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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
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Understanding foundation repair methods and the variety of material options available is crucial when considering the impact of material choice on the overall project cost. Foundation repair can be a significant investment, and the materials chosen not only affect the durability and longevity of the repair but also play a pivotal role in determining how much you'll spend.

Those windows that suddenly won't close properly aren't rebelling against you but rather responding to the foundation shift tango **water intrusion prevention McHenry County** Cherry Hill.

When it comes to foundation repair, common methods include slabjacking, piering, wall anchors, and mudjacking, each with its set of suitable materials. For instance, steel piers are often used for their strength and longevity in piering projects. They are more expensive upfront compared to concrete piers but offer superior load-bearing capacity and resistance to environmental factors like soil movement or water damage, which can reduce long-term maintenance costs.

Concrete is another widely used material, particularly in slabjacking where polyurethane foam or cement-based grouts lift and stabilize the foundation. While concrete is generally less costly than steel, its effectiveness can vary based on soil conditions. In areas prone to moisture changes or expansive soils, choosing high-quality cementitious materials might increase initial costs but prevent future issues like cracking or shifting.

The choice between polymer-based products like epoxy or polyurethane versus traditional materials like concrete also influences cost. Polymers are praised for their quick curing times and minimal disruption during application, which can lower labor costs. However, these materials tend to be pricier per unit than conventional options.

Moreover, local availability impacts cost significantly. Materials that need to be imported or are less common in a region will naturally escalate expenses due to transportation and scarcity premiums. On the flip side, locally sourced materials might not only be cheaper but also support local economies.

In essence, while cheaper materials might seem appealing initially for keeping project costs down, they could lead to higher expenses over time due to repairs or replacements if they fail prematurely under stress or environmental changes. Conversely, investing in high-quality materials might increase upfront costs but can provide peace of mind through enhanced performance and reduced need for future interventions. Therefore, when planning

foundation repairs, homeowners should weigh both immediate financial implications against long-term value and sustainability offered by different material choices. This balanced approach ensures that decisions made today do not become costly regrets tomorrow.

Geotechnical Investigation and Site Assessment for QA/QC Planning —

- Project Scope Definition and Permitting Requirements for Foundation Repair
- Geotechnical Investigation and Site Assessment for QA/QC Planning
- Material Procurement and Quality Control Procedures
- Inspection and Testing Protocols During Foundation Repair
- Documentation and Reporting for Permitting Compliance and QA/QC
- Risk Management and Mitigation Strategies in Project Logistics
- Post-Repair Verification and Long-Term Monitoring for QA/QC

When embarking on a foundation repair project, one of the critical factors influencing the overall cost is the choice of materials. The cost analysis of common foundation repair materials not only sheds light on direct expenses but also impacts the longevity, maintenance, and eventual value of the repair work. This essay explores how different material choices affect project costs in foundation repairs.

Firstly, let's consider concrete, one of the most traditional materials used in foundation repairs due to its durability and strength. While concrete might initially seem like a cost-effective option because of its widespread availability and lower unit cost, it requires significant labor for preparation and installation. Additionally, if high-quality concrete is not used, or if there are flaws in the mix or curing process, it can lead to future issues requiring additional expenditure for repairs or replacements.

Steel reinforcement, often used in conjunction with concrete to enhance tensile strength, introduces another layer of cost consideration. While steel adds to the upfront costs due to its price per unit and specialized labor needed for proper installation, it significantly reduces long-term expenses by providing additional structural integrity. This can prevent costly future repairs that might arise from settling or shifting foundations.

For those looking into more modern solutions, fiber-reinforced polymers (FRPs) present an interesting alternative. FRPs are lighter than traditional materials like steel and concrete yet offer impressive strength-to-weight ratios. However, their initial cost is considerably higher than conventional options due to both material expense and the need for skilled technicians to apply them correctly. Yet, this investment could pay off through reduced transportation costs during delivery and potentially fewer workers needed on-site due to ease of handling.

Another material gaining traction is helical piers or piles made from galvanized steel. These are particularly useful in areas with poor soil conditions where traditional methods might fail prematurely. Although more expensive upfront than simple concrete footings due to manufacturing complexity and installation precision required by professionals equipped with hydraulic machinery, they provide a long-lasting solution that often negates the need for repeated interventions.

In analyzing these materials impact on project costs, its essential to consider not just immediate financial outlays but also lifecycle costs including maintenance and potential replacement frequency. For instance, although steel might increase initial costs when added to concrete foundations, its contribution towards reducing future maintenance significantly impacts overall project economics positively over time.

In conclusion, while each material presents different initial costs associated with procurement and installation complexity, their selection should be guided by a comprehensive view that includes durability against environmental factors like soil movement or moisture content changes which could escalate repair costs over time if not adequately addressed at the outset. Therefore, when planning foundation repairs, homeowners or contractors must weigh these factors meticulously; choosing wisely between immediate affordability versus long-term value preservation can dramatically influence both current budgets and future financial commitments related to property upkeep.

Material Procurement and Quality Control Procedures

When considering the impact of material choice on overall project costs, one critical aspect to examine is the durability and longevity of the materials used. The initial cost of materials can often be misleading; while cheaper options might seem attractive at first glance, they can lead to significantly higher expenses over time if they lack durability.

Materials that endure over long periods reduce the frequency of replacements and repairs, which are costly both in terms of direct expenses and indirect costs such as downtime or disruption to operations. For instance, opting for high-quality steel or concrete in construction projects might increase upfront costs but will likely decrease maintenance needs. These materials resist weathering, corrosion, and structural degradation better than their less durable counterparts, leading to fewer interventions over the buildings lifespan.

