SECTION 02480 - LANDSCAPE PLANTING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS: The General Instructions to Bidders, the General Conditions of Construction Contracts, Special Provisions and Section 01010-General Requirements preceding these specifications shall govern this section of the work.

1.02 WORK INCLUDED: Work includes all labor, materials, equipment and incidentals required to complete the landscaping by a licensed landscape contractor as shown on the plans and as herein specified. Grass restoration for trenches (12" or less in width) for sewers, drains, culverts, electrical ducts, potable water lines, irrigation lines and related appurtenances shall not be required to be done by a licensed landscape contractor.

1.03 REFERENCE: DPR Standard Specifications for Landscaping.

1.04 EXPLANATION AND PRECEDENCE OF DRAWINGS:

A. For purposes of clarity or legibility, drawings are essentially diagrammatic and although the locations and areas of plant material are drawn to scale, Contractor shall make use of all data in all contract documents and shall verify this information at the site.

B. All work called for on the drawings by notes shall be furnished and installed whether or not specifically mentioned in the specifications.

1.05 WORK SPECIFIED IN OTHER SECTIONS:

A. Stripping surface, stockpiling and spreading of existing on‑site soil and/or furnishing and spreading of imported screened soil in all planting areas except for trees and shrubs.

B. Submission of samples of the existing on‑site soil and/or imported screened soil and the soil analysis.

1.06 SOIL PREPARATION (For grass and ground cover planting):

A. General:

1. These specifications shall supersede Sections 50 and 51 "Standard Specifications for Public Works Construction," September 1986, City and County of Honolulu.

2. Soil Testing: Complete soil testing and soil analysis shall be done on all existing on‑site soil and/or imported screened soil to be used for landscaping on the site. Soil testing shall be done by the University of Hawaii Cooperative Extension Service or an independent soil engineering laboratory. Soil samples shall be tested for pH and "available" phosphorous, potassium, calcium and magnesium. A test for salinity may be requested upon inspection by the Officer-in-Charge. Contractor shall bear all cost of soil testing.

B. Materials:

1. Commercial fertilizer shall be of the analysis 10‑30‑10, or as determined by the Officer-in-Charge.

2. Lime (Calcium Carbonate) shall be agricultural type acceptable to O.I.C.

3. Gypsum (calcium sulfate) shall be agricultural type acceptable to O.I.C.

4. Organic Nutrient soil conditioner (humus) shall be Ferto (6‑4‑2) or Gro‑Power Plus (5‑3‑1) or equal acceptable to O.I.C.

5. Organic non‑nutrient‑soil conditioner shall be “Menehune Mulch” or Big "R" Redwood soil conditioner or equal acceptable to O.I.C.

C. Soil Amending Application Rates:

1. Organic nutrient soil conditioner shall be applied at the rate of l50 lbs. per l000 square feet or as specified on plans.

2. Organic non‑nutrient‑soil conditioner shall be applied as specified on plans.

3. Addition of Amendments: Addition of commercial fertilizer and amendments shall be in strict accordance to specifications and as determined by the Officer-in-Charge after submission of soil test report.

4. Contractor shall submit copies of all purchase and delivery receipts to the Officer-in-Charge for all amendments ordered and used on this project.

D. Soil Preparation Procedure:

1. After site grading operations have been completed, shape and fine grade to a smooth fine surface the entire site in accordance with the grading plan. In ballfield areas, grade to a maximum 2% slope ground plane to insure proper drainage.

2. Spread amendments on ground in even layers at rates specified in 1.05c, 1, and 2 and incorporate to a depth of 4 inches by rotary hoe method, working over all areas in alternate directions. ALL AMENDMENTS SHALL BE SPREAD OVER THE SITE IN THE PRESENCE OF AND ACCEPTED BY THE OFFICER-IN-CHARGE BEFORE INCORPORATION. This soil amending and acceptance procedure shall not be deleted, substituted or amended in any manner.

3. Drag all areas by mechanical means to break up clods. Remove debris and rocks over 1 inch in diameter by use of a spring tooth harrow with debris screen container. Fine grade to a smooth continuous surface and roll with a lightweight disc roller prior to planting.

1.07 LANDSCAPE PLANTING ‑ TREES, SHRUBS, GROUND COVERS AND GRASS:

A. General: Plant trees, shrubs, ground covers and grass where indicated on the drawings and specified herein.

B. Materials:

1. Imported screened soil: Shall be screened, (1/2‑inch screen), natural, fertile, friable soil free of stones, noxious seeds, roots, sticks, weeds, (especially nutgrass), subsoil in any quantity. Red Humic latosol soils or types known as "Palolo Clay" or "Lualualei Clay" are unacceptable. Soil should have satisfactory loam characteristics, and it shall not be screened subsoil.

