Tree Protection

Definition

Trees are protected during construction to preserve their health and ensure their vitality post-construction. For the purpose of this practice, trees are defined as desirable native species, and differentiated from shrubs or bushes, which, while not covered specifically by this BMP, also warrant protection, for the stabilization their roots provide. Protection of native tree species also includes the removal and prevention of invasive exotic species such as autumn olive, buckthorn, multiflora rose, and others.

Pollutants Controlled

Preservation of trees is important for numerous reasons, including:

- Stabilization of soil and erosion prevention;

- Storm water runoff volume reduction through interception and the promotion of infiltration;

- Temperature moderation, shade promotion, and wind protection;

- Provision of privacy, as a noise and visual buffer;

- Filtration of pollutants from the air, and oxygen production;

- Provision of bird and animal habitat; and

- Improvement in site aesthetics, and increase in property values.

Companion & Alternate Practices

Protect trees prior to any Land Clearing or Grading. Use Construction Barriers in conjunction with tree protection.

Location

Tree protection is used most often on construction sites. It's especially important in areas subject to windthrow, where trees removed in the upland area cause a domino effect in the lower area. It's also important on highly erodible soils, where tree roots help stabilize soils and prevent erosion.

Planning

When planning tree protection or tree replacement, consider the following:

- Vigor. Preserve healthy trees. Sick trees or those damaged beyond repair can be left for wildlife, or removed. Trees lacking vigor include those with dead branches, small annual twig growth, stunted leaf size, sparse foliage, or pale-colored foliage. Follow the recommended guidelines for trees with specific diseases. For example, to prevent the spread of oak wilt, it is recommended that no pruning be done in warm weather months, but rather only in winter;

- Age. Older trees can be more aesthetically pleasing than younger trees, and can more shade and interception of rainfall through larger leaf canopies, and more interception of runoff through larger, more developed root structures. But, these potential benefits of older trees must be balanced with maintenance requirements, which can be greater than for younger trees;

- Species. Consider removing invasive species, and replacing them with more desirable native species. Also consider the diversity of species on a site; in general, the greater the diversity, the greater chance a stand of trees will survive unknown future conditions, including diseases, pests, or climate change;

- Wildlife. Protect trees which are preferred by wildlife for food, cover, or nesting. Evergreens are important for cover during winter months. Hardwoods are more valued for food. A mix of evergreens and hardwoods is usually most beneficial. If they pose no personal or property safety risk, consider leaving in place any dead, damaged, rotten, or hollow trees or trunks, for use by wildlife.

- Site Drainage. Consider the effects on site drainage from proposed construction activity or changes in site grading. These effects can have a significant impact on existing trees.

- Root and Soil Protection. In the planning stage, look for ways to minimize the impact on roots, and the compaction of soil. Avoiding these sensitive areas can save time and effort later in the project that would otherwise need to be spent making corrections or remediating damage.

Design

When designing tree protection, consider the following:

- Leaving critical areas (such as floodplains, steep slopes, and wetlands) in their natural condition, with as many desirable trees as possible;

- Selecting trees to be preserved before siting roads, buildings, or storage areas. Location these structures away from trees;

- Minimizing trenching in areas with trees, in part by place multiple utilities within a single trench;

- Place a [Construction Barrier](#) around the perimeter of the drip line of all trees within a construction area (see Figure 1). This will protect a tree's trunk and branches from damage through direct contact, and will also protect the roots by preventing the storage of equipment, building materials, topsoil, or fill dirt within that area;

- When construction plans call for lowering or raising the grade around trees, use tree wells (see Figure 2) or tree walls (see Figure 3), respectively, to protect trees.

Implementation

When implementing tree protection, consider the following:

- Never excavate, traverse, or fill within the drip line of trees;

- Mark trees which will be preserved with a band of brightly-colored spray paint or surveyor's ribbon, at a height clearly visible to equipment operators;

- Never use nails directly into or wire directly around trees, as this will make them more susceptible to disease, insect damage, and decay;

- To protect tree trunks from inadvertent damage, considering wrapping them with burlap, and wiring wooden slats around the trunk, each no more than two inches apart, to a height of five feet.