Moreover, durable materials often contribute to energy efficiency. For example, well-insulated materials like certain types of glass or advanced roofing systems not only last longer but also improve a buildings thermal performance, reducing heating and cooling costs. This aspect becomes increasingly important in an era where sustainability is not just an environmental concern but also a financial one.

In contrast, choosing less durable materials might save money initially but can result in a cycle of frequent replacements. This cycle increases labor costs, material procurement overheads, and potential losses from operational interruptions. Additionally, the environmental impact of frequent material turnover should not be underestimated; sustainable practices are increasingly valued by consumers and stakeholders alike, which indirectly affects a projects reputation and marketability.

In summary, while the initial investment in durable materials might seem high, their longevity directly impacts long-term cost efficiency by minimizing repair needs and enhancing operational continuity. Therefore, when planning projects with a focus on cost-effectiveness over time, prioritizing material durability is not just prudent but essential for achieving true economic value alongside environmental responsibility.

When considering the impact of material choice on the overall project cost, one critical factor often overlooked is the labor costs associated with different material applications. The selection of materials not only affects the direct expenses like purchasing and transportation but also significantly influences the labor intensity required for installation, maintenance, and potential repairs.

For instance, consider a construction project where one might choose between traditional brickwork and modern composite panels. Bricklaying is a labor-intensive process, requiring skilled masons who take considerable time to lay bricks accurately, especially in complex architectural designs. This can lead to higher labor costs due to both the time involved and the specialized skills needed. On the other hand, composite panels might offer a quicker installation process; they are often pre-fabricated to specific dimensions, reducing on-site labor requirements. However, this efficiency might come at a higher initial material cost or require specialized equipment or training for workers, which could balance out or even exceed savings from reduced labor time.

Similarly, in interior design projects, choosing between hardwood flooring and laminate can have stark differences in labor costs. Hardwood requires meticulous laying by experienced carpenters to ensure a perfect fit and finish, involving cutting around obstacles like door frames or heating vents. Laminate flooring might be less expensive initially but can be installed by less skilled laborers since it typically involves click-lock systems that simplify the process.

Moreover, maintenance plays a role as well. Materials like stainless steel in industrial settings are durable but might demand periodic polishing by professionals to maintain their appearance and functionality. In contrast, materials like certain polymers might degrade faster under similar conditions but require less intensive upkeep once installed.

In summary, when planning a project's budget, it's essential to look beyond just the upfront costs of materials. Labor costs associated with different material applications can significantly sway the total expenditure. A comprehensive analysis should include not just installation but also potential future maintenance or repair work influenced by material durability and ease of service. This holistic approach ensures that decisions made early on regarding material choice do not unexpectedly inflate project costs down the line through unforeseen labor demands.

Documentation and Reporting for Permitting Compliance and QA/QC

Okay, lets talk about how the materials we pick for foundation repair can really impact the final bill, specifically when it comes to getting those materials and hauling them around. Think about it: the cost of concrete versus, say, carbon fiber straps isnt just about the price tag on the material itself. Its about everything it takes to get that stuff onto the job site and ready to use.

Material availability is a huge factor. If youre in a rural area and need a specialized epoxy only available from a distributor three states over, well, thats going to add up. Lead times matter too. A material that takes weeks to arrive can delay the whole project, potentially increasing labor costs and even inconveniencing the homeowner. Compare that to something readily available at the local hardware store; the difference can be significant.

Then theres the transportation itself. Concrete is heavy. Really heavy. Getting it to the site requires specialized trucks and maybe even pumping equipment. That all costs money. Lighter materials, like those carbon fiber solutions, are much easier and cheaper to transport. Plus, consider the fuel costs, especially with fluctuating gas prices. A project requiring multiple truckloads of concrete will naturally rack up a higher transportation expense than one using materials that can be delivered in a single van.

So, when youre looking at foundation repair options, dont just focus on the material cost per unit. Think about the bigger picture: Where does this stuff come from? How easily can it be obtained? And whats it going to cost to get it here? These factors can significantly influence the overall project cost and should definitely be part of the decision-making process.

Risk Management and Mitigation Strategies in Project Logistics

When embarking on a construction or manufacturing project, one of the most critical decisions revolves around the selection of materials. This choice significantly influences the overall project cost, not merely through the direct expense of purchasing materials but also through how well these materials meet project-specific requirements. Comparing material costs with project-specific needs is therefore an exercise in balancing economic considerations with functional and aesthetic demands.

At first glance, opting for cheaper materials might seem like a straightforward way to reduce expenses. However, this approach can be shortsighted. For instance, if a project requires durability due to environmental exposure or heavy usage, low-cost materials might not only fail prematurely but also increase maintenance or replacement costs over time. Here, comparing the initial cost against long-term value becomes crucial. A higher upfront investment in a more durable material could lead to savings by reducing the frequency of repairs or replacements.

Moreover, project-specific requirements often include factors like thermal insulation, soundproofing, fire resistance, or aesthetic appeal. Each material has its own set of properties; for example, steel offers strength and fire resistance but might not provide the best thermal insulation compared to certain composites or insulative foams. By analyzing how each material's properties align with these specific needs, project managers can make informed decisions that prevent costly modifications later in the project lifecycle.

