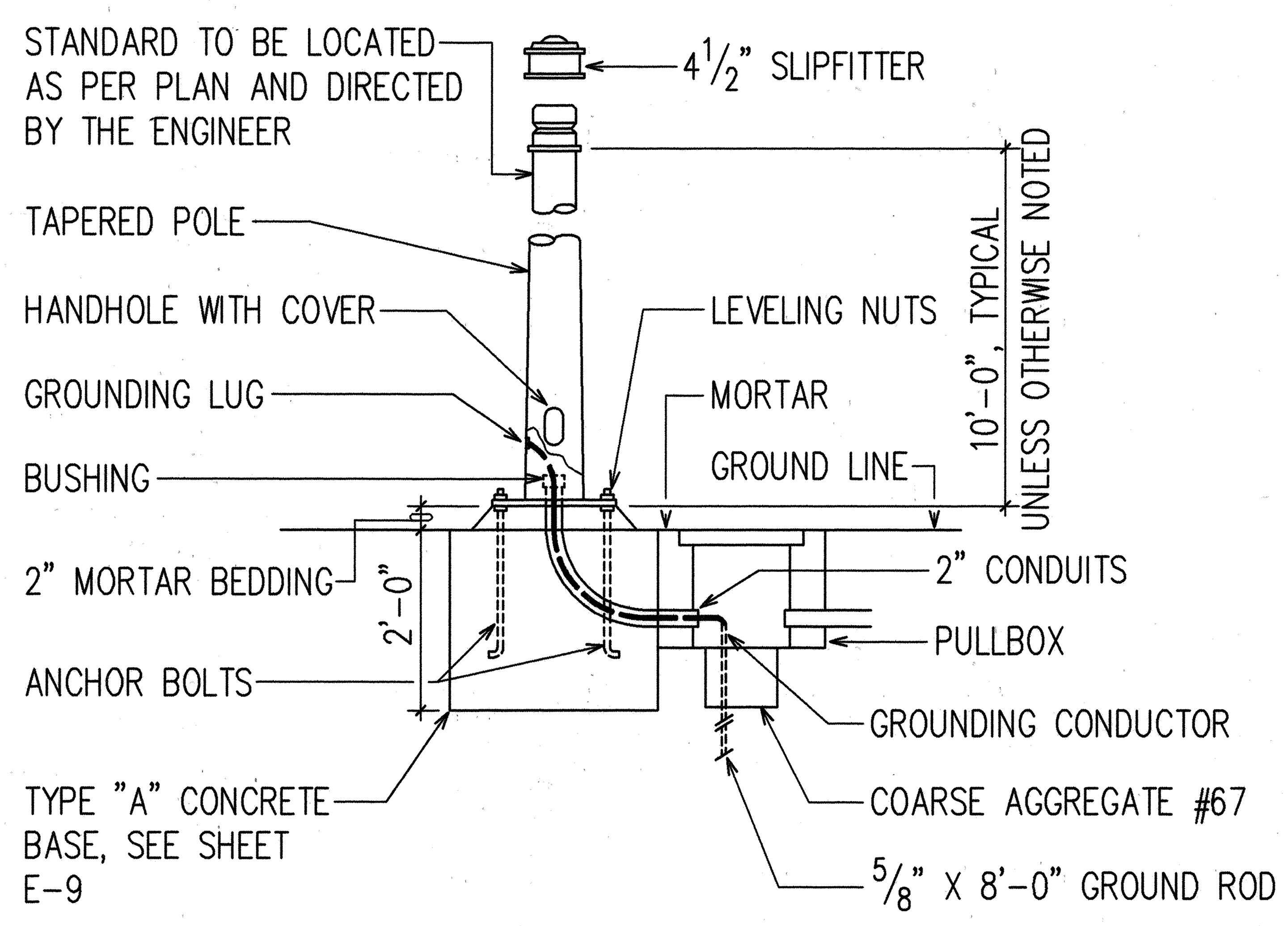
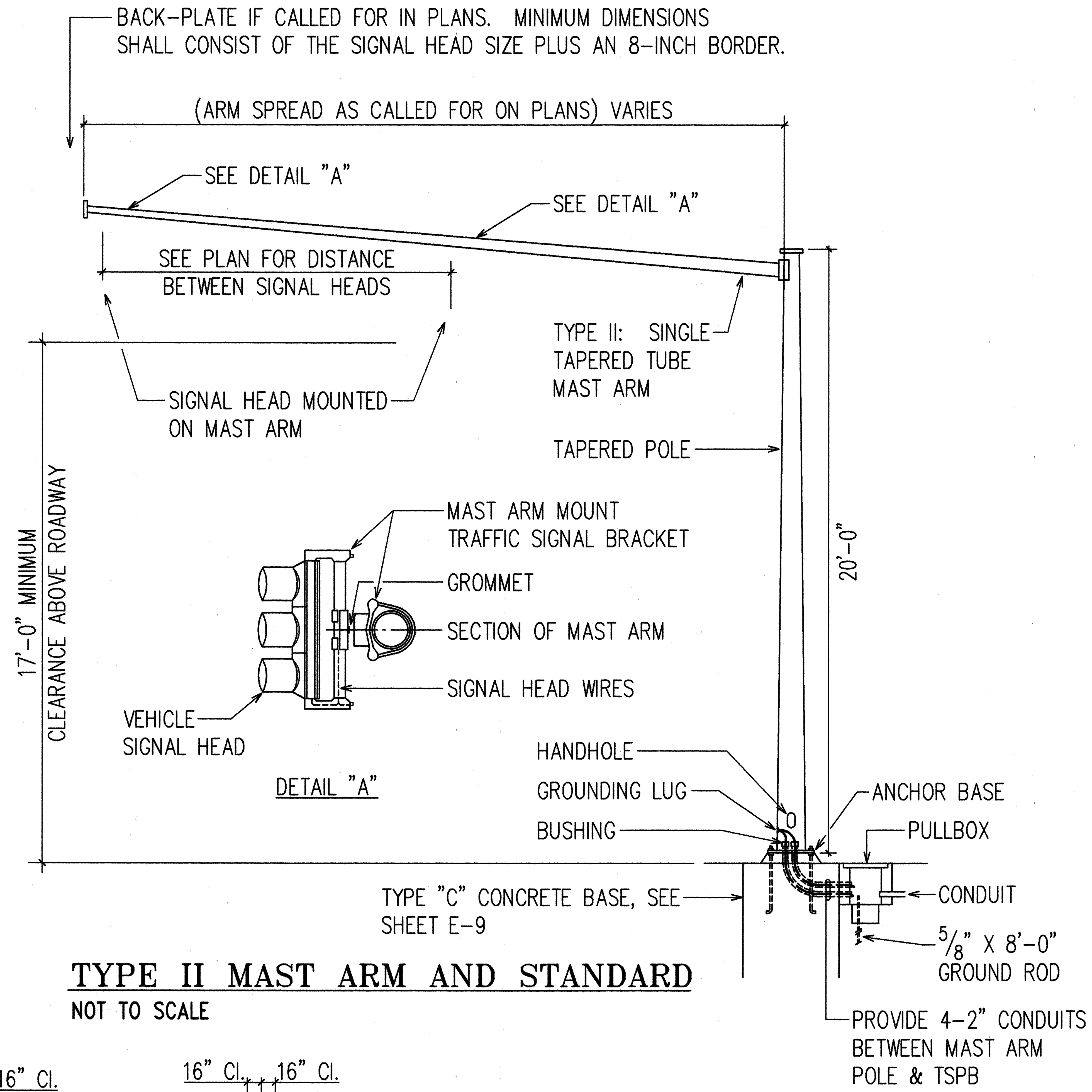
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	13	19

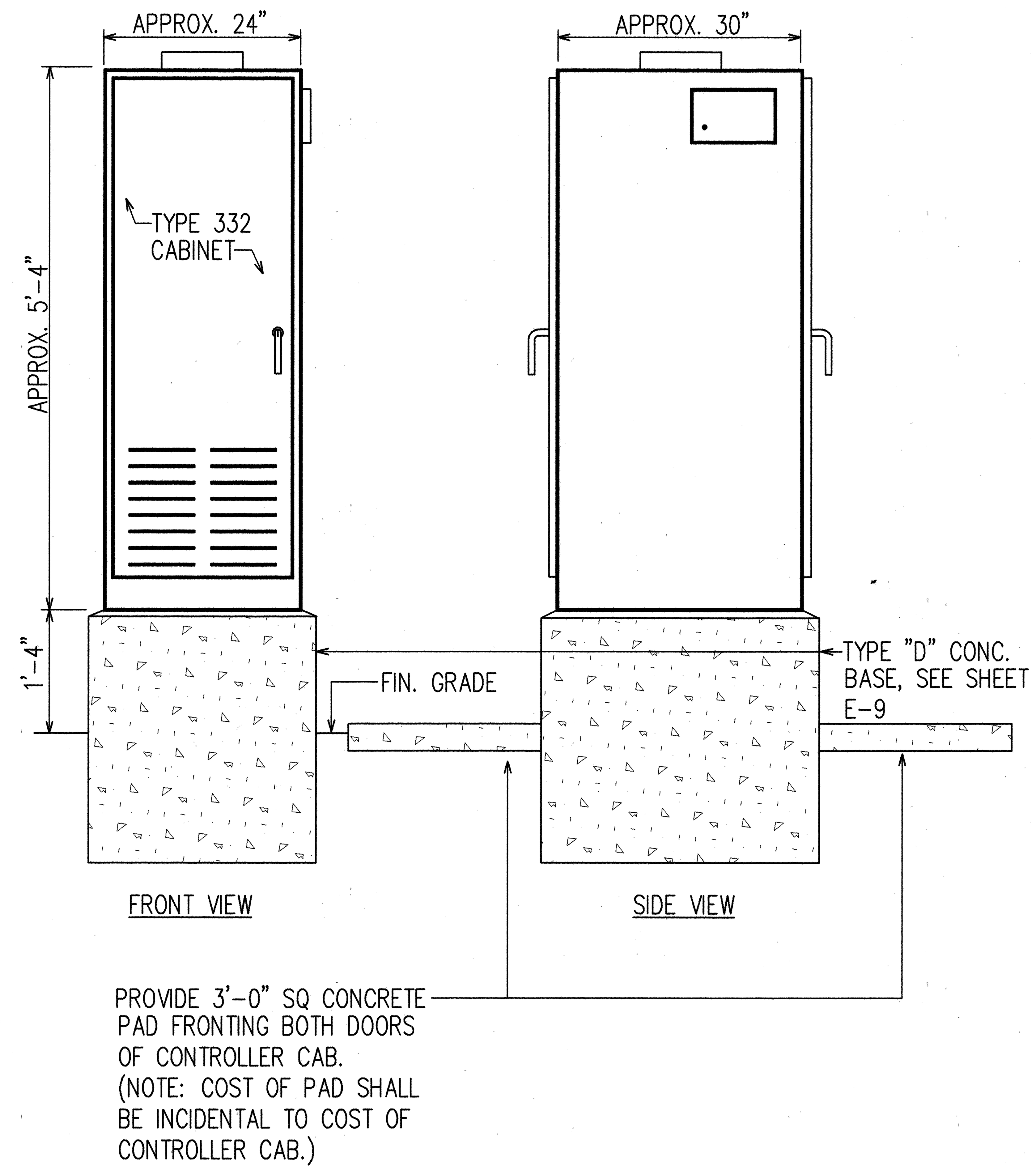


NOTE:
FOOTINGS IN SIDEWALK AREAS SHALL BE FLUSH WITH SIDEWALK.

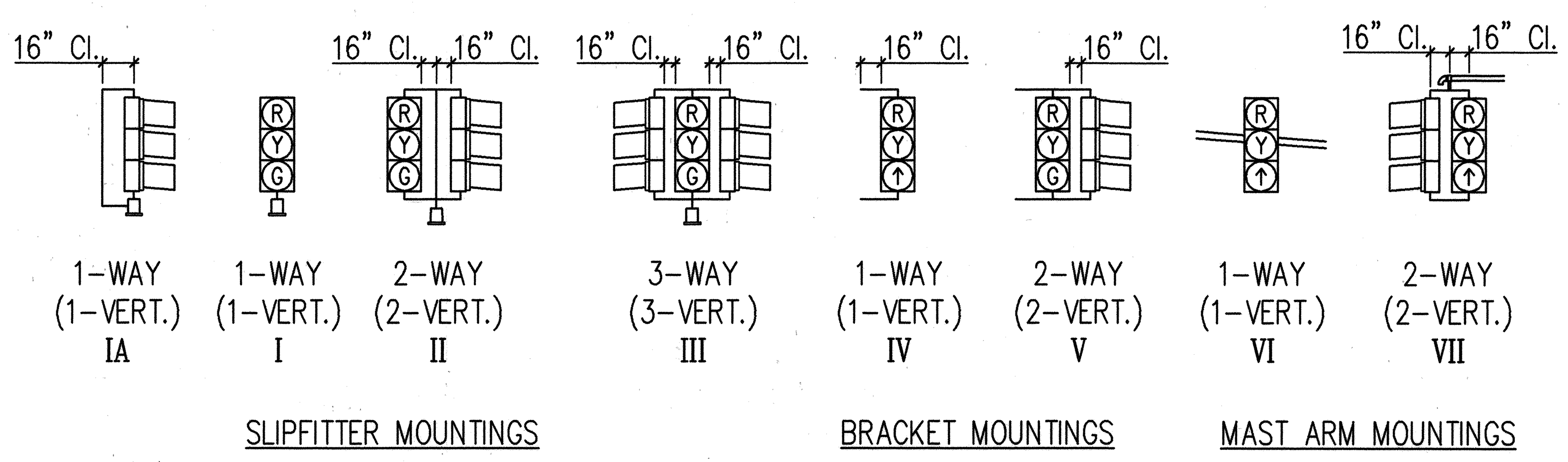
TYPE I SIGNAL STANDARD
NOT TO SCALE



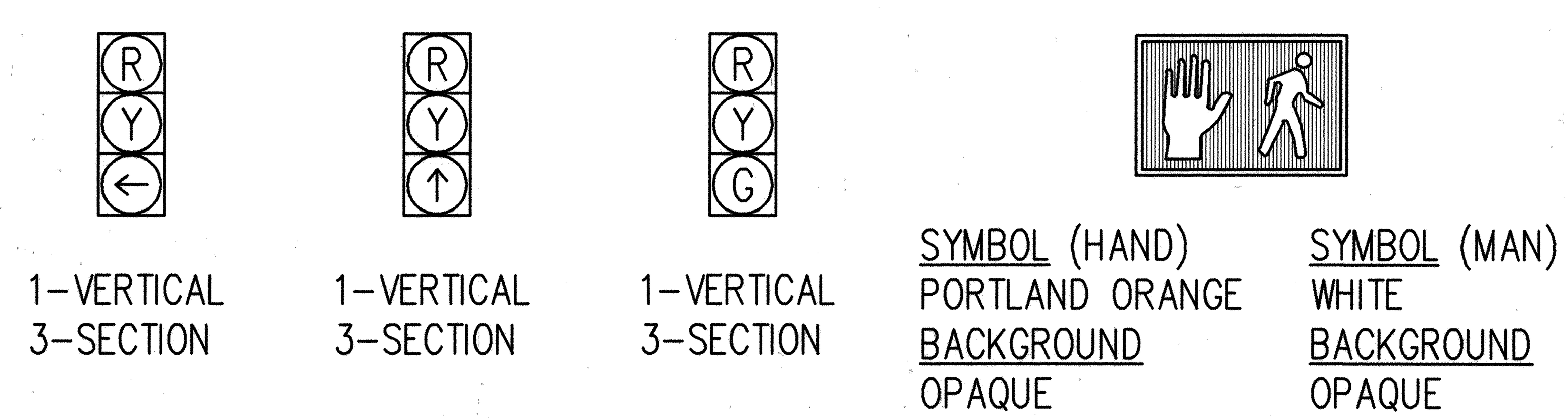
TYPE II MAST ARM AND STANDARD
NOT TO SCALE



