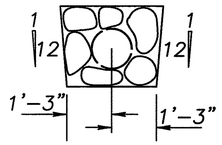
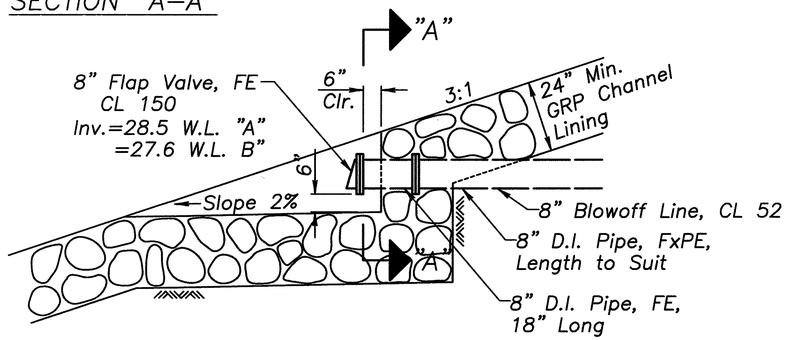
FED. ROAD DIST. NO.	STATE	FEDERAL – AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH–A311(7)	2004	45	138

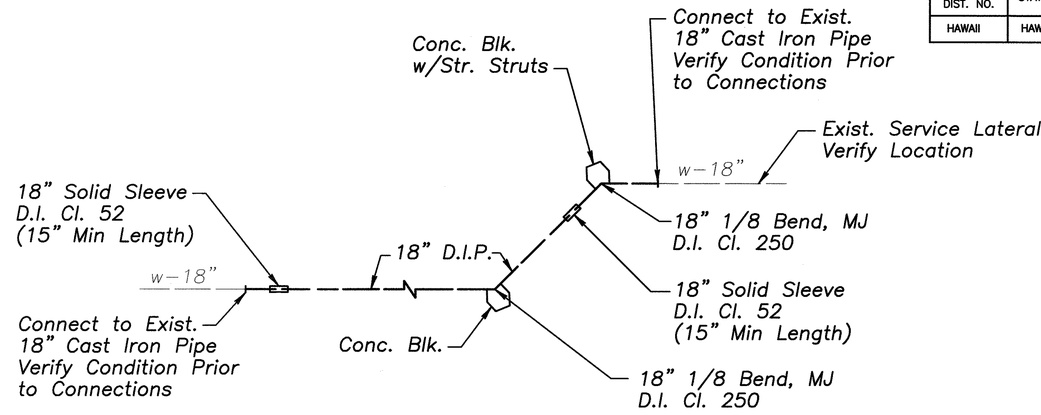


SECTION "A–A"



DETAIL AT FLAP VALVE

Scale: 1/2" = 1'–0"

