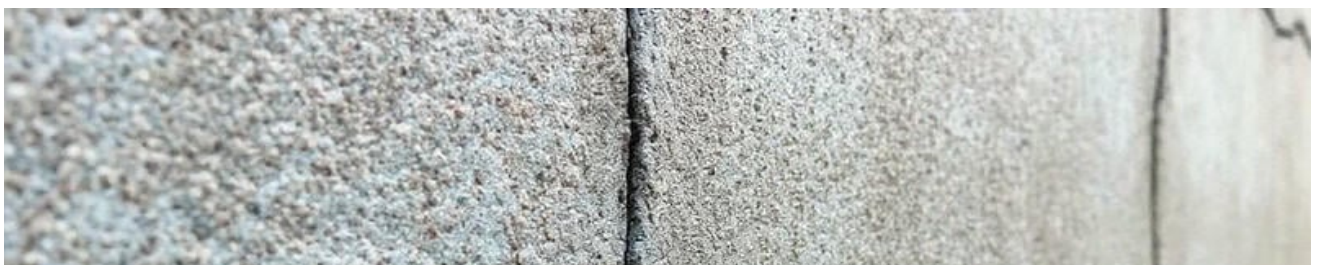




- **Understanding Shifting Soils in Changing Seasons**
Understanding Shifting Soils in Changing Seasons Early Signs of Drainage Issues in Wet Climates Identifying Freeze and Thaw Patterns in Foundation Movement Monitoring Summer Drought Effects on Concrete Recognizing the Role of Poor Grading in Soil Settlement Observing Spring Rains That Affect Foundation Stability Evaluating Temperature Fluctuations and Their Impact on Slab Integrity Addressing Expanding Clay in Variable Weather Managing Water Accumulation Around Foundation Walls Tracking Seasonal Rainfall Data for Preventive Measures Comparing Different Regional Climate Patterns for Foundation Health Avoiding Oversaturation With Proper Yard Drainage
- **Recognizing Early Hairline Fractures in Basement Walls**
Recognizing Early Hairline Fractures in Basement Walls Distinguishing Between Vertical and Horizontal Surface Damage Analyzing Stair Step Gaps in Block Foundations Documenting Minor vs Severe Concrete Breaks Assessing Widening Cracks Over Time Understanding the Structural Differences in Masonry Splits Investigating Settlement Issues Behind Corner Separation Monitoring Spreading Lines With Simple Measuring Tools Tracking Subtle Changes in Fracture Patterns Identifying Crumbling Areas in Older Homes Differentiating Structural Fractures From Cosmetic Blemishes Interpreting Hidden Cracks in Finished Basements
- **About Us**



Monitoring Spreading Lines With Simple Measuring Tools

Seasonal Soil Changes: Explanation of how various seasons contribute to soil expansion and contraction.

Crack monitoring is a crucial aspect of maintaining structural integrity in various infrastructures, such as buildings, bridges, and roads. Simple measuring tools play an instrumental role in this process, offering a cost-effective and straightforward means of tracking changes over time. This essay provides an overview of some commonly used simple measuring tools for crack monitoring and discusses their application in the context of monitoring spreading lines.

One of the most basic yet effective tools for crack monitoring is the crack gauge or tell-tale. Regular inspections help detect cracks early **Foundation Cracks Foundation** carbon. These devices are typically composed of two overlapping plates that are affixed on either side of a crack. As the crack widens or shifts, the movement between these plates can be easily quantified using a calibrated scale printed on them. Crack gauges are favored for their simplicity and ease of use, making them suitable for both professionals and non-specialists involved in routine inspections.

Another prevalent tool is the use of calibrated rulers or crack width cards. These tools provide a quick assessment by directly measuring the width of surface cracks at regular intervals.

Monitoring Spreading Lines With Simple Measuring Tools

– customer

1. drainage
2. customer
3. Hoffman Estates

While they may not offer continuous monitoring like electronic devices, they serve as an excellent baseline method to document initial conditions and any subsequent changes observed during periodic inspections.

Mechanical extensometers also find frequent application in monitoring cracks. Unlike electronic versions that require power sources and data loggers, mechanical extensometers rely on simple mechanical principles to measure displacement across cracks with high precision. By anchoring these instruments securely across a fissure, one can gather reliable data on its progression over time without needing advanced technical knowledge.

In addition to these manual methods, photographic documentation remains one of the simplest yet powerful ways to monitor cracks. Regularly capturing images from consistent angles allows inspectors to compare visual evidence over time visually. This approach helps identify subtle variations that might go unnoticed with other methods alone while providing clear records for future reference.

