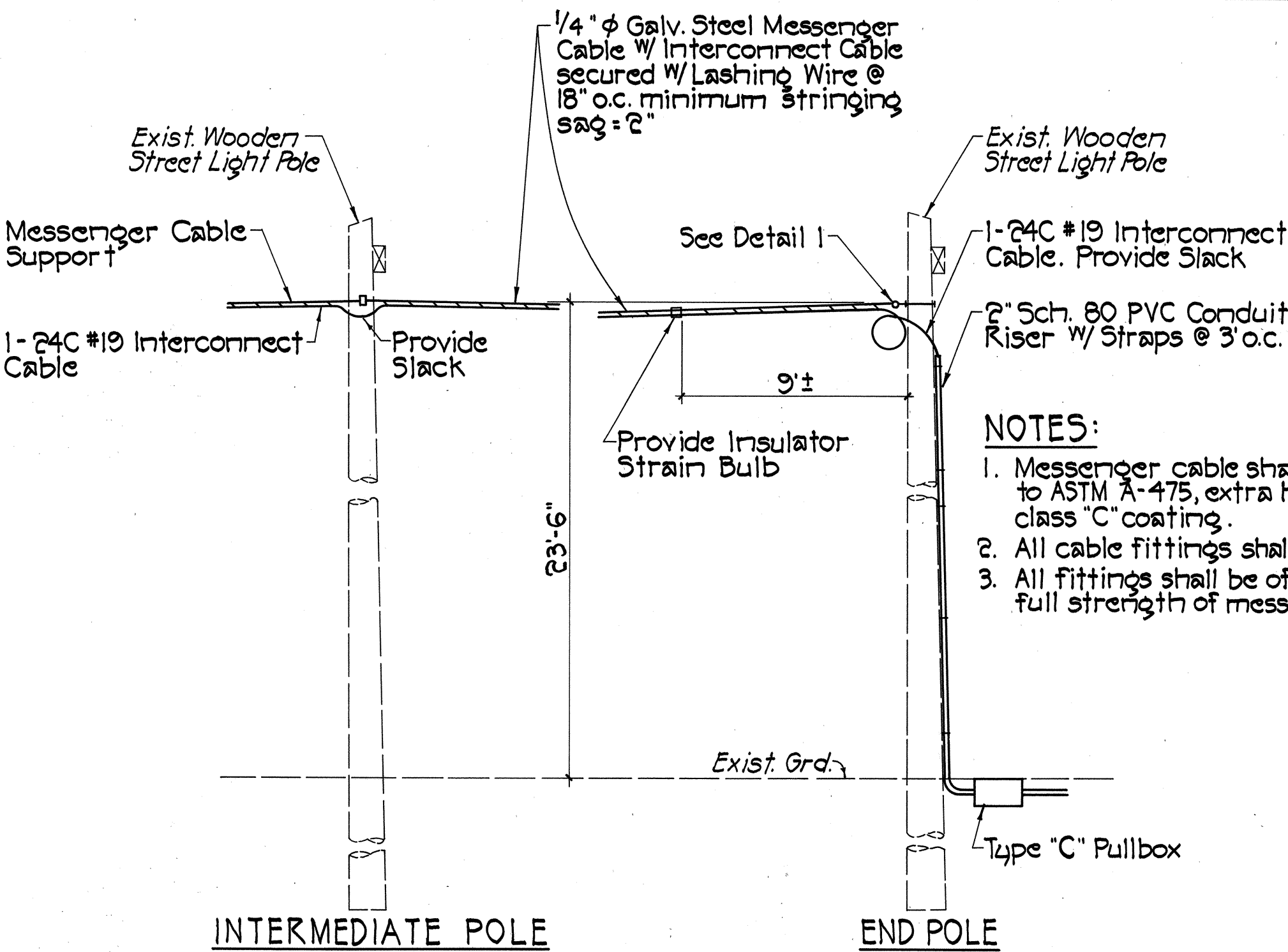
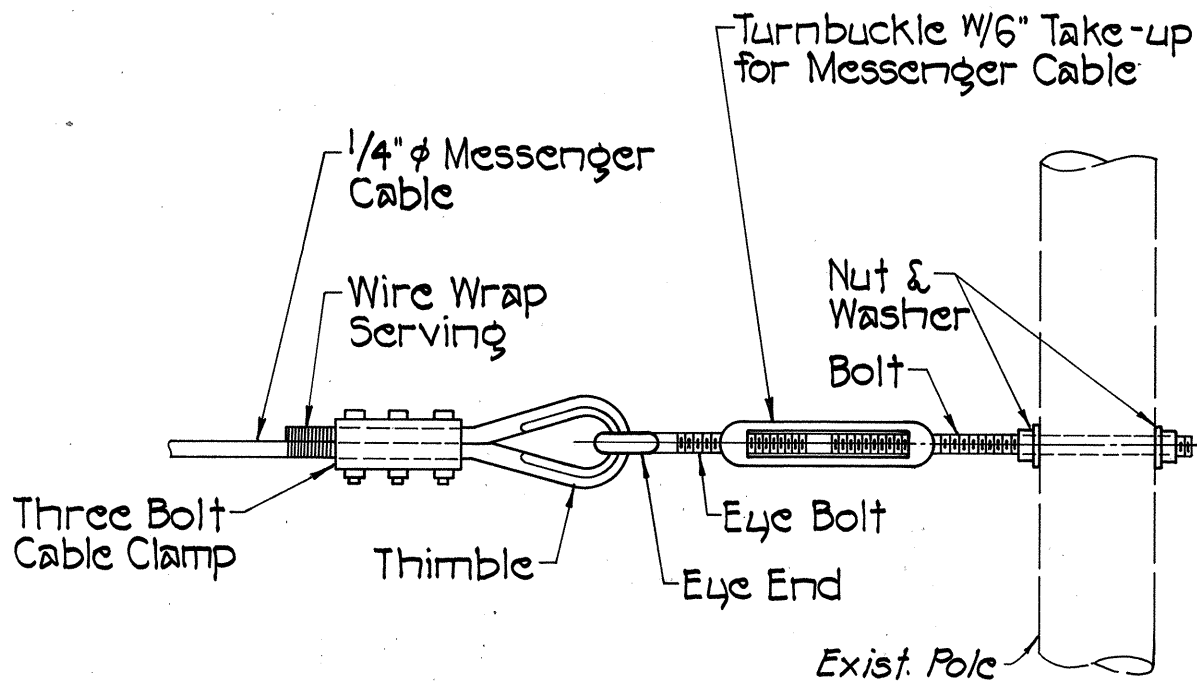


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(17)	1997	10	13

- 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 6"D x 10"W x 12"H.

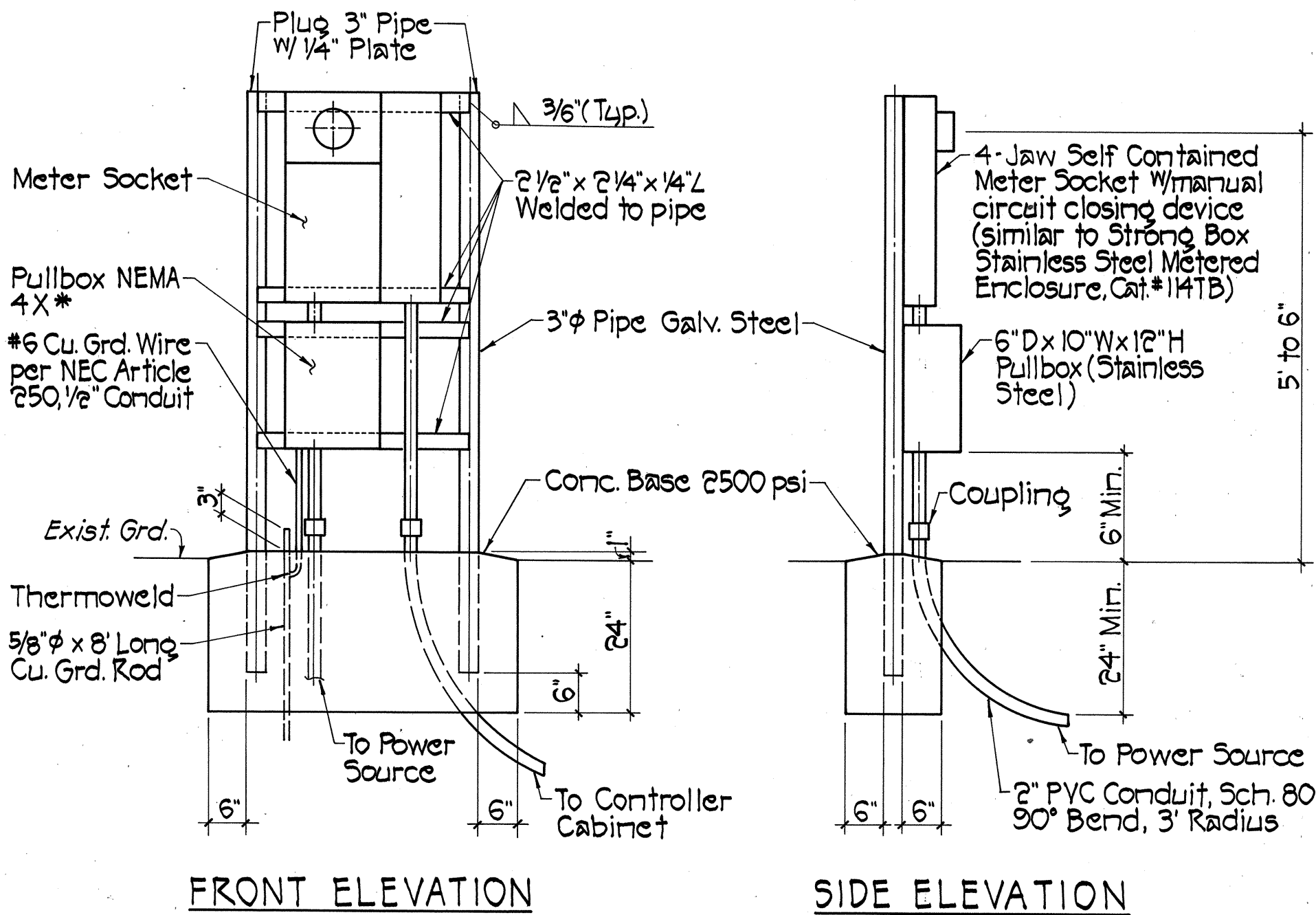


- NOTES:
- Messenger cable shall conform to ASTM A-475, extra high strength class "C" coating.
 - All cable fittings shall be galvanized.
 - All fittings shall be of design for full strength of messenger cable.

