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PART 1 – GENERAL

1.01 SCOPE OF THE WORK

- A. The Contractor shall visit the site prior to bidding to determine existing conditions.
- B. All work will be inspected by PARKWAYS. Notify PARKWAYS Chief Landscape Architect at 504.658.3201 at least three (3) working days before the work commences.
- C. The following list of items that shall be required under this section to complete this project in the proper horticultural manner.
 - 1. Installation of Trees, Shrubs & Groundcover
 - 2. Planting Bed Preparation
 - 3. Installation
 - 4. Staking & Guying
 - 5. Pruning
 - 6. Edging
 - 7. Fertilizer
 - 8. Mulch
 - 9. Clean Up
 - 10. Maintenance
 - 11. Guarantee & Watering Period

1.02 RELATED DOCUMENTS AND REFERENCES

- A. Drawings and general provisions of contract including general and supplementary conditions and Division I specifications apply to work of this section.
- B. Related Specification Sections
 - 1. Section 01 56 39 – Temporary Tree & Plant Protection
 - 2. Section 01 65 00 – Product Delivery Requirements

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3. Section 01 66 00 – Product Storage and Handling Requirements
 4. Section 01 70 00 – Execution and Closeout Requirements
 5. Section 32 91 13 – Soil Preparation
 6. Section 32 92 19 – Seeding
 7. Section 32 92 23 – Sodding
 8. Section 32 94 13 – Landscape Edging
- C. References: The following specifications and standards of the organizations and documents listed in this paragraph form a part of the specification to the extent required by the references thereto. In the event that the requirements of the following referenced standards and specification conflict with this specification section the requirements of this specification shall prevail. In the event that the requirements of any of the following referenced standards and specifications conflict with each other the more stringent requirement shall prevail or as determined by PARKWAYS:
1. ANSI A 300 – Standard Practices for Tree, Shrub and other Woody Plant Maintenance, most current edition and parts.
 2. *American Standard for Nursery Stock, ANSI Z60.1.*, most current edition.
 3. Interpretation of plant names and descriptions shall reference the following documents. Where the names or plant descriptions disagree between the several documents, the most current document shall prevail:
 - a. *Hortus Third*, The Staff of the L.H. Bailey Hortorium. 1976. MacMillan Publishing Co., New York.
 - b. *Southern Plants for Landscape Design*, Neil Odenwald and James Turner, Claitor's Publishing Division, Baton Rouge. Latest edition.
 - c. USDA - The Germplasm Resources Information Network (GRIN) <http://www.ars-grin.gov/npgs/searchgrin.html>
 - d. *Manual of Woody Landscape Plants*; Michael Dirr; Stipes Publishing, Champaign, Illinois; Most Current Edition.
 - e. *The New Sunset Western Garden Book*, Oxmoor House, most current edition.

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4. Pruning practices shall conform to recommendations “Structural Pruning: A Guide for the Green Industry” most current edition; published by Urban Tree Foundation, Visalia, California.
5. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign IL, most current edition.

1.03 VERIFICATION

- A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities, and shall immediately inform the Owner’s Representative of any discrepancies between the information on the drawings and the actual conditions, refraining from doing any work in said areas until given approval to do so by the Owner’s Representative.
- B. In the case of a discrepancy in the plant quantities between the plan drawings and the plant call outs, list or plant schedule, the number of plants or square footage of the planting bed actually drawn on the plan drawings shall be deemed correct and prevail.

1.04 DEFINITIONS

All terms in this specification shall be as defined in the “Glossary of Arboricultural Terms” or as modified below.

- A. Boxed trees: A container root ball package made of wood in the shape of a four-sided box.
- B. Container plant: Plants that are grown in and/or are currently in a container including boxed trees.
- C. Defective plant: Any plant that fails to meet the plant quality requirement of this specification.
- D. End of Warranty Final Acceptance: The date when the Owner’s Representative accepts that the plants and work in this section meet all the requirements of the warranty. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation work run concurrent with each other.
- E. Field grown trees (B&B): Trees growing in field soil for at least 12 months prior to harvest.
- F. Healthy: Plants that are growing in a condition that expresses leaf size, crown density, color; and with annual growth rates typical of the species and cultivar’s horticultural description, adjusted for the planting site soil, drainage and weather conditions.
- G. Kinked root: A root within the root package that bends more than 90 degrees.

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- H. Maintenance: Actions that preserve the health of plants after installation and as defined in this specification.
- I. Maintenance period: The time period, as defined in this specification, which the Contractor is to provide maintenance.
- J. Normal: the prevailing protocol of industry standard(s).
- K. Owner's Representative: The person appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative may appoint other persons to review and approve any aspects of the work.
- L. Reasonable and reasonably: When used in this specification relative to plant quality, it is intended to mean that the conditions cited will not affect the establishment or long term stability, health or growth of the plant. This specification recognizes that it is not possible to produce plants free of all defects, but that some accepted industry protocols and standards result in plants unacceptable to this project.

When reasonable or reasonably is used in relation to other issues such as weeds, diseased, insects, it shall mean at levels low enough that no treatment would be required when applying recognized Integrated Plant Management practices.

This specification recognizes that some decisions cannot be totally based on measured findings and that professional judgment is required. In cases of differing opinion, the PARKWAYS shall determine when conditions are judged as reasonable.