Post-Construction

After construction is completed, remove all temporary tree protection practices. Inspect all trees to ensure they're in good health. Repair all damaged roots and branches with the following methods:

- Repair roots by cutting off the damaged areas and painting them with tree paint. Spread peat moss or moist topsoil over exposed roots;

- Repair damaged bark by trimming around the damaged area, as shown in Figure 4. Taper the cut to provide drainage. Paint the cut with tree paint;

- Cut off all damaged tree limbs above the tree collar at the trunk or a main branch. Use three separate cuts—a backcut, a forecut, and a final trim cut, leaving a short collar on the trunk—to prevent the bark beneath the cut from peeling off and potentially leading to further damage or disease. This method of trimming branches is shown in Figure 5;

- When planting new or replacing old trees, use only desirable native species. Regarding specific species to use or avoid, refer to the 'Species' bullet point in the **Planning** section above. Use trees with trunk diameters of at least two (2) inches;

- Aerate soil over the root zone which has become compacted by punching holes in it with suitable equipment.

Literature Cited

North Carolina Department of Environment and Natural Resources (NCDENR). *Erosion & Sediment Control Planning & Design Manual.*

Virginia Department of Environmental Quality (VDEQ). 1992. *Virginia Erosion & Sediment Control Handbook*. Third Edition.

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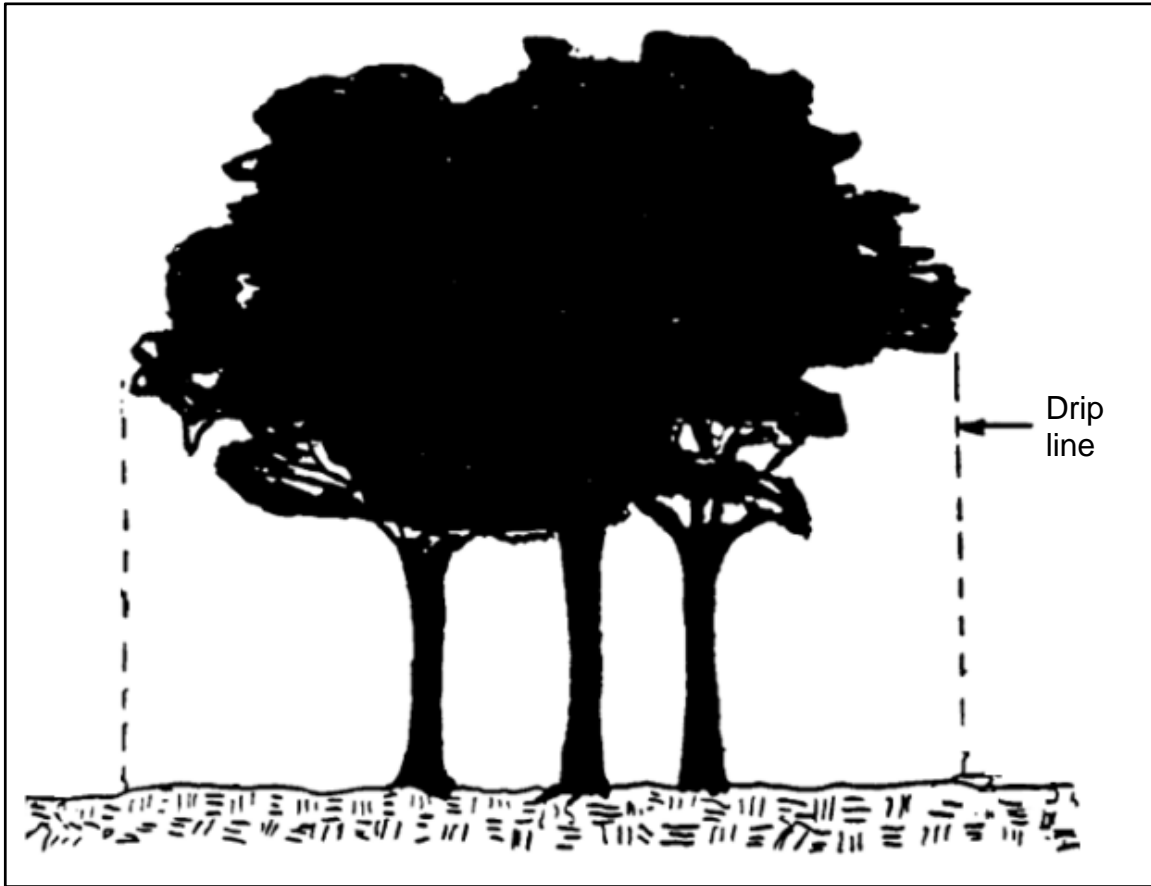
Drip line

