

PARKS AND PUBLIC LANDSCAPING STANDARDS (SECTION 5.*)

Parks and public landscapes are managed landscapes which demand particular community appeal providing sense of place and healthy living. Standards are required therefore to ensure continued community appeal and municipal investment in these managed landscapes at the highest possible level commonly accepted throughout California but also peculiar to the needs of Richmond Bay Area environments.

Clarification as to the applicability of these standards to a particular project can be obtained from the Superintendent. Failure to conform to these standards as well as other applicable specifications will result in the Superintendent directing corrections of deficiencies any time during design, plan review, landscape installation or the maintenance periods. Other applicable specifications include by reference, but are not limited to the following planning documents, codes, guidelines and standards:

- “City of Richmond General Plan; Parks & Recreation Element” and related elements.
- “City of Richmond Five-year Strategic Business Plan,”
- “Standard Specifications” of the State of California
- “City of Richmond Urban Forest Management/Master Plan Reforestation Supplement; December 1997,” with cover letter by the Superintendent
- “Richmond Parks Master Plan: 2010”
- City of Richmond Municipal Code; Chapter 10.08 and related chapters
- “Special Provisions” sections of any recent “City of Richmond Landscape Management Services” contract specifications.
- “City of Richmond Integrated Pest Management Policy.”
- “California Landscape Standards” by the California Landscape Contractors Association
- “The El Sobrante Valley Parks Study; 2001”
- “Marina Bay Neighborhood Landscape Management Plan; 2009”
- “Baxter Creek Maintenance and Management Guide; 2010”
- “Water Use Classifications of Landscape Species; 1999” (“WUCOLS III”) by the University of California Cooperative Extension and the California Department of Water Resources

5.1 Public Landscape Design Standards

5.1.1 General – The design of parks and all other public landscaping shall conform to Section 7-902 of the California Department of Transportation Highway Design Manual, as well as applicable portions of the above documents.

5.1.2. Specialists – Any departmental, agency or developer/owner project sponsor shall retain the services of a landscape architect, soils engineer and pest control advisor, all of whom are currently licensed in the State of California. Other specialist, like a certified consulting arborist, architect or civil engineer may also be required to provide full attention to site conditions. The services of these specialists shall be coordinated to produce the best project specifications language and design drawings acceptable to the City. The project sponsor shall be responsible to include the comments and certifications of the soils and /or a civil engineer in the landscape design where there is any site specific concern about irrigation and slope stability or drainage.

5.1.3 Soils Analysis Report – A lab test shall be made of the topsoil on site to determine suitability for landscaping. The selection of plant material, fertilizer, soil amendments, soil conditioners, and irrigation systems, shall address, in particular, the needs as indicated in the soils analysis report. A copy of the soils analysis report shall be given to the Superintendent prior to design submittal. Soil PH, composition, organic content, and chemical analysis shall be indicated in the report. Known or suspected infestations on site shall also be investigated in part by means of preparing the soils analysis report along with recommendations made by the pest control advisor. Another soils analysis report shall be submitted to the Superintendent 90 days before the one year landscape establishment maintenance period is scheduled to end.

5.1.4. Landscape Site – The design shall exhibit familiarity with the site in the following areas of concern:

1. Topography and drainage.
2. Available water sources(s), quality and pressure(s).
3. Existing trees and other features desirable for preservation.
4. The location of existing and planned hardscape features and utilities.
5. Available power and telephone point of connection sources for irrigation controllers.
6. The method of containment or neutralization of existing infestations including weeds.
7. Suitability of plant, irrigation and fence type selection for local environmental concerns as follows:
 - a) Vandalism
 - b) Predictable foot and vehicle traffic patterns
 - c) Prevailing winds
 - d) Exposure to the sun
 - e) Frost and cold
 - f) Fire hazards
 - g) Rates of predictable aging and replacement ('life cycle' projections) of materials (including plants)
 - h) Relation of the mature landscape to all the above.
 - i) Compatibility of selected plant material with existing protected specimens, e.g., drought tolerant versus high water usage plants.
8. History of the site and related cultural concerns raised by the City referenced planning documents or any specific area plan.
9. Relation to adjoining landscapes as follows:
 - a) Street tree selection and location
 - b) Type and quality of fencing
 - c) Successful plant material in the area
 - d) Planting themes established in the area
 - e) Continuation of public pathways for pedestrian and bicycle through traffic
 - f) Preservation of views

- g) Protection of privacy
- h) Protection of environmentally sensitive areas
- i) Consideration for crime prevention (per CPTED standards where applicable)
- j) Connectivity of area drainage systems

5. 1. 5 Water Conservation – The City of Richmond is actively engaged in a water management plan. Pursuant to that plan water conservation for any site landscape shall be designed from the following requirements:

1. Plant selection for the majority of the area to be irrigated shall be made from specimens that are documented as being drought resistant or otherwise water conserving in nature. Plants shall be grouped together in hydrozones (by irrigation stations) according to water conserving and use habits (per WUCOLS III plant listings). Specimens which only obtain drought tolerance with maturity cannot be mixed with those which naturally adapt to arid situations or those natives which turn truly drought resistant at a young age. Groupings shall take into account habits of water retention, early dormancy, early stomatal closure, decreased transpiring surfaces, photosynthetic adaptation, or other methods of drought avoidance.
2. High water using specimens shall be confined to specific areas of high visibility constituting no more than 5 % of the total area to be irrigated on a square foot basis. The drip line of water demanding street trees, annual flower bed areas, and raised container plantings shall be counted as part of the high water using areas.
3. Lawn areas shall constitute no more than 25% of the total area to be irrigated. Only those areas that are clearly intended for sports or other recreational activity recognized as demanding natural turf may be exempt. All lawn and turf areas shall have perimeters with the least lineal footage possible. No woody plantings or other objects other than turf may be included within the perimeters of a lawn area. At no time may lawns occupy medians, gores, verges, park strips, islands or any long, narrow or odd shaped area. Turf shall not be planned for any slope greater than 6 to 1. Isolated mounds or undulations shall be avoided within a lawn. All objects that may disrupt even precipitation over the turf shall be excluded from the lawn areas. Grass selection shall be made from deep rooted tall or improved type fescues or from several warm season grasses where winter dormancy can be tolerated. Blue grasses and other high water using cool season selections shall be limited to no more than 10% of any grass mix.
4. Ground cover areas which require overhead (non-bubbler) irrigation shall be limited to no more than 35% of the total area. Such ground cover areas, lawn areas (#3 above), and high waters use areas (#2 above) together cannot exceed 50% of the total square footage to be irrigated with overhead applications.
5. A water consumption analysis shall be made for all plant material to be irrigated (overhead, bubbler and drip). Such an analysis shall account for each of the following:
 - a) Projected mean maturity for each hydrozone plant grouping (including lawn areas).
 - b) Gross water demand of each plant grouping at maturity (including lawn areas) under optimum conditions. The demand shall be clearly stated in U.S. gallons per minute, hour or day. The basic explanation for optimum conditions shall be