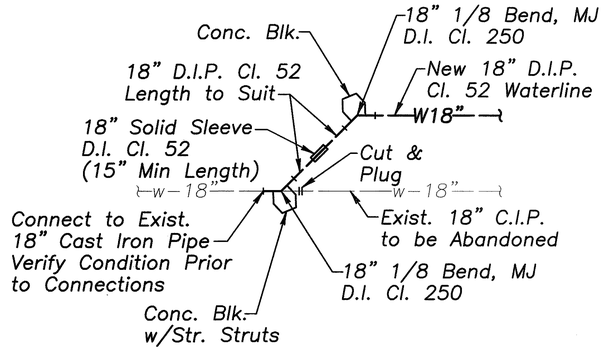


SCHEMATIC CONN. DETAIL

℄ STA. 321+44

Scale: Not to Scale

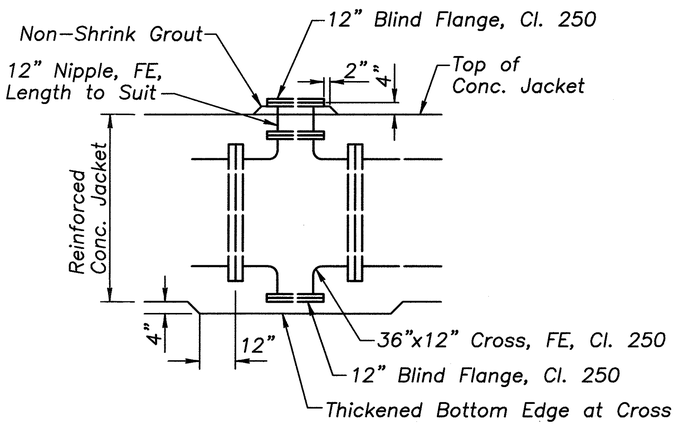
NOTE: All flanges, fittings and valves shall be Class 250.
See Note Sht. 38 for 24" D.I.P.



SCHEMATIC CONN. DETAIL

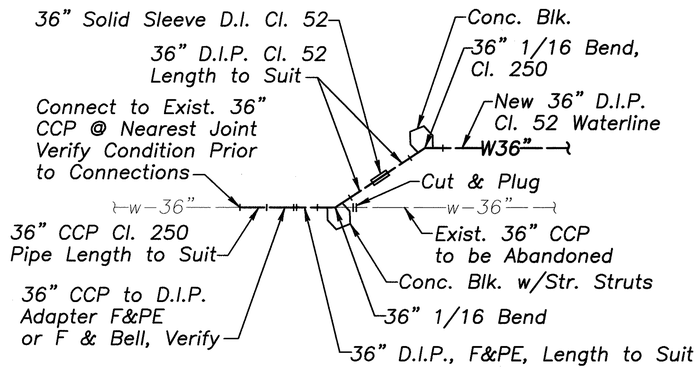
FOR 18" D.I.P.

Scale: Not to Scale



ACCESS HATCH DETAIL

Scale: 1/2" = 1'–0"



SCHEMATIC CONN. DETAIL

FOR 36" D.I.P.

Scale: Not to Scale

NOTE: All flanges, fittings and valves shall be Class 250.

DANIEL S. MIYASATO
LICENSED PROFESSIONAL ENGINEER
No. 3443–C
HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

04/30/04

EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLAENOUS WATER DETAILS

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

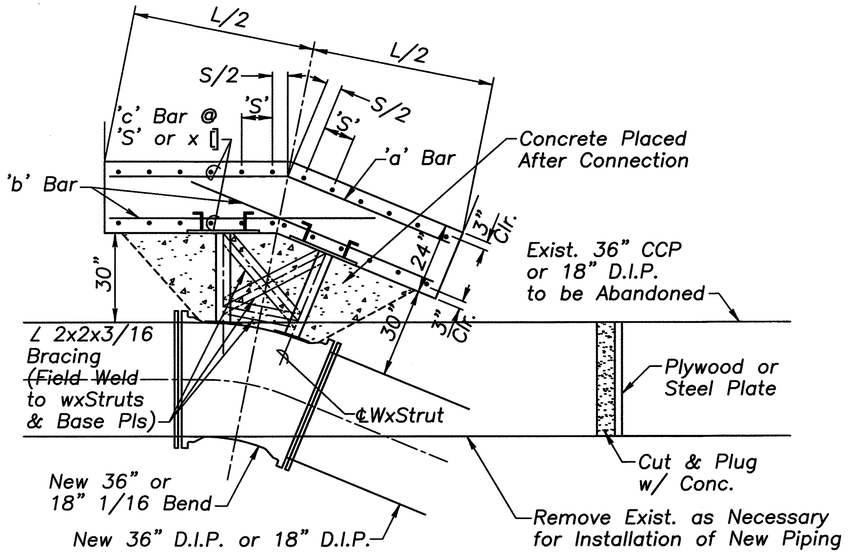
Scale: AS NOTED Date: August 2003

SHEET No. 1 OF 3 SHEETS

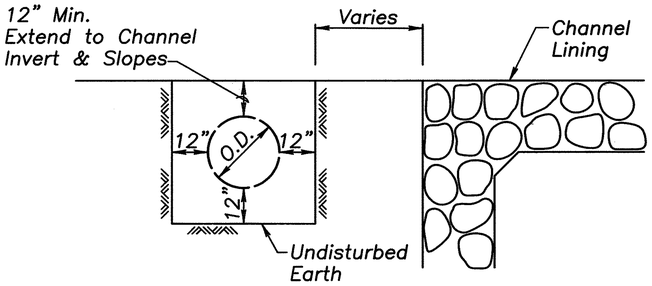
ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DATE
NOTE BOOK
DESIGNED BY
QUANTITIES BY
CHECKED BY
No.

