

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD. 47	57

PLANTING NOTES:

- The Contractor shall coordinate all landscaping work with the Department of Transportation, Landscaping Branch (Chris Dacus, ph. 692-7600) and Lani-Kailua Outdoor Circle.
- Backfill mix shall consist of three (3) parts of imported screened soil to one (1) part E.K.O. Compost. Add one (1) pound of Nutra Coat 13-13-13 fertilizer to one (1) cubic yard of backfill mix. Mix thoroughly on project site prior to any planting operations.
- Planting tablets for trees, palms, and shrubs shall be as follows:

A) field specimen 12 tablets

B) 25 gallon 8 tablets

C) 15 gallon 5 tablets

D) 5 gallon 3 tablets

E) 3 gallon 2 tablets

F) 1 gallon 1 tablet
- Use Agriform tablets 20-10-5, 21 gram size
- Loulu palms for transplanting shall be retrieved from Pua Lani Landscape Design in Waimanalo (ph. 261-7517). Contractor shall be responsible for transporting and transplanting of Loulu palms.
- ~~Royal palms are located at 1205 Ulunahala Street. Contractor shall be responsible for removal, transporting and transplanting of all Royal palms and complete restoration of origin site including landscaping consisting of grass and a new wooden fence to match existing.~~
- Contractor shall use only approved methods of transporting and transplanting of palms.
- Contractor shall restore all existing lawn areas in median damaged during or as a result of construction operations. Restored lawn shall be hydromulched with Common Bermuda.

- New Loulu Palms shall match genus/species of Loulu Palms to be transplanted.
- Hydromulch seeding shall be placed evenly and completely over the designated limits in one application at a minimum rate of 1,500 pounds of mulch per acre.
- Provide vigorous plantings in the areas shown on the drawings with hydromulched seed, provide for watering and maintenance, leaving plant material in a healthy, vigorous growing condition.
- At the preconstruction meeting, provide a written projected planting schedule noting the estimated completion date, number of working days required and any special coordination requirements. Landscape contractor to provide source and methods for temporary irrigation if permanent system not shown.
- Seeds of native plants are available through Hui'ku Maoli Native Plant Nursery, phone 259-6580. Apply as shown on drawings. Seedlings shall be healthy with at least three (2) branches and nodes.
- The landscape contractor shall accept the condition of the site prior to starting work.
- The area of application shall be reasonably smooth relative to the site, settled and free of voids.
- DOT Landscape Architect will select and approve all the plants at the place of growth and inspect after delivery to the project.
- Prior to tree and shrub hole excavation, all planting locations shall be staked out by the Contractor for approval by the DOT Landscape Architect.

PLANTING LIST:

Quantity	Common Name	Botanical Name	Comment
35,000 sf	Common Bermuda Lawn	Cynodon dactylon	Hydromulch
79,000 sf	Kikuyu Grass	Pennisetum clandestinum	Hydromulch
3,300	Beach Naupaka	Scaevola frutescens, var. sericea	1 gallon pots, 1' height, 1' spread, 24" O.C.
29	Loulu Palms	Pritchardia sp.	25 gallon, 2' min clear trunk height
27	Loulu Palms (transplanted)	Pritchardia sp.	
13	Royal Palms (transplanted) Loulu	Roystonea sp. Pacifica	5' height

- Representative samples of soil from project site shall be submitted to the University of Hawaii Agricultural Extension Service or laboratory acceptable to the Engineer for analysis of required soil amendments. Test results and soil amendment schedule shall be presented to the Engineer for review and acceptance prior to placing soil amendments over planting areas as recommended by the soil analysis report. Retest soil and continue amending soil until test meets soil test recommendations then provide an even six-inch layer of planting soil over all amended planting areas. Provide copies of all soil tests to the Engineer. Ground shall be free of stones greater than 1-1/2 inches in diameter.

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting



9/11/06	Added Notes 16 to 18; Revised Note 6; deleted allowance plants; revised quantity for Naupaka
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Date	Revision
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LANDSCAPE NOTES
KAWAINUI MARSH SLOPE
KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

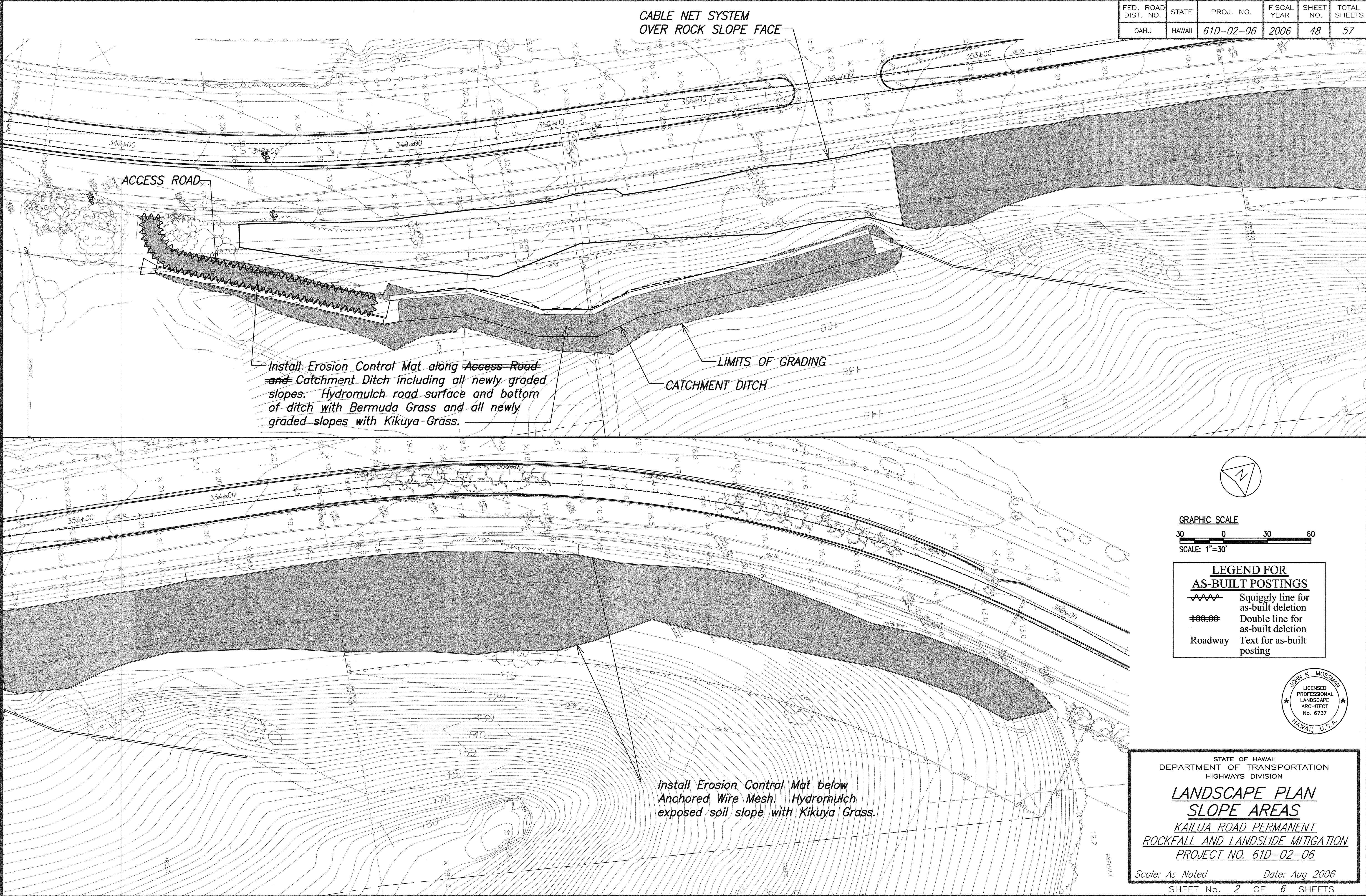
Scale: As Noted Date: Aug 2006

SHEET No. 1 OF 6 SHEETS

"AS-BUILT"

ADD. 47

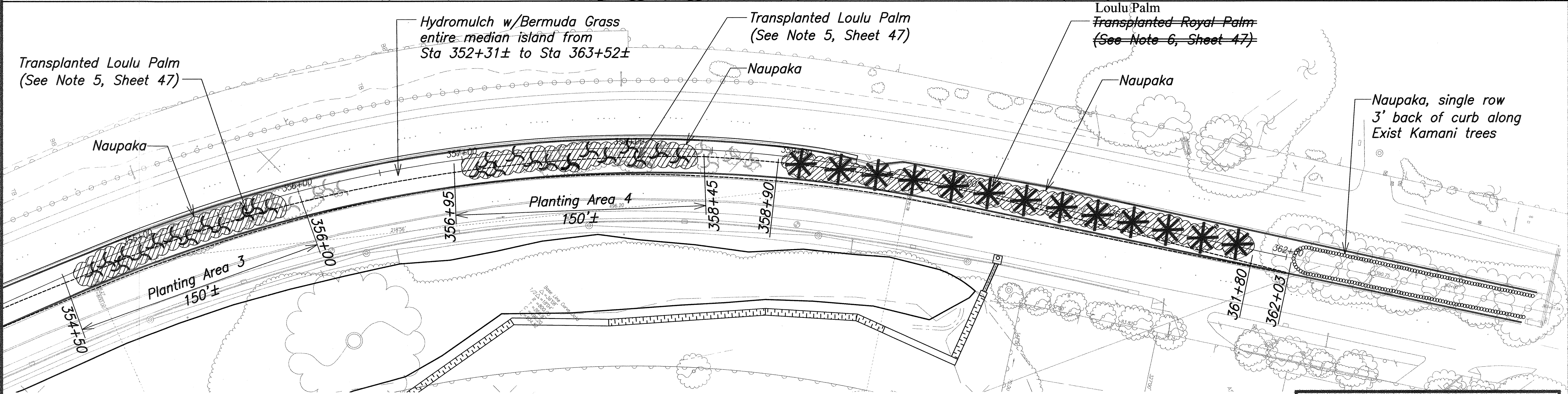
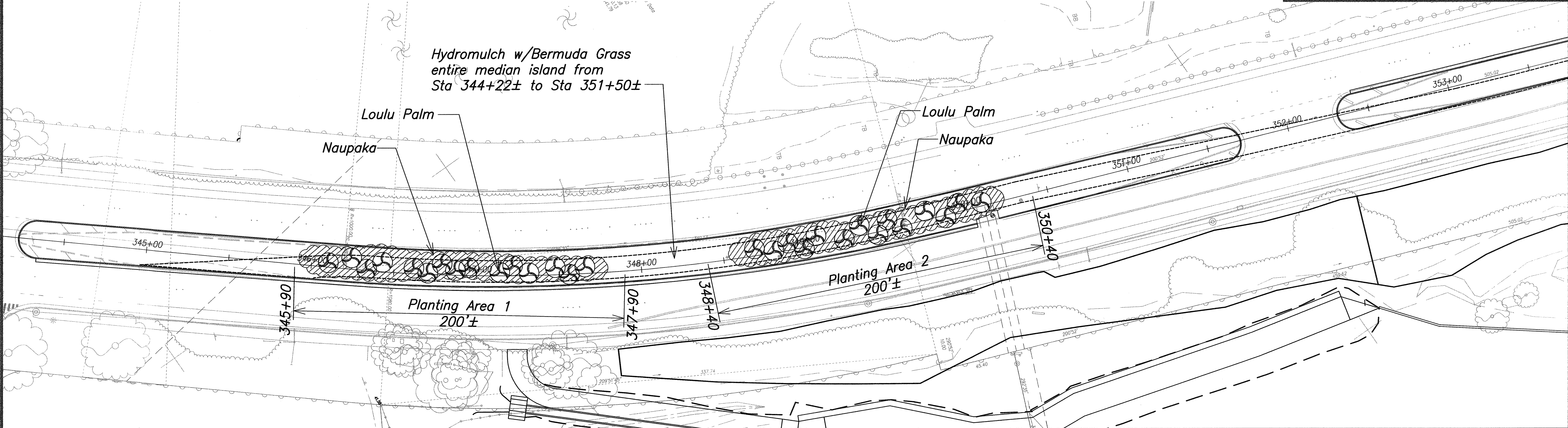
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	48	57



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD. 49	57

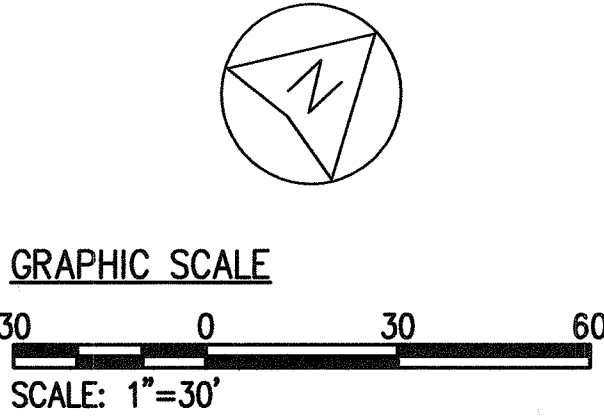


SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

Note:
Transplanted Loulu (2' Loulu and 5' Loulu) mixed in each planting area as directed by Landscape Architect and Outdoor Circle.