- presented in terms of canopy/leaf type size, native precipitation and soil field capacity or documented studies of specific specimens selected.
- c) The gross water demand adjusted for the local (Richmond) evapotranspiration (ET_o) rate for 12 months.
 - d) The ET_o demand adjusted again for soil field capacity, as the site soil analysis may indicate.
 - e) Square footage of each hydrozone plant grouping (including lawn areas) factored to account for slope conditions.
 - f) The analysis compiled as a brief and included with the design submission.
6. The irrigation system shall be designed around the water consumption analysis. Stations of the irrigation controller shall coincide with plant habit grouping by hydrozones.
 7. At no time can lawn irrigation be combined with irrigation for other plant groupings. The specific water demand (adjusted by the ET_o rate) of a plant habit grouping shall be supplies by the station system not exceeding the U.S. gallons per minute, hour or day indicated in the analysis. Where individual specimens within a grouping have a demand much greater than others of the same group habit (as naturalized trees may have amongst native shrubs) extra emitter outlets shall be placed as needed or a separate station for drip emitter or bubbler head system shall be supplied. All overhead spray systems shall be situated so as not to wet sidewalks, streets and other improvements as well as other non-irrigated areas. Above ground spray rotor and impact heads shall not be specified where pop-up type heads can be used. All areas to receive overhead applications shall have 100% overlap (head to head) coverage. Overhead spray systems shall be kept to a minimum at roadside and in slope areas. The majority method of irrigation for any landscaped site (except sports fields) shall be stream rotors, drip emitters and/or bubbler type heads. All irrigation for the city including drip emitter systems shall be designed and installed as permanent automated systems with subterraneous lateral lines.

5.2. Landscape Materials

5.2.1. General – All materials provided by the contractor shall be new or viable. Repurposed, transplanted or recycled materials are also encouraged for inclusion in city parks or any other public landscape projects but must be preapproved by the Superintendent. Materials shall be free of any contamination, infestation or damage. Materials not specifically addressed in these specifications or associated notes and drawings but are understood as a matter of industry standards necessary to complete an institutional quality landscape project shall nevertheless be provided by the contractor (such as a wide array of irrigation fittings and components). Substitutions of any materials or determination as to any ‘equals’ must be approved by the Superintendent. Any materials deemed unacceptable by the Superintendent, his representative or the landscape architect must not be shipped to the landscape site or be removed from said site the same day (without any ‘restocking’ cost incurred to the city) . All materials which conform to these standards shall be installed with all necessary components.

5.2.2. Materials Furnished or Managed through the City – The following materials, unless otherwise noted by the City may be furnished by East Bay MUD or managed through the City and paid for by the project sponsor or their contractor:

1. Water meter, the water meter box and adjustable spuds.
2. Backflow prevention device – A Fedco double check device and assembly
3. Mulch supplied by the City urban forest tree trimming program (at no cost to project)
4. Off site deposit locations for salvaged materials and topsoil affording the project short haul routes
5. On site or adjacent locations for the contractor's construction yard, set-down/receiving yard, nursery, topsoil stockpile, soils borrow or Kline-tank watering with hydrant meter.

5.2.3. Soil Improvements

1. Imported topsoil – Should topsoil have to be imported to the landscape site it shall be predominantly a friable loam in nature, obtained from well drained arable land. It shall be free of roots, rocks, debris, and other heavy materials. It shall have a PH between 7.0 and 6.0 and meet only the following allowable analysis or composition:
 - a) Sodium (SAR), 0-4 maximum
 - b) Salinity (ECeX10³), 0-2.5 maximum
 - c) Boron (in PPM saturated extraction), 0-2
 - d) Decompose organic material, 5-50%
 - e) Gravel no greater than 3/4", 0-10%
 - f) Course sand, 5-20%
 - g) Fine sand, 20-50%
 - h) Silt, 25-50%
 - i) Clay, 5-30%
2. Soil amendments for general application – should amendment have to be incorporated into native soil it shall be a decomposed or readily decomposed nitrogen stabilized organic material such as Forest Humus Duraloam, or a nitrolized redwood sawdust. It shall be a fresh aerated material containing particles not greater than 1/4" in size. No more than 25% of particles can fail to pass a 500 micron sieve. Amendment which has been allowed to "sour" at the bottom of stockpiles cannot be used. It shall contain the following allowable analysis:
 - a) Soluble salts (in PPM saturated extraction), 3.0 maximum
 - b) Iron, acid-soluble dilution (based on dry weight) 0.08 minimum
 - c) Ash (based on dry weight) 0-6.0 minimum
 - d) Nitrogen (based on dry weight) 0.4-0.6 minimum
3. Fertilizers – All fertilizers must contain the manufacturer's warranted analysis on each container which will clearly state the compositions of N (Nitrogen), P (Phosphorus) and K (Potassium) as well as any secondary or micro nutrients. Each type of fertilizer applied as a general soil improvement must be able to respond in season to the particular soil composition, PH, solubility and species demand of an area to ensure optimum usage. The fertilizer, like the soil amendment, should be the one that best addresses the shortages revealed in a soil analysis as compared to the needs of any plants introduced area by area. Changes of or additions made in fertilizers must also anticipate other improvements made in the soil. Fertilizers applied during the establishment maintenance period should obtain approximately 1 pound N minimum per 1000 square feet bimonthly for most selections

of plant material. The final application of fertilizer at the end of the establishment maintenance period must address deficiencies shown in the final soils analysis taken near the end of that same period. N derived from an ammonium must be very limited to non-existence in any fertilizer mix.

