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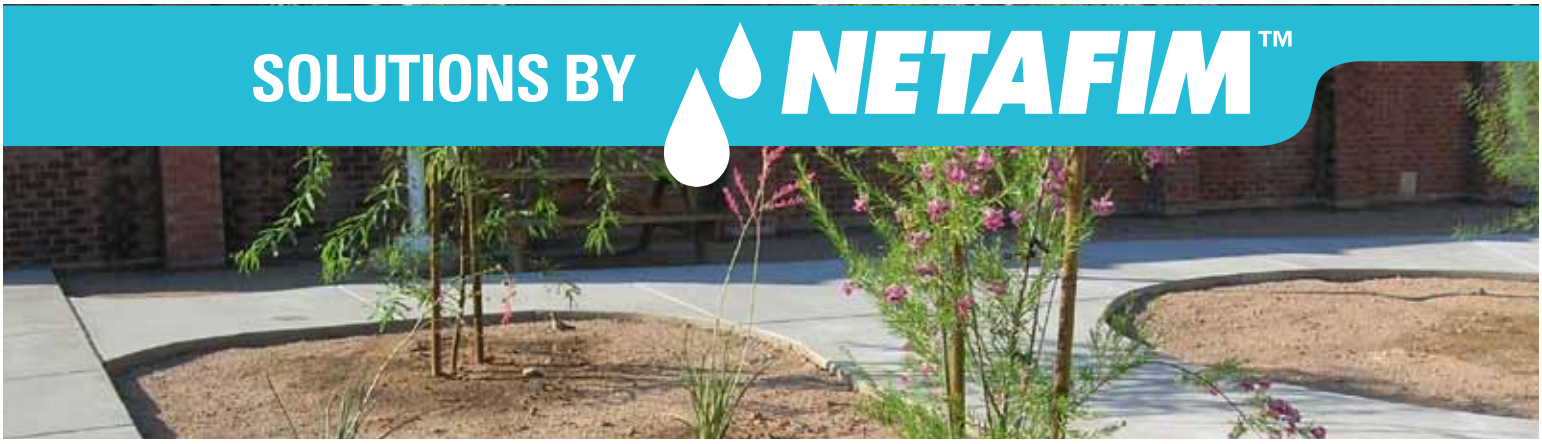


HOWENSTINE HIGH SCHOOL

ASPHALT BUS DROP IS TRANSFORMED INTO AN ATTRACTIVE HANG-OUT FOR STUDENTS

WITH THE HELP OF TECHLINE CV TREE AND SHRUB RINGS

Revitalizing a bare, mostly unusable area of the campus became a catalyst in the vision of a necessary landscape improvement project. "The mission is to reach out to young people to teach them about Landscape as a potential career," says Colleen Sand of Howenstine High School.

ABOUT HOWENSTINE HIGH SCHOOL

Howenstine has a diverse community of students with a curriculum that is modeled around a Service Learning philosophy. The principle of service learning incorporates teaching opportunities with service oriented projects that ultimately demonstrate volunteerism and community awareness through real life examples of how the classroom relates to the world around them. At least one service project is required of every student who attends Howenstine. With this in mind, Colleen Sand began formulating the plan that would become 'the project' with the expectation that nearly every student in the 200 person population would participate on some level.

TIMING IS EVERYTHING

From the project's inception, Colleen knew that budget constraints could stall her proposal. Thinking outside the box, Colleen applied for and subsequently received a $5,000 grant to subsidize the project while students solicited donations.

Coincidentally, Lisa Ribes was considering project options in conjunction with National Landscape Architecture Month (April, 2007). Interested in motivating young people and sharing her career experiences as a Landscape Architect, she approached Sand about a potential campus project.

With Sand's enthusiastic acceptance of Ribes' offer, they got to work on the initial planning. As it progressed through a needs assessment process, Ribes recommended Netafim, seeing the ideal fit of Netafim products for this application. Involving Mark Hall, Netafim USA Landscape District Sales Manager/Landscape Architect, was a natural choice for the drip irrigation instruction and supervision portion of the project, given his vast experience and creativity with landscape applications.

