

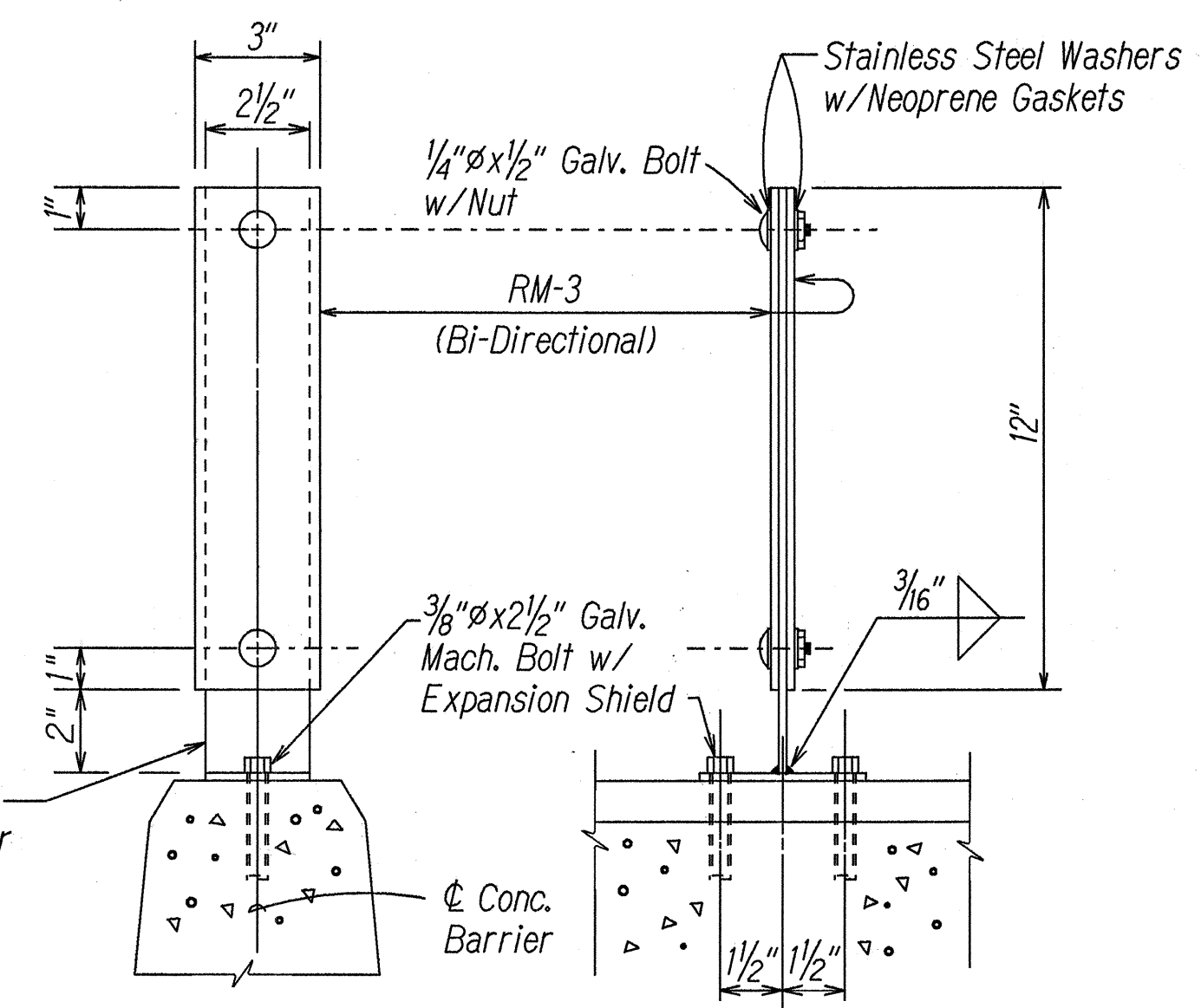
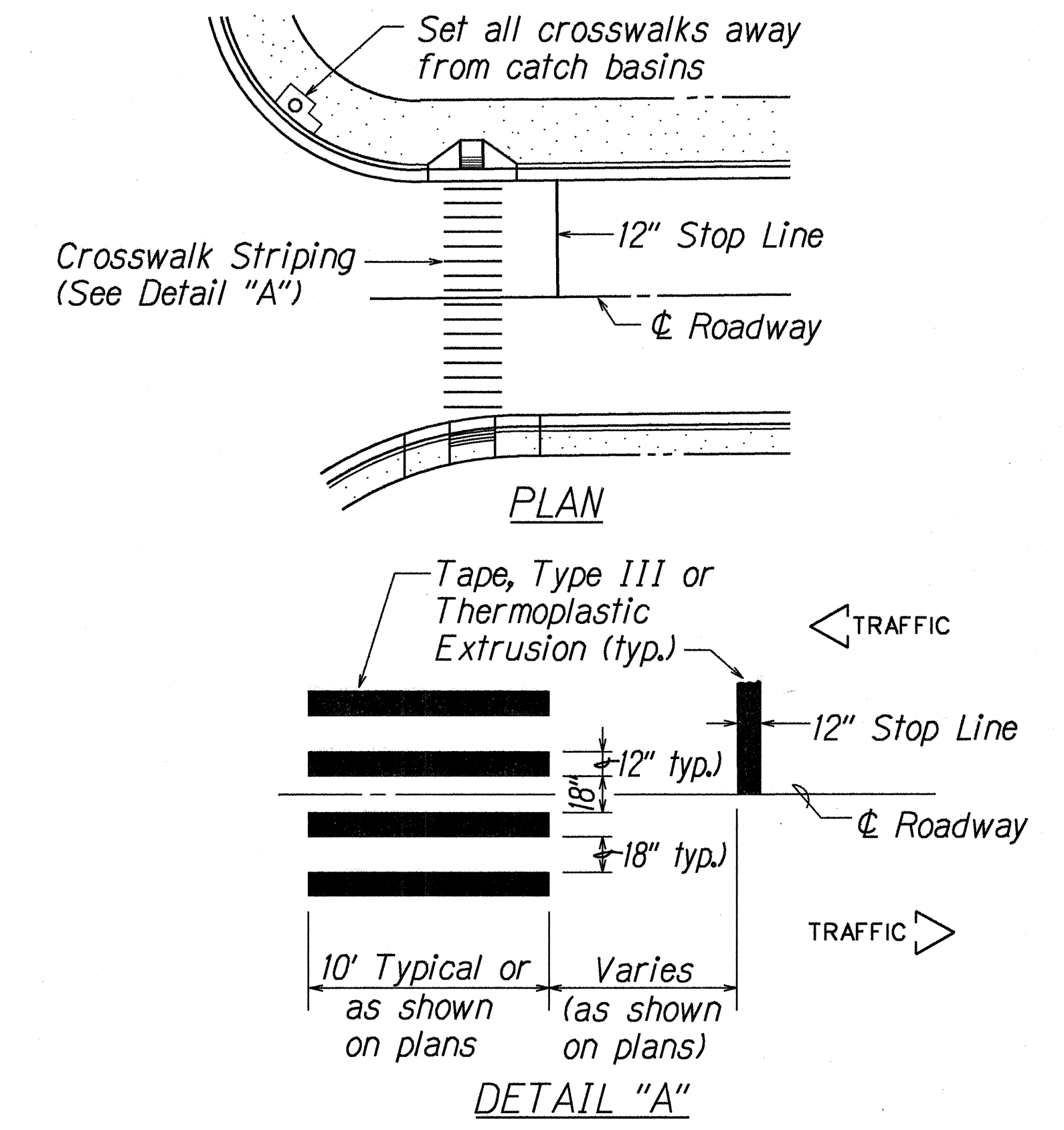
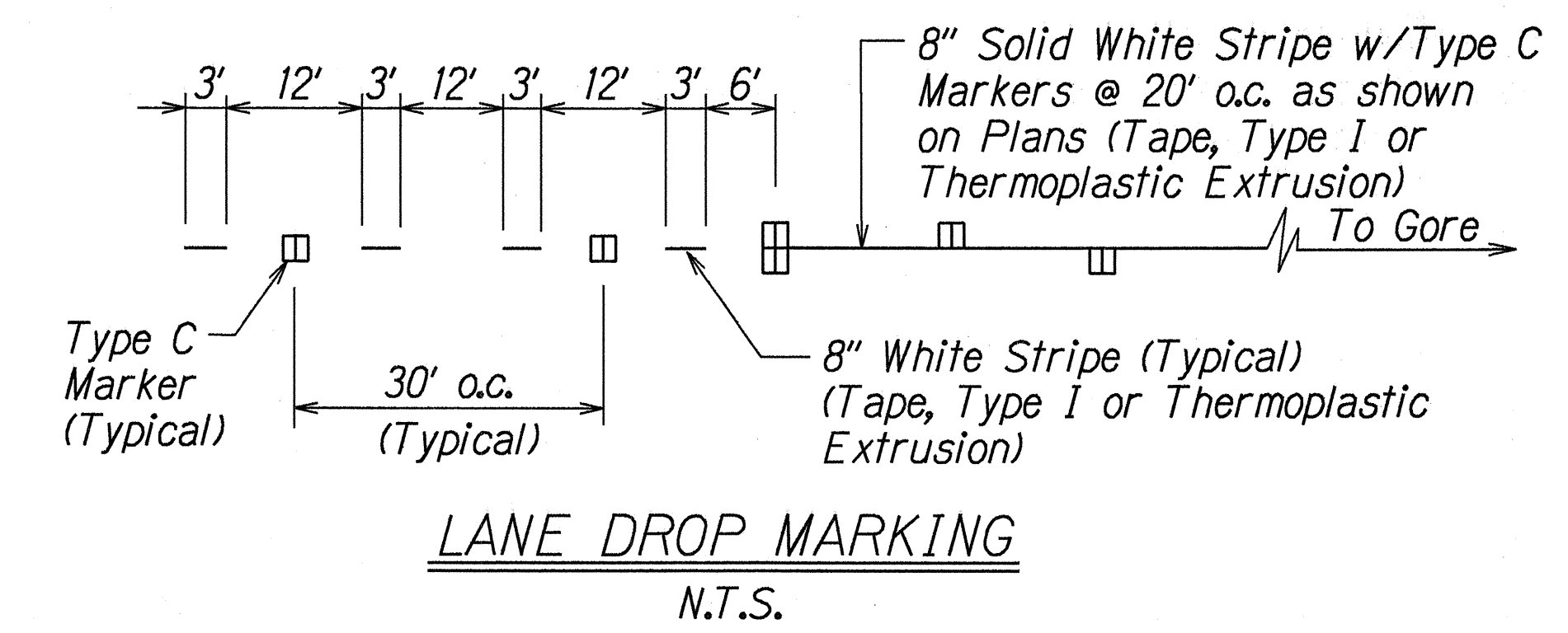
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	196	378

**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)

**REFLECTOR MARKER LEGEND**

- Reflector Marker (RM-2, White) w/Flexible Delineator Post
- Reflector Marker (RM-2, Yellow) w/Flexible Delineator Post
- Reflector Marker (RM-3, Yellow) w/Steel Post
- Reflector Marker (RM-3, Yellow) Bi-Directional Mounted on Concrete Barrier



**NOTE**  
The accepted quantities for the installation of the Reflector Markers mounted on the Concrete Barriers will be paid for at the contract unit price per each, complete in place. The contract unit price paid shall be full compensation for the new Reflector Markers, nuts, bolts, gaskets, washers, supports, brackets, and any necessary hardware, all labor, tools, equipment, and incidentals necessary for the installation of the new Reflector Markers mounted on the Concrete Barrier.

ORIGINAL PLAN	DATE	7/22/98
SURVEY PLOTTED BY		
DESIGNED BY		
QUANTITIES BY		
CHECKED BY		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PAVEMENT MARKING  
LEGEND AND DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)

Scale: As Noted      Date: Oct., 1997

SHEET No. 71 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	197	378

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.
9. Interstate Route Marker Symbols shall conform to details shown on the plans and as specified in the MUTCD.
10. All sign panels shall conform to Section 621 of the Special Provisions and the latest editions and amendments of the following FHWA publications:
  - a. "Manual On Uniform Traffic Control Devices For Streets and Highway (MUTCD)
  - b. "Standard Highway Signs"
  - c. "Standard Alphabets For Highway Signs"
11. Borders, messages, arrows, symbols and shields shall conform to details as shown on the plans and as specified in the MUTCD.
12. Sign messages shall be as indicated on the plan.
13. All panels shall be reflectorized in accordance with Section 712.20 of the Standard Specifications. Minimum width of panels shall be 2 ft. abutting edges of panels shall be in only one direction if vertical abutting edges are used, no horizontal abutting edges shall be allowed and vice versa.
14. All new and relocated signs and markers installed on pipe posts, light standard or expressway sign post are to be mounted with band brackets and steel braces.
15. 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.
16. Removal of existing delineators and posts shall be considered incidental to the various signing items.
17. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.

NOTES (Continued)

18. The Contractor shall install construction signs as noted on the plans. At the project completion, these signs and posts shall become the property of the State. The Contractor shall remove and deliver these signs and posts to a location as directed by the Engineer. The contract price shall be full compensation for all excavation and backfilling, for furnishing, installing, removing and delivering all materials and for all tools, labor and incidentals necessary to complete the work.

EXPRESSWAY (E) AND DESTINATION (D) SIGN NOTES

1. The Contractor shall verify the location and dimensions of existing Sign Panels and supports.
2. New sign panels shall be laminated aluminum or extruded aluminum.
3. Letter Size:
  - a. When letters are all uppercase, use series "E"
  - b. When initial uppercase letter is used in conjunction with lower case letters, use series "E"(M) for uppercase
4. Contractor shall submit all sign splicing details to the Engineer for approval. All backing for signs four (4) feet by six (6) feet or less shall be of one sheet.
5. The amount and center-to-center spacing of Expressway Sign Luminares shall be in accordance with the luminares manufacturer's instructions. Maximum center-to-center spacing of luminares shall be ten (10) feet.
6. Destination and Expressway Sign Posts shall be as noted on the plans
7. Incidental parts and services, including sign lighting system, not shown on the plans or specified but deemed necessary for the sign installation, shall be furnished and installed by the Contractor as part of the work contracted.
8. Removal and disposal of existing sign panels, posts with foundation, luminares and supports will not be paid for separately, but shall be considered incidental to the various signing items.

ORIGINAL PLAN	DATE
SURVEY PLANNED BY	4/18/97
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**NOTES**

**INTERSTATE ROUTE H-1**  
**Kunia Interchange Improvements**  
**F. A. I. Project No. IM-HI-1(219)**  
Date: Oct., 1997

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-K(219)	1998	198	378

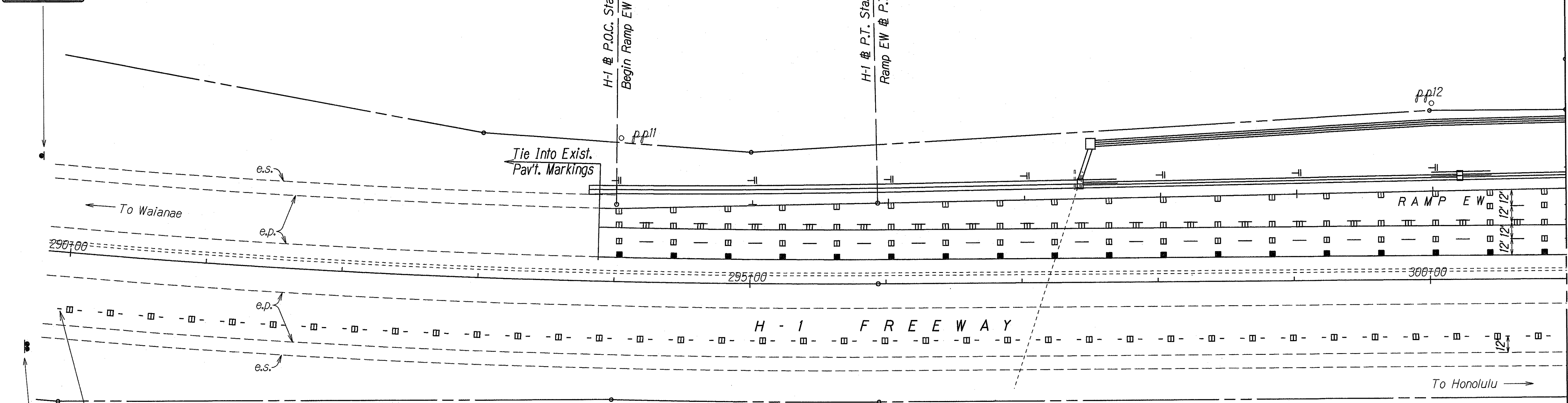
**NOTES:**

1. Install New Sign and Exit Panel Sign on New Sign Structure.
2. □ Install New Luminaires (175-Watt Metal Halide) with New Supports and connect to Roadway Lighting System (see Electrical Plans)

TRUE NORTH  
SCALE: 1" = 40'

H-1 @ Sta. 289+00± Lt.  
Install New Sign w/Post

END ROAD WORK  
CG20-2A  
(48"x24")

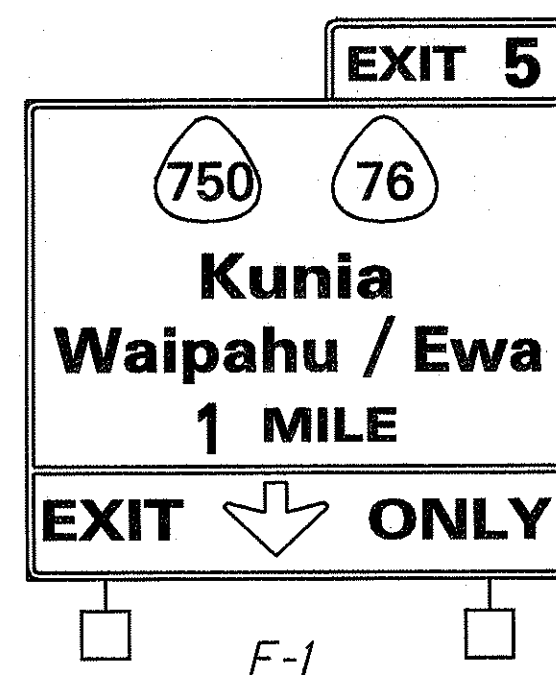


M.L. H-1 @ STA. 301+00  
(See Sheet No. T4)

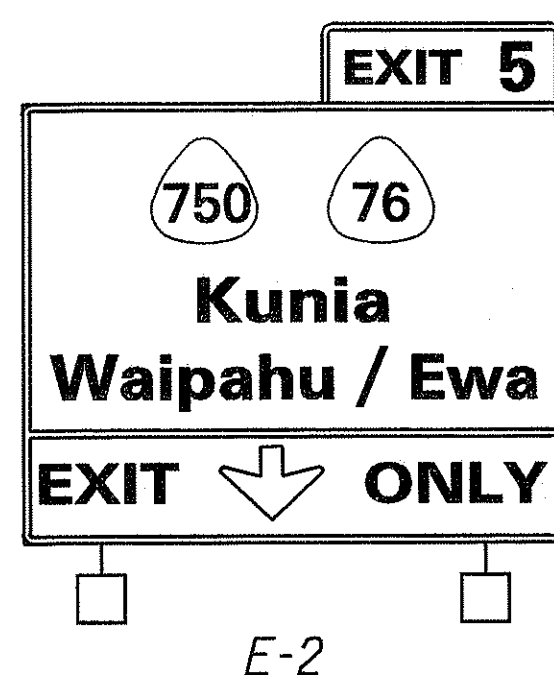
Continue Lane Drop  
Pav't. Marking to  
Sta. 283+87

ROAD WORK AHEAD  
CW20-1Ad  
(48"x48")

H-1 @ Sta. 252+40± Rt.  
Install New Sign w/Posts



H-1 @ Sta. 257+40± Rt.  
For Sign Details & Frame Layout,  
See Sht. Nos. T15, T17 & T18  
See Notes above.

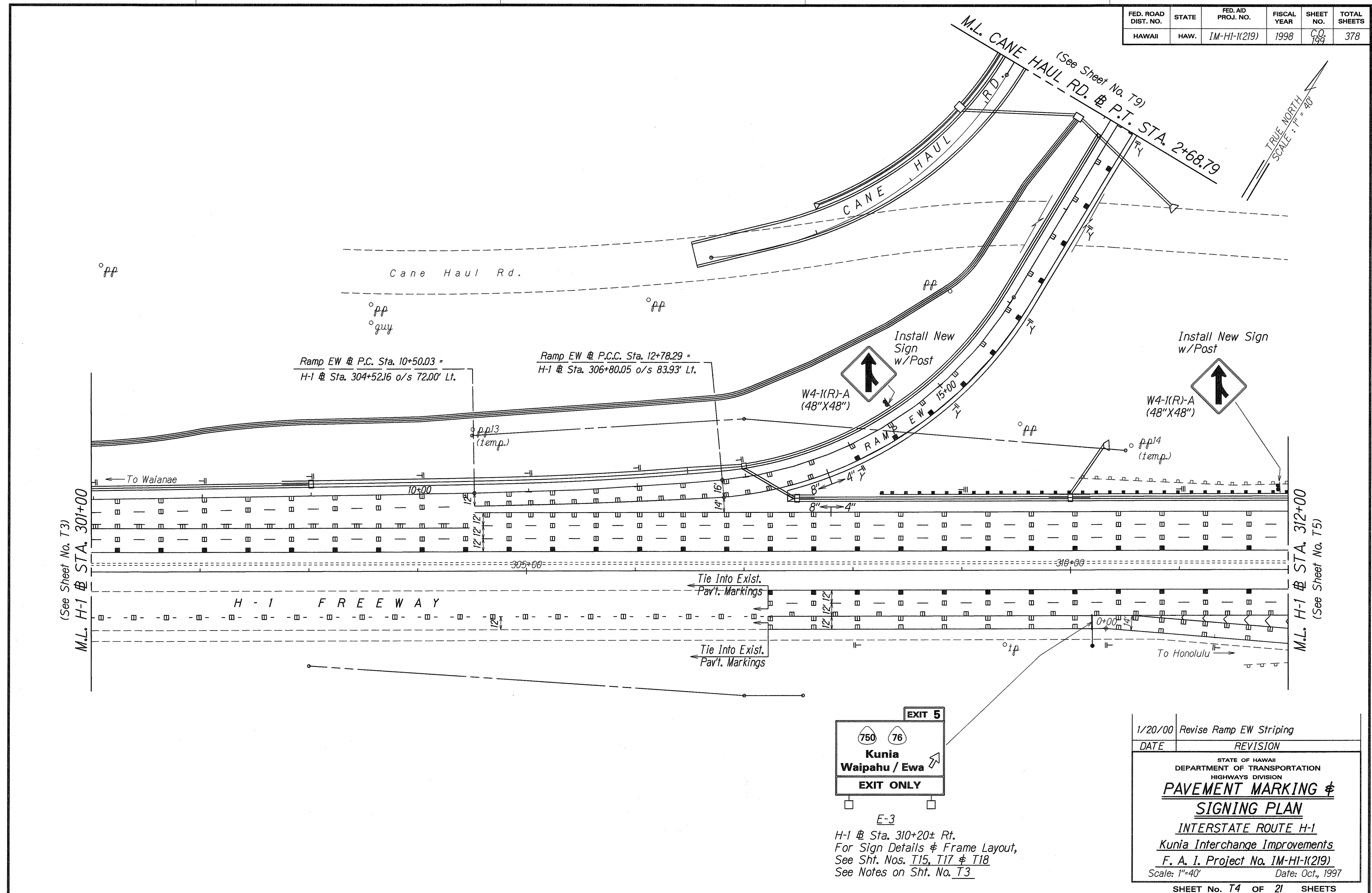


H-1 @ Sta. 283+80± Rt.  
For Sign Details & Frame Layout,  
See Sht. Nos. T15, T17 & T18  
See Notes above.

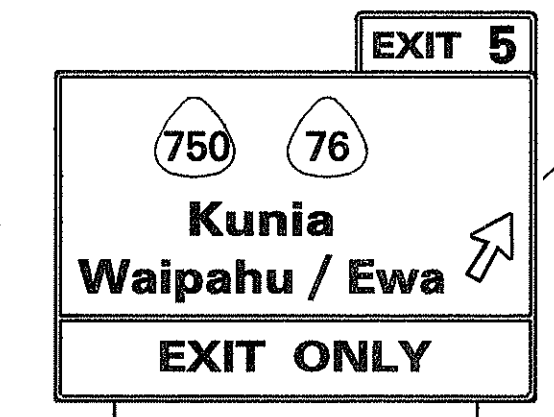
SURVEY PLOTTED BY	DATE	1/20/98
DRAWN BY		
NOTE BOOK		
DESIGNED BY		
QUANTITIES BY		
CHECKED BY		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**PAVEMENT MARKING &  
SIGNING PLAN**  
INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-K(219)  
Scale: 1"=40' Date: Oct., 1997  
SHEET No. T3 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 199	378



SURVEY PLOTTED BY	DATE
DRAWN BY	1/20/00
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
FILED BY	
CHECKED BY	

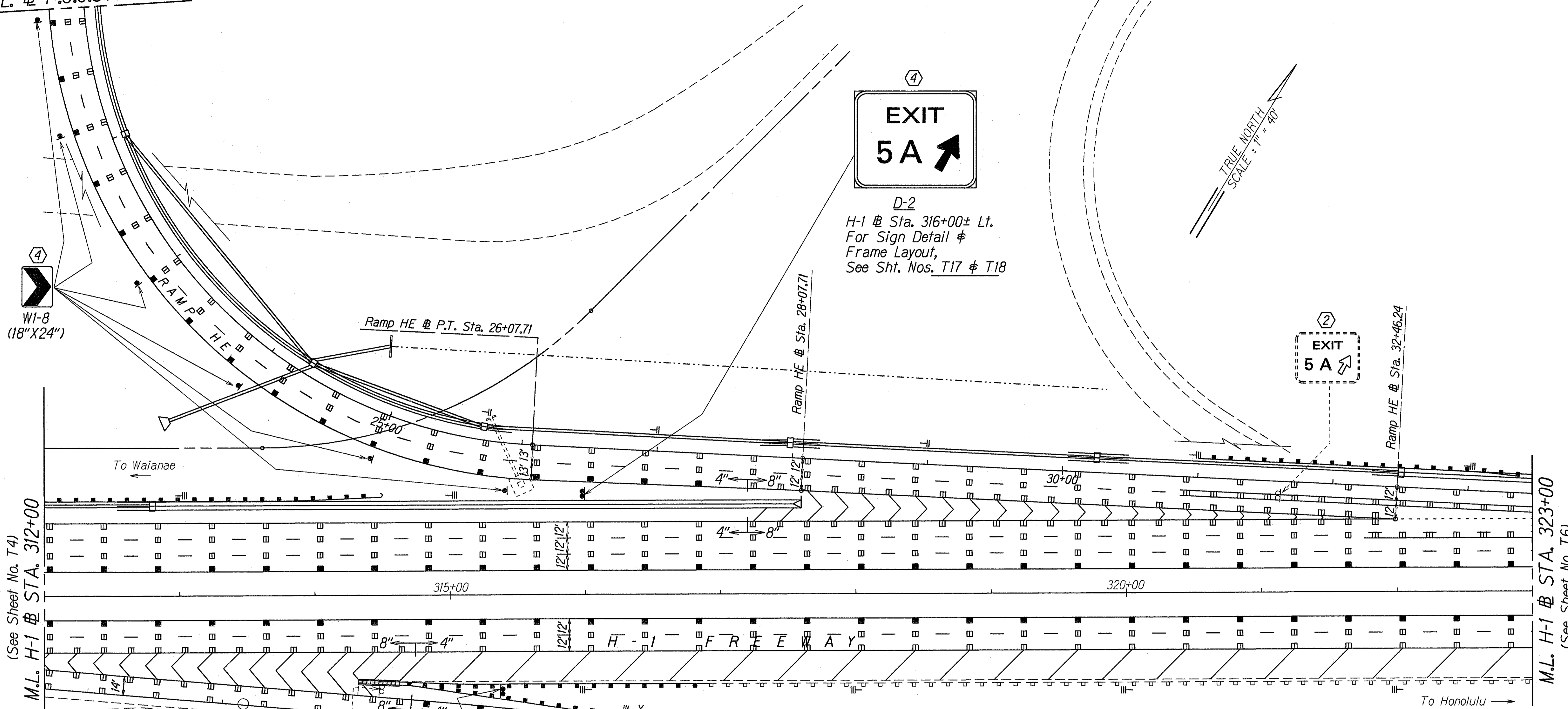


E-3  
 H-1 Sta. 310+20± Rt.  
 For Sign Details & Frame Layout,  
 See Sht. Nos. T15, T17 & T18  
 See Notes on Sht. No. T3

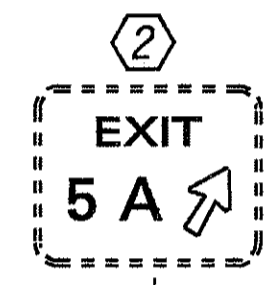
1/20/00	Revise Ramp EW Striping
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>	
INTERSTATE ROUTE H-1 Kunia Interchange Improvements	
F. A. I. Project No. IM-HI-1(219)	
Scale: 1"=40'	Date: Oct., 1997
SHEET No. T4 OF 21 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	200	378

(See Sheet No. T8)  
M.L. @ P.O.C. STA. 21+00



D-2  
H-1 @ Sta. 316+00± Lt.  
For Sign Detail &  
Frame Layout,  
See Sht. Nos. T17 & T18



Ramp HE @ Sta. 32+46.24

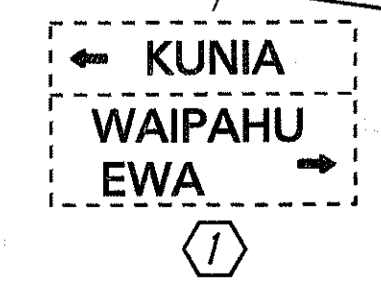


W1-8  
(18"X24")



D-1  
H-1 @ Sta. 315+35± Rt.  
For Sign Detail & Frame Layout,  
See Sht. Nos. T17 & T18

- KEY:
- ① Exist. Sign(s) & Post(s) to Remain
  - ② Remove Exist. Sign(s) w/Post(s)
  - ④ Install New Sign(s) w/Post(s)



← KUNIA  
WAIPAHU  
EWA →

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	1/20/05
DRAWN BY	AL/ACI
NOTE BOOK	
DESIGNED BY	G. K. K. K.
QUANTITIES BY	
CHECKED BY	
NO.	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**PAVEMENT MARKING &  
SIGNING PLAN**  
INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)  
Scale: 1"=40' Date: Oct., 1997

**KEY:**

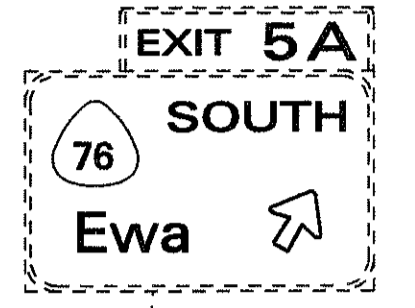
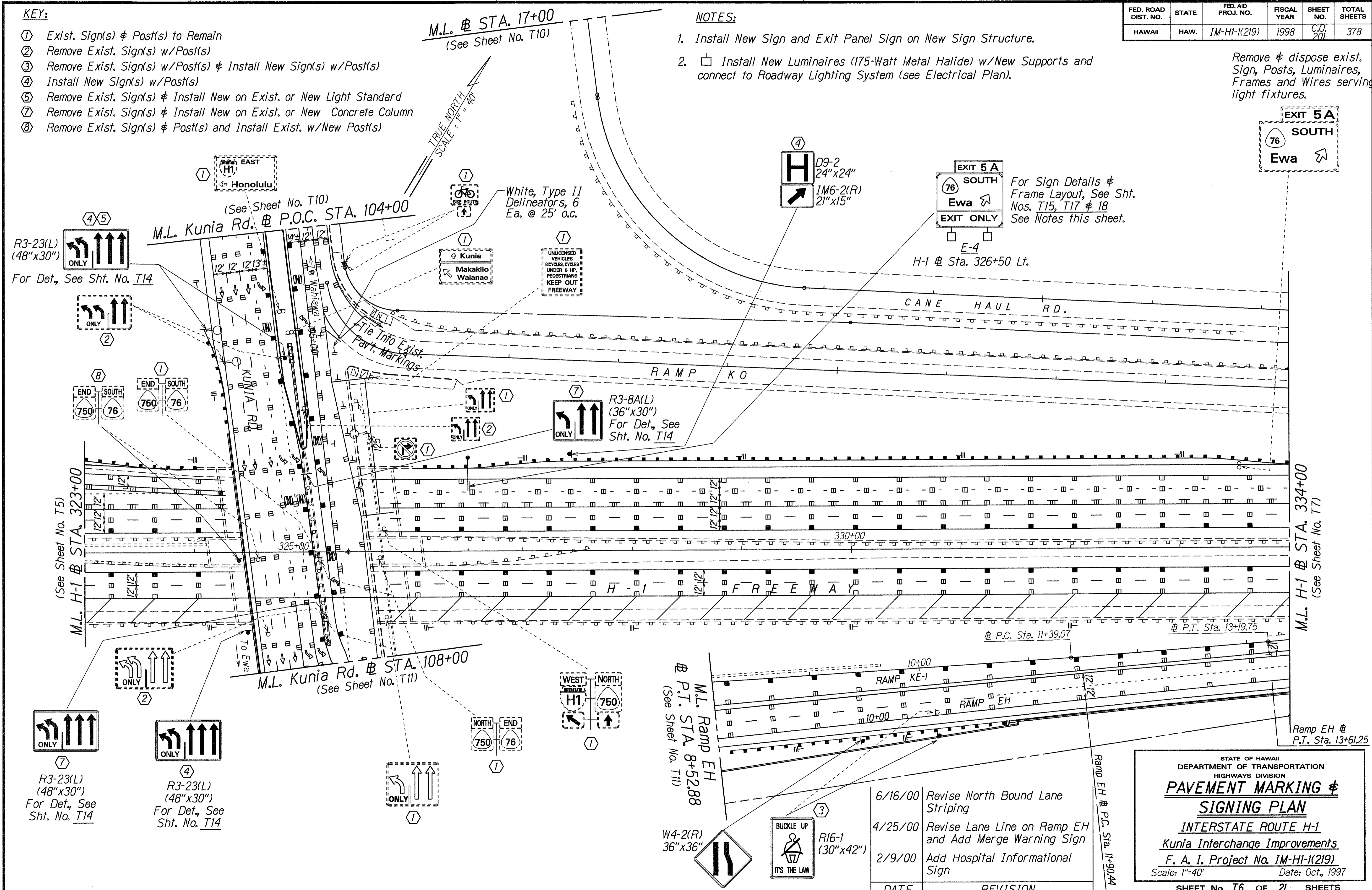
- ① Exist. Sign(s) & Post(s) to Remain
- ② Remove Exist. Sign(s) w/Post(s)
- ③ Remove Exist. Sign(s) w/Post(s) & Install New Sign(s) w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. or New Light Standard
- ⑦ Remove Exist. Sign(s) & Install New on Exist. or New Concrete Column
- ⑧ Remove Exist. Sign(s) & Post(s) and Install Exist. w/New Post(s)

**NOTES:**

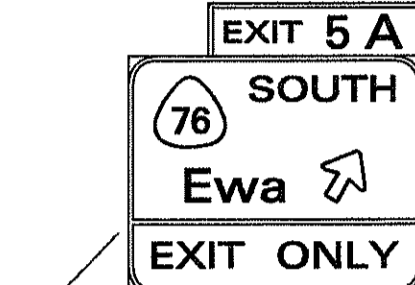
- 1. Install New Sign and Exit Panel Sign on New Sign Structure.
- 2. □ Install New Luminaires (175-Watt Metal Halide) w/New Supports and connect to Roadway Lighting System (see Electrical Plan).

