East Side Union High School District

# Independence High School
# IH Building J (Site Landscaping)

1776 Educational Parkway
San Jose, California

# Project Manual

Volume #2 of #2

DTA Dreiling Terrones Architecture Inc.
Architecture | Infrastructure | Environments

**SECTION 01 56 39**
**PART 1 - GENERAL**

1.1 SCOPE

A. Furnish and supply all equipment necessary for tree protection and pruning including, but not limited to, removal, protection and pruning of existing trees.

B. All work shall be done per the International Society of Arboriculture (ISA) tree protection and pruning requirements.

1.2 ACCESS AND STORAGE

A. Prior to commencement of work, the Contractor shall confer with the District and the District's Representative of the purposes of determining the exact scope of work. At no time shall materials, soil or equipment be stored or placed within the "dripline" of existing trees to be preserved. At no time shall vehicles be parked within the "dripline" of an existing tree to be preserved.

1.3 CO-ORDINATION AND SCHEDULING OF WORK

A. All work shall be scheduled and conducted in a cooperative manner in order to give the least possible interference with or annoyance to others. Contractors shall work out any cooperative schedules. Construction of drainage and irrigation lines etc., around existing trees, shall receive priority in scheduling in order that trenching, irrigation installation and backfilling can be done in an expedient manner.

**PART 2 – PRODUCTS**

2.1 FENCING

A. All trees to be retained shall be temporarily fenced (chain link) at the dripline of tree.

1. Temporary Chain Link Construction Fence: Shall be a 6 foot high temporary chain link construction fence installed along the entire perimeter of the project site and shall be maintained for the duration of the project. The temporary construction fencing shall be in good condition, staked into ground wherever possible, and installed with a top tension wire. The fence posts shall be two inch (2") diameter galvanized steel. The fence fabric shall be 11-gauge, with knuckled barbs on the top edges.

**PART 3 - EXECUTION**

3.1 PRESERVATION OF EXISTING TREES

A. Protection: Shall be as shown on plans.

B. Pruning:

1. Selective Pruning: Pruning consists of reducing the overall foliage and their branches by no more than 20% to 30% of the total tree canopy in order to trim canopy up for visibility and safety of bicyclists. Pruning is to be performed by a method called "drop crotch" pruning that permits the preservation of a natural appearing foliage margin and retains the character of the tree. At no time shall the leader of any tree be pruned or removed. Thinning of trees shall include "safety trim". This involves the removal of all dead branches over 1-1/2 inches in diameter, the removal of broken branches and the removal of over burdened or conflicting branches as deemed necessary by the District's Representative.
2. Debris Removal: All trimmings, stumps, roots, logs, sod, or any other form of debris resulting from this work or any work resulting from said operation shall be cleaned up and removed from the site by the Contractor. All laws, ordinances, etc., applicable to the involved locality governing such disposal shall be fully complied with. Stumps shall be ground to 12 inches below grade.
3. Tools: Cutting tools and saws shall be kept sharpened to a condition that will permit leaving an unabraised cambium edge on final cuts and bark tracings.

4. Final Pruning Cuts: Final pruning cuts shall be made without leaving a stub. They shall be made in a manner to favor the earliest possible covering of the wound by callus growth. This requires that the wound be as small as practicable, the cut be within the shoulder ring area, and that the cambial tissues at the edge of the cut be alive and healthy. Extremely flush cuts that produce large wounds and weaken the tree at the cut cannot be made.

C. Removal: Shall be per Clearing and Grubbing 02 41 13.

D. Excavation, Trenching and Backfill: All trenching under the drip line of the tree shall be hand dug with no roots over 1 inch diameter being cut or damaged.

E. Root System Repair: All exposed severed root ends are to be cut off smoothly.

F. Watering: Shall be per plans.

1. If trees show stress it may become necessary for Contractor to perform deep root watering as required at no extra cost to the District.

END OF SECTION 01 56 39

**SECTION 01 57 23**
**PART 1 – GENERAL**

1.1 WORK INCLUDED

A. The goal of these requirements is to prevent the pollution of storm water run-off on construction projects by keeping pollution out of storm drains, reducing the exposure and discharge of materials and wastes to storm water and by reducing erosion and sedimentation. Storm drains discharge run-off directly to creeks and the bay without treatment.

B. Contractor shall adhere to the requirements of this section and to requirements noted in the Storm Water Pollution Prevention Plan California Construction General Permit available for review by contacting the State Resource Water Control Board's storm water information line at (916) 341-5537.

C. Contractor shall complete sections and attachments of Storm Water Pollution Prevention Plan California Construction General Permit pertaining to contractor or contractor's representative, including but not limited to cover section, sections 300, 500, 600 and attachments H, I, J, L, M, P, and R.

1.2 GENERAL REQUIREMENTS

1. The following requirements shall be met on all projects within the City of San Jose.

    1. Non-hazardous Material/Waste Management

        a. Designated Area: The Contractor shall propose designated areas of the project site for approval by the District's Inspector, suitable for material delivery, storage and waste collection to the maximum practicable extent, are near construction entrances and away from catch basins, gutters and drainage courses.

    2. Granular Material: The Contractor shall store granular material at least 10 feet away from catch basins and curb returns. The Contractor shall not allow granular material to enter the storm drains. When rain is forecast within 24 hours or during wet weather, the Contractor is required to cover granular material with a tarpaulin and to surround the material with sand bags.

        a. Dust Control: Dust control shall be in accordance to Section 17 and 18 of the Standard Specifications.

        b. Street Sweeping: At the end of each working day or as directed by the Inspector, the Contractor shall clean and sweep roadways and on-site paved areas of materials attributed to or involved in the work. The Contractor shall not use water to flush down streets in place of street sweeping.

        c. Recycling: The Contractor shall recycle aggregate material and Portland Cement concrete, and other demolition items at approved recycling suite per the City of San Jose's Construction and Demolition Diversion Program.

            Zanker Recycling
            675 Los Esteros Rd.
            San Jose, CA 95134
            (408) 263-2384

            For additional information, please visit the following website: www.sanjoseca.gov/index.aspx?nid=1532

        d. Disposal: At the end of each working day, the Contractor shall collect all scrap, debris and waste materials and dispose of such materials properly. The Contractor shall inspect dumpsters for leaks and contact trash hauling

contractors to replace or repair dumpsters that leak. The Contractor shall arrange for regular waste collection before dumpsters overflow.

