RESOLUTION NO. 2009 - 51

A RESOLUTION OF THE FARMINGTON CITY COUNCIL OF FARMINGTON, UTAH, ADOPTING URBAN FORESTRY STANDARDS AND SPECIFICATIONS.

WHEREAS, Urban Forestry Standards and Specifications have been prepared by a committee established by the Planning Commission in conjunction with the enactment of Chapter 42 of the Zoning Ordinance titled "Urban Forestry", whereby two members of the City Council served on this committee; and

WHEREAS, the entire Planning Commission considered the Standards and Specifications at a public hearing and recommended approval of the same on September 10, 2009; and

WHEREAS, the Standards and Specifications are adopted by resolution allowing the City to make technical changes by considering additional resolution(s) where and as often as necessary; and

WHEREAS, the Farmington City Council has reviewed the Standards and Specifications and finds that they will promote the public health, safety, and general welfare of citizens in Farmington; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF FARMINGTON CITY, STATE OF UTAH:

Section 1. Adoption. The City Council hereby adopts the Urban Forestry Standards and Specifications, a copy of which is attached hereto as Exhibit "A" and by this reference is made a part hereof as Exhibit "A".

Section 2. Severability. If any section, clause, or portion of this Resolution is declared invalid by a court of competent jurisdiction, the remainder shall not be affected thereby and shall remain in full force and effect.

Section 3. Effective Date. This Resolution shall take effect immediately upon the date of its passage.

PASSED AND ADOPTED this 6th day of October, 2009, at the regularly scheduled City Council meeting of the Farmington City Council.

FARMINGTON CITY SEAL INCORPORATED NOV. 21. 1892 Davis County, Utah

FARMINGTON CITY

Scott C. Harbertson
Mayor

ATTEST:

Margy Lomax, City Recorder

EXHIBIT "A"

URBAN FORESTRY STANDARDS AND SPECIFICATIONS

PART I Urban Forestry Standards and Specifications Policy

1. **Compliance**. All work on public trees shall comply with the "Farmington City Urban Forestry Ordinance" and these standards and specifications, and if not set forth herein, and where applicable, ANSI A300 Pruning Standard Practices shall also apply. ANSI A300 standards are intended as guides for federal, state, municipal and private authorities including property owners, property managers, and utilities in the drafting of their maintenance specifications.

2. **Amendments**. These standards and specifications may be amended by the Urban Forester, with the approval of the Shade Tree Commission, at any time that improved methods become apparent through experience, new research, or laws, or whenever circumstances make it advisable.

3. **Removal of Trees**. No trees shall be removed from public places unless they constitute a hazard to life or property, a public nuisance, or because a revision of planting plans necessitates. Removal must be approved in advance by City Urban Forester prior to removal.

4. It is the policy of the City to cooperate with the Public Utility Companies in the placement and height of lighting standards and the development of a system of tree pruning to provide effective street illumination. Public Utility Companies must obtain a permit from the Urban Forester, or his designee, demonstrating that they will adhere to the standards set forth herein before pruning/maintaining public trees or private trees.

PART II Species, Cultivars or Varieties

1. **Acceptable Trees**. The Farmington City Urban Forester shall prepare lists of trees acceptable for planting in the public sites of Farmington City. Trees shall be selected for hardiness, water requirements, ease of maintenance, disease resistance, and tolerance to salts pollution and other urban impacts. Only desirable, long-lived trees of good appearance and adaptability, which are generally free from injurious insects or disease, shall be planted in public sites. The Shade Tree Commission, in conjunction with the Urban Forester, shall review at least once every two years the species, cultivars, and varieties included on the approved list to determine if any should be removed for any reason or if certain new species, cultivars, or varieties of proven dependability and value should be added. All trees hereafter planted in public right-of-ways, parks or other public places shall be in accordance with the Approved Species for Street Tree Planting List (See Appendix).

2. **Comprehensive Street Tree Plan**. Where street blocks have been assigned a particular tree species and variety on the Comprehensive Street Tree Plan, only that variety shall be planted subject to revision by the Urban Forester and approval by the Shade Tree Commission. No single tree species should comprise more than 10-15% of the total street population of Farmington City. No individual neighborhood of the city shall be planted out in just one species.

3. **Minimum Species Diversity**. When there are 10-19 trees on a site there shall be a maximum of 50% for any one species, for 20-39 trees there is a 33% maximum, for 40-50 trees there is a 25% maximum, and for 60 plus trees there is a 15% maximum.

PART III Planting

1. **Size**:

a. Unless otherwise specified by the Urban Forester, all medium to large deciduous tree species and their cultivars and varieties, shall conform to American Association of Nurserymen Standards and be at least 1 1/2 to 2 inches caliper size measured 6 inches above ground level and shall be at least 8-10 feet in height when planted. The crown shall be symmetrically well branched and in good balance with the trunk (See Appendix).

b. All small deciduous tree species and their cultivars or varieties, shall have a minimum caliper of 1 1/2 inches measured 6 inches above ground and have 6 or more branches (See Appendix).

c. All coniferous tree species and their cultivars or varieties, shall be at least 6 feet or more in height from ground level (See Appendix).

2. **Grade and Condition**:

a. Unless otherwise allowed for specific reasons, all trees shall have comparatively straight trunks, well developed leaders and tops, and roots characteristic of the species, cultivar, or variety showing evidence of proper nursery care.

b. All trees shall be free of insects, diseases, mechanical injuries, and other objectionable features at the time of planting.

c. All trees shall be established in containers or balled and burlapped (B&B). Measures shall be taken to prevent the roots of B&B trees from drying out at the surface of the ball and shall be protected against injurious freezing. All trees shall come from the nursery with tags identifying common and botanical names.

3. **Location and Spacing**:

a. Based on a 40-year cycle, no tree which will attain a trunk diameter greater than 12" to 15" shall be planted in a park strip less than 5 feet in width. In park strips less than 5 feet in width, or where overhead utility lines or building setback presents a special problem, the selection species shall be small trees or be determined by the Urban Forester.

b. Where there is a park strip less than five 5 feet in width, easements should be obtained on adjacent private property for planting. Such easements should contain provisions granting the municipality permission to select, plant, maintain, and remove

trees under the direction of the Urban Forester. A minimum setback of 4 feet is required from both the back of the curb and edge of sidewalk.

c. Where the sidewalk is attached to the street and is more than 10 feet or more in width or extends from the curb to the property line, shade trees shall be located in planting cutouts that are at least four 4 feet by 4 feet.

d. Trees shall be planted at least 30 feet from street intersections and at least 15 feet from driveways and alleys.

e. No tree shall be planted closer than 10 feet from a utility pole, structure, manhole, valve vault, valve box, and fire hydrant. The canopy of trees planted under utility lines shall not grow to be any closer than within 10 feet of the utility lines.

f. Small trees shall be planted no closer than 8 feet to a building. Large and medium trees shall be planted no closer than 14 feet to a building.

g. Spacing of trees shall be determined by the Urban Forester based on local conditions, the species, cultivars, or varieties used, and their mature height, spread, and form. Generally, all large trees shall be planted 30 to 40 feet on center, all medium-sized trees shall be planted 20 to 30 feet on center, and all small trees shall be planted 15 to 20 feet on center.

h. All planting on unpaved streets without curbs must have the special permission of the Urban Forester who shall determine the tree's location so it will not be injured or destroyed when the street is curbed and paved.

4. **Methods of Planting and Support**:

a. Pits dug for planting of bare-root plants shall be a minimum of 12" larger in diameter than the diameter of the root system so as to be of sufficient size to accommodate the roots without crowding. For balled trees, the pits shall be a minimum of 12" larger in diameter than the diameter of the ball of soil to allow proper backfill.

b. Plants shall be planted no deeper than previously grown, with due allowance for settling.

c. Only soil removed from the planting hole shall be used for backfill. No soil amendments shall be used. Care shall be taken to minimize disturbance to the root ball during the planting process. When the planting is completed, the entire root area at the time of planting shall be thoroughly saturated with water.

d. No fertilizer should be applied at the time of planting.

d. Excessive pruning at the time of transplanting should be avoided. Prune only broken or conflicting branches.

e. Generally, trees should not be wrapped or guyed. However, if support is necessary materials shall be used and located on the tree so as not to girdle or cause serious injury to the tree or endanger public safety.

f. Trees shall be planted between the months of March and November.

PART IV Early Maintenance

1. **General**. Newly planted trees require special attention to maintenance practices during one or two growing seasons following planting. All maintenance practices shall follow approved arboricultural standards.

2. **Watering**. Ample soil moisture shall be maintained following planting. A thorough watering each five to ten days, depending on climatic conditions, soil type and drainage provisions, is usually adequate during the growing season. A soil or sampling tube shall be used to check the adequacy of moisture in the soil ball and/or backfill.

3. **Fertilization**. Provision of good drainage and adequate moisture is more important than fertilization immediately following planting. However, adequate quantities of the essential nutrient elements should be available after new growth starts. Generally, a fertilization schedule should not begin until the growing season the year after planting.

4. **Insect and Disease Control**. Measures for the control of insects and diseases shall be taken as necessary. Plants in a weakened condition following transplanting are often more susceptible to insects, especially borers, and some diseases than are vigorously growing trees. Where it is necessary to spray, insecticides or fungicides shall be used that are recommended for safe and effective control.

