

LAKE CITY
MINNESOTA

STREET TREE AND
STREETSCAPE

ANALYSIS & GUIDELINES

A CONCEPTUAL DISCUSSION TOWARD AN OVERALL
GUIDE TO STREETSCAPE DESIGN,
IMPLEMENTATION AND MAINTENANCE FOR NEW
AND EXISTING STREETS



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NEW AND EXISTING STREETS

Prepared for:

The Lake City Tree Board

And

The Lake City Planning Department

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Prepared by:

Sharon K. Anderson, B.S.L.A.

Design North Gardens, LLC

274 Harrier Ridge Road, Lake City, MN.

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Lake City Street Tree and Streetscape Analysis & Guidelines

Definitions:

Right-of-way (R.O.W) – the publicly owned land along a street or highway corridor a portion of which is covered by the street or highway pavement. This includes roadway, utilities boulevard, sidewalk, lighting, and street landscaping

Street: - a public way for vehicular traffic

Collector Street – a street which carries traffic from local streets to arterials

Cul-de-sac – a street turn-around with only one outlet

Service Street – marginal access street, or otherwise designated as a minor street, which is parallel and adjacent to a thoroughfare and provides access to abutting properties and protection from through traffic

Local Street – a street of limited continuity used primarily for access to the abutting properties and the local need of a neighborhood

Arterial Street – a street or highway with access restrictions designed to carry large volumes of traffic between various sections of the city and beyond

Streetscape – design of the right-of-way

Boulevard – the area, usually grassed, between the back-of-curb and sidewalk

Utility Trench – a trench, usually located at the curb, for burying power and service lines

Transformer Box: - housing for local power distribution

Junction Box - housing for individual home power and communication services distribution located on bordering lot lines near the Utility Trench

Full Cut-Off Lighting – shielded lighting where bulb is inset to avoid glare

SCOPE OF THE STREET TREE AND STREETScape ANALYSIS & GUIDELINES:

This study, and its recommendations, are an addendum to the Lake City Community Forestry Plan. The additional purpose of the Lake City Street Tree And Streetscape Analysis & Guidelines is to establish guidelines for new and existing Lake City streets, including placement of trees, utilities, lighting and sidewalks.

The goals stated in the Lake City Community Forestry Plan, written in May of 1995, are as follows:

The following goals were identified by the Tree Board of the City of Lake City to be used to guide proposed courses of action in order to maintain and enhance the community forests of Lake City.

Enhance the character of the City of Lake City by re-establishing formal, tree-lined streets.

Ensure that trees are considered as part of the infrastructure of the City of Lake City.

Protect existing trees and encourage their health and longevity through regular maintenance.

Promote the involvement of residents of Lake City in their community forestry program and enhance their understanding of the importance of trees.

Protect, conserve, and enhance the natural resources within and adjacent to Lake City.

Encourage the development of a community forest with reduced maintenance needs through a comprehensive community forestry program.

Maintain and establish native plant communities where appropriate.

In the eight years since these goals were written, Lake City has expanded to include new developments outside of the formal grid. With this in mind, we suggest an additional goal.

Continue the general character of Lake City's tree-lined streets within new developments.

SCOPE OF THE STREET TREE AND STREETScape ANALYSIS & GUIDELINES, CONTINUED..

Sidewalks and utility placement, and their physical relationship to street trees, play a major role in creating the character of Lake City's streetscapes. This analysis addresses these relationships and how their affect goes beyond character. Many studies regarding the uses and users of street rights-of-ways are addressed in this Plan that indicate how the physical layout of rights-of-ways affect the general health, safety, and visual quality of the community.

The Lake City Planning Department has organized a Bike Trail and Pedestrian Safety Committee, with a goal to "...provide a network of bike trail and walkway access to regional destinations for the use, safety, benefit and enjoyment of the citizens of Lake City and to advise the Council on policy and procedures for implementation." The Lake City Ordinance #317, provides guidelines for planting trees that addresses the issue of future sidewalk placement. Other suggestions are included in the Guidelines section of this report.

The City also has long range plans to bury all over-head power lines in existing residential areas. Again, suggestions are included in the Guidelines section of this report.

Perhaps, the general character of Lake City that is most attractive to residents, future residents, and visitors is its relationship to the bluffs and river. However, as in most older towns, the section often referred to as 'Old Town' is endearing to many. The 'Old Town' area of Lake City appears to be the district bordered by Monroe Street, Lakewood Avenue, the Mississippi River edge, and 7th Street. Much of the residential and business growth outside those parameters lacks the same general character of 'Old Town'. Very few streets have sidewalks outside this district.

With the dual understanding that you cannot reasonably and affordably repeat some of the architectural detail found in 'Old Town' Lake City, and that a variety of architecture is desirable, a common thread is needed to avoid a piece-meal or disconnected appearance as the city grows. That common thread is the streetscape.

Lake City was recognized as a "Tree City USA" in 1993. This status was earned, in part, due to the mature boulevard trees, located between the curb and sidewalk, which line many of Lake City's streets.

This study examines all the benefits of boulevard trees and how they impact of the design of the entire right-of-way.

VISION STATEMENT RESEARCH:



This section of County Road 5, narrow and lined with oaks, is a remnant of the past.

It's strong visual statement should guide the streetscape design decisions for streets of today and tomorrow.

The Streets Define the Town:

A streetscape is more than the sum of its physical components; it includes pavement, curbs, utilities, street lighting, sidewalks, parking, and trees. The streets of Lake City play a large role in defining the town. As in many old towns, streets have replaced architecture as the major determinant of image.

Of its' early beginnings as one of Minnesota's oldest towns, only the natural boundary of the Mississippi River, the bluffs, early tree plantings, and the remnants of period architecture hold the historic image of Lake City – and these are changing rapidly. It is necessary to reduce the impact of asphalt in order to maintain the image of a quiet, healthy and aesthetically pleasing, pre-civil war community.

In an attempt to define the physical image of a town, Kevin Lynch in *Image of the City* notes several key elements:

- Paths – paths are the channels along which the observer customarily, occasionally, or potentially moves (streets, river-walks, sidewalks).
- Edges – linear elements not used or considered as paths, including railroad cuts - hold together generalized areas, as in the outline of a city by water or wall (railroad, river, bluffs).
- Districts – areas “inside of” the city with definable character (river side of Lake Shore Drive, Old Town, Downtown, etc.)
- Nodes – strategic spots in a city into which an observer can enter, perhaps the foci of districts (parks, civic area, 63/61 junction, Lakewood/High/61 intersection, etc).

VISION STATEMENT RESEARCH CONTINUED..

- Landmarks – grain elevators, church steeples, bluffs, the marina, usually vertical points-of-reference.

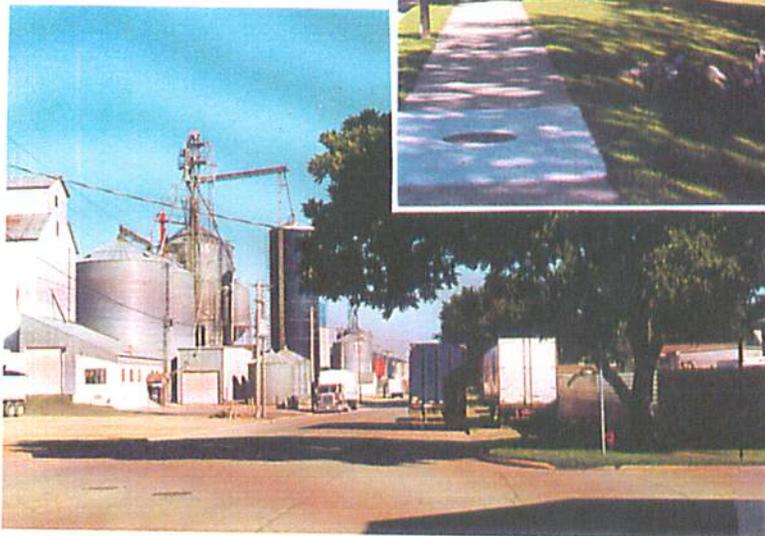
Many of these individual elements lose their impact when roads (the major paths) are cut through and around them. Pavement and curb hold little, if any, aesthetic quality. It becomes the role of the entire streetscape to keep the images of these elements intact and defined, by reducing the negative affects of large asphalt corridors and parking lots.