PROJ. NO.: M9901.00
9/30/03
R:\moku_ph1b\utility\DETAIL.dwg

FED. ROAD DIST. NO.	STATE	FEDERAL – AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH–A311(7)	2004	46	138



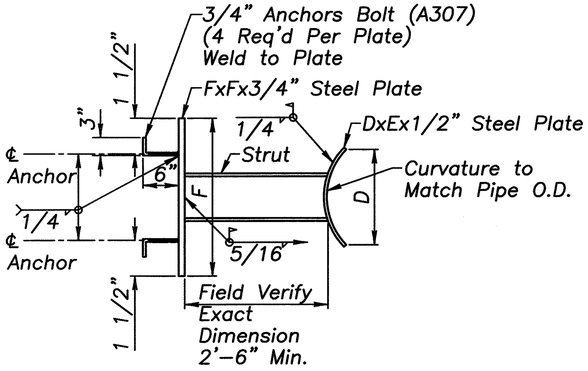
PLAN



For Concrete Jacket Reinforcing and Additional Requirements See plate B1 of the County DWS Water System Standards.

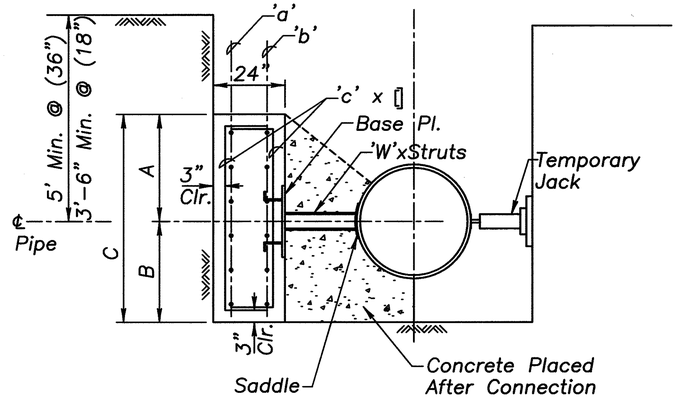
REINF. CONC. JACKET DETAIL

Scale: 1/2" = 1'–0"



STRUCTURAL STRUTS DETAIL

Not To Scale



SECTION

PIPE SIZE	L/2	A	B	C	STEEL PLATES D	STEEL PLATES E	STEEL PLATES F	STRUT
36"	6'–0"	3'–0"	3'–0"	6'–0"	10"	8"	12"	W8x24
18"	2'–6"	2'–0"	2'–0"	4'–0"	10"	8"	12"	W6x12

a Bars	b Bars	c Bars
6 #6	6 #5	#5@12" O.C.
4 #5	4 #5	#5@12" O.C.

THRUST BLOCK W/ STRUCTURAL STRUTS DETAIL (HORIZONTAL BENDS)

Not To Scale

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

PROJ. NO.: M9901.00 8/9/02
R:\moku_plnb\utility\DETAIL.dwg

DANIEL S. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 3443–C HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

