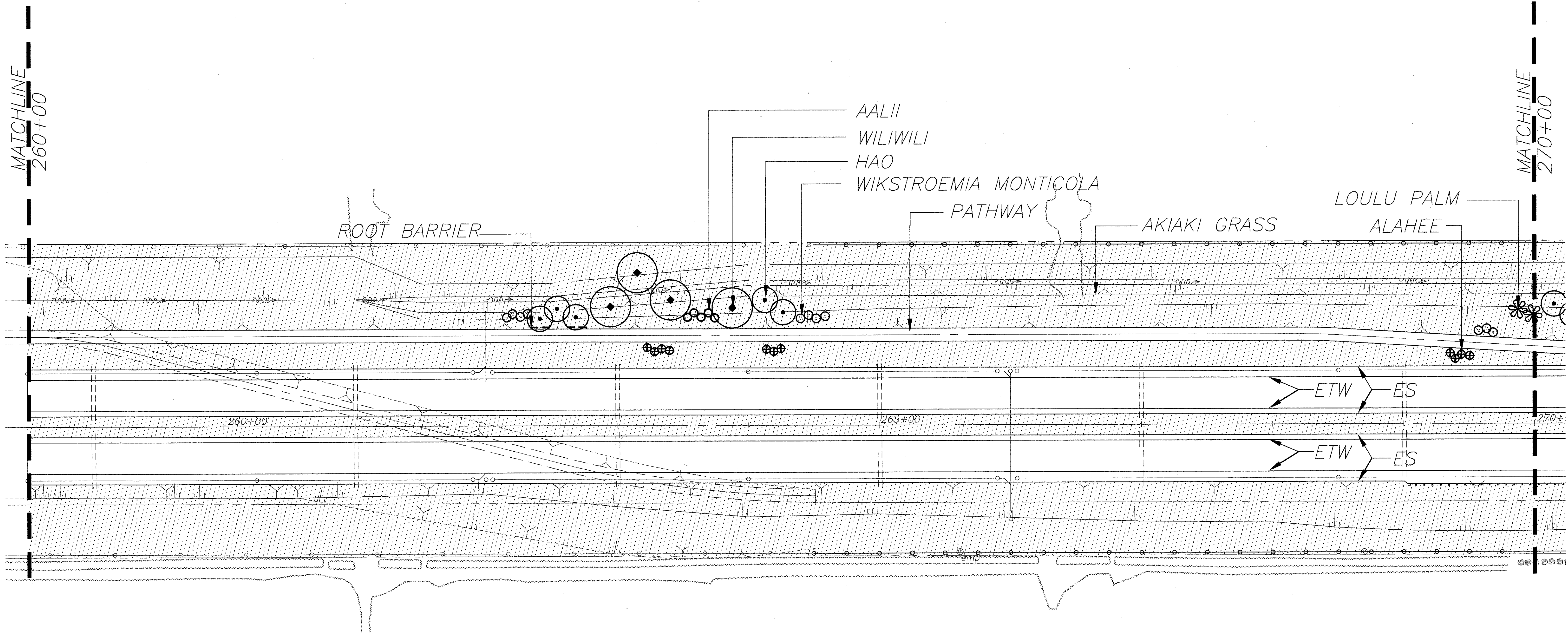
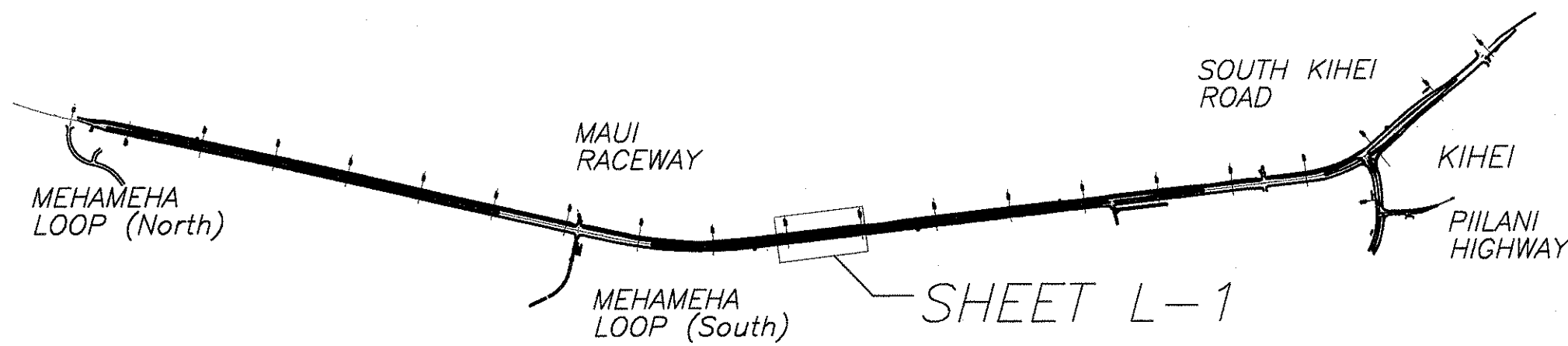


FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	120	138

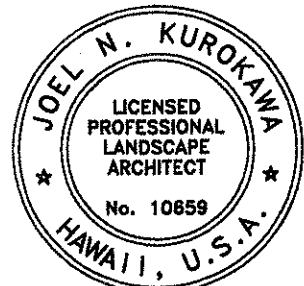


NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.

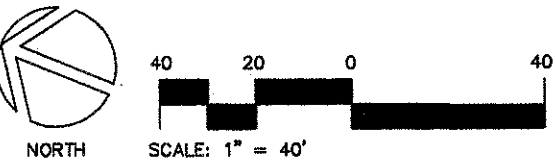


KEY MAP
NO SCALE

EST. QTY.	PLANT LIST COMMON NAME
5 EA.	AALII
11 EA.	ALAHEE
5 EA.	HAO
2 EA.	LOULU PALM
11 EA.	WIKSTROEMIA MONTICOLA
4 EA.	WILIWILI
185,350	GRASSING
2,266 CY.	IMPORTED SCREENED SOIL
1,140 CY.	SOIL AMENDMENTS
550 LF.	IRRIGATION SLEEVES
30 LF.	ROOT BARRIER
7 CY.	COVER MULCH



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
Joel N. Kurokawa
SIGNATURE
HAWAII DESIGN ASSOCIATES, INC.
EXPIRATION DATE 07/30/04



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN - STA. 260+00 - 270+00

MOKULELE HIGHWAY WIDENING

Vicinity of Koloa Bridge

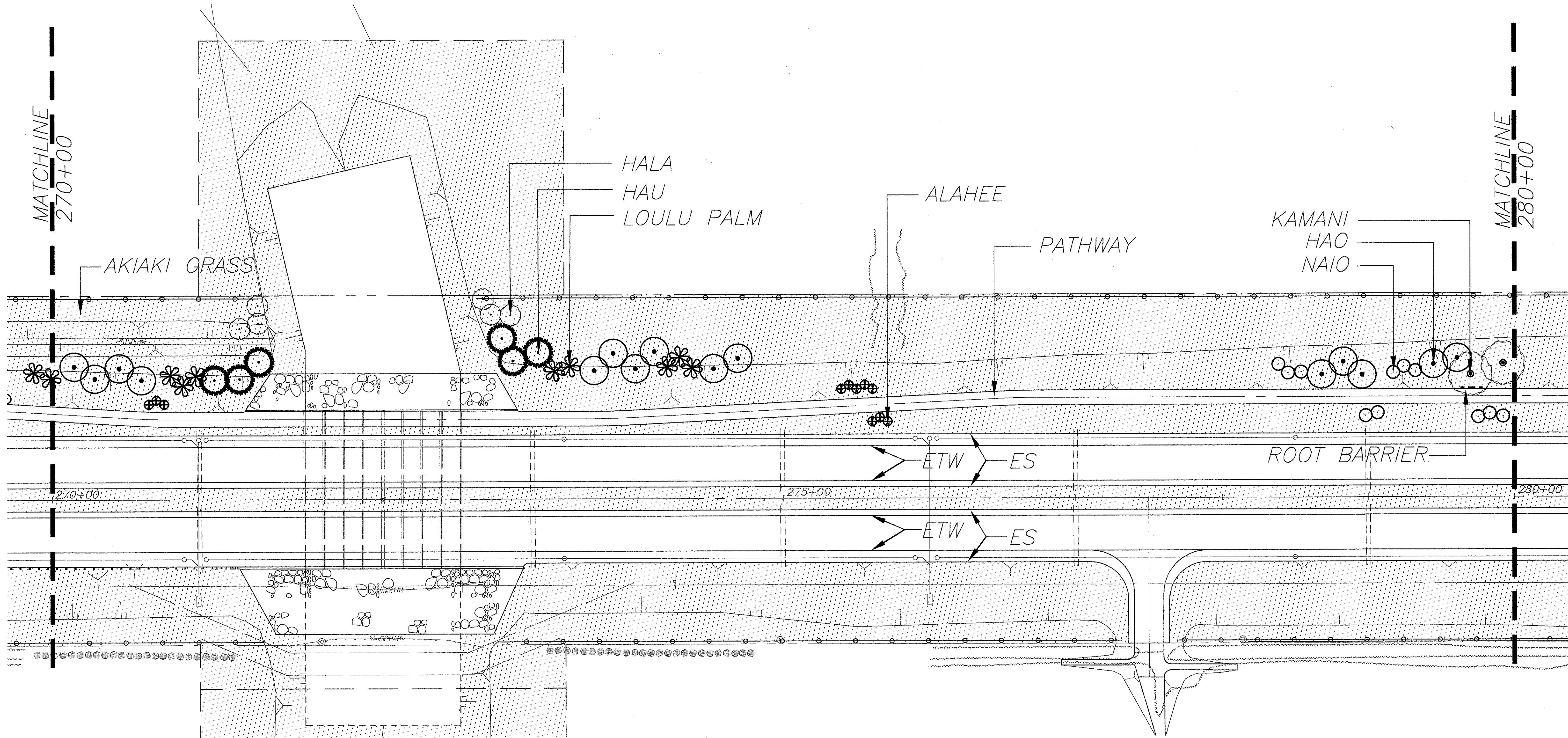
To
Vicinity of Kealia Pond Driveway

Federal - Aid Project No. NH-A311(7)

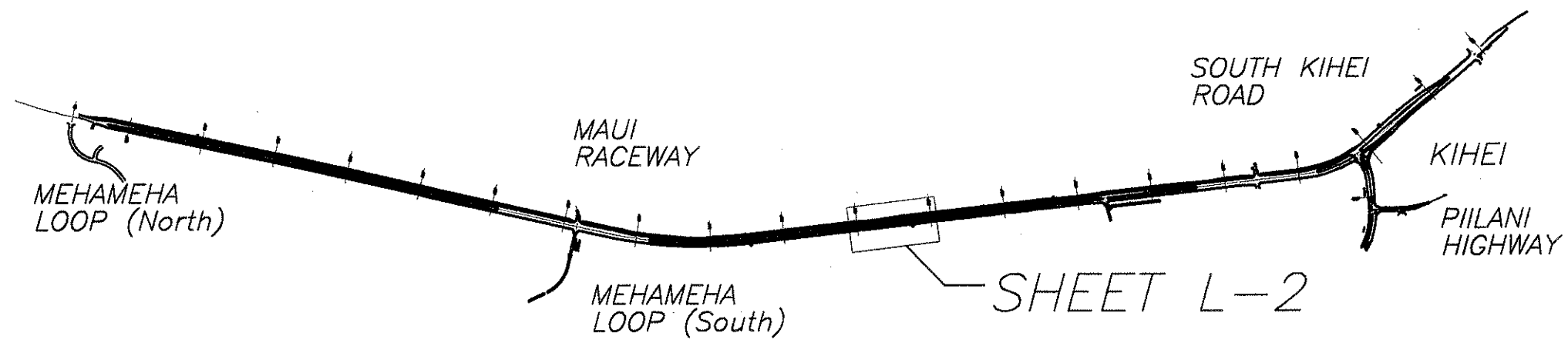
Scale: 1" = 40'-0" Date: AUGUST, 2003

SHEET No. L-1 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	121	138

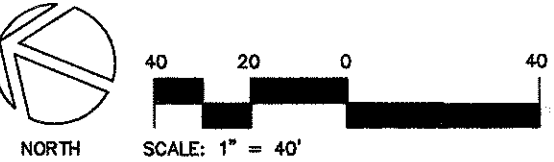


NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.