4. Fertilizers to be used for planting pits are as follows:
 - a) Agriform Bluechip Tablets: 21 grams 10.10.5 plus calcium, sulfur and iron (or approved equal).
 - b) A granulated balance of 3:1:1 but contains the lowest available adjusted salt index
 - c) Bone meal; 4.12.0 (especially for bulb and tuber plantings)
 - d) Or as identified specifically for planting pits in the soils fertility lab test report
5. Fertilizer for warm season application for lawn establishment; 27.4.6 with six secondary or micro nutrients (one of which is 3% Fe) and a minimum of 5% sulfur coated N for slow release.
6. Mulches and top dressing – unless otherwise specified for specialized situations (such as play lots), all mulches and top dressing shall be small grade “walk on” type bark with an aggregate particle size of approximately ¼ inch or mulch as supplied by the city urban forest tree trimming program. It shall be well aerated and free of debris (both organic and man made). Mulch which has been allowed to “sour” at the bottom of stockpiles cannot be used.
7. Gypsum and other soil modifiers can be used as the soils analysis indicates.
8. Soil amendments for planting pits shall be matched to the mix used by the nursery in the container of the particular specimen (s) to be planted. No other amendment for planting pits may be specified or employed. The nursery from which container stock is purchased shall provide a written description of the planting mix it uses in sufficient time to obtain such a mix for amending planting pit backfill.
9. For non-irrigated plantings synthetic based water absorbent polymer gels shall be added to the backfill at the manufacturer’s recommended rates.

5.2.4 Irrigation Equipment –

1. Pipe and fittings – All mainline and lateral pipe and fittings shall be schedule 40 NSP PVC solvent welded. The pipe shall meet ASTM-D-1784 standards. For systems with pipe diameters over 2” Class 200 bell jointed PVC pipe may be utilized. The fittings shall meet ASTM-D-2466 and NSP 14 standards. All pipes shall be marked continuously and permanently with the manufacturer’s identification of type and quality control.
2. Pipe Joining Materials – PVC solvent cement shall be IPS Weld-on # P-68 (or approved equal). It shall conform to ASTM-F-656 standards and rated for all classes and schedules of PVC up to 12 inch pipe. No fast setting solvent cement may be used. Primer shall be IPS Weld-on # P-68 (or approved equal). Only Teflon tape may be used to join threaded fittings. No pipe dope may be used. Sleeves and conduits for paving crossings shall also be Schedule 40 NSP PVC pipe and protected temporarily with non-solvent cemented end caps until fitted with pipe and wire.

3. Valves and Valve Boxes

- a.) Remote control valves shall be the Griswold Controls 2000 series or DW-PRV series (or approved equal). A ball valve such as the 'TU' series by Chemtrol or 'BLT' series by Rainbird shall be placed directly ahead of remote control valves.
- b.) Quick coupler valves shall be the two part all brass type with self closing and locking rubber cover such as 'LVC' series by Rainbird (colored appropriate to the water source). Each site shall be provided with 2 all brass quills mounted by all brass swivel hose bib as well as 2 quick coupler cover keys. Swing riser assembly and staking shall be provided.
- c.) Flush valves for drip system laterals and assemblies shall be provided. The flush valves can be the KBI model 'MIP-750-S' or ball valves as noted in 'a' above. Check valves (or anti-drain valves) can be the Valcon 'ADV-5000' series or the KBI 'CV' series located in-riser (or approved alternative).
- d.) Valve boxes for all remote control valve assemblies and flush valves assemblies servicing lateral runs longer than 60 feet shall be the Brooks model #1419 with bolt down lid (or approved equal). Valve boxes for isolation valves which stand alone and flush valve assemblies servicing lateral runs 60 feet or shorter shall be the Brooks model #70 with bolt-down lid (or approved equal). Only one valve assembly per box will be allowed. The top of the lid shall be marked as called for in the notes, specifications and drawings. Locate all boxes as noted in the specifications and drawings but not within lawns.
- e.) Isolation valves shall be the non-rising stem all brass gate valves such as the 'T' model by Nibco (or approved equal).
- f.) Pea type gravel free of other aggregates, fines, debris, soils and organic materials shall be placed at the base of the valve box pits to the depths indicated in the specifications and drawings.

4. Head Assemblies

- a) All heads shall be installed on a swing joint assembly as indicated in the specifications and drawings. Fittings shall meet ASTM-D-2464 standards.
- b) Any above ground shrub heads shall be staked or installed on a swing assembly and painted as required. No above ground head shall be employed in lawn areas. No above ground head shall be employed in areas of predictable pedestrian traffic. No above ground head shall be used where a 'high-pop' type head can be employed. Generally, above ground heads will seldom find use in new City of Richmond landscapes.
- c) Heads shall be those specified in the approved drawings (or approved substitutions).
- d) All heads shall be set perpendicular to finished grade unless otherwise designated by approved drawings, the Landscape Architect or the Superintendent.
- e) Heads shall be added, adjusted or relocated to assure optimum precipitation (during windy conditions) over the area to be covered. No head shall be situated so that it shoots directly into the opening end of the controller box or other utility boxes.

5. Drip Emitter Assemblies

- a) All drip emitter assemblies shall be installed on Schedule 40 PVC lateral lines.
- b) All drip emitter assemblies shall be installed as shown in the drawings or as required by the Superintendent. No on-the-ground drip lateral assemblies will be permitted.
- c) The single outlet emitter shall be the Bowsmith 'S1OL' 1 gal. (or approved equal) mounted on a length of IPS flex-PVC hose and 90 degrees Marlex street ell.
- d) The multiple, outlet emitter shall be the Bowsmith 2000 series or the Rainbird 'EMG-M-101' (or approved equal) mounted on a Schedule 80 riser and encased by the Rainbird SEB-6 access sleeve (or approved equal). Lengths of polyethylene distribution tube shall be held by AG Products 'S2' stakes (or approved equal) underground.