04/30/04
EXPIRATION DATE OF THE LICENSE

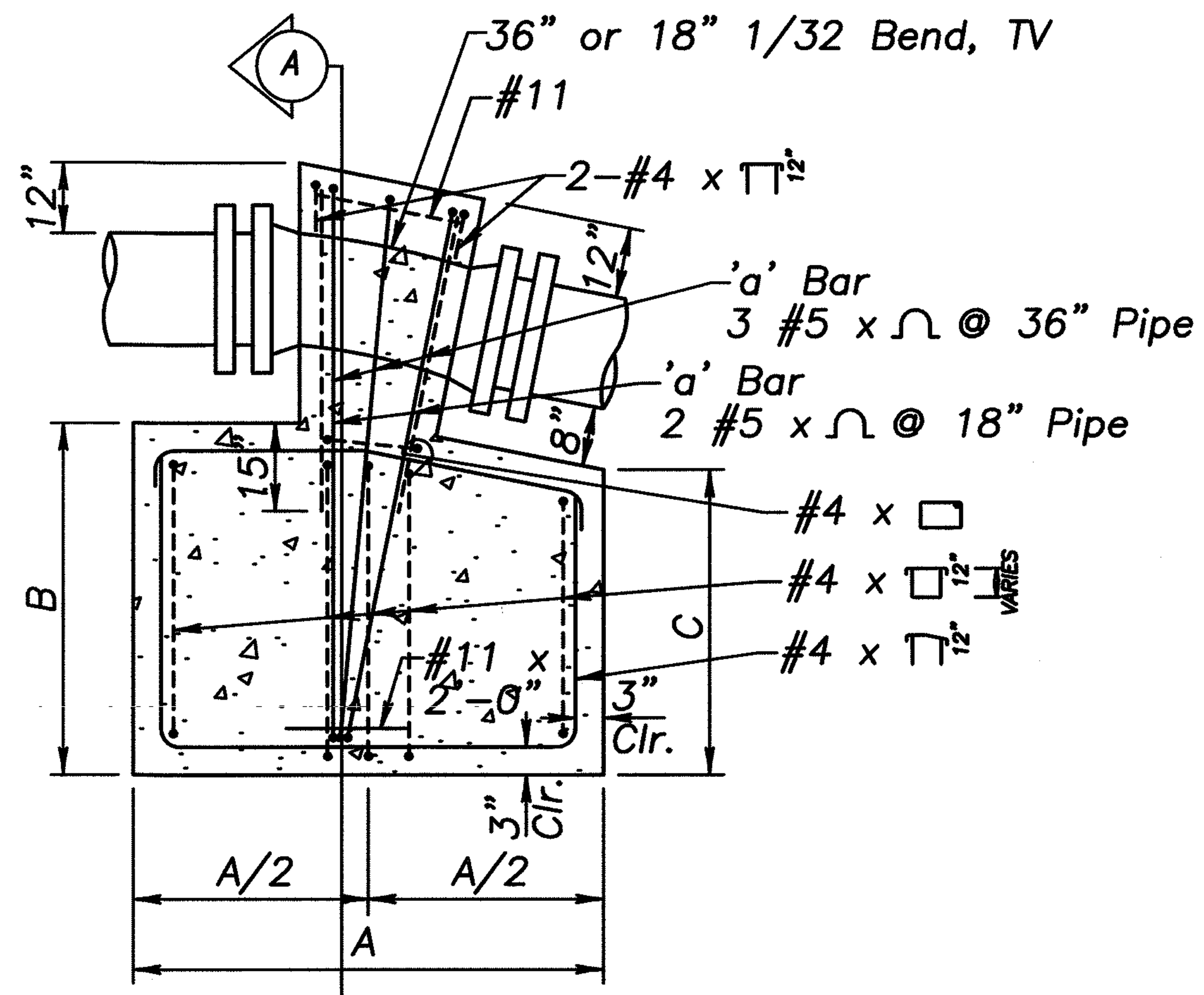
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLAENOUS WATER DETAILS

