

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-I(33)	1999	28	58

BOARD OF WATER SUPPLY NOTES:

- REVIEWED BY
DATE
12/2/99

DESIGNED BY
CHECKED BY

NOTED BY
QUANTITIES BY

ORIGINAL PLAN
2016/06/01
- Unless otherwise specified, all materials and construction of water system facilities and appurtences shall be in accordance with the City and County of Honolulu Board of Water Supply's "WATER SYSTEM STANDARDS" VOLUME 1, DATED 1985, THE "APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION", VOLUME 2, DATED 1985, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, and all subsequent amendments and additions.
 - All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply. All other features of the water system, such as lines, grades, fittings, drainage, etc., and other features of improvements shall not be the responsibility of the Board of Water Supply.
 - Test pressure shall be one of the following:
 - prevailing line pressure, joints left exposed for 24 hours to check for leaks prior to backfill.
 - 150 psi.
 - The Contractor shall notify the BWS Planning and Engineering Division, Construction Section in writing and submit four sets of approved construction plans, one week prior to commencing work on the water system.
 - The Contractor shall chlorinate the entire inside surface of each pipe and fitting with disinfection solution of 5 ounces of sodium hypochlorite mixed with 10 gallons of water. (For connection only)
 - The Contractor shall be responsible for the protection of all water lines during construction. The Contractor shall be especially careful when excavating behind water lines, tees, and bends wherever there is a possibility of water line movement due to the removal of the supporting earth beyond the existing reaction blocks. The Contractor shall take whatever measure necessary to protect the water lines, such as constructing special reaction blocks (with BWS approval) and/or modifying his construction method.
 - The existence and location of underground utilities and structures as shown on the plans are from the latest available data but is not guaranteed as to the accuracy or the encountering of other obstacles during the course of the work. The Contractor shall be responsible and shall pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.
 - Prior to installation, the Contractor shall submit for approval by Board of Water Supply, the manufacturer's certification that all cast iron (gray or ductile) fittings for the project conform in all respects to the Water System Standards, dated 1985.
 - Polygon shape for mechanical joint glands as described in AWWA Standard CIII shall be "straight-sided" or an approved equal on a job to job basis.
 - Re-approval shall be required if this project is not under construction within a period of two years.
 - The Contractor shall cut and plug all existing unused laterals at the main whether or not shown on the plans. The damaged area shall be repaired to an equal or better condition than the immediate area. All work shall be done at the expense of the Contractor.

- The Contractor shall obtain a NPDES permit prior to chlorination and/or dewatering. A copy of the permit shall be submitted to the Board of Water Supply, Planning and Engineering Division, Construction Section.
- Pipe cushion shall be of high resistivity material. The Contractor shall submit a soil certification that high resistant cushion material has a resistivity greater than 5,000 OHM-CM. Remainder of the backfill material shall be as specified in Volume 1 of the Water System Standards. Pipe cushion and backfill material shall contain no hazardous substances above regulatory action levels including but not limited to lead, asbestos, mercury, chromium, cadmium, zinc, strontium, and polychlorinated biphenyls (PCB).
- All ductile iron pipe, fittings and valves shall be wrapped with two layers of 8 mil. polyethylene wrap.
- The Contractor shall coordinate the securing of the existing water system with the BWS prior to excavating behind or removing any existing thrust blocks, structural struts or reaction beams, or any fittings such as tees, plugs, caps, bends, offsets, and valves, or any other pipeline appurtenance. The Contractor shall be responsible for all associated damages resulting from failure to adequately secure the existing system.
- The Contractor shall adjust all manhole frames/valve boxes within the resurfaced area. Prior to resurfacing, BWS will initially locate all water manholes/valve boxes that will require adjustments. The Contractor shall then be responsible for "referencing" these manholes/valve boxes to facilitate the adjustments. The cost for adjustments shall be made at their respective unit prices in the Bid based on the actual number adjusted. Cost for referencing shall be incidental and shall not be paid directly. Any additional request to BWS to again locate the manholes/valve boxes shall be done at the expense of the Contractor. (BWS will charge and bill the Contractor for all costs for said additional work.)
- Maintain 3'-0" minimum cover for all existing waterlines (18" minimum for service laterals) from new finish grade. The Contractor shall probe the waterline and service laterals and submit the probing data to BWS Construction Section. Any adjustments to the existing water system to meet the minimum cover and the requirements of the BWS standards, whether shown on plans or not, shall be done by the Contractor at no cost to BWS.
- The Contractor shall have existing water mains toned before construction in their vicinity. Call the Investigation Section at 527-5296 for toning services. Guardrail post locations are to be kept to a minimum clearance of 18" to any 2-1/2" water line or meter box. No post driving will be allowed when post is to be installed closer than 3' from water main. Excavated areas shall be restored to their original condition.

CHLORINATION NOTE:

- A. The following chlorination and water sample collection procedure shall apply to all water pipeline projects:
- Step 1: Chlorinate main by filling pipline with water and introducing chlorine in sufficient quantity to obtain a minimum chlorine concentration of 50 parts per million (ppm). Leave chlorinated water in main overnight.
- Step 2: Test chlorinated water left in main for chlorine content. If chlorine content is less than 25 ppm, repeat Step 1. If chlorine content is equal to or greater than 25 ppm, go to Step 3.
- Step 3: Flush main of all chlorine. Take bacteriological sample. Stop flushing and hold water in main for three (3) hours. After three (3) hours, take bacteriological sample of water being held. Indicate on the sample bottle label the amount of chlorine residual detected at the time of sampling as follows:
- ++ high residual CL2 (greater than 0.1 ppm)

+ trace residual CL2 (0.05 to 0.1 ppm)

- no residual CL2 (less than 0.05 ppm)
- Leave water in main overnight.
- Step 4: Take bacteriological sample of water left overnight. Flush main to have a minimum of one change over. Stop flushing and hold water in main for three (3) hours. After three (3) hours, take bacteriological sample of water being held. Indicate on the sample bottle label the amount of chlorine residual detected at the time of sampling.
- B. Two (2) consecutive water pipeline bacteriological samples collected 24 hours apart must be within the following guidelines: contain zero total and fecal coliform, and less than 200 colony forming units (CFU) of total bacteria when there is no residual chlorine.
- C. Chlorination, flushing, sampling and testing will be extended should unsatisfactory results be encountered. Any sample that shows positive coliform presence or total bacteria greater than 200 CFU is unsatisfactory.
- D. Water samples that show the presence of atypical colonies, debris or results inconsistent with existing water are subject to reconfirmation. BWS reserves the right to request and test additional water samples in the interest of safeguarding public health and safety.