PATH



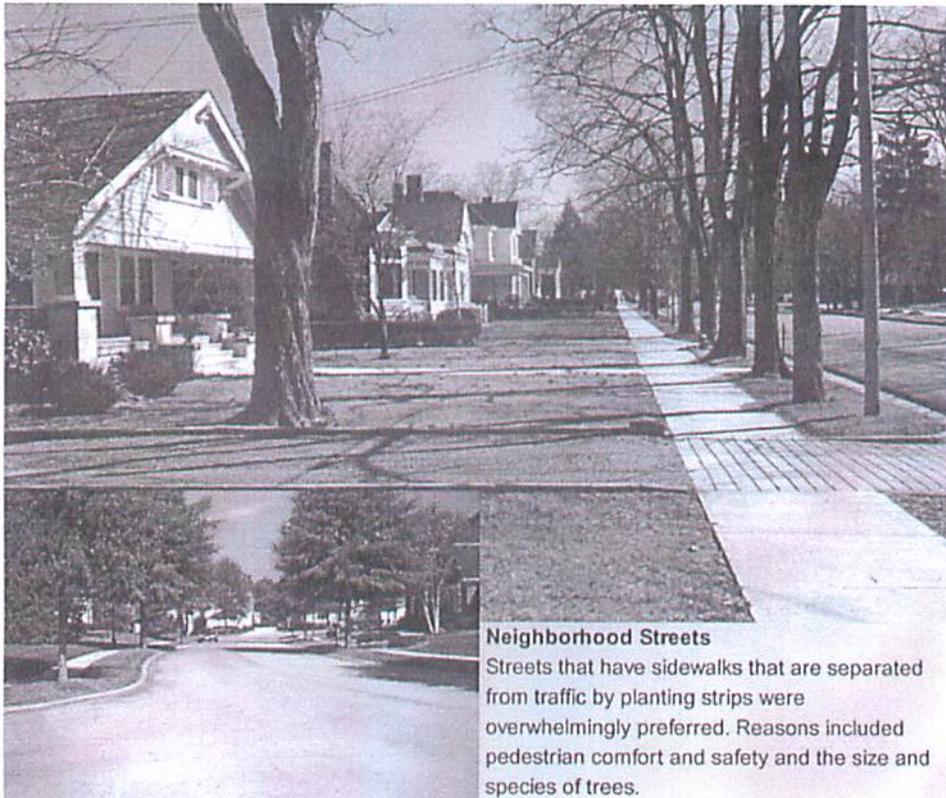
NODE



DISTRICT

Visual Preference Studies:

Based on personal opinion and aesthetics, visual preference studies in various communities across America indicate a common idea of what represents the ideal streetscape. The images below, from the Knoxville Street Tree Master Plan, are typical responses found in other studies.



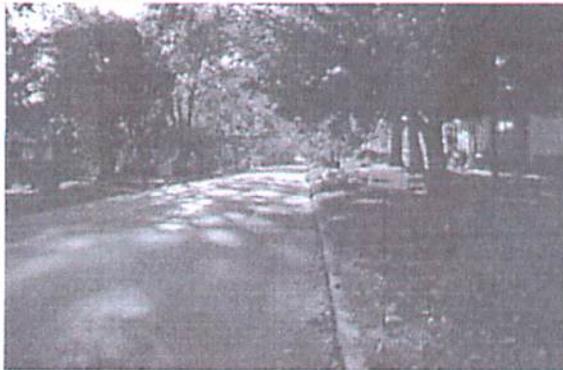
Source: Knoxville Master Plan

A Lake City Streetscape



VISUAL PREFERENCE STUDIES CONTINUED...

Lake City's streets are very similar to the Knoxville streets pictured below. However, Lake City may want to consider commissioning a local preference study.

A.	B.
	
C.	D.
	
<p>Over 90 percent of the respondents preferred the image "D". Why? Separated sidewalks and large shade trees were typical reasons.</p>	

Source: Knoxville Street Master Plan

Marion Street





Parking Lots

Parking lots that have a variety of trees, especially lots with medians, were preferred. Walkways through parking isles were also viewed positively.

Source: Knoxville Street Tree Master Plan



Fiesta Foods parking lot and public parking lot on the other side of Marion Street are devoid of trees.

Lake City Street Tree and Streetscape Analysis & Guidelines



Planting Choices

Places that have a significant variety of native trees were viewed most favorably.

Source: Knoxville Street Tree Master Plan

The Lake City Tree Board embraces the use of a variety of native plants. The result can be both beautiful and ecologically healthy.



Nature Mitigates The Impact Of Urban Hardscape On Drivers And Residents:

Our psychological and social well-being, and even our physical health are affected when nature and urban hardscapes are not in balance. Although Lake City is less urban than larger metropolitan areas, many of us commute to work, or, at least, juggle schedules and daily needs that routinely are accomplished using our automobiles. At the very least, we walk to town for task or pleasure using the sidewalks of residential and downtown streets.

According to the Center for Urban Horticulture, University of Washington, College of Forest Resources, ...”trees are more than the ‘lungs of the city’ or ‘pollution scrubbers’. They affect our everyday moods, activities, and emotional health. They improve our quality of life in ways that are sometimes understood, often underestimated.”

Researchers Rachel and Stephen Kaplan*, among others have found that well-designed streetscapes, parks, and trails have numerous benefits. Among the benefits are included:

- Restorative experiences – “Hours of working or driving can cause ‘directed attention fatigue’, brief encounters with nature can aid cognitive fatigue recovery, improving one’s capacity to concentrate.”
- Stress Reduction – Recent studies, including those of the Kaplans’, on driving and road stress reveal that fear, anger and aggression (“immunization effect”) are diminished if the driver experiences a view of nature preceding a stressful situation or encounter.
- Reduced domestic conflict, less school aggression and violence, are other benefits.

Lake City Street Tree and Streetscape Analysis & Guidelines



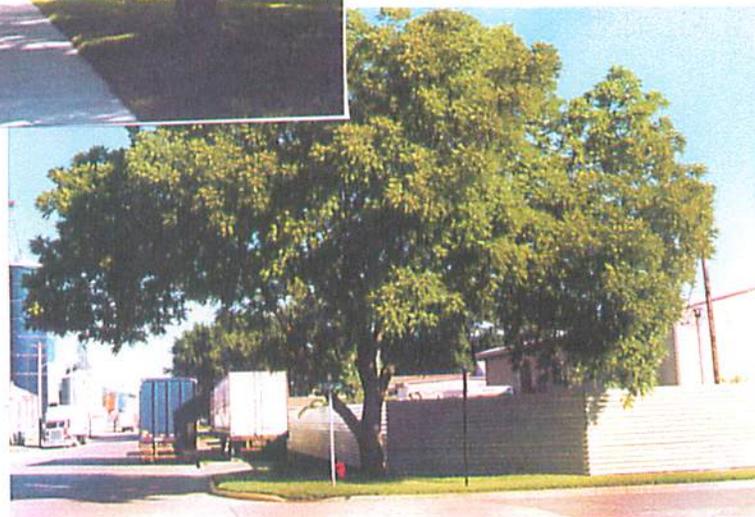
Visually restorative encounter for drivers & pedestrians.

Reduced domestic conflict.



Stress Reducing.

Restorative quality in harsh environment.



