MONTGOMERY STREET TREE MASTER PLAN

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Table of contents

INTRODUCTION

Scope of the Plan

The City of Montgomery is comprised of many distinct neighborhoods, each with its own unique history and character. The Street Tree Master Plan serves to build upon the positive elements of each neighborhood and the Downtown area by preserving and enhancing the urban landscape.

In short, the Street Tree Master Plan is a guide to be used by the City, public and private developers, and property owners for the selection and placement of street trees along major corridors, thoroughfares, and neighborhoods within the City.

The Street Tree Master Plan is concerned with public space, particularly rights-of-way (R.O.W.), including medians, planting strips, and sidewalk areas. The sections that follow provide a comprehensive guide to the development of the urban forest in the City of Montgomery for the next twenty years. Each chapter addresses unique considerations when adding street trees to a given area. Following this discussion is a list of short- and long-range priorities concerning future street tree projects.

City of Montgomery 2002 Land Cover Data

⇒ 34% Tree Canopy (48.2% State Average)

⇒ 32% Open Space

⇒ 21% Impervious Surface

⇒ The City of Montgomery's tree canopy declined by 6% between 1986 and 2002.

Benefits of Trees

It is not the intent of this document to detail case studies highlighting the benefits that trees provide for a community. However, this plan acknowledges that there are specific benefits when trees are included in the urban environment.

Economic Benefits

Trees provide monetary benefits to urban communities in several ways. First, trees provide shade, reducing the amount of air conditioning required to cool a residence or business establishment. This in turn allows citizens and business owners to realize reduced energy costs. Also, commercial areas that are shaded are more attractive to consumers, resulting in increased retail sales. Furthermore, property values are higher in shaded neighborhoods when compared to treeless lots of the same size.

Ecological Benefits

Trees, by nature of their physiology, are natural air and water filters. As a result, storm water runoff is reduced by a dense urban forest, and trees filter out water pollutants before the contaminants reach local waterways. Air quality is better with a dense urban forest because at the most basic level, trees absorb carbon dioxide and release oxygen.

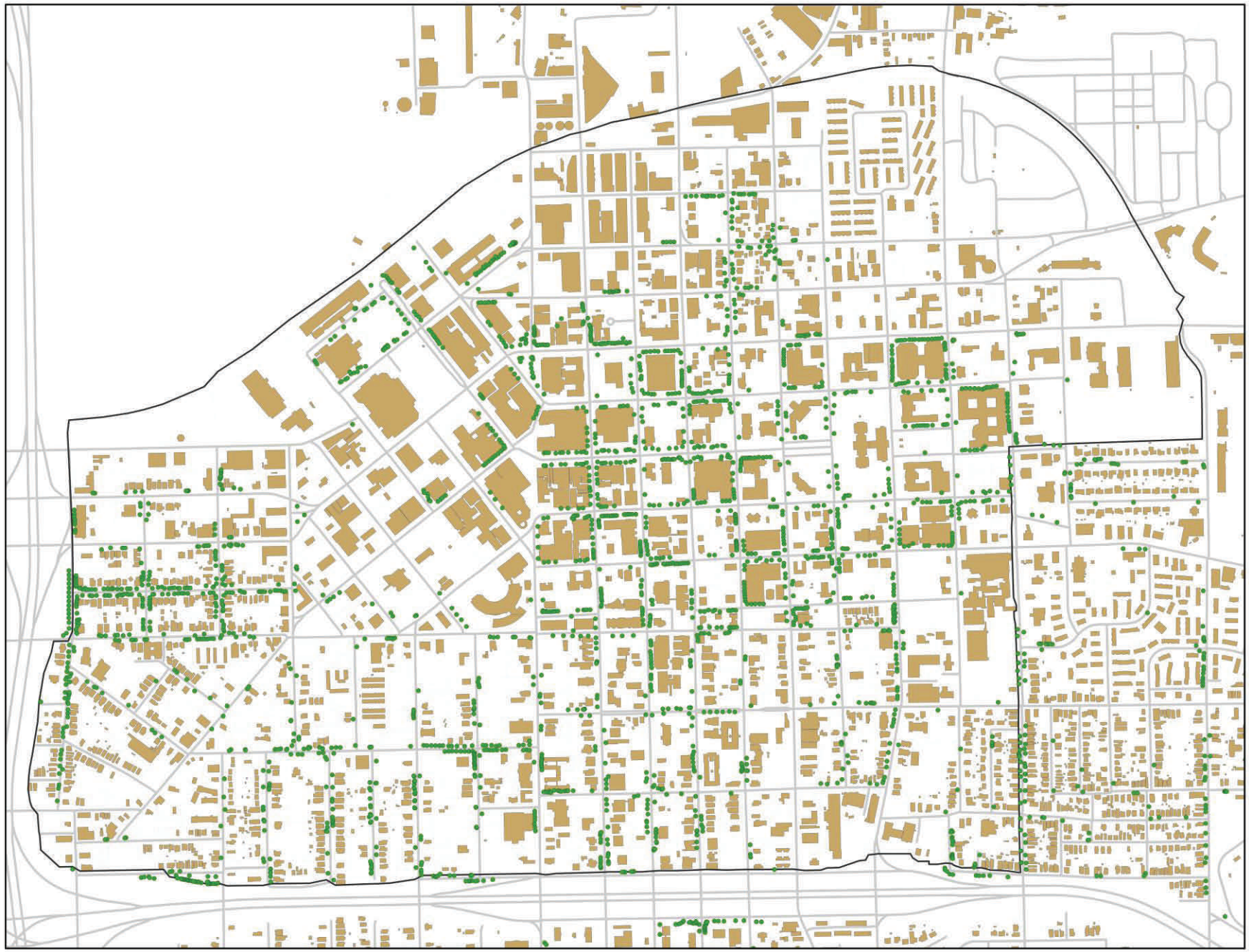
Social Benefits

A green community with plantings and trees is a healthy community. Additionally, a shady neighborhood has the appearance of a quiet, peaceful and safe neighborhood. It is this appearance that often becomes a reality for community residents. Trees contribute to reduced vehicle speed on neighborhood streets. Finally, a green environment is scientifically known to reduce stress, as evidenced by the fact that most hospitals maintain a small passive park or garden for their patients.

Trees Benefit Our Urban Areas By...

- ◊ Extending the life of paved surfaces
- ◊ Increasing traffic safety by reduced vehicle speed
- ◊ Improving economic sustainability
- ◊ Affecting consumer perceptions and behaviors
- ◊ Increasing real estate values
- ◊ Increasing energy savings

Downtown Street Tree Inventory



Guiding Principles and Preservation Strategies

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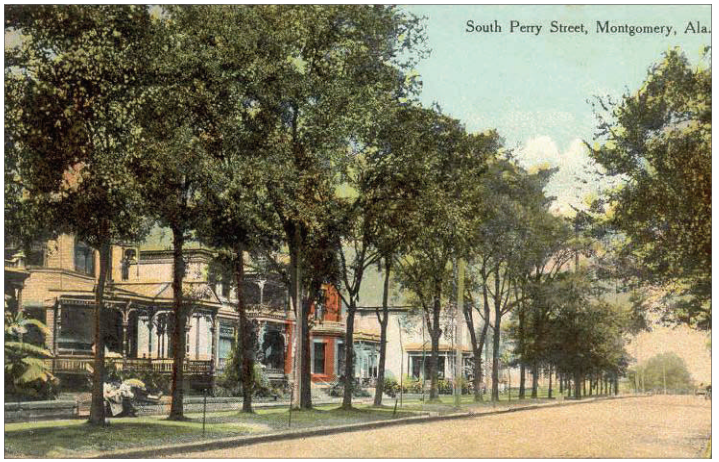
Guiding Principles

Several principles guide the Montgomery Street Tree Master Plan and its implementation strategies. These include:

- Healthy native trees shall be preserved to protect existing streetscapes throughout the City.
- Space shall be reserved or reclaimed for tree planting along City rights-of-way in order to plan for future street tree planting.
- Trees planted in implementing the street tree plan shall consist mainly of native species.
- A variety of species shall be planted to avoid problems with infestation and blight. As a rule, no single species shall make up more than 15% of the city's overall streetscape.
- An aesthetic balance shall be sought to ensure proper proportion and spacing of street trees along each streetscape.
- Trees shall be matched with street and highway circumstances to ensure pedestrian and vehicular safety.
- Smaller tree species shall be planted under overhead utility lines to avoid potential hazards.
- Invasive species such as kudzu, Chinese tallow, and Chinese privet shall be removed to protect the health and appearance of the urban forest.
- Shading shall be provided on area sidewalks to create an atmosphere hospitable to pedestrians and local businesses.
- Professional standards shall be applied for tree care and management.



Preservation of Existing Street Trees

Trees are living organisms that add to the quality of life in urban environments. However, people often forget that this slow growing, inert architectural framework can be injured or killed by careless actions. Saving the urban forest requires more than "tying an orange ribbon around the trunk of a tree." It requires responsible actions on the part of developers and citizens in the community.

Protection of a tree's root system is the most important aspect of tree preservation. Because trees store large food reserves while healthy, they are slow to show the effects of problems such as root damage. Trees can weaken and die years after the initial injurious action. Major injury to a tree's root system has no cure. Therefore, tree care must occur before and during new construction for preservation to be successful.

Every effort shall be made to preserve existing, healthy trees in the City rights-of-way, including the protection of street trees from new construction on private property. In the case of diseased or severely damaged trees (including trees with extensive decayed wood, cracks or other structural defects that may lead to failure) the unhealthy tree will be replaced with a suitable species to preserve the streetscape. Invasive species are also candidates for replacement in order to protect the City's urban forest.

