SECTION 144
LANDSCAPING

GENERAL

144.1 DESCRIPTION OF WORK

A. Provide all labor, materials, and equipment necessary for planting of trees, palms, shrubs, and ground covers and other supplementary landscape work described in this section.

B. Fine Grading: Provide fine grading necessary to establish finish grade in all landscape areas

144.2 DEFINITIONS

A. "Initial Acceptance": The point when all the plant installation requirements of contract documents, including any punch-list item, have been completed to the satisfaction of the Contract Manager.

B. "Final Acceptance": The point when the landscape maintenance work required after Initial Acceptance, including all punch list items from the Final Inspection, has been completed to the satisfaction of the Contract Manager.

C. "Nursery Grown": Plants grown in the nursery from liners or collected and then grown in a nursery not less than 2 years.

D. "Healthy, vigorous condition": Plants shall be full of foliage and show little, if any, evidence of chlorosis, necrosis, disease or insect infestation. Trees shall have a trunk caliper diameter greater at the end of the maintenance period than at the beginning of the maintenance period. Palms shall have new, green fronds developing with no necrosis or chlorosis.

E. "Hardened-off" or "Cured" tree or palm: A nursery field grown tree or palm that has been dug, balled and burlapped (B&B), and then placed in a holding area (4 week minimum) and watered until fibrous roots are seen growing through the burlap on the sides of the root ball. Florida nurseries belonging to the "Root Plus Growers" association (www.rootplusgrowers.org) can provide hardened off B&B trees.

F. "Cropped" or "Hurricane Cut": The removal of all leaves from a palm tree before shipment to the job site. Only cabbage palms can be cropped or hurricane cut.

G. "Booted": The retention of the dead leaf bases that naturally remain affixed to the palm trunk.

H. "Root Bound" or "Pot Bound": Root balls from containers which have large or numerous roots encircling the surface of the root ball.

I. Hardwood or Conifer Tree "Caliper": Diameter of trunk measured at 6" above the ground if the tree has a trunk diameter of 4½" or less, and measured at 12" above the ground if the trunk diameter is greater than 4½".

J. Palm "Caliper": The diameter of widest portion of the palm trunk measured 3' above the top of the root ball. Existing dead leaf bases or boots are not included this measurement.

K. Collected Cabbage Palm: Cabbage palm collected in the wild, with leaves cropped for shipment.

L. Regenerated Palm: A collected palm, especially a cabbage palm, which has some type of root ball containment after harvesting and cropping, and then is maintained until several new leaves and substantial number of new roots have been produced.

M. Tree: Hardwood or conifer trees, not including palms.

144.3 REFERENCED DOCUMENTS:

The latest editions of the following publications, specifications, and standards, when referenced, form a part of this specification, except as modified by this specification..

A. *Florida Grades and Standards for Nursery Plants*, 2015; Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

B. *ANSI Z60.1: American Standard for Nursery Stock.*

C. City of Jacksonville Ordinance Code, *Chapter 366 (Groundwater and Surface Water Resource Management), Part 6- Fertilizer Application*.

144.4 REGULATORY REQUIREMENTS

A. Obtain all permits related to landscape work unless previously excluded elsewhere in the contract documents.

B. Comply with all laws and ordinances bearing on the operation of the work as drawn and specified. Promptly notify the Contract Manager in writing if there is a conflict between the regulatory requirements and the work shown in the contract documents. Include, in the written notice, the description of the necessary changes and resultant costs, if any.

C. Comply with regulatory agencies requirements established for fertilizer and pesticide composition.

D. Application of Pesticides: Strictly comply with the manufacturer's specimen label and safety data sheet for each pesticide used, and the pest control regulation of the State of Florida and the EPA. The pesticide application shall not interfere with the public. Personnel applying pesticides must be licensed per Florida Administrative Code (5E-9 FAC) and Chapter 482 of the Florida Statutes.

144.5 VERIFICATION OF CONDITIONS: If drawings are provided with the purchase order, all dimensions and the layout shown on the drawings are approximate. Therefore, before proceeding with any work, carefully check and verify all dimensions and quantities, and immediately inform the Contract Manager of discrepancies in the drawings or between the information on the drawings and the actual conditions. Do not proceed with work in areas where discrepancies are found until the Contract Manager has resolved the conflict and approves work in the affected area.

144.6 SUBMITTALS: Submit the following information when requested by the Contract Manager.

A. Proposed Plant Substitutions: Do not substitute the type of plants requested in each purchase order unless written approval is received from the Project Manager. If a specified plant is not obtainable, submit proof of non-availability and a written proposal for use of equivalent material. The Contract Manager shall issue a change order for the approved substitutions.

B. Photograph, taken at the nursery or holding area, that shows a typical example of each specified type of plant.

C. Inspection Certificates, Manufacturer's Data: Submit copies of certificates of inspection required by governmental authorities. Submit manufacturer's or vendor's label, certified analysis, and application or installation instructions for the materials noted below. Submit other data requested to substantiate that materials comply with specified requirements. Submit vendors invoice for the materials below, if requested. The invoice shall reference this project name and show the plant quantities used for this project.

1. Fertilizers.
2. Pesticides and herbicides used.
3. Topsoil, yard sand and soil mix.
4. Portable water bags and/or the temporary irrigation system components, depending upon what water system is chosen.
5. Tree root ball anchoring and palm staking system components.

D. Plant Certification. Submit the following when requested by the Contract Manager.

1. Certification from each grower providing B & B Trees and Palms for the work order, stating that the B&B Trees and Palms, (except for collected cabbage palms) have been "hardened off" or "cured" before shipment.
2. Date Palm Variety Certification: Provide with delivery, the supplier's invoice and the supplier's certificate of date palm variety. Include on the certificate the following statement:

I, name, on behalf of supplier, certify that the palms sold to landscape contractor name on Invoice # _____ are the following variety: genus, _____, species_____, sub-variety _____. signature and date.

E. Samples of Topsoil, Yard Sand and Soil Conditioner. Submit one quart of each item used, if requested.

144.7 PLANT INSPECTION BEFORE ISSUANCE OF PURCHASE ORDER OR PLANT INSTALLATION

A. Photograph Submittal & Preliminary Approval of Plants

1. Once the CONTRACT MANAGER has provided preliminary approved of the price proposal for each project, submit photographs that show a typical example of each specified type and size of tree and palm taken at the nursery supplying the plants. Also, submit photographs showing a typical example of other plants listed on the plant schedule if requested by the Contract Manager.
2. Include in the photograph of each tree or palm an adult who is holding a pole that is longer than the specified height of the plant and marked in 1-foot increments, which can be clearly read in the photograph. Place pole on top of root ball. An adult is not required in the photos of other plants.
3. Label each photograph with a complete description of the plant shown, including botanical name, caliper, height and/ or spread, the B&B or container size, and other details included in the plant schedule.
4. The Contract Manager will review the photographs upon receipt. If the typical plant appears to comply with the project specifications, the Contract Manager will provide preliminary written approval that the plants appear in conformance with the plant schedule. For each photograph rejected, submit a new photograph of the plant which complies with the specifications. Approval of a photograph representing a typical plant does not relieve the Contractor from providing plants as specified. Individual plants at the job site that fail to meet the specifications will be rejected.
5. The Contract Manager may not require photographs of plants taken at the nursery for each project if a photograph of the plant of the same description from the same wholesale nursery has already been approved by the Contract Manager for a previous project.
6. Once the Contract Manager's has provided written approval of the photographs, he/she will then issue a Purchase Order, which will be the City's authorization to begin work**. Do not order or ship plants or begin the installation of plants until the Purchase Order is received and the Project Manager approves the work schedule.** The City is under no obligation to pay for work begun or completed before receipt of the Purchase Order and the Contract Manager's approval of the work schedule.
7. **Do not ship plants from the grower until the Contract Manager has given preliminary written approval of the photograph of each specified plant and has issued a written Purchase Order.**

