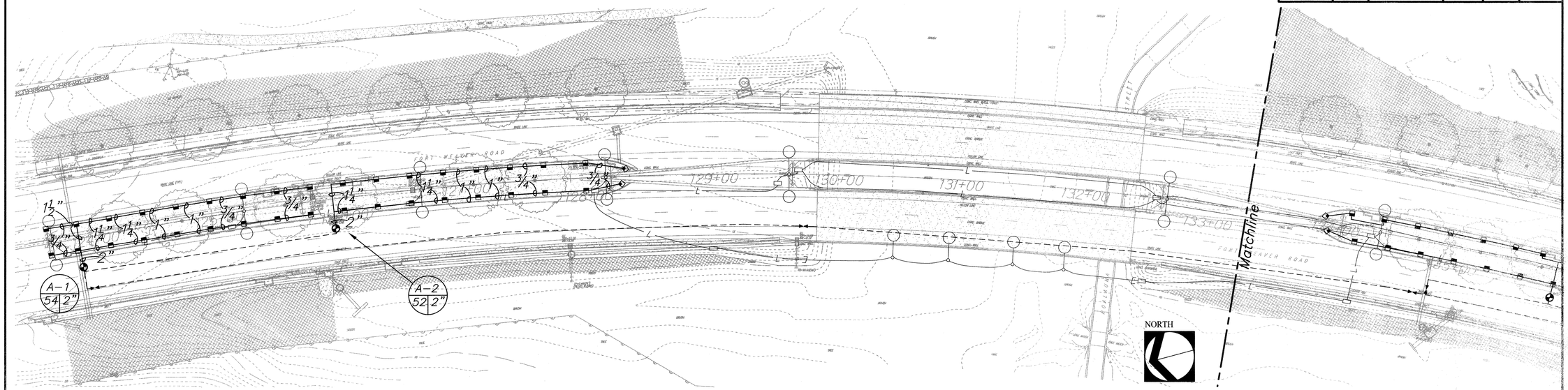
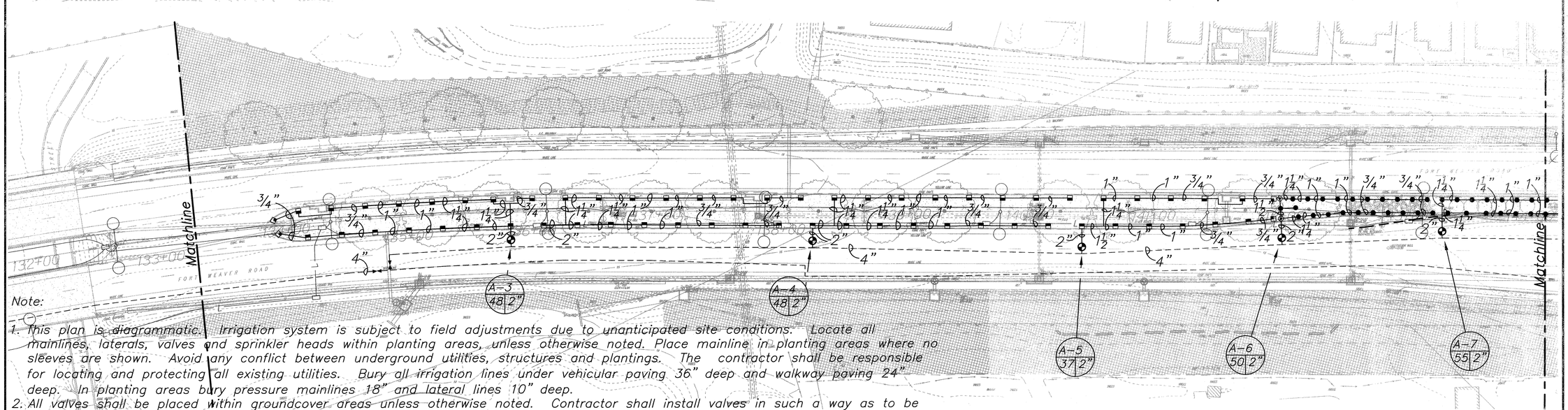
FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	313	371





Note:

1. 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 all irrigation lines under vehicular paving 36" deep and walkway paving 24" deep. In planting areas bury pressure mainlines 18" and lateral lines 10" deep.
2. All valves shall be placed within groundcover areas unless otherwise noted. Contractor shall install valves in such a way as to be as inconspicuous as possible.
3. See Civil plans for sleeve and conduit roadway crossings for mainlines.
4. Contractor shall verify and replace all existing permanent irrigation equipment damaged by roadway widening. Replacement irrigation equipment and materials shall conform with the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002.
5. Contractor shall provide an automatic temporary irrigation system in locations where no permanent existing irrigation system exists. Temporary irrigation equipment shall comply with the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002. Contractor shall submit proposed temporary irrigation plan to the State Department of Health for review and approval prior to installation.
6. Contractor shall retrofit all existing irrigation between Sta. 100+50 and 123+80 for use with non-potable water. Replacement irrigation equipment and materials shall conform with the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002.

NORTH 0 20 40 80 120

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

STA. 124+00 TO STA. 144+00

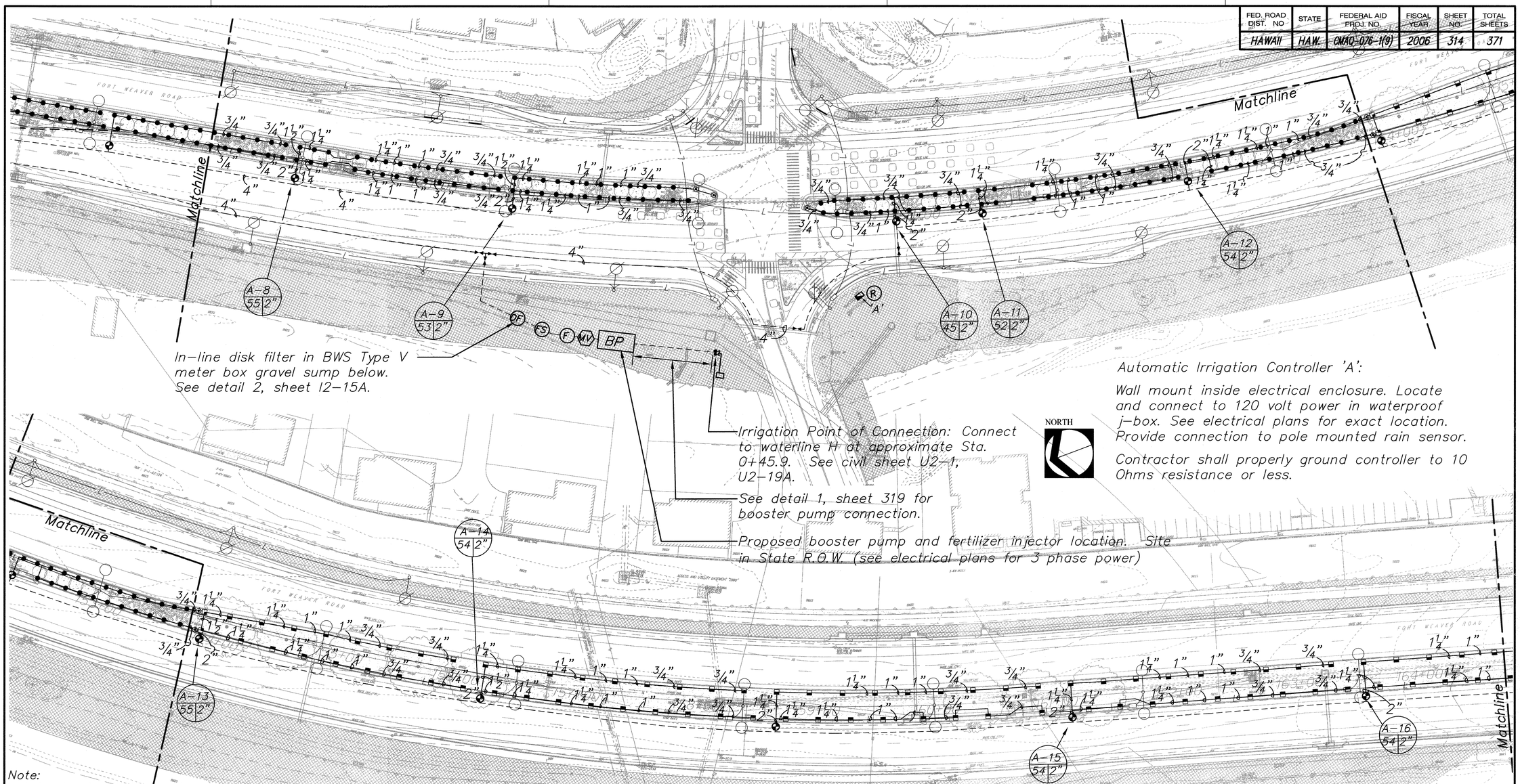
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-01 OF 15 SHEETS

AS-BUILT 313

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	314	371



Automatic Irrigation Controller 'A':

Wall mount inside electrical enclosure. Locate and connect to 120 volt power in waterproof j-box. See electrical plans for exact location. Provide connection to pole mounted rain sensor.

Contractor shall properly ground controller to 10 Ohms resistance or less.

Note:

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3. *See Civil plans for sleeve and conduit roadway crossings for mainlines.*
4. *Contractor shall verify and replace all existing permanent irrigation equipment damaged by roadway widening. Replacement irrigation equipment and materials shall conform with the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002.*
5. *Contractor shall provide an automatic temporary irrigation system in locations where no permanent existing irrigation system exists. Temporary irrigation equipment shall comply with the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002. Contractor shall submit proposed temporary irrigation plan to the State Department of Health for review and approval prior to installation.*

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

IRRIGATION PLAN

STA. 144+00 TO 165+00

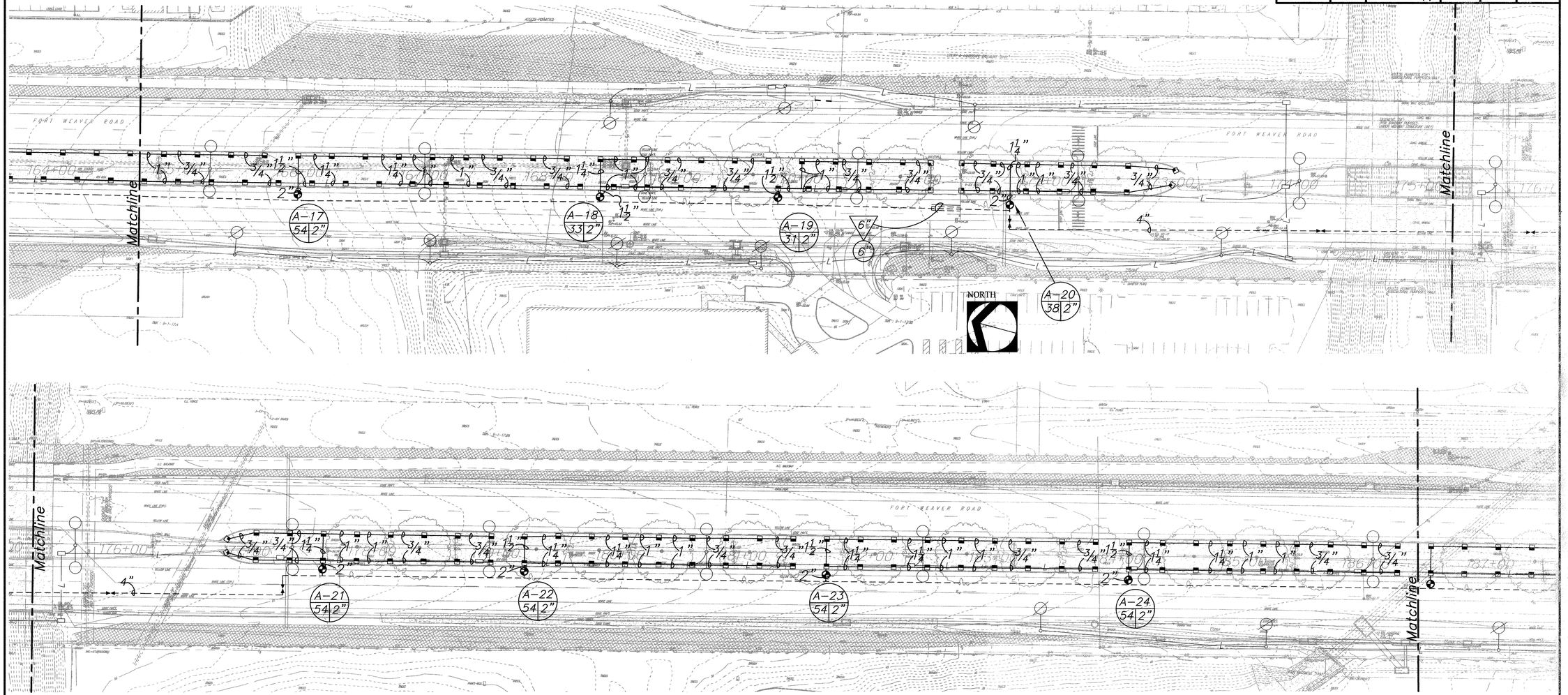
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-02 OF 15 SHEETS

AS-BUILT 314

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	315	371



Note:

1. *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 all irrigation lines under vehicular paving 36" deep and walkway paving 24" deep. In planting areas bury pressure mainlines 18" and lateral lines 10" deep.*
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NORTH 0 20 40 80 120

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STATE OF HAWAII
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HIGHWAYS DIVISION

IRRIGATION PLAN
STA. 165+00 TO 187+00

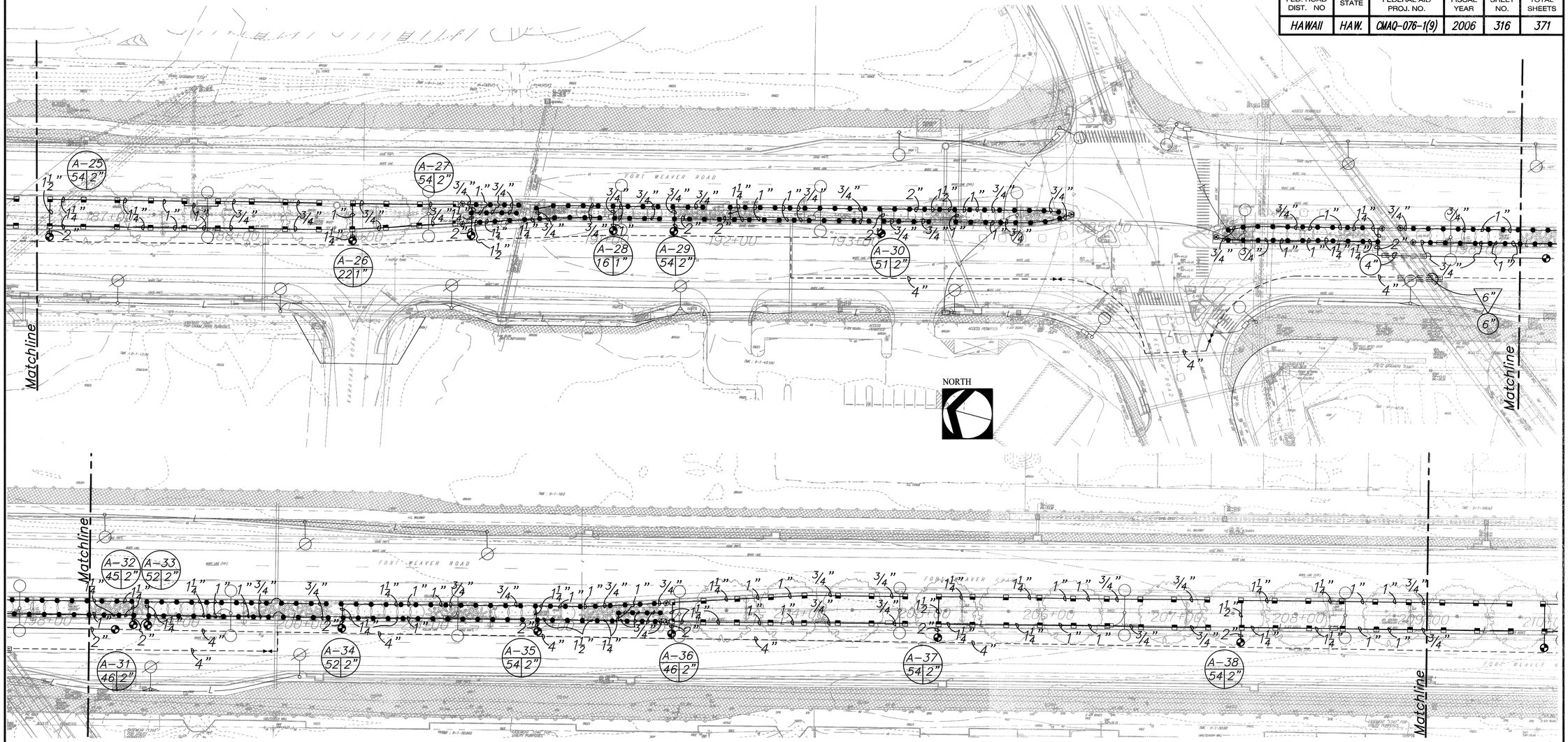
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-03 OF 15 SHEETS

