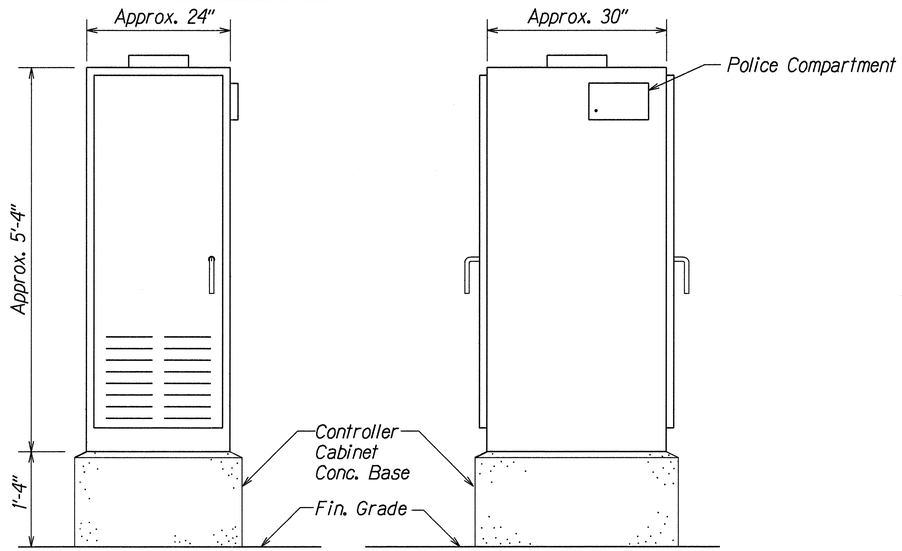
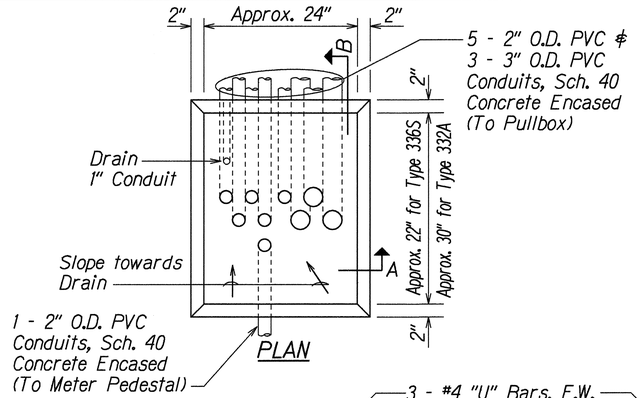
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	64	79



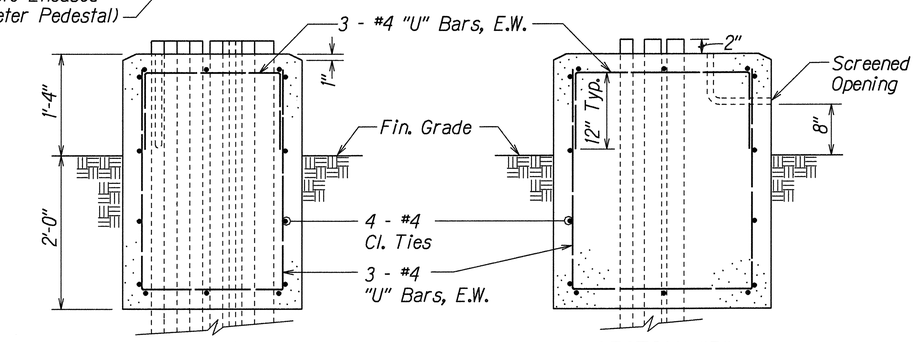
TYPE 332A TRAFFIC SIGNAL CONTROLLER CABINET DETAIL

N.T.S



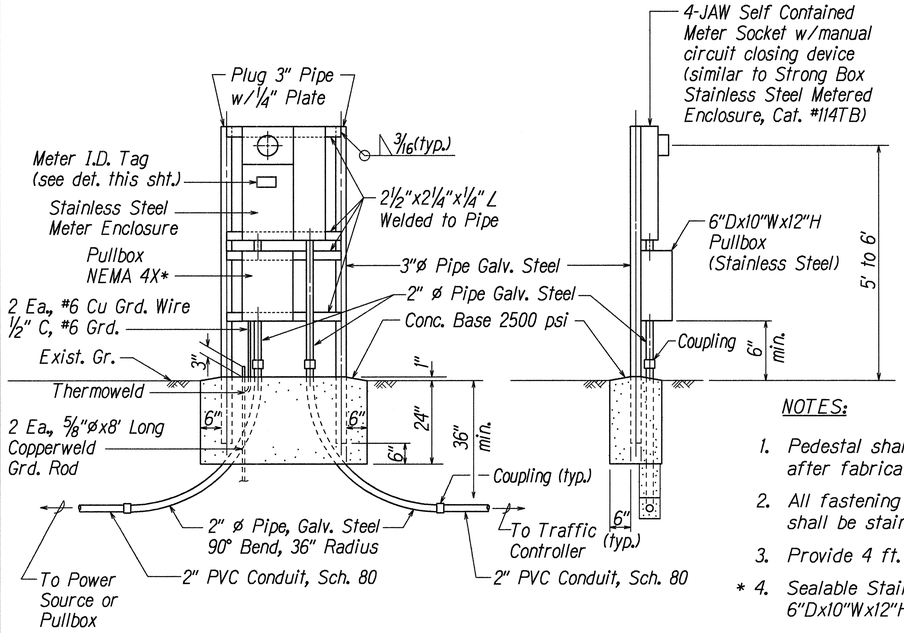
NOTES:

1. Concrete shall be class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduits bends and drain are incidental to concrete base
4. Refer to Cabinet Manufacturer's Specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a class 2, rubbed finish.



CONTROLLER CABINET CONCRETE BASE

N.T.S



METER PEDESTAL FOR UNDERGROUND SERVICE

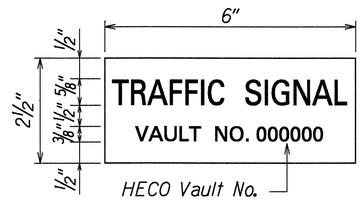
N.T.S.

NOTES:

1. Pedestal shall be hot-dipped galvanized after fabrication.
2. All fastening bolts, nuts ∉ washers shall be stainless steel.
3. Provide 4 ft. clearance in front of meter.
* 4. Sealable Stainless Steel Enclosure 6"Dx10"Wx12"H.

NOTES:

1. Use 3-ply laminated flexible plastic, black-white-black thickness: black cap sheet - 0.010", white base sheet - 0.052", black base sheet - 0.010".
2. Attach to Meter Socket using Scotch 3M Brand very high bond (VHB) double coated acrylic foam tape or equivalent.
3. Letters/Numbers shall be 1/16" stroke, (white in color).
4. Letters/Numbers area inscribed by cutting through "black cap sheet" to expose white letters/numbers.



METER ID TAG DETAIL

N.T.S

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 5/21/00
	DRAWN BY HWC-TS	
	TRACED BY HWC-TS	
NOTE BOOK N/A	DESIGNED BY	
	QUANTITIES BY N/A	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONTROLLER CABINET DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

Not to Scale Date: May 1, 2000

SHEET No. TE6 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	65	79

STATE RIGHT-OF-WAY BACKFILL NOTES

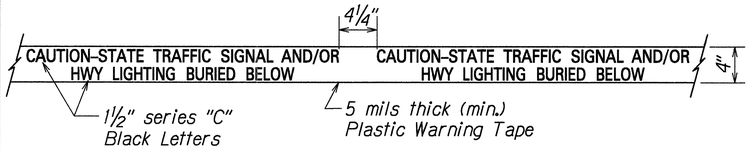
Trench Backfill Material "A"
Beach Sand, Earth, or Earth and Gravel. If Earth and Gravel used, the maximum shall contain not more than 50% by volume of rock particles. Maximum 8" loose fill per lift. Obtain 95% compaction for each lift.

Concrete
3000 psi compressive strength @ 3 days.

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

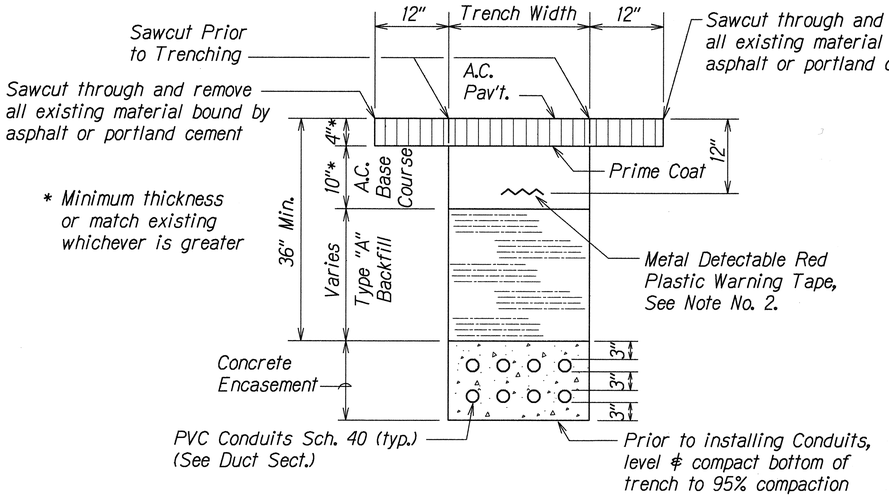
GENERAL NOTES

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, unless otherwise stated in plans or by the Engineer.
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.

