City of Andover

Tree Preservation Policy

2004

CITY OF ANDOVER
TREE PRESERVATION POLICY
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TREE PRESERVATION POLICY
CITY OF ANDOVER
COUNTY OF ANOKA
STATE OF MINNESOTA

I. Purpose. The purpose of this policy is to preserve and protect significant trees or stands of trees whose loss due to land disturbances would affect the character of neighborhoods, subdivisions, public or utility projects and commercial developments.

II. Applicability. This policy shall apply to any person or entity that would disturb land areas and impact significant trees or stands of trees in neighborhoods, subdivisions, commercial building developments, public and utility projects such as streets, utilities and parks whether disturbed by a public agency or private developer; except where the City Council may waive these requirements where there would be a greater public need for the project than to meet the requirements of this policy. The terms and provisions of the Tree Preservation Policy in conjunction with City Code 4-3 shall apply to all activity, which requires approval from the Natural Resources Technician or their designee prior to any land disturbance.

III. Definitions. All words in these standards have their customary dictionary definition except as specifically defined herein. The word "shall" is mandatory and the work "should" is permissive. Technical terms used in this Policy are defined in Appendix A.

Buildable Area – the portion of a lot which is not located within any minimum required yard, landscape strip/area, or buffer; that portion of a lot wherein a building may be located.

Natural Resources Technician (NRT) – the agent of the City of Andover assigned to the Engineering Department and having the primary responsibilities of administration and enforcement of the Tree Preservation Policy.

City Code 4-3 – a code relating to the preservation of shade trees and the prevention of epidemic diseases in shade trees within the City of Andover.

Construction Zone – the area within the property that is under some type of disturbance (i.e. soil disturbance or material storage) from an improvement.

Crown Dripline – a vertical line extending from the outer surface of a tree's branch tips down to the ground.

DBH – diameter-at-breast-height is a standard measure of tree size and is a tree trunk diameter measured in inches at a height of four and one-half feet (4½') above ground. If a tree splits into multiple trunks below four and one-half feet (4½'), then the total of the measurement of the largest of all the multiple trunks' at DBH and one-half (½) of the DBH of the other(s) is measured in inches.

Protection Zone – all lands that fall outside the buildable area of a parcel.

Significant Trees – any deciduous hardwood tree measuring four inches (4") in DBH or greater, or a coniferous tree measuring four inches (4") in DBH or greater, or any tree or group of trees that is/are considered significant by the NRT or their designee.

Structure – anything manufactured, constructed or erected, which is normally attached to or positioned on land, including portable structures.

Tree – any self supporting woody plant, usually having a single woody trunk and a potential DBH of two inches (2") or more.

Tree Protection Plan – plan established in Section IV(B) of the Tree Preservation Policy and Appendix C.

Tree Preservation Policy – approved and adopted by the City of Andover Council to regulate and provide standards and guidelines for the preservation of trees through development and construction processes within the City of Andover.

Woodlot – any wooded area with significant trees.

IV. Procedures.

A. Development Standards. Developments shall be designed to preserve large trees and woodlots where such preservation would not affect the public health, safety or welfare. The City may prohibit removal of all or part of a woodlot or stand of trees. In addition, nothing in this policy shall prevent building on an existing lot of record, provided that such building shall be designed to save as many trees as possible. This decision shall be based on, but not limited to, the following criteria:

1. Size of woodlot tree.

2. Species, health and attractiveness of the trees including:

    a. Sensitivity to disease
    b. Life span
    c. Nuisance characteristics
    d. Sensitivity to grading

3. Potential for transplanting.

4. Need for thinning of woodlot.

5. Effect on the functioning of a development.

B. Tree Protection Plan.

1. Sketch plan shall show large stands of significant trees.

2. A Tree Protection Plan shall be submitted with the following:

    a. Preliminary plat for the subdivision of property.
    b. Other permit drawings as a part of the Building Permit process.
    c. Commercial Site Plans, either as a separate drawing or as part of the Grading, Drainage and Erosion Control Plan.

3. The Tree Protection Plan shall include the following information:

   a. Definition of spatial limits:

      (1) Limits of land disturbance, clearing, grading and trenching
      (2) Tree protection zones
      (3) Specimen trees or stands of trees

   b. Detail drawings of tree protection measures (where applicable):

      (1) Protective tree fencing
      (2) Tree protection signs

   c. Drawings indicating location of various utilities:

      (1) City water or well
      (2) City sewer or septic system
      (3) Electricity
      (4) Gas
      (5) Cable TV
      (6) Telephone

4. These plans shall be reviewed by the NRT or their designee for conformance with the Tree Preservation Policy, in conjunction with City Code 4-3, and will either be approved, or returned for revisions. Request for revisions shall be noted on the Tree Protection Plan or otherwise stated in writing.

