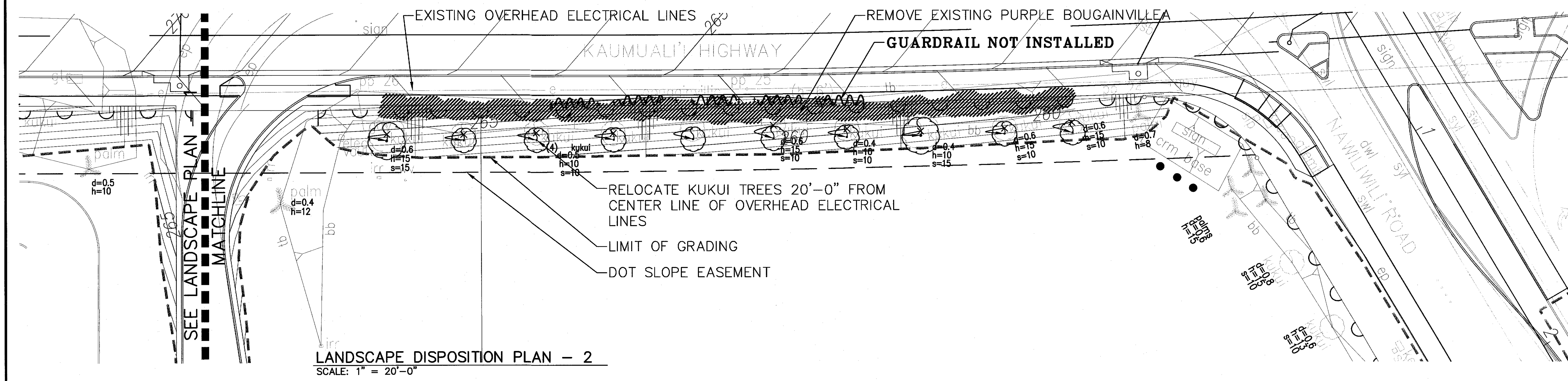
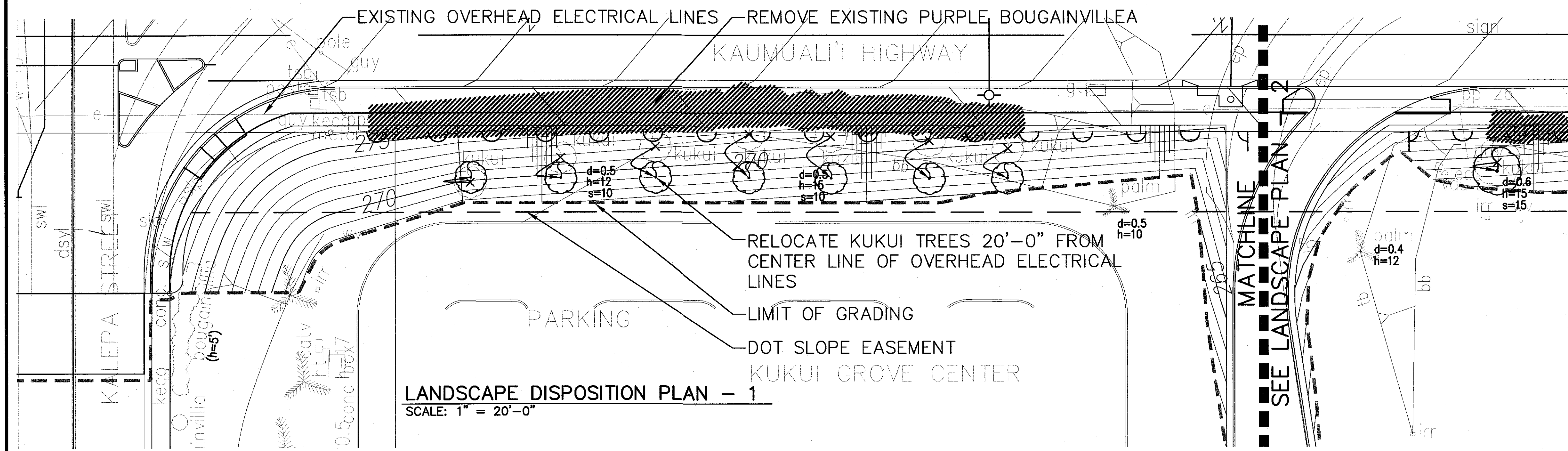


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	403	452



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

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

**RICHARD C. BROWNE**  
 LICENSED PROFESSIONAL LANDSCAPE ARCHITECT  
 No. 4613  
 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
 Richard C. Browne  
 SIGNATURE  
 APRIL 30, 2016  
 EXPIRATION DATE OF LICENSE



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**LANDSCAPE DISPOSITION PLANS**  
 KAUMUALII HIGHWAY WIDENING  
 Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
 FEDERAL-AID PROJECT NO. NH-050-1(31)  
 Scale: As Noted  
 Date: DEC. 2008  
 Date: MAY 2009


SHEET No. L-1 OF L-10 SHEETS

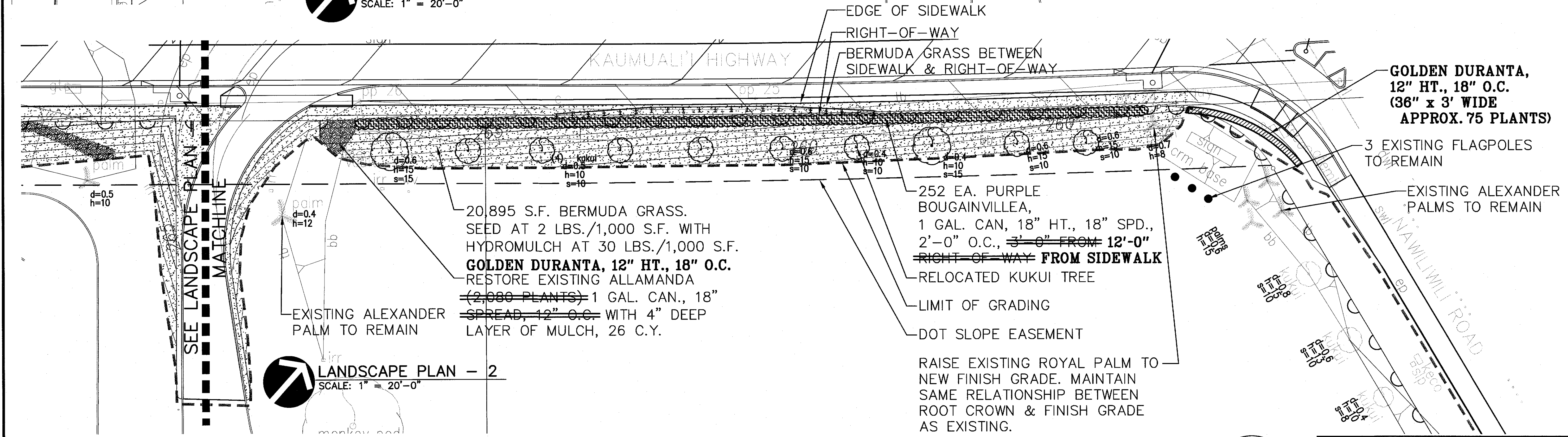
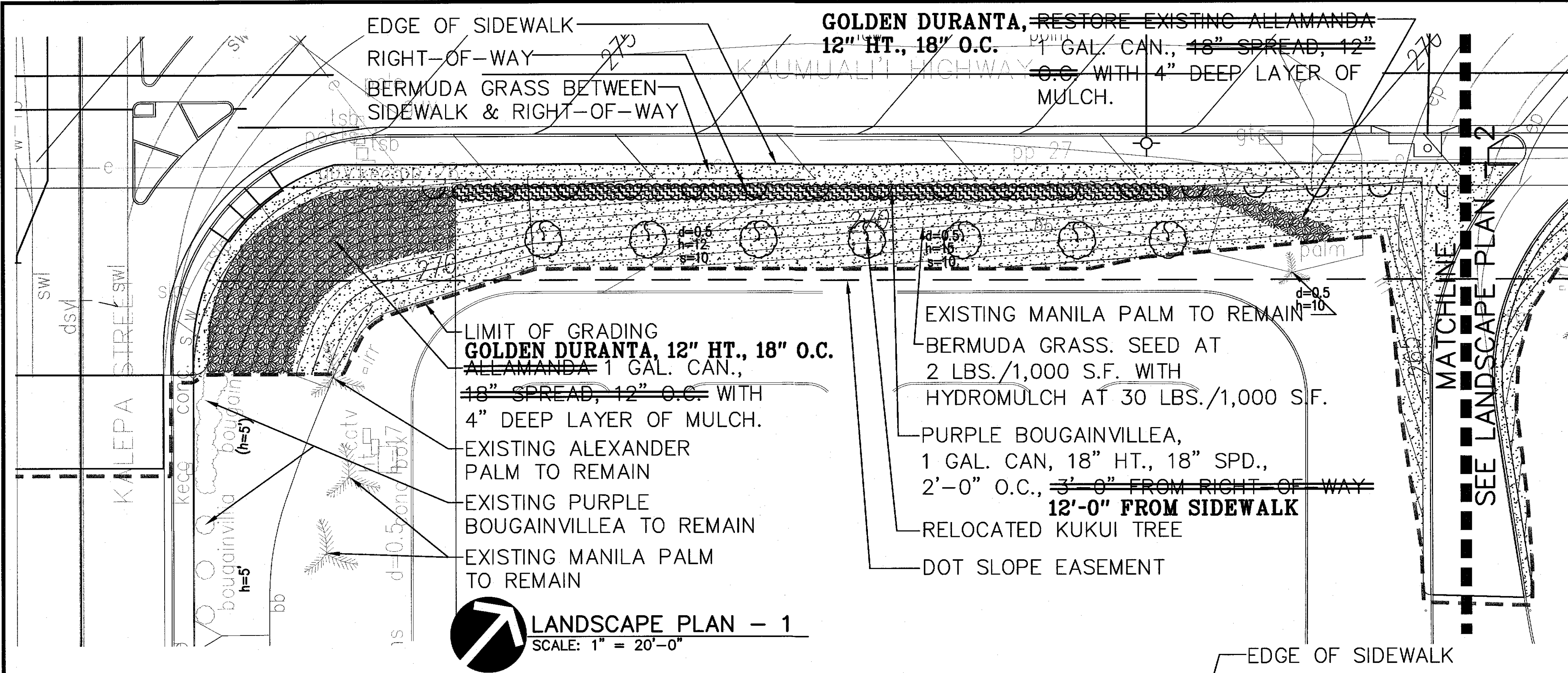
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	404 R	452

