SECTION 29

PLANTING

29-1 GENERAL

A. The work in this section is related to planting work and planting maintenance as shown on the drawings and as specified.

B. Manufacturer's recommendations.

1. "Sunset Western Garden Book", Lane Publishing Co., Menlo Park, California; current edition.

2. "American Standards for Nursery Stock", American Association of Nurseryman, 230 Southern Building, Washington, D.C. 20005.

C. Plant Material Standards

1. Quality and Size of Plants: Conform to the State of California Grading Code of Nursery Stock, No. 1 grade. Use only nursery-grown stock, which is free from insect pests and diseases.

2. Comply with federal and state laws requiring inspection for plant diseases and infestations. Submit inspection certificates required by law with each shipment of plants, and deliver certificates to the City. Obtain clearance from the County Agricultural Commissioner as required by law, before planting plants delivered from outside the County in which planted.

3. Palo Alto Tree Technical Manual (TTM), Section 3.30

4. Minimizing the use of turf and use native or climate appropriate plants whenever possible, unless specified otherwise by project specifications.

29-2 RELATED WORK

1. Section 9, EARTHWORK
2. Section 10, SUBGRADE
3. Section 28, IRRIGATION

29-3 PRODUCTS

A. Plants

1. Plant the variety, quantity and size indicated. The total quantity tabulated on the drawings are considered approximate and furnished for convenience only.

2. Tag plants of the type or name indicated and in accordance with the standard practice recommended by the American Association of Nurserymen.

3. Install healthy, shapely and well rooted plants with no evidence of having been rootbound, restricted or deformed.

4. Take precautions to ensure that the plants will arrive at the site in proper condition for successful growth. Protect plants in transit from windburn and sunburn. Protect and maintain plants on site by proper storage and watering.

5. Substitutions will not be permitted, except as follows:

    a. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of nearest equivalent size or variety with an equitable adjustment of contract price.

6. Trees: Select straight trunks with the leader intact, undamaged and uncut with all old abrasions and cuts completely callused over. Do not prune plants prior to delivery.

7. Measure trees and shrubs with branches in normal position. Height and spread dimensions indicated refer to the main body of the plant, and not from branch tip to tip.

B. Grasses

1. Turf Seed and Sod Mix: At least 98% pure, weed-free mixture and a minimum of 85% germination, re-cleaned, Grade A "New Crop" seed, delivered in the original containers, unopened and bearing a guaranteed analysis and dealer's label. Mixture as follows:

    a) <u>Palo Alto Mix</u>
    b) 20% Kentucky Bluegrass
    c) 80% Perennial Rye Grass

2. Sod: Machine cut sod to a uniform thickness of three-quarters (3/4) inch excluding top growth and thatch. Each individual sod piece shall be strong enough to support its own weight when lifted by the ends, in vigorous condition, dark green in color, free of disease, weeds and harmful insects. Broken pads, irregularly shaped pieces, and torn and uneven ends will be rejected.

C. Fertilizers

1. Commercial fertilizer, pelleted or granular form, conform to the requirements of Chapter 7, Article 2, of the Agricultural Code of the State of California for fertilizing materials as follows:

   a. Type A: 6% Nitrogen, 20% Phosphorus Acid and 20% Potash, (6-20-20).

   b. Type B: 21 gram planting tablets 20% Nitrogen, 10% Phosphoric Acid and 5% Potash (20-10-5) available from Agriform.

   c. Type C: Complete fertilizer 21% Nitrogen, 7% Phosphoric Acid and 14% Potash (21-7-14).

2. If commercial fertilizer having this analysis is not obtainable, other similar commercial fertilizer may be used providing it meets the approval of the City Landscape Architect and/or Project Manager.

