

PLANTING NOTES:

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	200A-01-10	2018	140	146

- ORIGINAL
PLAN

NOTE BOOK

No.
- SURVEY PLOTTED BY

DRAWN BY

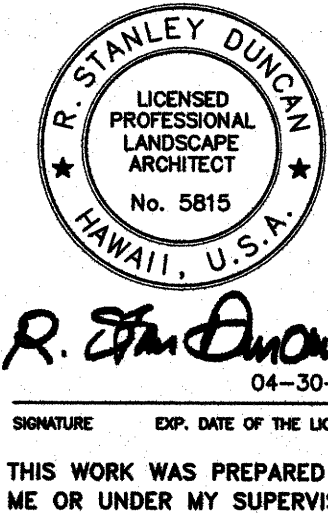
DESIGNED BY

QUANTITIES BY

CHECKED BY
- DATE

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- Temporary irrigation shall be provided and installed by the Contractor for the duration of the project. Temporary irrigation system shall be considered incidental to Specification Section 619 - Planting. The Contractor shall be responsible for locating, determining, and establishing the water source and delivery method of the water to the project site. Contractor shall be responsible for obtaining and maintaining all necessary permits and agreements for the source of the water for the irrigation system as well as ensuring water is delivered to the site for the duration of the project. Replace watering equipment that cause erosion or runoff. Water will be considered an incidental cost to the project. The Contractor shall provide and maintain all equipment required to deliver water to the project site. Contractor shall also be responsible for obtaining all necessary permits and agreements for the source of water for the temporary irrigation system.
- Contractor shall be responsible for weeding throughout he 9-month plant establishment period. All removed weeds shall be immediately placed in plastic bags to minimize the spread of weed seeds. Contractor shall keep all new planting areas at least 90 percent of weeds and grass considered undesirable by the Engineer. Keeping new planting areas at least 90 percent free of weeds and grass considered undesirable by the Engineer is required as a condition of acceptance for the planting period, plant establishment period, and final acceptance. Refer to Specification Sections 641.03(D), 641.03(E) and 641.03(F).
- Tree roots greater than 2 inches in diameter shall not be disturbed. Cutting of tree roots larger than 2 inches in diameter must be approved by an ISA Certified Arborist with a minimum of 10 years of continuous licensure and experience, and, accepted by the Engineer. Contractor to submit arborist's qualification and a tree root assessment report to the Engineer for approval prior to cutting tree roots. Root pruning shall be done in conformance with ANSI a300 (Part 8) latest edition. Root pruning shall take place under the supervision of the approved arborist at all times.
- The Contractor may procure plant material after Contract Award and prior to the agreed Notice To Proceed with approval of the Engineer. The Contractor shall present the list of plant materials for procurement to the Engineer for review and acceptance before procuring plants. Plants not conforming to contract document requirements will be rejected.
- Any planting that obstructs sight distance, signs, or traffic lights shall be pruned, relocated, or removed as determined by the Engineer, at no expense to the State.
- Unless specifically identified to remain, Contractor shall demolish and remove invasive and/or non-native trees and shrubs, within the project limits, with trunk caliper of less than 8-inches.



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLANTING NOTES
MAUNA KEA MAINTENANCE
BASEYARD
DANIEL K. INOUE HIGHWAY