3. Hazardous Material/Waste Management

   a. Storage: The Contractor shall label and store all hazardous materials, such as pesticides, paints, thinners, solvents and fuels and all hazardous wastes, such as waste oil and anti-freeze. The Contractor shall store all hazardous materials and all hazardous waste according to the local County Regulations. The Contractor shall keep an accurate up-to-date inventory of hazardous material and hazardous wastes stored on site to assist emergency response personnel if there is a hazardous material incident.

   b. Usage: When rain is forecast within 24 hours or during wet weather, the Contractor shall not apply chemicals in outside areas. The Contractor shall not over apply pesticides or fertilizers and shall follow material manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals.

   c. Disposal: The Contractor shall arrange for regular hazardous waste collection to comply with time limits on storage of hazardous waste. The Contractor shall dispose the hazardous waste only at authorized and permitted Treatment, Storage and Disposal Facilities and use only licensed hazardous waste haulers to remove the waste off-site, unless quantities to be transported are below applicable threshold limits for transportation specified in State and Federal Regulations. For additional information, please contact: County of Santa Clara Department of Environmental Health Hazardous Materials Compliance Division (408) 918-3400.

4. Spill Prevention and Control

   a. The Contractor shall keep a stockpile of spill clean up materials, such as rags or absorbents, readily accessible on site.

   b. The Contractor shall immediately contain and prevent leaks and spills from entering storm drains and properly clean up and dispose of the waste and clean up materials. If the waste is hazardous, the Contractor shall handle the waste as described in Section 1.2A, 3c above.

   c. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials.

   d. The Contractor shall report any hazardous materials spill to the District.

5. Vehicle/Equipment Cleaning

   a. The Contractor shall not perform vehicle or equipment cleaning on-site or in the street using soaps, solvents, degreasers, steam cleaning equipment or equivalent methods.

   b. The Contractor shall perform vehicle or equipment cleaning, with water only, in a designated, bermed area that will not allow rinse water to run off-site or into streets, gutters, storm drains or creeks.

6. Vehicle/Equipment Maintenance and Fueling

   a. The Contractor shall perform maintenance and fueling of vehicles or equipment in a designated, bermed area or over a drip pan that will not allow storm water run-off of spills.

b. Use secondary containment, such as a drip pan to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

c. Keep a stockpile of spill clean up materials, such as rags or absorbents, readily accessible on site.

d. Clean up leaks and spills of vehicles or equipment fluids immediately and dispose of the waste and clean up materials as hazardous waste, described in Section A.2.c above.

e. Do not wash any spilled material into streets, gutters from drains, or creeks and shall not bury spilled hazardous.

f. Report any hazardous materials spill to the District.

g. Inspect vehicles and equipment arriving on site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs are made.

h. Recycle waste oil and anti-freeze to the maximum practical extent.

i. Comply with Federal, State and City requirements for aboveground storage tanks.

7. Contractor Training and Awareness

a. The Contractor shall train all employees/subcontractors on the storm water pollution prevention requirements contained in these Specifications.

b. Inform subcontractors of the storm water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

c. Post warning signs in areas treated with chemicals.

2. Activity Specific Requirements

The following requirements shall be met on all projects with the District which include the listed activities.

1. Dewatering Operation

a. Sediment Control: The Contractor shall route water through a control measure, such as a sediment trap, sediment basin trap, sediment basin to remove settleable solids before discharge to the storm drain system. Approval of the control measures shall be obtained in advance from the Inspector. Filtration of the water following the control measures may be required on a case-by-case basis. If the Inspector determines that the dewatering operation would not generate an appreciable amount of settleable solids, the control measures requirement in (1) above may be waived. The Contractor shall reuse water for other needs, such as dust control or irrigation to the maximum practicable extent.

b. Contaminated Groundwater: If the project is within an area of known groundwater contamination, then water from dewatering operations shall be tested before discharge. If the water quality meets Regional Water Control Board (RWQCB) standards, then it may be discharged to the storm drain. Otherwise, the water shall be treated or hauled off-site for proper disposal.

2. Paving Operations

a. Project Site Management: When rain is forecast 24 hours or during wet weather, the Inspector may prevent the Contractor from paving. The Inspector may direct the Contractor to protect drainage courses by using control measures, such as earth dike, straw bale and sand bag to divert run-off or trap and filter sediment. The Contractor shall place drip pans or absorbent material under paving equipment when not in use. The Contractor shall cover catch basins and manholes when paving or applying a seal coat or tack coat.

b. Paving Waste Management: The Contractor shall not sweep or wash down excess sand or screenings (placed as part of a sand seal, chip seal or to absorb excess oil) into gutters, storm drains or creeks. Instead, the Contractor shall either collect the sand and screenings, and return it to the stockpile or dispose of it in a trash container. The Contractor shall not use water to wash down fresh asphalt concrete pavement.

3. Saw Cutting

a. During saw cutting, the Contractor shall cover or barricade catch basins using control measures, such as filter fabric, straw bales, sand bags and fine gravel dam to keep slurry out of the storm drain system. When protecting a catch basin, the Contractor shall ensure that the entire opening is covered.

b. The Contractor shall shovel, absorb or vacuum saw cut slurry, and pick up waste before moving to the next location or at the end of each working day, whichever is sooner.

c. If saw cut slurry enters catch basins, the Contractor shall remove the slurry from the storm drain system immediately.

4. Contaminated Soil Management

a. On all projects involving grading or excavation, the Contractor shall look for contaminated soil as evidence by site history, discoloration, odor, differences in soil properties, abandoned underground tanks or pipes or buried debris. If the project is not within an area of known soil contamination and no evidence of soil contamination is found, then testing of the soil shall only be required if directed by the Inspector. The Contractor shall follow Section 34-2,B.4.b below if contamination is found.

b. If the project is within an area of known soil contamination or evidence of soil contamination is found, then soil from grading or excavation operations shall be tested. The soil shall be managed as required by the Inspector.

5. Concrete, Grout and Mortar Waste Management

a. Material Management: The Contractor shall store concrete, grout and mortar away from drainage areas and ensure that these materials do not enter the storm drain system.

b. Concrete Truck/Equipment Wash Out: The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains or creeks. The Contractor shall perform wash out of concrete trucks or equipment off-site or in a designated area on site where water will flow onto dirt or into a temporary pit in a dirt area. The Contractor shall let the water percolate into the soil and dispose of the hardened concrete in a trash container. If a suitable dirt area is not available, then the Contractor shall collect the wash water and remove it off-site.

c. Expose Aggregate Concrete Wash Water: The Contractor shall avoid creating run-off by draining water from washing of exposed aggregate concrete to a dirt area. If a suitable dirt area is not available, then the Contractor shall filter the

wash water through straw bales or equivalent material before discharging to the storm drain. The Contractor shall collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in a trash container.

