- **Project Logistics Permitting and QA QC**
  Project Logistics Permitting and QA QC Steps to Secure a Municipal Foundation Repair Permit Coordinating Utility Markouts Before Pier Drilling Developing a Work Sequence to Minimize Downtime Creating a Safety Plan That Meets OSHA Guidelines Scheduling Third Party Inspections for Key Milestones Preparing As Built Elevation Logs for Engineer Review Managing Material Deliveries on Confined Job Sites Using Checklists to Track QA QC Tasks in Real Time Budget Control Methods for Foundation Projects Communication Strategies With Homeowners During Repairs Document Storage Solutions for Project Records Closing Out a Permit After Final Inspection Approval
- **Cost Financing and Warranty Structures**
  Cost Financing and Warranty Structures Factors That Influence Foundation Repair Pricing Understanding Pier Installation Quotes Line by Line Comparing Financing Options for Structural Repairs How Transferable Warranties Protect Future Owners Common Exclusions Found in Foundation Repair Contracts Calculating Return on Investment for Underpinning Services Payment Schedule Ideas to Align With Work Progress Evaluating Insurance Coverage for Structural Damage Estimating Long Term Savings From Preventive Upgrades Negotiating Warranty Terms With Contractors Impact of Material Choice on Overall Project Cost Tracking Repair Expenses for Tax Documentation
- **About Us**

Okay, so lets talk about getting those foundation repairs done right, focusing on the project logistics, permits, and quality control. Foundation problems are the homeowner equivalent of finding out your car needs a new transmission right after the warranty expires **interior drain tile installation Orland Park** customer. We cant just jump in and start digging without a plan, right?

First, we need a clear "Project Scope Definition." This is basically figuring out exactly what needs fixing. Is it a crack in the foundation wall? Is the whole thing sinking? What are we dealing with? A thorough inspection and maybe even some soil testing are crucial here. We need to understand the problem inside and out before we even think about solutions. This definition becomes our roadmap. It tells us exactly what the project aims to achieve, and helps us avoid scope creep later on – you know, when the project suddenly gets bigger and more expensive than originally planned.

Then comes the somewhat less thrilling, but absolutely vital, "Permitting Requirements." This is where we make sure were playing by the rules. Every city and county has its own set of regulations when it comes to construction and structural repairs. We need to find out what permits are required for the specific type of work were doing. This could involve submitting drawings, getting approvals from building inspectors, and paying fees. Ignoring this step can lead to hefty fines, project delays, or even being forced to undo the work! So, doing our homework and getting the right permits is non-negotiable.

Basically, the Scope Definition tells us *what* we need to do, and the Permitting Requirements tell us *how* were allowed to do it, legally. Both are critical for a successful and stress-free foundation repair project. Skipping either one is just asking for trouble.

Geotechnical Investigation and Site Assessment for QA/QC Planning —

- **Project Scope Definition and Permitting Requirements for Foundation Repair**

Okay, lets talk about dirt and rocks – but in a fancy, project-logistics-permitting-QA/QC kind of way. When were planning some big project, whether its a skyscraper, a highway, or even a sprawling solar farm, we cant just assume the ground underneath is going to cooperate. Thats where geotechnical investigation and site assessment come in. Think of it like this: before you build your dream house, you want to know if the foundation is going to crack or sink, right?

Geotechnical investigation, the fancy term for digging around and testing the soil, is all about understanding whats going on beneath the surface. Were talking about things like what kind of soil exists. Is it solid bedrock, loose sand, or something squishy like clay? How strong is it? How easily does water flow through it? All this stuff matters because it directly impacts what we can build and how we build it.

The site assessment takes all that geotechnical data and puts it into context. Its not just about knowing theres clay; its about understanding how that clay might affect drainage, stability, or even the long-term performance of the project. It also helps us identify potential hazards like unstable slopes, underground water sources, or even hidden contamination.

Now, why is this important for project logistics, permitting, and QA/QC? Well, everything starts with the ground. If the geotechnical investigation reveals unexpected challenges – say, a previously unknown fault line – it could completely change the projects design, requiring significant adjustments to logistics, construction methods, and even the permits we need. Imagine planning to haul massive concrete beams across a route, only to discover the ground underneath cant handle the weight without reinforcement. Thats a logistical nightmare and a QA/QC headache waiting to happen.

Therefore, a thorough geotechnical investigation and site assessment are crucial for quality assurance and quality control planning. It provides the baseline data against which we can measure the performance of the foundation, earthworks, and overall stability of the project. It informs the design, validates the construction methods, and ensures that the finished product meets the required standards. It enables us to foresee potential problems, mitigate risks, and ultimately, deliver a safe and reliable project. Its not just about digging in the dirt; its about building a solid foundation for success, both literally and figuratively.

Our Facebook Page

Socials About Us

Moisture: Silent Threat

How to reach us:

Posted by on

Posted by on

Material Procurement and Quality Control Procedures

In the realm of project logistics, particularly when dealing with permitting and quality assurance/quality control (QA/QC), material procurement and quality control procedures play a pivotal role. These procedures ensure that the materials used in a project not only meet the required specifications but also adhere to regulatory standards, which is crucial for obtaining necessary permits and maintaining project integrity.

