

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	8	18

ELECTRICAL SYMBOLS

SYMBOL		DESCRIPTION	REMARKS
EXIST	NEW		
		UTILITY POLE, WOOD, JOINT USAGE BY HEC _o , HTC _o , OCEANIC CABLEVISION, AND CITY & COUNTY STREET LIGHT POLE PROVIDED BY HEC _o , UNLESS OTHERWISE NOTED. POLE NUMBER INDICATED.	
		HEC _o POLE-TOP TRANSFORMER	
		UTILITY POLE, WOOD, BY HEC _o , UNLESS OTHERWISE NOTED. STREET LIGHT	
		TRAFFIC LIGHT POLE, TYPE II TRAFFIC SIGNAL HEAD-RED, YELLOW, GREEN MAST ARM TRAFFIC SIGNAL HEAD-RED, YELLOW, GREEN ARROW FIBER OPTIC TRAFFIC SIGNAL HEAD-RED, YELLOW, GREEN, GREEN/YELLOW LEFT TURN ARROW (BIMODAL)	POLE "B" INDICATED, TYPE 1, 2 & 3 TRAFFIC SIGNAL HEAD INDICATED SEE
		PUSH BUTTON TRAFFIC LIGHT POLE, TYPE I FIBER OPTIC TRAFFIC SIGNAL HEAD-RED, YELLOW, GREEN, GREEN/YELLOW LEFT TURN ARROW (BIMODAL) PEDESTRIAN SIGNAL	SEE
		TRAFFIC SIGNAL PULLBOX (TSPB) TYPE "C"	SEE
		TRAFFIC SIGNAL PULL BOX (TSPB), TYPE "A"	SEE
		TRAFFIC SIGNAL PULL BOX (TSPB), TYPE "D"	SEE
		UNDERGROUND ELECTRICAL DUCTLINES,	
		OPTICOM RECEIVER	SEE
		OVERHEAD UTILITIES (E=ELECTRICAL, T=TELEPHONE, V=CATV)	
		LOOP DETECTORS	SEE SHEET 14
		UNDERGROUND TRAFFIC SIGNAL DUCTLINES AND CABLES	
		UNDERGROUND WATER LINE. 8" & 12" DIAMETER INDICATED	
		UNDERGROUND SEWER LINE. 8" DIAMETER INDICATED	
		OVERHEAD TRAFFIC SIGNAL INTERCONNECT CABLES	

SYMBOL		DESCRIPTION	REMARKS
EXIST	NEW		
		BASELINE	
		CENTERLINE	
		COMMUNICATIONS	
		CATCH BASIN	
		CITY AND COUNTY OF HONOLULU	
		DEPARTMENT OF TRANSPORTATION SERVICES	
		ELECTRIC HANDHOLE	
		EMERGENCY VEHICLE PRE-EMPTION	
		FIRE HYDRANT	
		HAWAIIAN ELECTRIC Co.	
		HAWAIIAN TELEPHONE Co.	
		STREETLIGHT	
		SEWER MANHOLE	
		TRAFFIC SIGNAL	
		TRAFFIC SIGNAL PULLBOX	
		WATER METER	
		STATE DEPARTMENT OF TRANSPORTATION	
		UTILITY POLE	

INDICATOR SYMBOLS

SYMBOLS	DESCRIPTION	REMARKS
	TOP HALF: DETAIL NUMBER BOTTOM HALF: SHEET ON WHICH SHOWN	
	NOTE INDICATOR, NOTE #1 INDICATED	
	INDICATES DUCT SECTION TYPE.	SEE SHEET 11
	TRAFFIC SIGNAL STANDARD (TYPE 1 OR TYPE II) INDICATES POLE LETTER	

TYPES OF CABLES

TYPE	DESCRIPTION
1	SIGNAL LOOP CABLE: STRANDED, NO. 14, 26 CONDUCTORS (26/C #14)
2	DETECTOR LEAD-IN CABLE AND PEDESTRIAN PUSH BUTTON CIRCUIT CABLE: STRANDED, NO. 14, 2 CONDUCTORS (2/C #14)
3	INTERCONNECT CABLE: SOLID, NO. 19, 6 PAIRS (6 PAIR # 19)
4	LOOP SENSOR CABLE: SOLID, NO. 12, SINGLE CONDUCTOR CONFORMING TO IMSA SPEC 51-5 (1/C #12)
5	CABLE FROM SIGNAL LOOP TO SIGNAL HEAD: STRANDED, NO. 14, FOUR CONDUCTOR (4/C #14)
6	SERVICE CABLE: STRANDED, NO. 6, 3 CONDUCTORS (3/C #6)
7	SHIELD OPTICAL DETECTOR CABLE: SOLID, NO. 20, 3 CONDUCTORS (3/C #20)

SURVEY PLOTTED BY	DATE
DESIGNED BY	*****
NOTED BY	
CHECKED BY	
NO.	



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
SYMBOL LIST
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997
SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	9	18

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 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 HIGHWAY", FEDERAL HIGHWAY ADMINISTRATION (1988) AND AMENDMENTS.
9. LOCATIONS OF TRAFFIC MARKINGS AND MARKERS (LANE LINES, STOP LINES, CROSS, ETC.) SHOWN ON THE PLANS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO THE INSTALLATION OF THE TRAFFIC SIGNAL SYSTEM.
10. 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.
11. 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 MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTION SERVICES, THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK ON THE TRAFFIC SIGNAL SYSTEM (PHONE NO. 523-4589).
12. INSTALLATION OF THE OPTICOM RECEIVER SHALL CONFORM IN ACCORDANCE WITH THE STANDARD DETAILS OF THE DEPARTMENT OF TRANSPORTATION SERVICES, CITY & COUNTY OF HONOLULU, ELECTRICAL AND MAINTENANCE SERVICES DIVISION, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.

ELECTRICAL SERVICE CONNECTION NOTES

1. CONTRACTOR TO ARRANGE SERVICE CONNECTION WITH HEC_o.
2. CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS TO CONTROLLER, PROVIDE BREAKERS, GROUND AND 2" PVC CONDUIT, SCHEDULE 80.
3. CONNECTION FROM METER TO SERVICE BOX SHALL BE BY CONTRACTOR.
4. CONTRACTOR SHALL PROVIDE HEC_o FOUR WEEKS ADVANCE NOTICE FOR ANY WORK BY HEC_o.
5. A HEC_o STANBY MAN IS REQUIRED TO BE AT THE SITE AT THE TIME ANY NON-UTILITY COMPANY PERSONNEL WILL BE BREAKING INTO OR ENTERING ANY FACILITIES THAT CONTAIN ENERGIZED UTILITY COMPANY EQUIPMENT OR CABLES.

6. THREE WORKING DAYS ADVANCE NOTICE IS REQUIRED BY THE HEC_o FOR ANY INSPECTION SERVICE OR STANBY MAN. CALL - PHONE NO. 543-5668.
7. THE INSTALLATION OF THE METER PEDESTAL FOR UNDERGROUND SERVICE WILL NOT BE PAID FOR SEPARATELY BUT CONSIDERED INCIDENTAL TO THE METER SOCKET AND BREAKER.
8. ELECTRICAL SERVICE CONNECTION WORK BY HEC_o FORCES AND HEC_o FURNISHED EQUIPMENT AND MATERIALS SHALL BE PAID FOR UNDER ITEM NO. 623.9003 - ELECTRICAL SERVICE CONNECTION BY HEC_o.
9. PAYMENT FOR ITEMS OF WORK THAT HAVE CONTRACT UNIT PRICES WILL BE MADE UNDER THE APPLICABLE CONTRACT UNIT PRICES.
10. WORKING DRAWINGS FOR PERMANENT INSTALLATION OF HEC_o FACILITIES SHALL BE PROVIDED BY HEC_o.

ELECTRIC, TELEPHONE AND CABLE TV FACILITIES NOTES

1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN THE CONSTRUCTION IS IN CLOSE PROXIMITY OF EXISTING ELECTRIC, TELEPHONE, AND CABLE TV CABLE FACILITIES. ANY DAMAGE TO THE EXISTING UNDERGROUND UTILITIES SHALL BE REPAIRED BY THE UTILITY COMPANY AND PAID FOR BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL NOTIFY THE "UTILITY COMPANIES" TWO (2) WEEKS IN ADVANCE FOR ANY POLE RELOCATIONS THAT ARE REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATION COST.

ELECTRICAL & MAINTENANCE SERVICES DIVISION NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL & MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES, THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK ON THE TRAFFIC SIGNAL SYSTEM (PHONE: 523-4589).
2. THE TRAFFIC SIGNAL SYSTEMS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. ANY RELOCATION OR CHANGEOVER REQUIRED SHALL BE APPROVED BY THE ELECTRICAL & MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES, AND PERFORMED AND PAID FOR BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING TRAFFIC SIGNAL, FACILITY, INCLUDING THE TRAFFIC SIGNAL INTERCONNECT SYSTEM, AND ANY AND ALL DAMAGES TO THESE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS COST IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY AND COUNTY OF HONOLULU.
4. THE CONTRACTOR SHALL NOTIFY THE JOIST POLE COMMITTEE TWO (2) WEEKS IN ADVANCE OF ANY RELOCATION OF UTILITY POLE(S) THAT MAY BE NECESSARY.

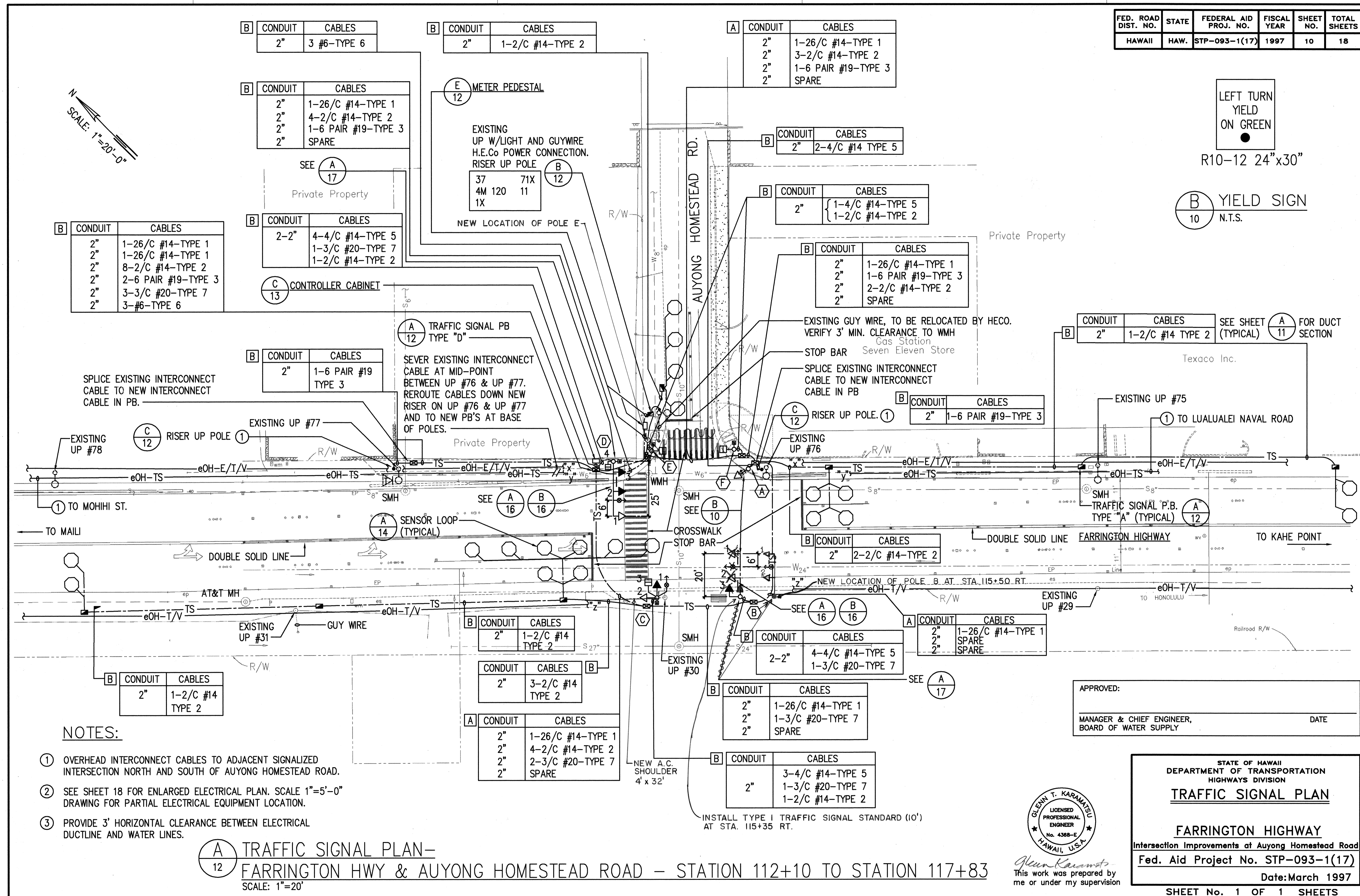
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NO.	DATE	



Glenn Karamatsu
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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION GENERAL NOTES FARRINGTON HIGHWAY Intersection Improvements at Auyong Homestead Road Fed. Aid Project No. STP-093-1(17) Date: March 1997 SHEET No. 1 OF 1 SHEETS

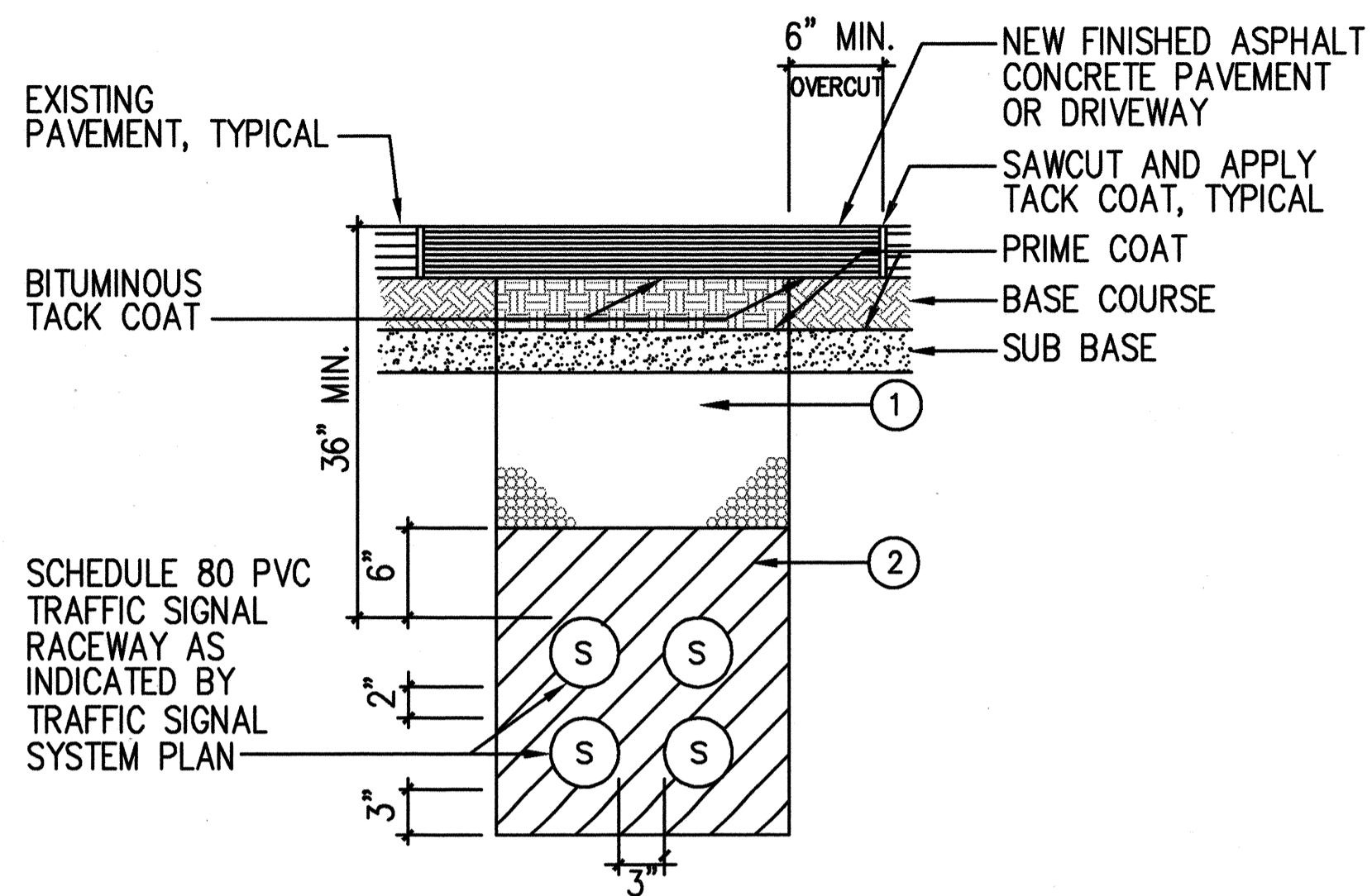
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	10	18



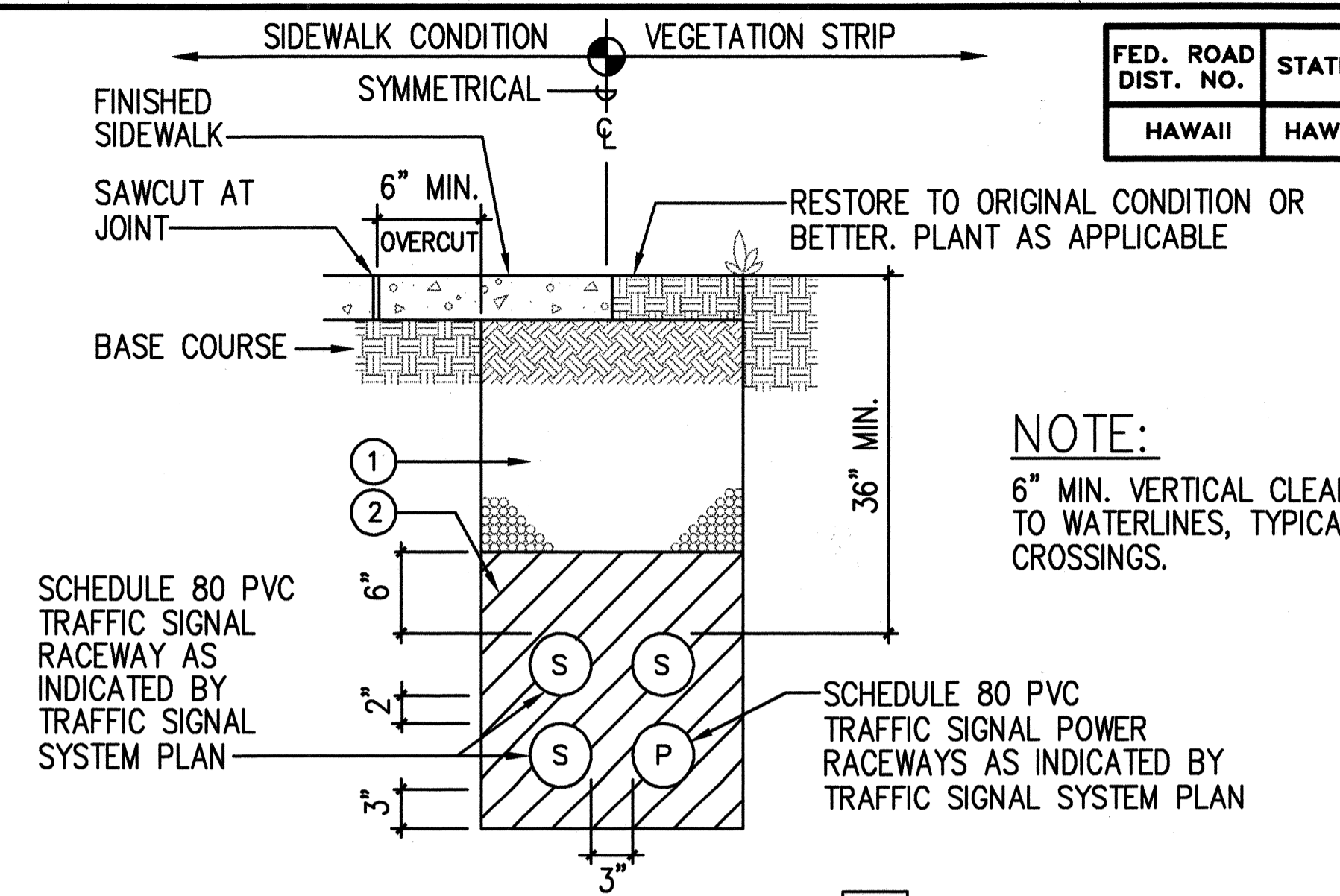
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	11	18

NOTES:

- TYPE "A" BACKFILL - BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH AND GRAVEL, THE MAXIMUM ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL NOT CONTAIN MORE THAN 50% BY VOLUME OF ROCK PARTICLES.
- TYPE "B" BACKFILL - BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH AND GRAVEL, THE MIXTURE MUST PASS A 1/2" MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES.
- PAVEMENT AND SIDEWALK STRUCTURE SHALL BE EQUIVALENT OR BETTER THAN EXISTING IN THICKNESS AND QUALITY.
- PROVIDE 3" CONCRETE JACKET SCHEDULE 40 PVC UNDER DRIVEWAY CONDITIONS.
- DIRECT BURIED WITH SCHEDULE 80 PVC UNDER SIDEWALK OR VEGETATION STRIP CONDITION IS AN ACCEPTABLE ALTERNATIVE.