KEY MAP
NO SCALE

EST. QTY.	PLANT LIST COMMON NAME
11 EA.	ALAHEE
6 EA.	HALA
15 EA.	HAO
6 EA.	HAU
2 EA.	KAMANI
8 EA.	LOULU PALM
11 EA.	NAIO
206,600 SF.	GRASSING
2,532 CY.	IMPORTED SCREENED SOIL
1,273 CY.	SOIL AMENDMENTS
450 LF.	IRRIGATION SLEEVES
15 LF.	ROOT BARRIER
10 CY.	COVER MULCH



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Joel N. Kurokawa
SIGNATURE

08/27/2004
EXPIRATION DATE

HAWAII DESIGN ASSOCIATES, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN - STA. 270+00 - 280+00

MOKULELE HIGHWAY WIDENING

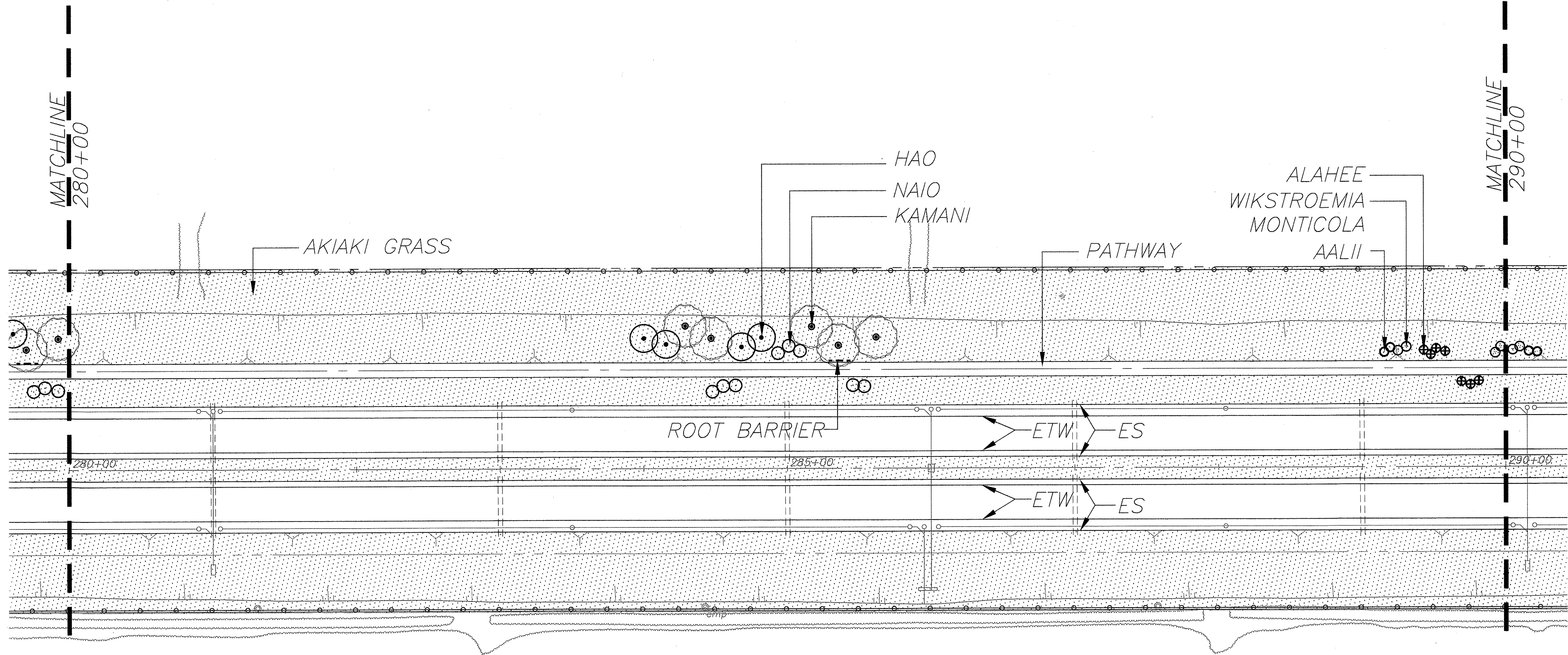
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)

Scale: 1" = 40'-0" Date: AUGUST, 2003

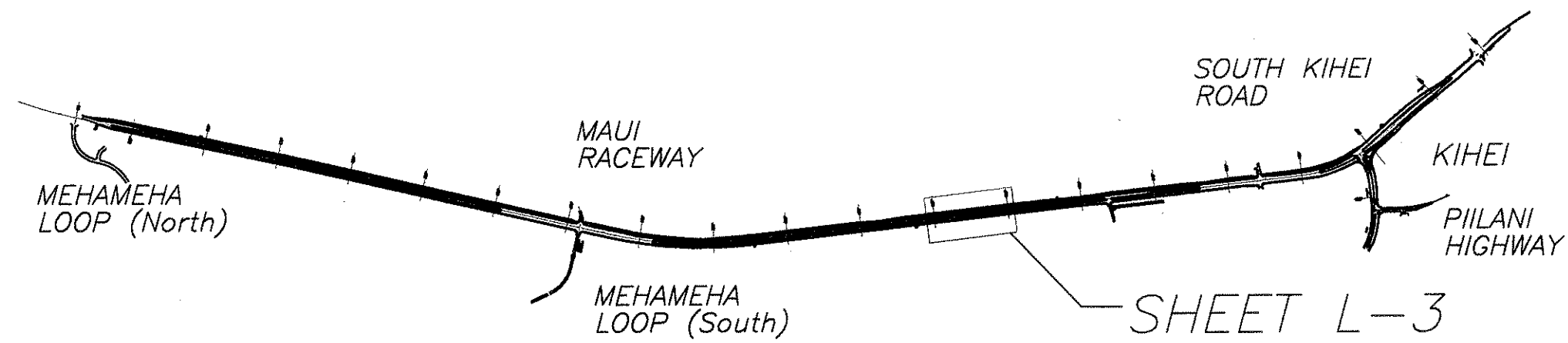
SHEET No. L-2 OF 11 SHEETS

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

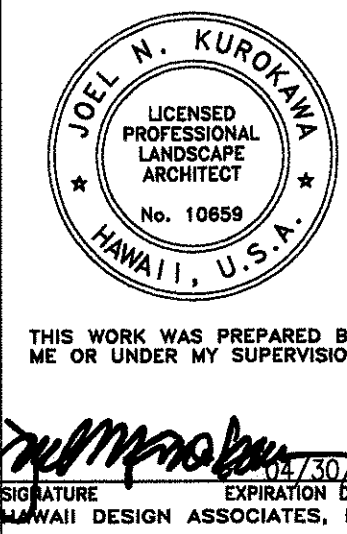
FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	122	138



NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.

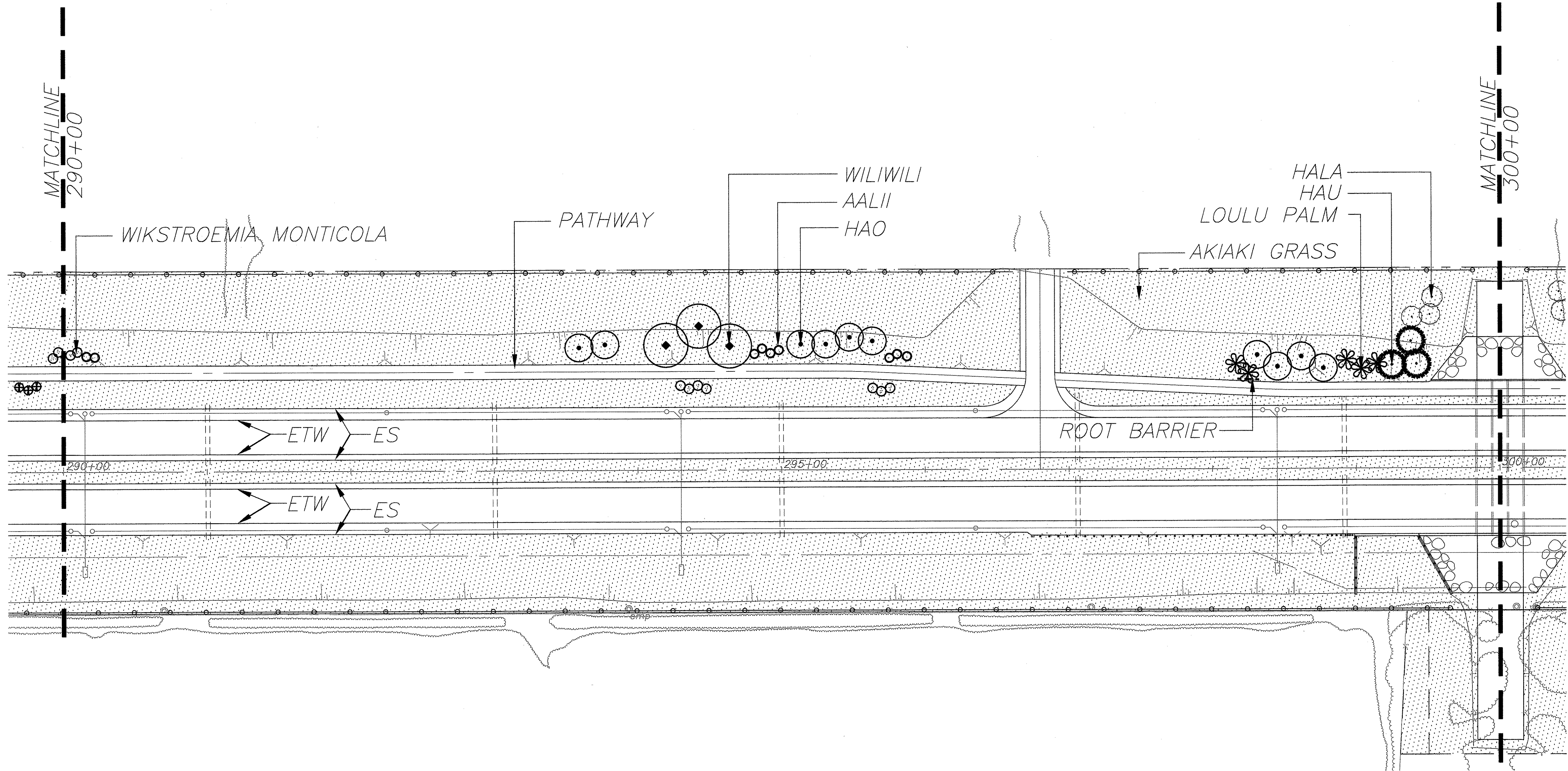


EST. QTY.	PLANT LIST COMMON NAME
2 EA.	AALII
7 EA.	ALAHE'E
4 EA.	HAO
5 EA.	KAMANI
8 EA.	NAIO
4 EA.	WIKSTROEMIA MONTICOLA
162,100 SF.	GRASSING
1,981 CY.	IMPORTED SCREENED SOIL
996 CY.	SOIL AMENDMENTS
450 LF.	IRRIGATION SLEEVES
15 LF.	ROOT BARRIER
5 CY.	COVER MULCH