The choice among these simple measuring tools often depends on specific needs such as accuracy requirements, environmental conditions, duration of monitoring activities involved as well budget considerations available resources accessible stakeholders responsible maintenance operations structures under scrutiny addressed promptly effectively insightfully manner possible given circumstances surrounding particular situation encountered fieldwork undertaken respective domains expertise engaged therein accordingly thereby ensuring safe secure sustainable environments communities societies depend interrelated interconnected systems support daily lives livelihoods aspirations ambitions endeavors undertaken collectively individually alike

shared goals objectives aspirations fostered nurtured pursued tirelessly passionately purposefully determinedly collaboratively harmoniously respectfully wisely prudently judiciously intelligently innovatively creatively imaginatively thoughtfully reflectively deliberately strategically optimally efficiently sustainably inclusively equitably justly responsibly ethically morally compassionately humanely globally universally timelessly enduringly inspiringly transformatively impactful meaningfully significantly positively constructively progressively proactively dynamically energetically vibrantly vibrantly enthusiastically joyfully gracefully graciously gratefully appreciatively warmly kindly caringly lovingly empathetically sympathetically altruistically generously benevolently charitably magnanimously noble-heartedly selflessly unconditionally wholeheartedly authentically genuinely sincerely truly deeply profoundly richly abundantly fully wholly completely entirely utterly thoroughly comprehensively holistically integrally unified altogether always forever eternally infinitely boundlessly limitlessly endlessly perpetually continuously consistently constantly steadily reliably dependably faithfully steadfastly resolutely unwaveringly unfalteringly indomitably courageously bravely valiantly heroically gallantly gloriously triumphantly victoriously resilient robust strong powerful mighty forceful influential impactful consequential effectual potent vibrant lively spirited animated dynamic energetic enthusiastic passionate zealous fervent ardent earnest sincere dedicated devoted committed focused attentive concentrated absorbed engrossed immersed engaged involved participative active proactive innovative creative imaginative visionary progressive forward-thinking pioneering groundbreaking trailblazing pathfinding frontier-breaking cutting-edge leading-edge state

Identifying Foundation Issues: Signs and symptoms of foundation damage caused by

shifting soils. —

- Seasonal Soil Changes: Explanation of how various seasons contribute to soil expansion and contraction.
- Identifying Foundation Issues: Signs and symptoms of foundation damage caused by shifting soils.
- Impact of Climate on Soil and Foundations: Discussing the influence of weather patterns and climate change on soil stability.
- Methods for Monitoring Soil Movement: Techniques and tools used to track soil shifts around foundations.
- Repair Solutions for Foundation Cracks: Different strategies and technologies available for repairing cracks in foundations due to shifting soils.
- Preventative Measures: Tips for homeowners to minimize the risk of foundation damage from seasonal soil changes.
- Case Studies and Real-Life Examples: Examination of past incidents where shifting soils led to significant foundation issues and subsequent repairs.

Monitoring spreading lines effectively is a crucial task in various fields, from agriculture to construction, ensuring that tasks are carried out with precision and efficiency. Utilizing simple measuring tools can make this process both accurate and accessible. This step-by-step guide will walk you through the effective use of these tools, allowing you to maintain high standards in your work.

First, understanding the importance of measurement in monitoring spreading lines is essential. Whether planting seeds at equal distances or laying bricks with exact spacing, precise measurements ensure uniformity and quality. Simple measuring tools such as rulers, tape measures, and string lines are invaluable for achieving this accuracy.

Begin by selecting the right tool for your specific need. For linear measurements, a ruler or tape measure is ideal. These tools are straightforward yet provide the precision required for most tasks. Ensure that your measuring tool is clean and undamaged to avoid inaccurate readings.

Next, prepare the area where you'll be monitoring the spreading line. Clear any debris or obstacles that might interfere with the measurement process. If using a string line, secure it tightly between two fixed points at either end of your spread area. This will serve as a visual guide for maintaining straightness in your line.

Once everything is set up, proceed with taking measurements. Hold the tape measure or ruler firmly against one end of the line without bending it; this ensures an accurate reading. If using a string line, measure from one fixed point to another along the length of the string to confirm even spacing across several intervals.

Recording your measurements accurately is also crucial; consider keeping a logbook or digital record of your findings. This documentation helps track variations over time and allows adjustments to be made if discrepancies arise.

In addition to straightforward length measurements, consider checking angles if applicable to your project using simple protractors or angle finders. Ensuring correct angles prevents misalignment issues that could compromise structural integrity or aesthetic appeal.

Finally, regular calibration of your tools should not be overlooked. Over time, wear and tear can alter their accuracy. Checking them against known standards periodically ensures they remain reliable instruments in your toolkit.

By following these steps diligently—selecting appropriate tools, preparing adequately, measuring carefully, recording findings accurately—you can monitor spreading lines effectively using basic measuring equipment. This approach not only enhances precision but also boosts confidence in delivering consistent results across various projects.