6. Electrical Services

- a) All wire connections shall be made with copper crimps encased by PT-S5 sealer (or approved equal) and snap Tite caps (or approved equal). Epoxy type sealers or Electrician's tape and wire nuts will not be allowed for field wire connections.
- b) Wire for all 24 volt or 120 volt services shall be #14 gauge solid strand copper for damp and wet locations. It shall be rated at 600 VAC THHN/THWN AWG and meet the National Electric Code and Underwriter's Laboratory standards. Larger gauge wire is required for longer pulls as AMP demands (current or future add-ons) indicate.
- c) Electrician's tape or duct tape can be used to bind bundles of 24 volt wire at 12 foot intervals for direct burial. Direct burial shall be made in irrigation pipe trenches as shown in drawings.
- d) Insulation jacket colors shall be white for common wire, black or red for station/signal wires and blue for extra/spare wires. Four spare wires (minimum) shall be provided for each controller and pulled into the farthest limits of the wire distribution. More than one common wire may be needed as site conditions require.
- e) All 120 volt power wire shall be housed in heavy-walled utility class PVC conduit with factory made bends, couplings and fitting where permitted by the NEC. Burial for all 120 volt power service shall be made at a minimum depth of 18". Where power conduit is routed into a building for an internal wall mounted controller it shall comply with building regulations.
- f) The ground rod shall be copper coated and 8 feet by $\frac{3}{4}$ inches diameter. It shall be attached to the junction box locally at the controller by means of a solid copper ground jumper and approved clamp.
- g) The junction box shall contain a 120 volt SPST off/on switch, standard plug receptacle and ground screw. It shall be attached to the inside of the controller pedestal or security enclosure chassis.
- h) Pull boxes shall be the Brooks 1100 series (or approved equal) with bolt-down lids.

6. Controllers – Controllers shall be satellites of only one of three preapproved master systems for three specific regions of the city (Rain Master Evolution for the south, Marina Bay, Pt. Richmond and harbor areas; CalSense Master for the central areas; or Griswold IDC for the north Hilltop and Richmond Parkway areas). Each controller satellite shall contain each of the following as a minimum:

- a) All solid state circuitry with accuracy to the second
- b) Full two way communication capability to master unit via telephone, radio or wire
- c) Protected non-dedicated keyboards that are readable in bright daylight or night
- d) Automated applicability of weather station (including CIMIS) precipitation data
- e) Optional ‘sensor’ input outlets for other timed applications (like lights, gates, etc.)
- f) Multiple (multi-language option) displays showing active stations and programs
- g) Review feature for display (including sensor data)
- h) Weatherproof and watertight outdoor locking case
- i) Lithium long life backup battery and automatic Daylight Savings Time changes
- j) Automatic default program which can be disabled
- k) Resettable circuit breaker (3.0A break) that exempts defective stations
- l) Master valve/pump start circuit which can be controlled in manual mode
- m) Programs with independent start times but capable of cluster applications
- n) Syringe cycle program option by station or cluster
- o) Percentage budgeting increase/decrease for all programs in one percent steps
- p) Skip day feature for each program
- q) Programmable rain mode to automatic mode recovery feature
- r) All stations run in sequence
- s) Rain mode switch with rain sensor activating attachment
- t) Manual program will run any program or selected station clusters
- u) Automatic program overlap protection which can be disabled
- v) Built-in access code options (including ‘sensor’ options)
- w) Remote control capability
- x) Built-in self test feature that logs information for operator review
- y) UL approved
- z) Powered by dedicated 120v service with dedicated grounding and power backup

5.2.5 Planting Materials

1. Hydroseed – Refer to the Superintendent’s Wildflower specifications by areas of the city.
2. Seeded lawn – seed shall be at least 98 percent pure and completely free of noxious weed seed. Only re-cleaned Grade A “new crop” seed delivered in unopened containers bearing the dealer’s label showing guaranteed analysis shall be used. The seed shall be pre-treated with a fungus preventative. Any seed allowed to become wet or moldy or otherwise damaged will not be accepted.
3. Sodded Lawn – Sod shall be at least 9 months old and no more than 16 months old and field grown by a commercial nursery. Sod shall be healthy and well knitted containing no more than ½” of thatch and free from debris, unspecified grasses, pests, noxious weeds,

insect eggs, or infestations of any type. Sod shall be delivered in moist rolls within 24 hours of harvesting. Sod will be cut with a thickness of 5/8" to 3/4" and dimensions of 18" x 72".

4. Rooted Cuttings – Only healthy rooted cuttings or flat grown material may be used. Material shall be grown by a commercial nursery and be delivered moist to the job site within 24 hours. Material that is too wet or too dry or showing signs of fungus or other infestation shall not be acceptable. All material shall exhibit good root growth. Roots shall constitute at least 20 percent of individual plant material for all specimens.
5. Container Grown Specimen – Only the No. 1 grade of nursery stock as provided in the State of California Grading Code may be planted. Plants shall conform to the American Association of Nurserymen Standards, AAN-SI Z60.1 as well as any height, spread, symmetry, or caliper as indicated in drawings or specifications. Plants shall be delivered unpruned in the original nursery containers bearing tags which show genera, species, cultivars, and/or varieties. All shipments of container grown species shall show documented compliance with Federal, California, and regional laws having to do with diseases and infestations. Plants which do not comply with the above or are shown to be broken, root bound, too young for the container, sun burned, wind burned, too dry, infested, trunk girdled or in any other way damaged will be rejected by the Superintendent. The nursery shall provide a written description of the planting mix used for the container grown specimens to be shipped. Any boxed, balled and burlaped or bare root specimens shall comply with the above as is applicable.
6. Transplanted Specimen – Only healthy unpruned specimens shall be delivered to the job Site within 24 hours of uprooting. Root mass shall be sufficient to anchor and sustain the plant. Roots shall be cut clean. Broken, stripped, or frayed roots will not be acceptable. Any trunk or branch which has been girdled, stripped, broken, or marred during uprooting, transport, or planting will not be acceptable. Tags for shipments from out of state or quarantined zones will show evidence of inspection.
7. Tree Stakes – Only treated 2" x 8' straight, close grained, lodge pole pine shall be used. Stakes will have been given a point at one end prior to treatment with copper naphthante. Treatment shall penetrate the stake surface to a minimum depth of 1/4". The blunt end of the stake will be cut to the appropriate height for individual trees on-site.
8. Tree Ties – rubber tire strips (or approved alternative) shall be used.
9. Tree Tie Nails – Only galvanized steel nails shall be used.
10. Tree Guys – Aircraft cable inserted through white 1/2" PVD pipe (as markers for pedestrian safety) and sections of 1/2" garden hose (for protection of tree limbs) and fastened to stakes through holes drilled on-site (or approved alternatives) and wire rope type clasps. Deadman anchors, if utilized as an alternative shall be of approved durable materials (not wood).

