



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



Explanation of what sump pumps are and how they function

Sure! Carbon fiber reinforcement adds strength to foundation wall repair service [foundation repair service near me](#) power tool. Here's a short, human-like essay on the explanation of what sump pumps are and how they function:

Sump pumps are essential devices designed to prevent basement flooding, especially in areas prone to heavy rainfall or with high water tables. Imagine your basement as a small fortress, and the sump pump as its vigilant guardian, tirelessly working to keep the unwanted water at bay.

So, what exactly is a sump pump? At its core, a sump pump is a simple yet effective mechanical device installed in the lowest part of a basement or crawl space. This area, known as the sump pit, collects water that seeps in through the foundation or walls. The sump pit is typically a small, bucket-like container that gathers this water.

Now, let's dive into how it functions. When water accumulates in the sump pit, the sump pump springs into action. Inside the pit, there's a float switch attached to the pump. As the water level rises, the float switch is triggered, activating the pump. The pump then kicks on, using an impeller to push the water out through a discharge pipe. This pipe directs the water away from the foundation, often leading it to a safe distance where it won't re-enter the basement.

There are primarily two types of sump pumps: submersible and pedestal. Submersible pumps are fully enclosed units that sit directly in the sump pit, while pedestal pumps have a vertical pipe that extends above the pit, with the pump motor housed in a dry section above the water line.

Sump pumps can be powered by electricity or batteries. Battery-backup sump pumps are particularly useful during power outages, ensuring continuous protection even when the grid fails.

In essence, sump pumps are the unsung heroes of basement protection. They operate quietly and efficiently, providing peace of mind to homeowners by preventing water damage and maintaining a dry, safe environment below ground level.

Identifying the signs that indicate a need for sump pump installation or repair

Certainly!

Identifying the signs that indicate a need for sump pump installation or repair is crucial for homeowners aiming to prevent basement flooding. One of the most obvious signs is consistent water accumulation in the basement, especially after heavy rainfall or during snowmelt periods. If you notice puddles forming or the basement floor feeling damp more often than not, it's a clear indicator that your current sump pump system might be inadequate or malfunctioning.

Another red flag is the sound coming from the sump pump. A healthy sump pump operates with a relatively quiet, consistent humming noise. However, if you start hearing unusual sounds such as rattling, grinding, or a loud humming, it could signify mechanical issues within the pump that require immediate attention.

Frequent tripping of the pump's circuit breaker is also a telltale sign. This could mean the pump is overworked or there's an electrical problem that needs addressing. Similarly, if the pump runs continuously without shutting off, it may indicate a blockage in the discharge line or that the pump is struggling to keep up with the water inflow.

Musty odors emanating from the basement can also suggest moisture issues that a sump pump is designed to mitigate. These odors often arise from mold and mildew growth spurred by consistent dampness. If you've noticed such smells, it might be time to evaluate your sump pump's efficiency.

Lastly, visible wear and tear on the sump pump itself or its components should not be ignored. Check for any cracks, leaks, or corrosion on the pump and its surrounding area. These physical signs of damage can compromise the pump's functionality and may necessitate repairs or a complete replacement.

In conclusion, being vigilant about these signs can help you maintain an effective sump pump system, ensuring your basement remains dry and protected from flooding. Regular inspections and timely interventions are key to prolonging the life of your sump pump and safeguarding your home.

Steps to properly install a sump pump in a residential basement

Certainly! Installing a sump pump in your residential basement is a practical step towards preventing flooding and maintaining a dry, healthy living space. Here's a straightforward guide to help you through the process:

Firstly, identify the lowest spot in your basement where water tends to accumulate. This will be the ideal location for your sump pump. Clear the area of any debris and ensure it's clean and dry.

Next, you'll need to dig a hole about 2 feet deep and wide enough to comfortably fit your sump pump and its basin. The basin is usually a bucket-like container that comes with the

pump. Place the basin in the hole and level it out.