The Pedestrian Experience:

Pedestrian studies reveal that walkers prefer sidewalks to be separated from the street with trees or hedges, or other intervening objects. Not only do they feel safer, they tend to take more walks. According to the research of the authors of *Modeling The Roadside Walking Environment: A Pedestrian Level of Service*, “in general, as the lateral separation {from the street} increases, the pedestrian’s comfort or sense of safety improved.” Furthermore, an increase in the frequency of trees, or an increase in the intervening roadside swale further improved the perception of the experience.

The perception of these walks (with lateral separation of plantings) varied with the purpose of each individual’s outing. Those who walked for meditation or spiritual rejuvenation were more sensitive to environmental distractions such as noise or traffic. Others, taking the same route, perceived less noise and less traffic. In general, the preference was clear – sidewalks or trails should be separated from the streets with planted boulevards.



Unpleasant
for drivers
& residents.



They
deserve
this.

Lake City Street Tree and Streetscape Analysis & Guidelines



These Lake City images, are representative of the spectrum of pedestrian preferences used in the studies cited in this report.

This sidewalk location was least preferred.



This sidewalk location was preferred over the top image.



This sidewalk location was most-preferred.

Safety and Environmental Issues:

Safety concerns are three-fold, 1) the safety of the pedestrian, 2) the safety of the drivers, and 3) accessibility of emergency vehicles. All of these issues must be addressed in the design of the public rights-of-way. Safety is a major focus of this Plan, and its advantages are obvious. The solutions may not be.

Studies on roads of various levels of service, from freeways to smaller residential lanes, indicate a common thread. More landscaping in the rights-of-ways equates to fewer fatal crashes and less expensive accidents.

The research of Jody Rosenblatt Naderi, an Urban Planner with Texas A&M University, includes a list of factors involved in fatal road crashes. The top three causes are, 1) drug and alcohol use, 2) drowsiness or fatigue, and 3) inattentiveness. Her study compared parkways and freeways of exact same length and speed limit. In her final analysis she states “..it may well be that the public’s demand for more aesthetic roadways and more context sensitive transportation design is also paying an unrecognized safety dividend particularly in our urban centers.” She notes that no fatal accidents occurred related to tree collisions or pedestrians.

Studies reveal that wider is not necessarily safer. The Urban Land Institute, the world’s largest development association, reports that 24’ residential streets are 4 times safer than 40’ residential streets. This relates to other studies discussed earlier in this document. Inattentiveness increases as road width increases. Narrower streets and more landscaping correlate to greater attention to driving. The concept of “traffic calming” is used in Australia, Canada, and is gaining acceptance in the United States

In Philip Thiel’s *A Sequence-Experience Notation*, he notes “Preoccupations will qualify spatial experience by withdrawing attention from the outer public world to the inner private one.” He also notes “the average person can register about 12 separate images in a second. The exact figure is perhaps not important. What is important is the fact that it is limited; and that when the rate of travel is increased the rate of perception does not follow suit.”

The Kaplans, and others agree that when streets are narrower and contain more trees and other street “furniture”, people will instinctively slow down to better perceive and more carefully register the greater number of images presented them. Combined with the findings on nature’s reduction of stress and fatigue on drivers, this may explain the Urban Land Institutes findings on the narrower streets being 4 times safer. .

Jody Rosenblatt Naderi, in 2002, compiled data and findings from practitioners, researchers and students from various institutions across the U.S. and Canada. Her paper, *The Effect of Landscape Variables on Pedestrian Health and Driver Safety*, presents transdisciplinary research on the potential role of the landscape architecture of roadside as a pedestrian health and traffic safety strategy. One of the findings of her study indicated that positive correlation exists between the landscape improvements to the roadside and a reduction in mid-block accidents. She states, “While nearly all of the tree planting and landscape improvements occurred with the clear zone, mid-block accidents decreased from between 5 to 20%.” She goes on to say that “This finding

Safety and Environmental Issues Continued..

indicate that some of the landscape treatments used for environmental mitigation can function as a cost-effective safety measure. (See also **The Pedestrian Experience** in the previous section.)

Emergency vehicle access is enormously important. The performance standards of roads are not complete unless this is addressed in right-of-way design. Multi-housing road design, especially, presents problems when adequate parking and road design are not clearly defined. Emergency services should be involved in reviewing these street designs.

Although the current trend is for cities and communities to reduce the width of the average residential street, many are allowing parking on one side only to provide the required pavement width, and turning ratios in the case of cul-de-sacs, for emergency vehicles - in some instances more room than currently exists. Average Daily Traffic (ADT) usage is another consideration. Streets with adequate driveway parking, that experience low traffic volume and restrict parking to one side, can be narrower than 28 feet.

Environmental and Energy Savings are important aspects when discussing costs and benefits of city trees. The University of Washington, College of Forest Resources, sites the following:

Heating and Cooling Costs: "...buildings and paving create a heat island effect. A mature tree canopy reduces air temperatures by 5 to 10 degrees, influencing the internal temperatures of nearby buildings." (University of Washington, Center of Forest Resources)

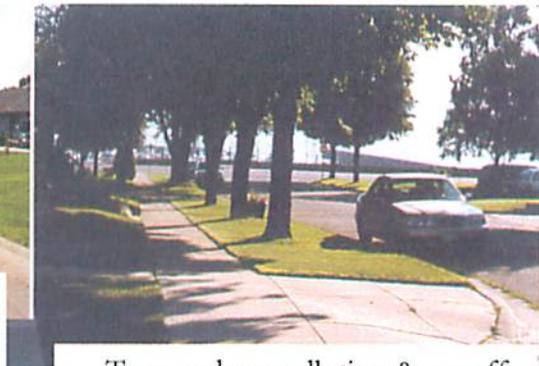
Air Quality and Cleaning: "Two mature trees supply the oxygen needs of a person each year. Also, cooler air temperatures created by tree canopies reduce smog levels by up to 6%. A mature tree absorbs from 120 to 240 lbs of the small particles and gases of air pollution".

Improved Water Quality: "In one study, 32 ft. tall street trees intercepted rainfall, reducing storm water runoff by 327 gallons".

Lake City's surface water management systems would benefit from less runoff, and fewer heavy metal pollutants would reach Lake Pepin. This could be achieved by planting street trees closer to the curb than currently planned in the Jewel, and planting the available sites on streets throughout Lake City in general.



Environmentally unhealthy streetscape.



Trees reduce pollution & runoff.

ROAD DESIGN TRENDS: Function, Safety, Aesthetic Preferences, and Cost Savings:

The 1990's were *the* decade of change in road design in communities and cities all across the United States. Communities, cities and states are challenging the old approach to wider, straighter and faster roads, as well as the "clear zone" theory of road engineers. The trend toward change in street design as been rapidly spreading.

"The problem is everywhere," says Barton D. Russell, executive director of the Connecticut Council of Small Towns. "The discontent is everywhere. There's just too much pavement. It's not what anybody wants."

The Washington, D.C.-based Institute of Transportation Engineers proclaimed in 1997, "A street should be no wider than the minimum width needed to accommodate the usual vehicular mix that street will serve."

By 1997, the State of Vermont; the cities of Phoenix, Arizona, Eugene, Oregon, and Wellesley, Massachusetts, are all cited in the October, 1997 Governing magazine article *The Asphalt Rebellion*, as reducing the width of their streets. The deputy city manager of Phoenix says "Sometimes we are building things wrong. We are creating neighborhoods we have to go back and fix."

Phoenix reduced their street size from 32 feet to 28, Eugene reduced theirs from 28 to 20 feet in some cases, Wellesley has decided to narrow a heavily traveled Route 16 and widen the sidewalks instead.

Minnesota cities of Woodbury and Burnsville have lowered residential street width to 28' with parking on one side or both depending on average daily traffic. Middletown, Wisconsin has reduced street width to 24'. In answer to pressures for more human-scaled streets, Woodbury will reduce street width in existing communities if they request it. Tree root damage has been experienced while removing the curb and gutter, another indication that "fixing" the problem can be very costly. Lake City has the opportunity to do it right the first time around in new development projects.

