

PROJECT

**INDEPENDENCE PLAZA
ALAMEDA, CALIFORNIA**

Landscape Specifications

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PROJECT DESCRIPTION

The Independence Plaza Project is a 4.8 acre residential site with 186 senior citizen units located at 703,705,707,709 and 711 Atlantic Avenue, Alameda CA 94501. The design calls for replacement of two in-ground lagoons with fountains and the surrounding landscaping (consisting of shrubs, groundcover, and turf areas) with dry creek-bed features, 2 new self-contained fountain/water features, and a Bay-Friendly Certified Landscape featuring native and drought tolerant shrubs and ground covers, as well as removal and replacement of several existing trees on the site. The majority of the existing trees on the site will be protected in place and are to remain. A new high efficiency irrigation system using drip and bubblers will also be installed as part of the project.

The scope of the project shall include the interior courtyard areas (phase 1) as well as the parking lot landscape areas (phase 2). The scope of the work shall not include the recently completed landscaped area adjacent to the north parking lot bounded by Neptune Park and Webster Street, as well as areas adjacent to the office building at 701 Atlantic Avenue, and at the Southwest corner of the property, bounded by Atlantic Avenue and Webster Street. Please refer to project site plans for locations.

**SECTION 01002
MEASUREMENT AND PAYMENT**

PART 1 - GENERAL

1.01 SUMMARY

- A. Measurement and Payment for this project will be in accordance of Section 9 of the Standard Specifications and as modified in these technical provisions.

PART 2 - UNITS OF MEASURE

2.01 BONDING AND MOBILIZATION

- A. All work under this section shall be paid for at the lump sum price bid for “Bonding and Mobilization” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.02 DUST CONTROL

- A. All work under this section shall be paid for at the contract price bid for items most closely associated with the work and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions. No other compensation will be allowed.

2.03 NOISE CONTROL

- A. All work under this section shall be paid for at the contract for items most closely associated with the work and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions. No other compensation will be allowed.

2.04 TRAFFIC CONTROL

- A. All work under this section shall be paid for at the contract for items most closely associated with the work and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions. No other compensation will be allowed.

2.05 STAKING & LAYOUT

- A. The lump sum price bid for “Staking & Layout” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in placing, removing, storing, and maintaining, as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.06 DEMOLITIONS REMOVALS OR ABANDONMENTS

- A. Payment for “Demolitions Removals or Abandonments” shall be paid for at the lump sum price paid for “Clearing and Grubbing” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.07 CLEARING, GRUBBING AND TREE PRESERVATION

- A. Payment for “Clearing and Grubbing” shall be paid for at the lump sum price paid for “Clearing and Grubbing” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in clearing, grubbing, tree protection, pruning and dust alleviation, shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.08 EROSION CONTROL

- A. The lump sum price bid for “Erosion Control” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in placing, removing, storing, maintaining as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.09 WATER SYSTEMS

- A. The lump sum price bid for Water System shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in furnishing and installation of water meter, sterilization and testing, utility earthwork, dust alleviation complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.
- B. Payment shall be made at the contract unit price bid per linear foot of pipe for PVC potable water line and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for all work involved in furnishing and installation of water lines, fittings, valves, sterilization, testing, utility earthwork, dust alleviation complete in place as shown on the plans, as specified in the standard specifications and these special provisions.

2.10 STORM DRAIN SYSTEM

- A. Measurement for payment of HDPE, reinforced concrete and PVC pipe shall be actual number of linear feet of pipe as measured in the field along the centerline of the pipe.
- B. Payment shall be made at the contract unit price bid per linear foot of pipe most closely associated with “Storm Drain Pipe” size and type; and shall include full compensation for excavation, trenching, shoring, pipe installation to grade, bedding, backfill, and furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in “Storm Drain Pipe”, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.
- C. Payment shall be made at the contract unit price bid for “Storm Drain Manholes” and shall include full compensation for excavation, trenching, shoring, bedding, backfill, and furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in “Storm Drain Manholes”, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.
- D. Payment shall be made at the contract unit price bid for item most closely associated with “Catch Basin / Drain Inlets”, “Area Drains for 12” SD and Smaller”, “Area Drains for 8” SD and Smaller” and shall include full compensation for excavation, trenching, shoring, bedding, backfill, and furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in said items complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.11 SANITARY SEWER SYSTEM

- A. Payment shall be made for “Sanitary Sewer System” at the contract bid price most closely associated with “Sanitary Sewer Connections”, “Sanitary Sewer Lateral”, “Cleanouts to Grade”, “Monitoring Manhole” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in sanitary sewers complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.12 PAVEMENTS

- A. The contract unit price bid for “Pavements” and shall include full compensation for concrete “Pavement”, furnishing all labor, materials, tools, equipment, incidentals and performing all operations necessary to complete the work as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and shall be considered as included in the contract price bid per ton for “Pavement” and no other compensation shall be made therefor, complete in place.
- B. The contractor shall retain concrete slips indicating tonnage of concrete delivered to the job site for payment.

2.13 IRRIGATION SYSTEM

- A. The lump sum price bid for “Irrigation System” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.14 SITE FURNISHINGS AND ACCESSORIES

- A. The contract unit price for the actual quantity of each item installed, and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for providing and installing all site elements as shown on the plans and as specified in these specifications under the direction of the Alameda Housing Authority. Payment shall only be made for installed elements as approved by the Alameda Housing Authority.
- B. The Site Elements shall be measured as follows:
 - 1. Benches shall be per each
 - 2. Fountain shall be per each

2.15 LANDSCAPE SOIL PREPARATION

- A. Payment for “Landscape Soil Preparation” shall be paid for at the square foot price paid for “Landscape Soil Preparation” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.16 LANDSCAPE PLANTING

- A. Payment for “Landscape Planting” shall be paid for at the contract unit price most closely associated with “Tree 24” Box”, “Tree 15 Gallon”, Tree, 2” Caliper”, “ Tree 1-1/2” Caliper”, “Plant Materials, 5 Gallon”, Plant Materials, 1 Gallon, ”, “Plant Materials, 8” pots”, ”, “Perennials and Annual Color 4” pots”, “Bark Mulch”, “Turf”, “Root Control Barrier” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.17 LANDSCAPE MAINTENANCE

- A. The lump sum price bid for “Landscape Maintenance” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.18 SITE CONCRETE WORK

- A. Payment for “Site Concrete Work” shall be paid for at the contract unit price most closely associated with “4 inch Standard Concrete”, “6 inch Standard Concrete”, “4 inch Toned and Textured Concrete”, “6 inch Toned and Textured Concrete”, “Curb” or “Curb and Gutter” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.19 JOINT SEALERS

- A. The payment for “Joint Sealers” shall be paid for at the lump sum price paid for “Restroom & Concession Building” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.20 ELECTRICAL GENERAL REQUIREMENTS

- A. All Work under this section shall be paid for at the lump sum price paid for all electrical items and shall include full compensation for licenses, fees, permits, furnishing all labor, materials, tools, equipment and incidentals and for doing all work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

2.21 BASIC CONSTRUCTION MATERIALS AND METHODS

- A. The lump sum price bid for “Basic Construction Materials and Methods” shall be paid for at the lump sum price paid for “Miscellaneous Electrical Construction” and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions.

END OF SECTION 01002

SECTION 01350

BAY-FRIENDLY LANDSCAPING REQUIREMENTS

PART 3 - GENERAL

3.01 1.1 SCOPE

- A. Section Includes: General requirements to comply with and obtain Bay-Friendly Rated Landscape status. The landscape and site development in this project is to achieve a Bay-Friendly Rated Landscape status by incorporating the required practices and achieving the minimum score on the Bay-Friendly Scorecard for Commercial and Civic Landscapes. Bay-Friendly credits as identified on the attached preliminary scorecard (to be reviewed and finalized) for this project have bearing on the Contractor's scope of work.

- B. Bay-Friendly Landscaping (BFL) is a holistic approach to the design, construction and maintenance of the landscape in order to support the integrity of one of California's most magnificent ecosystems, the San Francisco Bay watershed. The BFL Program is based upon seven inter-relating principles, including:
 - 1. Landscaping Locally
 - 2. Landscape for Less to the Landfill
 - 3. Nurture the Soil
 - 4. Conserve Water
 - 5. Conserve Energy
 - 6. Protect Water & Air Quality
 - 7. Create Wildlife Habitat

- C. Related Sections:
 - 02020 – Clearing and Demolition
 - 02870 – Site Furnishings and Accessories
 - 02920 – Soil Preparation
 - 02950 – Landscape Planting
 - 02970 – Standard Maintenance

1.2 REFERENCES

- A. Bay-Friendly Scorecard for Commercial and Civic Landscapes for this project (see www.BayFriendly.org)

APPENDIX B

- B. Bay-Friendly Rating Manual for Civic and Commercial Landscapes: serves as a guide in describing the requirements and verification procedures for each practice in the scorecard.
- C. Bay-Friendly Maintenance Specifications: serves as a reference document to provide language as needed to improve the environmental standards of ongoing landscape maintenance contracts.
- D. Bay-Friendly Landscape Guidelines: fully describes the seven Bay-Friendly principles, offering 55 practices in sustainable landscape design, construction, and maintenance.
- E. Additional Bay-Friendly resources found at www.BayFriendly.org

1.3 SUBMITTALS

- A. BFL submittals are required to verify compliance with the BFL scorecard and must be submitted in addition to project submittals. If a submitted item is identical to that submitted to comply with other project requirements submit duplicate copies in a separate BFL submittal. (On the submittal list below, the numbers such as "C.7.a.i" references the numbering of practices on the BFL Scorecard for Civic and Commercial Landscapes.) Submit the following:
 - 1. C.1.a. Submit soils analysis report and accompanying recommendations from the accredited soil laboratory.
 - 2. C.6.a. Submit tags or receipts for mulch and sheet mulching materials indicating the amount purchased/delivered and/or submit photos of removed trees being chipped for use as mulch on site.
 - 3. C.7.a i and ii- Submit Soil analysis and/or tags or receipts for compost indicating the amount of compost delivered/ purchased.
 - 4. C.7.a.iii- Submit tags or receipts showing compost is purchased from a processor that participates in US Composting Council's Standard Testing Assurance Program.
 - 5. C.8.a- Submit tags or receipts for all sheet mulching layers, and/or photo documentation of weed barrier layer.
 - 6. C.9.a Submit tags or receipts of purchased compost, and/or compost socks indicating amounts and that the compost is supplied from a participant in the US Composting Council's STA program.
 - 7. D.1.a- Submit tags or receipts showing source (salvaged or FSC) and/or recycled content of materials.
 - 8. D.1.b- Submit tags or receipts showing recycled aggregate percentage.
 - 9. D.1.c- Submit tags or receipts showing flyash or slag percentage in concrete mix.

APPENDIX B

10. D.1.d Submit tags or receipts showing quantity, supplier and feedstock of compost and/or mulch.
11. D.2.a,b,c- Submit Pre Construction Debris Recovery Plan in the planning stages of construction and submit Post Construction Debris Recovery Plan and documentation of results (i.e. hauler facility gate tags, builders waste tabulation supplied by local waste authority) and diversion rate from the C&D facility.
12. D.a.- Submit cut sheets for all stone indicating sources and/or submit cut sheets for non-hardscape materials indicating where they were produced.
13. F.2.a Submit the make and model of the irrigation controller.
14. F.3.a- Submit receipt of installation of water meter from the water supplier or manufacturer cut sheets for submeter.