5. **Pruning**. Any person, firm, or public entity, engaging in the practice of pruning branches of public trees that are one (1) inch in diameter or more within Farmington City shall first produce evidence of an arborist certification/license to the city prior to any pruning. The like person and any persons pruning branches under one (1) inch shall also follow the following standards:

a. Pruning practices to be followed the first few years following planting shall consist of removing dead, broken, or injured branches, the suppression of rank, uneven growth, and usually the removal of water sprouts.

b. The tree canopy should be raised as growth characteristics and location dictates. Newly planted trees need not have lover branches removed until they are well established. Eventually, trees should have the lower branches removed to the heights specified in the Farmington City Urban Forestry Ordinance. Generally, the height of the trunk should be not more than one third the total height of the tree. Branches shall be pruned to not obstruct the view of any street intersection.

PART V Long Term Maintenance

1. **Pruning and Removal**:

a. No topping or dehorning of trees shall be permitted.

b. Not more than 25 percent of the tree crown should be removed within an annual growing season.

c. All large, established trees shall be pruned to sufficient height to allow free passage of pedestrians and vehicular traffic; 8 feet over sidewalks and 13 feet over all streets.

d. All cuts shall be made with a saw or pruner and only at the nodes or crotches. All cuts shall be made outside the branch collar at 90 degrees to the branch. No spurs or climbing irons shall be used in the trees, except when trees are to be removed.

f. All dead, crossed, and rubbing branches shall be removed.

g. No wound dressing shall be used on cuts.

h. All dead, diseased, and or trees that harbor insects which constitute a potential threat to other trees within the city and to any persons shall be removed. Trees that are on private property are entitled to the same regulations.

i. All tools being used on a tree suspected to be infected with a contagious disease shall be disinfected before being used on another tree.

j. Whenever streets are to be blocked off to public access, police and fire departments shall be notified of the location and length of time the street will be blocked. Notification shall be given to these departments upon the removal of barriers or if such barriers remain longer than originally expected.

k. To protect the public from danger, suitable street and sidewalk barriers, highway cones, or signs shall be used when pruning a tree. Flashing signals shall be placed on all barriers or obstructions remaining in the street after dark.

l. The stumps of all removed trees shall be ground to at least six inches below grade, soil shall be replaced, and the area leveled.

2. **Spraying**:

a. Suitable precautions shall be taken to protect and warn the public that spraying is being done.

b. Spraying shall be done only for the control of specific diseases or insects, with the proper materials in the necessary strength, and applied at the proper time to obtain the desired control. All spraying practices shall conform to Federal and State regulations.

3. **Fertilization**:

a. Fertilization of public trees shall follow the National Arborist Association or other accepted arboricultural standards.

b. Formulations, rates, and methods of application of fertilizers shall be specified or approved by the Urban Forester.

4. **Cavities**. Extensive cavity work should be performed on trees only if they are sufficiently high in value to justify the cost. All cavity work shall conform to the National Arborist Association or other accepted arboricultural standards.

5. **Cabling and Bracing**:

a. As a general rule, cables should be placed approximately two-thirds (2/3) of the distance between the crotch and top branch ends. Rust-resistant cables, thimbles, and lags should be used. The ends of a cable should be attached to hooks or eyes of lags or bolts, and thimbles must be used in the eye splice in each end of each cable. In no instances shall the cable be wrapped around a branch.

b. All cabling and bracing practices with screw rods shall follow National Arborist Association or other accepted arboricultural standards.

c. When trees shall be braced they shall be braced in the following manner:

1. Two braces shall be driven a minimum of 2 feet into undisturbed soil outside the planting hole.

2. Braces when driven must be 1/2 to 2/3 the height of the tree measured from ground level.

3. Braces shall be 2 inches in diameter, minimum, at the thick end.

4. Braces shall be attached to tree with 12-gauge galvanized wire covered with rubber or plastic hose where wire is likely to come in contact with the tree trunk. An alternate may be any of the commercially available materials designed for bracing trees. The loop in contact with the tree shall be loose enough to permit growth and prevent grinding for 2 years, but shall be tightly bound to the brace to prevent slipping.

PART VI Replacement

1. **Replacement Ratio**. Replacement trees shall be replanted at a replacement ratio of one (1) inch diameter at breast height (DBH)of replacement tree for each one (1) inch DBH of removed tree. Replacement trees shall be a minimum of 2 inches for large and medium trees and one and a half (1 1/2) inches for small trees and to a height of eight 8 feet for coniferous trees.

2. **Indemnification**. If a replacement tree is not feasible an amount of indemnification should be paid by the person responsible for removing the protected tree. The amount shall be $100 per one (1) inch DBH for protected trees.

or

Replacement trees are figured by the size of the trunk of the removed tree. For trunks 4-9 inches 3 trees shall replace the old tree, trunks 10-15 inches shall need 5 trees, 16-22 inches need 7 trees, 22-27 inches need 9 trees, 28-33 inches need 11 trees, and 34 plus inches need 13 trees to replace the old tree. Locations of replacement trees to be planted as determined by the Forester.

APPENDIX A

Approved Species for Street Tree Planting In Farmington City

This list represents those trees which are deemed by the city forester as the most suitable species for planting along Farmington's streets. They were selected according to their proven dependability and practicality as street trees. Questions about these trees or new species not listed should be addressed to the city forester to verify their dependability and practicality as a street tree in Farmington City.

LARGE TREES -- Over 60'

Minimum planting strip 10' Wide
Minimum distance between trees 50'
Not to be planted under wires
These are fine trees for this area, but suitable only on very wide streets or in parks or lawns

Common Horsechestnut (Aesculus hippocastanum) H 50-75', W 40-70'. A very beautiful, symmetrical tree with an exciting display of white flowers. The large coarse leaves cast a dense shade. Leaves may scorch in hot, dry winds. Many seeds and husks are dropped in the fall, but most people feel the mess is worth it.

Common Hackberry (Celtis occidentalis) H 40-90', W 50'. These large trees are excellent street trees, recommended to replace the American Elm. They are hardy, tolerant of drought, hot winds, and are relatively pest free. They are moderate in their rate of growth and deep-rooted. Birds enjoy the seeds.

Ginkgo (Ginkgo biloba) H 50-80', W 30-40'. This unusual tree is a remnant from ancient times. Its fan shaped leaves turn yellow in the fall. Slow growing, but resistant to insects, disease, fire, and city conditions. Plant only male trees; female trees bare objectionable fruit.

Thornless Common Honeylocust (Gleditsia triacanthos var. inermis) H 30-70', W 60'. An excellent large, long-lived shade tree for this area. It is fast growing and tolerant of city conditions, alkaline soil, and once established tolerant to drought. The fern-like foliage casts a

light shade, permitting good grass growth. Leaf raking is no problem, and neither are the seed pods if a seedless variety is planted. Many horticultural varieties are available to suit different locations. Susceptible to Borer damage.

American Sweetgum (Liquidamber styraciflua) H 60-75', W 40-50'. Pyramidal when young but oblong to rounded when at maturity. Deep green leaves turn yellow-purple-red tones in the fall. Iron chlorosis can occur in high pH soils. Usable as a street tree with enough room for roots.

London Planetree (Platanus x acerifolia) H 70-120', W 65-80'. Widely used as a street tree, the London Plane is only appropriate where there is adequate space for its large and rapid growth habit. Large maple-like leaves are accompanied by familiar seed balls which some consider a problem. Lovely mottled bark coloration. Subject to anthracnose in wet years. Tolerant to alkaline soils.

Bur Oak (Quercus macrocarpa) H 70-80', W 70-80'. A very hardy and adaptable species, native to the East and Midwest. It has large acorns, nearly covered by a burr-like cap, and large, dark green leaves. Slow growing and long-lived, it does well in local soils and climate. Hard to transplant.

Pin Oak (Quercus palustris) H 60-70', W 25-40'. Strongly pyramidal in shape with a central leader. It drops its lower branches with age clearing the way for vehicles and pedestrians. Dark green leaves turn russet, bronze or red in the fall. Is pron to iron chlorosis in high pH soils.

Red Oak (Quercus rubra) H 60-75', W 60-75'. One of the rapid growing oaks, this one has a high branching pattern and turns red in the fall. It tolerates city conditions and is drought resistant.

English Oak (Quercus robur) H 50-60', W 40-60'. The tree of the Sherwood Forest, this is the fastest growing oak in Utah. Like the other oaks, it requires room to spread. It is a majestic tree with a stout trunk and large irregular crown.

Japanese Pagodatree (Sophora japonica) H 50-75', W 50-75'. Also known as the Chinese scholar tree, this excellent shade tree has lustrous fern like leaves, clusters of white flowers in summer, and long green seed pods. It tolerates city conditions, heat, drought, poor soil and is pest and disease free. Try to find cultivar Regent. Needs initial pruning & training.

Common Baldcypress (Taxodium distichum) H 50-70', W 20-30'. This pyramidal deciduous conifer has yellowish green foliage in the spring then green during the growth season and then orangish brown color in the fall. It has the appearance of a conifer evergreen but unlike the evergreens loses its leaves. A worthwhile tree along highways and streets.

American Linden (Tilia americana) H 60-100', W 30-50'. This native of the Eastern U.S. is also called Basswood. It has large heart-shaped leaves and fragrant yellow flowers in the foliage. It is narrow and upright in form. While it prefers moist rich soil, it can withstand city conditions. It grows quickly and is susceptible to Borer damage.

