

LANDSCAPING

General Description of the Development and Landscape Design Philosophy

All of the landscapes within Awbrey Park are expected to employ high standards. High standards for design and construction will ensure landscapes that are considerate to the site and to surrounding buildings. The Landscape Standards section specifically addresses design and architectural objectives.

Extensive formal landscaping is not required on any Awbrey Park homesites; however, all landscaping shall be organized in a casual, fluid manner so as to integrate into the natural setting of Awbrey Park. All homesites must be maintained as follows:

- a. Present a neat and pleasing appearance to all off-property vantage points (roadways and other homesites)
- b. Minimize fire danger in the area
- c. Maximize weed control
- d. Moderate the problem of wind-blown dust

If a homesite owner chooses to maintain the natural appearance of all or part of the homesite, steps must be taken to restore disturbed areas caused by construction activity and/or other activity on the homesite.

Other Considerations

Elements such as birdbaths, sculptures, water features, garden structures, etc., must be submitted as part of the landscape plan for review and written approval.

The landscaping plan must render the building footprint, driveway, parking areas, walkways, etc., exactly as proposed or built. Failure to accurately reflect hard surfaces may result in partial forfeiture of the application fee refund, a restraint against the continuation of the project or both.

Submittal of an application shall be authorization to the ARC to make onsite inspections of the homesite and proposed construction. In addition, the owner is responsible for notifying the ARC upon completion of the proposed landscaping, at which time the ARC shall arrange a final inspection to verify compliance with the plan as submitted and approved and to verify compliance with these Architectural Rules & Guidelines.

Inspection schedules become full during the building season; sometimes inspections are not feasible due to weather conditions. A request for an inspection may require a lead-time of up to three weeks or more.

Landscaping plans submitted later than five days before a scheduled ARC meeting will not be reviewed at that meeting. Landscaping may begin only after all issues (if any) are resolved, a final ARC approval letter has been granted, and the owner's written and itemized acknowledgement of the approval letter has been received by the Owner Relations Department. Failure to meet these requirements before beginning landscaping activity on site may result in a partial forfeiture of the application fee refund.

LANDSCAPE STANDARDS

General

Landscaping is required on all Awbrey Park homesites. The landscape plan is subject to review and approval by the ARC prior to the commencement of installation. Landscaping construction must be finalized within 6 months of substantial completion of the home. If a homeowner decides to maintain a portion of the homesite in a natural state, steps must be taken to restore/renaturalize areas disturbed during construction (see Native Areas).

Landscape Design Planning

Careful consideration should be given to the coordination of the elements of landscape design and the architectural features of the home itself. Properly oriented, protected and landscaped courtyards can create mini-climates, which provide a summer oasis or a warm and pleasant “sun-spot” in the spring or autumn.

Decks, which have large, solid underskirting, must be visually “broken-up” with plant materials, creating periodic vertical elements.

Formal, regimented plantings are discouraged. Shrubs, trees and other plant materials used on the homesite should be arranged in groupings, not necessarily in straight rows.

Lighting

Lighting may be incorporated in the landscape design with limitations. All driveway and exterior lighting must be shielded, exposed light sources are not allowed. Lighting may be used to enhance specimen trees, but the light sources must not be visible from the roadways or neighboring homesites.

Native Areas

A native area is defined as areas landscaped exclusively with plant materials native to Central Oregon, without permanent irrigation. Native areas shall be maintained to eliminate noxious weeds and non-native materials.

Restoration or re-naturalization of areas disturbed by the construction of your home includes the following:

- Planting native plant materials
- Spreading mulch/pine needles covering the raw earth
- Feathering transitions between truly native areas to the newly restored areas

Planter Strips

The area between the curb and sidewalk, or between the curb and property line of the homesite was landscaped with turf grass and street trees by the developer. These areas are irrigated and maintained by the Homeowners’ Association. The homesite owner is not allowed to modify the landscaping in these areas.