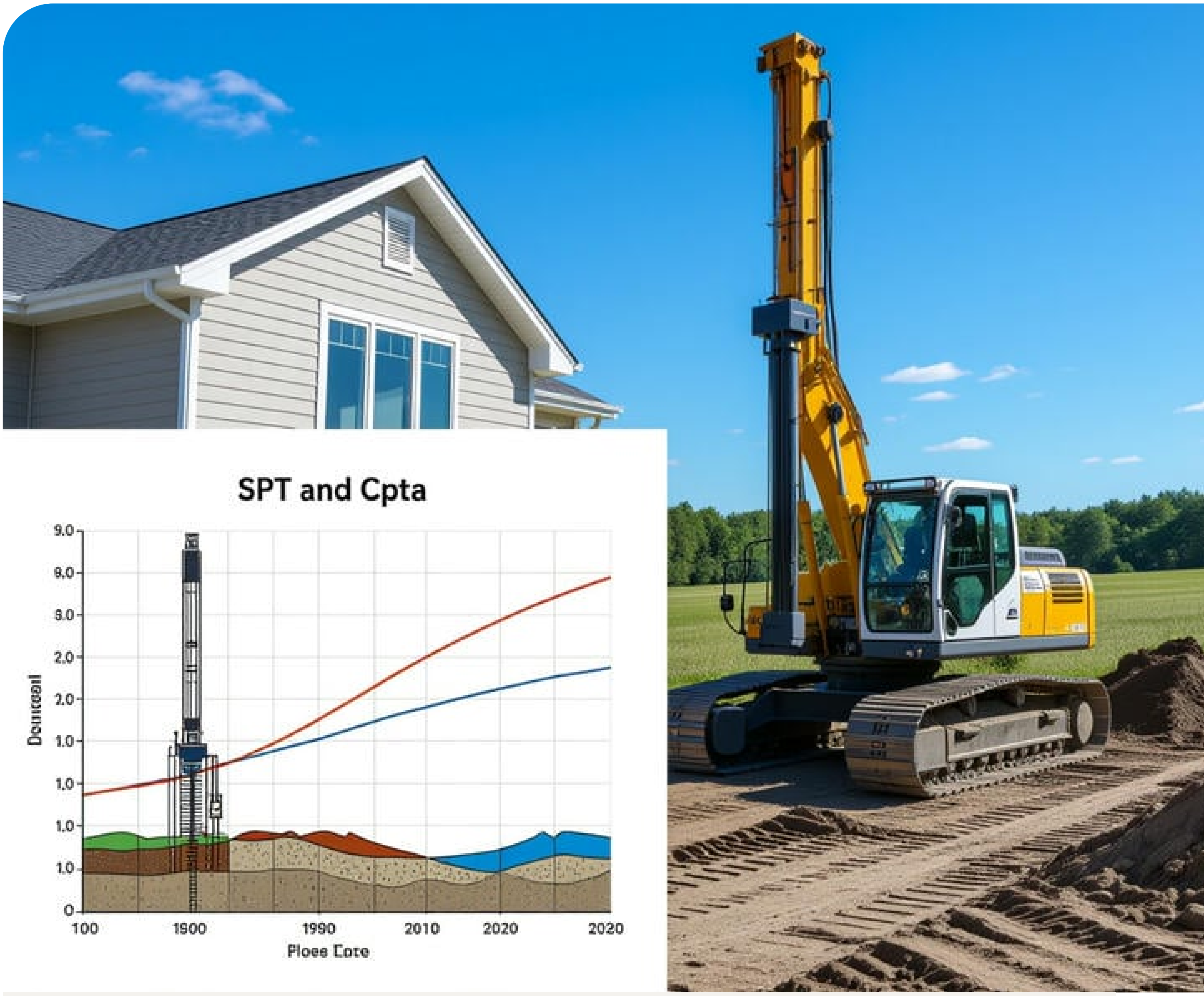
Material procurement begins with a thorough understanding of the projects scope, identifying exactly what materials are needed, their specifications, and quantities. This step involves close collaboration between project managers, engineers, and procurement specialists to develop a detailed list or Bill of Materials (BOM). Once this list is finalized, sourcing begins. Here, its not just about finding the cheapest supplier; its about balancing cost with reliability, delivery timelines, and supplier reputation. In many projects, especially those involving construction or heavy industry, local sourcing might be preferred due to logistics costs and to comply with local content requirements which can affect permit approval.

Once potential suppliers are identified, they undergo a vetting process where their capability to produce or supply materials according to specified standards is assessed. This often includes reviewing past performance records, certifications like ISO 9001 for quality management systems, and sometimes site visits or audits. Contracts are then negotiated which include clauses related to quality expectations, delivery schedules, and penalties for non-compliance.

Quality control kicks in both at the suppliers end before dispatch (pre-delivery inspection) and upon receipt at the project site (on-site inspection). Pre-delivery inspections might involve third-party inspectors who verify that materials meet all contractual specifications through testing or visual checks. Upon arrival at the site, materials are again inspected to ensure no damage occurred during transit and that they still comply with the project requirements. Any discrepancies found could lead to material rejection or require rework by the supplier at their cost.

Documentation is another critical aspect of these procedures. Every step from procurement to final acceptance must be documented meticulously. This includes purchase orders, inspection reports, certificates of compliance from manufacturers, delivery receipts, and any corrective actions taken if issues arise. This documentation trail is vital for QA/QC audits where every piece of material used in the project can be traced back to its source for verification purposes.

In summary, effective material procurement and quality control procedures within project logistics are essential for ensuring that projects proceed smoothly without delays due to material failures or non-compliance issues. They safeguard against regulatory hurdles by ensuring all materials meet legal standards before installation or use begins. By maintaining stringent controls over what goes into a project from inception through completion ensures not only efficiency but also safety and reliability in the final product or infrastructure developed.



Inspection and Testing Protocols During Foundation Repair

Inspection and testing protocols during foundation repair are crucial elements within the broader scope of project logistics, permitting, and quality assurance/quality control (QA/QC). These protocols ensure that the repair work on a buildings foundation not only meets local regulatory standards but also adheres to the highest quality benchmarks, safeguarding structural integrity and longevity.

In the realm of project logistics, these inspections begin with a thorough pre-repair assessment. This step involves geotechnical engineers who analyze soil conditions, existing foundation issues, and potential risks. Their findings dictate the repair strategy, influencing everything from material selection to method application. This initial phase is vital for obtaining necessary permits, as local authorities require detailed data to approve construction activities that affect structural foundations.

Once permits are secured, the actual inspection during repair kicks in. This process is methodical; inspectors from both the construction team and external QA/QC entities monitor each stage of the repair. For instance, when concrete is poured for underpinning or slab jacking, samples are taken for compressive strength tests to confirm they meet design specifications. Non-destructive testing methods like ground-penetrating radar might be employed to check for voids or inconsistencies without disturbing the ongoing work.

Testing doesnt stop at material checks; it extends to performance under load. Post-repair load tests simulate real-world conditions by applying weight to see how well the repaired section holds up. This could involve hydraulic jacks or even heavy machinery placed strategically to mimic building loads. The results provide confidence in the repairs effectiveness over time.

Quality control here intertwines with quality assurance through continuous documentation and reporting. Every test result, every observation made by inspectors, is meticulously recorded. This documentation serves dual purposes: it acts as proof of compliance for regulatory bodies and provides a historical record for future reference or if any issues arise post-repair.

In essence, inspection and testing protocols during foundation repair are not just about ticking boxes; they embody a commitment to excellence in construction practices. They bridge the gap between theoretical engineering solutions and practical implementation, ensuring that every step taken towards repairing a foundation contributes positively to the buildings lifespan and safety. Through diligent oversight during this critical phase, project managers can assure stakeholders of a job well done, where quality isnt compromised but enhanced through rigorous checks and balances.

Documentation and Reporting for Permitting Compliance and QA/QC

In the realm of project logistics, ensuring compliance with permitting requirements and maintaining high standards of quality assurance and quality control (QA/QC) is pivotal. This is where documentation and reporting play a critical role. These processes not only help in keeping track of all activities but also serve as a formal record to demonstrate adherence to regulatory standards and internal quality benchmarks.

Documentation for permitting compliance starts with detailed records of all permits required for the project. This includes environmental permits, construction permits, land use permissions, and any other legal authorizations necessary for the projects progression. Each permit must be meticulously documented with dates of application, issuance, conditions attached, and expiration dates. This meticulous record-keeping ensures that all activities remain within legal frameworks, avoiding potential fines or project halts due to non-compliance.

When it comes to QA/QC, documentation becomes even more nuanced. It involves creating comprehensive reports that detail the methodologies used for quality checks, the results of these checks, any discrepancies found, and corrective actions taken. For instance, in construction projects, this might include material test results, inspection reports from site visits, and logs of equipment calibration. Each document helps in tracing back the quality journey of every component involved in the project.