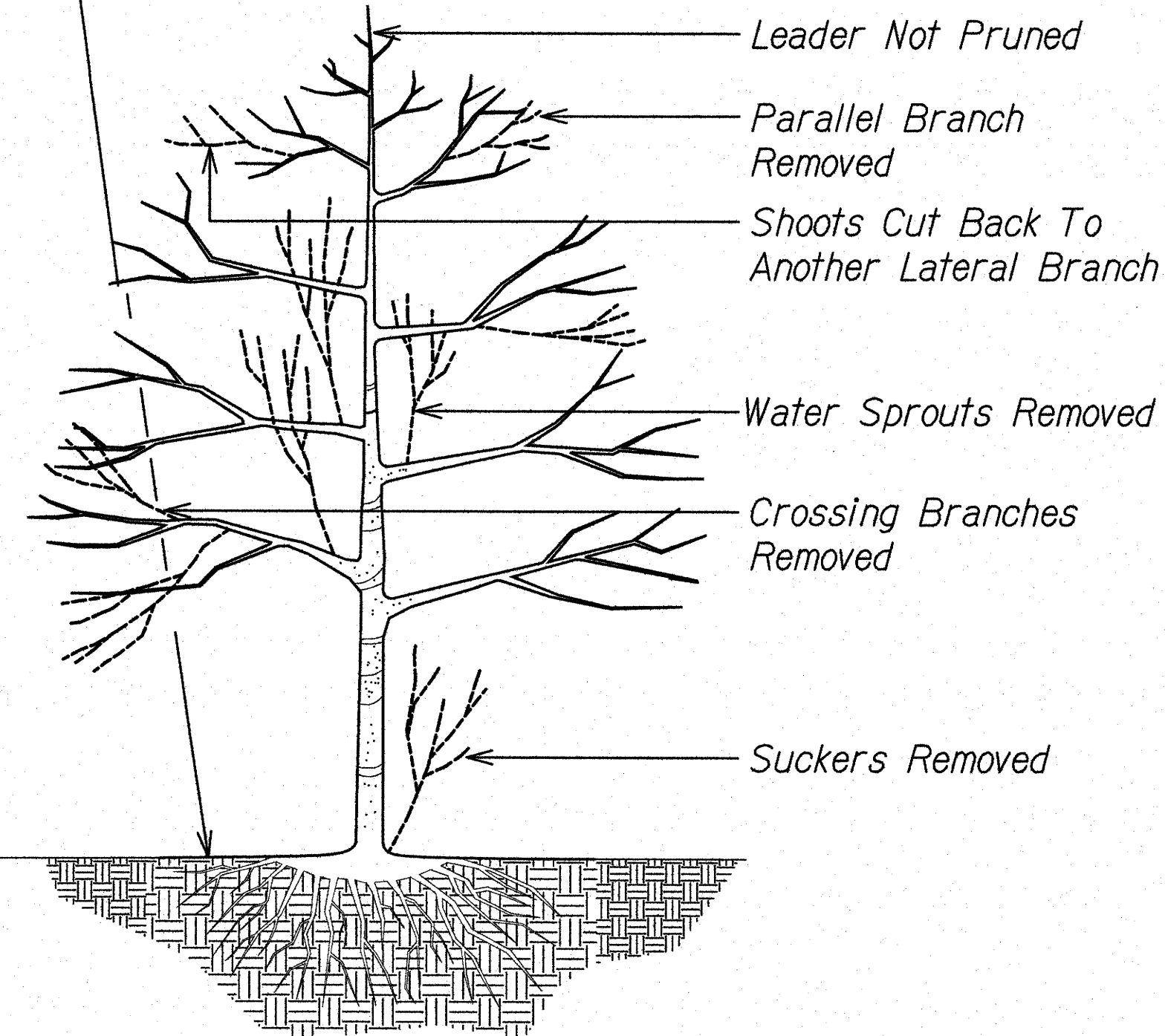
Project No. 200A-01-10
Scale: Not to Scale Date: April 2018
SHEET NO. L-1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	200A-01-10	2018	141	146

TREE PROTECTION ZONE:

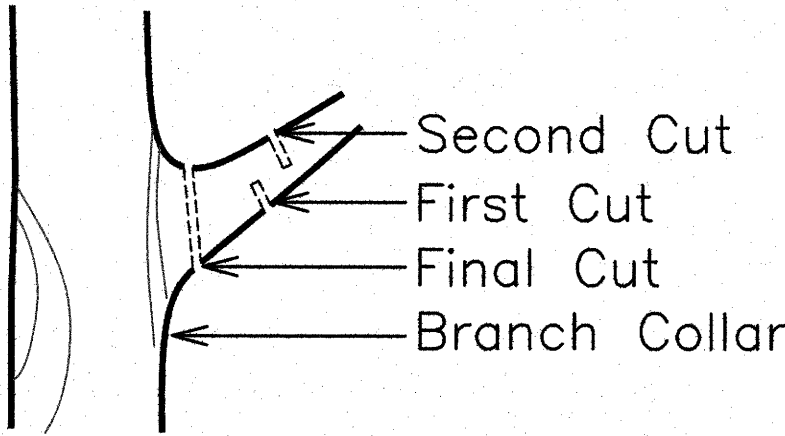
1. All trees identified on the plans shall be protected unless noted otherwise. If trees other than those designated for removal are damaged beyond survival condition as determined by the Engineer, the Contractor shall remove such trees and replace with a tree of the same species and size and maintain for the duration of the construction or 12 months whichever is greater at no cost to the State.
2. The recommended tree protection zone should be located at the outer drip line of the canopy of the tree. However, the minimum protection zone around a tree should be at least 10 feet from the external surface of the tree's trunk. For all palms, the minimum protection zone should be at least 10 feet from the external surface of the palm's trunk. Fence location may be adjusted as directed by the Engineer.
3. All underground utilities and irrigation lines should be routed outside of the tree protection zone. If utilities must traverse the tree protection zone, they shall be tunneled or bored at a depth of 4 feet or greater within the tree protection zone.
4. All protected trees shall be listed on the demolition, landscape, grading and utilities plans. If there is a discrepancy with all plans, Contractor shall contact Engineer immediately.
5. Protective fences shall be erected around trees identified on plan to remain and/or trees with a trunk diameter greater than 8 inches (as measured at a height of 4 1/2 feet.) Protective fence shall be 4 feet high orange plastic mesh or approved equivalent supported on steel T-post a minimum of 6 feet long. Protective fence shall surround tree at a minimum of 10 feet from tree trunk with steel T-post at a minimum of 5 feet on center. Fence shall be installed prior to any demolition work and shall remain in place until site work is completed. Signs shall be posted on all four sides to read "TREE PROTECTION ZONE [TPZ] - NO GRADE CHANGE, STORAGE OR EQUIPMENT PERMITTED WITHIN TPZ."
6. For the duration of construction within the drip line of the trees to remain there must be:
 - No changes, alteration or disturbance to the grade by adding fill, excavating or scraping except as noted on plans;
 - No storage on construction materials or equipment;
 - No stockpiling of any construction materials or excavated materials;
 - No disposal of any liquids (e.g. concrete slurry, gas, oil, paint);
 - No vehicular traffic, equipment or excessive pedestrian traffic;
 - No attachment of any wires, ropes, lights or any other such attachment other than those of a protective nature to any tree to be preserved; and
 - No cleaning of equipment or material under the canopy of any tree or group of trees to be preserved
7. Contractor shall refer to Specification Section 201 - Clearing And Grubbing for additional tree protection instructions.

