

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	15	23

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)

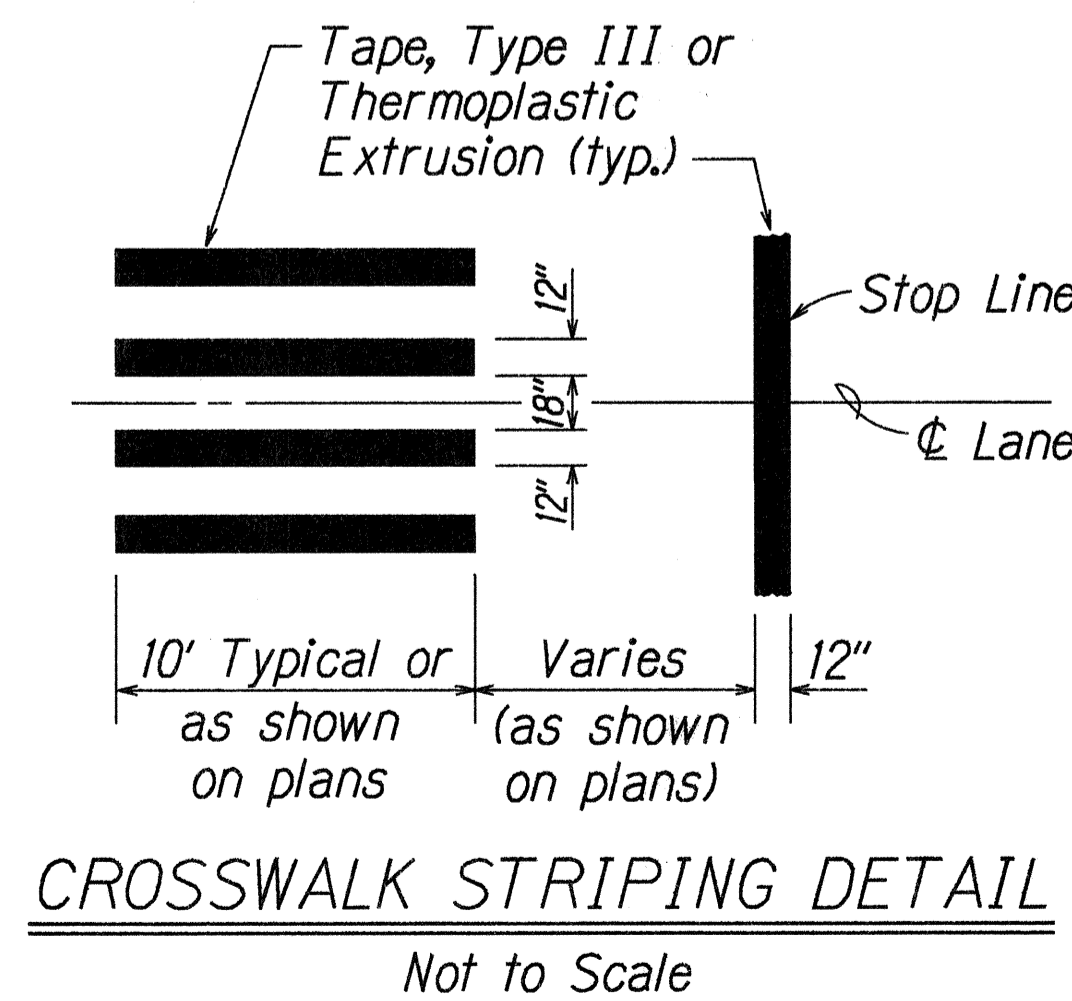
NOTES

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 not incorporated in the final traffic pattern shall be removed as directed by the Engineer. Costs shall be 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 shall be 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.

DESTINATION (D) SIGN NOTES

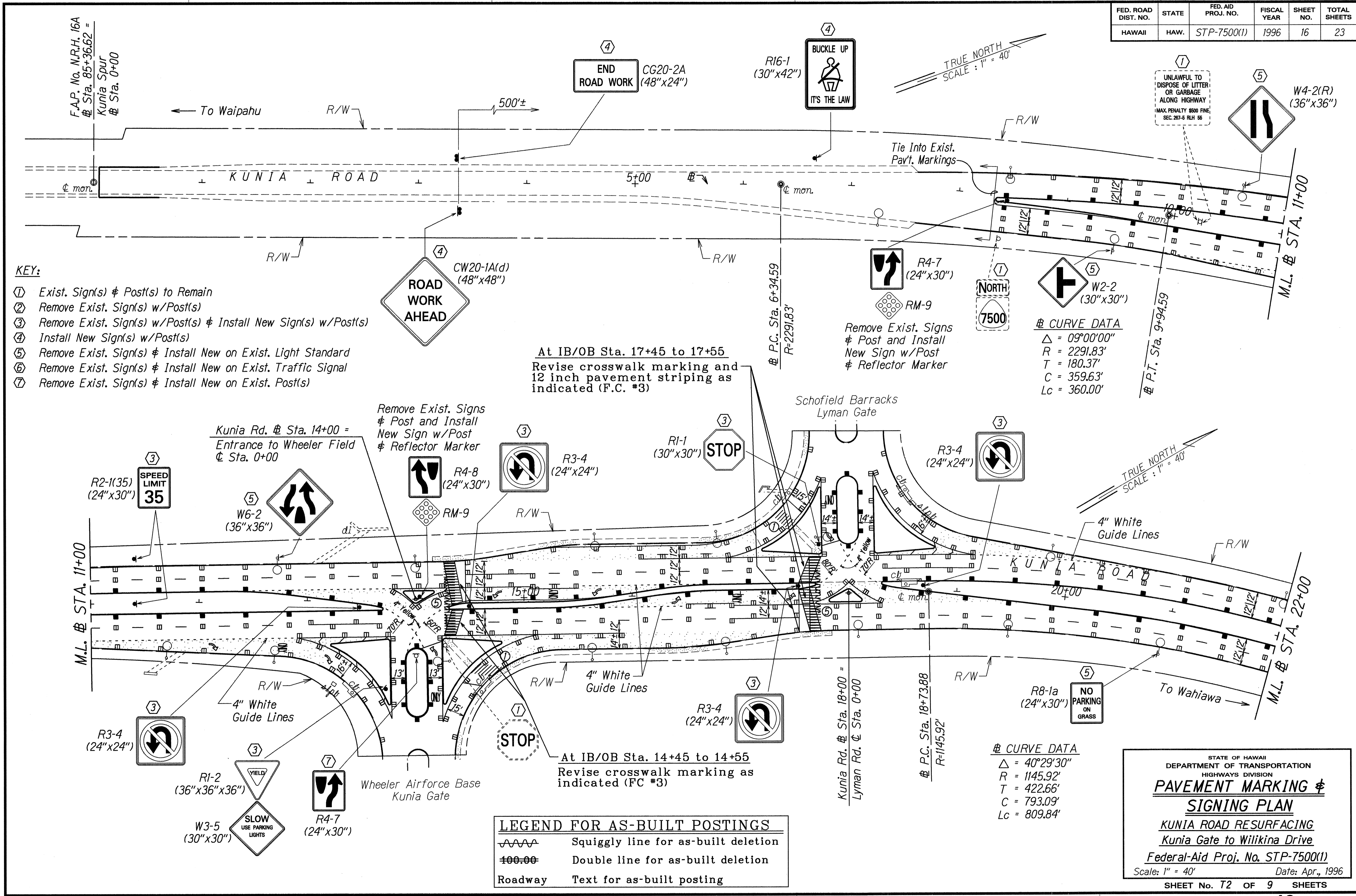
1. All signs shall conform to section 621 of the Special Provisions and the latest editions amendments of the following FHWA publications:
 - a. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
 - b. "Standard Highway Signs"
 - c. "Standard Alphabets for Highway Signs"
2. Borders, messages, arrows, symbols and shield conform to details as shown on the plans and as specified in the MUTCD.
3. Signs messages shall be as indicated on the plans.
4. All panels shall be reflectorized in accordance with Section 712.20 of the Standard Specifications.

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE: 100% TOL/100% QUANTITIES	
NO. 10/11/96	



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PAVEMENT MARKING
DETAIL, LEGEND, & NOTES
KUNIA ROAD RESURFACING
Kunia Gate to Wilikina Drive
Federal-Aid Proj. No. STP-7500(1)
Date: Apr., 1996
SHEET No. 71 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	16	23



KEY:

- ① Exist. Sign(s) & Post(s) to Remain
- ② Remove Exist. Sign(s) w/Post(s)
- ③ Remove Exist. Sign(s) w/Post(s) & Install New Sign(s) w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Remove Exist. Sign(s) & Install New on Exist. Traffic Signal
- ⑦ Remove Exist. Sign(s) & Install New on Exist. Post(s)

At IB/OB Sta. 17+45 to 17+55
 Revise crosswalk marking and 12 inch pavement striping as indicated (F.C. #3)

Remove Exist. Signs & Post and Install New Sign w/Post & Reflector Marker

At IB/OB Sta. 14+45 to 14+55
 Revise crosswalk marking as indicated (FC #3)

CURVE DATA

Δ	= 09°00'00"
R	= 2291.83'
T	= 180.37'
C	= 359.63'
Lc	= 360.00'

CURVE DATA

Δ	= 40°29'30"
R	= 1145.92'
T	= 422.66'
C	= 793.09'
Lc	= 809.84'