1.4 SUBSTITUTIONS

- A. Notify Alameda Housing Authority and Landscape Architect when Contractor wishes to substitute materials, equipment or products that may affect BFL certification.
- B. Contractor shall provide sufficient technical data and supporting information to verify that the proposed substitution is in compliance with the applicable Bay-Friendly credit(s) and practice(s), as described in the BFL Rating Manual for Civic and Commercial Landscapes.
- C. Refer to the general provisions of the contract regarding substitution requirements and procedures.

PART 4 - PRODUCTS

- 2.1 Refer to the plans and specs.

END OF SECTION 01350

SECTION 02110
TREE PRESERVATION AND PRUNING

PART 5 - GENERAL

5.01 WORK INCLUDED

- A. Preservation of trees, care, and pruning of trees to remain in place.
- B. Trimming of tree (limbs and tree roots) as may be required to construct the improvements.
- C. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

5.02 JOB CONDITIONS

- A. The Contractor will be held responsible for any damage to trees or other plants, which are to remain during construction, including limb or branch breakage, tearing of bark along trunk or excessive root damage. Large roots greater than 6" in diameter and 12" below ground level shall not be cut without the Alameda Housing Authority's approval.

5.03 QUALIFICATION

- A. All tree pruning and removal performed shall be executed by a company having, in full-time employment, an Arborist certified by the Western Chapter of the International Society of Arboriculture. Certification must be verified, and the Arborist must be directly responsible for decisions made, and should visit the work sites daily when trimming of trees and roots is to be performed.
- B. Pruning shall be performed to the standards of the International Society of Arborists Pruning guidelines, and to ANSI A-300.
- C. Tree pruning shall not occur without first securing a pruning permit. Permit applications shall be submitted to Alameda Housing Authority.
- D. Tree removal shall not occur without first securing a tree Removal Permit. For regulations on size description, application procedure and fees, the Contractor shall contact the Alameda Housing Authority.

5.04 APPLICABLE PUBLICATIONS

- A. Trees and Building Sites: Official Publication of the International Society of Arboriculture.

- B. Arboriculture: The care of trees and shrubs by Dr. Richard Harris

PART 6 - PRODUCTS

None

PART 7 - EXECUTION

7.01 TREE PROTECTION

- A. At sites where the excavation has taken place near trees to remain, and many living roots remain exposed to the air, the Contractor shall cover the exposed roots within 2 hours with sand, soil, moist burlap or other means acceptable to the Alameda Housing Authority.
- B. Construction materials, debris, and supplies shall not be stored within the drip line or protective fencing area under any tree.
- C. Vehicles shall not be parked within the drip line or protective fencing area.
- D. Woodchips or another cushioning surface material approved by the Alameda Housing Authority shall be placed over areas where roots are present and construction traffic occurs.
- E. Where called for on the plans, place fences or other approved protective barriers around trees to be saved.

7.02 TREE PRUNING

- A. Tree pruning shall be performed to balance the crown and eliminate hazards. The main work performed shall be to reduce the sail effect through thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs and sucker growth. Limbs shall be pruned back to an appropriate lateral branch.
- B. All final cuts shall be made at the outer edge of the branch collar. The pruning work shall be performed in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards
- C. The Contractor shall be responsible for the preservation of all public and private property. Pruning includes the cutting of limbs, cleanup, removal and disposal of cuttings and debris. Elm logs must be properly disposed of per State Quarantine. Work shall be performed by a two-person crew with one climber, one ground person, a dumping chipper truck and chipper, and any other necessary saws, lines, tools and safety equipment. The work area shall have appropriate cones and signs for safe pedestrian and vehicle traffic.

7.03 ROOT PRUNING

- A. Tree roots greater than 3” in diameter and less than 12” below ground level shall not be cut without approval of the Alameda Housing Authority.
- B. Roots shall be cut clearly, as far from the trunk of the tree as possible. Root pruning shall be to a depth of 18”.
- C. Root pruning shall be performed using a Vermeer Root Cutting Machine. Alternate equipment or techniques must be approved by the Alameda Housing Authority.
- D. Root pruning shall be completed prior to base or subgrade preparation, or to any excavation adjacent to the tree.

END SECTION 02110

**SECTION 02810
IRRIGATION SYSTEM**

PART 8 - GENERAL

8.01 RELATED DOCUMENTS

- A. The General and Supplementary Conditions and General Requirements apply to the work herein specified.

8.02 DESCRIPTION

- A. Contractor shall furnish all labor, tools, equipment, product, materials and transportation and perform all operations necessary to properly execute and complete all work in accordance with the Drawings and these Specifications. The intent is to accomplish the work of installing an irrigation system, which will operate in an optimum manner. This intention is to be met foregoing any deficiency in setting a complete detailed description of the work to be done.
- B. Related Work Specified Elsewhere:
 - 1. Section 02210: Earthwork and Site Grading
 - 2. Section 02900: Landscape Planting
 - 3. Division 15: Mechanical
 - 4. Division 16: Electrical

8.03 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. ASTM: American Society for Testing and Materials
 - a. D1785: Standard Specification for polyvinyl chloride (PVC) plastic pipe, Class 200, Class 315.
 - b. D2446: Standard Specification for polyvinyl chloride (PVC) plastic pipe fittings, Schedule 40 and Schedule 80.
 - 2. NSF: National Sanitation Foundation
- B. Drawings:
 - 1. For purposes of clarity and legibility, drawings are essentially diagrammatic to the extent that many offsets, bend, unions, special fittings, and exact locations of items are not indicated, unless specifically dimensioned.
 - 2. Exact routing of piping, etc., shall be governed by structural conditions, obstructions. Contractor shall make use of data in Contract Documents.
 - 3. The contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that unknown obstructions, grade difference or discrepancies in area dimensions exist that might not have been

considered in engineering. Such obstructions or differences shall be brought to the attention of the irrigation consultant. In the event this notification is not performed, the contractor shall assume full responsibility for any revision necessary.

8.04 VISIT TO THE SITE

- A. The contractor shall visit the construction site and shall take all measurements and obtain any other information as may be necessary for a complete and conclusive bid.

8.05 SUBMITTALS

- A. Substitutions: Prior to installation, any proposed substitution from the plans or these specifications is to be forwarded, in writing, to the irrigation consultant for approval.
- B. Record Drawings: Provide record drawings as follows:
 - 1. The contractor shall maintain in good order in the field office one complete set of prints of all sprinkler drawings, which form a part of this contract. In the event any work is not installed as indicated on the drawings, such work shall be indicated and dimensioned accurately on record drawings as changes occur. Dimension from two permanent points of reference, building corner, sidewalk, road intersections, etc., the location of the following items.
 - a. Connection to existing water lines
 - b. Connection of existing electrical power
 - c. Routing of pressure lines (dimension max. 100 feet lone along routing)
 - d. Electrical control valves
 - e. Routing of control wires
 - f. Quick-coupling valves
 - g. Underground stub-outs
 - h. Other related equipment as directed by the irrigation consultant
 - 2. Upon completion of the work, obtain reproducible mylar from the landscape architect and neatly correct the plans (to be done by a competent draftsperson) to show the as-built conditions. After the as-builts are reviewed and approved by the irrigation consultant, obtain reduced copies of "as-built" mylar (8-1/2" x 11" sheets or to the smallest readable size), and laminate with weather proofing coating.
- C. Operation and Maintenance Manuals:
 - 1. Prior to the final inspection of the irrigation system, furnish two (2) individually bound Service Manuals to the owner. The manuals shall contain the following:
 - a. Index sheet indicating the contractor's name, address, and phone number.
 - b. A copy of the completed guarantee-following the form in these specifications.
 - c. Certificate of insurance verifying coverage for completed operations.
 - d. List of equipment with names, addresses and telephone numbers of all local manufacturers' representatives.

- e. Copies of equipment warranties and certificates.
 - f. Complete operating and maintenance instructions of all equipment including exploded drawings and spare parts list.
 - 2. Provide instruction in operation of system to owner's personnel.
- D. Hardware Items:
- 1. Two (2) sets of matching Q.C.V. keys and hose swivels.
 - 2. Two (2) keys to each controller box.
 - 3. Two (2) sets of any special tool required for the maintenance of each type of component used in the sprinkler system.

8.06 PROJECT COORDINATION

- A. Sequencing and Scheduling: Coordinate irrigation installation work with the installation of other site improvements, including utility installation work and landscape installation.
- B. Environmental Conditions: Site work such as trenching and backfilling shall not be performed during wet, muddy or frozen conditions.
- C. Rules and Regulations: All work and materials shall be in full accordance with the latest rules and regulations of the National Electric Code; the Uniform Plumbing Code and other applicable state or local laws or regulations. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes.
 - 1. The contractor shall furnish any additional material and labor required to comply with these rules and regulations, though the work is not mentioned in these particular specifications or shown on the drawings.
 - 2. When the specifications call for materials or construction of a better quality or larger size than required by the above mentioned rules and regulations, the provision of the specifications shall take precedence over the requirements of the said rules and regulations.
- D. Safety:
 - 1. The contractor shall erect and maintain barricades, guards, warning signs, and lights as required for the protection of the public and workmen.
 - 2. All work shall be performed in a safe manner. All regulations, all OSHA requirements and other authoritative agencies shall be followed.
 - 3. Prior to commencement of work, locate all underground utilities so that proper precautions may be taken not to damage such improvements.
- E. Maintaining Traffic: It is the responsibility of the contractor to ensure adequate protection and controls for pedestrian and vehicular traffic in the vicinity of the project areas. The contractor shall provide all signs, barricades, flagmen, etc., necessary to meet all traffic requirements for this project at his own expense.
- F. Permits and Fees: The contractor shall obtain all permits and pay all required fees to any governmental agency having jurisdiction over the work and arrange for inspections specified by local ordinances during the course of construction as necessary.

PART 9 - PRODUCTS

9.01 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handling of pipe and fittings: The contractor is cautioned to exercise care in handling, loading, unloading, and storing of pipe and fittings. Cracks can occur from sudden impact. Protect all plastic products from excessive exposure to sunlight. Any section of pipe that has been dented or damaged shall be removed from the site and, if installed, shall be replaced with new undamaged piping.

9.02 MATERIALS

- A. PVC Pressure main line piping and fittings:
 - 1. Pressure main line piping: 1120-Schedule 40 PVC plastic pipe. Fittings shall be Schedule 40 PVC solvent weld.
 - 2. Pipe shall be made from NSF approved, Type 1, Grade 1 PVC compound conforming ASTM D1784. All pipe shall meet requirements set forth in ASTM D2441 with an appropriate standard dimension ratio.
 - 3. All PVC pipe shall bear the following markings:
 - a. Manufacturer's name
 - b. Nominal pipe size
 - c. Schedule or class
 - d. Pressure rating in PSI
 - e. NSF
 - f. Date of extrusion
 - 4. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.D. schedule and NSF seal of approval.
- B. PVC non-pressure lateral line piping and fittings:
 - 1. Non-pressure buried lateral line piping shall be PVC 1120 Schedule 40 with Schedule 40 PVC solvent-weld fittings.
 - 2. Pipe shall be made from NSF approved, Type 1, Grade 1 PVC compound conforming to ASTM D1784. All pipe shall meet requirements set forth in ASTM D2441 with an appropriate standard dimension ratio.
 - 3. Except as heretofore specified, all requirements for non-pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure main line pipe and fittings as specified.
- C. Sleeving and Conduit: Material shall be polyvinyl chloride (PVC) Schedule 40, type 1120/1220 with solvent weld.
- D. PVC Schedule 80 nipples shall be used with molded threads. Machined threaded nipples will not be allowed.
- E. Connections between supply line and R.C.V.'s shall be as specified or detailed on the drawings.

