

**TREE + PALM PLANTING
SECTION 02900**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
- B.
 - 1. completing rough and fine grading as necessary to accommodate tree and palm plantings;
 - 2. excavating planting pits;
 - 3. furnishing; installing; watering; and fertilizing trees and palms of species, variety, size, quantities, and quality specified;
 - 4. providing and placing Planting Mix and soil additives;
 - 5. bracing/guying, and selectively pruning;
 - 6. providing maintenance during maintenance period.

1.02 REFERENCES

- A. "Grades and Standards for Nursery Plants", Part I and II, State of Florida, Department of Agriculture (current edition).
- B. "Approved Planting Practices", American Association of Nurserymen (current edition).
- C. "Hortus" (L.H. Bailey), Second Edition.
- D. "Manual of Cultivated Plants" (L.H. Bailey).
- E. "Standard Plant Names", American Joint Committee on Horticultural Nomenclature.

1.03 DEFINITIONS

- A. Unsatisfactory Materials: Materials of any classification that are determined by a certified agricultural testing laboratory as inappropriate for horticultural purposes.
- B. "Plant Materials" or "Plants": Includes all trees and palms indicated on the drawings and/or specified by the Landscape Architect.
- C. All plant material shall conform to a minimum "Florida #1" standard as defined by "Grades and Standards for Nursery Plants" of the Florida Department of Agriculture.

1.04 SUBMITTALS

- A. Planting Mix: A sample of approximately five (5) pounds of the Planting Mix (or each of the Planting Mixes, when more than one such Mix is specified) to be utilized in planting of all trees and palms, shall be submitted to the Landscape Architect for approval at least seven (7) working days prior to its intended delivery to the site.

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B. Contract Closeout Submittals:

1. If Planting Plans are provided for project execution, then complete "As-Built/Record Drawings" of completed work, marking Planting Plans with red line markings indicating all changes made to the planting system layout during installation. Notations shall reflect changes in species, variety, location, quantity, and size, if any.

C. Certificates:

1. Submit certificates from supplier(s) stating that the delivered Planting Mix, delivered plant materials, and fertilizer comply with requirements specified.
2. Certificates of Inspections: Shipments or orders of plant material shall be properly inspected at nursery or growing site by authorized federal and state authorities; include certificates with shipment.

1.05 QUALITY ASSURANCE

- A. Qualifications of Workers: Provide at least one person conversant in the English language, who shall be present at all times during execution of the Work, and who shall be thoroughly familiar and knowledgeable with the types and requirements of horticultural materials being utilized and installed. This designated person shall direct the work performed under this Section. Provide name of designee to the Landscape Architect.
- B. Approvals: Obtain written acceptance from Landscape Architect for any variation from specified requirements before proceeding with work.
- C. Plant Materials: Meet or exceed specifications of federal, state and county laws requiring inspection for plant disease and insect control.
- D. Deficiencies: In the event that the Landscape Architect suspects deficiencies in materials proposed for use or installed on this project, such materials shall be tested by an independent testing laboratory. If results indicate non-conformance of materials tested, Contractor shall bear the costs of such tests, as well as all costs associated with the removal and replacement of such materials. Evidence of non-compliance will result in rejection of all work in which rejected materials have been utilized.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage:

1. Deliver all materials to the site in a horticulturally approved manner, and store until use in protected condition on site, free from contact with water or other liquids, and any tainting.
2. Immediately remove from the site - independently or as directed by the Landscape Architect - materials which do not comply with the provisions of this specification.
3. Use all means necessary to protect materials before, during, and after installation and to protect installed work and materials of all other trades.

- B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary at no cost to the Owner, subject to final acceptance by the Landscape Architect.
- C. Protection: Trees and palms shall be protected from storm, winds, and other deleterious weather conditions, and adequately packed/loaded to prevent breakage and drying out during transit.
- D. Tagged Trees and Palms: Only trees and palms bearing the City of Miami Parks + Rec aluminum sealing tag and orange card shall be delivered to the site, and shall be installed only after visual inspection and approval by the Landscape Architect. Advise Landscape Architect in writing of delivery schedule prior to commencement. The aluminum sealing tag and orange card shall be in place and attached to each tree or palm: the absence of such a tag shall be cause for rejection of the tree or palm.
- E. Rejection of Trees and Palms: The following types of plants will be immediately rejected:
 1. those that manifest improper handling, reflecting bruised, torn, scarred, or split or broken branches or stalks;
 2. those with manufactured, damaged, or loose root balls; or those that have been recently "sized up" to a larger container, where the root structure does not engage at least 80% of the container's soil; and
 3. those that arrive on site in an unsatisfactory condition.
- F. Acceptance: Storage and/or installation of trees and palms on site by the Contractor does not in any way convey acceptance of such work by the Landscape Architect or Owner. When appropriate, a letter of Partial Written Acceptance, or Final Written Acceptance will be issued at the discretion of the Landscape Architect.