6. Painting

a. Painting Clean Up/Designated Area: The Contractor shall conduct cleaning of painting equipment and tools in a designated area that will not allow run-on of storm water or run-off of spills. The Contractor shall not allow wash water from cleaning of painting equipment and tools into streets, gutters, storm drain or creeks.

b. Water-Based Paint: The Contractor shall remove as much excess paint as possible from brushes, rollers and equipment before starting clean up. To the maximum practicable extent, the Contractor shall dispose of wash water from aqueous cleaning of equipment and tools to the sanitary sewer. Otherwise, the Contractor shall direct wash water onto dirt area and spade in.

c. Oil-Based Paint: The Contractor shall remove as much excess paint as possible from brushes, rollers and equipment before starting clean up. To the maximum practicable extent, the Contractor shall filter paint thinner and solvents for re-use. The Contractor shall dispose of waste thinner and solvent and sludge from cleaning of equipment and tools and hazardous waste, as described in Section A.2.c above.

d. Material/Waste Management: The Contractor shall store paint, solvents, chemicals and waste materials in compliance with the District's Hazardous Materials Storage Regulations and all applicable State and Federal regulations. The Contractor shall store these materials in a designated area which will not allow run-on of storm water of run-off of spills. The Contractor shall dispose of excess thinners, solvents, oil and water-based paint as hazardous waste. The Contractor shall dispose of dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths in the trash.

7. Earthwork

a. The Contractor shall maximize the control of erosion and sediment by using the BMP's for erosion and sedimentation in the California Storm Water Best Management Practice Handbook - Construction Activity and as noted in the Erosion and Sediment Control Plan.

END OF SECTION 01 57 23

**SECTION 12 93 00**
**PART 1 - GENERAL**

1.1 SCOPE

A. Furnish and install all site furnishings, including but not necessarily limited to, stone benches, and basketball standards.

1.2 ACCEPTANCE: Prior to the purchase of the items and within five days of the award of the contract, the Contractor shall supply the District's Representative with samples of the finishes for approval by the District. No materials for this section shall be purchased until such approval is granted.

1.3 CERTIFICATION: Delivery schedules shall be verified and certified in writing to the District's Representative within ten days after the project commences.

1.4 SUBMITTALS: Submit catalog information for items:

A. Stone benches
B. Basketball standard

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Stone Benches: 2' wide x 2' deep x 7' long Gold granite bench with polished top and natural split sides. Available through Lyngso Garden, (650) 364-1730

B. Basketball Standard: Shall be "Single Curved Basketball Post" model #12154, "Rectangular Fiberglass basketball backboard" model #0910TA10BM, and "Basketball goal ring" model #600N. Available through LA Steelcraft, 1975 Lincoln Ave. Pasadena, CA 91103, (626) 798-7401.

**PART 3 - EXECUTION**

3.1 LAYOUT: Prior to commencing installation, Contractor shall stake layout and request a review by the District's Representative to determine adjustments on site from locations shown on drawings.

3.2 INSTALLATION:

A. All site accessories shall be installed per manufacturer's specifications.

END OF SECTION 12 93 00

**SECTION 31 20 00**
**PART 1 - GENERAL**

1.1 SCOPE

A. Perform all rough grading work as shown and specified including, but not necessarily limited to, site grading for concrete and decomposed granite pavement, landscaped areas, including subgrade compaction.

1.2 STANDARDS

A. Unless otherwise shown or specified, all materials and methods shall conform to the most current Section 19 Earthwork of the State of California, Department of Transportation, Standard Specifications (DTSS) as they reasonably apply to this work, except for measurement and payment requirements.

1.3 QUALITY CONTROL

A. Submit one-gallon sample of proposed fill material for testing and review by the Geotechnical Engineer at least two weeks prior to proposed use on site. No material is to be used unless approved by the Geotechnical Engineer retained by the District.

B. All excavation, placement and compaction of fill and preparation of subgrade shall be reviewed by the Geotechnical Engineer retained by the District. Contractor shall schedule work and notify District and Geotechnical Engineer three working days in advance of each portion of grading operations for their review, testing and approval. The Contractor shall cooperate with the District in performing these tests. All tests indicating conformance to project requirements shall be paid for by the District. Costs of retesting and re-inspection required as the result of inadequate, insufficient, or incomplete work by the Contractor shall be deducted from the contract amount.

C. Compaction Test Method: Where referred to in these specifications, "compaction" or "relative compaction" shall mean the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material as determined by ASTM D-1557-02e1.

D. The Contractor shall provide compaction testing as required to confirm compliance with these specifications and drawings. All costs of such testing will be borne by the District, except as specified below.

E. Should the results of any required test fail to meet the requirements of the Specifications, then then Contractor shall furnish new samples of new materials, as directed by the District, and additional tests shall be made at the Contractor’s expense until the test results are found to meet the requirements of the documents.

F. Geotechnical Engineer shall be present during all site clearing and grading operations to test and to observe earthwork construction. This representative shall be notified at least two working days prior to commencement of any grading operations to allow for discussion and planning with the earthwork, underground and paving contractors.

1.4 LAYOUT AND GRADING CONTROL

A. Grade the site to the tolerances shown. Vertical control is established by the benchmark indicated on the drawings.

B. The Contractor shall engage the services of a District-approved Land Surveyor licensed in California to lay out the work. This surveyor shall certify that the completed work is done in a manner that the District can check for conformance as the work progresses.

C. Tolerances: Site grading shall be to the elevations shown on the Drawings, plus or minus 0.1 foot vertically.

D. Dewatering: No soil shall be compacted during periods of rain or when the ground is not drained of all free water. Soil that has been stockpiled and wetted by rain or by any other cause shall not be compacted until completely drained and until the moisture content is within the limits approved by the District.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Existing material may be used for fill after removal of all debris, and after being moisture-conditioned, if it meets the criteria in paragraph B below.

B. Soil imported to the site and used for compacted fill shall be free of perishable organic material, and shall meet the following requirements:

1. Physical: 100% passing 4 inch size, 10 to 75% passing the No. 200 sieve. Plasticity Index of 12 maximum when tested in accordance with ASTM D 4318-75.
2. Chemical: Salinity Limit (ECe) saturation extract of 4.0 sodium (SAR) limit of less than 8.0.
3. Boron: Saturation extract concentration less than 1.0 ppm.

C. Minor quantities of material not meeting the above gradation may be mixed and blended with other on-site material if the resulting mixture conforms to the specifications. If the quantity of material not in conformance with the specifications becomes excessive in the opinion of the Geotechnical Engineer, it shall be removed from the site.

D. Topsoil: See Landscape Soil Preparation Section 32 91 00 for topsoil requirements.

**PART 3 - EXECUTION**

3.1 STRIPPING AND STOCKPILING OF NATIVE TOPSOIL

A. All vegetation including the top one to two inches of roots shall be removed from areas to be graded. The remaining six to twelve inches of topsoil shall be stripped and stockpiled in sufficient quantities as required to provide a 6 inch layer of topsoil in all planting areas.