Additionally, sustainability has become a non-negotiable aspect in modern projects. Materials that are eco-friendly might carry a higher price tag initially but can qualify for green building certifications or tax incentives which offset costs. They also appeal to environmentally

conscious stakeholders and can enhance a projects marketability or public perception.

In practice, this comparison involves detailed analysis: sourcing quotes from suppliers, reviewing case studies where similar choices were made in comparable projects, and sometimes even conducting small-scale tests or simulations to predict performance under expected conditions. This meticulous process ensures that when materials are selected, they are not just cost-effective at purchase but truly economical throughout the life of the project.

In conclusion, comparing material costs with project-specific requirements goes beyond simple arithmetic; its about understanding the broader implications of each choice on cost efficiency over time. Effective decision-making here requires foresight into how each material will serve within its intended application environment while keeping an eye on budget constraints and long-term financial impacts. This holistic approach ensures that projects remain financially viable while meeting all specified performance criteria.

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

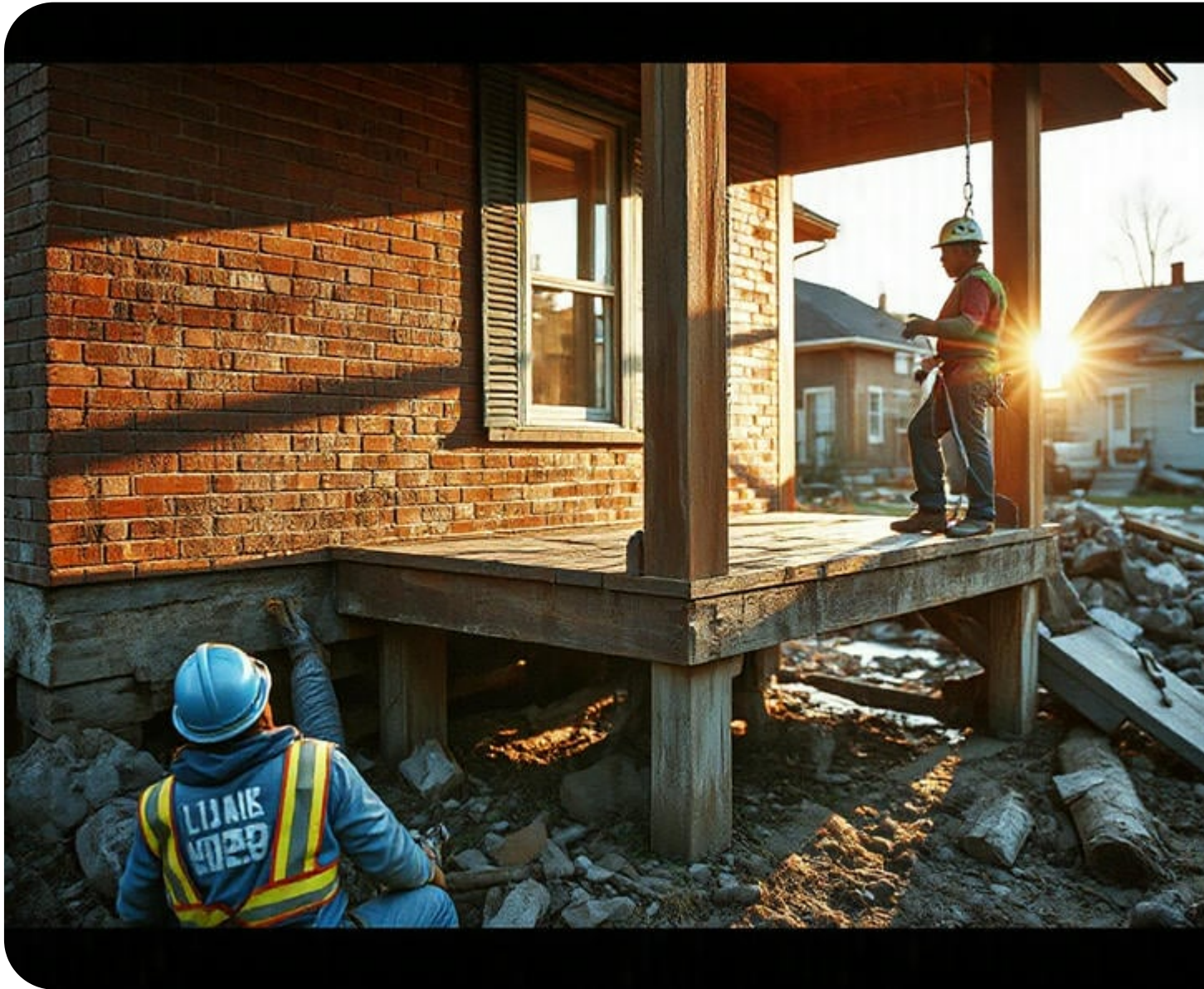
In the realm of foundation repair, the choice of materials significantly influences the overall project cost, a fact well-illustrated by various case studies. These studies highlight how different materials not only affect the durability and longevity of the repair but also have a direct impact on the financial aspect of projects.

One compelling case involved a residential building in a region prone to soil expansion and contraction. Initially, the project opted for traditional concrete piers due to their proven strength and local availability. However, while concrete is relatively cost-effective in terms of initial investment, it requires substantial labor and time for installation, which increased the projects indirect costs like labor and equipment rental. The total expenditure escalated unexpectedly, prompting a reevaluation.

