PUBLIC WORKS AND UTILITIES COMMITTEE
AGENDA

There will be a meeting of the Public Works and Utilities Committee on Monday, April 26, 2021 to begin at 5:30 pm. The following items will be heard via call-in number 1-929-205-6099 and access code 592 385 519:

A. Invocation

B. Approval of Public Works and Utilities Committee Minutes
   March 22, 2021
   April 13, 2021 – Deferred

C. Request to Set a Public Hearing
   None

D. Old Business
   None

E. Acceptance and Dedication of Rights-of-Way and Easements
   Not at this time.

F. Temporary Encroachments Approved by The Department of Public Service
   (For information only)

1. 82 Wentworth St.- Basic Kitchen – Replacing 11’x2’4x3’4 awning encroaching above the City right-of-way. This encroachment is temporary. Approved April 23, 2021

2. 104 Falaise St. – Installing 7 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. Approved April 23, 2021
3. **104 Integrity Ln.** – Installing 8 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

4. **116 Falaise St.** – Installing 3 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

5. **120 Falaise St.** – Transfer 7 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

6. **120 Nobels Point St.** – Installing 16 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

7. **121 Integrity Ln.** – Transfer 7 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

8. **125 Integrity Ln.** – Transfer 7 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

9. **133 Captains Island Dr.** – Installing 4 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

10. **320 Bayley Rd.** – Installing 11 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

11. **332 Bayley Rd.** – Installing 11 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

12. **580 Wading Pl.** – Installing 16 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

13. **576 Tribeca Ct.** - Installing 6ft fence encroaching in the City drainage easement. This encroachment is temporary. **Approved April 23, 2021**

14. **608 Bermuda Isle St.** - Installing 3 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**
15. **1028 Harriman Ln.** - Installing 9 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

16. **1223 Water View Ln.** - Installing 2 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

17. **1231 Smythe St.** - Installing 5 irrigation sprinkler heads encroaching within the City right of way. This encroachment is temporary. **Approved April 23, 2021**

18. **1957 Zonny Moss Dr.** – Installing 4ft fence encroaching in the City drainage easement. This encroachment is temporary. **Approved April 23, 2021**

19. **2021 Bouganvilla Dr.** – Installing 6ft fence encroaching in the City drainage easement. This encroachment is temporary. **Approved April 23, 2021**

20. **2363 Lantern St.** – Installing 6ft fence encroaching in the City drainage easement. This encroachment is temporary. **Approved April 23, 2021**

**G. Public Service Department Update**

1. Discussion and Consideration of Amendments to the Street Tree Manual.

**H. Stormwater Management Department Update**

1. Stormwater Manual Taskforce Update

**I. Executive Session pursuant to Section 30-4-70(a)(2) of the South Carolina Code, to receive legal advice regarding the barricading of portions of Frampton Street and Fairway Drive within the Country Club 2 subdivision. Upon returning from executive session, the Committee may or may not take action to recommend a resolution to set a public hearing before City Council to return one or both of these rights-of-way to their original condition.**

Councilmember Keith Waring,
Chairperson

In accordance with the Americans with Disabilities Act, people who need alternative formats, ASL (American Sign Language) Interpretation or other accommodation please contact Janet Schumacher at (843) 577-1389 or email to schumacherj@charleston-sc.gov three business days prior to the meeting.
1) **Updated layout, font, imagery** – ease of reproduction and ability to copy required text directly in word format for required notes to be inserted into cad documents.

2) There is **more discussion about planting trees in and around sidewalks.** This includes subsurface treatment under sidewalks and desired spacing from hardscape, etc.

3) **The street tree species list has been updated.** The list for commonly approved, conditionally approved, and unapproved street trees has been revised.

4) **Tree planting details have been improved and updated.** The details will now be required to be incorporated into plan documents rather than getting some generalized tree planting detail we always see. Details include various tree planting scenarios for instance, palms in tree wells, canopy trees in tree wells, trees in planting strips, staking details, paving details with trees, tree protection, etc.

5) **The street tree banking and bonding has been updated** to reflect how BFRC and Public Service would like the bonds to be handled. There is more information on how the bonding process works. Included now are fillable forms received from legal that consultants can use to submit bonding paperwork. Process flow charts have been updated as well.

6) **Mitigation Rates and Process have changed.** Instead of looking at a simple mitigation rate of $295 per 2.5” inch tree (or $118/inch), the new manual looks at a rate of $275 per 1” DBH but also incorporates mitigation deductions based on tree location, species, structure, and health. This means that the City is not looking at all trees the same. It provides a bit more scrutiny and return for nice trees and bit more leniency for trees not so desirable in the ROW. This rate has been tested on numerous occasions and appears to work out very nicely. Examples have been provided in the document (page 6). Furthermore, all determinations are based on arborist review from the client/developer so there is no question on where the City is generating its fees.

The current mitigation rate is determined by the cost of replacement based on **market pricing** of trees…not on the quality, condition, location of a tree. While that approach is **fine for functionality over a broad base**…it misses something in the equation—a 2-inch tree is not the same as a 42-inch tree in value. Trees are replaceable, but a low valuation makes the relatively low cost of mitigation become the ‘cost of doing business’ to remove trees. A higher dollar amount could drive a better decision-making process when applicants are considering the removal trees. Equally important—the higher dollar
amount is appropriately offset to the user by allowing deductions that make the asset more appropriately valued (based on technical matters judged by technical professionals). This is seen daily with Grand trees in Planning. The result with these proposed changes - trees are valued higher with a consistent path to relief based on the tree’s actual risk, location and health. Trees under power lines, trees with structural defects, trees with health issue will all be reduced appropriately in mitigation value. These changes will provide cost benefits to saving trees rather than removing them simply because they are in the way.

**Comparable fee structures to neighboring communities:**

**Summerville**—Tree mitigation values are based on market value for replacement trees.

**Charleston County**—Tree mitigation values are based on current market value for 2-3inch caliper trees installed. Based on at least two landscaping quotes for the number of trees to meet the mitigation inches. The trees quoted should be like species of what was removed. We usually end up averaging the quotes the applicant provides to determine the mitigation rate.

**City of North Charleston** – Tree mitigation values are $435 per 2-inches or around $217 per inch.

**Town of Mt. Pleasant** – Tree mitigation is based upon 150% of wholesale price of a 4” caliper tree. So currently it is $675/4” or 168.50/inch.
“Someone’s sitting in the shade today because someone planted a tree a long time ago.”
— Warren Buffett

The planting of trees means improved water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. Wooded areas help prevent the transport of sediment and chemicals into streams.
- USDA Forest Service

One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people.
- U.S. Department of Agriculture

Having large trees in yards along streets increases a home’s value from 3 percent to 15 percent.

There are about 60- to 200-million spaces along our city streets where trees could be planted. This translates to the potential to absorb 33 million more tons of CO2 every year, and saving $4 billion in energy costs.
- National Wildlife Federation

Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20-50 percent in energy used for heating.
- USDA Forest Service

One mature tree can store 50 to 100 gallons of water during a storm.
- Trees To Offset Stormwater Case Study 04: Charleston, South Carolina, 2018

During an average high volume rainfall (a 10-year storm) in the City of Charleston, over 24 hours the city’s trees uptake an average of 569 million gallons of water. That’s enough water to fill nearly 861 Olympic-size swimming pools!
- Trees To Offset Stormwater Case Study 04: Charleston, South Carolina, 2018

https://www.charleston-sc.gov/1567/Trees-to-Offset-Stormwater

Mayor Tecklenburg and City of Charleston employees planting a new Street Tree.
# TABLE OF CONTENTS

**Purpose, Intent, And Scope**

**General Overview of Regulations**
- Ordinances

**Street Tree Removal and Replacement**
- Mitigation for Approved and Unapproved Tree Removals
- Example Mitigation Scenarios
- Tree Protection and Preservation
- Removal and Replacement of Pavement or Sidewalk
- Promote Longevity of Trees and Pavement

**Street Tree Population and Selection**
- Street Tree Selection

**Street Tree Spacing and Planting Guidance**
- Street Tree Spacing
- Planting Stock and Material
- After Planting Care and Establishment

**Required Statements, Information, and Notes**

**Street Tree Banking and Bonding**
- Street Tree Bank
- Street Tree Bond

**Appendix**
- Street Tree Protection Barricade Detail
- Street Tree Planting Detail
- Street Tree Staking Detail
- Cobblestone Tree Well Detail
- Palm Tree and Tree Well Detail
- Street Tree Well Detail
- Street Tree Bank Analysis Flow Chart
- Sample Street Tree Banking Analysis Form
- Street Tree Bond Analysis Flow Chart
- Sample Street Tree Bond Analysis Form
- Street Tree Performance Bond Flow Chart
- Sample Street Tree Bonding Agreement
- Sample Warranty Agreement for Street Trees With Bond
- Web Links
Charleston Street Tree planting from the 1890's.
Residents and visitors of Charleston have enjoyed its streets lined with majestic trees for centuries. Indeed, Charleston’s stately street trees are as much a part of Charleston’s proud heritage as the historic streets and public spaces they shade. All trees proposed and growing within public places are considered to be city Street Trees.

Trees offer many practical advantages by their biological processes. All trees, young and old, process carbon dioxide and other pollutants, and then release oxygen into the atmosphere. Trees consume large amounts of water daily, helping to lessen the burden on our stormwater drainage systems. Trees cool the built environment, especially in urban contexts.