AS-BUILT 315

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	316	371



Note:

1. *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 all irrigation lines under vehicular paving 36" deep and walkway paving 24" deep. In planting areas bury pressure mainlines 18" and lateral lines 10" deep.*
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NORTH 0 20 40 80 120

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

STA. 187+00 TO STA. 209+00

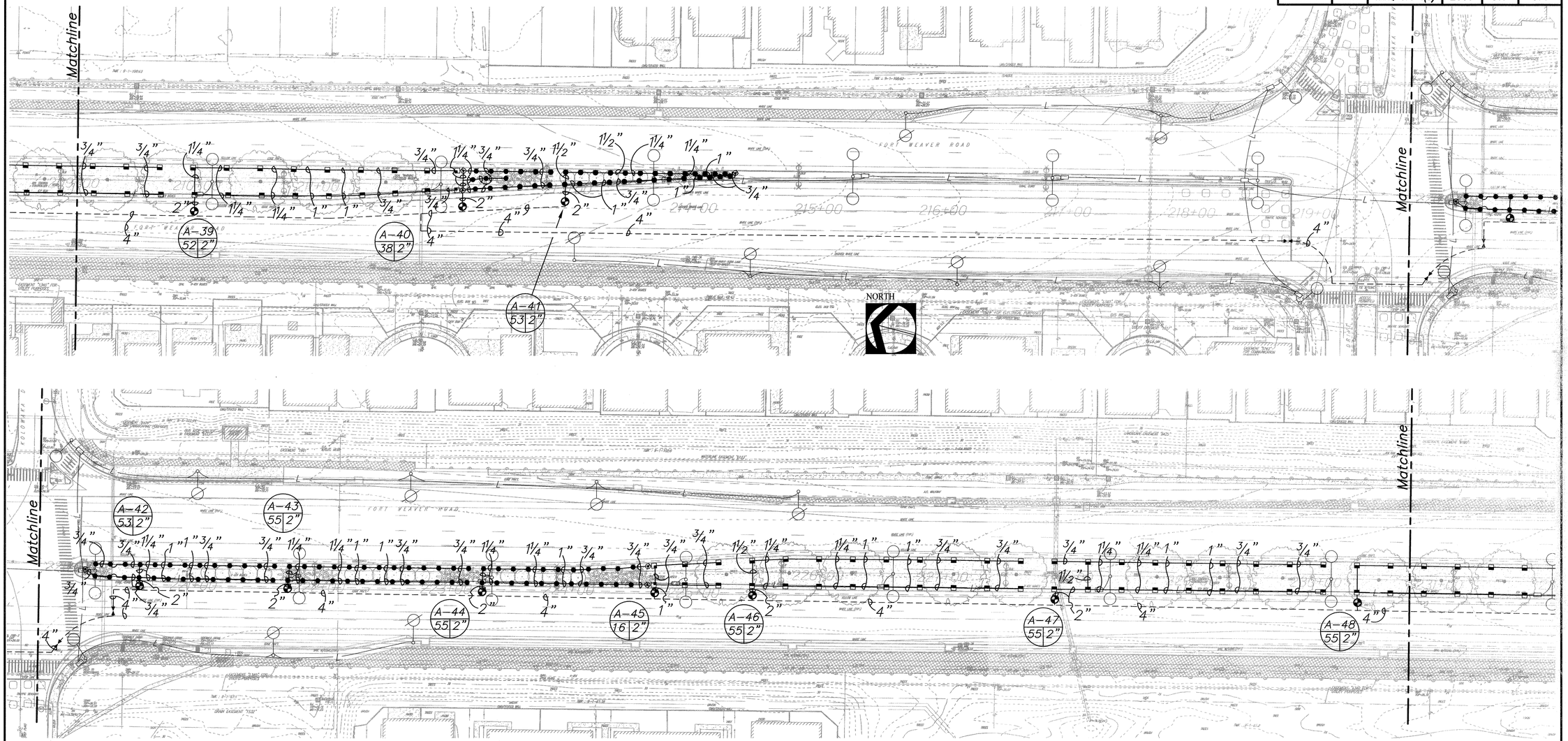
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-04 OF 15 SHEETS

AS-BUILT 316

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	317	371



Note:

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NORTH 0 20 40 80 120

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

STA. 209+00 TO 230+00

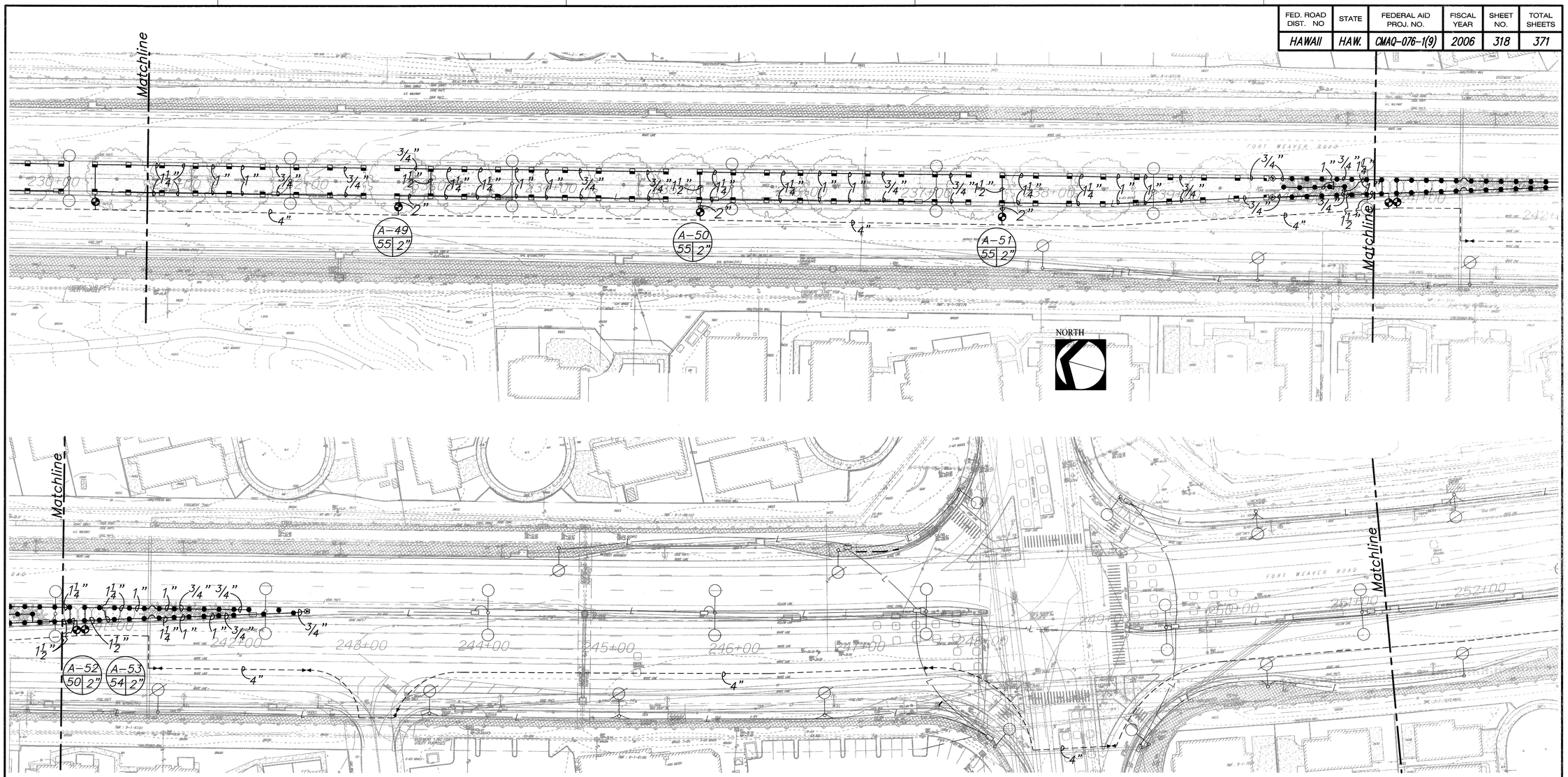
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-05 OF 15 SHEETS

AS-BUILT 317

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	318	371



Note:

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3. See Civil plans for sleeve and conduit roadway crossings for mainlines.
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

STA. 230+00 TO STA. 251+00

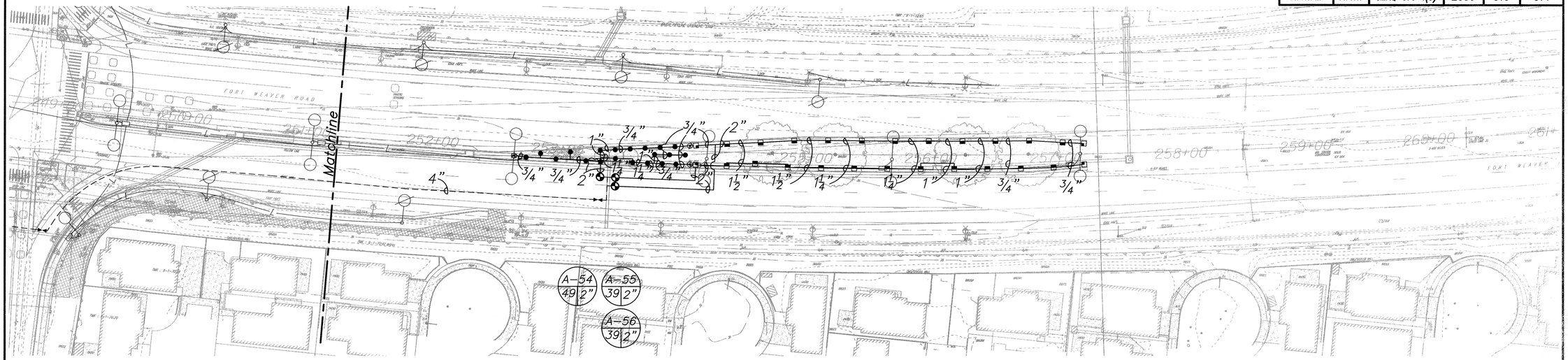
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

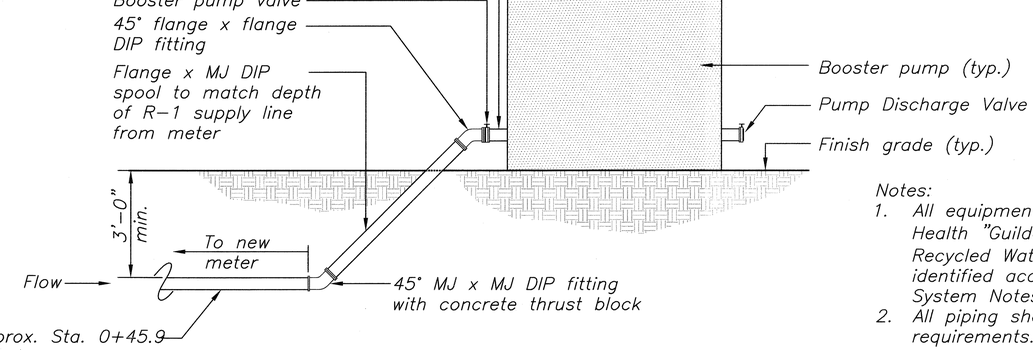
Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. 12-06 OF 15 SHEETS

AS-BUILT 318

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	319	371





Install new mainline to waterline H at approx. Sta. 0+45.9 (see civil sheet U2-1, U2-19A for location). Mainline and fittings shall match civil specifications. Install all fittings and material as required by BWS standards.

Notes:
1. All equipment shall comply with the Department of Health "Guildelines for the Treatment and use of Recycled Water" dated May 15, 2002 and shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.
2. All piping shall be installed per BWS standards and requirements.

BOOSTER PUMP (SECTION ELEVATION) SURFACE/SUBSURFACE TRANSITION DETAIL

1 SCALE: 1/2" = 1'-0"

Note:
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NOTE BOOK	TRACED BY	
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No.	CHECKED BY	

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

NORTH 0 20 40 80 120

R. STAN DUNCAN LICENSED PROFESSIONAL LANDSCAPE ARCHITECT No. 5815 HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION PLAN

STA. 251+00 TO STA. 260+00

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

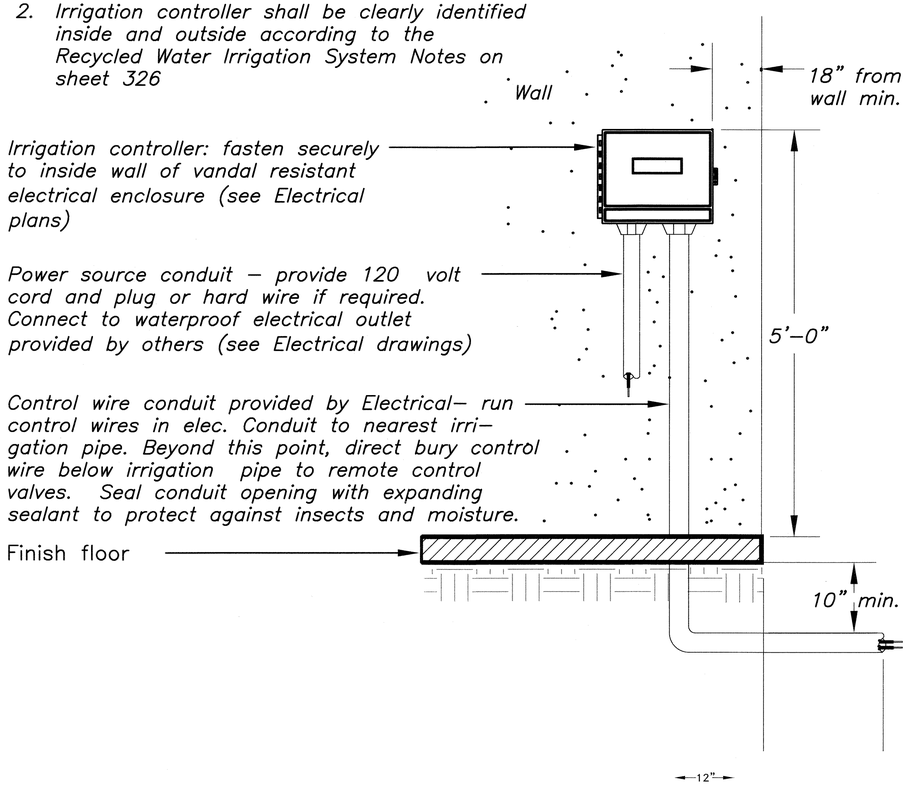
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SHEET No. 12-07 OF 15 SHEETS

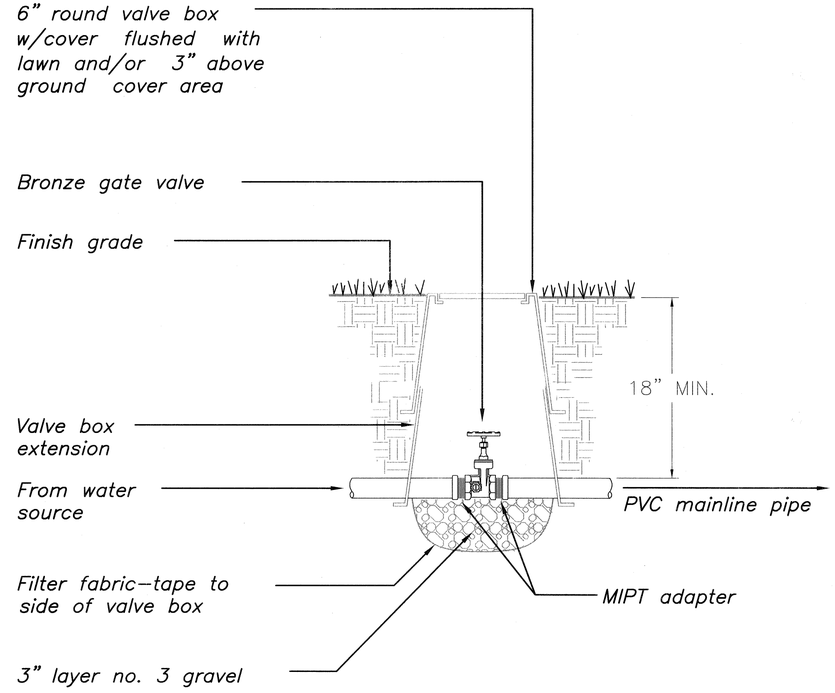
AS-BUILT 319

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	320	371

Note:
1. Install irrigation controller at locations shown on drawings and according to Manufacturer's recommendations
2. Irrigation controller shall be clearly identified inside and outside according to the Recycled Water Irrigation System Notes on sheet 326



WALL MOUNT
IRRIGATION CONTROLLER DETAIL
SCALE: N.T.S.