In contrast, another project in a similar geological setting chose to use steel push piers. Steel, although more expensive per unit than concrete, offered quicker installation times due to its lighter weight and ease of handling. This reduction in installation time directly translated into lower labor costs and reduced project duration, thereby decreasing overall expenses despite the higher material cost. Additionally, steel piers provided enhanced load-bearing capacity with less material volume, further optimizing cost efficiency.

A third case study focused on a commercial property where engineers decided on composite materials for foundation repair. Composites like fiber-reinforced polymers (FRP) are at the higher end of the cost spectrum initially but offer superior resistance to environmental factors like moisture and chemical degradation. Over time, this choice proved economical as it minimized maintenance costs and extended the lifespan of the repair work significantly beyond what traditional materials might achieve.

These examples underscore that while material costs are a direct expense in foundation repair projects, they must be considered within a broader context that includes installation efficiency, durability against local conditions, and long-term maintenance requirements. Each material brings its own set of advantages and challenges; thus, selecting the right one involves balancing immediate financial outlays with long-term savings. The key takeaway from these case studies is that an informed decision on material choice can lead to substantial savings or unexpected overruns depending on how well these factors are evaluated before project commencement. This strategic approach ensures not only structural integrity but also financial prudence in foundation repair initiatives.



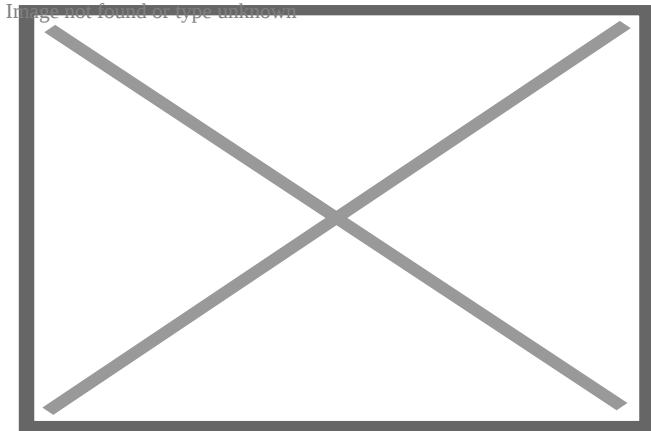
About Pier

For other uses, see Pier (disambiguation).

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A wooden pier in Corfu, Greece

A **pier** is a raised structure that rises above a body of water and usually juts out from its shore, typically supported by piles or pillars, and provides above-water access to offshore areas. Frequent pier uses include fishing, boat docking and access for both passengers and cargo, and oceanside recreation. Bridges, buildings, and walkways may all be supported by architectural piers. Their open structure allows tides and currents to flow relatively unhindered, whereas the more solid foundations of a quay or the closely spaced piles of a wharf can act as a breakwater, and are consequently more liable to silting. Piers can range in size and complexity from a simple lightweight wooden structure to major structures extended over 1,600 m (5,200 ft). In American English, a pier may be synonymous with a dock.

Piers have been built for several purposes, and because these different purposes have distinct regional variances, the term *pier* tends to have different nuances of meaning in different parts of the world. Thus in North America and Australia, where many ports were, until recently, built on the multiple pier model, the term tends to imply a current or former cargo-handling facility. In contrast, in Europe, where ports more often use basins and river-side quays than piers, the term is principally associated with the image of a Victorian cast iron pleasure pier which emerged in Great Britain during the early 19th century. However, the earliest piers pre-date the Victorian age.

Types

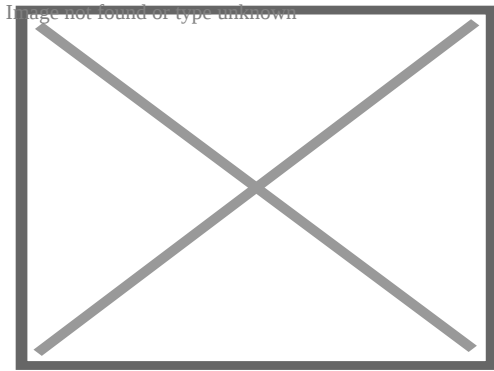
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Piers can be categorized into different groupings according to the principal purpose.^[1] However, there is considerable overlap between these categories. For example, pleasure piers often also allow for the docking of pleasure steamers and other similar craft, while working piers have often been converted to leisure use after being rendered obsolete by advanced developments in cargo-handling technology. Many piers are floating piers, to ensure that the piers raise and lower with the tide along with the boats tied to them. This prevents a situation where lines become overly taut or loose by rising

or lowering tides. An overly taut or loose tie-line can damage boats by pulling them out of the water or allowing them so much leeway that they bang forcefully against the sides of the pier.

Working piers

[edit]



Out-of-use industrial bulk cargo Pier, Cook Inlet, Alaska.

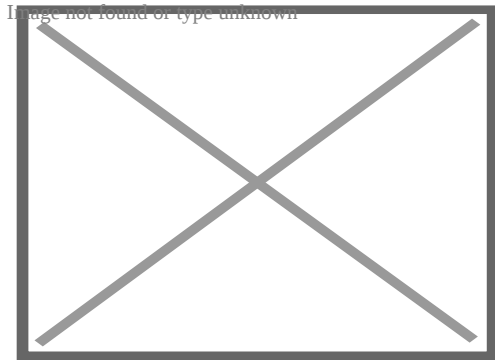
Working piers were built for the handling of passengers and cargo onto and off ships or (as at Wigan Pier) canal boats. Working piers themselves fall into two different groups. Longer individual piers are often found at ports with large tidal ranges, with the pier stretching far enough off shore to reach deep water at low tide. Such piers provided an economical alternative to impounded docks where cargo volumes were low, or where specialist bulk cargo was handled, such as at coal piers. The other form of working pier, often called the finger pier, was built at ports with smaller tidal ranges. Here the principal advantage was to give a greater available quay length for ships to berth against compared to a linear littoral quayside, and such piers are usually much shorter. Typically each pier would carry a single transit shed the length of the pier, with ships berthing bow or stern in to the shore. Some major ports consisted of large numbers of such piers lining the foreshore, classic examples being the Hudson River frontage of New York, or the Embarcadero in San Francisco.