LEGEND FOR AS-BUILT POSTINGS

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

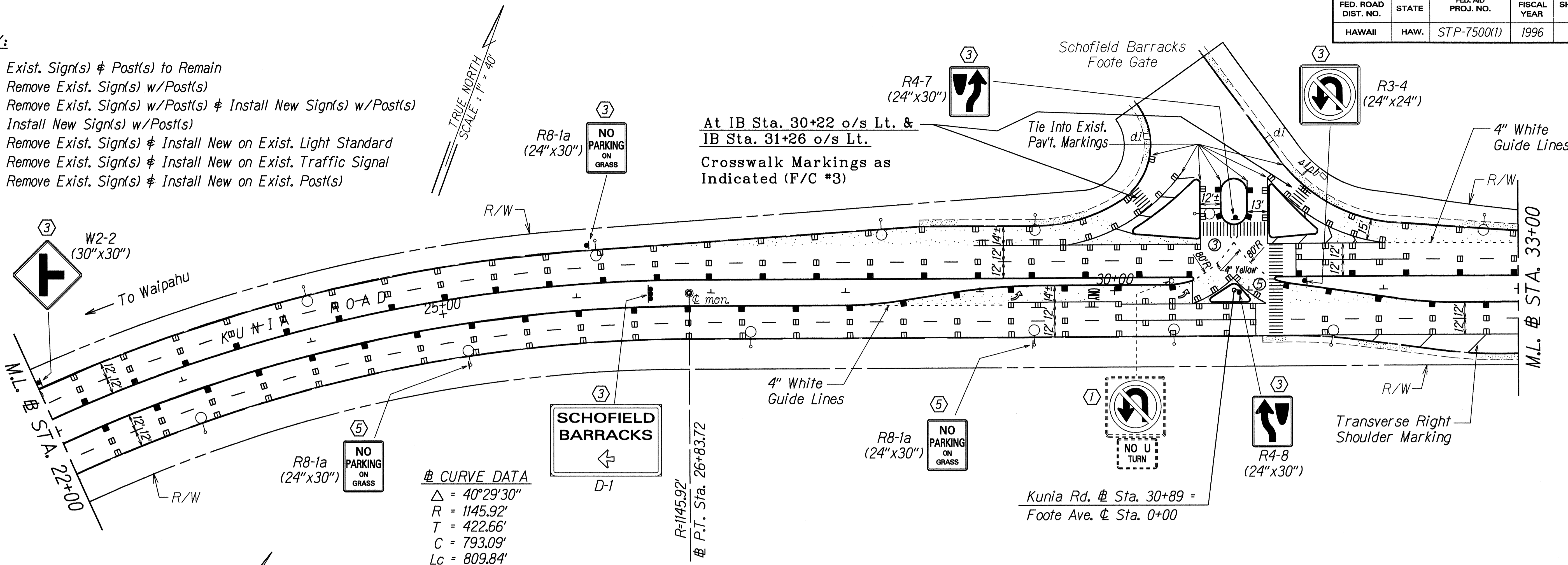
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
PAVEMENT MARKING & SIGNING PLAN
 KUNIA ROAD RESURFACING
 Kunia Gate to Wiilikina Drive
 Federal-Aid Proj. No. STP-7500(1)
 Scale: 1" = 40' Date: Apr., 1996
 SHEET No. T2 OF 9 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	17	23

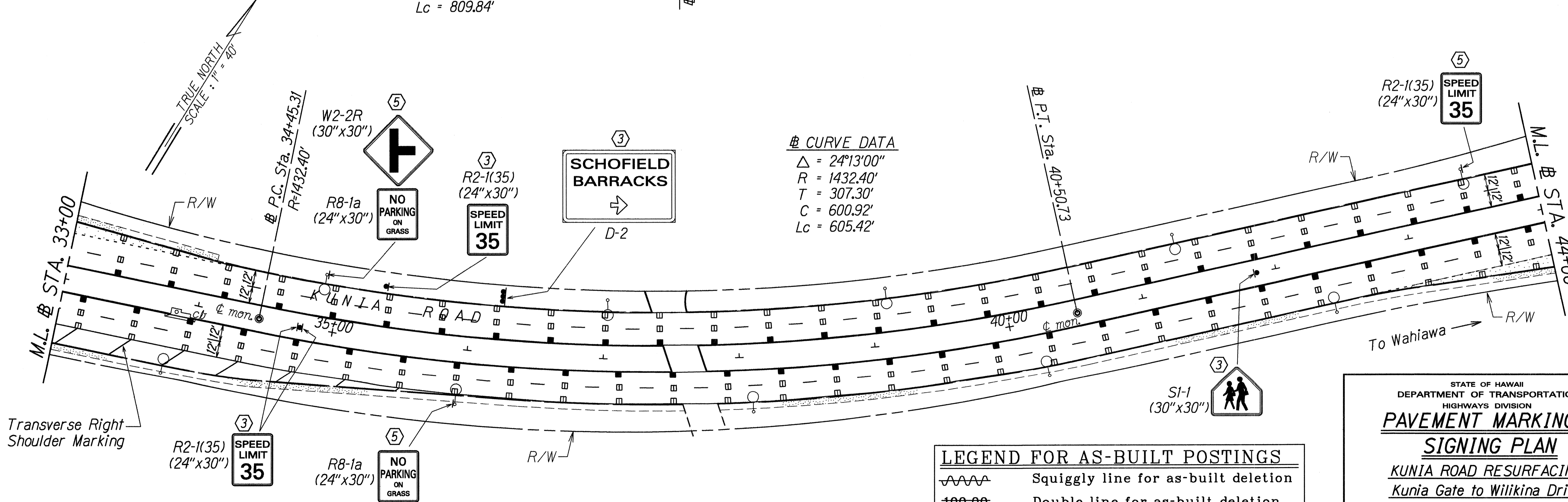
KEY:

- ① Exist. Sign(s) & Post(s) to Remain
- ② Remove Exist. Sign(s) w/Post(s)
- ③ Remove Exist. Sign(s) w/Post(s) & Install New Sign(s) w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Remove Exist. Sign(s) & Install New on Exist. Traffic Signal
- ⑦ Remove Exist. Sign(s) & Install New on Exist. Post(s)



④ CURVE DATA
 $\Delta = 40^\circ 29' 30''$
 $R = 1145.92'$
 $T = 422.66'$
 $C = 793.09'$
 $Lc = 809.84'$

④ CURVE DATA
 $\Delta = 24^\circ 13' 00''$
 $R = 1432.40'$
 $T = 307.30'$
 $C = 600.92'$
 $Lc = 605.42'$



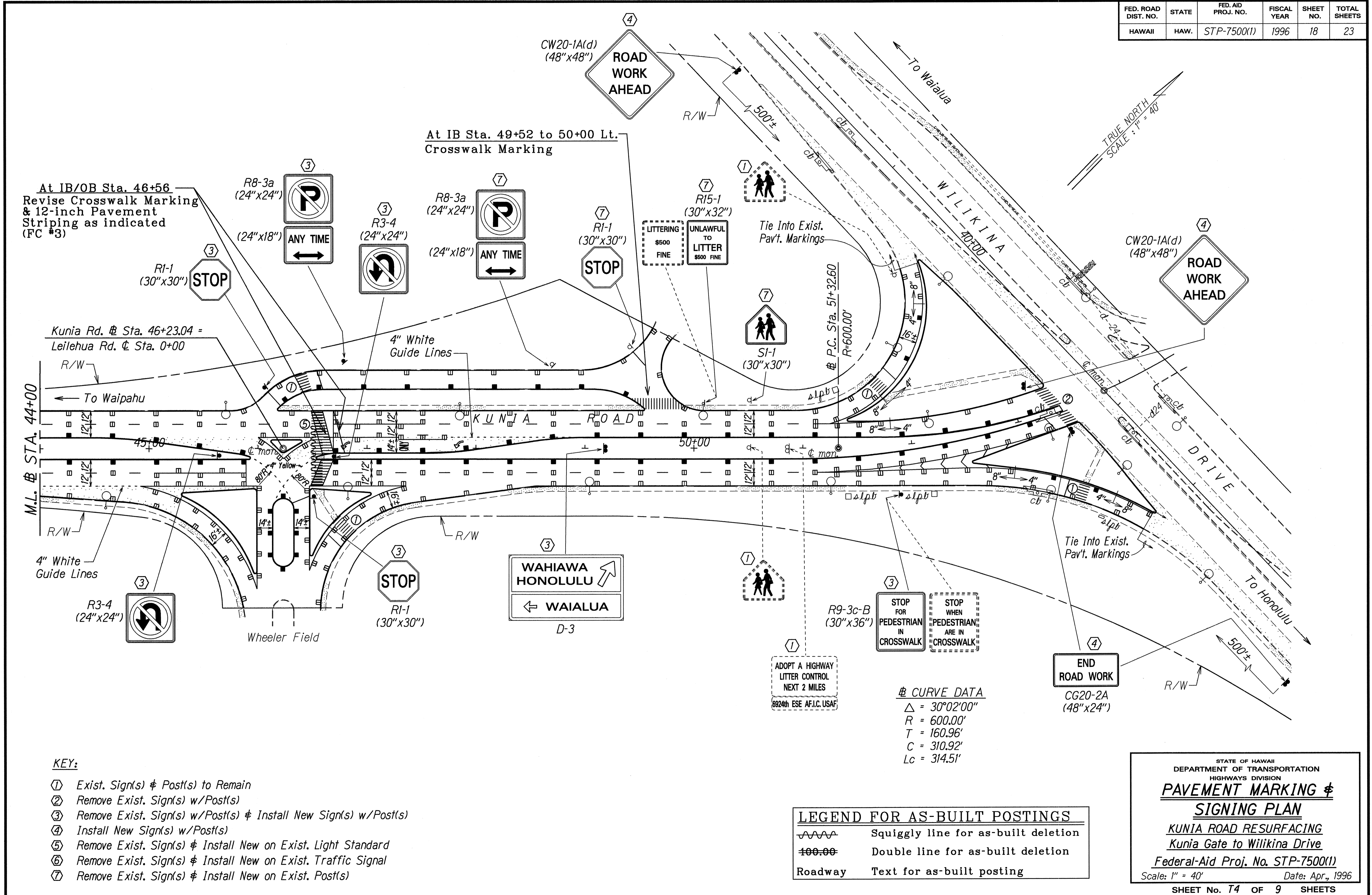
LEGEND FOR AS-BUILT POSTINGS

	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
PAVEMENT MARKING & SIGNING PLAN
KUNIA ROAD RESURFACING
Kunia Gate to Wiilikina Drive
Federal-Aid Proj. No. STP-7500(1)
Scale: 1" = 40' Date: Apr., 1996
SHEET No. 17 OF 9 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO. 300012	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	18	23



At IB/OB Sta. 46+56
 Revise Crosswalk Marking
 & 12-inch Pavement
 Striping as indicated
 (FC #3)

At IB Sta. 49+52 to 50+00 Lt.
 Crosswalk Marking

Kunia Rd. Sta. 46+23.04 =
 Leilehua Rd. Sta. 0+00

CURVE DATA
 $\Delta = 30^{\circ}02'00''$
 $R = 600.00'$
 $T = 160.96'$
 $C = 310.92'$
 $Lc = 314.51'$

KEY:

