

Changes to the Land Development Code and Tree Preservation Ordinance will ensure that trees and/or large stands of trees on private property in Louisville Metro are maintained in an appropriate manner to benefit the property owners and residents of the community.

Privately owned trees have an impact on the quality of life of the entire community. They comprise the city's urban forest and contribute more to the quality and aesthetic character of a neighborhood than city street trees and park trees.

Preservation of trees enhances the natural scenic beauty, sustains the long term potential increase in property values, maintains the ecology, moderates the effect of extreme temperatures, prevents the erosion of topsoil, and increases the oxygen output of the area which is needed to combat air pollution.

In order to promote the public health, safety and general welfare of Louisville Metro while at the same time recognizing individual rights to develop and maintain private property in a manner which will not be prejudicial to the public interest it is necessary to strengthen regulations addressing preservation of trees within the city.

Applicability:

These regulations apply to trees of any species that have grown to four (4) inches in diameter or greater, at the largest point measured between six (6) inches and thirty-six (36) inches above the ground.

Implementation

LDC Changes

1. For sites over 2 acres, tree preservation plans shall be stamped by a KY licensed Landscape Architect or a certified arborist.
2. 10.1.4F- *Current language:*
~~All new trees proposed to meet the requirements of this Part shall be planted within six months of the completion of the development. When a development is to be completed in phases, trees shall be provided for each phase as determined appropriate by the Planning Director.~~

New language: On sites 2 acres or less, all new trees proposed to meet the requirements of this Part (tree canopy requirements) shall be planted within six months, or next available planting season per PDS staff, of the completion of the development.
3. On sites greater than 2 acres, all trees shall be planted prior to issuance of the final Certificate of Occupancy.
4. Industrial sites will be changed *from Class B to Class C for suburban form districts.*
5. Remove exception from 10.1.6.C3 “No clearing, grading, construction or other land disturbing activity shall take place within the TCPA beyond pruning to improve the general health of the tree or to remove dead or declining trees that may pose a public health and safety threat. As trees are lost through natural causes, new trees shall be planted in order to maintain minimum tree canopy as specified in this part.” ~~Exception: Single Family residential development may remove trees from the TCPA as long as they are replaced with trees of a similar type (e.g. A, B or C).~~
6. For all development sites whenever possible, all utilities shall be located within a common trench (unless specifically approved by Landscape Architect).
7. *Scenic Corridor, Parkway, and Gene Snyder plantings must be installed within 6 months or next available planting season per PDS staff, from the issuance of the site disturbance/clearing and grading permit.*
8. What trees are not protected?
All known invasives are not protected and will not be considered toward meeting the tree canopy requirements. *However, tree canopy credit will be received (see Table 10.1.3 and 10.1.4 for credit square footage) for the removal of the invasive if it is replaced by a 1 ¾” caliper Type A or B tree. The two most common invasives are the Mimosa and Tree of Heaven.*

Invasive species means “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” (Executive Order 13112 signed by President William Clinton on February 3, 1999).

9. The following chart indicates how much credit each existing preserved trees provides. The credit for the existing trees can be used toward landscape buffer area planting requirements.

Credit for Existing Trees being preserved

Diameter Size of Existing Tree	Minimum Square Footage of Greenspace	New Tree Equivalent
6" or less	150	1 medium tree (Type B)
>6"-9"	150	2 medium trees (Type B)
>9"	250	Each additional 3" diameter increment above 9" counts as an additional medium tree (Type B)

