I'm not a robot

We are going to take you along on a project and cover how to build a French drain DIY. We're going to show you that not all drain systems are created equal and why our blueprint will get you the highest results in yard drainage. 7 Steps to Build a French Drain DIY If you're considering installing your own French drain, follow these 7 simple steps with tips from the pros to build your French drain DIY. 1. Cut Sod and Dig Trench The first step for building your French drain is cutting the sod before digging. Set the sod cutter to the deepest notch to cut out a thick piece of sod and all of the roots. Make sure to keep the sod in order and intact. Notice how we set our sod up in the picture above. This method allows us to place the sod back over the completed French drain like pieces in a puzzle. Once you have the sod cut, you can start digging. If you plan to dig by hand as a DIYer, it's easiest to dig in the spring. That's when the soil is the most saturated and your shovel will cut through the clay like a knife cutting through butter. 2. Haul the Dirt Away (Don't Put it Back in the Trench) One really important detail to building the very best French drain system is to remove all that poor percolating soil. You do not want to put any of that soil back in the trench. Too many times, a trench is dug for a French drain system and a pipe is put at the bottom of it. Some stone covers the pipe and then the dirt is pushed right back in. You don't want to do that. You want to get rid of all that dirt. It'll only slow down the drainage process and compromise your French drain system. For this reason, we do not use a trencher. We use a track hoe or mini excavator. We scoop the dirt out and we're putting it right into a skid loader bucket to run it to a dump truck, to get it hauled off the site. 3. Line Trench with Non-Woven Geotextile fabric When lining your trench with fabric, you want to make sure you're using a really good non-woven geotextile filter fabric. We recommend using a heavy-duty drainage fabric that has been double punched. That's different from a weed barrier and literally designed to be a long-lasting solution that helps leech water away from your system. Double punched non-woven geotextile fabric will add to the cost of your build, but it's necessary to make sure your system works at the highest efficiency. The fact is a good drainage fabric comes at a cost and there's labor involved in installing it. A lot of contractors fatten their bottom line by eliminating this labor process at the expense of a good French drain system. As you build a French drain DIY, it's important to build your system with the highest quality materials. Buy French Drain Fabric 4. Lay Pipe on Fabric in the Bottom of Trench You may be wondering why you need to lay your pipe at the bottom of the trench. This placement allows all of the water to drain out of your system. Moving that water away from your French drain is key because trees and shrubs sniff out water and roots will fill your system. Once that happens, your French drain has an expiration date. Another problem you'll run into if you don't lay your drainpipe at the bottom of the trench is that the soil will granulate over time. Those granules will work their way into the voids of the stone. Once the stone is plugged up, you're not going to get any water in the pipe. If the drainage aggregate that's assisting the water to the pipe ends up plugged, you're done. However, the pipe doesn't have to be plugged. Setting up your French drain correctly can prevent the issues that take out a French drain system. Buy Corrugated Pipe for French Drains 5. Cover with Stone like Round Rock Now that you've prepped your French drain and placed the drainpipe, your system is ready for the stone. You'll want to use an inch and a half round rock. If you can't find round rock, you can use an inch and a half crushed rock. Just make sure that crushed rock is screened. 6.Don't Forget to Burrito Wrap The next step is to burrito wrap your French drain system. It's important to note that you shouldn't overlap the filter fabric. The fabric is designed to move 140 gallons of water per minute. A heavy overlap of fabric could slow that movement of water and in turn, slow down your system. Instead, make sure to pull the fabric together and avoid wrapping extra filter fabric around it. This ensures you keep dirt out of your French drain without slowing the flow of water throughout the drain. 7. Place the Sod You Saved Earlier Lastly, place the sod that you saved earlier over your French drain system. You'll want to put them down one by one to make sure they fit snuggly like pieces of a puzzle. Remember, the sod will be heavy because you cut them as thick as possible. The roots and dirt from the sod are more than enough to cover your French drain. In fact, adding any more dirt will only slow down your system. Instead, haul any remaining dirt you dug out of your yard. What to Expect After You Build a French Drain DIY Now, as long as you have an automatic irrigation system, you can grow turf grass right on top of your system. The roots will grow through the fabric and any surface water will drain into the French drain through capillary action. The large inlets and high octane eight-slots allow for mineral buildup. Where other perforated pipes would be plugged and compromised, this will keep working for decades. That's how you build a French drain DIY with the highest results in yard drainage. Next Tutorial: Materials Needed to Bury Downspouts Away from the House Build a French Drain DIY and More with Tips from the Experts French Drain Man has a plethora of tips about yard drainage solutions. With over 35 years of experience in the drainage industry, French Drain Man uses only the best techniques and materials. They've crafted purpose-built drainage supplies that provide low-maintenance solutions to ensure your system lasts decades. Along with providing the best materials and tips for DIYers, French Drain Man provides the best professional drainage services to homeowners. If