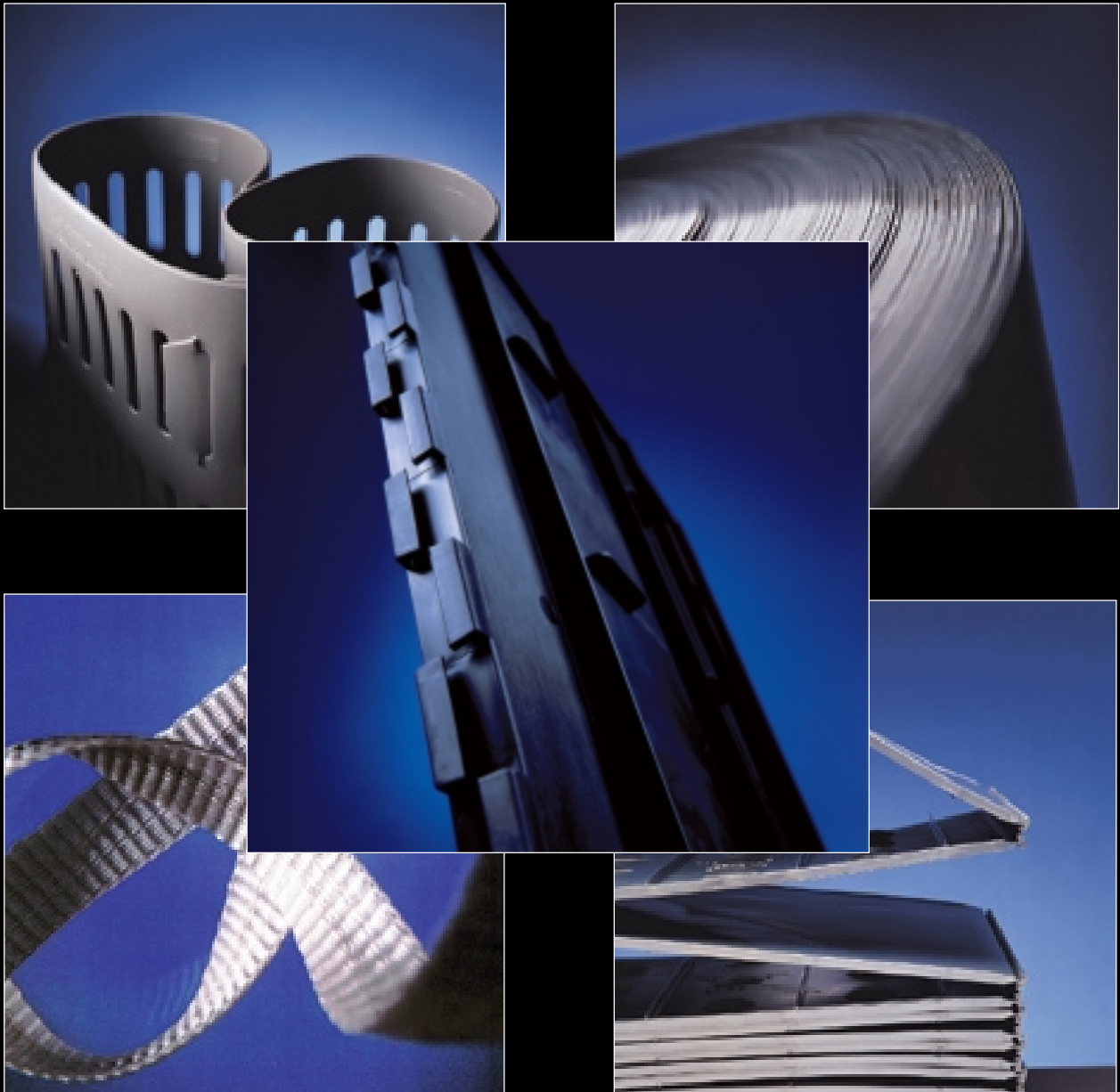


*Dedicated to enhancing our urban forest for over 25 years*



# Introduction



In 1976 DeepRoot invented the first practical and economical method to prevent damage to hardscapes from tree roots. Since then we have grown into a company dedicated to helping trees thrive in our difficult urban and suburban world with a variety of tree and landscape products.