Reporting in this context serves as a communication tool between various stakeholders including project managers, regulatory bodies, and clients. Regular reports provide transparency on how well the project adheres to both external regulations and internal quality policies. These reports often include summaries of compliance status against each permit condition, progress on QA/QC measures implemented during different phases of the project lifecycle, and any upcoming challenges or changes in regulatory landscapes that might affect ongoing operations.

Moreover, effective documentation and reporting facilitate continuous improvement. By analyzing past reports, teams can identify patterns or recurring issues that need systemic solutions rather than ad-hoc fixes. It also aids in training new team members by providing them with real-world examples of how compliance and quality are managed within similar projects.

In essence, thorough documentation and precise reporting are not just administrative tasks; they are strategic tools that ensure projects move forward smoothly while adhering to high standards of compliance and quality. They safeguard against legal repercussions while fostering an environment where excellence is not just expected but documented as a standard practice in project logistics management.

Risk Management and Mitigation Strategies in Project Logistics

Okay, so youre diving into the nitty-gritty of project logistics, specifically the permitting and QA/QC side of things. And you want to talk about risk management and mitigation strategies. Makes sense, right? Because lets be honest, getting permits and ensuring quality control in project logistics is basically a minefield of potential problems.

Think about it. Youre trying to move oversized equipment across multiple jurisdictions, maybe internationally. Each place has its own set of rules, regulations, and, lets face it, bureaucratic hurdles. A permit snag here, a QC failure there, and suddenly your whole project timeline is blown, your budget is in tatters, and youre dealing with some very unhappy stakeholders.

Thats where risk management comes in. Its not about eliminating risk entirely – thats usually impossible. Its about identifying potential problems *before* they become full-blown crises, and then putting strategies in place to minimize their impact.

So, what kind of risks are we talking about? Well, inaccurate or incomplete permit applications are a big one. Miss a crucial detail, and you can be looking at delays, fines, or even outright denial. Changes in regulations are another headache. What was perfectly legal last month might be a violation today. Then there are the QC issues – damaged goods, faulty equipment, or non-compliant materials. These can lead to rework, replacements, and, again, delays and cost overruns.

Okay, so how do we mitigate these risks? First, good planning is key. Thoroughly research all permit requirements upfront. Build in some buffer time for unexpected delays. And communicate, communicate, communicate! Keep all stakeholders informed of progress and potential roadblocks.

For permitting specifically, consider using experienced consultants who know the local landscape. They can navigate the regulatory maze more efficiently and anticipate potential problems. For QC, implement robust inspection procedures throughout the entire logistics chain. Dont just rely on the suppliers word; verify everything yourself. Use technology to your advantage – tracking systems, digital checklists, and data analytics can help you spot trends and identify potential issues early on.

And finally, have a contingency plan. What happens if a permit is denied? Whats your backup plan if equipment is damaged in transit? Having pre-determined solutions in place will allow you to react quickly and minimize disruption.

Ultimately, effective risk management and mitigation in project logistics for permitting and QA/QC is about being proactive, not reactive. Its about thinking ahead, anticipating potential problems, and having a plan to deal with them. Its not always easy, but its essential for ensuring project success.

Post-Repair Verification and Long-Term Monitoring for QA/QC

Alright, lets talk about what happens *after* the fix, in the world of project logistics, permits, and quality control. Were calling it "Post-Repair Verification and Long-Term Monitoring." Sounds technical, right? But its really just about making sure we didnt just slap a band-aid on something and hoping it holds.

Think of it like this: youve got a big, complicated project – maybe building a pipeline, or a wind farm. Its taken forever to get the permits, the logistics of getting materials there are a nightmare, and the QA/QC team is sweating bullets to make sure everything is done right. Then, something goes wrong. Lets say a piece of equipment malfunctions, or a survey reveals an unexpected environmental impact. You fix it, of course. But that fix? Thats not the end of the story.

Post-Repair Verification is the immediate follow-up. Did the repair actually solve the problem? Did it inadvertently create new ones? Did we follow the proper procedures, documented correctly, and get the required sign-offs? Its a deep dive to confirm the fix is solid and compliant, ticking all the boxes on the permitting checklist and meeting the stringent QA/QC standards. Were talking inspections, testing, re-surveys – whatever it takes to be absolutely sure.

But even a perfect repair today doesnt guarantee smooth sailing tomorrow. Thats where Long-Term Monitoring comes in. This is about setting up a system to track the repaired area, or the affected process, over time. Are we seeing any signs of deterioration? Are the environmental safeguards still effective? Are the permit conditions still being met? This might involve regular site visits, sensor data analysis, or periodic audits. It's about proactively catching potential problems before they escalate into major headaches, jeopardizing the entire project and potentially leading to permit violations or even worse, environmental damage.

Ultimately, Post-Repair Verification and Long-Term Monitoring are about responsible project management. Its about building trust with stakeholders – the community, the regulatory agencies, and even your own team. Its about demonstrating that youre not just focused on getting the project done, but on doing it right, sustainably, and with a commitment to long-term quality and environmental protection. It's the difference between a project that limps across the finish line and one that stands the test of time.

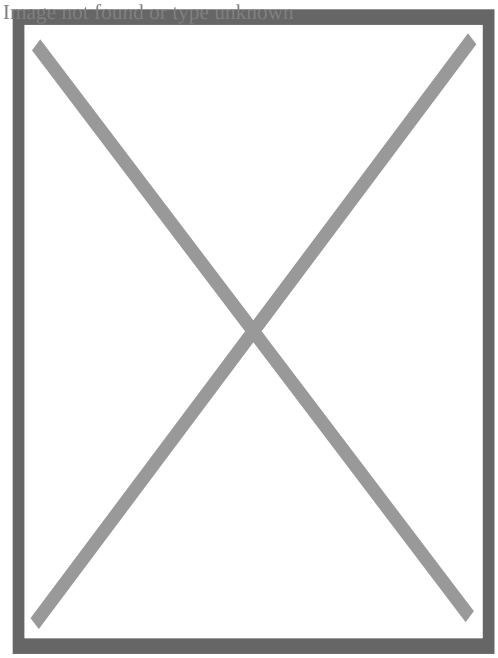
About Piling

For other uses, see Piling (disambiguation).

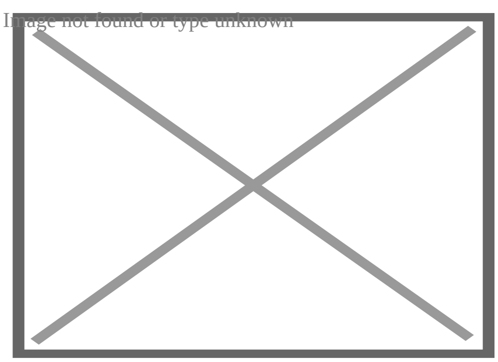
Image not found or type unknown

This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.
Find sources: "Piling" – news · newspapers · books · scholar · JSTOR *(October 2022) (Learn how and when to remove this message)*

Drilling of deep piles of diameter 150 cm in bridge 423 near Ness Ziona, Israel

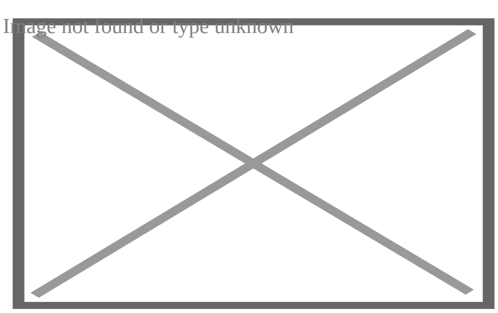


A deep foundation installation for a bridge in Napa, California, United States.