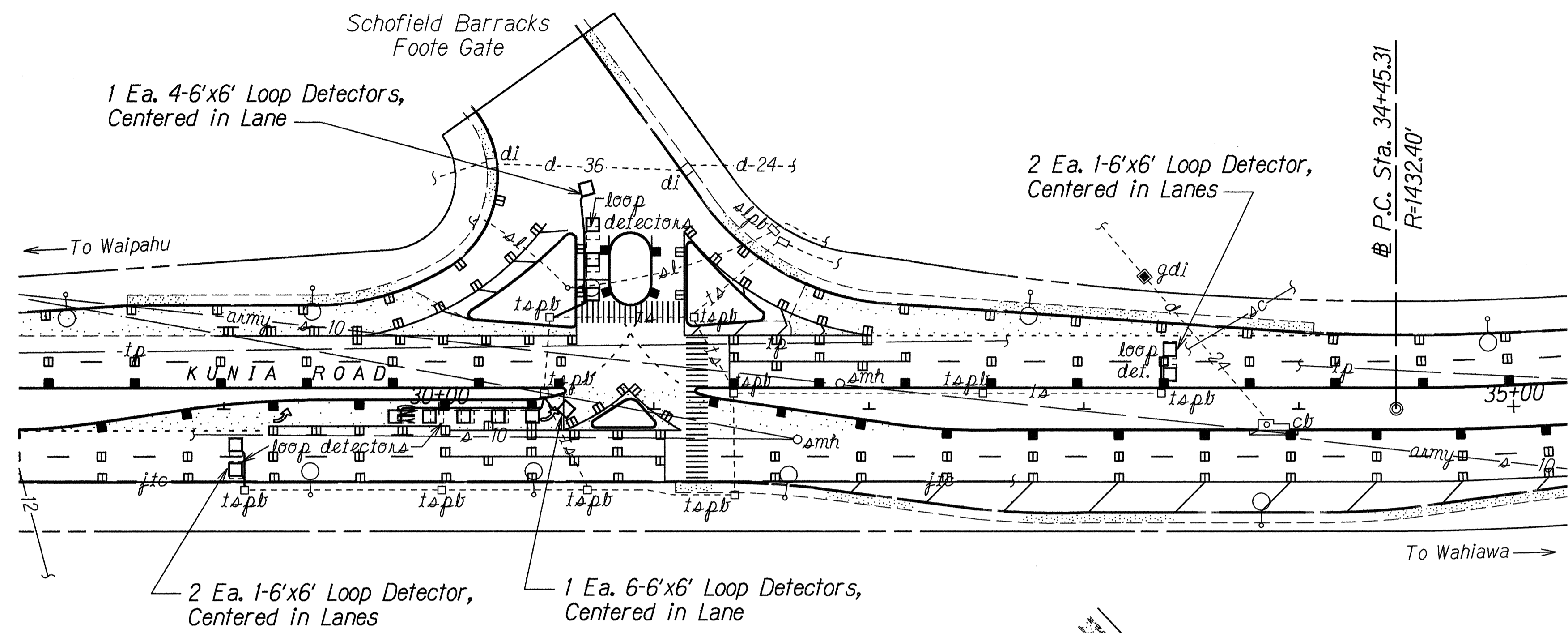
- ① Exist. Sign(s) & Post(s) to Remain
- ② Remove Exist. Sign(s) w/Post(s)
- ③ Remove Exist. Sign(s) w/Post(s) & Install New Sign(s) w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Remove Exist. Sign(s) & Install New on Exist. Traffic Signal
- ⑦ Remove Exist. Sign(s) & Install New on Exist. Post(s)

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

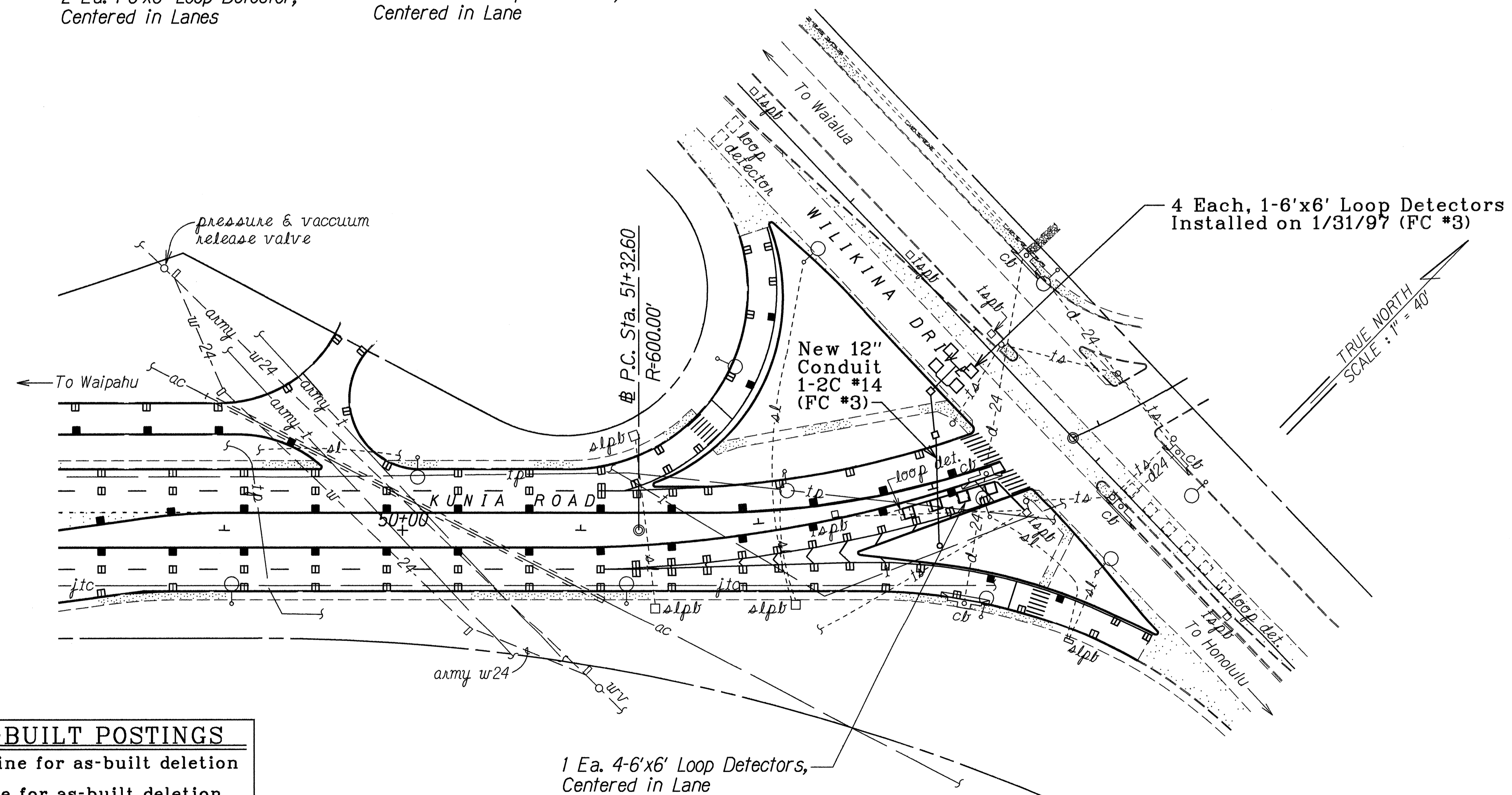
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**PAVEMENT MARKING &
 SIGNING PLAN**
 KUNIA ROAD RESURFACING
 Kunia Gate to Wilikina Drive
 Federal-Aid Proj. No. STP-7500(1)
 Scale: 1" = 40' Date: Apr., 1996
 SHEET No. T4 OF 9 SHEETS

DATE	4/16/96
SURVEY PLOTTED BY	
DRAWN BY	R. A. H.
DESIGNED BY	G. K. G.
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	310003

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	19	23



TRUE NORTH
SCALE: 1" = 40'



TRUE NORTH
SCALE: 1" = 40'

DATE	5/4/96
SURVEY PLOTTED BY	E. Hill
DRAWN BY	E. Hill
DESIGNED BY	G. Kishel
CHECKED BY	W. Kishel
ORIGINAL PLAN	
NOTE BOOK	
NO. 300010	

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

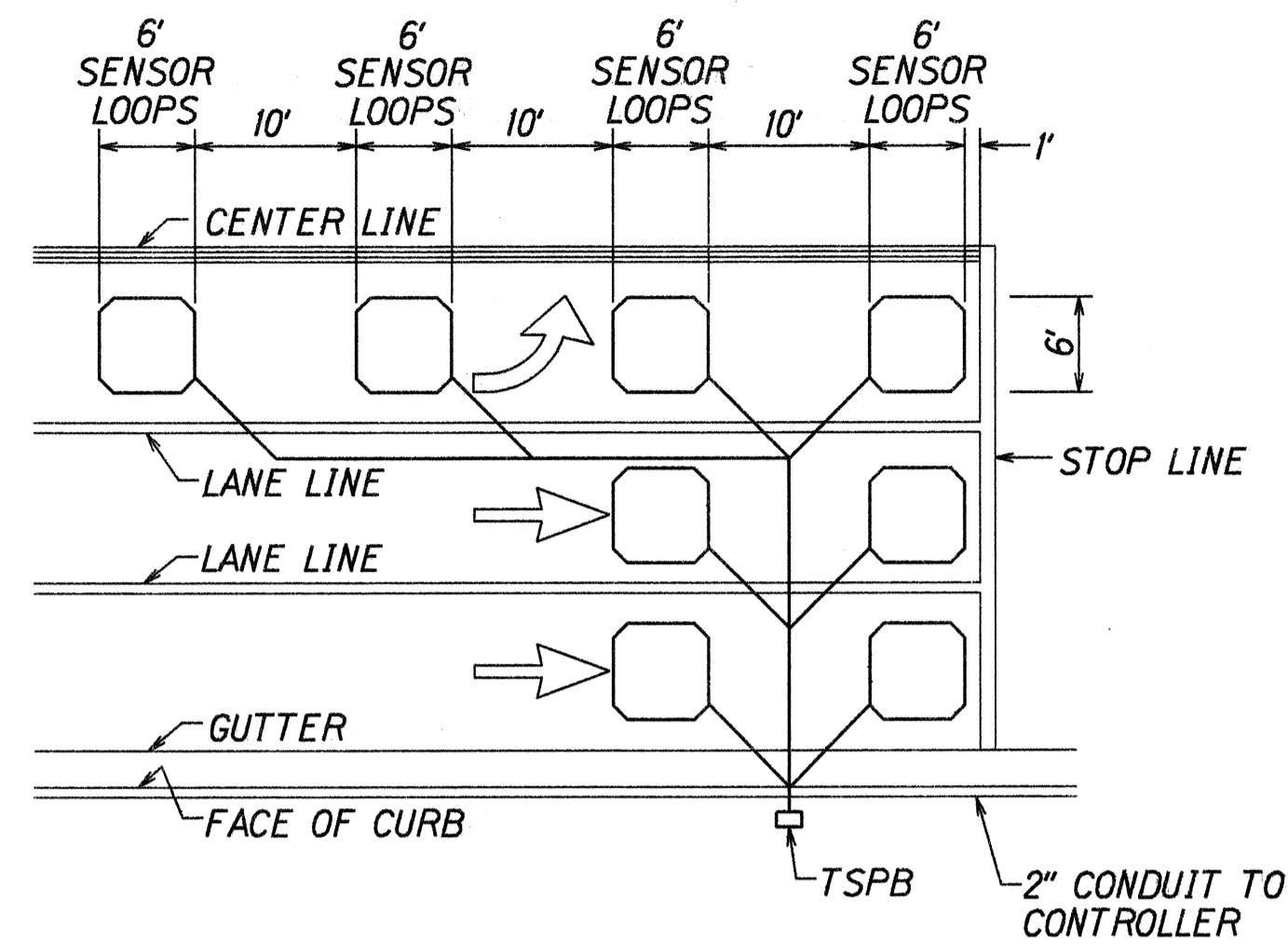
LOOP DETECTOR PLAN

KUNIA ROAD RESURFACING
Kunia Gate to Wilikina Drive
Federal-Aid Proj. No. STP-7500(1)

