Urban & Community Forestry Program

Reforestation, Tree Planting, and Maintenance Plan Guidelines

April 2022
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1. Introduction

The following are guidelines for the development and implementation of a tree planting and maintenance plan in conjunction with a NJ Forest Service Urban and Community Forestry Program (NJUCF) Stewardship Grant proposal and award.

One of the grant categories is for Reforestation and Tree Planting, up to $150,000 per grant. A full description of this grant category is provided in the 2022 NJUCF Stewardship Request for Proposals (RFP).

All Reforestation and Tree Planting Grant recipients must submit a tree planting and maintenance plan in accordance with these guidelines and receive NJUCF approval of that plan within six (6) months of start of the work period, as defined in the RFP. Grantees may use up to seven percent (10%) of the grant amount for professional services including the design of the reforestation and tree planting and maintenance plan and supervision of the tree planting contract and work.

2. Tree Planting and Maintenance Plan Components

All tree planting and maintenance plans must be developed in accordance with the most recent tree care industry standards (eg. ANSI Z60.1 and A300) for plant material, handling, shipping, planting/transplanting, and maintenance and forestry best management practices for reforestation.

The tree planting and maintenance plan must have the following components:

I. Project Location

The project location map(s) should clearly represent the project site, to scale, delineating boundaries of the grantee’s jurisdiction and the planned tree planting areas. Acceptable formats include but are not limited to:

A. USGS Quad Map (1:24,000).
B. Street Map – ensure that street names are clearly indicated.
C. Municipal tax map.

II. Landscape Plan

A comprehensive landscape plan must include the following parts:

A. Planting Plan

Landscape drawings (Appendix A) must be provided for each site where proposed tree planting is planned. The plan should clearly indicate where each tree will be located.
and identifies each location by tree species. A detailed planting plan is preferred, but the applicant may submit a general site plan, as long as it clearly conveys the planting location(s) and number of trees per location.

**B. Plant Schedule**

Each plan should include a table detailing the scientific name, common name (including cultivar name if applicable), type of root package (bare root, container or ball and burlap – B&B), size (in accordance the root package), and quantity of each tree species to be planted (Appendix B). Tree species that are fall dig hazards should be noted on the schedule.

**Elements of a good landscape plan:**

The trees selected for the planting should be appropriate for the planting location. Trees’ mature height and shape, project longevity, sun and soil requirements, salt tolerance should be considered when developing the plant list. Conflicts with the built environment should be minimized. This includes, but is not limited to avoiding planting large trees under overhead wires, near underground utilities, near building foundations or walls, or using trees with nuts or large fruit near pedestrian areas.

Plans should include a list of alternate species, in case the desired species is not available at the time of planting.

Tree planting should include a diversity of trees species. This is for the long stability and health of the tree canopy within the area as a whole. The species diversity and selection needs to be justified in the planting plan. A good rule is to follow the 30/20/10 rule: In any community, no more than 30 percent of trees should be species within the same family, no more than 20 percent should be from the same genus, and no more than 10 percent should be the same species.

Sample landscape plans and plant schedules can be found in Appendix A and B.

**III. Tree Planting & Maintenance Specifications**

Specifications for tree planting and maintenance must be developed and submitted in conjunction with the landscape plan. Specifications must incorporate the most recent tree care industry standards (e.g. ANSI Z60.1 and A300) for plant material, handling, shipping, planting/transplanting, and maintenance, or forestry best management practices for reforestation. The following components must be included in the tree planting and maintenance plan.

**A. Planting Preparation.**
i. Describe how trees will be selected, inspected, and shipped.
ii. Describe how the site will be prepared prior to planting, including the identification of any potential conflicts on the site.
iii. State the timing of the planting.
iv. Describe how the trees will be maintained after delivery, prior to planting.

B. Tree Planting.
   i. Describe how the trees and the site will be prepared for planting.
   ii. Describe the method used to plant. Include tree planting diagrams (Appendix C).
   iii. Detail the method for guying, staking, if applicable.
   iv. Describe the post-planting care, including watering, mulching and pruning.

