

SECTION 02900

LANDSCAPING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Clearing and grubbing.
- B. Site grading to subgrade for topsoil.
- C. Leaching of subgrade soils.
- D. Placing topsoil and prepared soil backfill.
- E. Planting.
- F. Watering.
- G. Staking and guying of trees and shrubs.
- H. Maintenance of planted material, including application of pre and post emergent herbicides for weed control.
- I. Cleanup and restoration of disturbed surfaces.
- J. Supplying all labor, materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the Work specified.

1.02 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.
- B. American society for Testing and Materials (ASTM) Publications:
 - D - 1557 Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10-lb. (4.54 KG) Rammer and 18-in. (457 mm) Drop.

1.03 QUALITY ASSURANCE

- A. Percentage of compaction specified shall present the ratio of the dry density of the compacted backfill material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

- B. Plant material as indicated on the "Plant List" and delivered to the job site shall be subject to the approval of the Engineer prior to planting. Any plant material as indicated on the "Plant List" which is rejected by the Engineer shall be removed from the site immediately and replaced by the Contractor.
- C. Submit list of plant materials and source location 30 days in advance of planting date, to allow the City an opportunity to inspect and tag plant material at the source before delivery to site.

1.04 JOB CONDITIONS

- A. Contractor shall accurately grade and prepare the landscape subgrade to six (6) inches below the adjacent top of curbs within median areas and as shown on the plans outside of median areas.
- B. Contractor shall provide dust alleviation and control measures during the course of the work at no additional expense to the Contract.
- C. Substitutions for plant materials called for on the "Plant List" shall not be allowed except with prior written consent of the Engineer. All substitute plant materials shall conform to the requirements of these specifications.
- D. Contractor shall be solely responsible for the maintenance of landscape areas until acceptance of the work including weed and pest control.
- E. All irrigation work shall be inspected and approved by the Engineer before landscape work may begin.
- F. Prior to excavation for planting or placing of stakes, Contractor shall locate all electric cables, conduits, sprinkler valve control wires, and all utility lines so that proper precautions may be taken not to damage such improvements. Any damage occurring during planting shall promptly be satisfactorily repaired by Contractor.

PART 2 - PRODUCTS

2.01 IMPORT MATERIAL FOR SITE GRADING

- A. Import material for site fill shall conform to Section 02220, of these Specifications.
- B. Materials not conforming to the above specifications and requirements shall remain the property of the Contractor and shall be removed from the job site.

2.02 PLANT MATERIALS

- A. Plant materials shall be as indicated on the plans. Plant names on the "Plant List" shall be listed by both nursery name and technical name.

- B. Sizes of plants shall be as stated on the "Plant List". Contractor stock (1 gallon, 5 gallon, and 15 gallon) shall have been grown in containers for at least one (1) year, but not over two (2) years.
- C. Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests, and other eggs, and have healthy, normal root systems, well filling their containers, but not to the point of being root bound. Plants shall not be pruned prior to delivery and in no case shall trees be topped before delivery.
- D. The height and spread of all plant material shall be measured with branches in their normal position, and shall be as indicated on the plans. The caliper of all trees shall be measured 4'-0" above the surface of the ground. Where caliper or other dimensions of any plant materials are omitted from the "Plant List", it shall be understood that these plant materials shall be normal stock for type listed.

2.03 SEEDED LAWN MATERIALS

- A. Grass seed shall be fresh, clean, new crop seed composed of the following varieties, or approved equal, mixed in proportions and testing minimum percentages of purity and germination as indicated below:

NAME	BY WEIGHT	PURITY	GERMINATION	MAXIMUM WEED CONTENT
*Warren's A-34 Bluegrass	25%	95%	90%	0.25%
Creeping Red Fescue	25%	96.89%	94%	0.20%
Penn Fine Ryegrass	50%	95%	90%	0.25%

* (Fylking Bluegrass may be substituted if sufficient quantities of Warren's A-34 Bluegrass are not available, upon prior approval by the Engineer.)