3. Maintenance Fertilizer: Type C

4. Sod Fertilizer: Provided by grower.

D. Soil Amendment: Contractor shall provide soil report.

1. Shredded redwood sawdust or shredded fir and/or pine bark with the following properties:

Percent Passing	Sieve Designation	
100	9.51 mm	3/8"
95-100	6.35 mm	1/4"
80-100 4.76 mm	No. 4	4 mesh
60-100 2.38 mm	No. 8	8 mesh
20-70 1.00 mm	No. 18	16 mesh
0-30 500 micron	No. 35	32 mesh

2. Redwood Sawdust

   a. Dry bulk density, lbs. per cu. yd., 270-370
   b. Nitrogen stabilized - dry weight basis, min. 0.4%

3. Fir Bark

   a. Dry bulk density, lbs. per cu. yd., 450-580
   b. Nitrogen stabilized - dry weight basis, min. 0.5%

4. Salinity (ECe): 4.0 maximum

5. Organic Content: 90% minimum

6. Reaction (pH): 4.0 minimum

7. Submit sample with Laboratory organic amendment analysis report to include above information and iron content.

E. Iron Sulfate: Dry form.

F. Mulch and Ground Cover

1. Organic Mulch: Shall be ground, screened fir bark, one-quarter (1/4) inch to one-half (1/2) inch in size, top dressed on the soil surface of all non-turf planting areas to the depth shown on the plans.

2. Rock Mulch: Hard, durable smooth river bank stone, three-quarters (3/4) inch to one (1) inch diameter in brown color range, Lin Creek or equal.

3. Taffy Rock-crushed gravel. Size range one-quarter (1/4) inch to one-half (1/2) inch.

4. Organic wood chips (supplied by City).

G. Tree Support Poles: Peeled lodge pole pine logs, clean, smooth, new, and sized as follows:

1. Two (2) inch diameter by eight (8) feet long for trees less than eight (8) feet high and one (1) inch caliper.

2. Three (3) inch diameter by eight (8) to ten (10) feet long for trees greater than eight (8) feet high and one (1) inch caliper.

H. Ties: Rubber strap, twenty-four (24) inch minimum length without sharp edges adjacent to trunk, V.I.T. cinch-tie, Dublin, CA, (818)882-9530, or approved equal.

I. Planting Soil (Topsoil):

Planting soil shall be existing surface soil and imported soil as follows:

1. Planting soil shall be imported, fertile, friable, natural, productive soil containing a normal amount of humus, and shall be capable of sustaining healthy plant life.

Planting soil shall be free of subsoil, heavy or stiff clay, rocks, gravel, brush, roots, weeds, noxious seeds, sticks, trash and other deleterious substances. Soil shall not be infested with nematodes or with other noxious animal life or toxic substances. Soil shall be obtained from well-drained, arable land, and shall be of an even texture. Soil shall not be taken from areas on which are growing any noxious weeds such as Morning Glory, Sorrel or Bermuda Grass.

2. Imported planting soil shall have a pH value of between 6.0 and 7.5, a boron concentration of the saturation extract of less than 1 ppm, salinity of the saturation extract at 25 degree C of less that 4.0 millimoles, and a sodium absorption rate (SAR) of less than 8.

3. The silt and clay content of imported planting soil shall not exceed that of the existing soil it is to be placed over. It shall be a "Sandy Loam" as classified in accordance with USDA Standards.

4. Soil Amendment shall be as Specification Section 29-3D.

J. Pre-Emergence Weed Killer: Clean non-staining as recommended by a licensed pest control specialist.

1. Pest control shall be done only by qualified, trained personnel under the supervision of a State licensed pest control operator, using materials approved by the City's Project Manager. The pesticide application shall be done with extreme care to avoid any hazard to any person, pet, or wildlife in the area or adjacent areas, or any property damage. Application shall be in strict accordance with all governing regulations. **Pesticides shall not be used within one hundred (100) feet of any creek or playground area without prior written approval from the City Engineer.**

2. Refer to the City's Integrated Pest Management (IPM) and Sustainable Landscaping policies for additional requirements.

K. Vine Ties: Train vine branches to Pergola supports with vinyl ties with anchor screws.

29-4 EXECUTION

A. Fine Grading and Soil Preparation.

1. Inspect planting areas and remove all rocks, sod and other foreign material. Except where tree roots are evident, scarify all planting areas in two directions full depth of compaction (to a minimum of twelve (12) inches) into undisturbed native soil prior to backfilling. Scarification of any planting area which cannot be

accomplished with a tractor shall be accomplished by an alternative method approved by the City's Landscape Architect and/or Project Manager to the specified depth to ensure proper drainage.

2. Uniformly distribute and spread planting soil backfill in planting areas in layers not to exceed twenty-four (24) inches and compact to a maximum of 85% relative compaction.

3. When the planting soil differs in clay and silt content from the subsoil it is to be placed upon, install a three (3) inch thick lift of planting soil on the subgrade and rototill into the subgrade twelve (12) inches deep before installing the remaining required planting soil.