Note:
1. All valve box covers shall be labeled recycled water, valve type, zone number and controller.
2. All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

GATE VALVE DETAIL
SCALE: N.T.S.

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

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SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION DETAILS

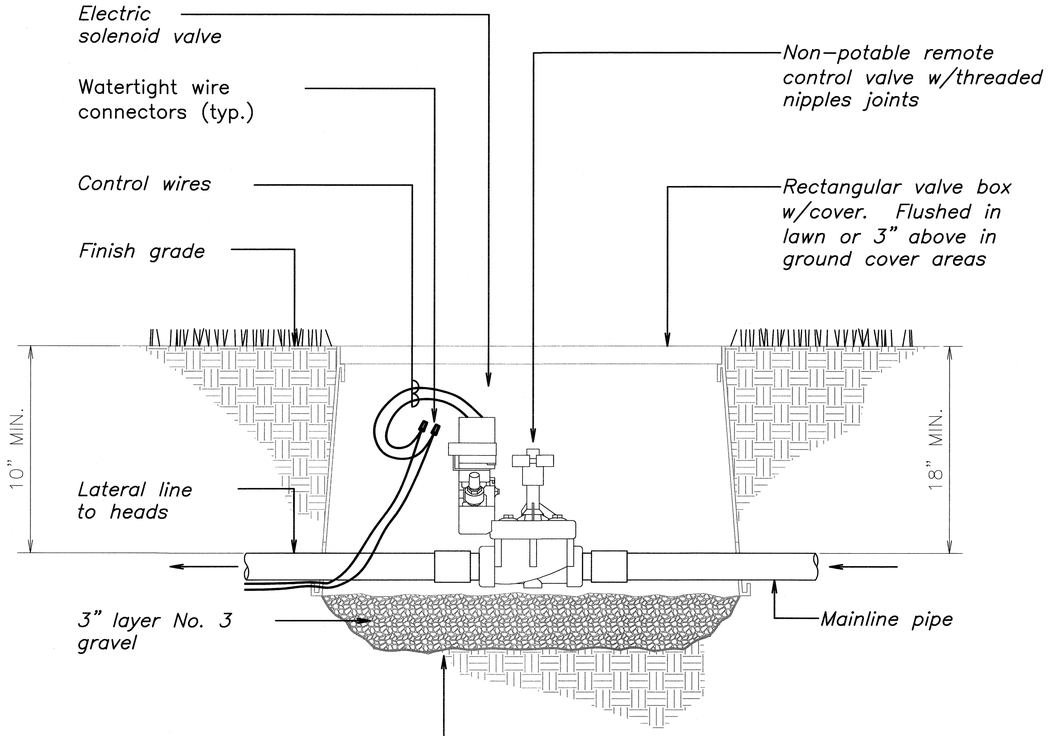
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12-08 OF 15 SHEETS

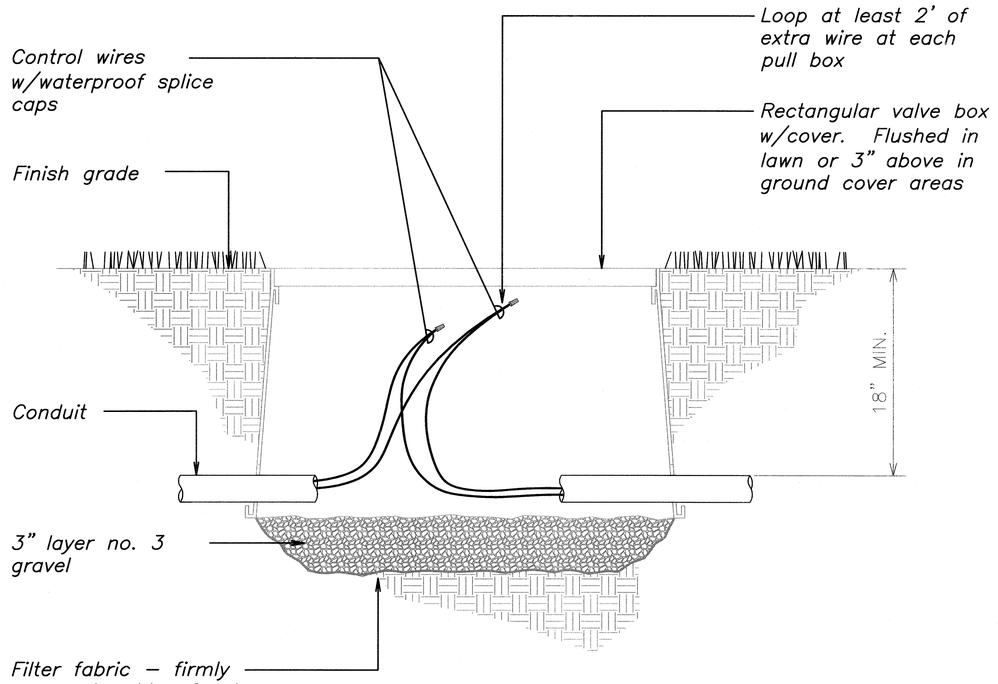
AS-BUILT 320

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	321	371



Note:
1. All valve box covers shall be labeled recycled water, valve type, zone number and controller number.
2. All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

③ NON POTABLE REMOTE CONTROL VALVE DETAIL
SCALE: N.T.S.



Notes:
1. All valve box covers shall be labeled valve type, zone number and, controller number.
2. Provide minimum of one pull box for every 250 linear feet of controller wire and at each grouping of valves and, prior to all road pavement crossings.
3. Do not splice wires except in valve boxes and pull boxes.
4. All irrigation equipent shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

④ PULL BOX DETAIL
SCALE: N.T.S.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
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IRRIGATION DETAILS

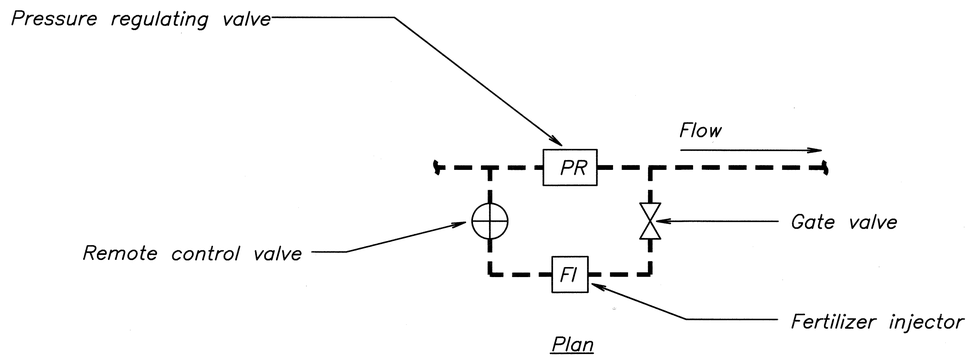
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

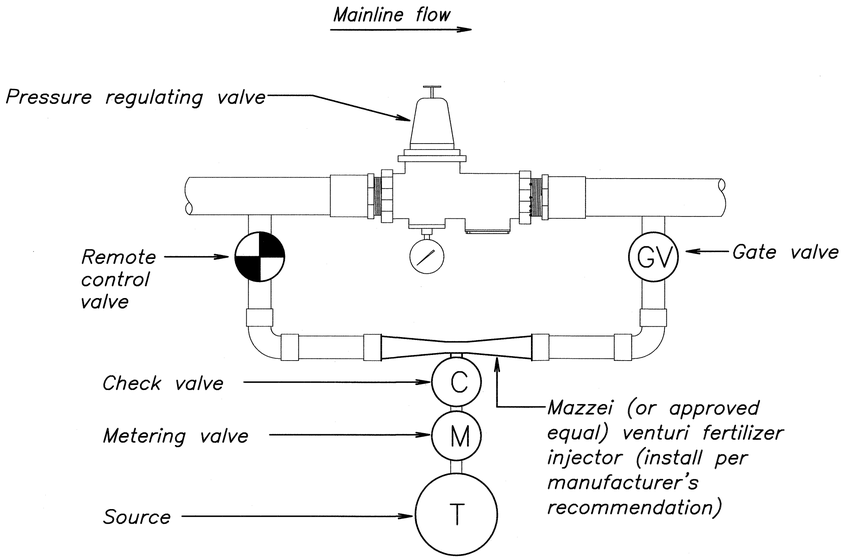
SHEET No. 12–09 OF 15 SHEETS

AS-BUILT 321

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	322	371

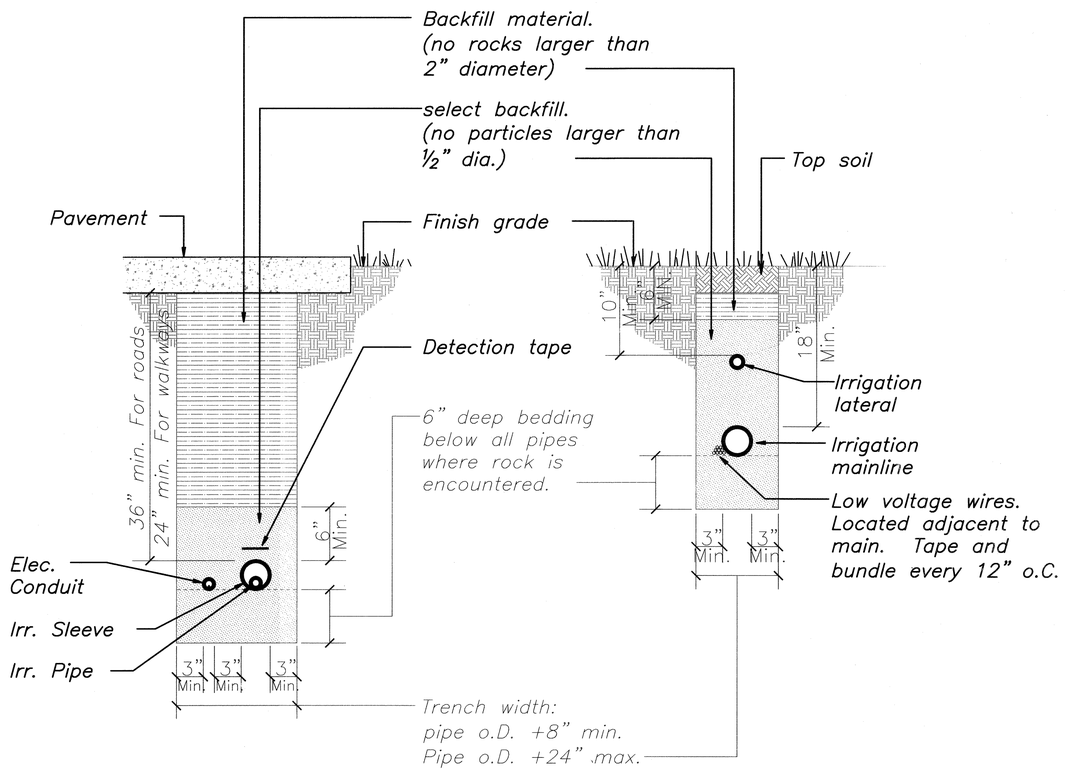


Plan



Note:
All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

TYPICAL VENTURI–TYPE FERTILIZER INJECTOR DETAIL
(5) SCALE: N.T.S.



Note:
All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

(6) IRRIGATION TRENCH & WIRING DETAIL
SCALE: N.T.S.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN LICENSED PROFESSIONAL LANDSCAPE ARCHITECT No. 5815 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R. Stan Duncan 4/30/08

SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION DETAILS

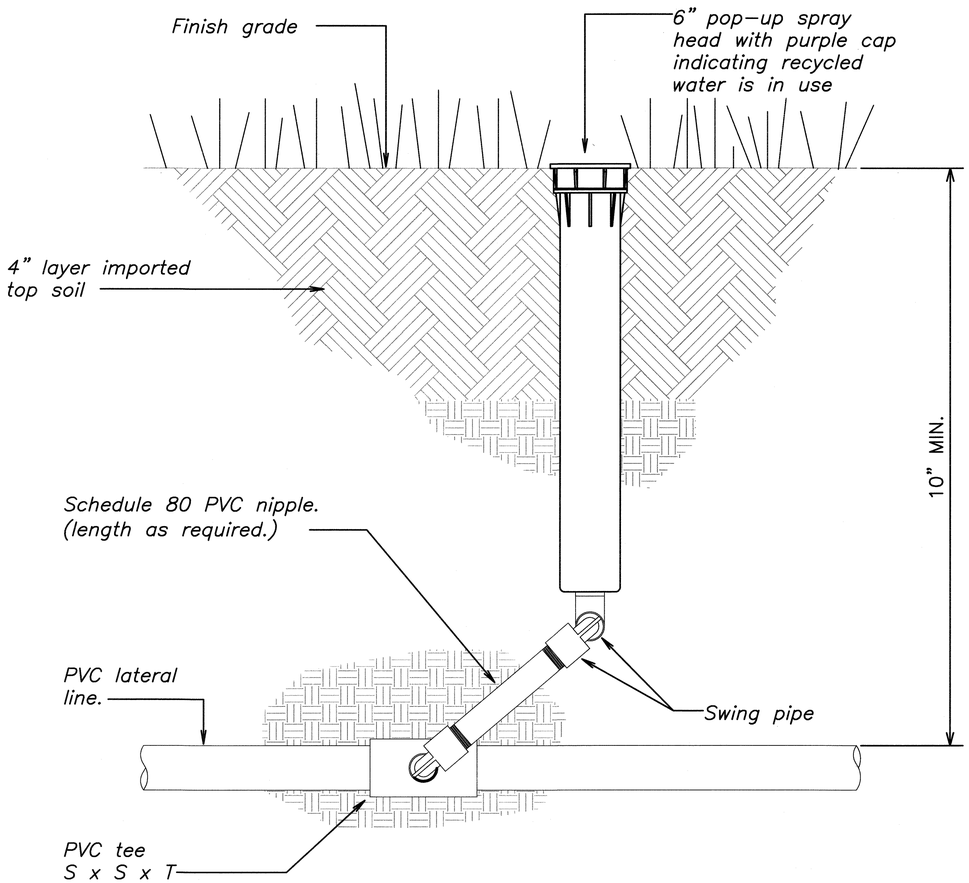
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12–10 OF 15 SHEETS

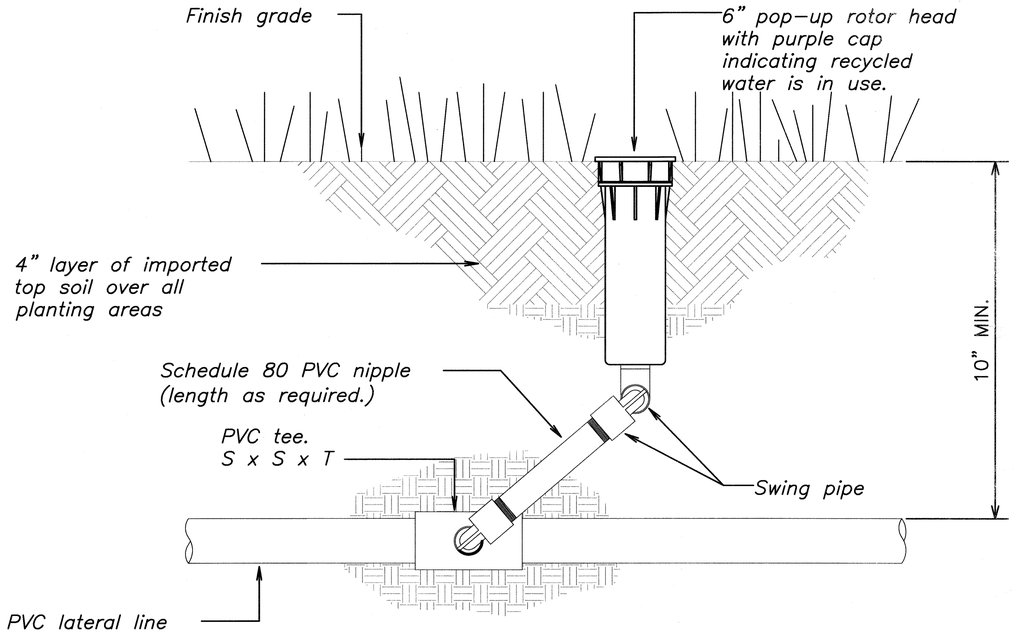
AS-BUILT 322

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	323	371



Note:
1. KBI or Lasco swing joints may be used upon approval by Engineer.
2. Install part circle pop-up heads 6" from edge of paved areas.
3. All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

⑦ 6" POP-UP SPRAY HEAD DETAIL
SCALE: N.T.S.



Note:
1. KBI or Lasco swing joints may be used upon approval by Engineer
2. Install part circle pop-up heads 6" from edge of paved areas.
3. All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

⑧ 6" ROTOR POP-UP SPRINKLER DETAIL
SCALE: N.T.S.