- M. Root ball: The mass of roots including any soil or substrate that is shipped with the tree within the root ball package.
- N. Root ball package. The material that surrounds the root ball during shipping; the root package may include the material in which the plant was grown, or new packaging placed around the root ball for shipping.
- O. Root collar (root crown, root flare, trunk flare, flare): The region at the base of the trunk where the majority of the structural roots join the plant stem, usually at or near ground level.
- P. Shrub: Woody plants with mature height approximately less than 15 feet.
- Q. Spade harvested and transplanted: Field grown trees that are mechanically harvested and immediately transplanted to the final growing site without being removed from the digging machine.
- R. Stem: The trunk of the tree.

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- S. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Owner's Representative accepts that all work in these sections is complete and the Warranty period has begun. This date may be different than the date of substantial completion for the other sections of the project.
- T. Stem girdling root: Any root more than ¼ inch diameter currently touching the trunk, or with the potential to touch the trunk, above the root collar approximately tangent to the trunk circumference or circling the trunk. Roots shall be considered as Stem Girdling that have, or are likely to have in the future, root to trunk bark contact.
- U. Structural root: One of the largest roots emerging from the root collar.
- V. Tree: Single and multi-stemmed plants with mature height approximately greater than 15 feet.

1.05 QUALITY ASSURANCE

A. Contractor

- 1. For projects in which the Prime Contractor will perform landscape, irrigation or arboreal work, the Contractor shall have a current and valid Landscape Horticulturalist License, Arborist License and/or Irrigation Contractor License issued by the Louisiana State Horticultural Commission as is applicable to the scope of work of the project.
- 2. The Contractor shall provide proof of qualifications prior to installation of work.

B. Installer

- 1. The Installer with the responsibility for landscaping, irrigation or arboriculture shall provide PARKWAYS a list of similar projects in terms of scope of work and budget completed over the past five (5) years, prior to the installation of work. The Installer shall have appropriate experience related to the work specified in the drawings and specifications.
- 2. The Installer shall complete and submit AIA Document A305, "Contractor's Qualification Statement". Completion of Section 5, "Financing", is not required unless requested by the City.
- 3. The Installer shall have a current and valid Landscape Horticulturalist License, Arborist License and/or Irrigation Contractor License issued by the Louisiana State Horticultural Commission as is applicable to the scope of work of the project.
- 4. The Installer shall provide proof of qualifications, including documentation of past projects and employee training certifications, that support that the Installer meets all of the above installer qualifications and applicable licensures.

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D. Personnel:

1. The Contractor and/or Installer shall provide at least one person on site full time who can communicate in English and who shall be present at all times during execution of this portion of the project. This person shall be a Landscape Horticulturalist, Arborist or Irrigation Contractor licensed by the Louisiana Horticultural Commission as is relevant to the scope of work, and shall be thoroughly trained and experienced. This person shall also have experience directing all work performed under this section.

1.06 SELECTION AND OBSERVATION OF PLANTS

- A. PARKWAYS may review all plants subject to approval of size, health, quality, character, etc. Review or approval of any plant during the process of selection, delivery, installation and establishment period shall not prevent that plant from later rejection in the event that the plant quality changes or previously existing defects become apparent that were not observed.
- B. Plant Selection: PARKWAYS reserves the right to select and observe all plants at the nursery prior to delivery and to reject plants that do not meet specifications as set forth in this specification. If a particular defect or substandard element can be corrected at the nursery, as determined by the PARKWAYS, the agreed upon remedy may be applied by the nursery or the Contractor provided that the correction allows the plant to meet the requirements set forth in this specification. Any work to correct plant defects shall be at the contractor's expense.
 1. PARKWAYS may make invasive observation of the plant's root system in the area of the root collar and the top of the root ball in general in order to determine that the plant meets the quality requirements for depth of the root collar and presence of roots above the root collar. Such observations will not harm the plant.
 2. Corrections are to be undertaken at the nursery prior to shipping.
- C. The Contractor shall bear all cost related to plant corrections.
- D. All plants that are rejected shall be immediately removed from the site and acceptable replacement plants provided at no cost to the Owner.
- E. Submit to PARKWAYS, for approval, plant sources including the names and locations of nurseries proposed as sources of acceptable plants, and a list of the plants they will provide. The plant list shall include the botanical and common name and the size at the time of selection. Observe all nursery materials to determine that the materials meet the requirements of this section.
- F. Trees shall be purchased from the growing nursery. Re-wholesale plant suppliers shall not be used as sources unless the Contractor can certify that the required trees are not directly

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available from a growing nursery. When re-wholesale suppliers are utilized, the Contractor shall submit the name and location of the growing nursery from where the trees were obtained by the re-wholesale seller. The re-wholesale nursery shall be responsible for any required plant quality certifications.