**LEGEND FOR AS-BUILT POSTINGS**

-  Squiggly line for as-built deletion
-  Double line for as-built deletion
- Roadway Text for as-built posting

APPROVED:

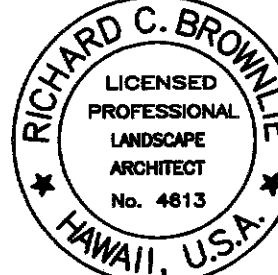

 1-21-11  
County Engineer, Dept. of Public Works Date  
County of Kauai  
(For Work Within County R/W)



**NOTE**  
ALL QUANTITIES ARE TOTAL FOR THIS SHEET.

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DESIGNED BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	

6/07/10	Added County of Kauai D.P.W. Approval and R/W Line.
DATE	REVISION

  
RICHARD C. BROWNIE  
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT  
No. 4813  
HAWAII, U.S.A.  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
Signature:   
APRIL 30, 2016  
EXPIRATION DATE OF LICENSE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

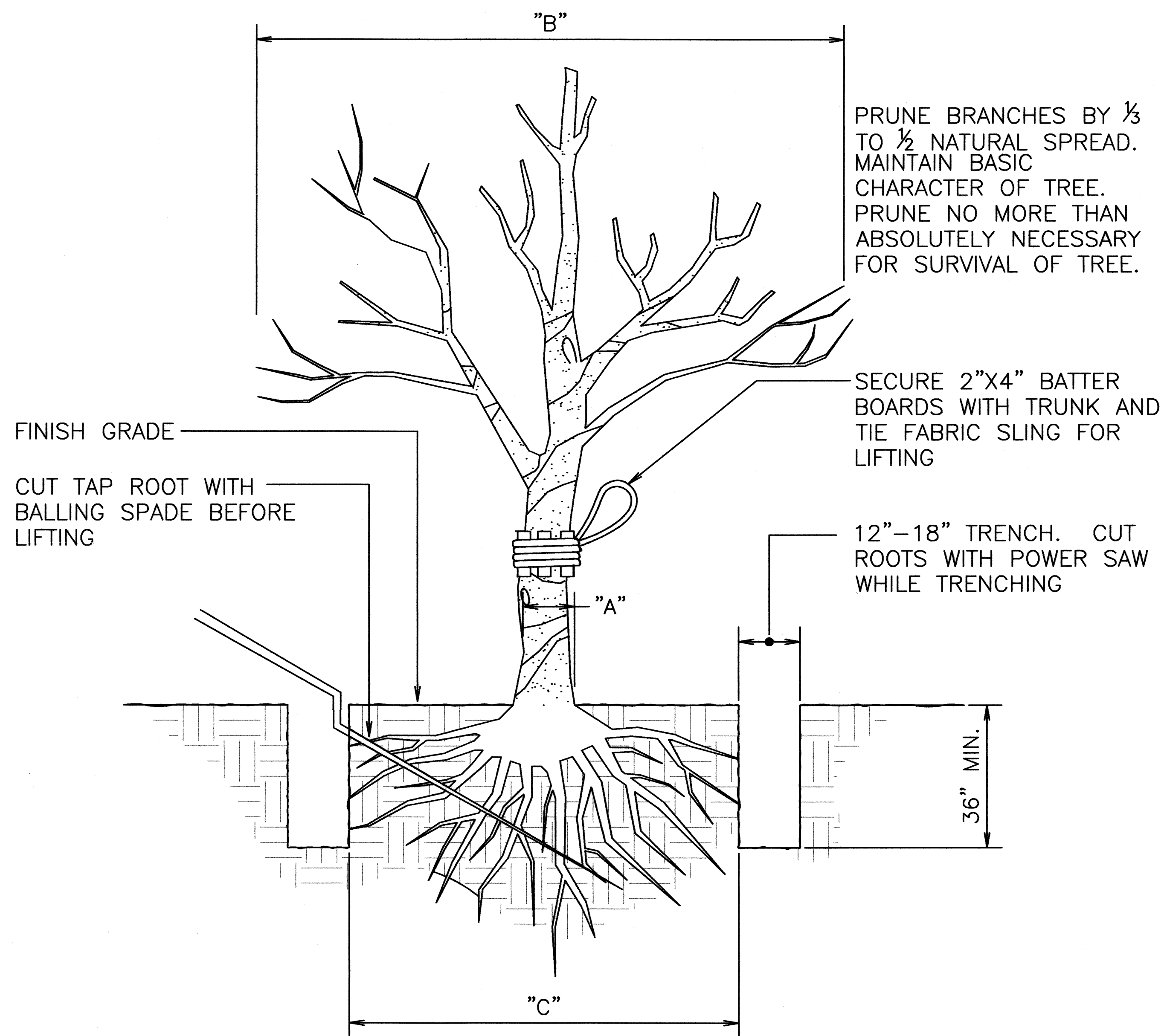
**LANDSCAPE PLANS**

KAUMUALI HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)  
Date: DEC. 2008  
Date: MAY 2009

Scale: As Noted

SHEET No. L-2 OF L-10 SHEETS





NOTES:

- TO REDUCE SHOCK, PRUNE ROOTS AND BRANCHES OF TREES WELL IN ADVANCE OF MOVING. (PREFERABLY DURING DORMANT SEASON.)
- ALL RELOCATION AND PRUNING WORK SHALL BE DONE UNDER THE SUPERVISION OF DOT APPROVED QUALIFIED ARBORIST WITH MINIMUM OF 5 YEARS OF EXPERIENCE FOLLOWING ARBORIST CERTIFICATION BY INTERNATIONAL SOCIETY OF ARBORIST.

"A"	"B"	"C"
CALIPER SIZE	SPREAD (SIDE)	ROOTBALL SIZE
2"-6" (50-150mm)	14"-26" (350-650mm)	24"-48" (600-1200mm)
6"-8" (150-200mm)	30"-48" (750-1200mm)	48"-72" (1200-1800mm)
> 8" (> 200mm)	60"-96" (1.5-2.4M)	72"-240" (1800-6000mm)

TREE TRANSPLANTING DETAIL

NOT TO SCALE

THREE (3) SINGLE STRAND NO. 9 GAUGE GALV. WIRES EQUALLY SPACED W/TWO (2) WHITE FLAGS PER GUY WIRE

2" LAYER WOOD CHIP MULCH

4" LAYER IMPORTED TOPSOIL

TEN (10) SLOW RELEASE PLANTING TABLETS. (21 GRAMS, 20-10-5)

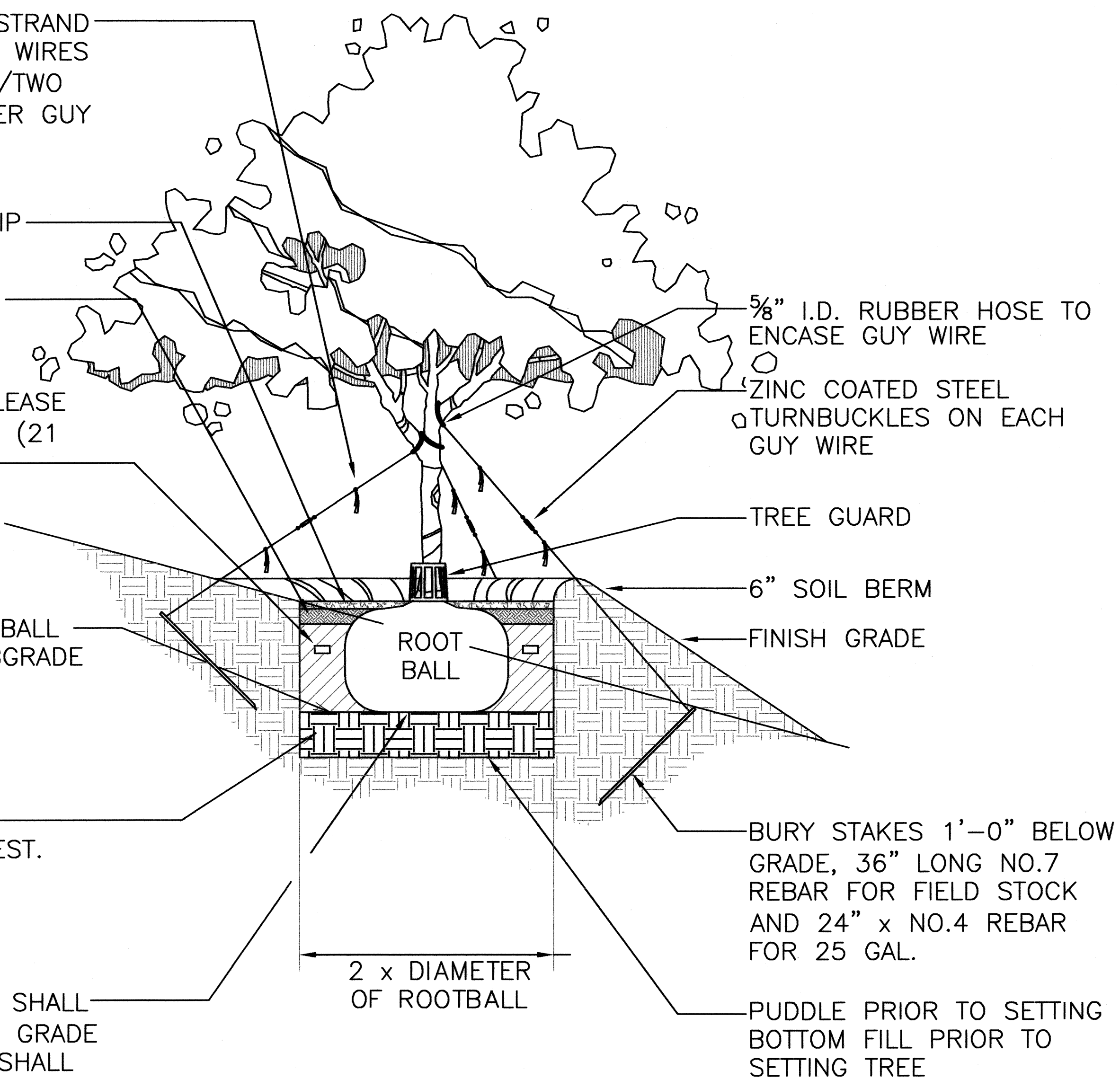
BOTTOM OF ROOTBALL TO REST ON SUBGRADE

BACKFILL MIXTURE: AMEND PER SOIL TEST.

