SECTION 02810

LANDSCAPE PLANTING

PART 1 GENERAL

1.01 LANDSCAPE PLANTING SPECIFICATIONS

The general and specific conditions of these specifications are an integral part of the landscape construction documents and must be complied with.

1.02 SCOPE OF WORK

Furnish all labor, material, equipment and services necessary to provide all landscape planting. Complete in place, as shown and specified.

1.03 QUALITY ASSURANCE

Source Quality Control

A. Submit documentation that all plant material has been ordered to Landscape Architect at least five days prior to start of work under this Section. Arrange procedure for inspection of plant material with Landscape Architect at time of submission.

B. Plants shall be subject to inspection and approval of Landscape Architect at place of growth upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Submit written request for inspection of plant material at place of growth to Landscape Architect. Written request shall state the place of growth and quantity of plants to be inspected. The Landscape Architect reserves right to refuse inspection at this time if, in his judgment, a sufficient quantity of plants is not available for inspection.

C. The Contractor will be responsible for financial reimbursement of the Landscape Architect for additional and unanticipated time and materials required to organize, re-design, re-inspect or to do whatever is required to guide a sub-standard installation or one which is not within substantial conformance to the Plans and Specifications back to an acceptable installation. Said reimbursement will be in the form of a back charge to the Contractor from the County.

1.04 SUBMITTALS

Certificate of Inspection of plant material by State or Federal Authority

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery
   1. Deliver fertilizer to site in original, unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark and conformance to State Law.
   2. Deliver plants with legible identification labels.
      a. Label trees, evergreens, and bundles of containers of like shrubs or ground cover plants.
      b. State correct plant name and size indicated on plant list.
      c. Use durable, waterproof labels with water-resistant ink, which will remain legible for at least 60 days.
   3. Protect material during delivery to prevent damage to root ball or desiccation of leaves.

4. The Contractor shall notify Alexander + Hibbs AIA, Inc. four days in advance, delivery of all plant materials and shall submit an itemized list of plants in each delivery.

B. Pruning

At no time shall the tree or plant materials be pruned, trimmed or topped prior to delivery, and alteration of their shape shall be conducted only with the approval of the Landscape Architect.

C. Right of Inspection

The Landscape Architect reserves the right to approve or reject at any time upon delivery or during the work any or all plant material regarding size, variety or condition.

D. Soils Test

Two copies of soils tests performed by an approved agronomic soils testing laboratory shall be submitted with the approved planting plans. Three separate soil samples shall be taken in the field by a qualified soils technician and submitted with planting plans to the testing lab, unless prior approval for alternative procedures is given by the County. Tests shall include a fertility and suitability analysis with written recommendations. Contractor shall comply with recommendations given for soil amendments, plant material selections and irrigation equipment. Test locations shall be approved by Landscape Architect.

The topsoil shall be amended as recommended by the testing laboratory. Should the amendment recommendations furnished by the laboratory exceed those required by the bidding documents, the laboratory recommendations shall be applied at no additional cost to the County.

E. Storage
1. Store plant material in shade and protect from weather.
2. Maintain and protect plant material not to be planted within four hours.

F. Handling
1. Do not drop plant material.
2. Do not pick up container plant material by stems or trunks.

1.06 JOB CONDITIONS

A. Planting

Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

B. Scheduling

Install trees, shrubs and liner stock plant material before sod lawn areas are installed.

1.07 SAMPLES AND TESTS

The Landscape Architect reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request by Landscape Architect. Rejected materials shall be immediately removed from the site and premises at Contractor's expense. Contractor shall pay cost of testing of materials not meeting specifications.

1.08 GUARANTEE AND REPLACEMENTS

A. Guarantee

All plant material installed under the Contract shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship for a period of one year (trees) or 6 months (shrubs) after date of acceptance by County. Any plant found to be dead or in poor condition due to faulty materials or workmanship, as determined by the Landscape Architect, shall be replaced by the Contractor at his expense.

B. Replacement

Any materials found to be dead, missing or in poor condition during the establishment period shall be replaced immediately. The Landscape Architect shall be the sole judge as to the condition of material. Material to be replaced within the guarantee period shall be replaced by the Contractor within 10 calendar days of written notification by the County.

PART 2 PRODUCTS

2.01 GENERAL

The following organic soil amendments and fertilizer are to be used for bid price basis only. Specific amendments and fertilizer specifications will be made after grading operations are complete and soil samples are tested by the Contractor. All materials shall be of standard, approved and first-grade quality and shall be in prime condition when installed and accepted. Any commercially processed or packaged material shall be delivered to the site in the original, unopened container bearing the manufacturer's guaranteed analysis. Contractor shall supply Landscape Architect with a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance or bearing the manufacturer's guaranteed analysis.

