

**SECTION 02930  
TREES, SHRUBS, AND GROUNDCOVER**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 – General Requirements shall govern the work under this section.

**1.2 WORK INCLUDED**

- A. Provide all labor, materials, plant materials, soil additives, equipment, services, and facilities required to complete all landscape planting and related work indicated on the Drawings and as specified.

**1.3 RELATED WORK**

- A. All applicable Sections.

**1.4 QUALITY ASSURANCE**

- A. Contractor Qualifications: A qualified landscape contractor whose work has resulted in successful establishment of exterior plants.
  - 1. Contractor's Field Supervision: Maintain an experienced full-time supervisor on project site when exterior planting is in progress.
- B. At the Contractor's expense, a certified Agricultural Soils Testing Laboratory shall be required to perform soil testing services from selected areas that are to be planted to investigate physical properties, diagnose problems, and program amendments to promote optimum plant growth.
- C. Required Laboratory Services
  - 1. The Contractor shall provide three (3) Soil Test Reports of existing soil conditions at selected locations within the project area at test sites approved by the Owner's Representative. Soil Test Reports shall also be supplied to the Owner's Representative.
  - 2. Provide a chemical analysis report of each individual sample to cover the following:
    - a. Percentage of organic matter
    - b. Percentage of sand, silt and clay content.
    - c. Salinity.
    - d. pH.
    - e. Mineral nutrients, including concentrations of nitrogen, phosphorus, potassium, calcium, and magnesium.
    - f. Furnish data on potential hazards or impediments to plant growth from salinity, sodium, boron, or impaired soil structure.
    - g. Percolation rate.
  - 3. Provide recommendations for organic materials, fertilizers, and other materials found necessary to amend the specified planting mix for optimum plant growth.
  - 4. Prescribe a backfill mix or mixes, as appropriate, to be employed in the planting of all plants for the project if soils test reports indicate inadequacies in the specified planting mix.

5. If so directed by the Owner's Representative, provide laboratory testing and evaluations of stockpiles of prepared backfill, and make recommendations for corrective measures.
  6. Provide periodic sampling and laboratory testing of prepared landscape planting areas to assure compliance with recommendations and requirements of the Contract Documents may be requested. Areas of testing and quantity of tests shall be as directed by the Owner's Representative.
  7. The Soil Test Reports with the dates and test site locations clearly marked shall be submitted to the Owners Representative prior to any planting.
- D. Deviation from control mix: Not more than twenty percent (20%). Should a higher degree of variation be found, make correction as directed by Owner, with conformance tests repeated until the mix meets specifications for pit backfill and soil preparation.
- E. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements.
- F. Tree and Shrub Measurements: Measure according to "ANSI Z60.1" and "Grades and Standards" with branches and canes in their normal position.
- G. Inspection: The Owner shall pre-tag all trees and shrubs at place of growth prior to planting to ascertain compliance with requirements for name, variety, size, and quality; however, final approval shall be based upon the in-place inspection.
- H. Coordinate with the Owner's Representative in monitoring and approval of all items and areas of work required.
- I. Regulatory Requirements: Applicable federal, state, or other governing laws and standards as specified hereafter, or as may otherwise apply.
- J. Preinstallation Conference: Conduct conference at project site with the Owner's Representative prior to commencing work.
- K. Source Quality Control:
1. Ship all landscape materials to the job with appropriate Florida State Department of Agriculture Bureau of Plant Industry Certificates of Inspection.
  2. Provide trees and shrubs grown in a recognized nursery in accordance with good horticultural practice.
  3. Prior to delivery of topsoil, submit written statements indicating:
    - a. Location of properties from which topsoil is to be obtained.
    - b. Names and addresses of owners.
    - c. Depth to be stripped.
    - d. Crops grown on property during past two (2) years.

## 1.5 SUBMITTALS

- A. Installation Schedule:
1. Submit for approval a Planting Installation Schedule showing dates for starting each type of planting in each area of the site.

- B. Product Data: Submit product sheets and samples for all manufactured items specified.
  - 1. Plant Samples: Submit three plants of each shrub, groundcover, or vine 7 gallons or less as specified for approval by the Owner's Representative and to be used as representative size, specification, and plant type for all plant materials to be installed. Any plant materials that do not conform to the plans, specifications, or approved plant samples shall be rejected.
  - 2. Sample plants shall be delivered and maintained on site for comparison. Any plants not equal to samples shall be rejected
  
- C. Warranties, Certificates, and Inspection Tags:
  - 1. Submit warranties, certificates, and inspection tags for all products and materials as defined under Paragraph 1.6 -"Product Delivery and Handling".
  - 2. Submit certificates of inspection for all materials and products subject to state or federal governmental inspection.
  