Slopes

Care should be taken in the planning for landscaping site gradients which will drain properly and which will support the intended plant materials. Terracing is recommended for conditions of extreme slope. The following are maximum slopes recommended for specific treatments.

Grass (mowable)	3:1	Grass (unmowed)	2:1
Parking	5%	Driveway	8%
Planted Banks	2:1	Firm Earth	1½:1

Any reshaping or regrading of the site must be shown on the submitted landscape plans for ARC review.

SUGGESTED PLANT MATERIALS

The following is a suggested list of materials for use in the landscape design. A number of shrubs, grasses and flowers may be successfully transplanted from one location on a homesite to another. Check with your landscape design consultant or contractor to determine proper season and methods for transplanting. A few local nurseries are propagating native plant materials. Check with your landscape professional for plant material availability.

Ground Cover

Fescue (festuca)

Can be used for lawns, ground cover and on slopes. Blades reach 2 to 12 inches high depending on variety and amount of water. Color can range from blue-green to dark green and blade texture, fine to course depending on variety. Meadow appearance can be clumpy or mowed. Evergreen.

Kinnikinnick (arctostaphylos uva-ursi)

Is low growing to 12 inches high, spreading to 15 feet wide; reddish in winter. White or pink flowers with red or pink fruit. Good on hillsides and slopes. Requires water for rapid growth. Evergreen.

Periwinkle (vinca)

Rapid growing with oval leaves on trailing stems. Up to 12 inches high. Blue flowers appear in spring. Full shade to partial sun, requires moist, well-drained soil. Variety *vinca minor* (dwarf) has smaller flowers and leaves. Evergreen.

Strawberry (alpine or wild)

When used as a ground cover, plants are 6 to 8 inches tall, which spread with runners to one foot across. Green, toothed leaves and white flowers; small fruit. Plant in full sun or partial shade in well-drained rich soil. Can be invasive. Native/Evergreen.

Shrubs

Alaska Blue Willow (salix purpurea)

Also called Arctic Willow and will grow 10 to 18 feet in height with purple branches and dark green leaves (1 to 3 inches long). Underside of leaves is bluish in color. Variety "*gracilis nana*" (dwarf) grows 1 to 3 feet high and is used as a background plant. Deciduous.

Barberry (berberis)

Spines on stems and green, red or gold 1 inch leaves (depending on season and variety). Berries range in color and density. Plants can be 1 to 6 feet high. Deciduous or evergreen.

Bitterbrush (pursha tridentata)

Light yellow blossoms in spring. Slight fragrance. Native plant. A major source of food for deer. Deciduous.

Dogwood (cornus)

Fast-spreading shrub 4 to 8 feet tall and spreads wildly by underground stems. Stems are red in winter with medium green, oblong leaves 2 to 5 inches long. White flowers grow in flat clusters. Will grow in sun to partial shade in moist soil. Deciduous.

Manzanita (arctostaphylos manzanita)

Must have loose, well-drained soil. Purplish-red bark with crooked branches. Pink flowers in spring. Native plant, difficult but not impossible to transplant. Evergreen.

Mugho Pine (pinus mugo)

Shrub-like form, generally low and dense. Slow growing but may reach 8 feet with a spread of 10 feet. May be pruned. Needles are dark green, in pairs and are 2 inches long. Very hardy, an excellent foundation plant. May be grown successfully in containers. Evergreen.

Oregon Grape (mahonia)

State flower of Oregon. Plants grow from 2 to 6 feet tall and will spread by underground stems. Leaves are 4 to 10 inches long and divided into smaller leaflets. Color is dark green but changes to purple or bronze in winter. Flowers are in clusters with blue-black fruit. Plant in sun or shade. Evergreen.

Potentilla (rosaceae)

Shrubs and perennial. Small rose-like flowers are white, yellow, orange or red. Profuse bloomers, June to October. Do best in full sun but can tolerate partial shade. Tolerates difficult soil conditions. Deciduous.