Tree Roots Shall Not Be Cut Unless Cutting Is Unavoidable. When Root Cutting Is Unavoidable, A Clean, Sharp Cut Shall Be Made To Avoid Shredding Or Smashing. Root Cuts Shall Be Made Back To A Lateral Root Whenever Possible. Roots 2-inches Or Greater In Diameter Shall Be Tunneled Or Bored Under And Shall Be Covered To Prevent Dehydration. Exposed Roots Shall Be Covered Immediately With Soil Or Burlap And Kept Moist. No Roots Larger Than 2-inches Shall Be Cut Unless No Other Alternative Is Feasible, Approved By A Certified Arborist, And Accepted By The Engineer. Fertilize And Water To Minimize Shock As Directed By A Certified Arborist Or Engineer.

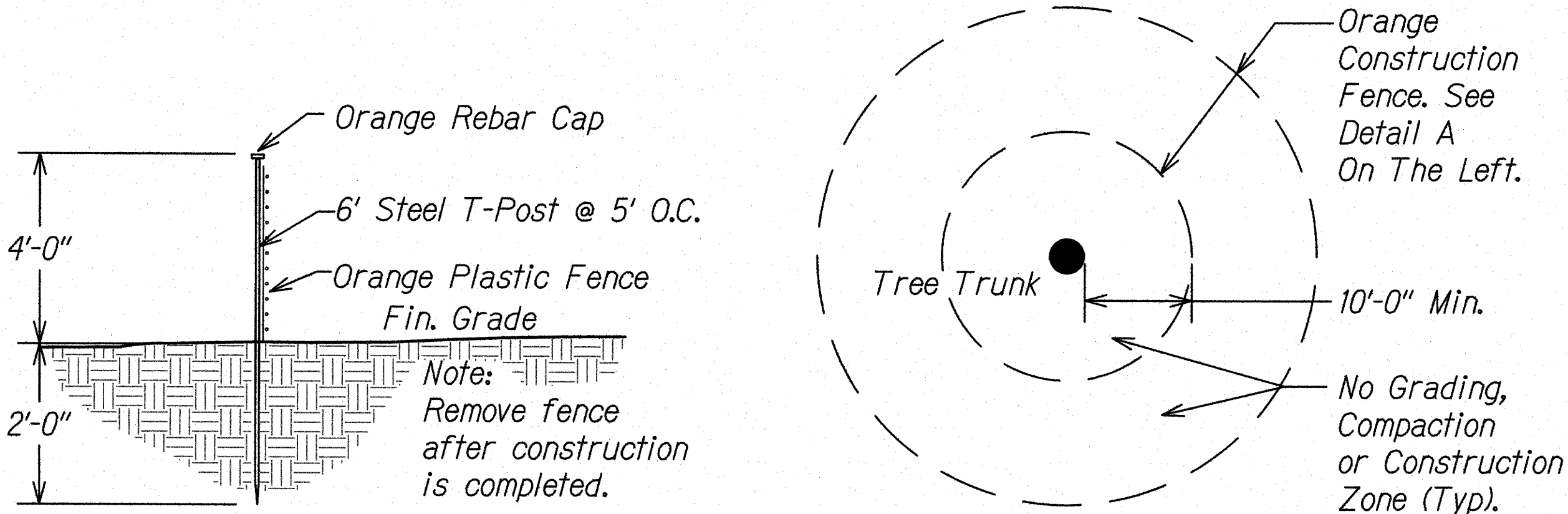


Notes:

1. Positions of first and second cuts may be reversed in some cases, particularly when cutting a large branch with a chainsaw.
2. Do not make flush cuts or leave stubs.
3. Do not paint cuts.
4. Remove dead, broken or malformed branches.
5. Remove all vines entwined in the tree or around its trunk.
6. All pruning shall be completed using clean sharp tools. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears.
7. Dispose of all cuttings in accordance with Specification Section 201 - Clearing And Grubbing.
8. Retain the normal shape of the plant.
9. All work shall be done in the presence of an ISA Certified Arborist.