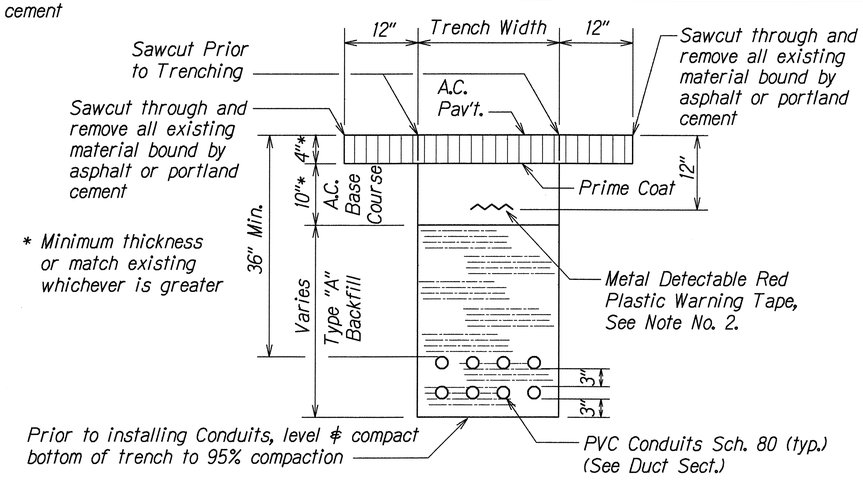


For additional information see note no. 2.

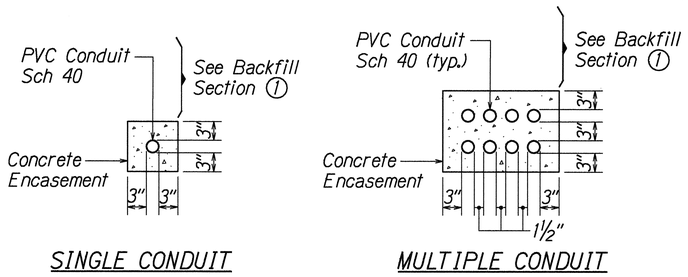
METAL DETECTABLE RED PLASTIC WARNING TAPE



① TYPICAL BACKFILL SECTION WITH CONCRETE ENCASED DUCTS



② TYPICAL BACKFILL SECTION DIRECT BURIED DUCTS

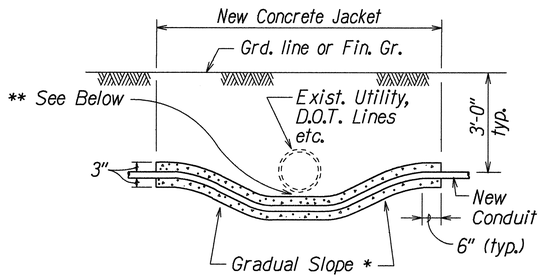


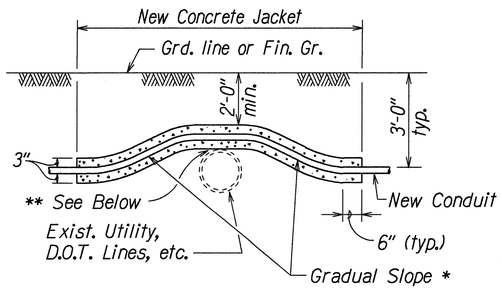
SINGLE CONDUIT — MULTIPLE CONDUIT

DUCT SECTIONS - CONC. ENCASED

SINGLE CONDUIT — MULTIPLE CONDUIT

DUCT SECTIONS - DIRECT BURIED





* To be determined by County Electrical Inspector/Engineer
** The Contractor shall provide a 1'-0" clearance from drainage lines
The Contractor shall contact Utility Co. for their proper clearances.
The Contractor shall contact Wheeler Army Airfield for the proper clearance from their 12" Sewer Line.

CONDUIT BY-PASS DETAIL AT VARIOUS UTILITIES

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 5/2000
	DRAWN BY HWY-1.S	
	TRACED BY HWY-1.S	
NOTE BOOK dated	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

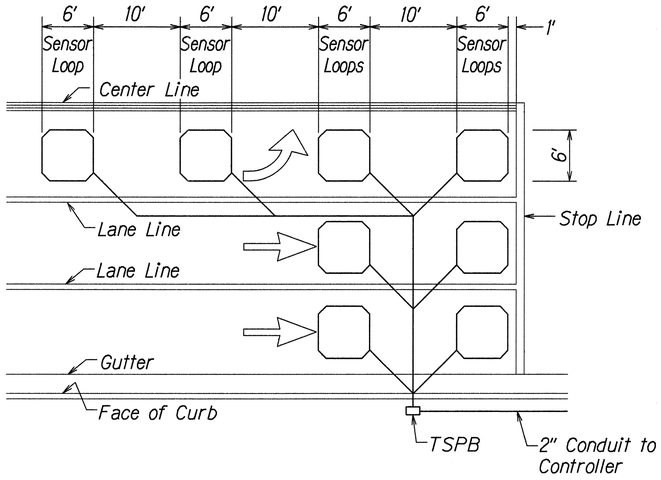
TRAF. SIG. & HWY. LTG. DUCT DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

Not to Scale — Date: May 1, 2000

SHEET No. TE7 OF 13 SHEETS

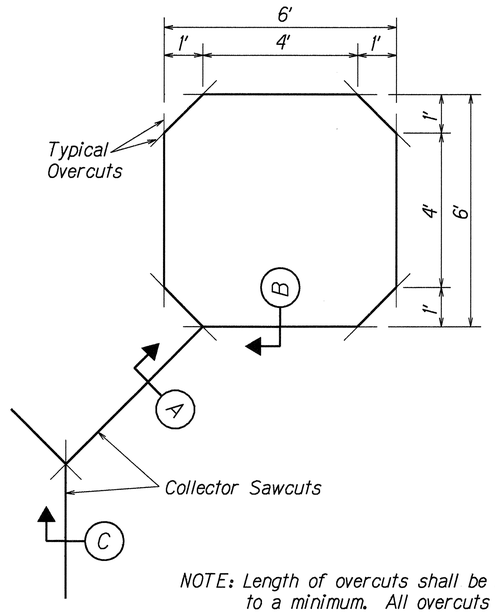
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	66	79



NOTES:

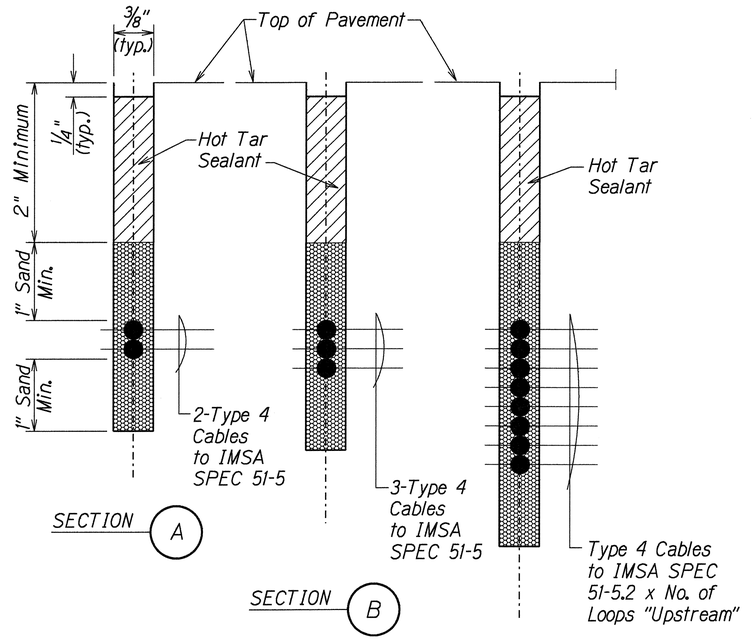
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