TOP OF ROOT BALL SHALL BE FLUSH W/FINISH GRADE AND TRUNK FLARE SHALL BE VISIBLE. IF TRUNK FLARE IS NOT VISIBLE, TREE SHALL BE REJECTED. ROUGHEN SIDE OF ROOT BALL. REMOVE ROOTS GIRDLING THE TRUNK. SCARIFY ROOTBALL.

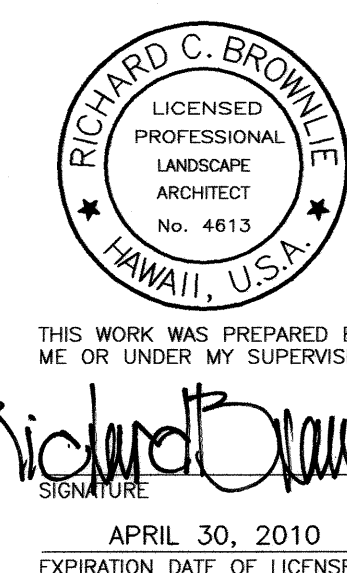
TREE PLANTING ON SLOPE DETAIL

NOT TO SCALE



NOTE:

TREE SHALL BE PLUMB. IF TREE IS LEANING AT THE END OF THE PLANT ESTABLISHMENT PERIOD, THE TREE SHALL BE REJECTED.



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

TREE RELOCATION DETAILS

KAUMUALII HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted

Date: MAY 2009

SHEET No. L-3 OF L-10 SHEETS

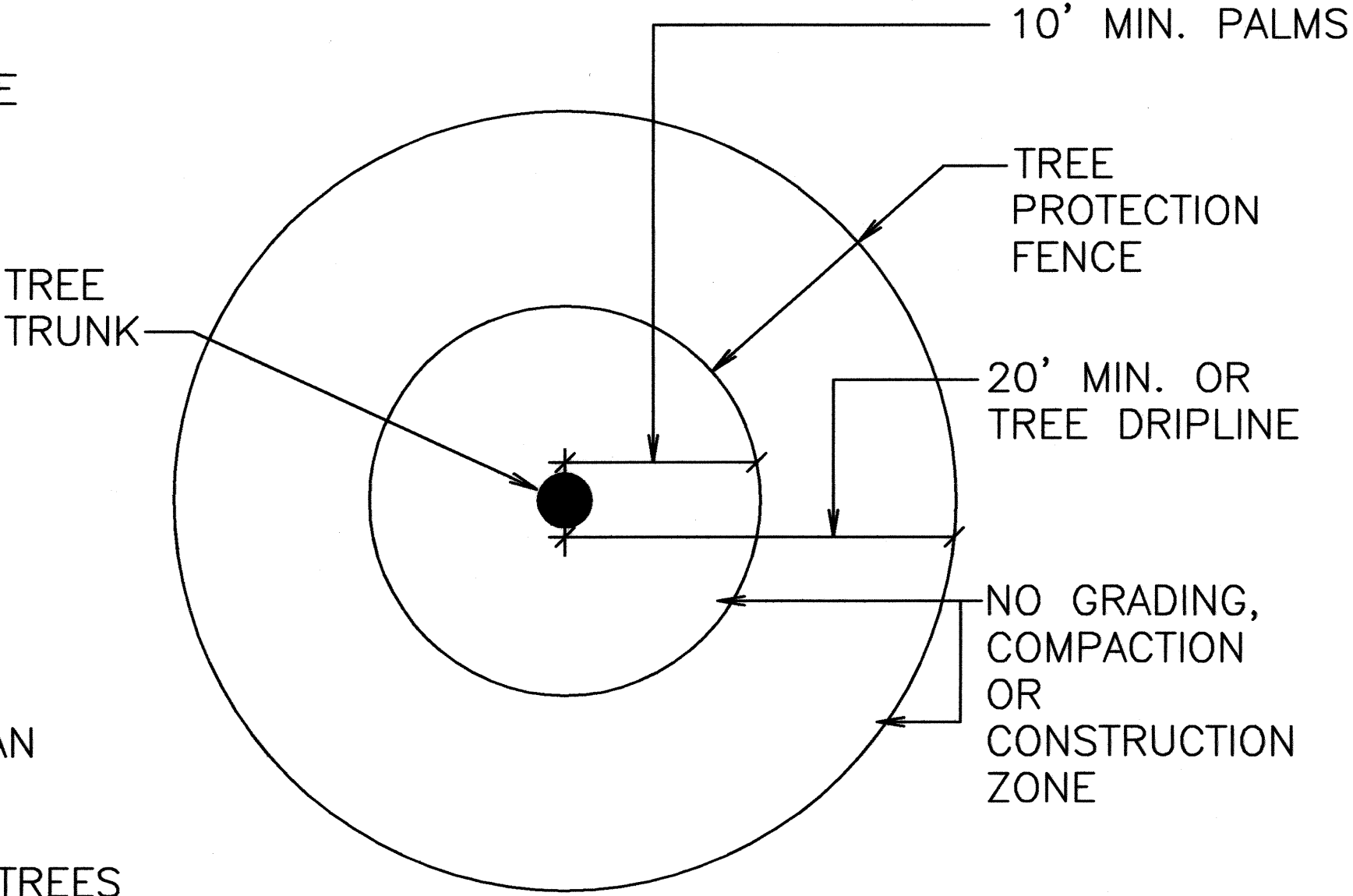
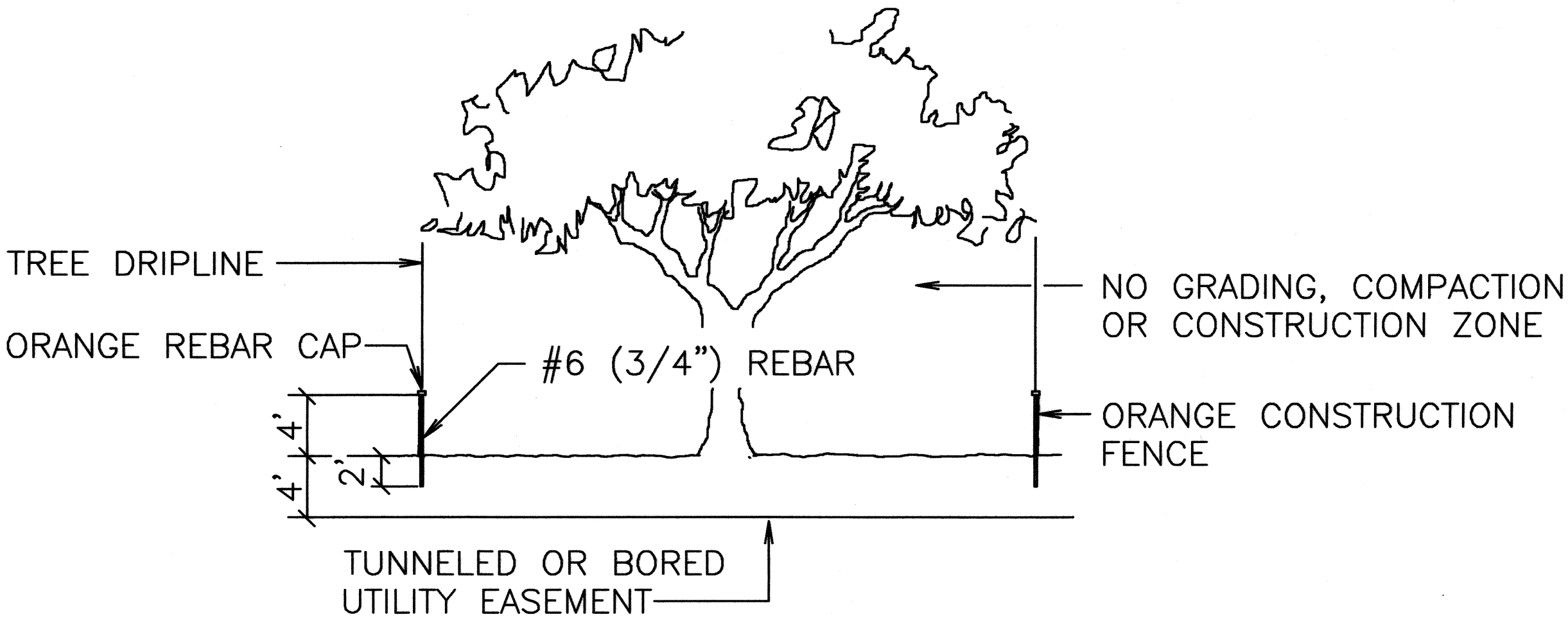




FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	407	452

TREE PROTECTION ZONE:

- ALL TREES IDENTIFIED ON THE PLANS TO BE PROTECTED. ALL TREES 24" CALIPER OR GREATER (AS MEASURED AT 4½ FEET HEIGHT) SHALL BE PROTECTED. 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 SPECIE AND SIZE AND MAINTAIN FOR THE DURATION OF THE CONSTRUCTION OR 12 MONTHS WHICHEVER IS GREATER AT NO COST TO THE STATE.
- 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 20 FEET FROM THE EXTERNAL SURFACE OF THE TREE'S TRUNK. FOR ALL PALMS, THE MINIMUM PROTECTION ZONE SHOULD BE AT LEAST 10 FEET.
- 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.
- ALL TREES SHALL REMAIN UNLESS SHOWN FOR REMOVAL. IF THERE IS A DISCREPANCY WITH ALL PLANS, CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY.
- PROTECTIVE FENCES SHALL BE ERECTED AROUND TREES IDENTIFIED ON PLAN OR TREES WITH A TRUNK DIAMETER GREATER THAN 24 INCHES (AS MEASURED AT A HEIGHT OF 4 ½ 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 AND APPROVED BY LANDSCAPE ARCHITECT OR ENGINEER 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."
- 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 OF CONSTRUCTION MATERIALS OR EQUIPMENT;
  - NO STOCKPILING OF ANY CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS;
  - NO DISPOSAL OF ANY LIQUIDS E.G. CONCRETE SLEUTH, 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
- AUGER TUNNELING, NOT TRENCHING, SHALL BE USED WHERE POSSIBLE FOR UTILITY PLACEMENT WITHIN THE DRIP LINE OF THE TREE. IF TRENCHING IS NECESSARY IT SHALL BE HAND DUG WITHIN THE DRIP LINE OF THE TREE.