10. Tree Protection Fencing

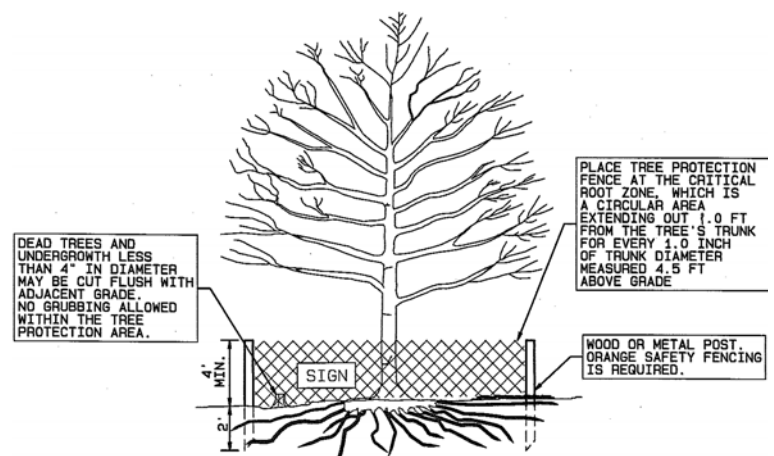
Protection fencing is designated as the materials used to protect the root zones of trees as illustrated in the attached detail. Three basic types of protective fencing materials are allowed by the LDC. Type A and Type B are typical applications and shall be installed where damage potential to a tree root system is high, while Type C shall be installed where damage potential is minimal and shall be installed on sites 2 acres or less. Type C shall be installed on sites greater than 2 acres. Where type C is used signs shall be posted every 50 linear feet. The specific type of protective fencing shall be indicated on the tree preservation plan. Type C fence materials shall be subject to the discretion of the Planning Director or designee. Type C fencing shall be replaced by Type A or Type B fencing as directed by the Planning Director or designee if it fails to perform necessary functions. fencing shall be replaced by Type A or Type B fencing if it is deemed necessary by PDS staff upon site inspection and tree preservation plan review.

1. Type A: Chain link fence (Typical Application- sites 2 acres or less-high potential damage).

Type A protective fencing shall be installed in accordance with the detail and shall consist of a minimum five-foot high chain link fencing with tubular steel support poles or "T" posts.

2. Type B Wood Fence (Typical Application- sites 2 acres or less high potential damage)

Type B protective fencing shall be installed in accordance with detail and shall consist of any vertical planking attached to 2x4-inch horizontal stringers which are supported by 2x4-inch intermediate vertical supports and a 4x4-inch at every fourth vertical support.



NOTES:

1. SEE PLANS FOR LOCATION OF ALL TREE PROTECTION FENCES.
2. ALL TREE PROTECTION DEVICES MUST BE INSTALLED PRIOR TO LAND DISTURBANCE, INCLUDING THE CUTTING OF ANY TREES, AND MUST BE INSPECTED BY THE Landscape Architect OR HIS DESIGNEE.
3. NO GRADING, TRENCHING, FILLING OR STORING OF MATERIALS IS TO OCCUR IN THE TREE PROTECTION AREA.
4. TREE PROTECTION FENCE MAY NOT BE REMOVED WITHOUT THE APPROVAL OF THE Planning Commission OR HIS DESIGNEE.
5. THE TREE PROTECTION AREA SHOULD BE DESIGNATED WITH "TREE PROTECTION AREA" SIGNS POSTED VISIBLY ON THE OUTSIDE OF THE FENCED-IN AREA. SIGNS MAY NOT BE POSTED ON THE TREES.

3. Type C Other Materials (*Typical Application- site over 2 acres Limited Application- minimal potential damage*)

Type C protective fencing shall be installed in accordance with detail. Signs shall be posted every 50 lineal feet.

The following materials may be permitted as alternates for limited or temporary applications (3 days or less) where tree damage potential is minimal (for example driveway construction, building demolition or as determined by the Planning Director or designee):

- a. High visibility plastic construction fencing.
- b. ~~Silt fence~~ The fabric shall be 4 feet in width and made of high density polyethylene resin, extruded and stretched to provide a highly visible international orange, non-fading fence.
- c. Other approved equivalent restraining material.

The fencing materials, identified above, shall be supported by steel pipe, tee posts, U posts or 2" x 4" timber posts that are a minimum of 5-1/2 feet in height and spaced no more than 8 feet (2.44 meters) on centers. ~~The fabric shall be secured to post by bands or wire ties.~~

11. Tree Preservation/ Protection Signage

All tree protection fences must be accompanied by "Stay Out" and "Tree Protection Area" signage. *Size and text of sign will be standardized.*