- F. Riser assemblies shall be as specified or detailed on the drawings.
- G. Controller, valves, backflow preventer, bubblers and drip line shall be specified and/or detailed on the drawings.
- H. Control wires shall be UL approved copper single strand type UF direct burial 14 gauge red in color. Common wires shall be UL approved copper single strand type UF direct burial 12 gauge white in color. Spare control wires shall be UL approved copper single strand type UF direct burial 14 gauge blue in color.
- I. Miscellaneous installation materials:
 - 1. Solvent weld joints shall be of make and type approved by manufacturer (s) of pipe and fittings. Solvent cement shall be a proper consistency throughout use. Mixing thinner with solvent will not be allowed.
 - 2. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe.
 - 3. Wire connections shall be 3M #3750 Scotch Lok Seal Packs, Spears DS-400 seal packs or approved equal.
- J. Control or Valve Boxes:
 - 1. Provide 14 x 19 inch plastic rectangular control valve box with bolt down plastic lid for each electrical control valve. Hot stamp or permanently engrave irrigation controller station number onto valve box lid.
 - 2. For gate valves and quick coupling valves: Use 9-inch plastic round box. Add extensions for gate valves as required. Hot stamp or permanently engrave "GV" for gate valve and "QCV" for quick coupler valves onto valve box lid.

PART 10 - EXECUTION

10.01 GENERAL

- A. Irrigation system shall be installed in accordance with all applicable local and state codes and ordinances by a licensed landscape contractor.
- B. Follow manufacturer's direction except as shown or specified.

10.02 INSPECTION OF SITE CONDITIONS

- A. All scaled dimensions are approximate. The contractor shall check and verify all size dimensions prior to proceeding with work under this Section.
- B. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities, which are caused by his operations or neglect. Check existing utilities drawings for existing utility locations.

- C. Coordinate installation of irrigation materials, including pipe, so there shall be no interference with utilities or other construction or difficulty in planting trees, shrubs, and groundcover.
- D. Avoid trenching within drip line of trees where possible. When not possible, all damaged roots over 1-1/2" in diameter shall be cut leaving clean face, seal cuts with tree seal, then immediately install pipe, wire, etc., refill trench and soak.
- E. The contractor shall carefully check all grades to satisfy himself that he may safely proceed before starting work on the irrigation installation.
- F. Coordinate the work of this Section with that of other Sections for the location of pipe sleeves through walls, paving, etc.
- G. The landscape contractor shall verify water pressure and available gallonage prior to construction. If deficiencies are noted that will hinder the system's performance, notify the irrigation consultant for directions to correct deficiencies.
- H. The design is diagrammatic. All piping, valves, etc., shown within paved areas is design clarification only. Install piping, valves, etc., in planting areas.

10.03 PREPARATION - LAYOUT OF WORK

- A. Prior to installation, stake out all pressure supply lines and notify irrigation consultant for reviewing layout when area or grade differences or obstructions are not as indicated on the plans.

10.04 INSTALLATION

- A. Trenching:
 - 1. Dig trench straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout shown on drawings.
 - 2. Provide for a minimum of 18 inches cover for all pressure supply lines.
 - 3. Provide for a minimum cover of 12 inches for all non-pressure lines to spray heads.
 - 4. Provide for a minimum cover of 18 inches for all control wiring.
 - 5. Provide a minimum cover of 24 inches over pipe and wiring under asphalt pavement.
- B. Backfilling:
 - 1. Do not backfill trenches until all required tests are performed. Carefully backfill trenches with specified excavated materials for backfilling, consisting of earth, loam, sandy clay, sand, or other acceptable materials, free from large clods of earth or stones. Backfill shall be mechanically compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill shall conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.
 - 2. Surround pipe with sand in rocky terrain with a 4" bed and 4" cover.

APPENDIX B

3. Backfill in proposed asphalt paved areas shall have sand covering pipe with a 6" minimum depth.
- C. Pipe and Fitting Installation and Connections:
1. Provide each bubbler and drip line assembly with its own outlet.
 2. Install all assemblies specified herein in accordance with details shown on drawings.
 3. Thoroughly clean PVC pipe and fittings of dirt, dust and moisture before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.
 4. On PVC to metal connections, the contractor shall work the metal connections first. Use Teflon tape, or equal, on all threaded PVC to PVC, and on all treaded PVC to metal joints.
 5. Install piping under existing walks by boring whenever possible. Where any cutting or breaking of sidewalks and/or concrete is necessary, it shall be done and replaced at no increase in contract sum. Obtain permission to cut or break sidewalks and/or concrete from the architect before proceeding. No hydraulic driving will be permitted under concrete paving.
- D. Line clearance:
1. All lines shall have a minimum clearance of 6 inches from each other and from lines of other trades. Parallel lines shall not be installed directly over one another.
- E. Automatic Controller:
1. Locate controller in general location shown with exact placement to be determined at job site by the irrigation consultant or Owner's Representative.
 2. Connect control lines to controller in sequential arrangement according to assigned identification number on plans.
 3. Controller shall be properly grounded per Article 250 of the National Electric Code and conform to local regulations.
- F. Remote Control Valves:
1. Install where shown on drawings. When grouped together, allow at least 12 inches between valves. Install each remote control valve in a separate valve box. Locate boxes in groundcover areas whenever possible, and a minimum of 12 inches from paving or curbs.
- G. Control Wiring:
1. Make connections between existing automatic controls and electrical control valves with direct burial copper wire. Common wires shall be white. Install in accordance with valve manufacturer's specifications and wire charts.
 2. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible. When not possible, house wiring in PVC conduit as described in "Sleeving and Conduit" section.
 3. Where more than one wire is placed in a trench the wiring shall be taped together at intervals of 10 feet.

4. Provide 2-foot expansion coil at each wire connection and at least every 100 feet of wire length on runs more than 100 feet in length. Form expansion coils by wrapping at least five turns of wire around a 1-inch diameter pipe, then withdrawing the pipe.
 5. Splicing on runs shall be placed in junction boxes. Indicate all splices on the As-Built Plan.
 6. All below grade wire connections shall be made by using heat shrink tubing with interwall sealer following manufacturers recommended procedures.
 7. Install separate common wire for each controller. Install extra control wires of a different color through all valve boxes to controller as indicated in irrigation notes on plans.
- H. Sleeving and Conduit:
1. Control wiring passing under proposed concrete and paving shall pass through Schedule 40 PVC conduit-size as required.
 2. Sleeving and conduit shall extend six (6") beyond farthest edge of pavement or curb.
 3. Provide removable non-decaying plug at ends of sleeves and conduits to prevent entrance of earth.
- I. Flushing of System:
1. After all new pipelines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of bubblers and drip lines, open control valves and use a full head of water to flush out the system.
 2. Install bubblers and drip line only after flushing of system has been accomplished.
- J. Bubblers:
1. Install bubblers and drip line as shown and detailed on Drawings.
 2. Spacing of drip line shall not exceed maximum shown on Drawings. In no case shall spacing exceed maximum recommended by manufacturer.

10.05 FIELD QUALITY CONTROL

- A. Adjustment of the System:
1. If it is determined that adjustments in the irrigation equipment will provide proper and more adequate coverage, the contractor shall make such adjustments prior to planting.
- B. Testing of Irrigation System:
1. Notify the irrigation consultant at least three (3) days in advance of testing.
 2. Test to be done at no extra cost to the Alameda Housing Authority.
 3. Center load piping with sufficient amount of backfill to prevent arching or slipping under pressure. No fitting shall be covered.
 4. Testing of pressure main lines shall occur prior to installation of electrical control valves.

5. Pressure Test for Solvent Weld Pipes:
 - a. Apply test for solvent welded plastic pipe after joints have cured at least 24 hours or more it manufacturer of solvent cement requires.
 - b. Test supply lines per ASTM-F690 as follows: (1) add water slowly to pipe to avoid water hammer damage, (2) bleed system to insure all air is out of pipes, (3) pressurize system to 125 psi for two (2) hours. Visually inspect for leaks while system is holding pressure constant. Note – use hydraulic pump or other safe method – do not use air compressor.
 - c. Test sprinkler lines at line pressure and visually inspect for leaks.
6. When the irrigation system is completed, perform a coverage test to determine if the water coverage for planting areas is complete and adequate. Furnish all materials and perform all work required to correct any inadequacies of coverage due to deviation from drawings. This test shall be accomplished before any plant material is planted.
7. Upon completion of each phase of work, test and adjust entire system to meet site requirements.

10.06 CLEAN-UP

- A. Clean-up shall be made as each portion of work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be broomed or washed down, and any damage sustained on the work of others shall be repaired to original conditions.

10.07 FINAL REVIEW PRIOR TO ACCEPTANCE

- A. Operate each system in its entirety at time of final review. Any items deemed not acceptable shall be reworked to the satisfaction of the irrigation consultant.
- B. Final review shall take place after submission of all specified lists, record drawings, and manuals.

10.08 INSPECTIONS

- A. The contractor shall be subject to inspections at any and all times by authorized representatives of the Alameda Housing Authority.

10.09 MAINTENANCE

- A. The contractor is to make all repairs and maintain the entire irrigation system from the time of installation through the landscape maintenance period.

10.10 WARRANTY

- A. The contractor shall repair or replace any irrigation found to be defective in material or workmanship within the entire irrigation system from the time of installation through the warranty period, as outlined in the Guarantee form provided in these specifications.

GUARANTEE FOR IRRIGATION SYSTEM

WE HEREBY GUARANTEE THAT THE IRRIGATION SYSTEM WE HAVE FURNISHED AND INSTALLED IS FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP, AND THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. WE AGREE TO REPAIR OR REPLACE ANY DEFECTS IN MATERIAL OR WORKMANSHIP, ANY SETTling OF BACKFILLED TRENCHES, WHICH MAY DEVELOP DURING THE PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE AND ALSO TO REPAIR OR REPLACE ANY DAMAGE CAUSED BY ANY DEFECTS IN THE IRRIGATION SYSTEM OR RESULTING FROM THE REPAIRING OR REPLACING OF SUCH DEFECTS AT NO ADDITIONAL COST TO THE OWNER. ORDINARY WEAR AND TEAR, UNUSUAL ABUSE OR NEGLIGENCE ARE EXCEPTED. WE SHALL MAKE SUCH REPAIRS OR REPLACEMENTS, INCLUDING COMPLETE RESTORATION OF ALL DAMAGED PLANTING, PAVING, OR OTHER IMPROVEMENTS OF ANY KIND, WITHIN A REASONABLE TIME, AS DETERMINED BY THE OWNER, AFTER RECEIPT OF WRITTEN NOTICE. IN THE EVENT OF OUR FAILURE TO MAKE SUCH REPAIRS OR REPLACEMENTS WITHIN A REASONABLE TIME AFTER RECEIPT OF WRITTEN NOTICE FROM THE OWNER, WE AUTHORIZE THE OWNER TO PROCEED TO HAVE SAID REPAIRS OR REPLACEMENTS MADE AT OUR EXPENSE AND WE WILL PAY THE COSTS AND CHARGES THEREFORE UPON DEMAND.