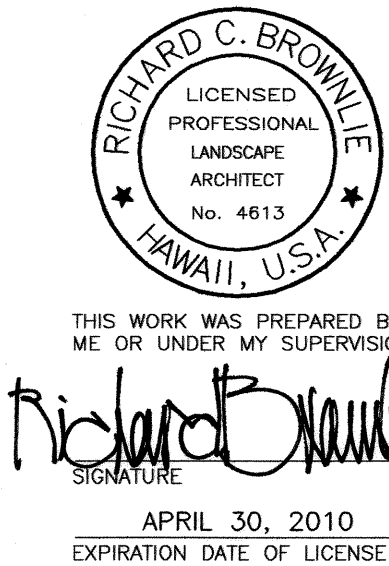


TREE/PALM PROTECTION ZONE (TPZ) DETAIL

NOT TO SCALE

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QUANTITIES BY	
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NOTE BOOK	
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TREE PROTECTION DETAILS**

KAUMUALII HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: MAY 2009

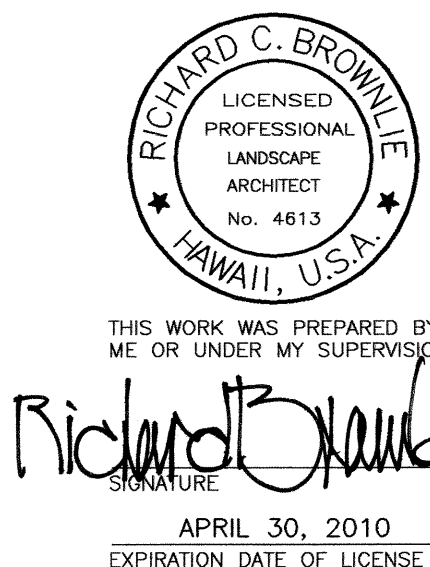
LANDSCAPE NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	408	452

- LANDSCAPE CONTRACTOR SHALL FIELD VERIFY ALL PLANT QUANTITIES AND DIMENSIONS PRIOR TO INSTALLATION. QUANTITIES SHOWN ARE FOR REFERENCE ONLY, VERIFY ACTUAL QUANTITIES AS SHOWN ON PLAN.
- LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES.
- PRIOR TO TREE AND SHRUB HOLE EXCAVATION, ALL PLANTING LOCATIONS SHALL BE STAKED OUT BY CONTRACTOR FOR APPROVAL BY ENGINEER. DO NOT PLANT UNTIL GROUND HAS BEEN PREPARED AND FREE OF STONES GREATER THAN 1/2" DIAMETER, SITE IS NEAT, ORDERLY AND THE ENGINEER ACCEPTS SITE FOR PLANTING.
- NOTIFY ENGINEER OF ANY DISCREPANCIES IN PLANT LOCATIONS OR INSUFFICIENT PLANT QUANTITIES DUE TO DIFFERENCE IN PLANS AND ACTUAL FIELD LOCATIONS.
- NOTIFY ENGINEER 30 DAYS PRIOR TO PLANTING OPERATIONS FOR APPROVAL OF ALL PLANT MATERIAL AT PLACE OF GROWTH. ALL PLANT MATERIAL NOT APPROVED BY THE ENGINEER WILL BE SUBJECT TO REJECTION.
- THE ENGINEER WILL INSPECT PLANTS AT THE PLACE OF GROWTH AND AFTER THE DELIVERY TO THE PROJECT. EACH TREE SHALL BE TAGGED BY THE ENGINEER WITH A CONSECUTIVELY NUMBERED PLASTIC TAMPER-RESISTANT AND SELF-LOCKING SEAL. SEALS SHALL REMAIN ON TREES AND ONLY BE REMOVED BY THE ENGINEER AT THE COMPLETION OF THE PLANT ESTABLISHMENT PERIOD. TREES DELIVERED TO THE PROJECT WITHOUT ENGINEERS SEAL WILL BE REJECTED.
- PLANT SHALL MEET SIZE INDICATED BY MINIMUM HEIGHT AND SPREAD. PLANTS SHALL BE STRAIGHT AND UNIFORMLY SHAPED, UNLESS UNIQUE OR SPECIAL CHARACTERISTICS ARE SPECIFIED, AND SHALL BE UNDAMAGED, SOUND, HEALTHY, VIGOROUS AND FREE OF DISEASE AND INSECT INFESTATION. PLANTS NOT CONFORMING TO THESE REQUIREMENTS ON DELIVERY TO THE PROJECT AND AT THE END OF THE PLANT ESTABLISHMENT PERIOD WILL BE REJECTED.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE COMPLETE REMOVAL AND DAMAGES RESULTING FROM THE INTRODUCTION OF PLANTING ANY PLANT SPECIES LISTED ON THE HAWAII DEPARTMENT OF AGRICULTURE 'NOXIOUS WEED RULES' AS DEFINED IN THE STATUTE, HAWAII ADMINISTRATIVE RULES 4:68:1 OR THE 'FEDERAL NOXIOUS WEED LIST' AS DEFINED IN TITLE 7 OF THE CODE OF FEDERAL REGULATIONS (CFR), PARTS 360 AND 361.
- ALL TREE WORK MUST ADHERE TO AMERICAN NATIONAL STANDARD INSTITUTE (OR ANSI) - A300 TREE CARE STANDARDS AND ANSI-Z133 SAFETY STANDARDS FOR TREE WORK. WORK SHALL BE CONTRACTED TO ARBORISTS THAT HAS BEEN CERTIFIED IN GOOD STANDINGS AS AN ISA CERTIFIED ARBORIST FOR AT LEAST 5 YEARS TO ASSURE THAT TREE WORK IS PERFORMED PROPERLY AND TREES ARE NOT DAMAGED BY PRACTICES SUCH AS TOPPING, FLUSH CUTS, OVER-THINNING, OR CLIMBING WITH SPIKES. CONTRACTOR SHALL SUBMIT A COPY OF THE ISA ARBORIST CERTIFICATION OF GOOD STANDING OF 5 YEARS TO THE ENGINEER MINIMUM 7 DAYS PRIOR TO TREE PRUNING.
- FOR THE DURATION OF CONSTRUCTION WITHIN THE DRIP LINE OF TREES TO REMAIN THERE MUST BE: NO CHANGES, ALTERATIONS OR DISTURBANCE TO THE GRADE BY ADDING FILL, EXCAVATING OR SCRAPPING EXCEPT AS NOTED ON PLANS; NO STORAGE OF CONSTRUCTION MATERIAL OR EQUIPMENT; NO STOCKPILING OF ANY CONSTRUCTION MATERIAL OR ANY EXCAVATED MATERIAL, NO DISPOSAL OF ANY LIQUIDS (E.G. CONCRETE SLEUTH, 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 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 REMAIN.
- IF TREES OTHER THAN THOSE SPECIFICALLY DESIGNATED FOR REMOVAL ARE DAMAGED BEYOND SURVIVAL CONDITIONS AS DETERMINED BY THE ENGINEER, THE CONTRACTOR SHALL REMOVE SUCH TREES AND REPLACE THE TREE WITH A SAME SPECIE AND SIZE AND MAINTAIN FOR THE DURATION OF CONSTRUCTION OR 12 MONTHS WHICHEVER IS GREATER AT NO COST TO THE STATE.
- PROVIDE EVEN FOUR-INCH LAYER OF PLANTING SOIL OVER ALL PLANTING AREAS. SEE GRADING PLANS FOR PLANTING SOIL. REPRESENTATIVE SAMPLES OF SOIL FROM PROJECT SITES 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 FERTILIZATION SCHEDULE SHALL BE PRESENTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE BEFORE PLACING PLANTING SOIL. UNIFORMLY DISTRIBUTE FERTILIZER AND AMENDMENTS OVER PLANTING AREAS AS RECOMMENDED BY THE SOIL ANALYSIS REPORT. ROTOTILL TOP FOUR-INCHES OF SOIL TO EVENLY INCORPORATE FERTILIZER AND AMENDMENTS. AFTER COMPLETION OF SOIL AMENDMENTS, RETEST TO MEET SOIL ANALYSIS. CONTINUE AMENDING UNTIL TEST MEETS SOIL TEST RECOMMENDATIONS. PROVIDE COPY OF ALL SOIL TESTS TO ENGINEER.
- GUY WIRES, FLAGGING STAKES, WINDBREAKERS, ETC. SHALL BE MAINTAINED AND REPLACED IF NECESSARY BY THE CONTRACTOR UNTIL THE TREE OR SHRUB IS ABLE TO STAND BY ITSELF. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THESE ITEMS AT THE END OF PLANT ESTABLISHMENT PERIOD.
- ANY PLANTING THAT OBSTRUCTS SIGHT DISTANCE, SIGNS OR TRAFFIC LIGHTS SHALL BE RELOCATED OR REMOVED AS DETERMINED BY THE ENGINEER.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
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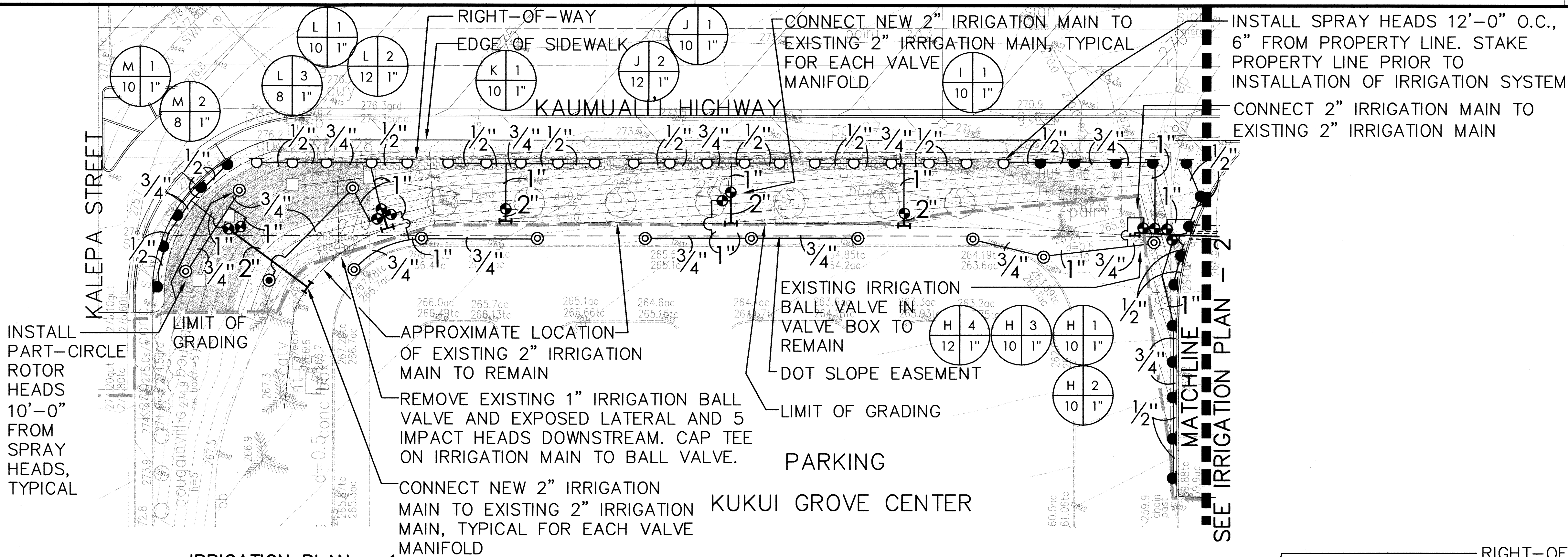


STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>LANDSCAPE NOTES</b>	
KAUMUALII HIGHWAY WIDENING	
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge	
FEDERAL-AID PROJECT NO. NH-050-1(31)	
Scale: As Noted	Date: MAY 2009

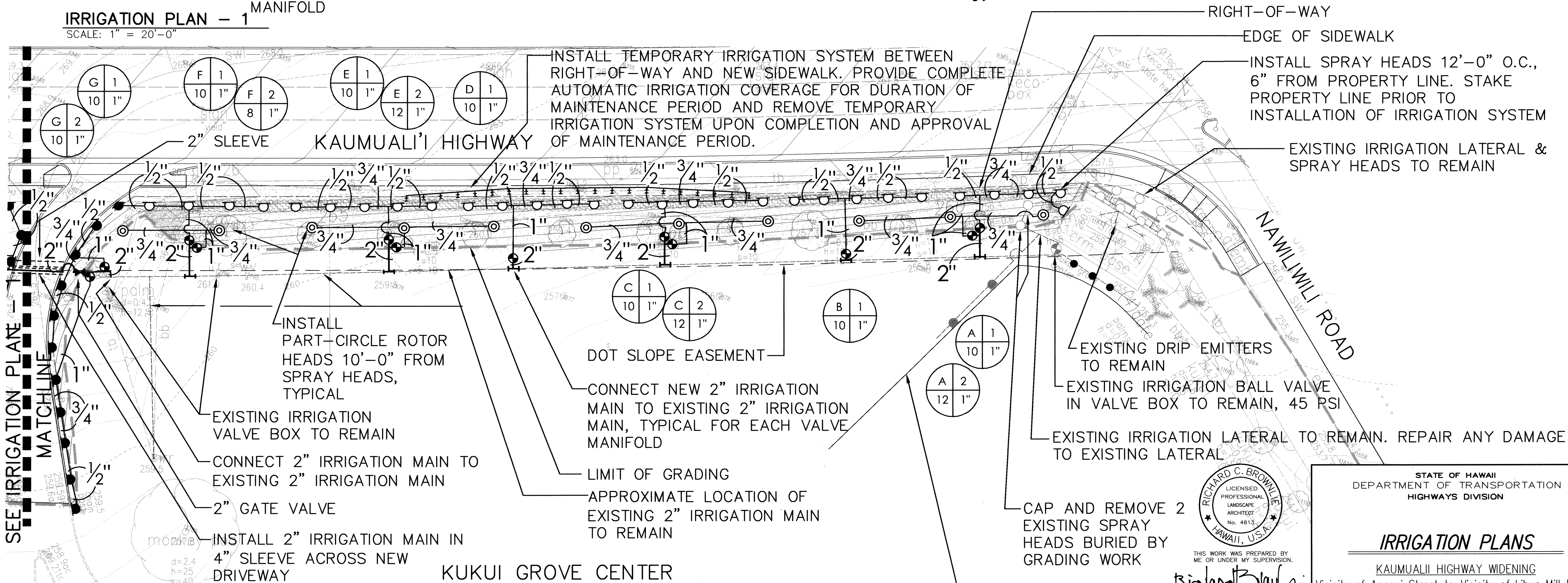
SHEET No. L-6 OF L-10 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	409	452



IRRIGATION PLAN - 1  
SCALE: 1" = 20'-0"



IRRIGATION PLAN - 2  
SCALE: 1" = 20'-0"

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	

May 08, 2009 - 1:34pm  
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RICHARD C. BROWN, JR.  
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT  
No. 4613  
HAWAII, U.S.A.  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
SIGNATURE  
APRIL 30, 2010  
EXPIRATION DATE OF LICENSE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**IRRIGATION PLANS**

KAUMUALI'I HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)

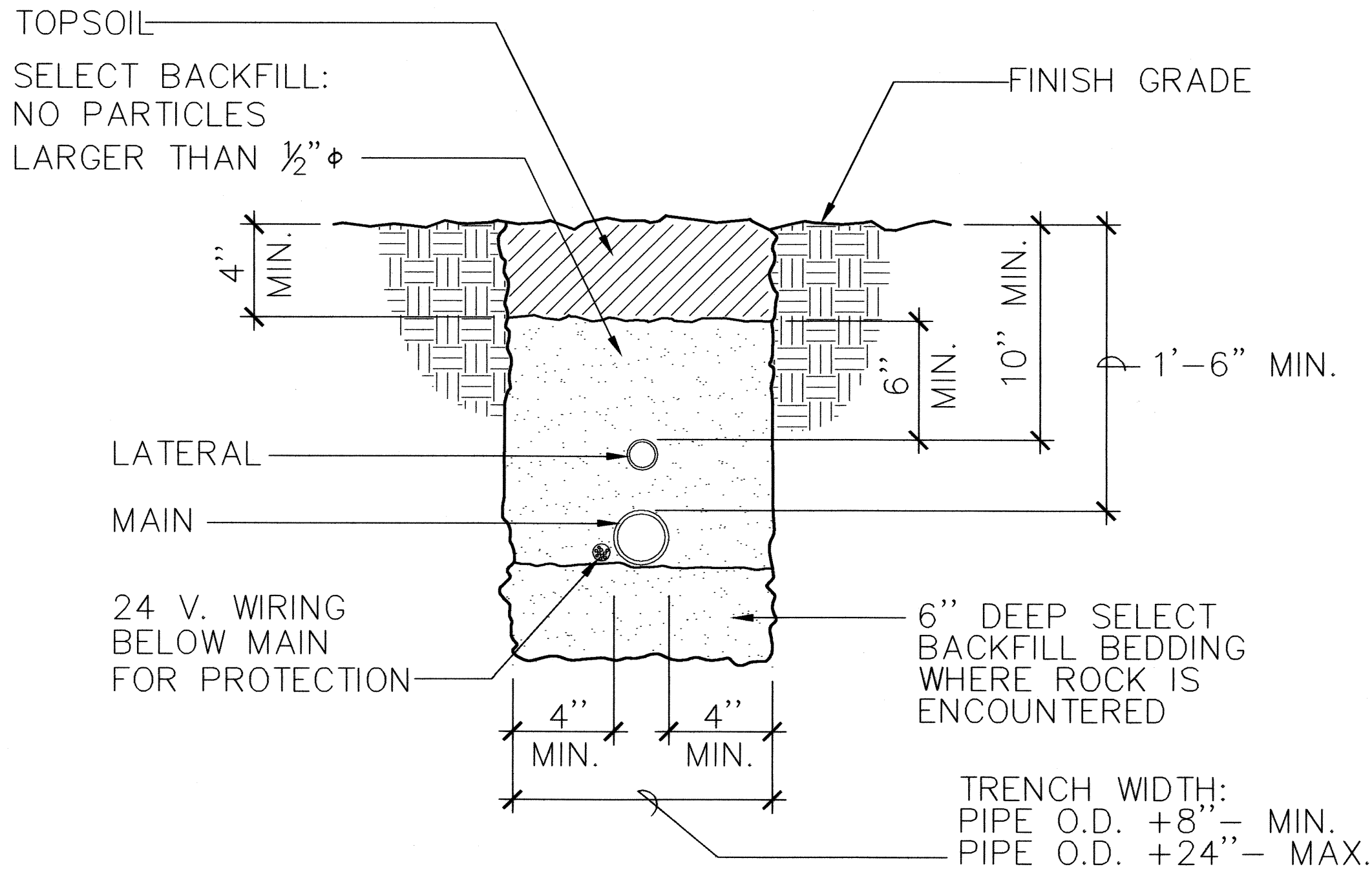
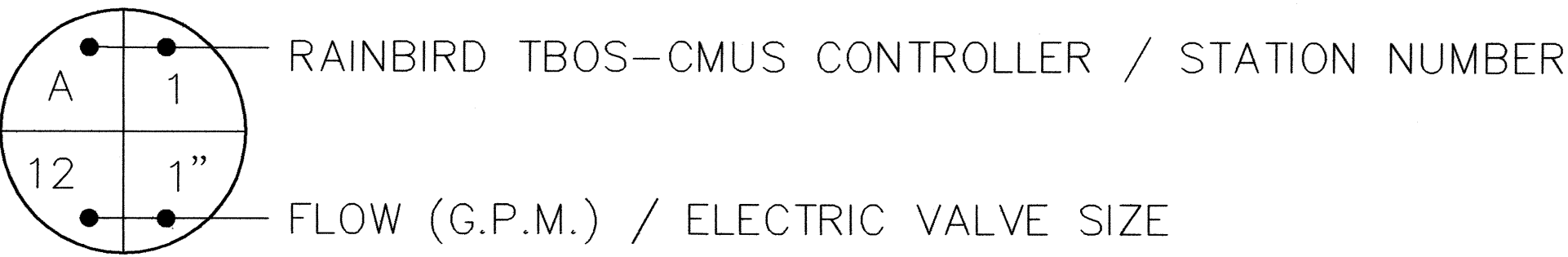
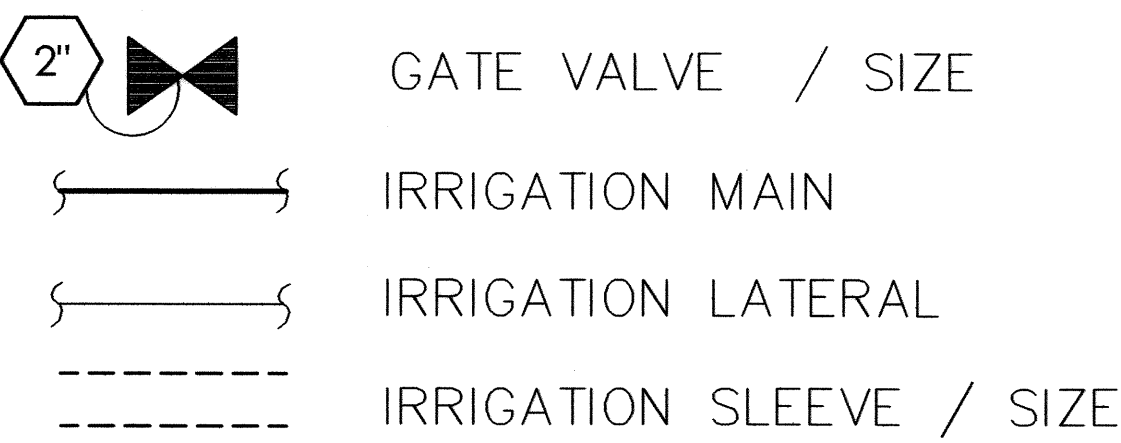
Scale: As Noted Date: MAY 2009