2. Commercial Fertilizer: Shall be slow release Agriform (20‑10‑5) tablets or Osmocote (18‑6‑12) polymeric capsules, unless otherwise detailed on plans.

3. Organic nutrient‑soil conditioner (humus): shall be Ferto (6‑4‑2) or Gro‑Power Plus (5‑3‑1) or equal acceptable to O.I.C.

4. Organic non‑nutrient‑soil conditioner: shall be Burnt Bagasse Mix or Big "R" Redwood soil conditioner or equal acceptable to O.I.C.

5. Stakes for container stock trees shall be 2" x 2" x 8'‑0" rough construction grade redwood or treated Douglas Fir; stakes for field grown trees shall be #5 reinforcing bars, 3 feet long minimum or as detailed on drawings.

6. Tree Ties shall be new or used reinforced rubber or plastic hose inserted with #12 gauge pliable galvanized iron wire or commercial ties acceptable to O.I.C.

C. Plant Materials:

1. Nomenclature: The names of plants required shall conform to "Gardens of Hawaii" by Marie C. Neal. Names of plants not included therein shall conform to names generally accepted in the local nursery trade. The Officer-in-Charge shall be the final arbiter in decisions regarding plant identification and nomenclature.

2. Quality and Size: All plant materials shall be uniform and have a habit of growth that is normal for the species and shall be sound, healthy, vigorous and free from insect pests, plant disease and injuries. Trees and shrubs in containers of the size specified shall have sufficient roots to hold earth together intact after removal from containers without being rootbound.

Trees will be straight of uniform shape without damaged, crooked or multiple leader, unless otherwise specified. Trees shall be free of bark abrasions, sunscalds, disfiguring knots or fresh cuts of limbs over 3/4 inch which have not completely calloused.

All materials shall equal or exceed the measurements specified in the drawings which are minimum acceptable sizes. Caliper measurements for trees shall be taken at a point 6 inches above natural ground line for trees up to 4 inches in caliper and at a point 12 inches above natural ground line for trees over 4 inches in caliper. Materials shall be measured before pruning with branches in normal condition.

D. Trees, Shrubs and Ground Cover Procedure:

1. Planting Pits: Reasonable care shall be exercised to have tree and shrub pits dug and soil prepared prior to moving plants to their respective locations for planting to ensure that they will not be unnecessarily exposed to drying elements or to physical damage. The diameter of all plant pits shall be at least twice the diameter of the container. The depth of pits for trees and shrubs shall be sufficient to accommodate the rootball depths when the plant is set plus at least 12 inches clearance for trees and 6 inches clearance for shrubs for prepared soil at the bottom of the pit.

2. Setting Trees: All trees shall be set at such a level that after settlement, the top of rootball shall be approximately 4‑6 inches below the finished grade of the surrounding ground. Each shall be set upright and faced to provide the best appearance possible.

3. Planting: Trees shall be planted in the specified backfill which shall be thoroughly settled by watering and tamping. Backfill mix for all trees shall consist of organic non‑nutrient‑soil conditioner, organic nutrient‑soil (humus) and screened soil in proportions detailed on plans. MagAmp (7‑40‑6) shall be mixed in bottom of pits in proportions detailed on plans. All soil amendments and screened top soil shall be thoroughly mixed together before being placed in the plant pit. If the on‑site soil available from the excavation of planting pits, as herein specified, is insufficient in quantity or of poor quality for backfill, the Contractor shall provide the necessary additional imported screened top soil. Backfill shall not be packed.

After backfilling, 6" below the rootcrown, soak pit with water and place the required number of Agriform tablets or amount of Osmocote fertilizer evenly around the rootball, approximately 2 inches from root tips. Slow release fertilizer shall be applied to trees and shrubs at rates detailed on plans.

Backfill rest of hole with specified backfill mixture. Firm down backfill, but do not pack. Immediately after planting, thoroughly soak planting pit with water.

4. Staking: Trees shall be supported immediately after planting.

Container‑grown trees shall be secured with stakes as detailed on plans.

5. Pruning: Pruning of trees shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for the loss of roots during transplanting but never to exceed one‑half of the branching structure.

6. Ground Cover Planting: Plant ground cover in prepared soil only, refer to 1.05. Soil Preparation. Plants shall be spaced equally and uniformly at the distance indicated on the plan. Spacings shown on the drawings are triangular, unless noted otherwise. Finish grade shall be smooth and uniform, and drainage patterns and tree water basins shall not be altered. Water and soak ground immediately after planting.

