

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	45	58

**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" or 8" 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)

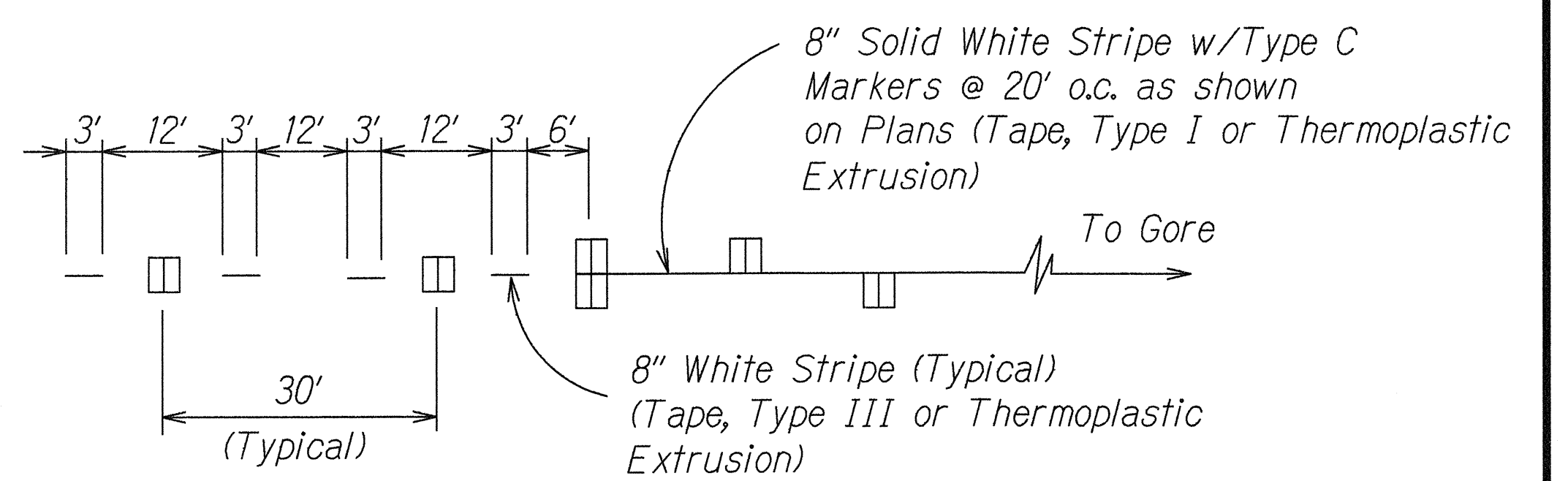
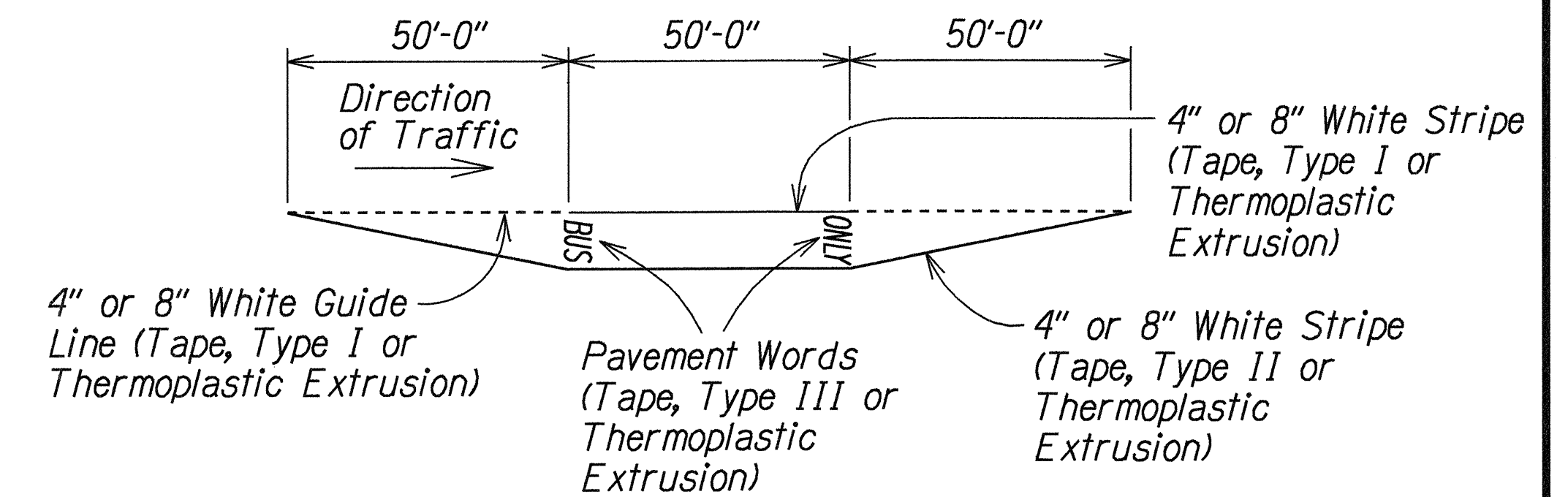
**LEGEND**