In the following pages each of our different products is highlighted

explaining their use and design features. A detailed *Technical Product Sheet* is available for each product as well as a comprehensive *Specification and Installation Guide* to DeepRoot tree root barriers. CAD disks with specifications are also available. To receive these please call us toll free at 800.458.7668 or visit us on the Internet at [www.deeproot.com](http://www.deeproot.com).



This *Ficus nitida* (*ficus micro carpa*) reaching maturity illustrates the DeepRoot method of directing tree roots downward, stopping roots from damaging sidewalks, curbs and paving. They also prevent roots from uplifting lawns and other planted areas, thus protecting against the high replacement cost of damaged landscapes.

These *Ficus nitida* are two of several planted in approximately 1978 on Warner Avenue in Santa Ana, California. The tree on the right was planted using DeepRoot while the tree on the left was planted without

DeepRoot. They are of similar height and span but the tree without DeepRoot has caused major upheaval while the sidewalk surrounding the DeepRoot tree is smooth and intact. For a closer look check out these photos from the same block.

DeepRoot products are patented under one or more of the following U.S. Patents, 5,070,642; 5,305,549; 5,371,967; and 5,442,891. Other patents pending.

While our experience has shown that the proper use and installation of DeepRoot tree root barriers and planters produces deep root growth, trees are living things whose growth cannot always be predicted. Accordingly, Deep Root makes no warranties, express or implied, including without limitation, any warranties of merchantability or fitness for a particular purpose, regarding its tree root barriers and planters. In particular, it makes no warranty as to the effect of DeepRoot tree root barriers and planters on the growth of any tree, on the growth of its roots, or on any nearby structures. It is recommended that a local Arborist be consulted.



The *Ficus nitida* on the right was planted with DeepRoot while the tree on the left was not and has caused considerable damage and created a



pedestrian hazard. Cities and property owners are liable for damage and injury caused by uprooted hardscapes.

# Hardscape Protection

**D**eepRoot is a patented mechanical barrier and root deflector placed between tree roots and hardscapes to prevent damage. This reduces costs, maintenance and liability to cities, homeowners, developers and others for repairs, restoration and injuries caused by root damage.

DeepRoot is used both for new tree plantings and for root pruning applications to preserve the beauty and value of mature trees while minimizing repair and liability costs of damaged hardscapes.

Tree roots are opportunistic, meaning they will grow wherever adequate conditions exist that supply oxygen, water and other nutrients. DeepRoot takes advantage of the natural growth habits of roots. As a root tip travels out from the root ball the tip will contact the barrier. Unable to penetrate through the barrier the root will turn and eventually reach the vertical 90° ribs that are spaced every six inches. The root tip then travels along the length of the rib before finally exiting underneath the barrier. This process of guiding the root down and then out from underneath the barrier enables the tree to grow to its full potential while eliminating the surface rooting and buttress root effect that damages hardscapes and utilities.

Planting trees anywhere near a hardscape is a compromise. Planting with DeepRoot gives designers greater flexibility with respect to both tree and site selection and provides the most workable and cost effective

solutions to root damage. Using DeepRoot enhances our urban forest by helping to grow strong,

healthy trees that will not be removed due to liability or damage concerns.



*This series of photos details the downward growth pattern DeepRoot creates. The photo above shows an overview of a control tree (background) with no barrier and a tree planted with DeepRoot (foreground), from a recent test by the United States Department of Agriculture, Forest Service at the Western Center for Urban Forest Research in Solano, California. The photo on the right is a detail of the root diversion created by the 90° rib in DeepRoot. Where the root travels once it is*



*underneath the barrier is determined by many factors including soil compaction, drainage and soil type. Some roots may begin to return to the surface, however, the capacity of those roots to cause damage is negated. A root that has traveled down the length of the barrier and exited underneath has passed what is known as the Zone of Rapid Taper (ZRT) This area causes most hardscape damage. The ZRT is the buttress root effect where surface roots close to the trunk swell as they age.*



*The photo above of a control tree without barrier illustrates the surface buttress roots that cause damage to hardscapes.*

*By contrast the DeepRoot tree in the photo at the upper right redirects root growth down preventing damage.*

# Using DeepRoot

There are two primary methods of using DeepRoot. We call these planting styles, either Linear or Surround. The choice between the two is primarily a consideration of the site.

