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

Here's an article outline for 'Assessing Elevation Changes with Precision Tools' in the context of 'Residential Foundation Repair Services':

In the realm of residential foundation repair services, assessing elevation changes with precision tools is a critical aspect of ensuring a home's structural integrity and safety. Ignoring minor foundation issues can lead to severe structural failure **residential foundation repair service** wall. Over time, foundations can settle, heave, or shift due to various factors such as soil expansion, erosion, or inadequate compaction. These movements can lead to uneven floors, cracked walls, and other structural issues that necessitate professional repair.

Precision tools play a pivotal role in accurately measuring and evaluating these elevation changes. One of the most commonly used tools is the leveling instrument, which can range from simple spirit levels to sophisticated digital levels. These devices help technicians determine the relative elevation of different points on the foundation, identifying areas that have settled or heaved. By establishing a benchmark or reference point, technicians can compare multiple readings to understand the extent and pattern of movement.

Another essential tool is the total station, a high-precision surveying instrument that combines an electronic distance measurement device with an electronic transit theodolite. This tool allows for precise measurement of angles and distances, providing a comprehensive map of elevation changes across the foundation. The data collected can be used to create detailed reports and 3D models, offering a visual representation of the foundation's condition.

Additionally, ground-penetrating radar (GPR) is increasingly being used in foundation repair services. GPR uses radar pulses to image the subsurface, identifying voids, cracks, and other anomalies that may not be visible from the surface. This non-invasive method provides valuable insights into the underlying causes of elevation changes, helping technicians develop more targeted repair strategies.

The use of these precision tools not only ensures accurate diagnoses but also facilitates effective planning and execution of repair work. For instance, by pinpointing the exact locations of settlement or heaving, technicians can implement solutions such as underpinning, slabjacking, or soil stabilization with greater precision. This targeted approach minimizes disruption to the home and reduces the overall cost of repairs.

Moreover, regular monitoring with precision tools can help in the early detection of potential foundation issues. Homeowners can schedule periodic inspections to track any subtle changes in elevation over time. This proactive approach allows for timely interventions before minor issues escalate into major structural problems.

In conclusion, assessing elevation changes with precision tools is indispensable in residential foundation repair services. By leveraging advanced instruments like levels, total stations, and ground-penetrating radar, professionals can accurately diagnose foundation issues and implement effective repair strategies. This ensures the longevity and safety of residential structures, providing homeowners with peace of mind and a secure living environment.

Brief overview of common causes of foundation issues related to elevation changes, such as soil settlement, heaving, or erosion.

Elevation changes around a building's foundation can lead to several issues that compromise its structural integrity. Understanding the common causes of these problems is essential for assessing and addressing them effectively with precision tools.

One of the primary causes of foundation issues related to elevation changes is soil settlement. This occurs when the soil beneath a foundation compresses over time, leading to a drop in elevation. Settlement can be uniform or differential; the latter is more problematic as it causes the foundation to move unevenly, leading to cracks and other structural damages. Precision tools like leveling instruments and laser scanners can help monitor and measure these changes over time, providing crucial data for remediation strategies.

Heaving, on the other hand, is the upward movement of a foundation due to swelling soils. This typically occurs in clay-rich soils that expand when they absorb water and shrink when they dry out. Heaving can cause the foundation to lift and crack, damaging the structure above. Using tools like inclinometers and tilt sensors can help detect and measure heaving, allowing for early intervention and prevention of severe damage.

Erosion is another significant cause of foundation issues related to elevation changes. Water runoff, improper drainage, or landscaping changes can lead to soil erosion, washing away the soil supporting the foundation. This loss of support can cause the foundation to settle or shift unevenly, leading to structural problems. Precision tools like ground-penetrating radar (GPR) and drone surveying can help identify areas prone to erosion and monitor changes in soil levels around the foundation.

Other factors contributing to elevation changes include poor compaction during construction, changes in moisture content due to plumbing leaks or weather variations, and even natural phenomena like earthquakes. Each of these issues can be identified and evaluated using various precision tools tailored to the specific problem. By regularly assessing elevation changes with these tools, homeowners and professionals can detect foundation issues early, implement corrective measures, and prevent further damage to the structure.

Explanation of various precision tools used to measure elevation changes, including levels (spirit/laser), total stations/GPS systems used by professionals). Describe how each tool works briefly (no subheadings). For example laser level utilizes light and

receiver for accuracy.

Assessing elevation changes accurately is crucial in various fields such as surveying civil engineering construction forests agriculture mining geology archeology architecture urban planning transportation infrastructure development etcetera Hence precision instruments become indispensable tools In understanding how professionals measure these elevation changes various tools stand out namely levels both spirit/dumpy/auto levels/ laser levels total stations Global Positioning System GPS Here' s brief overview how each tool operates starting wit levels Spirit level also known dumpy level auto level consists telescope tube fitted precise bubble vials cross hair plate micrometer screw staff Its basic working principle involves sighting through telescope towards graduated staff held vertical position ground Bubble vials ensure horizontality telescope enabling user read elevation accurately Laser level works differently utilizing laser light beam projected onto surface where receiver detect device reads elevation based where laser hits Total station combines electronic transit EDM electronic distance measurement angle encoder microprocessor data collector all integrated unit It shoot laser beam towards reflector positioned point interest measures angles distances simultaneously compute coordinates data collected eventually used plot elevations GPS receivers determine positioning using signals transmitted satellites orbit Process called trilateration GPS receiver picks up signals minimum four satellites computes position including elevation based differences timing signals High precision GPS system used geodetic surveying incorporate real time kinematic RTK corrections further enhancing accurate results In practice professionals may choose tool depending specific requirements project terrain conditions accuracy desired accessibility cost effectiveness Thus mastery these precision tools paramount ensuring reliable data collection ultimately leading informed decision making shaping our environment

Step-by-step guide on how to use these tools effectively, emphasizing safety and accuracy from setup through calibration to measurement collection.