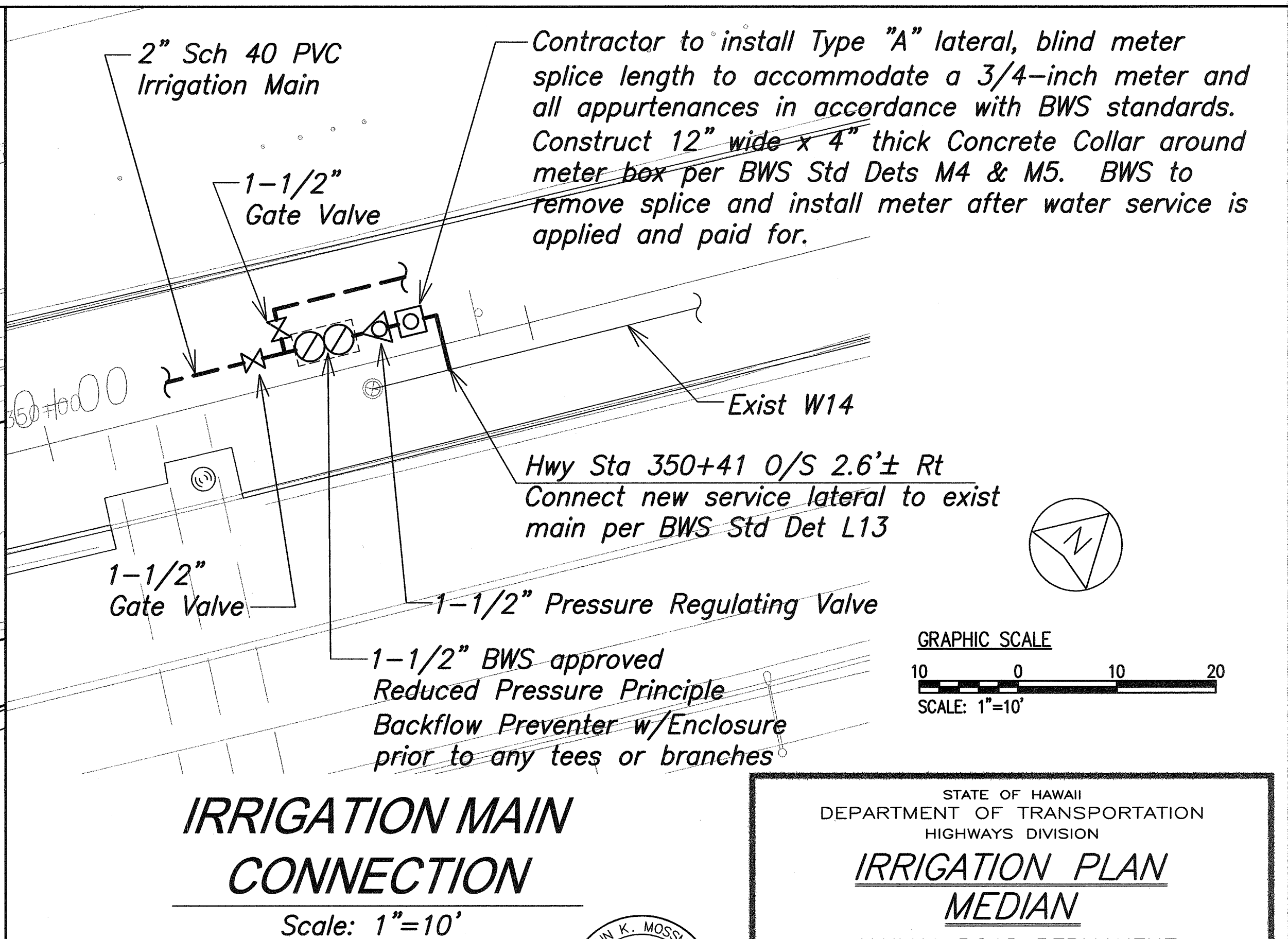
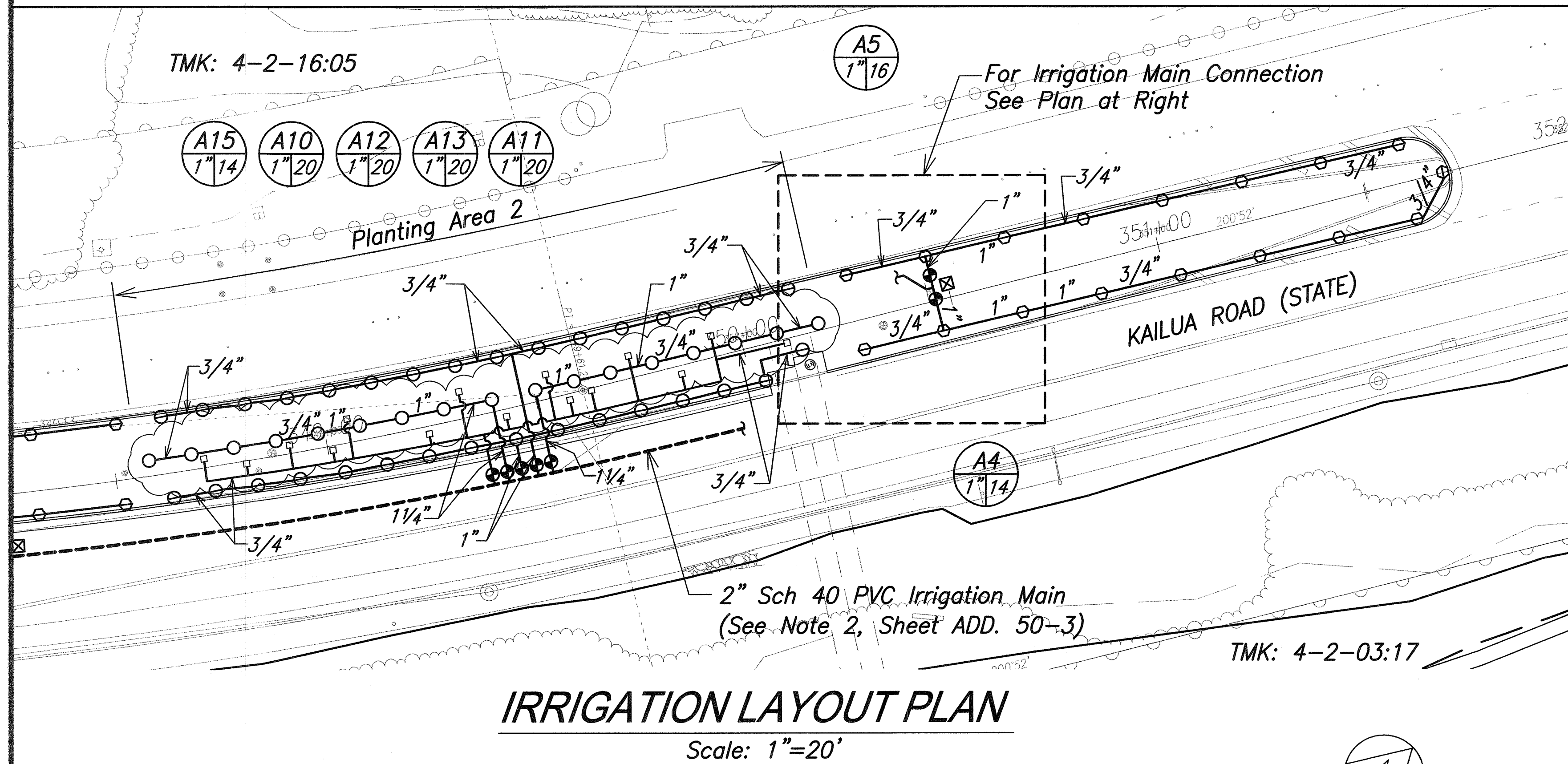
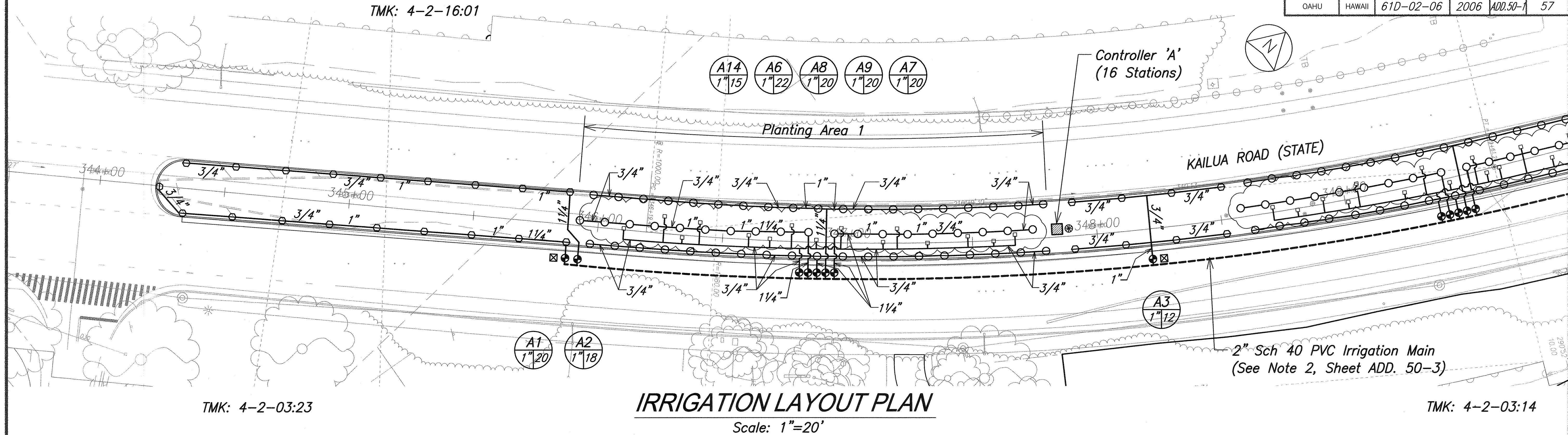
LEGEND FOR AS-BUILT POSTINGS	
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	Text for as-built posting

9/11/06	Revised location of Planting Areas 3 & 4; Revised location of Royal palms; Added Naupaka
Date	Revision



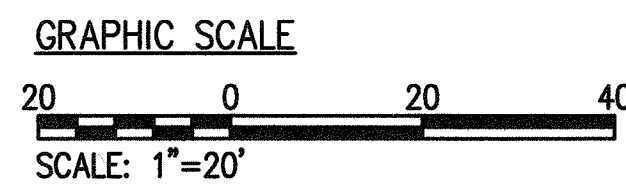
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
LANDSCAPING PLAN
MEDIAN
KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06
Scale: As Noted Date: Aug 2006
SHEET No. 3 OF 6 SHEETS

"AS-BUILT"



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

10/26/07	Revised per BWS comments
9/11/06	Revised irrigation layout
Date	Revision



Chief, Capital Projects Division, BWS Date



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**IRRIGATION PLAN
MEDIAN**

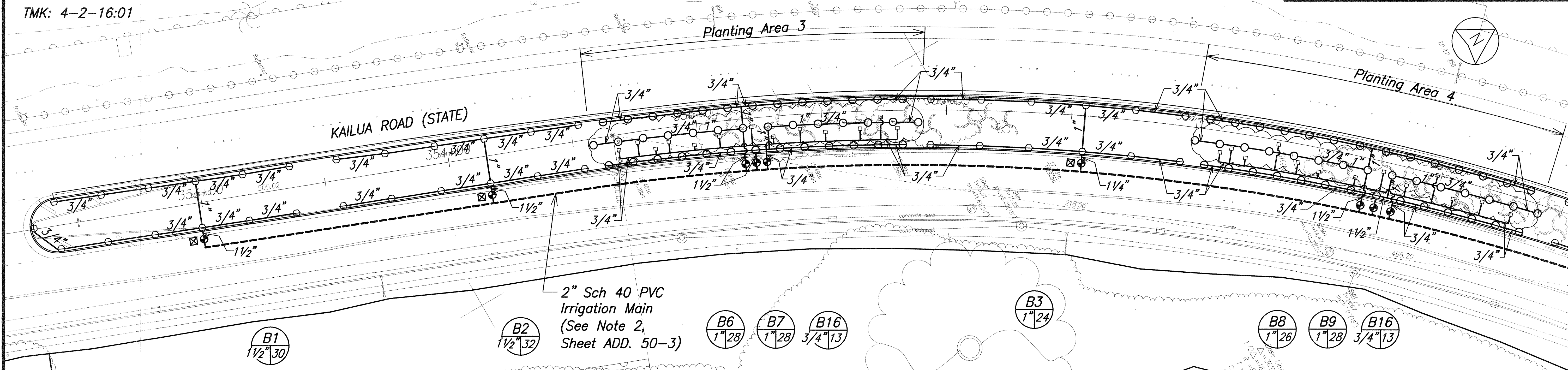
KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006

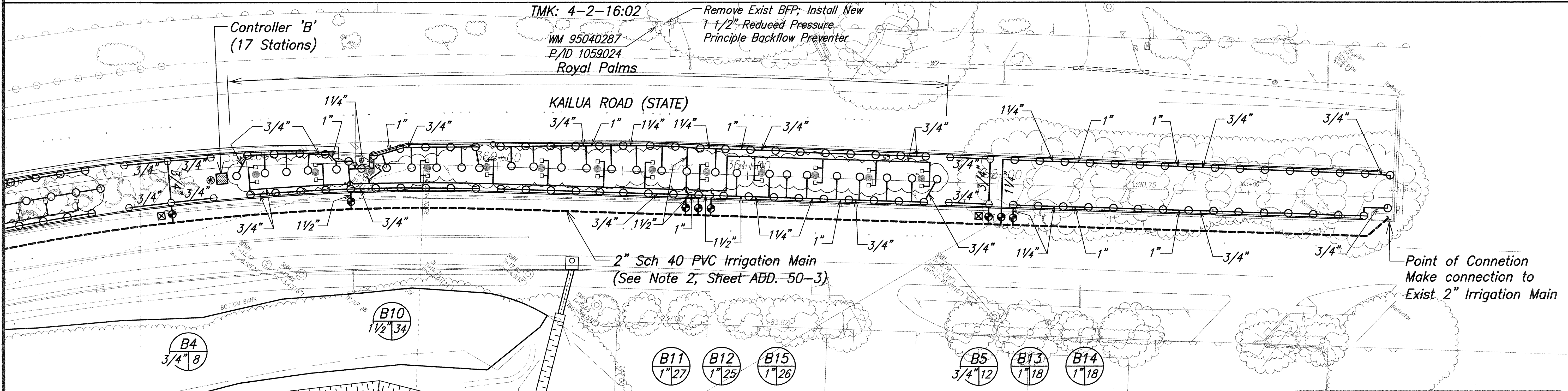
SHEET No. 2 OF 5 SHEETS

C.O. ADD. 50S-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD.50-2	57



IRRIGATION LAYOUT PLAN
Scale: 1"=20'