PROJECT:

LOCATION:

CONTRACTOR:

LICENSE NO:

ADDRESS:

TELEPHONE:

GUARANTEE TO:

DATE OF ACCEPTANCE:

AUTHORIZED REPRESENTATIVE:

END OF SECTION 02810

SECTION 02870
SITE FURNISHINGS AND ACCESSORIES

PART 11 - GENERAL

11.01 SUMMARY

- A. The General Conditions and all other Contract Documents for this project are complementary and applicable to this Section of the Specifications.
- B. Work Included: Furnish all labor, materials, equipment and services necessary to provide and construct, repair, or install the site elements, complete in place, as shown and specified, including, but not limited to:
 - 1. Benches
- C. Related Work:
 - 1. Section 03340: Site Concrete Work

11.02 SUBMITTALS

- A. Submit shop drawings where noted to the Alameda Housing Authority for approval before installing any manufactured items. Plans shall include dimensions, color, finish, structural design (custom items), and connection details.
- B. Submit catalog cuts, samples and manufacturers literature of all manufactured items in this section to the Alameda Housing Authority for approval before installation.
 - 1. Provide color samples, brushouts, or charts for all items. Final colors to be selected by Alameda Housing Authority and a sample submitted for approval.

PART 12 - PRODUCTS

12.01 MANUFACTURED ITEMS

- A. Benches: per plans
- B. Fountains: Per plans

12.02 NON-MANUFACTURED ITEMS

12.03 MISCELLANEOUS MATERIALS

- A. All other materials for site elements shall be as specified on the plans and these specifications.

PART 13 - EXECUTION

13.01 INSTALLATION

- A. Examination: Verify that conditions are satisfactory for installation of each item of site elements. If unsatisfactory conditions exist, do not begin installation until such conditions have been corrected.
- B. Picnic Tables, Benches and Trash Receptacles
 - 1. Install directly onto concrete. Use manufacturer's recommended adhesive.

13.02 GUARANTEE

- A. At completion of project, Contractor shall provide Alameda Housing Authority with written guarantee from each manufacturer identifying the nature of warranty for each product component.
- B. Contractor shall provide Alameda Housing Authority with two (2) bound maintenance manuals identifying each piece of equipment on manufacturer's recommended maintenance program including, but not limited to, daily, weekly, and monthly check lists.

END OF SECTION 02870

SECTION 02900
BAY FRIENDLY LANDSCAPE PLANTING

PART 14 - GENERAL

14.01 RELATED DOCUMENTS

- A. The General and Supplementary Conditions and General Requirements apply to the work herein specified.
- B. Bay Friendly Landscape Maintenance Specifications. See Appendix A.

14.02 DESCRIPTION

- A. Work to be Included:
 - 1. Furnish and place topsoil, fertilizer, organic materials, and all other materials incidental to planting work. Furnish all plant materials (trees, shrubs, ground covers, and plant labels). Furnish all labor, equipment and materials necessary for the installation of plant materials according to these Specifications.
 - 2. Conformance with Bay Friendly Scorecard and Grant Requirements: Please refer to the attached Bay Friendly Plan Review and Scorecard. Bay Friendly grant funding is based on a project's score in the Bay Friendly Plan Review and Scorecard. In order to maintain the awarded Bay Friendly grant funding, this project must successfully comply with all of the following specifications and requirements.
- B. Related Work Described Elsewhere:
 - 1. Section 02810 – Irrigation System: Irrigation system shall be installed and operative before beginning planting operation.
 - 2. Appendix A: Bay Friendly Landscape Maintenance Specifications.

14.03 RELATED DOCUMENTS

- A. The General and Supplementary Conditions and General Requirements apply to the work herein specified.
- B. References:
 - 1. Manufacturer's recommendations.
 - 2. Nomenclature: "Western Garden Book," Sunset Publishing Co., Menlo Park, CA, 2001 edition or current edition.
 - 3. Plant Material Standards: "American Standard for Nursery Stock", American Nursery & Landscape Association, 1000 Vermont Avenue, NW Suite 300, Washington, DC, or current edition.

4. Staking and guying procedures: "Staking Landscape Trees", University of California Extension, Publication #2576, or current publication.
5. Pruning procedures: "Tree Pruning Guidelines", International Society of Arboriculture, Savoy, IL, 1995 or current edition, conforms to ANSI-A300-1995 tree pruning specifications and guidelines.

14.04 REQUIREMENTS OF REGULATORY AGENCIES

- A. Perform work in accordance with all applicable laws, codes, and regulations required by the City of Alameda and any other authorities having jurisdiction over such work. Provide for all inspections and permits required by Federal, State, and local authorities in furnishing, transporting, and installing materials.
- B. Conform to all federal, state, district, local codes and requirements for installation, preparation and maintenance as referenced herein and as applicable.
- C. Certificates of inspection required by law for transportation shall accompany invoice for each shipment of plants. File copies of certificates with Alameda Housing Authority 's Representative after acceptance of material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at project site.

14.05 QUALITY ASSURANCE

- A. Personnel: All planting work shall be performed by personnel familiar with planting procedures under the supervision of a qualified foreman with 5 years of landscape installation experiences on projects of equal size and scope.
- B. Codes and Standards: Nursery stock shall meet the standards of the current edition of the "Agricultural Code of California" and the "Regulations of the Director of Agriculture Pertaining to Nursery Stock" as to grading and quality. They shall be true to type and name in accordance with "Standardized Plant Names", Second Edition.
- C. Plants shall be subject to inspection and approval of the Owner's Representative at place of growth or upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Wherever the terms "approve", "approval" or "approved" are used herein they mean approval of the Owner's Representative in writing.
- D. Plant Certification: All plants must meet specifications of Federal, State, and County laws requiring inspection for plant disease and insect infestations. Inspection certifications required by law shall accompany each shipment, invoice and order for stock.

14.06 SUBSTITUTIONS

- A. Substitutions: Substitutions of plant materials will not be permitted unless authorized in writing by Alameda Housing Authority 's Representative. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest

equivalent size or variety with corresponding adjustment of Contract price. Such proof shall be substantiated and submitted in writing to Alameda Housing Authority 's Representative at least 30 days prior to start of work under this Section. These provisions shall not relieve Contractor of the responsibility of obtaining specified materials in advance if special growing conditions or other arrangements must be made in order to supply specified materials.

- B. The Alameda Housing Authority's Representative reserves the right to require the Contractor to replace at the Contractor's cost any plants which the Contractor has installed without the Alameda Housing Authority 's Representative's approval.

14.07 SUBMITTALS

- A. Furnish 6 copies of manufacturers' literature for the following items:
 - 1. Organic Fertilizer
 - 2. Mulch
 - 3. Tree Support Poles
 - 4. Erosion Control Netting
 - 5. Root Control Barrier
 - 6. Certificates of Inspection
- B. Provide analysis from an approved testing laboratory for:
 - 1. Existing Topsoil
 - 2. Import Topsoil
 - 3. Organic Compost – soil amendment
 - 4. Bioswale material
 - 5. Provide agricultural analysis from an approved testing laboratory including pH, salinity, sodium hazard, boron hazard, lime content, organic matter, soil texture and available nutrient levels per Section 2.01-A.
- C. Submit one (1) quart sample each of mulch and organic compost.
- D. Foreman’s Qualification Statement
- E. All submittal data shall be forwarded in a single package to the Owner’s Representative within 60 days of award of the contract.
- F. Contractor shall provide delivery tickets with quantities listed for soil amendment.

14.08 SAMPLES AND TESTS

- A. Alameda Housing Authority’s Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request by Alameda Housing Authority’s Representative. Rejected materials shall be immediately removed from the site at Contractor's expense. Cost of testing of materials not meeting specifications shall be paid by Contractor.

14.09 SELECTION AND TAGGING OF PLANT MATERIAL

- A. Plants shall be subject to inspection and approval by Alameda Housing Authority's Representative at place of growth if the Alameda Housing Authority's Representative so chooses, and upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Submit written request for inspection of plant material at place of growth to Alameda Housing Authority's Representative. Written request shall state the place of growth and quantity of plants to be inspected. Alameda Housing Authority's Representative reserves right to refuse inspection at this time if, in his judgment, a sufficient quantity of plants is not available for inspection.

14.10 JOB CONDITIONS

- A. Delivery:
 - 1. Deliver standard products to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade mark and conformance to state law. Odorous materials shall not be brought to the site until they are to be used. Deliver quantities necessary to complete the work shown on the Drawings. Any discrepancy in the quantities given on the plans shall not entitle Contractor to additional remuneration.
 - 2. Deliver Bulk materials to the job site and store to deter mixing with other bulk materials, saturation by rainwater, contamination and/or contact with other deleterious substances or materials.
 - 3. Deliver plants with identification labels.
 - a. Labels should state correct name and size.
 - b. Use durable, water-proof labels with water resistant ink that will remain legible for at least 60 days.
 - 4. Protect plant materials during transport to prevent damage to rootball or desiccation of leaves.
 - 5. Remove unacceptable plant materials immediately from job site.
- B. Storage:
 - 1. Contractor shall maintain the plant material properly between delivery and planting. This includes protection from animals and vandals, proper watering, and feeding if necessary.
 - 2. Shade plants shall be stored in the shade, and sun plants shall be stored in the sun.
- C. Timing: Under no circumstances shall any work be performed if the temperature exceeds 90 degrees or is below 40 degrees. No planting shall be done with the soil saturated with water.

PART 15 - PRODUCTS

15.01 SOIL AMENDMENTS

- A. The organic amendments, and fertilizer rates and quantities listed in Part Three are to be used for bid basis only. Contractor shall arrange and pay for testing by an accredited soils laboratory approved by the Alameda Housing Authority. Test the existing site soil after demolition and rough grading operations are completed. Take samples from three site locations to be selected by Alameda Housing Authority's Representative. Mark location of each sample on field set plan for reference and label each sample. Adjust the quantities of soil amendments and fertilizer per soil lab written report recommendation. Submit lab report and any proposed soil amendments and cost adjustments to Alameda Housing Authority for written approval. After review and written approval by the Alameda Housing Authority, amend the soils according to said laboratory's recommendations. The approved soils laboratory recommendations shall be considered a part of this specification.

The base bid shall include cost of testing site soil and organic amendments noted in this spec section. Adjustments to project costs resulting from the soil report recommendation shall be submitted as a modification to the base bid.

- B. Imported Recycled Organic Topsoil: Topsoil shall be tested by an approved soils laboratory for compatibility with existing on-site soils and fertility. Contractor shall submit soil laboratory's analysis and amendment recommendations. Imported topsoil shall be subject to inspection by Alameda Housing Authority's Representative at the project site. Remove rejected topsoil immediately at Contractor's expense.
- C. Organic Compost and Non-Synthetic Fertilizers: Feedstock shall be no longer recognizable. Compost shall contain fairly uniform particle size, no weed sprouts. Submit a nutrient analysis and testing data from a third party or soil lab, such as the STA Seal of Testing Assurance by the US Composting Council; or OMRI, Organic Materials Review Institute. Compost shall be Super Humus Compost, available from BFI Organics: 408-945-2836, or approved equal. Organic Compost shall meet the following criteria:
1. Particle size: 100% passing a 1" screen or smaller
 2. Salt Concentration: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should be test. <2.5 mmhos/cm preferred for soil/compost blend.
 3. Feedstock Materials shall be specified and include at one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
 4. Nutrient Content: provide analysis detailing nutrient content including N-P-K; Ca; Mg; S; and Bo. Nitrogen content 1% or above preferred.
 5. Trace Contaminants Metals (Lead, Mercury, etc.). Product must meet US EPA, 40 CFR 503 regulations.
 6. pH: pH shall be between 5.5 and 8.
 7. Visible Contaminants: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
 8. Moisture Content shall be between 35% - 55% of dry solids.

9. Organic Matter Content: 50% - 60% by dry wt. preferred, 30-70% acceptable.
 10. Carbon and Nitrogen Ratio: C:N < 20:1
 11. Stability/Maturity: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable.
 12. Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.
- D. Non-Synthetic Fertilizer: Synthetic, quick-release fertilizers shall not be permitted. Fertilizers prohibited by OMRI are prohibited in the project. Organic fertilizers as recommended by the soils report.

