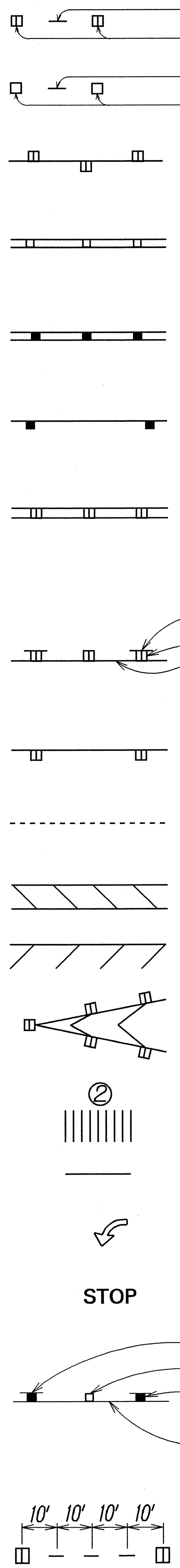
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	87	114

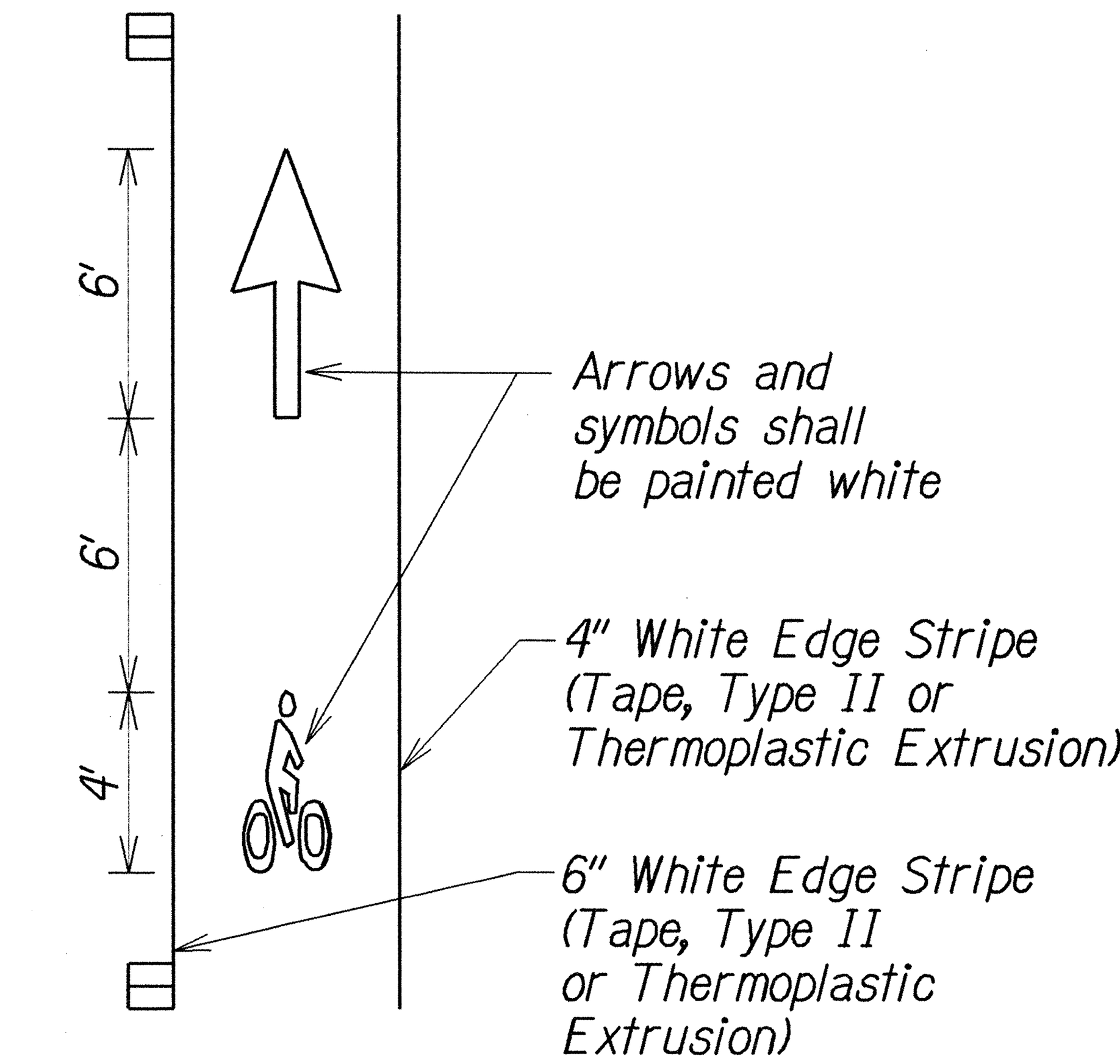
LEGEND



- 4 each Type A Raised Pavement Markers / Type C Raised Pavement Markers @ 40'-0" o.c.
- 4 each Type J Raised Pavement Markers / Type D Raised Pavement Markers @ 40'-0" o.c.
- 8" White Stripe with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
- 4" Double Solid Yellow with Type D Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion))
- 4" Double Solid Yellow Stripes with Type H Raised Pavement Markers @ 20'-0" o.c. (Tape, Type II or Thermoplastic Extrusion))
- 4" Yellow Edge Stripe with Type H Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion))
- 4" Double Solid White Stripes with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
- Lane Change Restriction Marking — 4 each Type A Raised Pavement Markers / Type C Raised Pavement Markers @ 20'-0" o.c. / 4" White Stripe (Tape, Type I or Thermoplastic Extrusion)
- 4" or 8" White Edge Stripe with Type C Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion)
- 4" White Guide Lines (Tape, Type III or Thermoplastic Extrusion except for bus bays)
- Transverse Median Marking (Tape, Type II or Thermoplastic Extrusion)
- Transverse Shoulder Marking (Tape, Type II or Thermoplastic Extrusion)
- Channelizing Island or Deceleration Lane Gore (Tape, Type II or Thermoplastic Extrusion)
- Crosswalk and Stop Line. All Stop Lines shall be 10'-0" from Crosswalk unless otherwise noted. The circled number indicates the number of lanes for payment (Tape, Type III or Thermoplastic Extrusion)
- Pavement Arrow (Tape, Type III or Thermoplastic Extrusion)
- STOP — Pavement Word (Tape, Type III or Thermoplastic Extrusion)
- 4 Each Type J Raised Pavement Markers / Type D Raised Pavement Markers @ 40'-0" o.c. / Type H Raised Pavement Markers (Reflective Surface facing no-passing direction) / 4" Single Solid Yellow Stripe (Tape, Type I or Thermoplastic Extrusion)
- 10' 10' 10' 10' — Extension of Edge Line, 4" Wide x 2'-0" Long White Stripe @ 10'-0" o.c. w/Type C Markers @ 40'-0" o.c. (Tape, Type III or Thermoplastic Extrusion)

NOTES

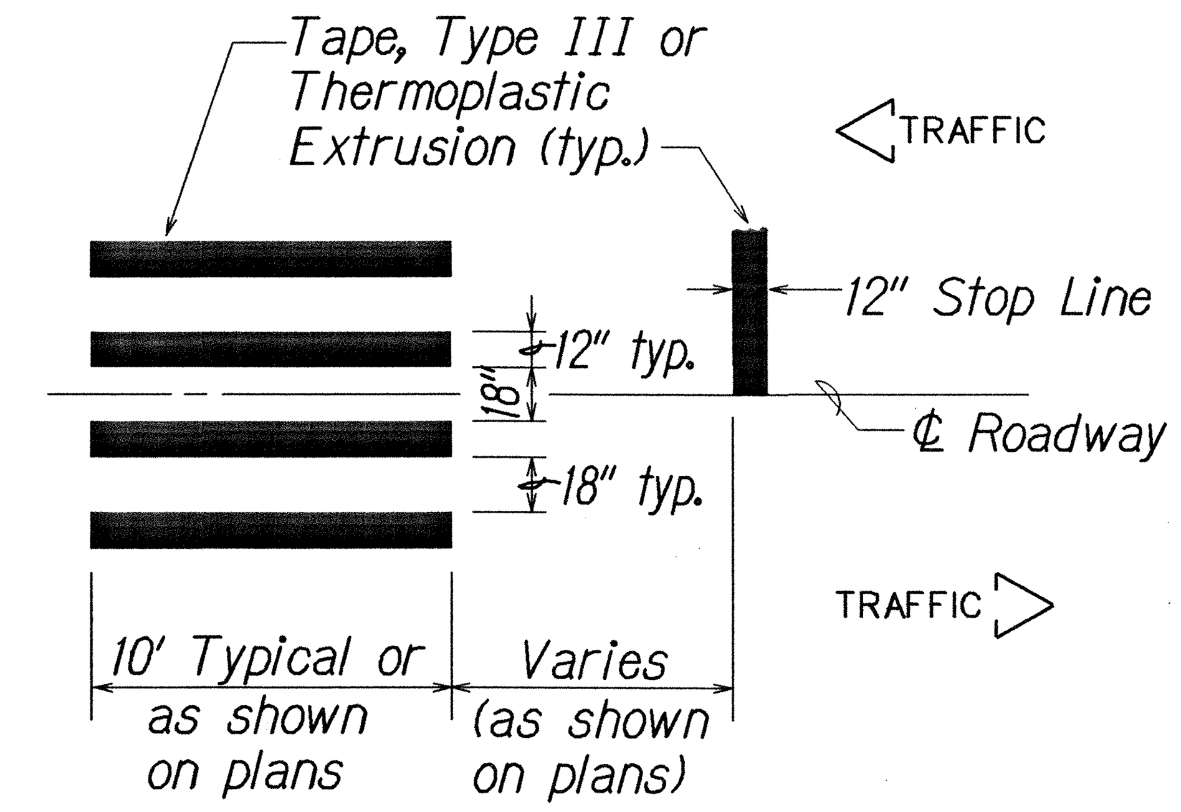
1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings and striping not incorporated in the final traffic pattern shall be removed as directed by the Engineer. The removal of the existing pavement markings shall not be paid for separately but shall be considered incidental to the various pavement marking items.
3. Raised pavement markers shall not be installed within crosswalks.
4. Final locations of all signs shall be approved by the Engineer prior to any installation work.
5. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans or directed by the Engineer shall not be paid for and shall be considered incidental to the various signing items.
6. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.
7. All pavement striping shall be as noted on the Legend or plans.
8. All preformed pavement marking tapes over existing pavement shall be applied with an approved primer as recommended by the tape manufacturer and as approved by the Engineer. The primer shall be allowed to dry to the tacky stage prior to tape application.
9. Removal of Existing Delineators and Posts as directed by the Engineer shall be considered incidental to the various signing items.
10. Existing signs that are to be replaced shall not be removed until new signs are installed as replacements, or the messages are no longer necessary.
11. Backing for all new regulatory and warning signs shall not be spliced.
12. All new and relocated signs and markers installed on pipe post or light standard are to be mounted with band brackets and steel braces.
13. The Contractor shall erect at the beginning of the project and at the end of the project advance construction warning signs as indicated on the plans or as directed by the Engineer for the duration of the highway project and shall be maintained by the Contractor. These signs shall be placed in addition to the required traffic control signs called for in Section 645-Traffic Control. The advance construction warning signs shall be new and become the property of the State. The Contractor shall remove, clean, and deliver the signs and posts to the Oahu District Baseyard or as directed by the Engineer at the end of the project.
14. The Contractor shall notify the Oahu Transit Services Inc. (OTS), Ed Sniffen, at 848-4571 or Lowell Tom at 848-4578 two weeks prior to beginning any work, informing them of location, scope of work, proposed closure of any street or traffic lanes, and the need to relocate any bus stop.



BIKE LANE MARKINGS

Not to Scale

NOTE: Bike Lane Markings - Pavement Arrows and Symbol shall be paid for as one complete set.



DETAIL "A"

CROSSWALK STRIPING DETAIL

Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING LEGEND, DETAILS & NOTES

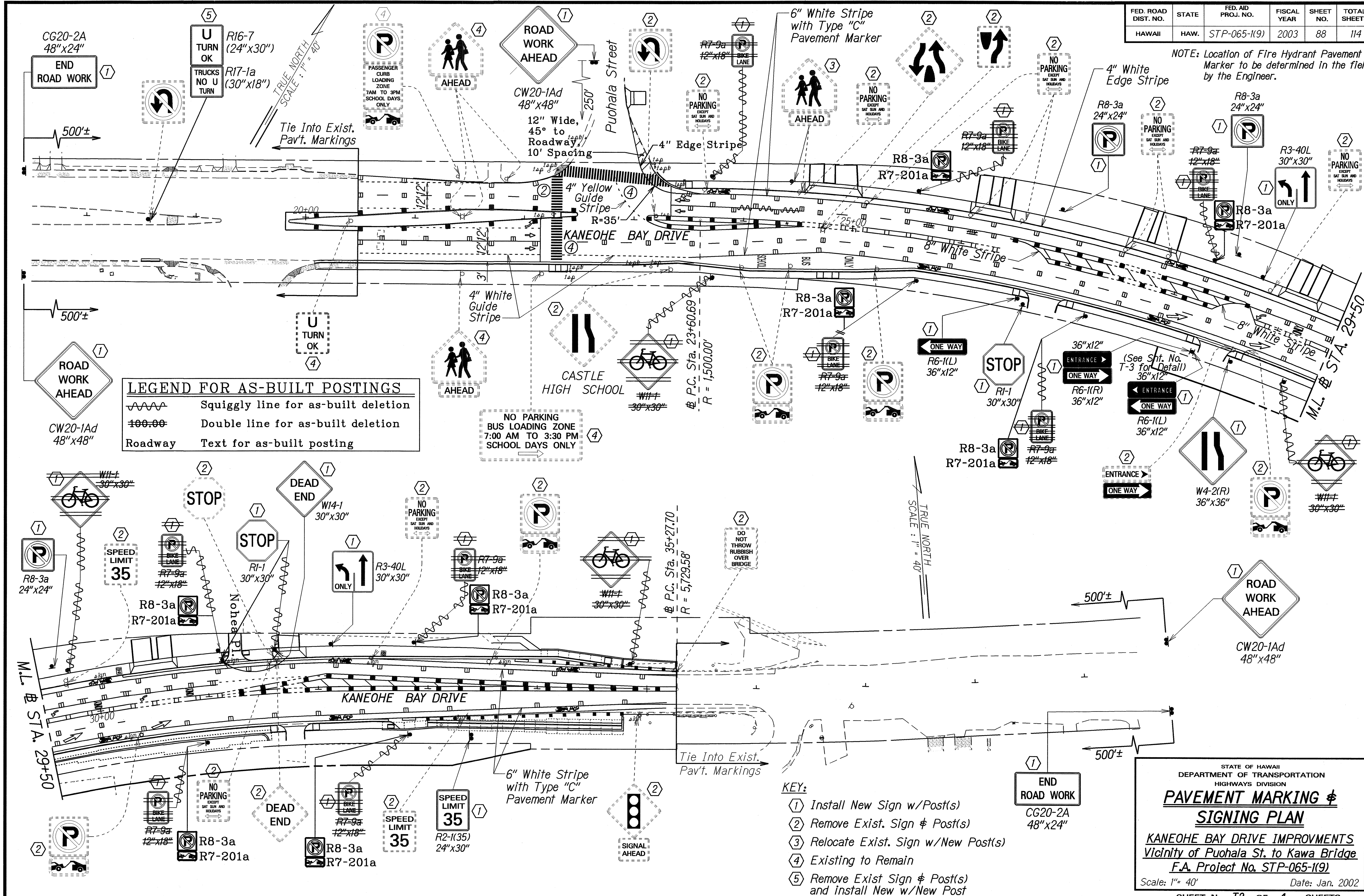
KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Scale: As Noted — Date: Jan. 2002

SHEET No. T1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	88	114

NOTE: Location of Fire Hydrant Pavement Marker to be determined in the field by the Engineer.



CG20-2A 48"x24"
END ROAD WORK
U TURN OK
R16-7 (24"x30")
TRUCKS NO U TURN
R17-1a (30"x18")
TRUE NORTH SCALE : 1" = 40'
PASSENGER CURB LOADING ZONE 7AM TO 3PM SCHOOL DAYS ONLY
AHEAD
ROAD WORK AHEAD
CW20-1Ad 48"x48"
12" Wide, 45° to Roadway, 10' Spacing
250'
Puohala Street
4" Edge Stripe
6" White Stripe with Type "C" Pavement Marker
R7-9a 12"x18"
BIKE LANE
NO PARKING EXCEPT SAT SUN AND HOLIDAYS
4" White Edge Stripe
R8-3a 24"x24"
R3-40L 30"x30"
ONLY
R8-3a
R7-201a
500'±
Tie Into Exist. Pav't. Markings
4" Yellow Guide Stripe
R=35'
KANEOHE BAY DRIVE
8" White Stripe
4" White Guide Stripe
CASTLE HIGH SCHOOL
W11-1 30"x30"
℄ P.C. Sta. 23+60.69 R = 1,500.00'
ONE WAY
R6-1(L) 36"x12"
STOP
R1-1 30"x30"
ENTRANCE
36"x12"
R6-1(R) 36"x12"
(See Sht. No. T-3 for Detail)
W4-2(R) 36"x36"
M.L. ℄ STA. 29+50
NO PARKING BUS LOADING ZONE 7:00 AM TO 3:30 PM SCHOOL DAYS ONLY
U TURN OK
DEAD END
W14-1 30"x30"
SPEED LIMIT 35
Nohea Pl.
R3-40L 30"x30"
DO NOT THROW RUBBISH OVER BRIDGE
℄ P.C. Sta. 35+27.70 R = 5,729.58'
R2-1(35) 24"x30"
SIGNAL AHEAD
6" White Stripe with Type "C" Pavement Marker
CW20-1Ad 48"x48"
CG20-2A 48"x24"

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

KEY:

1. Install New Sign w/Post(s)
2. Remove Exist. Sign & Post(s)
3. Relocate Exist. Sign w/New Post(s)
4. Existing to Remain
5. Remove Exist Sign & Post(s) and install New w/New Post

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

KANEOHE BAY DRIVE IMPROVMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Scale: 1"= 40' Date: Jan. 2002