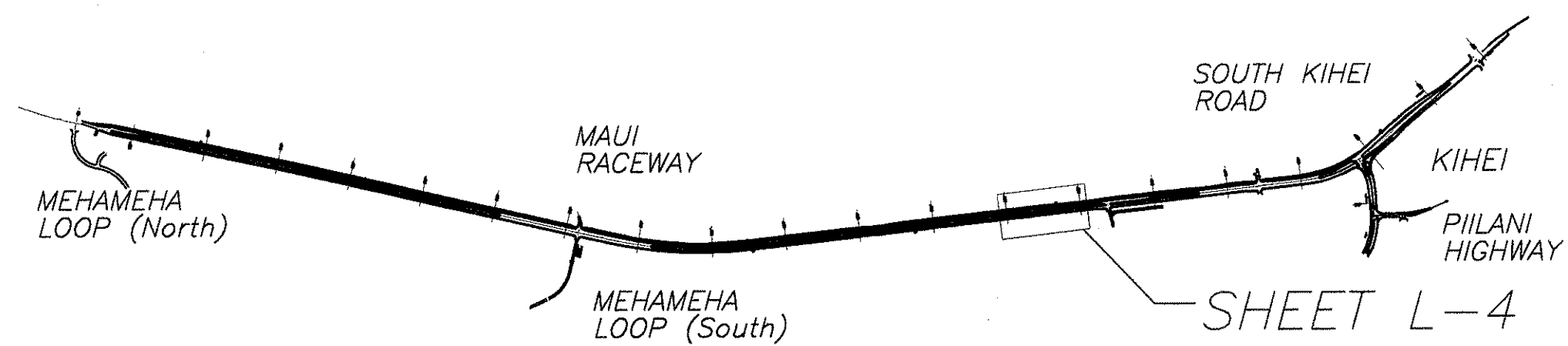


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLANTING PLAN STA. 280+00 - 290+00
MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: 1" = 40'-0" Date: AUGUST, 2003
SHEET No. L-3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	123	138

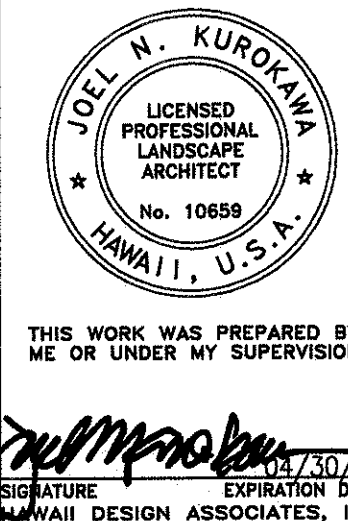
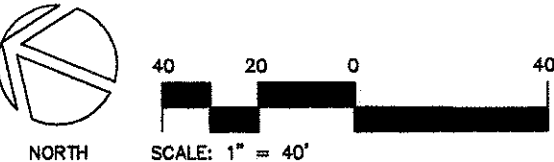


NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.



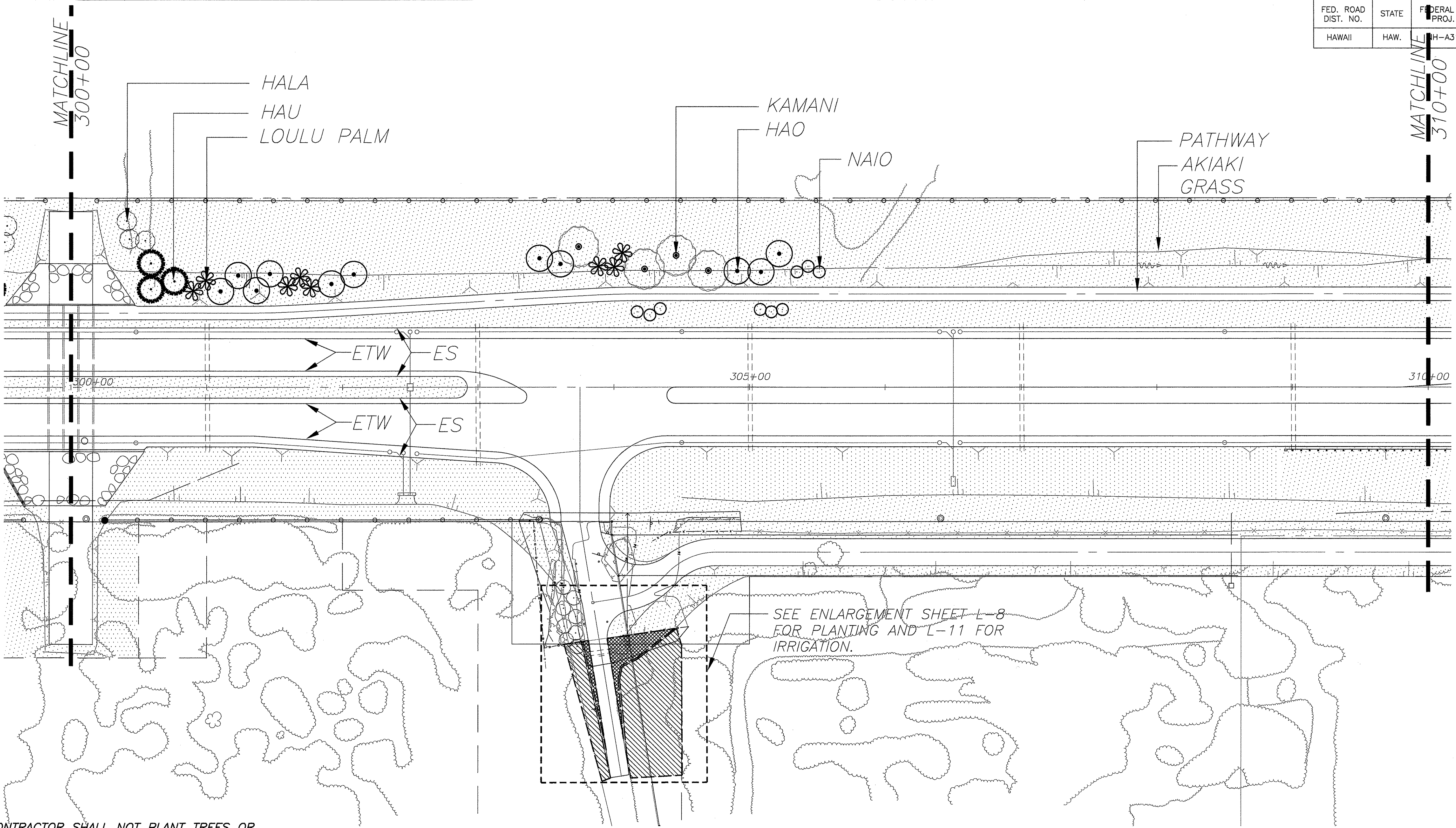
KEY MAP
NO SCALE

PLANT LIST	
EST. QTY.	COMMON NAME
9 EA.	AALII
3 EA.	HALA
10 EA.	HAO
3 EA.	HAU
5 EA.	LOULU PALM
3 EA.	WILIWILI
9 EA.	WIKSTROEMIA MONTICOLA
158,720 SF.	GRASSING
1,946 CY.	IMPORTED SCREENED SOIL
979 CY.	SOIL AMENDMENTS
450 LF.	IRRIGATION SLEEVES
15 LF.	ROOT BARRIER
7 CY.	COVER MULCH

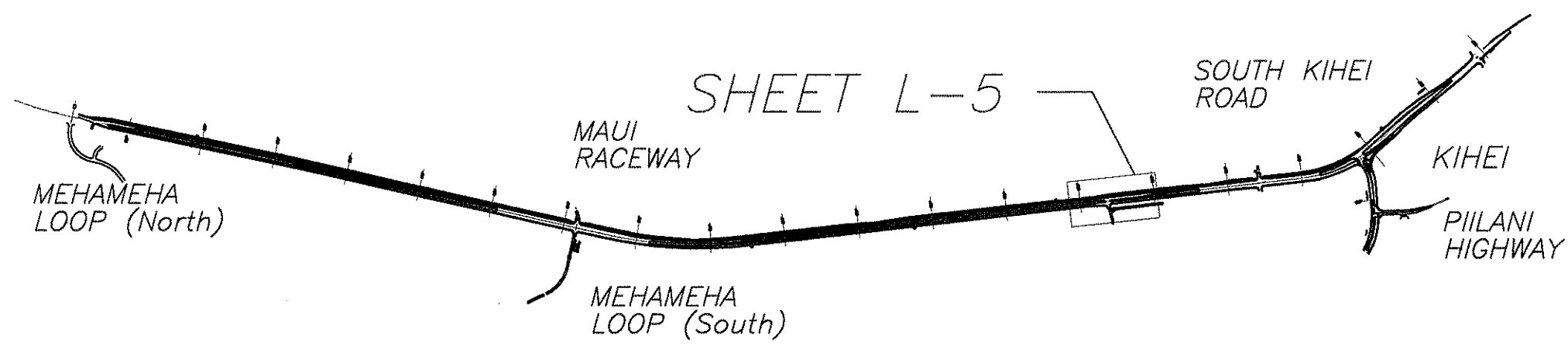


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLANTING PLAN - STA. 290+00 - 300+00
MOKULELE HIGHWAY WIDENING
Vicinity of Koolaa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: 1" = 40'-0" Date: AUGUST, 2003
SHEET No. L-4 OF 11 SHEETS

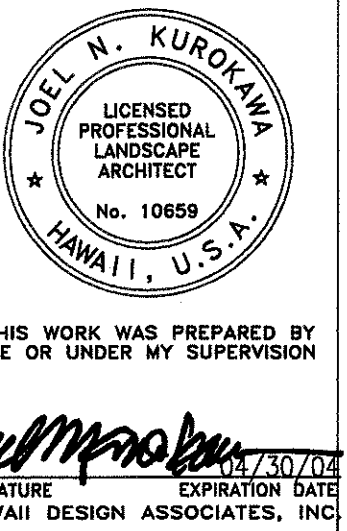
FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1H-A311(7)	2004	124	138



NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.