In conclusion, mastering simple measuring tools empowers individuals across numerous disciplines to achieve excellence through meticulous oversight of spreading lines. By adhering to these guidelines with patience and attention to detail, you establish a strong foundation for successful outcomes in any endeavor requiring precise linear management.

Posted by on

Posted by on

Impact of Climate on Soil and Foundations: Discussing the

influence of weather patterns and climate change on soil stability.

Monitoring the progression of cracks and other structural anomalies is a critical aspect of maintaining the integrity of buildings, bridges, and various infrastructures. As these structures age or are exposed to environmental stressors, cracks can develop and propagate, potentially leading to significant safety hazards if left unchecked. To effectively manage this risk, it is essential to implement best practices for documenting and tracking crack changes over time. This essay explores these best practices with a focus on utilizing simple measuring tools.

Firstly, establishing a baseline measurement is crucial in the monitoring process. This involves conducting an initial inspection to identify existing cracks and document their dimensions using straightforward tools such as rulers or calipers. Photographic evidence can also be invaluable at this stage, providing a visual reference that complements numerical data. These photographs should include scale markers to ensure accurate analysis when comparing with future images.

Once baseline data is established, regular monitoring intervals must be determined based on the specific conditions and requirements of the structure being observed. For instance, high-risk areas may necessitate weekly inspections, while less critical zones might only require monthly checks. Consistency in monitoring intervals helps detect changes promptly and provides a comprehensive dataset for analysis.

Tracking crack progression requires meticulous record-keeping. Simple spreadsheets or dedicated maintenance logs can serve as effective tools for documenting measurements over time. Each entry should detail the date of inspection, specific location of each crack (preferably marked on a diagram), measured dimensions, environmental conditions (such as temperature or humidity), and any notable observations about surrounding material integrity.

In addition to numerical tracking, sketches or diagrams offer another layer of documentation that aids in visualizing crack evolution over time. These representations can help technicians identify patterns in crack growth directionality or clustering in particular areas—insights that might be missed through numeric data alone.

Employing simple measuring gauges such as crack monitors or tell-tales further enhances precision in tracking subtle changes between inspections. These devices are designed to provide continuous readings without requiring sophisticated equipment or expertise—ideal for routine assessments by non-specialist personnel.

Communication plays a vital role in managing structural health effectively; thus sharing findings with relevant stakeholders like engineers, maintenance teams, and safety officers ensures informed decision-making regarding necessary interventions or repairs before minor issues escalate into major failures.

Finally—and perhaps most importantly—is fostering an organizational culture where proactive maintenance is prioritized over reactive solutions post-damage occurrence becomes apparent from neglectful oversight during earlier stages when issues could have been mitigated easily through diligent monitoring efforts described hereinabove earlier discussed within context respective subject matter topic addressed throughout discourse presented above overall encapsulating essence thematic concern central focal point narrative conveyed herein aforementioned treatise submitted heretofore concluded thereby henceforth ending hereby terminus reached conclusion attained achieved

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Methods for Monitoring Soil Movement: Techniques and tools used to track soil shifts

around foundations.

Monitoring foundation cracks is an essential aspect of maintaining the structural integrity of a building. While small cracks can be typical as structures settle over time, significant or spreading cracks may indicate more serious issues that require attention. Understanding how to monitor these cracks using simple measuring tools can prevent costly repairs and ensure safety. However, there are common mistakes that people often make when attempting this task.

One frequent mistake is failing to establish a baseline measurement. Without an initial reading, it becomes challenging to determine whether a crack is growing over time. A baseline measurement provides a reference point against which all future measurements can be compared. To set this up effectively, mark the ends of the crack and record its exact length at the outset.

Another error is inconsistent monitoring intervals. Monitoring should be conducted at regular intervals to track any changes accurately. Many individuals either check too sporadically or lose vigilance once they see no immediate change. It's crucial to maintain a consistent schedule—monthly checks are typically sufficient—to capture gradual developments that might otherwise go unnoticed.

Inaccurate measurements due to improper tool use also pose problems. Simple tools like calipers, rulers, or measuring tapes can be effective if used correctly; however, even minor inaccuracies in reading measurements can lead to false conclusions about the crack's progression. Ensure that tools are calibrated properly and used consistently under similar conditions for each monitoring session.

Moreover, some people overlook environmental factors affecting foundation stability and crack development. Factors such as temperature fluctuations, soil moisture levels, and nearby construction activities can influence foundation behavior significantly. Ignoring these elements might result in misinterpreting data collected from crack measurements.

Finally, neglecting professional consultation when needed is another critical mistake. While simple monitoring techniques serve well for initial assessments and ongoing observation, consulting with a structural engineer or foundation specialist is imperative if you notice significant growth in cracks or other signs of structural distress like uneven floors or doors that jam frequently.