Guidelines for New Construction

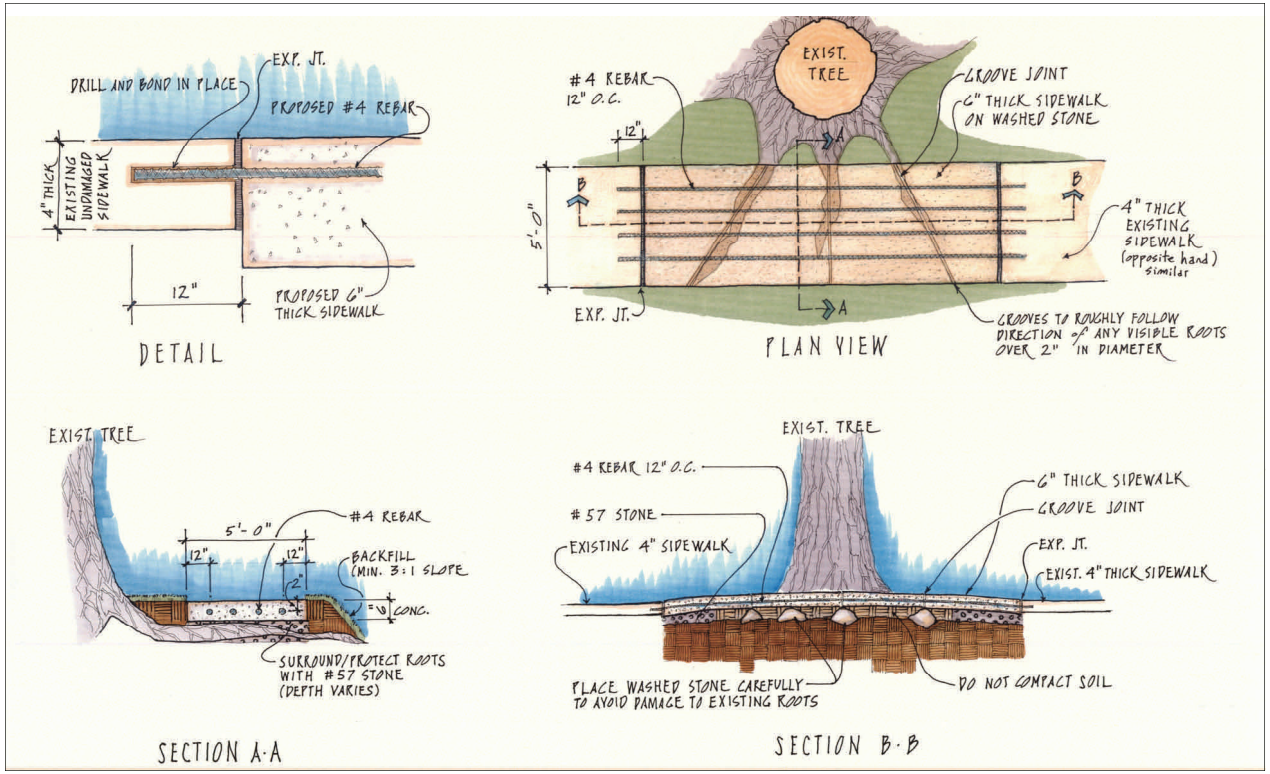
- Erect a barrier fence around the critical root zone of street trees.
- **Do not** change grade within the critical root zone of a street tree.
- **Do not** trench within the critical root zone of a street tree. Boring is appropriate where absolutely necessary due to specific site constraints.
- **Do not** store material within the critical root zone of a street tree.
- **Do not** empty toxic chemicals within the critical root zone of a street tree.
- If temporary access through the critical root zone cannot be avoided due to specific site constraints, a thick layer of coarse mulch or a layer of plywood shall be placed in the root protection zone to prevent soil compaction and minimize root disturbance. This material shall be removed as soon as temporary access has ceased.
- If there appears to be a conflict between new construction and street trees, contact the City of Montgomery Urban Forester in accordance with the City of Montgomery Tree Removal Policy.

Sidewalk Construction and Repair

Sidewalks experience upheaval due to the nature of sidewalk design. Because the soil underneath a sidewalk is usually compacted, the only space available for tree root growth is in the space between the sidewalk and the compacted soil. As roots grow, sections of sidewalk will eventually lift upward. This does not happen over short periods of time, but over many years.

When sidewalk repair becomes necessary, tree roots shall never be excavated with a backhoe or ground with a stump grinder. Instead, the heaved portion of sidewalk shall be carefully removed to avoid damage to existing tree roots, and be reconstructed above grade using washed stone as a base to protect the root system.

New sidewalks shall also be constructed above grade to protect existing trees. Where new trees are planted on City R.O.W. between the street curb and an existing sidewalk, a breakout zone shall be constructed. This involves removing the section of sidewalk adjacent to the new tree location, removing 2 to 3 feet of base material, backfilling with material such as CU-Structural Soil ™, and replacing the sidewalk section (see page 30). This will allow for tree root growth beneath the sidewalk through the base material instead of between the base material and the sidewalk.



Tree Planting: Selection, Preparation, Installation and Pruning

Tree Selection

The most important aspect to proper tree selection is matching a tree to site conditions. Site characteristics include temperature extremes, light conditions, hydrology, soil type and available growing space, both above and below ground. Tree characteristics include drought tolerance, light requirements, soil requirements and the tree's function in the streetscape. If trees are not matched to the site, problems are likely to arise. Many maple trees have suffered and died in commercial parking lots because they were not suited to the hot, dry environment. Matching tree requirements to site characteristics will lead to a healthy and successful streetscape.

In any tree selection process, the decision must be made whether to use native or non-native species. Many native tree species do very well in their natural zone if correctly matched to the site. Non-natives can sometimes out-perform native species. This out-performance sometimes comes with a cost. Some non-native species are able to reproduce and spread beyond the planting area, displacing indigenous vegetation. The Chinese tallow tree (Sapium sebiferium), one of Montgomery's most prolific exotic/invasive species, is a prime example.

This document recommends that native species be given consideration before deciding to use non-native trees in the streetscape. Trees native to the state, when correctly matched to the site, will fill any role in the streetscape. There is a native tree suitable for even the most harsh environments. As a weed is "a plant out of place," a native tree is a tree that is very much in place.

A list of recommended trees, both native and non-native, has been provided in the Appendix of this document. This list details information, such as mature size and site requirements, to allow for proper tree selection to match the site. This list is not all inclusive, but does contain species known to do well in the City of Montgomery.

Tree Selection Guidelines

- Consider using native trees in the streetscape before selecting non-native species.
- Correctly match site conditions with tree requirements.
- Refer to the "Recommended Trees" section in the **Appendix** of the Street Tree Master Plan when selecting trees for a site.

The Chinese Tallow Tree (Sapium sebiferium) is a non-native, invasive species that shall be avoided.

Tree Planting: Preparation

A successful street tree program also depends on proper tree installation. Even a well planned project will ultimately fail if healthy trees suited to the local environment are not properly planted. To place a project on sound footing, match the tree species to the soil type and local conditions and pay close attention to the site to ensure that proper installation and establishment occurs.

Street trees should be approximately 2 inches in caliper or larger at the time of planting. Trees that meet this size requirement will be available from tree nurseries in one of two forms: containerized or balled and burlapped (B&B). Both forms are suitable for street trees.

Containerized trees come with all of their roots contained in the soil of the container. This container must be removed before planting. As the tree was growing in the container, the tree roots will have begun to grow in circles around the inside edge of the pot. These roots shall be separated and spread out when the tree is planted, or if the roots have become matted, the matted roots on the outside of the root ball shall be cut on 4 sides of the root ball. New roots will grow from a cleanly cut root. If large girdling roots have begun to grow across or around other roots at the root crown, they shall be removed at the point they begin to turn.

Tree Planting Preparation

Containerized Trees

- Remove the tree from the container.
- If circling roots are present, separate the roots and spread them outward.
- If matted roots are present, score the root ball approximately 1 inch deep on four sides.
- If girdling roots are present, cut the root at the point where it turns.

Balled and Burlaped Trees

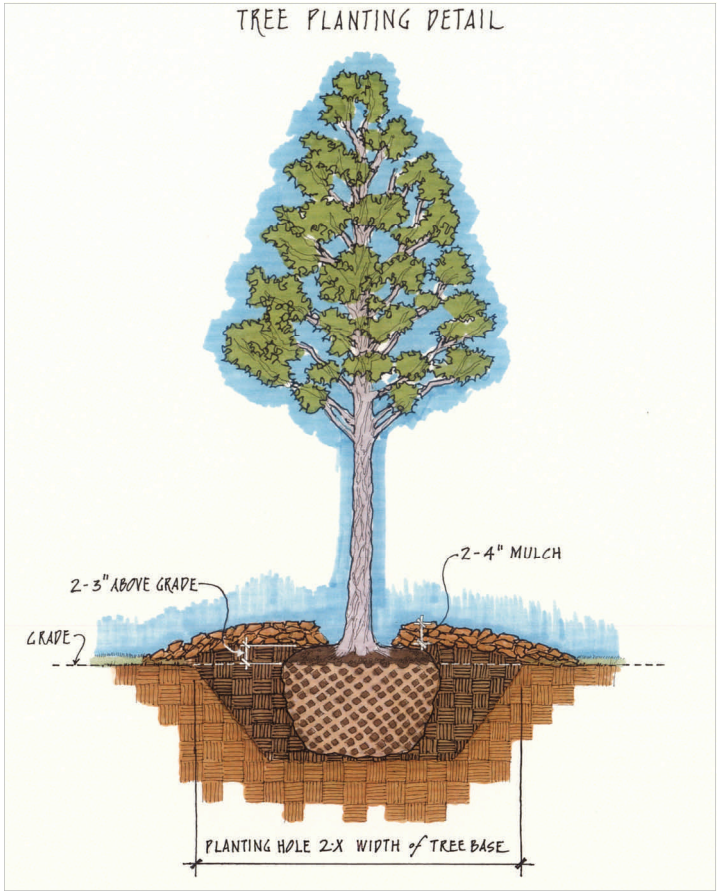
- If the burlap is synthetic, remove covering entirely.
- If the burlap is biodegradable, fold the material halfway down the root ball.
- If the root ball is contained in a wire basket, at a minimum, remove the wire covering to ½ of the root ball. However, it is **recommended** that the entire basket be removed before planting.

Balled and burlapped trees are dug from growing fields at the nursery and the root ball is wrapped with burlap. Sometimes the root balls of large trees arrive in wire baskets to protect the root ball during handling. Because these trees are field dug, which cuts off some of the trees' absorbing roots, circling or matted roots are not a problem. However, the trees shall still be checked for the presence of girdling roots. Before planting, wire baskets shall be removed at best, or the upper ½ of the wire basket shall be cut at worst. Biodegradable burlap can be folded back before planting. Synthetic burlap shall be removed entirely. As a word of advice, remove the material when in doubt.

Tree Planting: Installation

Before digging the planting hole, locate all underground utilities.

The planting hole shall be properly dug so that the tree can become established as soon as possible after planting. The hole shall be 2 to 3 times as wide as the diameter of the root ball. The more compacted the soil, the wider the planting hole should be. Dig the hole so that the sides of the hole slope down to about the width of the base of the root ball.



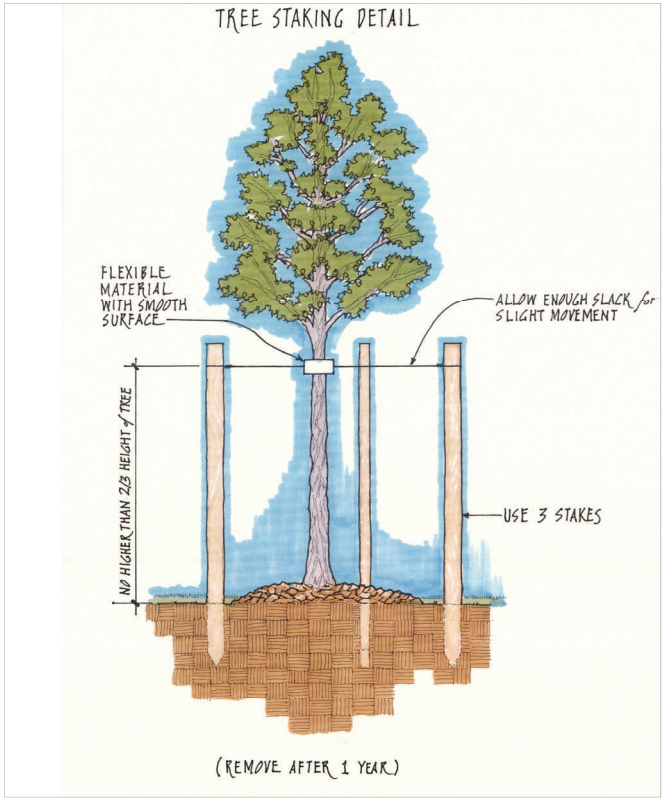
Tree Installation Guidelines

- Locate all underground utilities before planting a tree.
- Dig hole at least **2 times** wider than the diameter of the root ball at the soil surface, sloping down to the width of the root ball at its base.
- Plant the tree with the top of the root ball 2 to 3 inches above the soil grade. **Do not** plant the tree deeper than the soil grade.
- Work the soil around the root ball to remove air pockets.
- Water the root ball thoroughly.
- Cover the root ball and undisturbed soil with 2-4 inches of mulch. **Do not** place mulch directly against the stem of the tree.

