

4.5-e VEGETATION PROTECTION

Alternative Names: Vegetation Protection Fencing

DESCRIPTION

Trees, including their root systems and other vegetation not specifically designated and approved for removal from a construction site, shall be protected by installing vegetation protection fencing. This practice provides a visible barrier between the active construction area and the vegetation to be protected. This practice protects vegetation foliage, wood, and roots from compaction and other physical damage from construction equipment, reduces erosion and sediment loss from construction sites, reduces revegetation costs, and minimizes land disturbance.

APPLICABILITY

- Applicable to all construction sites.
- Protection of existing vegetation is especially important within and around SEZs, wetlands and surrounding buffer zones, floodplains, steep slopes (> 30 percent), and areas where vegetation would be difficult to establish and maintain.

Advantages

- Minimizes the amount of land disturbed by construction activities.
- Protection of trees and other vegetation reduces the expense of replacing vegetation and associated soil restoration.
- Retaining existing vegetation on portions of development sites provides water quality benefits by shielding the soil surface from the impact of falling rain, slowing the velocity of runoff allowing greater infiltration, maintaining the soil's capacity to absorb water within the root zone, and allowing the roots to physically hold the soil in place.
- Areas of undisturbed vegetation downslope from a construction site provide a buffer to capture and retain sediment that may be transported off-site by runoff.
- Protecting established vegetation gives the site a more mature look upon completion.

Disadvantages

- Requires a commitment to project planning, implementation, and maintenance focused upon vegetation protection.
- Vegetation on a small site may be a physical obstruction to construction equipment.

DESIGN CONSIDERATIONS

- During the planning and permitting process, identify trees and other vegetation on the proposed project plan and plan for their retention whenever possible. Not all vegetation can be retained on a construction site because of installation of improvements and associated excavation and grading. Plan to protect healthy and less common vegetation.

BMP DESIGN APPROACH	
<input checked="" type="checkbox"/>	Pollutant Source Control
<input type="checkbox"/>	Hydrologic Source Control
<input type="checkbox"/>	Stormwater Treatment
SCALE OF APPLICATION	
<input checked="" type="checkbox"/>	All SFR and MFR < 1 acre
<input checked="" type="checkbox"/>	MFR 1-5 Acre and CICU < 5 acres
<input checked="" type="checkbox"/>	MFR and CICU > 5 acres and all WQIPs
TYPE OF APPLICATION	
<input checked="" type="checkbox"/>	Temporary
<input type="checkbox"/>	Permanent

- Consider the following criteria when identifying vegetation for retention:
 - Location:
 - Consider placing structures away from desirable vegetation and legacy (i.e. unique) trees when designing a site plan for development.
 - To be approved for removal, trees must be located within 6 feet of a planned foundation, or will be adversely affected by construction activities involving soil compaction or excavation/paving.
 - Avoid disturbing vegetation on steep slopes or other sensitive areas. Construction on steep slope requires expanded excavation for foundations and driveways; consequently, steep slopes are more susceptible to erosion and create a greater challenge for retention and preservation of vegetation.
 - Integrate fire-defensible space measures into plans for vegetation retention. Consult *Living with Fire: A Guide for the Homeowner, Lake Tahoe Basin Edition* for more information (<http://www.livingwithfire.info/tahoe/>).
 - Species: Conserve the representation of native trees and shrubs inherent to the site. Preserve species that provide aesthetic value to the property.
 - Size: Preserve individual trees that provide aesthetic value to the property.
 - Age: Retain healthy mature trees because they have become relatively scarce in the developed environment.
 - Vigor: Preserve healthy trees that will be relatively less susceptible to damage, disease, and insects. (Indicators of poor vigor include dead growing tip and tips of branches, stunted leaf growth, sparse foliage, pale foliage color, and signs of disease or insect damage. Hollow, rotten, split, cracked, or leaning trees also have a decreased chance of survival.)
 - Structural Competence: Retain healthy trees that are structurally competent to withstand strong winds and snow loading.
 - Shade: Preserve trees that will provide shade to structures, especially on southern exposures.
 - Screening: Retain vegetation that will provide screening from designated scenic corridors.
 - Wildlife Benefits: Retain trees that provide wildlife benefits such as food, thermal or visual cover, and nesting.
 - Growing Space: Provide spacing of individuals necessary to maintain healthy vegetation growth.
 - Include in development plans maintenance provisions, including fertilization and irrigation requirements, if any, to ensure that existing vegetation will survive after development.