APPROVED BY:

Michael J. H.

CHIEF, PLANNING AND ENGINEERING, B.W.S. OF

CITY AND COUNTY OF HONOLULU

3/6/00

DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BOARD OF WATER SUPPLY NOTES

KAILUA ROAD

Shoulder Improvements For Bicycle Route

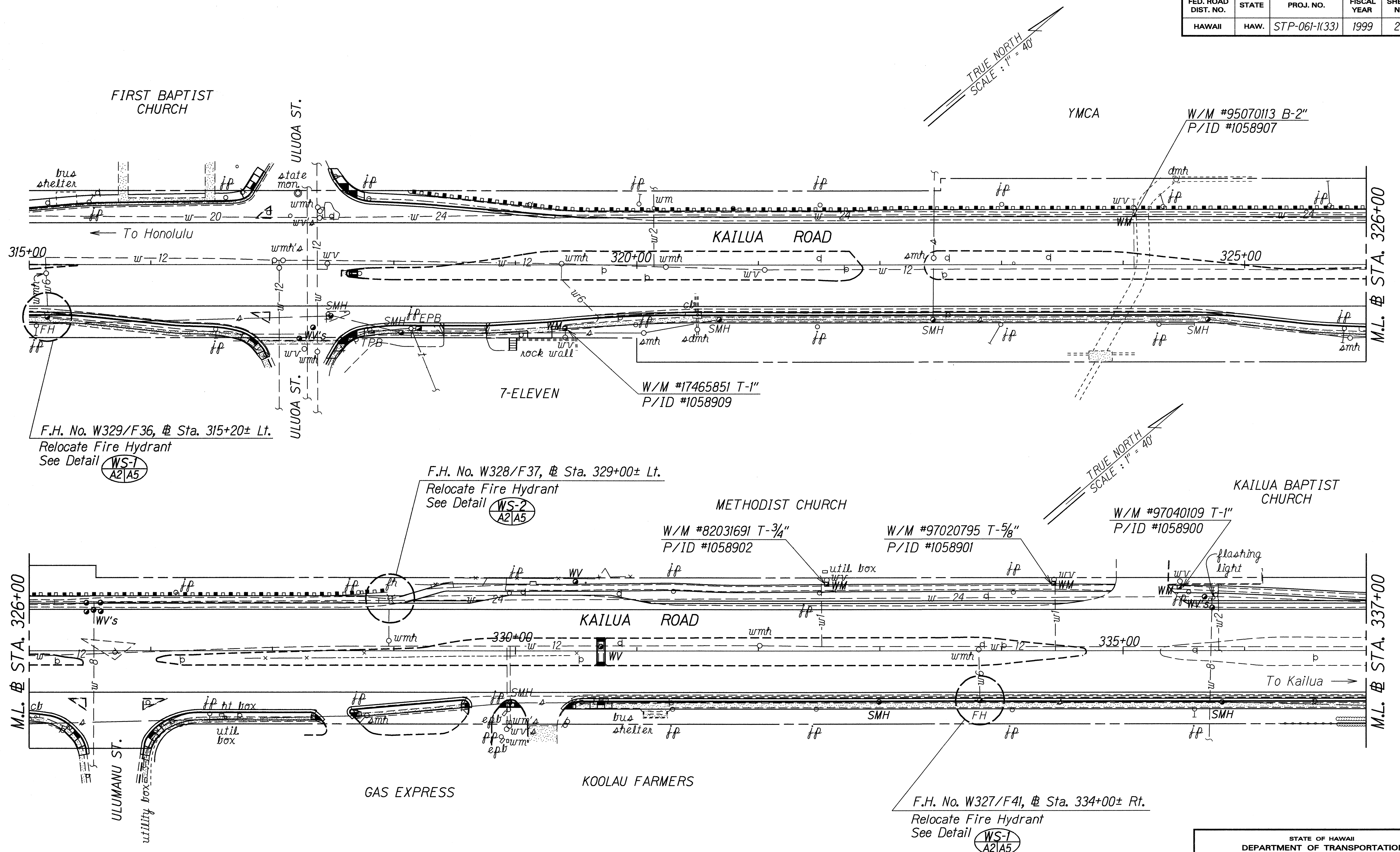
Kalanian'ole Hwy. To Kawai'ui Bridge

F.A. Proj. No. STP-061-I(33)

Date: Jan. 1999

SHEET No. A/ OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-K(33)	1999	29	58



ORIGINAL PLAN	DATE
DESIGNED BY	2/25/99
NOTED BY	
QUANTITIES BY	
CHECKED BY	

APPROVED BY:

Michael Lee
 CHIEF, PLANNING AND ENGINEERING, B.W.S. CO.
 CITY AND COUNTY OF HONOLULU

3/1/99
 DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

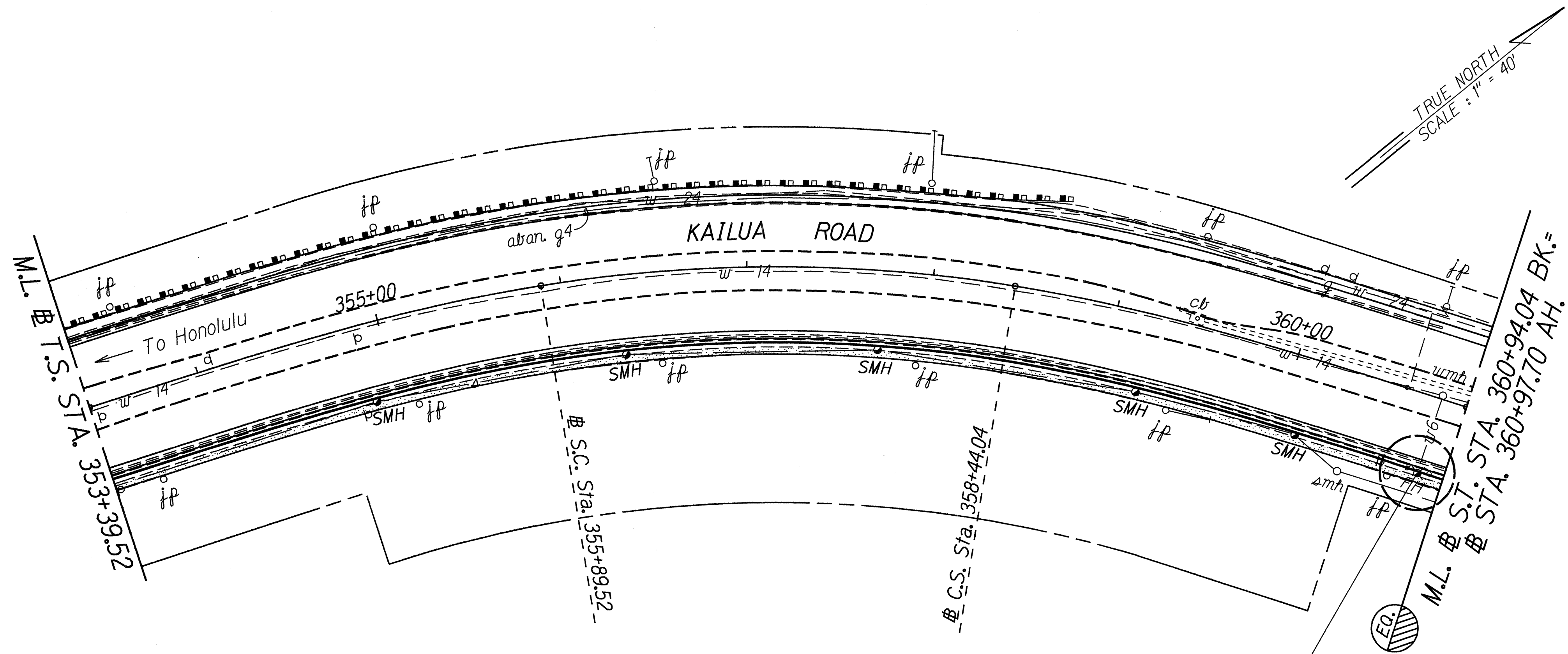
FIRE HYDRANT RELOCATION PLAN

KAILUA ROAD
 Shoulder Improvements For Bicycle Route,
 Kalanianaʻole Hwy. To Kawainui Bridge
 F.A. Proj. No. STP-061-K(33)

Scale: 1"=40.0' Date: Jan. 1999

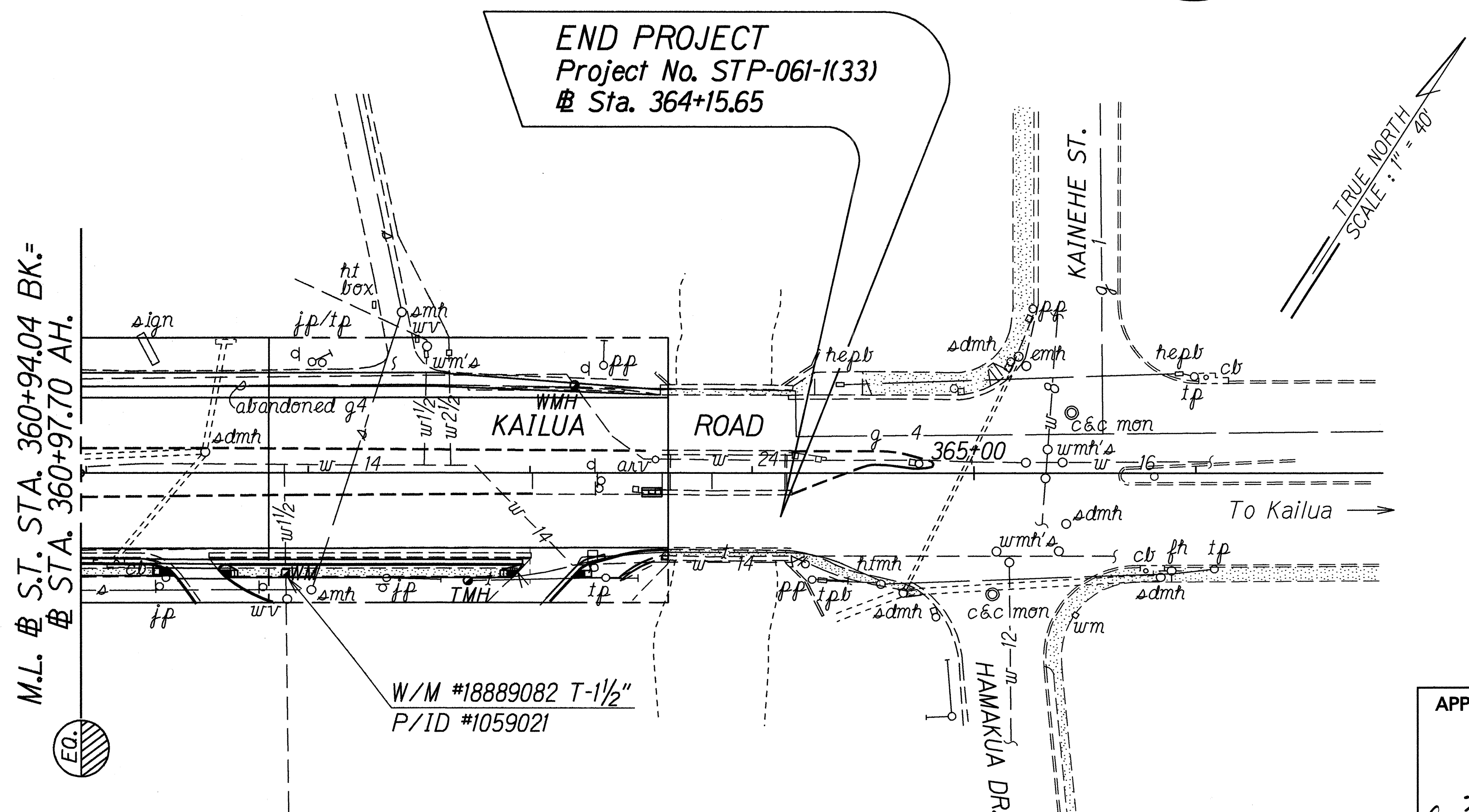
SHEET No. A2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-K(33)	1999	31	58



F.H. No. W324/F43, @ Sta. 360+80± Rt.
Relocate Fire Hydrant
See Detail **WS-4**
A4/A6

