

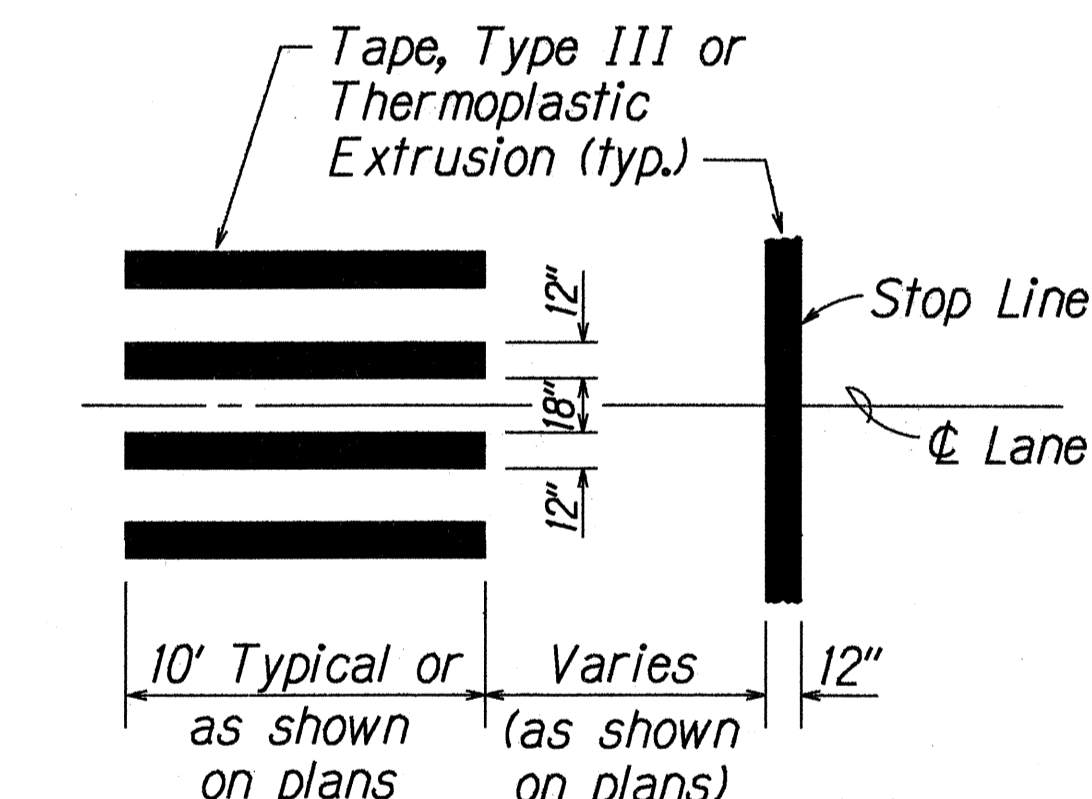
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	19	45

PAVEMENT MARKING LEGEND

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

NOTES

1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings and striping not incorporated in the final traffic pattern shall be removed as directed by the Engineer. The removal of the existing pavement markings shall not be paid for separately but shall be considered incidental to the various pavement marking items.
3. Raised pavement markers shall not be installed within crosswalks.
4. Final locations of all signs shall be approved by the Engineer prior to any installation work.
5. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans or directed by the Engineer shall not be paid for and shall be considered incidental to the various signing items.
6. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.
7. All pavement striping shall be as noted on the Legend or plans.
8. All preformed pavement marking tapes over existing pavement shall be applied with an approved primer as recommended by the tape manufacturer and as approved by the Engineer. The primer shall be allowed to dry to the tacky stage prior to tape application.
9. Removal of Existing Delineators and Posts as directed by the Engineer shall be considered incidental to the various signing items.
10. Existing signs that are to be replaced shall not be removed until new signs are installed as replacements, or the messages are no longer necessary.
11. Backing for all new regulatory and warning signs shall not be spliced.
12. All sign panels shall conform to Section 621 of Special Provisions and the latest editions and amendments of the following FHWA publications:
 - a. "Manual on Uniform Traffic Control Devices for Street and Highways" (MUTCD)
 - b. "Standard Highway Signs"
 - c. "Standard Alphabets for Highway Signs"
13. All new and relocated signs and markers installed on pipe post or light standard are to be mounted with band brackets and steel braces.
14. The Contractor shall erect at the beginning of the project and at the end of the project advance construction warning signs as indicated on the plans or as directed by the Engineer for the duration of the highway project and shall be maintained by the Contractor. These signs shall be placed in addition to the required traffic control signs called for in Section 645-Traffic Control. The advance construction warning signs shall be new and become the property of the State. The Contractor shall remove, clean, and deliver the signs and posts to the Oahu District Baseyard or as directed by the Engineer at the end of the project.
15. The Contractor shall notify the Oahu Transit Services Inc. (OTS), Ed Sniffen, at 848-4571 or Lowell Tom at 848-4578 two weeks prior to beginning any work, informing them of location, scope of work, proposed closure of any street or traffic lanes, and the need to relocate any bus stop.
16. The Contractor shall install New W3-3a Signs (6 each) as shown on the plans when the new signals become operational or as directed by the Engineer. The signs shall remain for a minimum of two weeks or until directed by the Engineer to remove the signs. The signs shall become the property of the City & County of Honolulu. When directed by the Engineer to remove the signs, the Contractor shall remove, clean and deliver the signs to the City & County of Honolulu, DTS, Electrical & Maintenance Division Baseyard. The Contractor shall coordinate with the City Traffic Signal Inspector for delivery date and time. Removal, cleaning and delivery of the signs shall not be paid for separately but considered incidental to the furnishing and installing of the new sign.



CROSSWALK STRIPING DETAIL

Not to Scale

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	4/15/97
DRAWN BY	M. Takahashi
TRACED BY	
DESIGNED BY	Cassidy Aho
CHECKED BY	
NOTED BY	1/2/97
SCALE	N. Semblesky

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKINGS & SIGNING
LEGEND, DETAIL & NOTES

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

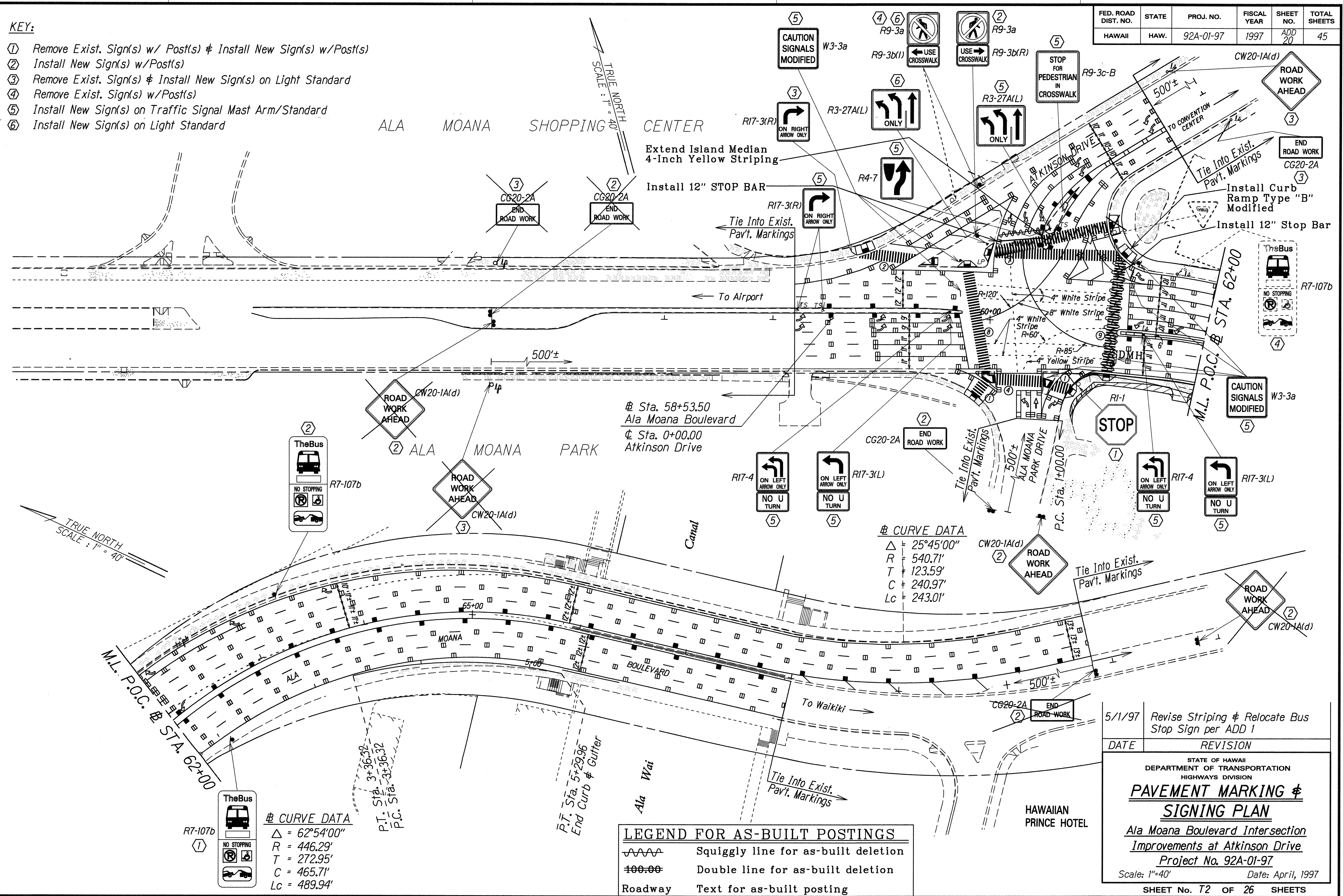
Not to Scale Date: April, 1997

SHEET No. 11 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	ADD 20	45

KEY:

- ① Remove Exist. Sign(s) w/ Post(s) & Install New Sign(s) w/Post(s)
- ② Install New Sign(s) w/Post(s)
- ③ Remove Exist. Sign(s) & Install New Sign(s) on Light Standard
- ④ Remove Exist. Sign(s) w/Post(s)
- ⑤ Install New Sign(s) on Traffic Signal Mast Arm/Standard
- ⑥ Install New Sign(s) on Light Standard



CURVE DATA

Δ	25°45'00"
R	540.71'
T	123.59'
C	240.97'
Lc	243.01'

CURVE DATA

Δ	62°54'00"
R	446.29'
T	272.95'
C	465.71'
Lc	489.94'

LEGEND FOR AS-BUILT POSTINGS

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

DATE	07-30-96
SURVEY PLOTTED BY	
DRAWN BY	M. Theluff
DESIGNED BY	C. Alb
QUANTITIES BY	
CHECKED BY	N. Shimada

5/1/97	Revise Striping & Relocate Bus Stop Sign per ADD 1
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

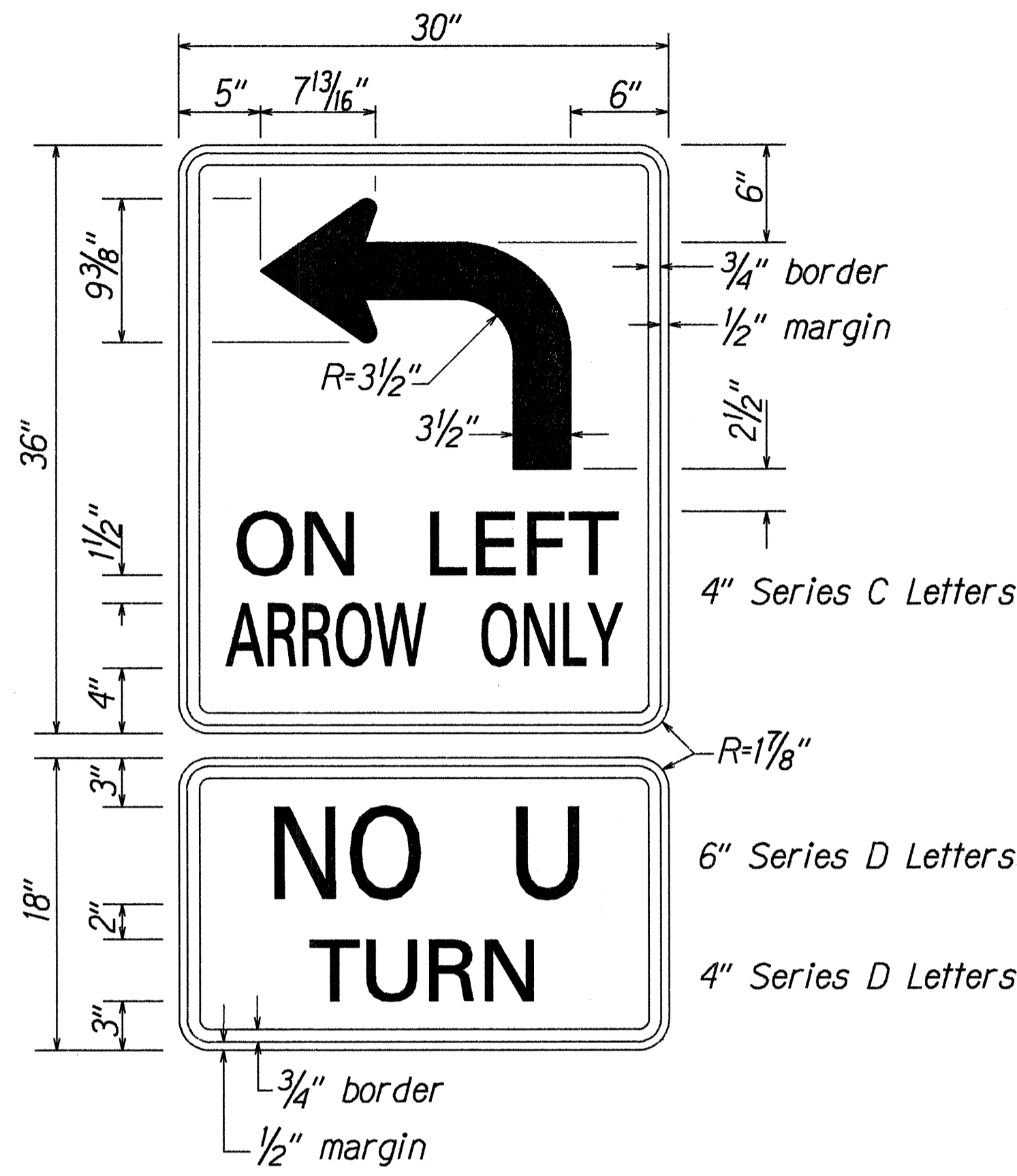
Ala Moana Boulevard Intersection Improvements at Atkinson Drive

Project No. 92A-01-97

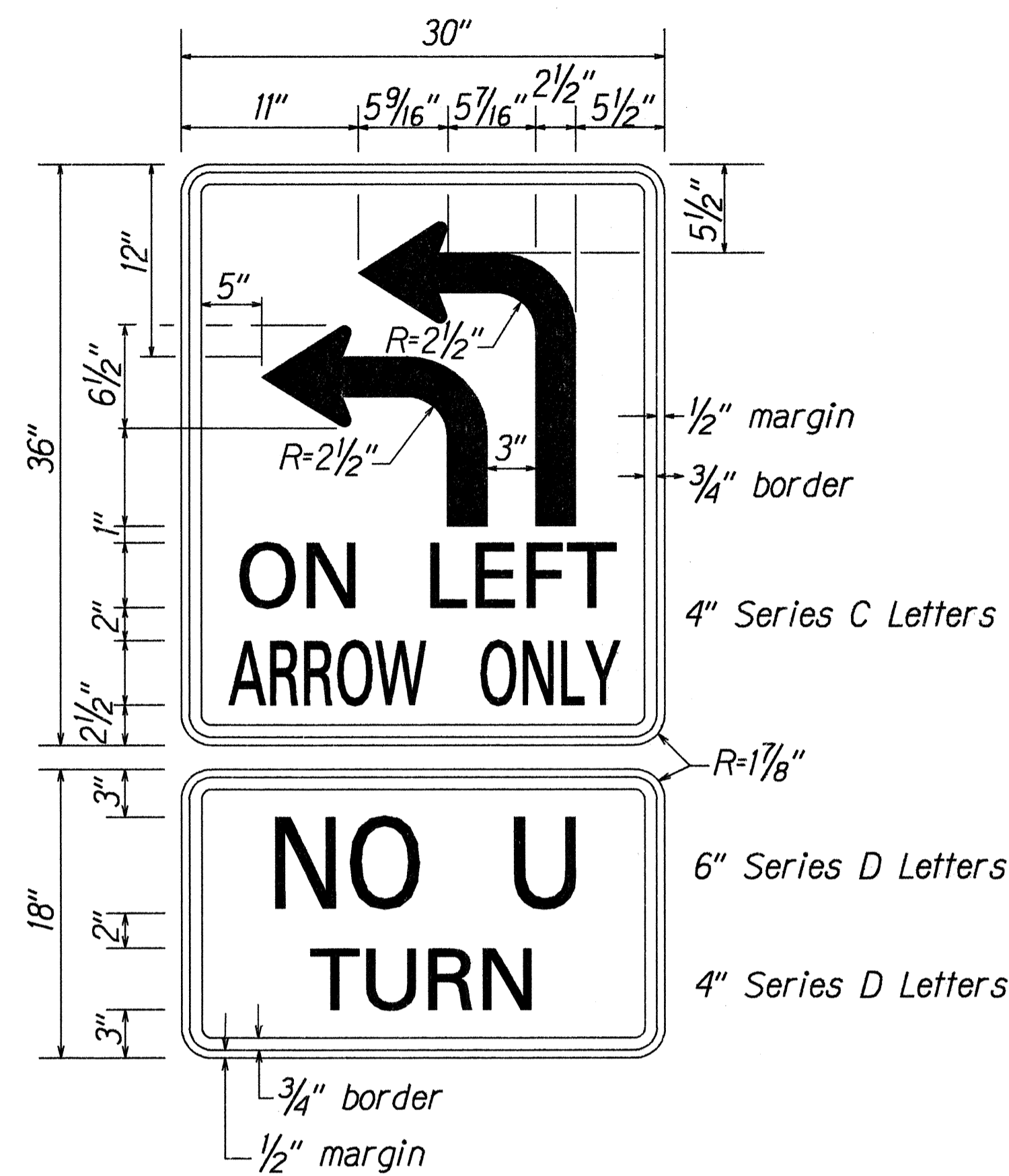
Scale: 1"=40' Date: April, 1997

SHEET No. T2 OF 26 SHEETS

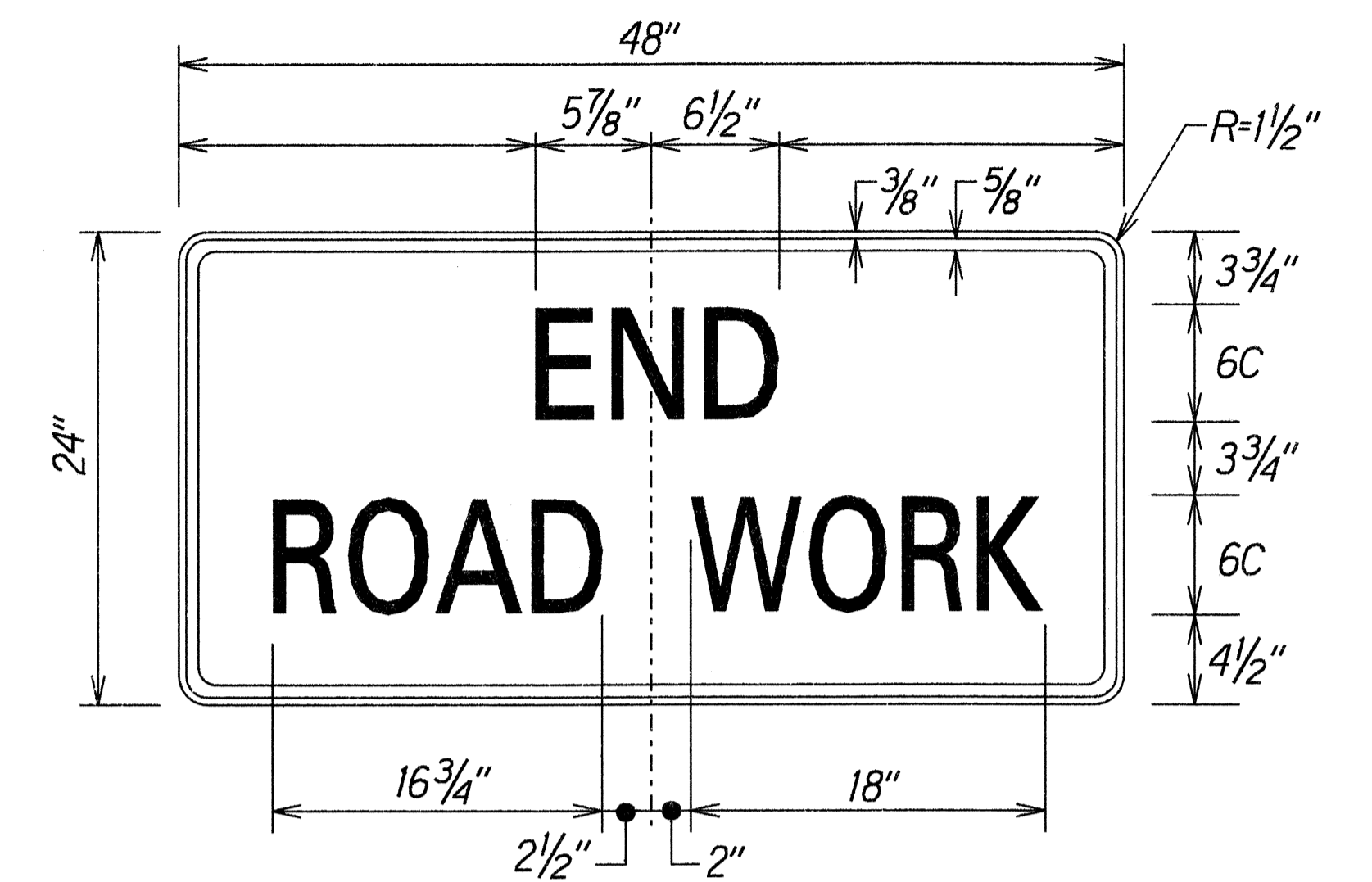
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	21	45



R17-3
Not to Scale

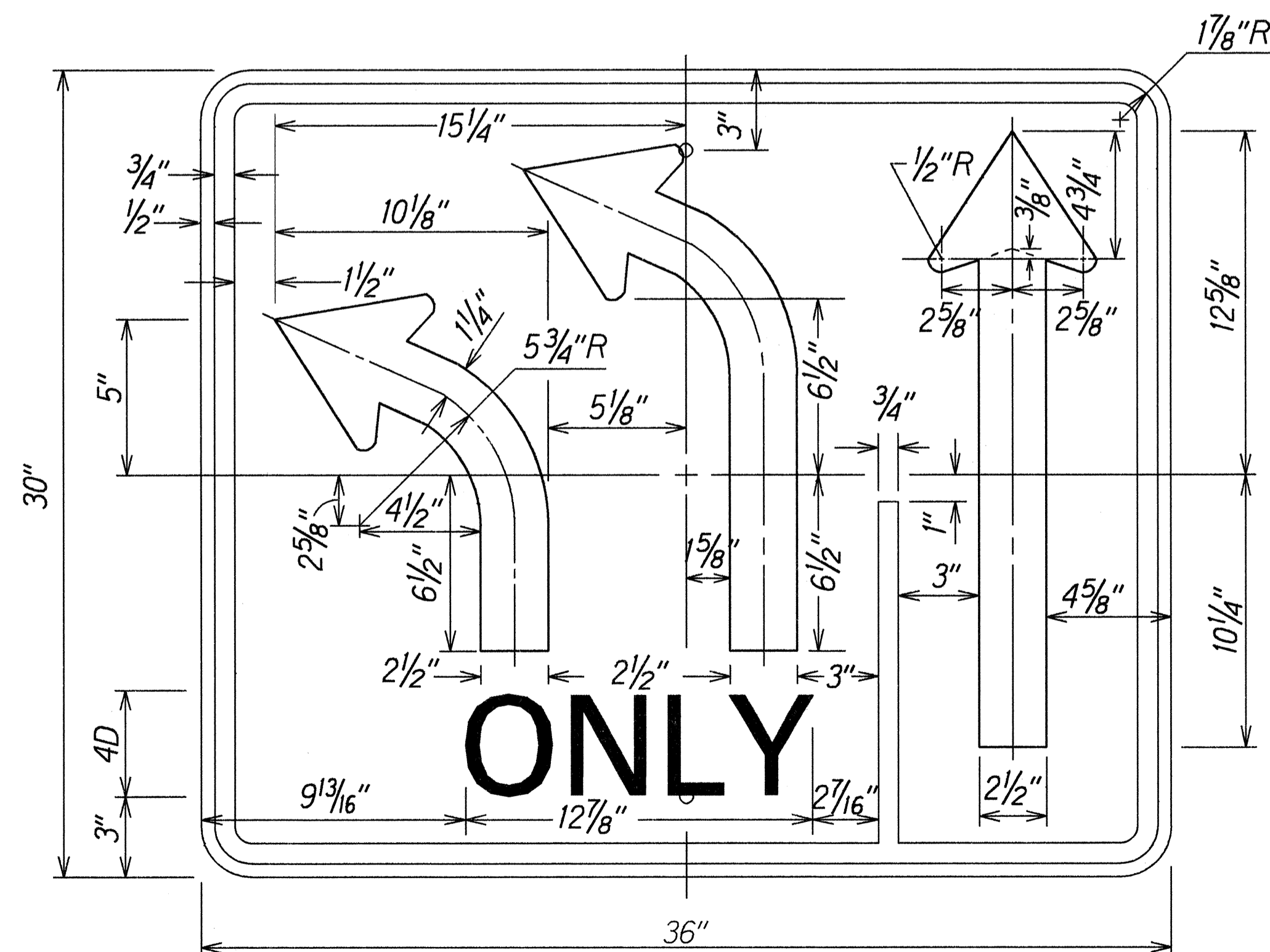


R17-4
Not to Scale

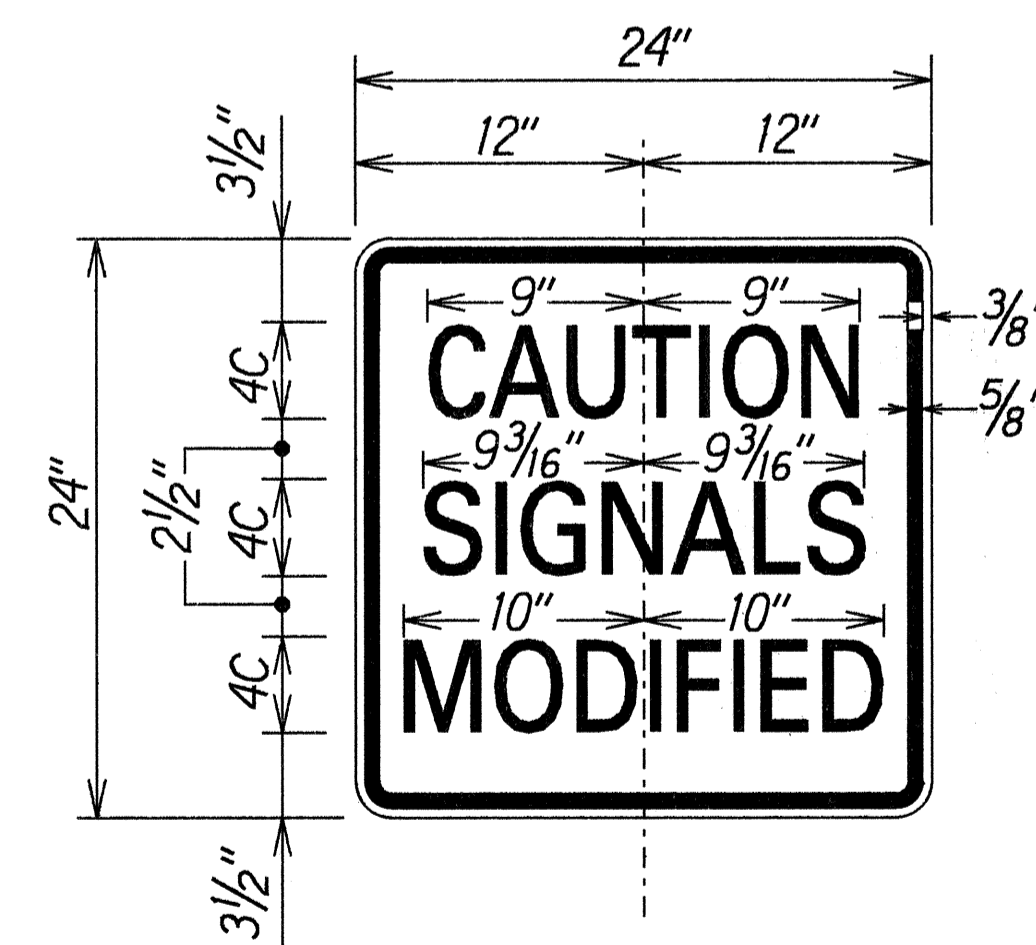


CG20-2A
Scale: 1/2" = 1'-0"

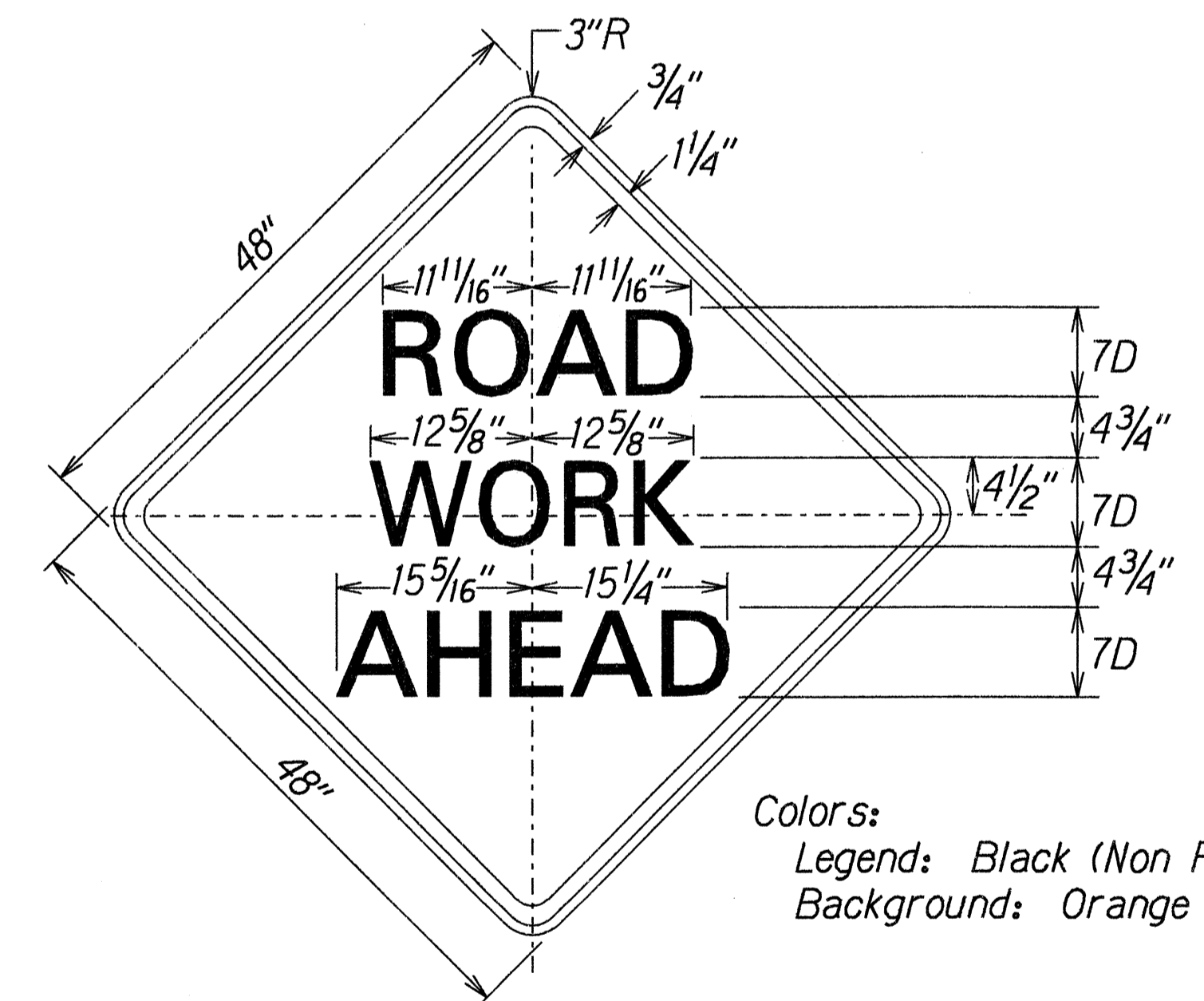
Colors:
Legend: Black (Non Refl)
Background: Orange



