FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	90	142

LEGEND

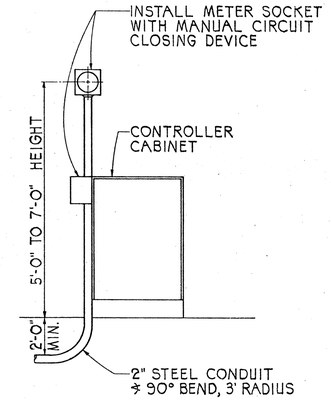
- 12" RYG STANDARD TRAFFIC SIGNAL HEAD
- STANDARD TRAFFIC AND PEDESTRIAN SIGNAL HEADS MOUNTED ON TYPE I SIGNAL STANDARD, HEIGHT = 10'
- 12" RYG ~~G~~/~~Y~~ 4-SECTION DUAL INDICATION TRAFFIC SIGNAL HEAD
- TRAFFIC SIGNAL HEADS MOUNTED ON TYPE II SIGNAL STANDARD, ARM SPREAD SHOWN 30' AND DISTANCE BETWEEN SIGNAL HEADS SHOWN IS 12' (30', 12')
- TYPE "A" PULLBOX
- TYPE "B" PULLBOX
- M TYPE "B" PULLBOX WITH MODIFIED COVER
- LOOP DETECTOR, SERIES-PARALLEL CONNECTED
- LOOP DETECTOR, SERIES CONNECTED
- TS NEW TRAFFIC SIGNAL STANDARD
- WV EXISTING WATER VALVE
- WM EXISTING WATER METER
- FH EXISTING FIRE HYDRANT
- CB CATCH BASIN
- EXISTING PAVEMENT MARKING
- EXISTING PAVEMENT MARKING TO BE REMOVED
- NEW STRIPING
- NEW PAVEMENT ARROW
- EXISTING CROSSWALK MARKINGS TO BE REMOVED
- NEW CROSSWALK MARKINGS
- W 6 EXISTING WATER LINE
- E (OH) EXISTING OVERHEAD ELECTRIC LINE
- T (OH) EXISTING OVERHEAD TELEPHONE LINE
- NEW A.C. PAVEMENT

CONSTRUCTION NOTES

1. LOCATIONS OF EXISTING UNDERGROUND STRUCTURES AND UTILITIES SUCH AS PIPELINES, CONDUITS, CABLES, ETC., SHOWN ON PLANS ARE APPROXIMATE ONLY. IT IS NOT THE INTENT OF THESE PLANS TO SHOW THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES WITH THE RESPECTIVE OWNERS. EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN COST.
2. THE LOCATIONS OF THE TRAFFIC SIGNAL STANDARDS, TRAFFIC SIGNAL STANDARDS WITH MAST-ARM, 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.
3. ALL TRAFFIC SIGNAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1978) AND AMENDMENTS.
4. LOCATIONS OF PAVEMENT STRIPING, MARKERS, AND MARKINGS (PAVEMENT ARROWS, STOP LINES, CROSSWALK, ETC.) SHOWN ON THE PLANS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO THE INSTALLATION OF THE TRAFFIC SIGNAL SYSTEM.
5. MAINTENANCE OF TRAFFIC THROUGH THE CONSTRUCTION AREA SHALL BE IN ACCORDANCE WITH PART VI OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1978) AND AS SPECIFIED IN THE SPECIAL PROVISIONS. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE BARRICADES, BLINKERS, CONSTRUCTION SIGNS, ETC. FOR THE SAFETY OF THE MOTORING PUBLIC.
6. REMOVAL OF EXISTING SIGNS SHALL ALSO INCLUDE THE REMOVAL OF POSTS AND FOUNDATIONS UNLESS OTHERWISE NOTED. ALL SIGN MATERIALS REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR. COSTS FOR REMOVAL AND TEMPORARY INSTALLATION OF SIGNS, POSTS, AND FOUNDATIONS SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS OF WORK.

TRAFFIC SIGNAL NOTES

1. ALL TRAFFIC SIGNAL CONTROLLER EQUIPMENT SHALL BE COMPLETELY WIRED IN THE CABINET AND SHALL CONTROL THE TRAFFIC SIGNALS AS CALLED FOR IN THE PLANS.
2. SIGNAL INDICATIONS DURING CLEARANCE INTERVAL:
   - A. IF A SIGNAL IS G OR ~~G~~ AND WILL REMAIN G OR ~~G~~ DURING THE NEXT PHASE, IT SHALL BE G OR ~~G~~ DURING THE CLEARANCE INTERVAL.
   - B. IF A SIGNAL IS G OR ~~G~~ AND WILL BECOME R OR EXTINGUISHED DURING THE NEXT PHASE, IT SHALL BE Y OR ~~Y~~ DURING THE CLEARANCE INTERVAL.
   - C. IF A SIGNAL IS R AND WILL REMAIN R OR BECOMES G DURING THE NEXT PHASE, IT SHALL REMAIN R DURING THE CLEARANCE INTERVAL.
3. THE CONTROLLER SHALL BE MODULAR BY PHASE; KEYBOARD ENTRY WILL NOT BE ACCEPTABLE. A COORDINATION UNIT IS NOT REQUIRED FOR THIS PROJECT. HOWEVER, THE CABINET SHALL BE WIRED FOR FUTURE INSTALLATION OF A COORDINATION UNIT OF THE SAME MANUFACTURER AS THE CONTROLLER UNIT.
4. THE LOOP AMPLIFIER UNITS FURNISHED FOR THIS PROJECT SHALL BE CAPABLE OF OPERATING THE LOOP DETECTOR CONFIGURATIONS SHOWN ON THE PLANS.
5. MINIMUM CONTROLLER CABINET SIZE SHALL BE 59" HIGH, 38" WIDE AND 24" DEEP.
6. CONTRACTOR SHALL FURNISH A 50-AMPERE CIRCUIT BREAKER.
7. A SOLID #8 BARE COPPER WIRE SHALL BE PULLED WITH THE TRAFFIC CONTROL CABLE FOR EQUIPMENT GROUND. COST SHALL BE INCIDENTAL TO THE INSTALLATION OF THE CONTROL CABLE.