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION DETAILS

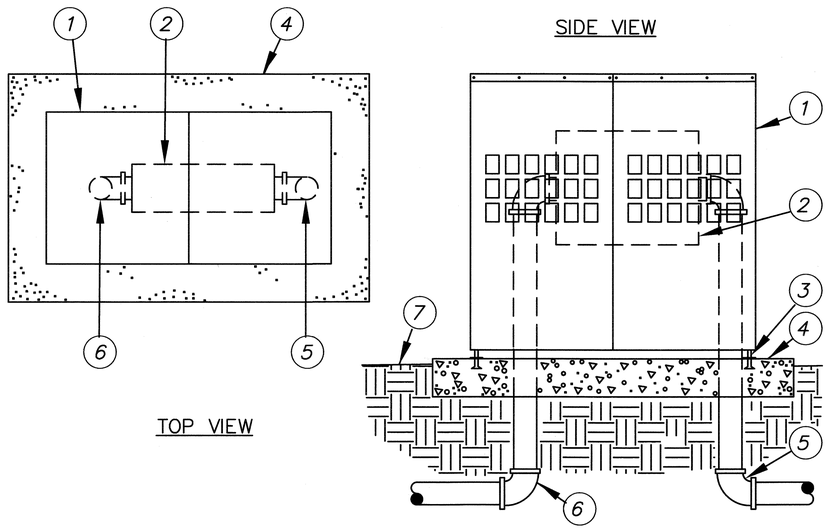
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12-11 OF 15 SHEETS

AS-BUILT 323

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	324	371



LEGEND

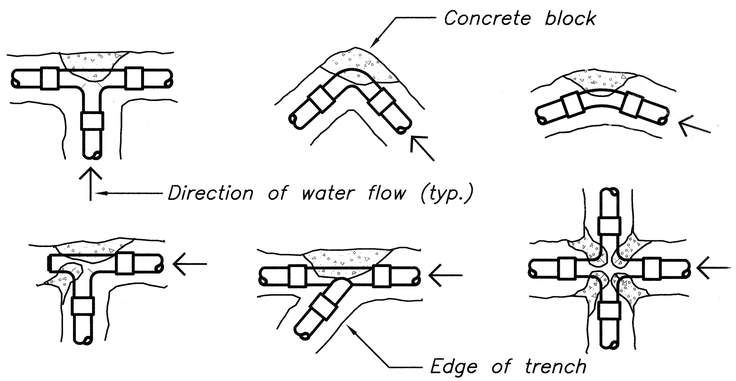
1. Aluminum backflow enclosure.
2. Backflow preventer.
3. Anchor rod (typical).
4. Poured concrete base – 6" min. thickness – extend 4" beyond outside dimensions of enclosure.
5. Water service inlet piping.
6. Water service outlet piping.
7. Finish grade.

Note:
All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

10 ALUMINUM BACKFLOW ENCLOSURE
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:
1. Install thrust block at all machine bends, tees or ells as shown below. Thrust blocks shall be minimum of (1) cu. ft. Redi–mix concrete or 2500 psi 28 day concrete.
2. Set all thrust blocks against undisturbed soil.



Note:
All irrigation equipment shall be identified according to the Recycled Water Irrigation System Notes on sheet 326.

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

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
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DESIGNED BY
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CHECKED BY
DATE
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No.

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SIGNATURE
EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION DETAILS

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12–12 OF 15 SHEETS

AS-BUILT 324

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	325	371

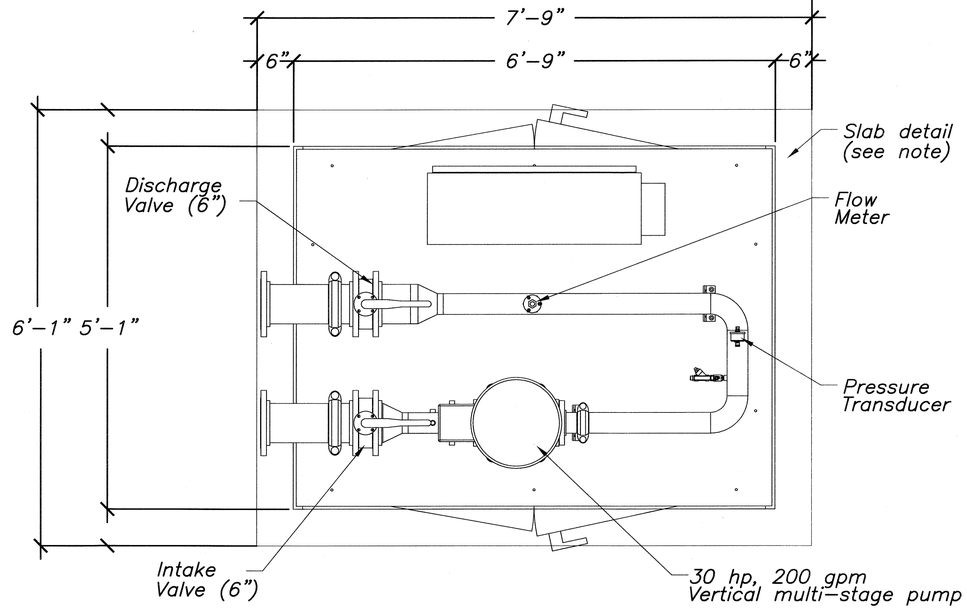
Notes:
1. Dimensions shown are minimum recommended clearances from pump station to slab edge.

2. Slab detail is provided for illustration only. The Architect or Project Engineer should be consulted for construction detail.

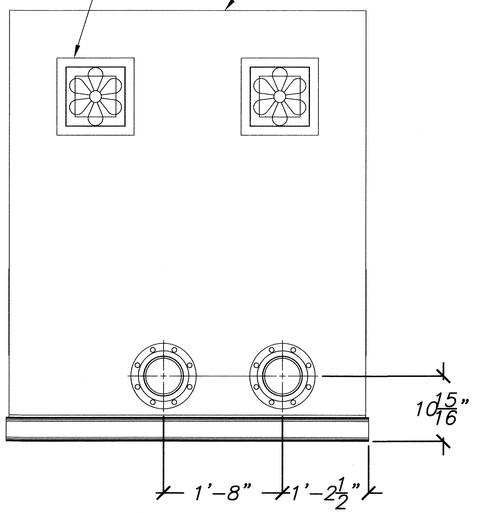
3. Slab and pump house must be built in accordance with local building codes.

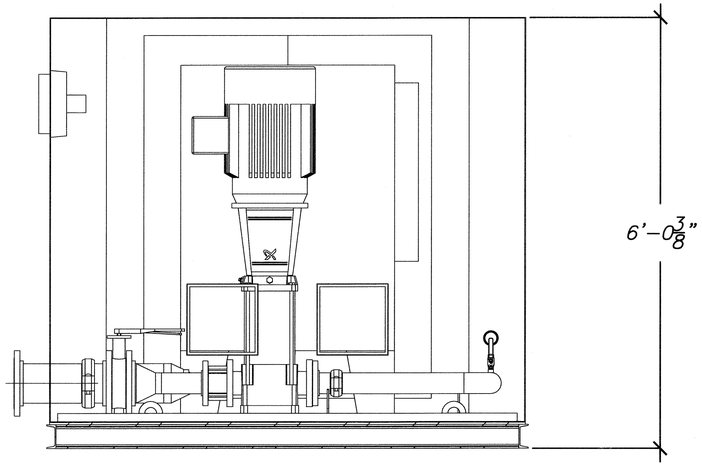
4. All supply and discharge piping shall be painted purple (suggested color Pantone 512 or equal) to clearly identify reclaimed water is in use.

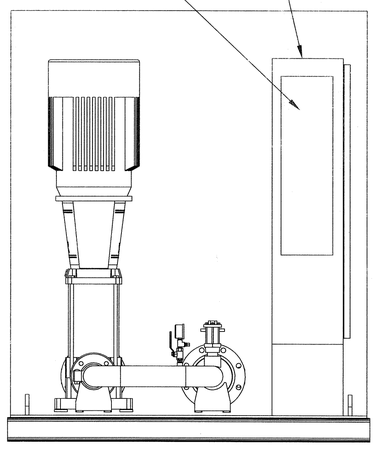
—not to be used for construction
contact factory for certified drawing



Power: 208/60/3 v/hz/ph
Service req: 200 a
Flow: 200 gpm
Suction pressure: 30 psi
Discharge pressure: 200 psi
Boost pressure: 170 psi







10 BOOSTER PUMP DETAIL
SCALE: N.T.S.

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

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HAWAII, U.S.A.

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R. Stan Duncan 4/30/08
SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION DETAILS

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12–13 OF 15 SHEETS

AS-BUILT 325

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	326	371

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 30 psi The point of connection. Notify the project engineer, if water pressure is less than 30 psi or greater than 60 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, building and wall unless otherwise noted. 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 its cycles. Check watering 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 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.

10 IRRIGATION NOTES
SCALE: N.T.S.

Recycled water irrigation system notes

1. The Recycled Water irrigation system shall comply with the Department of Health Guidelines for the Treatment and Use of Recycled Water, May 15, 2002.
2. All new buried irrigation piping in the Reclaimed Water System, including service lines, valves, and other appurtenances shall both be colored purple, suggested color pantone 512 or equal, and embossed or be integrally stamped/marked "Recycled Water – Do Not Drink", or be installed with purple identification tape, or purple polyethylene wrap, suggested color pantone 512 or equal.
3. Valve boxes shall be the standard concrete or fiberglass box conforming with "Water System Standards" Volume 1, State of Hawaii, 1985. All valve covers on recycled water lines shall be colored purple, suggested color Pantone 512 or equal, and contain "Recycled Water – Do Not Drink" inscriptions on the top surface.
4. Notification signs indicating that recycled water is being utilized for landscape irrigation shall be posted at conspicuous locations throughout the project. The signs shall indicate both in writing and pictorially that recycled water is not suitable for drinking. The location of the signs shall be noted on a signage plan.
5. Before construction of the irrigation system commences, the State Department of Health must approve the recycled water irrigation system design.
6. Engineer, has the right to stop construction should any work be found contrary to the approved plans and specifications, Department of Health Guidelines for the Treatment and Use of Recycled Water Rules, or detrimental to public interest.
7. Prior to startup of the irrigation system, representatives of the State Department of Health shall inspect the Recycled Water irrigation system along with the Irrigation System Contractor and Engineer. Once the irrigation system passes inspection, permits for Recycled Water use shall be issued to the Engineer.
8. All existing and new exposed above ground piping, fittings, pumps, valves, and other appurtenances shall be painted purple, suggested color index 77742 violet #16, Pantone 512 or equal, or clearly identified with signage informing the user that recycled water is in use. In additional, all piping shall be identified using an acceptable means of labeling reading "CAUTION: RECYCLED WATER–DO NOT DRINK."
9. Recycled water irrigation system shall utilize automatic irrigation controllers to automatically open and close on-site distribution valves.
10. Automatic irrigation controllers for the recycled water irrigation system shall be clearly identified inside and outside, warning that the system is utilizing recycled water. Identification shall be permanently attached to the inside and outside of the controller. The labels should also alert the system's owner/maintenance personnel of any important constraints on the operation of the system in accordance with Chapter V Sections C–7 and C–9 of the Department of Health "Guidelines for the Treatment and Use of Recycled Water," dated May 15, 2002.
11. Controllers of recycled water shall be color-coded to differentiate the recycled water from the potable water in accordance with Chapter V Sections A–4 and A–6 of the Department of Health Guidelines for the Treatment and Use of Recycled Water.
12. All recycled water irrigation system piping shall be colored purple, suggested color Pantone 512 or equal for pipe, appurtenances, marking tapes, labels and signs, and markings, differentiating them from potable water piping. The words "CAUTION: RECYCLED WATER–DO NOT DRINK," shall be printed on the pipe or identification tape. This statement shall be stamped on opposite sides of the pipe, repeated every three feet. All piping and valves shall also be appropriately labeled or continuously taped with appropriate identification.
13. Identification tape shall be installed on pressure and non-pressure laterals. Purple tape, color Pantone 512 or equal, with black lettering stating "CAUTION: RECYCLED WATER–DO NOT DRINK," shall be fastened directly to the top of the pipe. The tape shall run continuously the entire length of the pipe. The overall width of the tape shall be at least three inches in width. Identification tape shall be a locator type marking tape.
14. Hose bibs are not allowed on the recycled water irrigation system.
15. Horizontal and vertical clearances between potable water and recycled water lines shall conform with the "Water System Standards" Vol. 1 [26].
16. Identify all valve box covers with Reclaimed Purple Valve Box Nameplate such as Christy's Model #3800 Recycled/Reclaimed Water Valve Box Identification Nameplates with tamper-proof attachment rivets.

11 NON POTABLE IRRIGATION NOTES
SCALE: N.T.S.

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION, DEPARTMENT OF HEALTH STATE OF HAWAI'I — DATE

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE — EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION NOTES

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

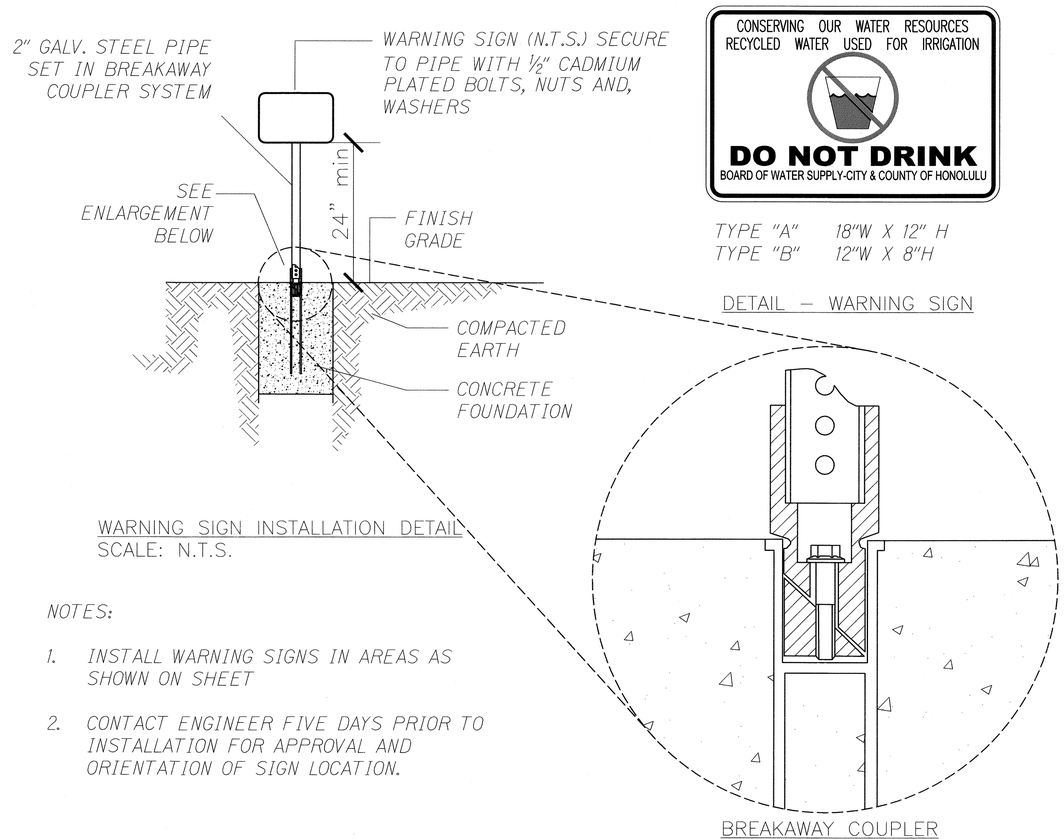
SHEET No. 12-14 OF 15 SHEETS

AS-BUILT 326

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

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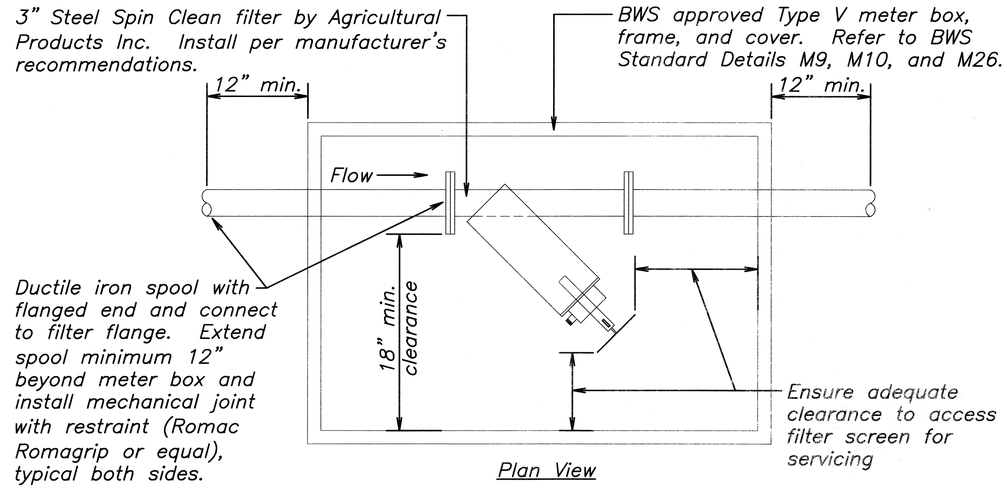
FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	C.O 326S-1	371



NOTES:

1. INSTALL WARNING SIGNS IN AREAS AS SHOWN ON SHEET
2. CONTACT ENGINEER FIVE DAYS PRIOR TO INSTALLATION FOR APPROVAL AND ORIENTATION OF SIGN LOCATION.