R3-27A(L)
Not to Scale



W3-3a
Not to Scale



CW20-1Ad
Scale: 1" = 1'-0"

Colors:
Legend: Black (Non Refl)
Background: Orange

DESIGNED BY	DATE
TRACED BY	4/17/97
DESIGNED BY	
TRACED BY	
DESIGNED BY	
TRACED BY	
DESIGNED BY	
TRACED BY	
DESIGNED BY	
TRACED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

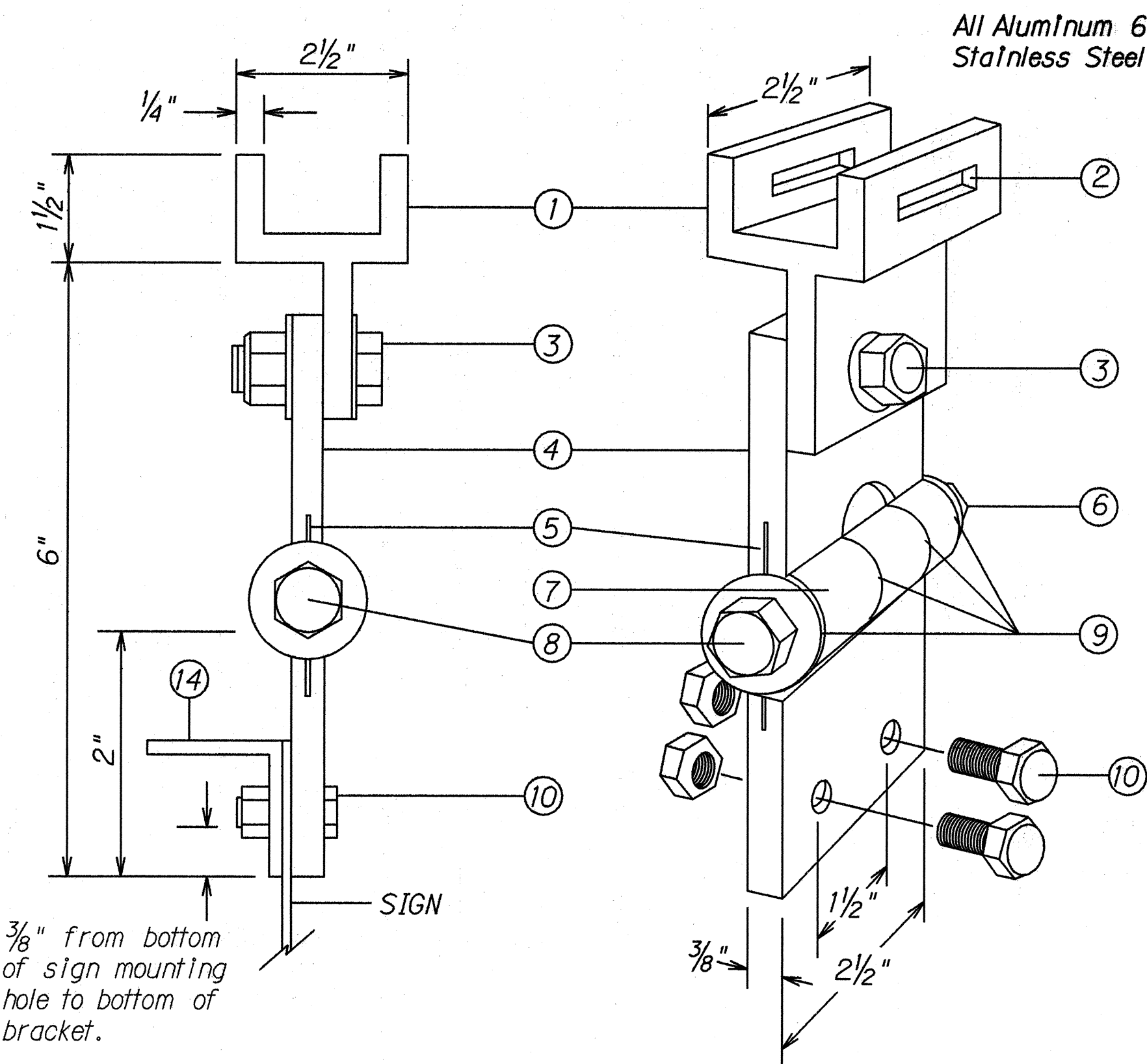
SIGN DETAILS

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

Scale: As Shown Date: April, 1997

SHEET No. T3 OF 26 SHEETS

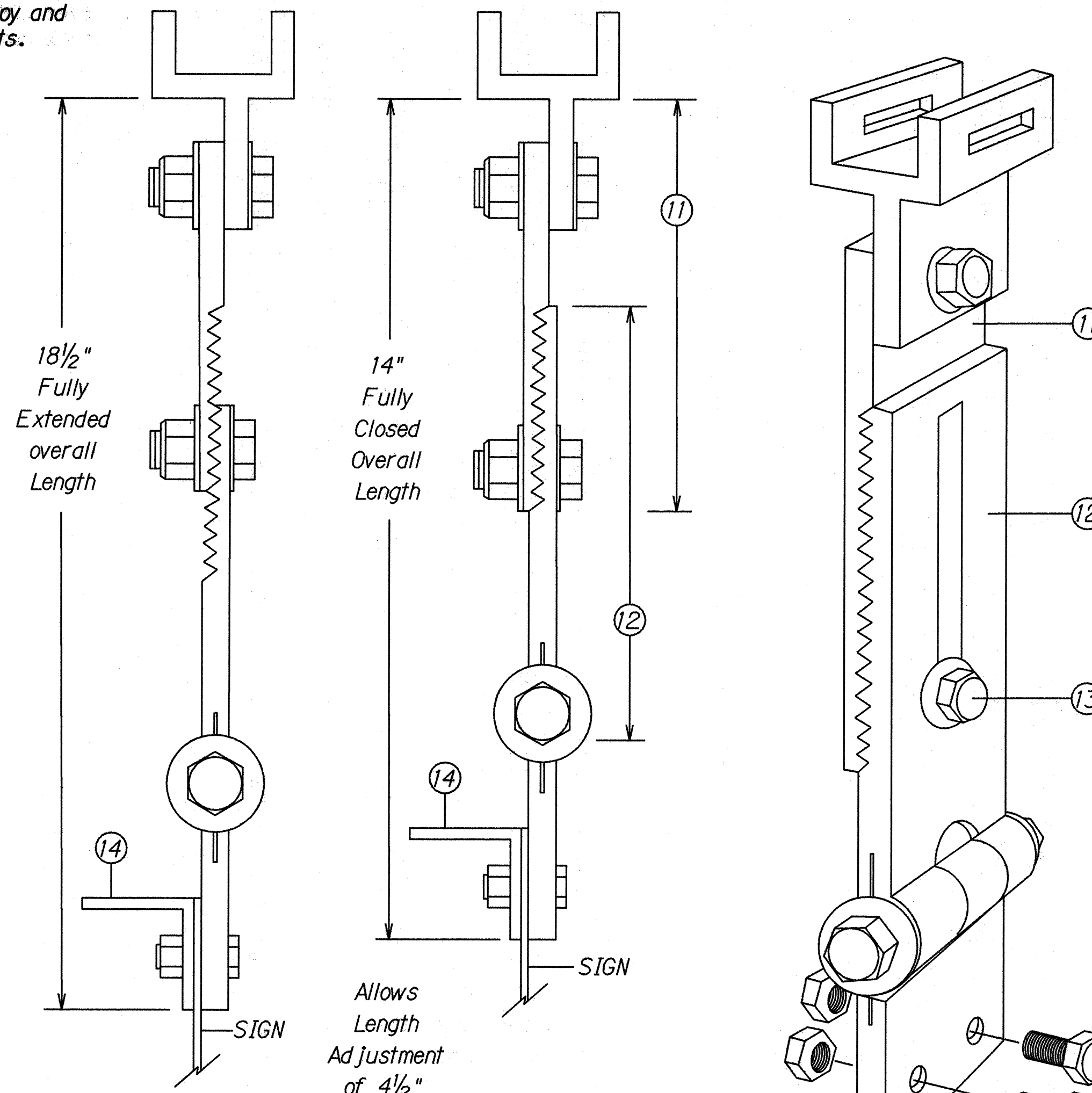
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	22	45



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 Steel Strap 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 O111te 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 1/2" 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 1/4" x 1/4" x 1/8" Aluminum Angle

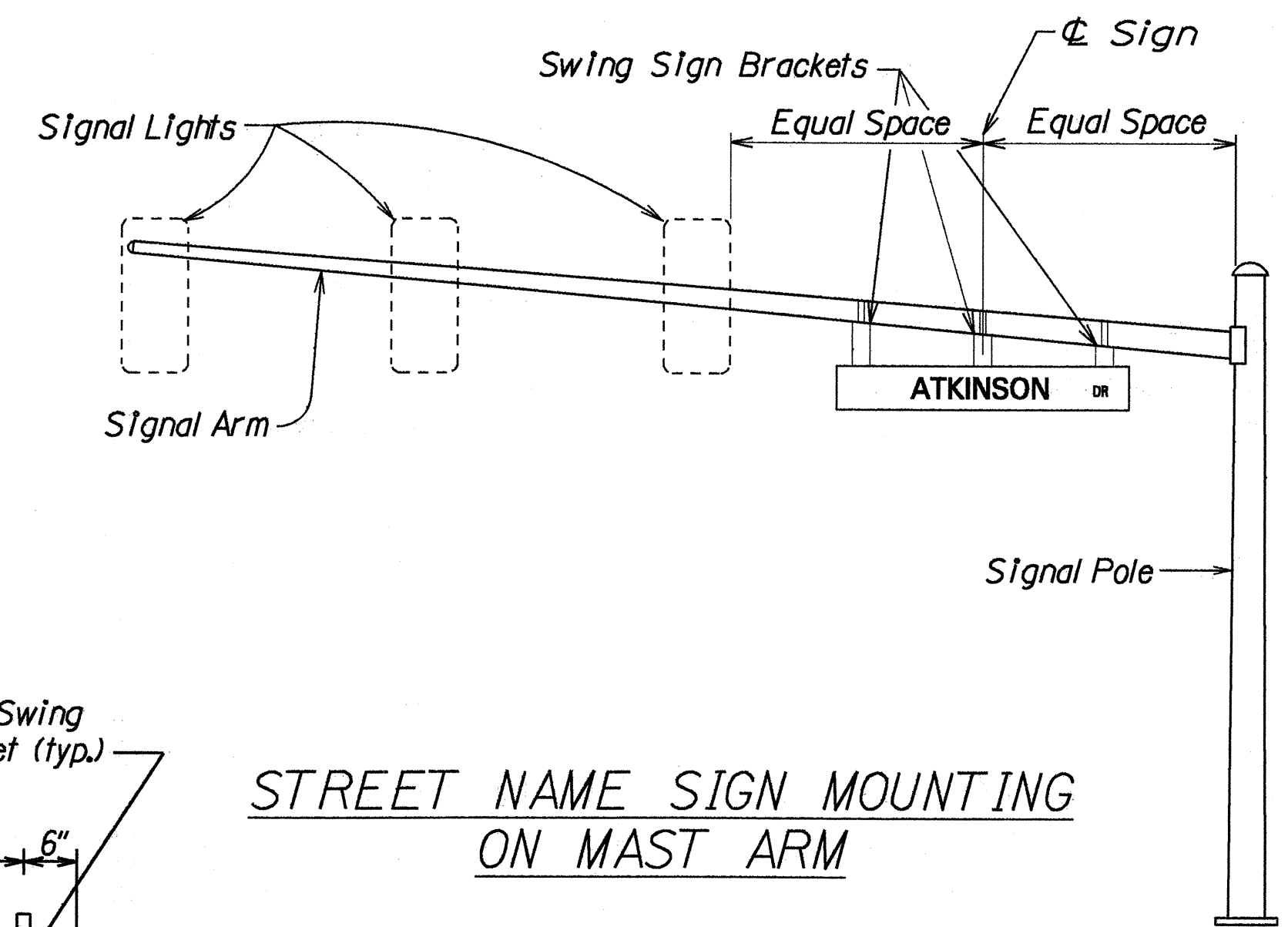
Note: Dimensions may vary slightly.



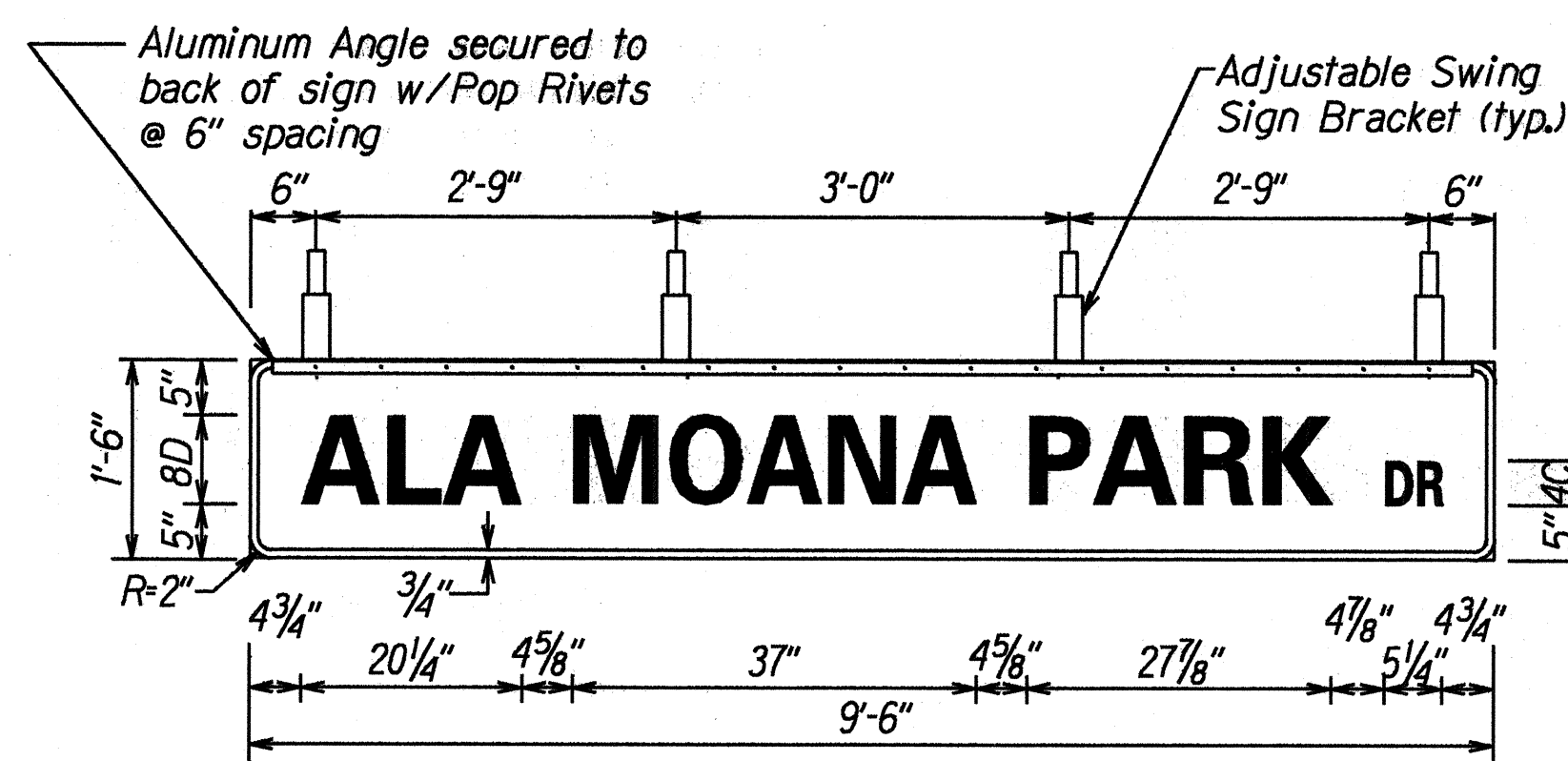
ADJUSTABLE LENGTH SWING SIGN BRACKET

NOTES:

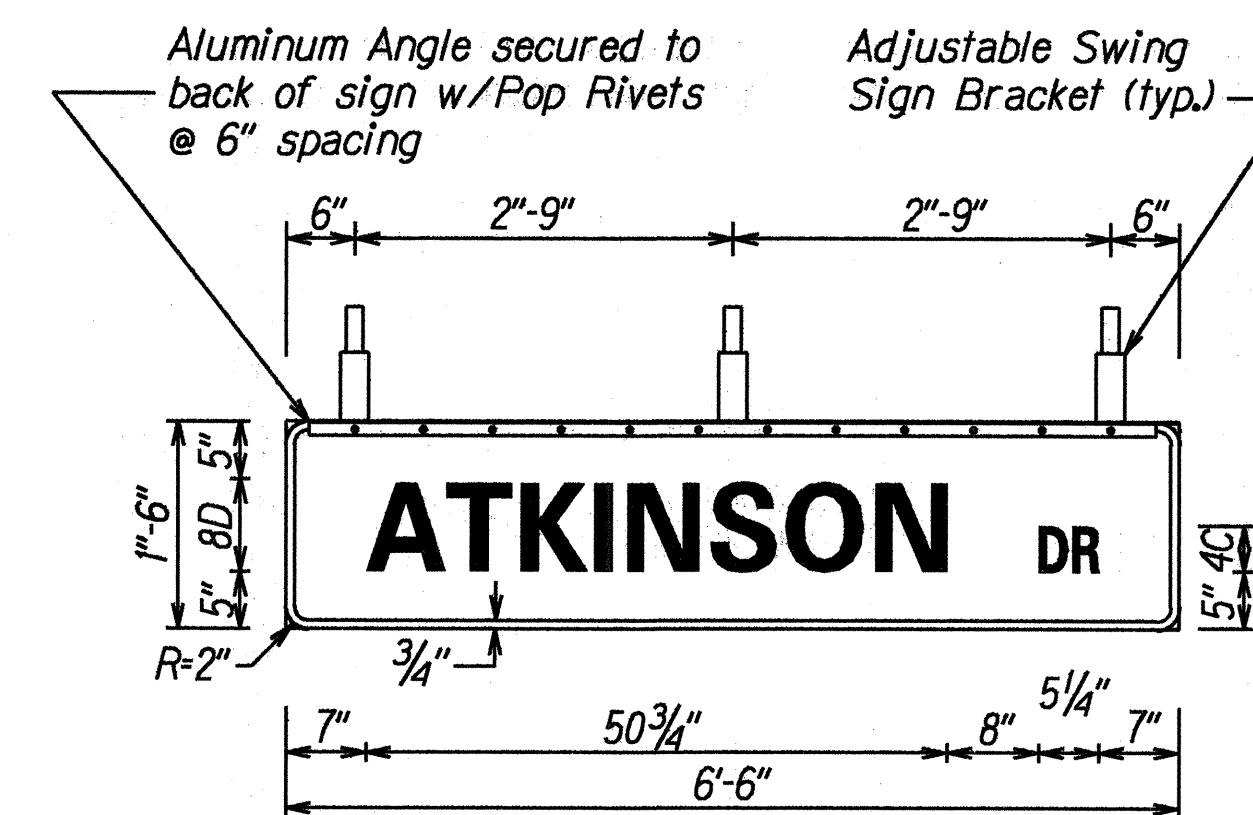
1. Sign D3-1 & D3-2 shall be a new Street Name Sign. The Contractor shall provide the same message on the front and back side of the sign. Payment will not be made separately but shall be considered as one unit.
2. Colors:
Legend - White (Reflectorized)
Background - Green (Reflectorized)
3. All panels shall be reflectorized with Type III or IV retroreflective sheeting in accordance with Section 712.20 of the Standard Specifications.
4. All signs shall conform to section 621 of the Standard Specifications and the latest editions and amendments of the following FHWA publications:
a. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
b. "Standard Highway Signs"
c. "Standard Alphabets for Highway Signs"
5. Borders and messages shall conform to details as shown on the plans and as specified in the MUTCD.
6. Sign mounting brackets, aluminum angle, fixtures, fasteners, and all necessary hardware, and equipment, tools, labor, materials and other incidentals for installation, will not be paid for separately but shall be considered incidental to street name sign installation.
7. All panels 7'-0" or less in length shall be installed with three (3) sign mounting brackets. Signs longer than 7'-0" shall have four (4) sign mounting brackets.
8. Diacritical Marks are not authorized.



STREET NAME SIGN MOUNTING ON MAST ARM



D3-2 (Rear View)



D3-1 (Rear View)

TYPICAL PANEL & SWING BRACKET LAYOUT FOR STREET NAME SIGN

DESIGNED BY	DATE
TRACED BY	4/14/97
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

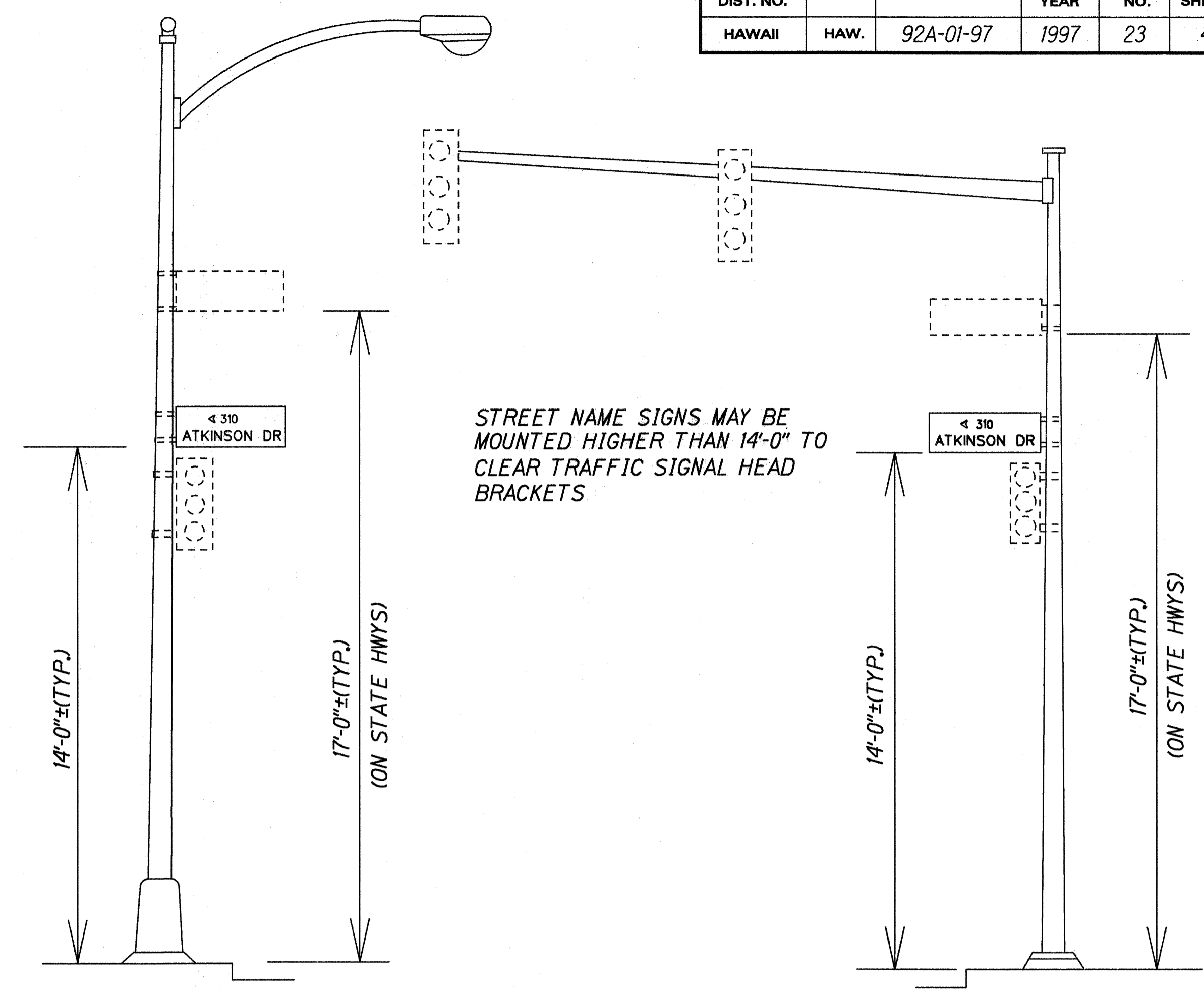
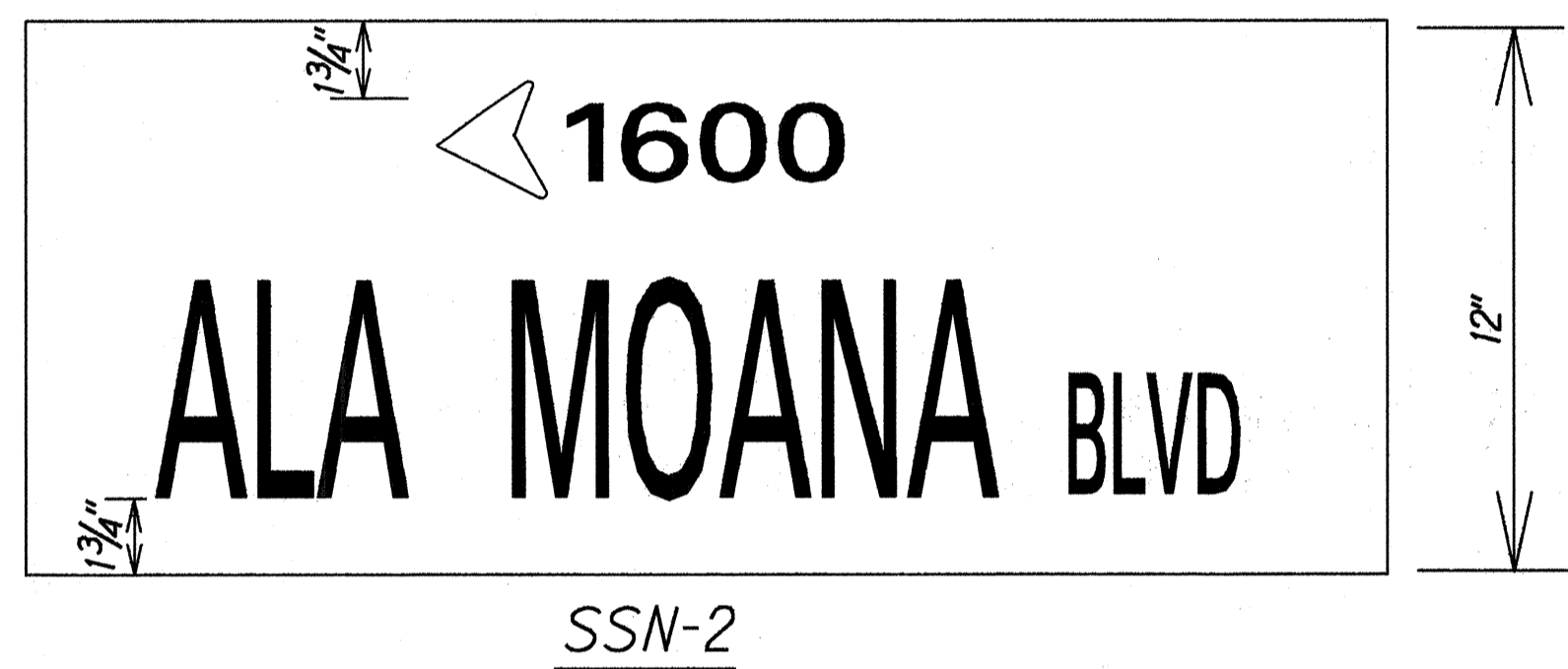
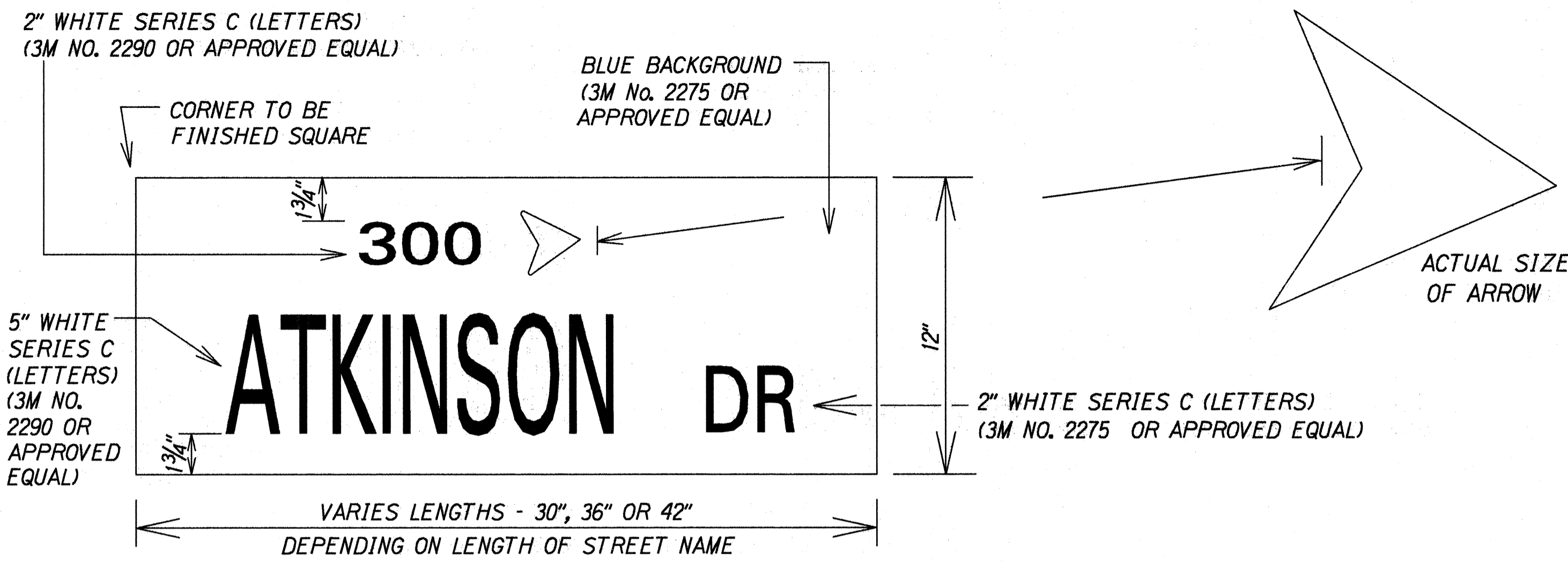
SWING SIGN BRACKET DETAIL

