FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	108	230

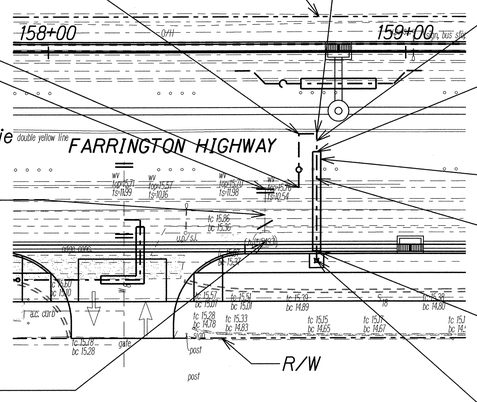
FH Lateral "A" Sta. 0+15.0
=FAR ℄ Sta. 158+70.1, o/s 22.61' Rt.
1-6" 1/4 Bend (H)
1-Conc. Block

FH Lateral "A" Sta. 0+00
FAR ℄ Sta. 158+70.1, o/s 37.61' Rt.
FH Connection
1-24" x 6" Tapping Tee (welded)
1-6" Tapping Gate Valve, 150#
1-Anchor Block
1-Valve Box
1-FH (Ht.=8'-0") (new)
2-FH Extension Pieces
56 LF, 6" PVC Pipe, CL. 150
4-Concrete Blocks
1-Concrete Block w/ Structural Struts
1-FH Marker
1-Hydrant Concrete curb guard (detail FH-II)
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2½" IPT
1-2½" Cleanout
1-Concrete Block

Cut ⊕ Plug at main
Remove and dispose
of valve, frame, and cover
1-6" Hubclamp w/ strongback tie
1-Concrete Block

FH Lateral to be removed

Remove and salvage exist. FH,
C.I. frame and cover.
Demolish ⊕ Dispose hydrant curb guard.
Cut and plug exist. FH lateral at main.
Remove exist. FH marker.
1-6" Plug
1-Hubclamp with Strong Back
1-Concrete Block



FH Lateral "A" Sta. 0+20.0
=FAR ℄ Sta. 158+75.1, o/s 22.61' Rt.
1-6" 1/4 Bend (H)
1-Conc. Block

6" Water Line

FH Lateral "A" Sta. 0+25.0
=FAR ℄ Sta. 158+75.1, o/s 27.61' Rt.
1-6" 1/16 Bend (T.V.)
1-Conc. Block
Begin RC Jacket

28 LF Reinforced
Concrete Jacket

FH Lateral "A" Sta. 0+32.5
=FAR ℄ Sta. 158+75.1, o/s 35.12' Rt.
1-6" 1/16 Bend (B.V.)
1-Conc. Block

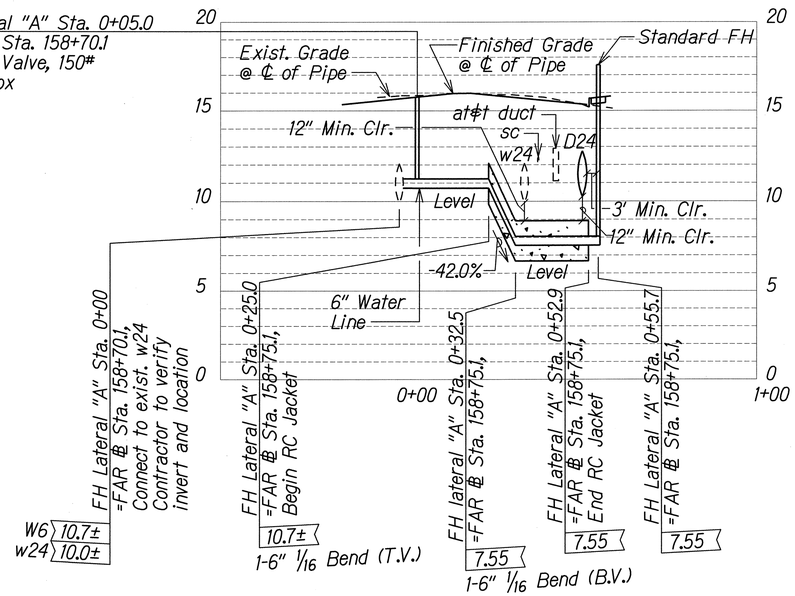
FH Lateral "A" Sta. 0+52.9
=FAR ℄ Sta. 158+75.1, o/s 55.53' Rt.
1-Conc. Block
End RC Jacket

FH Lateral "A" Sta. 0+55.7
=FAR ℄ Sta. 158+75.1, o/s 58.27' Rt.

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
FIRE HYDRANT - LATERAL "A"
Scale: 1"=20'

FH Lateral "A" Sta. 0+05.0
= FAR ℄ Sta. 158+70.1
1-6" Gate Valve, 150#
1-Valve Box



PROFILE - FIRE HYDRANT - LATERAL "A"
Scale: Horiz. 1"=20'
Vert. 1"=4'

FIRE HYDRANT NOTES:

1. See Board of Water Supply's Water System Standards Sht. FH4 for fire hydrant connection detail.
2. 3-ft minimum clear pathway shall be maintained between the fire hydrant and property line.

Approved:

7-2-13

Manager and Chief Engineer, BWS Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_FH_Latera_A.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - FH LATERAL "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted Date: April 2013

SHEET No. U-9 OF 22 SHEETS

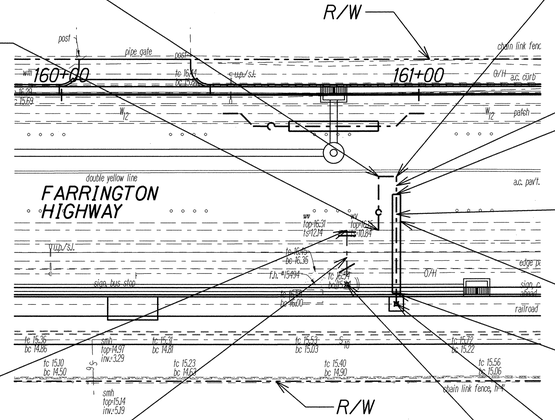
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	109	230

FH Lateral "B" Sta. 0+15.0
=FAR ℄ Sta. 160+88.8, o/s 22.75' Rt.
1-6" 1/4 Bend (H)
1-Conc. Block

FH Lateral "B" Sta. 0+00
FAR ℄ Sta. 160+88.8, o/s 37.75' Rt.
FH Connection
1-24" x 6" Tapping Tee (welded)
1-6" tapping Gate Valve, 150#
1-Anchor Block
1-Valve Box
1-FH (Ht.=8'-6") (new)
2-FH Extension Pieces
56 LF, 6" PVC Pipe, CL. 150
4-Concrete Blocks
1-Concrete Block w/ Structural Struts
1-FH Marker
1-Hydrant Concrete curb guard (detail FH-II)
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2 1/2" IPT
1-2 1/2" Cleanout
1-Concrete Block

Cut ⊄ Plug at main
Remove and dispose
of valve, frame, and cover
1-6" Hubclamp w/ strongback tie
1-Concrete Block

FH Lateral to be removed



FH Lateral "B" Sta. 0+20.0
=FAR ℄ Sta. 160+93.8, o/s 22.75' Rt.
1-6" 1/4 Bend (H)
1-Conc. Block

6" Water Line

FH Lateral "B" Sta. 0+25.0
=FAR ℄ Sta. 160+93.8, o/s 27.75' Rt.
1-6" 1/16 Bend (T.V.)
1-Conc. Block
Begin RC Jacket

FH Lateral "B" Sta. 0+32.5
=FAR ℄ Sta. 160+93.8 o/s 35.25' Rt.
1-6" 1/16 Bend (B.V.)
1-Conc. Block

28 LF Reinforced
Concrete Jacket

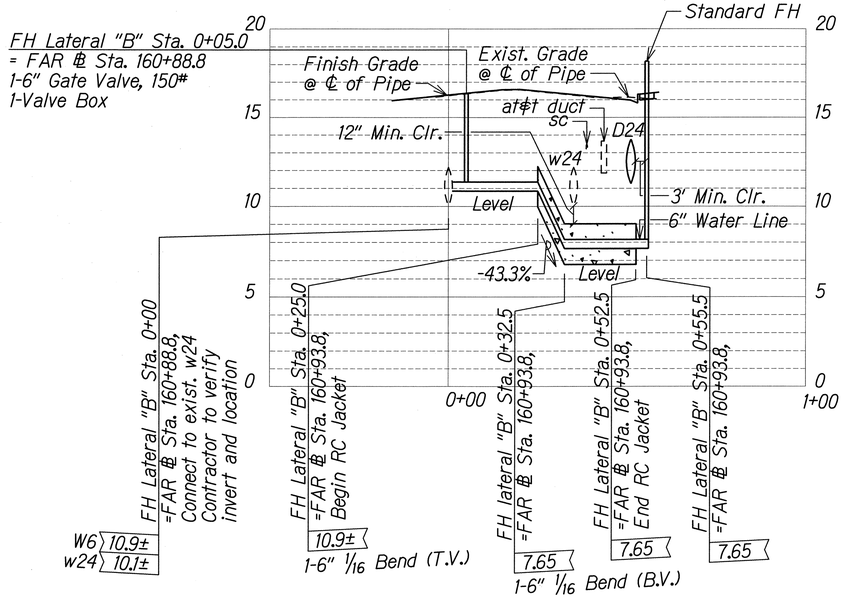
FH "B" Sta. 0+52.5
=FAR ℄ Sta. 160+93.8, o/s 55.25' Rt.
1-Conc. Block
End RC Jacket

FH "B" Sta. 0+55.5
=FAR ℄ Sta. 160+93.8, o/s 58.24' Rt.

Remove and salvage exist. FH,
C.I. frame and cover.
Demolish & Dispose hydrant curb guard.
Cut and plug exist. FH lateral at main.
Remove exist. FH marker.
1-6" Plug
1-Hubclamp with Strong Back
1-Concrete Block

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
FIRE HYDRANT - LATERAL "B"
Scale: 1"=20'



PROFILE - FIRE HYDRANT - LATERAL "B"
Scale: Horiz. 1"=20'
Vert. 1"=4'

FIRE HYDRANT NOTES:

1. See Board of Water Supply's Water System Standards Sht. FH4 for fire hydrant connection detail.
2. 3-ft minimum clear pathway shall be maintained between the fire hydrant and property line.

Approved:

1-2-13

for Manager and Chief Engineer, BWS Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/Util_FH_Latera_B.dgn

GERALD D. ANDRADE ★ LICENSED PROFESSIONAL ENGINEER ★ No. 10377-C ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - FH LATERAL "B"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted Date: April 2013

SHEET No. U-10 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	110	230

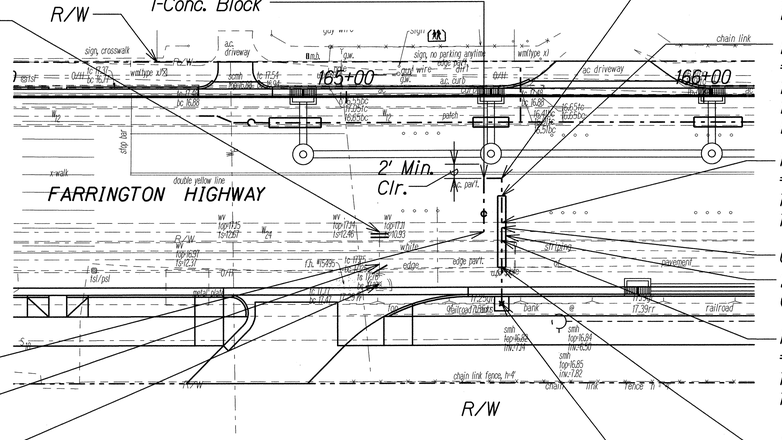
Cut & Plug at main
Remove and dispose
of valve, frame, and cover
1-6" Hubclamp w/ strongback tie
1-Concrete Block

FH Lateral "C" Sta. 0+00
FAR ℄ Sta. 165+38.5, o/s 38.02' Rt.
FH Connection
1-24" x 6" Tapping Tee (welded)
1-6" tapping Gate Valve, 150#
1-Anchor Block
1-Valve Box
1-FH (Ht.=9'-6") (new)
3-FH Extension Pieces
56 LF, 6" PVC Pipe, CL. 150
1-Concrete block w/ structural struts
4-Concrete Blocks
1-FH Marker
1-Hydrant Conc curb guard (details FH-II)
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2½" IPT
1-2½" Cleanout
1-Concrete Block

FH Lateral to be removed

Remove and salvage exist. FH,
C.I. frame and cover.
Demolish & Dispose hydrant curb guard.
Cut and plug exist. FH lateral at main.
Remove exist. FH marker.
1-6" Plug
1-Hubclamp with Strong Back
1-Concrete Block

FH Lateral "C" Sta. 0+15.0
=FAR ℄ Sta. 165+38.5, o/s 23.02' Rt.
1-6" ¼ Bend (H)
1-Conc. Block



UTILITY RELOCATION PLAN
FIRE HYDRANT - LATERAL "C"

Scale: 1"=20'

FH Lateral "C" Sta. 0+20.0
=FAR ℄ Sta. 165+43.5, o/s 23.02' Rt.
1-6" ¼ Bend (H)
1-Conc. Block

FH Lateral "C" Sta. 0+25.0
=FAR ℄ Sta. 165+43.5, o/s 28.02' Rt.
1-6" 1/16 Bend (T.V.)
1-Conc. Block
Begin RC Jacket

FH Lateral "C" Sta. 0+32.5
=FAR ℄ Sta. 165+43.5, o/s 35.52' Rt.
1-6" 1/16 Bend (B.V.)
1-Conc. Block

6" Water Line
20 LF Reinforced
Concrete Jacket

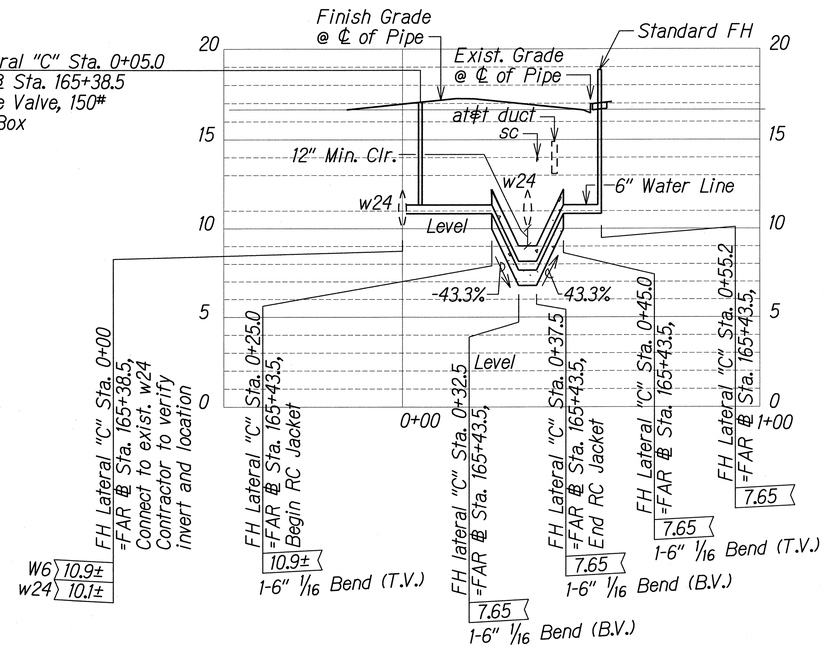
FH Lateral "C" Sta. 0+37.5
=FAR ℄ Sta. 165+43.5, o/s 40.52' Rt.
1-6" 1/16 Bend (B.V.)
1-Conc. Block

FH Lateral "C" Sta. 0+45.0
=FAR ℄ Sta. 165+43.5, o/s 48.02' Rt.
1-6" 1/16 Bend (T.V.)
1-Conc. Block
End RC Jacket

FH Lateral "C" Sta. 0+55.2
=FAR ℄ Sta. 165+43.5, o/s 58.18' Rt.