B. Plant Inspection before Installation: The Contract Manager may require preliminary approval of the plants either at the Contractor's facility or at the work site before installing plants. Do not install rejected plants at the work site.

144.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packaged materials: Deliver packaged materials in original unopened containers with original labels attached and legible. Store materials in a weather protected enclosure to protect from deterioration. Provide products manufactured no more than one year from the date of use unless otherwise specified.

B. Plants:

1. Water plants just before shipping.
2. During shipment, provide protective covering over plants. Do not allow plants to be left in closed trucks parked in the sun during hot weather unless air-conditioned. Tie down trees and palms to

truck to prevent rolling during shipment. Do not bend or bind-tie plants in such a way that will damage bark, break branches, or destroy natural shape.

3. Palm Shipment: Ship palms from the supplier with the fronds of each palm tied together in a bundle above the bud with biodegradable twine, except for cropped cabbage palms. Keep frond bundle tied until after the palm planting is completed and for the additional time recommended by the palm supplier.

4. Deliver plants after preparations for planting have been completed. If planting is delayed more than 6 hours after delivery, set plants in an erect position, shade root ball, and irrigate twice daily to keep roots moist until planting. Protect from weather and mechanical damage.

5. Pick up all plants by ball or container, not by trunks or stems.

6. Lift large container trees and palms with a forklift under the container. Trees or palms in 30 gallon containers or smaller can be manually lifted using hand holds along the lip of the container. Lift B&B trees by the root ball, or if there is a wire basket, lift by the wire loops. Do not deform the root ball during handling. Tall palms can be mechanically lifted with a sling around the palm trunk so long as the trunk is not damaged. Do not deform the root ball during handling.

7. Keep container grown stock in containers until just before planting.

144.9 JOB CONDITIONS

A. Coordination: Coordinate all landscape work with the Contract Manager and other Contractors. Begin planting after final grades are established and irrigation work is completed.

B. Location of Underground Utilities: Determine location of underground utilities before excavating; hand excavate where required to avoid damage to utilities. After the locations of transplanted trees, new trees and beds have been staked, contact utility-locating services at least 72 hours before any excavation. The utility location service for most utilities is the Florida Utility Locating Service at 800-432-4770.

C. Notification of FDOT and City Traffic Engineering: If work is within a street right-of-way, coordinate work and maintenance of traffic with the appropriate agency. If work is within state highway right-of-way, notify the FDOT Inspector Coordinator at 360-5658. If work is located in the City right-of-way, contact the City Traffic Engineering at 387-8894. Notification shall occur at least 48 hours before starting work in the right-of-way.

D. Maintenance of Traffic: When working in a FDOT right-of-way, obtain a work permit from FDOT Maintenance office and comply with FDOT conditions stated in the permit and in conformance with the FDOT Manual of Traffic Control; when working in a City right-of-way comply with the maintenance of traffic requirements of City Traffic Engineering.

E. Clean Up and Protection:

1. During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.

2. Protect vehicular and pedestrian traffic, existing vegetation, above ground and underground utilities and structures during construction by using signs, barricades and/or fencing. In addition, post signs or barricades required by the City. Maintain protection until Initial Acceptance of the landscaping.

3. Protect landscape work from damage by landscape operations, operations by other contractors and trespassers until Initial Acceptance. Repair or replace all construction damage to improvements and facilities on the project property, on adjacent property or on the right-of-way, as directed by the City, and at no cost to the City.

4. Maintain grade stakes set by others until all parties agree that the stakes can be removed.

144.10 PLANTING SEASON: Landscape work may proceed at any time or season agreed upon by the Contractor and the Contract Manager. However, schedule and perform landscape work only when weather

and soil conditions are suitable in accordance with local practice. Do not install plants when temperatures may drop below 35 degrees or above 95 degrees Fahrenheit, nor when wind velocity exceeds 10 miles per hour, unless approved by Contract Manager.

MATERIALS

144.11 PLANTS

A. General: Provide state inspected, nursery-grown plants, unless otherwise specified. Conform to the plant schedule, the FLORIDA FANCY and FLORIDA NO. 1 grades established by the "*Grades and Standards for Nursery Plants"*, local landscape ordinance, and, where applicable, to ANSI Z60.1. Trees and Palms shall be graded FLORIDA FANCY; all other plants shall be graded a FLORIDA NO. 1 or better. Plants may be specified as container grown and/or balled and burlapped (B&B). Spaded trees may be substituted for container grown or B&B trees, if approved by the Contract Manager (see specification below for spaded trees). Provide healthy, vigorous plants, free from disease, insects and injury; well branched, free of included bark within major branch unions; and with a solid healthy root ball of vigorous, fibrous roots, but not excessively rootbound. All plants shall be true to variety, cultivar, species, quality, size, and flower color. Plants that do not conform to the referenced standards shall be rejected. Plants that have been cut back from larger sizes to meet certain specified requirements shall also be rejected. Plants shall have green, live foliage, except deciduous plants planted in the dormant season. Plants that are planted during the growing season that are in "shock" (plants with dead or dying leaves) are subject to rejection. TREES OR PALMS THAT HAVE WOUNDS OR BARK INJURIES ON THE MAJOR TRUNKS WILL BE REJECTED.

B. Balled and Burlapped plants: Provide B&B plants with ball sizes complying with the "*Grades and Standards for Nursery Plants*," unless otherwise specified. Dig plants with a firm earth ball. Firmly wrap balls with burlap or other biodegradable cloth and insert into wire basket. Then secure with twine. Plants with cracked or loose balls will be rejected. Provide B&B trees and palms (except cabbage palms) that are "HARDENED OFF" OR "CURED."

C. Container Plants: Provide healthy, vigorous plants with a well-established root system reaching the sides of the containers that will remain as a firm root ball after removal from the container, but shall not be root bound (excessive root growth encircling the inside of the container). Root-bound plants will be rejected.

D. Spaded Trees and Palms: Provide trees spaded from a commercial nursery field. Use tree spade equipment capable of appropriately moving trees up to the caliper specified. Dig plants with firm balls of earth sufficient in diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Root ball diameter shall be at least 4" greater than the sizes recommended by the "*Grades and Standards for Nursery Plants*," unless otherwise specified.

