FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	5	11

TRAFFIC SIGNAL LEGEND

- New Traffic Signal Master Controller
- New Traffic Signal Conduits & Cables
- New 12" RYG Traffic Signal Head
- New 12" RY↑ Traffic Signal Head
- New 12" RY← Traffic Signal Head
- New 12" RYG←G/Y Fiber Optic Traffic Signal Head
- New Type II Traffic Signal Standard w/Mast Arm and Traffic Signal Heads
- New Pedestrain Signal Head
- New Type B Pullbox w/Modified Cover
- New Type B Pullbox
- New Type C Pullbox (For Details, see Plan Sht. No. 7)
- New Type D Pullbox (For Details, see Plan Sht. No. 7)
- New Loop Detectors
- New Pipe Guard
- Traffic Signal Standard
- Standard Traffic and Pedestrian Signal Heads Mounted on Type I Signal Height-10'
- Opticom Receiver

LEGEND

- emh Existing Electrical Manhole
- smh Existing Sewer Manhole
- tmh Existing Telephone Manhole
- sdmh Existing Storm Drain Manhole
- wmh Existing Water Manhole
- —e— Existing Electrical Line
- —s—12— Existing Sewer Line
- ---d--24--- Existing Drain Line
- —w—12— Existing Water Line
- —g—6— Existing Gas Line
- —t— Existing Telephone Line
- Existing Single Metal Guardrail
- pp Existing Power Pole

TRAFFIC SIGNAL NOTES

1. The locations of the Traffic Signal Standards, Traffic Signal Standards w/Mast Arms, Pedestrian Push Buttons, Traffic Controller, Pullboxes, Conduits and Loop Detectors shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.
2. All splicing shall be done in the pullboxes.
3. Furnishing and installing the conduit stubouts (pullboxes to edge of pavement) will not be paid for separately but shall be considered incidental to the various contract items.
4. A solid #8 bare copper wire shall be pulled with the traffic signal control cable for equipment ground. Cost shall be incidental to the installation of the control cable.
5. All Traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signals as called for in the plans.
6. The Contractor shall install one meter socket and 50 amp. breaker as shown on the plans in accordance with HECO requirements. The Meter shall be mounted on a meter pedestal between 5 feet and 6 feet above ground. For Details, see Plan Sht. No. 6. Meter socket shall be 4-prong, complete with a manual circuit closing device.
7. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the plans. Cost for the loop amplifier shall be incidental to the installation of the loop detector.
8. Should any defect be encountered during the warranty period, the manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense whatsoever to the State. All repairs shall be done as soon as possible.
9. All traffic signal work shall conform to the requirements of the "Manual On Uniform Traffic Control Devices For Streets And Highways", Federal Highway Administration (1988) and Amendments.
10. Locations of traffic markings and markers (lane lines, Stop lines, crosswalk, etc.) shown on the plans shall be verified with the Engineer prior to the installation of the traffic signal system.
11. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (phone no. 527-5007) two weeks prior to commencing any work on the traffic signal system.
12. The Department of Transportation Services, City & County of Honolulu, will assist the Engineer in construction inspection for the traffic signal system. The Contractor shall notify the Electrical and Maintenence Services Division, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone no. 527-5007).
13. Installation of the Opticom Receiver shall conform in accordance with the Standard Details of the Department of Transportation Services, City & County of Honolulu, Electrical and Maintenance Services Division, and all subsequent amendments and additions.
14. The cost of the Pipe Guard (4 each) shall not be paid for separately but considered incidental to the various traffic signal items. For Details, see Plan Sht. No. 6.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

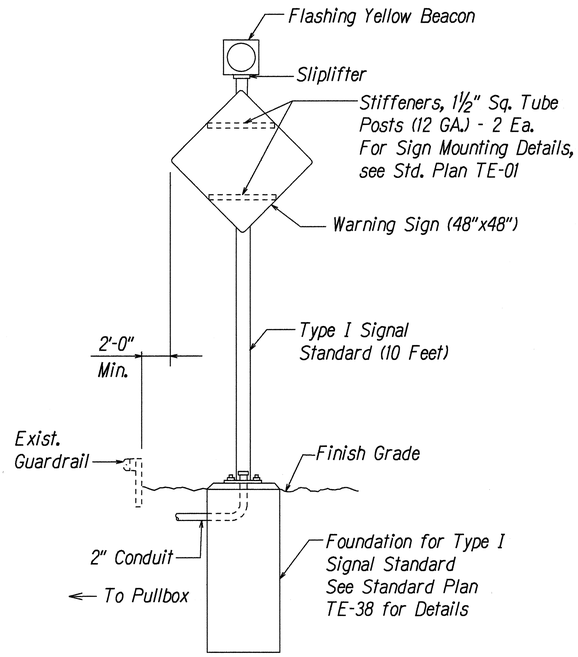
TRAFFIC SIGNAL LEGEND & NOTES

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Date: Apr., 1995

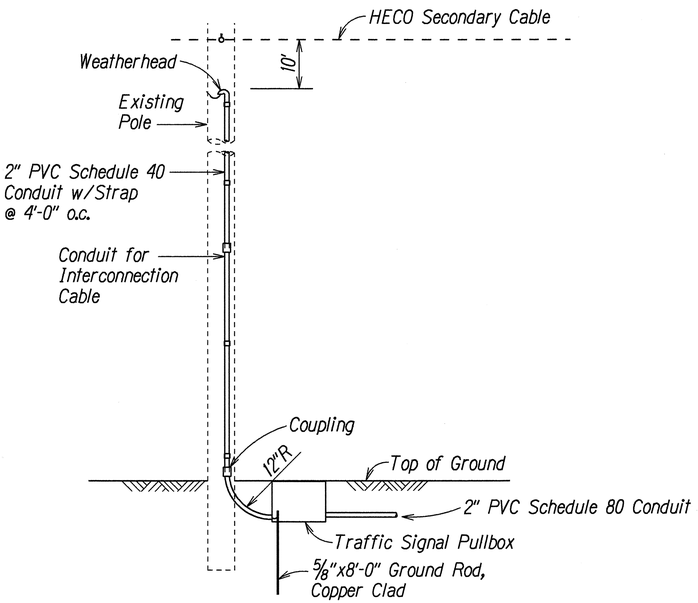
SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	C.O. 6	11



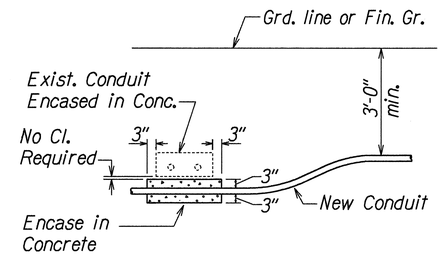
WARNING SIGN w/FLASHING AMBER BEACON

Not to Scale



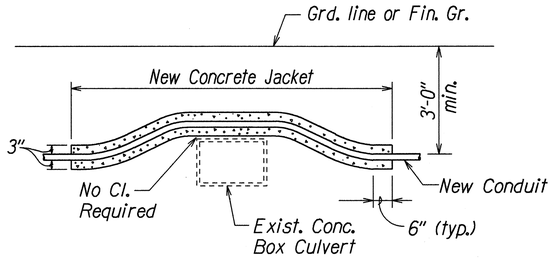
SERVICE POLE DETAIL

Not to Scale



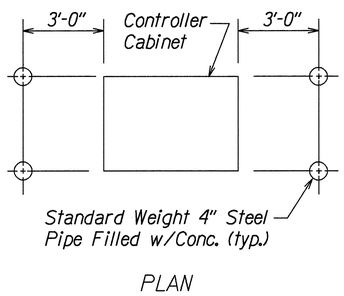
CONDUIT BY-PASS DETAIL

Not to Scale

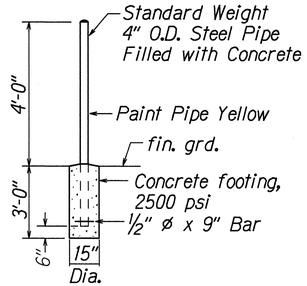


CONDUIT BY-PASS DETAIL AT EXISTING CONCRETE BOX CULVERT

Not to Scale



PLAN



TYP. ELEVATION

NOTE:

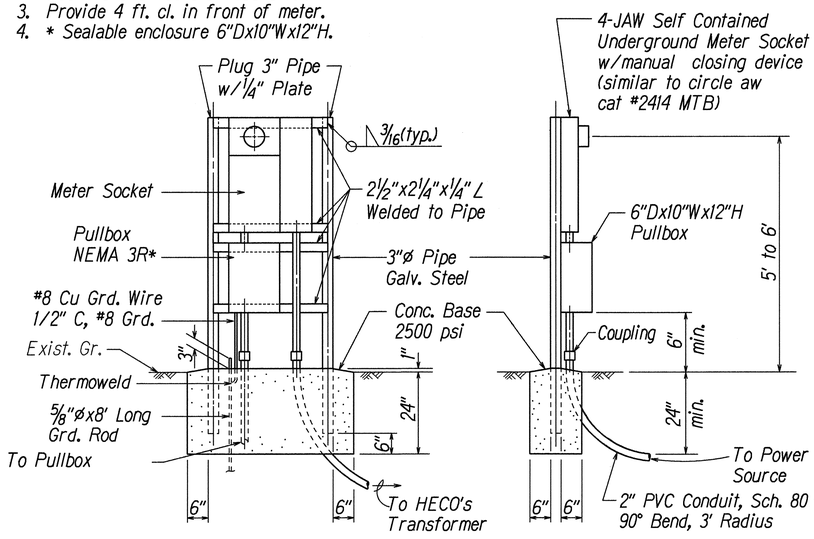
Cost of concrete filled galvanized pipe guard shall be incidental to other items of work.

PIPE GUARD DETAIL

Not to Scale

Notes:

1. Pedestal shall be hot-dipped galv. after fabrication.
2. All fastening bolts, nuts & washers shall be stainless steel.
3. Provide 4 ft. cl. in front of meter.
4. * Sealable enclosure 6"Dx10"Wx12"H.



FRONT ELEVATION

SIDE ELEVATION

METER PEDESTAL FOR UNDERGROUND SERVICE

Not to scale

DATE	REVISION
4/18/96	Revised Service Pole Detail. Added Meter Pedestal Detail.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

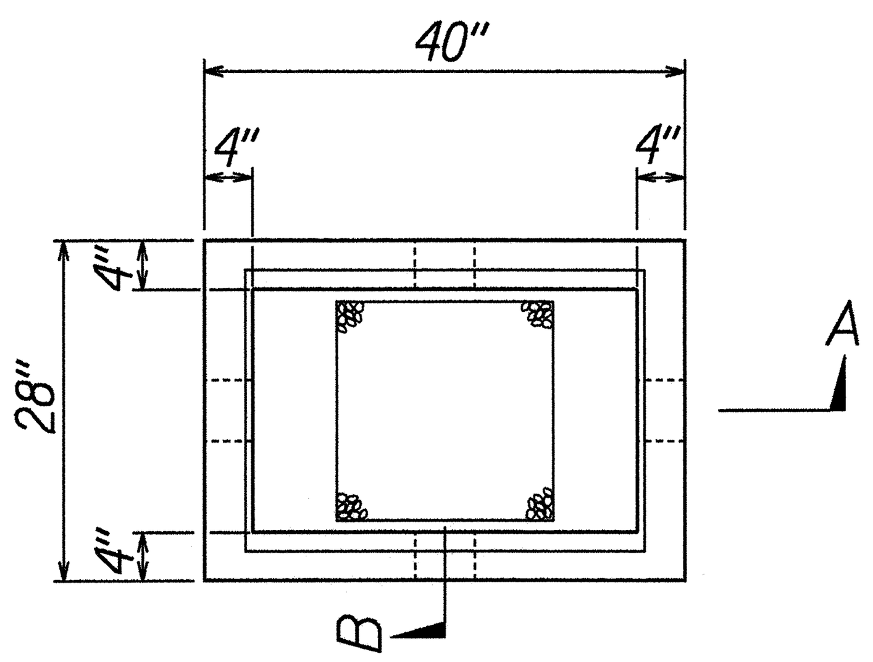
Not to Scale — Date: Apr., 1995

SHEET No. 1 OF 2 SHEETS

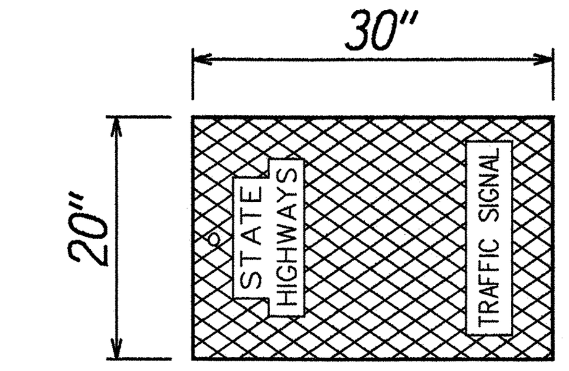
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 8/94
	DRAWN BY E. Isobe	
NOTE BOOK dated	TRACED BY C. Abe	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

C.O. 6

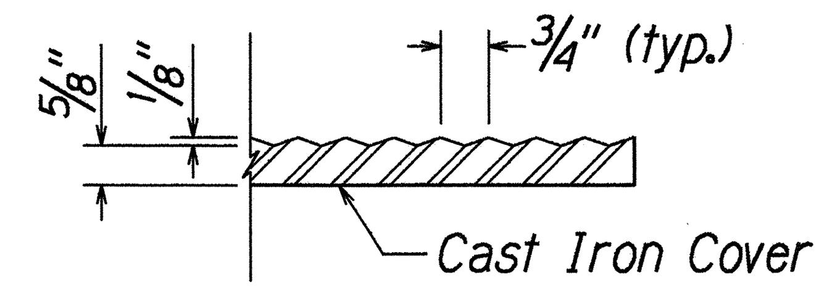
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	7	11



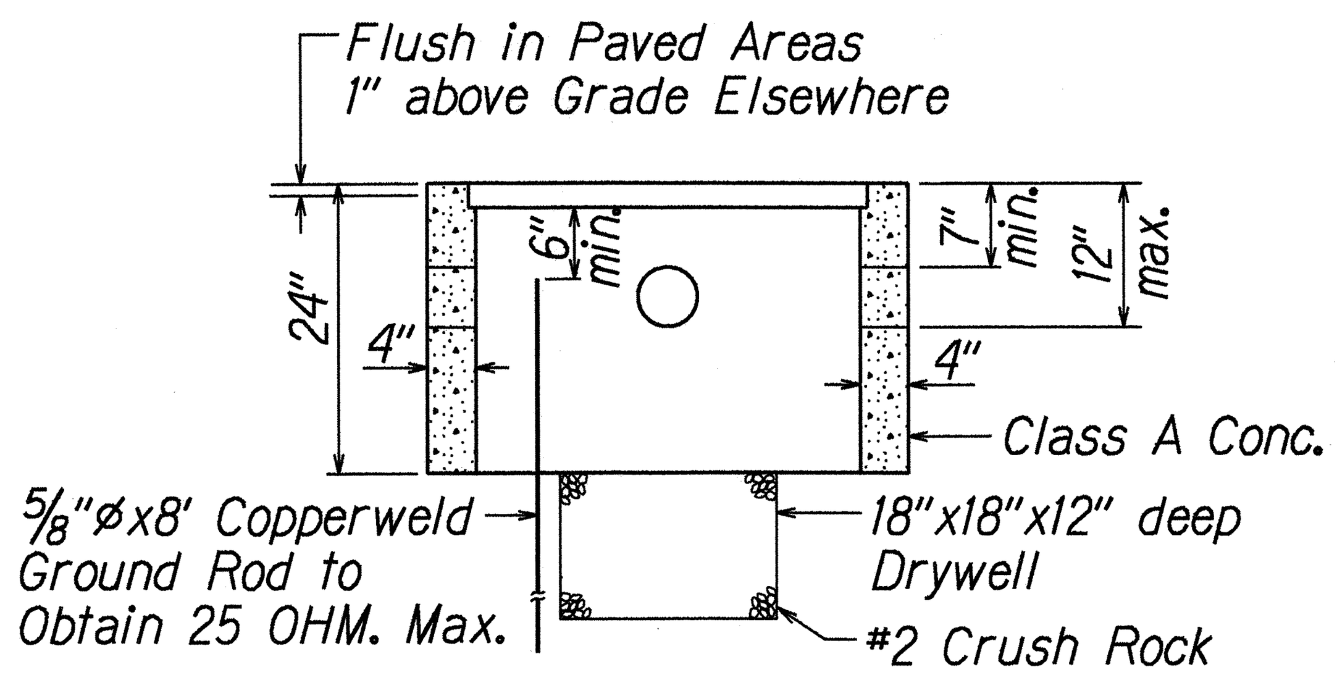
PLAN OF PULLBOX



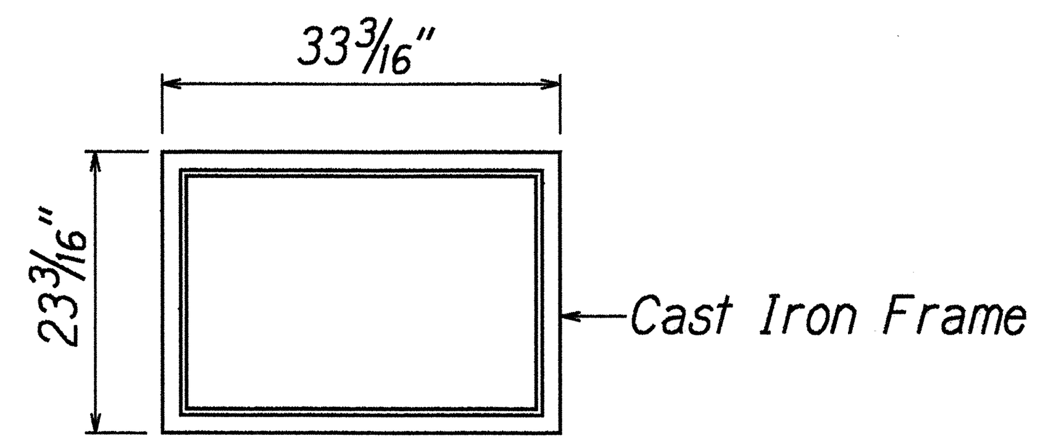
PLAN OF COVER



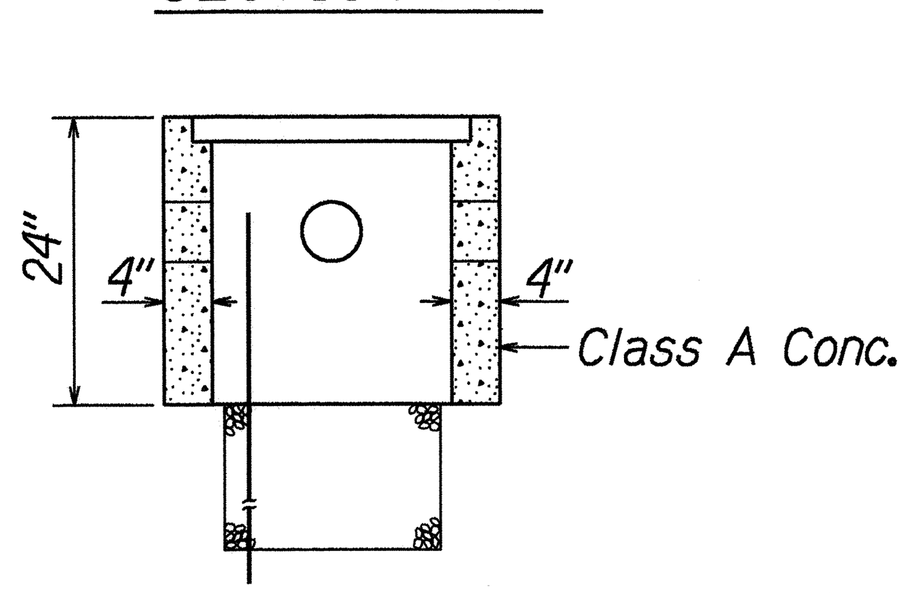
SECTION THROUGH COVER



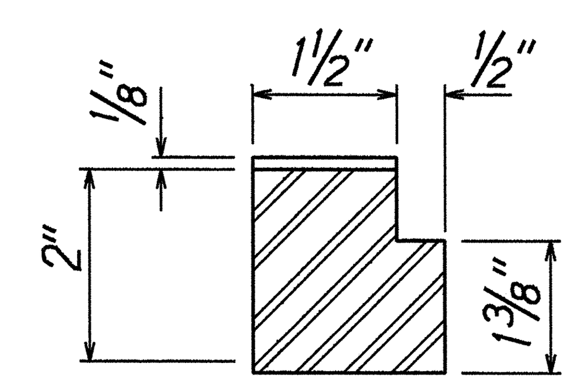
SECTION A-A



PLAN OF FRAME



SECTION B-B

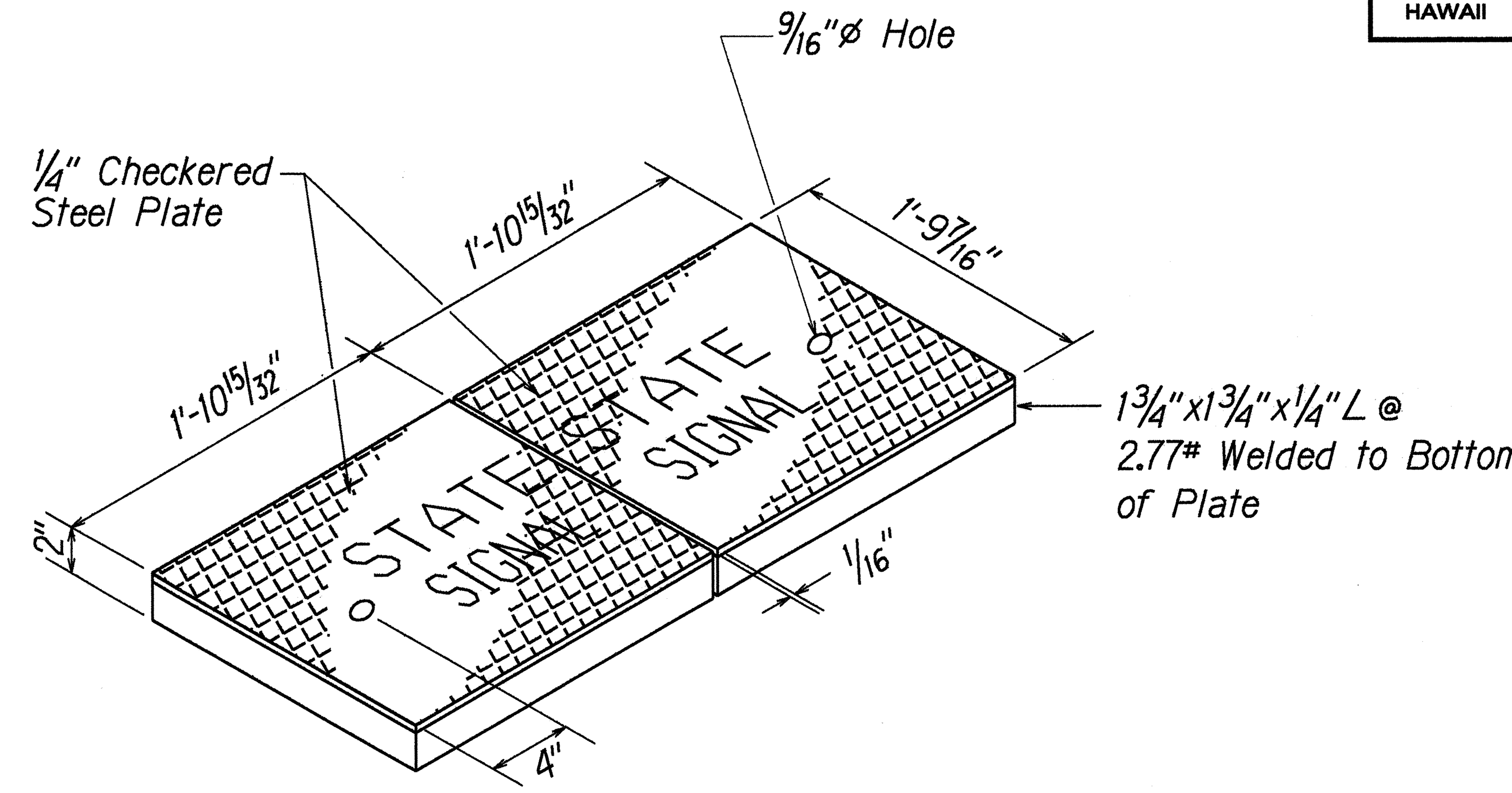


SECTION THROUGH FRAME

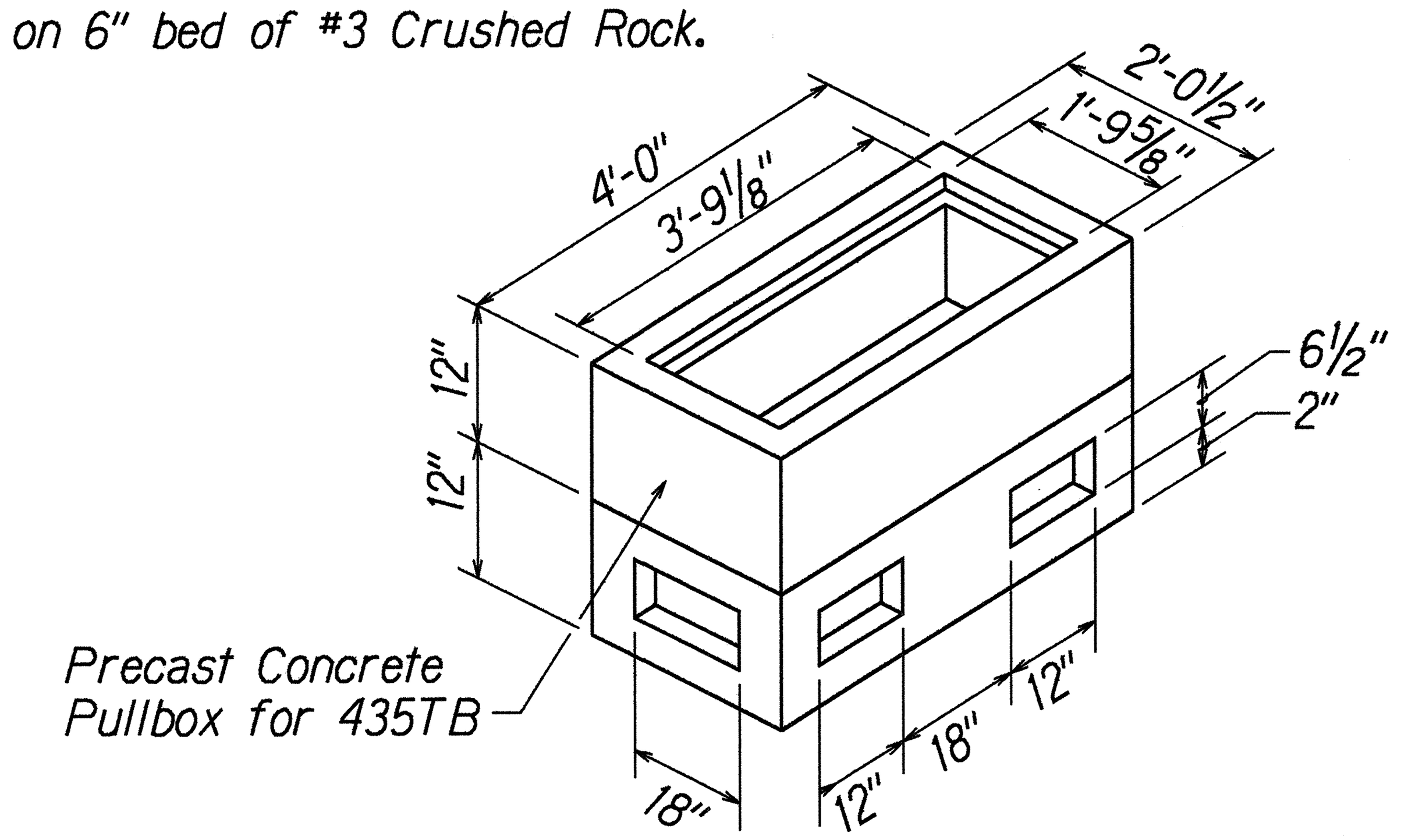
Note: Provide Ground Rod in all Pullboxes adjacent to Standards, Pedestals, Controllers, and other locations specified by the Engineer.

TYPE "C" PULLBOX

Not to Scale



NOTES:
1. After fabrication of covers, Galvanize or apply 2 coats of ZRC (Zinc Rich Coating) to both sides.
2. Install on 6" bed of #3 Crushed Rock.



TYPE "D" PULLBOX

Not to Scale

ORIGINAL PLAN — SURVEY PLOTTED BY; DRAWN BY B. Arii; TRACED BY; DESIGNED BY C. Abe; QUANTITIES BY; CHECKED BY — DATE 4/11/95 — NOTE BOOK No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Scale: As shown
Date: Apr., 1995

SHEET No. 2 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	C.O. 8	11

TRAFFIC SIGNAL SYSTEM CONDUIT AND CABLE SCHEDULE

	DELTA ITEM NO. (△)															
	△1	△2	△3	△4	△5	△6	△7	△8	△9	△10	△11	△12	△13	△14	△15	△16	△17
QUANTITY OF 2" CONDUIT, SEE NOTE NO. 1	7	6	4	2	3	5	5	5	5	1	1	1	2	2	1	1	1
QUANTITY OF 3/C #6 POWER CABLE																	1
QUANTITY OF 26/C #14 CONTROL CABLE	2	2	2	2	2	2	2	2	2								
QUANTITY OF 2/C #14 SHIELDED LOOP DETECTOR AND PEDESTRIAN PB CABLE	10	3	3			4	4	6	6			1	3	1			
QUANTITY OF 3/C #20 SHIELDED OPTICOM RECEIVER CABLE	4	1			1	1	2	2	3								
QUANTITY OF 12PR #19 INTERCONNECT CABLE	1	1								1	1*						
HAWAIIAN TELEPHONE LINE	1	1	1													1	
QUANTITY OF 3/C #12 FLASHING BEACON CABLE													1	1	1		

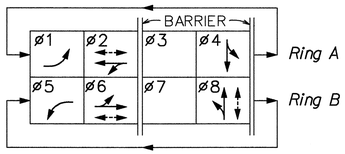
NOTE: 1. ALL CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS OTHERWISE NOTED.
* Existing Interconnect Cable

RI0-4b (Sign Varies w/Direction)

(A) (←) RI0-4b(L) (E) (←) RI0-4b(L)
(B) (→) RI0-4b(R) (F) (→) RI0-4b(R)
(D) (→) RI0-4b(R) (G) (←) RI0-4b(L)

VALLEY OF THE TEMPLES
MEMORIAL PARK
WINDARD MORTUARY

PEDESTRIAN PUSH BUTTON w/Sign



PHASE DIAGRAM

TRUE NORTH
SCALE: 1" = 20'

Install Street Name Sign, D3-2. For Details, see Plan Sht. No. 9

1 Ea., 4-6'x6' Loop Detectors Centered in Lane

R/W

42"

CABLE

P.T. ℄ Sta. 139+98.70

RI0-12 LEFT TURN YIELD ON GREEN
Install Sign on Mast Arm

2 Ea., 1-6'x6' Loop Detectors Centered in Lane

HECO Transformer w/Concrete Pad

Front New Meter Pedestal

RI0-12 LEFT TURN YIELD ON GREEN
Install Sign on Traffic Signal Standard

90'±

100'±

140+00 ← To Kaneohe

145+00

KAHEKILI HIGHWAY

1 Ea., 6-6'x6' Loop Detectors, Centered in Lane

2 Ea., 1-6'x6' Loop Detectors, Centered in Lane

185' To Stop Bar

1-6'x6' Loop Detector, Centered in Lane

1 Ea., 6-6'x6' Loop Detectors, Centered in Lane

2 Ea., 1-6'x6' Loop Detectors Centered in Lane

Install Street Name Sign D3-1. For Details, See Plan Sht. No. 9

Connect to Exist. 24C #20 Interconnection Cable

Install New City ⅋ County of Honolulu Street Name Signs, SSN-1 ⅋ SSN-2. For Details, see Plan Sht. No. 10

Exist. Concrete Box Culvert

2 Ea., 1-6'x6' Loop Detectors. Centered in Lane

1 Ea., 4-6'x6' Loop Detectors. Centered in Lane

R/W

105'± 110'± 100'± 75'±

W3-4 (48"x48")
STOP AHEAD WHEN FLASHING

℄ Sta. 137+80± Rt.

Install New Sign and 12" Yellow Flashing Light on 10-Foot Type I Signal Standard. For Details, see Plan Sht. No. 6.

RI0-12 LEFT TURN YIELD ON GREEN
Install Sign on Traffic Signal Standard

Install Street Name Sign, D3-2. For Details, see Plan Sht. No. 9

HUI IWA STREET (EAST)

100'±

125'±

135'±

exist. Haw'n. Telephone pullbox

RI0-12 LEFT TURN YIELD ON GREEN
Install Sign on Mast Arm

To Kahaluu →

TRAFFIC SIGNAL HEAD SCHEDULE

Traffic Signal Head Type and Description	12" RYG Traffic Signal Head	12" RYG ⅋ Traffic Signal Head	Pedestrian Signal Head
Pole Letter Signal Head Number	A-2, A-3, C-1, C-2, D-1, E-2, E-3, G-1, G-2, H-1	A-1, B-1, E-1, F-1	A-4, B-2, D-2, E-4, F-2, G-3

NOTE:
The Contractor shall contact Hawaiian Telephone (George Higashionna @ 483-8010) for verifying the location ⅋ connection requirements to the existing Hawaiian Telephone pullbox.

APPROVED:

Director, Dept. of Transportation Services — DATE 5/21/96

DATE	REVISION
4/18/96	Added Meter Pedestal, HECO Transformer w/Concrete Pad. Revised Power Cable on Traffic Signal System Conduit ⅋ Cable Schedule.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Scale: 1"=20' Date: Apr., 1995

SHEET No. 1 OF 1 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 3/94
	DRAFTED BY Elaine Isobe	
NOTE BOOK	TRACED BY Casey Abe	
	QUANTITIES BY	
	CHECKED BY	

C.O. 8

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1996	C.O.8S-1	11

HECO NOTES

1. The Contractor is to furnish materials and construct the facilities for the padmounted transformer including the concrete pad, primary and secondary ducts, anchor bolts, and also a concrete curb and rock fill around the pad, when required. (See Note 10).

2. Primary Ducts: The bends into the primary compartment of the padmount transformer shall be PVC with a 3'-0" radius.

3. Secondary Ducts: The Contractor is to supply and install the secondary ducts and cables. The secondary cables are to be minimum of 12'-0" long from the end of the duct.

4. The Utility Company shall have 24-hour access to the transformer without going through locked areas.

5. The Utility Company shall have a minimum 10' wide vehicular access to the transformer.

6. Bends due to changes of grade are to have a minimum radius of 20'-0". The ducts are to be as shown in the duct encasement details and are to run in a straight line from pad to pole or handhole. The Contractor is to install the ducts from the pad to the property line with the end left so that the Utility Company can readily connect to it. The Utility Company will extend the ducts from the property line to the pole or handhole

7. One copperclad ground rod 5/8" dia x 8'-0" long is to be provided by the Utility Company and installed by the Contractor. The Contractor is to pick up the rods at the Utility Company. The rod is to extend 6" above the finished pad. Tie the rod to a water pipe with #1/0 copper wire. This tie may be eliminated where the water pipe is more than 25' away.

8. No permanent or temporary structure or object shall be erected or placed within the indicated clear space.

9. The transformer pads are to be located by the Contractor so that the transformer sound levels do not exceed the limits specified in the Department of Health Regulation, "Community Noise Control for Oahu". The Utility Company shall provide the Contractor with the transformer sound level for each project and only standard NEMA sound level transformers shall be installed. It will be the responsibility of the Contractor to meet the allowable sound level limits at the property lines and also consider the prosimity of of the transformer to building windows, walls, etc. on this project to limit any objectionable noise to occupants in that property.

10. When the concrete pad is located in the vicinity of existing or future combustible material, combustible buildings or parts of buildings, the Contractor shall provide safeguards as outlined in Article 450 of the National Electrical Code (latest revision), subject to the approval of the County Inspector. If fire resistant concrete curbs are required, the Contractor shall erect a 5" wide x 14" deep concrete curb around the transformer pad, 2 ft. from the edges. The curb shall protrude 2" above the pad finished grade, and the space between the pad and the curb shall be filled with 7" of grade "A" crushed lava rock.

11. The front side of the concrete pad shall always be located to face the vehicular access (see Notes #4 and #5) and shall be free and clear of any construction at all times

12. When parts of buildings or structures are located directly over the concrete pad, a minimum vertical clearance of 9'-0" from the pad grade is required. In addition, 4'-0" clearance from any permanent or temporary object or structure shall be required from either sides of the pad to facilitate transformer removal or changeout. The customer shall provide adequate safeguards as outlined in Article 450 of the National Electrical Code (latest revision), and subject to approval of the County Building Inspector.

13. All duct lines shall contain a polyolefin pull line (Jet Line Cat. #232 or equivalent).

14. After the conduits are installed, the Contractor shall pass a smooth bullet-shaped wooden test mandrel through the entire length of each conduit to test for freedom of burrs and obstructions.

15. Select Backfill: As specified in the Utility Company's Service Installation Manual.

16. The Utility Company's metering facilities shall be installed in readily accessible, preferably unlocked, areas. However, when the Utility Company's metering facilities or any other equipment accessible to the Utility Company is located in enclosed areas which are locked, those areas shall be provided with doors or covers which are padlockable or fitted with a cylinder type Best Universal Lock. The Utility Company will provide the padlock or cylinder.

17. Two primary ducts are required to facilitate maintenance of service in the future. Horizontal bends are to have a minimum radius of 30'-0".

18. All construction must be inspected and approved by the Utility Company's Inspection Division prior to the installation of any Utility Company's facility or the energizing of the Utility Company's electrical system.

19. HECO H.G. Division is responsible for any duct entry into existing handholes or manholes that contain energized cables. 10 days advance notice is required. Contractor shall coordinate with HECO Underground Division Ph. 543-7345 to schedule the handhole or manhole penetration.

20. The Contractor is to call Mel Oyadomori, HECO Planner at 543-5601 five working days in advance prior to encasing the primary ducts in concrete, terminating the primary ducts in the transformer pad and backfilling of the trench prior to calling HECO's Contracting and Inspection Division.

ORIGINAL PLAN	
	SURVEY PLOTTED BY ____ DATE ____
	DRAWN BY R. Arii ____ 4/18/96
	TRACED BY ____
NOTE BOOK tol.elaine 1klitel	DESIGNED BY C. Abe ____
	QUANTITIES BY ____
No. ____	CHECKED BY ____

DATE	REVISION
4/18/96	Added HECO Notes

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Date: Apr., 1996

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	C08 S-2	11

S M U LIST

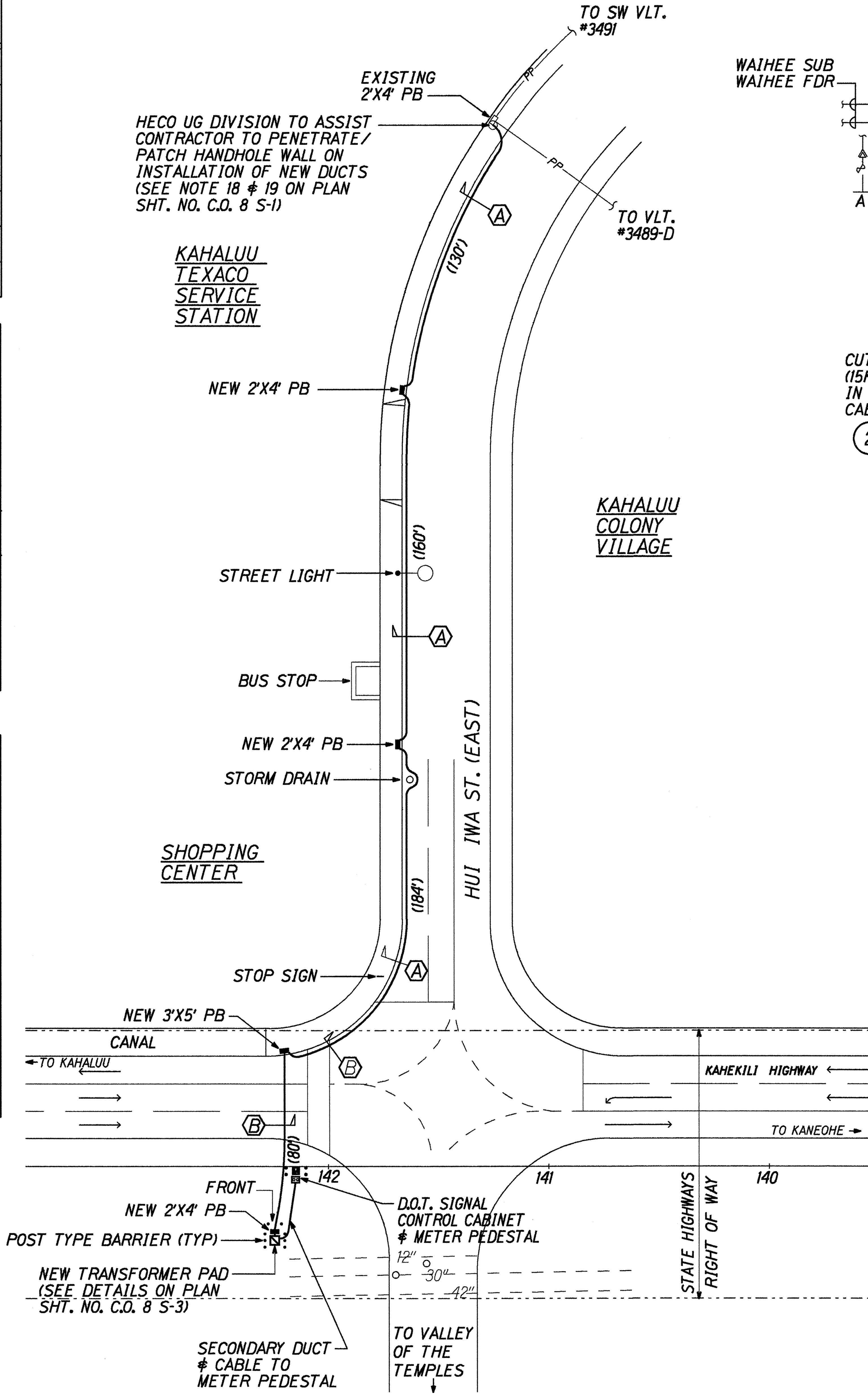
LINE NO.	SMU/STOCK NO.	VARIABLES	DESCRIPTION	QTY.
1	07620 ACT 56		1/C #2AL PEICN 15KV CABLE	1230'
2	26-1065 ACT 58		PREFAB PERM TYPE SPLICE 3-1/C #2AL PEICN 15KV	2
3	23-1020-2V		1 PH. PADMT TSF D.F. #2AL PEICN PRI CONN 15KV (OPEN POINT)	1
4	03125 ACT 82		INDICATOR CABLE FAULT 300A STD	1
5	11495 ACT 82		TERM COMPR 1 HOLE TD-CU #4 STR	3
6	02533 ACT 82		NUT HEX HEAD BRZ ½"	3
7	02548 ACT 82		WASHER LOCK BRZ ½"	3

ELECTRICAL LEGEND - UNDERGROUND (ONE LINE)

EXISTING	PROPOSED	REMOVALS	DESCRIPTION
—**—	—**—		CABLE, PRIM., AL, PEICN, 7.2/12/25KV
———	———		CABLE, SECONDARY/SERVICE, SIZE AS INDICATED
▭	▭		HANDHOLE/MANHOLE, SIZE AS INDICATED
	—◉—		SPLICES
			1 PHASE TRANSFORMER WITH LOAD BREAK ELBOW & FAULT INDICATOR, CLOSED POINT

SWITCH VAULT SYMBOLS - ONE LINE

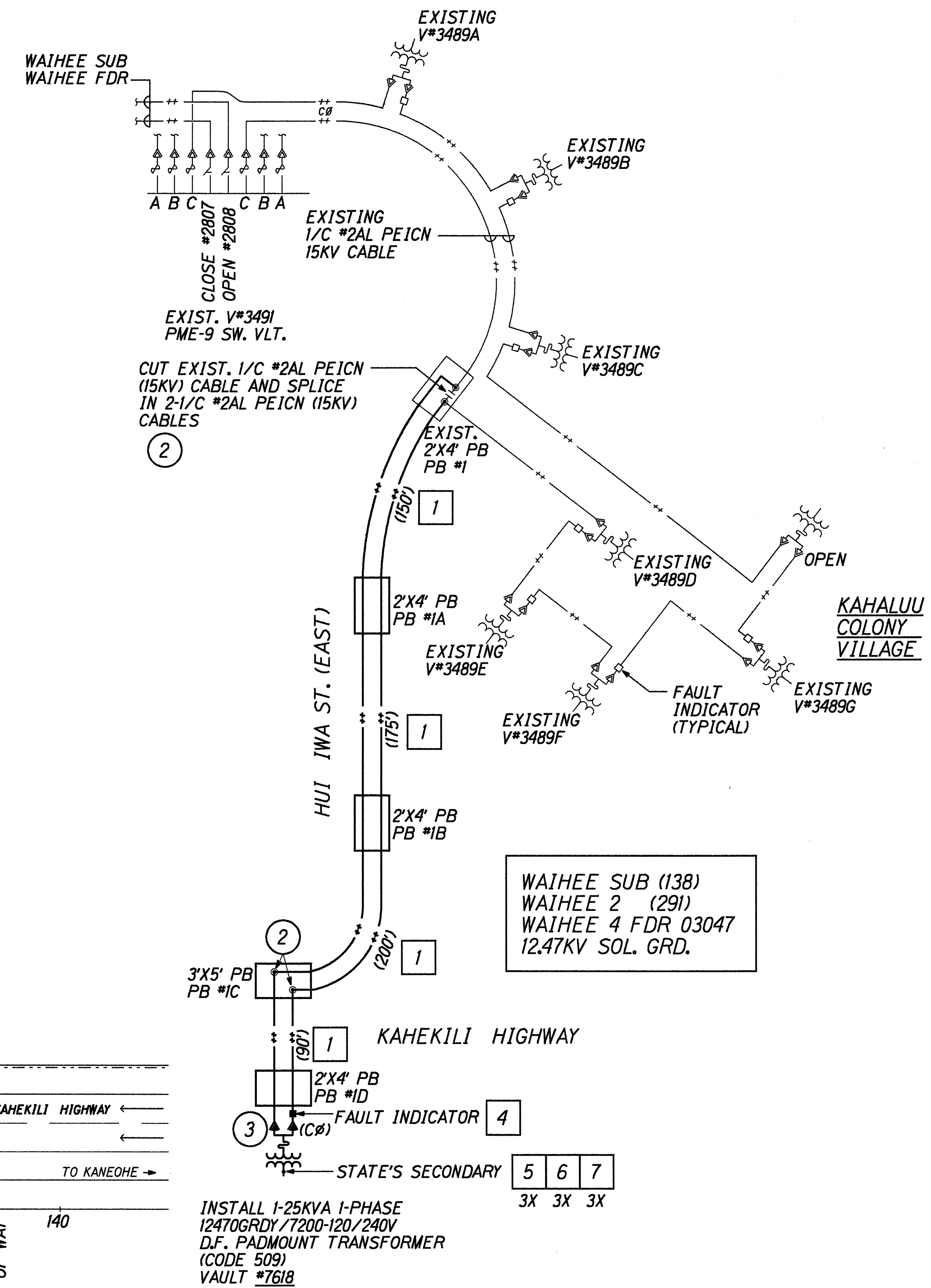
EXISTING	PROPOSED	DESCRIPTION
A B C #4123 #4124 OPEN C B A		PME-9



ELECTRICAL SITE PLAN

SCALE: 1" = 40'-0"

NOTE:
HECO PullBox per
HECO Standard 30-2005 and 15501



ONE LINE DIAGRAM

NOT TO SCALE

DATE	REVISION
4/18/96	Added Electrical Plan Sheet

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

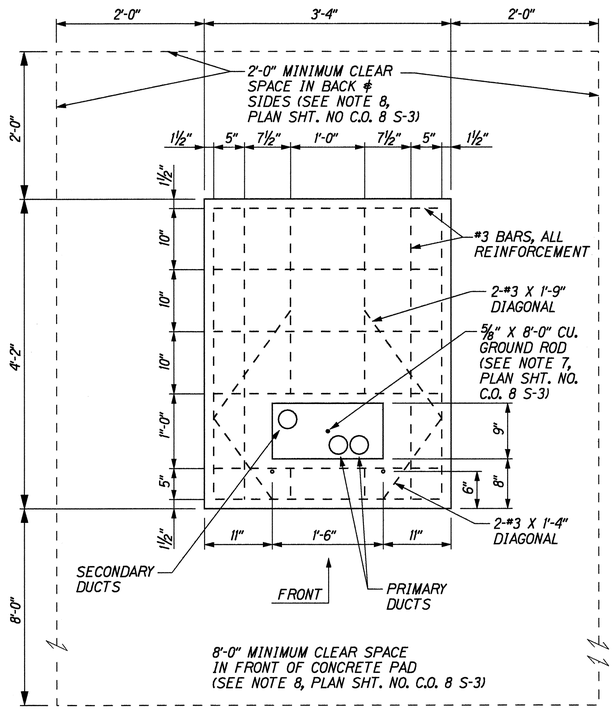
Scale: 1"=40' Date: Apr., 1995

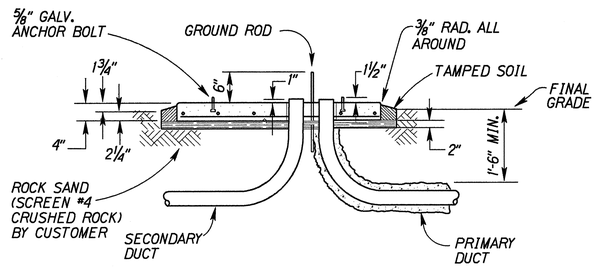
SHEET No. 1 OF 1 SHEETS

C.O. 8 S-2

ORIGINAL PLAN — SURVEY PLOTTED BY / DRAWN BY R. Acill / TRACED BY / DESIGNED BY C. Abe / QUANTITIES BY / CHECKED BY — DATE 4/18/96
NOTE BOOK toLelaine No. hilihi2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1996	C.O.8S-3	11





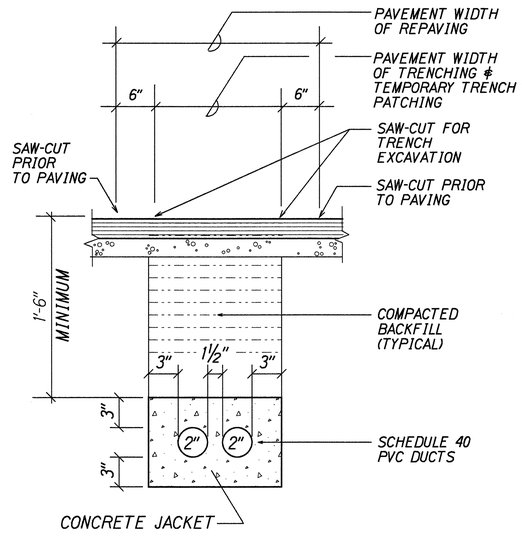
ELEVATION

N.T.S.

NOTES:

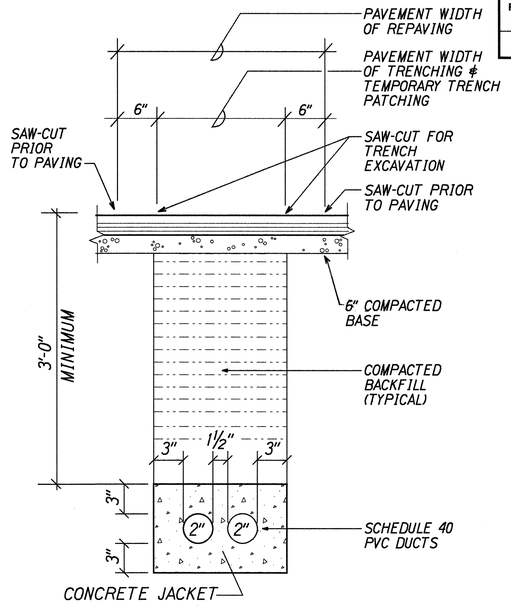
1. COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3,000 P.S.I. AT 28 DAYS.
2. TOP OF PAD SHALL BE SMOOTH, TRUE, LEVEL AND OTHER EXPOSED SURFACES SHALL BE SMOOTH AND FREE FROM DEFECTS.
3. CONCRETE SHALL BE CURED BY APPROVED METHOD (ASTM A15).
4. REINFORCING BARS SHALL BE CLEAN DEFORMED BARS.
5. ALL ITEMS SHALL BE FURNISHED IN PLACE COMPLETE BY CUSTOMER.

CONCRETE PAD FOR 1 Ø PADMOUNT TRANSFORMER



TRENCH DETAIL "A"

(WITHIN CITY & COUNTY RIGHT-OF-WAY)



DETAIL "B"

(WITHIN STATE RIGHT-OF-WAY)

NOTES:

1. MAINTAIN 6" VERTICAL CLEAR SEPARATION FROM WATER LINES 16" OR LESS AT WATER CROSSINGS.
2. MAINTAIN 12" VERTICAL CLEAR SEPARATION FROM WATER LINES LARGER THAN 16" AT WATER CROSSINGS.
3. MAINTAIN 3'-0" MINIMUM HORIZONTAL CLEAR SEPARATION BETWEEN ALL WATER LINES SYSTEMS WHEN PARALLELING THE WATER SYSTEM.

DUCT ENCASEMENT DETAIL

NOT TO SCALE

NOTE: BARRIER POSTS ARE TO BE PAINTED YELLOW AS PER ANSI SPEC 253J TO COMPLY WITH OSHA STANDARDS FOR COLORING CODE.

THE PIPE THAT IS TO BE PLACED DIRECTLY IN FRONT OF THE DOORS SHALL NOT BE FILLED WITH CONCRETE. THE PIPE SHALL BE CAPPED AND THE WELDED NUTS ARE FOR SCREWING IN BOLTS TO ACT AS "HANDLES" FOR LIFTING. THE BOLTS ARE TO BE REMOVE AFTER INSTALLATION.

BEFORE PROCEEDING WORK, CONTACT HECO FOR THE LOCATION OF UNDERGROUND ELECTRICAL LINES.

DUCT NOTES

1. ALL CONDUITS TO BE PVC SCHEDULE 40.
2. ALL CONDUITS TO CONTAIN A POLYOLEFIN PULL LINE (JET LINE CAT. #232 OF EQUIVALENT).
3. AFTER THE CONDUITS ARE INSTALLED, THE CUSTOMER SHALL PASS A SMOOTH BULLET-SHAPED WOODEN TEST MANDREL THROUGH THE ENTIRE LENGTH OF EACH CONDUIT TO TEST FOR FREEDOM OF BURRS AND OBSTRUCTIONS,
4. BACKFILL LEGEND:

TYPE "A" BACKFILL:

BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH GRAVEL, THE MAXIMUN ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.

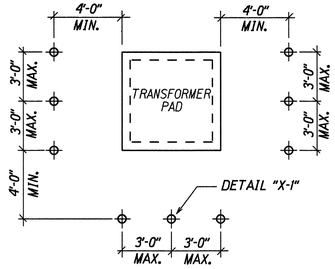
TYPE "B" BACKFILL:

BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH GRAVEL, THE MIXTURE MUST PASS A ½" MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

NOTE:

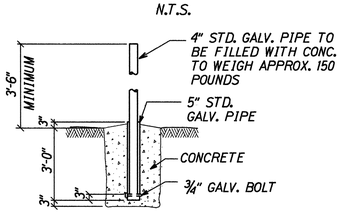
IF NORMAL MATERIAL IN THE BOTTOM OF THE TRENCH IS NOT TYPE "B", AN ADDITIONAL 3" SHALL BE EXCAVATED AND TYPE "B" BACKFILL SHALL BE PROVIDED.

CONCRETE ENCASEMENT STRENGTH: 2500 PSI IN 28 DAYS
MAXIMUM AGGREGATE: ¾"

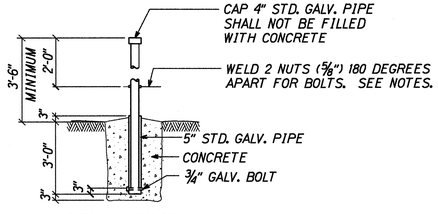


POST LOCATION DETAIL

N.T.S.



DETAIL "X"



DETAIL "X-1"

POST TYPE BARRIER

N.T.S.

DATE	REVISION
4/18/96	Added HECO Electrical Plan.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO ELECTRICAL SERVICE PLAN

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Scale: As Noted Date: Apr., 1996

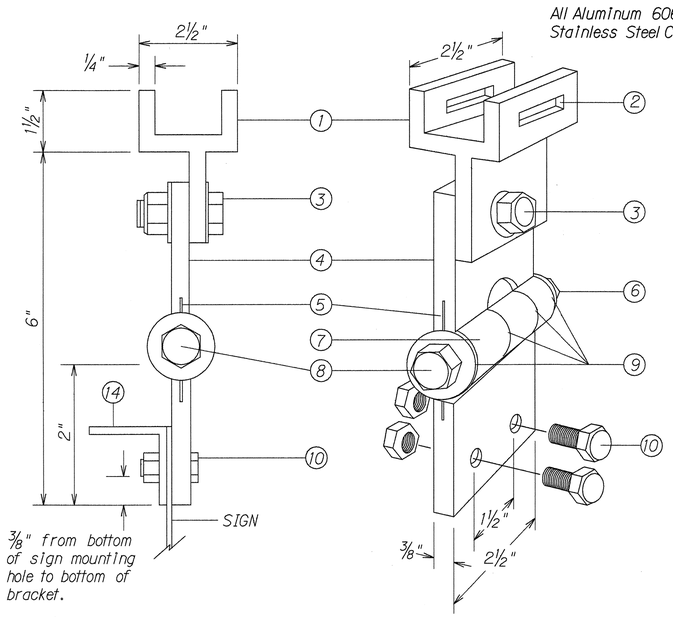
SHEET No. 1 OF 1 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 3/30/96
	DRAWN BY D. Arii	
NOTE BOOK	TRACED BY C. Abe	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

C.O. 8 S-3

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	9	11

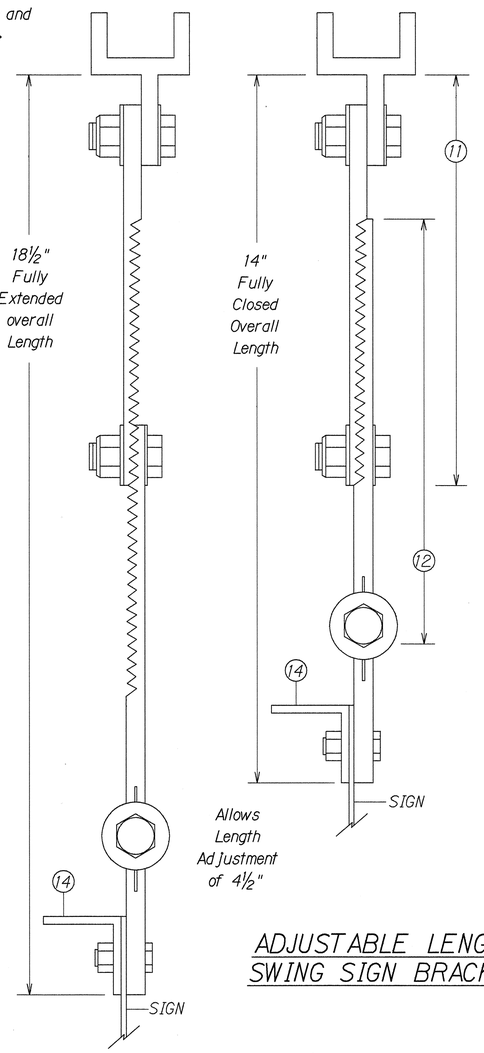
All Aluminum 6061T6 Alloy and Stainless Steel Components.



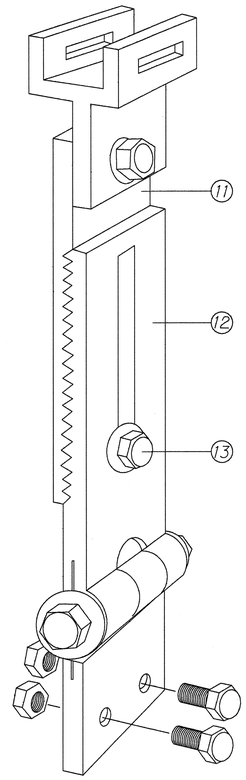
FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET

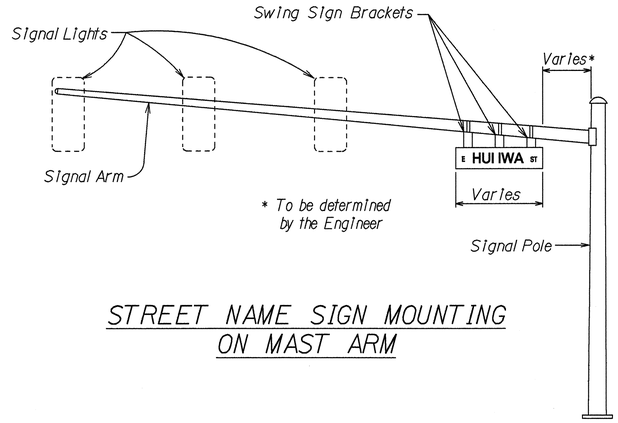
1. Pivotal Upper Bracket
2. 1⅝" x ¼" Slot for double strapping to electrolier mast arm. (M2G-34S(HD) .030" x ¾" Heavy Duty Stainless Steel Strap with M2G-34B(HD) Buckle recommended.)
3. ½" - 13 x 1½" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut and 1/16" Stainless Steel Washer (both sides). Allows upper bracket to pivot and align with electrolier mast arm.
4. 6" Overall drop with Fixed Length Sign Bracket
5. Stainless Steel Dampener Spring (Removable)
6. Stainless Steel Hex Lock Nut with 1/16" Stainless Steel Washer
7. 1" O.D. Axle Housing
8. ½" - 13 x 4" Stainless Steel Hex Head Bolt with 1/16" Stainless Steel Washer
9. Oilite Bushing
10. Sign Mounting Sets, consisting of two each 5/16" - 18 x 1" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut. Two holes on 1½" centers provide positive lock sign mounting to bracket.
11. 8¼" overall length Upper Adjustable Sign Bracket section
12. 9" overall length Lower Adjustable Sign Bracket section, including Axle Housing (8" overall length to top of Axle Housing)
13. ½" - 13 x 1½" Stainless Steel Hex Bolt with Stainless Steel Hex Lock Nut and 1/16" Stainless Steel Washers (both sides). Loosen lock nut, adjust bracket teeth to level sign.
14. 1¼" x 1¼" x ⅛" Aluminum Angle

Note: Dimensions may vary slightly.



ADJUSTABLE LENGTH SWING SIGN BRACKET

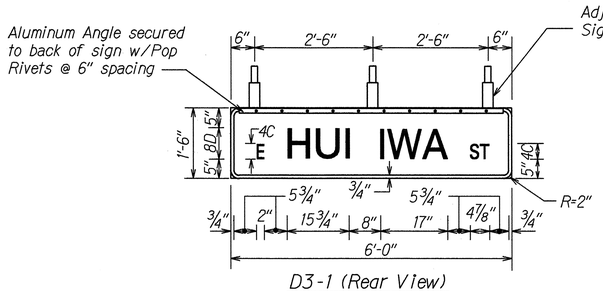




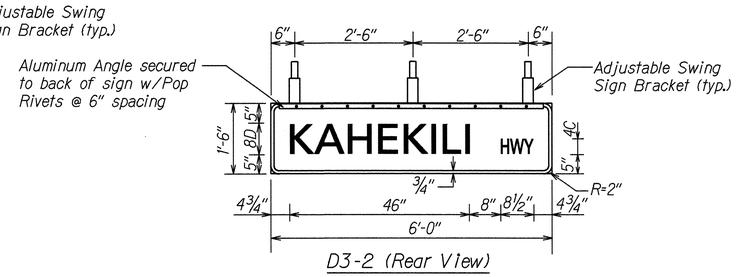
STREET NAME SIGN MOUNTING ON MAST ARM

NOTES:

1. Sign D3-1 & D3-2 shall be new Street Name Sign. The Contractor shall provide the same message on the front and back side of the sign. Payment will not be made separately but shall be considered as one unit.
2. Colors:
   Legend - White (Reflectorized)
   Background - Green (Reflectorized)
3. All panels shall be reflectorized with Type B reflective sheeting in accordance with Section 712.20 of the Standard Specifications.
4. Borders and messages shall conform to details as shown on the plans and as specified in the MUTCD.
5. Sign mounting brackets, aluminum angle, fixtures, fasteners, and all necessary hardware, and equipment, tools, labor, materials and other incidentals for installation, will not be paid for separately but shall be considered incidental to street name sign installation.
6. All signs shall conform to section 621 of the Standard Specifications and the latest editions and amendments of the following FHWA publications:
   a. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
   b. "Standard Highway Signs"
   c. "Standard Alphabets for Highway Signs"



D3-1 (Rear View)



D3-2 (Rear View)

TYPICAL PANEL & SWING BRACKET LAYOUT FOR STREET NAME SIGN

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY Elaine Isaka	8/94
NOTE BOOK	TRACED BY	
	DESIGNED BY Casey Abe	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

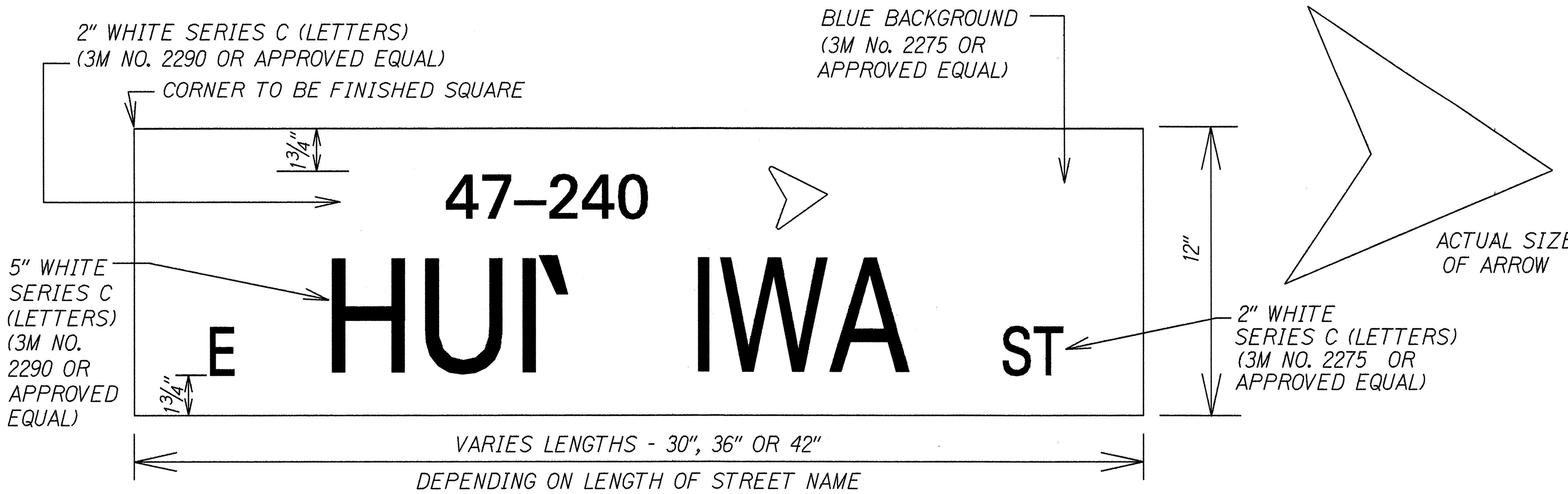
SWING SIGN BRACKET DETAIL

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJECT NO. STP-083-1(29)

Not to Scale — Date: Apr., 1995

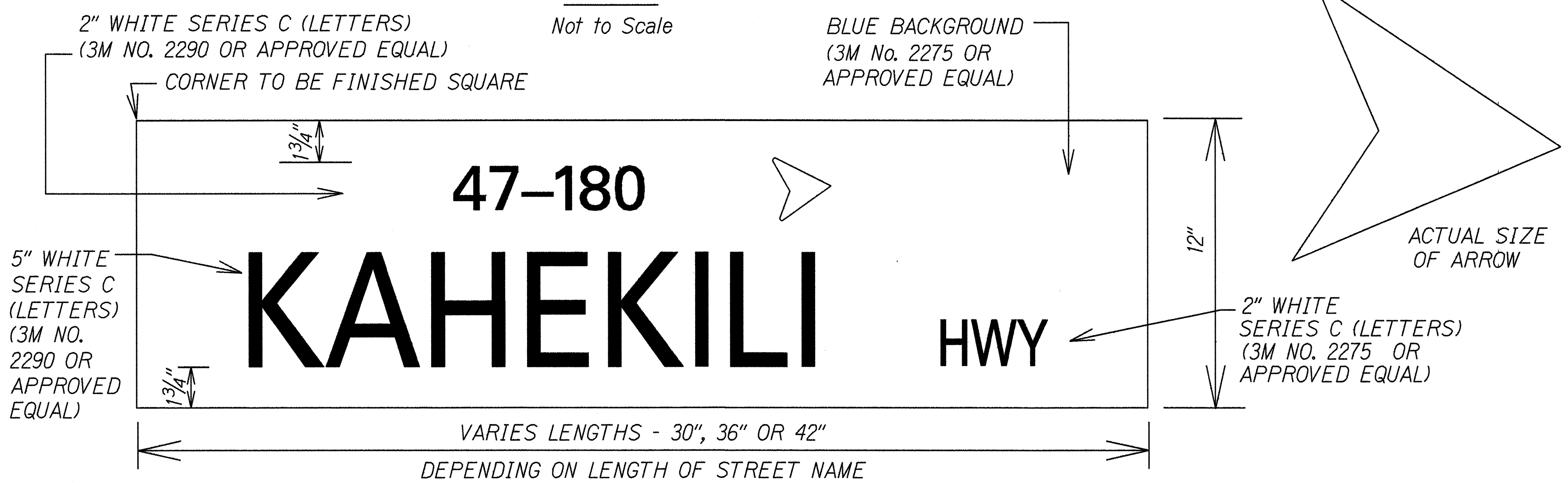
SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	10	11



SSN-1

Not to Scale



SSN-2

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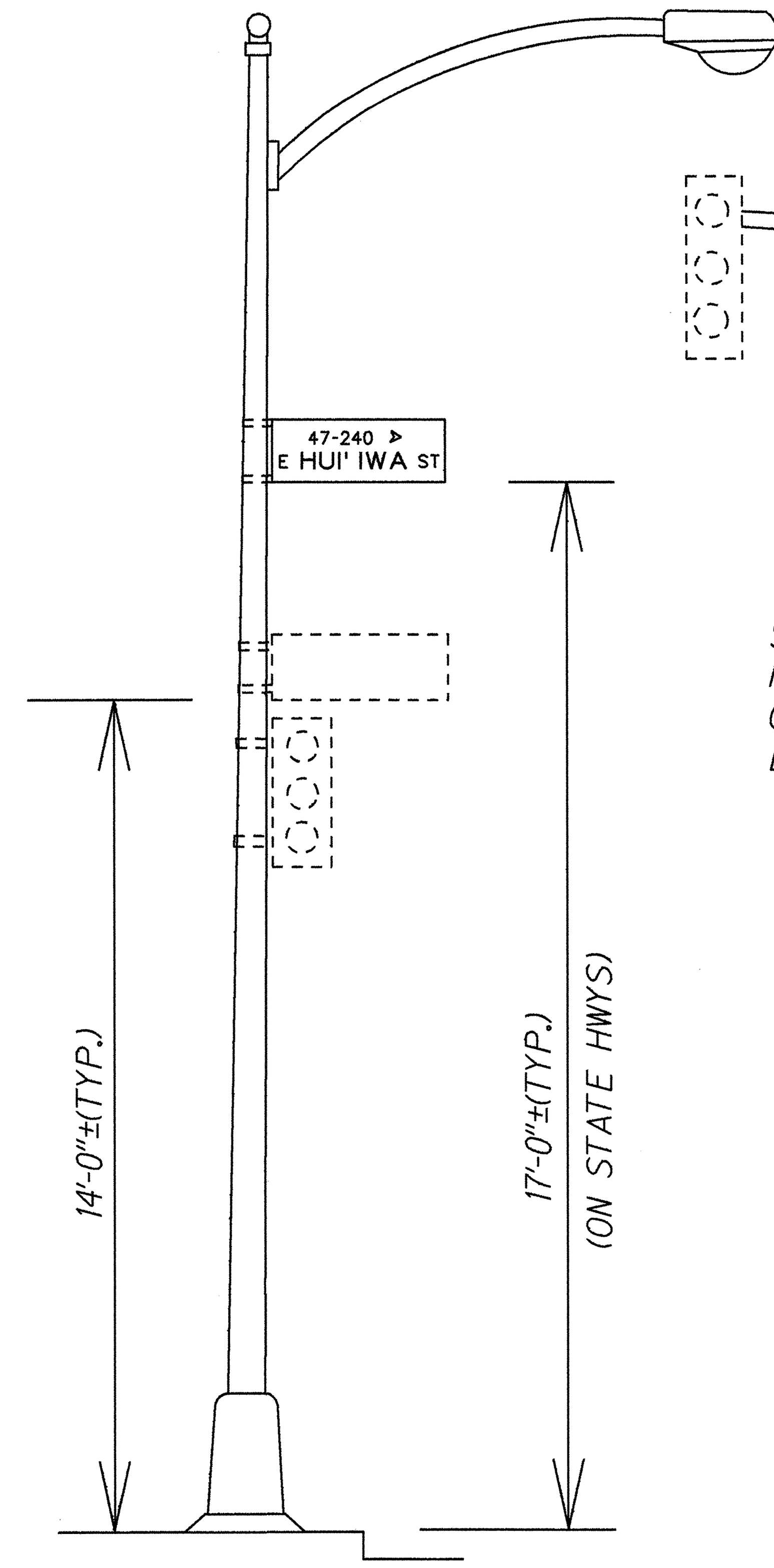
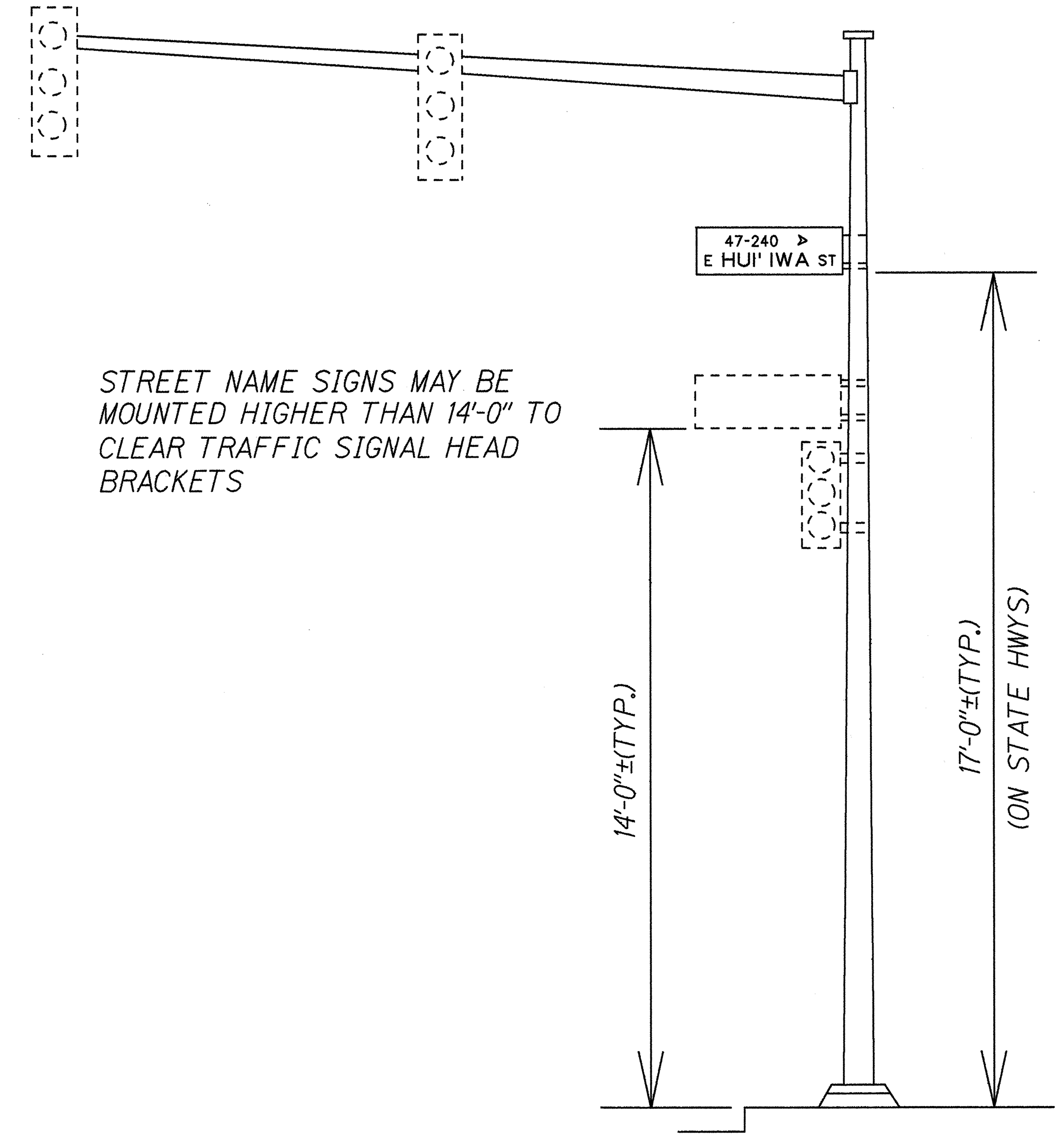


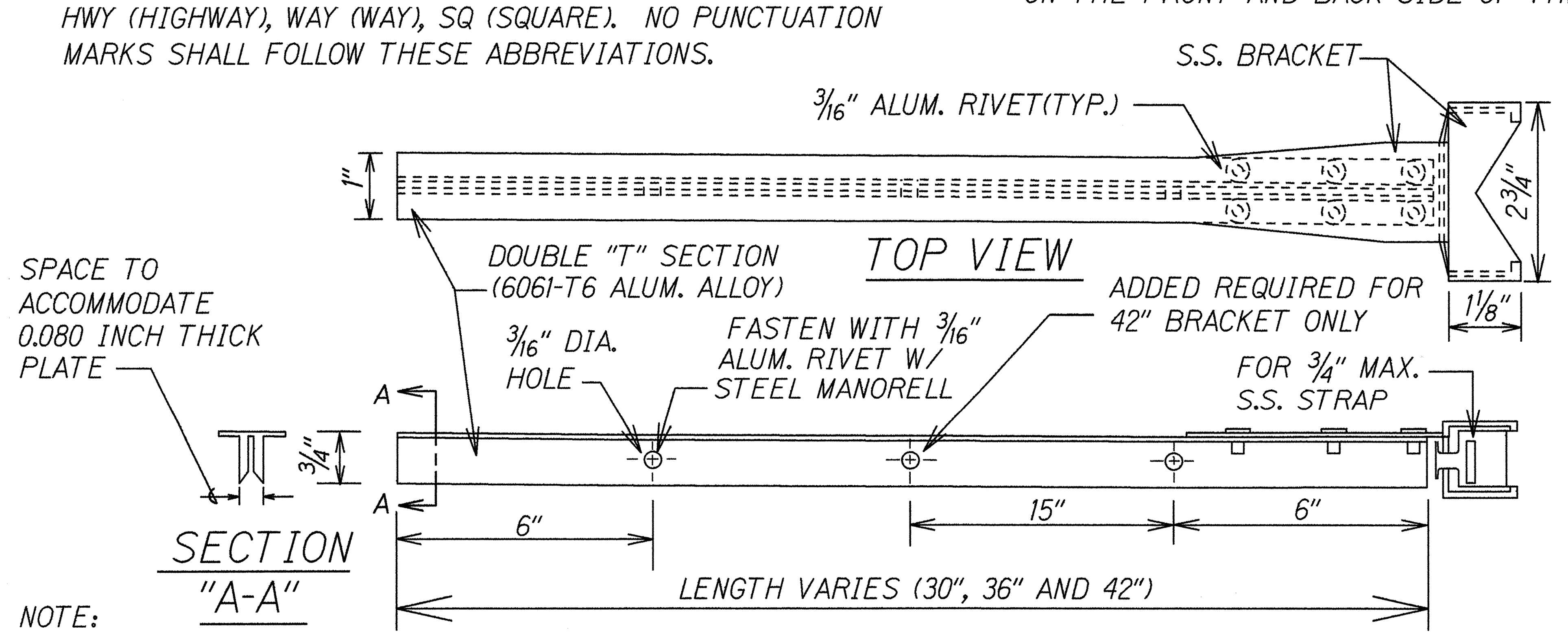
ELEVATION



ELEVATION

NOTES:

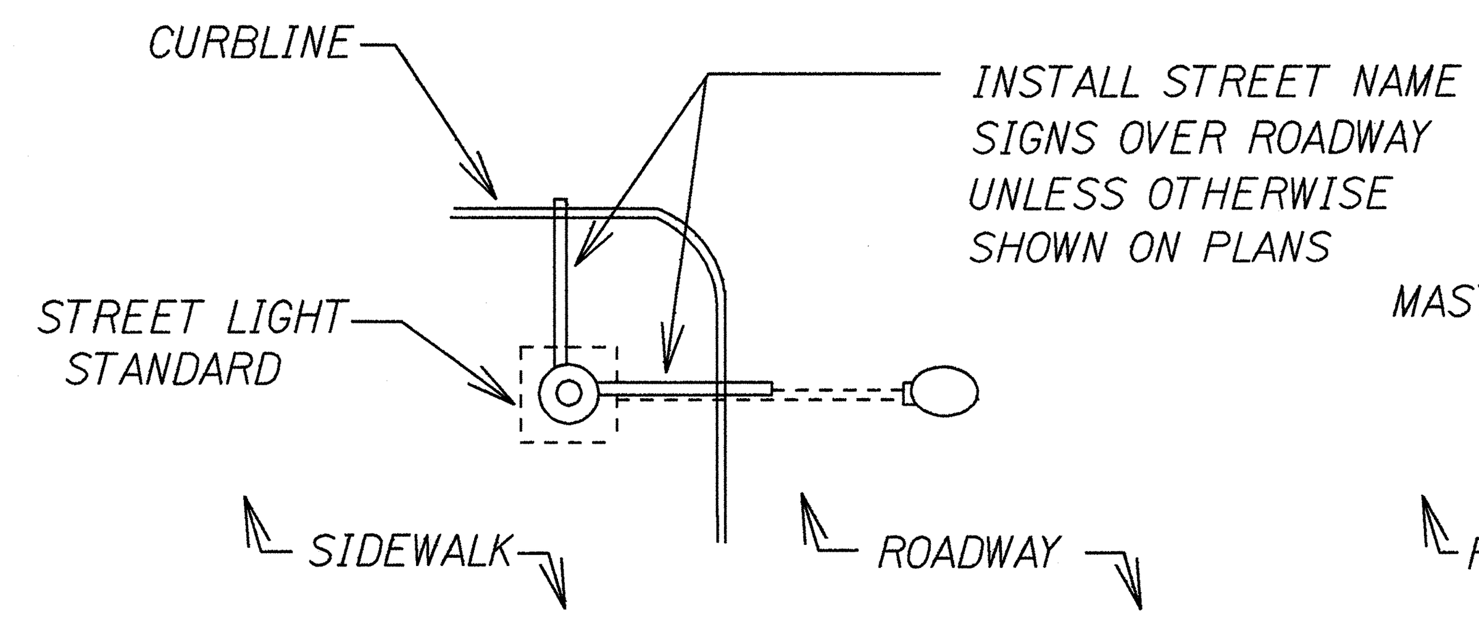
1. BLOCK NUMBERS AND STREET NAMES ARE TO BE NEATLY CENTERED HORIZONTALLY ON STREET NAME BLADE.
2. DIACRITICAL MARKINGS SHALL BE USED ON HAWAIIAN NAMES AS SPECIFIED. NO PUNCTUATION SHALL FOLLOW N (NORTH) OR S (SOUTH) ABREVIATIONS.
3. FOLLOWING ABBREVIATIONS SHALL BE USED: ST (STREET), AV (AVENUE), RD (ROAD), LN (LANE), BLVD (BOULEVARD), HWY (HIGHWAY), WAY (WAY), SQ (SQUARE). NO PUNCTUATION MARKS SHALL FOLLOW THESE ABBREVIATIONS.
4. WHEN BLOCK NUMBERS ARE NOT SPECIFIED, STREET NAME SHALL BE CENTERED VERTICALLY ON STREET NAME BLADE WITH 3½" SPACING ON TOP AND BOTTOM.
5. ALL STREET NAME SIGNS SHALL HAVE BLOCK NUMBERS AND ARROWS UNLESS NOTED OTHERWISE.
6. CONTRACTOR SHALL PROVIDE THE SAME MESSAGE ON THE FRONT AND BACK SIDE OF THE SIGN. PAYMENT WILL NOT BE MADE SEPARATELY BUT SHALL BE CONSIDERED AS ONE UNIT.
7. THE ACCEPTED QUANTITIES OF CITY & COUNTY OF HONOLULU STREET NAME SIGNS WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, COMPLETE IN PLACE. THE CONTRACT UNIT PRICE PAID SHALL BE FULL COMPENSATION FOR ALL NECESSARY HARDWARE, EQUIPMENT, TOOLS, LABOR, MATERIALS, AND OTHER INCIDENTALS FOR THE INSTALLATION OF THE NEW SIGN BRACKETS.



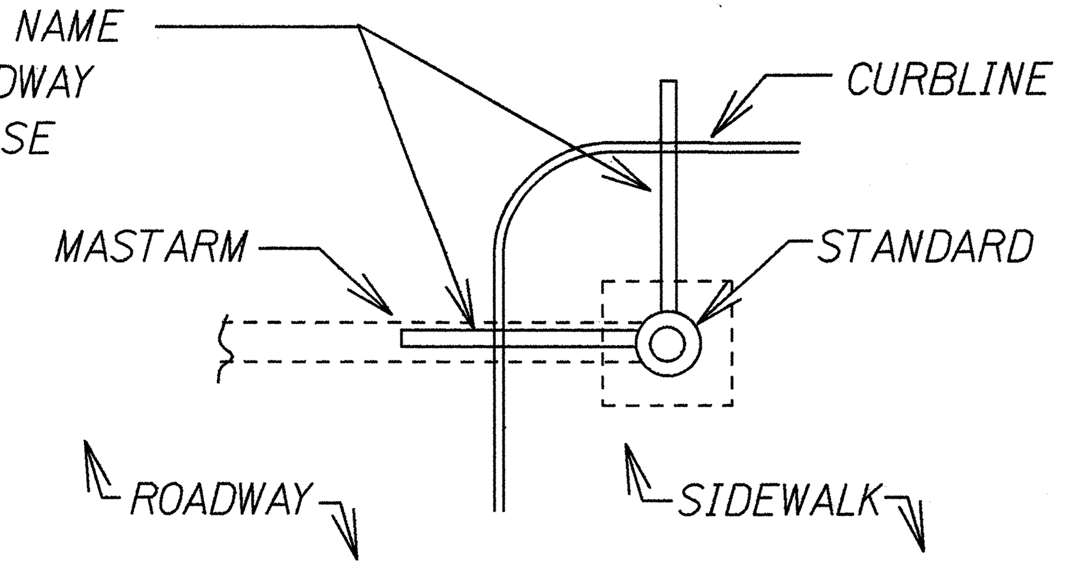
NOTE:

1. BRACKETS ARE TO BE USED AT TOP AND BOTTOM OF SIGN BLADE

STREET NAME CANTILEVER BRACKET



PLAN



PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CITY & COUNTY OF HONOLULU

STREET NAME SIGN DETAIL

KAHEKILI HIGHWAY

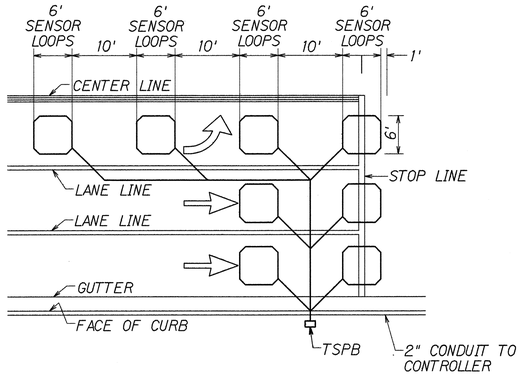
Traffic Signals at Hui Iwa Street (East)

F.A. PROJECT NO. STP-083-1(29)

Not to Scale Date: Apr., 1995

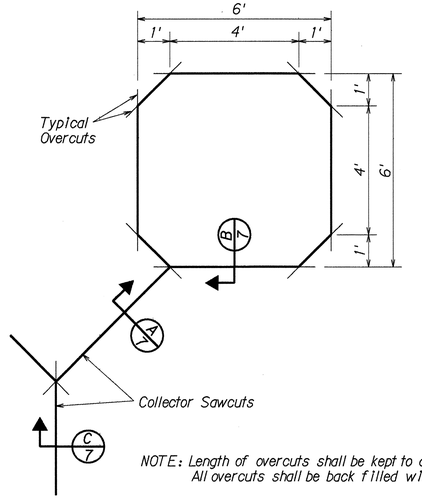
SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-083-1(29)	1995	11	11



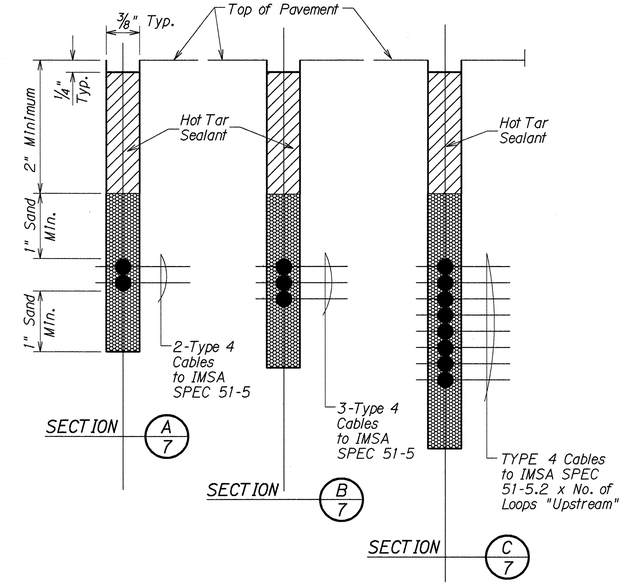
NOTES:
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

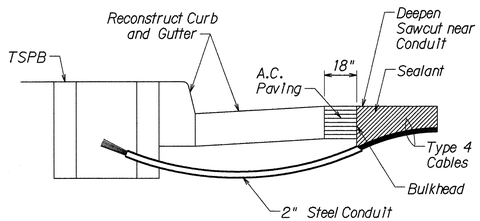
TYPICAL SENSOR LOOP LAYOUT



NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL

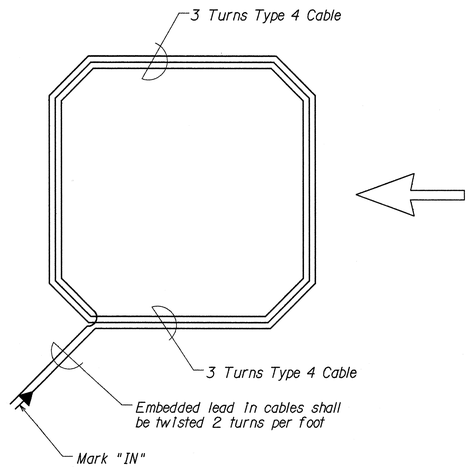




NOTES ON CONSTRUCTION AT END OF SAWCUT

1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place hot tar in sawcut.
4. Backfill over conduit with new A.C.
5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



TYPICAL SENSOR LOOP WIRING DIAGRAM

TYPES OF CABLES

TYPE 1	Signal Loop Cable: Stranded No. 14, 26 conductors
TYPE 2	Detector Lead-In Cable and Pedestrian Push Button Circuit Cable: Stranded, No. 14, 2 Conductors
TYPE 3	Interconnect Cable: Solid No. 20, 12 Pairs
TYPE 4	Loop Sensor Cable: Solid No. 12, Single Conductor to IMSA SPEC 51-5
TYPE 5	Cable from Signal Loop to Signal Head: Stranded, No. 14, Single Conductor
TYPE 6	Service Cable: Solid, No. 6, 3 Conductors

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 1/94
	DRAWN BY E. Isaka	
NOTE BOOK	TRACED BY C. Abe	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

KAHEKILI HIGHWAY
Traffic Signals at Hui Iwa Street (East)
F.A. PROJ. NO. STP-083-1(29)

Not to Scale — Date: Apr., 1995

SHEET No. 1 OF 1 SHEETS