(1/E-8) CONTROLLER CABINET - TYPE 332
NOT TO SCALE



TYPICAL VEHICULAR AND PEDESTRIAN SIGNAL MOUNTINGS



TYPICAL SIGNAL ARRANGEMENTS

ANDREW I. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 4340-E HAWAII, U.S.A.
PRINCIPAL-IN-CHARGE
Andrew I Miyasato
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

TIMOTHY S. HIGA LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Timothy S. Higa
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

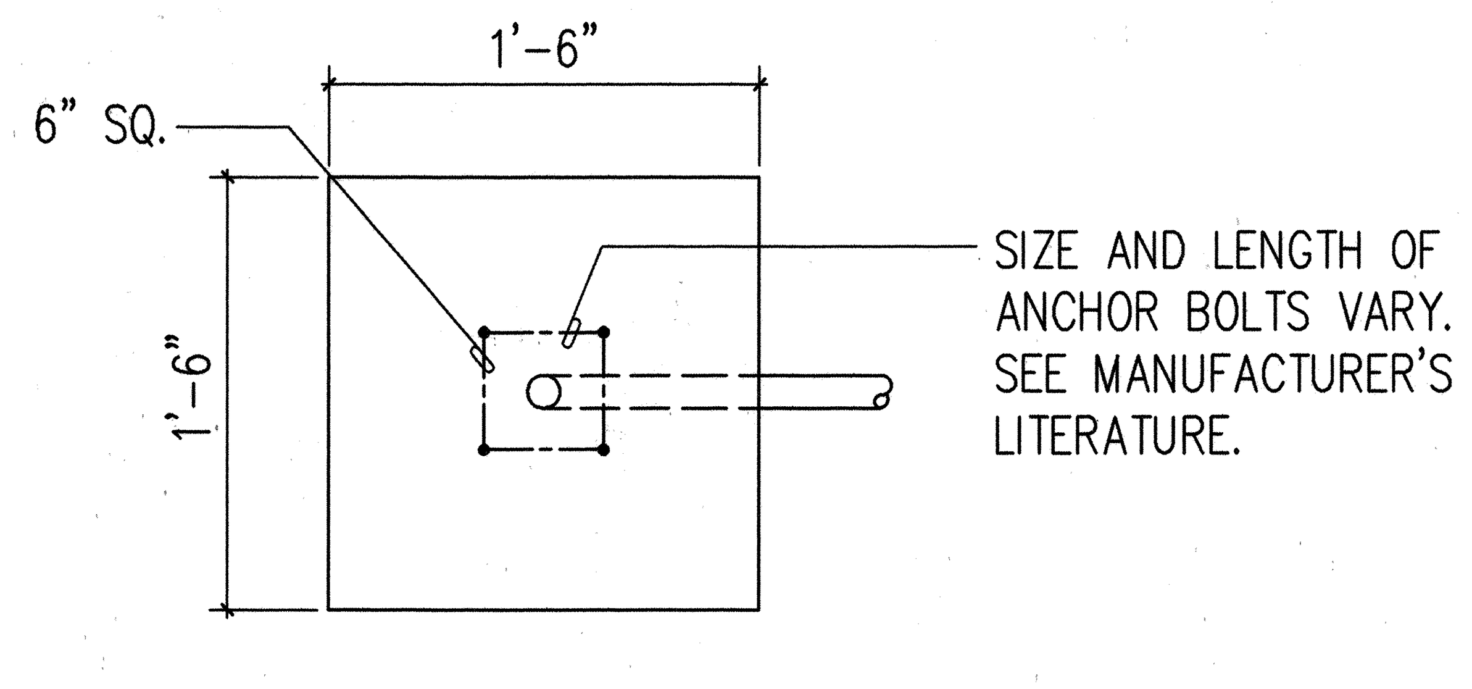
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

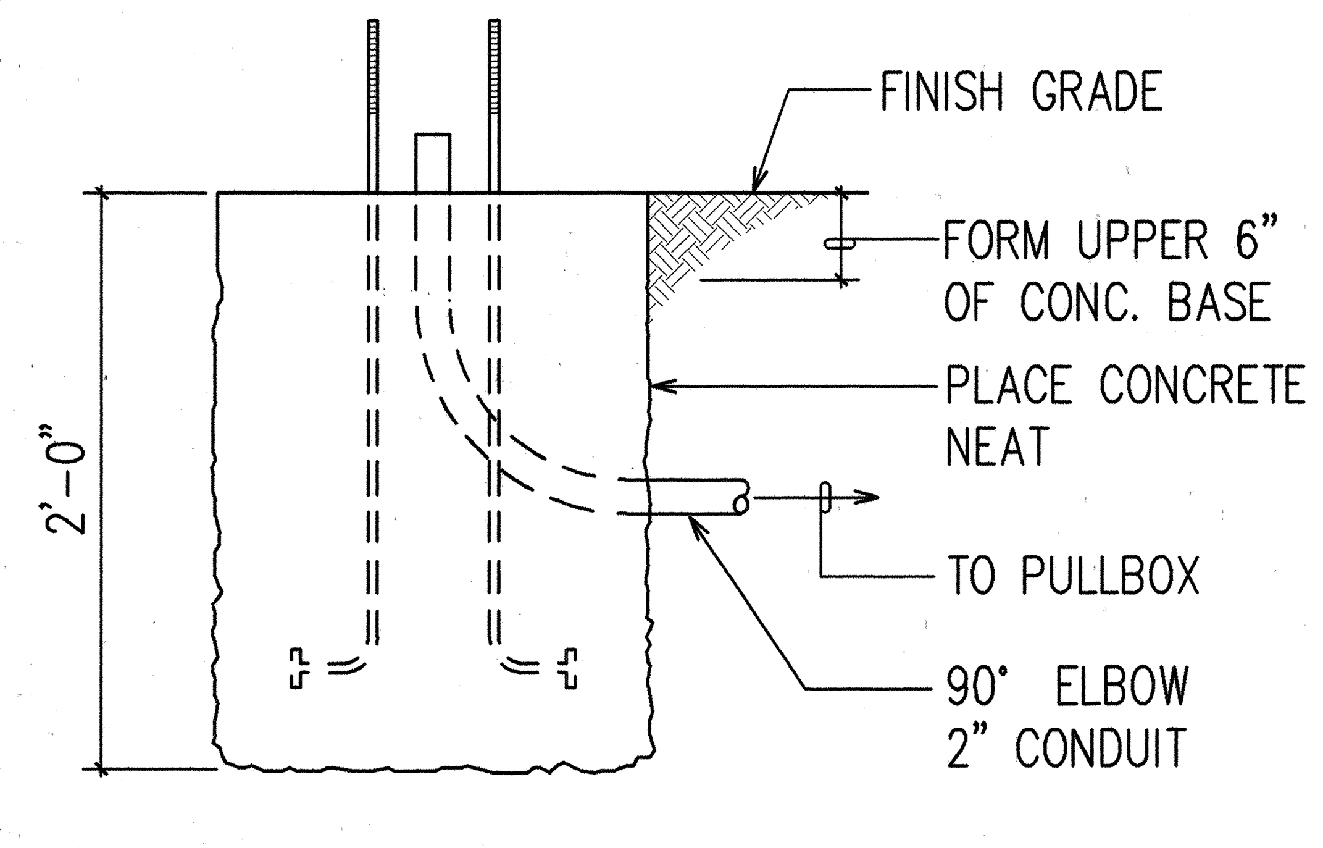
LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96
SCALE: AS NOTED DATE: FEB 1997
SHEET No. E-8 OF E-13 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY ___ DATE ___
NOTE BOOK No. ___ | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY
LAST SAVE: 02/04/97 @ 08:27:18 BY: GF2 PLOT SC 1"=0"=1'

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	14	19



PLAN



SECTION

NOTES:

1. CONCRETE SHALL BE CLASS "B".
2. TYPE "A" CONCRETE BASE SHALL BE USED FOR TYPE I-10 AND I-8 STANDARDS.
3. CONDUIT BEND IS INCIDENTAL TO CONCRETE BASE CONSTRUCTION.

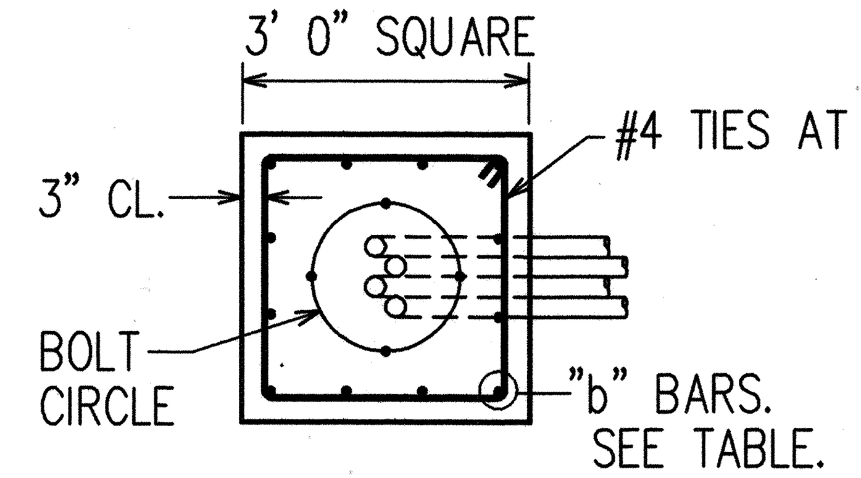
TYPE "A" CONCRETE BASE

NOT TO SCALE

TYPE "C" CONCRETE BASE		
TYPE OF STANDARD	"a"	"b" BARS
II - 18	5' - 0"	12 - #6
II - 20	5' - 6"	12 - #6
* II - 25	6' - 0"	12 - #6
II - 30	6' - 6"	12 - #8
II - 35	7' - 0"	12 - #8
* II - 40	8' - 0"	12 - #8
III - 18	5' - 6"	12 - #6
III - 20	6' - 0"	12 - #6
III - 25	6' - 6"	12 - #8
III - 30	6' - 6"	12 - #8
III - 35	7' - 0"	12 - #8
III - 40	8' - 0"	12 - #8

TYPICAL STANDARD DESIGNATION: II - 25 (TYPE: II; MAST ARM LENGTH: 25)

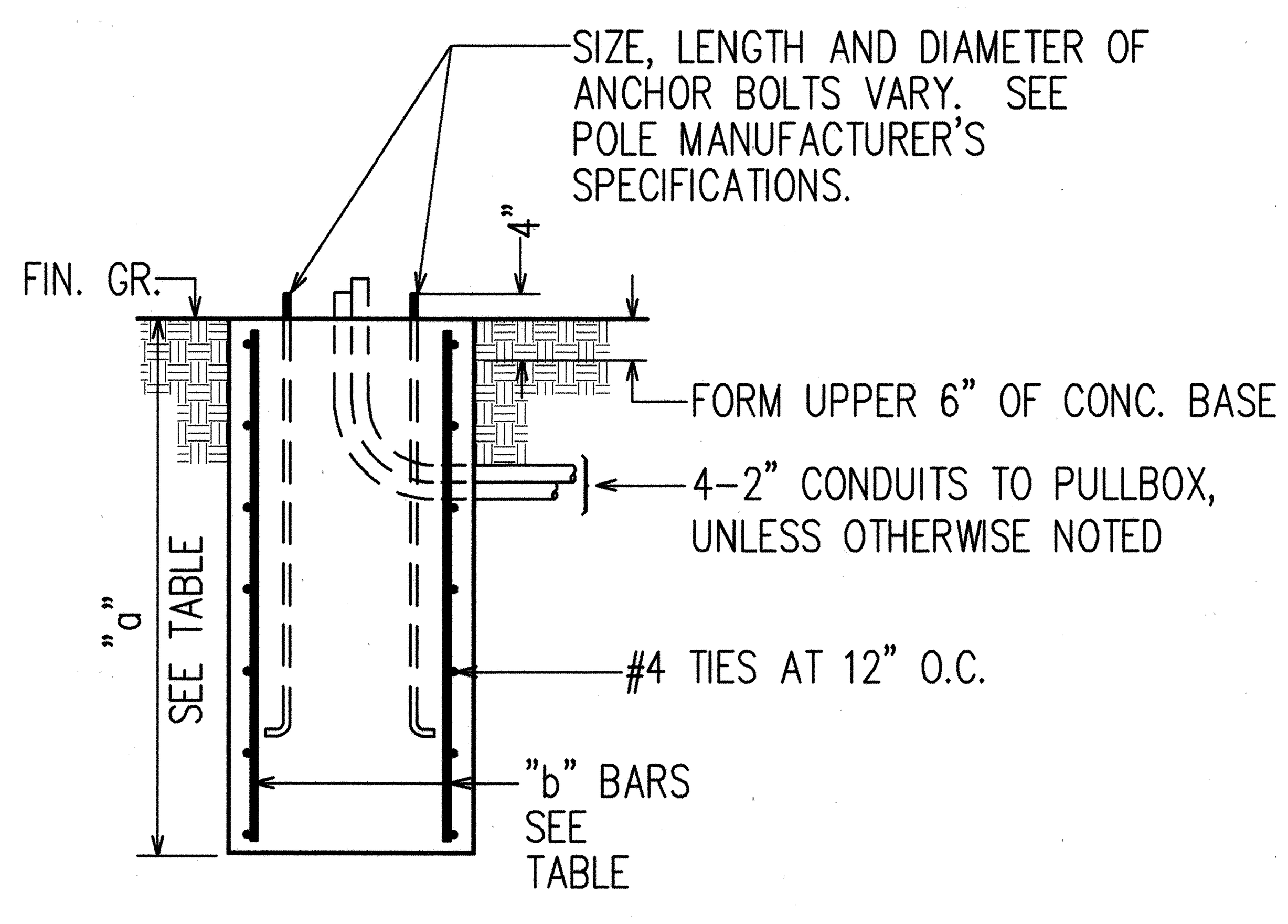
"*" DENOTES SIZE OF STANDARD APPLICABLE TO THIS PROJECT



PLAN - SECTION

NOTES:

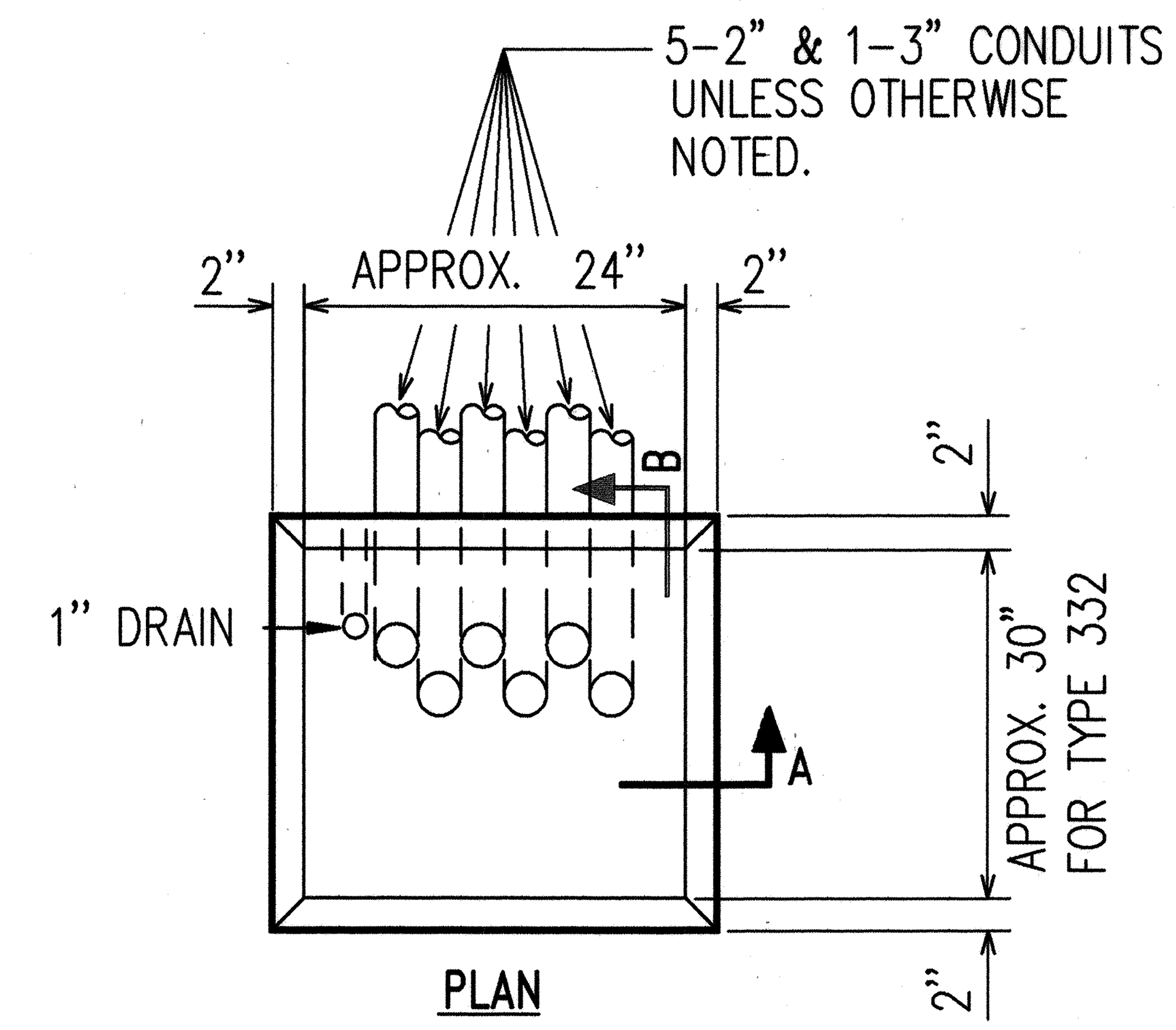
1. CONCRETE SHALL BE CLASS "B".
2. TYPE "C" CONCRETE BASE SHALL BE USED FOR TYPE II TRAFFIC SIGNAL STANDARDS.
3. DESIGN LATERAL PRESSURE: 1,500 PSF.
4. CONDUIT BEND IS INCIDENTAL TO CONCRETE BASE.



VERTICAL SECTION

TYPE "C" CONCRETE BASE

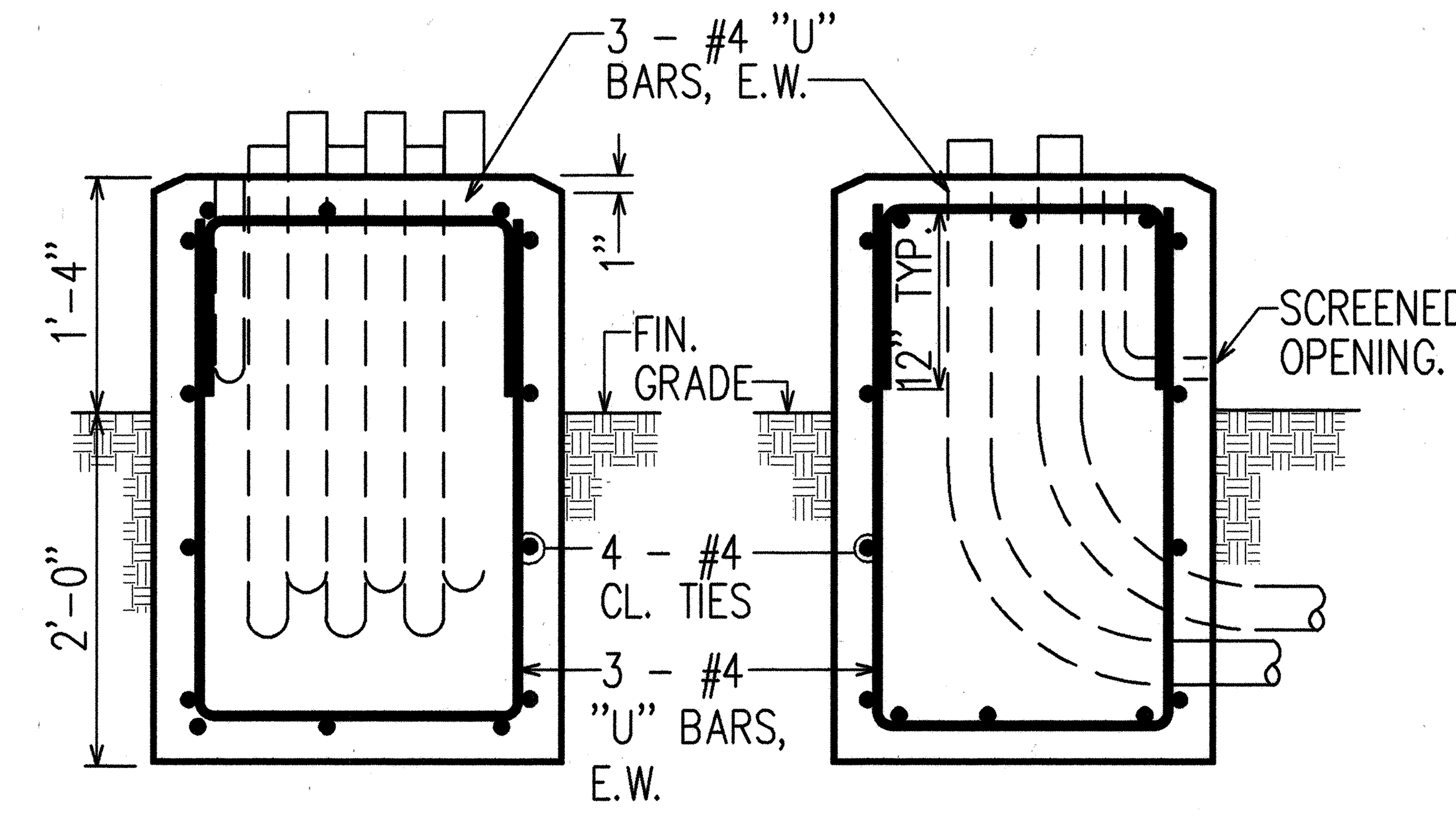
NOT TO SCALE



PLAN

NOTES:

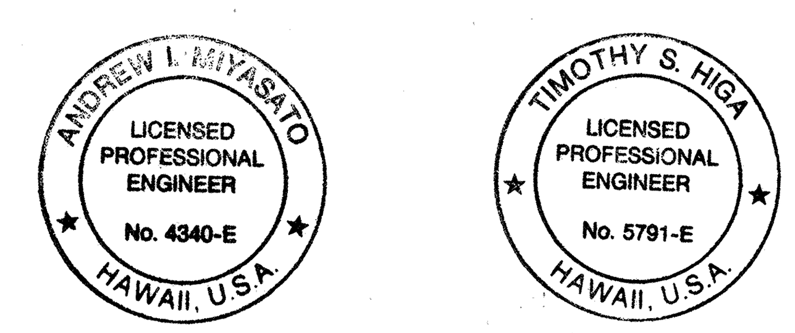
1. CONCRETE SHALL BE CLASS "B".
2. DIMENSIONS SHALL BE ALTERED TO SUIT CONTROLLER CABINET ACTUALLY FURNISHED.
3. CONDUIT BENDS AND DRAIN ARE INCIDENTAL TO CONCRETE BASE.
4. REFER TO CABINET MANUFACTURER'S SPECIFICATIONS FOR DETAILS OF ANCHOR BOLTS AND BASE SETTING.
5. ALL EXPOSED SURFACES OF CONCRETE BASE SHALL BE GIVEN A CLASS 2, RUBBED FINISH.



SECTION "A" SECTION "B"

TYPE "D" CONC. BASE FOR CONTROLLER CABINET

NOT TO SCALE



PRINCIPAL-IN-CHARGE
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

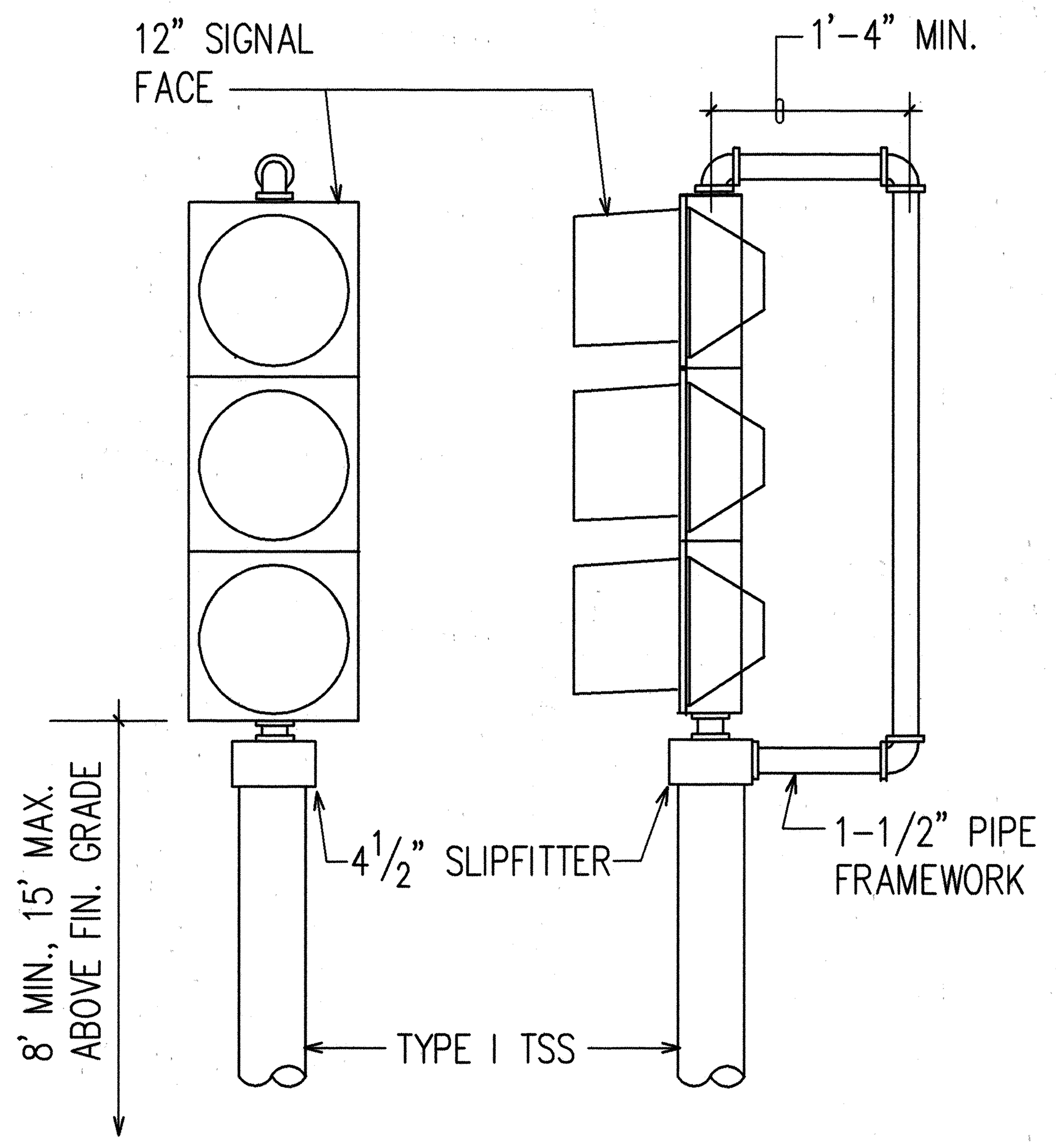
LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96