you want it done right the first time, give French Drain Man a call at 248-505-3065! The best and most effective way of removing water that gathers in an area and causes damp or flooding problems is to use a French drain pipe system. This simple yet highly effective way of moving waterlogged or water build up from an area where it is causing problems to another area where it can be safely dispersed was invented by Henry French, a farmer from Massachusetts in 1859. A French drain is a type of drainage system that is used to remove excess water from an area. It typically consists of a trench that is filled with gravel or other porous material, and a perforated pipe that is buried in the trench. The perforations in the pipe allow water to seep into the trench, where it is absorbed by the gravel and then carried away by the pipe to a suitable drainage area. French drains are commonly used in landscaping and other applications where excess water needs to be removed from an area. They are particularly useful for areas that are prone to standing water or flooding, as they can help to prevent water damage and erosion. French drains are also often used in gardens and other areas where the soil is not well-suited to growing plants, as they can provide a way for excess water to drain away and prevent the plants from becoming waterlogged. To install a French drain, the user first digs a trench that is deep enough to accommodate the pipe and the gravel. The pipe is then placed in the trench, and the gravel is added on top of it. The trench is then covered with soil, and the excess water from the area flows into the trench through the perforations in the pipe. The water is then absorbed by the gravel and carried away by the pipe to a suitable drainage area. French drains are excellent for anyone who needs to remove excess water from an area. They are simple to install, and they can help to prevent water damage and erosion, as well as improve the drainage of soil in gardens and other areas. This flexible, expandable, landscaping French drain pipe system is an ideal solution to basement, garage, yard, and garden, water build-up problem areas. The Best French Drain Pipes Reviewed Click below to jump to each section Best Flexible Perforated Drain Pipe: Flex-Drain 52012 Best Flexible Perforated Drain Pipe Flex-Drain 52012 This American made perforated ground water drainage pipe is the ideal choice to solve problem areas where water gathers and causes ground flooding problems. The flexible, expandable 4 inch perforated drain pipe, comes to you ready to expand from 4 ft up to 50 ft in length. Other sizes are available ranging from 4 inch X 12 ft, (expands from 15 inches up to 12 ft) and there's also a 4 inch X 25 ft option too, so there's plenty of length variations to choose from to help you get the right flexible perforated french drain pipe system for your needs. This particular perforated drain pipe is an ideal solution for solving your water drainage problems. Care should be taken to ensure that the surrounding soil where the flexible drain pipe is to be laid is coarse and won't cause a situation where the perforated holes in the pipe become clogged by soil, tree roots, plant roots, or other debris. If clogging could be a problem then check out our next review for the solution. This system exceeds all applicable ASTM standards and has a 30 percent higher load bearing rating over corrugated pipe, providing that you install the flexible drainage pipe in accordance with your local building codes. And if you do just that, then it's guaranteed not to split, break, or crack. Compatible with most existing 3 and 4 inch corrugated pipe and 4 inch PVC systems, and of course, you may need to connect this pipe to other accessories such as adaptors, couplers, connectors, or catch basins, to enable the water to drain away efficiently, if you do then check out our section on drainage accessories. What We Like: Great Expansion Range – This flexible landscaping drain pipe expands from 4 ft up to 50 ft. Other expansion sizes are available. Quality Product – Made in the USA this system exceeds all applicable ASTM Standards and is guaranteed not to split, break, or crack, providing that you have installed it in accordance with your local building codes. High Load Value – A 30 percent higher load bearing rating over corrugated pipe. Check the latest price on Amazon. Best Flexible Perforated Drain Pipe With Filter Sock: Flex-Drain 52003 Best Flexible Perforated Drain Pipe With Filter Sock Flex-Drain 52003 This flexible, expandable perforated drain pipe with filter sock is the ideal choice for removing ground water from areas with fine soil or from ground that is likely to cause clogging of none filtered drainage pipe systems. The filter sock covers the entire length of the drain pipe, this ensures that the drainage holes in the flexible pipe do not become clogged with soil, small stones or other small pieces of debris. This flexible expandable french drainage pipe system from Flex Drain is sized at 4 inches X 50 feet, so you can expand it from 4 ft right up to 50 ft. There is also a 4 inch X 25 ft option available (Flex Drain 51510) if that is more to the size that you are looking for. Exceeding all applicable ASTM standards this flexible drainage system has a 30 percent higher load bearing rating compared to corrugated pipe. To achieve the standards and ratings quoted then you must ensure that you install the flexible drainage pipe in accordance with your local building codes. This filter sock covered drain pipe is guaranteed not to split, break, or crack as long as it is installed correctly. As with our previous review, this waste water drainage system is compatible with most existing 3 and 4 inch corrugated pipe and 4 inch PVC systems. Helping you to drain standing water away might mean that you'll need to connect this pipe to other accessories like adaptors, couplers, connectors, or catch basins to enable the water to drain away efficiently. If you do require additional items then check out our section on drainage