Scale: 1" = 40' Date: Apr., 1996

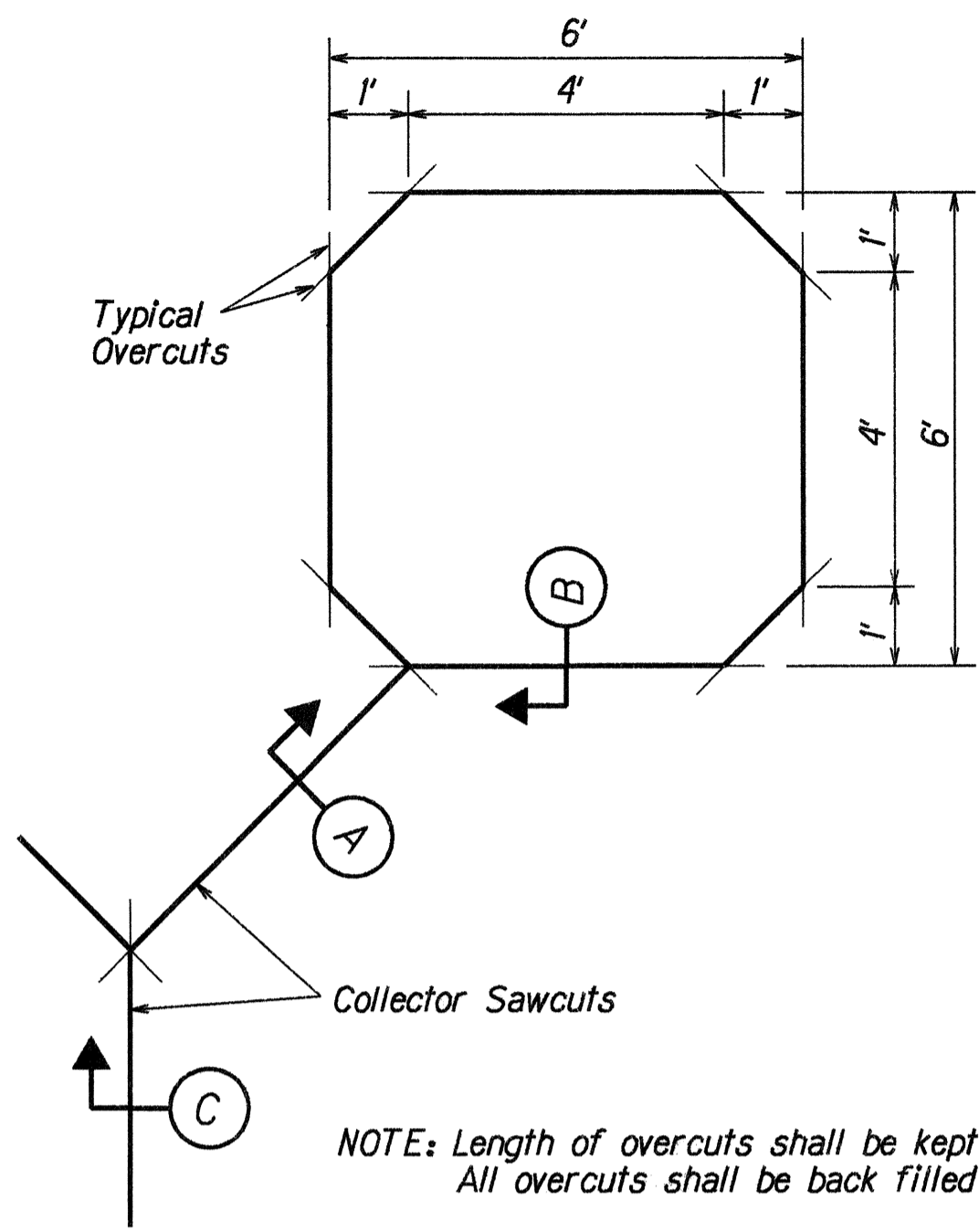
SHEET No. 15 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	20	23

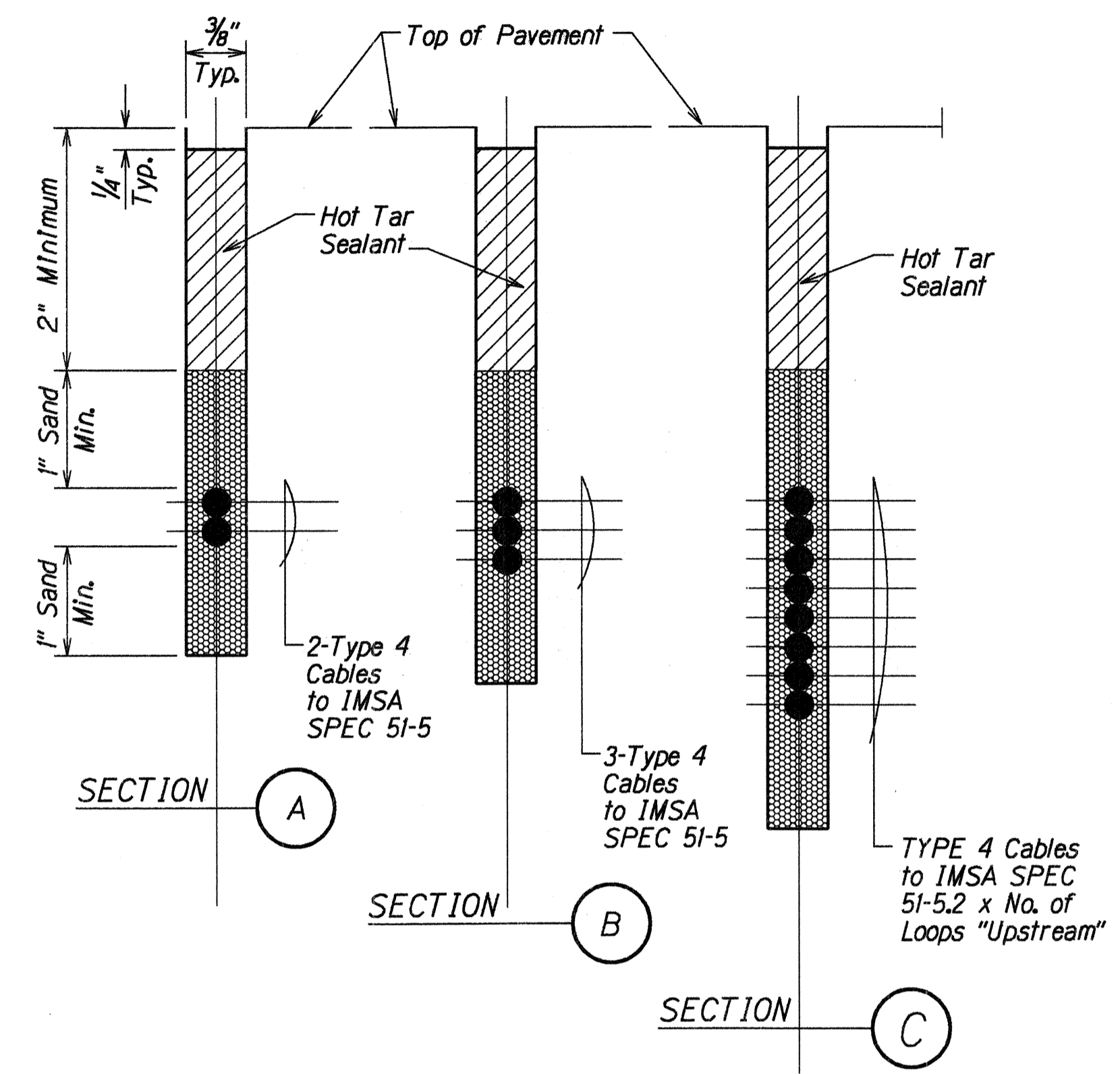


- NOTES:
1. Center sensor loops in lanes.
 2. Collector cables shall be twisted 2 turns per foot.
 3. Number of loops and locations vary. See project plans.
 4. Number and locations of collector sawcuts may be varied in the field to suit.