SHEET No. L-7 OF L-10 SHEETS



IRRIGATION LEGEND

SYMBOL	DESCRIPTION	P.S.I.	G.P.M.	RAD.	MANUFACTURER & MODEL No. (or approved equal)
●●●●	4" POP-UP SPRAY HEAD: FULL, 1/2, 1/3, 1/4 CIRCLE	20-30	4/2/1.5/1.0	4'-15'	RAINBIRD 1804-SAM-PRS-15F, -15H, -15T, -15Q; HUNTER INST-04-CV-15F, -15H, -15T, -15Q
○△▽□	12" POP-UP SPRAY HEAD: FULL, 1/2, 1/3, 1/4 CIRCLE	20-30	4/2/1.5/1.0	4'-15'	RAINBIRD 1812-SAM-PRS-15F, -15H, -15T, -15Q; HUNTER INST-12-CV-15F, -15H, -15T, -15Q
◎◎	5" POP-UP ROTOR HEAD WITH COLOR CODED NOZZLE: FULL CIRCLE, PART CIRCLE	30-80	4	25'-47'	RAINBIRD 5505-5 (YELLOW NOZZLE)
●●	2" REDUCED PRESSURE BACKFLOW PREVENTER (EXISTING)				WATTS
⊙	BATTERY OPERATED ELECTRIC VALVE WITH CONTROLLER				RAINBIRD PEB WITH TBOS-PSOL POTTED LATCHING SOLENOID AND ONE TBOS-CMUS CONTROL MODULE FOR EACH VALVE CLUSTER. REFER TO IRRIGATION PLAN FOR MODULE STATION COUNT.



PIPE TRENCH- PLANTING AREAS

NOT TO SCALE

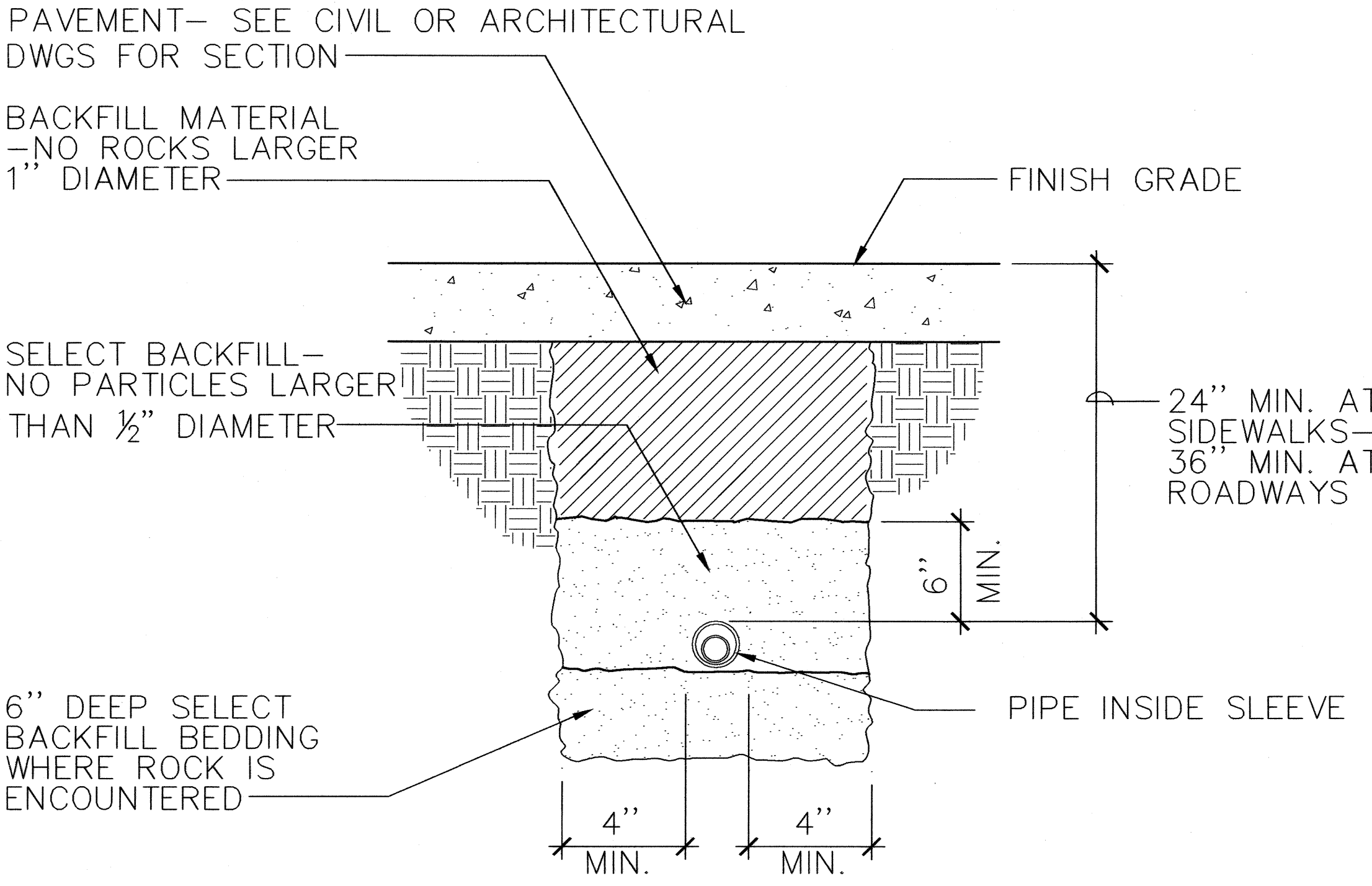
NIBCO T-113

PVC SCH. 40 (2" & SMALLER)

PVC CLASS 200

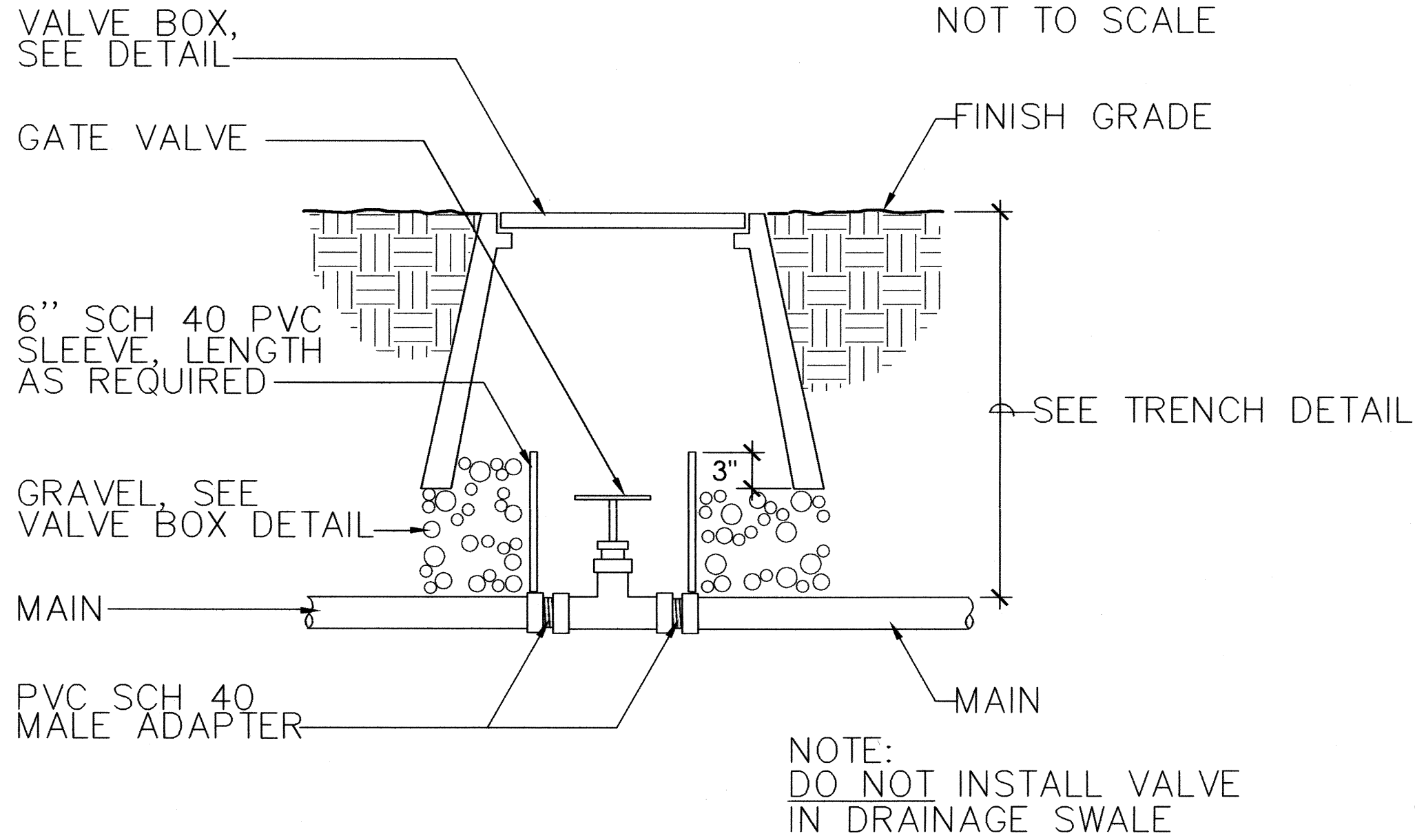
PVC SCH. 80

**NOTE**  
AT FINAL INSPECTION, DELIVER RAINBIRD  
TBOS-FTUS FIELD TRANSMITTER TO ENGINEER



PIPE TRENCH- PAVED AREAS

NOT TO SCALE



GATE VALVE (3" AND SMALLER)

NOT TO SCALE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	410	452

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

May 08, 2009-1:23pm  
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RICHARD C. BROWNE  
LICENSED PROFESSIONAL  
LANDSCAPE ARCHITECT  
No. 4613  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION.