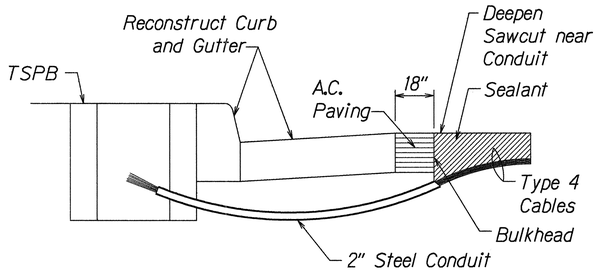


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



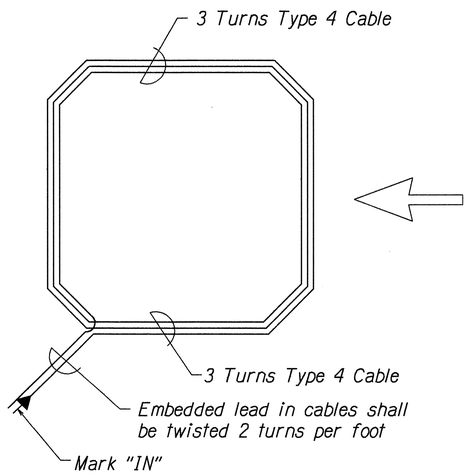
TYPICAL SECTION THROUGH SENSOR LOOP



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 5/18/00
	DRAWN BY HWY-TS	
NOTE BOOK Volcan	TRACED BY HWY-TS	
No. yearlips	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

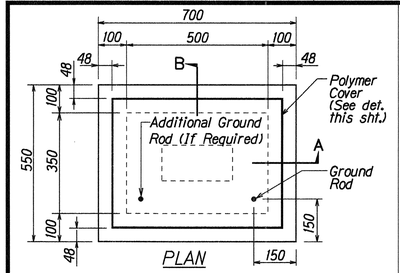
LOOP DETECTOR DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

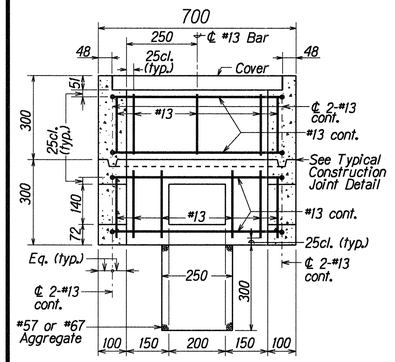
Not to Scale Date: May 18, 2000

SHEET No. TE8 OF 13 SHEETS

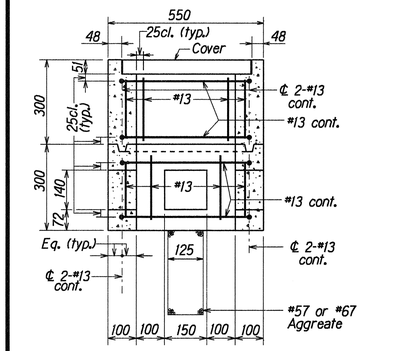
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	67	79



PLAN



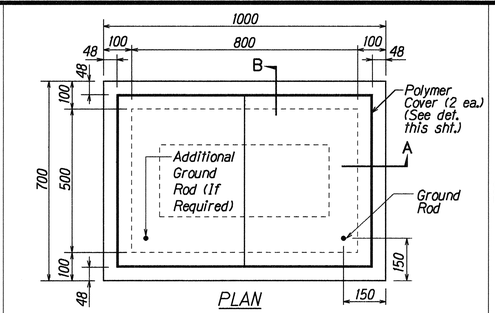
SECTION A-A



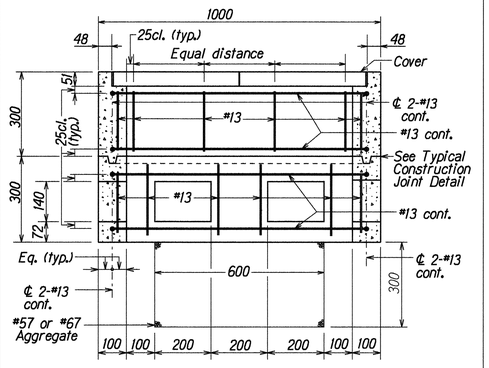
SECTION B-B

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

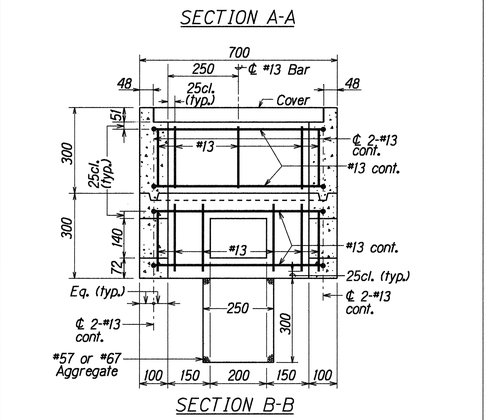
Scale: 1:10



PLAN



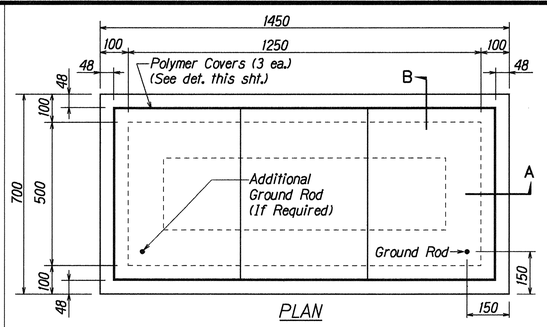
SECTION A-A



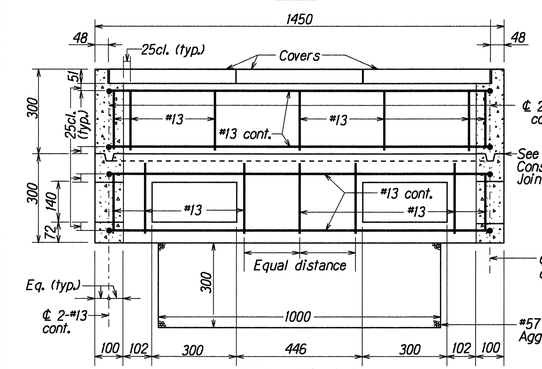
SECTION B-B

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

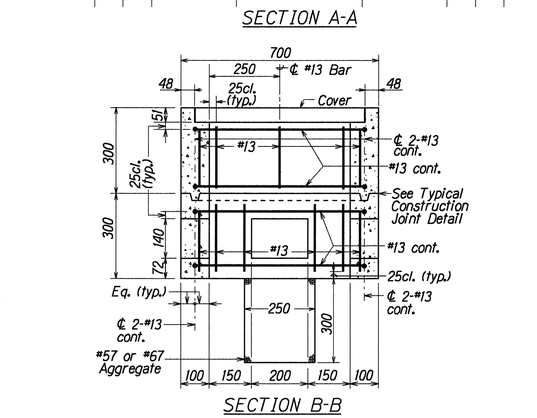
Scale: 1:10



PLAN



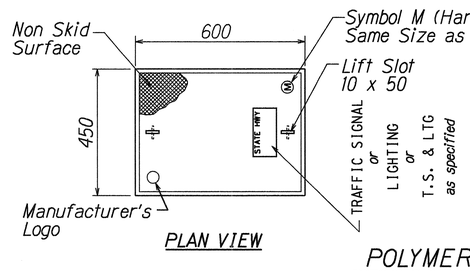
SECTION A-A



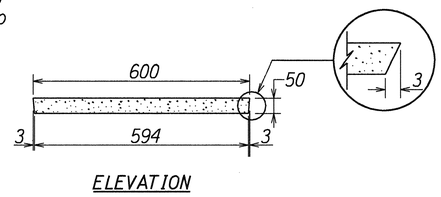
SECTION B-B

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

Scale: 1:10



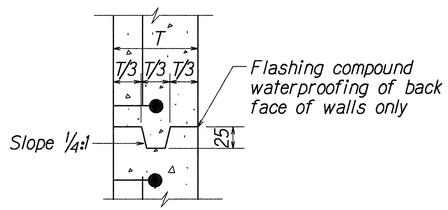
PLAN VIEW



ELEVATION

POLYMER CONCRETE COVER

Not to Scale

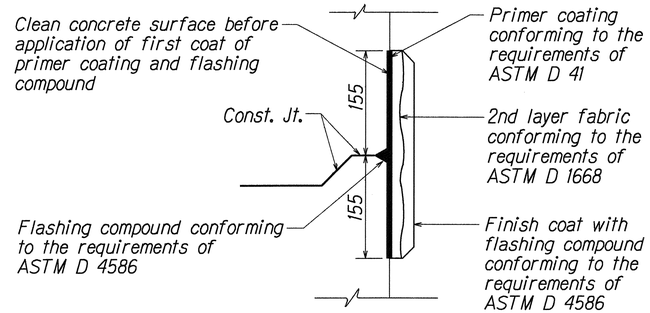


TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

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

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX & COVER DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