SCALE: AS NOTED DATE: FEB 1997

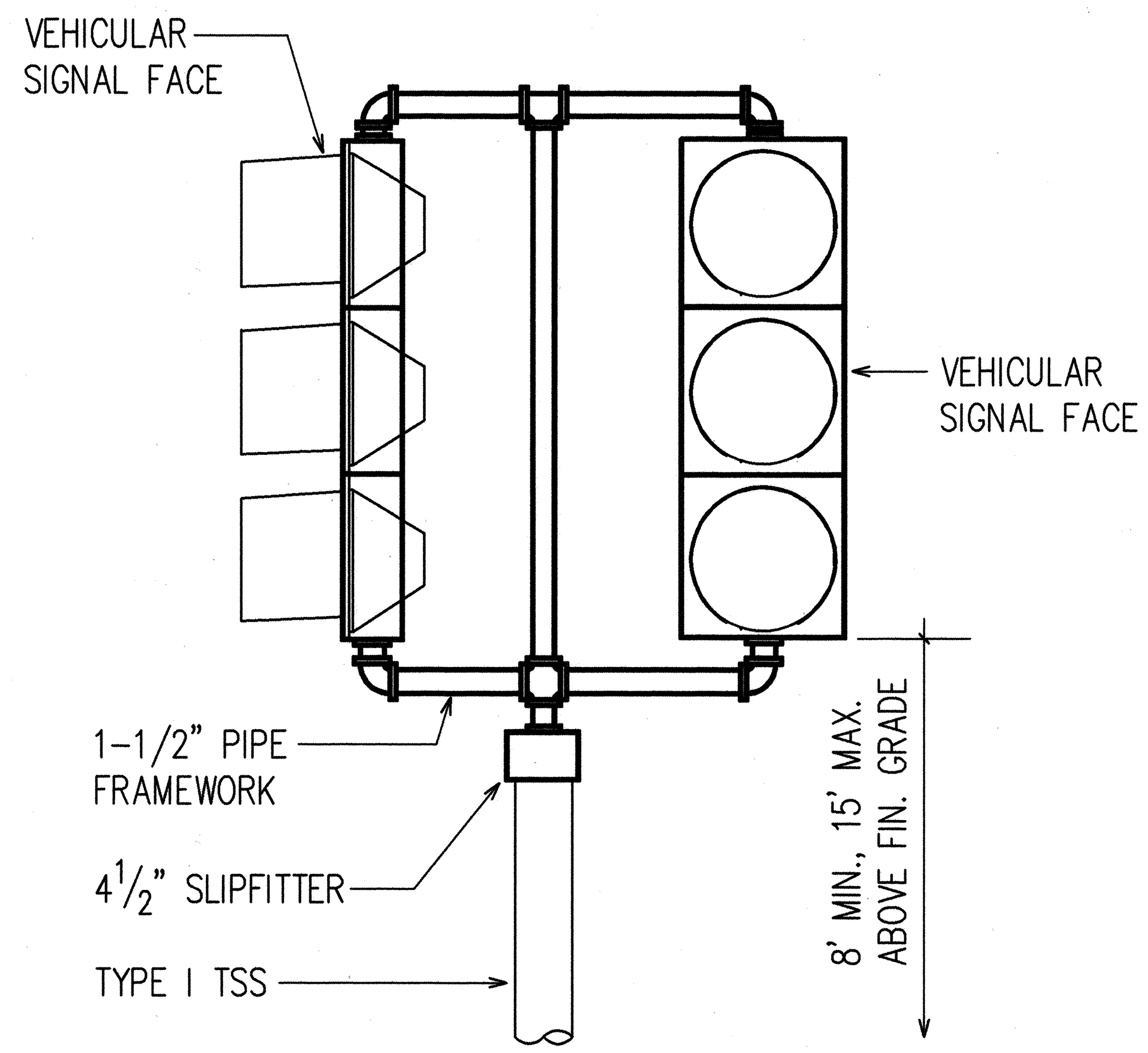
SHEET No. E-9 OF E-13 SHEETS

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

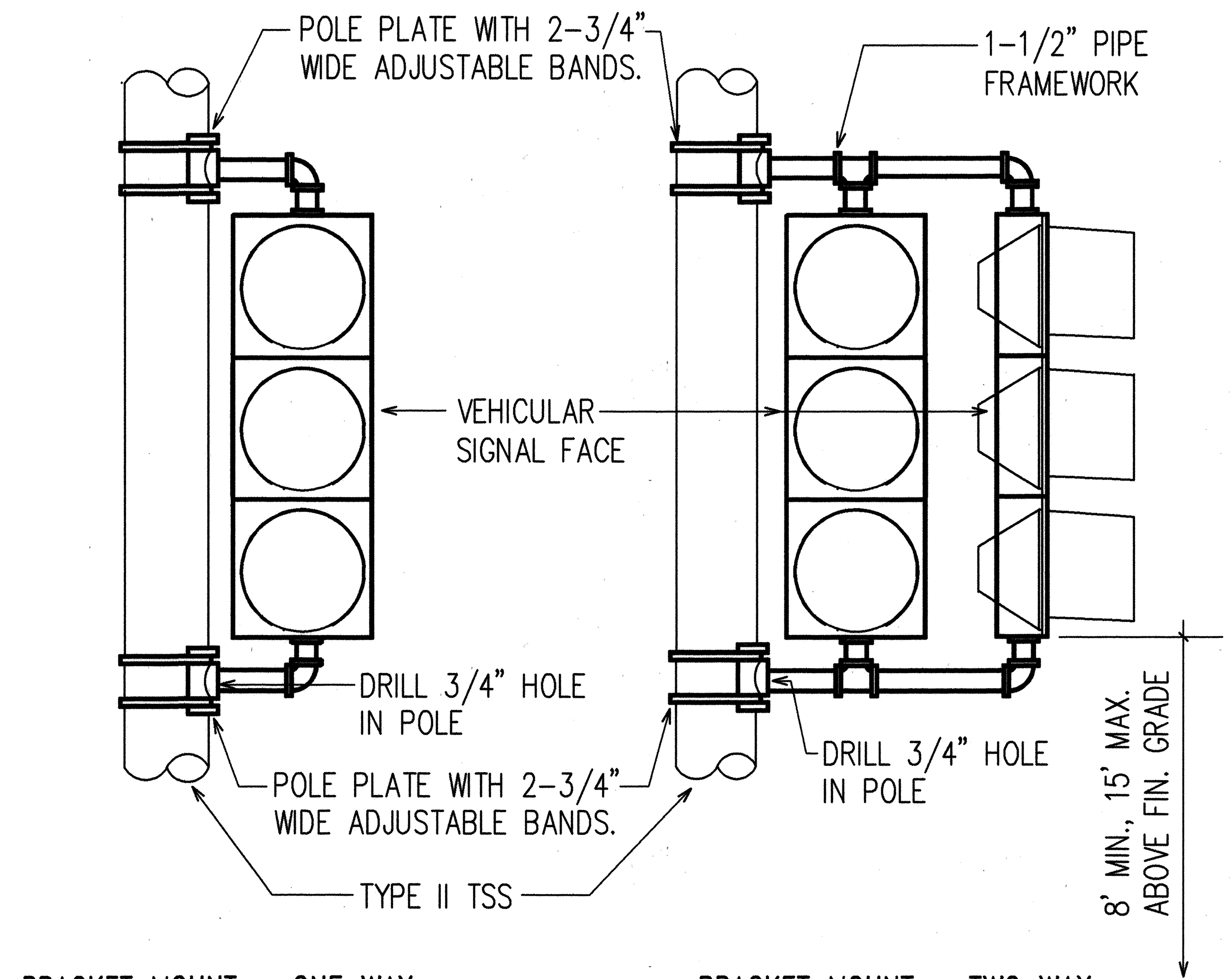
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	15	19



TOP OF POLE - ONE WAY MOUNTING



TOP OF POLE - TWO WAY MOUNTING

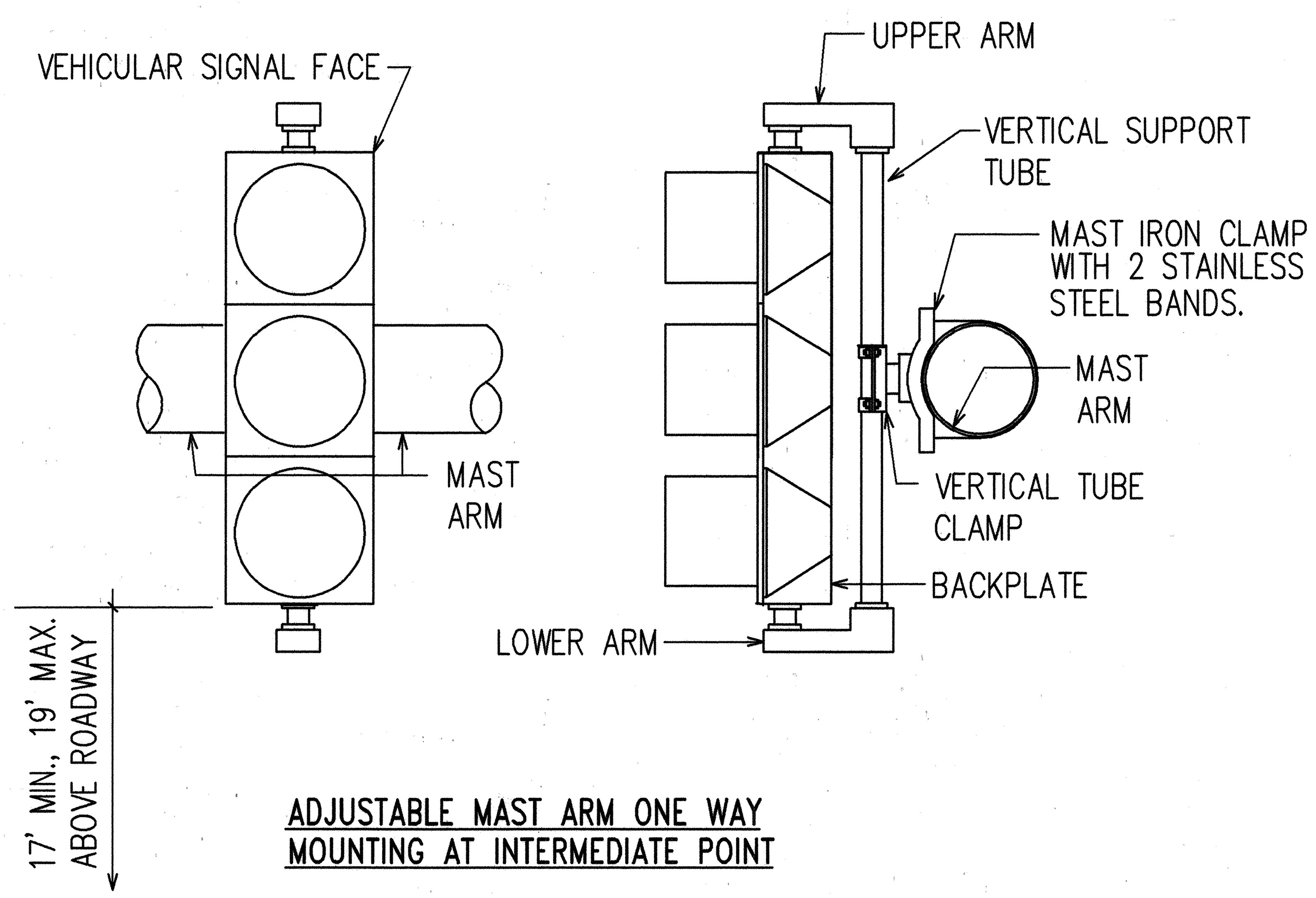


BRACKET MOUNT - ONE WAY

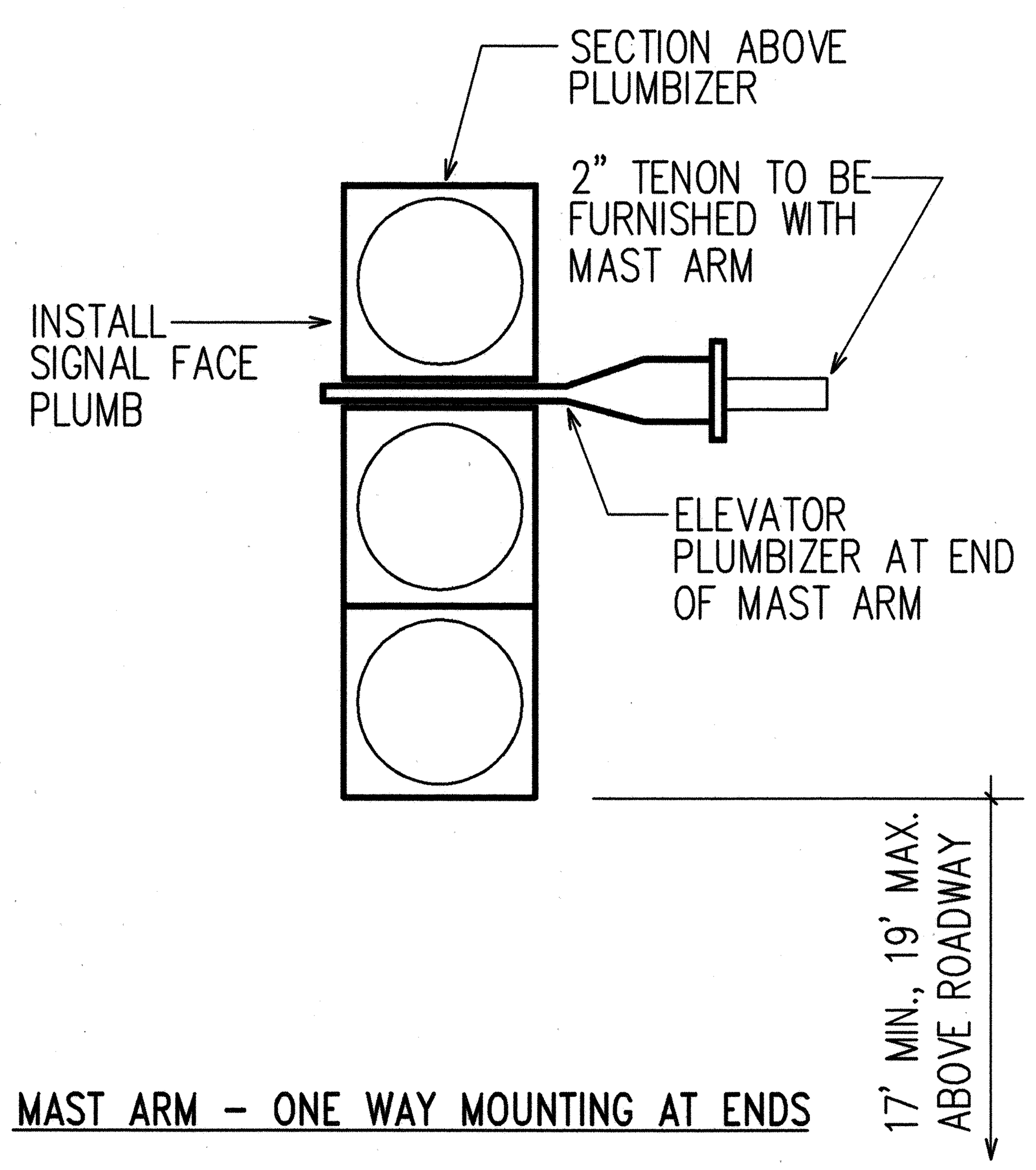
BRACKET MOUNT - TWO WAY

NOTES:

1. STAINLESS STEEL BANDS SHALL BE 1/2" WIDE X .050" THICK, MINIMUM. TENSILE STRENGTH SHALL BE 100,000 PSI MINIMUM.
2. UPPER ARM, LOWER ARM AND VERTICAL SUPPORT TUBE SHALL BE OF 356 CAST ALUMINUM.
3. ALL WIRING SHALL BE CONCEALED.
4. VERTICAL TUBE CLAMP SHALL BE OF MALLEABLE IRON, GRADE 32510.
5. ALL ALUMINUM PARTS SHALL HAVE AN ALODINE 1200 FINISH.
6. SIGNAL AS NOTED ON PLANS.
7. MAINTAIN 16" MIN. CLEARANCE AT REAR OF ALL PROGRAMMED FACES.