HOWENSTINE PROJECT STATS

LOCATION

Tuscon, Arizona

LANDSCAPE ARCHITECT

Lisa Ribes, Wheat Scharf Associates, Inc.

ISSUES TO ADDRESS

- Maximize limited water resources
- Efficiently irrigate trees and shrubs
- Poor soil quality due to the area primarily consisting of mainly asphalt
- Pathways and surrounding terrain needed to safely accommodate pedestrians and wheelchairs

NETAFIM PRODUCTS USED

- Techline CV Dripperline with 0.4 GPH dripper flow rate, 18" dripper spacing
- Line flushing valve
- Insert couplings, elbows, tees and crosses, 17mm males adapters and 17mm micro-tubing
- 6" soil staples

RESULTS

- Rings were formed using Techline CV and fittings to effectively and efficiently irrigate tree and shrub root systems.
- Techline CV rings promote better root growth and a strong and wide root structure so trees will not blow over during Monsoon season, a typical problem for this area.
- Because Techline CV is available with a variety of flow rates and dripper spacings, the needs of trees and shrubs were easily matched.
- Slippery pathways were eliminated making it safe for walkers and wheelchair users because water is delivered directly to the root zone, with no overspray.
- Shrub or tree rings are easy add-ons to existing irrigation systems.

SOLUTIONS BY NETAFIM™

Howenstine High Landscape Project Crew

HOWENSTINE HIGH SCHOOL

BUS DROP TRANSFORMED

THE CHALLENGE

The project area consisted primarily of asphalt, devoid of any landscape, making this space a heat island that was almost unbearable in the summer months. The revitalized area would be transformed from a bus drop off into an attractive gathering spot that would add usable space to the expanding campus population. The design concept needed to include pathways and surrounding terrain that would accommodate pedestrians and wheelchairs alike, while adding adequate shade for the students who would frequent the area.

Many students were recruited for the undertaking, one of which was sophomore, Karena Guthrie. Karena was thrilled to be chosen for something that would become an integral, permanent improvement on the campus that she was so proud of. Her primary role was to research and provide input on what plants would thrive in the hot Tucson climate. In choosing the plants, she had to take into consideration that the soil quality could be diminished due to the removal of the old asphalt. The goal to use only native plants to maximize the water resources was a major factor in the final selections. Fellow sophomore, R.B. Lyle, worked closely with the planning team as his experience with water harvesting at his home was invaluable in the selection of native plants as well as placement and pathway design. Like Guthrie, Lyle was interested in the opportunity to learn more about the water savvy options for their landscapes.

THE NETAFIM SOLUTION

Netafim's Techline CV dripperline was chosen primarily because it conserves water and can be buried. Subsurface drip irrigation uses up to 70% less water when compared to pop up sprinklers because water seeps into the root zone, very slowly, at a low pressure. Water isn't wasted through evaporation, wind or overspray – eliminating slippery pathways making it safe for pedestrians and wheelchair users. By installing the dripperline subsurface, tripping hazards and vandalism can also be reduced.

THE PROJECT IN ACTION

The students were deeply involved in all stages of the preparation and training was a vital part in carrying out the mission. With the design in hand and a truck full of donated Netafim materials, Mark was ready to get to work.

To make good use of the time and ensure a successful outcome, Mark conducted three student instruction classes and labs to provide the students with hands-on experience. Project-based learning provides a chance for adolescents to see the concept in context and apply it to something they care about. Not only would they be building the Techline CV rings, career opportunities in the Landscape field would also be discussed. Says Sand, "Adults become a very important part of sharing learning opportunities; when people come in [the kids] connect with that." Hall, impressed by the focus of the students, commented, "It was amazing how quickly they learned how to put our system together."

Because the tubing is flexible enough to bend to a 7" radius, by simply cutting the dripperline and connecting with a few fittings (glueless) the Techline CV rings are easy to build. The rings surround the root ball of the tree, providing a deep watering which promotes better root growth and a strong and wide root structure so trees will not blow over during Monsoon season (a typical problem for this area). Techline CV is available in a variety of flow rates and dripper spacings so the tree and shrub water needs can be easily matched and effectively and efficiently irrigated.

Students working together to install a tree ring and plant a tree.