4. Do not work planting soil in a wet or muddy condition or dump or spread in areas where subgrade is not in proper condition.

5. Water settling, puddling, and jetting of fill and backfill materials as a compaction method is not acceptable.

6. Maintain moisture content of materials during compaction operations within required moisture range to obtain indicated compaction density.

7. Before proceeding with the work: Carefully inspect all areas and verify all dimensions and quantities. Immediately inform the Landscape Architect of any discrepancy between the drawings and specifications and actual conditions and secure approval to proceed.

8. Planting operations shall be performed only during periods when beneficial results can be obtained. When excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped until conditions are satisfactory.

9. Thoroughly wet down the planting areas to settle the soil and confirm irrigation coverage and operation. Allow soil to dry so as to be workable.

10. Planting area soil shall be in a loose, friable condition prior to planting.

11. Drag to a smooth, even surface. Grade to form all swales, pitch to catch basins, streets, curb, etc., to ensure uniform surface drainage. Areas requiring grading include adjacent transition areas which shall be uniformly level or sloped between finish elevations.

12. Hold finish grade and/or mulch surface in planting areas one-half (1/2) inch below adjacent pavement surfaces, tops of curbs, manholes, etc. The subgrade of the mulch in mulched planting areas shall be a minus two (2) inches for a

distance of twelve (12) to eighteen (18) inches from the edge of pavement. The remainder of the planting area shall be graded to receive the required three (3) inches layer of mulch.

13. Spread soil amendment, iron and Type A fertilizer evenly over installed and rough graded topsoil in all planting areas including turf, ground cover and shrub areas at the following rates:

    a. Soil Amendment: six (6) cubic yards per one thousand (1,000) square feet
    b. Fertilizer: Type A (6-20-20) at twenty (20) lbs. per one thousand (1,000) square feet.
    c. Iron Sulfate: ten (10) lbs. per one thousand (1,000) square feet

14. In areas to receive planting soil in depths of twelve (12) inches or more, rototill above additives into soil six (6) to eight (8) inches deep. In areas to receive planting soil in depths less than twelve (12) inches, premix the additives into the backfill before placement. Keep iron sulfate off pavement and other surfaces to prevent rust staining. Correct all rust damage to work.

15. After the roto-tilling work, float areas to a smooth, uniform grade as indicated on the drawings. Slope all planting areas to drain. Roll, scarify, rake and level as necessary to obtain true, even planting surfaces. Remove rocks, sticks and debris.

16. Particles two (2) inches or larger in size in turf areas and four (4) inches or larger in shrub and ground cover areas. Secure approval of the grade by the Landscape Architect before any planting.

17. Scarify all planting areas that become compacted prior to planting.

B. Seeded Turf Planting

1. Roll surface and grade to level humps, low spots and hollows.

2. Both seed varieties shall be applied uniformly, either by mixing or separate applications of two hundred fifty (250) lbs per acre in total. Use an approved seeding method (slit seeding and broadcast seeding), sowing one-half of the amount in one direction and the remaining one-half in a direction ninety (90) degrees to the first during a windless period. Topdress using a mechanical pull-behind topdresser to cover the entire turf area with one-quarter (1/4) inch of organic compost. Hydroseeding is NOT an acceptable turf seeding method. Field areas shall be fertilized using “starter” type fertilizer (15-15-15) to enhance germination and initial seed vigor after turf areas have been topdressed.

Fertilizer is to be evenly distributed at ten (10) lbs per one thousand (1000) square feet.

3. Wet seeded areas slowly but thoroughly and keep moist, but not saturated, at all times until the grass has germinated.

4. Refer to additional requirements from the City's Parks Maintenance Division.

C. Sodded Turf

1. Lightly roll surface and re-shape to level humps and hollows. Do not sod on dry soil.

2. Lay first strip of sod along a straight line (use a string in irregular areas). Butt joints tightly, do not overlap edges. On second strip, stagger joints. Use a sharp knife to cut sod to fit curves, edges and sprinkler heads.

3. When a conveniently large area has been sodded, water lightly to prevent drying. Continue to sod and to water until installation is complete.

4. After laying all sod, roll lightly to eliminate irregularities and to form good contact between sod and soil. Avoid a heavy roller and excessive initial watering.

