

# LANDSCAPE INSTALLATION

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# BEFORE YOU DIG...

Call a utility locating service.

(800) DIG-TESS

## TEXAS ONE-CALL

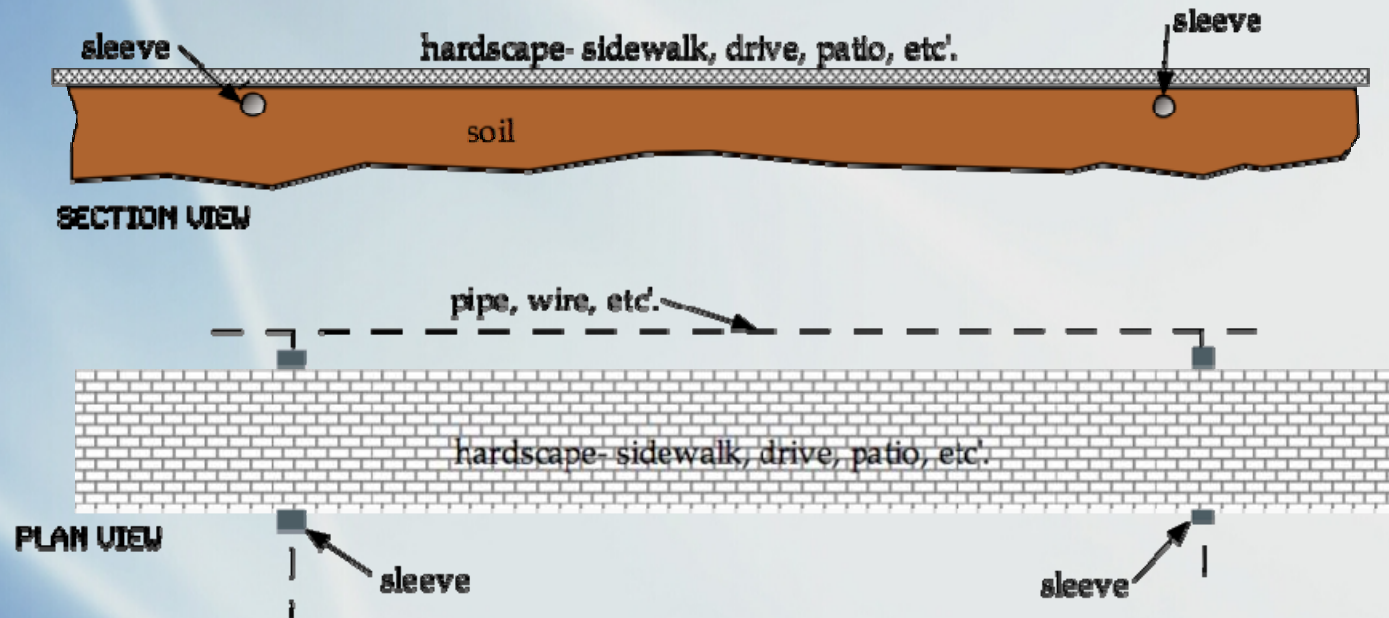
Hitting underground utilities can be inconvenient, costly or even deadly. A severed fiber-optic cable can cost thousands of dollars to repair. A ruptured gas line or cut high-voltage line can severely injure or kill you and/or destroy property.







## SLEEVES



When installing sleeves for irrigation, always go at least two sizes larger than the pipe you wish to pass through the sleeve. One size larger will not allow fittings to pass easily, if at all. It is also a good idea to install more sleeves than you think you need. Invariably some other need arises, or another trade uses the sleeve you intended to use, or there is some unanticipated need which arises later in the construction process.

It is much easier to install extra sleeves before the concrete, stone, etc. is in place than later, especially on rocky sites.

Schedule 40 or Sch 80 are the recommended sleeve material. Class pipe will work, but there is nothing worse than finding that your thin wall pipe was crushed or damaged during the installation of the hardscape/landscape, and is un-usable.

Finally, be sure to carefully mark the locations of all the sleeves.



# Site Grading

- Grading is performed for several reasons...
  - Water Control /Drainage or Retention
  - Aesthetic
  - Soil amendment
  - Safety









## Water control is an important aspect of every successful landscape...



Whether draining, retaining or merely allowing to pass through, water must be dealt with to some extent on every site.

Westlake residence courtyard which had substantial drainage problems. The area drained three roofs and a large portion of a driveway. This house was flooded several times in the past.

All water which flowed to this confined area is now dispersed by a rock channel and drain system. Most of the water in a normal rain event makes its way into planting/turf areas.

One side of the channel serves as a border, and the other as a border and a walkway.