Once the basin is in place, position the sump pump inside it. Make sure the pump's discharge pipe is pointing in the direction you want the water to go – typically, this will be away from your home's foundation.

Now, it's time to connect the pump. Plug in the sump pump if it's electric (make sure to use a GFCI outlet for safety) or connect the check valve and discharge pipe if it's a gravity-fed model. The check valve prevents water from flowing back into the pump.

After everything is connected, test the sump pump. Pour some water into the basin and ensure the pump activates and discharges the water properly. If everything works fine, backfill the hole around the basin with gravel, leaving the top of the basin exposed.

Finally, consider installing a sump pump cover to keep out debris and pests. Regularly check and maintain your sump pump to ensure it continues to function effectively.

Remember, while this guide provides a general overview, it's always a good idea to consult a professional for a more tailored installation, especially if you're not comfortable with DIY projects or if your basement has specific challenges.

Maintenance tips for ensuring sump pumps operate efficiently over time

Sure! Here's a human-like essay on maintenance tips for ensuring sump pumps operate efficiently over time:

Maintaining your sump pump is crucial for ensuring it operates efficiently and effectively over time, especially if you're relying on it to prevent basement flooding. Here are some practical maintenance tips to keep your sump pump in top shape.

Firstly, regular inspection is key. Check your sump pump at least once a month to ensure it's functioning correctly. Look for any signs of wear and tear, such as cracks in the pump or discharge pipe. Also, ensure that the FLOAT SWITCH moves freely and isn't stuck in one position.

Secondly, keep the sump pit clean. Debris like dirt, leaves, and small stones can accumulate in the pit and interfere with the pump's operation. Take a few minutes every few months to remove any buildup. This not only helps the pump run more efficiently but also extends its lifespan.

Thirdly, test your sump pump regularly. You can do this by pouring a bucket of water into the sump pit and observing how the pump responds. It should turn on automatically and

pump the water out. If it doesn't, you may need to troubleshoot the issue or call a professional.

Fourthly, don't forget about the discharge line. Ensure it's clear of obstructions and that water is being expelled away from your home's foundation. A clogged or misaligned discharge line can cause the pump to work harder than necessary, leading to premature wear.

Lastly, consider having a professional inspect your sump pump annually. They can provide a thorough check-up, identify potential issues you might have missed, and perform any necessary repairs or replacements.

By following these maintenance tips, you can ensure your sump pump remains reliable and efficient, giving you peace of mind during those rainy seasons or heavy downpours.

Common mistakes homeowners make when setting up or maintaining sump pumps

Certainly! Here's a short essay on common mistakes homeowners make when setting up or maintaining sump pumps to prevent basement flooding:

One of the most effective ways to prevent basement flooding is by installing and maintaining a sump pump. However, many homeowners inadvertently make mistakes that can compromise the effectiveness of their sump pump system. Understanding these common pitfalls can help ensure your sump pump works efficiently and reliably.

Firstly, improper placement of the sump pump is a frequent mistake. The sump pump should be installed in the lowest part of the basement where water is most likely to accumulate. Placing it elsewhere can lead to inadequate water removal and increased flood risk.

Another common error is neglecting regular maintenance. Sump pumps, like any mechanical device, require periodic checks and servicing. Homeowners often forget to clean the pump and pit, which can lead to clogs and reduced efficiency. It's essential to remove any debris, such as dirt, leaves, or insects, that may accumulate in the pit.

Using the wrong type of sump pump for your needs is another misstep. There are various sump pumps available, including pedestal, submersible, and hybrid models. Choosing the right one based on the volume of water and the depth of the pit is crucial for effective water management.

Improper discharge line setup is also a common issue. The discharge line should be long enough to move water away from the foundation but not so long that it creates

backpressure on the pump. Additionally, ensuring the line is free from kinks and obstructions is vital for smooth operation.