TRUE NORTH
SCALE : 1" = 20'

FH Lateral "C" Sta. 0+05.0
= FAR ℄ Sta. 165+38.5
1-6" Gate Valve, 150#
1-Valve Box



PROFILE - FIRE HYDRANT - LATERAL "C"

Scale: Horiz. 1"=20'
Vert. 1"=4'

FIRE HYDRANT NOTES:

1. See Board of Water Supply's Water System Standards Sht. FH4 for fire hydrant connection detail.
2. 3-ft minimum clear pathway shall be maintained between the fire hydrant and property line.

Approved:

1-2-13

W Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_FH_Lateral_C.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - FH LATERAL "C"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-11 OF 21 SHEETS

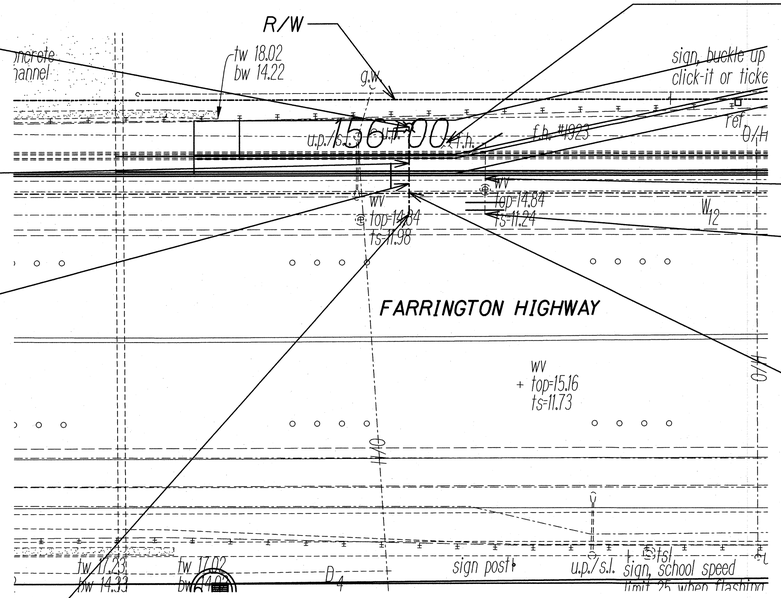
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	C.O. 110S-1	230

FH Lateral "D" Sta. 0+11.4
=FAR ℄ Sta. 156+02.4, o/s 6.36' Lt.

FH Lateral "D" Sta. 0+06.7
=FAR ℄ Sta. 156+02.4, o/s 1.61' Lt.
1-6" 1/16 Bend (T.V.)
1-Conc. Block

FH Lateral "D" Sta. 0+04.0
=FAR ℄ Sta. 156+02.4, o/s 1.07' Rt.
1-6" 1/16 Bend (B.V.)
1-Conc. Block

FH Lateral "D" Sta. 0+00
FAR ℄ Sta. 156+02.4, o/s 5.07' Rt.
FH Connection
1-12" x 6" Tapping Sleeve
1-6" Tapping Valve, 150#
1-Anchor Block
1-Valve Box
1-FH (Ht.=4'-0") (new)
1-FH Extension Piece
12 LF, 6" PVC Pipe, CL. 150
2-Concrete Blocks
1-Concrete Block w/ Structural Struts
1-FH Marker
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2½" IPT
1-2½" Cleanout
1-Concrete Block



Remove and salvage exist. FH,
C.I. frame and cover.
Cut and plug exist. FH lateral at main.
Remove exist. FH marker.
1-6" Plug
1-Hubclamp with Strong Back
1-Concrete Block

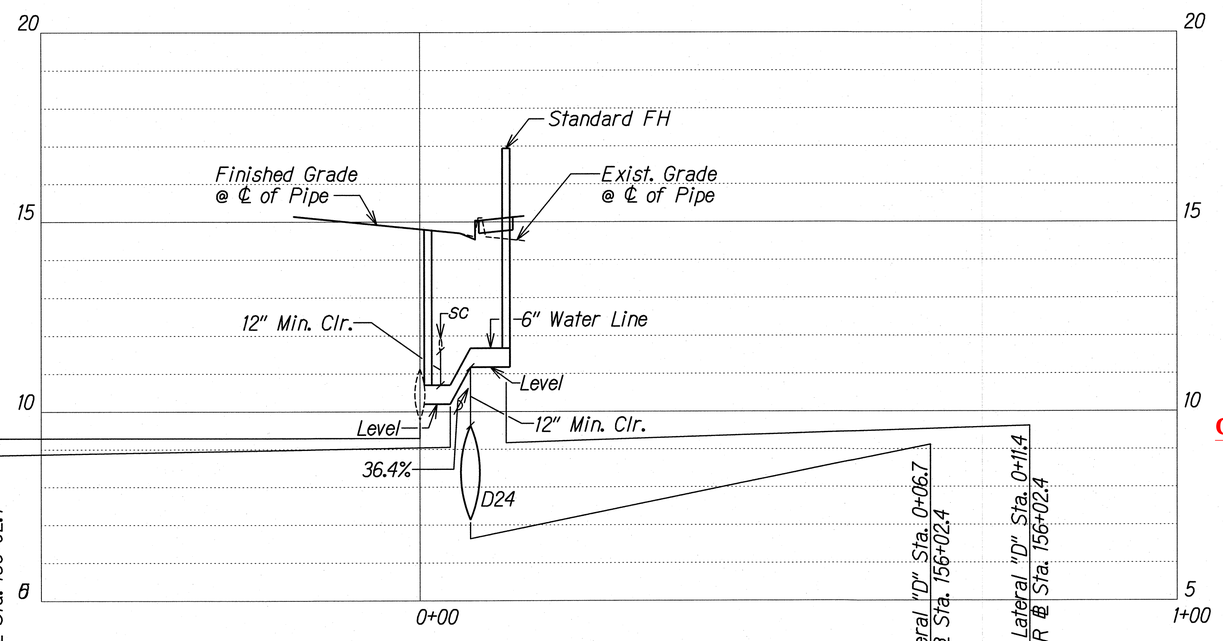
FH Lateral to be removed

Cut ℄ Plug at main
Remove and dispose
of valve, frame, and cover
1-6" Hubclamp w/ strongback tie
1-Concrete Block

6" Water Line

TRUE NORTH
SCALE : 1" = 10'

UTILITY RELOCATION PLAN
FIRE HYDRANT - LATERAL "D"
Scale: 1"=10'



PROFILE - FIRE HYDRANT - LATERAL "D"
Scale: Horiz. 1"=10'
Vert. 1"=2'

FIRE HYDRANT NOTES:

1. See Board of Water Supply's Water System Standards Sht. FH4 for fire hydrant connection detail.
2. 3-ft minimum clear pathway shall be maintained between the fire hydrant and curb.

Approved:

3-12-2018

& Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

CONTRACT CHANGE ORDER NO. 12 1st SUPPLEMENT

DATE	REVISION
3/9/18	⚠ Added Sheet - FH Relocation

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_FH_Latera_A.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

04/30/18
SIGNATURE — EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - FH LATERAL "D"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

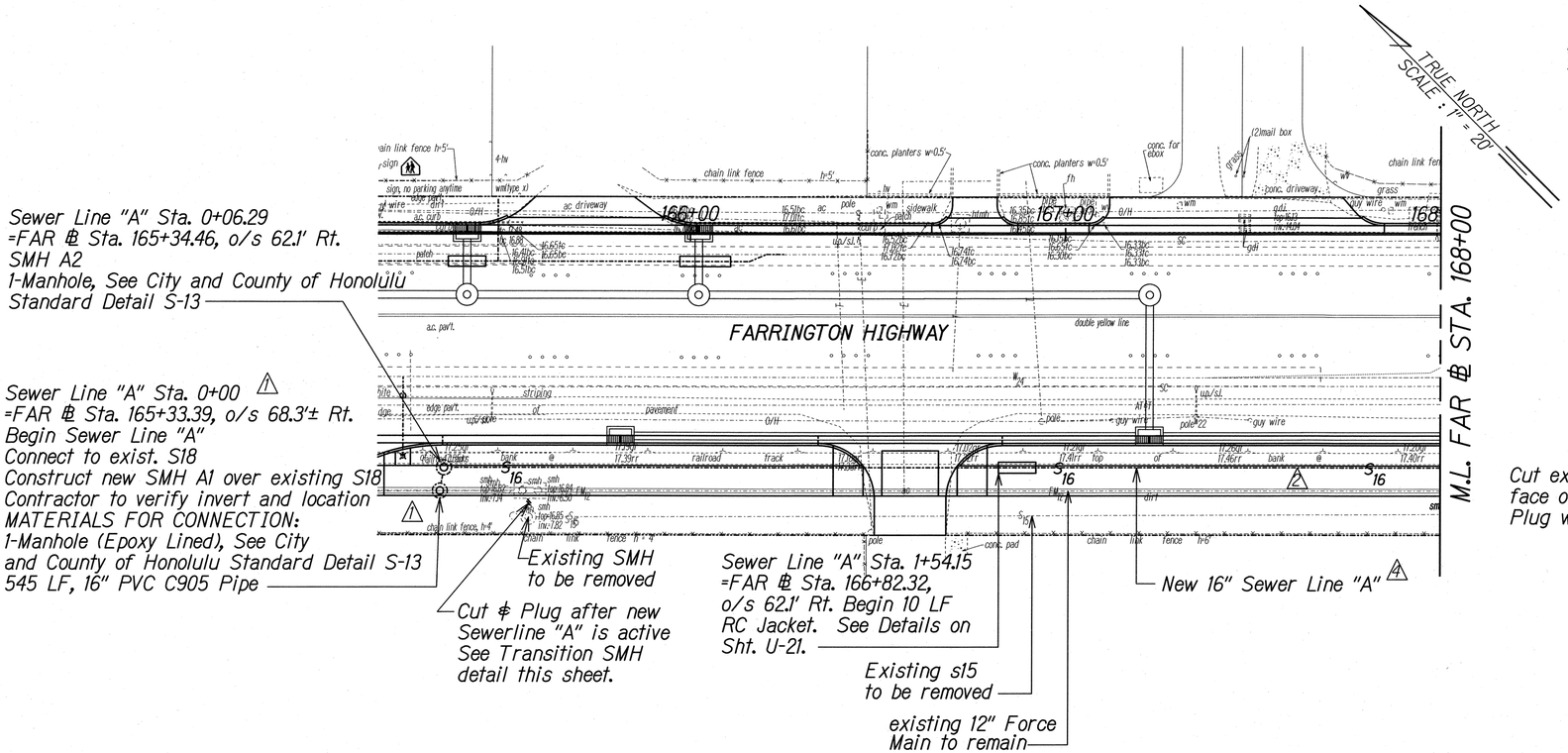
Scale: As Noted — Date: April 2013

SHEET No. U-11A OF 21 SHEETS

"AS-BUILT"

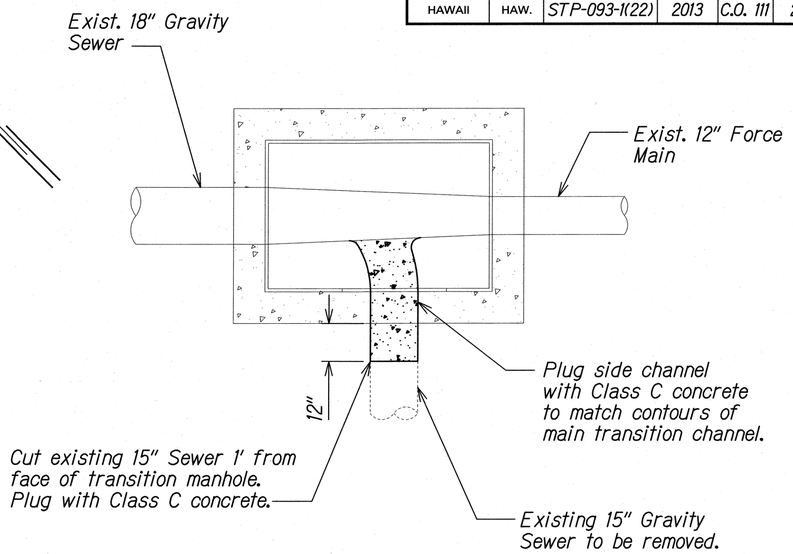
C.O. 110S-1

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	C.O. 111	230



UTILITY RELOCATION PLAN SEWER LINE "A"

Scale: 1"=20'