5. A fee established by Council resolution shall be charged for plan review for building permits. Any cost incurred by the City in reviewing plans for plats and commercial site plans shall be charged to the developer. City staff may submit the plan to a consulting forester for a recommendation. Any costs shall be paid for by the developer or builder. (Res. 105-93, 5-18-93)

6. All tree protection measures shall be installed prior to any construction activities and inspected by the NRT or their designee.

7. The NRT or their designee will conduct follow-up site inspections for enforcement of the Tree Preservation Policy in conjunction with City Code 4-3.

8. If any significant tree in development or building site:

- Is cut and removed, the City shall require planting of two (2) new trees.
- Is damaged and determined by the City that it will probably not survive, it shall be removed and the City shall require the planting of two (2) new trees.
- Has mechanical damage, the City may require planting of two (2) new trees.

- Has had its root system damaged or the area within the tree's dripline has been encroached upon by grading equipment without City authorization, the City may require planting of two (2) new trees

    a. Any trees required to be planted shall be varied in species, shall maximize the use of species native to the area, should not include any species under disease epidemic and shall be hardy under local conditions. Trees shall be at least one and three-fourths inches (1 ¾") in diameter for deciduous trees and six feet (6') tall for coniferous trees per nursery standard measurements.

    b. Any trees required to be planted shall be replaced if they die or appear to be dying within one (1) year of planting by the person responsible for the planting.

    c. Before any building construction takes place, fencing as required in Section VI(B) of this Policy shall be placed around the borders of woodlots of the driplines of significant trees to be preserved. Signs shall be placed along this fence line prohibiting grading beyond the fence line.

    d. The developer/contractor shall escrow 150% of the estimated project cost of tree replacement when tree conditions do not allow the trees to be planted at the time of the development or construction.

C. Conditional Use Permit Considerations. Any proposed density increase must save significant trees. The City Council may require a Conditional Use Permit. Conditions to Conditional Use Permits will be applied where determined necessary by the preliminary review. These conditions may be either general or specific in nature, and will reflect the standards of provisions of the Tree Preservation Policy in conjunction with City Code 4-3.

1. The NRT or their designee will conduct a preliminary review of all Conditional Use Permit applications.

2. A field review of select cases will occur:

3. The City may reduce the maximum allowed density under Density Zoning or the Planned Unit Development on developments that have significant trees, where such reduction would save all or part of such significant trees. The City Council may require the clustering of dwellings in the form of townhouses, quads, apartments or similar uses, where it is necessary to preserve significant trees.

4. Compliance to these conditions will be verified by staff review of the appropriate plans prior to building construction.

V. Tree & Site Related Disturbances.

A. Tree protection zones, specimen trees or stands of trees designated to be saved must be protected from the following damages which may occur during all phases of land disturbance and construction processes. Methods of tree protection and disturbance prevention are provided in Section VI.

1. Direct physical root damage

2. Indirect root damage

3. Trunk and crown disturbance

B. Direct physical root damage most frequently occurs during site clearing and grading operations, where transport or feeder roots are cut, torn or removed.

1. Transport and feeder roots tend to tangle and fuse among the roots of adjacent trees. The removal of trees with heavy machinery along the outer periphery of a tree save area cause root damage.

2. The most substantial form of root damage for all root types occurs in the form of cut roots. Roots are cut in grade reduction, or from trenching for underground utilities, sanitary sewer or storm sewer lines.

3. A more subtle type of root damage is the loss of feeder roots. Feeder roots normally occur within the organic layer and the surface four (4") inches of top soil, subsequently, these roots can be easily damaged by the track action from a single bulldozer pass. The stripping of top soil within a tree's critical root zone can totally eliminate its feeder root system.

C. Indirect root damage through site modification can result from positive grade changes, temporary storage of fill material, the sedimentation of erosion materials, soil compaction and soil chemical changes.

1. Positive grade changes from fill and sedimentation causes a decrease in soil oxygen levels. An increase in soil carbon dioxide and other toxic gasses can also occur, leading to large areas of anaerobic conditions. Anaerobic soil conditions cause a decrease in the root respiration process, which is essential for the uptake and transport of minerals and nutrients.

2. Anaerobic soil conditions are also produced by soil compaction, the increase in soil bulk density with a decrease in soil pore space. Compacted soil is also impervious to root penetration and this inhibits root development. Soil compaction is generally caused by the weight and vibrations of heavy machinery, vehicle parking and the storage of fill and/or construction materials within the critical root zones of trees.