When planting the tree, do not lift the tree by its stem. This can break the stem away from its root system. Instead, handle the tree carefully by the root ball. Plant the tree so that the top of the root ball is 2 to 3 inches above soil grade. Do not plant the tree below soil grade. Water tends to collect in the planting hole which can drown trees that are planted too deep. Also, the tree will tend to settle in the planting hole after a few rains or irrigation. Backfill with the same soil removed from the planting hole. Soil amendments are only needed for very poor soils (see "Sidewalk Construction and Repair," page 12). Make sure the backfill slopes down from the top of the root ball to the original soil grade. Work the soil in around the root ball to remove air pockets and water the tree to settle the soil. Slow release fertilizer can be added to the tree at this time so that nutrients will be available during the following growing season. Cover the root ball and disturbed area with 2 to 4 inches of mulch, taking care not to place mulch directly against the stem of the tree.

Tree Staking Guidelines

More often than not, a tree that has been properly planted does not require staking to keep the tree upright. Staking also has drawbacks. Staked trees will not develop good trunk taper and its root system will be smaller because a staked tree will use the



stake for support and place its resources on height growth. Also, trees will be more subject to rubbing and girdling injury from stakes and ties.

Staking Guidelines (if necessary)

- To provide support, use **3** stakes.
- Use a length of hollow material to attach wire from the stake to the stem of the tree.
- Attach stakes high enough to keep the tree upright without the top bending over at the tie point, but no more than ⅔ the height of the tree.
- Allow enough slack for slight tree movement.
- Remove stakes after one year to allow for proper tree development.

This being said, there are times when staking is necessary. In areas of high foot traffic, staking can protect a tree from accidental injury. Trees with a large crown to root ball ratio may need to staked until new root growth is adequate to support the tree, and trees with slender stems may require staking if the stem is not strong enough to stand without support. Expected wind conditions will also be a factor. Install tree stakes only when absolutely necessary.

If stakes are required, place three stakes equidistant around the tree. Use a flexible material with a broad smooth surface (to minimize stem abrasion and girdling) to attach the tree to the stakes. Garden hose, while not the best material, is often the most cost efficient material. Leave enough slack for projected growth of the tree and to allow for tree movement. A staked tree that can move slightly will develop better than one that is tied down tightly. Staked trees will require monitoring on a regular basis to prevent problems. Remove the stakes no later than one year following installation.

Tree Pruning

New trees in the streetscape will require professional pruning over a period of several years. Pruning is required so that tree branches do not interfere with pedestrians, vehicular traffic or visibility, especially at intersections. Mature streetscape tree canopies shall be maintained above the height of traffic, whether pedestrian or vehicular.

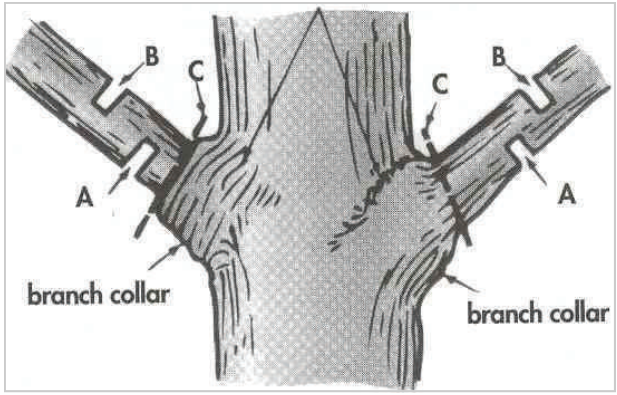
Any pruning that occurs must be done properly in order to maintain the health of the trees in the streetscape. Improper pruning is worse than no pruning, in that improper pruning results in damage to trees, which, in turn, creates unsafe conditions in the streetscape. Trees pruned using proper methods are more structurally sound and can last indefinitely in the streetscape.

All pruning shall be done in accordance with the American National Standards Institute (ANSI) A300 standards.

This picture illustrates how "topping" can destroy trees. In this particular case, the tree shall be removed and replaced with an understory tree to avoid interference with overhead power lines.

Tree Pruning Guidelines

- Follow ANSI A300 standards for pruning.
- Prune so that at maturity, the lowest tree branch is higher than the local traffic, both pedestrian and vehicular.
- Conduct pruning over a period of several years.
- **Do not** remove more than ¼ of the tree canopy in a single season.



This illustration shows proper pruning methods. (A) - Make a small, wedge shaped cut on the underside of the branch above the branch collar (3-4 inches). This will break the bark and prevent damage to stem tissue. (B) - Make another cut just above the first one, going all the way through the branch. A small stub will be left. (C) - The last cut will remove the stub, protecting the branch collar.

Design Considerations: Utilities and Street Types

Planting Near Overhead Utilities

While growing and maintaining large canopy trees along the city streetscape is the primary purpose of this plan; overhead utilities will, at times, be a factor in the placement and selection of street trees. Telephone and television cable utility lines are often heavily insulated and do not carry enough voltage to preclude installing canopy trees, so long as the trees can be properly placed and pruned to grow on one side of the utility. Electric power utilities, on the other hand, carry large amounts of voltage. Therefore, canopy trees cannot be planted under this type of utility.

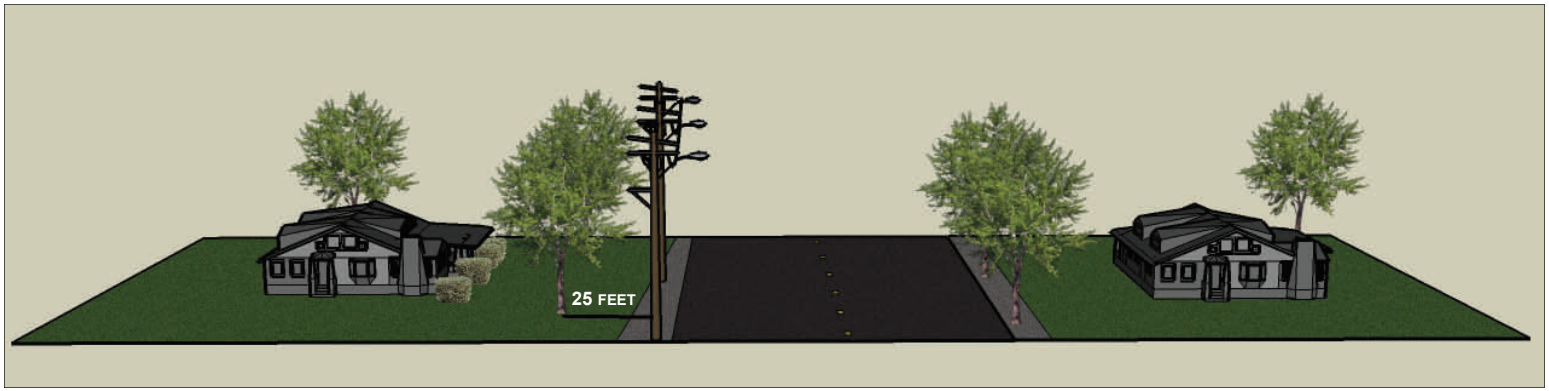
Where electric power utilities occupy the street R.O.W., understory trees must be used exclusively. Understory trees shall be pruned (see page 18) just high enough to allow for pedestrian and vehicular traffic. In cases where the understory trees grow to the point that they interfere with the clearance needed by the electric power utility, they should be pruned using height reduction pruning techniques. When properly maintained, the understory trees will fill the overhead space between the street and the utility.

In addition to understory trees in the street R.O.W., the Greenspace Planting Agreement (see Appendix) shall be used to place canopy trees on private property to enhance the streetscape.

Overhead Utility Planting Guidelines

- Use canopy trees in street rights-of-way if overhead utilities are absent.
- If telephone and/or cable utilities are present, canopy trees shall be planted in such a way that they can be pruned to grow to one side of the utility.
- If overhead power utilities are present, use understory trees only in the street rights-of-way.
- Where feasible, use the Green Space Planting Agreement with neighborhood citizens to plant trees on private property, maintaining a minimum lateral separation of 25 feet.
- **Do not** plant canopy trees directly under overhead power utilities.

Minimum lateral separation from overhead electric utilities shall be maintained at 25 feet (see figure below). This will allow the canopy trees to reach their mature height in the streetscape without requiring excessive utility clearance pruning.



Minimum lateral separation shall be maintained a minimum of 25 feet from overhead electric utilities.

Interstates and High Speed Roadways

The City of Montgomery is home to two interstate highways and several major highways (see map, page 22) maintained by the Alabama Department of Transportation (ALDOT). ALDOT maintains their roadways using the American Association of State Highway and Transportation Officials (AASHTO) guidelines and the "Green Book." Even though these publications are guidelines and are interpreted by ALDOT district managers, the interpretations tend to be treated as regulations. It is outside the scope of this document to question or comment on these interpretations, but several items will be discussed in relation to street trees in these high-speed thoroughfares.

The most important aspect of ALDOT regulations is the "clear zone", which is a vehicle recovery area for drivers who leave the paved surface of the highway. This area is kept free of fixed objects. A fixed object is defined as anything bigger than 4 inches in diameter, which includes trees.

The "clear zone" width is determined by several criteria, including speed limit, slope, sharpness of road curve, curbs, and guardrails. Changes to any of the criteria result in a change in the width of "clear zone". This must be kept in mind in tree preservation matters on high-speed roads. In the past, trees have been removed for violating the "clear zone" when the installation of a guard rail would have allowed them to remain.