Ramanas Rose (rugosa rose)

Sturdy, upright shrubs, 4 to 6 feet tall and wide, lustrous deep green compound leaves. Canes are densely bristled. Fragrant 2½ to 3½ inches wide, single or double flowers are white, rose or fuchsia, June through August. Full sun, prefers well-drained soil. Deciduous.

Rhododendron (many varieties)

White, purple and red funnel-shaped flowers. Shrub will grow up to 10 feet tall. Leaves are waxy and 1½ to 5 inches long. Plant requires partial shade, cool, acid soil and protection from wind. Should not be used on west and south elevations. Evergreen.

Sagebrush (artemisa)

Numerous varieties. Some fragrant. Heat and drought tolerant. Divide in spring and fall. Evergreen.

Snowberry (symphorecarpos)

Small shrubs, which spread by, root suckers. Small pink-tinged flowers in spring. Berry-like fruit in fall. Attracts birds. Deciduous.

Spiraea (many varieties)

Height may vary by variety from 2 to 8 feet tall. Graceful arching branches with small, dark green leaves that can be red or bronze in fall. Flowers cover stems in white or pink clusters. Plants can grow in sun or partial shade. Deciduous.

Squaw Current (saxifragaceae)

Small pink flowers in spring. Berries in late summer. Attracts birds. Fairly drought tolerant, but best with some water. Deciduous.

Trees

Aspen (*populus tremuloides*)

Rapid growing tree that reaches 20 to 60 feet. Small round light green leaves turn bright yellow in the fall. Trunk and limbs are smooth and gray to green in color. Invasive root system with moist soils will spread to new trunks. May be damaging if placed too close to paved areas. Deciduous.

Austrian Pine (*pinus nigra*)

Slow growing tree. The shape is dense and pyramidal. Needles are 3 to 6 inches and dark green. Plant in sun in well-drained soil. A favorite of porcupines. Evergreen.

Birch (*betula*)

Grows 50 to 60 feet high. Fast growing white to brown bark with weeping form. Dark green leaves 1 to 3 inches long with jagged edges. Not drought tolerant. Deciduous.

Blue Spruce (*picea pungens*)

Blue-green evergreen foliage, very formal appearance, horizontal branches in whorls to the ground. Stiff, pyramidal trees 80 to 100 feet tall, often much shorter in lawn settings (25 to 30 feet, with 10 to 20 foot spread) needles are 3 to 4 sided, stiff, sharp-pointed, 1 to 1½ inches long, drooping light brown cones, 2 to 4 inches long in tops of old trees. Sun to partial shade, cool, moist soil. Evergreen.

Fir (*many varieties*)

Some dwarf varieties may be used in contorted shapes as feature plants. Some varieties will become very large. Perform best near natural environment. Some varieties found along streams on eastern slopes of Cascades. Evergreen.

Flowering Cherry (*many varieties*)

An ornamental, decorative tree from 15 to 50 feet high. Generally as wide as it is tall. Pink to rose flowers in clusters covering branches. Plant in full sun and well-drained soil. Deciduous.

Flowering Crabapple (*malus*)

Glossy, smooth, gray to gray-brown bark, low-branched, even horizontally branched shape, with yellow, orange or red fruits. Deciduous.

Flowering Plum (*prunus*)

Upright, open, thickly branched tree, 15 to 20 feet high. Pink or white flowers cover branches in early spring. Leaves are reddish-purple. Fruit is sparse and small (if any). Deciduous.

Ponderosa Pine (*pinus ponderosa*)

Moderate to rapid growth and eventually will match predominate native groupings up to 150 feet. straight, tall form with yellow-green to dark green needles in clusters. Very hardy and drought resistant once established. Evergreen.

Mountain Ash (*sorbus aucuparia*)

Upright and loosely open, 25 to 30 feet high, with fernlike compound leaves. Leaves turn a reddish color in fall with clusters of scarlet-red berries. Trees like sun or partial shade and well-drained soil. Deciduous.