Street Trees that are well-planned and properly planted contribute immeasurably to the health and well-being of Charleston’s public spaces, while also improving the local ecosystem, and reducing energy use. To ensure the positive effects, it is essential to account for the mature size and shape of the tree in the layout of the streetscape and follow installation guidelines. Smart decisions early on ensure the health and viability of a tree as it matures.

Trees create a sense of place and character for our public spaces and streets. Healthy trees are aesthetically pleasing and increase property values. Well-maintained trees reflect both the health of the urban forest and the quality of life in Charleston. Mature trees, especially, have a measurable dollar value. All neighborhoods, parks, and commercial properties benefit from the existence of well-planned and maintained trees.

This manual is designed for developers, consultants, tree service providers, contractors, residential property owners, and others who are planning to work on, near, or around Street Trees. This manual is for accompaniment and clarification purposes as an applicant navigates the TRC process and does not override any directive provided by the City of Charleston Technical Review Committee Procedure Manual.
GENERAL OVERVIEW OF REGULATIONS

The management of street trees is handled through the City of Charleston Department of Parks (“Parks”). Parks administers the street tree program and performs other vital street tree related activities such as: permitting the planting, removal, cutting, pruning, protection and planning of trees within the public realm and rights-of-way. Through its participation in the technical review process with the City of Charleston Technical Review Committee, Parks addresses the design, development, construction, and installation of street trees. Sole authority to regulate the removal, location, species selection, and implementation of Street Trees rests with Parks.

RELEVANT ORDINANCES

CODE OF ORDINANCES:
Sec. 22-51. Permit required to plant Street Trees.
No shade or ornamental tree or shrub shall be planted in any of the public right-of-ways or easements of the city until such tree or shrub shall have been first approved by the director of the Department of Parks and a permit therefore be granted by the Director of the Department of Parks.

Sec. 22-52. Street Tree permit approvals.
Approved and permitted shade trees, ornamental trees, and shrubs shall be planted at the permittee’s expense and approvals shall be based upon the species and cultivar of the tree, the structure of the tree to be planted, the distance apart, and the distance from the edge of pavement, asphalt, or sidewalk as set forth in the City of Charleston’s Street Tree Manual.

Sec. 22-53. Permit required to remove, cut, or prune tree.
No person shall, without written permission of the director of the Department of Parks, cut, prune, break, climb, injure, or remove any tree or ornamental shrub located in a public right-of-way or easement of the city or on public property. For trees removed unlawfully, without approval, the Director of the Department of Parks is authorized to grant after-the-fact approval, and require mitigation in accordance with the City of Charleston’s Street Tree Manual.

Sec. 22-54. Permit required to remove devices protecting trees.
No person shall, without written permission of the Director of the Department of Parks, injure, misuse, or remove any device placed to protect a tree located in a public right-of-way or easement of the city on public property.

Sec. 22-55. Permit required to place stones impeding passage of water to trees.
No person shall, without the written permission of the Director of the Department of Parks, place or maintain upon the ground in a public right-of-way or easement of the city or on public property, stone, cement, or other substance which shall impede the free passage of water and air to the roots of any tree located in the public right-of-way or easement of the city or on public property.

Sec. 22-56. Protection of trees during building construction.
In the erection or repair of any building or structure the owner thereof shall place such guards around all the nearby trees in the public right-of-way and easements of the city and on public property as shall effectually prevent injury, as directed by the Director of the Department of Parks.
ZONING ORDINANCE:
Sec. 54-831e. Street Trees.
Within all new developments or subdivisions, all new thoroughfares, excluding alleys, shall be planted with Street Trees in accordance with the following requirements:

1. Street Tree species selection, size, location, and spacing shall require approval of the Department of Parks, pursuant to the City of Charleston Street Tree Manual.

2. Street Trees to be planted within streets rights-of-way shall be shown on Street Tree plans and specifications submitted with road construction documents and site plans. The plans and specifications shall satisfy the requirements of the City of Charleston Street Tree Manual.

3. Extensions of existing public rights-of-way with Street Trees shall require the planting of Street Trees.
STREET TREE REMOVAL AND REPLACEMENT

Street Trees provide numerous benefits to Charleston including, but not limited to, filtering air pollution, increasing dust filtration, reducing noise, heat and glare, preventing soil erosion, reducing storm runoff, improving surface drainage, and adding beauty and history to the surrounding landscape. It is for these reasons that the City of Charleston promotes the protection of existing trees.

A Street Tree must be protected and preserved through the technical review plan review process, unless Parks has specifically approved its removal. The removal of existing Street Trees requires mitigation. This mitigation is also required for all trees within the right-of-way. Parks, in its sole discretion, may provide relief from mitigation requirements based on the following circumstances: (1) the tree is dead; (2) the tree is deemed unhealthy; (3) the tree is deemed an unwarranted species; (4) the tree is located underneath a power line or an unfit location. On any given occasion a tree is proposed for removal, Parks may require an ISA Certified Arborist Report to support the need for removal.

Street Trees that are removed must be replaced with the same species, or another species that provides comparable or greater canopy coverage at maturity, provided the planting location can support the replacement. Removal of a Street Tree without a permit or without replacement is a violation of City ordinance and subject to penalties.

Mitigation for Approved and Unapproved Tree Removals

The City of Charleston has time and money invested in our large Street Tree population. Street Trees that are under review for removal will be subject to mitigation costs in most circumstances. In addition to mitigation costs, Parks may assess the cost for removal and stump grinding to the party requesting removal.

Mitigation Calculation: Diameter Breast Height (inches) (DBH) X $275.00 = Mitigation Cost
Diameter breast height is 4.5 ft above the ground. This mitigation cost is based on the cost of replacement taking into account planting, soil prep, watering, mulching, and maintenance.

Mitigation Deductions: The table below shows how mitigation deductions are calculated based on tree location, health, structure, and species. Numbers indicated are percentage deductions of the final monetary contribution of mitigation. Additional consideration is given for trees under overhead utility lines. A tree that has no defects or deductions will pay the full mitigation cost if the removal is permitted.

<table>
<thead>
<tr>
<th>TREE CONDITION</th>
<th>LOCATION</th>
<th>SPECIES</th>
<th>STRUCTURE</th>
<th>HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOOD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FAIR</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>POOR</td>
<td>30*</td>
<td>30</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>OVERHEAD UTILITY</td>
<td>10% Additional Deduction for Overhead Utility Impacted Trees</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Overhead utility line reduction only counts for large and medium maturing trees (not for small or understory trees (i.e. Crape Myrtles). No deductions can end in amounts over 100% mitigation.

The mitigation table is set up so property owners, developers, consultants, arborists, and city staff can adequately and fairly determine the conditions of a tree proposed for removal.
Mitigation Factors:

Location: The location of a Street Tree is critical for its projected growth. Does a tree have adequate room for growth? Are there man-made conflicts that adversely affect tree performance? Does the tree sit under water during a rain event? Is its canopy in a power line?

Species: This factor focuses on whether or not the tree itself is appropriate. Is the tree an invasive species? Is the tree prone to blight? Does this tree tend to be messy? Is it a large maturing tree under an overhead utility line?

Structure: The structure of a Street Tree refers to the architecture of a tree. Will the tree tear itself apart in a wind storm? Does it have included bark? Is the canopy lop-sided? Does it have a dominant leader?

Health: This mitigation factor relates to the biological development of a tree. Does it have a quality leaf set? Does is have fungi or cankers? Does it have poor leaf density. Health not only looks at a tree’s current conditions, but what it’s projected conditions are going to be. Will the construction of a tall building block out all the light? Will construction eventually damage a tree? Will branches grow to a point where they will need to be pruned?

Example Mitigation Scenarios

Example A:

12” LIVE OAK
This tree has no major defects, is in good health, has no overhead utility conflicts, has fair structure, and has a good site location.

DEDUCTIONS
Location: 0%
Species: 0%
Structure 10%
Health: 0%
Overhead Utility Conflict: 0%

TOTAL DEDUCTION = 10%

MITIGATION
12” X $275 = $3,300
$3,300 X .10 = $330 Deduction
$3,300 -$330 = $2970

TOTAL MITIGATION = $2970.00
Example B:

20” WATER OAK
This tree has some structural defects, is in poor health, has evident overhead utility conflicts, has fair structure, and has a fair site location.

DEDUCTIONS
Location: 15%
Species: 30%
Structure 10%
Health: 20%
Overhead Utility Conflict: 10%

TOTAL DEDUCTION = 85%

MITIGATION
20” X $275 = $5,500
$5,500 X .85 = $4,675 Deduction
$5,500 -$4,675 = $825

TOTAL MITIGATION = $825.00

Tree Protection and Preservation

Unless otherwise specifically approved, all Street Trees shall be preserved and protected from incidental impacts, injury, and damage by permitted or non-permitted construction activities in the right-of-way. All protection of Street Trees shall follow the same guidelines as set forth in Section 54-330 of the City of Charleston Zoning Ordinance.