E. Grass Planting:

1. General:

a. The work covered under this section shall include the furnishing of all labor, equipment, materials and incidentals necessary for grass planting or grass restoration, complete in place, in strict accordance with this section of the specifications and applicable drawings.

b. Grass planting shall commence immediately after the soil preparation has been completed and accepted by O.I.C.

c. The Contractor may elect to plant grass by either seeding, stolonizing or hydromulching, unless otherwise indicated on the drawings.

2. Materials:

a. Grass shall be common Bermuda, Cynodon dactylon, unless otherwise indicated on the drawings.

b. Grass seed shall be fresh hulled and meet the following requirements:

Pure Seed 95.0% minimum

Crop Seed 1.0% maximum

Weed 0.5% maximum

Inert Material 5.0% maximum

Germination 85.0% minimum

Grass seeds shall be delivered to the site in unopened, sealed container, labeled with brand name and percent purity. Labeling shall indicate that the seeds passed a certified germination test no more than 12 months prior to use.

c. Grass stolons shall be healthy, living runners 2 inches to 4 inches long with a well-developed root system. They shall be freshly cut and free from weeds. Immediately following harvesting, the stolons shall be thoroughly watered then covered and kept moist during storage and transportation until planted.

3. Procedure:

a. Preparation of Planting Area: Refer to 1.05. Soil Preparation.

b. Planting by Seed: Ground surface shall be raked to a smooth even plane, broadcast seeds uniformly by mechanical sower at a minimum rate of 5 lbs. per 1000 square feet. Sow one‑half the seeds in one direction and the remainder at right angles to the first direction. The seeds shall be incorporated into the top 1/4 inch to 1/2 inch of soil. After sowing, the seeded area shall be compacted by hand or a cultipacker or mechanical roller weighing 60 to 90 pounds per lineal foot of roller. The area shall be thoroughly and gently watered and kept moist during the germination period.

c. Planting by Stolons: After ground surfaces have been raked to a smooth and even plane, broadcast stolons uniformly by hand at a minimum rate of 6 bushels per 1000 square feet. The stolons shall be incorporated into the top 1/4 inch to 1/2 inch of soil. After broadcasting, the planted area shall then be disked and rolled by a mechanical roller weighing 60 to 90 lbs. per lineal foot of roller to insure close contact of the soil and stolons. Do not roll on wet soil.

d. Planting by Hydromulching:

(1) Description: This work shall consist of furnishing and applying by hydromulching, seeds or stolons, and mulch to areas designated on the plans or ordered by the Officer-in-Charge and shall include continuous care and maintenance in accordance with these specifications. Such areas shall include those damaged or made barren by construction operations or equipment. All steep banks 3 to 1 slope or more shall be hydromulched for erosion control.

(2) Materials:

(a) Seeds: Seeds shall be hulled common Bermuda (Cynodon dactylon), certified, meeting the following requirements:

Pure Seed 95.0% minimum

Crop Seed 1.0% maximum

Weed 0.5% maximum

Inert Material 5.0% maximum

Germination 85.0% minimum

The seeds shall be applied at the rate of 50 pounds per acre (minimum) and within 12 months of the date of the certified germination test.

(b) Stolons: Shall be healthy, living, well developed runners, 1 inch to 2‑1/2 inches in length, freshly dug up and free from weeds. Immediately following harvesting, the stolons shall be thoroughly watered then kept moist during storage and transportation until planted. Stolons shall be applied at the rate of 8 bushels per 1000 square feet (minimum).

(c) Mulch: Mulch shall be specifically processed fiber containing no growth or germination inhibiting factors. It shall be such that after addition and agitation in the hydraulic equipment with seeds, fertilizer, water and other additives not detrimental to plant growth, the fibers will form a homogeneous slurry. When hydraulically sprayed on the soil, the fibers shall form a blotter‑like ground cover which readily absorbs water and allows infiltration to the underlying soil. In every application, complete coverage of the soil shall be attained. Mulch shall be applied at the minimum rate of 1700 pounds per acre.

(3) Procedure:

(a) The Contractor shall notify the Officer-in-Charge not less than 24 hours in advance of any hydromulching operation and shall not begin work until area for hydromulching has been prepared and accepted by O.I.C. Acceptance shall include inspection of fine grading to provide for the collection and disposal of surface and subsurface water to protect planting areas against unnecessary erosion. Acceptance shall not relieve the Contractor of his responsibility to restore any damage to the grade until the planted areas are accepted. Following the Officer-in-Charge's acceptance, hydromulching of the approved planting areas shall begin promptly.

