

GUTTERS & DOWNSPOUTS

► USES: ROOFS



Gutters collect the rainwater that drains from a roof and directs the runoff to the ground via a downspout.

GUTTER PROFILES



Half Round

Ogee

Ogee-shaped gutters can hold more water, but rounded gutters collect less debris.

Your neighborhood or homeowners' association may have specific requirements for installing gutters and downspouts. Since requirements often change, we have provided general guidelines, but you should contact [Snohomish County Planning & Development Services \(PDS\)](https://www.snohomishcountyplanning.com/) for more detailed information.

See www.RainScaping.info/resources for contact information. For instructions on disconnecting and redirecting your downspouts, see Drainage Outlet Protection.

NEW INSTALLATIONS OR RETROFITS

Properly sized gutters and downspouts are crucial for proper performance. In general, the larger your downspout, the less likely it is to get clogged with debris. While installation is fairly simple, calculating the correct size system for your roof can prove more difficult. You will need to know your roof area and pitch or slope and your location's annual rainfall. The sidebar offers general guidelines for calculating roof area. For assistance with calculating correct gutter and downspout sizes, or other specific questions, we recommend contacting a local qualified professional. See www.RainScaping.info/resources for contact information.

Also consider where your downspouts drain. Site downspouts so that they do not drain to the uphill side of your structure unless you're using another infiltration strategy to move the water around the house. Where possible and safe, divert downspouts

away from impervious surfaces such as concrete driveways, walkways, or compacted soils. Instead, direct them to well vegetated areas of your property, a minimum of 10 feet away from your foundation, allowing runoff to **SINK** into the soil. This decreases water volume on streets and reduces the potential for downstream flooding.

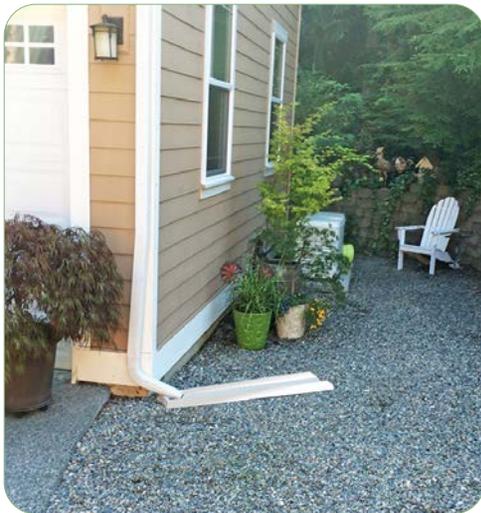
GUTTERS

Select gutters at least 5 inches wide. Use materials made from galvanized steel (29 gauge minimum) or aluminum (1/4 inch minimum). (Note: galvanized gutters should be painted to reduce the potential impacts of leaching zinc into soils and waterways.) To enhance flow, slope gutters according to the manufacturer's recommendations, commonly 1/16 inch to 1/8 inch per 1 foot of sectional gutter; 1/16 inch to 1/8 inch per 10 feet of seamless gutters. Tilt the gutter forward, keeping the front 1/2 inch lower than the back. For straight runs exceeding 40 feet, use expansion joints at connections. Select elbows with 45-, 60-, 75- or 90-degree angles, as needed.

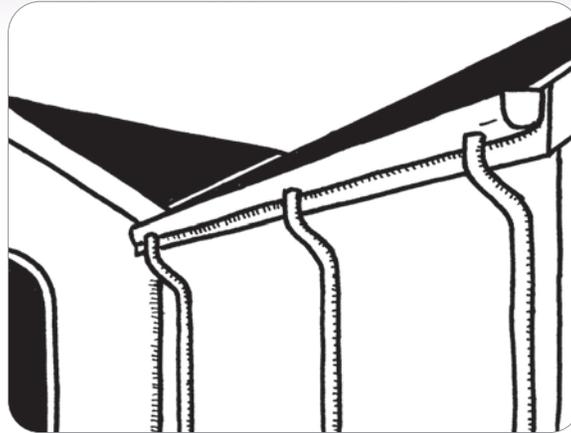
Gutters not only come in different sizes, they also come in different shapes. It's important to understand that the shape of your gutter determines the amount of water it can handle during a storm. Ogee shaped gutters, for example, can hold more water than rounded gutters. However the ogee gutter's sharp edges and corners can collect sediment and debris.