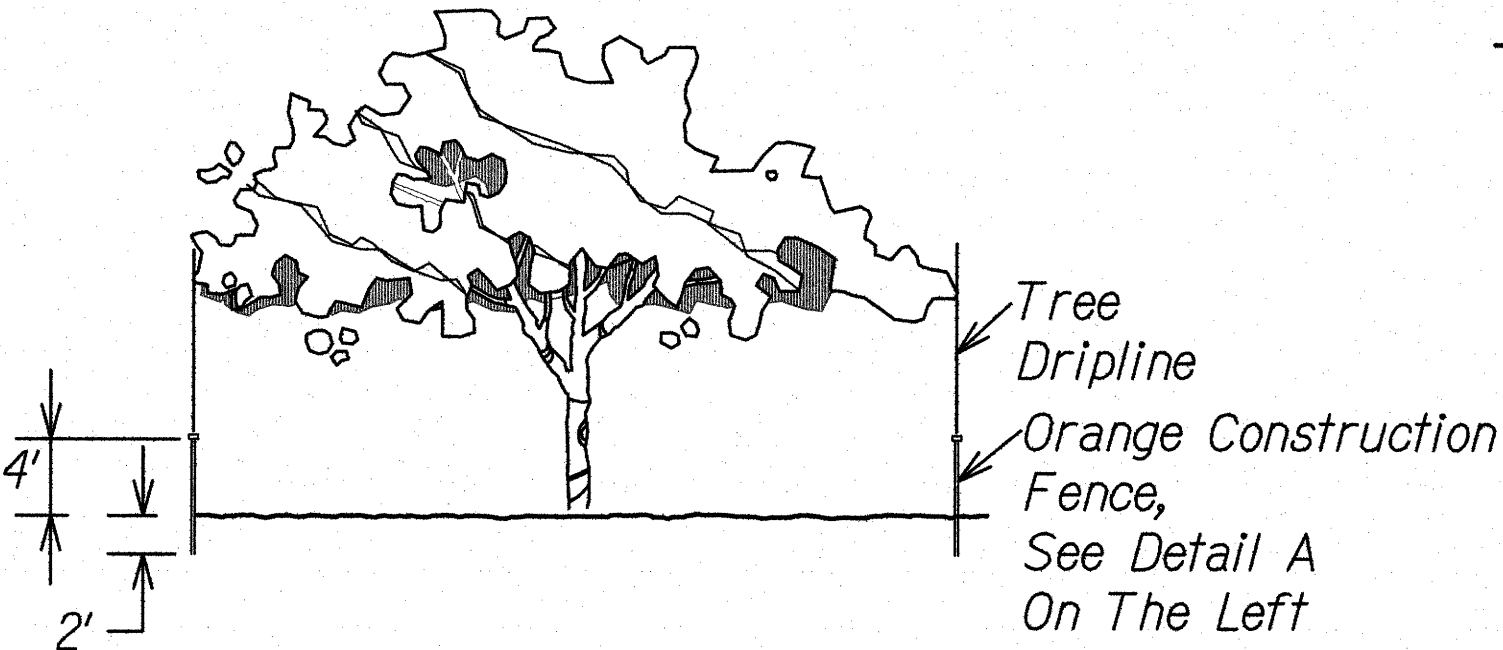


TYPICAL BRANCH REMOVAL
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DETAIL A - ORANGE CONSTRUCTION FENCE
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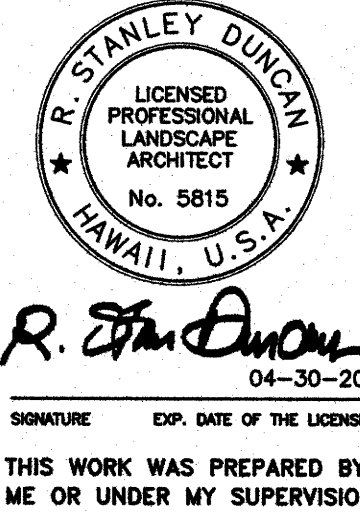
PLAN VIEW
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SECTION
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TREE PRUNING DETAIL
Scale: Not to Scale