C. 2-year Tree Maintenance and Establishment.
   i. Detail the long-term maintenance plan, including the work to be performed, the maintenance schedule, and the personnel responsible for carrying out the work.
   ii. Describe the corrective measures to be taken if necessary.

Tree Planting and Maintenance Recommendations:

General:
Trees should be free of damage as the result of handling or transportation. No substitution of plant material is allowed unless approved by NJUCF. All work should conform to accepted horticultural practices and meet or exceed the industry standards.

Layout:
All trees should be located as shown on the plans supplied. All adjustments to the plan must be authorized by the NJUCF. All plans should be detailed enough that someone could find the locations without a guide. Tree species substitutions are permitted with approval by the NJUCF.

Nursery Stock:
Plant species should conform to those indicated on the site plan, planting list, and should follow standard scientific names, with horticultural names when specific varieties will be used. All landscape nursery stock should conform to the standard specifications of The American Standard for Nursery Stock sponsored by the American association of Nurserymen, Inc. All trees should be grown under climatic conditions similar to the job site for a period of not less than two (2) years immediately prior to this project. Trees being planted within municipal right of ways along streets need a minimal caliper of 1.75” to reduce tree damage. It is recommended to use an average of 2½” caliper between 2”-3” caliper size class. In any other areas a smaller caliper can be used. Provide justification for the size of the material and how it will be protected. If the trees will be specified to be greater than 3” caliper provide justification.
Quality:

Plants should have the habit of growth that is normal for the species or cultivar and should be sound, healthy, vigorous, free from insects, plant diseases and injuries or damage of any nature. An altered growth habit to reduce conflicts with the surrounding environment or for street tree height is acceptable as long as it is in the planting plan, and well justified. All plants should be of the grades specified. Please be aware of fall dig hazards and salt tolerance when selecting trees to plant.

Bare root and de-balled trees should show full root growth in all directions out from the main stem. All poor and circling roots should be pruned before planting.

All plants must be state inspected and a copy of the “Certificate of Inspections” issued by the State Department of Agriculture at the point of origin must accompany shipments from each source.

Shipment, Delivery, Inspection and Acceptance:
The grantee should reserve the right to inspect all plant material at its point of origin. Acceptance at the nursery in which the plant is growing, prior to transplanting, should not preclude rejection at the site for just cause.

The plant material to be delivered should be covered with a tarp, protected from weather and be adequately packed to avoid breakage, sun scald, windburn, desiccation and other damage during loading and shipment. All measures customary in good trade practices should be taken to keep the plants in good condition. Documentation on when the tree was dug, and how it was held at the nursery before shipment should be given to the grantee’s professional and can be presented to the NJUCF upon request. No plants should be planted until they have been inspected and approved on the site by the grantee’s professional.

All bare root trees should be dug and shipped during tree dormant periods. The dormant period is after the first major frost after leaf-drop, and before the swelling of the buds. If bare root stock is to be held longer than two (2) days before shipping, or to be held one day after receiving shipment, storage method needs to be mentioned in the plan. The method that will be used to keep the roots moist and protected prior to planting must be mentioned in the plan. The roots must be kept moist and never allowed to dry out.

Time of Planting:

Planting operations should be performed within the planting season when weather and soil conditions are suitable and in accordance with the acceptable local practice. Trees should be installed during the following fall and spring seasons depending upon the location of the proposed trees.

<table>
<thead>
<tr>
<th>Season</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>September –</td>
</tr>
<tr>
<td>Spring</td>
<td>December</td>
</tr>
<tr>
<td></td>
<td>March – May</td>
</tr>
</tbody>
</table>

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It is advisable to ensure that fall dig hazard species are identified and avoided in the schedule for fall planting.

**Protection of Utilities:**
The plan should cover utility conflicts and mitigation with the tree planting and future tree growth issues that may arise. Species and locations need to be selected to minimize utility/tree conflicts. The plan must include a plan if a conflict is found in the field how the problem will be addressed including having some alternate sites. The plan should state who will be responsible for the one-call and utility mark-outs.