Assessing elevation changes with precision tools is a crucial task in various fields such as surveying, construction, and environmental monitoring. To ensure accuracy and safety, it's essential to follow a step-by-step guide when using these tools effectively throughout setup calibration measurement collection . Here are key points focusing mainly upon Total Stations Leica Disto laser measuring tools :

Setup:

Begin by selecting a suitable location for your instrument. For a Total Station, choose a spot that provides a clear line of sight to your targets minimizes obstructions ensures stability . Set your tool securely using tripod ensure its stability . For Leica Disto Ensure proper handling carry case avoid exposure moisture dust . Proper setup guaranteessafety accurate measurements ensuring reliable results right start . Once positioned level instrument carefully using bubble level .

Calibration:

Before collecting measurements , calibrate tool ensures accuracy . For Total Station follow manufacturer's guidelines usually involves sighting known points checking instrument's compensator . Leica Disto devices can be calibrated using reference distances provided by manufacturer . Regular calibration critical maintaining tool's precision avoiding errors . Follow procedure meticulously avoid rushing process .

Measurement Collection:

With setup calibration complete, proceed collecting measurements . Total Station requires careful aiming at targets using telescope precise focusing . Record horizontal vertical angles distances accurately . Use prism poles reflectors enhance accuracy when measuring long distances . Leica Disto measure distances simply aiming laser point at target pressing button . Ensure stable position laser point clearly visible target surface obtaining consistent readings . Double-check measurements minimize human error record data systematically maintain organized records . Always prioritize safety especially when measuring hazardous areas steep terrains . Use safety gear protective clothing necessary wear reflective vests increase visibility . Avoid working near power lines hazardous materials prevent accidents . Regularly inspect tools for damage malfunctions ensure optimal performance safety . Keep tools clean store properly prolong lifespan maintain accuracy .

Post-Measurement:

After collecting data transfer measurements digital format analyze using appropriate software . Verify data integrity check consistency with known benchmarks . Document process findings clearly concisely report accurate results . Maintain a log all activities including setup calibration measurements analysis future reference troubleshooting purposes . Ensure proper care maintenance tools following manufacturer's recommendations extending their lifespan .

In conclusion assessing elevation changes precision tools requires meticulous attention detail adherence safety protocols ensuring accurate reliable results throughout setup calibration measurement collection process understanding importance regular maintenance careful handling prolong tool's life accuracy ensuring successful outcomes every project undertaken .

Interpretation of results: Understanding what the measurements indicate about the foundation's condition and potential issues (such as differential settlement/cracking). Mention industry standards for acceptable elevation differences if applicable .

Assessing elevation changes with precision tools is a critical aspect of monitoring the health and stability of foundations. This process involves taking accurate measurements over time to detect any signs of movement, settlement, or other potential issues. The interpretation of these results is where the real value lies, as it helps professionals understand what the measurements indicate about the foundation's condition.

When assessing elevation changes, one of the key concerns is differential settlement, which can lead to cracking and other structural issues. Differential settlement occurs when different parts of a foundation settle at different rates, causing uneven stress distribution. Precision tools such as levels, total stations, and laser scanners can detect even the slightest changes in elevation, providing a detailed picture of what's happening beneath the surface.

Industry standards play a significant role in determining what constitutes acceptable elevation differences. For instance, the American Concrete Institute (ACI) and the International Building Code (IBC) provide guidelines for tolerable settlement levels based on factors such as soil conditions/type(either expansive or collapsible), load bearing capacities etcetera . Generally acceptable differential settlement ranges between 1 inch per 30 feet (25 mm per 9 meters) to 1 inch per 15 feet (25 mm per 4 meter). However these values might vary depending upon building design/structure type(either framed or rigid) also . These standards help engineers and surveyors evaluate whether the measured elevation differences fall within acceptable limits or indicate potential problems that need addressing(such as soil stabilization).

Interpreting these results involves more than just comparing numbers to standards; it requires a thorough understanding of the building's design, the surrounding soil conditions, and any external factors that could influence settlement (eg . Groundwater changes). For example , if measurements show that one corner of a building has settled more than another over several months during rainy season , it might indicate issues such as water erosion or soil expansion rather than structural failure . Therefore , Interpretation plays crucial role here . It helps professionals make informed decisions about maintenance , repairs , or even structural reinforcements . With advances continually made within technology tools used like drone mapping /LIDAR/GPR(ground penetrating radar) etcetera . Professionals can gather even more comprehensive data , leading to even precise interpretations . However human expertise remains crucial here too . Combining technical data analysis alongwith experienced judgement ensures accurate decision making ensuring long-term foundation stability . Therefore understanding what measurements indicate about foundation's condition remains essential step towards ensuring overall safety/durability of any structure .

How professional foundation repair services use this information to recommend specific repairs, such as house leveling, underpinning, or soil stabilization etc.

Professional foundation repair services utilize precise elevation assessment tools to gather critical information about a home's foundation, enabling them to recommend specific and effective repairs. These tools, which can include laser levels, digital altimeters, and remote sensing technologies like LiDAR, help experts detect even the slightest changes in elevation, indicative of foundation issues such as settling, sinking, or upheaval.

When a foundation repair specialist first visits a site, they establish a reference point, typically a stable structure or fixture unaffected by the foundation shift. Using their precision tools, they measure and compare elevations at various points around the foundation, creating a detailed map of the current foundation landscape. By comparing these measurements to the original or expected elevations, they can identify problem areas that require attention.

If a section of the foundation has sunk or settled, experts may recommend house leveling. This process involves lifting the affected area using jacks or other specialized equipment until it reaches its original elevation. Once leveled, they may suggest additional support methods like piers or pilings to maintain the corrected elevation.

In cases where the foundation has shifted due to soil instability or poor initial construction, underpinning might be recommended. Underpinning involves extending the foundation depth-wise or range-wise to transfer the building's weight to more stable soil layers. This can be achieved through methods like push piers or helical piers, which are driven deep into the ground to provide additional support.

Soil stabilization is another common recommendation stemming from elevation change assessments. If the soil beneath the foundation is weak or expansive (swelling with water and shrinking upon drying), it can cause recurring foundation issues. Soil stabilization techniques such as chemical grouting or soil modification can strengthen the soil and mitigate future movement.