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 201	378

Remove & dispose exist. Sign, Posts, Luminaires, Frames and Wires serving light fixtures.



For Sign Details & Frame Layout, See Sht. Nos. T15, T17 & 18 See Notes this sheet.



H-1 # Sta. 326+50 Lt.

White, Type II Delineators, 6 Ea. @ 25' o.c.

R3-8A(L) (36"x30") For Det., See Sht. No. T14

R3-23(L) (48"x30") For Det., See Sht. No. T14

R3-23(L) (48"x30") For Det., See Sht. No. T14

R3-23(L) (48"x30") For Det., See Sht. No. T14

W4-2(R) 36"x36"

R16-1 (30"x42")

DATE	REVISION
6/16/00	Revise North Bound Lane Striping
4/25/00	Revise Lane Line on Ramp EH and Add Merge Warning Sign
2/9/00	Add Hospital Informational Sign

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

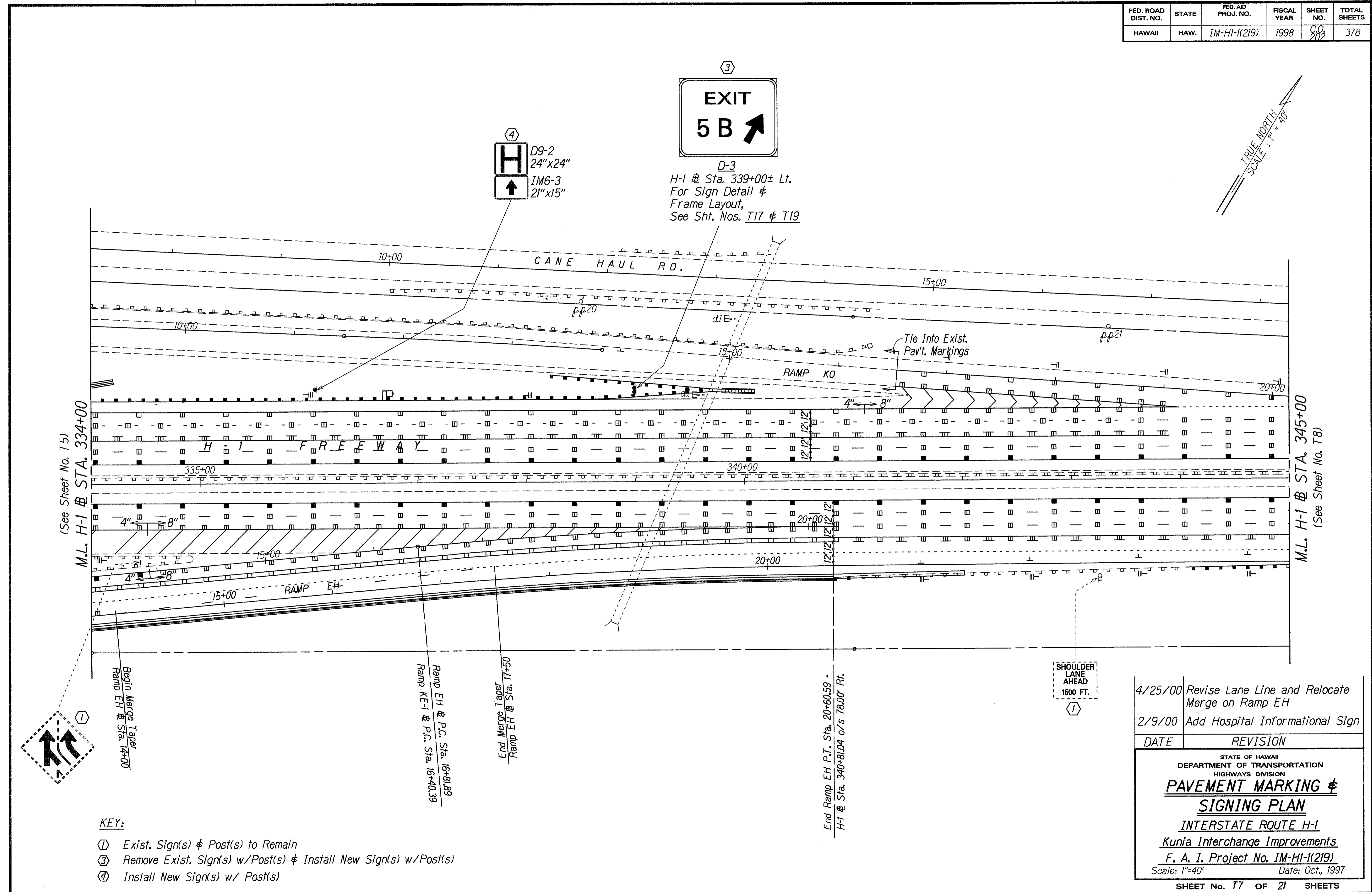
**PAVEMENT MARKING & SIGNING PLAN**

INTERSTATE ROUTE H-1  
Kunua Interchange Improvements  
F. A. I., Project No. IM-HI-1(219)  
Scale: 1"=40' Date: Oct., 1997

SHEET No. 76 OF 21 SHEETS

SURVEY PLOTTED BY	DATE	11/20/98
DRAWN BY	E. Agi	
NOTE BOOK	No. 101	
QUANTITIES BY	G. Kishitani	
CHECKED BY	S. dthmp44	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 202	378



TRUE NORTH  
SCALE: 1" = 40'

3  
**EXIT**  
**5 B** ↗

4  
D9-2  
24" x 24"  
IM6-3  
21" x 15"

D-3  
H-1 @ Sta. 339+00± Lt.  
For Sign Detail &  
Frame Layout,  
See Sht. Nos. T17 & T19

(See Sheet No. T5)  
M.L. H-1 @ STA. 334+00

M.L. H-1 @ STA. 345+00  
(See Sheet No. T8)

SURVEY PLOTTED BY	DATE
DRAWN BY	7/20/98
NOTE BOOK	
DESIGNED BY	G. Kaseh
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NO. CHANGES	

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
  - ③ Remove Exist. Sign(s) w/Post(s) & Install New Sign(s) w/Post(s)
  - ④ Install New Sign(s) w/ Post(s)

4/25/00	Revise Lane Line and Relocate Merge on Ramp EH
2/9/00	Add Hospital Informational Sign
DATE	REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

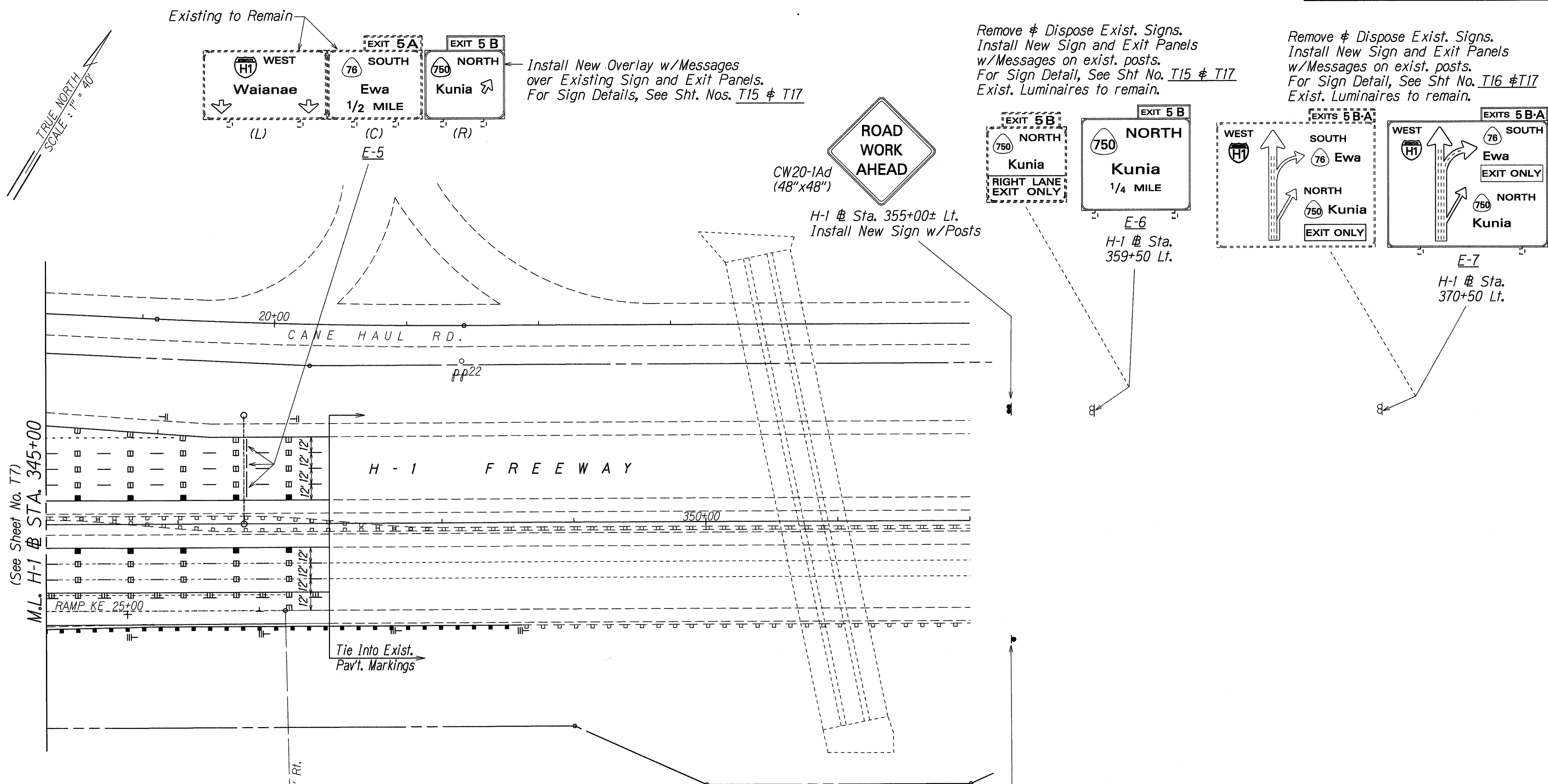
**PAVEMENT MARKING &  
SIGNING PLAN**

**INTERSTATE ROUTE H-1**  
**Kunia Interchange Improvements**  
**F. A. I. Project No. IM-HI-1(219)**  
Scale: 1"=40' Date: Oct., 1997

SHEET No. 77 OF 21 SHEETS

C.O. 202

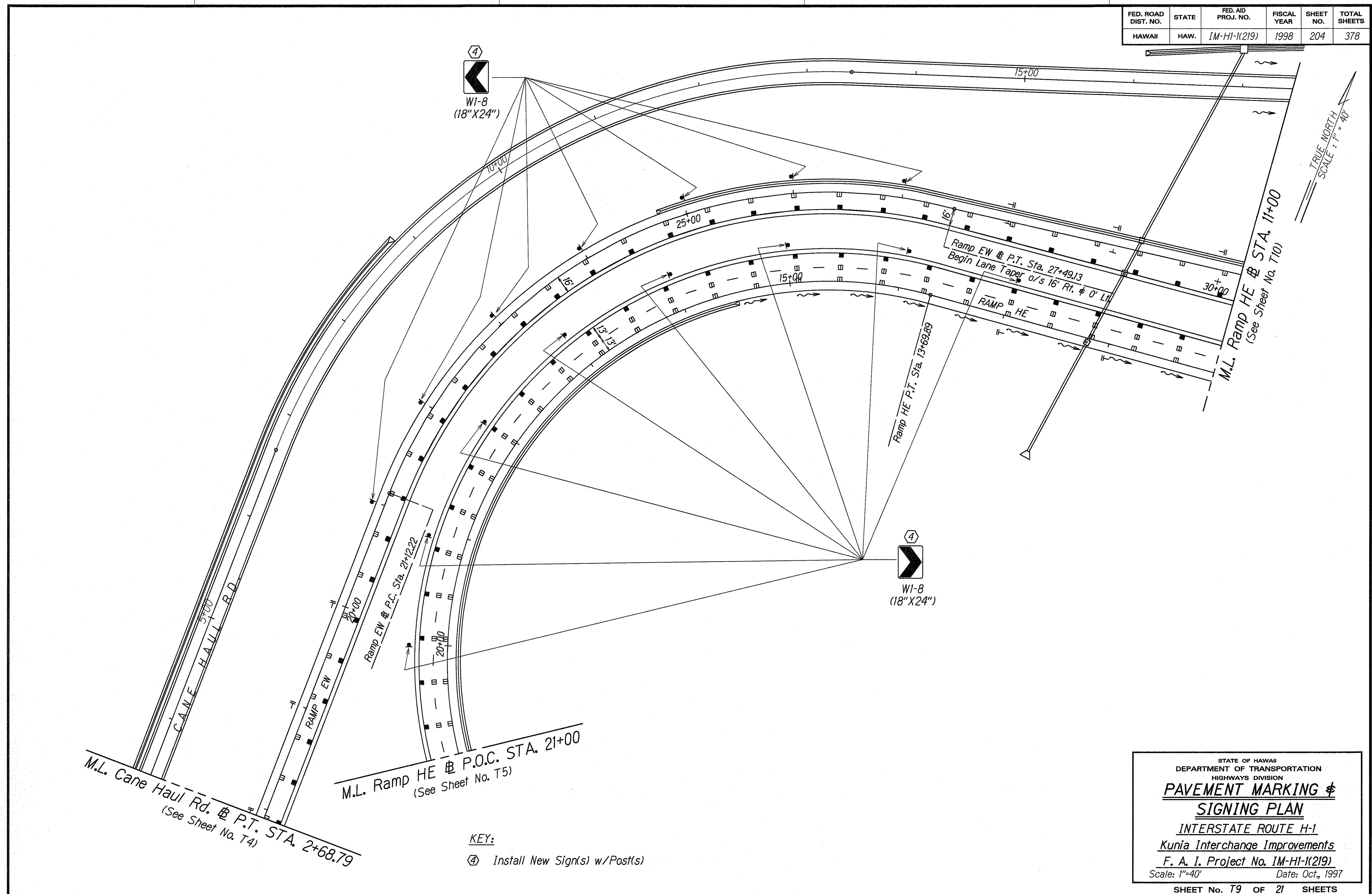
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 203	378



SURVEY PLOTTED BY	DATE
DRAWN BY	7/20/98
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
FILE NO.	
DATE	

5/22/00	Revise Route Marking on Sign E-5 and E-7
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>	
INTERSTATE ROUTE H-1 Kunia Interchange Improvements	
F. A. I. Project No. IM-HI-1(219)	
Scale: 1"=40'	Date: Oct., 1997
SHEET No. 78 OF 21 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	204	378



ORIGINAL PLAN	DATE
DESIGNED BY: G. KISHI	7/20/96
DESIGNED BY: G. KISHI	
QUANTITIES BY: S. SHIBATA	
CHECKED BY:	

KEY:  
 ④ Install New Sign(s) w/Post(s)

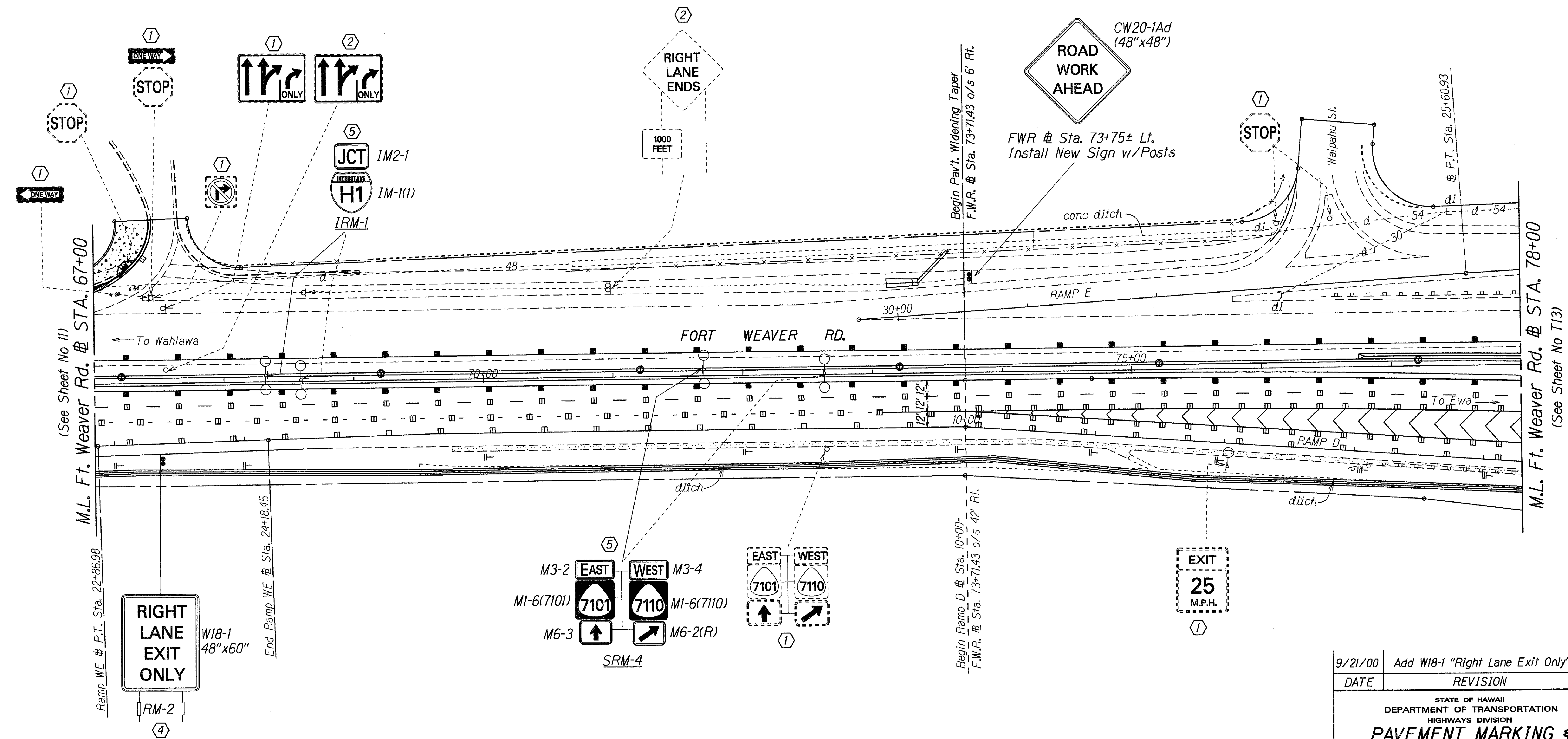
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
 INTERSTATE ROUTE H-1  
 Kunia Interchange Improvements  
 F. A. I. Project No. IM-HI-1(219)  
 Scale: 1"=40' Date: Oct., 1997  
 SHEET No. T9 OF 21 SHEETS





FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 207	378

TRUE NORTH  
SCALE: 1" = 40'



SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
  - ② Remove Exist. Sign(s) w/Post(s)
  - ④ Install New Sign(s) w/Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New on Exist. or New Light Standard

9/21/00	Add W18-1 "Right Lane Exit Only" Sign
DATE	REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

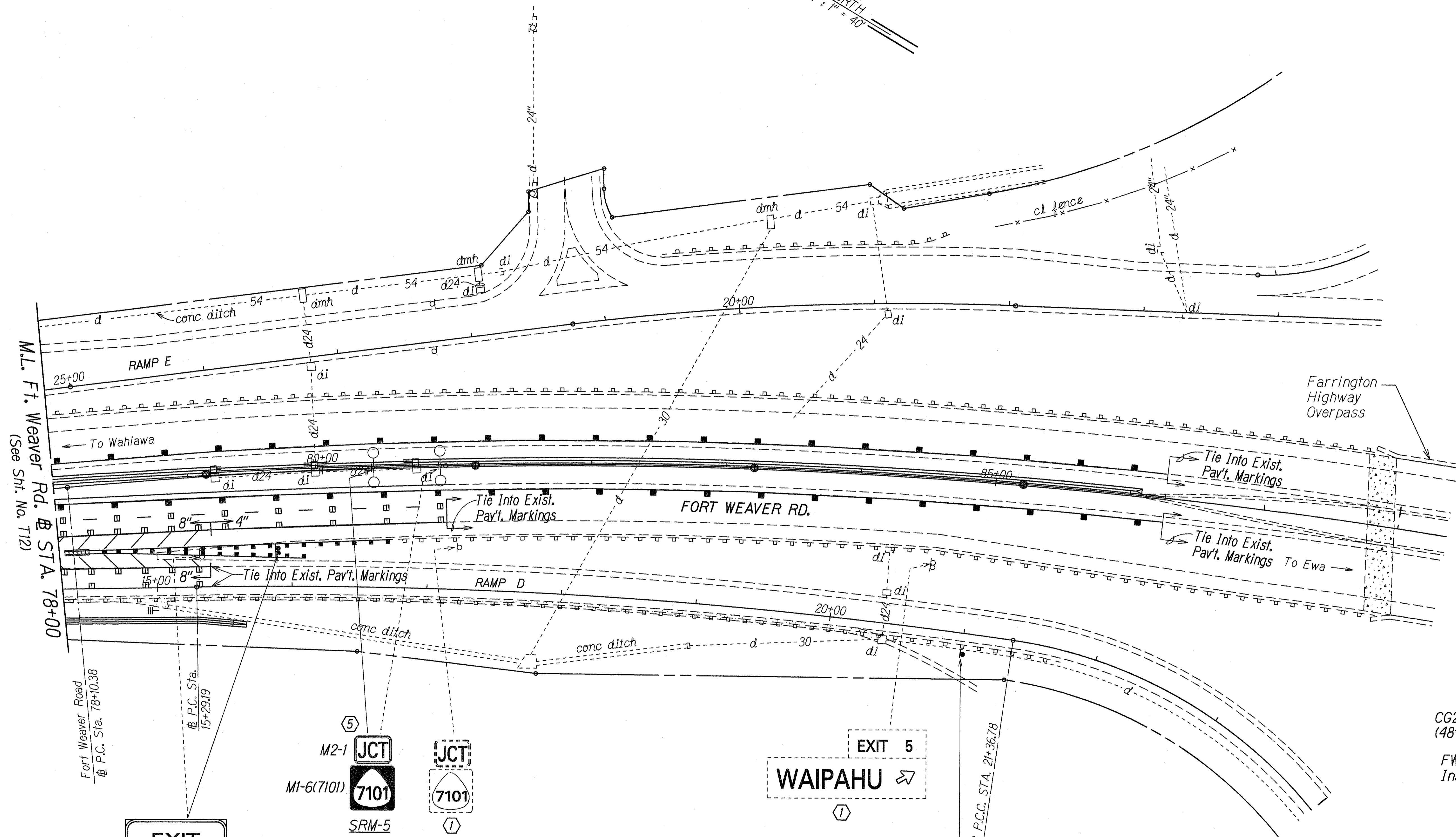
**PAVEMENT MARKING & SIGNING PLAN**

**INTERSTATE ROUTE H-1**  
**Kunia Interchange Improvements**  
**F. A. I. Project No. IM-HI-1(219)**  
Scale: 1"=40' Date: Oct., 1997

SHEET No. T12 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1M-HI-1(219)	1998	208	378

TRUE NORTH  
SCALE: 1" = 40'

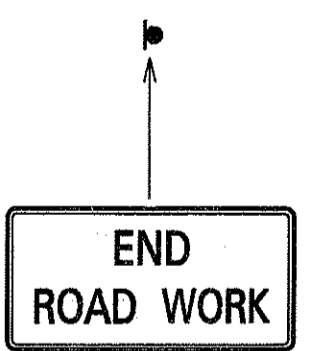


FWR @ Sta. 91+00± Lt.  
Install New Sign w/Post

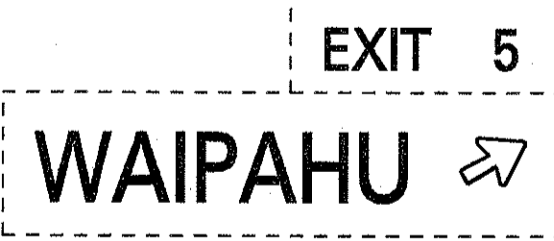


CW20-1Ad (48"x48")

CG20-2A (48"x24")  
END ROAD WORK  
FWR @ Sta. 91+50± Rt.  
Install New Sign w/Post

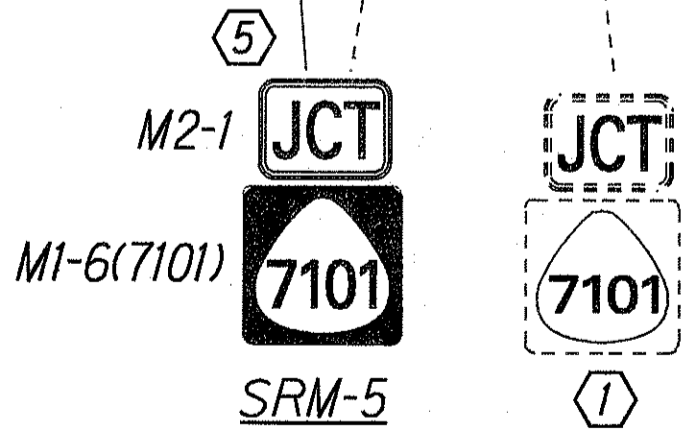


CG20-2A (48"x24")  
END ROAD WORK  
Ramp D @ Sta. 21+00± Rt.  
Install New Sign w/Posts



D-6  
FWR @ Sta. 79+60±  
Remove & Dispose Exist. Sign & Posts. Install New Sign w/ Posts. For Sign Detail & Frame Layout, See Sht. Nos. T17 & T19

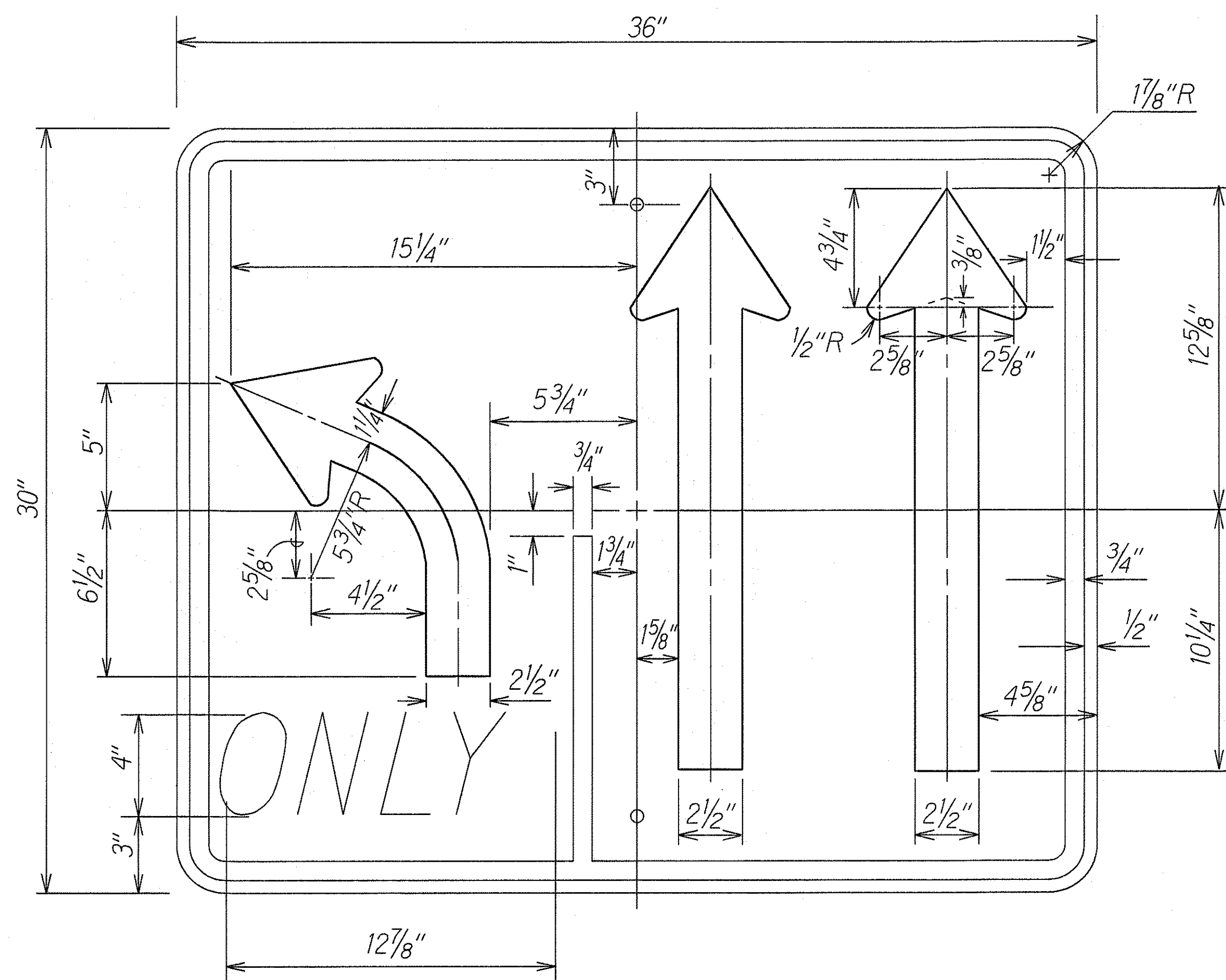
KEY:  
① Exist. Sign(s) & Post(s) to Remain  
⑤ Remove Exist. Sign(s) & Install New on Exist. or New Light Standard



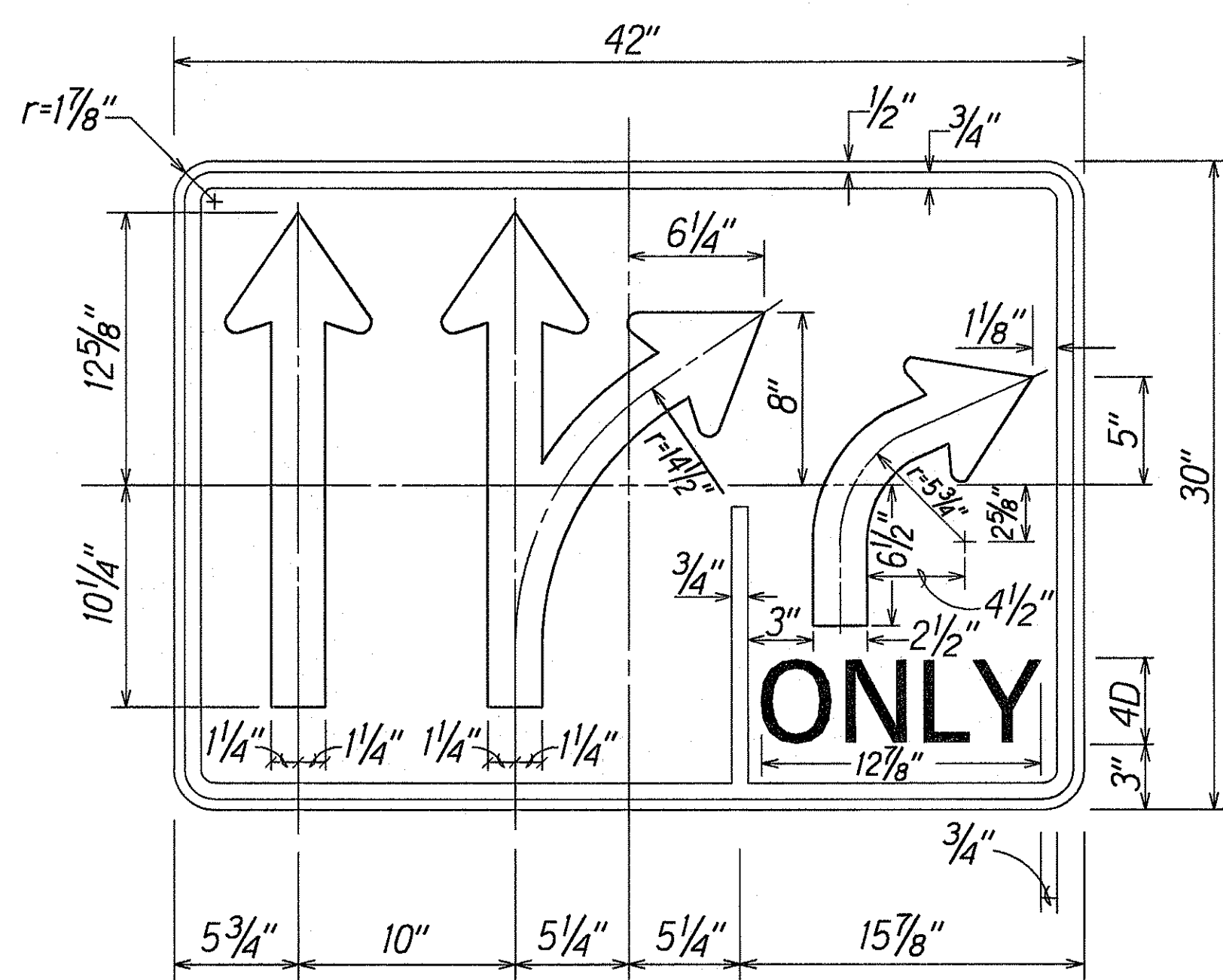
DATE	1/22/98
SURVEY PLOTTED BY	
DESIGNED BY	G. Kakahi
QUANTITIES BY	
CHECKED BY	N. Shimizu
NOTE BOOK	
ORIGINAL PLAN	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)  
Scale: 1"=40' Date: Oct., 1997  
SHEET No. T13 OF 21 SHEETS

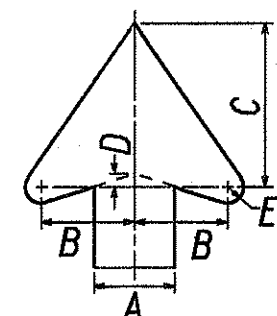
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	209	378



