

## **DIVISION 2 – SITEWORK**

### **Section 02930 – Palm Tree Salvage and Planting**

#### **Introduction**

This section contains standards for the identification, removal, storage and replanting of existing palm trees on site.

#### **Part 1 - General**

- Create a reference sheet for identification of trees to be salvaged.
- Provide backflow prevention devices for the temporary irrigation system if required by governing codes.
  - Holding Yard: The holding yard for this project will be on the project site, as indicated on the drawings. Water shall be provided by the Contractor.
- Identification of salvage material
  - The contractor, Architect and Owner's representatives will determine the final selection of salvage specimens based on specimens already identified, current health, accessibility, viability and appearance.
  - These trees shall be final-tagged with colored tape in conspicuous locations, irrigated, and fenced with temporary construction fence to avoid construction damage until they are removed.
  - Contractor is not to remove or work on any salvage material until after the Owner, or designated agent, has determined the limits of the salvage and work area, and has given the Contractor written consent to proceed.
- Removal of salvage material
  - Description of Work: The Contractor shall provide all labor, tools and materials necessary to remove salvage plants from the ground, frond- and rootball-protect them (when required) and transport them to the holding yard.
  - If it is determined that any of the trees to be transplanted can be immediately located to their new location, the Contractor may do so, but must water, maintain and protect the trees during construction.
  - If any trees are to be installed directly onto another site on UA property, the final site will need to be Bleu staked. Allow time for approval.
  - Access: Access shall be entirely within the Owner's property. Damage to surrounding areas not within the property, including but not limited to buildings, curbs, paving, vegetation and utilities, shall be the Contractor's responsibility.
  - The Architect will also identify areas within the property that are not to be disturbed. Any damage within these areas will also be the Contractor's responsibility. If designation of these areas makes access impossible, Contractor shall notify the Architect.
- Protection
  - Contractor shall provide barrier protection to warn pedestrians about the plant excavations, and reasonably prevent someone from falling into one.
    - Palms should be planted immediately or stored for no more than 48 hours in a shaded area where the total tree shall be misted frequently.
    - Do not store palm trees on an asphalt surface.
    - Covering material must allow air movement so that heat does not build up under the covering.
    - Do not use plastic or rubberized tarpaulins.
    - Do not stack palms, but lay them in a single layer on a flat surface.
    - If the trees are stored for more than a day, the rootballs must be covered with a burlap tarp and kept moist.
    - Planting delays may result in rejection of the palm.
  - Tagging and preparation:

- Exercise extreme caution while pruning palms, to prevent spread of vascular diseases. Dip pruning tools in a sterilizing agent before beginning pruning and before moving from one palm to another.
- After tagging of the palms, remove all thatch or dead leaves and cut back all resulting leaf bases to within 2 inches of the base of the trunk. Do not use chain type saws for pruning. Do not cut into trunk.
- The crown of the palm shall be reduced to leave at least 1/3 of the green fronds during shipping.
- Use soft rope (organic twine) to tie remaining fronds to protect crown bud.
- Do not permit fronds to become damaged by means of restraint.
- Loading and unloading:
  - A lattice type crane, a telescoping type crane or a specially designed tree crane is acceptable for lifting and off-loading palm trees.
  - For transporting, the trailer used shall be long enough to avoid damage to the heart of the palm.
  - Loading and unloading of palms must be accomplished with the aid of nylon or fabric sling/straps with a minimum width of 4 inches.
  - Palms should be carefully lifted off the truck setting the choker to the outside so to turn the palm to the inside as it is lifted.
  - Extreme caution must be used to ensure that the heads are not caught, pulled on banged into or shaken; any of these can damage the bud.
  - Excessive scarring or trunk damage will not be permitted and will be cause for rejection of the palms at the project site.
- Coordination
  - Remove all debris, trash and excess materials found on site or generated by the Contractor's operations.
  - Prior to digging and transplanting of palm trees the Contractor shall notify the Owner's Representative at least two (2) working days before starting any work.
  - Contractor is to provide all water and coordinate between temporary and permanent irrigation systems.
- Warranty
  - The Contractor shall warranty plants from damage caused by his own operations including boxing, holding and replanting. This warranty includes breakage of major limbs (after trimming), destruction of major root systems, excessive scarring to the trunk, and death from stress or severe insect damage.
  - Should replacement material be required under this warranty, Contractor is responsible for the procurement and transportation of the replacement material.
  - Plant materials shall be guaranteed for one year following final acceptance of planting operations under this section.
  - Guarantee nursery-grown palms against the bud rot *Thielaviopsis paradoxa*, the fungus *Fusarium oxysporum*, and the root disease *Phytophthora palmivora* and similar vascular infections for a period of six months from the start of the beginning of the maintenance period.
  - Replace without additional cost to the Owner all dead palms and all palms not in a vigorous condition as determined by the Owner's Representative. Replacement shall be when directed by the Owner's Representative.
  - Apply "Subdue" per manufacturers recommendation by flooding the planting basin as often as label permits during maintenance period.
  - Coordinate irrigation requirements of new palms with irrigation plans. The Contractor shall maintain the existing landscaping and irrigation systems.
  - Perform tensiometer testing and visual inspection of observation vents regularly during the maintenance period to verify the correct soil moisture at the surface and at the bottom of the rootball, report levels to the Owner's Representative in writing monthly.
  - Fertilize and apply soil and foliar drench.
  - Do not trim any green or partially green fronds during the maintenance period.