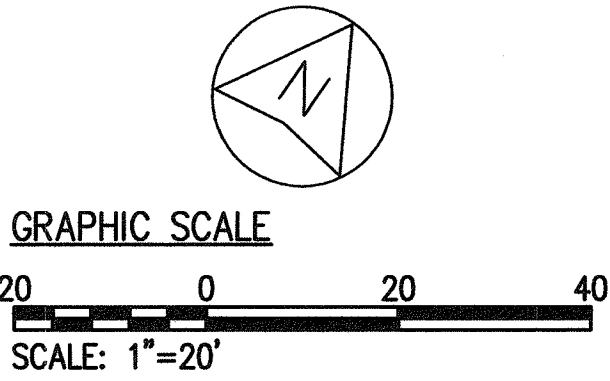


IRRIGATION LAYOUT PLAN
Scale: 1"=20'

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

10/26/07	Revised per BWS comments
9/11/06	Revised irrigation layout
Date	Revision

Chief, Capital Projects Division, BWS Date



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**IRRIGATION PLAN
MEDIAN**

KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006
SHEET No. 3 OF 5 SHEETS

IRRIGATION NOTES:

1. CONTRACTOR SHALL INSTALL IRRIGATION LINES, WIRES, VALVES AND HEADS PER SPECIFICATIONS. EXISTING GATE VALVES, POINT OF CONNECTION, ETC. ARE DERIVED FROM THE BEST AVAILABLE INFORMATION AND ON-SITE INSPECTION. THE CONTRACTOR SHALL VERIFY THOSE POINTS OF CONNECTION NOTED AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. THIS PLAN IS DIAGRAMMATIC. IRRIGATION SYSTEM IS SUBJECT TO FIELD ADJUSTMENTS DUE TO UNANTICIPATED SITE CONDITIONS. LOCATE ALL MAINLINES, LATERALS, VALVES AND SPRINKLER HEADS WITHIN PLANTING AREAS, UNLESS OTHERWISE NOTED. PLACE MAINLINE IN PLANTING AREAS WHERE NO SLEEVES ARE SHOWN. AVOID ANY CONFLICT BETWEEN UNDERGROUND UTILITIES, STRUCTURES AND PLANTINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES. BURY PRESSURE MAINLINES 18" AND LATERAL LINES 10" DEEP MINIMUM.
3. THIS IRRIGATION SYSTEM WAS DESIGNED WITH A MINIMUM STATIC WATER PRESSURE OF 60 PSI AT THE POINT OF CONNECTION. NOTIFY THE PROJECT ENGINEER, IF WATER PRESSURE IS LESS THAN 60 PSI OR GREATER THAN 100 PSI.
4. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND OBSERVE ALL LOCAL CODES AND REGULATIONS. THE CONTRACTOR SHALL CONFIRM ALL SITES DIMENSIONS AND CONDITIONS, AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL SLEEVES, CONDUITS, MAINLINES AND LATERALS UNDER PAVEMENT. CONTRACTOR SHALL ASSURE THAT THESE ITEMS ARE LAID PRIOR TO PLACEMENT OF PAVEMENT.
6. LOCATE AND INSTALL ALL SPRINKLER HEADS 6" FROM CURBS. FLEX TUBING SHALL BE INSTALLED ON ALL SPRINKLER HEAD ALONG SIDEWALKS, DRIVEWAYS, AND PARKING SPACES. ADJUST ALL SPRINKLER HEADS AND FLOW CONTROL FOR MAXIMUM COVERAGE AND MINIMUM OVERTHROW AND MISTING. OPERATE ONLY ONE VALVE AT A TIME PER CONTROLLER.
7. WITHIN 30 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT FOR THE ENGINEER'S ACCEPTANCE SIX (6) COPIES OF DETAILED SCALED DRAWINGS AND WIRING DIAGRAMS FOR PERMANENT AND TEMPORARY IRRIGATION SYSTEMS. NOT PROPOSED DEVIATIONS FROM THE CONTRACT. INCLUDE SAMPLES OF MATERIALS, IF REQUIRED BY CONTRACT.

8. PERFORM HYDROSTATIC TEST BY APPLYING CONTINUOUS STATIC PRESSURE OF 60 PSI FOR ONE (1) HOUR. NOTIFY THE ENGINEER AT LEAST THREE (3) DAYS IN ADVANCE OF TEST. REPAIR LEAKS THAT DEVELOP AND REPEAT TEST. DO NOT BACKFILL UNTIL THERE IS NO FURTHER SIGN OF LEAKAGE.
9. PERFORM OPERABILITY TEST BY OPENING REMOTE CONTROL VALVE AND TEST CIRCUITS FOR LEAKS AROUND BARBED AND THREADED PVC FITTINGS. REPAIR LEAKS AND REPEAT TESTS. NOTIFY THE ENGINEER AT LEAST THREE (3) DAYS IN ADVANCE OF TEST. DO NOT BACKFILL UNTIL THERE IS NO FURTHER SIGN OF LEAKAGE.
10. PERFORM COVERAGE TEST. BEFORE PLANTING PERIOD, RUN AUTOMATIC CONTROLLER THROUGH ALL IT'S CYCLES. CHECK WATERING FOR COVERAGES AND UNIFORMITY IN COMPANY OF THE ENGINEER. RUN SYSTEM UNTIL THERE ARE PUDDLES OR THERE IS SHEET FLOW TO DETERMINE INITIAL IRRIGATION TIME AND NUMBER OF CYCLES PER WEEK NEEDED TO WATER REQUIREMENTS OF PLANTS.
11. LOCATE VALVE BOXES SO THAT THE OUTER EDGES ARE NO CLOSER THAN FIVE FEET TO ROADWAY PAVEMENT. GROUP VALVE BOXES AS FEASIBLE.
12. IF PLANS DO NOT SPECIFY DEPTH OF EXCAVATION, PROVIDE MINIMUM COVER TO FINISH GRADE AS FOLLOWS.

(a) 4 INCHES FOR DRIP IRRIGATION MAIN.
(b) 18 INCHES FOR IRRIGATION MAIN.
(c) 10 INCHES FOR IRRIGATION LATERAL
(d) 24 INCHES FOR SLEEVE OR CONDUIT UNDER LANDSCAPE PAVEMENT.
(e) 36 INCHES FOR SLEEVE OR CONDUIT UNDER ROADWAY PAVEMENT.
(f) FOR CONTROLLER WIRES AND CONDUITS IN UNPAVED AREAS, DEPTH EQUAL TO THAT OF PRESSURE IRRIGATION PIPE.
13. A TEMPORARY IRRIGATION SYSTEM (LAID ON GRADE) SHALL BE INSTALLED BY THE CONTRACTOR IN THE AREA SHOWN ON PLAN TO BE GRASSED. THE SYSTEM SHALL BE REMOVED AFTER ESTABLISHMENT OF GRASS AT FINAL APPROVAL OF FORMAL MAINTENANCE PERIOD.

IRRIGATION EQUIPMENT LIST:

Symbol	Manufacturer & Cat. No.	Description	GPM	PSI	Radius
	Rainbird PA-8S-10F	Shrub Spray on 36" riser - 360°	1.6	30	10'
	Rainbird 1804-SAM-10H	4" Pop-Up Spray - 180°	0.8	30	10'
	Rainbird 1804-SAM-10Q	4" Pop-Up Spray - 90°	0.4	30	10'
	Rainbird 3504-PC-SAM-1.0	4" Rotor Pop-Up - 180°	1.0	35	21'
	Rainbird 1404	Flood Bubbler on 6" riser	1.0	30	--
	LEIT 150S Series	Remote Control Valve w/Actuator (3/4", 1" and 1-1/2")			
	LEIT X16 w/SKIT-8821-4	16 Station Solar Powered Controller w/Switch Tape Sensor Adapter (See detail)			
	Wilkens XL 975 w/Strong Box - V.I.T. SBBC-45SS	1-1/2" Reduced Pressure Backflow Device w/Stainless Steel Enclosure (See detail & note)			
	Wilkens 600 Series	1-1/2" Pressure Regulator			
	Rainbird RSD-BEX	Rain Sensor w/bracket & ext. wire (See detail)			
	Rainbird 3/4" (33DLRC) w/Wing Thing, 33DK & SH-0	Quick Coupler (2 piece-brass) w/anit-rotational stabilizer, valve key and hose swivel			
	1-1/2" Gate Valve, Brass				
	Irrigation Main, PVC Schedule 40				
	Irrigation Lateral, PVC Class 200				
	Controller/Station No.				
	G.P.M of Circuit				
	Size of Remote Control Valve				

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD-50-3	57

BWS FLOW REQUIREMENTS: (Existing meter)

Premise I.D. No. 1059024		Meter No. 95040287 (50038646)		
Description		F.U.	G.P.M.	G.P.D.
A. Proposed Domestic (See Above Note A)		0	0	0
B. Proposed Irrigation		59	32	6540
C. Total Proposed (Add A + B)		59	32	6540
D. Demolition	Domestic	0	0	0
	Irrigation	180	60	600
E. Net Change (Subtract D from C)		0	0	0
F. Existing to Remain	Domestic, and	0	0	0
	Highest Irrigation Sys.	0	0	0
G. Grand Total		0	0	5940
Note: Highest system demand is 32 G.P.M. The operation of the irrigation system remains at one station at a time and during off peak hours. The existing water meter does not serve any fire sprinkler system.				

BWS FLOW REQUIREMENTS: (New meter)

Premise I.D. No.		Meter No.		
Description		F.U.	G.P.M.	G.P.D.
A. Proposed Domestic (See Above Note A)		0	0	0
B. Proposed Irrigation		35	22	4600
C. Total Proposed (Add A + B)		35	22	4600
D. Demolition	Domestic	0	0	0
	Irrigation	0	0	0
E. Net Change (Subtract D from C)		35	22	4600
F. Existing to Remain	Domestic, and	0	0	0
	Highest Irrigation Sys.	0	0	0
G. Grand Total		35	22	4600
Note: Highest system demand is 22 G.P.M. The operation of the irrigation system remains at one station at a time and during off peak hours. The new water meter does not serve any fire sprinkler system.				

SURVEY PLOTTED BY _____ DATE _____

DESIGNED BY _____

NOTED BY _____

CHECKED BY _____

ORIGINAL PLAN _____

NOTE BOOK _____

NO. _____

Chief, Capital Projects Division, BWS

Date



10/26/07 Revised per BWS comments

6/25/07 Clarified requirements for quick coupler in equipment list

9/11/06 Revised notes & irrigation list; added BWS Flow Requirements

Date Revision

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION NOTES

KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006

SHEET No. 4 OF 5 SHEETS

WATER NOTES FOR STATE PROJECTS:

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD.50-3	57

1. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", dated 2005, as amended, of the Hawaii Highways Division, Department of Transportation, and the City and County of Honolulu, Board of Water Supply's "WATER SYSTEM STANDARDS", dated 2002, the "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, dated 1991, and all subsequent amendments and additions
2. All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply. All other features of the water system, such as lines, grades, fittings, drainage, etc., and all features of improvements shall not be the responsibility of the Board of Water Supply.
3. The Contractor shall notify BWS Capital Projects Division, Construction Section in writing and submit six (6) sets of approved construction plans one week prior to commencing work on the water system.
4. The existence and location of underground utilities and structures as shown on the plans are from the latest available data but is not guaranteed as to the accuracy or the encountering of other obstacles during the course of the work. The Contractor shall be responsible and pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.
5. Re-approval shall be required if this project is not under construction within a period of two years.
6. The Contractor shall be responsible for the protection of all water lines during construction. The Contractor shall be especially careful when excavating behind water lines, tees, and bends wherever there is a possibility of water line movement due to the removal of the supporting earth beyond the existing reaction blocks. The Contractor shall take whatever measure necessary to protect the water lines, such as constructing special reaction blocks (with BWS approval) and/or modifying his construction method.
7. Prior to any excavating, the Contractor shall verify in the field the location of existing water mains and appurtenances.
8. Contractor shall cut and plug all existing unused laterals at the main whether or not shown on the plans. Meter and valve boxes to be or already abandoned shall be demolished or removed and properly disposed of. The damaged area shall be repaired to and equal or better condition than the immediate area. All work shall be done at the expense of the Contractor.
9. Board of Water Supply approval of these plans does not constitute a water commitment. Availability of water will be determined when building permit is presented to the Department. Water commitment will depend upon the status of water system at that time. Should water service be made available, the water commitment will be effective when the project receives an approved building permit from the Building Department. All water commitments will be canceled in the event the building permit is canceled.
10. The project shall be subject to the Board of Water Supply's Cross-Connection Control requirements prior to issuance of the Building Permit.
11. The installation, chlorination and testing of the water main and facilities after the meter shall not be the responsibility of the Board of Water Supply.
12. The Contractor shall furnish and install polyethylene wrap, 3 feet minimum at all taps (for DI pipe and copper lateral combination only) and plastic pipe (PE tubing) 3 feet long after meters for all service lateral connections.