① RECYCLED WATER IDENTIFICATION SIGN DETAIL
SCALE: N.T.S.



② IN-LINE FILTER DETAIL
SCALE: N.T.S.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
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R. Stan Duncan 1/30/12
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RECYCLED WATER IDENTIFICATION SIGN DETAIL

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12-15A OF 15 SHEETS

AS-BUILT C.O 326S-1

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	327	371

Irrigation notes:

1. Irrigation systems are diagrammatic and subject to minor adjustments due to unanticipated field conditions. Irrigation heads shall be installed where shown, adjustments to head placement may be made in the field only to avoid obstacles or to improve coverage. Heads shall not be spaced further than shown on the drawings. Valves shall be installed in groundcover areas whenever possible and be accessible for service and use. Avoid conflicts with plantings, utilities and architectural elements.

2. Prior to excavation for irrigation lines, the contractor shall verify in the field the exact location and depth of all utilities in the area and exercise caution when excavating.

3. Coordinate with other trades to insure installation of irrigation lines and appurtenances. It shall be the responsibility of the Irrigation Contractor to coordinate with other contractors on the job to insure their installation and to provide proper clearances for connections.

4. Refer to Electrical drawings for 120v wiring to controller(s). Contractor shall provide surge protection for controller and pulse transmitter.

5. The irrigation system design is based on a minimum static pressure of 30 psi at the point of connection with a 170 psi water pressure boost at the booster pump. No backflow prevention device is required on the non-potable water system. Test the pressure at point of connection and notify Engineer if pressure is less than 30 psi prior to proceeding.

6. Install the irrigation controllers as noted on the drawings and in accordance with the manufacturer's recommendations. The Contractor, together with the appropriate Owner's Representative, shall program the controller to accommodate the landscape and site requirements.

7. Irrigation systems shall be operated during "off peak" evening hours. Operation during other times shall be with the approval of the Project Manager.

8. The Landscape Contractor shall ensure all controllers are grounded to 10 ohm resistance or less.

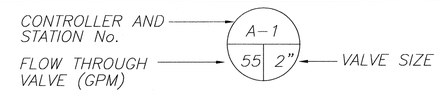
9. All electrical splicing shall comply with NEC standards. Contractor shall use 3M DBY-6 or DBR-6 electrical splices listed for use in wet environments.

IRRIGATION MATERIAL SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER/ CATALOG NUMBER
	AUTOMATIC IRRIGATION CONTROLLER OUTDOOR WALL MOUNT	TUCOR RKD CONTROLLER (100 STATION), ACCESSIBLE OVER THE INTERNET, MOUNTED IN ELEC ENCLOSURE OR APPROVED EQUAL
	COMMUNICATION MODULE	TUCOR GPRS MODULE FOR RKD CONTROLLER
	1 YEAR SERVICE PLAN	TUCOR 1 YEAR SERVICE PLAN
	LIGHTNING PROTECTION	4"x3'-0" GROUNDING PLATES AND POWERSET GROUND ENHANCEMENT MATERIAL. CONTRACTOR SHALL GROUND CONTROLLER TO 10 Ohms OR LESS.
	REMOTE CONTROL VALVE	RAINBIRD PESBR-PRS-D, SIZE AS NOTED OR APPROVED EQUAL
	2-WIRE DECODER	TUCOR RKLD SERIES DECODER OR APPROVED EQUAL
	MANUAL ANGLE VALVE	BUCKNER VBM-20, SAME SIZE AS LARGEST DOWNSTREAM REMOTE CONTROL VALVE OR APPROVED EQUAL
	GATE VALVE (FULL LINE SIZE)	1. NIBCO T-113, 2.5" OR LESS, OR APPROVED EQUAL 2. EPOXY COATED AWWA RESILIENT SEAT 3" OR LARGER
BP	BOOSTER PUMP 200 GPM @ 170 PSI BOOST	RAIN BIRD VERTICAL MULTI-STAGE INLINE VFD BOOSTER PUMP MODEL VM13000230 W/ CONTROLS IN MARINE GRADE STAINLESS STEEL ENCLOSURE
MV	MASTER VALVE(NORMALLY OPEN)	CLA-VAL MODEL 136-01/636-01 OR BERMAD MODEL 710, 200 GPM OR APPROVED EQUAL
R	POLE MOUNTED RAIN SENSOR	HUNTER MINI-CLICK ON 7'-0" TALL, 3" DIA. GALVANIZED POLE (APPLY 2 COATS OF RUSTPROOF PRIMER AND 2 COATS OF BLACK MARINE GRADE PAINT TO POLE) OR APPROVED EQUAL
F	VENTURI-TYPE FERTILIZER INJECTOR	MAZZEI MODEL 1583-A OR APPROVED EQUAL
	VANDAL RESISTANT ENCLOSURE	STRONGBOX SBBC-30ALI
P	PRESSURE RELIEF VALVE	CLA-VAL MODEL OR APPROVED EQUAL
FS	FLOW SENSOR	DATA INDUSTRIAL SERIES 200 IR SENSOR, 3" SIZE
	COM CABLE FOR FLOW SENSOR	RAIN MASTER EV-CAB-SEN OR APPROVED EQUAL
------	NON-POTABLE IRRIGATION MAINLINE - PVC	SCH 40 PVC 2" OR SMALLER (LAVENDER W/ "DO NOT DRINK WARNING) C 900 2½" OR LARGER (LAVENDER W/ DO NOT DRINK WARNING) (SIZE AS SHOWN - SEE SPEC'S - 18" MIN. DEPTH OR APPROVED EQUAL
———	NON POTABLE IRRIGATION MAINLINE DUCTILE IRON	4" DUCTILE IRON PIPE CONFORMING TO AWWA C151 STANDARDS CONTRACTOR SHALL PROVIDE ALL NECESSARY DUCTILE IRON FITTINGS FOR TRANSITION BETWEEN PVC AND DUCTILE IRON MAINLINE, SEE SPECS. 24" DEPTH MINIMUM OR APPROVED EQUAL
———	IRRIGATION LATERAL	CLASS 200 PVC, SIZE AS NOTED, 10" MIN. DEPTH OR APPROVED EQUAL (LAVENDER W/ DO NOT DRINK WARNING)
——--——	COPPER IRRIGATION LATERAL	COPPER TYPE K HARD, SIZE AS NOTED OR APPROVED EQUAL WITH DETECTABLE WARNING TAPE AND "DO NOT DRINK" WARNING
⊏====⊐	PVC SLEEVE UNDER PAVEMENT	SCH 40 PVC PIPE (SIZE AS NOTED) 36" DEPTH BELOW VEHICULAR PAVING, 24" DEPTH BELOW WALKWAY PAVING, OR APPROVED EQUAL
— · —	IRRIGATION CONDUIT	SCH 80 PVC UL LISTED, SIZE AS NOTED, 36" DEPTH BELOW VEHICULAR PAVING, 24" DEPTH BELOW WALK-WAY PAVING, OR APPROVED EQUAL

IRRIGATION SPRINKLER SCHEDULE

HEAD SYMBOL	ANGLE	MANUFACTURER/ CATALOG NUMBER	G.P.M.	P.S.I.	RAD.
LAWN SPRAY SPRINKLER 4" POP-UP		RAINBIRD 1804-SAM-PRS			
	90°	1804-SAM-PRS-10Q	0.29-0.39	15-30	7'-10'
	180°	1804-SAM-PRS-10H	0.58-0.79	15-30	7'-10'
	360°	1804-SAM-PRS-10F	1.16-1.58	15-30	7'-10'
	VAN	1804-SAM-PRS-10VAN	0.48-2.60	15-30	7'-10'
	90°	1804-SAM-PRS-15Q	0.65-0.92	15-30	11'-15'
	180°	1804-SAM-PRS-15H	1.30-1.85	15-30	11'-15'
	360°	1804-SAM-PRS-15F	2.60-3.70	15-30	11'-15'
	VAN	1804-SAM-PRS-15VAN	0.65-3.70	15-30	11'-15'
	SST	1804-SAM-PRS-15SST	0.89-1.21	15-30	4'x26-4'x30'
	EST	1804-SAM-PRS-15EST	0.45-0.61	15-30	4'x13-4'x15'
ROTOR HEAD 4" POP-UP		HUNTER I-20 SERIES			
		I-20-ARS-2.0LA	2.10	50	28'
		I-20-ARS-2.5LA	2.80	50	33'
		I-20-3RS-4.5LA	4.40	50	35'



SLEEVE & CONDUIT SIZING CHART: PIPE SIZE:	SIZE OF SLEEVE/CONDUIT
WIRE	3"
3/4"-1"	2"
1-1/4" - 2"	4"
2-1/2" - 4"	6"

LATERAL PIPE SIZING CHART: FLOW	PIPE SIZE
0 - 10 GPM	3/4"
11 - 16 GPM	1"
17 - 26 GPM	1-1/4"
27 - 35 GPM	1-1/2"
36 - 55 GPM	2"
56 - 80 GPM	2-1/2"
81 - 90 GPM	3"

3" GATE VALVE SIZE	GATE VALVE SIZE
2" ANGLE VALVE SIZE	ANGLE VALVE SIZE
3" SLEEVE SIZE	SLEEVE SIZE
3" CONDUIT RACEWAY SIZE	CONDUIT RACEWAY FOR 24V WIRING (INSTALL ONE EXTRA WIRE THROUGH RACEWAY FOR FUTURE USE)

10 IRRIGATION LEGEND
SCALE: N.T.S.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE
EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

IRRIGATION LEGEND

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. 12-15 OF 15 SHEETS

AS-BUILT 327

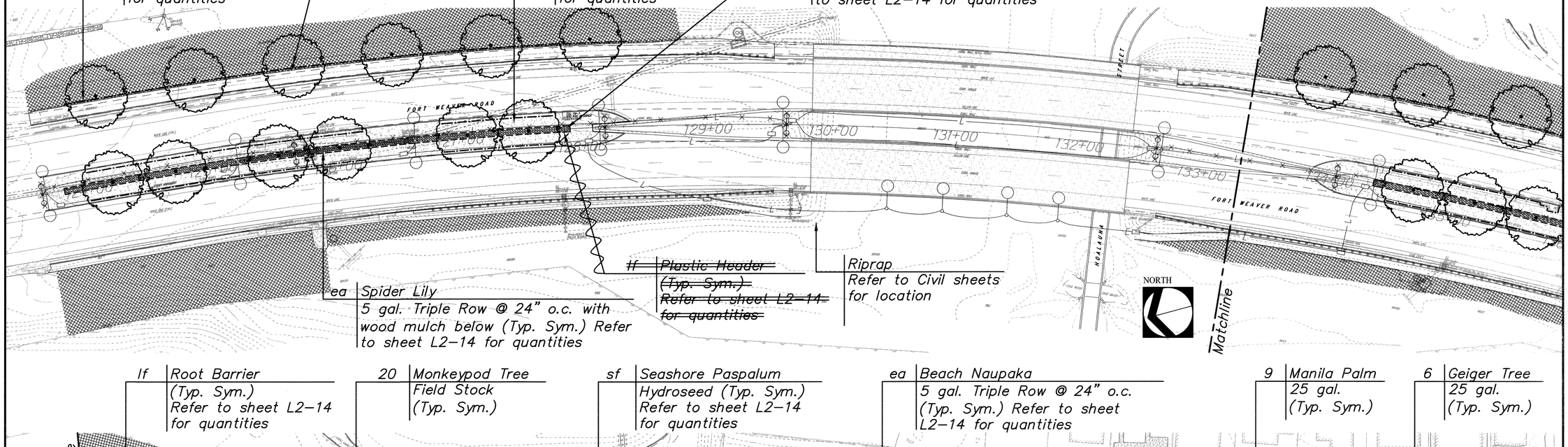
FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	328	371

If | Root Barrier
(Typ. Sym.)
Refer to sheet L2-14 for quantities

12 | Monkeypod Tree
Field Stock
(Typ. Sym.)

sf | Seashore Paspalum
Hydroseed (Typ. Sym.)
Refer to sheet L2-14 for quantities

ea | Beach Naupaka
5 gal. Triple Row @ 24" o.c. with wood mulch below (Typ. Sym.) Refer to sheet L2-14 for quantities



ea | Spider Lily
5 gal. Triple Row @ 24" o.c. with wood mulch below (Typ. Sym.) Refer to sheet L2-14 for quantities

~~If | Plastic Header
(Typ. Sym.)
Refer to sheet L2-14 for quantities~~

Riprap
Refer to Civil sheets for location

If | Root Barrier
(Typ. Sym.)
Refer to sheet L2-14 for quantities

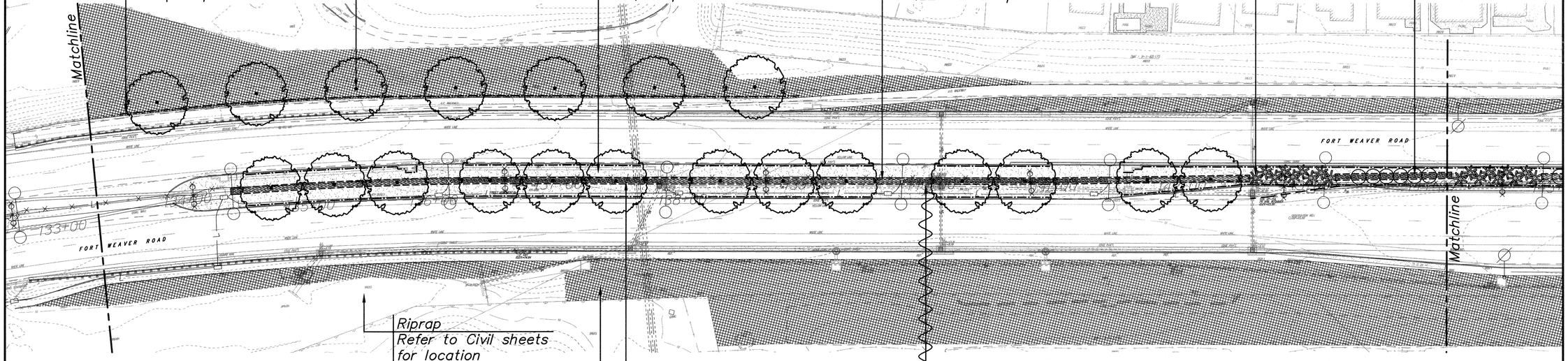
20 | Monkeypod Tree
Field Stock
(Typ. Sym.)

sf | Seashore Paspalum
Hydroseed (Typ. Sym.)
Refer to sheet L2-14 for quantities

ea | Beach Naupaka
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2-14 for quantities

9 | Manila Palm
25 gal.
(Typ. Sym.)

6 | Geiger Tree
25 gal.
(Typ. Sym.)



Riprap
Refer to Civil sheets for location

ea | Spider Lily
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2-14 for quantities

sf | Common Bermuda
Hydroseed (Shoulders Only)
Refer to sheet L2-14 for quantities

~~If | Plastic Header
(Typ. Sym.)
Refer to sheet L2-14 for quantities~~

NORTH 0 20 40 80 120

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

Notes:
1. Quantities are for this sheet only and provided only for convinience. The Contractor shall verify all quantities prior to construction.

2. Contractor shall repair & regrass all areas affected by construction.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R. Stan Duncan 4/30/08
SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN
STA. 124+00 TO 144+00

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-01 OF 14 SHEETS

AS-BUILT 328

FED. AID PROJECT NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWII	CMAQ-076-1(9)	2006	329	377

sf | Common Bermuda
Hydroseed (Shoulders Only)
Refer to sheet L2–14 for quantities

29 | Geiger Tree
25 gal.
(Typ. Sym.)

51 | Manila Palm
25 gal.
(Typ. Sym.)

ea | Spider Lily
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2–14 for quantities

lf | Root Barrier
(Typ. Sym.)
Refer to sheet L2–14 for quantities

ea | Beach Naupaka
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2–14 for quantities

sf | Seashore Paspalum
Hydroseed (Typ. Sym.)
Refer to sheet L2–14 for quantities

~~lf | Plastic Header~~
~~(Typ. Sym.)~~
~~Refer to sheet L2–14 for quantities~~

ea | Beach Naupaka
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2–14 for quantities

Matchline

Matchline

NORTH

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

FORT WEAVER ROAD

Matchline

sf | Common Bermuda
Hydroseed (Shoulders Only)
Refer to sheet L2–14 for quantities

8 | Monkeypod Tree
Field Stock
(Typ. Sym.)

lf | Root Barrier
(Typ. Sym.)
Refer to sheet L2–14 for quantities

ea | Spider Lily
5 gal. Triple Row @ 24" o.c.
(Typ. Sym.) Refer to sheet L2–14 for quantities

sf | Seashore Paspalum
Hydroseed (Typ. Sym.)
Refer to sheet L2–14 for quantities

~~lf | Plastic Header~~
~~(Typ. Sym.)~~
~~Refer to sheet L2–14 for quantities~~

NORTH

0 20 40 80 120

Notes:
1. Quantities are for this sheet only and provided only for convinience. The Contractor shall verify all quantities prior to construction.