Figure 1. Place a construction barrier around the perimeter of the drip line of all trees within a construction area
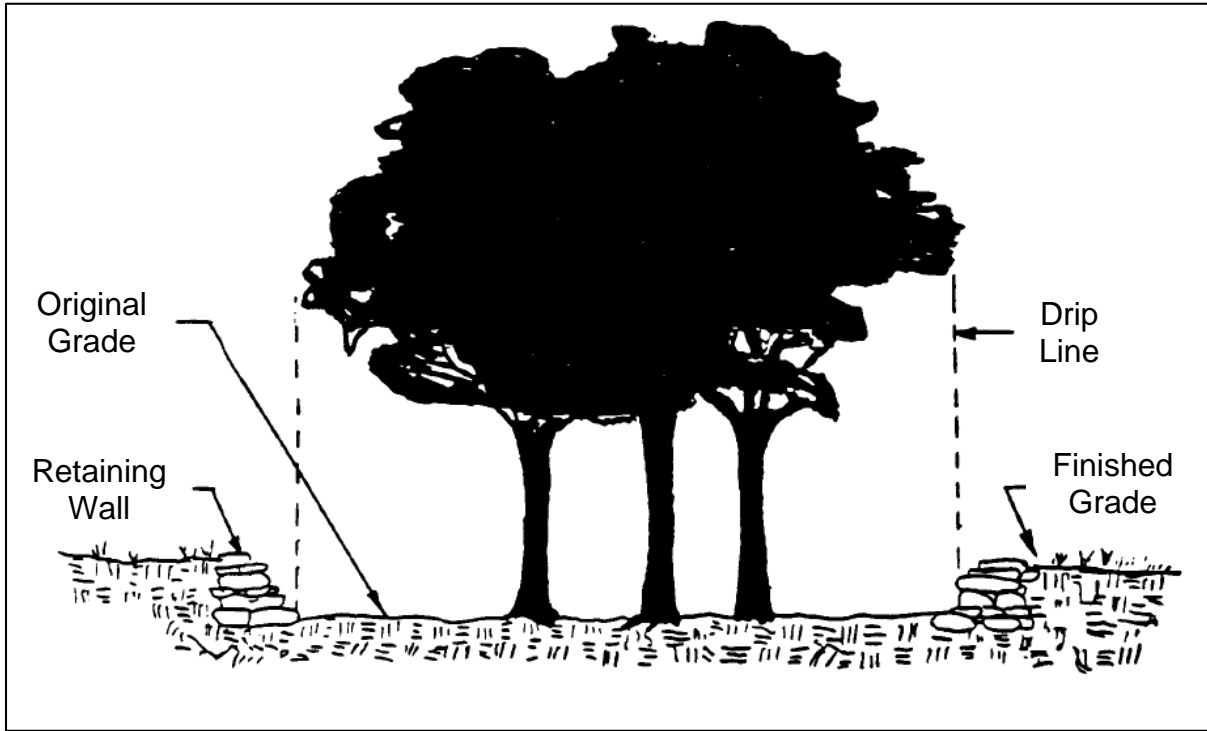Source: Adapted from VDEQ, 1992.