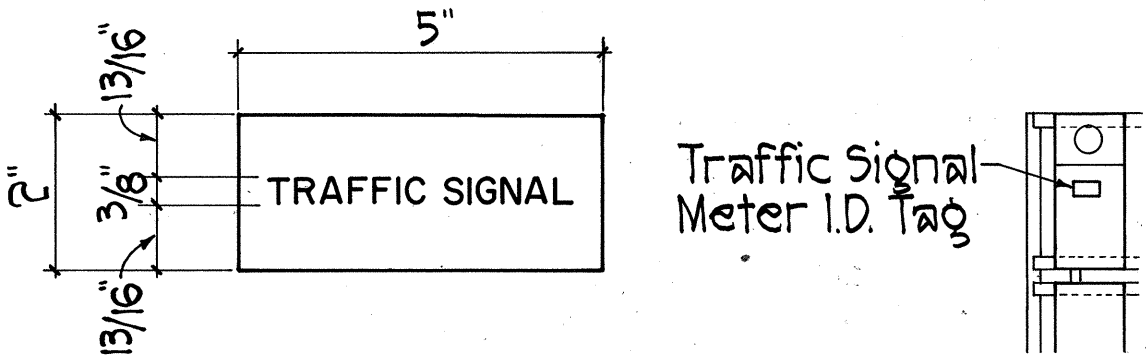


DETAIL 1

TYPICAL INTERCONNECT CABLE OVERHEAD INSTALLATION DETAILS Not to Scale

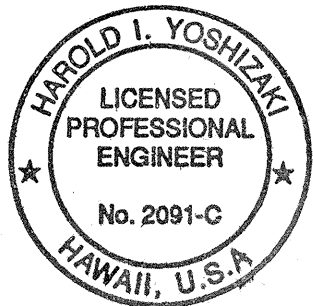


METER PEDESTAL FOR UNDERGROUND SERVICE DETAIL Not to Scale



- 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, (white in color).
 - Letters/Numbers are inscribed by cutting through "black cap sheet" to expose white letters/numbers.

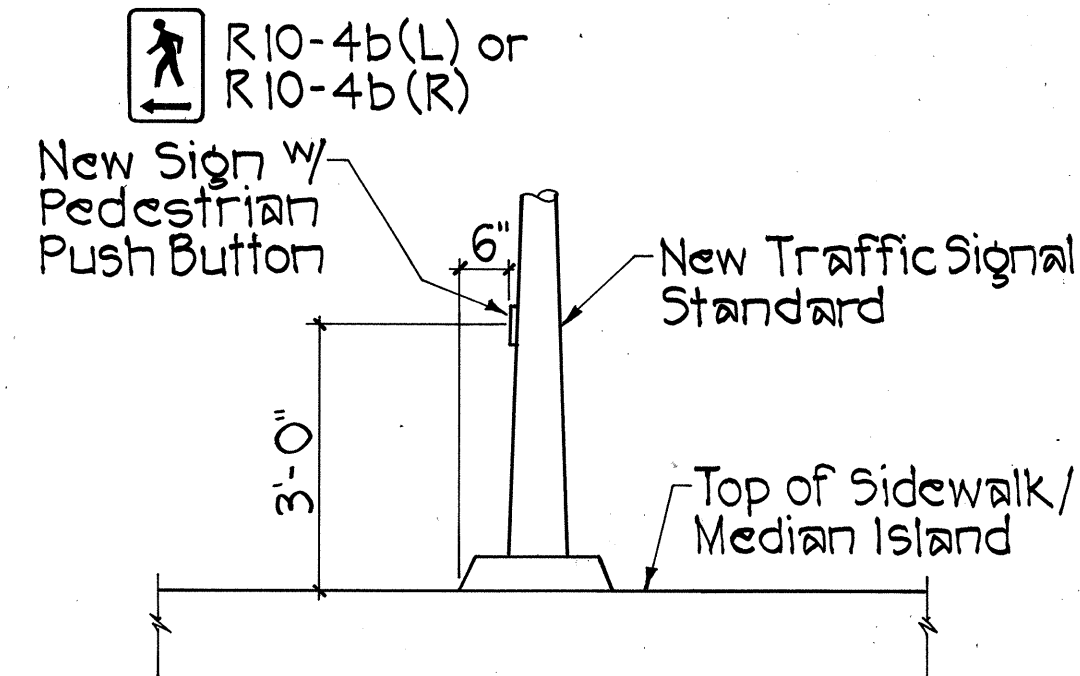
METER I.D. TAG DETAIL Not to Scale



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

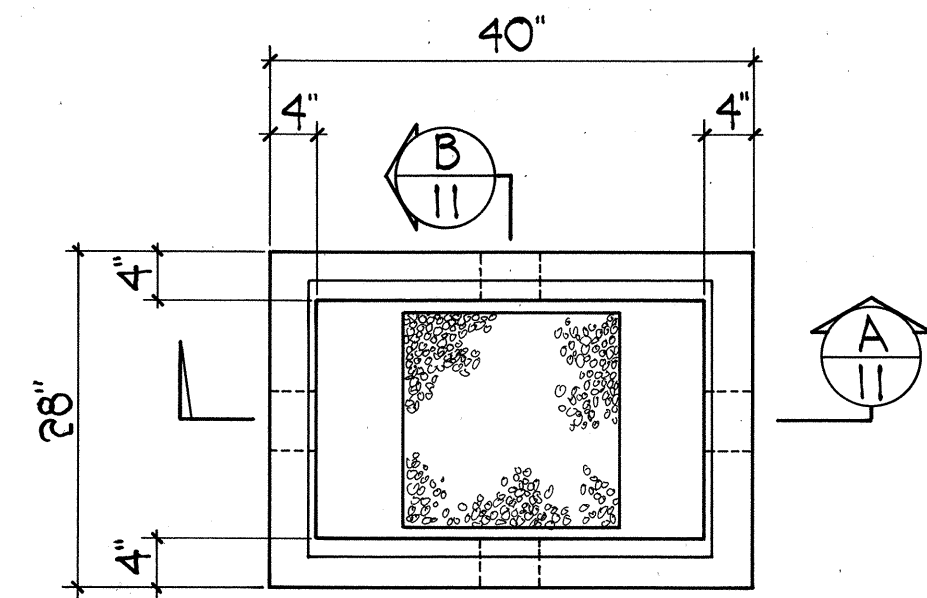
DETAILS
WILIKINA DRIVE
TRAFFIC SIGNALS AT LAKEVIEW CIRCLE
FED. AID PROJECT NO. STP-099-1(17)
SCALE: AS SHOWN DATE: JAN. 1997
SHEET NO. 1 OF 2 SHEETS



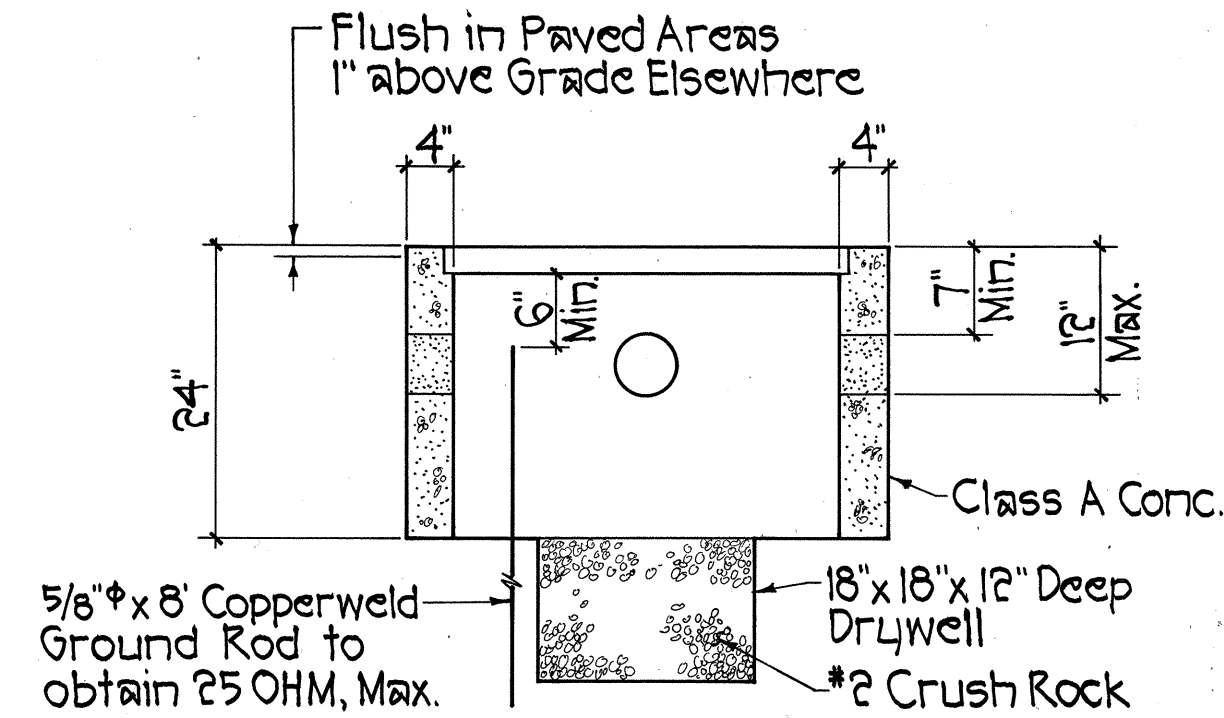
TYPICAL SIGN W/ PEDESTRIAN PUSH BUTTON Not to Scale

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

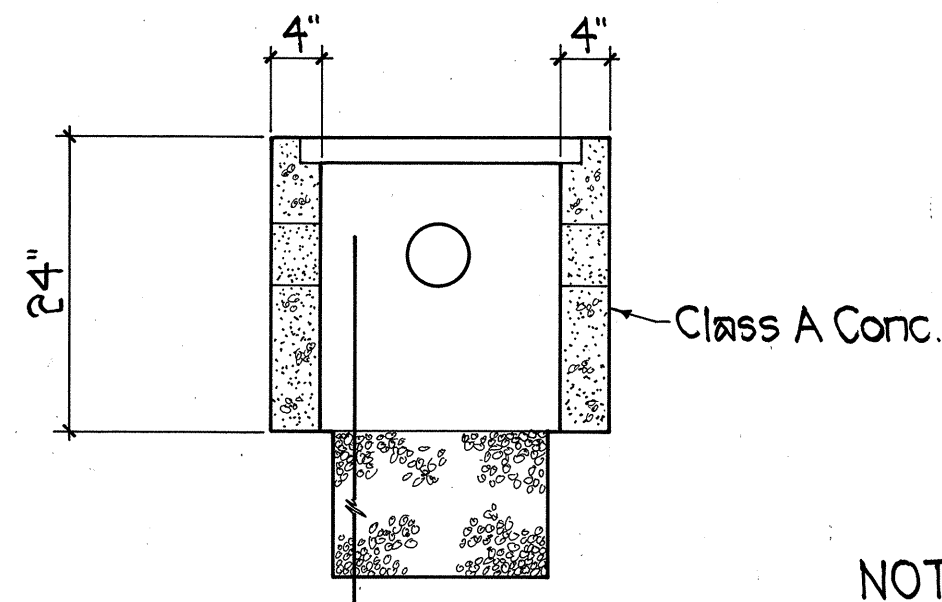
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(17)	1997	11	13