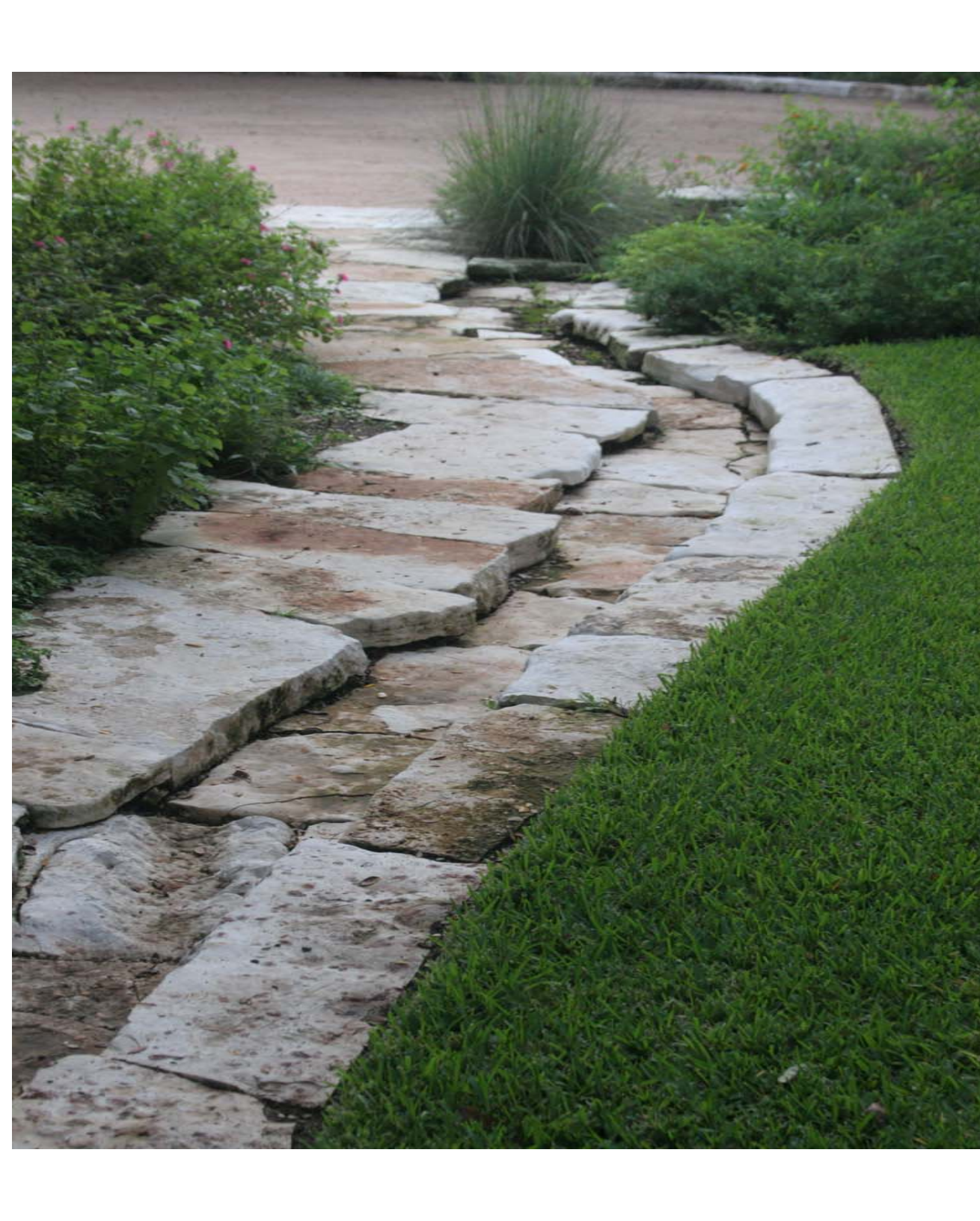
## FUNCTIONAL AND VISUALLY PLEASING...



A non-mortared stone channel allows water to infiltrate planting areas.

Side of channel is also walkway.



A photograph of a winding stone path made of large, flat, light-colored stones. The path leads from the foreground towards a pond in the background. The pond has a sandy or light-colored bottom. There are various green plants and bushes along the path, including some with small pink flowers on the left and a clump of tall grasses near the pond. The overall scene is a well-maintained garden or park area.

Water that makes it to the end of the channel, then travels through an 8" pipe under the parking area, and is dispersed in a large planted area.

With the escalation of water use in our area, conservation is of steadily increasing importance. The more we can use the water that falls on our properties to benefit the flora and fauna that live there, the better off we will be.

Holding and utilizing water on site has become the goal, rather than removing it from the property. We need to be creative in our designs and implementation, to use our water, not merely send it downstream.



## Austin's average rainfall is 31.88 inches

So, for every 1000 sq. ft. of area you have, approximately 623 gallons come your way in a 1" rain event. This is almost 20000 gallons per year for each 1000 sq.ft. of area. Treat it as a gift, rather than a nuisance, and use it when you can.

### Water Equivalents (approximate)

The following equivalents show the relationship between the volume and weight of water and between the volume and speed of flowing water.

#### Volume and weight

One inch of rain falling on 1 acre of ground is equal to about 27,154 gallons and weighs about 113 tons.

An inch of snow falling evenly on 1 acre of ground is equivalent to about 2,715 gallons of water. This figure, however, based upon the "rule-of-thumb" that 10 inches of snow is equal to 1 inch of water, can vary considerably, depending on whether the snow is heavy and wet, or powdery and dry.

Heavy, wet snow has a very high water content--4 or 5 inches of this kind of snow contains about 1 inch of water.

Thus, an inch of very wet snow over an acre might amount to more than 5,400 gallons of water, while an inch of powdery snow might yield only about 1,300 gallons.

One acre-foot of water (the amount of water covering 1 acre to a depth of 1 foot) equals 326,000 gallons or 43,560 cubic feet of water, and weighs 2.7 million pounds.

One cubic mile of water equals 1.1 trillion gallons, 147.2 billion cubic feet, or 3.38 million acre-feet, and weighs 9.2 trillion pounds (4.6 billion tons).

This Hyde Park residence was the victim of upstream development of three residences, which shunted large quantities of water through their back yard.

Those residences were sited several feet high, which changed drainage paths that had existed for thirty years, and these folks suddenly found themselves with a new addition to the Austin creek inventory... right in their backyard.