- G. The Contractor shall require the grower or re-wholesale supplier to permit the Owner's Representative to observe the root system of all plants at the nursery or job site prior to planting including random removal of soil or substrate around the base of the plant. Observation may be as frequent and as extensive as needed to verify that the plants meet the requirements of the specifications and conform to requirements.
- H. Each tree shall have a numbered seal applied by the Contractor. The seal shall be placed on a lateral branch on the north side of the tree. The seal shall be a tamper proof plastic seal bearing the Contractors name and a unique seven-digit number embossed on the seal.
 - 1. Do not place seals on branches that are so large that there is not sufficient room for the branch growth over the period of the warranty.
- I. PARKWAYS may choose to attach their seal to each plant, or a representative sample. Viewing and/or sealing of plants by PARKWAYS at the nursery does not preclude PARKWAYS right to reject material while on site. The Contractor is responsible for paying any up charge for PARKWAYS to attach their seal to specific plants.
- J. Where requested by PARKWAYS, submit photographs of plants or representative samples of plants. Photographs shall be legible and clearly depict the plant specimen. Each submitted image shall contain a height reference, such as a measuring stick. The approval of plants by PARKWAYS via photograph does not preclude PARKWAYS right to reject material while on site.

1.07 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE POST-BID ACCEPTANCE

- A. Submit all requests for substitutions of plant species, or size to PARKWAYS, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

1.08 SITE CONDITIONS

- A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify PARKWAYS, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.

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1. Should subsurface drainage or soil conditions be encountered which would be detrimental to growth or survival of plant material, the Contractor shall notify PARKWAYS in writing, stating the conditions and submit a proposal covering cost of corrections. If the Contractor fails to notify PARKWAYS of such conditions, he/she shall remain responsible for plant material under the warranty clause of the specifications.
- B. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to PARKWAYS.
- C. This specification requires that all Planting Soil and Irrigation (if applicable) work be completed and accepted prior to the installation of any plants.
 1. Planting operations shall not begin until such time that the irrigation system is completely operational for the area(s) to be planted, and the irrigation system for that area has been preliminarily observed and approved by PARKWAYS.
- D. Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practices.
 1. Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as rain or snow or during extremely hot, cold or windy conditions.

1.09 PLANTING AROUND UTILITIES

- A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
- B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification: The Contractor shall be responsible for contacting Louisiana One Call at 811 (1-800-272-3020) to verify the location of underground utilities prior to location flagging or excavation. Additionally, the Contractor shall contact the Department of Public Works for traffic signal line and communication line locations in addition to Royal Engineers for locations of street lights.

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PART 2 – PRODUCTS

2.01 GENERAL:

- A. The following list of materials shall be required under this section to complete all work described in these specifications and/or indicated on the project drawing. This includes, but is not limited to the following items and all related items necessary to complete this project:
 - 1. Plants
 - 2. Planting Soil Mixture
 - 3. Root Hormone Stimulant
 - 4. Pre-Emergent Herbicide
 - 5. Slow Release Fertilizer
 - 6. Mulch
 - 7. Slow Release Watering Bags
 - 8. Stakes
 - 9. Tree Trunk Protectors
 - 10. Edging
- C. Approvals for substitution must be requested no later than three (3) working days prior to bid opening.
- D. Planting Soil Mixture: See Section 32 91 13 SOIL PREPARATION.
- E. Compost: See Section 32 91 13 SOIL PREPARATION.
- F. Sand: See Section 32 91 13 SOIL PREPARATION.
- G. Pre-Emergent Herbicide: See Section 32 91 13 SOIL PREPARATION.
- H. Slow Release Watering Bags: Shall be twenty (20) gallon slow release by Tregator or approved equivalent manufacturer. The tree watering bag must meet or exceed the following specifications:
 - 1. Made of polyethylene reinforced with nylon webbing and treated with U.V. inhibitors.

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2. All sides are watertight with ¼” heat seals.
 3. Bag is secured to the tree with heavy duty nylon zippers.
 4. Drip holes are cored through both ply of material to allow for adjustable drip times.
 5. Treegator is manufactured by: Spectrum Products, Inc., www.treegator.com
- I. Tree Staking:
1. Stakes: Green T bar fence posts, 6’ minimum length.
 2. Ties shall be ArborTie, or approved equivalent, tree staking and guying material. Approvals for substitution must be requested no later than three working days prior to bid opening.
 3. Material for ties shall be: flat woven polypropalene material, ¾” wide and 900 lb. break strength. Color to be green. Product to be Arbor Tie, manufactured by: Deep Root Partners, L.P., www.deeproot.com, or approved equal.
- J. Root Hormone Stimulant: Mycor Tree Saver, or approved equal.
- K. Peat Humus: Is decomposed peat with no identifiable fibers and with a PH range suitable for intended use.
- L. Mulch: Organic mulch free from deleterious materials, of mulching grade, uniform in size and suitable for top dressing of trees, shrubs, or other plants, and consisting of the following:
1. Aged Ground Pine Bark for mulching
 2. Pine Needles for top dressing
- M. Tree Bark Protectors: Made of expandable polyethylene or extruded resin mesh to form a barrier around the tree to protect against bark damage from gardening equipment, tools and other small pests. Tree shield allows water and light to reach the plant while offering plenty of air circulation to prevent moisture and mildew build-up.
1. Tree Bark Protectors shall be black or gray, 4 inches in diameter, 5 feet long. As manufactured by Industrial Netting, Minneapolis, MN, USA or approved equal.
 2. Fasten the split side of the Tree Bark Protector together in three places with black or gray plastic tape.
 3. Submit manufacturers’ product data for approval.

