

French Drains

French Drains are simple subsurface drainage trenches that collect and move subsurface drainage to a desired location, preferably to another stormwater control measure such as a rain garden or berm and swale complex. These drains are an option for removing excess water in unwanted areas. They are commonly used in Western North Carolina to reduce water from around the foundation of a building and its basement (if applicable). In simplicity, a French drain is a trench filled with gravel and a perforated pipe at the bottom.

Advantages

- Removes moisture from unwanted locations to desired locations
- Subsurface (unseen)

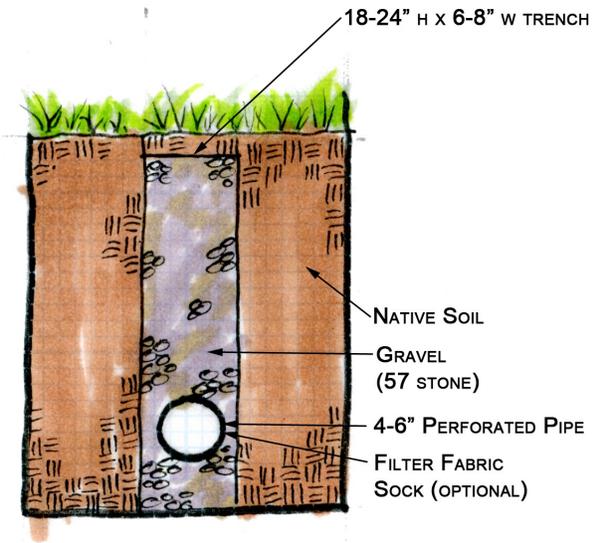
Disadvantages

- Can unnoticeably clog over time
- Typically linear
- Dependant on slope of drainage area



French drain daylighting onto a pile of gravel. Source: HGTV.

French Drains



Materials

- Shovel
- Mattock
- 6" or 4" Perforated pipe; length will vary based on site
- Standard gravel (#57 stone)
- Filter fabric pipe sock or wrap (recommended)
- Landscaping cover
- Stones for outfall (optional)

Design Considerations

- The location of the excess moisture and the location the pipe will daylight (reach the surface). At this point, the water is concentrated and needs to be dispersed appropriately.
- Linking the French drain to a stormwater feature can mitigate the concentrated flow.
- The shape of the land around the area of excess moisture. Is the property sloping towards the foundation of a building? Is there a natural depression?
- Drains located adjacent to the foundation should be placed at a minimum of 2 feet out from the foundation.

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Locating the French Drain

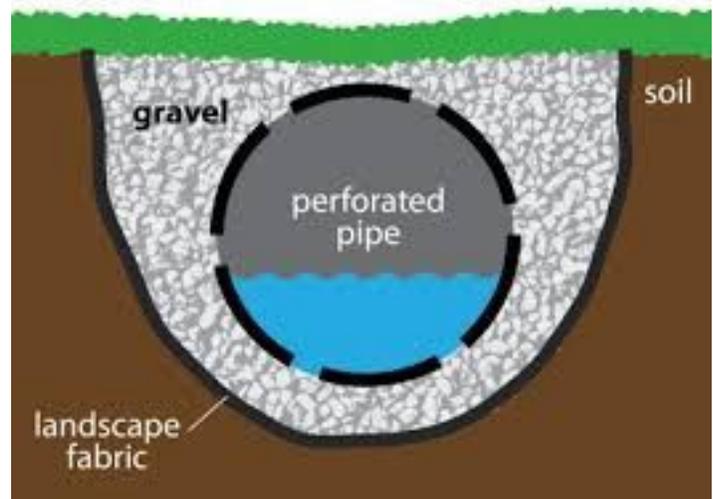
Your site analysis will help in locating the French drain. Make sure to **CALL 8-1-1** to locate all utility lines so you can route your drain to avoid these elements if possible. If a utility line must be crossed contact the service provider for assistance in placing the perforated pipe below the utility and add a PVC or other buffering sheath to protect the utility line. In some cases, like with gas lines, the utility company will need to be hired to do this. Avoiding them is the best option.

If your basement or foundation is wet after rain events, then a French drain would be necessary along the foundation where the moisture is apparent. These locations are usually higher in elevation than the basement floor or foundation. It would be useful to extend the drain past current areas of wetness to cover any additional drainage during larger storm events. Drains located adjacent to the foundation should be placed approximately 2' out from the foundation.

Locate the place you would like the 6" perforated pipe to daylight (reach the surface), preferably into a stormwater control measure. Route the drain from the location of excessive moisture to the daylight point. The daylight point must be lower in elevation than the drain itself. The pipe should slope down consistently at a slope between 2% and 10%. The steeper the slope the higher velocity of the water coming from the drain pipe, therefore the outfall may need additional armoring with stones.

Implementation

1. Excavate a trench 6 to 8 inches wide and a minimum of 18" deep along the routing line, sloping the trench consistently to the outfall location.
2. Place 2" of gravel in the trench.
3. Wrap 4" or 6" perforated pipe with filter fabric (recommended). The filter fabric will minimize clogging of individual perforations in the pipe.
4. Lay pipe in the trench and back fill with gravel up to 2-3" below ground surface.
5. Cover with soil and either seed with grass or mulch over the drain.



Cross-section of a French Drain. Source: The Plumbing Source.