

Disconnected Downspouts (DD)



Synonyms: There are no synonyms for this practice.

Rooftop runoff can be directed to vegetated areas through the disconnection of rooftop downspouts. By redirecting rooftop runoff, stormwater entering the stormwater conveyance network is reduced and groundwater recharge and runoff infiltration is increased. Disconnected downspouts are often used in conjunction with other stormwater infiltration practices by directing runoff to practices such as rain gardens, bioretention areas, and grassed swales. In doing so, the need for curbs, gutters, and conventional collection or conveyance of stormwater can be reduced.

Conventional stormwater practices focus on the immediate removal and conveyance of stormwater from impervious surfaces into storm drain networks. Typically, a stormwater conveyance network transports stormwater to a nearby outfall that is eventually discharged into a local waterway. As urban areas in Alabama expand and redevelop, increases in stormwater flows place tremendous pressures on aging sewer infrastructure. Disconnecting downspouts can help reduce the volume of untreated stormwater directed to waterways and decrease pollution in local streams and waterways.

Disconnected downspouts are applicable in residential or commercial settings. This handbook provides information regarding downspout disconnection for homeowners.

Site Selection Tips

- A good plan should be developed prior to downspout disconnection.
- Disconnecting the downspout should not result in any structural damage to you or your neighbor's property.
- Disconnected downspouts should not be directed to compacted soil that will not infiltrate stormwater. If downspouts are to be directed to poorly drained soils, an infiltration test should be conducted to ensure that standing water conditions will not persist beyond 48 hours as this can lead to mosquito breeding (for more information on how to conduct an infiltration test, see Chapter 5.1 on Rain Gardens).
- Proper execution of downspout disconnection should still allow stormwater to be quickly removed from any roadways and should not result in standing water on impervious surfaces.
- Areas with slopes greater than 10% are not appropriate for disconnected downspouts because steep slopes can result in increased runoff velocities and erosion.

<i>Site Selection</i>	
Quantity Control	---
Drainage Area	small
Space Required	small
<i>Works with:</i>	
Steep Slopes	---
Shallow Water Table	---
Poorly Drained Soils	---

<i>General Significance</i>	
Construction Cost	low
Maintenance	low
Community Acceptance	high
Habitat	---
Sun / Shade	either

Table 5.3.1

Site Selection: Constraints and Limitations for Disconnected Downspouts

House Foundation	Water should be discharged 5' from basements and 2' from building foundations; water should flow away from structure foundations
Slope	Downspouts should not be disconnected in areas with more than 10% slope
Septic System Drain Fields	Do not direct runoff over a septic system

Design Example

The following steps have been adapted from the City of Portland, 2011.

1. Examine Your Site

The first step is to determine where the downspouts drain to or where the runoff from the rooftop goes. Downspouts may drain to a standpipe or other stormwater conveyance network. It helps to draw or print out an aerial view of the building where rooftop square footage can be estimated and downspouts can be located.

2. Make a Plan

Mark downspouts on the site plan and determine any obstructions such as walkways or impervious surfaces that should be avoided when water is redirected. Extension elbows can be used to direct water around areas that need to be avoided or to direct water away from building foundations. Rooftop runoff can be directed to a rain garden or other landscaped area as long as the landscaped area is at least 10% of the rooftop footprint area. Rain gardens work well to treat rooftop runoff from downspouts because they are bowl shaped landscaped areas meant to capture water and encourage infiltration. See Chapter 5.1 on Rain Gardens for more information.

Check Your Available Landscape Size:

$$\text{Roof Area} \quad \text{Sizing Factor} \quad \text{Landscape Area Size Needed}$$
$$1000 \text{ ft}^2 \quad \times \quad 10\% \quad = \quad 100 \text{ ft}^2 \text{ (10' x 10')}$$

Tool List:

- Measuring tape
- Needle nose pliers or crimpers
- Hacksaw
- Drill
- Screwdriver or nut driver