DIRECT BURIED DUCT TYPE [A]



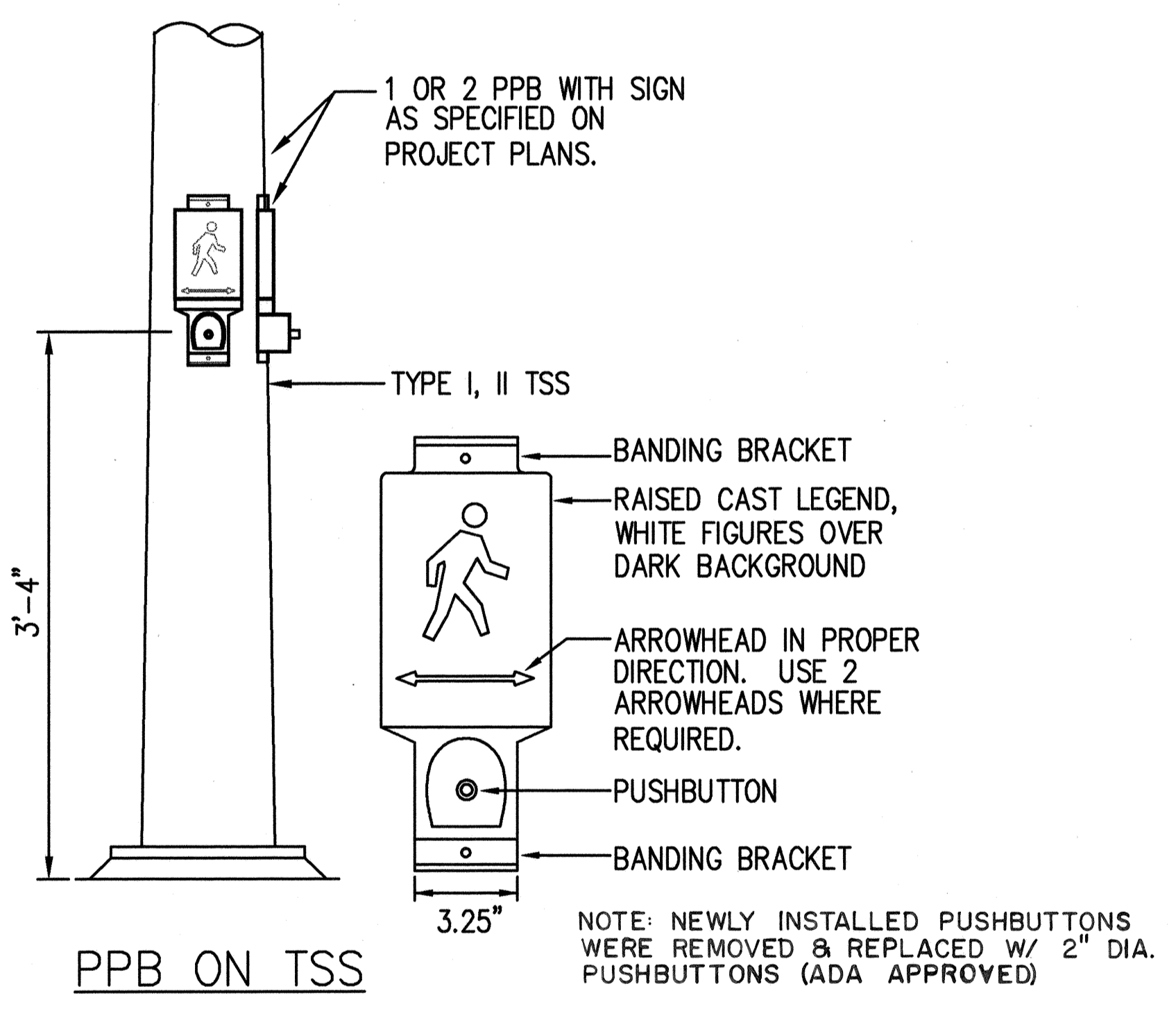
DIRECT BURIED DUCT TYPE [B]

NOTE:
6" MIN. VERTICAL CLEARANCE TO WATERLINES, TYPICAL AT CROSSINGS.

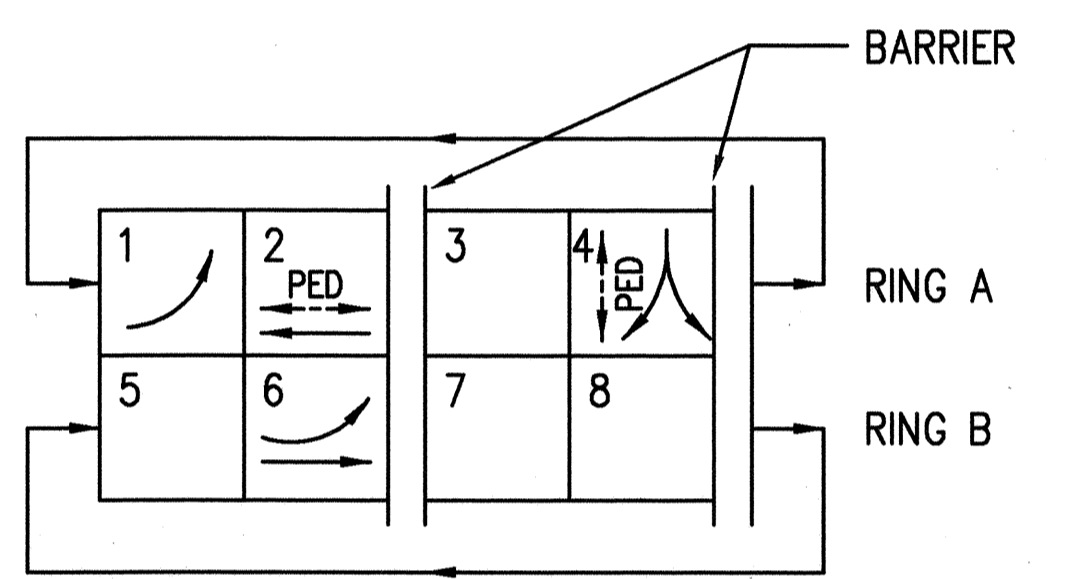
A
11
TYPICAL DUCT SECTIONS
NOT TO SCALE

TRAFFIC SIGNAL HEAD SCHEDULE				
TRAFFIC SIGNAL HEAD TYPE AND DESCRIPTION				
PEDESTRIAN SIGNAL HEAD		12" RYG TRAFFIC SIGNAL HEAD	12" RY TRAFFIC SIGNAL HEAD	12" RYG (BIMODAL) TRAFFIC SIGNAL HEAD, FIBER OPTIC
POLE LETTER SIGNAL HEAD NUMBER	E-1, F-1, C-3, D-4	C-1, B-3, D-2, D-3,	B-2, C-2, D-1	A-1, B-1

LIST OF MATERIALS			
POLE LETTER	STANDARD TYPE	MOUNTING TYPE	SIGNAL FACES AND OPTICOM RECEIVERS
[A]	I-10	SLIPFITTER - ONE WAY	R-Y-G (BIMODAL LEFT)
[B]	II-20	MAST ARM - ONE WAY MAST ARM - ONE WAY BRACKET - ONE WAY MAST ARM (HOR.)	R-Y-G (BIMODAL LEFT) R-Y- R-Y-G OPTICOM
[C]	I-10	SLIPFITTER - TWO WAY BRACKET - ONE WAY BRACKET - ONE WAY POLE	R-Y-G, R-Y- H-M OPTICOM PUSHBUTTON
[D]	II-25	MAST ARM - ONE WAY MAST ARM - ONE WAY MAST ARM - ONE WAY BRACKET - ONE WAY MAST ARM (HOR.) POLE	R-Y- R-Y-G R-Y-G H-M OPTICOM PUSHBUTTON
[E]	I-8	SLIPFITTER - ONE WAY POLE	H-M PUSHBUTTON
[F]	I-8	SLIPFITTER - ONE WAY POLE	H-M PUSHBUTTON



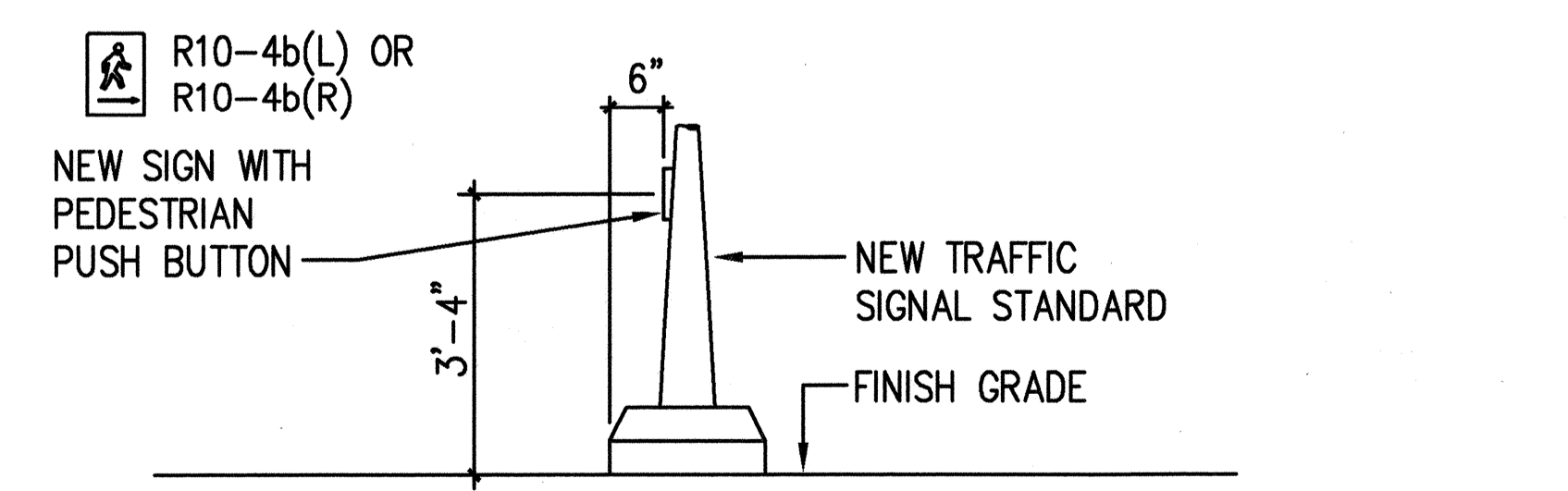
PPB ON TSS
PEDESTRIAN PUSH BUTTON DETAILS
NOT TO SCALE



PHASE DIAGRAM

POLE LETTER	PLAN ORIENTATION	POLE (TYPICAL)	TRAFFIC SIGNAL HEAD
[C]	(←)	[C]	R10-4b (SIGN VARIES WITH DIRECTION)
[D]	(←)	[D]	R10-4b (L)
[E]	(←)	[E]	R10-4b (L)
[F]	(←)	[F]	R10-4b (R)

PEDESTRIAN PUSH BUTTON WITH SIGN (NEW)



TYPICAL SIGN WITH PEDESTRIAN PUSH BUTTON
NOT TO SCALE

ORIGINAL PLAN
DATE
DRAWN BY
CHECKED BY
NOTED BY
QUANTITIES BY
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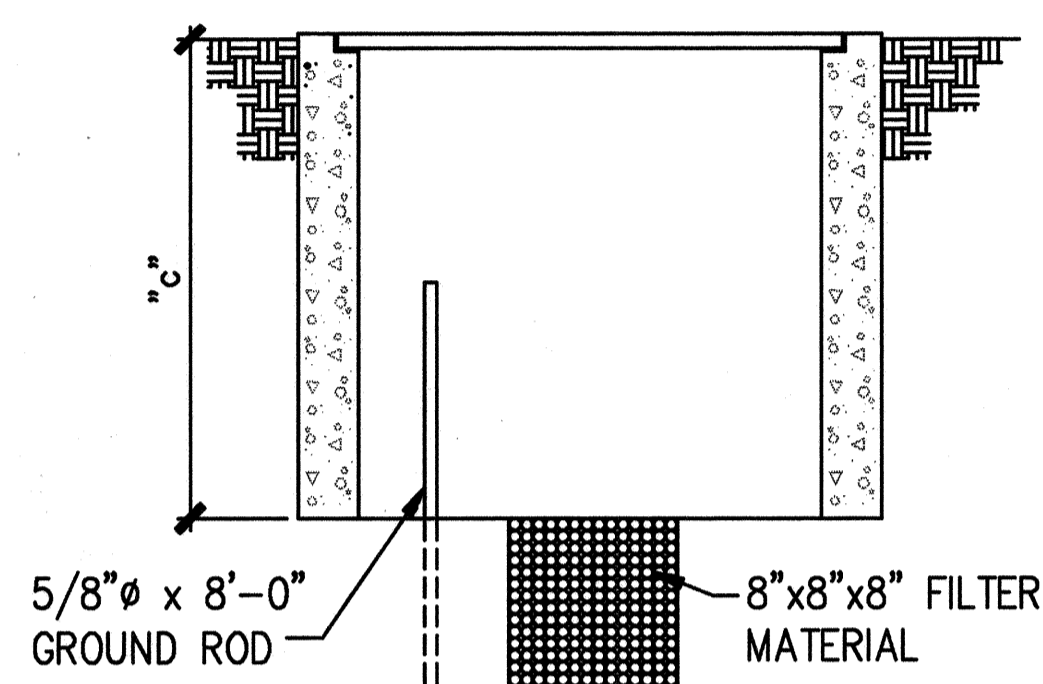
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TRAFFIC SIGNAL SCHEDULES AND DETAILS
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997
SHEET No. 1 OF 1 SHEETS

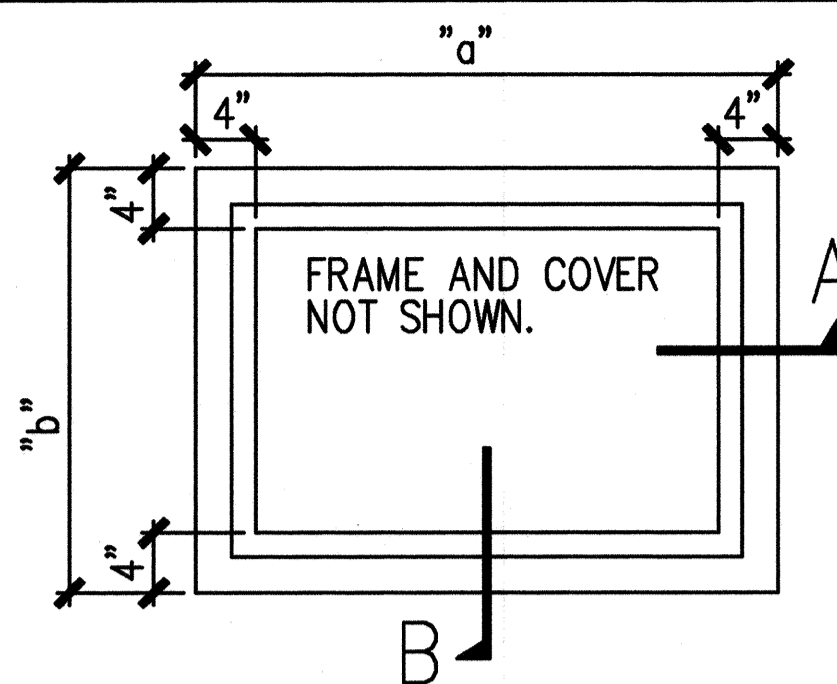
PULLBOX DIMENSIONS		
	TYPE "A"	TYPE "C"
"a"	28	40
"b"	19	28
"c"	18	24

NOTES:

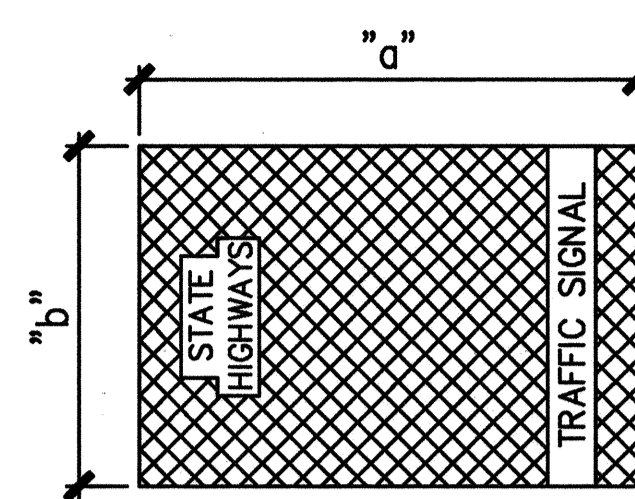
- ALL DIMENSIONS ARE IN INCHES
- ALL CONCRETE SHALL BE CLASS "A"
- PROVIDE GROUND ROD IN ALL PULLBOXES ADJACENT TO STANDARDS, PEDESTALS, CONTROLLERS AND OTHER SPECIFIED LOCATIONS.



SECTION A-A



PLAN OF PULLBOX



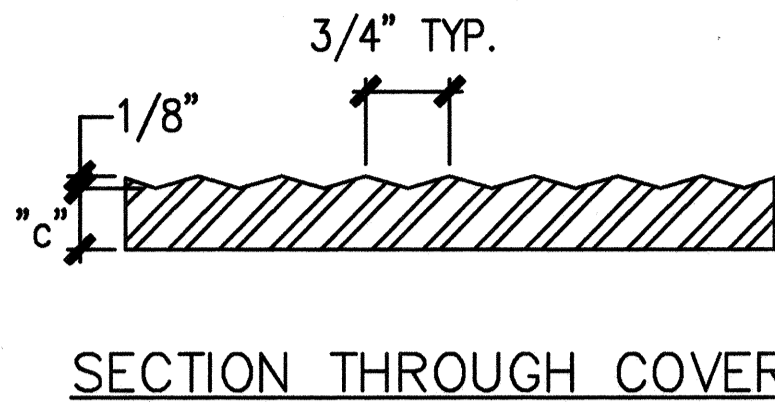
PLAN OF COVER

COVER AND FRAME DIMENSIONS		
	TYPE "A"	TYPE "C"
a	19-3/4	30
b	12	20
c	1/2	5/8
d	22-1/2	33-3/16
e	14-3/4	23-3/16
f	1	2
g	1-1/4	1-1/2
h	1/2	1-3/8

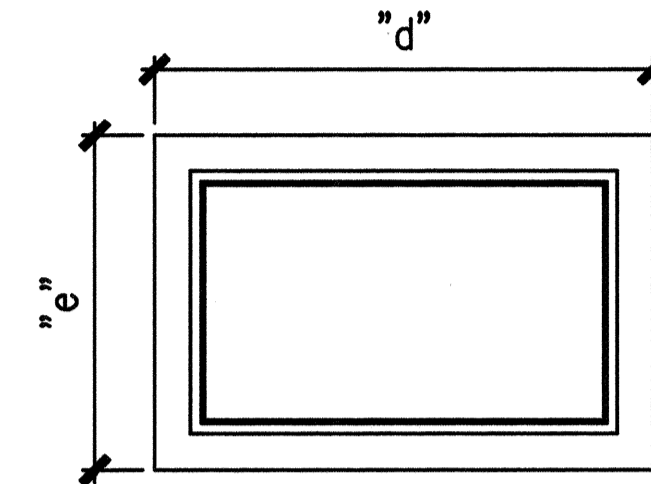
NOTE: ALL DIMENSIONS ARE IN INCHES

NOTES:

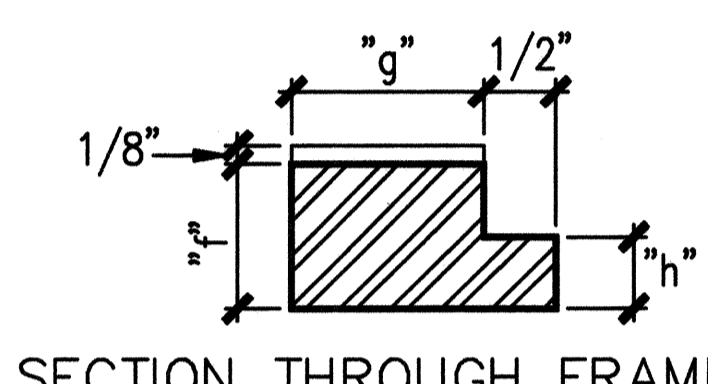
- SIDES OF COVER ARE TO BE SLIGHTLY BEVELED TO FACILITATE INSTALLATION. BEVEL IS INWARD FROM TOP TO BOTTOM.
- COVER TO BE CAST FROM GREY IRON.
- SUBMIT SHOP DRAWINGS FOR BOX, FRAME AND COVER FOR APPROVAL.
- INSTALL ON 6" BED OF #3 CRUSHED ROCK.