- Reflector Marker (RM-2, white or yellow) w/post
- Reflector Marker (RM-3) w/post
- Reflector Marker (RM-2, white or yellow) w/Flexible Delineator Post (Type B)
- Reflector Marker (RM-3) w/Flexible Delineator Post (Type A)
- Reflector Marker (RM-2, white or yellow) w/Bridge Railing Brackets

**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. 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.
10. Backing for all new regulatory and warning signs shall not be spliced.
11. 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 Streets and Highways" (MUTCD)
  - b. "Standard Highway Signs"
  - c. "Standard Alphabets for Highway Signs"
12. State Route Marker Symbols, borders, messages, arrows, symbols and shields shall conform to details as shown on the plans and as specified in the MUTCD.
13. 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.
14. Removal of existing delineators and posts, as directed by the Engineer or shown on the plans, shall be considered incidental to the various signing items.
15. Removal and reinstalling existing street name signs on regulatory and warning sign post shall not be paid for separately but shall be considered incidental to the various signing items.

16. Dept. of Transportation Services, City and County of Honolulu will assist the Engineer in construction inspection for the loop detector work. The Contractor shall notify the Electrical and Maintenance Services Division, Department of Transportation Services, three (3) working days prior to commencing work on the loop detectors (Phone no. 527-5007, Gerald Hamada).
17. The exact locations of the new loop detectors shall be determined in the field by the Engineer.
18. Loop detectors damaged during the Contractor's reconstruction of pavement area or cold planing operation, shall be replaced within 48 hours. Replacement and location of the new loop detectors shall be as directed by the Engineer.
19. The Contractor shall erect and maintain at the beginning and end of the project advance construction warning signs placed as indicated on the plans or as directed by the Engineer for the duration of the highway project. 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 upon the completion of the project.



Void Field Change No. 1 - Do not install Stimsonite 953 markers for this project.