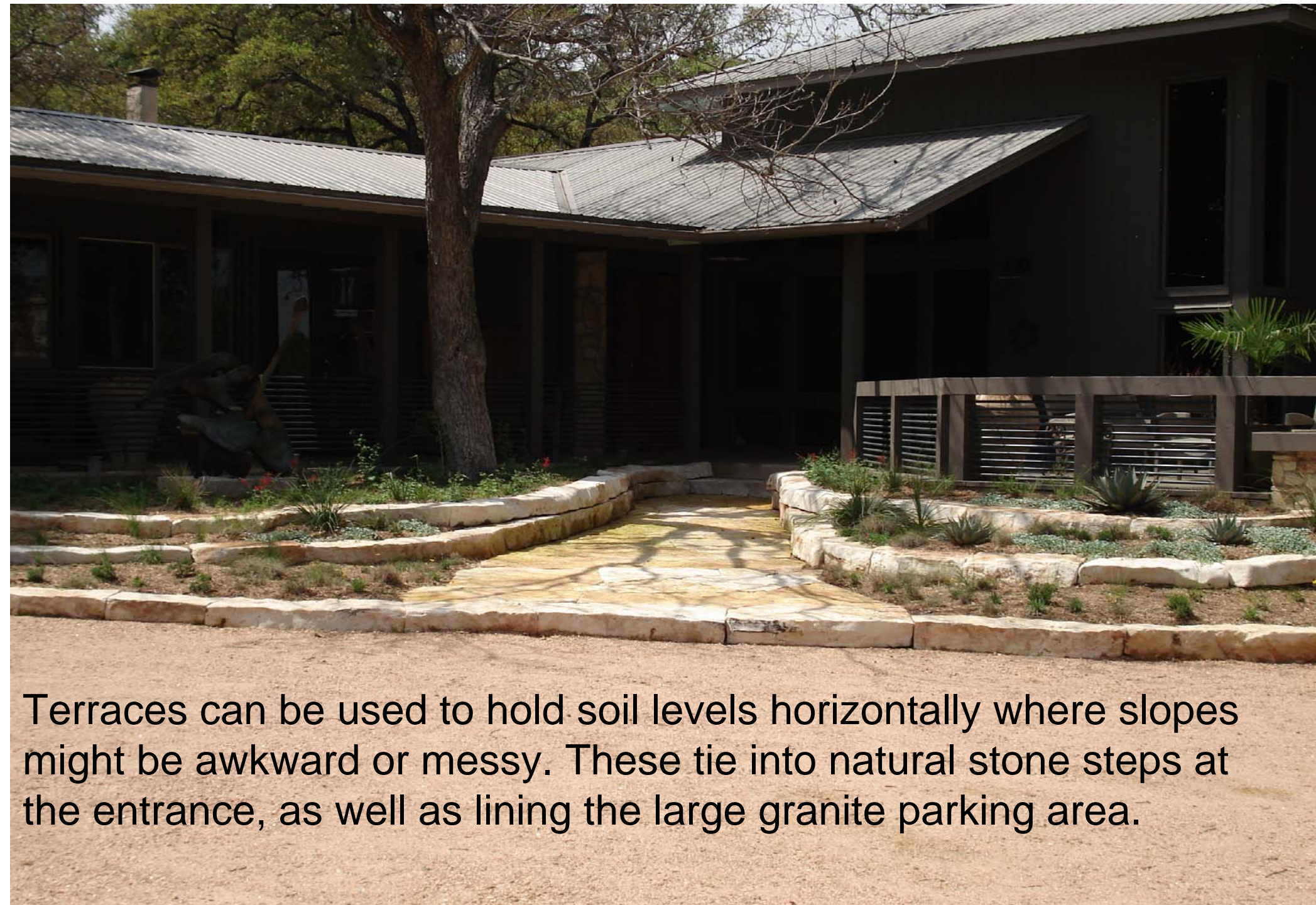




A channel was excavated, and the soil used to raise the shed and garden area. Cedar logs helped hold soil levels and define planting beds and granite paths. The homeowners also worked closely with their neighbors (friends), so the problem was not just passed downstream haphazardly.







Terraces can be used to hold soil levels horizontally where slopes might be awkward or messy. These tie into natural stone steps at the entrance, as well as lining the large granite parking area.







Before...





Changing...



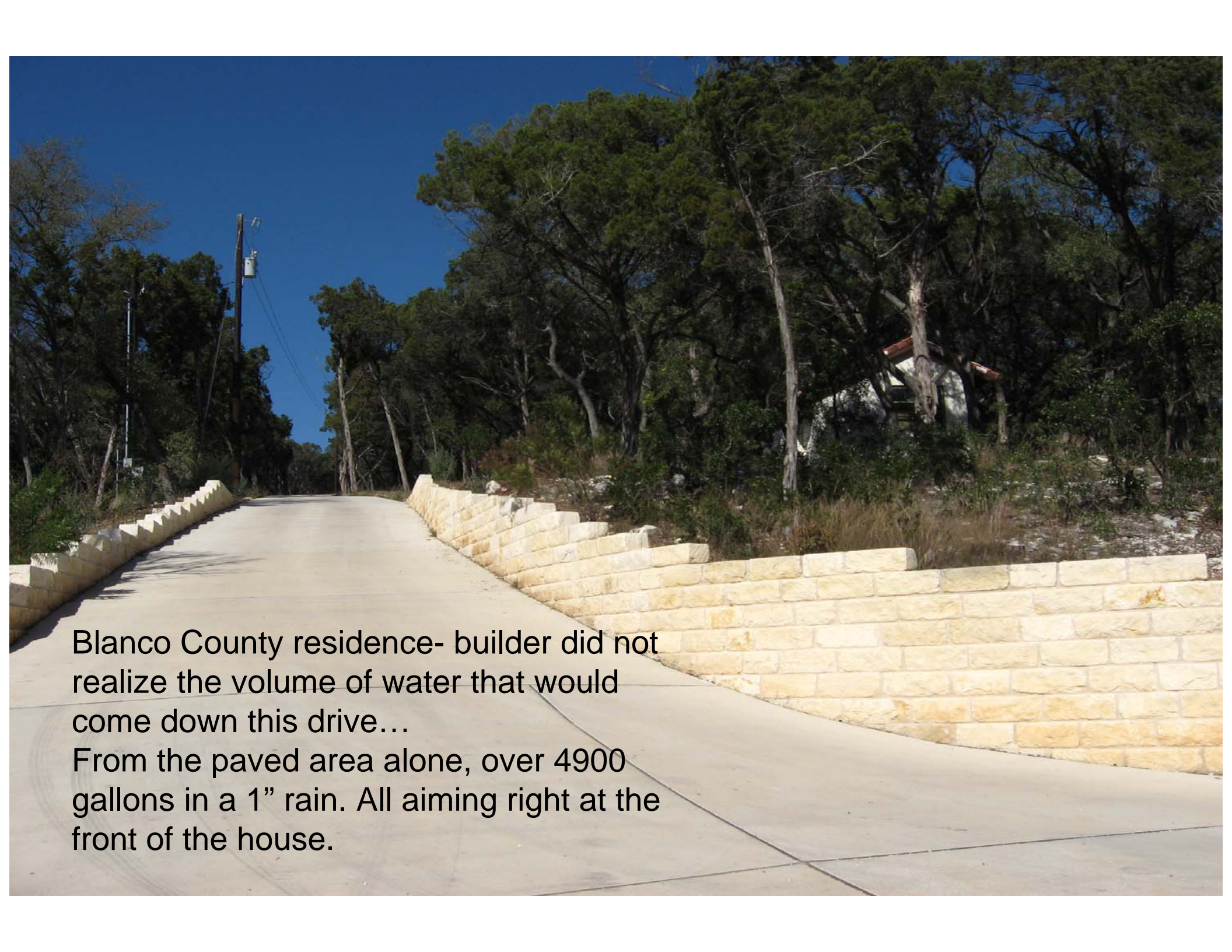
...this guy gets creative with his waste rock