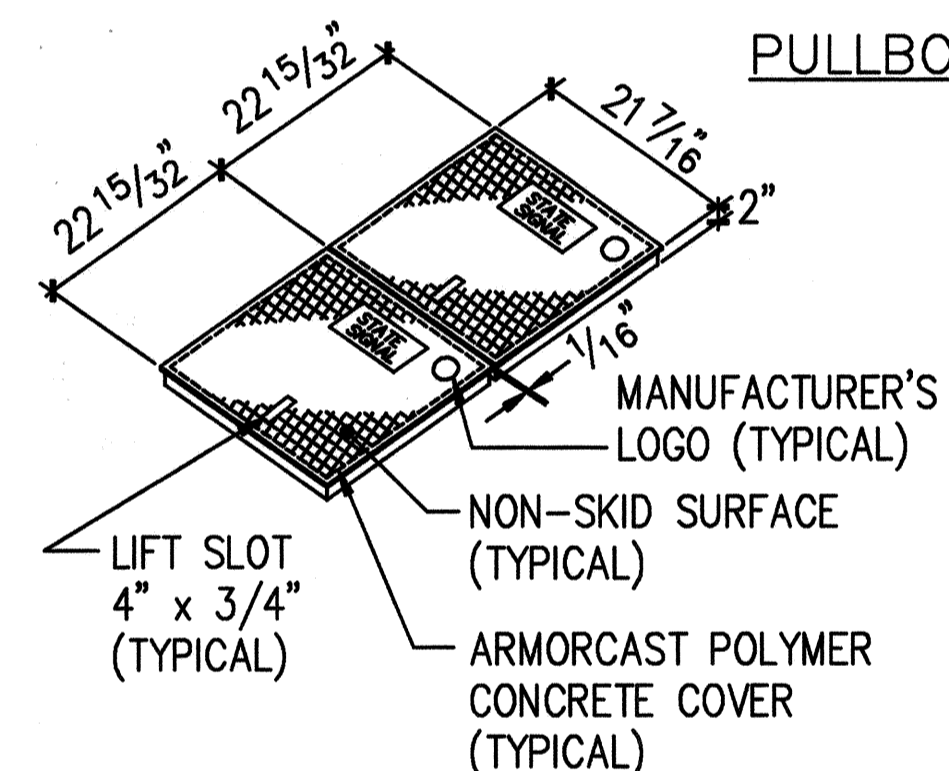
SECTION THROUGH COVER



PLAN OF FRAME

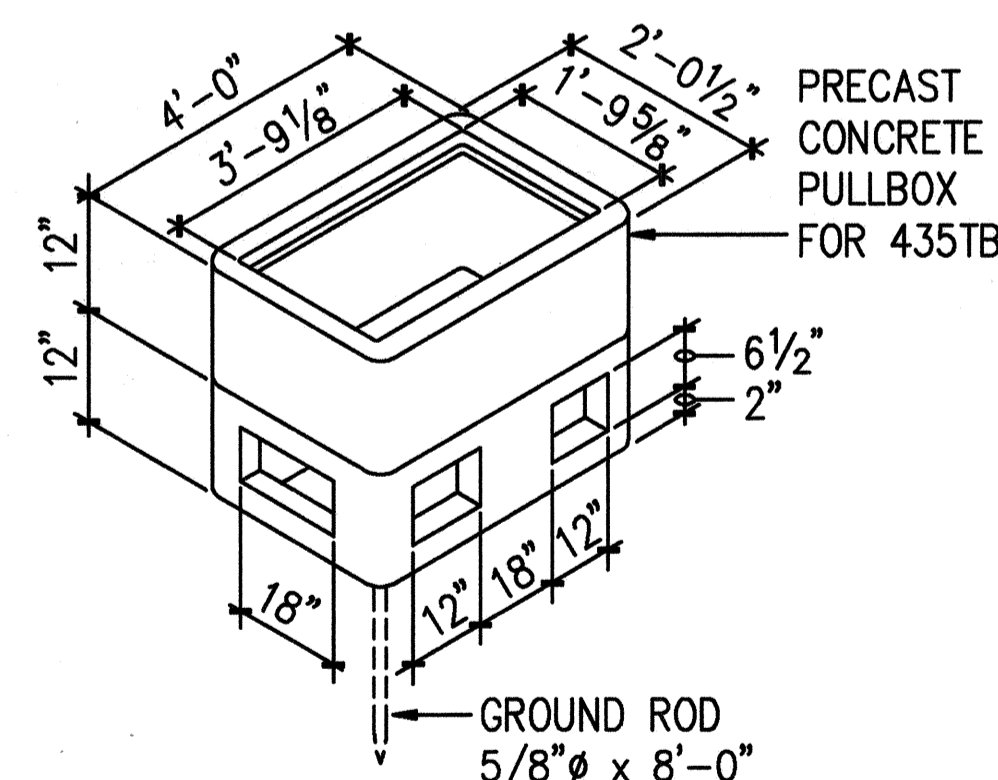


SECTION THROUGH FRAME



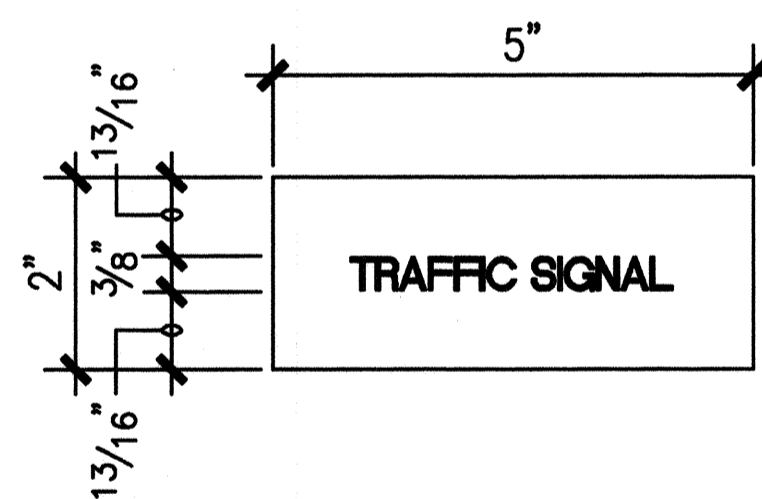
PULLBOX DETAILS

TSPB COVER DETAILS



TYPE "D" PULLBOX
TRAFFIC SIGNAL

(A) TYPE "A", "C", & "D"
TRAFFIC SIGNAL
PULLBOX DETAILS
NOT TO SCALE



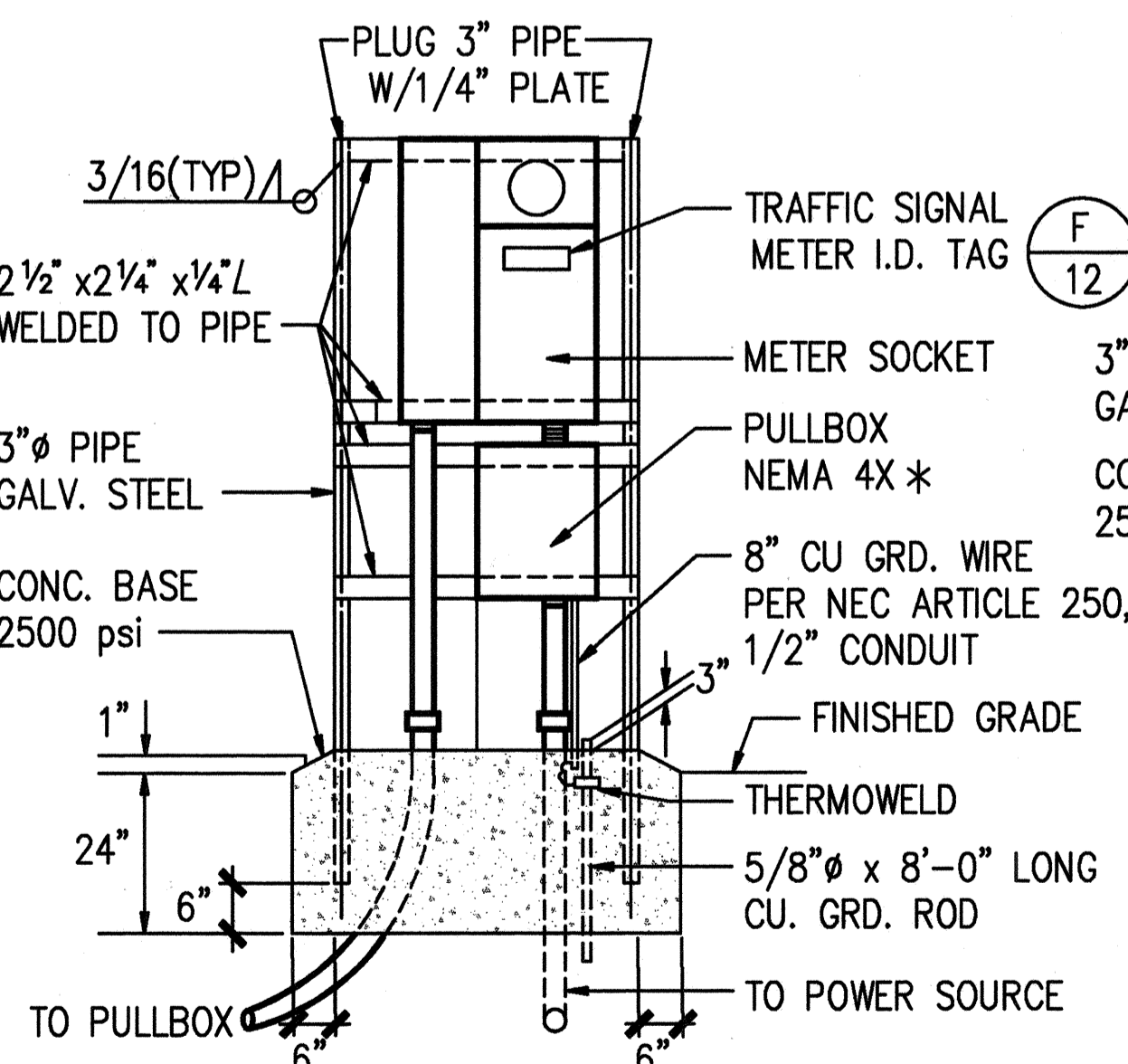
NOTES:

- 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".
- ATTACH TO METER SOCKET USING SCOTCH 3M BRAND VERY HIGH BOND (VHB) DOUBLE COATED ACRYLIC FOAM TAPE OR EQUIVALENT.
- LETTERS/NUMBERS SHALL BE 3/8" HIGH, 1/16" STROKE, AND WHITE IN COLOR.
- LETTERS/NUMBERS AREA INSCRIBED BY CUTTING THROUGH "BLACK CAP SHEET" TO EXPOSE WHITE LETTERS/NUMBERS.

(F) METER ID TAG DETAIL
NOT TO SCALE

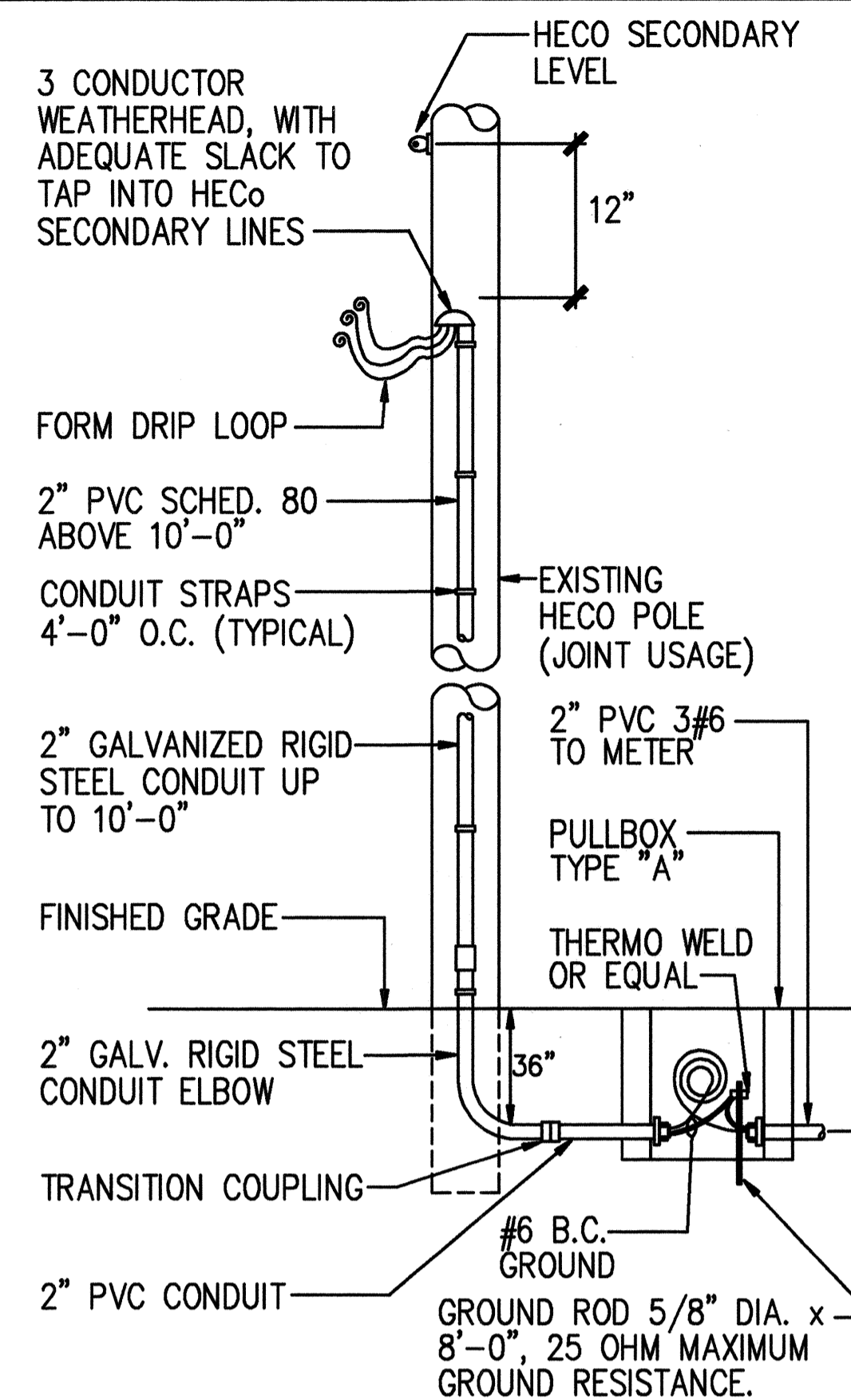
NOTES:

PEDESTAL SHALL BE HOT-DIPPED GALV. AFTER FABRICATION. ALL FASTENING BOLTS, NUTS & WASHERS SHALL BE STAINLESS STEEL. PROVIDE 4 FT. CL. IN FRONT OF METER.
* SEALABLE STAINLESS STEEL ENCLOSURE 10"Wx12"H x 6"D.