- D. Certificates, Reports and Samples Submittals
  - 1. All certificates, reports, and samples shall be submitted by the Contractor to the Owner's Representative a minimum of two weeks prior to the installation of any of the materials. Contractor shall not begin work until all submittals have been approved by the Owner's Representative. Submittals required but not limited to the following:
    - a. Existing soil analysis and sample
    - b. Prepared soil analysis and sample
    - c. Mulch sample
    - d. Erosion control fabric sample and product sheet
    - e. Pre- and post-emergent herbicide
    - f. Week eradication treatment for lawn grass
    - g. Foliar spray fertilizer(s)
    - h. Plant samples and/or photographs
    - i. Drainage gravel sample
    - j. List of Personnel, qualifications, and schedule
    - k. Guying methodologies
    - l. Leaf antidessicent spray
    - m. Maintenance manual
    - n. Soil Separator sample and product sheet
    - o. ADS pipe product cut sheets
    - p. Fluid applied membrane waterproofing for landscape pots

## 1.6 REFERENCES

- A. Florida Department of Agriculture and Consumer Services, "Grades and Standards for Nursery Plants", hereafter referred to as "Grades and Standards".
- B. American Nursery and Landscape Association (formerly American Association of Nurserymen) ANSI Z60.1, "American Standard for Nursery Stock", hereafter referred to as "ANSI Z60.1".

## 1.7 SUBSTITUTIONS

- A. If the specified or detailed landscape materials are not obtainable, submit proof of nonavailability and a proposal for use of equivalent material.

## 1.8 DELIVERY, STORAGE AND HANDLING

### A. Plant Materials:

1. Do not prune trees and shrubs before delivery, except as approved by the Owner's Representative. Protect bark, branches and root systems from sun scald, drying, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
2. Handle planting stock by root ball.
3. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed for more than six hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist. Water root systems of plants stored on-site with a fine-mist sprayer. Water as often as necessary to maintain root systems in a moist condition.

### B. Packaged Materials:

1. Deliver packaged materials in containers in good condition showing:
  - a. Weight
  - b. Analysis
  - c. Name of manufacturer
  - d. Trade name or trademark
  - e. Protect from deterioration, contamination, adverse weather, and other damage.

### C. Plant Materials:

1. Protect plants upon arrival on-site.
2. Thoroughly water and properly maintain until planting.
3. Do not allow plants to remain unprotected for a period exceeding twenty-four (24) hours.
4. Exercise workmanlike methods customary in good horticultural practice.
5. Do not prune plants prior to delivery, except as directed. In no case, are trees to be topped before delivery.
6. Prior to delivery to site, spray all trees for insects, fungus, and with a foliar anti-transpirant. Deliver with foliage, limbs, trunk, and roots free of disease and pests.
7. Remove from the site all plants that are not approved and replace with plants that are in accord with specifications.

## 1.9 PROJECT CONDITIONS

### A. Existing Conditions:

1. Examine the project site, verify elevations, observe the conditions under which the work is to be done, and notify the Owner's Representative of any unsatisfactory conditions.
2. Do not proceed with work on this Section until conditions have been corrected satisfactorily.

3. Utilities:
    - a. Determine location of underground utilities.
    - b. Numerous underground utilities exist within the project area. The Contractor shall exercise care in digging and other work so as to not damage existing work including underground cables and pipes. Excavation of plant pits within five feet (5) of utilities shall be preformed by hand.
    - c. Should such underground obstructions be encountered which interfere with his work, the Owner's Representative shall be notified at once.
    - d. The Contractor shall be responsible for the immediate repair of any damage caused by his work, and shall be responsible for any disruption of service caused by this damage. Patching and replacing damaged work shall be accomplished by the Owner's designated Contractor and the cost of this will be paid by the Contractor.
  4. Maintain grade stakes set by others until removal is approved by all parties concerned.
  5. Excavations:
    - a. When conditions detrimental to plant growth are encountered such as rubble fill, adverse drainage conditions, or obstructions, notify the Owner's Representative prior to planting.
    - b. Contractor shall conduct percolation tests in all planting areas prior to planting.
- B. Protection: Protect and maintain, as part of the work of this Section, all existing plant materials to remain.