Utility Placement in New Trends:

Woodbury, Minnesota has set standards for new development that are similar to North Carolina's, including setting the utility easement behind the sidewalks. They require the developers to bury an extra conduit for future communication lines. With the exception of the First and Second Addition, where curbs and gutters are installed, and utilities are already in place, Lake City has the opportunity to follow suit.

Woodbury allows only 3 feet for the utility trench, requiring careful coordination of utility and communications installation. Woodbury has also chosen to locate the utilities on the outer edge of the right-of-way.

Street Lighting:

Many cities in the U.S. are adopting regulations to promote full cut-off street lighting. The proven benefits are reduced energy costs, increased visibility by decreasing glare, and allow for more enjoyment of the night skies. Lake City is currently replacing existing fixtures and installing full cut-off street lighting.

LAKE CITY – PAST IMAGES OF A SMALL TOWN ON THE MISSISSIPPI RIVER:

Current images of Lake City Streets included in this and other studies will become important images some day. All changes to our rights-of-ways should reflect the streetscape heritage that has evolved.



Lake City has come a long way from boardwalks over mud. Upper photo is from approximately 1950, lower is from the turn of the century.

The upper photo shows Highway 61 from the intersection of Center Street, the lower photo is a view toward the Mississippi River from the same intersection. Lake City has lost the large elms that sheltered the north stretch of Highway 61 seen in the upper photo. Photos are provided courtesy of Robert Parrott of Lake City, Minnesota.

LAKE CITY STREETS:

EXISTING STREETS: (Roads in existence prior to the Jewel Development.)

The right-of-way width of existing streets in Lake City vary from 66 feet to 80 feet, with curb to curb width ranging from 33' 3" to 37' 6" leaving 16' 25" to 21' 25", respectively, on either side of curb for trees, sidewalk, and utility/drainage easements.

Most "Old Town" streets have tree-lined boulevards between the sidewalk and curb and include on-street parking. Very few of the streets outside of this district have sidewalks, and many have poor street tree definition or are without street trees.

Most of the utilities are located in the boulevard next to the curb, with a few exceptions where utilities are located in the alleys. Sewer and water are located under the streets.

Power lines and cable are, in many instances, especially in "Old Town" strung from poles limiting the placement of trees. Lake City has long-range plans to place all the utilities underground. A plan is needed to restructure the landscaping of those streets currently limited because of power lines.

Right-of-way and pavement widths are currently determined by the Urban Section Standards, see figure below. New and old standards are discussed in the comparative street section of this plan.

<u>URBAN SECTION STANDARDS</u>			
<u>Street Type</u>	<u>ROW Width To be Reserved</u>	<u>ROW Width To be Reserved</u>	<u>Pavement Width</u>
Arterial Street			Dual: 34 feet (20 ft. median)
4-Lane Divided	120 feet	100 feet	
Not Divided	70 feet	70 feet	48 feet
Collector Street	66 feet	66 feet	44 feet
Minor Streets 1,000 feet or more in length for Single-Family Development and in all Multi- Family Development	60 feet	60 feet	36 feet
Minor Streets less than 1,000 feet in length in Single-Family Developments; and Cul-de-Sac and Frontage Street	50 feet	50 feet	26 feet
Alleys	25 feet	25 feet	20 feet

Source: Lake City Subdivision Ordinance.

LAKE CITY STREET WIDTHS (not including the Jewel Development):

Width	R.O.W. Width (feet)	Street Type	Pavement Width
Adams Street	66	Collector	37.2
Apple Lane	66	Collector	37.4
Bayview Street	66	Collector	31.4
Bluffview Court	60	Minor Street	37.4
Center Street	70	Arteriel	37.2
Chestnut Street	70	Arteriel	37.2
Clay Street	66	Collector	37
Cross Street	66	Collector	37.4
Dakota Street			37
Doughty Street	70	Arteriel	37.2
Dwelle Street (cul de sacs are 60 feet)	70	Arteriel	37
Elm Street (cul de sac is 66 feet)	70	Arteriel	37
Franklin Street	70	Arteriel	37.2
Garden Street and Garden Court	80	Collector?	37.4 and 27.5
Grant Street	66	Collector	45.2
Green Street	66	Collector	36.8
Harrison Street	70	Arteriel	37.4
Hillwood Drive and Circle	60	Minor Street	37.2 and 28.2
High Street	80	Collector?	37.6
Kingswood Court	60	Minor Street	28.4
Kings Row	66	Collector	28.4
Illinois Street	70	Arteriel	37.2
Indiana Street and Indiana Street East	70	Arteriel	26 and 31.2
Iowa	70	Arteriel	37

LAKE CITY STREET WIDTHS (not including the Jewel Development) continued...

Irving Street (Wallerich Addn. 50 feet)	70	Arteriel	37
Jackson Street	70	Arteriel	37.3
Jefferson Street	70	Arteriel	37.2
Jewell Avenue	70	Arteriel	37
Lakeshore Drive South and North	State Highway and Collector		53.9 and 67.4
Lakewood Avenue	70	Arteriel	45.4
Lilac Lane	66	Collector	37.2
Lincoln Street	66	Collector	37.2
Lyon Avenue	90	4-Lane State	45.4
Madison Street	70	Arteriel	37.2
Maple Place	66	Collector	37.2
Marion Street	70	Arteriel	37.2
Michigan Street	70	Arteriel	37.4
Minnesota Street	70	Arteriel	37
Monroe Street	70	Arteriel	45.4
Oak Street	80	Collector?	37.6
N. Oak Street (Goodhue County)	66	Collector	37.4
S. Oak Street across Highway 61	77	Collector?	37.4
Park Street and Ohuta Park	70	Arteriel	37.2 and 26.4
Pepin Street	66	Collector	31.2
Pine Grove Lane	66	Collector	37.2
Prairie Street	80	Collector?	37.2
Safari Way			27.3
Sycamore Street	66	Collector	37.4
Valley View Road	66	Collector	37.5

LAKE CITY STREET WIDTHS (not including the Jewel Development) continued...

Vine Street	66	Collector	37.2
Walnut Street	70	Arteriel	37.2
Washington Street	80	Collector?	37
Willers Court			37.2
Wisconsin Street	70	Arteriel	37
Woodburn Street	70	Arteriel	37.2
6 th Street	80	?	37
7 th Street	80	?	37.2
8 th Street	80	?	45.6
9 th Street	80	?	41.6
10 th Street	70	Arteriel	45.4
Short Street			26
Terrace Road			32
Camp Lakeview Drive			24
Sportsman Drive			37

Many of Lake City streets are wider than the new Urban Standards. Consideration should be given to reducing the width of some residential streets. Opportunities will arise as utilities are buried underground or major road resurfacing is scheduled. Average Daily Traffic studies should be scheduled at that time. (See also suggestions in the section entitled GUIDELINES.)

Attached street maps:

Lake City Sidewalks locations, not including the Jewel Development.

Lake City Streets, including the Jewel First, Second and Third Additions.

