GEORGIA FORESTRY
COMMISSION

Green Buffers for Screening and Noise Reduction

Introduction

Communities are developing more rapidly today than at any time in our history. Land is becoming more scarce, and developments more dense. As lot sizes shrink, we move closer to our neighbors - along with the sights and sounds they create. A higher level of urban sounds has come to be known as "noise pollution." Elevated sound levels impact our physical health, stress levels, and quality of life in much the same way that other, more obvious forms of pollution affect us. “Visual pollution” is much more difficult to quantify. One person’s "trash" is another person’s "art," and many people prefer to be screened from their neighbors' chosen landscape.

This booklet discusses basic landscape tools and guidelines for optimizing sound reduction and visual screening. Keep in mind that distance, height, density of materials used, and cost considerations will determine what can reasonably be accomplished.

Impacting Noise Pollution

Residents have achieved success with a number of methods that minimize noise pollution, including building walls, planting vegetation, and creating fountains that mask offensive sounds. Research shows it is more effective to use a multi-faceted approach to noise reduction rather than a single tool. Well-planned efforts may reduce noise levels by as much as 50%.

Beginning design tips for noise reduction:

- Maximize personal distance from the sound source. Most loud sounds will dissipate over extended distances.
- Use structures (walls and berms) and vegetation (grass, shrubs and trees) to break sound lines. Don’t hesitate to use all resources at hand, particularly existing vegetation.
- Utilize and economize all space. A combination of distance, structures, and vegetation will provide the most benefit.

When trying to reduce noise levels it is important to absorb, deflect, and muffle intrusive sound as close to the source as possible. For most homeowners that point is the property line.

Opportunities and Materials

Berms – Earthen berms help absorb noise from low elevation sound sources. Construction should be at least 3 feet wide for every 1 foot in height, and planted with appropriate grasses or shrubs.

Walls – Sound barrier walls reflect and deflect noise. They may be constructed of stone, concrete, wood or recycled structural materials. Denser materials create greater sound deflection and absorption. The closer the wall is to the sound source, the more the sound will

be reduced. Often, a short wall close to the source will provide the same impact as a much larger structure further away. A wall-height barrier that screens the source from view is usually sufficient. Each increased meter of wall height above the line of sight attenuates sound by as much as 1.5 db(A).

Vegetation – Plant materials help attenuate sound and “calm” the noise. Some types of plants are better at performing this function than others. Efficient trees and shrubs have thick, waxy leaves, dense evergreen foliage, and branches that extend to the ground. Always be sure to properly install plant materials according to University of Georgia Extension Service or Georgia Forestry Commission guidelines.

Procedures for Noise Screening

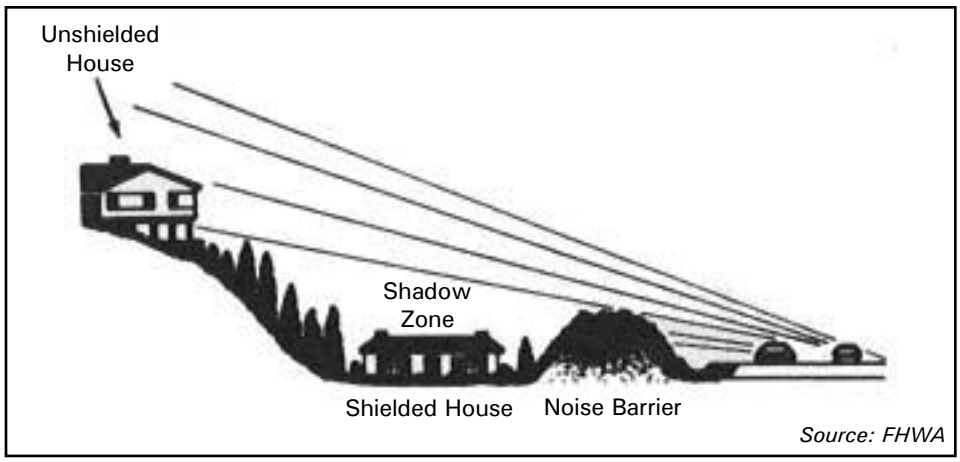
1. Determine the source of the noise and the area to be screened. Heavy traffic noise will likely require a scheme similar to the detail shown below. This requires a minimum of dense shrubs, a solid wall (wood, stone, or recycled material), and two rows of evergreen trees.