## 1.10 COORDINATION

- A. Sequencing and Coordination
1. Coordinate the work of this Section with related work of other disciplines and inform the Owner's Representative of any scheduling or other discrepancies relating to work to be performed.
  2. Prior to the starting of planting, verify that the underground sprinkler system and finish grading have been approved. Unless specified otherwise, do not commence planting until:
  3. Site grading, soil import, and preparation has been completed and approved.
    - a. Substantial provision for irrigation has been provided to maintain plant materials.
  4. Proceed with and complete the landscape planting work as rapidly as portions of the site become available, or as otherwise directed.
  5. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless approved otherwise.
    - a. When planting of trees and shrubs does occur after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.
- B. Fertilizer
1. Affix to each bag of fertilizer, used in connection with this work, the manufacturer's certified analysis tag or label.
  2. Fertilizer analysis shall be:
    - a. No less than minimum requirements of specifications.
    - b. As guaranteed by requirements of the Florida State Fertilizer Law.

- C. Peat/Humus
  - 1. Certify in writing that the peat/humus used meets all requirements and criteria of the specifications.

### 1.11 WARRANTY

- A. Warrant all plant materials, for a period of one year from the date of substantial completion, against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, or as a result of malpractice carried out by the Owner, abuse or damage by others, or unusual phenomena and incidents which are beyond the Contractor's control.
- B. Remove and replace dead plants immediately.
- C. Remove and replace plants that are more than 25% dead or in an unhealthy condition at the end of the warranty period.

### 1.12 MAINTENANCE

- A. Until the date of substantial completion, maintain by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guys, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Do not prune except as directed by the Owner's Representative.

## PART 2 - PRODUCTS

### 2.1 PLANT MATERIALS

- A. Name and Variety:
  - 1. As designated on the Plant List on the Drawings.
  - 2. Provide all plant materials complying with the latest editions of "ANSI Z60.1" and "Grades and Standards".
  - 3. Provide plant materials symmetrical and typical of their species or variety.
  - 4. Attach appropriate identification tags to each plant for all varieties specified as "patented", "registered", or "trade marked".
    - a. Do not remove tags until inspected and approved.
- B. Quality:
  - 1. Where plants are specified on the Plant List as "Specimen" or "Florida Fancy", provide plants that meet or exceed the "Florida Fancy" standard in accordance with "Grades and Standards".
  - 2. For all plant material not otherwise specified to be "Specimen" or "Florida Fancy", provide plants that meet or exceed the "Florida No. 1" standard in accordance with "Grades and Standards".
  - 3. Plants judged not in accordance with specified standards will be rejected.
  - 4. Provide plant materials:
    - a. With normal habit of growth.
    - b. Healthy with well-developed root systems filling their containers, but not to the point of being root bound.
    - c. Free of disease, insects, pests, and their eggs.
    - d. Sound, free of mechanical or cultural injury by dents, and free of noticeable after effects of insects and borers.

- e. In the event that it becomes apparent that any nursery supplying plants for this work has knowingly and consistently represented the grade of plants as being higher than the actual grade, as determined under the provisions of this Section, all plants already delivered from such source shall be removed from the job at the Contractor's expense, and no further plants will be accepted from such nursery until written evidence is submitted and confirmed that all material for delivery has been inspected and approved by inspectors of the State Plant Board as being of the grade as represented.

C. Dimensions:

1. Measure height and spread of all plants with branches in their normal position. Height and spread dimensions specified refer to main body of plant and not extreme branch tip to tip. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required.
2. When dimensions of plant materials are omitted from the plant list, provide plants of normal stock for type listed.
3. The caliper of tree trunks is to be taken six inches (6") above the ground if 4" caliper or less, and one foot (1') above the ground if greater than 4" caliper.
4. Trees shall conform to the measurements specified or indicated in the Plant List on the Drawings and shall not vary from the size specified more than ten percent (10%) or have a caliper size which varies more than one-fourth inch (1/4"). Where a trunk is specified as single or standard, the plant shall have a single-straight trunk for a height of not less than specified on the plant list.
5. Container and caliper sizes noted on the Plant List are minimums. Increase container and/or caliper as necessary to conform to specified height and spread.