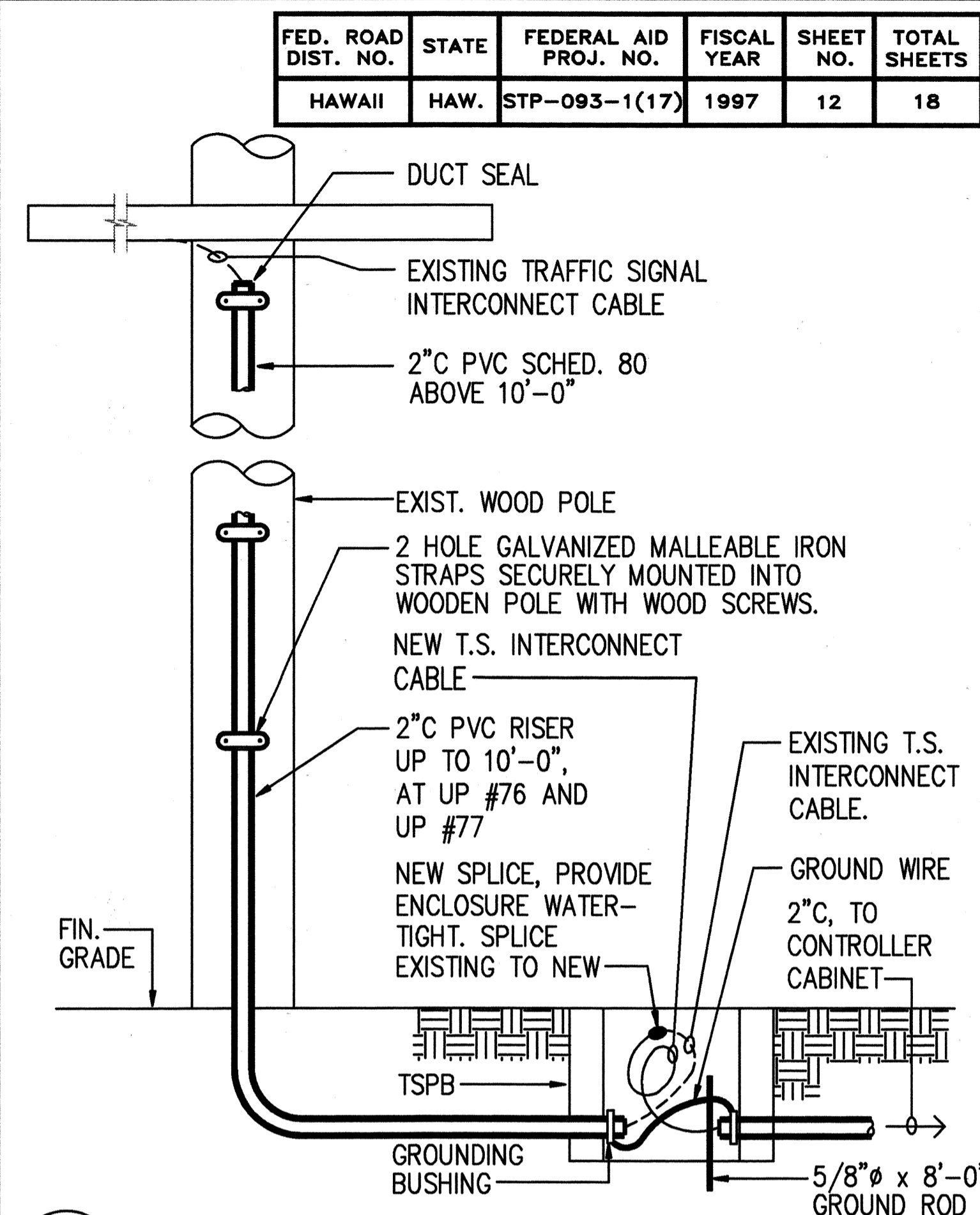


FRONT ELEVATION

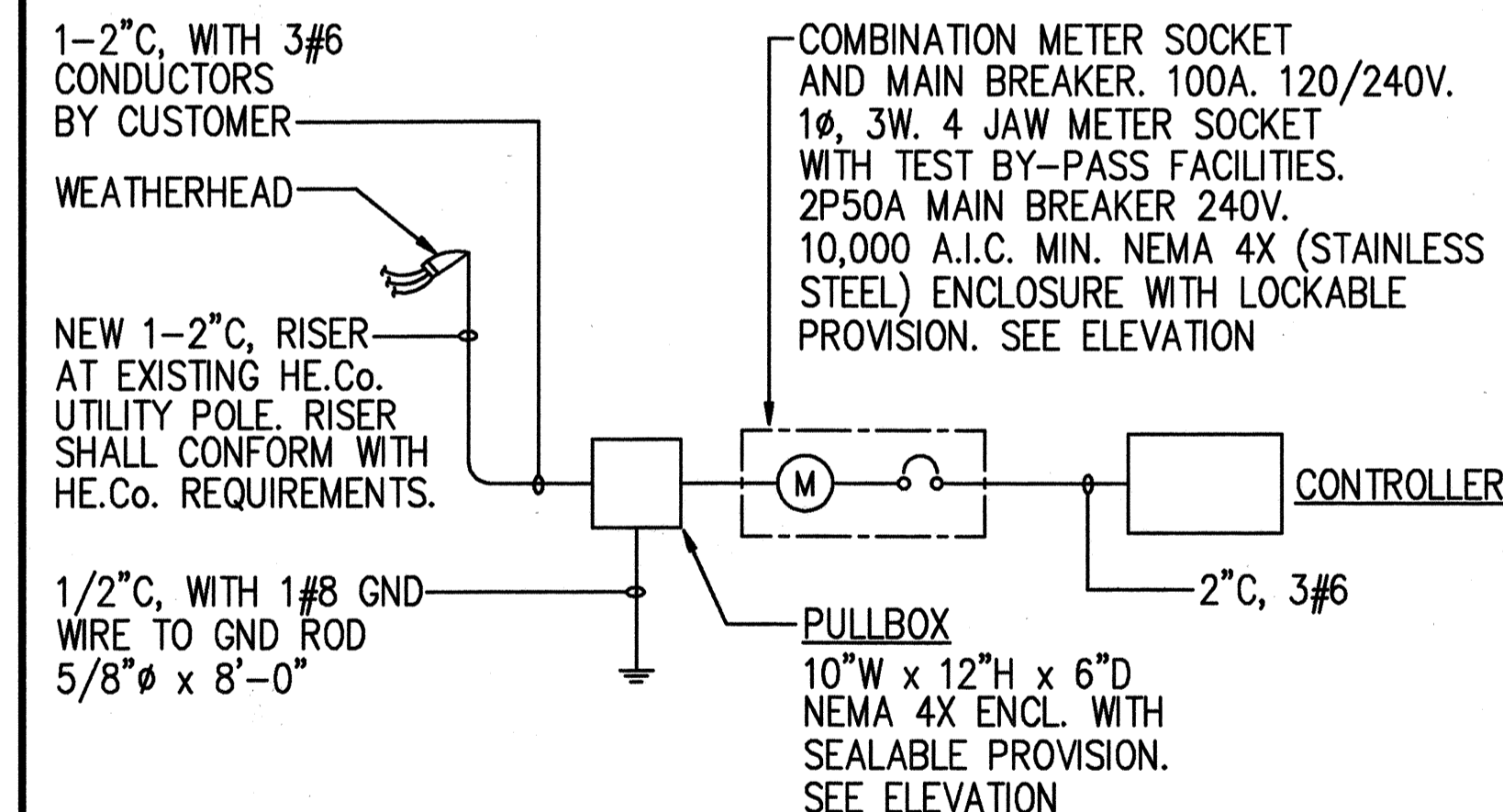
(E) METER PEDESTAL FOR UNDERGROUND SERVICE DETAIL
NOT TO SCALE



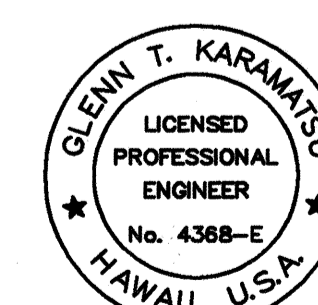
(B) TRAFFIC SIGNAL SYSTEM
HECO POWER CONDUIT
RISER DETAIL
NOT TO SCALE



(C) NEW TRAFFIC SIGNAL SYSTEM
CONDUIT RISER INTERCONNECT CABLE
NOT TO SCALE



(D) ONE-LINE DIAGRAM
NOT TO SCALE

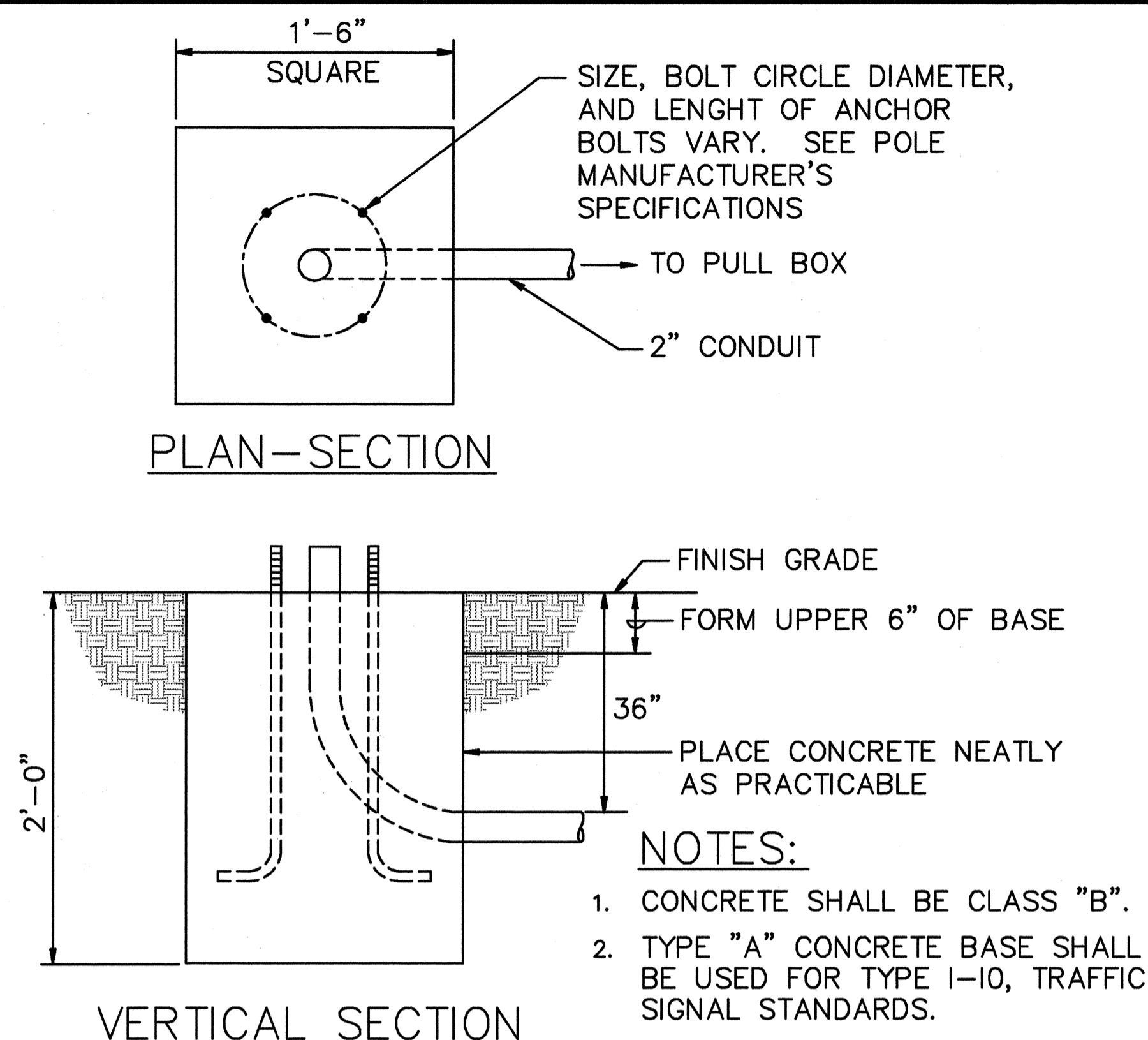


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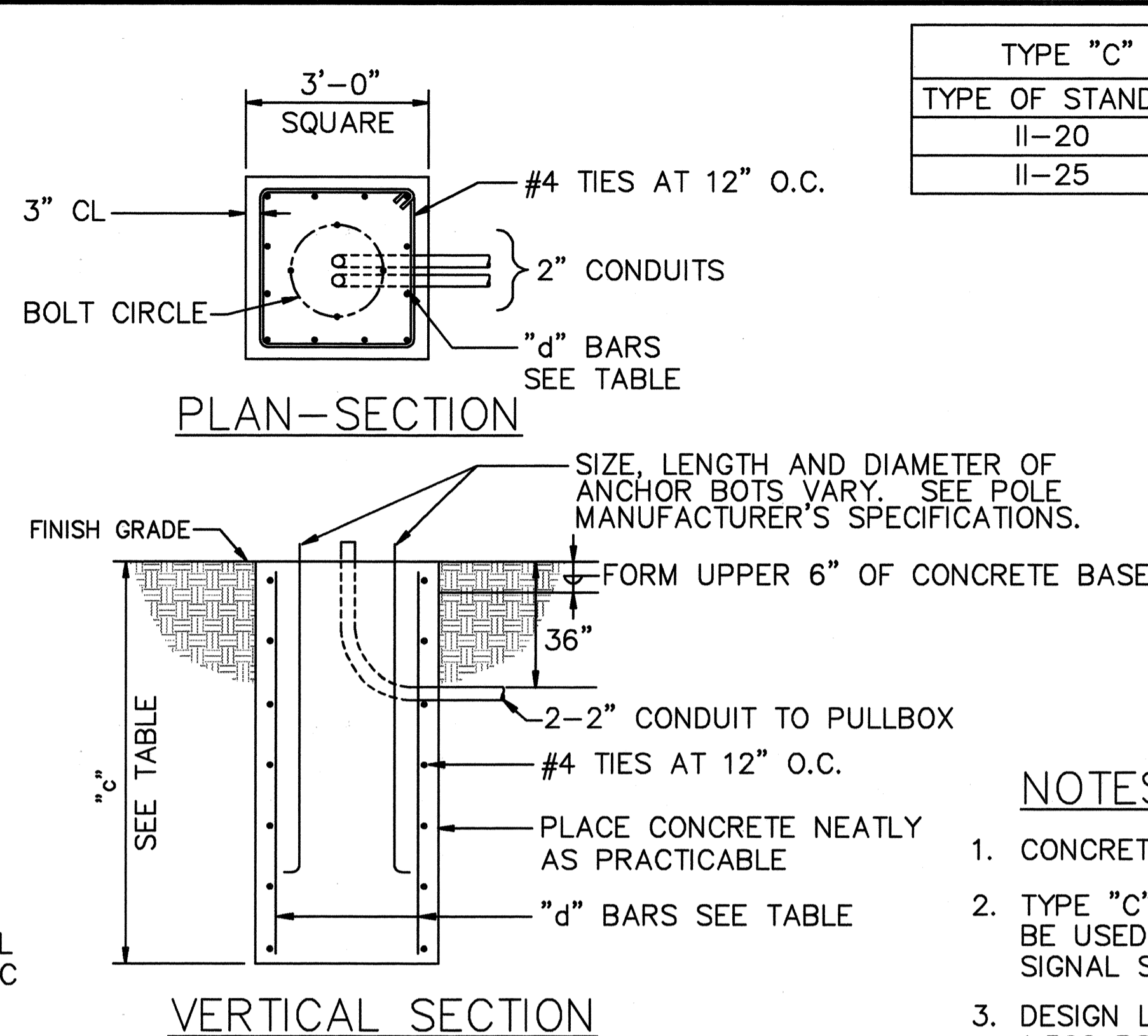
TRAFFIC SIGNAL DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997
SHEET No. 1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	13	18



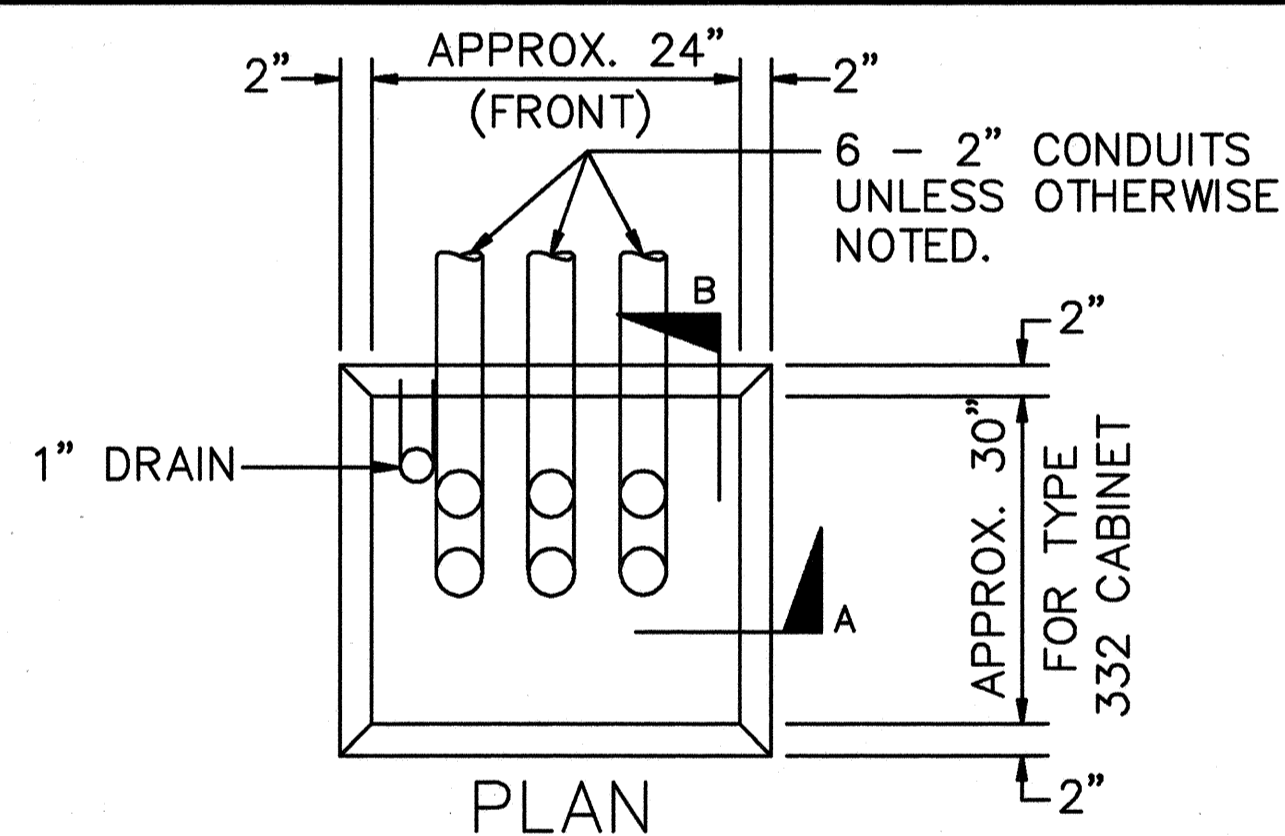
A TYPE "A" CONCRETE BASE
13 NOT TO SCALE



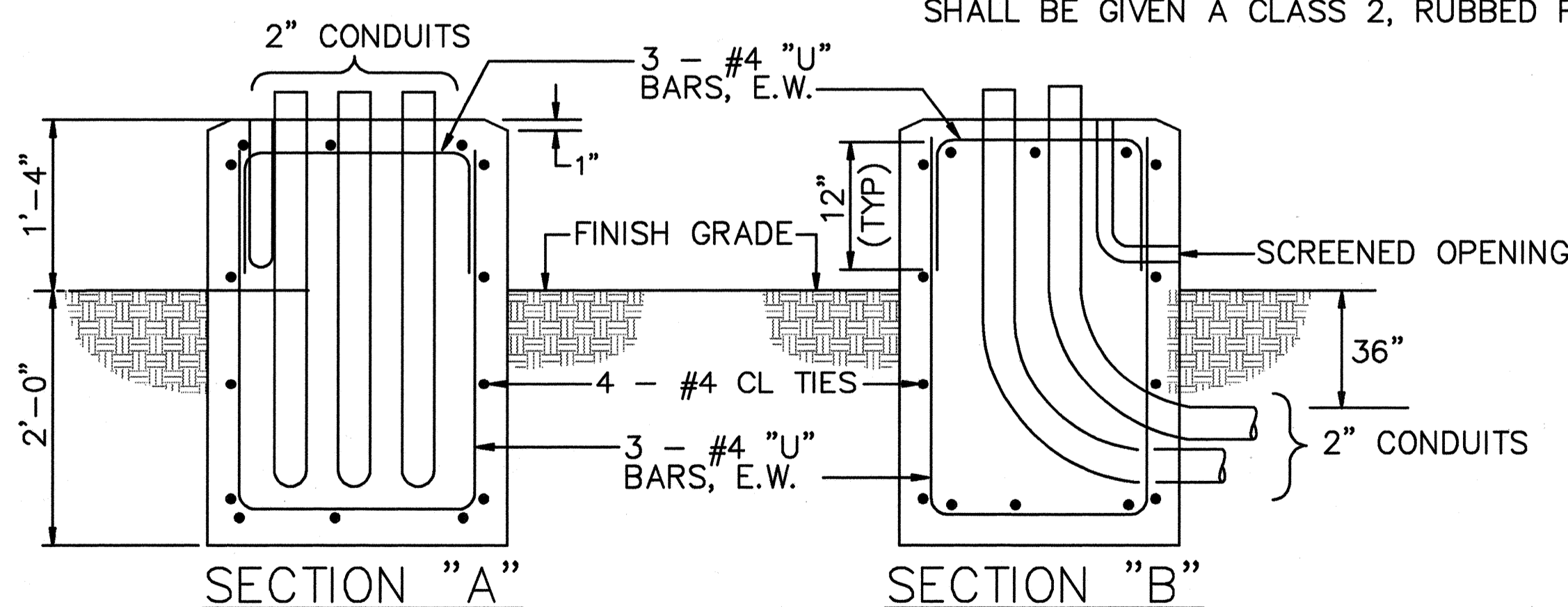
TYPE "C" CONCRETE BASE		
TYPE OF STANDARD	"c" BARS	"d" BARS
II-20	5'-6"	12-#6
II-25	6'-0"	12-#6

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

B TYPE "C" CONCRETE BASE
13 NOT TO SCALE

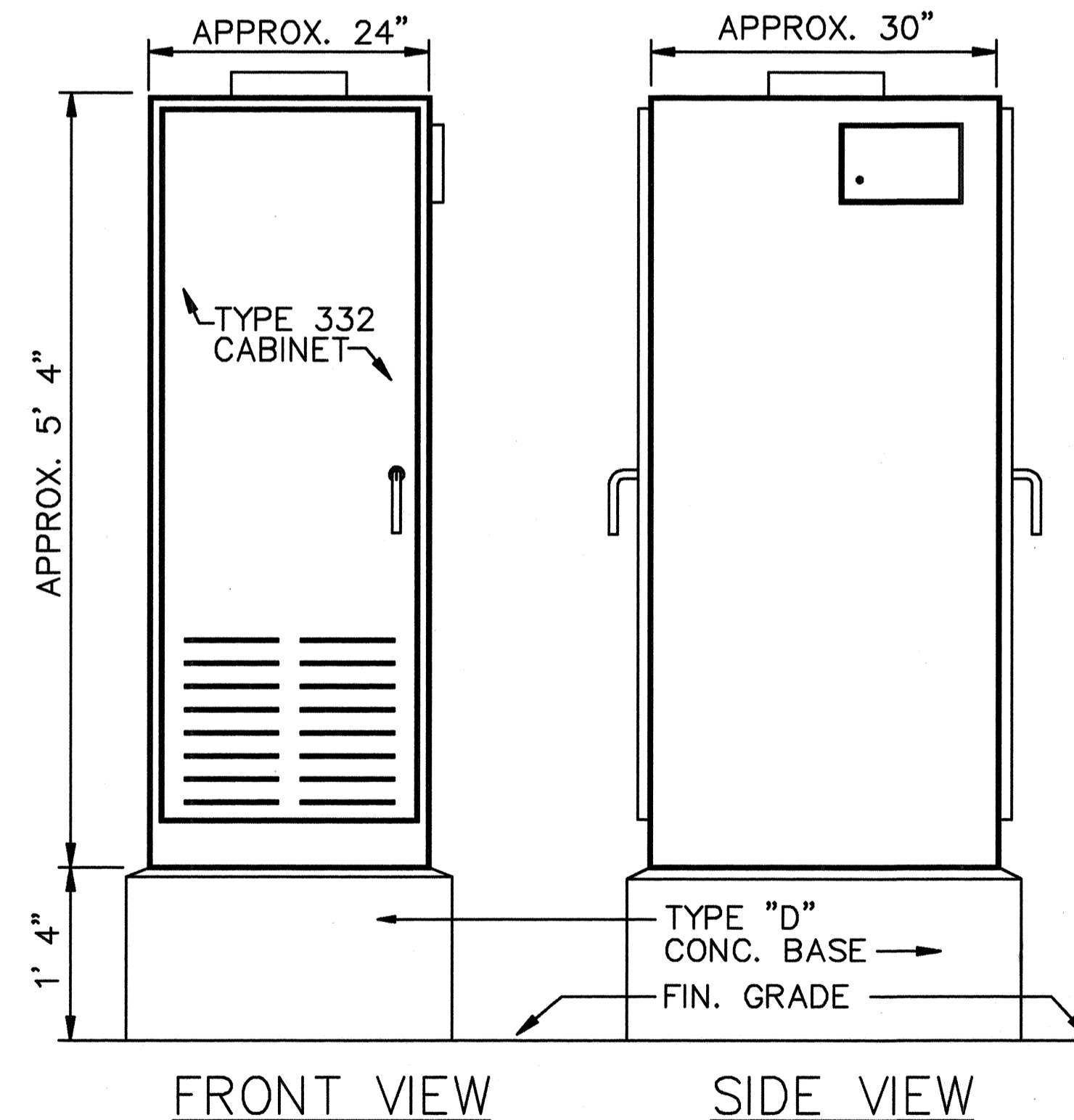


- NOTES:**
- CONCRETE SHALL BE CLASS "B".
 - DIMENSIONS SHALL BE ALTERED TO SUIT CONTROLLER CABINET ACTUALLY FURNISHED.
 - CONDUIT BEND AND DRAIN ARE INCIDENTAL TO CONCRETE BASE.
 - REFER TO CABINET MANUFACTURER'S SPECIFICATIONS FOR DETAILS OF ANCHOR BOLTS AND BASE SETTING.
 - ALL EXPOSED SURFACES OF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

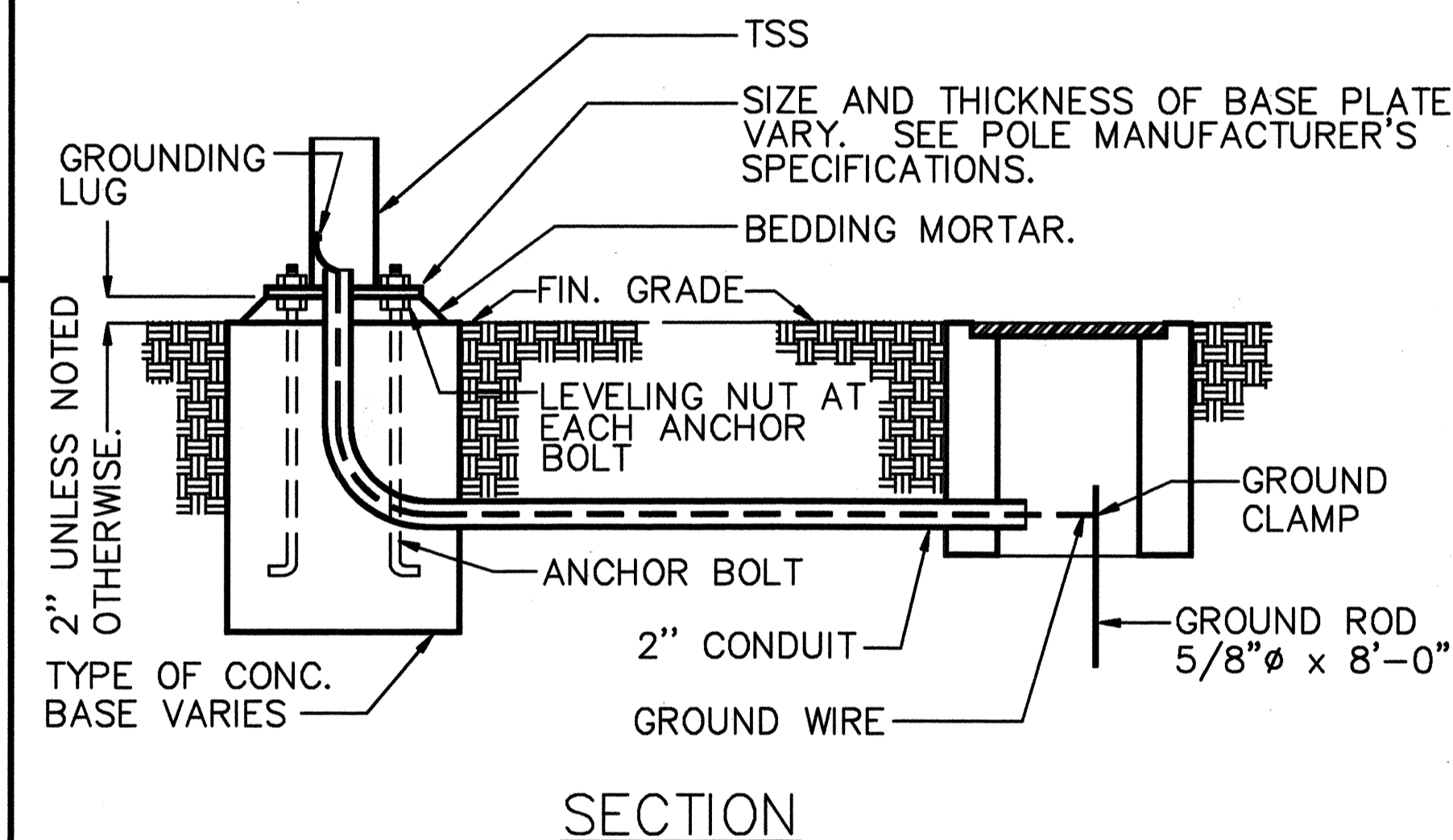
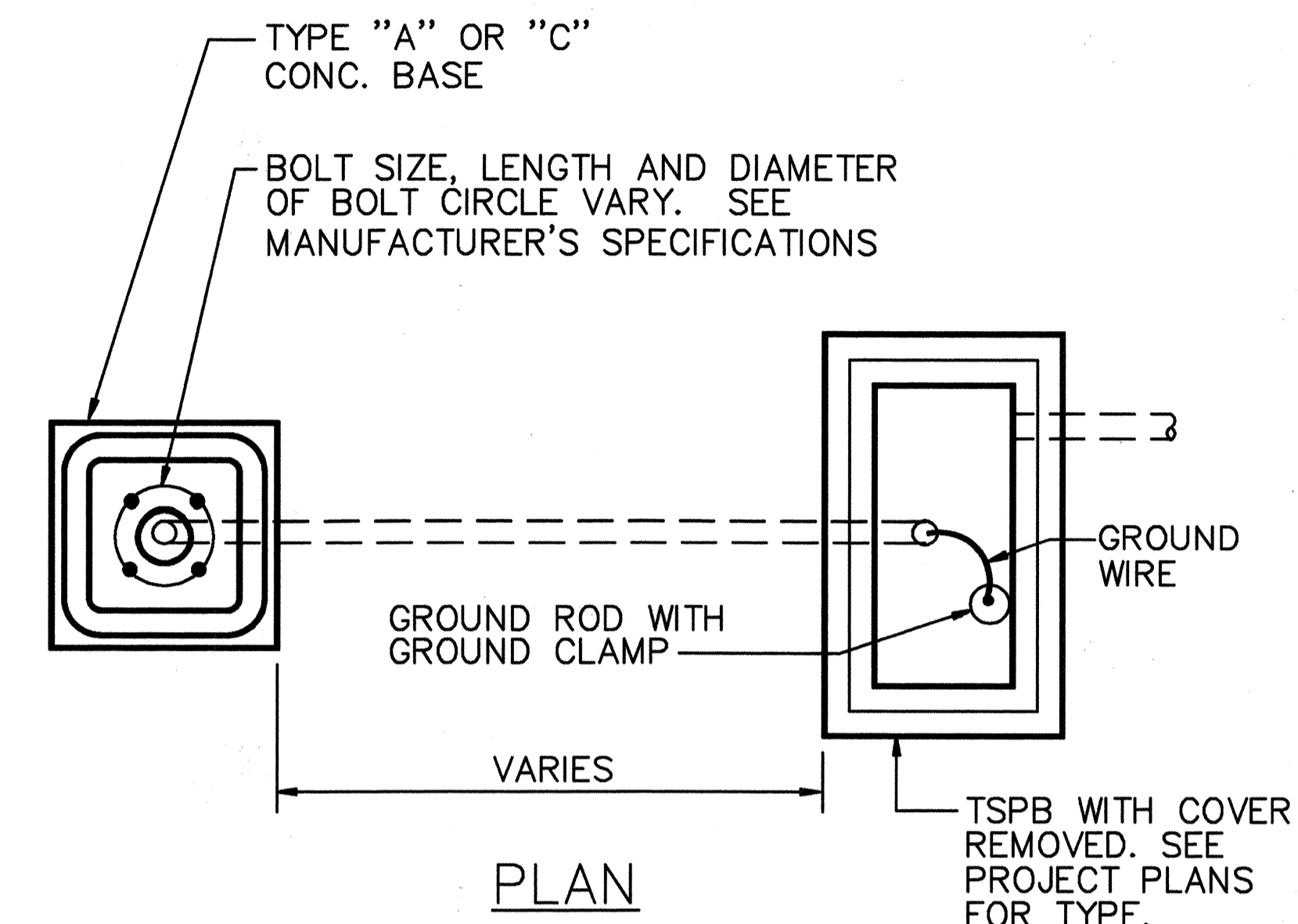


TYPE "D" CONCRETE BASE FOR CONTROLLER CABINETS
NOT TO SCALE

C TRAFFIC SIGNAL SYSTEM CONCRETE BASE DETAILS
13 NOT TO SCALE

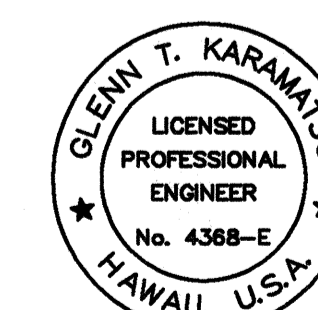


TYPE 332 CABINET
NOT TO SCALE



D TYPICAL STANDARD AND PEDESTAL INSTALLATION
13 NOT TO SCALE

SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTED BY	
CHECKED BY	
No.	