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Not to Scale Date: April, 1997

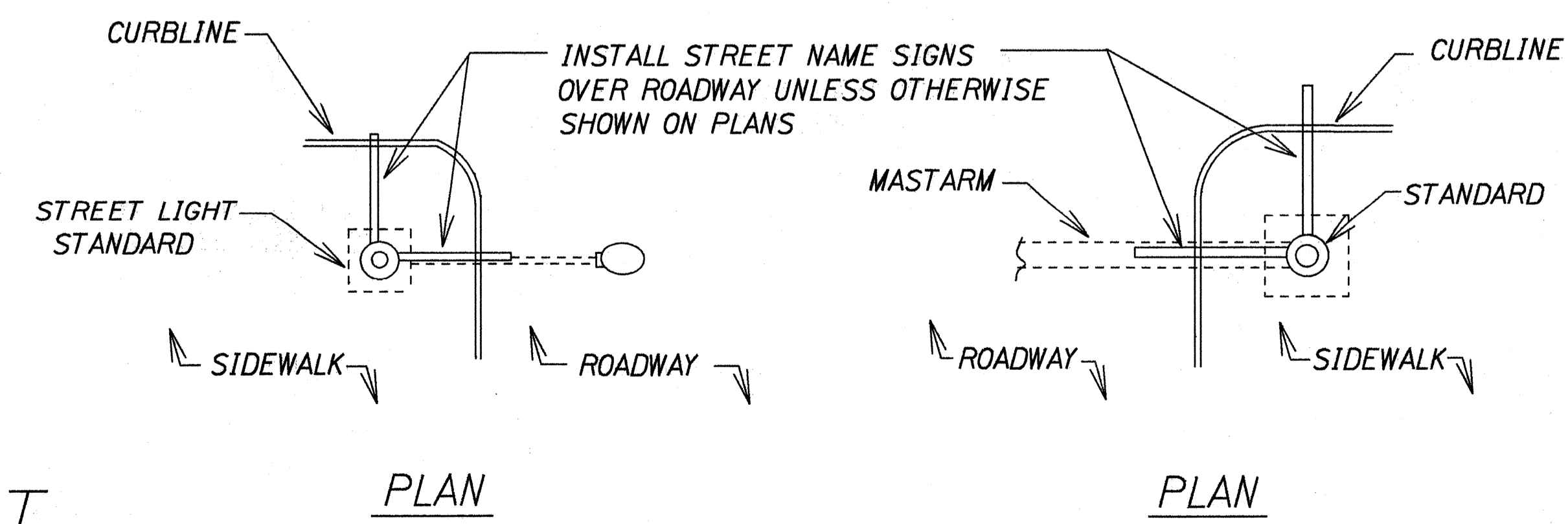
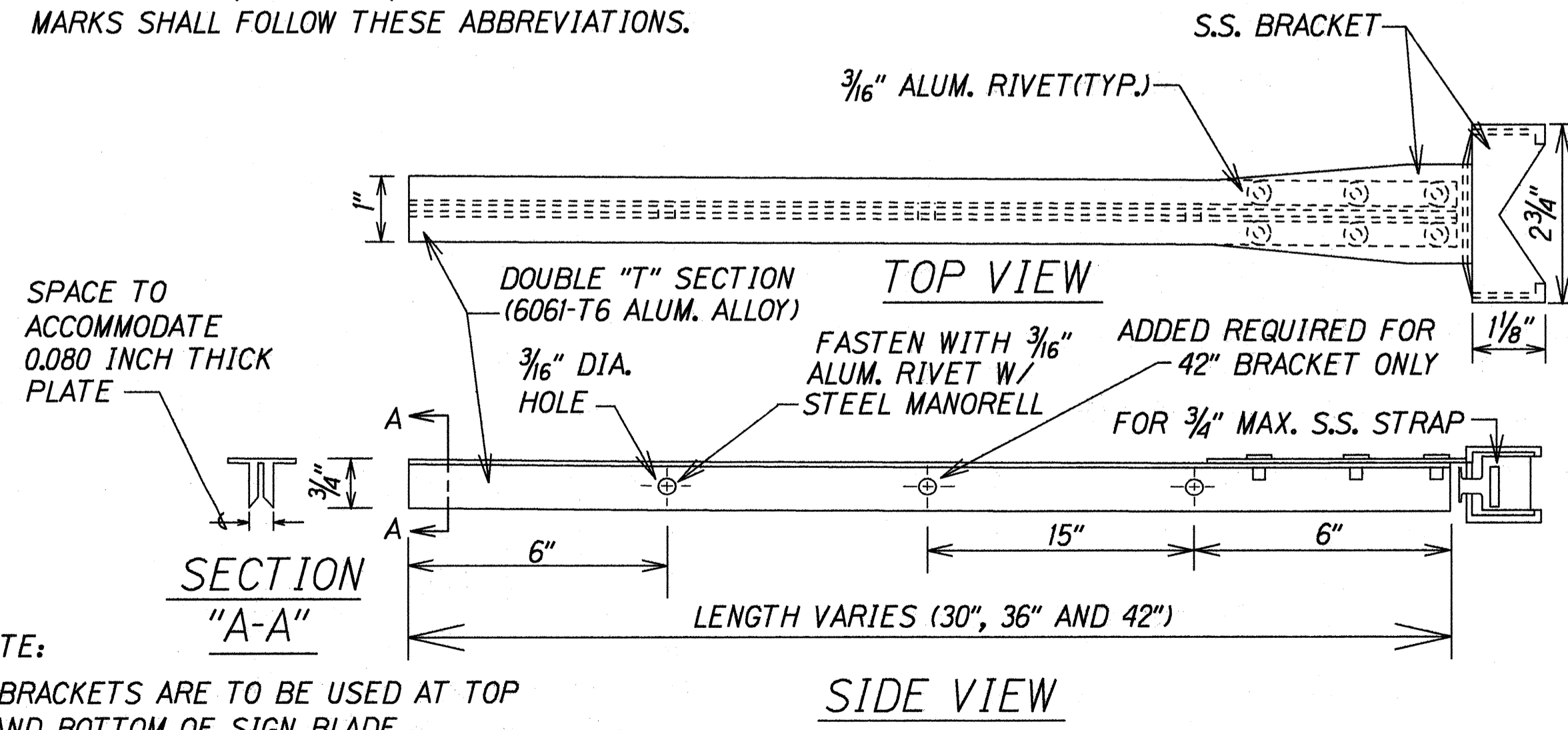
SHEET No. T4 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	23	45



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 3/2" 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

DATE	4.15.97
DESIGNED BY	M. Takahashi
CHECKED BY	C. Kelly
QUANTITIES BY	
NOTED BY	
ORIGINAL PLAN	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CITY & COUNTY OF HONOLULU
STREET NAME SIGN DETAIL

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

Not to Scale Date: April, 1997

SHEET No. T5 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	24	45

TRAFFIC SIGN SUMMARY

SIGN NO.	MESSAGE	QUANTITY			
		10 SQ. FT. OR LESS		GREATER THAN 10 SQ. FT.	
		W/POST	W/O POST	W/POSTS	W/O POSTS
R1-1	STOP	1			
R3-27A(L)			2		
R4-7			1		
R7-107b	BUS STOP SIGN	1	1		
R9-3a		1	1		
R9-3b(R)	USE → CROSSWALK		1		
R9-3b(L)	USE ← CROSSWALK		1		
R9-3c-B	STOP FOR PEDESTRIAN IN CROSSWALK		1		
R17-3(L)	ON LEFT ARROW ONLY NO U TURN		2		
R17-3(R)	ON RIGHT ARROW ONLY NO U TURN		3		
R17-4	ON LEFT ARROW ONLY		2		
W3-3a	CAUTION SIGNALS MODIFIED		6		
TOTAL		3	21	0	0

CONSTRUCTION SIGN SUMMARY

SIGN NO.	MESSAGE	W/POSTS	W/O POST
CG20-2A	END ROAD WORK	3	2
CW20-1Ad	ROAD WORK AHEAD	3	2
TOTAL		6	4

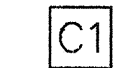
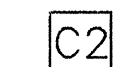

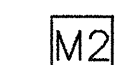








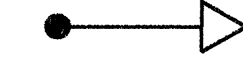




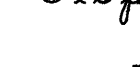

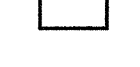



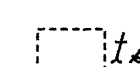
PAVEMENT MARKING SUMMARY

DESCRIPTION	QUANTITY
PAVEMENT MARKERS	
TYPE A _____	424 EA.
TYPE C _____	272 EA.
TYPE D _____	6 EA.
TYPE H _____	57 EA.
TAPE - TYPE I OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	220 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	1,350 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW) _____	100 L.F.
TAPE - TYPE II OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	1,700 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	2,000 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	740 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	160 L.F.
12-INCH PAVEMENT STRIPE (YELLOW) _____	80 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW) _____	120 L.F.
TAPE - TYPE III OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	970 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	70 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	285 L.F.
CROSSWALK MARKINGS _____	32 LANES
PAVEMENT ARROW _____	23 EA.

SURVEY PLOTTED BY: DATE: 4/16/97
 ORIGINAL PLAN: _____
 TRACED BY: _____
 NOTE BOOK: _____
 DESIGNED BY: _____
 1/22/97
 QUANTITIES BY: _____
 CHECKED BY: _____
 No. _____

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
TRAFFIC SUMMARIES
*Ala Moana Boulevard Intersection
 Improvements at Atkinson Drive
 Project No. 92A-01-97*
 Scale: As Shown Date: April, 1997
 SHEET No. T6 OF 26 SHEETS

TRAFFIC SIGNAL LEGEND

-  New Traffic Signal Controller (332A Cabinet)
-  New 336 Traffic Signal Cabinet
-  Electrical Meter Cabinet (Traffic Signal)
-  Electrical Meter Cabinet (Highway Lighting)
-  New Traffic Signal Conduits & Cables
-  New 12" RYG Traffic Signal Head
-  New 12" RY↑ Traffic Signal Head
-  New 12" RY← Traffic Signal Head
-  New 12" RY→ Traffic Signal Head
-  New 12" RYG← Programmable Visibility Signal Head
-  New Type I Traffic Signal Standard w/Traffic Signal Head as specified on plan
-  New Type II Traffic Signal Standard w/Mast Arm and Traffic Signal Heads (length of mast arm & distance between signal head specified on plan)
-  Existing Traffic Signal Standard
-  New Pedestrian Signal Head
-  New Type B Pullbox (Traffic Signal)
-  New Type B Pullbox (Highway Lighting)
-  New Type C Pullbox
-  New Type D Pullbox
-  Existing Traffic Signal Pullbox
-  Existing Highway/Street Lighting Pullbox
-  New Loop Detectors
-  Opticom Receiver (Model 711)
-  New Pipe Guard
-  Existing Highway Lighting Standard

TRAFFIC SIGNAL NOTES

1. The locations of the Traffic Signal Standards, Traffic Signal Standards w/Mast Arms, Pedestrian Push Buttons, Traffic Controller, Pullboxes, Conduits and Loop Detectors shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.
2. All splicing shall be done in the pullboxes.
3. Furnishing and installing the conduit stubouts (pullboxes to edge of pavement) will not be paid for separately but shall be considered incidental to the various contract items.
4. A solid #8 bare copper wire shall be pulled with the traffic signal control cable for equipment ground. Cost shall be incidental to the installation of the control cable.
5. All Traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signals as called for in the plans.
6. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the plans. Cost for the loop amplifier shall be incidental to the installation of the loop detector.
7. Should any defect be encountered during the warranty period, the manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense whatsoever to the State. All repairs shall be done as soon as possible.
8. All traffic signal work shall conform to the requirements of the "Manual On Uniform Traffic Control Devices For Streets And Highways", Federal Highway Administration (1988) and Amendments.
9. Existing traffic signal poles, mast arms, heads and controllers which are removed and not incorporated into the new Traffic Signal System shall be disposed of as directed by the Engineer. Cost shall be incidental to the various traffic signal items.
10. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (phone no. 527-5007) 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 Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone no. 527-5007).
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.
13. The cost of the Pipe Guard (9 each) shall not be paid for separately but considered incidental to the various traffic signal items.
14. All existing pullboxes, traffic signal poles and controller bases not incorporated into the New Traffic Signal System or as directed by the Engineer shall be removed to 6 inches below grade. Cost shall be incidental to the various traffic signal items.
15. Existing loop detectors and conduits not incorporated into the New Traffic Signal System shall be abandoned in place. Abandoned conduits shall be plugged with concrete. Remove existing cables.
16. The traffic signals shall be kept operational during construction. Any relocation required shall be approved by the Electrical and Maintenance Services Division, Department of Transportation Services, City and County of Honolulu and paid for by the contractor.

TRAFFIC SIGNAL NOTES (Cont.)

17. The Contractor shall be responsible for any damages to existing Traffic Signal Facilities. Including the Traffic Signal Interconnect System Closed Circuit T.V. (CCTV) System, and any and all damages to these facilities shall be repaired by the Contractor at his cost in with the requirements of the City and County of Honolulu.
18. The Contractor shall refer to Sht. No. T12 for location of new traffic signal standards with pedestrian push buttons in order to meet the new ADA requirements. The Contractor shall not install pullboxes within the normal path of pedestrians/wheelchairs between curb ramps and along sidewalks.
19. The Contractor shall install sufficient amounts of Type 5 Signal-Drop Cables between each Traffic Signal Head and Pedestrian Signal Head. The cables shall not be paid for separately but considered incidental to the Traffic Signal System.
20. The Contractor shall install the Temporary Approach-Only Microwave Detectors as directed by the City & County of Honolulu Traffic Signal Engineer/Inspector. When directed by the Traffic Signal Engineer/Inspector, the Contractor shall remove the detectors, clean the detectors and deliver the detectors to a location directed by the Traffic Signal Engineer/Inspector. The cost for installing, removing, cleaning and delivering the detectors shall be incidental to the microwave detector.
21. The Contractor shall refer to Sheet No. T13 for details on installing conduits between pullboxes and Traffic Signal & Highway Lighting Standards.

ORIGINAL PLAN	DESIGNED BY	DATE
NOTE BOOK	DESIGNED BY	DATE
QUANTITIES BY	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TRAFFIC SIGNAL
LEGEND AND NOTES**

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Scale: As Noted Date: April, 1997

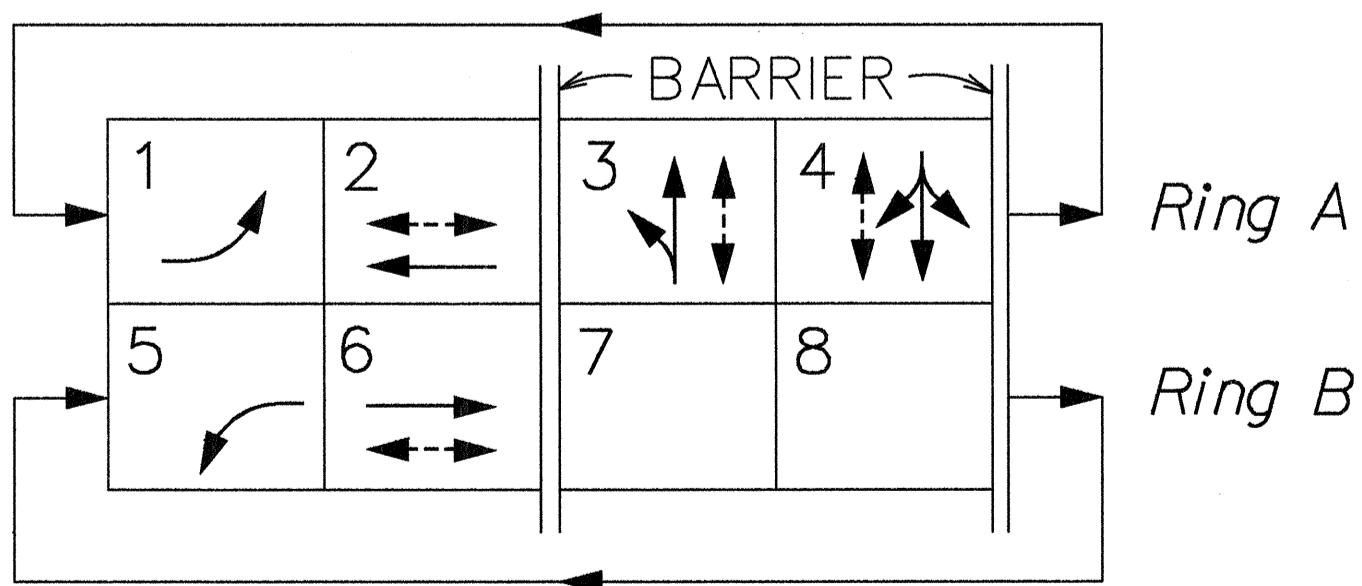
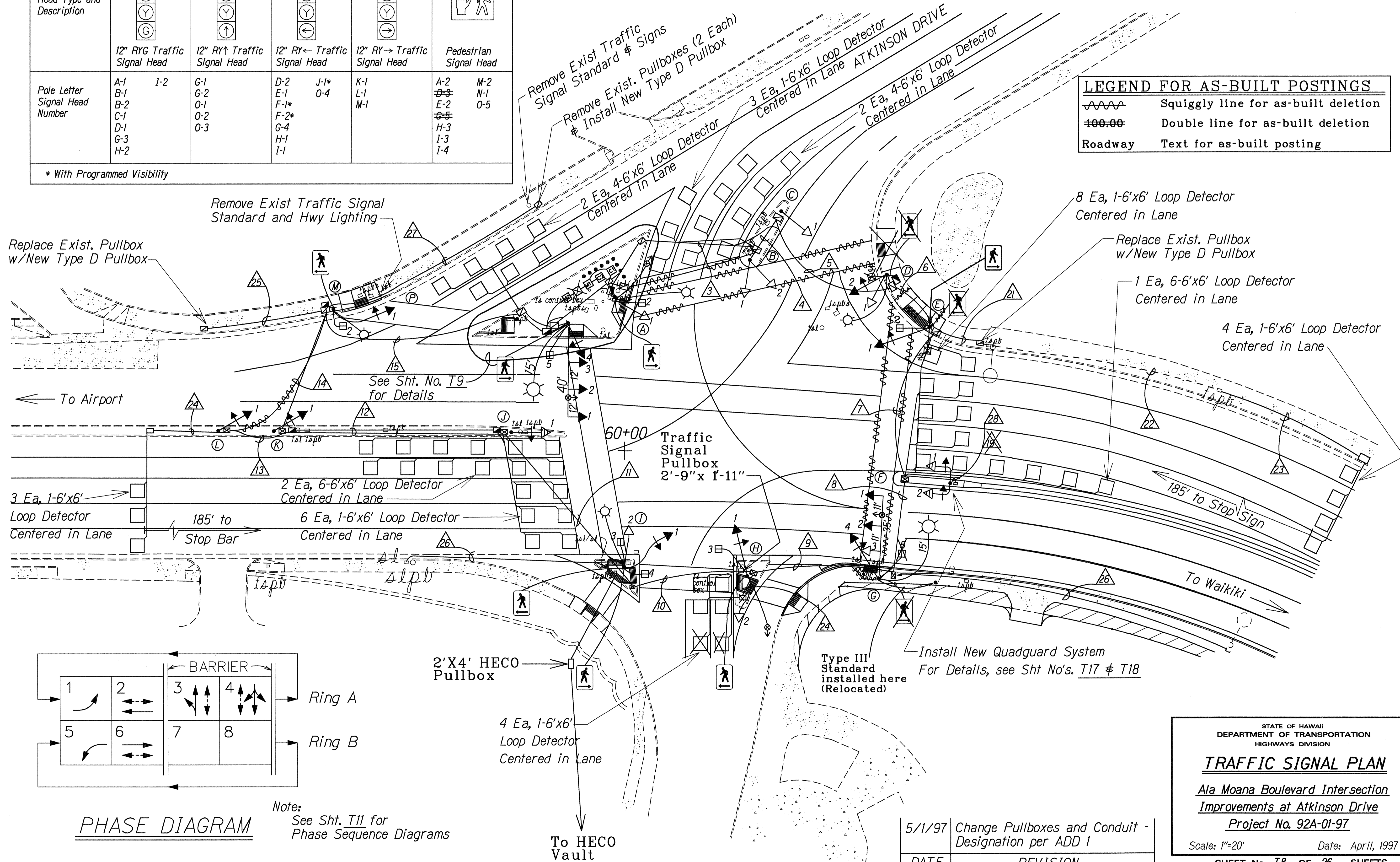
SHEET No. 77 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	ADD 26	45

TRAFFIC SIGNAL HEAD SCHEDULE					
Traffic Signal Head Type and Description					
	12" RYG Traffic Signal Head	12" RY↑ Traffic Signal Head	12" RY← Traffic Signal Head	12" RY→ Traffic Signal Head	Pedestrian Signal Head
Pole Letter Signal Head Number	A-1 I-2 B-1 B-2 C-1 D-1 G-3 H-2	G-1 G-2 O-1 O-2 O-3	D-2 J-1* E-1 O-4 F-1* F-2* G-4 H-1 I-1	K-1 L-1 M-1	A-2 M-2 D-3 N-1 E-2 O-5 G-5 H-3 I-3 I-4

* With Programmed Visibility

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



Note:
See Sht. T11 for Phase Sequence Diagrams

5/1/97	Change Pullboxes and Conduit - Designation per ADD 1
DATE	REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

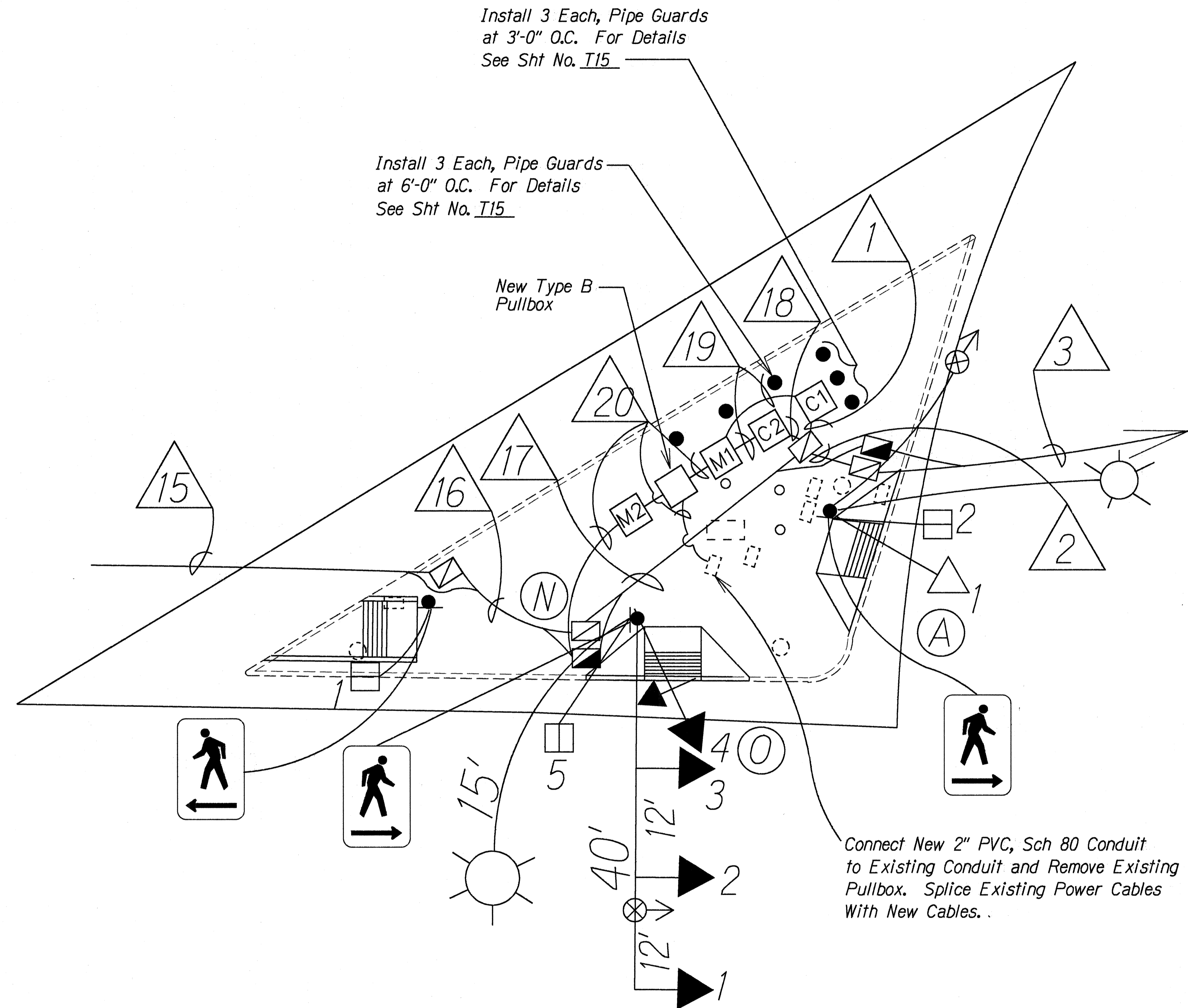
Ala Moana Boulevard Intersection
 Improvements at Atkinson Drive
 Project No. 92A-01-97

Scale: 1"=20' Date: April, 1997

SHEET No. T8 OF 26 SHEETS

ORIGINAL PLAN DATE: X
 SURVEY PLANNED BY: M. L. Takahashi
 DRAWN BY: M. L. Takahashi
 NOTED BOOK DESIGNED BY: Casey Aho
 QUANTITIES BY: M. L. Takahashi
 CHECKED BY: M. L. Takahashi

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	ADD 27	45



CONDUIT AND CABLE SCHEDULE		
DESIGNATION	PVC CONDUITS	CABLES
△1	8-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 7-2C #14 (Type 2) 7-2C #14 (Type 2) 1-12 prs # 1-6prs #19 (Type 3) 1-3C #4 Power Cable 4-4C #20 (Type 7) Spare
△2	9-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-4C #20 (Type 7) 1-6 prs #19 (Type 3) 1-Fiberoptic New Highway Lighting Cable Spare
△3	8-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-6 prs #19 (Type 3) 1-Fiberoptic Cable New Highway Lighting Cable Spare
△4	8-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-6 prs #19 (Type 3) 1-Fiberoptic Cable New Highway Lighting Cable Spare
△5	8-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-6 prs #19 (Type 3) 1-Fiberoptic Cable New Highway Lighting Cable Spare

SURVEY PLOTTED BY	DATE
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

5/1/97	Change Pullboxes per ADD 1
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

Not to Scale Date: April, 1997

SHEET No. T9 OF 26 SHEETS

CONDUIT AND CABLE SCHEDULE

DESIGNATION	PVC CONDUITS	CABLES
△6	8-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 3-2C #14 (Type 2) 3-2C #14 (Type 2) 1-6 prs #19 (Type 3) 1-Fiber optic Cable New Highway Lighting Cable Spare
△7	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 1-2C #14 (Type 2) New Highway Lighting Cable Spare
△8	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 1-2C #14 (Type 2) New Highway Lighting Cable Spare
△9	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 1-4C #20 (Type 7) New Highway Lighting Cable Spare
△10	6-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 2-2C #14 (Type 2) 2-4C #20 (Type 7) New Highway Lighting Cable Spare
△11	6-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 3-2C #14 (Type 2) 2-4C #20 (Type 7) New Highway Lighting Cable Spare
△12	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 5-2C #14 (Type 2) 2-4C #20 (Type 7) Spare
△13	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 5-2C #14 (Type 2) 2-4C #20 (Type 7) Spare
△14	5-2" Sch 80 (Direct Buried)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 6-2C #14 (Type 2) 2-4C #20 (Type 7) Spare

CONDUIT AND CABLE SCHEDULE

DESIGNATION	PVC CONDUITS	CABLES
△15	9-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-12 prs # 1-6 prs #19 (Type 3) 2-4C #20 (Type 7) 1-Fiber optic Cable New Highway Lighting Cable Spare
△16	9-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-12 prs # 1-6 prs #19 (Type 3) 2-4C #20 (Type 7) 1-Fiber optic Cable New Highway Lighting Cable Spare
△17	10-2" Sch 40 (Concrete Encased)	1-26C #14 (Type 1) 1-26C #14 (Type 1) 4-2C #14 (Type 2) 3-2C #14 (Type 2) 1-12 prs # 1-6 prs #19 (Type 3) 3-4C #20 (Type 7) 1-Fiber optic Cable 1-Co-Axial Cable New Highway Lighting Cable Spare
△18	3-2" Sch 40 (Concrete Encased)	1-Fiber optic Cable 1-Co-Axial Cable Spare
△19	1-2" Sch 80 (Direct Buried)	1-3C #6 Power Cable
△20	1-2" Sch 80 (Direct Buried)	1-3C #4 Power Cable
△21 (See Note #1 & #3)	5-2" Sch 40 (Concrete Encased)	1-6 prs #19 (Type 3) 1-Fiber optic Cable 2-2C #14 (Type 2) New Highway Lighting Cable Spare
△22	Existing Conduits	2-2C #14 (Type 2)
△23	1-2" Sch 80 (Direct Buried)	2-2C prs #14 (Type 2)
△24	1-2" Sch 80 (Direct Buried)	1-2C #14 (Type 2)

CONDUIT AND CABLE SCHEDULE

DESIGNATION	PVC CONDUITS	CABLES
△25 (See Notes #1 & #2)	4-2" Sch 40 (Concrete Encased)	1-12 prs #19 (Type 3) 1-Fiber optic Cable New Highway Lighting Cable Spare
△26	1-2" Sch 80 (Direct Buried)	New Highway Lighting Cable
△27 (See Note #3)	3-2" Sch 40 (Concrete Encased)	1-6 prs #19 (Type 3) New Highway Lighting Cable Spare
△28	2-2" Sch 80 (Direct Buried)	2-4c #14 (Type 5)

Notes:

- The Contractor shall install a new Fiber Optic Cable in Exist/New Conduits from the Termination Cabinet located at Piikoi Street to the New Traffic Signal Controller and continue the run to the next Termination Cabinet located at Kalia Road. Splicing of the Fiber Optic Cable between termination Cabinets is prohibited.
- The Contractor shall install a new 12 prs #19 Interconnect Cable in Exist/New Conduits from the Traffic Signal controller in front of Ala Moana Center to the New Traffic Signal Controller in one continuous run.
- The Contractor shall install a new 6 prs #19 Interconnect Cable in Exist/New Conduits from the New Traffic Signal Controller to the Exist Controllers at Mahukona Street along Atkinson Drive and Hobron Lane in one continuous run.