5. Thoroughly water the completed sod surface to at least eight (8) inches deep. Repeat sprinkling at regular intervals to keep sod moist at all times until rooted. After sod is established, decrease frequency and increase amount of water per application.

6. Protect turf areas by erecting fences, barriers and signs necessary to prevent trespass. Keep barriers neat and well maintained.

D. Tree and Shrub Planting

1. Mark tree and shrub locations on site using stakes, gypsum or similar approved means and secure location approval by the Landscape Architect before plant holes are dug. Adjust location as necessary prior to planting.

2. Test drainage of plant beds and pits by filling with water (minimum six (6) inches). The retention of water in planting beds and plant pits for more than three (3) hours shall be brought to the attention of the Landscape Architect. If rock, underground construction work, tree roots, poor drainage, or other obstructions are encountered in the excavation of plant pits, alternate locations may be selected by the Landscape Architect.

3. Excavate tree, shrub and vine pits as follows:

Excavation for	Width	Depth
Boxed Trees	Box + 24"	Box + 6"
15 gc plants	Can + 18"	Can + 6"
Canned Shrubs/Vines (1 or 5 gc)	Can + 12"	Can + 6"

4. Break and loosen the sides and bottom of the pit to ensure root penetration and water test hole for drainage as required above.

5. Backfill plant holes with mix as specified, free from rocks, clods or lumpy material. Backfill native soil free of soil amendments under rootball and foot tamp to prevent settlement. Backfill remainder of the hole with soil mix and place plant tablets (Type B fertilizer) three (3) inches below surface of rootball and one-half (1/2) inch from roots at the following rates:

1 gallon can plant	-	1 tablet
5 gallon can plant	-	3 tablets
15 gallon can plant	-	6 tablets
24-inch box plant	-	6 tablets

6. Carefully remove and set plants without damaging the rootball. Superficially cut edge roots vertically on three sides. Remove bottom of plant boxes before planting. Remove sides of boxes after positioning the plant and partially backfilling.

7. Set plants in backfill with top of the rootball two (2) inches above finished grade. Backfill remainder of hole and soak thoroughly by jetting with a hose and pipe section. Water backfill until saturated the full depth of the hole.

8. Build six (6) inch high watering basin berms around trees and shrubs to drain through rootball. Basins are not required around trees in turf areas.

9. Stake and/or guy trees as detailed. Drive stake until solid and remove excess stake protruding above top tree tie to prevent rubbing against branches.

10. Remove any soil from top of plant rootballs.

11. After approval of rootball height, mulch watering basins with organic mulch to two (2) inch depth and thoroughly water. No mulch is required around trees in turf areas.

E. Ground Cover Planting: Plant in neat, straight, parallel and staggered rows as indicated on plan. Plant first row one-half required ground cover spacing behind adjacent curbs, structures, or other plant bed limits. Plant ground cover to edge of water basins of adjacent trees and shrubs. Plant thirty (30) inches from back of curb.

F. Mulch: Mulch all shrub and ground cover areas with organic mulch to a three (3) inch depth. Hold bark mulch away from base (trunk) of plant two (2) to four (4) inches or as directed by the Landscape Architect.

G. Pre-Emergence Weed Killer: Apply pre-emergence weed killer in all areas to receive ground cover planting. Work shall be done under the supervision of a person licensed by the State of California as a pest control applicator and holding a qualified applicator license or a Qualified Applicator Certificate. Obtain approval of the finish grades prior to applying weed killer and coordinate planting and watering with the pest control specialist prior to planting. Take care to keep weed killer off areas to be seeded.

H. Watering: Water all trees, shrubs and ground cover immediately after planting. Apply water to all plants as often and in sufficient amount as conditions may require to keep the plants in a healthy vigorous growing condition until completion of the Contract. Do supplemental hand watering of trees and shrubs during the first three (3) weeks of plant establishment.

When irrigation bubblers are used for watering trees or large shrubs, the bubblers shall be installed on flexible risers and placed on top of the rootball midway between the trunk and edge of the rootball. A minimum of two (2) bubblers shall be installed on fifteen (15) gallon or twenty-four (24) inch box trees, and shall be placed on opposite sides of the trunk.

I. Maintenance of Planting: Maintain plants from time of delivery to site until final acceptance of landscape installation.