2.02 SPECIFIC

A. Top Soil

Topsoil shall consist of a Class A ("GreenBook" Specifications 2009 Edition). All Class A topsoil shall be tested for agricultural suitability. The test results from samples taken at the source shall be delivered to the Engineer at least 10-working days prior to anticipated delivery date to the site. Should the proposed source material be unsatisfactory, the Contractor shall locate a suitable material, and shall pay all additional costs for testing. The soil shall be fertile, friable, sandy loam soil possessing the characteristics of representative soils in the vicinity, which produce a heavy growth of grasses or other vegetation and shall be obtained from natural, well-drained areas. Before removal of the topsoil, the surface at the source of supply is to be stripped to a depth of two inches in order to remove weeds, seeds, roots, etc. The source of topsoil shall be free from Bermuda grass, crabgrass and all noxious weeds or grasses. The topsoil shall be free from subsoil, refuse, heavy roots, clay lumps, stones larger than one inch in size, noxious weeds, sticks, brush, litter and other deleterious substances. In no case shall there be more than five percent by volume of the following: stones larger than one inch, coarse sand and small clay lumps. The soil shall be free from insoluble carbonates and shall have the following analysis, which shall be verified by a soil analysis made at the Contractor's expense. The soil shall be subject to inspection at the source of supply prior to delivery.

1. pH: maximum of 7.0; minimum of 6.0
2. ECo1: zero to three maximum (electrical conductivity)
3. ESP: zero to twelve maximum (exchangeable sodium percentage)

B. Soil Conditioners and Fertilizers

1. Soil conditioner with fertilizer included shall consist of organic materials comprised of decomposed animal and vegetable matter and composted to support bacterial cultures. Soil conditioner shall be "Gro-Power Plus" or approved equal, and shall conform to the following analysis.
   a. Particle Size: 63 1/2% through 100 Screen
   b. pH: 4.5 to 4.7
   c. Organic content: Humus--50%; Humic Acids-15% (Note: Poultry, animal or human waste is not acceptable). See the definition of Humus in Western Fertilizer Handbook, Fifth Edition.)
   d. Chemical Analysis:
      - Ammonic Nitrogen 1.00% (derived from ammonium phosphate)
      - Organic Nitrogen 4.00% (derived from compost, meat meal and urea)
      - Total Nitrogen 5.00%
      - Available Phosphoric Acid 3.00% (derived from compost, meat meal and ammonium phosphate)
      - Soluble Potash 1.00% (derived from compost and muriate of Potash)
      - Iron 1.00% (derived from iron sulfate)
      - Zinc 0.05% (derived from zinc sulfate)
      - Manganese 0.05% (derived from manganese sulfate)
      - Soil Penetrant: Alkyl Naphthalene
      - Sodium Sulfonate 2.00%
   e. Materials shall be mixed thoroughly and bagged in 50 or 80 lb. bags.

2. Organic Soil Amendments shall be derived from Redwood, Fir or Cedar wood or bark, granular in nature, stabilized with nitrogen and having the following properties.
   a. Particle Size: minimum 955 passing 4 mesh screen (6.35 MM standard sieve); minimum 80% passing 8 mesh screen (2.33 MM standard sieve.)
   b. Nitrogen Content: 0.5% based on dry weight for redwood sawdust 0.7% based on dry weight for fir sawdust; 1.0% based on dry weight for fir or pine bark (Note: Pine sawdust is not acceptable.)
   c. Salinity: Saturation extract conductivity shall not exceed 3.5 milliohms / centimeter at 25 degrees centigrade.
   d. Organic Content: minimum-90% weight.
3. Minerals
   a. Soil Sulfur (S): as required from soil report
   b. Ferrous Sulfate: as metallic 20%; as required from soil report
   c. Agricultural Gypsum (CaSO42HpO): as required from soil report
   d. Lime (CaO): as required from soil report
4. Redwood Shavings shall be leeched and nitrogen-fortified and have aluminum residual nitrogen content of 1%.
5. Pre-Plant Commercial Fertilizer shall be uniform in composition, free-flowing, suitable for application original container or package, each bearing the manufacturer's statement of guaranteed analysis and shall contain the minimum available percentage by weight of plant food as specified in the approved agronomic soils report.
6. Planting Tablets

a. Slow-release type, containing the following percentages of nutrients by weight: 20% nitrogen; 10% phosphoric acid; 5% potash.

b. 21-gram tablets as manufactured by Agriform or approved equal, applied per manufacturer's instructions.

