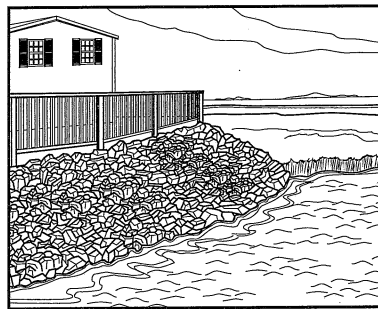


Technology Zone Controlling Riverbank Erosion

A riverbank is the land at the edge of a river. The flowing water can carry away soil from the riverbank. Rain can wash away part of the riverbank. This process is called **erosion**. Erosion might wash away paths, roads, or even houses. How can people keep erosion from happening?

People have come up with different ways to prevent riverbank erosion. One is to grow plants, such as trees, bushes, and grasses. The plant roots can help keep soil in place. Native plants work best because they are adapted to the soil and climate. The best kind of plants to use will depend on the location.

Another way to prevent erosion is to use a wall. One kind of wall is called **riprap**, which is a pile of stones. Sometimes chunks of concrete are added. The stones slow the currents down and keep them from washing away soil.



Another kind of wall is a **retaining wall**. A retaining wall holds the earth back away from the river.

While a wall needs to keep the river from washing away soil, it also needs to let rainwater go somewhere. If not, the ground will get too soggy, and the wall will probably break. If riprap is used, the spaces between the stones let rainwater drain away. A retaining wall will have holes in it, so rainwater can flow through.

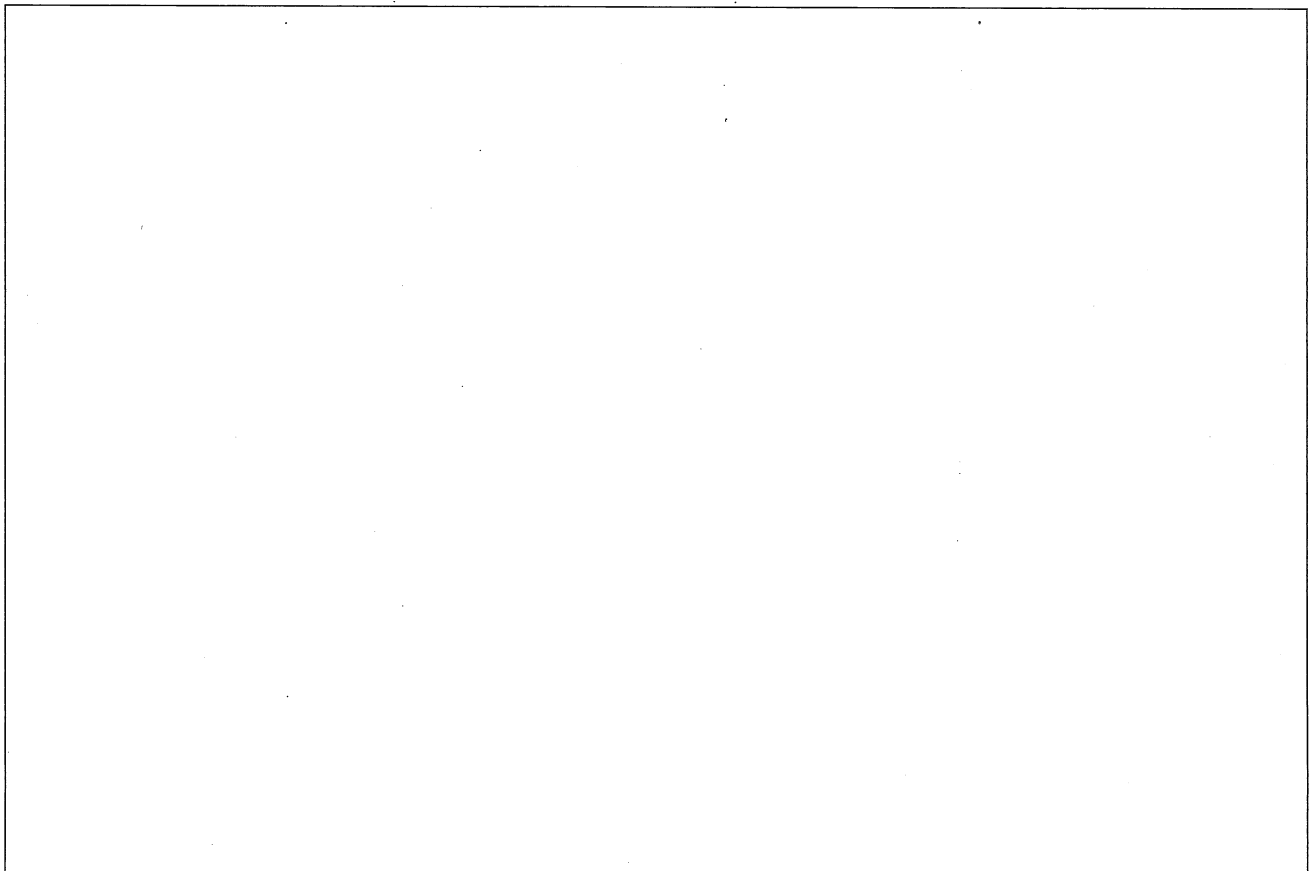
There are other ways of halting erosion, such as putting down woven mats or pounding steel bars into the ground. The best choice will depend on the area and people's needs and resources. But no matter what the method, the goals are the same: let the water pass but keep the soil where it is!