2. Contractor shall repair & regrass all areas affected by construction.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R. Stan Duncan 4/30/08
SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 144+00 TO 165+00

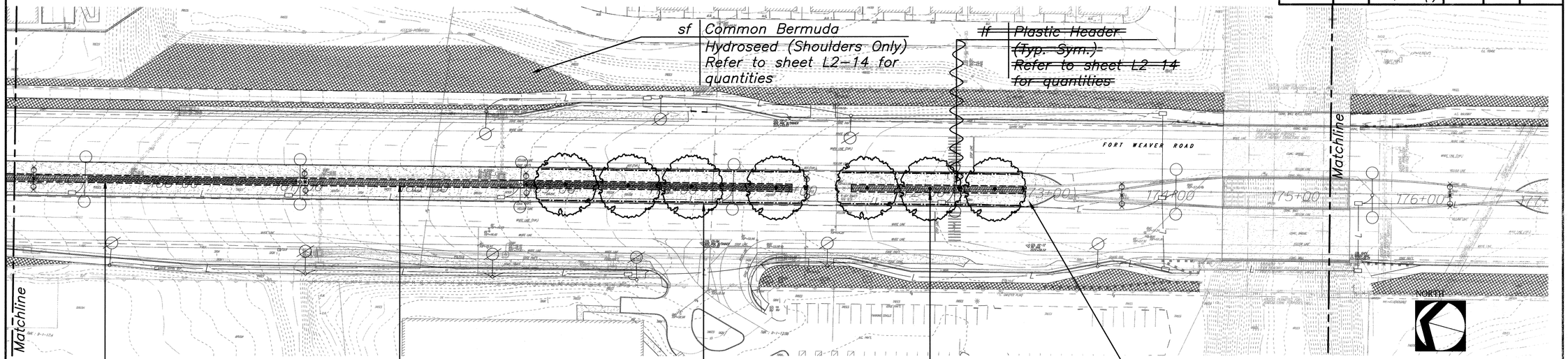
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

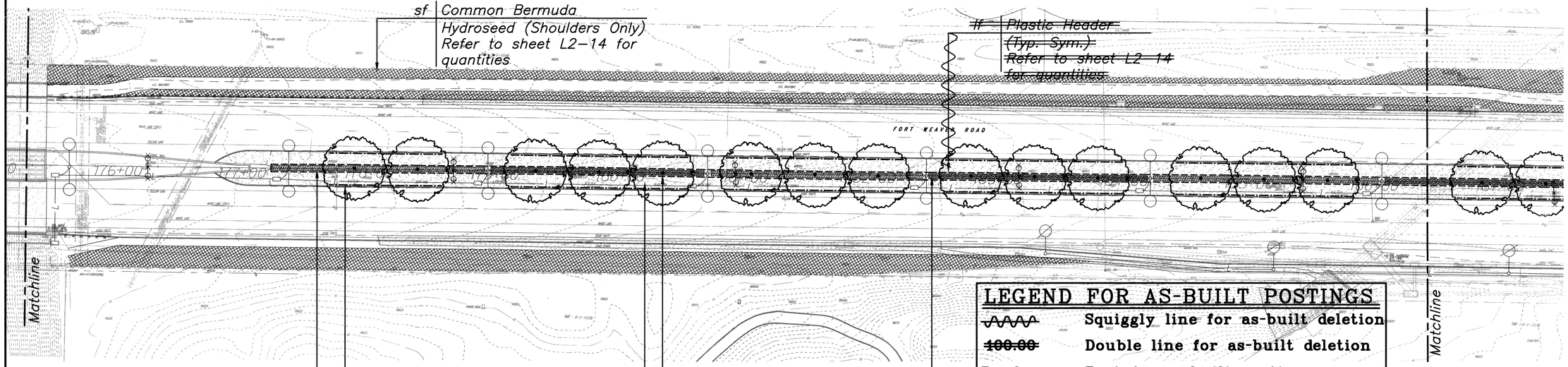
Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2–02 OF 14 SHEETS

AS-BUILT 329

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	330	371





LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

Notes:

1. Quantities are for this sheet only and provided only for convinience. The Contractor shall verify all quantities prior to construction.

2. Contractor shall repair & regrass all areas affected by construction.

NORTH 0 20 40 80 120

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN LICENSED PROFESSIONAL LANDSCAPE ARCHITECT No. 5815 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE EXPIRATION DATE OF LICENSE 1/30/10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 165+00 TO 187+00

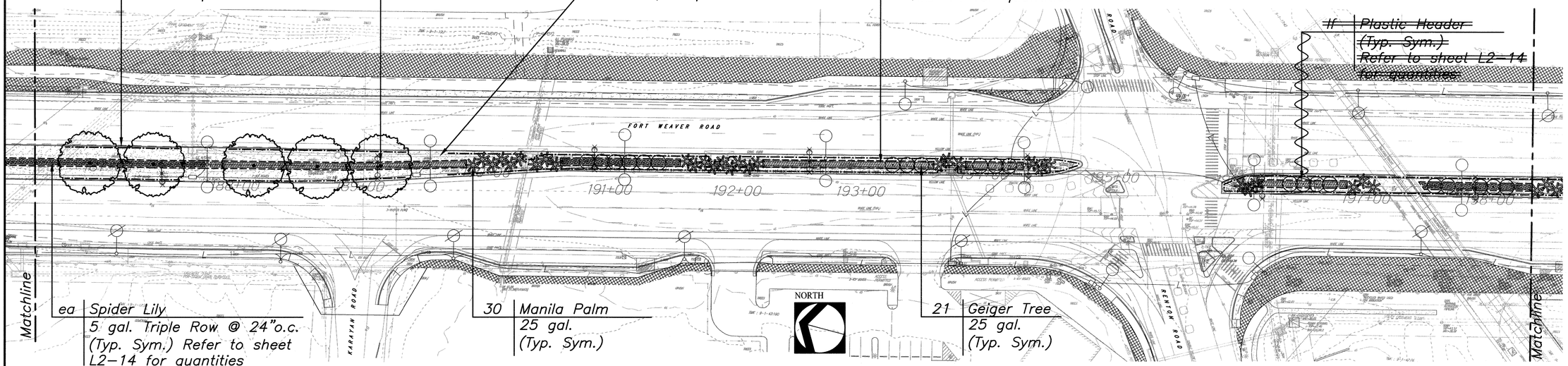
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

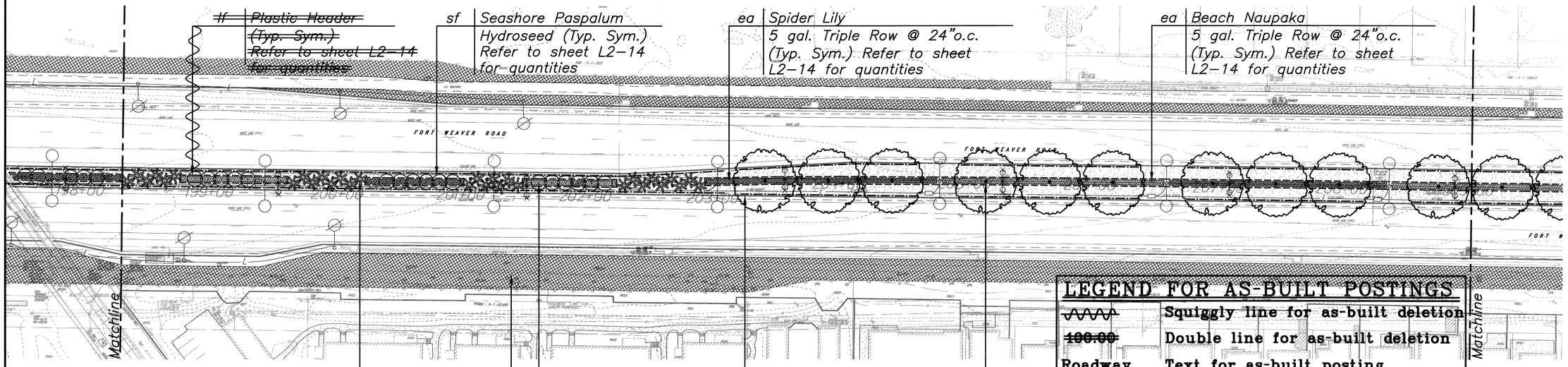
Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-03 OF 14 SHEETS

AS-BUILT 330

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	331	371





Notes:

1. Quantities are for this sheet only and provided only for convinience. The Contractor shall verify all quantities prior to construction.

2. Contractor shall repair & regrass all areas affected by construction.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN LICENSED PROFESSIONAL LANDSCAPE ARCHITECT No. 5815 HAWAII, U.S.A.

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SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 187+00 TO 209+00

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

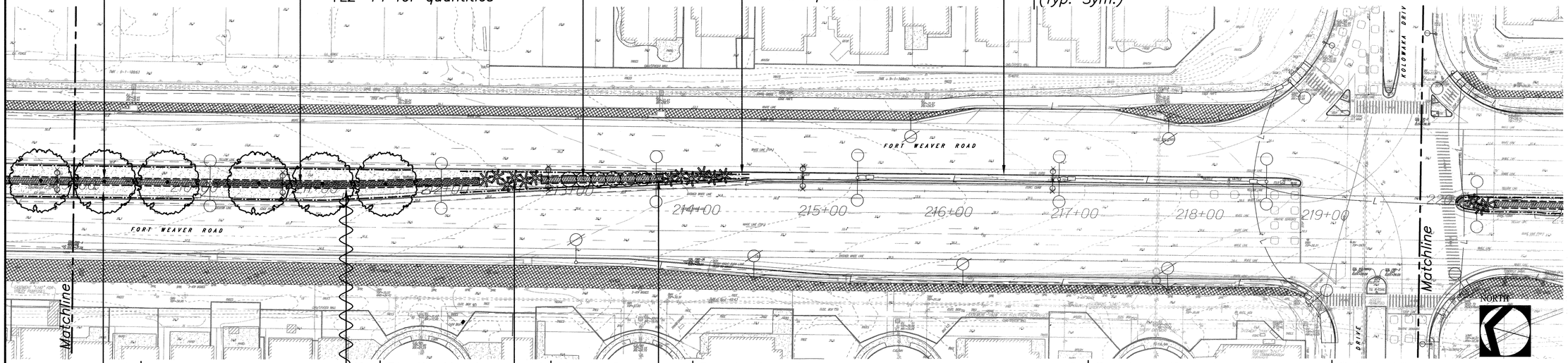
Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-04 OF 14 SHEETS

AS-BUILT 331

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	332	371

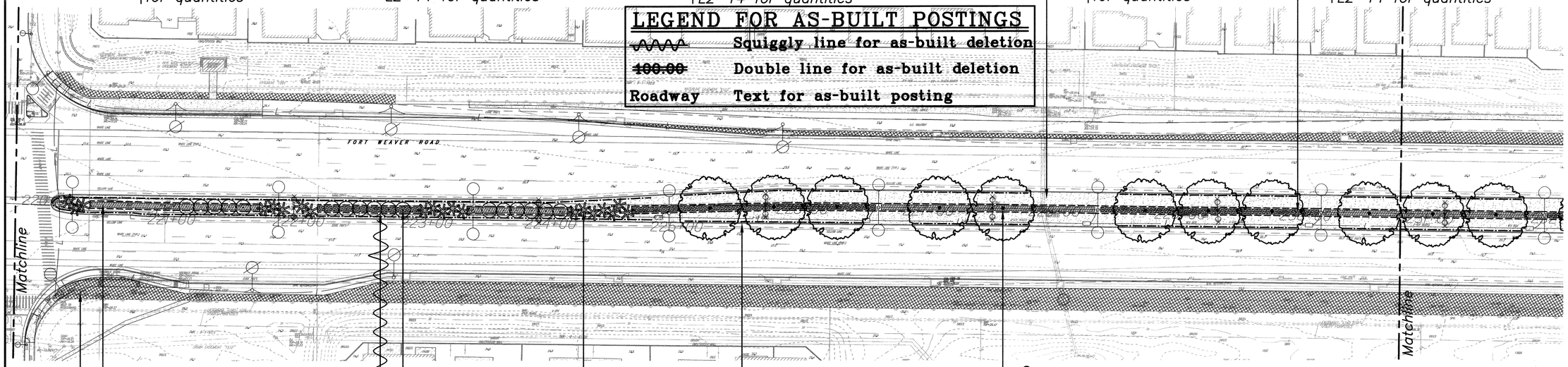
5	Monkeypod Tree Field Stock (Typ. Sym.)	
ea	Spider Lily 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities	
6	Geiger Tree 25 gal. (Typ. Sym.)	
lf	Root Barrier (Typ. Sym.) Refer to sheet L2-14 for quantities	
sf	~~Bomanite~~ **Concrete** Stamping Mounded cobblestone imprinted concrete (Typ. Sym.)	



sf	Seashore Paspalum Hydroseed (Typ. Sym.) Refer to sheet L2-14 for quantities	
~~lf~~	~~Plastic Header~~ ~~(Typ. Sym.)~~ ~~Refer to sheet L2-14 for quantities~~	
12	Manila Palm 25 gal. (Typ. Sym.)	
ea	Beach Naupaka 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities	
sf	Seashore Paspalum Hydroseed (Typ. Sym.) Refer to sheet L2-14 for quantities	
ea	Spider Lily 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities	

LEGEND FOR AS-BUILT POSTINGS

~~^^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**



ea	Beach Naupaka 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities	
sf	Common Bermuda Hydroseed (Shoulders Only) Refer to sheet L2-14 for quantities	
17	Geiger Tree 25 gal. (Typ. Sym.)	
~~lf~~	~~Plastic Header~~ ~~(Typ. Sym.)~~ ~~Refer to sheet L2-14 for quantities~~	
20	Manila Palm 25 gal. (Typ. Sym.)	
lf	Root Barrier (Typ. Sym.) Refer to sheet L2-14 for quantities	
9 ~~11~~	Monkeypod Tree Field Stock (Typ. Sym.)	