R3-8A(L)  
Not to Scale

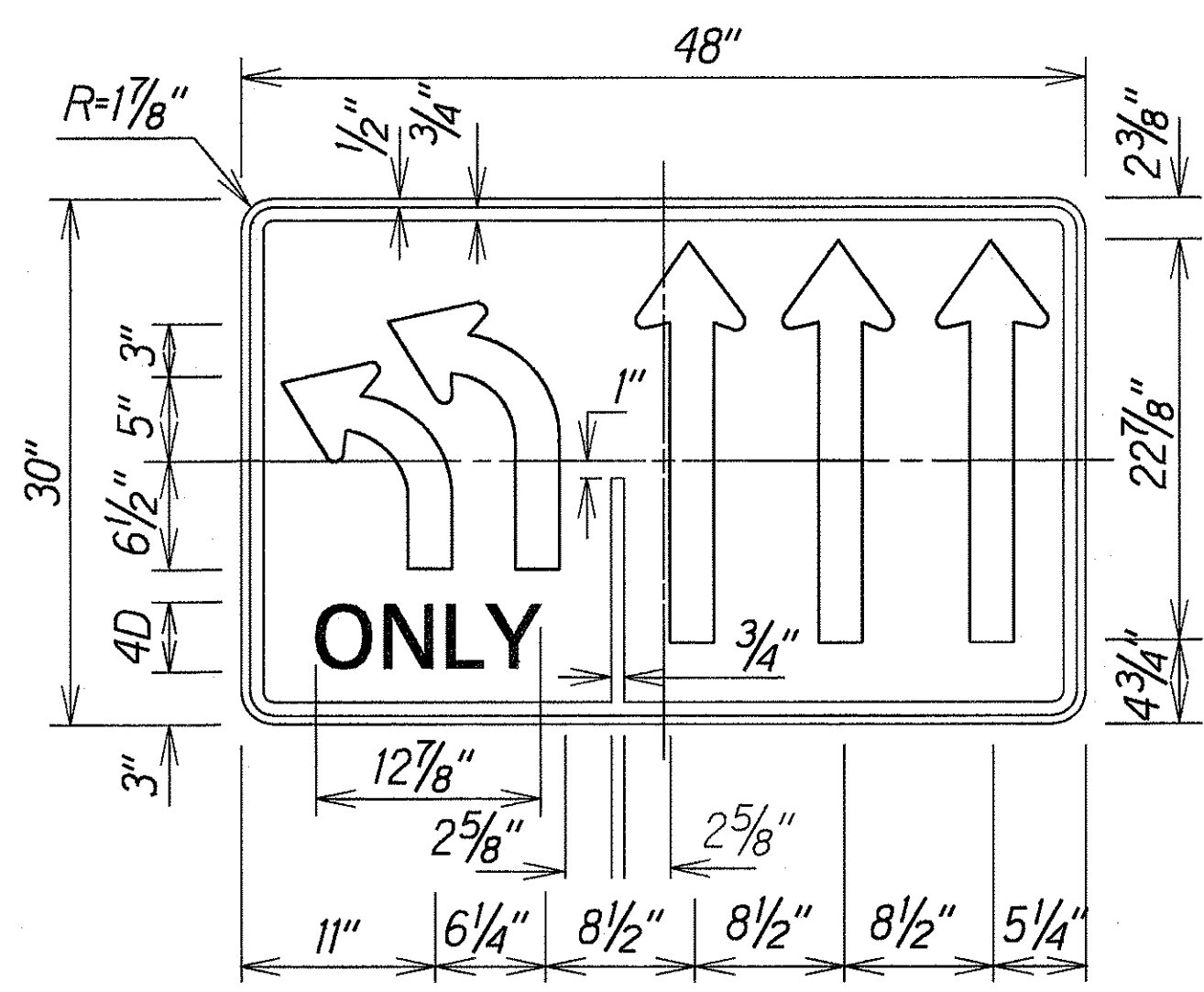


LEGEND - BLACK (NON-REFL)  
BACKGROUND - WHITE (REFL)



ARROW DIMENSIONS (Inches)				
A	B	C	D	E
2 1/2	2 7/8	5 1/16	3/8	1/2

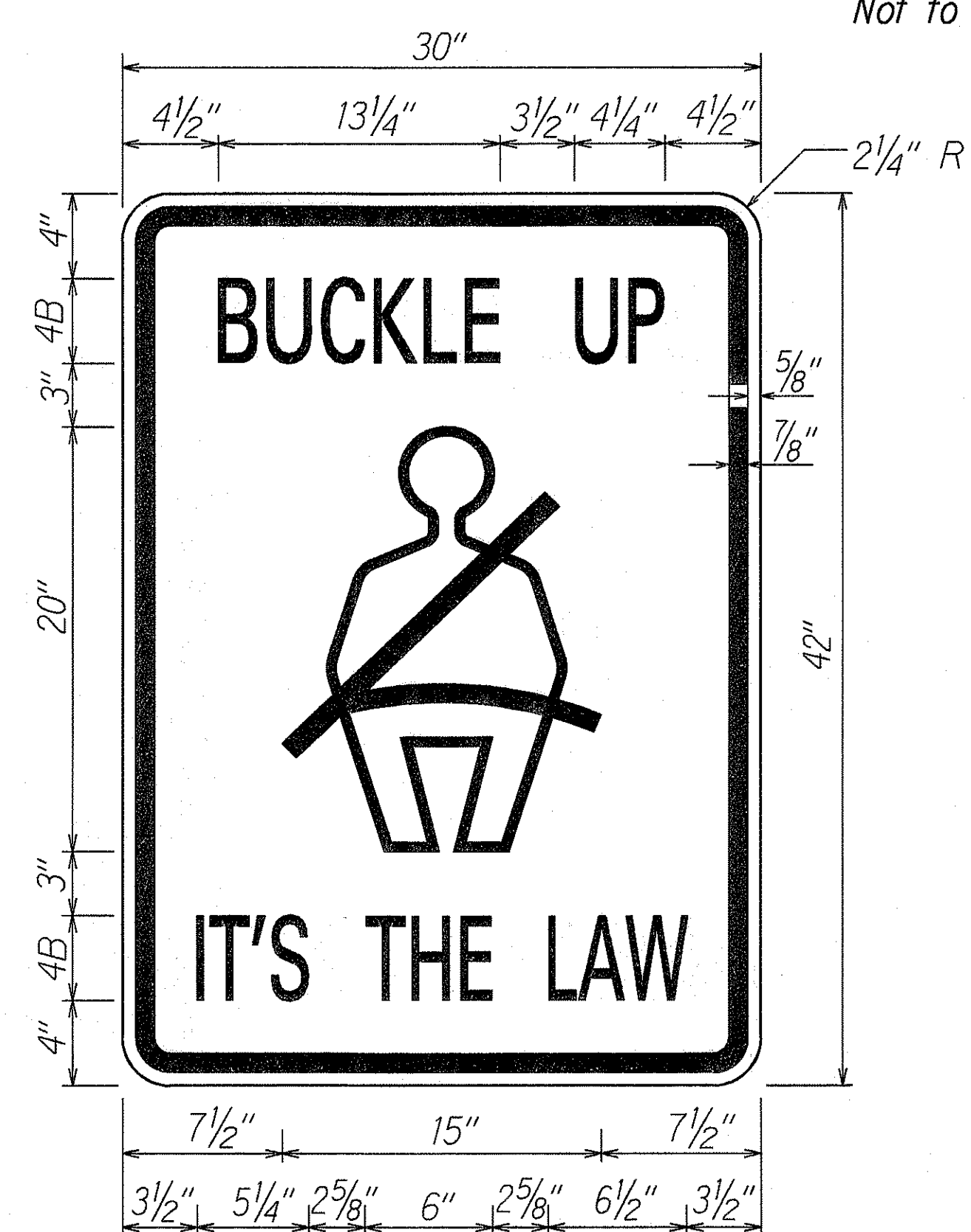
R3-19(R)  
Not to Scale



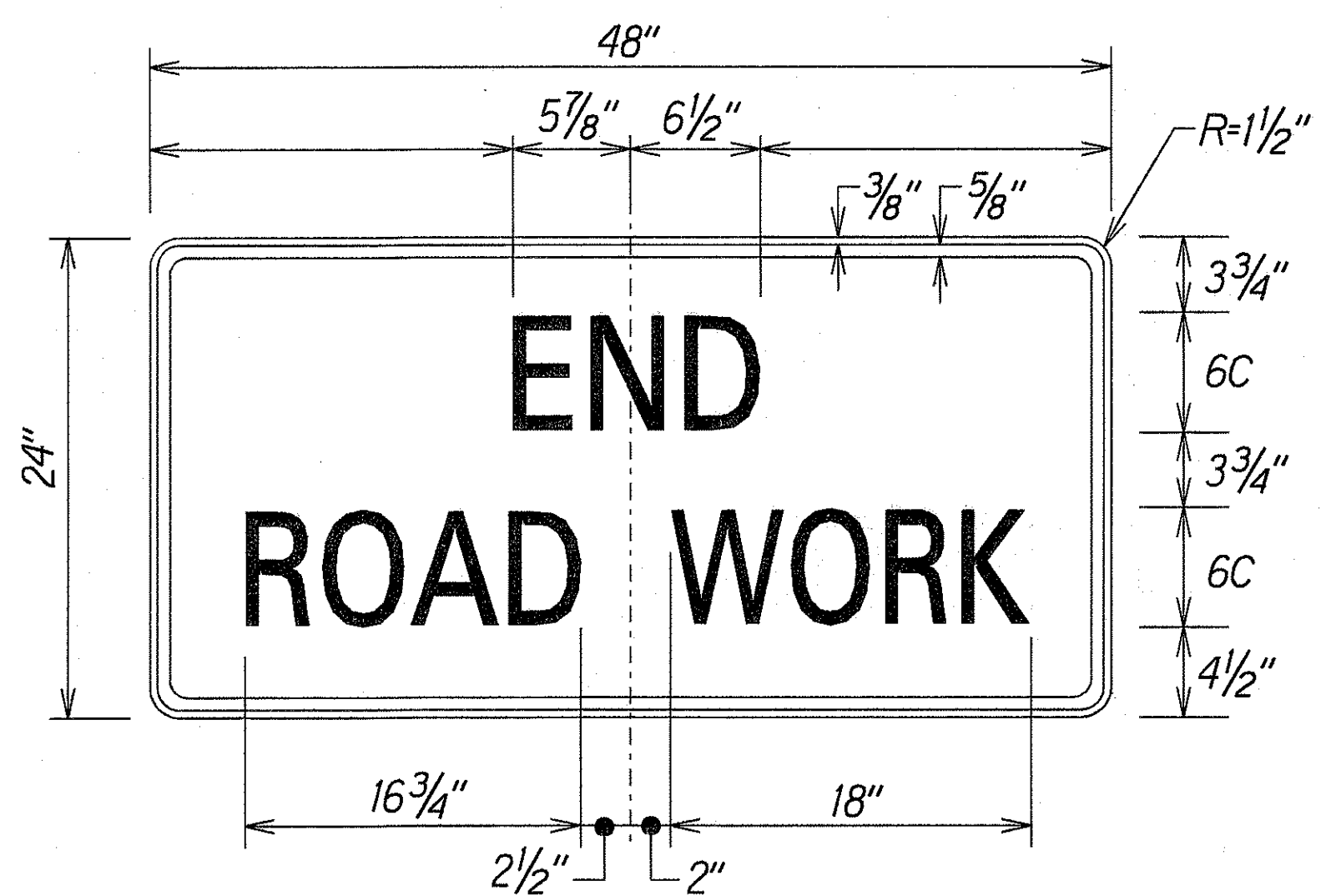
NOTE:

1. Sign R3-23(L) is a variation of Sign R3-8. Plate and arrow details shall conform to Sign R3-8.

SIGN R3-23(L)  
Not to Scale

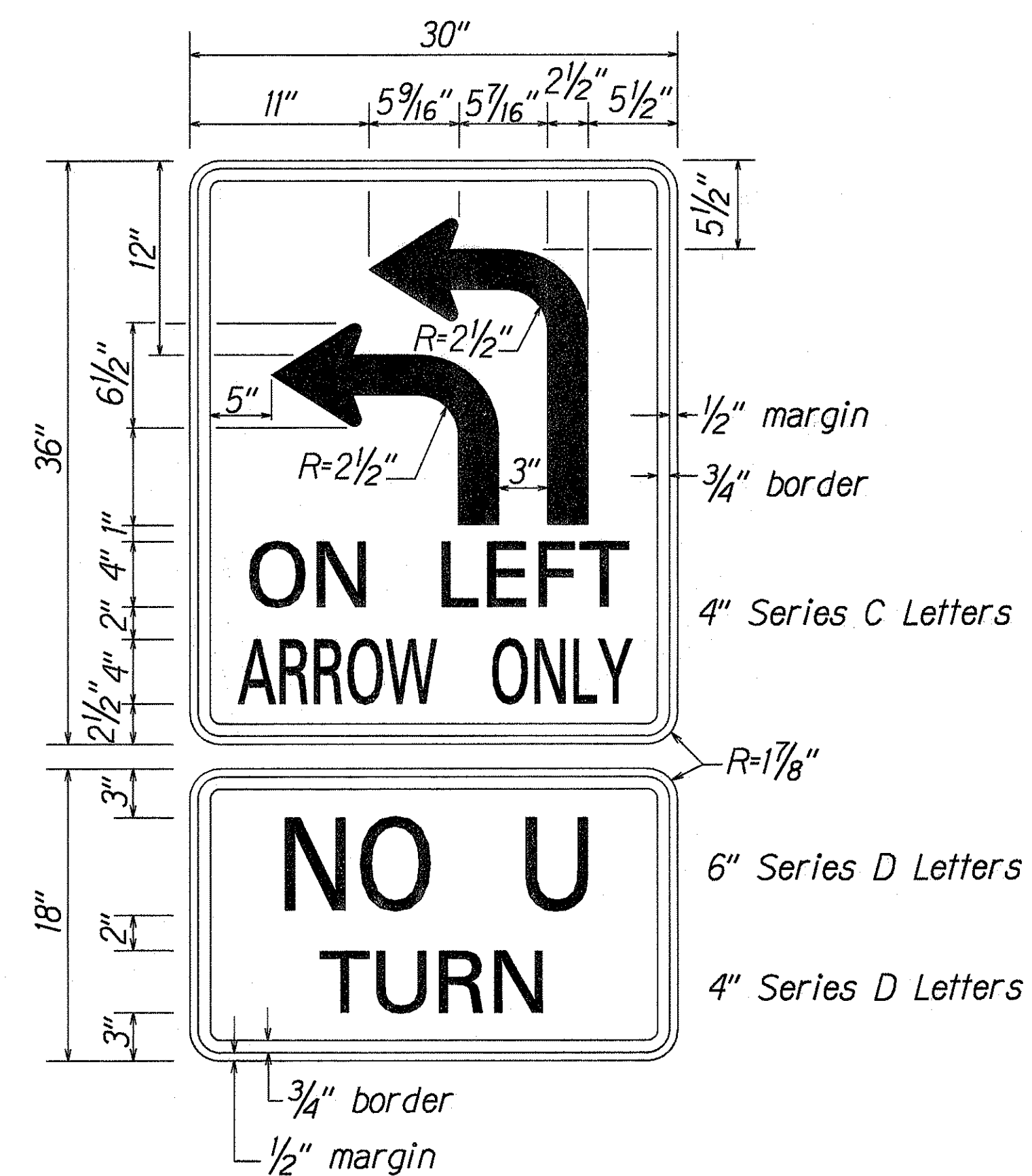


R16-1  
Not to Scale



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

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



R17-4  
Not to Scale

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

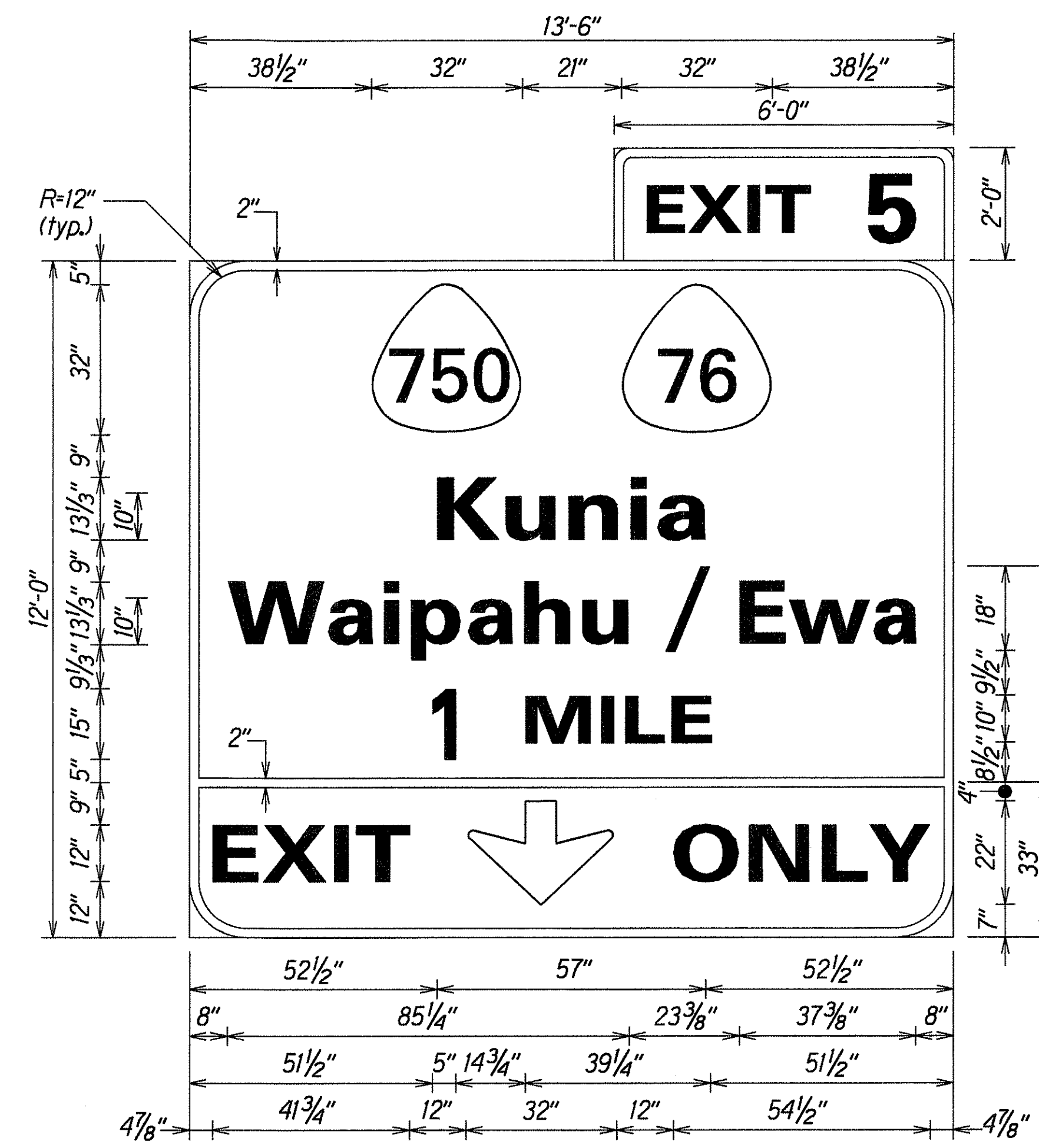
**SIGN DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)

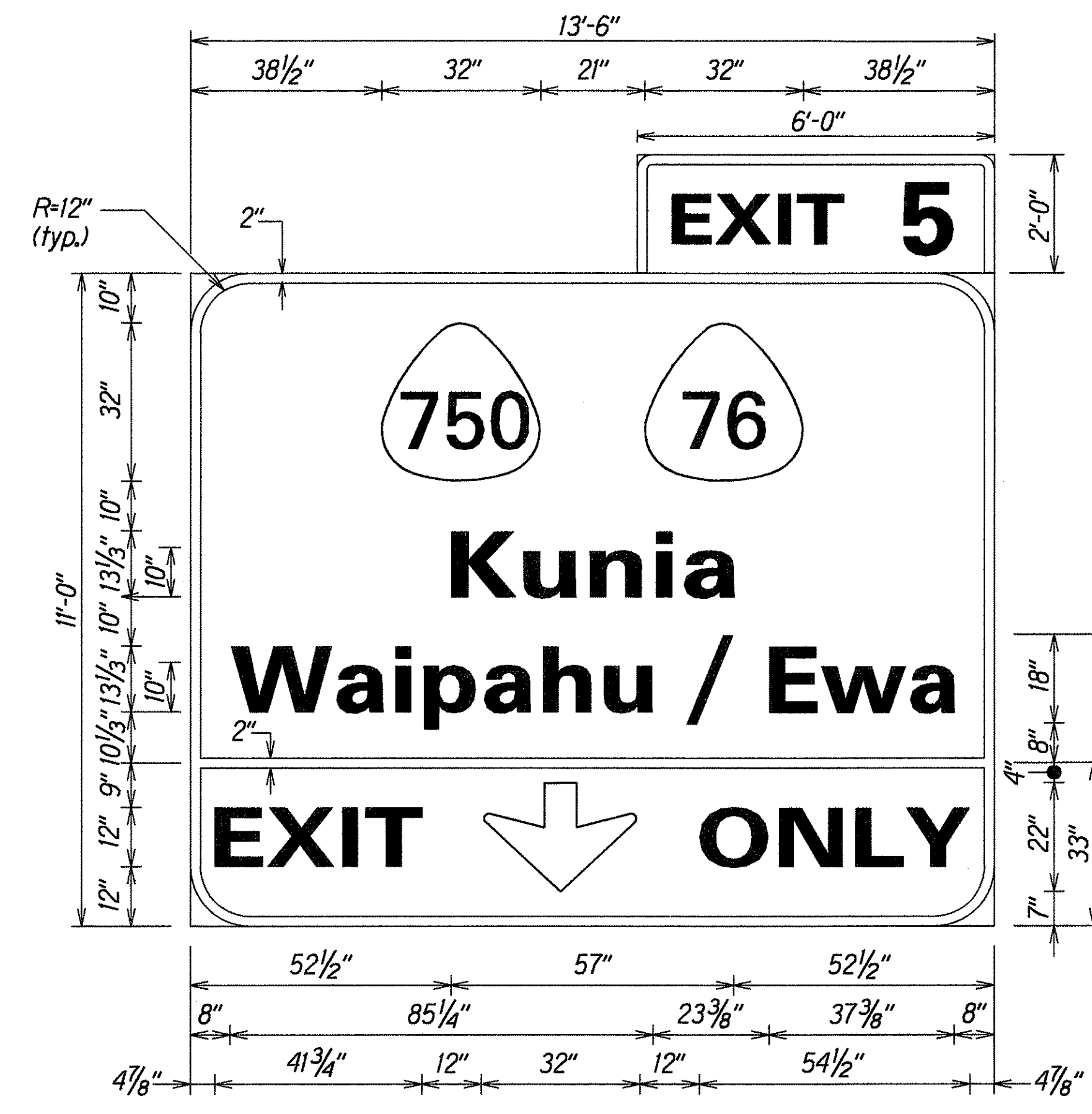
Scale: As Noted Date: Oct., 1997

SHEET No. T14 OF 21 SHEETS

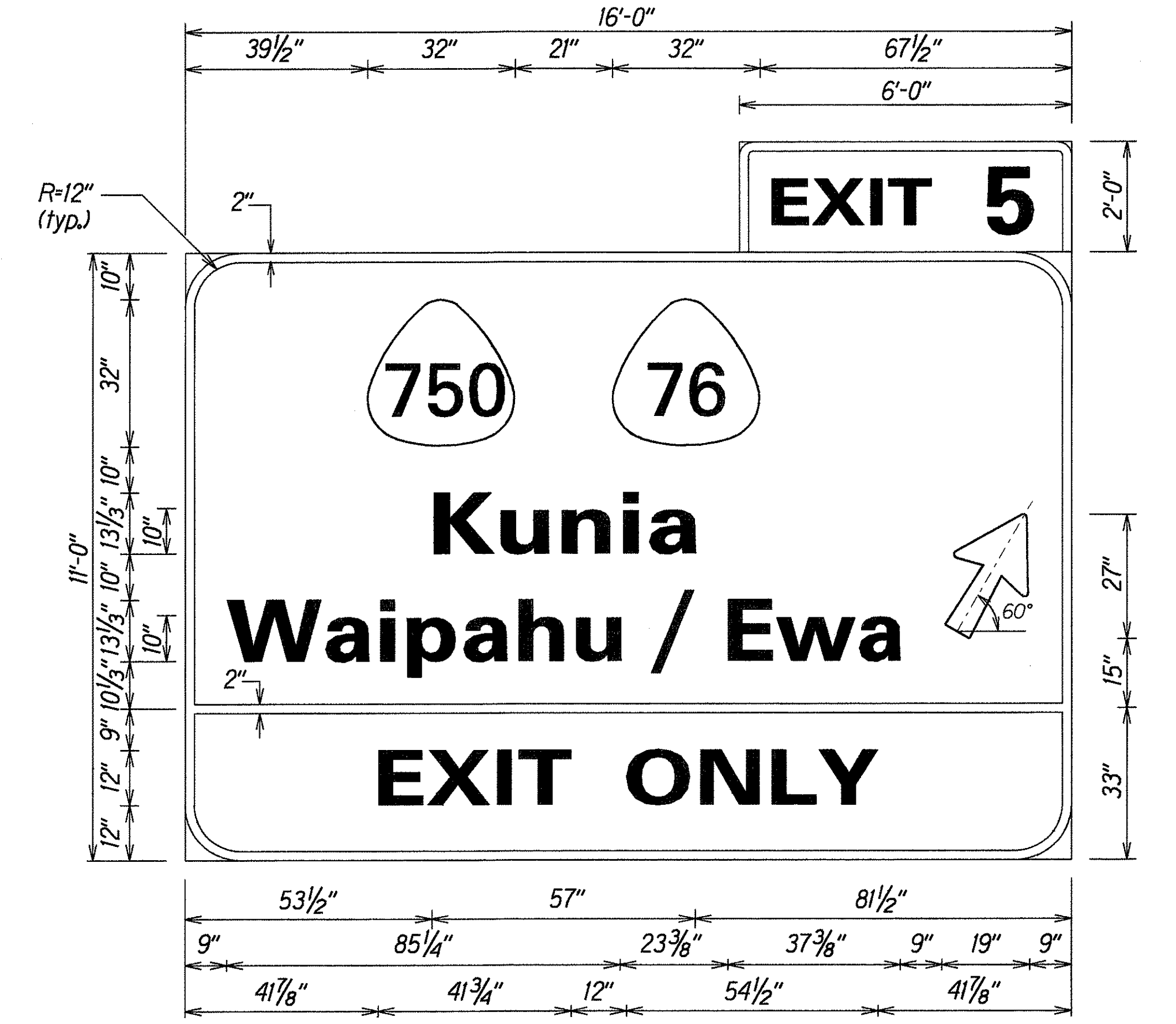
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 210	378



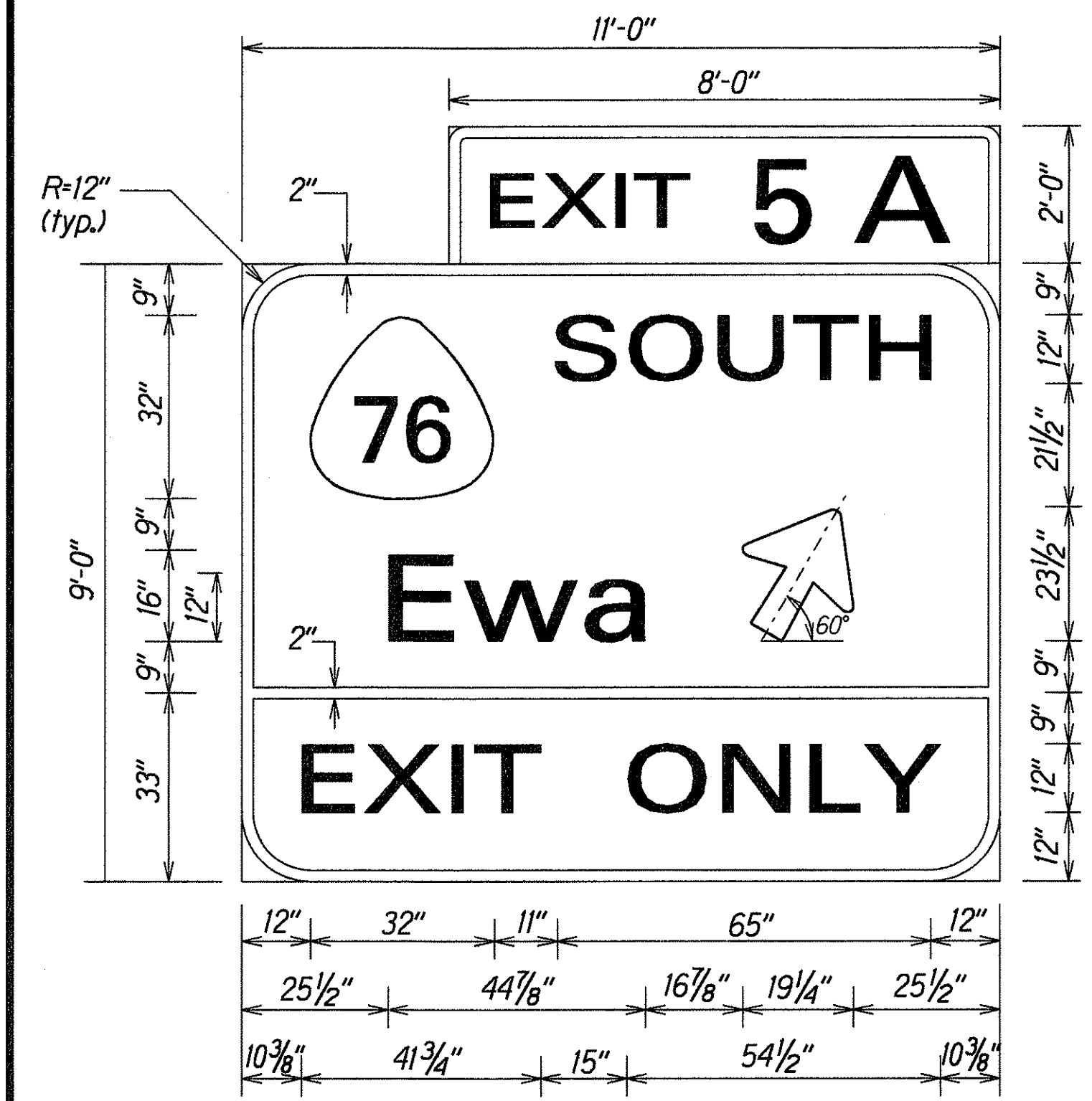
E-1  
H-1 @ STA. 257+40±  
Scale: 1/2" = 1'-0"



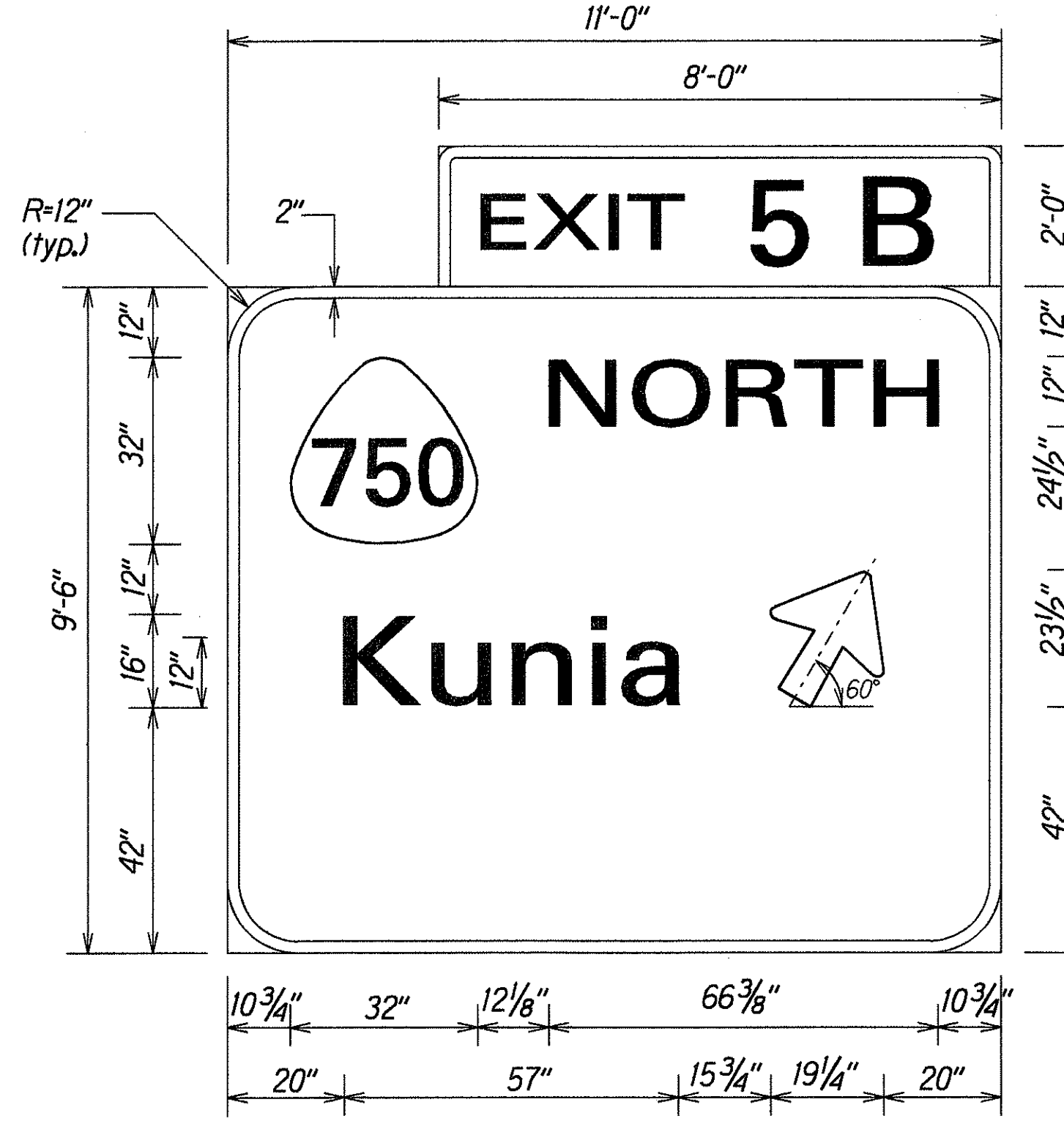
E-2  
H-1 @ STA. 283+80±  
Scale: 1/2" = 1'-0"