Russian Olive (*eleagnus angustifolia*)

Small tree or large shrub 15 to 25 feet high and wide with open look, narrow, lance-shaped leaves are 1 to 3 inches long, silvery green branches are silver to brown, flowers are fragrant. Full sun, prefers light, sandy loam, open location. Deciduous.

Vine Maple (acer circinatum)

Crooked shape and spreads in shade. Becomes more upright in sun. Leaves are light green with 5 to 10 lobes. Fall colors turn orange, scarlet and yellow. Deciduous.

Perennials

Blue Flax (linum)

Blue, 5 petaled flowers, spring and summer. Needle-like foliage with flowers on 2 foot stems. Plants need full sun but are drought tolerant. Soils should be well-drained.

California Poppy (eschscholzia californica)

Flowers are yellow to bright orange, 2½ inches wide, summer and fall. Fern-like foliage, flowers on 18-inch stems. Full sun, drought and heat tolerant and self-sowing.

Daphne (many varieties)

Special rock garden style plants. Plants grow neat, dense mounds from 6 inches to 4 feet high. Flowers range from white, pink, rose to blue. Plant in full sun to partial shade.

Day Lily (hemerocallis)

Bell-shaped flowers with 3 petals and 3 sepals, last only a day each, in every color except white and blue, May to September. Varieties from 1 to 3½ feet tall, medium green leaves, long slender stalks have multiple blooms. Full sun to partial shade, moist well drained fertile. Slightly acid to neutral.

Iris (many varieties)

Full flowers with round, upright trailing petals, every color except true red. Stout, 9 inches to 3-foot tall fan-like clumps of sword shaped, pale green leaves, flowers open successfully on tall stalks. Thrives in full sun, rich well-drained neutral to mild alkaline soil.

Phlox (many varieties)

Cylindrical clusters of white, lavender or pink flowers. Large flower clusters on 6 to 36 inch plants, glossy, bright green foliage, narrow leaves, those on stems spear-shaped. Full sun, rich, humus, moist, well-drained soil.

Shasta Daisy (chrysanthemum maximum)

White 3 to 5 inch flowers with fold centers, some varieties are double. Blooms July through August. Long, narrow, glossy dark green leaves, flowers are on 2-foot stems. Full sun, rich well-drained soil.

Summer Snow (cerastium)

Low growing and spreading in dense mats of silvery gray. Abundant white flowers in early summer. Plant grows to 8 inches high and spreads 2 to 3 feet annually. Plant in sun and well-drained soil.

Bulbs

Many types of bulbs do well in Central Oregon. However, tulips and grape hyacinths are a particular favorite of deer. Daffodils and other members of the hyacinth family seem to be resistant to their browsing. Contact your landscape professional for specific recommendations.

Wildflower Mixes

Wildflower seeds, which are specifically selected for their tolerance of extreme "high desert" conditions, are available from a number of sources. Annual and perennials, mixed and unmixed varieties, may be planted adjacent to or integrated with fescues such as Sheep

Fescue for a meadow appearance. A mix of Centaurea, Echinacea, Flax, Gallardia, Penstemon and others are particularly suited to the climate of Central Oregon. Seeds must be kept damp during germination. For best results, planting should take place in early to mid-spring; the area should be watered (lightly) two to four times a day during the first two weeks. Weed control may be an overwhelming problem during subsequent years after sowing wildflower seeds.

Deer-Resistant Plant Material for the Bend Area

Perennials

- Achillea (Yarrow)
- Aconitum (Monks Hood)
- Allium/Chives/Onions
- Arabis
- Armeria Maritima
- Artemesia
- Aubrieta
- Bleeding Heart
- Blue Flax
- Calendula
- Clematis
- Colchicums
- Coreopsis
- Cornflower
- Creeping Phlox
- Creeping Thyme
- Daffodils/Narcissus
- Delphinium Lysmachia
- Erigeron
- Forget-Me-Not
- Foxglove
- Germander
- Helianthemum
- Herbs (Except Basil)
- Hollyhocks
- Honeysuckle Vine
- Iris
- Kniphofia
- Lavender
- Lupine/Larkspur
- Lychnis
- Monkey Flower
- Oriental Poppies
- Penstemons
- Physotegia
- Pulmonaria
- Rudbeckia
- Salvia
- Silene Acaulis
- Stachys
- Sweet William
- Tadescanti