FOR ESTIMATING PURPOSES ONLY (Existing Meter)

Description of Work	Estimate
_____ IRRIGATION SERVICE	
_____ Meter	
Installation Charge	
WATER SYSTEM FACILITIES CHARGES	
*CREDIT	
S/N _____	
S/N _____	
_____ FIRE SERVICE	
_____ Meter	
Installation Charge	
One-time Charge	
TOTAL	

* Credits will be determined when the Building Permit application is submitted for BWS review and approval.

This estimate is subject to change. A formal written quotation may be obtained and all payments for the charges shown on the quotation made within 30 days after the construction plan is approved by BWS. If payments are not received within the 30 day period, the project will be subject to the prevailing rates.

FOR ESTIMATING PURPOSES ONLY (New Meter)

Description of Work	Estimate
_____ IRRIGATION SERVICE	
_____ Meter	
Installation Charge	
WATER SYSTEM FACILITIES CHARGES 3 COMPONENTS	\$21,729.75
35 FU x \$620.85/FU =	\$21,729.75
*CREDIT	
S/N _____	
S/N _____	
_____ FIRE SERVICE	
_____ Meter	
Installation Charge	
One-time Charge	
TOTAL	

* Credits will be determined when the Building Permit application is submitted for BWS review and approval.

This estimate is subject to change. A formal written quotation may be obtained and all payments for the charges shown on the quotation made within 30 days after the construction plan is approved by BWS. If payments are not received within the 30 day period, the project will be subject to the prevailing rates.

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
NOTE BOOK	DRAWN BY _____	
	DESIGNED BY _____	
	QUANTITIES BY _____	
	CHECKED BY _____	
	No. _____	

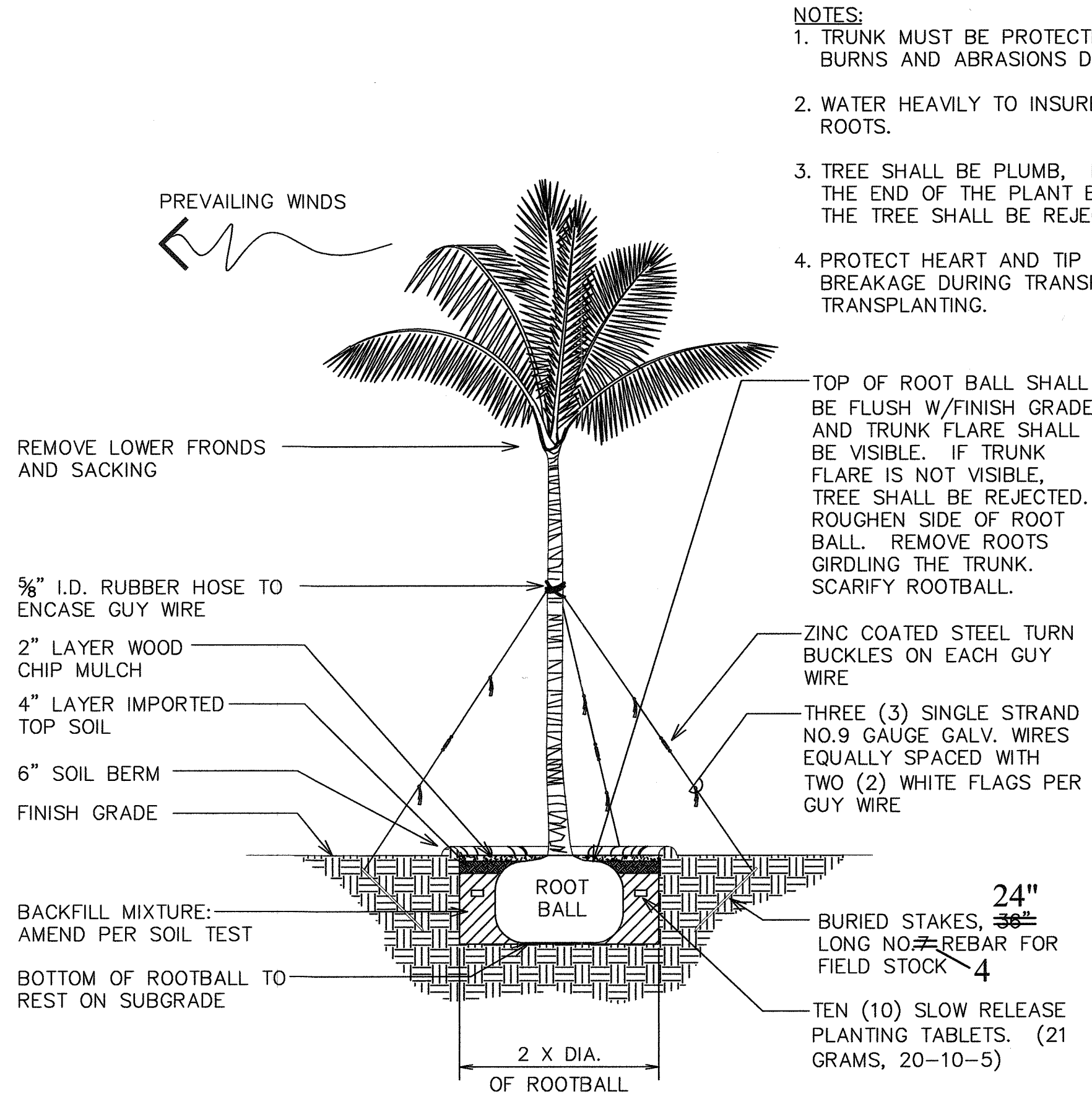
Chief, Capital Projects Division, BWS

Date

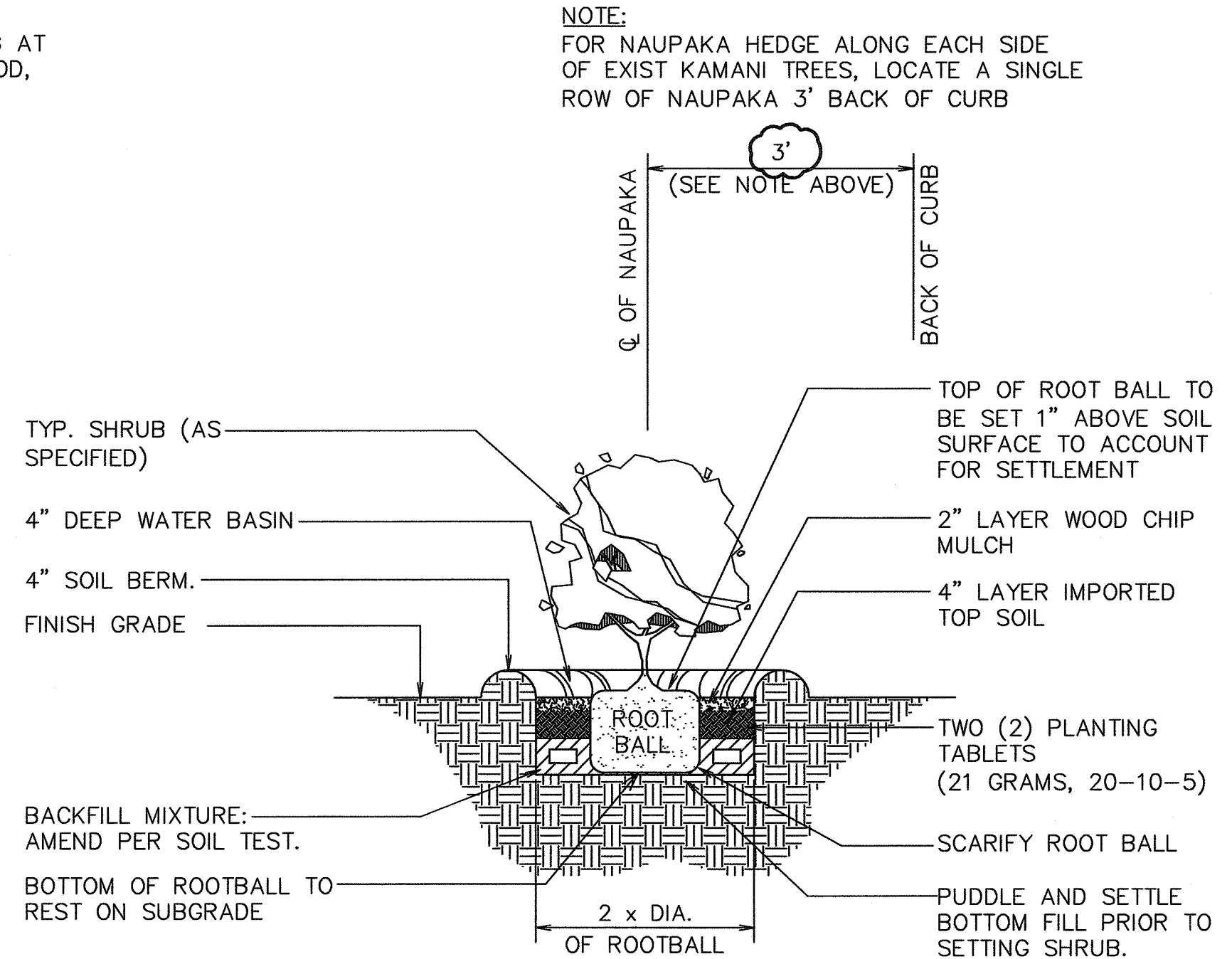


10/26/07	Revised per BWS comments
Date	Revision
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION WATER NOTES SERVICE CHARGES KAILUA ROAD PERMANENT ROCKFALL AND LANDSLIDE MITIGATION PROJECT NO. 61D-02-06 Scale: As Noted Date: Aug 2006 SHEET No. 5 OF 5 SHEETS	

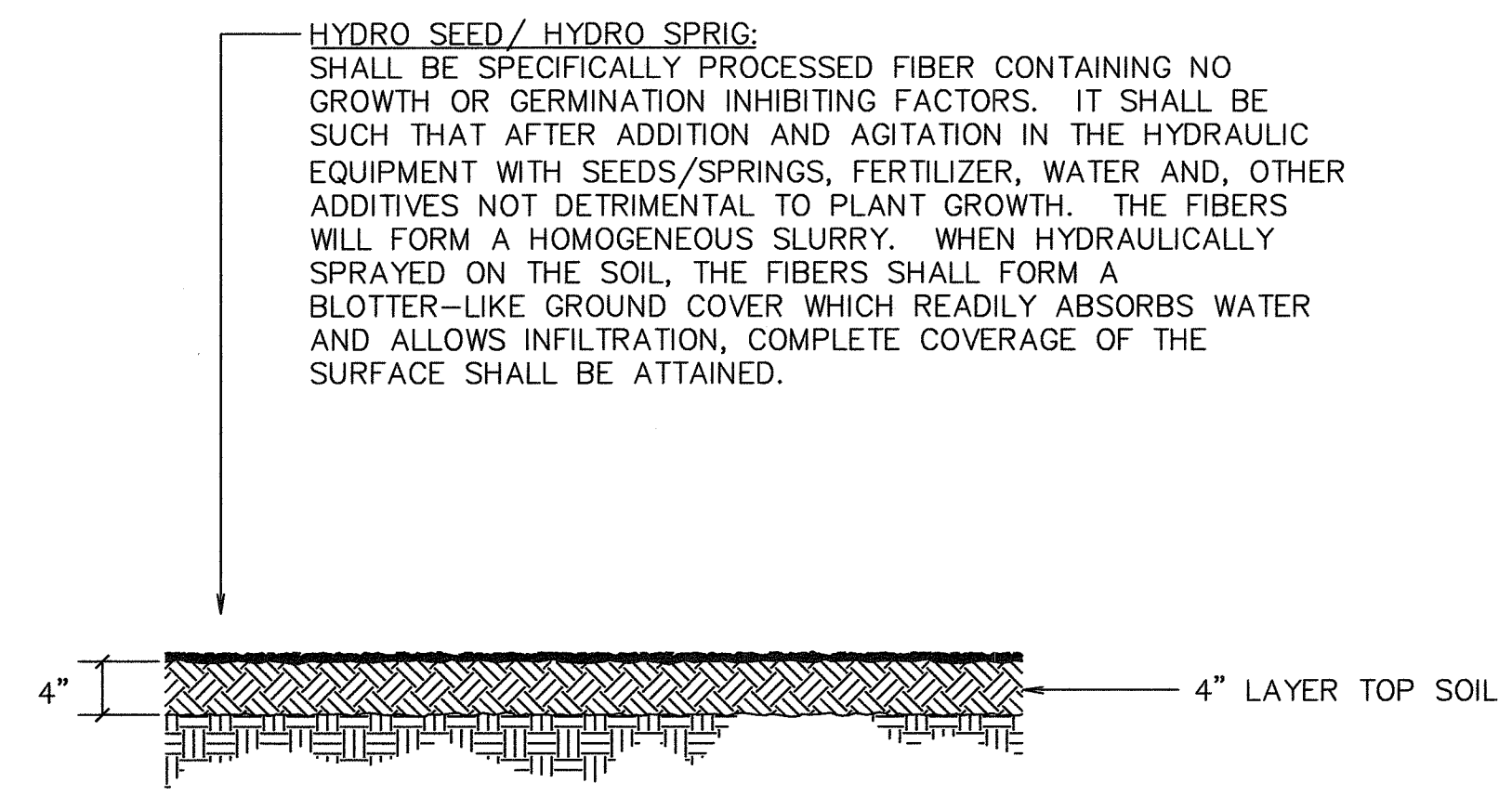
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD.57	57



7 PALM PLANTING DETAIL
SCALE: N.T.S.



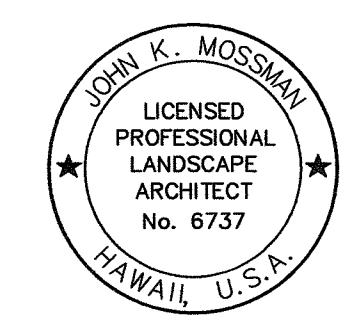
9 SHRUB PLANTING DETAIL
SCALE: N.T.S.