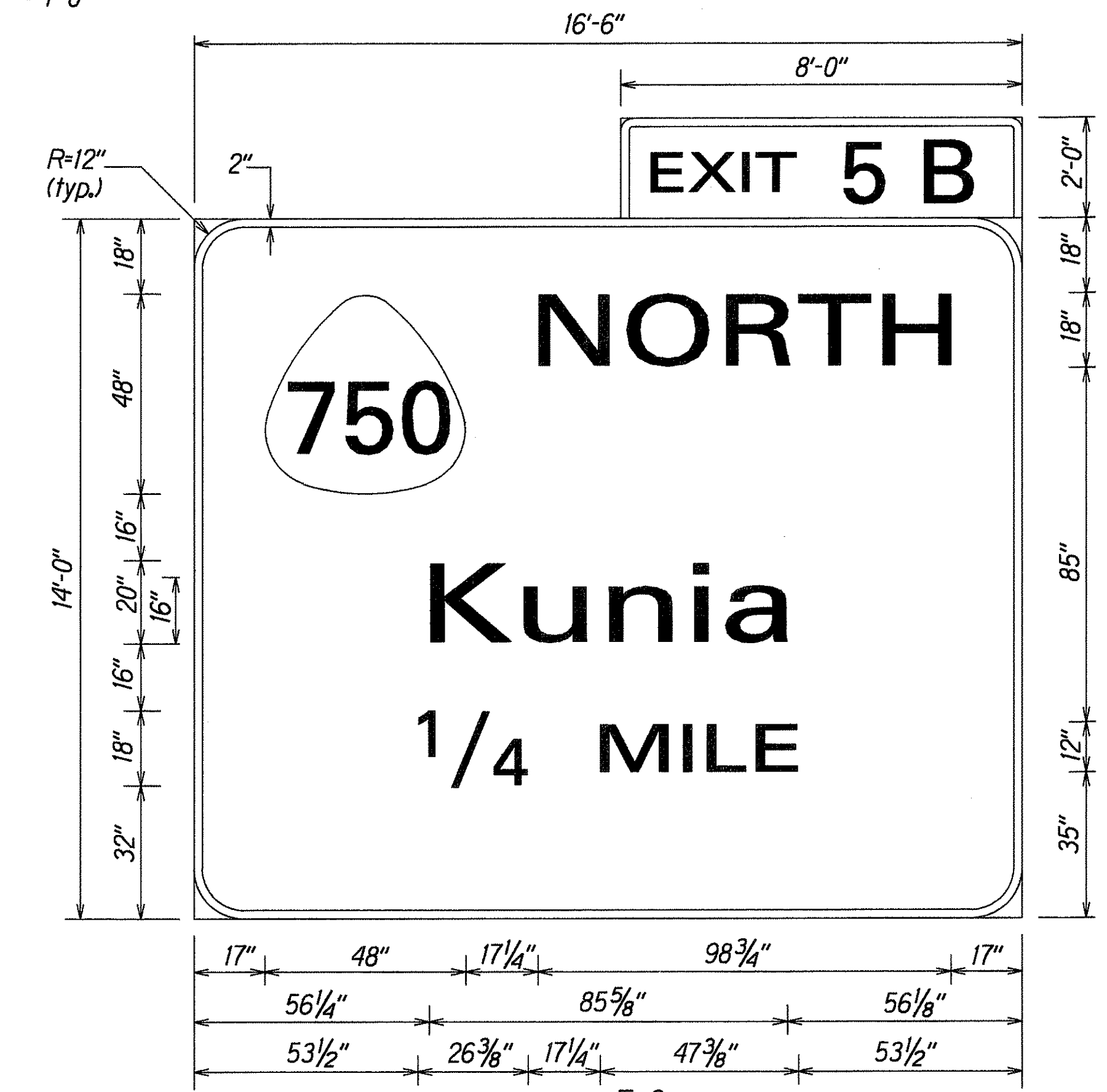
E-3  
H-1 @ STA. 310+20±  
Scale: 1/2" = 1'-0"



E-4  
H-1 @ STA. 326+50 LT.  
Not to Scale



E-5  
H-1 @ STA. 346+50 LT.  
Not to Scale

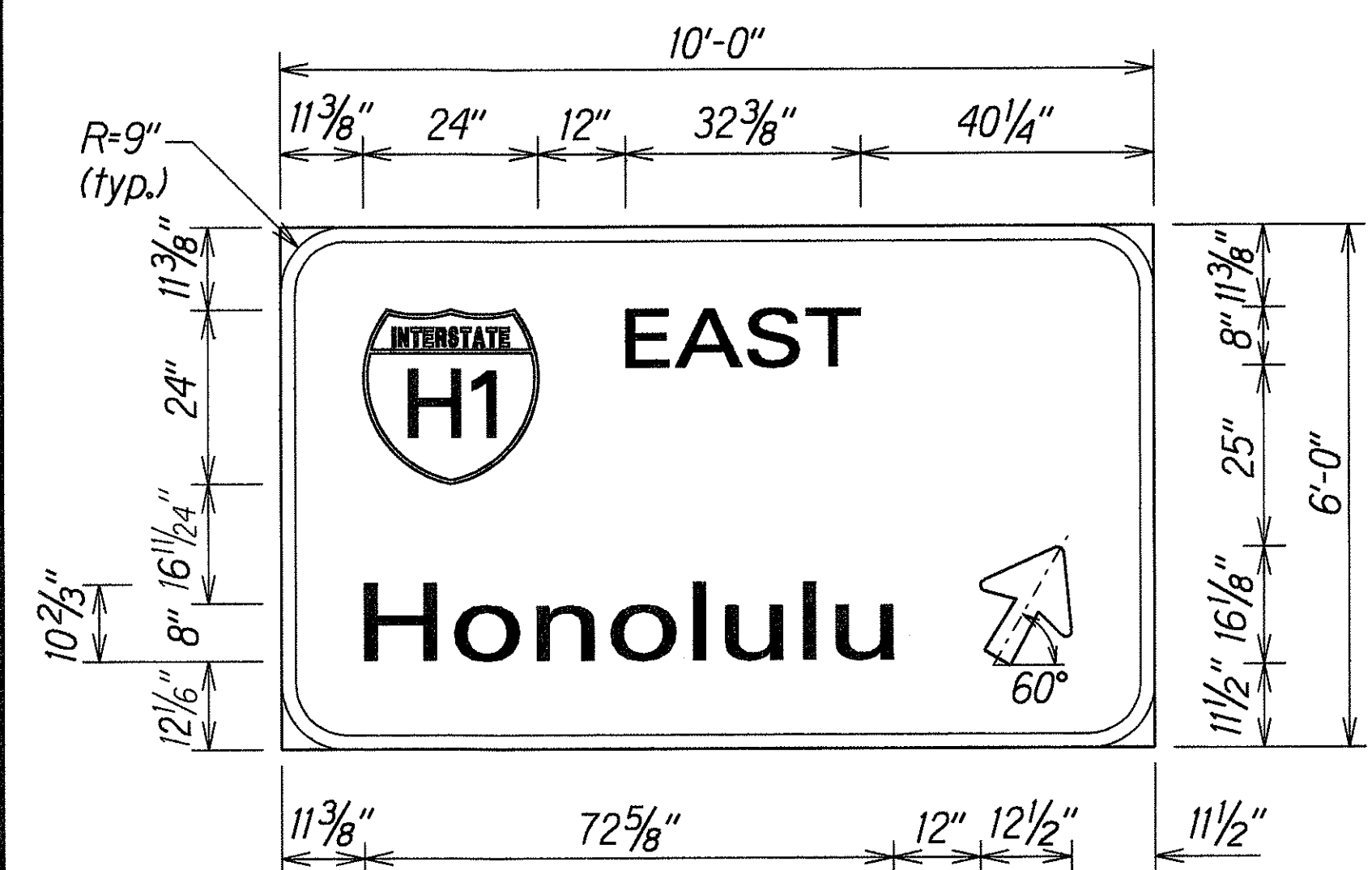


E-6  
H-1 @ STA. 359+50 LT.  
Not to Scale

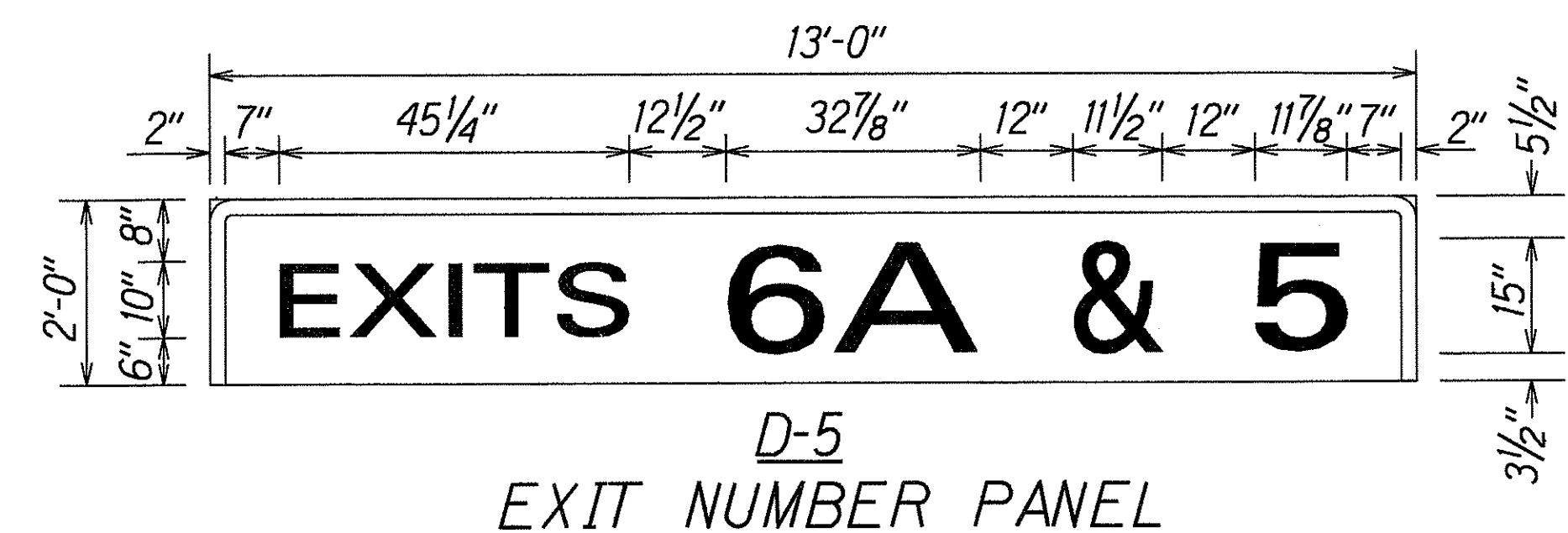
DATE	1
SURVEY PLOTTED BY	
DRAWN BY	M. Takahashi / R. Saito
DESIGNED BY	G. Kaseh
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO. SHEETS	

5/23/00	Revise Route Marking on Sign E-5
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>SIGN PANEL LAYOUTS</b>	
INTERSTATE ROUTE H-1 Kunia Interchange Improvements F.A.I. Project No. IM-HI-1(219)	
Scale: As noted	Date: Oct., 1997
SHEET No. 115 OF 21 SHEETS	

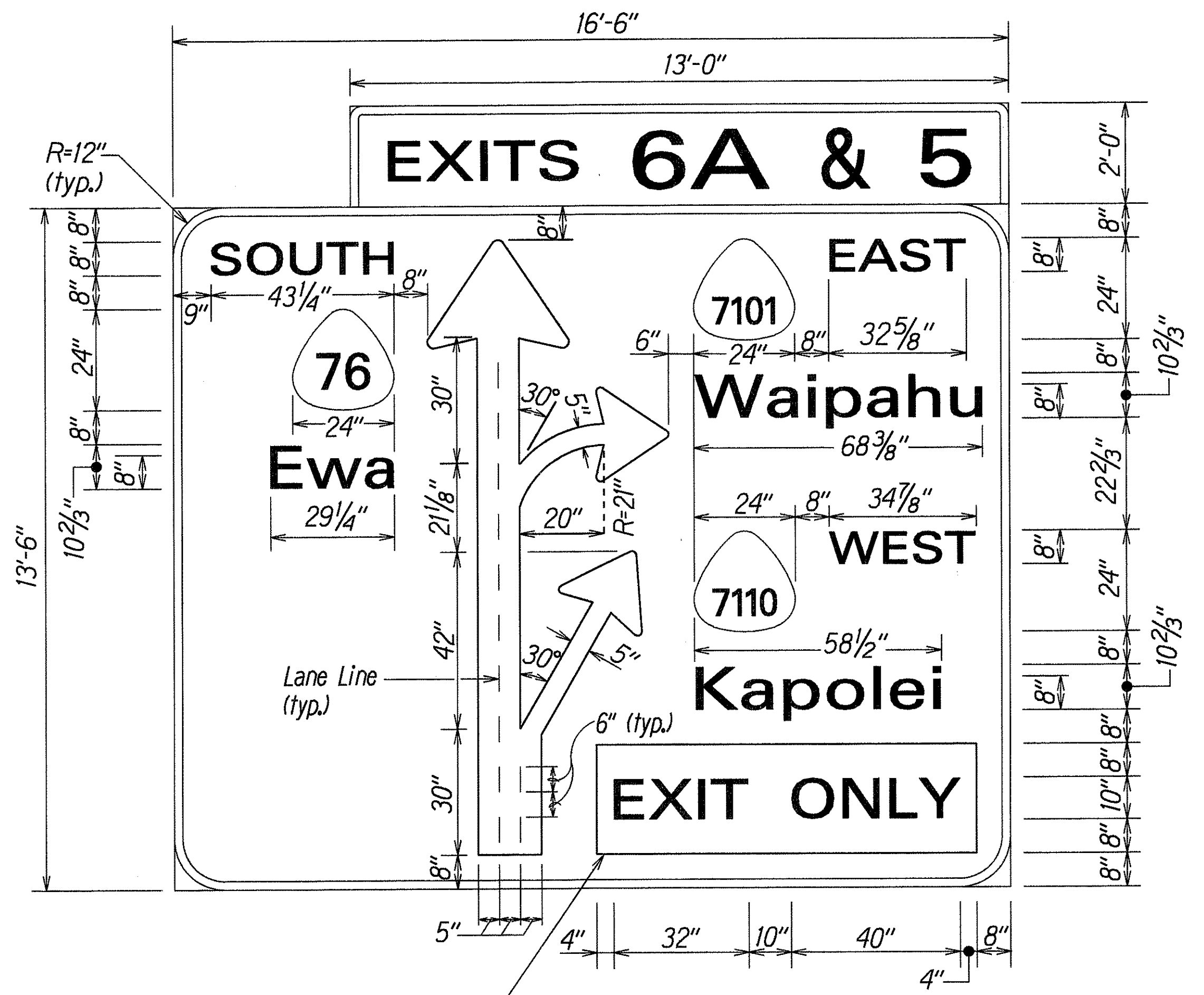
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 211	378



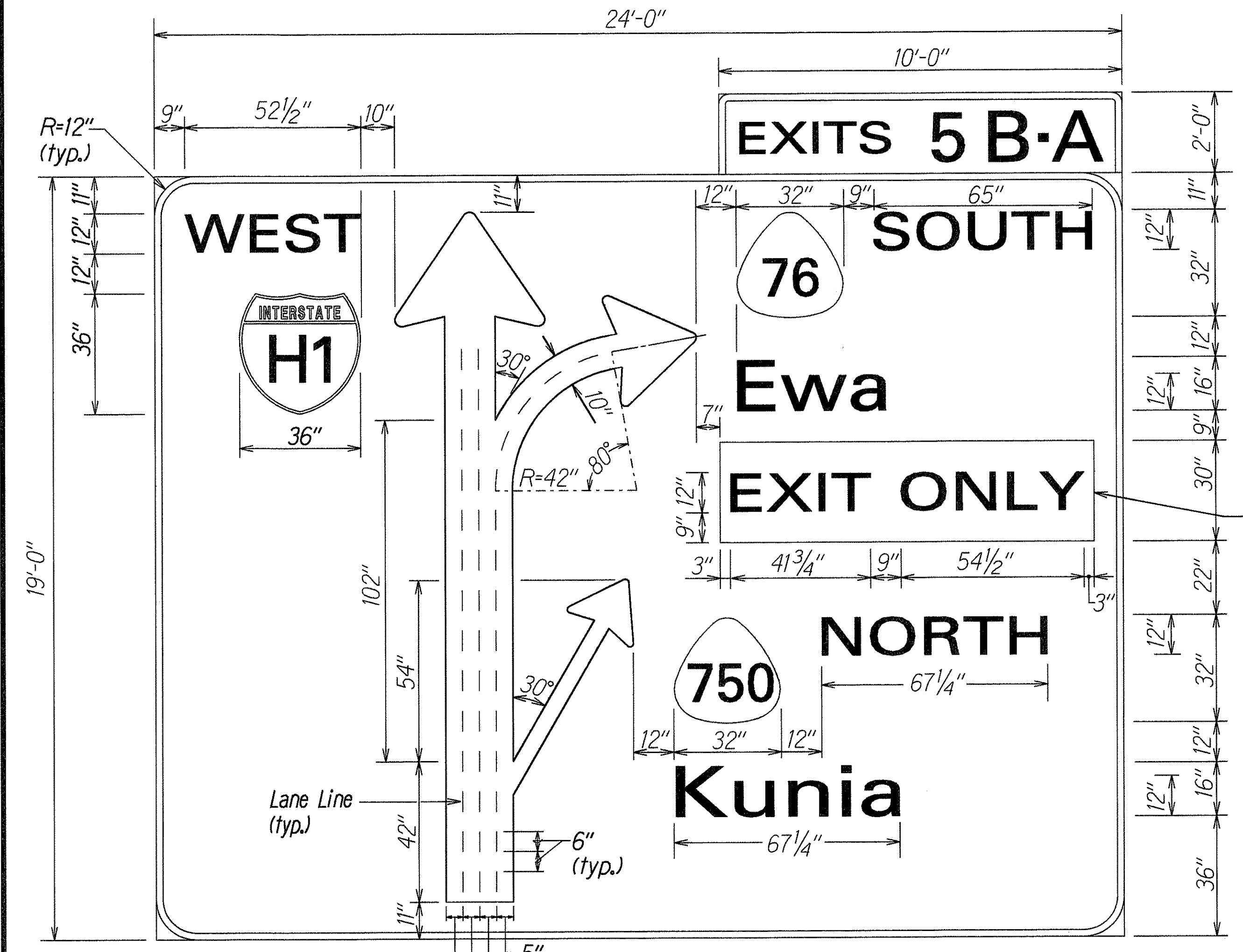
**D-4**  
FWR # Sta. 64+20± Lt.  
Not to Scale



**D-5**  
EXIT NUMBER PANEL  
Not to Scale



**D-5**  
FWR # Sta. 65+50 Rt.  
Not to Scale

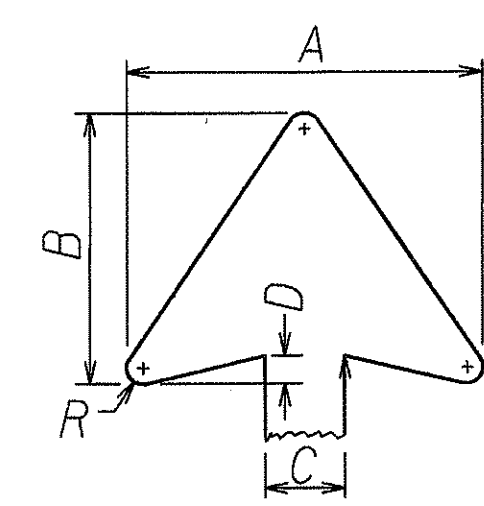


**E-7**  
FWR # Sta. 64+20± Lt.  
Not to Scale

LEGEND - BLACK BACKGROUND - YELLOW (RELF)

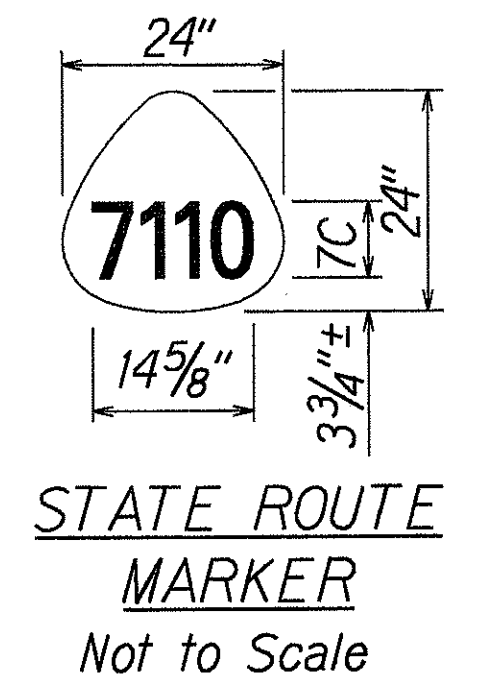
**LANE LINE DETAIL**

Not to Scale  
Black sheeting on demountable aluminum cutouts mounted on white background



ARROW DIMENSIONS (inches)				
A	B	C	D	R
22 1/4	17	5	1 3/4	1
33 3/8	25 1/2	10	2 5/8	1 1/2
44 1/2	34	15	3 1/2	2

**ARROW DETAIL FOR SIGNS D-5 & E-7**  
Not to Scale

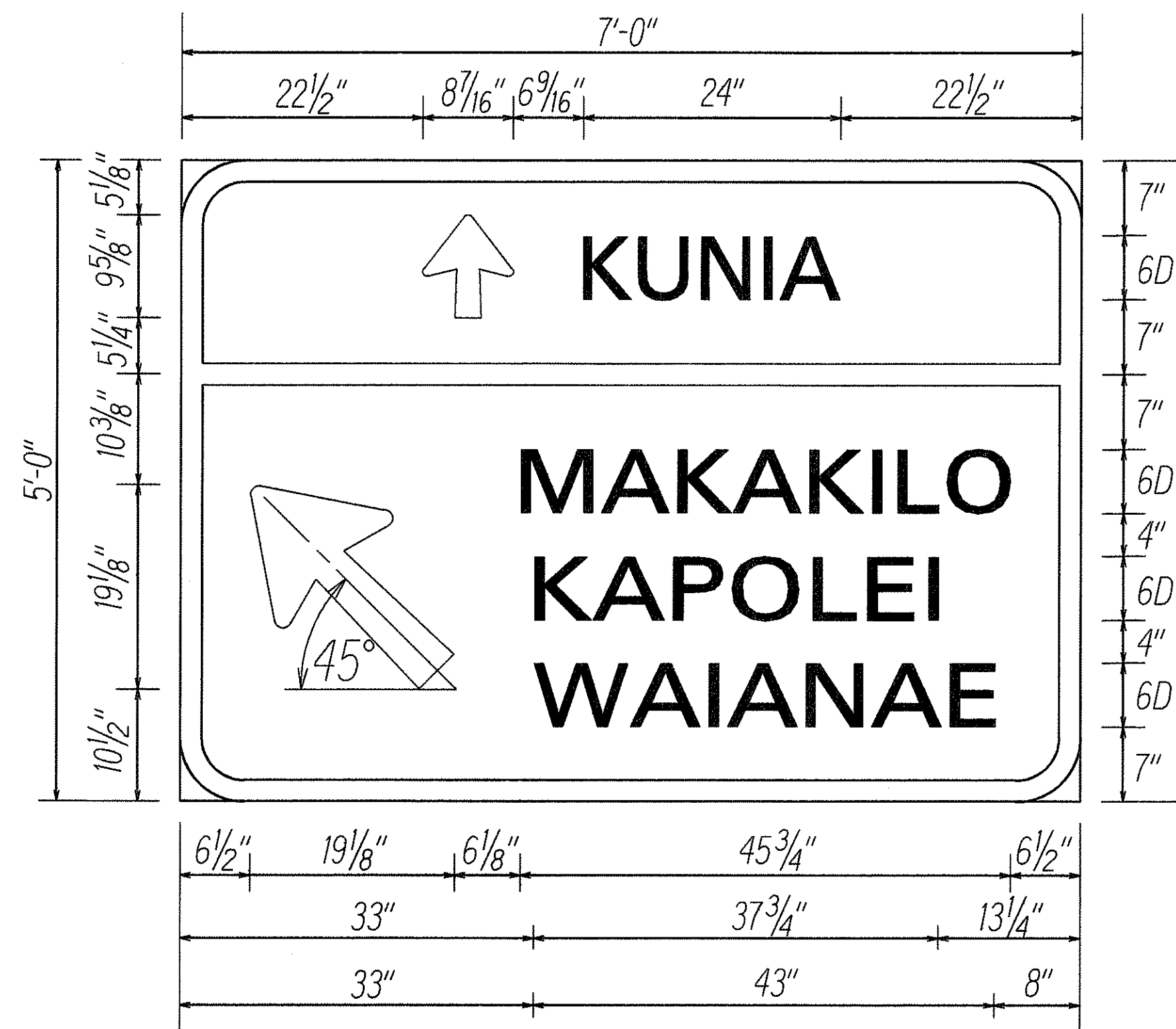


**STATE ROUTE MARKER**  
Not to Scale

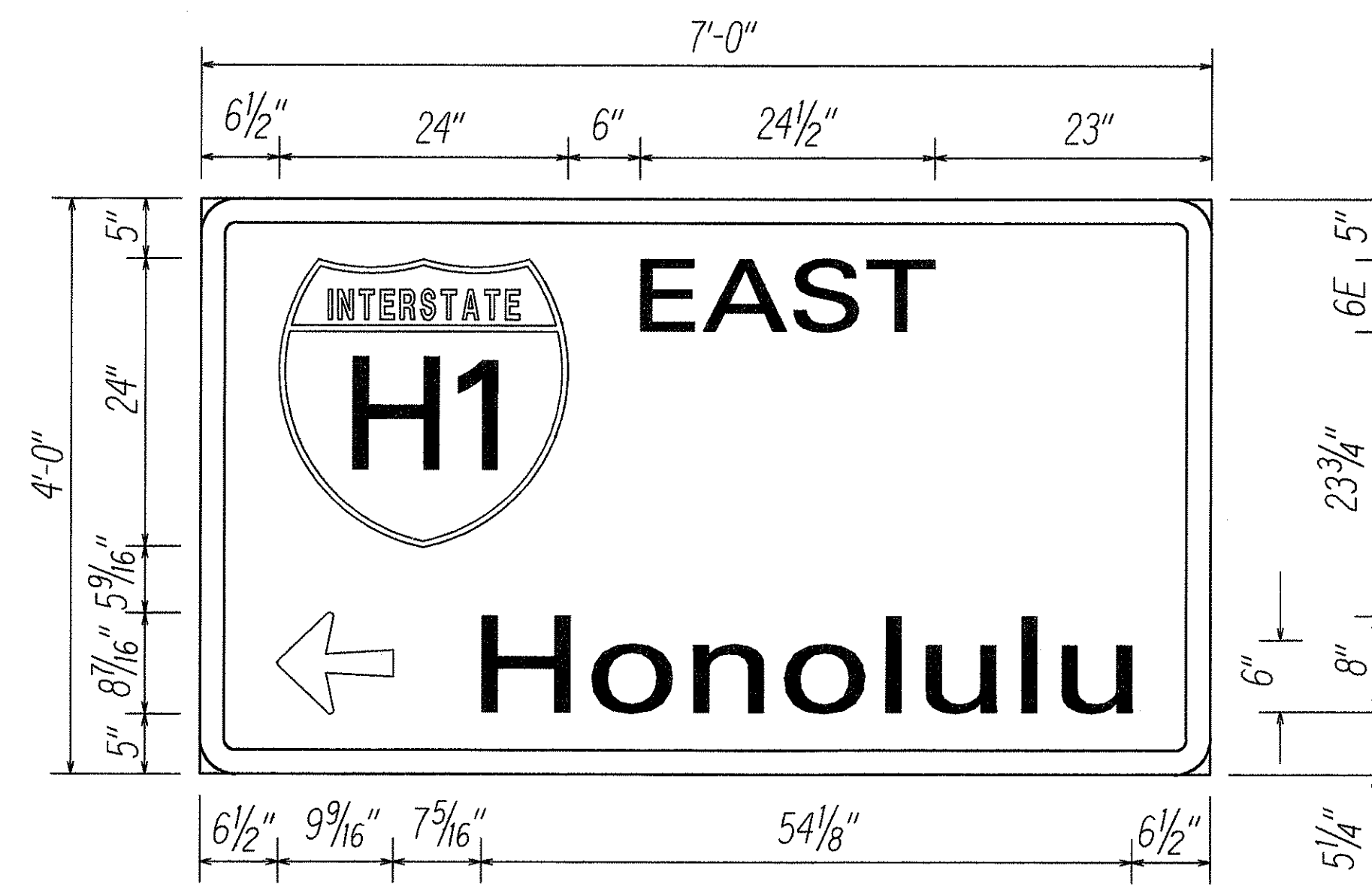
DATE	10/17/97
SURVEY PLOTTED BY	H.A.H.
DRAWN BY	H.A.H.
TRACED BY	G. KANEHI
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
101-101	
101-102	
101-103	
101-104	
101-105	
101-106	
101-107	
101-108	
101-109	
101-110	
101-111	
101-112	
101-113	
101-114	
101-115	
101-116	
101-117	
101-118	
101-119	
101-120	

5/22/00	Revise Route Marking on Sign E-7
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>SIGN DETAIL</b>	
INTERSTATE ROUTE H-1 Kunia Interchange Improvements F. A. I. Project No. IM-HI-1(219)	
Scale: As Shown	Date: Oct., 1997
SHEET No. T16 OF 21 SHEETS	

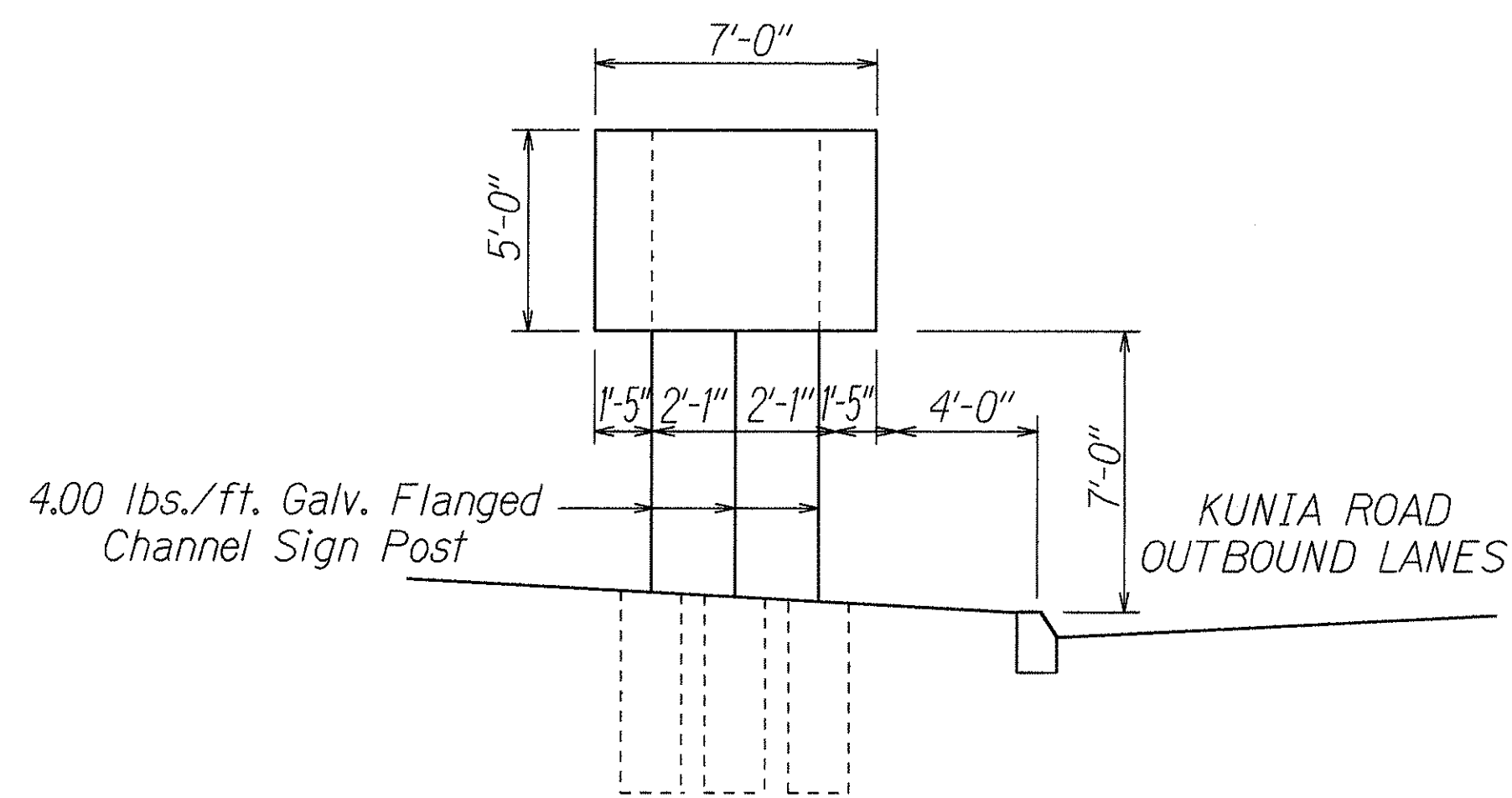
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	CO 211S-1	378



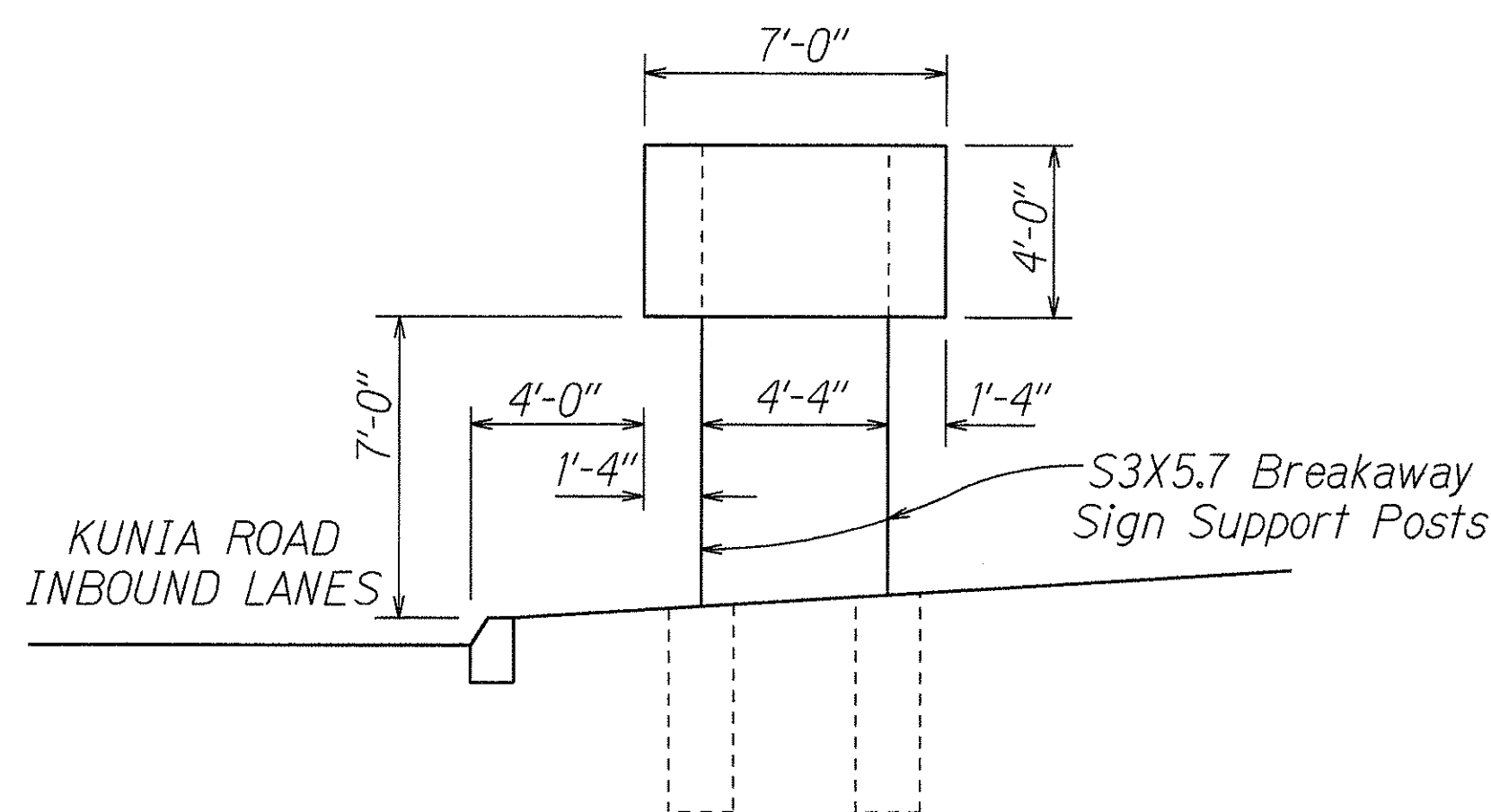
**SIGN D-6**  
Scale: 1"=1'-0"



**SIGN D-7**  
Scale: 1"=1'-0"



**SIGN D-6**  
Kunia Road Sta. 15+10± Lt.  
Scale: 1/4"=1'-0"



**SIGN D-7**  
Kunia Road Sta. 15+25± Lt.  
Scale: 1/4"=1'-0"  
(For Reference Only)

**DESTINATION (D) SIGN NOTES**

1. New sign panels shall be laminated aluminum or extruded aluminum.
2. When initial uppercase letter is used in conjunction with lowercase letters, use series "E"(M) for uppercase
3. Contractor shall submit all sign splicing details to the Engineer for approval. All backing for signs 4 feet by 6 feet or less shall be of one sheet.
4. Destination Sign Posts shall be as noted on the plans.
5. Removal and disposal of existing sign panels, posts with foundation, luminaires and supports will not be paid for separately, but shall be considered incidental to the various signing items.