accessories. What We Like: Stops Clogging – The filter sock covering the flexible perforated drain pipe, is the perfect solution to stop the clogging effect caused by fine soil and other small debris. Quality Drainage Pipe – Exceeds all ASTM standards. Strong Drainage System – Install this system correctly and this system will give a 30 percent higher load bearing value over standard corrugated drain pipe. Check the latest price on Amazon. Best Flexible Solid Drain Pipe: Flex-Drain 52011 Best Flexible Solid Drain Pipe Flex-Drain 52011 With this flexible non perforated, expandable drainage system you have a solution to move problematic standing water to another area for draining purposes. This 4 inch X 50 ft solid drain pipe is expandable from 4 ft right up to 50 ft. Other size options are available, a 4 inch X 12 ft and also a 4 inch X 25 ft version may be more suited to your particular requirements. Suitable for internal and external use where water gathers and won't drain away, also for areas where you want to divert water away from, or to. Meeting and exceeding all applicable ASTM standards this flexible solid drainage system has a 30 percent higher load bearing rating if you were to compare it to a corrugated pipe drainage system. This standing waste water drainage system is compatible with most existing 3 inch and 4 inch corrugated pipe systems and 4 inch PVC systems. If you need to connect this pipe to other accessories like adaptors, couplers, connectors, or catch basins to help the water to drain away, then you'll be happy to know that there are plenty of additional parts available to help you out. Check out our section on drainage accessories if you need additional parts to complete your drainage job. What We Like: Water Moving Solution – The ideal solution for moving water from problem areas. Internal And External Use – Perfect for inside or outside use. Made In The US – Quality product and made in the USA. Check the latest price on Amazon. Drainage Accessories Large 16 X 16 Catch Basin With Sediment Basket And Cast Iron Grate Standartpark 16 X 16 Large Catch Basin Featuring a cast iron grate, this 16 X 16 inch water catch basin incorporates a sediment basket to catch debris and in doing so stops the drainage pipe system from becoming blocked. Offering a wide array of drainage pipe connections, 4, 6, 8, and 12 inch PVC or pipe punch outs. Square Catch Basin Drainage Kit with Green Grate Storm Drain FSD-090-K 9″ This 9 inch X 9 inch rainwater catch basin features a green colored grate, with easy drain pipe connection for water removal or dispersal. NDS CATCH BASIN Kit Atrium Grate NDS 4″ Atrium Grate, Black Allows water to flow freely into the drainage system, but ensures debris is kept out. Fits on to 4 inch drain pipe and perfect for areas prone to debris build up such as mulch areas, planter beds and window wells. Are French drains effective? French drains are extremely effective and are an excellent choice for removing and dispersing water from problem areas where water builds up. French drains are much more effective at removing water than standard surface drains because French drains are capable of collecting water through their entire length. This is possible thanks to the design of having holes running the entire length of the drain pipe, whereas with a typical surface drain water is only collected at one point. Can you cover a French drain with dirt? French drains can be covered with dirt providing that the french drain pipe is covered with a filter sock, and, or installed in such a way with washed gravel preventing dirt from penetrating through to the small holes in the French drain pipe system. Care should be taken to ensure that the gravel itself is not going to cause a clogging problem. Can French drains be cleaned out? French drains can be cleaned out. Most French drains are used with a water catch basin and these basins often incorporate a basket or debris trap below the surface drain gate. For French drains that don't have any catch basins, it's still possible to clean the drain pipe out at the surface water entry position with either a garden hose, pressure washer, or a sewer snake for a heavily clogged pipe. Where do French drains drain the water to? French drains are intended to move surface water or groundwater from one area to another. For example, you may have a problem with water gathering and causing home foundation or basement damp or flooding problems. With a French drain installed the water will be channeled away from the foundations or basement and dispersed in another area where it will soak away without causing any further problems. Download Article Tools, materials, zoning laws, oh my! Everything you need to know about laying drainage pipes Download Article Are you finding water pooling on your lawn? Or maybe there's a bit too much moisture for comfort around your home's foundation. A French drain system could be the solution. It's a simple yet versatile bit of landscaping that can be used to drain standing water from problem areas in your yard or around your home. It's essentially a buried pipe that leads water down a slope. The construction process is fairly simple; it just requires a little preparation and planning, the right tools and materials, and a little DIY know-how. We'll show you how to plan, dig, install, and maintain a French drain to keep your property free of any troublesome moisture. Identify any municipal pipes or cables on your property, and plan your drain to flow downhill and away from any structures. Dig a trench and line it with landscape fabric. Add gravel to the bottom of the trench before laying down your drain pipe. Cover the drain pipe in gravel, then fill in the rest of the trench with the displaced dirt you dug up before. 1 Scout for any buried pipes or electrical lines. Before building a French drain in a specific area, locate all underground cables, pipes or other installations that could make digging dangerous in that particular spot. Check with your municipal or public agencies to make sure you have a free area to construct your French drain.