Littleleaf Linden (Tilia cordata) H 60-90', W 30-45'. This is one of the best street and shade trees available. It has smaller heart-shaped leaves than its American cousin and similar conical growth habit and flower. Its growth is rapid, and it is tolerant of city conditions, heat and drought. Susceptible to Borer damage. Subject to aphid infestation which can be damaging to car

paint finishes when parked along the street. Important to avoid mono-cultures where this is used.

Japanese Zelkova (Zelkova serrata) H 50-80', W 50'. An excellent tree, but difficult to locate. A large graceful tree, having wide spreading branches and yellow to russet fall colors. It is a good shade tree, commonly recommended to replace the American Elm. Disease resistant and moderately fast-growing. Zelkova tolerates city conditions and alkaline soils. Exceptional Varieties: 'Green Vase' bronze fall color, upright vase shape. 'Village Green' rusty-red fall color.

MEDIUM TREES - - 40' - 60'

Minimum planting strip 8' wide
Minimum distance between trees 45'
Not to be planted under wires

Red Horsechestnut (Aesculus x carnea) H 30-40', W 30-40'. A spectacular flowering tree with red flower spikes in late spring. Five-fingered leaves are light to dark bright green. A very nice lawn or street tree, best planted in less windy spots. The variety "brioti" flowers when very young.

Norway Maple (Acer platanoides) H 40-50', W 27-33'. A commonly planted, dependable shade tree. It has large green leaves which cast a dense shade. Inexpensive and readily available. Leaves subject to heat scorch in hot summer, particularly when subject to reflected heat from pavement. Prefer cooler summer climates. Autumn coloration is bright yellow. Use columnar varieties. Emerald Queen is one of the most popular. Some good ones are:

Cleveland Norway Maple (Acer platanoides 'Cleveland') H 40-50', W 30-40'. A recently developed variety of the Norway Maple, this tree develops an oval crown with attractive branching. Its smaller size makes it an appropriate companion for a one-story house.

Crimson King Norway Maple (Acer platanoides 'Crimson King') H 40-50', W 30-40'. This cultivar is one of the best red-leafed Norway Maples along with the cultivar Fassen's Black. They produce dense shade and striking color. Growth is somewhat slower than the green leafed varieties.

Fassen's Black Norway Maple (Acer platanoides 'Fassen's Black') H 40-50', W 30-40'. This cultivar is one of the best red-leafed Norway Maples along with the cultivar Crimson King. They produce dense shade and striking color. Growth is somewhat slower than the green leafed varieties.

Parkway Maple (Acer platanoides 'Parkway') H 40' x W 25' good for street tree applications.

Sycamore Maple (Acer pseudoplatanus) H 40-60', W 27-40'. This maple is similar to the Norway, but not quite as tolerant of pollution. It is much deeper rooted and grows rapidly. There is a red-leafed variety. Subject to anthracnose disease, but it will send out a secondary leaf growth.

Green Ash (Fraxinus pennsylvanica) H 40–80', W 40-50'. This tree is very popular due to its good form and resistance to disease. The autumn color is golden-yellow, and the tree is usually one of the earliest to change color. The leaves have serrated margins and short but distinct,

downy petiolules, and are green both above and below. The bark is smooth and gray on young trees, becoming think and fissured with age. They are moderate in their rate of growth and deep-rooted. Advantages include its tolerance of urban conditions.

Autumn Gold Ginkgo (Ginkgo biloba 'Autumn Gold') H 50', W 30'. This tree is a symmetrical broad conical form and can get broader later in its maturity. Excellent fall color, considered one of the best Ginkgo cultivars.

Princeton Sentry Ginkgo (Ginkgo biloba 'Princeton Sentry') H 60' x 20' good choice for tighter spaces.

Sargent Cherry (Prunus sargentii) H 40-50', W 40-50'. Most useful available cherry trees available. Foliage turns from dark green to bronze or red in the fall. Flowers are pink in late April to early May. One of the best of the larger cherries for general landscape use.

Yoshino Cherry (Prunus x yedoensis) H 40-50', W 40-50'. This tree is rounded and spreading. It has slightly fragrant pink or white flowers that bloom in March to April.

Bradford Callery Pear (Pyrus calleryana) H 30-50', W 20-35'. The callery pears have been hailed as near perfect street trees. In the spring they are covered with white flowers; in summer the leaves are a dark, glossy green; and in the fall they turn dark red. The small fruit is inedible, but enjoyed by the birds. It will grow in most soils and city environments. The Bradford cultivar is the most available but subject to storm damage from late snows and winds when older.

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Aristocrat Pear (Pyrus calleryana 'Aristocrat') H 40-45', W 20-25'. Pyramidal to broad-pyramidal, branches are more horizontal. Foliage is dark green during growth then in the fall yellow to red which is a better color than the 'Bradford'. Flowers later than the 'Bradford'. More susceptible to fireblight than 'Bradford'.

Autumn Blaze Pear (Pyrus calleryana 'Autumn Blaze') H 30-50', W 20-35'. Upright, pyramidal crown, many are pyramidal-rounded. May develop a few thorns. Known for its reddish purple fall color. It is more cold hardy and rounded than 'Bradford' and highly susceptible to fireblight.

Greenspire Linden (Tilia cordata 'Greenspire') H 40-50', W 30'. Widely used as a street tree with its single leader and good branching habit. Tolerable to many different situations.

Kentucky Coffee Tree (Gymnocladus dioicus) H 50' x W 35', Drought tolerant tree with yellow fall color and deeply furrowed bark. Good substitute for Honeylocust.

SMALL TREES - - Under 40'

Suitable for 5' planting strips
Minimum distance between trees 25'
May be planted under wires

Hedge Maple (Acer campestre) H 25-45', W 25-45'. An excellent street tree, the Hedge Maple is slow growing and tolerates dry, poor or sandy soils. The small green leaves turn yellow in the fall.

Amur Maple (Acer ginnala) H 15-25', W 15-25'. This maple is a very hardy tree and moderately rapid in growth. It has a broad oval shape and the leaves turn red in the fall. Single trunk tree best for street tree planting. 'Flame' good variety for bright fall color.

Globe Norway Maple (Acer platanoides 'Globosum') H 15-20', W 15-20'. This type has a very dense spreading form. It's ultimate height is determined by grafting height. It is similar to the other Norway Maples, except that it may be more susceptible to aphids than other cultivars.

Globe Catalpa (Catalpa bungei) H 20-30', W 20-30'. This popular small tree is fruitless and has large coarse leaves. Its wide spreading branches and short straight trunk are most unusual. As a street tree, it must be pruned up high enough to give adequate clearance.

European Hornbeam (Carpinus betulus) H 35' x W 25' Good tree for formal planting. Yellow fall color. Tight columnar when young, spreads with age. 'Carpinus' betulus fastigata good variety.

Eastern Redbud (Cercis canadensis) H 20-30', W 25-35'. This tree is best known for its profusion of purple-pink flowers that bloom on bare branches in the spring. It also has attractive heart-shaped leaves, which turn yellow in the fall, and interesting bark and branches in winter. Will grow in sun or shade, acid or alkaline soils, in limited space.

Hawthorn (Crataegus sp.) H 15-30', W 15-35'. These familiar flowering trees are very hardy and tolerant of the most adverse city conditions. They bloom in late May and have long-lasting, decorative fruits. They may be sheared into a hedge with thorns sharp enough to deter trespassers. Some good ones are:

English Hawthorn (Crataegus laevigata) H 15-20', W 12-20'. This shrubby, low branched, round-topped tree has thorns (up to 1" long) flowers are white in mid-may.

Lavalle Hawthorn (Crataegus x lavallei) H 15-30', W 10-20'. This tree is small, dense, oval-headed to rounded with white flowers in late May and has a bronzy or copper red color in the fall.

Washington Hawthorn (Crataegus phaenopyrum) H 25-30', W 20-25'. This broadly to oval-rounded, dense, thorny tree has a reddish purple foliage changing to dark green when the leaves mature. Flowers are white and bloom early in June. Fall color varies from orange, scarlet to purplish. Thorns on this species can range from 1" to 3" in length.

Fairmount Ginkgo (Ginkgo biloba 'Fairmount') H 30', W 10'. This cultivar of Ginkgo is a narrow upright pyramidal form with a strong central leader.

Columnar Ginkgo (Ginkgo biloba 'Fastigiata') H 30', W 10'. Upright columnar tree. Like the other Ginkgo trees, this one is very hardy and pest-free. Suitable for planting strips.

Liberty Splendor Ginkgo (Ginkgo biloba 'Liberty Splendor') H 30', W 10'. Wide pyramidal form with strong central leader. Rival to *Tilia cordata* 'Greenspire' and *Pyrus calleryana* 'Bradford' for its shape.

Mayfield Ginkgo (Ginkgo biloba 'Mayfield') H 30', W 8'. This Ginkgo has a narrow columnar habit much like that of Lombardy Poplar.

Flowering Crabapple (Malus sp.) H 20-30', W 15-30'. There are many varieties of crabapples available. They are hardy, easy to grow, and rapid growing. They can tolerate alkaline soils. Select a variety based on the flower and leaf color, and size of tree desired. Fruit from some species makes excellent jelly. Malus 'Springsnow' fruitless variety-good choice.

Japanese Flowering Cherry (Prunus serrulata) H 20-25', W 15-25'. Most of the cultivars of this species are vase-shaped or rounded and grow to be 20 to 25' high and wide. Foliage turns from red (new growth), to dark green (mature growth) to bronze or red in the fall. Flowers can be white or pink in April to early May.