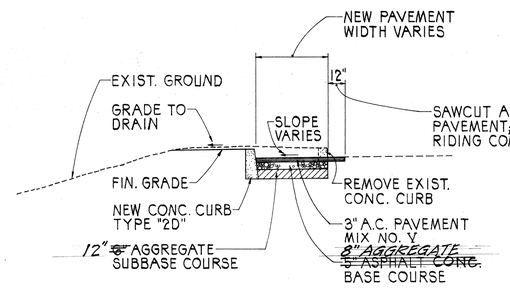


NOTES:

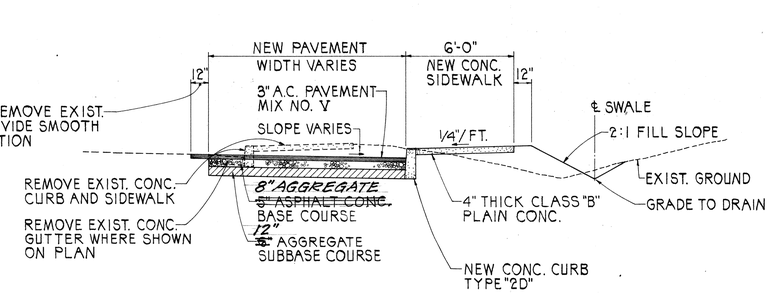
1. HAWAII ELECTRIC LIGHT CO. SHALL FURNISH AND INSTALL CABLE BETWEEN SECONDARY AND METER SOCKET.
2. CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS TO CONTROLLER, AND SHALL PROVIDE BREAKER AND GROUND.
3. CONTRACTOR SHALL PROVIDE HAWAII ELECTRIC LIGHT CO. ONE (1) WEEK ADVANCE NOTICE FOR ANY WORK BY HAWAII ELECTRIC LIGHT CO.

ELECTRICAL SERVICE DETAIL

NOT TO SCALE



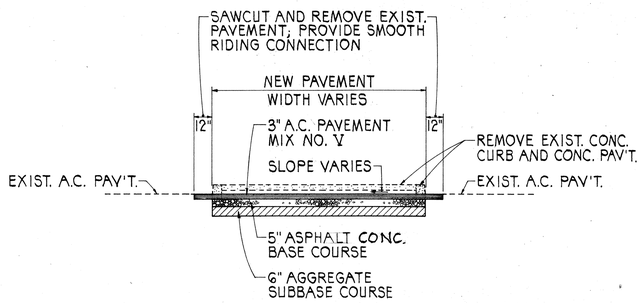
WITH CONCRETE CURB



WITH CONCRETE CURB AND CONC. SIDEWALK

TYPICAL PAVEMENT WIDENING

SCALE: 1/4" = 1'-0"



DEMOLITION OF EXIST. CURBED ISLAND

SCALE: 1/4" = 1'-0"

ORIGINAL PLAN

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

THEODORE S. KAWAHIGASHI REGISTERED PROFESSIONAL ENGINEER No. 3244-C HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Theodore S. Kawahigashi
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

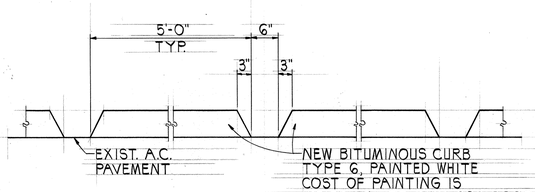
LEGEND, NOTES AND TYPICAL SECTIONS

KEAAU-PAHOA ROAD
TRAFFIC SIGNALS AT VOLCANO RD. AND OLD MAMALAHOA ROAD
FEDERAL AID PROJ. NO. RSG-0130(22)

Scale: As Noted Date: Sept. 1985

SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	91	142



DETAIL ~ TYP. BITUMINOUS CURB, TYPE G

NOT TO SCALE

PAHOA ROAD
℄ CURVE DATA

Δ = 34°04'
Δs = 3°00'
T1 = 391.12'
T2 = 455.87'
Ls = 133.33'
Δc = 31°04'
Dc = 4°30'
Rc = 1273.24'
Tc = 353.90'
Lc = 690.37'
Ec = 48.27'
C = 681.94'
S.E. = 0.015 FT./FT.

CURVE DATA

NO.	Δ	Δ/2	R	T	Ch	Lc
①	4°26'00"	2°13'00"	1250.24'	48.39'	96.71'	96.74'
②	76°45'58"	38°22'59"	30.00'	23.76'	37.25'	40.19'
③	65°35'00"	32°47'30"	40.00'	25.77'	43.33'	45.79'
④	75°12'04"	37°36'02"	40.00'	30.80'	48.81'	52.50'
⑤	10°11'10"	5°05'35"	900.00'	80.21'	159.79'	160.00'

CURB RETURN GRADES

SCALE: 1" = 20'

LEGEND

NEW A.C. PAVEMENT

NOTE

REMOVE EXISTING RAISED TRAFFIC ISLANDS. COST INCIDENTAL TO OTHER ITEMS OF WORK.

THEODORE S. KAWAHIGASHI REGISTERED PROFESSIONAL ENGINEER No. 3244-C HAWAII, U.S.A.

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Theodore S. Kawahigashi
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAHOA RD.-OLD VOLCANO RD. INTERSECTION
GEOMETRICS & STRIPING PLAN
KEAAU ~ PAHOA ROAD
TRAFFIC SIGNALS AT VOLCANO RD. AND OLD MAMALAHOA ROAD
FEDERAL AID PROJ. NO. RSG-0130(22)

Scale: As Noted Date: Sept. 1985

SHEET No. | OF | SHEETS

91

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	92	142

TRUE NORTH
SCALE: 1" = 20'

CONDUIT	CABLE
2"	1-2C #14

REMOVE EXIST. STOP SIGN & POST AFTER TRAFFIC SIGNAL SYSTEM BECOMES OPERATIONAL

TO CROSS STREET → PUSH BUTTON WAIT FOR WALK SIGNAL — INSTALL R10-4a(R) W/ PED. PUSH BUTTON

TO CROSS STREET ← PUSH BUTTON WAIT FOR WALK SIGNAL — INSTALL R10-4a(L) W/ PED. PUSH BUTTON

CONDUIT	CABLE
2"	1-19C #14
2"	4-2C #14

INSTALL R10-4a(L) W/ PED. PUSH BUTTON

INSTALL R10-4a(R) W/ PED. PUSH BUTTON

CONDUIT	CABLE
2"	1-19C #14
2"	1-19C #14
2"	4-2C #14
2"	4-2C #14

Installed 1 each meter cabinet and associated facilities as per HEI Drawing No. 79-D-355 Sht. 9 of 9 (C.C.O. No. 13)

BASE MOUNTED CONTROLLER CABINET

POWER SOURCE

2" CONDUIT FOR POWER SUPPLY

CONDUIT	CABLE
2"	1-2C #14

8' x 6' LOOP DETECTOR CENTERED IN LANE

℄ STA. 8+05

PIPE RAIL

CONC. CURB

A.C. SIDEWALK

8' x 6' LOOP DETECTOR CENTERED IN LANE

℄ STA. 3+55

℄ STA. 4+45

CONDUIT	CABLE
2"	1-2C #14

NOTE:

DETECTOR LOOPS AT ℄ STA. ~~3+55~~ AND ℄ STA. 4+45 SHALL BE WIRED TO THE SAME LOOP AMPLIFIER.