[1] If you're in the U.S., call the 811 "Call before you dig" hotline, which will connect you to your local call center. An agent will come to your site within a few days to flag any underground hazards like municipal pipes or cables. Also be sure to plan your drainage route so it runs at least 1 m (3.3 ft) from any walls or fencing, and try to avoid any posts, shrubs or tree roots. 2 Call your municipality to check for zoning or runoff regulations. Some municipalities have rules on whether you can build or even dig on your own property, and may require that you obtain a permit before you build any sort of drainage. Speaking with city and/or county officials and working together is in your best interest for this project—better to know you're in the clear now than get in legal trouble later.[2] Also establish whether or not your French drain would cause hardship for neighbors in terms of groundwater runoff. Running excess water onto someone else's land could lead to a potential lawsuit. Ideally the French drain runs off in a relatively unused section of land, away from any buildings, into sandy soil which allows water to pass through easily. Advertisement 3 Mark the dig site on a downhill slope. French drains are essentially buried pipes that use gravity to carry water in the soil away from the problem area. Mark out the path of your proposed drain with landscaping paint, starting it at the problem area, routing it downhill, and ending it away from structures and heavily-trafficked zones. If no natural downward slope exists, create a slope by digging progressively deeper as you work your way along the trench.[3] Sink a couple of stakes on far ends of the line and connect them with a string. Use a [Use-a-Level| leveling tool] to measure the grade of the string and slope—ideally, it'll have a downhill grade of at least 1%, or a drop of 0.125 in (0.32 cm) per 1 ft (0.30 m). Never plan your French drain to drain into a neighboring property; it's almost always illegal, and can pose numerous zoning issues and dangers, regardless. Optionally, hire a surveyor or other professional to help pin down the right dimensions and placement for your drain. Advertisement 1 Dig a trench about 10–12 in (25–30 cm) wide and 1.5 ft (0.46 m) deep. Use a spade to dig a trench wide enough to accommodate the drain pipe, plus a bit of room on either side for gravel. Follow your marked route, taking care to avoid any flagged municipal pipes or cables. Enlist the help of a family member, friend, or neighbor if possible.[4] Periodically check the depth of the trench as you dig to ensure it consistently slopes downwards. The ditch depth and grade doesn't have to be perfect, but ensure that there are no "bellies" in your drainage, or areas in which water can pool and be held. You might also rent a trencher from a hardware store, which is a specialized tool for digging trenches, or use a backhoe, but we recommend using a simple spade, since it's the most precise and controllable tool. 2 Line the trench with water-permeable landscape fabric. Roll out your landscape fabric over the trench, pressing it down to fill the contours, then temporarily pin it in place with nails or landscape fabric pins. Ensure the fabric extends about 1 ft (0.30 m) out of either side of the trench.[5] 3 Add 2 or 3 inches (5.1 or 7.6 cm) of gravel to the bottom of the trench. Shovel the gravel on top of the landscaping fabric. The gravel acts as a foundation for the drainage pipe, keeping it securely in place, and also blocking soil from clogging the pipe. 4 Lay drainage pipe with the perforations facing down, and cover it with gravel. Lay the drainage pipe atop the gravel along the entire length of the trench—ensuring that the perforations face down improves drainage. Then, cover the pipe with gravel, leaving about 2–3 in (5.1–7.6 cm) of room between the top of the gravel and the lip of the trench.[6] Place a cap on the upper end of the pipe to prevent any soil or gravel from entering the pipe and clogging it downstream. Alternatively, begin the length of pipe with a downspout catch to more effectively drain water from a targeted area. 5 Fold the landscaping fabric over the gravel and fill the trench with soil. Cover the gravel with the excess landscaping fabric. Fill in the rest of the trench with the displaced soil.[7] At this point, finish the trench in whatever way you like: lay sod on top, reseed it with grass, or even cover it with a layer of large, decorative stones. The bottom end of the pipe will remain below ground, but alternatively, install a drain emitter for easy, above-ground access. Simply attach the emitter to the end of the pipe, and bury it so that its top surface is level with the ground. Advertisement 1 Reinstall the French yard drain every 5-7 years. Your landscaping shifts over time, and the pipe, gravel, and landscaping fabric will deteriorate over the years. In order to keep the drain functioning properly, reinstall it every so often, or whenever it appears to stop working, like when water begins to pool in areas above the pipe, where it ought to be draining.[8] 2 Keep heavy machinery and livestock off the French drain. Heavy machinery like cars, tractors, or riding lawn mowers can compress the soil and the drain pipe, damaging the French drain and causing clogs or other faults.[9] Leave indicators of the drain's location for reference, like landscaping flags or lawn decor, to remind you and others of the drain's location. 3 Create a T-branch at the end of the drain for better water dispersal. A T-branch is simply another section of pipe that connects to the main pipe at a perpendicular angle. Dig an additional perpendicular trench at the bottom of the initial trench, and use a drain pipe connector to join the pipes.