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

5/1/97 Add Conduits to
△ & △ per ADD 1

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

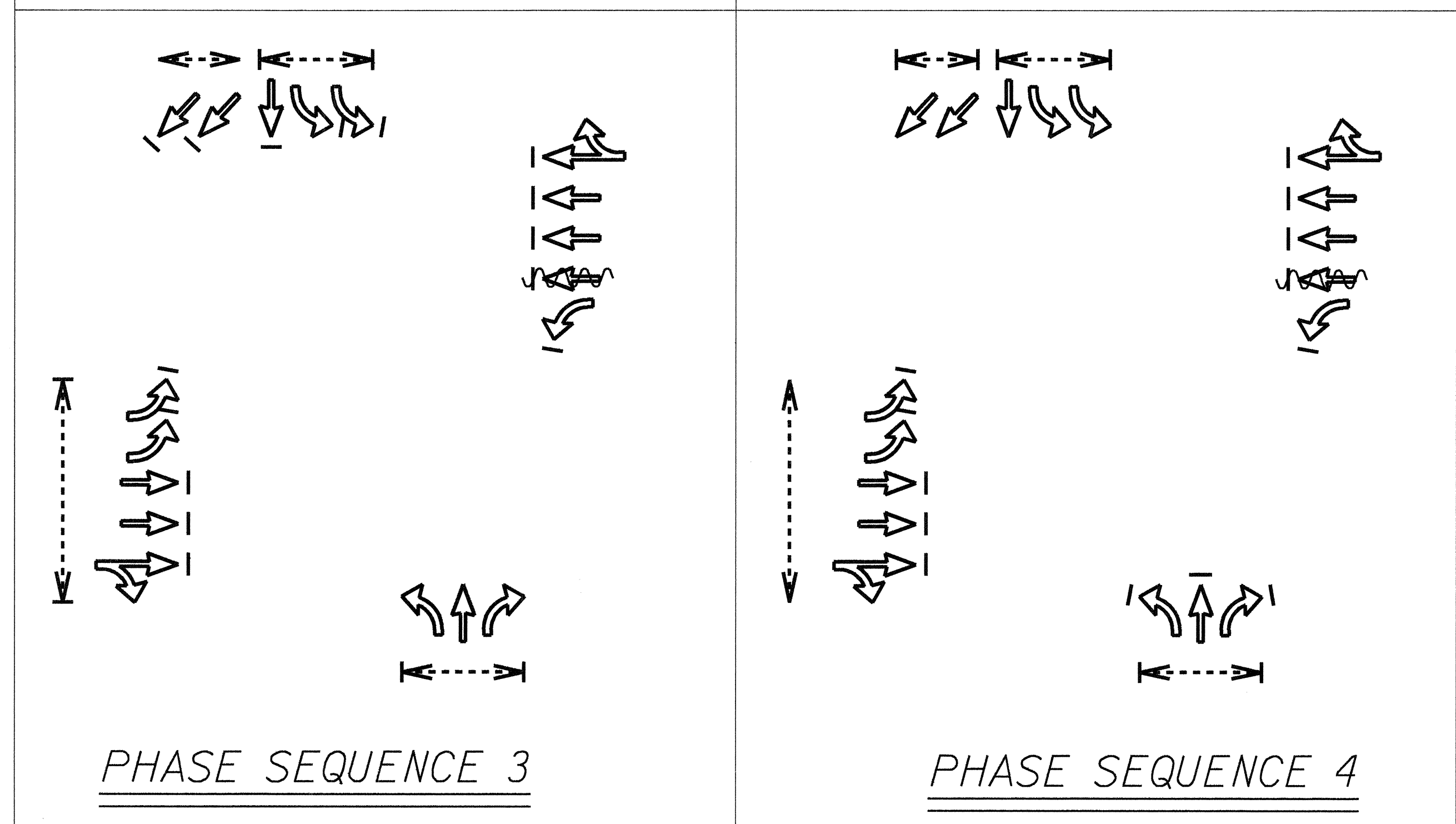
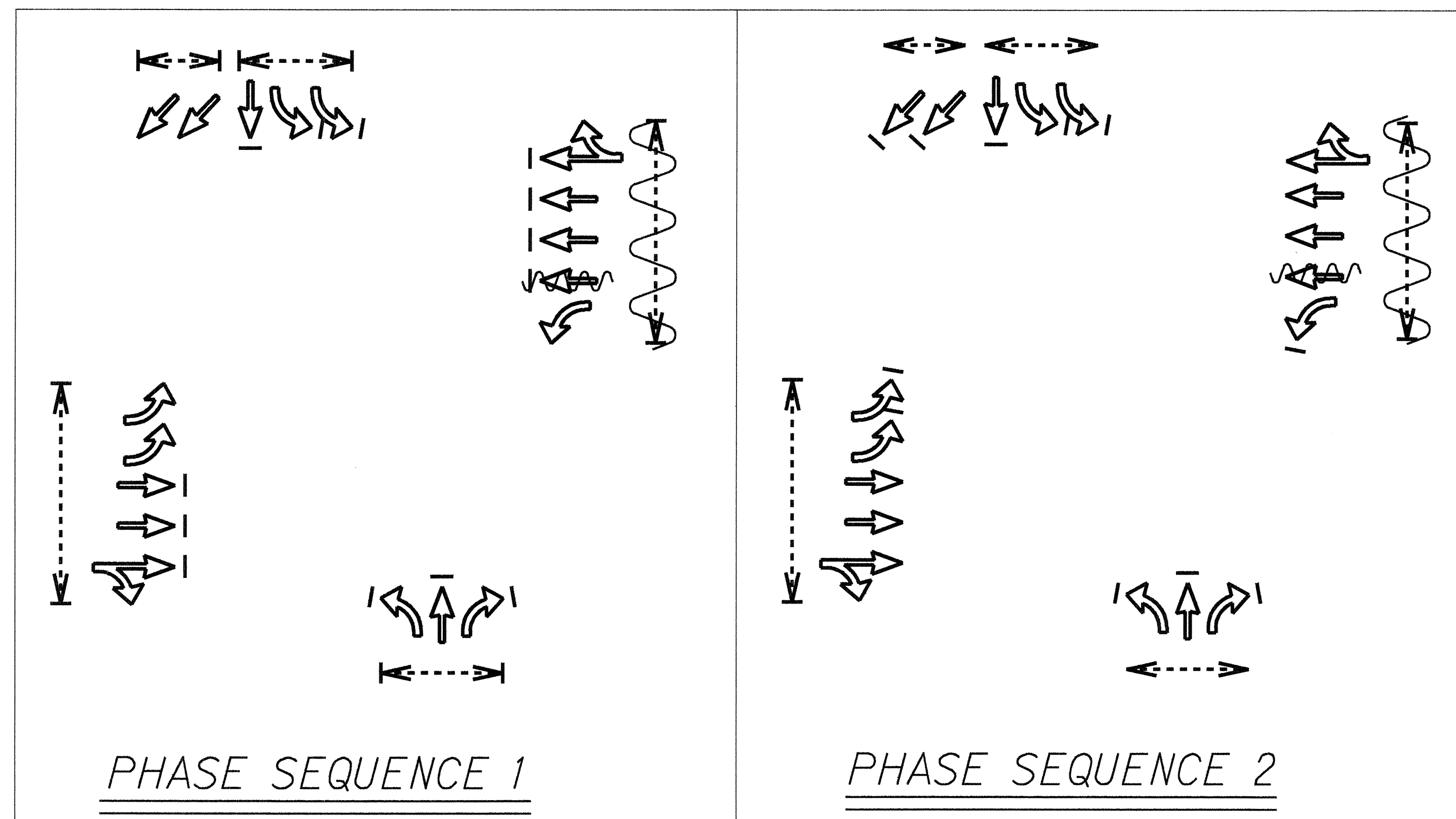
TRAFFIC SIGNAL PLAN

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

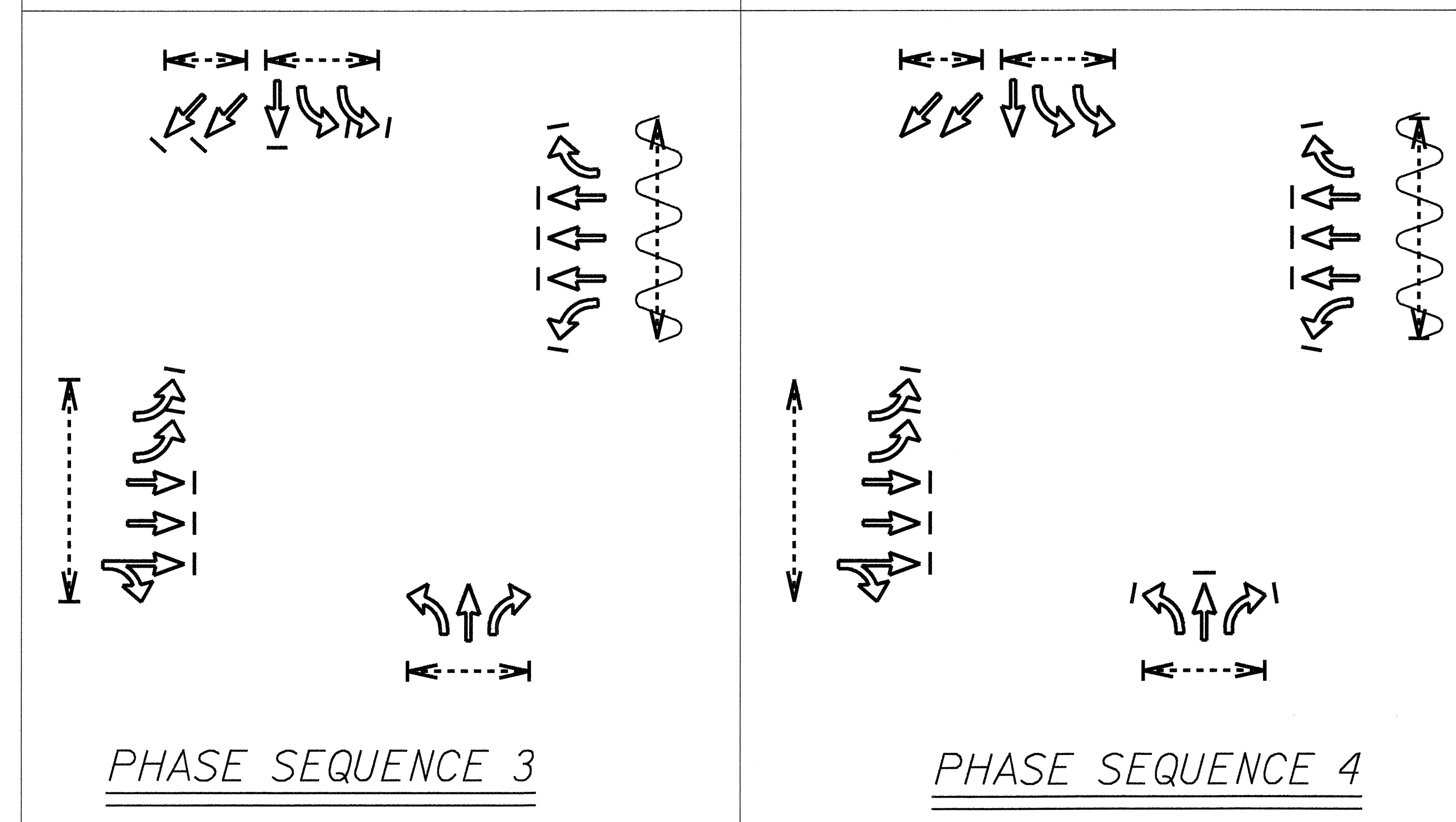
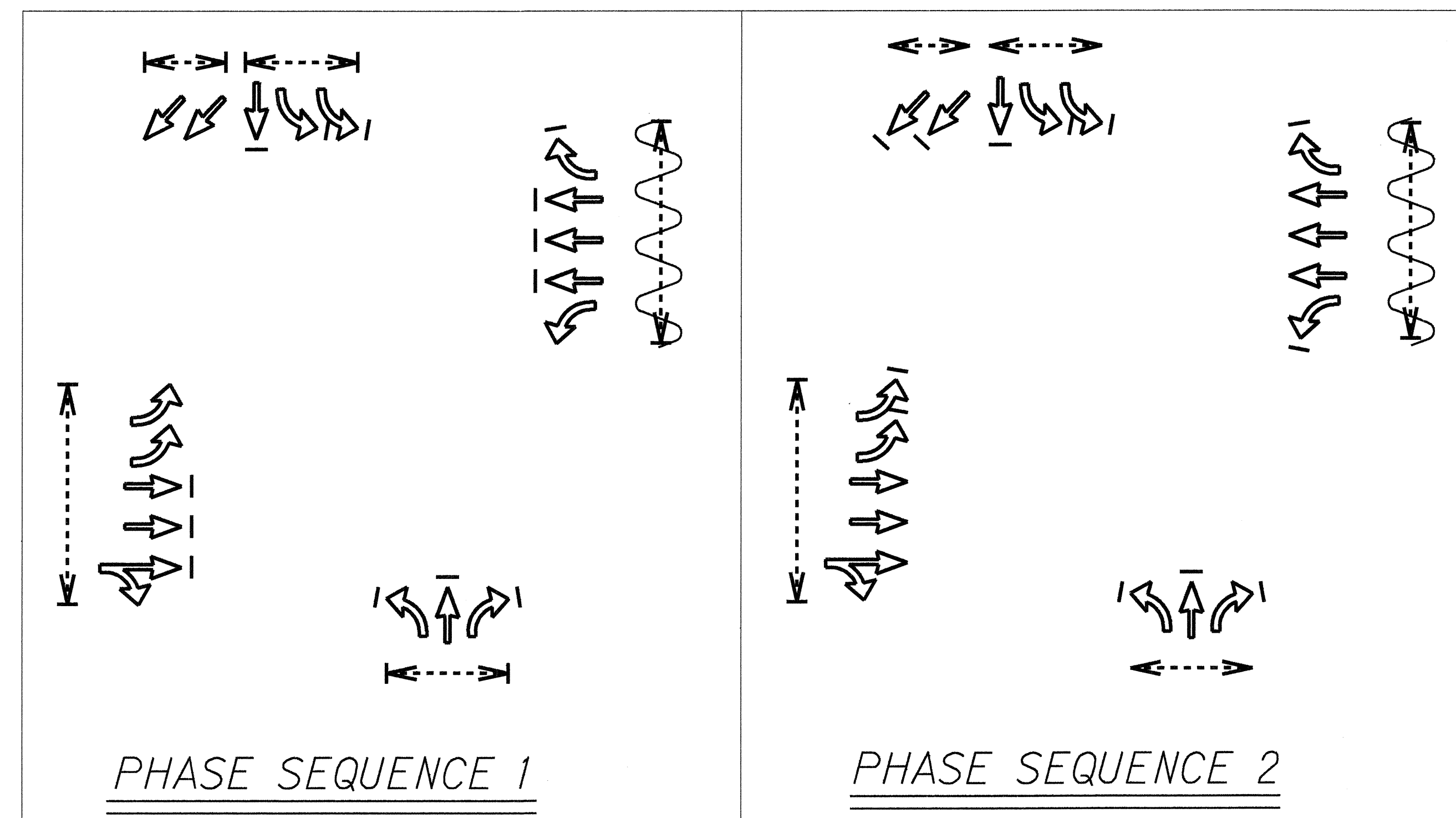
Scale: As Shown Date: April, 1997

ORIGINAL PLAN
DATE 4/12/97
SURVEY PLOTTED BY
DRAWN BY M. Madhul
TRACED BY
DESIGNED BY Casey Abo
CHECKED BY
N. Sambit

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	29	45



EXISTING PHASE SEQUENCE



NEW PHASE SEQUENCE

LEGEND FOR AS-BUILT POSTINGS

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

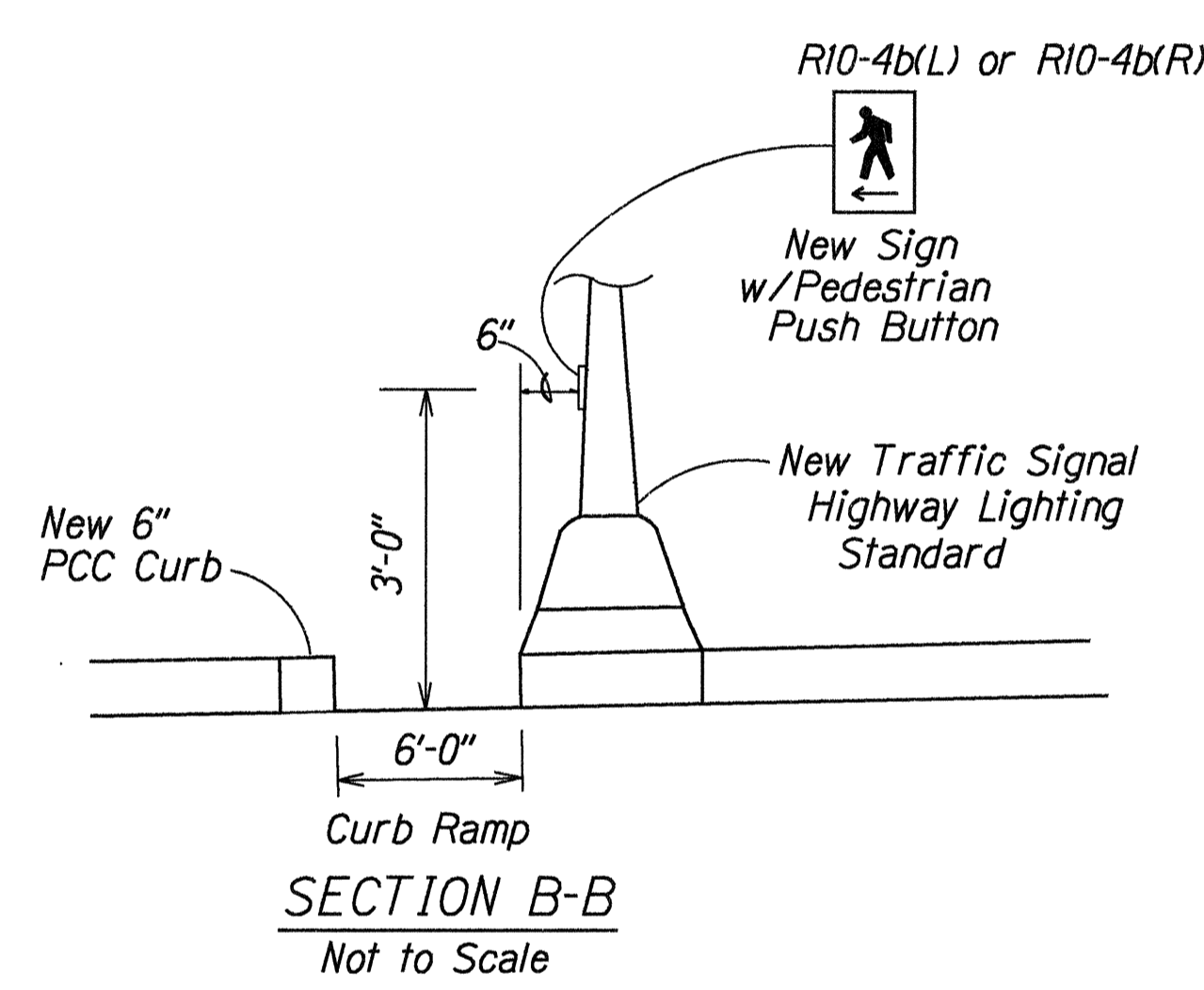
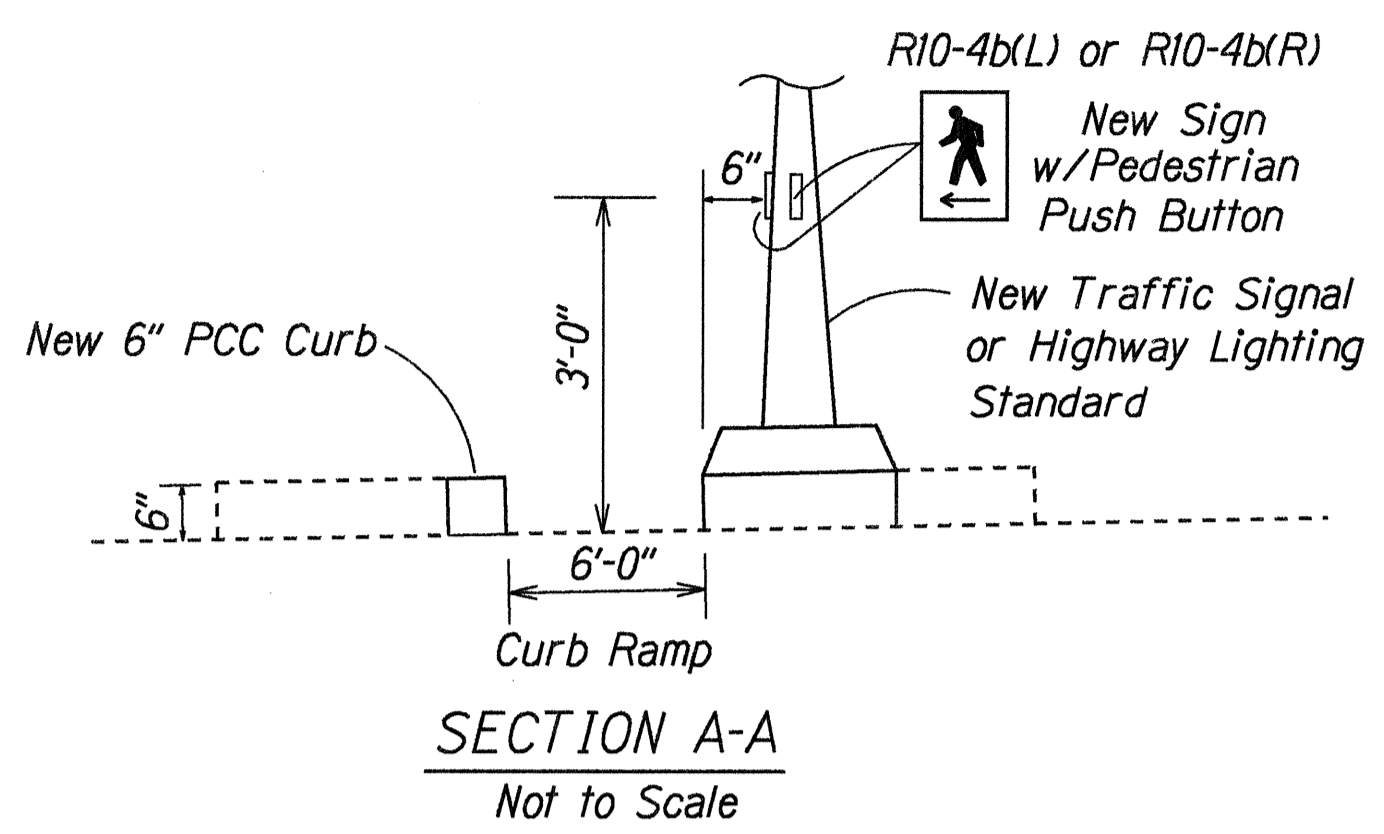
*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Not to Scale Date: April, 1997

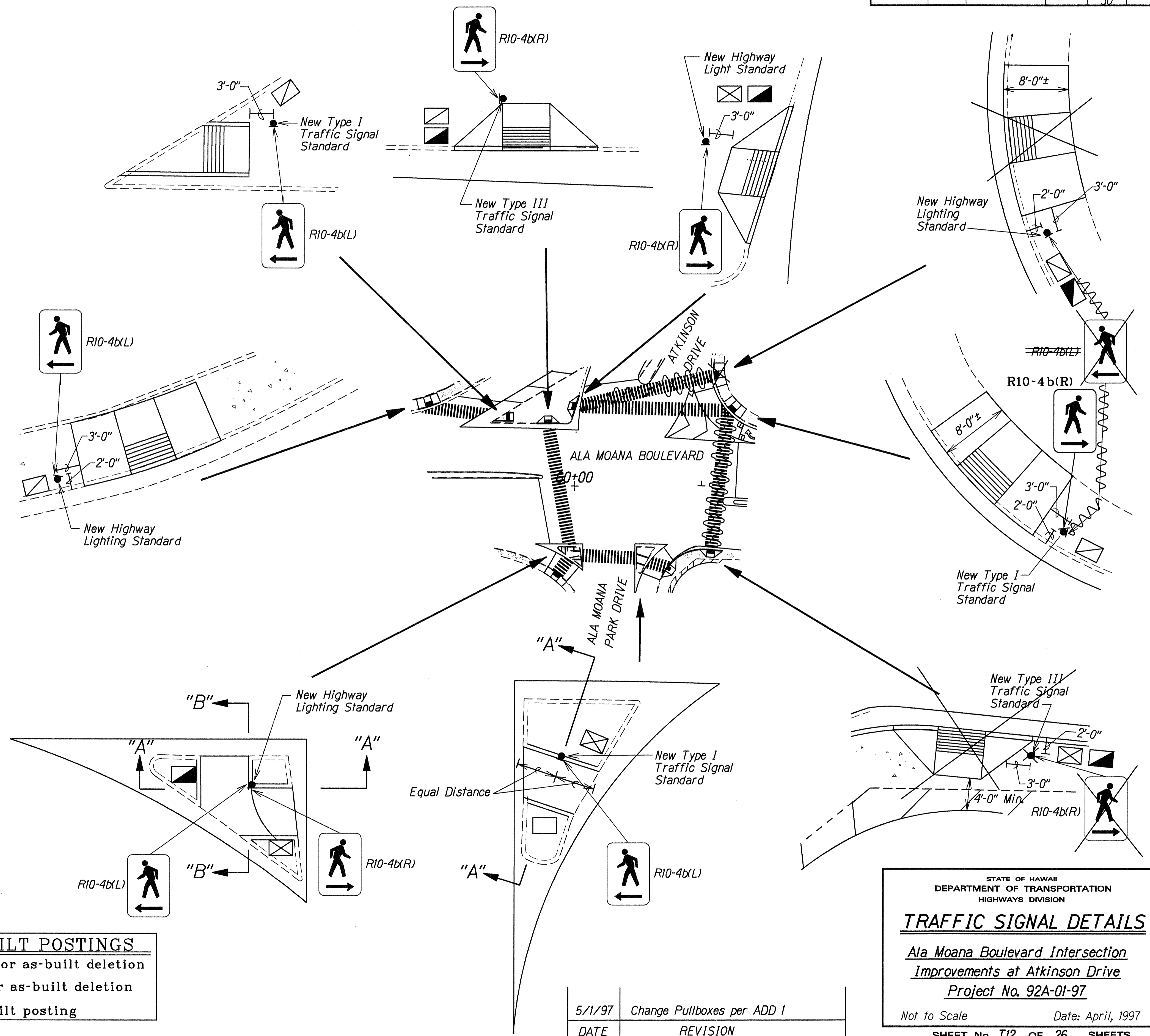
SHEET No. 111 OF 26 SHEETS

ORIGINAL PLAN	DATE
102/mj	4/18/97
NOTE BOOK	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	ADD 30	45



TRAFFIC SIGNAL STANDARD INSTALLATION
AT TYPE "C" AND MODIFIED TYPE "C" CURB RAMP



LEGEND FOR AS-BUILT POSTINGS

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

DATE	REVISION
5/1/97	Change Pullboxes per ADD 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

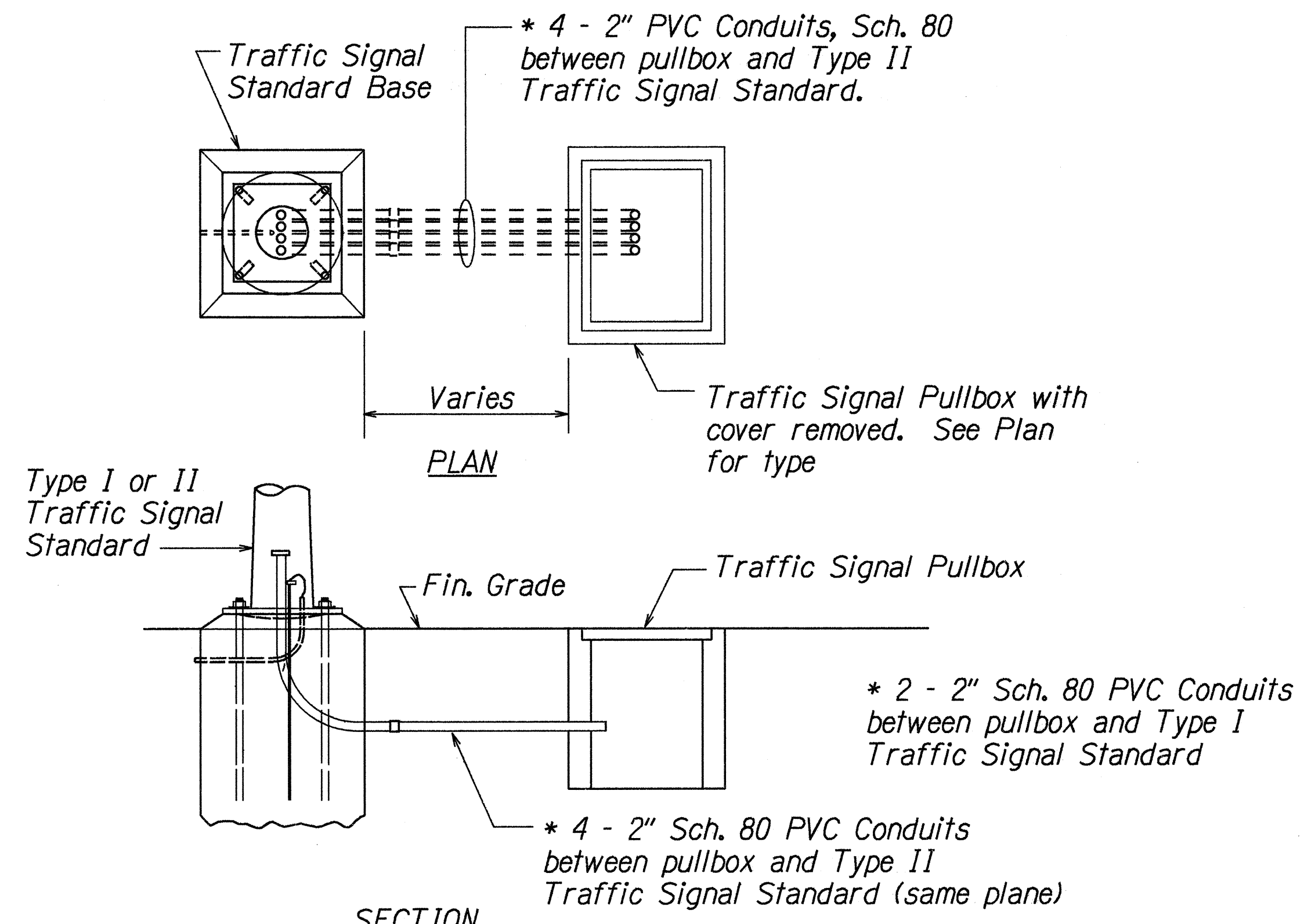
*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Not to Scale Date: April, 1997

