
PART 1 GENERAL**1.1 SUMMARY**

A. Section Includes:

1. Provide planting work complete as shown on the drawings and as specified.

B. Related work specified elsewhere

1. Section 32 01 90, LANDSCAPE MAINTENANCE PERIOD
2. Section 32 11 23, LANDSCAPE AGGREGATE BASE COURSE
3. Section 32 84 00 IRRIGATION
4. Section 32 91 30, PLANTING AREA FINISH GRADING, MECHANICAL
5. Section 32 92 10, CONTRACT GROWING AND MAINTENANCE
6. Section 32 93 00, PLANTING MATERIALS
7. Section 33 41 19, LANDSCAPE DRAINAGE
8. Section 32 94 53 MODULAR SUSPENDED PAVEMENT SYSTEM

C. REFERENCES

1. ASTM — ASTM International:
2. D 1557 — Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
3. C 136 — Test Method for Sieve Analysis of Fine and Coarse Aggregates.
4. D 854 — Test Method for Specific Gravity of Soils.
5. D 2974 — Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
6. D 3665 — Practice for Random Sampling of Construction Materials.
7. D 4427 — Classification of Peat Samples by Laboratory Testing.
8. F 1647 — Test Method for Organic Matter Content of Putting Green and Sports Turf Root Zone Mixes.
9. USDA — United States Department of Agriculture
10. USDA Particle Size Analysis and infiltration rate

1.2 DEFINITIONS

A. Acceptance, Acceptable, or Accepted: Acceptance by the Owner's Representative in writing.

B. Excessive Compaction: Planting area soil or soil mix compaction greater than 75 percent maximum dry density as determined by ASTM D 1557.

C. Agronomist: Agronomist employed by the Owner for the Project.

D. Arborist: Arboricultural consultant employed by the Owner for the Project.

E. On-Grade: On or over subgrade soil, not on or over a building structure.

F. On-Structure: On or over a building structure.

G. Job Mix Formula: Formula for soil mixes determined by Owner's Testing Laboratory by conducting tests on lab samples.

1.3 QUALITY ASSURANCE

A. Reference Standards:

1. Ordinances and Regulations: All local, municipal and state laws, codes and regulations governing or relating to all portions of this work are hereby incorporated into and made a part of these Specifications. Anything contained in these Specifications shall not be construed to conflict with any of the above codes, regulations or requirements of the same. However, when these Specifications and Drawings call for or describe materials, workmanship or construction of a better quality, higher standard than is required by the above mentioned codes and regulations, the provisions of these Specifications and Drawings shall take precedence. Furnish without extra charge additional materials and labor required to comply with above rules and regulations.
2. "Sunset Western Garden Book," Lane Publishing Co., Menlo Park, California; current edition.

3. "American Standards for Nursery Stock," American Association of Nurseryman, 230 Southern Building, Washington, D.C. 20005.
 4. Alameda Countywide Clean Water Program (ACCWP) or member agency having jurisdiction over the project work.
 5. US Composting Council Compost analysis Program (CAP)
 6. Test Methods for the Evaluation of Composting and Compost (TMECC)
 7. Manufacturer's recommendations.
- B. Qualifications:
1. Experience: Assign a full-time employee to the job as foreman for the duration of the Contract who is certified landscape technician, certification through CLCA or minimum of four (4) years experience in landscape installation and maintenance supervision, with experience or training in turf management, entomology, pest control, soils, fertilizers and plant identification.
 2. Labor Force: Provide a landscape installation and maintenance force thoroughly familiar with, and trained in, the work to be accomplished to perform the task in a competent, efficient manner acceptable to the Owner.
- C. Requirements:
1. Supervision: The foreman shall directly supervise the work force at all times and be present during the entire installation. Notify Owner's Representative of all changes in supervision.
 2. Identification: Provide proper identification at all times for landscape maintenance firm's vehicles and a labor force uniformly dressed in a manner satisfactory to Owner's Representative.
- D. Plant Material Standards
1. 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 Owner. Obtain clearance from the County Agricultural Commissioner as required by law, before planting plants delivered from outside the County in which planted.
- E. Testing Agency: Soil and Plant Laboratory, Inc. 1101 Winchester Blvd., Suite G-173, San Jose, CA 95128; Tel. (408) 727-0330. Components of the tests shall include all major nutrients, pH, salinity, boron, sodium, micronutrients, copper, zinc, manganese and iron, adsorption rate, organic content and soil texture/particle size, along with a summary describing the degree of compliance with the specified requirements.
- F. Coordinate plant locations with irrigation emitter locations.
- G. Adjust irrigation locations in relation to the plants as required to ensure that the plant roots receive the proper amount of water in order for it to thrive.
- H. Coordinate planting and irrigation and provide hand watering of irrigated areas as required to maintain moist root zones throughout plant maintenance period.
- 1.4 SUBMITTALS, per Section 01 33 00.**
- A. Product Data: Manufacturer's current catalog cuts and specifications of the following:
1. Fertilizers
 2. Filter Fabric
- B. Samples: Submit following samples along with certificates of compliance/analytical data from approved laboratory for degree of compliance:
1. Rock Mulch: Refer to Section 32 93 00, PLANTING MATERIALS.
 2. Organic (Soil) Amendment: Submit 1/2-pint sample with laboratory analysis.
 3. Permeable Backfill (Filter Rock): Submit 1-pint sample with laboratory analysis.
 4. Imported Planting Sand: Submit 1/2-pint sample with laboratory analysis.
 5. Raised Planter Topping Mix: Submit 1/2-pint sample with laboratory analysis.
 6. Lava Rock Aggregate: 1/2-pint sample with laboratory analysis.