2
L-2L-2



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TREE PROTECTION DETAIL

MAUNA KEA MAINTENANCE
BASEYARD
DANIEL K. INOUE HIGHWAY



Project No. 200A-01-10
Scale: Not to Scale Date: April 2018

SHEET NO. L-2 OF 7 SHEETS

L-2

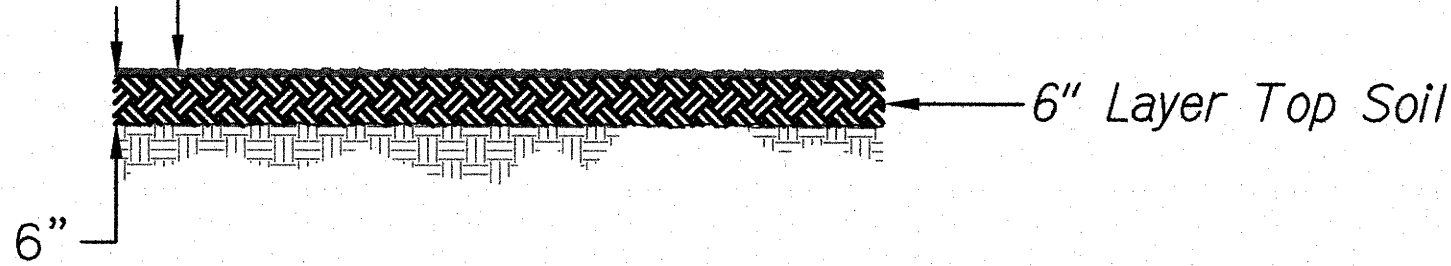
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- 16.1.3. Use narrow-tine spading forks to comb soil to expose roots with minimal damage to root system.
- 16.1.4. Cut exposed roots manually with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
- 16.1.5. Temporarily support and protect exposed roots from damage until they are permanently redirected and covered with soil. Cover roots with burlap and keep them moist until planted. Do not paint or apply sealants on cut root ends.
- 16.1.6. Backfill trench with excavated soil.
- 16.2. Crown Pruning (Tip Pruning): Perform preparatory crown pruning as shown on Drawings, under direction of arborist.
17. EXCAVATION AND PLANTING EQUIPMENT
- 17.1. Tree Spade: Track-mounted mechanized tree mover; sized according to manufacturer's size recommendation for each tree being transplanted.
18. EXCAVATING PLANTING PITS
- 18.1. General: Excavate under supervision of the arborist. Refer to detail 2/L-4 Field Stock Tree Planting detail
- 18.2. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees are encountered in excavations.
19. EXTRACTING TREES
- 19.1. General: Extract trees under supervision of the arborist.
- 19.2. Orientation Marking: Mark the north side of each tree with non-permanent paint before extracting.
- 19.3. Root-Ball Depth: As determined by the arborist for each species and size of tree and for site conditions at original and planting locations.
- 19.4. Extracting with Tree Spade: Use the same tree spade to extract the tree as will be used to transport and plant the tree. Do not use tree spade to move trees larger than the manufacturer's maximum size recommendation for the tree spade being used. When extracting the tree, center the trunk within the tree spade and move tree with a solid ball of earth.
20. PLANTING
- 20.1. Planting Standard: Perform planting according to ANSI A300 (Part 6) unless otherwise indicated. Ensure that root flare is visible after planting.
- 20.2. Orientation: Position the tree so that its north side, marked before extracting, is facing north in its new location.
- 20.3. Set tree plumb and in center of planting pit with top of root flare 2 inches above adjacent finish grades.
- 20.4. Backfill Soil: Excavated soil mixed with planting soil of suitable moisture content and granular texture for placing and compacting in planting pit around tree, and free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mixture: Well-blended mix of two parts excavated soil to one part planting soil. Refer to Section 617-Planting Soil for imported planting soil material.
- 20.4.1. If area under the tree was initially dug too deep, add backfill to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
- 20.4.2. After placing some backfill around root ball to stabilize plant, begin backfilling.
- 20.4.3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Redirect exposed root ends downward in backfill areas where possible. Hand-expose roots as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.
- 20.4.4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended by arborist. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
- 20.4.5. Continue backfilling process. Water again after placing and tamping final layer of soil.
21. CROWN PRUNING
- 21.1. Prune branches as shown on Drawings, under direction of arborist. Prune to remove only injured, broken, dying, or dead branches. Do not prune for shape. Do not remove or reduce living branches to compensate for root loss caused by cutting root system or to improve natural tree form. Pruning Standards: Perform pruning according to ANSI A300 (Part 1). Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.