SHEET No. T2 OF 4 SHEETS

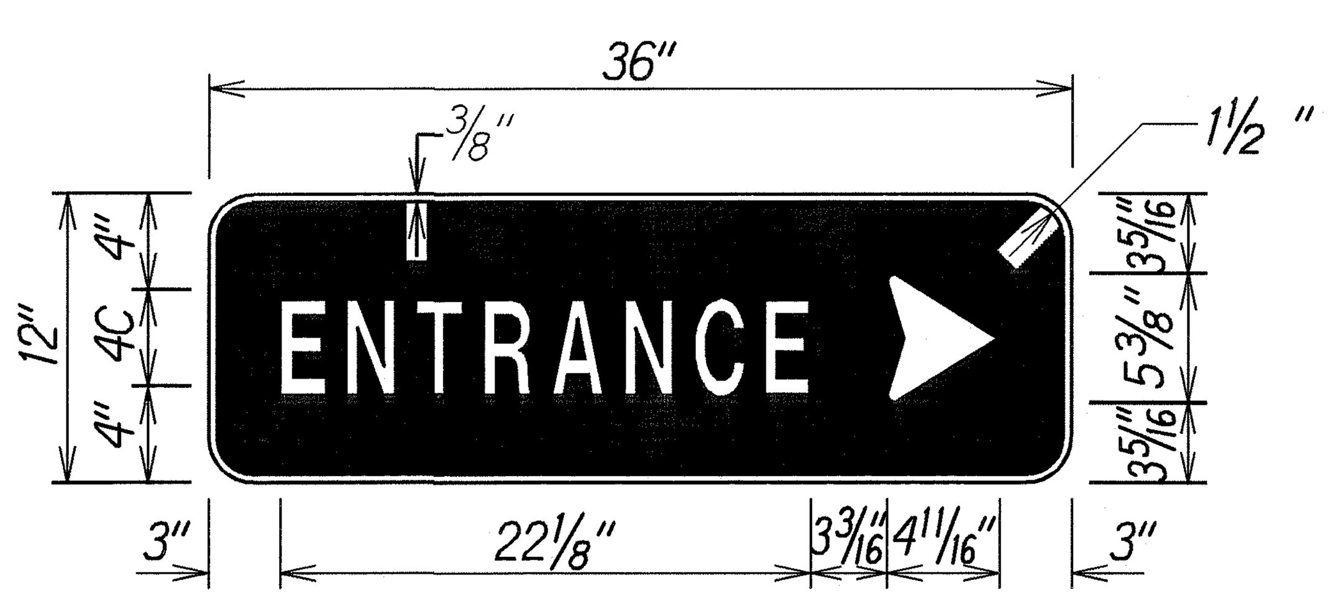
"AS-BUILT"

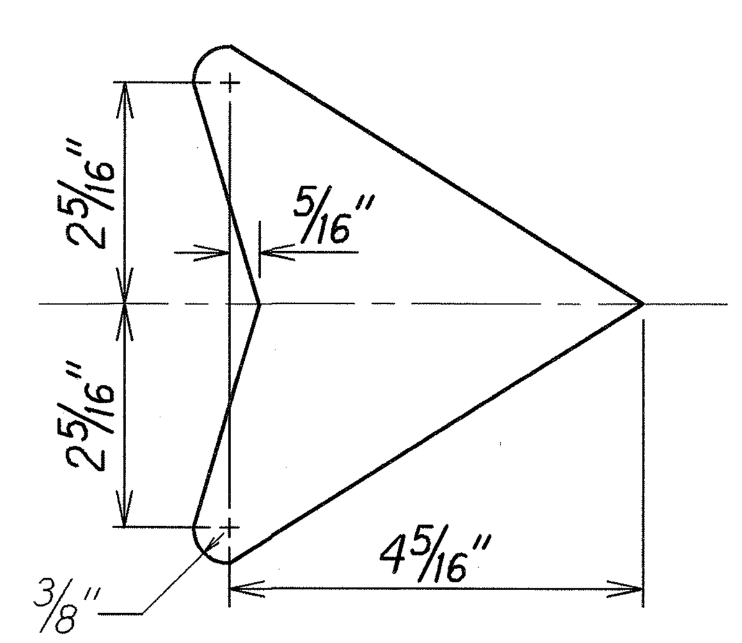
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	89	114

PAVEMENT MARKING SUMMARY	
DESCRIPTION	QUANTITY
PAVEMENT MARKERS	
TYPE A	108 EA.
TYPE C	112 EA.
TYPE D	21 EA.
TYPE DB	1 EA.
TYPE H	81 EA.
TAPE - TYPE I OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE)	170 L.F.
8-INCH PAVEMENT STRIPE (WHITE)	320 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW)	420 L.F.
TAPE - TYPE II OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (YELLOW)	300 L.F.
4-INCH PAVEMENT STRIPE (WHITE)	2780 L.F.
6-INCH PAVEMENT STRIPE (WHITE)	2,400 L.F.
8-INCH PAVEMENT STRIPE (WHITE)	80 L.F.
12-INCH PAVEMENT STRIPE (YELLOW)	120 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW)	1,500 L.F.
TAPE - TYPE III OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE)	620 L.F.
4-INCH PAVEMENT STRIPE (YELLOW)	60 L.F.
CROSSWALK MARKING	10 LANE
12-INCH PAVEMENT STRIPE (WHITE)	90 L.F.
PAVEMENT ARROW	12 EA.
PAVEMENT SYMBOL	12 EA.
PAVEMENT WORD	6 EA.

TRAFFIC SIGN SUMMARY				
SIGN NO.	MESSAGE	QUANTITY		
		10 SQ. FT. OR LESS		RELOCATE 10 SQ. FT. OR LESS
		W/POST	W/O POST	W/POST
R1-1	STOP	2	-	-
R2-1(35)	SPEED LIMIT 35	1	-	-
R3-40L	↰ ONLY ↑	2	-	-
R6-1(L)	ONE WAY	2	-	-
R6-1(R)	ONE WAY	-	1	-
~~R7-9a~~ R7-201a	~~(P) BIKE LANE~~ TOW AWAY SYMBOL	~~9~~	~~1~~ 8	-
R8-3a	NO PARKING SYMBOL	~~3~~ 11	-	-
R16-7	U TURN OK	1	-	-
R17-1a	TRUCKS NO U TURN	-	1	-
W4-2(R)		1	-	-
W11-1		~~4~~ 0	-	-
W14-1	DEAD END	-	1	-
	◁ ENTRANCE	-	1	-
	ENTRANCE ▷	-	1	-
S1-1 (EXIST.)	SCHOOL CROSSING	-	-	1
	TOTAL	~~25~~ 20	~~5~~ 13	1

CONSTRUCTION SIGN SUMMARY				
SIGN NO.	LOCATION	MESSAGE	W/POSTS	W/O POST
CW20-1Ad	℄ Sta. 14+00± Rt.	ROAD WORK AHEAD	1	-
CG20-2A	℄ Sta. 14+00± Lt.	END ROAD WORK	1	-
CW20-1Ad	℄ Sta. 40+00± Lt.	ROAD WORK AHEAD	1	-
CG20-2A	℄ Sta. 40+00± Rt.	END ROAD WORK	1	-
		TOTAL	4	-





COLORS:

LEGEND: White (Reflective)
BACKGROUND: Green (Reflective)

LEGEND FOR AS-BUILT POSTINGS	
~~AAAA~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

DATE	REVISION
2/20/03	Revise Traffic Sign Summary Quantities.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SUMMARY & SIGN DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Date: Jan. 2002

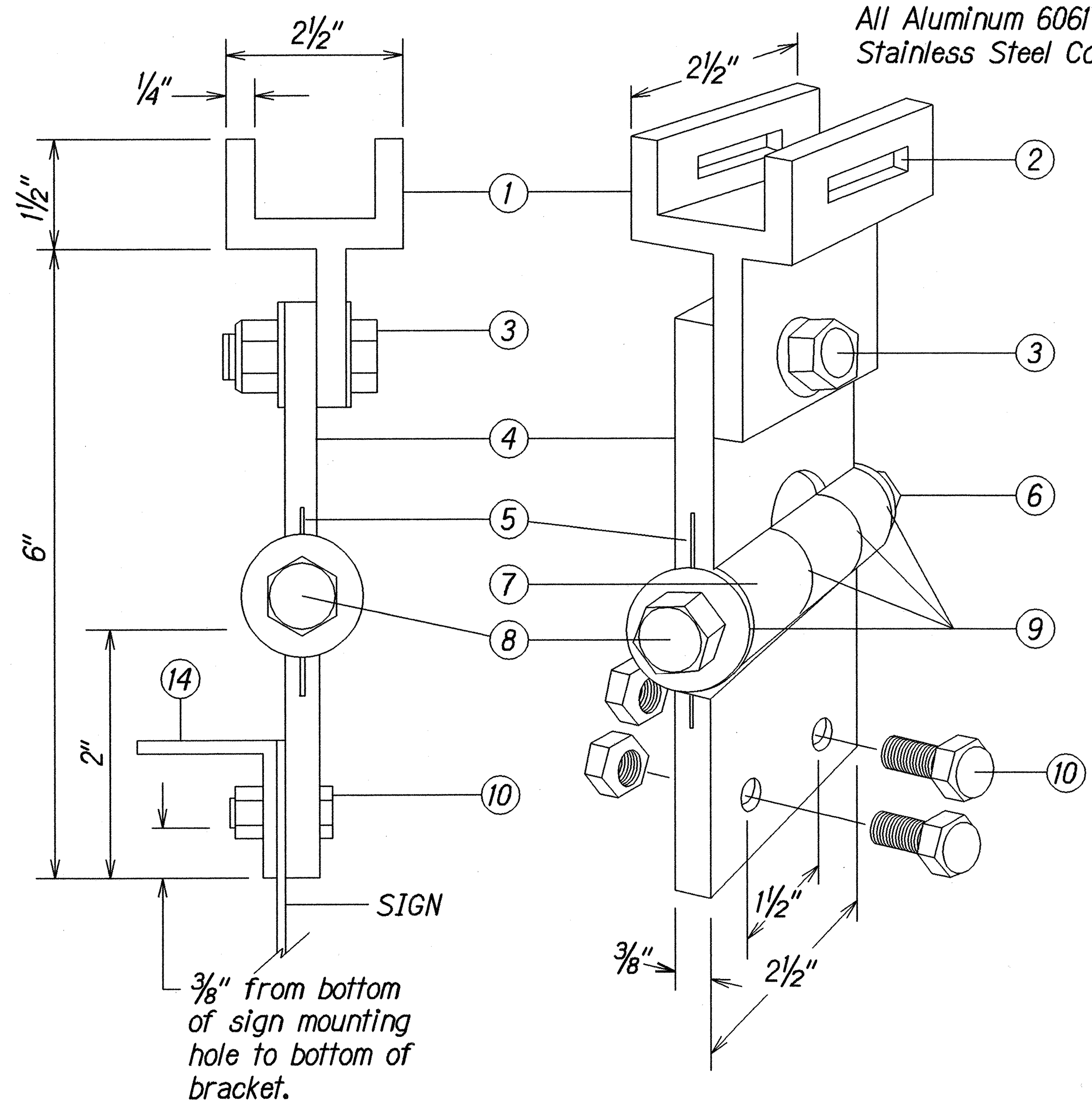
SHEET No. T3 OF 4 SHEETS

ORIGINAL PLAN — SURVEY PLOTTED BY; DRAWN BY J. Howells; TRACED BY; DESIGNED BY R. Akana; QUANTITIES BY; CHECKED BY; NOTE BOOK; DATE 12/28/01

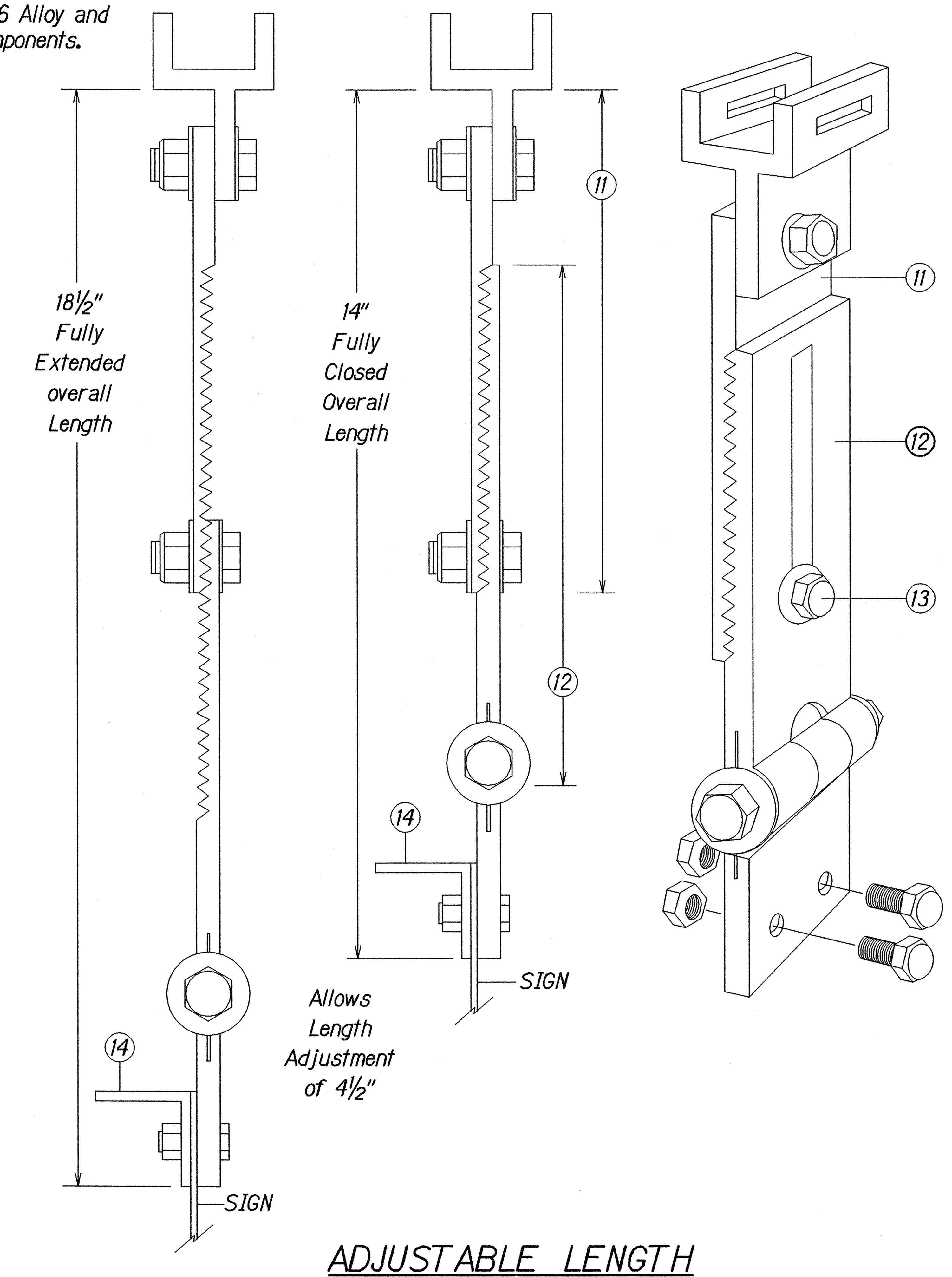
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	90	114

All Aluminum 6061T6 Alloy and Stainless Steel Components.



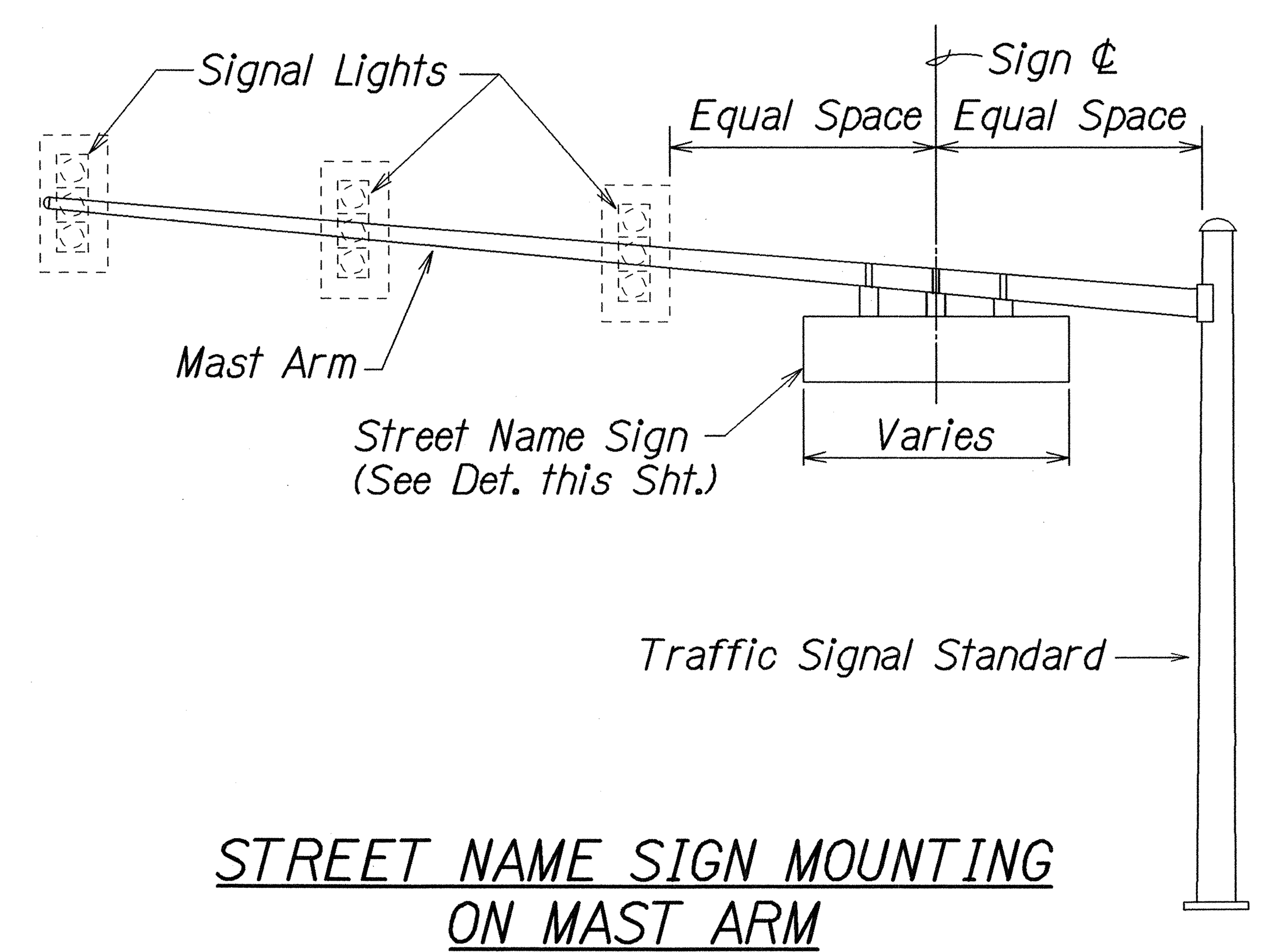
FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET



ADJUSTABLE LENGTH 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

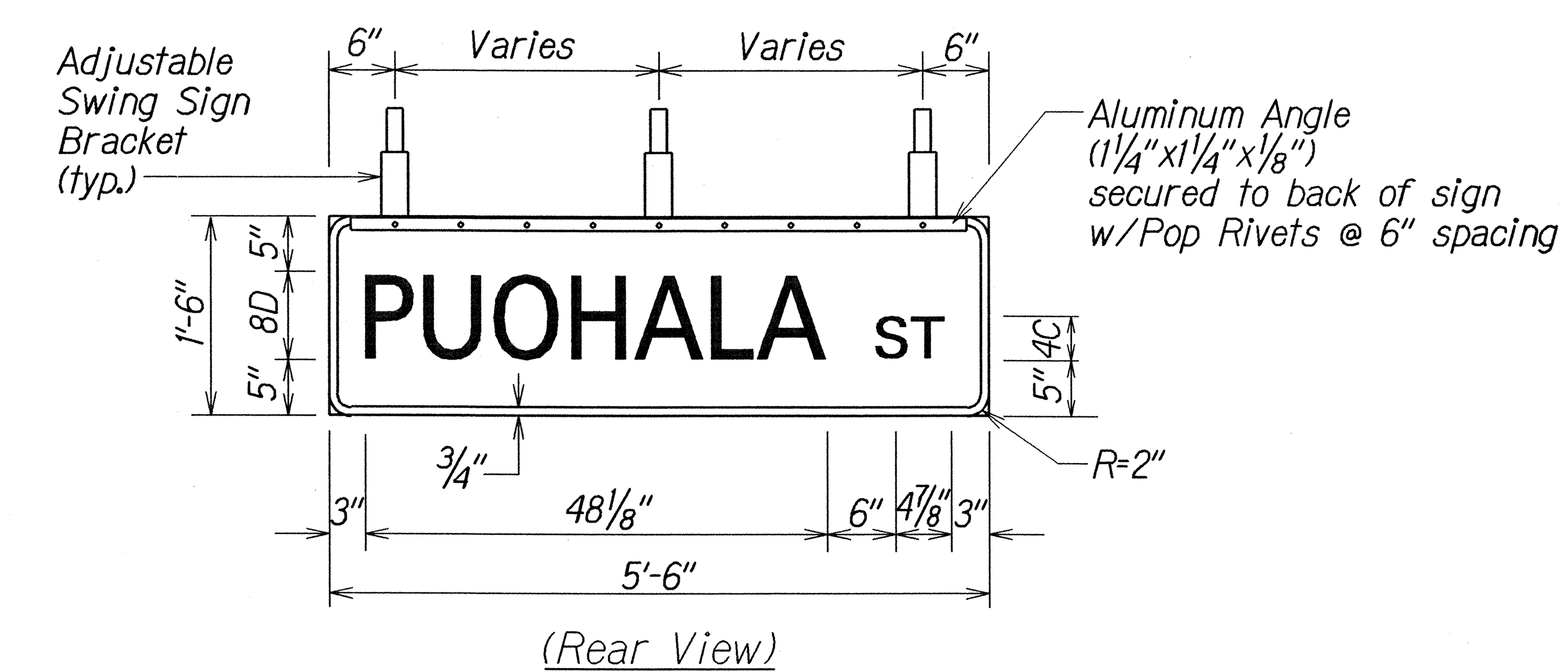
Note: Dimensions may vary slightly.