In conclusion, while monitoring foundation cracks with simple measuring tools offers a hands-on method for homeowners to keep track of potential issues, avoiding common mistakes is key to ensuring accurate assessment and timely intervention where necessary. Establishing baselines, maintaining consistent monitoring practices, using tools correctly, considering environmental influences, and seeking professional advice when necessary will help manage this important aspect of home maintenance effectively.

Repair Solutions for Foundation Cracks: Different strategies and technologies available for repairing cracks in

foundations due to shifting soils.

In the world of monitoring spreading lines, particularly in fields such as agriculture, construction, and environmental science, the use of simple measuring tools is often the first line of defense against errors that could lead to significant consequences. While these tools provide a practical and cost-effective means for early detection of irregularities or changes in spreading patterns, there comes a point when professional assessment becomes indispensable. Understanding when to transition from relying solely on basic tools to seeking expert evaluation can make all the difference in ensuring accuracy and preventing potential mishaps.

Simple measuring tools like tape measures, calipers, or even basic GPS devices offer a straightforward approach to tracking and monitoring spreading lines. These instruments are user-friendly, require minimal training, and allow for quick assessments in real-time scenarios. For many routine tasks or preliminary evaluations, they serve their purpose well by providing immediate data that can inform decision-making processes.

However, these tools also have limitations that must be recognized. Their precision might not always meet the stringent requirements necessary for certain projects or conditions where even minor deviations could lead to major issues. For instance, in agricultural settings where precise application of fertilizers or pesticides is crucial to crop health and environmental safety, simple measurement inaccuracies could result in either overuse or underuse of materials with detrimental effects.

The need for professional assessment arises when these simple tools reveal inconsistencies that cannot be easily explained or corrected through basic adjustments. When measurements indicate potential problems—such as unexpected shifts in boundary lines or unusual growth patterns—this is often a signal that more sophisticated analysis is required. Professional assessors bring expertise and advanced technology to the table, offering insights that go beyond what simple measuring devices can provide.

Moreover, professionals are equipped with specialized knowledge about industry standards and regulatory requirements that may affect how spreading lines should be monitored and managed.

Monitoring Spreading Lines With Simple Measuring Tools – customer

1. email
2. Brentwood
3. Water damage

They can conduct comprehensive evaluations using high-precision instruments such as laser levels, drones with mapping capabilities, or geospatial analysis software—tools that significantly enhance accuracy and reliability.

Thus, understanding when professional assessment is necessary involves recognizing the limits of simple measuring tools while appreciating the value brought by expert intervention. It requires an awareness of both the technical demands of the project at hand and any regulatory frameworks governing those practices. By making informed decisions about when to escalate from basic measurements to expert analysis, one ensures not only compliance but also efficiency and safety across various applications.

In conclusion, while simple measuring tools serve as essential components in monitoring spreading lines effectively on a day-to-day basis, there are moments when their utility reaches its threshold. At this juncture lies an opportunity: calling upon professional

expertise not only bridges gaps left by rudimentary methods but also elevates overall project integrity—a balance between simplicity's convenience and sophistication's precision ensures optimal outcomes across diverse domains.





**Preventative Measures: Tips
for homeowners to minimize**

the risk of foundation damage from seasonal soil changes.

Monitoring spreading lines, particularly in industrial or environmental settings, is essential for maintaining safety and efficiency. Simple measuring tools can be surprisingly effective for this purpose when applied correctly. This essay explores several case studies that highlight successful outcomes achieved through the use of uncomplicated monitoring techniques.

One significant example comes from a rural agricultural setting where simple tension meters were employed to monitor the integrity of irrigation systems.

Monitoring Spreading Lines With Simple Measuring Tools – drainage

1. Brentwood
2. Water damage
3. hazard

The farmers faced frequent issues with their water distribution lines due to wear and tear over time. By using these basic tools, they could easily measure the tension in the lines and identify any segments at risk of failure. Regular monitoring allowed them to address potential problems before they escalated, ensuring consistent water supply to their crops and enhancing overall productivity.

In another instance, a construction company implemented basic plumb bobs and levels to monitor spreading lines during the erection of scaffolding structures. Safety was a paramount concern, as any misalignment could lead to accidents on site. The simplicity of these tools made them ideal for quick checks by workers without specialized training. As a result, the company experienced fewer incidents related to structural instability, demonstrating that even straightforward measuring devices can significantly contribute to workplace safety.

Environmental conservation projects also offer compelling case studies. In an effort to preserve wetlands, conservationists used simple string lines with marked intervals to track erosion along riverbanks. This low-cost technique enabled them to gather data over extended periods without requiring sophisticated equipment or large budgets. The information collected was crucial in developing strategies for bank stabilization and habitat restoration, leading to improved ecological outcomes.