D. Trees:

1. Provide healthy, vigorous stock grown under climatic conditions similar to conditions in the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.
2. Provide trees and shrubs of the sizes shown or specified. Trees and shrubs of larger size may be used if sizes of roots or balls are increased proportionately and if approved acceptable.
3. All trees specified as container-grown shall have been grown in a rigid container (grow bags are unacceptable) for a minimum of two (2) years prior to installation.

E. Shrubs and Ground Covers:

1. Plants shall have been grown in containers for a minimum of six (6) months and a maximum of two (2) years and shall have sufficient roots to hold earth together after removal from containers.
2. Plants which have become pot-bound, or for which the top system is too large for the size of the container, will not be accepted.
3. Plants shall not be removed from the container until immediately before planting.

F. Ball and Burlapped Plants and Wired-Balled and Burlapped Plants: (Only with Prior Approval by Owner's Representative)

1. No plant shall be accepted when the ball of earth surrounding its roots has been cracked or broken or which shows evidence of being "made".
2. The diameter of the ball must be sufficient to encompass the fibrous and feeding-root systems necessary for the maximum development of the plant and shall conform to sizes and ratios in the table of minimum-ball sizes as set forth in "ANSI Z60.1" and "Grades and Standards".

3. Root pruning shall have been done at the minimum of four (4) weeks before planting at the job, and, such fact, be certified on accompanying invoices. Where, in the opinion of the Owner's Representative, following his inspecting 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, and, such fact, shall be certified accompanying invoices. Copy of invoices shall also be supplied to the Owner's Representative.
4. Balls shall be firmly wrapped with burlap or approved strong cloth. The root balls of these plants shall be properly protected until planting.

## 2.2 MISCELLANEOUS MATERIALS

### A. Topsoil:

1. Provide topsoil that is:
  - a. Natural surface soil from well-drained areas, fertile, friable and free of weeds, typical of productive, cultivated topsoils of the locality.
  - b. Not excessively acid or alkaline (pH 5.5 to 7.0), nor containing toxic substances.
  - c. Without admixture of sub-soil and reasonably free of clay, stones, stumps, roots, or other similar substances one inch (1") or more in diameter or any other object which may be a hindrance to the finish-grading operation.
  - d. Acceptable topsoil from the site and any imported soil used on the project shall be a natural, fertile, friable soil possessing characteristics representative of a well-drained area in Florida. Soil containing muck or poorly-drained soils shall not be used.
  - e. Acceptable soil from the site may be substituted for topsoil and/or sand, based upon the results of the laboratory analysis.

### B. Prepared Planting Mix:

1. Soil used for planting shall be free from sticks, roots, stones, or other extraneous material detrimental or injurious to plants. Particular care should be taken to remove pieces of mortar, cement, wood, and other similar remains of construction from all planting areas.
2. Soil used for planting mix shall be as follows: 1/3 approved topsoil, 1/3 Florida peat, and 1/3 clean D.O.T. sand. Material mixing of the backfill mix will be out of the pit or bed by approved mechanical methods. The resultant shall be an even mixture that will be hand-shoveled into place.
3. Planting soil mix to be placed as a growing medium for all annuals: 1/2 clean, coarse-grained sand 1/4 approved Florida Peat 1/8 fine-milled composted Pine Bark 1/8 vermiculite.

### C. At the Contractor's expense, samples of existing on-site soils will be submitted to a certified testing laboratory as required under paragraph 3.4, Field Quality Control, for analysis as to the suitability of the planting mix specified in Item B above to obtain a pH of 5.5 to 6.5. The findings, together with any recommendations for amending the specified planting mix shall be reviewed and approved by the Owner prior to delivery and installation of plant materials at the job.

1. At the Contractor's expense, soil amendments shall be added to any soil used for planting and in planting beds and plant pits in the amount and manner prescribed by a soil analysis. Results from soil analysis and a list of the prescribed amendments shall be presented to the Owner's Representative prior to incorporating into the soil.

