

3CP 6 – PLANTING**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and Special Provisions, and other Technical Specification Sections apply to this Section.

1.02 SUMMARY

- A. This Section includes the following for work in the project:
 - 1. Plants and Planting.
 - 2. Mulch Trail.
 - 3. Contractor installation of all products and plants specified and noted on Plans. See plans for plant material to be furnished by owner and plant material furnished by Contractor.
 - 4. Mulch.
 - 5. Provision of As-Built Drawings at the end of Year 1 and end of Year 3.
- B. Related Sections include the following:
 - 1. Section "Soil Bioengineering"
 - 2. Section "Irrigation"

1.03 DEFINITIONS

- A. Owner refers to the Contra Costa County Flood Control and Water Conservation District, which is the lead agency. Owner or Owner's Representative (O.R.) for the project refers to the district engineer, associates, or agents.
- B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
- C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of plant required.
- D. Finish Grade: Elevation of finished surface of planting soil.
- E. Planting Area Soil Mix: soil mix for planting areas.
- F. Subgrade: Surface or elevation of native subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- G. Plant: Any woody or herbaceous plant specified for the project.
- H. Root Guard: Plant protection
- I. Mulch: Organic mulch for top dressing trees, planting areas, and general site areas.
- J. Restoration Plant: Plant grown for the purposed for habitat restoration.

- K. Record (As-Built) Drawings: provide clear, legible, drawing, drafted in AutoCAD 2016 or newer format. Include dimensions and actual installed locations of all installed plants and any permanent irrigation system components, if applicable, as well as other site furnishings included in the Design Drawings. O.R. will provide design files used to develop the bid set in Civil 3D 2016 format.

1.04 SUBMITTALS

- A. Submittal Package: All submittals in this specification section (excluding re-submittals) shall be compiled together and submitted to O.R. as one package.
- B. Product Data and Samples: For each type of product indicated, including ArborTie Green tree tie material, seed mixes, mulch, and Root Guard.
- C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
1. Manufacturer's certified analysis for standard products.
 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Qualification Data: For planting Contractor and irrigation Contractor.
- E. Material Test Reports: For existing surface soil and imported topsoil.
- F. Soil Management Report: Sample Sungold Park, Dainty Triangle Park, right bank at station 340+00, left bank at station 360+00 and right bank at station 369+00. Analyze Sungold Park and Dainty Triangle separately (for a total of three analyses). Furnish prior to start of soil preparation work. The requirements for fertilization and amendments as specified herein, may be modified as necessary by the Landscape Architect prior to start of work in this section. Submit soil samples to a laboratory for analysis and recommendations.
1. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
 2. The soil analysis shall include:
 - a. soil texture;
 - b. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - c. pH;
 - d. total soluble salts;
 - e. sodium;
 - f. percent organic matter; and
 - g. recommendations.
- G. Mock-up: Provide one (1) mock-up for Tree Planting with Staking, see Plan Detail, for O.R. review and approval.
- H. Mock-up of Mulch Trail: Coordinate product approval with O.R. prior to initiating Mock-up. Provide 10-foot long trail section Mock-up at designed depth. Mock-up can be part of the actual installation if approved by O.R.
- I. Mock-up of Plant Patch: Layout plants for a typical plant patch for O.R. review and approval. Patches planted prior to mock-up review and approval shall be replanted to meet

design intent per O.R. direction. This lay out and approval process must occur for each of the Patch Types designated in the Design Drawings.

- J. Maintenance Plan and Schedule: Submit a brief (6-10 page) maintenance plan that details the maintenance approach for each maintenance task. Provide invasive species removal strategies and a schedule that includes seasonal shifts in activities and frequency of site visits. See Irrigation Specifications for irrigation requirements.
- K. As-Built Report: See Section 32-80-00 IRRIGATION.
- L. As-Built Drawings showing all plants installed and any permanent irrigation elements as well as other site furnishings included in the Design Drawings.