Example: TREE PROTECTION SIGN

**CAUTION
TREE PRESERVATION**

CONTRACTOR MUST INSTALL AND MAINTAIN CONSTRUCTION FENCING

Do not trim or remove trees without a permit	Por favor de no cortar arboles sin permiso
Do not park vehicles or place building materials in critical root zone	Por favor no estacionar vehiculos y materiales en zona critica de raíz
Do not clean equipment or dispose of liquids under trees	Por favor no limpiar equipo ni tirar liquidos abajo de los arboles
Do not make grade changes, cut or fill in critical root zone	Por favor no cambiar grados, cortar o llenar en zona critica de raíz

FAILURE TO COMPLY WILL RESULT IN FINES AND / OR TREE MITIGATION

12. Revised Tree Canopy Chart

Canopy coverage shall be provided in accordance with the following table. ~~and at a minimum shall include the preservation of at least 2 inches of existing tree diameter per 1,000sf of site. On lots that are 3,000sf or smaller, at least 3 inches of the existing tree diameter must be preserved per lot.~~

Class Canopy Requirement per Table 10.1.1	Preserved Tree Canopy Coverage Area	New Tree Canopy Coverage Area	Total Tree Canopy Coverage Area Required
Class A	5%	0%	5%
	4%	2%	6%
	3%	4%	7%
	2%	6%	8%
	1%	8%	9%
	0%	10%	10%
Class B	10%	0%	10%
	8%	4%	12%
	6%	8%	14%

	4%	12%	16%
	2%	18%	18%
	0%	20%	20%
Class C	15%	0%	15%
If site is 76%-100% covered in existing tree canopy	12%	6%	18%
	9%	12%	21%
	6%	18%	24%
	3%	24%	27%
	0%	30%	30%
Class C	15%	0%	15%
If site is 41-75% covered in existing tree canopy	12%	5%	17%
	9%	10%	19%
	6%	15%	21%
	3%	20%	23%
	0%	25%	25%
Class C	15%	0%	15%
If site is 0-40% covered in existing tree canopy	12%	4%	16%
	9%	8%	17%
	6%	12%	18%
	3%	16%	19%
	0%	20%	20%
Class D	20%	0%	20%
	15%	6%	21%
	10%	12%	22%
	5%	18%	23%
	0%	24%	24%

13. On

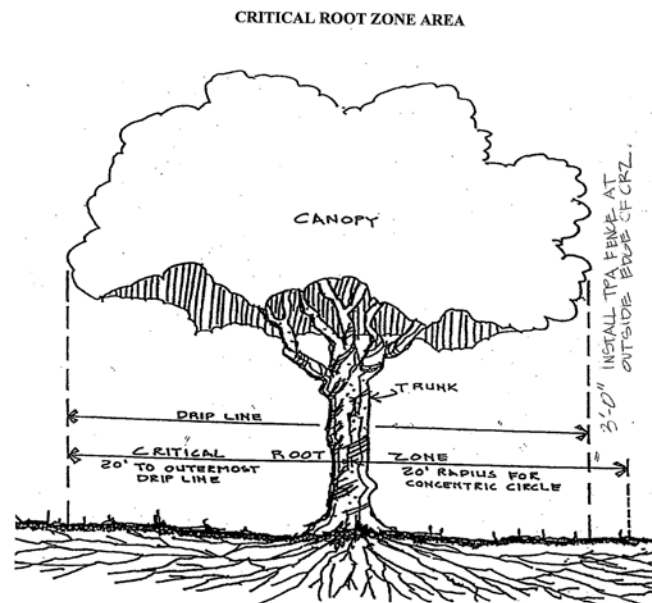
development plans and preliminary subdivision plans significant trees (trees 12" caliper and above) that are located outside an LBA and TCPA shall be identified on the plan. Sites that are preserving over 1 acre of continuous TCPA will only need to inventory the first 10 feet of TCPA.

A tree survey/inventory plan will be required for plans that show Tree Canopy Preservation Areas. The tree inventory shall be submitted as part of the tree preservation plan review process and shall be only for the trees shown in the TCPA. The tree inventory shall include but not be limited to the following information:

Date of inventory, person(s) preparing the survey, location of trunk and drip line, size, CRZ, health, and species of all existing trees on the property for all trees 4" diameter and greater. Also a completed tree inventory form shall accompany the plan. This form lists all the existing trees located on the inventory.