## Part 2 - Products

- Palm trees
  - All palms shall have been grown in accordance with good horticultural practices under climatic conditions similar to those for the project for at least two (2) years prior to shipment to the site.
  - All palms shall be specimen quality, well-grown, symmetrical, without curvature or leaning trunk from the

perpendicular and so trained or favored in development and appearance as to be superior in form, compactness and symmetry of crown. All palms shall be within one foot above or below the height specified, measured from the bottom of the crown bud to finish grade after installation.

- All palms shall be sound, healthy and vigorous, well foliated prior to pruning and showing no signs of disease. They shall be free of disease, insect pests, eggs or larvae. They shall also have well developed root systems. All palms shall be free from physical damage or adverse conditions which would prevent thriving growth.
- Verify that all field dug palms contain an adequate root ball to guarantee transplantation. Do not wrap root ball in plastic. Do not install palms that have damaged root balls.
- Minimum box size, minimum trunk caliper, and initial height are identified under each tree species.
- For palm trees only, the height shall be measured from the ground line to the base of the growing bud.
- Accessories
  - Clean washed concrete sand.
  - Frond Tie: Minimum 1/2 inch diameter soft sisal rope capable of maintaining frond in tied condition for 4 months.
  - PVC Pipe: Schedule 40, 4 inch diameter perforated pipe.
  - Filter fabric for covering PVC perforated pipe.
- Fungicides:
  - Where a product trade name or company is listed, "or equal" substitutions may be offered.
  - Soil Drench: "Subdue" by CIBA-GIEGY.
  - Foliar Drench:
    - "Kocide" Copper T.S. fungicide.
    - "Manzate", dithane flowable fungicide.
    - "Benelate" fungicide.
- Fertilizers and amendments
  - Where a product trade name or company is listed, "or equal" substitutions may be offered.
  - "Wood-Ace" Palm Special fertilizer (11-4-6) as manufactured by Vigoro Industries.
  - "Soluble Stem" micronutrient fertilizer as manufactured by Peters Fertilizer Products of W.R. Grace and Company, Fogelsville, PA 18051.
  - "Minor-Gro" fertilizer as manufactured by W.R. Grace and Company, Fogelsville, PA 18051.
  - Hydrated urea.
  - "Basic H" as manufactured by Shaklee Corporation.
- Water
  - Clean, fresh, and free of substances or matter which could inhibit vigorous growth of plants.
  - Water shall not contain elements toxic to plant life.

### **Part 3 - Execution**

- Existing palm tree removal/salvage
  - Existing palms designated for removal shall be excavated, prepared for salvage, and tree- and rootball-protected.
  - Rootballs of existing palm trees to be transplanted shall have a minimum diameter of the trunk diameter plus 4 feet, and shall be at least 16 inches in depth.
  - Contractor shall protect existing plant material, walls, pavements, and other site amenities from damage.
- Excavation
  - A trenching machine, a backhoe with a narrow bucket or a properly sized tree spade is acceptable as the excavation equipment. The exact equipment used must be approved by the Owner's Representative.
- Execution of planting new palm trees
  - Layout palms at locations shown on the plans. Use 3 foot lath, color coded for each palm. The Owner's

Representative will check location of palms in the field to exact position before planting begins.