3. Changes in soil chemistry will adversely affect tree survival. The most frequent occurrence is the change (decrease) in soil acidity by concrete washout. Most trees native to Anoka County area prefer slightly acidic

soils; spillage of toxic materials such as fuels or paints can be fatal for trees.

D. Trunk and crown disturbances are generally mechanical in nature and are either caused directly by clearing and grading machinery or indirectly by debris being cleared and falling into trees marked for protection.

1. Common forms of damage include stripped bark and cambium, split trunks and broken limbs.

2. Damage also occurs from the posting of signs such as building permits or survey markers on trees.

3. Indirect damage can be caused by the placement of burn holes or debris fires too close to trees. The possible range of damages include scorched trunks with some cambial dieback, the loss of foliage due to evaporative heat stress (leaf desiccation) and completely burned trunks and crowns.

VI. Methods of Tree Protection.

A. Planning and Considerations. Tree space is the most critical factor in tree protection throughout the development process. The root system of trees can easily extend beyond the dripline of the tree canopy. The root system within the dripline region is generally considered to be the critical root zone. Disturbance within this zone can directly affect a tree's chances. With reference to root zones, the following standards shall apply:

1. The use of tree save islands and stands is encouraged rather than the protection of individual trees scattered throughout a site. This will facilitate ease in overall site organization as related to tree protection.

2. The protective zone of significant trees or stands of trees or otherwise designated tree save areas shall include no less than the total area beneath the tree(s) canopy as defined by the farthest canopy dripline of the tree(s). In some instances, the NRT or their designee may require a protective zone in excess of the area defined by the tree's dripline.

3. Layout of the project site utility and grading plans shall accommodate the required tree protection zones. Utilities must be placed along corridors between tree protective zones.

4. Construction site activities such as parking, material storage, concrete washout, hole placement, etc., shall be arranged so as to prevent disturbances within tree protective zones.

5. No disturbance shall occur within the protective zone of the specimen trees or stands of trees without prior approval by the NRT or their designee.

B. Protective Barriers.

1. Active protective tree fencing shall be installed along the outer edge of and completely surrounding the critical root zones of all significant trees or stands of trees, or otherwise designated tree protective zones, prior to any building construction.

2. These fences will be a minimum four feet (4') high. Four feet (4') orange polyethylene laminar safety or snow fencing is acceptable. Additional specifications include:

    a. The stakes used to hold up fencing shall be a minimum of four and one-half feet (4 ½') tall.
    b. They shall be kept no farther than ten feet (10') a part from one another.
    c. The fence shall be adequately secured to the stakes.
    d. Fencing shall be required for trees to be saved that are within fifty feet (50') of the construction zone, unless exceptions are made by the NRT or their designee.

3. Orange silt/tree fence with wood stakes is acceptable for tree protection under certain conditions (i.e. an entire development).

2. Passive forms of tree protection may be utilized to delineate tree save areas, which are beyond fifty feet (50') from the construction zone. These areas must be completely surrounded with continuous rope or flagging (heavy mil - minimum four (4') inches wide). All passive tree protection must be accompanied by "Keep Out" or "Tree Save" signage.

3. All tree protection zones should be designated as such with "Tree Save Area" signs posted visibly on all sides of the fenced area. These signs are intended to inform subcontractors of the tree protection process. Signs requesting subcontractor cooperation and compliance with tree protection standards are recommended for site entrances.

4. All tree fencing barriers must be installed prior to and maintained throughout building construction and should not be removed until completion of construction and until landscaping is installed.

C. Encroachment. Most trees can tolerate only a small percentage of critical root zone loss. If encroachment is anticipated within the critical root zones of specimen trees, stands of trees, or otherwise designated tree protection zones, the following preventive measures shall be employed:

1. Clearing Activities: Roots, often fuse and tangle amongst trees. The removal of trees adjacent to tree save areas can cause inadvertent damage to the protected trees. Wherever possible, it is advisable to cut minimum two (2') foot trenches (e.g., with a "ditch-witch") along the limits of land disturbances, so as to cut, rather than tear, roots. Directionally felling trees outward into disturbance areas and grinding stumps is also acceptable.

2. It is very strongly suggested that all clearing in oak stands be done before April 1st and after July 1st of each season. This will help prevent oak wilt, which could infect damaged trees, especially during this high-risk period. If clearing has to be done at this time, all stumps and wounded trees shall have the wound area painted thoroughly with tree paint. To be effective, the painting shall be performed within an hour of cutting. Should oak wilt get started as a result of construction, the developer/builder shall pay for all additional oak wilt control measures needed to control the disease. This is in accordance with City Code 4-3.