2.04 SODDED LAWN MATERIALS

- A. Sod shall be well-established, disease-free, and in a healthy and vigorous growing condition at time of placement and shall be as grown by "Cal-Turf" or approved equal. Sod in all areas, except as noted for shade on the plans, shall be a mixture consisting of thirty percent (30%) Fylking Bluegrass and seventy percent (70%) Manhattan Ryegrass. Sod in shade areas shall be Warren's A-34 (100% weed free) or approved equal.

2.05 TOPSOIL AND PREPARED SOIL BACKFILL

- A. Topsoil shall consist of a fertile friable soil sandy loam conforming to the U.S. Bureau of Soils triangular distribution chart. Laboratory certification of the conformance of the topsoil material to these requirements shall be delivered with each batch of topsoil delivered to the site, and approved by the Engineer.
- B. To the topsoil, add six (6) cubic yards of nitrogen stabilized Fir or Redwood and thirty-five (35) pounds of "Agriform" C.R.F. Controlled Release Fertilizer in the

formulation 16-7-12 + Iron, or approved equal per 1,000 square feet (500 cubic feet) of topsoil.

- C. Topsoil shall be free of any refuse, heavy or stiff clay, hard clods, stones larger than one inch, roots larger than one-half inch in diameter, noxious weeds, Bermuda grass, nut grass, and other deleterious materials. Topsoil shall be free from toxic amounts of either acid or alkaline chemicals and shall be capable of sustaining plant life.
- D. Prepared soil mix for backfill in holes for trees, vines and shrubs shall consist of one-half (1/2) cubic yard of sandy loam topsoil and one-half (1/2) cubic yard of nitrogen stabilized fir or redwood per cubic yard of mix. One "Agriform" plant tablet (21 gram), or approved equal, shall also be placed for each twelve (12) inches of root ball circumference of the tree or shrub being planted.

2.06 FERTILIZERS AND ADDITIVES

- A. Fertilizer shall be "Agriform" C.R.F. Controlled Release Fertilizer in the formulation 16-7-12 + Iron, or approved equal. It shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original unopened containers. Any fertilizer which becomes caked or otherwise damaged shall be replaced.
- B. Fertilizer tablets shall be "Agriform" Planting Tablets as manufacture-by Agriform International Chemicals, Inc., or approved equal, with formulation 20-10-5 (21 gram).
- C. Nitrogen stabilized fir or redwood shall be bulk treated with a reactive form of nitrogen (NH₃) as manufactured under one of the following trade names "Tillo", "Redwood Soil Conditioner", "Ceda-Soil", "Turf and Tee".
- D. Mulch shall be "Walk on Bark", as manufactured by Sequoia Forest Products, or approved equal.
- E. Weed Control Material shall be pre-emergent herbicide, Trifluralin (Treflan R) or Diphenamid (Dymid R or Enide R) or approved equal.

2.07 STAKING AND GUYING MATERIALS

- A. Stakes for trees and shrubs shall be lodge pole pine as supplied by "B.V.C." or approved equal. Stakes shall be either two (2) inches or three (3) inches in diameter as shown on the plans and shall have been pressure treated with copper-chromate-arsenate or approved equal. The length of stakes shall be as indicated on the plans and all stakes shall be pointed at one end.
- B. Tree ties shall be corded rubber tree straps as manufactured by "Gro-Strait" or approved equal. Ties shall be located as indicated on the plans.

2.08 ROOT BARRIER

- A. Root Barriers shall be Deep Root Panels DR-128, or acceptable equivalent.

PART 3 - EXECUTION

3.01 CLEARING AND GRUBBING

- A.** All weeds and grasses shall be dug out by the roots and disposed of off the site, except those weeds and grasses that are not the perennial type, are less than 2-1/2 inches high and are not bearing seeds. The aforementioned weeds may be turned under.