J. Pre-Maintenance Period Review and Approval of Planting

1. Receive approval of the installed planting prior to commencement of planting establishment maintenance period. Notify the Landscape Architect a minimum of seven (7) days prior to requested review. Before the review, complete the following:

2. Complete all construction work.

3. Present all planted areas neat and clean with all weeds removed and all plants installed and appearing healthy.

4. Plumb all tree stakes.

5. Seed all turf areas.

6. No partial approvals will be given.

K. Planting Establishment Maintenance

1. General Requirements:

   a. The planting establishment maintenance period required shall be ninety (90) calendar days after all planting is complete, turf is seeded, and installation approved. A longer period may be required if the turf is not thick, vigorous and even, or if the plant material is not acceptably maintained during the maintenance period. The maintenance period may be suspended at any time upon written notice to the Contractor that the landscaping is not being acceptably maintained, and the day count suspended until the landscape is brought up to acceptable standards as determined by the City's Landscape Architect and/or Project Manager.

   b. Planting establishment maintenance immediately follows, coincides with, and is continuous with the planting operations, and continues through turf installation, and after all planting is complete and accepted; or longer where necessary to establish acceptable stands of thriving plants.

   c. Protect all areas against damage, including erosion and trespass, and provide proper safeguards. Maintain and keep all temporary barriers erected to prevent trespass.

   d. Keep all walks and paved areas clean. Keep the site clear of debris resulting from landscape work or maintenance.

   e. Repair all damaged planted areas, and replace plants and reseed or re-sod turf immediately upon discovery of damage or loss.

   f. Check sprinkler systems at each watering; adjust coverage and clean heads immediately. Adjust timing of sprinkler controller to prevent flooding.

   g. Maintain adequate moisture depth in soil to ensure vigorous growth. Check rootball of trees and shrubs independent of surrounding soils and hand water as required.

h. Keep Contract areas free from weeds by cultivating, hoeing or hand pulling. Use of chemical weed killers will not relieve the Contractor of the responsibility of keeping areas free of weeds over one (1) inch high at all times.

2. Tree, Shrub and Ground Cover Maintenance:

   a. Maintain during the entire establishment period by regular watering, cultivating, weeding, repair of stakes and ties, and spraying for insect pests. Prune when requested by the Landscape Architect.

   b. Keep watering basins in good condition and weed-free at all times.

   c. Replace all damaged, unhealthy or dead trees, shrubs, vines and ground covers with new stock immediately; size as indicated on the drawings.

3. Turf:

   a. Maintain during the entire establishment period. Cut as frequently as growth of grass requires. Cut to a height of two (2) inches, unless otherwise directed by the Landscape Architect.

   b. Maintain constant moisture to a depth of eight (8) inches.

   c. Trim edges of turf at paving and headerboards at time of second cutting, and at each later cutting.

   d. Keep a two (2) foot diameter area at tree trunk free of turf at all times to serve as a mowing band. Do not create low area around base of tree.

   e. Keep turf areas free of undesirable weeds and grasses by the application of suitable selective weed killers or hand pulling.

   f. Reseed all damaged areas as soon as evident.

   g. Repair any hollow, settled or eroded areas by filling, rolling and re-sod.

4. Fertilizing:

   a. Upon approval and after submitting fertilizer delivery tags, fertilize all turf and ground cover areas by broad-casting Type C (21-7-14) fertilizer at the rate of 5 lbs. per 1,000 square feet evenly throughout, and reapply every forty-five (45) days until acceptable.

b. Apply ammonium sulfate fertilizer as necessary to maintain vigorous, green grass between fertilizings mentioned above.

c. Observe plant's color, and if a soil pH imbalance is suspected, take soil samples and obtain laboratory analysis for confirmation. Take necessary action recommended in laboratory analysis such as top dressing with soil sulfur, leaching soil, etc.

L. Final Planting Review and Acceptance

1. At the conclusion of the planting establishment period, schedule a final review with the Landscape Architect. On such date, all project improvements and all corrective work shall have been completed. If all project improvements and corrective work are not completed, continue the planting establishment until all work has been completed.

2. Submit written notice requesting review at least ten (10) days before the anticipated review.

3. Prior to review, weed and rake all planted areas, repair plant basins, mow and edge turf, plumb tree stakes, clear the site of all debris and present in a neat, orderly manner.

END OF SECTION