5.2.6 Hardscape Features

1. Headerboard – Only 2 x 4 construction grade recycled plastic lumber or benderboard shall be used. Headerboard splices can only be 1 x 4 recycled plastic lumber (2 feet in length) matched to the rest of headerboard.

2. Headerboard Stakes – Only 1 x 2 clear Fir (or equal) shall be used, one foot in length sharpened at one end and bevel cut at the other end.
3. Headerboards Nails – Only galvanized steel nails shall be used.
4. River Cobble – Only 4” to 6” aggregate Lodi or Linn Creek type cobble shall be used where better than 66% are unbroken, better than 66% are near 5” size, and 66% are smooth spherical or egg like in shape.
5. Mortar for River Cobble – As per Section 51-1.135 of the Standards Specifications.
6. Decomposed Granite – Only decomposed granite in an aggregated grade between 3/4” and fines can be used as specified. They shall be free of other aggregates, debris, and organic materials. An approved binder shall be pre-mixed into every delivery of decomposed granite (“DG”) to the project site. No DG shall be installed without documented evidence of an approved binder incorporated at place of origin. Preferred binder will be resin based as typically specified for trails by EBRPD.
7. Imprinted Concrete – Only the Bomanite process (or approved equal) shall be used. The Concrete shall have a minimum compressive strength of 3000 psi. Portland cement shall conform to ASTM C 150, Type I, II, or V, depending on soil conditions. Aggregates shall conform to ASTM C33. Only potable water may be used. At no time can calcium chloride be introduced into the concrete mix. Only Bomanite Heavy Duty Hardener and Bomanite Color Curing Compound (or approved equals) may be used.

5.2.7 Pesticides – Only those pesticide products (including growth regulators) that are recommended, in writing by the Pest Control Advisor shall be used consistent with the City IPM policy.

5.3 Landscape Construction Standards

5.3.1 General – All work performed as site preparation, hardscape, installation of irrigation systems and planting shall comply with Standard Specifications Section 20, “Erosion Control and Highway Planting” as well as hereunder. All work will be performed generally in reference to the Standard Specifications of the State of California and as an industry standard to the California Landscape Standards of the California Landscape Contractors Association (“CLA”). Where there may be conflict between such standards and project specifications, notes or drawings these City of Richmond Parks and Public Landscaping Standards and/or the determination of the Superintendent shall prevail. The contractor performing such work shall be currently licensed with the State of California (C-27 minimum) and hold or obtain all other licenses, certificates, permits or waivers during the course of said work necessary to performance at industry standards. Clean up and site protection shall be a part of any installation work and performed each day on site to the satisfaction of the Superintendent.

5.3.2 Site Preparation

1. Site conditions – The landscape site shall be free of all debris, stocks piles, toxic spills, equipment, structures, and other unnecessary appurtenances left by other trades and former property users. Full ‘grub-and-clear’ will have been conducted to the satisfaction of the Superintendent and all detrimental organic material such as weeds destroyed and removed from the site. Native topsoil cover will have been protected or stocked in localized identifiable unsullied piles. The landscape site shall lie as or be rough graded to

within a 10th of a foot of finish grade. It shall have a 6 inch minimum cover of topsoil approved by the Superintendent free of subsoil, excessive rock or spoil. Topsoil shall be one, or a combination of the following:

- a) Original native cover.
 - b) Redistributed native from stockpiles the contractor has had kept on or near site.
 - c) Imported.
2. Sleeves and conduits – All necessary crossings for irrigation systems shall be in place and protected with end caps prior to paving.
 3. Points of connection – a secondary box or meter pedestal for 120 volt service and water meter, box and backflow prevention device for irrigation shall be prepaid and installed as per approved plan. The concrete meter box shall be set to finish grade. At no time can materials capable of deterioration (such as wooden boards) be employed to raise any meter box in order to bring it to finish grade. Durable materials (such as fire hardened bricks) shall be used in sufficient quantities to support any valve or meter box in order to raise it to finish grade. Care shall be taken throughout all phases of installation and maintenance to protect materials provided by PG&E, EBMUD and the City.
 4. Grub and clear – All noxious weeds on-site and specially identified invasive/exotic weeds must be destroyed and removed. Other weeds may be removed as needed. Groundcovers that had been provided by hydroseeding for erosion control can only be removed during the rainy season (between October 15 and April 15), upon approval by the City Engineer and Superintendent. To obtain such approval, the contractor must provide proof or assurance of timely revegetation. A combination of pre-emergent and post emergent spray programs as designed by the Pest Control Advisor or manual and mechanical means may be employed by the contractor as needed. All weeds or related debris shall be disposed of in an approved manner.
 5. Fuel suppression for fire safety – In the event of any delay between completions of mass grading and the start of landscape installation during the fire season the contractor shall remove fuel loading vegetation from the site. Such removal may entail mowing hydroseeded areas as well as weed populations. The contractor is to understand hereby that time is of the essence in performing such fuel suppression during the fire season.
 6. Fences and property lines – Such lines shall be established and made field identifiable in a timely manor to enable access for project work.
 7. On-site hazards – the site will be surveyed and all remaining potential hazards noted in as-built drawings and their risk/life cycle assessment documented to the satisfaction of the City Engineer, Risk Manager and Superintendent.
 8. Salvage – existing materials and equipment on site deemed salvageable by the city will be identified with the contractor prior to demolition and arrangements then made for removal. Irrigation components or other material suitable for repurposed use elsewhere may be identified. Special care shall be taken for removal, transport and storage of valuable and/or historic equipment, art, sculptures or monuments. At not time can the contractor presume to remove or destroy objects of obvious value to the city such as dedication or memorial markers.