3.02 SITE FILL AND GRADING

- A.** Areas to receive fill to landscape subgrade shall be scarified to a minimum depth of six (6) inches, conditioned to a moisture content that will permit compaction to the specified density, and compacted to a density of not less than ninety (90) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.
- B.** Import material for fill to landscape subgrade shall be placed in uniform horizontal layers not exceeding eight (8) inches in loose thickness and shall be compacted to a density of not less than ninety (90) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.
- C.** Subgrade for landscape shall be finished at six (6) inches below the adjacent top of curb grades shown or called for on the plans to the satisfaction of the Engineer prior to installation of irrigation and/or leaching systems, if any are required, and prior to leaching.

3.03 LEACHING

- A.** Fifteen (15) days prior to planting and prior to placing topsoil, subgrade for all planting areas shall be irrigated with automatic controller in operation at the maximum rate of one (1) inch per hour with a total of twenty-four (24) inches of water in a twenty-four (24) hour period.
- B.** Leaching operations shall be conducted in such a manner that said operation will not interfere with construction work by others. Surface runoff will not be permitted.

3.04 PLACING TOPSOIL AND SOIL MIX BACKFILL

- A.** Placing topsoil shall begin only after leaching operations have been completed to the satisfaction of the Engineer.
- B.** All areas to be planted shall have topsoil placed to a depth, that when compacted to a density of not less than eighty-five (85) percent of maximum dry density, shall conform to the lines, grades and elevations shown on the plans. Topsoil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that a dust will form in the air or that clods will not break readily. Water shall be applied, as necessary, to provide ideal moisture content for planting.

- C. Prepared soil mix shall be used for backfill in all holes for trees, vines and shrubs.

3.05 MULCHING

- A. In designated ground areas mulch shall be applied to a uniform depth of two (2) inches.

3.06 METHOD OF PLANTING

- A. No planting shall be done until all grading and irrigation system operations have been completed, finish grades have been established, the planting areas have been properly prepared as herein specified, and the work has been approved by the Engineer.
- B. All plants shall be set so that, when settled, they bear the same relation to the required grade as they bore to the natural grade before being transplanted. Each plant shall be planted in the center of the hold and backfilled, unless otherwise specified, with prepared soil mix backfill. No backfill in muddy condition shall be used. No filling will be permitted above crown. All broken or frayed roots shall be properly cut off. All backfill shall be properly tamped.
- C. Any plant material furnished as indicated on the "Plant List" which is not in compliance with the requirements of these specifications shall be removed immediately and replaced.

3.07 PLANTING OF TREES

- A. Positions of all trees shall be marked and approved in the field prior to planting.
- B. Holes for trees shall be excavated two times the diameter of root ball and a minimum of nine (9) inches below the bottom of root ball around a platform to support the tree at proper depth. Soil at sides and bottoms shall be loosened by scarifying or other approved method. Holes shall be backfilled with prepared soil mix to the bottom of the root ball depth. After the root ball has been set to the required grade, backfill to half the root ball depth, and place "Agriform" plant tablets equally spaced around root ball. The number of tablets shall be equal to the circumference of the root ball in inches divided by twelve (12). Fill the remaining portion with prepared soil mix and thoroughly tamp the backfill.
- C. Remove any previous nursery staking and ties. Set plants in center of the hole, in a vertical position without staking.
- D. Trees shall be planted so that the root crown is 2 inches above surrounding soil, and at least one inch above surrounding soil after settling. All plants shall be thoroughly "watered-in" within one hour after planting.
- E. Root barriers shall be installed at the time of planting as shown on plans, or as designated by the Engineer.

- F. Each tree shall be supported by two round treated stakes, per City Details. Tying shall be done with two (2) ties per tree, one from each stake. Ties shall be tied at the lowest height the trunk can be supported allowing the crown or top to stand upright. Use "Figure 8" method to attach ties. Stakes must be set in ground a minimum of two feet (2'). Stakes shall parallel sidewalk or curb. Stakes shall be located in the soil outside the rootball. Stakes shall be cut off above the tie-point to a height so as not to rub or contact branches.
- G. Trees shall be pruned to remove broken, crossing, rubbing branches or to lightly thin branches. A dominant central leader should be established. Prune girdling or curling roots.
- H. Turf shall be maintained a distance of 12" from tree trunk.