ADJUSTABLE MAST ARM ONE WAY MOUNTING AT INTERMEDIATE POINT



MAST ARM - ONE WAY MOUNTING AT ENDS

VEHICULAR SIGNAL MOUNTING DETAILS

NOT TO SCALE

ANDREW I. MIYASATO, LICENSED PROFESSIONAL ENGINEER, No. 4340-E, HAWAII, U.S.A.

PRINCIPAL-IN-CHARGE
Andrew I. Miyasato
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

TIMOTHY S. HIGA, LICENSED PROFESSIONAL ENGINEER, No. 5791-E, HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Timothy S. Higa
RONALD N.S. HO & ASSOCIATES, INC.
2/6/97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96

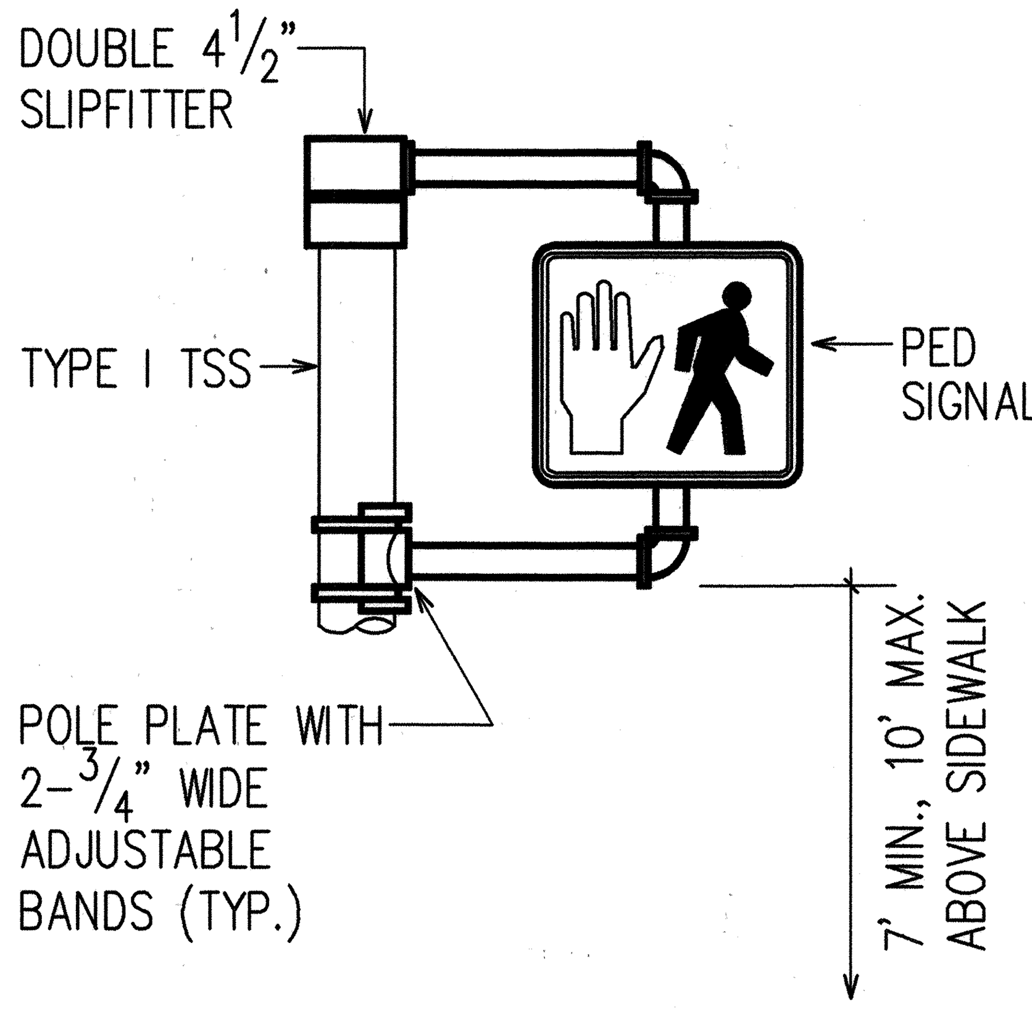
SCALE: AS NOTED   DATE: FEB 1997

SHEET No. E-10 OF E-13 SHEETS

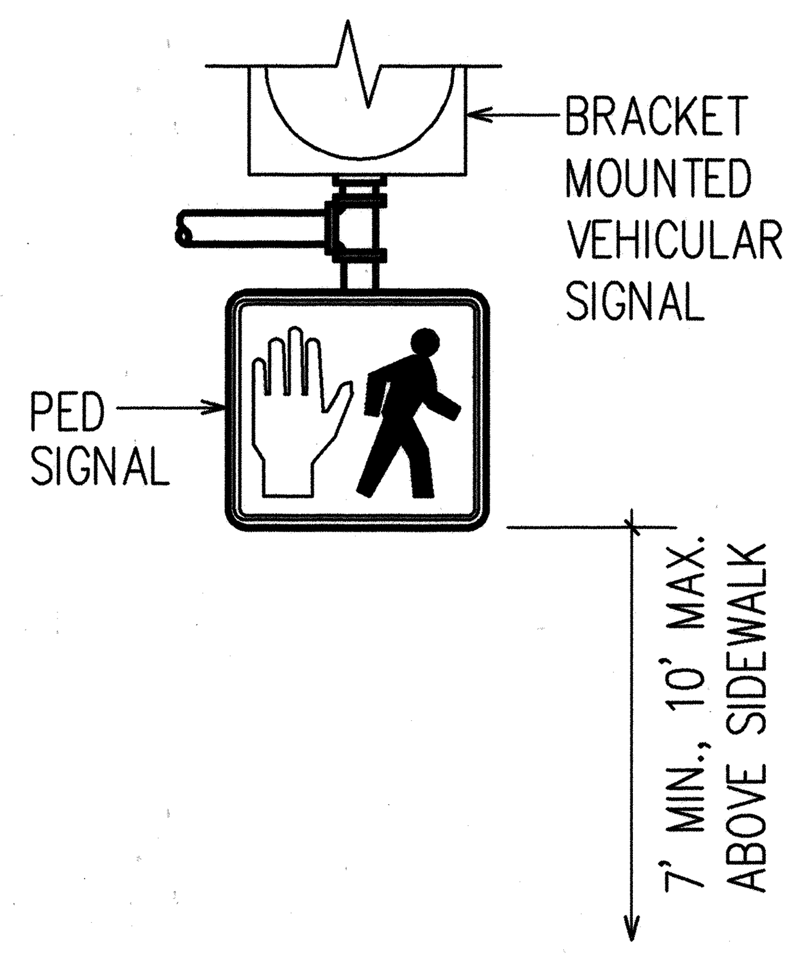
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

LAST SAVE: 02/03/97 @ 15:01:39 BY: GF2 PLOT SC 1"=0'=1"
G:\ACAD\PROJECTS\96039\TSHEAD

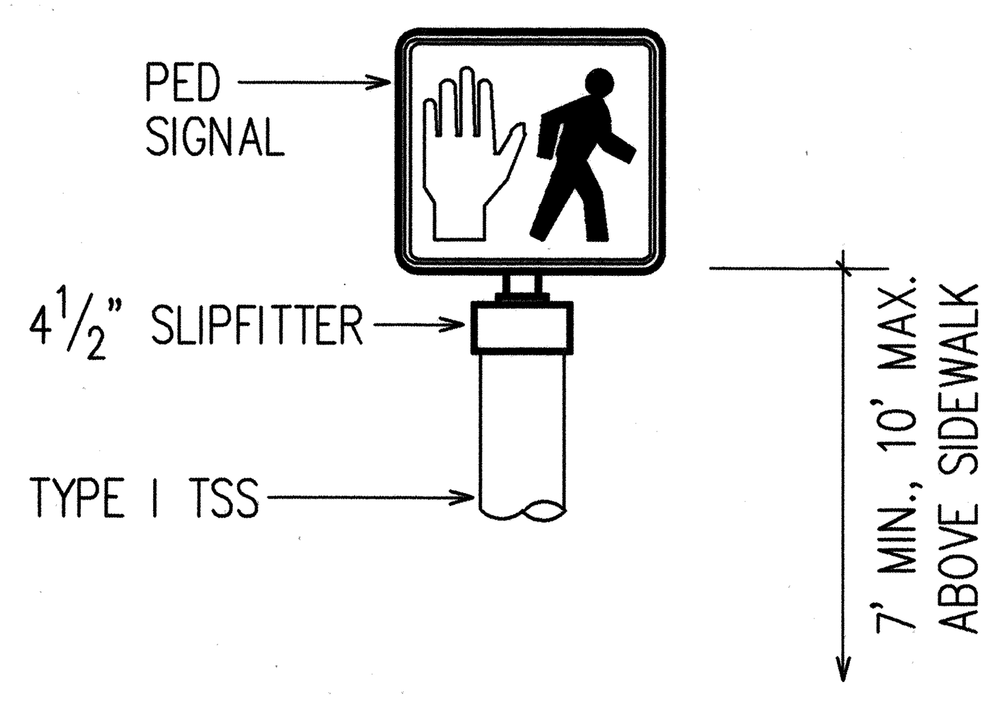
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	16	19