The advent of container shipping, with its need for large container handling spaces adjacent to the shipping berths, has made working piers obsolete for the handling of general cargo, although some still survive for the handling of passenger ships or bulk cargos. One example, is in use in Progreso, Yucatán, where a pier extends more than 4 miles into the Gulf of Mexico, making it the longest pier in the world. The Progreso Pier supplies much of the peninsula with transportation for the fishing and cargo industries and serves as a port for large cruise ships in the area. Many other working piers have been demolished, or remain derelict, but some have been recycled as pleasure piers. The best known example of this is Pier 39 in San Francisco.

At Southport and the Tweed River on the Gold Coast in Australia, there are piers that support equipment for a sand bypassing system that maintains the health of sandy beaches and navigation channels.

Pleasure piers

[edit]



Print of a Victorian pier in Margate in the English county of Kent, 1897

Pleasure piers were first built in Britain during the early 19th century.^[2] The earliest structures were Ryde Pier, built in 1813/4, Trinity Chain Pier near Leith, built in 1821, Brighton Chain Pier, built in 1823.^[2] and Margate Jetty 1823/24 originally a timber built pier.

Only the oldest of these piers still remains. At that time, the introduction of steamships and railways for the first time permitted mass tourism to dedicated seaside resorts. The large tidal ranges at many such resorts meant that passengers arriving by pleasure steamer could use a pier to disembark safely.^[3] Also, for much of the day, the sea was not visible from the shore and the pleasure pier permitted holidaymakers to promenade over and alongside the sea at all times.^[4] The world's longest pleasure pier is at Southend-on-Sea, Essex, and extends 1.3 miles (2.1 km) into the Thames Estuary.^[2] The longest pier on the West Coast of the US is the Santa Cruz Wharf, with a length of 2,745 feet (837 m).^[5]

Providing a walkway out to sea, pleasure piers often include amusements and theatres as part of their attractions.^[4] Such a pier may be unroofed, closed, or partly open and partly closed. Sometimes a pier has two decks. Galveston Island Historic Pleasure Pier in Galveston, Texas has a roller coaster, 15 rides, carnival games and souvenir shops.^[6]

Early pleasure piers were of complete timber construction, as was with Margate which opened in 1824. The first iron and timber built pleasure pier Margate Jetty, opened in 1855.^[7] Margate pier was wrecked by a storm in January 1978 and not repaired.^[8]^[7] The longest iron pleasure pier still remaining is the one at Southend. First opened as a wooden pier in 1829, it was reconstructed in iron and completed in 1889. In a 2006 UK

poll, the public voted the seaside pier onto the list of icons of England.^[9]

Fishing piers

[edit]

Many piers are built for the purpose of providing boatless anglers access to fishing grounds that are otherwise inaccessible.^[10] Many "Free Piers" are available in larger harbors which differ from private piers. Free Piers are often primarily used for fishing. Fishing from a pier presents a set of different circumstances to fishing from the shore or beach, as you do not need to cast out into the deeper water. This being the case there are specific fishing rigs that have been created specifically for pier fishing^[11] which allow for the direct access to deeper water.

Piers of the world

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Main article: List of piers

Belgium

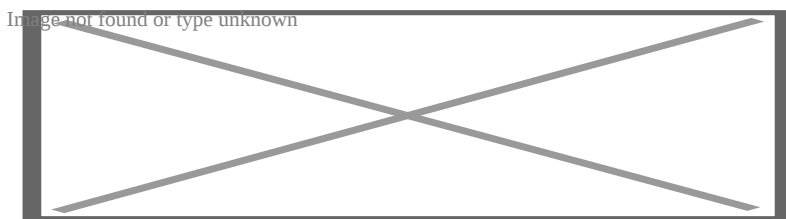
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In Blankenberge a first pleasure pier was built in 1894. After its destruction in the World War I, a new pier was built in 1933. It remained till the present day, but was partially transformed and modernized in 1999–2004.

In Nieuwpoort, Belgium there is a pleasure pier on both sides of the river IJzer.

Netherlands

[edit]



The Scheveningen Pier

Scheveningen, the coastal resort town of The Hague, boasts the largest pier in the Netherlands, completed in 1961. A crane, built on top of the pier's panorama tower, provides the opportunity to make a 60-metre (200 ft) high bungee jump over the North

Sea waves. The present pier is a successor of an earlier pier, which was completed in 1901 but in 1943 destroyed by the German occupation forces.