18 HYDRO SEED/SPRIG DETAIL
SCALE: N.T.S.

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

6/25/07	Revised dimension to match note and plan view callout
9/11/06	Revised to DOT standard details; Moved irrigation notes and equipment list to Sht ADD. 50-3
Date	Revision



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LANDSCAPE DETAILS

KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006

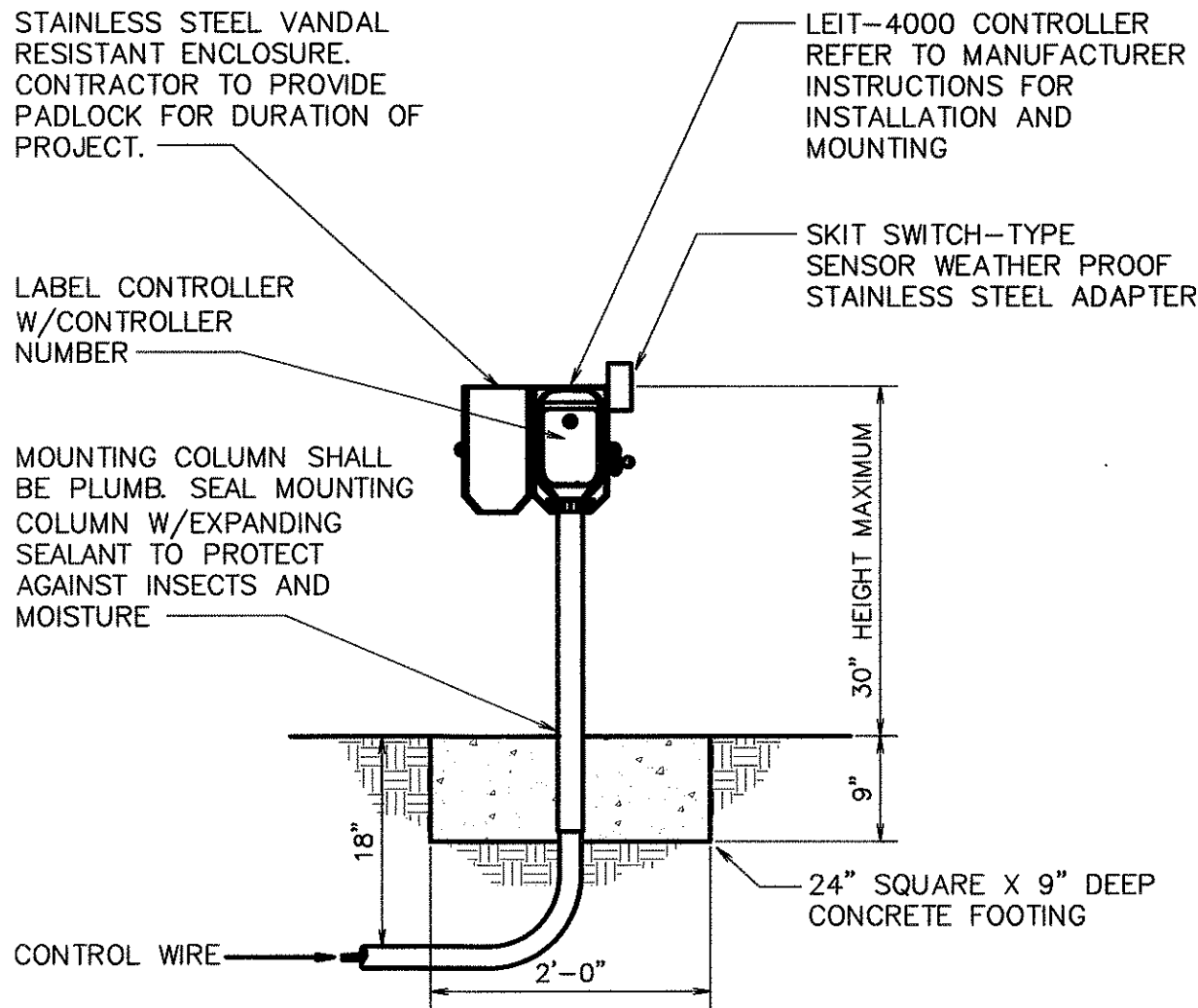
SHEET No. 5 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

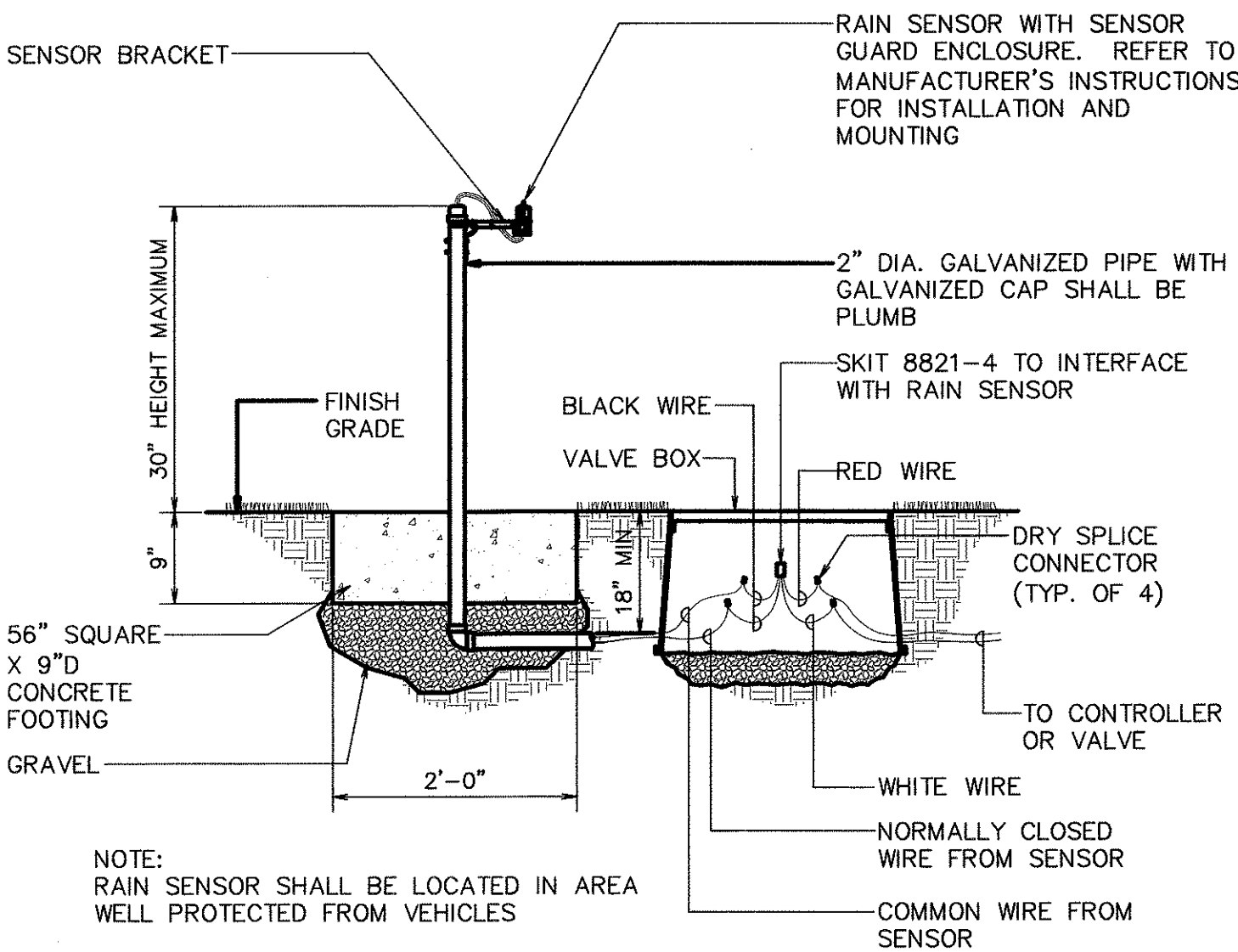
ORIGINAL PLAN	NOTE BOOK
No.	No.

"AS-BUILT"

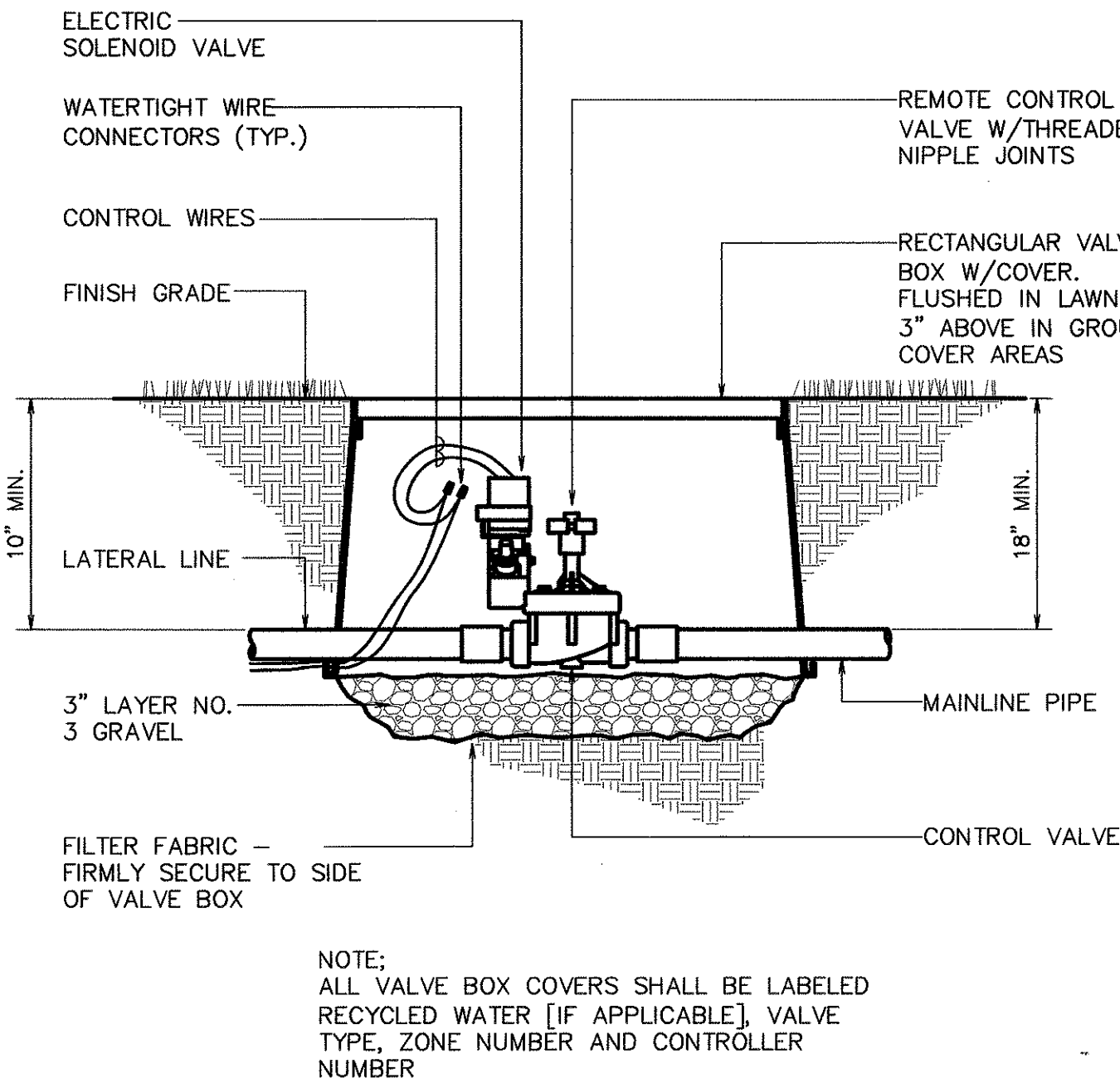
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	ADD.52-1	57