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Interstate and High Speed Highway Guidelines

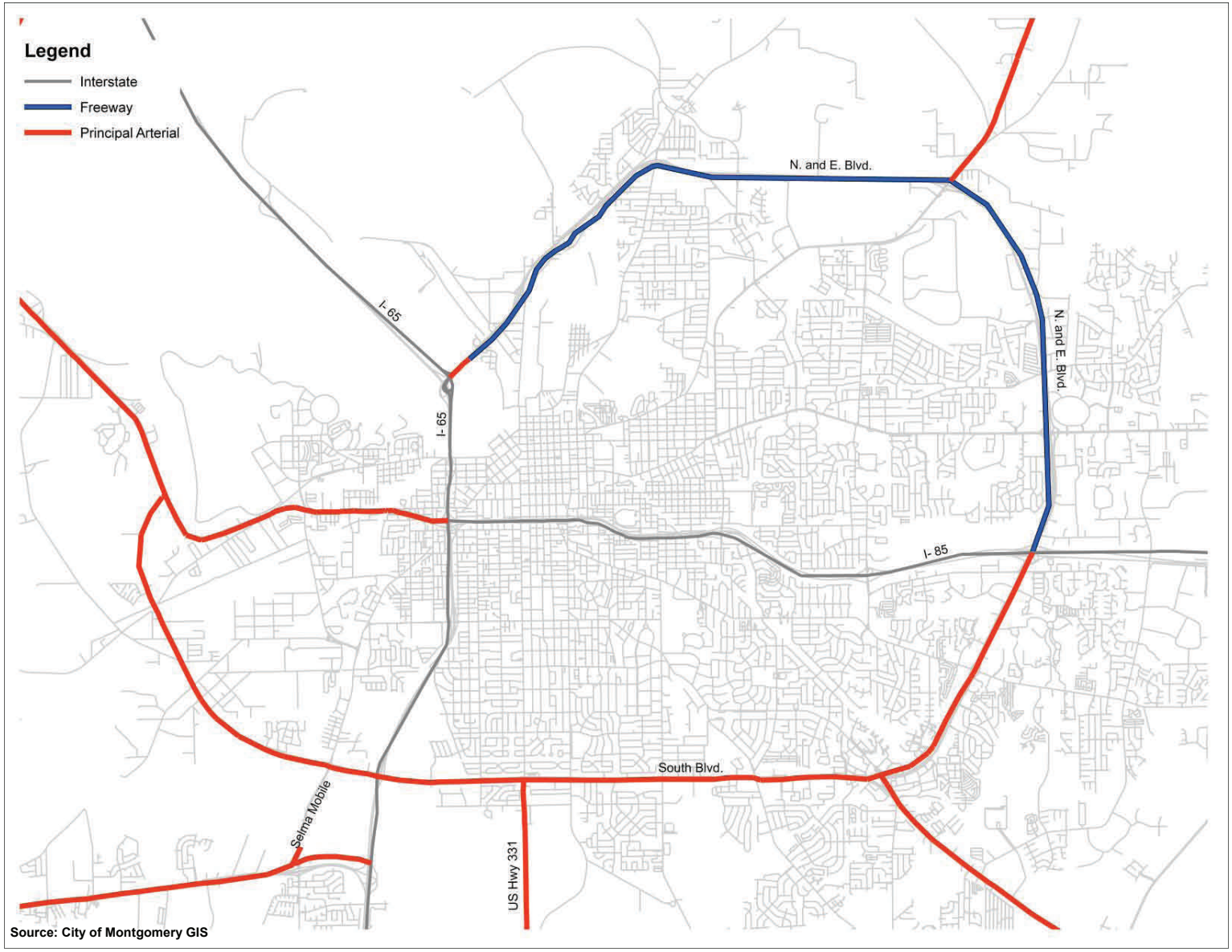
- Respect the "clear zone."
- Delineate the "clear zone" before planning the project.
- Submit the project to ALDOT for approval.
- Retain copy of approved project and plan.
- Use native species exclusively.
- Request that guard rails be installed to preserve existing street trees where necessary.

Tree project design in the state rights-of-way, due to state control and differing interpretations of guidelines, cannot be clearly set forth in this document. However, this document can set forth guidelines to follow when developing tree and beautification projects for ALDOT approval. First and foremost, make sure that the clear zone of the project area has been delineated by an ALDOT official. Submit the project proposal to ALDOT for approval, keeping in mind that public safety will be ALDOT's primary concern regarding the project proposal. Retain a copy of the approved project proposal for future reference.

Species selection is a final subject of discussion. The State's interstate rights-of-way and medians have, in certain areas, become infested with exotic/invasive species. Kudzu (Pueraria lobata) is a persistent problem, and Cogon grass (Imperata cylindrica) is rapidly spreading north along I-65. Recognizing the fact that both of these plant species were introduced on purpose as non-native plants to provide ground cover, it is highly recommended that only tree and plant species native to the state be used.

Roadways Maintained by the Alabama Department of Transportation

(shown in grey, blue and red)



City Streets

The streets maintained by the City of Montgomery include minor arterials, urban collectors, and local roads as shown on the City of Montgomery GIS map (see page 25). The minor arterials and urban collectors shall both be referred to as "major streets" and the local roads shall be referred to as "neighborhood streets" in this section. The major streets are typically four lane highways with speed limits of 35 MPH or greater and carry large volumes of traffic. The neighborhood streets are typically two lane roads with low speed limits.

Major Streets

Street trees shall be planted approximately 30 feet on center along the street, with the exception of commercial districts (see page 28). Actual distance between trees will be dictated by underground utilities, overhead service wires and poles and driveways (see page 20 for overhead utility guidelines). Trees shall be planted no closer than 15 feet from driveways and utility poles. Do not plant canopy trees directly under service wires.

Tree placement in the R.O.W. will depend on the location of the street. If the major street is located in a residential neighborhood, the trees shall be installed equidistant between the edge of pavement and the edge of R.O.W. , or between the edge of pavement and the edge of the sidewalk, if present (see Neighborhood Streets Diagram, page 24). Such placement will have a calming effect on traffic and will offer protection to pedestrians.

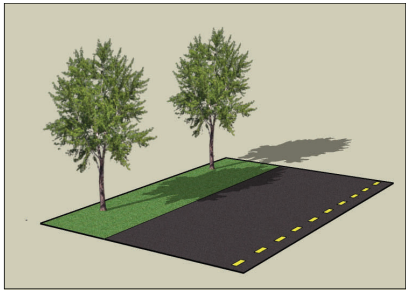
If the major street is located outside of residential neighborhoods, then trees shall be placed no closer to the edge of pavement than 2/3 the distance between the edge of pavement and the edge of R.O.W. to protect trees from vehicular damage.

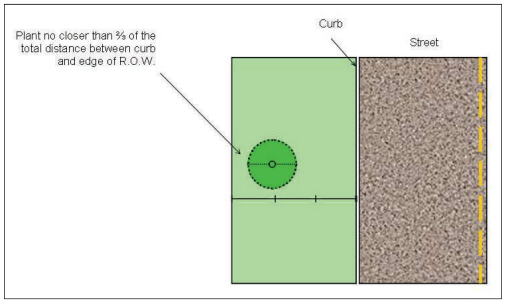
Line of sight at intersections is another consideration of tree placement. Place trees a minimum of 30 feet from intersections with a traffic light or 4-way stop. In cases where neighborhood streets intersect with major streets using 2-way stops on the neighborhood streets, place trees a minimum of 40 feet from the intersection along the major street, and a minimum of 30 feet from the intersection along the neighborhood street.

Major Street Guidelines

- Plant street trees approximately 30 feet on center along the street.
- **Do not** plant trees closer than 15 feet from driveways and utility poles.
- **Do not** plant canopy trees under service wires.
- Trees shall be installed equidistant between the edge of pavement and the edge of R.O.W. or between the edge of pavement and edge of sidewalk in **residential neighborhoods**.
- Trees shall be placed no closer to the edge of pavement than ⅔ the distance between the edge of pavement and the edge of R.O.W. **outside of residential neighborhoods**.
- Place trees a minimum of 30 feet from intersections with a traffic light or a 4-way stop.
- Place trees a minimum of 40 feet from the intersection along the major street and a minimum of 30 feet from the intersection along the neighborhood street where neighborhood streets intersect with major streets using a 2-way stop.

Major Streets Diagram





Neighborhood Streets

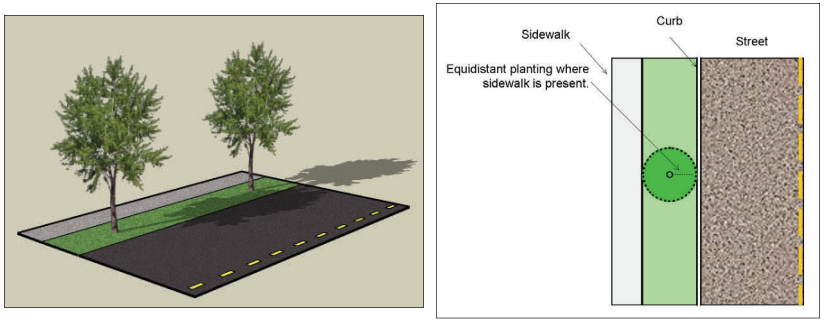
Street trees shall be planted approximately 30 feet on center along neighborhood streets (see page 31 for Historic District guidelines). Actual distance between trees will be dictated by underground utilities, overhead service wires and poles, and driveways (see page 20 for overhead utility guidelines). Trees shall be planted no closer than 15 feet from driveways and utility poles. Do not plant canopy trees directly under service wires. Trees shall be placed equidistant between the edge of pavement and edge of R.O.W., or equidistant between the edge of pavement and edge of sidewalk where sidewalks are present.

Street tree placement at neighborhood street intersections will be dictated by the nature of the intersection. If traffic at the intersection is controlled by a 4-way stop, trees will be placed a minimum of 15 feet from the intersection. If a 2-way stop is used, place trees a minimum of 15 feet from the intersection along the street containing the stop, and 30 feet from the intersection along the street that continues.

Neighborhood Street Guidelines

- Plant street trees approximately 30 feet on center along the street.
- **Do not** plant trees closer than 15 feet from driveways and utility poles.
- **Do not** plant canopy trees under service wires.
- Trees shall be installed equidistant between the edge of pavement and the edge of R.O.W. or between the edge of pavement and edge of sidewalk in **residential neighborhoods**.
- Place trees a minimum of 15 feet from intersections with a 4-way stop.
- Place trees a minimum of 15 feet from an intersection containing a 2-way stop. In addition, a street that continues through a 2-way stop shall place trees 30 feet from the intersection.

