

SECTION 02900**LANDSCAPING****PART 1 - GENERAL**

1.01 SCOPE OF WORK:

- A. Work included in this Section includes tree removal, tree relocations, furnishing and planting trees, plants and grass of the species, sizes and quality specified, fertilizing, watering, maintaining plants, guarantee and obtaining all permits from municipalities having jurisdiction over this work.
- B. The schedule of trees and plants, if applicable, is shown on the drawing, and indicates the common and botanical names, the quantities and sizes of plants to be used.
- C. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf with well developed root systems free of disease and insects, pests, eggs or larvae. No plants will be accepted unless healthy and showing satisfactory foliage conditions.

1.02 Solid sod and grass submittal to be submitted to the Engineer or Record for approval prior to installation.

PART 2 - PRODUCTS

2.01 GRASSING, SOLID SOD AND SEED:

A. General:

- 1) Solid sod shall be planted in the unpaved areas abutting the structures and extending to the limits shown on the Plans.
- 2) Grass seeding: All other unpaved areas shall be planted with grass seed and mulched.
- 3) When solid sod or grass seed is to be placed adjacent to or in close proximity to existing sod or grass, the Contractor is to use similar sod or grass and obtain approval from the Engineer of Record prior to installation. In public areas and right-of-ways the Contractor is also required to comply with Governmental Agency requirements and provide the Department with written approval of said agency prior to installation of grass and sod.

B. Materials:

1) Solid Sod:

- (a) Solid sod shall be certified bitter blue St. Augustine Floratam. The sod shall be firm touch texture having a compact growth of grass with good root

- development. It shall contain no weeds or other objectionable vegetation.
- (b) The soil embedded in the sod shall be good clean earth, free from stones and other debris. The sod shall be free from fungus, vermin and other diseases. The sod and soil shall be approximately 2" thick.
 - (c) Before being cut and lifted, the sod shall have been mowed at least three times with a lawn mower, with the final mowing not more than seven days before the sod is cut. The sod shall be cut into uniform dimensions approximately 12" X 24". Abutting joints shall be free of open spaces with a tamped or rolled surface so that there are no joint openings.
- 2) Topsoil: Soil utilized for planting grasses shall be a mixture of pulverized 50% rock free siliceous sand and 50% clean mulch from an approved source. All ingredients shall be free of sticks, roots, rocks, lumps or other impurities or debris. All soil shall be delivered in a loose friable condition. Topsoil may be "unsuitable top soil" removed during the course of other work hereunder, if approved by the Engineer of Record. Topsoil shall be free of undesirable plants and seeds. Any such plants sprouting from areas of recent topsoil application shall be presumed to have originated in the topsoil and shall be eradicated from the area by the Contractor at his expense. Means of eradication shall be submitted to the Engineer of Record for approval.

C. Planting of Grassing:

- 1) Solid Sod: Unless otherwise directed by the Engineer, four inches of topsoil shall be placed. The ground area shall be saturated with water. Sod shall be placed on the graded and watered ground firmly butted on all sides by sod without leaving holes, slots, or depressions. Sod shall be top dressed with soil (herein before specified) where required to bring all fill to voids and provide a uniform grass matt if approved by the Engineer of Record. Soil shall firmly abut all structures to which it surrounds or contacts. Immediately after the grassing process, the entire grassed or mulched area shall be rolled thoroughly with a cultipacker traffic approved roller, or other 1,000 pound roller. At least two trips over the entire area will be required.
- 2) Grass Seeding: As above, place four inches of topsoil and saturate with water. Thereafter seed and mulch

D. Fertilizing Grassing:

- 1) Commercial fertilizers shall comply with all Federal, State and County fertilizer laws.
- 2) The numeral designations for fertilizer indicate the minimum percentage (respectively) of (1) total nitrogen, (2) available phosphoric acid, and (3) water soluble potash, contained in the fertilizer.
- 3) Designations may be approved specifically for a particular project and if liquid fertilizer other than that of chemical designation 8-8-8 is used, the total nitrogen content shall not exceed 12 percent.

- 4) At the Contractor's option liquid or dry fertilizer may be used. All grass shall be fertilized and watered in during the planting operation using the application rate and method directed by the manufacturer of the fertilizer used.

E. Guarantee and Maintenance of Grassing:

1) Guarantee:

- (a) The Contractor shall guarantee all grasses for a period of six months from the date of acceptance of the completed overall project from the Contractor.
- (b) The Contractor shall guarantee the grasses shall be alive, free of disease and have a healthy appearance at the end of the guarantee period.
- (c) During the guarantee period, the Contractor shall replace any grass which is diseased, dead or visually unsightly within 3 days when requested in writing.