1.05 QUALITY ASSURANCE

- A. Planting Contractor Qualifications: A qualified Landscape Contractor whose work has resulted in successful establishment of plants in public park settings. Minimum of five (5) years of experience in each discipline.
 - 1. Field Supervision: Require Contractor to maintain an experienced full-time supervisor on Project site when planting work is in progress.
 - 2. Training and experience in identifying the typical non-native and invasive species common to the region as well as the native plant species specified for the project.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
 - 1. Contractor to indicate source of plant material. Selection of plants will be made by O.R., who will tag plants at their place of growth before they are prepared for transplanting. If designated supplier does not have sufficient quality of quantity of acceptable stock, additional supplier(s) to be designated by contractor.
 - 2. For substitutions, see PART 2 PRODUCTS in this specification section.
- D. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6-inches above ground for trees up to 4-inch caliper size, and 12-inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
- E. Nursery stock shall conform to Guideline Specifications for Nursery Tree Quality: https://upei.calpoly.edu/files/pubs/NurseryTreeSpecs10_13.pdf
- F. Observation: O.R. may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. O.R. retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
- G. Notify O.R. of plant sources two weeks in advance of site delivery.
- H. Pre-Planting Meeting: Conduct meeting at Project site to comply with specified requirements.

- I. The pesticide applicator must have an active and valid qualified applicator license or certificate from the Department of Pesticide Regulation.
- J. Plant Establishment Evaluation: Restoration revegetation success will be measured by the O.R. annually. Results of the monitoring will be provided to the Contractor. The Contractor must adapt the maintenance regime as necessary to meet the success criteria.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Do not prune trees and shrubs before delivery, except as approved by O.R. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during delivery. Do not drop plants during delivery.
- B. Handle containerized plants by container or root ball.
- C. Contractor responsible for health and vigor of contract grown plants once delivered on-site and accepted.
- D. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in shade, protect from weather and mechanical damage, and keep roots moist.
 - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 2. Do not remove container-grown stock from containers before time of planting.
- E. Water root systems of plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.07 COORDINATION

- A. Planting Restrictions: Coordinate planting periods with contract restrictions and maintenance periods.
- B. Ensure new plants are watered during Maintenance Period. Provide schedule and methods to City for review.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
- D. No Planting shall be installed prior to the installation of the irrigation system and its approval by O.R.
- E. Site access must be given to volunteer groups throughout the maintenance period. O.R. will determine timing, location and actions of volunteer groups in coordination and agreement with the Contractor.
 - 1. Anticipated actions by volunteer groups include planting of additional patches (including acorn plantings), irrigating volunteer installed plants, and general site-wide weeding.

1.08 WARRANTY

- A. Plant Warranty: Warrant project plants installed by Contractor, for the warranty period indicated in the Specifications, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.

1. Sungold Park Plant Warranty: One year after written acknowledgement of substantial completion by O.R of all Sungold Park improvements.
2. Restoration Plant Warranty: Through Maintenance Period or 6 months after planting, whichever is longer.
3. Remove dead plants immediately. Replace immediately unless required to plant in the succeeding planting season.
4. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
5. Plant replacements shall be limited to one replacement per specified plant, except for losses or replacements due to failure to comply with Specifications and Plans.