STREET NAME SIGN MOUNTING ON MAST ARM

STREET NAME (D3) SIGN NOTES:

1. Sign D3-1 shall be a 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 III or IV retroreflective sheeting in accordance with Section - 712.20 of the Standard Specifications.
4. 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"
5. Borders and messages shall conform to details as shown on the plans and as specified in the MUTCD.
6. 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.
7. Number of Swing Sign Brackets required per Sign Panel:
   3 Brackets - Panel length 7' or less
   4 Brackets - Panel length greater that 7' with a maximum length of 9'-6"
8. Diacritical marks for Street Name are not authorized.



(Rear View)

PANEL & SWING BRACKET LAYOUT FOR STREET NAME SIGN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN MOUNTING DETAIL

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Not to Scale — Date: Jan. 2002

SHEET No. T4 OF 4 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

tdl/usr2/traffic/std/stnmsgnr.dgn

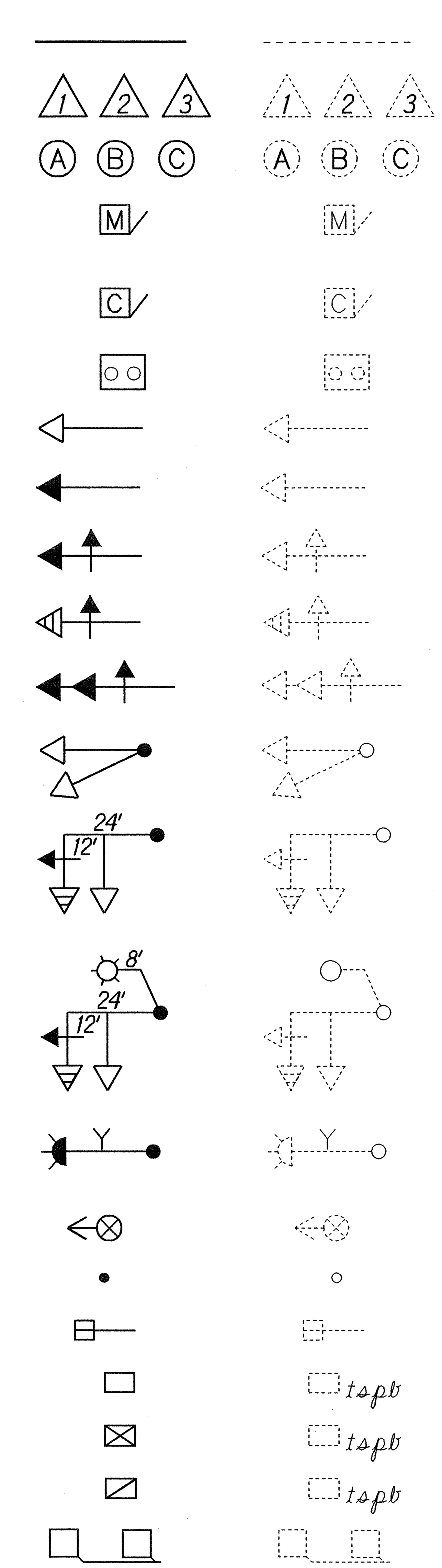
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	91	114

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 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.
7. 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 to the State. All repairs shall be done as soon as possible.
8. 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.
9. 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.
10. All Conduits between pullboxes and Traffic Signal/Highway Lighting Standards shall not be paid for separately but shall be considered incidental to the various contract items.
11. All Signal-Drop Cables (Type 5 Cables) from the various Types of Traffic Signal Head on the traffic signal standards and mast arms to the pullboxes shall not be paid for separately but considered incidental to the Traffic Signal Head.
12. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.
13. After installing the Traffic Signal System, the Contractor shall apply grease to all parts of the Traffic Signal System (i.e. fittings, brackets, nipples, elbows, screws, signal head assemblies, bolts, hinges, etc.) as directed by the Traffic Signal Inspector, to prevent rust and corrosion. The grease material shall be approved by the Signal Inspector, and shall not be paid for separately but considered incidental to the various Traffic Signal Contract items.
14. Connecting into existing traffic signal system and making all necessary adjustments shall not be paid for separately, but considered incidental to the various traffic signal contract items.
15. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (phone no. 523-4589) two weeks prior to commencing any work on the traffic signal system.
16. 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. 523-4589).
17. The concrete jacket for the Conduit By-Pass Details shown on Plan Sheet No. 95, shall not be paid for separately but considered incidental to the various contract items. The Engineer shall determine if a concrete jacket is required.
18. Removal and disposal of existing conduit wil not be paid for separately but shall be considered incidental to the various Traffic Signal Contract Items.
19. Any temporary traffic signal work required for the existing traffic signal system to be operational, shall be considered incidental to the various Traffic Signal Contract items.

TRAFFIC SIGNAL LEGEND

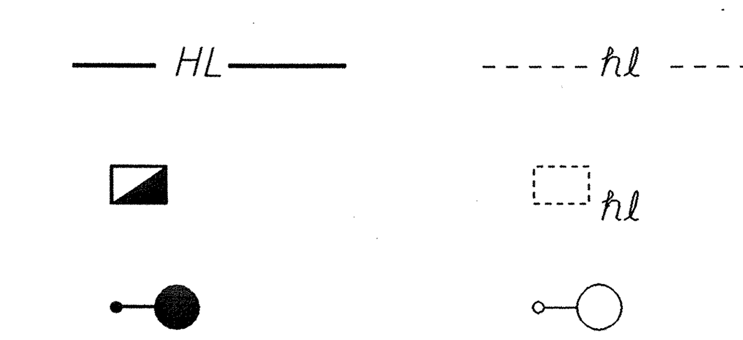
NEW EXISTING



Traffic Signal Conduit
Conduit Run Numbers
Equipment description, installation or item no.
Traffic Signal Master Controller Door Indicates Front of Cabinet
Traffic Signal Controller Door Indicates Front of Cabinet
Meter Pedestal
12" RYG Traffic Signal Head
12" RY↑ Traffic Signal Head
12" RY← Traffic Signal Head
12" RY← Traffic Signal Head (Programmed Visibility)
12" RYG ←G/Y Fiber Optic Traffic Signal Head
Type I Standard and Attached Signals
Type II Standard with Signal Mast Arm and Attached Signals (Nos. indicates mast arm length & distance between signal heads as specified on plans)
Type III Standard with Luminaire and Signal Mast Arm and Attached Signals (Nos. indicates mast arm lengths & distance between signal heads as specified on plans)
Flashing Beacon, One Signal Section, "Y" indicates 12" Yellow Lens
Opticom Receiver (Arrow indicates direction detector faces)
Pipe Guard
Pedestrain Signal Head
Type A Pullbox
Type B Pullbox
Type C Pullbox
Loop Detectors

HIGHWAY LIGHTING LEGEND

NEW EXISTING



Highway Lighting Conduit
Type A Pullbox (Hwy. Ltg.)
Highway Lighting Standard

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

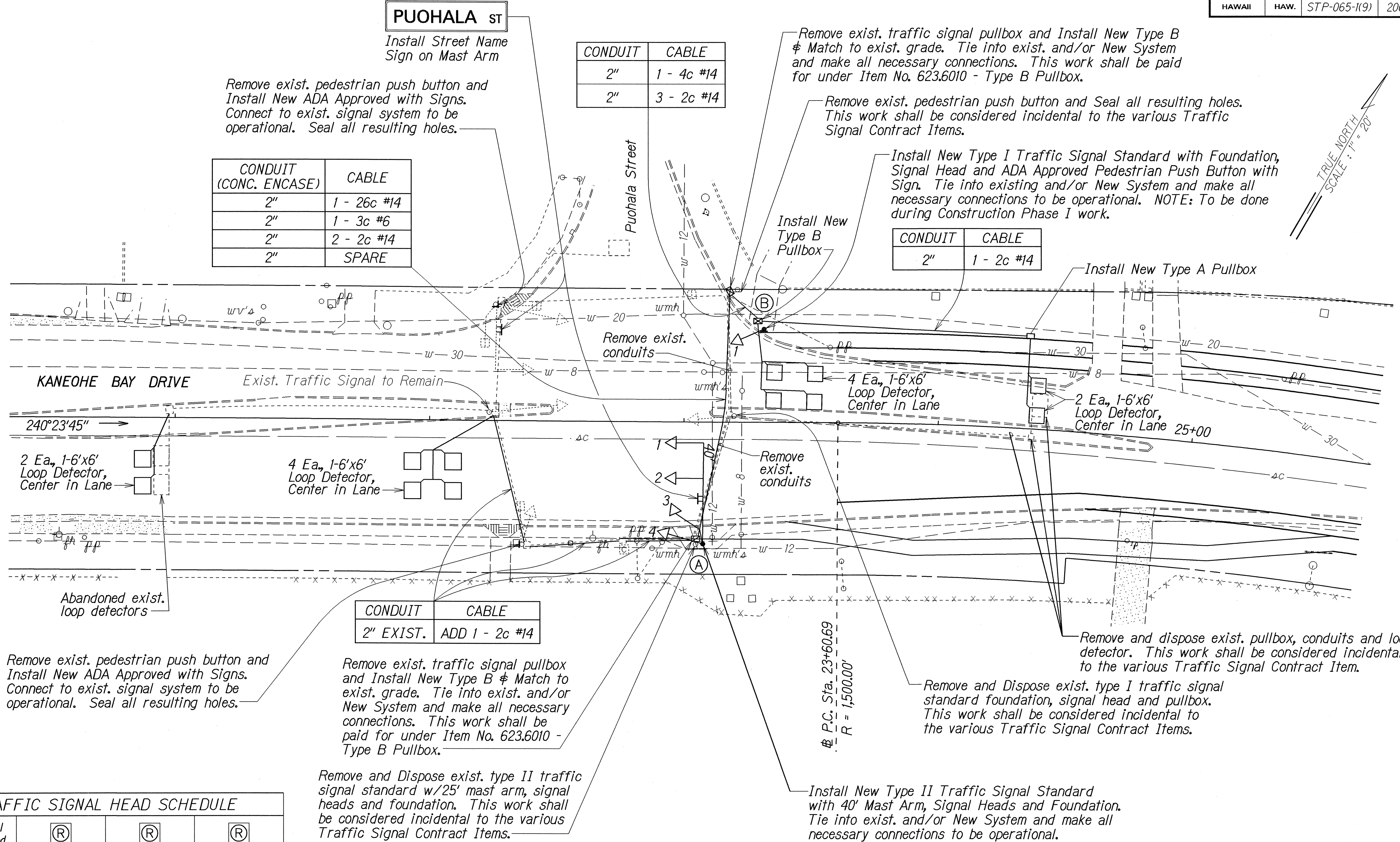
TRAFFIC SIGNAL LEGEND AND NOTES

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)
Date: Jan. 2002

SHEET No. TS1 OF 7 SHEETS

R4-1-97

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	92	114



CONDUIT	CABLE
2"	1 - 4c #14
2"	3 - 2c #14

CONDUIT (CONC. ENCASE)	CABLE
2"	1 - 26c #14
2"	1 - 3c #6
2"	2 - 2c #14
2"	SPARE

CONDUIT	CABLE
2"	1 - 2c #14

CONDUIT	CABLE
2" EXIST.	ADD 1 - 2c #14

TRAFFIC SIGNAL HEAD SCHEDULE

Traffic Signal Head Type and Description	R Y G — 12" RYG Traffic Signal Head	R Y ↑ — 12" RY↑ Traffic Signal Head	R Y → — 12" RY→ Traffic Signal Head
Pole Letter Signal Head Number	A-1* B-1	A-2* A-4*	A-3*

* LED Optical Units

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY J. Hewlis	2/2/00
	TRACED BY	
	DESIGNED BY R. Akana	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

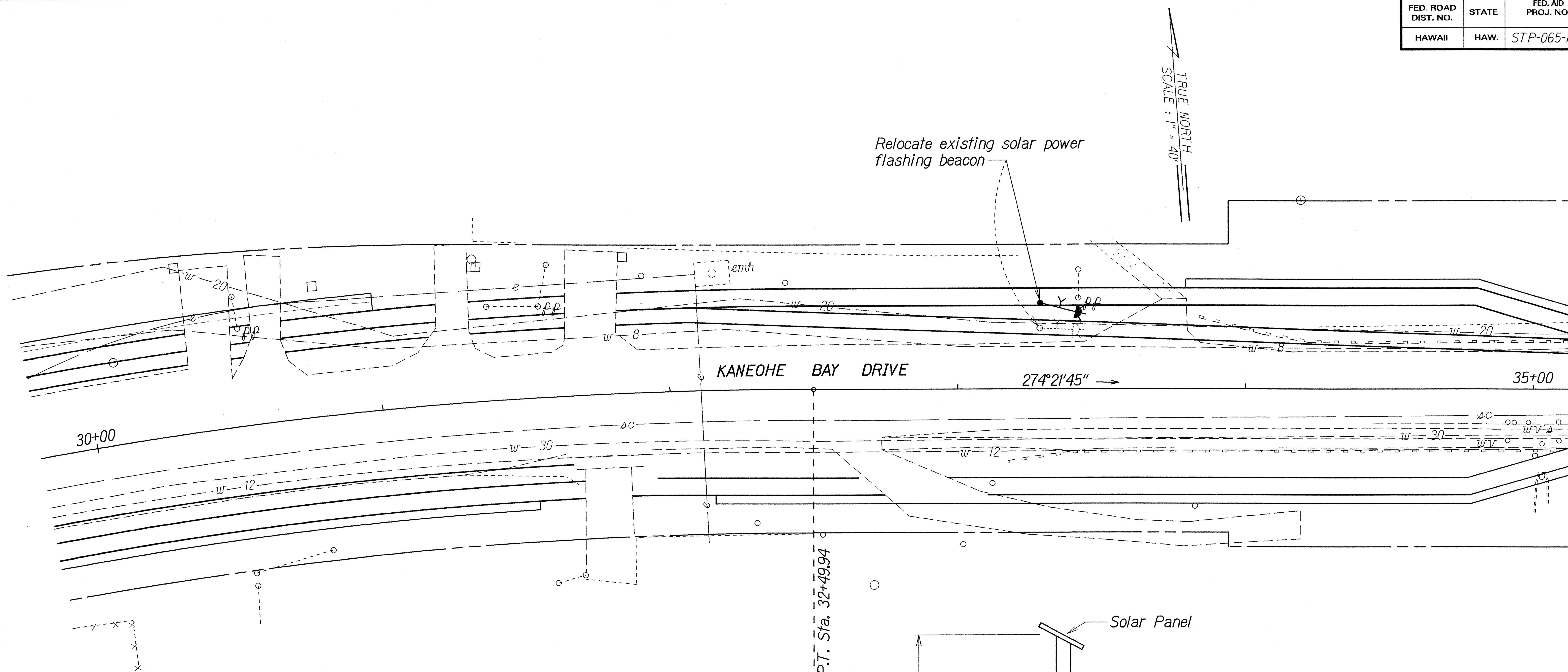
TRAFFIC SIGNAL PLAN

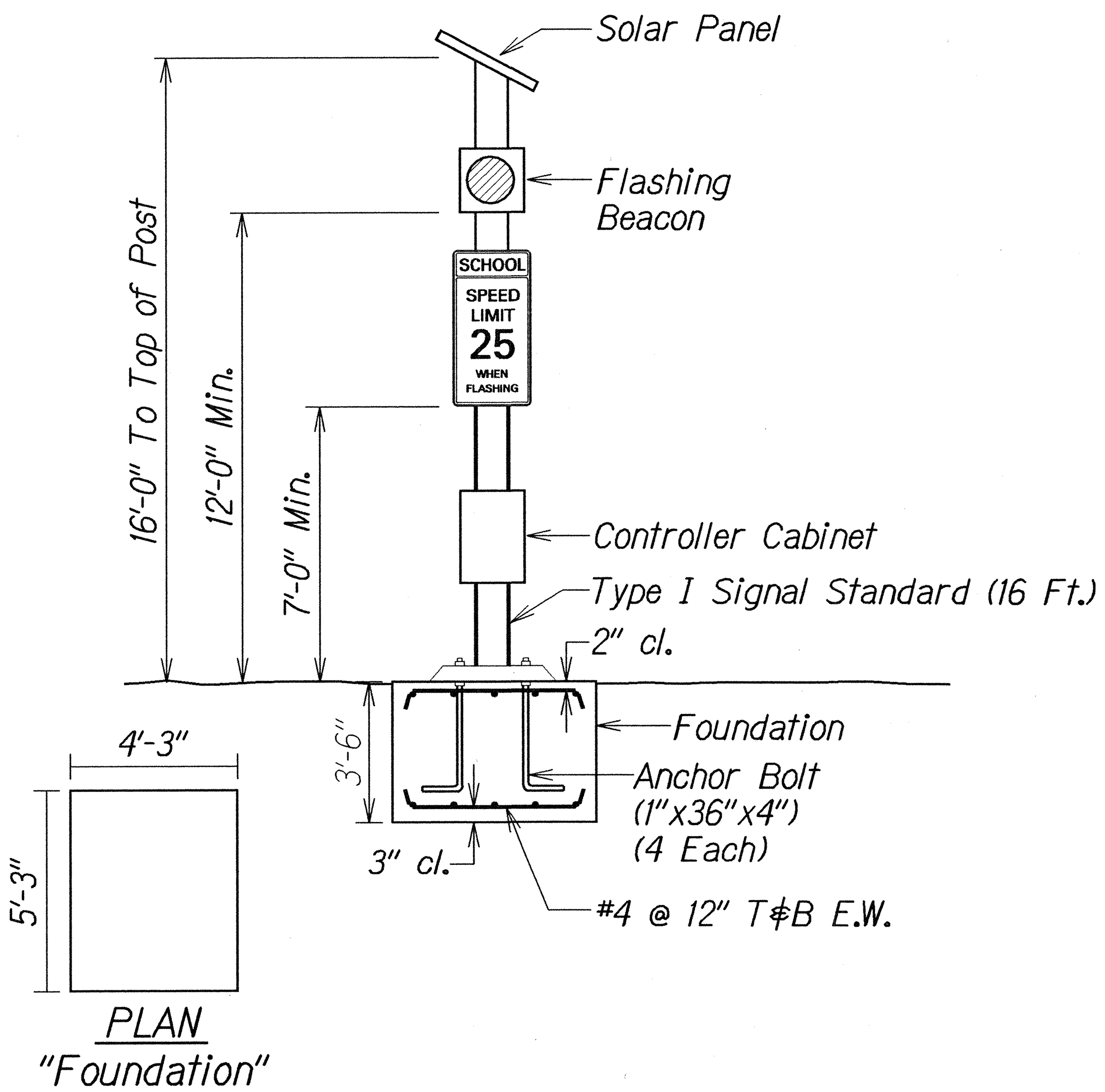
KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Scale: 1"= 20'   Date: Jan. 2002