Pile driving operations in the Port of Tampa, Florida.

A **pile** or **piling** is a vertical structural element of a deep foundation, driven or drilled deep into the ground at the building site. A deep foundation is a type of foundation that transfers building loads to the earth farther down from the surface than a shallow foundation does to a subsurface layer or a range of depths.

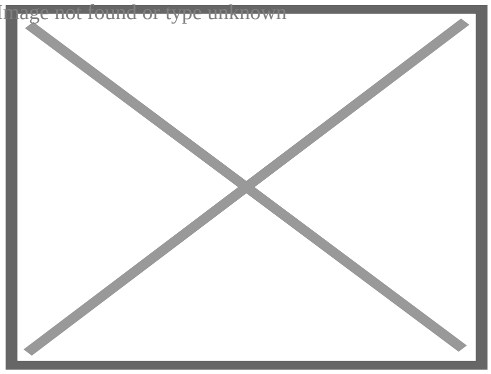


Deep foundations of The Marina Torch, a skyscraper in Dubai

There are many reasons that a geotechnical engineer would recommend a deep foundation over a shallow foundation, such as for a skyscraper. Some of the common reasons are very large design loads, a poor soil at shallow depth, or site constraints like property lines. There are different terms used to describe different types of deep foundations including the pile (which is analogous to a pole), the pier (which is analogous to a column), drilled shafts, and caissons. Piles are generally driven into the ground *in situ*; other deep foundations are typically put in place using excavation and drilling. The naming conventions may vary between engineering disciplines and firms. Deep foundations can be made out of timber, steel, reinforced concrete or prestressed concrete.

Driven foundations

[edit]



Pipe piles being driven into the ground

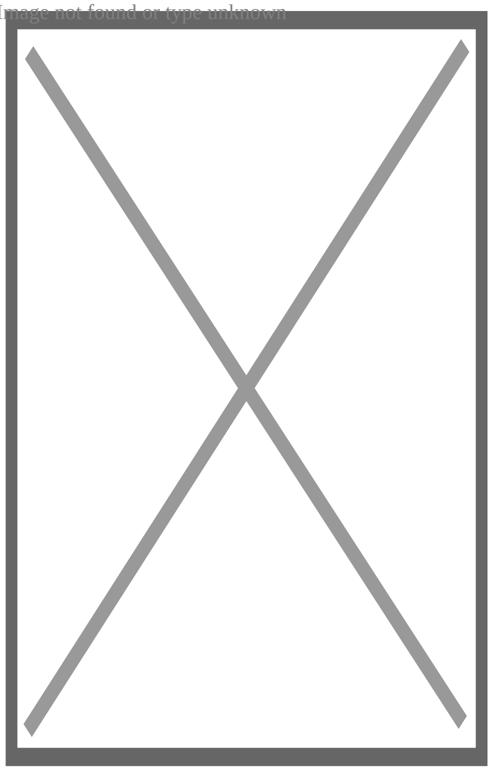


Illustration of a hand-operated pile driver in Germany after 1480

Prefabricated piles are driven into the ground using a pile driver. Driven piles are constructed of wood, reinforced concrete, or steel. Wooden piles are made from the trunks of tall trees. Concrete piles are available in square, octagonal, and round cross-sections (like Franki piles). They are reinforced with rebar and are often prestressed. Steel piles are either pipe piles or some sort of beam section (like an H-pile). Historically, wood piles used splices to join multiple segments end-to-end when the driven depth required was too long for a single pile; today, splicing is common with steel piles, though concrete piles can be spliced with mechanical and other means. Driving piles, as opposed to drilling shafts, is advantageous because the soil displaced by driving the piles compresses the surrounding soil, causing greater friction against the sides of the piles, thus increasing their load-bearing capacity. Driven piles are also considered to be "tested" for weight-bearing ability because of their method of installation.[*citation needed*]

Pile foundation systems

[edit]

Foundations relying on driven piles often have groups of piles connected by a pile cap (a large concrete block into which the heads of the piles are embedded) to distribute loads that are greater than one pile can bear. Pile caps and isolated piles are typically connected with grade beams to tie the foundation elements together; lighter structural elements bear on the grade beams, while heavier elements bear directly on the pile cap.[*citation needed*]

Monopile foundation

[edit]

A **monopile foundation** utilizes a single, generally large-diameter, foundation structural element to support all the loads (weight, wind, etc.) of a large above-surface structure.

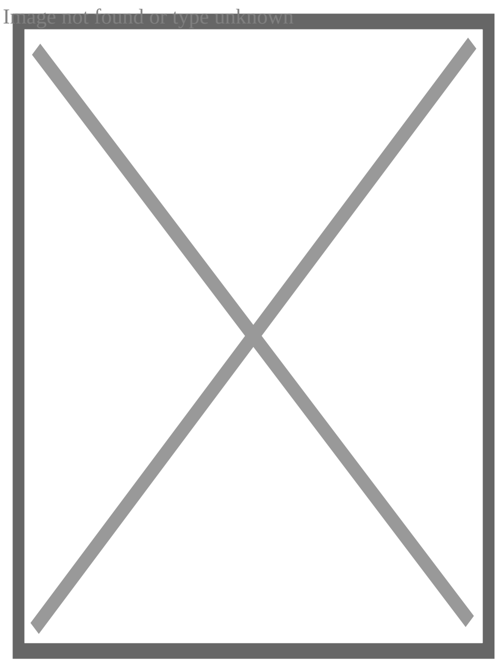
A large number of monopile foundations[1] have been utilized in recent years for economically constructing fixed-bottom offshore wind farms in shallow-water subsea locations.[2] For example, the Horns Rev wind farm in the North Sea west of Denmark utilizes 80 large monopiles of 4 metres diameter sunk 25 meters deep into the seabed,[3] while the Lynn and Inner Dowsing Wind Farm off the coast of England went online in 2008 with over 100 turbines, each mounted on a 4.7-metre-diameter monopile foundation in ocean depths up to 18 metres.[4]

The typical construction process for a wind turbine subsea monopile foundation in sand includes driving a large hollow steel pile, of some 4 m in diameter with approximately

50mm thick walls, some 25 m deep into the seabed, through a 0.5 m layer of larger stone and gravel to minimize erosion around the pile. A transition piece (complete with pre-installed features such as boat-landing arrangement, cathodic protection, cable ducts for sub-marine cables, turbine tower flange, etc.) is attached to the driven pile, and the sand and water are removed from the centre of the pile and replaced with concrete. An additional layer of even larger stone, up to 0.5 m diameter, is applied to the surface of the seabed for longer-term erosion protection.[2]

Drilled piles

[edit]



A pile machine in Amsterdam.