In some instances, a combination of these repair methods may be suggested based on the elevation data and other diagnostic information. Professional foundation repair services rely heavily upon precise elevational assessments throughout planning & execution phases - rechecking measurements post-repair ensures work quality & foundational integrity moving forward.

Importance of regular monitoring and assessment of elevation changes by homeowners or professionals to prevent serious foundation problems and maintain residential property value (could mention seasons/weather conditions impact).

Regular monitoring and assessment of elevation changes in and around a home are crucial for preventing serious foundation problems and maintaining residential property value. This vigilance is not just a task for professionals; homeowners also play a vital role in this process. By keeping an eye on elevation shifts, homeowners can identify potential issues early, before they become costly repairs.

Foundation issues often stem from changes in the soil beneath a home. These changes can occur due to various factors, with seasons and weather conditions playing significant roles. For instance, during rainy seasons, soil can expand as it absorbs water, leading to upward movements known as heaving-while during dry periods; soil contraction causes settling which leads homes foundation sink unevenly causing cracks both interior & exterior walls plus jammed doors & windows amongst other signs.

To track these elevation changes precisely; advanced tools such altimeters digital levels GPS systems or remotely sensed InSAR data offer accurate readings helping pinpoint problematic areas efficiently allowing timely intervention avoiding severe damage later stages.. However precision tools aren'ts always readily accessible hence simple methods e .g using string levels bubble levels alongside visual inspection cracks measurement periodically helps catching initial warning signs..

Professionals like surveyors or foundation specialists should be consulted periodically ideally annually unless noticeable changes happen sooner; they bring expertise coupled modern equipment giving comprehensive analysis foundation status providing recommendations necessary repairs prevention measures respectively ensuring property structural integrity maintained ultimately preserving its market value.. Additionally keeping records monitoring observations enables tracking patterns correlate findings weather events facilitating proactive approach managing potential threats posed changing elevations overall ensure safety longevity investment i.e.,your home.. In essence collaborative effort between homeowner specialist complemented regular checks precise tools proves effective strategy mitigating risks associated elevations fluctuations safeguarding both foundation health property value alike..

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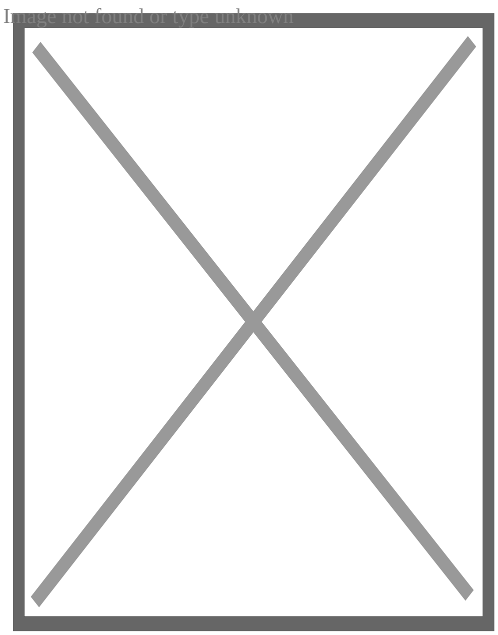
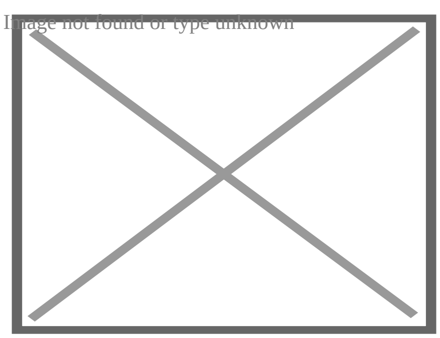
Residential Foundation Repair Services

Strong Foundations, Strong Homes

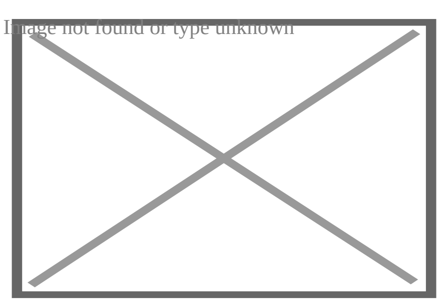
About geotechnical engineering



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



Precast concrete retaining wall



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

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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

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Geotechnical investigation

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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

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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

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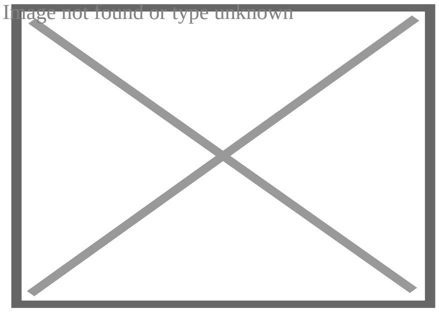

A compactor/roller operated by U.S. Navy Seabees

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

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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

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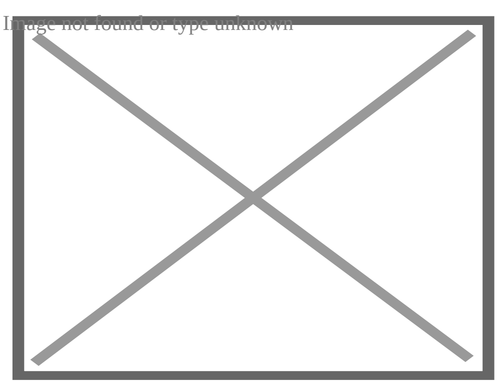

Simple slope slip section.