PLAN OF PULLBOX

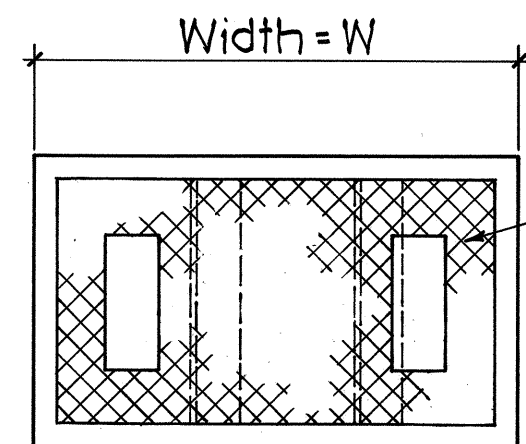


SECTION A

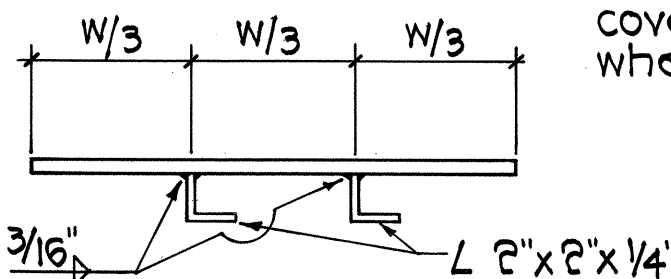


SECTION B

TYPE "C" PULLBOX (C & C Type)
Not To Scale

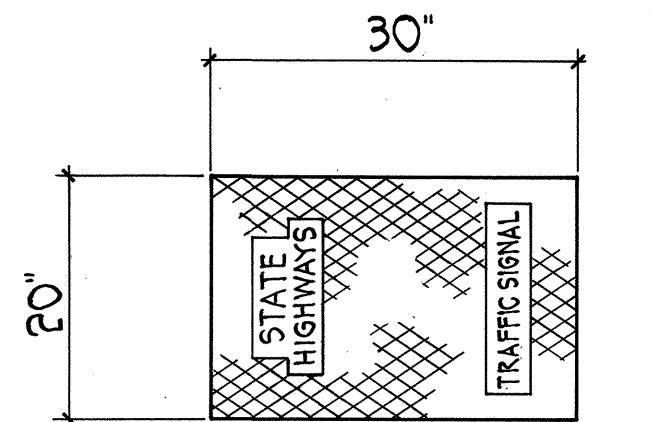


TOP VIEW

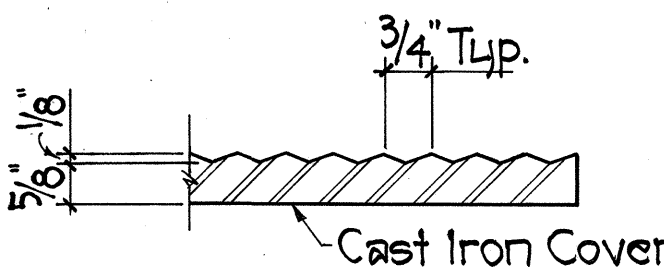


SIDE VIEW

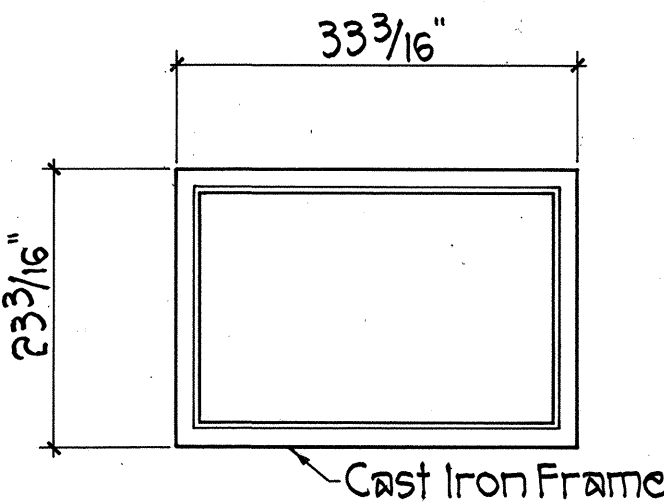
MODIFIED COVER DETAIL
Not To Scale



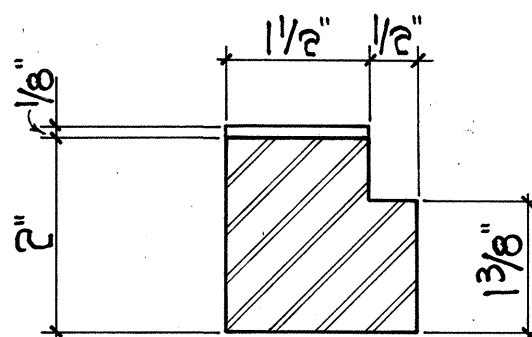
PLAN OF COVER



SECTION THROUGH COVER

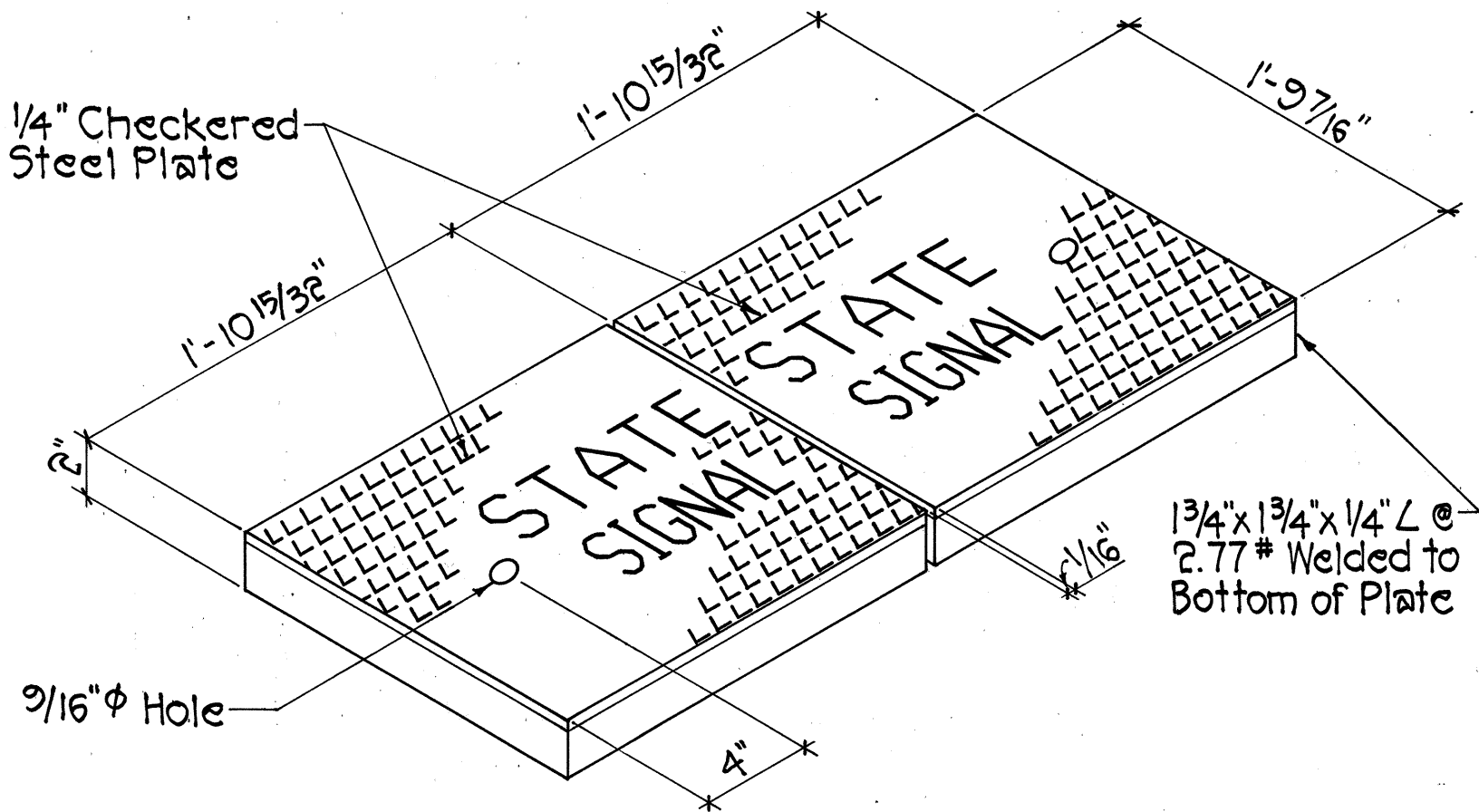


PLAN OF FRAME