**Linear** style planting is an expansive barrier application that provides maximum protection while utilizing all available rooting space. For new plantings the barrier is placed in a straight line directly along the hardscape to be protected. The linear style has the advantage of allowing the tree to take advantage of all available soil volume for root growth which translates directly into a healthier tree. At the same time it provides complete hardscape protection. The illustration below details a typical Linear style application.

In the **Surround** planting style the barrier loosely surrounds or encircles the root ball. Ultimately as the roots grow they will come

into contact with the barrier. Upon reaching the 90° root deflecting ribs root growth is redirected downward. Without this 90° rib the roots would swirl around the walls of the barrier like spaghetti on a fork, girdling the roots which can stunt growth or even kill the tree.

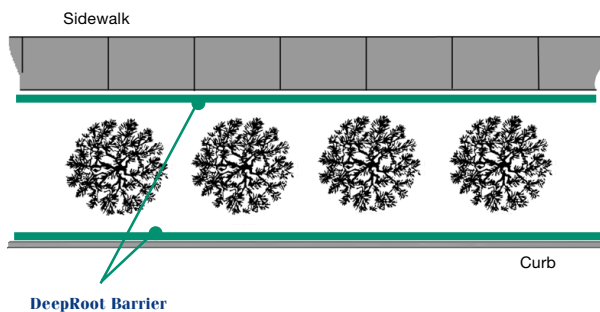
The Surround style is typically used for new tree plantings in a variety of landscapes, such as sidewalk cutouts or parkways. It is most common in planting applications where the tree is surrounded on 4 sides by hardscape. The illustration at the bottom left below details a typical Surround style planting.

If planting in tree pits and using the Surround style, plan to line the outside of the hole with DeepRoot. This provides as much immediately accessible, uncompacted soil volume as possible while protecting the hardscape at the critical Zone of Rapid Taper.

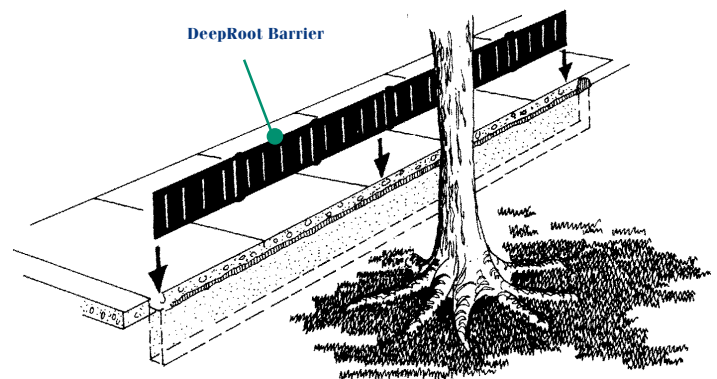
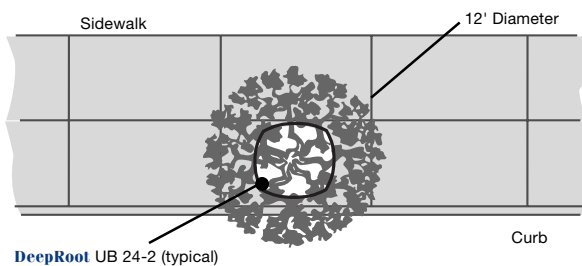
DeepRoot tree root barriers come in several different sizes and configurations to suit different sites and applications. For complete details and guidelines see our *Specification and Installation Guide* to DeepRoot.

DeepRoot is also used in situations where a tree was originally planted without a barrier and has caused damage to a nearby hardscape. **Root Pruning** preserves the value and beauty of a mature tree while preventing future damage. In a root pruning application a trench is dug and the roots causing damage cleanly cut and removed. DeepRoot is then installed in a Linear style alongside the repaired or replaced sidewalk as demonstrated in the illustration below. There are limitations to root pruning however and a qualified Certified Arborist should be consulted. *For more complete Root Pruning recommendations call 800.458.7668 and request our Root Pruning Specifications.*