2. Should traffic noise be of a lighter nature, a berm and shrubs may be sufficient. These tools should be placed as close to the sound source or curb as possible. On occasion, a simple, low wall and shrub planting will suffice.

3. Make sure the shrub planting is designed for individual plants to overlap and eventually touch as they grow large. This will provide an uninterrupted buffer of foliage.

4. Allow adequate space for the growth of the trees and shrubs, and don't crowd them too close together. An effective planting plan will screen more noise over time.

5. Tree plantings should be staged in two staggered rows (where space allows), to provide visual screening of the sound source.

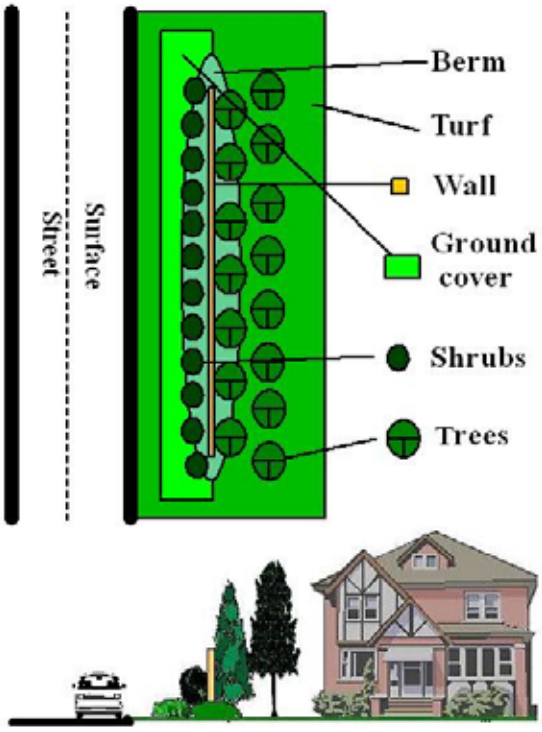


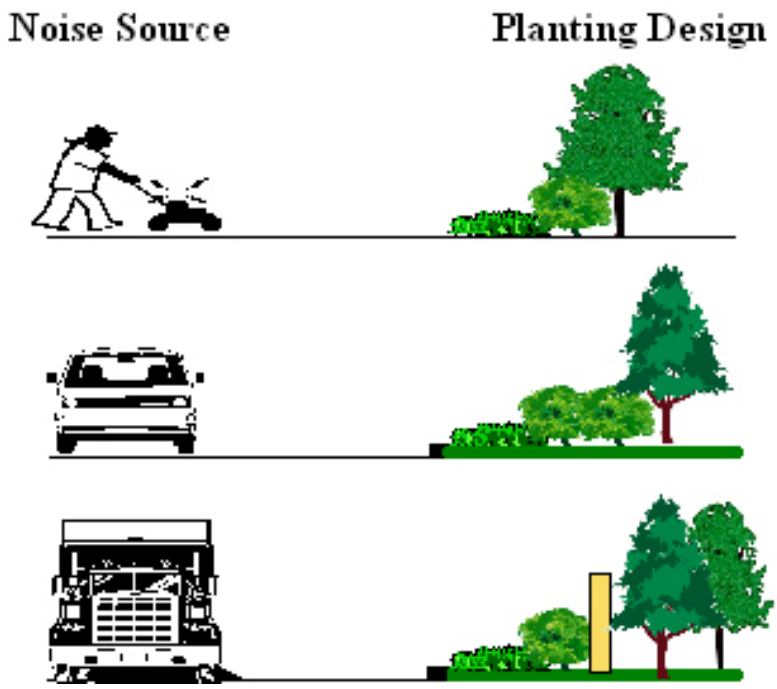
Design note: Noise reduction in urban environments is a matter of "getting in the way" of the sound with the "right materials." A significant amount of the perceived sound attenuation is a function of the sound source being "out of sight." This may require different strategies for different types of situations (i.e. a second story window will require a different screen type than would a first floor patio). Remember, home surfaces (walls and cement) also reflect sound and may serve to accentuate noise problems if not screened.