3.2 ROUGH GRADING

A. Prior to commencement of site grading work the Contractor shall notify the District's Representative that the site has been cleared. The District's Representative shall have sufficient time to review the site. Site grading shall not commence until the District's Representative has completed review of the site and the District has given approval to proceed.

B. Perform all cut and fill required to bring the site to the grades indicated, with proper allowances for finish materials such as paving and base. Prior to placing new fill the exposed ground surface should be scarified to a depth of six inches (or greater as indicated on plans), brought to near optimum moisture content and compacted. Areas to be planted shall be compacted to 85 percent and areas to be paved shall be compacted to at least 90 percent relative compaction as determined from ASTM Test Method D 1557-78.

C. Placement and Compaction: Approved fill material shall be placed in layers of six to eight inches in loose thickness and moisture-conditioned as necessary to achieve moisture content suitable for re-compacting. Fill material shall be compacted with equipment of such weight and design as necessary to obtain the specified compaction. Fill shall be compacted to 85 percent relative compaction in areas to be planted and at least 90 percent relative compaction in areas to be paved unless otherwise directed. In pavement areas, the upper 9 inches of subgrade shall have a minimum relative compaction of 95 percent. The resulting subgrade should be smooth and essentially unyielding. In planting areas, the upper 8 inches shall have a minimum relative compaction of 85 percent. Between successive lifts, the fill surface shall be scarified or otherwise processed to obtain satisfactory bonding between the fill lifts.

D. Re-compaction: Where, in the judgment of the District's Representative, the moisture content is not suitable or insufficient compaction has been obtained, the fill shall be reconditioned and/or re-compacted to the specified density prior to placing any additional fill material. The Contractor shall be responsible for placing and compacting approved fill material in accordance with these specifications. If the Contractor fails to meet the compaction requirements, he shall reduce his rate of haul, furnish additional spreading, moisture conditioning and/or compacting equipment or make any other adjustments necessary to produce a satisfactorily compacted fill.

E. All excess material and all material that is unsuitable for paving subbase or finish grading shall be disposed of off site at Contractor's expense and includes all testing and fees required by the disposal site.

F. Where any marked or unmarked utility lines or other underground obstruction or piping may be encountered within the work area, notify the District or the Agencies or service utility companies having jurisdiction thereof, and take necessary measures to prevent interruption of service (if live). Should such lines or service be damaged, broken, or interrupted through the Contractor's own negligence, those services shall be repaired immediately and restored by him at his own expense. Abandoned lines, meters and boxes, obstructions or piping, shall be removed, plugged or capped in accordance with the requirements and approval of the agencies affected.

G. Rock Removal: All rocks eight cubic inches or larger shall be removed completely from the top 6 inch of subgrade prior to placement of topsoil in all planting areas. (See "Landscape Soil Preparation" for additional requirements.) All rocks not meeting criteria for fill material shall be legally disposed of off-site as the Contractor's own property.

3.3 EROSION CONTROL AND CLEAN-UP

A. Spillage: The Contractor shall prevent spillage when hauling on or adjacent to any public street or highway. In the event that such occurs, the Contractor shall remove all spillage and sweep, wash or otherwise clean such street or highways.

B. Dust Control: The Contractor shall take all precautions needed to prevent a dust nuisance to adjacent public and private properties and to prevent erosion and transportation of soil to adjacent properties due to work under this contract. Any damage so caused by the Contractor's work under this contract shall be corrected or repaired by the Contractor at no cost to the District. In the event the Contractor fails to take such precautions or make such corrections or repairs promptly, the District may take such steps as he may deem necessary and deduct the cost of the same from the monies due to the Contractor.

C. Clean-up: The job site shall be kept neat and clear at all times, with all public walks swept clean at the end of each day, and all materials neatly stored. Upon completion of the work under this Section, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work. Failure to perform such cleanup operations within 48 hours of notice by the District shall be considered adequate grounds for having the work done by others at this subcontractor's expense.

END OF SECTION 31 20 00

**SECTION 31 23 33**
**PART 1 - GENERAL**

1.1 SCOPE

A. Perform all trenching, and backfilling work as shown and specified including, but not necessarily limited to, utility trenches, footings, and irrigation lines.

1.2 STANDARDS

A. Unless otherwise shown or specified, all materials and methods shall conform to Section 19 Earthwork of the State of California, Department of Transportation Standard Specifications (DTSS) as they reasonably apply to this work, except for measurement and payment requirements.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Backfill material shall consist of the same material as specified for general fill under Section 31 20 00 - Earthwork and Grading.

B. General Backfill: Backfill material shall be approved by the District's Representative prior to its use. Excavated material and excess material from site grading may be re-used for backfilling and grading, provided such fill shall be homogeneous, free from rocks, rubbish, organic material, etc., and shall consist of fragments capable of being thoroughly crushed and consolidated into a dense, uniform compact fill, and shall meet the following requirements:

| Sieve Size | Percentage Passing |
|---|---|
| 1 inch | 100 |
| 3/4 inch | 95-100 |
| No. 200 | 10-75 |
| PlastiDistrict index | 12 maximum |

**PART 3 - EXECUTION**

3.1 EXCAVATING AND BACKFILLING FOR TRENCHES

A. Perform all necessary excavation, shoring, pumping and dewatering and backfilling required for the proper laying of all underground pipes and conduits.

B. All piping in ground shall have a minimum cover of 1'-6", except as otherwise shown, and shall be laid in ditches dug true to grade and line, avoiding sharp breaks. Piping shall bear equally over its entire length at bottom of ditch. Rock or unstable material encountered at grade shall be replaced with sand fill to a depth of 6 inches below pipe.

C. Backfill (drainage trenches): 3/4 inch crushed rock.

D. Backfill (non-drainage trenches): Fill trenches with excavated material in 6 inch to 8 inch uncompacted thick layers, compacted to 90% relative density. Backfill shall be moisture-conditioned to near-optimum in accordance with ASTM D 1557-02e1.

E. Backfilling shall be commenced as soon as practical after subsurface work is installed and reviewed by the Engineer.

F. No wood or debris shall be buried in any fill. The fill material shall be non-expansive, meeting the criteria of paragraph 2.1B of Section 31 20 00 – Earthwork and Grading.

G. Provide shoring, excavation pumping and other requirements as necessary at excavations for points of connection.

3.2 STRUCTURAL EXCAVATION AND BACKFILL

A. Structural Excavation: Make all excavation to the grades and elevations shown on the drawings, or to the subgrades required to obtain the finished grades shown thereon. Accurately cut footing trenches. Where footings are to be cut "neat", the trench or excavation width shall be increased by 2 inches from the dimensions shown on the drawings, so as to permit pouring footings against earth banks. If soil type or weather does not permit such excavations, excavate wide enough to permit full forming of footings. If any excavation is made below proper grade, the District shall be immediately notified, and the grade shall be restored in whatever manner the District directs, at no expense to the District. All excavation shall be kept free of standing water until concrete work, paving or backfilling is complete. Shore and brace excavations when required to prevent cave-ins.