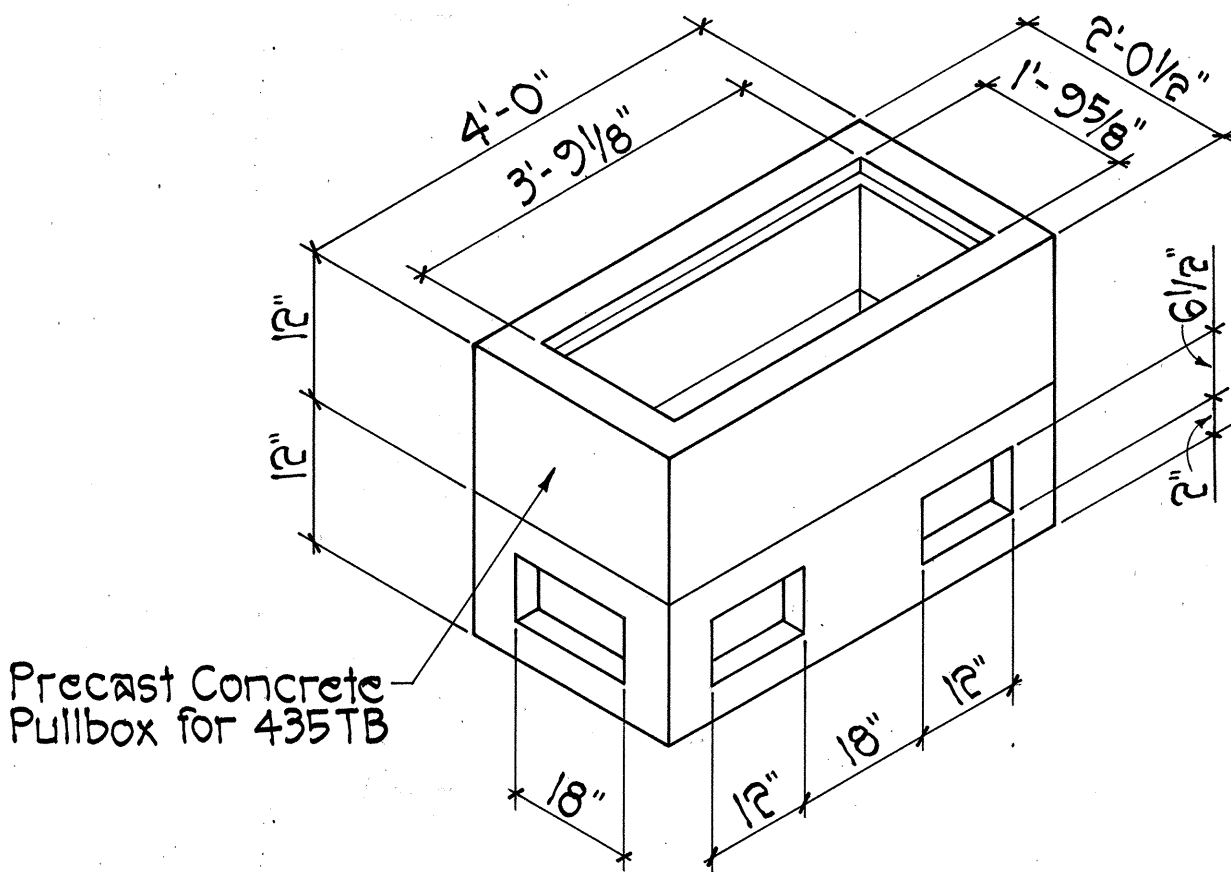


SECTION THROUGH FRAME

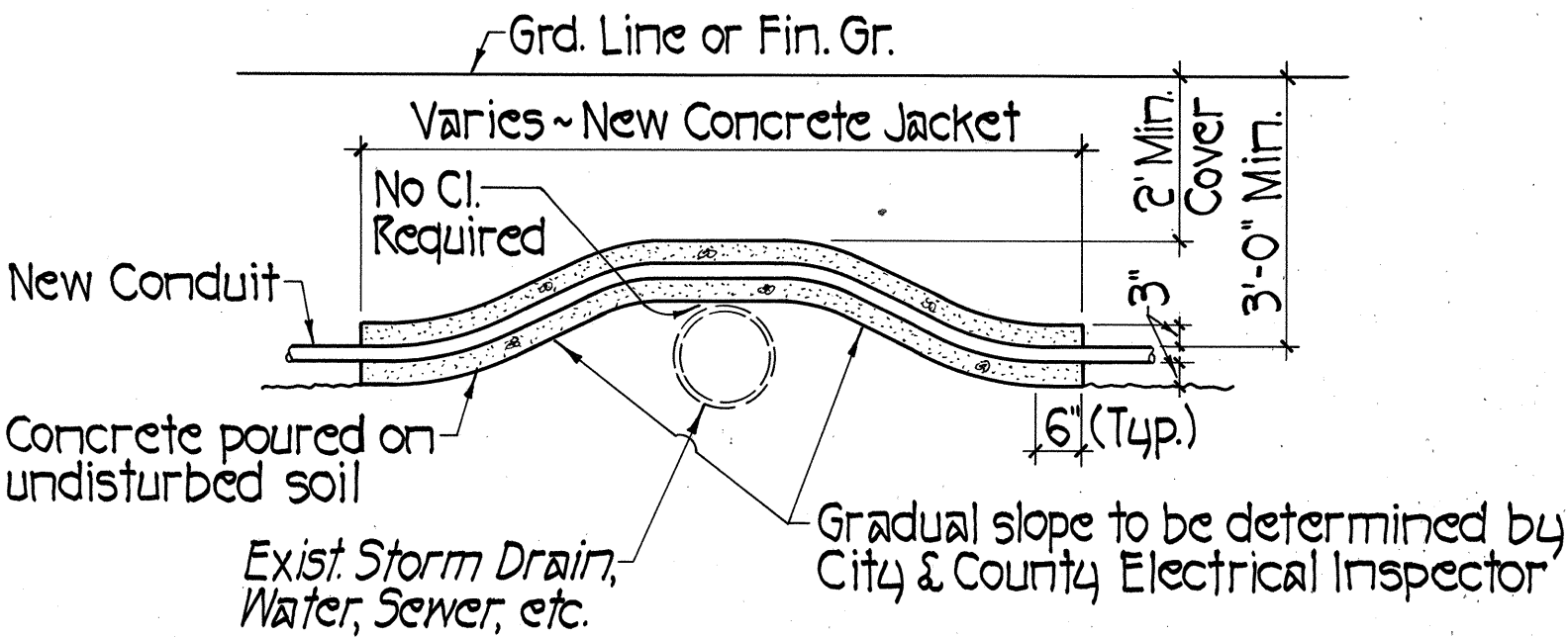
NOTE: Provide Ground Rod in all Pullboxes adjacent to Standards, Pedestals, Controllers, and other locations specified by the Engineer.



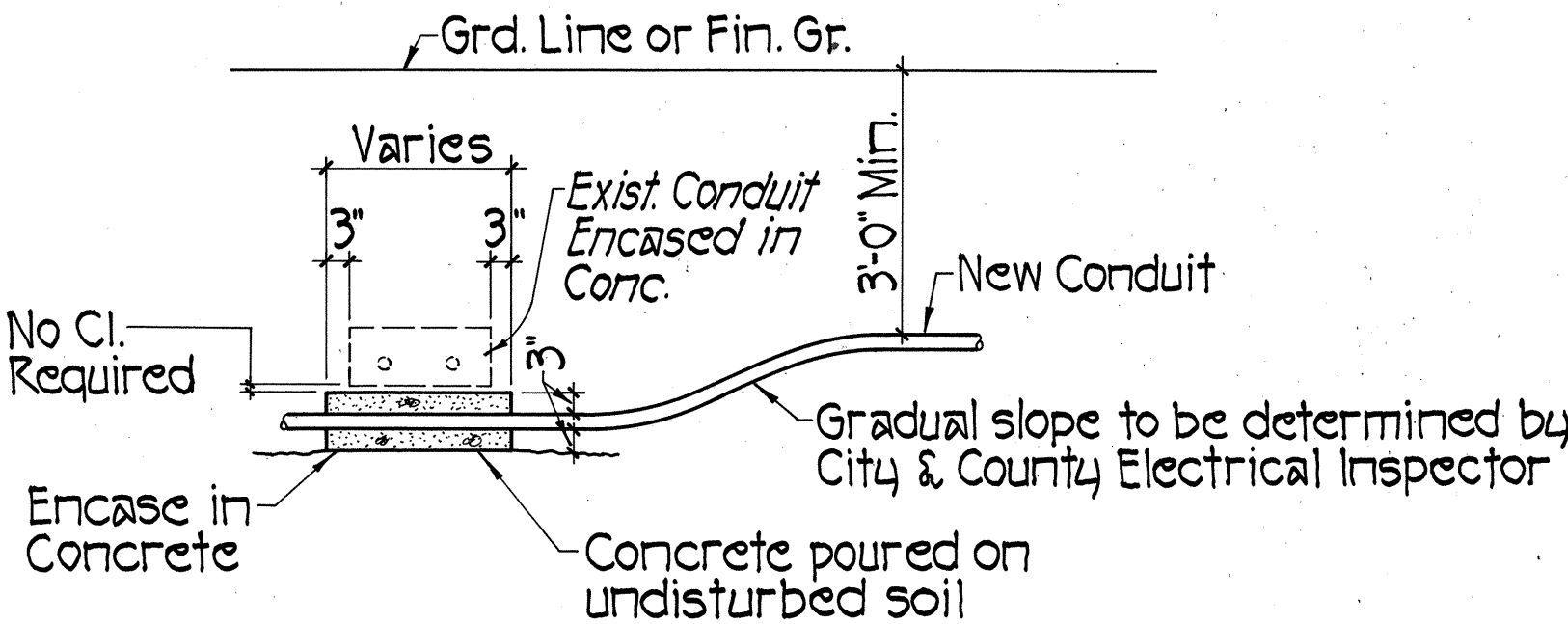
- NOTES:
1. After fabrication of covers, galvanize or apply 2 coats of ZRC (Zinc Rich Coating) to both sides.
 2. Install on 6" bed of #3 Crushed Rock.



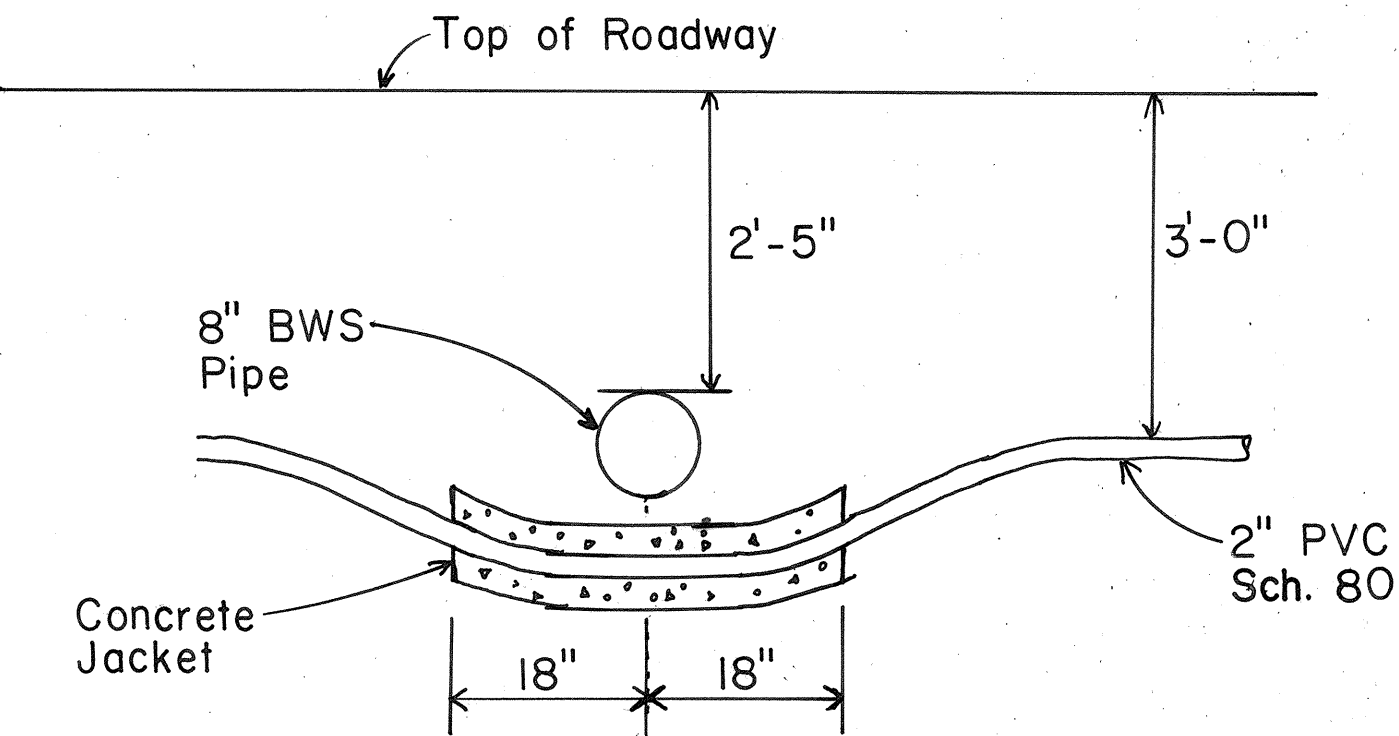
TYPE "D" PULLBOX (C & C Type)
Not To Scale