CONDUIT	CABLE
2"	1-19C #14
2"	2-2C #14

TO CROSS STREET ← PUSH BUTTON WAIT FOR WALK SIGNAL — INSTALL R10-4a(L) W/ PED. PUSH BUTTON

CONDUIT	CABLE
2"	1-19C #14
2"	SPARE

TO CROSS STREET ← PUSH BUTTON WAIT FOR WALK SIGNAL — INSTALL R10-4a(L) W/ PED. PUSH BUTTON

4-8' x 6' LOOP DETECTORS

CONDUIT	CABLE
2"	1-19C #14
2"	3-2C #14

TO CROSS STREET → PUSH BUTTON WAIT FOR WALK SIGNAL — INSTALL R10-4a(R) W/ PED. PUSH BUTTON

REMOVE RELOCATED STOP SIGN & POST AFTER TRAFFIC SIGNAL SYSTEM BECOMES OPERATIONAL

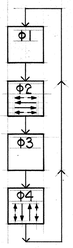
CONDUIT	CABLE
2"	1-2C #14

CONDUIT	CABLE
2"	1-19C #14
2"	1-2C #14

℄ C.S. STA. 8+08.04

℄ S.T. STA. 9+41.37

PHASE DIAGRAM



SIGNAL INDICATIONS

R	Y	G	
A-2			A-1
B-1			B-2
C-2			C-1
D-1			D-2
D-3			F-1
E-1			F-3
F-2			G-2
G-1			H-2
H-1			
H-3			

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

THEODORE S. KAWAHIGASHI
REGISTERED PROFESSIONAL ENGINEER
No. 3244-C
HAWAII, U.S.A.

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Theodore S. Kawahigashi
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAHOA RD.-OLD VOLCANO RD. INTERSECTION

TRAFFIC SIGNAL PLAN

KEAAU-PAHOA ROAD

TRAFFIC SIGNALS AT VOLCANO RD. AND OLD MAMALAHOA ROAD

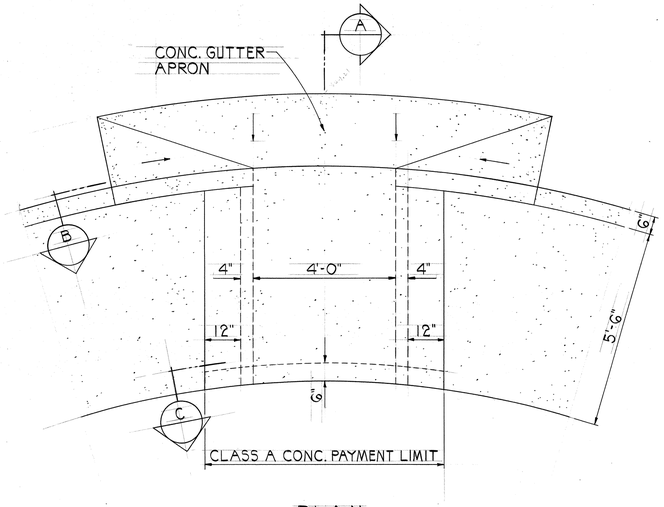
FEDERAL AID PROJ. NO. RSG-0130(22)

Scale: 1" = 20' Date: Sept. 1985

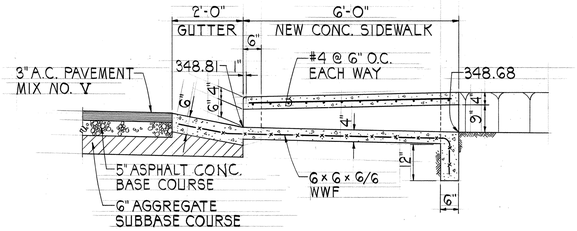
SHEET No. 1 OF 1 SHEETS

92

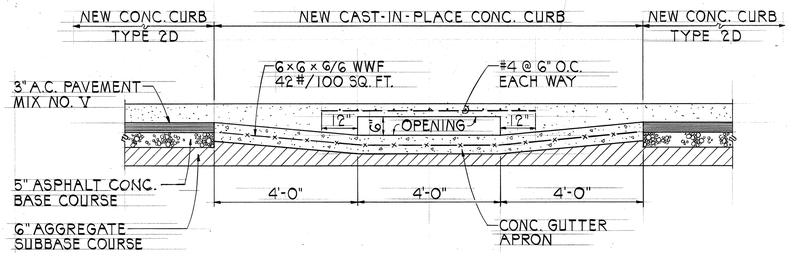
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	93	142



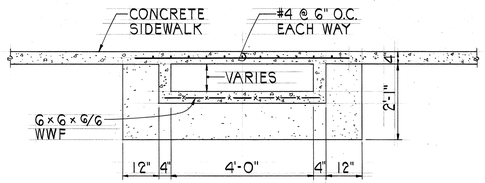
PLAN



SECTION A



SECTION B



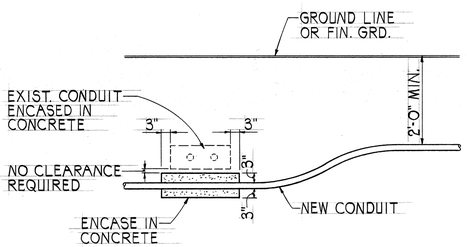
SECTION C

NOTE:

COSTS OF EXCAVATION AND REINFORCING STEEL ARE INCIDENTAL TO ITEM NO. 603.5001.

SIDEWALK CULVERT DETAILS

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



CONDUIT BY-PASS DETAIL

NOT TO SCALE

ORIGINAL PLAN

NOTE BOOK

SURVEY PLOTTED BY		DATE	
DRAWN BY		"	
TRACED BY		"	
DESIGNED BY		"	
QUANTITIES BY		"	
CHECKED BY		"	
No.			

THEODORE S. KAWAHIGASHI REGISTERED PROFESSIONAL ENGINEER No. 3244-C HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Theodore S. Kawahigashi
Signature

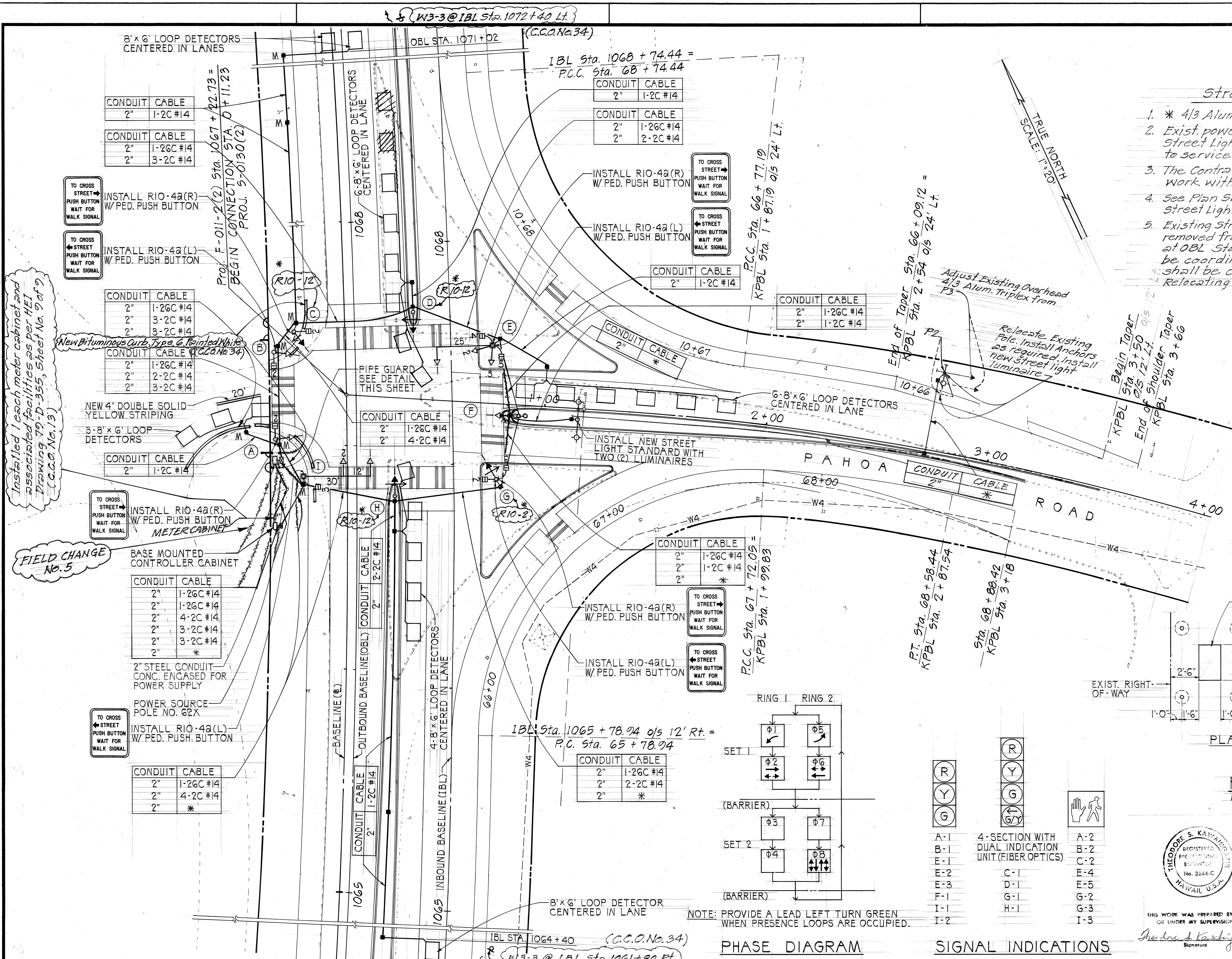
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAHOA RD.-OLD VOLCANO RD. INTERSECTION
SIDEWALK CULVERT DETAILS
KEAAU-PAHOA ROAD
TRAFFIC SIGNALS AT VOLCANO RD. AND OLD MAMALAHOA ROAD
FEDERAL AID PROJ. NO. RSG-0130(22)

Scale: As Noted Date: Sept. 1985

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	94	142



Street Lights Notes

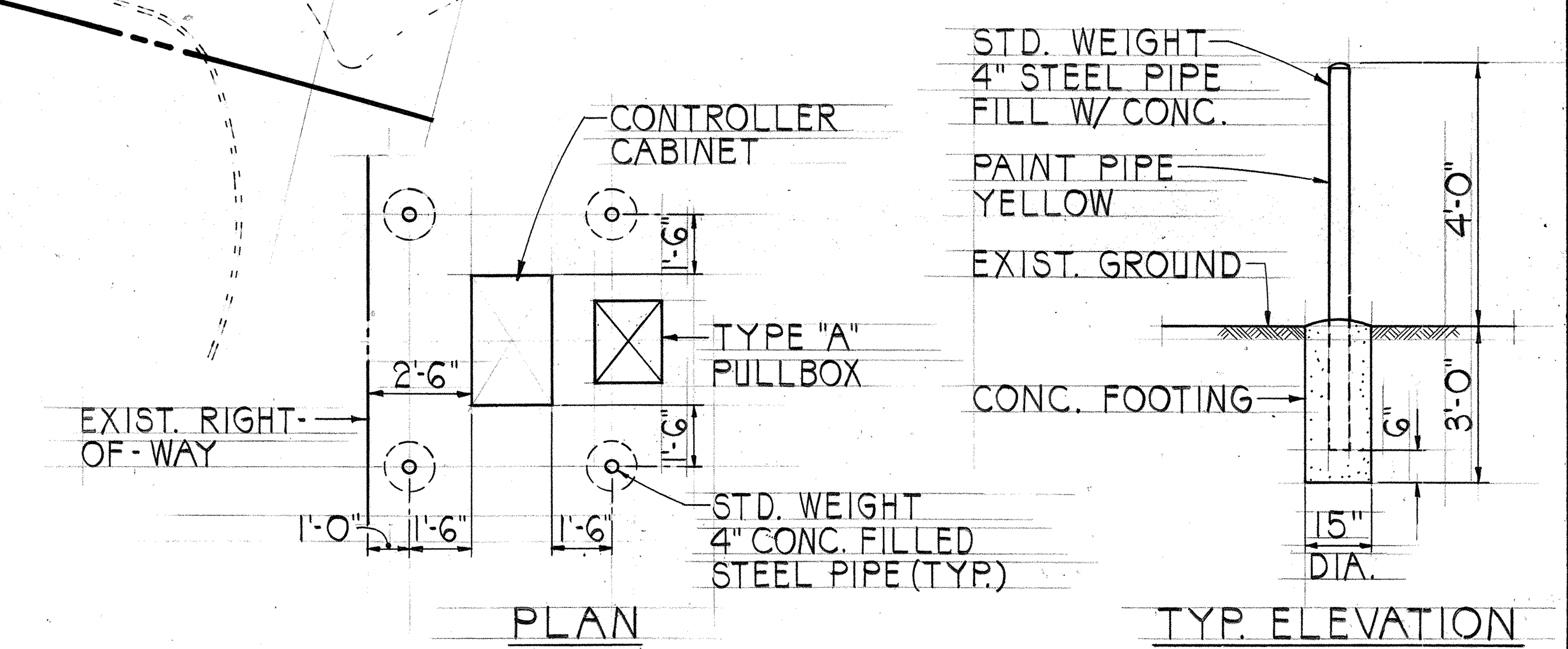
1. * 4/3 Alum triplex or equiv.
2. Exist. power soure @ pole 62X for Street Lights, shall be modified to service the new luminaires.
3. The Contractor shall coordinate work with HELCO.
4. See Plan Sheet No. 5 for additional Street Lighting work.
5. Existing Street Light anchors shall be removed from the existing Pole # P-58X at OBL Sta. 1077+03± Lt. Work shall be coordinated with HELCO. This work shall be considered incidental to Relocating of Highway Lighting System.

LEFT TURN YIELD ON GREEN

R10-12 (24"x24") (C.C.O. No. 34)

* Furnished & Installed R10-12 at the following locations:
- (H): IBL Sta. 1066+80, Left
- (G): IBL Sta. 1066+93, Right
- (C): OBL Sta. 1067+52, Left
- (D): IBL Sta. 1067+69, Left

NOTE:
COST OF 4 CONC. FILLED GALVANIZED POSTS SHALL BE INCIDENTAL TO ITEM NO. 623.2002.



PIPE GUARD DETAIL
NOT TO SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KEAAU - PAHOA INTERSECTION
TRAFFIC SIGNAL PLAN

KEAAU-PAHOA ROAD
TRAFFIC SIGNALS AT VOLCANO ROAD AND OLD MAMALAHOA ROAD
FEDERAL AID PROJ. NO. RSG-0130(22)

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

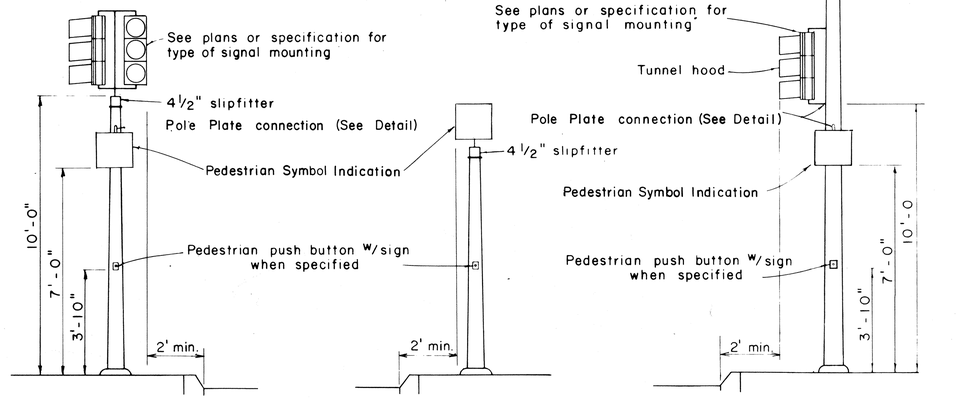
Signature

Scale: 1"=20' Date: Sept. 1985

SHEET No. OF SHEETS

94

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2(17)	1986	95	142

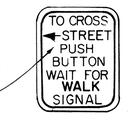


ON 10 - FOOT STANDARD

ON 8 - FOOT STANDARD WHEN SPECIFIED

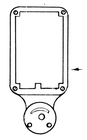
ON MAST ARM OR SPAN WIRE STANDARD

TYPICAL EQUIPMENT MOUNTINGS



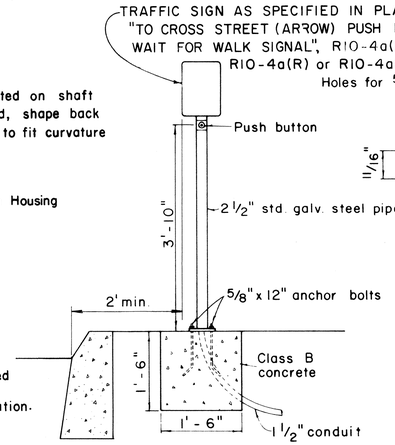
Arrow to be left or right or both See Plan

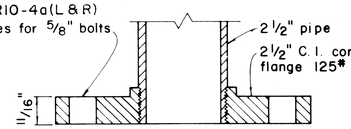
R10-4a(L)
5" x 7"



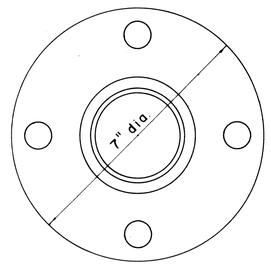
PEDESTRIAN PUSH BUTTON

NOTE:
1. Conduits shall protrude 2" max. above finished surface of foundation.
2. Conduits shall slope away from pole foundation.



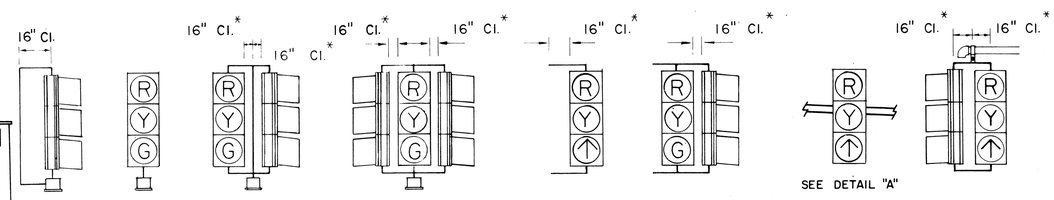


SECTION



BASE DETAIL

PEDESTRIAN PUSH BUTTON POST AND FOOTING



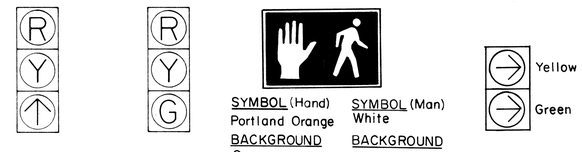
1 way (1 vert.) *IA | 1 way (1 vert.) I | 2 way (2 vert.) II | 3 way (3 vert.) III | 1 way (1 vert.) IV | 2 way (2 vert.) V | 1 way (1 vert.) VI | 2 way (2 vert.) VII

SLIPFITTER MOUNTINGS | BRACKET MOUNTINGS | MASTARM MOUNTINGS

SEE DETAIL "A"

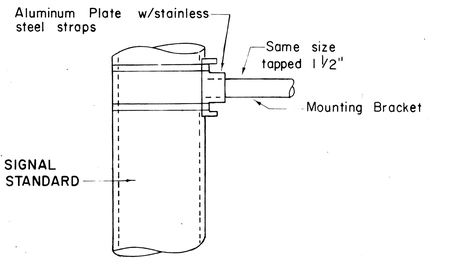
* Use with Programmed Visibility Signal

TYPICAL VEHICULAR AND PEDESTRIAN SIGNAL MOUNTINGS

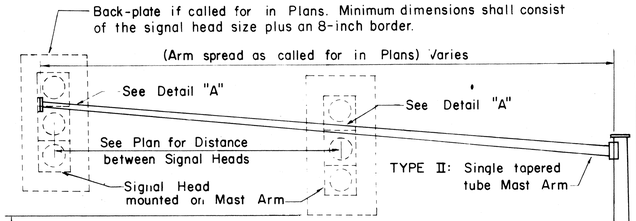


1 - Vertical 3 - Section | 1 - Vertical 3 - Section | 1 - Section | 1 - Vertical 2 - Section

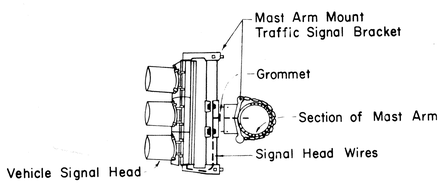
TYPICAL SIGNAL ARRANGEMENTS



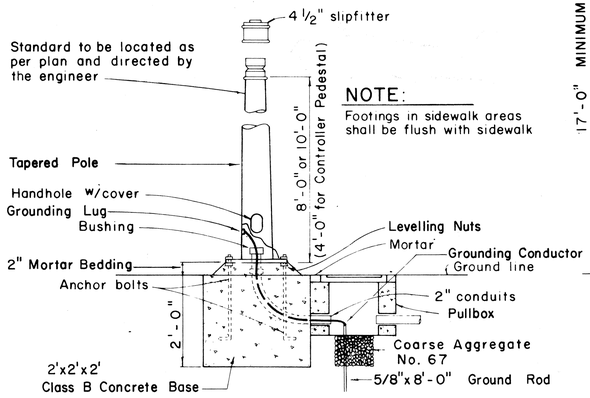
DETAIL OF POLE PLATE CONNECTIONS



TYPE II MAST ARM AND STANDARD



DETAIL "A"



NOTE:
Footings in sidewalk areas shall be flush with sidewalk

TYPE I SIGNAL STANDARD OR CONTROLLER PEDESTAL AND FOOTING

NO.	REVISION	APPROVED BY	DATE
7	Deleted word "Lunar" from Symbol (Man)	E.T.	3/3/85

NO.	REVISION	APPROVED BY	DATE
1	Revise code nos. for Pedestrian Push Button signs.	H.T.	3/23/72
2	Revise Details of Traffic and Pedestrian Signals, Standards and Pedestrian Push Button and Signs.	H.T.	3/5/76
3	Revise signal indications.	H.T.	9/22/76
4	Remove Note No. 3 & Revise clearance and dimension.	H.T.	9/19/77
5	Revise Ped. Signal Indication	H.T.	8/6/80
6	Added note for back-plate dimensions.	PJO	9-28-83

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

ASSISTANT CHIEF, ENGINEERING — 12/30/69 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM

MISCELLANEOUS DETAILS

Not to Scale

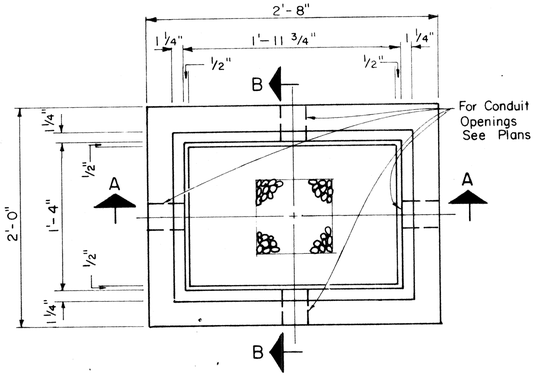
SHEET No. 95 OF SHEETS DT 400

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGN BY
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
No.

PRINTED ON NO. 1000H CLEARPRINT

95

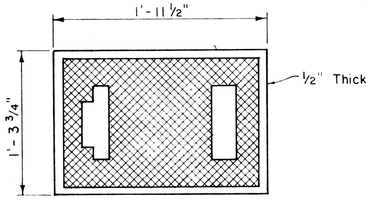
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSG-0130(22)	1986	96	142



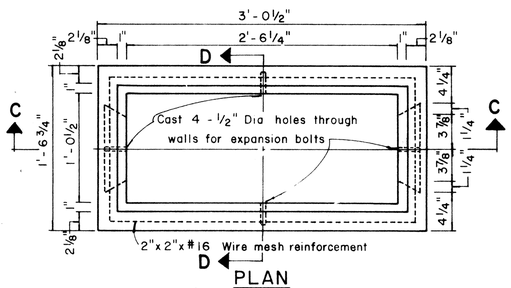
PLAN

NOTE:

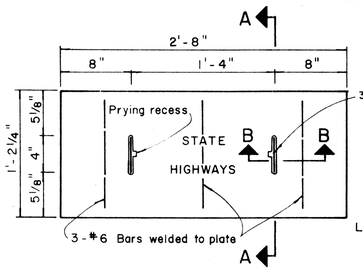
Except as noted, Cover Details shall conform to Type "B" Pullbox Cover.



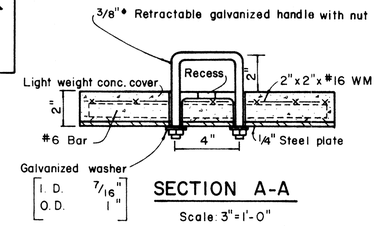
PLAN OF COVER



PLAN

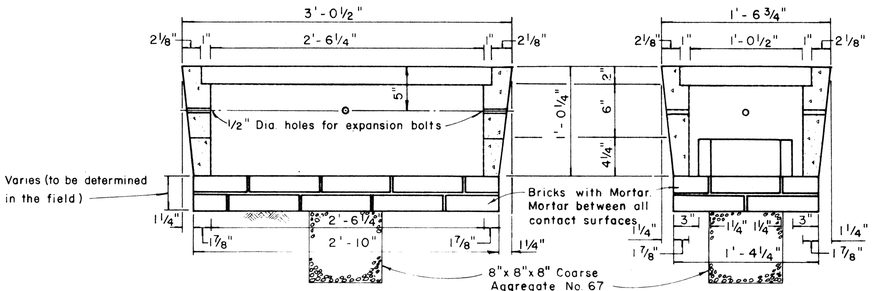


PLAN OF COVER



SECTION A-A

Scale: 3"=1'-0"

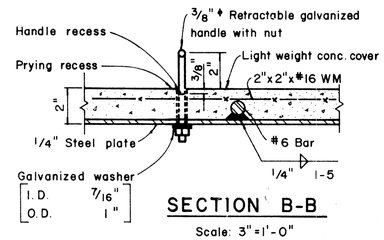


SECTION C-C

SECTION D-D

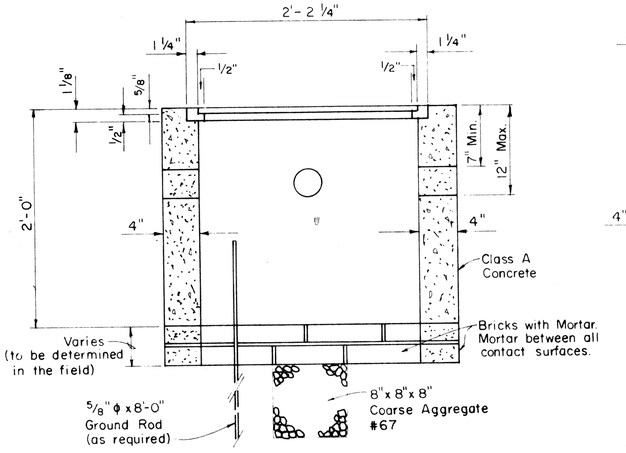
TYPE "C" PULLBOX

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

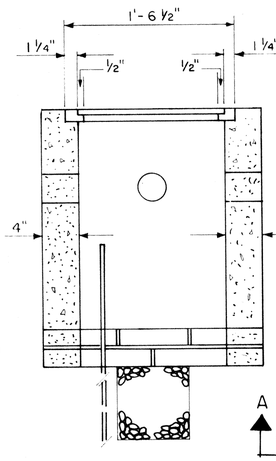


SECTION B-B

Scale: 3"=1'-0"



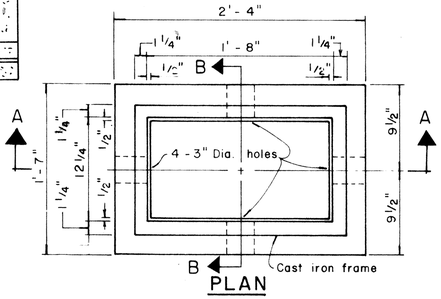
SECTION A-A



SECTION B-B

TYPE "A" PULLBOX

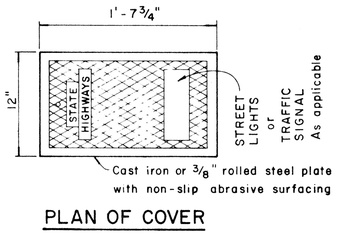
Scale: 1 1/2"=1'-0"



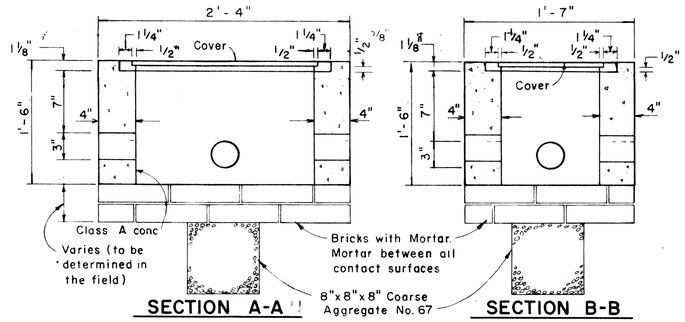
PLAN

NOTE

Steel rim shall be welded to bottom of steel cover if necessary so that top of cover and frame are flush



PLAN OF COVER

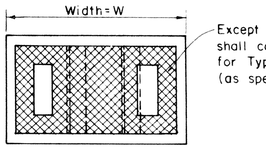


SECTION A-A

SECTION B-B

TYPE "B" PULLBOX

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



Except where noted, details shall conform to cover details for Type "A" or Type "B" Pullbox (as specified on plans).

NOTE:

Hot dip galvanize after fabrication. Modified cover shall be furnished when called for on plans.

MODIFIED COVER DETAIL

Not to Scale

APPROVAL RECOMMENDED:

TRAFFIC ENGINEER — DATE 12/29/83

APPROVED

ASSISTANT CHIEF, ENGINEERING — DATE 12-30-83

NO.	REVISION	APPROVED BY	DATE
1	Revised Type B & C Pullbox details	H.F.	3-5-76
2	Revised Type "A" Pullbox & Added Modified Cover.	H.F.	7-31-80
3	Revised Type B & C Pullbox details.	[illegible]	2-1-83

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PULLBOXES

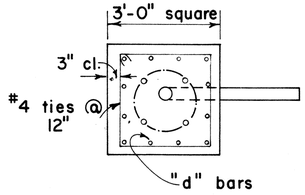
Scale as noted — Date

SHEET No. OF SHEETS DT 401

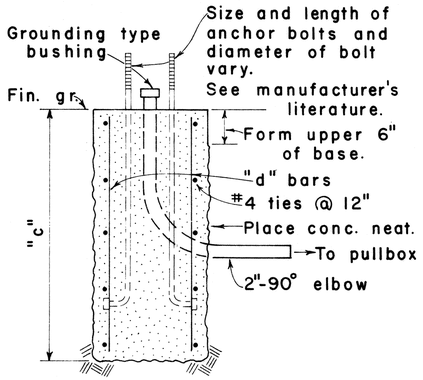
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RSS-0130(22)	1986	97	142



PLAN - SECTION

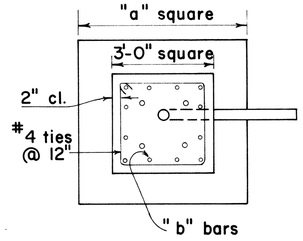


NOTE:
Concrete shall be Class B.

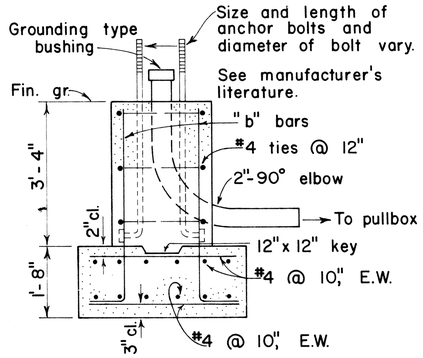
SECTION

MAST ARM LENGTH	"c"	"d" BARS
16'-18'	5'-0"	12-#6
20'	5'-6"	12-#6
25'	6'-0"	12-#6
30'	6'-6"	12-#6
35'	7'-0"	12-#8
40'	8'-0"	12-#8

TYPE II



PLAN - SECTION



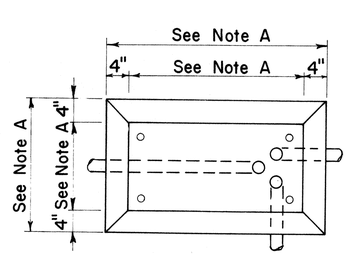
NOTE:
Concrete shall be Class B.

SECTION

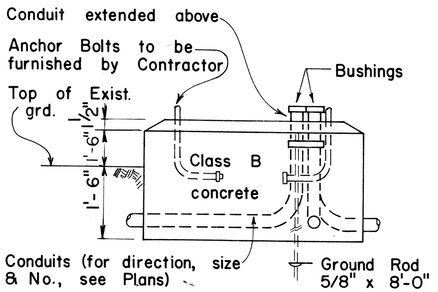
MAST ARM LENGTH	"a"	"b" BARS
16'-18'	5'-0"	12-#6
20'	5'-6"	12-#6
25'	6'-0"	12-#6
30'	6'-6"	12-#8
35'	6'-6"	12-#8
40'	7'-0"	12-#8

TYPE IIA

FOOTING FOR MAST ARM STANDARD



PLAN



ELEVATION

CONCRETE BASE FOR CONTROLLER CABINET

NOTES:

A. Dimensions to be determined by the size of the Controller Cabinet to be furnished under this Contract.

B. Details of Conduits, Anchor Bolts, etc., are approximate only. Exact details shall be secured by the Contractor from Manufacturer.

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 3/4/86 DATE

APPROVED:
Herbert R. Takeishi — ASSISTANT CHIEF, ENGINEERING — 3-5-86 DATE

NO.	REVISION	APPROVED BY	DATE
1	Revised Cabinet Base Design	[illegible]	1-31-85

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TRAFFIC SIGNAL SYSTEM
MISCELLANEOUS DETAILS

Not to Scale

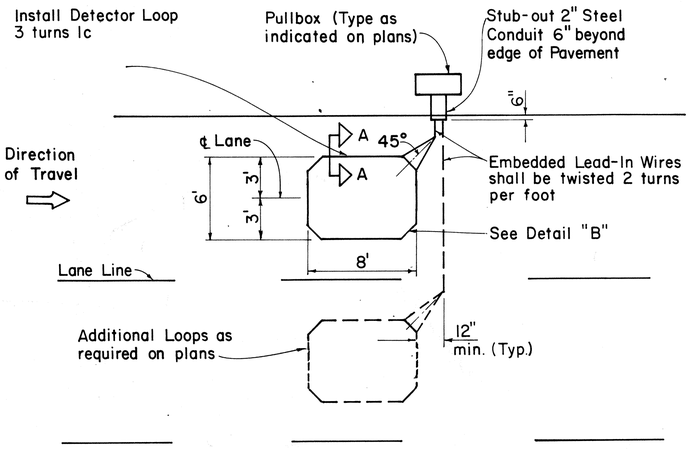
SHEET No. OF SHEETS DT404

97

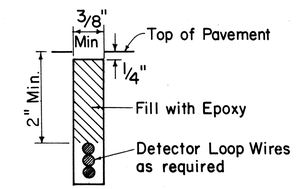
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

K+E TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2(17)	1986	98	142

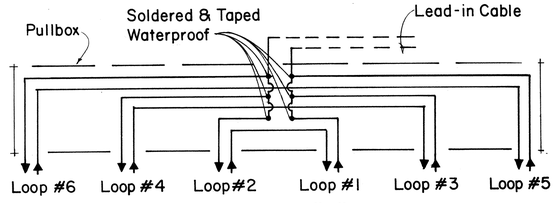


SINGLE LOOP LAYOUT



DETECTOR LOOP SAW-CUT

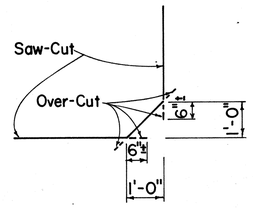
SECTION A-A (TYPICAL)



DETAIL "A"

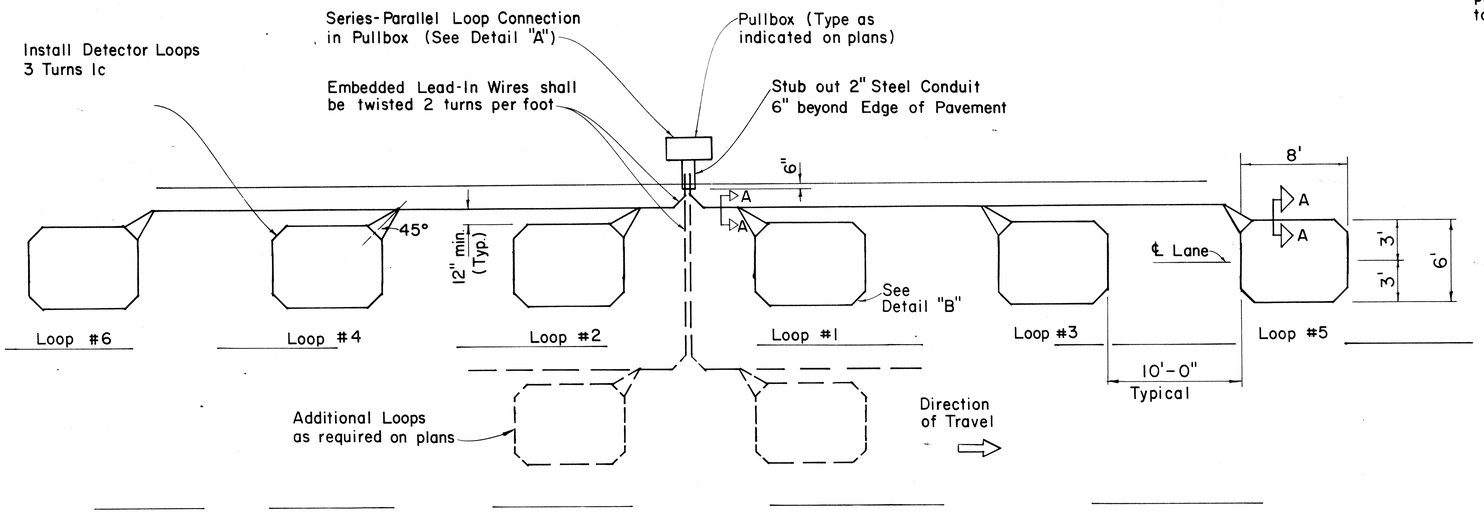
TYPICAL SERIES-PARALLEL LOOP CONNECTION

Note: Back-Fill Over-Cuts with Epoxy

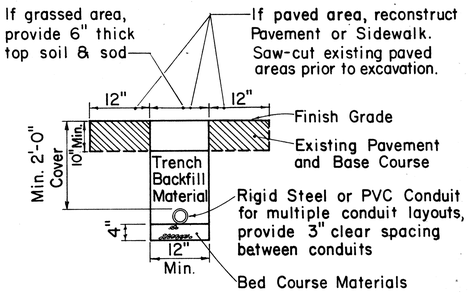


DETAIL "B"

SAW-CUT AT CORNERS



MULTIPLE LOOP LAYOUT



TYPICAL TRENCH SECTION FOR CONDUIT

NOTE:

1. All conduits under roadways shall be steel or PVC schedule 80.

APPROVAL RECOMMENDED:

Eriki Tanaka — TRAFFIC ENGINEER — 9/26/80 DATE

APPROVED:

Herbert Saiki — ASSISTANT CHIEF, ENGINEERING — 9/30/80 DATE

NO.	REVISION	APPROVED BY	DATE
1	Replaces Sht. DT 405 dated 3/5/76	H.T.	9/30/80
2	Revised Section A-A	H.T.	5/15/81
3	Revised Loop Design & Deleted Wiring Diagram	[illegible]	2-4-85
4	Revised Typical Section for conduit and note Deleted #14 from Loop Layout	E.T.	9/18/85

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

LOOP DETECTORS

Not to Scale

SHEET No. OF SHEETS DT 405

98

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