Typical Linear Style Planting Application



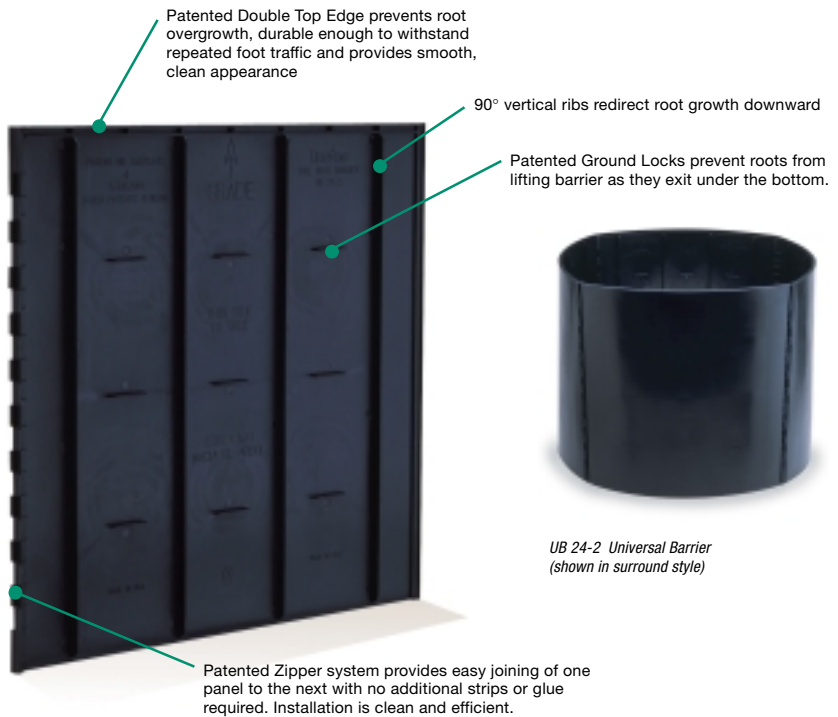
Typical Surround Style Planting Application



**Note: Always consult your local qualified Arborist before root pruning.**

# DeepRoot Features

**S**everal product features make DeepRoot the most effective tree root diversion systems available. As the original developers of effective hardscape protection over 20 years ago DeepRoot has incorporated numerous design changes that reflect knowledge gained from thousands of applications. We use the highest quality Polypropylene and Polyethylene materials with 50% Post-Consumer recycled content to ensure a product that is tough enough to endure the rigors of construction. Specific product features are highlighted in this photograph.



UB 24-2 Universal Barrier (shown in surround style)

**DeepRoot tree root barriers are available in many sizes and configurations to fit all planting applications and sites. For complete details see the individual Product Technical Sheets as well as the comprehensive Specifiers Guide to DeepRoot.**

**UB 24-2 - Universal Barrier (Universal meaning used for either Linear or Surround style)** is 24" high and 2' wide. Featuring our Zipper joining system this is the most common barrier size. Ideal for sidewalk, curb and gutter and median strips.

**UB 36-2, UB 48-2 - Universal Barriers** are 36" high and 2' wide, and 48" high and 2' wide respectively. These barriers are used in sites where added depth is a requirement such as retaining walls and slopes.

**LB 12-2 - Linear Barrier** is 12" high and 2' wide. Factory preassembled in 80' lengths LB 12-2 is only used for Linear applications and is ideal for cart and bike paths and less aggressive tree species.

*Please note Linear Barriers are designed for Linear style plantings only and should never be used in a Surround planting application.*

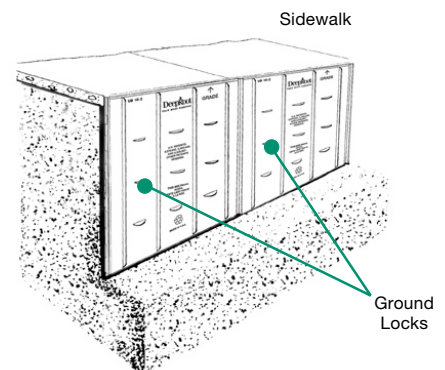
**UB 18-2 - Universal Barrier** is 18" high and 2' wide. This product is ideal for sidewalk and median strip applications, either Linear or Surround.