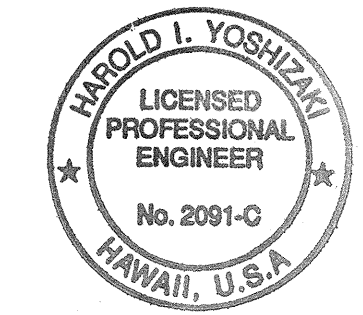
TYPICAL CONDUIT BY-PASS DETAIL
ABOVE EXISTING UTILITIES
Not to Scale



TYPICAL CONDUIT BY-PASS DETAIL
BELOW EXISTING UTILITIES
Not to Scale



ACTUAL AS-BUILT FOR DUCTLINE AT LAKEVIEW CIRCLE



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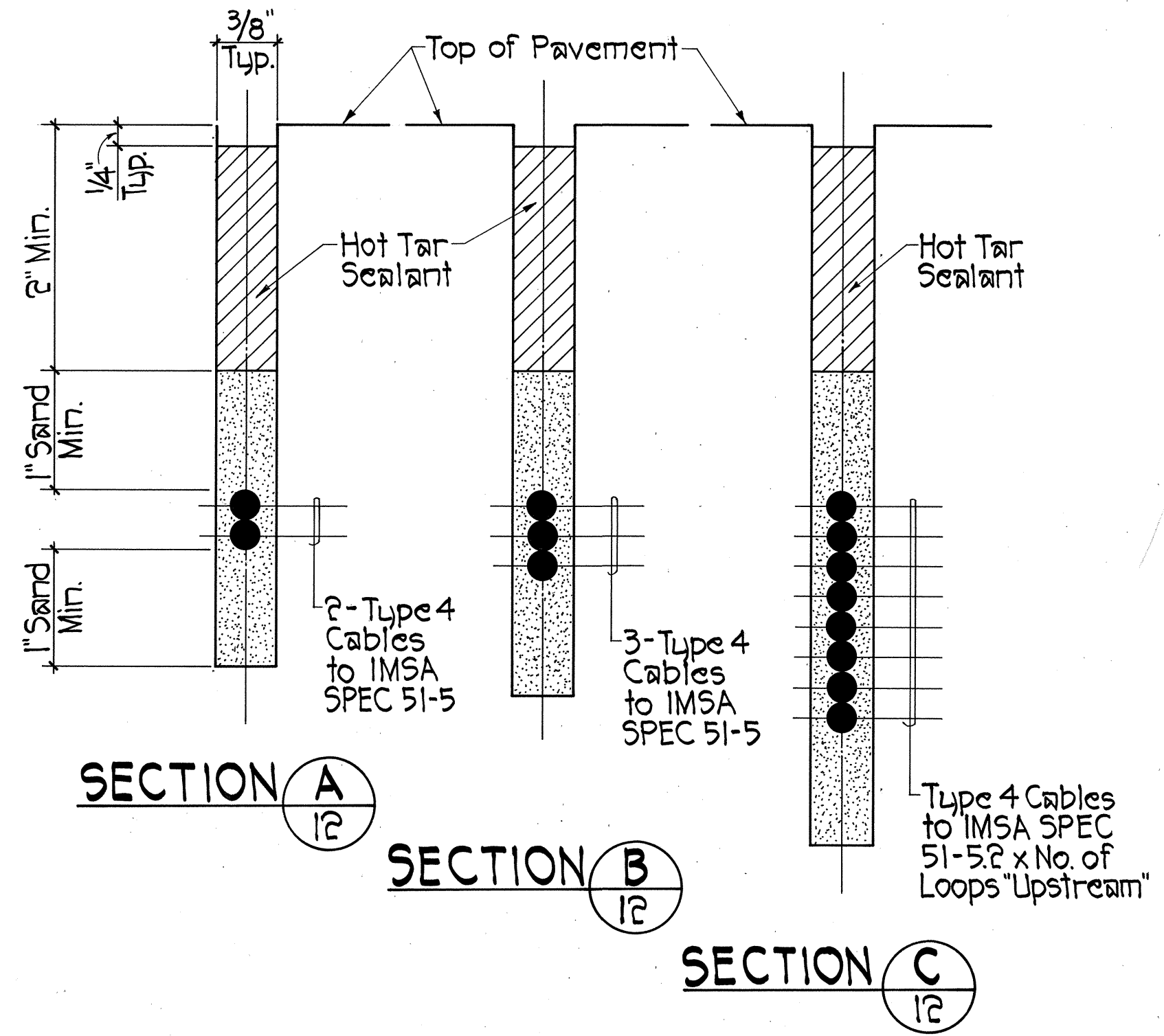
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS
WILIKINA DRIVE
TRAFFIC SIGNALS AT LAKEVIEW CIRCLE
FED. AID PROJECT NO. STP-099-1(17)
SCALE: AS SHOWN DATE: JAN. 1997
SHEET NO. 2 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(17)	1997	12	13

TYPES OF CABLES

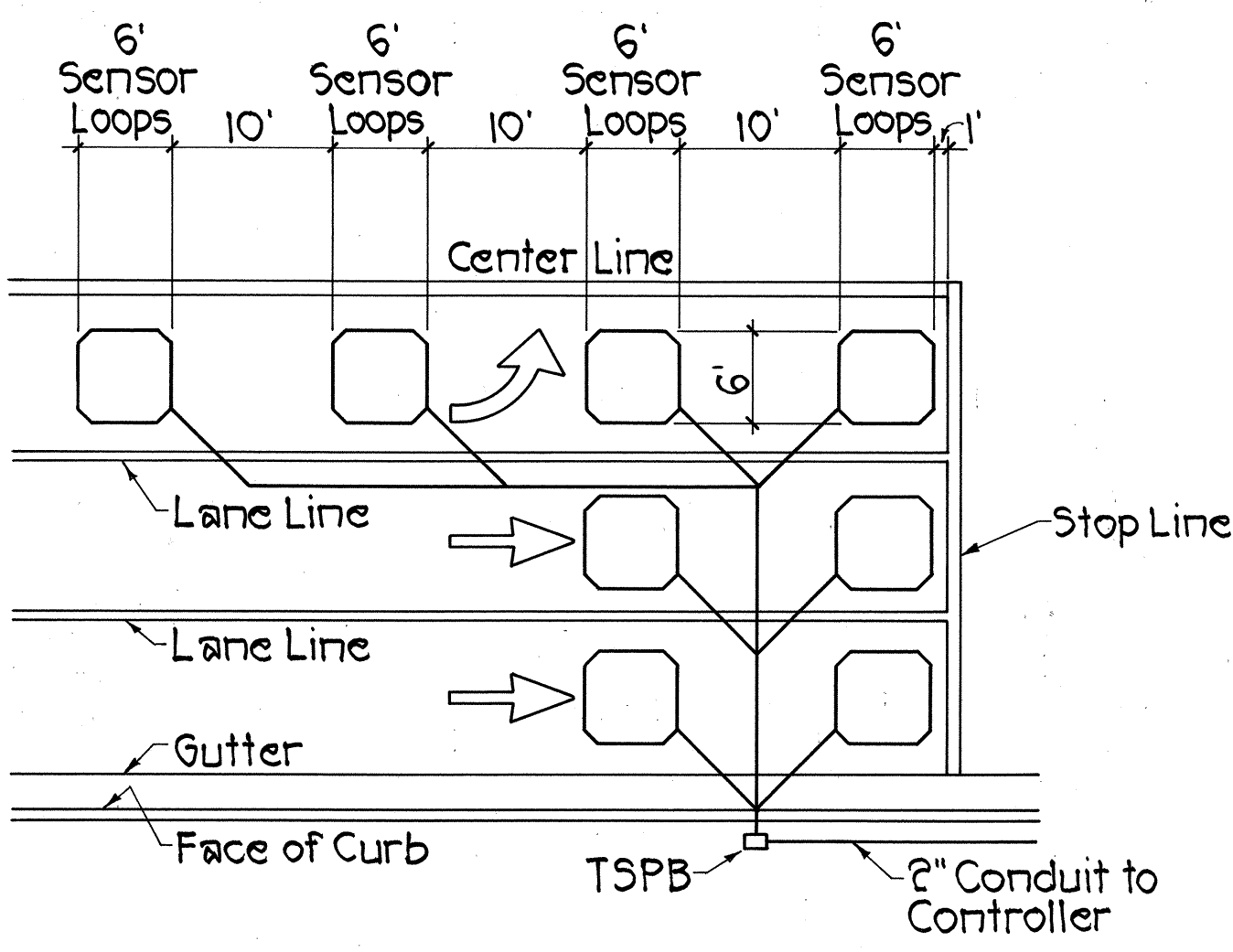
- Type 1
Signal-Loop Cable for Load Circuits from the Cabinet looped to field pullboxes. Polyethylene Insulated, Stranded, 14 AWG Copper; 26 Conductor Cable; Polyethylene Jacket; Color-Coded; IMSA Spec. No. 20-1 Certified.
(Note: 1- 26C #14 Cable for 5 phases or less
2- 26C #14 Cable for 6 or more phases)
- Type 2
Home-Run Cable tie in Loop Detector Stubs or Ped Push Buttons to the Cabinet. Polyethylene insulated, Stranded-Tinned-Copper 14 AWG; 2 Conductor Cable; Stranded-Tinned-Copper Drain Wire; Aluminum-Polyester Shielded; Polyethylene Jacketed; 600 Volts Rated; IMSA Spec. 50-2 Certified.
- Type 3
Inter-Connect Cable tie in one signalized intersection to another. Polyethylene insulated, Solid Copper 19 AWG; 24 Conductor (12 Twisted Pairs) Cable; Copper Shielded with Polyethylene Jacketed; 300 Volts Rated; Color Coded; IMSA Spec. 40-2 Certified.
(Note: 1- 12-pairs, #19 continuous run from one controller to the next controller. Splicing between controllers is prohibited)
- Type 4
Detector-Loop Cable for installation into the roadway sawcut; 12 AWG Stranded THHN Conductor; 600 Volts; Inserted into a Polyethylene Tube, .25" max. dia. IMSA Spec. 51-5 Certified. Cable inclusive in the Detector Loop Bid.
- Type 5
Signal-Drop Cable from 3-section, RYG Traffic Signal Heads and PDW-W (Pedestrian Signal Head) dropped from signal head on traffic signal standard to pullbox for splicing. The Cable shall be Polyethylene Insulated; Stranded; Copper 14 AWG; 4-Conductor Cable; 600 Volts; Color-Coded; IMSA Spec. No. 20-1 Certified. Cable incidental to the Traffic Signal Head Bid.
(Note: 1-4C #14 Cable per 3-section Traffic Signal Head
1-4C #14 Cable per Programmable Signal Head
1-4C #14 Cable per Pedestrian Signal Head
2-4C #14 Cable per Fiber Optic Signal Head)
- Type 6
Electrical Service Cable from Electrical Company Secondary Lines to Traffic Signal Meter to Controller Cabinet; RHW-USE; Neoprene Insulated; 3 conductors each; size as shown on plans; BRW Color Coded.
- Type 7
Preemption Detector (Opticom) Cables are the specific cables which run continuously from the Optical Detectors mounted on the traffic signal standards to the terminal blocks for the M562 Phase Module located in the controller cabinet. Each detector shall have their own cable running back to the Controller Cabinet. The detector cable shall be 3M's M138 Optical Detector Cable compatible and consistent with the requirements for the Opticom Preemption System. The M138 Cable shall be BerkTek Type B, Shield Jacket, 3-Insulated Conductor Cable, 20 AWG, 1-20 AWG Bare Stranded Ground, 600 Volts, Orange-Blue-Yellow Color Coded and 9/16 diameter.