Each Street Tree within a work zone that is to be preserved shall be barricaded, including all unpaved areas of the critical root zone to prevent compaction, grading, or other disturbance. The detailing of Street Tree protection barricades shall be consistent with Section 54-330 of the City of Charleston Zoning Ordinance. See Appendix at the end of this manual for tree protection barricade detail. All tree barricades must be in place prior to any approved demolition or construction activities. Street Trees with open planting strips and all unpaved areas within a Street Tree drip line shall be enclosed with the required protection fencing.

Removal and Replacement of Pavement or Sidewalk

A number of development projects require the removal of existing sidewalks. Especially in the historic districts of Charleston, these sidewalks surround well established Street Trees. Removal of existing pavement over tree roots is often necessary within the critical root zone of a Street Tree. In any case of construction activity within the root zone of a Street Tree, the exposed roots shall be protected from injury. This is achieved through careful removal of pavement.

Once pavement is broken into manageable pieces it can be carefully removed. All equipment must remain on undisturbed pavement and off exposed roots. All base material around roots shall remain intact prior to determining root pruning strategies. These strategies must be determined by Parks in consultation with the on-site arborist of record. In dry and hot conditions, apply untreated wood chips, burlap or other
means of moisture control over the exposed roots within one hour, and keep the area moist until overlay surface is applied. See Required Notes, page 16.

Promote Longevity of Trees and Pavement

Charleston is accustomed to the effects of significant root growth and its impacts on sidewalks, walls, streets, and buildings. As new development arises, the chance of conflict between trees and surrounding pavement is ever greater. It is imperative to loosen soils to promote deep rooting and find ways to maximize available soil volume for healthy root development.

When there is oxygen, water, and space under sidewalk pavement, tree roots will grow. The growth of roots under pavement result in lifting or cracking of the pavement. When pavement lifting is excessive, a pedestrian tripping hazard is created. It then becomes a challenge to preserve the tree while continuing to allow pedestrian use of the sidewalk.

The best opportunity of dealing with sidewalk lifting problems is at the time of tree planting or concrete installation. Tree species can be selected to fit the available space. If space is limited, small maturing trees or species known not to damage pavement should be planted. Alternatively, modifications can be made under or next to the pavement to reduce root growth. Modifications that will extend the useful life of sidewalk pavement include installation of root barriers alongside the pavement or installing a root-excluding base beneath the concrete. Root barriers must be at least 18 inches deep and the top must be above the soil and mulch surface to be effective. Base layers that successfully exclude roots include washed coarse gravel (1-1.5 inches diameter, with no fines) and foam insulation boards. A gravel base at least 4 inches is recommended, thicker is better. Gravel is only effective in well drained soils. Foam boards are commonly available from 1 to 2 inches thick. Two 2-inch thick boards can be glued together to provide a 4 inch base for the greatest protection from root growth damage.

The City of Charleston has adopted a standard detail for proposed Street Trees with a surrounding hard-scape application. This detail shall be utilized in the right-of-way for all Street Tree applications. See Appendix at the end of this manual.
The Street Tree population in Charleston is as historic and diverse as its citizens. All Street Trees provide specific aesthetic, human health, environmental and economic benefits. The Street Tree population in Charleston has evolved by cycles of planting, growth, death, removal, and replacement.

Charleston streets are known for fabulous Live Oak canopies, tall Palmettos and colorful Crape Myrtles. These Street Trees have proven their effectiveness, ability to adapt to harsh conditions and survive years of impact from nature and man. Just beyond the city urban limits are forests of tree species that over time have adapted (via aid from nature or man) for suitable use in local streetscapes. For a number of reasons, diversity in Street Trees is important to the survivability of all Street Trees. As Charleston continues to grow, the Street Tree population must adapt to the conditions presented.

In general, no one species should account for more than 10% of the entire population. Further, no one genus should account for more than 20% of the total population. We encourage developers to select species that perform well as Street Trees, yet are underrepresented in the overall Street Tree inventory. Live Oaks, Crape Myrtles, and Palmettos will be allowed, but they should not represent the majority of new streetscape trees.

**Street Tree Selection**

Parks is willing to consider any species for approval except for those shown on the unapproved Street Tree list. For trees listed on the conditionally approved list, approvals are granted by Parks on a case-by-case basis.

**Commonly Approved Street Trees Found in Charleston**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Oak</td>
<td><em>Quercus virginiana</em></td>
</tr>
<tr>
<td>Overcup Oak</td>
<td><em>Quercus lyrata</em></td>
</tr>
<tr>
<td>Pin Oak</td>
<td><em>Quercus palustris</em></td>
</tr>
<tr>
<td>Nuttall Oak</td>
<td><em>Quercus texana</em></td>
</tr>
<tr>
<td>Sawtooth Oak</td>
<td><em>Quercus acutissima</em></td>
</tr>
<tr>
<td>Shumard Oak</td>
<td><em>Quercus shumardii</em></td>
</tr>
<tr>
<td>Southern Red Oak</td>
<td><em>Quercus falcata</em></td>
</tr>
<tr>
<td>Crape Myrtle</td>
<td><em>Lagerstroemia indica</em></td>
</tr>
<tr>
<td>Cabbage Palmetto</td>
<td><em>Sabal Palmetto</em></td>
</tr>
<tr>
<td>Chinese Pistache</td>
<td><em>Pistacia chinensis</em></td>
</tr>
<tr>
<td>Sweetbay Magnolia</td>
<td><em>Magnolia virginiana</em></td>
</tr>
<tr>
<td>Blackgum</td>
<td><em>Nyssa sylvatica</em></td>
</tr>
<tr>
<td>Chinese Fringetree</td>
<td><em>Chionanthus retusus</em></td>
</tr>
<tr>
<td>American Hornbeam</td>
<td><em>Carpinus caroliniana</em></td>
</tr>
<tr>
<td>Trident Maple</td>
<td><em>Acer buergerianum</em></td>
</tr>
<tr>
<td>Eagleston Holly</td>
<td><em>Ilex x attenuata ‘Eagleston’</em></td>
</tr>
<tr>
<td>Dahoon Holly</td>
<td><em>Ilex cassine</em></td>
</tr>
<tr>
<td>Savannah Holly</td>
<td><em>Ilex x ‘Savannah’</em></td>
</tr>
</tbody>
</table>
Conditionally Approved List

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulip Poplar</td>
<td>Liriodendron tulipifera</td>
</tr>
<tr>
<td>American Sycamore</td>
<td>Platanus occidentalis</td>
</tr>
<tr>
<td>London Planetree</td>
<td>Plantanus x acerifolia</td>
</tr>
<tr>
<td>Bald Cypress</td>
<td>Taxodium distichum</td>
</tr>
<tr>
<td>Chinese Elm</td>
<td>Ulmus parvifolia</td>
</tr>
</tbody>
</table>

Unapproved List

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bradford Pear</td>
<td>Pyrus calleryana ‘Bradford’</td>
</tr>
<tr>
<td>Popcorn Tree</td>
<td>Carya illinoinensis</td>
</tr>
<tr>
<td>Pine</td>
<td>Pinus sp.</td>
</tr>
<tr>
<td>Red Maple</td>
<td>Acer rubrum</td>
</tr>
<tr>
<td>Sweet Gum (fruiting or fruitless)</td>
<td>Liquidambar styraciflua</td>
</tr>
<tr>
<td>Water Oak</td>
<td>Quercus nigra</td>
</tr>
<tr>
<td>Redbud</td>
<td>Cercis canadensis</td>
</tr>
</tbody>
</table>

Pruning of Street Trees under power line.
Street Tree species selection must take into account existing and proposed utilities, hardscape elements, as well as the minimum planting space necessary for each species. Street trees shall be selected and planted appropriately in order to minimize conflict in public spaces.

Spacing of Street Trees is determined on a number of circumstances and there is no set required vertical and lateral clearance. In light of this, there are some typical clearances that might be applied to the decision regarding the approved location of Street Trees.

**Vertical Clearances: Tree Canopy Above Surfaces**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Standard Clearance (Distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk</td>
<td>Any horizontal projection over a surface</td>
<td>6 - 8 Feet</td>
</tr>
<tr>
<td>Roadway</td>
<td>Tree limbs</td>
<td>12 - 14 Feet</td>
</tr>
<tr>
<td>Bike Path</td>
<td>Any horizontal projection over a surface</td>
<td>8 - 10 Feet</td>
</tr>
</tbody>
</table>

Trees with a mature height of greater than 15’ are prohibited from planting under distribution power lines. No large canopy tree should ever be planted under an overhead utility line.

**Lateral Clearances: Tree Planting Adjacent To Other Infrastructure**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Standard Clearance (Distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Centerline</td>
<td>Face of curb</td>
<td>3 - 4 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Sidewalk or sidewalk landing</td>
<td>2 - 3 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Driveway edge</td>
<td>6 - 7 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Edge of decorative streetlight pole</td>
<td>15 - 20 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Edge of fire hydrants</td>
<td>5 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Edge of utility poles</td>
<td>10 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Underground utilities</td>
<td>3 - 5 Feet</td>
</tr>
<tr>
<td>Tree Centerline</td>
<td>Roadway edge where no curb exists</td>
<td>10 Feet</td>
</tr>
</tbody>
</table>

**Street Tree Spacing**

Tree spacing is based largely on crown spread, understanding tree species growth habits, and surrounding items located within the planting area.