C. Subsurface Root Barrier

1. Root barrier for tree planting Root control barrier shall be 24-inches (600mm) wide by 0.080-inches (2mm) thick high impact polyethylene or polyproplene sheeting with reinforced double top edge, manufactured for root barrier purposes. Sheeting shall have integrally molded root deflector ribbing and integrally molded joiner strips. Root barrier shall be pre-fabricated as manufactured by Deep Root Corporation or approved equal.

2. Within 15 calendar days of award of contract, submit one 24-inch-by-24-inch sample with joining strip or seam and two copies of manufacturer's technical data for approval.

D. Plant Material

1. Plants shall be in accordance with the California State Department of Agriculture's regulation for nursery inspections, rules and ratings. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous and free of insect infestations, plant diseases, sun scalds, fresh abrasions of the bark, excessive abrasions or other objectionable disfigurements. Tree trunks shall be sturdy and well "hardened" off. All plants shall have normally well-developed branch systems and vigorous and fibrous root systems which are not root or pot-bound. In the event of disagreement as to condition of root system, the root condition of the plants furnished by the Contractor in containers will be determined by removal of earth from the roots of not less than two plants, or more than two percent of the total number of plants of species or variety. Where container-grown plants are from several sources, the roots of not less than two plants of each species or variety from each source will be inspected. In case the sample plants inspected are found to be defective, the Landscape Architect reserves the right to reject the entire lot or lots of plants represented by the defective samples. The Landscape Architect is the sole judge as to acceptability. Any plants rendered unsuitable planting because of this inspection will be considered as samples and will be provided at the expense of the Contractor.

2. The size of the plants will correspond with that normally expected for species and variety of commercially available nursery stock or as specified in the Special Conditions, drawings or details. The minimum acceptable size of all plants, measured before pruning with the branches in normal position, shall conform to the measurements, if any, specified on the drawings in the list of plants to be furnished. Plants larger in size than specified may be used with the approval of the Landscape Architect. If the use of larger plants is approved, the ball of earth or spread of roots for each plant will be increased proportionately

3. All Plants not conforming to the requirements herein specified shall be considered defective and such plants, whether in place or not, shall be marked as rejected and immediately removed from the site of work and replaced with new plants at the Contractor's expense. The plants shall be of the species, variety, size and condition specified herein or as shown on the drawings. Under no conditions will there be any substitution of plants or sizes listed on the accompanying plans, except with the expressed consent of the Landscape Architect.

4. At no time shall trees or plant material be pruned, trimmed or topped prior to delivery, and any alteration of their shape shall be conducted only with the approval and when in the presence of the Landscape Architect and as noted on the Planting Specifications.

5. Plant material shall be true to botanical and common name and variety as specified in "A Checklist of Woody Ornamental Plants in California," Manual 32, published by the University of California School of Agriculture (1963).

6. All trees shall be selected by the Contractor and inspected by the Landscape Architect. All trees of 24-inch (600mm) box size or larger shall be inspected at the nursery. Inspections at no cost to the Contractor will be limited to three nurseries, all within a 50-mile (80Km) radius of the site of work. Additional inspections and inspections out of the area will be charged to the Contractor at the Landscape Architect's standard billing rate in effect at the date of bid, plus mileage costs, and will be deducted from payments due to the Contractor.

E. Nursery-Grown and Collected Stock
1. Grown under climatic conditions similar to those in locality of project.
2. Container-grown stock in vigorous, healthy condition; no root-bound plants or plants with root system hardened off.
3. Substitute plant material will not be permitted unless specifically approved in writing by the Landscape Architect.

F. Tree Staking Material
1. Stakes for Tree Support
   a. Full-length, lodge pole, pine stakes, treated with copper naphthanate.
   b. Minimum nominal size: 2" in diameter x 10' long and pointed at one end (adjusted length to fit tree).
2. Ties
   a. V.I.T. Rubber cinch tie.
   b. All guys are to be flagged. Ninety percent wire length is to be covered. White PVC 1/4 inch diameter tube covering shall be used.

G. Shredded Wood Mulch Top Dress

Top dress shall be regular, ground, nitrolized citrus, redwood or fir, consisting of 3/8" to 5/8" diameter by 1" to 3" in length. Prior to delivery to the site, the Contractor shall submit samples to the Landscape Architect for approval.