Also called **caissons**, **drilled shafts**, **drilled piers**, **cast-in-drilled-hole piles (CIDH piles)** or **cast-in-situ** piles, a borehole is drilled into the ground, then concrete (and often some sort of reinforcing) is placed into the borehole to form the pile. Rotary boring techniques allow larger diameter piles than any other piling method and permit pile construction through particularly dense or hard strata. Construction methods depend on the geology of the site; in particular, whether boring is to be undertaken in 'dry' ground conditions or through water-saturated strata. Casing is often used when the sides of the borehole are likely to slough off before concrete is poured.

For end-bearing piles, drilling continues until the borehole has extended a sufficient depth (socketing) into a sufficiently strong layer. Depending on site geology, this can be a rock layer, or hardpan, or other dense, strong layers. Both the diameter of the pile and the depth of the pile are highly specific to the ground conditions, loading conditions, and nature of the project. Pile depths may vary substantially across a project if the bearing layer is not level.

Drilled piles can be tested using a variety of methods to verify the pile integrity during installation.

Under-reamed piles

[edit]

Under-reamed piles have mechanically formed enlarged bases that are as much as 6 m in diameter.[*citation needed*] The form is that of an inverted cone and can only be formed in stable soils or rocks. The larger base diameter allows greater bearing capacity than a straight-shaft pile.

These piles are suited for expansive soils which are often subjected to seasonal moisture variations, or for loose or soft strata. They are used in normal ground condition also where economics are favorable. [5][*full citation needed*]

Under reamed piles foundation is used for the following soils:-

1. Under reamed piles are used in black cotton soil: This type of soil expands when it comes in contact with water and contraction occurs when water is removed. So that cracks appear in the construction done on such clay. An under reamed pile is used in the base to remove this defect.

2. Under reamed piles are used in low bearing capacity Outdated soil (filled soil)

3.Under reamed piles are used in sandy soil when water table is high.

4. Under reamed piles are used, Where lifting forces appear at the base of foundation.

Augercast pile

[edit]

An augercast pile, often known as a continuous flight augering (CFA) pile, is formed by drilling into the ground with a hollow stemmed continuous flight auger to the required depth or degree of resistance. No casing is required. A cement grout mix is then pumped down the stem of the auger. While the cement grout is pumped, the auger is slowly withdrawn, conveying the soil upward along the flights. A shaft of fluid cement grout is formed to ground level. Reinforcement can be installed. Recent innovations in addition to stringent quality control allows reinforcing cages to be placed up to the full length of a pile when required.[*citation needed*]

Augercast piles cause minimal disturbance and are often used for noise-sensitive and environmentally-sensitive sites. Augercast piles are not generally suited for use in contaminated soils, because of expensive waste disposal costs. In cases such as these, a displacement pile (like Olivier piles) may provide the cost efficiency of an augercast pile and minimal environmental impact. In ground containing obstructions or cobbles and boulders, augercast piles are less suitable as refusal above the design pile tip elevation may be encountered.[*citation needed*]

Small Sectional Flight Auger piling rigs can also be used for piled raft foundations. These produce the same type of pile as a Continuous Flight Auger rig but using smaller, more lightweight equipment. This piling method is fast, cost-effective and suitable for the majority of ground types.[5][6]

Pier and grade beam foundation

[edit]

In drilled pier foundations, the piers can be connected with grade beams on which the structure sits, sometimes with heavy column loads bearing directly on the piers. In some residential construction, the piers are extended above the ground level, and wood beams bearing on the piers are used to support the structure. This type of foundation results in a crawl space underneath the building in which wiring and duct work can be laid during construction or re-modelling.[7]

Speciality piles

[edit]

Jet-piles

[edit]

In jet piling high pressure water is used to set piles.[8] High pressure water cuts through soil with a high-pressure jet flow and allows the pile to be fitted.[9] One advantage of Jet Piling: the water jet lubricates the pile and softens the ground.[10] The method is in use in Norway.[11]

Micropiles

[edit]

Micropiles are small diameter, generally less than 300mm diameter, elements that are drilled and grouted in place. They typically get their capacity from skin friction along the sides of the element, but can be end bearing in hard rock as well. Micropiles are usually heavily reinforced with steel comprising more than 40% of their cross section. They can be used as direct structural support or as ground reinforcement elements. Due to their relatively high cost and the type of equipment used to install these elements, they are often used where access restrictions and or very difficult ground conditions (cobbles and boulders, construction debris, karst, environmental sensitivity) exists or to retrofit existing structures. Occasionally, in difficult ground, they are used for new construction foundation elements. Typical applications include underpinning, bridge, transmission tower and slope stabilization projects.[6][12][13][14]

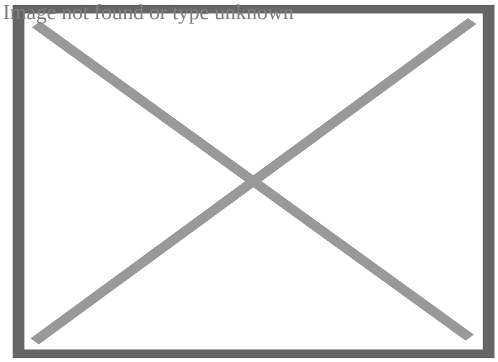
Tripod piles

[edit]

The use of a tripod rig to install piles is one of the more traditional ways of forming piles. Although unit costs are generally higher than with most other forms of piling,[*citation needed*] it has several advantages which have ensured its continued use through to the present day. The tripod system is easy and inexpensive to bring to site, making it ideal for jobs with a small number of piles.[*clarification needed*]

Sheet piles

[edit]

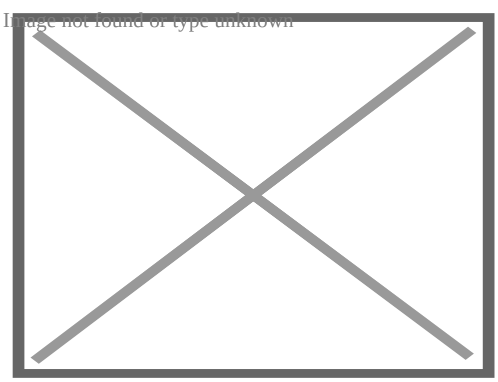


Sheet piles are used to restrain soft soil above the bedrock in this excavation

Sheet piling is a form of driven piling using thin interlocking sheets of steel to obtain a continuous barrier in the ground. The main application of sheet piles is in retaining walls and cofferdams erected to enable permanent works to proceed. Normally, vibrating hammer, t-crane and crawle drilling are used to establish sheet piles.[*citation needed*]

Soldier piles

[edit]



A soldier pile wall using reclaimed railway sleepers as lagging.

Soldier piles, also known as king piles or Berlin walls, are constructed of steel H sections spaced about 2 to 3 m apart and are driven or drilled prior to excavation. As the excavation proceeds, horizontal timber sheeting (lagging) is inserted behind the H pile flanges.

The horizontal earth pressures are concentrated on the soldier piles because of their relative rigidity compared to the lagging. Soil movement and subsidence is minimized by installing the lagging immediately after excavation to avoid soil loss.[*citation needed*] Lagging can be constructed by timber, precast concrete, shotcrete and steel plates depending on spacing of the soldier piles and the type of soils.