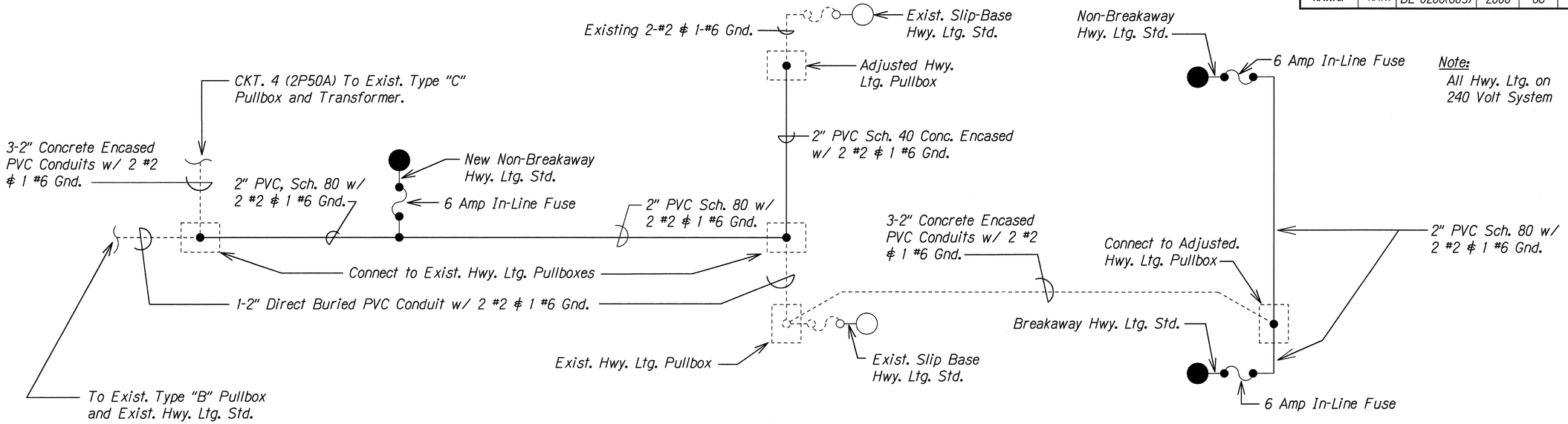
Scale: As Shown Date: May 18, 2000

SHEET No. TE9 OF 13 SHEETS

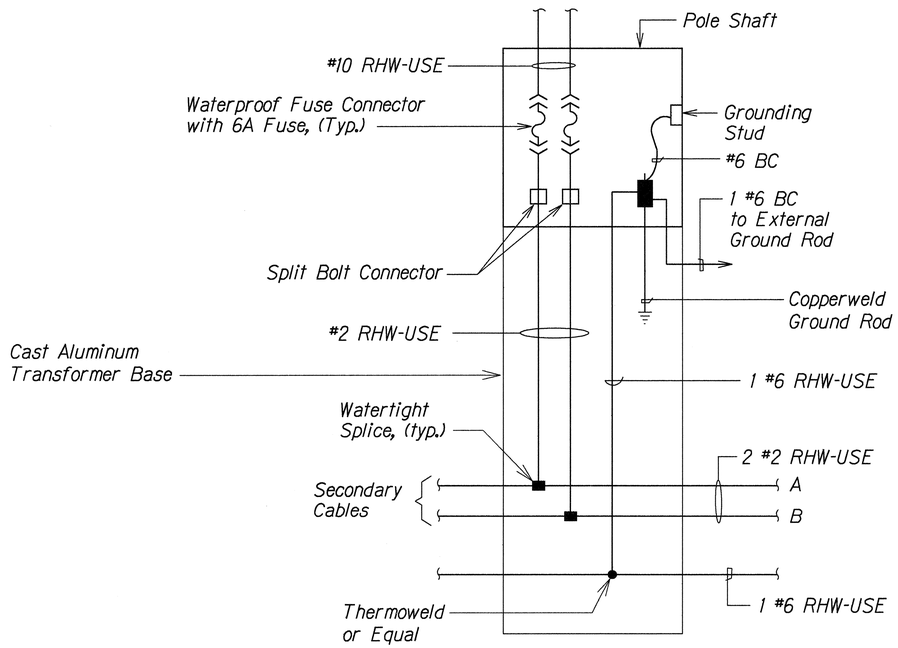
ORIGINAL PLAN

SURVEY PLOTTED BY
DRAWN BY M. Takafuji DATE 5/18/00
TRACED BY Steven Yoshida
DESIGNED BY
QUANTITIES BY
CHECKED BY
NOTE BOOK tolan NAMBOD

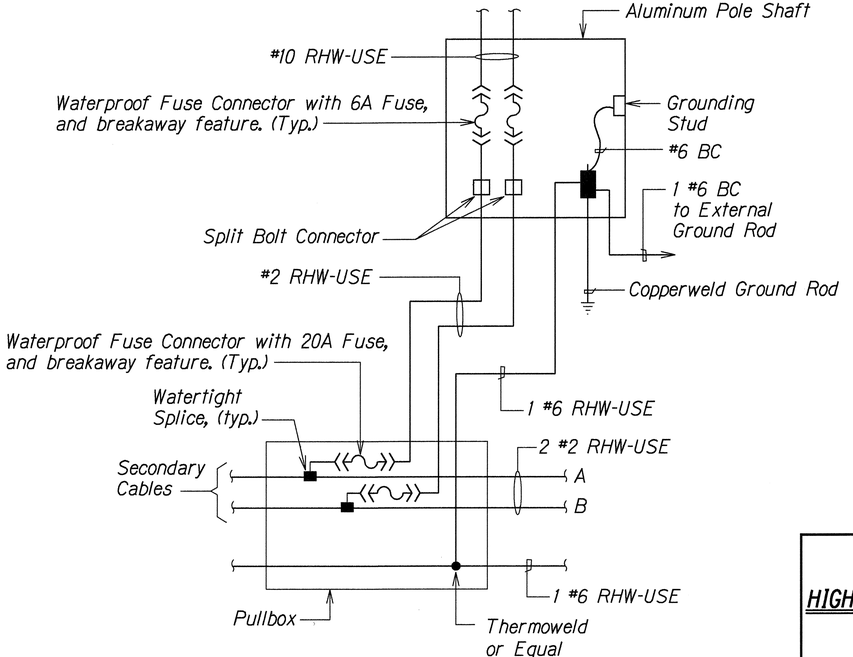
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	68	79



ONE-LINE DIAGRAM



TYPICAL WIRING CONNECTION DIAGRAM FOR NON-BREAKAWAY HWY. LTG. STD. (NO PULLBOX)



TYPICAL WIRING CONNECTION DIAGRAM FOR BREAKAWAY HWY. LTG. STD. W/ PULLBOX

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 5/28/2001
	DRAWN BY LIN-TS	
NOTE BOOK N/A	TRACED BY LIN-TS	
	DESIGNED BY N/A	
	QUANTITIES BY N/A	
	CHECKED BY N/A	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

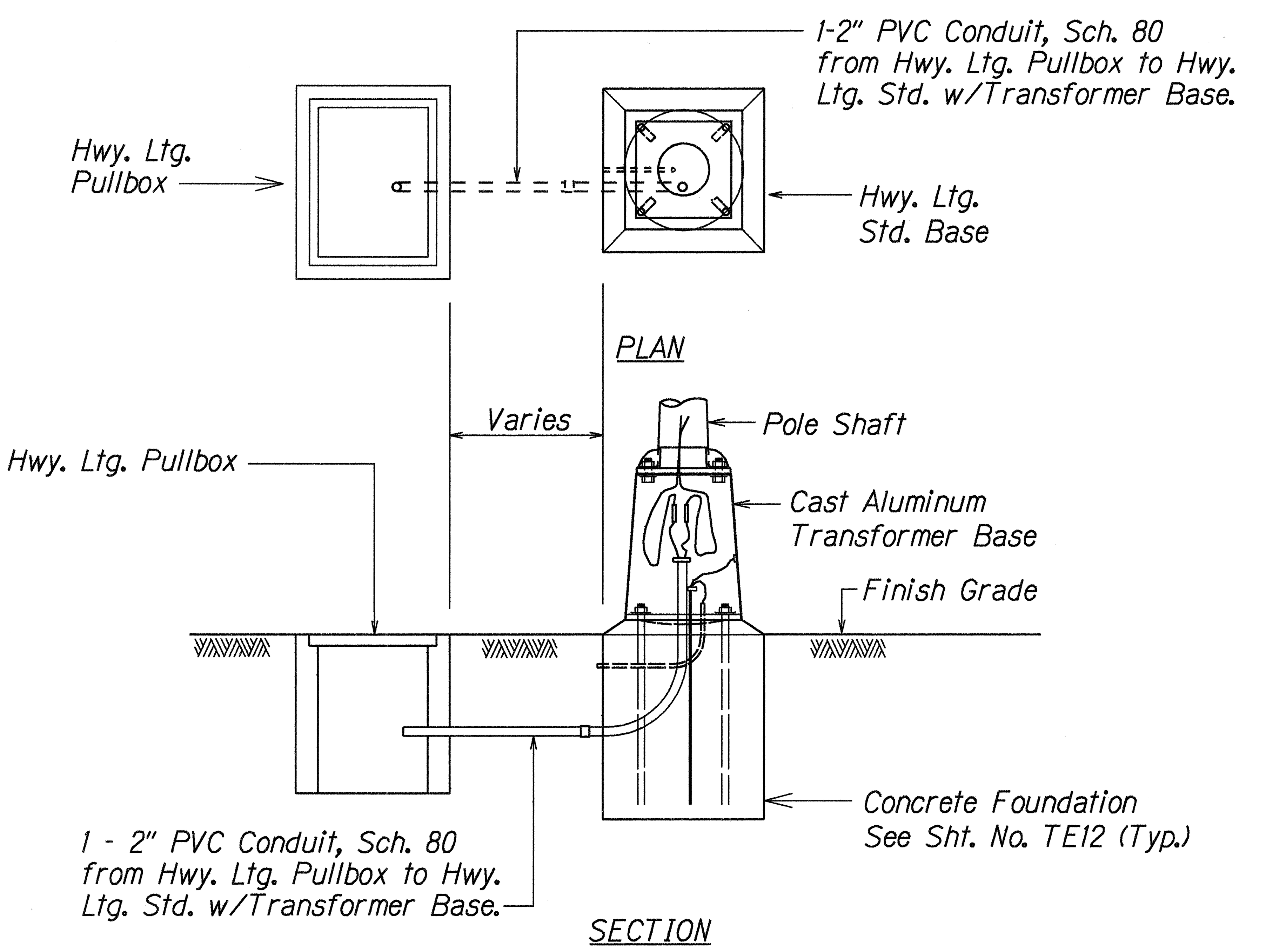
HIGHWAY LIGHTING WIRING DIAGRAMS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