[10] With this setup, the water forks off into the T-branch and is dispersed over a wider area, preventing pooling at the bottom of the French drain. Advertisement Add New Question Question Why are the holes of the pipe facing down? Wouldn't you want the water to filter into the pipe from the top holes and drain out from the bottom? No. The water travels to the lowest point in the gravel, which is beneath your pipe. If you put the holes on top, they would probably catch some of the draining water, but most of the water (considering the width of the trench vs. the holes) would actually begin pooling below the pipe. With the holes on the bottom, they are closer to the lowest point and therefore will catch more water because gravity will compel it toward the path of least resistance (in the pipe). Question What kind of gravel should be used? Washed gravel. The fine sand/clay can clog up your freshly installed French drain. Question How do I unplug a stopped-up drain? Water is coming into the garage! You'll need to find access points to the drain. Ideall,y both through the drain in your garage floor and wherever it drains to: the street, sewer, or drywell. You'll probably want to rent the smallest motorized snake (a roto-rooter type machine that has a couple small bits: paddle and screw) you can find to avoid damaging the pipes/drain tiles. Use the snake to go into the drain-line from every entrance you can. The more junctions, the less likely you'll clean it completely. Older homes will often have broken french drain pipes, either from age (with terra cotta or iron), or mechanical breakage (roots, digging, etc.). See more answers Ask a Question Advertisement Thanks Advertisement Thanks for reading our article! If you'd like to learn more about french drains, check out our in-depth interview with David Balkan. This article was co-authored by David Balkan and by wikiHow staff writer, Luke Smith, MFA. David Balkan is a Professional Plumber, CEO of Balkan Sewer and Water Main Service, and President of Balkan Sewer and Drain Cleaning. As a hands-on owner of these companies for over 40 years, David is knowledgeable about water service lines, sewers, and drain line issues. David is a Committee Chairman of the Master Plumbers Council and has sat on the Executive Committee of the Sub Surface Plumbers Association of New York for over 30 years. His knowledge and solution-oriented approach contributed to Balkan Sewer and Water Main Service being the largest and most trusted service in New York City and the recipient of the 2017 Angie's List Super Service Award. This article has been viewed 1,458,393 times. Co-authors: 24 Updated: January 31, 2025 Views: 1,458,393 Categories: Drains Print Send fan mail to authors Thanks to all authors for creating a page that has been read 1,458,393 times. "I just had a French Drain install. I am sick to my soul that I did not Google this article prior to having it done. It was very informative. I just found out that the company I hired scammed me by not following all the steps or telling me the proper steps, charged me more than necessary and used inferior product, a flexible perforated pipe instead of a plastic pipe as originally stated. Within a year's time the pipe they used will be blocked with weeds and if it is snaked will be destroyed. "..." more Share your story Sub-surface drainage system A diagram of a traditional French drain A French drain[1] (also known by other names including trench drain, blind drain,[1] rubble drain,[1] and rock drain[1]) is a trench filled with gravel or rock, or both, with or without a perforated pipe that redirects surface water and groundwater away from an area. The perforated pipe is called a weeping tile (also called a drain tile or perimeter tile[2]). When the pipe is draining, it "weeps", or exudes liquids. It was named during a time period when drainpipes were made from terracotta tiles. French drains are primarily used to prevent ground and surface water from penetrating or damaging building foundations and as an alternative to open ditches or storm sewers for streets and highways. Alternatively, French drains may be used to distribute water, such as a septic drain field at the outlet of a typical septic tank sewage treatment system. French drains are also used behind retaining walls to relieve ground water pressure. The earliest forms of French drains were simple ditches that were pitched from a high area to a lower one and filled with gravel. These may have been invented in France,[3] but Henry Flagg French (1813–1885) of Concord, Massachusetts, a lawyer and Assistant U.S. Treasury Secretary, described and popularized them[4] in Farm Drainage (1859).[5] French's own drains were made of sections of ordinary roofing tile that were laid with a 1⁄8 in (0.32 cm) gap in between the sections to admit water. Later, specialized drain tiles were designed with perforations. To prevent clogging, the size of the gravel varied from coarse in the center to fine on the outside and was selected contingent on the gradation of the surrounding soil. The sizes of particles were critical to prevent the surrounding soil from washing into the pores, i. e., voids between the particles of gravel and thereby clogging the drain. The later development of geotextiles greatly simplified this technique. Subsurface drainage systems have been used for centuries. They have many forms that are similar in design and function to the traditional French drain. Highway French drain under construction Coarse washed stone base in place Filter fabric over pipe A wye joining a perforated and a solid corrugated pipe to a buried solid outlet Ditches are dug manually or by a trencher. An inclination of 1 in 100 to 1 in 200 is typical. Lining the bottom of the ditch with clay or plastic pipe increases the volume of water that can flow through the drain. Modern French drain systems are made of perforated pipe, for example weeping tile surrounded by sand or gravel, and geotextile or landscaping textile. Landscaping textiles prevent migration of the drainage material and prevent soil and roots from entering and clogging the pipe. The perforated pipe provides a minor subterranean volume of storage for water, yet the prime purpose is drainage of the area along the full length of the pipe via its perforations and to discharge any surplus water at its