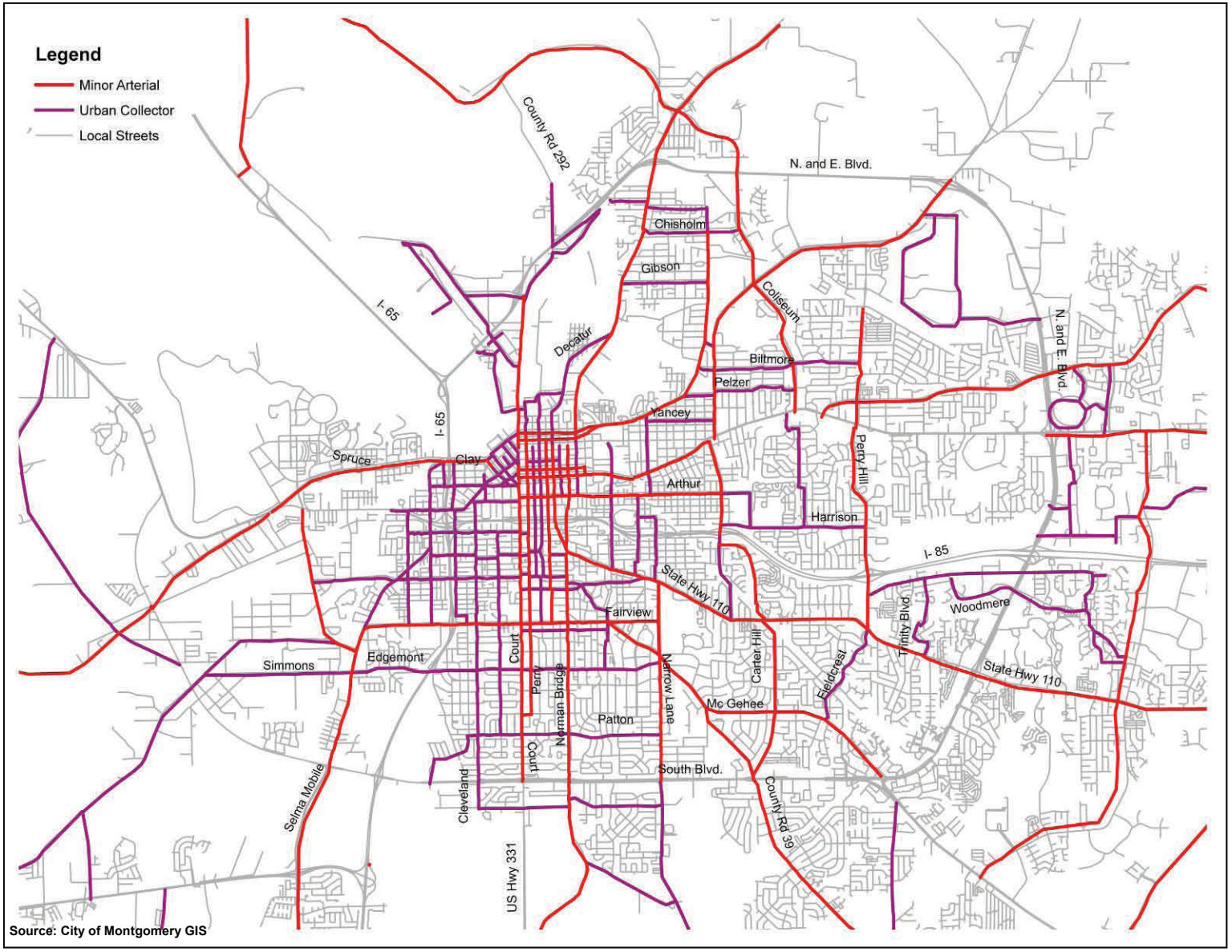
Neighborhood Streets Diagram with Sidewalk



Neighborhood Streets Diagram without Sidewalk

City Streets

(shown in red, purple and grey)



SPECIAL AREAS

Commercial Districts

Commercial districts tend to be harsh environments for trees. Parking areas cause excessive heat during the summer months, and planting areas tend to be limited in size. Species selection in these areas is critical, and trees shall be selected for drought and heat tolerance.

The City of Montgomery Landscape Ordinance (Ordinance No. 63-2005) covers landscape requirements for off-street parking in new commercial construction. The landscape requirements call for canopy trees to be placed a minimum of 50 feet on center (or understory trees 30 feet on center where overhead utilities conflict) adjacent to public rights-of-way. This is sufficient for a commercial district streetscape.

Many of the City's commercial districts were built before the Landscape Ordinance was enacted. These areas will require infill in order to blend old and new commercial development in the streetscape. Where feasible, trees shall be planted on 50 foot centers adjacent to commercial developments which were constructed before the Landscape Ordinance was enacted.

As stated, the environment for trees is likely to be poor. In order to improve conditions as much as possible, all unnecessary pavements shall be removed from the public rights-of-way, and these areas tilled to break up the soil compaction before installing new trees. In older parts of the City, overhead utilities may preclude the use of canopy trees. When there is a conflict with overhead utilities, understory trees shall be planted on 30 foot centers.

Commercial District Guidelines

- Tree requirements for new commercial development are sufficient for commercial district streetscapes.
- Infill areas of older commercial development with street trees where necessary.
- Remove unnecessary pavements from the public rights-of-way and till soil before installing trees.
- Plant canopy trees on 50 foot centers, or understory trees on 30 foot centers when there is a conflict with overhead utilities.
- Keep trees properly pruned so as not to interfere with pedestrian or vehicular traffic.

Downtown Area

The Montgomery Street Tree Master Plan also treats the Downtown Area as a special area. In September 2006, Dover Kohl & Partners held a charrette to plan Downtown Montgomery. As one of their planning prescriptions to improve transportation design and street walk ability, they suggest the planting of street trees throughout Downtown. The plan notes:

> "Great streets are not the place to experiment with random, romantic, or naturalistic landscaping. Urban streets are typically planted in aligned rows, with regular spacing, using consistent species. This will not appear rigid or mechanistic, for trees do not grow identically; rather, the power of formal tree placement is that it at once shapes the space, reflects conscious design, and celebrates the intricacy and diversity within the species. More importantly, the shade produced by the trees will be continuous enough to make walking viable, and the spatial impression of aligned streets also has a calming effect."
>
> - 2006 Downtown Montgomery Plan

SmartCode Development

The SmartCode (recommended for downtown by Dover Kohl) specifies street trees on average 30 foot centers, and also specifies types of planting strips and planters depending on the respective Transect Zone. These specifications are compatible with all aspects of this plan except commercial areas. Commercial area streetscapes within a Smart Code overlay will follow the Smart Code specifications of trees planted on 30 foot centers.

Downtown Study Area

Downtown Master Plan

SmartCode Development (cont'd.)

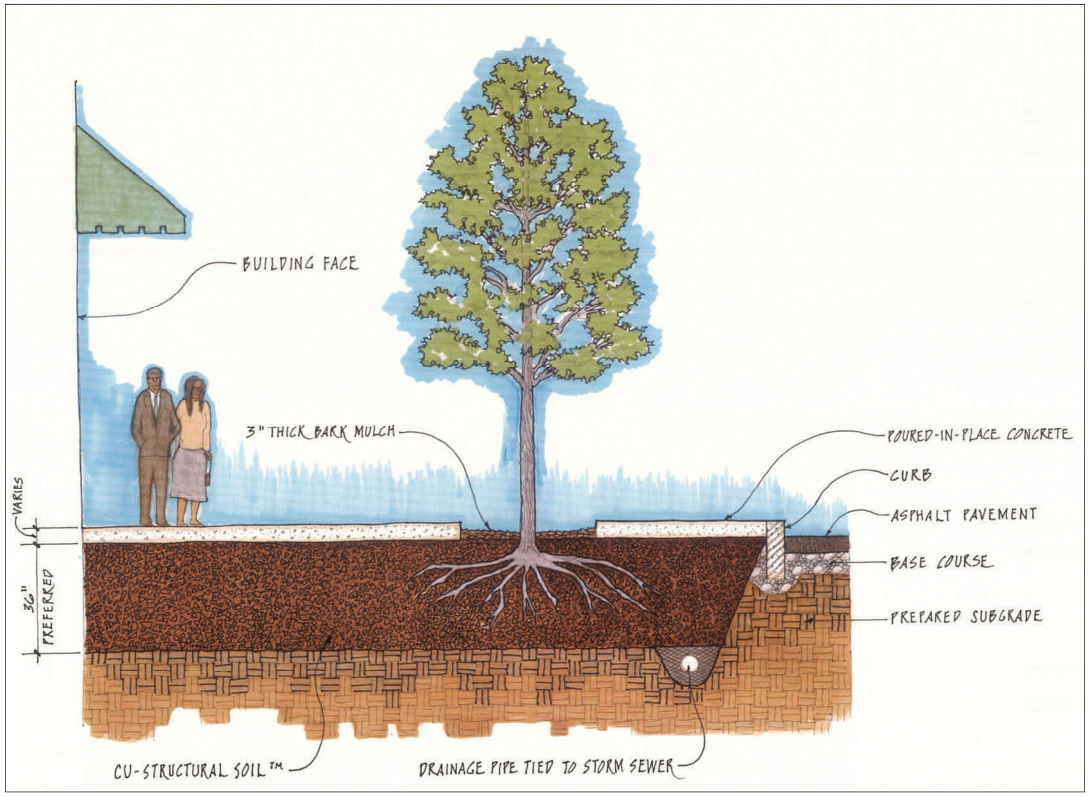
Additionally, certain Transect Zones containing the highest urban density specify 4 foot square tree wells. However, 16 square feet of growing space is not enough to grow a large tree to maturity with a canopy maintained above storefront height. In order to accomplish the task of maintaining a large canopy tree in a small tree well, growing space must be created under the paved surface adjacent to the tree wells.

The basic idea is to create a covered planting strip. Each tree will require at least 150 square feet of growing medium in addition to the tree well. Use of CU-Structural Soil ™ beneath the sidewalks will accomplish this task (see page 12 for sidewalk construction).

CU-Structural Soil ™ shall be placed 10 feet wide and 3 feet deep along the streetscape, which will provide each tree with the space needed to mature, and to prevent future sidewalk upheaval problems.

Downtown Montgomery contains a multitude of overhead utilities, which will necessitate the use of understory trees in certain areas. These trees should be considered temporary until such time as the overhead utilities are placed underground. At that time, the understory trees should be replaced with canopy tree species where appropriate following the specifications contained within this document.

Diagram of the "break out zone" and use of CU-Structural Soil ™



Historic Districts

The City of Montgomery's Historic Districts (see Appendix for maps) are well known for their tree canopy coverage and urban forest density. Trees in historic districts contribute to the unique character of each neighborhood. The homes found in the Historic Districts were mostly built before the advent of air-conditioning, and shade trees were planted as a way to diminish the high temperatures during the summer months. The result is seen today in the shady streets and yards of these neighborhoods.

Street tree preservation is vitally important in these districts. A mature tree is irreplaceable in terms of human time. A mature tree can not be replaced "as good as new" in a human lifetime. Just as the historic homes and mature trees are protected on private property in these districts, so too will the trees along the districts streets be preserved.

Species selection is also an important consideration in the Historic Districts. While native and non-native understory trees were planted as part of individual landscapes for ornamentation, the shade trees that were planted were nearly always large native species. In deference to this practice, native canopy trees will be used to enhance the streetscape, while non-native species will be regulated to the role of understory trees where overhead utilities conflict.

Historic District Guidelines

- Infill new trees where necessary, using native canopy trees to preserve the streetscape.
- Understory trees shall only be used where there is a conflict with overhead utilities.
- Where feasible, use the greenspace planting agreement with neighboring citizens to preserve the streetscape without conflicting with overhead utilities.
- Replace dead or severely damaged trees with an appropriate species for the location (see recommended trees).
- Adhere to the tree protection and preservation guidelines.

IMPLEMENTATION

Implementation

The City of Montgomery's Urban Forestry Division has made substantial contributions to the City's streetscape since its creation in 2004. Some projects that the division has completed include:

- 300 infill street trees in the Garden District in 2006.
- 300 infill street trees in Capitol Heights in 2006.
- 150 infill street trees in Old Cloverdale in 2007.
- 126 street trees on Coliseum Boulevard near Eastbrook Shopping Center in 2007.
- Street trees in Centennial Hill along Jackson and High streets during 2007.
- Replacement of street trees on Perry Street in front of City Hall in 2007.
- 200 street trees in the Rosa Parks Combined Neighborhood District in 2007.