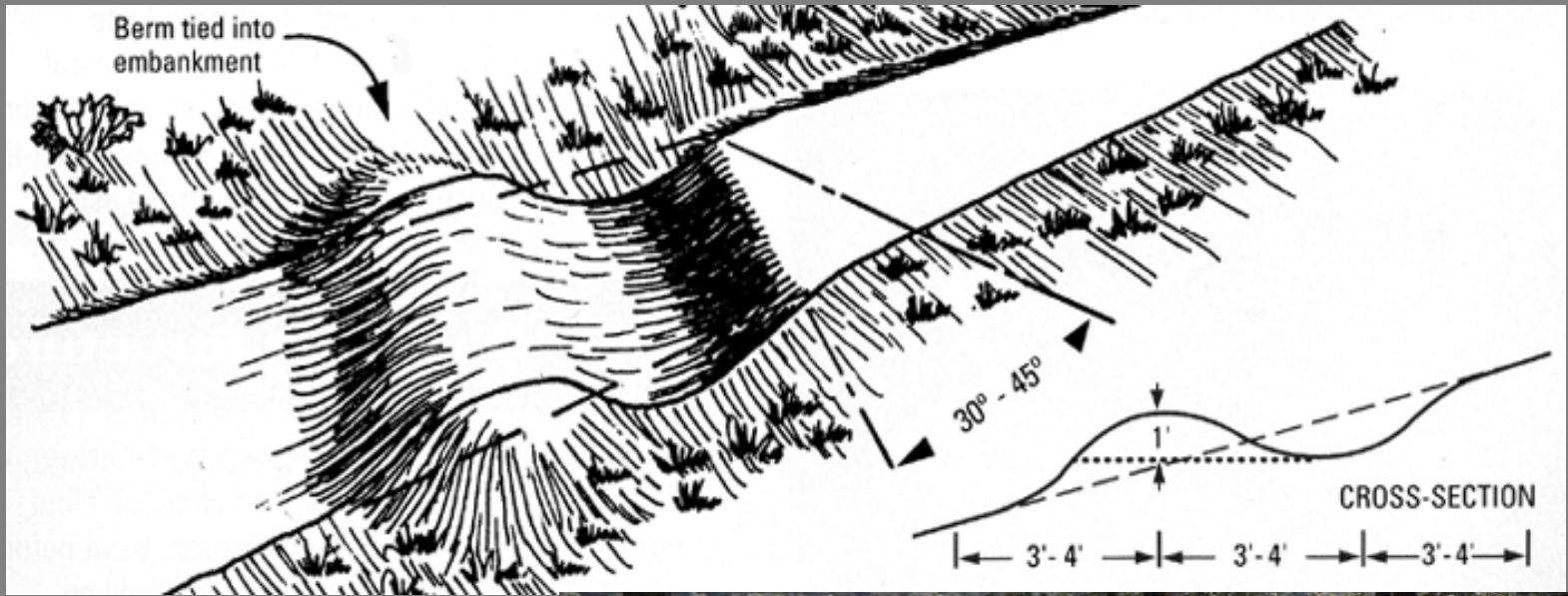


# Water bars

- Landscapers and landowners can use water bars to control erosion. **Water bars** are a combination of a mound and trench angling across or next to a road or slope to intercept, direct and disperse water flowing down the road surface or slope. Because they form a significant, almost impassible bump in a trail, they are generally placed where vehicles will not travel. If the landowner wishes to continue using wheeled equipment near the road for recreation or obtaining firewood, broad-based dips can be substituted for water bars. The idea is to divert water off the road and into a more stable vegetated area. Water bars are built at a 30 degree angle to the road course. The distance between water bars will vary from every 250 feet on gently sloping trails to every 20 feet on steep trails. The height of the mound will also vary from 8 - 30 inches; lower on gentle slopes, higher on steeper slopes.