2) Maintenance:

- (a) The Contractor shall maintain all grass guaranteed above for the period of the guarantee. Such maintenance shall include filling, leveling, and repairing eroded areas, replanting areas where the establishment of the grass does not develop satisfactorily, and watering as required. In no case shall such maintenance be less than 3 weeks for watering and 6 weeks for remaining maintenance care.
- (b) The maintenance of the grass shall include, regular mowing, one application of approved dry or liquid fertilizer to the grasses guaranteed above. The fertilizer shall be applied and watered in as directed by the manufacturer. The time of fertilizing shall be approved.
- (c) The Contractor shall be required under the maintenance of the guaranteed grasses to safeguard and take all possible precautions against damage from the elements and other possible damage. The Contractor shall be required to clean up the effected landscape area during the maintenance period due to any such event. The Contractor shall not be responsible to replace grasses properly protected under this item of the specifications, damaged by the events beyond his control.

2.02 PLANTS AND TREES: (If required by relocation and if shown on the drawings)

A. Grade Standards and Quality:

- 1) Quality of all plants shall be at least equal to that defined as No. 1 by the State Plant Board of Florida in Grades and Standards for Nursery Plants, Part I, 1963 Revised Edition, and Part II, Palms and Trees.
- 2) All plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall have healthy, well developed root systems and shall be free of disease and insect pests, eggs or larvae.
- 3) No plants will be accepted unless they are healthy and show satisfactory foliage conditions.

- 4) All plants shall conform to the measurements specified or indicated on the Drawings except that up to 10 percent of undersized plants in any one variety or grade may be used provided there are sufficient oversized plants to make the average equal to or above specified grade. Plants larger than specified may be used if approved by the Engineer of Record, but use of such plants shall not increase the Contract price. The spread of roots or ball of earth for larger plants shall be increased in proportion to the size of the plant.
- B. Plant Designation: With reference to method of cultivation, root system status, etc., plants for landscaping shall be classified under the following designations:
- 1) Balled and Burlapped:
 - (a) Plants so classified shall be dug with firm natural root balls of earth, of sufficient diameter and depth to include most of the fibrous roots. The root ball of these plants shall be properly wrapped with burlap sack material and remain protected and moist until they are planted. Plants whose burlapped balls have cracked or become sagging, or plants showing scars from rope and cable marks or other improper handling are not acceptable. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. The plants shall be set with the burlap cover intact and with the burlap showing, until inspection. At final inspection, the burlap may be cut away to ground level and completely covered with soil.
 - (b) It is required that, balled and burlapped materials, 1½ inches or more in caliper, shall be root-pruned at least 45 days before being dug and such fact shall be certified on accompanying invoices. Where, in the opinion of the Engineer of Record following his inspection of the grower's stock, adequate root pruning is being obtained by the grower's general cultivating practices, he may consider such fact as meeting this requirement.
 - 2) Wire Balled and Burlapped:
 - (a) Plants grown in soil of a loose texture which does not readily adhere to the root system shall have sound hog wire placed around the burlapped ball before the plant is removed from the excavation. The wire shall be looped and tensioned until the burlapped ball is substantially packaged so as to prevent loosening of the soil around the roots during handling.
 - (b) Wire balled and burlapped plants shall otherwise comply with the requirements for balled and burlapped plants described in 1 above.
 - 3) Container Grown Plants:
 - (a) Container grown plants shall have been grown in a container large enough and for sufficient time for the root system to have developed well enough to hold its soil together firm and whole. No plants shall be loose in the container. Plants which have become pot bound or for which the top system is too large for the size of the container, will not be acceptable.
 - (b) All containers with vertical sides shall be cut and opened fully, in a manner

such as will not damage the root system. Container grown plants shall not be removed from the container until immediately before planting, when all due care shall be taken to prevent damage to the root system.

- 4) Bare-Root Plants: No bare-root plants shall be used unless specifically required by the Engineer of Record or called for on the drawings.
- 5) Palms:
 - a) Palm species shall have the roots adequately wrapped before transplanting except when they are container grown. Burlapping will not be required if the palm is carefully dug from marl or heavy soil that it adheres to the roots and retains its shape without crumbling. During transporting and after arrival, root balls of palm shall be carefully protected from the wind and exposure to the sun. After delivery to the job site, if palm is not planted within 24 hours, the root ball shall be covered with a moist material.
 - b) All moving of sabal, coconut and royal palms shall be in accordance with Heavy Trunk Palms, as described in "Florida Grades and Standards for Nursery Plants, Part II".
- 6) Rooted Cuttings: Cuttings shall be kept moist at all times. They shall be rooted in a medium other than wood shavings and have at least 4 root tips of ½-inch or longer.