Lake City Street Tree and Streetscape Analysis & Guidelines

It is suggested that Lake City develop an existing power pole locations map and create a tentative plan for line burial. At the very least, a list of criteria should be developed to help determine where to begin. Some suggested criteria are:

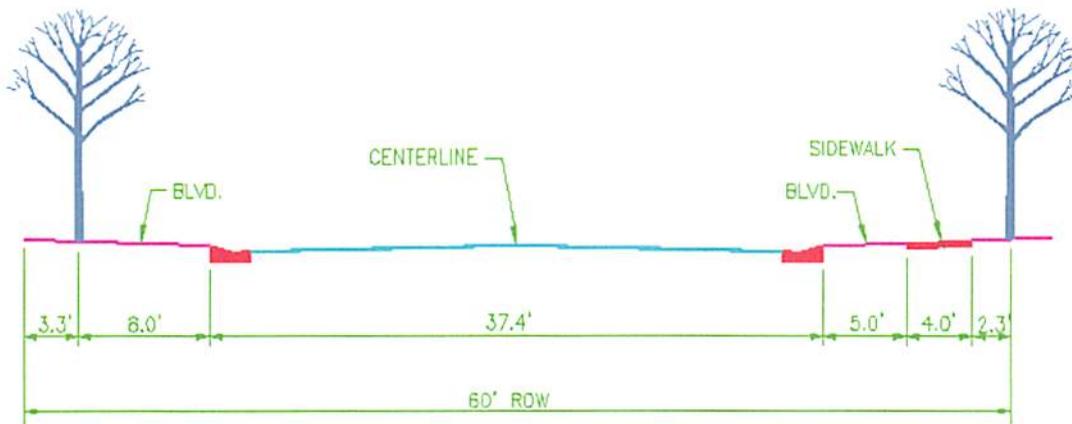
- Planned street repairs
- Potential sidewalk and trail locations
- Streets that have available planting or replanting areas
- Areas that are technically or mechanically more feasible (if any)

With the concept in mind that funds often follow good planning and ideas, Lake City may wish to develop a visual presentation promoting the aesthetic improvement line burial offers.

PLANNED UNIT DEVELOPMENT STREETS - as currently approved:

The right-of-way width of the current P.U.D. residential streets vary from 50 to 60 foot, with curb to curb width ranging from 27' 4" to 37' 4", with side-walks (one-side), trees, utilities and drainage easements located behind the curb. Sections of the current residential streets now under construction are shown below. Utilities are being installed just inside the curb.

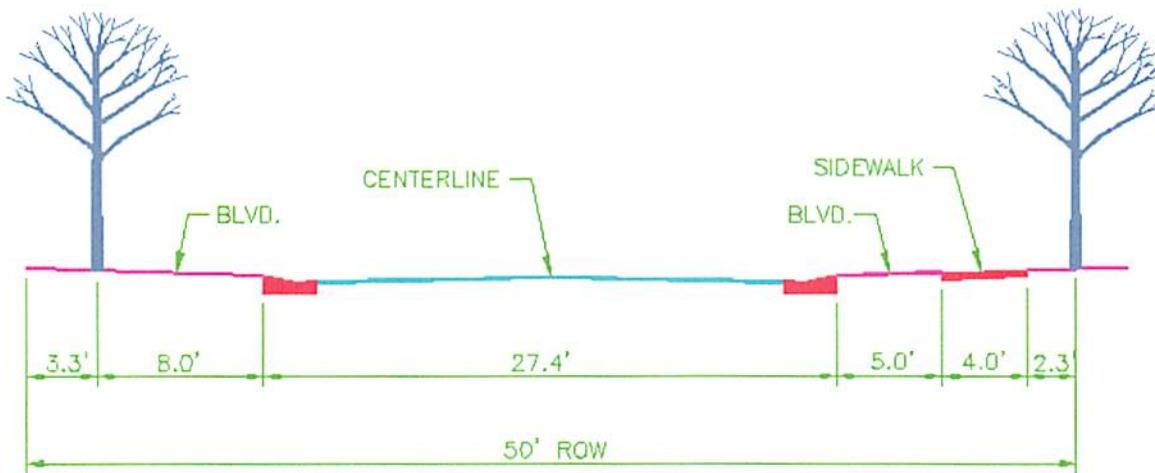
Currently planned 37 foot residential street::



TYPICAL STREET SECTION

SCALE: NTS

Currently planned 27 foot residential street:



TYPICAL STREET SECTION

SCALE: NTS

Lake City Street Tree and Streetscape Analysis & Guidelines

It is suggested that maps of any currently planned development and all submitted or proposed street sections - CSAH 5, Hwy 63, Green Parkway, Hidden Meadow Drive, etc – be reviewed and compared with the guidelines presented in this report.

PLANNED UNIT DEVELOPMENT STREETS CONTINUED..

JEWEL DEVELOPMENT STREET WIDTHS:

	R.O.W. Width (feet)	Street Type	Pavement Width
First Addition:			
Hidden Meadow Lane	60	Collector	37.4
Hidden Meadow Court	50	Minor Street	27.4
Harmony Court	50	Minor Street	27.4
Harvest Way	50	Minor Street	27.4
Hazelnut Way	50	Minor Street	27.4
Hickory Way	Private Street	10' easement each side of road	
Second Addition:			
Hillwood Drive	60	Collector	37.4
Hillwood Drive – past second turn	50	Minor Street	27.4
Harmony Way	60	Minor Street	27.4
Highland Court	50	Minor Street	27.4
Harmony Court	50	Minor Street	27.4
Third Addition:			
Coral Drive	60	Collector	37.4
Cedar Drive	60	Collector	37.4
Clover Court	50	Minor Street	27.4
Carnation Court	50	Minor Street	27.4
Crimson Way	50	Minor Street	27.4
Cedar Court	50	Minor Street	27.4
Clubhouse Drive	60	Collector	37.4

PLANNED UNIT DEVELOPMENT STREETS CONTINUED..

JEWEL DEVELOPMENT STREET WIDTHS CONTINUED:

	R.O.W. Width (feet)	Street Type	Pavement Width
Oakhurst:			
Oakhurst Drive	50	Minor Street	27.4
Oakhurst Trail	Private Road	10' easements	
Oakhurst Circle	50	Minor Street	27.4
Champion Circle:			
Champion Drive	60	Collector	37.4
Inverness Drive	60	Collector	37.4
Medina Circle East	50	Minor Street	27.4
Medina Circle West	50	Minor Street	27.4
Winged Foot Circle	50	Minor Street	27.4
Green Parkway:			
from County Road 5 to Champion Drive	80		
from Champion Drive to Hwy 63	100		
County State Aid Highway 5	as required		
State Highway 63	as required		

COMPARATIVE STREET LAYOUT SECTIONS:

The sectional drawings on the next page compare four street layouts.

#1: Represents a composite Lake City street with 33 foot wide pavement and no utility poles. The sidewalks are placed in the ideal position behind the boulevard tree, representing many of Lake City's tree-lined streets.

#2 & #3: Represent the same composite street with a reduction in pavement width to 28 feet and 24 feet.

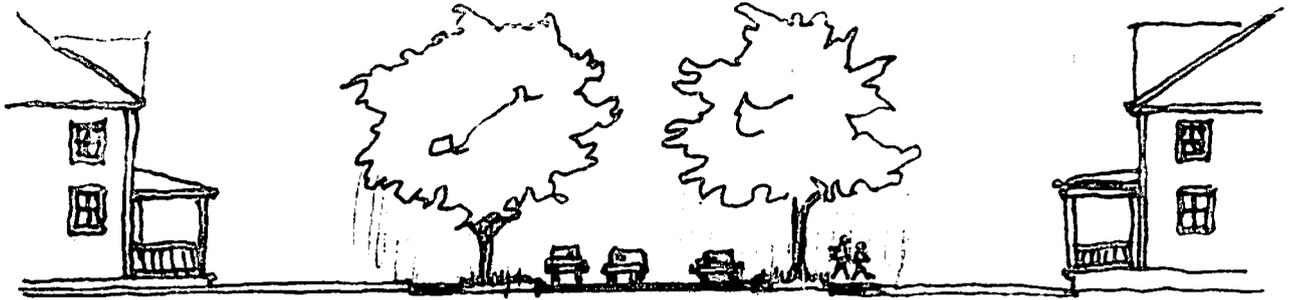
#4: Represents a typical 28 foot pavement street in the Jewel 1st and 2nd Additions. The sidewalks are placed in the undesirable position close to the street.