14. Establishment of the Critical Root Zone

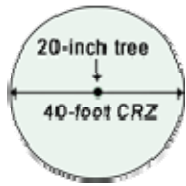
Code will require that proposed developments demonstrate that trees are preserved to the maximum extent reasonable and feasible. Tree preservation is effectively defined as root system preservation; a Critical Root Zone Area (CRZ) will be assigned to each tree, based on trunk diameter size. In order to be considered as TCPA, a



CRITICAL ROOT ZONE AREA (CRZ): The area of undisturbed natural soil around a tree defined by a horizontal circle drawn at grade with the center of the trunk of the tree and a radius equal to the distance from the trunk to the outermost portion of the drip line.

DRIP LINE: Whichever of the following encompasses the greatest area: (1) the irregular shape formed around a tree by a series of vertical lines that run through the outermost portion of the canopy of the tree and extend to the ground, or (2) a circular area with a radius of one-half (1/2) the height of the tree extending outward from the center point of the tree.

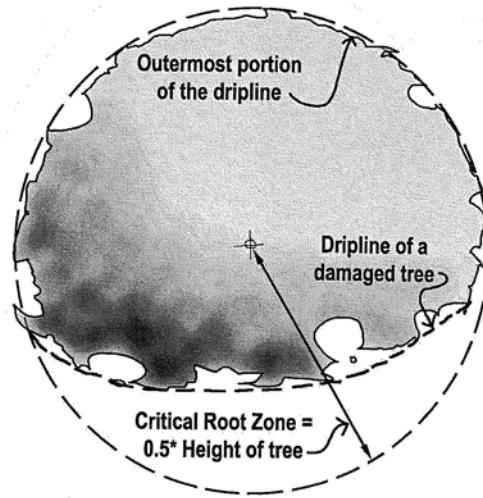
minimum



diameter

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CRITICAL ROOT ZONE AREA & DRIP LINE



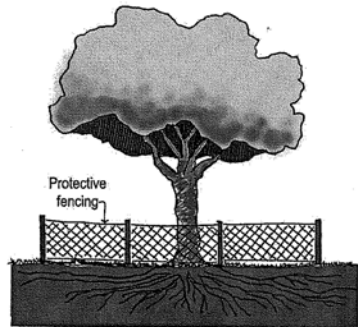
showing Critical Root Zone and Drip Line measurement for a damaged or deformed

of 50% of the CRZ is required to be left undisturbed around the tree.

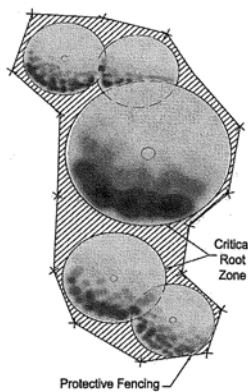
Trees are to be depicted on tree survey plans with a CRZ circle centered on the tree base location (i.e. a twenty inch diameter tree is represented by a 40 foot diameter circle). The formula is: Tree in inches X 2, then convert to feet = CRZ diameter. The CRZ circles will be shown on tree survey plan so that review staff can discern the extent of disturbance proposed near trees.

TREE PROTECTION FENCING Examples of appropriate protective fencing

Protective fencing for a single tree



Protective fencing for multiple trees



Bonding for non-residential sites and multi-family

- All sites greater than 2 acres shall bond the landscaping requirements from Chapter 10 *unless the Planning Director or Designee deems it unnecessary. The bond requirement can also be waived by the Planning Commission or its designee.*
Exceptions:
 1. *Where no landscape plan is required.*
 2. *Where a site is meeting all Chapter 10 part 2 requirements using existing plant materials.*
 3. *Where a site is utilizing the alternate to compliance in 10.1.3 to meet tree canopy requirements and where no screening in LBA's is provided.*
 4. *Community Facility Reviews (JCPS, Fire Department, MSD, Metro Parks Etc.)*
- Sites less than 2 acres may be bonded if the Planning Commission or Planning Director deems it necessary.
- Landscaping must be bonded before issuance of the building permit or other applicable permit ~~final approval of the landscape plan.~~
- The landscape bond will be held for at least ~~48~~ 12 months from the date the Certificate of Occupancy or other permit was issued before being released. The landscaping on a site will be inspected before the site receives a Certificate of Occupancy or other permit and again before the bond is released. Any dead, dying, or missing landscaping shall be replaced before the bond is released.
- The bond amount shall be equal to 110% of the approved estimate. This is to cover inflation of materials and labor costs in the event that Louisville Metro must install the materials.