B. Foundations from previous structures, underground utilities or other buried structures shall be removed in their entirety and replaced with compacted engineered fill.

C. When zones of soft or saturated soils are encountered at the over-excavated levels during excavation and compaction, deeper excavation shall be required to expose firm soil. This shall be determined in the field by the District's Representative.

3.3 SURPLUS MATERIAL

A. Any excavated material which proves to be unsuitable or which is not required for backfilling shall be removed from the immediate work area and disposed of off-site.

3.4 CLEANUP

A. Upon completion of the work under this Section, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work. Failure to perform such cleanup operations within 48 hours shall be considered adequate grounds for having the work done by others at the Contractor's expense.

END OF SECTION 31 23 33

**SECTION 32 01 90**
**PART 1 - GENERAL**

1.1 SCOPE

A. Work in this section includes the growing and maintenance operations necessary to establish the newly planted turf, shrubs, trees, and other plantings; to provide insect and disease control, and to maintain the irrigation system, and related construction elements.

1.2 SUBMITTALS

A. Soil Testing: Contractor shall collect one, one-quart samples in the turf area and two one-quart samples in the container planting areas of the in-place topsoil 20 days after completion of planting and submit to Waypoint Analytical, Inc. of San Jose, (408) 727-0330, for maintenance period fertilizer recommendation. Test results shall be made available to the District's Representative. Sample shall be a representative composite taken from several planting areas. Cost of soil test shall be paid for by the Contractor.

B. Herbicide/Fungicide/Insecticide: Submit a written recommendation from a State of California appropriately licensed individual along with complete product data from proposed manufacturer, for review by District Inspector and/or District's appropriately licensed individual.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Fertilizer: Used during the course of the maintenance period shall be determined by soils test required under Part 1 of this Section. For bidding purposes only, assume the use of ammonium sulfate (21-0-0) at 5 lbs. per 1000 SF, minimum of two applications.

B. Water: During the course of construction and maintenance period water shall be paid for by the Contractor.

C. Herbicide/Fungicide/Insecticide: Shall be a commercially available chemical recommended for this project and these plantings by a State of California appropriately licensed individual. The licensed individual shall review all planting, including but not limited to seed, sod, groundcovers, shrubs, and trees, the types and extent of soil preparation, the irrigation systems, drainage patterns, and other project characteristics to verify type, compatibility, and recommend the appropriate chemical(s) for use. Contractor shall be responsible for all overspray, spreading, runoff, plant health, and other impacts from the use of the chemical(s).

**PART 3 - EXECUTION**

3.1 TIME LIMITS: The maintenance period shall commence from the date of substantial completion of planting as defined in paragraph 3.6 below, and extend for a 90 day period thereafter, or until the acceptance of Final Completion.

3.2 FERTILIZER APPLICATION: Fertilizer(s) shall be applied per Waypoint Analytical, Inc. recommendations. For bidding purposes, assume initial application to be four weeks after planting and subsequent applications to be at 45-day intervals.

3.3 HERBICIDE APPLICATION: Herbicide shall not be used until all plant material has been planted a minimum of 20-days. All planting areas shall be kept weed-free by non-herbicide methods during this time period. Herbicide shall not be applied to any areas that are or have been seeded. Contractor must apply the material in conformance with the written recommendations of the State appropriately licensed individual.

3.4 BASIC REQUIREMENTS: All planting areas shall be kept weed-free at all times during the maintenance period. All pest and disease control shall be the Contractor's responsibility. All planting areas shall be kept at optimum moisture for plant growth. Settlement of soil and plants and soil erosion shall be repaired and areas replanted as required. Dying or deficient plants shall be replaced as soon as they become apparent.

3.5 DISTRICT'S RESPONSIBILITY: Work installed under this contract that is damaged or stolen prior to Substantial Completion shall be repaired or replaced by the Contractor without cost to the District. After Substantial Completion and through the maintenance period, these damages and similar factors such as extensive litter, abuse and defacement shall be the District's responsibility to repair or replace and shall not

be a part of this contract. No planting shall be guaranteed beyond the maintenance period, except as to conformance to specified species and variety, and except as to conditions specified under "Root Systems" of Landscape Planting, Section 32 93 00.

3.6 SUBSTANTIAL COMPLETION: Shall be deemed as the time all major plantings, including groundcover, are installed, and when all other work is satisfactorily completed (with the exception of minor items to be completed as noted upon a checklist compiled by the District's Representative). Maintenance period shall not commence until work is deemed substantially complete by the District's Representative.

3.7 FINAL REVIEW: Contractor shall request a final review of the project at least five days in advance of the proposed date. Failure to request this notice shall automatically extend the date of completion. The maintenance period will continue until project is deemed complete.

END OF SECTION 32 01 90

**SECTION 32 15 40**
**PART 1 - GENERAL**

1.1 SCOPE

A. Furnish and install all decomposed granite pavement as shown and specified.

1.2 QUALITY CONTROL

A. Standards: Unless otherwise shown or specified, all materials and methods shall conform to the appropriate current sections of:

1. The State of California, Department of Transportation Standard Specifications (DTSS) Section 20-10.
2. Applicable ASTM Specifications as they reasonably apply to this work.

B. Tolerances: Tolerances for subgrade, subbase, and finish grade shall be as specified by DTSS except that Contractor shall deliver the full decomposed granite thickness shown. No combination of high and low tolerances that compromise the section will be permitted.

1.3 SUBMITTALS

A. Soil Sterilant: Submit written recommendation from a State of California appropriately licensed individual along with complete product data from proposed manufacturer, for review by District Inspector and/or District's appropriately licensed individual.

B. Decomposed Granite: A one-quart sample with supplier and source clearly indicated of decomposed granite to be used shall be submitted to the Engineer for approval prior to delivery to the site.

C. Mixing Facilities: Method or supplier source for paving product shall be submitted to the Engineer with sufficient notice so inspection of batching and mixing operations can be made.

D. Reviews: Contractor shall stake and layout all paving areas for review by the Engineer prior to excavation.

E. Samples: The Contractor shall demonstrate to the satisfaction of the Engineer that he or his subcontractor possesses sufficient skills and experience to perform the work in all aspects required. A five-square-foot sample of decomposed granite pavement shall be installed at the site for the Engineer's review and approval. The Contractor shall meet or exceed that quality of work in all subsequent work. Contractor shall be responsible for the removal of the sample at the completion of work.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Soil Sterilant: Shall be a commercially available herbicide material such as "Trifluralin HF", "Treflan", or approved equal, and as recommended for this project by a State of California appropriately licensed individual. The licensed individual shall review the type of construction, soils, base, adjacent plantings, time and season of application, and other project requirements; verify compatibility; and recommend procedures for proper application. Contractor shall be responsible for all overspray, spreading, or runoff of material into adjacent areas. Products listed above are for Contractor's general reference only as these products may not be suitable for all conditions at the site.