E. Single Trunk Trees and Palms: The specified trunk caliper is the minimum acceptable caliper size. Provide trees with a single straight trunk and a single dominant central leader, unless otherwise specified. Trees with multiple leaders and "V" crotches will be rejected. Palms shall have a single, straight trunk, unless otherwise specified. If the Contract Manager approves a tree or palm with a larger trunk caliper than specified, then the ball/container size, height, and spread must be increased to conform to the criteria in the Florida Grades and Standards for the caliper provided.

F. Multi-trunk Trees and Palms: Provide the minimum number of trunks specified, with each trunk equal to or greater than the caliper specified. Each specified trunk shall originate from the root ball. The Contract Manager may approve additional trunks if requested.

144.12 PALMS

A. Provide palms with straight trunks unless otherwise specified. Provide the clear trunk height specified, measured from the original soil line to the point in the canopy where the trunk caliper begins to taper abruptly. **The practice of either burying taller palms below the original soil line of the root ball or raising short palms by exposing part of the root ball above the original soil line to achieve the specified height is not allowed.**

B. Root Ball Diameter

1. Date Palms: Provide 42 inch diameter root balls with a minimum depth of 36 to 42 inches.

2. Other Palms: Provide B&B root balls conforming to "*Florida Grades & Standards*." Balls shall extend 9 to 12 inches beyond the lowest part of the trunk exclusive of exposed roots and persistent leaf bases and a minimum depth of 12 to 24 inches. If the palm has multiple trunks, the root ball shall extend out never less than 8 inches from the outside edge of the trunk cluster.

144.13 TOPSOIL

A. Fine sand or loamy fine sand indigenous to the area suitable for plant growth that is free of weeds, roots, stumps, rocks larger than ½" diameter, organic muck, hard pan, toxic substances detrimental to plant growth, and construction debris such as limerock, concrete, and asphalt pieces. Deliver in a normally moist condition, neither muddy nor wet. Soil used for topsoil shall meet the following criteria measured in accordance with the appropriate AASHTO and ASTM standard:

1.	AASHTO Classification:	A-3
2.	USDA Texture	Fine Sand, Loamy fine sand
3.	pH	5.0-7.5
4.	Deleterious Material (rocks, roots)	0-2% maximum by mass
5.	Organic Matter Content	1-10% by mass
6.	Sand Content	78-99% by mass
7.	Silt & Clay Content	0-10% by mass

B. Black, chalky, silt like soil material often sold as "topsoil" does not meet the above criteria for topsoil and is therefore not acceptable. Provide a sandy soil meeting the above criteria.

C. Submit a one-quart sample of the topsoil to the Contract Manager before beginning planting and obtain approval. If requested by the Contract Manager, submit a soil test report from a commercial soil testing laboratory to verify compliance with the above criteria.

144.14 EXISTING SOIL: Use existing soil in plant pits if the soil complies with the standard for topsoil, unless the soil is contaminated with limerock, clay, brush, weeds, roots, stumps, stones larger than 1/2 inch in any dimension, litter and other extraneous or toxic matter harmful to plant growth. Remove contaminated soil and replace with acceptable stockpiled existing soil or new topsoil.

144.15 YARD SAND: Coarse, clean washed yellow sand, commonly called "yard sand" that is free of limerock, clay, silt, brush, weeds, roots, stumps, gravel, litter and other extraneous or toxic matter harmful to plant growth. Manufactured yard sand is not permitted.

144.16 SOIL MIX: Provide 100% organic soil mix, free of limerock, clay, brush, weeds, roots, stumps, gravel, litter and other extraneous or toxic matter harmful to plant growth. Soil mix shall be *Wild Earth Mix #3* by "Mulch Masters, Inc. Landscape Supply Company" or approved equal.

144.17 FERTILIZER

A. General Use: Granulated "LESCO 12-2-14 Southern Ornamental and Landscape Fertilizer" with a ratio of 12% nitrogen (N), (6.3% polymer coated urea, 5.7% soluble nitrogen), 2% phosphorous (P), and 14% potassium (K) (6.65% polymer coated sulfate of potash, 7.35% soluble potash), with minor elements of 2.24% magnesium (MG), 8.41% sulfur (S), 4.5% iron, and 2.89% manganese (Mn).

B. Palm Fertilizer: Granulated commercial grade fertilizer of nitrogen (N), phosphorous, (phosphate) (P), potassium (potash) (K) and magnesium (Mg) in a ratio of 8-4-12-4 or 8-2-12-4. The fertilizer shall also contain 1-2% iron (Fe), 1-2% manganese (Mn) and trace amounts of Zink (Zn), copper (Cu) and boron (B). Provide 50% of N, K and Mg in slow-release form.

144.18 SURFACE MULCH: The Project Manager will select one of three mulches below to be provided by the Contractor for each project site. Provide 100% natural, organic wood mulch, processed as a top dressing

for trees and shrubs. Provide clean, bright mulch that is free of limerock, clay, brush, weeds, leaves, sticks, color dyes and other extraneous or toxic matter harmful to plant growth.

A. Pine Bark: Ground pine bark nuggets derived for the Pinus genus with particle size from 0.5" to 1.25", and a maximum wood content of 15%.

B. Pine Straw: Mechanically baled fallen needles (leaves) derived from the Pinus genus.

C. Wood Mulch: Mechanically shredded and screened wood, wood products, or re-processed wood containing no more than 0.5% CCA treated wood by weight free of dye. Reprocessed wood shall be free of C & D plywood. **Do not use color enhanced wood unless approved by Contract Manager.**

144.19 ROOTBALL ANCHOR SYSTEM

A. Anchor System 1:

1. 2x2 pine posts, pointed on one end or steel u-channel fence posts in lengths as detailed.
2. 2x2 pine horizontal member cut to span width of rootball, and drywall screws to connect to posts.

B. Anchor System 2 & 3: Provide anchor system available from; Tree Frog Environmental Products; Apopka, FL: (407)-362-1030, www.treefrogep.com; or from Accuplastics Inc.; Brooksville, FL; (800) 395-5232; www.terratoggle.com, or approved equal consisting of the following:

1. Plastic, nylon, or metal anchors, rated at 1800 lb. minimum tensile strength.
2. ¾" wide, black or green woven polyester, or polypropylene straps, rated at 1800 pounds minimum tensile strength.
3. ¾" dichromate coated wire cinch buckles.
4. 2x6 untreated pine boards.
5. Mechanical tensioner to tighten straps in buckle.

144.20 PE-EMERGENT OR POST-EMERGENT HERBICIDE: granular or liquid herbicide approved by the Contract Manager that will control annual grasses and many broadleaf weeds and that is labeled safe for use with the plants in the project.

144.21 NON-SELECTIVE HERBICIDE: Non-selective liquid herbicide, such as 'Roundup, that will kill live vegetation and roots.