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N. Edging:

1. See Section 32 94 13 LANDSCAPE EDGING.

O. Commercial Fertilizer: All fertilizer shall be a commercial balanced formula with the least 25% organic materials, and shall conform to applicable State fertilizer laws. It shall be a slow release formula and shall be used as specified by manufacturer. Fertilizer, unless otherwise specified, shall be delivered mixed as specified, in standard size, unopened containers, showing weight, analysis, and name of manufacturer. Fertilizer shall be complete and of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:

1. Unless otherwise specified, fertilizer for trees and shrubs shall be Osmocote 18-6-12 (8-9 Months) formulation by Sierra Chemical Corporation or an approved equal.

2.02 PLANTS

A. Plants shall be true to species and variety specified and nursery-grown in accordance with good horticultural practices under climatic conditions similar to those in the locality of the project for at least two years. They shall be freshly dug.

1. All plant names and descriptions shall be as defined per Part 1 – 1.02.C.3 in this Section.

2. All plants shall be grown and harvested in accordance with the *American Standard for Nursery Stock*.

3. Unless approved by PARKWAYS, plants shall have been grown at latitude not more than 200 miles north or south of the latitude of the project.

4. Trees shall be grown from a certified nursery using sound horticultural practices.

B. Unless specifically noted, all plants shall be of specimen quality, exceptionally heavy, symmetrical, and so trained or favored in development and appearance as to be unquestionably and outstandingly superior in form, compactness, and symmetry. They shall be sound, healthy, vigorous, well branched, and densely foliated when in leaf; free of disease and insects, eggs, or larvae; and shall have healthy, well-developed root systems. They shall be free from physical damage or other conditions that would prevent vigorous growth.

1. Trees with a natural excurrent growth form will have only one main branch leader. Trees with a damaged or crooked leader, bark abrasions, sunscald, disfiguring knots, insect damage, or cuts of limbs over three-quarter inch (.75”) in diameter that are not completely closed will be rejected.

2. Trees shall have good branch structure in accordance with the natural form for the species. Branching will be plentiful and uniformly spaced along the trunk and have firm, strong attachments with the trunk.

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3. Sprouts shall be cleanly removed.
 4. Pruning scars will be clean cut leaving little or no protrusion from the trunk or branch.
 5. V-shaped branch unions with included bark will not be accepted.
 6. When present, foliage will be healthy and of normal size, shape, texture and color for the species.
- C. Plants shall conform to the measurements specified, except that plants larger than those specified may be used. Use of larger plants shall not increase the contract price. If larger plants are used, the root ball shall be increased in proportion to the size of the plant.
1. Caliper measurements shall be taken on the trunk six inches (6") above the natural ground line for trees up to and including four inches (4") in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Plants shall be measured when branches are in their normal position.
 2. If a range of sizes is given, no plant shall be less than the minimum size, and no less than fifty percent of the plants shall be as large as the maximum size specified.
 3. Measurements specified are minimum sizes acceptable after pruning, where pruning is required.
 4. Plants that meet measurements but do not possess a standard relationship between height and spread, according to the *American Standards for Nursery Stock*, shall be rejected.
- D. Substitutions of plant materials will not be permitted unless authorized in writing by PARKWAYS. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.
- E. Root Condition: Poor-quality trees with cracked, wet, or loose root balls, poorly developed trunk-to-crown ratios, or undersized root balls shall be rejected. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting tree health. Root quality at or below the soil line shall comply with the project Root Acceptance details and the following:
1. The roots shall be reasonably free of scrapes, broken or split wood.
 2. The root system shall be reasonably free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Wounds resulting from root pruning used to produce a high quality root system are not considered injuries.

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3. A minimum of three structural roots reasonably distributed around the trunk (not clustered on one side) shall be found in each plant. Root distribution shall be uniform throughout the root ball, and growth shall be appropriate for the species. Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
 4. The root collar shall be within the upper 2 inches of the substrate/soil. Two structural roots shall reach the side of the root ball near the top surface of the root ball. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball.
 5. The root system shall be reasonably free of stem girdling roots over the root collar or kinked roots from nursery production practices.
 6. At time of observations and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.
- F. Trees that settle out of plumb due to inadequate soil compaction either under or adjacent to the root ball shall be excavated and reset. In no case shall trees that have settled out of plumb be pulled upright using guy wires.
- G. Container Plants
1. Plants grown in containers shall be of appropriate size for the container as specified in the most recent edition of the *American Standard for Nursery Stock* and be free of circling roots on the exterior and interior of the root ball.
 2. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.
 3. No trees will have large roots growing out of the container.
 4. Container plants shall have been grown in the container long enough to have established roots throughout the growing medium.
 5. The rooting medium shall be weed-free.
- H. Balled and Burlapped (B&B) Plant Materials
1. Trees designated B&B shall be properly dug with firm, natural balls of soil retaining as many fibrous roots as possible, in sizes and shapes as specified in the *American Standard for Nursery Stock*. Balls shall be firmly wrapped with nonsynthetic burlap and secured with nails and heavy, nonsynthetic twine. The root collar shall be apparent at surface of ball.

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Trees with loose, broken, processed, or manufactured root balls will not be accepted, except with special written approval before planting.