Check Your Understanding

1. Why does a retaining wall need drains?

2. When might somebody want to use a retaining wall instead of riprap? When might riprap be better?

3. Imagine you are designing a system to control riverbank erosion. Draw a river. Then draw three different things you would add to control erosion. Label your drawing.

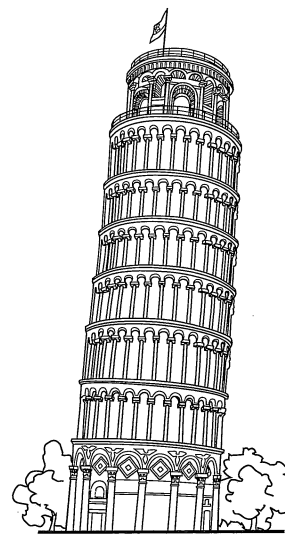


Career Spotlight Geotechnical Engineer

Why don't all tall buildings lean over like the Tower of Pisa? You can thank geotechnical engineers. Geotechnical engineers study earth materials like soil and rocks. They study the ground carefully before a building or other structure is built. They design foundations, retaining walls, and other features to keep things stable.

The **foundation** of a building is the underground structure that supports the building. The foundation keeps the building from sinking, sliding, or leaning. If you build a building on top of the ground with no foundation, it is likely to sink, lean, or collapse, over time.

Geotechnical engineers study the earth where a building will be built. If the soil is loose, they might compact it. They might dig down to the **bedrock**, or the rock layer underneath. Or they might hammer **piles** into the ground. Piles are like columns that rest on the bedrock and support the building. Next, geotechnical engineers design a foundation that will support the building safely.



Geotechnical engineers also design ways to stabilize soil around roads, airports, and other building projects. For example, if a road winds around a hill or mountain, they build a retaining wall to keep soil and rocks from falling on the road.



Geotechnical engineers work on tunnel projects too. They plan the excavation work and design ways to keep the soil from falling when the hole is dug.

Geotechnical engineers work with the people who want something built and the engineers who are building it. With their help, buildings and walls won't lean over like the Tower of Pisa! On the next page you can practice doing the work of a geotechnical engineer.

Check Your Understanding

1. Do you think it would be easier to build a building where the earth is very hard, or on soft sand? Explain your answer.

2. Draw a house on a hill. Draw what you think the foundation should look like. Use one color for the house and another color for the foundation. Write two sentences about what your foundation does.