9. Prework meeting – Such a meeting is mandatory and shall include the Superintendent (or designee), landscape contractor, general contractor and project manager. No further landscape related work may commence save any of the above necessary to site preparation. The prework meeting shall be the time and place to determine that any other work (as in the below) may proceed.

5.3.3 Irrigation System

1. All irrigation systems shall be installed and tested as per approved drawings and specifications as well as in the below. The contractor shall provide an experienced irrigation technician to the project capable of reading and applying such drawings and specifications in ‘the field’ as well as keeping detailed and up to date records to generate reliable as-built drawings.
2. Excavation for irrigation trenches shall be performed to cause the least possible damage to streets, sidewalks utilities and other improvements. No trenching of paved streets will be permitted. Care shall be taken not to interfere with trees. Route the trench a minimum of six feet away from tree planting locations and outside the drip-line of existing trees. In the event tree roots have to be cut such cuts shall be made clean without any ragged stripping, fraying or twisting of the roots. Where roots of a diameter greater than 2 inches are encountered the City Arborist assigned by the Superintendent shall be contacted for direction. Trenches shall be cut consistently with grade and uniform bearing for the full length of the line. Any improvements or plantings disturbed by excavation shall be replaced or reconstituted in an approved manner. Excavated material shall be placed so as not to cause damage to improvements or plantings nor obstruct traffic (vehicular and pedestrian) or surface drainage.
3. PVC pipe shall be cut with a fine tooth hack saw and any burrs shall be removed. The pipe and fittings shall be clean and dry prior to application of solvent cement. All mainline pipe ends and fitting sockets shall be treated with primer prior to application of solvent cement. Both primer and solvent cement shall be applied uniformly over three quarters of both insertion surfaces. Any pipe or fitting where solvent cement had been allowed to thicken prior to joining shall be discarded. Immediately after cement has been applied pipe and fittings shall be joined with a twisting motion to the full depth of the socket and any excess wiped away. At no time can cement be allowed to cover threaded fittings. Joined pipe and fittings shall be allowed to set up prior to any further handling. Time for curing will increase with damp/or cold weather. Only pipe with completely cured welds can be filled with water. Excessive layers of teflon tape and/or any pipe dope will not be allowed on threaded joints. Also, excessive cinching will not be allowed. No PVC pipe shall be exposed above ground. Mainline shall be placed a minimum depth of 18” and lateral line 12” in the trench.
4. Valves shall be installed in such a way that easy access and service are possible. No valve (except in-line check valves) shall be buried or silted over. No valve shall be placed inside a box in such a way that handles and bleeder cocks are held tight against the box wall. If necessary, a larger valve box shall be set. It shall be possible to lift the bonnet of the remote control valve without dirt and debris sliding inside the valve body. Approved pressure regulator and “Y” strainer shall be included with all remote control valve assemblies servicing drip emitter systems. It shall be possible to remove filters from “Y” strainers without digging. The valve stem of a remote control valve shall not be left in a

fully open position. It shall be throttled part way down to avoid the valve becoming “stuck open” but still allowing optimum operation. All valve boxes shall be bolted securely shut. On some projects it will be specified that the box be buried to thwart tampering by vandals. No debris from valve assembly or remnant wiring shall be left inside the valve box. The location of quick coupling valves shall be marked in an approved fashion.

5. Heads shall be installed as specified. All risers shall be flushed prior to assembly of clean head units. Subsequently, flushes of end risers on each lateral line shall be performed during each maintenance period. Dissimilar heads shall not be placed on any station system. Nozzles and screens shall be change out as needed to ensure full irrigation coverage (including during windy conditions).
6. Drip emitter distribution tubing shall be installed subterraneously. Drip emitter systems shall be flushed and filters cleaned monthly throughout each maintenance period.
7. All electrical services shall be installed strictly as specified. No wire splices shall be made in the field outside approved controller box, valve box, and pull box locations. Nicked or cut wire shall be removed and discarded and new installed. Wire shall not be pulled taut at any location. Expansion loops, coils and serpentinous runs shall be liberally turned into every pull of 24 V wire. Wire splice ends shall not be exposed to wet or damp conditions. In the event of delay between pulling and connecting wires the splice ends shall be covered securely with electricians tape and pulled up out of the bottom of the boxes or water catching depression in the soil. New splice ends will be cut at the time of connection. The controller shall be supplied with a penciled (not penned) schedule at time of installation. Electrical service shall not be tested by touching any charged wire to the circuit board or battery wires of the controller (an Ohm- meter is best used for such test). Every controller shall be grounded locally at its own mounted location (and not depend solely on a shared ground with other nearby equipment and utilities). The dedicated ground rod shall be set at the controller location and no further than 5’ away.
8. All irrigation lines (main and lateral) shall be hydrostatically pressure tested at 125 p.s.i. with all joints and fittings clearly exposed. There shall be a pressure gauge at the pump and another at the furthest end of the section of the line that is to be tested. The line shall hold the required pressure for a minimum of four hours. If there is any drop in pressure, the line shall be retested until there is no drop in pressure. The lines shall be filled with water from the low end and the air expelled from the high point. All air must be removed from the line before the test shall begin. Testing the lateral lines will necessitate the capping of all risers. Such test will not be required for drip lateral lines or where marlex street elbows are employed in swing assemblies. An air pressure test at 125 p.s.i. can be substituted for a hydrostatic test for as long as it takes to walk the entire lines with all joints and fittings exposed upon advanced approval from the Superintendent.
9. A coverage test shall be made of the irrigation system via manual control or pre-timed control from the irrigation controller. Spot checks may be made by “bleeding” individual remote control valves, but this method shall not be substituted for an overall coverage test. Adjustments and cleaning of irrigation components shall be made (including change out of nozzles) as needed, as a result of a coverage test and a new coverage test(s) subsequently made.

