

PREPARATION OF CONTAINER GROWING BEDS

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Greenleaf Nursery Company has two growing areas. Our original location, near Tahlequah, Oklahoma, consists of 310 acres and is located on the rolling, rocky hills adjacent to Lake Tenkiller. The second growing area was located in El Campo in 1971. Gil Nickel and Austin Kenyon selected the area for its mild climate and closeness to large and developing metropolitan areas of Texas.

They liked the level land and the deep black clay which would make it easy to prepare growing beds. Due to the levelness of the land they decided to reverse the block design; instead of the block's being crowned it would slope to the center. This would allow the roads to be built on the crown and assure good drainage of the roadway and block.

We contacted the Texas Highway Department and road building firms to see what preparation should be made to the base. They recommended lime stabilization. We put in 8 test areas where we incorporated lime at the rate of 10 lb/sq yd and compared them to areas with no stabilization. We covered these areas with 4 materials: 4-mil black plastic; oyster shells; washed 1-inch bunker gravel; and bay prairie aggregate (a baked clay approximately $\frac{1}{4}$ to $\frac{1}{2}$ in in size).

Lime stabilization worked very well for all of the materials. We first selected the bay prairie aggregate to top the blocks. However, after one year of use we discovered the aggregates broke and crumbled. Therefore, we selected washed 1-in bunker gravel.

Our first ditches were V-ditches. They also required modification. After the first year we discovered they should be dug and boarded. We first used 1×12 in penta-treated boards; we have since changed to two 1×6 inch penta-treated boards and leave a small crack to allow water to seep into the ditch.

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(Block area 100 × 615 ft with 20-ft road on side)

Land preparation. The land is disked 6 to 8 in deep to provide a sufficient amount of loosened dirt to work with. Then a maintainer is used to shape two 120- × 615- ft container blocks at a time. This is accomplished by windrowing dirt and moving it away from the desired "V"ed area to the roadway (Figure 1). A sheep foot packer is employed to pack the

dirt in the crowned area of the adjacent blocks. A disk is then employed to loosen approximately 6 in of earth.

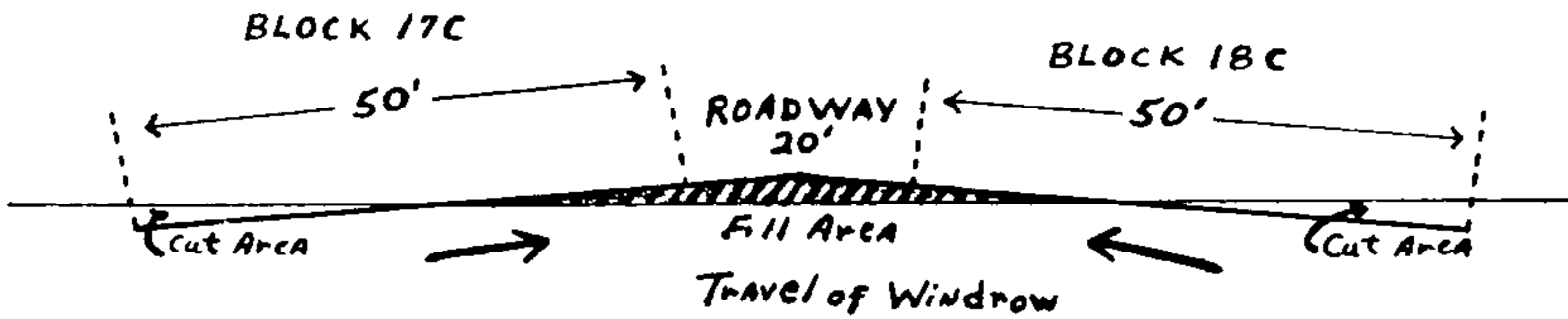


Figure 1. Arrows denote travel of windrowed dirt from cut area to fill area. This is accomplished with a maintainer by working with two adjacent blocks.

Lime stabilization. Lime is then applied at a rate of 10 lb/sq yd, disked in, watered and packed until a firm base is achieved. We apply lime at a rate of 20 lb/sq yd on our roadways. The 100- × 615-ft block area requires 48 tons of lime. The side road requires 12 tons and the end road requires 4½ tons.

Ditch preparation. A back hoe is employed to dig a “V”ed ditch down in the center of the block. This is accomplished by bolting two halves of a plow sweep to the sides of the back hoe bucket. The ditch is 12 in deep with an 18-in bottom width and a 32-in top width. After the ditch is dug, 2- × 1- × 24- in penta-treated pegs are driven into the outside edges. 1- × 6- in penta-treated boards are then secured to these pegs with nails. Two in of concrete are placed in the bottom of the ditch. Four 2- × 4- × 34- in penta-treated boards are then secured to the top of the board ditch for each 40 ft length. These 2- × 4- inch boards support the 4-in aluminum irrigation lines (Figure 2).