C. Transportation and Inspection:

- 1) Plant transportation shall comply with all Federal and State regulations therefor and, upon delivery at the site, all plants shall be inspected for conformity to specifications and for handling damage. Rejected plants shall be removed immediately from the site by the Contractor.
- 2) Foliage trees when moved in full leaf shall be treated with "Wilt Pruf" or "Plantguard", as they are loaded at their growing site. This material shall be applied to the entire tree with a fine spray at a dilution of 1 part "Wilt Pruf" or "Plantguard" to 15 parts of water.
- 3) Trees which have to be transported in excess of 10 miles to reach the job site, shall be covered with a 70 percent shade-cloth-tarp, or equal in order to prevent wind burn.
- 4) Immediately following the delivery and inspection at the job, all plants with exposed roots shall be heeled-in moist soil or peat moss. All plants heeled-in shall be properly maintained by the Contractor until planted.
- 5) The balls of balled and burlap plants, must, if not immediately planted after delivery and inspection, be adequately protected by covering until removed for planting, in a manner appropriate to prevailing conditions and in accordance with accepted horticultural practices. The Contractor shall, in loading, unloading, or handling of plants, exercise utmost care to prevent injuries to the branches or roots of the plants. The solidity of the ball of balled and burlapped plants shall be carefully preserved. Handling of the plant by parts other than the ball shall be cause for

rejection of such plant. Bare root plants which have been heeled-in shall be properly handled during the distribution of planting beds.

D. Planting Materials:

- 1) Planting Soil: Planting soil shall be a pulverized mixture of 50% rock free siliceous sand and 50% clean mulch from an approved source. All ingredients shall be free of sticks, roots, rocks, lumps, or other impurities or debris. All soil shall be delivered in a loose friable condition.
- 2) Fertilizer:
 - (a) Fertilizer shall be as specified in subsection 2.01-D, herein.
 - (b) Fertilizer shall be selected and used as recommended by the manufacturer for each particular plant.
- 3) Mulch: Mulch shall be ground bark, bark peelings, peat, hay or straw. Cypress mulch shall not be used because its harvest degrades cypress wetlands.
- 4) Anti-Desiccant: Anti-desiccant shall be "Wilt Pruf", "Plantguard", or equal, delivered in the manufacturer's containers and used in accordance with the manufacturer's instructions.
- 5) Water:
 - (a) Water for the irrigation of the new plantings during the progress of construction shall be provided by the Contractor in accordance with the provisions previously specified.
 - (b) The Contractor shall furnish adequate watering equipment and shall continue watering to properly establish the new plantings throughout the maintenance period.
- 6) Wire: Wire for the bracing and guying shall be pliable No. 12 or No. 14 gauge galvanized soft steel wire.
- 7) Stakes and Ties: Stakes and ties shall be provided in accordance with the requirements of PART 3 EXECUTION, below.

PART 3 - EXECUTION

3.01 EXCAVATION OF PLANT HOLES:

- A. Plant hole excavations shall be roughly cylindrical in shape, with the sides approximately vertical. Plants shall be centered in the hole, with the trunk location as shown in the Plans.
- B. Bottoms of the holes shall be loosened at least 6-inches deeper than the required depth of excavation.

- C. Holes for balled and burlapped and wire balled and burlapped plants shall be large enough to allow at least 8-inches of backfill around the earth ball. For root balls over 18-inches in diameter, this dimension shall be increased to 12-inches.
- D. Where excess material has been excavated from the plant hole, the excavated material shall be disposed of as and where directed by the Engineer of Record.
- E. PREPARATION OF GROUND
 - 1) Four inches minimum thickness of topsoil shall be placed over the areas off the right of way on which the sod is to be placed.
- F. APPLICATION OF FERTILIZER
 - 1) Before applying fertilizer, the soil pH shall be brought to a minimum range of 6.0 - 7.0.
 - 2) The fertilizer shall be spread uniformly over the area to be sodded at the rate of 500 pounds per acre, by a spreading device capable of uniformly distributing the material at the specified rate. Immediately after spreading, the fertilizer shall be mixed with the soil to a depth of approximately 4-inches.
 - 3) On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2-inches.
- G. PLACING SOD
 - 1) The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools. Sod areas abutting concrete, asphalt or other applicable surfaces shall have the soil depressed at edges of the pavements so that the cut grass does not protrude over 2-inches above the adjacent property.
 - 2) Where sodding is used in drainage ditches, the setting of the pieces shall be staggered so as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6-inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.
 - 3) On steep slopes, the Contractor shall, if so directed by the Engineer of Record, prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth, at suitable intervals.
 - 4) Sod which has been cut for more than 72 hours shall not be used unless specifically authorized by the Engineer of Record after his inspection thereof. Sod which is not planted within 24 hours after cutting shall be stacked in an approved manner and maintained and properly moistened. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.

- 5) Sodding shall not be performed when weather and soil conditions are, in the Engineer of Record's opinion, unsuitable for proper results.

H. WATERING

- 1) The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the Engineer of Record, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2 weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 days (or until final acceptance whichever is latest).

