



United States  
Department of  
Agriculture

Soil  
Conservation  
Service

Columbia,  
Missouri



## Urban Conservation Tips



# Rock Chutes

### Description

Rock chutes are channels protected from erosion by rock. The channels are used to carry water down a slope without creating a gully. The rock protects the soil, permitting water velocities which normally would erode even sod-covered soil.

### Construction

Rock chutes have been used successfully on grades as steep as 3:1 (three feet horizontally for each vertical foot).

Failures can result from improper rock size, poor quality rock, unstable chute outlets, undermining, improper placement, settlement, undersized capacity, channel linings that are too thin, poor alignment and lack of maintenance.

Recommended rock size is based on the anticipated velocity of the water the channel is to carry. Bigger rock is used for greater velocities, which can be decreased by making the channel wider.

Rock for rock chutes must be

dense and durable so it will not break easily.

Various rock sizes should be distributed randomly. Smaller rocks fill the voids between the larger rocks, causing the rocks to interlock. Rock of only one size is not suitable.

There are a number of alternatives to rock chutes. They should be used when they would be more economical than rock. Other useable materials include concrete, concrete blocks, steel, aluminum, treated wood and gabions (rock-filled wire baskets).

Rock has one advantage over other materials. It can shift to adjust to slight movement, whereas a more rigid material might crack.

It is important that the end of the rock chute be stable and on a gentle slope. This keeps water leaving the chute from eroding the soil at the end of the chute. The velocity of the water at the end of the chute should not be fast enough to erode vegetated soil.

The channel through the steep

section of a rock chute should be as straight as possible. When water flows at a high velocity, curves must be designed carefully to prevent water from jumping out.

The rock chute should be 50 percent thicker than the largest rock used. The rock should be placed on sand or gravel and on a fabric liner if the area contains fine-textured soils.

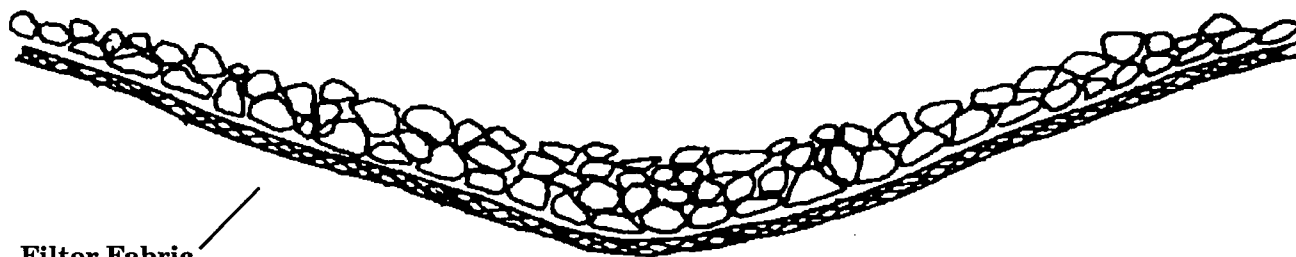
### Maintenance

Rock chutes should be inspected periodically, usually after each heavy storm. They especially should be inspected after the first storm because displacement is most likely then. Blockages should be removed promptly, and necessary repairs made.

### Where To Get Help

For more information about rock chutes, contact your local Soil Conservation Service office. It is listed in the telephone directory under "U.S. Government, Department of Agriculture."

### Rock Chute Cross Section



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