144.22 PORTABLE WATER BAG: UV treated polyethylene "Ooze Tube" 35 gallon portable water bag, chocolate brown color, from Engineered Watering Solutions (www.engineeredwatering.com, Atlanta, GA. Kit includes wood stake and water emitters.

144.23 TERMPORARY IRRIGATION SYSTEM: A run of PVC pipe and emitters with a water connection constructed to deliver water from a water truck or fire hydrant to a cluster of plants. Piping may be laid on the soil surface or buried in the soil. Remove the temporary water system at the end of the maintenance period.

144.24 WATER

A. Provide water of suitable quality for healthy plant growth.

B. The contractor shall pay for the cost of irrigation water used during construction, through the Initial Acceptance of the landscaping, during the plant establishment period, and until Final Acceptance. The cost of irrigation water shall be included in the unit price of each plant.

EXECUTION

144.25 NOTICE TO PROCEED: For each separate project, the City shall list the type and number of plants to be planted at a particular site. The contractor shall submit a price proposal using the unit prices established

for the contract. Upon receipt of the proposal from the contractor, the City shall verify prices and then issue a purchase order for the work. Once the Contractor receives the purchase order and the Contract Manager approves the work schedule for each project, the Contractor may begin work.

144.26 **LAYOUT:** The Contract Manager shall either field locate the plants covered by each purchase order or provide the Contractor with a landscape plan. Before beginning planting work, identify the location of each individual tree and multiple plant beds with wood stakes, survey flags or paint and request a layout inspection by the Contract Manager when the layout is completed. Make minor adjustments to the layout requested by Contract Manager during the inspection.

144.27 **COMMENCEMENT OF LANDSCAPE WORK:** Do not commence landscape work until the plant layout has been inspected and approved by the Contract Manager, and the site work has been completed necessary for the proper installation of landscaping. Perform all work in strict accordance with sound horticultural practice. Place plants where shown and as detailed.

144.28 **SOIL TESTING FOR DRAINAGE:** Before planting begins, test soil drainage by digging pits (1 foot wide by 2 feet deep) in the locations of new plant beds and trees and then filling the pits with water twice in succession. Delay planting If water in the pit is not completely gone in 2 hours, after the second filling and immediately notify Contract Manager. The Contract Manager shall determine the corrective action required before planting is continued.

144.29 **NOTIFICATION OF CONDITIONS DETRIMENTAL TO PLANT GROWTH:** When conditions detrimental to plant growth, such as poor drainage, hardpan of clay or silt, rubble fill, obstructions, limerock, petroleum products, and construction debris are encountered during the landscape work, cease landscape work in the affected area and immediately notify Contract Manager in writing, describing the adverse conditions along with a proposal to correct such conditions. Do not proceed with work in the affected areas until the unsatisfactory conditions have been corrected and approved. If the Contractor fails to notify the Contract Manager of such conditions, the Contractor shall remain responsible for the replacement of plant materials affected by the adverse conditions in accordance with the warrantee requirements of the specifications.

144.30 **REMOVAL OF EXISTING TREES AND PALMS**

A. If the purchase order includes the replacement of existing trees/palms, remove and dispose of the exiting trees/palms and root balls before installing the specified replacement plants.

B. If the existing tree has a single trunk of less than 2" caliper, a multi-trunk tree less than 6 foot overall height, or a palm with less than a 1 foot clear trunk, then the cost of tree removal shall be included in the unit price of a new tree or palm.

C. If the existing tree or palm is larger than the sizes noted in paragraph B, then the City will pay for tree/palm removal based upon unit price established in the bid proposal for the size of tree/palm removed.

D. If the existing tree/palm is larger than the sizes included in the unit price bid proposal, of if there are existing suckers growing from an existing hardwood or conifer tree, with a stump diameter at ground level greater than 7 inches, then the Contract Manager will have the tree removed by others before the Contractor begins planting of the replacement tree. Alternatively, the Contract Manager may negotiate with the Contractor a price to remove the tree as part of the total project cost.

E. For the removal of existing trees and palms within pavement cutouts or planters, the Contract Manager will negotiate with the Contractor a price to remove the trees or palms or will have others remove the plants. Tree removal shall include the removal of existing roots inside the planting area.

144.31 **SELECTIVE REMOVAL AND REPLACEMENT OF EXISTING SHRUBS AND GROUNDCOVERS IN EXISTING PLANT BEDS**

A. If the purchase order includes the selective removal and replacement of existing shrubs, groundcovers, ornamental grasses, and other similar container grown plants scattered throughout an existing planting

bed, begin by raking the existing mulch away from each plant to be removed. Then remove and dispose of the exiting debris, weeds, and plants selected for removal including root balls. The Contract Manager may adjust the locations of the replacement plants before installation depending upon the site conditions. Add 3 inches of soil mix to a one foot wide area around each replacement plant hole. Incorporate the soil mix into the top 6 inches of existing soil and rake smooth.

B. Provide replacement plants of the type and size specified and install at the locations approved by the Contract Manager.

C. Excavate each pit to slightly larger than the root ball area and with slightly less depth than the root ball. If the plant is in a container, remove container and shave off the outside layer of encircling roots from all sides and bottom of the root ball to remove root defects before planting. Set plant plumb in center of the pit. Set the top of the root ball level with or slightly above the level of the existing surrounding soil. If the plant is B&B, remove burlap and twine after setting plant in pit. Backfill remainder of pit with existing excavated soil and compact to eliminate voids. Keep top of the root-ball free of any soil.

D. Add a temporary 3" maximum height soil berm around the edge of the root ball to help contain the water. Fill area inside berm with water.

E. Uniformly spread 1.5 tablespoons of fertilizer within a 12" diameter circle centered on each plant.

F. Apply a 3" thick layer of mulch within a 2' diameter circle centered on each plant.

G. The cost to remove and replace existing shrubs and groundcovers is included in the unit price for each plant.

144.32 REMOVAL OF EXISTING VEGETATION IN NEW INDIVIDUAL TREE AND PALM BEDS

A. Remove exiting debris and vegetation within an area with the following diameter centered on each tree, being careful not to damage the surface roots of existing trees. Vegetation shall include turf-grass, broadleaf weeds, grasses, sedges and rushes. If the tree is within a tree cutout in existing pavement, then remove all existing vegetation inside the cutout.

Table 1	SINGLE HARDWOOD, CONIFER TREE OR PALM PLANTING BED DIAMETER	
*Single Trunk Tree Caliper	*Small or Muti-trunked Tree Ht.	Planting Bed Diameter
1" Cal	4'	6'
2" Cal	8'	8'
3" Cal.	10'	8'
4" Cal.	12'	8'
5" Cal.	14'	10'
6"-7" Cal.	18'	10'
Palms	-	8'

**Note: Caliper and height shown includes caliper and height up to, but not including, the next higher number shown.*

B. Removal of existing vegetation inside each individual tree or palm planting bed shall be included in the unit price for each tree and palm listed in the bid proposal.