6. A typical buffer for heavy noise reduction might appear as shown below. Note the integrated and overlapping plantings with each feature suited to the site.

Establishing Visual Screens

Visual screening has become a more frequent challenge for homeowners. Established residents may disagree with new neighbors about what looks acceptable. New homeowners may find themselves "too close" to their neighbors' windows. When mutual effort is put into the design and establishment of a screen, the desired effect has a greater chance of pleasing all homeowners. Visual screening may be easier and less expensive to achieve depending upon the level of screening desired (a 100% visual screen can be very expensive and difficult to achieve in a short period of time), if you follow a few basic principles.

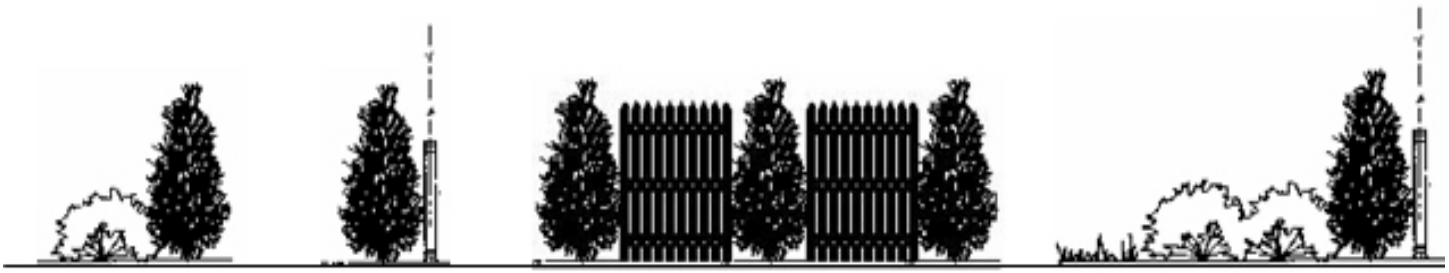




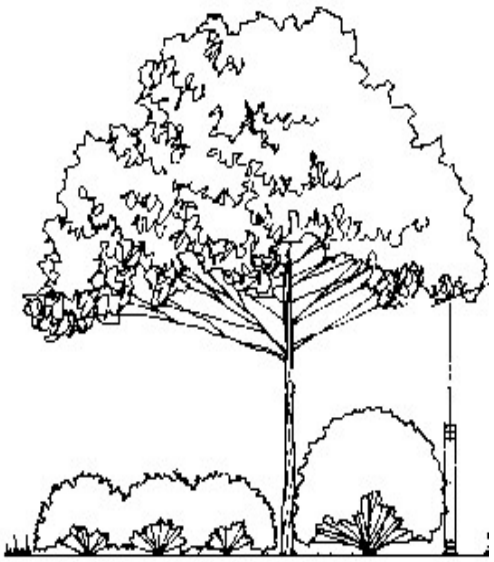
Procedure for Visual Screening

The basic principles of visual screening are the same as those for buffering sound, except that visual screens may not need the same level of occlusion to achieve desired results.

1. Determine the length and height of the area to be screened. An elevated visual problem, such as a second story window, may require the use of a berm and taller trees to get the desired results.
2. Check to see how the view changes from different vantage points around your yard and home. Attempt to have the screening plan address all these views.
3. Usually, a simple multi-row planting of a combination of trees and shrubs will suffice. Make sure the shrub planting is designed for individual plants to overlap and eventually touch as they grows large.
4. Where only trees are used, plantings should be of two staggered rows (where space allows), to provide visual screening. Remember to allow for the growth of the trees and shrubs, and don't crowd them too close together.



There may be a need for a variety of vegetation/fence combinations to achieve the required level of screening.



Additionally, the screening of second story views may require larger growing materials and permanent structures employed together to get the desired result over time.