1.09 MAINTENANCE

- A. Three-Year Maintenance Period: Begins at mobilization. Ends June 15th three years following year one planting or after year three planting is complete, whichever is later. (e.g. if mobilization begins November 2020, and year 1 planting is completed in spring 2021, the maintenance period would end June 15th, 2024).
 1. Maintenance of planting and irrigation within Sungold Park will be done by the City following written acknowledgement by the O.R. of substantial completion of all Sungold Park improvements.
- B. Quarterly Reports: Summarize work completed during the previous quarter, including invasive species removed, weeding, status of irrigation and irrigation approach and a qualitative summary of overall plant and site health. Provide a look ahead for the next quarter, and a revised schedule if necessary. The final report submitted at the end of the project must include a list of ongoing maintenance activities required, and items to monitor for successful maintenance of the site by others.
- C. Plants: Maintain by pruning, cultivating, watering, weeding, restoring planting basins, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Restore or replace damaged tree wrappings. Target weed management timing to minimize seed setting of weed species.
- D. Patches and individual landscape plants
 1. Mark individual plants installed outside patches with flagging or similar strategy to protect from inadvertent trampling, weeding, or line-trimming.
 2. Weeding: Maintain patches free of weedy non-native vegetation within mulched area.
 3. Maintain mulch to specified depth for the duration of the maintenance period.
- E. Landscape areas outside of patches: Areas outside of patches will be seeded by others prior to mobilization. Contractor must line-trim and weed to maintain areas to encourage vegetative cover, while limiting invasive species cover. Coordinate timing of line trimming with O.R. to precede seed setting of non-native species.
 1. Weeding: Remove all invasive species
 2. Fire Abatement: Dry grass/herbaceous plants must be cut to 3-inches or less within 10-ft of Marsh Creek Trail. Preserve and protect all container plants within this zone. Non-native dry grass/herbaceous plants further than 10-ft from the trail must be cut 6-8" in height. Protect volunteer and planted native plants.

- F. Invasive species: Remove all invasive species listed moderate and above by the California Invasive Plant Council (CAL-IPC). Remove species following recommended protocols per CAL-IPC.

1. Herbicide shall not be applied within 100 feet of wetlands, ponds, streams, or riparian habitat. However, where appropriate to control serious invasive plants, herbicides that have been approved by the U.S. EPA for use in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control nonnative invasive species. Herbicide drift should be minimized by applying the herbicide as close to the target area as possible and by avoiding applying during windy days.

- G. Plant Establishment Success Criteria: Plant establishment must meet the vegetation performance criteria and the maximum roughness allowed for hydraulic conveyance of flood waters.

1. Vegetation Performance Criteria:

	1 Year after planting (2021)	3 Years after planting (2024)
total vegetation cover (absolute)	>5%	>20%
% native plant cover (relative)	>20%	>40%
% highly invasive species (relative)	<15%	<10%
% moderately invasive species (relative)	<20%	<15%
% bare ground (absolute)	<20%	<15%
% canopy cover (absolute; creek at low flow)	>1%	>5%
tree density within 20-ft of stream side of trail (# live trees, height [ft] per 40 ft of trail)	2, 2	2, 3

2. Maximum Roughness for Hydraulic Conveyance: Manning's n for the vegetated floodplain and banks range from 0.065 to 0.085. See the 90% Design Hydraulic Modeling Report for additional information.
3. See Section 32-80-00 Irrigation for plant performance criteria related to irrigation related stress.

- H. General Site Maintenance: Remove and dispose all contractor generated refuse and green-waste generated from invasive weed removal. Alert O.R. of any dumping, trash accumulation, or vegetation damage due to vandalism or herbivory on-site within 48 hours.

1. Keep all walks and paved areas clean.

- I. District Required Clear Zones: Remove any woody vegetation and maintain 2-ft maximum height of grasses (measured from ground to topmost leaf):

1. Within 10-ft of side drains and outfalls
2. At Personnel Access Corridors
3. At Vehicular Access Corridors

- J. Maintenance demobilization: Prior to substantial completion of maintenance period complete the following tasks as directed by O.R:

1. Remove tree stakes from trees

2. Remove temporary restoration irrigation equipment installed by Contractor, including but not limited to buried and surface lines, emitters, heads, valves, stakes and controllers. Mainline and quick couplers shall be preserved and protected in place.