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
NOTES CHECKED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
Id Ruby	
N. d/11/93	

6/27/00	Replace existing directional signs.
DATE	REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

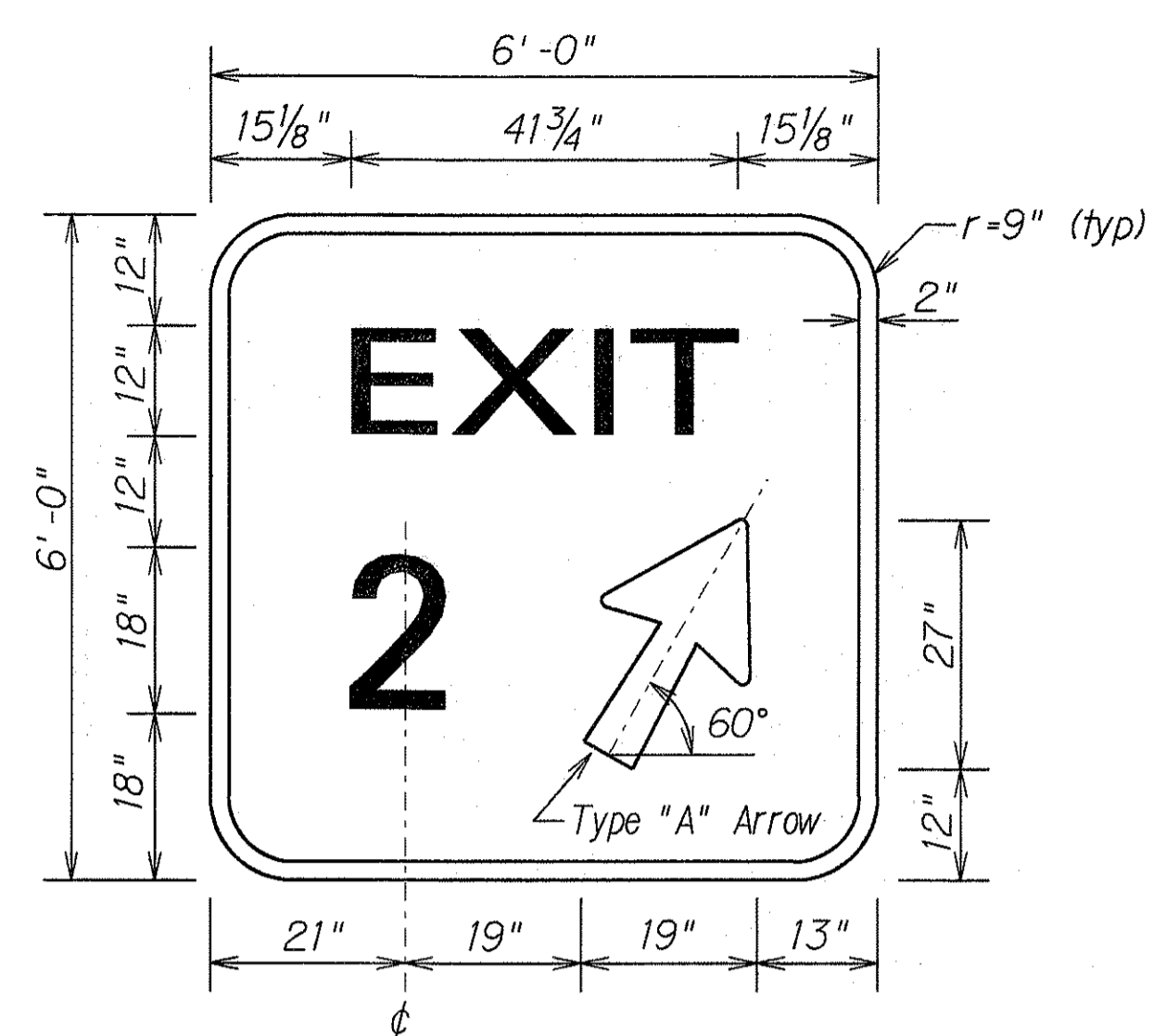
**SIGN DETAILS**

**INTERSTATE ROUTE H-1**  
**Kunia Interchange Improvements**  
**F.A. Project No. IM-HI-1(219)**

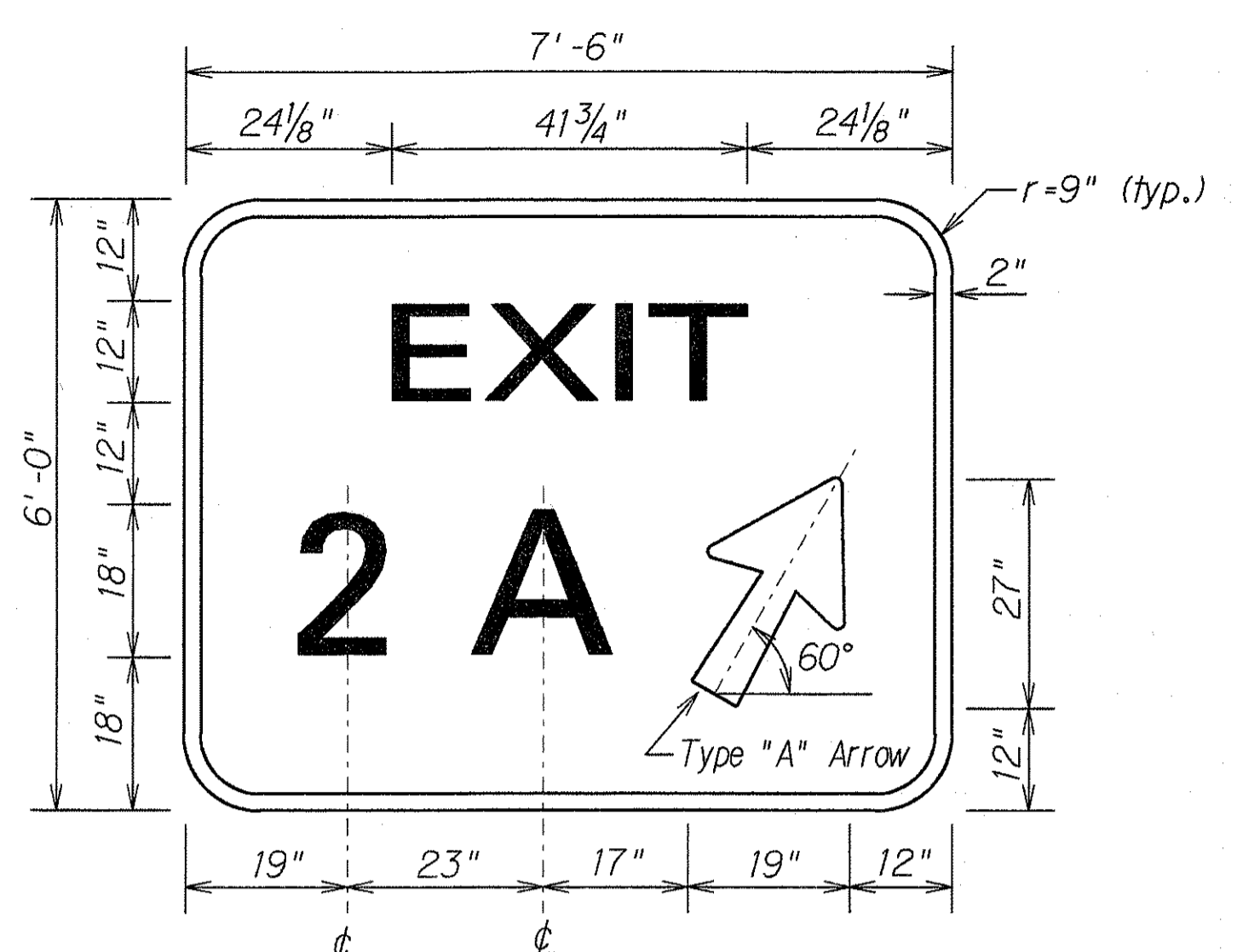
Scale: As Shown Date: May, 2000

SHEET No. 116S-1 OF 21 SHEETS

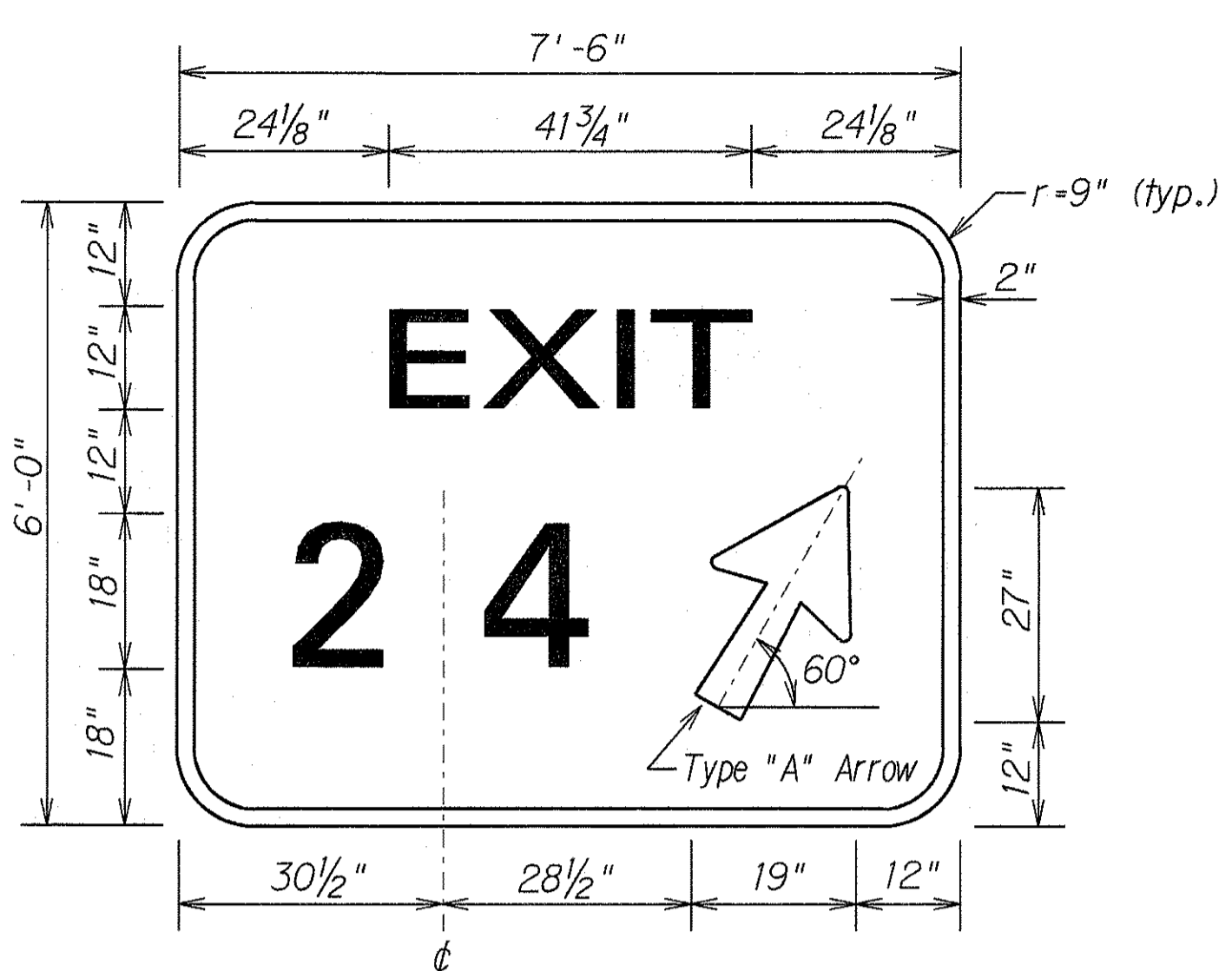
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	212	378



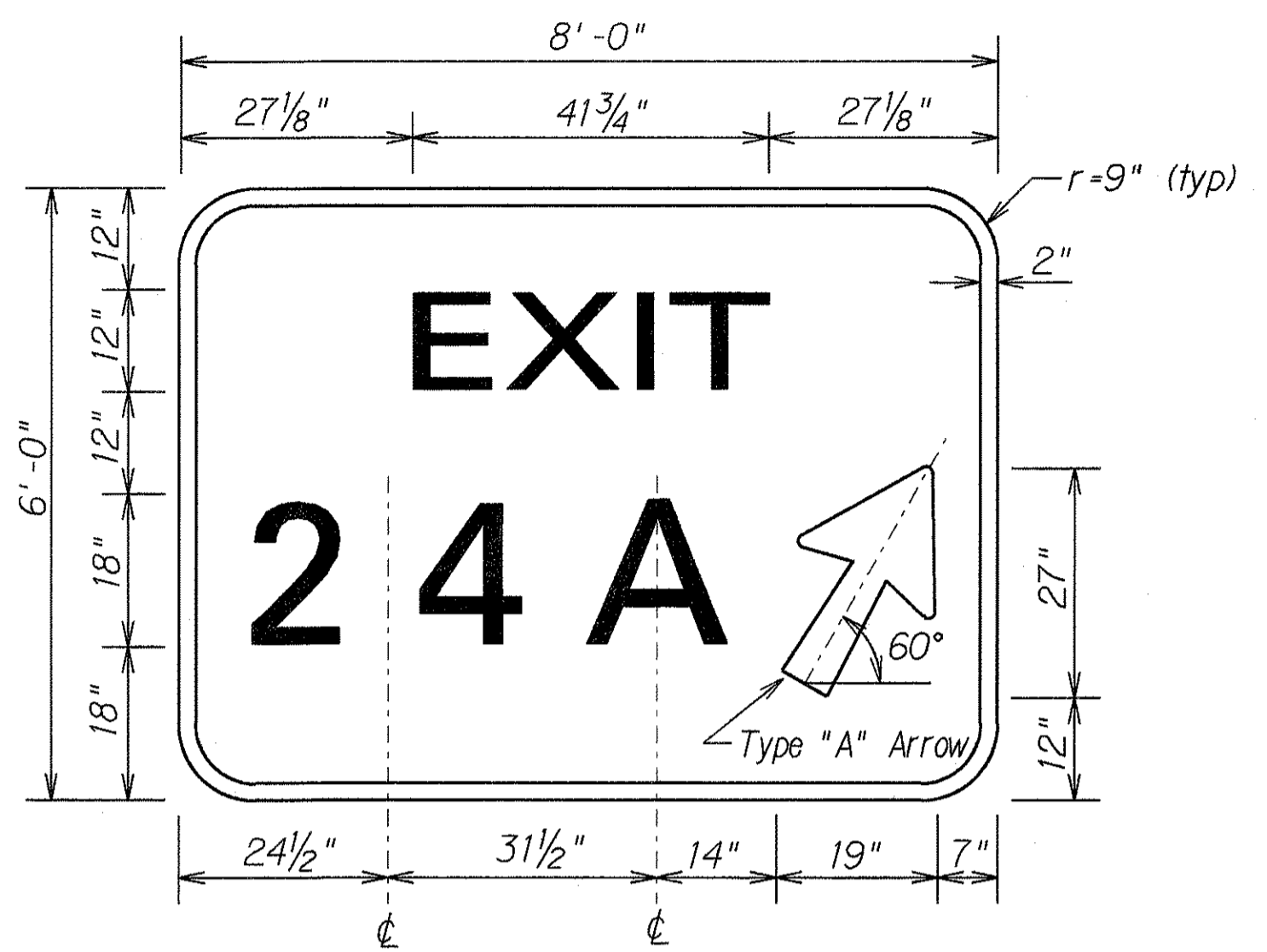
SINGLE NUMBER



SINGLE NUMBER  
SINGLE LETTER



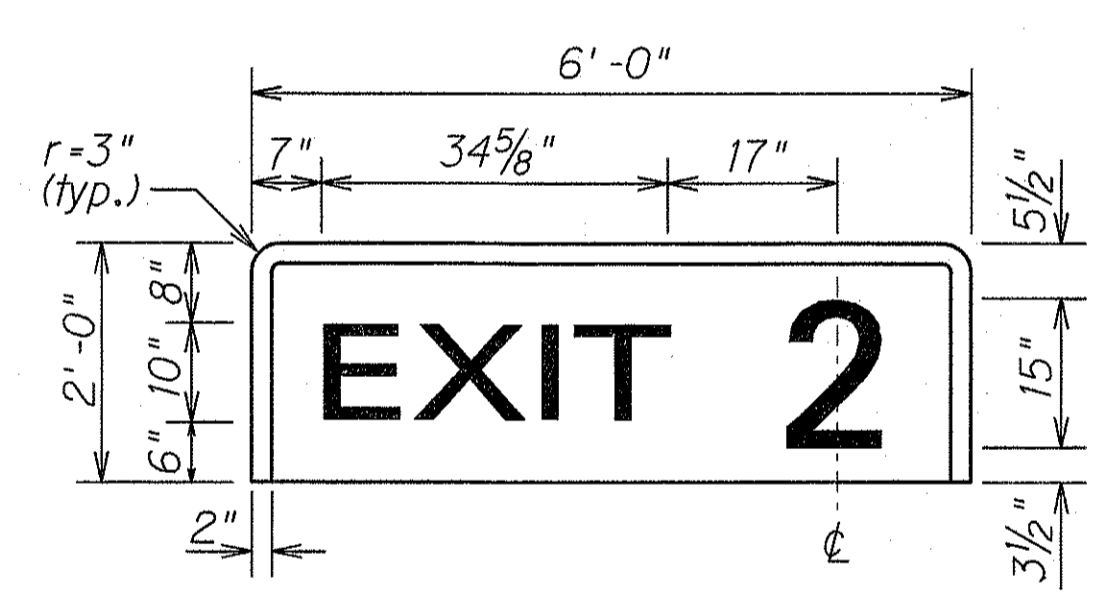
DOUBLE NUMBER



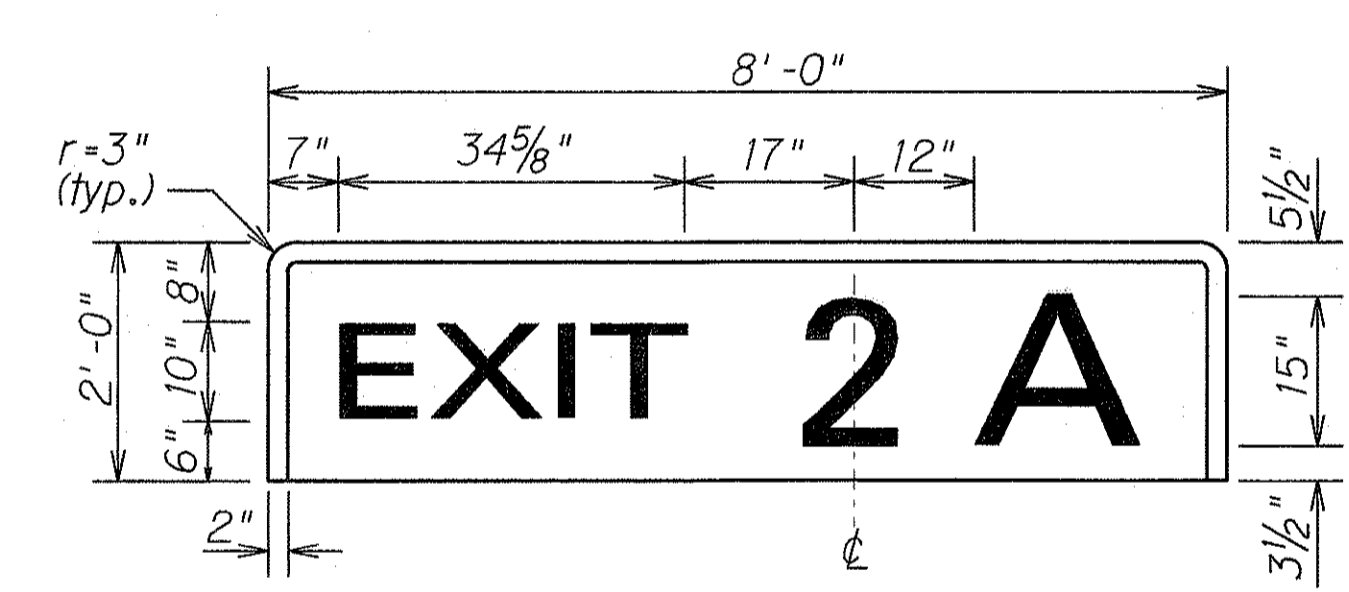
DOUBLE NUMBER  
SINGLE LETTER

GORE EXIT SIGNS

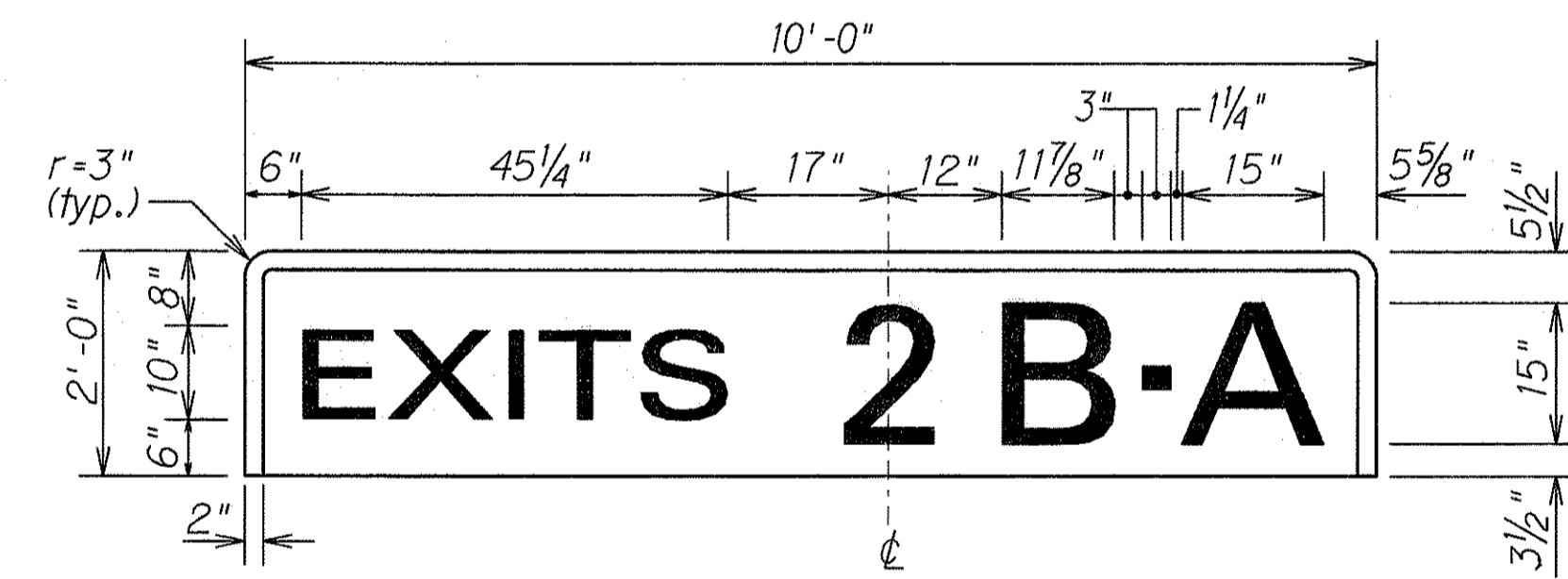
Not to Scale



SINGLE NUMBER

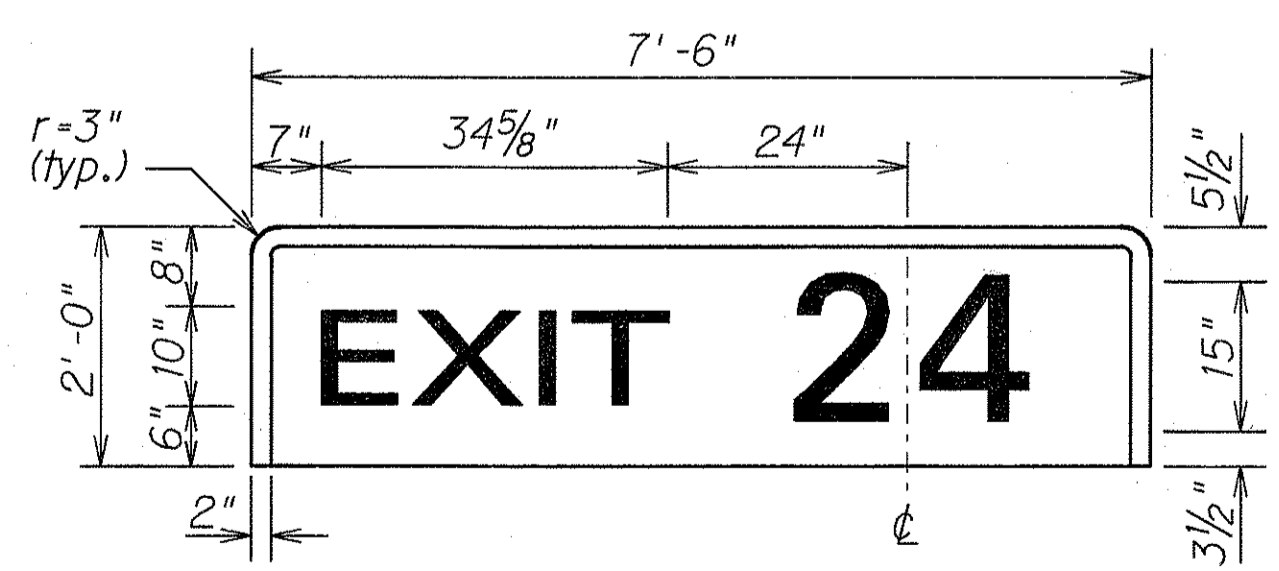


SINGLE NUMBER  
W/SINGLE LETTER

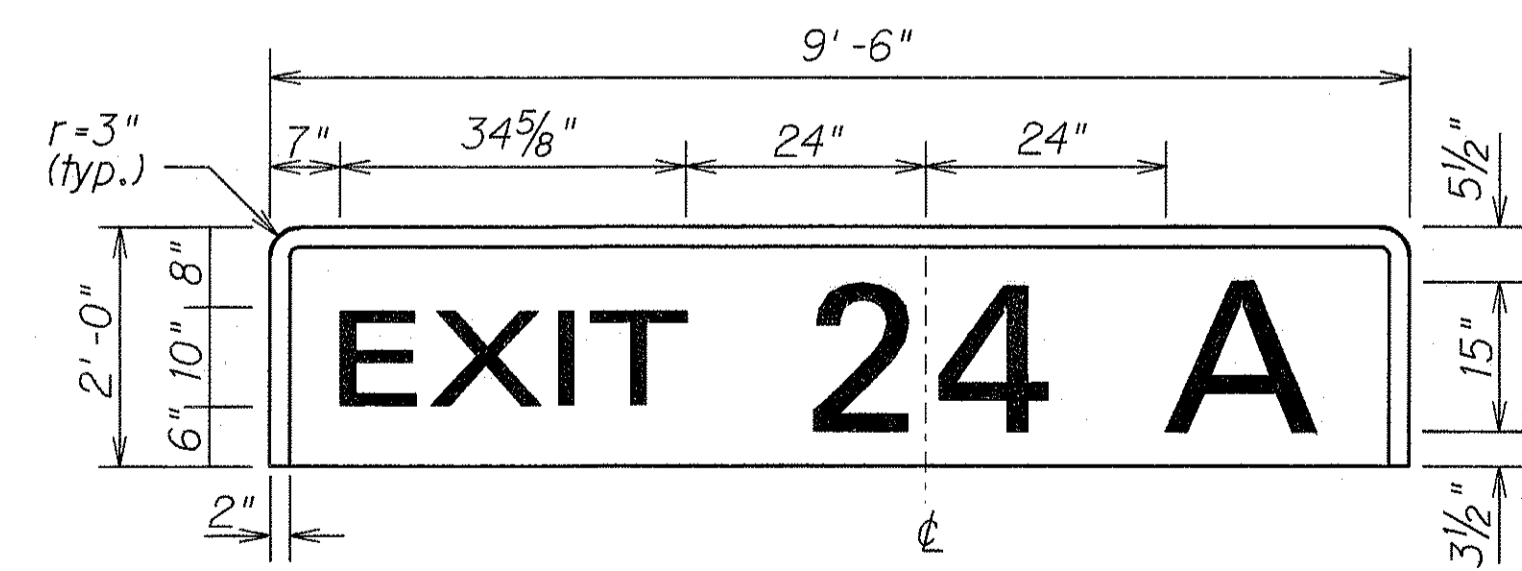


SINGLE NUMBER  
W/DOUBLE LETTER

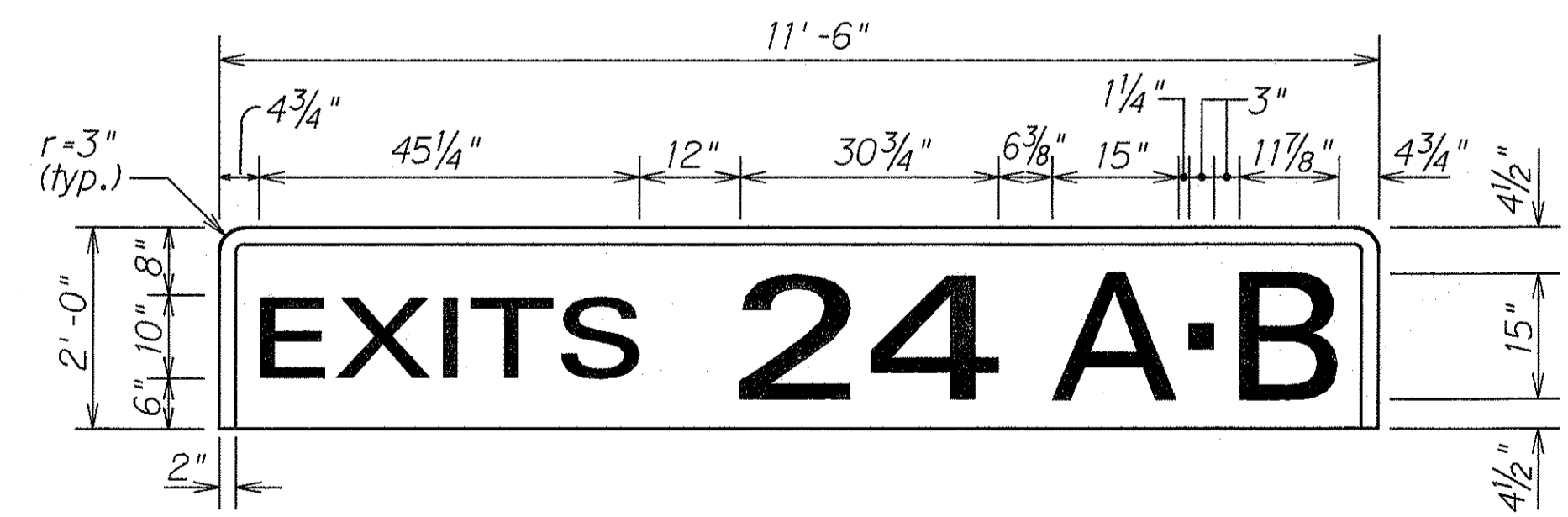
1. Design of Exit Number Panels shall conform to plans and specifications for either the Expressway or Destination Sign to which the Exit Number Panel will be attached.
2. Sign message shall be lettered in uppercase according to Standard Alphabets for Highway Signs, FHWA, 1966. Use Series "E" letters unless otherwise noted.
3. Arrows, Borders, and Route Markers shall conform with details as shown on standard plans and/or as specified in the MUTCD.
4. Contractor shall submit for approval, shop drawings for the attachment of Exit Number Panels to Sign Panels.