Finally, many homeowners fail to have a backup power source for their sump pump. Power outages during heavy rains can render the primary sump pump useless. Installing a battery backup or connecting the pump to a generator can provide peace of mind and added protection.

In conclusion, avoiding these common mistakes can significantly enhance the effectiveness of your sump pump system. Proper placement, regular maintenance, choosing the right pump, correct discharge line setup, and having a backup power source are all critical components in preventing basement flooding.

The role of professional residential foundation repair services in sump pump installation and maintenance

In the realm of safeguarding homes against basement flooding, the role of professional residential foundation repair services is indispensable, especially when it comes to sump pump installation and maintenance. A sump pump is a critical component in preventing water from accumulating in basements, but its effectiveness hinges on proper installation and regular upkeep. This is where the expertise of professional services becomes crucial.

Firstly, professional residential foundation repair services bring a wealth of knowledge and experience to the table. They understand the complexities of foundation systems and the specific requirements of different homes. When installing a sump pump, these professionals ensure that it is positioned in the lowest part of the basement, where water is most likely to collect. They also make sure that the pump is correctly aligned and securely installed, which is vital for its efficient operation.

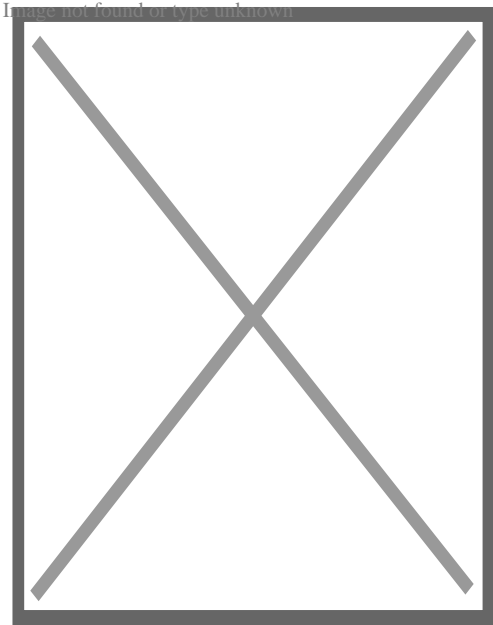
Moreover, these services are equipped with the right tools and technology to diagnose and address any underlying issues that might affect the sump pump's performance. For instance, they can identify cracks or weaknesses in the foundation that might lead to water infiltration, and recommend appropriate repairs to complement the sump pump installation.

Maintenance is another area where professional services excel. Regular check-ups by these experts can prevent unforeseen breakdowns. They can clean the pump and its components, check for any signs of wear and tear, and ensure that the discharge line is free from obstructions. This proactive approach not only extends the lifespan of the sump pump but also ensures that it functions optimally when needed most.

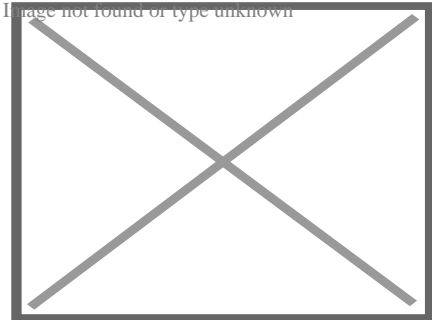
In addition to technical skills, professional residential foundation repair services offer valuable advice on sump pump usage and maintenance. They can guide homeowners on the best practices for operating their sump pump, including when to turn it on and off, and how to handle it during power outages. This educational aspect is often overlooked but is crucial for the effective use of sump pumps.

In conclusion, the role of professional residential foundation repair services in sump pump installation and maintenance is multifaceted. It encompasses technical expertise, diagnostic capabilities, regular maintenance, and educational support. By leveraging these services, homeowners can ensure that their sump pumps are not only installed correctly but are also maintained in top condition, offering reliable protection against basement flooding.