PART 2 PRODUCTS

2.01 SOIL AMENDMENTS – SUNGOLD PARK PLANTING (BASE BID**) AND DIANTY TRIANGLE PARK (**ADDITIVE BID ITEM NO. 5**)**

- A. Quantities are for bid purposes only. The Contractor shall install soil amendments as specified by soil test results or designated by Landscape Architect
- B. Organic Soil Amendment: Incorporate at a rate of 4 cy per 1,000 sf of planting area. Ground or processed wood product shall be Type I, as approved by the Landscape Architect and conform to the provisions of the Standard Specifications for Public Works Construction, Latest Edition Section 212-1.2.4.
- C. Commercial Fertilizer: Best Pro-Balance 15-15-15 at 590 lbs per acre. All materials shall comply with Section 212-1.2.3 of the Standard Specifications for Public Works Construction, Latest Edition.
- D. Agricultural Gypsum: Shall conform to Section 212-1.2 of the Standard Specifications for Public Works Construction, Latest Edition.
- E. Planting Tablet: Agriform 21 Gram.

2.02 PLANT MATERIAL

- A. General
 1. Restoration Plants supplied by others. Landscape Plants supplied by Contractor.
 2. Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to O.R., with a proportionate increase in size of roots or balls.
- C. Label every individual tree specified and one plant of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- D. If formal arrangements or consecutive order of trees or plants is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.
- E. Trees
 1. Single and multi-stem trees as appropriate for the site conditions and species and as directed by the Plans, Specifications, and O.R. Verify species specific tree forms with O.R. prior to selection and purchase. Select for well-branched and well-balanced crown, and intact leader. Comply with ANSI Z60.1 for type of trees required. Trees (within species) shall be generally matching for height, canopy, and branching structure.
 2. Tree Structure: Trees shall be container-grown with healthy and proper branching and root structures.
 3. During selection, O.R. reserves right to inspect all tree rootwads. Containers shall be pulled rootwads inspected. Roots shall be healthy, well-developed and extending

outward from the base of the trunk. Trees with circling, girdling, diving and kinked roots shall be rejected.

4. Improper root structures may be allowed to be corrected prior to planting if Contractor utilizes the services of a Certified Arborist to correct the root problems.
5. Tree Branching Height: One-half of tree height in single stemmed trees, multi-stemmed restoration form trees shall have branching within lowest third of the total tree height.
6. Tree Trunks: Trunks shall be sturdy and self-supporting of the entire tree canopy without the benefit of staking. Trees with trunks which exhibit drooping, bent, or weak trunk structure will not be accepted. Staking will not be acceptable as a correction method for weak trunk structure.

F. Container Plants

1. Form and Size: Normal-quality, well-balanced, plants, of type, height, spread, and shape required, complying with ANSI Z60.1. Provide and container-grown plants
Container Sizes: All plants shall be healthy, vigorous, fully leafed and well-branched specimens. Strongly rooted plants shall be provided. All plants from a Certified, California licensed nursery vendor specializing in native plants. Plants deemed unhealthy or lacking in vigor shall be rejected by the Engineer and replaced with same species (from a different nursery if necessary). Plant types and sizes and planting methods are noted on the Plans and Specifications.
2. Specified Sizes: (not all sizes may be utilized on the site)

Supercell (SC)	(1.5" dia. X 8.25" deep) similar to Plug
D16	(2" dia. X 7" deep)
D40	(2.5" dia. X 10" deep)
TB4	(4" sq.. X 10" deep)
TP4	(4" sq.. X 14" deep)
1 Gallon	(standard nursery size)
5 Gallon	(standard nursery size)
15 Gallon	(standard nursery size)

- G. Substitute Sizes for Plants: Should plants specified not be available in the specified containers, substitutes or changes in species shall be considered by the O.R.

2.03 PLANT ACCESSORIES

A. RootGuard™ Heavy Duty Tree Size Gopher Wire Basket (or approved equal):

1. Twenty-gauge, three-quarter-inch hex mesh, Hot-dipped galvanized before weaving.
2. 15-gallon: 17" diameter x 20" deep
3. 5-gallon: 12" diameter x 14" deep

B. Mulch

1. Planting and Mulch Trail: Treeincarnation from Green Waste Recycle Yard, (510) 527-8733 or approved equal (to be approved during submittal process).
2. City Owned Parcels (Sungold Park, Dainty Triangle Park, Central Blvd Triangle, Duffy Meadow): City of Brentwood Standard Spec, Shredded Cedar Bark as manufactured by Hyphenex or approved equal.