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

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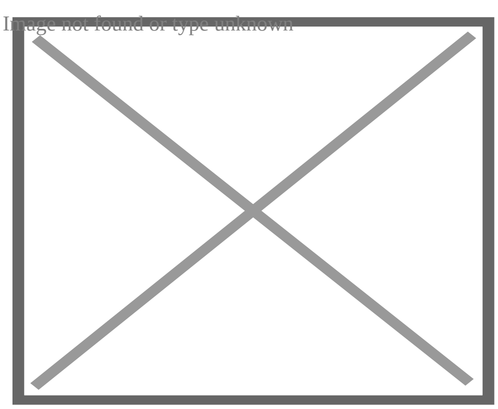
Geosynthetics

[edit]
Main article: Geosynthetics



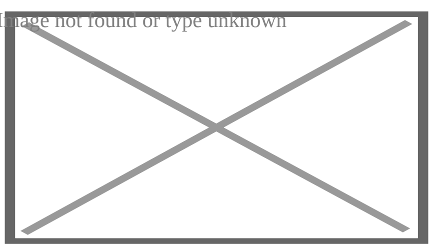
A collage of geosynthetic products.

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

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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

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- 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

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3. ^ ***a b*** Disturbed soil properties and geotechnical design, Schofield, Andrew N., Thomas Telford, 2006. ISBN 0-7277-2982-9
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External links

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- Worldwide Geotechnical Literature Database

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Engineering

- History
- Outline
- List of engineering branches

Specialties and interdisciplinarity

Civil

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

- Acoustic
- Aerospace
- Automotive
- Biomechanical
- Energy
- Manufacturing
- Marine
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- Railway
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Electrical

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Other

- Agricultural
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- Automation
- Biomedical
  - Bioinformatics
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  - Health technology
  - Pharmaceutical
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- Building services
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- Design
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- Fire
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- Geomatics
- Graphics
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  - Instrumentation and control
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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

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Soil topics

- Soil
- Pedosphere
  - Soil morphology
  - Pedodiversity
  - Soil formation
- Soil erosion
- Soil contamination
- Soil retrogression and degradation
- Soil compaction
  - Soil compaction (agriculture)
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- 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)

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

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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
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  - Loess
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  - Hydraulic conductivity
  - Water content
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  - Angle of repose
  - Friction angle
  - Cohesion
  - Porosity
  - Permeability
  - Specific storage
  - Shear strength
  - Sensitivity

- **Structures (Interaction)**
  - Natural features
    - Topography
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    - Land development
    - Landfill
    - Excavation
    - Trench
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    - 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

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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

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	    ◦ List
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	    ◦ 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
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  - Millwork
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- 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

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About load-bearing wall

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

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

Description

[edit]

A **load-bearing wall** or **bearing wall** is a wall that is an active structural element of a 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

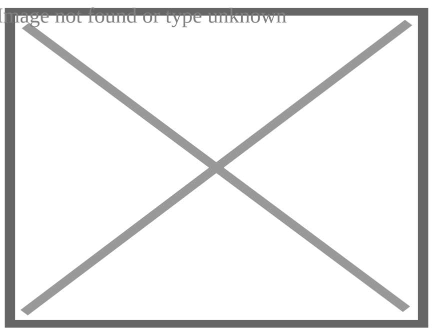
[edit]

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]

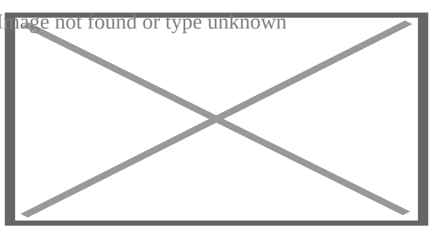


A beam of PSL lumber installed to replace a load-bearing wall at the first floor of a three-story building.

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)

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[edit]

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About Hoffman Estates, Illinois

Hoffman Estates is located in Illinois

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Estates

Hoffman Estates is located in the United States

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Hoffman Estates
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Estates

Hoffman Estates, Illinois

Village

Hoffman Estates scenery

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Hoffman Estates scenery

Flag of Hoffman Estates, Illinois

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Flag
Official seal of Hoffman Estates, Illinois

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Seal

Motto:
"Growing to Greatness"

Location of Hoffman Estates in Cook County, Illinois

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Location of Hoffman Estates in Cook County, Illinois

Hoffman Estates is located in Chicago metropolitan area

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Hoffman Estates
Hoffman
Estates

Coordinates: 42°03?50?N 88°08?49?WÃ¯Â»Â¿ / Ã¯Â»Â¿42.06389°N 88.14694°W
CountryUnited StatesStateIllinoisCountiesCookTownshipsSchaumburg, Palatine, Hanover, BarringtonIncorporated1959 (village)Government

• MayorWilliam D. McLeod[*citation needed*] • Village ManagerEric J. Palm[*citation needed*]Area

[1]
• Total

21.25 sq mi (55.03 km^2) • Land21.07 sq mi (54.56 km^2) • Water0.18 sq mi (0.47 km^2)
0.86%Elevation

[2]

824 ft (251 m)Population

(2020)
• Total

52,530 • Density2,493.71/sq mi (962.82/km^2)Zip Code

60169, 60010, 60192

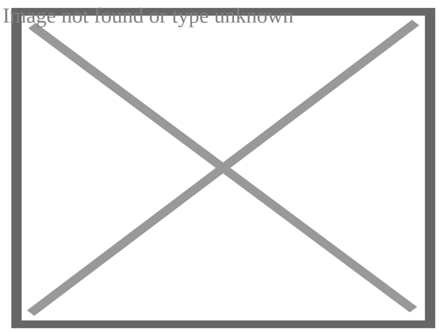
Area code(s)847 / 224FIPS code17-35411GNIS feature ID2398519[2]Websitewww
.hoffmanestates.org

Hoffman Estates is a village in Cook County, Illinois, United States. It is a suburb of Chicago. Per the 2020 census, the population was 52,530.[3]

The village previously served as the headquarters for Sears and is one of the American headquarters for Mori Seiki. Now Arena, home of the Windy City Bulls of the NBA G League is part of the village. Between 2006 and 2009, the village hosted the Heartland International Tattoo, one of the largest music and dance festivals of its kind in the Midwest.

History

[edit]



Sunderlage Farm Smokehouse[4](National Register of Historic Places) in Hoffman Estates

Prior to the 1940s, German settlers moved into the area west of Roselle Road and north of Golf Road, then known as Wildcat Grove. The area was sparsely populated until farmers purchased land in the area in the 1940s.