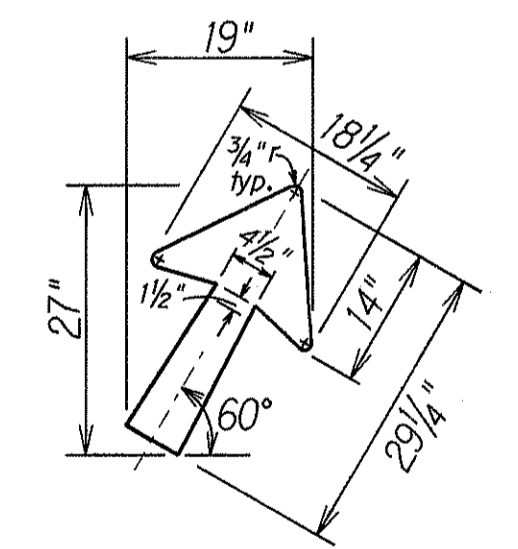
DOUBLE NUMBER



DOUBLE NUMBER  
W/SINGLE LETTER



DOUBLE NUMBER  
W/DOUBLE LETTER



TYPE "A" DIAGONAL  
ARROW DETAIL

Not to Scale

EXIT NUMBER PANELS

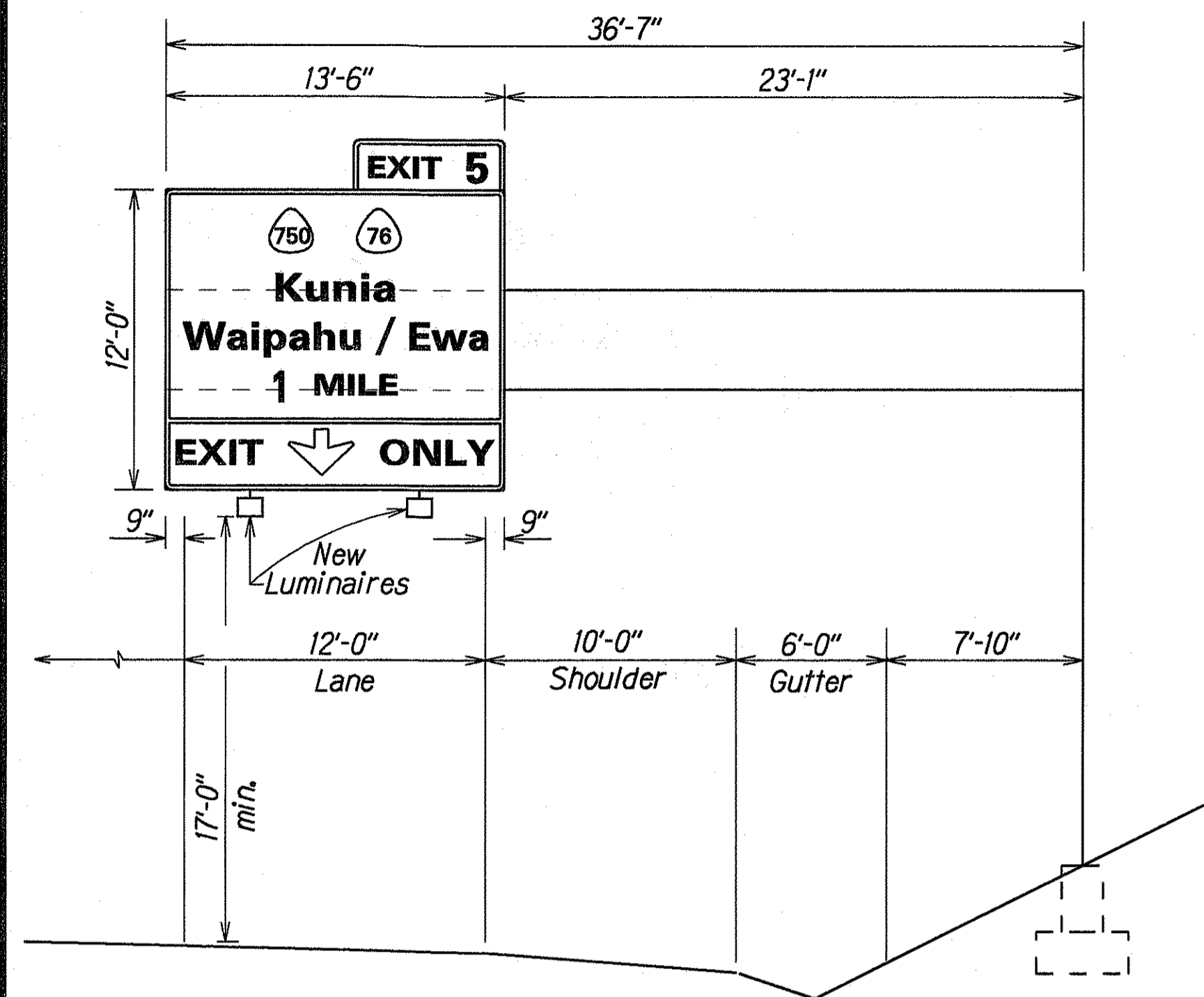
Not to Scale

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

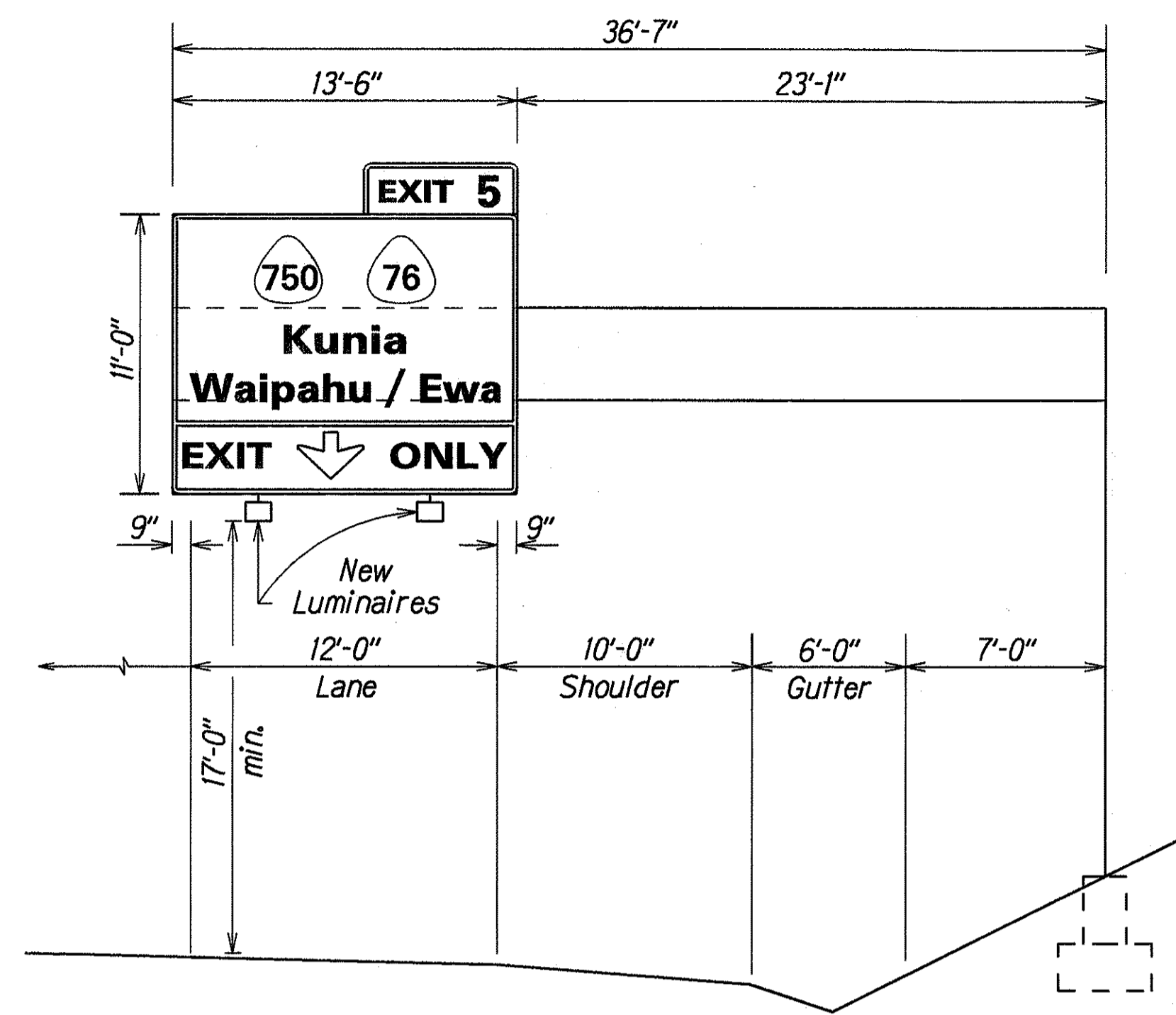
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TYPICAL EXIT NUMBER**  
**SIGN PANEL LAYOUT**  
**INTERSTATE ROUTE H-1**  
**Kunia Interchange Improvements**  
**F. A. I. Project No. IM-HI-1(219)**  
Not to Scale Date: Oct., 1997  
SHEET No. T17 OF 21 SHEETS

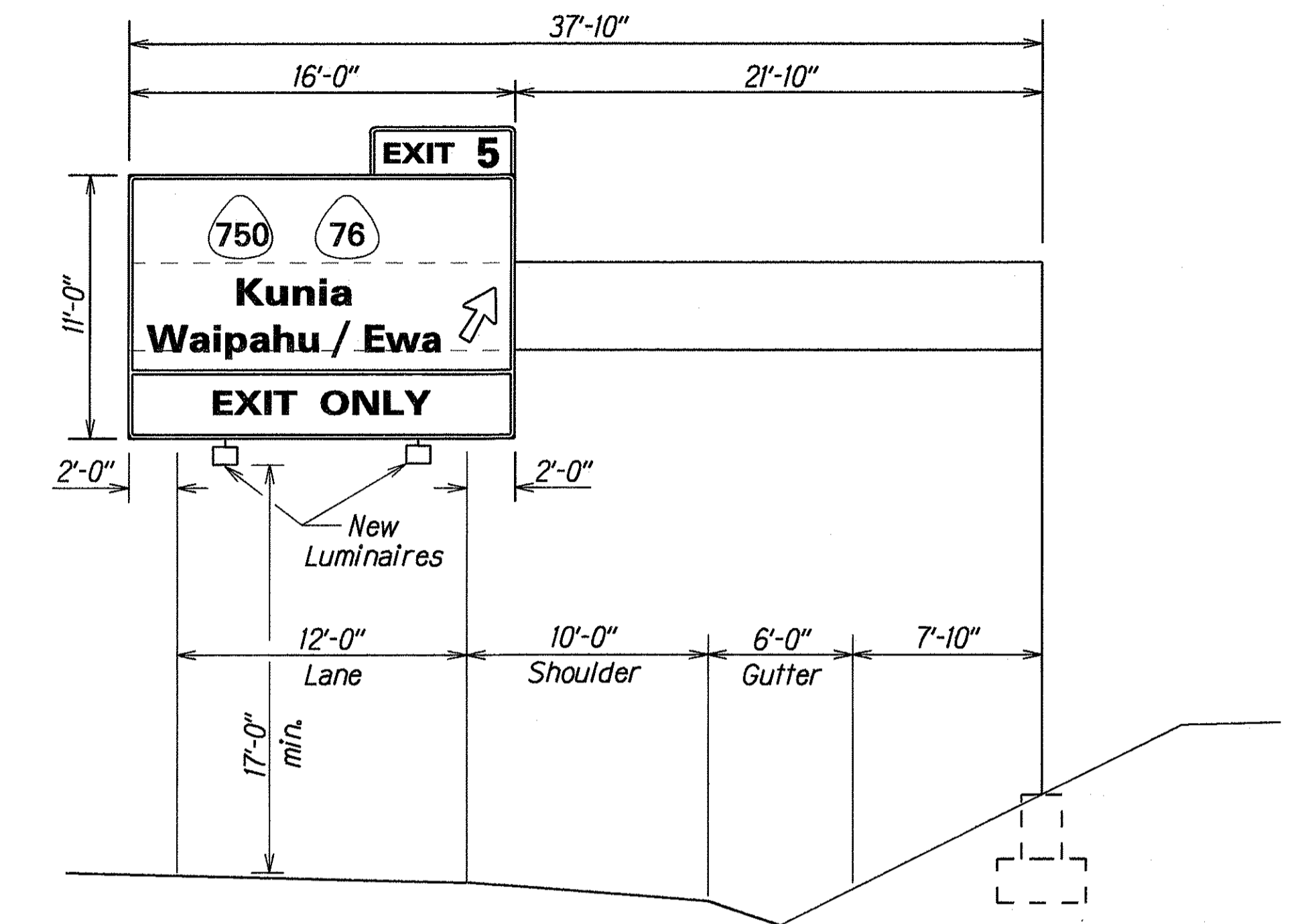
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	213	378



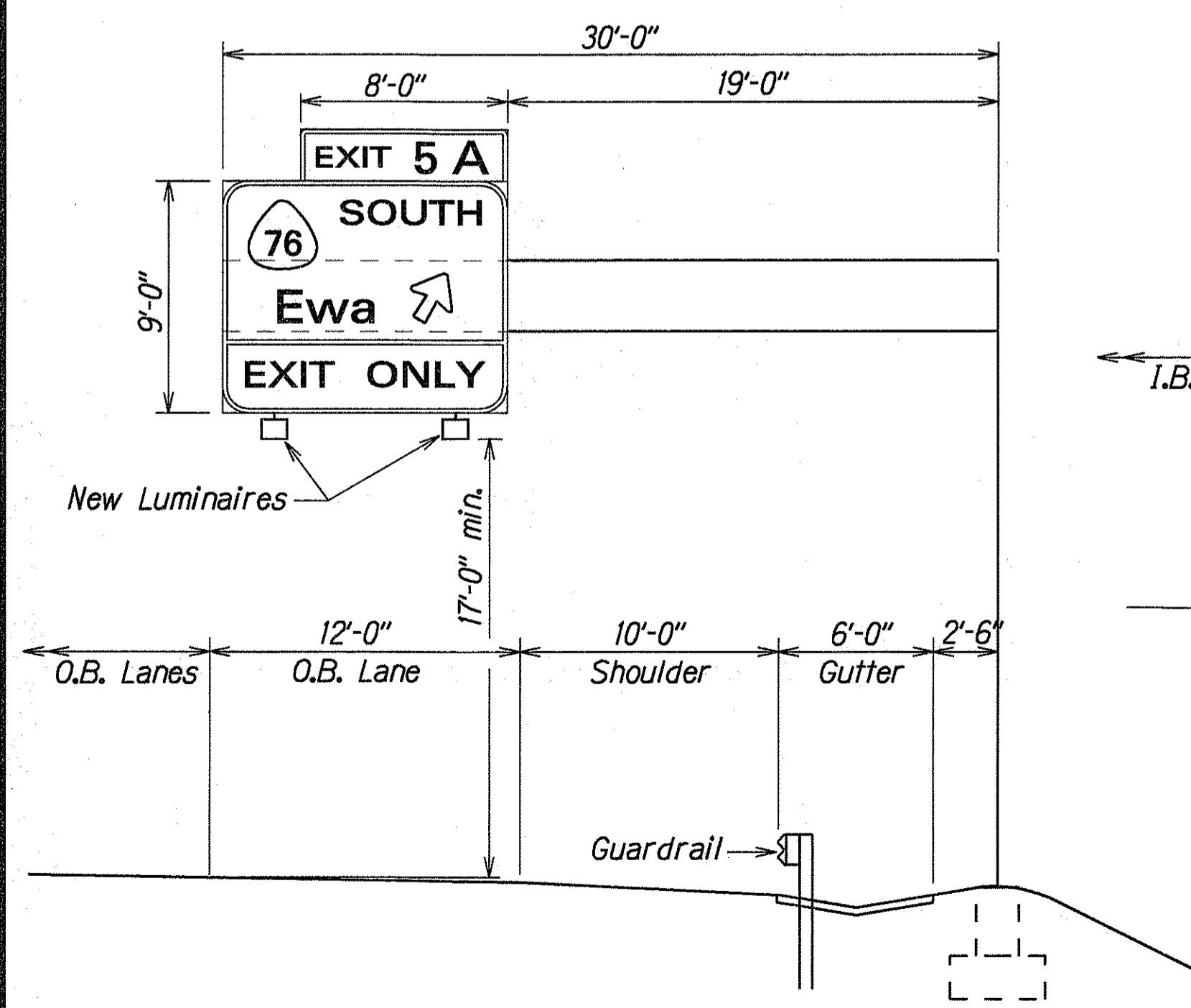
**SIGN ASSEMBLY E-1**  
H-1 # STA. 257+40± RT.  
Scale: 3/16" = 1'-0"



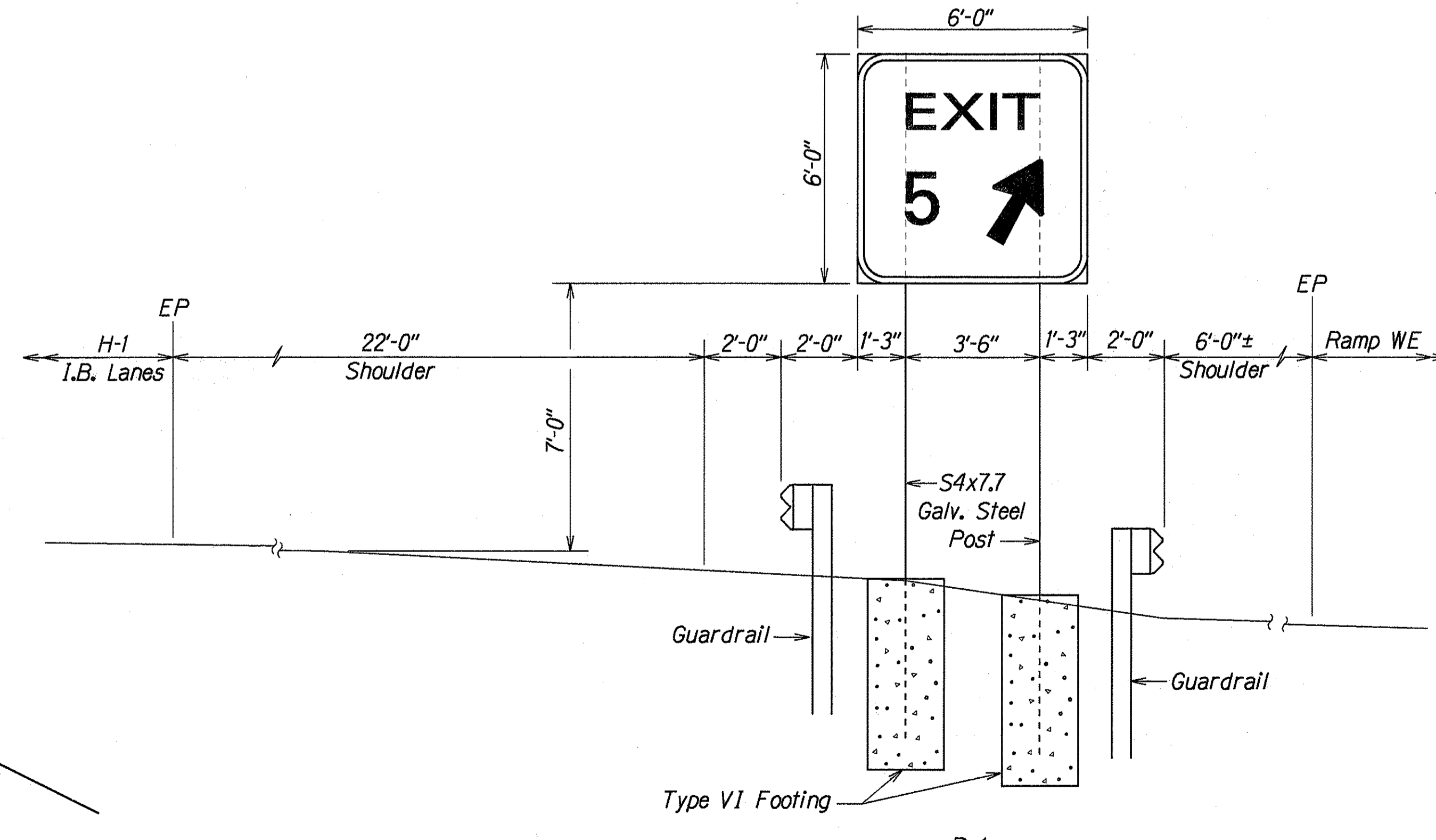
**SIGN ASSEMBLY E-2**  
H-1 # STA. 283+80± RT.  
Scale: 3/16" = 1'-0"



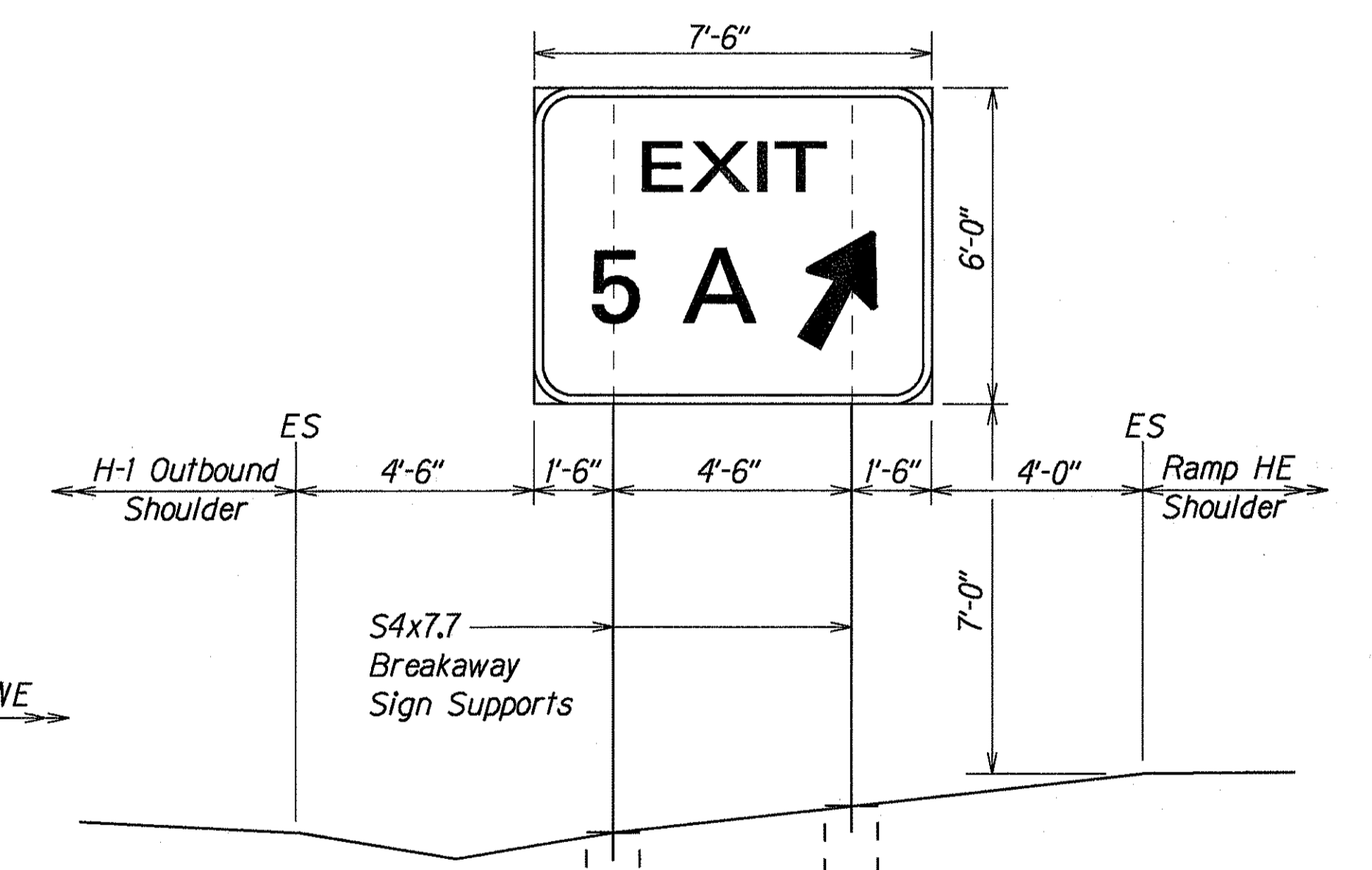
**SIGN ASSEMBLY E-3**  
H-1 # STA. 310+20± RT.  
Scale: 3/16" = 1'-0"



**SIGN ASSEMBLY E-4**  
H-1 # STA. 326+50± LT.  
Scale: 3/16" = 1'-0"



**D-1**  
H-1 # STA. 315+35± RT.  
Scale: 3/8" = 1'-0"



**D-2**  
H-1 # STA. 316+00± LT.  
Scale: 3/8" = 1'-0"

DATE	Y
SURVEY PLOTTED BY	
DRAWN BY	M. Takahashi / R. Acti
DESIGNED BY	G. Kagehi
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
FILED BY	
DATE	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

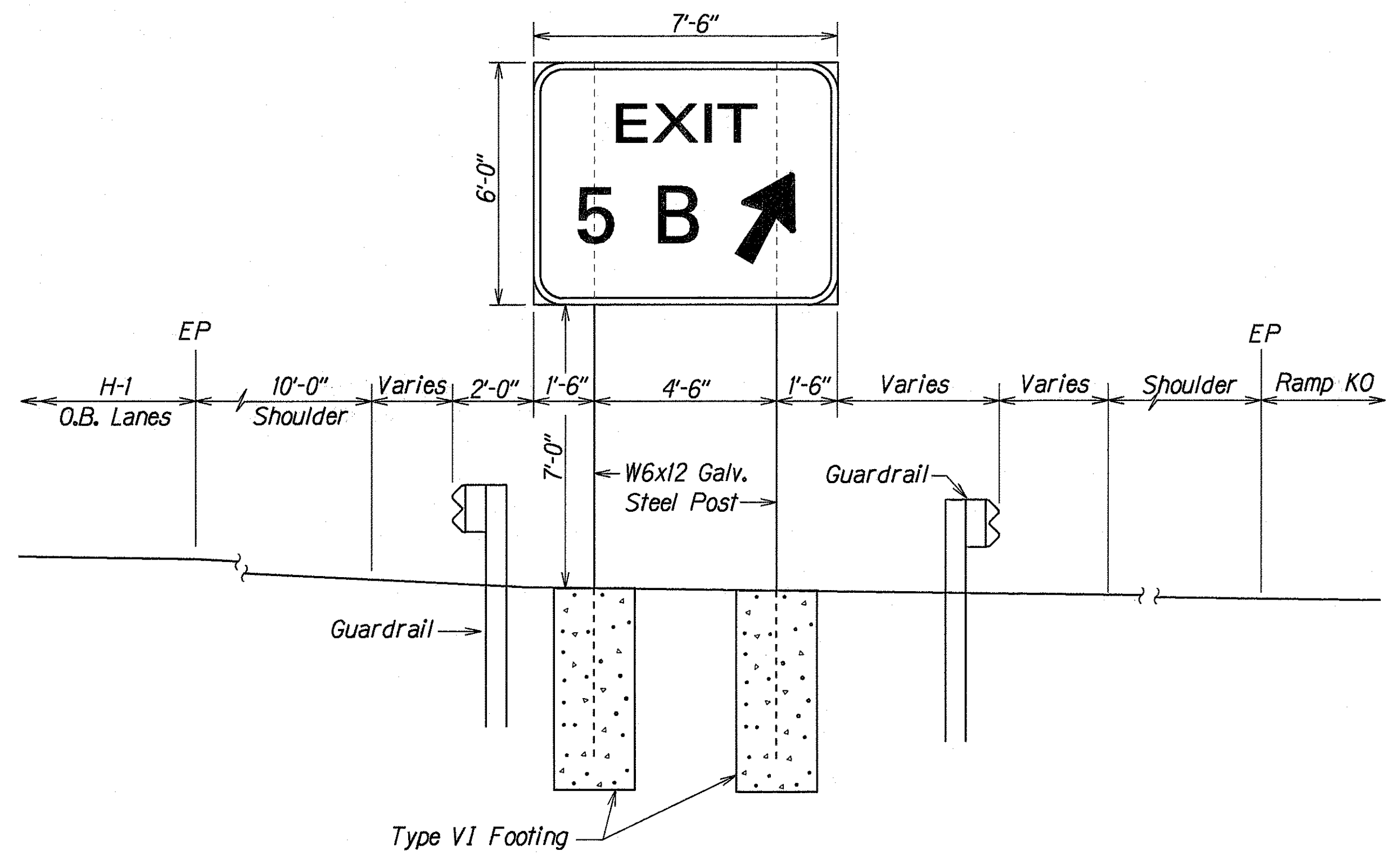
**FRAME LAYOUT DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F.A.I. Project No. IM-HI-1(219)

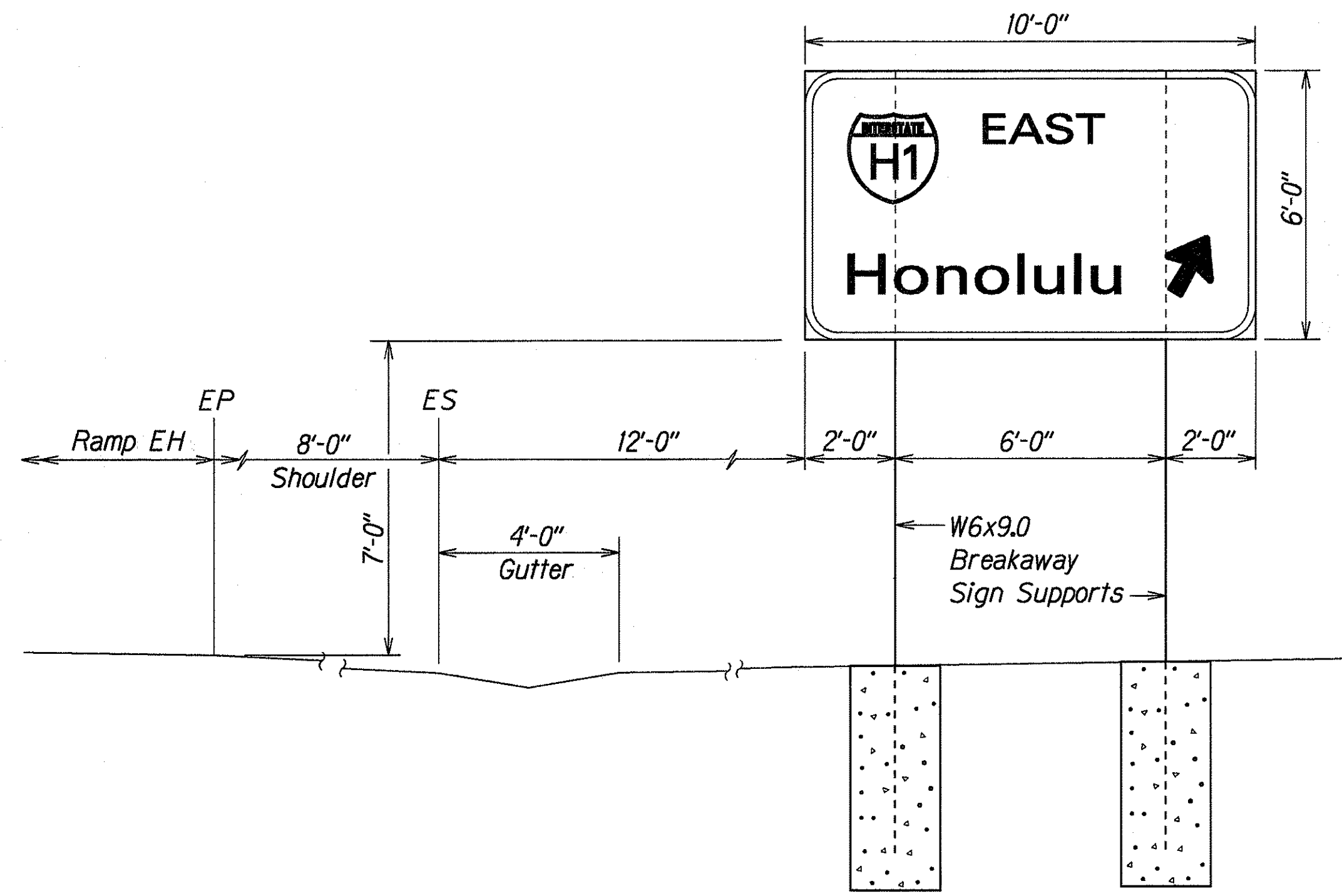
Scale: As Shown Date: Oct., 1997

SHEET No. 118 OF 21 SHEETS

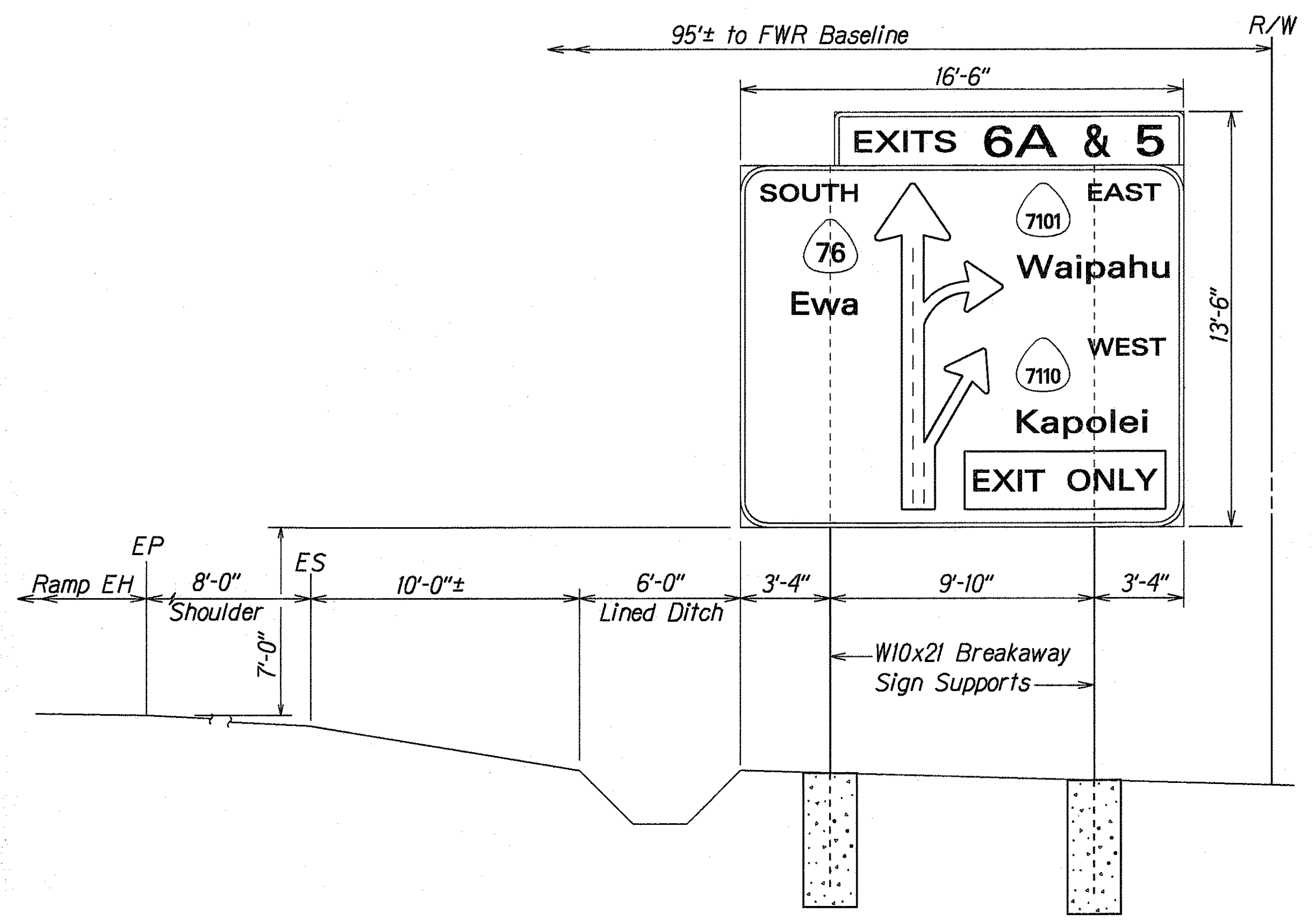
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-K(219)	1998	214	378



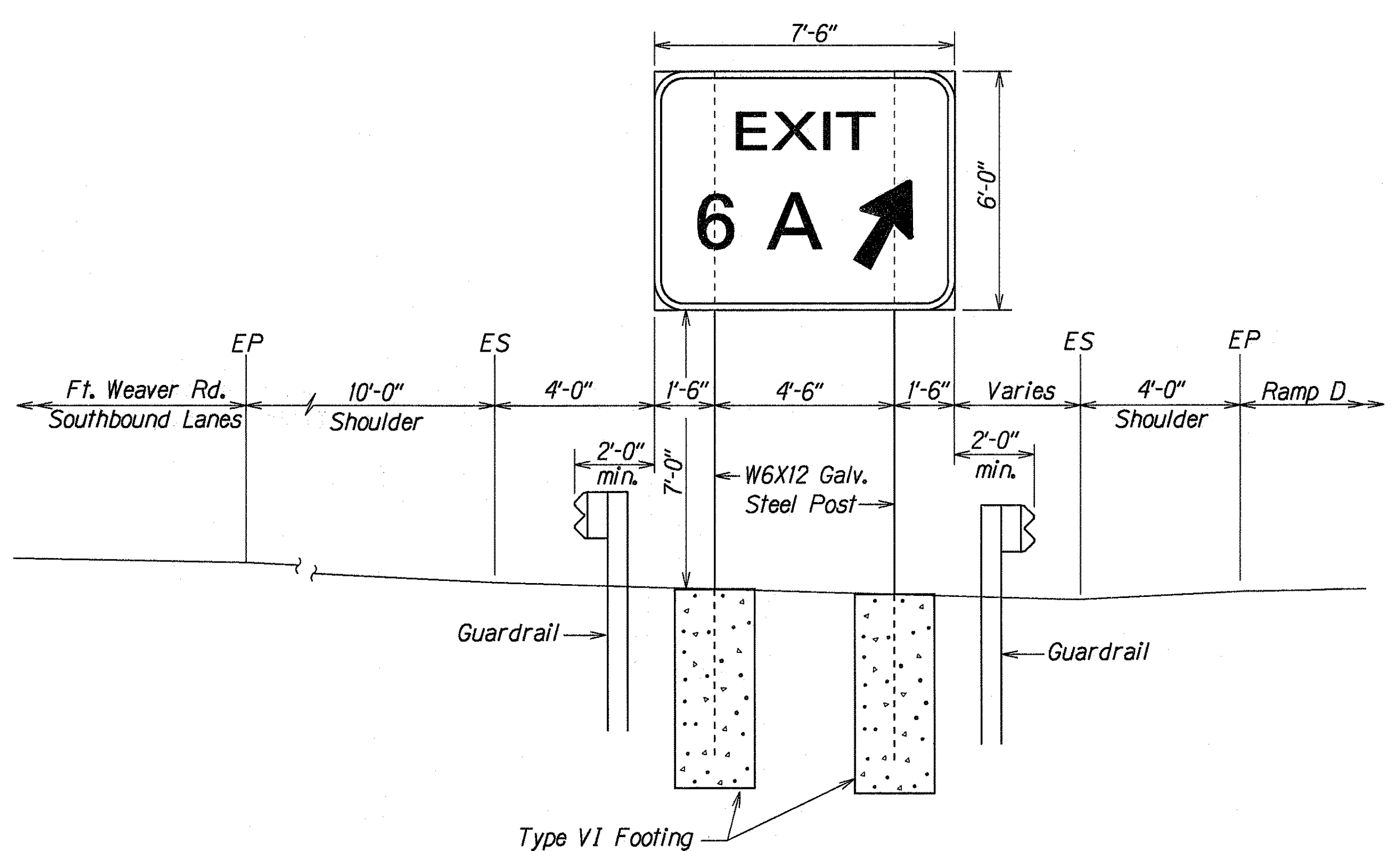
D-3  
H-1 @ STA. 339+00± LT.  
Scale: 3/8" = 1'-0"



D-4  
FWR @ STA. 63+60± LT.  
Scale: 3/8" = 1'-0"



D-5  
FWR @ STA. 65+50± RT.  
Scale: 1/4" = 1'-0"



D-6  
FWR @ STA. 79+60± RT.  
Scale: 3/8" = 1'-0"

DATE: 4/23/97  
SURVEY PLOTTED BY: [ ]  
DRAWN BY: [ ]  
DESIGNED BY: G. KAKIHI  
QUANTITIES BY: [ ]  
CHECKED BY: [ ]  
ORIGINAL PLAN: [ ]  
NOTE BOOK: [ ]  
FOR: [ ]  
BY: [ ]  
NO. [ ]

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**FRAME LAYOUT DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F.A.I. Project No. IM-HI-K(219)

Scale: As Shown Date: Oct., 1997  
SHEET No. 119 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	215	378

### 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
R1-2	YIELD		1		
R2-1(35)	SPEED LIMIT 35		1		
R2-1(45)-B	SPEED LIMIT 45			1	1
R3-1		2			
R3-4			1		
R3-4b		1			
R3-8A(L)			1		
R3-19(R)			1		
R3-23(L)		2	2		
R4-7		1			
R5-1		2			
R5-1a	WRONG WAY	2			
R6-1(L)		1			
R6-1(R)		1			
R16-1	BUCKLE UP  ITS THE LAW	1			
R17-3		1	1		
R17-4		1	1		
W1-8		21			
W3-4	STOP AHEAD WHEN FLASHING				1
W4-1(R)			1		
W4-1(R)-A				2	
W4-2(R)			2		
W4-3		1			
W9-1(R)-A	RIGHT LANE ENDS	1			
W11-2		1			
W13-3(30)	30 M.P.H.			1	
D9-2	H	1	1		
IM6-2(R)			1		
IM6-3			1		
TOTAL		40	15	4	2

### PAVEMENT MARKING SUMMARY

DESCRIPTION	QUANTITY
PAVEMENT MARKERS	
TYPE A _____	2,560 EA.
TYPE C _____	1,950 EA.
TYPE H _____	560 EA.
TAPE - TYPE I OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	4,100 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	6,600 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW) _____	1,100 L.F.
TAPE - TYPE II OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	20,780 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	22,275 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	8,300 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	4,100 L.F.
TAPE - TYPE III OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	2,200 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	110 L.F.
CROSSWALK MARKINGS _____	4 LANES
PAVEMENT ARROW _____	21 EA.
PAVEMENT WORD _____	7 EA.