15.02 RECYCLED TOP MULCH

- A. Pro-Chip Mulch (2 inch grind – all product passes 2 inch screen) or approved equal. Available from: BFI Organics 408-945-2836. Color: dark brown.

15.03 TREE SUPPORT POLES

- A. Peeled, lodge pole pine logs, treated with Chemonite or ACQ or approved equal, clean, smooth, new, and sized as follows:
1. Three inch (3”) diameter by eight (8’) long for trees greater than 8 feet high and 1 inch caliper.

15.04 TIES

- A. Flexible strap, 24 inch minimum length without sharp edges adjacent to trunk, V.I.T. cinch-ti, or approved equal.

15.05 GROUNDCOVERS, TREES, AND SHRUBS

- A. All plant materials shall be nursery grown in accordance with the best known horticulture practices and under climatic conditions similar to those in the locality of the project. Container stock shall have grown in the containers in which delivered for at least six (6) months, but not over two years. No container plants that have cracked or broken balls of earth when taken from container shall be planted except upon special approval by Alameda Housing Authority’s Representative.
- B. Plants shall be vigorous and shall have a normal habit of growth. Plants shall be free of damage by insects, pests, diseases or wind; burns from insecticides or fertilizer; and stunted growth due to lack of water, lack of food, diseases, or other causes. Plants shall be in conformity with the sizes shown on the drawings.
- C. Trees: Unless otherwise specified, tree trunks shall be straight with leader intact, undamaged, and uncut. All old abrasions and cuts are acceptable only if completely callused over.

- D. Quantities: Quantities necessary to complete the work as shown on the drawings shall be furnished.
- E. Root Systems: All shrubs and trees shall have a normal root system. No plants with roots that have encircled themselves will be accepted. In case of any unsatisfactory root system, a total group of plants may be rejected.

15.06 WATER SOURCE

- A. Irrigation Water source shall be provided by the owner. Contractor shall provide transport of additional supply if required.

15.07 ROOT GUARDS

- A. Deep Root Model UB 24-2 or Century Products CP18-2 shall be used on all trees 5' or closer to pavement, utilities, curbs, etc.

PART 16 - EXECUTION

16.01 SURFACE CONDITIONS

- A. Inspections by the Landscape Contractor:
 - 1. Prior to all work in this section, verify grades and carefully inspect the installed work of all other trades. Verify that all such work is complete to the point where the installation may properly commence.
 - 2. In the event of discrepancy, immediately notify the Alameda Housing Authority's Representative. Do not proceed with this installation in areas of discrepancies until all such discrepancies have been fully resolved.
 - 3. Inspect trees, shrubs and ground cover plants for injury, insect infestations, and proper pruning.
 - 4. General contractor shall coordinate rough grading of site to ensure the Landscape Contractor receive all planting areas graded to +0.10 ft. of finish grades shown on the Drawings. Allow for depth of soil amendments and mulch in determining the difference between finished subgrade in groundcover and shrub beds. Verify that subgrades are not compacted. Do not proceed until detrimental conditions are corrected.

16.02 SOIL PREPARATION

- A. The Contractor shall prepare the site for landscaping. In the areas designated for landscaping on the plans, he shall, prior to placing imported material, replacing existing topsoil, or doing any planting clear the areas of weeds, roots, debris, rocks, and underground obstructions, and construction debris to a depth acceptable for planting. Scarify the subgrade to a 6" minimum depth prior to spreading topsoil.

APPENDIX B

- B. The Contractor shall alleviate compacted soils before planting, for all landscaped areas that cannot be protected during construction.
1. Scarification: Scarify all planting areas prior to fine grading in order to ensure relative compaction of 85% or less. Any planting areas which become compacted in excess of 85% due to construction activities shall be thoroughly cross-ripped to the maximum depth feasible to alleviate that condition, taking care to avoid all existing drainage and subsurface utility lines.
- C. Soil shall not be worked when wet, generally between October and April.
- D. A minimum of 1" of quality organic compost is tilled into all planting areas. Quality to be per Soils Test Lab recommendations.
- E. Contractor shall compact 12" of blended imported recycled organic top soil.
- F. Cultivation and Placement of Amendment:
1. In areas to be planted with shrubs cultivate to a depth of 12", unless sheet mulching.
 2. In groundcover areas, cultivate soil to a depth of 8", unless sheet mulching. Incorporate 6 cubic yards per 1000 square feet of organic compost. Prior to planting incorporate to a depth of 6" the following non-synthetic fertilizers, per 1000 square feet:
Organic, non-synthetic fertilizers as recommended by the soils report.
 3. Areas within the driplines of existing trees shall be hand cultivated.
 4. In bioswale area: Top soil to be of the following consistency, 5" per hour percolation rate:
70% Sandy Loam
10% Clay
20% Composted Organic Matter
Terra Vida bioswale mix available from:
TMT Enterprises or approved equal
- G. Soil Mix for Backfill of Shrubs and Trees: The following ingredients shall be tumbled to achieve a homogeneous mix:
- | | |
|-----------------|-------------------|
| Organic compost | 1 acre cubic yard |
| Topsoil | 3 cubic yards |
- Top dress each pot with organic compost, compost tea or other organic fertilizer.
- H. Finish Grading:
1. Finely finish surfaces by raking smoothly and evenly. Remove all exposed, extraneous matter one inch or larger in size to facilitate natural runoff. Drag to smooth surface.
 2. Finish grades will slope to drain, without water pockets or irregularities (humps or hollows). Finish grades will meet all existing controls and shall be 1 ½ inches below adjacent top of paving, curbs, sidewalks and planters, unless otherwise noted on plans. Grades will be of uniform slope between points of fixed elevation. Establish vertical curves or rounding at abrupt changes in slope.

3. All finish grades will be approved by the engineer prior to commencing the planning operations.

16.03 SHRUBS AND TREES

A. Preparation:

1. Stake out location for plants and outline of planting beds on ground and obtain the approval of Alameda Housing Authority's Representative before digging.
2. The Contractor shall protect all utilities, vegetation, and structures during work.
3. Trees shall be located a minimum of 3' from walls, overheads, walks, headers, and other trees within the project. If conflicts arise between size of areas and plans, Contractor shall contact Alameda Housing Authority's Representative for resolution. Failure to make such conflicts known to the Alameda Housing Authority's Representative will result in Contractor's liability to relocate the materials.

B. Excavation:

1. All plant pits shall be dug with vertical walls. The sides and bottoms of all planting pits shall be thoroughly scarified.
2. Holes for one (1) gallon size plants: Twelve (12) inches wider than the can and six (6) inches minimum deeper.
3. Holes for (5) gallon size plants: Twice as wide as the can or root ball, and eight (8) inches deeper than can or root ball.
4. Holes for fifteen (15) gallon size plants or larger: Twice as wide as the can or root ball, and twelve (12) inches deeper than the can or root ball.

C. Planting:

1. Center plant in pit or trench over tamped mound.
2. Face for best effect.
3. Set plant plumb and hold rigidly in position.
4. All plants shall be set in the ground so that the root ball will be flush with the finish grade. All plants that settle below the finish grade within 30 days of acceptance of the work shall be replanted in the proper position. In case a total section of planting area settles, the Contractor shall lift the plants, import additional soil mix, regrade, and replant, at no additional cost to the Alameda Housing Authority.
5. Use soil mix only for backfill. Backfill pit with soil mix in 9" layers and water each layer thoroughly to settle soil. The filled pit shall be flush with surrounding grade when complete.
6. When the plant pit has been approximately one half filled, place organic planting tablets according to the manufacturer's schedule.
7. Apply post-planting organic fertilizer, per soils report.
8. In tree, and shrub areas, mulch area under and between plant pits with 3" layer of Pro-Chip manufactured by BFI Organics or equivalent recycled wood chip mulch.

9. Planting operation for plants in raised concrete planters is same as above except that finish grade of soil mix shall be 1 1/2" below top of planter walls. Planters may be backfilled with excess topsoil up to the depth specified for plant pits above which backfill shall be soil mix.

16.04 GROUNDCOVER AREAS

- A. Planting:
 1. Space plants equally and uniformly at spacing indicated on the Drawings, which are the maximum and in a triangular pattern.
 2. Plant pits shall be sufficiently large so that the root can be freely suspended in the pit. After backfilling the pit, firm the soil so that there will be no air space around the roots.
 3. Apply post-planting organic fertilizer, per soils report.
 4. Mulch all ground cover areas with 3" layer of Pro-Chip manufactured by BFI Organics or equivalent recycled wood chip mulch.

16.05 TREE STAKING

- A. Stake 24" Box trees as indicated on the Drawings.
- B. Tying: Find the proper support height by holding the trunk in one hand and pulling the top to one side and releasing it. The lowest height, at which the trunk will return to the upright position when the top is released, is the height at which to attach tree ties.

16.06 PRUNING

- A. Tree and Shrub: Pruning shall be performed as required to maintain a natural appearance, promote healthy and vigorous growth, and eliminate diseased or damaged growth.
- B. Trees shall be pruned to thin crown and avoid wind damage, eliminate narrow V-shaped branch forks that lack strength, eliminate sucker growth, and maintain a radial branching pattern to avoid crossing branches.
- C. Under no circumstances will stripping of lower branches ("raising-up") of young trees be permitted. Lower branches shall be retained in a "tipped back" or pinched condition with as much foliage as possible to promote caliper trunk growth (tapered trunk).
- D. Major pruning of trees to compensate for root loss or for aesthetic reasons shall be done only with approval of the Alameda Housing Authority's Representative.
- E. Shrubs shall not be clipped into balled or boxed forms, unless such is required by the design and directed by the Alameda Housing Authority's Representative.
- F. All pruning shall be made flush to lateral branches, buds, or trunk. "Stubbing" will not be permitted.

- G. Damage: All cuts over 1" resulting from pruning or wind breakage shall be inspected periodically for insect infestation or disease.

16.07 CLEAN UP

- A. Keep all areas of work clean and neat at all times. Upon completion of planting, all cans, boxes, and other debris that is a part of the planting operation shall be removed from the site.
- B. All pavements shall be washed off, and site shall be left in an absolutely clean condition. All planting areas shall be cultivated and weed free before final inspection. Clean-up operations shall take place throughout the course of work so that walks and drives are clean at all time.

16.08 INSPECTIONS

- A. Notification: The Contractor shall notify the Alameda Housing Authority's Representative a minimum of 72 hours before requiring a visit by the Alameda Housing Authority's Representative or his duly appointed representative to the site.
- B. Check Points: The following shall be considered check points and the Contractor shall only proceed with the work after the Alameda Housing Authority's Representative has visited the site and determined that the work is proceeding satisfactorily.
 - 1. Completion of placement of soil mix and fine grading.
 - 2. When plant material is placed in the configuration shown on the Drawings before planting.
 - 3. A check visit shall be made to begin the maintenance period. At this time the Contractor shall have completed all phases of the Plans and Specifications. Any discrepancies shall be noted at that time and the Contractor shall make appropriate corrections before the acceptance of the work.
 - 4. A conference including the Alameda Housing Authority shall be held at the completion of the work, provided that all deficiencies brought out in the check visit which began the maintenance period have been corrected by this time. The Contractor shall continue to maintain the project at his own expense until all deficiencies have been corrected, at which time the Contractor shall request the Alameda Housing Authority's Representative to visit the site and approve the project as complete. The Alameda Housing Authority's Representative will accept the landscape project in writing. The date of the acceptance letter shall be the first day of the guarantee period.
- C. Should it be determined at the Final Inspection or Final Acceptance visit that any punchlist item is incomplete, any further review of the site will be terminated until all items are guaranteed, in writing, to be complete by the Contractor. The cost of additional site visits by the Alameda Housing Authority's Representative to verify completion of work shall be paid for by the Contractor.