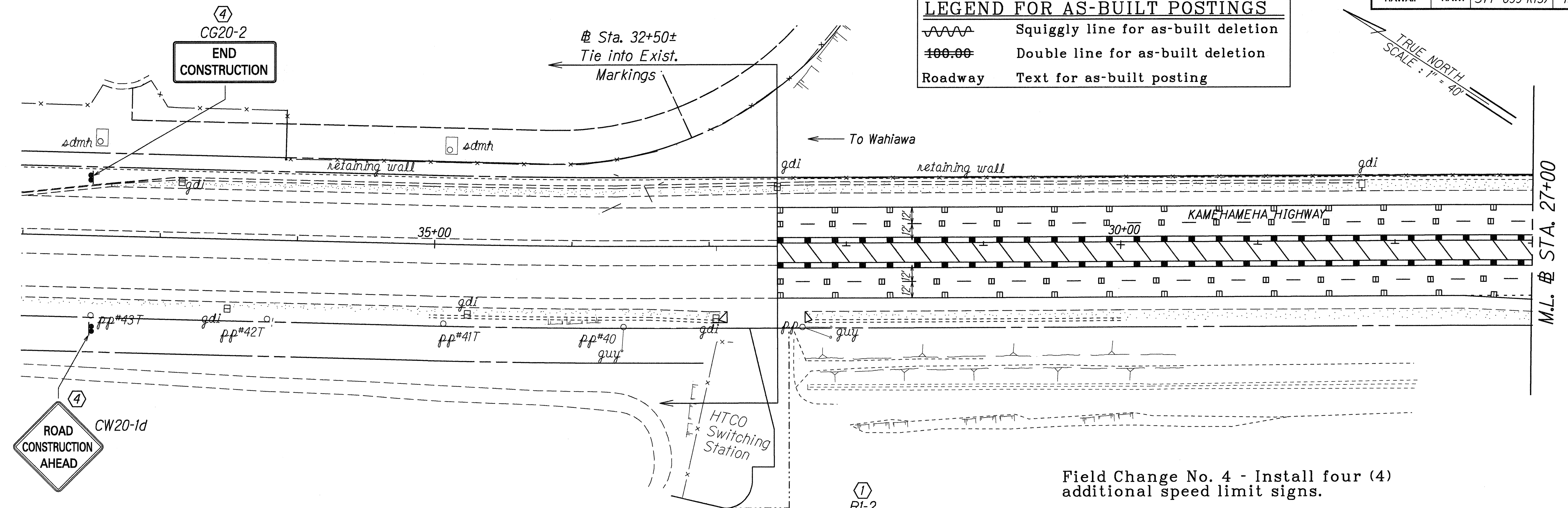
LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**TRAFFIC LEGEND,**  
**DETAIL & NOTES**  
**KAMEHAMEHA HIGHWAY RESURFACING**  
**Lumaina Street to Farrington Highway**  