UB 24-2 Universal Barrier (shown)



UB 36-2 Universal Barrier (shown)



UB 18-2 Universal Barrier shown

# Also from DeepRoot...

## ArborTie®

Tree Staking and Guying Material

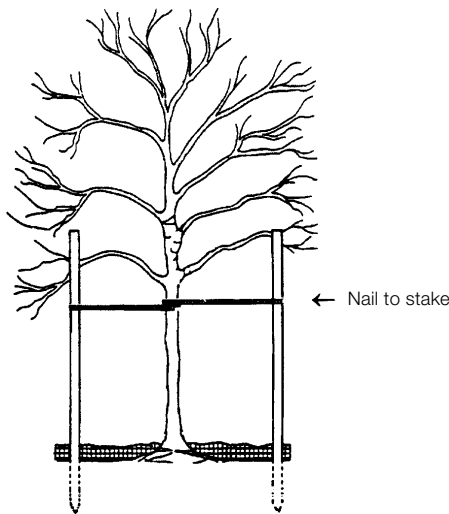


ArborTie is a revolutionary new material for staking and guying trees. Specifically designed to replace traditional methods such as wire and hose, ArborTie is safe, soft, easy to use and less expensive than traditional tree ties.

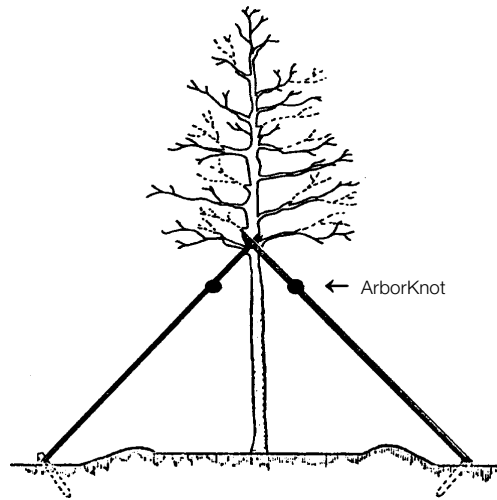
The soft polypropylene materials have an exclusive weave that ensures a rounded edge at all times. This prevents the material from ever cutting into the bark of the tree, which is a common cause of injury or death to young trees. The weave also prevents ArborTie from unraveling like rope or string. Girdling is eliminated while improving safety.

The 900 lb. test strength stands up to fierce winds while providing enough sway to help the tree develop trunk strength. Contractors love the versatility, easy installation and convenience of the 250', 500', and 3000' rolls. ArborTie fastens to any stake or anchoring system with traditional knots or nails. For guying ArborTie eliminates the need to flag or cover guywires and our proven ArborKnot expands as the tree grows in caliper, preventing girdling. Available in high visibility safety white or olive green ArborTie is the best method of staking and guying commercially available.

Typical ArborTie staking installation



Typical ArborTie guying installation



## ArborGard+®

TREE TRUNK PROTECTORS



A very common cause of death to young trees is the damage caused by string trimmers, lawn mowers and rodents. Patented ArborGard+® is scientifically designed to prevent such injury.

Made in a natural shade with ultra-violet inhibitors ArborGard+ will expand as the tree grows. And unlike other tree trunk guards ArborGard+ will never lose its shape in the sun.

ArborGard+ has the optimum size holes to protect against rodents, prevent insect infestation and bark rot. In addition it allows the tree to breathe and prevents sun scald once the ArborGard+ is removed.

Easy to install ArborGard+ is 9" high and protects trunks up to 4" in diameter. For larger trees simply join two or more ArborGard+ together.



# ...these fine products.

## DeepRoot® Water Barriers WB 24, WB 24/40, WB 30/40, WB 36



Made of extremely tough yet lightweight polyethylene DeepRoot Water Barriers protect hardscapes and landscapes from subterranean water movement. They are also ideal for golf course greens as a liner to separate grasses, invasive species protection and for home foundations to prevent root intrusion.