terminus. The direction of percolation depends on the relative conditions within and without the pipe. Variations of French drains include: Curtain drain This form comprises a perforated pipe surrounded by gravel. It is similar to the traditional French drain, the gravel or aggregate material of which extends to the surface of the ground and is uncovered to permit collection of water, except that a curtain drain does not extend to the surface and instead is covered by soil, in which turf grass or other vegetation may be planted, so that the drain is concealed. Filter drain This form drains groundwater. Collector drain This form combines drainage of groundwater and interception of surface water or run off water, and may connect into the underground pipes so as to rapidly divert surface water; it preferably has a cleanable filter to avoid migration of surface debris to the subterranean area that would clog the pipes. Interceptor drain Dispersal drain This form distributes waste water that a septic tank emits. Fin drain This form comprises a subterranean perforated pipe from which extends perpendicularly upward along its length a thin vertical section, denominated the "fin", of aggregate material for drainage to the pipe. The length is 200 mm (7.9 in). This form is less expensive to build than a traditional French drain. A French drain can end, i.e., open at a downhill slope, dry well, or rain garden where plants absorb and hold the drained water. This is useful if city water systems or other wastewater areas are unavailable. Cross-section view showing French drain with two underground pipes Depending on the expected level and volume of rainwater or runoff, French drains can be widened or also fitted on two or three underground drainpipes. Multiple pipes also provide for redundancy, in case one pipe becomes overfilled or clogged by a rupture or defect in the piping. A pipe might become overfilled if it is on a side of the drain which receives a much larger volume of water, such as one pipe being closer to an uphill slope, or closer to a roofline that drips near the French drain. When a pipe becomes overfilled, water can seep sideways into a parallel pipe, as a form of load-balancing, so that neither pipe becomes slowed by air bubbles, as might happen in a full-pipe with no upper air space. Filters are made from permeable materials, typically non-woven fabric, may include sand and gravel, placed around the drainage pipe or envelope to restrict migration ofnon-colloidal particles[clarification needed] from the surrounding soils. Envelopes are the gravel, stone, rock, or surrounding pipe. These are permeable materials placed around pipe or drainage products to improve flow conditions in the area immediately around the drain and for improving bedding and structural backfill conditions. This section possibly contains original research. Please improve it by verifying the claims made and adding inline citations. Statements consisting only of original research should be removed. (February 2013) (Learn how and when to remove this message) French drains are often installed around a home foundation in two ways: Buried around the external side of the foundation wall Installed underneath the basement floor on the inside perimeter of the basement[6] In most homes, an external French drain or drain tile is installed around the foundation walls before the soil is backfilled. It is laid on the bottom of the excavated area, and a layer of stone is laid on top. A filter fabric is often laid on top of the stone to keep fine sediments and particles from entering. Once the drain is installed, the area is backfilled, and the system is left alone until it clogs.[7] French drains can be used in farmers' fields for the tile drainage of waterlogged fields.[2] Such fields are called "tiled". Weeping tiles can be used anywhere that soil needs to be drained. Weeping tiles are used for the opposite reason in septic drain fields for septic tanks. Clarified sewage from the septic tank is fed into weeping tiles buried shallowly in the drain field. The weeping tile spreads the liquid throughout the drain field. In the US, municipalities may require permits for building drainage systems as federal law requires water sent to storm drains to be free of specific contaminants and sediment.[8] In the UK, local authorities may have specific requirements for the outfall of a French drain into a ditch or watercourse. Dry well – Pit to allow surface waste water to drain Infiltration basin – Form of engineered sump or percolation pond Percolation trench – Drainage structure Rubble trench foundation – Foundation construction approach Sustainable drainage system – Designed to reduce the potential impact of development Tile drainage – Form of agricultural drainage system ^ a b c d "Drain Francais". 8 October 2009. ^ a b Gradwell, John B., and Malcolm Welch. Technology--shaping our world. South Holland, Ill.: Goodheart-Willcox, 1991. 116. Print. ^ Schultz, Bart. Guidelines on the Construction of Horizontal Subsurface Drainage Systems. New Delhi, India: International Commission on Irrigation and Drainage, 1990. Page 186. ^ "What's So French About French Drains and Other Musings on Concord Agriculture". Archived from the original on 2006-09-06. Retrieved 2006-09-08. ^ French, Henry F. (1859). Farm Drainage: The Principles, Processes, and Effects of Draining Land with Stones, Wood, Plows, and Open Ditches, and Especially with Tiles. New York, New York: Orange Judd and Company. ^ "Pros and Cons to Installing a French Drain for Your Home". www.thearchitectsguide.com. 2020-10-15. Retrieved 2023-10-08. ^ "French Drain Services – Drainage Systems Installation and Repair". Archived from the original on 2016-10-02. Retrieved 2016-08-15. ^ "Storm Water Management Fact Sheet Non-Storm Water Discharges to Storm Sewers" publ 1999 by United States Environmental Protection Agency. Available from nepis.epa.gov (search "Storm Water Management Fact Sheet Non-Storm Water Discharges to Storm Sewers") retrieved Feb 2022 UK Highways Agency (2001). Design Manual