Ground Covers

- Ajuga
- Asarum
- Bishops Weed
- Clump Fescues
- Hosta
- Lamium
- Repens Oregon Grape
- Squaws Carpet
- Sweet Woodruff
- Tanacetum
- Variegated Grasses
- Vinca Minor

Shrubs

- Arctic Willow
- Barberry
- Blue Girl/Boy Holly
- Brooms
- Cotoneaster
- Flowering Quince
- Forsythia
- Genista Lydia
- Globosa Spruce
- Honeysuckle
- Lilacs
- Nest Spruce
- Oregon Grape
- PJM Rhododendron
- Potentilla
- Privet
- Pyracantha
- Rock Daphne
- Sagebrush
- Spirea
- Sumac
- Viburnums
- Wild Rose
- Yucca

Trees

- Autumn Olive
- Birch
- Black Locust
- Box Elder
- Cedar
- Hawthorne
- Idaho Locust
- Larch
- Mountain Ash
- Mountain Hemlock
- Russian Olive
- Spruce
- Sub-Alpine Fir
- White Fir

Deer Favorites

- Arborvitae
- Aspen
- Columbine
- Crab Apple
- Flowering Kale
- Grape Hyacinth
- Hybrid Roses
- Manzanita
- Pansies
- Petunias
- Red Twig Dogwood
- Tulip

Bark

Bark toppings are approved for use in Awbrey Park for decorative and dust abatement purposes. Finer mulched bark works well for all areas, but the larger decorative barks are permitted only in areas directly adjacent to the home. Large areas of bark with sparse planting are discouraged. Fine bark mulch may be used in areas following the seeding of natural materials to inhibit weeds, control dust and to help retain moisture in newly seeded areas. Owners are reminded that bark areas should be kept weed free and contained. Bark and other walkway materials should not slough over onto adjoining properties or other

Portions of the owners' landscaped areas. Applying a straight line of bark along adjoining property lines is discouraged.

Borders

In most cases, borders are not necessary. However, in some instances, the definition of areas between walkways, lawns, flower beds and natural areas can be difficult. Many times gravel and bark need to be retained in specific areas. Suggested materials for use as landscape borders are wood headers and concrete curbing. The use of small rocks of any size, shape or color as a border between landscape elements is discouraged.

Walkways

Walkways, between various areas of the homesite, should be of materials that are earthtone in color. Pavers, aggregate, gravel and concrete are all approved materials. The homeowner's choice for materials should be included on the plan. If gravel or other small material is used, it must be contained within the walkway area to keep it from creeping into other parts of the landscape design.

IRRIGATION & WATERING

Watering Regulations

Annual rainfall in the Central Oregon region can be less than 10 inches per year. Because of the concern for water conservation, the City of Bend employs watering rules during the irrigation season. The official rules may be obtained from the City of Bend (541 388-5515).

In general, the rules allow watering every other day; even numbered days are reserved for even numbered street addresses, etc. No household is permitted to water on the 31st. Additionally, time restrictions may apply; during the allowable day, property owners are allotted morning hours from 5:00 a.m. to 10:00 a.m. and evenings from 4:00 p.m. to 10:00 p.m. for watering. Additional restrictions apply to car washing and sidewalk cleaning.

Water Management

Effective management of plant irrigation water can be accomplished by the use of a drip irrigation system, using water efficient heads and by adhering to a watering schedule. Watering effectiveness may be affected by weather and adjustments may need to be made during extremely dry or wet periods.

Soil conditions may effect watering needs. Central Oregon soils are generally granular and porous and do not retain moisture well. Additionally, subsurface rock formations may affect the absorption rate and capacity of soil. Lawns, flowers and grasses generally require more water than shrubs and trees. An electronic sprinkler controller is an effective water management device.