END PROJECT
Project No. STP-061-K(33)
@ Sta. 364+15.65



SURVEY PLANNED BY	DATE
DRAWN BY	12/25/99
DESIGNED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

APPROVED BY:
Michael J. [Signature]
CHIEF, PLANNING AND ENGINEERING, B.W.S. & DATE
CITY AND COUNTY OF HONOLULU

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
FIRE HYDRANT RELOCATION PLAN
KAILUA ROAD
Shoulder Improvements For Bicycle Route,
Kalaniana'ole Hwy. To Kawaiunui Bridge
F.A. Proj. No. STP-061-K(33)
Scale: 1"=40.0' Date: Jan. 1999
SHEET No. A4 OF 7 SHEETS

New Fire Hydrant
1 - FH
1 - Concrete Block
1 - Concrete Slab
1 - 6" Sleeve 12" long
6 - L.F. 6" DI Pipe
Cl. 52



New Fire Hydrant

- 1 - FH
1 - Concrete Block
1 - 6" Sleeve 12" long
3 - L.F. 6" DI Pipe
CJ. 52



Technical drawing illustrating the proposed fire hydrant relocation project. The drawing shows the existing ground, water lines, and the proposed new fire hydrant location.

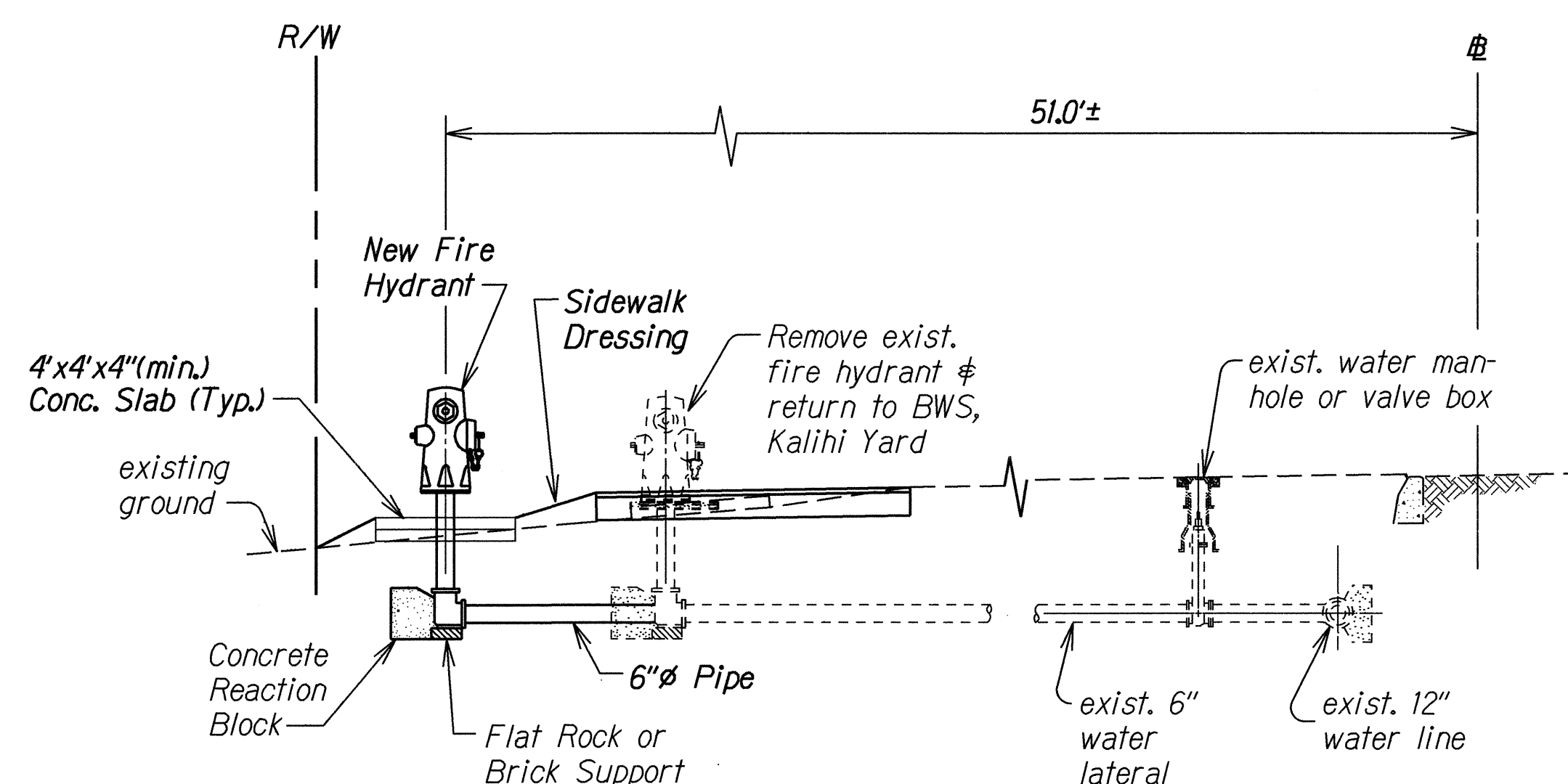
Key components and labels:

- 49.0'±**: Dimension indicating the distance from the existing water man-hole/valve box to the proposed new fire hydrant location.
- exist. water man-hole or valve box**: Existing infrastructure on the left.
- exist. 12" water line**: Existing main water line running horizontally.
- Remove exist. fire hydrant & return to BWS, Kalihi Yard**: Instruction regarding the removal of the existing hydrant.
- New Fire Hydrant**: The proposed new fire hydrant location.
- 4'x4'x4" (min.) Conc. Slab (Typ.)**: Proposed concrete slab for the hydrant base.
- existing ground**: The current ground surface.
- Concrete Reaction Block**: Proposed block for the hydrant base.
- Flat Rock or Brick Support**: Proposed support for the hydrant base.
- 6"Ø Pipe**: Proposed 6-inch diameter pipe for the hydrant connection.
- 6" water lateral**: Existing 6-inch water lateral line.
- R/W**: Right of Way line.

PROFILE

Scale: $\frac{1}{4}" = 1'-0"$

FIRE HYDRANT RELOCATION DETAIL

$$\text{STA. } 315+20 \pm \text{ Rt. } \neq \text{ STA. } 334+00 \pm \text{ Rt.}$$


PROFILE

Scale: $\frac{1}{4}" = 1'-0"$

FIRE HYDRANT RELOCATION DETAIL

STA. 329+00± Lt.