2. The Contractor shall be responsible for providing adequate acceptable soil to prepare the planting mixture. The Contractor is responsible for supplying and mixing soil amendments and moving the planting mixture to the plant pits and beds.
- D. Fertilizer:
1. Provide a complete commercial fertilizer mixture complying with the laws of manufacture regulating the sale and manufacture of fertilizer in the State of Florida.
  2. Agriform Tablets - Agriform tablets shall be Agriform twenty-one (21 ~gram tablets, slowrelease, 20-10-5 analysis, or an approved equal.
  3. Provide as specified by the Agricultural Soils Testing Laboratory.
- E. Peat/Humus: Provide peat/humus consisting of:
1. Peat shall consist of ninety-percent (90%) organic peat and shall be suitable for horticultural purposes.
  2. Peat shall be brown in color, clean, low in content of mineral and woody material, pH 4 to 5, and shall be shredded into particles not larger than one-half inch (1/2") in diameter.
  3. Peat shall contain no more than thirty-five-percent (35%) moisture and the ash content not exceed ten percent (10%) and free from weedy grasses, sedges, rushes, or mineral matter harmful to plant growth.
- F. Mulch for Planting Areas: As Designated on the Drawings
- G. Dolomitic Limestone:
1. Ground limestone containing not less than eighty-five percent (85%) of total carbonate and ground to such a size that fifty percent (50%) will pass through a 100-mesh sieve and ninety percent (90%) will pass through a 200-mesh sieve.
  2. Coarser materials will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.
- H. Aluminum Sulfate: Shall be a recognized manufacturer's standard commercial grade.
- I. Anti-Desiccant: "Wilt-Pruf", "Dowwax", "Foilgard", or Owner-approved equivalent delivered in manufacturer's containers.
- J. Stakes for Guying Trees: As detailed on the drawings.
- K. Tree Wrapping: First-quality, heavy-waterproof crepe paper manufactured for tree wrapping.

## **PART 3 - EXECUTION**

### **3.1 INSPECTION**

- A. All scaled dimensions are approximate. Before proceeding with any work, carefully check and verify all dimensions and quantities, and immediately inform the Owner's Representative of any discrepancies between the Drawings, Specifications, and actual conditions. Do not do work in any area where there is a significant discrepancy until approval to proceed has been received from the Owner's Representative.

- B. Verify that fine grading has been completed and there are not errors which will result in poor application or cause latent defects in fine grading and sodding.
- C. Accept job site elevations at plus or minus two-tenths ( $\pm 0.2$ ) of a foot from finish-grade elevations.

### 3.2 PREPARATION

- A. Preparation for Planting:
  - 1. Weeding: Dig-out all weeds and grasses by the roots and dispose of off-site. Grasses not of the perennial type less than two and one-half inches (2-1/2") high and not bearing seeds, may be turned under. Perennial weeds and grasses are to be removed. Also, remove other noxious or invasive weeds encountered on the site.
  - 2. Loosen rough-graded material by roto-tilling to a depth of four inches (4") and regrade to maintain proper elevation.
  - 3. Remove all stones over two inches (2") in size, rubbish, and all other extraneous matter.
- B. Layout and Spacing:
  - 1. Layout areas for multiple plantings and stake locations for individual trees and shrubs.
    - a. In the event that underground utilities or other obstructions are encountered during planting, relocate and replant materials at alternate locations as directed.
  - 2. Obtain approval for all locations, spacing, and orientation prior to planting and make adjustments as directed, if necessary, to achieve project-design objectives.
    - a. When plant material is spaced in rows, verify total dimension and space plants equally within the designated areas. Adjust quantities as required. Rows shall be parallel to curbs.
    - b. Where plant material is indicated in a "loose" pattern, space the material as indicated, maintaining the spacing constant with proper consideration for trees, sprinkler irrigation patterns, light standards, and other features.
    - c. Space ground cover material triangularly in straight rows at the spacing indicated.
    - d. Set shrubs, that are to be located adjacent to walks or sod edges, back from edges the "on center" dimension of the individual shrub.
    - e. When specimen trees are to be planted prior to construction of finish grades, use a surveyor to locate position and finish-grade relationship to top of root ball.
- C. Fine Grading Verification:
  - 1. Verify that all lawn and planting areas have been graded to a smooth, even, and uniform plane with no abrupt change of surface.
  - 2. Verify that lawn and planting areas have been graded to provide positive surface drainage in all areas.
    - a. Do not work soil when moisture content is so great that excessive compaction will occur nor when it is so dry, dust will form in the air.
    - b. Apply water, if necessary, to provide ideal moisture for filling and for planting, as herein specified.
    - c. Properly grade low spots and pockets to drain to established drainage structures.
  - 3. The Contractor shall be required to re-establish any grades impacted as a result of his work.

