- **Identifying Common Issues and Symptoms of residential foundations**
  Identifying Common Issues and Symptoms of residential foundations Spotting Early Warning Signs of Foundation Stress Recognizing Cracks and Shifts in Concrete Floors Understanding Sticky Doors and Window Alignment Pinpointing Sinking Spots around the Foundation Perimeter Tracking Water Intrusion as a Contributor to Structural Damage How Uneven Floors Reveal Deeper Foundation Concerns Identifying Subtle Changes in Exterior Walls When Hairline Drywall Cracks Indicate Movement Monitoring Seasonal Soil Movement for Foundation Clues Evaluating Soil Erosion and Its Impact on Stability Noting Shifting Porches and Deck Attachments Examining Sloping Floors for Underlying Settlement
- **Soil and Environmental Factors influencing home foundations**
  Soil and Environmental Factors influencing home foundations Examining Expansive Clay in Residential Areas Understanding Sandy Loam and Drainage Properties Measuring Soil Moisture for Stabilizing Foundations Impact of Freeze Thaw Cycles on Concrete Slabs Recognizing Erosion Patterns that Undermine Support Coordinating Landscaping to Control Soil Shifts Evaluating Groundwater Levels for Long Term Stability Identifying Seasonal Soil Movement in Coastal Regions Reviewing Impact of Tree Roots on Foundation Integrity Forecasting Effects of Prolonged Drought on Soil Behavior Managing Flood Risk through Strategic Elevation Observing Climate Trends for Anticipating Soil Swell
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*** Understanding foundation settlement and its causes in residential buildings.**

Okay, so you've got a sloping floor in your house. Expert contractors use specialized techniques to stabilize shifting foundations foundation repair service market entrance stairs. That's never a good sign, is it? But before you panic and start imagining the whole place collapsing, let's talk about what might be going on underneath. Chances are, we're dealing with settlement – that's when the ground beneath your foundation shifts, compresses, or even washes away, causing the foundation to sink unevenly.

Think of your house like a giant Lego structure. It's all nicely connected, but if one of the Lego bricks underneath starts to sink, the whole thing is going to tilt, right? That's essentially what's happening with your foundation.

Now, why does settlement happen? There are a bunch of potential culprits. The soil itself could be the problem. Some soils, like clay, expand and contract dramatically depending on how wet or dry they are. Others might be poorly compacted to begin with. Then there's water – too much or too little. Heavy rains can saturate the soil, making it weak and unstable. A drought can cause it to shrink, leaving gaps under the foundation.

Also, consider what's been happening around your house. Did you recently have a tree removed? Roots can suck up a lot of moisture, and when they're gone, the soil can become overly saturated. Are there any leaky pipes nearby? That constant moisture can weaken the soil over time. Even nearby construction can vibrate the ground and cause soil compaction.

The important thing is to understand that sloping floors are usually a symptom of a bigger problem. It's not just about leveling the floor; it's about figuring out why it's sloping in the first place. Getting a professional foundation inspection is really the best way to go. They can assess the situation, identify the underlying cause of the settlement, and recommend the appropriate repairs to stabilize your foundation and prevent further problems down the road. Ignoring it won't make it go away, and it'll likely just get worse (and more expensive!) over time.

*** How to identify sloping floors and other related symptoms indicating settlement.**

Okay, so you think your floor might be sloping. It's a worry, right? Because a sloping floor isn't just a quirk; it often whispers (or sometimes shouts) about settlement issues going on beneath your feet. Settlement, simply put, is when the ground under your house shifts or compacts, causing the structure to sink unevenly. Let's talk about how to spot the signs, because catching it early can save you a whole heap of trouble and money down the line.

The most obvious sign, naturally, is the sloping floor itself. Grab a level – the longer the better – and place it on the floor in various spots around the room. If the bubble stubbornly stays off-center, you've got a slope. Don't just check one room; walk around the entire house. The problem might be localized, or it could be affecting a larger area.

But it's more than just the floor itself. Think of it like a detective case. You're looking for clues. Do doors and windows stick? Maybe they're difficult to open or close, or perhaps they're rattling in their frames even when there's no breeze. This is because the frames themselves are being warped by the shifting structure. Look closely at the walls, too. Are there cracks appearing? Small hairline cracks are common in most houses, but pay attention to larger cracks, especially those that are diagonal or stair-step patterns. These are often telltale signs of movement.

Another subtle symptom can be wallpaper or paint that's starting to wrinkle or tear, particularly around door and window frames. You might also notice gaps appearing between the wall and the ceiling or the wall and the floor. Don't dismiss these seemingly minor issues; they can be indicators of a bigger problem brewing.

Finally, take a look outside. Are there cracks in the foundation of your house? Is the ground sloping away from the foundation? Are there any signs of water pooling near the foundation? These exterior clues can provide valuable insight into what's happening underneath your home.

Remember, a single sloping floor or a minor crack might not be cause for alarm. However, if you're noticing multiple symptoms, it's time to call in a professional. A structural engineer or a qualified foundation specialist can assess the situation, determine the cause of the settlement, and recommend the appropriate repairs. Ignoring these signs won't make them go away; it'll only lead to more significant and costly problems in the future. So, be observant, be proactive, and keep your home safe and sound.

*** Tools and methods used by foundation repair professionals to assess sloping floors.**

So, you've noticed a little slant in your living room floor, huh? That's never a good feeling, and it often whispers (or shouts!) "settlement problems!" But before you panic and start picturing your house sliding into the abyss, let's talk about how the pros figure out exactly what's going on. Foundation repair specialists don't just eyeball it; they use a bunch of tools and methods to get a real understanding of the situation.