SHEET No. TS2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	93	114





SOLAR POWERED SIGNAL ON POLE

Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

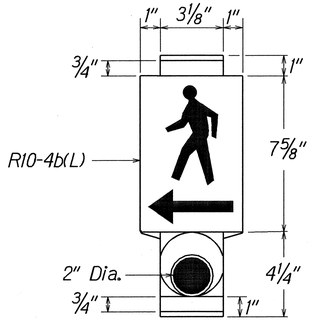
TRAFFIC SIGNAL PLAN

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

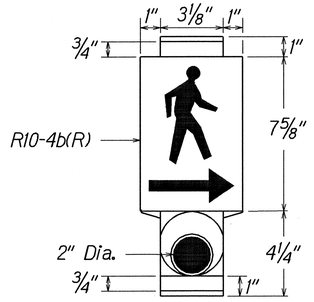
Scale: 1"= 20' Date: Jan. 2002

SHEET No. TS3 OF 7 SHEETS

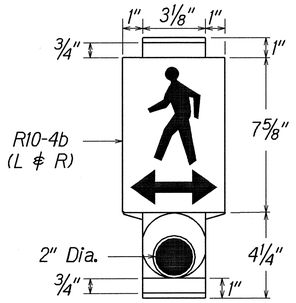
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	94	114



Left



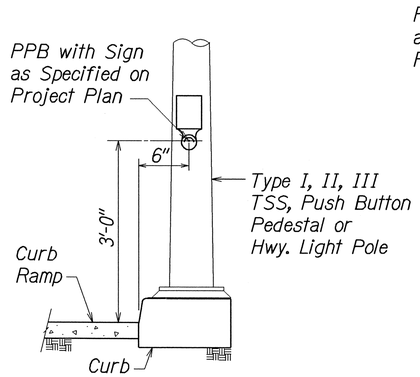
Right

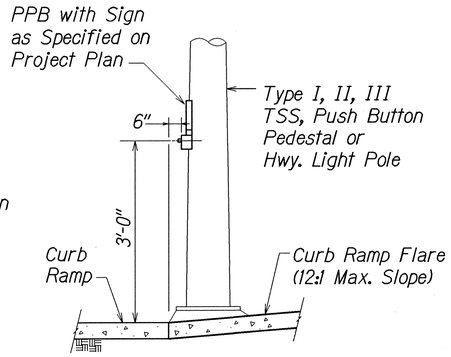


Left & Right

PEDESTRIAN PUSH BUTTON WITH SIGN

Man, Arrow & Push Button - White
Background - Black





TYPICAL PEDESTRIAN PUSH BUTTON

tdl /usr2/traffic/std/ppbdet.dgn

ORIGINAL PLOT SIZE	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM
PEDESTRIAN PUSHBUTTON DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Scale: Not to scale Date: Jan. 2002

SHEET No. TS4 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	95	114

STATE RIGHT-OF-WAY BACKFILL NOTES

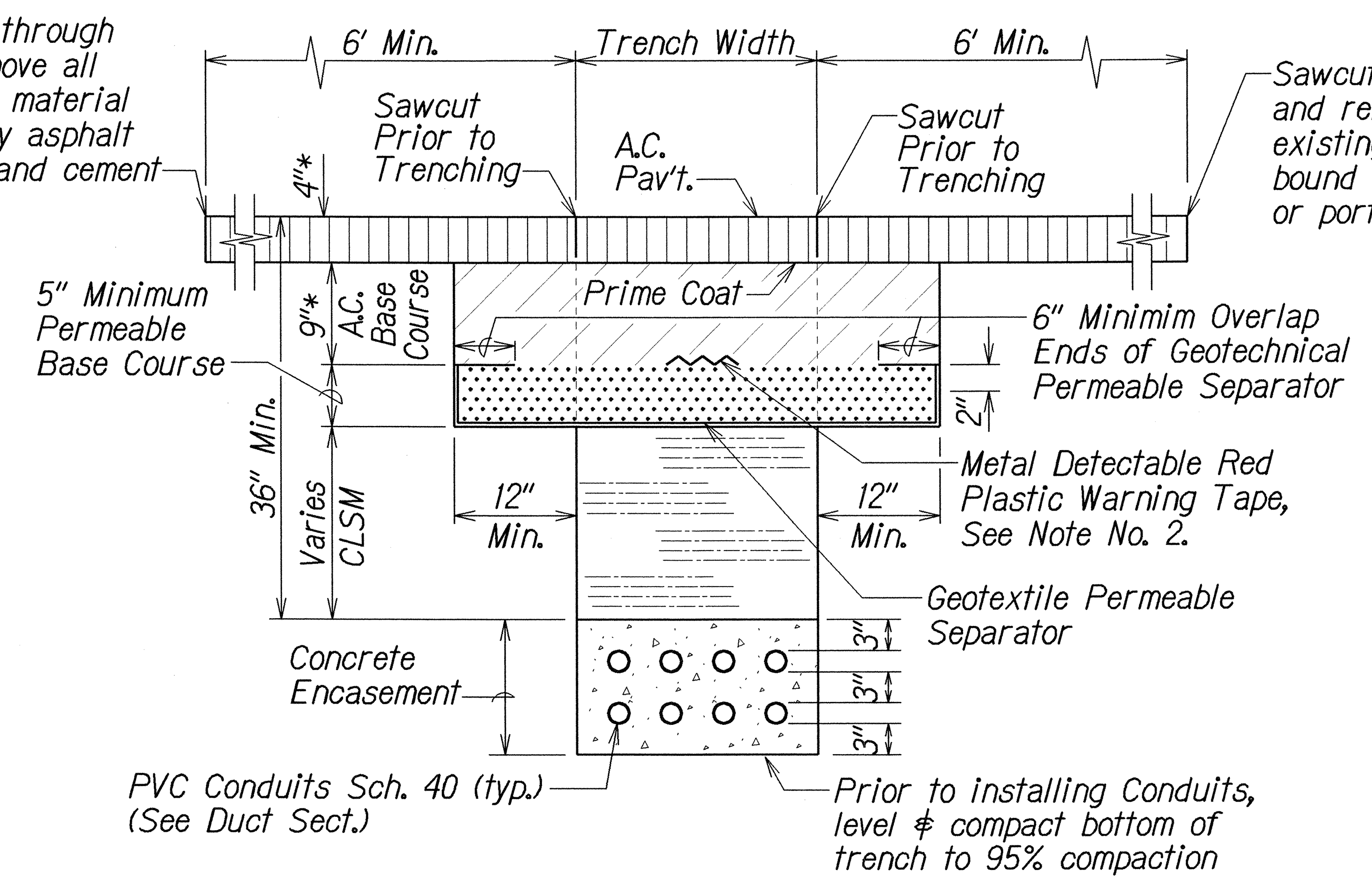
Trench Backfill Material "A"
Beach Sand, Earth, or Earth and Gravel. If Earth and Gravel used, the maximum shall contain not more than 50% by volume of rock particles. Maximum 8" loose fill per lift. Obtain 95% compaction for each lift.

Concrete
3000 psi compressive strength @ 3 days.

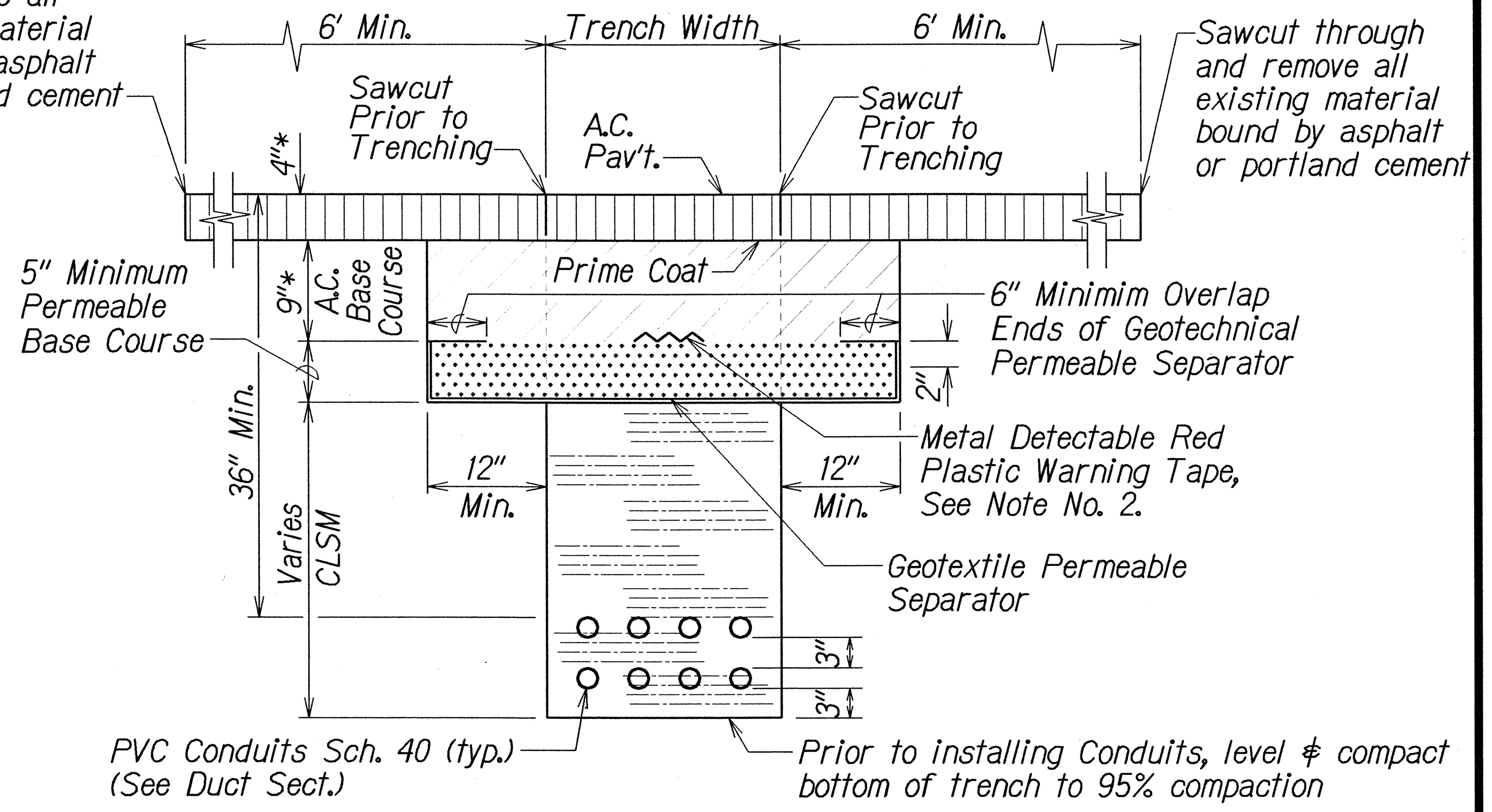
NOTE: Base Course & Sub-Base Course per 1994 State Standard Specifications for Highway Construction.

GENERAL NOTES

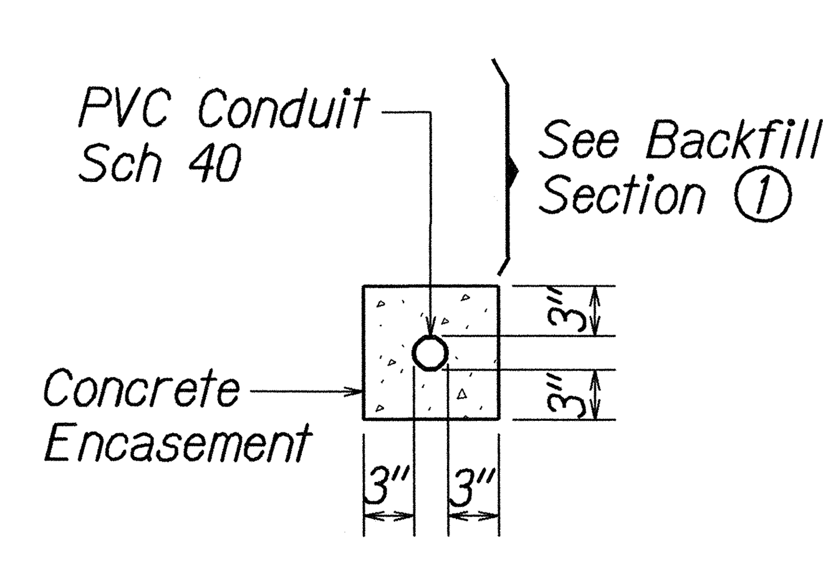
1. If trench is located on unpaved area, the Contractor shall replace 10" A.C. Base Course and 4" A.C. Pavement with Type "A" backfill material.
2. The Metal Detectable Red Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuous metallic backing and corrosion resistant 1± mil thick foil core. The message on the tape shall read, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY LIGHTING BURIED BELOW," utilizing 1½ inches series "C" black lettering. The message will be repeated with a 4¼" spacing between top line of message and start of next repeat.
3. The Contractor may begin backfilling the conduit trench when the concrete reaches 3000 psi compressive strength after 3 days.
4. Maximum four (4) Conduits per row for multiple conduit duct section.
5. For direct buried duct sections, the concrete jacket required at the conduit by-pass for various utilities, shall not be paid for separately but considered incidental to the direct buried conduits.
6. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.