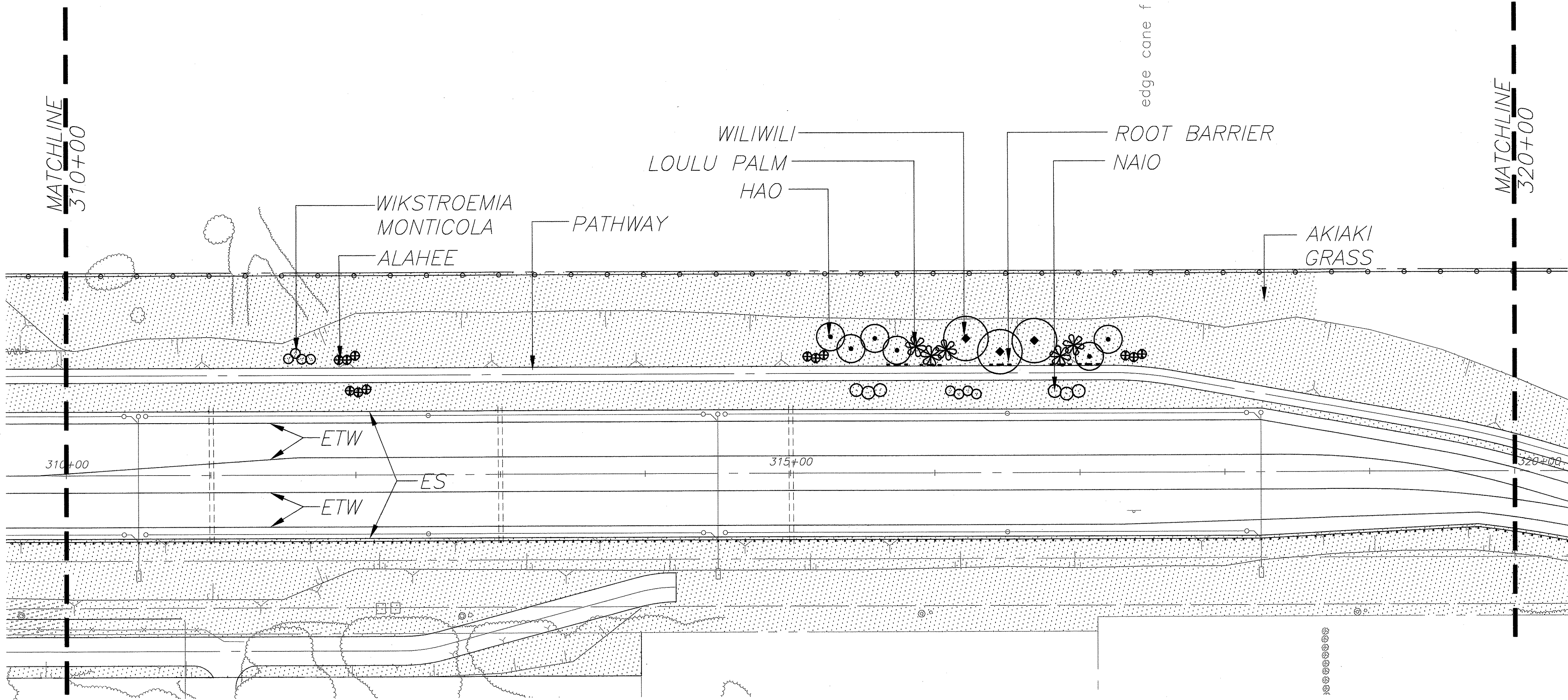


EST. QTY.	PLANT LIST COMMON NAME
3 EA.	HALA
11 EA.	HAO
3 EA.	HAU
4 EA.	KAMANI
8 EA.	LOULU PALM
9 EA.	NAIO
164,848 SF.	GRASSING
2015 CY.	IMPORTED SCREENED SOIL
1014 CY.	SOIL AMENDMENTS
500 LF.	IRRIGATION SLEEVES
8 CY.	COVER MULCH
	See sheet L-10 for tree and shrub quantities in outlined area, all other quantities are on this sheet.

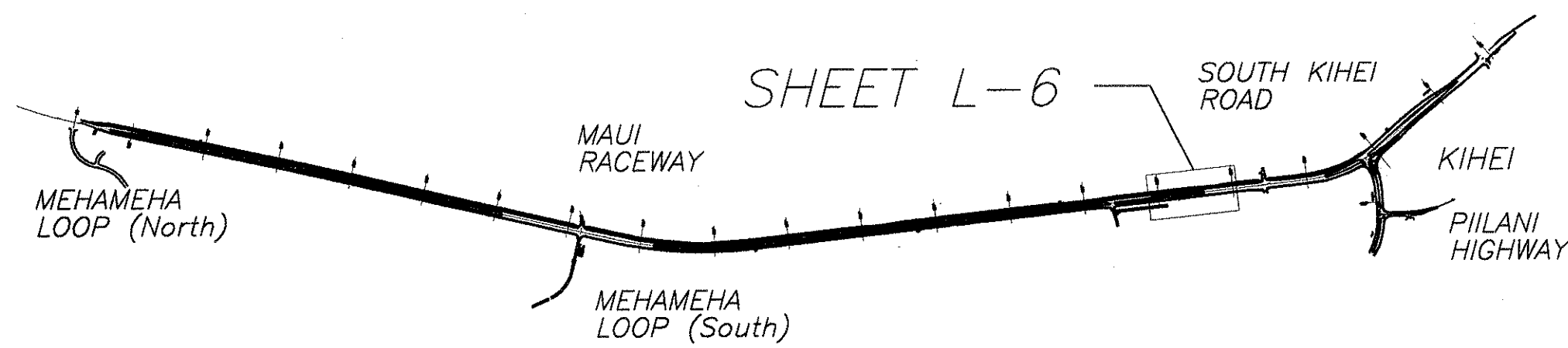


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLANTING PLAN STA. 300+00 - 310+00
MOKULELE HIGHWAY WIDENING
Vicinity of Kalaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: 1" = 40'-0" Date: AUGUST, 2003
SHEET No. L-5 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	125	138

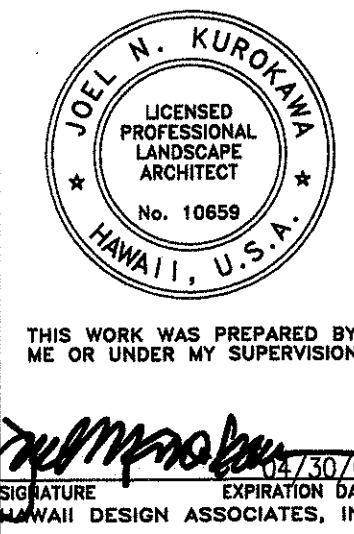


NOTE: CONTRACTOR SHALL NOT PLANT TREES OR SHRUBS WITH 4" CALIPER TRUNK OR GREATER CLOSER THAN 30' TO THE EDGE OF ROAD TRAVELWAY.



KEY MAP
NO SCALE

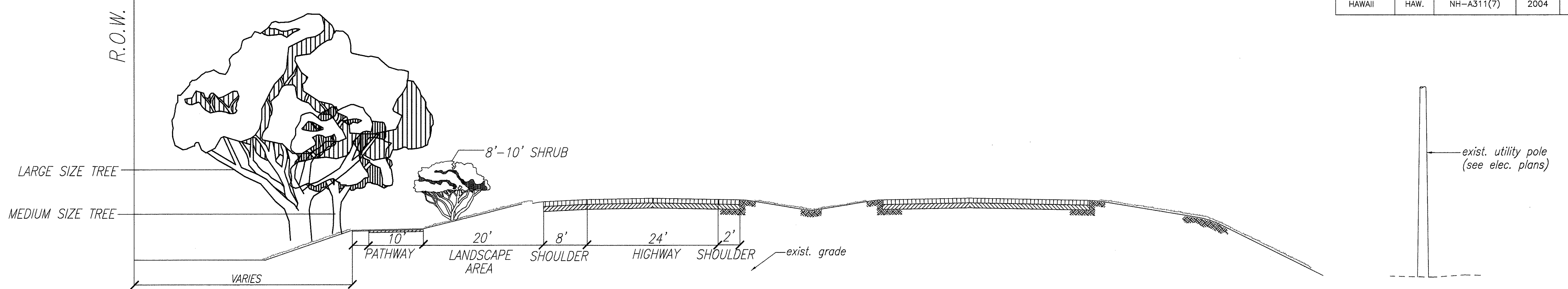
EST. QTY.	PLANT LIST COMMON NAME
12 EA.	ALAHEE
6 EA.	HAO
6 EA.	NAIO
5 EA.	LOULU PALM
8 EA.	WIKSTROEMIA MONTICOLA
3 EA.	WILIWILI
153,550 SF.	GRASSING
1,877 CY.	IMPORTED SCREENED SOIL
944 CY.	SOIL AMENDMENTS
300 LF.	IRRIGATION SLEEVES
75 LF.	ROOT BARRIER
6 CY.	COVER MULCH