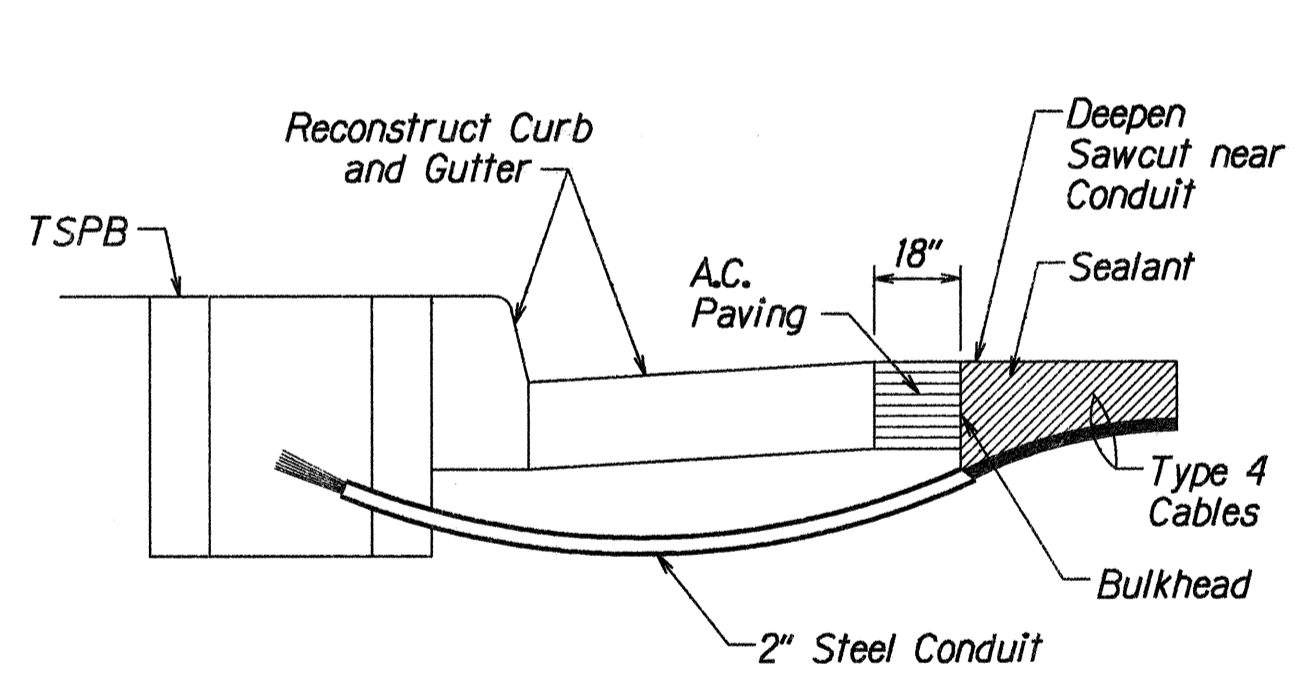
TYPICAL SENSOR LOOP LAYOUT



TYPICAL SENSOR LOOP SAWCUT DETAIL

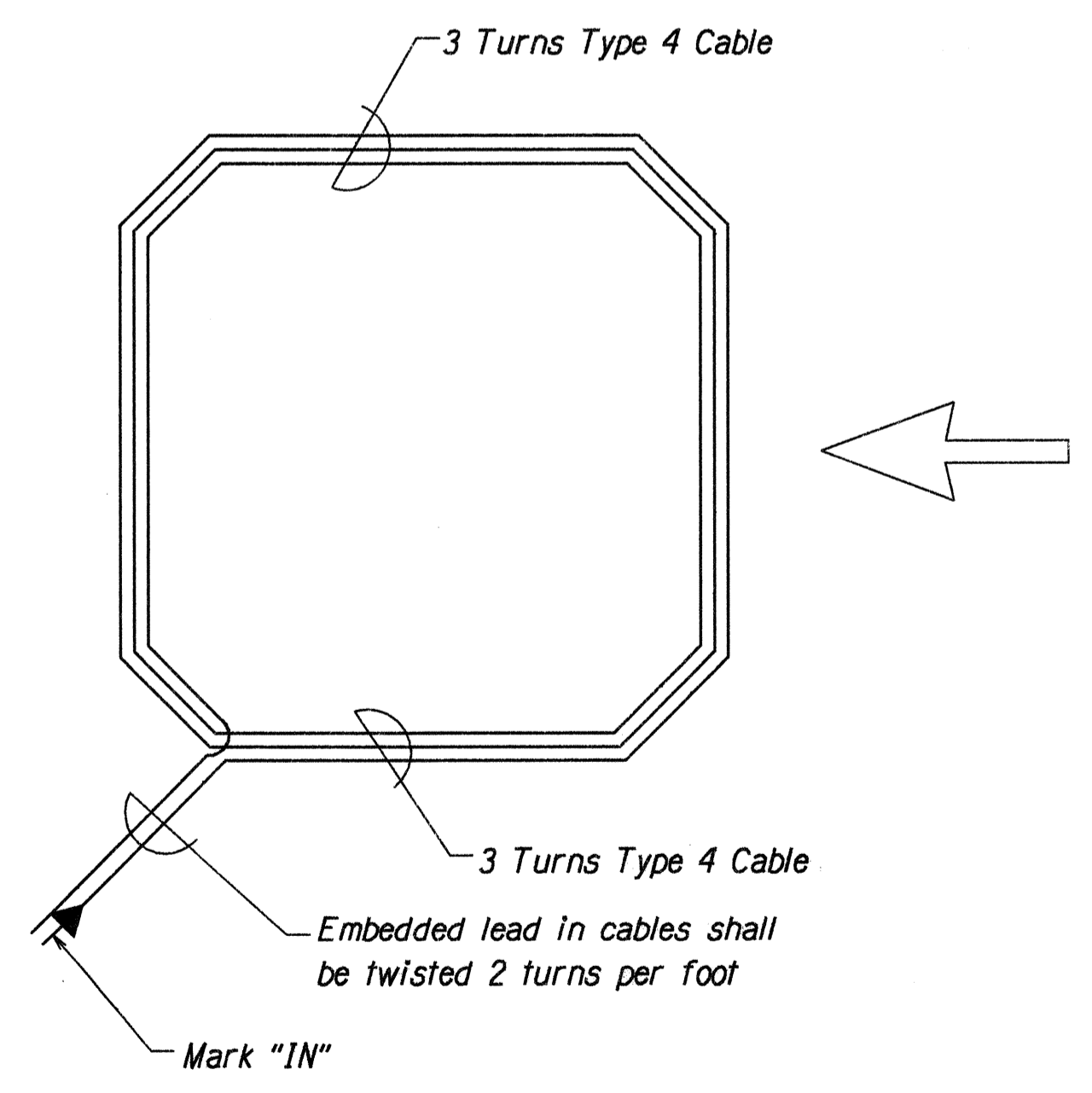


TYPICAL SECTION THROUGH SENSOR LOOP



- 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 AC.
 5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



TYPICAL SENSOR LOOP WIRING DIAGRAM

TYPES OF CABLES

- TYPE 1 Signal Loop Cable: Stranded No. 14, 26 conductors
- TYPE 2 Detector Lead-In Cable and Pedestrian Push Button Circuit Cable: Stranded, No. 14, 2 Conductors
- TYPE 3 Interconnect Cable: Solid No. 20, 12 Pairs
- TYPE 4 Loop Sensor Cable: Solid No. 12, Single Conductor to IMSA SPEC 5I-5
- TYPE 5 Cable from Signal Loop to Signal Head: Stranded, No. 14, Single Conductor
- TYPE 6 Service Cable: Solid, No. 6, 3 Conductors

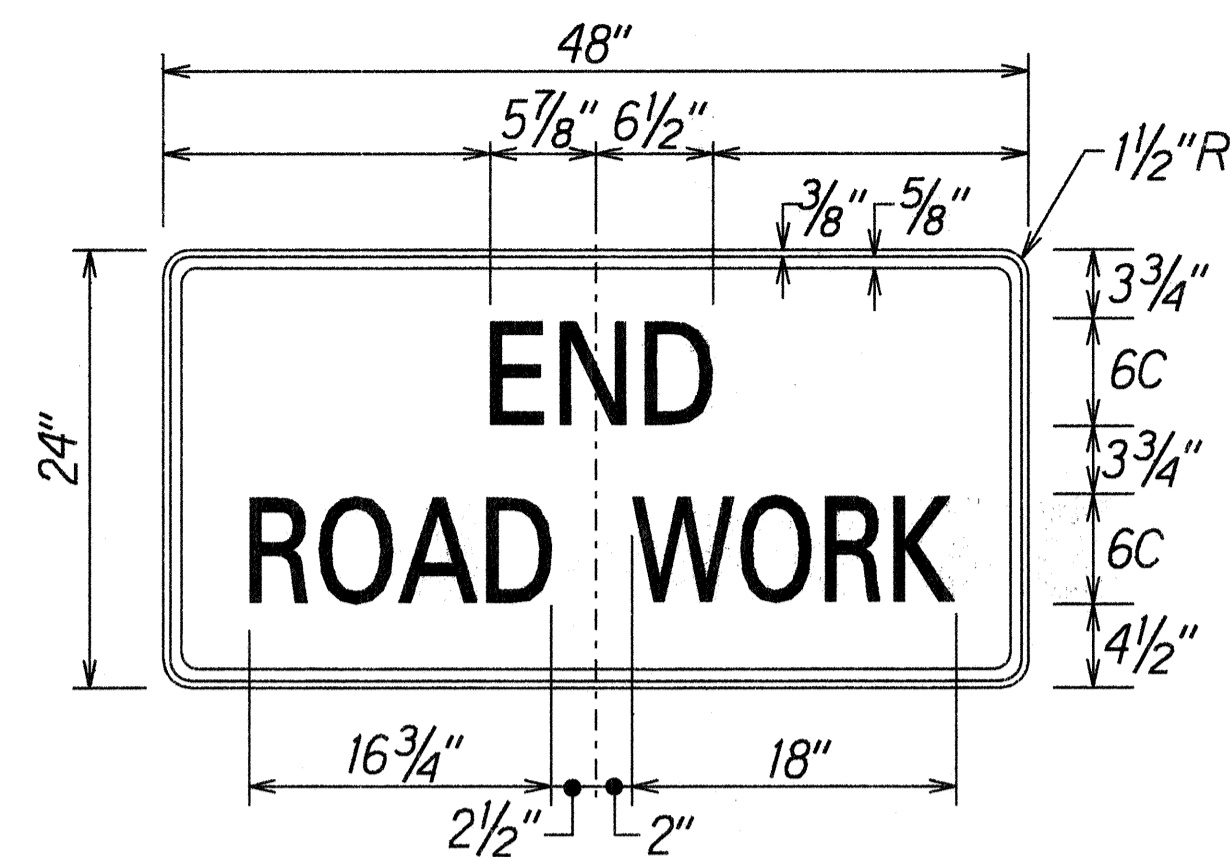
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NO. 304110	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

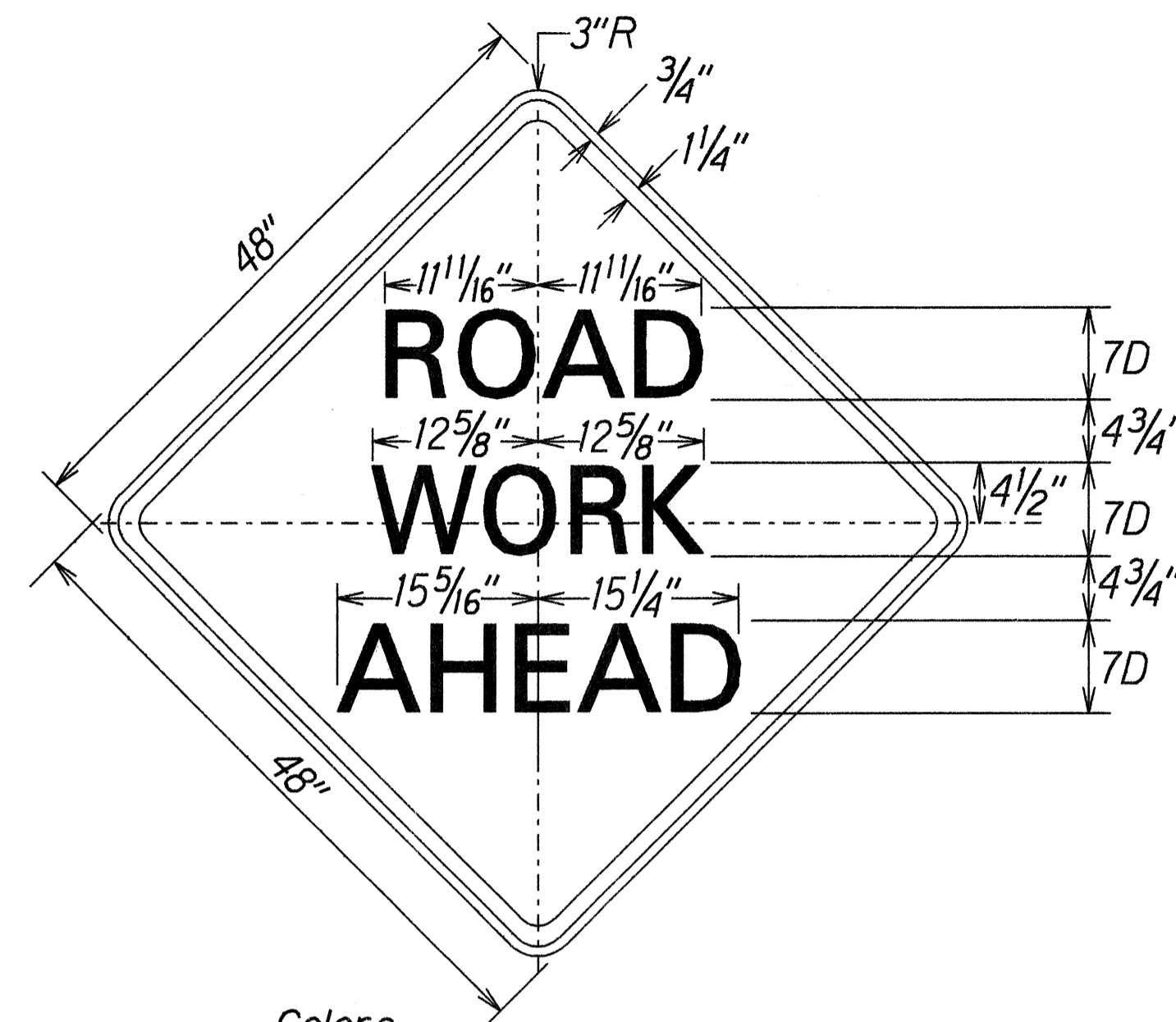
KUNIA ROAD RESURFACING
Kunia Gate to Wilikina Drive
Federal-Aid Proj. No. STP-7500(1)
Not to Scale Date: Apr., 1996