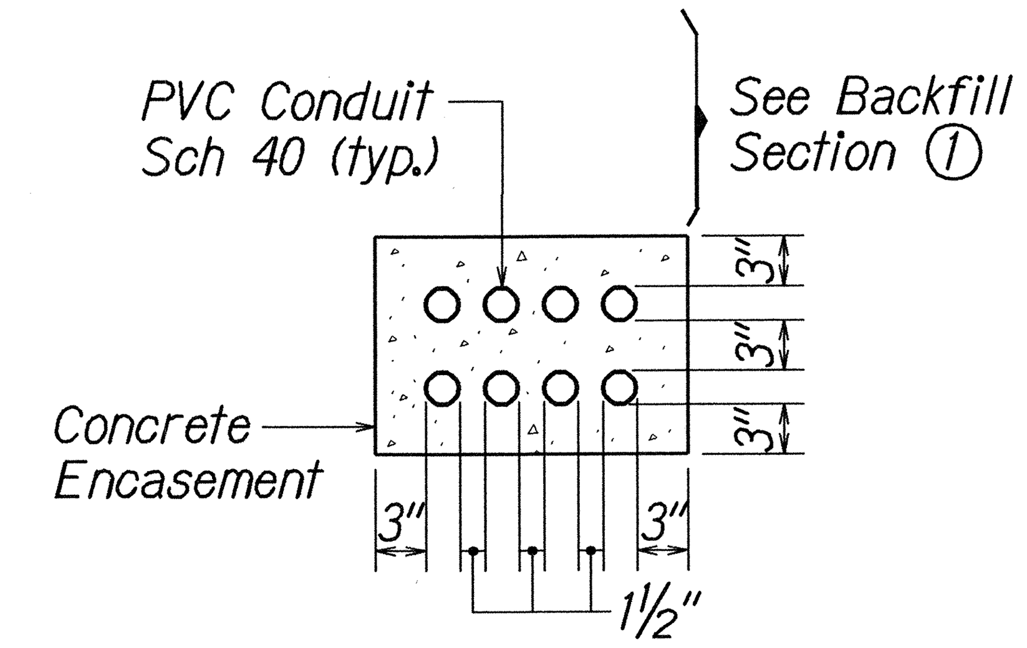
① TYPICAL BACKFILL SECTION WITH CONCRETE ENCASED DUCTS



② TYPICAL BACKFILL SECTION DIRECT BURIED DUCTS

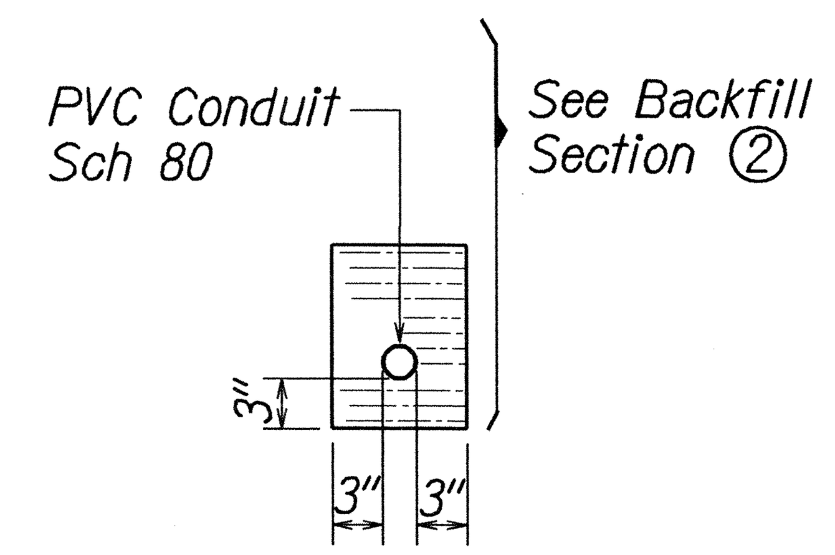


SINGLE CONDUIT

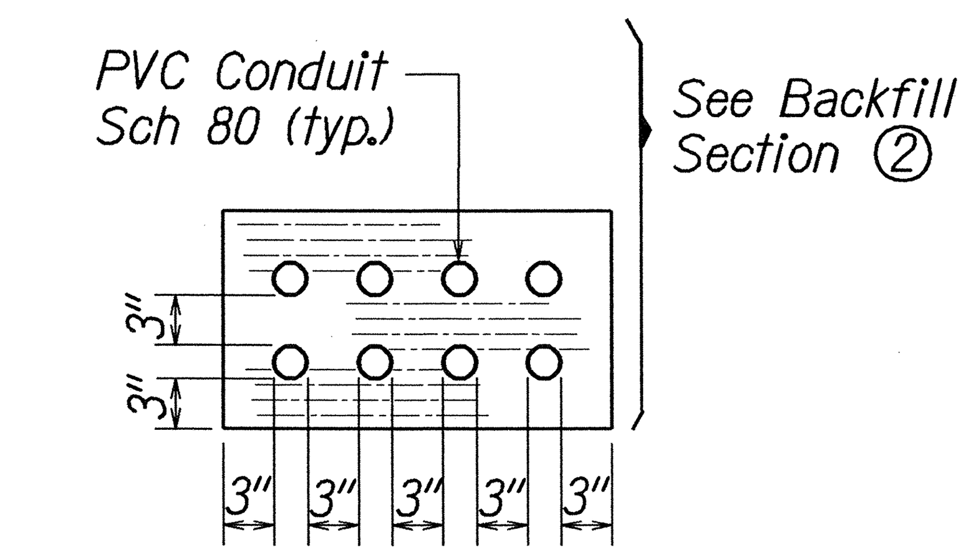


MULTIPLE CONDUIT

DUCT SECTIONS - CONC. ENCASED



SINGLE CONDUIT

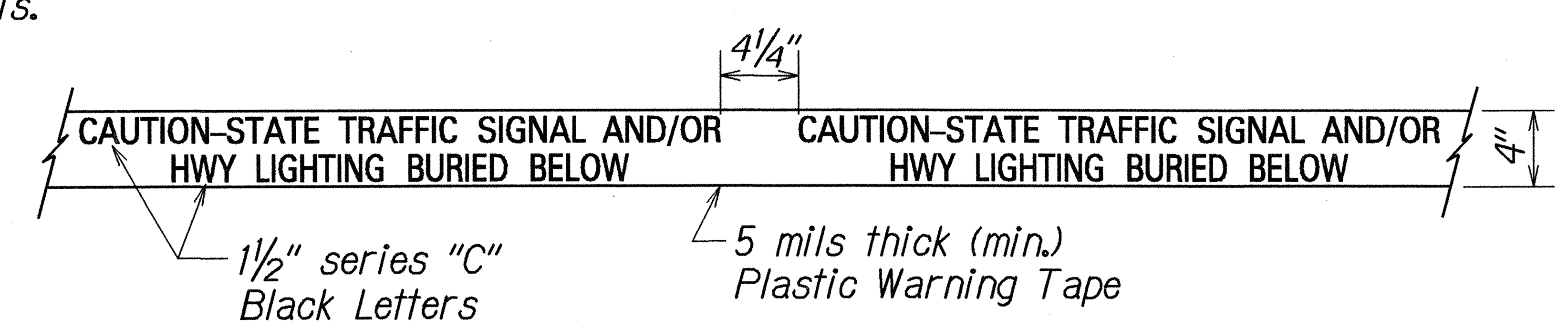


MULTIPLE CONDUIT

DUCT SECTIONS - DIRECT BURIED

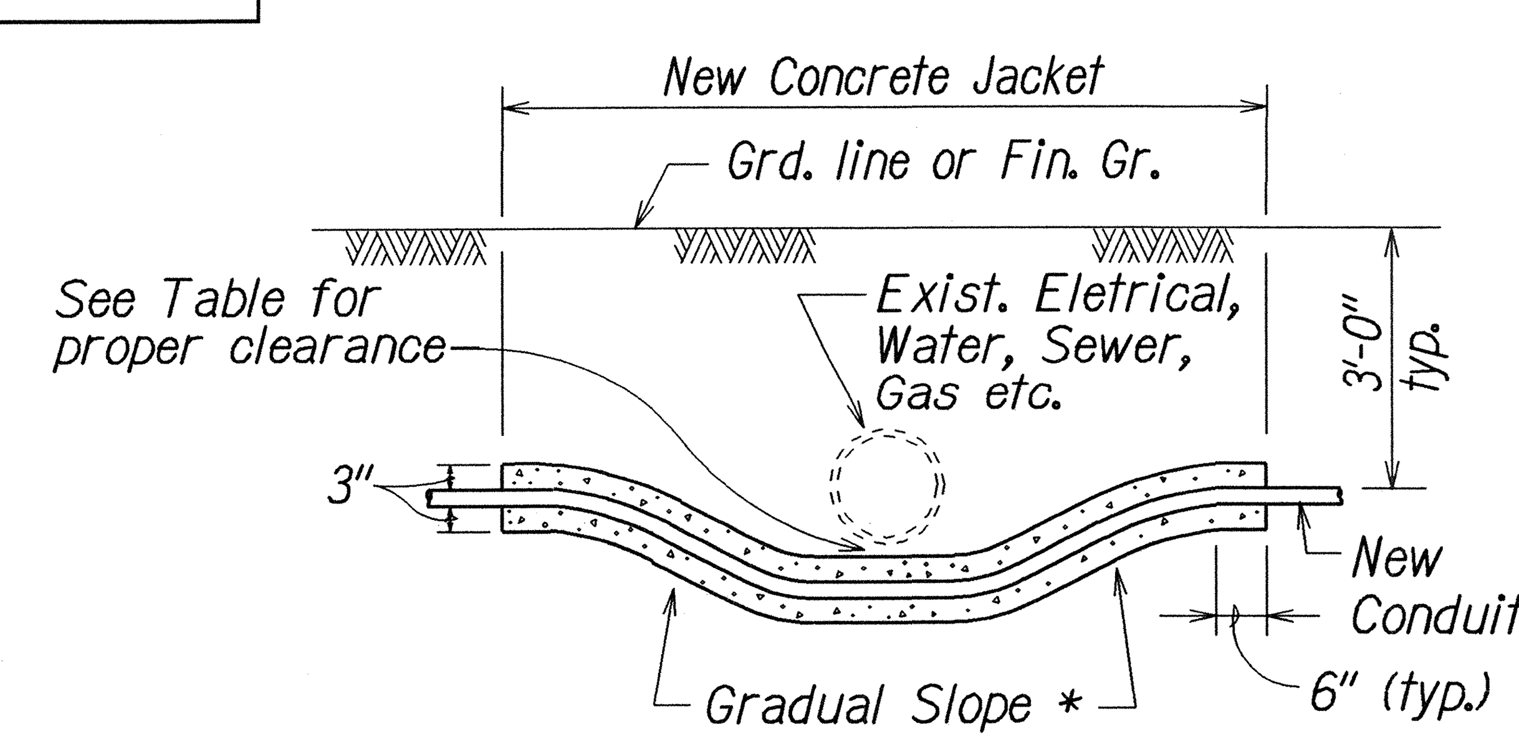
UTILITY	CLEARANCE
Water	** See Note
Sewer	24" Min. or Provide 6" Thick Reinforced Conc. Jacket
Drain	12" Min.
HECO/HTCO/CATV	3" Min.
AT&T	12" Min.

**At the electrical/signal ductline water crossing, install all electrical/signal ductline elevations to maintain 6" vertical clear separation from all waterlines (12" clear for all electrical/signal ductline structures larger than 16") at no cost to the Board of Water Supply.



For additional information see note no. 2.

METAL DETECTABLE RED PLASTIC WARNING TAPE



* To be determined by County Electrical Inspector/Engineer

CONDUIT BY-PASS DETAIL AT VARIOUS UTILITIES
Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

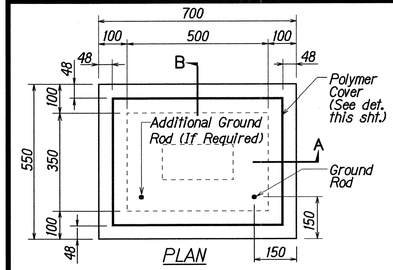
TRAFFIC SIGNAL DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

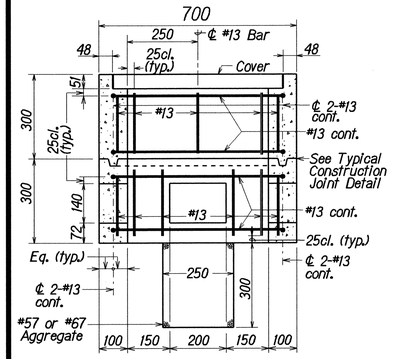
Not to Scale — Date: Jan. 2002

SHEET No. TS5 OF 7 SHEETS

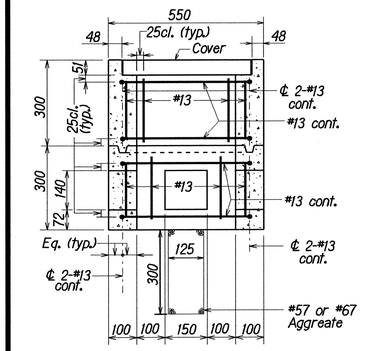
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	96	114



PLAN



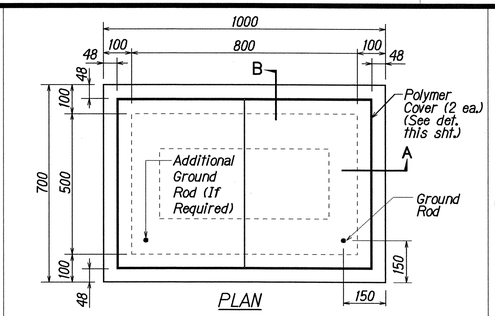
SECTION A-A



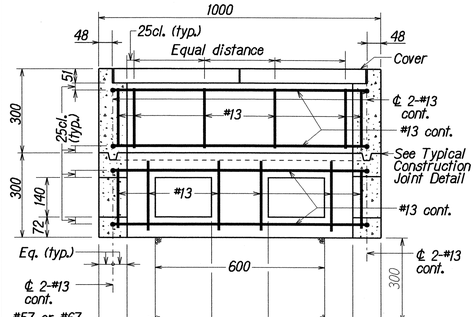
SECTION B-B

TYPE "A" PULLBOX
(Old Type "B")

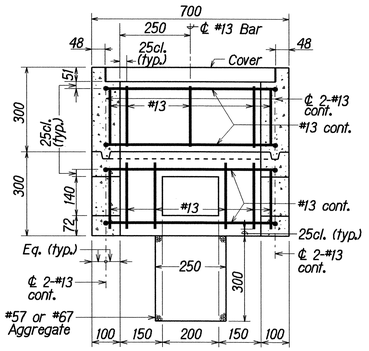
Scale: 1:10



PLAN



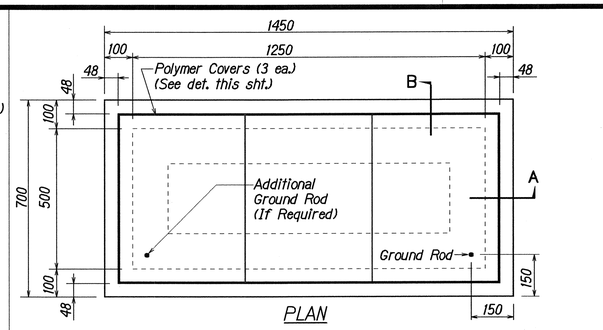
SECTION A-A



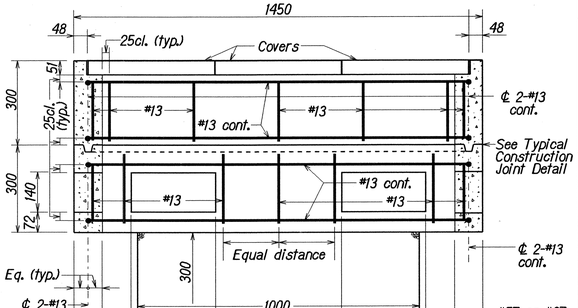
SECTION B-B

TYPE "B" PULLBOX (Old Type "C")

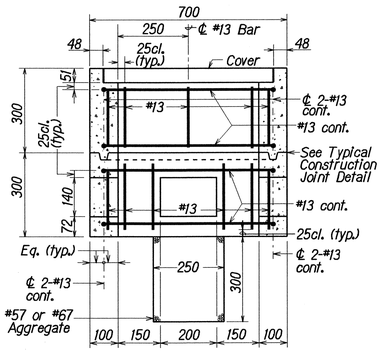
Scale: 1:10



PLAN



SECTION A-A



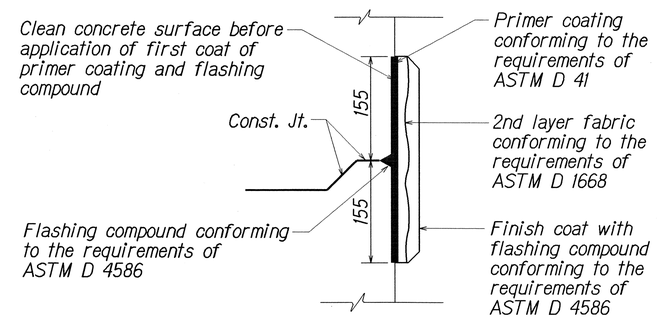
SECTION B-B

TYPE "C" PULLBOX (Old Type "D")

Scale: 1:10

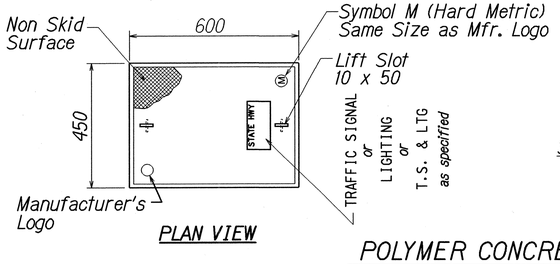
GENERAL NOTES

1. Provide a minimum of one 16 ø x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
2. All pre-cast concrete pullboxes shall be manufactured in two pieces.
3. The pullbox with cover shall be capable of supporting an MS 18 Loading.
4. The maximum weight of the pullbox cover shall not exceed 27 kilograms.
5. The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
6. After installing the conduits in the openings of the pullboxes, the Contractor shall fill the excess opening in the pre-cast knockouts with concrete mortar.
7. Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
8. All concrete shall be Class A (21 MPa (3,000 psi), min.)
9. Rebars shall be Grade 300 and all lapped splices shall be 360mm minimum.
10. The #57 or #67 size aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
11. Type "C" Pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind A.C. curbs, traffic signal standard or pipe guards).

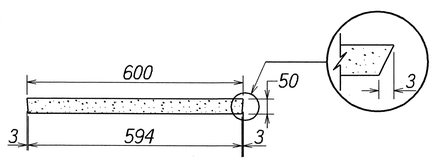


TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

Not to Scale



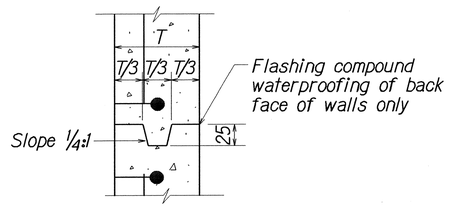
PLAN VIEW



ELEVATION

POLYMER CONCRETE COVER

Not to Scale



TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX & COVER DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Scale: As Shown Date: Jan. 2002

SHEET No. TS6 OF 7 SHEETS

ORIGINAL PLAN AS NOTE BOOK

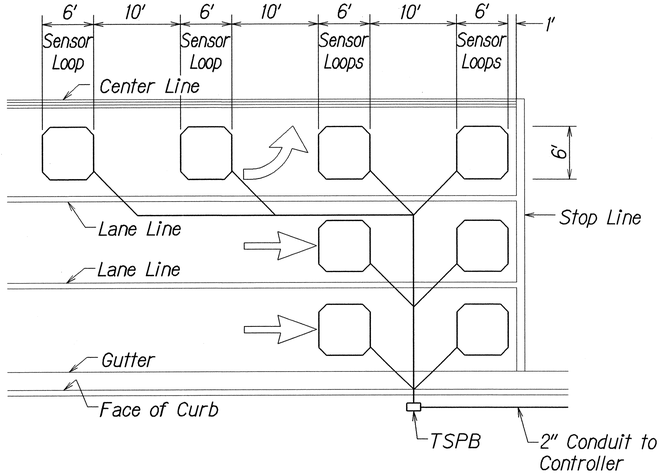
SURVEY PLOTTED BY
DRAWN BY T. Howells
TRACED BY R. Akana
DESIGNED BY
QUANTITIES BY
CHECKED BY

DATE 2/7/01

4/01/98 TE-41

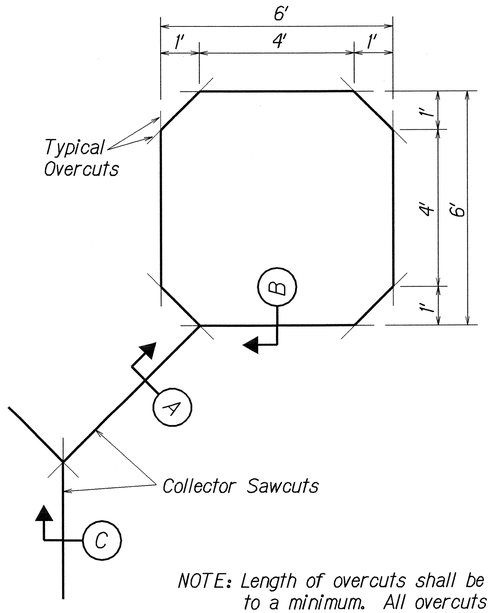
TD1 - Traffic Design Section

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	97	114



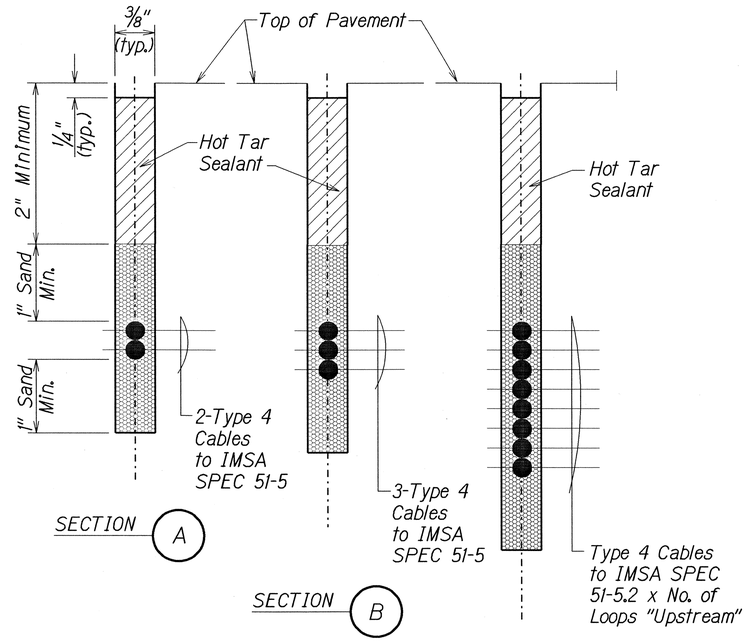
NOTES:
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