In 1954, Sam and Jack Hoffman, owners of a father-son owned construction company, bought 160 acres of land in the area.[5] The pair constructed homes and began the development of the region which now bears their name. As residents moved in, they voted to incorporate the area, and the Village of Hoffman Estates was incorporated on September 23, 1959.[6][5][7] In 1973, six former town officials, including mayors Edward F. Pinger (1959?1965) and Roy L. Jenkins (1965?1969) were indicted on bribery and tax charges.[8]

Once the Northwest Tollway opened, Schaumburg Township became more attractive to Chicago commuters. In the early 1960s, land annexations north of the tollway and in other neighboring regions more than doubled Hoffman Estates' land area.[9]

The opening of the Woodfield Mall in Schaumburg to the east in 1971 made the area a major business center. An attempt to change the name of the village to East Barrington, among other names, was made in the early 1980s but failed upon a residential vote.[10]

In the 1990s, the Prairie Stone Business Park began development. This 750-acre (3.0 km^2) planned multi-purpose business park[11] is bounded by Illinois Route 59 on the east, Interstate 90 on the south, Illinois Route 72 on the north, and Beverly Road on the west. The business park came to fruition in 1993 when Sears, Roebuck and Company relocated from the Sears

Tower in Chicago to a sprawling headquarters in the northwest part of Prairie Stone.[12][11] That was followed in by Indramat and Quest International, which in 1995 also opened facilities in the park.[13][14][15] Throughout the 1990s, a health and wellness center and child care facility were developed, as well as other smaller office buildings, and a branch of Northern Illinois University. Development of the business park is still ongoing, and recent additions in the 2000s include the 11,000-seat Now Arena; office buildings for Serta, WT Engineering, I-CAR, and Mary Kay; a Cabela's outdoor outfitters store; a 295-room Marriott hotel; and the 400,000-square-foot (37,000 m^2) Poplar Creek Crossing Retail Center, which is anchored by Target and numerous other big-box retailers. Future development will include further office buildings and retail development, Sun Island Hotel and Water Park, an amphitheater, and restaurants.

In 2011, the Village of Hoffman Estates took over ownership of the Now Arena.[16] On June 23, 2020, the Village of Hoffman Estates approved an $11.5 million deal to rename the Sears Centre Arena to the "NOW Arena".[17]

In the fall of 2016, papers and artifacts from President Barack Obama's administration began to arrive in town, where they are being stored in a building on Golf Road. The site is their temporary home while construction takes place on the Barack Obama Presidential Center in Jackson Park, Chicago, and is not open to the public.[18]

In January 2020, the Centers for Disease Control and Prevention (CDC) confirmed the second U.S. case of COVID-19 in a Hoffman Estates resident. The patient, a woman in her 60s returning from Wuhan, China, was treated at St. Alexius Medical Center.[19] Her husband was later infected in the first case of human-to-human transmission of the SARS-CoV-2 virus in the United States.[20]

Geography

[edit]

According to the 2021 census gazetteer files, Hoffman Estates has a total area of 21.25 square miles (55.04 km^2), of which 21.07 square miles (54.57 km^2) (or 99.15%) is land and 0.18 square miles (0.47 km^2) (or 0.85%) is water.[21]

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Places adjacent to Hoffman Estates, Illinois

Barrington Hills	South Barrington	Inverness
Elgin / East Dundee	**Hoffman Estates, Illinois**	Schaumburg
Elgin	Streamwood	Schaumburg

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Demographics

[edit]

Historical population

Census	Pop.	Note	%±
1960	8,296		—
1970	22,238		168.1%
1980	37,272		67.6%
1990	46,363		24.4%
2000	49,495		6.8%
2010	51,895		4.8%
2020	52,530		1.2%

U.S. Decennial Census[22]
2010[23] 2020[24]

Hoffman Estates village, Illinois – Racial and ethnic composition

Note: the US Census treats Hispanic/Latino as an ethnic category. This table excludes Latinos from the racial categories and assigns them to a separate category. Hispanics/Latinos may be of any race.

Race / Ethnicity (*NH = Non-Hispanic*)	Pop 2000[25]	Pop 2010[23]	Pop 2020[24]	% 2000	% 2010	% 2020
White alone (NH)	33,789	29,357	26,014	68.27%	56.57%	49.52%
Black or African American alone (NH)	2,141	2,393	2,472	4.33%	4.61%	4.71%
Native American or Alaska Native alone (NH)	54	60	69	0.11%	0.12%	0.13%
Asian alone (NH)	7,429	11,701	13,733	15.01%	22.55%	26.14%
Pacific Islander alone (NH)	10	4	2	0.02%	0.01%	0.00%
Other race alone (NH)	73	70	183	0.15%	0.13%	0.35%
Mixed race or Multiracial (NH)	801	1,013	1,579	1.62%	1.95%	3.01%
Hispanic or Latino (any race)	5,198	7,297	8,478	10.50%	14.06%	16.14%
Total	**49,495**	**51,895**	**52,350**	**100.00%**	**100.00%**	**100.00%**

As of the 2020 census[26] there were 52,530 people, 18,110 households, and 14,048 families residing in the village. The population density was 2,472.58 inhabitants per square mile (954.67/km^2). There were 19,160 housing units at an average density of 901.86 per square mile (348.21/km^2). The racial makeup of the village was 52.08% White, 26.26% Asian, 4.87% African American, 0.60% Native American, 0.02% Pacific Islander, 7.51% from other races, and 8.68% from two or more races. Hispanic or Latino of any race were 16.14% of the population.

There were 18,110 households, out of which 36.3% had children under the age of 18 living with them, 61.71% were married couples living together, 11.97% had a female householder with no husband present, and 22.43% were non-families. 18.07% of all households were made up of individuals, and 5.43% had someone living alone who was 65 years of age or older. The average household size was 3.16 and the average family size was 2.77.