### CONSTRUCTION SIGN SUMMARY

SIGN NO.	LOCATION	MESSAGE	W/POST(S)
CG20-2A	H-1 @ STA. 289+00± LT.	END ROAD WORK	1
CW20-1Ad	H-1 @ STA. 289+00± RT.	ROAD WORK AHEAD	1
CW20-1Ad	H-1 @ STA. 355+00± LT.	ROAD WORK AHEAD	1
CG20-2A	H-1 @ STA. 355+00± RT.	END ROAD WORK	1
CG20-2A	KUNIA RD. @ STA. 94+00± LT.	END ROAD WORK	1
CW20-1Ad	KUNIA RD. @ STA. 95+00± RT.	ROAD WORK AHEAD	1
CW20-1Ad	FWR @ STA. 73+75± LT.	ROAD WORK AHEAD	1
CG20-2A	RAMP D @ STA. 21+00± RT.	END ROAD WORK	1
CW20-1Ad	FWR @ STA. 91+00± LT.	ROAD WORK AHEAD	1
CG20-2A	FWR @ STA. 91+50± RT.	END ROAD WORK	1
TOTAL			10

### REFLECTOR MARKER SUMMARY

TYPE	QUANTITY					
	W/FLEXIBLE POST		W/STEEL POST		MOUNT ON CONCRETE BARRIER WALL	
	YELLOW	WHITE	YELLOW	WHITE	YELLOW	WHITE
RM-2	26	83				
RM-3			59			
RM-3 (Bi-Directional)					14	
RM-9			2			

SURVEY PLOTTED BY \_\_\_\_\_ DATE: 11/19/97  
 DRAWN BY: J.L. BELL  
 NOTE BOOK DESIGNED BY: G. KANEHI  
 QUANTITIES BY: M. ITOH  
 CHECKED BY: M. ITOH

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**TRAFFIC SUMMARIES**  
 INTERSTATE ROUTE H-1  
 Kunia Interchange Improvements  
 F. A. I. Project No. IM-HI-1(219)  
 Date: Oct., 1997  
 SHEET No. T20 OF 21 SHEETS

EXIT NUMBER SIGN SUMMARY				
INSTALLED ABOVE SIGN NO.	MESSAGE	SIZE	AREA (SQ. FT.)	
			NEW PANEL	OVERLAY
E-1	EXIT 5	6'-0" x 2'-0"	12.00	
E-2	EXIT 5	6'-0" x 2'-0"	12.00	
E-3	EXIT 5	6'-0" x 2'-0"	12.00	
E-4	EXIT 5A	8'-0" x 2'-0"	16.00	
E-5(R)	EXIT 5B	8'-0" x 2'-0"		16.00
E-6	EXIT 5B-A	10'-0" x 2'-0"	20.00	
E-7	EXIT 5B-A	10'-0" x 2'-0"	20.00	
D-5	EXIT 6A & 5	13'-0" x 2'-0"	26.00	
TOTAL			118.00	16.00

ROUTE MARKER SUMMARY						
SIGN ASSEMBLY	LOCATION	SIGN NO. AND MESSAGE	TYPE A ASSEMBLY		TYPE B ASSEMBLY	
			W/POST	W/O POST	W/POST	W/O POST
SRM-1	RAMP WE @ STA. 12+35±	M3-1 NORTH M1-6(750) 750 M5-1(L) ← M3-3 SOUTH M1-6(76) 76 M6-1 →			1	
SRM-2	RAMP WE @ STA. 22+40±	M2-1 JCT M1-6(7110) 7110	1			
SRM-3	FWR @ STA. 66+70±	M2-1 JCT M1-6(7110) 7110		1		
SRM-4	FWR @ STA. 71+70±	M3-2 EAST M1-6(7101) 7101 M6-3 ↑ M3-4 WEST M1-6(7110) 7110 M6-2(R) ↗				1
SRM-5	FWR @ STA. 80+40±	M2-1 JCT M1-6(7107) 7101		1		
IRM-1	FWR @ STA. 68+30±	IM2-1 JCT IM-1(1) HI		1		
TOTAL			1	3	1	1

DESTINATION SIGN SUMMARY					
SIGN NO.	LOCATION	MESSAGE	SIZE	NEW PANEL AREA (SQ. FT.)	
				W/O POSTS	W/POSTS
D-1	H-1 @ STA. 315+35± RT.	EXIT 5 ↗	6'-0" x 6'-0"		36.00
D-2	H-1 @ STA. 316+00± LT.	EXIT 5A ↗	7'-6" x 6'-0"		45.00
D-3	H-1 @ STA. 339+00± LT.	EXIT 5B ↗	7'-6" x 6'-0"		45.00
D-4	FWR @ STA. 63+60± LT.	Ⓜ EAST Honolulu ↗	10'-0" x 6'-0"		60.00
D-5	FWR @ STA. 65+50± RT.	DIAGRAMMATIC SIGN	16'-6" x 13'-6"		222.75
D-6	FWR @ STA. 79+60± RT.	EXIT 6A ↗	7'-6" x 6'-0"		45.00
TOTAL					453.75

EXPRESSWAY SIGN SUMMARY						
SIGN NO.	LOCATION	MESSAGE	SIZE	NEW PANEL AREA (SQ. FT.)	OVERLAY AREA (SQ. FT.)	SIGN LUMINAIRE
E-1	H-1 @ STA. 257+40± RT.	Ⓜ Ⓜ Kunia Waipahu/Ewa 1 Mile EXIT ↘ ONLY	13'-6" x 12'-0"	162.00		2
E-2	H-1 @ STA. 283+80± RT.	Ⓜ Ⓜ Kunia Waipahu/Ewa EXIT ↘ ONLY	13'-6" x 11'-0"	148.50		2
E-3	H-1 @ STA. 310+20± RT.	Ⓜ Ⓜ Kunia Waipahu/Ewa EXIT ONLY ↗	16'-0" x 11'-0"	176.00		2
E-4	H-1 @ STA. 326+50± LT.	Ⓜ South Ewa ↗ EXIT ONLY	11'-0" x 9'-0"	99.00		2
E-5(R)	H-1 @ STA. 346+50± LT.	Ⓜ NORTH Kunia ↗	11'-0" x 9'-6"		104.50	
E-6	H-1 @ STA. 359+50± LT.	Ⓜ NORTH Kunia 1/4 MILE	16'-6" x 14'-0"	231.00		
E-7	H-1 @ STA. 370+50± LT.	DIAGRAMMATIC SIGN	24'-0" x 19'-0"	456.00		
TOTAL				1,272.50	104.50	8

SURVEY PLOTTED BY: DATE: 11/1/97  
 DESIGNED BY: G. A. KERR  
 CHECKED BY: G. A. KERR  
 ORIGINAL PLAN: 10/1/97  
 NOTE BOOK: 10/1/97  
 QUANTITIES BY: G. A. KERR  
 CHECKED BY: G. A. KERR








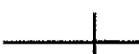













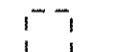



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**TRAFFIC SUMMARIES**  
 INTERSTATE ROUTE H-1  
 Kunia Interchange Improvements  
 F. A. I. Project No. 1M-HI-1(219)  
 Date: Oct., 1997  
 SHEET No. T21 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	217	378

TRAFFIC SIGNAL NOTES

- 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.
- All splicing shall be done in the pullboxes.
- 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.
- 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.
- All Traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signals as called for in the plans.
- 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.
- 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.
- 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.
- Locations of traffic markings and markers (lane lines, Stop lines, crosswalk, etc.) shown on the plans shall be verified with the Engineer prior to the installation of the traffic signal system.
- 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.
- 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).
- Connecting into existing traffic signal system and making all necessary adjustments shall not be paid for separately, but considered incidental to the various traffic signal contract items.

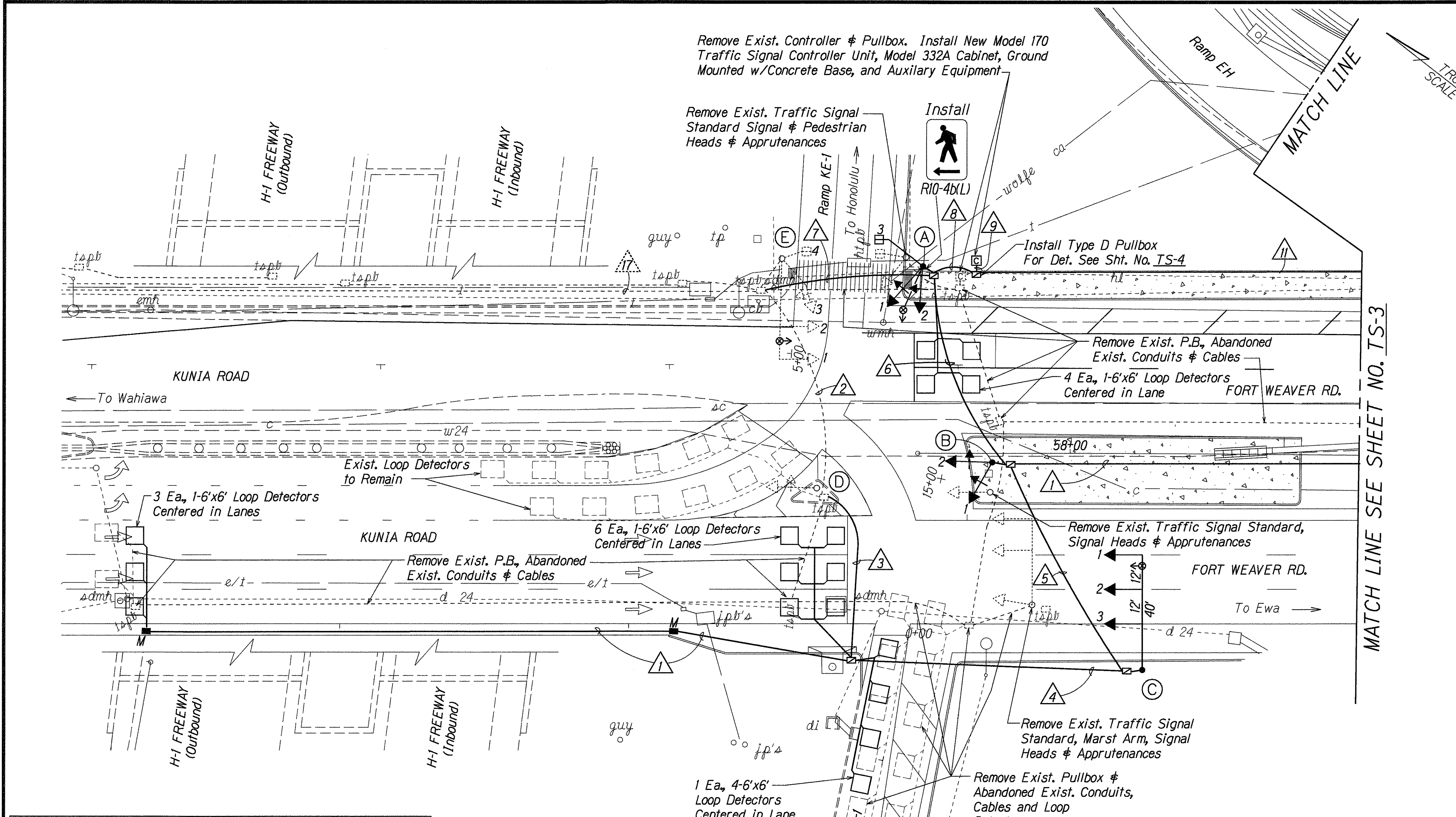
TRAFFIC SIGNAL LEGEND

-  New Traffic Signal Master Controller
-  New Traffic Signal Controller
-  Existing Traffic Signal Controller
-  New Traffic Signal Conduits & Cables
-  Existing 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 (Programmed Visibility)
-  New 12" RYG  $\frac{G}{Y}$  Fiber Optic Traffic 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 heads as specified on plan)
-  Exist. Traffic Signal Standard & Signal Head
-  New Pedestrian Signal Head
-  Exist. Pedestrian Signal Head
-  New Type B Pullbox
-  New Type B Pullbox w/Modified Cover
-  New Type C Pullbox
-  New Type D Pullbox
-  Existing Traffic Signal Pullbox
-  New Loop Detectors
-  Existing Loop Detectors
-  Opticom Receiver
-  New Pipe Guard
-  Existing Pipe Guard

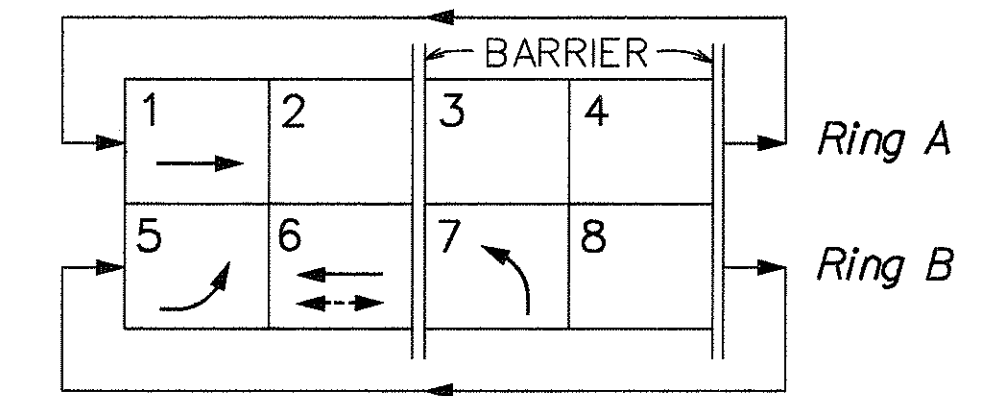
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY A. BH	11/22/96
DESIGNED BY G. KAHON		
QUANTITIES BY		
CHECKED BY		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**TRAFFIC SIGNAL LEGEND  
AND NOTES**  
INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)  
Date: Oct., 1997  
SHEET No. TS-1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 218	378



MATCH LINE SEE SHEET NO. TS-3



PHASE DIAGRAM

POLE LETTER	STANDARD TYPE	MOUNTING TYPE	SIGNAL FACES
A	I - 10	Slipfitter - Two Way Cantilever - One way TPIW - EVP	R-Y-G←, R-Y-G← H-M Opticom
B	I - 10	Slipfitter - Two Way	R-Y-G←, R-Y-G←
C	II - 40	Mast Arm - One Way Mast Arm - One Way Mast Arm - One Way Mast Arm - Hor.	R-Y-G↑ R-Y-G↑ R-Y-G↑ Opticom
D	I - 10 (Exist.)	Slipfitter - One Way	R-Y-G← (Exist.)
E	II - 35 (Exist.)	Mast Arm - One Way Mast Arm - One Way Bracket - One Way Bracket - One Way Mast Arm - Hor.	R-Y-G↑ (Exist.) R-Y-G↑ (Exist.) R-Y-G← (Exist.) H-M (Exist.) Opticom
F	LIGHT STD.	Bracket - One Way Bracket - One Way	R-Y-G↑ M-H
G	I - 10	Slipfitter - One Way Cantilever - One Way	R-Y-G↑ H-M
H	LIGHT STD.	Bracket - One Way	Y Flasher

Traffic Signal Head Type and Description	12" RY↑ Traffic Signal Head	12" RY← Traffic Signal Head	12" Y Signal Head	Pedestrian Signal Head
Pole Letter	C-1	A-1	H-1	A-3
Signal Head Number	C-2 C-3 E-1 (exist.) E-2 (exist.) F-1 * G-1	A-2 B-1 B-2 D-1 (exist.) E-3 (exist.)		E-4 (exist.) F-2 G-2

\* With Programmed Visibility

	DELTA ITEM NO. (Δ)											
	1	2	3	4	5	6	7	8	9	10	11	
QUANTITY OF 2" CONDUIT, SEE NOTE NO. 1	1	2*	2	3	4	4	6	6	9	1	2	3*
QUANTITY OF 26/C #14 CONTROL CABLE		1	1	1	1	1	1	1	3		1	
QUANTITY OF 2/C #14 SHIELDED LOOP DETECTOR AND PEDESTRIAN PB CABLE	1	2*	3	3	4	3	8	9			1	
QUANTITY OF 3/C #20 SHIELDED OPTICAL DETECTOR CABLE						1	1	1	3	3		
QUANTITY OF 12 PR #19 INTERCONNECT CABLE							1	1	1			1*
QUANTITY OF 4/C #14 FLASHING YELLOW LT. CABLE									1	1		
QUANTITY OF 2/C #2 #8 GND							1	1	1			1*
QUANTITY OF 19/C #14 CONTROL CABLE		1**										

NOTE: 1. ALL CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS OTHERWISE NOTED.  
\* EXIST. TO REMAIN \*\*REMOVE EXIST.

SURVEY PLOTTED BY: DATE: 11/12/98  
 DRAWN BY: J. HILL  
 NOTE BOOK DESIGNED BY: G. KANEHI  
 QUANTITIES BY: J. HILL  
 CHECKED BY: J. HILL

6/27/00	Add 2 Ea., 1-6'x6' Loop Detectors on Fort Weaver Road, North-bound
DATE	REVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

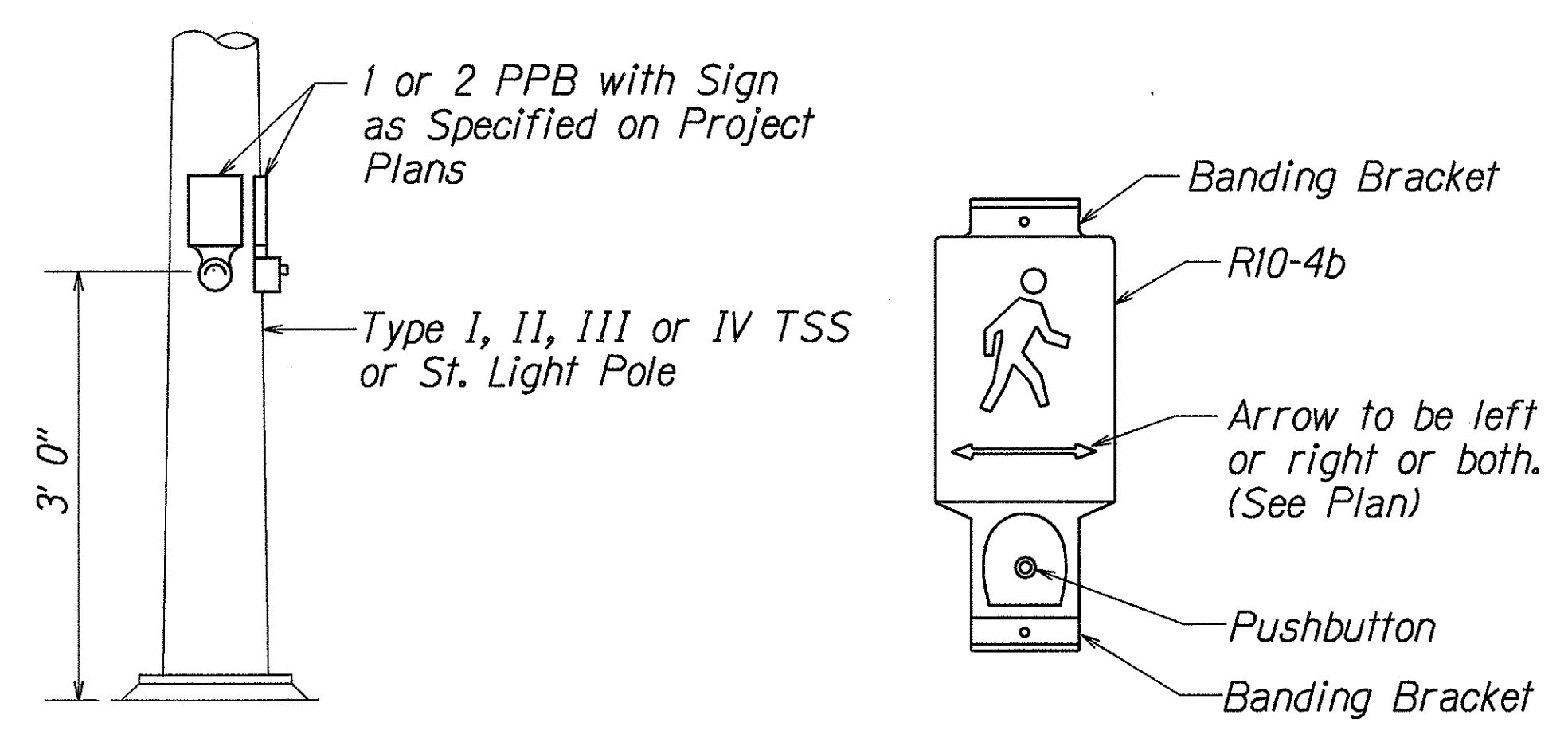
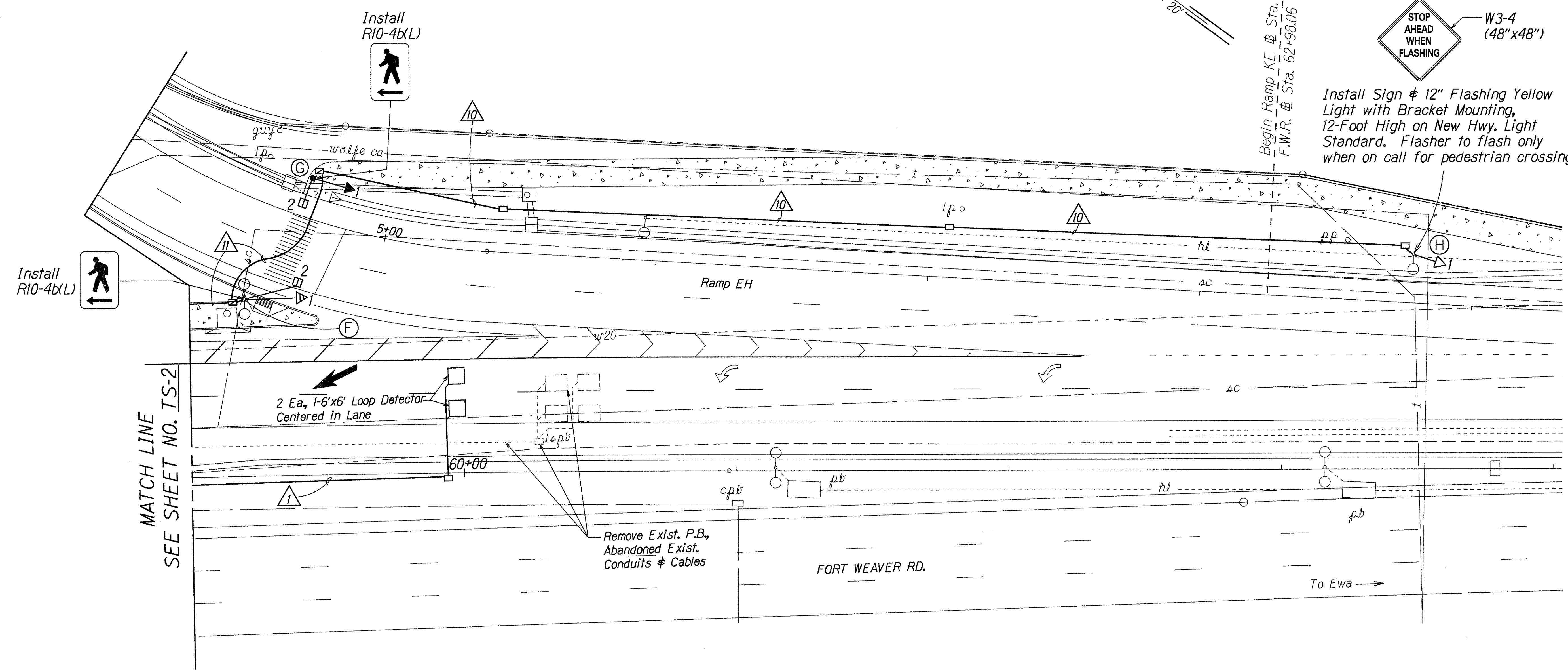
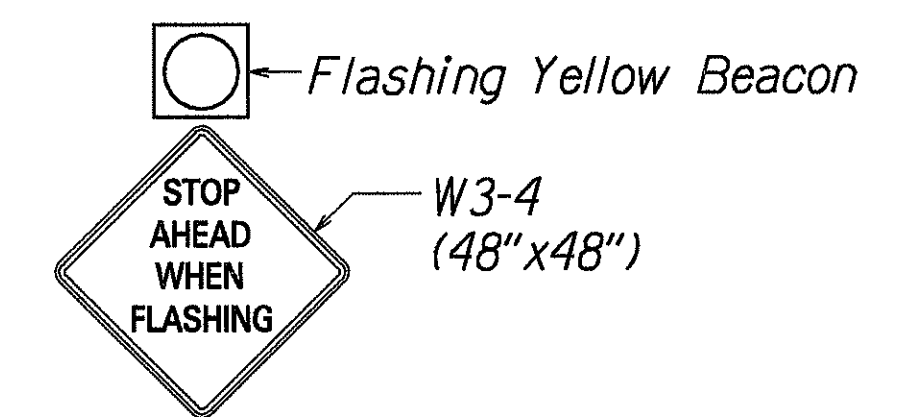
**TRAFFIC SIGNAL PLAN**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)  
Scale: 1"=20' Date: Oct., 1997

SHEET No. TS-2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	C.O. 219	378

TRUE NORTH  
SCALE: 1" = 20'

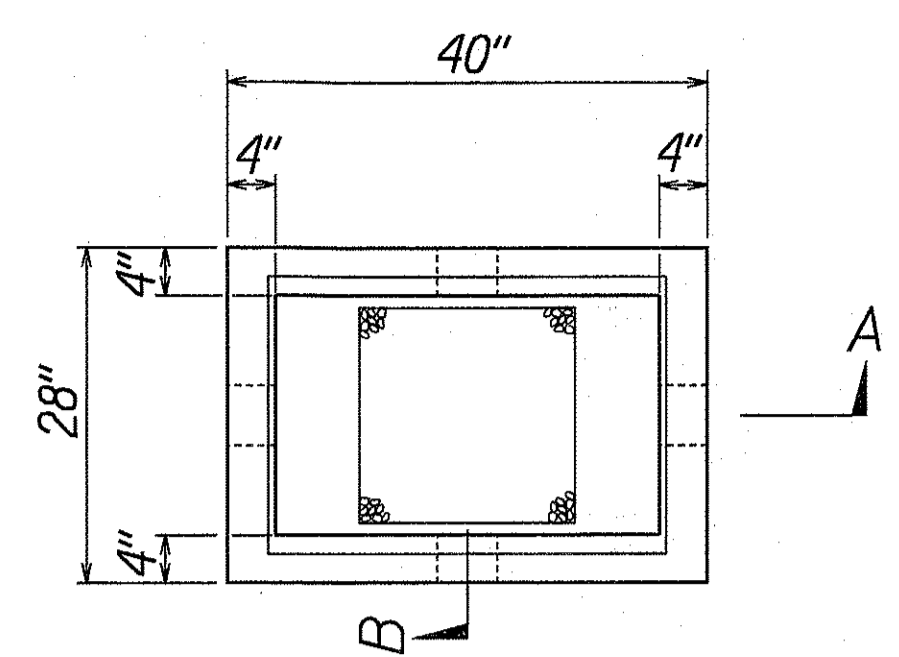


PEDESTRIAN PUSHBUTTON DETAILS  
N.T.S.