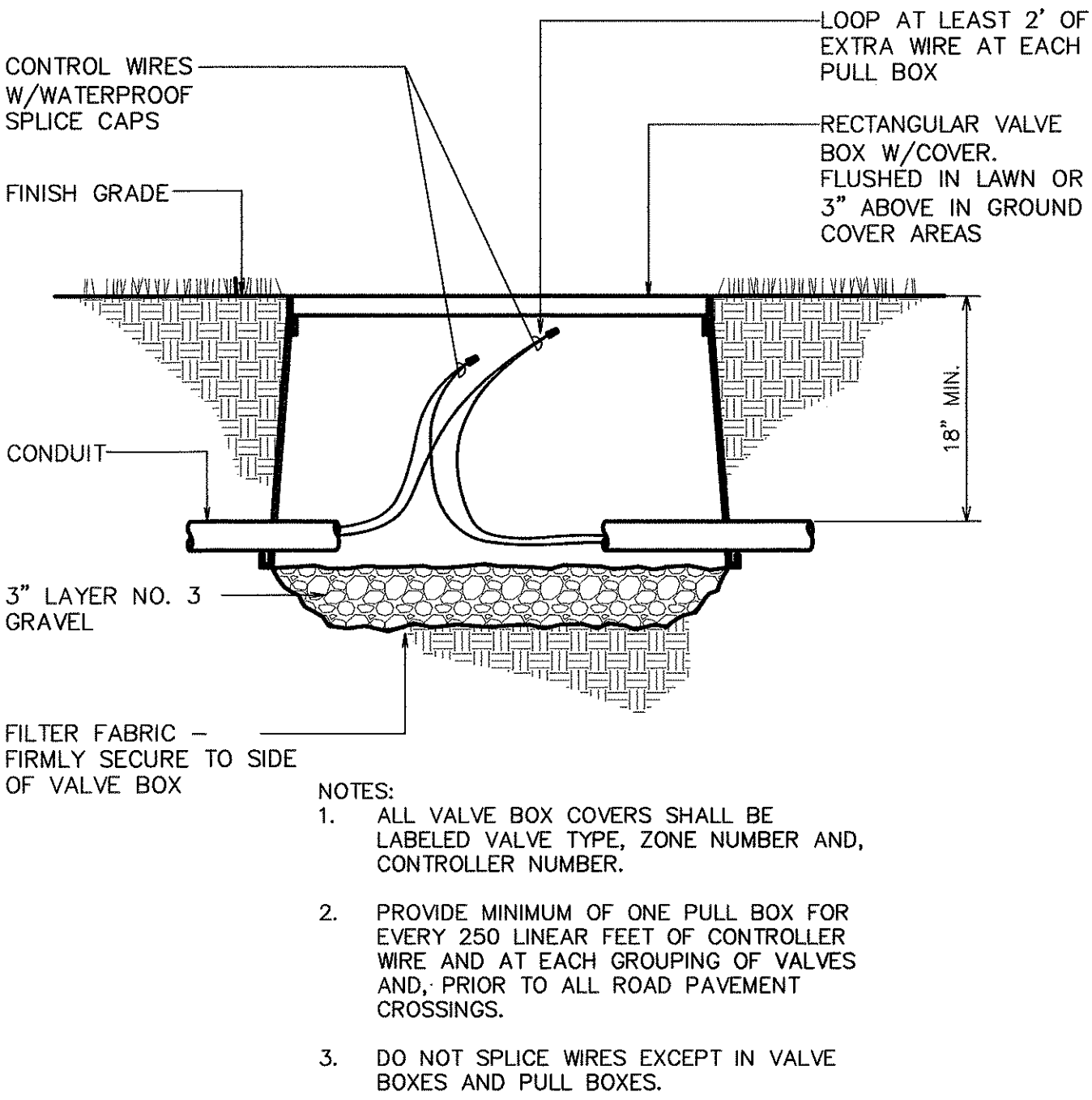
22 SOLAR POWERED CONTROLLER DETAIL
SCALE: N.T.S.



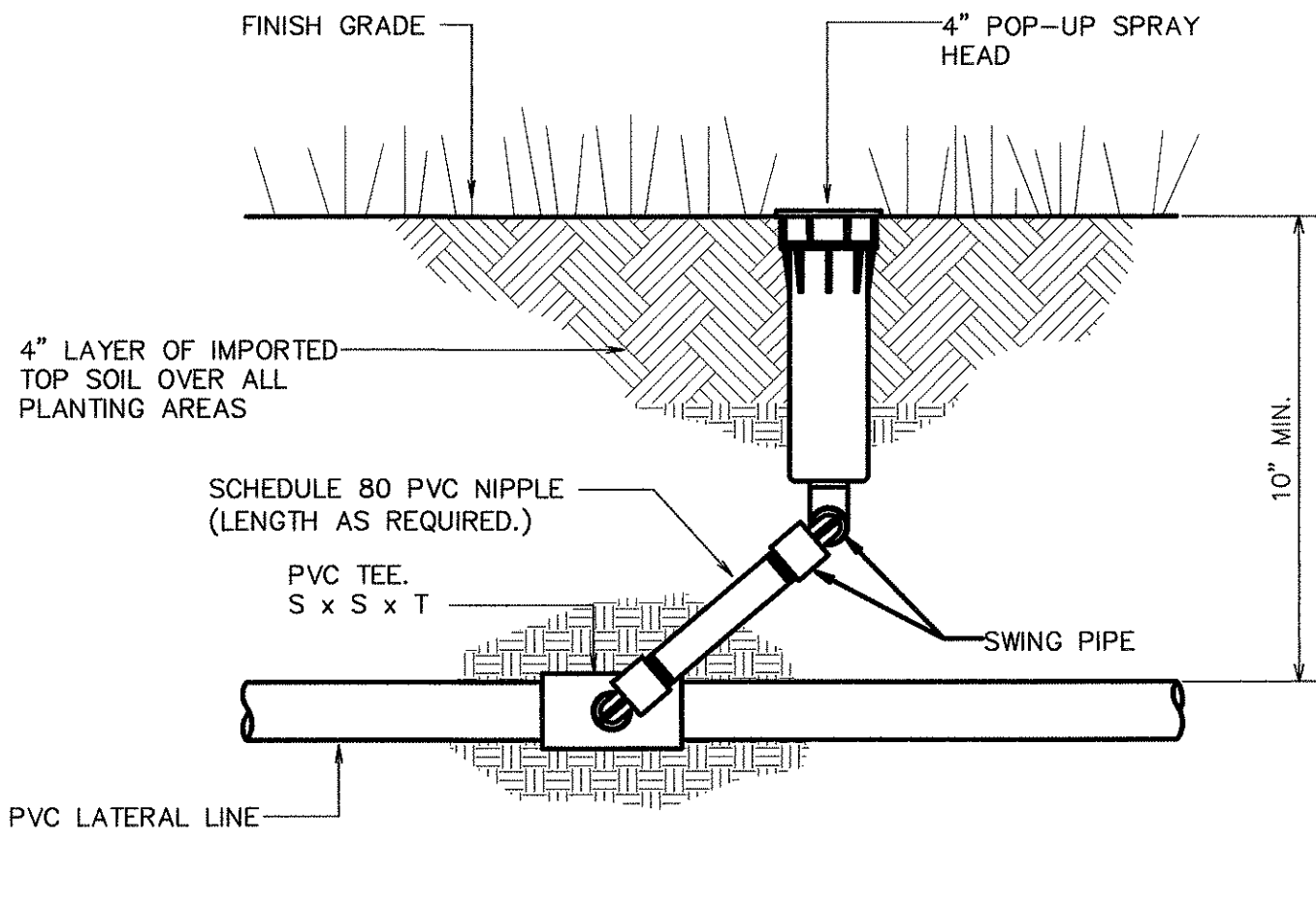
24 RAIN SENSOR DETAIL
SCALE: N.T.S.



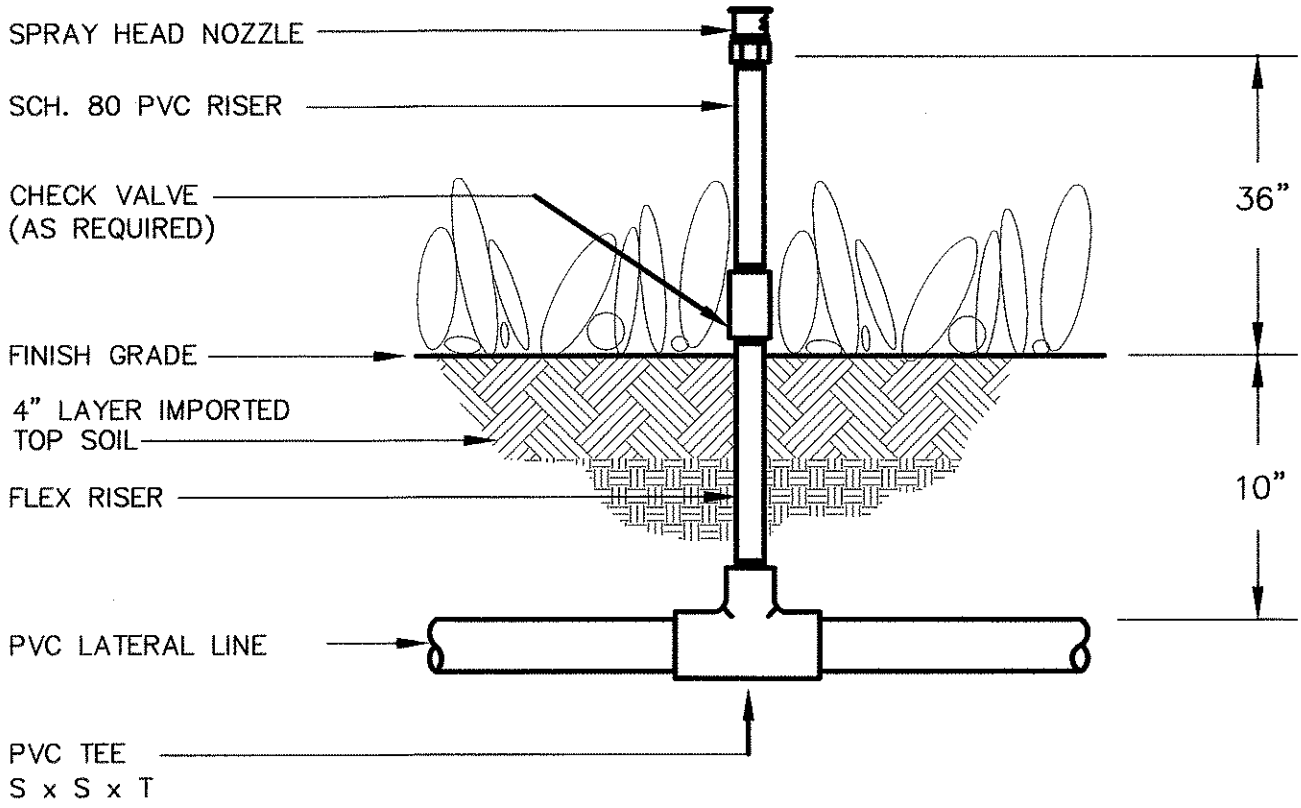
25 REMOTE CONTROL VALVE DETAIL
SCALE: N.T.S.



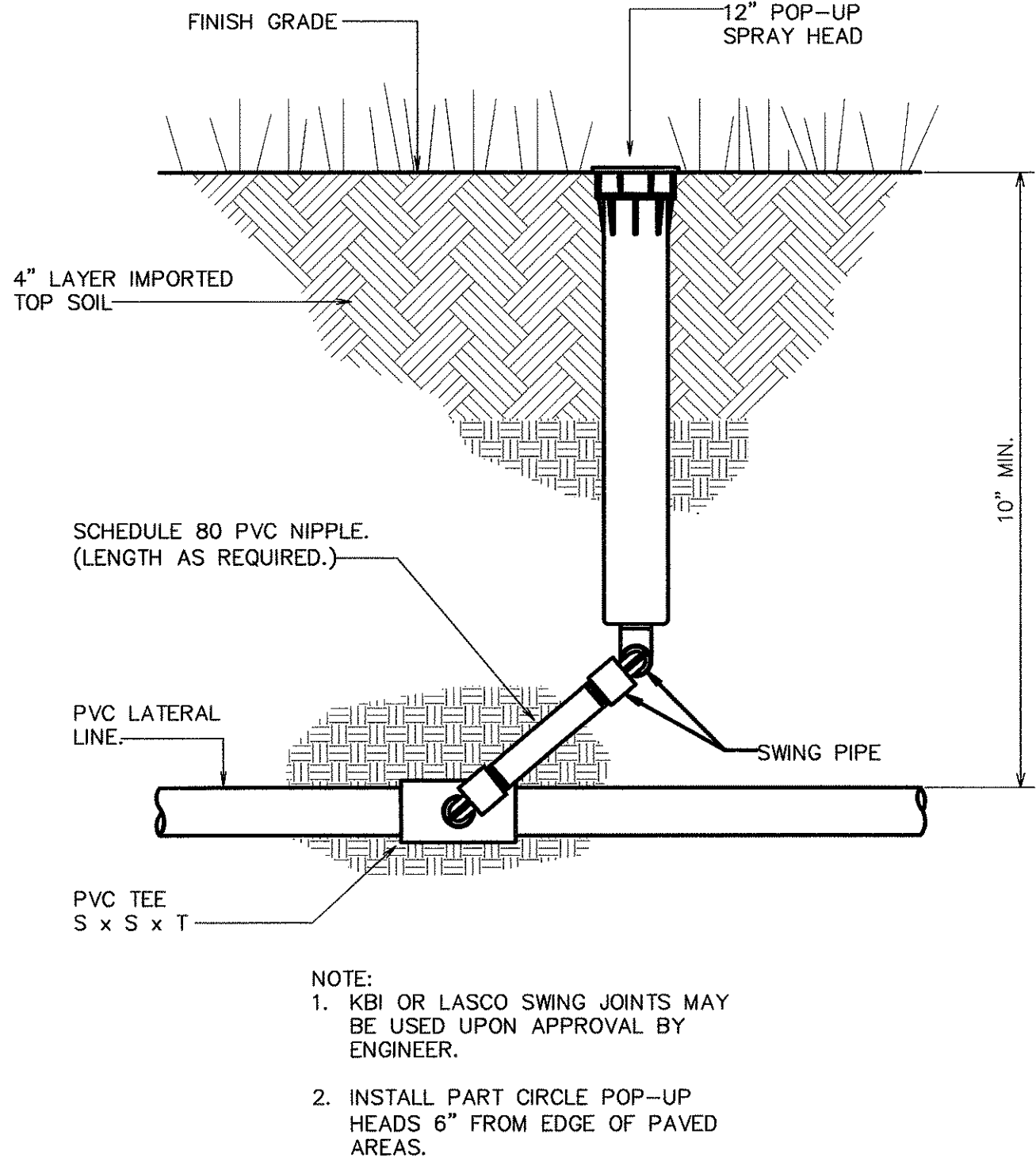
29 PULL BOX DETAIL
SCALE: N.T.S.