4. The Contractor shall be provided with a complete copy of the Civil Construction Documents for his use in reviewing existing grading and to use in restoring the areas impacted by his work.
5. The Contractor shall re-establish grade levels where settlement, erosion, or other grade changes occur from the point in time when the respective area is turned over to the Contractor. This Contractor shall adjust grades, as necessary, to provide positive drainage.

D. Fertilizing:

1. Remove or redistribute excess soil before application of fertilizer. Make allowances when establishing finish grades for earth excavated from planting pits and mulch.
2. Provide fertilizing applications as prescribed by Agricultural Soils Laboratory tests and recommendations.
3. For all shrubs and trees, place agriform fertilizer tablets (at specified rates) in the root zones, six to eight inches (6-8") below the finish grade of the soil, no greater than four inches (4") away from the root ball. Verification of tablet placement will be required during final review.

E. Liming:

1. Immediately following or simultaneously with the incorporation of the fertilizer, distribute lime uniformly at a rate determined by tests and incorporate into the soil to a depth of at least one inch (1 ") by disking, harrowing, or other accepted methods.
2. Do not apply lime under trees.

- F. Pre-Emergent/Post-Emergent Herbicide: For weed and grass control, apply an approved pre- and post-emergent herbicides to all shrub, ground cover, and mulch beds.

### 3.3 PLANTING

A. General:

1. All plant material shall be reviewed and receive initial approval from the Owner's Representative prior to its delivery to the job site, as deemed necessary, by the Owner's Representative.
  - a. The approval methods shall be by nursery site visits or by photographs submitted by the Contractor to the Owner's Representative as required under paragraph 1.5 Submittals. All photographs of plant material shall include an appropriate scale element adjacent to the individual plant. In the case of large quantities of trees or shrubs, photographs should be of representative specimens of each plant species and size.
  - b. All photographs shall be in color and taken with a 35mm camera. Each picture shall have the date electronically imprinted. Two (2) sets of photographs for each plant submittal shall be delivered to the Owner's Representative.
  - c. Approval of plant materials at this stage will not constitute final approval. Final approval for all materials will be given only at the time of final acceptance by the Owner.
2. Do not do any planting until all operations involved with the installation of the irrigation system have been completed, final grades have been established, and the planting areas have been properly graded and approved.

3. THE RELATIVE POSITION OF EACH TREE AND PLANT IS SUBJECT TO APPROVAL BY THE OWNERS REPRESENTATIVE, AND SHALL, IF NECESSARY TO ACHIEVE PROJECT DESIGN OBJECTIVES, BE RELOCATED AS DIRECTED AND AT NO ADDITIONAL COST TO THE OWNER.
4. Remove each plant from its container and plant in such a manner that when settled, it will bear the same relation to the constructed finished grade as it bore to the grade in the container before being transplanted.
  - a. Filling will not be permitted around trunks and stems.
  - b. Cut and remove all wire and nylon rope used on root ball.
5. Backfill procedure:
  - a. Tamp firm, prepared plant mix placed into plant pits.
  - b. Form a shallow basin around plants to hold enough water to saturate the root ball and prepared plant mix.
  - c. Maintain tree saucers until substantial completion.
6. Thoroughly water plants using a slow-soak technique immediately after planting. Rake all basins around trees away from root ball before sodding or mulching.
7. Prune at the time of planting with due regard to the natural forms and growth characteristics of each species and paint all cuts over three-fourths-inch (3/4")-diameter with an approved tree-wound dressing.
8. Pruning shall be done in a manner complying with standard horticultural practices and shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for the loss of roots during transplanting. Pruning shall not result in the removal of one-third (1/3) of the branching structure or more, nor shall pruning result in alterations to the basic plant structure. Broken or damaged roots shall be cut off smoothly.
9. Hand watering:
  - a. Contractor shall be responsible for supplemental hand watering of trees and shrubs irrigated by rotor irrigation heads and trees irrigated by spray heads on an as-needed basis, but not less than three (3) times weekly, until the end of the ninety (90) day plant establishment period.  
Each time plants are watered, they shall be watered completely using a slow-soak technique, saturating the root ball to its full depth.
10. Place mulch between and around specified trees and all shrubs within five (5) days after any planting.
  - a. For individual trees outside of planting beds, spread mulch to cover the saucer area.
  - b. When in place, water mulch thoroughly.