Flowering Cherry (Prunis sp.) H 15-30', W 15-25'. The oriental types produce a display of pink white blooms in early spring. The cultivar "Kwanzan" is double-flowered and hardy. Weeping types should be avoided in planting strips. Other good ones include "Mt. Fuji", "Royal Burgundy and "Shirofugen". All are subject to peach borer infestation. Some other good species are:

Sweet Cherry (Prunus avium) H 30-40', W 30-40'. This is a conical shaped tree that has white flowers in mid to late April. Foliage turns yellow to bronze in the fall. This is one of the hardiest cherries.

Cherry Plum (Prunus cerasifera) H 15-30', W 15-25'. This is a small, shrubby, twiggy and rounded tree with ascending and spreading branches. White and extremely fragrant flowers in April. Prefers soil that is well-drained but is adaptable to pH soil. Prefers full sun and is not particularly pollution tolerant.

Canada Plum (Prunus nigra) H 20-30', W 20-30'. Upright branched, narrow-headed tree. Flowers are white between April-May and usually flowers heavily when young. Black bark add interest in the winter.

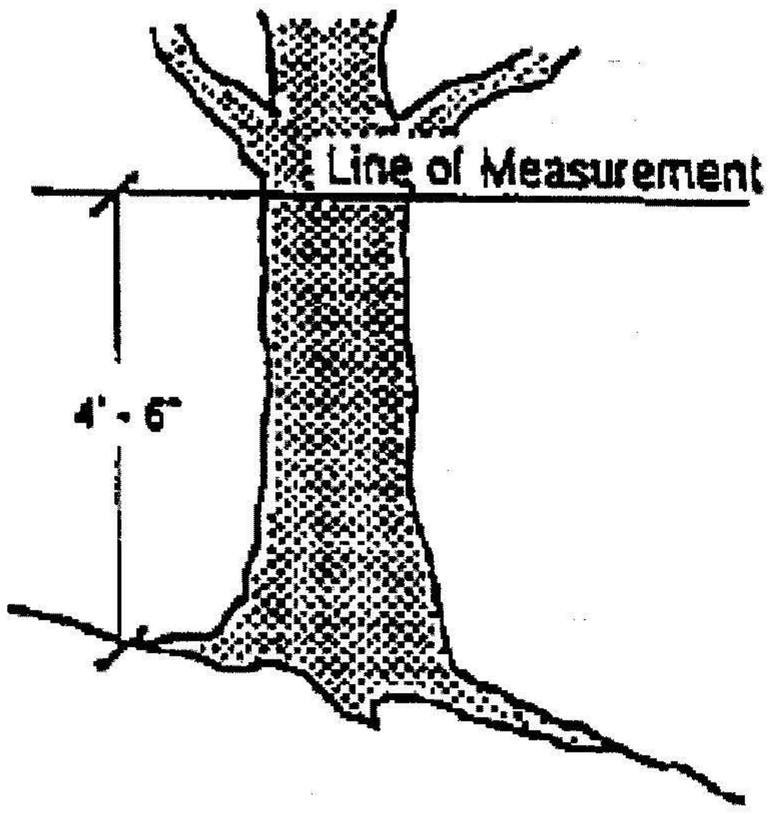
Common Birdcherry (Prunus padus) H 30-40', W 30-40'. Rounded, low-branched tree with ascending branches. Dark green foliage may become bronze in the fall. Flowers are white and fragrant in mid-April to early May. One of the first trees to leaf out in the spring. Fruit drop can be a problem.

Chanticleer Pear (Pyrus calleryana 'Chanticleer') H 35', W 16'. Upright-pyramidal form is much narrower than 'Bradford'. Flowers heavily and later than 'Bradford' and leaves are a reddish purple color in the fall. Less susceptible to early freezes than 'Bradford'. Resistant to fireblight. Multiple leaders are common.

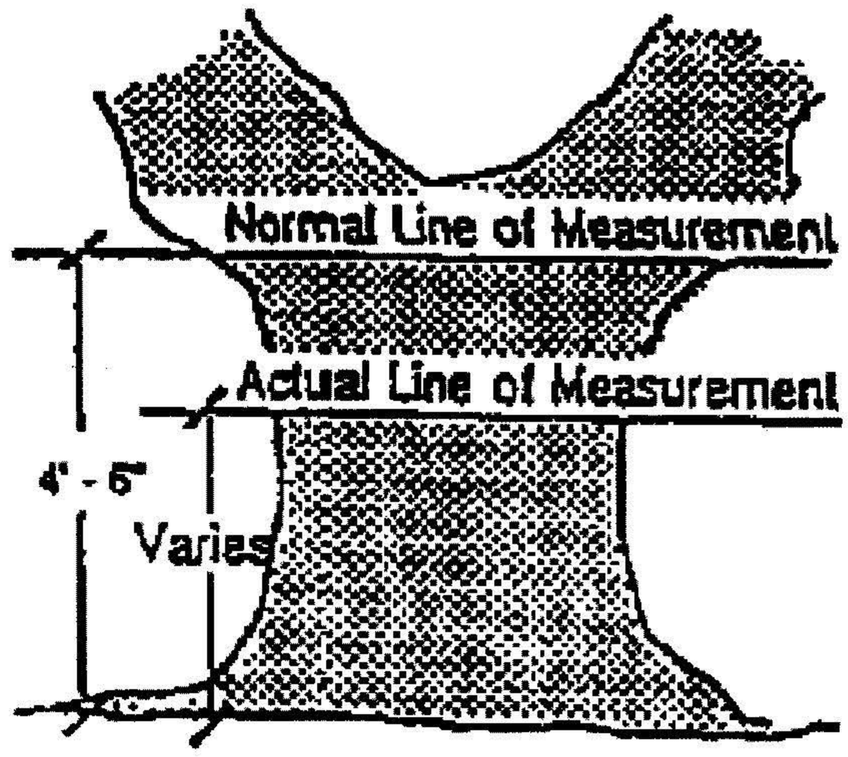
(Syringa reticulata) H 20' x W 15'- small flowering lilac tree, drought tolerant with white flower panicles. Syringa reticulata 'Ivory Silk' good variety.

APPENDIX B

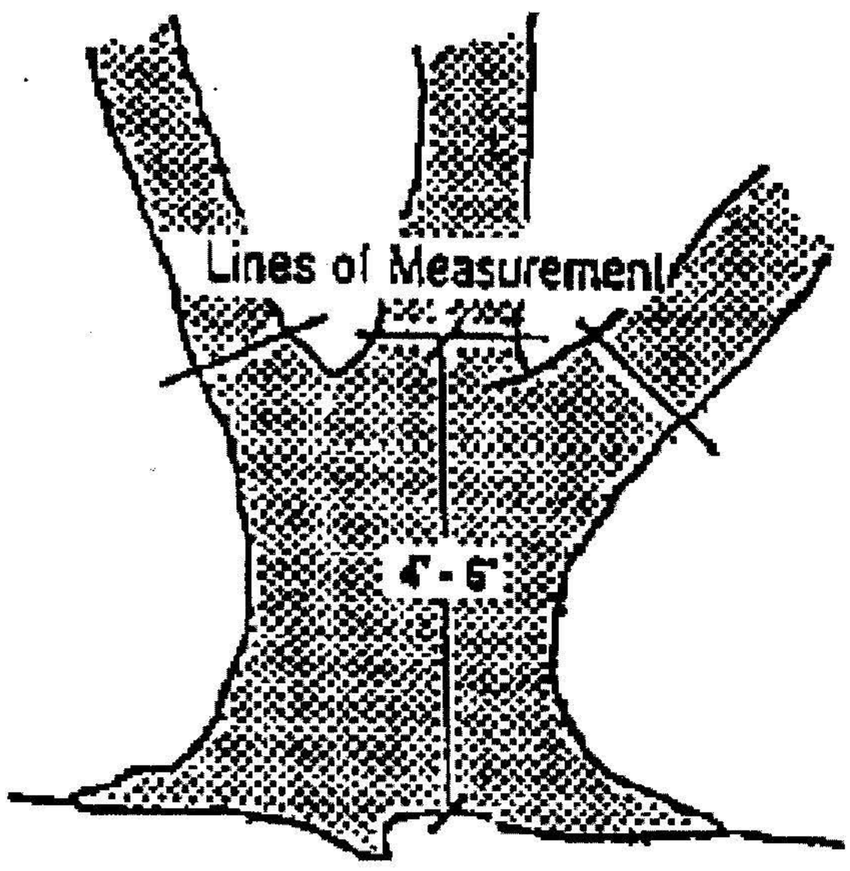
Tree Diameter Measurement



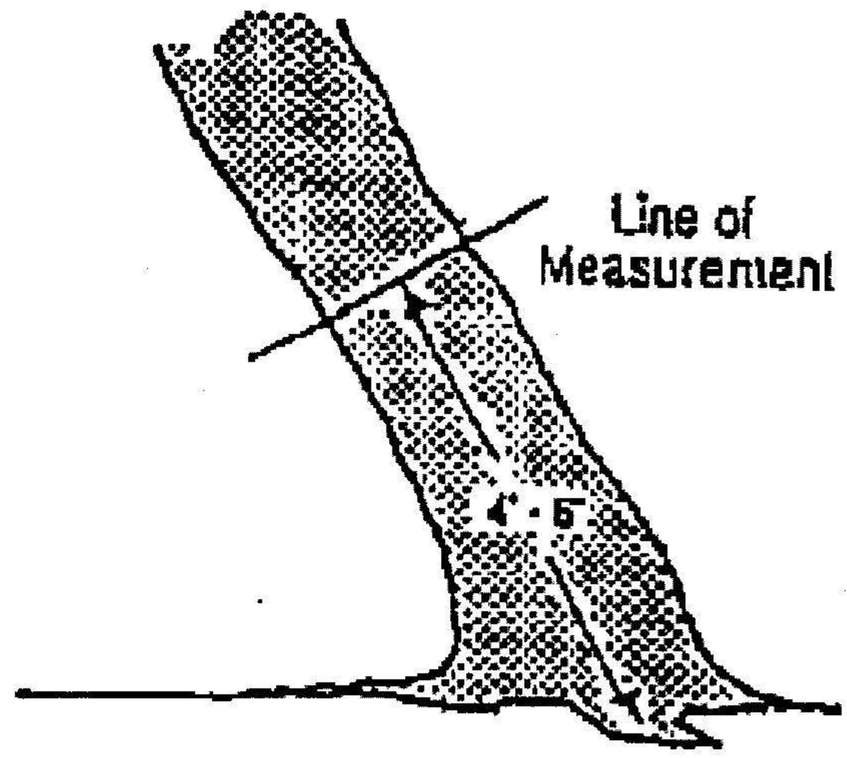
ON A SLOPE



IRREGULAR SWELLING
(requires discretion by
Landscape Administrator)