Fed. Aid Proj. No. STP-099-1(13)  
Scale: As Noted Date: Dec., 1994  
SHEET No. 11 OF 14 SHEETS

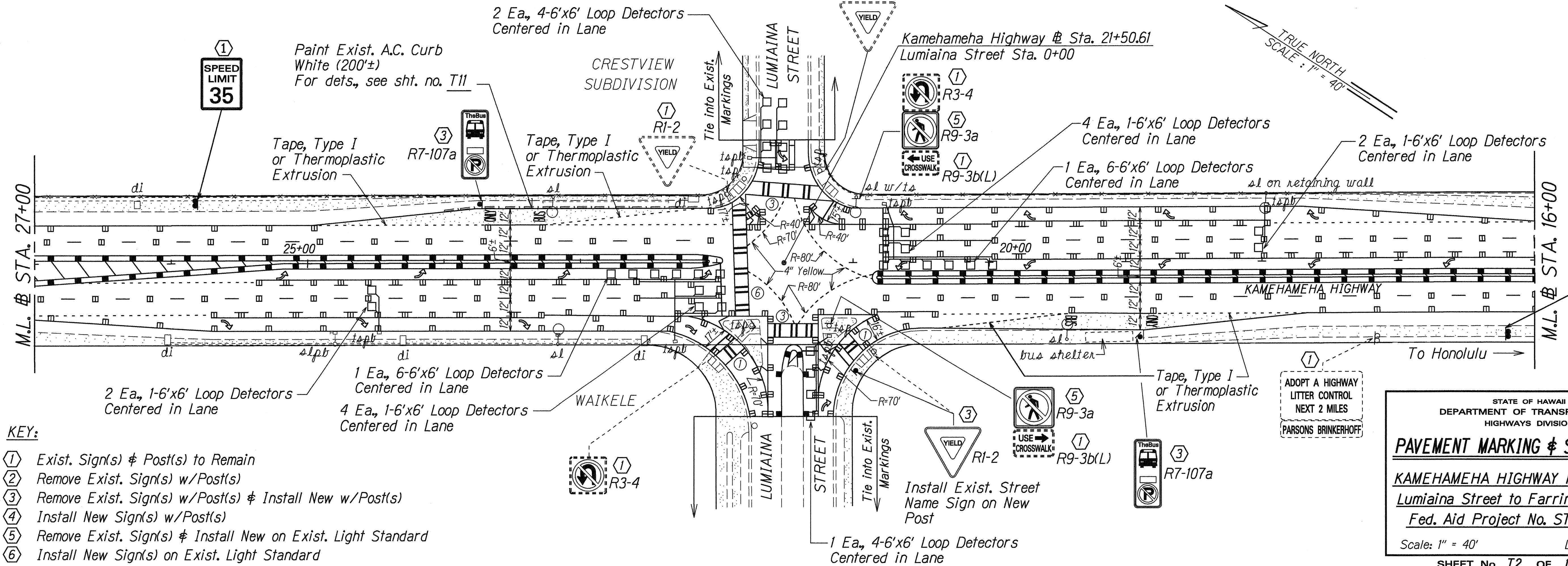
ORIGINAL PLAN  
DATE: 12/17/94  
DESIGNED BY: C. ABE  
CHECKED BY: [Signature]