**General Spacing by Canopy Size**

<table>
<thead>
<tr>
<th>Large Tree</th>
<th>40’+ Canopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>30’ Minimum</td>
<td>60’ Maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medium Tree</th>
<th>15’ to 40’ Canopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>15’ Minimum</td>
<td>40’ Maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tree</th>
<th>Less than 15’ Canopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>15’ Minimum</td>
<td>25’ Maximum</td>
</tr>
</tbody>
</table>

Small and columnar trees should be planted only if the space is limited. Spacing for columnar varieties may be spaced more closely upon approval by Parks.
Planting Stock and Material

All trees approved for the right-of-way shall meet ANLA Nursery Stock Standards, to provide root and canopy development to support healthy, vigorous growth with natural resistance against disease and/or pest infestation. Trees with broken or inappropriately pruned tops, injured trunks, or branch damage that cannot be corrected by minor pruning are not suitable as Street Trees. For more information on industry standards, and how to select quality trees from local suppliers, see the additional resources links at the end of this manual.

Soil amendments such as compost or other soil conditioners are typically included as a standard for construction projects that construct new planting strips. Soil amendment is not required nor recommended for Street Tree installations in existing planting strips with well-developed soil and appropriate site and soil properties for drainage. Soil amendments in the backfill do not reduce the watering requirements.

Standard tree planting pits should be excavated to a depth equal to the depth of the rootball with diameter of planting hole a minimum of 24 inches greater than the root ball diameter. Excavated native soil should be placed as backfill free of debris, weeds, sod and rocks larger than 1 inch.

Trees should be handled to ensure protection and full support under the root ball, placed with the root crown two inches above adjacent curb and sidewalk surfaces, and oriented to align structural branches for optimum compatibility with buildings and adjacent street/sidewalk clearances. It is imperative that twine, burlap and wire baskets be removed to expose the top 2/3 of the root ball. Full removal of twine, burlap and wire baskets is preferred. Lack of this removal/treatment will result in automatic replacement of tree by developer or contractor.

All other containers, grow bags and materials used in the commercial production of nursery stock must be removed entirely from the root ball. Roots should be pruned, loosened and/or straightened to ensure proper growth and establishment.

2”-3” Premium Dyed Brown Shredded Pine Bark mulch (City of Charleston Parks Department standard) should be placed on top of root ball. Mulch shall not cover the root flare and keep 6” away from the base of any/all tree trunks. The final product should be a uniform coverage and thickness. Any mulch “volcanoes” or excessively placed mulch will not be accepted. The minimum diameter of any mulch ring shall be 4’if possible. NOTE: Proper installation and ongoing management of mulch topdressing is necessary to retain soil moisture and protect trees from damage by lawn maintenance equipment.

Correctly planted trees do not require staking. If staking is deemed to be necessary, the staking shall only remain for one year following installation. All stakes must be removed by the developer after one year. See the additional detailing for approved staking methods at the end of this manual.
Place backfill soil around root ball, lightly compacting the soil with pole or shovel handle to eliminate voids. Construct a watering ring (soil berm at 3”-4”; height x 4” diameter) and water thoroughly to ensure settlement of the backfill material. *See Appendix at the end of this manual.*

**After Planting Care and Establishment**

Watering is necessary for the establishment and survival of new Street Trees. Newly planted trees, including drought tolerant species, are dependent upon supplemental irrigation until established, typically for two to three years. Monitor and water trees weekly during summer months and especially during drought conditions to ensure adequate watering frequency suited to the tree species and soil conditions. Trees shall be watered at time of installation and throughout the warranty period.

It should be noted that trees are often irrigated up to twenty-one times per week at the nursery. Live Oaks (2.5” caliper) take 12 months to establish roots in the landscape when watered regularly 2-3 times per week. Larger trees take longer. For bare minimum survival, a 2.5” caliper Live Oak planted in the spring needs water twice weekly for approximately 10 weeks, then can survive with average rainfall. You cannot make up for lack of frequency with larger volumes less often. It is better to apply water frequently in the weeks and months immediately after planting, than to apply the same volume over a longer period.

Periods of extreme heat, wind or drought may require more or less water than recommended here. The method and amount that is applied may vary depending upon soil composition, heat, wind, planted in turf or ground cover, periods of abnormal rainfall or in poorly drained soils.

**Recommended Watering Schedule**

<table>
<thead>
<tr>
<th>Caliper</th>
<th>Watering Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;2” Caliper</strong></td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper every day for 1-2 weeks</td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper every other day for 1-2 months</td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper weekly for two months</td>
<td></td>
</tr>
<tr>
<td>Additional watering as needed throughout the first year</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caliper</th>
<th>Watering Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;2-4” Caliper</strong></td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper every day for 1 month</td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper every other day for 2-3 months</td>
<td></td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper weekly for two months</td>
<td></td>
</tr>
<tr>
<td>Additional watering as needed throughout the first year</td>
<td></td>
</tr>
</tbody>
</table>
<4” Caliper

<table>
<thead>
<tr>
<th>Watering Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3 gallons per inch of caliper every day for 6 weeks</td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper every other day for 5 months</td>
</tr>
<tr>
<td>2-3 gallons per inch of caliper weekly until established</td>
</tr>
<tr>
<td>Additional watering as needed throughout the first year</td>
</tr>
</tbody>
</table>

Palmettos

Watering is based on the average daily temperatures and soil type at the location. Water trees by flooding saucer and allowing water to perk in and then flood again, or put a hose on slow drip and saturate soil completely.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Watering Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-55 = no watering needed</td>
<td>55-70 = water one (1) time per week</td>
</tr>
<tr>
<td>70-85 = water two (2) times per week</td>
<td>85 - up = water four (4) times per week</td>
</tr>
</tbody>
</table>

Plans for automated irrigation systems shall be submitted at the time of the Technical Review Committee review for approval. Irrigation systems in the right-of-way must receive an encroachment permit from the City of Charleston Public Service Department. Typically, irrigation systems decrease room for root growth in tree wells. For other obvious reasons, irrigation systems within the public right-of-way may create unnecessary maintenance and infrastructure conflicts.
REQUIRED STATEMENTS, INFORMATION AND NOTES

Projects with proposed Street Trees must provide the following information on landscape plans in order to receive TRC Approval from Parks:

1. Guarantee Statement
   - Trees 2-3.5” caliper require a one (1) year warranty
   - Trees 4-6” caliper require a two (2) year warranty
   - Trees 6”+ caliper require a three (3) year warranty
   - Palmettos require a two (2) year warranty
   - Warranty period begins at written acceptance of street tree installation by Parks

2. Watering Schedule (See Previous Pages)

3. List of Proposed Street Trees (Street Tree Plant Schedule)
   The list should be separated from the planting list for private areas. The proposed Street Tree list should include common name, botanical name, quantities, caliper, and other specifications such as: minimum height/spread, root ball type, mulch requirements, remarks, etc.

4. Note - Language must appear exactly as stated below:
   “Trees planted in the right-of-way must meet ANLA Nursery Stock Standards, and species selection must be approved by the Department of Parks. The City of Charleston Department of Parks reserves the right to reject any Street Tree deemed to be unacceptable.”

5. Street Tree Planting Detail
   The Street Tree planting detail for canopy trees located in the back of this manual shall be included on landscape plans.
**STREET TREE BANKING AND BONDING**

**Street Tree Bank**

The Street Tree Bank is an account established specifically for Street Tree requirements. Should the developer choose to utilize this instrument; a tree bank analysis shall be submitted for review/approval. Please refer to contact information at the end of this manual. The developer shall pay Parks 100% of the approved estimated cost as determined in the tree bank analysis, at which time, the Street Tree requirements are considered satisfied. The City will then utilize the deposited funds to pay for the Street Tree installation and establishment per the approved plans after the adjacent building construction is completed. Projects will be planted in full blocks when possible, and all projects will be planted within five (5) years of acceptance of the right-of-way regardless of the status of adjacent construction. Parks reserves the right to change Street Tree species depending on the final building product or current information. Changes will be made in consultation with the developer when possible.

**Street Tree Bank Analysis**

A tree bank analysis is 100% of the estimated cost of the trees, installation, watering, mulching, and staking, if necessary. The analysis shall be based on current market rates for tree species and installation. Parks has the right to request a contractor estimate to back up pricing. The tree bank analysis shall be submitted to Parks for review and approval prior to submitting for a final plat for recording. Please refer to contact information at the end of this manual. Please include the approved Street Tree layout plan with the bank analysis. This plan should include street names, be full size, and drawn to a standard engineering scale. Please allow two (2) weeks for approval. Once approved, a copy of the bank analysis will be sent back to the applicant via email. Please keep this copy for your records. A copy of the approved tree bank analysis will be required to be submitted to the City of Charleston’s Engineering Division when submitting your final plat for recording. Payment in full must be received by Parks prior to final plat recording.

**Street Tree Bonding**

If Street Trees are not installed through the Tree Banking process, projects (or project phases) with **10 or more trees must be bonded at 150% of the estimated cost.** This cost shall include the price of the trees, installation of the trees, approved watering method, mulching, and staking, if necessary. Smaller bonds may be considered based on market conditions.

Bonds shall be issued for 24 months (730 days) initially and renewed for up to three (3) additional 12 month periods, as necessary. Street Trees shall be planted during the appropriate season to increase survivability. Trees shall not be planted from **April through September.** Palmettos may be planted throughout the year, pending appropriate watering methods are performed.