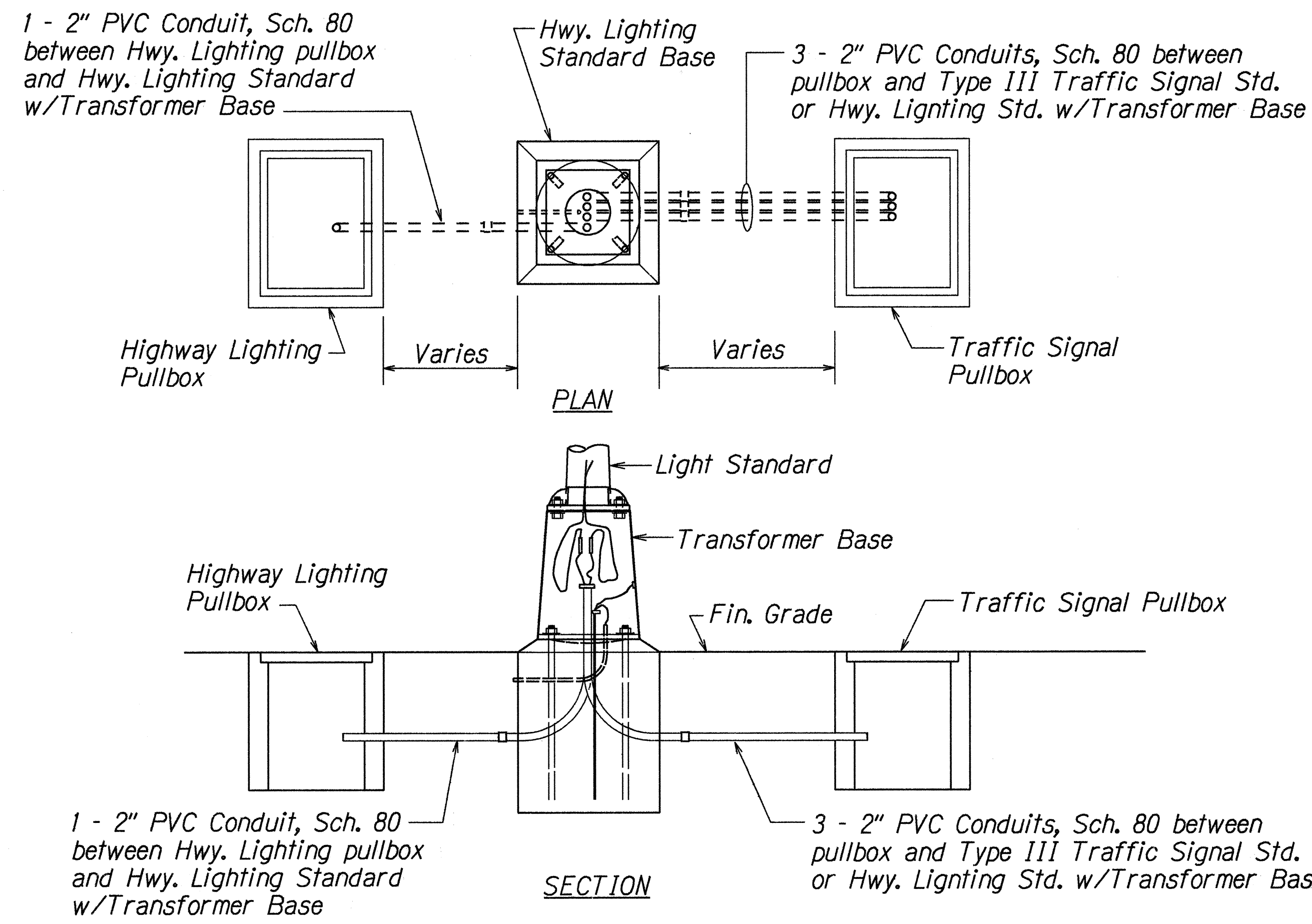
SHEET No. T12 OF 26 SHEETS

DATE	12/13/97
SURVEY PLOTTED BY	TEB/BJ
DRAWN BY	M. Takahashi
TRACED BY	C. Casey, A. Aho
NOTE BOOK	142/may
QUANTITIES BY	N. Sammis
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	31	45



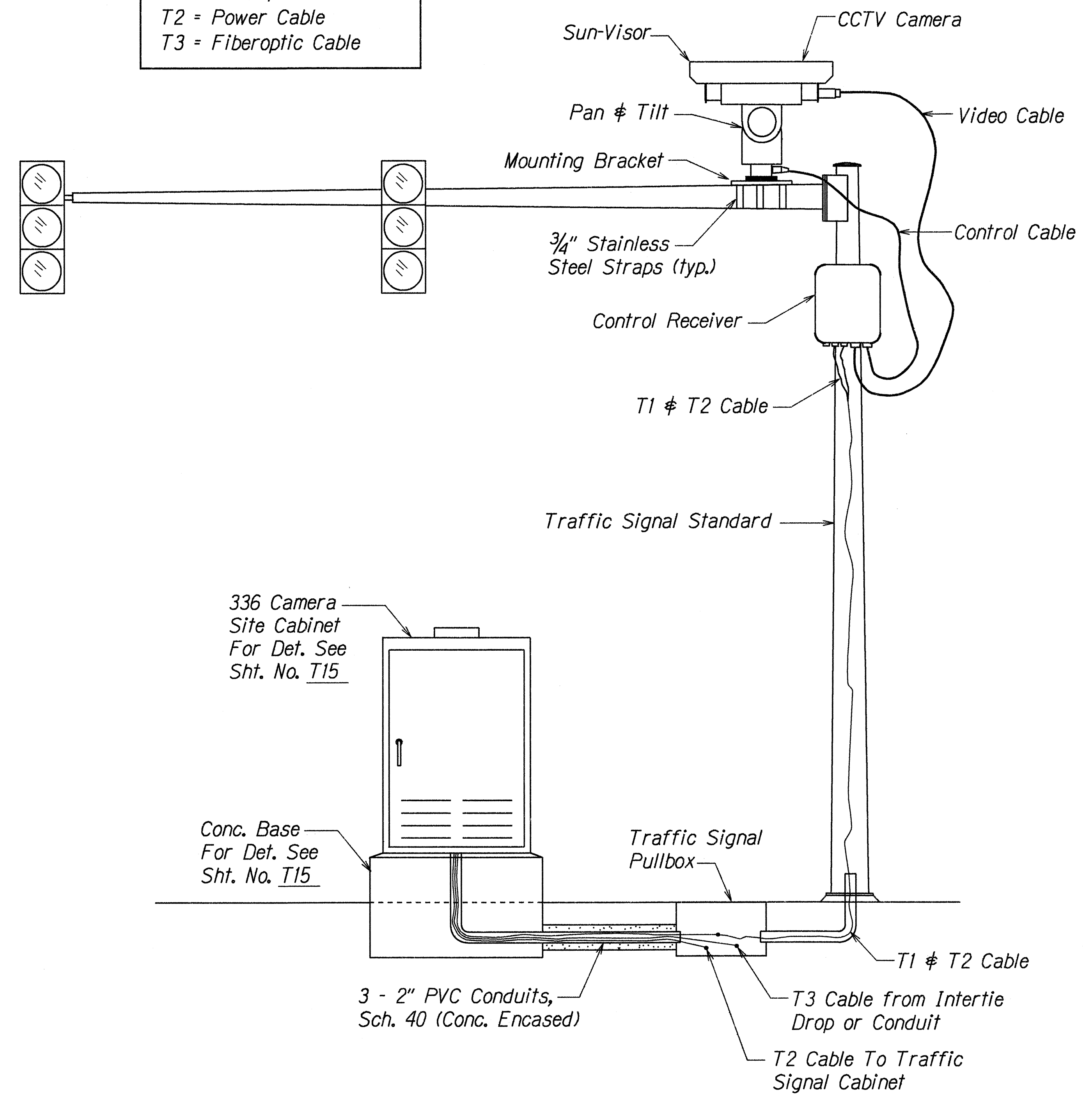
CONDUIT FOR TYPE I OR II TRAFFIC SIGNAL STD.



CONDUIT DETAILS FOR TRAFFIC SIGNAL/HWY. LIGHTING STANDARD

N.T.S.

T1 = Video & Control Cable
T2 = Power Cable
T3 = Fiberoptic Cable



CCTV CAMERA SITE INSTALLATION

Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

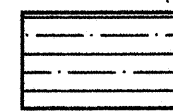
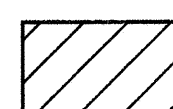


Not to Scale Date: April, 1997

SHEET No. T13 OF 26 SHEETS

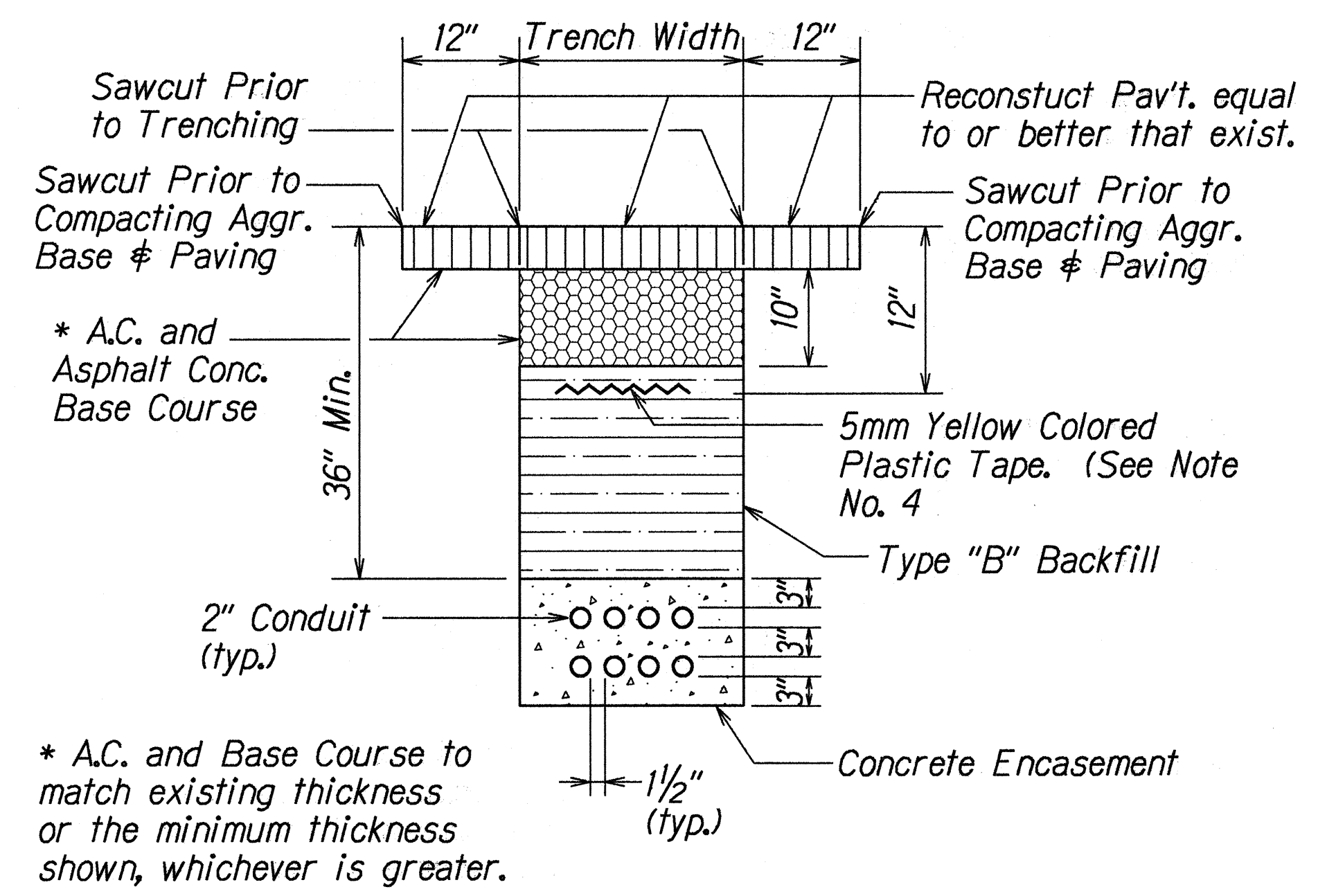
DATE 4/97
SURVEY PLOTTED BY
DRAWN BY R. ABEL
TRACED BY G. ALBE
DESIGNED BY G. ALBE
CHECKED BY S. AMBITSM3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	32	45

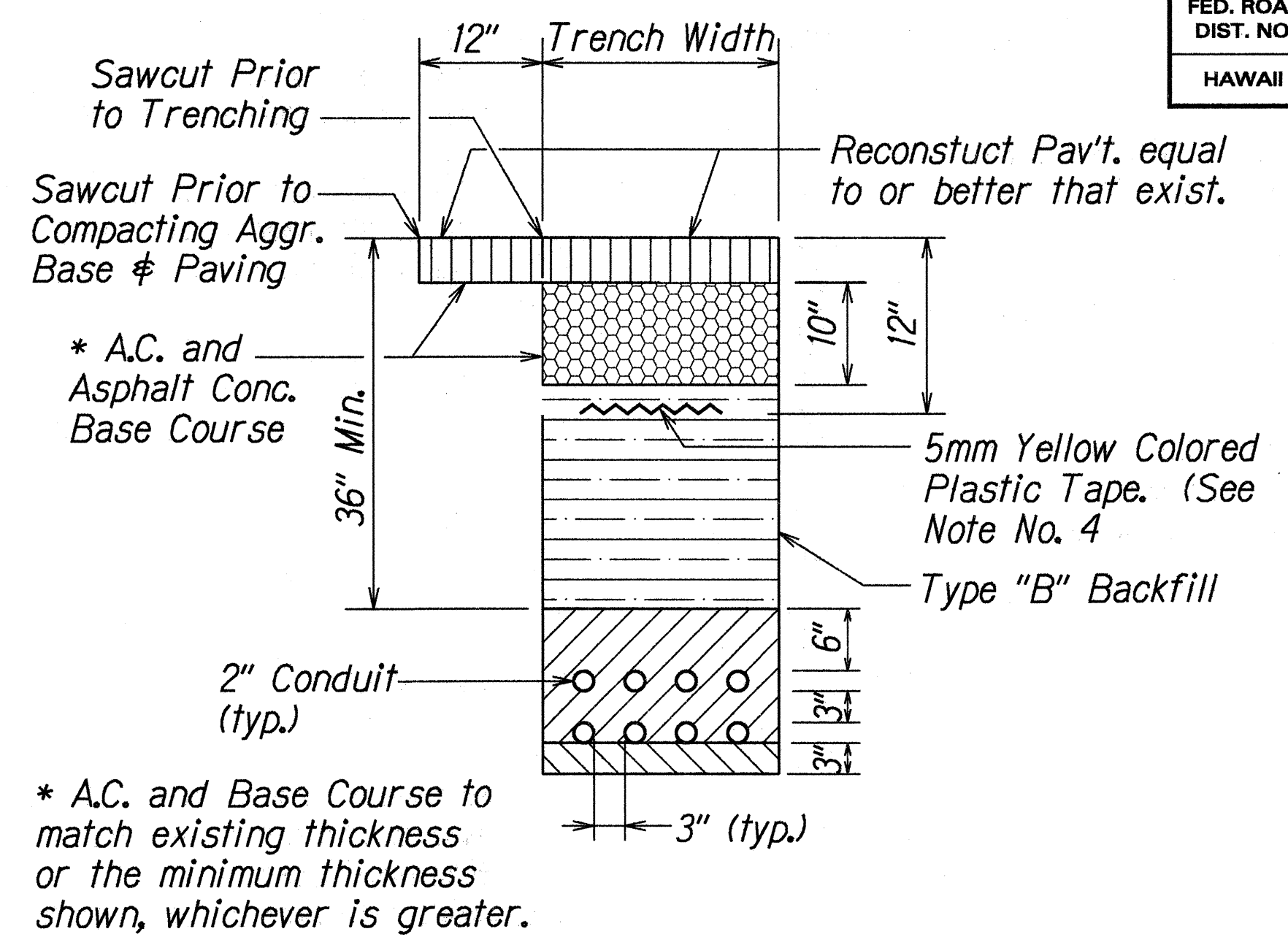
STATE RIGHT-OF-WAY BACKFILL NOTES

-  Trench Backfill Material "B"
1. Sand Equivalent ≥ 2
2. 8" Max. Lift Loose
3. 95% Compaction
-  Trench Backfill Material "A"
1. Sand Equivalent > 20
2. 8" Max. Lift Loose
3. 95% Compaction
-  If material below duct is not equivalent to Backfill Material "A", excavate material and provide 3" Backfill Material "A". See above.
-  Concrete - 3" Encasement, 3000 psi compressive strength @ 28 days.

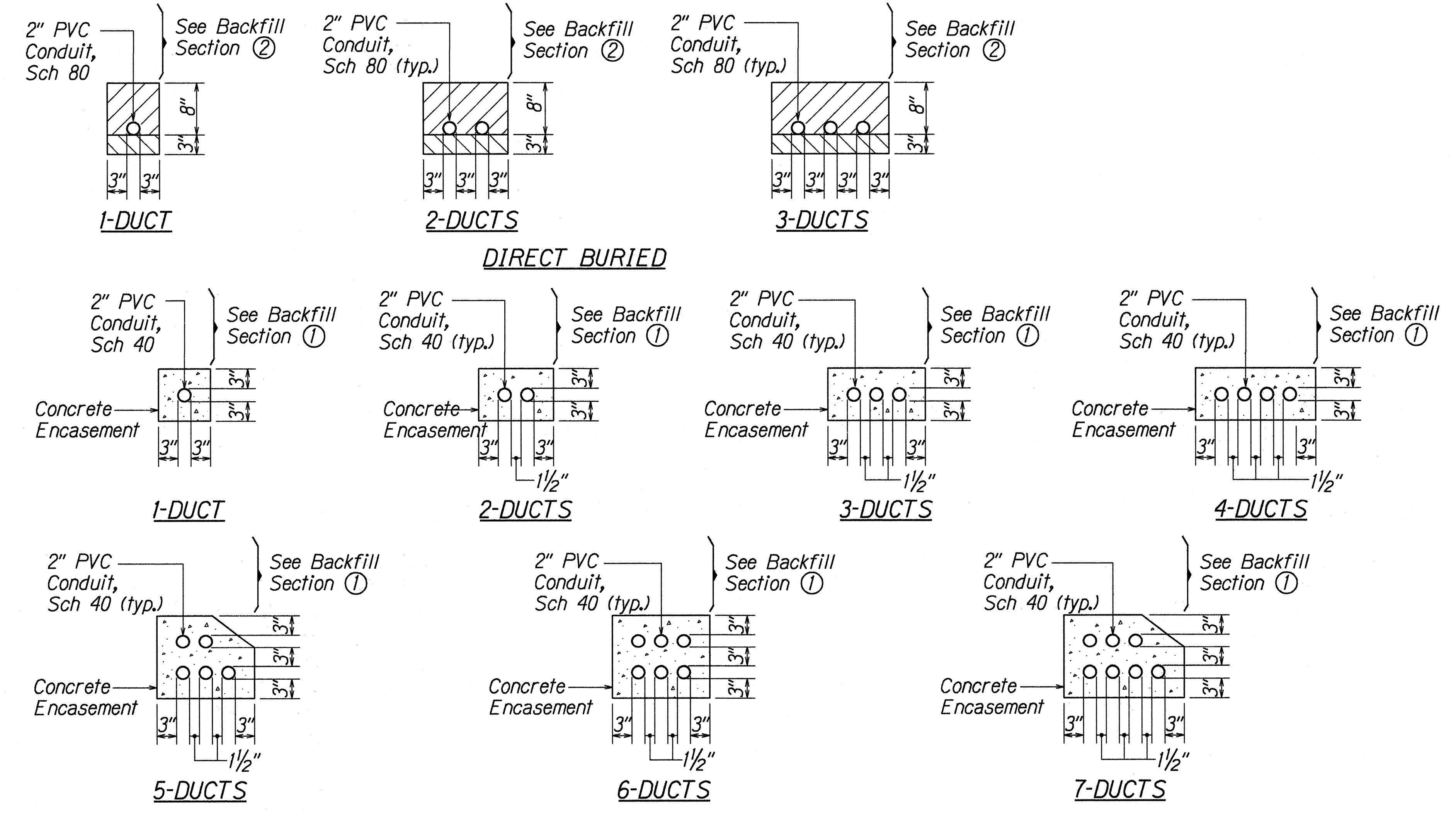
NOTE: Base Course & Sub-Base Course per 1994 State Standard Specifications for Highway Construction.



① TYPICAL BACKFILL SECTION
CONCRETE ENCASED CONDUITS



② TYPICAL BACKFILL SECTION
DIRECT BURIED CONDUITS



CONCRETE ENCASED
TYPICAL DUCT SECTIONS
N.T.S.

GENERAL NOTES:

1. For Multiple Concrete Encased Conduits, spacing between conduits shall be horizontal $1\frac{1}{2}$ " and vertical 3".
2. For Multiple Direct Buried Conduits, horizontal and vertical spacing shall be 3" between conduits.
3. All Concrete Encased Conduits shall be 2" PVC, Sch. 40 while Direct Buried shall be 2" PVC, Sch. 80.
4. Contractor shall place 5mm Yellow Colored Plastic Tape, four (4") min. width with continuous metallic backing and corrosion resistant 1-mil Foil-Core inscribed with "CAUTION - TRAFFIC SIGNAL LINE BURIED BELOW" in Black Lettering, repeated at thirty six inch (36") intervals, the entire length of trench. Cost of Tape shall be incidental to the Conduits.

SURVEY PLOTTED BY	DATE
DRAWN BY	4/97
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
102/mey	
10/20/97	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

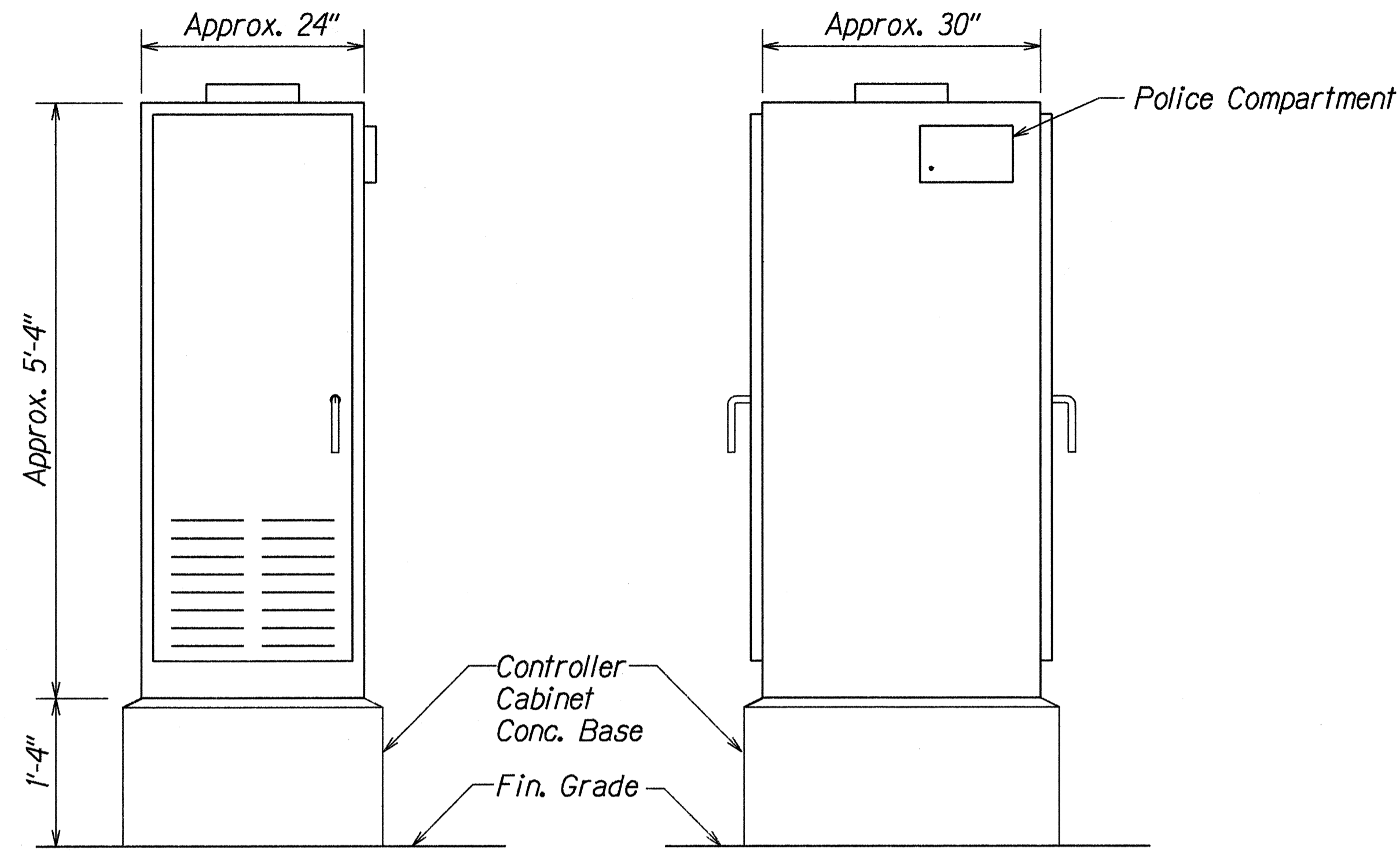
TRAFFIC SIGNAL DETAILS

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Not to Scale Date: April, 1997

SHEET No. T14 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	33	45

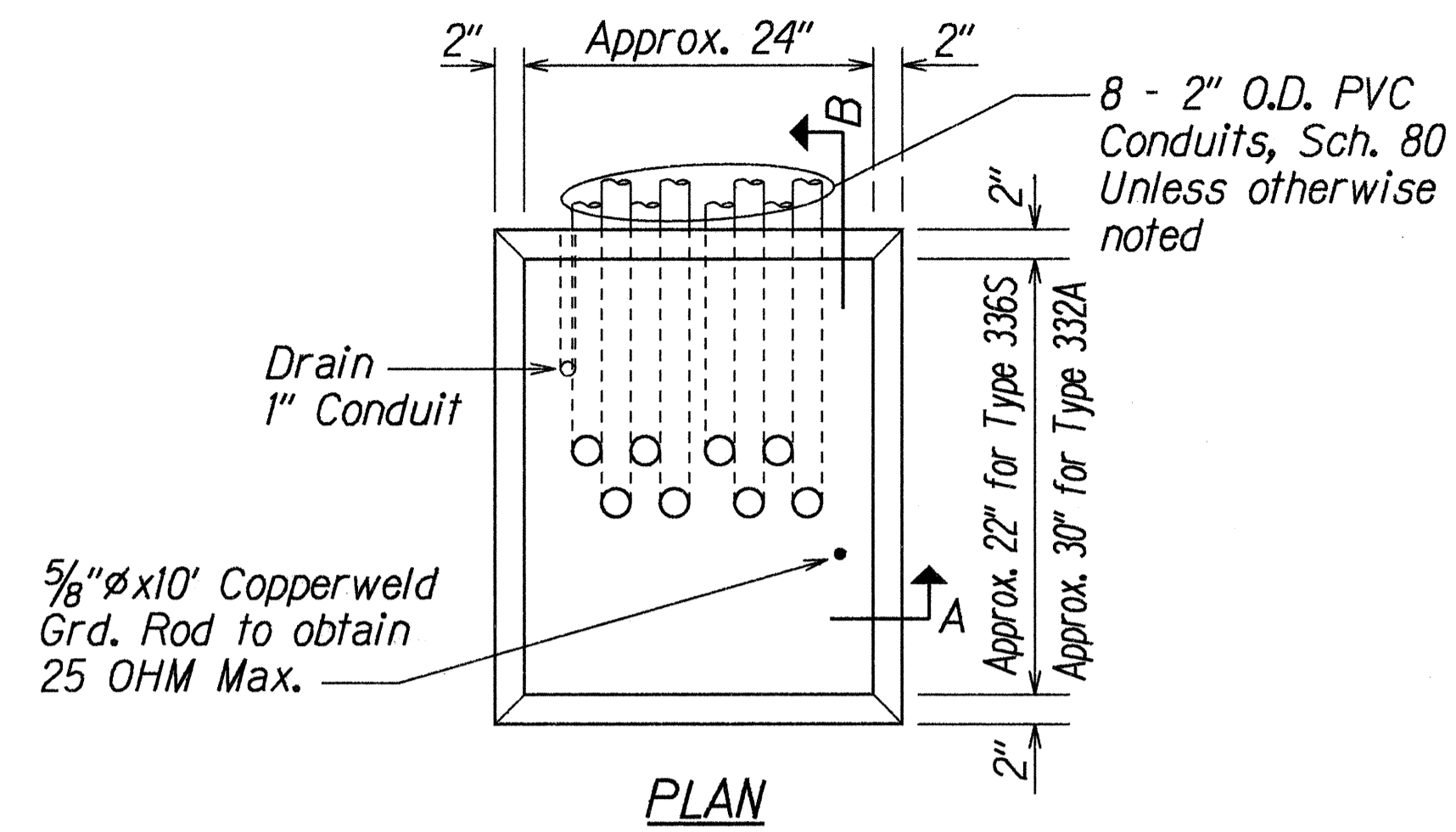


FRONT VIEW

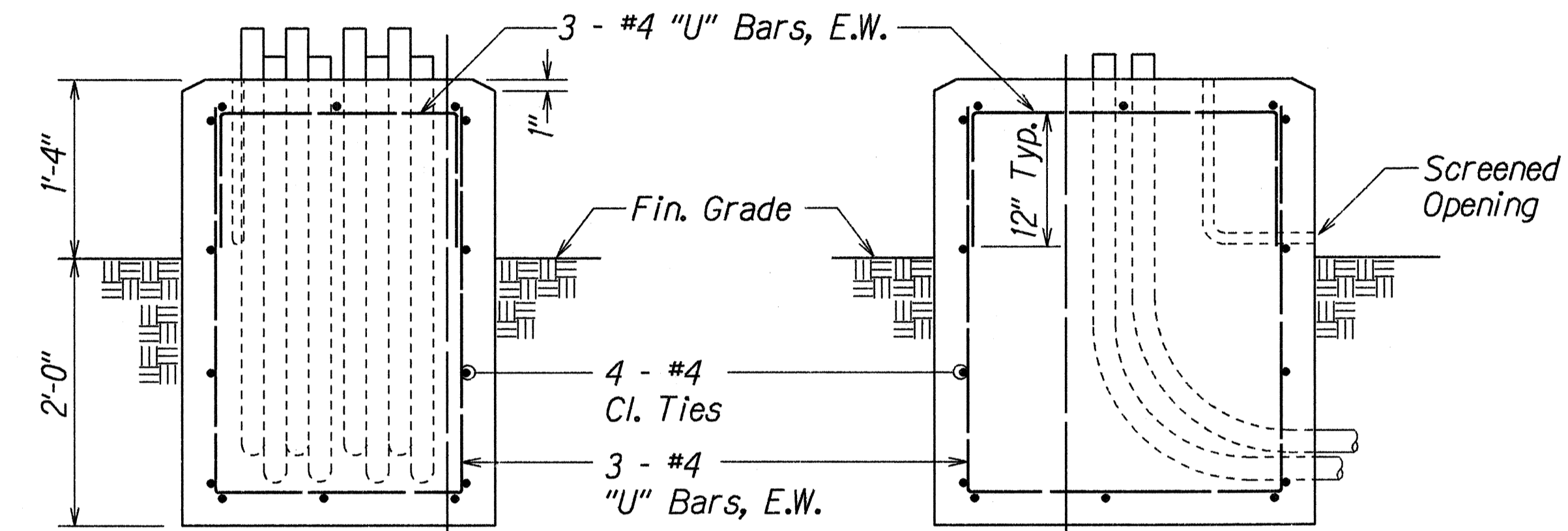
SIDE VIEW

TYPE 332A TRAFFIC SIGNAL CONTROLLER CABINET DETAIL

N.T.S



PLAN



SECTION "A"

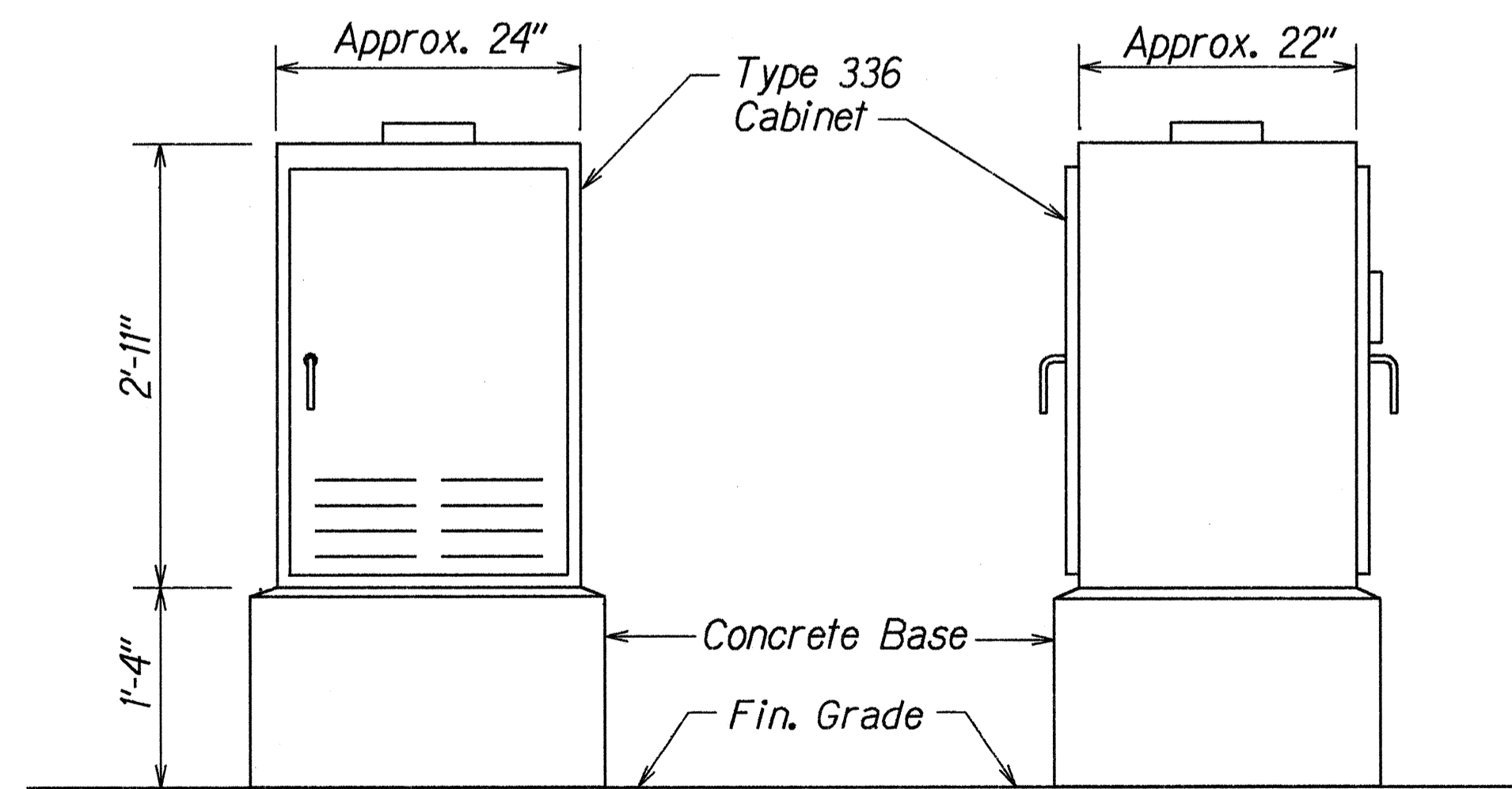
SECTION "B"

TYPE 332A/TYPE 336 CABINET CONCRETE BASE

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.