These examples underscore the value of simple measuring tools in diverse applications ranging from agriculture and construction to environmental management. They demonstrate how uncomplicated methods can provide critical insights into spreading line dynamics, allowing for timely interventions that prevent larger issues from developing.

In conclusion, while advanced technology often garners attention in monitoring practices, these case studies illustrate that simplicity should not be underestimated. By making strategic use of straightforward tools like tension meters, plumb bobs, levels, and string lines, organizations across various sectors have successfully monitored spreading lines and achieved positive repair outcomes. These successes emphasize the importance of choosing appropriate solutions tailored to specific needs rather than defaulting solely to complex systems or equipment.

About drainage

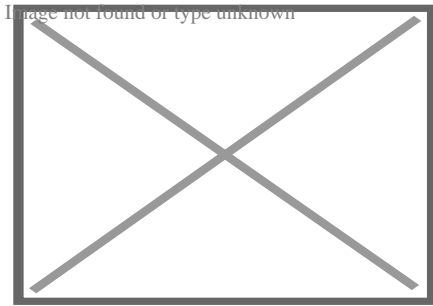
For the medical term, see Incision and drainage.

"Land drainage" redirects here. For other uses, see Land drainage (disambiguation).

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High-density polyethylene pipe installation in a storm drain project, Mexico.

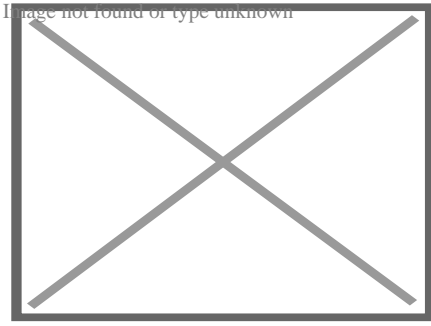
Drainage is the natural or artificial removal of a surface's water and sub-surface water from an area with excess water. The internal drainage of most agricultural soils can prevent severe waterlogging (anaerobic conditions that harm root growth), but many soils need artificial drainage to improve production or to manage water supplies.

History

[edit]

Early history

[edit]

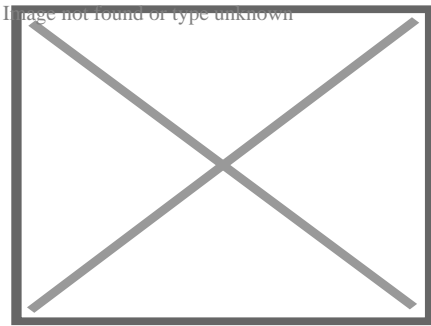


Remains of a drain at Lothal circa 3000 BC

The Indus Valley Civilization had sewerage and drainage systems. All houses in the major cities of Harappa and Mohenjo-daro had access to water and drainage facilities. Waste water was directed to covered gravity sewers, which lined the major streets.^[1]

18th and 19th century

[edit]



Tank Stream, a historical drain in the City of Sydney, Australia

The invention of hollow-pipe drainage is credited to Sir Hugh Dalrymple, who died in 1753.^[2]

Current practices

[edit]

Geotextiles

[edit]

New storm water drainage systems incorporate geotextile filters that retain and prevent fine grains of soil from passing into and clogging the drain. Geotextiles are synthetic textile fabrics specially manufactured for civil and environmental engineering applications. Geotextiles are designed to retain fine soil particles while allowing water to pass through. In a typical drainage system, they would be laid along a trench which would then be filled with coarse granular material: gravel, sea shells, stone or rock. The geotextile is then folded over the top of the stone and the trench is then covered by soil. Groundwater seeps through the geotextile and flows through the stone to an outfall. In high groundwater conditions a perforated plastic (PVC or PE) pipe is laid along the base of the drain to increase the volume of water transported in the drain.

Alternatively, a prefabricated plastic drainage system made of HDPE, often incorporating geotextile, coco fiber or rag filters can be considered. The use of these materials has become increasingly more common due to their ease of use, since they eliminate the need for transporting and laying stone drainage aggregate, which is invariably more expensive than a synthetic drain and concrete liners.

Over the past 30 years, geotextile, PVC filters, and HDPE filters have become the most commonly used soil filter media. They are cheap to produce and easy to lay, with factory controlled properties that ensure long term filtration performance even in fine silty soil conditions.