**Street Tree Bond Analysis**

A Street Tree bond analysis is 150% of the estimated cost of the trees, installation, watering, mulching, and staking. The Street Tree bond analysis shall be submitted by the developer or developer’s representative to Parks for review and approval prior to submitting a final plat for recording. Please include the approved Street Tree layout plan with the bond analysis. This plan should include Street Tree names, be full size, and drawn to an appropriate engineering scale. Allow two (2) weeks for approval. Once approved, a copy of the bond analysis will be sent back to the applicant via mail, hand delivery, or electronic mail. Please keep a copy for your records. A copy of the approved bond analysis will be required to be submit-
Street Tree Performance Bond Agreement
The developer or developer’s representative brings the Street Tree Performance Bond Agreement and Bonding Instrument to for verification against the Street Tree Bond Analysis. Upon approval, the Street Tree Performance Bond Agreement is signed and given back to the Developer. Parks will keep a copy of the Street Tree Performance Bond Agreement and Bonding Instrument for their records. Please allow at least two (2) weeks for this process.

Public Dedication Process
If the developer plans to pursue the public dedication process, then they will bring the executed Street Tree Performance Bond Agreement and Bonding Instrument with them to the City of Charleston Public Service Department, who will submit as a single package to City of Charleston Budget, Finance, Revenue, and Collections (BFRC) for recording upon completion of the dedication process detailed in the Appendix of the Manual. Developers will be provided a copy of the bond paperwork for their records.

No Public Dedication Process
In the event a particular project is required to provide Street Trees but does not require plat dedication, the developer or developer’s representative brings the Street Tree Performance Bond Agreement and Bonding Instrument to Parks for verification against the Street Tree Bond Analysis. Upon approval, the Street Tree Performance Bond Agreement is signed and submitted as a single package directly to BFRC for recording upon completion of the dedication process detailed in the Appendix of the Manual. Parks will keep a copy of the Street Tree Bond Agreement and bonding instrument for their records. Another copy will be sent back to the applicant via mail, hand delivery, or electronic mail. Please allow at least two (2) weeks for this process.

Bonding Instrument
A bonding instrument is considered a letter of credit, performance bond, cashier’s check, or other financial instrument deemed acceptable to the City of Charleston’s Corporation Counsel and BFRC.

Release of Performance Bond
Once the required Street Trees have been installed and the developer or the developer’s representative is ready for a formal inspection, Parks must be contacted to conduct a field inspection. A field inspection will be scheduled within two (2) weeks upon notification.

Upon final inspection and acceptance, Parks will notify Legal and BFRC staff that the applicant’s obligations have been met. At this time, the bond may be released and the warranty period for the Street Trees will begin. A Street Tree Warranty Bond must be submitted and approved by Parks prior to the release of the Street Tree Performance Bond. The developer or the developer’s representative is responsible for contacting Parks to schedule inspections for the release of bonds. All bonds will be released to the original bond holder.

Warranty Bond
Once the required Street Trees have been approved and the Street Tree Performance Bond has been released, the warranty period shall begin. In order to be placed into the warranty period a Warranty Agreement For Street Trees With Bond is signed and submitted and approved by Parks. A bonding instrument must also be submitted with the warranty agreement. The bond amount shall be 10% of the bonding analysis subtotal prior to the 150% bond. A bonding instrument is considered a letter of credit, performance bond, cashier’s check, or other financial instrument deemed acceptable to the City of Charleston’s Corporation Counsel and BFRC. Upon approval, the Warranty Agreement For Street Trees With Bond is submitted to the City of Charleston’s Public Service Department when submitting your final plat of recording.
signed and submitted as a single package directly to BFRC for recording upon completion of the dedication process detailed in the APPENDIX of the Manual. Parks will keep a copy of the Warranty Agreement For Street Trees With Bond and bonding instrument for their records. Another copy will be sent back to the applicant via mail, hand delivery, or electronic mail.

**Release of Warranty Bond**

Once the required Street Trees have been in the ground for a minimum of one year from initial performance approval, the developer or the developer’s representative is responsible for contacting Parks to schedule a final inspection for the release of the warranty bond.

Upon final warranty inspection and acceptance, Parks will notify Corporation Counsel and BFRC the applicant’s obligations have been met. At this time, the warranty bond will be released. **All bonds will be released to the original bond holder.**

Trees rejected during this inspection will be replaced by the developer and a new warranty bond for the replaced trees will be required.

Please Note: Due to typical slow growth rate at time of planting, palm trees require a 2-year warranty period.

**Notice for Inspections of Installation**

Please give the Department of Parks at least a two (2) week notice of anticipated installation date. This period will allow for the Department of Parks to review flagging of tree locations and coordinate with tree installers on potential field issues. Trees that are improperly located and were not flagged out for Department of Parks approval may be relocated at the developer’s expense.

**Notice of Acceptance or Denial**

Parks will notify the developer of acceptance or denial within one (1) week of final inspection. Phases must be complete. If elements of the work are found to be out of compliance with this Street Tree Manual (species, quality, location, etc.) the developer will be notified of the deficiencies in writing. Bonds will not be released until all elements of the work are completed. Upon correction of deficiencies an additional inspection of the work will be required. Partial releases shall be considered if the original bond consists of fifty (50) or more trees. Additionally, entire blocks must be completed for a partial release. No less than 50% of the original bond will be released.

Contact Information:

Rodney H. Porter (Primary)
Sr. Landscape Architect
City of Charleston - Department of Parks
823 Meeting Street
Charleston, SC 29403
porterr@charleston-sc.gov
843.724.7322

F. Clark DeCiantis (Secondary)
Deputy Director
City of Charleston - Department of Parks
823 Meeting Street
Charleston, SC 29403
deciantisf@charleston-sc.gov
843.724.7148
Street Tree planting in a new Charleston development.
APPENDIX

Standard Details, Forms, Process Flow Charts, And Links

Street Tree Protection Barricade Detail
Street Tree Planting Detail
Street Tree Staking Detail
Cobblestone Tree Well Detail
Palm Tree and Tree Well Detail
Street Tree Well Detail

Street Tree Bank Analysis Flow Chart
Sample Street Tree Banking Analysis Form

Street Tree Bond Analysis Flow Chart
Sample Street Tree Bond Analysis Form

Street Tree Performance Bond Flow Chart
Sample Street Tree Bonding Agreement

Sample Warranty Agreement for Street Trees With Bond

Web Links

American Nursery & Landscape Association (ANLA)
https://www.americanhort.org/page/standards

International Society of Arboriculture
https://www.isa-arbor.com/

City of Charleston Urban Forestry Division
https://www.charleston-sc.gov/269/Urban-Forestry-Division

City of Charleston Street Tree Program
https://www.charleston-sc.gov/271/Street-Tree-Program
CROWN DRIP LINE OR OTHER LIMIT OF TREE PROTECTION AREA.
SEE TREE PRESERVATION PLAN FOR FENCE ALIGNMENT.

TREE PROTECTION FENCE:
HIGH DENSITY POLYETHYLENE
FENCING WITH 3.5"X1.5"
OPENINGS. COLOR - ORANGE.

1" DIA. METAL OR PVC
CROSS RAIL SECURED
TO POST THROUGH
POST CAPS

1" DIA. METAL POST
WITH CAPS AT 5' OC

EXISTING GRADE,
MAINTAIN EXISTING
GRADE WITH THE
FENCE PROTECTION
UNLESS OTHERWISE
APPROVED

4" THICK LAYER OF
DOUBLE GROUND PINE
BARK MULCH

8.5"X11" LAMINATED
SIGN SPACED
AROUND PROTECTION

SECTION VIEW

NOTES
1. SEE SPECIFICATIONS FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.
2. NO PRUNING SHALL BE PERFORMED WITHOUT SPECIFIC CONSULTATION AND APPROVAL BY THE CITY
OF CHARLESTON DEPARTMENT OF PARKS. ALL PRUNING MUST BE PERFORMED BY A CERTIFIED
ARBORIST.
3. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING FOR ANY REASON INCLUDING
FENCE INSTALL
4. TREE BARRICADES SHALL BE ERECTED AT A MINIMUM DISTANCE FROM THE BASE OF THE
PROTECTED TREES AND/OR GRANTS TREES ACCORDING TO THE FOLLOWING STANDARDS:
   • FOR PROTECTED TREES 23" DIAMETER BREAST HEIGHT (DBH) OR LESS, PROTECTIVE BARRICADES
     SHALL BE PLACED A MINIMUM DISTANCE OF TEN FEET FROM THE BASE OF EACH PROTECTED
     TREE.
   • FOR PROTECTED TREES GREATER THAN 23" DBH AND GRANTS TREES, PROTECTIVE BARRICADES
     SHALL PROVIDE A DIAMETER OF PROTECTION AROUND THE TREE EQUAL IN FEET TO THE DBH OF
     THE TREE (24" DBH TREE = 24" DIA. BARRICADE).
5. BARRICADES MAY BE ADJUSTED TO ADDRESS EXISTING TREE WELLS, SIDEWALKS, OR OTHER ITEMS.
ADJUSTMENTS MUST BE MADE UPON STRICT REVIEW AND APPROVAL FROM THE DEPARTMENT OF
PARKS.
STRONG CENTRAL LEADER, NEVER TO BE CUT