Glenn T. Karamatsu
This work was prepared by me or under my supervision

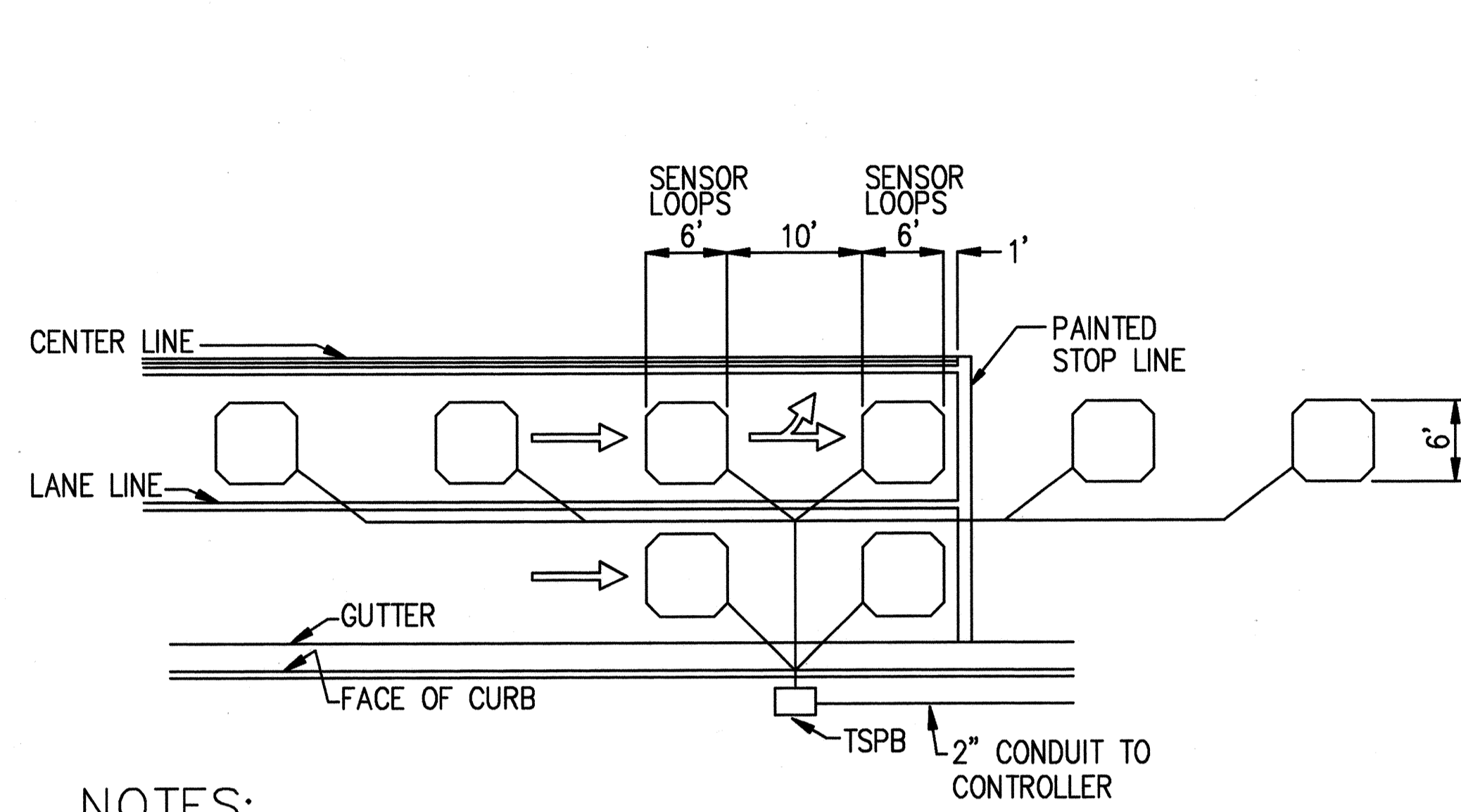
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE BASE DETAILS

FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997

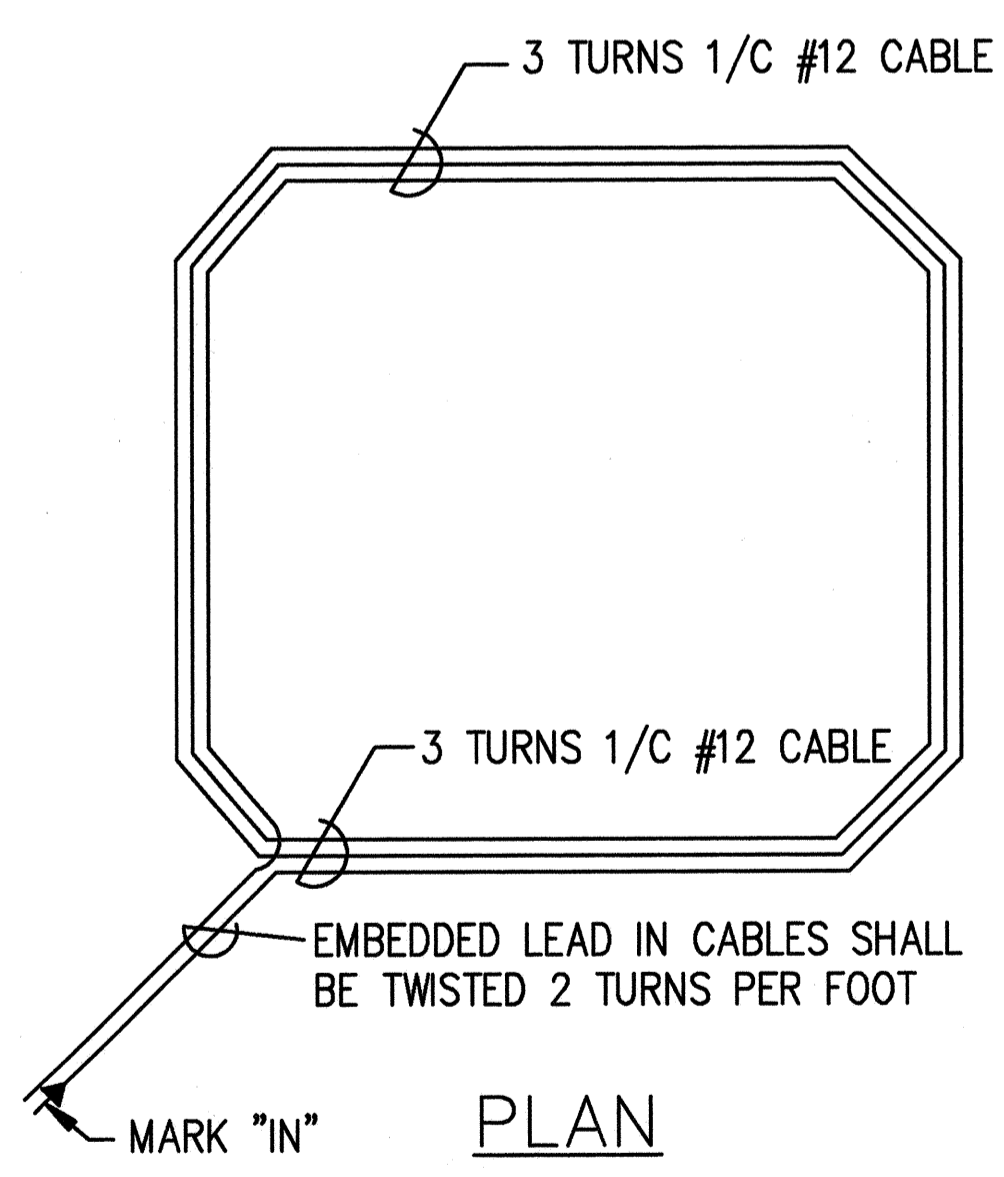
SHEET No. 2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	14	18

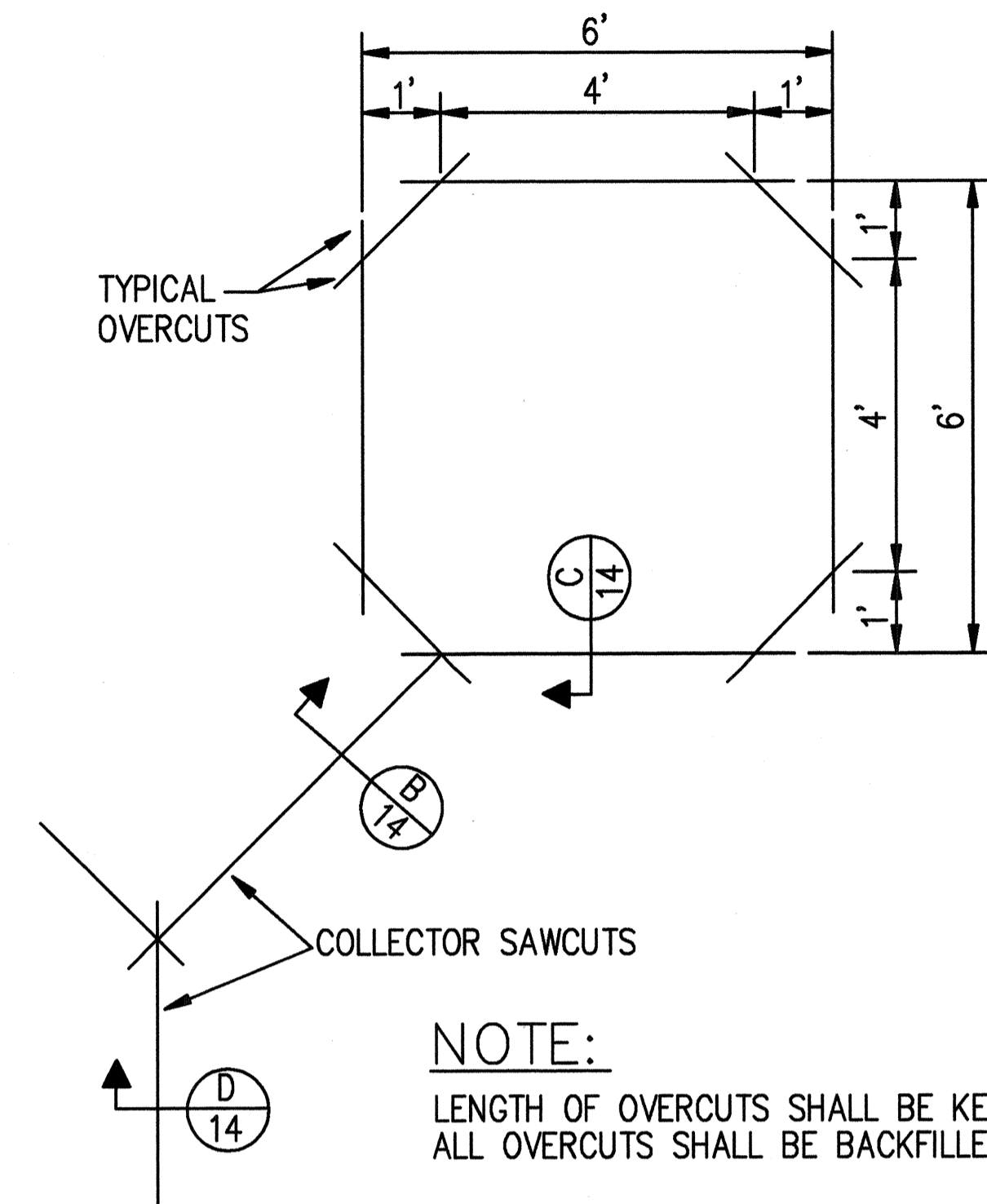


- NOTES:**
1. CENTER SENSOR LOOPS IN LANES.
 2. COLLECTOR CABLES SHALL BE TWISTED 2 TURNS PER FOOT.
 3. NUMBER OF LOOPS AND LOCATIONS VARY. SEE PROJECT PLANS.
 4. NUMBER AND LOCATIONS OF COLLECTOR SAWCUTS MAY BE VARIED IN THE FIELD TO SUIT.
 5. COORDINATE FINAL LOCATION OF SENSORS WITH CIVIL STRIPING PLAN.

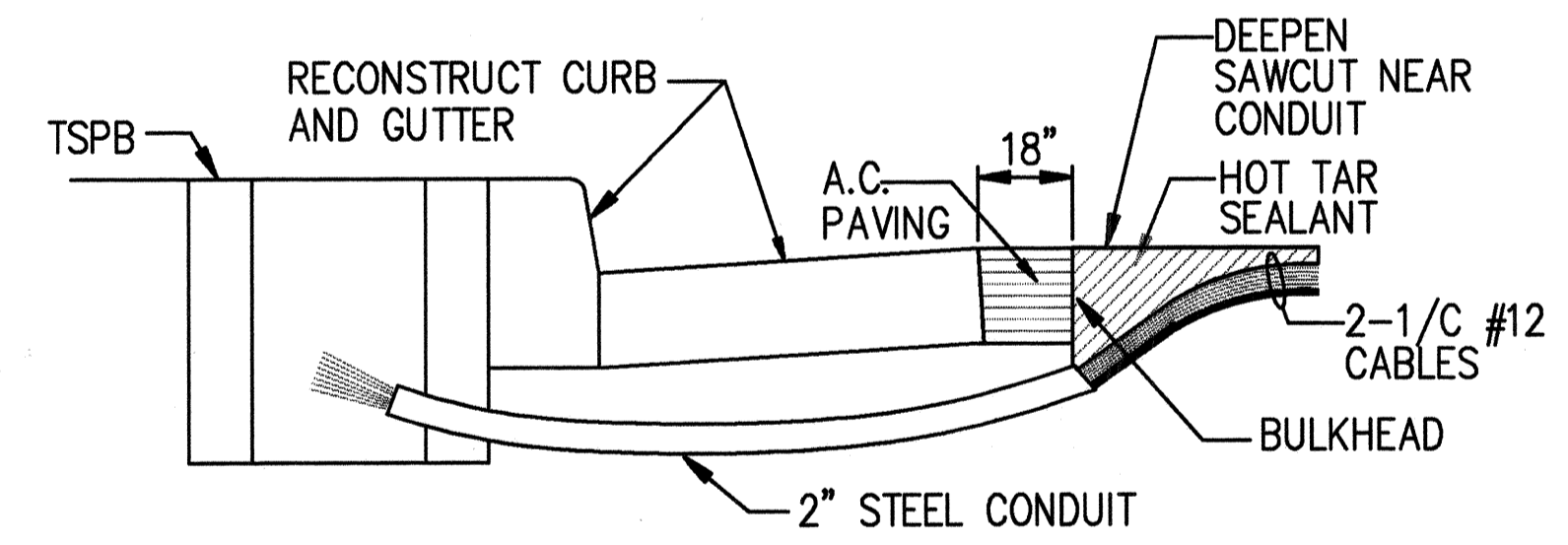
A
14
TYPICAL SENSOR LOOP LAYOUT
NOT TO SCALE



TYPICAL SENSOR LOOP WIRING DIAGRAM
NOT TO SCALE



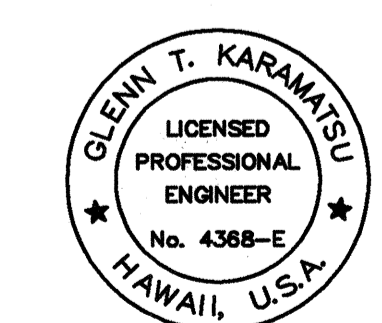
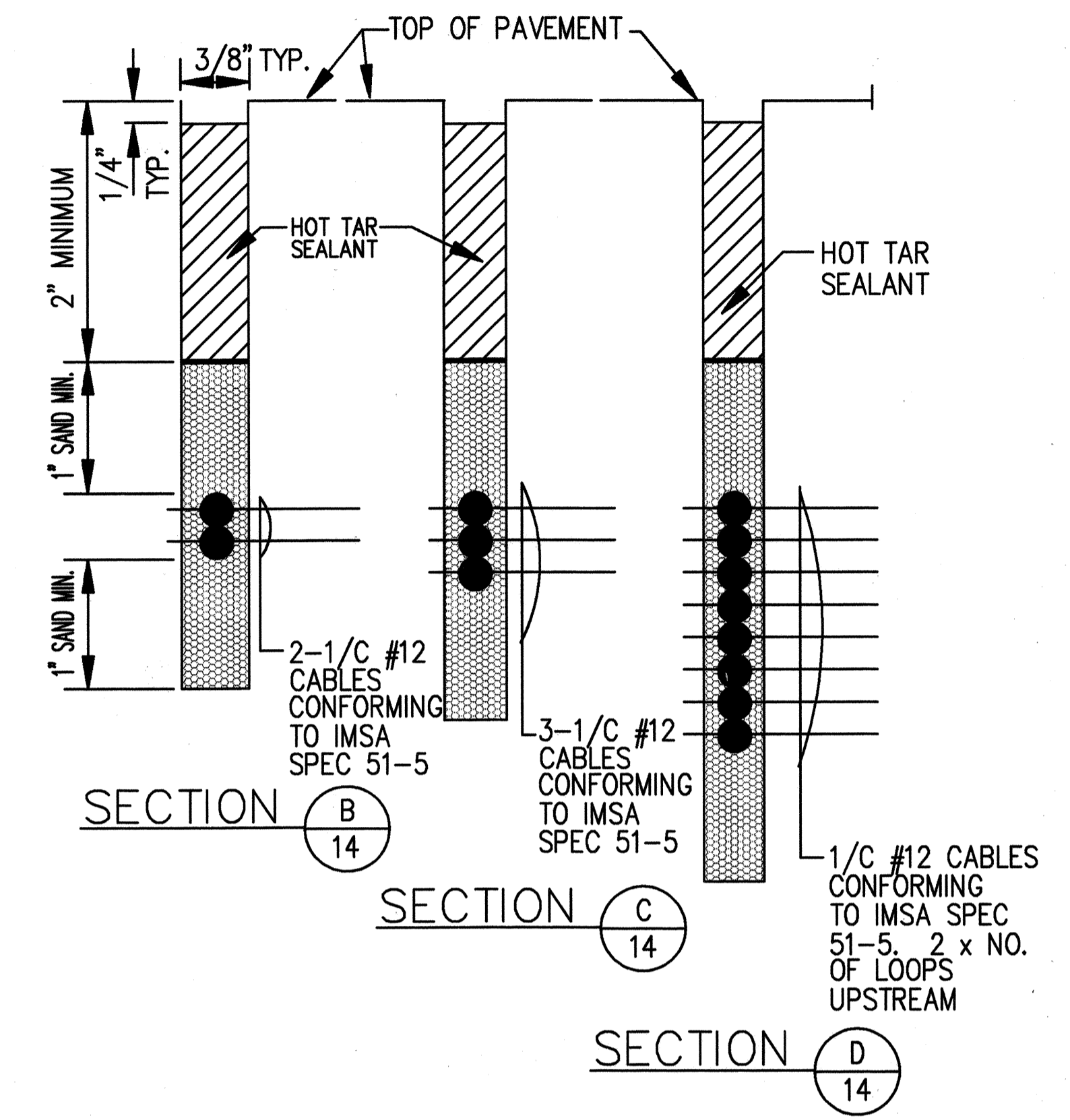
TYPICAL SENSOR LOOP SAWCUT DETAIL



NOTES ON CONSTRUCTION AT END OF SAWCUT

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

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



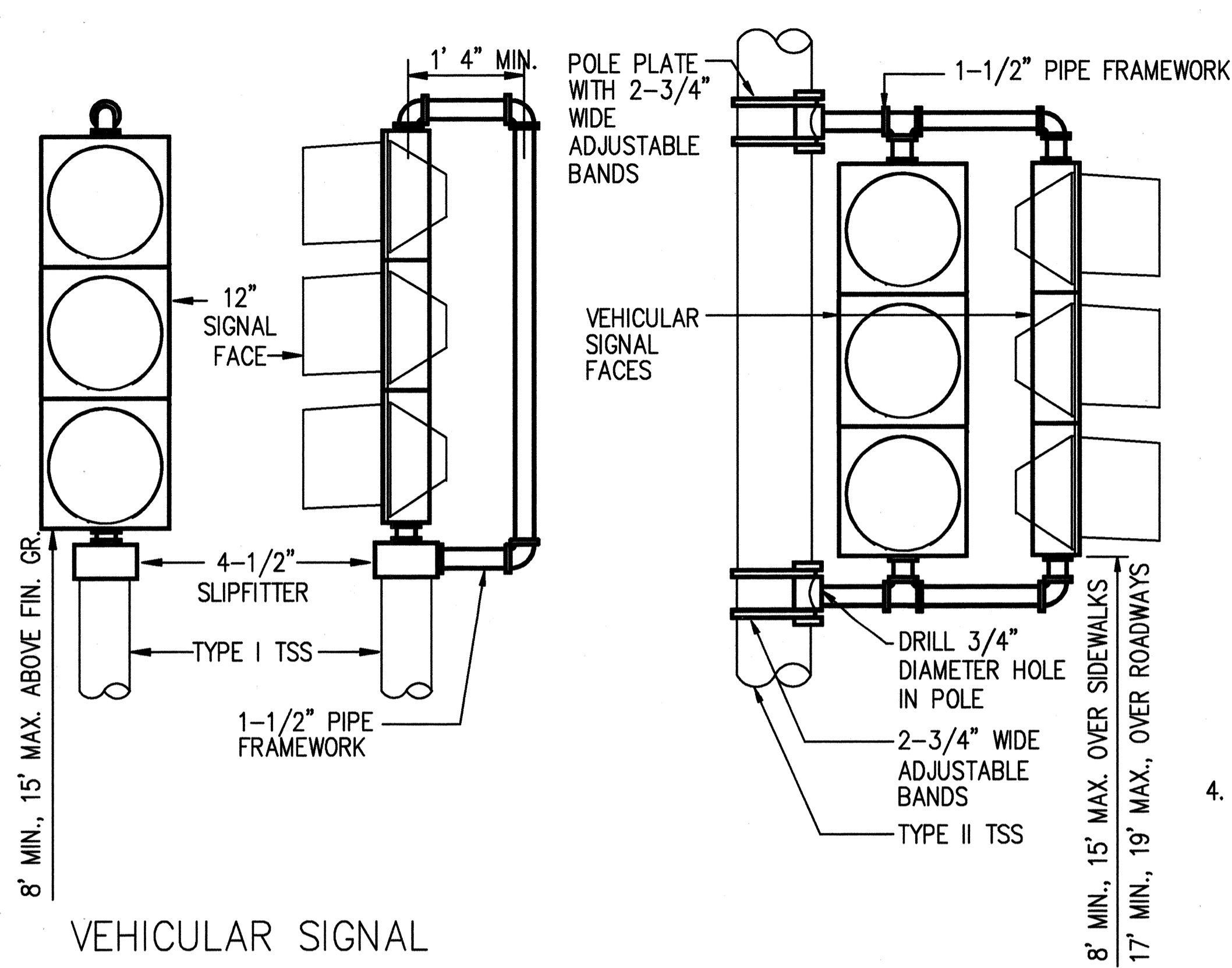
Glenn Karamatsu
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
LOOP DETECTOR DETAILS