  04-30-20 SIGNATURE EXP. DATE OF THE LICENSE THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION <u>TREE RELOCATION - 1</u> <u>MAUNA KEA MAINTENANCE</u> <u>BASEYARD</u> <u>DANIEL K. INOUE HIGHWAY</u> <u>Project No. 200A-01-10</u> Scale: Not to Scale Date: April 2018 SHEET NO. L-3 OF 7 SHEETS
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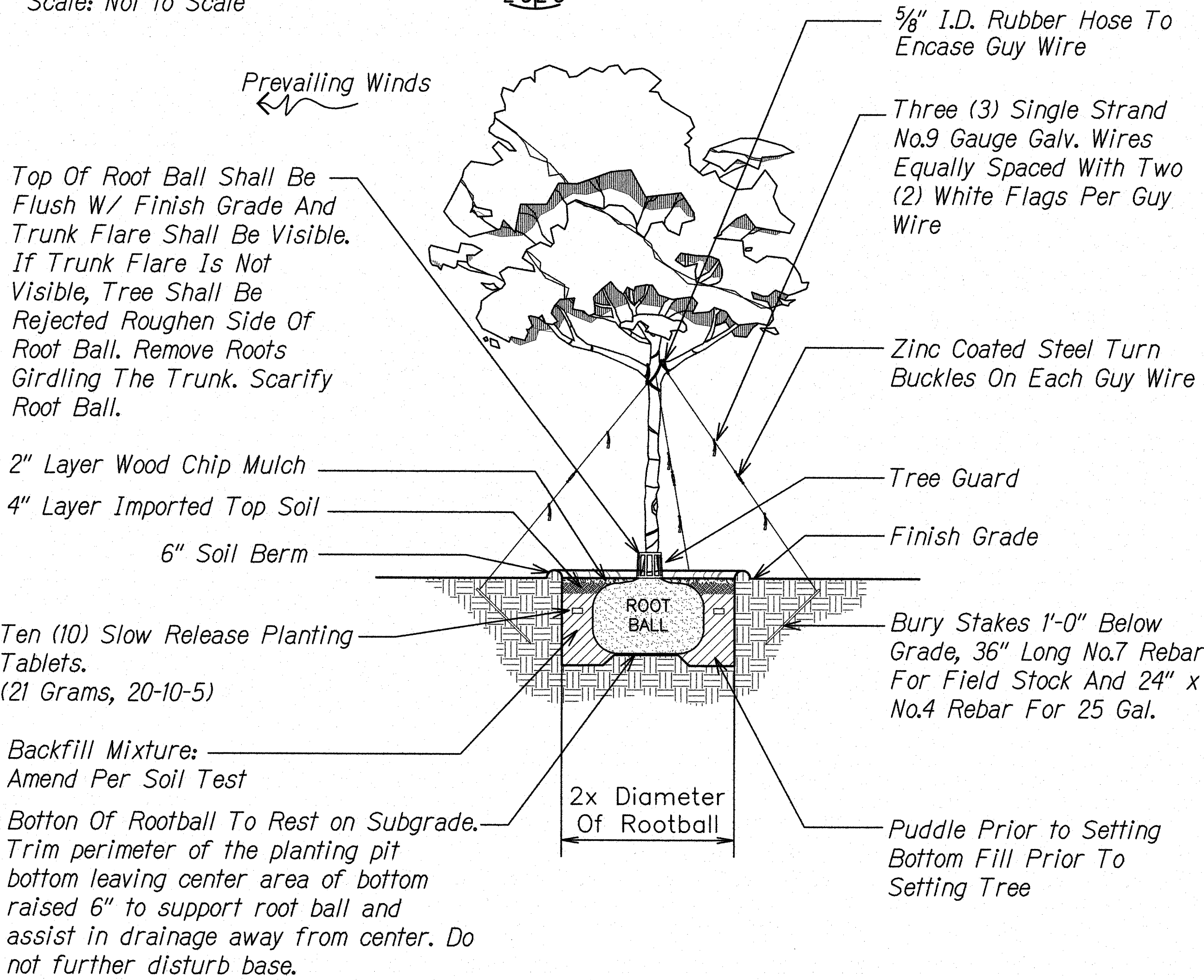
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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Hydro seed/ hydro sprig:
 Shall Be Specifically Processed Fiber Containing No Growth Or Germination Inhibiting Factors. It Shall Be Such That After Addition And Agitation In The Hydraulic Equipment With Seeds/Sprigs, Fertilizer, Water, And Other Additives Not Detrimental To Plant Growth, The Fibers Will Form A Homogeneous Slurry. When Hydraulically Sprayed On The Soil, The Fibers Shall Form A Blotter-Like Ground Cover Which Readily Absorbs Water And Allows Infiltration, Complete Coverage Of The Surface Shall Be Attained.