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

NORTH 0 20 40 80 120

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R. Stan Duncan 4/30/08

SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 209+00 TO 230+00

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-05 OF 14 SHEETS

AS-BUILT 332

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	333	371

~~If | Plastic Header (Typ. Sym.) Refer to sheet L2-14 for quantities~~

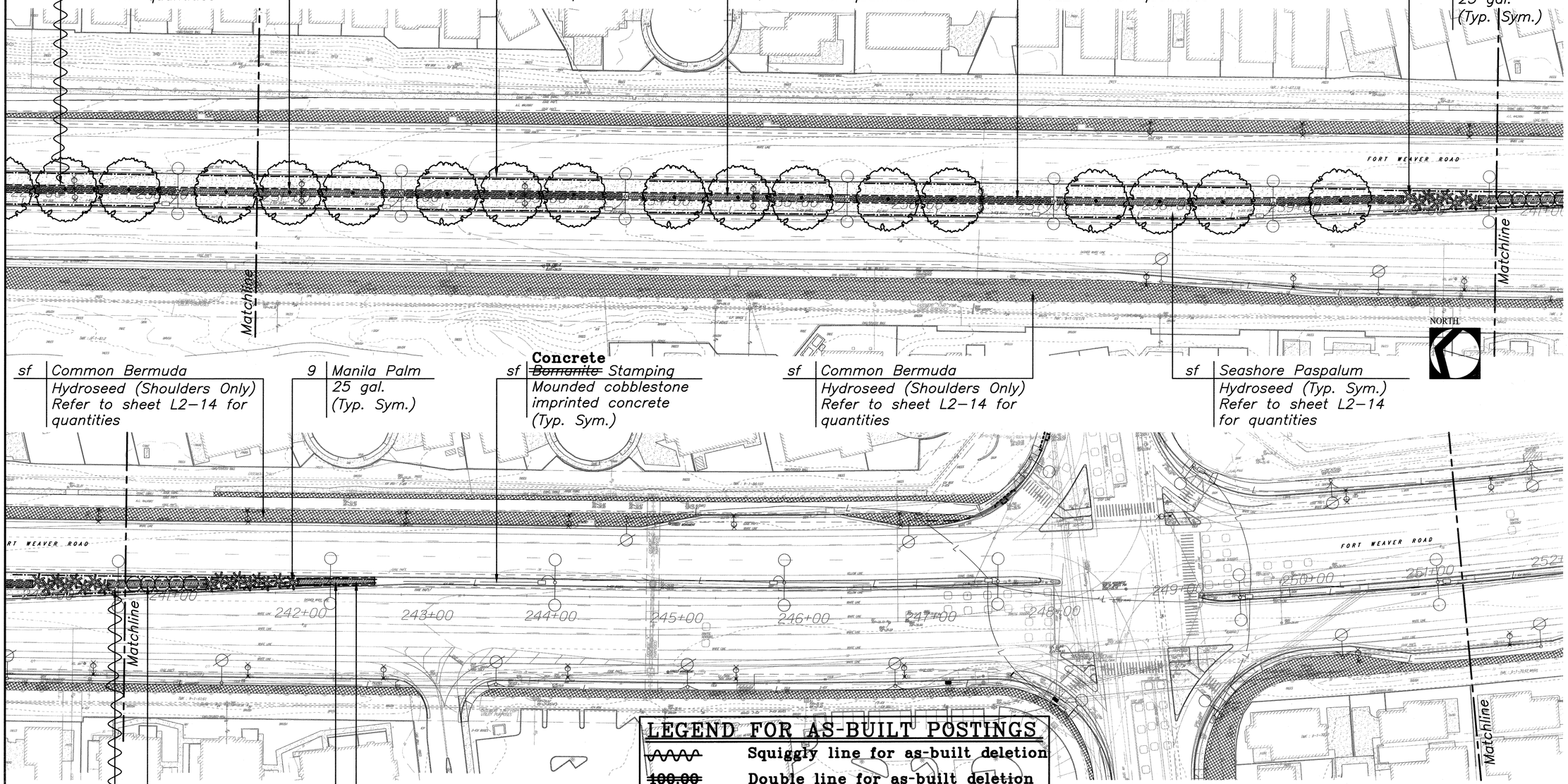
14 | Monkeypod Tree | Field Stock (Typ. Sym.)

lf | Root Barrier | (Typ. Sym.) Refer to sheet L2-14 for quantities

ea | Beach Naupaka | 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities

ea | Spider Lily | 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities

8 | Manila Palm | 25 gal. (Typ. Sym.)



sf | Common Bermuda | Hydroseed (Shoulders Only) Refer to sheet L2-14 for quantities

9 | Manila Palm | 25 gal. (Typ. Sym.)

sf | ~~Bornanite~~ **Concrete** Stamping | Mounded cobblestone imprinted concrete (Typ. Sym.)

sf | Common Bermuda | Hydroseed (Shoulders Only) Refer to sheet L2-14 for quantities

sf | Seashore Paspalum | Hydroseed (Typ. Sym.) Refer to sheet L2-14 for quantities

5 | Geiger Tree | 25 gal. (Typ. Sym.)

ea | Beach Naupaka | 5 gal. Triple Row @ 24"o.c. (Typ. Sym.) Refer to sheet L2-14 for quantities

~~If | Plastic Header (Typ. Sym.) Refer to sheet L2-14 for quantities~~

lf | Root Barrier | (Typ. Sym.) Refer to sheet L2-14 for quantities

LEGEND FOR AS-BUILT POSTINGS

~~∿∿∿~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

Notes:

1. Quantities are for this sheet only and provided only for convinience. The Contractor shall verify all quantities prior to construction.

2. Contractor shall repair & regrass all areas affected by construction.

NORTH 0 20 40 80 120

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN LICENSED PROFESSIONAL LANDSCAPE ARCHITECT No. 5815 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

R. Stan Duncan 4/30/08

SIGNATURE EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 230+00 TO 251+00

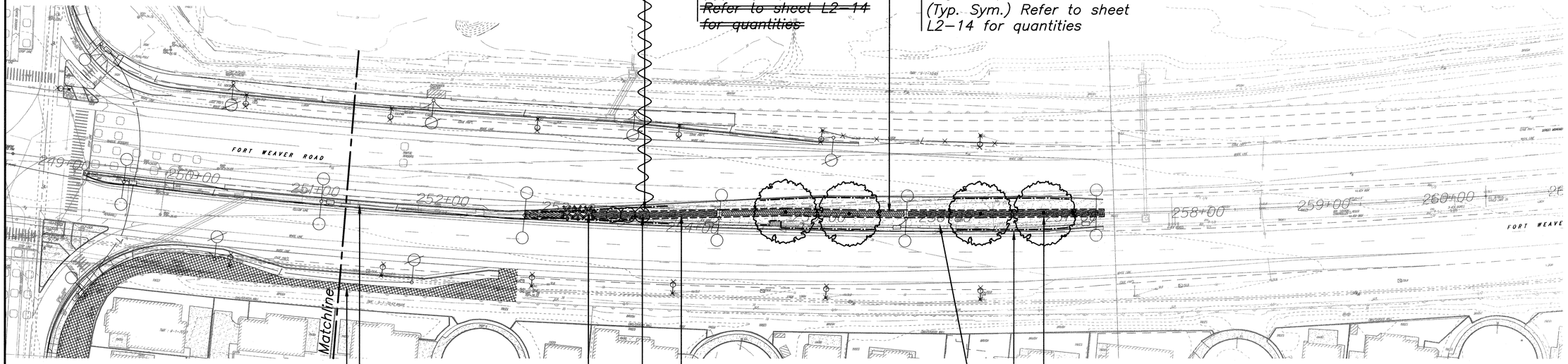
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-06 OF 14 SHEETS

AS-BUILT 333

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	334	371



LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~**100.00**~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

~~lf | Plastic Header (Typ. Sym.) Refer to sheet L2-14 for quantities~~

ea | Beach Naupaka
5 gal. Triple Row @ 24"o.c.
(Typ. Sym.) Refer to sheet L2-14 for quantities

Concrete

sf | ~~Bomanite~~ Stamping
Mounded cobblestone imprinted concrete
(Typ. Sym.)

ea | Spider Lily
5 gal. Triple Row @ 24"o.c.
(Typ. Sym.) Refer to sheet L2-14 for quantities

4 | Monkeypod Tree
Field Stock
(Typ. Sym.)

sf | Common Bermuda
Hydroseed (Shoulders Only)
Refer to sheet L2-14 for quantities

3 | Geiger Tree
25 gal.
(Typ. Sym.)

3 | Manila Palm
25 gal.
(Typ. Sym.)

lf | Root Barrier
(Typ. Sym.)
Refer to sheet L2-14 for quantities

sf | Seashore Paspalum
Hydroseed (Typ. Sym.)
Refer to sheet L2-14 for quantities

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

NORTH 0 20 40 80 120

R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF LICENSE 1/31/08

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING PLAN

STA. 251+00 TO STA. 260+00

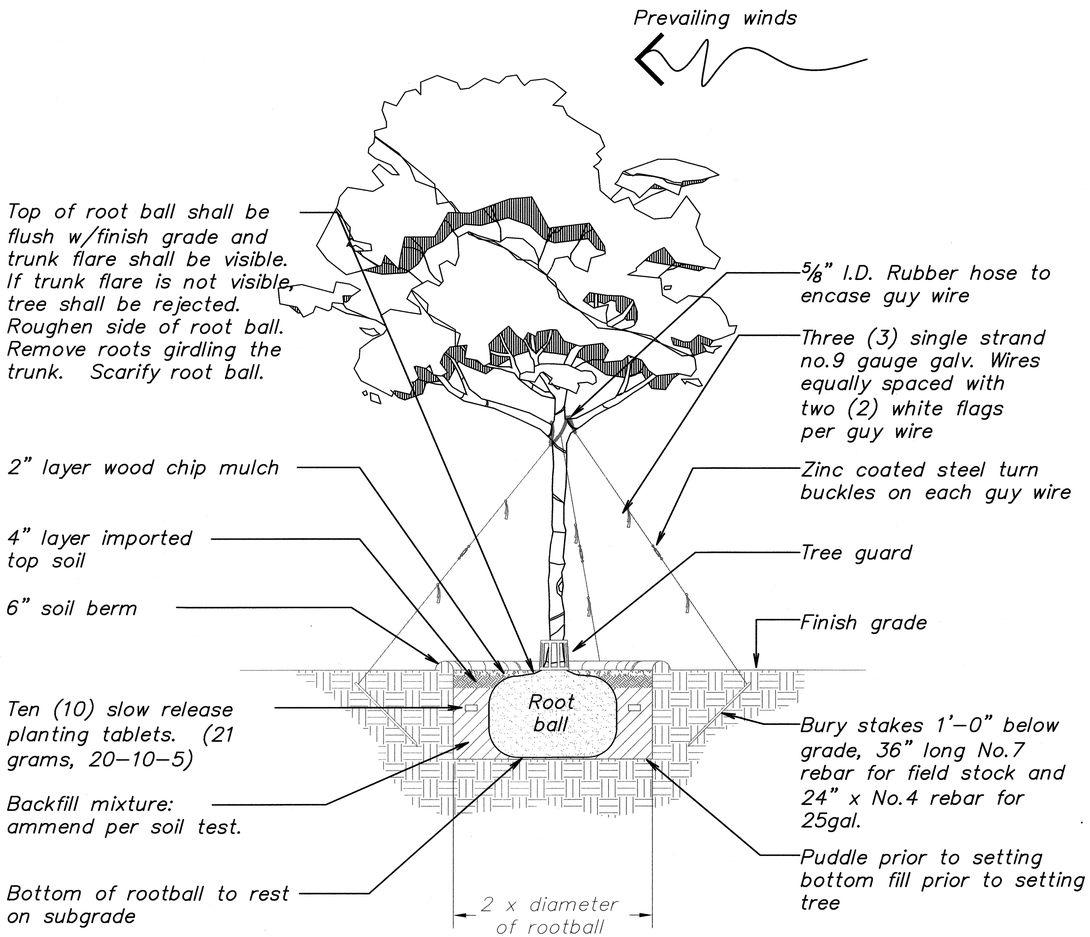
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=40' Date: Jan. 25, 2008

SHEET No. L2-07 OF 14 SHEETS

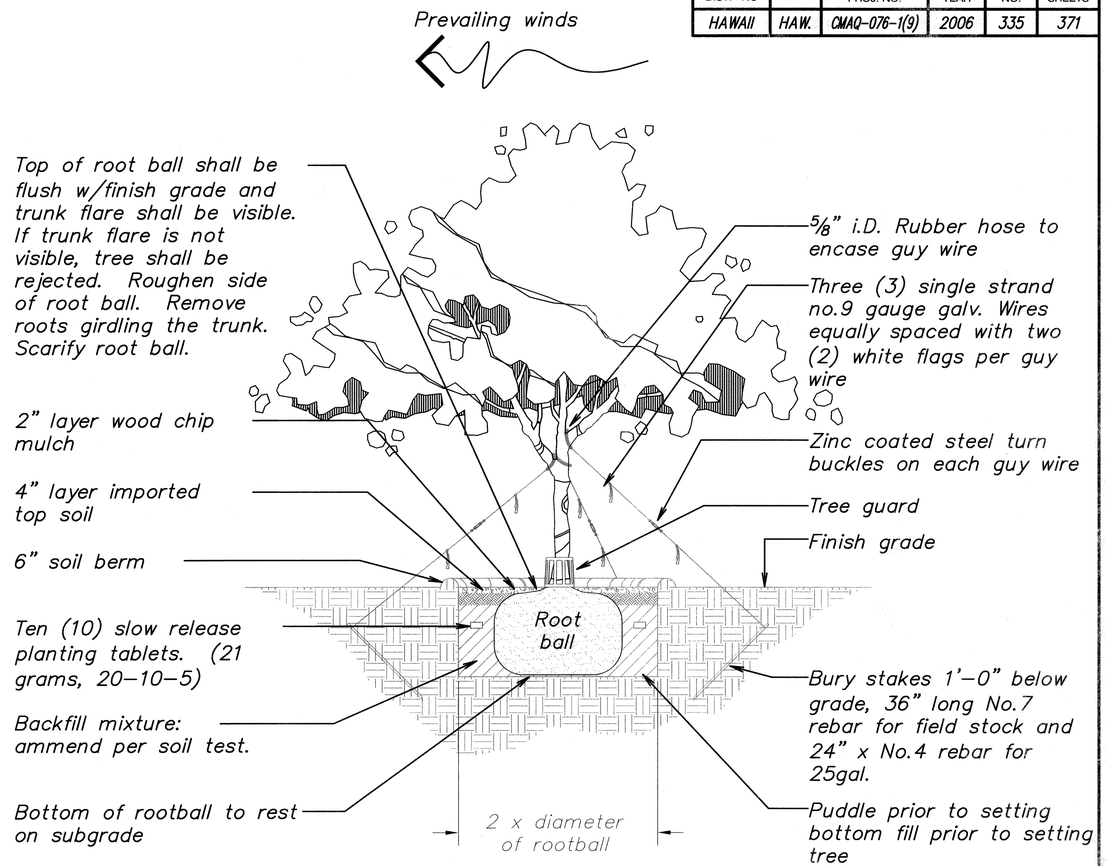
AS-BUILT 334

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	335	371



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

1 Field Stock Tree Planting Detail
SCALE: N.T.S.



Note:
Trunk must be protected from rope sling burns and abrasions during moving. Tree shall be plumb. If tree is leaning at the end of the plant establishment period, the tree shall be rejected.

2 Container Tree Planting Detail
SCALE: N.T.S.

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

J:/FORT WEAVER ROAD/XXXX/XXX.dgn

R. STAN DUNCAN
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No. 5815
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SIGNATURE
EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS

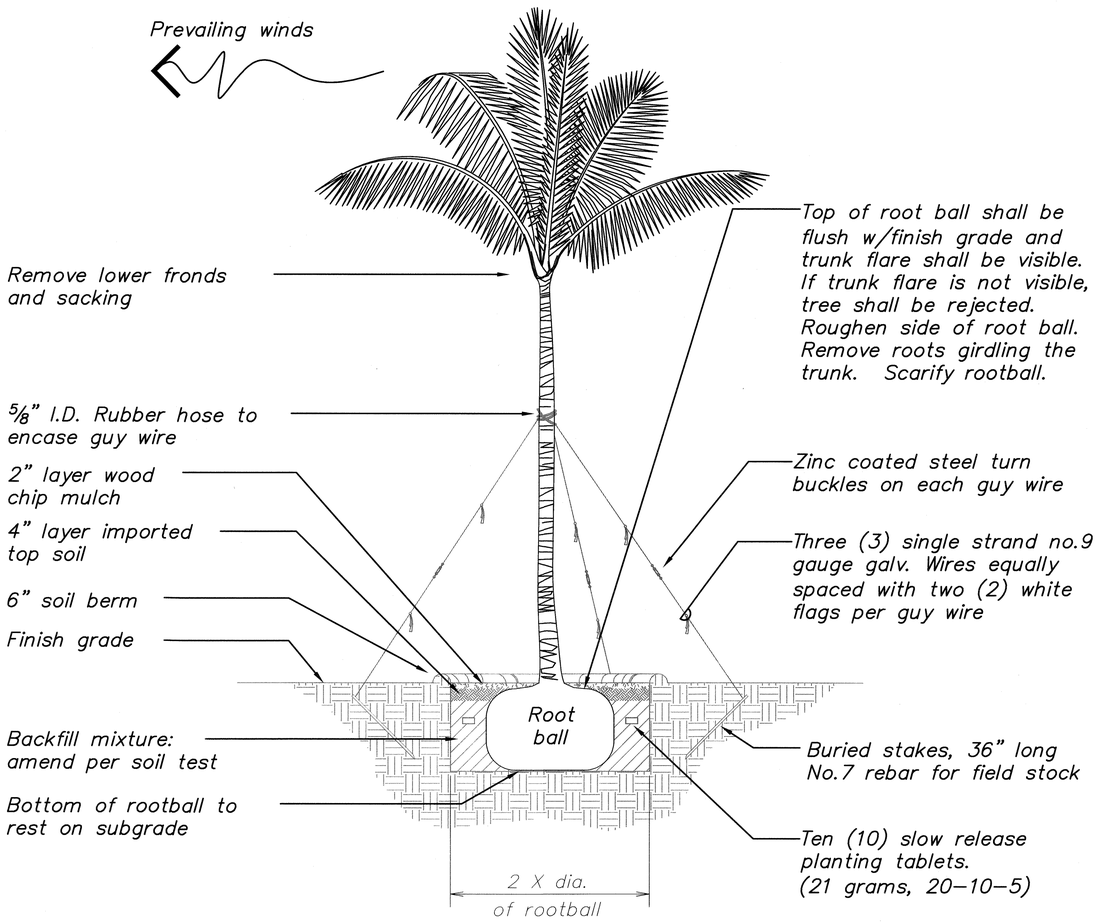
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. L2-08 OF SHEETS

AS-BUILT 335

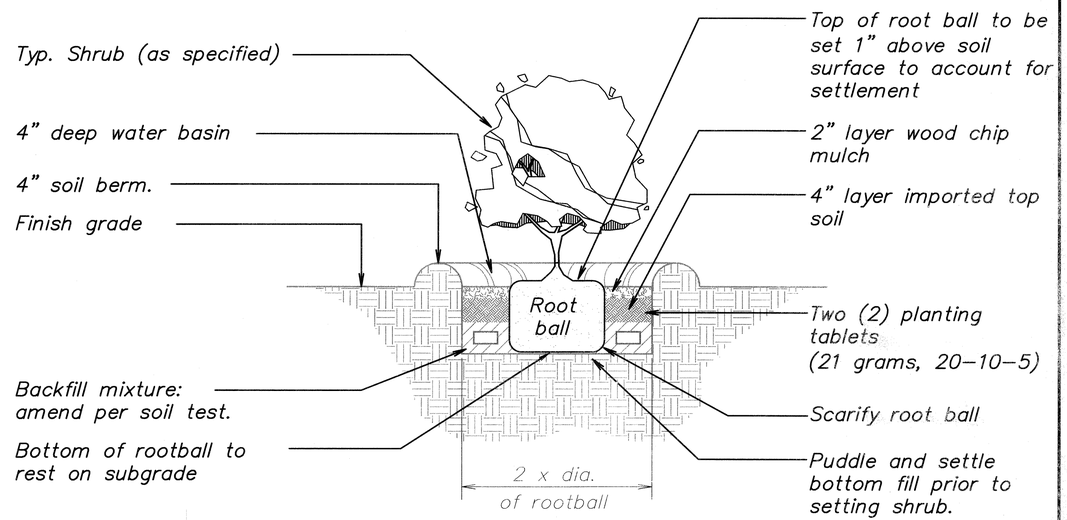
FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	336	371



Notes:

1. Trunk must be protected from rope sling burns and abrasions during moving.
2. Water heavily to insure soil settles around roots.
3. Tree shall be plumb, if there is leaning at the end of the plant establishment period, the tree shall be rejected.
4. Protect heart and tip from damage and breakage during transporting and transplanting.