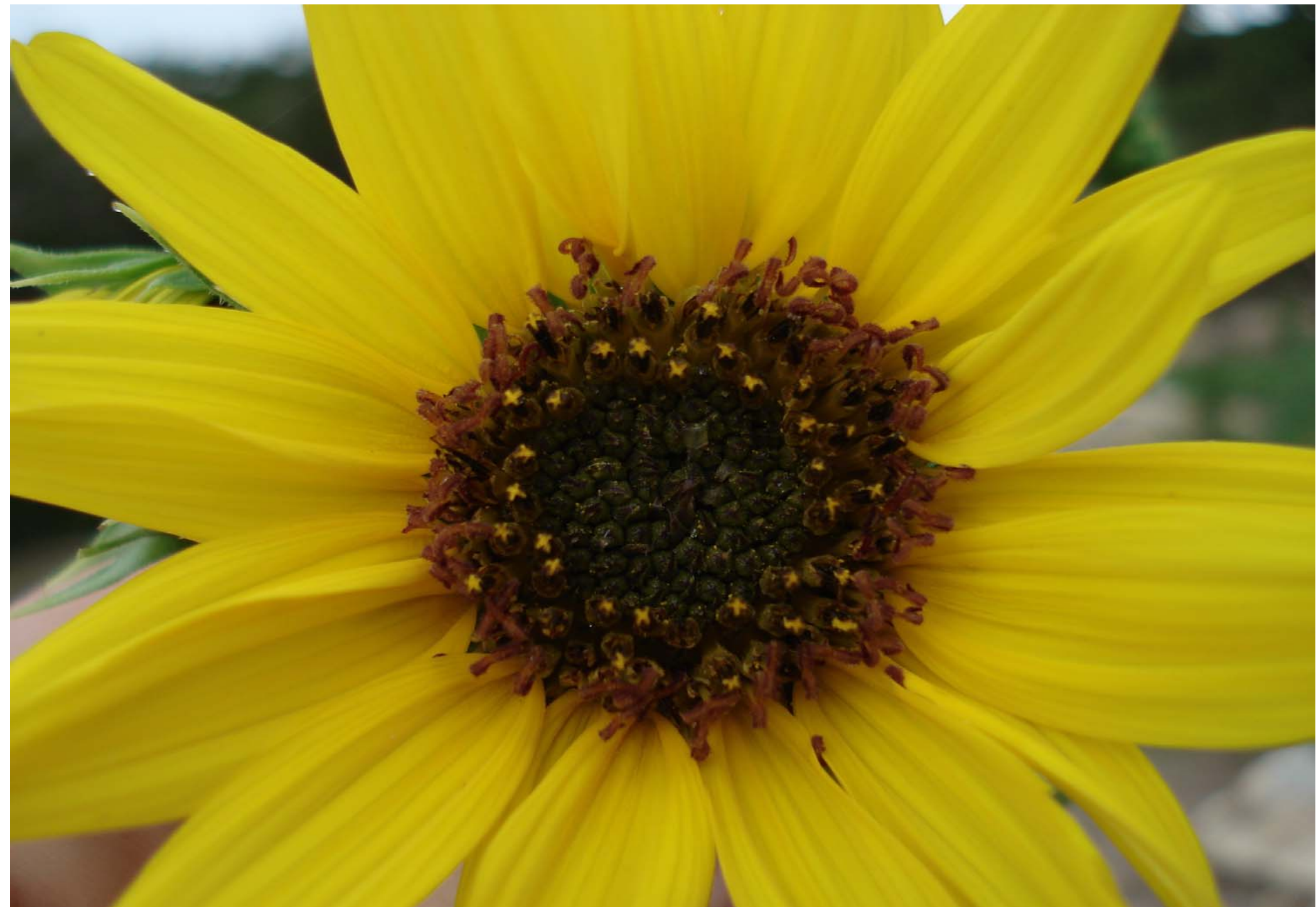
A photograph of a paved driveway in a residential area. The driveway is made of light-colored concrete and runs uphill. On both sides of the driveway, there are retaining walls constructed from stacked, light-colored stone blocks. The walls are several feet high and follow the curve of the driveway. In the background, there are many large, mature trees with green foliage. A utility pole with wires is visible on the left side of the driveway. A house with a white exterior and a red roof is partially visible through the trees on the right side of the driveway. The sky is clear and blue.

Blanco County residence- builder did not realize the volume of water that would come down this drive...  
From the paved area alone, over 4900 gallons in a 1" rain. All aiming right at the front of the house.











# Planting

Quality plant material and proper planting technique can help to insure happy clients and profitable jobs.

If we create pleasing exterior positive spaces, many of our clients will spend more time outdoors which is a fundamentally healthy and “green” act.

BIOPHILIA- human's love of living things, our innate affinity with nature (E.O. Wilson)

Wilson wrote in Arousing Biophilia, “To arouse biophilia, science is not enough. Money, for all its power is not enough. Culture--literature, drama ,music, painting, filmmaking, the humble activity of learning itself- may be the way to engage the heart.

# PLANT SOURCES

## Nurseries

Container- from 4" pot to 300+ gallon

Balled and burlapped- all sizes w/caveats

Bare-root- mostly smaller fruit and nut trees

## Transplants

Digging-method depends on plant species, time of year and how quickly the plant will be re-planted

Care- water... immediately!

Superthrive

Anti-transpirants (Cloud Cover, Anti-Stress 550)

## Select a Good Quality Tree at the Nursery

### A High Quality Tree Has:

- Enough sound roots to support healthy growth.
- A single, central trunk or leader
- A trunk free of mechanical wounds and wounds from incorrect pruning.
- A strong form with well-spaced, firmly attached branches.
- Leaves with good color and no obvious insect or disease damage

- Healthy form



### A Low Quality Tree Has:

- Crushed or circling roots in a small root ball or small container.
- A trunk with wounds from mechanical impacts or incorrect pruning.
- A weak form in which multiple stems squeeze against each other or branches squeeze against the trunk.



Healthy form

# New Tree Planting

Think of the tree you just purchased as a lifetime investment. How well your tree, and investment, grows depends on the type of tree and location you select for planting, the care you provide when the tree is planted, and follow-up care the tree receives after planting.