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	21	23



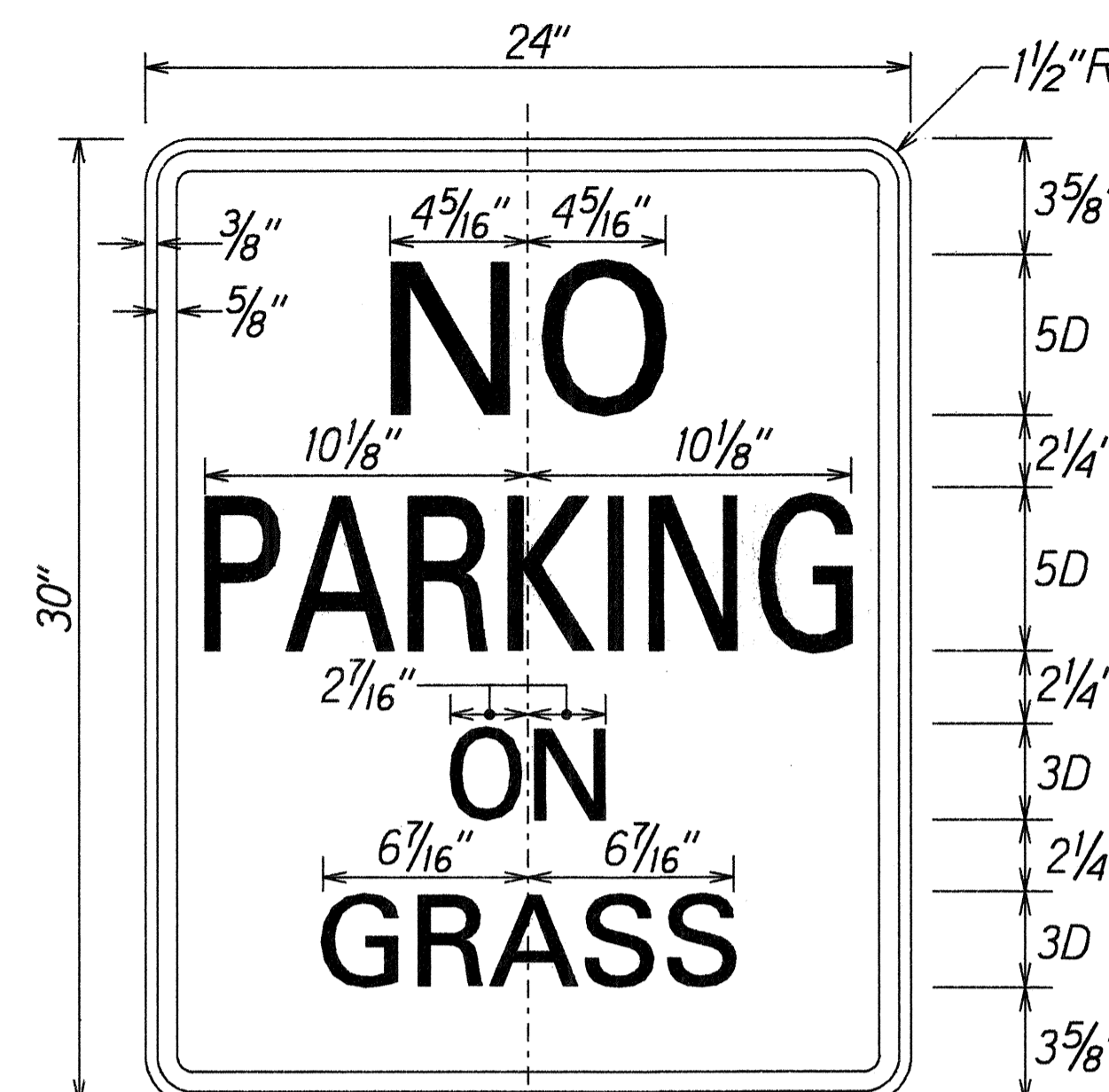
Colors:
Legend: Black (Non Refl)
Background: Orange

CG20-2A
Not to Scale



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

CW20-1A(d)
Not to Scale



Colors:
Legend: Red (Ref)
Background: White (Ref)