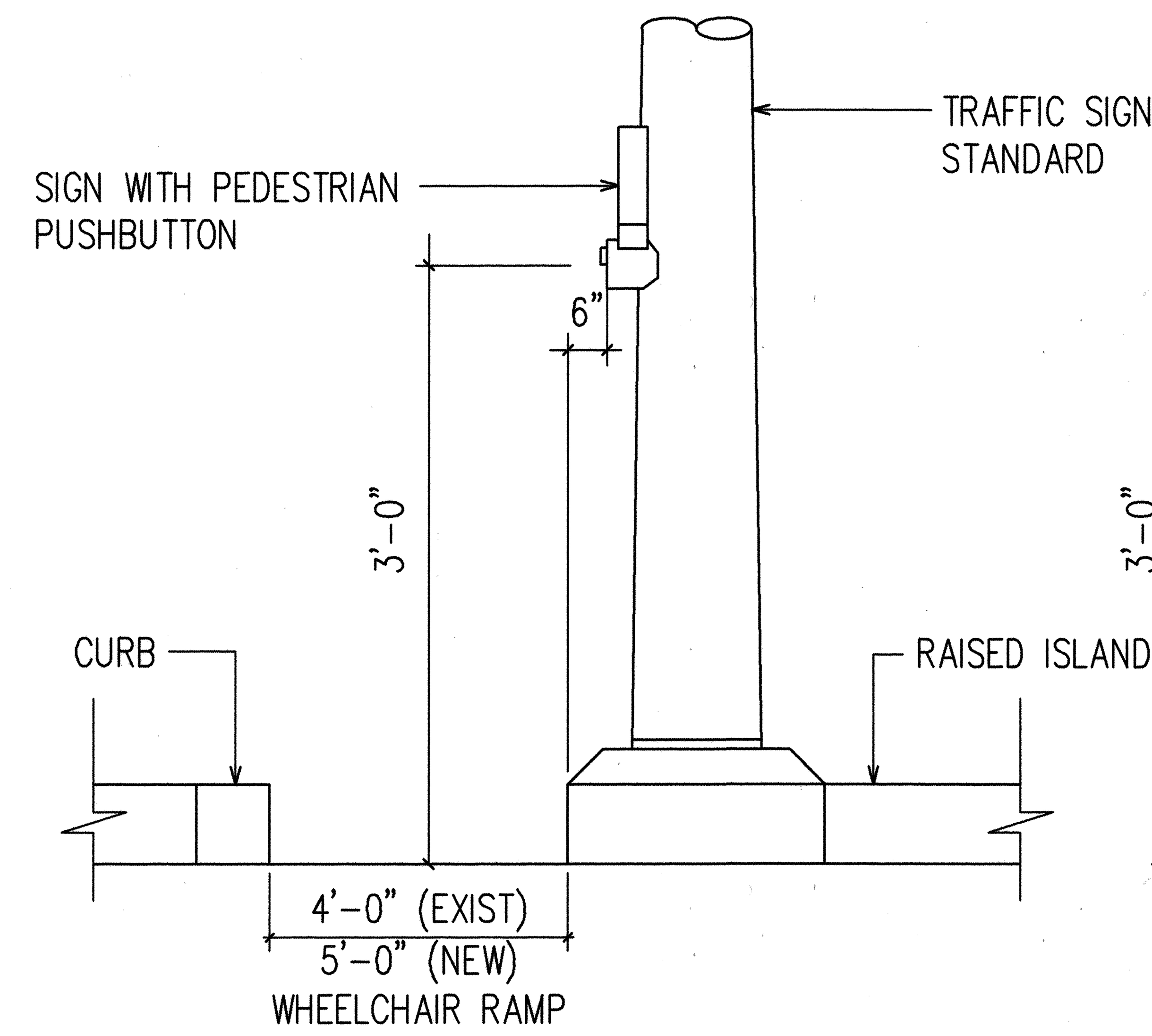
CANTILEVER - ONE WAY



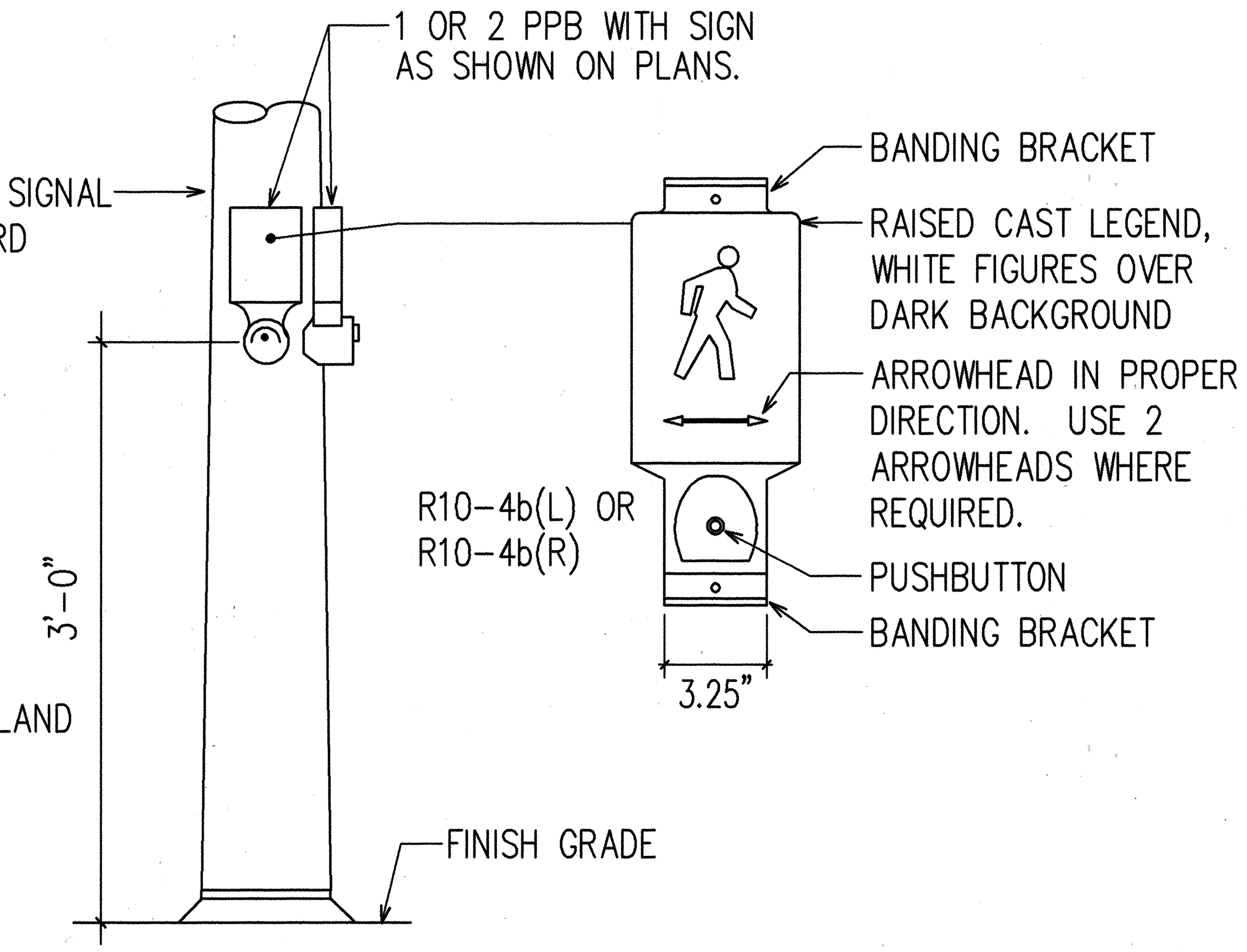
UNDERSLUNG - ONE WAY



TOP OF POLE - ONE WAY



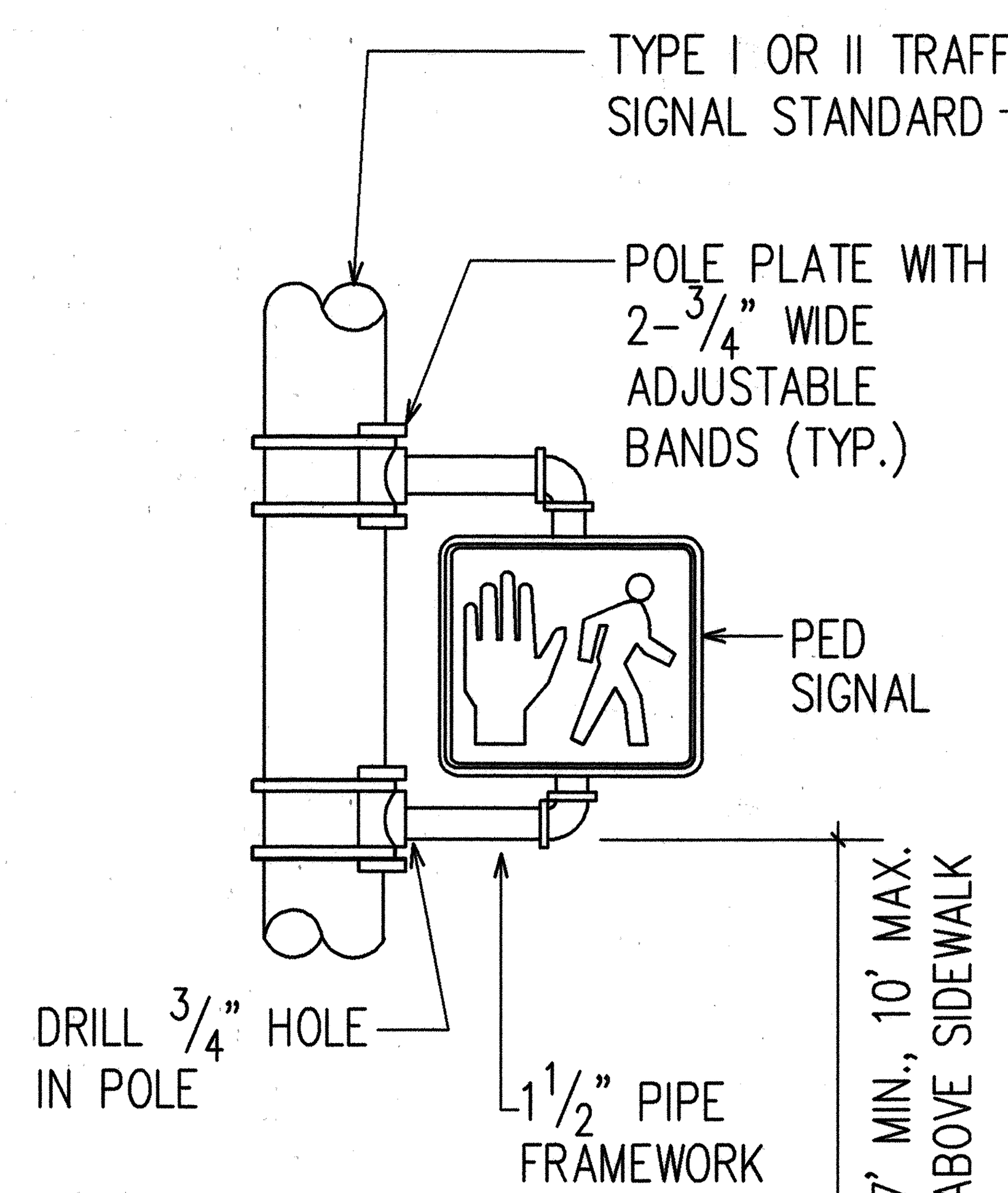
AT RAISED CONCRETE ISLAND



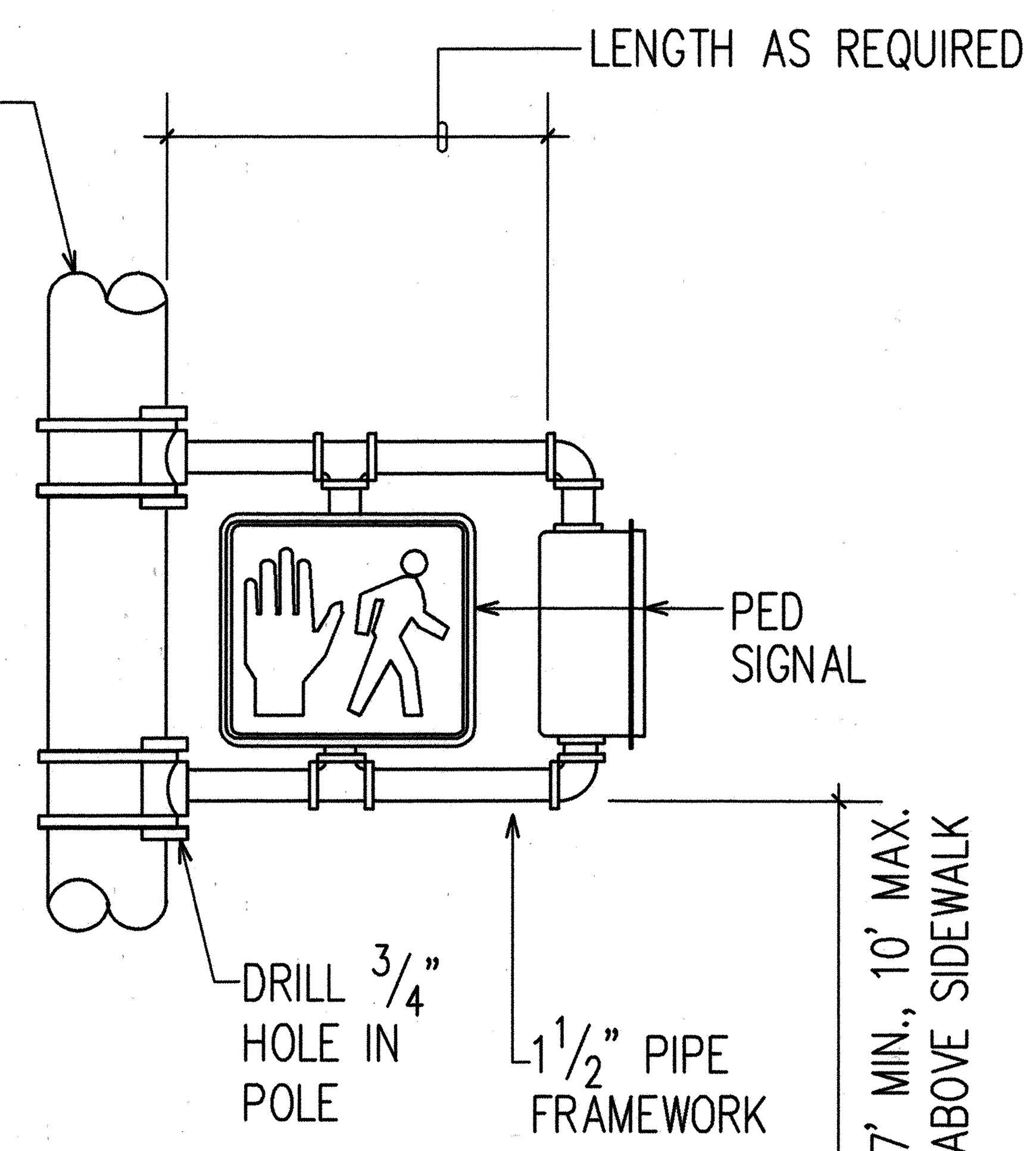
AT SHOULDER

PEDESTRIAN PUSHBUTTON DETAILS

NOT TO SCALE



BRACKET MOUNT - ONE WAY



BRACKET MOUNT - TWO WAY

NOTES:

1. STAINLESS STEEL BANDS SHALL BE 1/2" WIDE X .050" THICK, MINIMUM. TENSILE STRENGTH SHALL BE 100,000 PSI MINIMUM.
2. UPPER ARM, LOWER ARM AND VERTICAL SUPPORT TUBE SHALL BE OF 356 CAST ALUMINUM.
3. ALL WIRING SHALL BE CONCEALED.
4. VERTICAL TUBE CLAMP SHALL BE OF MALLEABLE IRON, GRADE 32510.
5. ALL ALUMINUM PARTS SHALL HAVE AN ALODINE 1200 FINISH.
6. SIGNAL AS NOTED ON PLANS.
7. MAINTAIN 16" MIN. CLEARANCE AT REAR OF ALL PROGRAMMED FACES.

PEDESTRIAN SIGNAL MOUNTING DETAILS

NOT TO SCALE

ANDREW I. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 4340-E HAWAII, U.S.A.

PRINCIPAL-IN-CHARGE

RONALD N.S. HO & ASSOCIATES, INC.

2/6/97

TIMOTHY S. HIGA LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

RONALD N.S. HO & ASSOCIATES, INC.

2/6/97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

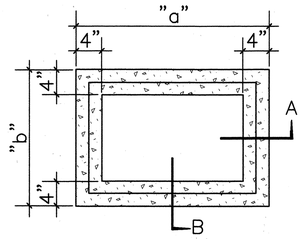
TRAFFIC SIGNAL DETAILS

LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96

SCALE: AS NOTED DATE: FEB 1997

SHEET No. E-11 OF E-13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	17	19

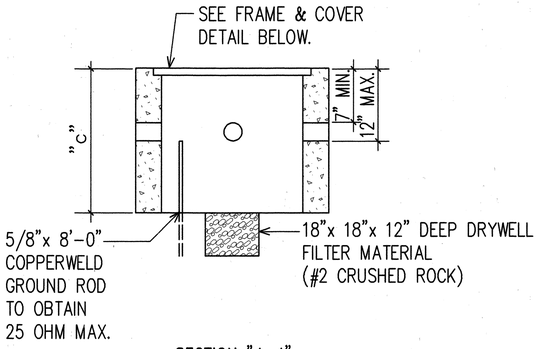


PLAN OF PULLBOX

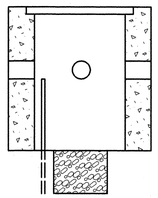
NOTES:

1. CONCRETE BRICKS MAY BE USED IN LIEU OF CONCRETE UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS ARE IN INCHES.
3. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
4. PROVIDE GROUND ROD IN ALL PULLBOXES ADJACENT TO STANDARDS, PEDESTALS, CONTROLLERS AND OTHER SPECIFIED LOCATIONS.