One of the first things they'll do is take precise level readings. Think of it like a fancy, high-tech level. They use instruments like a digital level or a laser level to map out the elevations across your floor. This gives them a clear picture of how much the floor is sloping and where the lowest points are. It's way more accurate than just rolling a marble across the floor, trust me!

Beyond just the floors themselves, they'll also be looking at the walls and ceilings. Are there cracks appearing? Are doors and windows sticking? These can be tell-tale signs that the whole structure is shifting. They might use a crack monitor to measure if cracks are widening over time - a definite red flag.

Then comes the detective work outside. The foundation itself is the prime suspect. They'll inspect it for cracks, crumbling concrete, or signs of water damage. They might even use a soil probe or conduct a soil test to understand the type of soil around your foundation and its moisture content. Soil that's too wet or too dry can cause all sorts of problems.

Finally, they often combine all this visual and technical data with something called a floor flatness survey. This involves taking numerous elevation readings across the entire floor and then using software to create a detailed contour map. This map essentially shows a bird's-eye view of the sloping and unevenness, making it easier to pinpoint the exact areas that need attention.

Ultimately, assessing sloping floors is about more than just seeing a slant. It's about using the right tools and methods to understand the underlying cause and develop a plan to get your foundation back on solid ground. So, if your floors are looking a little tipsy, call in the experts. They've got the knowledge and the gadgets to diagnose the problem and help you keep your house standing tall.

*** The connection between sloping floors and the need for foundation repair services.**

Okay, so you've noticed a slope in your floor. That little dip, that subtle lean that makes your marble roll downhill. It might seem like a quirky characteristic, but it's often a flashing red light pointing to a much bigger problem: your foundation.

Think of your foundation as the bedrock of your house, literally. It's supposed to be level and stable, supporting the entire structure above. Now, imagine that bedrock starts to shift, to sink unevenly. This is settlement, and it's often the culprit behind those sloping floors.

The connection is pretty direct. As the foundation settles, it pulls and twists the house above. Walls can crack, doors and windows stick, and yes, floors start to slope. The degree of the slope often reflects the severity of the settlement. A slight, barely noticeable incline might indicate a minor issue, while a dramatic slant could be a sign of serious structural damage.

Ignoring a sloping floor is like ignoring a toothache. It might start small and annoying, but it will likely get much worse and more expensive to fix if you don't address it. Foundation repair services are essentially about stabilizing the foundation and, in some cases, lifting it back to its original position. This can involve underpinning, soil stabilization, or other techniques depending on the cause and extent of the settlement.

So, if you're walking around feeling like you're perpetually on a slight incline, don't just shrug it off. Investigate. A professional foundation inspection can pinpoint the cause of the sloping floor and recommend the best course of action before a quirky characteristic becomes a major, house-threatening problem. Your house – and your sense of level – will thank you.

*** Common foundation repair solutions for homes with sloping floors due to settlement.**

Okay, so you've got a sloping floor. Not ideal, right? Feels like you're living on a gentle incline. And chances are, that slope isn't just a quirky design feature. Often, it's a sign of settlement, meaning your house is slowly sinking in certain areas. That sinking can be caused by all sorts of things: shifting soil, poor drainage, even tree roots sucking moisture from under your foundation. But the good news is, there are solutions.

Now, the exact fix depends on the severity and the cause of the settlement, but let's talk about some

common approaches. One of the most widely used is underpinning. Think of it like adding extra support beams under your existing foundation. This usually involves installing concrete piers or steel push piers deep into the ground, reaching stable soil or bedrock. These piers then lift and stabilize the foundation, hopefully leveling out those sloping floors. It's a pretty involved process, but often necessary for significant settlement.

Another option, often used for less severe cases, is slabjacking, also known as mudjacking or pressure grouting. This involves pumping a mixture of concrete slurry under the sunken slab to lift it back into place. It's a bit like filling a void under the floor. It's generally less expensive than underpinning and can be a good solution for smaller areas of settlement.

Sometimes, the problem isn't the foundation itself, but rather the soil around it. In these cases, soil stabilization techniques might be necessary. This could involve compacting the soil, adding chemical stabilizers, or improving drainage to prevent further shifting and erosion. Think of it as strengthening the ground beneath your house.

Finally, don't underestimate the power of good old-fashioned drainage improvements. Water is a major culprit in foundation problems. Making sure rainwater is properly diverted away from your foundation with gutters, downspouts, and proper grading can go a long way in preventing further settlement and potentially even reversing some of the damage.

The key takeaway is that you shouldn't ignore a sloping floor. It's a signal that something is going on with your foundation. Get a professional inspection to determine the root cause and the best course of action. Ignoring it will only lead to bigger, more expensive problems down the road.

*** Preventing future settlement issues and maintaining a level foundation.**

Okay, so you've noticed your floors are a little, well, *off*. That subtle lean, that gentle slope – it's not just a quirk of an old house; it could be a sign of settlement. And while a little settling is normal, excessive or uneven settling can lead to headaches down the road. We're not just talking about aesthetics here; we're talking about the structural integrity of your home. That's where the phrase "preventing future settlement issues and maintaining a level foundation" comes in.