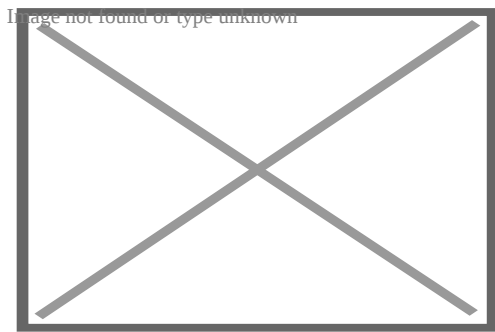
United Kingdom

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England and Wales

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The first recorded pier in England was Ryde Pier, opened in 1814 on the Isle of Wight, as a landing stage to allow ferries to and from the mainland to berth. It is still used for this purpose today.^[12] It also had a leisure function in the past, with the pier head once containing a pavilion, and there are still refreshment facilities today. The oldest cast iron pier in the world is Town Pier, Gravesend, in Kent, which opened in 1834. However, it is not recognised by the National Piers Society as being a seaside pier.^[13]



Brighton Palace Pier (pictured in 2011), opened in 1899

Following the building of the world's first seaside pier at Ryde, the pier became fashionable at seaside resorts in England and Wales during the Victorian era, peaking in the 1860s with 22 being built in that decade.^[14] A symbol of the typical British seaside holiday, by 1914, more than 100 pleasure piers were located around the UK coast.^[2] Regarded as being among the finest Victorian architecture, there are still a significant number of seaside piers of architectural merit still standing, although some have been lost, including Margate, two at Brighton in East Sussex, one at New Brighton in the Wirral and three at Blackpool in Lancashire.^[4] Two piers, Brighton's now derelict West Pier and Clevedon Pier, were Grade 1 listed. The Birnbeck Pier in Weston-super-Mare is the only pier in the world linked to an island. The National Piers Society gives a figure of 55 surviving seaside piers in England and Wales.^[1] In 2017, Brighton Palace Pier was said to be the most visited tourist attraction outside London, with over 4.5 million visitors the previous year.^[15]

See also

[edit]

- Boardwalk
- Breakwater
- Dock
- Jetty
- List of piers
- Seaside resort
- Wharf

References

[edit]

1. ^ **a b** *"Piers". National Piers Society. 2006. Archived from the original on September 29, 2008. Retrieved February 24, 2012.*
2. ^ **a b c d** *"The expert selection: British seaside piers". No. 1 August 2014. Financial Times. 15 June 2015. Archived from the original on 2022-12-10.*
3. ^ Gladwell, Andrew (2015). *"Introduction". London's Pleasure Steamers. Amberley Publishing. ISBN 978-1445641584.*
4. ^ **a b c** *"A very British affair - the fall and rise of the seaside pier". BBC News. 16 June 2015.*
5. ^ *"California Pier Statistics, Longest Piers". seecalifornia.com. Retrieved 2014-02-10.*
6. ^ Aulds, T.J. (January 28, 2012). *"Landry's Corp. is close to revealing plans". News Article. Galveston Daily News. Archived from the original on January 31, 2012.*
7. ^ **a b** *"200 years of historic British piers: in pictures". The Telegraph. Retrieved 15 June 2015*
8. ^ *"The destruction of Margate jetty in the great storm of January 1978". 13 January 2018.*
9. ^ *"ICONS of England - the 100 ICONS as voted by the public". Culture 24 News. 15 June 2015.*
10. ^ *"Landscape Design Book" (PDF). University of Wisconsin-Stevens Point. 2013. Retrieved January 6, 2015.[permanent dead link]*
11. ^ VS, Marco (2021-03-21). *"Pier Fishing Rigs: 6 Common Types of Rigs for fishing from a Pier". Pro Fishing Reviews. Retrieved 2021-10-10.*
12. ^ *"Britain's best seaside piers". The Telegraph. Retrieved 15 June 2015*
13. ^ *"The oldest surviving cast iron pier in the world". BBC. February 9, 2006. Retrieved March 26, 2006.*
14. ^ Dobraszczuk, Paul (2014). *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment. Ashgate Publishing. p. 143. ISBN 978-1-472-41898-2.*
15. ^ *"Brighton Palace Pier named as Britain's most visited tourist attraction outside London". Brighton and Hove News. 2 August 2017. Retrieved 23 January 2025.*

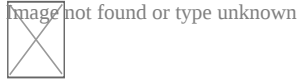
Further reading

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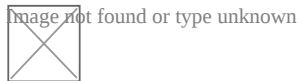
- Turner, K., (1999), *Pier Railways and Tramways of the British Isles*, The Oakwood Press, No. LP60, ISBN 0-85361-541-1.
- *Wills, Anthony; Phillips, Tim (2014). British Seaside Piers. London: English Heritage. ISBN 9781848022645.*

External links

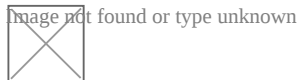
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Wikisource has the text of the 1911 *Encyclopædia Britannica* article "**Pier**".



Look up **pier** in Wiktionary, the free dictionary.

- The Piers Project
- National Piers Society
- Details on UK Piers including Webcams

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About Shallow foundation

Shallow foundation construction example

A **shallow foundation** is a type of building **foundation** that transfers **structural load** to the Earth very near to the surface, rather than to a subsurface layer or a range of depths, as does a **deep foundation**. Customarily, a shallow foundation is considered as such when the width of the entire foundation is greater than its depth.^{**[1]**} In comparison to deep foundations, shallow foundations are less technical, thus making them more economical and the most widely used for relatively light structures.