1.5 PROJECT/SITE CONDITIONS

- A. Site Visit: At beginning of work, visit and walk the site with the Owner's Representative to clarify scope of work and understand existing project/site conditions.

PART 2 PRODUCTS

2.1 FERTILIZERS

- A. Commercial fertilizer, pelleted or granular form, shall conform to the requirements of Chapter 7, Article 2, of the Agricultural Code of the State of California for fertilizing materials.

2.2 ORGANIC AMENDMENT FOR PLANTING SOIL MIX:

- A. Ground Nitrolized Fir 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	
75-100	2.38 mm	No. 8	8 mesh
20-70	1.00 mm	No. 18	16 mesh
0-40	500 micron	No. 35	32 mesh

1. Ground Fir and/or Pine Bark
2. Dry bulk density, lbs. per cu. yd., Min. 350
3. 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

- B. Submittal: Submit sample along with analytical data from an approved laboratory for degree of compliance to the Landscape Architect within two weeks after award of Contract.

2.3 IRON SULFATE: Dry form.

2.4 MULCH

- A. Rock Mulch: Refer to Section 32 93 00 PLANTING MATERIALS and Drawings.
- B. Submittal: Submit samples of rock mulch to the Owner's Representative for approval within two weeks of award of Contract. Resubmit until acceptable to Owner, at no extra cost.

2.5 TREE SUPPORT: Refer to Drawings

2.6 PLANTING SAND:

- A. 100% medium/coarse, washed, sharp, angular, silt-free sand with the following sieve analysis:

1. USDA Particle Size USDA Standard

Discipline Name	mm	Sieve #	% Retained	% Passing
Gravel	4.76	4	0%	100%
Fine Gravel	2.00	10	0-5%	95-100%
Very Coarse Sand	1.00	18	0-10%	90-100%
Coarse Sand	500 micron	35	0-35%	65-100%
Medium Sand	250 micron	60	50-100%	0-50%
Fine Sand	105 micron	140	0-30%	0-20%
Very Fine Sand	53 micron	270	0-15%	0-5%
Silt and Clay	Pan		0-5%	

2. Reaction (pH) of the saturated sand shall be between 6.0-8.0 as determined on the saturation extract solution:

- a. Permissible range of Salinity, Boron and Sodium as follows:
 - 1) Salinity (Ece) 0-3.0 dS/m
 - 2) Boron 0.1.0 ppm
 - 3) Sodium 0-20 meq/L
- B. Submittal: Submit 1 pint sample of the Imported Planting Sand along with analytical data from the approved laboratory for degree of compliance.

2.7 LAVA ROCK AGGREGATE

- A. Required Properties of Lava Rock Aggregate:

1. GRAIN SIZE DISTRUBUTION

U.S. Std. Sieve Size -	% Retained per Screen -	% Weight Passing-Cumulative
12.5mm	0	95-100
8 mm	1	90-100
4.75 mm (#4)	58	35-50
1.18 mm (#16)	34	0-20
.850 mm (#20)	.9	0-20
.500 mm (#35)	.1	0-20
.212 mm (#70)	.6	0-20
.150 mm (#100)	1	0-15
.075 mm (#200)	3	0-5
.053 mm (#270)	1	0-5
.045 mm (#325)	.3	0-5

- a. Sieve Analysis by ASTM 136
- b. PH - 6.0 to 7.8
- c. Chloride ppm 9.5 to 19
- d. Sulfate ppm .4 to 1.1
- e. Absorption 15 to 30%
- f. Loose Unit Weight 43 Lbs PCF (ASTM C 29)
- B. Absorption: Lava Rock aggregate shall retain a minimum of 18% of its weight in absorbed water and shall be free of toxic materials, insects, diseases, weed seeds and other pests.
- C. The sieve analysis shall be as shown above and with not more than 5% passing the #200 sieve. Lava Rock Aggregate meeting the above specification is available from American Soil Products, Richmond, CA (510) 292-3000 and TMT Enterprises, San Jose, CA (408) 432-9040.
- D. Submittal: Submit 1 pint sample of the Lava Rock Aggregate along with analytical data from an approved laboratory for degree of compliance.