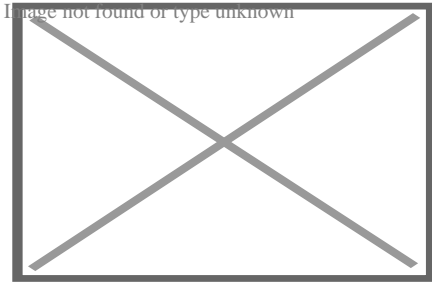
About geotechnical engineering



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

[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 it 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

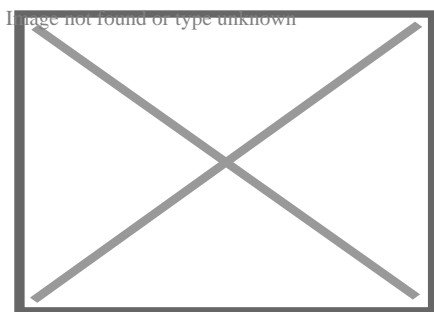
[edit]

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.

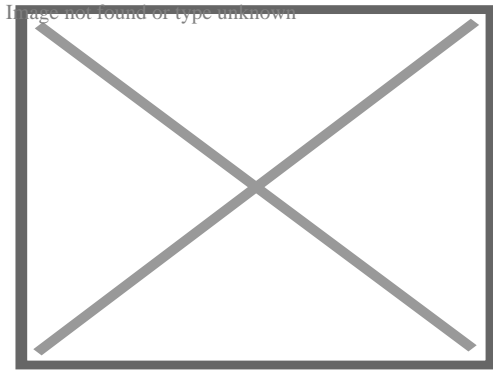
Ground improvement

[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.

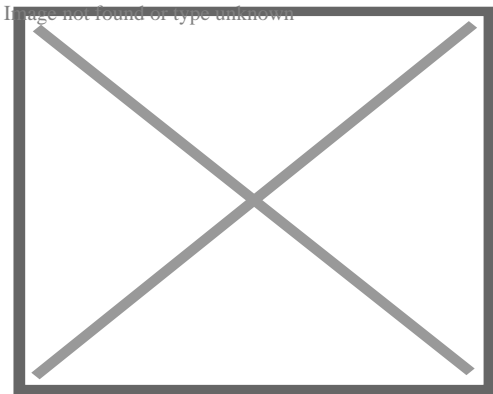
Sub-disciplines

[edit]

Geosynthetics

[edit]

Main article: Geosynthetics



A collage of geosynthetic products.

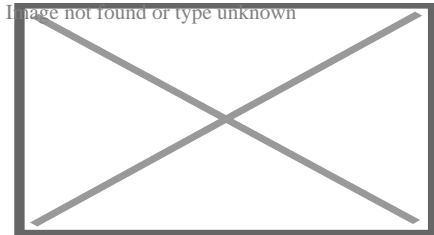
Geosynthetics are a type of plastic polymer products used in geotechnical engineering that improve engineering performance while reducing costs. This includes geotextiles, geogrids, geomembranes, geocells, and geocomposites. The synthetic nature of the products make them suitable for use in the ground 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]

-  [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

- o t
- o e

Engineering

- o History
- o Outline
- o List of engineering branches

Civil

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

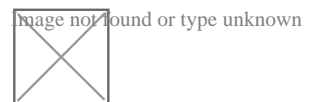
Mechanical

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

Electrical

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

**Specialties
and
interdisciplinarity**



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

-  **Category** image not found or type unknown
-  **Commons** image not found or type unknown
-  **WikiProject** image not found or type unknown
-  **Portal** image not found or type unknown