Additionally, the City of Montgomery Parks & Recreation Department maintains a nursery that helps to supply replacement trees for the City. A "no-net loss" approach is the ultimate goal with respect to street trees in the City of Montgomery.

The following section outlines future priorities for street trees in the City of Montgomery. The short-range priorities include projects where immediate attention is desired with a one to five year time frame. In contrast, the long-range priorities are those that the Division will not feasibly complete within this period. The long-range priorities have a projected completion of up to twenty years.

Dexter Avenue as it currently exists. Source: Downtown Montgomery Plan

Dexter Avenue visualization after the addition of proper urban street trees.
Source: Downtown Montgomery Plan

Short-Range Priorities

1) <u>Street Trees Along Key Streets in the Downtown Study Area</u>

- **Dexter Avenue** - Dexter Avenue is an ideal street to begin implementing the recommendations of the Dover Kohl Downtown Plan. As the gateway to the State Capitol grounds, the "most important street in Alabama" shall have street trees planted in planter strips and tree wells where appropriate. Additionally, as sidewalk and street repairs are made, additional consideration shall be given to allow for the addition of street trees. In locations where low canopy trees currently exist, proper urban street trees shall be planted to allow views of businesses and signage.

- **Commerce Street -** Commerce Street runs perpendicular to the Alabama River and is part of the primary grid system for Downtown. As a connector to Dexter Avenue and the riverfront, this street can benefit from the addition of street trees on the center median and street R.O.W. (whether tree wells or planting strips).

- **Tallapoosa Street** - Tallapoosa Street is an important entrance to the Montgomery Riverfront. To form a connection with Dexter Avenue and Commerce Street, street trees shall be planted in planting strips and tree wells where appropriate.

- **Bell Street** - Bell Street is a significant gateway into Downtown and borders Overlook Park. Although this area has achieved some success in preserving existing trees, R.O.W. opposite the river shall be planted with street trees to produce a more walkable environment.

2) <u>Street Trees in the Five Points Area</u>

- The Five Points area is an important intersection within Downtown. Clayton, Mobile, Montgomery and Goldthwaite streets all come together to form an area of potential synergy. Additionally, the Five Points intersection is listed as an "immediate

Bell Street Section of Downtown Montgomery Master Plan. As shown, the addition of street trees greatly enhances Overlook Park and this gateway to Downtown Montgomery.

Bell Street Visualization with infill mixed-use development and the addition of street trees.

project" in the Downtown Master Plan. To complement redevelopment efforts, street trees shall be installed as illustrated in the Downtown Master Plan (page 29). Guidelines for "Major Streets" and "Neighborhood Streets") listed in this document shall be followed (pages 23 and 24).

3) <u>Demonstration Blocks in the Downtown Core</u>

- In order to enhance the character of Downtown Montgomery, one block will be selected as a street tree demonstration project each year. Ideally, the block selected will not contain existing street trees and lacks visual cohesion. This effort supplements the overall Downtown strategy suggested by the Dover Kohl Downtown Plan.

4) <u>Street Trees Along the Primary Street Grid in the Downtown Study Area</u>

These streets include:

- Day Street
- Bibb Street
- Whitman Street
- Mobile Street
- Mildred Street
- High Street
- Perry Street
- Columbus Street
- Jackson Street
- Holt Street
- Grady Street

In addition to installing street trees along Dexter Avenue, Commerce Street, Tallapoosa Street and Bell Street, street trees shall be added to the gateways listed above to create connections between Downtown neighborhoods.

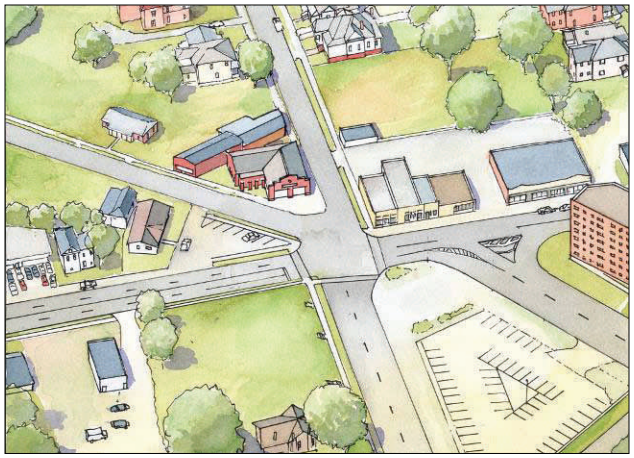


Illustration of the Five Points area as it currently exists.

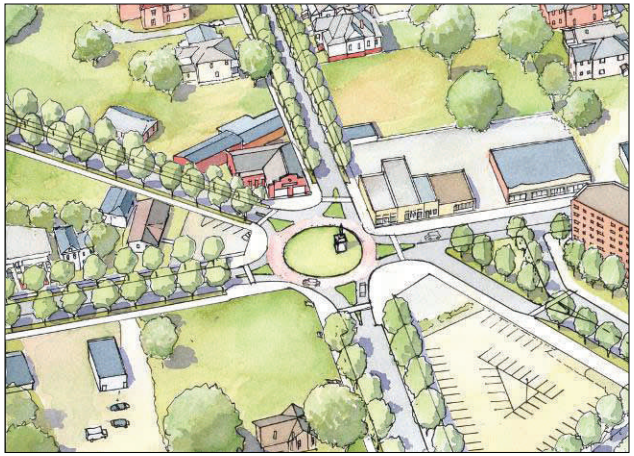


Illustration of the Five Points area after redevelopment efforts. Note the addition of street trees to enhance appearance of the area.

Short-Range Priority Streets

(shown in green)

Long-Range Priorities

1) <u>Street Trees Along the Secondary Street Grid in the Downtown Study Area</u>

- A long-range priority within the Downtown Study Area is to plant trees along the entire secondary street grid. The grid approximates 26 miles in length, but contains existing street trees in several areas. There are several factors which affect the completion of this project including: existing conditions, available planting space, sidewalks and building disposition. In many cases, sidewalks will have to be reconfigured and planting strips or tree wells will have to be provided. Continued and future support from the City of Montgomery Maintenance Department will greatly facilitate this task.

2) <u>Neighborhood Demonstration Project</u>

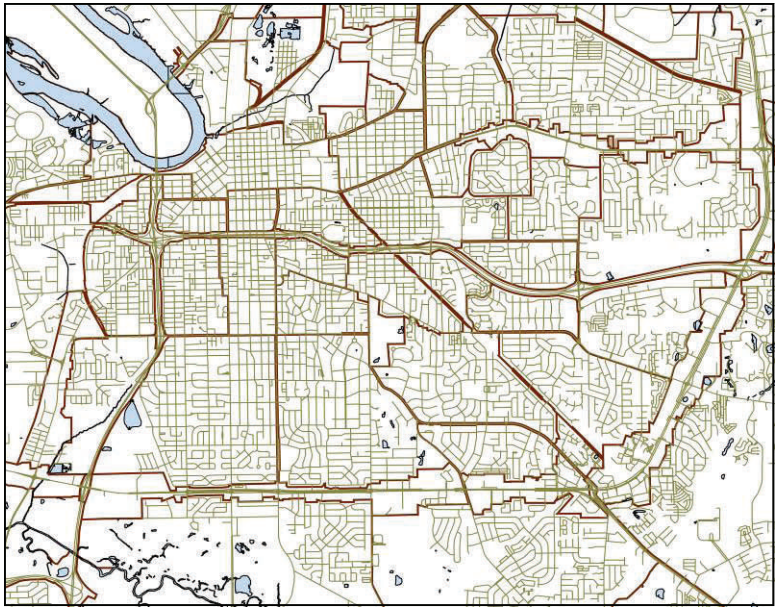
- While many of the short-range priorities address Downtown, an ongoing effort within the Urban Forestry Division is to develop a street tree campaign for each neighborhood within the City. As mentioned at the beginning of this document, each neighborhood in Montgomery has its own unique history and character. To build on these characteristics, a neighborhood demonstration project will be planned for each neighborhood, every four years, on a rotating basis. Demonstration projects will create a sense of pride for residents and can soften barren streetscapes.

3) <u>Street Tree Replacement</u>

- It is also an ongoing priority of the Urban Forestry Division to replace street trees that are diseased or damaged. Periodic storms and severe weather can cause loss of existing street trees. In order to maintain a "no-net loss" approach, street trees will be replaced when they are damaged beyond repair.

Additionally, tree replacement is often required when improper pruning methods such as tree topping are employed.

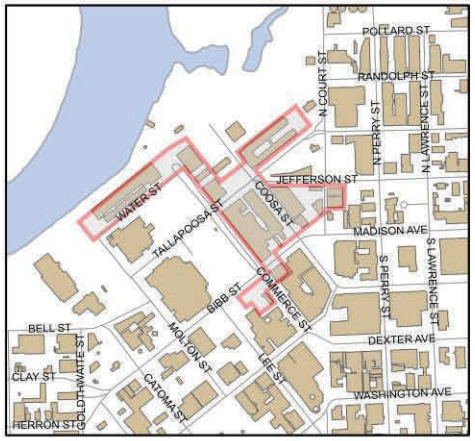
City of Montgomery Neighborhood Boundaries