Richard C. Browne

APRIL 30, 2010  
EXPIRATION DATE OF LICENSE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**IRRIGATION LEGEND & DETAILS**

KAUMUALII HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: MAY 2009

SHEET No. L-8 OF L-10 SHEETS

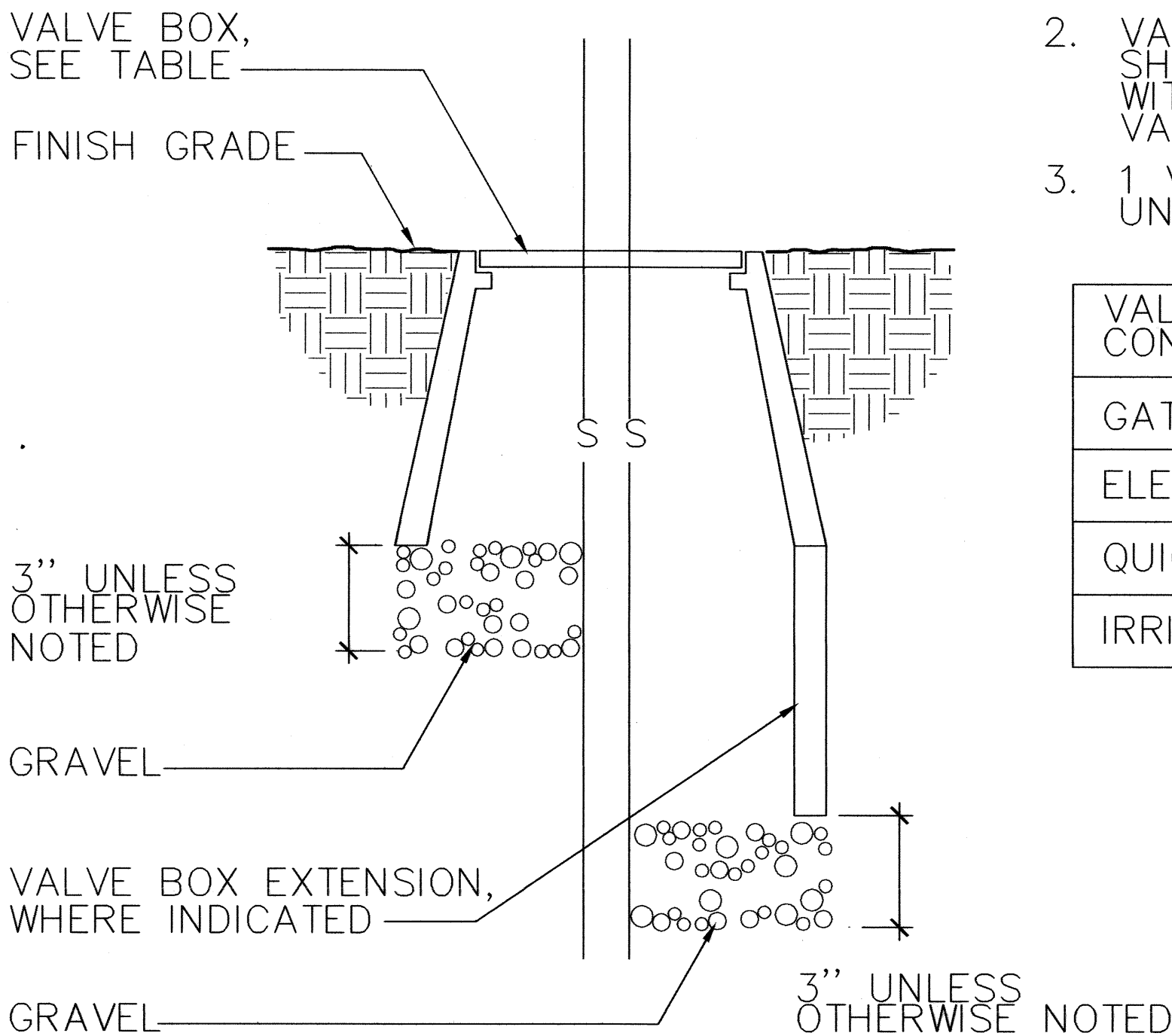


NOTES:

- DO NOT INSTALL VALVE BOX IN DRAINAGE SWALE
- VALVE BOX EXTENSIONS SHALL BE COMPATIBLE WITH CORRESPONDING VALVE BOX
- 1 VALVE PER VALVE BOX UNLESS OTHERWISE NOTED

VALVE BOX CONTENTS	VALVE BOX MODEL NO. (OR APPROVED EQUAL)
GATE VALVE	NDS 312BC
ELECTRIC VALVE	NDS 314BC
QUICK COUPLER	NDS 212BC
IRRIGATION WIRES	NDS 314BC