B. Decomposed Granite: Decomposed granite, hereafter referred to as "DG", shall be a material with a 3/8" minus gradation, per the following specifications:

| Sieve Size | Percent Passing |
|---|---|
| 3/8" | 100% |
| No. 4 | 85% - 95% |

| | |
|---|---|
| No. 8 | 70% - 80% |
| No. 16 | 50% - 60% |
| No. 30 | 40% - 50% |
| No. 50 | 25% - 35% |
| No. 100 | 15% - 25% |
| No. 20 | 10% - 20% |

Decomposed granite pavement shall be ”California Gold” available from TMT Enterprises (408) 432-9040. The yellow-brown color of decomposed granite is a requirement for this material.

**PART 3 - MIXES**

3.1 INSTALLATION

A. Soil Sterilant: Shall be applied to the subgrade soil of areas to be paved prior to paving operations; uniformly applied per manufacturer's recommendations; minimum rate of 2.5 to 3.0 lbs./1000 square feet and watered with a minimum of 3 gallons/100 square feet. Contractor shall take all precautions necessary to avoid spray onto or runoff into planting areas, play areas, or other surfaces.

B. Immediately prior to placing the decomposed granite, the subgrade shall be moistened. The decomposed granite shall be deposited in such a manner as to minimize the necessity for spotting, picking up, or otherwise shifting the decomposed granite. The decomposed granite shall be leveled by raking and compacted by use of a light roller.

C. Fill in any low spots or cracks with additional decomposed granite.

3.2 GRADES

A. The finish grades of the decomposed granite paving shall conform to the lines and grades on the drawings and allow for drainage.

3.3 CLEAN-UP

A. All waste produced as a result of decomposed granite pavement construction shall be removed from the site and disposed of legally. All excess decomposed granite shall be removed from planting areas.

END OF SECTION 32 15 40

**SECTION 32 84 00**
**PART 1 - GENERAL**

1.1 SCOPE

A. Work in this section includes installation of a complete automatic irrigation system, including excavation for points of connection, trenching, piping, equipment, electrical components, modifications to existing irrigation, and incidentals related thereto.

1.2 QUALITY CONTROL

A. Standards: Unless otherwise shown or specified, all materials and methods shall conform to section 20-3 of the State of California Department of Transportation Standard Specifications (DTSS) as they reasonably apply to this work except for measurement and payment requirements.

B. Reviews: Contractor shall specifically request the following reviews prior to progressing with the work:

1. Layout of system.
2. Points-of-connection excavation.
3. Trenching and pipe assembly.
4. Coverage adjustment of all heads and valve box installation.
5. Operation of system.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Quality: All materials shall be new and the best quality available unless otherwise specified. All materials shall be clearly marked by manufacturer on all material, containers, or certificates of contents for inspection.

B. Plastic Pipe and Fittings: All mainline pipe ¾" – 1-½" in size shall be polyvinyl chloride (PVC) Schedule 40; sizes 2" – 3" shall be Class 315; and sizes 4" and larger shall be Class 200 twin-seal gasketed pipe. Unless otherwise noted, all laterals shall be Class 200 PVC pipe; solvent weld fittings, if used, shall be Schedule 40, or Schedule 80 as called for on details. Solvent for piping shall be as recommended by manufacturer. All pipe shall be clearly labeled with manufacturer type and specification numbers.

C. Control Wire: Type UF, 600 v. insulation, minimum size #14, copper, common to be white, valve control wire to be red or black, U.L. approved for irrigation control use; splices shall be "Scotch-Lok" seal pack, or equal.

D. Valve Boxes: Plastic of type and size indicated; free of all cracks, chips or structural defects. Boxes shall be sized to provide a 4" minimum clearance around the irrigation equipment inside the box, excluding all pipes and fittings.

E. Irrigation Equipment: Refer to drawings. Any desired substitutions require submittals in duplicate for specific written approval.

F. Thread Sealant: Permatex Thread Sealant, part #14H, white in color.

**PART 3 - EXECUTION**

3.1 GRADING: Contractor shall be responsible for installing all irrigation features to their finished grade and at depths indicated. All rough grading shall be completed before trenching commences.

3.2 LAYOUT AND TRENCHING: All features of the irrigation system shall be staked and pipe alignments marked prior to trenching for review by the Engineer.

3.3 BACKFILLING: Do not cover joints until system has been reviewed by the Engineer. Backfill with damaging rocks and debris shall not be permitted. Compact all backfill and eliminate settlement. Previously prepared soil is to be replaced as the top six inches of backfill.

3.4 FABRICATION: Snake pipe from side to side when trench exceeds thirty feet in length. All manifolds shall be neat, orderly, and constructed for ease in maintenance operations. Construct manifolds to allow valve boxes to be parallel to each other and to adjacent walls, walks, curbs, and buildings. Cuts and joints shall be free of burrs, smooth, and minimum in quantity. All pipe above finish grade shall be galvanized unless noted otherwise.

3.5 PIPELINES: All pipelines shown parallel on the drawing may be installed in a common trench. Where pipelines are shown parallel or adjacent to shrub or groundcover areas, they shall be installed in these areas. All changes in depth of pipe shall be accomplished using 45-degree fittings.

3.6 TESTING: Test mainline at 125 psi for six (6) hours. Test and repair as necessary until satisfactory test conditions are obtained.

3.7 CONTROL WIRE: Install control wire in pipe trenches wherever practical. Tape to underside of pipe every ten feet. Loop wire every 20 feet. Splices shall occur in valve boxes only and shall be accomplished utilizing approved connectors. All wire shall be installed below or level with the bottom of adjacent pipes. All wiring above finish grade shall be enclosed in steel conduit. Splices shall be installed in junction boxes.

3.8 ADJUSTMENTS: Adjust all heads for arc, radius, riser height, and distribution for uniform and optimum coverage. Such adjustments shall include nozzle changes without additional cost to the District.

3.9 FINISH GRADE: Unless otherwise noted, all heads shall be set at finish grade and on double or triple swing joints as called for on drawings. The top of all valve boxes shall be flush with finish grade.

3.10 SOIL MANAGEMENT REPORT: Contractor shall prepare and submit a soil management report as required by the State to achieve compliance with mandated water conservation requirements as prescribed in AB 1881. Soil management report shall be submitted to the District.

3.11 CONTROLLER: Contractor shall clearly label and sequence stations for ease in maintenance operations. Station valves to operate as they are located around the site. Fasten controller and wire conduits securely to enclosure with conduit clamps and screws. Contractor shall complete all forms and labels shipped with and/or attached to the controller; attach his own name, address and phone number to the controller via a permanent label; and shall properly execute and file with the District the controller and valve guarantees.