1.07 SEQUENCING

- A. Schedule: Provide to the Landscape Architect in pre-construction meeting, a written schedule of all tree and palm installations, and indicate delivery dates to the site of these items. Notify the Landscape Architect by email a minimum of two (2) work days in advance of anticipated delays in deliveries.
- B. Periodic Observation: In addition to other periodic observation, the Contractor shall schedule and facilitate the following observations, giving notice to the Landscape Architect at least seven (7) work days in advance:
 1. observation of proposed planting pit locations for trees and palms, as represented by marking with white spray paint;
 2. when required, line and utility locations marked by private line locator retained by landscape contractor, and/or Sunshine State;
 3. observation, upon delivery, of plant materials at the site to verify species, vigor and robustness, size, condition, shape, quantity, all required to be in compliance with specification and drawings;
 4. observation of planting pit excavations.

5. observation of placement of vertical watering/fertilizing tubes, and backfilling of trees and palms in planting pits with specified Planting Mix;
6. observation of work and materials after completion of planting. This observation shall be scheduled sufficiently in advance and in cooperation with the Landscape Architect so that it may be conducted within forty-eight (48) hours after completion of all planting;
7. observation, at written request of the Contractor with five (5) day advanced notice, at thirty (30) day intervals of the sixty (60) calendar day period of maintenance that shall commence at issuance of Final Written Acceptance; and observation for Final Written Acceptance at the end of the warranty period.

1.08 WARRANTY

- A. Replacements: At no additional cost to the Owner, the Contractor shall replace from date of Final Written Acceptance for a period of one year (365 days), any and all trees and palms that fail to establish, manifest, and maintain vigorous and robust growth. Throughout and at conclusion of the specified warranty period, the Landscape Architect shall observe the condition of all tree and palm plantings. Trees and palms that have died or that are in an unhealthy or badly impaired condition for reasons other than vandalism, "Acts of Providence" (*force majeure*), or documented neglect by the Owner, shall be replaced by the Contractor at his cost, at the direction of the Landscape Architect. Replacement will not be required in any season determined by the Landscape Architect as unfavorable to the survival and robust development of such trees and/or palms.
- B. Loss: After Final Written Acceptance, Contractor shall not be held responsible for losses beyond his control arising from "Acts of Providence" (*force majeure*); acts of vandalism; or loss arising from documented neglect and failure on the part of the Owner to properly care for planting.
- C. Maintenance Modifications: During warranty period and at no extra cost to the Owner, Contractor shall observe and determine if any changes should be made in the Owner's maintenance program. Proposed changes shall be submitted in writing, to the Landscape Architect.
- D. Remedial Clean-Up: Site of work shall be returned to a clean, neat condition, removing all debris and by-products of operations. Where appropriate within turf areas, install sod in areas in which disturbance and damage to turf areas has occurred.

1.09 MAINTENANCE

- A. Maintenance Period: Contractor shall maintain all trees and palms, from commencement of planting and continuing until issuance of Final Written Acceptance by the Landscape Architect. Maintain and protect tree and palm plantings including incidental materials, until completion of planting operations, and receipt of Final Written Acceptance.