144.33 REMOVAL OF EXISTING VEGETATION IN NEW TURF AREAS AND MULTIPLE PLANT BEDS

A. Remove and dispose of existing vegetation (turf, weeds, grasses), and debris (such as bottles, wood, construction material, and rocks greater than 1" diameter) within the entire limits of new turf areas and multiple plant beds where the removal and replacement of unsuitable soils is not required.

B. If the new plant bed is located in an existing turf area and the area is free of surface roots from existing trees, use a sod cutter or other equipment with blades of sufficient depth to remove the vegetation, including roots, in one operation. DO NOT REMOVE EXISTING VEGETATION WITH A ROTOTILLER OR OTHER MACHINE THAT WILL BREAK THE REMOVED VEGETATION INTO SMALL PIECES DURING THE OPERATION. If the turf area contains extensive surface roots of existing trees, hand excavate top growth and roots of existing vegetation.

C. The City will pay for the removal of existing vegetation based upon the unit price for "Turf Removal" and Shrub and Groundcover Removal" established in the bid proposal. Bare soil areas will be deducted from the area calculation for existing vegetation removal in new turf areas and multiple plant beds.

D. The cost of vegetation removal in areas where the Contract Manager requests the removal and replacement of unsuitable soil is included in the unit price for the "Replacement of Unsuitable Soil."

144.34 REPLACEMENT OF UNSUITABLE SOIL IN NEW TURF AREAS AND MULTIPLE PLANT BEDS

A. When conditions detrimental to plant growth, such as poor drainage, a hardpan of clay or silt, rubble fill, obstructions, limerock contaminated soil, petroleum products, and construction debris are encountered during the landscape work, the Contract Manager may request the removal and replacement of the unsuitable soil with soil mix.

B. Excavate and remove the existing unsuitable soil and surface vegetation from the areas identified by the Contract Manager to the depth requested, excluding areas containing surface roots of existing trees that would be damaged by the excavation of existing soil. Remove excavated unsuitable soil from site and deliver to legal disposal facility.

C. Replace excavated soil with soil mix. Backfill soil mix in layers no more than 12 inches deep, tilling the first soil mix layer into the top 6 inches of undisturbed soil. Lightly compact each soil layer. Rake soil smooth and level with adjacent undisturbed soil.

D. The payment for removal of unsuitable soil and the replacement with new soil mix will be in accordance with the unit price established in the bid proposal for "Replacement of Unsuitable Soils." This unit price includes the removal of surface vegetation covering unsuitable soils.

144.35 APPLICATION OF SOIL MIX IN NEW TURF AREAS AND MUTLIPLE PLANT BEDS

A. Where existing soil is generally suitable for plants, the Contract Manager may request the application of soil mix and incorporation into the top layer of existing soil to increase the organic content. Apply soil mix into areas identified by the Contract Manager after existing vegetation has been removed. Spread **soil mix throughout turf areas and plant beds designated for the application of soil mix to a minimum depth of 3" (9.25 cub. yds. per 1000 sq. ft.). Obtain Contract Manager's approval before proceeding further.**

B. After the Contract Manager has approved the application of the soil mix, incorporate the soil mix into the top 6" of existing soil to achieve a uniform mixture of 1/2 soil mix and 1/2 existing soil. In areas free of tree surface roots, use a rototiller to incorporate soil mix into existing soil. In areas with surface roots, incorporate soil mix into existing soil by hand.

C. Adjust soil mix layer so that, after light compaction, soil mix layer is level with the existing soil level of the adjacent plant beds and turf areas. Rake to a smooth, even surface with a loose, uniform, fine texture.

D. Payment for this work will be in accordance with the unit price established in the bid proposal for "Application of Soil Mix."

144.36 PLANTING PREPARATION

A. General

1. Do not install plants until the means of watering the plants has been approved.

2. If the soil is very dry before planting, water soil sufficiently to moisten the prepared area.

3. If the Contract Manager has requested the removal of existing vegetation, the removal and replacement of unsuitable soils, or the incorporation of soil mix, delay planting until after the requested bed preparation has been completed.

4. Stockpile clean, limerock-free excavated soil which conforms to the specification for topsoil. This soil can be used as backfill in the plant beds. Remove surplus excavated soil from the site after planting has been completed.

B. Trees and Palms

1. After the planting area is clear of existing vegetation to the diameter shown in Table 1,, excavate a pit at the location of each tree or palm with a width equal to the diameter of the root ball plus 2 feet and with a depth that will leave top of the root ball level with the adjacent soil surface outside the bed. If planting a date palm, excavate the pit 12" deeper than the root ball depth and replace with a 12" layer of yellow sand below the root ball. Excavate the remainder of the bed area specified in Table 1 to a depth of 6" unless in a multiple plant bed where the existing soil has been replaced with soil mix. If the tree or palm is within a pavement cutout, excavate the soil within the dimensions of the cutout.

2. Notify the Contract Manager if the existing soil at the bottom of the tree pit is contaminated with limerock or other material detrimental to plant growth. After the Contract Manager's review, excavate the contaminated soil underneath each tree root ball to a width equal to the diameter of the root ball plus 2 feet and to the depth approved by the Contract Manager. Remove and replace with soil mix. This additional soil replacement shall be paid at the unit price established in the proposal for "Replacement of Unsuitable Soil."

3. Remove and dispose of stones over ¾", roots, rubbish, and soil contaminated with limerock, rubble fill, chemicals and other matter harmful to healthy, plant growth.

144.37 PLANTING

A. Begin planting only after the Contract Manager has inspected and approved the plants either at the holding area or job site and has approved the plant layout, unless the Contract Manager waives either inspection.

B. Planting Trees

1. If the tree is container grown, remove container before planting, and shave off the outside 1" layer of roots from all sides and bottom of the root ball to remove root defects.

2. If the tree is B&B, remove all plastic shrink-wrap, straps, and twine from the trunk and the root ball. Also, remove the burlap and wire cage from the top of the root ball and the top one or two bands of wire basket down the sides of the root ball after the tree is properly placed in the pit. If the burlap is a synthetic non-biodegradable fabric, remove all of the fabric from the ball. Do not bury synthetic fabric in the planting pit.

3. Set the tree plumb in the center of the pit and orient for best appearance.

4. If the first root emerging from the trunk is not visible on the root ball surface, carefully remove soil from the top of the root ball next to the trunk until the first root can be seen. Pull away soil from the rest of the root ball surface down to the same point. Cut away exposed circling roots.

5. Adjust the depth of the tree pit so that the top of the root ball is 1" to 2" above the surrounding soil level or pavement.

6. Backfill tree pit with excavated soil in 6-inch layers until the soil is 6" below the adjacent soil level. Fill the top 6" of the entire bed area with soil mix. If the tree is within a multiple plant bed, delete the 6" soil mix layer and replace with 6" of surplus excavated soil. Water in and compact each soil layer to eliminate voids. Apply 10 to 20 gallons of water during planting and backfilling of each tree. The application of soil mix in each individual tree bed shall be included in the unit price of each tree.