2. The rooting medium shall be weed-free.
 3. All Balled and Burlapped Plants shall be field grown, and the root ball packaged in a burlap and twine and/or burlap and wire basket package.
 4. Plants shall be harvested with the following modifications to standard nursery practices.
 - a. Prior to digging any tree that fails to meet the requirement for maximum soil and roots above the root collar, carefully removed the soil from the top of the root ball of each plant, using hand tools, water or an air spade, to locate the root collar and attain the soil depth over the structural roots requirements. Remove all stem girdling roots above the root collar. Care must be exercised not to damage the surface of the root collar and the top of the structural roots.
 - b. Trees shall be dug for a minimum of 4 weeks and a maximum of 52 weeks prior to shipping. Trees dug 4 to 52 weeks prior to shipping are defined as hardened-off. Digging is defined as cutting all roots and lifting the tree out of the ground and either moving it to a new location in the nursery or placing it back into the same hole.
 - c. Trees that are stored out of the ground shall be placed in a holding area protected from extremes of wind and sun with the root ball protected by covering with mulch or straw and irrigated sufficiently to keep moisture in the root ball above wilt point and below saturation
 - d. If wire baskets are used to support the root ball, a "low profile" basket shall be used. A low profile basket is defined as having the top of the highest loops on the basket no less than four inches (4") and no greater than eight inches (8") below the shoulder of the root ball package. At nurseries where sandy soils prevent the use of "low profile baskets", baskets that support the entire root ball, including the top, are allowable. Wire baskets are to be removed at time of installation.
 - e. Twine and burlap used for wrapping the root ball package shall be natural, biodegradable material. If the burlap decomposes after digging the tree then the root ball shall be re-wrapped prior to shipping if roots have not yet grown to keep root ball intact during shipping.
- I. Transportation and Storage of Plant Material
1. Protect from drying and damage until shipped and delivered to the planting site. Rootballs shall be checked regularly and watered sufficiently to maintain root viability.

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2. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.
3. During transportation of plant material, the contractor shall exercise care to prevent injury and drying out of the plants. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, PARKWAYS may reject the injured plant(s) and order them replaced at no additional cost to the owner. All loads of plants shall be covered at all times with tarpaulin or canvas. Loads that are not protected will be rejected.

J. Palms

1. Except as modified below or where the requirements are not appropriate to the specification of palms, palms shall meet all the requirements of the plant quality section above.
2. Defronding, tying, and hedging:
 - a. In preparing palm trees for relocation, all dead fronds shall be removed.
 - b. All remaining fronds above horizontal shall be lifted up and tied together around the crown in an upright position. Up to 1/3 of the oldest live fronds can be removed. Do not tie too tightly, bind or injure the bud. Jute binder twine shall be used in tying up the fronds; wire will not be permitted. Fronds shall be untied immediately after planting.
3. Digging the root ball:
 - a. When digging out the root ball, no excavation shall be done closer than 24 inches to the trunk at ground level and the excavation shall extend below the major root system to a minimum depth of 3.5 feet. The bottom of the root ball shall be cut off square and perpendicular to the trunk below the major root system.
4. The Contractor shall not free-fall, drag, roll or abuse the tree or put a strain on the crown (bud area) at any time. A protective device shall be used around the trunk of the tree while lifting and relocating so as not to injure the bud, or scar or skin the trunk in any way.
5. Clear trunk shall be measured from the lowest live green frond to ground level and Clear Wood shall be measured from the bottom of the "pineapple" to ground level.
6. Unless otherwise specified, each palm shall have a minimum caliper of 16 inches and shall not vary in caliper by more than one inch (1") at any point along the trunk. Each palm shall have a straight trunk.

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7. Mechanical scars (Chainsaw or other types of mechanical wounds) that penetrate the petiole disqualify this material and so are not acceptable.
8. No other sub variety will be considered an acceptable alternate. The Contractor will be required to submit a notarized certificate (affidavit) to PARKWAYS as supplied by the vendor that sets forth invoice number on which s/he transacts the business with the Contractor, it will set forth in botanical terms the Genus, Species and Sub variety of the palms s/he is shipping and it will contain her/his notarized signature. This notarized certificate is required to be submitted to PARKWAYS at least three (3) business days prior to delivery to project site.
9. All palms to be harvested from an actively farmed grove and must be uniform in size, caliper and development.
10. PARKWAYS shall have the right to personally inspect the proposed palms either at a holding area locally or alternatively, in the field of origin. A photograph of each palm selected by the contractor shall be submitted to PARKWAYS for approval prior to ordering the palm trees. Each photograph must include a measuring stick for purpose of scale. In the event that the initial inspections are performed in the field of origin or photographs are approved, PARKWAYS shall retain final right of rejection until the palms have been re-inspected on the job site and a completed certificate of variety has been submitted.

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PART 3 – EXECUTION

3.01 SITE EXAMINATION

- A. Examine the surface grades and soil conditions to confirm that the requirements of the Specification Section – Planting Soil - and the soil and drainage modifications indicated on the Planting Soil Plan and Details (if applicable) have been completed. Notify the Owner's Representative in writing of any unsatisfactory conditions.

3.02 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind or extremes of heat and cold temperatures. If planting is delayed more than 24 hours after delivery, set plants in a location protected from sun and wind. Provide adequate water to the root ball package during the shipping and storage period.

11. All plant materials must be available for observation prior to planting.

12. Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered. Volumetric soil moisture shall be maintained above wilting point and below field capacity for the root ball substrate or soil.