16.09 MAINTENANCE

- A. See Bay Friendly Landscape Maintenance Specification, Appendix A, for additional information, Bay Friendly Specifications shall govern in case of conflict. In particular, Contractor shall utilize Integrated Pest Management (IPM) practices to manage planting.
- B. Contractor shall furnish all labor, material, equipment, and services required to maintain the landscape in a healthy and attractive condition for a period of 60 days.
- C. Maintenance shall include fertilization, watering, insect and disease control (IPM), and weed control using IPM, weekly trash removal, mulching, restaking trees, tightening of guys, resetting plants to proper grades or upright position, and restoration of watering basins. Refer to Bay Friendly Landscape Specifications, Appendix A.
- D. Maintenance period shall not start until all elements of construction, planting, and irrigation for the entire project are complete. Project will not be segmented into maintenance phases, unless specifically authorized in writing by the Alameda Housing Authority 's authorized representative.
- E. The Contractor shall request an inspection to begin the plant maintenance period after all planting and related work has been completed in accordance with the Contract documents. A prime requirement is that all groundcover areas be planted. If such criteria are met to the satisfaction of the Architect, a field notification will be issued to the Contractor to establish the effective beginning date of the period.
- F. The Contractor's maintenance period will be extended if the provisions required within the plans and specifications are not filled.
- G. Watering:
 - 1. All plants shall be kept watered as often as it is necessary to keep them in optimum, vigorous growth. Watering shall be done preferably during the early morning hours. Check soil moisture levels with a soil probe before watering and adjust watering schedule to match weather conditions.
 - 2. Water shall be controlled so that there will be no excessive run-off, ponding, or overwatering. Check and adjust irrigation system on a weekly basis.
 - 3. Root Growth: Periodically the Contractor shall check the progress of the root growth within the back fill area. As the root growth increases beyond the root ball, the frequency of watering shall be reduced so that the roots are encouraged to grow to a lower soil depth. Watering then shall be less frequent, but applications shall be very slow and the Contractor shall assure himself that water does penetrate to the depth of the former plant pit.
 - 4. Replace broken equipment immediately with equal or superior materials.
- H. Spraying:
 - 1. Utilize IPM practices for plant care, as outlined in the Bay Friendly Landscape maintenance specifications. Spraying shall only be performed as a last resort.
 - 2. All shrubs and trees shall be inspected at least twice a month during the growing period to determine the need for spraying to control insect damage, fungus development or any other disease that might be attacking the plants. Preventative

- spraying shall be done only with the approval of the Alameda Housing Authority's Representative.
3. Operators of spray equipment shall take all reasonable precautions to protect themselves, other people and buildings from spray. The Contractor shall have all permits and licenses required for such an operation. Where applicable, dormant spray shall be applied to shrubs and trees during the winter period.
 4. All equipment shall be properly washed before and after use.
 5. No spraying shall take place during windy or gusty days.
- I. Staking and Guying: Stakes and guys shall be inspected a minimum of two times a month to assure that the wires and ties are tight and no damage has occurred to the tree trunk or branches.
- J. Weed Control:
1. Weeds shall be kept under control, preferably either by hand or by IPM methods outlined in the Bay Friendly Landscape maintenance specifications. The application of herbicides shall be as last resort.
 2. All equipment used for herbicides, if utilized, shall be properly cleaned before it is used on this project. Herbicides shall be applied at temperatures recommended by the manufacturers. Herbicides shall not be used during windy or gusty days. All possible precautions shall be taken to protect vegetation which is susceptible to damage from the particular herbicides to be used.
 3. The bases of all plants shall be kept completely free of weeds. Periodically, the base of the trees and shrubs shall be cultivated in order to allow better penetration of water, but such cultivation shall be carefully done in order not to destroy surface roots.
- K. Non-Synthetic Fertilization: Top dress all areas at 45 day intervals from time of planting with organic fertilizer or compost tea as recommended by soils report.
- L. Litter: The Contractor shall remove promptly after pruning, trimming, and weeding or other work required under the contract, all debris generated by his performance of the work. Immediately after working in the areas of public walks, driveways or paved areas, they shall be vacuumed clean with suitable equipment. All areas covered by this contract shall be kept free of the following items: bottles, cans, paper cardboard or metallic items. Common debris and litter shall be disposed of in an appropriate manner.
- M. Pruning: Prune as necessary to remove injured twigs and branches, dead wood, and suckers.
- N. All green waste shall be taken to a certified green waste facility for utilization in organic compost or mulch.

16.10 GUARANTEE AND REPLACEMENT

- A. Guarantee period shall be extended for a period of one year from the date of written acceptance.

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- B. All plants shall be guaranteed to be alive and healthy as determined by the Alameda Housing Authority's Representative at the end of the guarantee period.
- C. The Contractor shall replace, in accordance with the Drawings and Specifications throughout the guarantee period, any plants that die, or in opinion of the Alameda Housing Authority's Representative, are in an unhealthy or unsightly condition, and or have lost their natural shape due to dead branches, excessive pruning, inadequate or improper maintenance, or any other causes due to the Contractor's negligence. The Contractor shall not be held responsible for acts of vandalism occurring after the beginning of the guarantee period.

END OF SECTION 32 93 00

**SECTION 03340
SITE CONCRETE WORK**

PART 17 - GENERAL

17.01 SCOPE

- A. Provide fountain footings, concrete pathways and plaza areas complete and in place, as shown and specified. The work includes but is not limited to:
 - 1. Final subgrade preparation and paving base
 - 2. Concrete curbs, walks, paving, walls, driveways, roadway.
 - 3. Concrete footings for site mechanical, carpentry, and electrical items as shown.

17.02 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Divisions 1 Specifications Sections, apply to this section.
- B. Related Work:
 - 1. Section 02110: Clearing, Grubbing and Demolition
 - 2. Section 02810: Irrigation System

17.03 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the following standards:
 - 1. American Society of Testing and Materials, (ASTM).
 - 2. American Concrete Institute, (ACI).
 - 3. California Building Code (CBC)
 - 4. State Standard Specifications, California Department of Transportation.
 - 5. American National Standards Institute, (ANSI).
 - 6. Bay Area Air Quality Management District, Sandblasting Guidelines.
- B. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, each aggregate from one source and each admixture from the same manufacturer.
- D. Maintain field records of time, date of placing, curing and removal of forms of concrete in each portion of work.
- E. Samples:

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1. Sample for concrete walk: Before ordering material for concrete, provide sample panel, minimum 3' X 3' of each color and finish, using specified materials. Show color, texture, pattern, edging, and joint treatments.
 - a. Where applicable, the approved sample panel may be a portion of the work and remain in place. Location as directed by the Alameda Housing Authority's Representative. Contractor will be required to provide additional panels as necessary, until approved.

17.04 SUBMITTALS

- A. Submit concrete mix designs to Alameda Housing Authority's Representative. Obtain approval before placing concrete.
- B. Product data:
 1. Submit complete materials list of items proposed for the work. Identify materials source.
 2. Submit admixture, curing compound, retarder, and accessory item product data, if used.
 3. Submit material certificates for aggregates, reinforcing, and joint fillers.
- C. Submit concrete delivery tickets. Show the following:
 1. Batch number.
 2. Mix by class or sack content with maximum size aggregate.
 3. Admixtures.
 4. Slump.
 5. Time of loading.
- D. Submit concrete test reports.

17.05 DELIVERY, STORAGE AND HANDLING

- A. Work notification: Notify Alameda Housing Authority's representative at least 24 hours prior to installation of concrete.
- B. Establish and maintain required lines and grade elevations. All concrete shall slope to drain with no ponding of water.
- C. Do not install concrete work over wet, saturated, muddy, or frozen subgrade.
- D. Do not install concrete when air temperature is below 40 degrees F. Use of calcium chloride, salt, or any other admixture to prevent concrete from freezing is prohibited.
- E. When temperatures is between 85 and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when temperatures is above 90 degrees F, reduce mixing and delivery to 60 minutes.
- F. Protect adjacent work.

- G. Provide temporary barricades and warning lights as required for protection of project work and public safety.

PART 18 - PRODUCTS

18.01 FORMWORK

- A. Furnish formwork and form accessories according to ACI 301-10.
- B. Wood or metal formwork shall be of sufficient strength to resist concrete placement pressure and to maintain horizontal and vertical alignment during concrete placement. Provide forms straight, free of defects and distortion, and height equal to full depth of concrete work.
 - 1. Provide 2" nominal thickness, surfaced plank wood forms for straight sections. Use flexible metal, 1" lumber or plywood forms to form radius bends.

18.02 STEEL REINFORCEMENT

- A. Reinforcing steelbar: ASTM A615, A616, or A617, Grade 60, new domestic deformed steel bars.
- B. Welded Wire Fabric: ASTM A185, welded plain cold-drawn steel wire fabric as indicated.
- C. Steel Dowels: ASTM A615

18.03 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type 1, natural color, unless otherwise noted.
- B. Aggregate: Provide ASTM C33 normal weight aggregates, 3/4" maximum size, clean, uncoated crushed stone or gravel coarse aggregate free of materials which cause staining or rust spots; fine aggregate shall be clean natural sand.
- C. Water: Clean, fresh, and potable.

18.04 ADMIXTURES

- A. Calcium Chloride: Do not use calcium chloride in concrete, unless specifically specified by Engineer.
- B. Water-reducing admixture: ASTM C494.
- C. All admixtures, if used, shall conform to C.B.C. Vol. 2, Section 1905A.2. Use of additional admixtures is accepted based upon approval by Engineer.

18.05 CONCRETE MIXES

- A. Provide Class A ready-mixed concrete. Batch mixing at site not acceptable.
 - 1. Site concrete: Use Portland Cement Concrete containing not less than 564 pounds of Portland Cement per cubic yard, with a compressive strength of not less than 3000 p.s.i.
- B. Indicate water added to mix at job site on each delivery ticket. Show quantity of water added. Site water tempered mixes exceeding specified slump range will be rejected as not complying with specification requirements.
- C. Retempering of concrete will not be permitted.

18.06 GLARE REDUCING AGENTS

- A. Lampblack in dry form, in accordance with the requirements of ASTM D209-81 “Standard Specifications for Lampblack”, in proportion $\frac{3}{4}$ of a pound per cubic yard of concrete.
- B. An approved liquid or semi-paste black colorant intended for use integrally in concrete mixes. The proportion required generally from 10 to 40 ounces liquid measure per cubic yard of concrete, may be affected by the colorant used. Curing, in this case, shall be by the pigmented curing compound method.

18.07 ACCESSORIES

- A. Granular base: Class II Aggregate Base, clean and uncoated.
- B. Joint Filler: ASTM D1751, premolded non-extruding asphalt-impregnated fiberboard, thickness indicated.
- C. Curing compound: ASTM C309, non-yellowing, non-staining liquid membrane-forming type containing a fugitive dye. Chlorinated rubber compounds not acceptable for exterior use.
- D. Joint Sealants: Two-component polysulfide or polyurethane elastomeric type complying with Federal Specifications TT-S-00227, self-leveling, designed for foot traffic in pedestrian areas.
- E. Form release agent: Non-staining chemical form release agent free of oils, waxes, and other materials harmful to concrete.
- F. Reveals/Chamfer strips: Shall be plastic or polyvinyl coated for easy release. Available from Barker Steel, www.barker.com, or approved equal.
- G. Provide all stirrups, ties, anchors, shown or required to be cast into precast members.
- H. Bolts, Nuts, and Washers: ASTM A307. Provide hot-dip galvanized fasteners for exterior use. Paint to match adjacent metal work.