PLAN - Transition Sewer Manhole

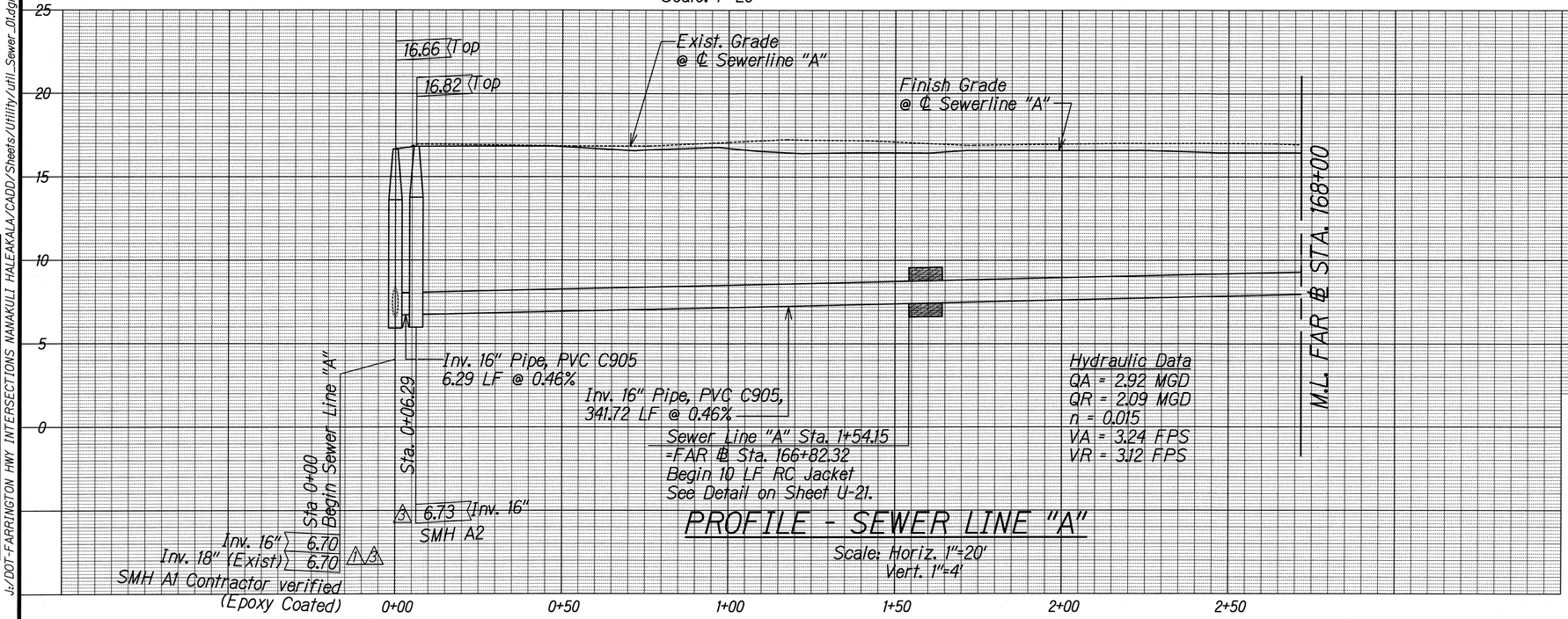
Not to Scale

Approved:

Jesse Ching 2/5/16

Chief, Wastewater Branch, DPP Date

CONTRACT CHANGE ORDER NO. 22



PROFILE - SEWER LINE "A"

Scale: Horiz. 1"=20'
Vert. 1"=4'

DATE	REVISION
12/30/15	4 Revised Sewerline "A"
10/6/15	3 Revised Sewerline "A" Profile
7/31/15	2 Re-aligned Sewerline "A"
4/16/15	1 Revised Sewerline "A"

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/Util_Sewer_01.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/16 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - SEWER LINE "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted Date: April 2013

SHEET No. U-12 OF 21 SHEETS

C.O. 111

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	C.O. 112	230

4 Sewer Line "A" Sta. 3+09.57
=FAR ℄ Sta. 168+37.74, o/s 62.10' Rt.
Begin 10 LF RC Jacket. See Detail on Sht U-21.

4 Sewer Line "A" Sta. 3+83.36
=FAR ℄ Sta. 169+01.17, o/s 37.11' Rt.
SMH A4 1-Manhole,
See City & County of Honolulu Standard Detail S-13

New 16" Sewer Line "A"

2 10 LF Reinforced Concrete Jacket. See Detail on Sheet U-21

2 Sewer "A" Sta. 5+44.18
=FAR ℄ Sta. 170+61.99, o/s 37.11' Rt.
End Sewer Line "A"
Connect to exist. S15
Construct new SMH A5 over existing S15
Contractor to verify invert and location
MATERIALS FOR CONNECTION:
1-Manhole, See City and County of Honolulu Standard Detail S-13.
1 545-LF, 16" PVC C905 Pipe

TRUE NORTH
SCALE : 1" = 20'

M.L. FAR ℄ STA. 168+00

FARRINGTON HIGHWAY

Cut and Plug exist. sewerline

Existing smh and sewerlines to be removed after new Sewerline "A" is active

Public Sewers
Private Sewers

Existing smh to be removed

existing 12" force main to remain

New Sewer Lateral "B" See Sht U13/C.0.112S-3 for Plan and Profile. 3

Cut and Plug Exist. Sewerline

4 Sewer Line "A" Sta. 3+48.01
=FAR ℄ Sta. 168+76.18, o/s 62.10' Rt.
SMH A3
1-Manhole, See City and County of Honolulu Standard Detail S-13

Existing s15 to be removed

Sewer Line "A" Sta. 3+54.78
=FAR ℄ Sta. 168+80.96, o/s 57.32'Rt.
Begin 10 LF RC Jacket. See Detail on Sht U-21A. 4

3 Sewer Lateral "B" Sta. 1+95.57
Relocate exist sewer lateral from exist COTG to new manhole SMH B-1. Inv.=9.8±
See Sht U-13/C.0.112S-3 for plan and profile.

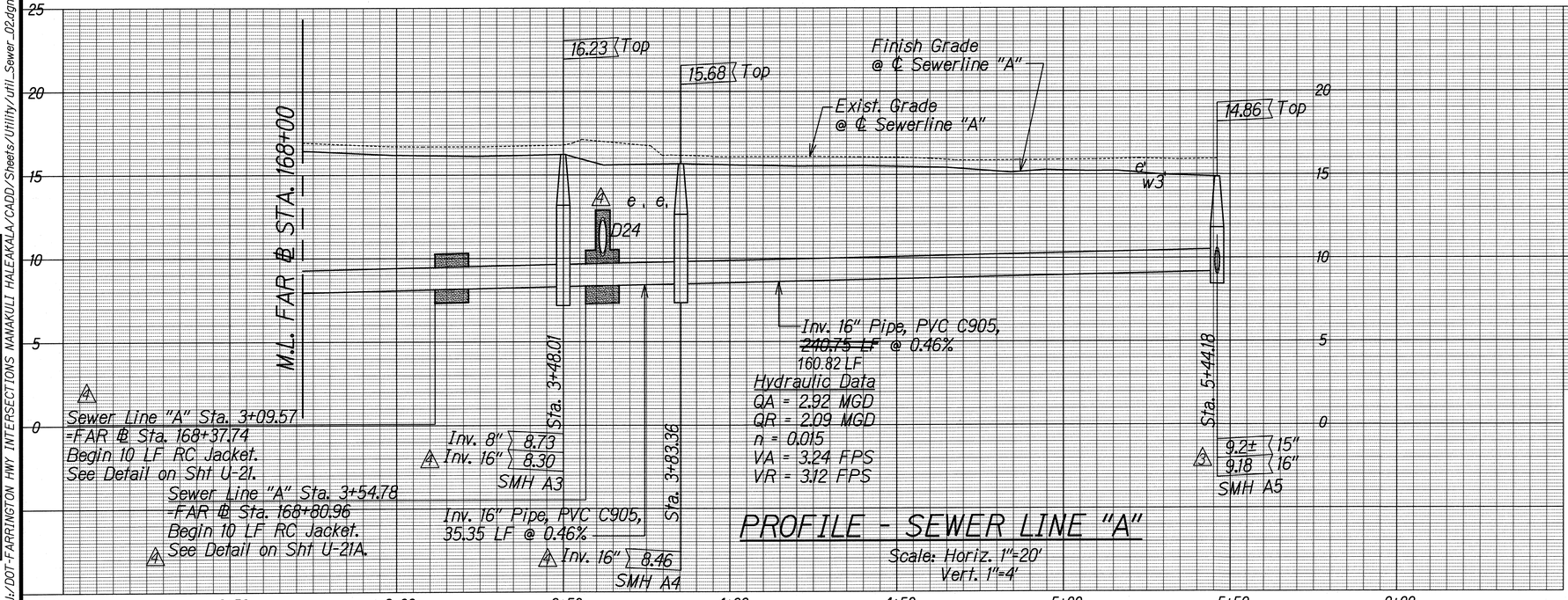
Approved:

Dean Chang 2/5/16
Chief, Wastewater Branch, DPP Date

UTILITY RELOCATION PLAN SEWER LINE "A"

Scale: 1"=20'

CONTRACT CHANGE ORDER NO. 22



PROFILE - SEWER LINE "A"

Scale: Horiz. 1"=20'
Vert. 1"=4'

DATE	REVISION
12/30/15	4 Re-aligned Sewerline "A"
10/6/15	3 Re-aligned Sewer Lateral "B"
7/31/15	2 Re-aligned Sewerline "A"
4/16/15	1 Revised Sewerline "A"

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Sewer_02.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Gerald D. Andrade 04/30/16
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - SEWER LINE "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: 1"=20' Date: April 2013

SHEET No. U-13 OF 21 SHEETS

C.O. 112

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	112	230

SPECIAL PROVISIONS FOR PVC PIPING SEWER PIPE (FOR PIPES 6" TO 12" IN DIAMETER ONLY)

1. Polyvinyl chloride (PVC) plastic sewer pipe and appurtenances used on this project shall conform to the requirements of Section 21 of the Standard Specifications for Public Works Construction dated September 1986, except as modified herein.

   A. General. PVC gravity sewer pipe shall conform to the requirements of C-900/C-905. (DR 18 minimum wall thickness).

   B. Acceptance. The basis for acceptance shall be the inspection of pipe, fittings and couplings, the tests specified herein and in Section 21, and compliance with the specifications. At the time of manufacture, each lot of pipe and fittings shall be inspected for defects and tested for impact, stiffness and flattening in accordance with ASTM D3034. The Engineer may require the certification by the manufacturer that the test results comply with specification requirements. When the pipe is delivered to the job site, the Engineer may require the Contractor to provide additional testing to insure the quality of the pipe at no expense to the City. Pipe which is not installed within 120 days of the latest factory test shall not be used without prior approval of the Engineer.

   C. Selection of Test Pipe. When testing is required by the Engineer, one test pipe shall be selected at random by the Engineer from each 1200 linear feet or fraction thereof of each size of pipe delivered to the job site but no less than one test pipe per lot. A lot shall be defined as pipe having the same identification marking. The length of the specimen of each selected pipe shall be a minimum of 8 feet.

   D. Cell Classification. Pipe shall be made of PVC plastic having a cell classification of 12454-B, 13364-A, or 13364-B as defined in ASTM D1784. The fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C. PVC compounds of other cell classifications shall be pre-qualified by the manufacturer.

   E. Joints. Pipe joints shall be bell and spigot type with an elastomeric gasket. The gasketed joints shall be manufactured with a socket configuration which will preclude improper installation of the gasket and will insure the gasket remains in place during the joining operation. All pipes shall have a home mark on the spigot and to indicate proper penetration when the joint is made.

   F. Identification Marks. All pipe fitting and couplings shall be clearly marked at an interval not to exceed 5 feet as follows:
   (1) Nominal pipe diameter.
   (2) PVC cell classification
   (3) Company, plant, shift, ASTM, SDR, and date designations.
   (4) Service designation and legend.

   G. Dimensions and Tolerances:

Table - Pipe Dimension (inches)

Nominal Size	Average O.D.	Tolerance on Average	Minimum Wall Thickness	Approx. Wt./20' Length (lbs.)
6	6.90	±0.011	0.383	104
8	9.05	±0.012	0.503	178
10	11.10	±0.015	0.617	268
12	13.20	±0.018	0.733	382

   H. Chemical Resistance. The PVC compound for cell classifications not specifically identified in item D above shall be prequalified by the pipe manufacturer by meeting the chemical resistance tests which follow. Compound samples and molded test specimens shall be prepared in accordance with ASTM D543.

   Tensile and Izod impact exposure specimens shall be immersed in the solutions specified in Table 2 for a period of 112 days. Test specimens shall be conditioned to constant weight at 110°F (43.3°C) before and after submersion. The solutions shall be kept at a temperature of 77°F ±5°F (24°C ±3°C). At 28-day intervals, selected specimens shall be removed, washed, surface dried and tested.

SPECIAL PROVISIONS FOR PVC PIPING SEWER PIPE (CONT'D)

Table 2 -- Test Solutions

Chemical Solutions	Concentration (%)
Sulfuric Acid	20*
Sodium hydroxide	5
Ammonium hydroxide	5*
Nitric acid	1*
Ferric chloride	1
Soap	0.1
Detergent (Linear alkyl benzyl sulfonate or LAS	0.1
Bacteriological	BOD not less than 700 ppm.

* Volumetric percentages of concentrated reagents of C.P. grade

Weight change specimens shall be 2 inches in diameter and may be molded discs or discs cut from the pipe wall. Specimens shall be conditioned for seven days of 43° ±2°C, cooled in a desiccator for the three hours at 23° ±2°C, weighed, and then immersed in the solutions. At 4 week intervals, selected specimens shall be removed, washed, surface dried and weighed. These same specimens shall then be reconditioned for seven days at 43° ±2°C, cooled in a desiccator for the three hours at 23° ±2°C and again weighed.

Initial and past exposure specimens shall meet the following requirements when tested at 23° ±2°C:

Property	ASTM Test Method	Cell Class Minimum Values 12454	13343	13364
Tensile Strength (Yield), psi	D 638	7000	6000	6000
Impact Strength, ft-lbs/in.	D 256 Method A	0.65	1.5	1.5
Weight Change, %	D 543	1.5	1.5	1.5

If any specimen fails to meet the requirements at any time during the 112 days exposure period, the material shall be subject to rejection.

   I. Trench Excavation. Trenches for PVC sewer pipe shall be excavated and prepared in accordance with the requirements of Section 11 of the Standard Specifications for Public Works Construction except as modified herein.