10. All tests are subjected to City inspection and approval by the Superintendent.

5.3.4 Soil Preparation and Fine Grade

1. All areas to be landscaped shall be prepared with specified soil conditioners, soil amendments and fertilizers and shall be thoroughly mixed with the topsoil in areas to be planted as lawns and groundcovers. All clumps and clods of topsoil shall be broken and mixed in.
2. All rocks, debris, and excess soil shall be removed from the site and disposed of in an approved manner and/or outside of the city.
3. Wherever possible topsoil native to the site shall be utilized as fill in the fine grading process. The contractor will have provided for stockpiles of native topsoil during mass grading. Though such topsoil will have been distributed, remnants of the stockpiles might be located and utilized.
4. Tops and toes of slopes shall be rounded to produce a gradual and natural appearing transition between relatively level areas and slopes.
5. Fine grade is to provide a smooth even finish and positive surface drainage without low spots or pockets. Undulations in slope-sides which result in specific grades steeper than the overall intended grade of the slope shall be corrected. Finish grade at edges shall lay the following inches below the level of pavement and header boards:
 - a) 1/4" – 1/2" for bare ground, hydroseeded, and non-mulched groundcovers
 - b) 1/2" – 3/4" for lawn areas
 - c) 1" – 2" for mulched areas
6. The site shall be checked to be sure that soil preparation and fine grading have not resulted in bringing subsoils to the surface or causing public and private properties to drain into each other. Any such problems shall be brought to the attention of the City.
7. All phases of soil preparation and fine grading are subject to City inspection and approval. The finish grade must be complete and irrigation system fully tested and operational before planting can begin.

5.3.5 Planting

1. All planting shall be performed as per all related standards and specifications and the approved landscape plan.
2. The contractor shall provide an experienced supervisor or foreman, capable of reading the landscape plans and related specifications and who is familiar with current California horticultural practices, to oversee all aspects of planting. Such a foreman shall concern himself/herself with close on-site supervision of the following:
 - a) Proper species identification and location.
 - b) Excavation of the planting pits with particular attention given to pit side scarification.
 - c) Identification and application rates of fertilizers and amendment (matched nursery container mix) to be used in the backfill mix.
 - d) Proper manipulation of the root ball to encourage future outward growth of roots.

- e) Planting techniques which do not allow the root ball to be set too low or the root crown covered with backfill or siltation.
 - f) Approved staking and pruning techniques.
3. Planting pit amendment shall be matched to the nursery container mix unless otherwise specified in the project soils report and approved by the Superintendent. Any attempt to use other amendments will be rejected.
 4. Whenever possible project plant material shall be contract grown and subject to nursery inspections by the Superintendent and Landscape Architect. This is especially applicable for projects with large quantities of the same container stock specimen to ensure uniformity of quality, stature and appearance.
 5. Seeding for lawn areas shall be performed only during the warm months between March 1 and October 15. The lawn areas shall be free of weeds and debris and be fertile and friable the day of seeding. Seeding may be done either by double passes of a mechanical spreader or by hydroseeding. Mechanically sown seed shall be ranked into the surface and rolled. Either application shall be kept moist until full germination. Bare spots shall be reseeded at 10 day intervals until a full stand of grass is germinated and acceptable.
 6. Sod can be laid in lawn areas any time during the year. The soil shall be in the same condition as for seeding and fertilizer applied the same day as sod delivery. Lay sod in a tight fitting staggered brick layer pattern against any grade. Rolls of sod shall be kept moist throughout installation. All sod shall be installed the same day as delivery. Keep sod moist until first mowing. Roll sod twice within two days of installation. Care shall be taken not to leave footprints in the soil surface or sod.
 7. Ground covers taken from flats or rooted cuttings shall be planted in the bare soil surface prior to any mulching so as to ensure true root to soil contact. A staggered or triangular pattern shall be employed (unless otherwise instructed via the Superintendent). Specimens shall be placed in a pit of sufficient size to prevent roots from doubling over. Newly planted ground covers shall be kept moist. Care shall be taken not to plant within understories of low growing shrubs or right next to hardscape (paved) edges.
 8. Areas (other than lawns, turf, selected groundcovers and hydroseeded wildflowers) shall be mulched.
 9. Newly planted trees will have to be deep watered during hot months.
 10. All specimen selections, substitutions, locations and planting are subjected to City inspection and approval.
 11. Replacement plantings will be expected, no matter what caused the loss, at the end of the installation period and at the end of the one year establishment maintenance period. Seasonal considerations may necessitate adjusted replacements at other times.

5.3.6 Hardscape Installation – The subgrade of all areas in 2, 3 and 4 below shall be compacted to 90% and treated with an approved soil sterilant which shall remain stationary in the soil. Application of sterilant shall be that as recommended by the pest control advisor. Only a few hardscape surfaces are addressed in the below. Other surfaces shall be installed per drawings, specifications and best of industry practices.

1. Headerboards – Headerboards shall be installed true to line and finished grade and set flush with adjacent paving. Lengths shall be no less than 12 feet and stakes placed at intervals of 8 feet. All corner connections shall be mitered cut to receive each board as an exact fit and securely staked. All straight joints shall be spliced and securely staked.
2. River Cobble – A tight fitting random pattern of river cobble shall be set firmly into freshly poured mortar to half the depth of each individual cobble. Broken or odd shaped cobbles shall be discarded. All clean and smooth rounded cobble within 3 inches of the mean size of 5 inches shall be used. Cobble shall be lightly wetted just prior to placement. The planting side edge of the mortar shall be formed or troweled so as to present a smooth even edge. All spoil shall be removed from the street, curb and planting bed. As the mortar begins to set-up the mortared cobble shall be sprinkled lightly with water so as to clean the cobble and settle the mortar surface. After mortar has cured all dirt and excess materials shall be cleaned off of the cobble and two coats of Thompson's clear sealer (or approved equal) shall be applied.
3. Decomposed Granite - Decomposed granite (with binder mixed in) shall be put true to grade and compacted to 92%. The finished surface shall have a smooth appearance and lay flush with any adjacent paving and headerboards.
4. Imprinted Concrete – The concrete shall be placed and screened to the proper grade and floated to a uniform surface in the normal manner. Bomanite Color Hardener (or approved equal) shall be applied evenly to the surface by the dry- shake method using a minimum of 60 pounds per 100 square feet. It shall be applied in two or more shakes, floated after each, and troweled only after the final floating. While the concrete is still in the plastic stage of set-up, the imprinting tools by Bomanite (or approved equal) shall be applied to make the desired patterned surface. Bomanite Color Curing Compound (or approved equal) shall be applied uniformly with a sprayer or roller. Coverage shall be approximately 1200 to 1300 square feet per gallon of solution. The cured surface shall be cleaned to remove residual dust or grout. At no time can acid or caustic solutions be used for cleaning. For the Bomanite process, only contractors certified by the Bomanite International Society may perform the work.