3. Where the NRT or their designee has determined that irreparable damage has occurred to trees within tree protective zones, they must be removed and replaced by the developer/builder as defined in Section IV(B)9.

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APPENDIX A

TECHNICAL TERMS:

Cambium – tissue within the woody portion of trees and shrubs which gives rise to the woody water and nutrient conducting system, and the energy substrate transport system in trees.

Cambial Dieback – the irreparable radial or vertical interruption of a tree's cambius, usually caused by mechanical damage, such as "skinning bark", or from excessive heat.

Coniferous – belonging to the group of cone bearing evergreen trees or shrubs.

Critical Root Zone – the rooting area of a tree established to limit root disturbances. This zone is generally defined as a circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline. Disturbances within this zone will directly affect a tree's chance for survival.

Deciduous – not persistent; the shedding of leaves annually.

Feeder Roots – a complex system of small annual roots growing outward and predominantly upward from the system of "transport roots". These roots branch four or more times to form fans or mats of thousands of fine, short, non-woody tips. Many of these small roots and their multiple tops are 0.2 to 1 mm or less in diameter, and less than 1 to 2 mm long. These roots constitute the major fraction of a tree's root system surface area, and are the primary sites of absorption of water and nutrients.

Major Woody Roots – first order tree roots originating at the "root collar" and growing horizontally in the soil to a distance of between three (3) and fifteen (15) feet from the tree's trunk. These roots branch and decrease in diameter to give rise to "rope roots". The primary function of major woody roots include anchorage, structural support, the storage of food reserves, and the transport of minerals and nutrients.

Root Collar – the point of attachment of major woody roots to the tree trunk, usually at or near the groundline and associated with a marked swelling of the tree trunk.

Root Respiration – an active process occurring throughout the feeder root system of trees, and involving the consumption of oxygen and sugars with the release of energy and carbon dioxide. Root respiration facilitates the uptake and transport of minerals and nutrients essential for tree survival.

Rope Roots – an extensive network or woody second order roots arising from major woody roots, occurring within the surface 12 to 18 inches of local soils, and with an average size ranging from .25 to 1 inch in diameter. The primary function of rope roots is the transport of water and nutrients, and the storage of food reserves.

Soil Compaction – a change in soil physical properties, which include an increase in soil weight per unit volume and a decrease in soil pore space. Soil compaction is caused by repeated vibrations, frequent traffic and weight. As related tree roots, compacted soil can cause physical root damage, a decrease in soil oxygen levels with an increase in toxic gasses, and can be impervious to new root development.

Transport Roots – the system for framework of tree roots comprised of major woody roots and rope roots.

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APPENDIX B

RECLAMATION OF THE GROWING SITE:

1. A tree's ability for adequate root development, and ultimately its chances for survival, is improved with reclamation of the growing site.

    a. Whenever possible, the soil should be brought back to its natural grade. Unnecessary fill, erosion sedimentation, concrete washout and construction debris shall be removed. When machinery is required for site improvements, it is recommended that a "bobcat" or similar light weight rubber tire vehicle be used so as to minimize soil compaction.

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APPENDIX C

CHECKLIST FOR TREE PROTECTION PLAN:

Contact the City of Andover Engineering Department at (763) 755-5100 for a site inspection upon completion of landscape installation.

1. Tree Protection Plans.

   a. Provisions for tree protection on the site shall be, as minimum, in conformance with the requirements of the City of Andover Tree Preservation Policy in conjunction with City Code 4-3.

   b. A Tree Protection Plan shall be submitted either as part of the Grading, Drainage and Erosion Control Plan or as a separate drawing to include the following:

      (1) All tree protection zones.
      (2) Approximate location of all significant trees.
      (3) Approximate location of all significant trees when their preservation is questionable, or might result in a change of the site design.
      (4) Indicate those significant trees to be removed. Removal of significant trees is subject to NRT or their designee approval.
      (5) Limits of clearing and land disturbance such as grading, trenching, etc. where these disturbances may affect tree protection zones.
      (6) Proposed location of underground utilities.
      (7) Methods of tree protection shall be indicated for all tree protection zones.
      (8) The plan should indicate staging areas for parking and material storage.

   c. The following notes shall be indicated on both Tree Protection Plans and Grading Plans in large letters:

      (1) Contact the City Engineering Department at (763) 755-5100 to arrange a pre-construction conference with the NRT or their designee prior to any land disturbance.
      (2) All tree protection measures shall be installed prior to building construction.