C. Planting Palms

1. For date palms only, place a compacted 12” layer of yellow yard sand before planting the palm.
2. Set the palm plumb in the center of the pit and orient for best appearance. If the root ball is B&B, remove twine, shrink-wrap, burlap and wire cage as described for B&B trees. Adjust the depth of the pit so that the top of the root ball is level with the surrounding soil or pavement.
3. Where underground utilities interfere with the root ball, clear utilities by carefully notching the root ball around the utilities, not by raising the root ball above the finish grade.
4. After the palm is set, backfill with excavated or imported topsoil in 6” layers until the backfill is 6” below the adjacent soil level; backfill pit with yard sand if the palm tree is a date palm. Fill the top 6” of the entire individual palm bed area with soil mix. If the palm is within a multiple plant bed, delete the 6” soil mix layer and replace with 6” of surplus excavated soil. Water in and compact each soil layer to eliminate voids. Apply 10 to 20 gallons of water during planting and backfilling. The application of soil mix in each individual palm bed shall be included in the unit price of each palm.
5. Release tied bundle of fronds once the palm planting is completed unless palm supplier recommends a longer period before untying fronds.
6. Immediately after palm fronds are untied, prune to remove dead, injured, diseased fronds and fronds drooping more than 15 degrees below horizontal.

D. Planting Shrubs and Groundcovers

1. Place shrubs and groundcovers where shown and as detailed, using the specified spacing and in accordance with the planting detail shown on the drawings.
2. Excavate each pit to slightly larger than the root ball area and with slightly less depth than the root ball. If the plant is in a container, remove container and shave off the outside layer of roots from all sides and bottom of the root ball to remove root defects before planting. Set plant plumb in center of the pit. Set the top of the root ball level with or slightly above the level of the surrounding soil. If the plant is B&B, remove burlap and twine after setting plant in pit. Backfill remainder of pit with existing excavated soil and compact to eliminate voids. Keep top of the root-ball free of any soil.
3. Immediately apply at least 2" of water throughout each bed. If a temporary berm is desired around the edge of the root ball to help contain the water, then construct a topsoil berm at the edge of the root ball.

E. Planting in Marginal Wet Areas

1. If during the excavation of the plant pits water saturated soil is encountered in the very bottom of the pit, stop work and notify the Contract Manager. The Contract Manager may approve the planting if the bottom of the root ball can be raised above the water table and the top of the root ball is no higher than one foot above the existing surrounding grades. Otherwise the plant will be deleted or relocated to a more suitable place within the project site. Adjust the depth if the planting pit accordingly.
2. After setting plant, fill the pit with existing soil until the backfill is level with the surrounding undisturbed soil.
3. After the plant is installed, place imported or surplus excavated backfill against the exposed sides of the root ball to create an soil mound around the root ball with a 4:1 maximum slope from the edge of the root ball to the edge of the bed.
4. Complete planting as specified for plants.

F. Planting on Slopes

1. When planting on a slope, follow planting specifications for each type of plant used, except form a level platform by cutting into the slope on the back side of the tree and then using the cut soil as fill on the front side of the tree so that the volume of cut and fill are equal. The level

platform for a shrub or groundcover shall be twice the diameter of the root ball; for a tree or palm, equal to the diameter of the root ball plus 2 feet.

2. Form a 3" high soil berm on the front and sides of the level platform to contain water.

144.38 FINISHING INDIVIDUAL AND MULTIPLE PLANT BEDS

A. After planting, shape the soil to form a downward taper toward the edge of each individual and multiple plant bed so that the soil at the bed edge is 4" below the adjacent turf or pavement to allow for a 3" layer of mulch, leaving 1" between the top of the mulch and the top of the adjacent turf, pavement or curb. Remove excess soil and rake plant beds to a smooth surface. Keep top of each root ball free of any soil.

B. Immediately apply at least 2" of water throughout each bed.

144.39 WATERING AFTER INSTALLATION

A. General: Water soil sufficiently to keep plant roots moist, but not saturated, to prevent wilting, and to keep plants healthy. (The Agriculture Extension Service recommends watering daily for at least one month after installation during the growing season when there is no rain or 2 to 3 times a week during the winter and rainy weather). Following rainfall, delay watering until all free moisture has drained from the soil.

B. After initial watering, provide water to trees and palms using water bags and/or a temporary irrigation system that will provide to each tree or palm during each watering the volume of water shown in the *Table 2* below. Water other plants with a temporary irrigation system or, if approved by the Contract Manager, use the existing irrigation system.

C. If water bags are used to water trees and palms, place water bag around the trunk and fill with 35 gallons of water with each watering in accordance with manufacturer's instructions. Install 4 emitters to provide a slow water drip over one week. **Fill water bags once a week during the first 6 weeks after installation and thereafter at a frequency necessary to keep plants in healthy condition.**

D. If a temporary irrigation system is used, connect the system to a water truck or other water source and pump water until the specified volume of water in the tables 2 and 3 below is delivered to each plant through emitters. Apply at a rate that will allow the water to soak into the root ball without runoff.

E. Maintain each temporary or permanent irrigation system and each water bag in working condition throughout the installation and maintenance period and until Final Acceptance. Immediately repair or replace each water bag or temporary irrigation system component that is missing or malfunctioning.

F. Apply the volume of water shown in Table 2 and 3 each time plants are watered, unless water bags are used. Schedule watering frequency necessary to keep plants in healthy condition, with no wilting.

Table 2	**WATER VOLUME FOR NEW TREES & PALMS**	
Single Trunk Tree Caliper	Multi-trunked Tree Ht.	Min. Water Volume Per Application
2" Cal.	8-10'	4 Gal.
3" Cal.	10-12'	6 Gal.
4" Cal	12-14'	8 Gal.
5" Cal.	14-16'	10 Gal.
6" Cal.	-	12 Gal.
Each Palm	-	12 Gal.

TABLE 3	**WATER VOLUME FOR NEW SHRUBS & GROUNDCOVERS**
Plant Size	*Min. Water Volume Per Application
1 Gallon	1 quart
3 Gallon	2 quarts
7 Gallon	1 gal.

*If shrubs and groundcovers are located within a multiple plant bed, apply ½ to ¾" of water throughout the plant bed during each watering in lieu of watering each individual plant.

G. If a permanent automatic irrigation system is located within new turfgrass areas or multiple plant beds, the Contractor may seek the approval of the Contract Manager to use the existing irrigation system and to delete a temporary irrigation system and hand watering, provided that such request is made before beginning planting work. If the Contract Manager determines that there is sufficient capacity to provide the specified water volume to the area and approves the Contractor's use of the existing irrigation system, the City will modify the irrigation system to provide uniform water distribution throughout the turf area or plant bed before planting work begins.

144.40 PRUNING

A. General: Prune plants in accordance with standard horticulture practice. Use sharp, clean tools that are specifically designed for type of pruning performed. Make clean cuts with no bark tears or other damage. Provide a ladder, hydraulic lift, bucket truck or similar equipment for tree pruning. No equipment or climbing is allowed that may damage the trunk. After the pruning is completed at each tree, load all debris into a trash truck before proceeding to the next tree. At the end of the day, remove all debris from the area. If any vegetation falls into the street, immediately remove it from the street.