A large scale drawing of Sections #1 and #2 is available in the Planning Office and was part of the presentation of this report. It more clearly illustrates the aesthetics and pedestrian comfort of the sidewalks placed furthest from the street.

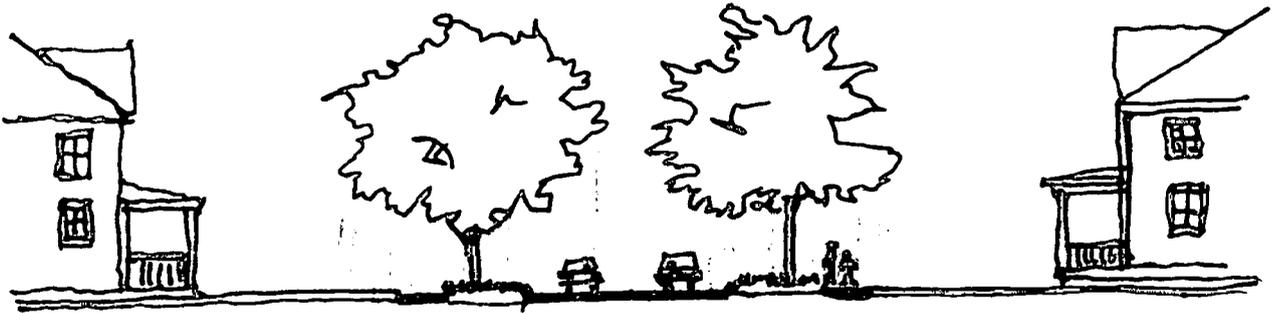
SECTIONS:



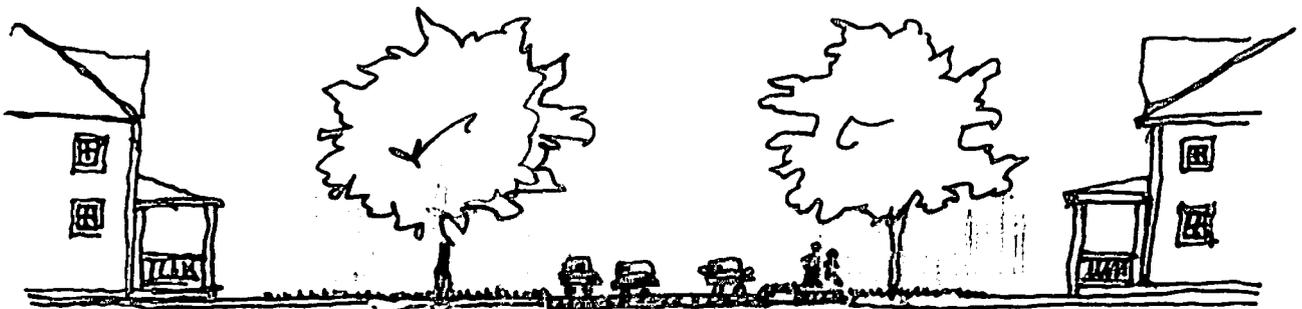
① 33' LAKECITY COMPOSITE STREET. W/O UTILITY POLES



② REDUCED TO 28'



③ REDUCED STREET WIDTH WHERE POSSIBLE 24'



④ TYPICAL 28' JEWEL 1ST ADDITION STREET.

VISUAL SURVEY OF EXISTING LAKE CITY STREETS:

A visual study of (some) Lake City streets indicate that the existing structure of rights-of-ways in “Old Town” provide many of the benefits of the “ideal” street. Suggestions for improving a variety of streets are included in this Plan. The Lake City Community Forestry Plan, prepared by Peter J. Bedker, includes both a survey of Lake City trees as of 1995 and recommendations for additional plantings. Mr. Bedker provides extensive material from which a conceptual overall Master Planting Plan of residential streets could be drawn. To-date, with the exceptions of recent plantings under over-head utility wires and some boulevard tree replacement, much residential streetscape design remains incomplete. Lake City would benefit greatly from a conceptual plan, from which planting plans could be designed on a street-by-street basis. (See, also, Conclusion section in this report.)

The Heart of the City:



City Hall with dead tree.



Patton Park.

This is a major node within our civic district and the tree should be quickly replaced. Renovation should always include the streetscape. The tree in Patton Park, just outside the Post Office would be a good replacement selection.

VISUAL SURVEY CONTINUED..

Creating a Sense of Entry:



The large cottonwoods at the river's edge are graceful and sheltering. They are as representative of Lake City landscape as the river itself.

Lake City's limestone entry signs reflect the indigenous outcroppings of the river bluffs. The "ripple" of shrubs leading to the signs reflect the flow of the river. If the signs were nestled under a large cottonwood, silver maple or elm, the entry markers would also reflect Lake City's image as a "Tree City USA" located on the banks of Lake Pepin.



VISUAL SURVEY CONTINUED..

A Block Away from Patton Park:



This gaping hole in the streetscape is especially noticeable in contrast to the tree-lush Patton Park, across the street.

Another view from the corner in the above photo reflects the lack of trees from the perspective of a pedestrian. This sidewalk is a path to the heart of the city, Patton Park and the City Hall, for area residents. The boulevard trees should be replaced.



VISUAL SURVEY CONTINUED..

Industrial Areas:



Sections of Seventh Street appear desolate. As the studies show, the lack of streetscaping promotes speeding, increases runoff and pollution, and is psychologically negative and stressful. Local residence are often seen walking here, sidewalks should be considered, as well.

Tree planting requirements and guidelines for the visual attributes of streetscape in this report, should be applied to industrial areas. A separate ordinance may need to be addressed. The glare from building and parking lights is addressed in the Guidelines section of this report. The overall impact of this wide street, commercial architecture, and lighting on neighboring residents is a major concern.



A precedent of evergreens and large street trees has been established along other parts of Seventh Street. For the sake of continuity this should be continued for the entire length of North Seventh Street and other mixed-use zoned areas in Lake City. When selecting evergreens, tolerance to salt spray should be addressed. For example, Spruce are somewhat intolerant to salt spray.



VISUAL SURVEY CONTINUED..

Industrial Areas Continued...



Scale and continuity are important aspects of design. The visual impact of these small trees would be improved if the spacing were reduced for a more continuous canopy, or if the trees had a solid back-drop of a thick hedge.

Clusters of semi-natural plantings, including shrubs and clump grasses, could be used where there are no driveways mid-block.

Competition from the tall power lines and wide open spaces reduces the effectiveness of this hedge. There is plenty of room to address semi-natural groupings of plants including trees of different sizes and clump grasses.

VISUAL SURVEY CONTINUED..

The importance of edges:



When trees are not possible, edges can be created with walls, hedges or layering of trees.

Scale, again, becomes an issue with wide streets and easements. The impact can be lost when the height of the materials used are not in balance with the overall size of the edge.

Speed of the traffic is another issue to consider when creating an edge. To create an effective image the plantings should be continuous and large enough to make a statement.

In the first photo, the simple edge of stone wall is very affective in creating a sense of place and inviting a view and destination.

The impact of the plantings in the two lower photos is diminished because of a lack of scale. The middle image is far more effective than the third. More height and depth are required to create a more pleasant corridor.

Larger shrubs could be placed in back of the existing plantings, and a few large evergreen or deciduous trees. An informal survey of parking lot usage throughout this past summer indicates that some of the parking lot could be made available to at least provide a sence of entry to this public building.

Again, species of plants with urban setting tolerances should be chosen.

GUIDELINES:

Conclusion:

Local documents, The Lake City Comprehensive Plan Update, April 2001, The Lake City Forestry Plan, May 1995, and the commission of this Street Tree and Streetscape Analysis & Guidelines, indicate a clear desire on the part of this community to plan the future.

All three of these documents share many common goals and each acknowledges the heritage of Lake City's streetscape. Lake City is clearly growing, reaching for guidelines, and has done a lot of research.