Images Source: PALC, Bristish Columbia, Ca.

Plant Materials for Urban Noise Reduction

Recommended Overstory Trees

Scientific Name -	Common Name	Height	Spacing	Sun/Shade	Drainage
Cedrus atlantica	Atlas Cedar	40-60	30	S - PS	M - D
Cedrus deodara	Deodar Cedar	40-60	30	S - PS	M - D
Cryptomeria japonica -	Japanese Cryptomeria	50-70	40	S	M
Cupressus arizonica	Arizona Cypress	30-40	20	S	D
Cunninghamia lanceolata -	Common Chinafir	50-70	30	S - PS	M
Cupressocyparis leylandii -	Leyland Cypress	60-70	15	S	M - D
Juniperus virginiana -	Eastern Red Cedar	40-60	25	S	D
Magnolia virginiana -	Sweetbay Magnolia	15-25	20	S - PS	M - D
Magnolia grandiflora -	Southern Magnolia	60-80	50	S - PS	M - D
Metasequoia glyptostroboides	Dawn Redwood	70-100	40	S	M
Pinus strobus -	White pine	60-80	40	S - PS	M - D
Pinus taeda -	Loblolly Pine	60-80	25	S	D
Pinus virginiana -	Virginia Pine	40-60	25	S	D
Thuja occidentalis	Arborvitae	40-60	15	S	M

Recommended Understory Trees

Scientific Name -	Common Name	Height	Spacing	Sun/Shade	Drainage
Ilex x attenuata -	Savannah Holly	15-30	15	S - PS	M - D
Ilex cassine -	Dahoon Holly	20-30	15	S - PS	M
Ilex decidua -	Decidious Holly	20-30	15	S - PS	M - D
Ilex x Nellie R. Stevens -	Nellie R. Stevens Holly	15-35	15	S	M - D
Ilex x opaca -	American Holly	20-40	15	S	M - D
Ilex vomitoria -	Yaupon Holly	15-20	10	S	W - M - D
Myrica cerifera -	Waxmyrtle	10-20	15	S - PS	W - M

Recommended Shrubs

Scientific Name -	Common Name	Height	Spacing	Sun/Shade	Drainage
Ilex cornuta "Carissa"	Carrisa Holly	3 - 4'	3'	S - Sh	M - D
Ilex cornuta "Rotunda"	Dwarf Chineese	3 - 4'	3'	S - Sh	M - D
Ilex cornuta "Dwarf Burford"	Dwarf Burford	5 - 8'	5'	S - Sh	M - D
Ilex vomitoria "Nana"	Dwarf Yaupon	3 -5'	4'	S - Sh	M - D
Juniper chinensis "Pfitzeriana"	Pfitzer Juniper	5 - 6'	5'	S	M - D
Loropetalum chinensis	Chinese Loropetalum	3-5'	8'	S - Sh	M - D
Myrica cerifera “pumilla”	Dwarf Waxmyrtle	3 - 5’	5’	S - PS	W - M
Osmanthus x fortunei	Fortunes Osmanthus	10 - 15'	8'	S	M - D

Recommended Ornamental Grasses					
Scientific Name -	**Common Name**	**Height**	**Spacing**	**Sun/Shade**	**Drainage**
Chasmanthium latifolium	Upland Sea Oats	2-3'	2'	S - Sh	W - M
Cortaderia selloana	Pampas Grass	7 - 7'	5'	S	M - D
Cortaderia selloana "Nana"	Dwarf Pampas Grass	3 - 4'	4'	S	M - D
Miscanthus sinensis "Strictus"	Porcupine Grass	5 - 7'	3'	S	M - D
Miscanthus sinensis "Zebrinus"	Zebra Grass	5 - 7'	3'	S	M - D
Panicum virgatum	Switch Grass	5—7'	3'	S—Sh	M—D

Key: **S** - Sun, **P** - Part Sun, **S** - Shade, **W**- Wet, **M** - Moist/Well drained, **D** - Dry

Notes above assume proper tree to site location and proper planting techniques and moderately well drained soils. This list is not intended to be all inclusive but to point to logical landscape selections.

Resource Information

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