- a. The mulch shall consist of fibrous, woody bark mixture of varied particle size such that physical properties:

Percent Passing	Sieve Size
90 – 100	25.4 mm (3/4")
80-100	12.7 mm (1/2")
20-60	6.35 mm (3/8")

- C. Tree Stake: Provide two (2) per Tree. Size, 2-inch diameter wood tree stakes with sharpened end point and perpendicular cut top. Size, 2-inch diameter, minimum length 8'-0". Provide longer stake lengths (up to 10'-0" long) if required due loose subgrade soils.

1. Provide ArborTie Green tree staking ties. Woven polypropylene (3/4"), 900 lbs. tensile strength. As provided by DeepRoot, 800.458.7668.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive plants and irrigation for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Schedule a pre-planting meeting with O.R. on-site to coordinate any changes to planting locations with irrigation layout, prior to initiating irrigation work.

3.02 PLANTING AREA PREPARATION

- A. Coordinate work with Specifications
- B. Protect structures, utilities, sidewalks, pavements, and other facilities, and existing plants from damage caused by planting operations.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Lay out individual plants and patches per plans for review by O.R. Clearly mark for review. Obtain O.R. acceptance of layout before planting. Make minor adjustments as required.

3.03 CONTAINER PLANTING PIT PREPARATION

- A. Coordinate work with Specifications
- B. Loosen subgrade of planting pits. Remove stones larger than 3-inches in any dimension and sticks, roots, rubbish, and other extraneous matter and carefully dispose of off-site.
- C. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Rake and remove ridges and fill depressions to meet finish grades.
- D. Restore planting pits if eroded or otherwise disturbed after finish grading and before planting.

3.04 TREE AND PLANT EXCAVATION

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base of pit or trench leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation. See Plans for additional detail.
- B. Obstructions: Notify O.R. if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

1. Hardpan Layer (if encountered): Drill 6-inch diameter holes into free-draining strata and backfill with a 50/50 mix of free-draining Planting Area Soil Mix and Native Soil.
- C. Drainage: Notify O.R. if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- D. Fill excavations with water and allow them to percolate away before planting and positioning trees and shrubs.

3.05 PLANTING AND MULCHING PROCEDURES

- A. Follow procedures on Plans and Specifications, as well as means and methods approved by O.R. in Mock-ups.
- B. Set plants plumb and in center of pit or trench as noted on details.
- C. Remove containers, burlap, and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not plant trees or shrubs if root ball is cracked or broken before or during planting operation.
- D. Install Rootguard per manufacturers recommendation
- E. Use Native Soil as backfill for all plantings. Spread out and grade into site contours all excess Native Soil from planting pit excavation and Planting Area Soil Mix blending on-site.
- F. Place Native Soil around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When planting pit is approximately one-half backfilled, water thoroughly before placing the remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil.
- G. Stake per Plans and ArborTie Green manufacturers recommended procedure for knots and dimensions.
- H. Tree, Planting Areas, and Mulch Layout: Coordinate any planting location changes prior to irrigation layout.
 1. Trees and individual plants shown on plans will generally be sited as noted on the Plans. O.R. reserves the right to request Contractor to relocate trees prior to planting at no cost to Owner.
- I. Mulch:
 1. Provide mulch for all plants, patches, and where noted on plans.
 2. Provide 4-inch thick layer of mulch at all plants and other mulched areas unless otherwise noted.
 3. Hold mulch edges to 3:1 max slope when adjacent to paving and 2-inches clear of plant leader/trunk.

3.06 TREE AND PLANT PLANTING AND PRUNING

- A. Only prune new trees and shrubs if directed by O.R.

3.07 CLEANUP AND PROTECTION AND DISPOSAL

- A. During planting installations keep adjacent pavements and improvements clean and the work area in an orderly condition.
- B. Protect plant installations from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged planting.

- C. Disposal: Remove surplus soil, and waste materials, including excess subsoil, unsuitable soil, irrigation debris, and general debris, and legally dispose off City property.