REMOVE ANY BROKEN OR DEAD AND DISEASED LIMBS

TRUNK CALIBER SHALL MEET ANSI Z60 CURRENT EDITION FOR ROOT BALL SIZE

ROOT CROWN SHALL BE POSITIONED 2" – 4" ABOVE FINISH GRADE. ROOT BALL MODIFIED AS NEEDED

LOOSENED PLANTING SOIL. DIG AND TURN SOIL TO REDUCE COMPACTION. MIX AS SPECIFIED

BOTTOM OF ROOT BALL RESTS ON EXISTING OR RECOMPACTED SOIL

3" LAYER OF ORGANIC BIODEGRADABLE MULCH. TAPER TO TRUNK. NO MORE THAN 1" MULCH ON ROOT BALL. NO MULCH SHALL TOUCH TREE TRUNK

SOIL BERM OF CLEAN SOIL FREE OF ROCKS AND ROAD DEBRIS 4"–6" MAX ABOVE ROOT BALL SURFACE CONSTRUCTED AROUND ROOT BALL AT PERIPHERY OF ROOT BALL

REMOVE TOP 1/3 OF BURLAP, AND ANY NAILS/PINS, ETC FROM B&B TREES

REMOVE ENTIRE WIRE BASKET. AT A MINIMUM REMOVE TOP 2/3 OF WIRE BASKET WHERE PRESENT

UNDISTURBED SOIL LINE, PRIOR TO MULCHING, LIGHTLY TAMP SOIL AROUND ROOT BALL IN 6" LIFTS TO BRACE TREE. DO NOT OVER COMPACT. WHEN THE PLANTING HOLE HAS BEEN BACKFILLED, POUR WATER AROUND THE ROOT BALL TO SETTLE THE SOIL

SECTION VIEW

ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1)

FOR EXAMPLE: CALIBER HEIGHT (RANGE) MAX. HT. MIN. ROOT BALL DIA. MIN. ROOT BALL DEPTH

<table>
<thead>
<tr>
<th>Size</th>
<th>Height Range</th>
<th>Max. Height</th>
<th>Min. Root Ball Dia.</th>
<th>Min. Root Ball Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>12–14&quot;</td>
<td>16&quot;</td>
<td>24&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>14–16&quot;</td>
<td>18&quot;</td>
<td>32&quot;</td>
<td>21&quot;</td>
</tr>
</tbody>
</table>

NOTES

1. ALL TREES ARE TO BE NURSERY GROWN, CONTAINER GROWN STOCK FOR PREFERRED FOR NARROW PLANTING WELLS AND VEGETATIVE STRIPS. BALL AND BURLAP (B&B) PREFERRED OTHERWISE.
2. REMOVE ALL TREATED OR PLASTIC–COATED BURLAP, STRAPPING, WIRE OR NYLON TWINE FROM ROOT BALL AND CANOPY. AFTER SETTING IN HOLE, CUT AWAY TOP 2/3 OF WIRE BASKET, IF PRESENT, AND TOP 1/3 OF BURLAP. FOLDING OF WIRE BASKET UNDER SOIL WILL NOT BE ACCEPTED.
3. SOAK PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.
4. INSTALL TOP OF PLANT BALL 2" ABOVE FINISH GRADE.
5. 4" SAUCER WILL BE OUTSIDE OF BACKFILL.
6. NO BACKFILL ALLOWED ON TOP OF ROOT BALL.
7. STAKING IS REQUIRED FOR ALL TREES.
8. CONTRACTOR SHALL REMOVE ALL STAKES, GUING YET. AT END OF WARRANTY PERIOD.
9. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
10. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
11. RE–SEED UNMULCHED, DISTURBED AREAS.
12. MULCH LAYER SHALL BE MAINTAINED DURING ENTIRE WARRANTY PERIOD AND REPLACED UPON NOTIFICATION BY THE DEPARTMENT OF PARKS.
PREVAILING WIND

RUBBER TREE TIES

LODGE POLE STAKES

PREVAILING WIND

REMOVE NURSERY STAKE. IF CENTRAL LEADER NEEDS TO BE STRAIGHTENED OR HELD ERECT, IT IS ACCEPTABLE TO ATTACH A 1/2" X 8' BAMBOO POLE TO THE CENTRAL LEADER AND TRUNK.

36" LONG NON-ABRASIVE RUBBER STRAPS

TWO (2) OR THREE (3) INCH LONG LODGE POLE STAKES. INSTALL APPROXIMATELY 2' AWAY FROM THE EDGE OF THE ROOT BALL. STAKE LOCATION SHALL NOT INTERFERE WITH PERMANENT BRANCHES.
NOTES
2. BRICK SHALL BE OLD CAROLINA BRICK. BRICK COLOR SHALL BE SAVANNAH GRAY.
3. MORTAR COLOR SHALL BE IVORY BUFF
4. CONTRACTOR TO REMOVE, AT BACK OF CURB, CONCRETE GRANITE FOOTING AT NEW TREE WELL LOCATIONS.
5. COBBLESTONES SHALL BE 4"X4"X4" TUMBLED SMOOTH GRANITE, BUTTED EDGE TO EDGE ON 1’ BED OF GRANITE SCREENINGS, TOPPED WITH ADDITIONAL GRANITE SCREENINGS TO FILL VOIDS AND COMPACTED.
GRANITE CURB (SEE CIVIL DRAWINGS FOR DETAIL) NO CONCRETE WILL BE ALLOWED AT BOC AT ALL TREE WELL LOCATIONS.

TREE PLANTER W/ GRANITE COBBLES IN CRUSHED GRANITE FILL

BRICK PAVER IN 1" MORTAR SETTING BED

BROOM FINISH CONCRETE SIDEWALK, REFER TO ASSOCIATED SITE PLANS

SLOPE 2% MAX.

3.75"

COMPACTED ABC (95% SP)

95% COMPACTED SUBGRADE

LOOSENED PLANTING SOIL, DIG AND TURN SOIL TO REDUCE COMPACTION. MIX AS SPECIFIED

NOTES
1. 36" MINIMUM PAVED SIDEWALK AREA WILL BE REQUIRED AT ALL TREE WELLS.
2. CONTRACTOR TO COORDINATE PROPOSED TREE LOCATIONS W/ INSTALLATION OF CURBING SO NO JOINT INTERSECTS WITH TREE WELL.
3. TREE WELL SHALL RECEIVE PREMIUM SHREDDED BROWN PINE MULCH AT A DEPTH OF 3" MIN.
4. CROSS SLOPES SHALL NOT EXCEED 2% SLOPE ON ALL SIDEWALKS WITHIN R.O.W.
5. FULLY REMOVE ALL TREATED OR PLASTIC-COATED BURLAP, STRAPPING, WIRE OR NYLON TWINE FROM ROOT BALL AND CANOPY. FOLDING OF WIRE BASKET UNDER SOIL WILL NOT BE ACCEPTED.
6. SOAK PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.
7. INSTALL TOP OF PLANT BALL 1" BELOW FINISH GRADE.
8. 4" SAUCER WILL BE OUTSIDE OF BACKFILL.
9. NO BACKFILL ALLOWED ON TOP OF ROOT BALL.
10. STAKING IS NOT REQUIRED FOR PALMS BUT ENCOURAGED.
11. CONTRACTOR SHALL REMOVE ALL STAKES, GUING ETC. AT END OF WARRANTY PERIOD.
12. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
13. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
14. RE-SEED UNMULCHED, DISTURBED AREAS.
15. MULCH LAYER SHALL BE MAINTAINED DURING ENTIRE WARRANTY PERIOD AND REPLACED UPON NOTIFICATION BY THE DEPARTMENT OF PARKS.
GRANITE CURB (SEE CIVIL DRAWINGS FOR DETAIL) NO CONCRETE WILL BE ALLOWED AT BOC AT ALL TREE WELL LOCATIONS

REFER TO LAYOUT

BROOM FINISH CONCRETE SIDEWALK, REFER TO ASSOCIATED SITE PLANS & DETAILS

SLOPE 2% MAX.