	TYPE "B"	TYPE "C"
"a"	28	40
"b"	19	28
"c"	18	24



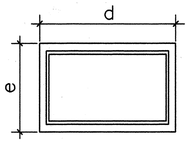
SECTION "A-A"



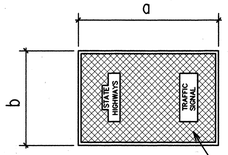
SECTION "B-B"

	TYPE "B"	TYPE "C"
a	$19\frac{3}{4}$	30
b	12	20
c	$\frac{1}{2}$	$\frac{5}{8}$
d	$22\frac{1}{2}$	$33\frac{3}{16}$
e	$14\frac{3}{4}$	$23\frac{3}{16}$
f	1	2
g	$1\frac{1}{4}$	$1\frac{1}{2}$
h	$\frac{1}{2}$	$1\frac{3}{8}$

NOTE: STEEL RIM SHALL BE WELDED TO BOTTOM OF STEEL COVER IF NECESSARY SO THAT TOP OF COVER AND FRAME ARE FLUSH.

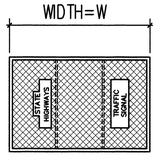


PLAN OF FRAME

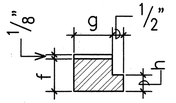


CAST IRON OR $\frac{3}{8}$" ROLLED STEEL PLATE WITH NON-SLIP ABRASIVE SURFACING

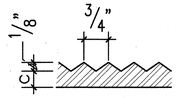
PLAN OF COVER



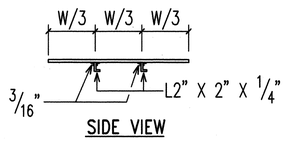
TOP VIEW



SECTION THROUGH FRAME



SECTION THRU COVER

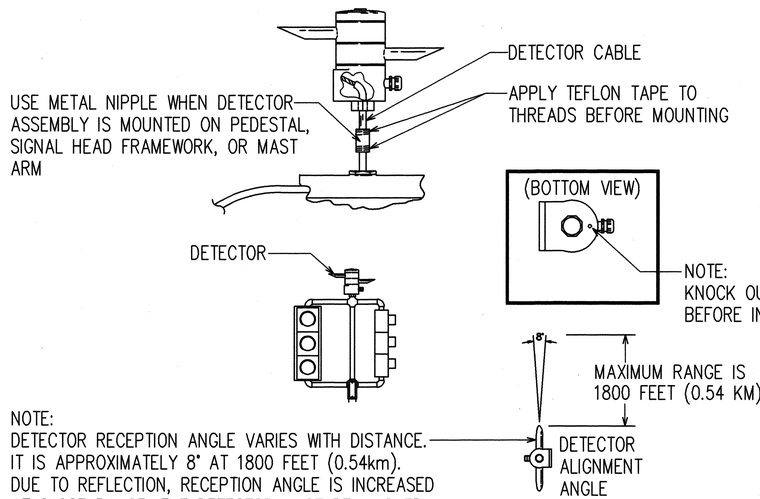


SIDE VIEW

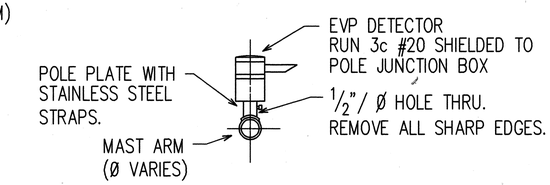
NOTE: HOT DIP GALVANIZE AFTER FABRICATION. MODIFIED COVER SHALL BE FURNISHED WHEN CALLED FOR ON PLANS.

TRAFFIC SIGNAL PULLBOX DETAILS
NOT TO SCALE

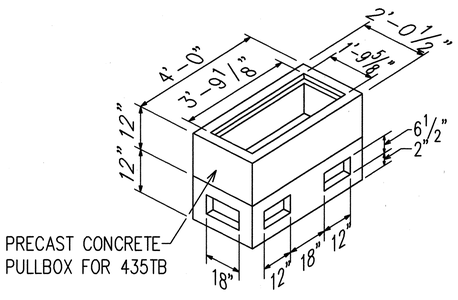
MODIFIED COVER DETAIL
NOT TO SCALE



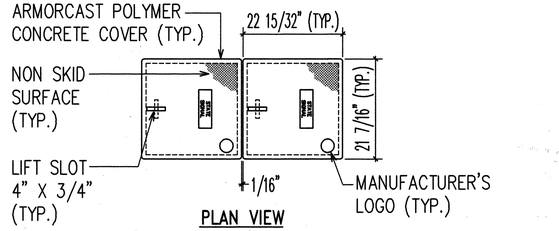
TYPICAL PEDESTAL/MAST ARM INSTALLATION OF EVP DETECTOR
NOT TO SCALE



EVP DETECTOR HORIZONTAL MOUNTING DETAIL
NOT TO SCALE



PULLBOX



COVER

NOTES:

1. PROVIDE ARMORCAST POLYMER CONCRETE COVER.
2. INSTALL ON 6" BED OF #3 CRUSHED ROCK.
3. PROVIDE SUFFICIENT AMOUNT OF 5/8"ø X 8' COPPERWELD GROUND RODS AS DIRECTED BY THE TRAFFIC SIGNAL INSPECTOR/ENGINEER. COST SHALL BE INCIDENTAL TO THE VARIOUS TRAFFIC SIGNAL ITEMS.

TYPE "D" PULLBOX & COVER
NOT TO SCALE

ANDREW I. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 4340-E HAWAII, U.S.A.

PRINCIPAL-IN-CHARGE
RONALD N.S. HO & ASSOCIATES, INC.
3/6/97

TIMOTHY S. HIGA LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
RONALD N.S. HO & ASSOCIATES, INC.
3/6/97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96

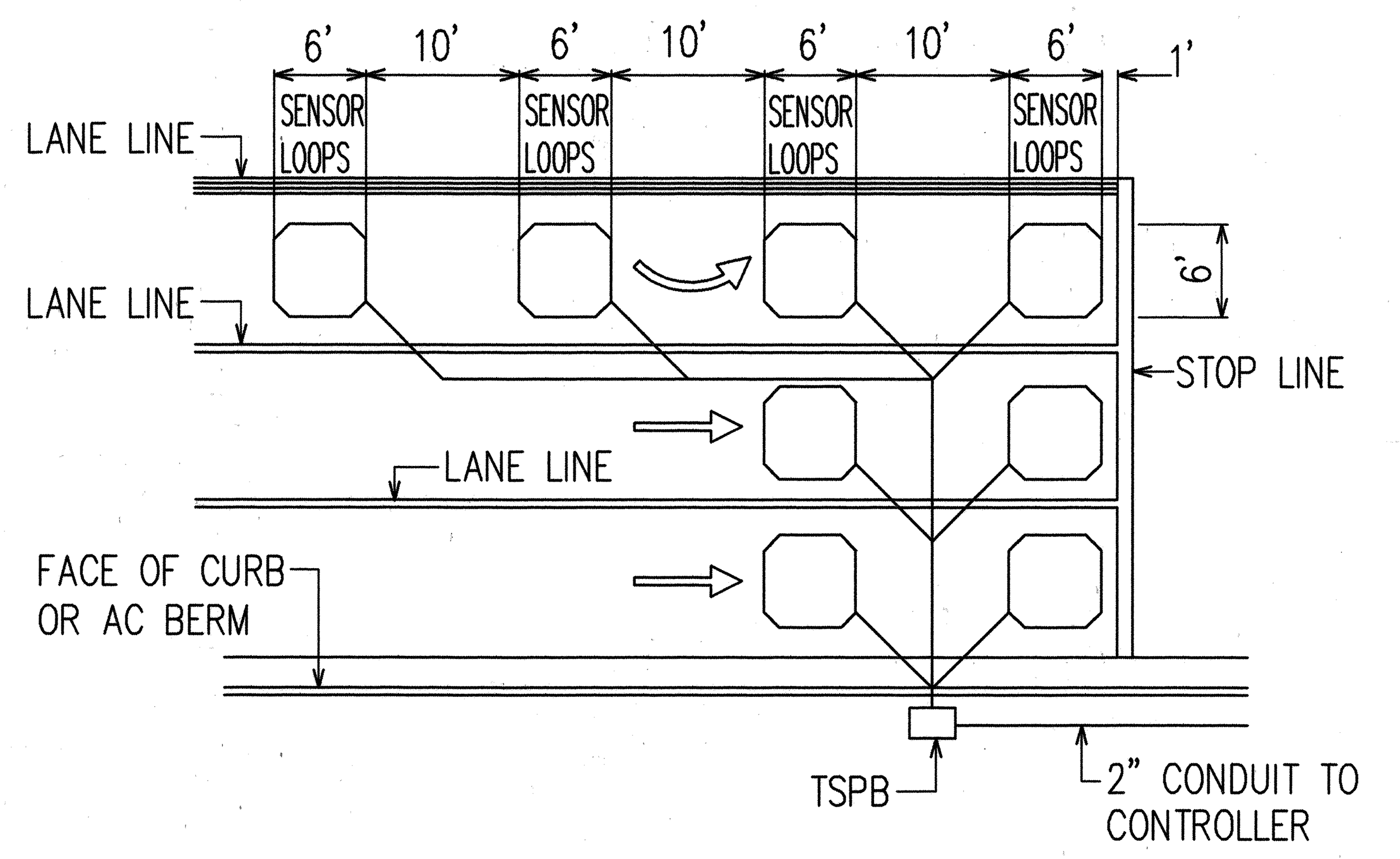
SCALE: AS NOTED DATE: FEB 1997

SHEET No. E-12 OF E-13 SHEETS

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

LAST SAVED 03/06/97 @ 10:58:18 BY 92 PLOT SC 1-0"=1'
LAST PLOTTED 03/06/97 @ 10:58:18 BY 92 PLOT SC 1-0"=1'

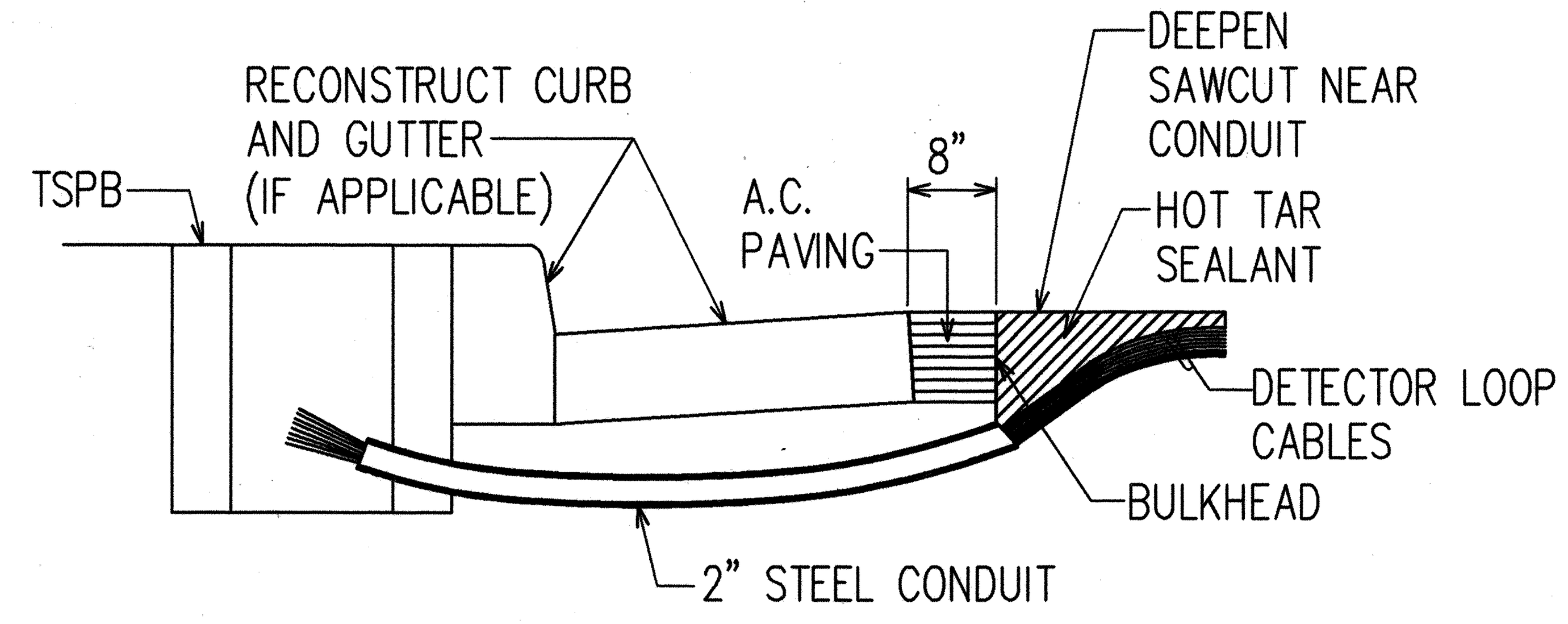
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-02-96	1997	18	19



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.