- Where palms are to be preplanted to permit site improvements to be installed around them, be responsible for the accurate layout of those palms, measured to their centerlines.
  - Provide protection of those palms while work is taking place. Provide bracing per drawings.
  - Provide regular irrigation as necessary until final acceptance. Vitamin B-1 shall be used per manufacturer's recommendations with the first watering.
  - Excavation
    - "Hand dig" planting pits and protect existing utilities, where utilities may be encountered.
    - The palm tree excavation shall be a minimum of 5 feet wide by 5 feet long By depth of rootball plus 12 inches.
    - It is acceptable for the final site grade around the palm to be 6 to 12 inches higher than the original soil line of the root ball.
    - The depth of the pit shall be approved by the Owner's Representative prior to planting the tree.
  - Water-test tree pits:
    - Water test each tree pit for drainage by filling the holes twice in succession with water.
    - If when filled with water the second time the pit fails to drain within 24 hours, then additional excavation is necessary to break through the impermeable layer or to provide a thick under layer of clean washed concrete sand below the root ball.
  - Clean moist washed concrete sand should be added to the bottom of the hole and tamped or water jetted, prior to insertion of the tree.
  - Install drainage and viewing vent pipe(s) in each tree pit to assure wetting of the whole root ball and to enable monitoring and viewing of the tree pit chamber.
  - The vents shall be 4 inch diameter perforated PVC, with sufficient length to extend to the bottom of the tree pit. Provide filter cloth to cover perforated PVC pipe.
  - Do not backfill drainage or viewing pipes.
  - Backfill shall be clean site soil. Palms shall be placed in the pit and watered in as they are backfilled. Watering shall be done with a pipe sticker, six foot length topped with a 90 degree elbow and placed on the end of at least a 3/4 inch hose with adequate volume. Work the sticker up and down, washing the soil down around the rootball as the backfilling is accomplished. The backfill soil shall be thoroughly saturated, all around the periphery of the root ball, before going on to the next palm. It is of the utmost importance that this procedure occur as each palm is being planted, not later in the day, or the next day.
  - Apply fertilizer amendments during planting by mixing one ounce of "Basic H" and two tablespoons of "Stem" in a 5 gallon container of water. Drench area around each palm when backfilling is almost complete. Water in thoroughly.
  - A 6 inch deep swale shall be made around each palm tree to provide water holding capability.
  - After planting, the crown buds of all the palms shall be within 1 foot of the designated palm height above finish grade.
- Fungicide
    - After planting, drench the soil with the fungicide, "SUBDUE" per manufacturers recommendations by flooding the planting basin. Reapply as often as label permits throughout the maintenance period.
  - Irrigation
    - It is essential that irrigation be deep enough to assure wetting of the whole root ball. Vitamin B1 shall be used per manufacturer's recommendations with the first watering.
      - Maintain the irrigation system to the existing trees and supplement additional water to newly planted trees as necessary for establishment.
      - Check for water penetration as well as drainage throughout the root zone at least once a week and monthly thereafter for duration of warranty. These findings shall be entered into a log with the dates and initials of person verifying the drainage. Monitoring shall be done the day prior to applying supplemental water. After the initial watering-in, water the palms with a good soaking, 40-50 gallons per palm every day. Watering amounts and schedule are estimates and are subject to change by Owner's Representative after reviewing the log and observing in the field.
  - Fertilizing
    - After four to six weeks, apply four pounds per palm tree and at six month intervals apply 5 to 6 pounds per

- palm tree of "Woodace Palm Special" fertilizer in a one inch band around the base of each palm.
- After 14 days then monthly, spray the fronds (foliar drench) with the following mixture. No compounds shall exceed manufacturers recommended rate. The following rates are for a 100 gallon tank mix.
  - "Kocide" 101 w.p. at 3/4 pound; or "Manzate" at one quart.
  - W.R. Grace, "Minor-Gro" at 1/2 cup.
  - Hydrated urea and five cups or 2-1/2 pounds.
  - Spread sticker at 8 ounces "Basic H", by Shaklee Corp., Hayward California.
  - "Benlate" at one pound.

**End of Section 02930**