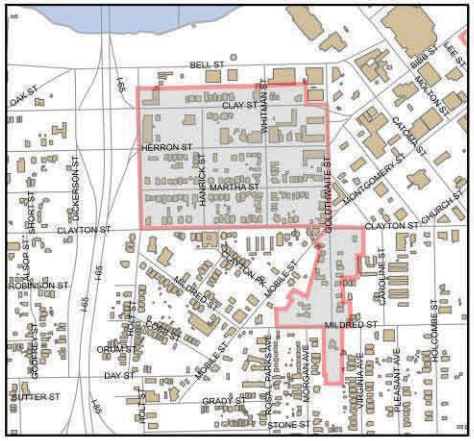
APPENDIX

HISTORIC DISTRICTS

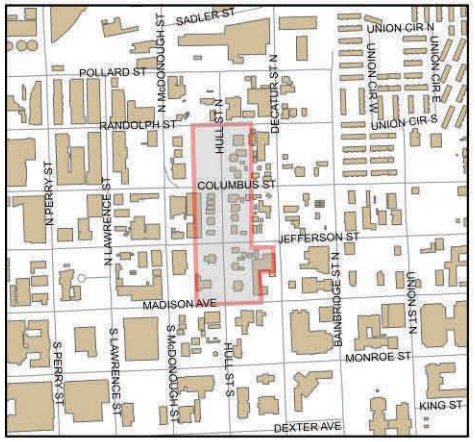
Lower Commerce District



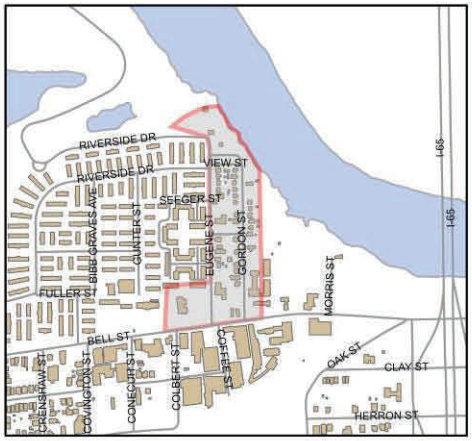
Cottage Hill



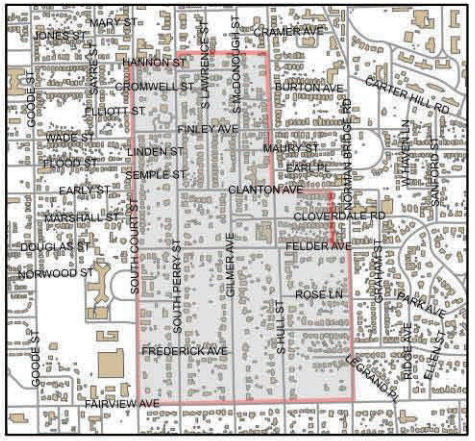
North Hull District



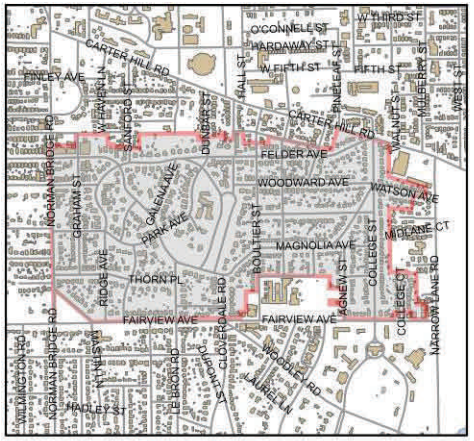
Powder Magazine District



Garden District

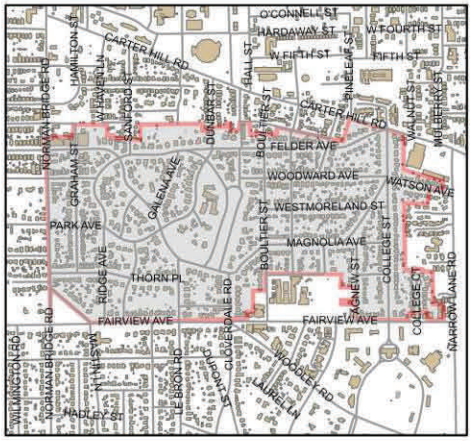


Old Cloverdale District

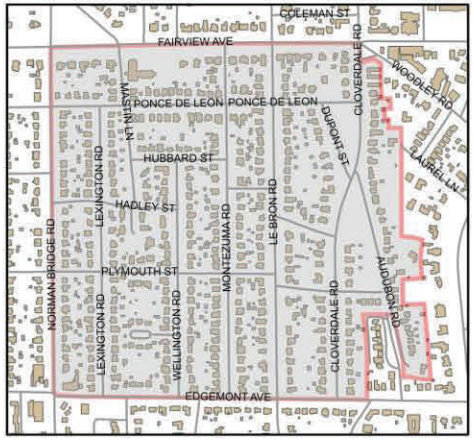


HISTORIC DISTRICTS

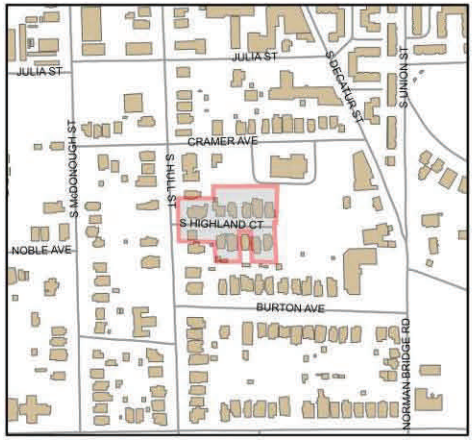
Old Cloverdale District



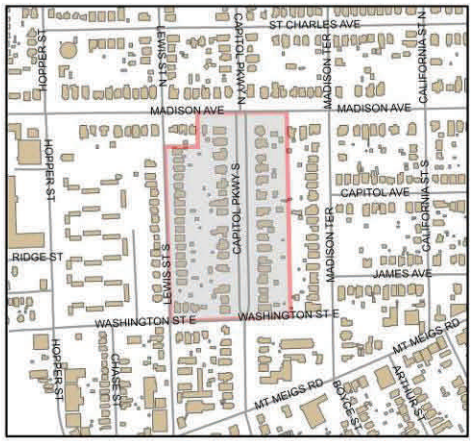
Cloverdale Idlewild District



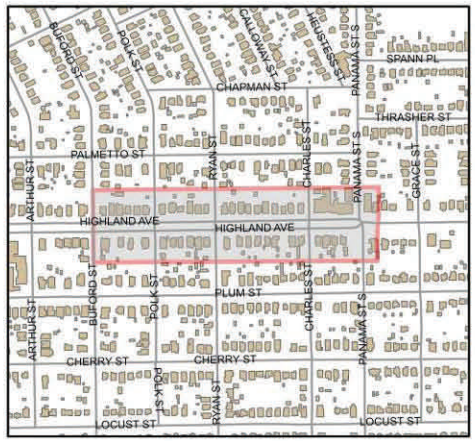
South Highland Court



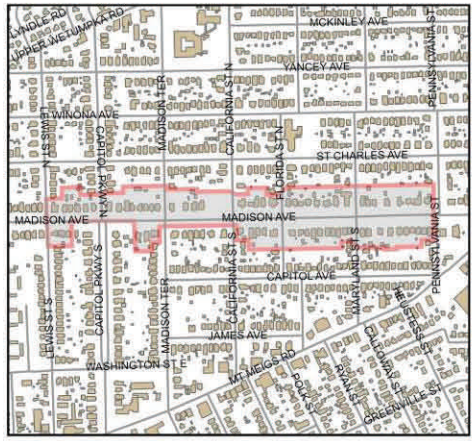
Capitol Park District



Highland Avenue District

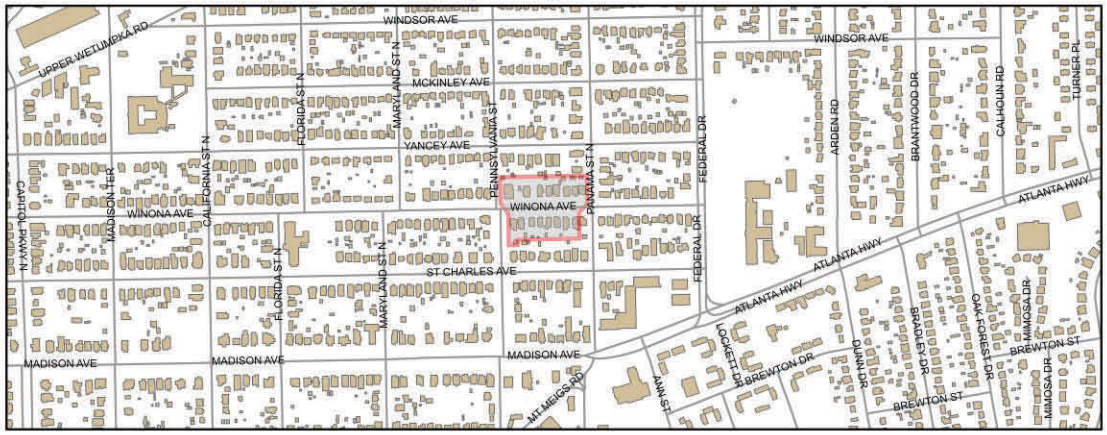


Capital Heights District

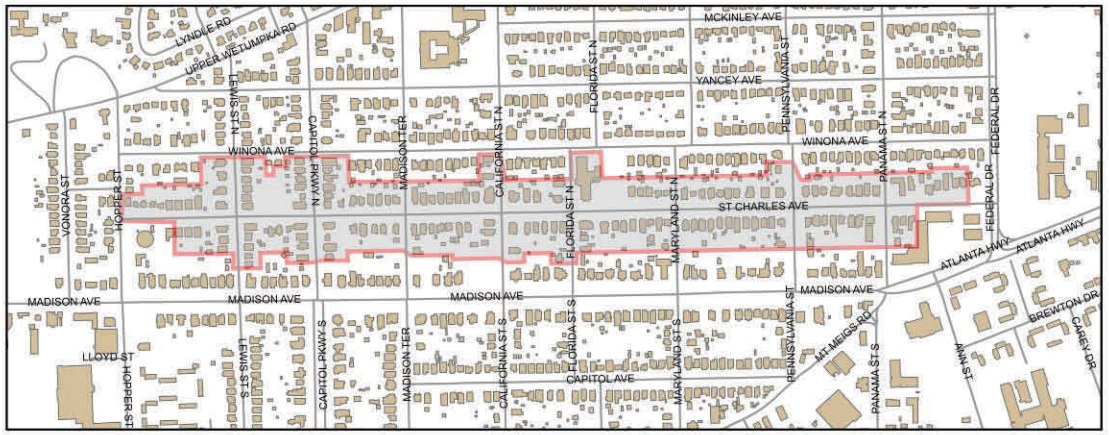


HISTORIC DISTRICTS

Capitol Heights - Winona



Capitol Heights - St. Charles



Native Canopy Trees

Common Name	Scientific Name	Habitat	Growth Rate	Site Requirements	Form	Height of Canopy at Maturity*	Width of Canopy at Maturity*	Comments
Northern catalpa	Catalpa speciosa	Deciduous	Moderate to rapid	Sun to partial shade; range of soil types (wet, dry) but prefers moist, well drained soil	Narrow, open, irregular rounded crown; spreading branches	40 to 70’	20 to 40’	Brittle wood; tolerates hot, dry sites
Green ash	Fraxinus pennsylvanica	Deciduous	Rapid	Sun; tolerates wet to dry soil	Pyramidal in youth; upright; spreading; irregular crown	50 to 60’	25 to 30’	Transplants well; grows in a variety of locations and soils; adaptable tree; drought tolerant
Thornless honeylocust	Gleditsia triacanthos var. inermis	Deciduous	Rapid	Sun; range of soil types; drought tolerant	Open spreading crown	30 to 70’	30 to 40’	Casts light shade; fine leaves result in ease of leaf clean up in fall; easy to transplant
Tulip poplar, Yellow poplar	Liriodendron tulipifera	Deciduous	Rapid	Sun; moist, well drained soil	Tall, straight trunk; upper branches create a rounded crown; in an open landscape has more upright, oval shape	40 to 100’	20 to 40’	Some leaves will turn yellow and drop during drought; attracts hummingbirds, birds and squirrels; host plant for tiger and spicebush swallowtail butterflies
Black gum; Black tupelo	Nyssa sylvatica	Deciduous	Slow to moderate	Sun to partial shade; prefers moist, well drained soil; provide shelter from wind; tolerates wet soil and clay	Pyramidal when young; opens with age; some branches are pendulous; right angled branches are attractive in winter	40 to 60’	20 to 30’	Difficult to transplant due to taproot; casts light shade; good street tree if not heavily polluted; does not tolerate standing water
American Sycamore	Platanus occidentalis	Deciduous	Medium to rapid	Sun to partial shade; prefers moist, well drained soil	Large massive trunk; white mottled bark; wide spreading open crown, crooked branches	70 to 100’	60 to 80’	Leaves have a tendency to drop all summer; subject to anthracnose and lace bugs; shall be alternated with another species when used as a street tree
Swamp white oak	Quercus bicolor	Deciduous	Moderate to rapid	Sun to partial shade; range of soil types including damp sites; drought tolerant	Stiffly pyramidal in youth; broad open rounded crown with age	50 to 60’	50 to 60’	Not tolerant of salt or air pollution; casts dense shade; long lived; easy to transplant
Southern red oak	Quercus falcata	Deciduous	Moderate	Sun; range of soil types including poor dry soil; drought tolerant	Rounded	70 to 90’	40 to 60’	Good residential street tree
Laurel oak	Quercus hemisphaerica	Evergreen	Moderate to rapid	Sun to partial shade; well drained soil	Pyramidal in youth; dense; upright; rounded tip	40 to 60’	30 to 40’	Good street tree
Overcup oak	Quercus lyrata	Deciduous	Moderate	Sun; range of soil types including damp sites	Pyramidal oval when young, oval to rounded with age; uniform branching; lower branches are upswept	35 to 45’	35 to 40’	Good street tree
Bur oak	Quercus macrocarpa	Deciduous	Slow	Sun; wide range of soil types including dry clay	Weakly pyramidal in youth; massive trunk and broad crown with stout branches	70 to 80’	70 to 80’	Difficult to transplant; tolerant of city conditions
Swamp chestnut oak	Quercus michauxii	Deciduous	Moderate	Sun; range of soil types including moist soil	Pyramidal when young, becoming oval to rounded with age; densely branched	60 to 80’	50 to 70’	Larval plant for Juvenal’s duskywing butterfly; shallow root system
Chinkapin oak	Quercus muehlenbergii	Deciduous	Moderate	Sun; range of soil types; drought tolerant	Weakly rounded when young; open rounded crown with age	40 to 50’	40 to 60’	Difficult to transplant; pest free; strong wood
Willow oak	Quercus phellos	Deciduous	Moderate to rapid	Sun; prefers moist well drained soil but will grow in a wide range of soil conditions including compacted soil	Conical in youth; rounded crown; dense	60 to 80’	30 to 40’	Fibrous root system easy to transplant; good street tree; tolerant of heat, drought, air pollution and standing water; acorns eaten by birds and squirrels; small leaves are easy to clean up in fall
Northern red oak	Quercus rubra	Deciduous	Rapid	Sun; well drained soil; tolerates drought and air pollution	Rounded; symmetrical; flat top with age	60 to 75’	60 to 75’	Easy to transplant
Shumard oak	Quercus schumardii	Deciduous	Rapid	Sun; range of soil types including clay, sand and moist soil; tolerates wind and drought	Pyramidal; wide spreading with age	40 to 60’	40 to 60’	Larval plant for white M hairstreak butterfly; casts medium shade; shallow root system; good street tree
Baldcypress	Taxodium distichum	Deciduous	Moderate	Sun; grows in variety of soils (wet, dry, compacted)	Pyramidal when young; horizontal branches; brown, fibrous bark	50 to 100’	20 to 30’	Good street tree; light shade; easy fall cleanup; reddish; cypress knees produced when grown in or near water; large taproot; heat, drought tolerant

Non-Native Canopy Trees

Common Name	Scientific Name	Habitat	Growth Rate	Site Requirements	Form	Height of Canopy at Maturity*	Width of Canopy at Maturity*	Comments
Chinese Elm; Lace bark elm	Ulmus parvifolia	Deciduous	Moderate to rapid	Sun; moist, well drained soil but tolerates poor soil	Rounded top; pendulous branches; bark sheds, leaving irregular spots of orange, gray, green and brown;	40 to 50’	40 to 50’	Tough, durable tree; easy to transplant; good street tree; resistant to Dutch elm disease and air pollution; great variability among seedlings
Japanese zelkova	Zelkova serrata	Deciduous	Moderate to rapid	Sun to partial shade; prefers moist, well drained soil	Low branched; vase shape in youth; ascending branches with age	50 to 80’	40 to 50’	Good shade tree; easy fall cleanup; tolerant of heat, drought, wind and urban conditions; good alternative for American elm; easy to transplant; good street tree

Native Understory Trees

Common Name	Scientific Name	Habitat	Growth Rate	Site Requirements	Form	Height of Canopy at Maturity*	Width of Canopy at Maturity*	Comments
Ironwood; American Hornbeam	Carpinius caroliniana	Deciduous	Slow	Sun to partial shade; does well in moist to wet soil	Wide spreading flat or round top; single or multi-stemmed	20 to 30’	20 to 30’	Difficult to transplant; good street tree; sculptural appearance of trunk (smooth; fluted; ridges); very hard wood
Eastern Redbud	Cercis canadensis	Deciduous	Moderate	Sun to partial shade; prefers moist, well drained soil but will tolerate a range of soil types	Dense; flat topped to rounded crown; often multistemmed; zig zag horizontal branches	20 to 30’	25 to 35’	Drought tolerant; legume – produces nitrogen; best flowers in full sun