Types

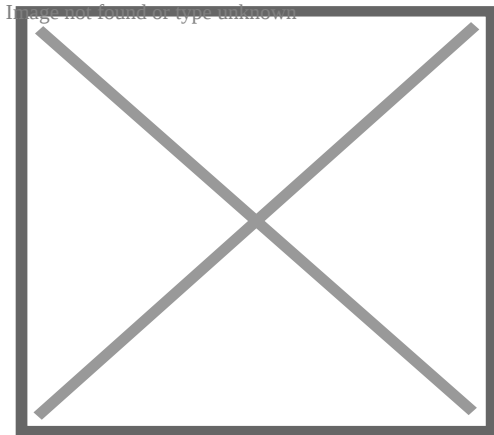
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Footings are always wider than the members that they support. Structural loads from a **column** or wall are usually greater than 1,000 kPa, while the soil's **bearing capacity** is commonly less than that (typically less than 400 kPa). By possessing a larger bearing area, the foundation distributes the pressure to the soil, decreasing the bearing pressure to within allowable values.^[2] A structure is not limited to one footing. Multiple types of footings may be used in a construction project.

Wall footing

[[edit](#)]

Also called *strip footing*, a **wall footing** is a continuous strip that supports structural and non-structural load-bearing walls. Found directly under the wall, Its width is commonly 2-3 times wider than the wall above it.^[3]



Detail Section of a strip footing and its wall.

Isolated footing

[[edit](#)]

Also called *single-column footing*, an isolated footing is a square, rectangular, or circular slab that supports the structural members individually. Generally, each column is set on an individual footing to transmit and distribute the load of the structure to the soil underneath. Sometimes, an isolated footing can be sloped or stepped at the base to spread greater loads. This type of footing is used when the structural load is relatively low, columns are widely spaced, and the soil's bearing capacity is adequate at a shallow depth.

Combined footing

[[edit](#)]

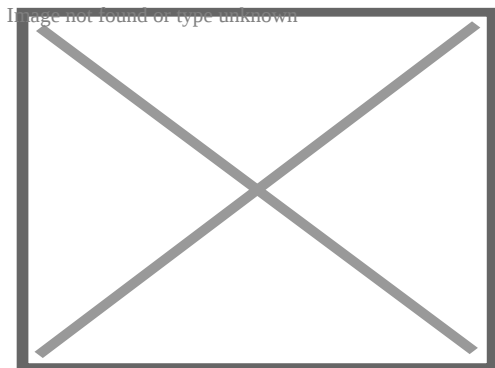
When more than one column shares the same footing, it is called a *combined footing*. A combined footing is typically utilized when the spacing of the columns is too restricted such that if isolated footing were used, they would overlap one another. Also, when property lines make isolated footings eccentrically loaded, combined footings are preferred.

When the load among the columns is equal, the combined footing may be rectangular. Conversely, when the load among the columns is unequal, the combined footing should be **trapezoidal**.

Strap footing

[[edit](#)]

A **strap footing** connects individual columns with the use of a strap beam. The general purpose of a strap footing is alike to those of a combined footing, where the spacing is possibly limited and/or the columns are adjacent to the property lines.



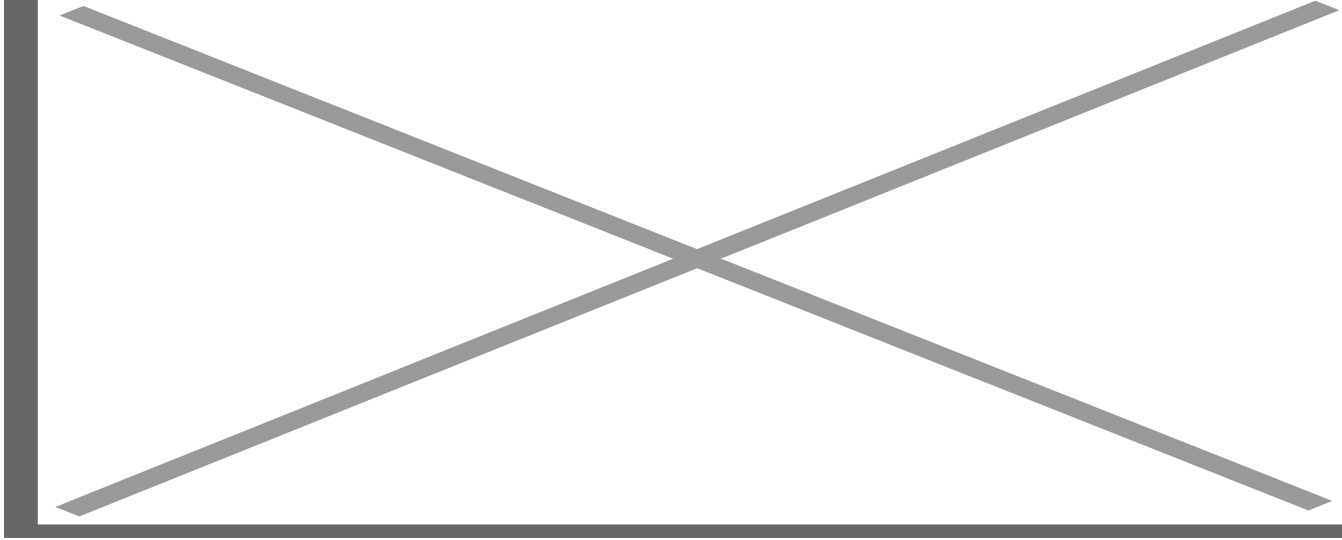
Mat foundation with its concrete undergoing **curing**.