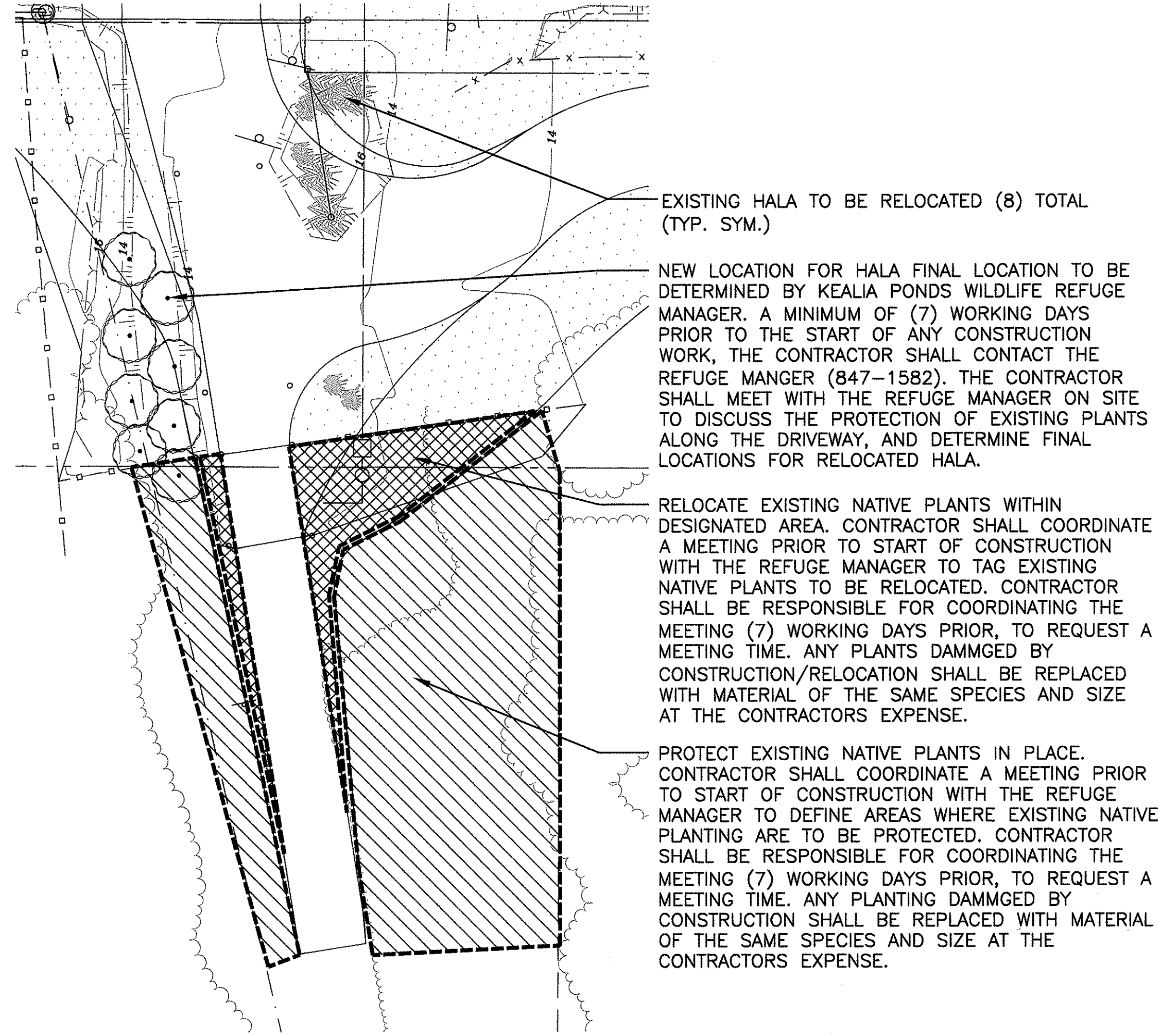
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
 SIGNATURE
 EXPIRATION DATE
 HAWAII DESIGN ASSOCIATES, INC.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 PLANTING PLAN STA. 310+00 - 320+00
 MOKULELE HIGHWAY WIDENING
 Vicinity of Kolaloa Bridge
 To
 Vicinity of Kealia Pond Driveway
 Federal - Aid Project No. NH-A311(7)
 Scale: 1" = 40'-0" Date: AUGUST, 2003
 SHEET No. L-6 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	127	138



1 TYPICAL SECTION ON TREE CLUSTER AREAS-MOKULELE HIGHWAY
L-8 SCALE: 1" = 10'



2 KEALIA POND ENTRY
L-8 SCALE: 1" = 20'

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

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Joe M. Kurokawa
SIGNATURE
EXPIRATION DATE 12/31/2014
HAWAII DESIGN ASSOCIATES, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL ROAD SECTIONS

MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: 1" = 40'-0" Date: AUGUST, 2003

SHEET No. L-8 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL - AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-A311(7)	2004	128	138

SPECIAL CONDITIONS AND NOTES

THE FOLLOWING NOTES ARE PROVIDED TO INFORM THE CONTRACTOR OF SPECIFIC REQUIREMENTS, DIRECTIONS, INSPECTIONS, ETC. WHICH SHALL BE REQUIRED TO COMPLY WITH THE TERMS OF THE CONTRACT. THE CONTRACTOR SHALL REFER TO THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION (1994) AND THE SPECIAL PROVISIONS WHILE REVIEWING THE WORK INDICATED ON THE PLANS MENTIONED BELOW.

1. PLANTING PLANS

- SUBMIT ALL NECESSARY SAMPLES AND DOCUMENTS TO ENGINEER PRIOR TO THE START OF WORK, I.E. CERTIFICATE OF PLANTS, MATERIALS, FERTILIZER AND WEEDING SCHEDULE, ETC. REFER TO SPECIFICATIONS SECTION 619.02(A), 619.02(B), 619.02(C), 619.02(D), AND 619.02(G)
- EXISTING DEBRIS AND PLANTS SHALL BE REMOVED. REFER TO SPECIFICATIONS 619.03(A), 619.03(H)(1), AND 619.03(H)(4).
- IMPORTED PLANTING SOIL AND ORGANIC SOIL AMENDMENTS SHALL BE REQUIRED. REFER TO SPECIFICATIONS 619.03(A).
- THE CONTRACTOR SHALL MEET THE MINIMUM ACCEPTABLE STANDARDS FOR PLANT SIZE. REFER TO SPECIFICATIONS 619.02(C) AND THE "REMARKS" COLUMN OF THE PLANT LIST FOR MINIMUM REQUIREMENTS.
- EXCAVATION FOR PLANT HOLES SHALL BE REQUIRED. PROPER PREPARATION OF PLANT HOLES WILL BE MONITORED. SEE SPECIFICATIONS 619.03(A), 619.03(D) AND 201.
- A MINIMUM THIRTY-SIX (36) MONTH PLANT ESTABLISHMENT PERIOD IS REQUIRED. REFER TO SECTION 619.03(I).
- FORMAL INSPECTIONS BY THE ENGINEER WILL BE HELD WITH THE CONTRACTOR TO VERIFY COMPLIANCE TO THE CONTRACT AS LISTED IN SECTION 619.03(J)
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER WRITTEN CERTIFICATION THAT ALL NATIVE HAWAIIAN PLANT MATERIALS SPECIFIED HAVE BEEN PROPAGATED FROM SEED OR PLANT STOCKS ORIGINALLY FROM THE EAST MAUI REGION.

2. TEMPORARY IRRIGATION

- THE CONTRACTOR SHALL SEEK AND SECURE A POTABLE OR NON-POTABLE WATER SOURCE FOR TEMPORARY IRRIGATION OF ALL LANDSCAPE AREAS WITHIN THE PROJECT LIMITS DURING THE CONTRACT PERIOD. ALL REQUIRED PERMITS, FEES AND CHARGES FOR SECURING, TRANSPORTING AND USING THE WATER SHALL BE BORN BY THE CONTRACTOR.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEERS FOR REVIEW AND APPROVAL FROM AN ENVIRONMENTAL TESTING LABORATORY, A WATER QUALITY ANALYSIS REPORT OF WATER SAMPLES TAKEN FROM THE PROPOSED WATER SOURCE.
- THE CONTRACTOR SHALL PROVIDE A TEMPORARY IRRIGATION SYSTEM APPROVED BY THE ENGINEER TO PROVIDE SUPPLEMENTAL WATER TO ALL LANDSCAPE AREAS WITHIN THE PROJECT LIMITS THROUGHOUT THE PLANTING AND THE PLANT ESTABLISHMENT PERIOD. REFER TO SECTION 619 PLANTING AND TRANSPLANTING.

THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

- AFTER THE CONTRACT HAS BEEN AWARDED TO THE CONTRACTOR, SUBMIT A PLAN FOR THE TEMPORARY IRRIGATION SYSTEM FOR APPROVAL BY THE ENGINEER. APPROVAL WILL BE BASED ON COMPLIANCE TO THE IRRIGATION PERFORMANCE REQUIREMENTS LISTED BELOW, ITEM NO. 3.

THE APPROVED IRRIGATION SYSTEM PLAN SHALL BE INSTALLED OR MADE AVAILABLE FOR A FIELD TEST IN THE PRESENCE OF THE ENGINEER. MAKE ALL NECESSARY ADJUSTMENTS TO THE SYSTEM IN ACCORDANCE TO THE PERFORMANCE REQUIREMENTS AND AS DIRECTED BY THE ENGINEER. CONTACT THE ENGINEER IN WRITING ONE WEEK IN ADVANCE TO ARRANGE A DAY AND TIME OF THE FIELD TEST.

THE TYPE OF IRRIGATION SYSTEM TO BE PROVIDED IS AT THE CONTRACTOR'S DISCRETION SO LONG AS IT MEETS THE IRRIGATION PERFORMANCE REQUIREMENTS LISTED BELOW.

- 6" PVC SLEEVES UNDER THE ROADWAY ARE INDICATED ON THE LANDSCAPE PLANS FOR USE BY THE CONTRACTOR IF SO DESIRED.

3. TEMPORARY IRRIGATION PERFORMANCE REQUIREMENTS

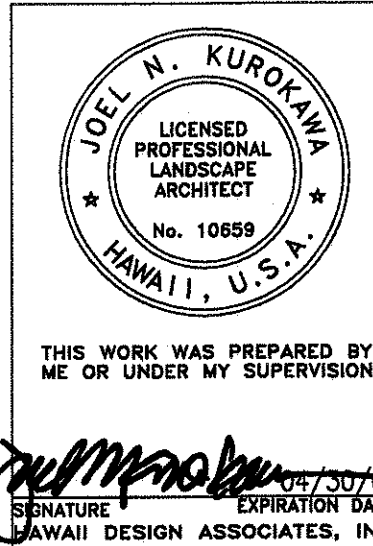
- THE INTENT OF THE TEMPORARY IRRIGATION SYSTEM (OR METHOD) IS TO PROVIDE A RELIABLE AND REGULATED SOURCE OF SUPPLEMENTAL WATER TO NEW PLANTING AREAS TO OPTIMIZE PLANT GROWTH AND ROOT DEVELOPMENT DURING THE PLANTING AND PLANT ESTABLISHMENT PERIOD.

- REGULATE IRRIGATION TO ENSURE ACTIVE GROWTH KEEPING AREAS MOIST BUT NOT SATURATED. REGULATE IRRIGATION TO AVOID MISTING AND OVERSPRAYING AS WELL AS TO AVOID EROSION AND GULLYING.
- THE FREQUENCY AND QUANTITY OF IRRIGATION WATER SHALL BE GRADUALLY REDUCED AND EVENTUALLY ELIMINATED AT THE END OF THE PLANT ESTABLISHMENT PERIOD TO ACCLIMATIZE THE PLANTS TO ENABLE THEM TO SURVIVE UNDER NATURAL CONDITIONS.
- THROUGH OUT THE INITIAL PLANTING PERIOD AND THE FIRST 90 DAYS OF THE PLANT ESTABLISHMENT PERIOD, WATER DAILY. APPLY APPROXIMATELY 1/4 INCH OF WATER IN A 10-15 MINUTE RUN TIME.
- REDUCE THE FREQUENCY OF WATERING DURING THE PLANT ESTABLISHMENT PERIOD TO EVERY OTHER DAY FROM DAY 91 TO DAY 365 (OR END OF 12 MONTHS) OF THE PLANT ESTABLISHMENT PERIOD. APPLY AT THE SAME RATE ABOVE. MONITOR FOR ANY SIGNS OF DROUGHT STRESS AND ADJUST AS NECESSARY.
- FROM DAY 366 TO DAY 913 (OR END OF 30 MONTHS) OF THE PLANT ESTABLISHMENT PERIOD, FURTHER REDUCE THE FREQUENCY OF WATERING TO EVERY THIRD DAY. MAINTAIN THE SAME RATE AS ABOVE. MONITOR AND ADJUST AS REQUIRED.
- FROM DAY 914 TO DAY 1096 (OR END 36 MONTHS) OF THE PLANT ESTABLISHMENT PERIOD REDUCE THE FREQUENCY OF WATERING TO ONCE A WEEK. APPLY AT THE SAME RATE ABOVE. MONITOR FOR ANY SIGNS OF DROUGHT STRESS AND ADJUST AS NECESSARY.
- AT THE FINAL ACCEPTANCE AND COMPLETION OF THE PROJECT THE TEMPORARY IRRIGATION SYSTEM (OR METHOD) SHALL BE SHUT-OFF, DISMANTLED AND REMOVED.