   (1) Over excavation. The maximum allowable trench width shall be equal to the outside diameter of the PIPE plus 18-inches for pipe up to 12" (I.D.). If the trench excavation exceeds the computed maximum allowable trench width whether by excavation, cave-in, or by ground movement, the Contractor shall provide at his own expense additional bedding, another type of bedding, and/or a higher strength of pipe designated by the Engineer. Where shoring is required, the allowable width of the trench shall be increased only by the thickness of the sheathing.

   J. Pipe Bedding. Where unsuitable material is encountered at the sub grade and additional excavation is required, the void created by the additional excavation shall be filled and compacted with bedding material specified on the plans or special provisions. Where concrete is specified to bed the pipe, the top of the concrete shall be considered as the top of the bedding.

DATE	REVISION
5/18/15	⚠ New PVC Notes

GERALD D. ANDRADE LICENSED PROFESSIONAL ENGINEER No. 10377-C HAWAII, U.S.A.

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SIGNATURE 04/30/15 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION NOTES - SEWER LINE "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: 1"=20' Date: April 2013

SHEET No. U-13 OF 21 SHEETS

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Sewer_02.dgn

"AS-BUILT"

C.O.112 S-1

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	112	230

SPECIAL PROVISIONS FOR PVC PIPING SEWER PIPE (CONT'D)

Bedding material shall consist of one of the following:

(1) Beach sand.
(2) No. 8 or No. 67 aggregate conforming to the gradation requirements of ASTM C33.
(3) 3/8" filter aggregate.
(4) Native free-draining granular material having a minimum sand equivalent of 30 or having a coefficient of permeability greater than 0.001 centimeter per second.
(5) Other material approved by the Engineer.

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 times the outside diameter of the barrel. If the pipe is to be laid in a rock excavation, the rock shall be removed such that no ribs, rocks, or solid projections shall be within 6 inches of the sewer pipe horizontally and there shall be at least 4 inches of bedding below the pipe.

Compaction of the bedding from the bottom of the pipe to 12 inches above the pipe barrel by jetting will be permitted provided that the foundation material will not soften or be otherwise damaged by the applied water. Flooding or ponding methods of achieving the required relative density will not be permitted. The size and length of jet pipe, quantities and pressure of water, and jetting locations shall be sufficient to compact the bedding to 87% minimum relative density. Compaction of the backfill from 12 inches above the pipe barrel to the finish surface shall conform to the requirements of Section 11.4 of the Standard Specifications for Public Works Construction.

K. Mandrel Test of PVC Pipe. A mandrel test shall be performed no sooner than 30 days after the trench backfill is completed. In roadway areas the 30-day period shall begin after installation and compaction of bedding backfill and sub base to within 2 feet of the finished pavement grade. A rigid mandrel shall be pulled through the pipe by hand between adjacent manholes to measure for obstructions (deflections, joint offsets and lateral pipe intrusions). The mandrel shall have a cross section equivalent to a circle having a diameter at least 95 percent of the specified average inside diameter of the pipe. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. This test shall be performed by the Contractor in the presence of the Engineer. All material, equipment and labor required to perform the test shall be provided by the Contractor at no cost to the City. Any section of pipe that fails to permit passage of the mandrel will not be accepted until properly repaired or replaced and retested.

2. Bedding for PVC Pipe sewer shall be Class "B" as shown on S-47 of the Standard Details for Public Works Construction unless otherwise noted.

3. The maximum design deflection (flattening) for plastic pipe shall be 5 percent. The maximum SDR (Standard Dimension Ratio of pipe outside diameter to pipe wall thickness) shall be 35.

4. Special watertight manhole couplings per standard detail S-48 will be required for all manhole connections. Couplings may be cast directly into cast-in-place manholes or grouted into precast concrete manholes with non-shrink or expansion type grout.

5. For connections of PVC lateral sewers to mains of different materials, an approved saddle wye fitting constructed of the same material as the main line shall be installed. Connection to the saddle fitting shall be made by means of an approved flexible rubber coupling in accordance with the coupling manufacturer's installation recommendations or by other means acceptable to the Engineer.

6. PVC Pipe shall be limited to use in agricultural, residential and apartment zoned areas and in sizes from 6 inches to 12 inches in diameter.

7. GEOLABS INC. letter dated April 12, 2015 recommends approval of the use of PVC pipe for Farrington Highway Intersection Imrovements At Nanakuli Avenue and Haleakala Avenue.

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Sewer_02.dgn

DATE	REVISION
5/18/15	⚠1 New PVC Notes

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

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SIGNATURE 04/30/16 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION NOTES - SEWER LINE "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

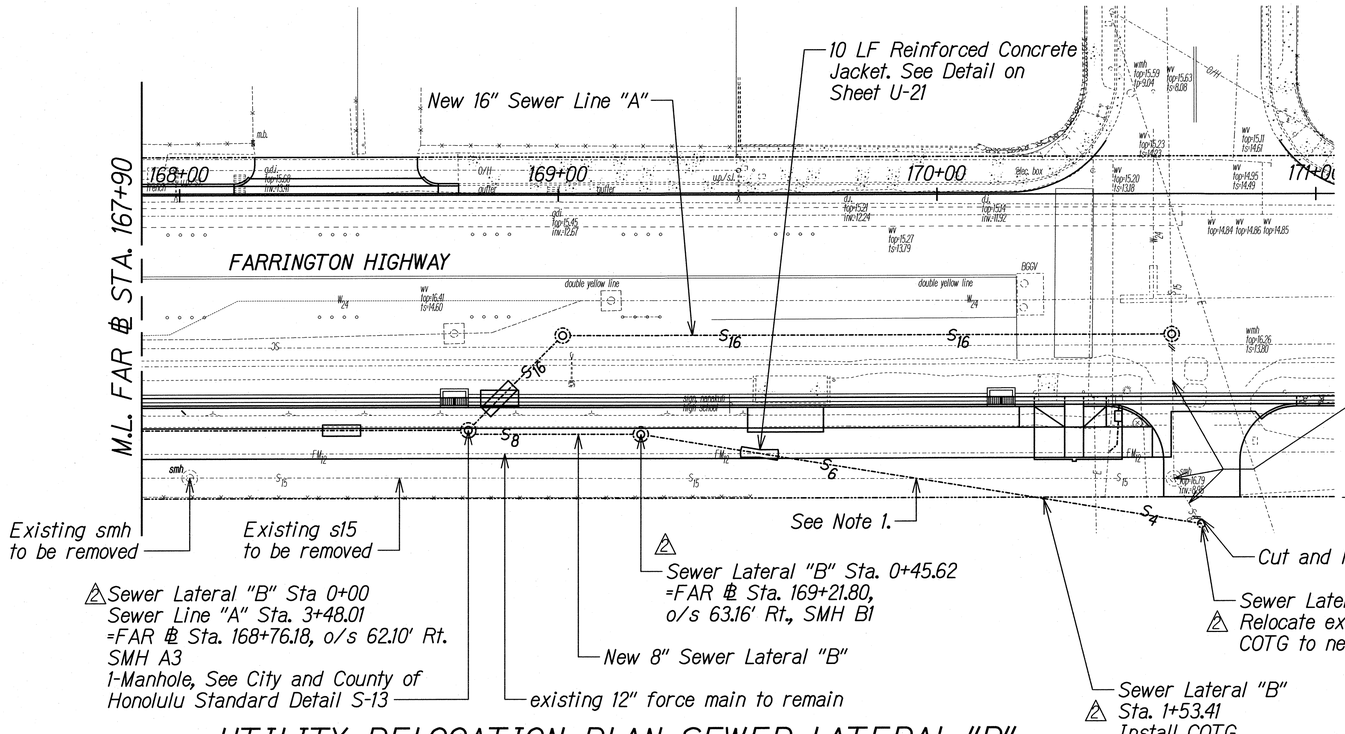
Scale: 1"=20' Date: April 2013

SHEET No. U-13 OF 21 SHEETS

"AS-BUILT"

C.0112 S-2

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	C.O. 112S-3	230



TRUE NORTH
SCALE : 1" = 20'

Note 1: This pipe section of 6" sewer to be placed last as existing s15 is being taken out of service.

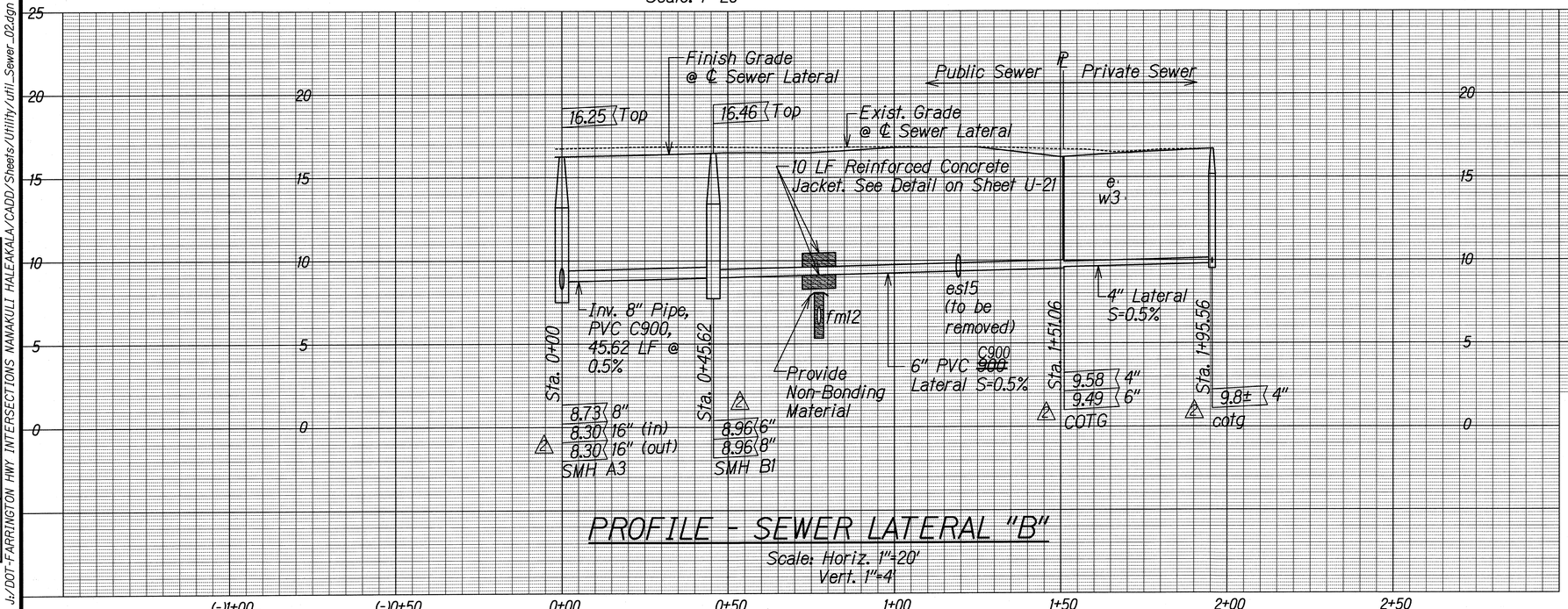
Approved:

2/5/16
Chief, Wastewater Branch, DPP — Date

UTILITY RELOCATION PLAN SEWER LATERAL "B"

Scale: 1"=20'

CONTRACT CHANGE ORDER NO. 22



PROFILE - SEWER LATERAL "B"

Scale: Horiz. 1"=20'
Vert. 1"=4'

DATE	REVISION
12/30/15	2 Revised Sewerline "A"
10/6/15	1 New Sheet

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Sewer_02.dgn

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - SEWER LATERAL "B"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: 1"=20' Date: April 2013

SHEET No. U-13C OF 21 SHEETS

"AS-BUILT"

C.O.112S-3

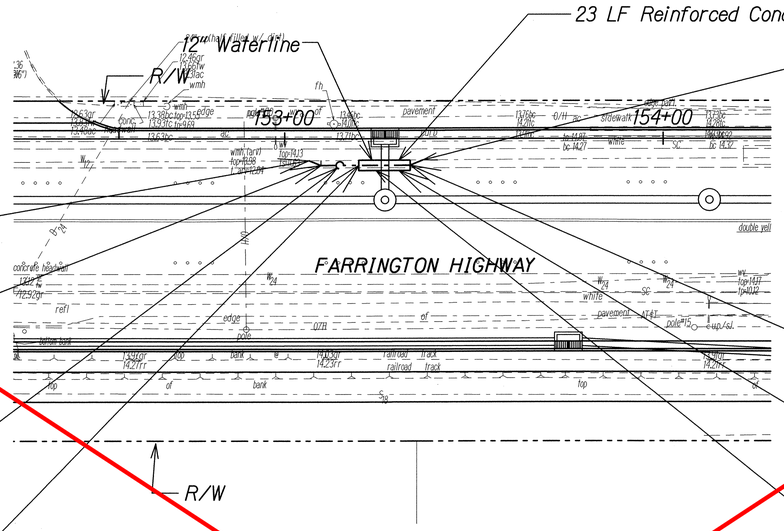
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	113	230

Water Line "A" Sta. 0+00.0
=FAR ℄ Sta. 153+06.4, o/s 5.78' Rt.
Begin Water Line "A"
1-12" 1/16 Bend (H)
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
31-LF, 12" PVC Pipe, CL. 150
1-Conc. Block w Structural Struts
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "A" Sta. 0+03.2
=FAR ℄ Sta. 153+09.6, o/s 7.07' Rt.
1-12" 1/16 Bend (H)

Water Line "A" Sta. 0+08.2
=FAR ℄ Sta. 153+14.6, o/s 7.05' Rt.
1-12" DBL Hub Tee w/Boss tapped for 3/4" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "A" Sta. 0+13.2
=FAR ℄ Sta. 153+19.6, o/s 7.03' Rt.
Begin RC Jacket
1-12" 1/16 Bend (T.V.)