Bonding for residential subdivisions

- All residential subdivisions will require a landscape bond.
- Subdivision bonding for landscaping shall follow the similar procedures as outlined in Chapter 7 of the LDC.
- Add landscape bond info to chapter 7.

TCPA Exceptions

Sites which present unique development constraints will have opportunities to preserve existing trees as TCPA as determined by the Planning Director or designee. Such situations are described below.

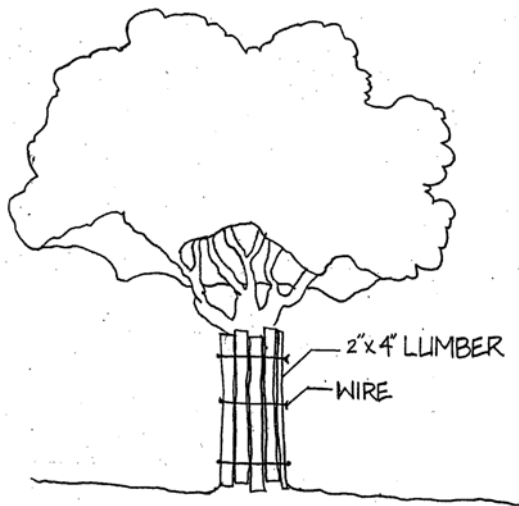
1. Utilities

A proposed development which requires underground utilities shall avoid the installation of said utilities within the drip line and critical root zone of existing trees whenever possible. In the event that this is unavoidable, all trenching shall be done by directional boring taking extreme caution to avoid damage to the root structure. *(LWC contractors are trained to use directional boring where applicable)*

2. Trunk Protection (Limited Application)

Tree trunk protection shall be provided in accordance with detail. Tree trunk protection shall consist of any 2 x 4-inch or 2 x 6-inch planking or plastic strapping.

BARK PROTECTION

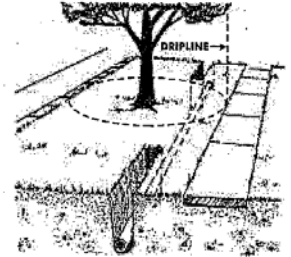
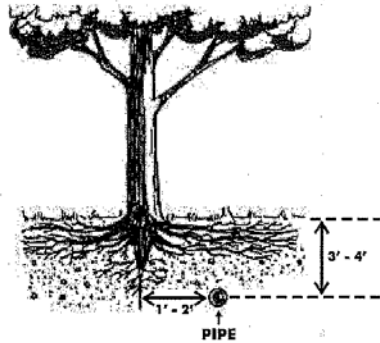


In situations where a protected tree remains in the immediate area of intended construction and the tree may be in danger of being damaged by construction equipment or other activity, the contractor or subcontractor shall protect the tree with 2"x4" lumber encircled with wire or other means that do not damage the tree. The intent is to protect the trunk of the tree against incidental contact by large construction equipment.

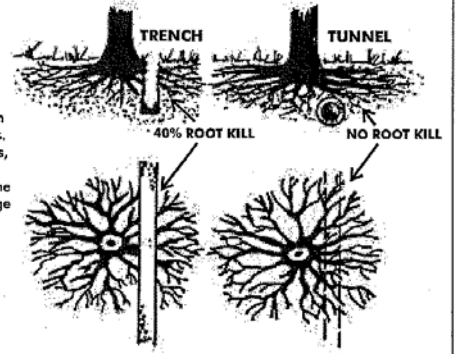
3. Tree Wells for Raised Grades

APPENDIX B. Tunneling (How to Save Existing Trees When Tunneling)

Use tunneling for underground utilities such as cable, electric, and natural gas instead of cutting an open trench. This method will help preserve existing trees or smaller tree save areas.



Why Tunneling Saves Trees
Trenching near a tree can kill as much as 40 to 50 percent of the tree's roots. This will almost certainly lead to stress, poor health, lack of firmness against wind, or outright death. A tunnel in the same place will do virtually no damage to the tree.