- B. Do not deliver more plants to the site than there is space with adequate storage conditions. Provide a suitable remote staging area for plants and other supplies.

1. The Owner's Representative or Contractor shall approve the duration, method and location of storage of plants.

- C. Provide protective covering over all plants during transporting.

3.03 INSTALLATION OF TREES, SHRUBS & GROUNDCOVERS

- D. All locations for plants shall be flagged by the landscape contractor prior to excavation. Flag locations shall be approved by PARKWAYS prior to excavation.

E. Seasonal Limitations: Planting and seeding shall be done whenever soil and weather conditions permit. This shall be determined by PARKWAYS. Planting season for non-tropical trees is November 1 through March 15.

F. Insofar as is practical, plant materials shall be planted on the day of delivery. In the event this is not possible, the Contractor shall protect that stock not planted from sun or drying winds and shall keep the plants well watered and stored in the shade. Plants shall not remain unplanted for longer than three days after delivery. Plants shall not be bound with wire or rope at any time so

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as to damage the bark or break branches. All plants shall be lifted and handled from the bottom of the ball only. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operations.

- G. The Contractor shall be responsible for providing all necessary equipment, materials, and labor to complete the project.
- H. Plant list quantities are provided as an aid to bidders only. The Contractor shall verify all quantities on the plan. Improper plant counts made by the Contractor shall be no cause for additional costs to the Owner.

3.04 PLANTING BED PREPARATION

- A. Rake surface clear of stones, debris, rubbish, and trash before pit excavation. Dispose of such material away from the site.
- B. A tiller may be used to loosen the soil if the planting is outside of the Critical Root Zone (CRZ) of existing trees. The CRZ extends in a radius of one foot per inch diameter, or to the tree drip line, whichever distance is greater.
- C. For planting areas within the CRZ, an air spade may be used to loosen the soil for bed preparation.
- D. Planting soil shall be installed as plant bed material for all shrubs and groundcovers in accordance with the details and plans.
- E. The contractor shall provide positive drainage for all beds and plant areas.
- F. Detrimental soil conditions: PARKWAYS is to be notified, in writing, of detrimental soil conditions encountered, including poor drainage. When detrimental conditions are uncovered, planting shall be discontinued until instructions to resolve the conditions are received from PARKWAYS.
- G. Obstructions: If rock, underground construction work, utilities, tree roots, or other obstructions are encountered in the excavation of planting areas, alternate locations for any planting shall be determined by PARKWAYS.
- H. Trees:
 - 1. Tree pits are to be excavated to the depth and widths indicated on the drawings. If the planting area under any tree is initially dug too deep, the soil added to bring it up to the correct level should be thoroughly tamped.

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2. For trees, excavate the hole to the depth of the root ball and to widths shown on the drawing. Slope the sides of the excavation at a 45 degree angle up and away from the bottom of the excavation.
 - a. In areas of slowly draining soils, the root ball may be set up to three inches (3") or one eighth (1/8) of the depth of the root ball above the adjacent soil level.
 - b. Save the existing soil to be used as backfill around the tree.

3.05 INSTALLATION

- A. Trees: Trees shall be set on flat-tamped or unexcavated pads and shall stand at approximately the same elevation as in the field or nursery. As planting soil is backfilled, it shall be placed in layers and tamped in place carefully so that no damage will occur to ball in any manner, or disturb the position of the ball.
 1. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.
 2. If the root flare is less than two inches (2") below the soil level of the root ball, plant at the tree the appropriate level above the grade to set the flare even with the grade. If the flare is more than two inches (2") below the soil level of the root ball the tree shall be rejected.
 3. Remove burlap or cloth wrapping and any wire baskets as completely as possible from the root ball. Do not turn under and bury portions of burlap at top of ball.
 4. Set balled and burlapped trees in the hole with the north marker facing north unless otherwise approved by PARKWAYS.
 5. Place native soil into the area around the tree, tamping lightly to reduce settlement.
 6. Ensure that the backfill immediately around the base of the root ball is tamped with foot pressure sufficient to prevent the root ball from shifting or leaning.
 7. Outfit each tree with a twenty (20) gallon slow release watering bag.
- B. Palms:
 1. Palm trees shall be placed at grade making sure not to plant the tree any deeper in the ground than the palm trees originally stood.
 2. The trees shall be placed with their vertical axis in a plumb position.

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3. All backfill shall be native soil except in cases where the soil has been amended. Water-settle the back fill.
 4. Do not cover root ball with mulch or topsoil.
 5. Provide a watering berm at each palm. Berms shall extend a minimum of 18 inches out from the trunk all around and shall be a minimum of (6) inches high.
 6. Remove twine which ties fronds together after placing palm in planting hole and securing it in the upright position using wooden bracing.
- C. Cut and remove containers for containerized plants.
 - D. Lift plants only from the bottom of the root balls or with belts or lifting harnesses of sufficient width not to damage the root balls. Do not lift trees by their trunk or use the trunk as a lever in positioning or moving the tree in the planting area.
 - E. Cut ropes or strings from the top of trees after plant has been set.
 - F. Completely remove any waterproof or water-repellant strings or wrappings from the root ball and trunk before backfilling.
 - G. The use of high nitrogen fertilizer in the planting hole is prohibited.
 - H. Contractor is responsible for providing local agricultural extension with existing soil report for fertilization recommendations.
 - I. Thoroughly water all plants immediately after planting. Apply water by hose directly to the root ball and the adjacent soil.
 - J. Remove all nursery stakes, tags, labels, strings, etc. from all plants.
 - K. Space plants as indicated on details and plans.
 - L. Form watering saucers four inches (4") high immediately outside the area of the root ball of each tree and shrub as indicated on the drawings.
 - M. Apply root hormone stimulant as per the manufacturer's instructions.