- B. Tree and Palm Maintenance:
 1. Maintenance shall begin immediately after each tree/palm is properly installed and shall continue until the completion of the sixty (60) calendar-day maintenance period, commencing from Final Written Acceptance, issued by the Landscape Architect.
 2. Settled trees and palms whose root ball crowns do not maintain a flush relationship with adjacent grades shall be reset to proper grade position. Individual trees and palms that manifest at least 50% or more dead or failing foliar crown shall be immediately removed and replaced.
 3. Defective work shall be corrected within a reasonable period of time after being manifest and when weather permits. Upon completion of planting, the Contractor shall remove from the site excess soil and debris, and repair all damage to the work of any trade, resulting from planting operations.
- C. General Maintenance:
 1. Maintenance shall include all watering, mulching, weeding, fertilizing, cultivating, spraying, and pruning necessary to keep trees and palms in a healthy, vigorous growing condition for the sixty (60) calendar-day maintenance period. All planted areas shall be maintained in a neat and attractive appearance.
 2. Provide all equipment and means for proper application of water to those trees and palms that do not receive water from an irrigation system.
- D. Extension of Maintenance Period: The contractor shall continue maintenance period at no additional cost to Owner, for an additional period of 30 days after previously noted deficiencies have been corrected. Warranty period shall commence at the end of the maintenance period for such replacement plantings.
- E. Completion of Maintenance: The Contractor shall conclude maintenance (exclusive of replacement within warranty period) upon Final Written Acceptance issued by the Landscape Architect at the end of the maintenance period or, as provided for above, at the end of the extended maintenance period.
- F. Protection: Protect all work from damage, and immediately restore any work of any trade, that is damaged during construction by Contractor or supporting forces.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Planting Mix: An evenly blended mixture of 35% organic "Everglades Muck", 35% coarse ("sharp-edged") sand, 20% decomposed pine bark or wood chips, 10% Canadian Peat Moss.. Add five (5) pounds of Atlantic FEC TRINITE PLUS fertilizer to each cubic yard of Planting Mix and thoroughly blend. After addition of fertilizer amendment, Planting Mix shall have pH between 6.0 and 7.0 after blending. The Landscape Architect reserves the right to reject Planting Mix utilized that fails to meet the Specification at any time during the execution of work.

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B. Commercial Fertilizer: Commercial grade fertilizer, uniform in composition, dry, free flowing, and delivered to site in fully labeled, unopened containers, bearing name, trade name or trademark, and warranty of producer. Fertilizers shall conform to applicable State and Federal law. At least 50% of the nitrogen content of fertilizers shall be derived from natural organic sources and potash shall be derived from sulfate of potash. Each container of fertilizer shall bear the manufacturer's statement of analysis or a manufacturer's Certificate of Compliance shall be submitted to the Landscape Architect upon delivery to the site. The following minimum percentages of available plant food by weight are required.

1. 12-4-8 Fertilizer

- a. Total Nitrogen, not less than 12.00%.
- b. Nitrate Nitrogen, not less than 1.5%.
- c. Ammoniacal Nitrogen, not less than 5.7%.
- d. Granular Blend Requirements:

- [1] Water soluble organic nitrogen, not less than 1.3%.
- [2] Water insoluble organic nitrogen, not less than 3.5%.
- [3] Available Phosphoric Acid, not less than 4.0%.
- [4] Water Soluble Potash, not less than 8.0%.
- [5] Total primary plant food, not less than 24.0%.
- [6] Chlorine, not more than 6.0%.
- [7] Secondary Plant Foods:

OXIDE		ELEMENTAL	
Magnesium	2	or	Mn 1.20%
Manganese	1	or	Mn .70%

[8] From F.T.E. 504 - 30 lbs. per ton to be composed of the following elements:

ELEMENTAL			
Boron	B ₂ O ₃	.1845%	B .05%
Copper	CuO	.1312%	Cu .10%
Iron	Fe ₂ O ₃	.3360%	Fe .26%
Manganese	MnO	.1372%	Mn .10%
Molybdenum	MoO ₃	.0015%	Mo
Zinc	ZnO	.1312%	Zn .10%

[9] Derived from this source Materials:

- a) Ammonium Nitrate
- b) Sulfate of Ammonia
- c) Ureaform or I.B.D.U.
- d) Triple Superphosphate
- e) Muriate of Potash
- f) Sulfa-Mag
- g) Manganese Sulfate

[10] All materials to be prilled or granular in form, except Manganese Sulfate.