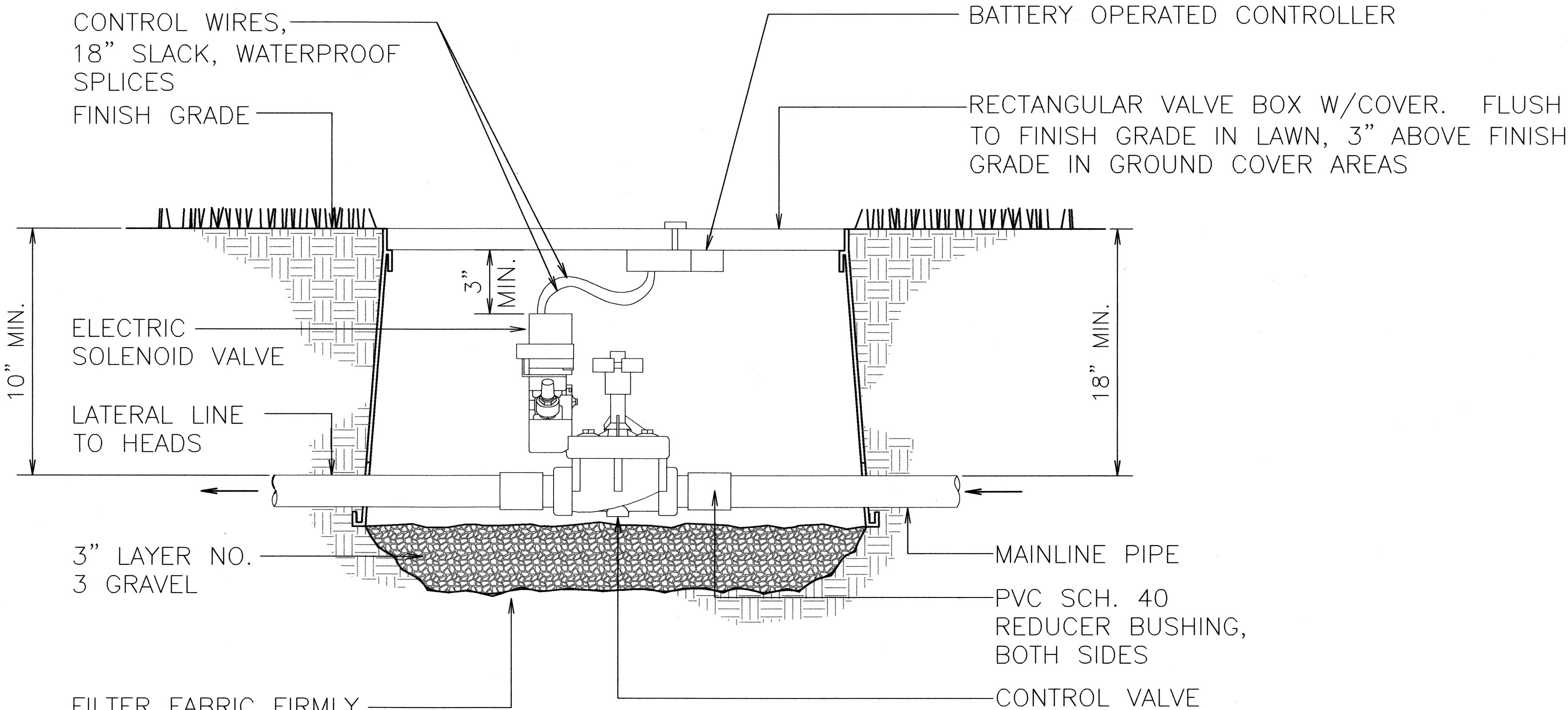
VALVE BOX TABLE



VALVE BOX

NOT TO SCALE

LR-040  
12/30/98

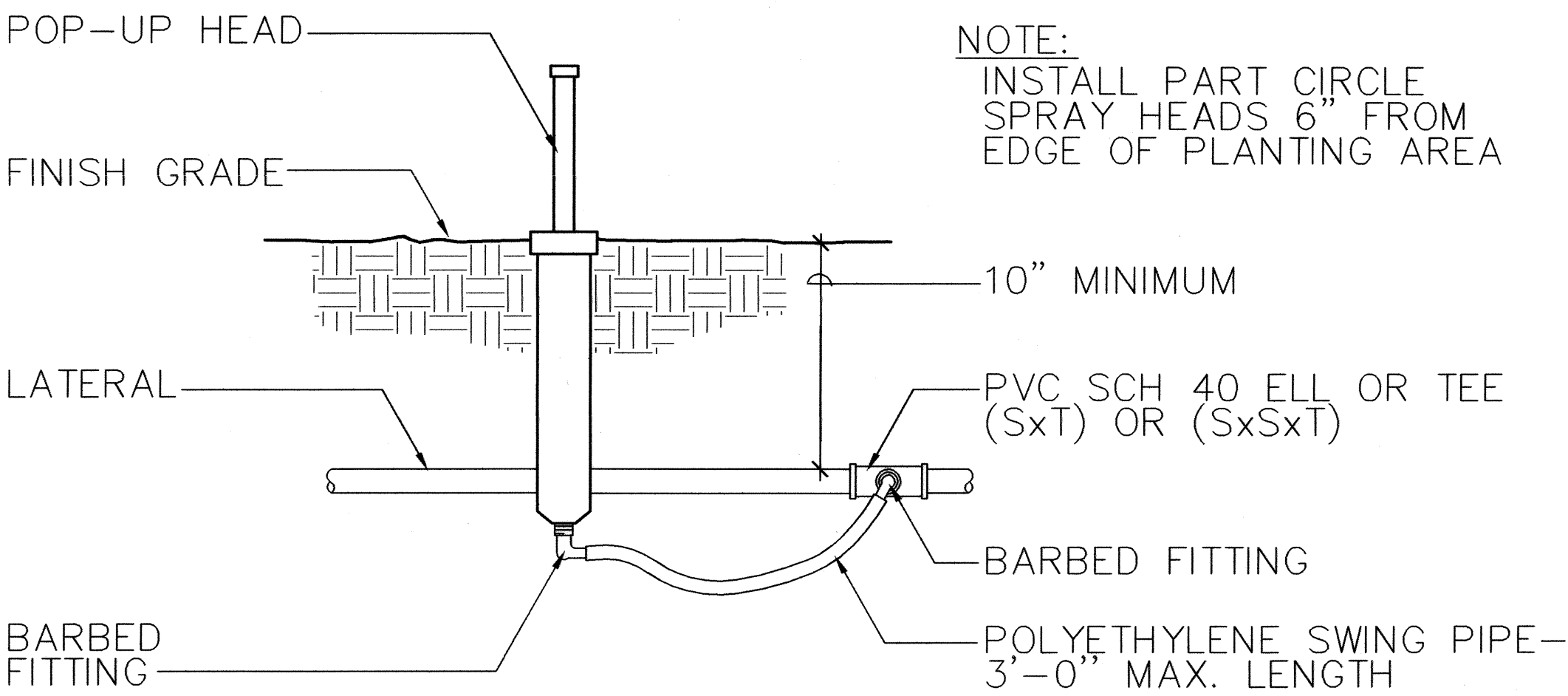


NOTE:

DO NOT INSTALL VALVE IN DRAINAGE SWALE

BATTERY POWERED AUTOMATIC CONTROLLER DETAIL

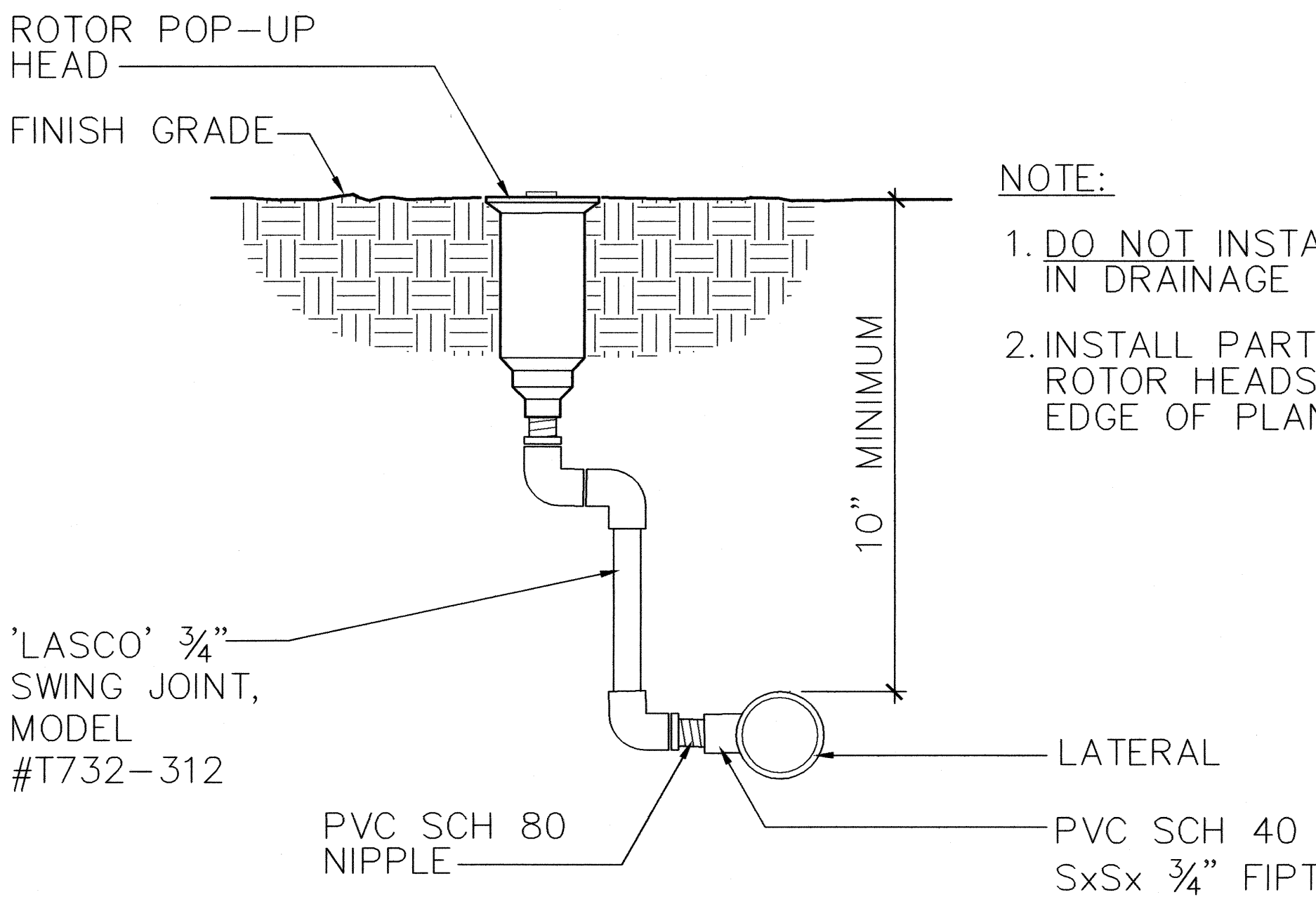
NOT TO SCALE



SPRAY HEAD POP-UP

NOT TO SCALE

LR-019  
12/30/98



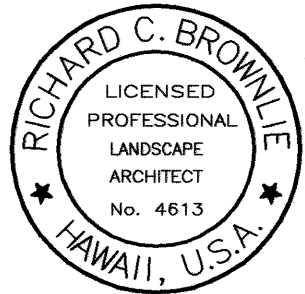
ROTOR HEAD - POP-UP

NOT TO SCALE

LR-023  
12/30/98

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

May 08, 2009 - 1:22pm  
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THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION.  
*Richard C. Brown*  
SIGNATURE  
APRIL 30, 2010  
EXPIRATION DATE OF LICENSE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**IRRIGATION DETAILS**

KAUMUALII HIGHWAY WIDENING  
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge  
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: MAY 2009

SHEET No. L-9 OF L-10 SHEETS

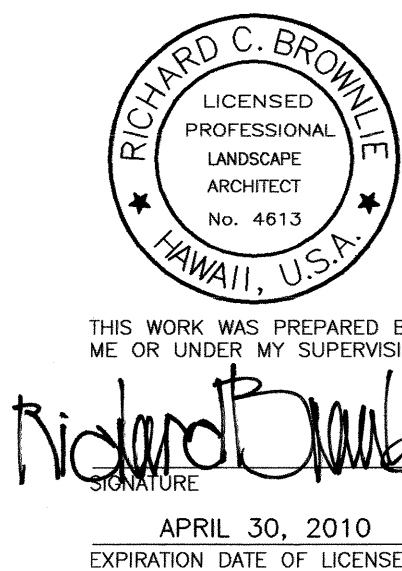
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	412	452

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 50 PSI AT THE HIGH POINT OF THE SITE. NOTIFY THE PROJECT ENGINEER, IF WATER PRESSURE AT THE HIGH POINT OF THE SITE IS LESS THAN 45 PSI OR GREATER THAN 90 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 AND THROUGH WALLS. CONTRACTOR SHALL ASSURE THAT THESE ITEMS ARE LAID PRIOR TO PLACEMENT OF PAVEMENT OR WALL STRUCTURES.
6. LOCATE AND INSTALL ALL SPRINKLER HEADS 6" FROM SIDEWALKS, CURBS, DRIVEWAYS, BUILDINGS AND WALLS UNLESS OTHERWISE NOTED. FLEX TUBING SHALL BE INSTALLED ON ALL SPRINKLER HEADS ALONG SIDEWALKS, DRIVEWAYS, AND PARKING SPACES. ADJUST ALL SPRINKLER HEADS AND VALVE FLOW CONTROLS 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 ENGINEERS ACCEPTANCE SIX (6) COPIES OF DETAILED SCALED DRAWINGS AND WIRING DIAGRAMS FOR PERMANENT AND TEMPORARY IRRIGATION SYSTEMS. NOTE 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 WORKING (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 ELECTRIC CONTROL VALVE AND TEST PIPES 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, RUN AUTOMATIC CONTROLLER THROUGH ALL CYCLES. CHECK IRRIGATION SYSTEM FOR COVERAGE 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 MEET IRRIGATION 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 DRIP IRRIGATION MAIN.
  - (c) 10 INCHES FOR DRIP IRRIGATION LATERAL.
  - (d) 24 INCHES FOR SLEEVE OR CONDUIT UNDER SIDEWALKS.
  - (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.

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

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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>IRRIGATION NOTES</b>	
KAUMUALII HIGHWAY WIDENING Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge FEDERAL-AID PROJECT NO. NH-050-1(31)	
Scale: As Noted	Date: MAY 2009