In the process of creating the Street Tree and Streetscape Analysis & Guidelines, which essentially defines the streets rights-of-way, it became very obvious that all of Lake City's Plans are extremely interconnected. One cannot address one issue involving the right-of-way (for instance, trees) without considering another (for instance, underground utilities), etc. This may appear somewhat obvious.

Lake City needs a collaborative plan or simultaneous method to address sidewalk and trail plans, power line burial, lighting, the addition or removal of street trees and the opportunities that may arise for any of these issues when changes are made to the roadways. Street width reduction may be addressed at this time. Sidewalk plans should coincide with power line burial plans, and future plantings under the power lines should be made based on the near-term or long-term plans for both the burial of power lines and installation of sidewalks.

Meanwhile, the basis for the physical layout of the right-of-way can be established based on this report. It should be the common thread to maintain the image of Lake City, "Tree City USA".

PROPOSED ROAD RIGHT-OF-WAY SECTIONAL LAYOUT:

This proposal attempts to culminate the research data of the various issues that collectively dictate a safe, environmentally friendly, and aesthetically pleasing right-of-way. Major consideration was given to the existing character of Lake City to insure continuity as the town grows.

The following section, with two optional utility placements, is suggested for new residential street layouts and as a conceptual guide for reconstruction of existing streets.

Both options keep the boulevard trees close to the curb, and locate the sidewalk in the pedestrian-preferred position. Sidewalks are placed in a more friendly and safe environment away from the road and drivers experience the benefits of tree-canopied streets. As the research indicates, placing trees closer to the street has the tendency to reduce drivers' speed and diminish their stress.

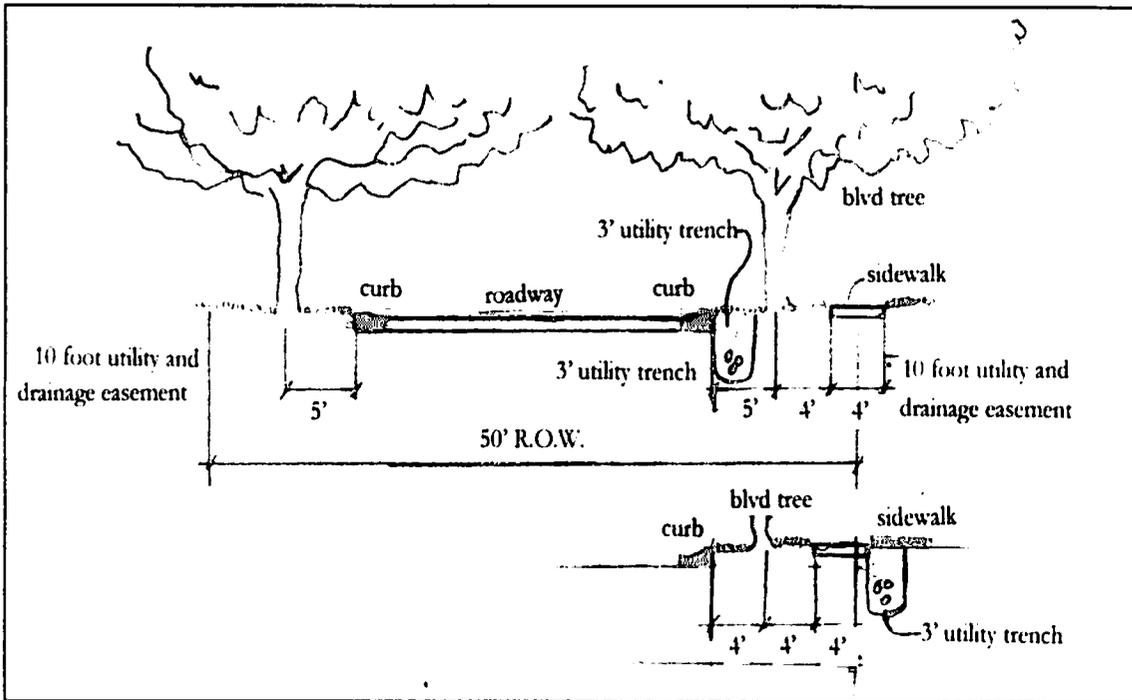
GUIDELINES CONTINUED..

PROPOSED ROAD RIGHT-OF-WAY SECTIONAL LAYOUT CONTINUED..

These suggested layouts differ from those currently being installed in the Jewel development in regards to tree and sidewalk placement. Sidewalks are yet to be installed for the Jewel Second and Third Additions. The opportunity still exists to insure tree and sidewalk placement that reflects the visual heritage of Lake City's oldest streetscapes and provide cooler, more environmentally conscious streets for the next generation.

Option A, utilities are placed in the right-of-way next to the curb, and utilizes 2.7 feet of the 10 foot drainage and utility easement for the sidewalk. Lake City Ordinance Number 157 requires medium or large trees to be placed no closer than 3 to 4 feet, respectively, to a sidewalk or curb. To accommodate the ordinance, 2.7 additional feet are needed.

Option B, one adopted by the City of Woodbury, places the utilities within the 10-foot drainage and utility easement, at the far-edge of the right-of-way, away from boulevard tree roots.



Option:
A

Option:
B

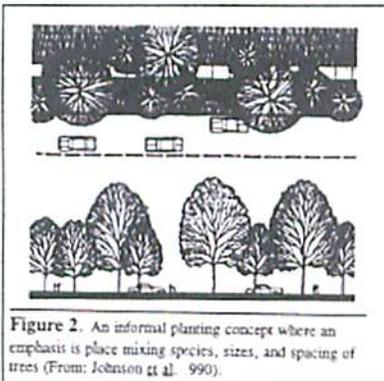
GUIDELINES CONTINUED...

FUTURE CONSIDERATIONS:

Power Line Pole Removal:

Many opportunities will become available when existing power lines are buried and where sidewalks are added.

In some areas, large trees have been placed behind the power lines, or small species trees have been planted in the boulevard as stipulated in Ordinance #157, making it impossible to plant large trees in the boulevard once the utilities are buried. The informal planting concept recommended by Peter Bedker would work well in these areas, incorporating trees and shrubs plantings of homeowners.



In general, however, the City should follow the basic concept of larger trees in the boulevard with sidewalks located close to the outer edge of the right-of-way. Reference should be made to the Lake City Community Forestry Plan for acceptable trees based on the width of the boulevard and size of neighboring trees.

Source: Lake City Community Forestry Plan.

Miscellaneous Open Streetscape Areas:

The informal planting concept shown above could also work in some areas where homes are located above the street on slopes that stop at the streets. The right selection of short native plants, and a few trees would maintain their views, protect the slope from erosion, and greatly reduce runoff. However, sidewalk decisions would be the first item to be addressed.



GUIDELINES CONTINUED...

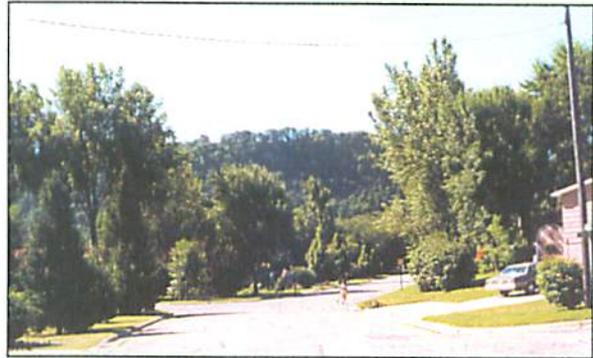
FUTURE CONSIDERATIONS CONTINUED...

Reconstruction of existing roads:

Reconstruction of existing roads should follow the recommended right-of-way design whenever possible, including the addition of sidewalks where planned. Consideration should be given to narrowing the roads and on-street parking limited to one side only, especially in low traffic local street situations. In general, large or medium street trees should be planted in the boulevard to allow tree canopies to cover the street providing environmental cooling and less rainwater runoff.