**Planting Preparations:**
Prior to backfilling, B&B trees should have wire, burlap and twine removed from around the crown, trunk, root collar and at least the top two-thirds (2/3) of the root ball. Soil should be removed from the top of the root ball to expose the root flare.

**Planting:**
Unless otherwise specified within the specifications, all work should conform to accepted arboricultural practices. Plants should be protected upon arrival at the site by being thoroughly watered and properly maintained until properly planted and watered. Unplanted stock should be "healed-in" a bed of material approved by the municipal tree expert upon delivery to the site unless they will be planted within four (4) hours after delivery.

All trees should be planted in pits two (2) times the diameter of the rootball. The depth of the pits should be at the proper depth so that the root flare is at the level of the neighboring ground in a level planting area. On slopes the tree should be planted so that the top of the root ball after the root flare is exposed is at the same level of the adjacent highest point of the hole. The tree should be centered in the hole and then back filled one-half the depth of the soil ball with topsoil. The backfill should be lightly but thoroughly tamped and well-watered. The remainder of the hole is then to be backfilled with topsoil to a depth that after settling will assure the tree will be at the same level it was previously growing at in the nursery. The tree should be well watered again before mulch is placed over the surface of the root ball.

**Additional planting specifications:**
Any planting specifications that go beyond the standard tree planting specifications must be listed. All plantings should note if the tree will be staked and wired or not.

**Guying, Staking and Wrapping:**
Staking is not required. The installation of tree stakes and supporting materials should be done to those trees that the municipal tree expert deems necessary after planting. Tie materials should have some type of protection for the tree, with room for a minimum of 2 fingers to fit on the tension side of the tree ties. Damage caused by wiring may cause a tree to fail the establishment inspection. Material should be removed after one growing season and before the next spring. Materials must be removed before the final inspection.
Watering:
The plants should be thoroughly watered after planting. The plan must identify how future watering will be conducted and include contingencies for droughts or long dry periods.

Mulching:
All tree pits and planting beds should be mulched to a depth of 2”-3” with shredded hardwood bark mulch or compost. Mulch should be free of debris and placed around all plantings at the time of planting to a depth no higher than three inches (3”). Care should be exercised to keep mulch at least four inches (4”) away from the trunk of the tree.

Pruning:
If the trees need any pruning the cut must follow industry standards and be kept to a minimum. Trees selected at the nursery must have fully sealed wounds and not need pruning to meet specifications. Any dead, diseased or damaged branches should be pruned.

3. Tree Survivorship & Establishment Criteria

All trees must be healthy and established two (2) years after planting. The tree planting and maintenance plan must address the replacement of trees to satisfy this requirement. The following criteria are general conditions and characteristics used by NJUCF to determine that a tree is established. NJUCF makes the final determination on whether a tree is established.

- The terminal or topmost shoot, the central leader, of the tree is alive (species-specific characteristic).
- Two-thirds (2/3) or more of a tree’s canopy is alive and healthy (a branch or shoot is dead when no live cambium is present in the stem).
- There are no major wounds on the truck or root collar. A major wound occurs when one-third or more of the cambium is injured over the circumference of the bole.
- There is no major insect, disease or fungal infestation or affliction.
- Adventitious stems and/or roots are not present.
- There are no j-roots or girdling roots.

Final payment under the grant will be contingent upon satisfaction of the establishment requirement.

4. Professional Plan Development Requirement

All planting and maintenance plans should be by prepared by a NJ Certified/Approved Forester, Licensed Tree Expert, Certified Arborist, licensed Landscape Architect, or other professional as appropriate. The professional’s qualifications must be included with the plan submission.
5. Tree Planting Inspections

The purpose of NJUCF inspections is to ensure that the implementation of the tree planting grant is in accordance with the approved plan, and the required survivability threshold is attained.