- I. Waterproofing at walls shall be Tremco 250-GC, or approved equal.

PART 19 - EXECUTION

19.01 INSPECTION

- A. Examine subgrades and installation conditions. Immediately inform the Alameda Housing Authority 's Representative of any discrepancy between the Drawings and Specifications and actual conditions and secure approval to proceed. Do not start concrete work until unsatisfactory conditions are corrected.

19.02 PREPARATION

- A. Proof roll the subgrade and do all necessary rolling and compacting to obtain firm, even subgrade surface. Fill and consolidate depressed areas. Remove uncompactable materials, replace with clean fill and compact to 90% of the maximum dry density in accordance with ASTM D1557-70.
- B. Provide minimum 4" depth of compacted base material at walks. Compact base to 95% of the maximum dry density in accordance with ASTM D1557-70
- C. Remove loose material and debris from base surface before placing concrete.
- D. Install, align, and level forms. Stake and brace forms in place. Maintain following grade and alignment tolerances:
 - 1. Top of form: Maximum 1/8" in 10'-0".
 - 2. Vertical face: Maximum 1/2" in 10'-0".
- E. Coat form surfaces in contact with concrete with form release agent. Clean forms after each use and coat with form release agent as necessary to assure separation from concrete without damage.
- F. Install, set, and build-in work furnished under other specification sections. Provide adequate notification for installation of necessary items.
- G. Install pipe sleeves for irrigation system furnished under Section 02810. Stake location of irrigation sleeves.

19.03 PLACING REINFORCEMENT

- A. Place all reinforcement as shown on the drawings. Place accurately and securely fasten and support reinforcement to prevent displacement before or during pouring. Hang footing bars from forms. Support wire mesh with suitable metal cradles.
- B. Clean, bend and place reinforcement in accordance with current requirements of the ACI Manual of Concrete Practice.

- C. Reinforcement Splices:
Welded wire fabric - one mesh minimum.
Reinforcing bars - 24 bar diameter minimum, except as otherwise noted.

19.04 TESTING

- A. Provide slump test on first load of concrete delivered each day and whenever requested due to changes in consistency or appearance of concrete.

19.05 INSTALLATION

- A. Concrete placement:
 - 1. Comply with ACI 304 "Guide for Measuring, Mixing, Transporting, and Placing Concrete", and as specified.
 - 2. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing. In cold weather comply with ACI 306, "Cold Weather Concreting". In hot weather comply with ACI 305, "Hot Weather Concreting".
 - 3. Moisten base to provide a uniform dampened condition at the time concrete is placed. Verify structures are at required finish elevation and alignment before placing concrete.
 - 4. Place and spread concrete to the full depth of the forms. Use only square-end shovels or concrete rakes for hand-spreading and consolidating operations to prevent segregation of aggregate and dislocation of reinforcement.
 - 5. Place concrete in a continuous operation between expansion joints. Provide construction joints where sections cannot be placed continuously.
 - 6. Place concrete as indicated on the plans in one course, monolith construction, for the full width and depth of concrete work.
 - 7. Strike-off and bull-float concrete after consolidating. Level ridges and fill voids. Check surface with a 10'-0" straightedge. Fill depressions and refloat repaired areas. Darby the concrete surface to provide a smooth level surface ready for finishing.
- B. Joints:
 - 1. Provide expansion joints using premolded joint filler at concrete work abutting curbs, walls, structures, walks, and other fixed objects.
 - a. Expansion joints shall be formed provided at the location and intervals as shown on the plans and details.
 - b. Approved joint material shall be placed with top edge 1/4 inch below the paved surface, and shall be securely held in place to prevent movement. Joint and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression. All edges shall be struck before and after brooming.
 - c. After the curing period, expansion joints shall be carefully cleaned and filled with approved joint sealant to just below adjacent paved surface in

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such a manner as to avoid spilling on paved surfaces or overflow from joint.

- d. Install joint fillers full-width and depth of joint. Recess top edge below finish grade for joint sealants.
- e. Provide joint fillers in single lengths for the full slab width, whenever possible. Fasten joint filler sections together when multiple lengths are required.
- f. Protect the top edge of the joint filler during concrete placement.

2. Score Joints:

- a. Score joints shall be formed in the fresh concrete using a jointer to cut the groove so that a smooth uniform impression is obtained. All joints shall be struck before and after brooming. See plans and details for size and locations.

C. Dowels:

1. All new concrete walkways shall be doweled into new and existing concrete walk ways and curbing. See plans and details for size and location.

D. Finishes:

1. Broom Finish: Shall be obtained by drawing a stiff bristled broom across a floated finish. Direction of brooming to be perpendicular to direction of work or otherwise shown on drawings.
2. Sand Blast Finish:
 - a. Perform in as continuous an operation as possible, utilizing the same work crew to maintain continuity of finish.
 - b. Depth of Cut: Use an abrasive grit of the proper type and gradation to expose the aggregate and surrounding matrix surfaces to match approved sample panel.
 - 1) Light Cut: Approx. 1/16 inch depth.
 - 2) Medium Cut: Approx. 1/8 inch to 3/16 inch depth.
 - 3) Heavy Cut: Approx. 1/2" to 3/4" depth.
 - c. Blast corners and edge patterns carefully, using backup boards, in order to maintain a uniform corner or edge line.
 - d. Use same nozzle, nozzle pressure and blasting technique as used for sample panel.
 - e. Maintain control of abrasive grit and concrete dust in each area of blasting. Clean up and remove all expended abrasive grit, concrete dust, and debris at the end of each day of blasting operations.

E. Curing:

1. Cure concrete with a clear, non-staining liquid membrane-forming compound. Spray apply in accordance with manufacturer's recommended coverage rate. Apply curing compound immediately after completing surface finish.

19.06 TOLERANCES

- A. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"

19.07 PROTECTION

- A. Protect concrete work from damage due to construction and vehicular traffic until Final acceptance. Exclude construction and vehicular traffic from concrete pavements for at least 14 days.
- B. Protection: Protect precast concrete items from chipping, spalling, cracking, or other damage until the Work is accepted by the Alameda Housing Authority.

19.08 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.
- B. Sweep concrete sidewalks and pavement; wash free of stains, discoloration, dirt, and other foreign material immediately prior to final acceptance.

END OF SECTION 03340

DIVISION 16

ELECTRICAL

PART 1 - GENERAL

1.01 CONDITIONS & REQUIREMENTS

- A. Refer to the General Conditions, Supplementary Conditions and Division 1 - General Requirements.

1.02 SCOPE OF WORK

- A. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in Division 16 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation.

Scope of work includes, but not limited to the followings:

- 1. Disconnect and removing of motor starters, controls and associated wiring for existing pumps in the pump vaults being demolished.
 - 2. provide new circuit breakers in existing panels in electrical room and use for new fountains control enclosure.
 - 3. Provide new wiring associated with the new fountains.
 - 4. Provide one “ground rod” with inspection well and cast concrete cover, engraved label “GROUND” at each control enclosure for the new fountain.
- B. Definitions (Applicable to Drawings and Specifications):
 - 1. Above Grade: Not buried in ground and not embedded in concrete slab on grade.
 - 2. Below Grade: Buried in ground or embedded in concrete slab on grade.
 - 3. Concealed: Inside building above grade and located within walls, furred spaces, crawl spaces, attics, above suspended ceilings, etc. In general, any item not visible or directly accessible.
 - 4. Connect: Complete hookup of item with required services, including conduit, wires, and other accessories.
 - 5. Exposed: Either visible or subject to mechanical or weather damage, indoors or outdoors, including areas such as mechanical and storage rooms. In general, any item that is directly accessible without removing panels, walls, ceilings, or other parts of structure.
 - 6. Furnish: Supply and deliver complete.
 - 7. Install: Place, secure, and connect as required to make fully operational.
 - 8. Provide: Furnish and install as defined above; perform work.
 - 9. Underground: Buried in ground, including under building slabs.
 - 10. Use (Verb): Furnish and install as defined above.
 - 11. Wiring: Electrical raceway, conductors, and connections.

1.03 CODE COMPLIANCE

- A. All work and materials shall comply with the latest rules, codes, and regulations, including, but not limited to the following:
 - 1. Occupational Safety and Health Act Standards (OSHA).
 - 2. NFPA #70: National Electric Code (NEC).
 - 3. NFPA #101: Life Safety Code.
 - 4. All other applicable Federal, State and Local laws and regulations.
- B. Code compliance is mandatory. Nothing in these Drawings and Specifications permits work not conforming to these codes. Where work is shown to exceed minimum code requirements, comply with drawings and specifications.
- C. No work shall be concealed until after inspection and approval by proper authorities. If work is concealed without inspection and approval, the Contractor shall be responsible for all work required to open and restore the concealed areas in addition to all required modifications.

1.04 LICENSE, FEES AND PERMITS

- A. Arrange for required inspections and pay all license, permit, and inspection fees.

1.05 CONDITIONS AT SITE

- A. Visit to site is required of all bidders prior to submission of bid. All will be held to have familiarized themselves with all discernible conditions and no extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.
- B. Lines of other services that are damaged as a result of this work shall promptly be repaired at no expense to the Alameda Housing Authority to complete satisfaction of the Alameda Housing Authority.

1.06 DRAWINGS AND SPECIFICATIONS

- A. All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.
- B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural, and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.
- C. Right is reserved to make changes of up to 10' in location of any outlet or equipment prior to roughing-in without increasing contract cost.

1.07 SAFETY AND INDEMNITY

- A. Safety: Refer to General Conditions.

1.08 RECORD DRAWINGS

- A. Contractor shall obtain a complete record set of reproducible transparencies from the Architect. This shall be corrected daily to show all changes from original contract drawings and shall be kept on the job. This set of reproducible, clearly and neatly marked, shall be delivered to the Architect upon completion of the job.

1.09 GUARANTEE

- A. Guarantee the installation free from defects of workmanship and materials for a period of one (1) year after Date of Certificate of Final Payment, and promptly remedy any defects developing during this period, without charge.

1.10 ACCEPTANCE DEMONSTRATION

- A. Upon completion of the work, at a time to be designated by the Alameda Housing Authority, the Contractor shall demonstrate for the Alameda Housing Authority the operation of the electrical installation, including any and all special items installed by him or installed under his supervision.

1.11 SUBSTITUTIONS

- A. Wherever possible, more than one manufacturer has been listed for various items of equipment, any one of which will be acceptable. Base the bid on use of materials specified. If, after award of the Contract, a substitute is proposed, the request for permission to substitute shall be accompanied with a statement of the amount of money to be returned to the contract if the substitution is permitted. The Architect is the sole judge of acceptability of proffered substitutions. If a substitute item is permitted, and any redesign effort is thereby necessitated, the required redesign shall be at the Contractor's expense.

1.12 SHOP DRAWINGS

- A. Submit shop drawings and product descriptive literature for review.
- B. All proposed deviations from specifications must be clearly listed under a prominent heading entitled "DEVIATIONS".
- C. Purpose of review of submittals is for check of general compliance with information given in contract documents. Each review and/or addition of notations and comments does not relieve Contractor from compliance with requirements of project contract documents.
- D. Contractor shall be responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction. Where dimensions of proposed equipment differ significantly from that shown on contract documents, Contractor shall submit scaled drawings showing proposed layout of equipment with shop drawing submittal.

1.13 WORKMANSHIP AND CONTRACTOR'S QUALIFICATIONS

- A. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.

- B. Provide foreman in charge of this work at all times.