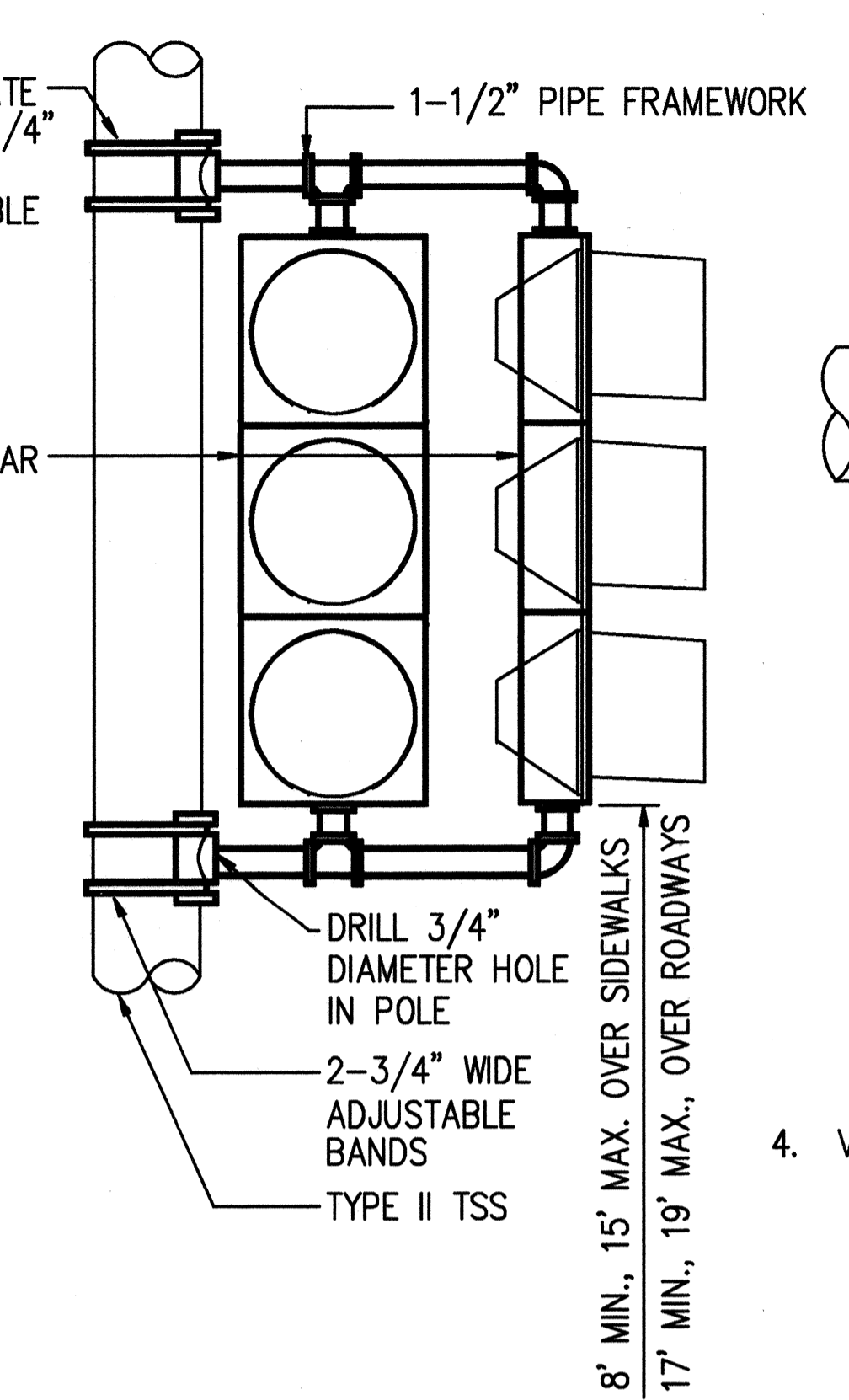
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997
SHEET No. 3 OF 4 SHEETS

14

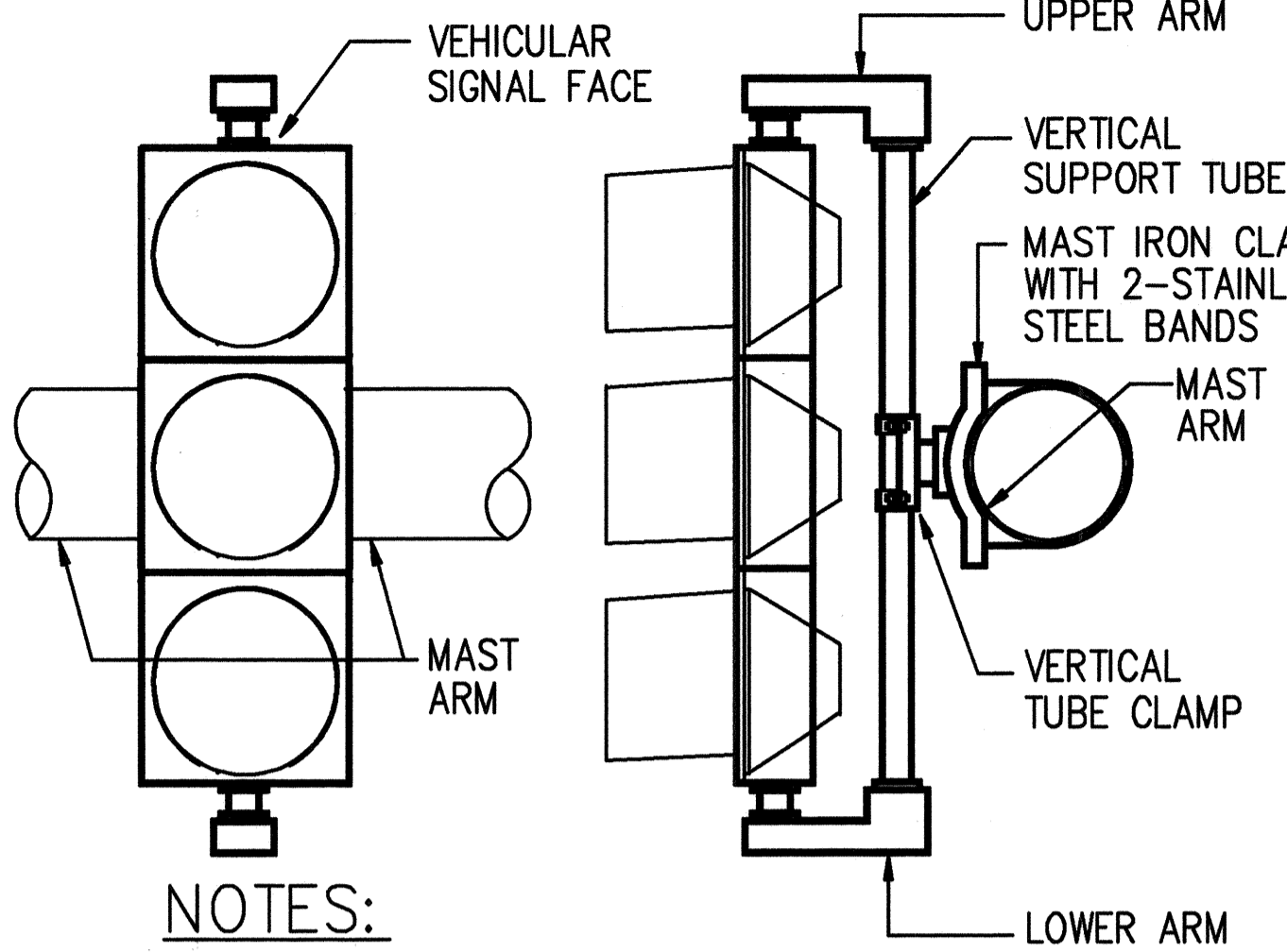
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	15	18



VEHICULAR SIGNAL
TOP OF POLE –
ONE WAY MOUNTING
(TP-1W)



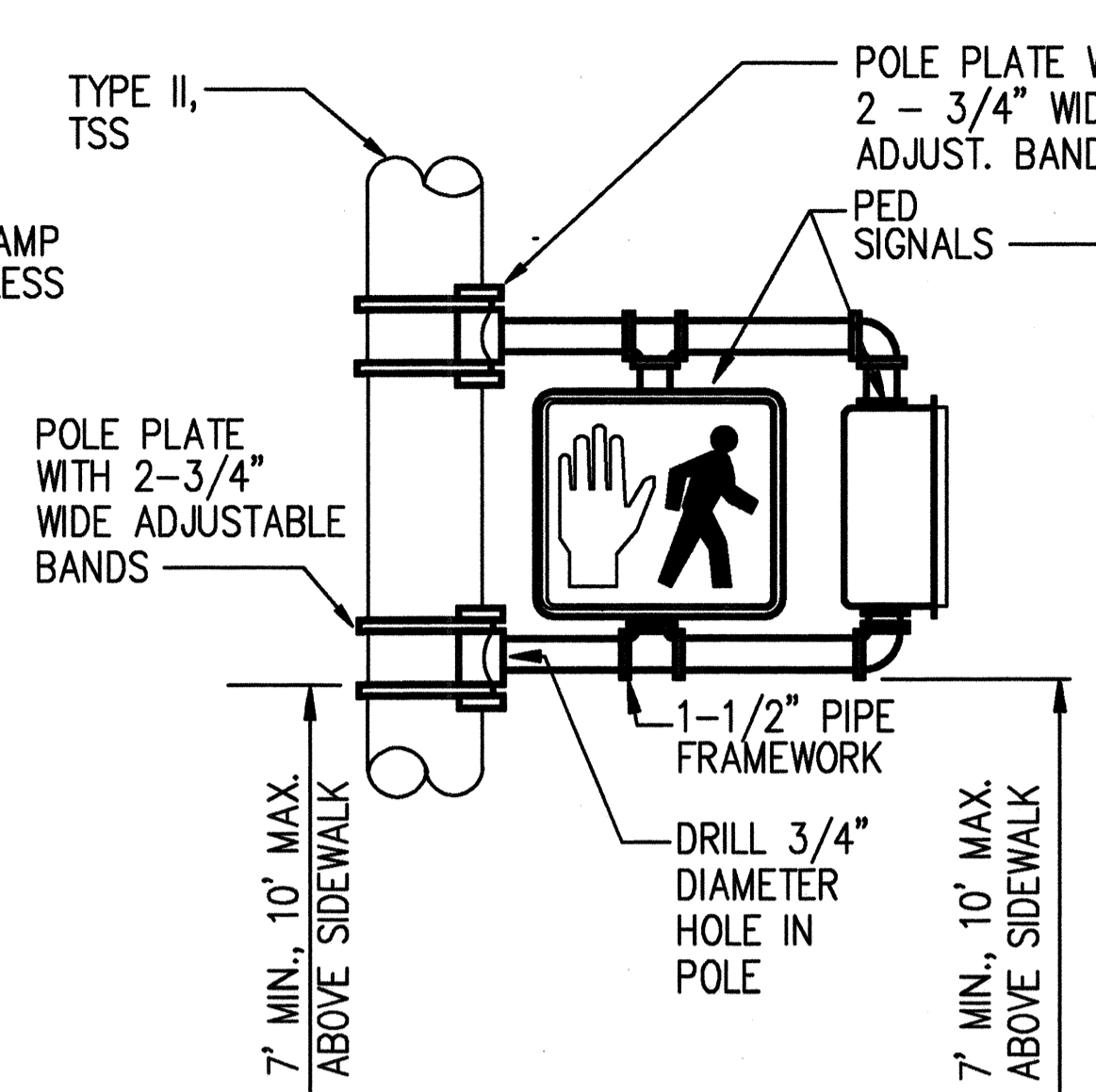
BRACKET MOUNT – TWO WAY
(B-2W)



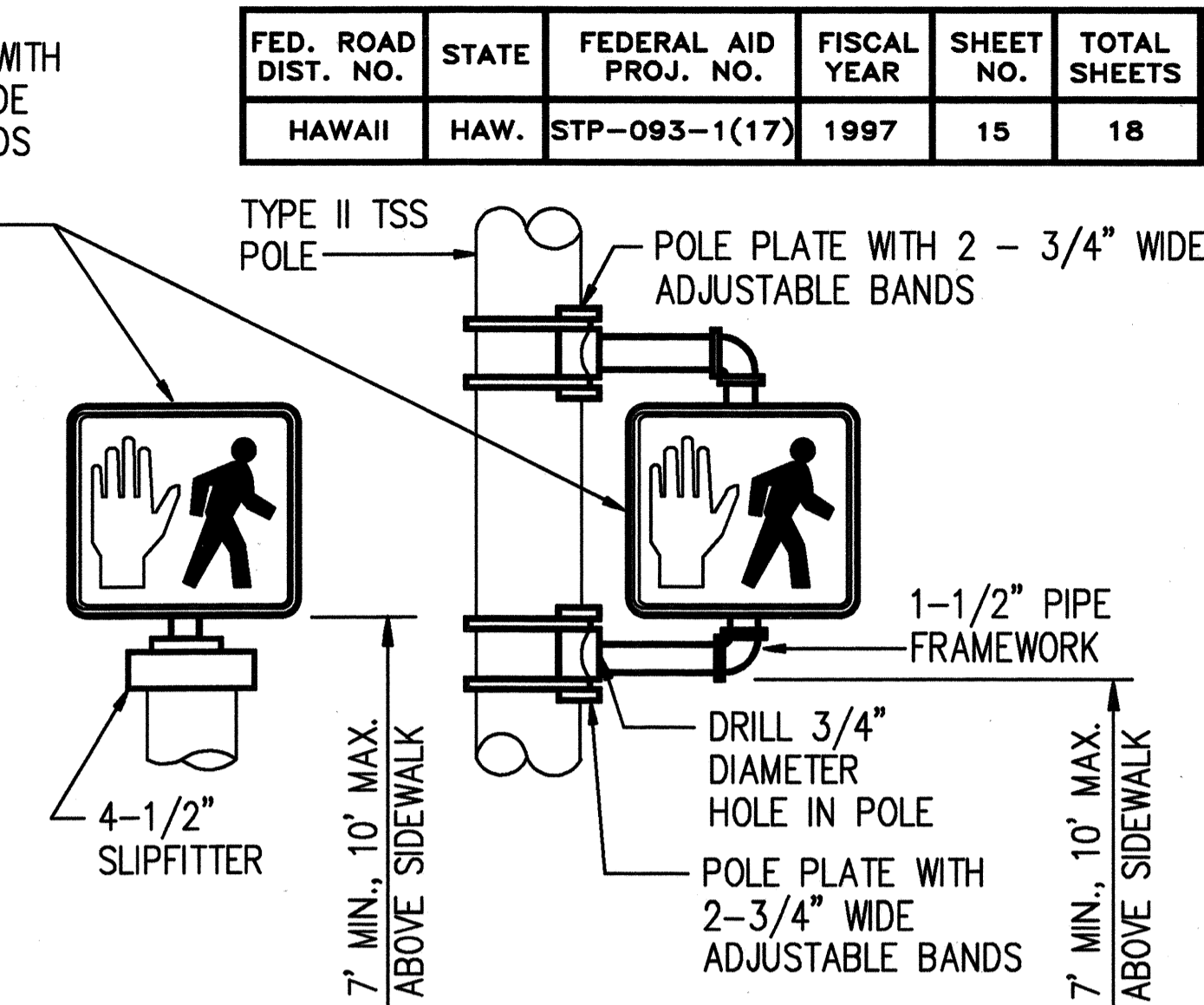
NOTES:

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.

ADJUSTABLE
MAST ARM ONE WAY MOUNTING
AT INTERMEDIATE POINT
MA-1W(I)



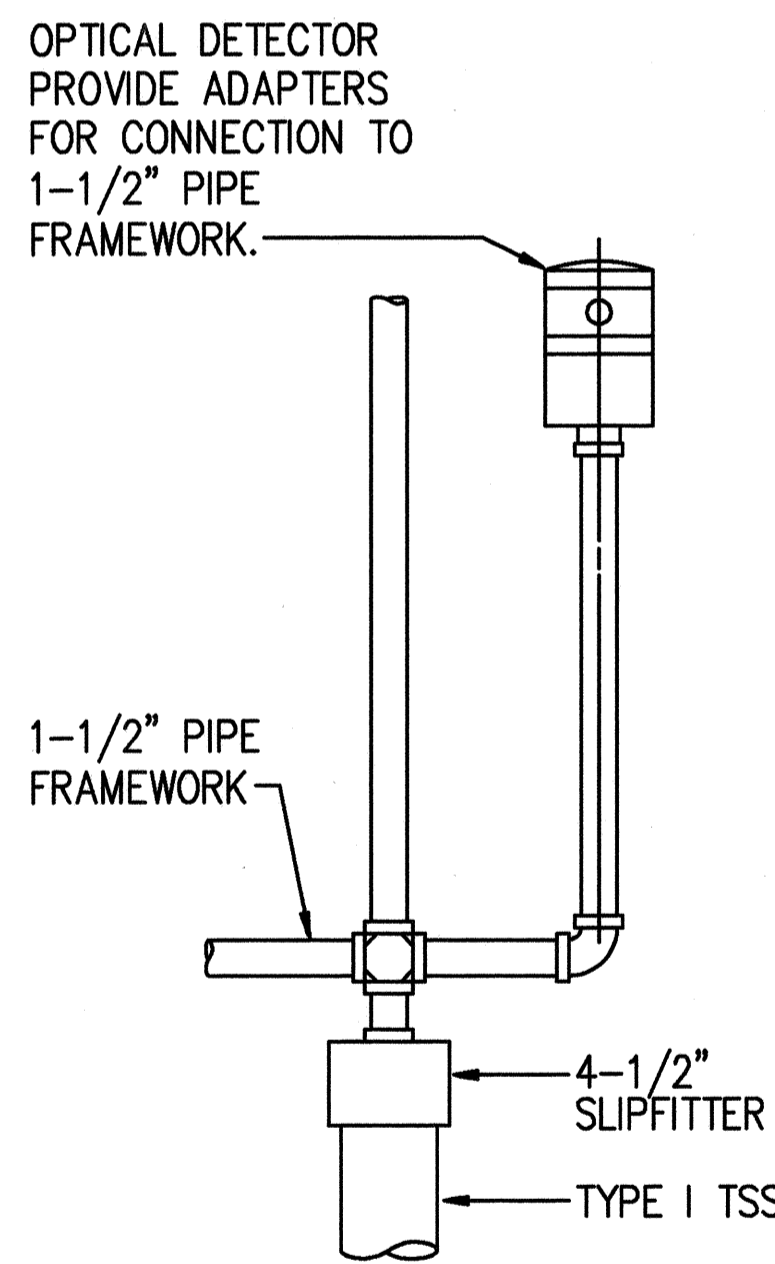
BRACKET MOUNT-TWO WAY
(B-2W)



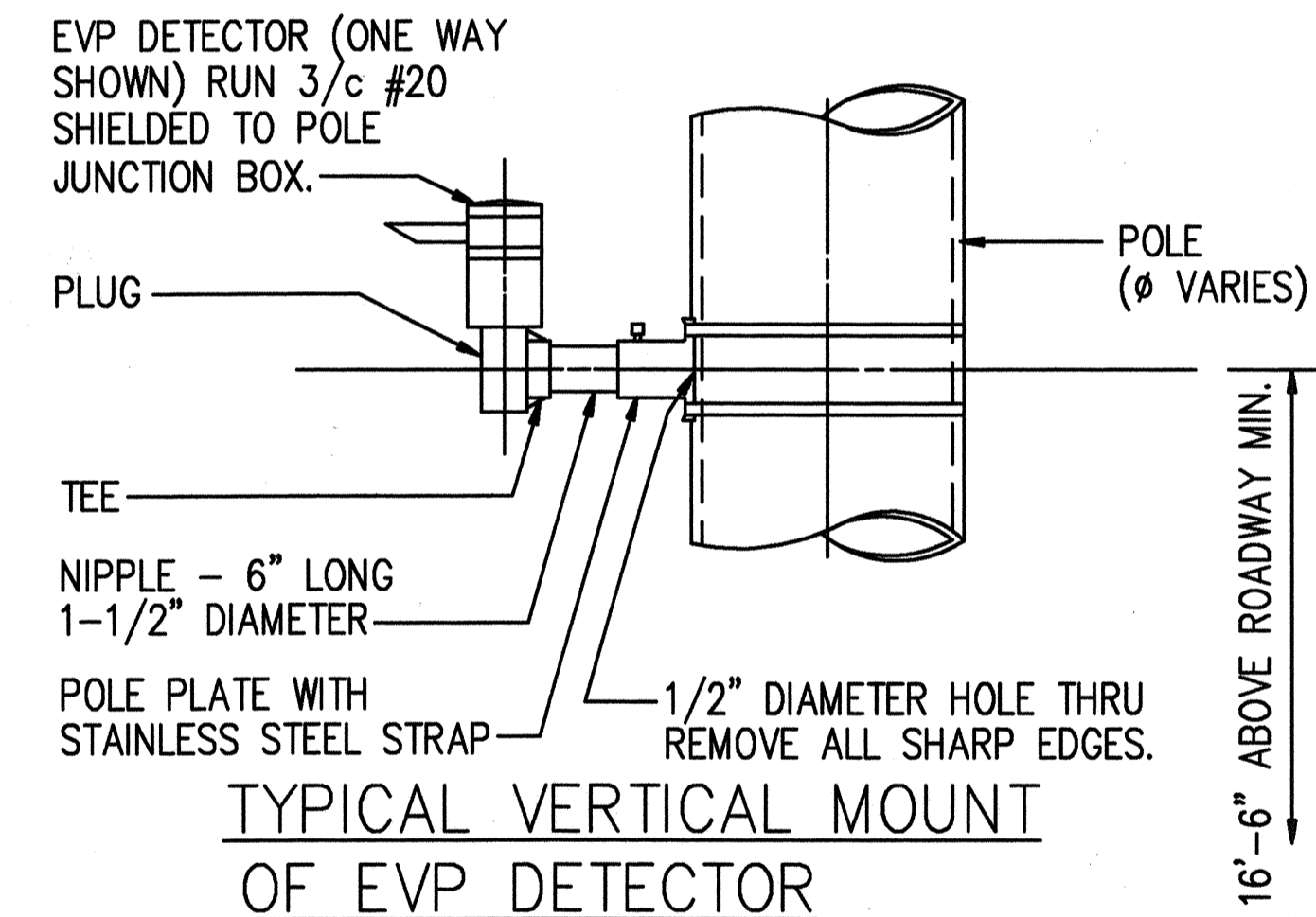
BRACKET MOUNT-ONE WAY
(B-1W)

TOP OF POLE-ONE WAY
(TP-1W)

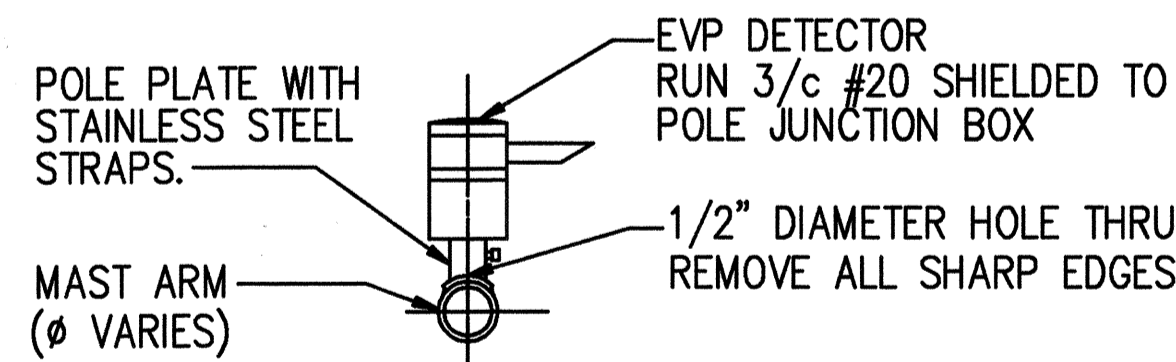
PEDESTRIAN SIGNAL MOUNTING



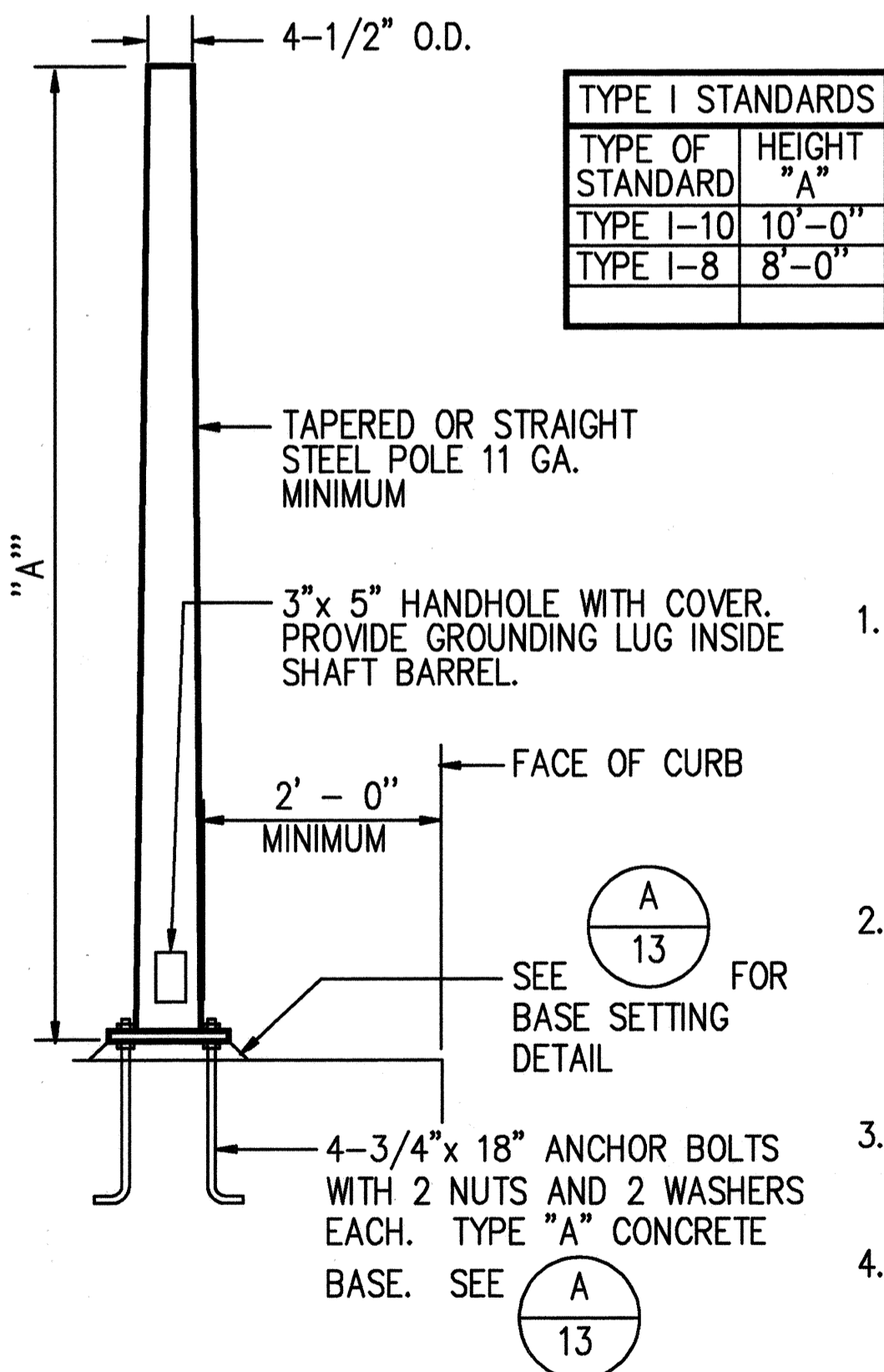
TYPICAL EVP
MOUNTING



TYPICAL VERTICAL MOUNT
OF EVP DETECTOR



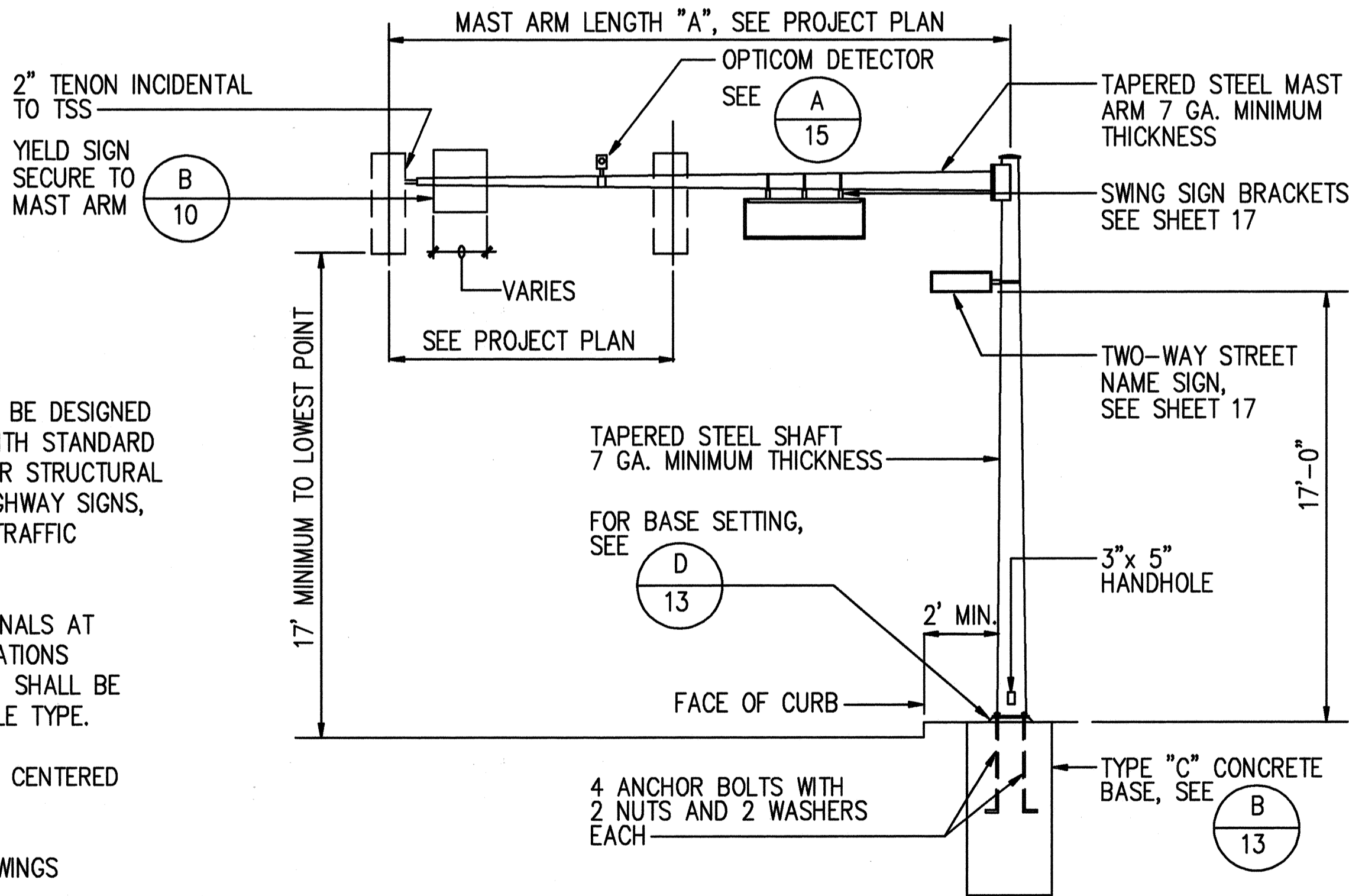
TYPICAL HORIZONTAL MOUNT
OF EVP DETECTOR



TYPE I TRAFFIC SIGNAL STANDARD

NOTES:

1. STANDARDS SHALL BE DESIGNED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. MOUNTING FOR SIGNALS AT INTERMEDIATE LOCATIONS ON THE MAST ARM SHALL BE OF THE ADJUSTABLE TYPE.
3. SIGNALS SHALL BE CENTERED OVER LANE LINES.
4. SUBMIT SHOP DRAWINGS FOR APPROVAL



TYPE II - "A" TRAFFIC SIGNAL STANDARD

A
15
TRAFFIC SIGNAL SYSTEM DETAILS
NOT TO SCALE

SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTES BY	
CHECKED BY	
NO.	



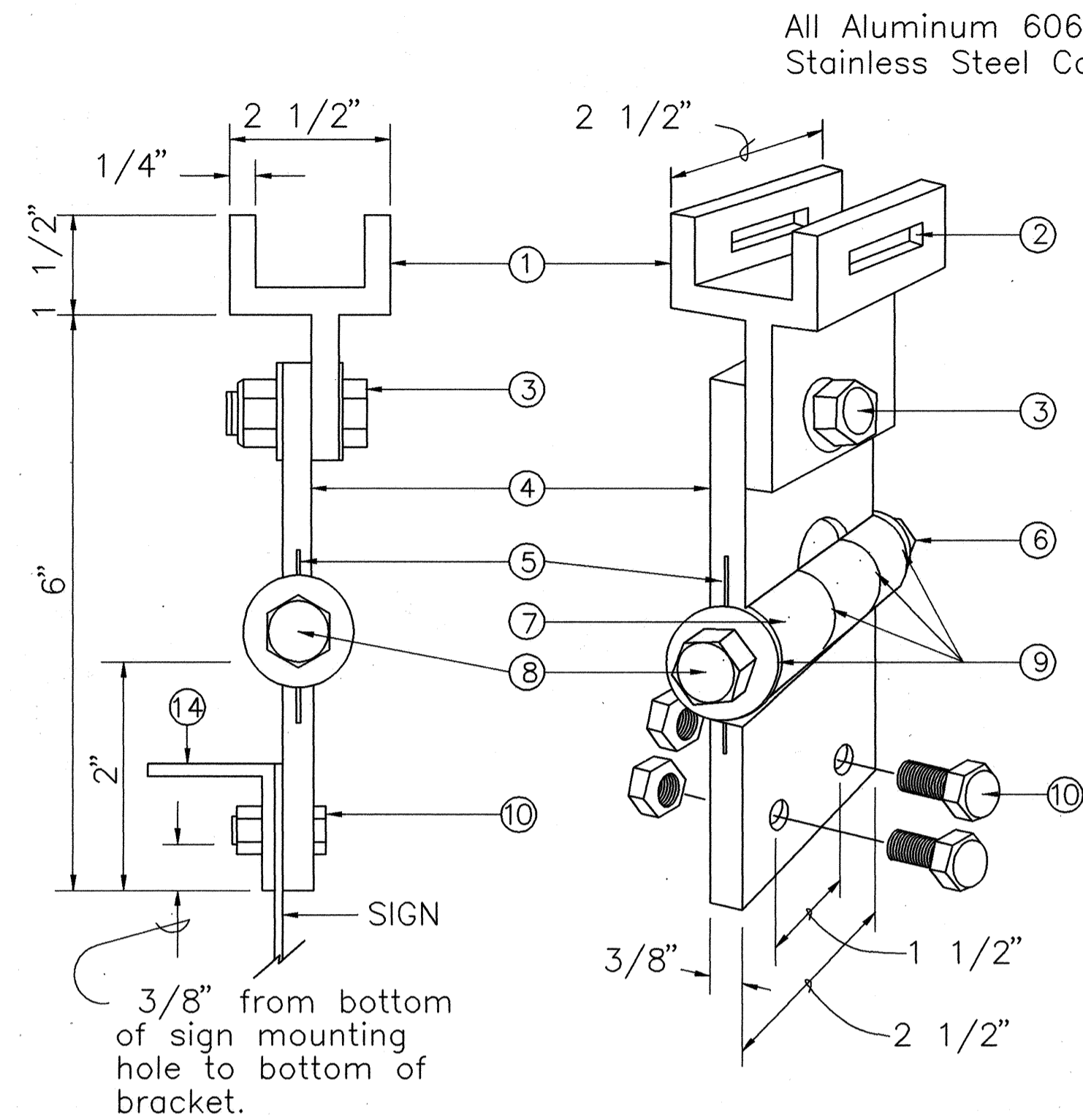
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me or under my supervision

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL STANDARD
AND SIGNAL HEAD DETAILS
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: March 1997

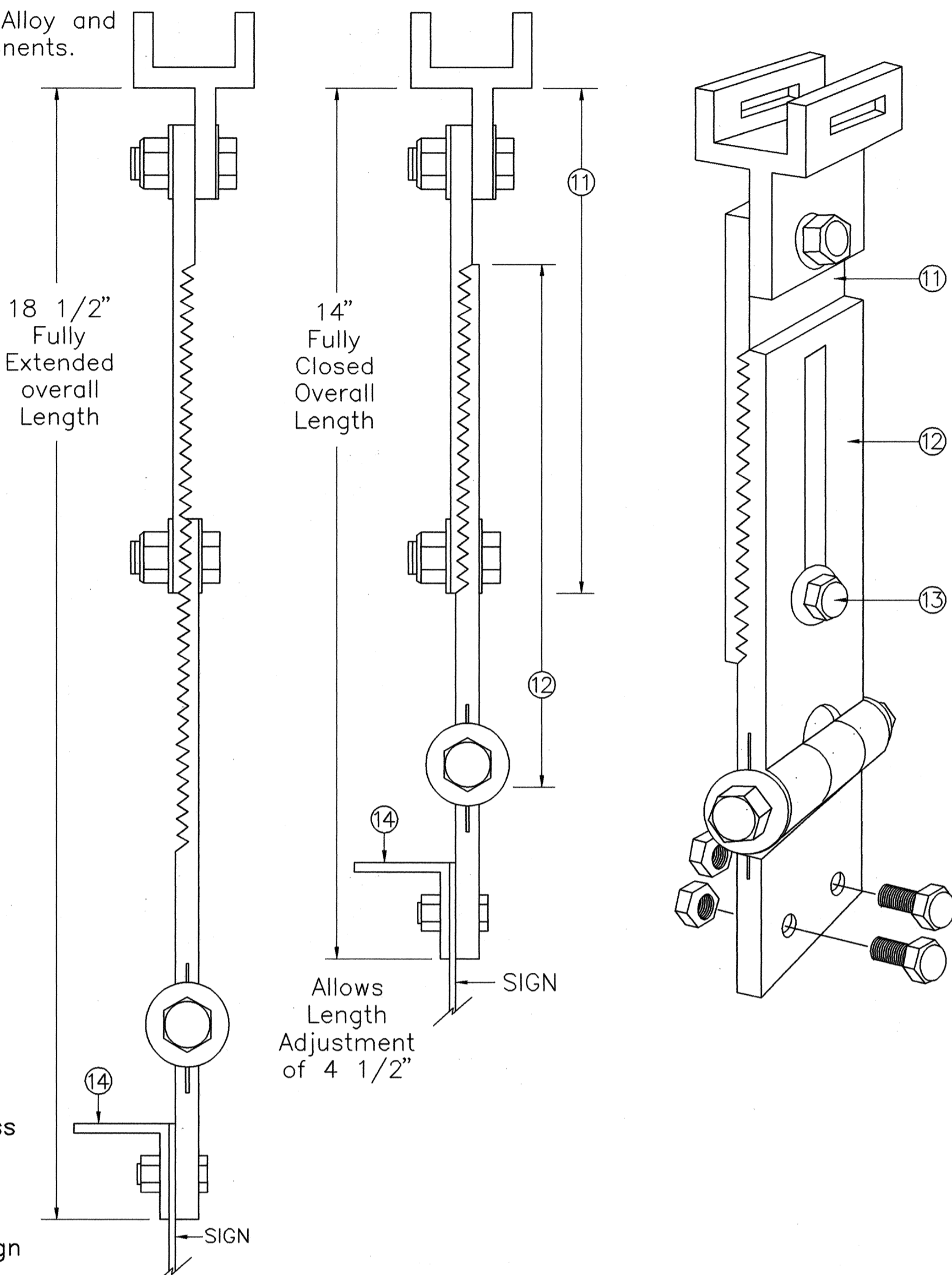
SHEET No. 4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	16	18



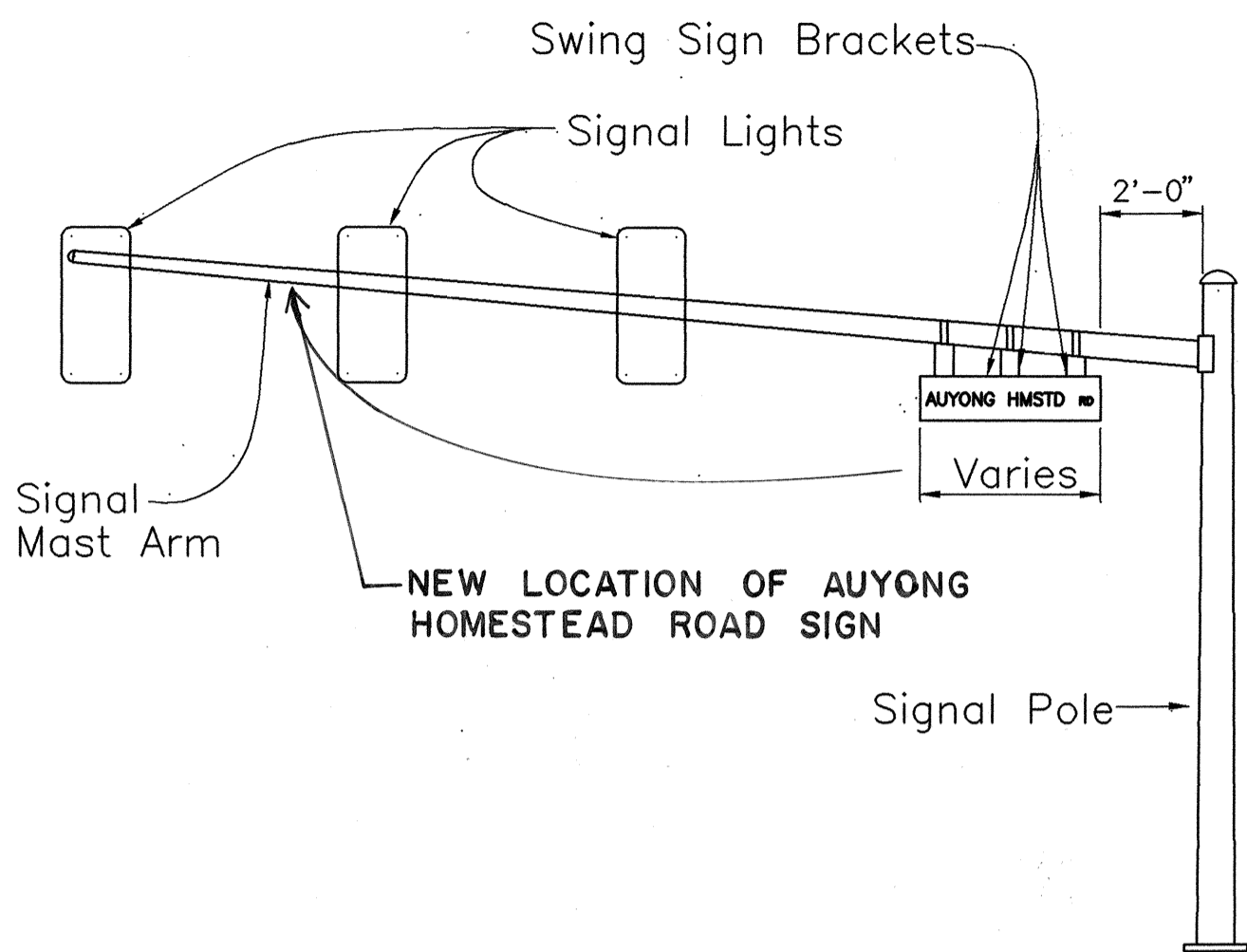
**FIXED LENGTH NON-ADJUSTABLE
SWING SIGN BRACKET**

- ① Pivotal Upper Bracket
- ② 1 5/8" x 1/4" Slot for double strapping to electrolier mast arm. (M2G-34S(HD) .030" x 3/4" Heavy Duty Stainless Stail Stump with M2G-34B(HD) Buckle recommended.)
- ③ 1/2" - 13 x 1 1/2" 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 1/2" - 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 1 1/2" centers provide positive lock sign mounting to bracket.
- ⑪ 8 1/4" 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 1/2" - 13 x 1 1/2" 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 1 1/4" x 1 1/4" x 1/8" Aluminum Angle

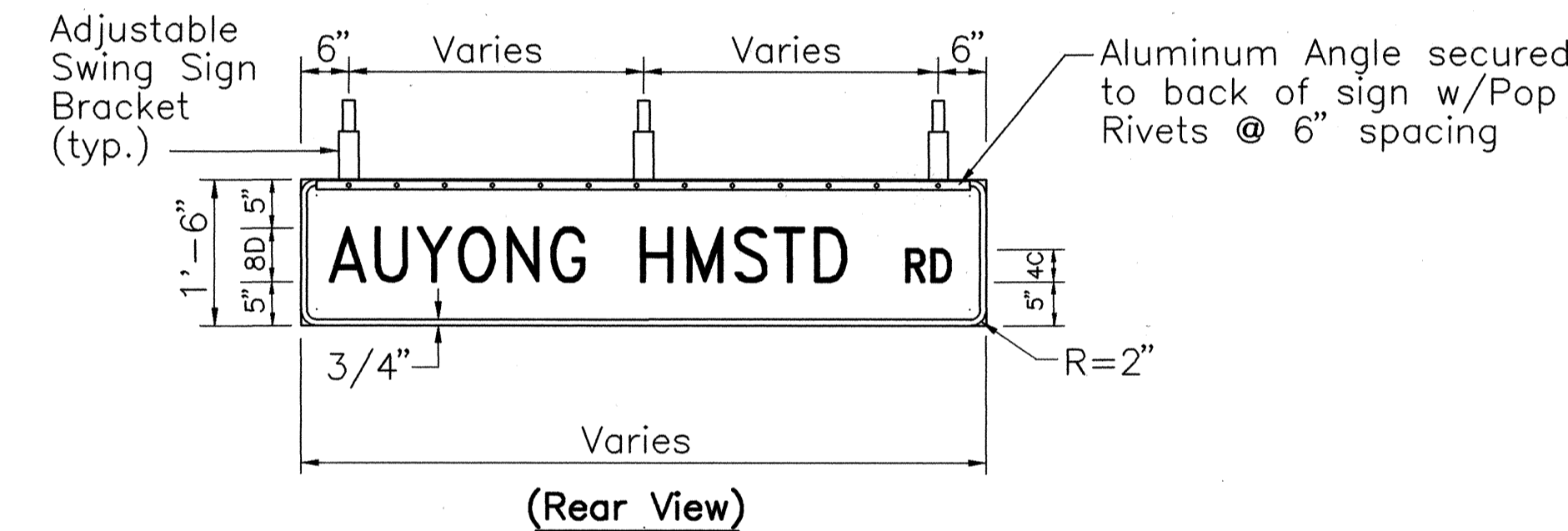


**ADJUSTABLE LENGTH
SWING SIGN BRACKET**

Note: Dimensions may vary slightly.