23 LF Reinforced Concrete Jacket

Water Line "A" Sta. 0+30.1
=FAR ℄ Sta. 153+36.5 o/s 5.6' Rt.
End Water Line "A"
1-12" 1/16 Bend (H)
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
31-LF, 12" PVC Pipe, CL. 150
1-Conc. Block w/ Structural Struts
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "A" Sta. 0+26.8
=FAR ℄ Sta. 153+33.2, o/s 7.03' Rt.
End RC JAcket
1-12" 1/16 Bend (H&TV)

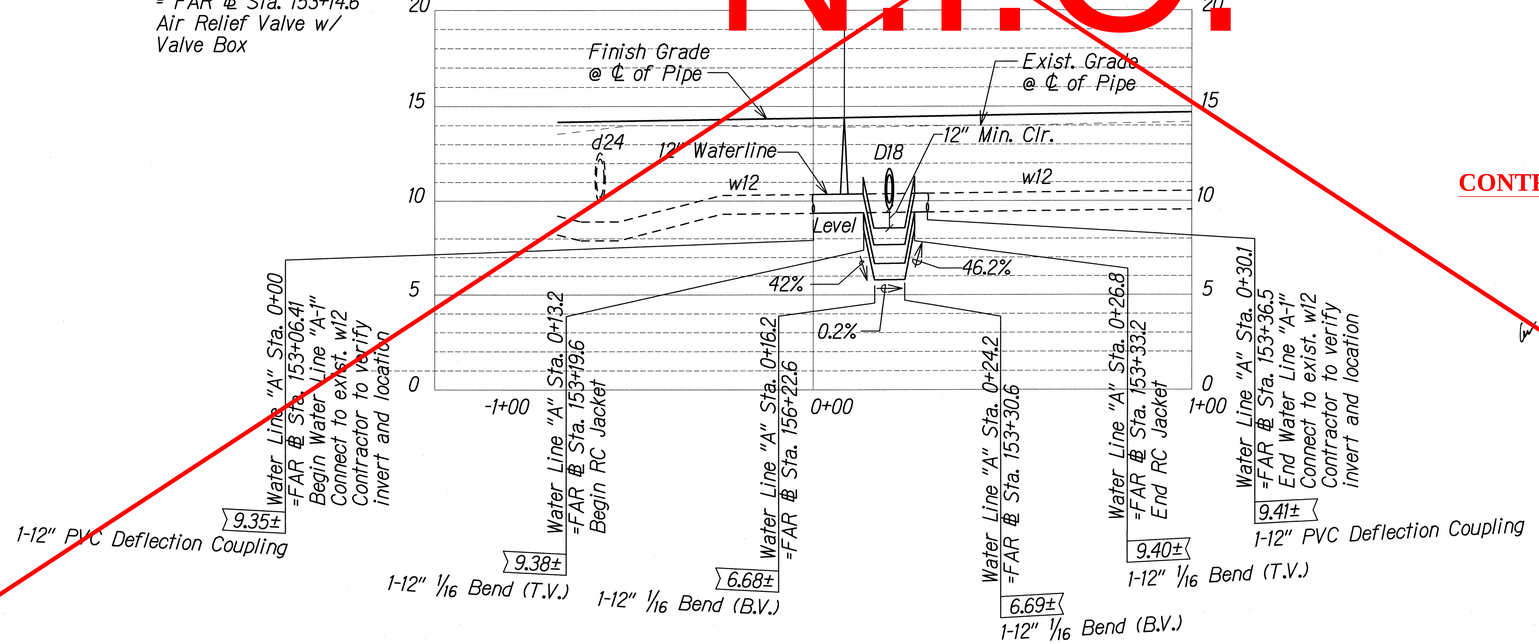
Water Line "A" Sta. 0+24.2
=FAR ℄ Sta. 153+30.6, o/s 7.03' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "A" Sta. 0+16.0
=FAR ℄ Sta. 153+22.4, o/s 7.03' Rt.
1-12" 1/16 Bend (B.V.)

UTILITY RELOCATION PLAN
WATER LINE "A"
Scale: 1"=20'

N.I.C.

Water Line "A" Sta. 0+08.2
= FAR ℄ Sta. 153+14.6
Air Relief Valve w/
Valve Box



PROFILE - WATER LINE "A"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

1-2-17
Manager and Chief Engineer, BWS Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_A.dgn

GERALD D. ANDRADE
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No. 10377-C
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SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

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HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "A"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted Date: April 2013

SHEET No. U-14 OF 21 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	114	230

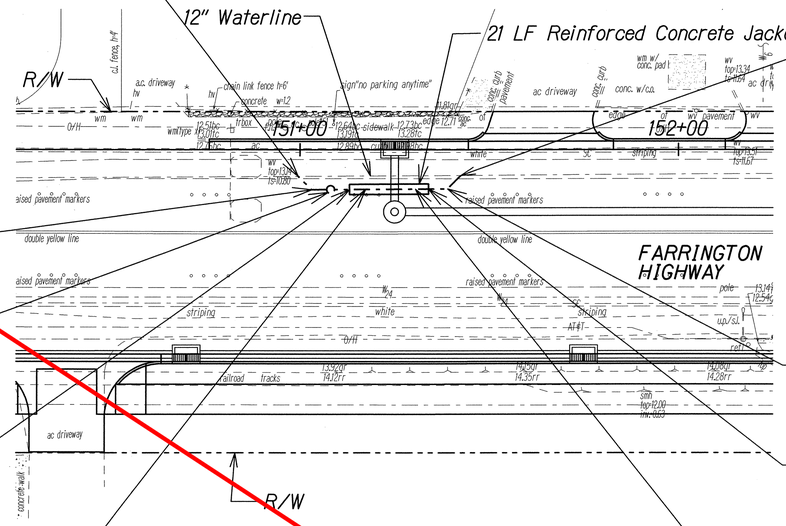
Water Line "B" Sta. 0+00.0
=FAR ℄ Sta. 150+99.5, o/s 6.96' Rt.
Begin Water Line "B"
Connect to exist. w12
Contractor to verify invert and location
1-12" ⅛ Bend (H)
1-Conc. Block w/Structural Struts
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
46-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout

Water Line "B" Sta. 0+05.0
=FAR ℄ Sta. 151+03.1, o/s 10.45' Rt.
1-12" ⅛ Bend (H)
1-Conc. Block

Water Line "B" Sta. 0+10.0
=FAR ℄ Sta. 151+08.1, o/s 10.45' Rt.
1-12" DBL Hub Tee w/Boss tapped for ¾" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "B" Sta. 0+15.0
=FAR ℄ Sta. 151+13.1, o/s 10.45' Rt.
Begin RC Jacket
1-12" 1/16 Bend (T.V.)

Water Line "B" Sta. 0+19.3
=FAR ℄ Sta. 151+17.3, o/s 10.45' Rt.
1-12" 1/16 Bend (B.V.)



Water Line "B" Sta. 0+46.0
=FAR ℄ Sta. 151+42.5 o/s 6.72' Rt.
End Water Line "B"
Connect to exist. w12
Contractor to verify invert and location
1-12" ⅛ Bend (H)
1-Conc. Block w/Structural Struts
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
46-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout

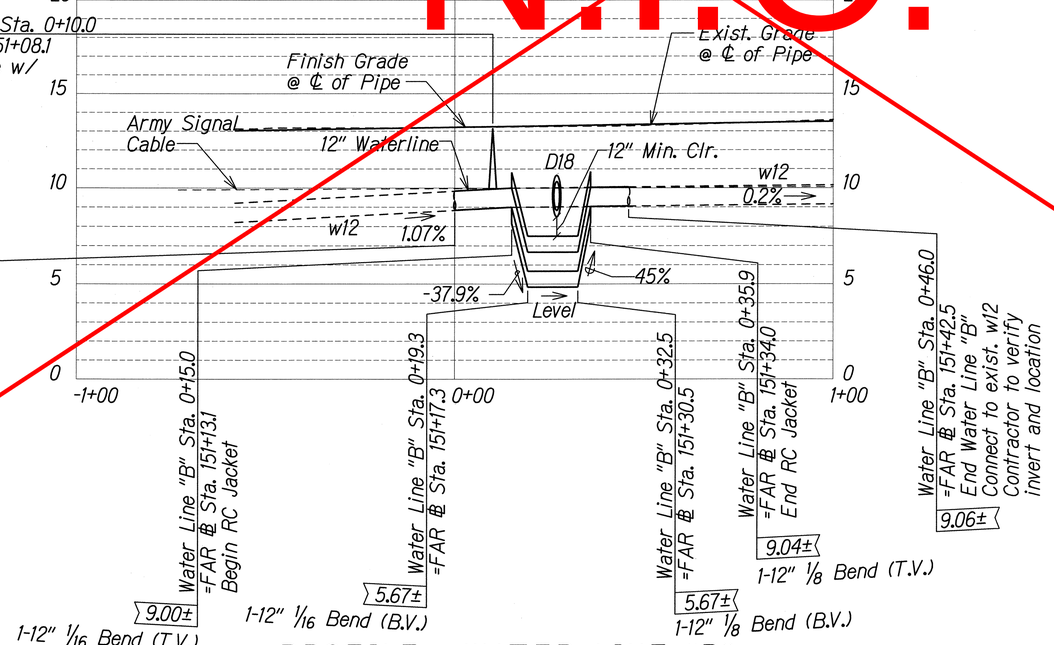
Water Line "B" Sta. 0+40.9
=FAR ℄ Sta. 151+39.0, o/s 10.45' Rt.
1-12" ⅛ Bend (H)
1-Conc. Block

Water Line "B" Sta. 0+35.9
=FAR ℄ Sta. 151+34.0, o/s 10.45' Rt.
End RC Jacket
1-12" ⅛ Bend (T.V.)

Water Line "B" Sta. 0+32.5
=FAR ℄ Sta. 151+30.5, o/s 10.45' Rt.
1-12" ⅛ Bend (B.V.)

UTILITY RELOCATION PLAN
WATER LINE "B"
Scale: 1"=20'

N.I.C.



PROFILE - WATER LINE "B"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

1-2-15

Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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UTILITY RELOCATION PLAN & PROFILE - WATER LINE "B"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-15 OF 21 SHEETS

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_Bdgn

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	115	230

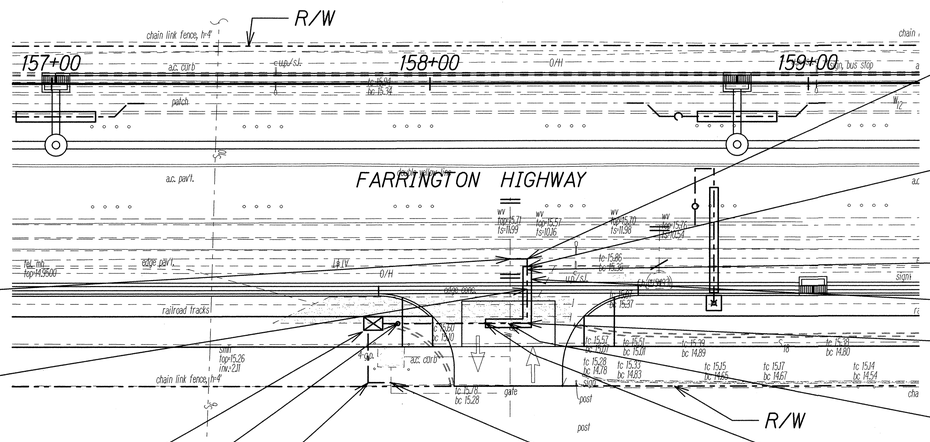
Water Line "C" Sta. 0+00.0
=FAR ℄ Sta. 158+21.3, o/s 46.59' Rt.
Begin Water Line "C"
Connect to exist. w6
Contractor to verify invert and location
1-6" ¼ Bend
1-Conc. Block w/ Structural Struts
MATERIALS FOR CONNECTION:
2-6" Sleeve, 12" Long
85-LF, 6" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2½" IPT
1-2½" Cleanout
1-Conc. Block

Water Line "C" Sta. 0+12.5
=FAR ℄ Sta. 158+25.8, o/s 54.59' Rt.
1-6" 1/16 Bend (B.V.)

Remove exist 6" Detector Check Meter and Box. Install new DC Meter and Box per BWS Std. Det. M19, M30 & M31.

Water Line "C" Sta. 0+55.7
=FAR ℄ Sta. 157+91.55, o/s 66.59' Rt.
1-6" Gate Valve, FL
1-Valve Box

Water Line "C" Sta. 0+79.1
=FAR ℄ Sta. 157+83.7, o/s 79.02' Rt.
1-6" ¼ Bend (H)
1-Conc. Block w/ Structural Struts



UTILITY RELOCATION PLAN
WATER LINE "C"
Scale: 1"=20'

Water Line "C" Sta. 0+04.5
=FAR ℄ Sta. 158+25.8, o/s 46.59' Rt.
1-6" ¼ Bend (H)

Water Line "C" Sta. 0+06.5
=FAR ℄ Sta. 158+25.8, o/s 48.59' Rt.
1-6" 1/16 D.I. Bend (T.V.)
Begin RC Jacket

6" Water Line

20 LF Reinforced Concrete Jacket

Water Line "C" Sta. 0+21.5
=FAR ℄ Sta. 158+25.8, o/s 63.59' Rt.
1-6" ¼ D.I. Bend (H), FL

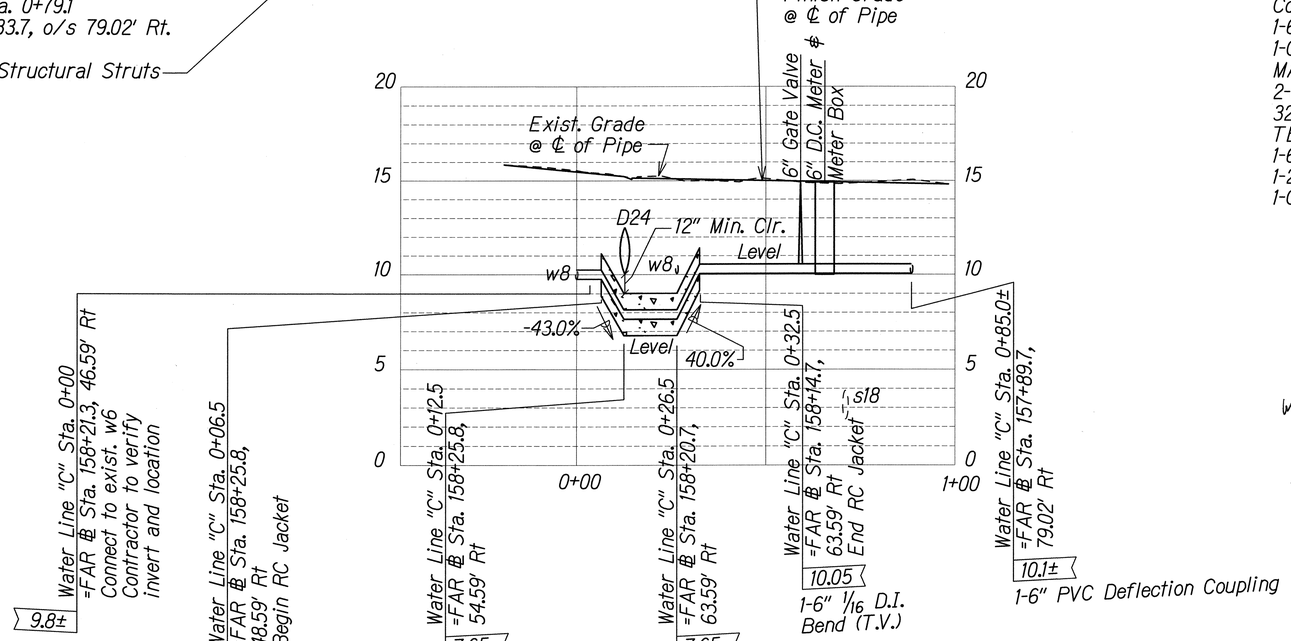
Water Line "C" Sta. 0+26.5
=FAR ℄ Sta. 158+20.7, o/s 63.59' Rt.
1-6" 1/16 D.I. Bend (B.V.)