The village's age distribution consisted of 23.1% under the age of 18, 7.3% from 18 to 24, 27.7% from 25 to 44, 28.3% from 45 to 64, and 13.5% who were 65 years of age or older. The median age was 38.2 years. For every 100 females, there were 97.6 males. For every 100 females age 18 and over, there were 96.4 males.

The median income for a household in the village was $92,423, and the median income for a family was $103,641. Males had a median income of $56,210 versus $42,288 for females. The per capita income for the village was $40,016. About 3.3% of families and 4.3% of the population were below the poverty line, including 4.9% of those under age 18 and 3.5% of those age 65 or over.

Economy

[edit]

Employers

[edit]

Many Japanese companies have their U.S. headquarters in Hoffman Estates and Schaumburg[27] but the largest employers in Hoffman Estates as of 2023[28] are:

No.	Employer	No. of employees
1	St. Alexius Medical Center	2,500
2	Siemens Medical Systems	400
3	Claire's[29]	400
4	Village of Hoffman Estates	370
5	FANUC America[30]	350
6	Vistex	350
7	Leopardo Companies, Inc.	300
8	Wells Fargo	300

9	The Salvation Army	270
10	Tate & Lyle	220

Education

[edit]

The village is served by several public school districts. The majority of residents who live in Schaumburg Township attend:

- Township High School District 211 (9–12)[31]
- Community Consolidated School District 54 (K–8)[32]

North Hoffman Estates (north of I-90) residents are served by:

- Township High School District 211
- Community Consolidated School District 15 (K–8)[33] (East of Huntington Blvd)
- Barrington School District 220 (K–12) (Unit District) (West of Huntington Blvd).[34]

Residents west of Barrington Road primarily attend Unit School District, Elgin Area U46.

High schools

[edit]

Schools located in the Hoffman Estates village limits:

- Hoffman Estates High School
- James B. Conant High School

Other high schools in the same township high school district:

- Schaumburg High School
- William Fremd High School
- Palatine High School

Community college

[edit]

Most of the village is served by Harper College Community College District 512.

Miscellaneous education

[edit]

The Xilin Northwest Chinese School (simplified Chinese: Ã¥Â¸Å’Ã¦Å¾â€”Ã¨Â¥Â¿Ã¥Å’â€”Ã¤Â¸Â-Ã¦â€“â€¡Ã¥ÂÂ¦Ã¦Â Â¡; traditional Chinese: Ã¥Â¸Å’Ã¦Å¾â€”Ã¨Â¥Â¿Ã¥Å’â€”Ã¤Â¸ÂÃ¦â€“â€¡Ã¥Â-Â¸Ã¦Â Â¡; pinyin: *XÃ„Â«lín XÃ„Â«bÃ„â€ºi ZhÃ…Â•ngwén Xuéxiào*) holds its classes at Conant High School in Hoffman Estates.[35] It serves grades preschool through 12.[36] The school predominately serves mainland Chinese families. In 2003 the school held its classes in Palatine High School in Palatine. In 2000 the school had served around 300 students. This figure increased almost by 100%, to almost 600 students. This made it one of the largest of the Chinese schools in the Chicago area.[37]

Library

[edit]

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- Barrington Area Library
- Schaumburg Township District Library
- Gail Borden Public Library District
- Palatine Township Library

Sister city

[edit]

Hoffman Estates has one sister city:[38]

- Angoulême, Charente, Nouvelle-Aquitaine, France

Transportation

[edit]

Pace provides bus service on multiple routes connecting Hoffman Estates to Elgin, Rosemont, and other destinations.[39]

Notable people

[edit]

- Tammy Duckworth, U.S. Senator from Illinois (2016–present)[40]
- Rob Valentino (b. 1985), former soccer player who is an assistant coach for Atlanta United[41]
- William Beckett, lead singer of the band The Academy Is...

Notes

[edit]

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2. ^ ***a b*** U.S. Geological Survey Geographic Names Information System: Hoffman Estates, Illinois
3. **^** *"Hoffman Estates village, Illinois". United States Census Bureau. Retrieved April 15, 2022.*
4. **^** *"The Sunderlage Smokehouse: Hoffman Eestates' National Register Landmark". History of Schaumburg Township: A Blog of the Schaumburg Township District Library. February 21, 2010. Retrieved March 3, 2017.*
5. ^ ***a b*** *Collins, Catherine (August 24, 1986). "Hoffman Estates Plans a Revamp of Future Image". Chicago Tribune.*
6. **^** *"Hoffman Estates, IL". The Encyclopedia of Chicago. Retrieved March 8, 2020.*
7. **^** *"HR0614 96th General Assembly". State of Illinois.*
8. **^** *Davis, Robert (October 27, 1973). "U.S. indicts builder, seven ex-officials in suburb bribe". Chicago Tribune.*
9. **^** *"History of Hoffman Estates". Village of Hoffman Estates. Retrieved March 8, 2020.*
10. **^** *"Name history of Hoffman Estates". Falcon Living. Retrieved November 26, 2017.*
11. ^ ***a b*** *Sulski, Jim (May 11, 2000). "Versatile Network Brings Workers to Prairie Stone Business Park". Chicago Tribune.*
12. **^** *Bernstein, David (May 16, 2020). "The Sears Headquarters Deal Cost Taxpayers $500 Million. 30 Years Later, There's Little to Show for It". ProPublica.*
13. **^** *Russis, Martha (December 28, 1994). "PRAIRIE STONE GETS ELECTRONIC FIRM FOR TENANT". Chicago Tribune.*
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16. **^** *Manson, Ken (December 23, 2009). "Suburb takes over Sears Centre". Chicago Tribune.*
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20. **^** *Hauck, Grace (January 30, 2020). "Chicago man is first US case of person-to-person coronavirus spread". USA Today. Chicago. Retrieved February 13, 2020.*
21. **^** *"Gazetteer Files". Census.gov. Retrieved June 29, 2022.*
22. **^** *"Decennial Census of Population and Housing by Decades". US Census Bureau.*
23. ^ ***a b*** *"P2 Hispanic or Latino, and Not Hispanic or Latino by Race – 2010: DEC Redistricting Data (PL 94-171) – Hoffman Estates village, Illinois". United States Census Bureau.*