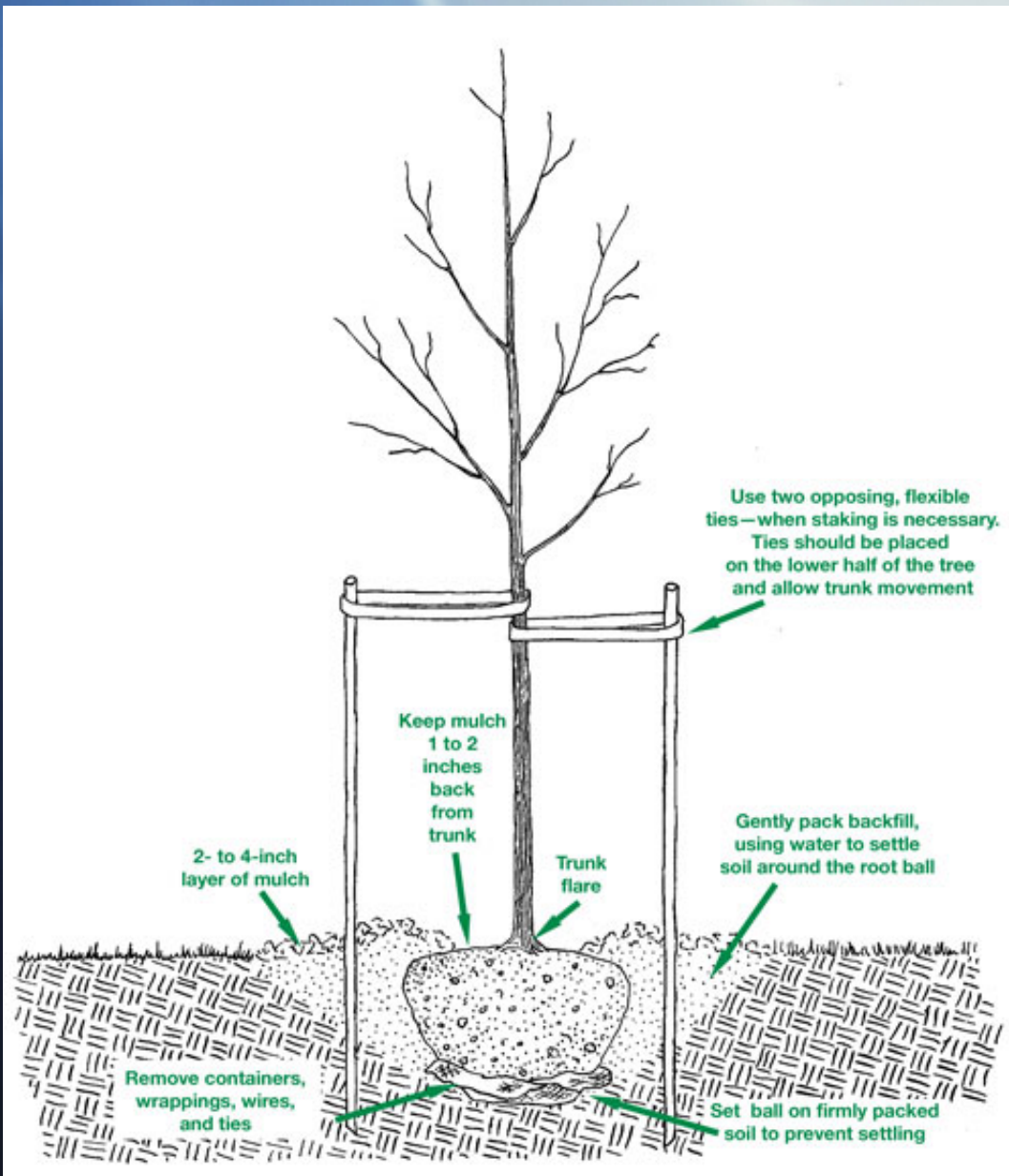
## Planting the Tree

The ideal time to plant trees and shrubs is during the dormant season, when the fall after leaf drop or early spring before bud break. Weather conditions are cool and allow plants to establish roots in the new location before spring rains and summer heat stimulate new top growth. However, trees properly cared for in the nursery or garden center, and given the appropriate care during transport to prevent damage, can be planted throughout the growing season. In tropical and subtropical climates where trees grow year round, any time is a good time to plant a tree, provided that sufficient water is available. In either situation, proper handling during planting is essential to ensure a healthy future for new trees and shrubs. Before you begin planting your tree, be sure you have had all underground utilities located prior to digging.

If the tree you are planting is balled or bare root, it is important to understand that its root system has been reduced by 90 to 95 percent of its original size during transplanting. As a result of the trauma caused by the digging process, trees commonly exhibit what is known as transplant shock. Containerized trees may also experience transplant shock, particularly if they have circling roots that must be cut. Transplant shock is indicated by slow growth and reduced vigor following transplanting. Proper site preparation before and during planting coupled with good follow-up care reduces the amount of time the plant experiences transplant shock and allows the tree to quickly establish in its new location. Carefully follow nine simple steps, and you can significantly reduce the stress placed on the plant at the time of planting.

More information can be found at:

<http://www.treesaregood.org/>



## Plant Your Tree Properly

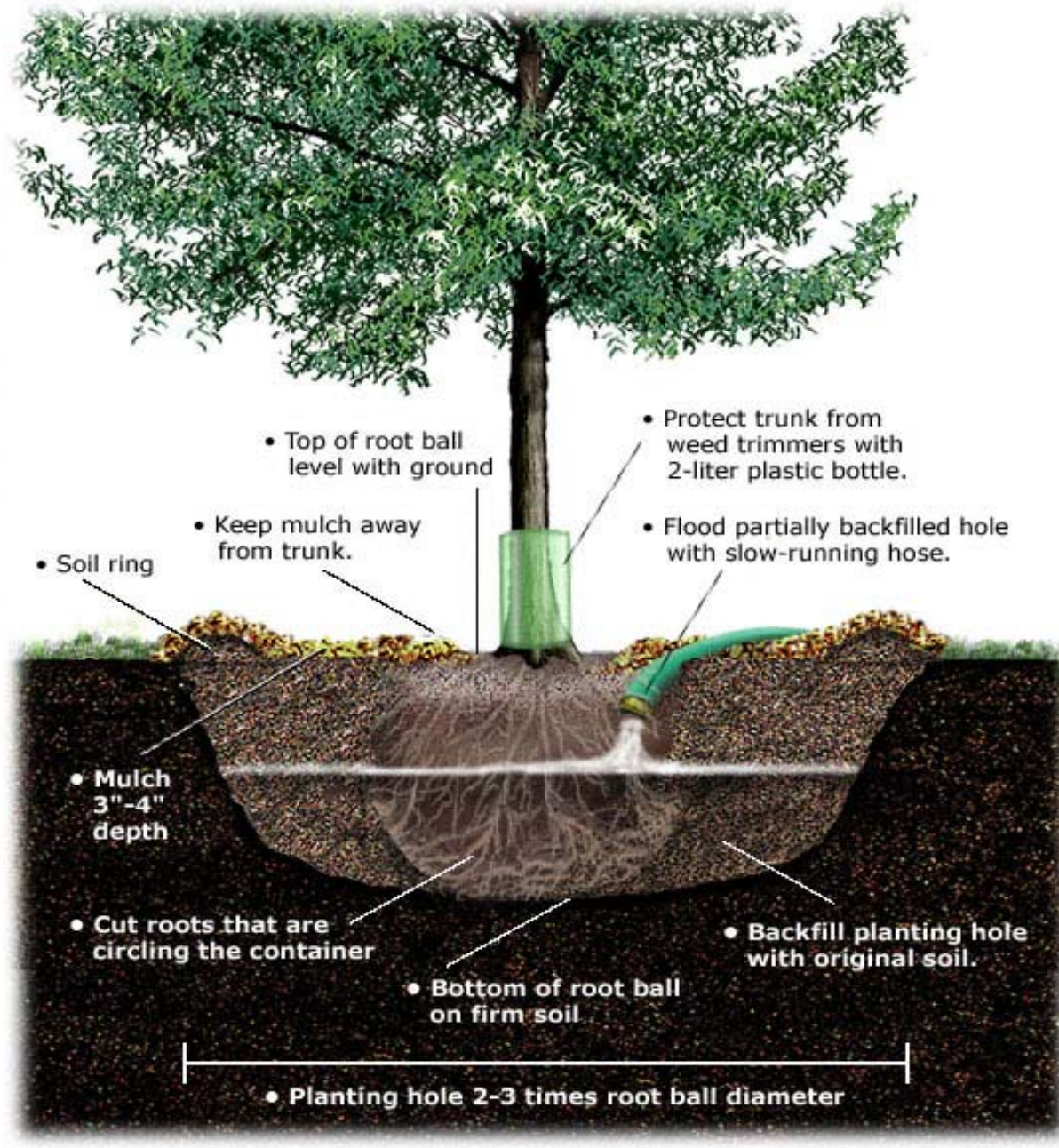


Illustration Copyright © Robert O'Brien



Checking the width of the root ball...



And the depth... but check to top of root ball, not top of container.

Dig a big, ugly hole...





The roots...



Examine the root ball...  
is the plant rootbound?  
Is the depth of the hole accurate?  
The hole should be the depth of the root ball or slightly less.  
Sometimes plants have not been in the pots very long and have not rooted in completely, and when you remove them from the pot, a lot of soil falls away and the hole is suddenly too deep.



Next place the plant in the hole and make sure the root flare is at or slightly above grade.  
If the hole was dug too deeply, the planting height needs to be adjusted to compensate for soil settling.





In Austin , we usually have good drainage, but occasionally you may have concerns about the planting site/hole. If so, you should fill the hole with water and see if it drains in a reasonable time. “Reasonable time” is a function of your plant material and other factors, and will be a judgement call in each particular case.

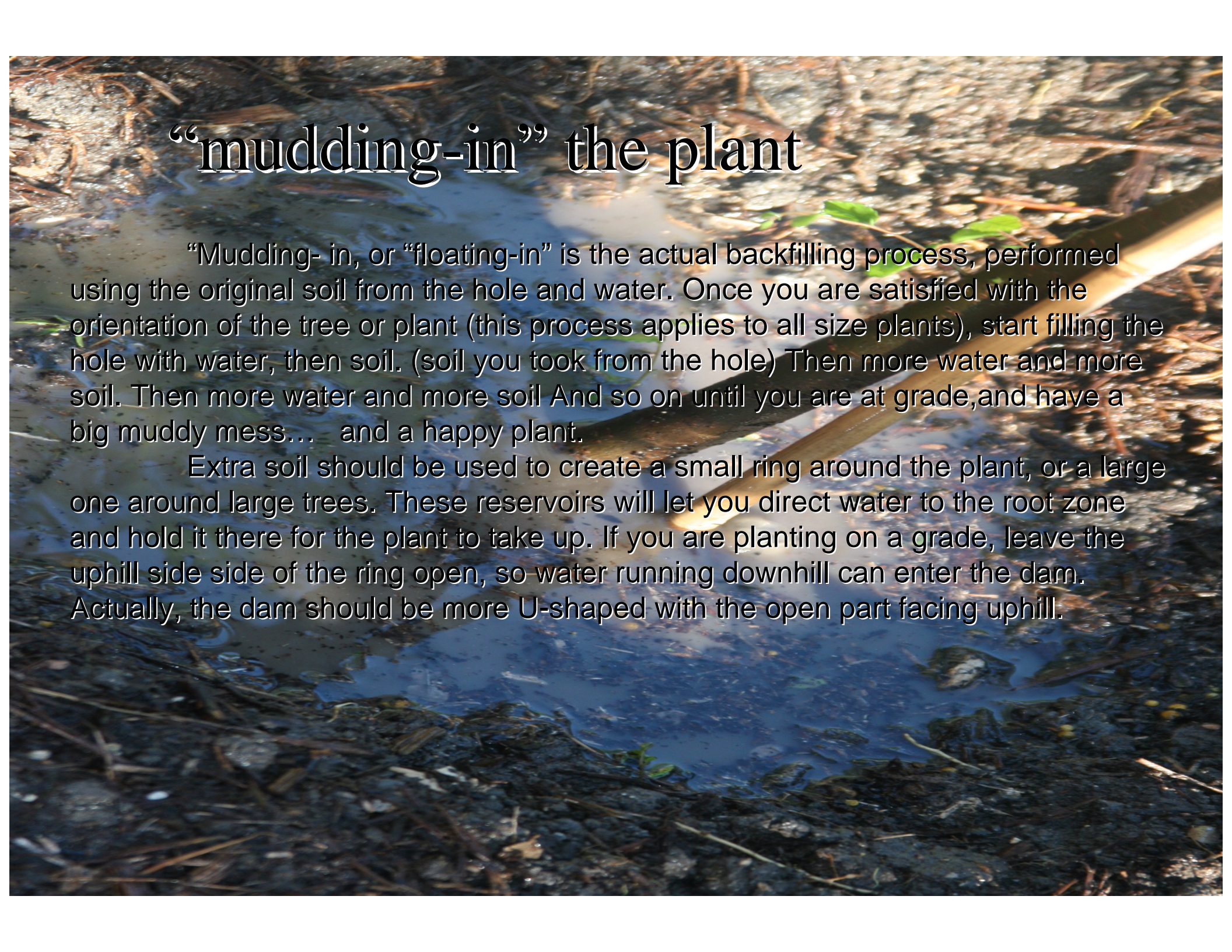
# Large plant specimens

Large plants or trees require different handling and a little more attention as you plant them. Special care should be taken as they are unloaded and moved around the site. Tree dollies work quite well up to about 200g or 36' box sizes, but after that you may need power equipment. Removing them from their containers can sometimes be an adventure in and of itself.

Then they must be maneuvered into the planting hole. The old adage , “measure twice, plant once” applies. You do not want to have to remove a large specimen because the hole is too deep, shallow or narrow. So check the hole carefully.

Also, know what the desired orientation of the plant is. The decision-maker should be on site. Many plants have an obviously better-looking side, or a wider side is desired for screening. Whatever the rationale, have the information or the person there. It is much easier to turn a tree thirty degrees to the right before it has been watered and “mudded-in”.