3.02 UNDERGROUND OBSTRUCTIONS:

- A. In the event that rock, underground construction work, utility lines or obstructions out of the ordinary are encountered in any plant hole excavation, alternative locations will be selected by the Engineer of Record.
- B. Where locations cannot be changed and the obstructions may be removed, the obstructions shall be removed to a depth of not less than 3-feet below grade and not less than 6-inches below bottom of balls or roots when plant is properly set at the required grade.

3.03 SETTING OF PLANTS:

- A. When lowered into the hole, the plant shall rest on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth and so oriented such as to present the best appearance. The Contractor, when setting plants in holes, shall make allowances for any anticipated settling of the plants.
- B. The backfill shall be made with planting mixture as specified hereinbefore and shall be firmly rodded and watered-in, so that no air pockets remain. The quantity of water applied immediately upon planting shall be sufficient to thoroughly moisten all the backfilled earth. Plants shall be kept in a moistened condition for the duration of the Contract.

3.04 STAKING AND GUYING:

- A. When called for on the Drawings or directed by the Department, plants shall be staked in accordance with the following provisions:
 - 1) Small Trees: For trees and shrubs of less than 1-inch caliper, the size of stakes and the method of tying shall be such as to rigidly support the staked plant against damage caused by wind action or other effects. Trees larger than 1-inch and smaller than 1½ inch caliper shall be staked with a 2-inch square stake driven at least 24-inches in the ground and extending to the crown of the plant. The plant shall be firmly fastened to the stake with two strands of 14 gauge soft wire, enclosed in rubber hose, or other approved covering. The wire shall then be nailed or stapled to the stake to prevent slippage.

- 2) Medium Trees: All trees, other than palm trees, larger than 1½-inch caliper and smaller than 2½-inch caliper shall be staked with two or more, 2-inch by 2-inch stakes, 8-feet long, set 2-feet in the ground. The tree shall be midway between the stakes and held firmly in place by two strands of 12 gauge wire, applied as specified above for single stakes. Tie wires shall be tightened and kept tight by twisting.
- 3) Large Trees: All trees, other palm trees, larger than 2½-inch caliper, shall be guyed from at least 3 points with double strands of 12 gauge wire. Guy wires shall be anchored to 2-inch by 4-inch stakes, 24-inches long, driven into the ground at least 2-feet and sufficient that the top of the stake is at least 3 inches below the finished ground level. In firm rock soils, No. 4 steel reinforcing rods or ½-inch pipe may be used instead of 2 by 4's. Tie wires shall be securely fastened to the tree by means of a collar of rubber hose, or other approved material. Guy wires shall be tightened and kept tight by twisting.
- 4) Palm Trees: Brace palm trees with three or more 2-inch by 4-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point at least 6-feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with 2-inch by 4-inch by 24-inch stake pads. In firm rocky soils, No. 4 steel reinforcing rods or ½-inch pipe is acceptable.

3.05 PRUNING:

All broken or damaged roots shall be cut off smoothly and the tops of all trees shall be pruned in a manner complying with standard horticultural practice. At the time pruning is completed, all remaining wood shall be alive. All cut surfaces of 1-inch or more in diameter, above the ground, shall be treated with an approved commercial tree paint.

3.06 MULCHING:

Within one week after the planting, mulch material, approved by the Engineer of Record, shall be uniformly applied to a minimum thickness of 2-inches, over the entire area of the backfilled hole or bed. The mulch shall be maintained continuously in place until the time of final inspection. Mulch is not required if other ground surface covers, such as rooted cuttings are called in the Plans.

3.07 INSPECTION:

On completion of the work, the Engineer of Record will inspect all planting work. The Contractor shall repair or replace all defective work, whichever is unsatisfactory to the Engineer of Record or the Department. Preliminary acceptance of all plant materials will be given only after the materials are planted and after meeting all requirements prescribed herein.

3.08 MAINTENANCE:

- A. Maintenance shall begin immediately after each plant is planted and shall continue until

all work under this Contract has been completed and final acceptance is obtained from the Department, however, the minimum period of this maintenance shall not be less than 60 days even if it extends beyond final acceptance of contract. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected. Settled plants shall be reset to proper grade position, planting saucer restored and dead material removed. Guys shall be tightened and repaired.

- B. Defective work shall be corrected as soon as possible after it becomes apparent. Upon completion of planting, the Contractor shall remove from the site excess soil and debris, and repair any damage to structures, etc., resulting from planting operations.

3.09 GUARANTEE:

The Contractor shall guarantee all planting work for a period of six months after the date of final acceptance. During the guarantee period, the Contractor shall replace at no cost to the Department any plant that dies or is not established within the guarantee period. Any plants missing or defective shall be furnished or replaced in a manner satisfactory to the Department.

END OF SECTION