Soldier piles are most suitable in conditions where well constructed walls will not result in subsidence such as over-consolidated clays, soils above the water table if they have some cohesion, and free draining soils which can be effectively dewatered, like sands.[*citation needed*]

Unsuitable soils include soft clays and weak running soils that allow large movements such as loose sands. It is also not possible to extend the wall beyond the bottom of the excavation, and dewatering is often required.[*citation needed*]

Screw piles

[edit]

Screw piles, also called *helical piers* and *screw foundations*, have been used as foundations since the mid 19th century in screw-pile lighthouses.[*citation needed*] Screw piles are galvanized iron pipe with helical fins that are turned into the ground by machines to the required depth. The screw distributes the load to the soil and is sized accordingly.

Suction piles

[edit]

Suction piles are used underwater to secure floating platforms. Tubular piles are driven into the seabed (or more commonly dropped a few metres into a soft seabed) and then a pump sucks water out at the top of the tubular, pulling the pile further down.

The proportions of the pile (diameter to height) are dependent upon the soil type. Sand is difficult to penetrate but provides good holding capacity, so the height may be as short as half the diameter. Clays and muds are easy to penetrate but provide poor holding capacity, so the height may be as much as eight times the diameter. The open nature of gravel means that water would flow through the ground during installation, causing 'piping' flow (where water boils up through weaker paths through the soil). Therefore, suction piles cannot be used in gravel seabeds.[*citation needed*]

Adfreeze piles

[edit]

Image not found or type unknown

Adfreeze piles supporting a building in UtqiaÃƒâ€žÃ‚Â¡vik, Alaska

In high latitudes where the ground is continuously frozen, adfreeze piles are used as the primary structural foundation method.

Adfreeze piles derive their strength from the bond of the frozen ground around them to the surface of the pile.[*citation needed*]

Adfreeze pile foundations are particularly sensitive in conditions which cause the permafrost to melt. If a building is constructed improperly then it can melt the ground below, resulting in a failure of the foundation system.[*citation needed*]

Vibrated stone columns

[edit]

Vibrated stone columns are a ground improvement technique where columns of coarse aggregate are placed in soils with poor drainage or bearing capacity to improve the soils.[*citation n*

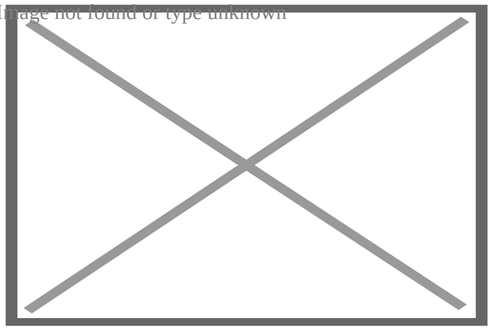
Hospital piles

[edit]

Specific to marine structures, hospital piles (also known as gallow piles) are built to provide temporary support to marine structure components during refurbishment works. For example, when removing a river pontoon, the brow will be attached to hospital pile to support it. They are normal piles, usually with a chain or hook attachment.[*citation needed*]

Piled walls

[edit]



Sheet piling, by a bridge, was used to block a canal in New Orleans after Hurricane Katrina damaged it.

Piled walls can be drivene or bored. They provide special advantages where available working space dictates and open cut excavation not feasible. Both methods offer technically effective and offer a cost efficient temporary or permanent means of retaining the sides of bulk excavations even in water bearing strata. When used in permanent works, these walls can be designed to resist vertical loads in addition lateral load from retaining soil. Construction of both methods is the same as for foundation bearing piles. Contiguous walls are constructed with small gaps between adjacent piles. The spacing of the piles can be varied to provide suitable bending stiffness.

Secant piled walls

[edit]

Secant pile walls are constructed such that space is left between alternate 'female' piles for the subsequent construction of 'male' piles.[*clarification needed*] Construction of 'male' piles involves boring through the concrete in the 'female' piles hole in order to key 'male' piles between. The male pile is the one where steel reinforcement cages are installed, though in some cases the female piles are also reinforced.[*citation needed*]

Secant piled walls can either be true hard/hard, hard/intermediate (firm), or hard/soft, depending on design requirements. Hard refers to structural concrete and firm or soft is usually a weaker grout mix containing bentonite.[*citation needed*] All types of wall can be constructed as free standing cantilevers, or may be propped if space and sub-structure design permit. Where party wall agreements allow, ground anchors can be used as tie backs.

Slurry walls

[edit]

A slurry wall is a barrier built under ground using a mix of bentonite and water to prevent the flow of groundwater. A trench that would collapse due to the hydraulic pressure in the surrounding soil does not collapse as the slurry balances the hydraulic pressure.

Deep mixing/mass stabilization techniques

[edit]

These are essentially variations of *in situ* reinforcements in the form of piles (as mentioned above), blocks or larger volumes.

Cement, lime/quick lime, flyash, sludge and/or other binders (sometimes called stabilizer) are mixed into the soil to increase bearing capacity. The result is not as solid as concrete, but should be seen as an improvement of the bearing capacity of the original soil.

The technique is most often applied on clays or organic soils like peat. The mixing can be carried out by pumping the binder into the soil whilst mixing it with a device normally mounted on an excavator or by excavating the masses, mixing them separately with the binders and refilling them in the desired area. The technique can also be used on lightly contaminated masses as a means of binding contaminants, as opposed to excavating them and transporting to landfill or processing.

Materials

[edit]

Timber

[edit]
Main article: Timber pilings

As the name implies, timber piles are made of wood.

Historically, timber has been a plentiful, locally available resource in many areas. Today, timber piles are still more affordable than concrete or steel. Compared to other types of piles (steel or concrete), and depending on the source/type of timber, timber piles may not be suitable for heavier loads.

A main consideration regarding timber piles is that they should be protected from rotting above groundwater level. Timber will last for a long time below the groundwater level. For timber to rot, two elements are needed: water and oxygen. Below the groundwater level, dissolved oxygen is lacking even though there is ample water. Hence, timber tends to last for a long time below the groundwater level. An example is Venice, which has had timber pilings since its beginning; even most of the oldest piles are still in use. In 1648, the Royal Palace of Amsterdam was constructed on 13,659 timber piles that still survive today since they were below groundwater level. Timber that is to be used above the water table can be protected from decay and insects by numerous forms of wood preservation using pressure treatment (alkaline copper quaternary (ACQ), chromated copper arsenate (CCA), creosote, etc.).

Splicing timber piles is still quite common and is the easiest of all the piling materials to splice. The normal method for splicing is by driving the leader pile first, driving a steel tube (normally 60–100 cm long, with an internal diameter no smaller than the minimum toe diameter) half its length onto the end of the leader pile. The follower pile is then simply slotted into the other end of the tube and driving continues. The steel tube is simply there to ensure that the two pieces follow each other during driving. If uplift capacity is required, the splice can incorporate bolts, coach screws, spikes or the like to give it the necessary capacity.