Figure 2. Protect trees with wells when the grade around them is raised.
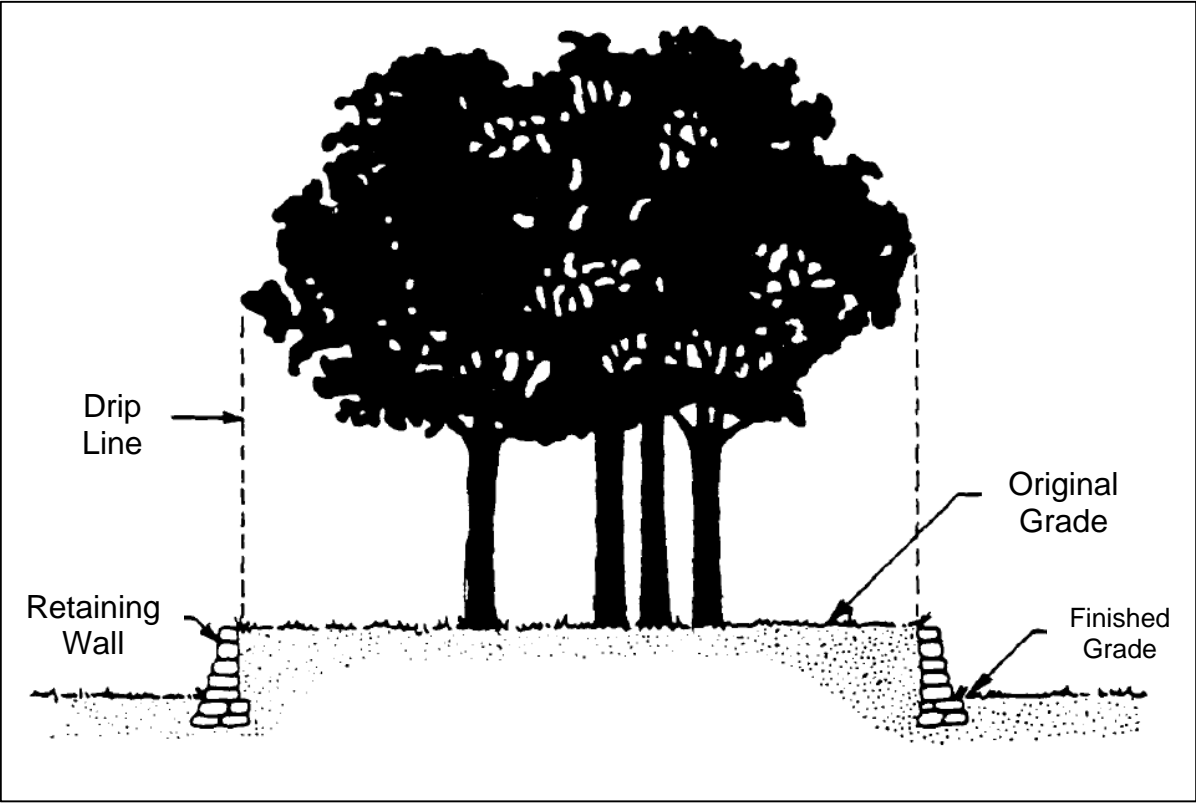Source: VDEQ, 1992.