The hydromulch equipment shall be capable of mixing all the necessary ingredients to a uniform mixture and to apply the slurry to provide uniform coverage. Seeds, fertilizer and mulch mix shall be applied in one operation by approved hydraulic equipment. The equipment shall have a built‑in agitation system with an operating capacity sufficient to keep the mix in uniform distribution until pumped from the tank. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with hydraulic discharge spray nozzles which provide a uniform distribution of the slurry. Areas inaccessible to hydromulching application shall be stolonized or seeded by hand broadcast method acceptable to O.I.C. and fertilized.

Water shall be applied immediately following mulching in such quantities as to moisten the soil and mulch. Watering shall be continued in such manner, quantity and frequency to insure proper germination and growth and shall be done in a way that will prevent erosion. Watering equipment shall be of a type that will not cause erosion or runoff. If method is deemed unacceptable by the Officer-in-Charge, it shall be corrected by the Contractor. Should the slope erode or silt be transported to pose as potential pollutants, it shall be immediately removed and prevented from entering into water channels. All eroded areas shall be restored to the original grade as soon as possible.

1.08 PLANTING MAINTENANCE, INSPECTION AND ACCEPTANCE:

A. General: This item of work shall consist of the maintenance of all plants and planted areas in optimum growing condition and appearance and the inspection and acceptance of landscape planting.

B. Pre‑Maintenance Inspection:

1. A pre‑maintenance inspection shall be held at the completion of all planting operations and prior to the beginning of the formal maintenance period.

2. All deficiencies shall be corrected and all plantings accepted by the Officer-in-Charge before the issuance of a commencement date of the formal maintenance period.

C. Period of Maintenance:

1. Maintenance shall begin immediately after completion and acceptance of all planting and shall continue for 60 calendar days thereafter, unless otherwise specified in the Proposal or on the drawings. The care of plants prior to completion of all planting, including relocated trees, shall not be considered as part of the maintenance period but only as an incidental to landscape work.

2. Maintenance shall include watering, weeding, fertilizing, topdressing with amended imported screened soil acceptable to O.I.C., mowing, pruning, repairing stakes, guys and ties, spraying for diseases and insects, replanting and any other work necessary to maintain all plants in a healthy growing condition. The Contractor shall be responsible for the protection of all plants and planting areas during the maintenance period and shall pay for all water required during the maintenance period unless otherwise specified. All dead plant materials shall be replaced immediately. During the last week of the maintenance period, the Contractor shall fertilize the entire planting areas as follows:

a. Organic nutrient‑soil conditioner (humus) at the rate of 25 lbs. per 1000 square feet. Ferto (6‑4‑2) or Gro-Power Plus (5‑3‑1) shall be applied in the presence of the Officer-in-Charge.

D. Final Inspection and Acceptance:

1. At the completion of all planting operations and the maintenance period, an inspection shall be performed.

2. The Contractor shall request the inspection in writing to the Officer-in-Charge 7 calendar days prior to the completion of the maintenance period in order that a mutually agreeable time for inspection may be arranged.

3. The Contractor and the Officer-in-Charge, or their representatives, shall be present at the inspection.

4. Any plant material found not to be in healthy growing condition shall be immediately replaced by the Contractor.

1. Acceptance of the grass planting after the maintenance period shall be contingent upon the following:

a. 95% coverage of the overall area shall be required for grass planting.

b. All germinated areas shall be healthy and living at the end of maintenance period.

c. Weeds shall not exceed an area greater than 10% of the overall grass area.

d. Grass shall be mowed and not taller than 1 inch in height. All clippings shall be removed.

e. All depressions shall be filled to proper grade and area regrassed as required.

6. Acceptance of the ground cover planting after the maintenance period shall be contingent upon an 80% coverage.

7. If at the final inspection, the Officer-in-Charge is of the opinion that all or certain portions of the work is not acceptable as to the intent of the drawings and specifications, an additional 30 days maintenance period shall be extended at no cost to the Department. During this period, the Contractor shall meet all requirements and correct all deficiencies, including any additional mowing and fertilizing. After the 30 days, if the work is still unacceptable or does not meet the conditions as specified under Section 1.07.d.4) and 5), Planting Maintenance, Inspection and Acceptance, the Contractor shall be charged with liquidated damages for each and every calendar day thereafter and shall be based on the amount bid in the Proposal.

8. If all plant materials are accepted at this inspection by the Officer-in-Charge, the Contractor shall be relieved of further maintenance.

9. All trees and palms shall be guaranteed for one year. If any tree or palm fails to survive by the end of one year, it shall be replaced with the same size and species by the Contractor at no cost to the Department. Contractor shall not be held liable for any loss due to lack of proper maintenance, vandalism or accident.

END OF SECTION