Not To Scale — Date: May 18, 2000

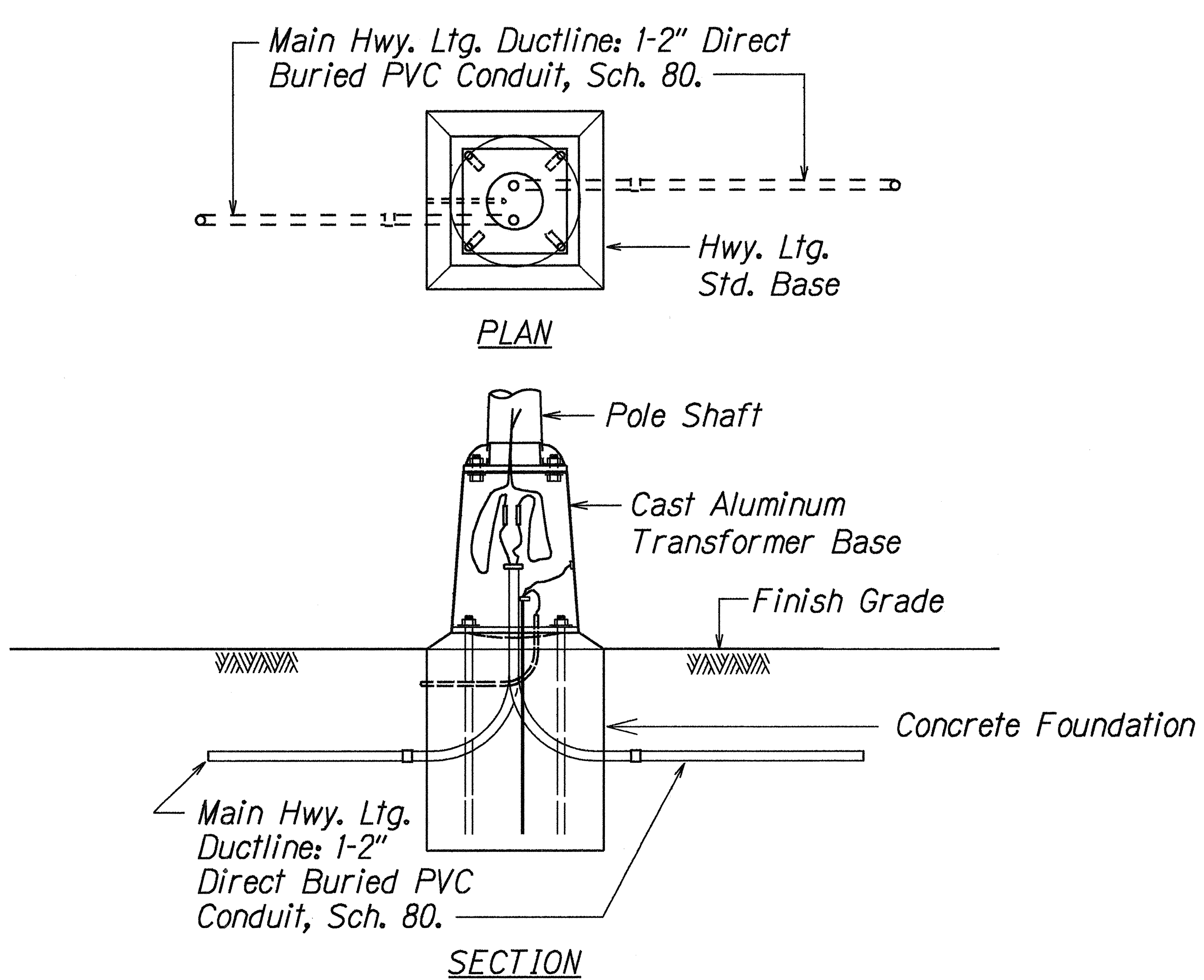
SHEET No. TE10 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	69	79