3.08 PLANTING OF SHRUBS AND VINES

- A. Shrubs and vines shall be planted in holes of at least twelve (12) inches greater in diameter than their ball of earth and at least six (6) inches below the bottom of the ball. Compacted soil at the bottom of the hole shall be loosened and the hole filled with prepared soil mix to the bottom of the ball. When the plant has been properly set, the hole shall be half filled and "Agriform" plant tablets placed. The number of tablets to be placed shall equal the circumference of their ball of earth divided by twelve (12). The remainder shall be filled to the required grade with prepared soil mix and then thoroughly settled by tamping and watering. All vines shall be removed from stakes, untied, and securely fastened in an approved manner to wall, fence, or other surface next to which they are planted and/or as shown on the plans.
- B. Prepare depressed water basin as wide as plant balls at each plant. Water thoroughly, backfilling any voids with additional prepared planting mix followed by tamping. Do not basin flat sized plants.

3.09 PLANTING OF GROUND COVERS

- A. Directly after planting, ground cover areas shall have applied a pre-emergent herbicide acceptable to the Engineer in accordance with the manufacturer's rates and procedures followed by an application of commercial fertilizer 6-20-20 applied at the rate of 35 lbs./1,000 sq. ft. A mulch top dressing shall then be placed over the fertilizer.
- B. Plant spacing for flat sized plants shall be as specified on the plans. Ground cover areas are to be moistened prior to planting. No flat plants are to be planted in dry soil.
- C. Set plants in the center of holes so that the crown of plants will be level with finished grade after settling of the soil, then backfill and water.
- D. Plants shall not be allowed to dry out before, or while being planted. Keep exposed roots moist by means of wet sawdust, peat moss, or burlap at all times during planting operations. Do not expose roots of plants to the air except while being placed in the ground.

3.10 WATERING BASINS

- A.** Watering basins shall consist of a depression in the soil around each tree and plant at the outside edge and following the shape of the planting hole area. Area shall be firmly compacted. Depressions for trees and for shrubs from five-gallon or larger containers, shall be at least four (4) inches deep. Depressions for all other shrubs, vines or plants not otherwise specified shall be at least two (2) inches deep, and thoroughly tamped.
- B.** Watering shall be done so as not to expose the crown by washing away the mound in the center. However, if any settling occurs, the mound shall be satisfactorily replaced.

3.11 LAWNS

A. Seeded or Sodded Lawn

1. Prior to planting lawn, the topsoil shall have been raked to a smooth, firm surface and then rolled with a 200-pound water ballast roller.
2. All lawn areas whether seeded or sodded shall be thoroughly watered. Lawns are to be kept continuously moist by watering as deemed necessary to insure germination or maintain healthy growth as the case may be.
3. Any lawn areas that do not show a prompt catch of grass shall be re-seeded or re-sodded to the original specification at ten (10) day intervals until an acceptable stand of grass is produced.

B. Seeded Lawn

1. Seed shall be sown in two directions at the rate of 3 lbs./1,000 sq. ft. in each direction for a combined rate of 6 lbs./1,000 sq. ft.
2. After seeding operation is complete, top dress entire seed bed area using Nitrolized fir or redwood shavings at the rate of 1 cu. yd./1,000 sq. ft. of lawn.
3. After top dressing, roll entire seed bed area with a 200-pound water ballast roller to press seed firmly into seed bed.
4. After lawn planting is complete, fertilizer shall be applied as follows:

16-6-8 Polycoated Fertilizer at the rate of 7 lbs./1000 sq. ft. of lawn.