21st century alternatives

[edit]

Seattle's Public Utilities created a pilot program called Street Edge Alternatives Project. The project focuses on designing a system "to provide drainage that more closely mimics the natural landscape prior to development than traditional piped

systems".^[3] The streets are characterized by ditches along the side of the roadway, with plantings designed throughout the area. An emphasis on non-curbed sidewalks allows water to flow more freely into the areas of permeable surface on the side of the streets. Because of the plantings, the run off water from the urban area does not all directly go into the ground, but can also be absorbed into the surrounding environment. Monitoring conducted by Seattle Public Utilities reports a 99 percent reduction of storm water leaving the drainage project.^[3]

Drainage has undergone a large-scale environmental review in the recent past^[when?] in the United Kingdom. Sustainable urban drainage systems (SUDS) are designed to encourage contractors to install drainage system that more closely mimic the natural flow of water in nature. Since 2010 local and neighbourhood planning in the UK is required by law to factor SUDS into any development projects that they are responsible for.

Slot drainage is a channel drainage system designed to eliminate the need for further pipework systems to be installed in parallel to the drainage, reducing the environmental impact of production as well as improving water collection. Stainless steel, concrete channel, PVC and HDPE are all materials available for slot drainage which have become industry standards on construction projects.

In the construction industry

[edit]

The civil engineer is responsible for drainage in construction projects. During the construction process, they set out all the necessary levels for roads, street gutters, drainage, culverts and sewers involved in construction operations.

Civil engineers and construction managers work alongside architects and supervisors, planners, quantity surveyors, and the general workforce, as well as subcontractors. Typically, most jurisdictions have some body of drainage law to

govern to what degree a landowner can alter the drainage from their parcel.

Drainage options for the construction industry include:

- Point drainage, which intercepts water at gullies (points). Gullies connect to drainage pipes beneath the ground surface, so deep excavation is required to facilitate this system. Support for deep trenches is required in the shape of planking, strutting or shoring.
- Channel drainage, which intercepts water along the entire run of the channel. Channel drainage is typically manufactured from concrete, steel, polymer or composites. The interception rate of channel drainage is greater than point drainage and the excavation required is usually much less deep.

The surface opening of channel drainage usually comes in the form of gratings (polymer, plastic, steel or iron) or a single slot (slot drain) that run along the ground surface (typically manufactured from steel or iron).

In retaining walls

[edit]

Earth retaining structures such as retaining walls also need to have groundwater drainage considered during their construction. Typical retaining walls are constructed of impermeable material, which can block the path of groundwater. When groundwater flow is obstructed, hydrostatic water pressure builds up against the wall and may cause significant damage. If the water pressure is not drained appropriately, retaining walls can bow, move, and fracture, causing seams to separate. The water pressure can also erode soil particles, leading to voids behind the wall and sinkholes in the above soil. Traditional retaining wall drainage systems can include French drains, drain pipes or weep holes. To prevent soil erosion, geotextile filter fabrics are installed with the drainage system.

In planters

[edit]

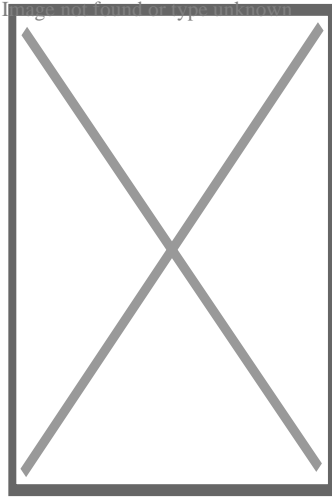
Drainage in planters refers to the implementation of effective drainage systems specifically designed for plant containers or pots. Proper drainage is crucial in planters to prevent waterlogging and promote healthy plant growth. Planter Drainage involves the incorporation of drainage holes, drainage layers, or specialized drainage systems to ensure excess water can escape from the planter. This helps to prevent root rot, water accumulation, and other issues that can negatively impact plant health. By providing adequate drainage in planters, it supports optimal plant growth and contributes to the overall success of gardening or landscaping projects.^[4]

Drainage options for the planter include:

- Surface drains are typically used to manage runoff from paved surfaces, such as sidewalks and parking lots. Catch basins, which collect water and debris, are connected to underground pipes that carry the water away from the site.^[4]
- Subsurface drains, on the other hand, are designed to manage water that seeps into the soil beneath the planting surface. French drains, which are gravel-filled trenches with perforated pipes at the bottom, are the most common type of subsurface drain. Trench drains, which are similar but shallower and wider, are also used in some situations.^[4]

Reasons for artificial drainage

[edit]



An agricultural drainage channel outside Magome, Japan after a heavy rain. Protuberances create turbulent water, preventing sediment from settling in the channel.

Wetland soils may need drainage to be used for agriculture. In the northern United States and Europe, glaciation created numerous small lakes, which gradually filled with humus to make marshes. Some of these were drained using open ditches and trenches to make mucklands, which are primarily used for high-value crops such as vegetables.