Water Line "C" Sta. 0+32.5
=FAR ℄ Sta. 158+14.7, o/s 63.59' Rt.
1-6" 1/16 D.I. Bend (T.V),
End RC Jacket

Water Line "C" Sta. 0+85.0±
=FAR ℄ Sta. 157+89.7, o/s 79.02' Rt.
End Water Line "C"
Connect to exist. w6
Contractor to verify invert and location
1-6" ¼Bend (H)
1-Conc. Block
MATERIALS FOR CONNECTION:
2-6" Sleeves, 12" Long
32-LF, 6" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-6" Cap Tapped for 2½" IPT
1-2½" Cleanout
1-Conc. Block

TRUE NORTH
SCALE : 1" = 20'

PROFILE - WATER LINE "C"
Scale: Horiz. 1"=20'
Vert. 1"=4'



9.8± Water Line "C" Sta. 0+00 =FAR ℄ Sta. 158+21.3, 46.59' Rt Connect to exist. w6 Contractor to verify invert and location

Water Line "C" Sta. 0+06.5 =FAR ℄ Sta. 158+25.8, 48.59' Rt Begin RC Jacket
9.80
1-6" 1/16 D.I. Bend (T.V.)

Water Line "C" Sta. 0+12.5 =FAR ℄ Sta. 158+25.8, 54.59' Rt
7.65
1-6" 1/16 D.I. Bend (B.V.)

Water Line "C" Sta. 0+26.5 =FAR ℄ Sta. 158+20.7, 63.59' Rt
7.65
1-6" 1/16 D.I. Bend (B.V.)

Water Line "C" Sta. 0+32.5 =FAR ℄ Sta. 158+14.7, 63.59' Rt End RC Jacket
10.05
1-6" 1/16 D.I. Bend (T.V.)

Water Line "C" Sta. 0+85.0± =FAR ℄ Sta. 157+89.7, 79.02' Rt
10.1±
1-6" PVC Deflection Coupling

Approved:

7-2-13
Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/utl_Water_C.dgn

GERALD D. ANDRADE ★ LICENSED PROFESSIONAL ENGINEER ★ No. 10377-C ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "C"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted Date: April 2013

SHEET No. U-16 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	116	230

Water Line "D" Sta. 0+00.0
=FAR ℄ Sta. 156+72.1, o/s 5.12' Rt.
Begin Water Line "D"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
57-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "D" Sta. 0+05.0
=FAR ℄ Sta. 156+77.1, o/s 5.12' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/ Structural Struts

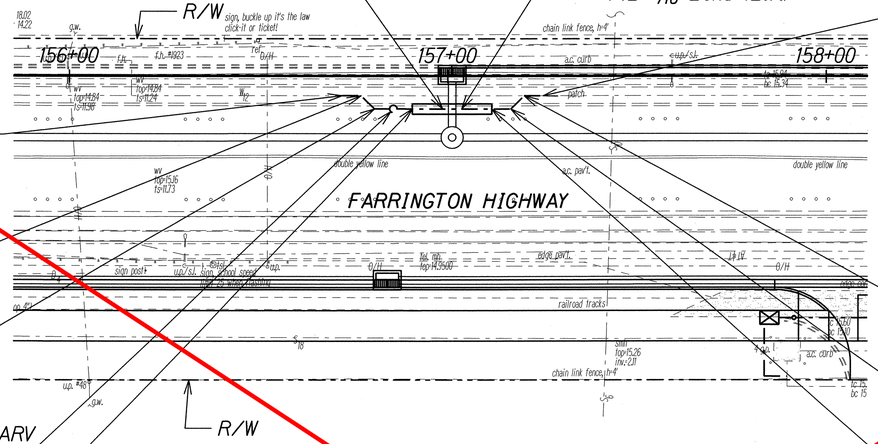
Water Line "D" Sta. 0+10.0
=FAR ℄ Sta. 156+80.6, o/s 8.66' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

Water Line "D" Sta. 0+15.0
=FAR ℄ Sta. 156+85.6, o/s 8.66' Rt.
1-12" DBL Hub Tee w/ Boss tapped for 3/4" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "D" Sta. 0+20.0
=FAR ℄ Sta. 156+90.6, o/s 8.66' Rt.
1-12" 1/16 Bend (T.V.)
Begin RC Jacket

Water Line "D" Sta. 0+28.0
=FAR ℄ Sta. 156+98.6, o/s 8.66' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "D" Sta. 0+33.0
=FAR ℄ Sta. 157+03.6, o/s 8.66' Rt.
1-12" 1/16 Bend (B.V.)



Water Line "D" Sta. 0+56.0
=FAR ℄ Sta. 157+25.2, o/s 5.17' Rt.
End Water Line "D"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
57-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "D" Sta. 0+51.0
=FAR ℄ Sta. 157+20.2, o/s 5.13' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/Structural Struts

Water Line "D" Sta. 0+46.0
=FAR ℄ Sta. 156+16.6, o/s 8.66' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

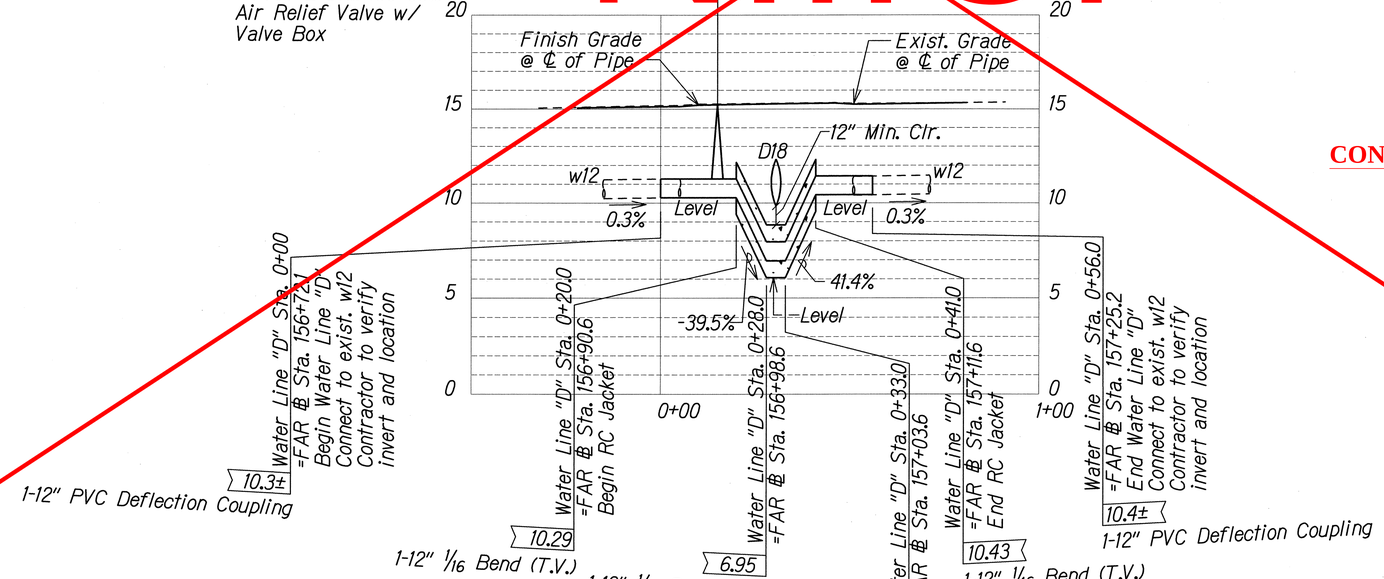
Water Line "D" Sta. 0+41.0
=FAR ℄ Sta. 157+11.6, o/s 8.66' Rt.
1-12" 1/16 Bend (T.V.)
End RC Jacket

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
WATER LINE "D"
Scale: 1"=20'

N.I.C.

Water Line "D" Sta. 0+15.0
= FAR ℄ Sta. 156+85.6
Air Relief Valve w/
Valve Box



PROFILE - WATER LINE "D"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

1-2-13

Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_D.dgn

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

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "D"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-17 OF 21 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	117	230

Water Line "E" Sta. 0+00.0
=FAR ℄ Sta. 158+52.1, o/s 5.16' Rt.
Begin Water Line "E"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
56-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "E" Sta. 0+05.0
=FAR ℄ Sta. 158+57.1, o/s 5.16' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/ Structural Struts

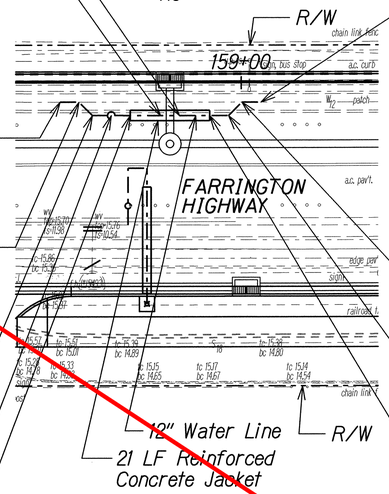
Water Line "E" Sta. 0+10.0
=FAR ℄ Sta. 158+60.7, o/s 8.70' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

Water Line "E" Sta. 0+15.0
=FAR ℄ Sta. 158+65.7, o/s 8.70' Rt.
1-12" DBL Hub Tee w/Boss tapped for 3/4" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "E" Sta. 0+20.0
=FAR ℄ Sta. 158+70.7, o/s 8.70' Rt.
1-12" 1/16 Bend (T.V.)
Begin RC Jacket

Water Line "E" Sta. 0+28.0
=FAR ℄ Sta. 158+78.7, o/s 8.70' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "E" Sta. 0+33.0
=FAR ℄ Sta. 158+83.7, o/s 8.70' Rt.
1-12" 1/16 Bend (B.V.)



Water Line "E" Sta. 0+56.0
=FAR ℄ Sta. 159+05.2, o/s 5.17' Rt.
End Water Line "E"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Defelction Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
56-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "E" Sta. 0+51.0
=FAR ℄ Sta. 159+00.2, o/s 5.17' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/ Structural Struts

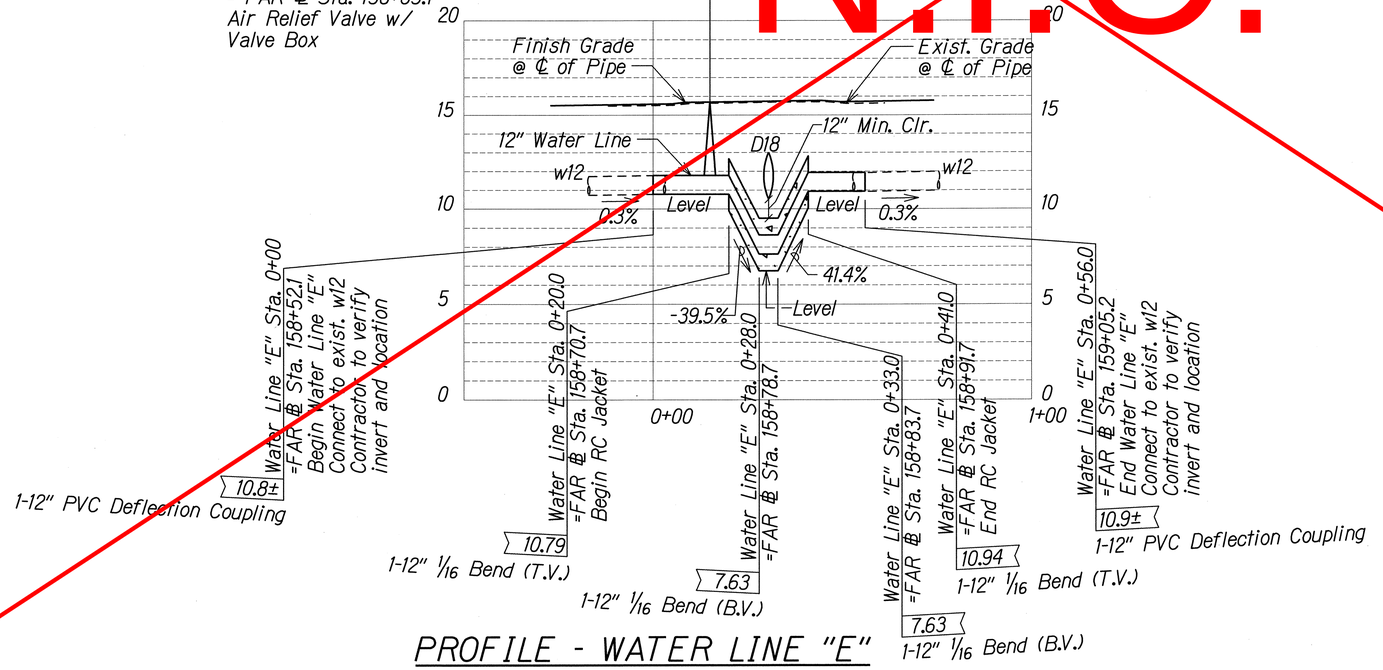
Water Line "E" Sta. 0+46.0
=FAR ℄ Sta. 158+96.7, o/s 8.70' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

Water Line "E" Sta. 0+41.0
=FAR ℄ Sta. 158+91.7, o/s 8.70' Rt.
1-12" 1/16 Bend (T.V.)
End RC Jacket

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
WATER LINE "E"
Scale: 1"=20'

N.I.C.