LAWN SPRAY POP-UP
30 SPRINKLER DETAIL
SCALE: N.T.S.

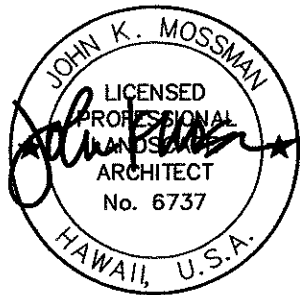


SPRAY HEAD
ON RISER DETAIL
32 SCALE: N.T.S.

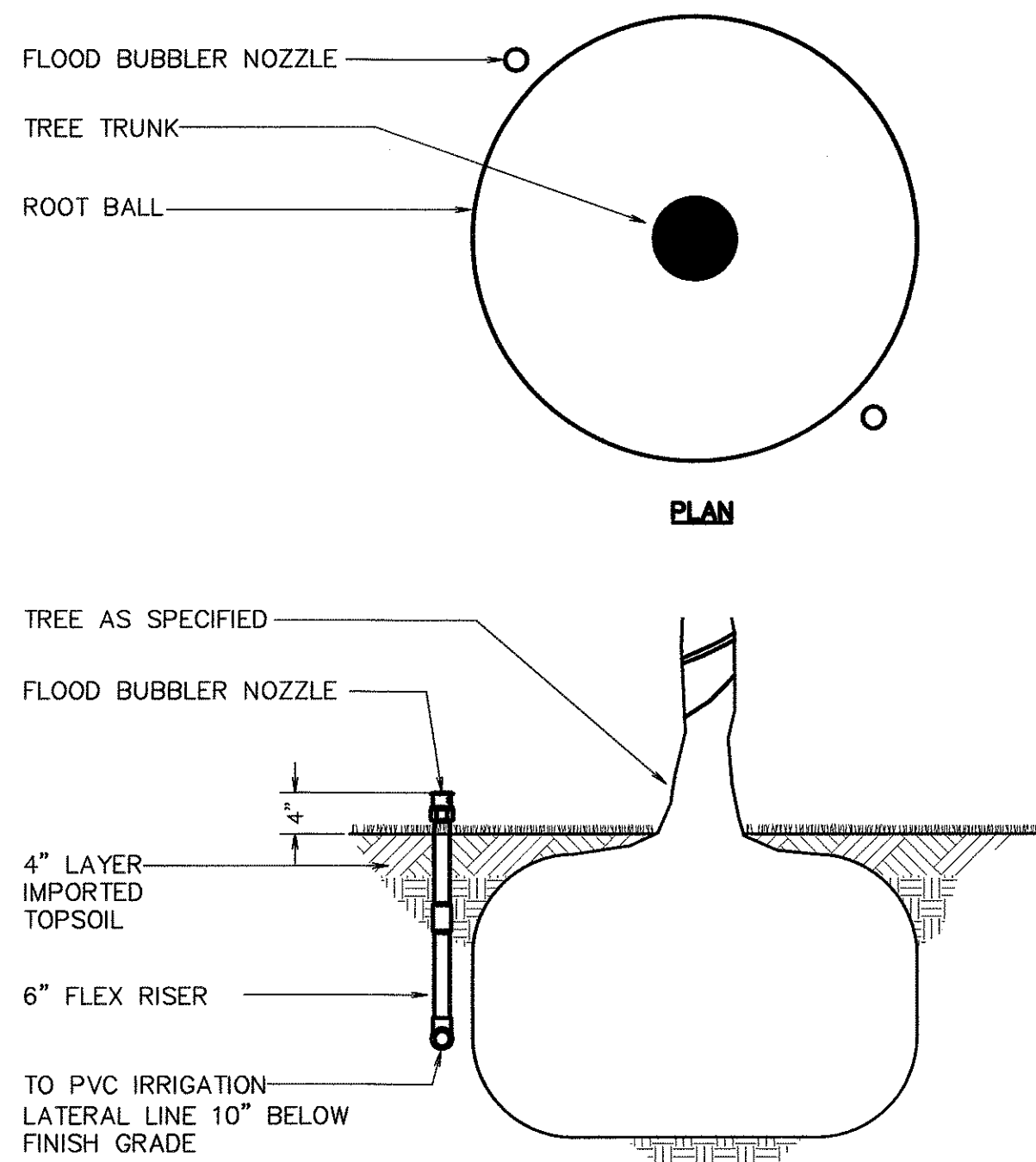


34 SHRUB POP-UP SPRAY HEAD DETAIL
SCALE: N.T.S.

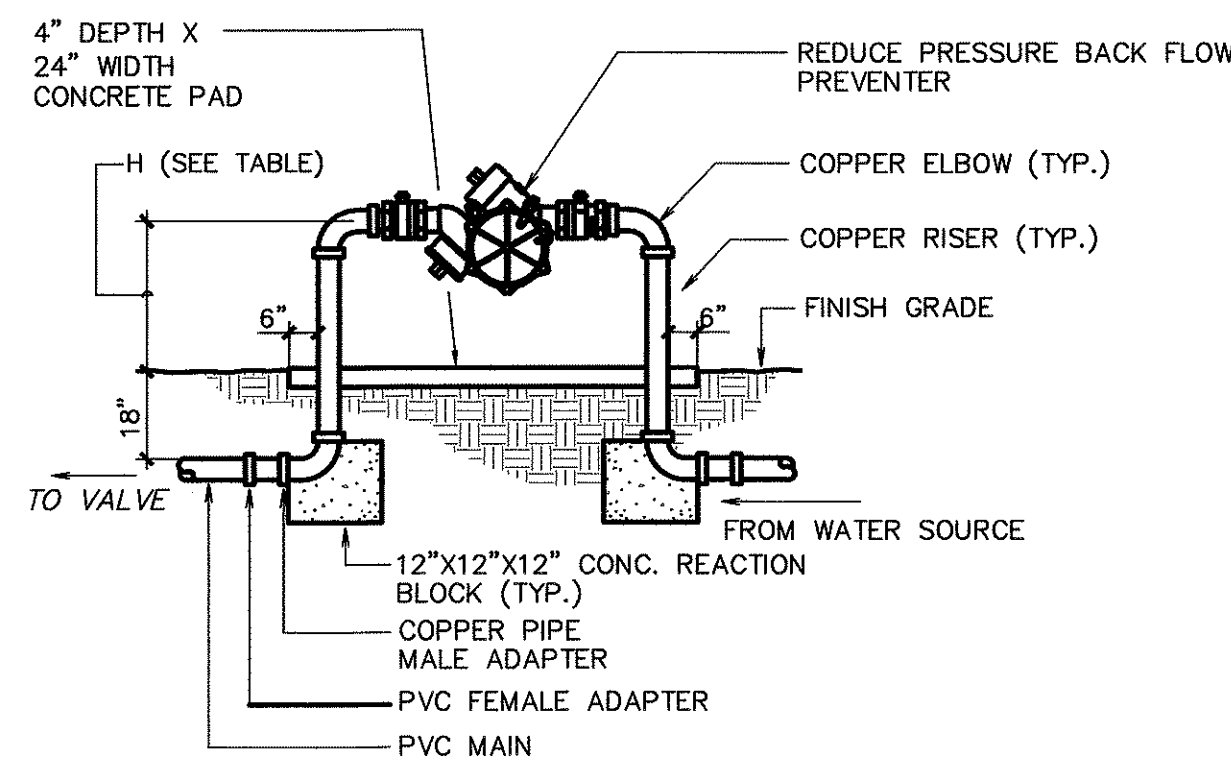
9/11/06	Added details; revised to DOT standard details
Date	Revision
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
LANDSCAPE DETAILS	
KAILUA ROAD PERMANENT ROCKFALL AND LANDSLIDE MITIGATION PROJECT NO. 61D-02-06	
Scale: As Noted	Date: Aug 2006
SHEET No. 6 OF 6 SHEETS	



SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTE BOOK	
No.	



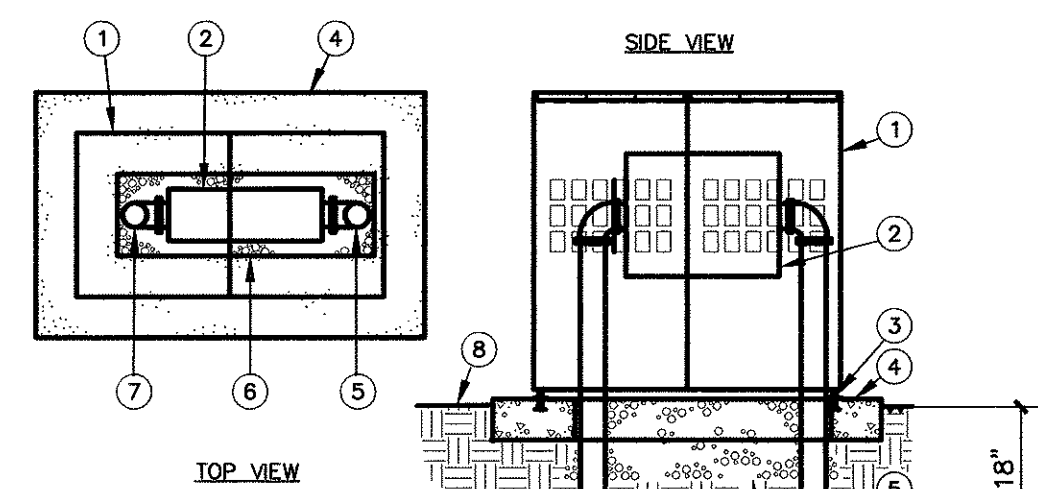
37 TREE BUBBLER DETAIL
SCALE: N.T.S.



SIZE (INCHES)	H (INCHES)
3/4 TO 1-1/2	18
2 TO 3	24

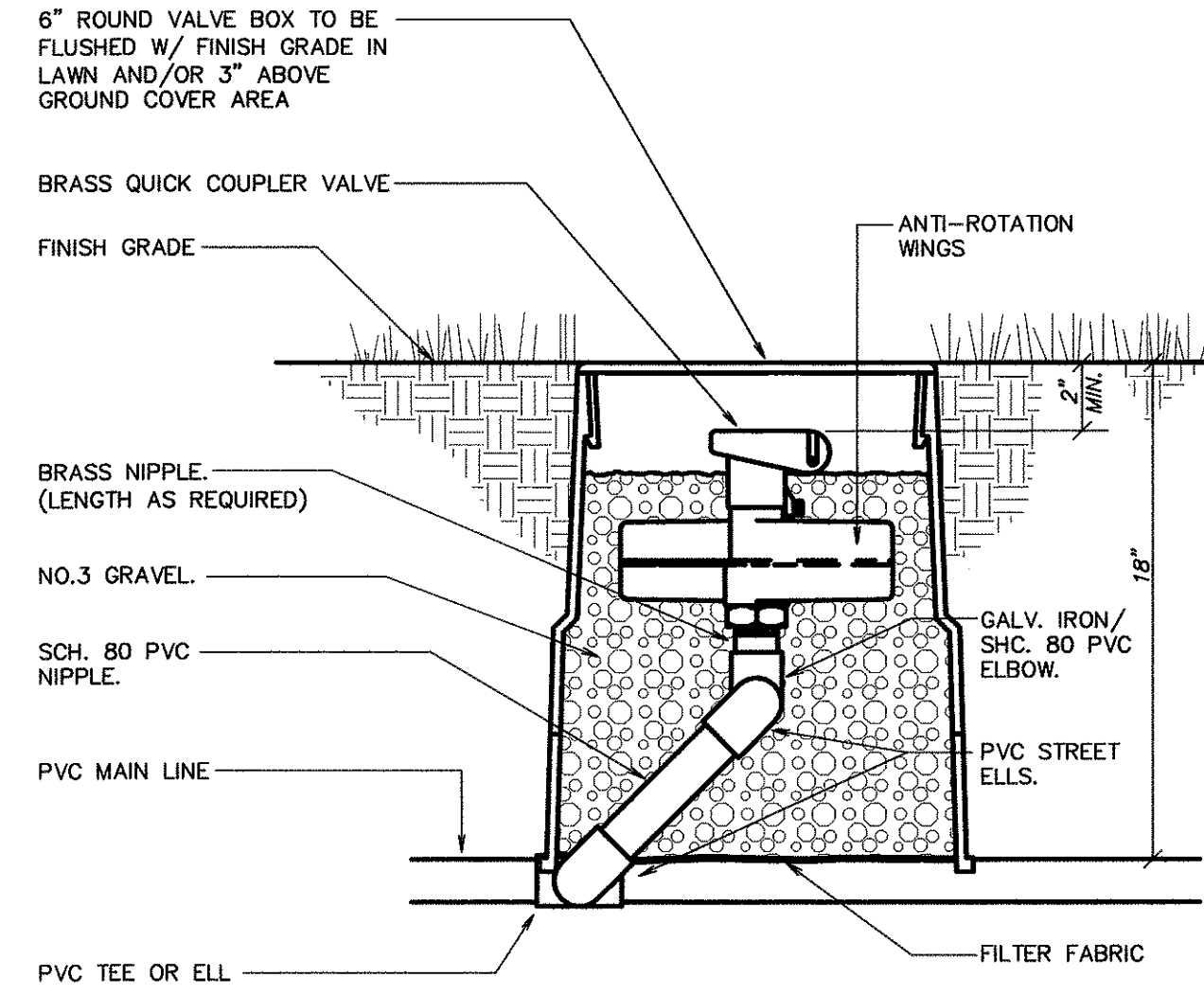
- NOTES:
- ALL PIPES AND FITTINGS INSTALLED ABOVE GRADE SHALL BE EITHER COPPER OR BRONZE ONLY.
 - BACK FLOW PREVENTER SHALL BE PLUMB.
 - BACK FLOW PREVENTER SHALL BE LOCATED IN AN AREA WELL PROTECTED FROM VEHICLES (CLEAR ZONE). IF THE BACK FLOW PREVENTER IS LOCATED IN AN UNPROTECTED AREA, THEN FOUR (4) 6" PIPE BOLLARDS FILLED WITH CONCRETE SHALL SURROUND THE BACK FLOW PREVENTER.