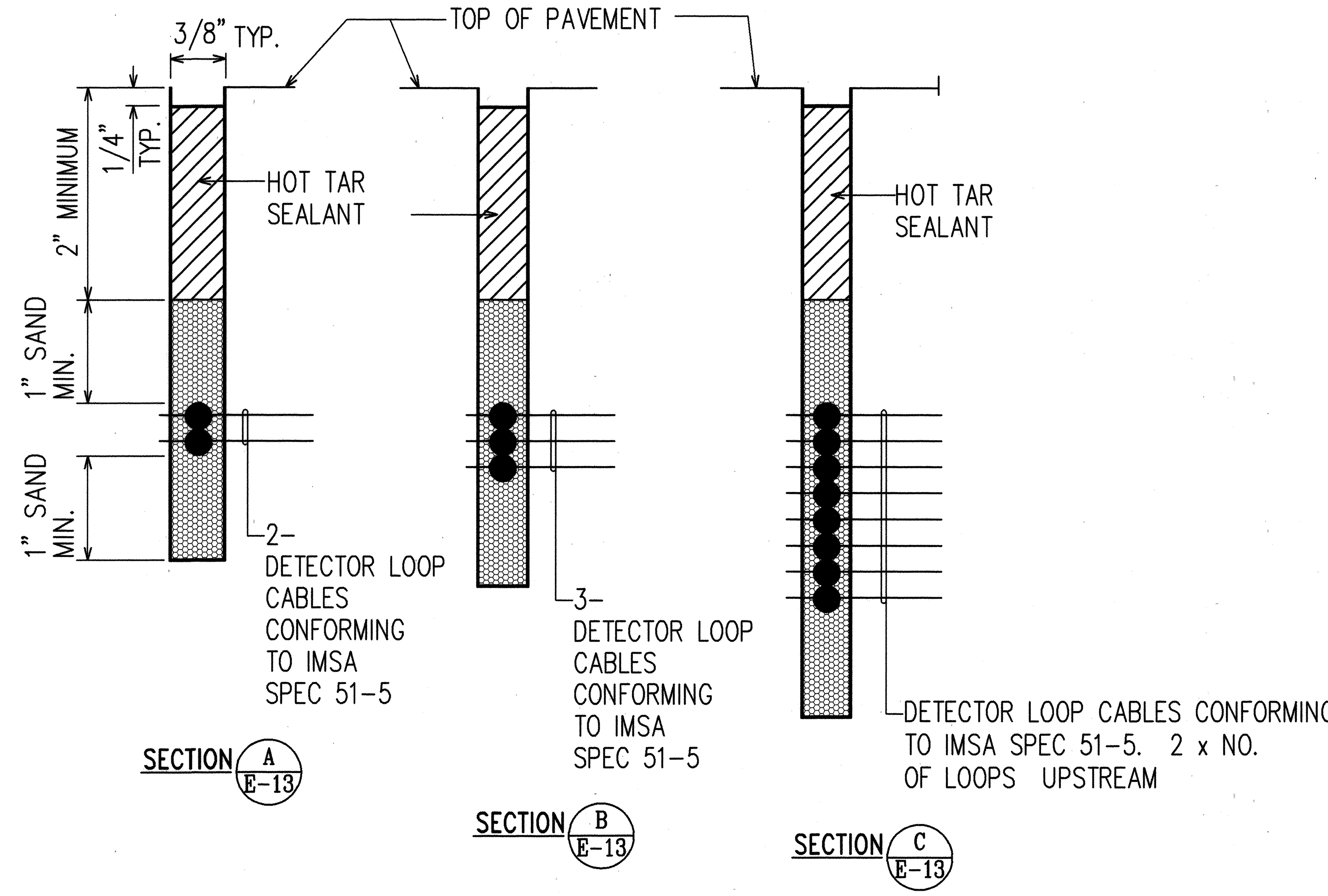
TYPICAL SENSOR LOOP LAYOUT

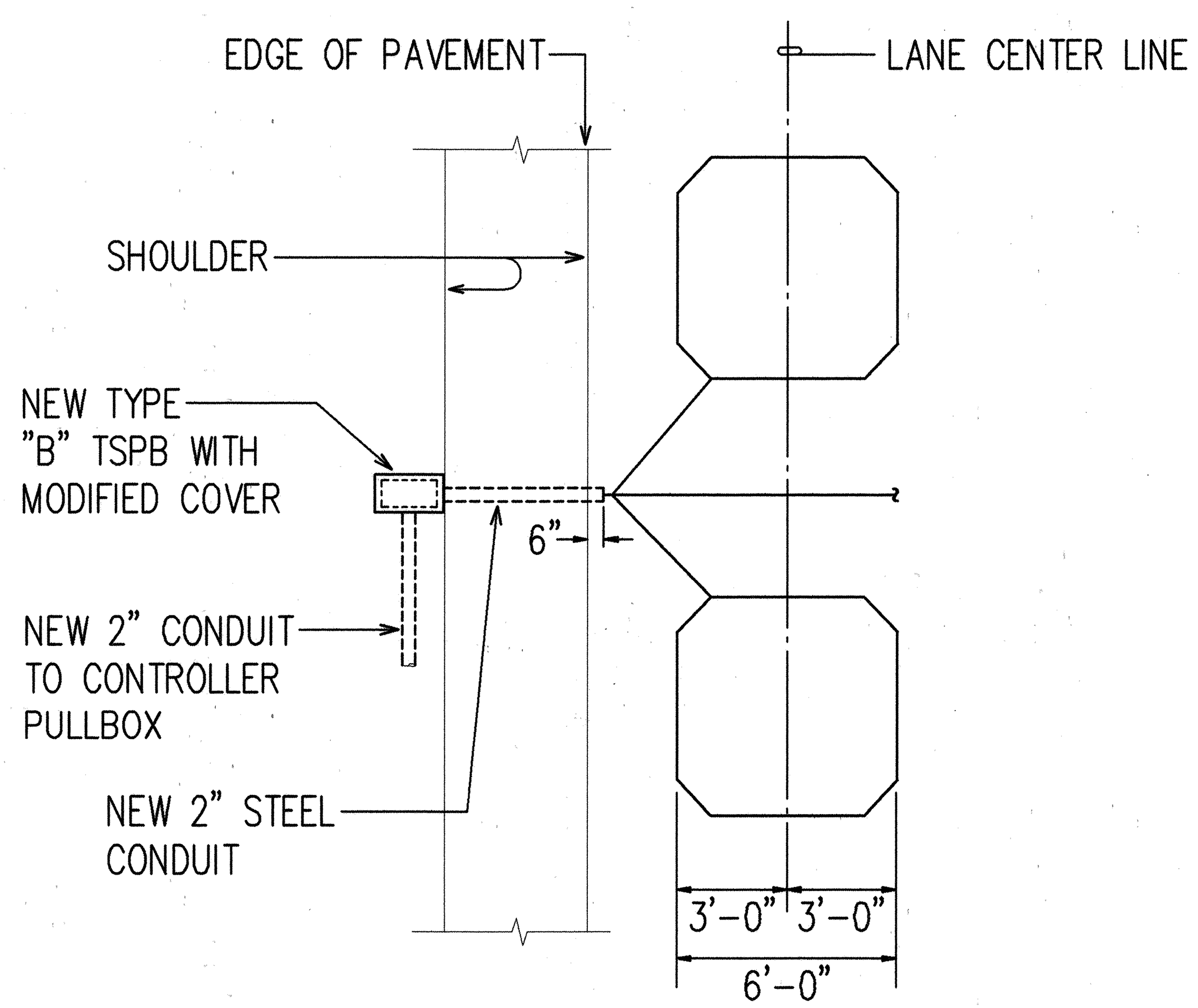


NOTES ON CONSTRUCTION AT END OF SAWCUT

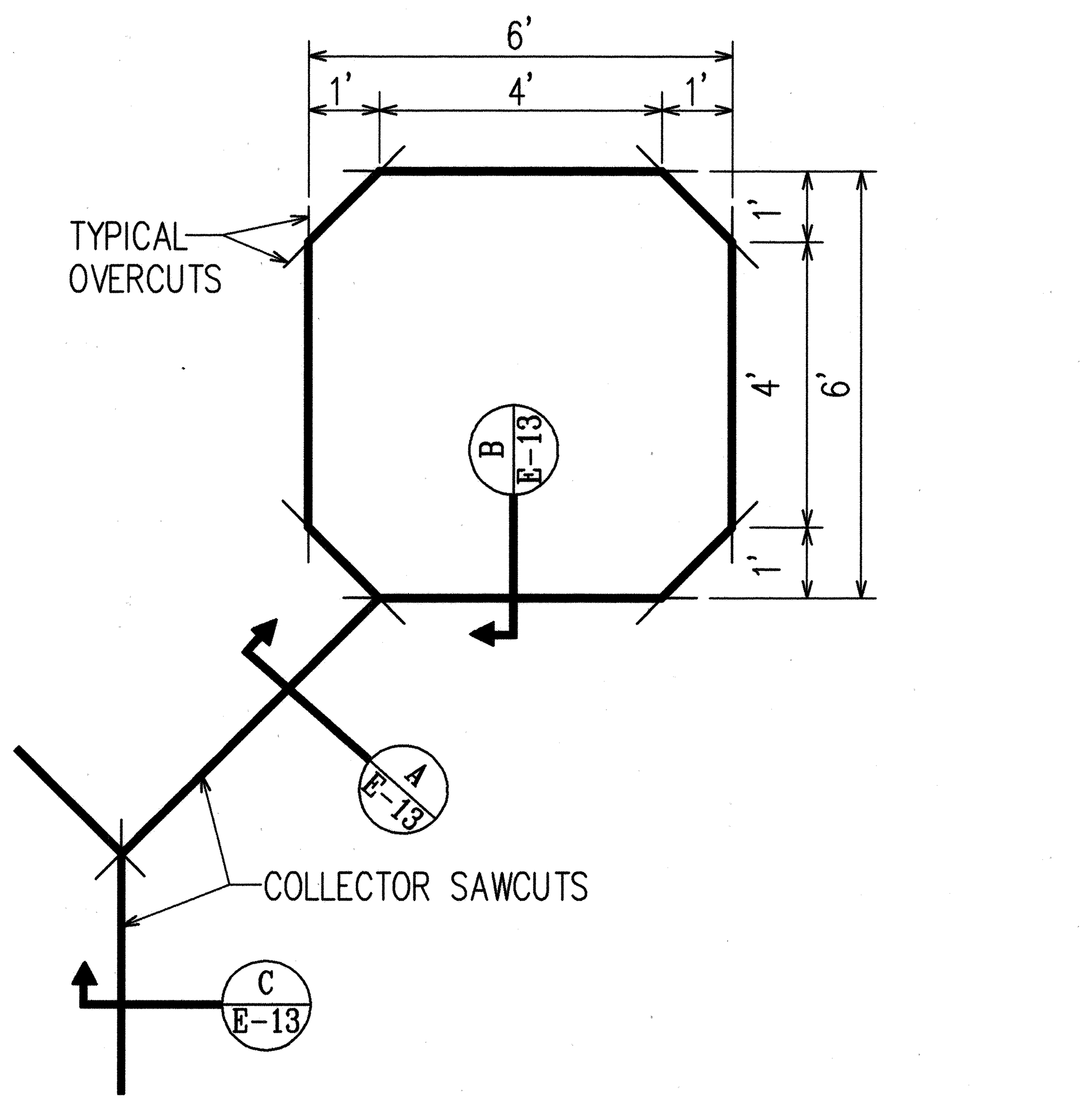
1. SEAL ROADWAY END OF CONDUIT AFTER INSTALLATION OF CONDUCTORS
2. INSTALL BULKHEAD ACROSS CONDUIT TRENCH.
3. PLACE HOT TAR IN SAWCUT.
4. BACKFILL OVER CONDUIT WITH NEW A.C.
5. RECONSTRUCT CURB AND GUTTER AS REQUIRED.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



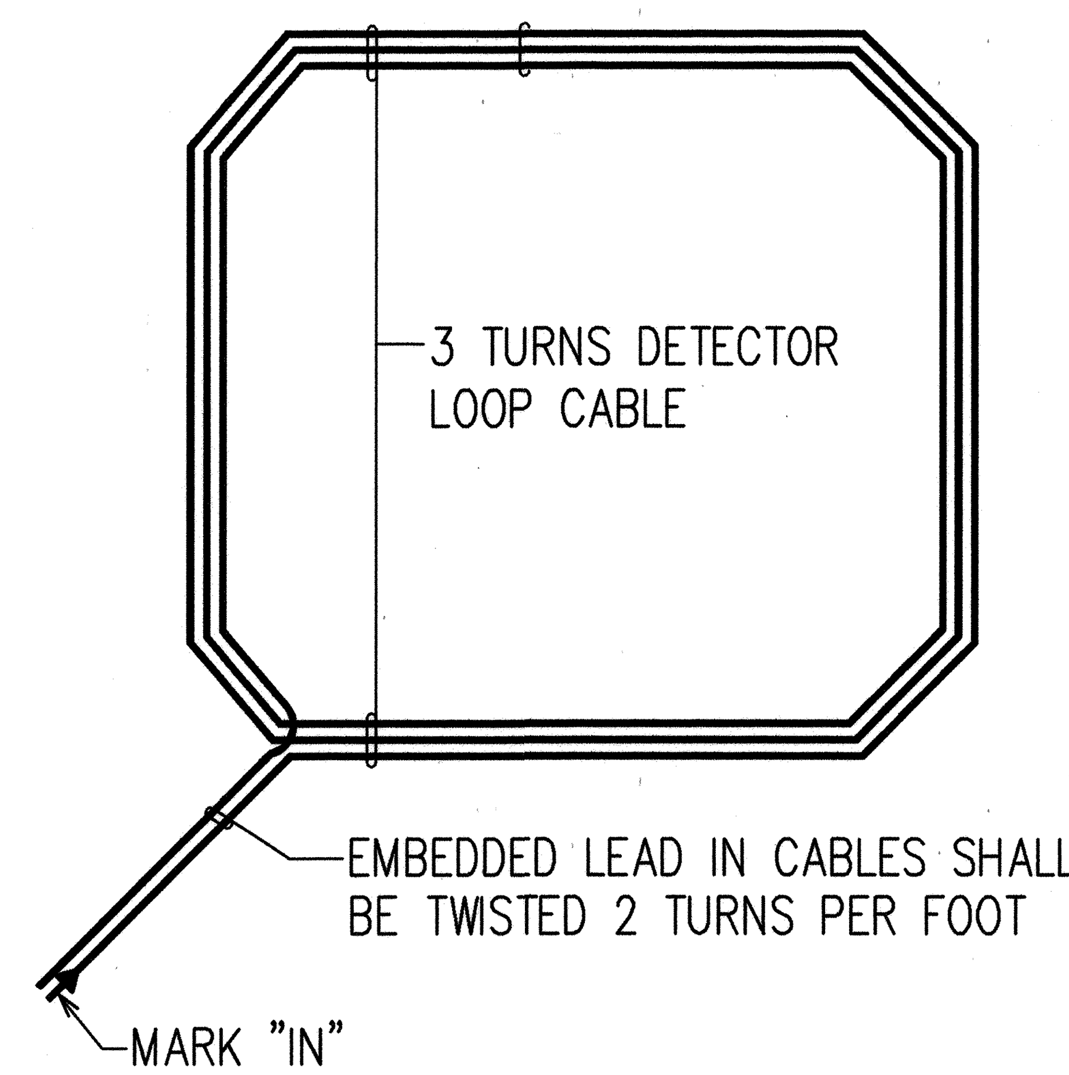


TYPICAL LAYOUT AT SHOULDER AREAS



NOTE: LENGTH OF OVERCUTS SHALL BE KEPT TO A MINIMUM. ALL OVERCUTS SHALL BE BACKFILLED WITH HOT TAR.

TYPICAL SENSOR LOOP SAWCUT DETAIL



PLAN

TYPICAL SENSOR LOOP WIRING DIAGRAM

ANDREW I. MIYASATO LICENSED PROFESSIONAL ENGINEER No. 4340-E HAWAII, U.S.A.

PRINCIPAL-IN-CHARGE

RONALD N.S. HO & ASSOCIATES, INC.

2/6/97

TIMOTHY S. HIGA LICENSED PROFESSIONAL ENGINEER No. 5791-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

RONALD N.S. HO & ASSOCIATES, INC.

2/6/97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

LIKELIKE HIGHWAY
Inters. Improvements at Alu St.
PROJECT NO. 63A-02-96

SCALE: AS NOTED DATE: FEB 1997

SHEET No. E-13 OF E-13 SHEETS

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

LAST SAVE: 02/03/97 @ 15:28:13 BY: GF2 PLOT SC 1"=1"