- C. **Mulch: No mulch of any type is to be placed over (on top of) nor around the root ball of any newly-planted tree and/or palm installed under this contract.**
- D. **Watering Saucer: No earthen watering saucer shall be constructed around the perimeter of the root ball of any newly-planted tree or palm under this contract.**
- E. **Stress Reducer / Root Stimulant: For each one inch of caliper DBH measured at 54" above the crown of root ball of each tree, incorporate four (4) ounces of "DIEHARD Transplant" for trees, or "DIEHARD Palm Transplant" for palms (Horticultural Alliance, Inc. / 1-800-628-6373 / FAX 1-888-386-4478 / info@horticulturalalliance.com), a mycorrhizal fungal transplant inoculants. Incorporate into the uppermost 8" of compacted Planting Mix surrounding the root ball, and water to total soil saturation.**
- F. **Water Absorber / Hydrogel: For each one inch of caliper DBH measured at the 54" above the crown of root ball of each tree, incorporate two (2) ounces by weight of "Terra-Sorb Coarse Hydrogel" (1-800-421-9051) or "Horta-Sorb (1-800-628-6373), a water-absorbing and storing copolymer gel.**
- G. **Tree & Palm Guying: For trees and palms up to and including 12' in height, install a minimum of four woven anchor straps, at ninety degrees to one another, from and connected to the tree or palm trunk, and anchored a minimum of 4" below grade to 12" pressure treated stakes.. Secure tree against movement in wind, and fasten two "DayGlo" color plastic flags with two 12" tails equidistant on each anchor strap line.**
- H. **Tree & Palm Bracing: For trees and palms greater than 12' in height, a minimum of three 2x4 appearance grade braces painted 100% complete in Day Glo Orange paint, set One hundred twenty degrees to one another around the trunk, at 60 degrees to the ground plane, and secured into the ground plane with one, 12" #4 rebar or ½" galvanized pipe passing through each such 2x4 brace, driven into the ground, and set flush with the top of the brace. Secure each angled brace to one 12" long 2x4 vertical block set over four layers of burlap. Secure blocks with two metal or plastic straps, one 3" from the top and one 3" from the bottom of each block. Nail brace to block with four 10d nails.**
- I. **Water: Potable water shall be provided by the Contractor. In the event of emergency or other loss of water supply, Contractor shall be responsible for providing adequate water supply for required watering of all plant materials..**
- J. **Trees and Palms:**
 1. Trees and palms shall be as noted on plans and/or as specified and approved by the Landscape Architect.
 2. Caliper measurement (DBH, 54" above crown of root ball), height and spread measurements, root ball dimensions, and container size when applicable, for trees; and CT (clear trunk) or OA (overall height), root ball dimension, and caliper measurement (DBH, 54" above crown of root ball) for palms; shall conform to the applicable standards established within reference documents cited herein, and the requirements for this project.
 3. The Landscape Architect shall select trees and palms, and affix an embossed and numbered "Miami Parks & Rec" lockable orange-ball seal, and a color tag bearing project name, to each tree and palm selected. Each orange-ball seal and color tag

shall not be removed: absence of orange-ball seal and/or tag at delivery to project site will be grounds for rejection of the tree or palm.

4. No substitutions in plant species or sizes shall be made, without first obtaining written approval from the Landscape Architect.
5. Materials or work may be rejected if, in the opinion of the Landscape Architect, such work does not meet the requirements of the Specifications. Rejected materials shall be promptly removed from the site by the Contractor at no expense to the Owner.

K. Pruning:

1. Trees and palms shall not be pruned prior to delivery.
2. Field-grown trees shall have been root pruned at least once within the three months prior to the date of their removal from the field for installation at the site of the work.
3. Prune in accordance with current ANSI 300 standards immediately after planting, under observation of the Landscape Architect.

L. Plant Quality:

1. Trees and palms shall be freshly dug, balled and burlapped nursery grown stock, or container grown nursery stock. All plant material shall be free of broken or damaged root balls, or root bound conditions. Plant materials shall be sound, healthy, vigorous, free from plant diseases, insect pests or their eggs, and shall have healthy, normal root systems.
2. Collected plants are not acceptable, and shall not be used.
3. All trees and palms shall be Florida No. 1 or better quality, graded in accordance with Grades and Standards for Nursery Plants (current edition), published by the State of Florida, Department of Agriculture. Trees and palms shall have pronounced symmetry typical of the species, and a full foliar crown. Plants judged not to be in accordance with these standards will be rejected, and shall be immediately removed from the site of the work.

PART 3 EXECUTION

3.01 INSPECTION

- A. Inspection: Observe work of all other trades and verify that all such work is complete to the point at which this landscape work may properly and safely commence. Verify that planting can be completed in accordance with any prevailing Contract Documents.
- B. Discrepancies:
 1. In the event of discrepancy, immediately notify the Landscape Architect.
 2. Do not proceed with installation of trees or palms in areas of discrepancy until all such discrepancies have been fully resolved to the satisfaction of the Landscape Architect.