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	46	58

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



Field Change No. 4 - Install four (4) additional speed limit signs.



- 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 w/Post(s)
  - ④ Install New Sign(s) w/Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
  - ⑥ Install New Sign(s) on Exist. Light Standard

SURVEY PLATTERED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PAVEMENT MARKING & SIGNING PLAN**

**KAMEHAMEHA HIGHWAY RESURFACING**  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

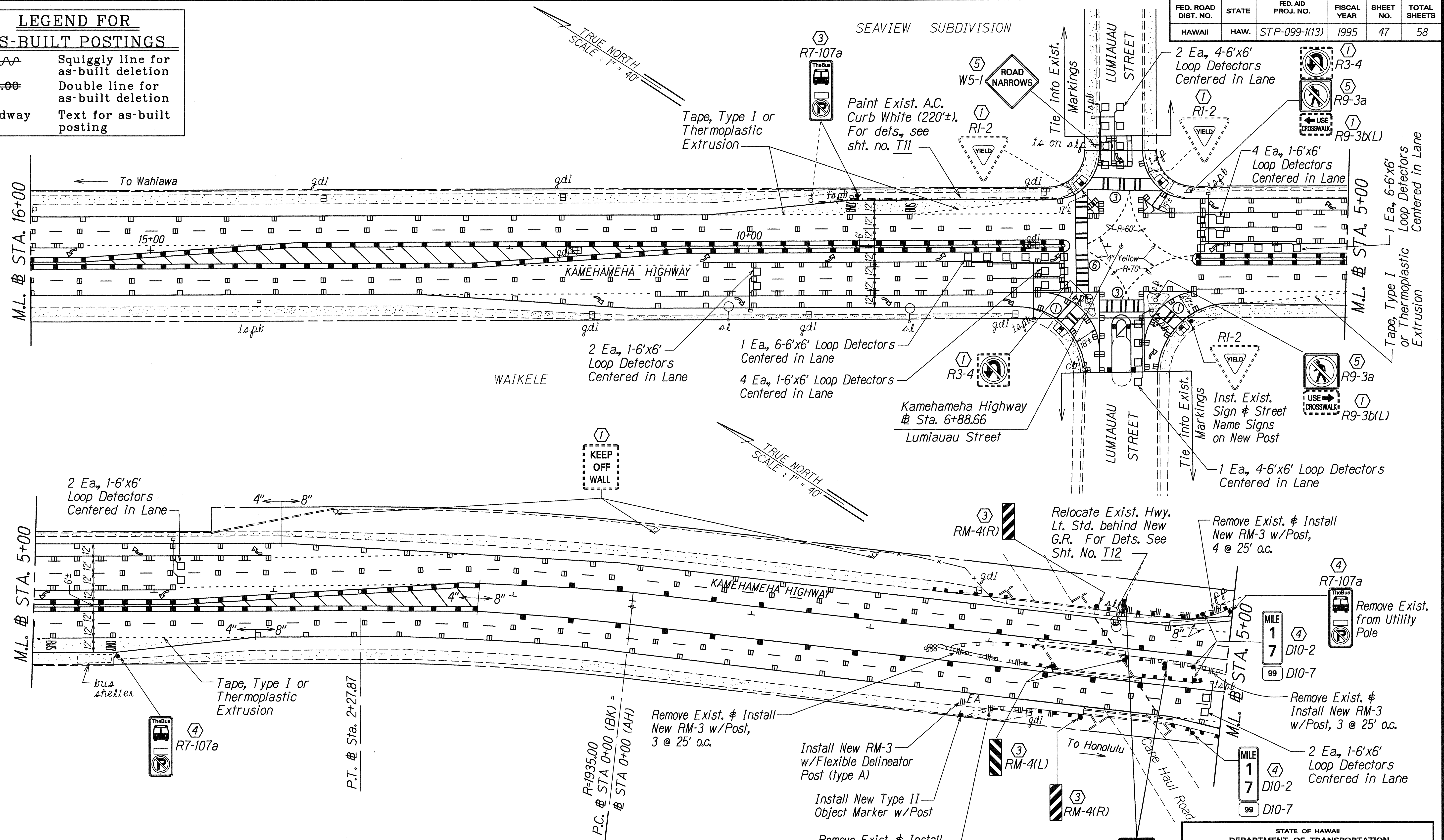
Scale: 1" = 40'      Date: Dec., 1994

SHEET No. T2 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	47	58

**LEGEND FOR AS-BUILT POSTINGS**

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



- 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 w/Post(s)
  - ④ Install New Sign(s) w/Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
  - ⑥ Install New Sign(s) on Exist. Light Standard

SURVEY PLOTTED BY: DATE: 8-4-94  
 DRAWN BY: Elaine Isoda  
 DESIGNED BY: Casey Abbe  
 CHECKED BY: [Signature]  
 CONSULTED BY: [Signature]