NJUCF may perform a minimum of three (3) inspections to monitor the grantee’s compliance with the approved tree planting and maintenance plan. These inspections include:

1. **Initial Tree Quality and Planting Inspection** - This inspection verifies the planting of the required number of trees under the grant agreement, and that the trees meet the specifications for quality and planting in the approved plan. This inspection may take place throughout the delivery and installation of the trees.
   NJUCF must be notified at least seven (7) business days prior to the anticipated start date for tree delivery and planting. Any plant material or tree planting that does not conform to the specifications of the approved plan should be rejected by the grantee. Trees that do not conform in form and planting methods to the approved plan specifications may not be counted toward the survivorship threshold.
   NJUCF must be notified in writing by the grantee when the entire tree planting is complete. A final plant list based on the actual planting, and an as-built drawing indicating final planting locations must be provided to NJUCF (See Appendix E for an example as-built plan). NJUCF will issue a Notice of Planting Completion after all the required information is received, and the planting complies with the approved plan. The date of this Notice will trigger the two-year establishment period for the project.

2. **Year-1 Tree Establishment Inspection** - This inspection verifies that the required maintenance is taking place according to the specifications in the approved plan, and that the trees are on track for meeting the survivorship threshold for the final inspection. This inspection occurs one (1) year following the issuance of the Notice of Planting Completion.
   NJUCF may provide a one (1) year inspection report to the grantee stating that the planting is on track to meet the survivorship threshold, or that it appears that the maintenance schedule in the approved compensatory reforestation plan is not being followed, and the planting may not meet the required survivorship threshold at the final inspection.

3. **Final Tree Establishment Inspection** - This inspection verifies whether the survivorship threshold for the grant was met or not. This inspection occurs two (2) years following the issuance of the Notice of Planting Completion. Final payment will only be made if the survivorship threshold is met.
6. Tree Planting and Maintenance Plan Submission Instructions

Reforestation and Tree Planting Plans must be submitted and approved by NJUCF within six (6) months of that start of the work period, as defined in the RFP. Applicants should submit a complete plan, including all of the elements in Section 2, well enough in advance of that date to allow NJCUF review and comment.

Electronic copy of the reforestation and tree planting plan should be submitted to:

Michael Martini, Forester
Michael.Martini@dep.nj.gov
609.292.8191
Appendix A – Sample Landscape Plans

Sample Plan 1: Park planting/reforestation Landscape Drawing
Sample Plan 2: Park planting on aerial photograph
Sample Plan 3: Streetscape Plan Landscape Drawing
Appendix B – Sample Plant Schedules

Example Plant Schedule Format

<table>
<thead>
<tr>
<th>Key</th>
<th>Qty</th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Size</th>
<th>Caliper</th>
<th>Root</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR</td>
<td>8</td>
<td>Acer rubrum “Red Sunset”</td>
<td>Red Sunset Red Maple</td>
<td>10’-12’</td>
<td>2” – 2 ½”</td>
<td>B&amp;B</td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>10</td>
<td>Cercis canadensis</td>
<td>Eastern Redbud</td>
<td>9’-10’</td>
<td>1” min.</td>
<td>B&amp;B</td>
<td>Multi-stemmed</td>
</tr>
<tr>
<td>IO</td>
<td>5</td>
<td>Ilex opaca</td>
<td>American Holly</td>
<td>8’-10’</td>
<td>---</td>
<td>B&amp;B</td>
<td></td>
</tr>
<tr>
<td>QR</td>
<td>20</td>
<td>Quercus rubra *</td>
<td>Eastern Red Oak</td>
<td>10’-12’</td>
<td>2” – 2 ½”</td>
<td>B&amp;B</td>
<td>No branching to 6’</td>
</tr>
</tbody>
</table>