24. ^ ***a*** ***b*** *"P2 Hispanic or Latino, and Not Hispanic or Latino by Race – 2020: DEC Redistricting Data (PL 94-171) –Hoffman Estates village, Illinois". United States Census Bureau.*
25. **^** *"P004: Hispanic or Latino, and Not Hispanic or Latino by Race – 2000: DEC Summary File 1 – Hoffman Estates village, Illinois". United States Census Bureau.*
26. **^** *"Explore Census Data". data.census.gov. Retrieved June 28, 2022.*
27. **^** Selvam, Ashok. "Asian population booming in suburbs". *Daily Herald* (Arlington Heights, Illinois). March 6, 2011. Retrieved on June 19, 2013.
28. **^** *"Village of Hoffman Estates Comprehensive Annual Financial Report". June 25, 2024.*
29. **^** " FAQ Archived July 13, 2014, at the Wayback Machine." Claire's. Retrieved on December 25, 2011. "Claire's Stores, Inc. has its investor relations and customer service located in Pembroke Pines , Florida . The buying, marketing and distribution offices are located in Hoffman Estates, a suburb of Chicago . Please visit Contact Us if you would like to send correspondence to our corporate headquarters."
30. **^** *"Village of Hoffman Estates Top Employers". Hoffmanestates.org. March 21, 2012. Archived from the original on April 22, 2012. Retrieved April 30, 2012.*
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35. **^** "School Location." Northwest Xilin Chinese School. Retrieved on February 24, 2014. "School Address 700 East Cougar Trail,Hoffman Estates,IL 60194 Located at Conant High School campus."
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39. **^** *"RTA System Map" (PDF). Retrieved January 30, 2024.*
40. **^** *"Endorsement: Duckworth for U.S. Senate". Daily Herald. October 8, 2022.*
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External links

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- Village of Hoffman Estates official website

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Places adjacent to Hoffman Estates, Illinois

Barrington Hills	South Barrington	Inverness / Palatine
East Dundee / Elgin	Image not found or type unknown Image not found or type unknown **Hoffman Estates, Illinois** Image not found or type unknown Image not found or type unknown	Palatine
Elgin	Streamwood	Schaumburg

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Hoffman Estates, Illinois

Education

Schools

- Community Consolidated School District 54
- Community Consolidated School District 15
- Barrington School District 220
- Township High School District 211
  - Hoffman Estates High School
  - James B. Conant High School
- Elgin Area School District U46

Other education

- Harper College (in Palatine)
- Schaumburg Township District Library
- Barrington Area Library

Other

Landmarks

- Now Arena
- Sunderlage Farm Smokehouse

This list is incomplete.

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Municipalities and communities of Cook County, Illinois, United States

County seat: **Chicago**

Cities

- Berwyn
- Blue Island
- Burbank
- Calumet City
- Chicago‡
- Chicago Heights
- Country Club Hills
- Countryside
- Des Plaines
- Elgin‡
- Elmhurst‡
- Evanston
- Harvey
- Hickory Hills
- Hometown
- Markham
- Northlake
- Oak Forest
- Palos Heights
- Palos Hills
- Park Ridge
- Prospect Heights
- Rolling Meadows

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Map of Illinois highlighting Cook County

Towns

- Cicero

- Alsip
- Arlington Heights‡
- Barrington‡
- Barrington Hills‡
- Bartlett‡
- Bedford Park
- Bellwood
- Bensenville‡
- Berkeley
- Bridgeview
- Broadview
- Brookfield
- Buffalo Grove‡
- Burnham
- Burr Ridge‡
- Calumet Park
- Chicago Ridge
- Crestwood
- Deer Park‡
- Deerfield‡
- Dixmoor
- Dolton
- East Dundee‡
- East Hazel Crest
- Elk Grove Village‡
- Elmwood Park
- Evergreen Park
- Flossmoor
- Ford Heights
- Forest Park
- Forest View
- Frankfort‡
- Franklin Park
- Glencoe
- Glenview
- Glenwood
- Golf
- Hanover Park‡
- Harwood Heights
- Hazel Crest
- Hillside
- Hinsdale‡
- Hodgkins
- Hoffman Estates
- Homer Glen‡
- Homewood
- Indian Head Park
- Inverness

Townships	○ Barrington ○ Berwyn ○ Bloom ○ Bremen ○ Calumet ○ Cicero ○ Elk Grove ○ Hanover ○ Lemont ○ Leyden ○ Lyons ○ Maine ○ New Trier ○ Niles ○ Northfield ○ Norwood Park ○ Oak Park ○ Orland ○ Palatine ○ Palos ○ Proviso ○ Rich ○ River Forest ○ Riverside ○ Schaumburg ○ Stickney ○ Thornton ○ Wheeling ○ Worth **Former:** Evanston • Hyde Park • Jefferson • Lake • Lake View • North Chicago • Rogers Park • South Chicago • West Chicago
Unincorporated communities	○ Central Stickney ○ Hines ○ Indian Hill ○ La Grange Highlands ○ Nottingham Park ○ Sag Bridge ○ Sutton

Other Communities	◦ Orchard Place ◦ Techny
Footnotes	‡This populated place also has portions in an adjacent county or counties

- Illinois portal
- United States portal

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Chicago metropolitan area

Major city	◦ **Chicago**	
Cities (over 30,000 in 2020)	◦ Aurora ◦ Berwyn ◦ Calumet City ◦ Crown Point ◦ Crystal Lake ◦ DeKalb ◦ Des Plaines ◦ Elgin ◦ Elmhurst ◦ Evanston ◦ Gary ◦ Hammond ◦ Highland Park ◦ Joliet ◦ Kenosha ◦ Naperville ◦ North Chicago ◦ Park Ridge ◦ Portage ◦ St. Charles ◦ Valparaiso ◦ Waukegan ◦ Wheaton	Chicago landsat image Image not found or type unknown