3.12 RECORD DRAWING: Contractor shall regularly update a print of the system and any changes made to the system throughout the project. Features below ground shall be indicated with at least two measurements from surface features such as walks, building, or sprinkler heads. All changes shall be recorded on this plan before trenches are backfilled. The record drawing shall be completed and submitted to the District before final payment shall be made for work installed.

END OF SECTION 32 84 00

**SECTION 32 91 00**
**PART 1 - GENERAL**

1.1 SCOPE

A. Furnish and install all landscape soil preparation as shown and specified, including, but not necessarily limited to, the following: topsoil placement, organic amendment and fertilizer placement, and finish grading.

1.2 QUALITY CONTROL

A. Reviews: Contractor shall specifically request at least two working days in advance the following reviews prior to progressing with the work:

1. Completion of rough grading
2. Verification of amendment incorporation depths
3. Finish grade

B. Certification: Written certificates stating quantity, type, and composition, weight and origin for all amendments and chemicals shall be delivered to the District's Representative before the material is used on the site.

C. Soil Samples: Contractor shall provide a one-quart sample of the native topsoil to Waypoint Analytical, Inc. of San Jose, (408) 727-0330, for their testing for conformance to this specification. No material shall be delivered to the site, graded on-site, or otherwise modified until the District's Representative approves the material. All testing costs shall be paid for by the Contractor. Contractor shall allow for sufficient time for such testing prior to construction. Testing costs for the initial samples and costs for any additional samples due to non-compliance shall be paid for by the Contractor.

D. Amendment Samples: Contractor shall provide a one-quart sample of each proposed amendment to Waypoint Analytical, Inc. of San Jose, (408) 727-0330, for their testing for conformance to this specification. No material shall be delivered to the site until the District's Representative approves the samples. Testing costs shall be paid for by the Contractor.

E. Planting Areas: All areas to be planted, whether in sod, container stock, or otherwise, are defined as planting areas in these documents.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Native Topsoil: Shall be the existing surface layer of soil on site. This layer typically will be a different color and texture than the subsoil, and may be of varying thicknesses. The Contractor shall be responsible for reviewing the area limits and depths of native topsoil on site with the District's Representative.

B. Fertilizer: Shall be determined from soils analysis results. See section 3.4 A.

C. Organic Amendment: Shall BFI super-humus compost.

1. BFI Super Humus Compost shall conform to:

Gradation: A minimum of 90% of the material by weight shall pass a 1/2" screen. Material passing the 1/2" screen shall meet the following criteria.

| percent passing | sieve designation |
|---|---|
| 85-100 | 9.51 mm (3/8") |

| | |
|---|---|
| 50-80 | 2.38 mm (No. 8) |
| 0-40 | 500 micron (No. 35) |

Organic Content: A minimum of 50% based on dry weight and determined by ash method. A minimum of 270 lbs. organic matter per cubic yard of compost.

Carbon to Nitrogen Ratio: Maximum 35:1 if material is claimed to be nitrogen stabilized.

Soluble Salts: Soluble nutrients typically account for most of the salinity levels but sodium should account for less than 25% of the total. To avoid a leaching requirement, the addition of the compost shall result in a final ECe of the amended soil of less than 4.0 ds/m @ 25 degrees C. as determined in a saturation extract. Use the following table to determine the maximum allowable ECe (ds/m of saturation extract) of compost at desired use rate and allowable ECe increase.

Moisture Content: 35-60%.

Contaminants: The compost shall be free of contaminants such as glass, metal and visible plastic.

Maturity: Physical characteristics suggestive of maturity include:

Color: dark brown to black

Odor: acceptable = none, soil like, musty or moldy
unacceptable = sour, ammonia or putrid

Particle Characterization: identifiable wood pieces are acceptable but the balance of material should be soil-like without recognizable grass or leaves.

**PART 3 - EXECUTION**

3.1 LIMITS AND GRADES

A. Grade Review: Prior to commencing soil preparation operations, Contractor shall request a review by the District's Representative to verify specified limits and grades of work completed to date and soil preparation work to commence. Contractor shall complete the rough grading as necessary to round the top and toe of all slopes, providing naturalized contouring to integrate newly graded areas with the natural topography. Finish grading under this section shall be completed in accordance with the grades indicated on the landscape drawings.

3.2 STRIPPING AND STOCKPILING OF EXISTING TOPSOIL

A. Excavation Areas: The native topsoil shall be stripped and stockpiled on-site in sufficient quantities to provide a six-inch layer throughout all planting areas. Topsoil to be stripped and stockpiled shall be taken from the surface layer after all organic litter and foreign debris has been removed and properly disposed.

B. Existing Grade Unchanged: In those areas where grades are not proposed to be modified (areas of no excavation or fill) the native topsoil shall be left in place. All debris, as well as all rocks over 0.75 inches in diameter, shall be removed from the surface of planting areas.

3.3 TOPSOIL PLACEMENT

A. Existing Topsoil to Remain: In those planting areas where native topsoil is to be left in place, cross rip to a depth of ten inches. Then incorporate the amendments to a homogeneously blended soil depth of six inches.

3.4 ORGANIC AMENDMENT AND FERTILIZER INCORPORATION

A. Materials and Rates: Materials determined from the soils test shall be uniformly distributed throughout all irrigated planting areas and incorporated to a homogeneously blended soil depth of six inches. Assume per 1000 square feet:

5 cubic yards nitrogen stabilized organic amendment
7 pounds ammonium sulfate (21-00-00)

3.5 PLANT PITS

A. Plant Pit Preparation: Plant pits shall have their sides and bottoms loosened or otherwise broken to prevent glazed or compacted surfaces, and shall be as shown on the planting detail.

3.6 BACKFILL

A. Backfill Material and Placement: Only unamended soil shall be used beneath the root ball; cultivate bottom of plant pit to improve porosity. Backfill around sides of rootball shall be the amended soil taken from adjacent prepared areas. Spread material excavated from plant pits onto adjacent areas as replacement. Should additional backfill be necessary, a mixture of one-third organic amendment/fertilizer mix and two-thirds topsoil may be used.

3.7 PLANT TABLETS

A. Tablet Quantities: All container plants shall receive plant tablets as follows:

| | |
|---|---|
| one-gallon plants | two 21-gram tablets |
| five-gallon plants | five 21-gram tablets |
| fifteen-gallon plants | twelve 21-gram tablets |
| 24 inch box trees | eighteen 21-gram tablets |

Space the tablets evenly around the root ball halfway up backfill touching side of root ball. District's Representative may require excavation of up to 5% of all plants selected at random for conformance review.