H. Erosion Control Matting

Erosion control matting shall be of open weave, furnished in rolled strips as follows: It shall be approximately 225 feet long with a width of 48 inches plus or minus one inch and an approximate one (1) inch square mesh. Fabric shall average .4 pounds per linear foot. The erosion control matting shall be manufactured from loosely twisted jute yarn not varying in thickness by more than one-half its normal diameter, equal in quality to "Ludlow Soil Saver #48" or approved equal. Staples for erosion control shall be 11 gauge steel wire bent in a U shape six inches minimum length and one inch wide. Wetting Agent to be 95% Alkyl Polyethylene Glycol Ether such as "Commercial Water In" or approved equal.

I. Sod

Sod shall be fully mature, well-maintained, of the grass variety specified, free of all other grasses or weeds and shall be evenly cut with a conventional sod-cutting machine to a thickness of 1 1/2 inches. All material shall be from the same growing ground and delivered fresh to the job site. If, after installation, any areas of sod die or become brown, these areas are to be replaced with sod immediately. Replacement sod is to match original.

K. Weed Abatement Program

The herbicide "Round-up" or approved equal shall be used for all planting areas. See Section 3.04-B, for guidelines for proper application procedures.

L. Miscellaneous Materials
   1. Sand-washed river sand or equal.
   2. Post emergent weed killer: "Round-up."
   3. Tree wound paint-as approved.

PART 3 EXECUTION

3.01 INSPECTION

Verify that final grades have been established prior to beginning planting operations. Inspect trees, shrubs, and material for injury and insect infestation, and inspect trees and shrubs for improper pruning. Do not begin planting trees until deficiencies are corrected or plants replaced.

3.02 PREPARATION

Stake out locations for plants and outline of planting beds on ground. Do not begin excavation until plant locations and plant beds are acceptable to Landscape Architect. The irrigation system shall have been installed and approved prior to soil preparation.

3.03 INSTALLATION

A. Excavation of Planting
   1. Shape
      a. Vertical sides and flat bottom
      b. Plant pits to be square for box material, circular for canned material.
   2. Size: All trees shall have planting pits dug 3 times the diameter and to the depth of the root ball. Backfill around the root ball with prepared backfill mix. Refer to Planting Details for specific method.

B. Preparation of Planting Areas

   1. After approximate finished grades have been established, soil shall be conditioned and fertilized in the following manner. Nitrogen-stabilized organic amendment and ammonium phosphate shall, at the following rates, be uniformly spread and cultivated thoroughly by means of mechanical tiller into the top 6" of soil. Note: The soil tests analysis and recommendations shall take precedence over the following amendments:
      a. Nitrogen-Stabilized Organic Amendment 4 cu.yds. / 1,000 sq.ft.
      b. Ammonium Phosphate 6-20-20: 15 lbs./1,000 sq.ft.
      c. 150 lbs. Agricultural Gypsum I 1,000 sq.ft.
   2. All soil areas shall be compacted and settled by application of heavy irrigation to a minimum depth of twelve inches.
   3. At time of planting, the top two inches of turf areas to be sod shall be free of stones, stumps or other deleterious matter 3/4" in diameter or larger. In ground cover areas, the top two inches shall be free of stones, stumps or other deleterious matter 1" in diameter or larger. All planting areas shall be free from all wire, plaster or similar objects.

C. Final Grades
   1. After the foregoing specified deep watering, minimum modifications to grade may be required to establish the final grade. These areas shall not be worked until the moisture content has been reduced to a point where working it will not destroy soil structure.
   2. Finish grading shall insure proper drainage of the site.

3. All areas shall be graded so that the final grades will be 1" below adjacent paved areas, sidewalks, valves boxes, headers, clean-outs, drains, manholes, etc., in turf areas, and 2" below in ground cover areas.
4. Surface drainage shall be away from all building foundations.
5. Eliminate all erosion scars.
6. Planting areas receiving sod shall sustain a finish grade of a depth that installed sod shall be flush with finish surfaces (walks, paved areas, etc.).
7. All planting areas shall have a finish grade conforming to approved plans and specifications after full settlement has occurred.
8. Dispose of unacceptable or unused excess soil off site and premises.

3.04 PLANTING INSTALLATION

A. General
1. Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice, as approved by the Landscape Architect.
2. Only as many plants as can be planted and watered on that same day shall be distributed in a planting area. In extreme heat, plants shall be watered immediately after planting.
3. Containers shall be opened and plants shall be removed in such a manner that the ball of earth surrounding the roots is not broken, and they shall be planted and watered as herein specified immediately after removal from the containers. Containers shall not be opened prior to placing the plants in the planting area.