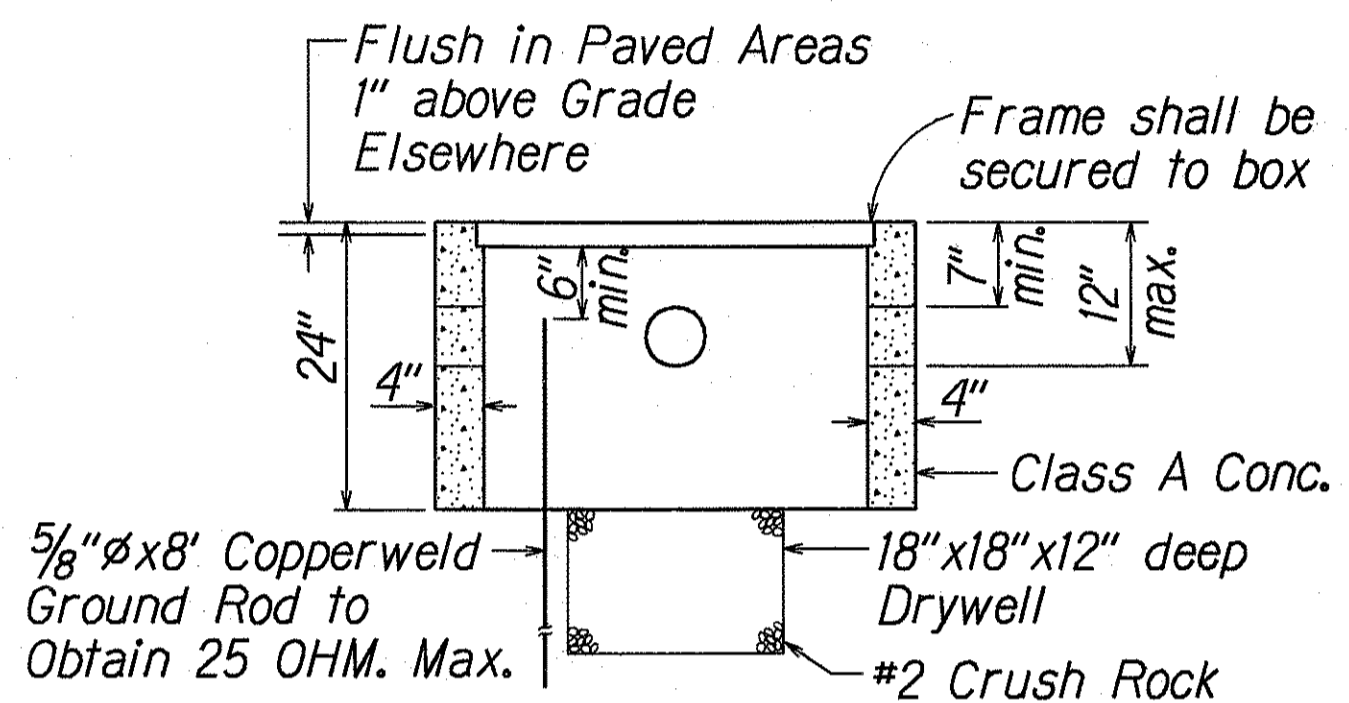
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO. 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000	

6/27/00	Add 1 Ea. 1-6'x6' Loop Detector on Fort Weaver Road, North-bound
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>TRAFFIC SIGNAL PLAN</b>	
<u>INTERSTATE ROUTE H-1</u> <u>Kunia Interchange Improvements</u> <u>F. A. I. Project No. IM-HI-1(219)</u>	
Scale: 1"=20'	Date: Oct., 1997
SHEET No. TS-3 OF 5 SHEETS	

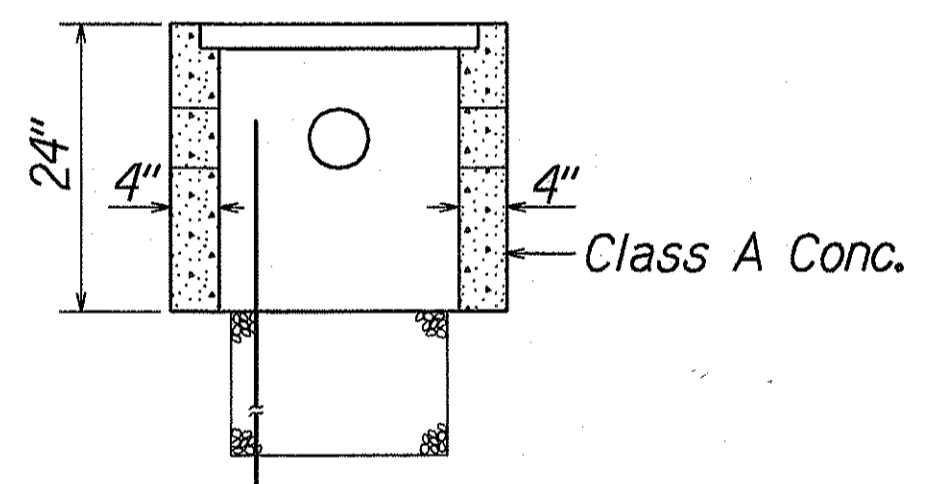
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(219)	1998	220	378



PLAN OF PULLBOX



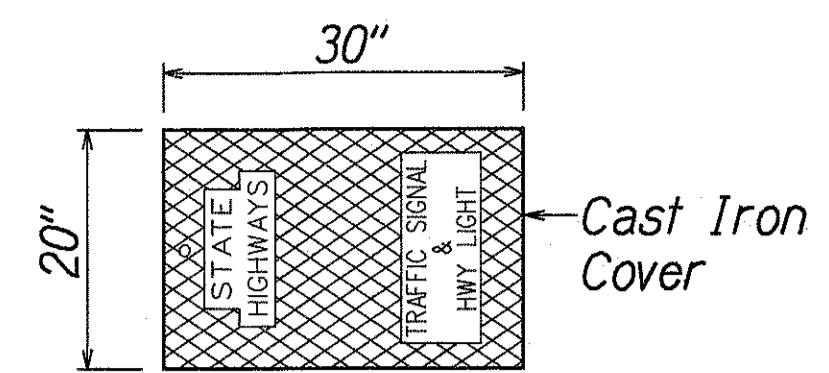
SECTION A-A



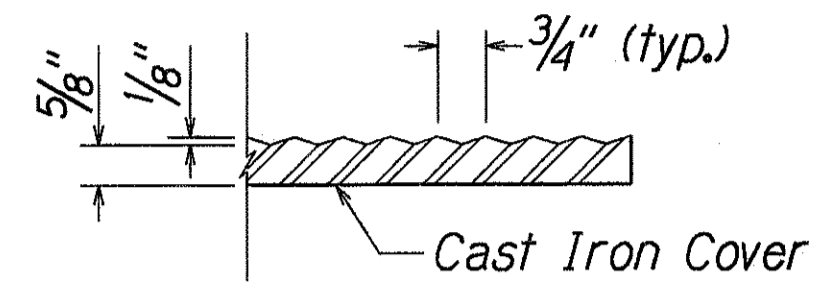
SECTION B-B

**TYPE "C" PULLBOX**

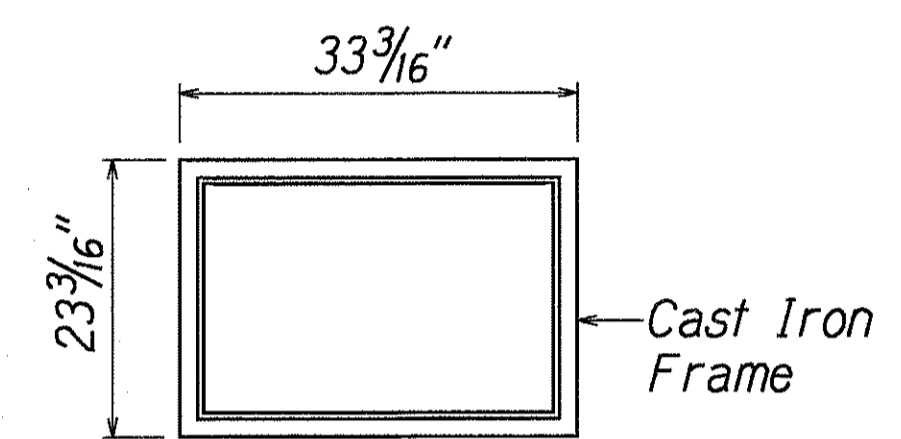
Not to Scale



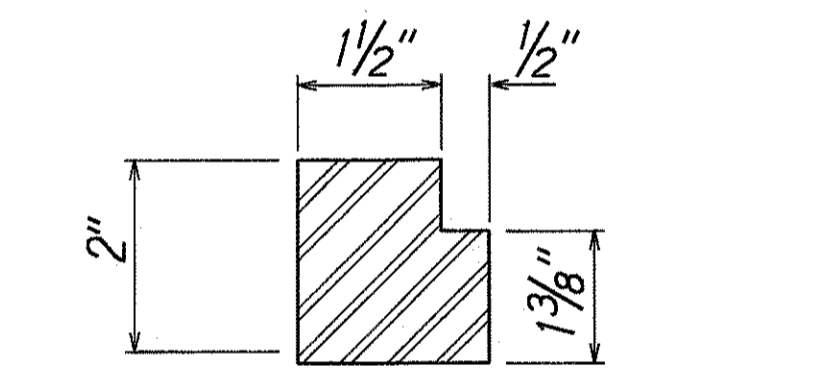
PLAN OF COVER



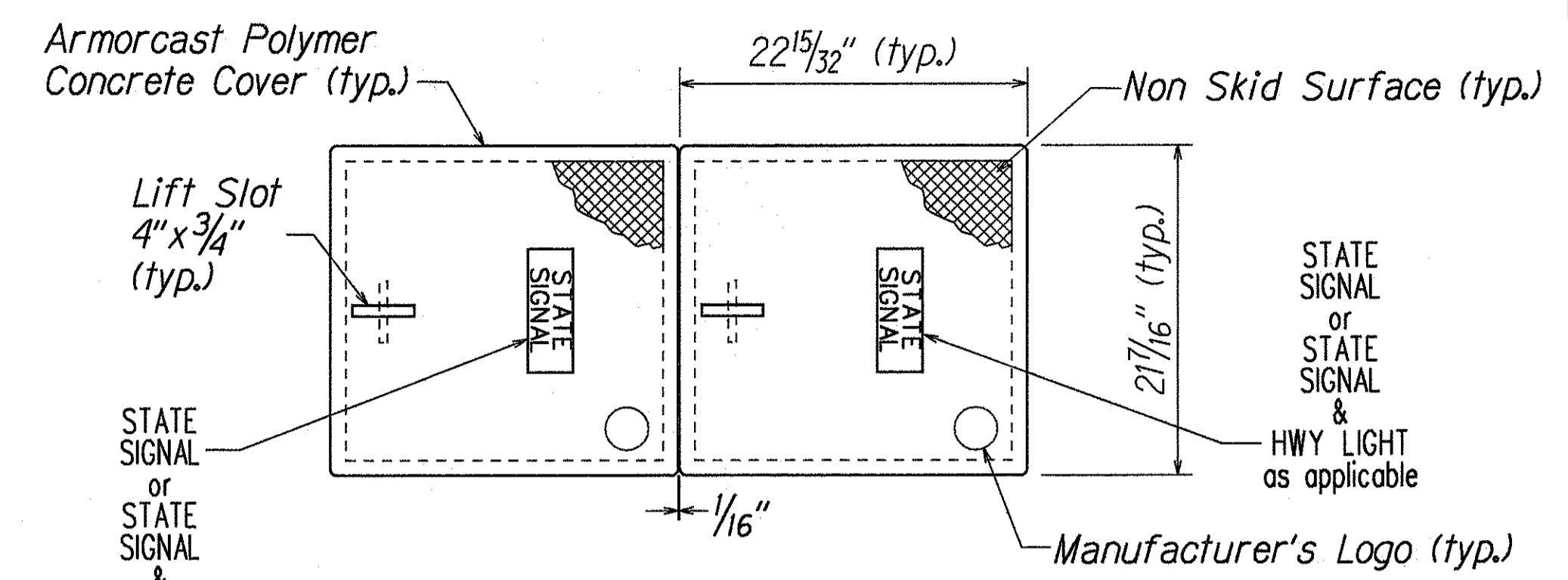
SECTION THROUGH COVER



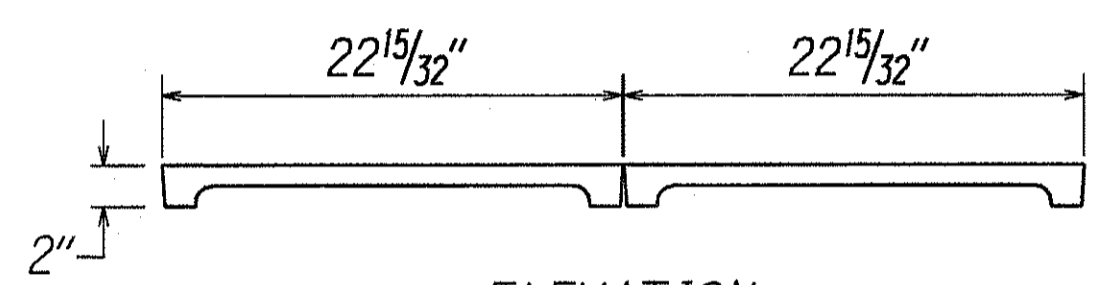
PLAN OF FRAME



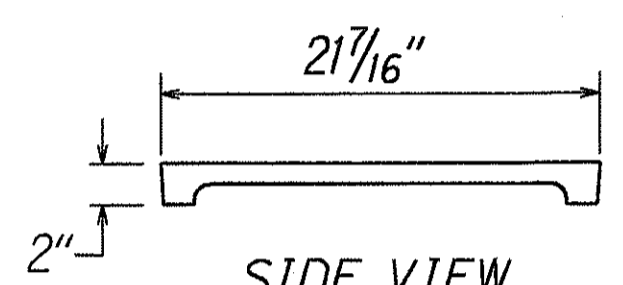
SECTION THROUGH FRAME



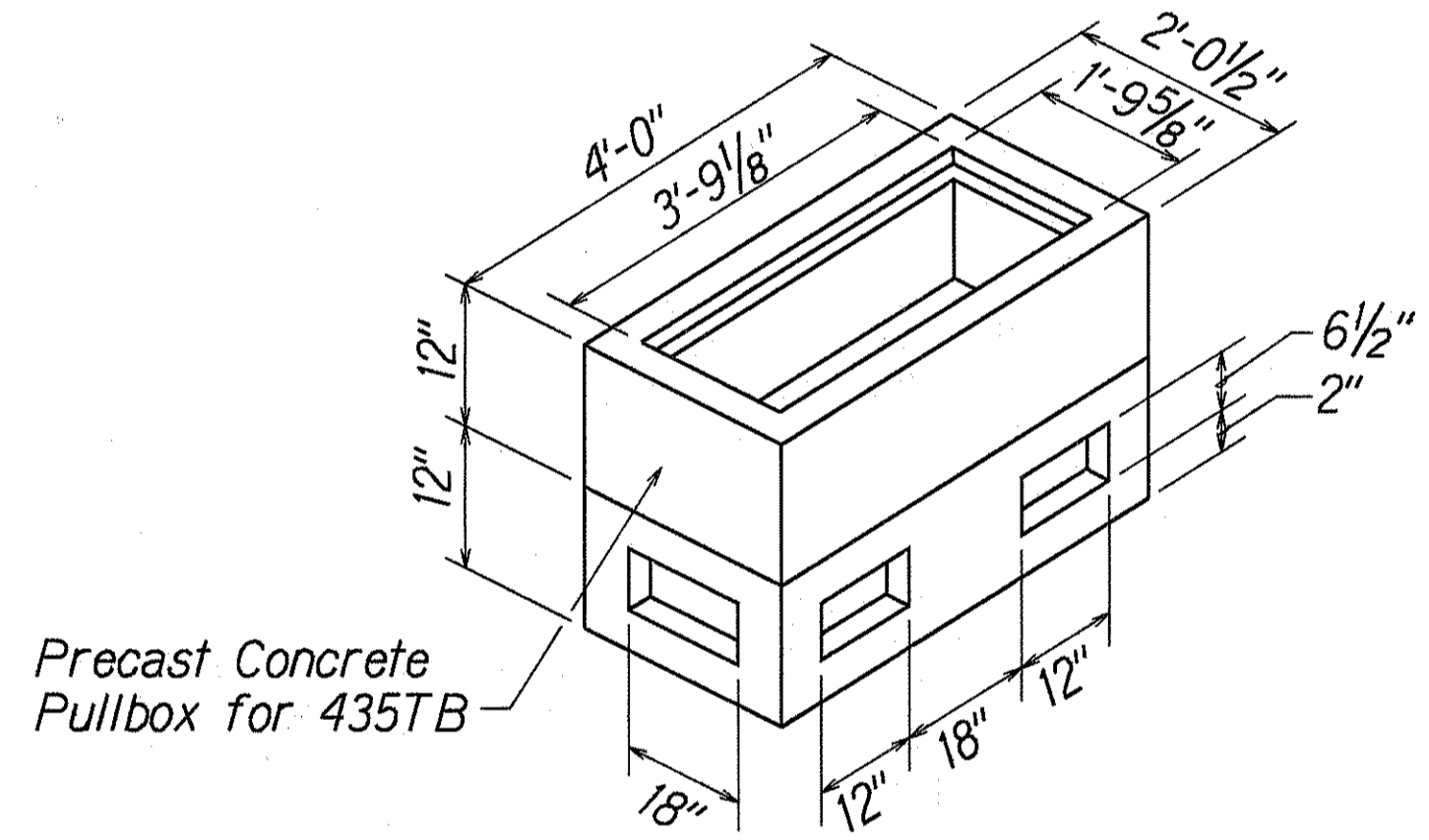
PLAN VIEW



ELEVATION COVER



SIDE VIEW



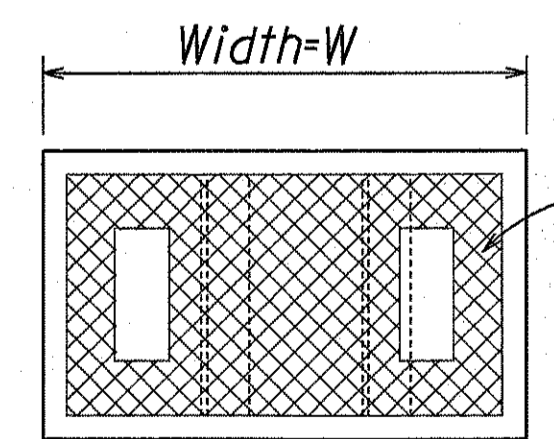
PULLBOX

**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**

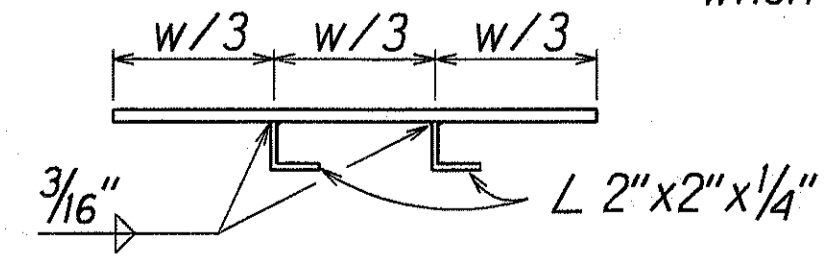
Not to Scale



TOP VIEW

Except where noted, details shall conform to cover details for Type "C" Pullbox (C&C Type)

NOTE: Modified cover shall be furnished when called for on plans.



SIDE VIEW

MODIFIED COVER DETAIL

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	11/22/96
FOR RUBY	DESIGNED BY	
NO. 0111151	QUANTITIES BY	
	CHECKED BY	

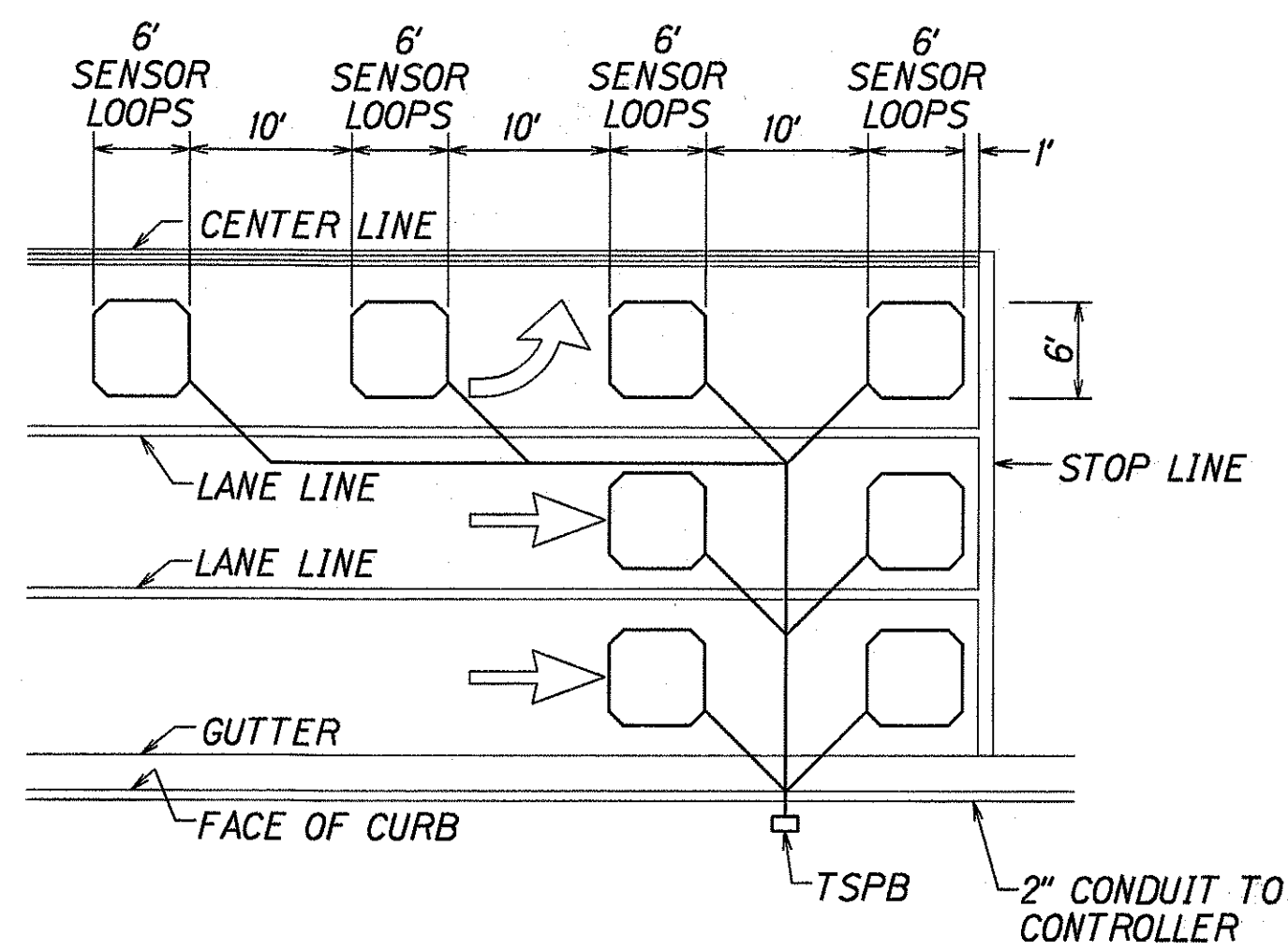
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TRAFFIC SIGNAL DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)

Scale: As Noted Date: Oct., 1997

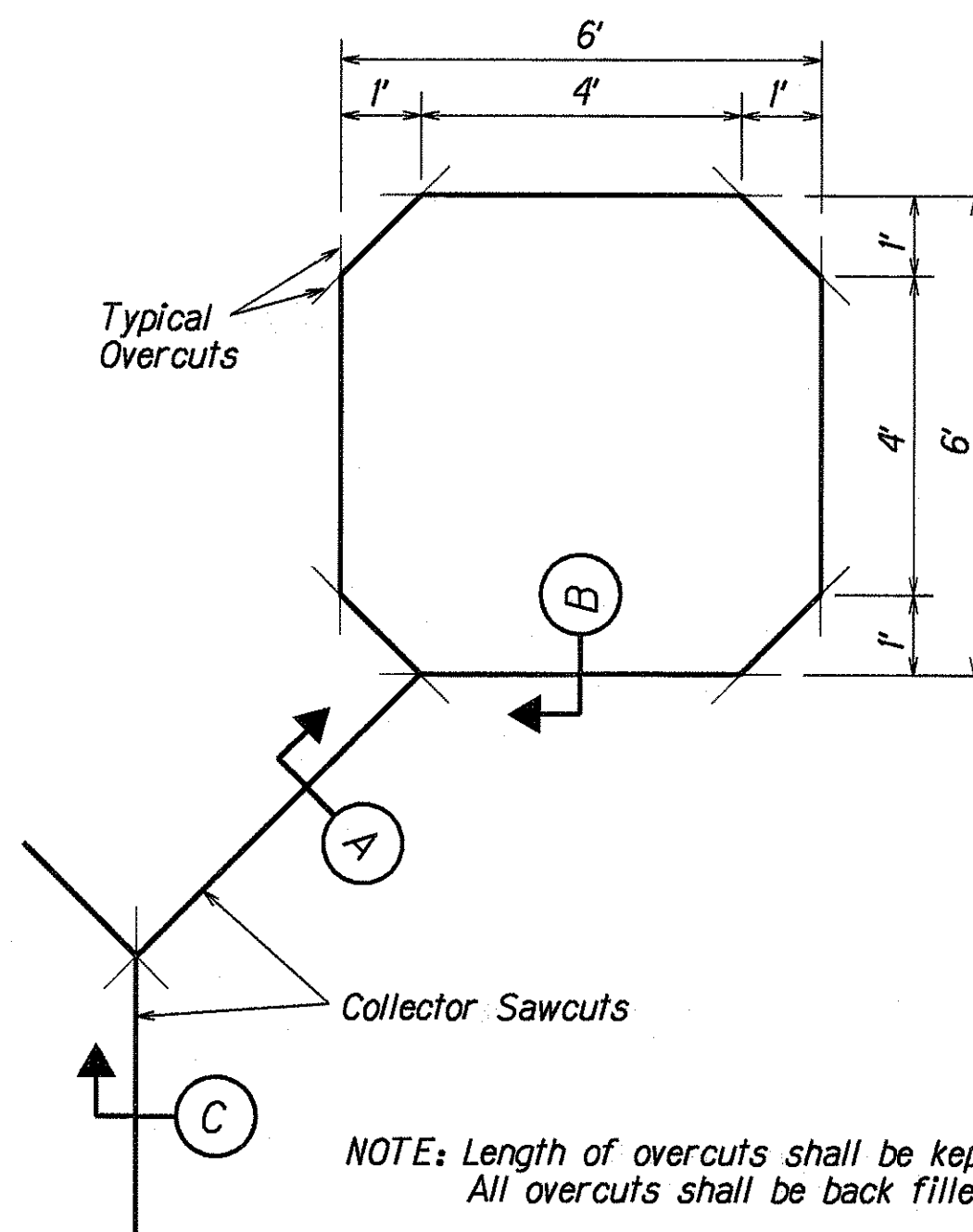
SHEET No. TS-4 OF 5 SHEETS



**NOTES:**

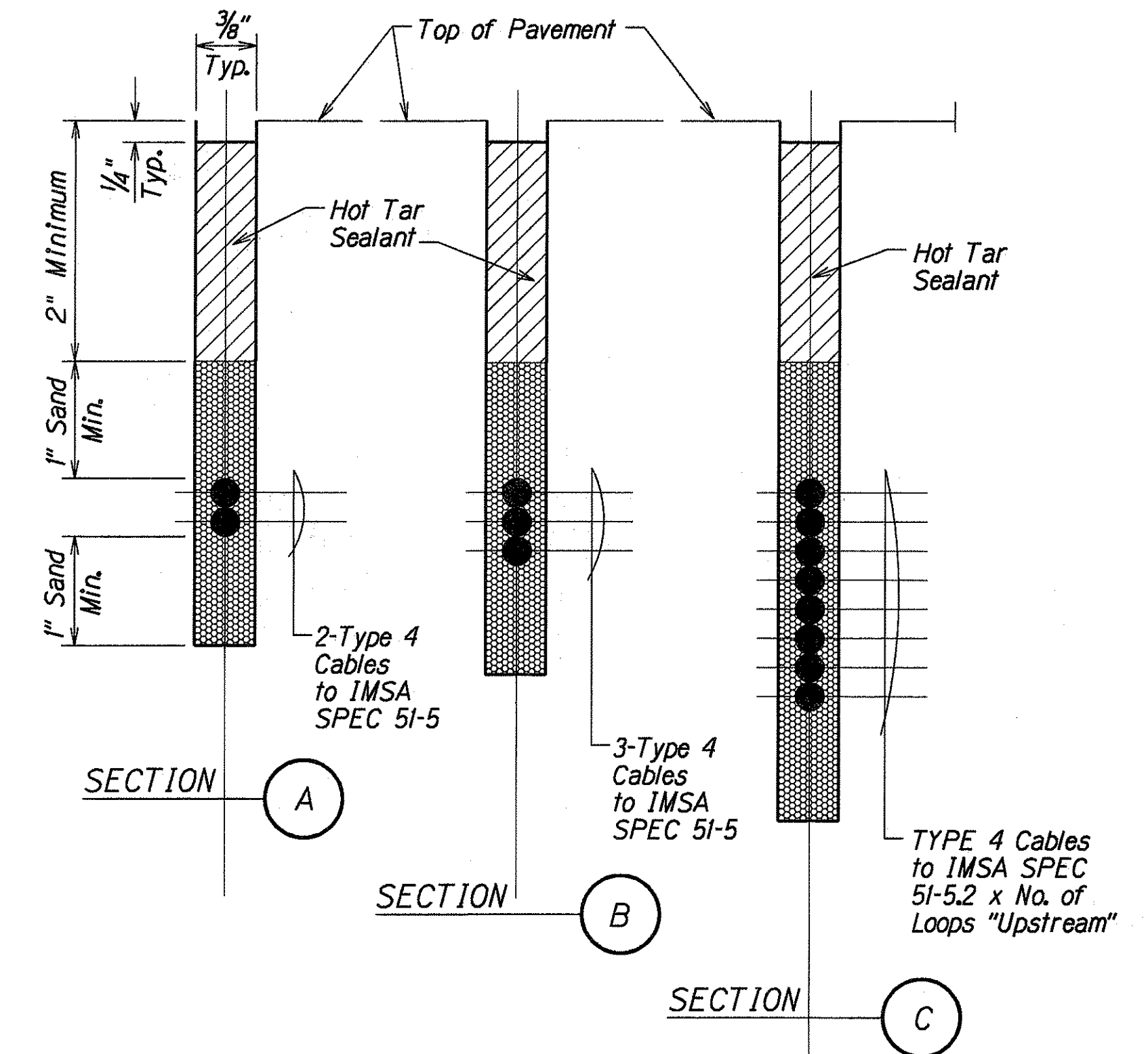
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

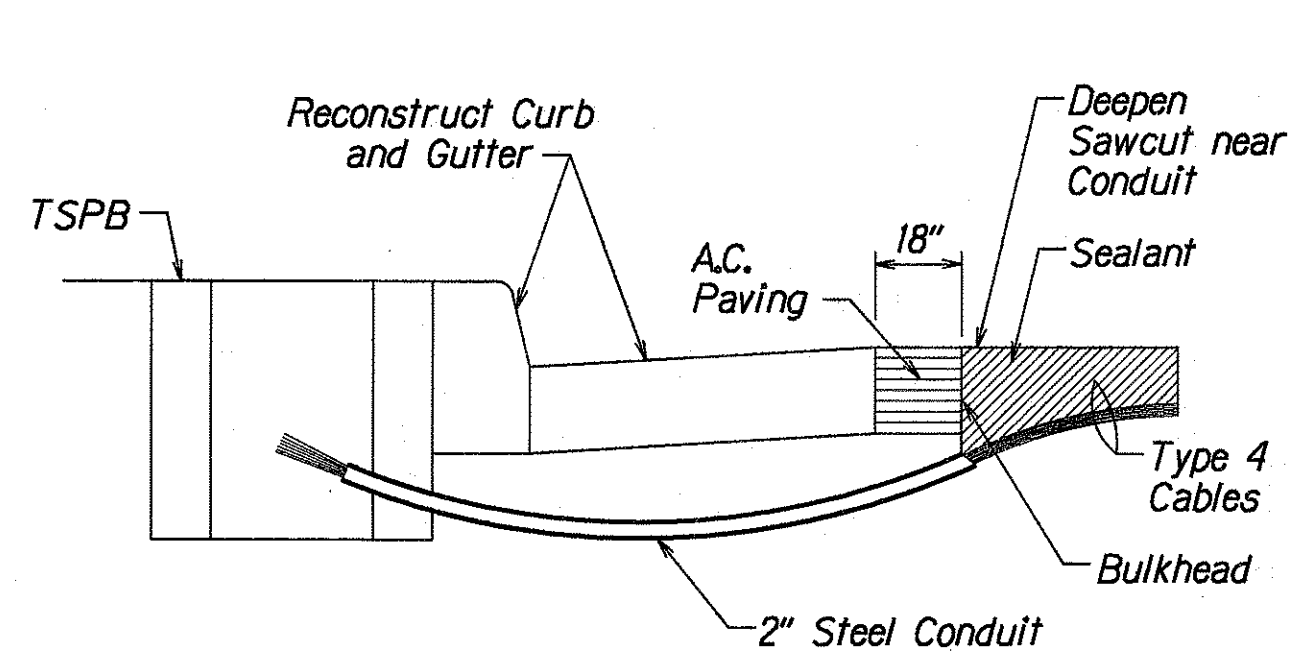


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



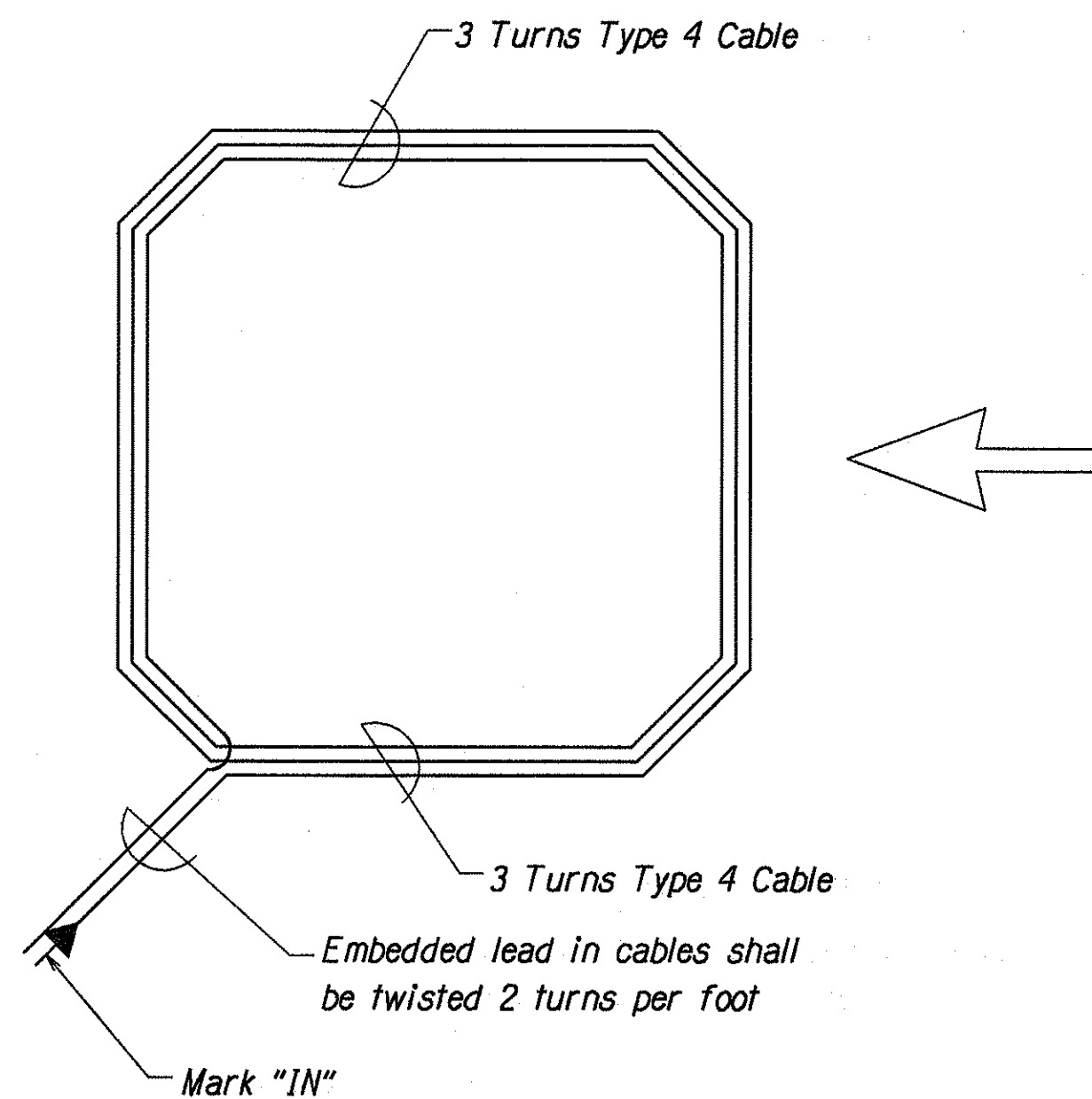
TYPICAL SECTION THROUGH SENSOR LOOP



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

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

DATE	Y
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
NOTED BY	
ORIGINAL PLAN	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**LOOP DETECTOR DETAILS**

INTERSTATE ROUTE H-1  
Kunia Interchange Improvements  
F. A. I. Project No. IM-HI-1(219)

Not to Scale Date: Oct., 1997

SHEET No. TS-5 OF 5 SHEETS