C. Sodded Lawn

1. Quantities of sod delivered to site shall not remain unplanted longer than one (1) day. Sod remaining unplanted longer than 24 hours shall be removed from the work and replaced.
2. All sod shall be set tight without gaps between pieces and shall be rolled with a 200-pound water ballast immediately after first watering.
3. All sodded areas shall be thoroughly watered. Lawns are to be kept continuously moist by watering as often as required to maintain vigorous growth.

3.12 WATERING

- A.** Immediately after planting, water shall be applied to each tree and shrub by means of a hose. The water shall be applied in a moderate stream in the planting holes and until the material around the roots is completely saturated from the bottom of the hole to the top of the ground.
- B.** Following the planting of ground cover plants, furnished in flats, each plant shall be immediately and thoroughly watered by means of a hose and a slow running stream of water.
- C.** Water shall be applied in sufficient quantities, and as often as seasonal conditions require, to keep the ground wet at all times, well below the root system of grass and planting until acceptance of the entire work.

3.13 ROOT BARRIER INSTALLATION

- A.** An approved root barrier shall be placed in the trench created alongside the new, or existing sidewalk or curb as directed by the Engineer.
- B.** The barrier shall be a continuous length and shall extend from finished grade downwards to a minimum depth of 18".

3.14 MAINTENANCE

- A.** As a Contract requirement, Contractor shall maintain all landscaping for a period of at least sixty (60) calendar days after the date of written preliminary acceptance of landscape areas by the Engineer.
- B.** The Contract maintenance period may begin prior to completion of the total work, but in no case shall the Contract maintenance period end prior to the final acceptance of the work by the City Council. If completion of the work is delayed for whatever reason, Contractor shall maintain all landscaping until final acceptance of the work. The project shall not be accepted until the end of the 60-day maintenance period.
- C.** Plants, shrubs, trees, lawn or other landscaping which are replaced during the original Contract maintenance period shall be maintained for an additional maintenance period of sixty (60) calendar days beginning from the time of replacement.
- D.** Contract maintenance work shall consist of applying water (except initial watering of plants), weeding, caring for plants, edging and mowing of lawns and the following additional maintenance requirements:
 - 1.** Water lawn until final acceptance of work by the City. Seeded lawn shall be maintained 60 calendar days after germination of all grass species in seed mix. Immediately following the first mowing, apply commercial fertilizer 16-6-8 at a rate of 7 pounds per 1,000 sq. ft. Maintain a fertility level sufficient to insure a rapid, vigorous, healthy stand of grass.

2. During the maintenance period, all plants and planted areas shall be kept well watered and weed free at all times. Weeds, Dallas and Johnson grass and Bermuda grass shall be removed. Grass shall be mowed before it exceeds two (2) inches in height. Grass clippings shall be collected during mowing operations and removed from the site. The entire project shall be cared for and maintained in a neat and clean condition.
3. After each lawn cutting, the edge of the grass shall be trimmed to a neat and uniform line. Lawn and lawn edges are to be maintained in a neat and orderly condition until the final acceptance of work.
4. Workmen shall not be allowed to work on lawn areas before, during or after planting. Damaged or compacted lawn areas shall be recultivated and re-planted.
5. After initial mowing, lawn shall be mowed a minimum of twice every **seven (7) calendar days** and a final mowing shall occur one (1) day prior to the end of the maintenance period.
6. Any damage to landscape areas including depressions caused by vehicles, bicycles, foot traffic or damage incurred by gophers or moles shall be satisfactorily replaced.

3.15 WARRANTY PERIOD

- A. Dead or dying trees and shrubs shall be replaced at the contractor's expense prior to the end of the warranty period.

3.16 DUST ALLEVIATION AND CONTROL

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures during the course of the work, including street sweepers and/or watering truck fully manned and operable as required.
- B. Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.17 RESTORATION OF EXISTING IMPROVEMENTS

- A. Existing paving and other improvements removed or damaged due to the installation of landscaping shall be replaced in kind.

3.18 CLEANUP

- A. Surplus materials and construction debris remaining upon the completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site promptly by the Contractor and disposed of in a lawful manner.

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