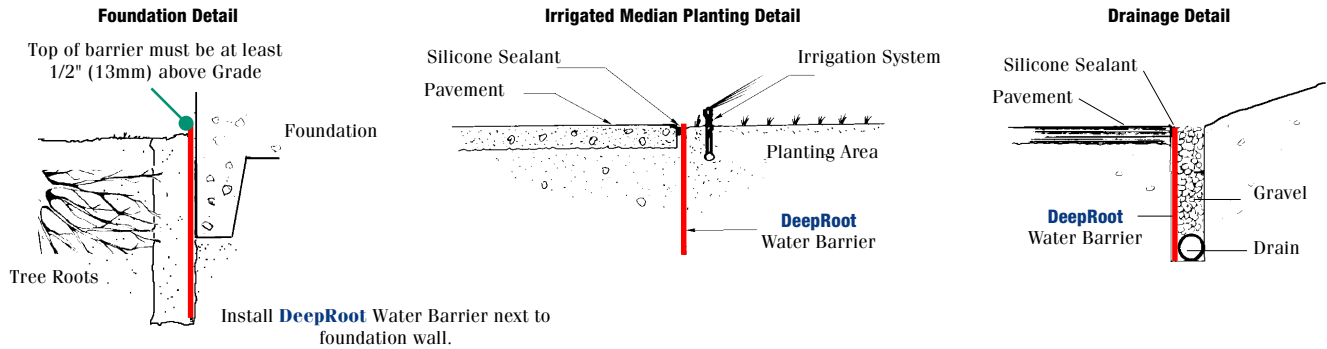
### Applications:

- Medians
- Roads
- Golf Greens liner
- Bamboo Control
- Invasive Species Control
- Foundation Protection

### Dimensions:

WB 24:	24" x 300' Roll – 0.030" (0.76 mm) Thickness
WB 24/40:	24" x 300' Roll – 0.040" (1.02 mm) Thickness
WB 30/40:	30" x 300' Roll – 0.040" (1.02 mm) Thickness
WB 36:	36" x 300' Roll – 0.030" (0.76 mm) Thickness

## Typical DeepRoot Water Barrier Applications



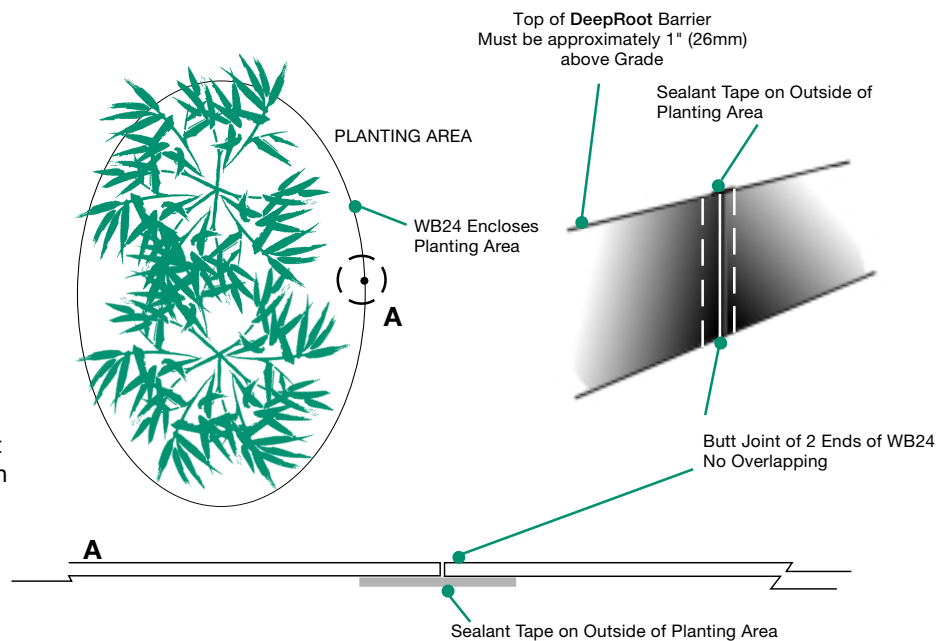
## DeepRoot® Bamboo Barriers

Bamboo makes an ideal garden plant and grows quickly to provide privacy and beauty.

Many designers and contractors are nevertheless hesitant to recommend bamboo to clients because, if left unchecked, it can grow throughout the yard and become a major nuisance.

DeepRoot Water Barrier has proven to be an effective material to prevent the unwanted spread of bamboo. The smooth surface of the Water Barrier acts as a root stop, diverting the rhizome and preventing rampant growth. The rhizome will not penetrate the barrier, rather it will turn and continue to grow along the surface of the barrier. This contains the bamboo and prevents the unwanted spread.

## A Typical Surround Planting of Bamboo Using DeepRoot Water Barrier



# DeepRoot®

URBAN LANDSCAPE PRODUCTS

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