**STREET NAME SIGN MOUNTING
ON MAST ARM**



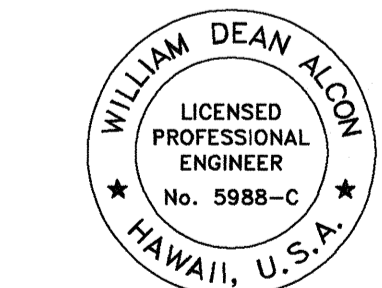
COLORS:
Legend - White (Refl.)
Background - Green (Refl.)

NOTE:
Provide the same message on the front and back side of the sign.

**TYPICAL PANEL & SWING BRACKET
LAYOUT FOR STREET NAME SIGN ON
TRAFFIC SIGNAL MAST ARM**

SIGN MOUNTING DETAIL

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
NO.	

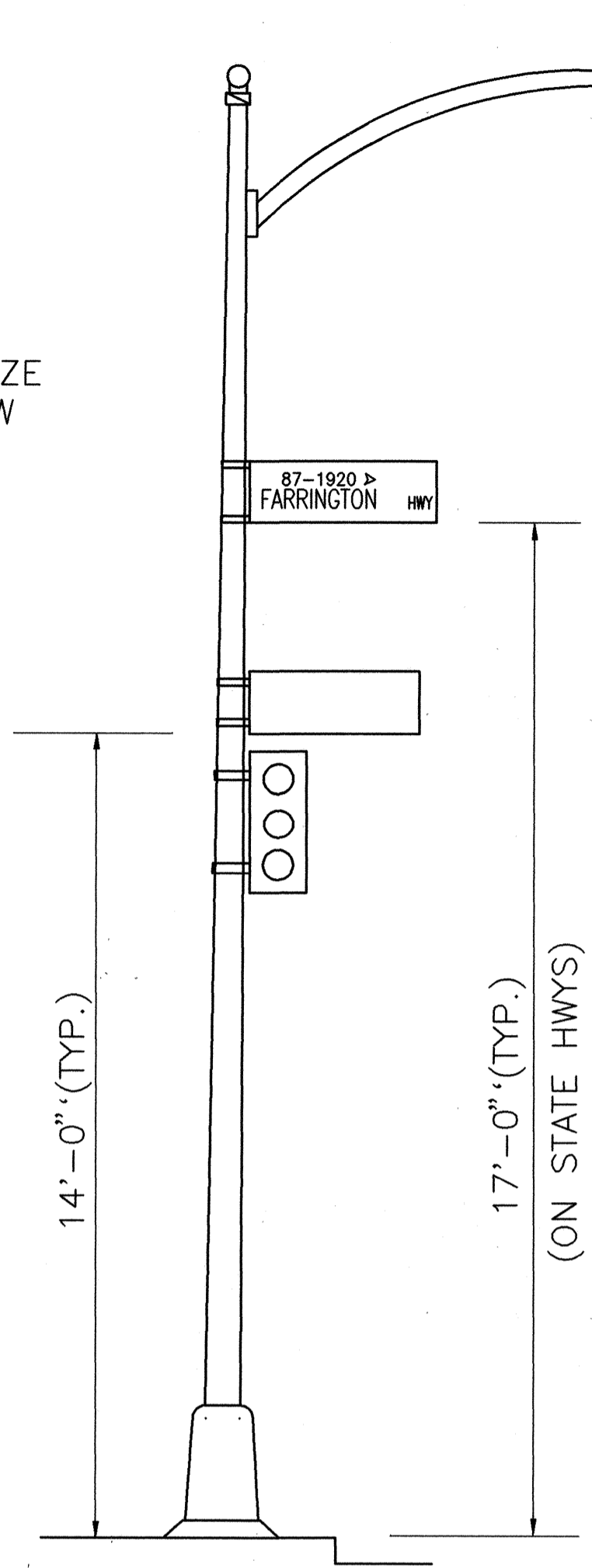
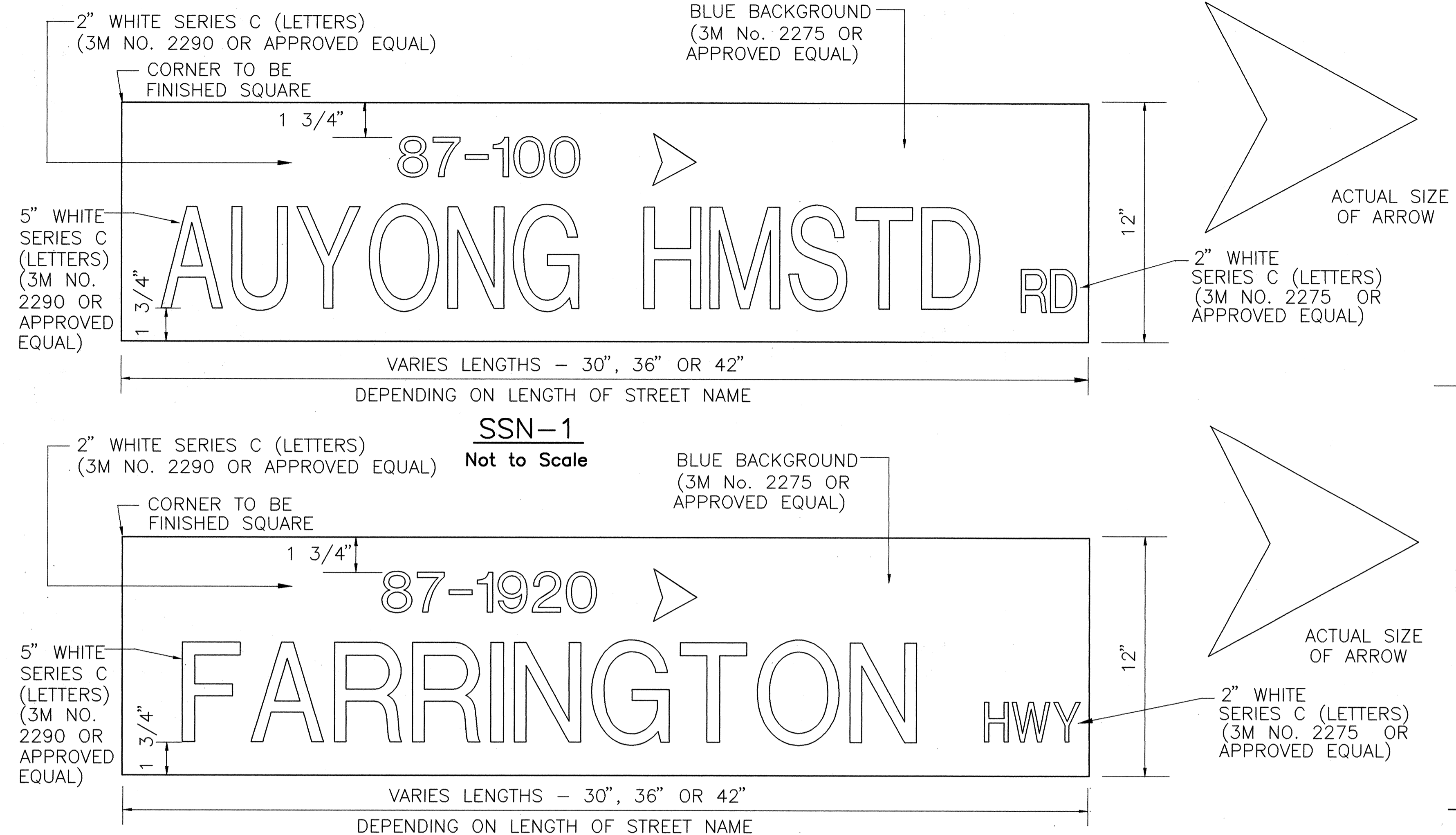


THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

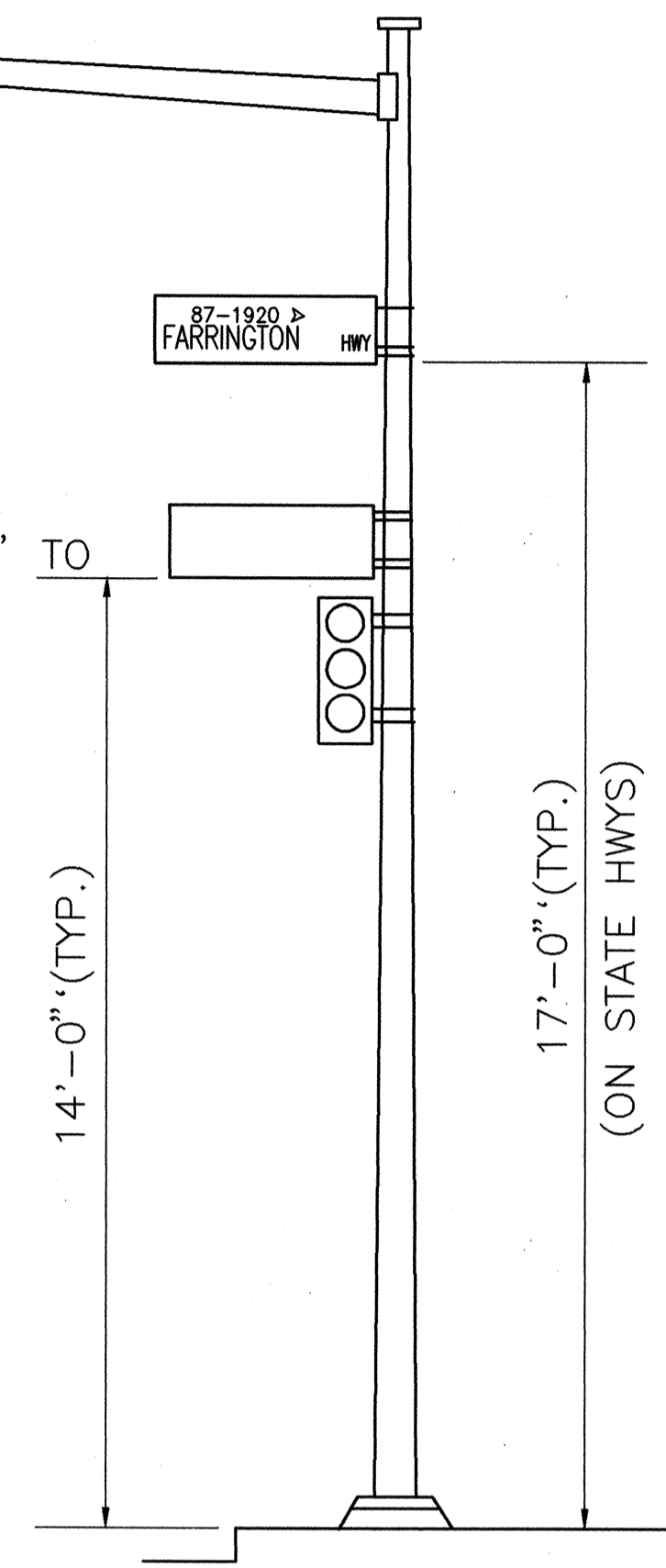
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**STREET NAME SIGN AND
SWING SIGN BRACKET DETAIL**
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: MARCH, 1997

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(17)	1997	17	18



STREET NAME SIGNS MAY BE MOUNTED HIGHER THAN 14'-0" CLEAR TRAFFIC SIGNAL HEAD BRACKETS

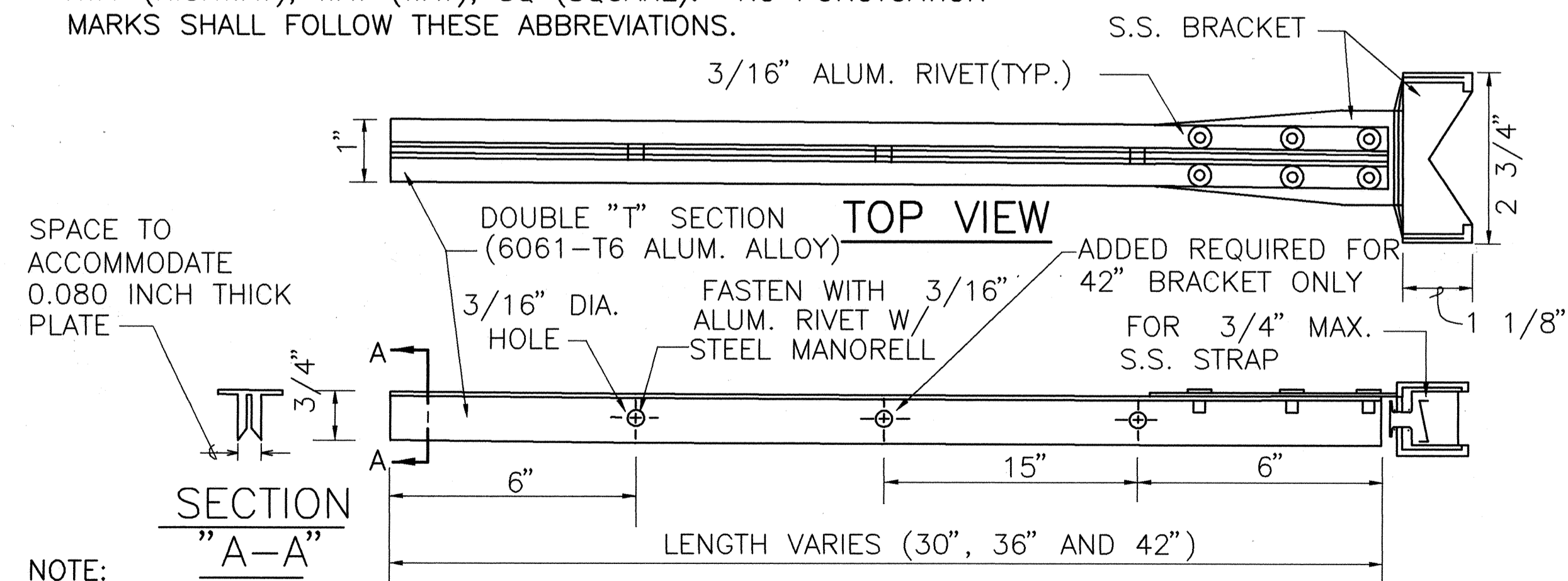


NOTES:

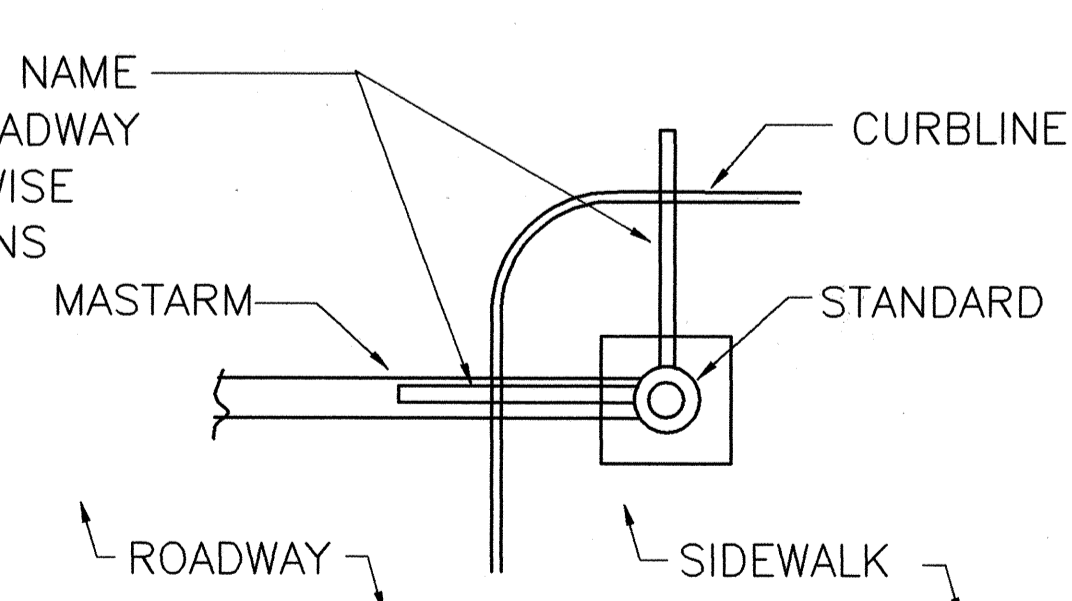
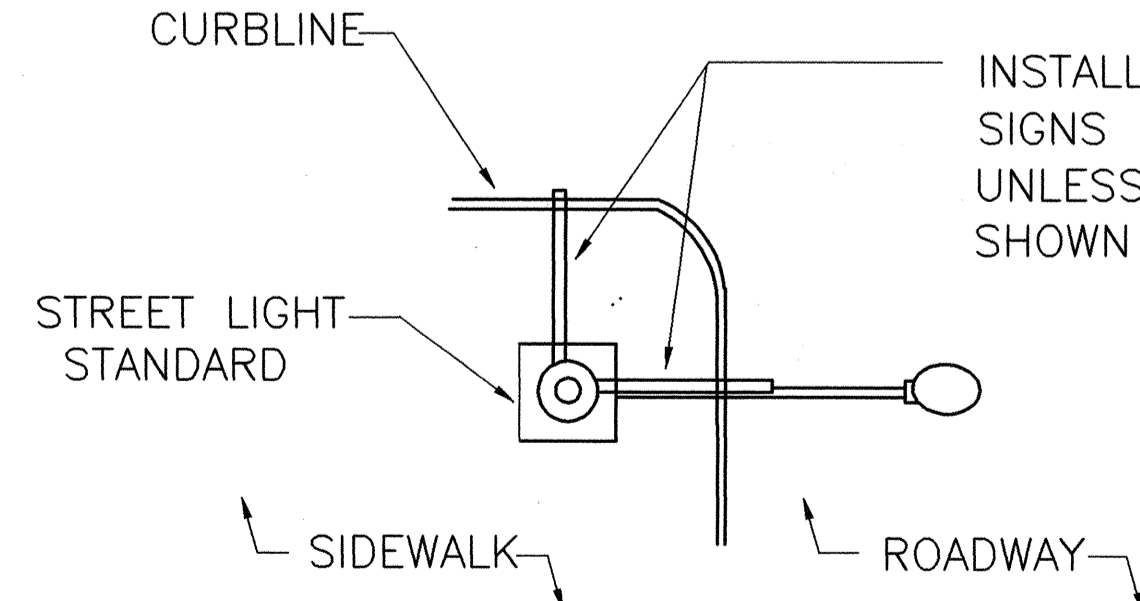
- BLOCK NUMBERS AND STREET NAMES ARE TO BE NEATLY CENTERED HORIZONTALLY ON STREET NAME BLADE.
- DIACRITICAL MARKINGS SHALL BE USED ON HAWAIIAN NAMES AS SPECIFIED. NO PUNCTUATION SHALL FOLLOW N (NORTH) OR S (SOUTH) ABBREVIATIONS.
- FOLLOWING ABBREVIATIONS SHALL BE USED: ST (STREET), AV (AVENUE), RD (ROAD), LN (LANE), BLVD (BOULEVARD), HWY (HIGHWAY), WAY (WAY), SQ (SQUARE). NO PUNCTUATION MARKS SHALL FOLLOW THESE ABBREVIATIONS.
- WHEN BLOCK NUMBERS ARE NOT SPECIFIED, STREET NAME SHALL BE CENTERED VERTICALLY ON STREET NAME BLADE WITH 3 1/2" SPACING ON TOP AND BOTTOM.
- ALL STREET NAME SIGNS SHALL HAVE BLOCK NUMBERS AND ARROWS UNLESS NOTED OTHERWISE.
- 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.

- THE ACCEPTED QUANTITIES OF CITY & COUNTY OF HONOLULU STREET NAME SIGNS WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, COMPLETE IN PLACE. THE CONTRACT UNIT PRICE PAID SHALL BE FULL COMPENSATION FOR ALL NECESSARY HARDWARE, EQUIPMENT, TOOLS, LABOR, MATERIALS, AND OTHER INCIDENTALS FOR THE INSTALLATION OF THE NEW SIGN BRACKETS.



- NOTE:
- BRACKETS ARE TO BE USED AT TOP AND BOTTOM OF SIGN BLADE



STREET NAME CANTILEVER BRACKET



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET NAME SIGN CANTILEVER
BRACKET DETAIL
FARRINGTON HIGHWAY
Intersection Improvements at Auyong Homestead Road
Fed. Aid Project No. STP-093-1(17)
Date: MARCH, 1997

SHEET No. 1 OF 1 SHEETS

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
ORIGINAL PLAN	
NO.	