39 REDUCED PRESSURE BACKFLOW PREVENTION DEVICE DETAIL
SCALE: N.T.S.



- LEGEND
- ALUMINUM BACK FLOW PREVENTER ENCLOSURE, W/"DOT IRRIGATION BACK FLOW PREVENTOR" MANNER ACCEPTABLE TO ENGINEER.
 - BACK FLOW PREVENTER
 - ANCHOR ROD (TYP.)
 - POURED CONCRETE BASE - 6" MIN. THICKNESS - EXTEND 4" BEYOND OUTSIDE DIMENSIONS OF ENCLOSURE.
 - WATER SERVICE INLET PIPING.
 - 4" LAYER 3/4" DIA WASHED ROCK.
 - WATER SERVICE OUTLET PIPING.
 - FINISH GRADE.
- NOTES:
- CONTRACTOR SHALL PROVIDE PADLOCK FOR DURATION OF THE PROJECT.
 - BACK FLOW PREVENTER SHALL BE LOCATED IN AN AREA WELL PROTECTED FROM VEHICLES (CLEAR ZONE). IF THE BACK FLOW PREVENTER IS LOCATED IN AN UNPROTECTED AREA, THEN FOUR (4) 6" PIPE BOLLARDS FILLED WITH CONCRETE SHALL SURROUND THE BACK FLOW PREVENTER.

40 BACKFLOW PREVENTION DEVICE ENCLOSURE DETAIL
SCALE: N.T.S.



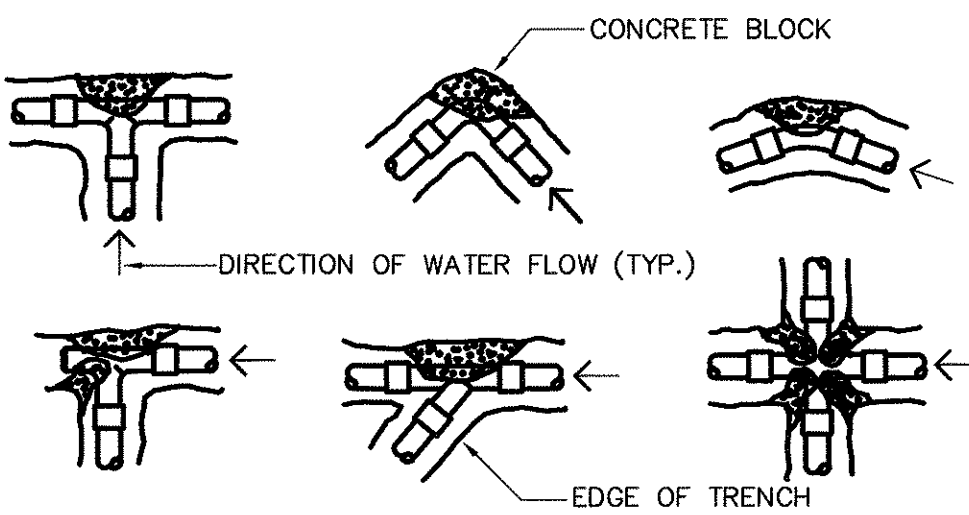
- NOTE:
- KBI OR LASCO SWING JOINTS UPON APPROVAL BY ENGINEER.
 - ALL VALVE BOX COVER SHALL BE LABELED VALVE TYPE, ZONE NUMBER AND, CONTROLLER NUMBER.
 - CONTROLLER SHALL PROVIDE ONE (1) QUICK COUPLER KEY AND ONE (1) HOSE ELL FOR EACH QUICK COUPLER VALVE.

41 QUICK COUPLER VALVE DETAIL
SCALE: N.T.S.

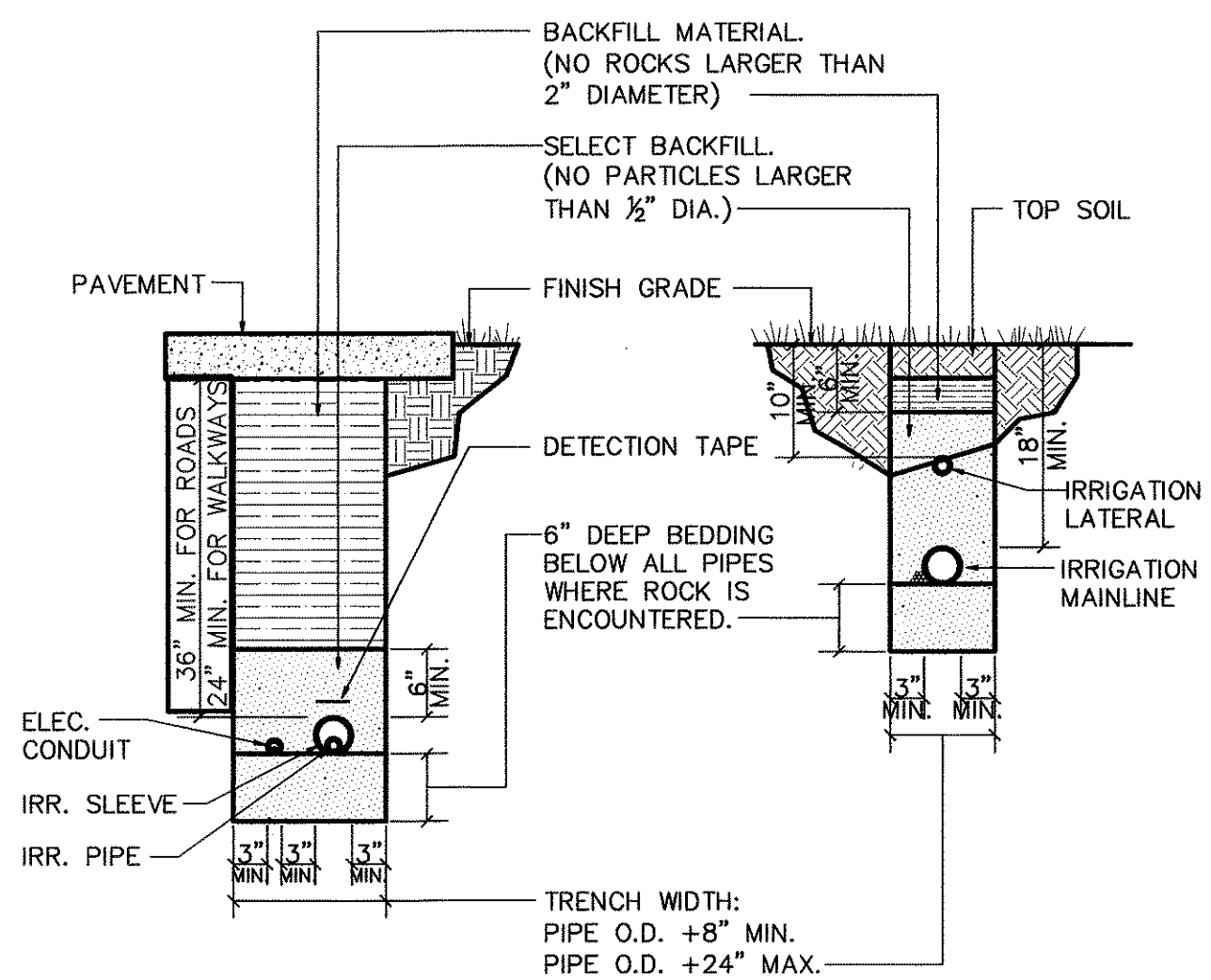
THRUST BLOCK BEARING AREA (SQ. FT.)				
PIPE SIZE	1 1/4" - 2 1/2"	3"	4"	6"
TEES/ELLS	1.00	1.00	1.25	3.2
90 BENDS	1.00	1.25	2.00	4.5
45 BENDS	1.00	1.00	1.00	2.4

NOTES:

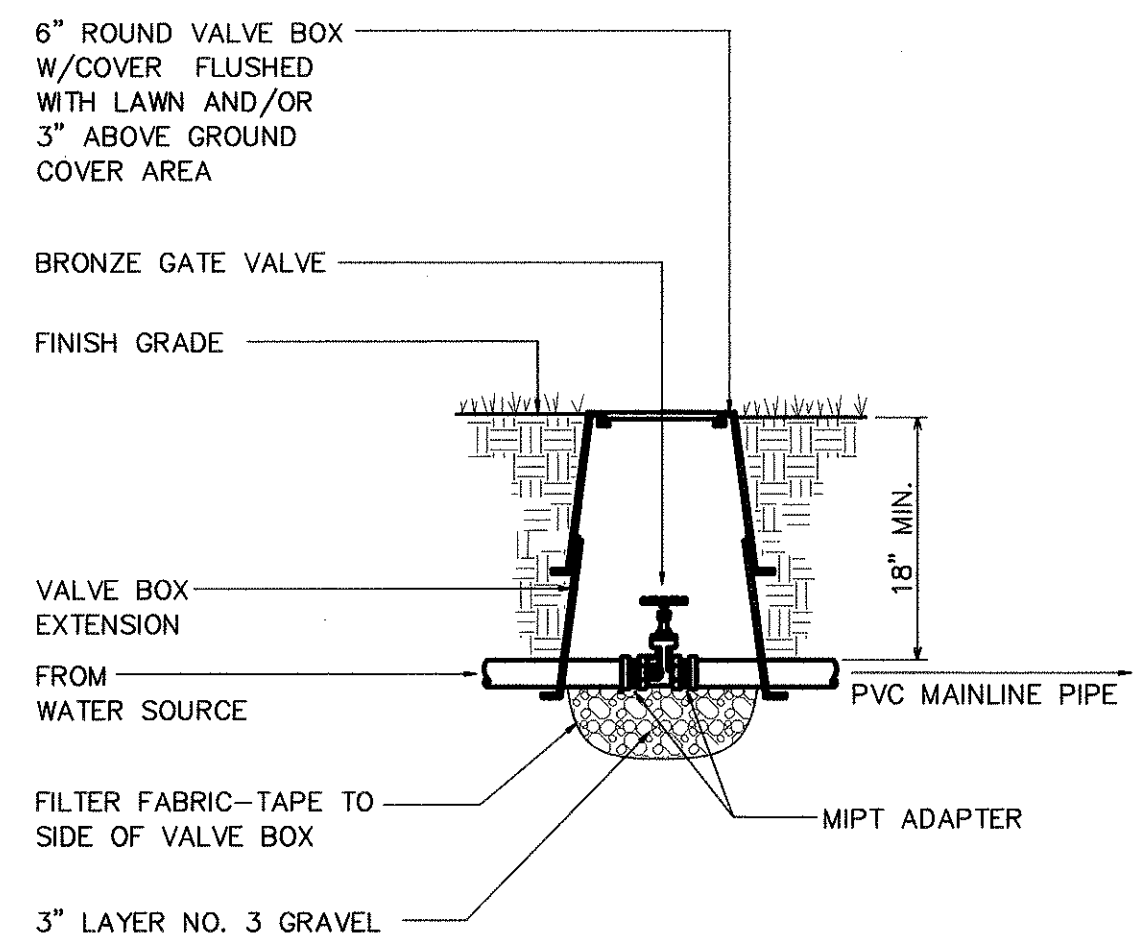
- INSTALL THRUST BLOCK AT ALL MACHINE BENDS, TEES OR ELLS AS SHOWN BELOW. THRUST BLOCKS SHALL BE MINIMUM OF (1) CU. FT. RED-MIX CONCRETE OR 2500 PSI 28 DAY CONCRETE.
- SET ALL THRUST BLOCKS AGAINST UNDISTURBED SOIL.



42 THRUST BLOCK DETAIL
SCALE: N.T.S.



43 IRRIGATION TRENCH & WIRING DETAIL
SCALE: N.T.S.



- NOTE:
- ALL VALVE BOX COVERS SHALL BE LABELED VALVE TYPE, ZONE NUMBER AND, CONTROLLER NUMBER.

44 GATE VALVE DETAIL
SCALE: N.T.S.

9/11/06	Added details; revised to DOT standard details
Date	Revision

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LANDSCAPE DETAILS

KAILUA ROAD PERMANENT
ROCKFALL AND LANDSLIDE MITIGATION
PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006

SHEET No. 6 OF 6 SHEETS



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	
No.	