With the area cleared of asphalt and trenches dug, the adult and student volunteers were ready to install the dripperline in the 107 degree heat. Working from early morning until the project was completed, Hall and the students placed the Techline CV rings in the beds and planted the trees and shrubs.

THE RESULTS

Howenstine provided a wonderful example of how drip irrigation is a real solution to getting hydration to trees and shrubs as well as maximizing limited water resources. The improvement has clearly enhanced the campus beautification efforts, but it isn't over yet! Adjustments to wheelchair accessibility and re-evaluating plant locations are just two of the design modifications currently underway. Senior, Matthew Johnson, has been on the project from the beginning. Known for his masonry skills, Matthew is heading up the construction of a cement block bench, incorporating ceramic tiles created by the art students.

The students are proud of what they accomplished, but beyond the finished landscaping project came something more. The experience of creating a vision, working it through and seeing it to the end taught the group more than how to plan a landscape, it gave them tools that will take them beyond the classroom and high school.

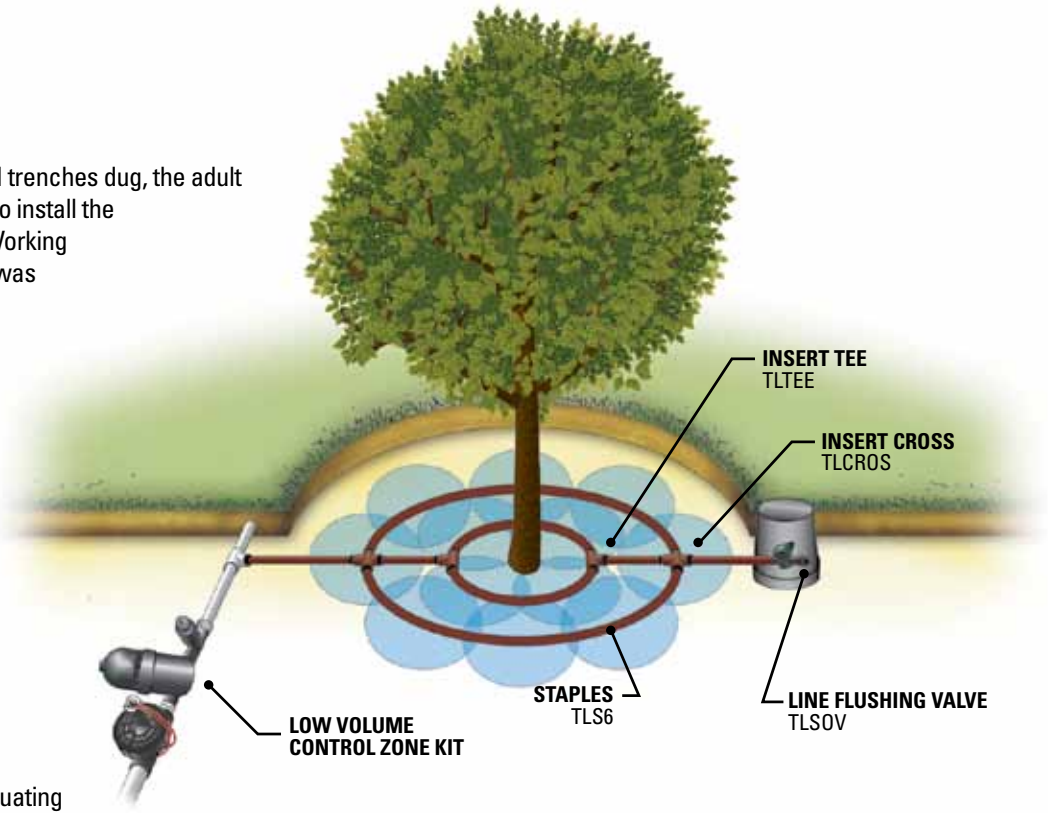
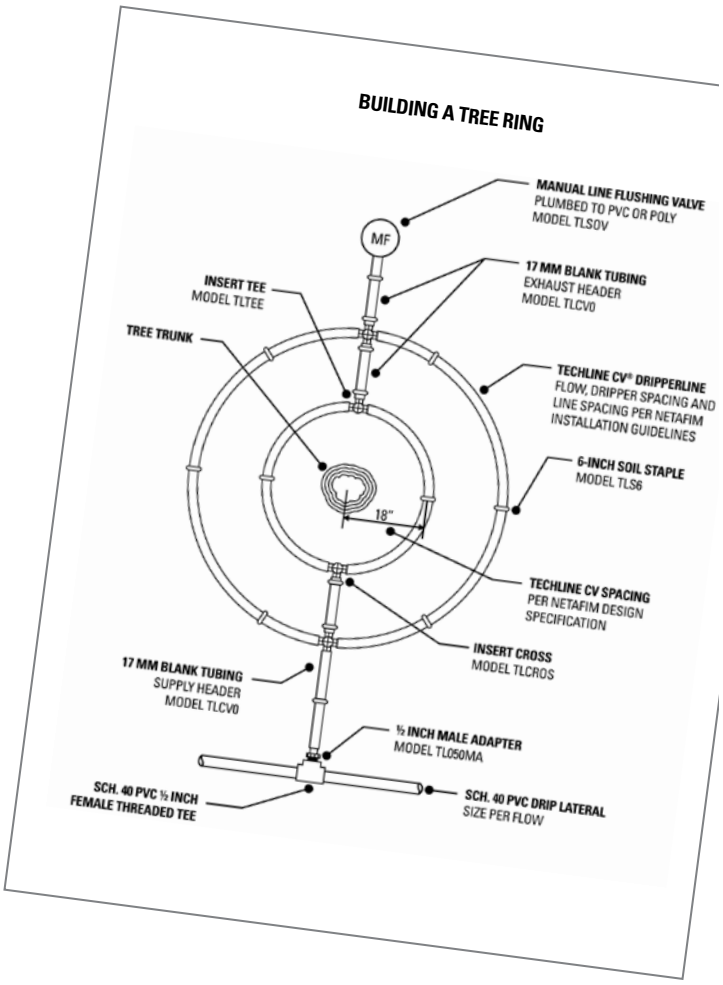