The sprinkler system might include some drip irrigation heads, low volume oscillating or stream heads and soakers. Knowledge of plants, soils, exposure and weather are all essential in the design of an adequate sprinkler system. It is recommended that an experienced landscape professional be consulted for best results.

Choices of plant materials may affect irrigation needs. Successful lawns require much more water than other plant materials. Meadow grasses and fescues can be used to substitute for manicured lawn areas further away from buildings and decks.

Broadcast or drip sprinkler systems are discouraged in the native planting areas, including the 25-foot Non-Development Easement. However, watering may need to be provided for the first two to three years following the planting of native materials in these areas until

plants, grasses and trees are established. Additionally, water may be provided during low rain/snowfall years to prevent drought damage.

LANDSCAPE MAINTENANCE

All site components must be kept in good order. All landscaping shall be kept healthy and neat—replacing dying or dead plants as necessary. Parking areas shall be free of rubbish and other debris.

It is important and necessary to ensure good appearance of plantings after installation. Landscape maintenance is a large part of the proper maturation of a successful and healthy landscape design. All grass clippings and other natural debris must be removed from the homesite (not disposed of on neighboring properties) or composted in a screened, approved system.

FIRE CONTROL

General precautions shall be taken against potential fire danger as enforced by the City of Bend Fire Prevention Officer. Specific rules of the Uniform Fire Code (Article 11) and rules for outdoor burning are available for review at the City of Bend Fire Department. Article 11 includes information regarding open burning, combustible and flammable materials, fire reporting, false alarms and use of equipment, appliances and devices.

Homeowners should consider precautions such as the following in the development of landscaping plans:

- a. New plantings of evergreen trees near homes should be placed to avoid collections of needles on roofs
- b. Grasses or succulent ground covers surrounding structures can provide some protection from the advancement of ground fires.
- c. Irrigation systems ringing the building site can assist in diverting an oncoming fire and protecting the encircled structure.
- d. Non-combustible roof materials may help prevent or limit fire damage.
- e. Roof sprinklers can protect combustible roofs from burning due to airborne material traveling from off-site sources.
- f. A combination of hose bibs/stand pipes and easily accessible lengths of hose which allow access to all sides of the exterior of the home and other on-site structures can be of great value in dealing with a threatening fire.
- g. Spring maintenance should include removal of all homesite accumulations of pine needles, leaves and other dead plant materials that could serve as fuel for fire. Dead branches within living trees and shrubs should be removed, particularly within 5 feet of the ground. Burning is not permitted at Awbrey Park, all material must be removed from the site.
- h. Thinning of some thick stands of pine trees may be appropriate under certain conditions (stand is directly adjacent to residence, trees are unhealthy, etc.). Approval for such thinning must be received from the ARC.
- i. All weeds on the homesite should be controlled early in the spring to prevent the potential of fires during the dry summer season.

LANDSCAPE MISCELLANEOUS

Fertilizers

Consulting an experienced landscape professional to test and recommend specific additives is encouraged. Central Oregon soil conditions may require fertilizing of all landscape installations. Nitrogen may be leached away by watering through the porous soils and may need to be replenished periodically. Phosphorus, potassium and other elements such as sulfur are used as soil conditioners and must be mixed with soil and placed in the root zone to be effective. Care should be taken when fertilizing indigenous plants. Adverse reactions may occur.

Pests

Consulting an experienced landscape professional or pest control professional to test and recommend specific action(s) is encouraged. Pests are active from spring to fall in Central Oregon and can be difficult to control. Locally, aphids, mites, grasshoppers, mildew leaf rollers and tent caterpillars may cause problems. Consult with plant and landscape professional or pest control professional on methods of control for each pest type.

Pruning

Consulting an experienced landscape professional/arborist to evaluate and recommend specific action(s) is encouraged. Pruning may be necessary for some plants to promote proper health, increase quality of flowers and to control growth. Thinning may be sometimes necessary to maintain proper appearance and health of many plants.