WS-2
A2 | A6

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY <i>L. Mitsuyoshi, MH, GK</i>	<i>1-26-59</i>
<i>dd3jyme</i>	TRACED BY	
<i>2khhkfnadll</i>	DESIGNED BY <i>R. Sequeira</i>	
	QUANTITIES BY	
	CHECKED BY	

APPROVED BY:

Michael Felt
CHIEF, PLANNING AND ENGINEERING
CITY AND COUNTY OF HONOLULU

DATE 3/01/00

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FIRE HYDRANT RELOCATION DETAILS

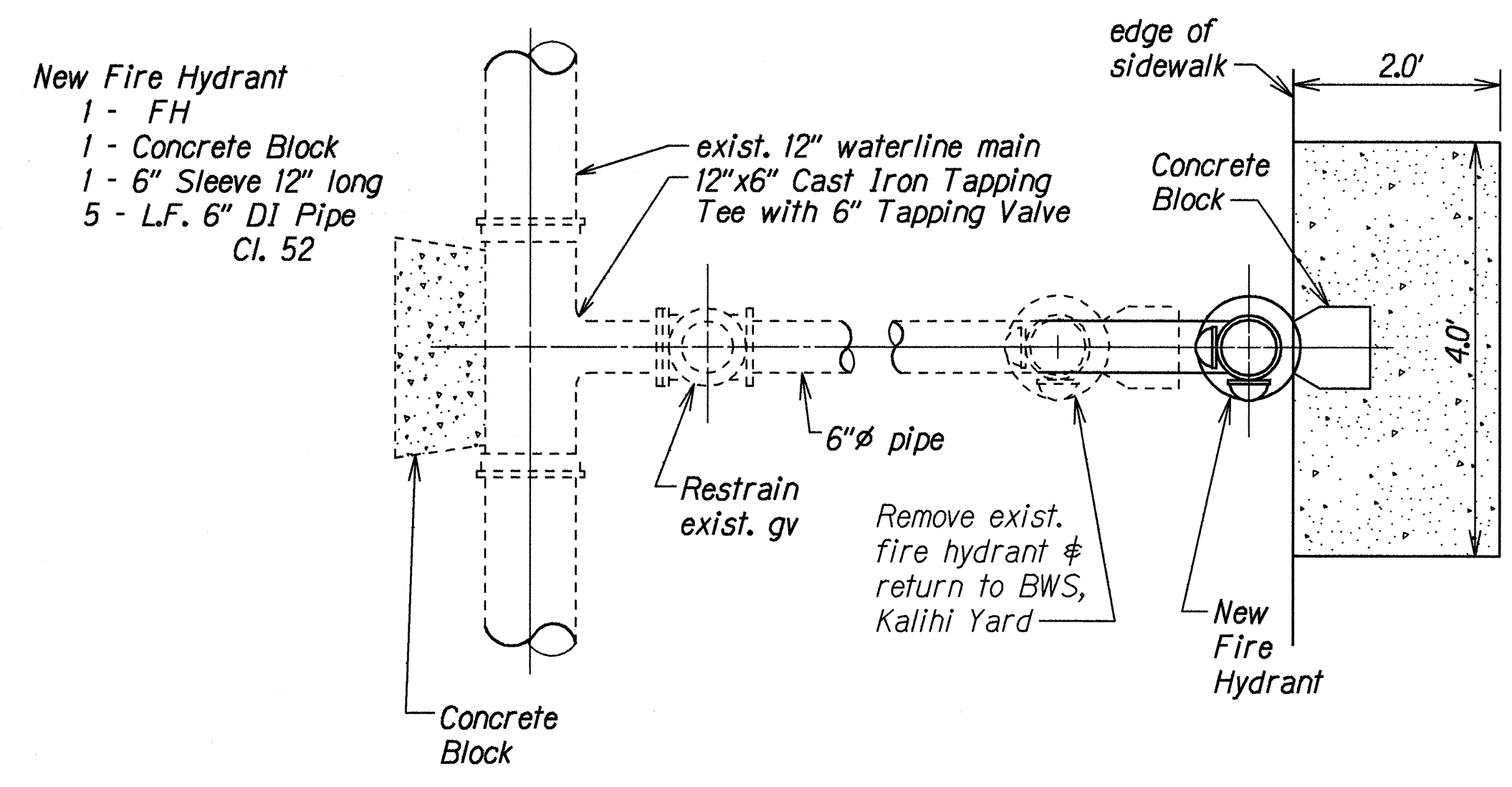
KAILUA ROAD
Shoulder Improvements For Bicycle Route
Kalanianaʻole Hwy. To Kawainui Bridge
F.A. Proj. No. STP-061-I(33)