Illustration of a typical tree ring layout

HOW TO BUILD AND INSTALL TREE RINGS

For trees, shrubs and native plants with a wide random spacing requirement, rings built using Techline CV Dripperline are the perfect solution. Techline CV Dripperline's tubing flexibility bends to a 7" radius, easily forming a ring using just a handful of fittings.



BUILDING A TREE RING

To build a tree ring using
Techline CV Dripperline, the following accessories are needed:

- Insert Tee TLTEE
- Insert Cross TLCROS
- Line Flushing Valve TLSOV
- Staples TLS6
- Low Volume Control Zone Kit

INSTALLING A TREE RING

- Install Techline CV Dripperline ring 18 inches from the center of the tree truck. Each additional ring should be installed following Netafim General Installation Guidelines.
- Install Techline CV Dripperline:
  - On the soil surface (below decomposed granite or mulch) to a maximum of 6 inches below grade.
  - Staple in place per manufacturer's recommendation, backfill and spread surface treatment as directed.
  - In accordance with Netafim General Installation Guidelines.

TECHLINE CV DRIPPERLINE

GENERAL INSTALLATION GUIDELINES FOR TREES & SHRUBS

SOIL TYPE	CLAY	LOAM	SANDY
Dripper Flow	0.26 GPH	0.4 GPH	0.6 GPH
Dripper Interval	18"		
Lateral (Row) Spacing	18" - 24"		
Burial Depth	Surface or bury evenly throughout the zone to a maximum of 6"		
Application Rate (in/hr)	.19 - .14	.29 - .21	.72 - .58
Time to Apply ¼" Of Water (min)	79 - 107	52 - 71	21 - 26

NOTE: It is important to provide trees with adequate water to both the rootball and surrounding soil, while also planning for the tree's growth. When transplanting trees, the soil in the rootball and the surrounding soil are generally different. A sufficient number of drippers irrigating both soil types are needed to overcome this natural barrier.

A ring of Techline CV may be installed close to the rootball, with additional dripperline rings added at installation or as the tree matures. This provides sufficient water to the tree's root zone for proper growth and stability of each tree.

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