**B. Planting Trees:**

1. Maintain plants in nursery containers, or properly heeled-in, until time for transplanting.
2. Handle all plants by earth ball or container only. Handling by the plant itself will be cause for rejection.
3. Layout areas and set stakes for trees at locations indicated on Drawings. Secure approval from Owner's Representative before excavating pits. Make necessary adjustments as directed.
  - a. Specimen trees to be planted prior to construction of finish grade shall be located by surveyor for position and relationship of top of root ball to finish grade.
  - b. Dig each plant pit twice the diameter and the exact depth of the tree root ball. When hardpan or muck is encountered, break through to clean sand and backfill with prepared backfill as directed. Loosen compacted soil at sides and bottom by scarifying, or other approved method. Set tree to finish grade and fill the pit with prepared soil, progressively settling the soil about the root ball by water jetting and flooding to remove voids.

- c. Excavation of plant pits located within five feet (5') of utility lines shall be performed by hand.
- 4. Set trees in center of pits in a vertical position so that crown of balls will be three inches (3") above finish grade after allowing for watering and settlement.
- 5. Prepare watering basin same width as tree plant ball. Water thoroughly immediately following planting. Backfill all voids which develop with additional prepared planting soil to bring to finish grade. All basin shall remain in place following final acceptance and shall be removed by the Owner.
- 6. If burlap containing synthetic materials is used, the burlap is to be completely removed and properly disposed of.
- 7. Fill all tree pits with water to test proper drainage percolation prior to planting.
  - a. Excavate pits which are found to be inadequately draining to a depth sufficient for proper drainage and backfill with course sand.
  - b. No allowances will be made for plants lost due to improper installation and drainage.
- 8. Backfill with prepared planting mix.
- 9. Stake trees as shown on Drawings. All trees and palms shall be staked according to the Drawings. Staking is not at the discretion of the Contractor. Staking requirements may only be waived by written permission from the Owner's Representative and a credit for any unstaked tree or palm issued by the Contractor to the Owner.

C. Bed Preparation for Shrubs and Ground Cover Planting Areas:

- 1. Remove all existing grass including roots and other vegetation (by mechanical methods), construction debris, limerock, etc., and any soil which would be deleterious to plant growth completely. Contractor shall remove unwanted materials from project site and dispose of in an appropriate and legal manner.
- 2. For all areas to be planted with shrubs and ground covers, provide a six-inch (6") depth of prepared planting mix over entire planting bed, and till into bed in three-inch (3") lifts. Hand digging will be required in areas where mechanical means would cause damage to underground utilities. Vertical drill, if necessary, through compacted subgrade to ensure drainage in beds.

D. Planting of Individual Vines and Shrubs:

- 1. Plant individual vines and shrubs in pits at least twelve inches (12") greater in diameter than their root ball and at least six inches (6") deeper than the bottom of the ball. Loosen soil at bottom of pit. Fill pit with prepared soils to the bottom of the ball. When the plant has been properly set, fill the pit to the finish grade with prepared soil and thoroughly settle by tamping and watering. Remove all vines from stakes, untie, and securely fasten to the wall, fence, or other surface next to which they are planted in a manner approved by the Owner's Representative.
- 2. Prepare a water basin as wide as the plant pit at each plant. Water thoroughly and backfill voids with additional prepared planting soil.

E. Planting Ground Cover:

- 1. Space ground cover plants as shown in schedule on Drawings.
- 2. Moisten ground cover areas prior to planting. Do not set plants in dry soil.
  - a. Do not allow rooted plants to dry out before or while being planted.
  - b. Wilted plants will not be accepted.
- 3. Plant rooted cuttings sufficiently deep to cover all roots.

4. Ground cover plants that have been grown in liners are to remain in liners until time for transplanting.
  - a. At time of transplanting, the soils are to contain sufficient moisture so that it does not fall from the roots when plants are lifted from the liners.
  - b. Plant each plant with its proportionate amount of soil in a manner that will insure a minimum of disturbance to the root system.
5. At time of planting, firm up the earth around each plant sufficiently to force out all air pockets.
6. Use alternate procedures in the planting of ground covers, only when approved.
7. After all planting has been completed, top-dress all ground cover areas with three inches (3") of mulch as detailed on the drawings.