MULTI-TRUNK TREE

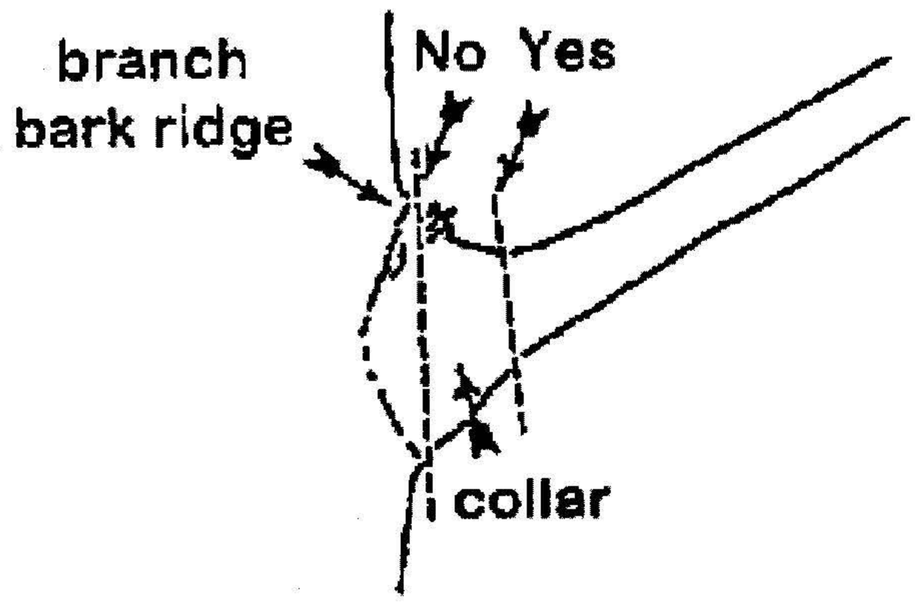


LEANING TREE

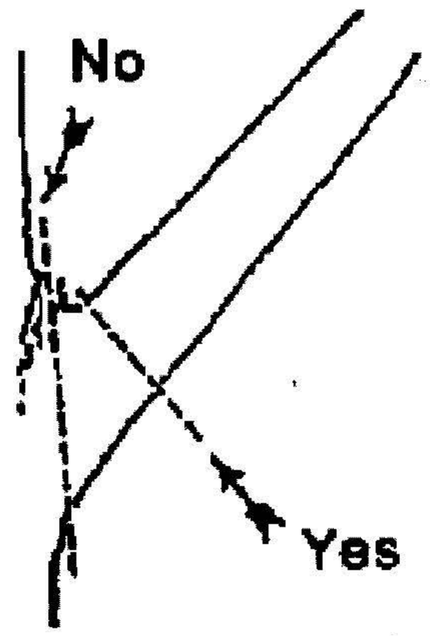
Diameter Measurement: The diameter of a tree shall be measured as shown above. The diameter of a multi-trunk tree shall be the total diameter of the largest trunk plus half the diameter of each additional trunk.

APPENDIX C

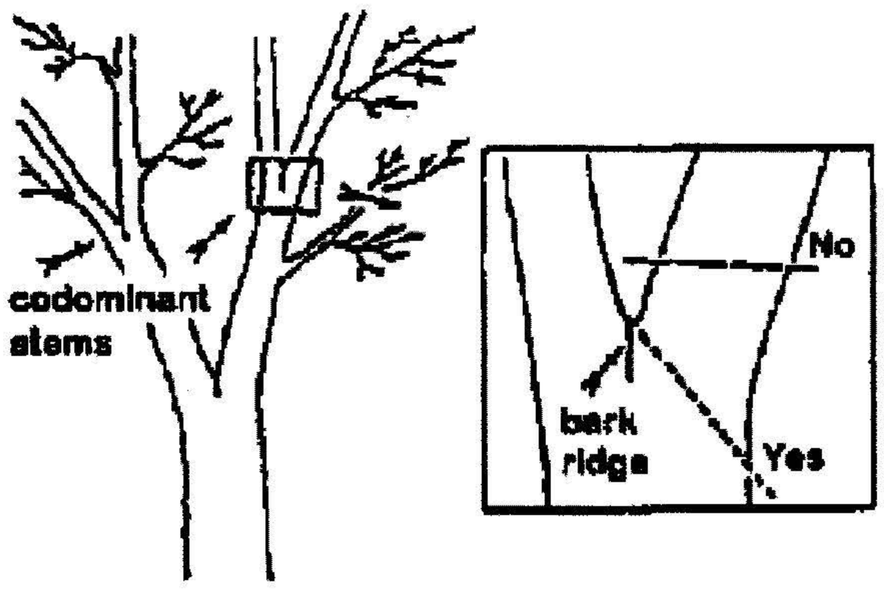
Tree Pruning Recommendations



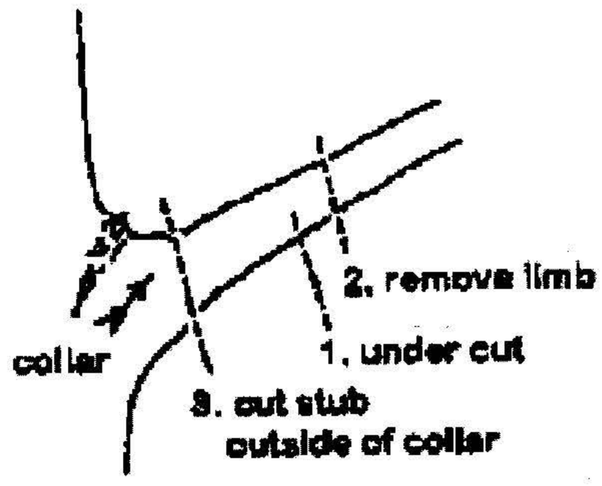
When removing a branch, always cut outside the branch bark ridge and collar. Do not make a flush cut.



Branches that do not have a distinct collar should be cut at a right angle to the branch outside the branch bark ridge.



Trees may have co-dominant stems, as shown on the left. If a co-dominant stem must be removed, cut at an angle outside of the bark ridge as shown in the insert at right. Avoid leaving any stub.



When removing heavy limbs, first make an undercut several inches outside of the collar. Then remove limb by a second cut an inch or so outside of the first cut. Remove stub with a third cut just outside of the collar.

APPENDIX D

Intersection Sight Distance

Notes:

1. Intersection sight triangles typically are 30 feet by 30 feet measured from the right-of-way. Intersection geometry will change sight distance requirements. No improvements allowed over 2 feet high measured from the top back of curb (unless otherwise approved by the city transportation engineer).

2. Trees must be planted outside of the sight triangle. Branches need to be trimmed to 8 feet above the top back of curb on the sidewalk side.

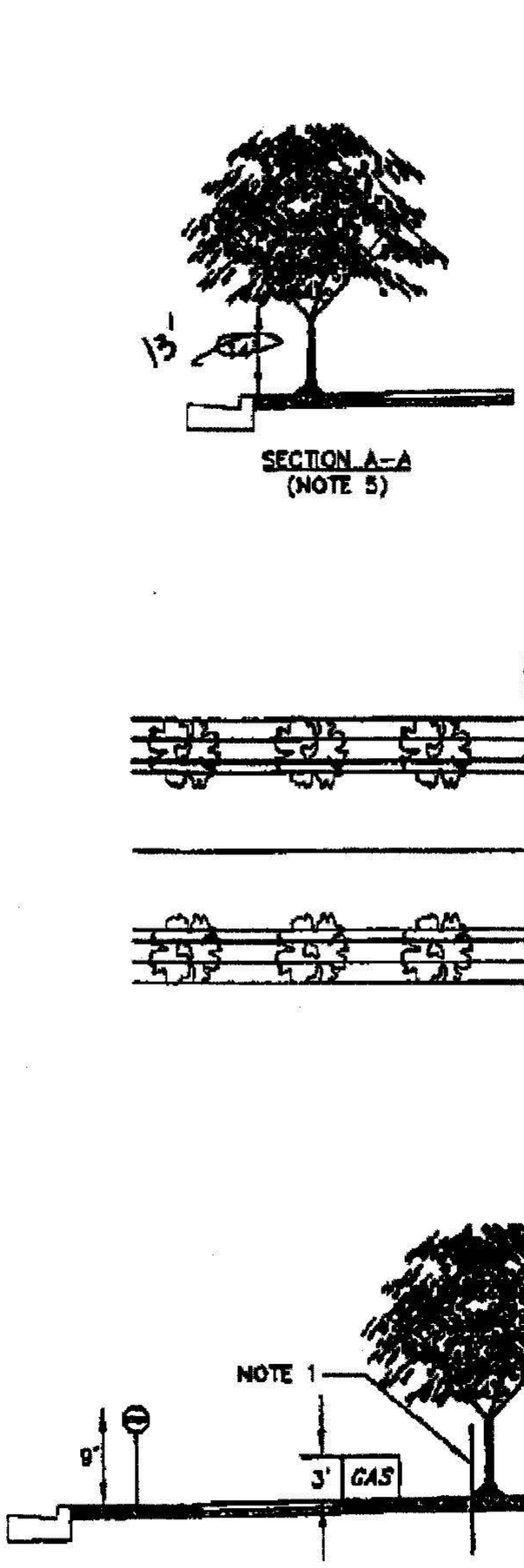
3. Required sight distance to stop signs on roads with a speed limit of 25 mph is 100 feet. Speed limits of 30 mph or more requires 150 feet of clear sight distance to stop signs.