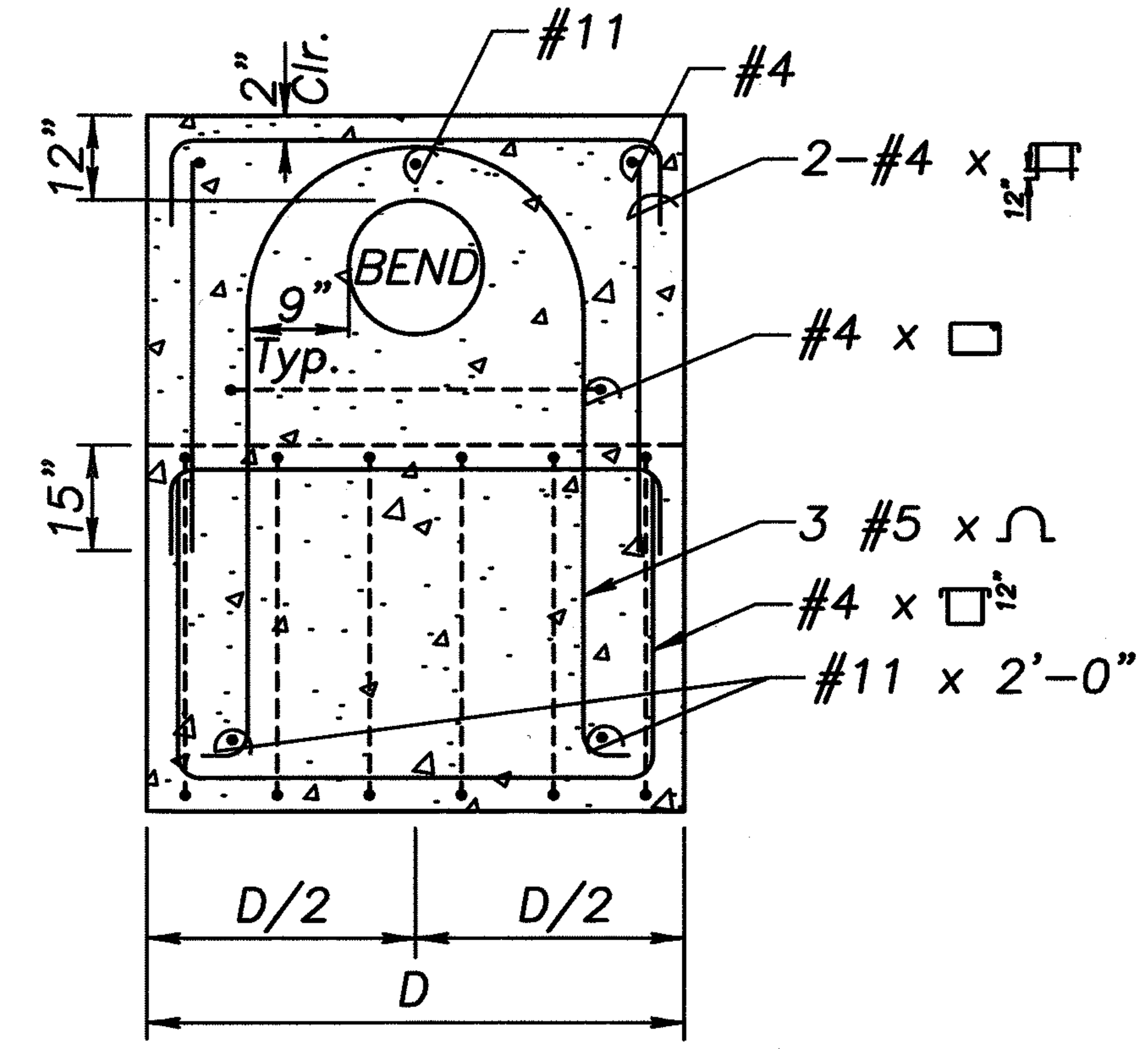
MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal – Aid Project No. NH–A311(7)

Scale: AS NOTED Date: August 2003

SHEET No. 2 OF 3 SHEETS



PLAN



SECTION (A)

FITTING SIZE	A	B	C	D
36"	10'-0"	7'-6"	6'-4"	8'-0"
18"	8'-0"	6'-10"	6'-0"	5'-6"