for Roads and Bridges, Volume 4: Drainage (Part 5: Determination of Pipe Bedding Combinations for Drainage Works) (PDF) (Publication HA 40/01 ed.). Stationery Office. p. B1–2. Archived from the original (PDF) on 2006-10-09. Retrieved 2006-08-23. Non-residential French drains are regulated in the U.S. – US EPA How to Install French Drains (Archived 2016-10-15 at the Wayback Machine) What are French drains? Why are they called French drains? Retrieved from " Download Article Tools, materials, zoning laws, oh my! Everything you need to know about laying drainage pipes Download Article Are you finding water pooling on your lawn? Or maybe there's a bit too much moisture for comfort around your home's foundation. A French drain system could be the solution. It's a simple yet versatile bit of landscaping that can be used to drain standing water from problem areas in your yard or around your home. It's essentially a buried pipe that leads water down a slope. The construction process is fairly simple; it just requires a little preparation and planning, the right tools and materials, and a little DIY know-how. We'll show you how to plan, dig, install, and maintain a French drain to keep your property free of any troublesome moisture. Identify any municipal pipes or cables on your property, and plan your drain to flow downhill and away from any structures. Dig a trench and line it with landscape fabric. Add gravel to the bottom of the trench before laying down your drain pipe. Cover the drain pipe in gravel, then fill in the rest of the trench with the displaced dirt you dug up before. 1 Scout for any buried pipes or electrical lines. Before building a French drain in a specific area, locate all underground cables, pipes or other installations that could make digging dangerous in that particular spot. Check with your municipal or public agencies to make sure you have a free area to construct your French drain.[1] If you're in the U.S., call the 811 "Call before you dig" hotline, which will connect you to your local call center. An agent will come to your site within a few days to flag any underground hazards like municipal pipes or cables. Also be sure to plan your drainage route so it runs at least 1 m (3.3 ft) from any walls or fencing, and try to avoid any posts, shrubs or tree roots. 2 Call your municipality to check for zoning or runoff regulations. Some municipalities have rules on whether you can build or even dig on your own property, and may require that you obtain a permit before you build any sort of drainage. Speaking with city and/or county officials and working together is in your best interest for this project—better to know you're in the clear now than get in legal trouble later.[2] Also establish whether or not your French drain would cause hardship for neighbors in terms of groundwater runoff. Running excess water onto someone else's land could lead to a potential lawsuit. Ideally the French drain runs off in a relatively unused section of land, away from any buildings, into sandy soil which allows water to pass through easily. Advertisement 3 Mark the dig site on a downhill slope. French drains are essentially buried pipes that use gravity to carry water in the soil away from the problem area. Mark out the path of your proposed drain with landscaping paint, starting it at the problem area, routing it downhill, and ending it away from structures and heavily-trafficked zones. If no natural downward slope exists, create a slope by digging progressively deeper as you work your way along the trench.[3] Sink a couple of stakes on far ends of the line and connect them with a string. Use a [Use-a-Level| leveling tool] to measure the grade of the string and slope—ideally, it'll have a downhill grade of at least 1%, or a drop of 0.125 in (0.32 cm) per 1 ft (0.30 m). Never plan your French drain to drain into a neighboring property; it's almost always illegal, and can pose numerous zoning issues and dangers, regardless. Optionally, hire a surveyor or other professional to help pin down the right dimensions and placement for your drain. Advertisement 1 Dig a trench about 10–12 in (25–30 cm) wide and 1.5 ft (0.46 m) deep. Use a spade to dig a trench wide enough to accommodate the drain pipe, plus a bit of room on either side for gravel. Follow your marked route, taking care to avoid any flagged municipal pipes or cables. Enlist the help of a family member, friend, or neighbor if possible.[4] Periodically check the depth of the trench as you dig to ensure it consistently slopes downwards. The ditch depth and grade doesn't have to be perfect, but ensure that there are no "bellies" in your drainage, or areas in which water can pool and be held. You might also rent a trencher from a hardware store, which is a specialized tool for digging trenches, or use a backhoe, but we recommend using a simple spade, since it's the most precise and controllable tool. 2 Line the trench with water-permeable landscape fabric. Roll out your landscape fabric over the trench, pressing it down to fill the contours, then temporarily pin it in place with nails or landscape fabric pins. Ensure the fabric extends about 1 ft (0.30 m) out of either side of the trench.[5] 3 Add 2 or 3 inches (5.1 or 7.6 cm) of gravel to the bottom of the trench. Shovel the gravel on top of the landscaping fabric. The gravel acts as a foundation for the drainage pipe, keeping it securely in place, and also blocking soil from clogging the pipe. 4 Lay drainage pipe with the perforations facing down, and cover it with gravel. Lay the drainage pipe atop the gravel along the entire length of the trench—ensuring that the perforations face down improves drainage. Then, cover the pipe with gravel, leaving about 2–3 in (5.1–7.6 cm) of room between the top of the gravel and the lip of the trench.[6] Place a cap on the upper end of the pipe to prevent any soil or gravel from entering the pipe and clogging it downstream. Alternatively, begin the length of pipe with a downspout catch to more effectively drain water from a targeted area. 5 Fold the landscaping fabric over the gravel and fill the trench with soil. Cover the gravel with the excess landscaping fabric. Fill in the rest of the trench with the displaced soil.