Think of it like this: your foundation is the anchor of your entire house. If it's shifting and sinking unevenly, everything built upon it is going to suffer. Doors and windows might stick, cracks might appear in your walls, and, of course, your floors will start to resemble a funhouse. Addressing the underlying settlement isn't just about fixing the symptom (the sloping floor); it's about treating the cause.

By carefully examining the sloping floors, we can get clues about what's happening beneath the surface. Is the soil compacting? Is there water damage weakening the foundation? Is there a drainage problem exacerbating the issue? Once we've diagnosed the root cause, we can implement solutions like soil stabilization, underpinning, or drainage improvements. These measures are crucial for preventing further settlement and, ultimately, maintaining a level, stable foundation.

In essence, tackling settlement issues isn't just about fixing a crooked floor; it's about safeguarding your investment and ensuring the long-term health and stability of your home. Ignoring the problem

only allows it to worsen, potentially leading to more extensive and costly repairs down the line. So, that gentle slope on your floor? It's worth investigating. It could save you a lot of trouble – and money – in the long run.

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Strong Foundations, Strong Homes

About ceiling

For other uses, see Ceiling (disambiguation).

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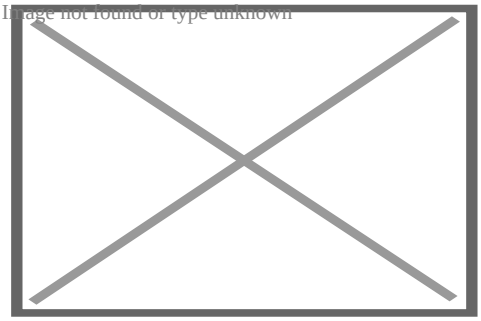

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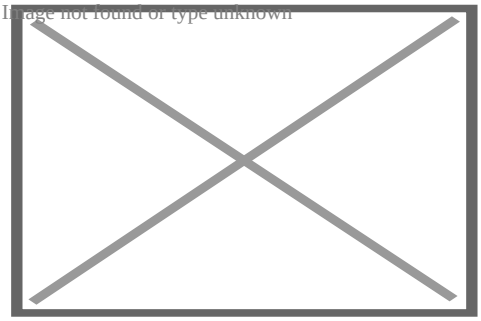

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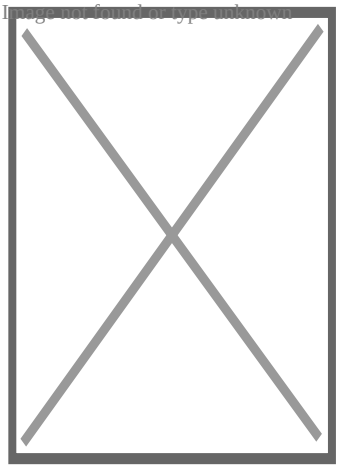

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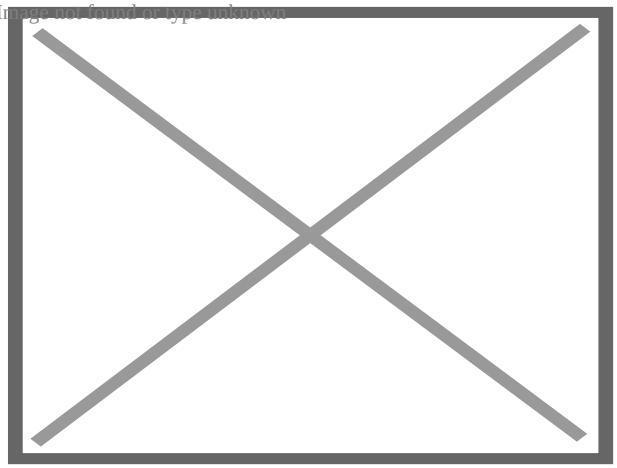

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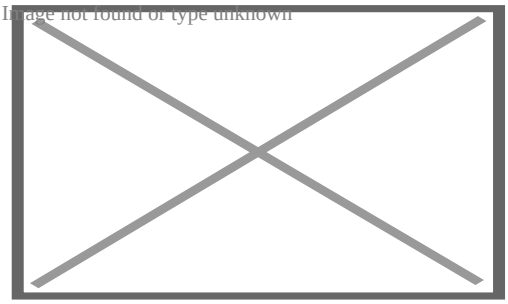

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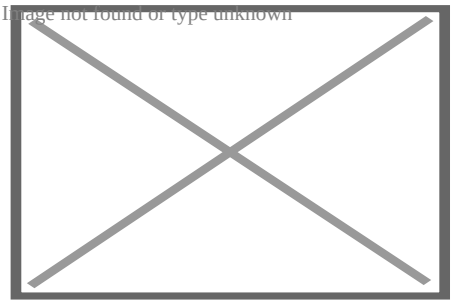


Various examples of ornate ceilings

A **ceiling** /Ãƒâ€¹Ã‹â€ siÃƒâ€¹Ã‚Ã¾Ãƒâ€°Ã‚ªÃƒâ€¦Ã¢â‚¬Ã‚¹/ is an overhead interior roof that covers the upper limits of a room. It is not generally considered a structural element, but a finished surface concealing the underside of the roof structure or the floor of a story above. Ceilings can be decorated to taste, and there are many examples of frescoes and artwork on ceilings, especially within religious buildings. A ceiling can also be the upper limit of a tunnel.