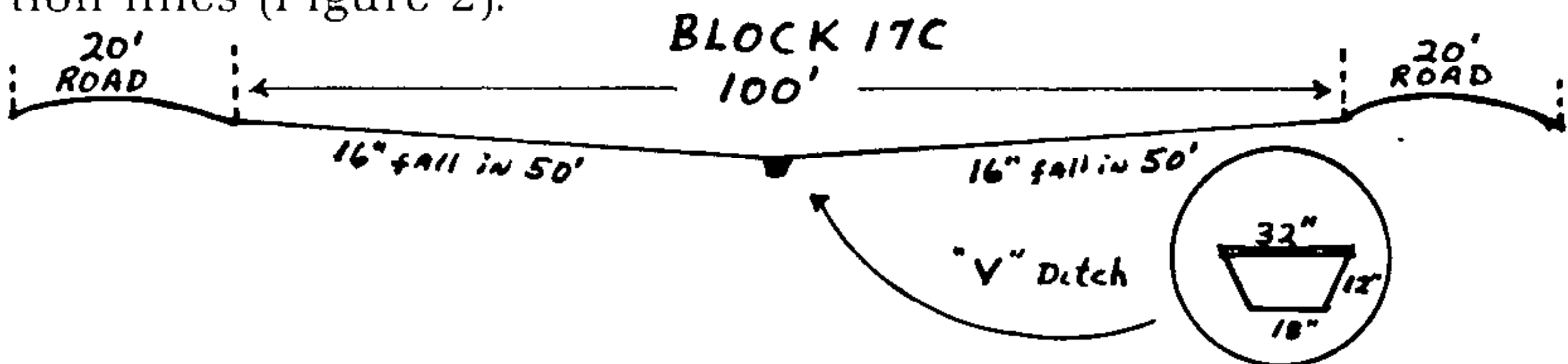


Figure 2. Block is 100 ft in width by 615 ft in length with a 20 ft roadway on each side of the block. There are 16 in of fall from edge of roadway to the block ditch.

Gravel application. Trucks are employed to haul 1-in washed bunker gravel to the stabilized block area. This requires 280 tons of gravel. The maintainer is then used to windrow and spread the gravel. A land plane assists in the latter stages, and some hand work is required for the final touches. Road gravel is applied 4- to 6- inches deep on the 20-ft roadways. They are lime stabilized with 10 lbs/sq yd and then packed. A standard side road, 20- × 615- ft in length, and a 25- × 100- ft end road require 140 yards and 60 yards,

respectively. Road gravel is a pit-dug product, which contains approximately 50% red clay and 50% gravel, and is unwashed.

Irrigation installation. Sixteen 40-ft joints of 4-in aluminum irrigation pipe, equipped with steelheads, are installed down the center of the ditch and supported by the 2- × 4- in boards on top of the ditch, two 21-ft × 1-in galvanized pipes run out from each side of the steelhead and terminate with 4-ft × ¾-in galvanized pipe and Weather Tec sprinkler.¹ A ¾-in bell reducer, ½-in threaded nipple and ½-in gas cock allow the sprinklers to be turned on and off individually. A ¾-in hose bib is located at the bottom of every other riser for the purpose of hand watering during planting and other times. The centers of the steelheads are equipped to accommodate a ¾-in riser and sprinkler head; therefore, the sprinklers are on a 40- × 42-ft spacing. A 4-in gate valve at the end of each block allows the block to be watered with 48 sprinklers at one time.

Can filling. There is room for 5 beds between each of the lateral lines. The beds are 6½ ft wide by 50 ft long with an 18-in aisle between beds. The beds will accommodate 1,206 one-gallon, 516 two-gallon, or 250 five-gallon cans per bed. When the plants are large enough in size, the plants are spaced on both sides of the ditch; thus, the beds become 6½ × 100 ft.

QUESTIONS FOR GRADY WADSWORTH

LIN TABER. What type of lime are you using?

GRADY WADSWORTH: We buy it in Austin, Texas. It is a pit-mixed rock in hydrated form.

JAKE TINGA. Could you give us some approximate per-acre costs?

GRADY WADSWORTH. A growing block occupies 1¾ A. Costs per block are as follows.

Lime stabilization	\$5,500
Gravel, 1 inch layer	
Bed	2,800
Roadway	1,500
Hardware and lumber (ditches)	1,445
Use of backhoe	300
Plumbing	2,800
	<hr/>
	\$14,345

or approximately \$14,500. Cost per acre would, therefore, be between \$8,200 or \$8,300. The blocks last at least 7 years. We

¹ Mfg by Weather Tec Corporation, 510 E Clinton Way, Suite 214, Fresno, CA 93727. Full-circle sprinkler — No 10-20AJ, half- or full-circle sprinkler — No 10-25 KAFP.

have 130 A in production and spend less than \$10,000/year for gravel.

BILL BEATY: From your discussion of can spacing it seems you are using only half of the prepared area.

GRADY WADSWORTH: No, we use all of it since the previous year's plants occupy the area where this year's crop will be spaced out. By that time, the others will have been sold.

JOHN HOPKINS: What herbicides, if any, do you use?

GRADY WADSWORTH: We use 80% wettable powder simazine at the rate of 20 lb ai/A.

PROPAGATION METHODS USED AT HINES WHOLESALE NURSERIES

STEVEN A. HOTTOVY

*Hines Wholesale Nurseries, Inc.
Houston, Texas 77042*

Hines Wholesale Nurseries operates a 200-acre container nursery approximately 20 miles west of Houston, Texas. Construction of this facility has been completed over the past 3 years. Hines Nursery grows 227 cultivars of ornamental landscape plants in several size containers. The nursery averages 170 employees during the year with seasonal fluctuations.

At the hub of the nursery is the propagation department. This branch of the nursery has been developed over the last two years and now occupies 9.6 acres. Propagation is divided into three departments: cutting, potting and liner maintenance. Propagation produced 3 million potted liners for canning and liner sales in 1981. These liners were started as rooted cuttings, seedlings or divisions. In 1982 a grafting and a spore program will be initiated.

PROPAGATION

Water source. The heart of all propagation is the water source and the mist system. Hines nursery draws its water from deep-water wells. The mist water is pH adjusted to 6.5 by acid injection and chlorinated before used. The mist system operates at 90 psi. The mist nozzles are a parasol type made by Spraying Systems Co.¹ These nozzles give excellent coverage on a 7- × 7-ft spacing with minimum maintenance. The mist

¹ Spraying Systems Co., North Ave. at Schmale Rd., Wheaton, Illinois 60187