[7] At this point, finish the trench in whatever way you like: lay sod on top, reseed it with grass, or even cover it with a layer of large, decorative stones. The bottom end of the pipe will remain below ground, but alternatively, install a drain emitter for easy, above-ground access. Simply attach the emitter to the end of the pipe, and bury it so that its top surface is level with the ground. Advertisement 1 Reinstall the French yard drain every 5-7 years. Your landscaping shifts over time, and the pipe, gravel, and landscaping fabric will deteriorate over the years. In order to keep the drain functioning properly, reinstall it every so often, or whenever it appears to stop working, like when water begins to pool in areas above the pipe, where it ought to be draining.[8] 2 Keep heavy machinery and livestock off the French drain. Heavy machinery like cars, tractors, or riding lawn mowers can compress the soil and the drain pipe, damaging the French drain and causing clogs or other faults.[9] Leave indicators of the drain's location for reference, like landscaping flags or lawn decor, to remind you and others of the drain's location. 3 Create a T-branch at the end of the drain for better water dispersal. A T-branch is simply another section of pipe that connects to the main pipe at a perpendicular angle. Dig an additional perpendicular trench at the bottom of the initial trench, and use a drain pipe connector to join the pipes.[10] With this setup, the water forks off into the T-branch and is dispersed over a wider area, preventing pooling at the bottom of the French drain. Advertisement Add New Question Question Why are the holes of the pipe facing down? Wouldn't you want the water to filter into the pipe from the top holes and drain out from the bottom? No. The water travels to the lowest point in the gravel, which is beneath your pipe. If you put the holes on top, they would probably catch some of the draining water, but most of the water (considering the width of the trench vs. the holes) would actually begin pooling below the pipe. With the holes on the bottom, they are closer to the lowest point and therefore will catch more water because gravity will compel it toward the path of least resistance (in the pipe). Question What kind of gravel should be used? Washed gravel. The fine sand/clay can clog up your freshly installed French drain. Question How do I unplug a stopped-up drain? Water is coming into the garage! You'll need to find access points to the drain. Ideall,y both through the drain in your garage floor and wherever it drains to: the street, sewer, or drywell. You'll probably want to rent the smallest motorized snake (a roto-rooter type machine that has a couple small bits: paddle and screw) you can find to avoid damaging the pipes/drain tiles. Use the snake to go into the drain-line from every entrance you can. The more junctions, the less likely you'll clean it completely. Older homes will often have broken french drain pipes, either from age (with terra cotta or iron), or mechanical breakage (roots, digging, etc.). See more answers Ask a Question Advertisement Thanks Advertisement Thanks for reading our article! If you'd like to learn more about french drains, check out our in-depth interview with David Balkan. This article was co-authored by David Balkan and by wikiHow staff writer, Luke Smith, MFA. David Balkan is a Professional Plumber, CEO of Balkan Sewer and Water Main Service, and President of Balkan Sewer and Drain Cleaning. As a hands-on owner of these companies for over 40 years, David is knowledgeable about water service lines, sewers, and drain line issues. David is a Committee Chairman of the Master Plumbers Council and has sat on the Executive Committee of the Sub Surface Plumbers Association of New York for over 30 years. His knowledge and solution-oriented approach contributed to Balkan Sewer and Water Main Service being the largest and most trusted service in New York City and the recipient of the 2017 Angie's List Super Service Award. This article has been viewed 1,458,393 times. Co-authors: 24 Updated: January 31, 2025 Views: 1,458,393 Categories: Drains Print Send fan mail to authors Thanks to all authors for creating a page that has been read 1,458,393 times. "I just had a French Drain install. I am sick to my soul that I did not Google this article prior to having it done. It was very informative. I just found out that the company I hired scammed me by not following all the steps or telling me the proper steps, charged more than necessary and used inferior product, a flexible perforated pipe instead of a plastic pipe as originally stated. Within a year's time the pipe they used will be blocked with weeds and if it is snaked will be destroyed. "..." more Share your story Credit: ItchySan / Getty Images One of the most common fixes for poor drainage is to add dirt and slope it away from the foundation of your house. Before trying any other DIY drainage method, this should always be the first to consider—it's effective but can also be a lot of work as a DIY project. Sloping the grade isn't as simple as tossing down some dirt and smoothing it with the back of the shovel. Make sure there's a minimum of 4 inches between the slope and the bottom of the siding. Bagged topsoil and mulch aren't the best for grading soil because they're permeable and may wash away. Instead, you should use a harder, more clay-like soil that packs tightly and helps you better sculpt that slope. Credit: Eric Audras / Getty Images Hardscaping materials, like concrete and asphalt, are great for patios or driveways but can sometimes divert water in the wrong direction. If any concrete or asphalt slabs are tilted toward the house, water can cascade to your foundation. Replace hardscape materials with crushed gravel or pea gravel to encourage even drainage. This is a labor-intensive but affordable DIY project. Credit: