



CITY OF SAN RAMON
LANDSCAPE PLANTING SPECIFICATIONS

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SECTION 329000**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

The General Conditions of the Contract, including General and Special Provisions, and General Requirements apply to the work in this Section.

1.02 DESCRIPTION:

- A. Furnish all labor, material, equipment and services necessary to install the landscape planting, as indicated on the approved Drawings. Work includes:
1. Amend, fertilize and fine grade the soil;
 2. Supply and install trees, shrubs, ground cover and lawns, and hydroseed;
 3. Do other incidental work necessary for the installation of planting and seeding including but not limited to, supplying and installing wood headers and tree staking; and
 4. Provide guarantee.
- B. Related Work:
1. Demolition
 2. Irrigation:

Irrigation system shall be installed and operative before beginning planting operation.
 3. Earthwork
 4. Drainage and Utilities:

Contractor shall fully acquaint himself with the existing conditions particularly in reference to underground piping. Any damage caused by the Contractor to public utilities or work of other trades shall be repaired by him including any payments to public utilities Contractor, at no cost to the City.

Contractor shall contact Underground Service Area (USA) at 811 a minimum of two (2) working days prior to any excavation.
 5. Maintenance Period and Specifications.

1.03 QUALITY ASSURANCE:

- A. Personnel:
 - 1. Employ at least one (1) qualified supervisor familiar with the products and requirements of this Section. The supervisor shall be present at the project at all times. Submit the supervisor's name to the City before beginning work. The foreman shall be English-speaking and shall have full authority to act on behalf of the Contractor.
 - 2. Employ workers familiar with the products and requirements of this Section.
- B. Codes and Standards:

Nursery stock shall meet the standards of the current edition of the "Agricultural Code of California" and the "Regulations of the Director of Agriculture Pertaining to Nursery Stock". They shall be true to type and name in accordance with "Standardized Plant Names", Second Edition.
- C. Substitutions: No substitutions will be permitted without approval of the City.

1.04 SUBMITTALS:

- A. Submit to the City all required government plant inspection certificates.
- B. Submit to the City proof of required government permits for the use of pesticides, insecticides, and herbicides along with a list of proposed products and application.
- C. Submit to the City a schedule showing dates for accomplishing the work. Include dates when approvals by the City will be needed.
- D. Submit to the City a guarantee from the lawn seed supplier of the percentage of purity and germination.
- E. Prior to installation, the Contractor shall submit to the City three (3) copies of manufacturers literature, receipts of sale, and laboratory analytical data for the following items:
 - 1. Organic Amendments
 - 2. Import Topsoil, if needed
 - 3. Commercial Fertilizer
 - 4. Mulch
 - 5. Erosion Control Fabric
 - 6. Plant Material
 - 7. Hydroseeding Work Sheets
- F. Submit a minimum one-quart sample of all import materials, including import soil, mulch, soil amendment, prior to order and delivery of material.
- G. Prior to hydroseeding, the Contractor shall submit an-ounce sample of the certified seed mix and bill of lading for materials.

- H. Prior to soil preparation, provide testing of soils by an independent soils testing laboratory accredited by California Environmental Laboratory Accreditation Program (ELAP). Representative soil samples shall be taken from at least three (3) separate areas of the project as directed by the City, and tested by the soils testing laboratory for a complete evaluation of soil texture, infiltration rate, chemical suitability, available nutrients, and percent of organic matter.

A written soil analysis report shall be prepared by the testing laboratory and shall include soil texture; infiltration rate; pH; total soluble salts; sodium; percent of organic matter; and recommendations. Recommendations shall include:

1. soil loosening;
2. type and quantities of soil amendments for mass planting areas large enough for a mixer, slopes less than or equal to 4:1, and slopes greater than or equal to 4:1;
3. planting backfill mix;
4. planting pit requirements;
5. hydromulch slurry; and
6. maintenance fertilization program.

- I. Refer to Irrigation System Specifications for additional submittal requirements.

1.05 STORAGE:

- A. Provide healthy growing conditions for all plants which are stored on the site before installation.
- B. Water, fertilize and protect plants from excessive wind, sun or shade while they are in storage.
- C. Store all materials where they are protected from damage including weather and vandalism.
- D. Stop work if air temperature, soil moisture or climate conditions are beyond limits established by standard practice. Under no circumstances shall any planting be performed if the temperature exceeds 90 degrees or is below 40 degrees. No planting shall be done in soil saturated with water.

1.06 PROTECTION:

- A. Protect structures, utilities and other on-site facilities from damage.
- B. Protect existing vegetation to remain.
1. The term "tree dripline" shall mean the widest distance to the edge of canopy extending equally around tree circumference.
 2. Change of grade within dripline of trees shall not occur.
 3. Protect existing mature specimen trees a minimum of 50% beyond dripline per City Standards.

4. Any construction activities involving excavation or trenching within the dripline shall be done only after consultation with an ISA Certified Arborist to determine mitigation measures.
5. Grade changes outside the dripline shall be such that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%.
6. If import soil is utilized, it should be the same or slightly coarser texture than existing site soil, should have a pH range comparable to site soils, and generally should have acceptable chemical properties for appropriate plant growth. Provide soil analysis report prior to ordering and delivery to evaluate import soil for these criteria.
7. Protective Fencing:
 - Existing trees shall be fenced as shown on plans prior to commencement of demolition and mass grading operations.
 - This fencing shall serve as a barrier to prevent dripline encroachment of any type by construction activities and equipment.
 - Contractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct employees as to the purpose and importance of the fencing. Roots of single standing trees often extend up to three times the distance of the actual dripline and function primarily in the uptake of nutrients and water. The dripline is arbitrarily established as the minimum root area generally required to preserve tree health.
 - Protective fencing shall remain in place for the duration of all construction prior to landscape installation.
 - Any proposed encroachment into the fenced area shall be discussed with and approved by the project arborist and City in advance.

PART 2 - PRODUCTS

2.01 SOIL AMENDMENTS:

The following soil amendment rates and quantities are to be used for bid purposes only. Specific planting specifications will be made after rough grading operations are complete and soil analysis report is provided by the Contractor in conformance with Section 329000-1.04.H "Submittals".

- A. Import Fill: Provide soil as required to complete landscape work. Soil to be furnished shall be fertile and friable, possessing characteristics of representative productive soils in the vicinity. It shall not contain toxic substances which may be harmful to plant growth. It shall be uniformly textured and free of all objectionable foreign materials, oil, or chemicals which may be injurious to plant growth. Natural soil shall possess pH factor between 6.5 and 7. Contractor shall submit soil test to City for approval prior to delivery of any imported soil. Obtain soil from naturally well-drained sites where soil occurs in a depth of not less than

4-inches; do not obtain from bogs or marshes. Soil from the project stockpile, which meets the requirements, is acceptable.

B. Organic Amendment:

- 1. Compost from yard trimmings. Amendment shall be mature, cured, stable compost that is weed free from organic matter sources. It shall be derived from agricultural, food or industrial residual, yard trimmings, or source-separated mixed solid waste. The product shall contain no substances toxic to plants and shall be reasonably free (<1% by dry weight) of man-made foreign matter. The compost will possess no objectionable odors and shall not resemble the raw material from which it is derived. It shall have the following characteristics as determined by a soils testing laboratory accredited by California Environmental Laboratory Accreditation Program (ELAP):

C:N Ratio	<25:1
PH	6.0-7.5
ECE	<2.5
Ammonia: Nitrate ratio	<3:1
Total Ammonia	<500PPM
Organic Content	50 - 60%
Particle size:	100% passing 1/2 inch; at least 80% passing 1/4 inch; no more than 20% passing #32 mesh

- 2. Submit analysis of proposed amendment to verify nutrient level, salinity, pH and organic content for comparison with soil analysis report recommendations.

C. Fertilizers:

- 1. Lawn and groundcover areas:
 - a. Single super-phosphate (0-25-0) at 10-pounds per 1,000 square feet.
 - b. Potassium sulphate (0-0-50) at 15-pounds per 1,000 square feet.
 - c. Soil Sulfur at 15-pounds per 1,000 square feet.
- 2. Shrubs and trees:

Controlled release fertilizer (20-10-5) 10 gram packets as manufactured by Best. Apply according to manufacturer's application rates by spreading contents over the surface of the plant basin unless specified otherwise by the soil analysis report.
- 3. Post Plant Fertilizer:

A complete fertilizer, 15-15-15, at 6-pounds per 1,000 square feet. Apply per soils report.

D. Pre-Emergent Herbicides:

Unless otherwise specified on the Drawings, a broad spectrum pre-emergent herbicide shall be used. The herbicide must be registered for use in the State of California. Care shall be taken in selecting the appropriate pre-emergent herbicide because the effectiveness of these products is determined by site-specific conditions.

2.02 SOD:

- A. General Turf Areas: 'Medallion Dwarf' available from Pacific Sod, (800) 692-8690, or approved equal, containing the following seed percentages:

<u>Seed</u>	<u>% of total by weight</u>
Dwarf Fescue	100%

- B. Sports Turf Areas: 'Blue Rye' non-netted on sand available from Delta Bluegrass Company, (800) 637-8873, or approved equal, containing the following seed percentages:

<u>Seed</u>	<u>% of total by weight</u>
Perennial Ryegrass	50%
Kentucky Bluegrass	50%

2.03 LAWN SEED:

- A. General Turf Areas: 'Medallion Dwarf' available from Pacific Coast Seed, (800) 692-8690, or approved equal, containing the following seed percentages:

<u>Seed</u>	<u>% of total by weight</u>	<u>Purity</u>	<u>Germination</u>
Dwarf Fescue	100%	98%	85%

- B. Sport Turf Areas: 'City of San Ramon Custom 60/30/10 Turf Mix' by Pacific Coast Seed, (925) 373-4417 or approved equal. Seed type may vary depending on availability. City to approve seed type prior to installation:

<u>Seed</u>	<u>% of total by weight</u>	<u>Purity</u>	<u>Germination</u>
Manhattan 5 GLR	30%	97%	92%
Perennial Ryegrass			
Pangea GLR	30%	98%	94%
Perennial Ryegrass			
Rhambler	30%	99%	96%
Tall Fescue			
Brooklawn	10%	99%	93%
Kentucky Blue			

- C. Lawn seed shall be applied at the rate of 10-pounds per 1,000 square feet. All seeds shall be certified and guaranteed as to purity and germination.

2.04 MULCH:

All planting shall be inspected prior to installation of any mulch surrounding plants.

- A. In plant basins and shrub beds, provide 3-inches of uniform cover.

- B. In groundcover areas provide an organic mulch top dressing of a product approved by the City.
- C. Mulch from recycled wood chips shall be 'Mahogany ProChip' as produced by JetMulch, Inc., (866) 306-8524, or approved equal. Mulch shall be made from wood pallets, non-painted construction wood and plywood. Colorant shall be a 'Brown' food-grade based dye rated completely safe for children and pets. Colorant longevity shall be greater than two (2) years. Particle size shall range from 1/2-inch to 3-inches and not less than 3/8-inch in width and 1/16-inch in thickness.
- D. 'Gorilla Hair' mulch material shall not be used. 'Gorilla Hair' is defined as shredded cedar.
- E. Do not allow mulch to come into contact with the plant trunk. Do not place mulch within 6-inches of the plant trunk of native species.

2.05 HYDROMULCH:

- A. Seed:

Seed mix shall consist of the following (unless otherwise specified by the City):

Non-irrigated Hydroseed Mix/Per Acre

- 44 lbs. Bromis mollis (*Blando Brome*)
- 6 lbs. Trifolium incarnatum (*Crimson Clover*)
- 4 lbs. Eschscholzia californica (*California Poppy*)
- 2 lbs. Lupinus densiflorus aureus (*'Ed Gedling' Lupine*)
- 2 lbs. Lupinus succulentis (*Blue Annual Lupine*)
- 2 lbs. Layia platyglossa (*Tidy Tips*)

- B. Seed:

1. Seed shall consist of the species and variety specified on the Drawings. Wet, moldy, or otherwise damaged seed shall not be acceptable.
2. The Contractor shall have all seed to be used on the project officially tested by the California State Department of Agriculture, and shall submit to the City prior to hydroseeding, official seed labels, and a signed statement from the Agriculture Department certifying that the seed meets the analysis shown on the labels. Unlabeled collected seed shall be tested and analyzed and the results furnished in lieu of the seed labels.
3. The seed quantities listed above shall be on the basis of pure live seed.

Total Seed Material:

Pounds pure, live seed required
Percent purity x percent germination

<u>Botanical Name (Common Name)</u>	<u>Purity</u>	<u>Germination</u>
Trifolium incarnatum (Crimson Clover)	98%	85%
Bromus mollis (Blando Brome)	95%	85%
Lupinus succulentis (Blue Annual Lupine)	99%	85%
Lupinus densiflorus aureus (Ed Gedling Lupine)	99%	85%
Eschscholzia californica (California Poppy)	99%	85%

Weed shall not exceed 0.25%. Test methods specified in "Rules for Testing Seeds" from the proceedings of the Association of Official Seed Analysts will be acceptable for determining the germination of the seed.

C. Fertilizer:

Commercial fertilizer shall have the following chemical analysis:

Nitrogen	15%
Phosphoric Acid	15%
Water Soluble Potash	15%

or equivalent complete fertilizer based on soil analysis.

D. Hydromulch material shall be produced from 100% virgin wood cellulose fiber or approved equivalent and shall be of such character that it will disperse into a uniform slurry when mixed with water. The fiber shall be of such character that when used in the applied mixture, an absorptive or porous mat, but not a membrane, will result on the surface of the ground. Materials which inhibit germination or growth shall not be present in the mixture.

E. Commercial fertilizers and soil amendments for hydromulch slurry shall be as recommended by the approved agronomic soil analysis report for products and application rates. Products shall conform to Specifications herein.

F. Binders shall be Az-Tac, Terra Tac 3, Ecology Control M-Binder, or approved equivalent.

G. Equipment:

Equipment for the application of seed, fertilizer, and mulch shall have a built-in agitation system with an operating capability sufficient to agitate, suspend and homogeneously mix a slurry of fiber mulch, seed, fertilizer, and water. The discharge system shall provide continuous, even distribution of the slurry on the surface to be stabilized. The slurry tank shall have a minimum capacity of 1,500 gallons when operating.

2.06 GROUND COVERS, TREES, AND SHRUBS:

- A. Plant material delivered shall be well-grown, free of insect pests and disease in conformance with Caltrans Standard Specifications, Section 20-2.13. Plant material that has circling or girdling roots near the trunk, which is not a correctable condition, will be returned to the grower by the Contractor.
- B. All plants shall be typical of their species or variety. All shall have normal well developed branches. Roots shall be well developed but not rootbound. Trees shall have straight trunks. All plants shall be healthy and vigorous. They shall be free of defects including knots, bark abrasions, sunscald injuries, plant diseases, insect eggs, borers, and other evidence of ill health. Plants shall conform to height, spread, and caliper as noted in the plant list.
- C. It shall be the Contractor's sole responsibility to provide quality control of the plant material received from their growers. The Contractor will notify the growers, in advance of the quality and inspection requirements.
 - 1. The City shall review all plant materials at the site prior to installation and reserves the right to reject all plant material not meeting acceptable standards.
 - 2. Any corrective measures to improve the condition of plant material delivered will not relieve the Contractor of the requirements of these Specifications or warranties.
 - 3. Root conditions may be correctable by root pruning. The requirements for root pruning will be determined on a case-by-case basis by the City or the project Horticulturalist as directed by the City.
 - 4. Methods for root pruning vary with species characteristics, density of root mass, size of roots, and container size. The City Inspector will explain the required root pruning treatment at the time of plant inspection.
 - a. If the plant is lightly to moderately rooted with fine roots to the edge of the container (no woody roots), scarify the sides and bottom of the ball loosening the outer soil and roots by hand or with a hand cultivator.
 - b. If woody roots are present on the outside of the root ball, prune to remove with pruning shears where they emerge from the root ball.
 - c. For plants that are acceptable and have circling roots near the edge or at the edge of the root ball, or are heavily rooted, scarify and root prune. Make vertical cuts through the outer edge of the root ball with sharp trowel, sharp small toothed saw or sharp pruning shears. Space cuts evenly around the ball. The City will determine the number and depth of cuts required. The following provides guidance on root pruning cuts:

Container Size	Number of Cuts	Depth of Cuts into Root Ball
1 gallon	1 per quadrant	1-1.5 inches
5 gallon	1 per quadrant	1.5 - 2 inches
15 gallon	1 per quadrant	2 - 3 inches
24" box	2 per side	2 - 3 inches
36" box	2-3 per side	3 - 4 inches
48" box	3 per side	3 - 5 inches
60" box	3 per side	4 - 6 inches
72" box	3-4 per side	4 - 6 inches

D. Quantities of plants shall be as shown on the Drawings. Where quantities are not shown, provide plants at the spacing listed on the Drawings.

2.07 TREE STAKING AND GUYING ASSEMBLIES:

Provide materials as shown in the planting Details.

2.08 HEADER BOARDS:

Materials to be pressure-treated Douglas Fir (brown) or Redwood as approved by the City.

2.09 SOIL IN RAISED PLANTERS:

Provide and install soil mix as specified in conformance with Section 329000-3.02.C "Soil Preparation and Fine Grading".

2.10 PRECAST POTS:

Install gravel, filter fabric, and soil mix, as required by Details.

2.11 EROSION CONTROL MATERIAL:

A. Jute Netting

1. Jute netting shall be provided at the locations shown on the Drawings.
2. Matting: Erosion control matting shall be of open weave, furnished in rolled strips as follows: Length - approximately 225-feet; width – 48-inches +/- one-inch, with an approximate 1/10-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 of its normal diameter, equal in quality to 'Ludlow Soil Saver #48' or approved equivalent.
3. Staples: Staples for erosion control shall be pre-manufactured 11-gauge steel wire bent in a U shape 6-inches minimum length and 1-inch-wide.

B. Excelsior Blanket

1. Excelsior Blanket shall be installed at the locations shown on the Drawings.
2. The excelsior blanket shall consist of a machine-produced mat of curled wood excelsior of 80%, 6-inch or longer fiber length with consistent thickness, and the fiber evenly distributed over the entire area of the blanket. Fiber dimensions shall be 0.21 inch x 0.42 inch. Average weight per square yard to be 0.08 pound at time of manufacture.
3. The top side of each blanket shall be covered with a biodegradable extruded mesh. The blanket shall be made smolder-resistant without the use of chemical additives.
4. The staples shall be made of wire, 0.091 inch in diameter or greater, 'U' shaped with legs 6-inches in length and a 1-inch crown. Size and gauge of staples used may vary with soil conditions and shall be approved by the City's representative.
5. Excelsior blanket shall be as manufactured by American Excelsior Company, Pico Rivera, California 90660, or approved equivalent.

2.12 ROOT BARRIERS:

Provide materials as shown in Details.

PART 3 - EXECUTION OF WORK

3.01 SITE CONDITIONS:

- A. Prior to all work in this Section, inspect the site and verify that preceding work of other Sections is complete and has been approved by the City.
- B. In the event of discrepancy, immediately notify the City. Do not proceed in areas of discrepancy until they have been resolved.

3.02 SOIL PREPARATION AND FINE GRADING:

- A. The following is to be used for bid purposes only. Specific planting specifications will be made after rough grading operations are complete and soil analysis report is provided by Contractor in conformance with Section 329000-1.04.H "Submittals".
- B. Lawn, Ground Cover, and Shrub Areas:
 1. Rototill soil to be amended twice in cross-directions to a depth of 6-inches minimum. Spread soil amendment and thoroughly incorporate into the top 6-inches of soil.
 2. Remove all rubble, sticks, rocks or stones 1-inch or larger from the top 2-inches of amended soil.
 3. Rake, roll, drag, and fill to line and grade. Maintain all drainage patterns and swales. Finish out to 1-inch below adjacent walks or paving for sod

lawn or groundcover, 1/2-inch for seeded lawn, and 1-1/2-inch below walls. Any irregularities in surface shall be leveled out before seeding or planting. Roll to compact amended soil to not less than 85% and not more than 90% compaction.

4. Precautions shall be taken to prevent erosion of the soil between completion of soil preparation and planting.
5. All planting areas shall have a neat appearance with uniform slopes providing positive drainage away from buildings, and conveying drainage to curbs or drainage structures, with no puddling of water, prior to starting planting operations.
6. Finish grades shall be approved by the City prior to performing planting operation.

C. Soil Mix for Backfill of Trees, Shrubs, and Groundcovers:

Thoroughly incorporate the following amendments into backfill mix. Rates per cubic yard.

- 1/3-CY organic amendments;
- 2/3-CY well pulverized native site soil; and
- other amendments and fertilizers in conformance with Section 329000-2.01.C "Soil Amendments and Fertilizers".

3.03 LAWN SEEDING:

- A. It shall be the responsibility of the Contractor to establish and maintain a healthy, uniform stand of grass during the maintenance period. Hydraulic methods shall be used.
- B. Slurry shall be applied at a uniform depth with no bare soil exposed. All borders, edges, and adjacent improvements shall be protected from overspray. If any slurry should slough onto any adjacent improvement, it shall be removed prior to the slurry drying.
- C. Lawn seeding shall take place prior to November 15th or after February 15th. All other parameters governing timing of planting shall also apply.

3.04 LAWN SODDING:

A. Inspection:

Upon the completion of soil preparation and prior to placing sod, the Contractor shall call for an inspection of the lawn irrigation system. The sod shall be placed after the City has approved the irrigation system.

B. Laying Sod:

1. Remove all rubble, sticks, rocks, and stones 1-inch or larger from top 2-inches of amended soil.

2. Lay sod without stretching. Stagger end seams and butt edges as close as possible to each other. Roll with sod roller perpendicular to direction it was laid.
 3. Apply post-planting fertilizer: 15-15-15 or equivalent.
 4. Irrigate to an 8-inch soil depth immediately after planting and then irrigate lightly every day to maintain adequate moisture level through establishment period.
 5. Arrange for delivery of sod in the morning to insure same-day installation.
 6. A non-netted sod shall be used on all sport fields.
 7. Leave a 30-inch diameter turf-free zone around trees. Apply mulch around tree in conformance with Section 329000-2.04 "Mulch".
- C. At the time of final inspection the lawns shall be dense, green, and weed free. It is the Contractor's responsibility to eliminate any bare spots, dead areas, and/or weeds.

3.05 SHRUBS AND TREES:

- A. Preparation:
1. Stake out the locations for plants and the outlines of planting beds on the ground and obtain approval of the City before digging.
 2. The Contractor shall protect all utilities, vegetation and structures during work in conformance with Section 329000-1.06 "Protection".
- B. Excavation:
1. Dig all plant pits with vertical walls. Walls shall be loosened to permit root penetration, to the satisfaction of the City.
 2. Holes for one (1) gallon size plants shall be two times wider than the can and the same depth as the rootball.
 3. Holes for five (5) gallon size plants shall be two times wider than the can or root ball, and the same depth as the rootball.
 4. Holes for 15 gallon size plants or larger shall be 18 inches or two times wider than the can or root ball, whichever is greater, and the same depth as the rootball.
- C. Planting:
1. Lift plants, remove them from containers and otherwise handle them with care to prevent damage.
 2. Center plants in pits. Face for best effect.
 3. Set plants plumb.

4. Set all plants so that the top of the root ball will be 2-inches above the finish grade. All plants that settle below the finish grade or are planted too high shall be replanted in the proper position at no additional cost to the City.
5. Trees shall be planted with the following minimum clearances:
 - a. 5-feet from water lines and meters;
 - b. 5-feet from sewer lines;
 - c. 5-feet from storm drain lines;
 - d. 5-feet from utility and irrigation boxes;
 - e. 5-feet from fire hydrants;
 - f. 5-feet from driveways;
 - g. 5-feet from mailboxes;
 - h. 15-feet from street lights; and
 - i. Visual clearance from signs as directed by the City
6. Backfill and construct planting berms as detailed, with special attention to the construction of the watering basin. Do not install berms around native plants in flat land areas.
7. Apply pre-emergent herbicide to all planted areas in accordance with manufacturer's recommendations prior to placement of mulch.
8. Place a 3-inch layer of wood mulch in shrub areas and plant basins as detailed and shown on Drawings.
9. Plant vines at base of wall. Remove nursery stakes. Fan out the leaders into two or three groups. Support each group of leaders with 1/2 x 1/2-inch stakes (nursery stake plus two others). Drive the stakes 6-inches into the ground and lean the top of the stake into the wall.

D. Root Barriers:

1. Provide linear root barriers for all trees within 5-feet of paving as detailed.
2. Panels shall be 20-feet in length, installed parallel to paving, and centered on trunk of tree unless otherwise specified on the Drawings.
3. Install root barriers to above finish grade as required by the manufacturer's guidelines and place directly against paving without voids.

3.06 GROUND COVER AREAS:

A. Planting:

1. Space plants equally and uniformly at the required spacing and in a triangular pattern.
2. Make plant pits large enough so that the roots can be freely suspended in the pit. After backfilling the pit, firm the soil so that there are no air spaces around the roots.

3. Apply pre-emergent herbicide to all planted areas in accordance with manufacturer's recommendations prior to placement of mulch.
4. Mulch all ground cover areas with a minimum 3-inch layer of material in conformance with Section 329000-2.04 "Mulch".
5. Begin irrigating ground cover areas as soon as a section is completed.

3.07 HYDROSEEDING:

A. Slope Preparation:

1. Slopes shall be graded (or re-graded) to a uniform surface as shown on the Drawings.
2. Slopes shall be inspected by City before hydroseeding application at which time irregularities, including gullies, shall be removed.
3. After soil preparation, establishment of final grades and weed abatement, loosen surface 2-inches of soil by harrow or rototiller and float level.
4. Install trees, shrubs, and groundcover, if they occur in hydroseeded area, prior to hydroseeding.

B. Application of Hydroseed:

1. The hydroseed materials shall be mixed and applied in the following proportions to all areas indicated on the Drawings:

a. Non-irrigated Areas:

Wood Fiber	2,000 lbs./acre
Seed Mix	60 lbs./acre
Fertilizer	450 lbs./acre
Binder	40 lbs./acre (or manufacturer's recommendations)
Water	As needed for application

b. Irrigated Areas:

Wood Fiber	1,800 lbs./acre
Seed Mix	60 lbs./acre
Fertilizer	450 lbs./acre
Binder	40 lbs./acre (or manufacturer's recommendations)
Water	As needed for application

Note: The proportions of hydroseed materials may be changed by the City to meet field requirements.

2. An approved hydromulch company shall apply hydroseed in a form of a slurry consisting of wood cellulose fiber, seed, commercial fertilizer, binder and water. When hydraulically sprayed on soil, ensure that hydromulch forms a blotter-like groundcover impregnated uniformly with

seed and fertilizer and allows the absorption of moisture and rainfall to percolate to the underlying soil.

3. The slurry shall be applied within 60 minutes after the seed has been added to the slurry.
4. Begin spraying immediately, after tank has been filled with the hydromulch mixture specified. Spray with a uniform visible coat by using the green color of the mulch as a guide. Apply the slurry in a sweeping motion allowing the wood fibers to build on each other until a good coat is achieved and the material is spread at required rates.
5. After application of hydromulch, wash excess material from previously planted materials and architectural features. Avoid washing or eroding mulch materials.
6. The slurry shall not be sprayed on undesignated areas. Any slurry spilled or sprayed into areas other than those designated to receive spray shall be cleaned up at the Contractor's expense, to the satisfaction of the City.
7. For irrigated hydroseed mixes:
After completion of hydroseeding, let materials dry, and then irrigate each area. Irrigate during the germination period of the seed to keep the hydromulch moist at all times without creating run-off, erosion or oversaturation. Irrigation system is not to be used until it is tested and fully operational.
8. Slurry not used within two hours after delivery to the site shall be removed from the site. Daily worksheets shall be filled out by the nozzleman and delivered to the City, with the following information: Seed type and amount; fertilizer analysis and amount; mulch type and amount; seeding additive type and amount; number of loads and amount of water; area covered; equipment used; and capacity and license number.
9. All bare or unsuccessfully germinated areas shall be reseeded within 10 days. Areas to receive reseeded shall be determined by the City. The Contractor shall be responsible for all seeded areas until an acceptable stand of hydroseed material is realized and approved by the City.

C. Timing:

1. Hydroseeding materials shall not be applied during windy or rainy weather or when soil temperatures are below 40 degrees F. Pedestrians or equipment shall not enter hydroseeded areas after the slurry has been applied.
2. Hydroseeding work shall not commence until the rate and method of application of hydroseeding have been approved by the City.

D. Maintenance:

Any area which has not produced a healthy, established stand of grasses after a period of 30 days from the date of seeding shall be reseeded and refertilized at the original rates of application.

E. Watering:

All hydroseeded areas shall be watered as necessary (without ponding or excessive run-off) for germination and establishment of grasses.

3.08 TREE STAKING:

Stake all trees as detailed on the Drawings.

3.09 PRUNING:

A. New Plant Material:

1. Prune only if necessary to remove injured twigs and branches, deadwood, and suckers.
2. Prune trees and shrubs for aesthetic reasons only with the approval of the City.
3. Inspect periodically for insect infestation or disease and notify City of any proposed treatment (one week minimum notice).

3.10 WOOD HEADERS:

Install wood headers as shown on the Drawings and as detailed.

3.11 CLEAN UP AND PROTECTION OF WORK:

During the work on a weekly basis and when the work is complete, remove all cans, boxes, and other debris from the site. Wash pavement and other surfaces daily. Cultivate and neatly rake all areas. Follow established practices used to protect landscape work in progress.

3.12 APPROVALS AND SITE VISITS:

A. The City shall approve the following before planting can begin:

1. Irrigation systems.
2. Soil preparation and fine grading work of all planting areas.
3. Plant material. Contractor shall notify the City a minimum of 48 hours prior to delivery of any plant material to site.
4. Placement of trees and shrubs.
5. All submittals.

B. Pre-Maintenance:

Upon the completion of work shown on the Contract Drawings, the City shall review the work and prepare a written punch list indicating all deficiencies to be corrected prior to the start of the maintenance period.

- C. Start of Maintenance and Guarantee Period:
1. Once all deficiencies are corrected to the satisfaction of the City, the City shall provide written notice to the Contractor of the start date of maintenance and guarantee period.
 2. This is not final acceptance and does not relieve the Contractor from any of the responsibilities in the Contract Documents.
- D. End of Maintenance Period:
1. Prior to the end of the maintenance period all record drawings, controller charts, operation and maintenance manuals, hardware items, and turn over documents listed in these Specifications and Contract Documents shall be submitted to the City.
 2. Upon written notice from the Contractor, the City shall review the work under maintenance and prepare a written punch list indicating all deficiencies to be corrected prior to the end of the maintenance period.
 3. The maintenance period shall continue until all submittals are received and deficiencies are corrected to the satisfaction of the City and at no cost to the City.
 4. Once all deficiencies are corrected to the satisfaction of the City, the City shall provide written notice to the Contractor of the end of the maintenance period and the City shall assume responsibility for the maintenance of the work.
 5. This is not final acceptance and does not relieve the Contractor from any of the responsibilities in the Contract Documents.
- E. Final Acceptance:
1. At the end of the guarantee period, the City shall inspect the work and determine if there are any defects in materials and workmanship:
 - a. Settling of backfilled trenches.
 - b. Repair or replacement of any damage caused by any defects or resulting from the repairing or replacing of such defects.
 - c. Repairs or replacements, including complete restoration of all damaged planting, paving, or other improvements of any kind.
 - d. Replacement of plant material with latent defects, disease or death, and injury.
 2. The City shall prepare a written punch list indicating all defects to be corrected prior to final acceptance.
 3. In the event the contractor fails to make such repairs or replacements within a reasonable time after receipt of written notice from the City, the

City shall proceed to have said repairs or replacements made at the cost of the Contractor.

4. Once all defects are corrected to the satisfaction of the City, the City shall provide written notice to the Contractor of the intended final acceptance date.
- F. The cost of additional site visits by the City to verify correction of deficiencies and defects of work shall be paid by the Contractor.

3.13 MAINTENANCE PERIOD:

- A. Maintenance period shall be 90 calendar days unless otherwise specified on the Drawings.
- B. The maintenance period shall not commence until after the second mowing of all lawn areas, and all work has been completed and accepted by the City for the start of the maintenance period.
- C. Maintain and guarantee all planting under this Contract in conformance with the City "Landscape Maintenance" Specifications.

3.14 GUARANTEE AND REPLACEMENT:

The purpose of this guarantee is to assure that the City receives plant materials of prime quality, planted and maintained in a thorough and careful manner. Sometimes plants have latent diseases or defects or are shocked in the process of transplanting, therefore:

- A. Contractor shall guarantee all plants 15 gallons or larger from latent defects, disease or death and injury for a period of 12 months after final acceptance of the total project by the City.
- B. Contractor shall replace at no expense to the City as soon as possible, plants that are dead or not in a vigorous, healthy growing condition; replacement shall be of the same kind and size as originally specified and shall be planted as described on the Drawings and in the Specifications.
- C. Specimen trees that die during the 12 month guarantee period and are deemed the responsibility of the Contractor shall be replaced by a boxed tree of the same variety and size at no cost to the City.
- D. Contractor shall not be held liable for loss of plant materials during the guarantee period due to vandalism or accidental causes.
- E. The first day of the guarantee period shall be the date of the letter informing the Contractor that the maintenance period has been accepted by the City.

END OF SECTION