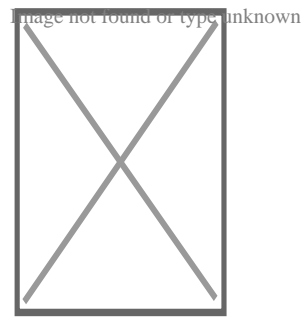
- v
- t
- e

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



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

- Alfisols
- Andisols
- Aridisols
- Entisols
- Gelisols
- Histosols

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

-  [Wikipedia:WikiProject Soil](#)
-  [Category soil](#)
- [Category soil science](#)
-  [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
 -  Inclinator
 -  Settlement recordings
-  Shear vane test
-  Simple sounding
-  Standard penetration test
-  Total sounding
-  Trial pit
-  Visible bedrock
- Nuclear densometer test
- Exploration geophysics

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

Forces

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

Mechanics

Phenomena/ problems

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

Numerical analysis software

- SEEP2D
- STABL
- SVFlux
- SVSlope
- UTEXAS
- Plaxis

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

- 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

Other topics

 [Outline](#)  [Category](#)

Authority control databases: National

- [Germany](#)
- [United States](#)
- [Czech Republic](#)
- [Israel](#)

[Edit this at Wikidata](#)

About Hoffman Estates, Illinois

Hoffman Estates is located in Illinois

Image not found or type unknown

Hoffman Estates
Estates

Hoffman Estates is located in the United States

Image not found or type unknown

Hoffman Estates
Estates

Hoffman Estates, Illinois

Village

Hoffman Estates scenery

Image not found or type unknown

Hoffman Estates scenery

Flag of Hoffman Estates, Illinois

Image not found or type unknown

Flag

Official seal of Hoffman Estates, Illinois

Image not found or type unknown

Seal

Motto:

"Growing to Greatness"

Location of Hoffman Estates in Cook County, Illinois

Image not found or type unknown

Location of Hoffman Estates in Cook County, Illinois

Hoffman Estates is located in Chicago metropolitan area

Image not found or type unknown

Hoffman Estates

Estates

Coordinates: 42°03′50″N 88°08′49″W﻿ / ﻿42.06389°N 88.14694°WCountryUnited StatesStateIllinoisCountiesCookTownshipsSchaumburg, Palatine, Hanover, BarringtonIncorporated1959 (village)Government

• Mayor William D. McLeod^[*citation needed*] • Village Manager Eric J. Palm^[*citation needed*]
Area

[¹]

• Total

21.25 sq mi (55.03 km²) • Land 21.07 sq mi (54.56 km²) • Water 0.18 sq mi (0.47 km²)
0.86% Elevation

[²]

824 ft (251 m) Population

(2020)

• Total

52,530 • Density 2,493.71/sq mi (962.82/km²) Zip Code

60169, 60010, 60192

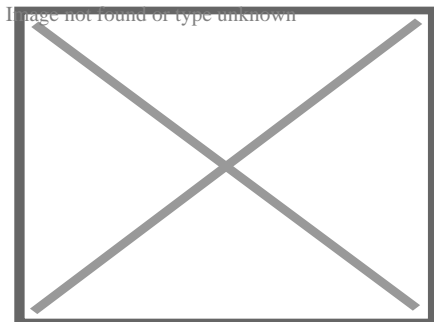
Area code(s) 847 / 224 FIPS code 17-35411 GNIS feature ID 2398519^[²] Website www.hoffmanestates.org

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 km²) 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 m²) 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 km²), of which 21.07 square miles (54.57 km²) (or 99.15%) is land and 0.18 square miles (0.47 km²) (or 0.85%) is water.^[21]

- o v
- o t
- o e

Places adjacent to Hoffman Estates, Illinois

Barrington Hills

South Barrington

Inverness

 image not found or type unknown

Elgin / East Dundee

 image not found or type unknown

Hoffman Estates, Illinois

 image not found or type unknown

Schaumburg

 image not found or type unknown

Elgin

Streamwood

Schaumburg

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/km²). There were 19,160 housing units at an average density of 901.86 per square mile (348.21/km²). 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: 新林西北汉语学校; traditional Chinese: 新林西北漢語學校; pinyin: *Xīnlín Xībĭbĭ Zhōngwén 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]