4. On roads with a speed limit of 30 mph or more requires that street trees within the first 100 feet of the intersection be planted 10 feet behind the back of sidewalk.

5. Street trees planted within the parkstrip shall be trimmed to 13 feet above the top back of the curb when the canopy crosses into the roadway area (beyond the top back of curb).

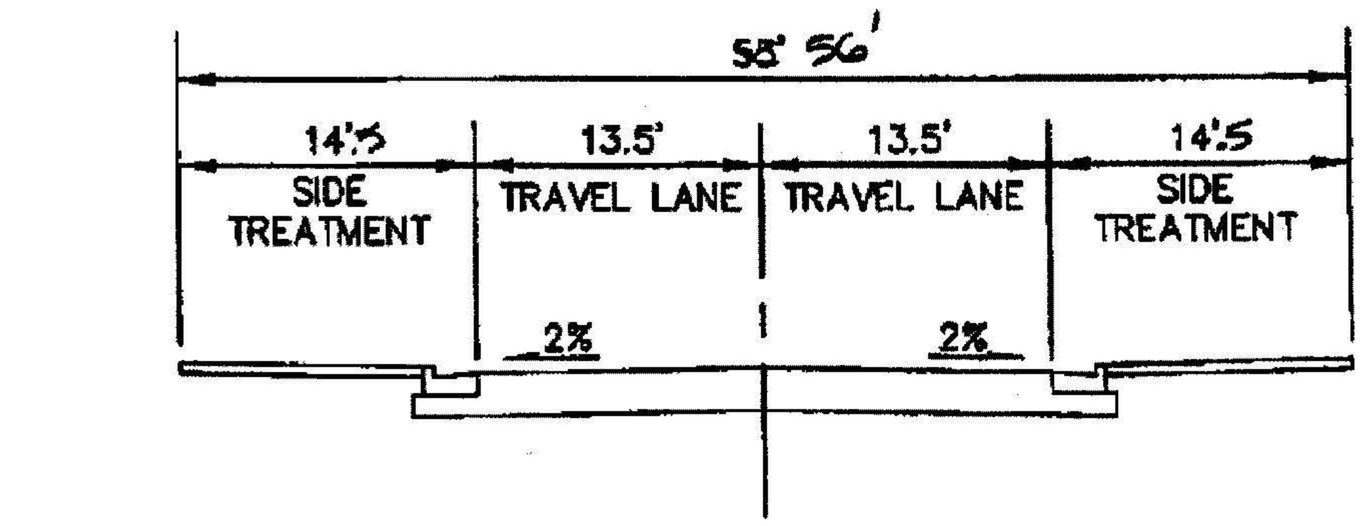
6. For T-intersections use a 60 feet by 20 feet sight triangle measured from the top back of curb (60 feet being on the through street).

Intersection Sight Distance



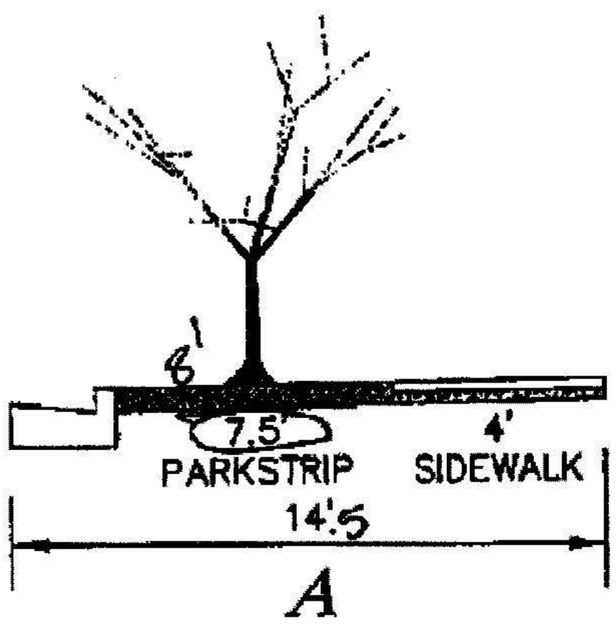
APPENDIX E

Road Section



55-FOOT RIGHT-OF-WAY

2 LANES



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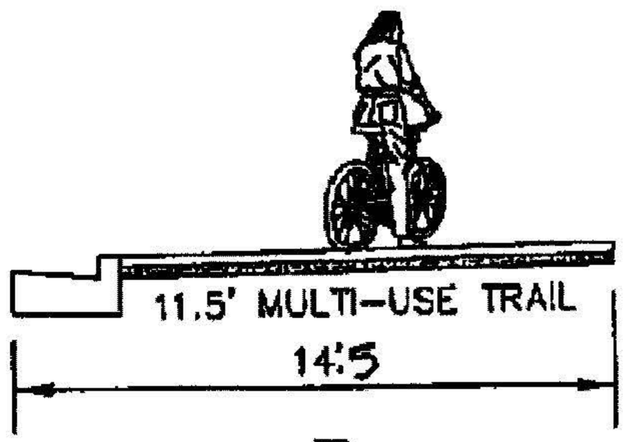
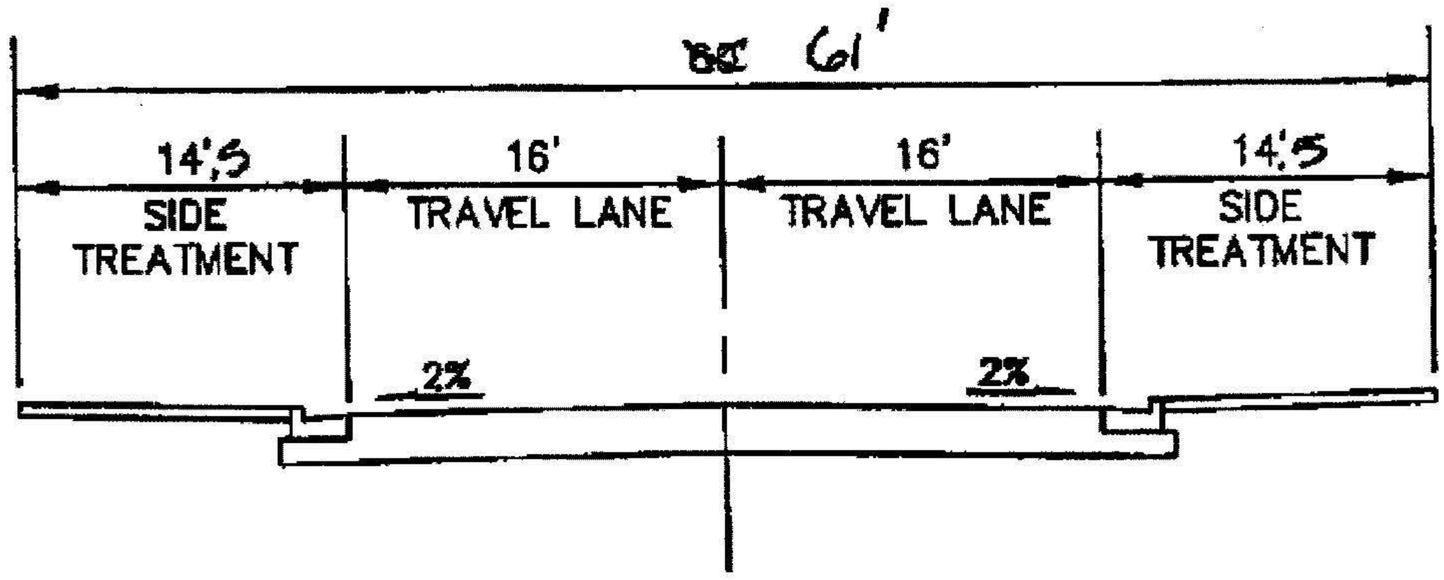