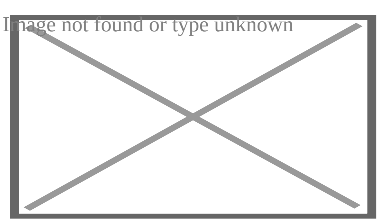
Iron

[edit]

Cast iron may be used for piling. These may be ductile.[*citation needed*]

Steel

[edit]



Cutaway illustration. Deep inclined (battered) pipe piles support a precast segmented skyway where upper soil layers are weak muds.

Pipe piles are a type of steel driven pile foundation and are a good candidate for inclined (battered) piles.

Pipe piles can be driven either open end or closed end. When driven open end, soil is allowed to enter the bottom of the pipe or tube. If an empty pipe is required, a jet of water or an auger can be used to remove the soil inside following driving. Closed end pipe piles are constructed by covering the bottom of the pile with a steel plate or cast steel shoe.

In some cases, pipe piles are filled with concrete to provide additional moment capacity or corrosion resistance. In the United Kingdom, this is generally not done in order to reduce the cost.[*citation needed*] In these cases corrosion protection is provided by allowing for a sacrificial thickness of steel or by adopting a higher grade of steel. If a concrete filled pipe pile is corroded, most of the load carrying capacity of the pile will remain intact due to the concrete, while it will be lost in an empty pipe pile. The structural capacity of pipe piles is primarily calculated based on steel strength and concrete strength (if filled). An allowance is made for corrosion depending on the site conditions and local building codes. Steel pipe piles can either be new steel manufactured specifically for the piling industry or reclaimed steel tubular casing previously used for other purposes such as oil and gas exploration.

H-Piles are structural beams that are driven in the ground for deep foundation application. They can be easily cut off or joined by welding or mechanical drive-fit splicers. If the pile is driven into a soil with low pH value, then there is a risk of corrosion, coal-tar epoxy or cathodic protection can be applied to slow or eliminate the corrosion process. It is common to allow for an amount of corrosion in design by simply over dimensioning the cross-sectional area of the steel pile. In this way, the corrosion process can be prolonged up to 50 years.[*citation needed*]

Prestressed concrete piles

[edit]

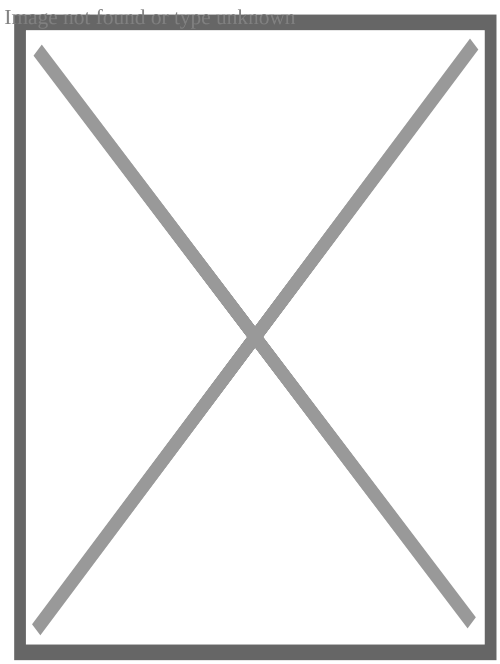
Concrete piles are typically made with steel reinforcing and prestressing tendons to obtain the tensile strength required, to survive handling and driving, and to provide sufficient bending resistance.

Long piles can be difficult to handle and transport. Pile joints can be used to join two or more short piles to form one long pile. Pile joints can be used with both precast and prestressed concrete piles.

Composite piles

[edit]

A "composite pile" is a pile made of steel and concrete members that are fastened together, end to end, to form a single pile. It is a combination of different materials or different shaped materials such as pipe and H-beams or steel and concrete.



'Pile jackets' encasing old concrete piles in a saltwater environment to prevent corrosion and consequential weakening of the piles when cracks allow saltwater to contact the internal steel reinforcement rods

Construction machinery for driving piles into the ground

[edit]

Construction machinery used to drive piles into the ground:[15]

- Pile driver is a device for placing piles in their designed position.
- Diesel pile hammer is a device for hammering piles into the ground.
- Hydraulic hammer is removable working equipment of hydraulic excavators, hydroficated machines (stationary rock breakers, loaders, manipulators, pile driving hammers) used for processing strong materials (rock, soil, metal) or pile driving elements by impact of falling parts dispersed by high-pressure fluid.
- Vibratory pile driver is a machine for driving piles into sandy and clay soils.
- Press-in pile driver is a machine for sinking piles into the ground by means of static force transmission.[16]

- Universal drilling machine.

Construction machinery for replacement piles

[edit]

Construction machinery used to construct replacement piles:[15]

- Sectional Flight Auger or Continuous Flight Auger
- Reverse circulation drilling
- Ring bit concentric drilling

See also

[edit]
- Eurocode EN 1997
- International Society for Micropiles
- Post in ground construction also called earthfast or posthole construction; a historic method of building wooden structures.
- Stilt house, also known as a lake house; an ancient, historic house type built on pilings.
- Shallow foundations
- Pile bridge
- Larssen sheet piling

Notes

[edit]

1. **^** Offshore Wind Turbine Foundations, 2009-09-09, accessed 2010-04-12.
2. ^ ***a b*** Constructing a turbine foundation Archived 21 May 2011 at the Wayback Machine Horns Rev project, Elsam monopile foundation construction process, accessed 2010-04-12]
3. **^** Horns Revolution Archived 14 July 2011 at the Wayback Machine, Modern Power Systems, 2002-10-05, accessed 2010-04-14.
4. **^** *"Lynn and Inner Dowsing description". Archived from the original on 26 July 2011. Retrieved 23 July 2010.*
5. ^ ***a b*** Handbook on Under-reamed and bored compaction pile foundation, Central building research institute Roorkee, Prepared by Devendra Sharma, M. P. Jain, Chandra Prakash
6. ^ ***a b*** *Siel, Barry D.; Anderson, Scott A. "Implementation of Micropiles by the Federal Highway Administration" (PDF). Federal Highway Administration (US).* cite journal: Cite journal requires |journal= (help)
7. **^** *Marshall, Brain (April 2000). "How House Construction Works". How Stuff Works. HowStuffWorks, Inc. Retrieved 4 April 2013.*
8. **^** *"jet-pile". Merriam-Webster. Retrieved 2 August 2020.*
9. **^** *Guan, Chengli; Yang, Yuyou (21 February 2019). "Field Study on the Waterstop of the Rodin Jet Pile". Applied Sciences. doi:10.3390/app9081709. Retrieved 2 August 2020.*

10. **^** *"Press-in with Water Jetting". Giken.com. Giken Ltd. Retrieved 2 August 2020.*
11. **^** *"City Lade, Trondheim". Jetgrunn.no. Jetgrunn AS. Retrieved 2 August 2020.*
12. **^** *Omer, Joshua R. (2010). "A Numerical Model for Load Transfer and Settlement of Bored Cast In-Situ Piles". Proceedings of the 35th Annual Conference on Deep Foundations. Archived from the original on 14 April 2021. Retrieved 20 July 2011.*
13. **^** *"International Society for Micropiles". Retrieved 2 February 2007.*
14. **^** *"GeoTechTools". Geo-Institute. Retrieved 15 April 2022.*
15. ^ ***a b*** *McNeil, Ian (1990). An Encyclopaedia of the history of technolology. Routledge. ISBN 9780415147927. Retrieved 20 July 2022 – via Internet Archive.*
16. **^** *"General description of the press-in pile driving unit". Concrete Pumping Melbourne. 13 October 2021. Archived from the original on 25 December 2022. Retrieved 20 July 2022.*