### **3.4 FIELD QUALITY CONTROL**

- A. Notify the Owner's Representative at least two (2) days in advance so that the following minimum observations can be made as the work progresses:
  1. Conditions prior to finish grading and soil preparation.
  2. Conditions upon completion of finish grading and soil preparation.
  3. Plants, after delivery to site and prior to planting.
  4. When vines, shrubs, and trees are spotted or staked for planting prior to excavation of planting holes.
  5. Specimen trees at nursery source before delivery to on-site location.
  6. Lawn areas prior to sodding.
  7. Specimen trees for condition, upon delivery to job site, and for positioning progressively as work is completed.

### **3.5 MAINTENANCE AND ADJUSTMENT**

- A. Maintenance:
  1. Begin maintenance immediately after planting: Continuously protect all areas including lawn areas, plant materials, supports, etc., until written substantial completion acceptance of the work. Maintenance shall consist of weeding, fertilizing, mulching, pruning, watering, and maintenance of staking and water saucers.
  2. Maintain trees, shrubs, ground covers, and other plants until receipt of written substantial completion approval by the Owner.
  3. Spraying and dusting:
    - a. During the maintenance period and up to the substantial completion acceptance by Owner, perform all seasonal spraying and dusting of trees and shrubs.
    - b. Use materials and methods in accordance with the highest nursery standards and practices and as directed by Owner or Owner's Representative.
- B. Adjustment:
  1. If planting should occur after lawn preparation, provide proper protection at lawn areas and promptly repair all damage resulting from planting operations.
  2. Provide other adjustments as follows:
    - a. Resod areas, where necessary, for full and even coverage.
    - b. Regrade, lightly compact, and replant around sprinkler heads, where necessary, to maintain proper vertical positioning in relation to general grade.

- c. Fill all depressions and eroded channels with sufficient soil mix to adjust grade to assure proper drainage. Compact lightly and replant the filled areas in accord with Contract requirements.

### **3.6 CLEAN UP**

- A. Clean Up:
  - 1. During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.
  - 2. Protect plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged planting.
  - 3. Keep all planted areas free of debris, weeds, and insects. Cultivate, weed, and water until final substantial completion of the work.
  - 4. Upon completion, remove all excess subsoil, cordage, wrappings, and other extraneous materials from the site.
    - a. Remove all tools, equipment, and other materials, except those necessary, for maintenance work.
    - b. Remove litter or other debris occurring from maintenance operations.

### **3.7 ACCEPTANCE**

- A. Inspection of the entire project or designated portions thereof shall be made upon written request of the Contractor.
- B. A substantial completion inspection shall be conducted with all deficiencies noted and given to the Contractor as a list of items to be corrected. Substantial completion acceptance will not be issued until all punch list items have been completed and a reinspection by the Owner is done.
- C. For the purpose of establishing an "Acceptance" standard, all plant material shall be healthy, well-rooted, evenly colored, viable, and free of weeds and disease.
  - 1. Perform other operations necessary to complete maintenance and ensure that plants are healthy, vigorous, visually pleasing, and undamaged.
  - 2. Perform all maintenance tasks as specified in this section.
- D. Once the reinspection for compliance with the punch list requirements has been conducted and barring any new deficiencies being noted during the reinspection, written acceptance will be given for all work of this Section, exclusive of possible replacement of plant material subject to warranty.
  - 1. If any deficiencies of requirements exist, they will be noted in writing.
- E. Upon written notice of substantial completion, the Owner will assume all responsibilities for maintenance of landscape work. The Contractor is responsible for all maintenance as specified in this Section until the date of substantial completion.
- F. At the conclusion of the warranty period, an inspection will be made to determine the condition of warranted plant material.
  - 1. Remove all plant material noted as not being in a healthy-growing condition.
  - 2. At no additional cost, replace plant material during the following planting season with material of like kind and size, in accordance with specification for original plant material.
  - 3. Warranty period also applies to replaced material.
  - 4. Remove all tree staking and guys and dispose of the material off-site.

### **3.8 GUARANTEE AND REPLACEMENT**

#### **A. Trees, Shrubs and Groundcover**

1. All trees, shrubs and groundcover shall be established or exhibit signs of being established in a ninety (90) day establishment period or from the date of installation, or the plant material shall be removed and replaced at no additional cost to the Owner. Plant material installed by the Contractor shall be warranted in writing for a period of one (1) year from the date of substantial completion.

**END OF SECTION**