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

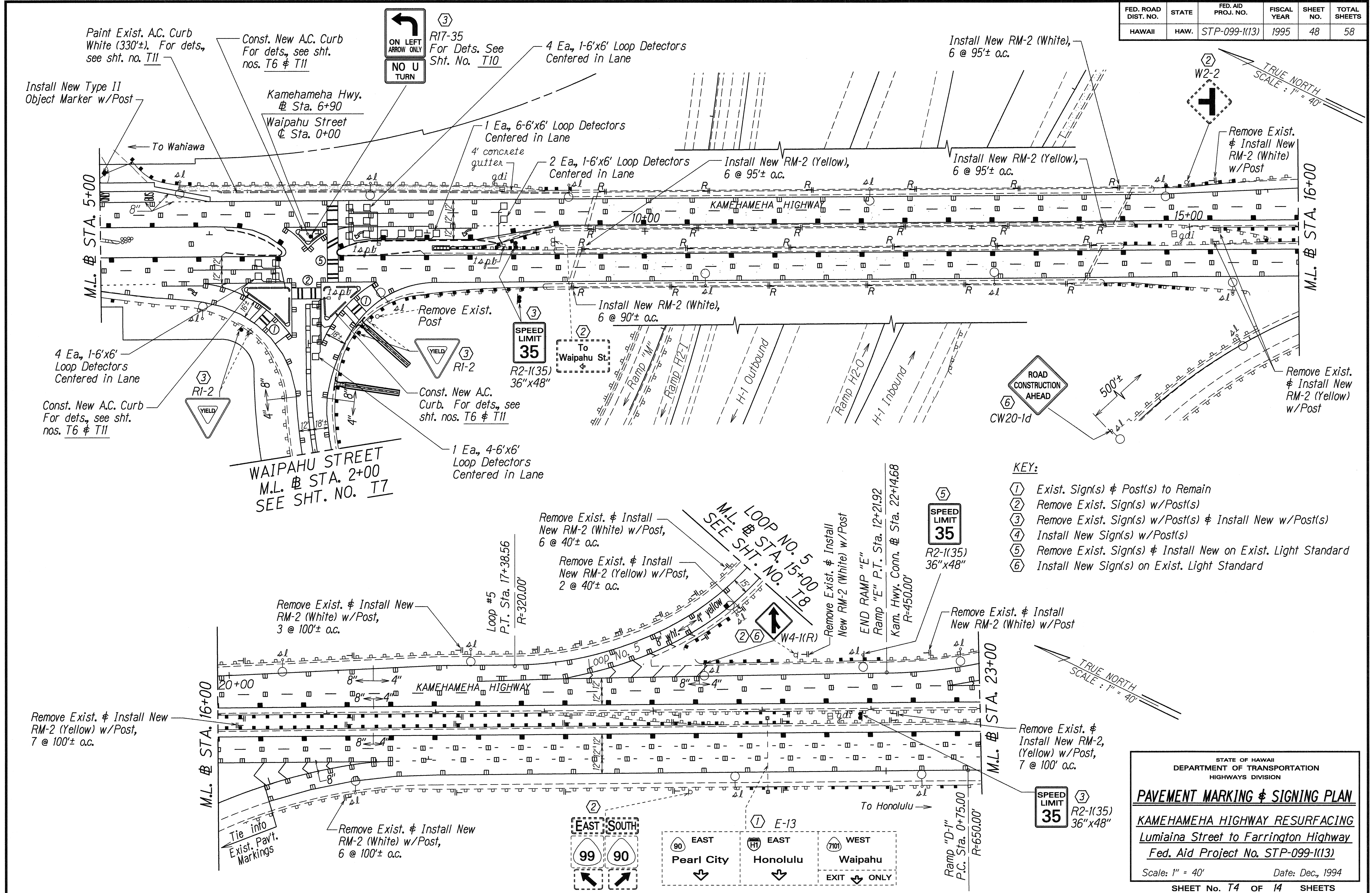
**PAVEMENT MARKING & SIGNING PLAN**

**KAMEHAMEHA HIGHWAY RESURFACING**  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

Scale: 1" = 40' Date: Dec., 1994

SHEET No. T3 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	48	58



- 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 w/Post(s)
  - ④ Install New Sign(s) w/Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
  - ⑥ Install New Sign(s) on Exist. Light Standard

DATE: 8-4-94  
 SURVEY PLOTTED BY: [Name]  
 DRAWN BY: [Name]  
 DESIGNED BY: [Name]  
 CHECKED BY: [Name]

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**PAVEMENT MARKING & SIGNING PLAN**