③ Palm Planting Detail
SCALE: N.T.S.



④ Shrub Planting Detail
SCALE: N.T.S.

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	DESIGNED BY	
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	CHECKED BY	

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R. STAN DUNCAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 5815
HAWAII, U.S.A.

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R. Stan Duncan 12/31/08
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS

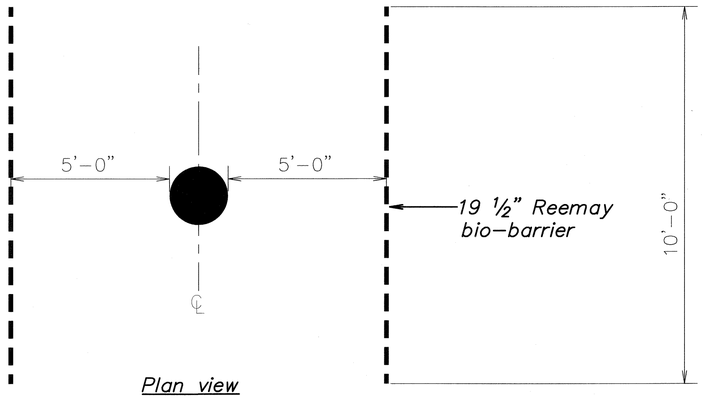
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

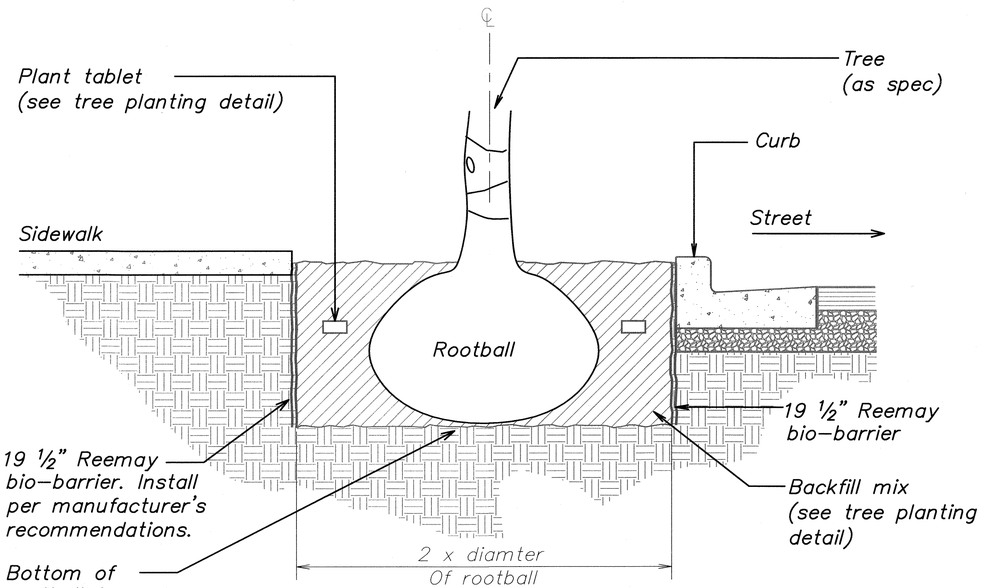
SHEET No. L2-9 OF 14 SHEETS

AS-BUILT 336

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	337	371



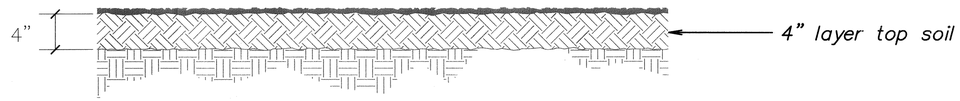
Plan view



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. Gravel backfill for bio-barrier shall be considered incidental.

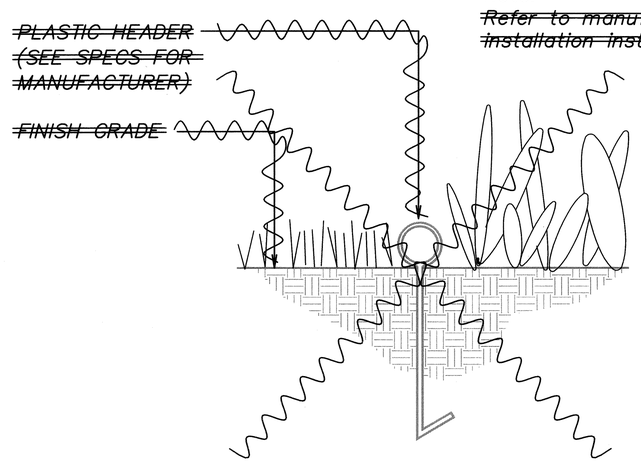
⑤ Root Barrier Detail
SCALE: N.T.S.

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/springs, 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.



⑥ Hydro Seed/Sprig Detail
SCALE: N.T.S.

~~Note:~~
~~Refer to manufacturer's specifications~~ for ~~installation instructions.~~



⑦ ~~Plastic Header Detail~~
~~SCALE: N.T.S.~~

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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PLANTING DETAILS

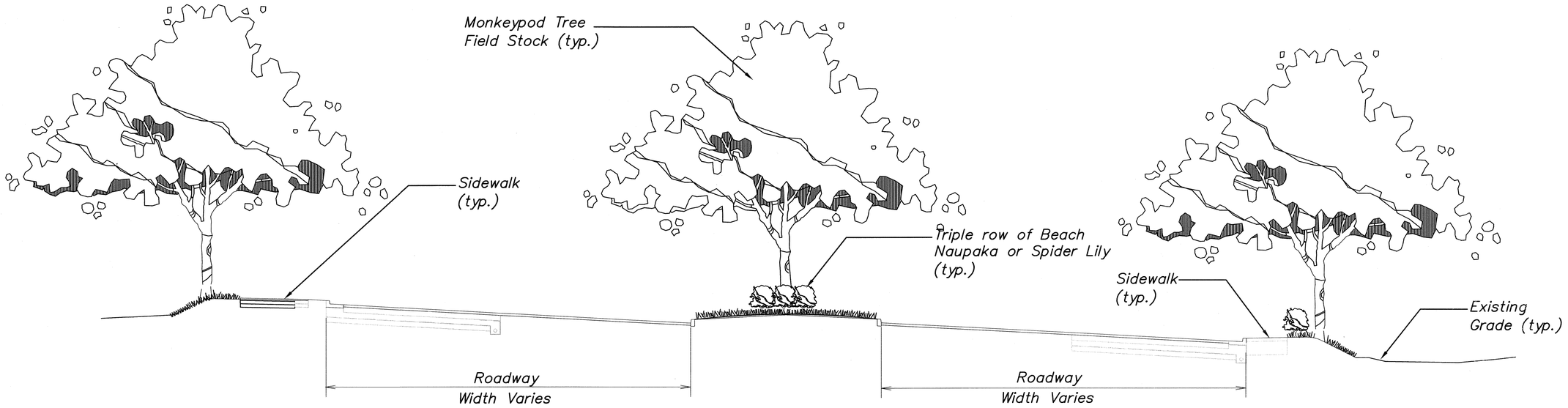
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

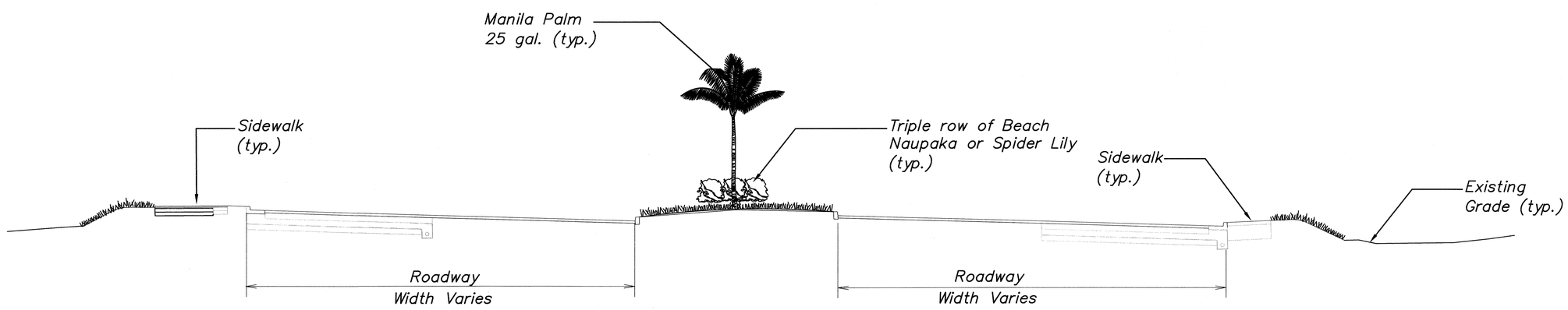
SHEET No. L2-10 OF 14 SHEETS

AS-BUILT 337

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	338	371



1 Typical Roadway Section Through 20'–0" Wide Median
SCALE: N.T.S.



2 Typical Roadway Section Through 7'–0" to 19'–0" Wide Median
SCALE: N.T.S.

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STATE OF HAWAII
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TYPICAL PLANTING SECTIONS

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. L2-11 OF 14 SHEETS

AS-BUILT 338

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	339	371

Plant notes:

1. Landscape Contractor shall field verify all plant quantities and dimensions prior to installation. Quantities shown on plant list are for reference only, verify actual quantities as shown on plan. If there is a discrepancy, the planting plan shall take precedence.

2. Landscape Contractor shall be responsible for locating and protecting existing utilities.

3. 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 ½", dia., site is neat, orderly, and the engineer accepts site for planting.

4. Notify Engineer of any discrepancies in plant locations or insufficient plant quantities due to difference in plans and actual field conditions.

5. 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.

6. 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.

7. Plants 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.

8. Contractor shall be solely responsible for the complete removal and damages resulting from 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.

9. 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.

10. 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 scraping 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.

11. If trees other than those specifically designated for removal are damaged beyond survival conditions as determined by Engineer, the Contractor shall remove such trees and replace the tree with a same species and size and maintain for the duration of construction or 12 months whichever is greater at no cost to the state.

12. Provide even four–inch layer of planting soil over all planting areas. Representative samples of soil from project site shall be submitted to the University of Hawaii Agricultural Extention 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. Fter 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

13. 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 at the end of plant establishment period.

14. Any planting that obstructs sight distance, signs or traffic lights shall be relocated or removed as determined by the Engineer.

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PLANTING NOTES

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. L2-12 OF 14 SHEETS

AS-BUILT 339

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	340	371

Tree Protection Zone:

1. *All trees shall 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 increase in contract price or contract time.*

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 20 feet from the external surface of the tree's trunk. For all palms, the minimum protection zone should be at least 10 feet.*

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.*

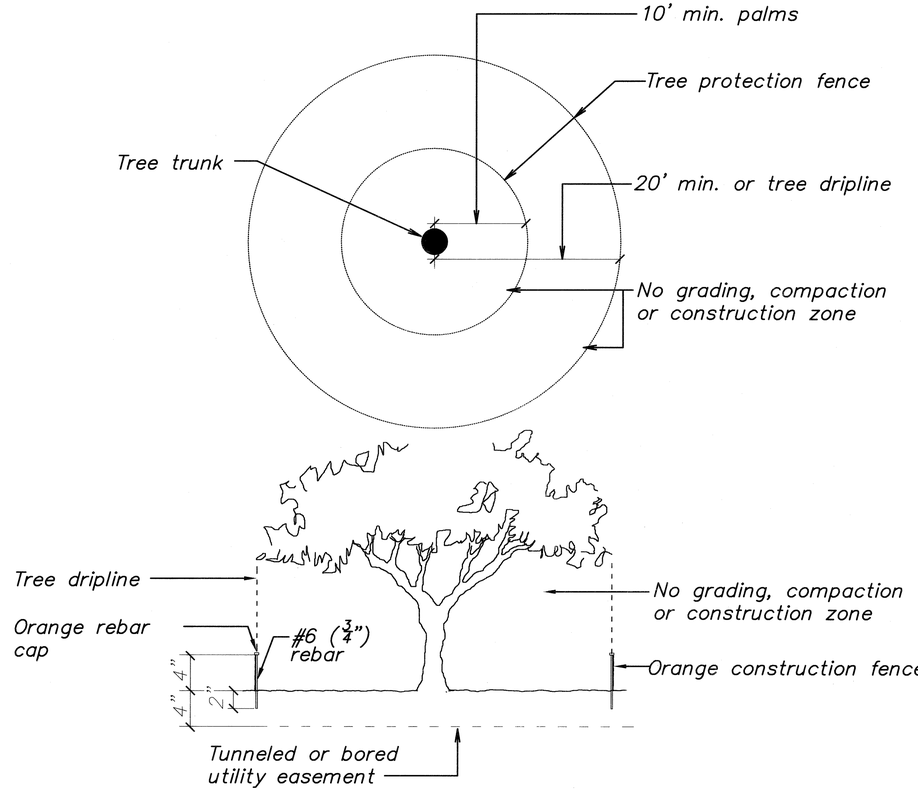
4. *All trees shall remain unless shown for removal. All protected trees shall be listed on the demolition, landscape, grading and utilities plans. If there is a discrepancy with all plans, Contractor shall contact Engineer immediately.*

5. *Protective fences shall be erected around trees identified on plan 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 20 feet from tree trunk with steel T–post at a minimum of 5 feet on center. Fence shall be installed and accepted by 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 permited 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 equpment;*
- *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 pedistrian 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;*
- *no cleaning of equipment or material under the canopy of any tree or group of trees to be preserved*

7. *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.*



1 *Tree/Palm Protection Zone (TPZ) Detail*
SCALE: *N.T.S.*

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PLANTING NOTES

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. L2-13 OF 14 SHEETS

AS-BUILT 340

FED. ROAD DIST. NO	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	341	371

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Roadway	**Text for as-built posting**

STREET TREE PLANT LIST

SYMBOL	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	HEIGHT	REMARK
TREES						
	108 ~~125~~ ea	Monkeypod Tree	Samanea saman	F.S.	12'–15' Min.	5"–8" cal. min.
	104 ea	Geiger Tree	Cordia sebestena	25 gal.	8'–10' Min.	2" cal. min.
PALMS						
	172 ea	Manila Palm	Veitchia merrillii	25 gal.	8'–10' trunk ht.	
SHRUBS						
	9,017 ea	Beach Naupaka	Scaevola sericea	**1** ~~5~~ gal.	3'–4' Min., bushy	Triple row, 24" O.C.,
	6,245 ea	Spider Lily	Crinum asiaticum	**1** ~~5~~ gal.	3'–4' Min., bushy	Triple row, 24" O.C.,
GRASS						
	697,450 sf	Seashore Paspalum	Paspalum vaginatum	Hydroseed		Medians Only
	sf	Common Bermuda	Cynodon dactylon	Hydroseed		Shoulder areas only
MISC. ITEMS						
	17,335 lf	Root Barrier				
	~~20,725 lf~~	~~Plastic Header~~				

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PLANTING LEGEND

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: NTS Date: Jan. 25, 2008

SHEET No. L2-14 OF 14 SHEETS

AS-BUILT 341