HYDRO-SEED/SPRIG DETAIL

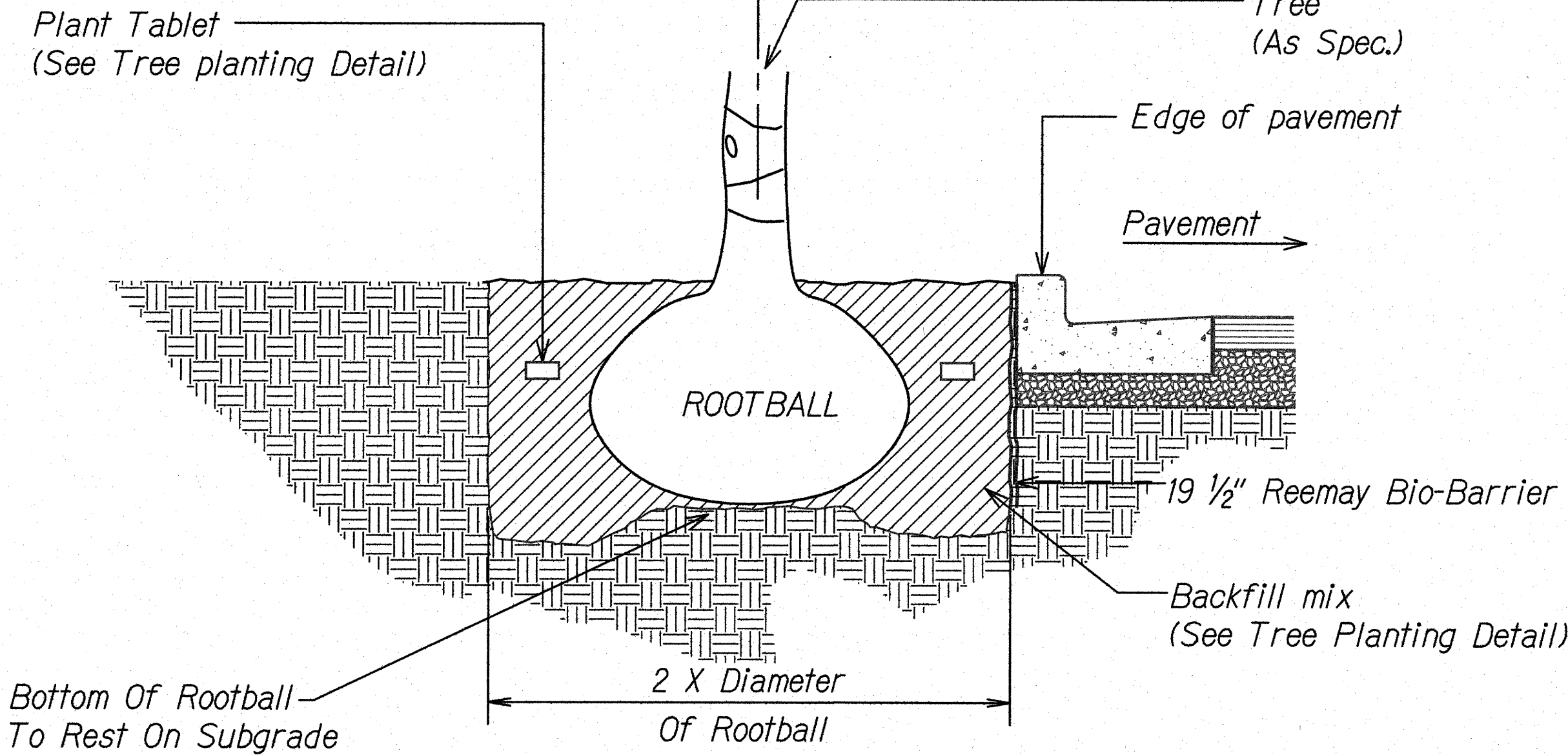
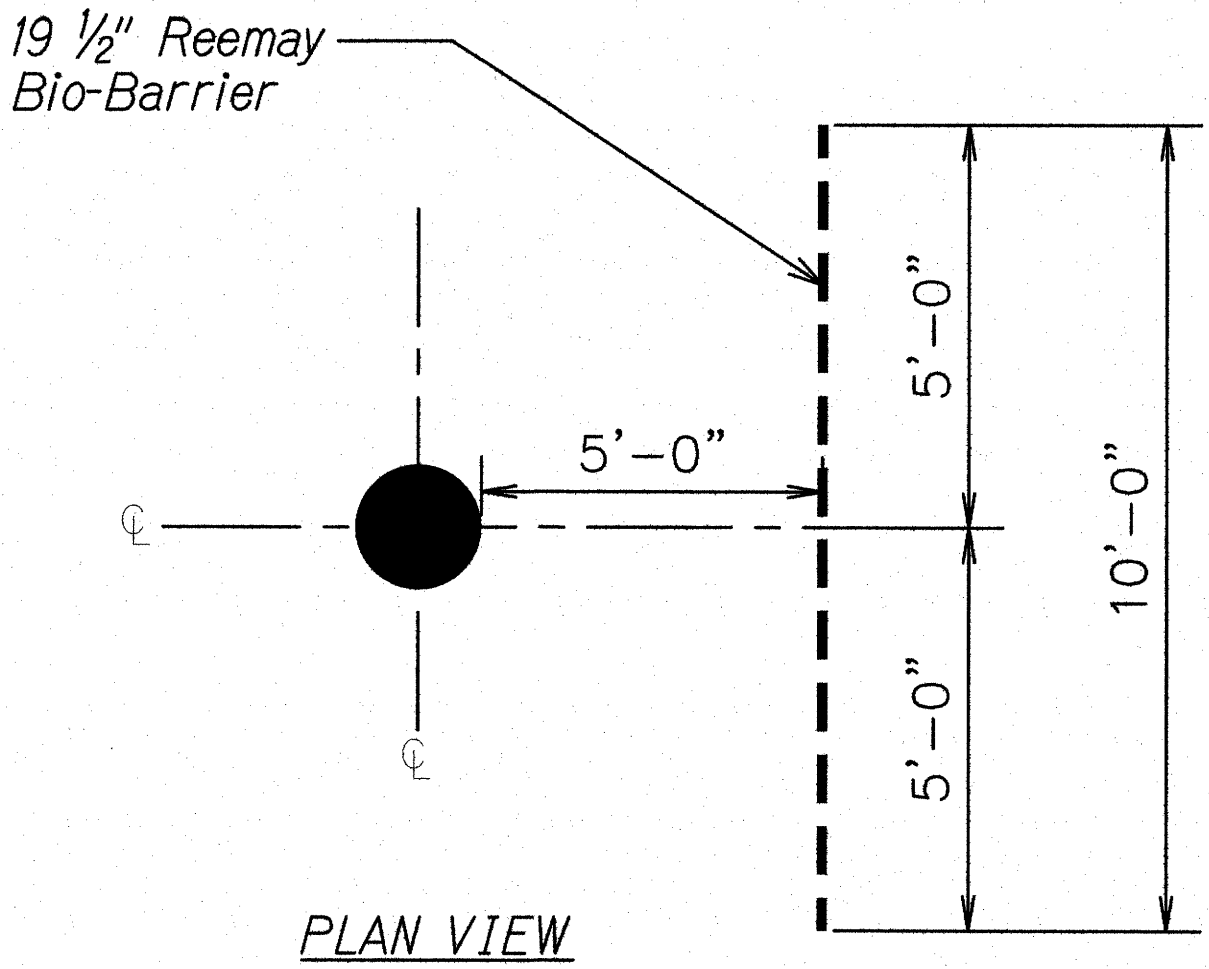
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NOTE:
 Tree shall be plumb. If tree is leaning at the end of the plant establishment period, the tree shall be rejected.