B

SIDE TREATMENTS

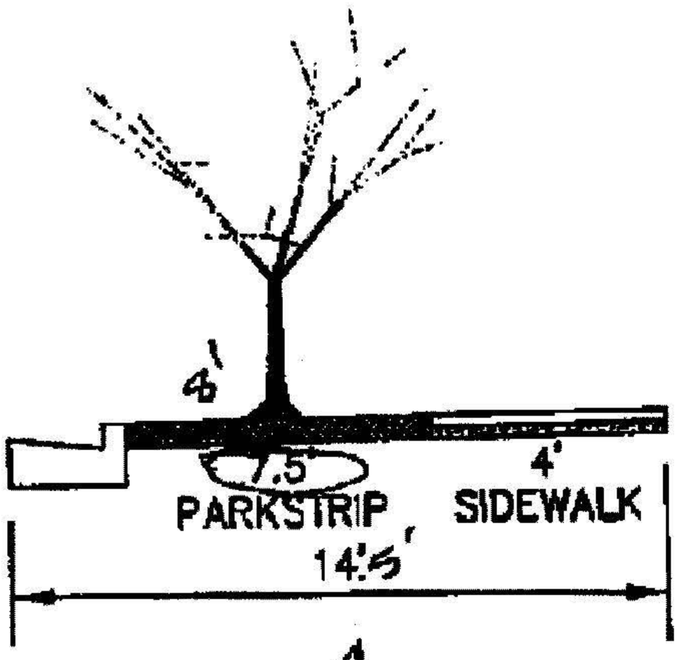
Road Section

IMPORTANT LOCAL



60-FOOT RIGHT-OF-WAY

2 LANES



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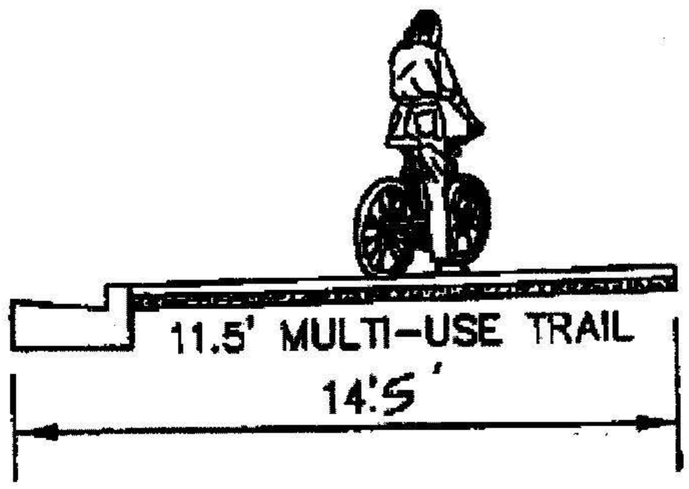
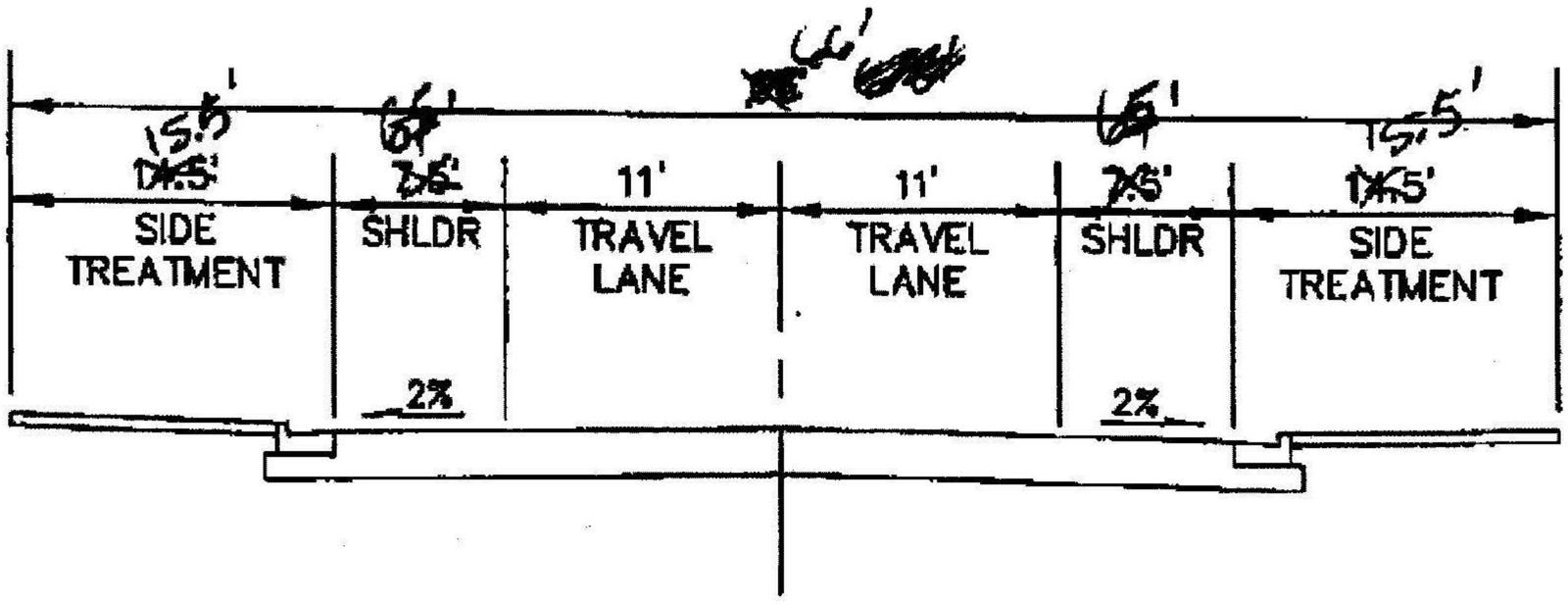


B

SIDE TREATMENTS

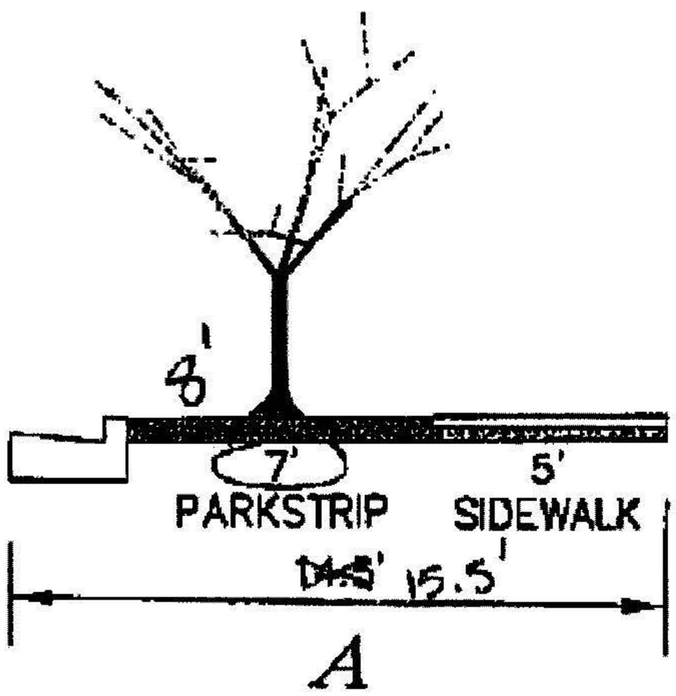
Road Section

MINOR COLLECTOR



66-FOOT RIGHT-OF-WAY

2 LANES



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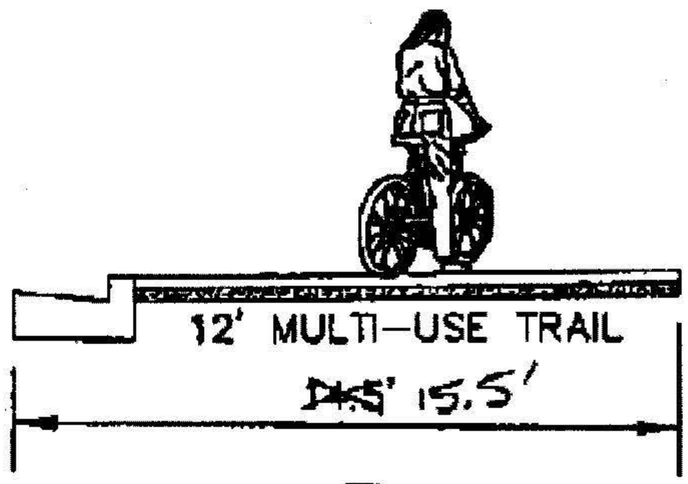
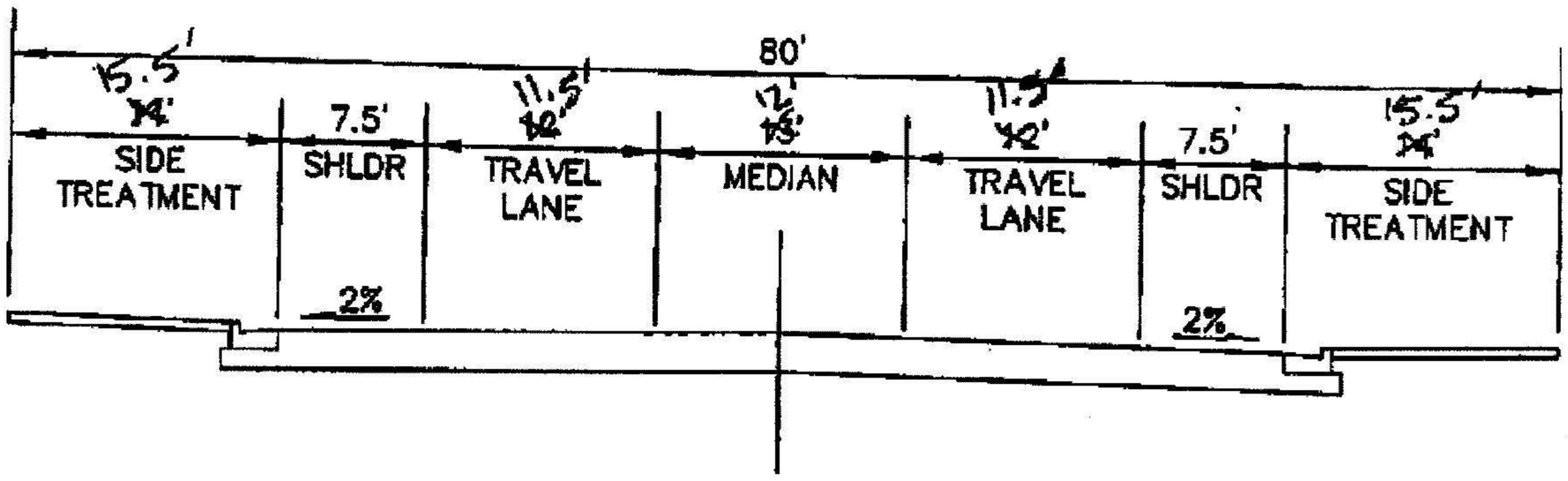