B. Prune to remove suckers, dead, injured or diseased wood, and to achieve a uniform shape natural to each species. Required plant sizes are after pruning. Replace excessively pruned plants. Do not cut tree leaders.

C. Prune multi-trunked trees to remove suckers or water sprouts from the roots or the lower portions of main trunks and to remove small, twiggy growth that has developed underneath and within the tree canopies. Cut back the tips of all stems approximately one foot to promote blooming, if requested. Extend pruning of upright growing trees to remove branches that are drooping below a 30-degree angle from vertical so that the result will be a very upright branching tree with a full, gently rounded crown.

144.41 TREE AND PALM STAKING

A. Trees: Anchor tree root balls as detailed using "Anchor System 1 or 2 or 3 depending on the trunk caliper of the tree.

B. Palms: Anchor palms in accordance with palm staking details shown on current edition of FDOT Design Standards: Index 544-Landscape Installation, Sheet 2 of 3.

C. Strictly follow manufacturer's installation instructions.

144.42 MULCHING: The Contract Manager shall select one of 3 mulches listed in this specification to be used on each project. Apply 3 inches of the selected mulch to each individual tree/palm bed, replacement plant, and to each new multiple plant bed, while keeping mulch away from the trunk(s) of each plant. Rake to neat finished appearance.

144.43 APPLICATION OF PRE-EMERGENT HERBICIDE: Rake mulch smooth and apply pre-emergent herbicide throughout all beds. Apply herbicide at the recommended manufacturer's rates and in strict accordance with the label instructions. Avoid spraying herbicide on leaves of landscape plants. Delay herbicide application until spaying can occur within the calendar dates shown on the label.

144.44 INITIAL INSPECTION AND ACCEPTANCE

A. The Contract Manager will attempt to inspect the project within 10 work days of written notification from the Contractor that installation is complete.

B. Plants shall be acceptable if in "healthy, vigorous condition" and are in compliance with both the specific specifications for each named plant and the general specifications for all plants.

C. Replace rejected work within 14 days of notification and continue specified maintenance until re-inspected and found to be acceptable. Remove rejected plants and materials promptly from project site.

144.45 MAINTENANCE

A. Begin maintenance of landscape work immediately after each area is planted and continue until Initial Acceptance until Final Acceptance.

B. General: Visit the site at least once a month after Initial Acceptance and complete the following maintenance items:

1. Remove debris and dead branches: reset settled or leaning plants to proper grade and vertical position; tighten or repair guys and stakes; and rake mulch to keep neat and uniform.

2. Remove and replace any plants that the Contract Manager determines are in unhealthy condition.

3. Remove debris from maintenance operations.

4. During the last maintenance visit, in addition to the normal maintenance operations, remove stakes and guys from trees and palms unless instructed otherwise

C. Watering: Comply with the "Watering after Installation" section above. Visit each work site as often as needed to provide water to plants that will maintain healthy growth and prevent wilting.

D. Pruning

1. All pruning operations shall conform to paragraph "A" of Section **144.40**.

2. Tree Pruning

a. During each monthly maintenance visit, prune trees to remove suckers, dead, broken, or damaged branches, or branches heavily infected with disease or insects.

b. During the final maintenance visit, if applicable, prune trees in accordance with paragraph "B" and "C" of Section "144.40-Pruning." Also, prune lower branches originating from the trunk so that the clear trunk is between 1/3 and 1/2 of the overall tree height at the time of the visit.

3. Palm Pruning

a. Remove palm flower/fruit stalks and pollen sacks when they are fully extended, usually in May/June. If the fruit stalks are late in forming, delay the pruning until the fruit stalks appear.

b. Prune palms fronds during last maintenance visit. Remove dead, damaged, dying or diseased fronds; any fronds brushing adjacent structures or signs; drooping fronds (frond petiole angled below horizontal); and fronds hanging lower than 15 feet over a street travel lane and 8 feet over other areas. Do not remove healthy fronds with leaf petioles horizontal to the ground or at a higher angle unless requested by the Contract Manager.

E. Mulching: Apply specified mulch to each new individual tree bed and to replacement plants in multiple plant beds during monthly maintenance visits. Apply sufficient mulch to achieve a thickness of 3 inches after settlement of the mulch.

F. Fertilization:

1. Apply fertilizer to each new individual tree bed, replacement plant in multiple plant beds and new multiple plant beds during the last maintenance visit, and at the 12 month maintenance visit, if applicable. Spread fertilizer evenly on the ground within the canopy of each tree and evenly around each replacement plant and new plant beds at the rates shown on the following table.

FERTILIZER SCHEDULE

Tree Canopy Spread	Pounds of Fertilizer (LESCO 12-2-14)
4-6’ Spd.	0.25
6-10’ Spd	0.50
10-12’ Spd	0.75
12-14’Spd.	1.00
14-16’ Spd.	1.50
16-18’ Spd.	1.75
Multiple Plant Beds /1000 Sq. Ft.	8.30
Replacement Shrub and Groundcover	1½ tablespoon s
Palms	Palm Fertilizer @ 1½ lbs/palm

2. Apply palm fertilizer to each palm during the last maintenance visit, if the maintenance period is one year; apply palm fertilizer on the 12th and 24th maintenance visit if the maintenance period is for 2 years. Spread palm fertilizer evenly in a 2-foot band around the root ball in accordance with manufacturer’s instructions.

3. Sweep adjacent pavement clean of any fertilizer overspray. Immediately water in the fertilizer applied to each area using a water hose from a temporary water supply or the existing irrigation system, if available.

4. If the 12th or 24th maintenance visit is scheduled to occur between November 1 and April 1, apply fertilizer during the previous September or the following April maintenance visit whichever month is closer.

G. Weed Control: During the first month of maintenance, visit the work site at least weekly to control weed growth. Remove weeds by pulling and by the application of selective pre/post-emergent herbicide until the weed growth is limited to two weeds per 100 square feet of bed area between monthly maintenance visits. During each monthly maintenance visit, remove all weeds from plant beds. Remove the entire weed, including roots. Dispose of removed vegetation and all other debris. Apply additional pre/post-emergent herbicide, as needed, to prevent weed infestation. Apply herbicide in strict accordance with the label instructions. Use a pre/post-emergent herbicide suitable for the installed plants. Delay selective herbicide application if plants have not rooted in. If the Contract Manager determines that weed growth exceeds two weeds per 100 square feet of plant bed between monthly maintenance visits, then more frequent visits will be required until weeds are controlled to this standard.

H. Insect and Disease Control: Inspect trees, palms and other plants for disease and insect problems during each monthly maintenance visit. If present, consult with the County Agent to identify the disease and insects present and provide the treatment recommended by the County Agent.

144.46 STANDING UP LEANING TREES AND PALMS

A. When a tree or palm planted under this contract is discovered by the Contractor or by the Contract Manager during the warranty period to be leaning from its original vertical alignment, stand up plant within 48 hours after discovery or notification.