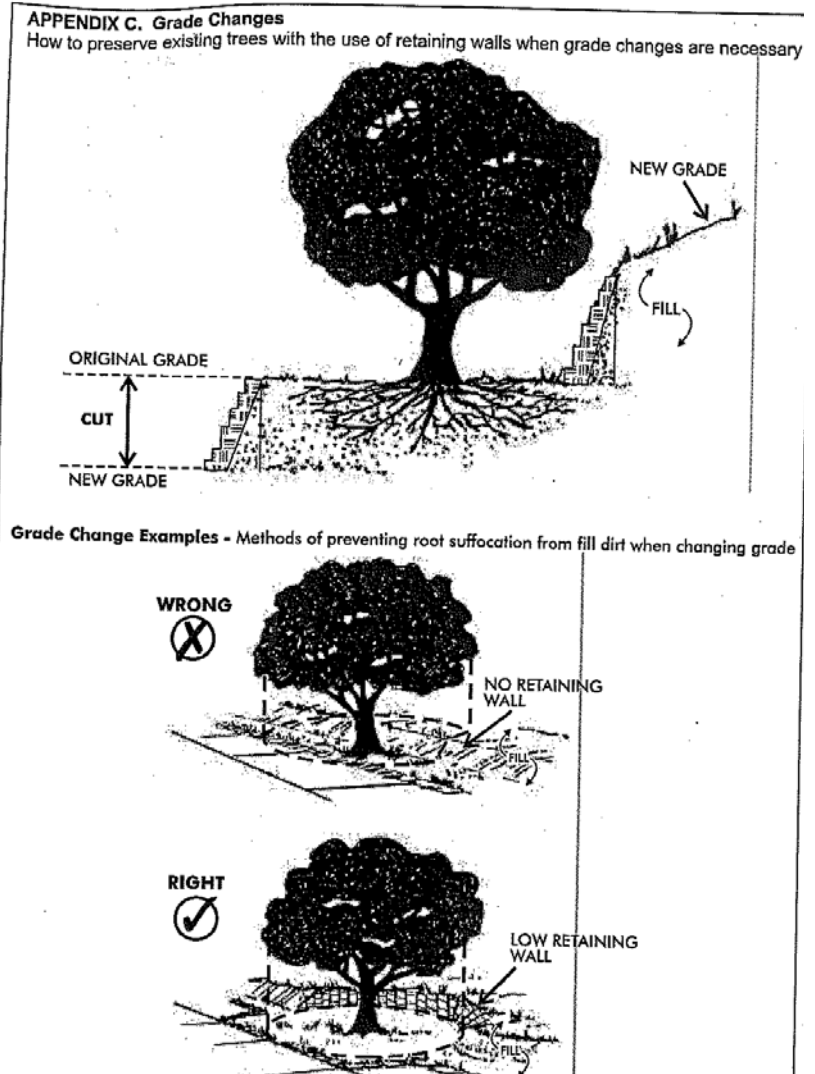
When existing grades are raised by more than 6 inches, the tree root system shall be protected by the installation of tree wells in accordance with detail (to be provided). Building materials (brick, stone, timber, etc.) similar to those utilized on site shall be used for the separator wall of the well and PVC conforming to ASTM D-2729, SDR-35 shall be used for the aeration systems in fill areas.

4. Cutting and Filling Around Trees
When the depth of an excavation or embankment exceeds 6 inches within the drip line of any tree with a diameter greater than 4 inches, a tree well shall be constructed to protect the tree as indicated on the tree preservation plan.

5. Paving Around Trees
Where paving within the drip line of any tree greater than a 4 inch diameter is necessary, a permeable pavement and aeration system must be installed as indicated on the tree preservation plan, except for street construction. Permeable segmented pavers in conjunction with PVC pipe aeration system or concrete on gravel base with cored holes shall be used to protect existing tree root zones.

6. *Percent change in TCPA*
A threshold of change from development plan to construction plan will be considered as there are many unknowns at development plan stage (unforeseen site constraints, rock, utilities etc.). Percentage of change must be in keeping with the original intent of the TCPA shown on the plan. Percent of change from development plan to construction plan shall be no more than 10% of the original TCPA shown on the approved development plan. A change greater than 10% will require Planning Commission or designee approval.