 [Chicago portal](#)

 [Flag Illinois portal](#)

- 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]

- ¹ ↑ "2020 U.S. Gazetteer Files". *United States Census Bureau*. Retrieved March 15, 2022.
- 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 Estates' 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*.
14. ^ Kerch, Steve (October 30, 1994). "GETTING THE NOD". *Chicago Tribune*.
15. ^ "Village of Hoffman Estates: History of Hoffman Estates". *Hoffmanestates.com*. Archived from the original on May 11, 2012. Retrieved April 30, 2012.
16. ^ Manson, Ken (December 23, 2009). "Suburb takes over Sears Centre". *Chicago Tribune*.
17. ^ Zumbach, Lauren (June 23, 2020). "Sears name disappearing from another Chicago-area building. Hoffman Estates arena gets a new name this fall". *Chicago Tribune*. Retrieved June 24, 2020.
18. ^ Skiba, Katherine (October 21, 2016). "Military Soon to Start Moving Obama's Papers to Hoffman Estates". *Chicago Tribune*. Washington DC. Retrieved March 3, 2017.
19. ^ "Coronavirus Confirmed In Chicago; Woman In Her 60s Being Treated For Symptoms". *CBS Chicago*. Chicago. January 24, 2020. Retrieved February 13, 2020.
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.*
31. ^ *"d211.org". d211.org. Archived from the original on May 4, 2012. Retrieved April 30, 2012.*
32. ^ *"sd54.k12.il.us". sd54.k12.il.us. April 19, 2012. Archived from the original on February 1, 1998. Retrieved April 30, 2012.*
33. ^ *"ccsd15.net". ccsd15.net. Retrieved April 30, 2012.*
34. ^ *"cusd220.lake.k12.il.us". cusd220.lake.k12.il.us. Archived from the original on July 3, 2006. Retrieved April 30, 2012.*
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."
36. ^ "About Us." Northwest Xilin Chinese School. Retrieved on February 24, 2014.
37. ^ Ray, Tiffany. "Schools connect students to China." *Chicago Tribune*. March 2, 2003. Retrieved on February 24, 2014.
38. ^ *"Archived copy". Archived from the original on April 5, 2017. Retrieved April 4, 2017.*
cite web: CS1 maint: archived copy as title (link)
39. ^ *"RTA System Map" (PDF). Retrieved January 30, 2024.*
40. ^ *"Endorsement: Duckworth for U.S. Senate". Daily Herald. October 8, 2022.*
41. ^ *"Rob Valentino Biography". ESPN. Retrieved March 31, 2024.*

External links

[edit]

- Village of Hoffman Estates official website

- v
- t
- e

Places adjacent to Hoffman Estates, Illinois

Barrington Hills

South Barrington

Inverness / Palatine

 Image not found or type unknown

East Dundee / Elgin

 Image not found or type unknown

Hoffman Estates, Illinois

 Image not found or type unknown

Palatine

 Image not found or type unknown

Elgin

Streamwood

Schaumburg

- v
- t
- e

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.

- v
- t
- e

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

Towns

- Cicero

Image not found or type unknown



Map of
Illinois
highlighting
Cook
County

- 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

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

- v
- t
- e

Chicago metropolitan area

- Major city**
 - **Chicago**

Chicago landsat image

Image not found or type unknown

**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

**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

- v
- t
- e

State of Illinois

Springfield (capital)

Topics

- Index
- Abortion
- African Americans
- Buildings and structures
- Census areas
- Climate change
- Crime
- Communications
- Culture
- Delegations
- Earthquakes
- Economy
- Education
- Energy
- Environment
- Geography
- Government
- Health
- History
- Homelessness
- Languages
- Law
- Military
- Music
- People
- Politics
- Portal
- Protected areas
- Science and technology
- Sister cities
- Society
- Sports
- Symbols
- Tourism
- Transportation
- Windmills