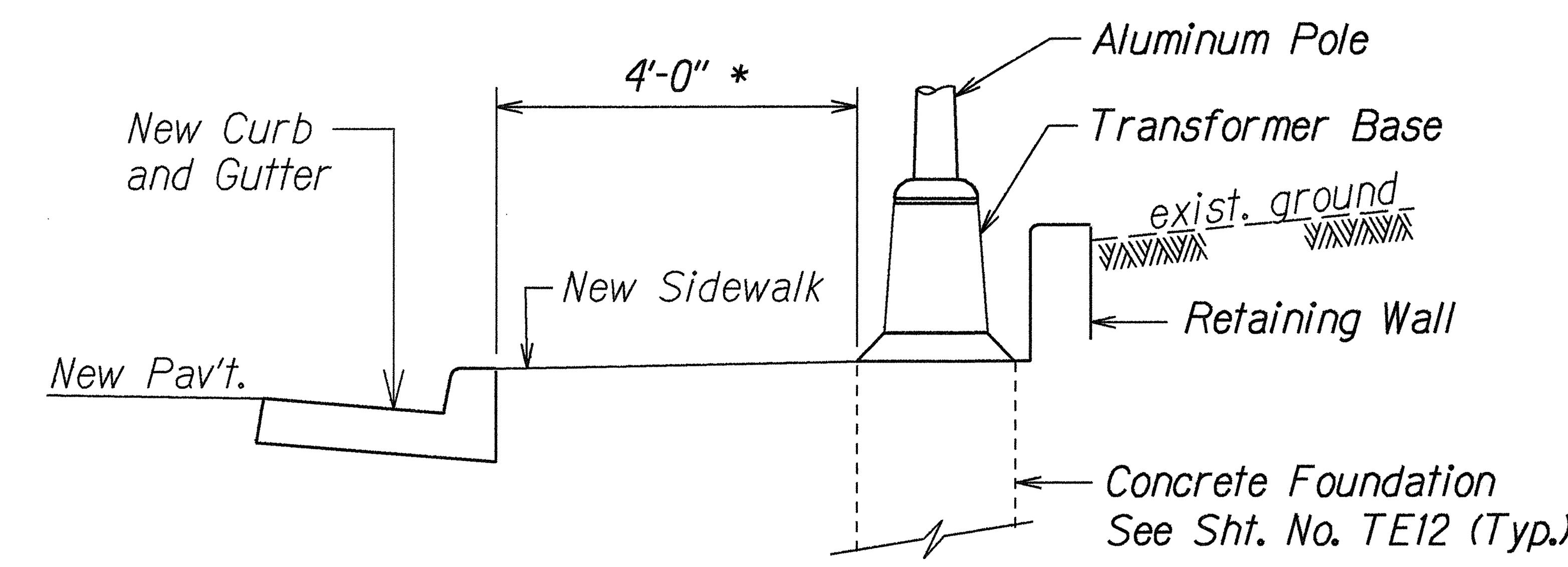
CONDUIT DETAILS FOR TRANSFORMER BASE HWY. LTG. STD. WITH PULLBOX

Not to Scale



CONDUIT DETAILS FOR TRANSFORMER BASE HWY. LTG. STD. WITHOUT PULLBOX

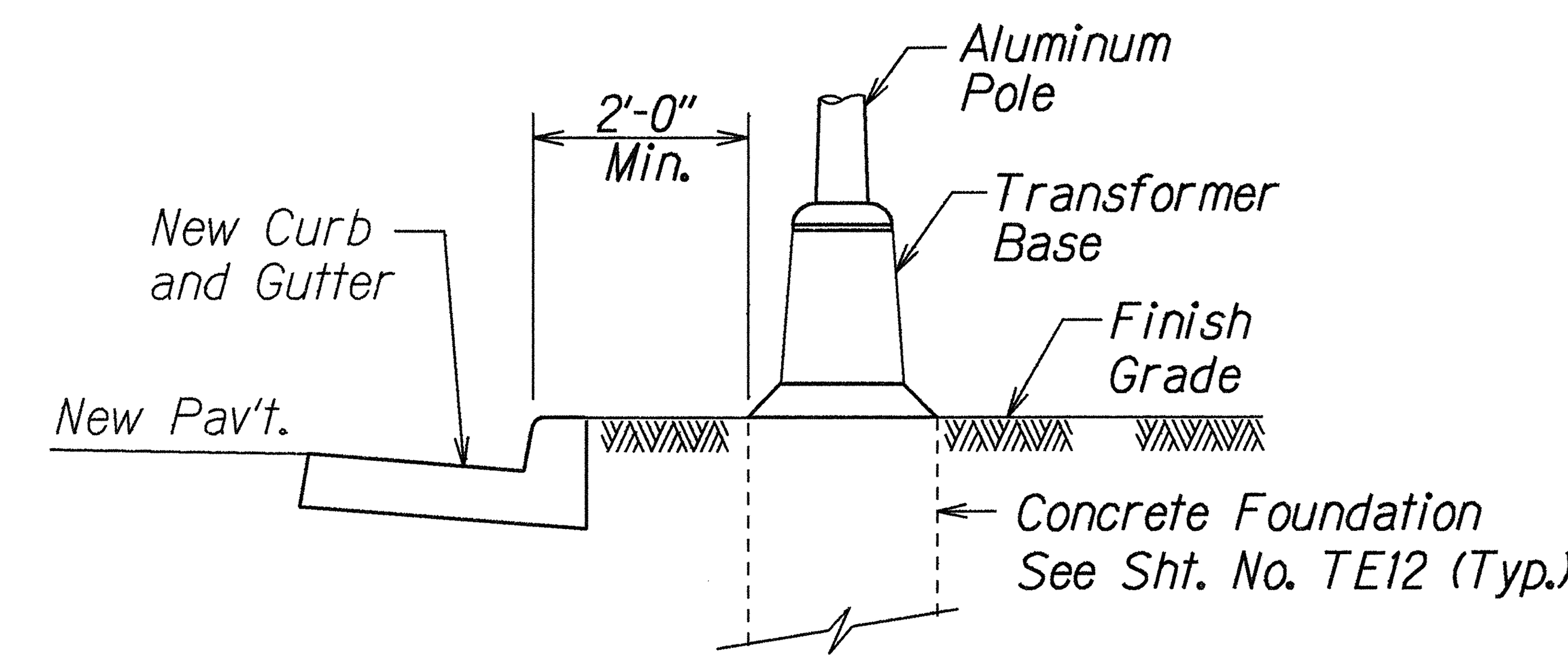
Not to Scale



* Absolute Minimum According to A.D.A. Standards is 3'-0"

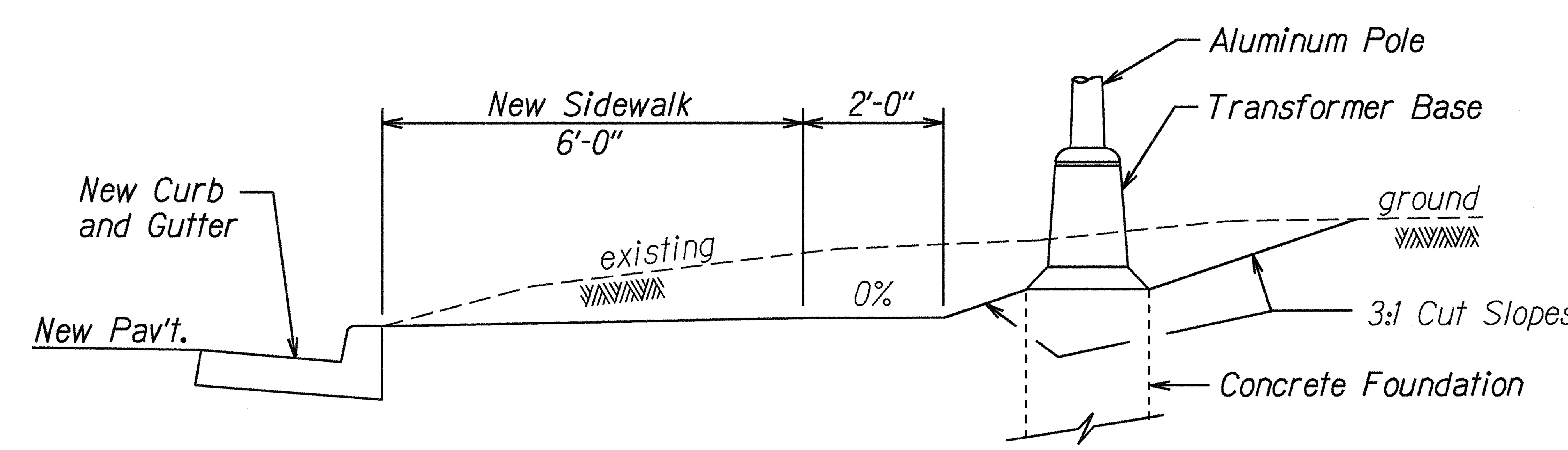
TYP. SECT. - KAM. HWY. NON-BREAKAWAY HWY. LTG. STD.

Not to Scale



TYP. SECT. - KAM. HWY. HWY. LTG. STD. W/ BREAKAWAY FEATURE

Not to Scale



TYP. SECT. - G.C. RD. NON-BREAKAWAY HWY. LTG. STD.

Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

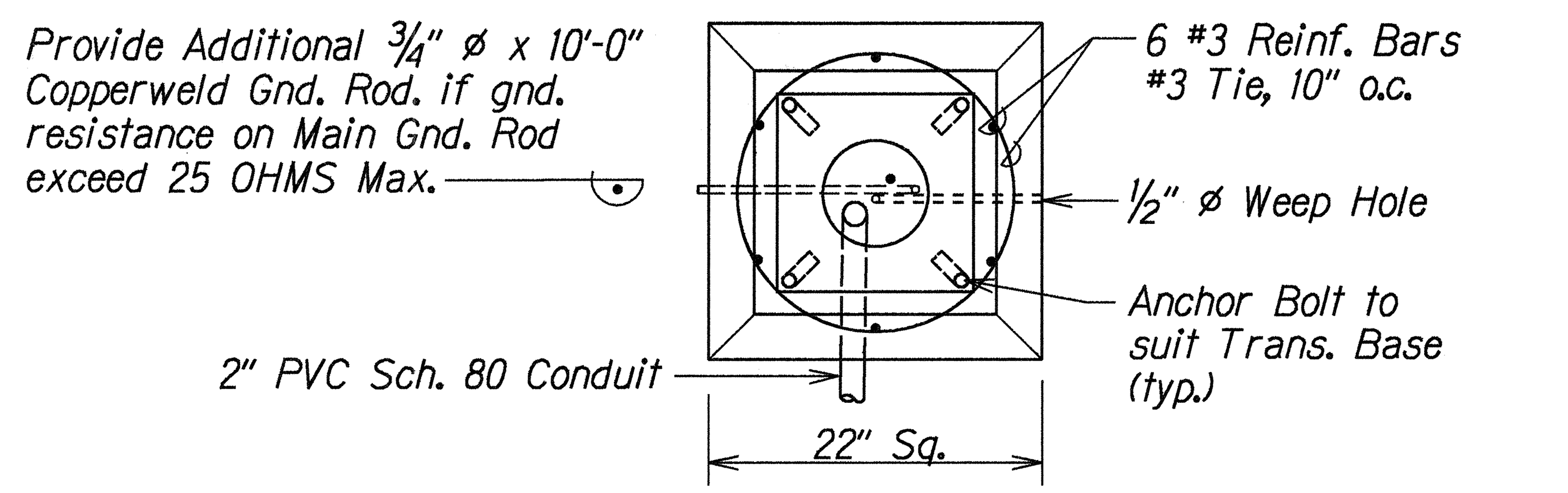
HWY. LTG. TYP. SECTS. & CONDUIT DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