Scale: As Shown

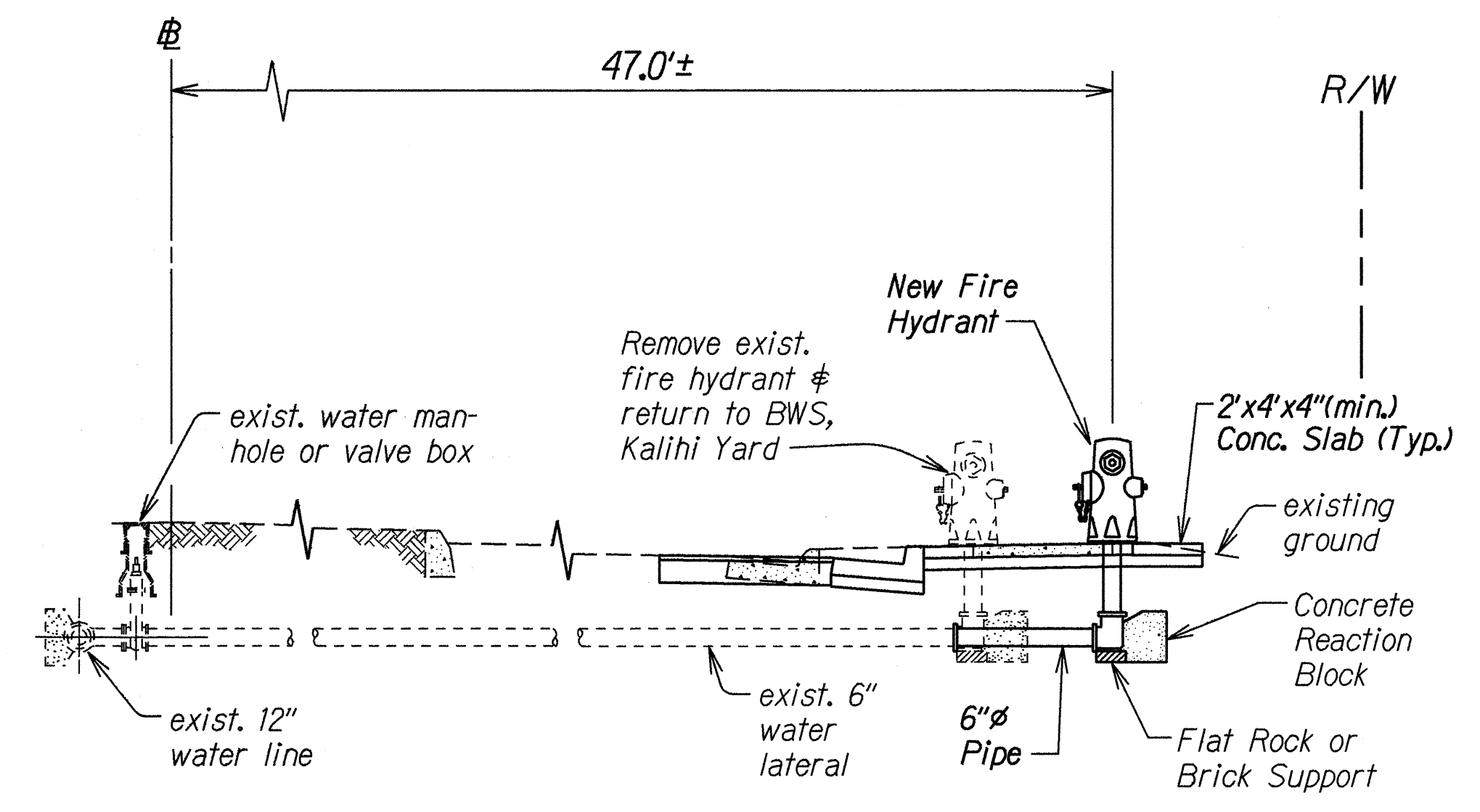
Date: Jan. 1999

SHEET No. A5 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-K(33)	1999	33	58