IRRIGATION NOTES:

- REFER TO IRRIGATION SPECIFICATIONS SECTION 616 PRIOR TO START OF WORK. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL MATERIALS, SCHEDULING, PRODUCTS, WARRANTIES AND METHODS FOR EXECUTION OF WORK WHICH MAY NOT BE INDICATED WITHIN THE DRAWING.
- IRRIGATION SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND ARE SUBJECT TO ADJUSTMENTS DUE TO UNANTICIPATED FIELD CONDITIONS. UNLESS OTHERWISE NOTED, LOCATE ALL SPRINKLER HEADS, VALVES, AND PIPES WITHIN PLANTING AREAS.
- THE IRRIGATION SYSTEM DESIGN IS BASED ON A MINIMUM STATIC WATER PRESSURE OF 55 PSI AT THE POINT OF CONNECTION. NOTIFY PROJECT ENGINEER IF PRESSURE IS LESS THAN 55 PSI OR GREATER THAN 100 PSI.
- CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF THE INSTALLATION OF ALL SLEEVES, CONDUITS, MAINS AND LATERALS UNDER PAVEMENT AND THROUGH WALLS AND SHALL ASSURE THAT THESE ITEMS ARE LAID PRIOR TO THE PLACEMENT OF PAVEMENT/WALL.
- ALL IRRIGATION WIRES SHALL BE BUNDLED AND INSTALLED UNDER THE IRRIGATION MAIN FOR IN-GRADE INSTALLATION. INSTALL IRRIGATION WIRE IN CONDUITS WHERE WIRES ARE NOT FOLLOWING THE IRRIGATION MAIN AND ALL ABOVE-GRADE INSTALLATIONS. VERIFY UTILITY LOCATIONS BEFORE TRENCHING. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES.
- INSTALL SPRINKLER HEADS 4" AWAY FROM WALKWAYS, DRIVEWAYS AND A MINIMUM OF 2' FROM STRUCTURES. FLEX RISERS SHALL BE USED ON ALL SHRUB HEADS ON RISERS. ADJUST ALL SPRINKLER HEADS TO OBTAIN HEAD COVERAGE. ADJUST FLOW CONTROL OF PRESSURE REGULATING VALVES TO MINIMIZE MISTING.
- THE CONTRACTOR, TOGETHER WITH THE OFFICER IN CHARGE AND THE USFWS REPRESENTATIVE SHALL PROGRAM THE IRRIGATION CONTROLLER TO ACCOMMODATE THE LANDSCAPE AND SITE REQUIREMENTS, AND SHALL INSTRUCT THE REPRESENTATIVE ON THE OPERATION OF THE COMPLETE SYSTEM.
- PROVIDE TEMPORARY IRRIGATION FOR AREAS BEYOND THE AUTOMATIC IRRIGATION SYSTEM DURING THE MAINTENANCE PERIOD. AVOID OVER WATERING.
- JUNCTION BOXES SHALL BE USED AT WIRE SPLICES.
- THE CONTRACTOR SHALL FURNISH THE STATE WITH TWO (2) SETS OF REPRODUCIBLE 'AS-BUILT' PLANS.

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



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECIAL CONDITIONS & NOTES

MOKULELE HIGHWAY WIDENING

Vicinity of Kalaoa Bridge

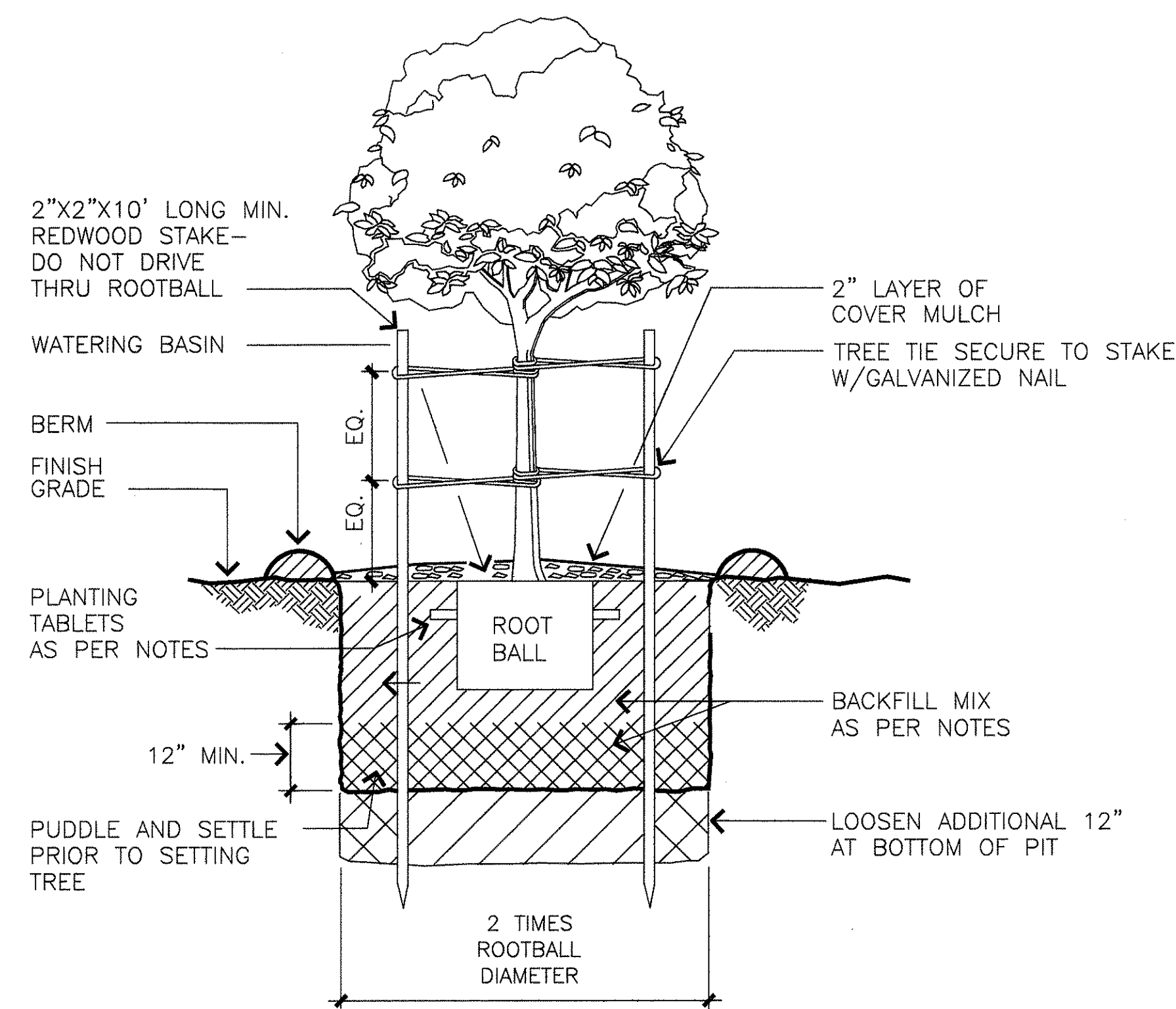
To

Vicinity of Kealia Pond Driveway

Federal - Aid Project No. NH-A311(7)

Scale: 1" = 40'-0" Date: AUGUST, 2003

SHEET No. L-9 OF 11 SHEETS



1
L-10

TREE PLANTING AND STAKING
W/ ROOT BARRIER DETAIL

NOT TO SCALE

MATERIALS LIST FOR ENLARGEMENT AREA SHEET L-5

NOTE:
FOR PLANTING NOTES AND
DIMENSIONS REFER TO ABOVE
DETAIL # 1/ L1.6

2 TREE PLANTING AND STAKING W/ ROOT
L-10 BARRIER ON SLOPE
NOT TO SCALE

4 SHRUB PLANTING DETAIL
L-10 NOT TO SCALE

3 PALM PLANTING DETAIL
L-10 NOT TO SCALE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS & PLANT LIST

MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)

Scale: 1" = 40'-0" Date: AUGUST, 2003

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

[Signature]
SIGNATURE

08/30/03

EXPIRATION DATE

HAWAII DESIGN ASSOCIATES, INC.