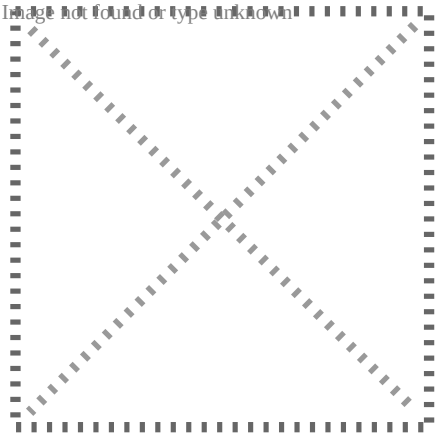
The most common type of ceiling is the dropped ceiling,[*citation needed*] which is suspended from structural elements above. Panels of drywall are fastened either directly to the ceiling joists or to a few layers of moisture-proof plywood which are then attached to the joists. Pipework or ducts can be run in the gap above the ceiling, and insulation and fireproofing material can be placed here. Alternatively, ceilings may be spray painted instead, leaving the pipework and ducts exposed but painted, and using spray foam.

A subset of the dropped ceiling is the suspended ceiling, wherein a network of aluminum struts, as opposed to drywall, are attached to the joists, forming a series of rectangular spaces. Individual pieces of cardboard are then placed inside the bottom of those spaces so that the outer side of the cardboard, interspersed with aluminum rails, is seen as the ceiling from below. This makes it relatively easy to repair the pipes and insulation behind the ceiling, since all that is necessary is to lift off the cardboard, rather than digging through the drywall and then replacing it.

Other types of ceiling include the cathedral ceiling, the concave or barrel-shaped ceiling, the stretched ceiling and the coffered ceiling. Coving often links the ceiling to the surrounding walls. Ceilings can play a part in reducing fire hazard, and a system is available for rating the fire resistance of dropped ceilings.

Types

[edit]



California tract home with an open-beam ceiling, 1960

Ceilings are classified according to their appearance or construction. A cathedral ceiling is any tall ceiling area similar to those in a church. A dropped ceiling is one in which the finished surface is constructed anywhere from a few inches or centimeters to several feet or a few meters below the structure above it. This may be done for aesthetic purposes, such as achieving a desirable ceiling height; or practical purposes such as acoustic damping or providing a space for HVAC or piping. An inverse of this would be a raised floor. A concave or barrel-shaped ceiling is curved or rounded upward, usually for visual or acoustical value, while a coffered ceiling is divided into a grid of recessed square or octagonal panels, also called a "lacunar ceiling". A cove ceiling uses a curved plaster transition between wall and ceiling; it is named for cove molding, a molding with a concave curve.[1] A stretched ceiling (or stretch ceiling) uses a number of individual panels using material such as PVC fixed to a perimeter rail.[2]

Elements

[edit]

Ceilings have frequently been decorated with fresco painting, mosaic tiles and other surface treatments. While hard to execute (at least in place) a decorated ceiling has the advantage that it is largely protected from damage by fingers and dust. In the past, however, this was more than compensated for by the damage from smoke from candles or a fireplace. Many historic buildings have celebrated ceilings. Perhaps the most famous is the Sistine Chapel ceiling by Michelangelo.

Ceiling height, particularly in the case of low ceilings, may have psychological impacts. [3]

Fire-resistance rated ceilings

[edit]

The most common ceiling that contributes to fire-resistance ratings in commercial and residential construction is the dropped ceiling. In the case of a dropped ceiling, the rating is achieved by the

entire system, which is both the structure above, from which the ceilings is suspended, which could be a concrete floor or a timber floor, as well as the suspension mechanism and, finally the lowest membrane or dropped ceiling. Between the structure that the dropped ceiling is suspended from and the dropped membrane, such as a T-bar ceiling or a layer of drywall, there is often some room for mechanical and electrical piping, wiring and ducting to run.

An independent ceiling, however, can be constructed such that it has a stand-alone fire-resistance rating. Such systems must be tested without the benefit of being suspended from a slab above in order to prove that the resulting system is capable of holding itself up. This type of ceiling would be installed to protect items above from fire.

An unrestrained non-loadbearing ceiling undergoing a 4-hour fire test. Deflection is measured off t

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  An unrestrained non-loadbearing ceiling undergoing a 4-hour fire test. Deflection is measured off the I-beam.
- Durasteel ceiling after successful fire test, being raised from the furnace and readied for an option

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Durasteel ceiling after successful fire test, being raised from the furnace and readied for an optional 45PSI (3.1 bar) hose-stream test.

Gallery

[edit]

- Gothic ceiling in the Sainte-Chapelle, Paris, 1243-1248, by Pierre de Montreuil[4]

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Gothic ceiling in the Sainte-Chapelle, Paris, 1243-1248, by Pierre de Montreuil[4]

Renaissance ceiling of the Henry II staircase in the Louvre Palace, Paris, by Ã ƒÆ'Ã¢â‚¬Â°tienne C

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Renaissance ceiling of the Henry II staircase in the Louvre Palace, Paris, by Étienne Carmoy, Raymond Bidollet, Jean Chrestien and François Lheureux, 1553[5]

Renaissance ceiling of the king's bedroom in the Louvre Palace, by Francisque Scibecq de Carpi,

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Renaissance ceiling of the king's bedroom in the Louvre Palace, by Francisque Scibecq de Carpi, 1556[6]

- Baroque ceiling of the Salle des Saisons in the Louvre Palace, by Giovanni Francesco Romanelli,

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Baroque ceiling of the Salle des Saisons in the Louvre Palace, by Giovanni Francesco Romanelli, Michel Anguier and Pietro Sasso, mid 17th century[7]

- Neoclassical ceiling of the Salle DuchÃƒÆ'Ã‚Â¢tel in the Louvre Palace, with The Triumph of Fren

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Neoclassical ceiling of the Salle Duchâtel in the Louvre Palace, with The Triumph of French Painting.