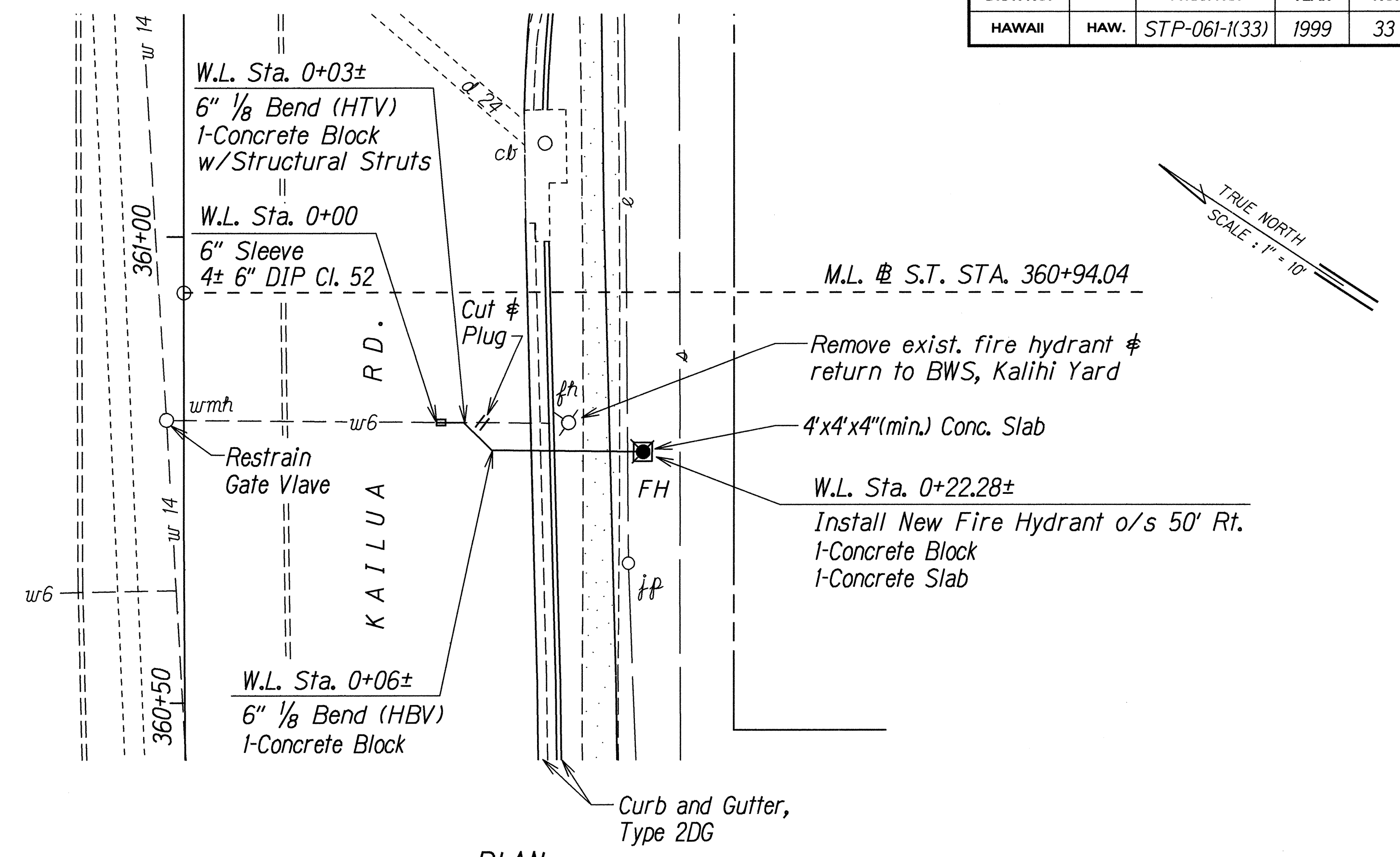


PLAN
 Not to Scale

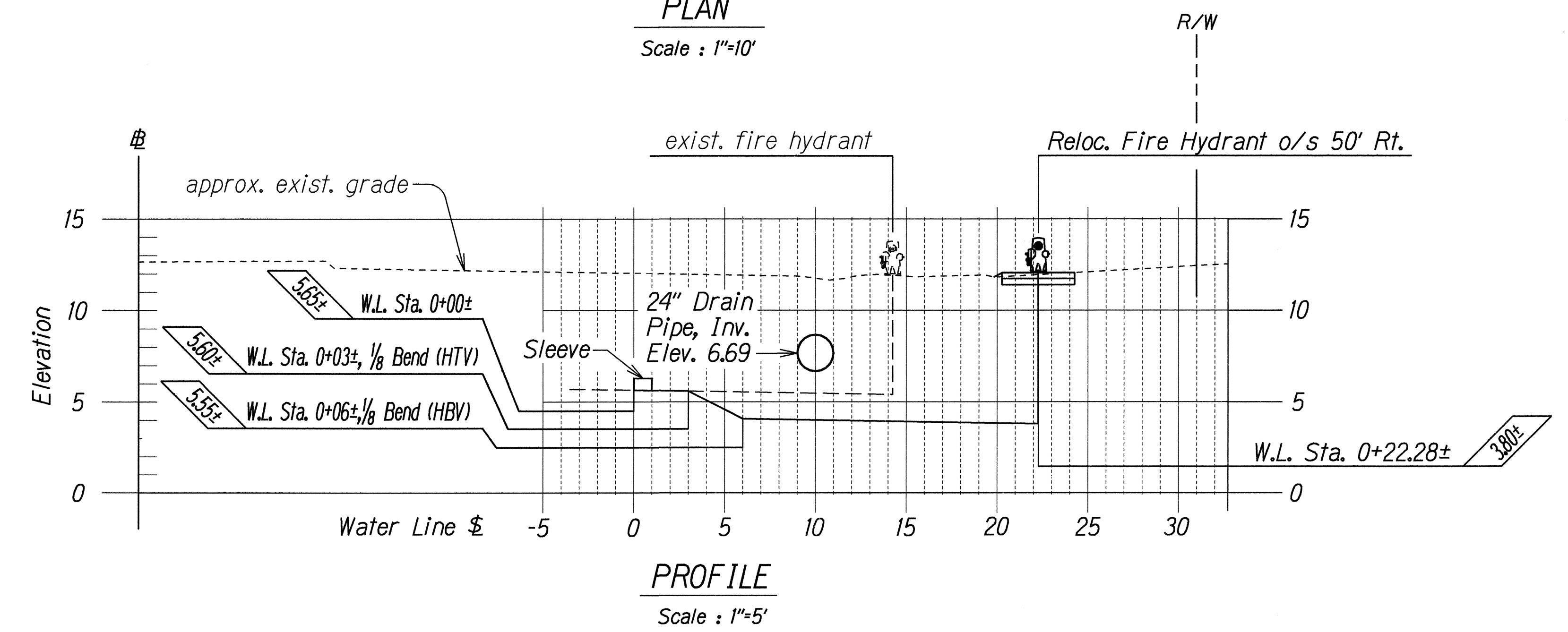


PROFILE
 Scale: 1/4" = 1'-0"

FIRE HYDRANT RELOCATION DETAIL
 STA. 341+00± Rt. & STA. 343+50± Rt. WS-3 A3/A6



PLAN
 Scale: 1"=10'



PROFILE
 Scale: 1"=5'

FIRE HYDRANT RELOCATION DETAIL
 STA. 360+80± RT.

APPROVED BY:

Michael A. [Signature]