B. Weed Control:

After soil preparation and establishment of final grades prior to any planting, the Contractor shall irrigate thoroughly for a period of time, two to three weeks or until the weed seeds have germinated. When there is sufficient weed seed germination, the Contractor shall apply a post-emergent contact weed killer according to the directions of the manufacturer. The Contractor shall then wait an additional two weeks to allow the weed killer to dissipate, then plant as indicated in the plans and specifications. Contractor shall remove any residual foliage and/or roots.

C. Layout of Major Plantings:

The Contractor shall mark locations for plants and outlines of areas to be planted on the ground before any plant pits are dug. The Landscape Architect shall approve all such locations. If an underground construction or utility line is encountered in the excavation of planting areas, the Landscape Architect may select other locations.

D. Planting of Trees and Shrubs
1. Excavation for planting shall include the stripping and stacking of all acceptable topsoil encountered within the areas to be excavated for trenches, tree holes, plants pits and planting beds.
2. Can Removal
   a. Do not injure root ball.
   b. Carefully remove plants without injury or damage to root ball.
   c. After removing plant, superficially cut edge-roots with knife on three sides.
3. Box Removal
   a. Remove bottom of plant boxes before planting.
   b. Remove sides of box without damage to root ball after positioning plant and partially backfilling.
4. All excavated holes shall have vertical sides with roughened surfaces and shall be of a size that is at least 3 times the width and to the depth of the original plant

container. The holes shall be, in all cases, large enough to permit handling and planting without injury or breakage to the roots or root ball. Refer to Standard Planting Details.

5. Excavated holes for slope plantings shall be dug two times original plant container width, providing a permanent 6-inch berm around plant pit.
6. Protect all areas from excessive compaction when trucking plants or other material to the planting site.
7. Center plant in pit or trench.
8. Face plants with fullest growth into prevailing wind.
9. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots.
10. Container plants shall be backfilled with:

    - 8 parts by volume on-site topsoil
    - 2 parts by volume organic amendment
    - 6-20-20 fertilizer mix as per chart below:

1 gallon	1 handful
5 gallon	2 handfuls
15 gallon	3 handfuls
18" box	4 handfuls
24" box	5 handfuls
30" box	6 handfuls
36" box	7 handfuls
42" box	8 handfuls
48" box	9 handfuls
60" box	10 handfuls

(1 handful approximately equals 4 - 6 ounces)

11. All plants, which settle deeper than specified above, shall be raised to the correct level. After shall be added to the hole to cover approximately one-half of the height of the root ball. At this stage, water shall be added to the top of the partly-filled hole to thoroughly saturate the root ball and adjacent soil.
12. Excess soil generated from the planting holes may be distributed on the site and amended as specified in general soil preparation.
13. Hand place plants which are in containers less than one gallon in size.
14. Hand backfill and hand tamp, leaving a slight depression around bases of plants.
15. Planting tablets shall be set with each plant on the top of the root ball while the plants are still in their containers so the required number of tablets to be used in each hole can be easily verified.
16. After the water has completely drained, planting tablets shall be placed as indicated per container size indicated on the manufacturer's specifications.
17. The remainder of the hole shall then be backfilled.
18. After backfilling, an earthen basin shall be constructed around each plant. Each basin shall be of a depth sufficient to hold at least two inches of water. Basins shall be of a size suitable for the individual plant. In no case shall the basin for a fifteen-gallon plant be less than four feet in diameter, for a five-gallon plant less than three feet in diameter and for a one-gallon plant less than two feet in diameter. The basins shall be constructed of amended backfill materials.
19. Pruning shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for loss of roots during transplanting, but never to exceed one-third of the branching structure. Upon approval of the Landscape

Architect, pruning may be done before delivery of plant, but not before plants have been inspected and approved. Cuts over 3/4" in diameter shall be painted with tree seal.

20. Staking and Guying
    a. Staking of all trees shall conform to three staking and tree guying details.
    b. Tree stakes shall be straight-grained, lodge pole pine. Stakes shall be free from knots, checks, splits or disfigurements.
    c. Guy as indicated immediately after planting, using three guys per tree, guys placed as to five equal supports to tree from any direction. Install a warning flag on each guy. Protect bark of tree by connecting wire with "Cinch-Tie". Anchor guy wires with "deadmen" buried at least 2 feet below finish grade. Tighten guy lines to a firm tension. Install additional guys should tree growth be such that three guy wires do not give required equal support from all directions.