2.8 PODIUM LEVEL RAISED PLANTERS & PLAZA SOIL TRENCH BACKFILL REQUIREMENTS

- A. Backfill for Plaza Soil Trenches: As noted herein, soil trenches that occur under pavement are to receive different specified backfill mixes than trenches under metal tree grate systems.
- B. "Base Soil Mix" is a mixture of 50% specified Imported Planting Sand and 50% specified Lava Rock and "Base Soil Fertilizer" specified below. Base Soil shall be installed in bottom of soil trench planters up to minus 12 inches from bottom of rock mulch layer at tree grates; and to a minus 12 inches from soil surface in Raised Podium Planters. Only Base Soil Mix shall be used as backfill in soil trenches that occur under pavement.
- C. " Topping Mix" is a mixture of 70% " Base Soil" and 30% specified nitrolized Fir bark Organic Amendment and "Topping Mix Fertilizer" specified below. Topping Mix shall be installed only in the top 12 inch layer of Plaza trench planters that occur at tree grate systems.
- D. Portions of soil trenches covered by pavement shall be backfilled with Base Soil Mix, including Base Soil Fertilizer, up to finish soil grade at air gap under pavement.

- E. The above Planter Mixes shall be delivered to the site in a damp condition and installed immediately to prevent losing the humus due to wind blow.

2.9 FERTILIZER MIXES

- A. Add the following fertilizer ingredients to each cubic yard of specified planting sand and lava rock Mix:

TOPPING MIX FERTILIZER

0.75 pound	Potassium Nitrate 13-0-44
0.5 pound	Calcium Nitrate 15.5-0-0
0.5 pounds	Urea Formaldehyde 38.0 0.
2.5 pounds	Single Superphosphate 0-25-0
4.0 pounds	Calcium Carbonate Lime
4.0 pounds	Kaiser 65 Dolomite
1.0 pounds	Iron Sulfate (min. 20% Fe)

- B. Add the following fertilizer ingredients to each cubic yard of specified planting sand and lava rock Mix:

BASE SOIL FERTILIZER

0.75 pound	Potassium Nitrate 13-0-44
0.5 pounds	Urea Formaldehyde 38.0 0.
2.5 pounds	Single Superphosphate 0-25-0
1.0 pounds	Iron Sulfate (min. 20% Fe)

PART 3 EXECUTION

3.1 FINE GRADING AND SOIL PREPARATION

- A. Before proceeding with the work, carefully inspect all areas and verify all dimensions and quantities. Immediately inform the Owner's Representative of any discrepancy between the drawings and specifications and actual conditions and secure approval to proceed.
- B. Planter Soil Placement: Prior to installing planting soil, inspect the waterproofing and drainage installation to verify that it is approved and acceptable to receive the planting soil.
- C. Refer to PODIUM LEVEL RAISED PLANTERS & PLAZA SOIL TRENCH BACKFILL REQUIREMENTS noted above in PART 2- PRODUCTS.
- D. Install Base Soil Mix and Topping Mix as specified herein.
- E. 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.
- F. 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 as described herein.
- G. Provide a smooth, even surface.

3.2 MULCH:

- A. Install rock mulch to depth as detailed.

3.3 WATERING:

- A. Water planting 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 as required to maintain plants in good health.

3.4 MAINTENANCE OF PLANTING:

- A. Maintain plants from time of delivery to site until final acceptance of landscape installation and Two Year Maintenance Period.
- B. Also refer to Section 32 92 10, CONTRACT GROWING AND MAINTENANCE

3.5 PRE-MAINTENANCE PERIOD REVIEW AND APPROVAL OF PLANTING

- A. Receive approval of the installed planting prior to commencement of the 2 year Planting Maintenance period. Notify the Owner's Representative a minimum of seven (7) days prior to requested review.

3.6 REVIEW AND ACCEPTANCE OF PLANT INSTALLATION

- A. Prior to start of 2 year maintenance period, per Section 01 77 00.
- B. At the conclusion of the Planting installation, schedule a review with the Owner and the Owner's maintenance person,. On such date, all landscape project improvements and all corrective work shall have been completed. If all project improvements and corrective work are not completed, continue the planting installation work at no additional cost to the Owner, until all work has been completed. This condition will be waived by the Owner under such circumstances wherein the Owner has granted an extension of time to permit the completion of a particular portion of the work beyond the time of completion set forth in the Agreement.
- C. Prior to review, clean and restore all planted areas and present in a neat, orderly manner.

END OF SECTION