CHIEF, PLANNING AND ENGINEERING, B.W.S. CITY AND COUNTY OF HONOLULU

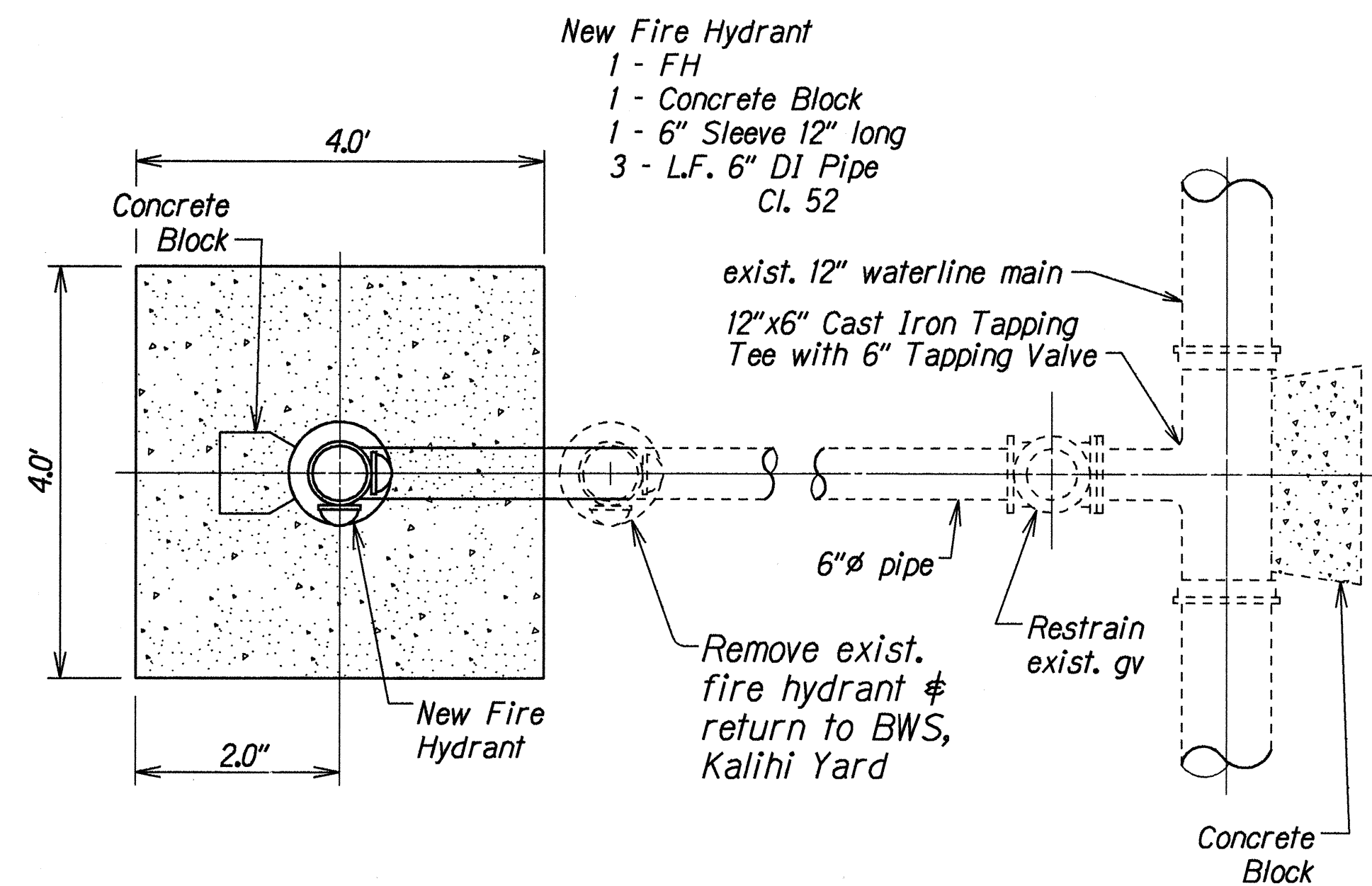
DATE 2/6/99

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

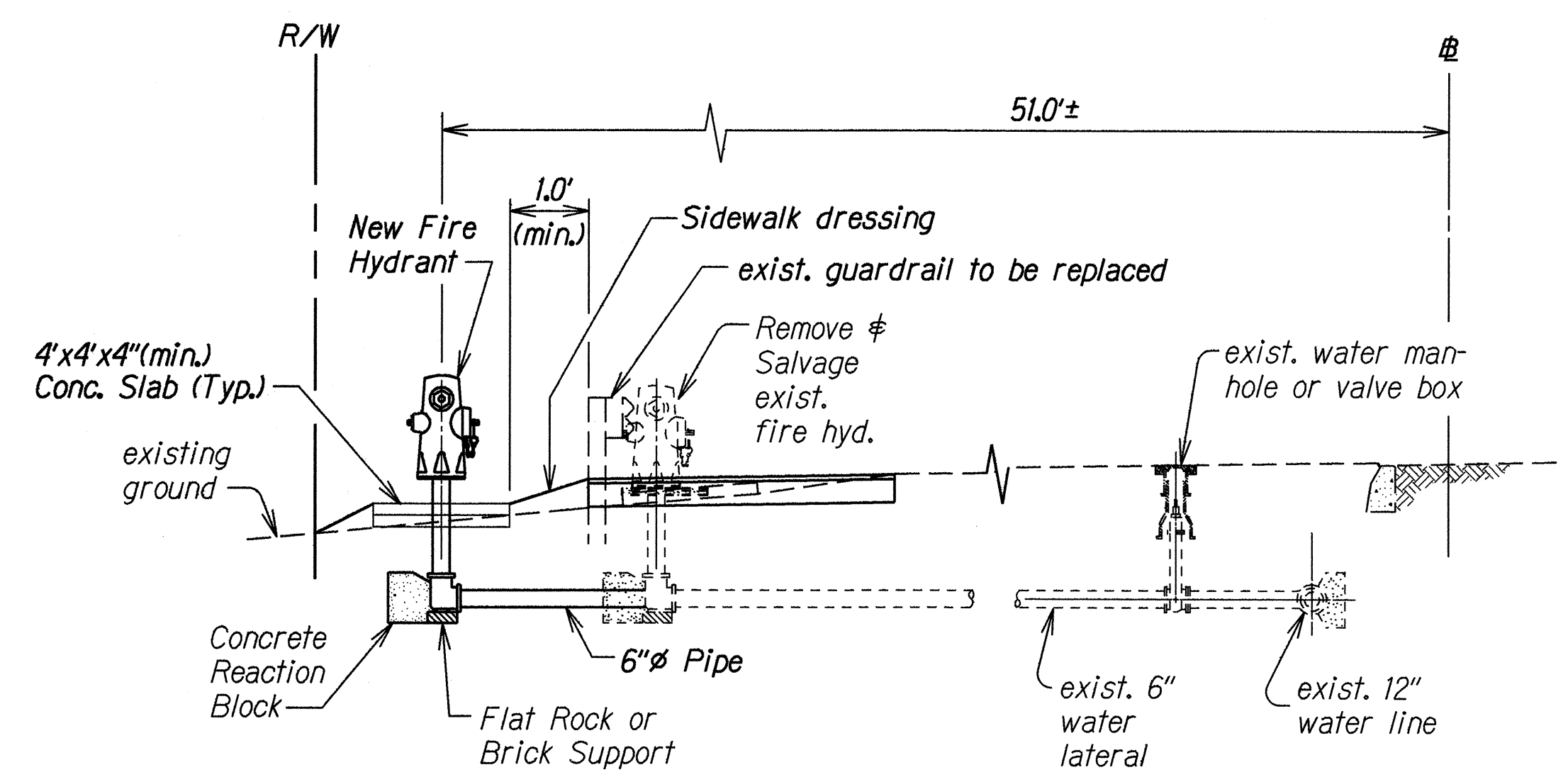
FIRE HYDRANT RELOCATION DETAILS
KAILUA ROAD
Shoulder Improvements for Bicycle Route
Kalanianaʻole Hwy. to Kawainui Bridge
F.A. Proj. No. STP-061-K(33)
Scale: As Shown Date: Jan. 1999
SHEET No. A6 OF 7 SHEETS

DESIGNED BY	DATE
TRACED BY	DATE
DESIGNED BY	DATE
QUANTITIES BY	DATE
CHECKED BY	DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-1(33)	1999	34	58



PLAN
Not to Scale



PROFILE
Scale: 1/4" = 1'-0"

FIRE HYDRANT RELOCATION DETAIL
STA. 348+50± Lt.

APPROVED BY:

Michael H.
CHIEF, PLANNING AND ENGINEERING, B.W.S. CO. DATE 2/1/99
CITY AND COUNTY OF HONOLULU

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
FIRE HYDRANT RELOCATION DETAILS
KAILUA ROAD
Shoulder Improvements For Bicycle Route,
Kalaniana'ole Hwy. To Kawainui Bridge
F.A. Proj. No. STP-061-1(33)
Scale: As Shown Date: Jan. 1999
SHEET No. A7 OF 7 SHEETS