Weeds

Weeds on all homesites must be controlled. Additionally, fire control is improved with a weed-free zone directly adjacent to the home. Pulling, hoeing and cultivating are established methods for weed control that do not use chemicals but are labor intensive. The use of ground covers and bark mulch can be an effective means for weed control primarily where appropriate. If chemicals are the only possible solution for certain conditions, then consult with plant and landscape specialists.

Other Considerations

Juniper trees are found throughout Awbrey Park and are attractive elements of the natural landscape, but they also can cause difficulty for other plant materials because of their root systems and considerable water consumption habits. Carefully consider the locations of the existing junipers in relation to proposed plantings of shrubs, trees and grasses for the most successful landscape design.

Modifications

Prior to or during execution of an approved landscape plan, any proposed changes to this plan must be resubmitted to the ARC for review and approval before being implemented.

Reference Sources & Books

Sunset Western Garden Book
Sunset Publishing Corporation
Menlo Park, California
August 1990

TREE PROTECTION

The following is an article written by Linda Payne Williams that illustrates the importance of tree protection and outlines methods to safeguard your trees:

A western Connecticut couple fell in love with their new home in part because of the majestic feature tree in the front yard. Five years later they had to pay \$3,000 to have the tree removed. The new homeowners hadn't realized that a bulldozer used to grade the site hit the tree during construction. The damage wasn't obvious except to a trained arborist, but the tree had been dying for many years. The story is not unusual, according to consulting arborist Gary Mullane of New Fairfield, CT, who was called too late to save the tree. The loss was unnecessary, he says. "If the builder had been required to follow arborists' guidelines during construction of the house," Mullane says, "the tree might have been standing for another century."

Bob Ray, president of the American Society of Consulting Arborists, presented his guidelines at a clinic on construction injury and tree evaluation in Syracuse, New York. Ominously for home buyers, none of the invited builders, contractors, or architects came to the session. Their absence suggests that it's up to homeowners to write precautionary clauses into contracts with builders.

"Many people buy a piece of property because it has trees," he said, "and they assume that the trees will remain in good health. In reality these trees may be dying for up to 10-15 years because a developer failed to protect them properly."

Here's how to guard your investment:

- Seek an arborist's advice before purchasing a wooded lot or start of construction. "As arborists," Ray says, "our primary mission is to educate builders and property owners about special needs of trees during construction and to serve as a resource." The adjustment an arborist suggests may cost more money initially, "but in the long run, they'll save the cost of removing and replacing dead trees," he says.
- Around each tree or group of trees to be protected erect a boundary with stakes connected by brightly colored ribbons. This should extend past the drip line, the outermost reach of the branches. Ray's suggestion: When feasible, the boundary should be located one foot away from the tree trunk for every inch of trunk diameter measured 4 ½ feet above grade.
- Make it clear that builders may not park or store vehicles, equipment or materials within the tree's drip line. The builder is to be liable for any injury to tree bark or roots.
- Builder may not add more than two inches of fill within the drip line of any tree. Amounts in excess of two inches can cause root loss from earth compaction and suffocation. You can compensate for raising the grade near a tree by installing wells (see Exhibit B) to provide underground drainage and aeration.
- No soil may be removed within the drip line of any protected tree.
- The builder may not remove or trim any tree without permission.
- It's the builder's responsibility to route utility services so they won't injure trees.
- Utility ditches must be located nine inches away from the tree trunk for each inch of trunk diameter. The exposed roots should be pruned to promote healing, closure and regrowth.

For a list of trained arborists in your area, write for the directory of American Society of Consulting Arborists (ASCA): Jack Siebenthaler, Executive Director, 700 Canterbury Rd., Clearwater, FL 33624. The American Forestry Association provides a workbook called *Global ReLeaf Action Guide: Save Our Urban Trees* and offers workshops. Write: American Forestry Association, P.O. Box 2000, Washington, DC 20013.

Exhibit B

Tree Protection – Drainage and Aeration