Apotheosis of Poussin, Le Sueur and Le Brun in the centre, by Charles Meynier, 1822, and ceilings panels with medallion portraits of French painters, 1828-1833[8]

- Neoclassical ceiling of the Mollien staircase in the Louvre Palace, designed by Hector Lefuel in 18

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Neoclassical ceiling of the Mollien staircase in the Louvre Palace, designed by Hector Lefuel in 1857 and painted by Charles Louis Müller in 1868-1870[9]

Moorish Revival ceiling in the Nicolae T. Filitti/Nae Filitis House (Calea DorobanÃƒË†Ã¢â‚¬Âºilor n

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Moorish Revival ceiling in the Nicolae T. Filitti/Nae Filitis House (Calea DorobanÃƒË†Ã¢â‚¬Âºilor no. 18), Bucharest, Romania, de Ernest Doneaud, c.1910[10]

Demonstrative reconstruction of a Roman suspended ceiling in an Imperial palace of circa AD 306

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  Demonstrative reconstruction of a Roman suspended ceiling in an Imperial palace of circa AD 306 at Trier, Italy
- Part of the ceiling of the Sistine Chapel in Vatican City in Rome, showing the ceiling in relation to t

Image not found or type unknown
Part of the ceiling of the Sistine Chapel in Vatican City in Rome, showing the ceiling in relation to the other frescoes

Ceiling of the Villa Schutzenberger from Strasbourg, France, decorated with Art Nouveau ornamen

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  Ceiling of the Villa Schutzenberger from Strasbourg, France, decorated with Art Nouveau ornaments

- Painted ceiling in LiÃƒÆ’Ã‚Â¨ge, Belgium

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Painted ceiling in Liège, Belgium

- Traditional Chinese ceiling of Dayuan Renshou Temple at Taoyuan, Taiwan

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Traditional Chinese ceiling of Dayuan Renshou Temple at Taoyuan, Taiwan

- Dropped ceiling

Image not found or type unknown

Dropped ceiling

- Wooden beam ceiling

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Wooden beam ceiling

See also

[edit]

- Beam ceiling
- Hammerbeam roof
- Hollow-core slab
- Moulding (decorative)
- Popcorn ceiling
- Scottish Renaissance painted ceilings
- Tin ceiling
- Passive fire protection
- Fire test
- Hy-Rib

References

[edit]

1. **^** *"Casa de las Ratas 2/2/2003". Archived from the original on September 29, 2008. Retrieved September 14, 2008.*
2. **^** *Corky Binggeli (2011). Interior Graphic Standards: Student Edition. John Wiley & Sons. p. 220. ISBN 978-1-118-09935-3.*
3. **^** *Meyers-Levy, Joan; Zhu, Rui (Juliet) (August 2007). "The Influence of Ceiling Height: The Effect of Priming on the Type of Processing That People Use". Journal of Consumer Research.* ***34*** *(2): 174–186. doi:10.1086/519146. JSTOR 10.1086/519146. S2CID 16607244.*
4. **^** *Melvin, Jeremy (2006). …isme SÃƒâ€žÃ†â€™ ÎnÃƒË†Ã¢â‚¬Âºelegem Stilurile Arhitecturale (in Romanian). Enciclopedia RAO. p. 39. ISBN 973-717-075-X.*
5. **^** *Bresc-Bautier, Geneviève (2008). The Louvre, a Tale of a Palace. Musée du Louvre Éditions. p. 26. ISBN 978-2-7572-0177-0.*
6. **^** *Bresc-Bautier, Geneviève (2008). The Louvre, a Tale of a Palace. Musée du Louvre Éditions. p. 30. ISBN 978-2-7572-0177-0.*
7. **^** *Bresc-Bautier, Geneviève (2008). The Louvre, a Tale of a Palace. Musée du Louvre Éditions. p. 55. ISBN 978-2-7572-0177-0.*
8. **^** *Bresc-Bautier, Geneviève (2008). The Louvre, a Tale of a Palace. Musée du Louvre Éditions. p. 106. ISBN 978-2-7572-0177-0.*
9. **^** *Bresc-Bautier, Geneviève (2008). The Louvre, a Tale of a Palace. Musée du Louvre Éditions. p. 138. ISBN 978-2-7572-0177-0.*
10. **^** *Marinache, Oana (2015). Ernest Donaud - visul liniei (in Romanian). Editura Istoria Artei. p. 79. ISBN 978-606-94042-8-7.*

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- *"Ceiling" . New International Encyclopedia. 1904.*
- Merriam-Webster ceiling definition

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Rooms and spaces of a house

Shared rooms

- Bonus room
- Common room
- Den
- Dining room
- Family room
- Garret
- Great room
- Home cinema
- Kitchen
  - dirty kitchen
  - kitchenette
- Living room
- Gynaeceum
  - harem
- Andron
  - man cave
- Recreation room
  - billiard room
- Shrine
- Study
- Sunroom

Private rooms

- Bathroom
  - toilet
- Bedroom / Guest room
  - closet
- Bedsit / Miniflat
- Boudoir
- Cabinet
- Nursery