FRONT VIEW

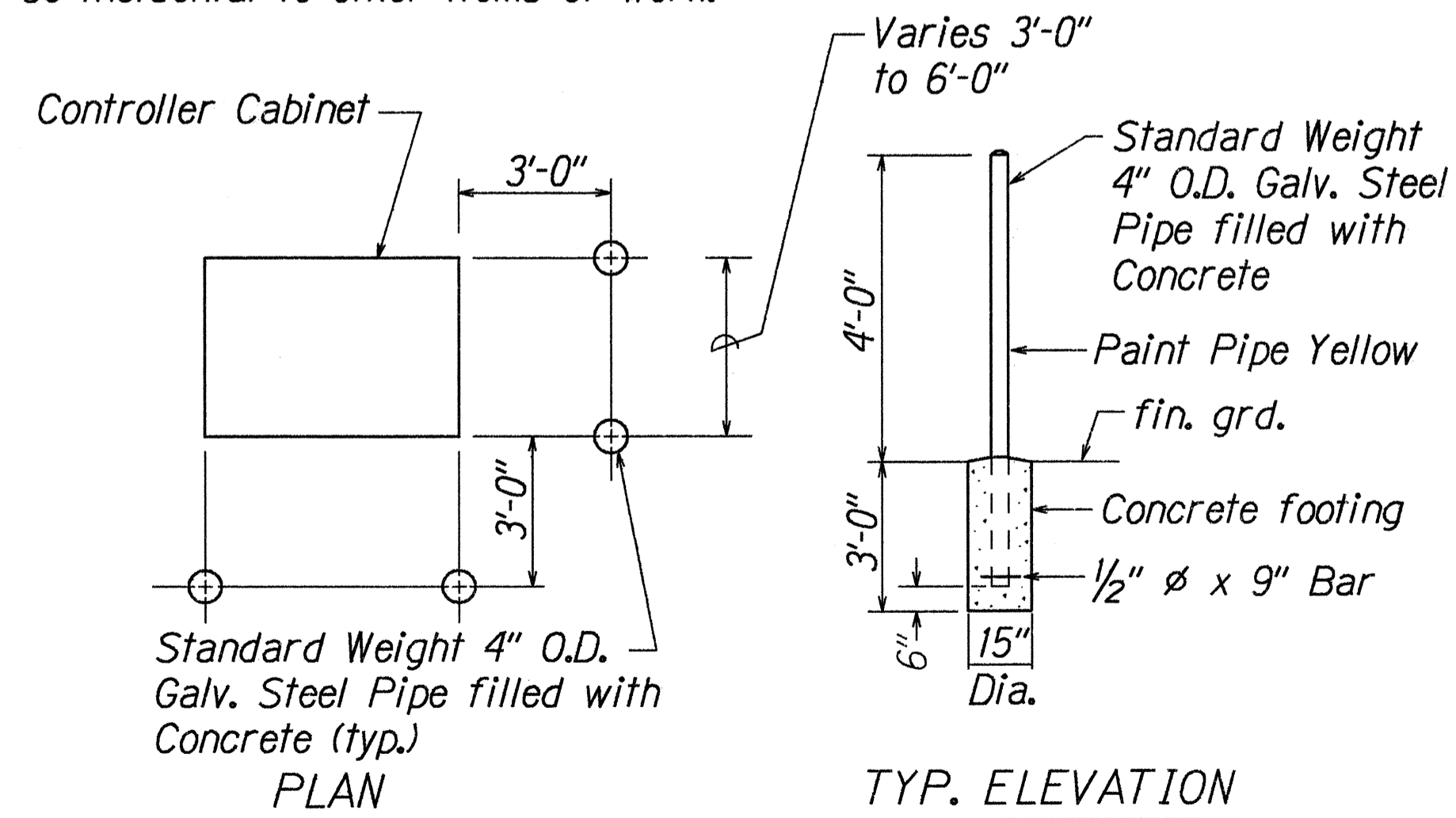
SIDE VIEW

TYPE 336 CABINET - GROUND MOUNTED

N.T.S

NOTE:

Cost of the conc. filled galvanized pipe guard shall be incidental to other items of work.



PLAN

TYP. ELEVATION

PIPE GUARD DETAIL

N.T.S

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	4/97
DRAWN BY	
TRACED BY	
DESIGNED BY	
CHECKED BY	

R44-1-97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

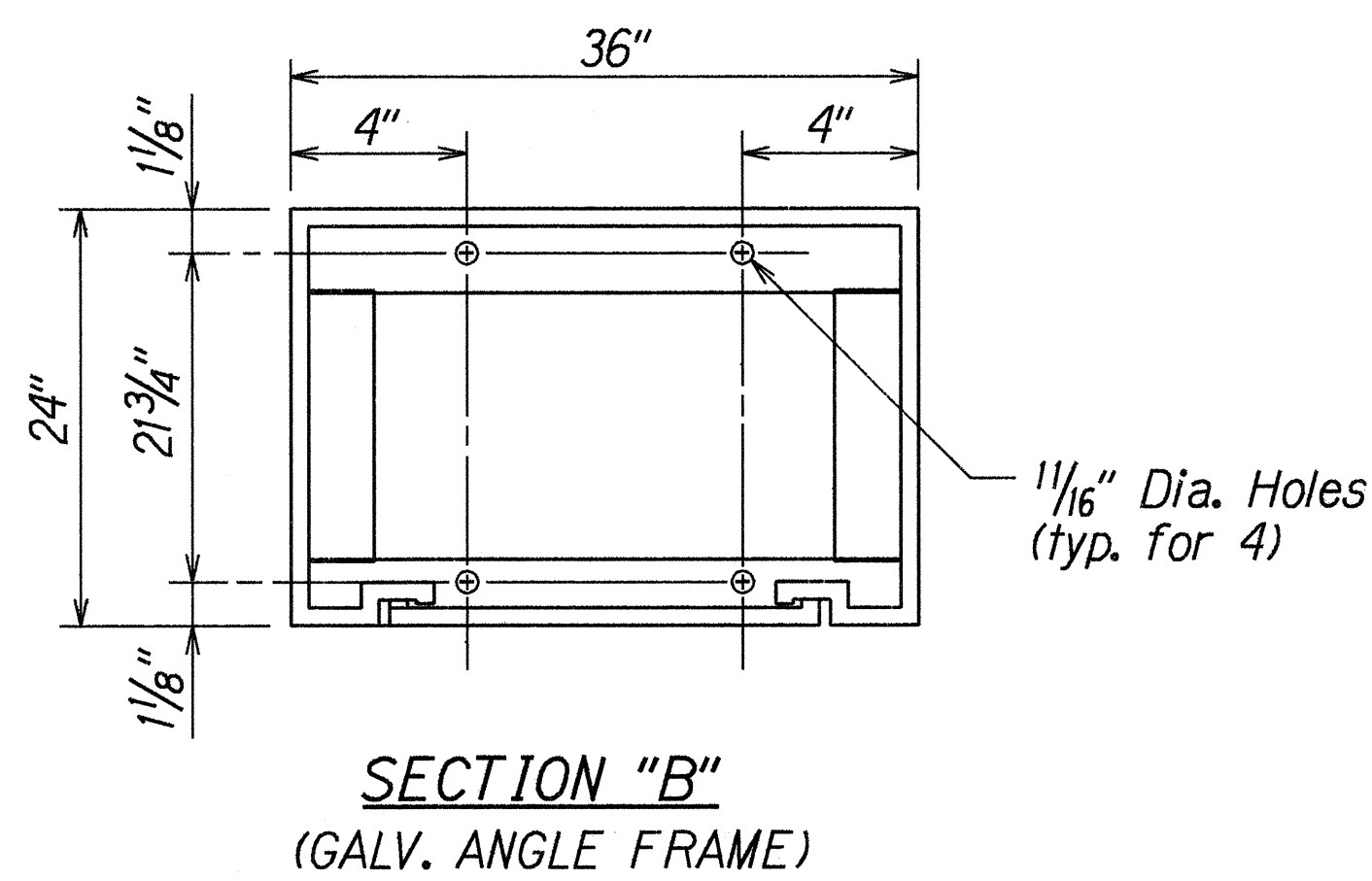
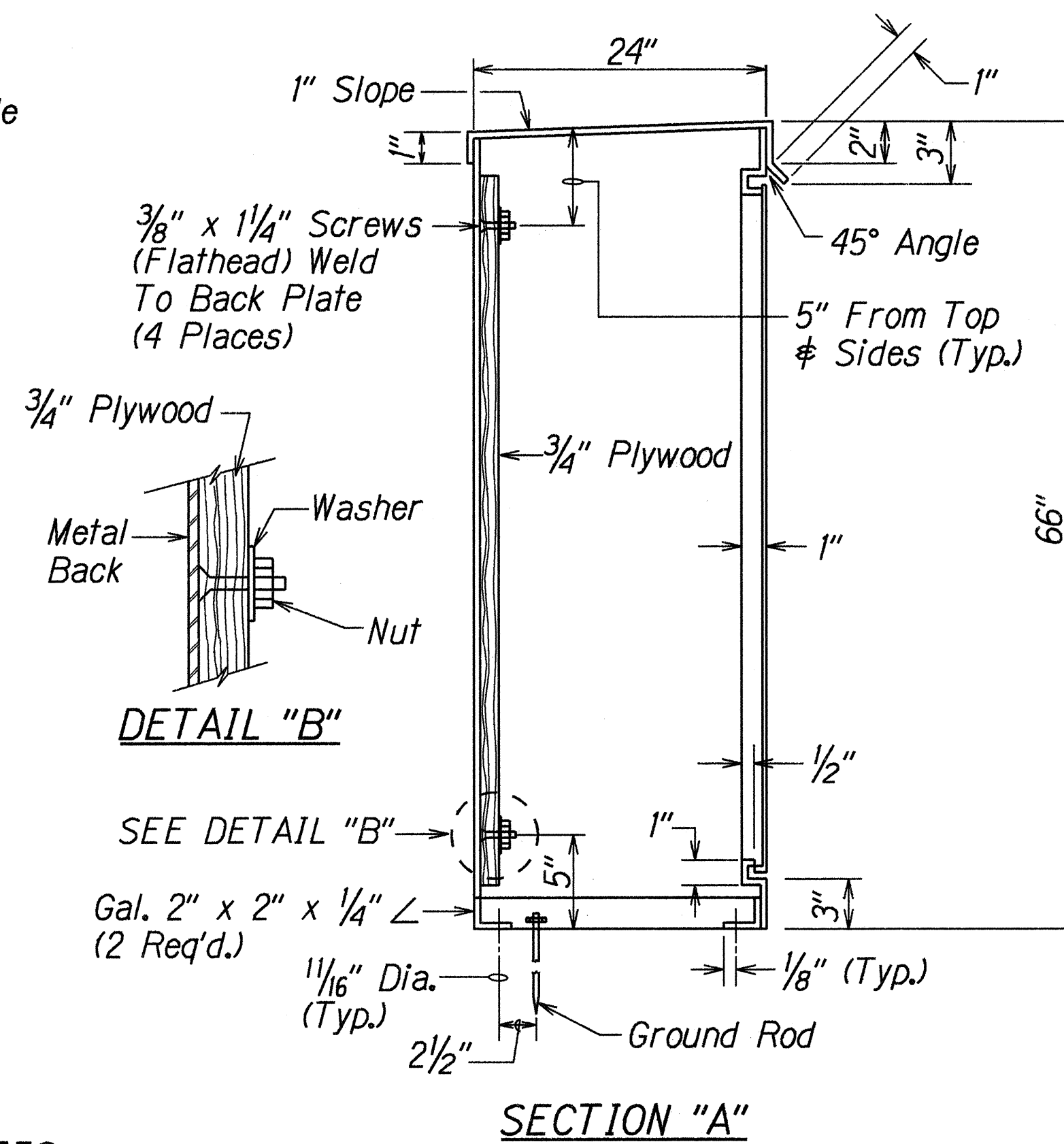
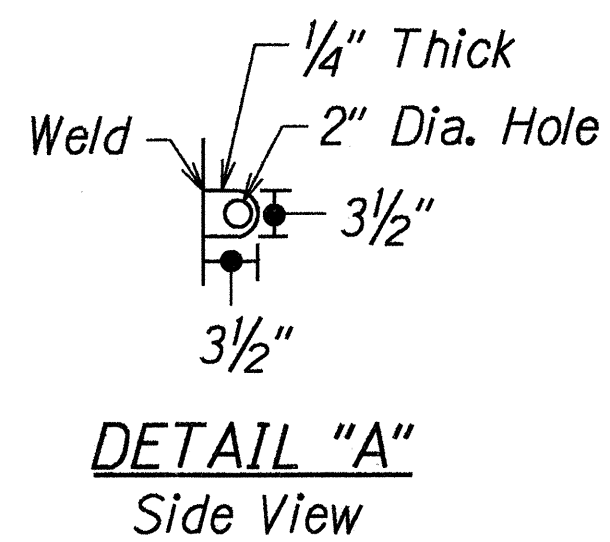
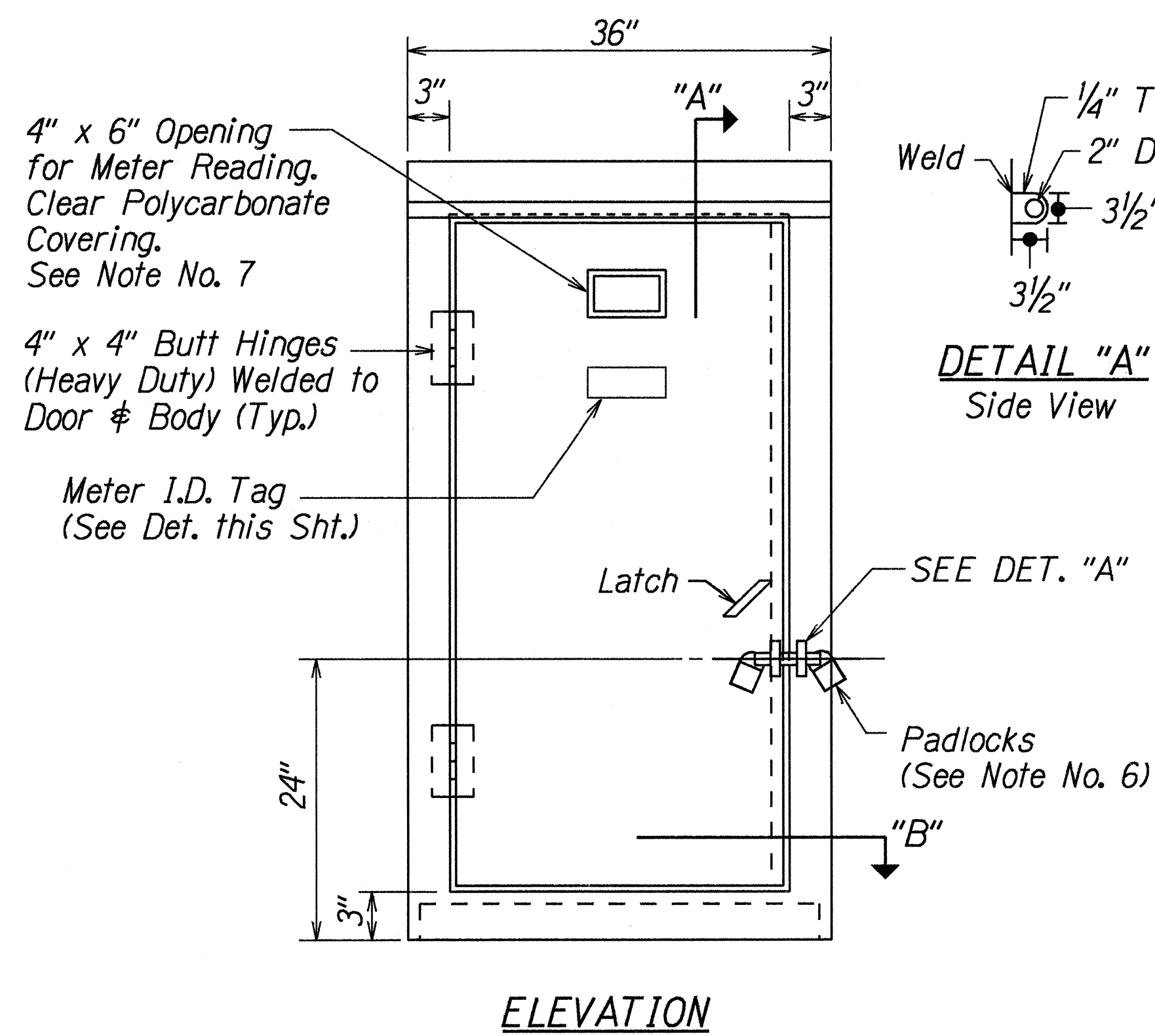
TRAFFIC SIGNAL DETAILS

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

Not to Scale Date: April, 1997

SHEET No. T15 OF 26 SHEETS

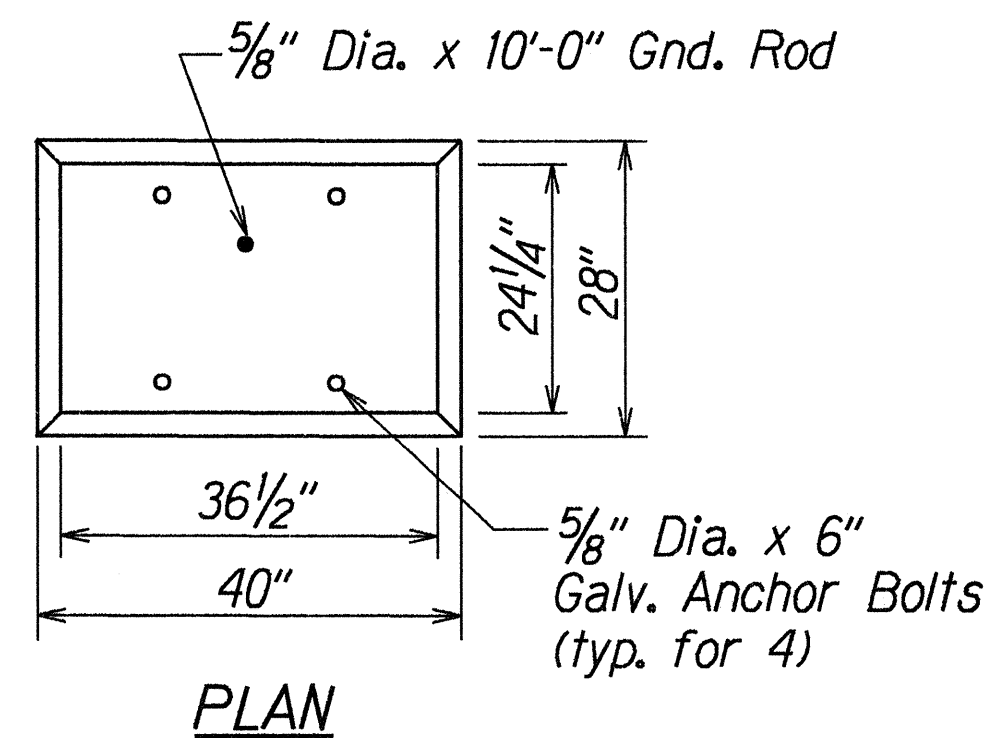
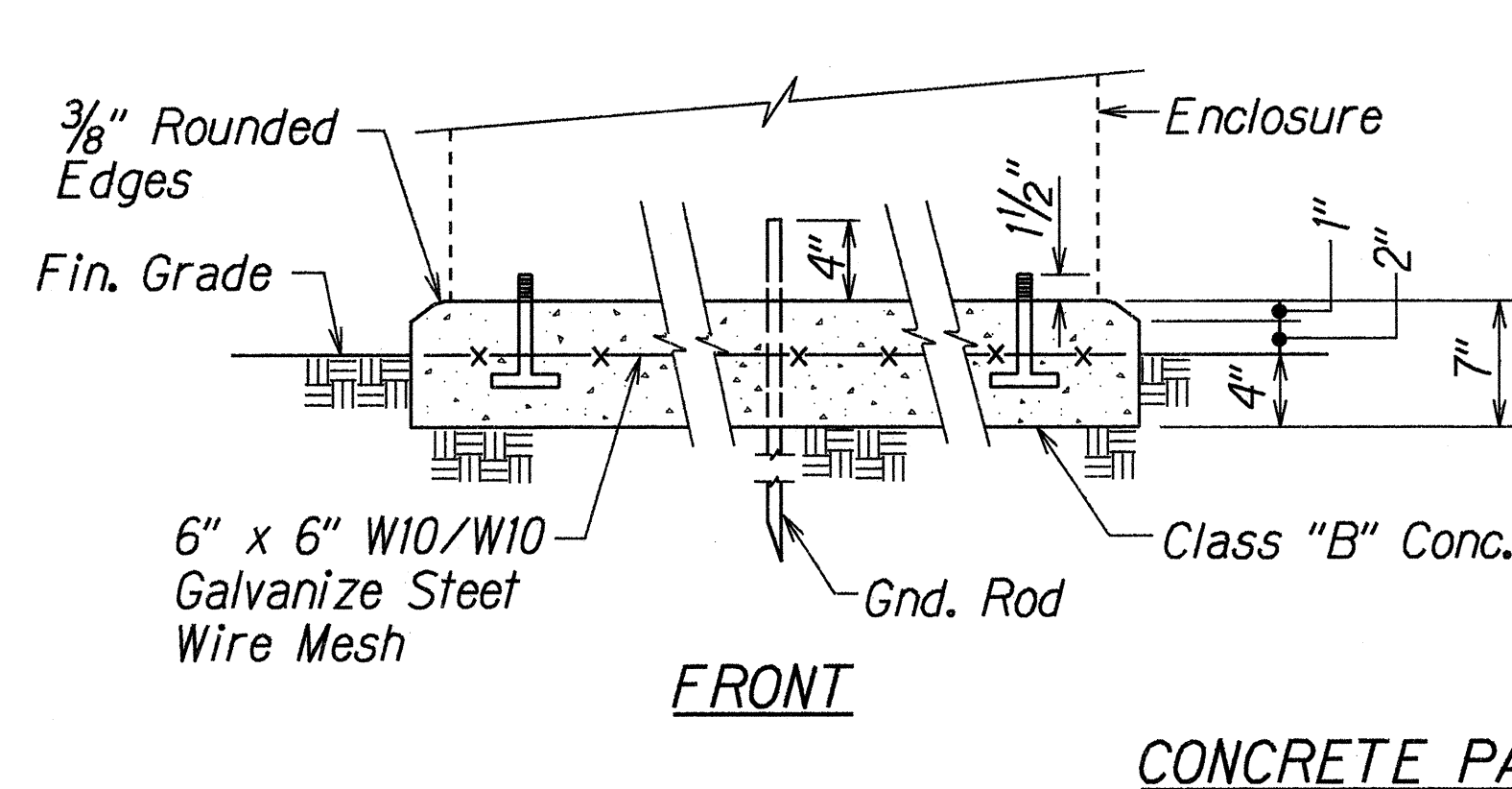
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	34	45



NOTES:

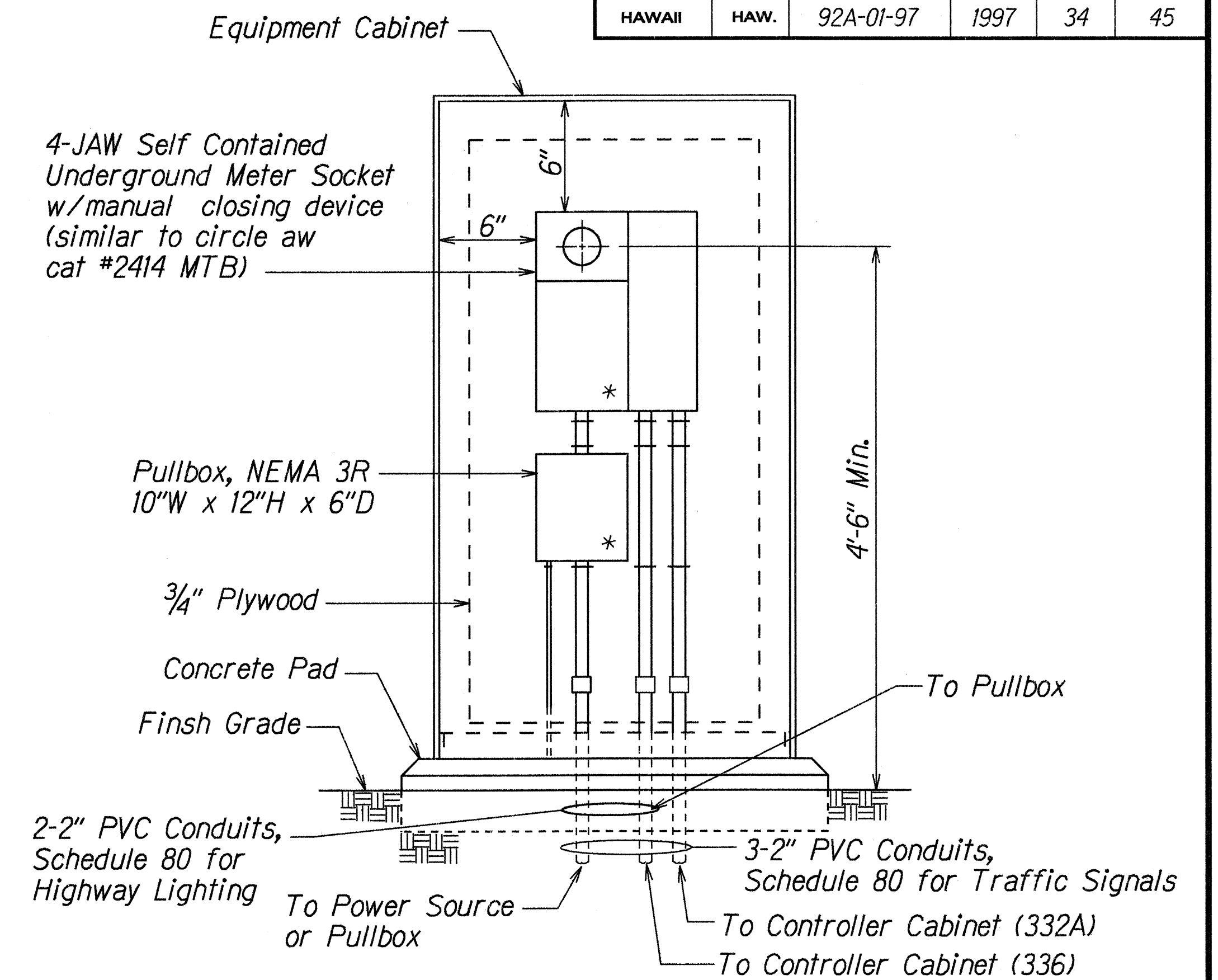
- Cabinet to be primed with one coat shop primer.
- Plywood to be 3/4" thick min. treated, exterior grade, (wolmanized) plywood.
- Cabinet made from stainless steel.
- Provide epoxy enamel finish.
- Enclosure shall be NEMA 3R with neoprene gasketing.
- Padlocks/Keys:
2 - Contractor furnished per cabinet
Contractor shall receive Engineer's approval on the type of locks.
- Shop furnished drawings shall be submitted for approval.
- Location of opening for meter reader to correspond with location of meter.