Lilac Lane is a Minor Street with very little traffic. It has a 66-foot right-of-way (Collector classification) and approximately 38 feet of pavement with no sidewalks. Most driveways have parking for four cars.

Oak Street, north of Monroe, also with very little traffic is another candidate for narrower streets and consideration for sidewalks.





Lighting the way, not the sky.

GUIDELINES CONTINUED...

LIGHTING

This drawing illustrates the improved visibility aspects of full cut-off lighting. Although this depicts a parkway, all streets would benefit.

Good quality lighting will greatly enhance the community and create an atmosphere that is safe and pleasing. An environment with no glare has higher visibility and less visual clutter and creates a greater sense of orderliness and peacefulness.

All lighting, residential, street, and parking lots impact the drivers and pedestrians using the rights-of-ways. Full cut-off lighting should be used in all instances to promote safety of drivers and pedestrians. Reduced crime is another benefit of non-glare lighting, because it eliminates the contrasting dark shadows of traditional, exposed bulb lighting.

GUIDELINES CONTINUED...

GUIDELINES FOR STREET TREE SIZE, SPACING AND LOCATION RESTRICTIONS:

Street placement for the Jewel development, as stipulated in the Alternative Urban Areawide Review (AUAR) states that street trees shall be planted not less than 40 feet apart, at least 40 feet away from intersections in the case of corner lots, and will have a minimum caliper of 1½ inches at the ground line.

Lake City Ordinance #157 sets minimum spacing of trees with regard to their mature size: Small (30' high) - no less than 30 feet on center, Medium (50' high) – no less than 40 feet on center, and Large (greater than 50' high) – no less than 50 feet on center. See Ordinance #157 for placement restrictions in regards to sidewalk, curb, fireplug, and driveways. Many of “Old Town” trees are spaced closer than required.

Standards have not been set for maximum spacing. To maintain the current character of Lake City Streets, it is recommended that the maximum spacing be within 10 feet of the minimum spacing indicated in Ordinance #157, unless other woody vegetation or informal wildlife planting plans are incorporated.



With the exception of Jewel First Addition, shown here, street trees are being placed between 40 and 50 feet on center (in Second Addition). The Jewel has plans to add more trees in the First Addition, after driveways are in.

GUIDELINES CONTINUED...

PLANTING METHODS FOR STREET TREES:

Planting methods continue to change as empirical data is collected. The Lake City Tree Board should be contacted for the latest methods before planting woody plant materials. Careful planning can be ruined, and funds wasted if standards are not met. Suggestions for assured health and aesthetic value follow.

The following planting methods assume the soil has not been compacted previous to planting. If the area is compacted, it is necessary to till the soil. Adding a few inches of compost is recommended.

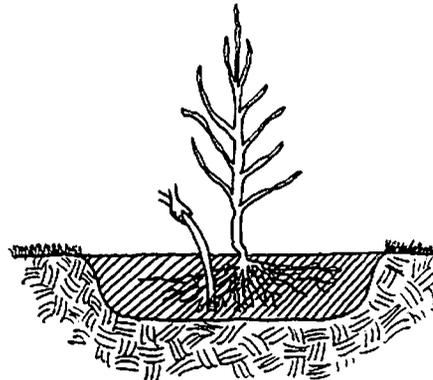
Bare-Root Planting:

Keep the roots moist, covered and in a cool location at all times preceding the planting. When you are ready to plant, prune out any broken or damaged branches or roots.

Dig the hole large enough so that roots easily fit without pressing against the sides of the hole. Trim only those roots that are broken or have grown tightly around each other. Do not coil the roots – make sure they are lying outward. Do not plant too deep. The graft located above the roots should be above ground level, and primary lateral roots should be just below the soil surface.

Backfill until the hole is two-thirds filled and tamp down, while holding the plant upright and at the proper level.

Water from below as illustrated until the hole is filled. After the water settles away, finish back filling. Backfill with the original soil, do not add purchased soil. Do not compact the soil after it is wet.



Bare-Root Planting

GUIDELINES CONTINUED...

Planting Methods continued..

Container Stock Planting:

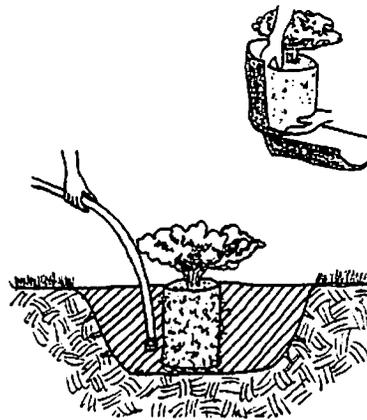
Dig the hole approximately 3 times the width of the container and slightly deeper in a bowl shape as illustrated. If the soil is clay, score the sides of the hole with the shovel or spade. Cut the container down the sides and remove the plant from it as illustrated. It is extremely important to keep the earth ball intact until you place it in the hole.

Use a probe (surveyor's pin or BBQ skewer, to determine the depth of the primary roots. Excess soil covering these roots should be removed before planting

Encircling roots and adventitious roots should be pruned away before planting.

Set the plant in the hole with enough compacted soil beneath it to bring the top of the primary roots even with ground level. Do not plant too deep. Hold the plant erect, lacerate the side of the earth ball to loosen the roots, and backfill until the hole is two-thirds filled and tamp down.

Water from below as illustrated until the hole is filled. After the water settles away, finish back filling. Backfill with the original soil amended with compost, do not add purchased soil. Do not compact the soil after it is wet.



Container Stock Planting

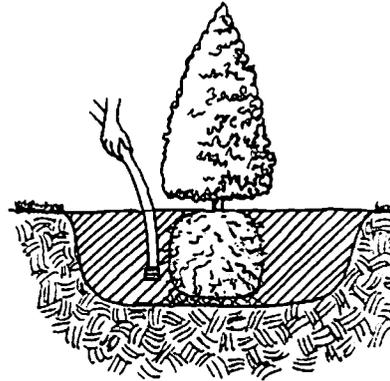
GUIDELINES CONTINUED...

Planting Methods continued..

Balled and Burlap Planting:

Dig a hole approximately 3 times the width of the container and slightly deeper in a bowl shape as illustrated. Remove the top section of the wire basket before setting plant in the hole. Set the plant in the hole with enough compacted soil underneath to bring the primary roots even with ground level. Do not plant too deep. Remove as much of the burlap and remaining wire basket as possible and lacerate the sides of the earth ball to loosen the roots. Backfill until the hole is two-thirds filled and tamp down.

Water from below as illustrated until the hole is filled. After the water settles away, finish back filling. Backfill with the original soil amended with compost, do not add purchased soil. Do not compact the soil after it is wet.



Balled and Burlap Planting

STREET TREE MAINTENANCE: (See Lake City Community Forestry Plan)

RECOMMENDED STREET TREE SPECIES: (Available from the Tree Board)

COSTS OF RIGHT-OF-WAY IMPROVEMENTS:

Empirical data from Lake City would be beneficial to further analyze the cost of proposed changes to new or existing Lake City streets. Perhaps three fairly exacting plans are needed to calculate a new streetscape (right-of-way) budget: final recommendations from the sidewalk committee, a plan for placing utilities underground, and planting plans for updating existing streets (after sidewalks and utilities are determined).

REVIEWAL PROCESS:

The Lake City Street Tree and Streetscape Analysis & Guidelines were presented to the following Lake City Organizations: The Tree Board, The Utility Board, the Streets and Parks Commission, and the Planning Board.

Comments were received and incorporated in this final report.

REFERENCES AND RESOURCES:

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- City of Knoxville, Tennessee. 2003 *Street Tree Master Plan*. Knoxville-Knox County Metropolitan Planning Commission.
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