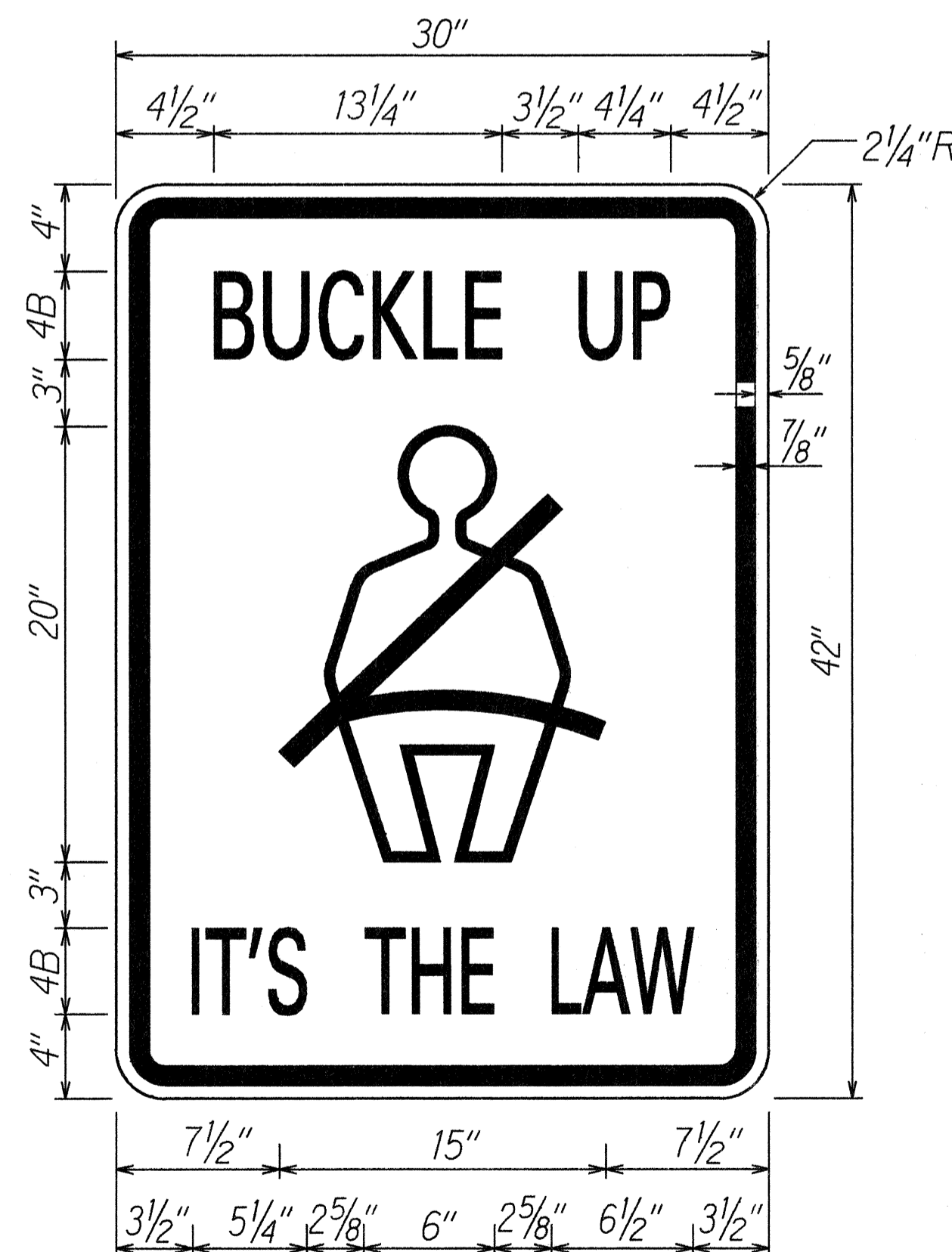
R8-1a
Not to Scale



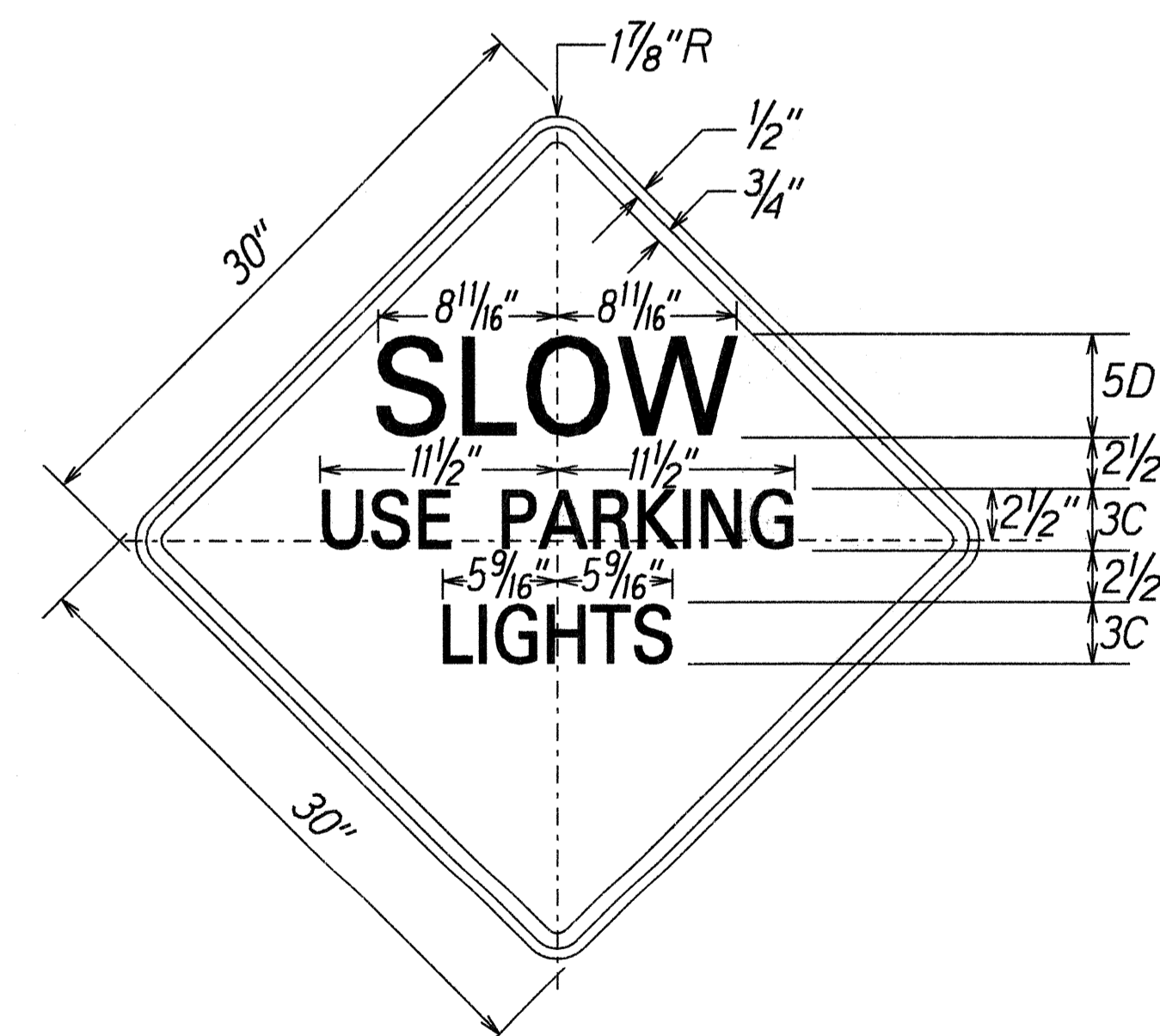
R9-3c-B
Not to scale



R15-1
Not to Scale



R16-1
Not to Scale



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

W3-5
Not to Scale

SURVEY PLOTTED BY	DATE
DRAWN BY	3/29/96
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NO. 30000000	

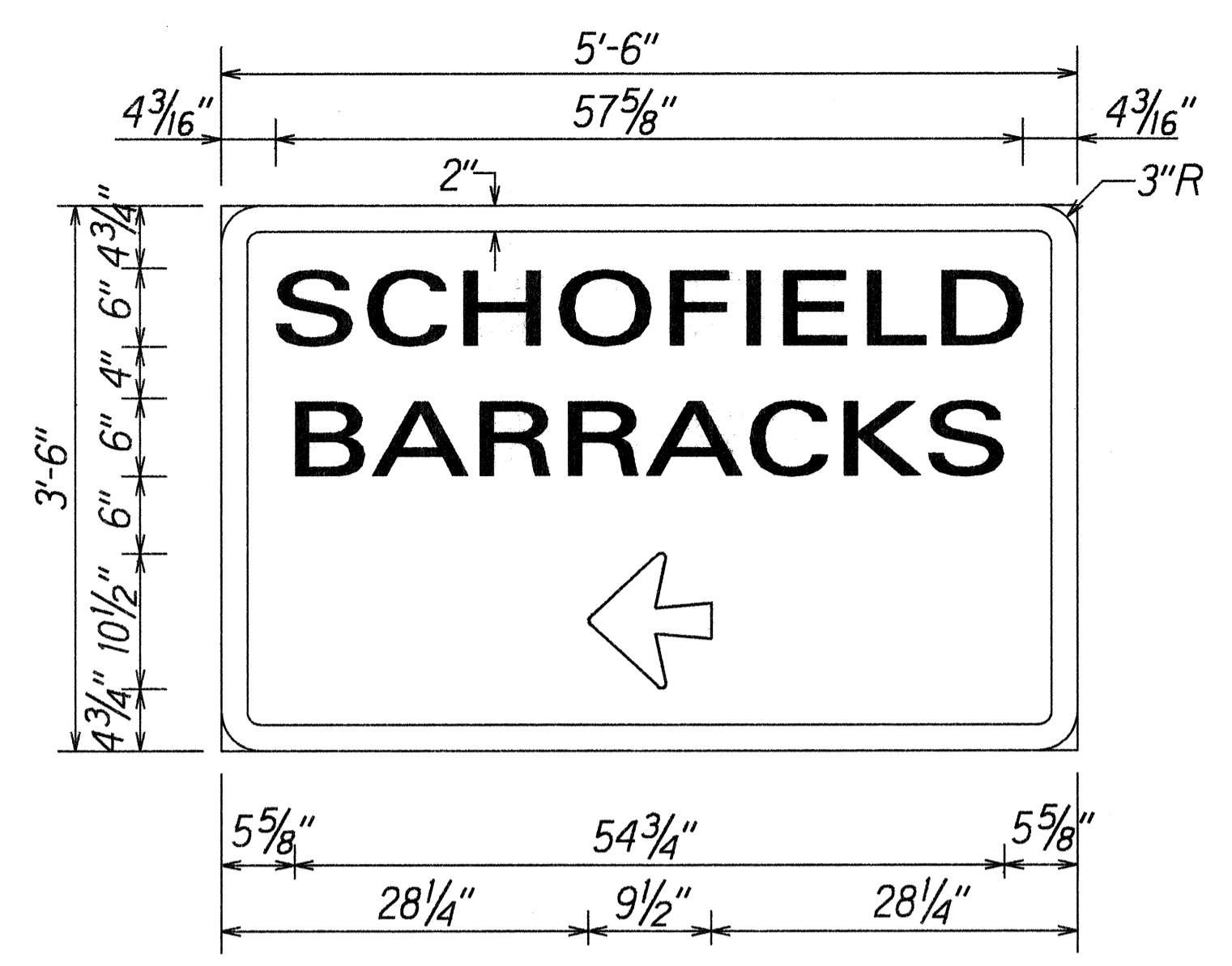
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN DETAILS

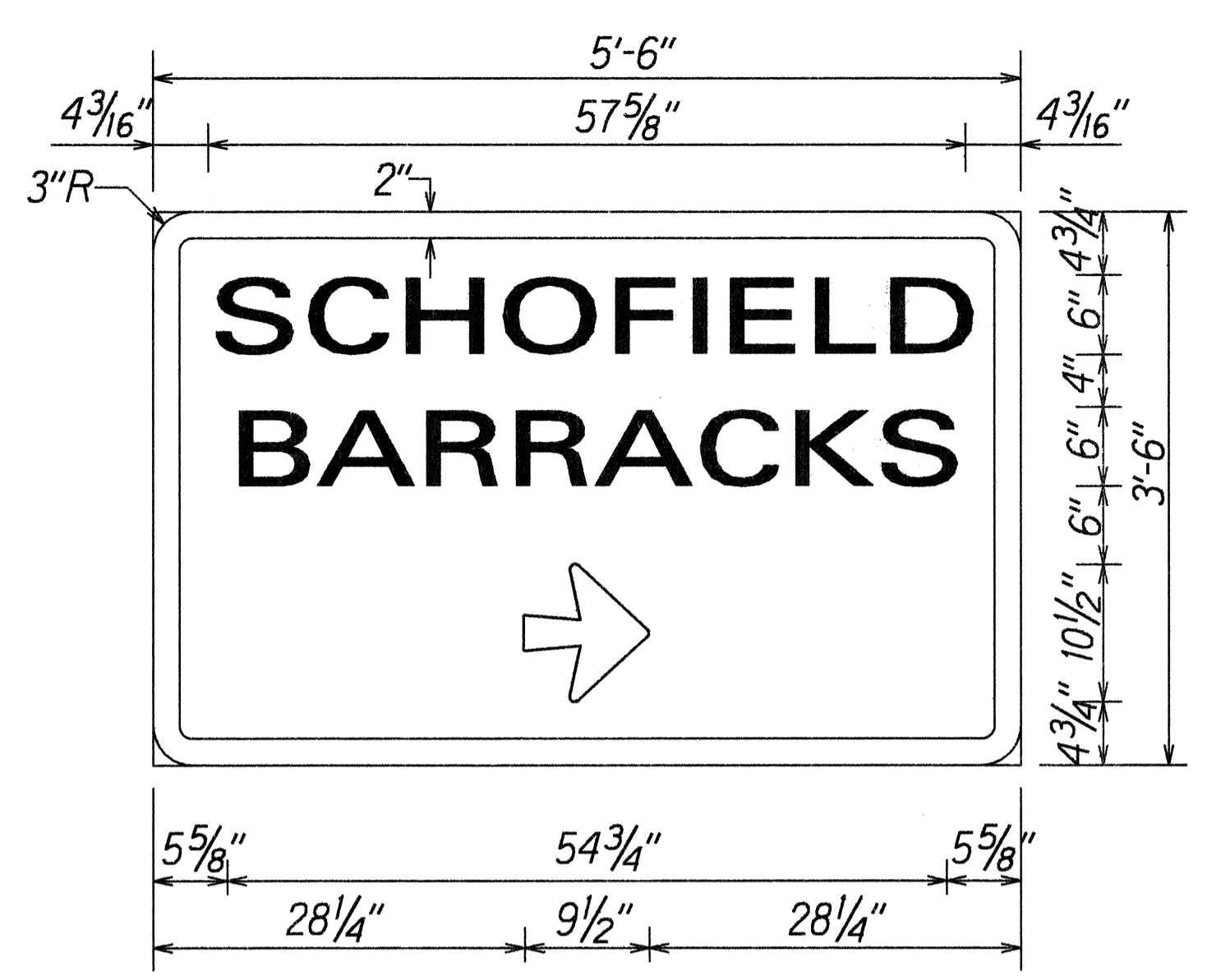
KUNIA ROAD RESURFACING
Kunia Gate to Wilikina Drive
Federal-Aid Proj. No. STP-7500(1)
Not to Scale Date: Apr., 1996