Spaces

- Atrium
- Balcony
- Breezeway
- Conversation pit
- Cubby-hole
- Deck
- Elevator
  - dumbwaiter
- Entryway/Genkan
- Fireplace
  - hearth
- Foyer
- Hall
- Hallway
- Inglenook
- Lanai
- Loft
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  - screened
  - sleeping
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- Terrace
- Veranda
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Technical, utility and storage	○ Attic ○ Basement ○ Carport ○ Cloakroom ○ Closet ○ Crawl space ○ Electrical room ○ Equipment room ○ Furnace room / Boiler room ○ Garage ○ Janitorial closet ○ Larder ○ Laundry room / Utility room / Storage room ○ Mechanical room / floor ○ Pantry ○ Root cellar ○ Semi-basement ○ Storm cellar / Safe room ○ Studio ○ Wardrobe ○ Wine cellar ○ Wiring closet ○ Workshop

Great house areas

- Antechamber
- Ballroom
- Kitchen-related
  - butler's pantry
  - buttery
  - saucery
  - scullery
  - spicery
  - still room
- Conservatory / Orangery
- Courtyard
- Drawing room
- Great chamber
- Great hall
- Library
- Long gallery
- Lumber room
- Parlour
- Sauna
- Servants' hall
- Servants' quarters
- Smoking room
- Solar
- State room
- Swimming pool
- Turret
- Undercroft

Other

- Furniture
- Hidden room
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- Multi-family residential
- Secondary suite
- Duplex
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- Semi-detached
- Townhouse
- Studio apartment

Architectural elements	○ Arch
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	○ Baluster
	○ Belt course
	○ Bressummer
	○ Ceiling
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	○ Column
	○ Cornice / Eaves
	○ Dome
	○ Door
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	○ Floor
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	  ○ Portal
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	○ Ornament
	○ Plumbing
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	○ Roof lantern
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	○ Vault
	○ Wall
	○ Window

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About soil compaction

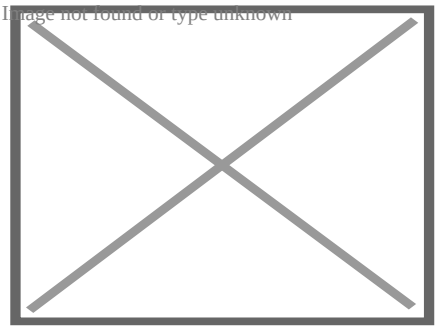
For soil compaction in agriculture and compaction effects on soil biology, see soil compaction (agriculture), for natural compaction on a geologic scale, see compaction (geology); for consolidation near the surface, see consolidation (soil).

In geotechnical engineering, **soil compaction** is the process in which stress applied to a soil causes densification as air is displaced from the pores between the soil grains. When stress is applied that causes densification due to water (or other liquid) being displaced from between the soil grains, then consolidation, not compaction, has occurred. Normally, compaction is the result of heavy machinery compressing the soil, but it can also occur due to the passage of, for example, animal feet.

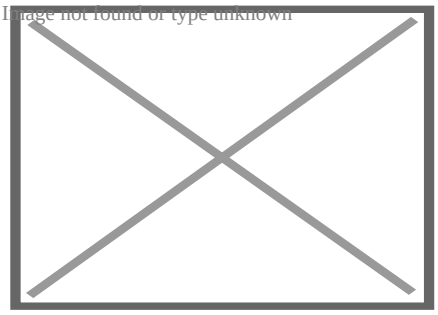
In soil science and agronomy, **soil compaction** is usually a combination of both engineering compaction and consolidation, so may occur due to a lack of water in the soil, the applied stress

being internal suction due to water evaporation[1] as well as due to passage of animal feet. Affected soils become less able to absorb rainfall, thus increasing runoff and erosion. Plants have difficulty in compacted soil because the mineral grains are pressed together, leaving little space for air and water, which are essential for root growth. Burrowing animals also find it a hostile environment, because the denser soil is more difficult to penetrate. The ability of a soil to recover from this type of compaction depends on climate, mineralogy and fauna. Soils with high shrink–swell capacity, such as vertisols, recover quickly from compaction where moisture conditions are variable (dry spells shrink the soil, causing it to crack). But clays such as kaolinite, which do not crack as they dry, cannot recover from compaction on their own unless they host ground-dwelling animals such as earthworms—the Cecil soil series is an example.

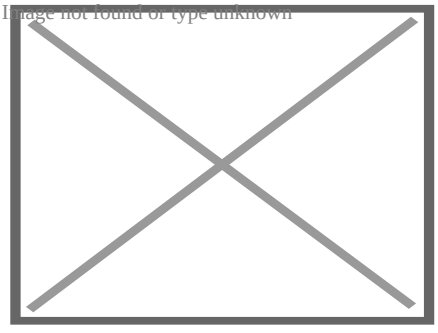
Before soils can be compacted in the field, some laboratory tests are required to determine their engineering properties. Among various properties, the maximum dry density and the optimum moisture content are vital and specify the required density to be compacted in the field.[2]



A 10 tonne excavator is here equipped with a narrow sheepsfoot roller to compact the fill over newly placed sewer pipe, forming a stable support for a new road surface.