(2) 2" SHEETS EXTRUDED POLYSTYRENE OWENS CORNING FOAMULAR 15C OR EQUAL SURROUND ALL SIDES OF TREE WELLS MIN. 5' STAGGER ALL OVERLAPPING JOINTS

COMPACTED ABC (95% SP)

95% COMPACTED SUBGRADE

SECTION

TREE PLANTER WITH TOPSOIL / PLANT MIX

NOTES
1. 36" MINIMUM PAVED SIDEWALK AREA WILL BE REQUIRED AT ALL TREE WELLS.
2. CONTRACTOR TO COORDINATE PROPOSED TREE LOCATIONS W/ INSTALLATION OF CURBING SO NO JOINT INTERSECTS WITH TREE WELL.
3. TREE WELL SHALL RECEIVE PREMIUM SHREDDED BROWN PINE MULCH AT A DEPTH OF 3" MIN.
4. CROSS SLOPES SHALL NOT EXCEED 2% SLOPE ON ALL SIDEWALKS WITHIN R.O.W.
5. FULLY REMOVE ALL TREATED OR PLASTIC-COATED BURLAP, STRAPPING, WIRE OR NYLON TWINE FROM ROOT BALL AND CANOPY. FOLDING OF WIRE BASKET UNDER SOIL WILL NOT BE ACCEPTED.
6. SOAK PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.
7. INSTALL TOP OF PLANT BALL 1" BELOW FINISH GRADE.
8. 4" SAUCER WILL BE OUTSIDE OF BACKFILL.
9. NO BACKFILL ALLOWED ON TOP OF ROOT BALL.
10. STAKING IS NOT REQUIRED FOR PALMS BUT ENCOURAGED.
11. CONTRACTOR SHALL REMOVE ALL STAKES, GUAGING ETC. AT END OF WARRANTY PERIOD.
12. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
13. REMOVE EXCESS SOIL FROM SITE AND DISPOSE OF IN A LEGAL MANNER.
14. RE-SEED UNMULCHED, DISTURBED AREAS.
15. MULCH LAYER SHALL BE MAINTAINED DURING ENTIRE WARRANTY PERIOD AND REPLACED UPON NOTIFICATION BY THE DEPARTMENT OF PARKS.
DEVELOPER SUBMITS:
1) COVER SHEET
   • NAME OF PROJECT
   • CONTACT PERSON AND CONTACT INFORMATION
   • DEVELOPER’S INFORMATION
2) ONE FULL SIZE STREET TREE PLANTING PLAN
   • LOCATION OF STREET TREES
   • LOCATION OF STREET LIGHTS
   • LOCATION OF SIDEWALK
   • LOCATION OF PROPERTY LINES
3) BOND ANALYSIS SHEET
   • LISTING BY SPECIES INCLUDING CALIPER & HEIGHT
   • UNIT PRICE FOR EACH TREE
   • COST FOR INSTALLATION
   • COST FOR WATERING
   • COST FOR STAKING AND MULCH
Developer X will be submitting the tree banking for street trees for Development X, Phase X. The probable cost for these improvements is contained in the table below and would be the basis for bonding. Tree prices include installation costs. Watering prices are based on unit cost, per tree, per week for 52 weeks and given to us by X Landscape Company.

<table>
<thead>
<tr>
<th>Common Name of Tree</th>
<th>Quantity</th>
<th>Caliper</th>
<th>Height/Spread</th>
<th>Cost of Tree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quercus Virginiana/Live Oak</td>
<td>32</td>
<td>2.5&quot;</td>
<td>14-16'</td>
<td>$400.00</td>
<td>$12,800.00</td>
</tr>
<tr>
<td>Quercus Shumardii/Shumard Oak</td>
<td>10</td>
<td>2.5&quot;</td>
<td>14-16'</td>
<td>$400.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Pine Straw Bales (1 Per Tree)</td>
<td>42</td>
<td></td>
<td></td>
<td>$6.00</td>
<td>$252.00</td>
</tr>
</tbody>
</table>

Installation of Trees and Gator Bags: $17,052.00

Watering for trees 2 times a week for 12 months ($5/tree/per week) $10,920.00

Bank Total: $27,972.00

Bank Amount Approved By:

______________________________ Date: __________________

Rodney H. Porter, PLA
Sr. Landscape Architect
City of Charleston, Department of Parks
DEVELOPER SUBMITS:
1) COVER SHEET
   - NAME OF PROJECT
   - CONTACT PERSON AND CONTACT INFORMATION
   - DEVELOPER’S INFORMATION
2) ONE FULL SIZE STREET TREE PLANTING PLAN
   - LOCATION OF STREET TREES
   - LOCATION OF STREET LIGHTS
   - LOCATION OF SIDEWALK
   - LOCATION OF PROPERTY LINES
3) BOND ANALYSIS SHEET
   - LISTING BY SPECIES INCLUDING CALIPER & HEIGHT
   - UNIT PRICE FOR EACH TREE
   - COST FOR INSTALLATION
   - COST FOR WATERING
   - COST FOR STAKING AND MULCH
Summary of Street Tree Performance Bond Analysis for

*Development X*

(Title of Project)

*Developer X* will be submitting the bond for street trees for *Development X, Phase X*. The probable cost for these improvements is contained in the table below and would be the basis for bonding. Tree prices include installation costs. Watering prices are based on unit cost, per tree, per week for 52 weeks.

<table>
<thead>
<tr>
<th>Common Name of Tree</th>
<th>Quantity</th>
<th>Caliper</th>
<th>Height/ Spread</th>
<th>Cost of Tree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quercus Virginiana/Live Oak</td>
<td>32</td>
<td>2.5&quot;</td>
<td>14-16'</td>
<td>$400.00</td>
<td>$12,800.00</td>
</tr>
<tr>
<td>Quercus Shumardii/Shumard Oak</td>
<td>10</td>
<td>2.5&quot;</td>
<td>14-16'</td>
<td>$400.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Pine Straw Bales (1 Per Tree)</td>
<td>42</td>
<td></td>
<td></td>
<td>$6.00</td>
<td>$252.00</td>
</tr>
</tbody>
</table>

Installation of Trees and Gator Bags: $17,052.00

Watering for trees 2 times a week for 12 months ($5/tree/per week) $10,920.00

| SUBTOTAL:                           | $27,972.00 |

| TOTAL BOND AMOUNT (150% OF SUBTOTAL): | $41,958.00 |

Bond Amount Approved By:

_________________________  ____________________
Rodney H. Porter, PLA  Date:
Sr. Landscape Architect
City of Charleston, Department of Parks
STATE OF SOUTH CAROLINA )
COUNTY OF Charleston )

STREET TREE BONDING AGREEMENT

THIS STREET TREE BONDING AGREEMENT (this “Agreement”) made and entered into this ___ day of ________________, 20___, by and between ____________________________, having a mailing address of ____________________________, (hereinafter the “Owner”), and THE CITY OF CHARLESTON, SOUTH CAROLINA (hereinafter the “City”), in the state aforesaid.

WHEREAS, the Owner has submitted to the City a subdivision plat entitled “__________________________________________,” dated ______________, 20__, prepared by ____________________________, and recorded in the RMC Office for Charleston County in Plat Book ____ (hereinafter the “Plat”) of the Owner’s Project identified as ____________________________, (hereinafter the “Project”); and

WHEREAS, as a condition of approval of the aforesaid Plat, the Owner has agreed to post a bond or other adequate security in a form acceptable to the City for the completion of certain street tree improvements required for the Project (hereinafter the “Bonded Improvements”); and

NOW, THEREFORE, in consideration of the foregoing and of mutual promises contained in this Agreement, the parties in this Agreement agree as follows:

1. As a condition of approval of the Plat by the City, the Owner hereby agrees to obtain a Street Tree Bond in a form acceptable to the City for the benefit of the City (hereinafter the “Street Tree Bond”). Said Street Tree Bond shall contain the following terms:

   a. The amount of the Street Tree Bond shall be ________________________ Dollars and __/100 ($_______), which represents one and one-half (1½) times the estimate of the cost to construct the Bonded Improvements as shown on the Project construction drawings approved by the city engineer and as verified by an independent cost estimate for the construction of the Bonded Improvements prepared by ____________________________, attached hereto and incorporated by reference herein.

   b. The Owner shall authorize the City to draw against the Street Tree Bond upon presentation of a statement signed by an authorized officer of the City that the Owner has failed to construct the Bonded Improvements as approved on the construction drawings for the Project dated ________________, 20__, last revisions dated ________________, 20__, within 24 month(s) of the date of this Agreement.
2. Upon completion of the Bonded Improvements as shown on the Approved Construction Drawings for the Project, the Owner shall request that the same be inspected by the City. If the inspection by the City verifies that the Bonded Improvements have been completed in accordance with the approved Project construction drawings and the applicable regulations in effect as of the date of the approved construction drawings for the Project, the City shall send notice to the Owner that the conditions of the Street Tree Bond have been satisfied and the Street Tree Bond is to be released to the Owner. In the event the Bonded Improvements have not been properly completed in accordance with the approved Project construction drawings and the applicable regulations in effect as of the date of the approved construction drawings for the Project, the City shall immediately notify the Owner, in writing, specifying what items have not been completed pursuant to the approved Project construction drawings and/or the applicable regulations in effect as of the date of the approved construction drawings for the Project.

3. In the event that it is necessary for the City to complete the Bonded Improvements, the Owner hereby agrees to give the City access to the approved constructions drawings for the Project and to further authorize the City to draw against the Street Tree Bond in accordance with Section 1(b) herein. In such event, the Owner shall cause the Street Tree Bond to be extended by the Surety thereof, if necessary, in order to provide the City with sufficient time in which to construct the Bonded Improvements and draw against the Street Tree Bond in accordance with Section 1(b) herein.

4. Notwithstanding the foregoing, the City reserves the right to issue a stop-work order for the Project and/or withhold the issuance of any certificate of occupancy in the event the Owner has failed to complete the Bonded Improvements in accordance with the terms of this Agreement or extend this Street Tree Bond in accordance with Section 3 herein.

IN WITNESS WHEREOF, the parties have set the Hands and Seals the day and year above written.

WITNESSES: __________________________________________
Witness #1

_____________________________________________________
Witness #2

WITNESSES: __________________________________________
Witness #1

_____________________________________________________
Witness #2

OWNER

Name:

Date:

CITY OF CHARLESTON

By: ___________________________
Its: _______________________
Date: _______________________

Street Tree Bonding Agreement
Page 2 of 2
Revised 1/10/2013
Street Tree Warranty Bond Flow Chart

1. **Applicant** notifies **Dept. of Parks** to request a formal tree inspection to place street trees into warranty.