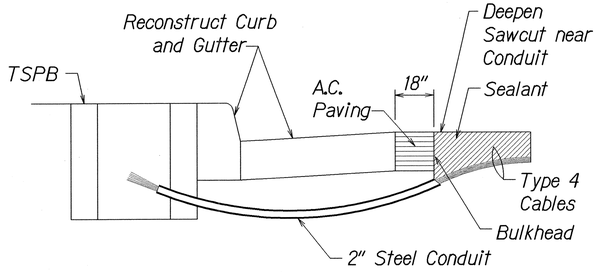


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



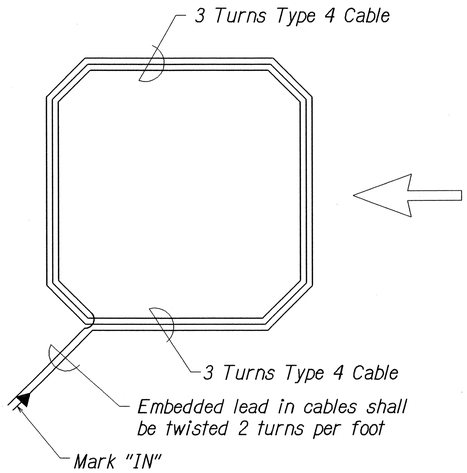
TYPICAL SECTION THROUGH SENSOR LOOP



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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 2/7/01
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY R. Agas	
No.	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

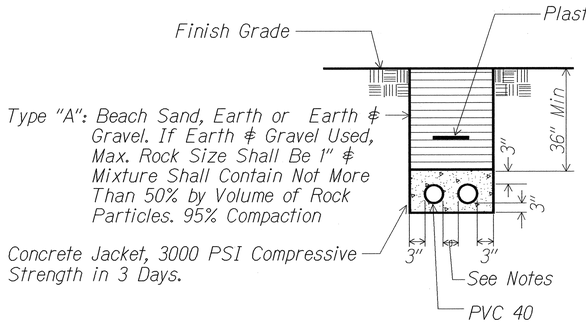
LOOP DETECTOR DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala St. to Kawa Bridge
F.A. Project No. STP-065-1(9)

Not to Scale — Date: Jan. 2002

SHEET No. TS7 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	98	114

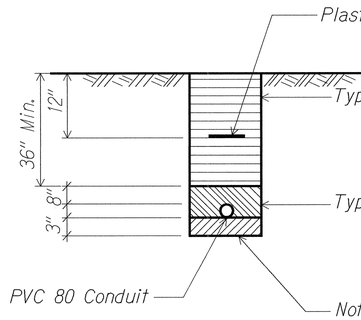


NOTES:

1. Electrical & Telephone Ducts Similar.
2. Provide 2" Separation Between Ducts of Same System & 3" Between Ducts of Different Systems.
3. Where Trench Encounters Existing Concrete or Asphalt Concrete, Surface Shall be Sawcut. Backfill, Compact & Patch Surface to Match Adjacent Area. See Details, Sheet 94.

A E-1 | E-1 TYPICAL DUCT SECTION (CONCRETE ENCASED)

Not to Scale 01401-D3



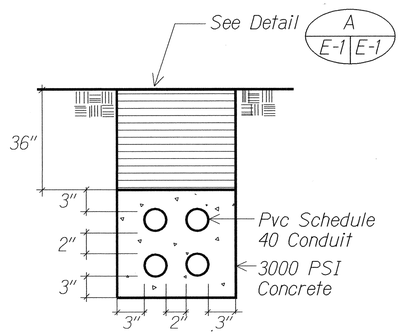
Type "A": Beach Sand, Earth or Earth & Gravel. If Earth & Gravel Used, Max. Rock Size Shall Be 1" & Mixture Shall Contain Not More Than 50% by Volume of Rock Particles. 95% Compaction

Type "B": Same as Type "A" Except That If Earth & Gravel Used, the Mixture Must Pass a ½" Mesh Screen & Contain Not More Than 20% by Volume of Rock Particles. 95% Compaction

Note: If the Normal Material in the Bottom of Trench is Not Type "B", an Additional 3" Shall Be Excavated & Type "B" Backfill Shall be Provided.

B E-1 | E-1 TYPICAL DUCT SECTION (DIRECT BURIED)

Not to Scale 01401-D3

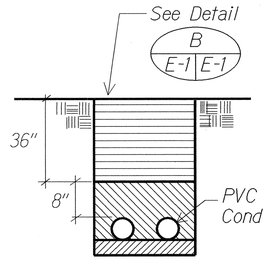


DUCT SECTION (C)

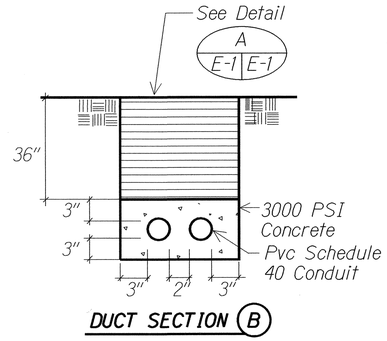
GENERAL NOTES

1. Obtain all standards and drawings related to this project from the utility companies. Verify that the HECO, Verizon and Oceanic Cablevision project drawings are the same as the contract drawings. Notify the engineer of any differences between them. if differences exist, obtain a resolution prior to proceeding with the work which is affected.
2. Prior to starting work, notify the utility companies in writing when work will start, and provide them with a construction schedule. Coordinate all work with utility companies.
3. LIGHTING CALCULATION SUBMITTAL - The Contractor shall submit computerized point-to-point iso-footcandle calculations of the roadway (curb-to-curb) for approval. The following requirements and parameters shall be used:

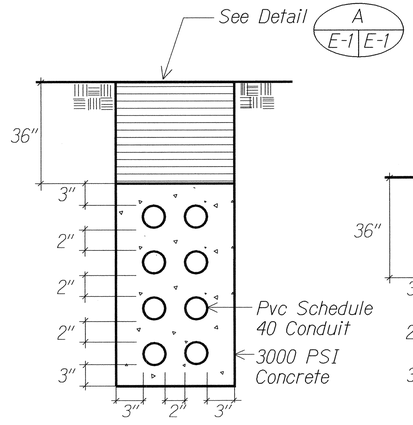
Minimum average maintained illuminance level-	0.9 footcandles
Uniformity ratio (average to minimum)-	6:1 maximum
Lamp lumen output-	28,500 lumens
Light loss factor-	0.75



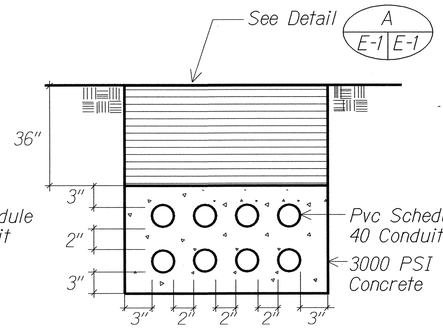
DUCT SECTION (A)



DUCT SECTION (B)



DUCT SECTION (D)



DUCT SECTION (E)

DUCT SECTION DETAILS

01401-D3

ELECTRICAL SYMBOLS

- Manhole (Existing)
- Handhole, Verizon #435TB
- 250W HPS Street Light Fixture Mounted on Joint-Use Pole, See Sht E-9 for Details
- 250W HPS Street Light Fixture with House-side Light Shield Mounted on Joint-Use Pole, See Sht E-9 for Details
- Joint-Use Pole with Guy Anchor Assembly (By HECO/Verizon as Noted)
- ---e--- Existing Ductline
- ——·—— Ductline, See Duct Sections
- Street Light Tag (II / N250 | 120V)
- —pstc— Aerial Line
  - 12KV,46KV: HECO Lines, Voltage as Indicated
  - S : Electrical Secondary &/or Common Neutral
  - T : Telephone
  - C : Cable Television
  - L : Street Light
  - G : Span Guy
- X X X Indicates Aerial Line Removal by Utility Company

DUCT DESIGNATION

2 E 4 (A)

- Duct Section "A" See Duct Section Details
- Conduit Size
- System "P" Primary Electrical, "T" Telephone
- Number of Ducts

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/18/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

HAWAIIAN TELEPHONE COMPANY / VERIZON HAWAII INC. — DATE 7/22/02

APPROVED:

OCEANIC CABLEVISION — DATE 07-26-02

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

R.C. KATAHARA LICENSED PROFESSIONAL ENGINEER No. 3181-E HAWAII, U.S.A.

This work was prepared by me or under my supervision.

MK ENGINEERS, LTD. 7/19/02

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

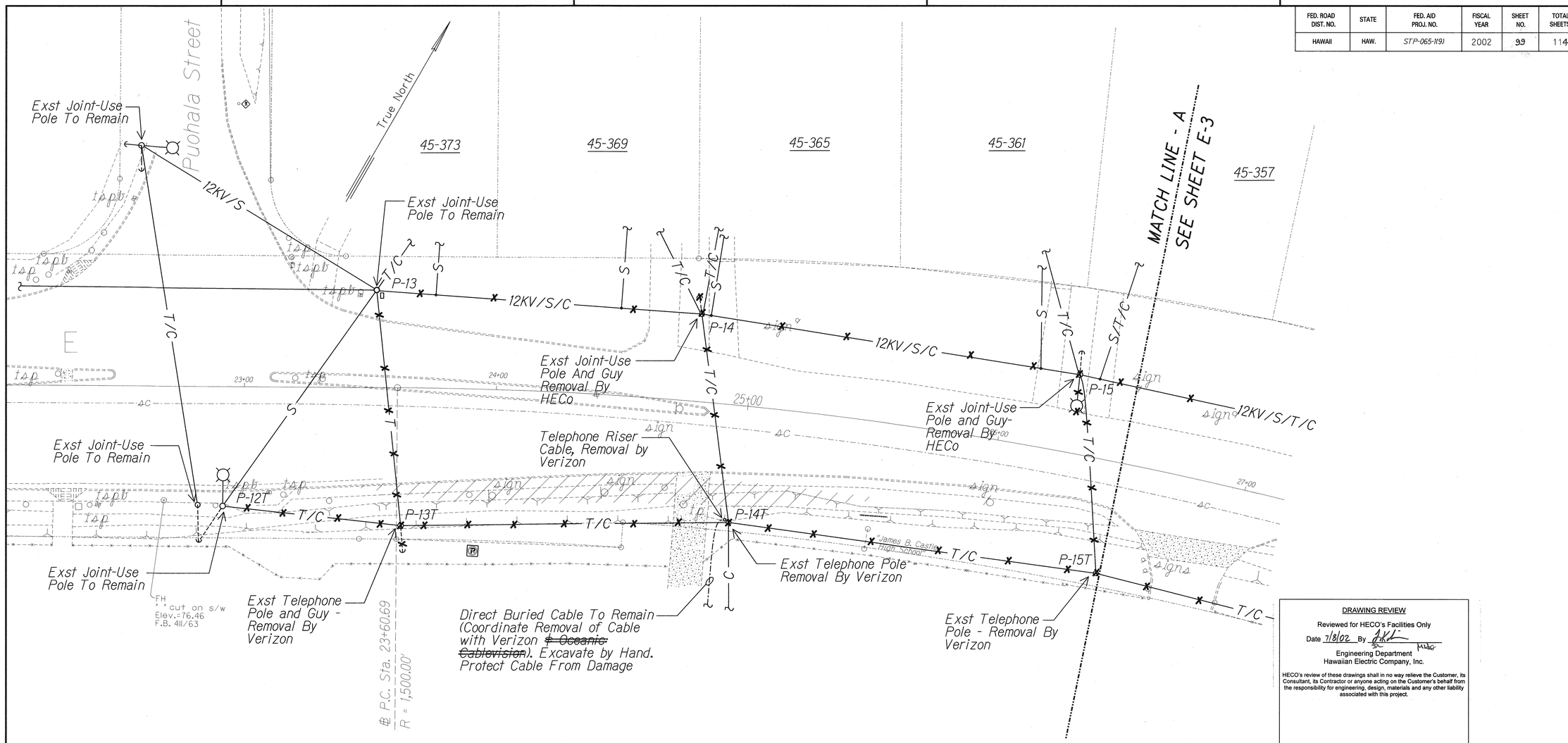
ELECTRICAL SYMBOLS, NOTES & DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-1 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	99	114



PARTIAL ELECTRICAL DEMOLITION SITE PLAN - A

Scale: 1" = 20'-0" 01401-S1

Notes:

1. ——— Light Lines Denote Existing Condition.
   ~~x~~ ~~x~~ "x" Items Denote Removal Work.

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/8/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

~~HAWAIIAN TELEPHONE COMPANY~~ VERIZON HAWAII INC. 7/22/02 DATE

APPROVED:

OCEANIC CABLEVISION 07-26-02 DATE

ORIGINAL PLAN

NOTE BOOK No.

SURVEY PLOTTED BY DATE
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R.C. KATAHARA LICENSED PROFESSIONAL ENGINEER No. 3181-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL DEMOLITION SITE PLAN - A

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-2 OF 10 SHEETS

"AS-BUILT"

99

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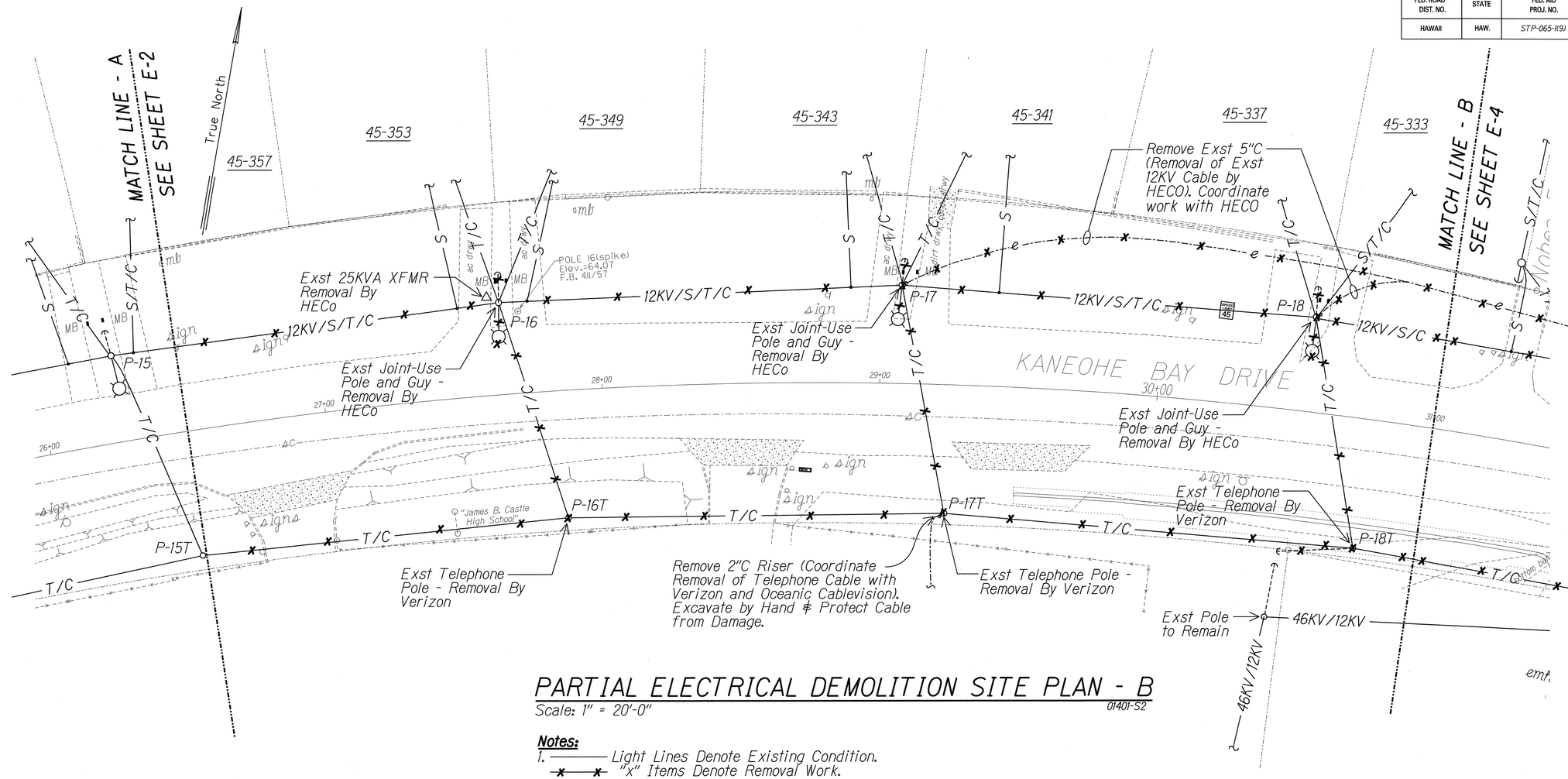
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	100	114



PARTIAL ELECTRICAL DEMOLITION SITE PLAN - B

Scale: 1" = 20'-0" 01401-S2

Notes:

1. ——— Light Lines Denote Existing Condition.
   ~~x x~~ "x" Items Denote Removal Work.