FIELD STOCK TREE PLANTING DETAIL

Scale: Not to Scale



NOTE:
 Nodules to face tree. Place top edge of bio-barrier at finish grade and secure w/manufacturer provided pins. Seams shall have minimum 3" overlap. Refer to manufacturer instructions for bonding the seam. Do not allow gaps in fabric during installation or backfilling. Bio-barrier should not be left exposed to surface water or sunlight for more than 12 hours since high temperatures and sunlight reduce effective life of product. Refer to product label and MSDS sheet for safety information.

ROOT BARRIER DETAIL

Scale: Not to Scale

R. Stanley Duncan
 LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
 No. 5815
 HAWAII, U.S.A.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

PLANTING DETAILS

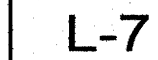
MAUNA KEA MAINTENANCE
 BASEYARD
 DANIEL K. INOUE HIGHWAY

Project No. 200A-01-10

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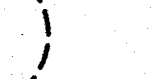

SHEET NO. L-5 OF 7 SHEETS


ORIGINAL PLAIN	SURVEY PLOTTED BY _____ DATE _____	
	DRAWN BY _____	
NOTE BOOK	TRACED BY _____	
	DESIGNED BY _____	
	QUANTITIES BY _____	
	CHECKED BY _____	
N _o _____		



146

PLANT SCHEDULE

<u>TREES</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
	4	MYOPORUM SANDWICENSE	NAIO (EXISTING TO REMAIN)
	2	SOPHORA CHRYSOPHYLLA	MAMANE (EXISTING TO REMAIN)
	10	SOPHORA CHRYSOPHYLLA	MAMANE (RELOCATED)
<u>GROUND COVERS</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
	5,375 SF	PENNISETUM CLANDESTINUM	KIKUYU GRASS (HYDRO-SEED)



R. Stanley Duncan
04-30-

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLANTING PLAN
MAUNA KEA MAINTENANCE
BASEYARD
DANIEL K. INOUE HIGHWAY

Project No. 200A-01-10
Scale: As Shown Date: April 2018
 SHEET NO. L-7 OF 7 SHEETS