3.06 STAKING & GUYING

- A. Palms: Brace palms which are to be staked with three 2" x 4" wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point one-third the height of the trunk. Pad the trunk with five layers of burlap under the cleats. Place braces approximately five inches (5") apart and secure them underground by 2" x 4" x 12" stake pads.

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- B. Staking of trees shall be done immediately after planting. Trees shall stand plumb after staking.
- C. Staking methods shall be approved by PARKWAYS. Stakes shall be of sufficient strength to maintain the tree in an upright position that overcomes the particular circumstances that initiated the need for staking.
- D. Where ArborTie or approved equivalent is used, it shall be installed as per the manufacturer's instructions.
- E. Stakes shall be removed by the contractor at the end of the first growing season. Any tree that is not stable at the end of this time shall be rejected.
- F. Three stakes shall be used for each tree.
- G. Stakes shall not penetrate the ball of earth moved with the tree. Stakes shall penetrate existing soil below tree pit.
- H. It shall be the Contractor's responsibility to prevent plants from falling or being blown over and to straighten or replant all plants which are damaged due to a lack of staking. If unstaked, plants blown over by high winds shall not be a cause of additional expense to the Owner, but shall be the financial responsibility of the Contractor.

3.07 PRUNING

- A. Plants shall not be heavily pruned at the time of planting. Healthy lower branches and interior small twigs should not be removed except as necessary to clear walks and roads. In no case should more than one-quarter of the branching structure be removed.
- B. Pruning is required at planting time to correct defects in the tree structure, including removal of injured branches, double leaders, waterspouts, suckers, and interfering branches.
- C. Each tree shall be pruned to preserve natural character of plant.
- D. All injured tree and shrub roots shall be pruned to make clean cut ends before planting.
- E. Main leaders of trees shall not be cut back.
- F. If required, cut branches and roots with clean, sharp pruning instruments; do not break or chop. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears.
- G. No heavily pruned material will be accepted at any time. If the natural form is destroyed, the plant will be rejected.

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- H. Trees that have had roots pruned must be treated with a root stimulating hormone.
- I. The trees or roots shall be pruned in accordance with generally accepted arboricultural practices.

3.08 EDGING

- A. See Section 32 94 13 LANDSCAPE EDGING.

3.09 FERTILIZER

- A. See Section 01 66 00
- B. Special Protection: If stored at the site, fertilizer shall be kept in a weatherproof place and in such a manner that it will be dry and its effectiveness unimpaired.

3.10 MULCH

- A. Aged ground pine bark mulch spread in designated areas in a three inch (3") minimum layer.
- B. Top Dressing: Pine needle mulch spread in designated areas in a one inch (1") minimum thick layer.
- C. Mulch must not be placed within three inches (3") of the trunks of trees.
- D. The Contractor shall be responsible for the replenishment of mulch during the one-year guarantee period.

3.11 CLEAN-UP

- A. The Contractor shall, periodically or as directed during the progress of the work, remove and properly dispose of debris, rubbish, trash, clippings, pruning, and defective or unacceptable materials. The Contractor shall continuously keep the project clear of hazardous obstructions.
- B. Trash burning on the site will not be permitted.
- C. Prior to substantial completion, all tools, surplus materials, equipment, trash, and debris shall be removed and the site left in a neat clean condition.
- D. Paved areas shall be kept clean of soil, fertilizer, mulch, trash and debris, and shall be maintained in a broom clean condition at all times. Mud and soil tracked onto paved areas by equipment and workmen shall be removed promptly and completely.
- E. Protection of Existing Trees, Lawn Areas and Restoration of site: Contractor shall take special precautions to ensure that lawn areas and tree roots are not damaged during construction.

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The Contractor shall fill and re-sod any areas damaged during his operation. Refer to Section 01 56 39 TEMPORARY TREE & PLANT PROTECTION.

- F. Materials and equipment shall be stored where directed and shall be limited to the quantity required for the work. Rejected materials shall be immediately removed from the property.