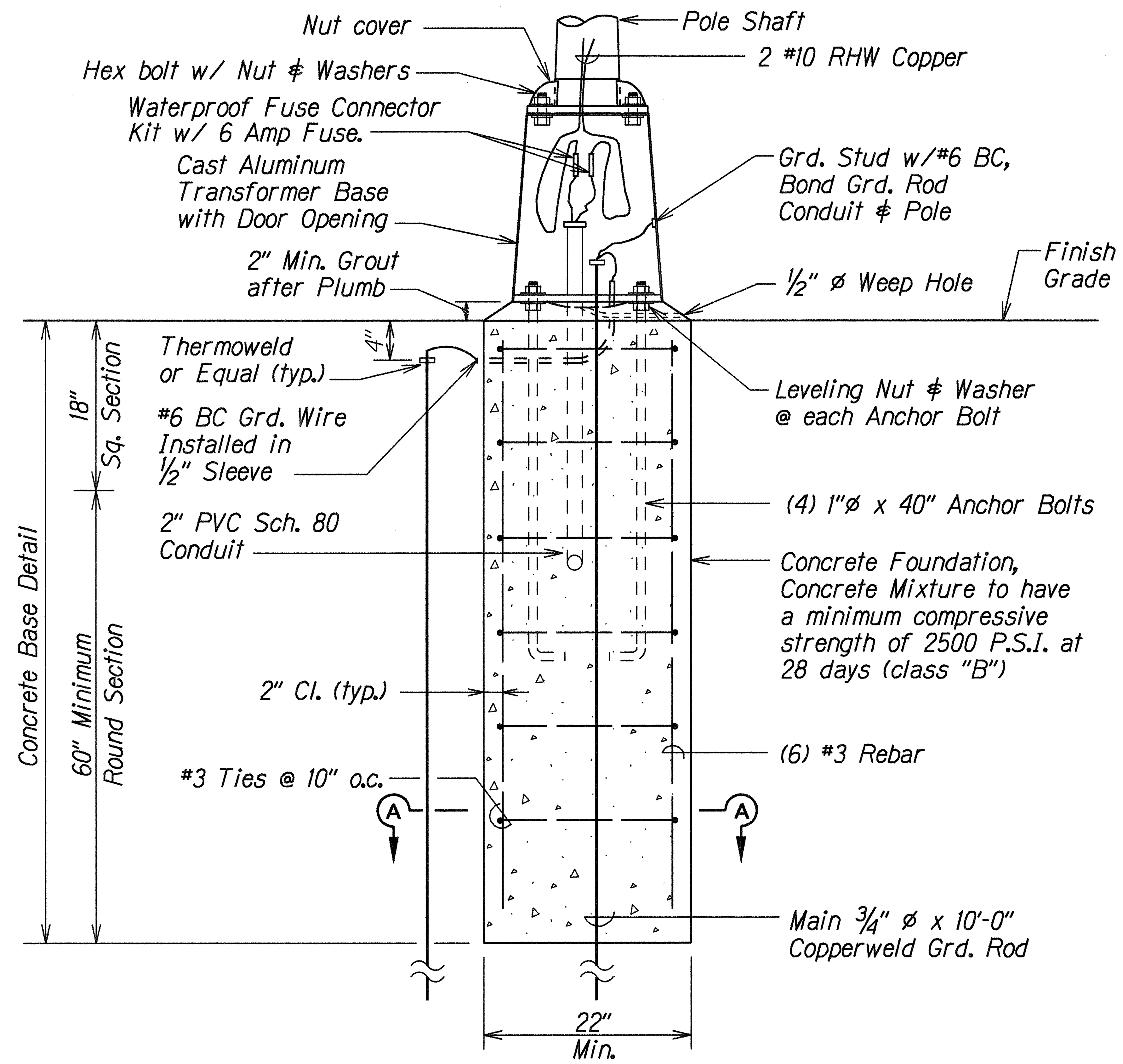
Not To Scale — Date: May 18, 2000

SHEET No. TE11 OF 13 SHEETS

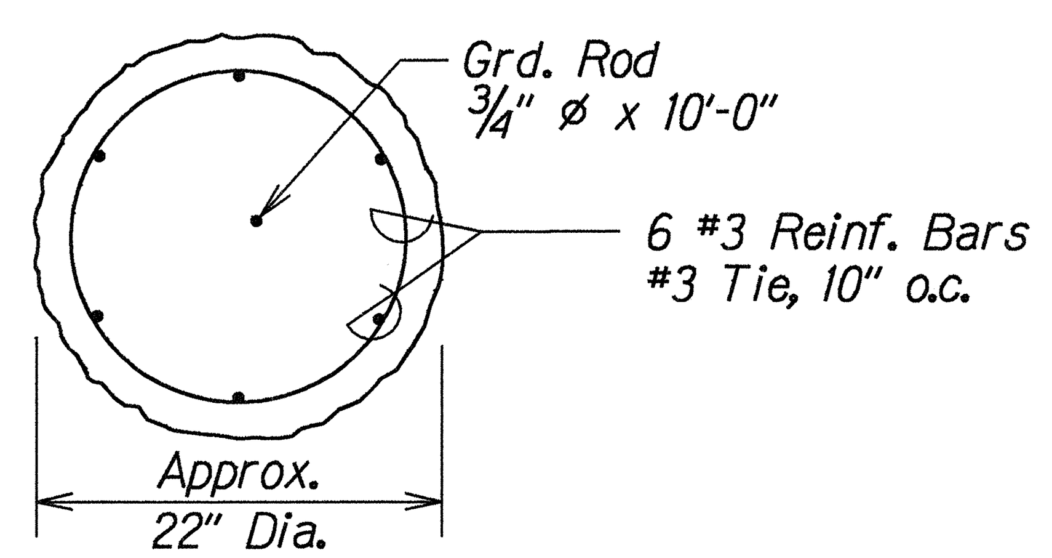
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	70	79