3.8 FINISH GRADING

A. Grading Operations: Contractor shall finish grade all irrigated planting areas unless otherwise noted, and shall remove all rocks and clods over one cubic inch to a depth as shown on the plans to allow for the installation of sod, seed or mulch. All areas shall be smooth and uniformly graded. All erosion damage during the construction period shall be repaired by the Contractor.

END OF SECTION 32 91 00

**SECTION 32 93 00**
**PART 1 - GENERAL**

1.1 SCOPE

A. Furnish and install all sod, container plantings, groundcover, staking, and related work thereto.

1.2 QUALITY CONTROL

A. Reviews: The Contractor shall specifically request the following reviews prior to progressing with the work:

1. Plant material approval
2. Plant layout
3. Finish grade
4. Substantial completion
5. Final completion

1.3 SUBMITTALS

A. Plant Material: Within 10 days after award of contract, Contractor shall submit notice to the District's Representative certifying the quantity and species of plant material ordered, the nursery supplying the material, any plant material unavailable at the time, and proposed plant substitutions. No plants shall be ordered or delivered prior to written acceptance by the District's Representative.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Nomenclature and Labels: Plant botanical names shall conform to "Standardized Plant Names", second edition, and secondly, "A Checklist of Woody Ornamental Plants of California", Manual 32, University of California. All plants of each clone, species, and cultivar shall be delivered to the site labeled with their full botanical names. Every plant species shall be labeled with no less than one label for every ten plants of a species.

B. Quality: Minimum quality of all plant material shall conform to prevailing published specifications of the California Association of Nurserymen and the American Association of Nurserymen's American Standard for Nursery Stock unless otherwise indicated. Additional specifications shall be indicated on the drawings.

C. Quantities: The quantities shown on the plant list and in labels are for the District's Representative's use and are not to be construed as the complete and accurate limits of the contract. Contractor shall furnish and install all plants shown schematically on the drawings. Any unlabelled plants shall be considered as the smaller size shown for that type on the drawings.

D. Root Systems: All container-grown stock shall be grown in its container for at least six months prior to its planting. Contractor shall allow one percent of the quantity of plants for removal and inspection. Any plant material, within one year following the final acceptance of the project, determined by the District's Representative to be defective, restricted, declining or otherwise deficient due to abnormal root growth, shall be replaced by Contractor to the equal condition of adjacent plants at the time of replacement.

E. Trees: All trees shall have straight trunks of uniform taper, larger at the bottom. Trunks shall be free of damaged bark, with all minor abrasions and cuts showing healing tissue. Sucker basal growth and sucker lateral growth shall be removed and treated to eliminate resprouting. Normal lower side branching shall remain. Trees unable to stand upright without support shall be rejected.

F. Health: Foliage roots and stems of all plants shall be of vigorous health and normal habit of growth for its species. All plants shall be free of all diseases, insect stages, burns, or disfiguring characteristics.

G. Untrue Species: All plant material, within two years following the final acceptance of the project, determined by the District's Representative to be untrue to the species, clone, and/or variety specified, shall be replaced by the Contractor, to the equal condition of adjacent plants at the time of replacement.

H. Sod/Lawn: Shall be minimum 95% purity and 85% germination. Inert matter shall not exceed 2.0% nor weed content 0.00%, with no noxious weeds. Sod type shall be as indicated on the drawings. Sod shall have a well developed root structure sufficiently mature so that it will hold together when held by one end of the roll. Yellowing, brown, diseased, dried, or pest infested sod shall be rejected. Soil thickness of the sod shall be 1/4 inch to 5/8 inch thick excluding top-growth and thatch; top-growth shall be uniformly mowed to 1-1/2 inch to 2 inches for bluegrasses and ryegrasses with excess clippings and surface debris removed; size of rolls or slabs shall be consistent to the suppliers standard length and width and is not to vary by more than 2% in either dimension.

**PART 3 - EXECUTION**

3.1 GENERAL

A. Plant Material Approvals: Before planting operations commence, all or a representative sampling of plant material shall be reviewed at the site by the District's Representative. Defective plants installed without such review shall be removed from the site upon request by the District's Representative and an acceptable plant substituted in its place.

B. Layout: Only those plants to be planted in any single day shall be laid out. Locations of all plants shall be reviewed prior to planting. Plants installed without this review shall be transplanted as directed by the District's Representative.

C. Protection of Plants: Contractor shall maintain all plant material in a healthy growing condition prior to and during planting operations. Contractor shall be responsible for vandalism, theft and damage to plant material until the commencement of the maintenance period.

D. Root Systems: Contractor shall be responsible for inspection of all root systems on plant materials. Inspection shall include, but not be limited to, checking for rootbound stock, encircling roots at the perimeter of the container, girdling roots at the top surface of the rootball, and other defective root conditions. Such inspections shall include the complete removal of soil from one percent of plant material containers, or at least one plant from each nursery and each plant type. Contractor shall cut defective or potentially defective girdling, rootbound, and encircling roots and spread the root system into the surrounding backfill. Plants with excessively defective root systems shall be rejected by the Contractor.

E. Pruning: Contractor shall do no pruning without the specific approval of the District's Representative. Plants pruned without approval shall be replaced by the Contractor, if required.

F. Basins: Construct basins as necessary to water plants. Remove basins from all plants under a permanent irrigation system prior to final inspection and finish grade the planting area. Basins for plants to be hand-watered shall remain in place. Basin bottoms shall drain to berm away from plant stem.

G. Staking: All trees shall be staked as drawn with stakes driven securely into existing soil aligned with the trunk and perpendicular to the direction of the prevailing winds. A minimum of two figure-eight wire and rubber tree ties required per stake.

H. Plant Pits, Backfill and Finish Grading: See Soil Preparation Section 32 91 00 for materials and installation requirements.

I. Cleanup: After completion of all operations, Contractor shall remove all trash, excess soil and other debris. All walks and pavement shall be swept and washed clean, leaving the entire area in a neat, orderly condition.

J. Sod Installation: Finish grade to smooth even surface allowing for sod thickness at pavement and other structures to leave the sod one-half inch below the finish grade of adjacent structures. The

soil surface shall be sufficiently firm to resist impressions over one-quarter inch deep, and shall be lightly rolled until meeting this firmness. The top six to eight inches of soil shall be watered until this zone has an optimum moisture content for root growth.

Sod shall be laid in rows with staggered ends neatly and tightly butted on all edges. Sod shall be protected from wind and sun exposure during storage with a maximum storage period of twenty-four hours. No overlap, gaps, ripples, or other uneven pavement will be accepted. Contractor shall lightly roll all sod after installation to insure optimum contact with the soil. Trimming and cutting around structures shall be completed with sharp tools and carefully fitted so the final appearance is a solid continuous turf.

END OF SECTION 32 93 00