References

[edit]

- Italiantrivelle Foundation Industry Archived 25 June 2014 at the Wayback Machine The Deep Foundation web portal Italiantrivelle is the number one source of information regarding the Foundation Industry. (Link needs to be removed or updated, links to inappropriate content)
- *Fleming, W. G. K. et al., 1985, Piling Engineering, Surrey University Press; Hunt, R. E., Geotechnical Engineering Analysis and Evaluation, 1986, McGraw-Hill.*
- Coduto, Donald P. *Foundation Design: Principles and Practices* 2nd ed., Prentice-Hall Inc., 2001.
- NAVFAC DM 7.02 Foundations and Earth Structures U.S. Naval Facilities Engineering Command, 1986.
- Rajapakse, Ruwan., *Pile Design and Construction Guide*, 2003
- Tomlinson, P.J., *Pile Design and Construction Practice*, 1984
- Stabilization of Organic Soils Archived 22 February 2012 at the Wayback Machine
- Sheet piling handbook, 2010

External links

[edit]

Image not found or type unknown

Wikimedia Commons has media related to ***Deep foundations***.

- Deep Foundations Institute

- v
- t
- e

Geotechnical engineering

Offshore geotechnical engineering

Investigation and instrumentation

Field (*in situ*)

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

Laboratory testing

- Soil classification
- Atterberg limits
- California bearing ratio
- Direct shear test
- Hydrometer
- Proctor compaction test
- R-value
- Sieve analysis
- Triaxial shear test
- Oedometer test
- Hydraulic conductivity tests
- Water content tests

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
- Shoring structures
    - Retaining walls
    - Gabion
    - Ground freezing
    - Mechanically stabilized earth
    - Pressure grouting
    - Slurry wall
    - Soil nailing
    - Tieback

Earthworks

- Land development
- Landfill
- Excavation
- Trench
- Embankment
- Cut
- Causeway
- Terracing
- Cut-and-cover
- Cut and fill
- Fill dirt
- Grading
- Land reclamation
- Track bed
- Erosion control
- Earth structure
- Expanded clay aggregate
- Crushed stone
- Geosynthetics
    - Geotextile
    - Geomembrane
    - Geosynthetic clay liner
    - Cellular confinement
- Infiltration

Foundations

- Shallow
- Deep

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

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

Numerical analysis software	- SEEP2D - STABL - SVFlux - SVSlope - UTEXAS - Plaxis	
Related fields	- Geology - Geochemistry - Petrology - Earthquake engineering - Geomorphology - Soil science - Hydrology - Hydrogeology - Biogeography - Earth materials - Archaeology - Agricultural science - Agrology	

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

- Germany
- France
- BnF data
- Czech Republic

About waterproofing

Waterproofing is the process of making an item, person or structure water-proof or waterproof to make sure that it remains fairly unaffected by water or resists the access of water under specified problems. Such items may be utilized in wet settings or undersea to defined depths. Waterproof and waterproof often describe resistance to infiltration of water in its liquid state and possibly under stress, whereas wet evidence describes resistance to humidity or moisture. Permeation of water vapour with a material or structure is reported as a wetness vapor transmission rate (MVTR). The hulls of watercrafts and ships were once waterproofed by using tar or pitch. Modern products may be waterproofed by using water-repellent coatings or by securing joints with gaskets or o-rings. Waterproofing is utilized of developing structures (such as basements, decks, or damp locations), boat, canvas, garments (raincoats or waders), digital devices and paper product packaging (such as cartons for liquids).
.

About Cook County

Driving Directions in Cook County

Driving Directions From 42.088525008778, -88.079435634324 to

Driving Directions From 42.021124436568, -88.109125186152 to

Driving Directions From 42.017845685371, -88.11591807218 to

Driving Directions From 42.084324223519, -88.137710099374 to

Driving Directions From 42.10843482977, -88.114090738222 to

Driving Directions From 42.086153671225, -88.19640031169 to

Driving Directions From 42.051159627372, -88.202951526236 to

Driving Directions From 42.008657936699, -88.152725208607 to

Driving Directions From 42.007242948498, -88.153060682778 to

Driving Directions From 42.073881347839, -88.179224443136 to

https://www.google.com/maps/place//@42.050000207566,-88.075050390596,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.087798734568,-88.063295005626,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.10843482977,-88.114090738222,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.050966333631,-88.065085692084,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.03783000352,-88.074000387298,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.047694157891,-88.091046817967,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.010753136556,-88.109359678334,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.056354483873,-88.088327608895,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.102108978802,-88.091450952786,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/place//@42.042207985309,-88.186095527361,25.2z/data=!4m6!3m5!1sNone!8m2!3d42.0637725!4d-88.1396465!16s%2F

https://www.google.com/maps/dir/?api=1&origin=42.042207985309,-88.186095527361&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=driving&query=foundation+settlement+sign

https://www.google.com/maps/dir/?api=1&origin=42.011697190191,-88.159742980637&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=structural+engineer+consult

https://www.google.com/maps/dir/?api=1&origin=42.068719913035,-88.076011775936&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=foundation+stability+check+

https://www.google.com/maps/dir/?api=1&origin=42.040913746131,-88.212085693635&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=helical+pier+installation+Sch

https://www.google.com/maps/dir/?api=1&origin=42.002740342082,-88.143950765717&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=sprayed+urethane+foam+lifti

https://www.google.com/maps/dir/?api=1&origin=42.10843482977,-88.114090738222&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=house+leveling+service+Des

https://www.google.com/maps/dir/?api=1&origin=42.089226014242,-88.21676191398&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2C
wSxDtinD4gRiv4kY3RRh9U&travelmode=driving&query=crawl+space+underpinning+

https://www.google.com/maps/dir/?api=1&origin=42.076323560785,-88.219373904701&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=slab+foundation+lifting+Hoff

https://www.google.com/maps/dir/?api=1&origin=42.097395420237,-88.146014933305&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=transit&query=sinking+basement+floor+Bol

https://www.google.com/maps/dir/?api=1&origin=42.027868101227,-88.201484266296&destination=%2C+2124+Stonington+Ave%2C+Hoffman+Estates%2
wSxDtinD4gRiv4kY3RRh9U&travelmode=driving&query=water+intrusion+prevention+

Check our other pages :

- **Understanding Pier Installation Quotes Line by Line**
- **Budget Control Methods for Foundation Projects**
- **Cost Financing and Warranty Structures**
- **Steps to Secure a Municipal Foundation Repair Permit**

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

foundation crack repair Chicago

residential foundation inspection

home foundation leveling

basement foundation repair

Sitemap

Privacy Policy

About Us

Follow us