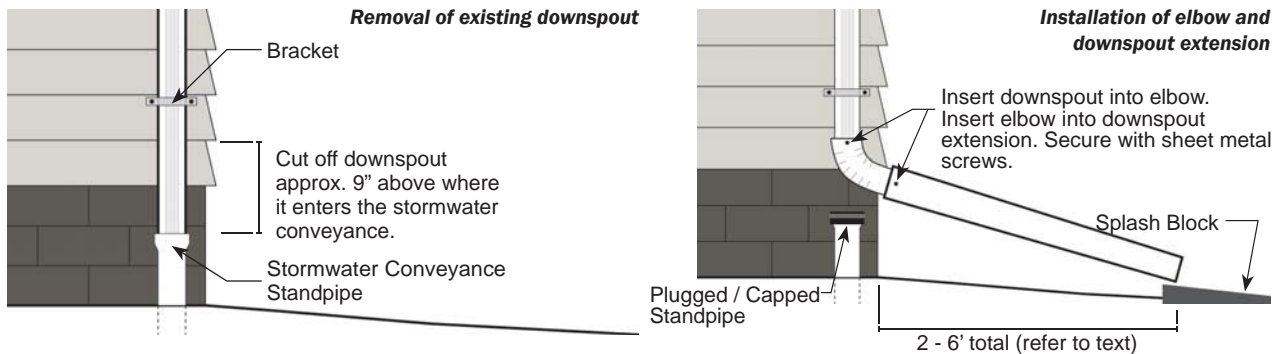
Materials: A materials list will include any downspout elbow or extensions needed plus any materials necessary to seal the standpipe. Be sure to measure the inside diameter of the standpipe so that the correct size rubber cap and hose clamp are purchased. If the downspout is only attached to the standpipe and gutter, a strap or bracket should be used to attach the downspout firmly to the building once it is disconnected. Durable materials should be used for the elbows and extensions. Avoid using corrugated plastic, PVC, dryer hose, or other materials that will degrade quickly.

Extensions can be used to direct runoff away from foundations or under other obstructions, such as a deck, so that flow is directed to a landscaped area. A hinged extension can also be helpful to use so it can be lifted out of the way when mowing the lawn. Concrete splash blocks or decorative rocks can be placed just beneath the downspout to minimize any erosion and direct flow during a heavy rain. A concrete splash block will help spread the runoff to disperse it evenly in a sheet flow pattern.

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3. Disconnecting

The downspout should be cut approximately 9" above where it meets the standpipe. Check the downspout extension length and cut higher if necessary. The standpipe should be sealed or plugged using either an in-pipe test plug or a cap secured by a hose clamp. Do not use concrete or any other substance to seal the standpipe. The elbow should be attached over the downspout; attaching the elbow inside the downspout can cause leakage near the building foundation. Needle nose pliers or crimpers can be used to bend the downspout to ensure that the elbow fits over the cut downspout. Next, the extension should be measured to either 2', 6', or to the length necessary to avoid obstructions. Two feet is the minimum amount of extension away from the building foundations and crawl spaces; 6' is used when there is a basement that could potentially flood. Be sure to attach the extension pieces over the downspout elbow. Do not direct your runoff into neighboring properties. The extension should end at least five feet before the property line. Use sheet metal screws to attach extensions and elbows to one another. Pilot holes can make this an easier process. Add a concrete splash block or rocks below the extension piece to decrease soil erosion.



Maintenance

Gutters: Gutters should be free of debris, pitched, and efficiently direct water to attached downspouts. Flashing on the roof should direct water to the gutter system to avoid home maintenance issues.

Downspouts: Downspout elbows are prone to clogging and these should be checked periodically so that water flows freely. Extension pieces should be checked for proper connection and if these become loose, sheet metal screws should be used to firmly attach one piece to another.

Erosion: Landscaped areas where water has been directed should be checked during and after a heavy rainfall for any erosion, gullies, scour, or extended standing water conditions. If erosion is occurring, check that concrete splash blocks are in place and that vegetation is actively intercepting runoff.

Vegetation Maintenance: Depending on the landscape, plants that were previously unaccustomed to receiving excess runoff may suffer under soggy conditions. In such cases, rain gardens or vegetation that can handle extended periods of wet conditions may need to be used.

Table 5.3.2
Maintenance Schedule

Task	How Often	Comments
Clean Gutters	At least twice a year	Gutters with trees overhead may require cleaning out more frequently.
Caulk Leaks in Gutters	As they occur	Leaks or holes should be repaired as they appear.
Clear Elbows or Bends	As clogging occurs	Debris may collect in elbows or bends, which can inhibit water flow.
Inspection	After 0.5" or greater rainfall event	Visually inspect the downspout, gutters, and splash block for any damage.

Pollutant Removal

Impervious surfaces can contribute nonpoint source (NPS) pollutants to stormwater. Through disconnecting downspouts, stormwater is directed to vegetated areas; thus, stormwater pollutants can be treated by plant and soil filtration processes and runoff quantity is reduced. In slowing and reducing stormwater flows, stream erosion near stormwater outfalls may also be reduced.

References

- City of Portland. 2011. How to Manage Stormwater: Downspout Disconnection. Environmental Services, Portland, OR.
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- Seattle Public Utilities. 2011. Rain Wise: Disconnecting Downspouts from the Sewer System – Safely!. Seattle Public Utilities, Seattle, WA.