SHEET No. 77 OF 9 SHEETS

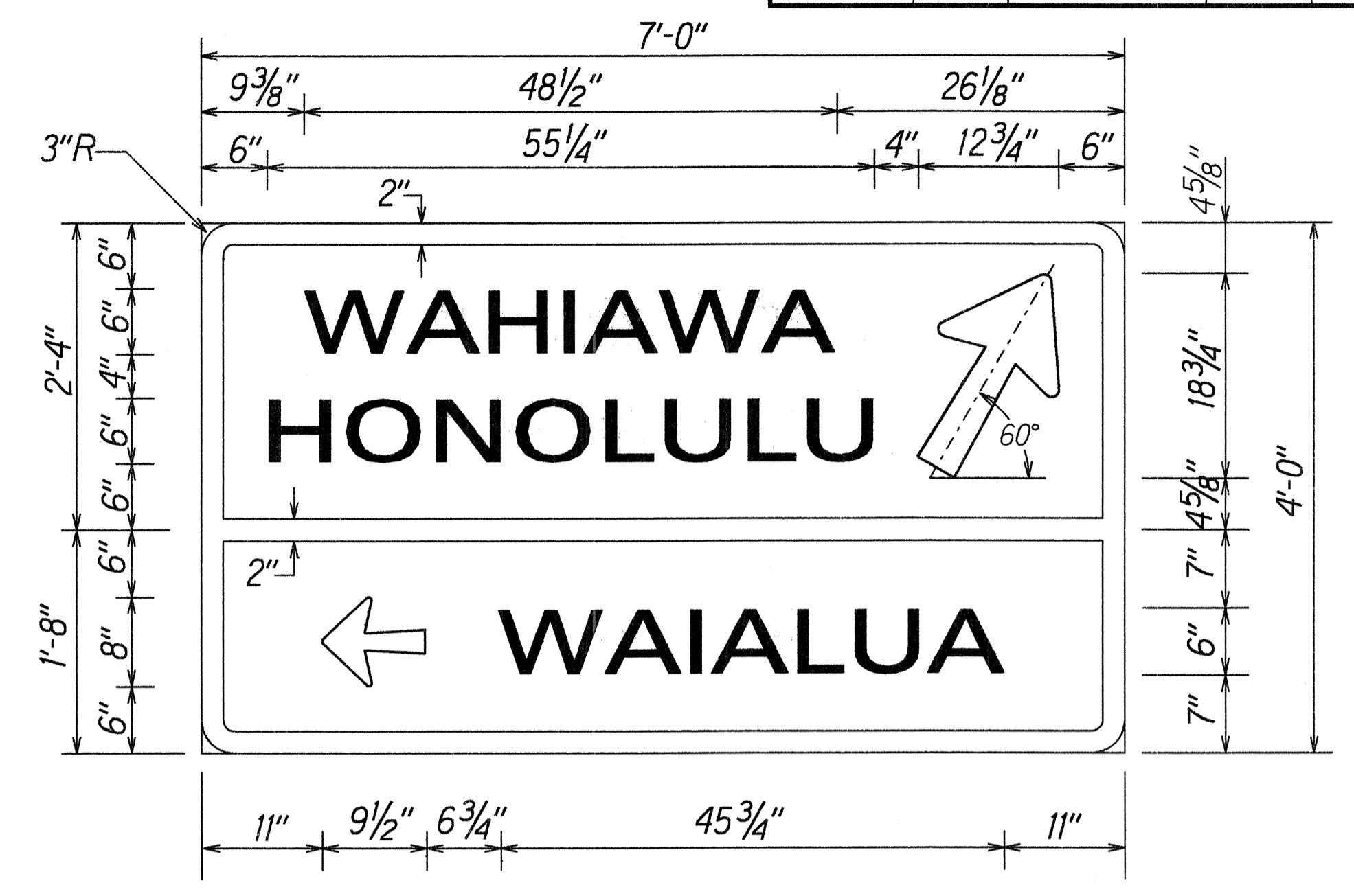
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7500(1)	1996	22	23



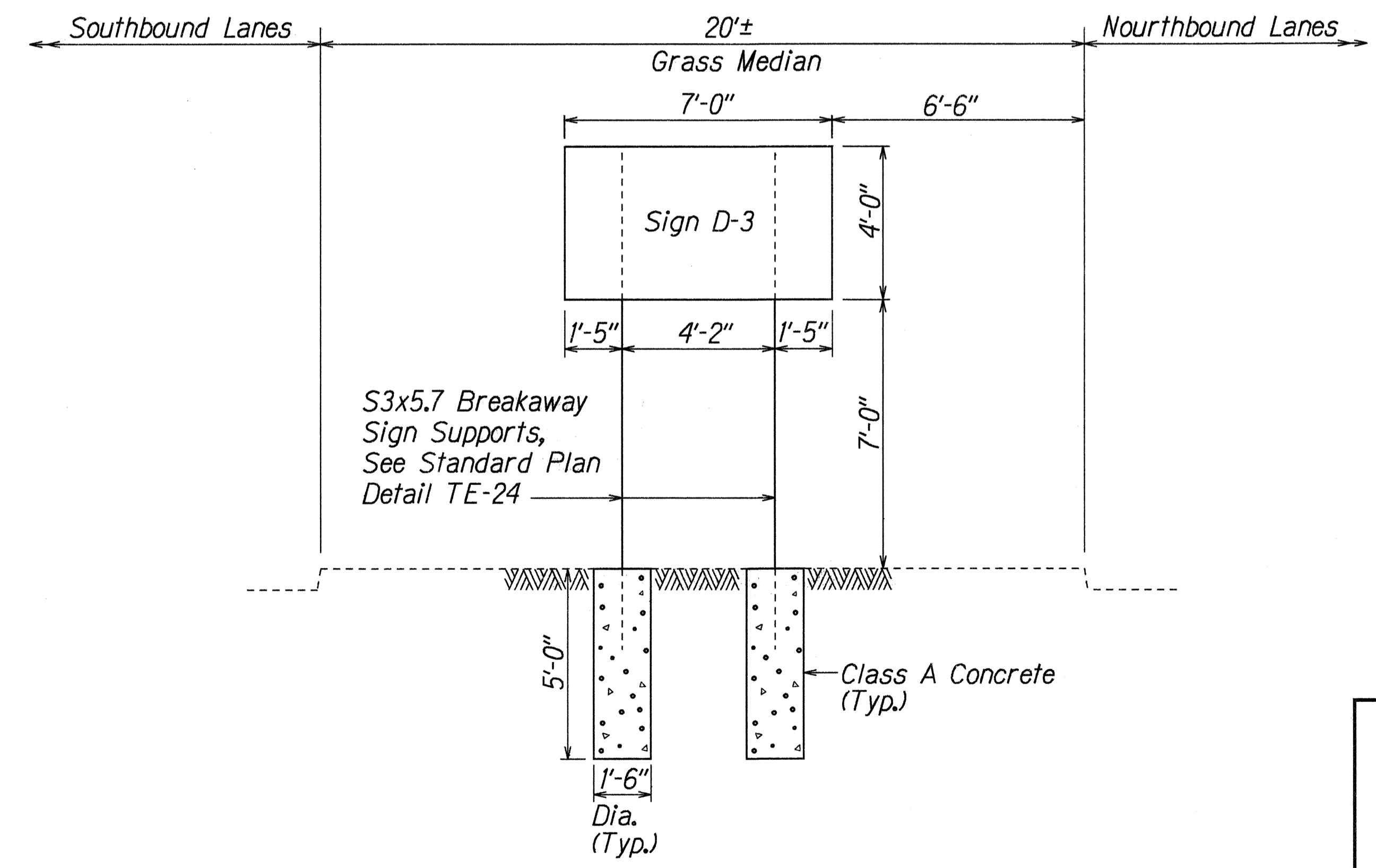
D-1
Scale: 1" = 1'-0"
Use 2.50 lbs./ft. Flanged Channel
3 - Post Installation



D-2
Scale: 1" = 1'-0"
Use 2.50 lbs./ft. Flanged Channel
3 - Post Installation



D-3
Scale: 1" = 1'-0"



SIGN D-3 FRAME LAYOUT
Sta. 49+15±
Scale: 3/8" = 1'-0"

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN DETAILS

KUNIA ROAD RESURFACING
Kunia Gate to Wilikina Drive
Federal-Aid Proj. No. STP-7500(1)
Scale: As Noted Date: Apr., 1996

SHEET No. 78 OF 9 SHEETS

PAVEMENT MARKING SUMMARY	
DESCRIPTION	QUANTITY
PAVEMENT MARKERS	
TYPE A _____	780 EA.
TYPE C _____	690 EA.
TYPE H _____	260 EA.
TAPE - TYPE I OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	340 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	820 L.F.
TAPE - TYPE II OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	9,900 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	9,700 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	3,500 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	180 L.F.
TAPE - TYPE III OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	1,300 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	470 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	550 L.F.
CROSSWALK MARKINGS _____	31 LANES
PAVEMENT ARROW _____	12 EA.
PAVEMENT WORD _____	7 EA.

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	3	1		
R1-2	YIELD	1			
R2-1(35)	SPEED LIMIT 35	4	2		
R3-4		7			
R4-7		2	1		
R4-8		2			
R8-3a	ANYTIME	1	1		
R8-1a	NO PARKING ON GRASS	1	5		
R9-3c-B	STOP FOR PEDESTRIAN IN CROSSWALK	1			
R15-1	UNLAWFUL TO LITTER \$500 FINE		1		
R16-1	BUCKLE UP ITS THE LAW	1			
S1-1		1	1		
W2-2			2		
W3-5	SLOW USE PARKING LIGHTS		1		
W4-2(R)			1		
W6-2			1		
TOTAL		24	17		

CONSTRUCTION SIGN SUMMARY			
SIGN NO.	MESSAGE	W/POSTS	W/O POST
CG20-2a	END ROAD WORK	3	
CW20-1d	ROAD WORK AHEAD	3	
TOTAL		6	

DESTINATION SIGN SUMMARY				
SIGN NO.	MESSAGE	SIZE	NEW PANEL AREA (SQ. FT.)	
			W/O POST	W/POSTS
D-1	SCHOFIELD BARRACKS 	5'-6"x3'-6"		19.25
D-2	SCHOFIELD BARRACKS 	5'-6"x3'-6"		19.25
D-3	WAIHAWA HONOLULU WAIALUA	7'-0"x4'-0"		28.0
TOTAL				66.50

REFLECTOR MARKER SUMMARY		
TYPE	QUANTITY	
	W/O POST	W/STEEL POST
RM-9 (yellow)	2	

SURVEY PLOTTED BY _____ DATE 4/20/96
 DRAWN BY E. A. H. _____
 NOTE BOOK _____
 QUANTITIES BY G. K. H. _____
 CHECKED BY N. M. S. _____
 ORIGINAL PLAN _____
 FEDERAL AID PROJECT NO. STP-7500(1)

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
TRAFFIC SUMMARIES
 KUNIA ROAD RESURFACING
 Kunia Gate to Wilikina Drive
 Federal-Aid Proj. No. STP-7500(1)
 Date: Apr., 1996
 SHEET No. 79 OF 9 SHEETS