PLAN



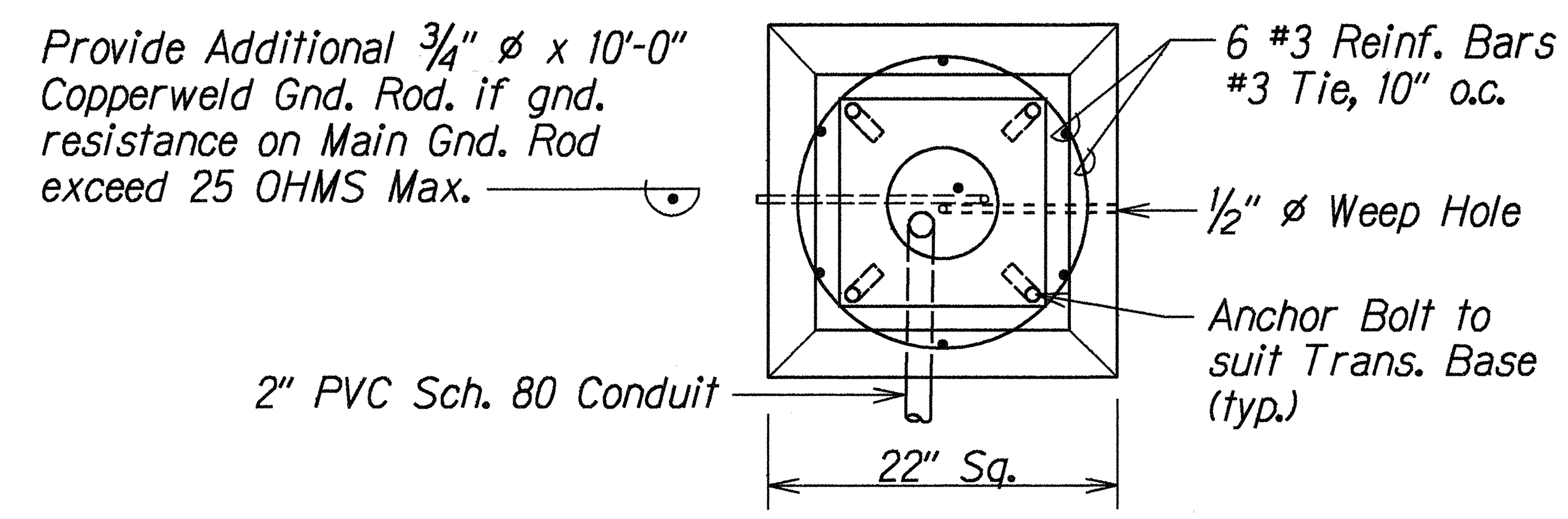
ELEVATION



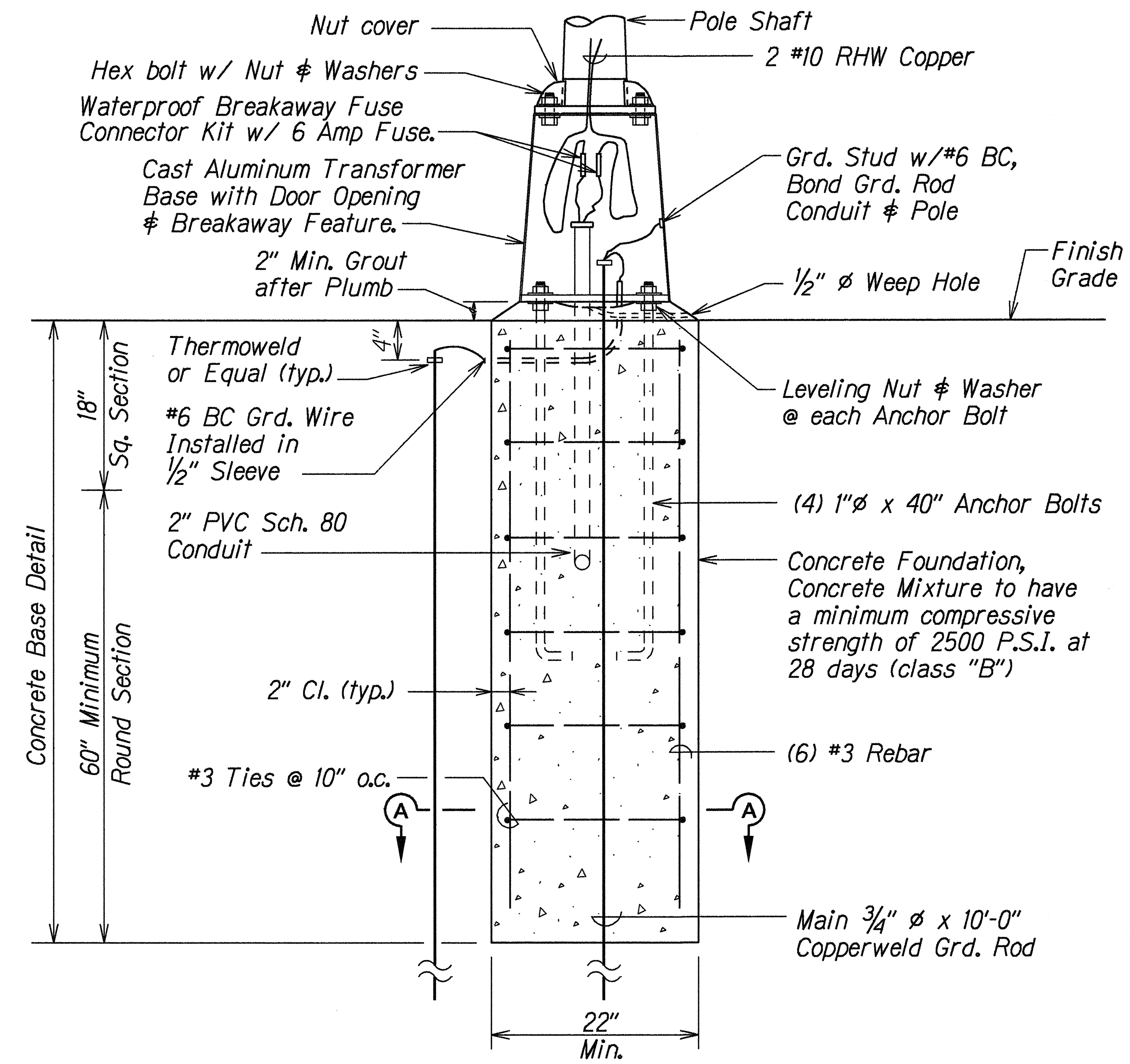
SECTION A-A

TYPICAL CONCRETE FOUNDATION AND TRANSFORMER BASE DETAIL FOR NON-BREAKAWAY HIGHWAY LIGHTING STANDARDS

Not to Scale



PLAN



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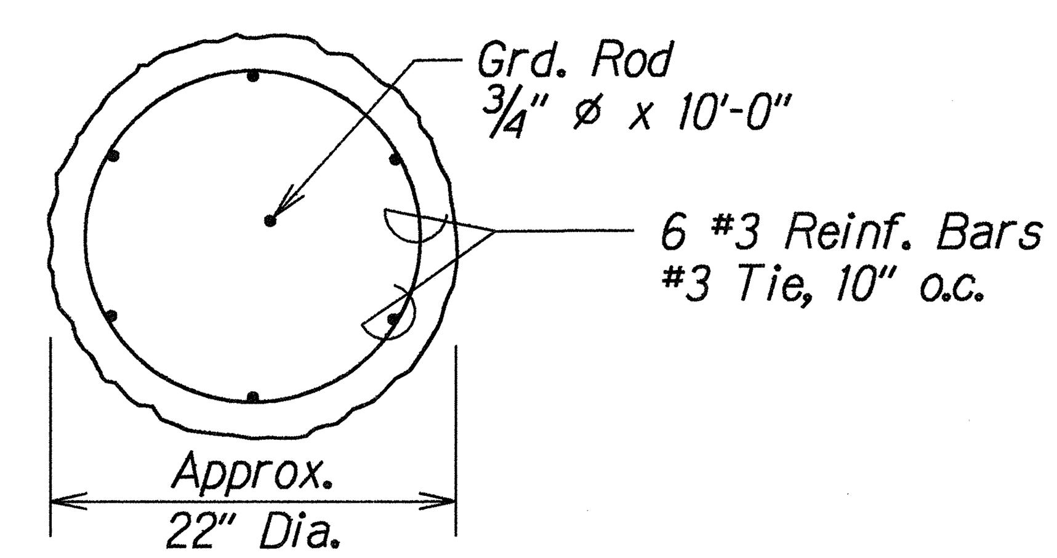


SECTION A-A

TYPICAL CONCRETE FOUNDATION AND TRANSFORMER BASE DETAIL FOR BREAKAWAY HIGHWAY LIGHTING STANDARDS

Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HWY. LTG. FOUNDATION & BASE DETAILS

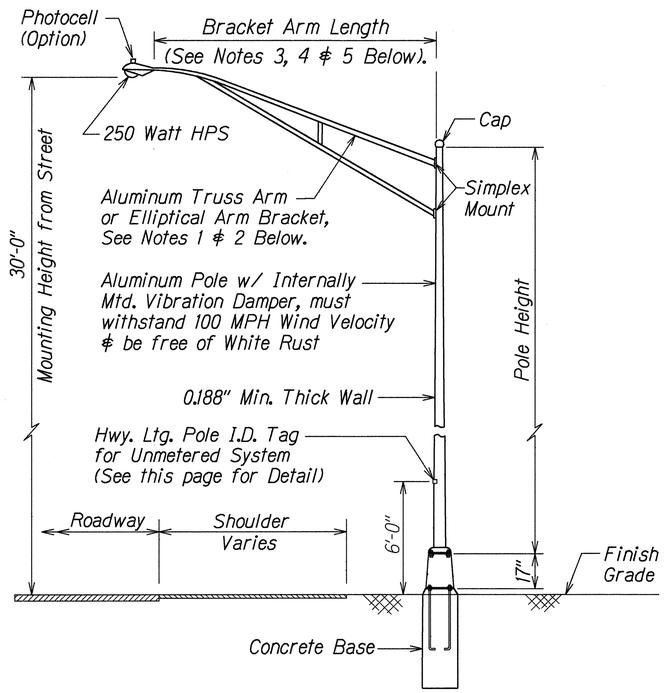
KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

Not To Scale — Date: May 18, 2000

SHEET No. TE12 OF 13 SHEETS

ORIGINAL PLAN / NOTE BOOK / SURVEY PLOTTED BY / DRAWN BY HWY-TS / TRACED BY / DESIGNED BY HWY-TS / QUANTITIES BY / CHECKED BY / DATE 5/18/00

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-0200(803)	2000	71	79

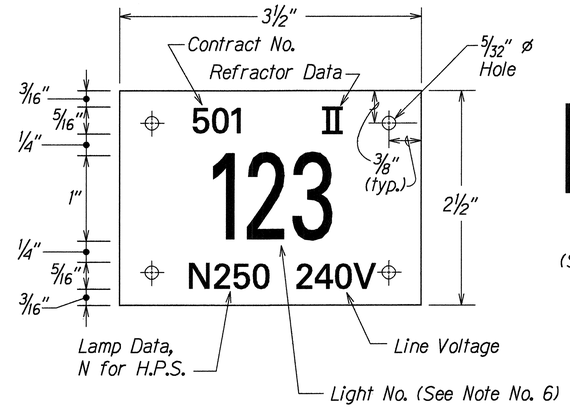


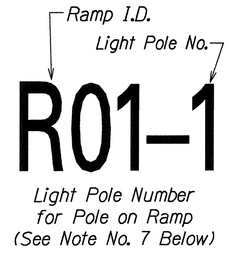
NOTES:

1. For 4' to 10' Arm, Use Elliptical Bracket Arm.
2. For 10' to 15' arm, Use Truss Bracket Arm.
3. For Kam. Hwy. Non-Breakaway Hwy. Ltg. Std.; Bracket Arm Length = 12'.
4. For Kam. Hwy. Hwy. Ltg. Std. w/ Breakaway Feature; Bracket Arm Length = 10'.
5. For G.C. Rd. Non-Breakaway Hwy. Ltg. Std.; Bracket Arm Length = 14'.

TYPICAL INSTALLATION
TRANSFORMER BASE HWY. LTG. STD.

Not to Scale





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 Aluminum and Steel Poles with no. 8 Stainless Steel, 1/2" long Drive Screws in 1/8" drilled hole. 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).
7. For Light Poles installed on Ramp, assign Numbers to include Ramp I.D. and Light Number. Legend may be less that one inch in height.

HWY. LTG. POLE I.D. TAG DETAIL
UNMETERED SYSTEM

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 5/18/00
	DRAWN BY HWY-TS	
NOTE BOOK	TRACED BY	
	DESIGNED BY HWY-TS	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING STANDARD DETAILS

KAMEHAMEHA HIGHWAY
Intersection Improvements at
Leilehua Golf Course Road
Fed. Aid Project No. DE-0200(803)

Not To Scale — Date: May 18, 2000

SHEET No. TE13 OF 13 SHEETS