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/8/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

HAWAIIAN TELEPHONE COMPANY — DATE 7/22/02

APPROVED:

OCEANIC CABLEVISION — DATE 07-26-02

R.C. KATAHARA
LICENSED PROFESSIONAL ENGINEER
No. 3181-E
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL DEMOLITION
SITE PLAN - B

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-3 OF 10 SHEETS

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

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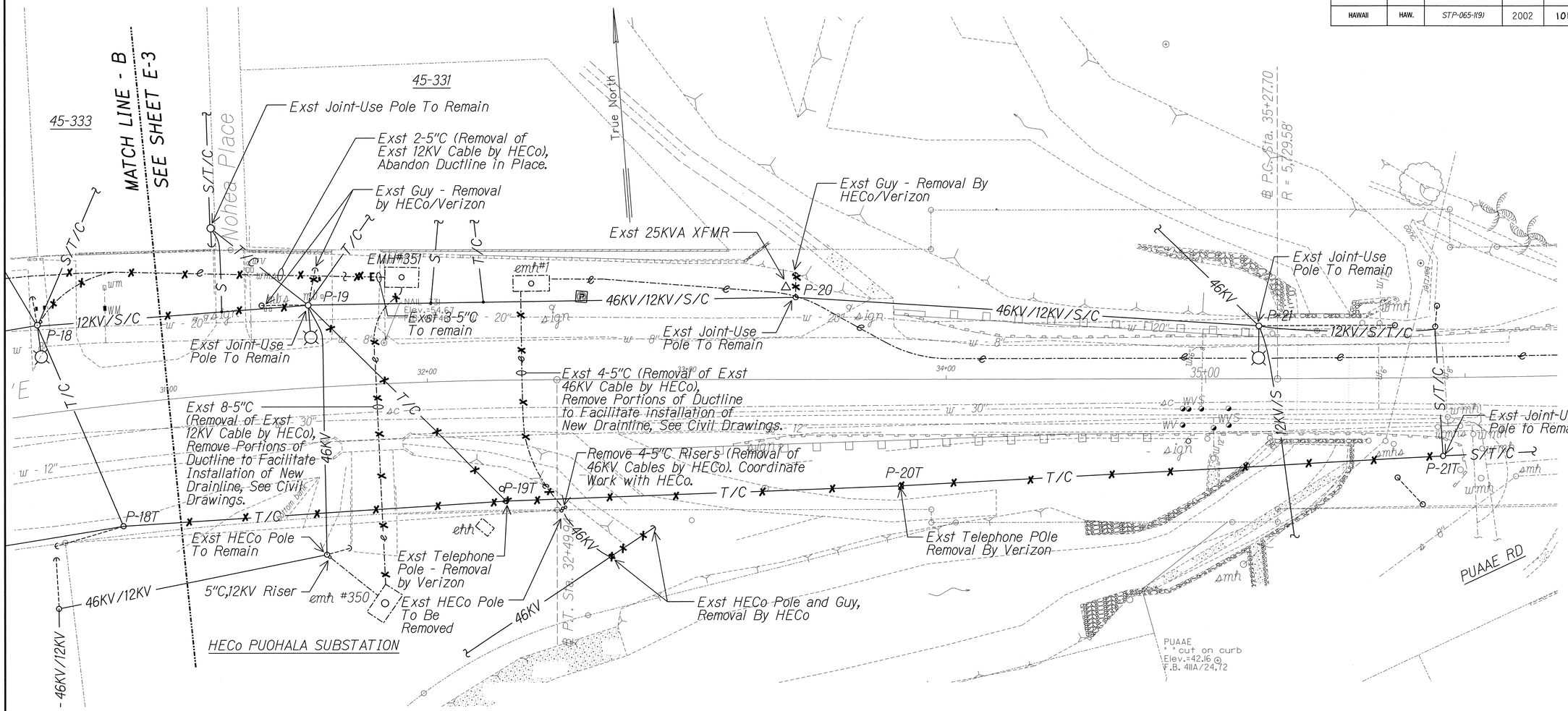
100

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	101	114



PARTIAL ELECTRICAL DEMOLITION SITE PLAN - C

Scale: 1" = 20'-0" 01401-S3

Notes:

1. ——— Light Lines Denote Existing Condition.
   -x-x- "x" Items Denote Removal Work.

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/18/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

HAWAIIAN TELEPHONE COMPANY
VERIZON HAWAII INC. — DATE 7/22/02

APPROVED:

OCEANIC/CABLEVISION — DATE 07-26-02

R.C. KATAHARA
LICENSED PROFESSIONAL ENGINEER
No. 3181-E
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL DEMOLITION SITE PLAN - C

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-4 OF 10 SHEETS

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

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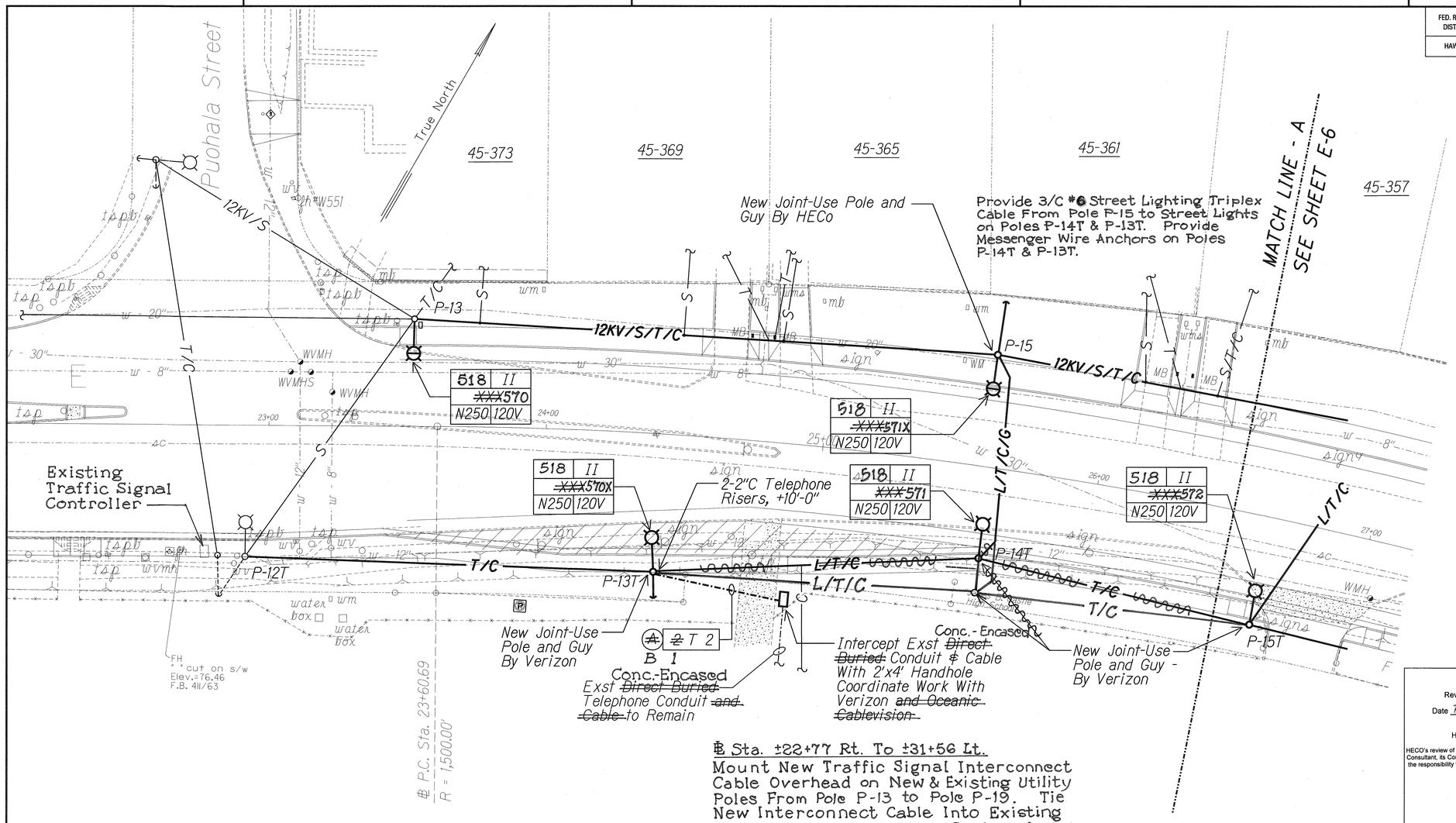
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	102	114



℄ Sta. ±22+77 Rt. To ±31+56 Lt.
Mount New Traffic Signal Interconnect Cable Overhead on New & Existing Utility Poles From Pole P-13 to Pole P-19. Tie New Interconnect Cable Into Existing Traffic Signal Controller System & Make All Necessary Connections.

PARTIAL NEW ELECTRICAL SITE PLAN - A

Scale: 1" = 20'-0" 01401-S4

Notes:
1. ——— Light Lines Denote Existing Condition.
   ——— Bold Lines Denote New Work.

DRAWING REVIEW
Reviewed for HECO's Facilities Only
Date 7/8/02 By
Engineering Department
Hawaiian Electric Company, Inc.
HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:
HAWAIIAN TELEPHONE COMPANY VERIZON HAWAII INC. — DATE 7/23/02
APPROVED:
OCEANIC CABLEVISION — DATE 07-26-02

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

R.O. KATAHARA LICENSED PROFESSIONAL ENGINEER No. 3181-E HAWAII, U.S.A.
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MK ENGINEERS, LTD. 6/26/02

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL NEW ELECTRICAL SITE PLAN - A

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-5 OF 10 SHEETS

"AS-BUILT"

102

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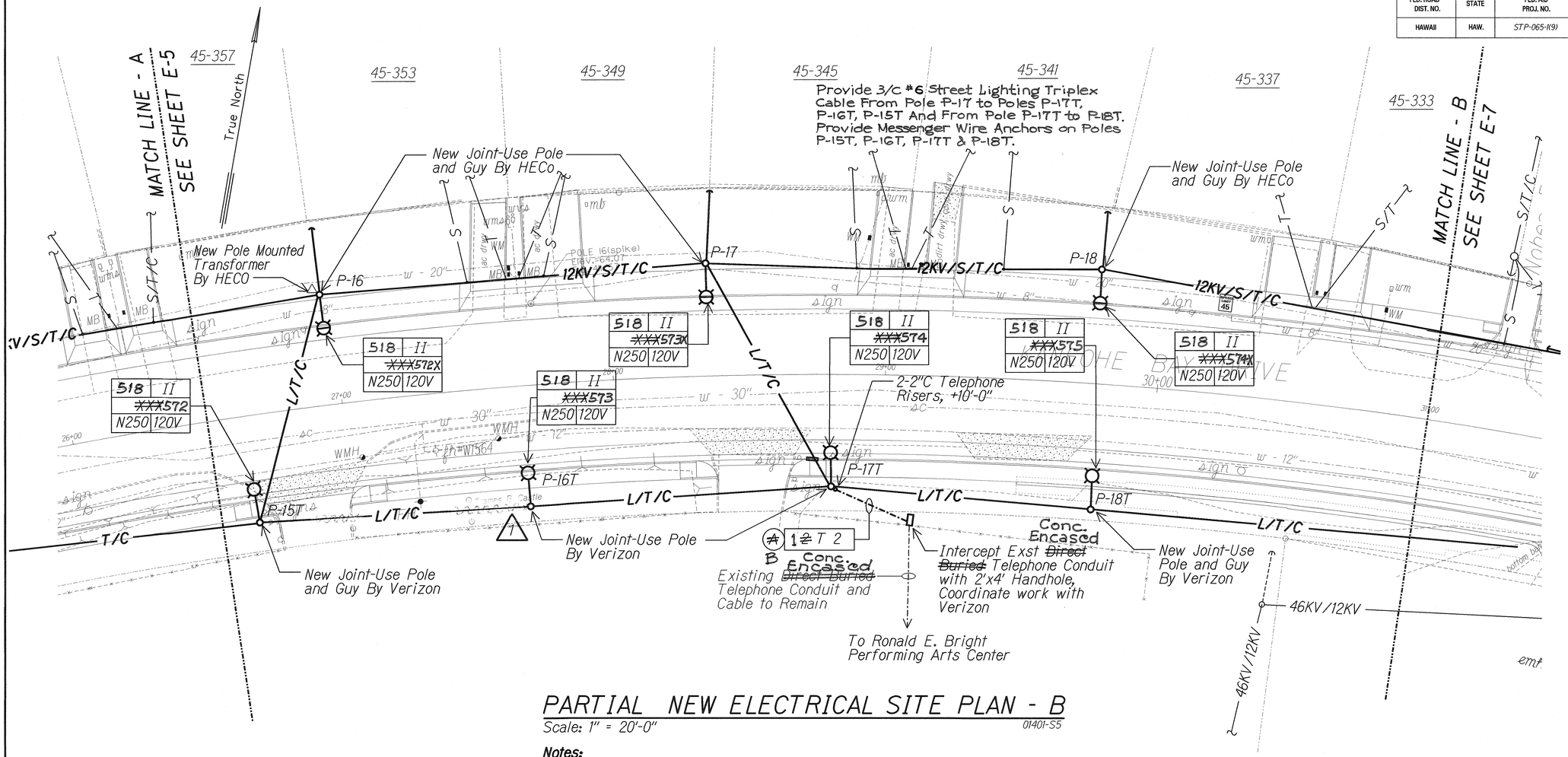
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	C.O. 103	112



PARTIAL NEW ELECTRICAL SITE PLAN - B

Scale: 1" = 20'-0" 01401-S5

Notes:

1. ——— Light Lines Denote Existing Condition.
   ——— Bold Lines Denote New Work.

℄ Sta. ±22+77 Rt. To ±31+56 Lt.
Mount New Traffic Signal Interconnect Cable Overhead on New & Existing Utility Poles From Pole P-13 to Pole P-19.

1 9-26-03	Revised Joint-Use Pole Location Per Verizon Hawaii
Date	Revision

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 10/7/03 By JK (EC MW)

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

~~HAWAIIAN TELEPHONE COMPANY~~ VERIZON HAWAII — DATE 10/2/03

APPROVED:

OCEANIC CABLEVISION — DATE 10/14/03

PAUL K. UYEDA LICENSED PROFESSIONAL ENGINEER No. 7646-E HAWAII, U.S.A.

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MK ENGINEERS, LTD. 10/1/03

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL NEW ELECTRICAL SITE PLAN - B

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. C.O. E-6 OF 10 SHEETS

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

"AS-BUILT"

C.O.103

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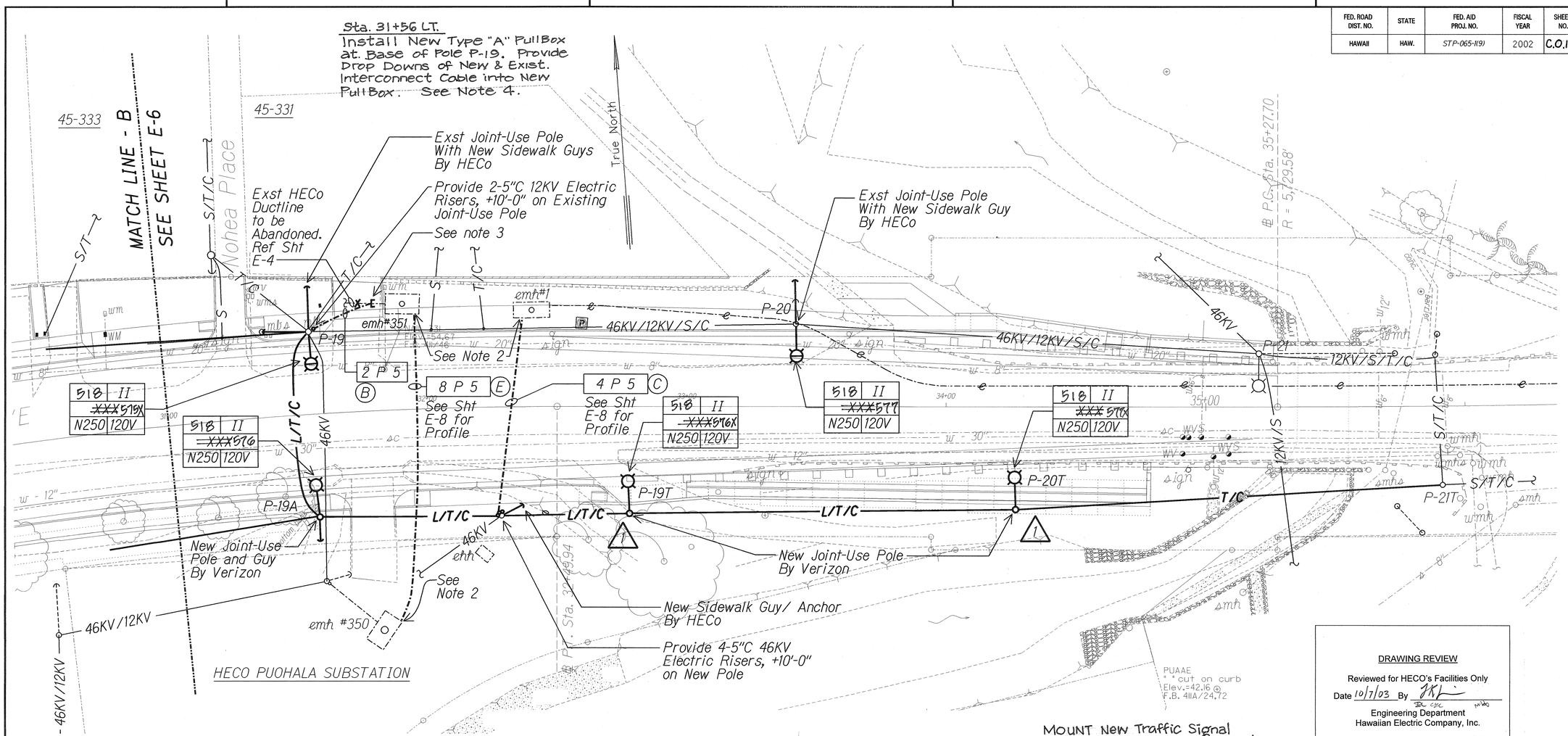
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	C.O.104	112



Provide 3/C #6 Street Lighting Triplex Cable From Pole P-19 To Street Lights on Poles P-19A, P-19T & P-20T. Provide Messenger Wire Anchors on Poles P-19A, P-19T & P-20T.

MOUNT New Traffic Signal Interconnect Cable Overhead on New & Exist. Utility Poles From Pole P-13 To Pole P-19.

PARTIAL NEW ELECTRICAL SITE PLAN - C

Scale: 1" = 20'-0" 01401-S6

Notes:

1. ——— Light Lines Denote Existing Condition.
   ——— Bold Lines Denote New Work.
2. See EMH Details, Sheet E-10. Install New Ductline Entry to Manhole under HECO Supervision. Coordinate all work with HECO.
3. ~~Intercept the (2) Existing Spare 5" Conduits of the Ductline. Coordinate all Work with HECO. HECO Personnel shall Break into the Existing~~ Ductline. Existing HECO Ductline To Be Abandoned.
4. Splice New & Existing Interconnect Cable in new PullBox & Make all Necessary Connections. Coordinate Work With The C & C of Honolulu Department of Transportation Services.

Date	Revision
1 9-26-03	Revised Joint-Use Pole Location Per Verizon Hawaii

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 10/7/03 By _____

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED:

_____ ~~HAWAIIAN TELEPHONE COMPANY~~ VERIZON HAWAII — 10/2/03 DATE

APPROVED:

Leonard L. Porter — OCEANIC CABLEVISION — 10/14/03 DATE

ORIGINAL PLAN | NOTE BOOK | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

PAUL K. UYEDA LICENSED PROFESSIONAL ENGINEER No. 7646-E HAWAII, U.S.A.