5.3.7 Pesticide Use – All applications shall be made in strict conformance with the pest control advisor's written recommendations, the manufacturer's label, latest science, industry standards for safe use and disposal, the City IPM Policy and the approval of the Superintendent (a licensed pest control advisor). Applications shall be made under the supervision of a licensed Applicator who is registered with and reporting to Contra Costa County Agriculture Commissioner.

5.4 Landscape Maintenance

5.4.1 General – Landscape maintenance shall be performed in compliance with applicable portions of any current or the most recent "Special Provisions" sections of a City of Richmond "Landscape Management Services" specifications, "California Landscape Standards; Section VII; Landscape Maintenance" by the CLCA, the "Monthly Maintenance Service Schedule", the Superintendent's "Directive # 11; Irrigation Maintenance", "Directive #13; Open Lawn Areas" and "Directive # 16; Plant Material Selections, Care and Management" and the "Park Maintenance Handbook; 1990" by the National Park Service as well as compatible project

specifications for maintenance. Where there may be any conflicts between said specifications or standards the determination of the Superintendent will prevail. This is applicable as appropriate in any of the following maintenance periods:

1. Interim maintenance conducted during installation; this is required and is intended to protect investments already made in the landscape site while construction remains underway throughout. At no time can a notion of “substantial completion” be employed as grounds to proceed automatically to the next period below. Inspections and tests of a fully completed landscape as directed by the Superintendent are expected via satisfaction of punch list items. Replacement of any plant material failing or lost (for any reason) is possible as a result. As-built drawings are expected to be generated during this period and submitted to the Superintendent for approval (without exception), which is a condition required to be able to proceed to the next period below.
2. The one year establishment maintenance period; this is intended to bring the new landscape into acceptable grown and operational conditions suitable for turnover to the city for long term maintenance. This period may or may not necessarily coincide with warranty periods of specific materials and equipment installed in the landscape site. This period is not automatically ended exactly in one year. The contractor is expected to make timely requests to the Superintendent’s representative to begin an orderly turnover process. Inspections and specific retests of this maintained site as directed by the Superintendent are expected via satisfaction of punch list items. Replacement of any plant material failing or lost (for any reason) is possible as a result. Specified items, including but not limited to cabinet keys, gate keys, door keys, irrigation schedules, quick coupler quills/hose bibs, warranty maintenance manuals, specialized tools and spare parts are required to be submitted directly to the Superintendent’s representative as condition of turnover to the city for long term maintenance.
3. Long term maintenance conducted by City staff or by a City maintenance contractor; wherein all appropriate foresaid standards and specifications will apply. City forces cannot be comingled with that of the project contractor during construction and establishment maintenance prior to turnover for long term maintenance unless specifically approved by the Superintendent for mitigation of hazards or expediting code driven work.
4. Maintenance conducted by volunteers; this is intended to supplement and be strictly coordinated with hired maintenance forces under an Adopt-a-Park/Trail or Adopt-a-Tree program as directed by the Superintendent. This will usually commence during long term maintenance and only with concurrence of the contractor during construction and establishment maintenance.
5. Management and maintenance conducted by sports leagues; hired or volunteer work can be provided for a sports field or other outdoor facility by such groups under permit from the Recreation Department for the duration of an entire season or a tournament. At least ten weeks before the start of a sports season or tournament Recreation staff will direct the sport league representatives to meet with Parks & Landscaping staff designated by the Superintendent to determine what assistance they will jointly provide to initially improve and then maintain the facility to make it playable for that particular sport and events. This arrangement will then be memorialized with detail for responsibilities in the permit

Recreation issues to the league. A concessionaire's agreement may also provide for complete management and maintenance of a sports facility acceptable to the city.

6. Maintenance conducted by another agency under agreement; such as exists with the City of El Cerrito for Central Park and with East Bay Regional Park District for Alvarado Park. City of Richmond staff or maintenance contractors cannot tend the property of another agency without fully executed agreement to do so. Nor can such City forces tend private property.

5.4.2 Non-irrigated planting – Non-irrigated plantings shall have an establishment maintenance period which encompasses two full rainy seasons (October 15 to April 15 twice). Some mitigation planting areas (usually with native endemic specimens) may require longer periods for maintenance and/or monitoring required by development agreement and/or regulatory agencies.

5.4.3 Specialized Monitoring Programs – During any maintenance period some third party monitoring and testing must be permitted and necessarily included. Such programs may include, but not be limited to the following:

1. Inspections conducted by the Contra Costa Agricultural Commissioner's office.
2. Inspections conducted by other regulatory agencies or their agents.
3. Warranty inspections conducted by manufacturer's representatives of equipment and materials.
4. Inspections and sampling conducted by a soils engineer.
5. Inspections conducted by a certified arborist or biologist.
6. Surveys and mapping.
7. GMX compaction testing of synthetic turf.
8. Playground equipment and surfacing inspections.
9. Water quality inspections.
10. Building inspections.
11. Utility company inspections and testing (with possible USA markings).
12. Conservator inspections of art or historic objects located in the landscape.

**These "Parks and Public Landscaping Standards" have been formatted in such a way that they can also serve as a section in a future comprehensive City of Richmond standards for public improvements as well as an exhibit incorporated by reference in the "Richmond Parks Master Plan".*