IRRIGATION EQUIPMENT LIST

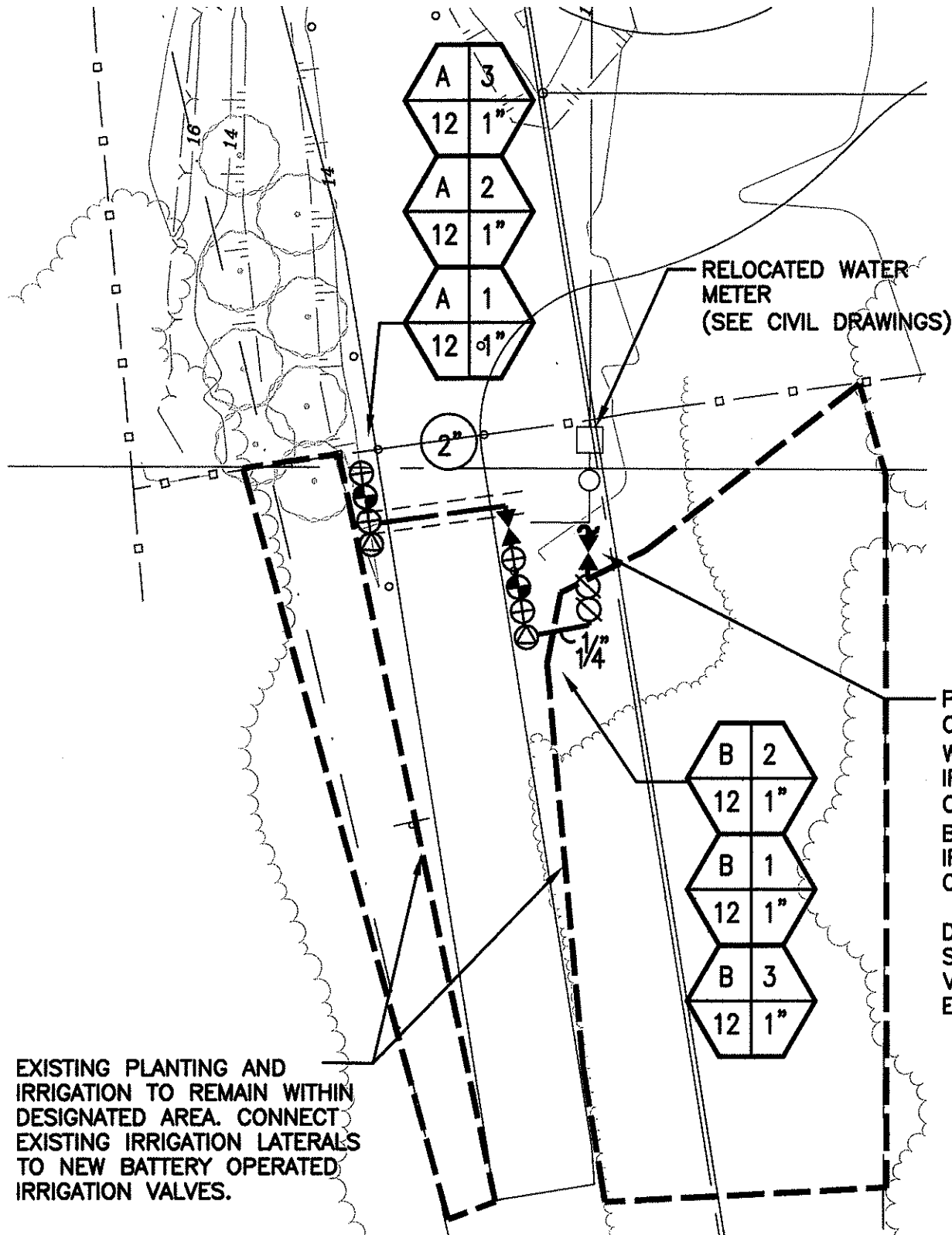
SYMBOL	DESCRIPTION	GPM	RADIUS	PSI
	BENT NOSE LOOSE KEY HOSE BIBB, PROVIDE TWO KEYS FOR HOSE BIBB FOR REFUGE MANAGER.			
	GATE VALVE			
	REDUCE PRESSURE BACKFLOW PREVENTER			
	PLASTIC REMOTE CONTROL VALVE, WYE FILTER, AND THREE STATION BATTERY OPERATED CONTROLLER WITH REMOVEABLE HANDHELD PROGRAMMER. PROVIDE TWO HANDHELD PROGRAMMERS FOR REFUGE MANAGER.			
	PLASTIC REMOTE CONTROL VALVE, AND WYE FILTER			
	1" PVC SCHEDULE 40 MAIN			
	PVC CLASS 200 LATERAL			
	PVC SCHEDULE 40 CONDUIT			
	PVC SCHEDULE 40 SLEEVE			
	CONTROLLER / STATION NUMBER			
	GPM OF SYSTEM / SIZE OF RCV			
	SLEEVE SIZE			

IRRIGATION NOTES:

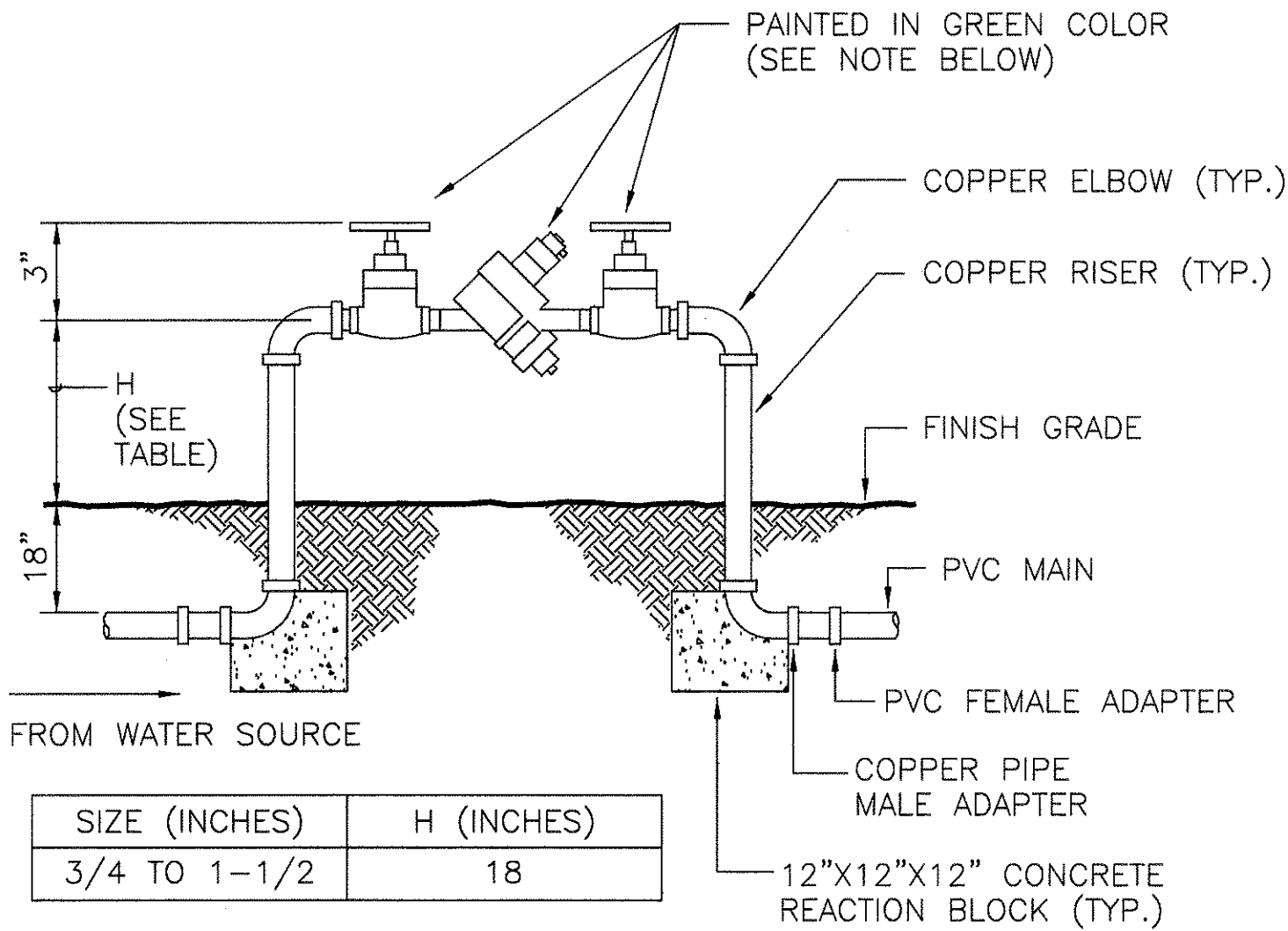
1. THE IRRIGATION SYSTEM DESIGN IS BASED ON A MINIMUM STATIC WATER PRESSURE OF 55 PSI AT THE POINT OF CONNECTION. NOTIFY PROJECT ENGINEER IF PRESSURE IS LESS THAN 55 PSI OR GREATER THAN 100 PSI.
2. ALL IRRIGATION WIRES SHALL BE BUNDLED AND INSTALLED UNDER THE IRRIGATION MAIN FOR IN-GRADE INSTALLATION. INSTALL IRRIGATION WIRE IN CONDUITS WHERE WIRES ARE NOT FOLLOWING THE IRRIGATION MAIN AND ALL ABOVE-GRADE INSTALLATIONS. VERIFY UTILITY LOCATIONS BEFORE TRENCHING. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES.
3. IRRIGATION SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND ARE SUBJECT TO ADJUSTMENTS DUE TO UNANTICIPATED FIELD CONDITIONS. UNLESS OTHERWISE NOTED, LOCATE ALL SPRINKLER HEADS, VALVES, AND PIPES WITHIN PLANTING AREAS.
4. THE CONTRACTOR, TOGETHER WITH THE ENGINEER AND THE KEALIA POND WILDLIFE REFUGE'S REPRESENTATIVE SHALL PROGRAM THE IRRIGATION CONTROLLER TO ACCOMMODATE THE LANDSCAPE AND SITE REQUIREMENTS, AND SHALL INSTRUCT THE REPRESENTATIVE ON THE OPERATION OF THE COMPLETE SYSTEM.

POINT OF CONNECTION:
CONNECT NEW 1" GATE VALVE INTO EXISTING WATER MAINLINE. CONNECT NEW 1 1/4" IRRIGATION MAINLINE TO GATE VALVE AND CONTINUE TO NEW 1" REDUCE PRESSURE BACKFLOW PREVENTER. CONTINUE NEW 1 1/4" IRRIGATION MAINLINE TO NEW BATTERY OPERATED REMOTE CONTROL VALVES.

DRAWINGS ARE DIAGRAMMATIC, CONTRACTOR SHALL KEEP BACKFLOW PREVENTER AND VALVES AND IRRIGATION MAINLINE OUTSIDE EXISTING PLANTING.

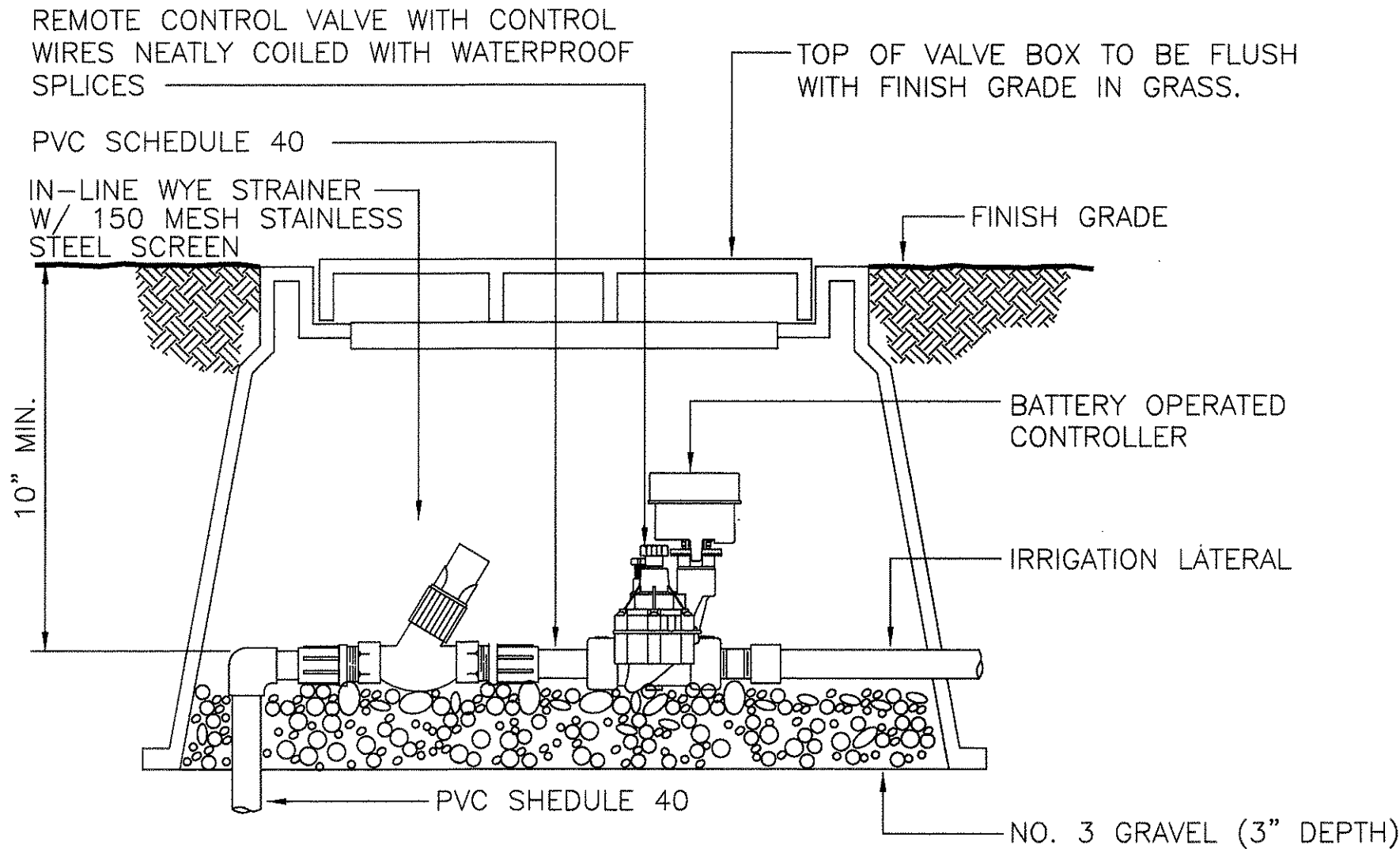


KEALIA POND ENTRY
SCALE: 1" = 20'