PROFILE - WATER LINE "E"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

7-2-13

Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_E.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "E"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-18 OF 21 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	118	230

Water Line "F" Sta. 0+00.0
=FAR ℄ Sta. 160+45.1, o/s 5.20' Rt.
Begin Water Line "F"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
60-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "F" Sta. 0+05.0
=FAR ℄ Sta. 160+50.1, o/s 5.20' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/ Structural Struts

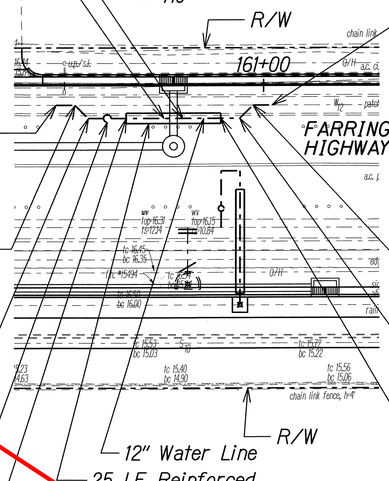
Water Line "F" Sta. 0+10.0
=FAR ℄ Sta. 160+53.7, o/s 8.74' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

Water Line "F" Sta. 0+15.0
=FAR ℄ Sta. 160+58.7, o/s 8.74' Rt.
1-12" DBL Hub Tee w/Boss tapped for 3/4" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "F" Sta. 0+20.0
=FAR ℄ Sta. 160+63.7, o/s 8.75' Rt.
1-12" 1/16 Bend (T.V.)
Begin RC Jacket

Water Line "F" Sta. 0+30.0
=FAR ℄ Sta. 160+73.7, o/s 8.75' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "F" Sta. 0+35.0
=FAR ℄ Sta. 160+78.7, o/s 8.75' Rt.
1-12" 1/16 Bend (B.V.)



Water Line "F" Sta. 0+60.0
=FAR ℄ Sta. 161+02.2, o/s 5.22' Rt.
End Water Line "F"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Defelction Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
60-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "F" Sta. 0+55.0
=FAR ℄ Sta. 160+97.2, o/s 5.21' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block w/ Structural Struts

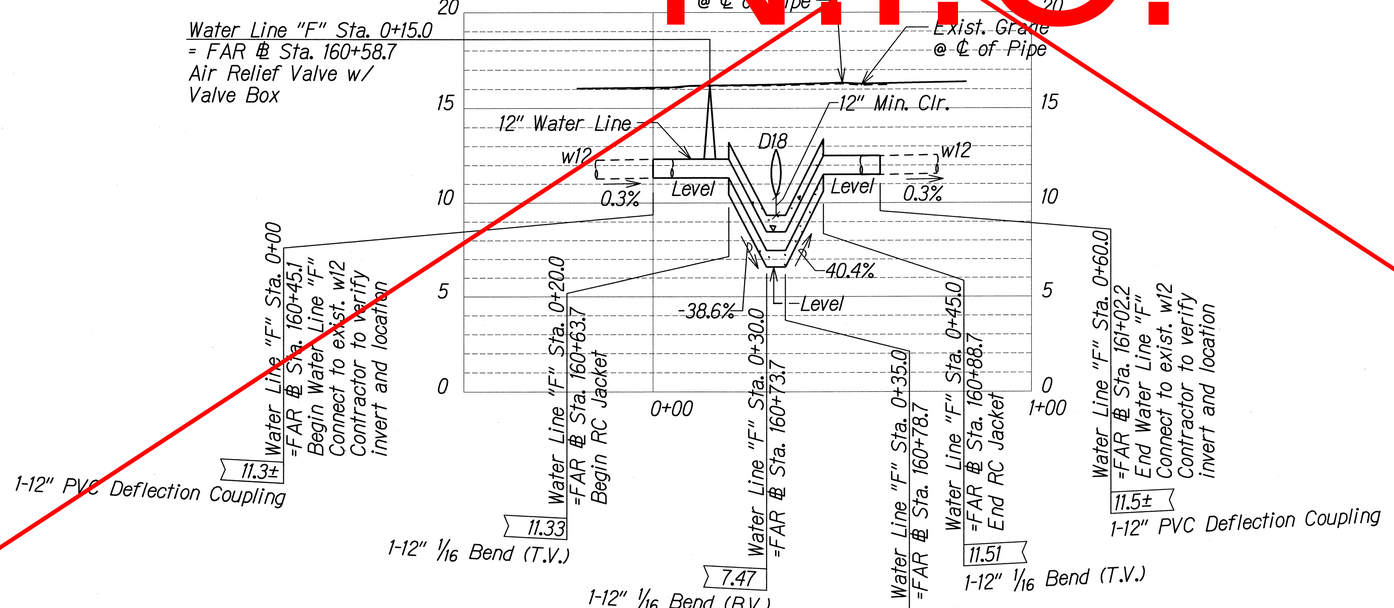
Water Line "F" Sta. 0+50.0
=FAR ℄ Sta. 160+93.7, o/s 8.70' Rt.
1-12" 1/8 Bend (H)
1-Conc. Block

Water Line "F" Sta. 0+45.0
=FAR ℄ Sta. 160+88.7, o/s 8.75' Rt.
1-12" 1/16 Bend (T.V.)
End RC Jacket

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
WATER LINE "F"
Scale: 1" = 20'

N.I.C.



Water Line "F" Sta. 0+15.0
= FAR ℄ Sta. 160+58.7
Air Relief Valve w/
Valve Box

PROFILE - WATER LINE "F"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

7-2-13

Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_F.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "F"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-19 OF 22 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	119	230

Water Line "G" Sta. 0+00.0
=FAR ℄ Sta. 164+58.8, o/s 5.30' Rt.
Begin Water Line "G"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
164-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "G" Sta. 0+05.0
=FAR ℄ Sta. 164+63.8, o/s 5.30' Rt.
1-12" 1/16 Bend (H)
1-Conc. Block w/ Structural Struts

Water Line "G" Sta. 0+10.0
=FAR ℄ Sta. 158+68.4, o/s 7.21' Rt.
1-12" 1/16 Bend (H)
1-Conc. Block

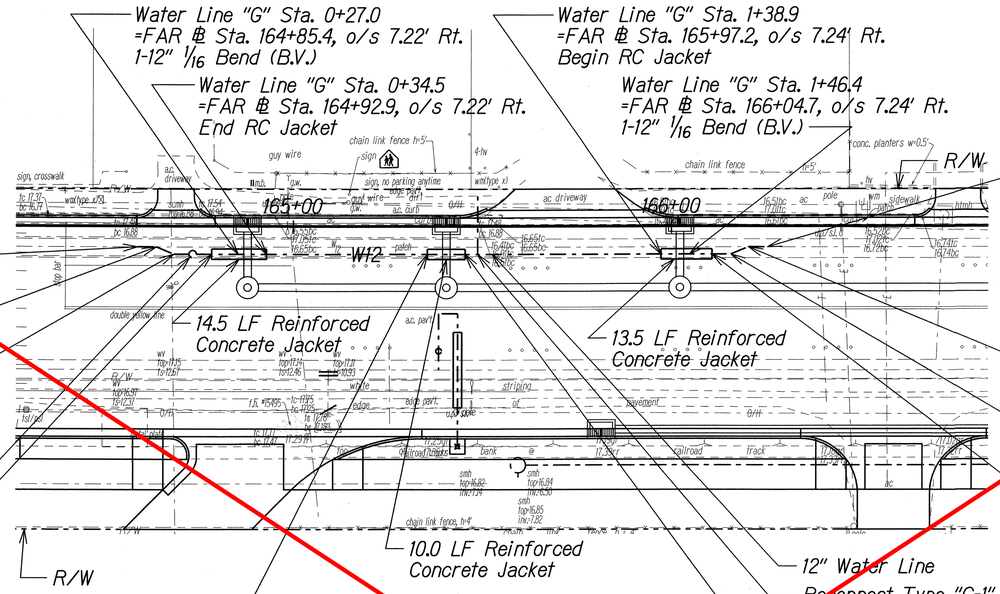
Water Line "G" Sta. 0+15.0
=FAR ℄ Sta. 164+73.4, o/s 7.21' Rt.
1-12" DBL Hub Tee w/Boss tapped for 3/4" ARV
1-3/4" Air Relief Valve
(WP=0-150 psi)
1-Valve Box

Water Line "G" Sta. 0+20.0
=FAR ℄ Sta. 164+78.4, o/s 7.21' Rt.
1-12" 1/16 Bend (T.V.)
Begin RC Jacket

Water Line "G" Sta. 0+27.0
=FAR ℄ Sta. 164+85.4, o/s 7.22' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "G" Sta. 0+34.5
=FAR ℄ Sta. 164+92.9, o/s 7.22' Rt.
End RC Jacket

Water Line "G" Sta. 0+77.0
=FAR ℄ Sta. 165+35.4, o/s 7.23' Rt.
Begin RC Jacket



Water Line "G" Sta. 1+38.9
=FAR ℄ Sta. 165+97.2, o/s 7.24' Rt.
Begin RC Jacket

Water Line "G" Sta. 1+46.4
=FAR ℄ Sta. 166+04.7, o/s 7.24' Rt.
1-12" 1/16 Bend (B.V.)

Water Line "G" Sta. 1+67.4
=FAR ℄ Sta. 166+25.4, o/s 5.33' Rt.
End Water Line "G"
Connect to exist. w12
Contractor to verify invert and location
1-12" PVC Deflection Coupling
MATERIALS FOR CONNECTION:
2-12" Sleeves, 12" Long
164-LF, 12" PVC Pipe, CL. 150
TEMPORARY FOR TESTING:
1-12" Cap Tapped for 4" IPT
1-4" Cleanout
1-Conc. Block

Water Line "G" Sta. 1+62.4
=FAR ℄ Sta. 166+20.4, o/s 5.33' Rt.
1-12" 1/16 Bend (H)
1-Conc. Block w/ Structural Struts

Water Line "G" Sta. 1+57.4
=FAR ℄ Sta. 166+15.7, o/s 7.25' Rt.
1-12" 1/16 Bend (H)
1-Conc. Block

Water Line "G" Sta. 1+52.4
=FAR ℄ Sta. 166+10.7, o/s 7.24' Rt.
1-12" 1/16 Bend (T.V.)
End RC Jacket

12" Water Line
Reconnect Type "C-1" Lateral
1-12" Dbl. Hub Tee w/ Boss
Tapped for 1 1/2" Ball Corp.

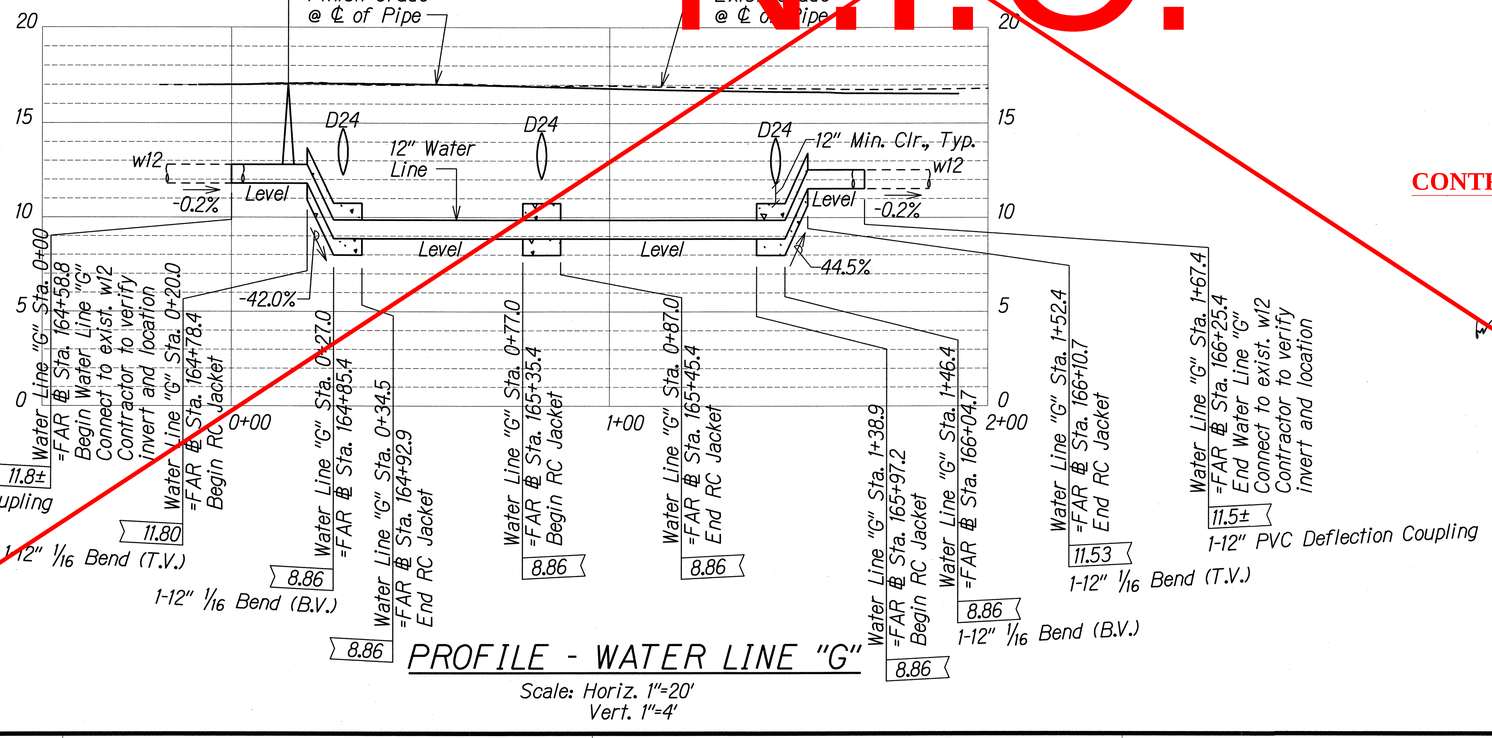
Water Line "G" Sta. 0+87.0
=FAR ℄ Sta. 165+45.4, o/s 7.23' Rt.
End RC Jacket

TRUE NORTH
SCALE : 1" = 20'

UTILITY RELOCATION PLAN
WATER LINE "G"
Scale: 1"=20'

N.I.C.