* Fall dig hazard: These species have a high risk of failure when dug in the fall
<table>
<thead>
<tr>
<th>Area</th>
<th>Botanical Name</th>
<th>Size (in.)</th>
<th>Trees per Area</th>
<th>Total Area Covered (sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrance Area</td>
<td>Liquidamber styraciflua</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Plaza</td>
<td>Eschscholzia californica</td>
<td>20</td>
<td>15</td>
<td>300</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Chondrilla juncea</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Ipomoea tricolor</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Ageratum conyzoides</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Nicotiana alata</td>
<td>20</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Helianthus annuus</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Verbena bonariensis</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Salvia splendens</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Centaurea cyanus</td>
<td>20</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Coreopsis tinctoria</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Eryngium giganteum</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Stachys byzantina</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Helianthus orientalis</td>
<td>20</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Eupatorium cannabinum</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Monarda didyma</td>
<td>20</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Salvia greggii</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Helianthus salicifolius</td>
<td>20</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Eryngium spinescens</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Stachys byzantina</td>
<td>20</td>
<td>10</td>
<td>200</td>
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<td>Garden Walk</td>
<td>Helianthus orientalis</td>
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<td>Eupatorium cannabinum</td>
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<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Garden Walk</td>
<td>Stachys byzantina</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
</tbody>
</table>

**TOTAL TREE TOTALS BY SITE**

- **Total Trees:** 1200
- **Plants per Area:** 60
- **Area Covered (sq ft):** 1200

**Notes:**
- All trees are 1 inch in diameter at breast height (DBH).
- All plants are 1 foot in height.
- All plants are 1 gallon in size.

**Contact Information:**
- NJUCF Reforestation and Tree Planting Coordinator
- 123 Main Street, Newark, NJ 07101
- Phone: 555-555-5555
- Email: reforestation@njucf.org
SOIL SAUCER

BACKFILL DAM CONSTRUCTED OF SPECIFIED BACKFILL MATERIAL, FERTILIZE, SEED, AND MULCH DAM.

2H:1V SLOPE

PLANT MALUS SPECIES LOW ENOUGH IN PIT TO COVER THE GRAFT TO PREVENT SPROUTING FROM THE ROOT STOCK.

TREE PLANTING - 2H:1V SLOPE

IMMEDIATELY PRIOR TO PLANTING, MAKE 3 VERTICAL CUTS EQUIDISTANT AND ½” DEEP INTO ROOT MASS.

CONTAINERIZED PLANTING DETAIL

NOTES:
1. CUT OUT BOTTOM LOOPS PRIOR TO SETTING PLANT IN PLANTING PIT.
2. SET PLANT AND BACKFILL HALFWAY UP THE BALL. TAMPER AND WATER BACKFILL.
3. CUT REMAINING HORIZONTAL BAND DOWN ONE SIDE.
4. REMOVE REMAINDER OF WIRE BASKET.
5. COMPLETE BACKFILLING AND PROVIDE INITIAL WATERING.

WIRE BASKET REMOVAL
### Appendix D – Example Maintenance Plan

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Timing</th>
<th>Comments</th>
<th>Responsible Person/Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree watering</td>
<td>Throughout</td>
<td>As needed, especially during dry periods. Continue until ground freezes</td>
<td>Contractor</td>
</tr>
<tr>
<td>Stake removal</td>
<td>After 1 year</td>
<td></td>
<td>Contractor</td>
</tr>
<tr>
<td>Mulching</td>
<td>Throughout</td>
<td>Refresh and replace as needed</td>
<td>Contractor</td>
</tr>
<tr>
<td>Inspect for disease or insect problems</td>
<td>Annually</td>
<td>Start approximately 1 year after planting</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Apply pesticides/herbicides</td>
<td></td>
<td>If annual inspection</td>
<td>Contractor</td>
</tr>
<tr>
<td>Monitor health &amp; vigor</td>
<td>Annually</td>
<td>Start approximately 1 year after planting</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Replace dead trees</td>
<td>After 1 year</td>
<td>At direction of Project Manager. Planting should take place within 3 weeks of annual inspection. Follow planting guidelines</td>
<td>Contractor</td>
</tr>
<tr>
<td>Prune</td>
<td>After 1 year</td>
<td>Remove no more than ¼ of foliage in one season. Retain lower branches.</td>
<td>Contractor</td>
</tr>
<tr>
<td>Fertilize</td>
<td>After 3 years</td>
<td>If needed</td>
<td>DPW</td>
</tr>
</tbody>
</table>
Appendix E – Example As-Built Plan
Additional Resources


New Jersey Tree Foundation - http://njtreefoundation.org