7. *Other techniques as described by applicant and approved by the Planning Director or designee.*



Policy Changes

- ~~15. Site disturbance permits will be issued by MSD **after** Planning and Design, Public Works, and MSD sign off on the clearing and grading red stamp. MSD will issue the stamp, but in order to receive the permit the plans must be returned to MSD with Planning and Design and Public Works' signatures. Planning and Design will conduct a site inspection to ensure the tree preservation fencing is in the locations as shown on the approved tree preservation plan prior to signing the clearing and grading plan.~~
*Site disturbance permits will be issued by MSD **after** MSD receives approval from both Public Works and Planning & Design Services. PDS approval will be a copy of the approved tree preservation plan. Public Works approval will be a plan with the "Transportation" approval stamp.*
16. Tree preservation fencing, tree canopy calculations, trees being preserved must be shown on the clearing and grading and site disturbance plan.
17. Subdivisions may only clear what is necessary for roadway and utility installation. Utility and roadway locations and associated site disturbance shall be shown on both the tree preservation plan and clearing and grading plan.
- ~~18. Scenic Corridor, Parkway, and Gene Snyder plantings must be installed within 6 months of issuance of the site disturbance/clearing and grading permit.~~
19. All tree and shrub preservation and protection measures shall be removed *upon bond release or issuance of Certificate of Occupancy* ~~when the construction has been completed.~~
20. Woodland Protection Area- dead/dying trees are to remain unless public, health, safety and welfare are compromised.
21. ~~Binding Element (for WPA/TCPA sites):~~ Prior to any site disturbance permit being issued and Prior to any clearing, grading or the issuance of a site disturbance permit, a site inspection shall be conducted by PDS staff to ensure proper placement of required tree protection fencing in accordance with the approved Tree Preservation Plan.
22. Re-introduce WPAs on development plans- Policy describes WPA but planners should recommend and utilize this option where applicable. Training and discussions with planning staff and development community to occur.

Enforcement

1. If a site is found in violation of the tree preservation policies and Code requirements mitigation measures will be enforced by Codes and Regulations. (Additional penalties for the violations shall be determined by the Planning Commission or its designee.)
2. The Planning Commission may approve bond forfeiture for developments that fail to install or permanently preserve landscaping in accordance with an approved landscape plan and/or tree preservation plan. The forfeited bond shall be utilized to install the required landscaping and/or replace dead, dying, or missing landscaping.
3. Penalties and mitigation measures for removal of existing trees deemed to be otherwise permanently preserved and removal of landscaping required by the LDC shall be determined by the Planning Commission or its designee.
4. The replacement requirement is inches per inch. 3" caliper minimum trees from the preferred tree list may be used to add up to the number of inches removed. For example, if a 9" caliper tree is removed, 9" must be replaced. This can be accomplished by using three (3) 3" caliper replacement trees. Trees that are larger than 3" caliper *also* may be used.
5. The Tree Replacement Chart below will apply when Tree Canopy Preservation Areas have been removed, which were intended to remain. The tree inventory form and tree *inventory plan survey* would be used to determine the number of replacement trees required to mitigate the removal. *On sites where there is over one (1) acre of continuous preserved tree canopy and the inventory plan only indicates the first 10 feet of TCPA, 110% of the area removed will be required to be replaced.*

Tree Replacement Chart

Size of Removed Tree	Number of Replacement Trees Required	
6"	2	
>6"- 9"	3	
> 9" – 12"	4	
>12" – 16"	5	
>16" – 20"	6	
>20" – 24"	7	
>24" – 28"	8	
>28" – 32"	9	
>32" – 36"	10	
>36"	The equivalent of 3" caliper trees or greater needed to equal the DBH of the removed tree	
		(3" minimum caliper for replacement deciduous trees and 12' height minimum for evergreen trees)

6. Guide the Planning Commission on the monetary value of existing tree loss and non-compliance.
7. Assist Planning Commission in determining monetary penalty for non-compliance in addition to replanting mitigation. Staff member presenting case to Commission may submit tree loss worksheet to guide Commissioners on setting a fine.
8. Parameters for monetary penalties are being researched.

DRAFT