A compactor/roller fitted with a sheepsfoot drum, operated by U.S. Navy Seabees



Vibrating roller with plain drum as used for compacting asphalt and granular soils

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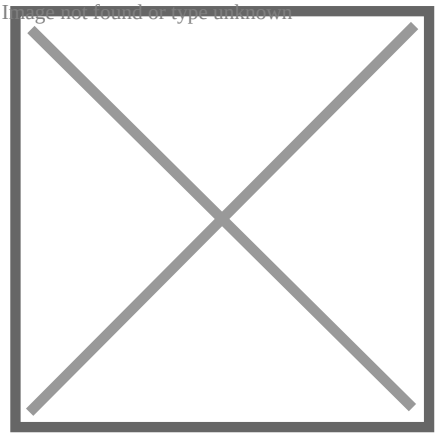


Vibratory rammer in action

In construction

[edit]

Soil compaction is a vital part of the construction process. It is used for support of structural entities such as building foundations, roadways, walkways, and earth retaining structures to name a few. For a given soil type certain properties may deem it more or less desirable to perform adequately for a particular circumstance. In general, the preselected soil should have adequate strength, be relatively incompressible so that future settlement is not significant, be stable against volume change as water content or other factors vary, be durable and safe against deterioration, and possess proper permeability.[3]

When an area is to be filled or backfilled the soil is placed in layers called lifts. The ability of the first fill layers to be properly compacted will depend on the condition of the natural material being covered. If unsuitable material is left in place and backfilled, it may compress over a long period under the weight of the earth fill, causing settlement cracks in the fill or in any structure supported by the fill.[4] In order to determine if the natural soil will support the first fill layers, an area can be proofrolled. Proofrolling consists of utilizing a piece of heavy construction equipment to roll across the fill site and watching for deflections to be revealed. These areas will be indicated by the development of rutting, pumping, or ground weaving.[5]

To ensure adequate soil compaction is achieved, project specifications will indicate the required soil density or degree of compaction that must be achieved. These specifications are generally recommended by a geotechnical engineer in a geotechnical engineering report.

The soil type—that is, grain-size distributions, shape of the soil grains, specific gravity of soil solids, and amount and type of clay minerals, present—has a great influence on the maximum dry unit weight and optimum moisture content.[6] It also has a great influence on how the materials should be compacted in given situations. Compaction is accomplished by use of heavy equipment. In sands and gravels, the equipment usually vibrates, to cause re-orientation of the soil particles into a denser configuration. In silts and clays, a sheepsfoot roller is frequently used, to create small zones of intense shearing, which drives air out of the soil.

Determination of adequate compaction is done by determining the in-situ density of the soil and comparing it to the maximum density determined by a laboratory test. The most commonly used laboratory test is called the Proctor compaction test and there are two different methods in obtaining the maximum density. They are the **standard Proctor** and **modified Proctor** tests; the modified Proctor is more commonly used. For small dams, the standard Proctor may still be the reference.[5]

While soil under structures and pavements needs to be compacted, it is important after construction to decompact areas to be landscaped so that vegetation can grow.

Compaction methods

[edit]

There are several means of achieving compaction of a material. Some are more appropriate for soil compaction than others, while some techniques are only suitable for particular soils or soils in particular conditions. Some are more suited to compaction of non-soil materials such as asphalt. Generally, those that can apply significant amounts of shear as well as compressive stress, are most effective.

The available techniques can be classified as:

1. Static – a large stress is slowly applied to the soil and then released.
2. Impact – the stress is applied by dropping a large mass onto the surface of the soil.
3. Vibrating – a stress is applied repeatedly and rapidly via a mechanically driven plate or hammer. Often combined with rolling compaction (see below).
4. Gyrating – a static stress is applied and maintained in one direction while the soil is a subjected to a gyratory motion about the axis of static loading. Limited to laboratory applications.
5. Rolling – a heavy cylinder is rolled over the surface of the soil. Commonly used on sports pitches. Roller-compactors are often fitted with vibratory devices to enhance their effectiveness.
6. Kneading – shear is applied by alternating movement in adjacent positions. An example, combined with rolling compaction, is the 'sheepsfoot' roller used in waste compaction at landfills.

The construction plant available to achieve compaction is extremely varied and is described elsewhere.

Test methods in laboratory

[edit]

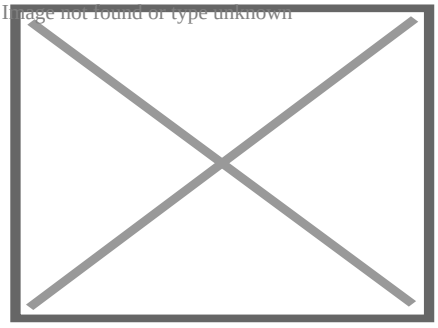
Soil compactors are used to perform test methods which cover laboratory compaction methods used to determine the relationship between molding water content and dry unit weight of soils.

Soil placed as engineering fill is compacted to a dense state to obtain satisfactory engineering properties such as, shear strength, compressibility, or permeability. In addition, foundation soils are often compacted to improve their engineering properties. Laboratory compaction tests provide the basis for determining the percent compaction and molding water content needed to achieve the required engineering properties, and for controlling construction to assure that the required compaction and water contents are achieved. Test methods such as EN 13286-2, EN 13286-47, ASTM D698, ASTM D1557, AASHTO T99, AASHTO T180, AASHTO T193, BS 1377:4 provide soil compaction testing procedures.[7]

See also

[edit]

- Soil compaction (agriculture)
- Soil degradation
- Compactor
- Earthwork
- Soil structure
- Aeration
- Shear strength (soil)



Multiquip RX1575 Rammax Sheepsfoot Trench Compaction Roller on the jobsite in San Diego, California