21. Vine Planting

    Vines shall have wood stake support removed without damage to plant and the vine trained upon the adjacent posts and walls as directed by the plan or Landscape Architect. Vines shall be held to posts and overheads by plastic green ribbon ("heavy duty") and eyebolts, not nails, as directed by the Landscape Architect or details.

22. Where street trees occur within tree wells or are adjacent to a substantial amount of pavement, a sub-surface planter box ("Deep-Root" or approved equal) shall be used. Box shall be installed per Details.

23. Location for street trees adjacent to any light standards or utility equipment shall be adjusted to maintain a suitable clearance, as approved by the Landscape Architect.

E. Planting of Groundcovers
    1. Groundcover plants shall be grown in flats or peat pots or taken as cuttings, as indicated on the plans. Flat grown plants (rooted cuttings) shall remain in those flats until transplanting. The flat's soil shall contain sufficient moisture that it will not fall apart when lifting the plants. If plants from peat pot are used, the pots shall be protected at all times prior to planting to prevent unnecessary drying of the root ball.
    2. Groundcover shall be planted in straight rows and evenly spaced, unless otherwise noted, at intervals called out in the drawings. Triangular spacing shall be used unless otherwise noted in the drawings.
    3. Each rooted plant shall be planted with its proportionate amount of flat soil or in a peat pot, in a manner that will insure minimum disturbance of the root system, but in no case shall this depth be less than two nodes. To avoid drying out, plantings shall be immediately wetted after planting until the entire area is soaked to the full depth of each hole, unless otherwise noted on the drawings.
    4. Care shall be exercised at all times to protect the plants after planting. Any damage to plants by tramping or other operations of the Contractor shall be repaired immediately.

F. Planting of Lawn
    1. Lawn will be planted by sod as indicated on the plans.
    2. After preparation of soil in accordance with the section on "Grading and Soil Preparation," the areas to be planted to lawn shall be rolled, raked and floated to finish grade by any acceptable method, with the finish grade being smooth and even, free of rocks and clods and reasonably well-firmed. Prior to planting, the surface of the area shall be sufficiently loose and friable to receive the sod.

3. Pre-Fertilization: Just prior to the planting of turf, evenly broadcast appropriate fertilizer as specified in the approved soils report.
4. Method

   Sod: Soil preparation, finish grading and fertilization shall be as specified. Lay sod down in one direction only, with close fitted joints. The ends of each strip shall be staggered to eliminate continuous joining. On steep slopes staple sod with metal staples typical for those used on erosion control matting, if necessary.
5. Watering

   Immediately following planting or top dressing, if applied, apply a light, fine, mist spray to anchor the or dressing to the soil, forming a protective crust to prevent wind erosion and drying of the sod. The areas shall be kept moist until fully rooted. Fully-rooted lawn areas shall be allowed to dry sufficiently to permit rolling with approximately two hundred to three hundred pound water-weighted roller to satisfactorily compact the soil around the grass roots and to provide a firm, smooth mowing surface.

G. Re-sod: All bare spots shall be re-sod within 10 days to the satisfaction of the Landscape Architect.

H. Watering
1. A balanced, full-coverage watering program shall be maintained to ensure proper rooting until the acceptance of work.
2. Plants, which cannot be watered efficiently with the existing water system, shall be watered by means of a hose.

I. Fertilization (Turf): Apply recommended fertilization program 45 days after the first mowing. Continue every 90-120 days.

J. Maintenance and Irrigation: Maintenance shall be the responsibility of the Landscape Contractor for a period of ninety days. It is his responsibility to provide sufficient water. Moisture must be maintained on the soil. There are no set irrigation requirements in gallons per minute, duration of time or number of gallons to be applied. This will vary from day to day depending on the rate of growth and climatic conditions encountered. The soil surface shall be kept moist at all times.

K. Soil Test: After planting, Contractor shall take soil samples from three approved locations. Agricultural suitability test shall be made of the soil samples. Test shall include, but not be limited to, Ph, ECE, SAR, NPK, BORON and half-saturation test. Copies of the results shall be sent to the Landscape Architect for review.