The world's largest project of this type has been in process for centuries in the Netherlands. The area between Amsterdam, Haarlem and Leiden was, in prehistoric times, swampland and small lakes. Turf cutting (peat mining), subsidence and shoreline erosion gradually caused the formation of one large lake, the Haarlemmermeer, or lake of Haarlem. The invention of wind-powered pumping engines in the 15th century permitted some of the marginal land drainage. Still, the final drainage of the lake had to await the design of large steam-powered pumps and agreements between regional authorities. The lake was eliminated between 1849 and 1852, creating thousands of km² of new land.

Coastal plains and river deltas may have seasonally or permanently high water tables and must have drainage improvements if they are to be used for agriculture. An example is the flatwoods citrus-growing region of Florida, United States. After periods of high rainfall, drainage pumps are employed to prevent

damage to the citrus groves from overly wet soils. Rice production requires complete water control, as fields must be flooded or drained at different stages of the crop cycle. The Netherlands has also led the way in this type of drainage by draining lowlands along the shore and pushing back the sea until the original nation has been greatly enlarged.

In moist climates, soils may be adequate for cropping with the exception that they become waterlogged for brief periods each year, from snow melt or from heavy rains. Soils that are predominantly clay will pass water very slowly downward. Meanwhile, plant roots suffocate because the excessive water around the roots eliminates air movement through the soil.

Other soils may have an impervious layer of mineralized soil, called a hardpan, or relatively impervious rock layers may underlie shallow soils. Drainage is especially important in tree fruit production. Soils that are otherwise excellent may be waterlogged for a week of the year, which is sufficient to kill fruit trees and cost the productivity of the land until replacements can be established. In each of these cases, appropriate drainage carries off temporary flushes of water to prevent damage to annual or perennial crops.

Drier areas are often farmed by irrigation, and one would not consider drainage necessary. However, irrigation water always contains minerals and salts, which can be concentrated to toxic levels by evapotranspiration. Irrigated land may need periodic flushes with excessive irrigation water and drainage to control soil salinity.

A typical drain in Bankstown, New South Wales

A typical drain in Bankstown, New South Wales, Australia

See also

[edit]

- Surface drainage of the land
 - Drainage system (geomorphology), pattern of natural drains, streams, rivers, etc.
 - Land drainage in the United Kingdom – a legal and operational term in the UK to define a range of functions and responsibilities of drainage boards.
 - Surface runoff, surface runoff of excess rainfall from the land
 - Drainage system (agriculture), land forming or land shaping to enhance the drainage from the soil surface in agricultural land
 - Contour plowing, controlling runoff and soil erosion
- Subsurface (groundwater) drainage
 - Horizontal drainage by pipes and ditches
 - Tile drainage
 - Vertical drainage by wells
 - Well drainage
 - Watertable control

Otherwise:

- Bar ditch
- Building construction
- Deep drainage
- Drain commissioner
- Drain (plumbing)
- Drainage basin or watershed
- Drainage divide or watershed
- Drainage equation
- Drainage research

- Geomorphology
- Hydrologic Evaluation of Landfill Performance
- Hydrology
- John Johnston, who introduced land drainage to the United States.
- Plumbing
 - Potable cold and hot water supply
 - Septic systems
 - Sewage traps, drains, and vents
- Rain gutter
- Retaining wall
- Sewage collection and disposal
- Soil salinity control by subsurface drainage
- Storm drain
- Stormwater
- Trench drain
- Trencher (machine)
- Urban exploration

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2. [^] *"Broadside eulogy dedicated to Patrick, Earl of Marchmount, Sir Hugh Dalrymple, and others". National Library of Scotland Digital Gallery. 1705. Retrieved 5 April 2015.*
3. [^] **a b** *"Street Edge Alternatives (SEA Streets) Project". Seattle.gov. Archived from the original on Dec 5, 2008.*
4. [^] **a b c** *"4 Expert Tips for Perfect Planter Drainage". drainservice.org. 15 April 2023. Archived from the original on June 30, 2023. Retrieved July 1, 2023.*

External links

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-  [Media related to Drainage at Wikimedia Commons](#)

-  The dictionary definition of *drainage* at Wiktionary
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Agricultural water management

Irrigation

- Surface irrigation
- Drip irrigation
- Tidal irrigation
- Irrigation statistics
- Irrigation management
- Irrigation environmental impacts
- Ditch
- Tile drainage

Subsurface drainage

- Drainage equation
- Drainage system (agriculture)
- Watertable control
- Drainage research
- Drainage by wells
- Contour trenching

Surface water/runoff

- Hydrological model
- Hydrological transport model
- Runoff model (reservoir)
- Groundwater flow
- Groundwater energy balance