References

[edit]

1. **^** Soil compaction due to lack of water in soil
2. **^** *Jia, Xiaoyang; Hu, Wei; Polaczyk, Pawel; Gong, Hongren; Huang, Baoshan (2019). "Comparative Evaluation of Compacting Process for Base Materials using Lab Compaction Methods". Transportation Research Record: Journal of the Transportation Research Board.* ***2673*** *(4): 558–567. doi:10.1177/0361198119837953. ISSN 0361-1981.*
3. **^** *McCarthy, David F. (2007). Essentials of Soil Mechanics and Foundations. Upper Saddle River, NJ: Pearson Prentice Hall. p. 595. ISBN 978-0-13-114560-3.*
4. **^** *McCarthy, David F. (2007). Essentials of Soil Mechanics and Foundations. Upper Saddle River, NJ: Pearson Prentice Hall. pp. 601–602. ISBN 978-0-13-114560-3.*

5. ^ ***a b*** *McCarthy, David F. (2007). Essentials of Soil Mechanics and Foundations. Upper Saddle River, NJ: Pearson Prentice Hall. p. 602. ISBN 978-0-13-114560-3.*
6. **^** *Das, Braja M. (2002). Principles of Geotechnical Engineering. Pacific Grove, CA: Brooks/Cole. p. 105. ISBN 0-534-38742-X.*
7. **^** *"Automatic Soil Compactor". cooper.co.uk. Cooper Research Technology. Archived from the original on 27 August 2014. Retrieved 8 September 2014.*

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Geotechnical engineering

Offshore geotechnical engineering

Investigation and instrumentation

Field (*in situ*)

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

Soil	Types	○ Clay ○ Silt ○ Sand ○ Gravel ○ Peat ○ Loam ○ Loess
	Properties	○ Hydraulic conductivity ○ Water content ○ Void ratio ○ Bulk density ○ Thixotropy ○ Reynolds' dilatancy ○ Angle of repose ○ Friction angle ○ Cohesion ○ Porosity ○ Permeability ○ Specific storage ○ Shear strength ○ Sensitivity

Structures (Interaction)	Natural features	○ Topography ○ Vegetation ○ Terrain ○ Topsoil ○ Water table ○ Bedrock ○ Subgrade ○ Subsoil

	Earthworks	○ Shoring structures
		  ○ Retaining walls
		  ○ Gabion
		  ○ Ground freezing
		  ○ Mechanically stabilized earth
		  ○ Pressure grouting
		  ○ Slurry wall
		  ○ Soil nailing
		  ○ Tieback
		○ Land development
		○ Landfill
		○ Excavation
		○ Trench
		○ Embankment
		○ Cut
		○ Causeway
		○ Terracing
		○ Cut-and-cover
		○ Cut and fill
		○ Fill dirt
		○ Grading
		○ Land reclamation
		○ Track bed
		○ Erosion control
		○ Earth structure
		○ Expanded clay aggregate
		○ Crushed stone
		○ Geosynthetics
		  ○ Geotextile
		  ○ Geomembrane
		  ○ Geosynthetic clay liner
		  ○ Cellular confinement
		○ Infiltration

	Foundations	○ Shallow ○ Deep

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

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

Numerical analysis software	○ SEEP2D ○ STABL ○ SVFlux ○ SVSlope ○ UTEXAS ○ Plaxis	

Related fields

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

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Soil science

- History
- Index

Main fields

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

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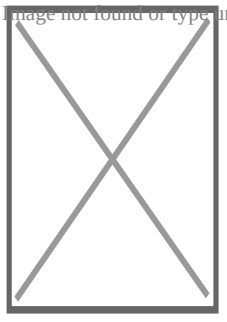

Soil topics

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

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- **t**
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Soil classification

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

Applications

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

Related fields

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

Societies, Initiatives

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

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

- Wikipedia:WikiProject Soil
- Category soil
- Category soil science
- List of soil scientists

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About Cook County

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Things To Do in Cook County

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Sand Ridge Nature Center

4.8 (96)

Photo

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River Trail Nature Center

4.6 (235)

Photo

Palmisano (Henry) Park

4.7 (1262)

Driving Directions in Cook County

Driving Directions From Palmisano (Henry) Park to

Driving Directions From Lake Katherine Nature Center and Botanic Gardens to

Driving Directions From Navy Pier to

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https://www.google.com/maps/dir/Palmisano+%28Henry%29+Park/United+Structural+Systems+of+Illinois%2C87.6490151,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-87.6490151!2d41.8429903!1m5!1m1!1sChIJ-wSxDtinD4gRiv4kY3RRh9U!2m2!1d-88.1396465!2d42.0637725!3e1

Reviews for

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Jeffery James

(5)

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

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Sarah McNeily

(5)

USS was excellent. They are honest, straightforward, trustworthy, and conscientious. They thoughtfully removed the flowers and flower bulbs to dig where they needed in the yard, replanted said flowers and spread the extra dirt to fill in an area of the yard. We've had other services from different companies and our yard was really a mess after. They kept the job site meticulously clean. The crew was on time and friendly. I'd recommend them any day! Thanks to Jessie and crew.

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Jim de Leon

(5)

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

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Chris Abplanalp

(5)

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

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Dave Kari

(5)

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

Examining Sloping Floors for Underlying SettlementView GBP

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- How Uneven Floors Reveal Deeper Foundation Concerns
- When Hairline Drywall Cracks Indicate Movement

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