

SECTION 32 90 00 - PLANTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide all material, labor, equipment and services necessary to do all Landscape Work and other related items necessary to complete the Project as indicated by the Contract Documents unless specifically excluded.
- B. The landscape work includes, but is not necessarily limited to the following:
 1. Fine grading, cross-ripping of compacted soil, soil preparation, topsoil and weed control.
 2. Planting and staking as per drawings and specifications.
 3. Tree hole boring for all trees on plan.
 4. Sodded turf planting.
 5. Ninety (90) Day maintenance.
 6. Root Barriers.
- C. All other requirements appear in the following sections: Part 1, Part 2 and Part 3.

1.2 RELATED WORK SPECIFIED ELSEWHERE

32 84 20 IRRIGATION SYSTEM

- A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to work of this section.

1.3 DEFINITIONS

- A. The term "approved" shall mean by the Architect, and only in writing.

1.4 QUALITY ASSURANCE

- A. Landscape work shall be performed by a single firm specializing in landscape work.
- B. Plant measurements shall be as follows: 24" box size caliper shall be at least one and one half inches (1-1/2") in diameter, measured six inches (6") from container soil level, 15 gallon size caliper shall be at least three quarters inch (3/4") in diameter measured six inches (6") from container soil level. Where not shown, plants shall be of uniform, standard size, neither overgrown and root bound, nor too recently canned so that the root system is not thoroughly established through can. Pruning shall not be done prior to delivery except by prior approval.
- C. Inspection:
 1. All landscape work and materials shall comply with applicable Federal, State, County and City regulations. All plant material shall conform to State of California Grading Code of Nursery Stock, No. 1 grade for quality and size and also ISA Standards. Use only nursery grown stock.
 2. All plant material shall be subject to inspection upon delivery by the Landscape Architect and

District. Approval shall not limit the right of rejection during progress of the work for condition of the root ball, size, variety, latent defects or injuries. Rejected plants shall be removed from the site and replaced immediately by the Landscape Contractor at no additional cost to the Owner.

D. Qualifications of Workmen

1. Employ skilled workmen who are thoroughly trained experienced in landscaping and who are completely familiar with specified requirements and methods needed for proper performance of the work in this section.
2. Provide adequate supervision by a qualified foreman.

E. Soil Fertility Analysis

1. The Contractor shall provide, and pay for, a fertility analysis of the existing soil on the project site after rough grading operations have been completed, but before any top soil is imported and placed on site. The samples shall be collected for the fertility analysis by collecting a minimum of 10 representative samples of the soil throughout the site. Each sample shall be a minimum of .25 cubic foot each, and shall be thoroughly mixed together to prepare a homogenous 2.5 cubic foot sample. A one cubic foot sample shall be submitted to the soil testing laboratory as a representative sample for fertility analysis. The Contractor shall submit to the Landscape Architect for review, the results of the soil testing investigations before proceeding with any soil improvement activities such as fertilizing, and/or adding of amendments.
2. Recommendations for improvement of the soil conditions for plant growth shall be made by the testing laboratory, and at a minimum, shall include the following:
 - a. A fertilizer and amendment application program (including macro and micro nutrients).
 - b. Treatments to improve soil PH for optimum plant growth.

F. Bidding Allowance

1. The Contractor shall prepare his bid for the project based upon the type and quantities of soil amendment and fertilizer specified herein. The Contractor's bid price shall also include a \$3,000.00 bidding allowance for additional work and amendments / fertilizer required by the Owner to be provided for the project after review of the fertility analysis. If the soil analysis reveals that the amendment program is sufficient and does not need altering the Contractor shall credit back the Owner the full bidding allowance. If a minor amendment adjustment is made and the Owner considers the change has a value less than the bidding allowance amount the Contractor shall provide a credit to the Owner for a portion of the bidding allowance in the amount agreed upon by the Contractor and Owner.

1.5 SUBMITTALS

A. Submit six (6) copies of:

1. A complete materials list of all items proposed to be furnished.
2. Certificates of inspection as may be required by government agencies (providing duplicate copies for the Owner).

B. Maintenance Instructions: Submit two (2) copies typewritten instructions recommending procedures to be established by the District for maintenance of landscape work of one full year. Submit prior to one year maintenance period. Maintenance instructions shall be a bound manual.

1. Maintenance Instruction shall include the following:
 - a. Detailed chart, graph or written description of monthly maintenance procedures for turf, shrubs and trees specific to the types called to be provided.

- b. Description shall include detailed directions for pruning, fertilizing, pest and disease control for shrubs and trees; directions for fertilizing, pest and disease control, mowing, pre-emergent and post-emergent herbicide applications for turf.
- C. Soil amendment: Submit one (1) pint sample and analysis of soil amendment and mulch.
- D. Samples: When requested by the Owner.
- E. Submit invoices from material suppliers for all amendments, fertilizer, seed, plants, mulch and any other materials provided for the landscape installation to the Landscape Architect. Contractor shall submit invoices at any stage of installation as requested by the Landscape Architect.

1.6 AVAILABILITY

- A. The Landscape Contractor shall confirm availability of plants, supplies, and materials prior to submitting his landscape bid. Variety substitutions are not desired.
- B. If a plant is found not to be available, the Landscape Contractor is to notify the Landscape Architect before bidding. The Landscape Architect will then select a reasonable alternate and inform all those bidding of the availability of the original plant. If a substitute is selected it must be of the same size, value and quality as the original plant. Failure to inform the Landscape Architect of unavailable plants prior to bidding will result in assumption that all plants specified will be provided by the Landscape Contractor at time of installation. No substitution will be allowed after award of contract.
- C. Plant size listed on construction documents are minimum acceptable sizes. If plant material specified is not substituted prior to award of contract the minimum specified size shall be provided by the Contractor. If the Contractor can not provide the minimum specified size plant material at the time of installation, the Contractor shall be required to install a larger sized container of the plant specified at no additional cost to the Owner.
- D. Within sixty (60) calendar days of execution of the prime agreement between the General Contractor and the Owner the Contractor shall enter into an agreement to provide all of the plant material specified for the project with a licensed and registered nursery. The intent of the agreement is to assure that the Contractor will provide and install planting to meet the Owner's construction schedule as well as provide plant material which fulfills the quantity, variety and quality required by the specifications. The Contractor shall provide written evidence to the Architect that the agreement between Contractor and nursery has been executed. Periodic review of the plant material stored for the project will be performed by the Architect and District in the presence of the Contractor to ensure the quality of the plant material will be acceptable upon delivery to the project site.

1.7 PROJECT CONDITIONS

- A. Existing Conditions
 - 1. The Landscape Contractor is to visit the job site to verify existing conditions including soils, vegetative growth, existing grade, subsurface conditions, drainage, etc. making allowances in his bid for any required work to provide the landscape installation as specified in the construction documents.
 - 2. The Landscape Contractor shall notify the General Contractor to locate underground lines prior to hole boring or trenching. Do not permit heavy equipment such as trucks, rollers, or tractors to damage utilities. Hand excavate as required

to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned. Prevent damage to temporary risers of underground irrigation system and similar obstructing work located in the landscape areas.

3. If there is a conflict with the utilities and the planting, Contractor shall notify the District for instructions as to further action. Failure to do so will make Contractor liable for any and all damages thereto arising from his operation.

B. Environmental Requirements

1. No plants shall be planted in situations that show obvious poor drainage. Such situations shall be corrected by the Landscape Contractor as directed by the Landscape Architect and the Owner. Corrections shall be provided by the Landscape Contractor at no additional cost to the Owner.

C. Protection

1. The Landscape Contractor shall guarantee repair of damage to any part of the premises resulting from leaks, defects in materials, equipment or workmanship. The Landscape Contractor shall be liable for any and all accidents resulting from his work, including open holes and trenches during construction.
2. During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.
3. Protect landscape work from theft, loss, damage and deterioration during storage, installation and maintenance periods. Protect from unauthorized persons (trespassers) as well as from operations by other contractors and tradesmen, and landscape operations. Protect all planted turf and shrub areas from persons as well as operations of other contractors and the Owner. Cost for protection shall be borne by the Contractor. Means of protection such as temporary fencing shall be approved by the Owner.
4. Contractor shall repair or restore damaged work as identified by the Landscape Architect to an acceptable condition. No additional payment will be made to the Contractor for repair of unprotected material.

1.8 INSPECTION

- A. Periodic inspections will be made by the District and Landscape Architect during the installation for the project. Such inspections will include but not necessarily be limited to:
1. Stockpiled imported soil and soil amendments prior to installation.
 2. Weed control operations prior to other portions of work.
 3. Placement of plant material at the site prior to planting.
 4. Condition of plant material prior to placement.
 5. Auguring, digging and preparation of plant pits for trees and shrubs.
 6. Planting and staking of trees.
 7. Planting of shrubs and ground cover.
- B. Any corrective action called for by any of the above listed authorities shall be immediately performed by the Contractor.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Plant label shall identify each specie and variety. A label shall be attached to each individual plant or block of identical plants grouped together.

- B. Adequately protect plants from sun and wind prior to planting. Do not allow stored plant material to dry out at any time.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Soil Amendment

1. Turf and Planting Areas: "Harvest Premium" as supplied by Harvest (559) 977-1510 or equivalent and conforming to the following:
 - a. Derivative material -Mixture of 50% composted/ decomposed shredded, chipped greenwaste organic matter and 50% composted dairy manure.
 - b. Particle size - 3/8".
 - c. PH Value - 5.9/6.7.
 - d. Macro-nutrients - Minimum of 1.3% Nitrogen, 0.47% Phosphorus, 1.7% Potassium.
 - e. Moisture holding capacity - 4 times by volume.
 - f. Composted to provide carbon: nitrogen ratio -9:1 to 11:1 maximum.
 - g. Salinity/ Cation Exchange -13% / 541%.
 - h. Submit sample and laboratory analysis for review prior to installation.
2. Turf and Planting Areas: Super Cal 75 gypsum as supplied by Harvest (559) 977-1510. Gypsum shall be mined gypsum composed of no less than 75% pure CAS042H20 hydrated calcium sulfate or equivalent.
3. Turf and Planting Areas: Tri-C Enterprises P. O. Box 1367, Chino, CA 91708-1367 (800) 927-3311. Tri-C Humate containing 40% Humic Acid per CDFA testing method derived from Leonardite or equivalent.
4. Turf and Planting Areas: Tri-C Enterprises P. O. Box 1367, Chino, CA 91708-1367 (800) 927-3311. Tri-C Endo 120 Mycorrhizae containing 60,000 living propagules of glomus intraradices per one pound, or equivalent.
5. Turf and Planting Areas: Quantum Growth, Quantum Light and Quantum Revive liquid organic soil amendments as supplied by Agro Natural Sciences, 352 West Bedford, Suite112, Fresno, CA. (866) 571-3277, or equivalent.
6. Turf and Planting Areas: Ferrous Sulfate 20% and Manganese Sulfate 31 % as supplied by Wilbur/ Ellis (559) 442-1220, or equivalent.
7. Turf and Planting Areas: Soil Sulfur as supplied by Wilbur/ Ellis (559) 442-1220, or equivalent.

B. Imported Topsoil

1. Clean, friable, sandy loam with no noxious weeds, clods, or other extraneous material.
2. The Owner reserves the right to take samples of imported topsoil have tested at Contractor's expense, and reject topsoil as deemed necessary.
3. Particle size distribution.
 - a. Minimum 95% passing a 25.4 mm screen.
 - b. Minimum 85% passing a 9.5 mm screen.
 - c. Fraction passing a 9.5 mm screen shall contain a minimum of 15%, maximum 40% total silt and clay.

4. Agricultural Suitability:
 - a. Salinity (exec 103) less than 4.0 at 25 degrees centigrade.
 - b. Sodium absorption ration (SAR) less than 10.
 - c. Boron in saturation extract less than 1.0 PPM.

C. Fertilizer

1. Trees and Shrubs:
 - a. Fertilizer for all trees and shrubs to be Best-Paks (20-10-5) with Polyon by Simplot Turf (800) 992-6066 or equivalent. The Best-Pak tablets shall be applied at the following rates:

1 Gallon Can	-	1 Paks
5 Gallon Can	-	3 Paks
15 Gallon Can	-	9 Paks
24" Boxes	-	18 Paks
2. Turf:
 - a. The pre-plant fertilizer shall be commercial fertilizer Best (12-12-12) or equivalent.
 - b. The post-plant fertilizer shall be commercial fertilizer Best (15-15-15) with minors or equivalent.

D. Mulch

1. Orchard Chippings shredded greenwaste, free of sticks, dirt, dust and other debris, as provided by ALW (559) 275-2828 or equivalent as accepted by Landscape Architect.
2. Particle size: $\frac{3}{4}$ " to 1" in general size.

E. Staking Material

1. 2 inch diameter lodgepole pine, pressure treated, pointed one end.
2. V.I.T. Cinch Tie, 32 inches long, V.I.T. Products, Inc. (619) 673-1760 or equivalent.

F. Plants

1. Plants shall be typical of their species and variety, shall have normal growth habits, well developed branches and be densely foliated, and shall have fibrous root systems. No substitutions will be allowed unless approved in writing by the Landscape Architect.
2. Plants shall be free from defects and injuries including disease, insects, insect eggs and larvae and girdled roots.
3. Quality and size of plants, spread or roots, caliper and size of balls shall be in accordance with ANSI 260.1-1969, "American Standard for Nursery Stock".
4. Plants shall not be pruned before planting.
5. Plant material must be selected from nurseries that have been inspected by State or Federal Agencies.
6. Plants shall be nursery grown and shall have been transplanted or root pruned at least once in the past three (3) years. Plants shall have been grown under climatic conditions similar to those in the locality of the project.
7. Each bundle of plants shall be properly identified by weatherproof labels securely attached thereto before delivery to the project site. Label shall identify plant by name.
8. Nomenclature shall be in accordance with Hortus III.
9. No plants shall be delivered to the project site, except for required samples, until inspection

has been made in the field or at the nursery, or unless specifically authorized in writing by the Landscape Architect.

10. Collected plant material may be used only when approved. Approval shall not limit the right of rejection during work progress for conditions of the root ball, latent defects or injuries.
11. Where shown as "MULTI" provide trees with branching starting close to the ground in the manner of a shrub.
12. Plants are listed on the planting plan as the minimum acceptable sizes. The quantities listed are the Landscape Architect's estimate only. The Landscape Contractor is responsible for all material shown on the plan.

G. Turf Sod:

1. Sod shall be fresh and labeled in accordance with U. S. Department of Agriculture Rules and Regulations under the Federal Seed Act.
2. The turf sod shall be wide roll 'Celebration' hybrid Bermuda grass as provided by AG Sod (559) 289-6381 or approved equivalent.

H. Tree Trunk Protector:

1. Arbor Guard polyethylene tree guard, (8" min. tall) or equivalent.

I. Root Barrier

1. Deep Root Corporation #UB 24 PANEL, (714) 898-0563 or equivalent.

J. Other Materials:

1. Materials not specifically indicated, but necessary for proper execution of the work, shall be of first quality as selected by the Contractor subject to approval of Landscape Architect.
2. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the area and conditions under which the work in this section is to be performed. Correct conditions detrimental to the timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 ROUGH GRADING/SOIL COMPACTION

- A. Rough grading has been performed by others to the extent of establishing drainage patterns. The Contractor is responsible for placement of topsoil and rough grading required to ensure positive drainage in all turf and planting areas. Rough grading shall accommodate the addition of soil amendments in anticipation of proposed finish grades.
- B. During the course of earth work required in the project, compaction of soil in the turf and planting areas will exceed an acceptable density. The Landscape Contractor is required to cross rip and cultivate (break up large clumps and clods) the soil within these areas so the soil is loose and friable. Ripping shall be to a depth of twelve inches (12") and shall be accomplished by approved

means and methods as directed by the District. The Landscape Contractor shall review the completed ripping operation with the Landscape Architect to determine compliance. The Contractor shall provide additional work as directed by the after review.

- C. Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting. Maintain within 2 percent above or below optimum moisture content for soil type present at all times during the work.
- D. The soil shall be cleared of all construction materials, concrete, stones, roots, wire, sticks, foreign material and similar objects larger than one half inch (1/2") in length.
- E. Spread approved type topsoil over accepted subgrade prior to incorporating amendments. Add topsoil where needed to bring grade to required elevation as referenced on the plans and specifications.

3.3 SOIL PREPARATION

- A. Before commencement of any soil preparation, all existing grasses and weeds on the site shall be killed by application of herbicide. All dead vegetation shall be removed from the site and disposed of in a lawful manner. The Contractor shall use and apply all weed control chemicals in accordance with the manufacturer's recommendations and all local codes and ordinances. The chemicals applied shall be done by a licensed applicator.
- B. Amend soil in turf area and planting areas per the following:
 - 1. Turf and Planting Area
 - a. Apply "Harvest Premium" at a rate of two (2) tons (4,000 pounds) per 1,000 square feet. Incorporate into soil to a depth of six inches (6") prior to finish grading.
 - b. GYPSUM shall be applied at a rate of 200 pounds per 1,000 square feet. Incorporate into soil to a depth of six inches (6") prior to finish grading.
 - c. Tri-C Humate shall be applied at a rate of thirty-five (35) pounds per 1,000 square feet. Incorporate into soil to a depth of six inches (6") prior to finish grade.
 - d. Tri-C Endo 120 Mycorrhizae shall be applied at a rate of one and one half (1 ½) pounds per 1,000 square feet. Incorporate into soil to a depth of six inches (6") prior to finish grading.
 - e. Pre-plant fertilizer shall be applied at a rate of five (5) pounds per 1,000 square feet. Apply to turf bed only prior to installing sod and after fine grade is accepted.
 - f. Quantum Light and Quantum Revive shall be applied at a rate of (1) gallon per acre for each product. Apply prior to installing turf sod and shrubs / ground cover after fine grade is accepted in all turf areas and planting areas.
 - g. Ferrous Sulfate 20% shall be applied at a rate of one hundred (100) pounds per acre. Incorporate into soil to a depth of six inches (6") prior to finish grading in turf areas and planting areas.
 - h. Manganese Sulfate 31 % shall be applied at a rate of fifty (50) pounds per acre. Incorporate into soil to a depth of six inches (6") prior to finish grading in new turf areas and planting areas.

- i. Soil sulfur shall be applied at a rate of twenty (20) pounds per 1,000 square feet. Incorporate into soil to a depth of six inches (6") prior to finish grading in turf areas and planting areas.
- C. Planting pits, prior to planting trees and shrubs mix 50% native soil and 50% "Harvest Premium" as backfill mix.
- D. Pre blended soil amendment will not be accepted. The soil amendments shall be delivered to the project site in separate containers clearly identified by the manufacturer product label.

3.4 FINE GRADING

- A. Upon completion of soil preparation, grade all planting and turf areas to smooth and even slope reestablishing drainage patterns. Grading shall eliminate all humps and hollows and promote positive drainage in all planting and turf areas.
- B. Tolerance of grade differential shall be plus or minus 0.05 foot from existing elevation. The Contractor shall water test all turf and planting areas after the grading operations are completed in the presence of the Landscape Architect. The water test shall consist of applying water to the turf and planting areas to the point where water runs over the soil to show the drainage pattern. Make all corrections to the grading as required by the Landscape Architect and certify that fine grading has re-established drainage patterns. Certification shall be approved in writing by the Landscape Architect prior to proceeding with planting.
- C. During the finish grading process no relative compaction of the soil in turf and planting areas shall exceed 85% relative density. The reserves the right to require the Contractor to test for over compaction. The first test will be paid for by the Owner, all subsequent testing will be paid for by the Contractor.
- D. Finish grades shall be one half inch ($\frac{1}{2}$ ")for turf areas, and two inches (2") for planting areas, below all walks and curbs.

3.5 WEED CONTROL

- A. The Contractor shall treat all proposed turf and planting areas with a post emergent contact systemic herbicide weed killer at manufacturer's approved rates prior to any commencement of work at the site. Desiccated and dead weed growth shall then be removed from the entire project site by scraping the vegetation growth off of the existing dirt. Dispose of removed vegetation matter lawfully. Disking in of vegetative material is not acceptable.
- B. Weed eradication shall be ongoing from first day of project work, throughout the course of the project life and continue until final acceptance of the entire project. The Contractor shall apply a post-emergent systemic herbicide contact weed killer to eradicate all weeds throughout the project life up to and throughout the one year maintenance period for all areas of the project site. This includes but is not necessarily limited to open dirt areas, parking lots, concrete paving areas, etc. At no time will weeds be allowed to become established. Contractor shall provide all weed control operations as directed by the District.

3.6 PLANTING

A. Planting Procedures

1. Planting shall be performed by workmen familiar with planting procedures and under the supervision of a qualified foreman. The planting foreman shall be on the job site at all times when planting is in progress.
2. Planting operations shall not occur under unfavorable weather conditions.
3. Large trees shall be planted first. Shrub planting shall be completed before groundcover is planted.
4. Proceed and complete the landscape work as rapidly as portions of the site become available, working within the seasonal limitations for each kind of landscape work required.
5. Cooperate with other contractors and trades working in and adjacent to the landscape work areas. Examine drawings which show the development of the entire site and become familiar with the scope of other work required.

B. Planting Preparation and Operations

1. Planting material shall be provided with adequate protection of root systems and balls from drying winds and sun. Do not bend or bind trees or shrubs in such a manner as to damage bark, break or destroy natural shape. Provide protective covering during delivery.
2. Deliver trees and shrubs after preparations for planting have been completed, and plant immediately .If planting is delayed more than six (6) hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage and keep roots moist. Do not remove container grown stock from containers until planting time.
3. All planting areas shall be smooth and even. Finish grades shall be established as indicated on the plans. Approval of shall be secured before digging of holes.
4. Place all trees and shrubs in locations shown on the planting plan and obtain written field approval of the before planting or digging planting pits. Inform the seven (7) days prior to placing the plants.
5. Carefully remove all canned stock from containers with tin snips or approved cutter. After removing plant from container, scarify the sides of the rootball to a depth of 1 inch at four to six equally spaced locations around the perimeter of the ball or at 12 inch intervals on sides of boxed materials. Cut and remove circling roots over 3/8 inch diameter.
6. Excavate plant pit holes of circular outline with vertical sides for all plants. The vertical sides and bottom of the holes shall be thoroughly scarified to promote union of backfill with existing soils. All trees shall be installed with a drainage hole. Drainage holes shall be drilled with a twenty-four inch (24") diameter auger penetrating soil layers to sand or to a minimum depth of six (6) feet but in no case further than ten (10) feet. Precautions shall be exercised to avoid smooth sides on the holes. Offset augured hole eighteen inches (18") from center of planned tree location to avoid settling of tree after planting.
7. The Contractor shall test tree drainage holes for drainage by flooding with water. If the water does not drain out within two (2) hours, excavating shall be carried down as required to achieve such drainage by breaking through the hardpan layer.
8. Tree and shrub holes shall be at least twice the width and depth of the plant container.
9. Set each plant in the center of the hole, plumb and straight. Set the crown of the plant at one inch (1 ") above finish grade (after settling). When ½ of the backfill mix has been placed, tamp-in, insert fertilizer and allow no air pockets as remainder of backfill is added.
10. Compact soil around the rootball of all plants and water in thoroughly.
11. Excess soil from plant holes shall be cultivated and raked to a smooth outline.
12. Shrubs and groundcovers shall be installed in relation to walks and paving to

allow for future growth without obstructing traffic.

13. All plants shall be set in watering basin which shall be four feet (4') in diameter and four inches (4") deep for trees and two feet (2') in diameter and three inches (3") deep for shrubs and vines six feet (6') in diameter and four (4") deep for trees in turf. Remove watering basins at end of maintenance.
14. Ground cover plants shall be planted at the spacing noted on the drawings in a triangular pattern. Not more than one hour shall elapse from the time any groundcover plant is planted until it is watered.
15. Upon completion of planting, the Landscape Contractor shall topdress the entire planting area with three inches (3") mulch and treat area with pre-emergent at a rate recommended by the manufacturer. Contractor shall coordinate application with the Landscape Architect and provide certificates of application to Landscape Architect. Provide one final application of pre-emergent seven (7) days prior to final acceptance.

C. Pruning

1. Prune plants in accordance with established horticultural practice and only when necessary. Shearing of any plants will not be acceptable.

D. Tree Staking

1. Trees shall be supported by three (3) tree stakes, unless otherwise noted.
2. Stake shall be set firmly in the ground on the northwest side of the plant, and equally space others around tree.
3. Trees shall be tied to upright stakes loosely with Tree Ties (see planting detail).

E. Root Barrier

1. Install root barrier per planting details.

F. Arbor Guard

1. Install Arbor Guard as per manufacturer's recommendation.

G. Turf

1. The area to be planted shall be finish graded to present a smooth and even surface free of humps and hollows and conforming to the grading plans. Immediately prior to planting, the surface of the area to be planted shall be sufficiently loose and friable to receive the turf.
2. Turf Sod Planting

Moisten prepared surface immediately prior to laying sod. Lay sod same day as delivery to prevent deterioration.

Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum as in laying bricks. Do not stretch or overlap sod pieces. Lay smooth. Place sod so that final grade will match adjacent areas. Water lightly the sodded areas immediately after installation. After all sod is laid, roll sodded areas with 300 pound vibrating roller to provide good bond between sod and soil and to remove minor depressions and irregularities. Roller shall not leave any marks on sod. Immediately following installation, the soil should be moistened as much as necessary to keep it squishy wet. Avoid traffic on the new sodded areas until after first mowing.

3 Watering

After acceptance by the inspector of the planting operations, the Contractor shall apply water, by means of a gentle spray, to make all planted areas moist, but not flooded. The areas shall not be watered to the extent of saturating the soil and causing "flotation" or "flowing" of the top surface of the soil. After water has once been applied, no portion of the planted areas shall be allowed to dry out during the entire maintenance period. The Contractor shall be responsible to monitor the site and alter the watering times and frequencies to meet site conditions.

3.7 CLEAN-UP

- A. All areas shall be maintained in a neat and orderly condition at all times. All reasonable precautions shall be taken to avoid damage to existing planting and structures.
- B. Damaged areas shall be restored to their original condition.
- C. After the planting operations are completed, the Landscape Contractor shall remove all trash, excess soil, tree protection barriers, empty containers or any other debris accumulated by the work from the site. All damage caused by the work shall be repaired at the Contractor's expense and the ground shall be left in a neat and orderly condition to the satisfaction of the Landscape Architect.

3.8 GENERAL INSPECTION

- A. A general inspection will be held upon conclusion of the planting operations, irrigation system installation and after clean-up has occurred. The Owner shall be informed in writing a minimum of seven (7) working days prior to the time the work is ready for inspection in order to arrange a suitable time and date for such inspection.
- B. At the time of inspection, Contractor shall have all planting areas free of weeds and neatly cultivated and top dressed with mulch. All plant basins shall be in good repair. All trees shall be properly staked.
- C. Work requiring corrective action or replacement in the judgment of the District shall be performed within five (5) days after the inspection. Corrective work and materials replacement shall be in accordance with the drawings and specifications and shall be made by the Contractor at no cost to the Owner. A subsequent inspection shall then be arranged.
- D. If, after the inspection, the Owner is of the opinion that all the work has been performed as per drawings and specifications, the Contractor will be given written notice of substantial completion.

3.9 MAINTENANCE

- A. The Contractor shall continuously maintain all areas included in the contract during the progress of the work, through the establishment period and until final acceptance of the work.

Maintenance work includes monitoring the site to control all watering, filling settled trenches, replanting, fertilizing, mulching, cultivating and mowing necessary to bring the planted areas to a healthy growing condition, and any additional work needed to keep the areas neat, edged and attractive. Any date when the Contractor fails to adequately water, replace unsuitable planted areas and other work determined to be necessary by the District, will NOT be credited as part of the Maintenance Period.

- B. The maintenance period shall commence immediately following the first mowing cycle for the turf grass and continues for a minimum period of ninety (90) calendar days as specified in these Specifications. No additional payment will be made for additional time necessary for maintenance and plant establishment required by the Owner.
- C. During the progress of the maintenance period, the Contractor and the District shall conduct inspections at no less than 30 day intervals to determine that ongoing maintenance activities have been conducted by the Contractor. If in the opinion of the District, ongoing maintenance has not been conducted by the Contractor in a satisfactory manner the maintenance period shall be suspended. The Contractor shall provide remedial work as directed by the District to correct the found deficiencies and schedule another inspection. If after the reinspection the work is deemed acceptable the maintenance period shall resume.
- D. The first mowing of turf shall not commence until the grass is generally at least one and one half inches (1-1/2") in height. For the first mowing and all subsequent mowings for the turf, the mower shall be set to cut at a height of one inch (1"). The turf shall be maintained by mowing and edging at least once every seven (7) calendar days after the initial mowing. The turf shall be mowed and edged prior to final inspection.

Between the fifteenth (15th) day and the twentieth (20th) day of the maintenance period the Contractor shall replant the spots or areas in which normal growth of the turf is not evident. The Contractor shall do the following: replant all spots or areas where normal growth is not evident; remove all rocks or other debris that would constitute a hindrance to mowing; repair all damaged done by his operations; fill all depressions and eroded channels with sufficient sandy loam top soil to raise to proper grade, compact lightly and replant the filled areas; and roll all planted and replanted areas with a one hundred twenty-five (125) pound weigh roller to compact the soil around the seed and to provide a smooth and even mowing surface.

The Contractor shall fertilize the planted turf area every three weeks with (15-15-15) fertilizer with minors at a rate of 5 lbs./ 1,000 sq. ft. The Contractor shall continue the fertilizer application until the planted turf is accepted.

At no time will broadleaf and annual weeds be allowed to become established in the turf. At the earliest time possible the Contractor shall eradicate all weeds in the turf area by application of herbicides and/or mechanical or hand labor means. The Contractor shall not proceed with any weed eradication without the written consent of the District.

- E. A final inspection of the turf and planting areas shall be made by the District in the presence of the Contractor at the end of the one calendar year maintenance period to determine if the planted areas are well established and healthy throughout the entire site. If the areas are determined by the Owner as being unacceptable, the maintenance period will be extended to such time as the areas are brought up to the acceptable level.
- F. All trees, shrubs, ground cover shall be kept at a optimum growing condition by watering, weeding, replanting, fertilizing, cultivating, tree stake repair, spraying for diseases and insects, replace dead or dying materials, pruning as directed, maintaining proper grades of plants and filling of settled trenches, and providing any other reasonable operations of maintenance and protection required for successful completion of the project.
- G. The Contractor shall be responsible to replace all loss of plants due to theft, vandalism or any other causes till final acceptance of the work by the District.

3.10 FINAL ACCEPTANCE

- A. Final inspection will be made at the end of the maintenance period, provided all deficiencies brought out during that time have been corrected. If these deficiencies have not been corrected by the end of the stated maintenance period, the Contractor shall continue to maintain the project at his own expense beyond the specified time. When all deficiencies have been corrected, the final inspection will be held with the Project Inspector, and Contractor.
- B. If, after the final inspection, the owner is of the opinion that the work is acceptable, the Contractor will be given written acceptance of the project.

3.11 WARRANTY AND REPLACEMENT

- A. All trees and plants provided under this Contract shall be in good, healthy and flourishing condition one growing year from the date of final acceptance. If deemed necessary for replacements; Quality, species and size of replacements to be determined by the Landscape Architect.
- B. Except for loss beyond control of the Landscape Contractor, replacement of trees and plants of comparable quality and size shall be made by the Landscape Contractor. Replacement trees and plants shall be installed and guaranteed as specified for original planting.
- C. The Landscape Contractor shall be held responsible for repair of damages resulting from the defects, materials equipment or workmanship during the execution of his contract.
- D. All trees, shrubs and groundcover shall be guaranteed for a period of one calendar year after acceptance by the Architect.

END OF SECTION 32 90 00