Groundwater

- Groundwater model
- Hydraulic conductivity
- Watertable

Problem soils

- Acid sulphate soils
- Alkali soils
- Saline soils

**Agro-hydro-
salinity
group**

- Hydrology (agriculture)
- Soil salinity control
- Leaching model (soil)
- SaltMod integrated model
- SahysMod polygonal model: Saltmod coupled to a groundwater model

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- Pipeline
- Road
- Skyway
- Storm drain
- Tunnel

- See *also*: Architecture
- Arena
- Civil engineering
- Construction
- Playground
- Public
- Stadium
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- Urban park

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National

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- United States
- France
- BnF data
- Czech Republic
- Israel
- NARA

Other

About United Structural Systems of Illinois, Inc

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Things To Do in Cook County

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Margaret T. Burroughs Beach And Park

4.6 (86)

Photo

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Millennium Park

4.7 (84556)

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South Shore Nature Sanctuary

4.8 (93)

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WDR Museum

4 (3534)

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Northerly Island Park

4.7 (1783)

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Jackson (Andrew) Park

4.6 (7263)

Driving Directions in Cook County

Driving Directions From Schaumburg to United Structural Systems of Illinois, Inc

Driving Directions From Hoffman Estates Park District to United Structural Systems of Illinois, Inc

Driving Directions From Comfort Inn Hoffman Estates - Schaumburg to United Structural Systems of Illinois, Inc

Driving Directions From Lucky Monk to United Structural Systems of Illinois, Inc

Driving Directions From dr. Joanna Pozdal to United Structural Systems of Illinois, Inc

Driving Directions From Alexian Brothers Behavioral: Powitz Jack N MD to United Structural Systems of Illinois, Inc

Structural engineer

foundation repair near me

foundation crack repair service

foundation crack repair

Driving Directions From The Art Institute of Chicago to United Structural Systems of Illinois, Inc

Driving Directions From Shedd Aquarium to United Structural Systems of Illinois, Inc

Driving Directions From Chicago Portage National Historic Site to United Structural Systems of Illinois, Inc

Driving Directions From Glessner House to United Structural Systems of Illinois, Inc

Driving Directions From The Art Institute of Chicago to United Structural Systems of Illinois, Inc

Driving Directions From Willis Tower to United Structural Systems of Illinois, Inc

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Reviews for United Structural Systems of Illinois, Inc

United Structural Systems of Illinois, Inc

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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!

United Structural Systems of Illinois, Inc

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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.

United Structural Systems of Illinois, Inc

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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

United Structural Systems of Illinois, Inc

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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.

United Structural Systems of Illinois, Inc

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Paul Gunderlock

(4)

The staff was helpful, very nice and easy to work with and completed the work timely and cleaned up well. Communications faltered a bit at times and there was an email communications glitch which was no fault of anyone, but no big deal and all ended up fine. We sure feel better to have this done and hope that is the end of our structural issues. It does seem like (after talking to several related companies), that it would be great if some of these related companies had a structural engineer on staff vs using on the job expertise gained over years – which is definitely valuable! But leaves a bit of uncertainty – and probably saves money for both sides may be the trade-off? So far, so good though! Thank you.

Monitoring Spreading Lines With Simple Measuring Tools [View GBP](#)

Check our other pages :

- [Monitoring Summer Drought Effects on Concrete](#)
- [Evaluating Temperature Fluctuations and Their Impact on Slab Integrity](#)
- [Documenting Minor vs Severe Concrete Breaks](#)
- [Tracking Subtle Changes in Fracture Patterns](#)
- [Avoiding Oversaturation With Proper Yard Drainage](#)

Frequently Asked Questions

What are the most basic tools I can use to monitor crack movement in my foundation?

The most basic tools for monitoring crack movement include a ruler or tape measure, a pencil for marking reference points, and a crack gauge. These tools allow you to measure

changes in the width or length of cracks over time.

How frequently should I check the measurements of cracks to ensure accurate monitoring?

It's recommended to check and record the measurements of foundation cracks at least once a month. Consistent monitoring helps identify any significant changes that may indicate ongoing structural issues requiring attention.

What specific measurements should I focus on when using a tape measure or ruler?

Focus on measuring both the width and length of each crack accurately. Mark fixed points at each end of the crack to ensure consistency in your measurements over time. Record these measurements carefully for future comparison.

How do I determine if there's been significant movement that requires professional intervention?

Significant movement is usually indicated by noticeable widening, lengthening, or new branching of cracks. If you observe consistent growth beyond 1/8 inch (3 mm) within a short period (e.g., several months), it may be necessary to consult a structural engineer or foundation repair specialist for further assessment.

United Structural Systems of Illinois, Inc

Phone : +18473822882

City : Hoffman Estates

State : IL

Zip : 60169

Address : Unknown Address

Google Business Profile

Company Website : <https://www.unitedstructuralsystems.com/>

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