Mat foundation

[[edit](#)]

Also called *raft* foundation, a mat foundation is a single continuous slab that covers the entirety of the base of a building. Mat foundations support all the loads of the structure and transmit them to the ground evenly. Soil conditions may prevent other footings from being used. Since this type of foundation distributes the load coming from the building uniformly over a considerably large area, it is favored when individual footings are unfeasible due to the low bearing capacity of the soil.

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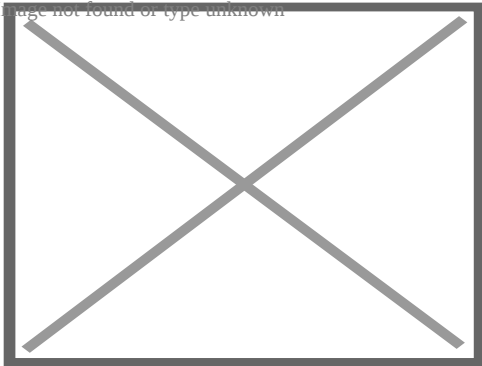
Diagrams of the types of shallow foundations.

Slab-on-grade foundation

[[edit](#)]

"Floating foundation" redirects here. For Floating raft system, see [Floating raft system](#).

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Pouring a slab-on-grade foundation

Slab-on-grade or *floating slab* foundations are a **structural engineering** practice whereby the **reinforced concrete** slab that is to serve as the foundation for the structure is formed from **formwork** set into the ground. The concrete is then poured into the formwork, leaving no space between the ground and the structure. This type of construction is most often seen in warmer climates, where ground freezing and thawing is less of a concern and where there is no need for heat ducting underneath the floor. Frost Protected Shallow Foundations (or FPSF) which are used in areas of potential frost heave, are a form of slab-on-grade foundation.^[4]

Remodeling or extending such a structure may be more difficult. Over the long term, ground settling (or **subsidence**) may be a problem, as a slab foundation cannot be readily jacked up to compensate; proper soil compaction prior to pour can minimize this. The slab can be decoupled from ground temperatures by insulation, with the concrete

poured directly over insulation (for example, **extruded polystyrene** foam panels), or heating provisions (such as **hydronic heating**) can be built into the slab.

Slab-on-grade foundations should not be used in areas with **expansive clay** soil. While elevated structural slabs actually perform better on expansive clays, it is generally accepted by the engineering community that slab-on-grade foundations offer the greatest cost-to-performance ratio for **tract homes**. Elevated structural slabs are generally only found on custom homes or homes with basements.

Copper piping, commonly used to carry **natural gas** and **water**, reacts with concrete over a long period, slowly degrading until the pipe fails. This can lead to what is commonly referred to as slab leaks. These occur when pipes begin to leak from within the slab. Signs of a slab leak range from unexplained dampened carpet spots, to drops in water pressure and wet discoloration on exterior foundation walls.^[5] Copper pipes must be *lagged* (that is, **insulated**) or run through a **conduit** or **plumbed** into the building above the slab. Electrical conduits through the slab must be water-tight, as they extend below ground level and can potentially expose wiring to **groundwater**.

See also

[**edit**]

- **Argillipedoturbation**
- **Building construction**
- **Construction engineering**
- **Fiber reinforced concrete**
- **Grade beam**
- **Precast concrete**
- **Prestressed concrete**
- **Rebar**
- **Steel fixer**
- **Tie rod**

References

[**edit**]

1. [^] Akhter, Shahin. **"Shallow foundation – Definition, Types, Uses and Diagrams"**. Pro Civil Engineer. Retrieved July 31, 2021.
2. [^] Gillesania, Diego Inocencio T. (2004). **Fundamentals of reinforced concrete design** (2nd ed.). [Cebu, Cirty, Philippines]. p. 259. **ISBN 971-8614-26-5. OCLC 1015901733**.**cite book: CS1 maint: location missing publisher (link)**
3. [^] Mahdi, Sheikh. **"8 Most Important Types of Foundation"**. civiltoday.com. Retrieved July 31, 2021.
4. [^] **"Slab-on-Grade Foundation Detail & Insulation, Building Guide"**.
5. [^] **"Slab Leak Repair McKinney, Frisco, and Allen Tx - Hackler Plumbing"**. Hacklerplumbingmckinney.com. 2013-11-08. Retrieved 2018-08-20.

External links

[**edit**]

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

- **Raft or Mat Foundations**

- **v**

- **t**

- **e**

Geotechnical engineering

Offshore geotechnical engineering

Investigation and instrumentation

Field (*in situ*)

Laboratory
testing

-  **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**
- **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**

Foundations

- **Infiltration**
- **Shallow**
- **Deep**

	Forces	○ Effective stress ○ Pore water pressure ○ Lateral earth pressure ○ Overburden pressure ○ Preconsolidation pressure ○ 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
Mechanics	Phenomena/ problems	
Numerical analysis software	○ SEEP2D ○ STABL ○ SVFlux ○ SVSlope ○ UTEXAS ○ Plaxis ○ Geology ○ Geochemistry ○ Petrology ○ Earthquake engineering ○ Geomorphology ○ Soil science	
Related fields	○ Hydrology ○ Hydrogeology ○ Biogeography ○ Earth materials ○ Archaeology ○ Agricultural science ○ Agrology	

Driving Directions in Cook County

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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

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Driving Directions From 42.073881347839, -88.179224443136 to

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Frequently Asked Questions

Are there green or environmentally friendly foundation repair materials, and how do they impact the price compared to traditional materials?

Yes, some greener

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