PART 4 - PLANT GUARANTEE AND MAINTENANCE PERIOD

4.01 MAINTENANCE, GUARANTEE AND WATERING PERIOD:

- A. Final Acceptance shall be the final review and completion of all punch list items by Contractor. The Guarantee and Watering Period shall begin on the date of Final Acceptance and continue for one (1) full calendar year unless otherwise specified.
- B. Inspection of the work to determine its completion (Final Acceptance) will be made by PARKWAYS upon written notice requesting such inspection submitted by the Contractor at least ten (10) days prior to anticipated date. After the inspection, the Contractor will be notified of the date that the work has been approved or of any deficiencies of the requirements for work to remedy deficiencies.
- C. It is the responsibility of the Contractor to maintain all planting work through Final Acceptance and during the Guarantee and Watering Period. The Contractor is to maintain the plant materials for the year, or one year for replacements after replacements are installed, whichever is longer.
- D. Maintenance shall include all necessary watering, mulching, cultivating, fertilizing, weeding, pruning, disease and insect control, protective spraying, replacement of any plants which settle or were planted too low, and other procedures consistent with good horticultural practices which are necessary to insure normal, vigorous and healthy growth of all work under this contract.
- E. The Contractor shall fully and satisfactorily maintain and protect all work performed under this contract until completion and acceptance of the work or portions thereof.
- F. One Year Plant Watering: Contractor shall irrigate as required to maintain vigorous and healthy plant growth.
 - 1. Overwatering or flooding shall not be allowed.
 - 2. Contractor shall furnish any water to ensure adequate irrigation.
 - 3. All plants shall be spot watered using handheld hoses during the first year after planting, as required to ensure adequate water within the root ball.

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4. **Watering shall occur a minimum of two (2) times per week for one full year from the date of planting during the months of March through October and one (1) time per week during the remainder of the year.**
5. **Palm trees may require additional watering during the initial establishment period.**
Verify water needs with supplier and schedule watering accordingly.
- G. **Stake Removal: At the end of the one-year Guarantee Period, the Contractor shall be responsible for removing stakes from all trees planted under this contract.**
- H. **Mulch: Plants without the specified depth of mulch at the end of the one year guarantee period will be rejected.**
- I. All portions of the property including work resulting from other contracts which have been disturbed by causes due to, or incidental to, work performed under this contract shall be repaired and restored to the satisfaction of PARKWAYS. The contractor shall repair or replace at his own expense any work related damage to the satisfaction of PARKWAYS.
- J. To insure proper inspection of plant materials by the Contractor and proper maintenance relative to the appearance and survival of the plants during the period of construction, the Contractor shall inspect his planting according to the following schedule:
 1. at least once a week for the first month;
 2. at least once every two weeks for the next two months;
 3. at least once a month for the remainder of the construction period; and,
 4. as needed during the Guarantee Period after Final Acceptance.

Within twenty-four hours after each such inspection, the Contractor shall submit to PARKWAYS a written report describing his findings as to condition of the plantings and compliance with the recommended care and maintenance program.

- K. Cost in connection with periodic inspections, as specified above, shall be included in the Contractor's Base Bid proposal and the Contract Lump Sum. Lump Sum amount stipulated shall be withheld from all monies due to Contractor by the Owner only after Final Acceptance of the entire project.

4.02 GUARANTEE PERIOD:

- A. The Guarantee Period shall be one (1) full year after the date of Final Acceptance unless otherwise specified. The Guarantee Period ends officially with a final inspection by the Contractor and/or his subcontractor Landscape Contractor, the Owner, (the City) represented

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by PARKWAYS and the User Agency, and the City's Consultant upon the Owner's request. All replacements and repairs shall be completed no later than that day before the final inspection.

4.03 REPAIR AND REPLACEMENT OF SHRUBS AND GROUNDCOVERS

- A. The Contractor shall replace, in accordance with the drawings and specifications and throughout the guarantee period, any plants that die, or in the opinion of PARKWAYS are in an unhealthy or unsightly condition due to dead branches, excessive pruning, inadequate or improper maintenance, or any other causes due to the Contractor's negligence.
- B. The Contractor shall not be held responsible to replace or honor any warranty for the loss of any trees, plants, groundcovers or sod caused by fires, floods, freezing temperatures, lightning, winds above 50 miles per hour, or any other natural disaster, nor shall the Contractor be held responsible for acts of vandalism or acts of negligence on the part of the Owner occurring after the beginning of the one (1) year Guarantee Period.
- C. In the event that treatment or replacement is made necessary as a result of damage caused by circumstances which are beyond the Contractor's control and not due wholly or partially as a result of any act or omission of the Contractor, such treatment or replacement may be authorized by the Owner by change order in accordance with the general conditions.
- D. The Contractor shall engage a qualified Licensed Arborist to perform tree repair work for trees damaged by construction operations, in a manner acceptable to PARKWAYS Urban Forester. The Contractor shall make repairs promptly after damage to trees. The Arborist shall remove and replace dead trees and damaged trees which are determined by the Arborist to be incapable of restoration to normal growth pattern.
- E. Replacements shall be made during the first planting season following the death of plants. The cost of such replacements shall be borne by the Contractor. Replaced plant materials shall be guaranteed for one year. The Contractor shall replace plants as many times as is necessary in order to meet this requirement.
- F. If requested by PARKWAYS, the Contractor shall remove any dead plant materials in advance of the planting season.

4.04 END OF GUARANTEE PERIOD

- A. The Guarantee Period ends officially with a final inspection by the Contractor and/or his subcontractor Landscape Contractor, the Owner, (the City) represented by PARKWAYS and the User Agency, and the City's Consultant upon the Owner's request.
- B. No plants will be accepted unless they are alive and healthy and all related work conforms to the drawings and specifications.

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- C. Should any portion of the work be unacceptable, Contractor shall make all work acceptable and request a re-inspection by PARKWAYS.
- D. Contractor will be notified by letter of acceptance within five (5) days after re-inspection should the latter be necessary.

END OF SECTION