TYPES OF CABLES - CONTINUATION

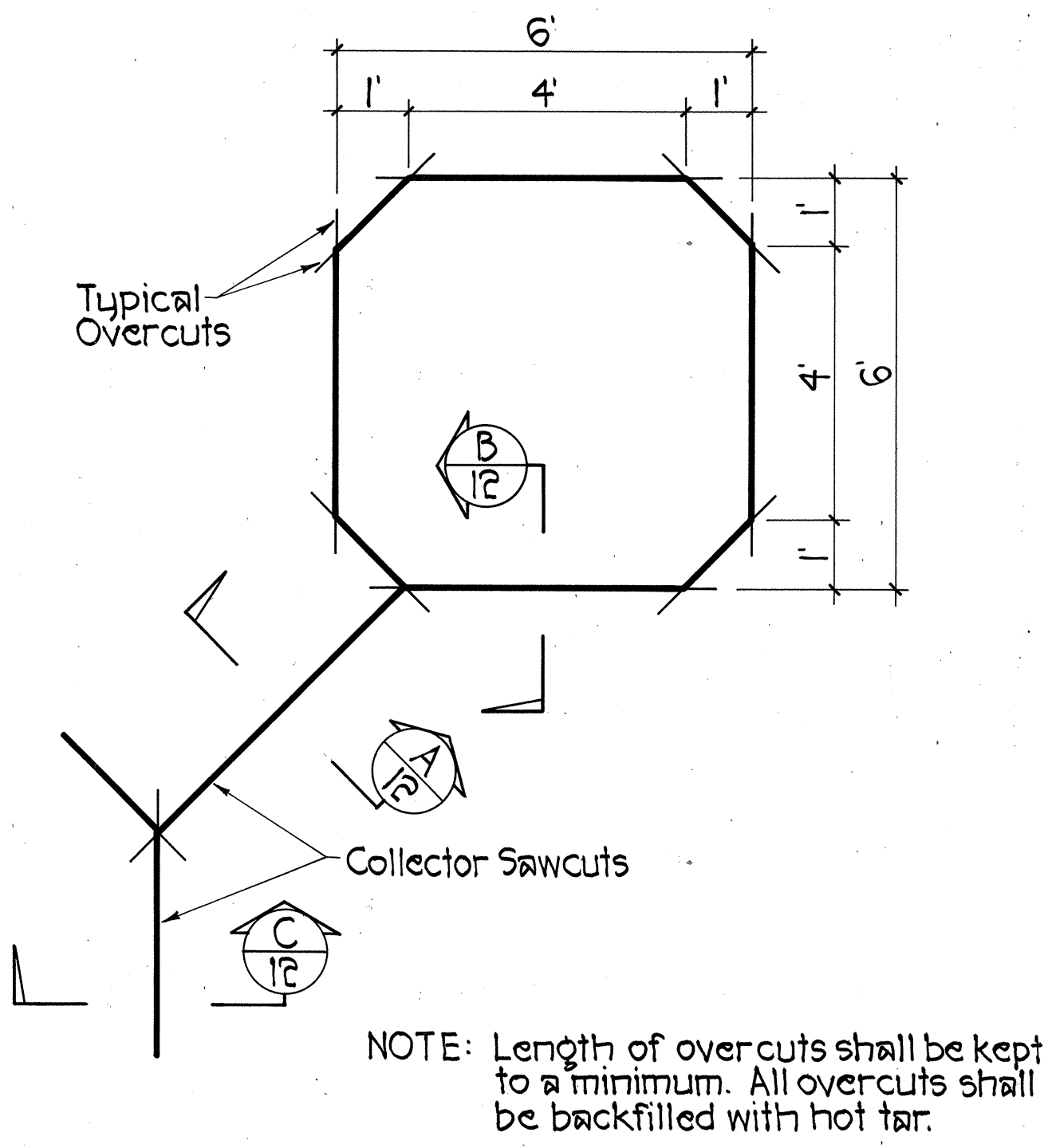
Ground Wire Shall be single conductor No. 8 AWG as shown on plans, solid electrolytic bare copper, medium-hard-drawn and suitable for grounding wire. The conductor shall conform to ASTM B 2. The wire shall weigh approximately 49.9 pounds per 1,000 feet.

Overhead Construction Messenger for overhead interconnect system shall be of 1/4" seven-wire strand conforming to ASTM A 475, extra galvanized Siemens-Martin grade with breaking strength of 6,000 pounds. Conductor shall be as specified on the project drawings. Messenger Hanger shall be of the universal type suitable for 1/4" bolts. Lashing wire shall be of 0.045-inch diameter stainless steel wire.

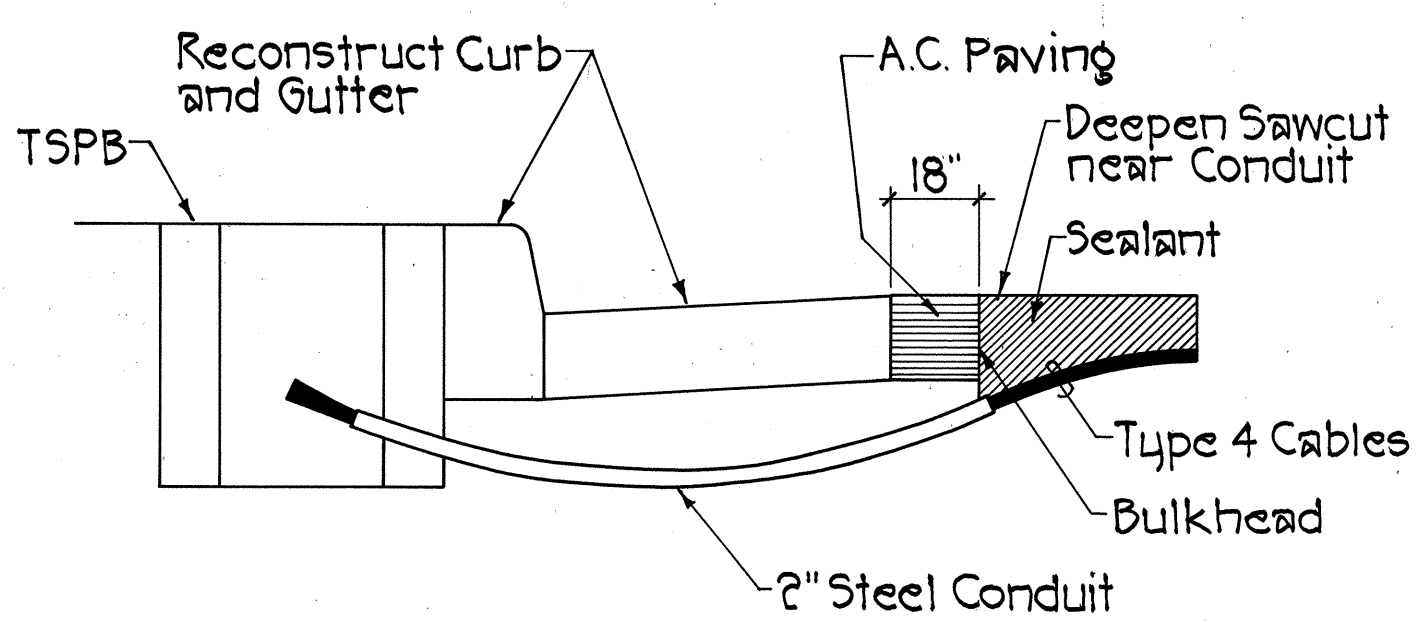


- NOTES:
- Center sensor loops in lanes.
 - Collector cables shall be twisted 2 turns per foot.
 - Number of loops and locations vary. See project plans.
 - Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT



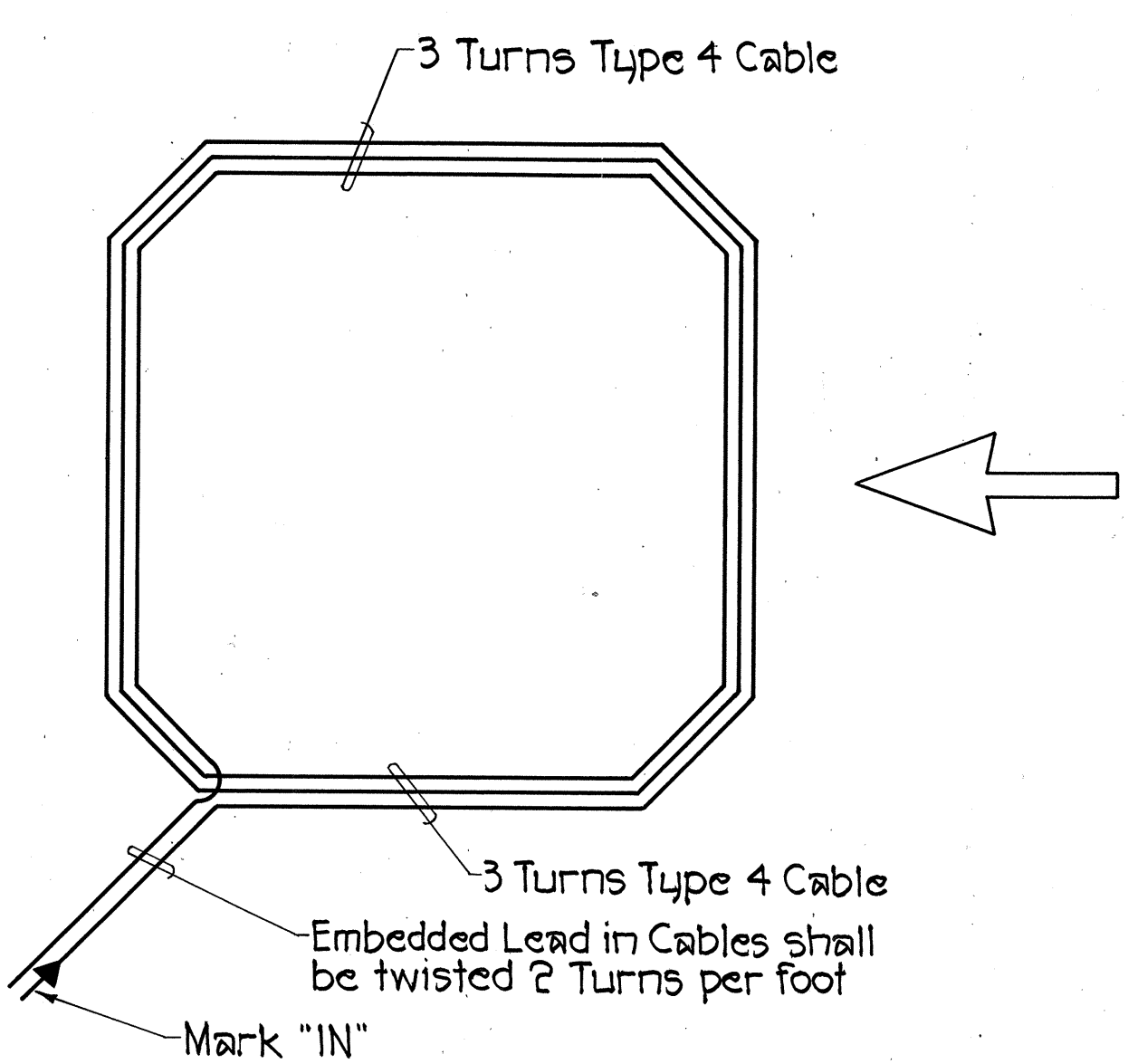
TYPICAL SENSOR LOOP SAWCUT DETAIL



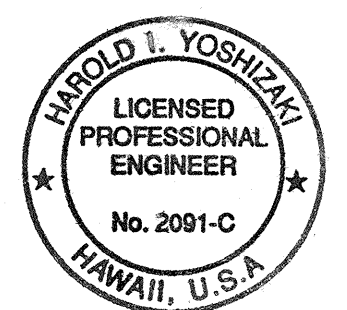
NOTES ON CONSTRUCTION AT END OF SAWCUT

- Seal roadway end of conduit after installation of conductors.
- Install bulkhead across conduit trench.
- Place hot tar in sawcut.
- Backfill over conduit with new A.C.
- Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



TYPICAL SENSOR LOOP WIRING DIAGRAM



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

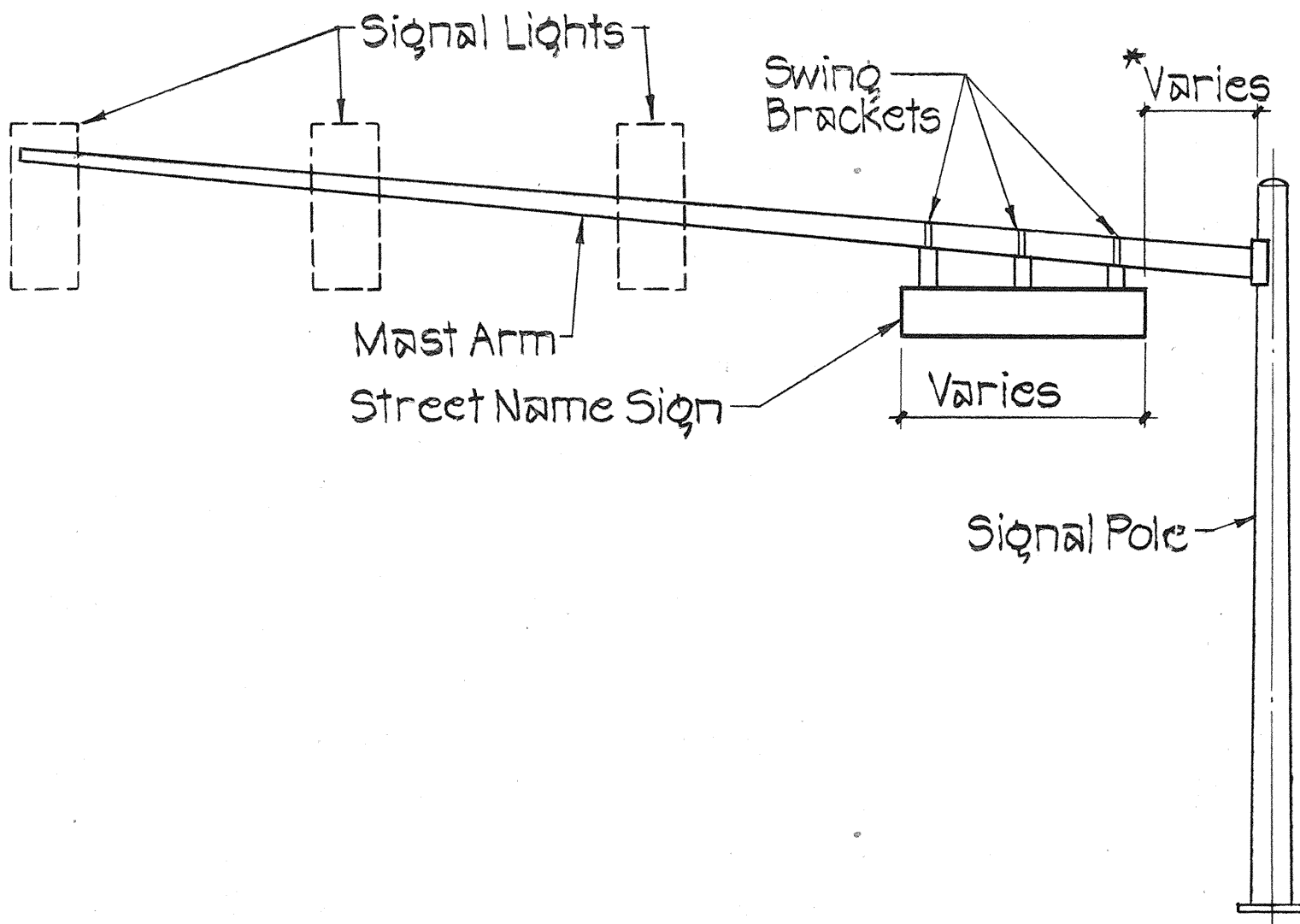
WILIKINA DRIVE
TRAFFIC SIGNALS AT LAKEVIEW CIRCLE
FED. AID PROJECT NO. STP-099-1(17)
SCALE: AS SHOWN DATE: JAN. 1997

SHEET NO. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(17)	1997	13	13

*To be determined by the Engineer.

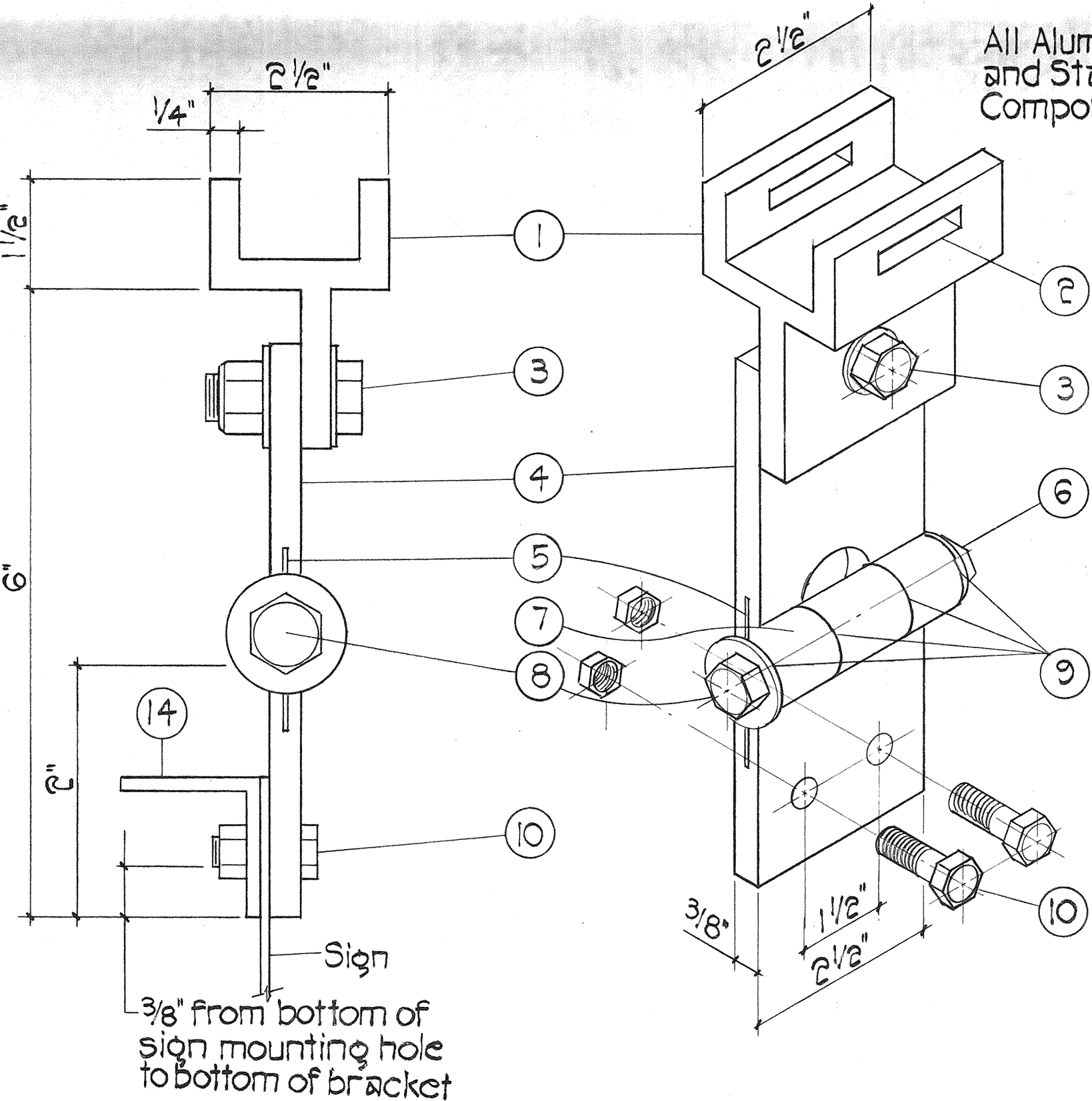


STREET NAME SIGN MOUNTING ON MAST ARM

Not to Scale

NOTES:

- All Street Name Signs shall conform to Section 681 of the Standard Specifications and the latest editions and amendments of the follow FHWA publications:
 - "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD).
 - "Standard Highway Signs".
 - "Standard Alphabets for Highway Signs"
- Colors
 Legend - White (Reflectorized)
 Background - Green (Reflectorized)
- All panel shall be reflectorized with Type B reflective sheeting in accordance with Section 712.10 of the Standard Specifications.
- The Contractor shall provide the same message on the front and back side of the sign.
- Borders and messages shall conform to details as shown on the Plans and as specified in the MUTCD.
- 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 the Street Name Sign installed complete.

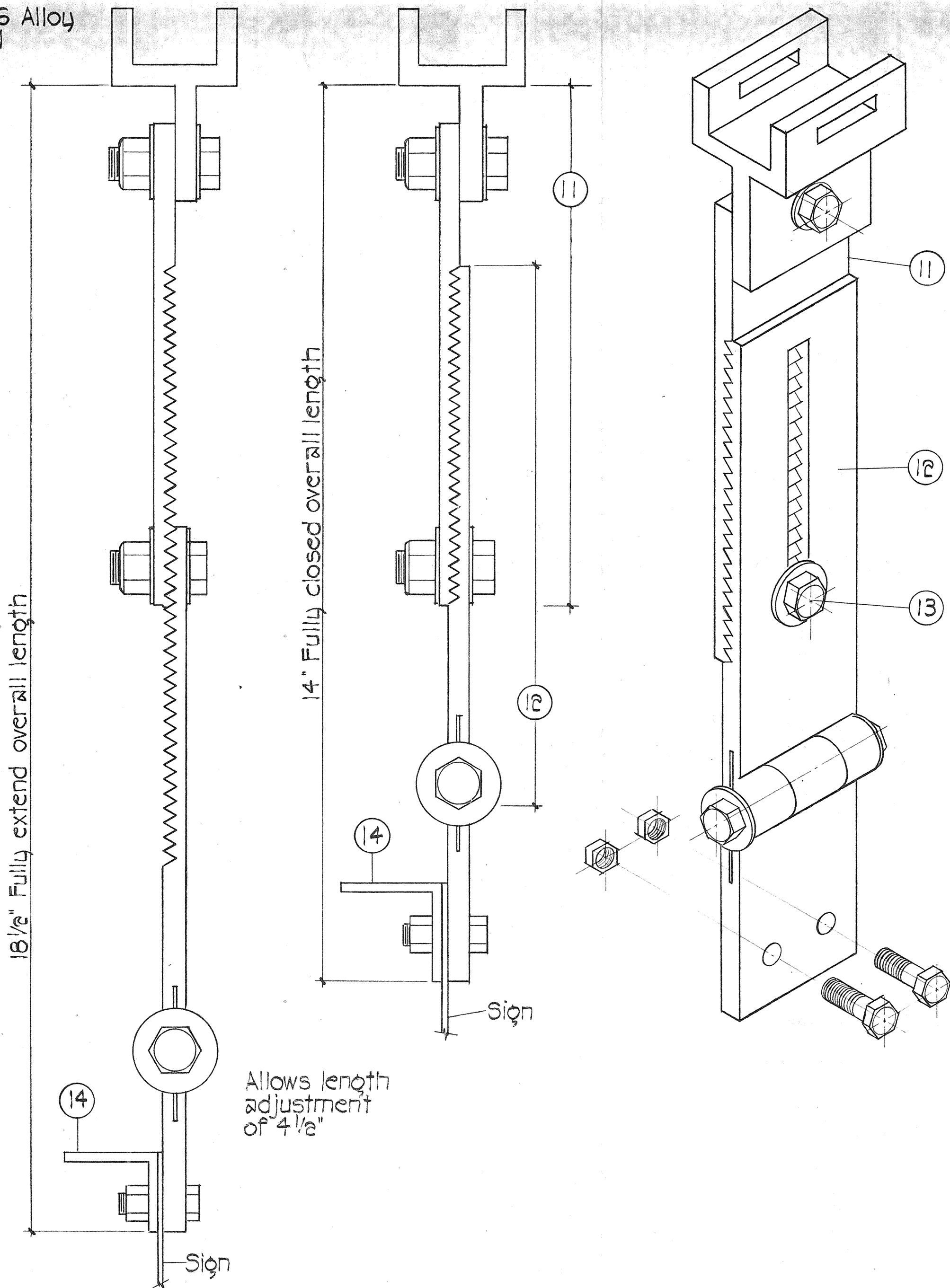


FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET

Not to Scale

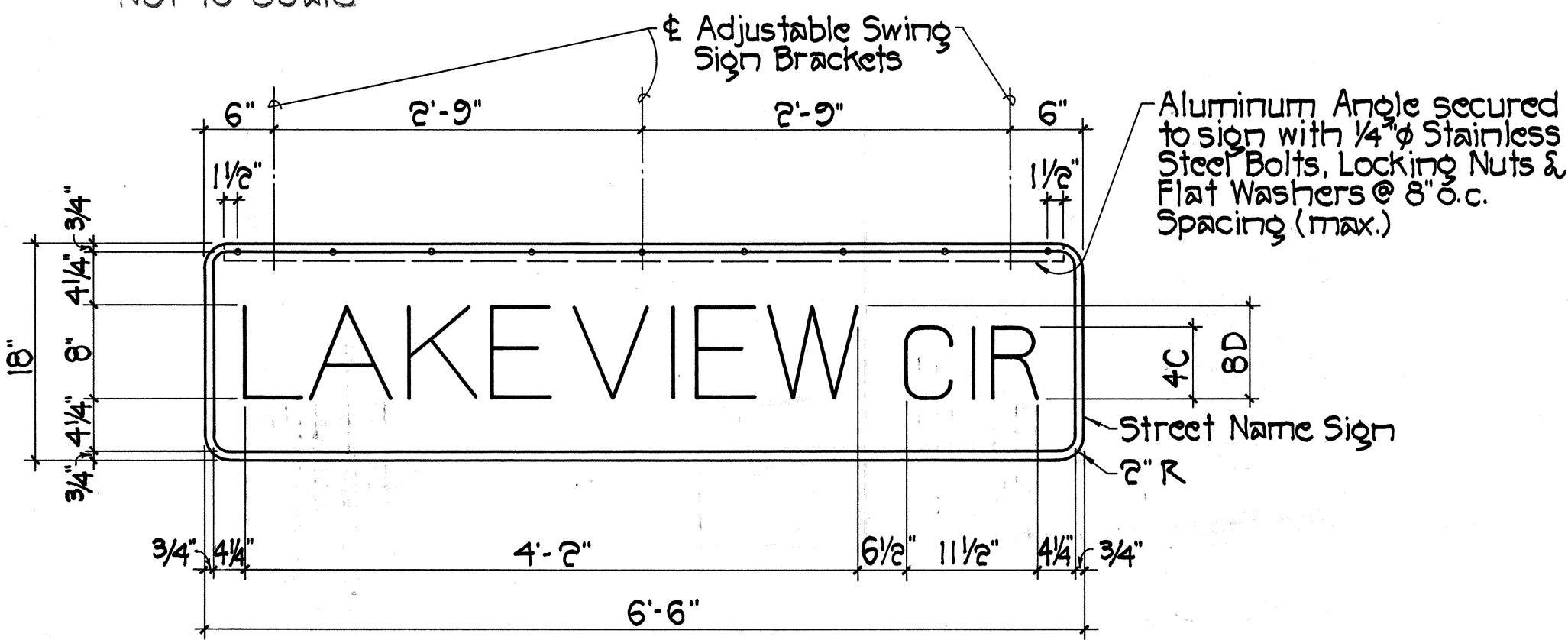
- Pivotal Upper Bracket
- 1 5/8" x 1/4" Slot for double strapping to electrolier mast arm. (M2G-34S(HD) .030" x 3/4" heavy duty stainless steel strap with M2G-34B(HD) buckle recommended.
- 1/2" - 13 x 1 1/2" Stainless steel hex head bolt with stainless steel hex lock nut and 1/16" stainless steel washer (both sides). Allows upper bracket to pivot and align with electrolier mast arm.
- 6" Overall drop with fixed length sign bracket.
- Stainless steel dampener spring (removable).
- Stainless steel hex lock nut with 1/16" stainless steel washer.
- 1" O.D. Axle housing
- 1/2" - 13 x 4" Stainless steel hex head bolt with 1/16" stainless steel washer.
- Oilite bushing
- 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.
- 8 1/4" overall length upper adjustable sign bracket section.
- 9" overall length lower adjustable sign bracket section, including axle housing (8" overall length to top of axle housing).
- 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.
- 1 1/4" x 1 1/4" x 1/8" Aluminum angle.

Note: Dimension may vary slightly.



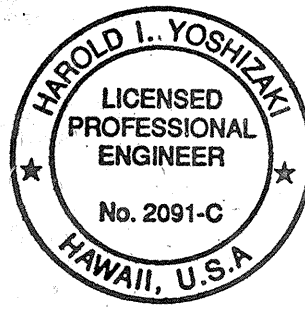
ADJUSTABLE LENGTH SWING SIGN BRACKET

Not to Scale



STREET NAME SIGN ON MAST ARM

Not to Scale



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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

SWING SIGN BRACKET DETAILS

WILIKINA DRIVE
 TRAFFIC SIGNALS AT LAKEVIEW CIRCLE
 FED. AID PROJECT NO. STP-099-1(17)

SCALE: AS SHOWN DATE: JAN. 1997

SHEET NO. 1 OF 1 SHEETS

SURVEY PLOTTED BY	DATE
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