CABINET



TRAFFIC SIGNAL ELECTRICAL EQUIPMENT CABINET DETAILS

N.T.S

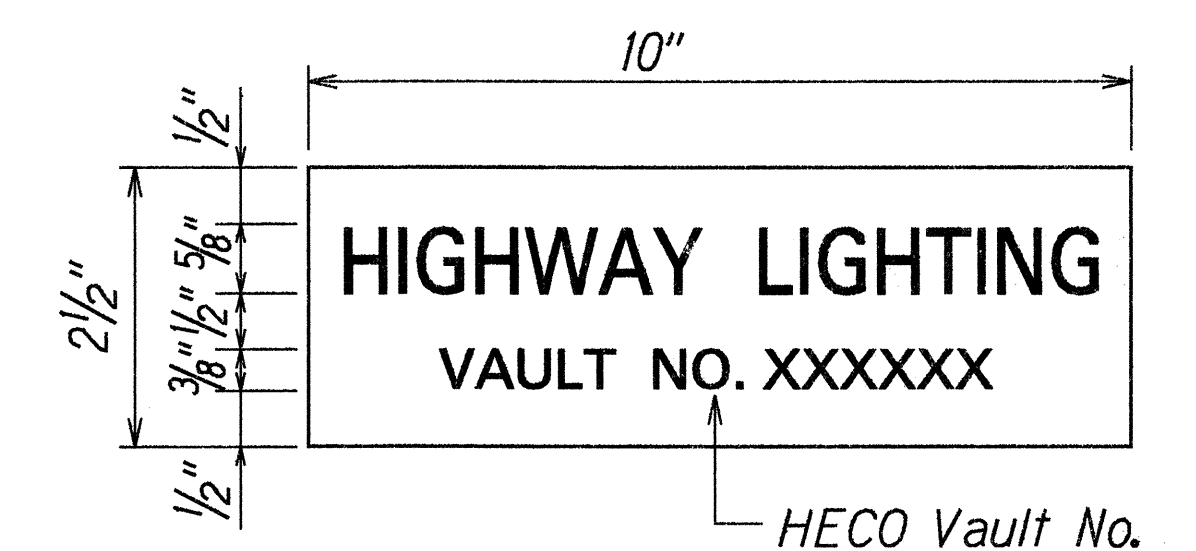
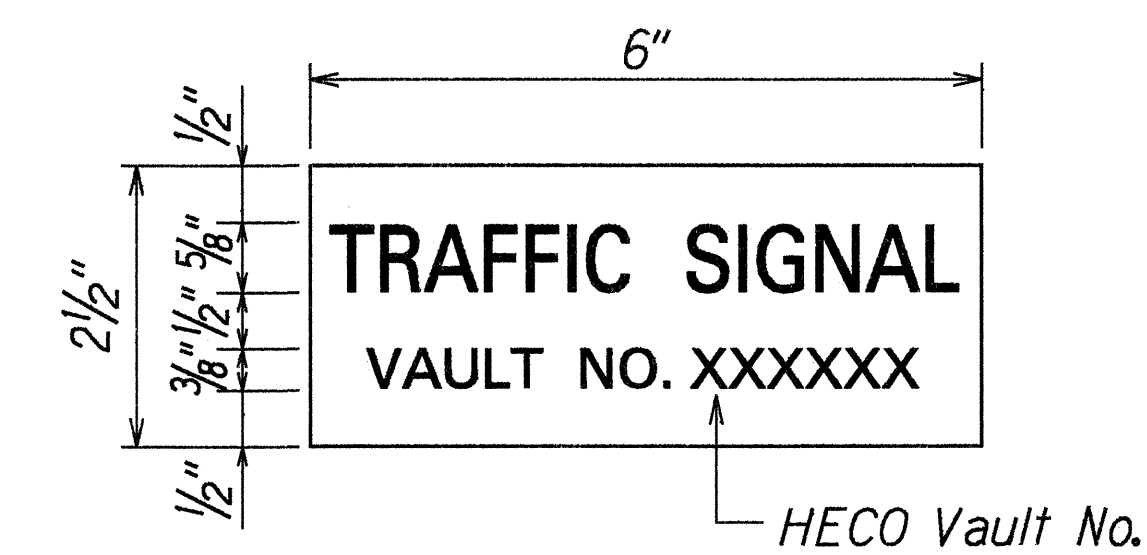


NOTES:

- Equipment shall be provided per HECO requirements and approval.
- "*" Indicates provisions for HECO seals.

TRAFFIC EQUIPMENT ELEVATION

N.T.S



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 area inscribed by cutting through "black cap sheet" to expose white letters/numbers.

METER ID TAG DETAIL

N.T.S

DATE	4/97
SURVEY PLOTTED BY	
DRAWN BY	A. All
DESIGNED BY	C. Ane
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	102/100
NO. 102/100	
NO. 102/100	

R4-1-97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

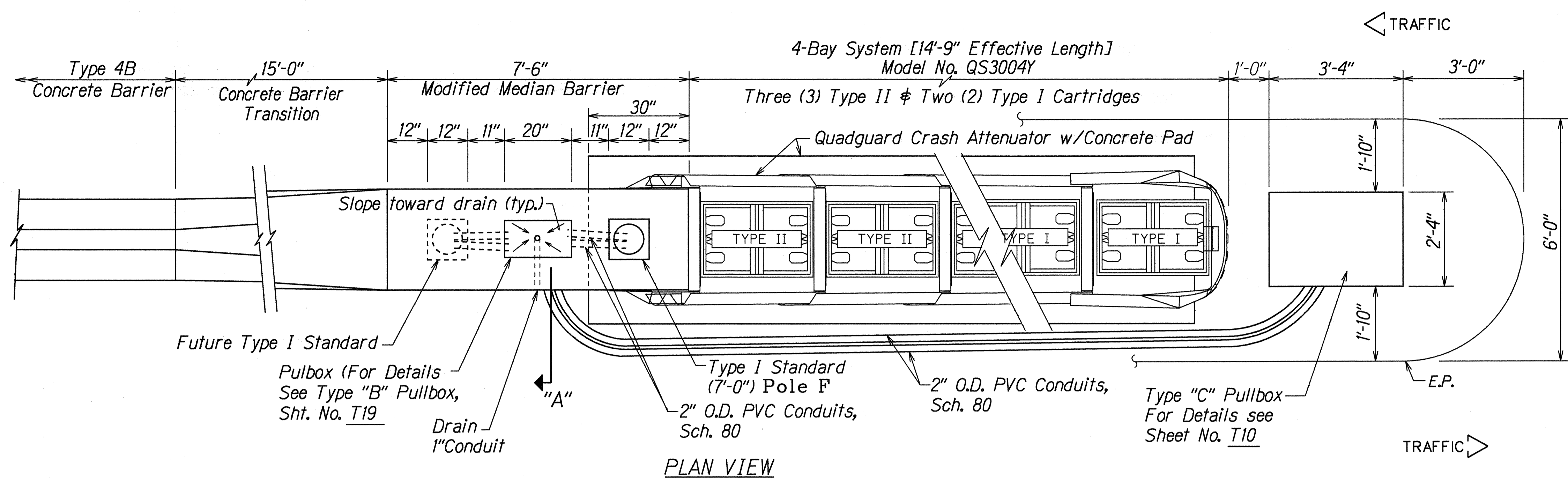
TRAFFIC SIGNAL DETAILS

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

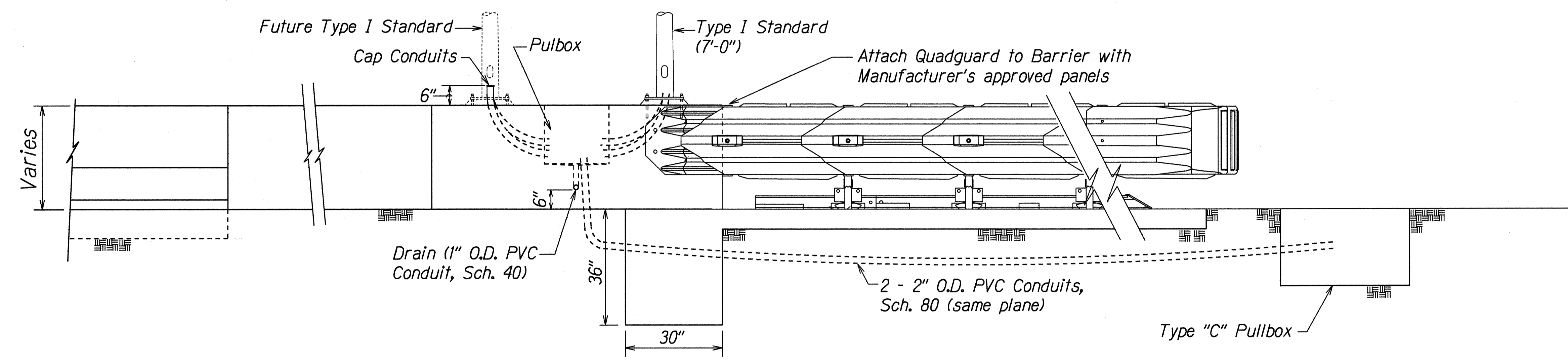
Not to Scale Date: April, 1997

SHEET No. T16 OF 26 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	35	45

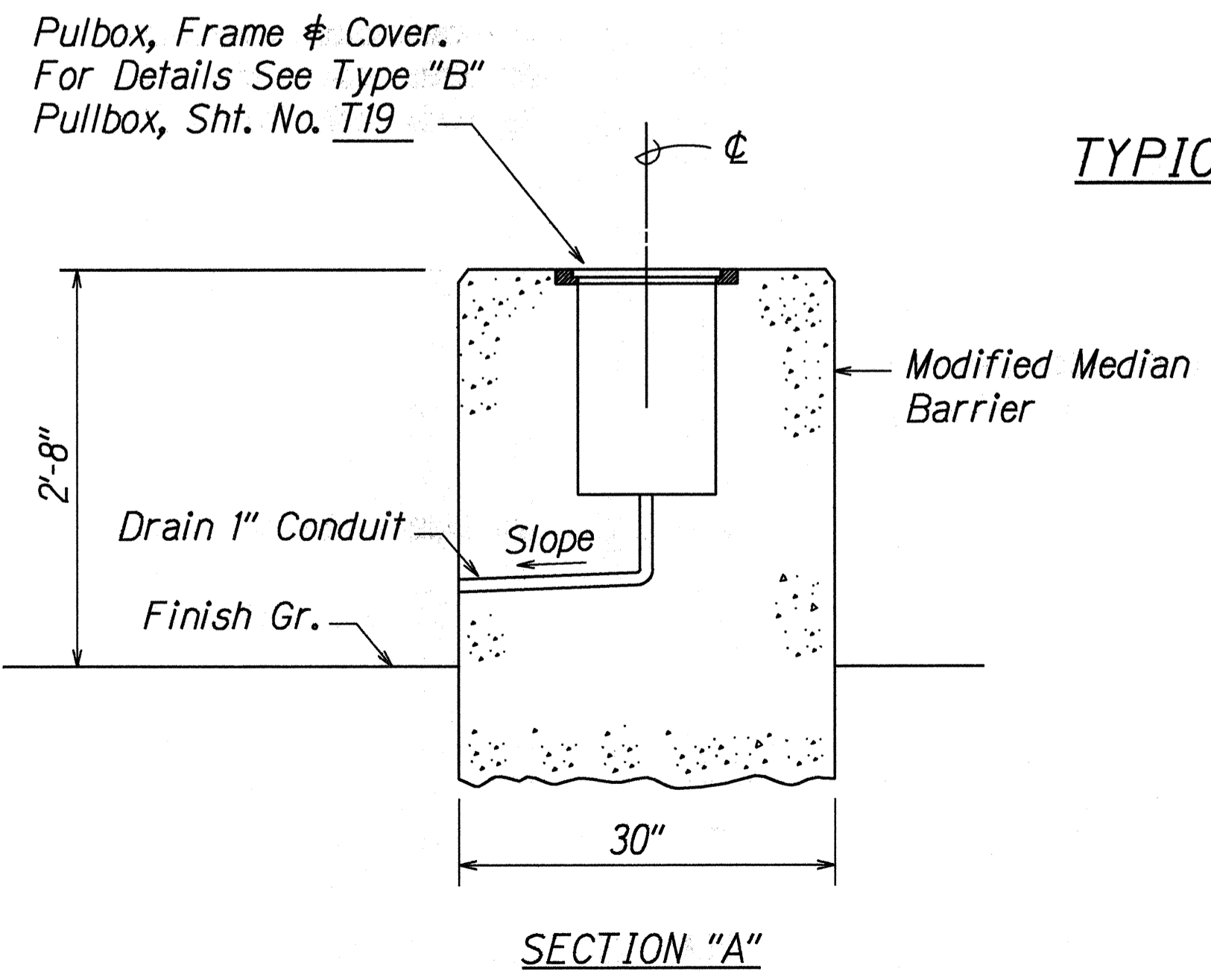


PLAN VIEW



ELEVATION VIEW

TYPICAL TYPE I TRAFFIC SIGNAL STANDARD
ON CONCRETE BARRIER
N.T.S.



SECTION "A"

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

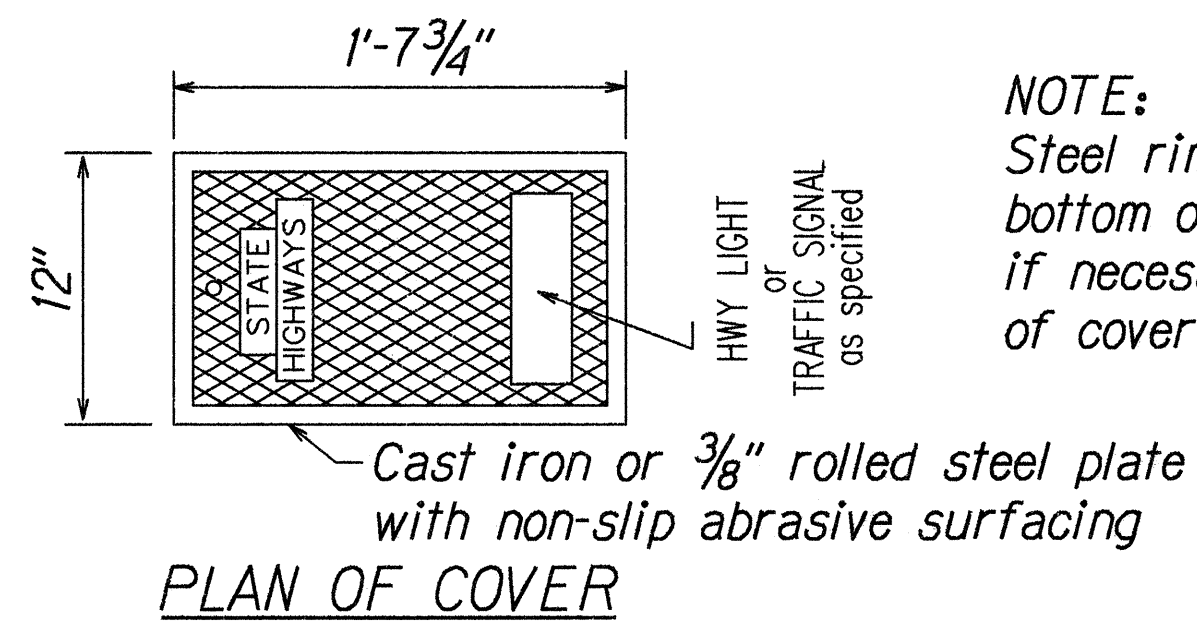
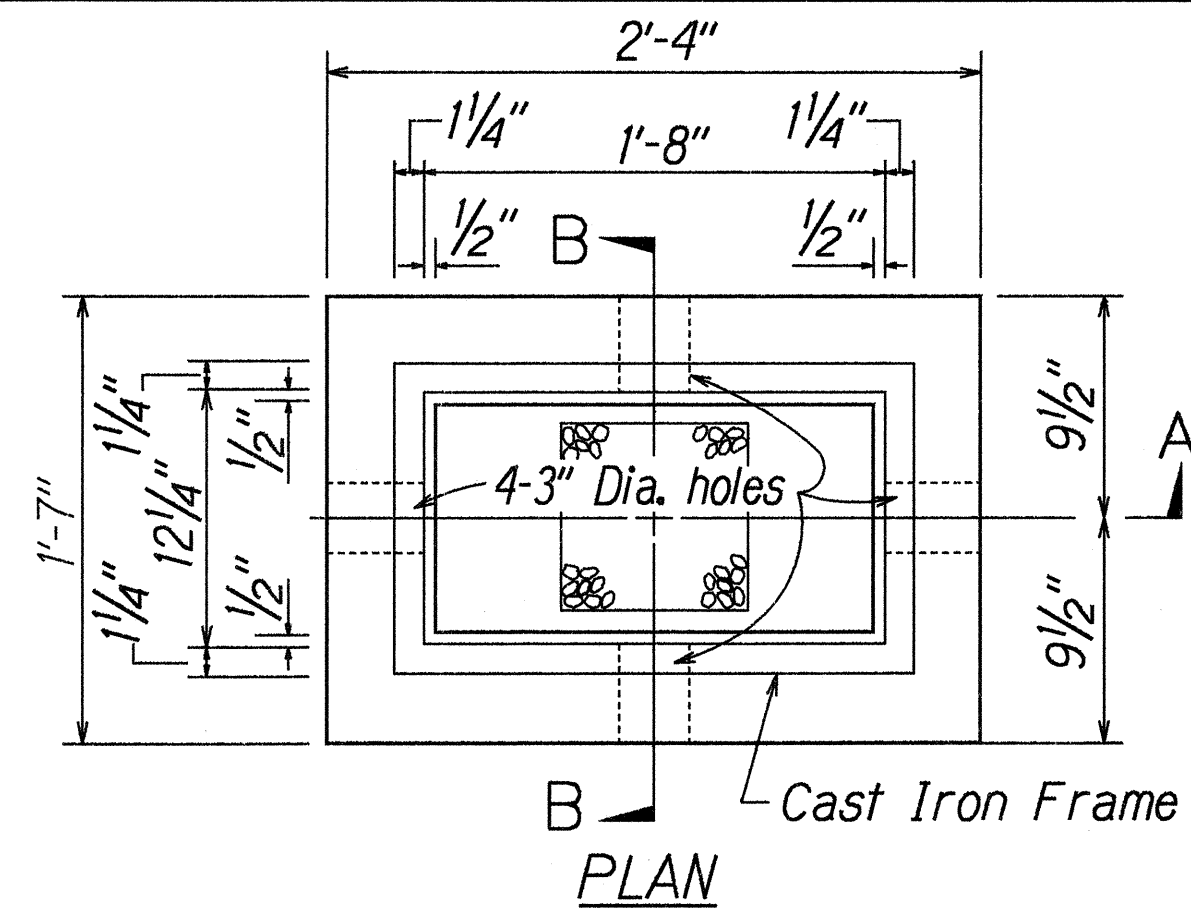
*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

No Scale Date: April, 1997

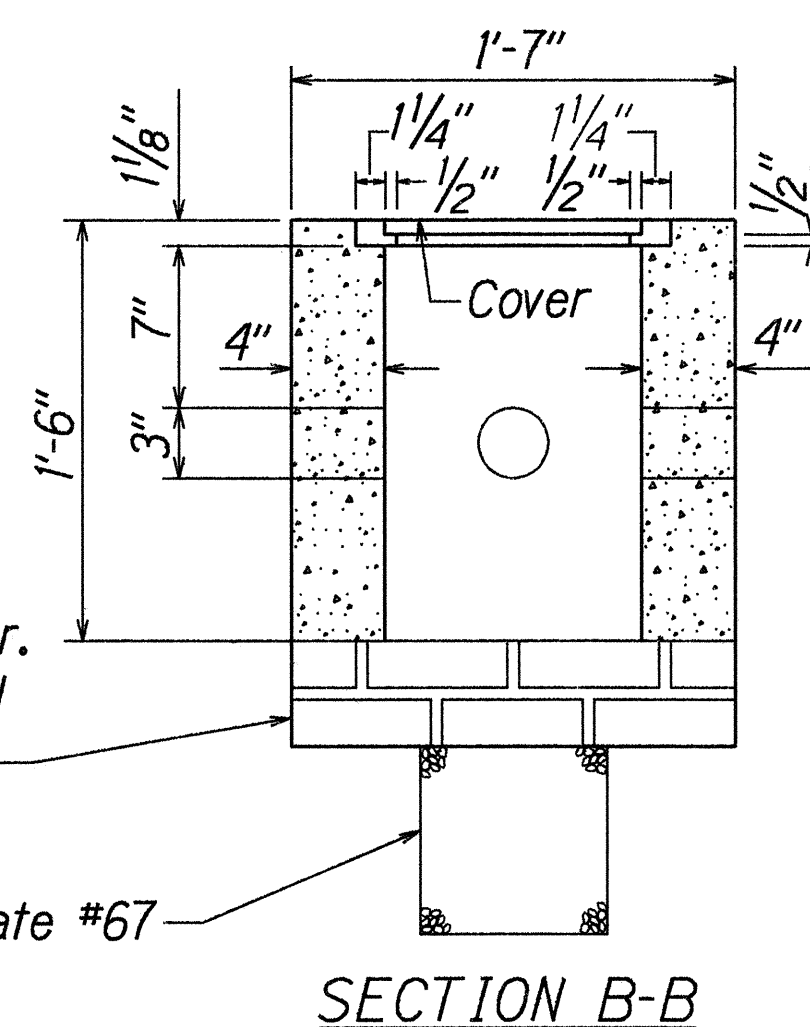
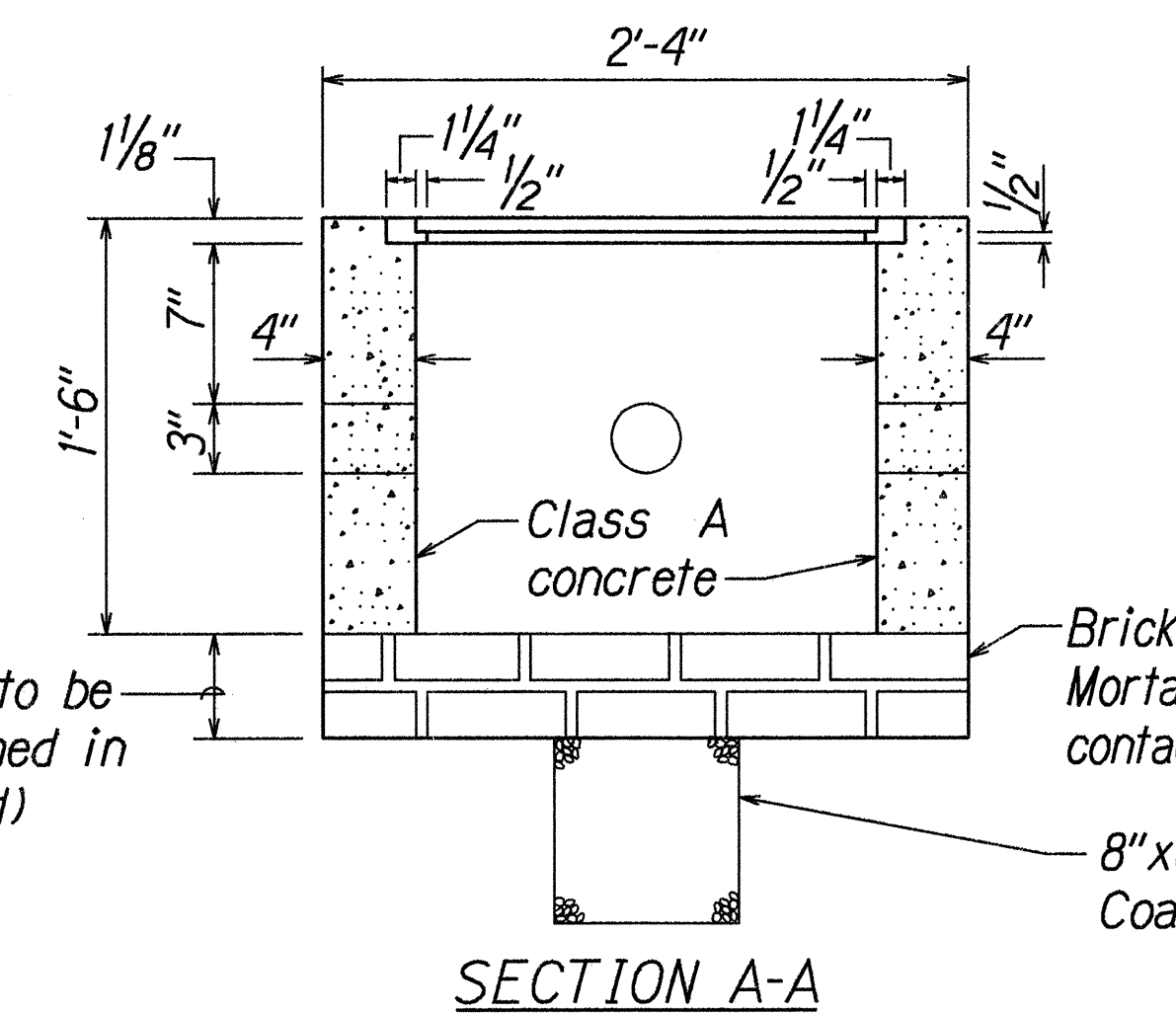
SHEET No. T17 OF 26 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY E. Acl	4/27
TRACED BY C. Ake	
NOTES BOOK	
102 May	
3/20/97	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	37	45



NOTE:
Steel rim shall be welded to bottom of steel cover if necessary so that top of cover and frame are flush

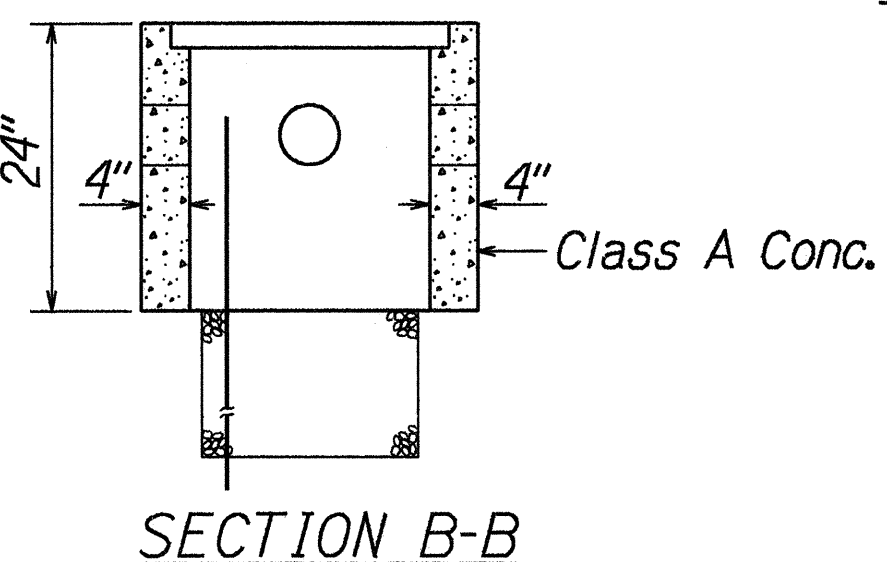
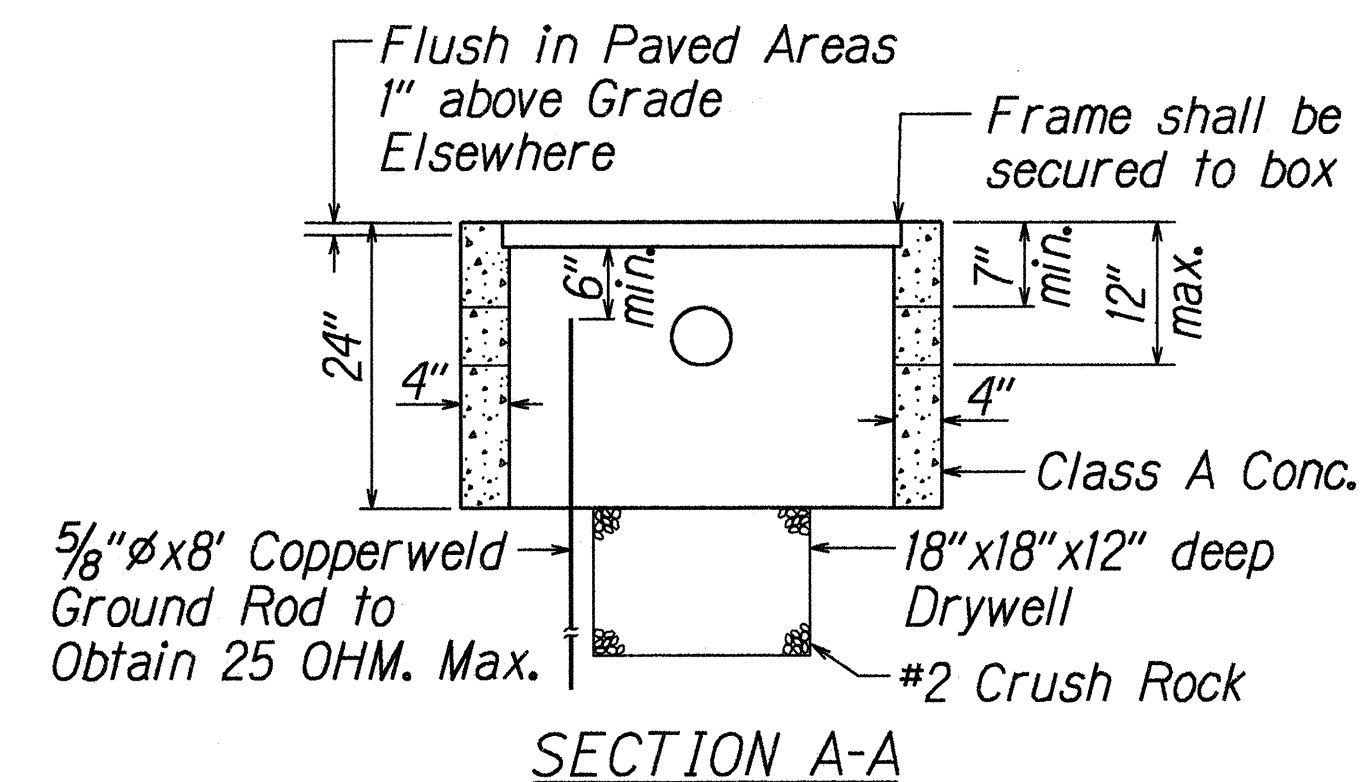
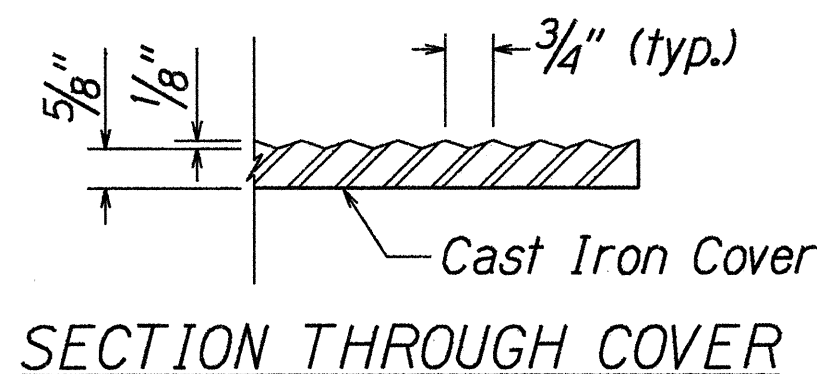
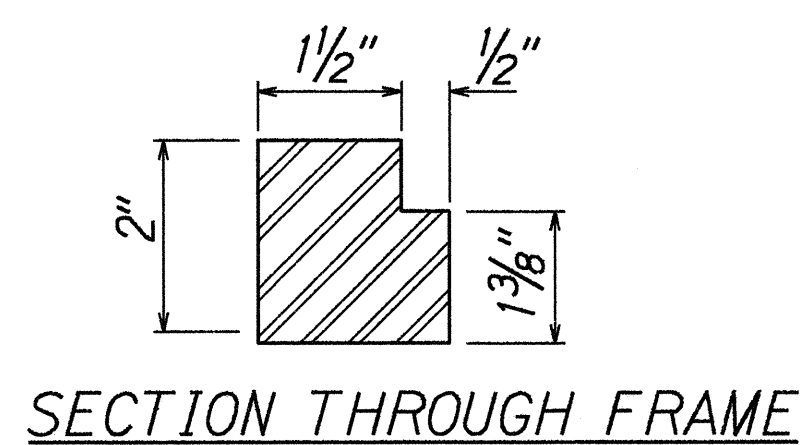
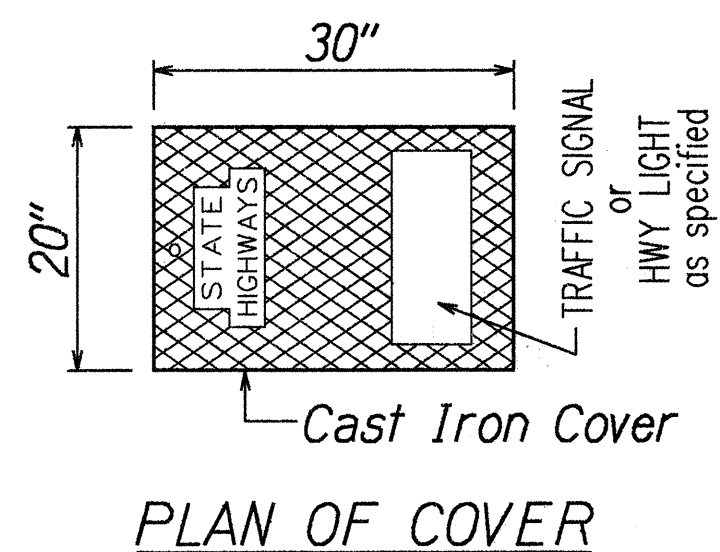
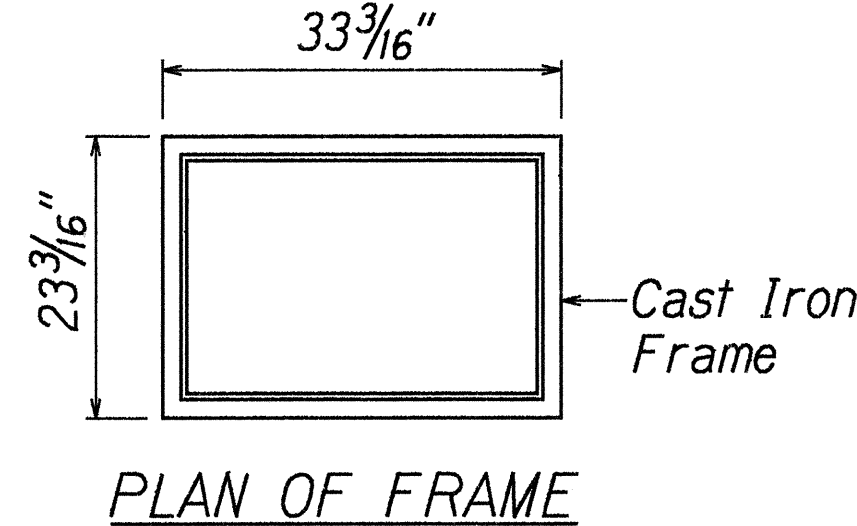
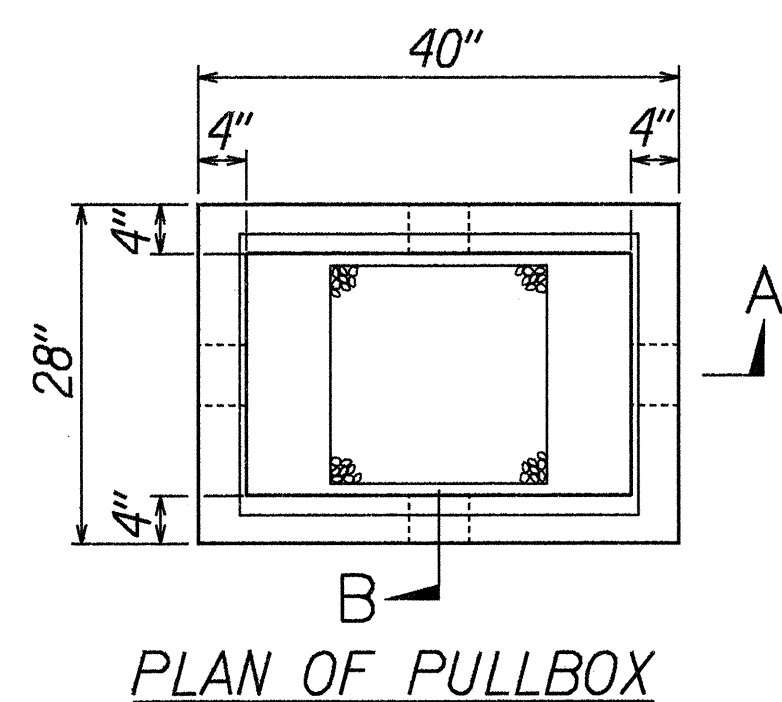