INSTALLATION CONSIDERATIONS

- For individual trees, place protective fencing at the perimeter of the dripline at minimum.

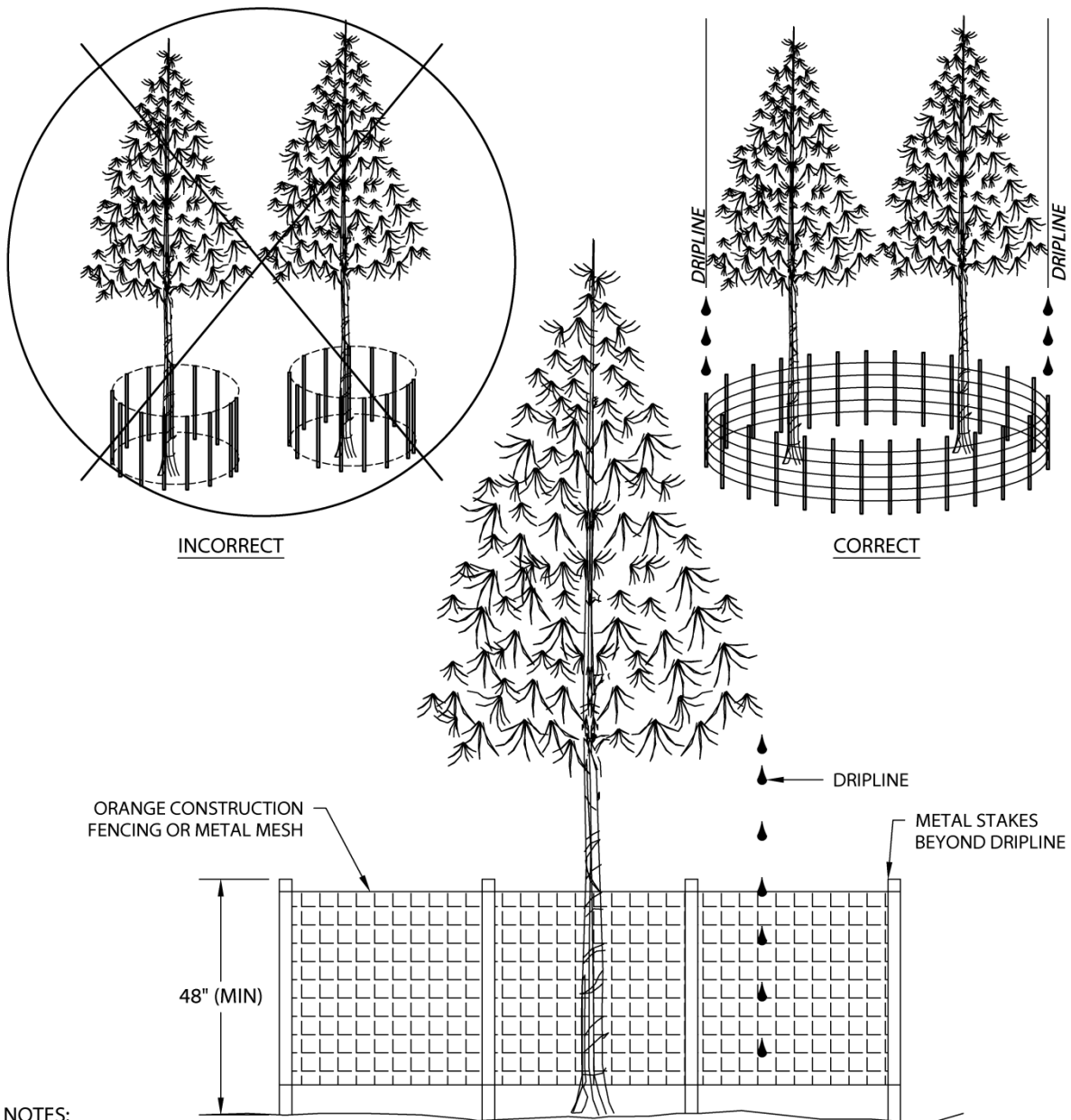
- Install fencing to protect large areas and other vegetation as a group rather than individual trees where feasible.
- When trenching and excavating requires the removal of tree roots, employ a certified arborist for surgical pruning using sanitized equipment. Where possible, do not prune tree roots 4 inches and larger. (A majority of tree roots are within 3 feet of the surface. Severing one major root may cause a loss of up to 20 percent of the total root system. Root systems for a healthy tree can extend laterally a distance equal to one to three times the height of the tree.)
- Install protective fencing that is brightly colored (clearly visible) and at least 48 inches high; anchor it to metal posts.
- On construction sites where there is not adequate space to install protective fencing under the dripline of the tree, wrap the tree trunks with protective wooden stakes positioned vertically and extending 10 to 12 feet above the ground surface to protect the tree from equipment damage.
- Do not nail, staple, wrap, or wire signs, equipment, or fencing to trees or other vegetation.
- Do not allow vehicles, personnel, material, or equipment beyond protective fencing.
- Maintain vegetative protective measures until all construction activity including site cleanup and stabilization is complete.
- Consider implementing the following recommendations to ensure that trees and other preserved vegetation will not be damaged during construction:
 - Solicit advice from tree care specialists, such as professional foresters or arborists.
 - To encourage tree retention, water and lightly fertilize trees prior to construction. Prune dead, diseased, and hazardous limbs and apply wood chips and other organic mulch in the no-disturbance zone to help keep the soil from becoming desiccated and compacted.
 - Generally avoid root pruning, unless it cannot be avoided.
 - If tree roots are encountered during excavation, do not leave the roots exposed to the air. Hygienically prune them with the guidance of a professional arborist. While pruning, keep roots protected with moist burlap or peat moss. Loosely backfill with soil as soon as possible. After backfilling, drip-irrigate to gently hydrate the tree.
 - No tree should be confined to a volume of soil less than 8 feet by 8 feet by 8 feet deep. When feasible, plan and design driveways, sidewalks, and other pavement areas to be located as far from retained trees and other vegetation as possible. Consider using alternatives to paving that can benefit vegetation: pavers, pervious concrete, elevated iron grates, and wooden walkways. Ensure that project designs accommodate vegetation growth over time, recognizing that root growth can cause damage to pavement, structures, or subsurface utilities where roots are too confined.
 - Do not backfill soil over the buttress collar of any tree. (This practice asphyxiates fine roots in the upper six to 12 inches of soil.)