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Paul K Uyeda 10/1/03
MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL NEW ELECTRICAL SITE PLAN - C

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. C.O. E-7 OF 10 SHEETS

"AS-BUILT"

C.O.104

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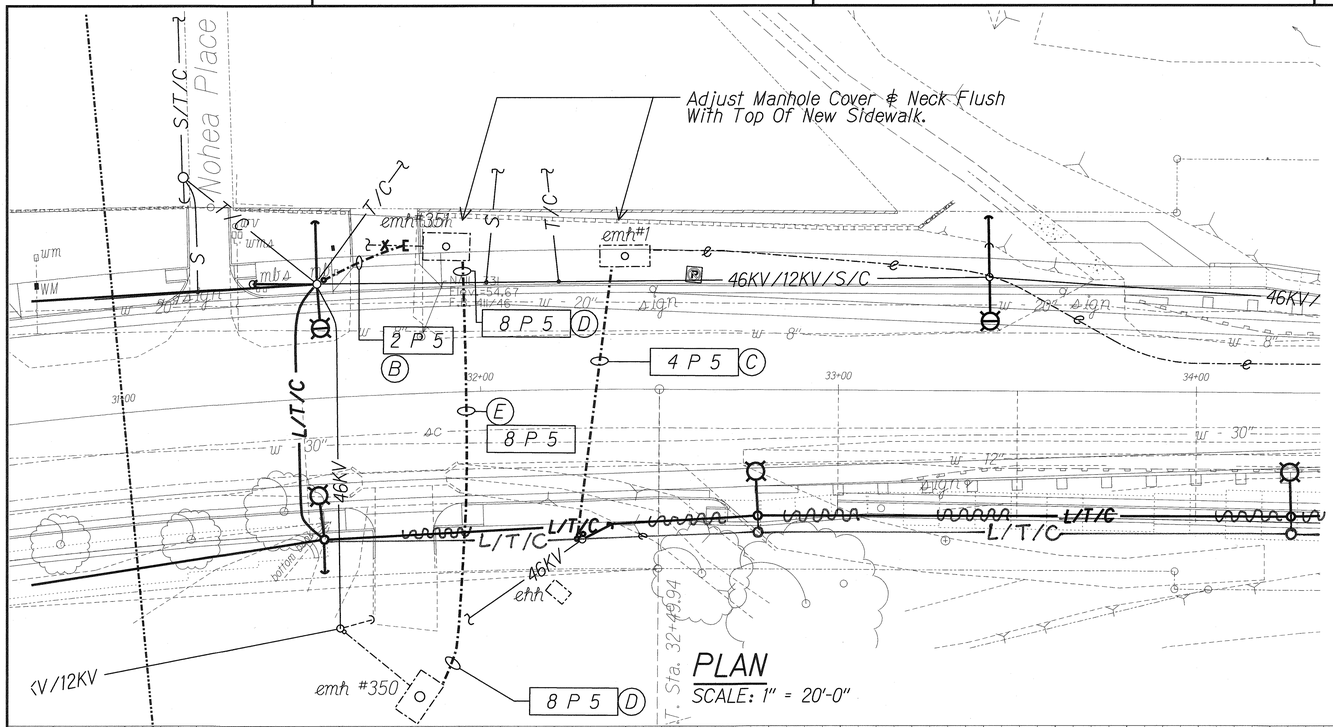
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	105	114



True North

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/8/02 By

Engineering Department
Hawaiian Electric Company, Inc.

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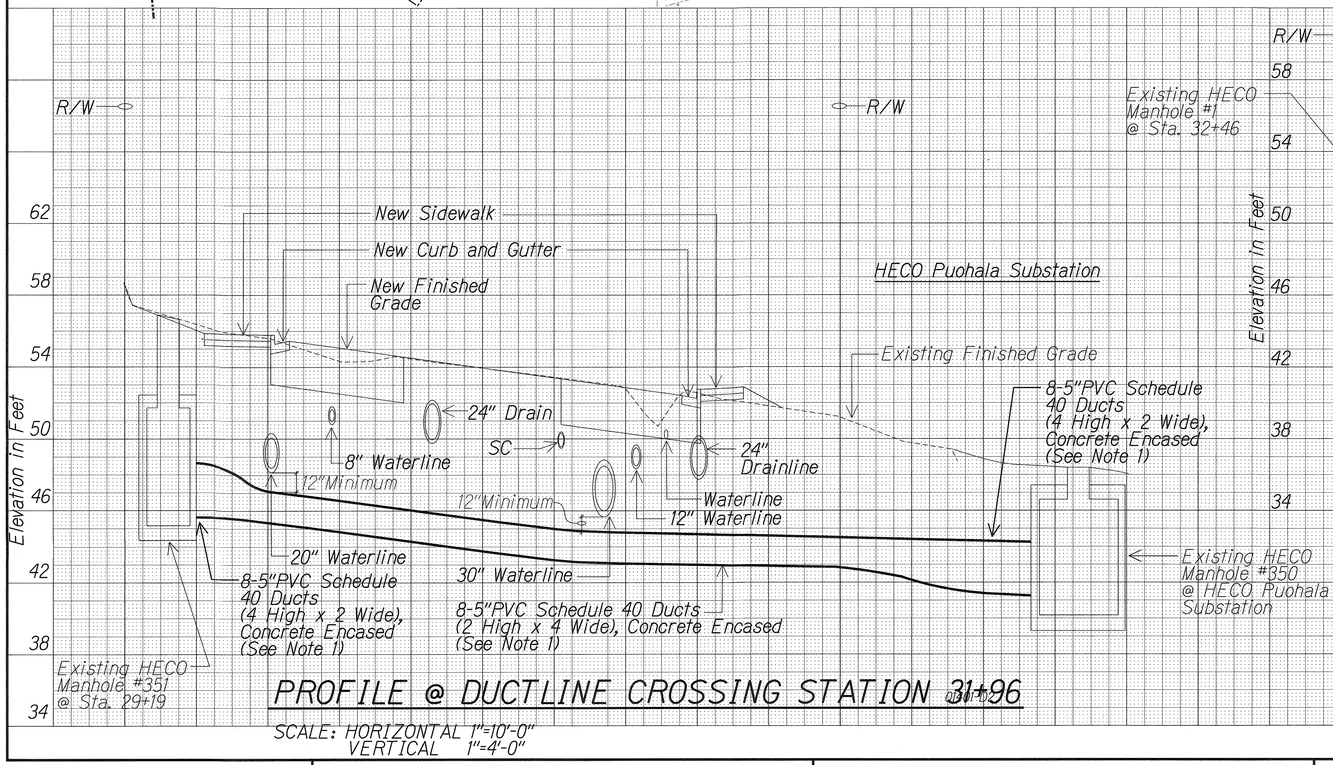
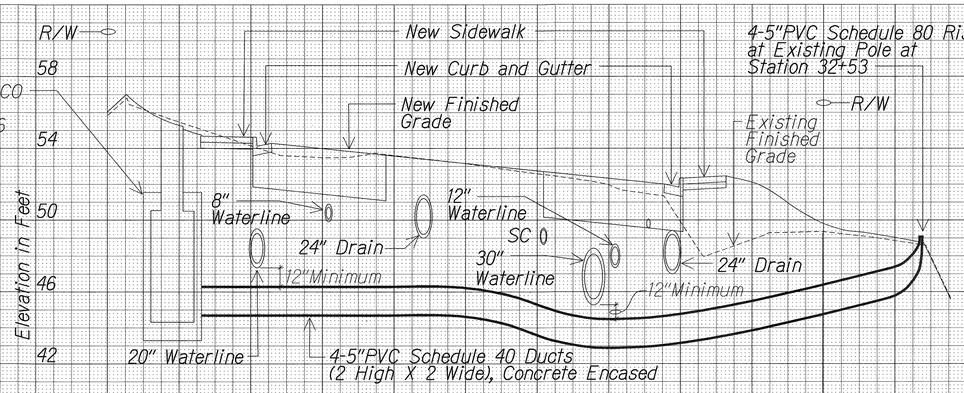
Notes:

1. Reference HECO Std #30-1020, Figure 2 for Detail of Duct Roll Sections.



PROFILE @ DUCTLINE CROSSING STATION 31+96

SCALE: HORIZONTAL 1"=10'-0"
VERTICAL 1"=4'-0"



PROFILE @ DUCTLINE CROSSING STATION 32+47

01401-D2

SCALE: HORIZONTAL 1"=10'-0"
VERTICAL 1"=4'-0"

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

R.C. KATAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9181-E
HAWAII, U.S.A.

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MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PROFILE @ DUCTLINE CROSSING STATIONS 32+47 AND 31+96

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-8 OF 10 SHEETS

"AS-BUILT"

105

104

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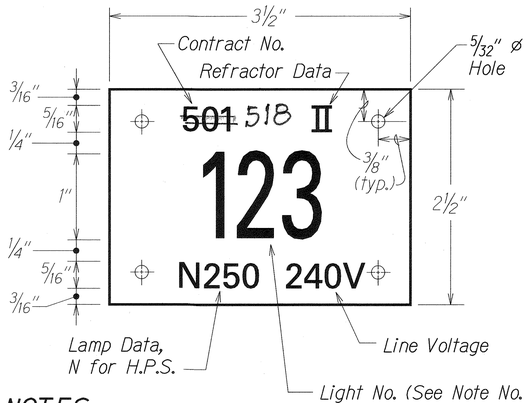
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	106	114

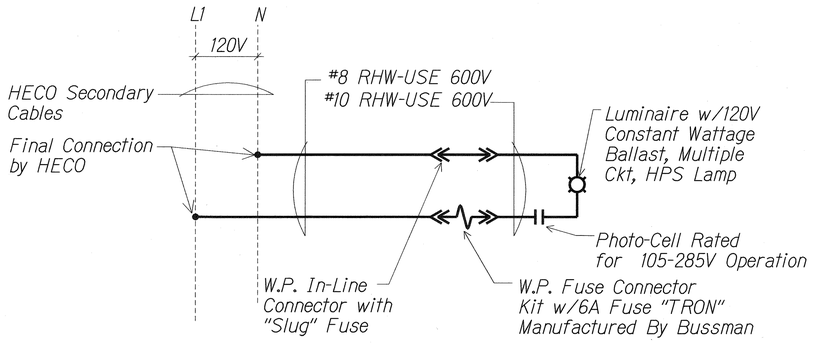


NOTES:

1. Use 3 Ply Laminated Flexible Plastic Black-White-Black Thickness:
   0.010" - Black Cap Sheet
   0.052" - White Base Sheet
   0.010" - Black Base Sheet
2. Light Number Size shall be 1-inch high and engraved 1/8" wide, White in color (Number as required).
3. Nomenclature Size shall be 5/16" high and engraved 1/32" wide, White in color (Contract No., Line Voltage, Lamp Data and Refractor Data as required).
4. Attach to Wood Pole with 4D Aluminum Nails.
5. Numbers are inscribed by cutting through "Black Cap Sheet" to expose "White Letters".
6. Contract Number and Light Number shall be obtained from the State. Use an alphabet suffix to designate lights mounted on the same pole (e.g. 123A & 123B). Contract No. 518

A E-9|E-9 **STREET LIGHT I.D. TAG DETAIL UNMETERED SYSTEM**

N.T.S. 01401-D1

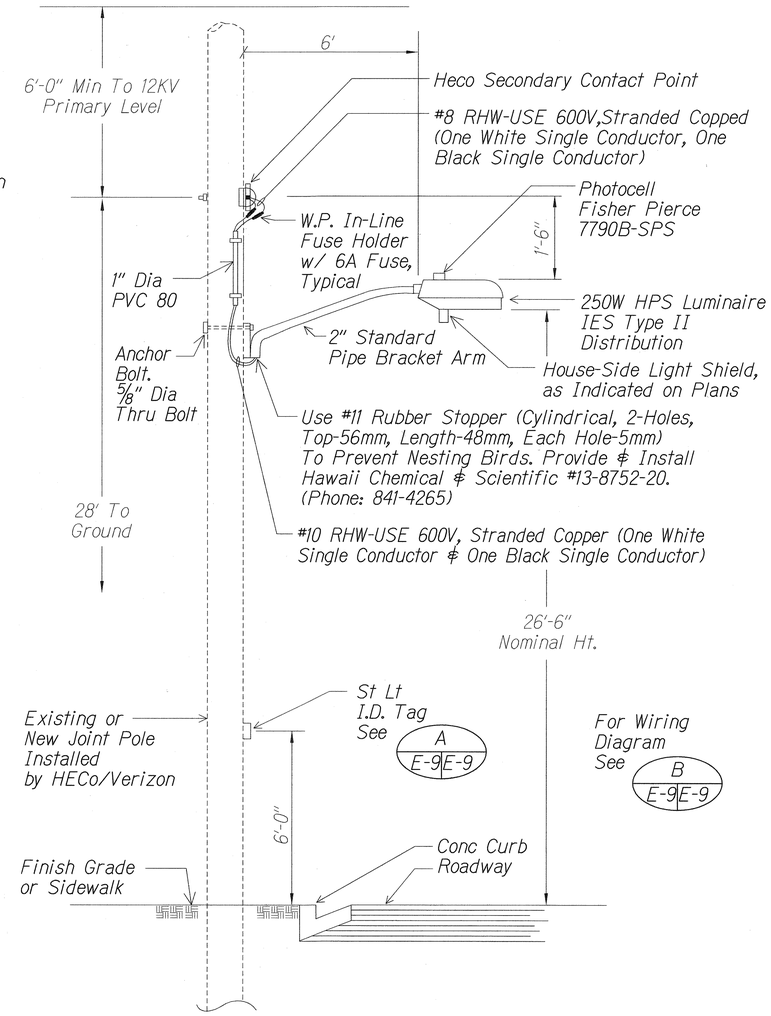


B E-9|E-9 **STREET LIGHT WIRING DIAGRAM**

NTS 01401-D1

STREET LIGHTING NOTES:

1. Street Light system for this area shall be under Hawaiian Electric Co Inc.
2. Street light numbers for this increment of the work shall be as indicated.
3. All secondary circuit extensions on HECO secondary cables shall be provided by contractor to nearest service pigtail. Final connections shall be by HECO and paid for by contractor.
4. Contractor shall notify DOT-Highways 72 hours in advance of commencing installation of street light system, phone: 831-6886 (Victor Chan).
5. Contractor shall be responsible for coordinating and informing HECO of street light location on site prior to installation of their secondary cables.
6. All luminaires shall be high pressure sodium type with I.E.S. type II light distribution, with cut-off optics unless otherwise noted on the plans. Provide house-side shields for luminaires installed on north side of Kaneohe Bay Drive.
7. Contractor shall mark date of installation on bottom of photo-cell.
8. Contractor shall obtain written acceptance of street light system from DOT-Highways.
9. Luminaire count: 250W HPS - 9ea
   250W HPS with house-side shields - 7ea
10. Contractor to arrange with HECO to energize street lights a minimum of 6 hours for final inspection & acceptance. Contractor shall pay for all HECO charges.
11. Contractor shall have one set of approved plans at the job site at all times during the construction work.
12. Final acceptance & inspection will be undertaken only after all work has been completed and "as-built" tracing has been given to the DOT-Highways. Contractor to prepare "as-built" tracing.
13. Submit shop drawings for all street light components for approval.
14. All neutral conductors shall be identified with white insulation, other means of identification are not acceptable.
15. All nuts, washers, bolts and screws shall be greased or coated with "threde-exe" by Chemsearch.



B E-9|E-9 **TYPICAL STREET LIGHT INSTALLATION DETAIL**

N.T.S 01401-D1

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 7/8/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

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

R.C. KATAHARA LICENSED PROFESSIONAL ENGINEER No. 3181-E HAWAII, U.S.A.

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MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT DETAILS & NOTES

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-9 OF 10 SHEETS

"AS-BUILT"

106

135

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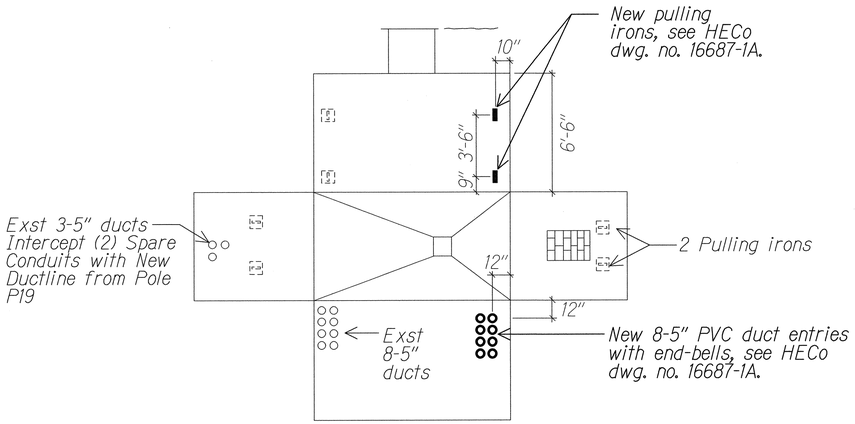
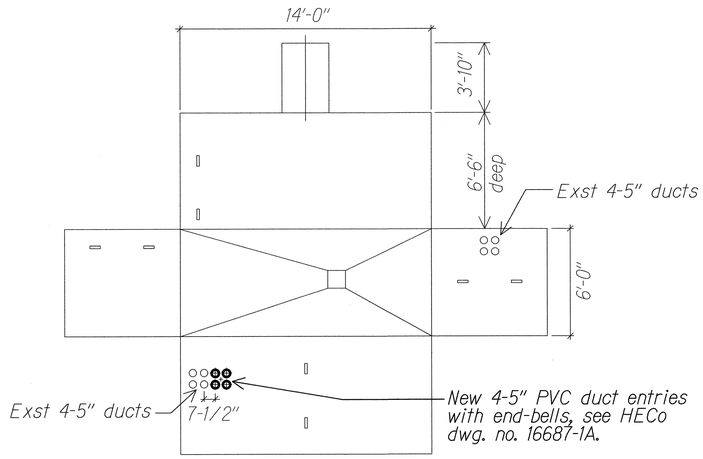
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2002	107	114



ELECTRICAL MANHOLE #351

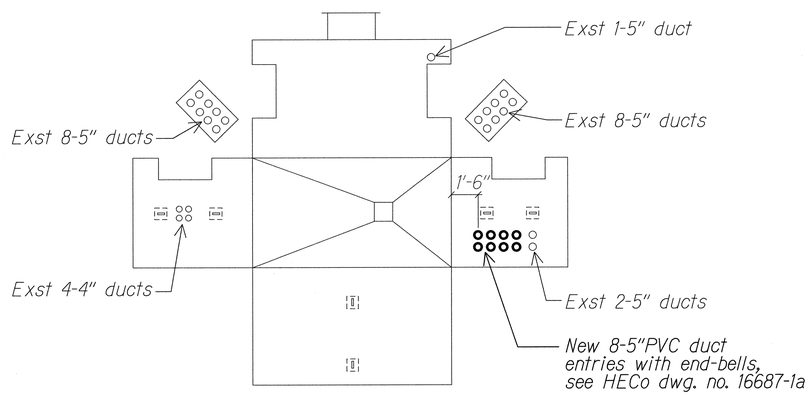
Scale: 1/4" = 1'-0"

01401-D4



ELECTRICAL MANHOLE #1

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



ELECTRICAL MANHOLE #350

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

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

DRAWING REVIEW

Reviewed for HECO's Facilities Only
Date 7/8/02 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

R.C. KATAHARA
LICENSED PROFESSIONAL ENGINEER
No. 3181-E
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

MK ENGINEERS, LTD. 7/3/02

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL MANHOLE DEVELOPMENT DETAILS

KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Federal Aid Project No. STP-065-1(9)

Scale: As Noted Date: June, 2002

SHEET No. E-10 OF 10 SHEETS