1.14 COORDINATION

- A. Coordinate work with the fountain manufacturer and other trades to avoid conflict and to provide correct rough-in and connection for equipment that requires electrical connections. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain serviceability and code compliance.
- B. Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions subject to additional compensation, which are made without written authorization and an agreed price, shall be at Contractor's risk and expense.

1.15 CUTTING AND PATCHING

- A. All cutting and patching required for work of this Division is included herein. Coordination with General Contractor and other trades is imperative. Contractor shall bear the responsibility for and the added expense of adjusting for improper holes, supports, etc.

1.16 EXISTING UNDERGROUND UTILITIES AND SERVICES

- A. Locations of existing utilities, where shown, were established from best available information. Assume that this information is approximate. Contractor shall verify exact locations and depths before starting work. Should, during the course of the work, conditions are found different than indicated, notify Architect immediately. Use extreme caution so as not to damage or break lines that are in use. If breakage does occur, Contractor shall be responsible for all damage and repairs resulting there from. All unusual conditions with respect to existing facilities shall be brought to Architect's attention immediately.

PART 2 - PRODUCTS

2.01 MATERIAL APPROVAL

- A. All materials must be new and bear Underwriters' Laboratories label. Materials that are not covered by UL testing standards shall be tested and approved by an independent testing laboratory or a governmental agency.
- B. Material not in accordance with these Specifications may be rejected either before or after installation.

2.02 CONDUITS AND OTHER RACEWAYS

- A. Rigid Steel: Hot-dipped galvanized or sherardized.
- B. Intermediate Metal Conduit (IMC): hot-dipped galvanized or sherardized.
- C. Electrical Metallic Tubing (EMT): Electro-galvanized or sherardized.
- D. Plastic: Schedule 40 PVC, approved for use as non-metallic raceway for 90 degree

Centigrade conductors. Carlon, CertainTeed, or Kraloy.

- E. Provide fittings and accessories approved for the purpose equal in all respects to the conduit or raceway. EMT connectors and couplings shall be steel setscrew type indoors and steel compression type outdoors.

2.03 WIRES AND CABLES

- A. For power and lighting systems 600 Volts or less:
 - 1. Conductor: Shall be stranded copper. Minimum size shall be #12 AWG.
 - 2. Insulation Type: Shall be THWN for wet or underground locations, and THHN for dry locations. Grounding wire shall be Type TW or same type insulation as circuit conductors.
- B. For signal and communications circuits:
 - 1. Special cables shall be as specified on drawings.
 - 2. Conductors for general signal use shall be stranded copper conductor, #16 AWG minimum, with Type THWN insulation for underground or wet locations and Type THHN insulation for dry locations.
- C. Acceptable Products: General Electric, Anaconda, Okonite, Paranite, Pirelli-General or Triangle products conforming or exceeding applicable IPCEA Standards.

2.04 OUTLET BOXES, JUNCTION BOXES, AND PULL BOXES

- A. Outlet Boxes: Shall be hot-dipped, galvanized or sherardized of required size, 4" square, minimum, for flush mounted devices and lighting fixtures. Cast type with gasketed covers for outdoor or wet locations.
- B. Junction Boxes and Pull Boxes: Use outlet boxes with appropriate covers as junction boxes wherever possible. Larger junction boxes and pull boxes shall be fabricated from sheet steel, sized according to code, with screw-on covers, finished gray baked enamel.

2.05 WIRE CONNECTORS

- A. For wires sizes #8 AWG and smaller: Insulated pressure type (with live spring) rated 105 degrees Centigrade, 600 Volts, for building wiring and 1000 Volts in signs or fixtures. Scotchlok or Ideal.
- B. For wires sizes #6 AWG and larger: T&B or equivalent compression type with 3M #33+ or Plymouth "Slipknot Grey" tape insulation.
- C. For outdoor and wet locations provide compression type for all sizes and cover with "heat shrink" style weatherproof splice connectors.

2.06 PANELBOARDS

- A. Existing panels will be used for the new fountains equipment.

2.07 MISCELLANEOUS MATERIALS

APPENDIX B

- A. Handholes: Shall be sized as indicated, pre-cast concrete type with structurally reinforced roadway type bolt-down galvanized steel covers and required extension collars. Units shall be provided with concrete bottoms and sumps. Handholes shall be left in a clean condition with all debris removed and with all cables supported on approved cable supports. All stubs for handholes shall be concrete-encased and shall extend 5' beyond handhole. Acceptable products by Brooks, Christy or Quickset.
- B. Safety Switches: Heavy duty type, 600 Volt, horsepower rated for motors, standard enclosure indoors and weathertight enclosure outdoors; fused or non-fused as required. General Electric, Square D, or equivalent.
- C. Lugs and Hardware:
- Cable connectors shall be mechanical type lugs, suitable for copper or aluminum cables. All hardware used on conductors shall have high tensile strength and a suitable protective finish. Bus connections shall be made with Belleville washers or welded.
- D. Finish:
- Chemically clean and treat all steel surfaces before application of rust resistant prime coat. Finish with two coats of ANSI 61 light grey lacquer.
- E. Identification:
- Provide engraved lamaroid nameplate for the for switchboard and each component.
- F. Outdoor Enclosure (If Specified):
1. Provide sloped, drip-proof roof.
 2. Screen all openings to prevent entrance of small animals, insects, etc.
 3. Barrier all openings to inhibit entrance of sand, rain, and snow. Provide air filter holders and filters at ventilation intake openings.

PART 3 - EXECUTION

3.01 GENERAL

- A. Electric system layouts indicated on the drawings are generally diagrammatic, but shall be followed as closely as actual construction and work of other trades will permit. Govern exact routing of cable and wiring and the locations of outlets by the structure and equipment served. Take all dimensions from architectural drawings.
- B. Consult all other drawings. Verify scales and report any dimensional discrepancies or other conflicts to Architect before submitting bid.
- C. All homeruns to panel boards are indicated as starting from the outlet nearest the panel and continuing in the general direction of that panel. Continue such circuits to the panel as though the routes were completely indicated.
- D. Avoid cutting and boring holes through structure or structural members wherever possible. Obtain prior approval of Architect and conform to all structural requirements when cutting or boring the structure is necessary and permitted.

- E. Furnish and install all necessary hardware, hangers, blocking, brackets, bracing, runners, etc., required for equipment specified under this Section.
- F. Provide necessary backing required to insure rigid mounting of outlet boxes.

3.02 WIRING METHOD

- A. Install all wiring in raceway, unless specifically shown otherwise.
- B. Conduit shall be rigid steel, IMC, EMT, or plastic as follows:
 - 1. Above ground: Use rigid steel, IMC, or EMT.
 - a. Wet locations: Rigid steel or IMC only.
 - b. Hazardous locations: Rigid steel conforming to NEC requirements.
 - c. For conductors above 600 Volt: Rigid steel or IMC only.
 - d. Locations subject to mechanical injury: Rigid steel or IMC only.
 - e. In concrete walls or block walls: Rigid steel or IMC only.
 - f. Dry locations and those not subject to mechanical injury: EMT, IMC, or rigid steel conduit.
 - 2. Underground, Under buildings: Use rigid steel or plastic.
 - a. Rigid steel conduit shall be encased in 3" minimum concrete envelope and may be used for all services.
 - b. Other plastic conduits shall be installed on 2" sand base and covered by 2" sand backfill. In planting areas provide 2" concrete cap. Multiple runs shall maintain 3" minimum separation between runs.
 - c. Do not install plastic conduit in rock base.
 - 3. Make all risers to grade with rigid steel conduit and rigid steel elbow fittings only. Concrete encase underground portion of steel conduit or fittings.
 - 4. Burial depth of conduits shall be as follows:
 - a. Concrete encased: 24" minimum for 600 Volt or lower systems to top of concrete encasement.
 - b. Concrete capped: 24" minimum to top of conduit.
 - c. Conduits without concrete encasement or cap: 24" minimum to top of conduit.
 - d. When installed under buildings the above minimum depth shall be 18" below bottom of floor slab.
- C. Use flexible conduits in the following applications:
 - 1. Motor connections.
 - 2. At wet locations or where exposed to weather, the flexible conduit shall be liquid tight type.

3.03 INSTALLATION OF CONDUITS

- A. General:
 - 1. Run all conduits concealed unless otherwise noted or shown.
 - 2. Run exposed conduit parallel to or at right angles to center lines of columns and beams.
 - 3. Run no conduit in concrete slabs or floors except at point of penetration. All penetrations shall be at right angles to slab surfaces.

- B. Conduit Supports:
 - 1. Support conduits with UL's listed steel conduit supports at intervals required by the NEC. Wires or sheet metal strips are not acceptable for conduit support.
- C. Conduit Penetrations:
 - 1. Conduit penetrations of walls and floors shall be sealed to preserve the integrity of waterproofing. Materials and methods used shall conform to that specified under Architectural Sections.

3.04 INSTALLATION OF WIRES

- A. Pull no wire into any portion of the conduit system until all construction work which might damage the wire has been completed.
- B. Install all wire continuous from outlet to outlet or terminal to terminal. Splices in cables when required shall be made in handholes, pull boxes, or junction boxes. Make branch circuit splices in outlet boxes with 8" of correctly color-coded tails left in the box.
- C. Splices in wires and cables shall be made utilizing materials and methods described hereinbefore.
- D. All cables and wires passing through manholes and handholes shall be full looped inside the manhole and handhole and supported on galvanized steel racks.
- E. Make all ground, neutral and line connections to receptacle and wiring device terminals as recommended by manufacturer. Provide ground jumper from outlet box to ground terminal of devices when the device is not approved for grounding through the mounting screws.
- F. Provide Brady Wire markers where number of conductors in a box exceeds four.

3.05 WIRE COLOR CODE

- A. Color code all conductors. Wire sizes #8 AWG and smaller shall have integral color-coded insulation. Wire sizes #6 AWG and larger may have black insulation, but identified by color coded electrical tape at all junction, splice, pull or termination points. Color tape shall be applied lap to the at least 6" of the conductor.
- B. Color code wires as follows:

<u>Conductors</u>	<u>120/208V</u>
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

3.06 CONNECTIONS TO EQUIPMENT

- A. General:
 - 1. Furnish and install required power supply conduit and wiring to all equipment. See below for other wiring required.

2. Furnish and install a disconnect switch immediately ahead of and adjacent to each magnetic motor starter or appliance unless the motor appliance is located adjacent and within sight of the serving panelboard, circuit breaker or switch. Verify all equipment nameplate current ratings prior to installation.
3. Mount all motor starters and provide all power wiring to them, including those furnished under other section of specifications.
4. Install all rough-in work for equipment from approved shop drawings to suit the specific requirements of the equipment.
5. Furnish and install manual thermal protection for all motors not integrally equipped with thermal protection.
6. Furnish 120 Volt power to each control enclosure and time switch requiring a source of power to operate.

3.07 IDENTIFICATION

- A. Provide engraved, lamacoid nameplates for fountain control enclosure, disconnect switches and all similar devices.

3.08 GROUNDING

- A. Electrical systems, circuits, fountains metallic parts and control enclosures must be grounded in accordance with National Electrical Code for personnel and equipment safety.
- B. Grounding electrode system shall consist of the following electrodes:
 1. Ground Rod, 3/4" x 10 ft. long copper clad with inspection well and cast concrete cover mounted adjacent to fountain control enclosure.
The grounding electrode shall be bonded to new fountains equipment. The bonding conductor shall be #2/0 copper.
- C. Ground conductor shall be copper and shall be in accordance with NEC 250.
- D. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways to provide a low impedance path for line-to-ground fault current and to bond all non-current carrying metal parts together. Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC 250 unless larger conductors are shown on drawings.

END OF SECTION 16000