B

SIDE TREATMENTS

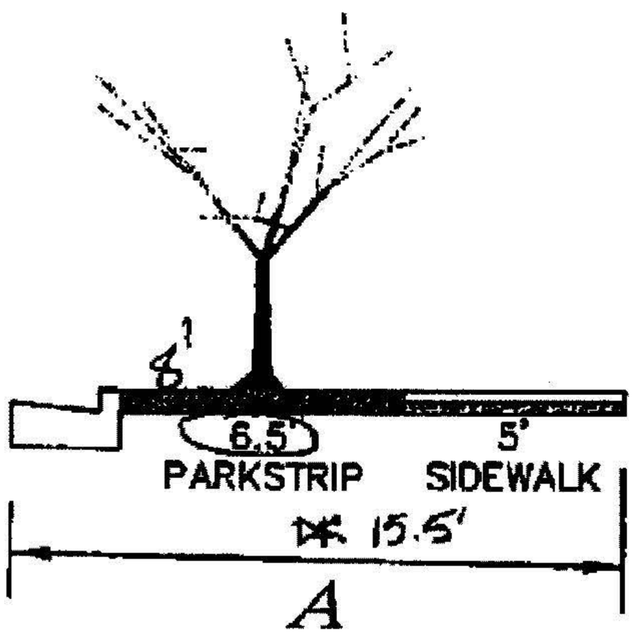
Road Section

MAJOR COLLECTOR



80-FOOT RIGHT-OF-WAY

3 LANES



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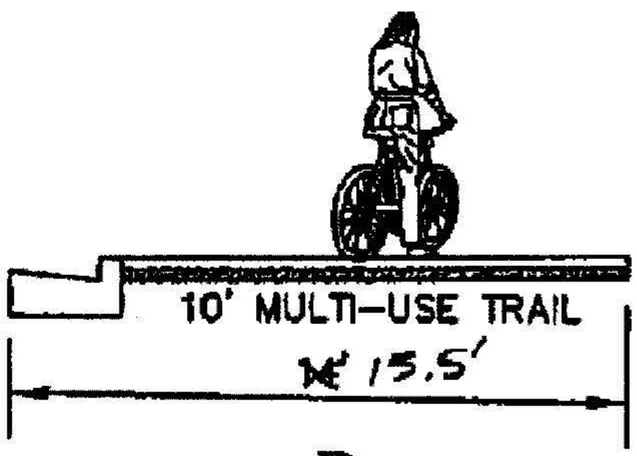
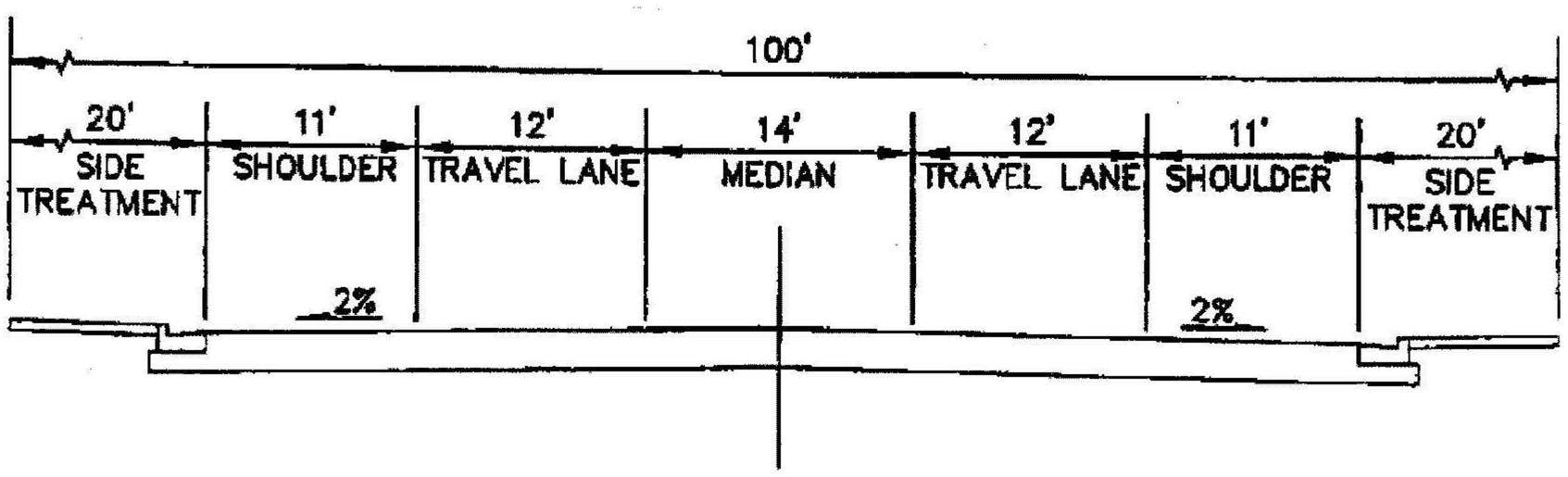


B

SIDE TREATMENTS

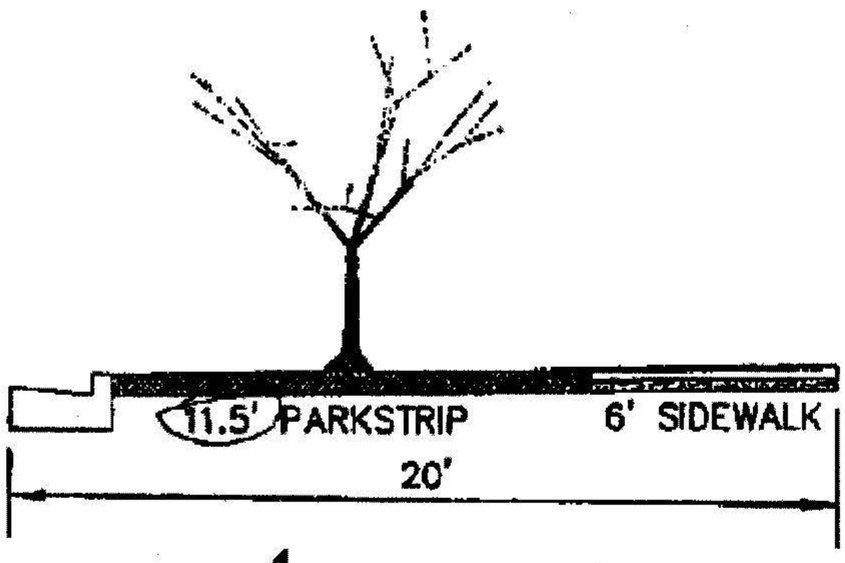
Road Section

MINOR ARTERIAL



100-FOOT RIGHT-OF-WAY

3-5 LANES



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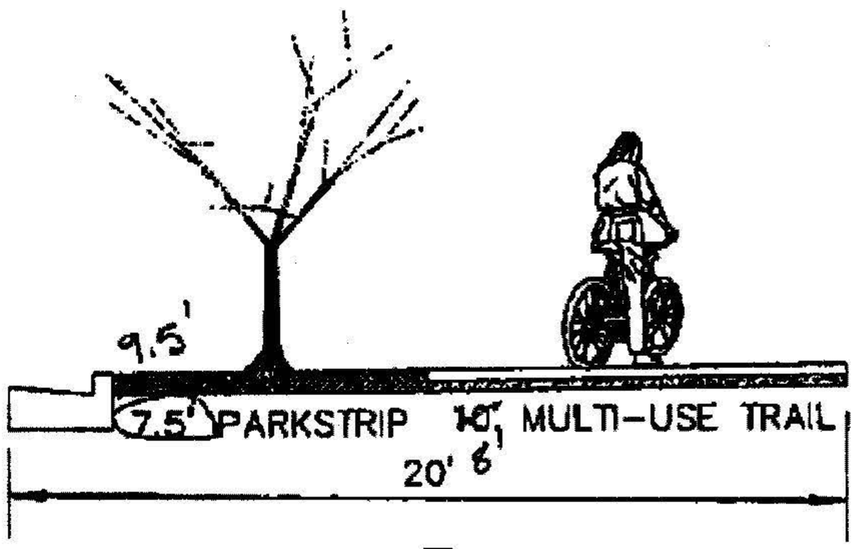

B

SIDE TREATMENTS

Road Section