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

- 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/Peoria East/Peoria/Morton/Washington

Municipalities

- Adams
- Alexander
- Bond
- Boone
- Brown
- Bureau
- Calhoun
- Carroll
- Cass
- Champaign
- Christian
- Clark
- Clay
- Clinton
- Coles
- Cook
- Crawford
- Cumberland
- DeKalb
- DeWitt
- Douglas
- DuPage
- Edgar
- Edwards
- Effingham
- Fayette
- Ford
- Franklin
- Fulton
- Gallatin
- Greene
- Grundy
- Hamilton
- Hancock
- Hardin
- Henderson
- Henry
- Iroquois
- Jackson
- Jasper
- Jefferson
- Jersey
- Jo Daviess
- Johnson
- Kane
- Kankakee
- Kendall

Authority control databases Image not found or type unknown [Edit this at Wikidata](#)

International

- VIAF
- WorldCat

National

- Germany
- United States
- Israel

Geographic

- MusicBrainz area

About Cook County

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Things To Do in Cook County

Photo

Sand Ridge Nature Center

4.8 (96)

Photo

Image not found or type unknown

River Trail Nature Center

4.6 (235)

Photo

Image not found or type unknown

Palmisano (Henry) Park

4.7 (1262)

Driving Directions in Cook County

Driving Directions From Palmisano (Henry) Park to

Driving Directions From Lake Katherine Nature Center and Botanic Gardens to

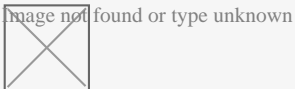
Driving Directions From Navy Pier to

<https://www.google.com/maps/dir/Navy+Pier/United+Structural+Systems+of+Illinois%2C+Inc/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/United+Structural+Systems+of+Illinois%2C+Inc/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+Systems+of+Illinois%2C+Inc/87.6490151,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-87.6490151!2d41.8429903!1m5!1m1!1sChIJ-wSxDtinD4gRiv4kY3RRh9U!2m2!1d-88.1396465!2d42.0637725!3e1>

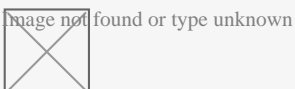
Reviews for



Jeffery James

(5)

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

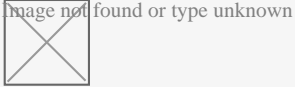


Sarah McNeily

(5)

USS was excellent. They are honest, straightforward, trustworthy, and conscientious. They thoughtfully removed the flowers and flower bulbs to dig where they needed in the yard, replanted said flowers and spread the extra dirt to fill in an area of the yard. We've had other services from different companies and our yard was really a mess after.

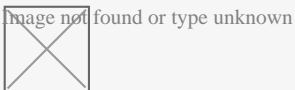
They kept the job site meticulously clean. The crew was on time and friendly. I'd recommend them any day! Thanks to Jessie and crew.



Jim de Leon

(5)

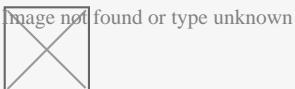
It was a pleasure to work with Rick and his crew. From the beginning, Rick listened to my concerns and what I wished to accomplish. Out of the 6 contractors that quoted the project, Rick seemed the MOST willing to accommodate my wishes. His pricing was definitely more than fair as well. I had 10 push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



Chris Abplanalp

(5)

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



Dave Kari

(5)

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

Setting Up Sump Pumps to Prevent Basement Flooding [View GBP](#)

Check our other pages :

- [Excavation Basics for Residential Construction Projects](#)
- [Installing Exterior Waterproof Barriers for Walls](#)
- [Examining Seasonal Swelling and Shrinking of Soil](#)
- [Identifying Areas Vulnerable to Soil Erosion](#)
- [Incorporating Root Barriers to Prevent Shifts](#)

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