3.02 PREPARATION

- A. Marking Locations: Mark with the Landscape Architect in white marking paint, proposed locations for each tree and/or palm. Obtain and pay for utility line locations (electric, phone, cable, gas, water, etc.) from a qualified company (for example, GPRS, 305-801-4138; High Tech Locating, 305-412-0891; Pertuz, 305-275-7813; or other), for park property, and from Sunshine State for public rights-of-way. Advise Landscape Architect of any conflicts.
- B. Finish Sub-grade: Upon acceptance of rough grading elevations, establish fine sub-grade with smooth and even finish. Remove rocks exceeding one inch diameter, sticks, debris, deleterious material, grass and soil clods, and vegetation.
- C. Excavation:
1. Proposed planting pits identified as having potential utility or service line conflicts shall be excavated with hand tools to determine the location of, and avoid damage to, such utilities.
 2. Barricade or mark excavations to prevent hazards to mechanical equipment, vehicles, and pedestrians.
 3. ***Excavate tree and palm planting pits 24" greater in diameter than the root ball, and a minimum 12" deeper than the vertical depth of root ball.***
 4. ***Set trees and palms in vertical position in the center of the Planting Pit with the top of the root ball approximately 1" to 1 ½" above immediately surrounding finish grades.***
 5. ***Ensure that the root flare - the point at which the trunk of a tree begins to spread as it meets the root structure of the tree – is visible above existing grade when the tree installation is completed.(The absence of visible root flare is a clear indication that a tree has been planted too deep)***
 6. ***Place four (4), high density polypropylene polymer Vertical Root Aeration + Nutrient Delivery tubes (3" diameter x 18" length) equidistant around the perimeter of the root ball of each tree, exposing the top 1" of the tube above finished grade. Top and bottom caps of the tube shall be constructed of high-density styrene polymer, with the top-end cap containing an air convection insert. Product as manufactured by Rootwell Products, Inc. (248-227-5705 / 1-888-766-8935), Model "Rootwell Pro 318".***
 7. ***Carefully place specified Planting Mix under and around root ball. Take great care not to deposit Planting Mix into vertical Rootwell tubes. For burlapped root balls, cut top 1/3 of burlap away from root ball, and remove, before placing Planting Mix around the root ball.***

8. ***Install around each tree trunk for protection, a minimum of one "Plantra Tree Bark Protector" (1-800-951-3806) Model Number TBCS0W -1800 (1 ½' in length).***
 9. Thoroughly water each plant after placement of Planting Mix in each lift, to remove all air pockets.
 10. Prune trees, removing no more than 1/3 of twigs and branches, while maintaining the uniform character and shape typical of the species. Remove all dead diseased, rubbing, and dying branches. All trees shall meet height and spread specifications after pruning.
 11. Prune palms, removing 1/3 of healthy fronds, and remove all fronds below the horizontal. For Royal Palms and Sabal Palms, gather pruned fronds around the bud, and tie with loose-woven hemp cord every 12" vertically, to protect and secure bud.
 12. If planting is performed after sod placement, proper protection shall be provided and damage resulting from planting operations shall be repaired promptly
- E. Provisional Inspection:
1. On completion of the work and upon receipt of the written request of the Contractor, the Landscape Architect shall inspect planting work for provisional acceptance. The request shall be received from the Contractor at least five (5) work days before the anticipated date of provisional inspection.
 2. The Contractor shall repair or replace defective work before provisional acceptance of the work.]
- F. Clean-up and Final Inspection:
1. Upon completion of the work in its entirety, the Contractor must thoroughly clean up the project site. In addition to removing all equipment, unused materials, deleterious material, and surplus excavated material, the Contractor shall fine grade all disturbed areas and the areas adjacent to the new plantings to provide a neat and uniform site. All existing structures, appurtenances, and site features and elements damaged or altered, as a result of the landscape work, shall be corrected by the Contractor.
 2. At the end of the warranty period, inspection of plants will be made by the Landscape Architect upon written notice requesting such inspection, submitted by the Contractor at least five (5) days before the desired inspection.
 3. All defects discovered shall be repaired or replaced by the Contractor prior to Final Written Acceptance.

END OF SECTION