2. **Dept. of Parks** conducts street tree inspection and provides feedback to **Applicant**.

3. **Applicant** notified of **Approved (A)** or **Disapproved (D)**.

4. **Dept. of Parks** requests warranty agreement for street trees with bond and bonding instrument.

5. **Applicant** submits to **Dept. of Parks** warranty agreement for street trees with bond and original bond instrument.

6. **Dept. of Parks** signs warranty agreement and submits original bond instrument, agreement, and request for street tree performance bond release to BFRC. **Parks** retains copies of warranty bond material.

7. **Dept. of Parks** submits copy of executed warranty agreement, and instrument to **Applicant**.

8. **Applicant** notifies **Dept. of Parks** to request a formal street tree inspection.

9. **Dept. of Parks** conducts street tree inspection and provides feedback to **Applicant**.

10. **Applicant** notified of **Approved (A)** or **Disapproved (D)**.

11. **Parks** notifies BFRC that project obligations are complete and requests bond release from BFRC.

12. **BFRC** releases bond agreement, sends to original bond applicant, and notifies **Dept. of Parks and Engineering**.

13. Street trees maintained in ground for a minimum period of 1 year (2 for palm trees) from initial performance approval.
STATE OF SOUTH CAROLINA  ) WARRANTY
COUNTY OF ________________  ) AGREEMENT FOR STREET

This Warranty Agreement is made and entered into this ___ day of 
___ 20__, by and between the City of Charleston, a municipal corporation 
organized under the laws of the State of South Carolina (hereinafter referred to as “the 
City”), and ________________________________ (hereinafter 
referred to as “Developer”) with its principal place of business being 

WHEREAS, Developer has undertaken to make certain street tree improvements 
by planting street trees (hereinafter referred to as the “Improvements”) in and for 

Development, Improvements more particularly shown on the street tree and lighting plan for 

prepared by ________________________________, dated ___ day of __________, 20__ (hereinafter referred to as “Street Tree Plan”); and 

WHEREAS, Developer wishes to have the above said Improvements dedicated to 
the public and accepted by the City for maintenance. These Improvements have been built 
in accordance with the City’s Street Tree Manual, as amended from time to time, and a 
condition of the City accepting the Improvements for maintenance is that the Developer 
agrees to assume warranty responsibility for these Improvements for a period of ____ years 
from the date of acceptance by the City; and 

WHEREAS, the City has inspected the Improvements, has approved the Street 
Tree Plan, and has accepted the public Improvements as shown on the approved Street Tree 
Plan. 

NOW THEREFORE, for and in consideration of having the Improvements 
accepted by the City, and for other good and sufficient consideration, the receipt of which 
is hereby acknowledged by the parties hereto, Developer enters into this Agreement with 
the City, guaranteeing that Developer shall comply with the following requirements 
regarding the Improvements as follows:

1. Developer warrants that it shall, for a period of ____ years from the date of the 
acceptance of the above-referenced Improvements by City Council (hereinafter 
referred to as the “Warranty Period”):

   A. Take every reasonable precaution to protect the Improvements from damage by the 
elements or from any cause whatsoever at no cost to the City, and;

   B. Remove and replace all street trees determined by the City to be diseased, dead, 
dying or otherwise not in conformance with the City’s Street Tree Manual which are 
or should be discovered during the Warranty Period even if the City performs
repairs, maintenance, removal, and/or replacement due to the defect or defects before the expiration of the ____ year Warranty Period, in which case the Developer shall reimburse the City for its costs incurred therefore and;

C. Provide and maintain suitable barricades for the Improvements wherever necessary, and;

D. Save and hold harmless the City, its officers, agents and employees from any and all claims for damage to persons or property or death, including legal fees and costs associated therewith, sustained as a result of any defect or defects in the Improvements or lack of maintenance thereof or any negligent act or omission by the Developer, its employees, agents, contractors and subcontractors arising out of this Warranty Agreement, and;

E. Save and hold harmless the City, its officers, agents and employees from any and all claims for damage to persons or property or death, including legal fees and costs associated therewith, occurring during any Developer repairs, maintenance, removal, and/or replacement of the Improvements, and;

F. Developer shall not be responsible for damages to the Improvements caused by utilities or others.

2. If in the sole judgment of the City or its designee, repairs, maintenance, removal, and/or replacement to the above-referenced Improvements become necessary at any time during the Warranty Period or after the Warranty Period if the defect or defects are discovered within the expiration of the ____ year Warranty Period, said repairs, maintenance, removal, and/or replacement shall be made by the Developer at the Developer’s expense upon written notice from the City or its designee. Developer shall take out and remove all inferior or defective Improvements and replace the same with good and acceptable trees approved by the City as necessary to bring the Improvements into compliance with the certified Street Tree Plans and the Street Tree Manual following final inspection and preceding the commencement of the ____ year Warranty Period. Failure to remedy any defect in the Improvements as requested by the City or its designee shall extend the Warranty Period until such repairs are completed and accepted by the City. If the City elects to make such repairs, the Developer shall reimburse the City for all expenses associated with such repairs no later than thirty (30) days from demand for reimbursement from the City. Repaired and/or removed and replaced Improvements shall be warranted for a period of ____ years from the date of City’s acceptance of the repair and/or removal and replacement of the Improvement(s).

3. If during the ____ year Warranty Period, the City or its designee determines that any of the Improvements, need emergency repairs, maintenance, removal, and/or replacement in order to comply with federal, state or local regulations, or if the City or its designee determines that any Improvements require emergency repairs, maintenance, removal, and/or replacement in order to protect the public health, safety or welfare, then the City or its designee may demand in writing of Developer that such repairs, maintenance, removal, and/or replacement or maintenance be completed within fifteen (15) calendar
days from receipt of such demand notice from the City. Should the Developer fail to complete such repairs, maintenance, removal, and/or replacement of such Improvements within fifteen (15) calendar days of receipt of such demand notice from the City, then the City may perform such emergency repairs, maintenance, removal, and/or replacement to the Improvements and Developer shall be responsible for the costs of any such repairs, maintenance, removal, and/or replacement to the Improvements performed by the City and shall reimburse the City for all expenses associated with such repairs, maintenance, removal, and/or replacement no later than thirty (30) days from receipt of a demand for reimbursement from the City.

4. As a condition of this Agreement, the Developer shall provide a bond, attached hereto and incorporated herein as Exhibit A, in a form acceptable to the City for the benefit of the City (hereinafter the “Warranty Bond”). The Warranty Bond shall contain the following terms:

   A. The amount of the Warranty Bond shall be _______ Dollars and ______/100 ($0.00 ______), which represents ten percent (10%) of the cost of the constructed Improvements as shown on the Street Tree Plan approved by the City and as verified by an independent cost estimate for the Bonded Improvements prepared by________________________, attached hereto and incorporated by reference herein as Exhibit B. The Warranty Bond shall either be provided by a reputable Federal Treasury Department approved bonding company with at least a rating of A minus or in a form acceptable by the City.

   B. The Developer shall authorize the City to draw against the Warranty Bond upon presentation of a statement signed by an authorized officer of the City that the Developer has failed to maintain or repair the Improvements as required under this Agreement.

   C. In the event the City performs maintenance or repairs to the Improvements, the Developer hereby agrees to give the City access to the approved Street Tree Plans for the Project and to draw against the Warranty Bond to pay for the necessary repair, maintenance, removal, and/or replacement to the Improvements. If necessary, the Developer shall cause the Warranty Bond to be extended by the Surety of the Warranty Bond, in order to provide the Surety or the City with sufficient time in which to complete the repairs, maintenance, removal, and/or replacement to the Improvements and draw against the Warranty Bond to pay for such repairs, maintenance, removal, and/or replacement in accordance with this Agreement.

5. During the Warranty Period should the cost of the repairs, maintenance, removal, and/or replacement to the Improvements exceed the Warranty Bond, the City may proceed with the repair, maintenance, removal, and/or replacement of the Improvements and subsequently demand such costs in excess of the Warranty Bond be paid by the Developer. Should Developer not pay such costs within thirty (30) calendar days of the City’s written demand therefor, the City shall be entitled to recover such costs from the Developer, including attorney’s fees and costs, in a court of competent
jurisdiction in Charleston County, South Carolina.

6. The parties hereto shall execute the original agreement with all attached original exhibits.

7. Developer agrees that during the Warranty Period, Developer shall advise the City in writing of any change in its address, contact information or corporate status.

8. Developer assures that it is financially stable, solvent and is fiscally capable of completing any repairs, maintenance, removal, replacement and/or other work to the Improvements that may become necessary pursuant to the terms of this Warranty Agreement.

IN WITNESS WHEREOF, the City of Charleston, South Carolina, and Developer have hereunto set their respective hands and seals the day and year hereinafter set forth.

I, ________________________________, hereby certify that all Improvements being dedicated to the City has been installed in accordance with the Street Tree Manual as approved by the City of Charleston.

________________________
Witness #1

________________________
Witness #2

________________________
Witness #1

________________________
Witness #2

________________________
By: ________________________
By: ________________________
By: ________________________

________________________
Date: ______________________
Date: ______________________
Date: ______________________