Carolina silverbell	Halesia tetraptera (Halesia Carolina)	Deciduous	Moderate	Sun to partial shade; moist, well drained soil	Rounded; open; irregular; low branches; multistemmed	20 to 40’	15 to 35’	Similar culture to dogwood; not tolerant of difficult sites
Eastern Hophornbeam	Ostrya virginiana	Deciduous	Slow	Full sun, partial sun, partial shade, shade tolerant; clay, sand, loam, alkaline, acidic, well drained soil; high drought tolerance	Droopy branches; typically multi-stemmed; oval or round crown shape; bark peels in longitudinal strips; medium or dense shade when in full sun	30 to 40’	25 to 30’	Needs little care once established; rugged and well-suited for urban areas;
Sourwood	Oxydendrum arboreum	Deciduous	Slow	Sun to partial shade; well drained soil but does well in dry soil	Pyramidal; slender trunk; droop-ing branches; narrow crown	20 to 30’	10 to 15’	Excellent native tree; difficulty to transplant; shallow root system; good alternative for crape myrtle

Non-Native Understory Trees

Common Name	Scientific Name	Habitat	Growth Rate	Site Requirements	Form	Height of Canopy at Maturity*	Width of Canopy at Maturity*	Comments
Trident Maple	Acer buergerianum	Deciduous	Slow to moderate	Sun; prefers well drained soil; tolerates dry infertile sites	Upright; rounded crown; bark exfoliates revealing gray, orange, brown color with age	25 to 35’	20 to 30’	Tolerant of wind, salt, drought, air pollution and soil compac-tion; fall color varies greatly; possible tree for restricted root zone sites; does not develop leaf scorch during drought
Crape Myrtle	Lagerstroemia idica	Deciduous	Rapid	Sun; moist, well drained soil	Multi-stemmed; rounded crown; dense branching	15 to 30’	6 to 15’	Smooth to exfoliating bark; best to prune of seed pods to promote reblooming
Chinese pistache	Pistacia chinensis	Deciduous	Moderate to rapid	Sun; prefers moist, well drained soil but tolerates a wide range of soils (poor, dry)	Oval; rounded; main branches may be upright to arching	25 to 40’	25 to 35’	Drought tolerant; easy to transplant; dioecious; modest exfoliating bark

* Note: Actual width and height of canopy at maturity will vary due to urban conditions and site considerations.

GLOSSARY

American Association of State Highway and Transportation Officials (AASHTO): A non-profit, non-partisan association representing highway and transportation departments in the fifty states, the District of Columbia, and Puerto Rico. It represents all five transportation modes: air, highways, public transportation, rail, and water. Its primary goal is to foster the development, operation, and maintenance of an integrated national transportation system.

Caliper: The tree trunk diameter, measured six inches above ground for trees with up to a four inch caliper, and twelve inches above ground for larger trees.

Canopy trees: Canopy tree species shall be a minimum of eight feet in height and have a caliper of at least two inches immediately after planting. These species shall have an average mature crown spread of at least 25 feet when grown in Montgomery, Alabama.

Clear zone: AASHTO defines the clear zone as the total roadside border area, starting at the edge of the traveled way available for safe use by an errant vehicle. It is important to note that the clear zone varies depending on the overall road geometric and operating conditions. This document does not attempt to delineate exact "clear zone" dimensions. Refer to the most recent *Roadside Design Guide* (AASHTO) for additional information.

Containerized tree: Nursery grown trees that are grown within some form of container, usually specified by size in gallons.

Critical root zone: An area on the ground around a tree that is within the drip line of a tree.

CU-Structural Soil ™: An artificially engineered medium that meets or exceeds road bearing-load requirements for structurally sound pavement design and installation while supporting tree growth, remaining root penetrable, and encouraging deep root growth away from pavement surfaces.

Drip line: A roughly circular or ovate line around a tree which runs even with and vertically beneath the outermost reaches of the crown of the tree

Exotic/invasive species: Plant species that are not native to the area and that tend to spread rapidly outside of their planting area. These species are usually marked by fast growth and the ability to produce seed at an early age.

Green Book: The "Green Book" refers to a volume discussing the geometric design of highways and streets. The recommendations contained in the "Green Book" are based on extensive research and generally provide a range of acceptable design criteria based on the type of roadway and the expected traffic volume for the facility.

Greenspace Planting Agreement: A contract between property owners and the Urban Forester whereby trees are planted by mutual agreement on private property and maintained up to one year by the Forestry Division. The agreement helps to provide trees to areas that would otherwise be excluded as a result of insufficient right-of-way.

Historic Districts: A geographically definable area designated by the City Council. A district generally includes within its boundaries a significant concentration of properties linked by architectural styles, periods of development, or past events. Any exterior changes to properties in historic districts, including tree removal, require review by the Architectural Review Board before work is performed.

Local Street: Local streets consist of all roadways not defined as arterials or collectors. Unlike arterials and collectors, local roads are intended to provide access to land with little or no thought to vehicle movement. Speeds on local roads will mirror their function by their low speed limits.

Lateral separation: The distance, measured horizontally at ground level, such as between an electrical conductor and the center of the trunk of a tree.

GLOSSARY

Minor arterial: A major roadway intended primarily to serve through traffic, where access is carefully controlled; generally roadways of regional importance, intended to serve moderate to high volumes of traffic traveling relatively long distances and at higher speeds.

Mulch: A layer of wood chips, pine straw, hay or other material placed on the surface of the soil around plants to retain moisture, prevent weeds from growing, hold soil in place and aid in plant growth.

Native trees: Originating naturally in this region.

Non-native trees: Alien to this region.

Right-of-way: A strip of land over which the City of Montgomery has the right by ownership to construct a public street, sidewalk, or use for public utilities.

Root ball: The network of roots and the soil clinging to them when a plant is lifted from the soil or removed from a container is called its root ball.

Staking: To provide support with a stake.

Streetscape: A pictorial view of a street.

Street tree: Any existing tree or tree to be planted on the street right-of way.

Toxic chemicals: A chemical capable of producing injury or death.

Understory trees: Understory tree species used have an average mature crown spread of at least 15 feet . Understory tree species shall be a minimum of five feet in height and have a caliper of at least one and one-half inches immediately after planting.

Urban Collector: An urban collector is characterized as a roadway designed to balance traffic mobility and land access. Speeds on urban collector roadways are slower than on arterial roadways and are intended to carry vehicles for shorter distances.