Water Line "G" Sta. 0+15.0
= FAR ℄ Sta. 164+73.4
Air Relief Valve w/
Valve Box



PROFILE - WATER LINE "G"
Scale: Horiz. 1"=20'
Vert. 1"=4'

CONTRACT CHANGE ORDER NO. 12, 2nd SUPPLEMENT

Approved:

1-2-13

Manager and Chief Engineer, BWS — Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

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

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/util_Water_G.dgn

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

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SIGNATURE — 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN & PROFILE - WATER LINE "G"

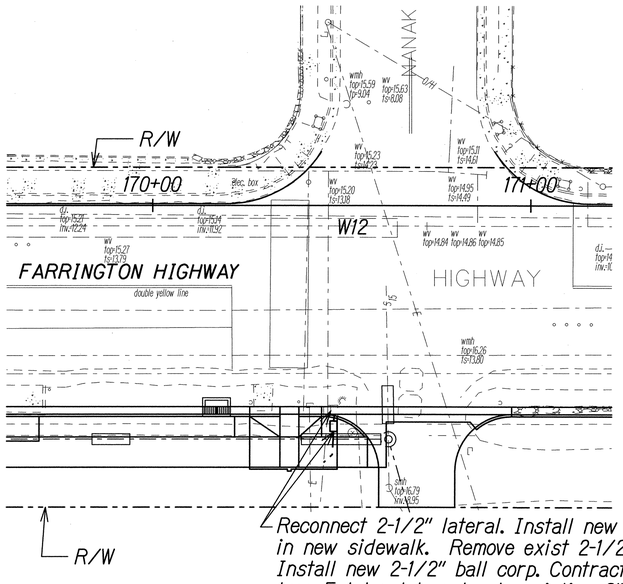
FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Noted — Date: April 2013

SHEET No. U-20 OF 21 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	120	230

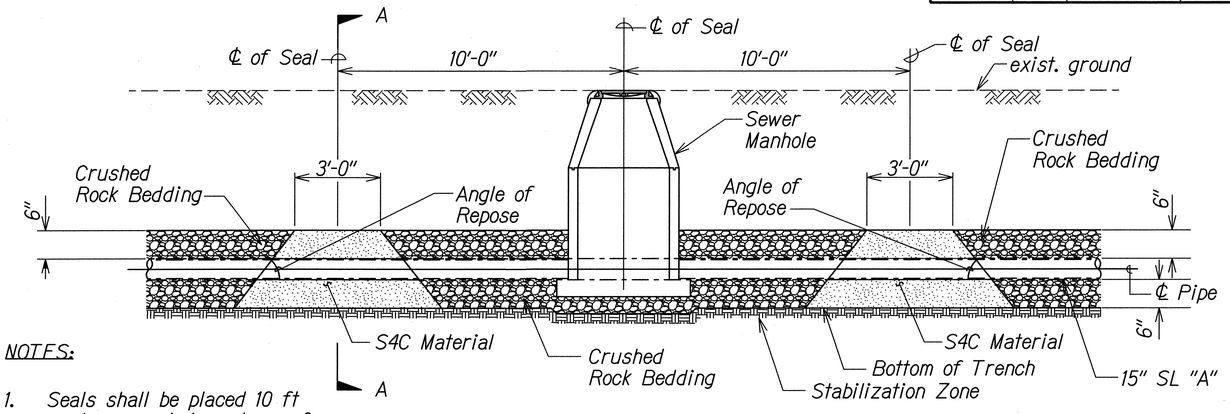


TRUE NORTH
SCALE : 1" = 20'

Reconnect 2-1/2" lateral. Install new type III box in new sidewalk. Remove exist 2-1/2" Corp Stop. Install new 2-1/2" ball corp. Contractor to extend type E lateral to relocate existing 2" meter. Prem ID: 1028461 M/N 90070049.

LATERAL "B" RECONNECTION PLAN

Scale: 1"=20'

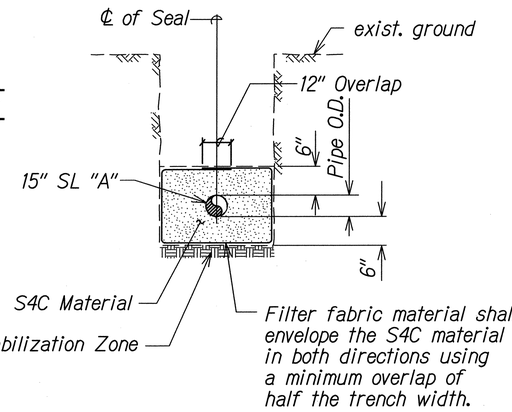


NOTES:

1. Seals shall be placed 10 ft upstream and downstream from each manhole.
2. The contractor shall compact S4C material by ponding and draining. Upon draining, a vibratory machine shall be used until no visible evidence of further consolidation exists.
3. The officer-in-charge may adjust seal locations and dimensions as required.

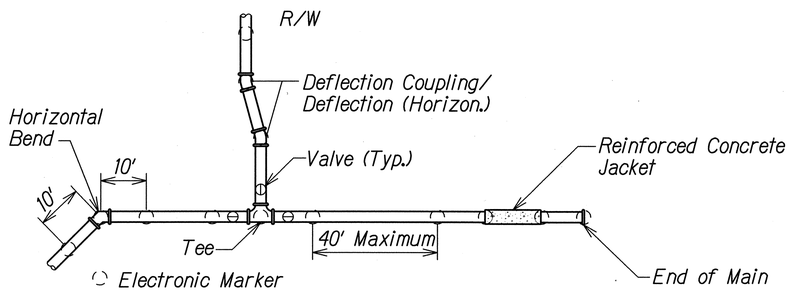
SEAL DETAIL FOR TRENCHED SEWER LINE

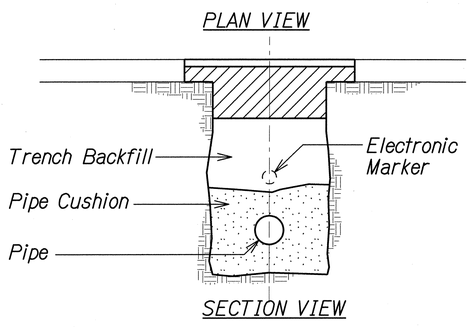
NOT TO SCALE



SECTION A-A

NOT TO SCALE

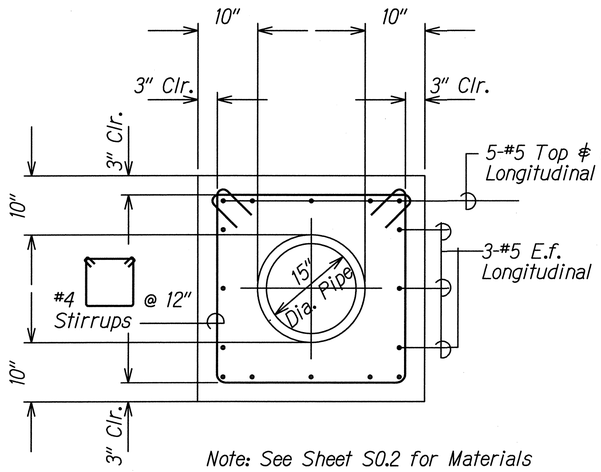




Note:
1. Install electronic marker over centerline of pipe at minimum depth of 2 feet and a maximum depth of 3 feet from finish grade.
2. Install trench backfill and pipe cushion material in accordance to the plans and specifications.
3. Install electronic marker at a minimum clearance of 6-inches, where possible. Install markers on or above concrete jackets.

TYPICAL ELECTRONIC MARKER INSTALLATION

Not to Scale



Note: See Sheet S0.2 for Materials

PIPE JACKET TYPICAL SECTION FOR 15" DIAMETER PIPE

Scale: 1" = 1'-0"

Approved:

9-23-2013
Manager and Chief Engineer, BWS Date
(For work affecting BWS facilities in City/State R/W and BWS Easements only)

Approved:

Scott Ursho 9/13/13
Chief, Wastewater Branch, DPP Date

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY RELOCATION PLAN LATERALS "A" & "B"

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

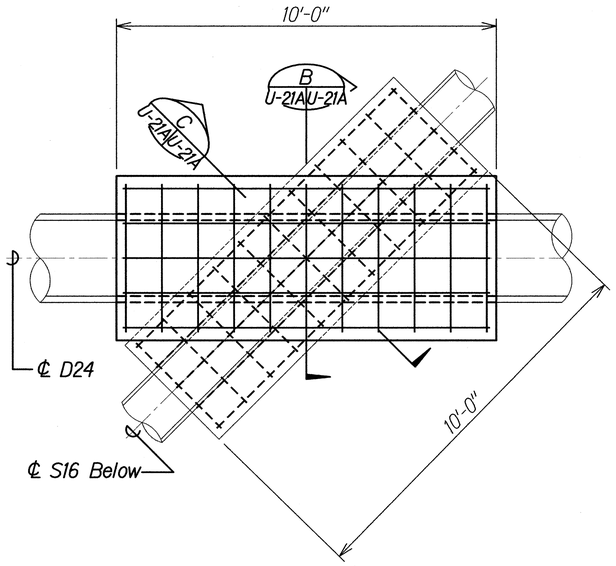
Scale: As Noted Date: April 2013

SHEET No. U-21 OF 21 SHEETS

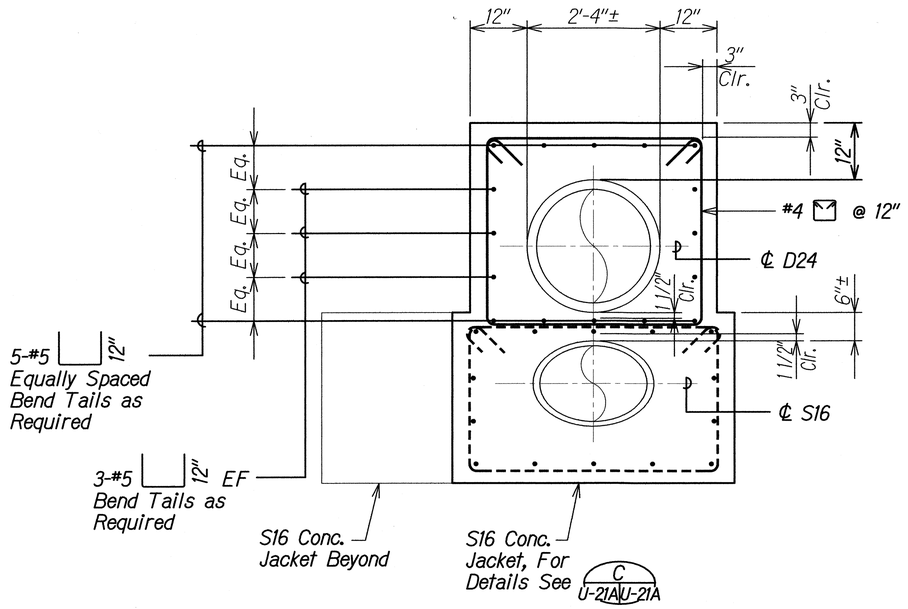
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

J:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Utility/Util_Water_A#B.dgn

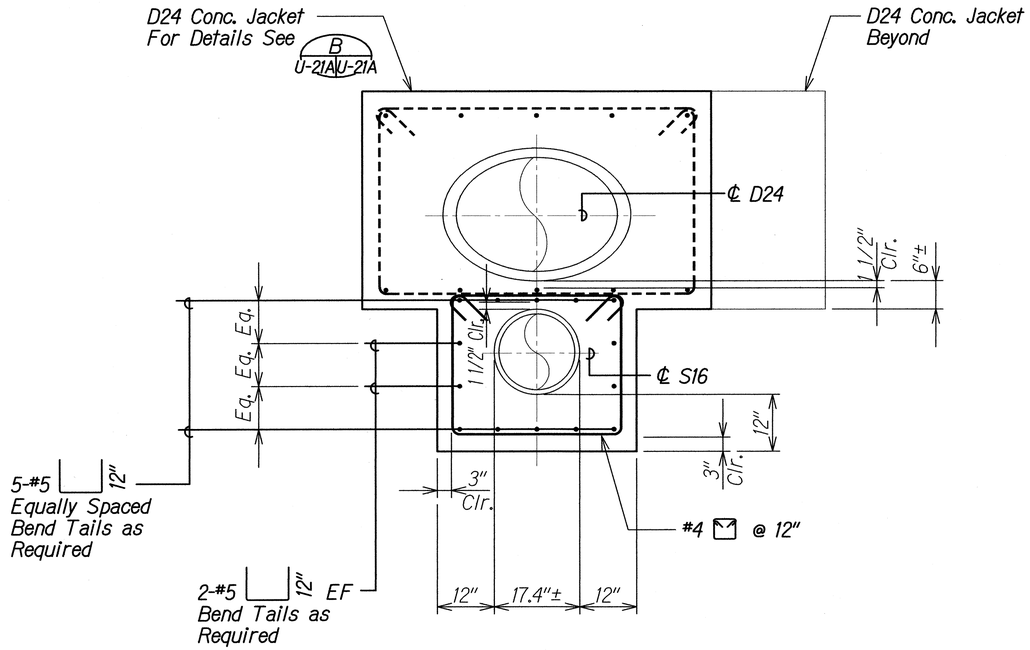
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	C.O.120S-1	230



PLAN
Scale: 1/2" = 1'-0" A U-21A | U-21A



SECTION
(PERPENDICULAR TO D24)
Scale: 3/4" = 1'-0" B U-21A | U-21A



SECTION
(PERPENDICULAR TO S16)
Scale: 3/4" = 1'-0" C U-21A | U-21A

CONTRACT CHANGE ORDER NO. 22

APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP — DATE 2/5/16

DATE	REVISION
1/29/16	1 Added This Sheet

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PIPE JACKET DETAILS
D24 & S16 AT STA. 168+84.50
FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

RSF, INC. — APRIL 30, 2016 LIC. EXP. DATE

SHEET No. U-21A OF 21 SHEETS

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

DRAWING NAME: Z:\OD ONGOING\12-026.1-FARRINGTON HWY PD\01 CAD\02-02-16 BEACON & JACKET\FHU-U21-A.DWG PLOT TIME: 02-02-16, 12:20 PM)

"AS-BUILT"

C.O. 120S-1