

PROJECT-BASED LEARNING: DESIGN AND BUILD A RAIN GARDEN

Part 2: Site Investigation and Inventory

Calculate Slope

For many project sites, the area will have a low-enough slope that it is an obvious and easy location to build a rain garden. For areas with steeper slopes, there are greater risks of the rainwater runoff building up too much speed that can cause extensive erosion during rain flows.

Note: For any site that with a slope of greater than 10%, we recommend you consult an expert.

Materials:

- Contractor's laser level
- 8' long 2"x2" or 2"x4" board (8' is usually long enough; if the difference in elevation is more than 8' between the site's highest and lowest points, you have a steep slope and we recommend you consult an expert)
- Measuring wheel
- Tape measure

Note: This process requires at least 2 people.

Process: To determine the percentage of slope or grade on a site, you will measure two things, *rise* and *run*, and then perform a simple calculation. The rise of a site is the difference in elevation between its lowest point and its highest point. The run of a site is the length between those two points.

1. Determine where the highest and lowest points of the site based on visual estimation.
2. Have one person stand at the lowest point and hold the 8' long 2x2 board plumb, or straight up and down.
3. Have another person stand at the highest point on the site and place the laser-level on the ground, making sure it is level and projecting a laser beam at the wooden 2x2 board.
4. Measure *rise*: Mark the point at which the laser strikes the vertical 2x2 board; the distance between the ground at the lowest point and the mark indicates the difference in elevation from the top of the site to the bottom, or the rise.
5. Measure *run*: Using a tape measure or the measuring wheel, measure the horizontal distance between the lowest and highest points.
6. Now, divide the "rise" by the "run" and you should get a number between 0.01 and 0.00. Multiply that number by 100 and you get the percent of slope for the site.

Example:

Imagine a site where two volunteers measure the rise and run from the highest point to the lowest point on the site and they get an elevation difference of 2 feet 6 inches (2.5 feet) and a length or run between the two points of 32 feet 9 inches (32.75 feet).

In order to determine the slope of the site, they divide 2.5 feet by 32.75 feet (2.5/32.75) and get 0.0763. Multiply this number by 100 to find the percent and you get 7.6% slope on the site. This is a reasonable slope for a rain garden.

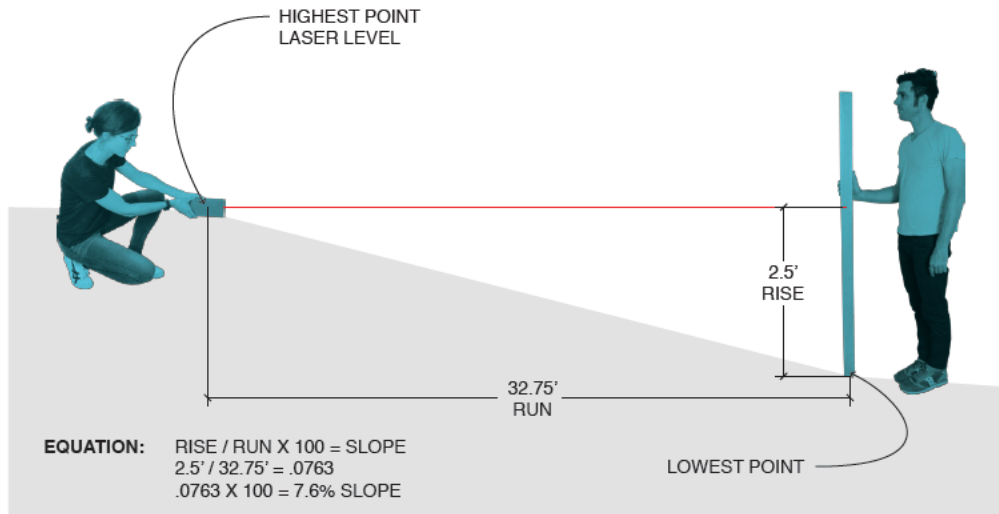


Illustration by Hans Hesselein, Apiary Studios