\*Tip



# “mudding-in” the plant

“Mudding- in, or “floating-in” is the actual backfilling process, performed using the original soil from the hole and water. Once you are satisfied with the orientation of the tree or plant (this process applies to all size plants), start filling the hole with water, then soil. (soil you took from the hole) Then more water and more soil. Then more water and more soil And so on until you are at grade, and have a big muddy mess... and a happy plant.

Extra soil should be used to create a small ring around the plant, or a large one around large trees. These reservoirs will let you direct water to the root zone and hold it there for the plant to take up. If you are planting on a grade, leave the uphill side side of the ring open, so water running downhill can enter the dam. Actually, the dam should be more U-shaped with the open part facing uphill.



# Mulch

- Reasons for Mulch
  - Weed suppression
  - Moisture retention
  - Erosion control
  - Soil condition improvement
  - Soil temperature regulation
  - Aesthetic

# Types of Mulch

- **Organic**- adds organic matter and nutrients to the soil over time
  - Cedar
  - Shredded hardwood
  - Pine bark
  - Pine straw, leaves, etc.
- **Inorganic**- longer lasting, but with virtually no benefits to soil structure
  - Gravel
  - Stone
  - Glass
  - Rubber, etc.
  - Beer Cans (just making sure y'all are still with me)

QuickTime™ and a  
Laplacompresor  
are required to see this picture.

More good mulch info:

<http://www.treesaregood.com/treecare/mulching.aspx>



# Proper Mulching Techniques

**Mulches are materials placed over the soil surface to maintain moisture and improve soil conditions. Mulching is one of the most beneficial things a home owner can do for the health of a tree. Mulch can reduce water loss from the soil, minimize weed competition, and improve soil structure. Properly applied, mulch can give landscapes a handsome, well-groomed appearance.**

**Mulch must be applied properly; if it is too deep or if the wrong material is used, it can actually cause significant harm to trees and other landscape plants.**

Trees growing in a natural forest environment have their roots anchored in a rich, well-aerated soil full of essential nutrients. The soil is blanketed by leaves and organic materials that replenish nutrients and provide an optimal environment for root growth and mineral uptake. Urban landscapes, however, are typically a much harsher environment with poor soils, little organic matter, and large fluctuations in temperature and moisture. Applying a 2- to 4-inch layer of organic mulch can mimic a more natural environment and improve plant health.

The root system of a tree is not a mirror image of the top. The roots of most trees can extend out a significant distance from the tree trunk. Although the guideline for many maintenance practices is the drip line—the outermost extension of the canopy—the roots can grow many times that distance. In addition, most of the fine, absorbing roots are located within inches of the soil surface. These roots, which are essential for taking up water and minerals, require oxygen to survive. A thin layer of mulch, applied as broadly as practical, can improve the soil structure, oxygen levels, temperature, and moisture availability where these roots grow

# Benefits of Proper Mulching

- \* Mulch can give planting beds a uniform, well-cared-for look.
- \* Helps maintain soil moisture. Evaporation is reduced, and the need for watering can be minimized.
- \* Helps control weeds. A 2- to 4-inch layer of mulch will reduce the germination and growth of weeds.
- \* Mulch serves as nature's insulating blanket. Mulch keeps soils warmer in the winter and cooler in the summer.
- \* Many types of mulch can improve soil aeration, structure (aggregation of soil particles), and drainage over time.
- \* Some mulches can improve soil fertility.
- \* A layer of mulch can inhibit certain plant diseases.
- \* Mulching around trees helps facilitate maintenance and can reduce the likelihood of damage from "weed

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Applying a 2- to 4-inch layer of organic mulch can mimic a more natural environment and improve plant health.

# Types of Mulch

- Mulches are available commercially in many forms. The two major types of mulch are inorganic and organic. Inorganic mulches include various types of stone, lava rock, pulverized rubber, geotextile fabrics, and other materials. Inorganic mulches do not decompose and do not need to be replenished often. On the other hand, they do not improve soil structure, add organic materials, or provide nutrients. For these reasons, most horticulturists and arborists prefer organic mulches
- Organic mulches include wood chips, pine needles, hardwood and softwood bark, cocoa hulls, leaves, compost mixes, and a variety of other products usually derived from plants. Organic mulches decompose in the landscape at different rates depending on the material and climate. Those that decompose faster must be replenished more often. Because the decomposition process improves soil quality and fertility, many arborists and other landscape professionals consider that characteristic a positive one, despite.
- **Not Too Much!**
- As beneficial as mulch is, too much can be harmful. The generally recommended mulching depth is 2 to 4 inches. Unfortunately, many landscapes are falling victim to a plague of overmulching. A new term, “mulch volcanoes,” has emerged to describe mulch that has been piled up around the base of trees. Most organic mulches must be replenished, but the rate of decomposition varies. Some mulches, such as cypress mulch, remain intact for many years. Top dressing with new mulch annually (often for the sake of refreshing the color) creates a buildup to depths that can be unhealthy. Deep mulch can be effective in suppressing weeds and reducing maintenance, but it often causes additional problems.

## Glass Mulch



# Edging beds

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Edging planting beds is a good way to keep mulch where it belongs, and attempt to keep turf where it belongs. It can also have an aesthetic component if desired.

Some types of edging commonly used are...

Steel- comes in various gauges and lengths, can be very precisely installed to desired shapes or geometry... can be difficult installing in shallow soils over bedrock, or in areas with lots of large roots or utilities... can be a little “edgy” (sharp) around kids

Plastic - no comment

Stone - can be aesthetically pleasing... can be expensive, depending on scale

Cedar log - works well, relatively inexpensive... done by skilled craftsmen, it can look quite nice, ☐but a little more rustic looking... probably not right for your sleek, contemporary design

Plastic “wood”(Trex, Choice-Dek, etc.) - lasts a long time, a little expensive, but you can do clean lines and shapes... more kid friendly

Also, there is the “edge” with no “edging”- a smooth, clean 3”-5” canal dug along the bed-line with a flat spade... allows you to apply a thicker layer of mulch at the bed perimeter, and draw the maintenance/battle line between areas,





QuickTime™ and a  
decompressor  
are needed to see this picture.