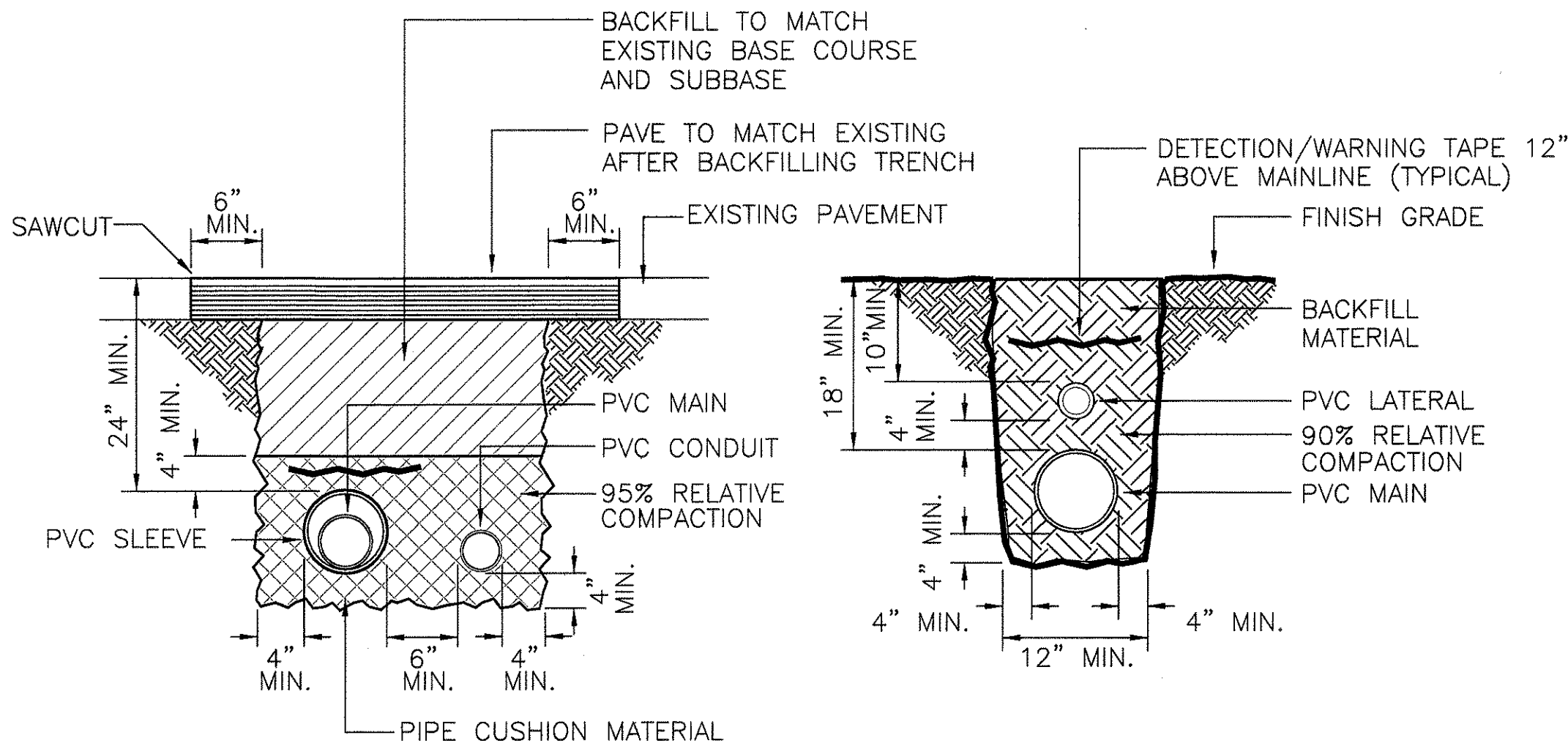
NOTE: ALL EXPOSED SURFACES TO BE PAINTED WITH MFR: AMERITONE NO. 1D26C, "CRUISER GREEN"

2 BACKFLOW PREVENTER DETAIL
NOT TO SCALE



NOTE: COMPACT SOIL AROUND VALVE BOX TO SAME DENSITY AS UNDISTURBED ADJACENT SOIL.

4 WYE STRAINER AND BATTERY OPERATED CONTROL VALVE DETAIL
NOT TO SCALE



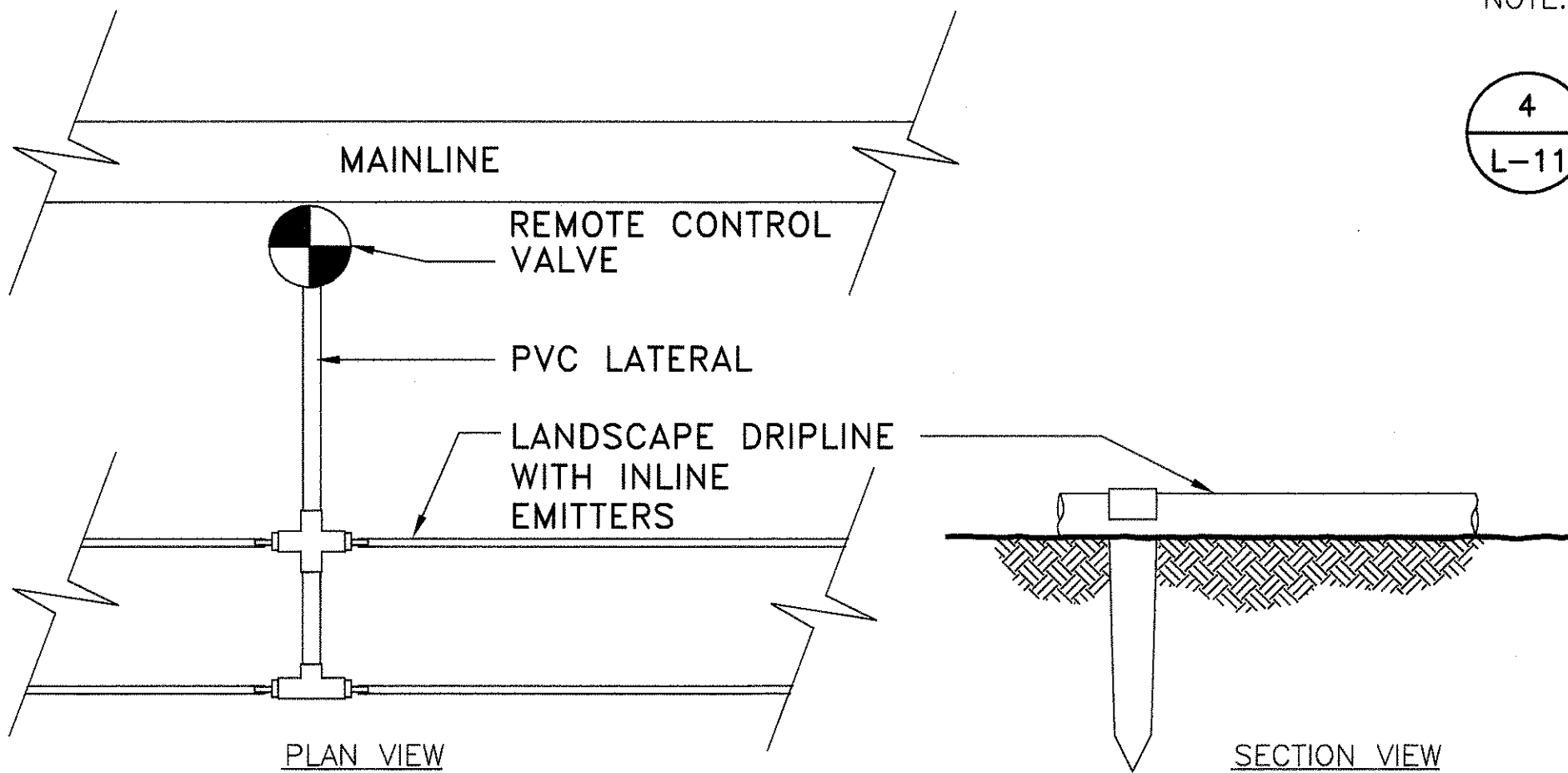
SECTION FOR: PVC SLEEVE AND PVC CONDUIT UNDER PAVEMENT

SECTION FOR: PVC MAIN AND PVC LATERAL IN PLANTING AREA

NOTE:

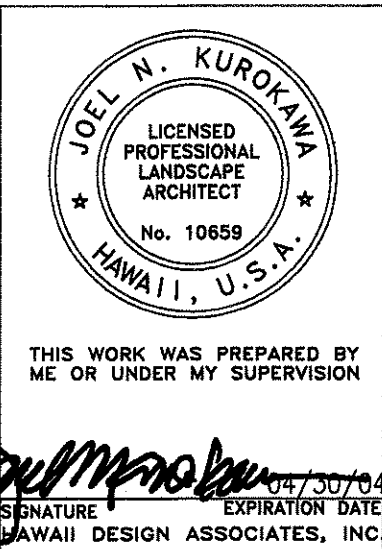
1. NO ROCKS OVER 1/2" SHALL BE WITHIN 2" OF PIPE.
2. ALL EXCAVATIONS SHALL BE BACKFILLED WITH TRENCH BACKFILL MATERIAL PER SPECIFICATIONS, AND PER AMENDMENT TO SPECIFICATIONS.
3. TRENCHES MUST BE LEFT FLUSH WITH, OR SLIGHTLY ABOVE, ADJACENT FINISHED GRADE AFTER COMPACTING TO 90% RELATIVE COMPACTION.

1 CONDUIT / SLEEVE / TRENCH DETAIL
NOT TO SCALE



3 DRIPLINE WITH INLINE EMITTER LAYOUT
NOT TO SCALE

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



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEALIA POND DRIVEWAY

MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: 1" = 40'-0" Date: AUGUST, 2003

SHEET No. L-11 OF 11 SHEETS