L. Erosion Control

Erosion control installation will be required in locations specifically delineated on the drawings or as necessary due to field conditions.
1. Surface of the slopes shall be uniformly smooth and even, with all debris and rocks raked out. The soil shall be sufficiently moist to permit firm erosion control matting and to prevent sloughing of topsoil.
2. The erosion control matting shall be laid with the direction of flow of surface drainage and in accordance with the manufacturer's directions. The matting shall be cut to provide a visually pleasing slope.
3. The matting shall be stapled in place and firmly embedded by means of stamping or rolling as approved by the Landscape Architect to insure that the matting is in contact with the soil and that no erosion can take place under the matting.
4. Planting of turf, ground covers, shrubs and/or vines may be required in areas protected by erosion control matting as specified in the plans or as becomes necessary.

M. Native Plant Areas

1. Any planting areas designated as natural planting that are cleared off during any phase of development must be re-established with an approved planting prior to acceptance of the tract.
2. Comply with City Zoning and Subdivision Ordinance.
3. Natural vegetation areas are subject to review and approval by the Landscape Architect or Fire Marshall. Appropriate fuel management programs shall be addressed as a part of the contract documents for execution during site development. Budgeting for on-going fuel management programs should also be addressed as a part of the maintenance programs.

3.05 CLEAN-UP

After the completion of all planting operations remove all trash, excess soil, empty plant containers and rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. Clean-up Contractor shall pick-up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week and/or the last working day of each week. All trash shall be removed completely from the site. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition. The contractor shall arrange for offsite disposal of surplus soil and shall, upon request, furnish the County's authorized representative with the disposal site Owner's written consent.

3.06 INSPECTIONS

A. The Contractor from the Landscape Architect shall request normal progress inspections at least 4 days in advance of an anticipated inspection. Inspections are required as follows:

1. Upon the completion of fine grading
2. Upon the completion of soil conditioning
3. Prior to application of post-emergent weed killers
4. Pre or post-delivery of all plant material
5. Upon the completion of major plant layout
6. At the tree staking prior to sod

PART 4 LANDSCAPE MAINTENANCE

4.01 SCOPE OF WORK

Work Specified in this Section: Furnish all labor, material, equipment and services required to maintain the landscape in an attractive condition as specified herein for a period of ninety (90) days after final acceptance by County.

4.02 QUALITY ASSURANCE

The Contractor's representative shall be experienced in landscaping maintenance and shall have received an education in ornamental horticulture.

4.03 MAINTENANCE PERIOD

A. The Contractor shall continuously maintain all areas involved in this Contract during the progress of the work and the maintenance period until final acceptance of the work by the County. Improper maintenance or possible poor condition of any planting at the termination of the scheduled maintenance period may cause postponement of the final completion date of the Contract. The Contractor shall continue maintenance until work is

acceptable. Maintenance period shall not start until all elements of construction, planting and irrigation for the entire project are in accordance with Plans and Specifications. The Contractor shall request an inspection of begin the maintenance period after all planting and related work has been completed in accordance with the Contract documents. A prime requirement is that all lawn areas shall show an even, healthy stand of sod, either of which shall have been mown twice. If such criteria are met to the satisfaction of the Landscape Architect, a field notification will be issued to the Contractor to establish the effective beginning date of the maintenance period. Any day when the Contractor fails to adequately maintain plantings, replace unsuitable plants or do weed control or other work, as determined necessary by the Landscape Architect, will not be credited as a maintenance period working days. The maintenance period will be extended if the provisions required within the plans and specifications are not filled.

B. All plants and planted areas shall be kept well watered and kept well weed-free at all times. Weeds shall be removed and disposed of off the site.

C. The Contractor shall be responsible for detecting diseases and pests as soon as their presence is manifested. He shall take immediate action to identify the disease and/or pest and apply such remedies as are necessary to control the infestation. He shall remove all rodents, taking control measures immediately upon discovery.

D. Apply commercial fertilizer on all planted areas as required to sustain growth. The Engineer shall be notified at least 2 days before starting this operation.

E. Damage to planting areas shall be repaired immediately.

F. The lawn areas shall keep moist, but not glistening wet, until time for the first cutting of grass. Any area where the lawns fail to establish satisfactorily shall be immediately replanted.

G. Workmen shall not be allowed to walk on the grass unnecessarily before, during, or after planting operations. Grass areas that have been damaged or compacted shall be re-sod at the Contractor's expense.

H. The lawns shall be edged whenever necessary. The grass shall be mowed with a sharp mower before it exceeds 3 inches (75mm) in height. The grass will be cut to not less than 2 inches (50mm) and, during the period of maintenance, the grass will not be allowed to exceed 3 inches (75mm) in height.