TYPE "B" PULLBOX
Not to Scale

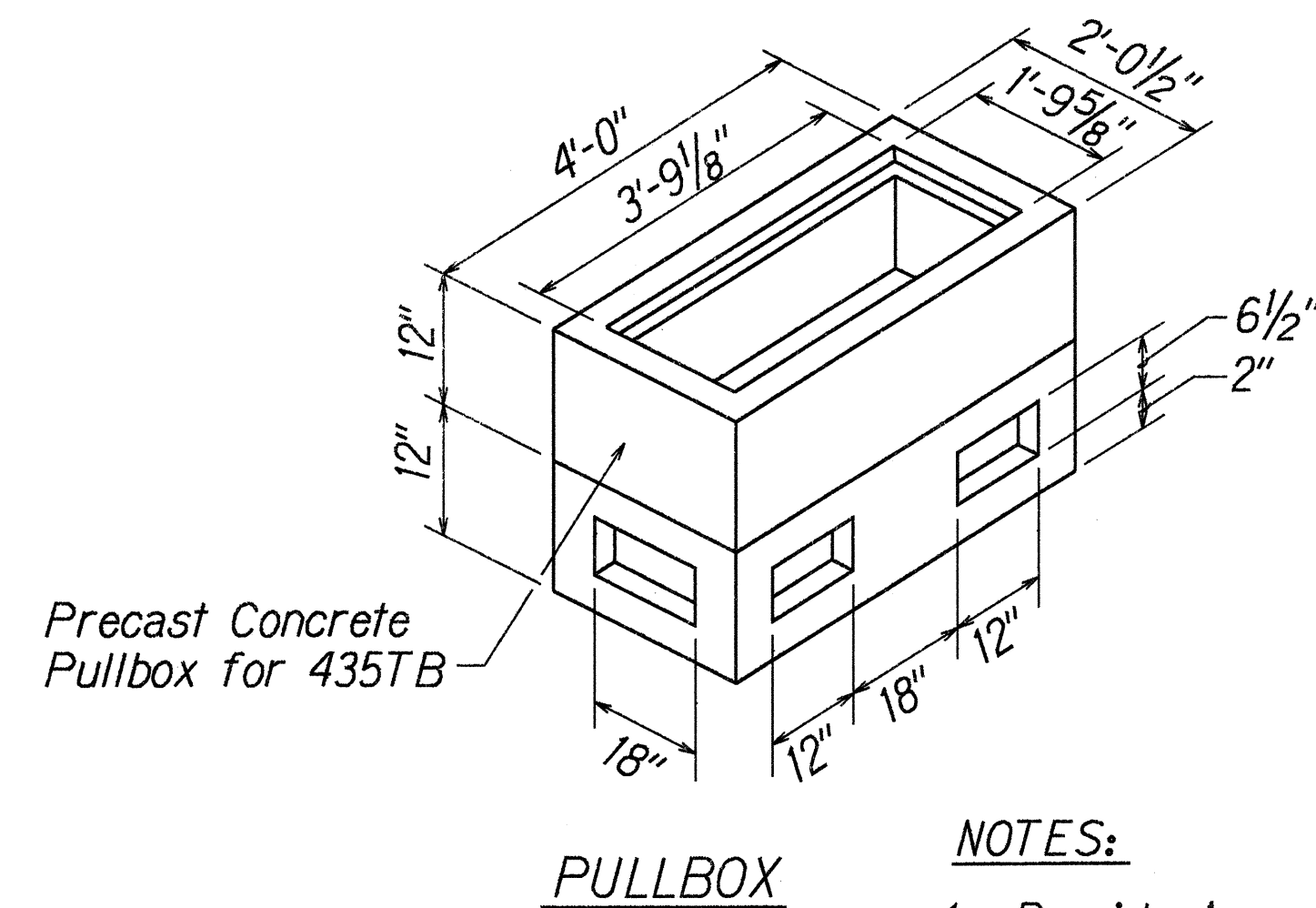
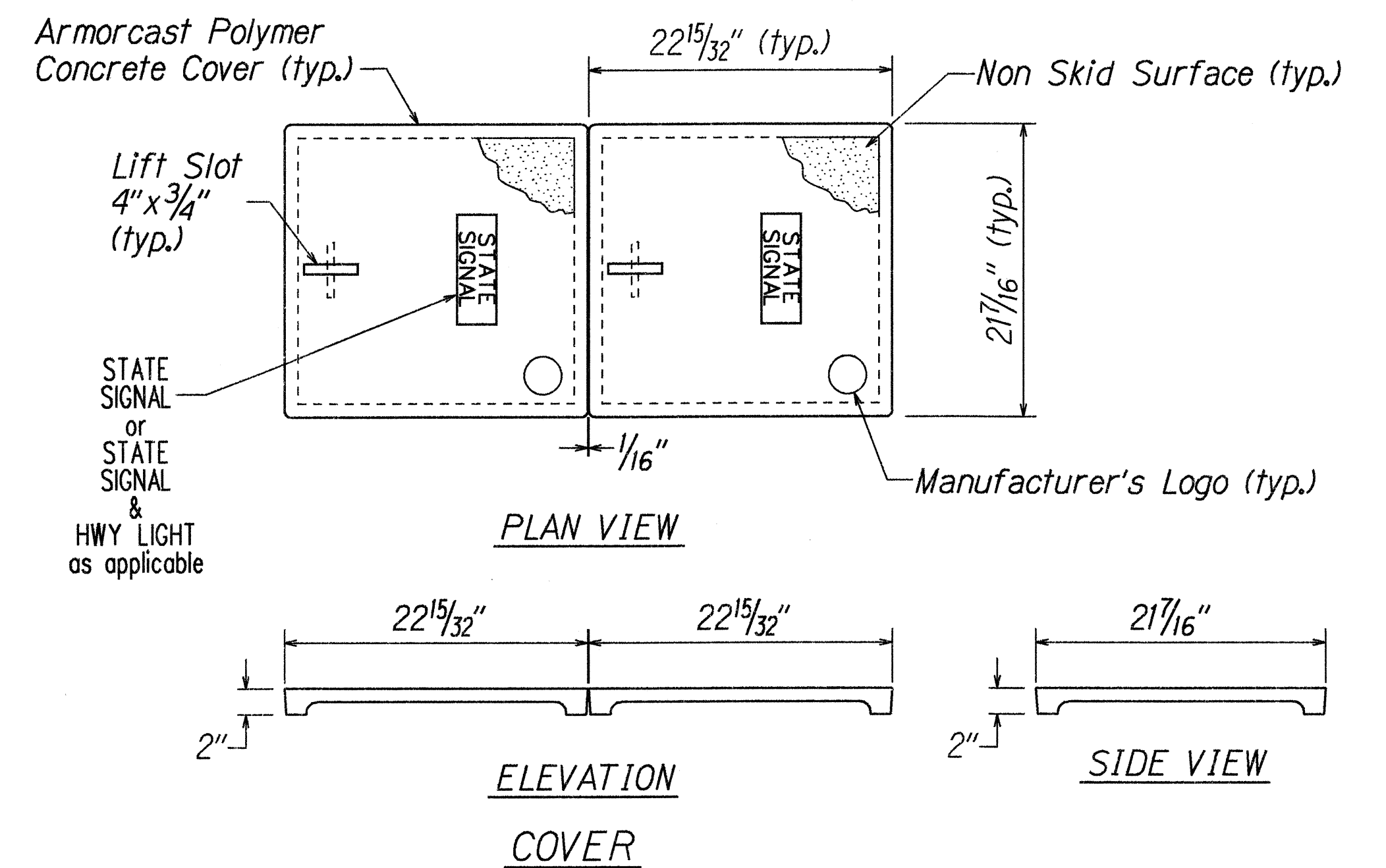
Varies (to be determined in the field)

Bricks with Mortar. Mortar between all contact surfaces.

8"x8"x8" Coarse Aggregate #67



TYPE "C" PULLBOX
Not to Scale



- NOTES:
1. Provide Armorcast Polymer Concrete Cover.
 2. Install on 6" bed of #3 Crushed Rock.
 3. Provide sufficient amount of 5/8" 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

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	4/97
DRAWN BY	B. A. H.
DESIGNED BY	C. J. S.
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

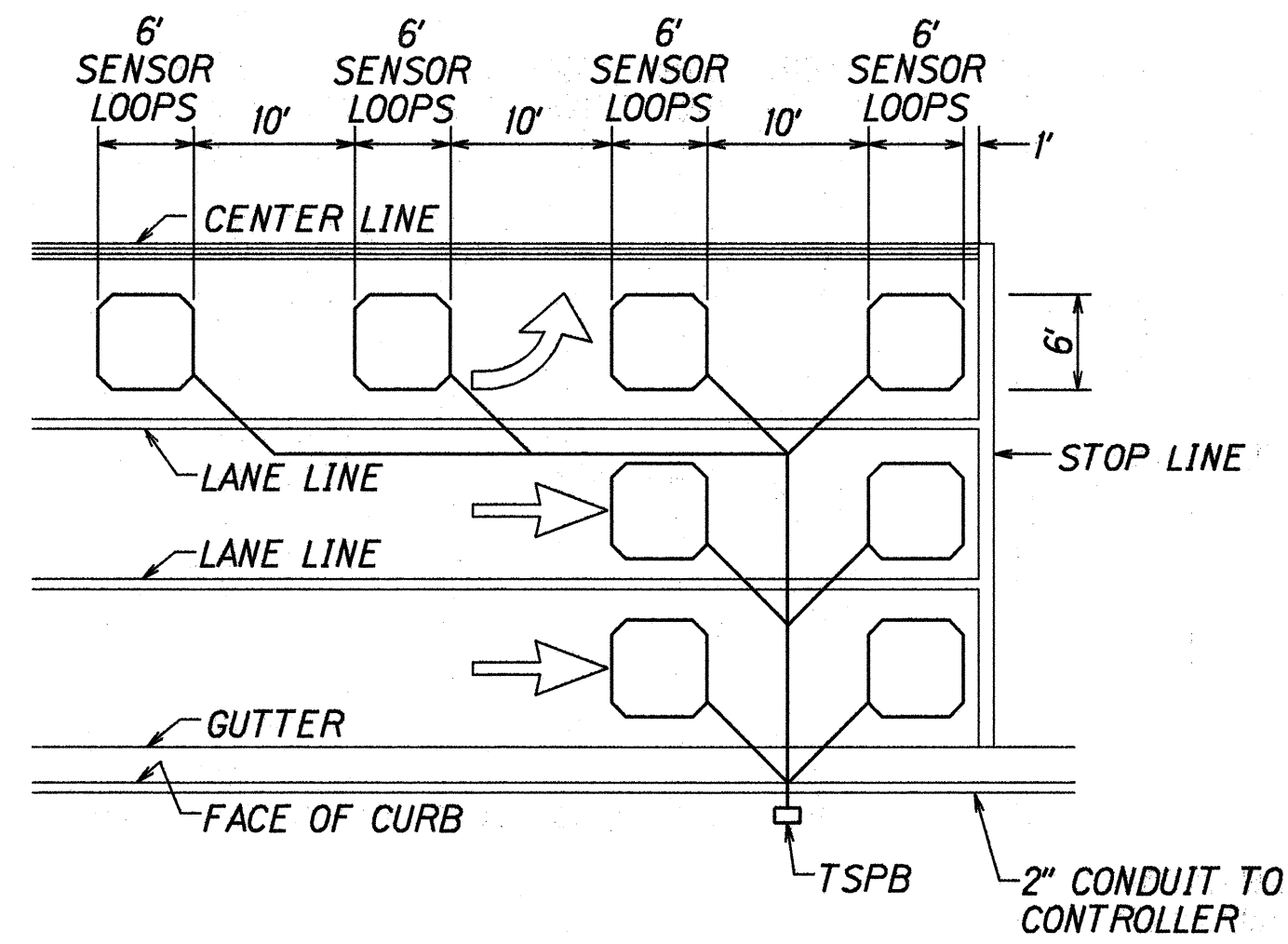
PULLBOX & COVER DETAILS

Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97

Not to Scale Date: April, 1997

SHEET No. T19 OF 26 SHEETS

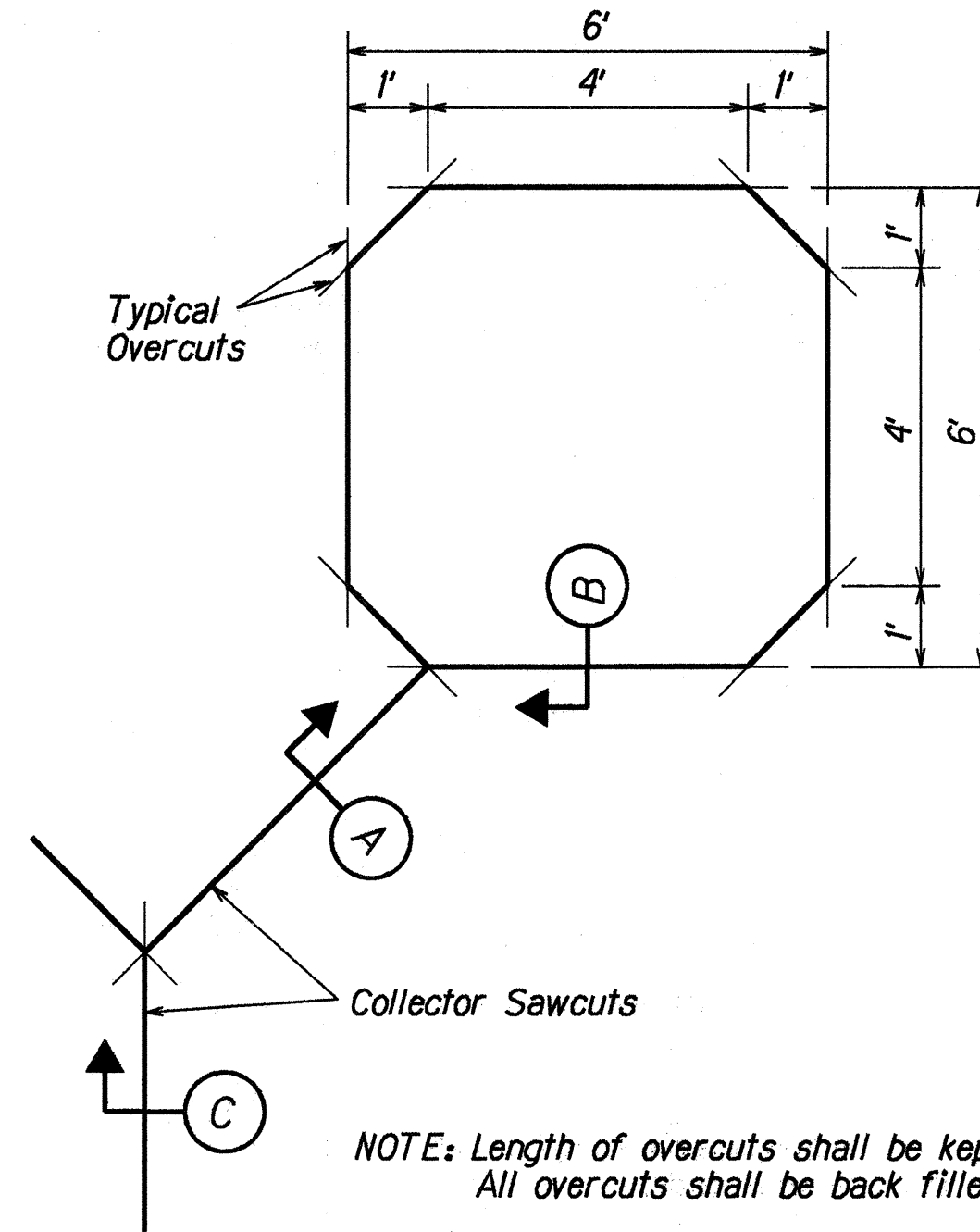
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	92A-01-97	1997	38	45



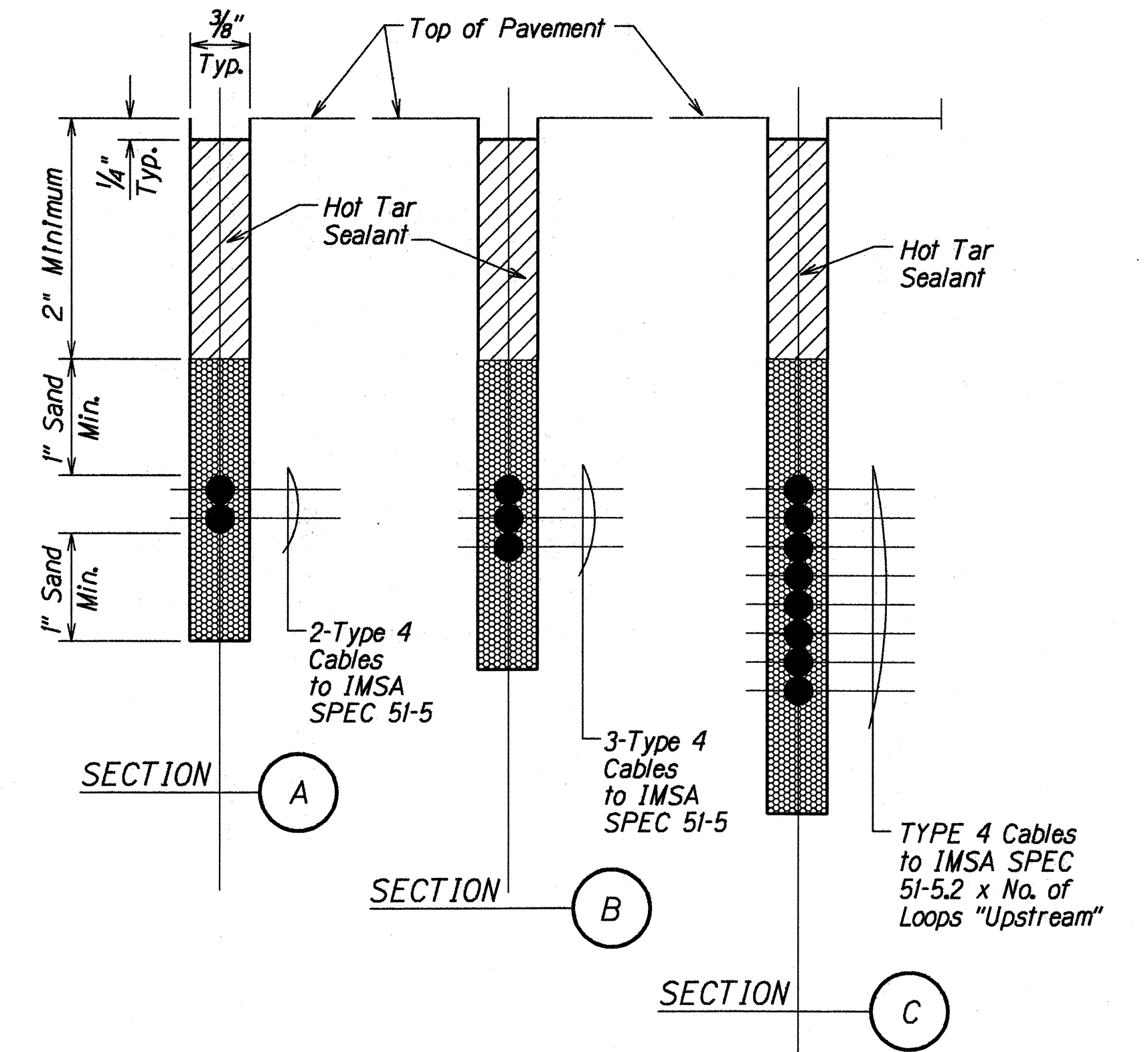
NOTES:

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.

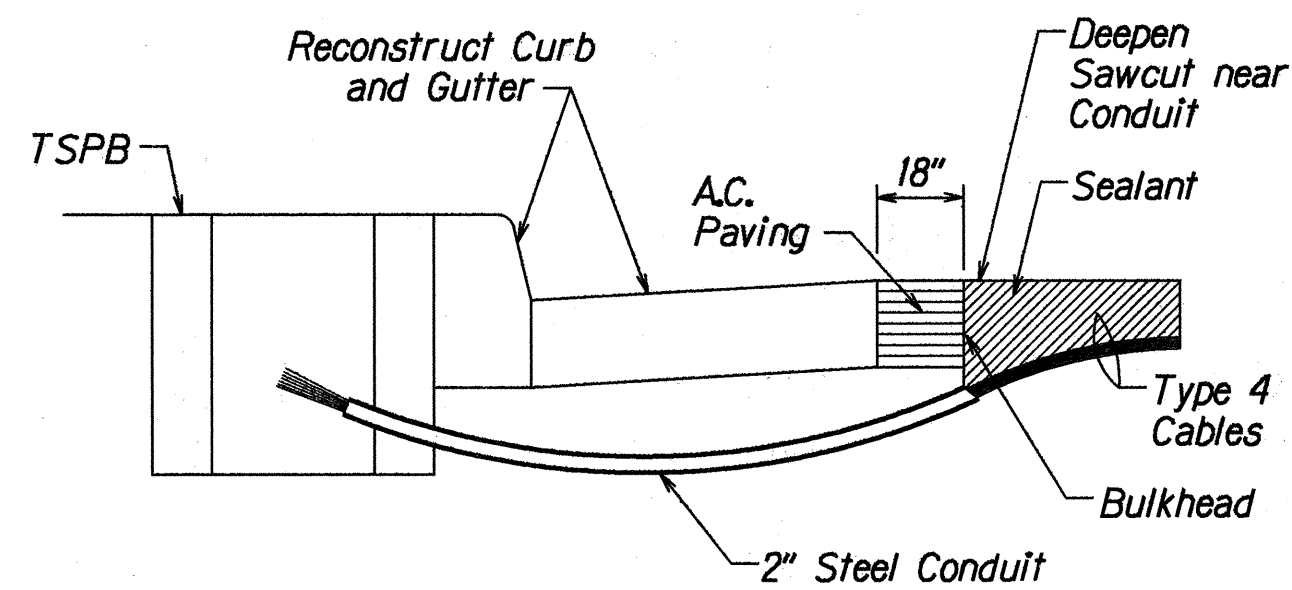
TYPICAL SENSOR LOOP LAYOUT



TYPICAL SENSOR LOOP SAWCUT DETAIL



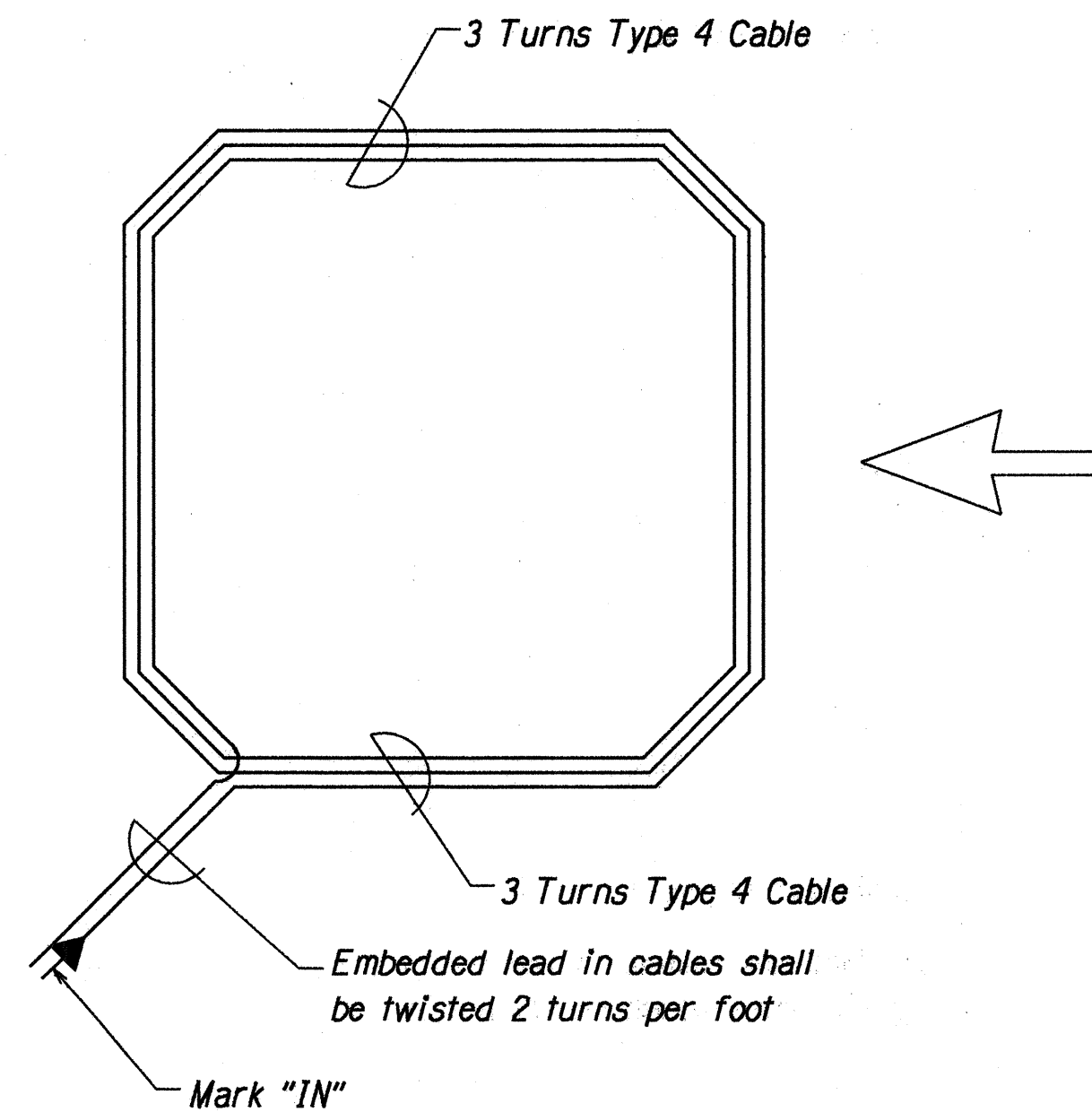
TYPICAL SECTION THROUGH SENSOR LOOP



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

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
162.000	
N. 30mm/100'	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

*Ala Moana Boulevard Intersection
Improvements at Atkinson Drive
Project No. 92A-01-97*

Not to Scale Date: April, 1997

SHEET No. T20 OF 26 SHEETS