DOWNSPOUTS

Space downspouts from 20 to 50 feet apart. Adding additional downspouts can increase capacity where necessary and help **SLOW** water down and **SPREAD** it out. Do not exceed 45-degree angle bends. Where needed, you can use 4-inch diameter extensions (flexible or rigid) to convey water to infiltration areas such as rain gardens or to other safe outlets at least 10 feet away and down slope from structures and steep slopes. All downspouts and pipes that outlet onto surfaces without substantial plant cover should use one of the practices described in Drainage Outlet Protection. Do not direct downspout outlets to driveways or other impervious hard surfaces unless there are no safe alternatives. Instead, route them to vegetated areas.



All downspout outlets should have splash blocks or other features that **SLOW** runoff and prevent erosion (Ch 3. Drainage Outlet Protection).



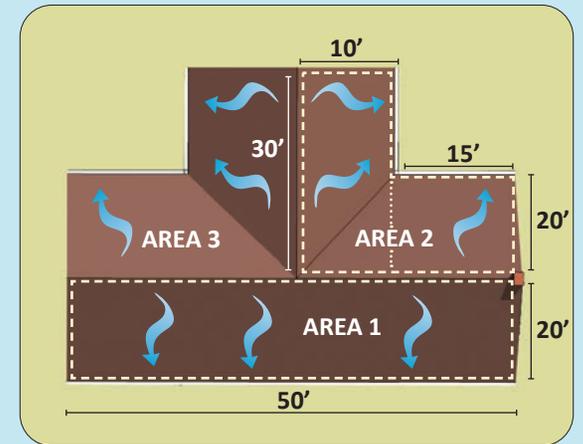
A maximum of 700 square feet of roof area should drain to each downspout. Adding an additional downspout helps reduce the volume and velocity of runoff at any given point reducing the potential for erosion.

DO

- Check and clean gutters frequently, especially before the rainy season and after severe storms.
- Direct runoff to a rain garden, underground infiltration trench, or other stable vegetated area away from structures.
- Collect runoff in a cistern or rain barrel.

DON'T

- Release water onto bare soil.
- Direct runoff to steep slopes, foundations, or to the uphill side of your structure.
- Direct water to a drinking water well, septic system or neighbor's property.



CALCULATING ROOF AREA

You will want to plan your gutters and downspouts so that no more than 700 square feet of roof drain to each downspout and splash block. When finding the square footage of an area of your roof, do not consider slope. Instead, treat your roof as flat. Measure the length and width of each side of your building including the roof overhangs. Multiply the length times the width to find the area of each surface. For more complex roofs, you will need to break up the roof into smaller sections and then add up the areas that drain to a common gutter.

Formula

LENGTH x WIDTH = AREA in square feet (sq. ft.)

Example

- Area 1:
 $50 \times 20 = 1000$ sq. ft. (Needs 2 downspouts)
- Area 2: (Calculate Area 3 the same way)
 $10 \times 30 = 300$ sq. ft.
 $15 \times 20 = 300$ sq. ft.
Total = 600 sq. ft. (Needs 1 downspout)

✓ Maintenance

Setting up a maintenance schedule is one of the easiest and most cost-effective solutions to many roof runoff issues.

- The vegetation on your property will impact your maintenance schedule. Gutters on homes surrounded by deciduous trees will need to be cleaned in late fall after the leaves have been shed. Gutters on homes surrounded by evergreen trees will need cleaning before the rainy season and after any storm that causes tree debris to fall. In areas with dense trees or vegetation, trim trees and vines away from gutters to maintain a minimum 24-inch clearance zone.
- Add gutter screens (see photos) and clean them regularly to reduce debris build-up.
- You can also add drip-line protection below gutters that clog often (see Drip-line Protection).
- Check your system for leaks, damaged parts, rust and evidence of past erosion. Make sure to check hidden outlets under decks or staircases that might be forgotten.



This type of screen covers the gutter opening with a mesh or lid that keeps debris out while allowing runoff water to flow through it.



A simple wire mesh or plastic strainer sits inside the downspout inlet and is easy to clean when it fills with debris.



You can retrofit a strainer cup that pulls out of the downspout for regular cleaning and inspection.



RAIN CHAINS

A rain chain can be used instead of a downspout in some situations.

Rain chains ('kusari dio' in Japanese) have been used for hundreds of years in Japan. Not only are they visually appealing, they also provide some runoff reduction through evaporation and spillage.

When installing rain chains, make sure to avoid copper and galvanized zinc which can leach toxic metals and take the same precautions for outlet protections as you would with standard downspouts. Make sure you extend your outlet flow downhill and far enough away from your house.