I. Immediately after the first cutting of grass, where trees occur in grass areas, the grass shall be turf-free neatly edged 12-inches away from the plants, and 24-inches around trees. The lawn edges shall be maintained in a neat condition until acceptance of the work.

J. No pruning shall be performed by the Contractor unless directed in writing by the Engineer. The County's Certified Arborist must be present for any attempted pruning operations. Seventy-two (72) hours prior notice to the County is required before commencing pruning operations.

ANY TREES PRUNED WITHOUT PERMISSION OR IN A FASHION UNACCEPTABLE TO THE AGENCY SHALL BE REPLACED IN KIND AND SIZE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE County.

If pruning is permitted by the Landscape Architect:

- All trees and shrubs shall be pruned to maintain natural structure. Clipping into formal shapes such as boxes and balls will not be allowed unless such is specified in the design.

- Young trees shall be pruned to select and develop permanent scaffold branches; to remove overlapping and rubbing limbs; to eliminate narrow crotches; and to maintain growth within space limitations. All cuts shall be made to lateral branches, or buds, or flush with branch bark collar. Side pruning of young trees, stubbing or heading back will not be permitted.
- Evergreen trees shall not be pruned, except under the direction of the Engineer.
- The objectives of shrub pruning are the same as for trees.

K. Ground covers shall be edged and trimmed to keep in bounds and to achieve an overall even appearance. Keep ground cover 12-inches clear of the base of shrubs, and clear of low branches.

L. All plants that show signs of failure to grow at any time during the life of the contract or those plants so injured or damaged from any cause, including vandalism, as to render them unsuitable for the purpose intended shall be immediately replaced in kind and size at the expense of the Contractor.

4.04 EMERGENCY NUMBERS

The Contractor shall provide and maintain a current list of emergency telephone numbers for 24-hour emergency response. The Contractor shall initiate remedial action within two hours from the time of notification.

4.05 PROTECTION OF EXISTING FACILITIES AND STRUCTURES

The Contractor shall exercise due care in protecting from damage all existing facilities, structures and utilities both above and below surface on the County's property. Any damage to County's property deemed to be caused by the Contractor's neglect shall be corrected or paid for by the Contractor at no cost to the County. It will be the Contractor's responsibility to verify and locate any underground systems (i.e., utility lines). This does not release the Contractor from the responsibility of taking reasonable precautions when working in these areas. Any damage or problems shall be reported immediately to the County's representative.

4.06 PROJECT INSPECTIONS

Upon request, the Contractor or his representative will walk the project with the County's representative for the purpose of determining compliance with the specifications.

A written notice requesting an inspection should be submitted to the County at least 48 hours prior to the anticipated date.

Prior to inspection, the site must be thoroughly cleaned up and all excess material and debris removed.

Prior to start of the landscape maintenance period, the Contractor will be required to have a complete inspection and approval of all landscape construction items.

An inspection shall be scheduled at 30-calendar day intervals during the landscape maintenance period.

END OF SECTION

SECTION 02843

PARKING BUMPERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precast concrete parking bumpers and anchorage.

1.02 REFERENCE STANDARDS

A. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

B. ASTM C 33 - Standard Specification for Concrete Aggregates.

C. ASTM C 150 - Standard Specification for Portland Cement.

D. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.

E. ASTM C 330 - Standard Specification for Lightweight Aggregates for Structural Concrete.

1.03 SUBMITTALS

A. See Section 01350 - Submittals, for submittal procedures.

B. Product Data: Provide unit configuration, dimensions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Parking Bumpers: Precast concrete, conforming to the following:
   1. Nominal Size: 5 inches high, 9 inches wide, 4 feet long.
   2. Profile: Manufacturer's standard.
   3. Cement: ASTM C 150, Portland type I - Normal.
   4. Concrete Materials: ASTM C 33 aggregate, water, and sand.
   5. Reinforcing Steel: ASTM A 615/A 615M, deformed steel bars; unfinished finish, strength and size commensurate with precast unit design.
   6. Air Entrainment Admixture: ASTM C 260.
   7. Concrete Mix: Minimum 5000 psi, 28 day strength, air entrained to 5 to 7 percent.
   8. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
   9. Embed reinforcing steel, and drill or sleeve for two dowels.
   10. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
   11. Minor patching in plant is acceptable, providing appearance of units is not impaired.

B. Dowels: Steel, galvanized finish; 1/2 inch diameter, 24 inch long, pointed tip.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units without damage to shape or finish. Replace or repair damaged units.

B. Install units in alignment with adjacent work.

C. Fasten units in place with 2 dowels per unit.

END OF SECTION