B. Remove the existing root ball staking system, pull back mulch, and then excavate a hole around the plant that will accommodate the exposed roots.

C. Remove jagged or torn roots by using sharp tools to make clean cuts.

D. Pull the tree or palm to original vertical alignment without damaging the trunk or roots.

E. Fill the hole with soil from the site so that the top of the root ball is level with or slightly above the adjacent soil and the tree is vertical. Reinstall soil berm around root ball and water-in the backfill to compact the soil.

F. Reinstall or upgrade the root ball staking system so that the tree or palm remains in alignment. Finally, reapply specified mulch and water bag.

G. Notify Contract Manager within 48 hours of work completion.

H. All costs associated with standing up leaning trees installed under this contract is part of the maintenance requirements, and shall be included in the unit prices of the landscape work items established by the Contract.

I. For standing up trees that are not under warranty or that were damaged by others or by extreme weather, the Project Manager will negotiate with the Contractor a price for each work request to stand up leaning trees or may have the work completed by others.

144.47 SUPPLEMENTAL FERTILIZATION

A. Provide supplemental fertilization to each tree in plant beds or turf areas and to each plant bed requested by the CONTRACT MANAGER. The CONTRACT MANAGER will identify the trees and plant beds to receive supplemental fertilization for each work order. Submit fertilizer label for the CONTRACT MANAGER's approval before proceeding with the first supplemental fertilization request.

B. Supplemental fertilization will only be scheduled between April 1 and October 15.

C. Coordinate work schedule with the CONTRACT MANAGER at least 5 workdays in advance of the anticipated start date so that the CONTRACT MANAGER may observe the fertilization, or inspect the work within 48 hours of the fertilization if he/she so chooses.

D. Spread fertilizer evenly on the ground within the canopy of each tree and evenly throughout each multiple plant bed. Spread palm fertilizer evenly in a 2-foot band around the root ball. Spread fertilizer at the rates shown on the following table.

SUPPLEMENTAL FERTILIZER SCHEDULE	
Tree Canopy Spread	Pounds of Fertilizer (LESCO 12-2-14)
4-6' Spd.	0.25
6-10' Spd	0.50
10-12' Spd	0.75
12-14'Spd.	1.00
14-16' Spd.	1.50
16-18' Spd.	1.75
Multiple Plant Beds / 1000 Sq. Ft.	8.30
Palms	Palm Fertilizer @ 1½ lbs/palm

E. Sweep adjacent pavement clean of any fertilizer overspray. Immediately water in the fertilizer applied to each area using a water hose from a temporary water supply or, if available, the existing irrigation system.

F. Upon Initial Acceptance of the work, the CONTRACT MANAGER will pay 100% or the fertilization cost once the invoice for the work is received.

G. Payment for supplemental fertilization will be at the unit price established in the Bid Proposal.

144.48 <u>LANDSCAPE MAINTENANCE REPORT</u>: Submit a monthly maintenance report to the Contract Manager within 5 workdays after the completion of the maintenance work scheduled for that month. Note

the date and the description of the work completed during each visit at each project site. Also, note the location and the description of any conditions that may affect the health of plants, such as insects, disease, or physical damage and describe the corrective actions taken.

144.49 WARRANTY

A. Warranty that all plants will remain in "healthy, vigorous condition" and remain in conformance with the specifications for a minimum of **3 months from** the date of Initial Acceptance and until Final Acceptance.

B. If the Final Inspection occurs in the dormant season when deciduous plants are not in full leaf, then the warranty of deciduous plants shall be extended until the plants are in full green leaf, and can be inspected and approved by the Contract Manager.

C. If at any time during the entire length of the maintenance period, the Contract Manager determines that a plant is dead or in poor condition and will not likely recover to a healthy vigorous condition by the end of the warranty period, then remove and replace the plant within two weeks after receipt of Contract Manager's replacement request unless the Contract Manager agrees to time extension. The specified maintenance and warranty requirements of the originally installed plants shall apply to replacement plants.

144.50 SIX, TWELVE AND EIGHTEEN MONTH INTERUM INSPECTIONS

A. If 12 month or 24 month warranty is applied, notify the Contract Manager when the requirements for each 6-month maintenance period have been completed and the project is ready for the interim inspection. The Contract Manager will attempt to inspect the work within 10 work days after the Contractor's written notification.

B. Plants will be acceptable if in "healthy, vigorous condition" and in compliance with both the specific specifications for each named plant and the general specifications for all plants. Replace plants that the Contract Manager has determined are dead or in poor condition and not likely to recover to original healthy condition within the remaining warranty period.

C. Replace rejected work within 14 days of the Contract Manager written notification and continue specified maintenance until re-inspected and found to be acceptable by the Contract Manager. Remove rejected plants and materials promptly from project site. Maintenance and warranty of replacement plants shall be for a minimum of 3 months, 12 months, or 24 months where applicable after Initial Acceptance of the replacement plant and shall continue until Final Acceptance.

144.51 FINAL INSPECTION AND ACCEPTANCE

A. When maintenance work is complete, submit written notification to the Contract Manager. The Contract Manager will attempt to conduct a final inspection within 10 days after receipt of the Contractor's notification.

B. Plants: Plants shall be acceptable if they are in "healthy, vigorous condition" and remain in compliance with the general specifications for all plants. In addition, plants shall have a greater height and spread typical for each type of plant after specified warranty period. Tree caliper shall exceed the caliper originally specified.

C. Plant Beds: Plant beds shall be acceptable if the plant beds are free of weeds and disease, are well drained and are covered by a uniform layer of mulch of the specified thickness.

D. Replace rejected work with 14 days of notification unless the Contract Manager agrees to a longer time for replacement. Continue landscape maintenance until work is re-inspected and found acceptable.

144.52 MEASUREMENT AND PAYMENT

A. The unit price for plants established in the proposal includes the cost of materials, soil preparation, planting, watering, pruning, staking, pruning, mulching and landscape maintenance until the Final Acceptance.

B. When "Removal of Existing Vegetation," the "Replacement of Unsuitable Soils," and the "Application of Soil Mix" in turf areas and multiple plant beds are requested, payment will be based upon the unit prices established in the proposal for each service.

C. The total price of each project proposal is not considered a lump sum bid, but only as a means to establish the upset price. Payment will be based upon the actual quantities installed.

144.53 REPLACEMENT PLANTS

A. The specified plant warranty, including the maintenance, inspection and acceptance provisions, shall apply to replacement plants. The maintenance period and warranty for replacement plants shall begin on the date the Contract Manager accepts the installation of replacement plants for any of the three warranty options and shall continue for a minimum of specified warranty option and until Final Acceptance of each replacement plant; with each additional required replacement, in turn, being maintained and warrantied for a minimum specified warranty option after Initial Acceptance of each replacement plant.

B. Replacements shall comply with specified requirements for new plants.

C. After Initial Acceptance, the Contractor is not responsible for costs to repair damage to work caused by other parties not under the Contractor's control, or caused by abnormal weather conditions such as floods, excessive wind damage, severe freezing or abnormal rains. **END OF SECTION 144**