Towns and villages (over 30,000 in 2020)	○ Addison ○ Arlington Heights ○ Bartlett ○ Bolingbrook ○ Buffalo Grove ○ Carol Stream ○ Carpentersville ○ Cicero ○ Downers Grove ○ Elk Grove Village ○ Glendale Heights ○ Glenview ○ Grayslake ○ Gurnee ○ Hanover Park ○ Hoffman Estates ○ Lombard ○ Merrillville ○ Mount Prospect ○ Mundelein ○ Niles ○ Northbrook ○ Oak Lawn ○ Oak Park ○ Orland Park ○ Oswego ○ Palatine ○ Plainfield ○ Romeoville ○ Schaumburg ○ Skokie ○ Streamwood ○ Tinley Park ○ Wheeling ○ Wonder Lake ○ Woodridge

Counties	◦ Cook ◦ DeKalb ◦ DuPage ◦ Grundy ◦ Jasper ◦ Kane ◦ Kankakee ◦ Kendall ◦ Kenosha ◦ Lake, IL ◦ Lake, IN ◦ McHenry ◦ Newton ◦ Porter ◦ Will
Regions	◦ Great Lakes ◦ Northern Illinois ◦ Northern Indiana
Sub-regions	◦ Chicago Southland ◦ Eastern Ridges and Lowlands ◦ Fox Valley (Illinois) ◦ Golden Corridor ◦ Illinois Technology and Research Corridor ◦ North Shore (Chicago) ◦ Northwest Indiana

Illinois, United States

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State of Illinois

Springfield (capital)

Topics

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Regions	◦ American Bottom ◦ Bloomington–Normal metropolitan area ◦ Central Illinois ◦ Champaign–Urbana metropolitan area ◦ Chicago metropolitan area ◦ Collar counties ◦ Corn Belt ◦ Driftless Area ◦ Forgottonia ◦ Fox Valley ◦ Illinois–Indiana–Kentucky tri-state area ◦ Metro East ◦ Metro Lakeland ◦ Mississippi Alluvial Plain ◦ North Shore ◦ Northern Illinois ◦ Northwestern Illinois ◦ Peoria metropolitan area ◦ Quad Cities ◦ River Bend ◦ Rockford metropolitan area ◦ Southern Illinois ◦ Wabash Valley

Municipalities	◦ Alton/Granite City/Edwardsville ◦ Arlington Heights/Palatine ◦ Aurora/Naperville/Oswego/Plainfield ◦ Bartlett/Hanover Park/Streamwood ◦ Belleville/East St. Louis/Collinsville/O'Fallon ◦ Berwyn/Cicero ◦ Bloomington/Normal ◦ Bolingbrook/Romeoville ◦ Buffalo Grove/Wheeling ◦ Calumet City ◦ Canton ◦ Carbondale ◦ Carol Stream/Glendale Heights ◦ Centralia ◦ Champaign/Urbana ◦ Charleston/Mattoon ◦ Chicago ◦ Chicago Heights ◦ Crystal Lake/Algonquin ◦ Danville ◦ Decatur ◦ DeKalb/Sycamore ◦ Des Plaines/Mount Prospect/Park Ridge ◦ Dixon ◦ Downers Grove/Woodridge ◦ Effingham ◦ Elgin/Carpentersville ◦ Elmhurst/Lombard/Addison ◦ Evanston/Skokie ◦ Freeport ◦ Galesburg ◦ Glenview/Northbrook ◦ Harrisburg ◦ Jacksonville ◦ Joliet ◦ Kankakee/Bradley/Bourbonnais ◦ Lincoln ◦ Macomb ◦ Marion/Herrin ◦ Moline/East Moline/Rock Island ◦ Mount Vernon ◦ Mundelein ◦ Oak Lawn ◦ Oak Park ◦ Orland Park/Tinley Park ◦ Ottawa/Streator/LaSalle/Peru ◦ Peoria/Pekin/East Peoria/Morton/Washington ◦ Pontiac

- Adams
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- Crawford
- Cumberland
- DeKalb
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About Cook County

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Things To Do in Cook County

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Sand Ridge Nature Center

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River Trail Nature Center

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Palmisano (Henry) Park

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Driving Directions in Cook County

Driving Directions From Palmisano (Henry) Park to

Driving Directions From Lake Katherine Nature Center and Botanic Gardens to

Driving Directions From Navy Pier to

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Reviews for

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Jeffery James

(5)

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

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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.

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Jim de Leon

(5)

It was a pleasure to work with Rick and his crew. From the beginning, Rick listened to my concerns and what I wished to accomplish. Out of the 6 contractors that quoted the project, Rick seemed the MOST willing to accommodate my wishes. His pricing was definitely more than fair as well. I had 10 push piers installed to stabilize and lift an addition of my house. The project commenced at the date that Rick had disclosed initially and it was completed within the same time period expected (based on Rick's original assessment). The crew was well informed, courteous, and hard working. They were not loud (even while equipment was being utilized) and were well spoken. My neighbors were very impressed on how polite they were when they entered / exited my property (saying hello or good morning each day when they crossed paths). You can tell they care about the customer concerns. They ensured that the property would be put back as clean as possible by placing MANY sheets of plywood down prior to excavating. They compacted the dirt back in the holes extremely well to avoid large stock piles of soils. All the while, the main office was calling me to discuss updates and expectations of completion. They provided waivers of lien, certificates of insurance, properly acquired permits, and JULIE locates. From a construction background, I can tell you that I did not see any flaws in the way they operated and this an extremely professional company. The pictures attached show the push piers added to the foundation (pictures 1, 2 & 3), the amount of excavation (picture 4), and the restoration after dirt was placed back in the pits and compacted (pictures 5, 6 & 7). Please notice that they also sealed two large cracks and steel plated these cracks from expanding further (which you can see under my sliding glass door). I, as well as my wife, are extremely happy that we chose United Structural Systems for our contractor. I would happily tell any of my friends and family to use this contractor should the opportunity arise!

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Chris Abplanalp

(5)

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

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Dave Kari

(5)

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

Highly recommend.

Assessing Elevation Changes with Precision Tools**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

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