TYPICAL THRUST BLOCK VERTICAL BENDS

Not To Scale

DEPARTMENT OF WATER SUPPLY ADDITIONAL WATER SYSTEM NOTES

1. Water service connections:
The contractor shall furnish all material, equipment, and labor for re-connection of consumer's pipe to new service lateral with copper piping at the contractor's expense. The size of copper pipe and fittings shall be determined by D.W.S. or as specified on plans. The use of plastic materials is prohibited.
    a. All water meter installations/relocations shall be coordinated with D.W.S. personnel. Only D.W.S. personnel is authorized to remove and relocate water meter.
    b. If consumer's pipe is copper or pvc, use bronze pack joint coupling. If consumer's pipe is any other material, use appropriate di-electric coupling.
    c. The contractor shall be responsible for maintaining water service to consumers at all times. If water service disruption is necessary, the contractor shall coordinate all disruptions of service with consumers.
2. The contractor shall furnish and install ductile iron nipples whether or not specified on the construction plans for complete installation of the waterline at the contractor's expense.
3. The contractor shall furnish temporary cleanouts when necessary to test, flush, and chlorinate the waterline at the contractor's expense.
4. The contractor shall remove and dispose of all portions of abandoned waterlines. Removal cost shall include trench excavation and backfill.
5. The contractor shall adjust to finished pavement grades, all existing valve boxes and manholes, including frame and covers for all utilities (i.e., water, sewer, drain, etc.) affected by pavement restoration at the contractor's expense, whether or not shown on the construction plans.
6. The contractor shall restore all road improvements, disturbed or damaged during construction in accordance with the "Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994," as amended, to the satisfaction of the Department of Public Works and Waste Management. Road improvements include, but are not limited to, pavement, pavement markers, striping, and speed humps.
7. Unless Otherwise Noted, Pipe, Fittings and Valves, Including Connecting Piping Shall Be:
Waterline "A" Class 225
Waterline "B" Class 250
8. Type "A" (Traffic) and Type "D" Manholes Shall Be Provided With Metal Covers. Top of Manhole Shall Be Minimum 6" Above Finish Grade.
9. Type "A" Manhole Shall Be Provided With Concrete Collars At Each Pipe Entry Into Manhole.

DEPARTMENT OF WATER SUPPLY NOTES FOR CHLORINATION OF WATER SYSTEM

1. Liquid chlorine or calcium hypo chlorite, conforming to AWWA standards shall be used for the chlorination of the project.
2. Prior to chlorination, the project shall be thoroughly flushed.
3. The interior surfaces of the project shall be exposed to the chlorinating solution for a minimum of 24 hours and the chlorine residual shall not be less than 10 ppm after such time.
4. Should calcium hypo chlorite be used, no solid and /or undissolved portion of the compound shall be introduced into any section of the project to be chlorinated.
5. At the end of the 24-hour disinfection period, representative samples shall be taken and analyzed to assure a chlorine residual of at least 10 ppm.
6. Should the results indicate adequate chlorination, the project shall be thoroughly flushed and filled with water from the existing system and again tested for chlorine residual. The flushing shall be considered adequate if the test results indicate that the water in the project has comparable chlorine residual as the water in the existing system.
7. Following the acceptable flushing of the project, two consecutive sets of acceptable samples, taken at least 24 hours apart, from representative points in the project shall be taken and subjected to micro biological tests. At least one set of samples shall be collected from every 1,200 feet of the new water main, plus one from the end of the line and at least on set from each branch. Positive results will not be acceptable and the process will be repeated.
8. Analysis for residual chlorine shall be made in accordance with "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 20th Edition.
9. Micro biological tests shall be made in accordance with "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 20th Edition.
10. All measurements for chlorine residual and micro biological tests shall be performed by a laboratory approved by the Director.
11. The Contractor shall be responsible for all costs associated with all of the foregoing. Cost shall be incidental to various items of the proposal.

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

PROJ. NO.: M9901.00
R:\moku_ph1b\utility\DETAIL.dwg
07/18/02

DANIEL S. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 3443-C HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
04/30/04
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLAENOUS WATER DETAILS

MOKULELE HIGHWAY WIDENING
Vicinity of Kolaloa Bridge
To
Vicinity of Kealia Pond Driveway
Federal - Aid Project No. NH-A311(7)
Scale: AS NOTED Date: August 2003
SHEET No. 3 OF 3 SHEETS