Figure 3. Protect trees with walls when the grade around them is lowered.
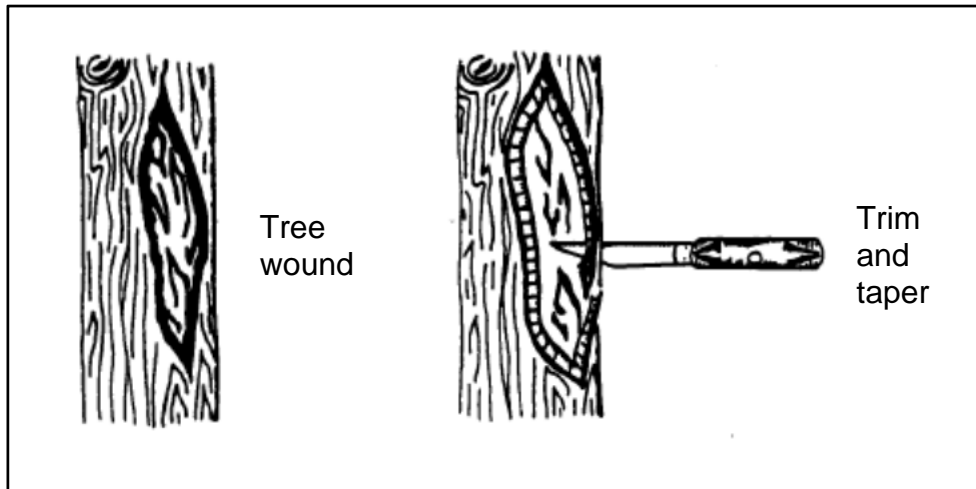Source: VDEQ, 1992.

Figure 4. Trim bark wounds with a tapered cut, then apply tree paint.
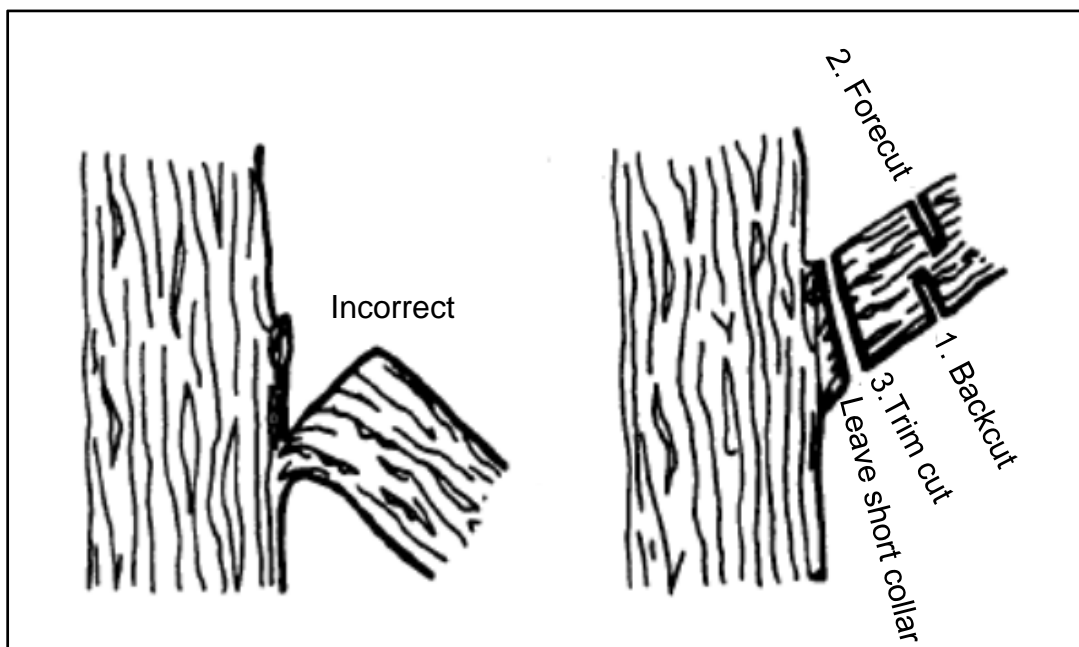Source: NCDENR.

Figure 5. The incorrect and correct ways of trimming branches to prevent bark damage.
Source: NCDENR.