- In selecting trees to retain, recognize that removal of neighboring trees during construction can cause sunscald of retained trees, because of the higher levels of sunlight reaching the tree. Recognize also that neighboring trees also support each other and when neighboring trees are removed, retained trees may be prone to breaking from wind and snow and ice loading.
- Periodically monitor and evaluate health and hazard of trees damaged during construction for several years. (Damaged, stressed trees are more prone to disease and insect infestations.)

INSPECTION AND MAINTENANCE

- Check vegetation fencing daily and maintain it as required, especially during clearing and grading operations.
- If installed protective fencing consistently fails to perform adequately, replace it with a more resilient fencing system (e.g. high gauge metal fencing).

Vegetation Protection Figure



NOTES:

1. DO NOT PERMIT PERSONNEL, CONSTRUCTION MATERIALS, OR EQUIPMENT, TEMPORARY OR OTHERWISE, WITHIN PROTECTIVE FENCING.
2. VEGETATION PROTECTION IS REQUIRED FOR ALL PROJECTS AS A CONDITION OF PROJECT APPROVAL.
3. METAL OR WIRE MESH FENCING MAY BE REQUIRED.
4. CALCULATE THE PROTECTIVE PERIMETER FOR SHIELDING LARGER SPECIMEN TREES MEASURING OVER 30" DBH AS FOLLOWS: COMPUTE THE PROTECTIVE RADIUS BY ADDING ONE FOOT, AS MEASURED OUT FROM THE TREE BOLE, FOR EVERY INCH IN DBH. (E.G. A TREE WITH A 30" DBH WOULD RECEIVE A 30' PROTECTIVE PERIMETER)

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