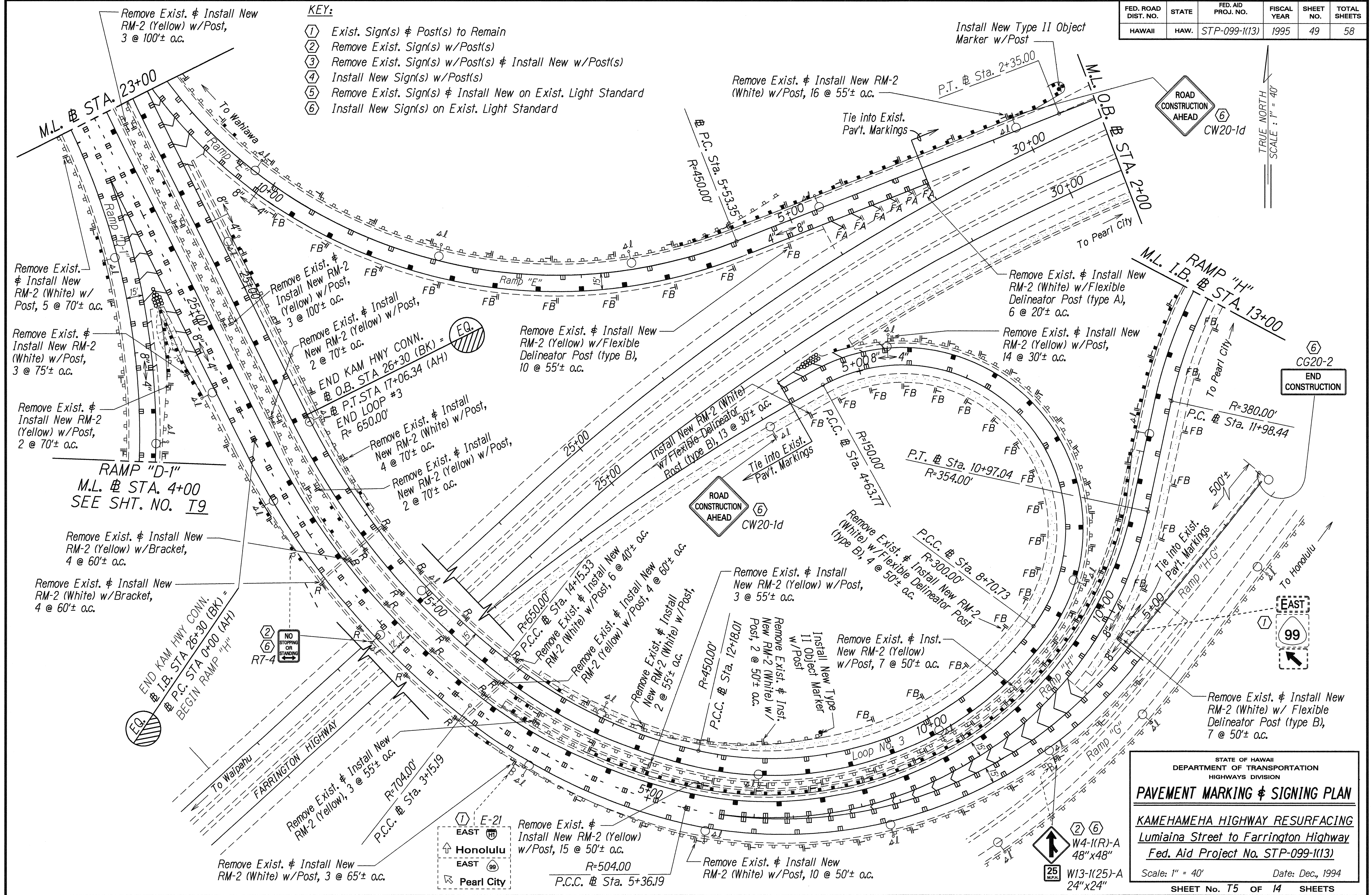
**KAMEHAMEHA HIGHWAY RESURFACING**  
 Lumiaina Street to Farrington Highway  
 Fed. Aid Project No. STP-099-1(13)

Scale: 1" = 40'      Date: Dec, 1994

SHEET No. T4 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	49	58

- 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 w/Post(s)
  - ④ Install New Sign(s) w/Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
  - ⑥ Install New Sign(s) on Exist. Light Standard



Remove Exist. & Install New RM-2 (Yellow) w/Post, 3 @ 100'± a.c.

Remove Exist. & Install New RM-2 (White) w/Post, 5 @ 70'± a.c.

Remove Exist. & Install New RM-2 (White) w/Post, 3 @ 75'± a.c.

Remove Exist. & Install New RM-2 (Yellow) w/Post, 2 @ 70'± a.c.

**RAMP "D-1"**  
M.L. STA. 4+00  
SEE SHT. NO. T9

Remove Exist. & Install New RM-2 (Yellow) w/Bracket, 4 @ 60'± a.c.

Remove Exist. & Install New RM-2 (White) w/Bracket, 4 @ 60'± a.c.

END KAM HWY CONN.  
M.L. STA. 26+30 (BK) =  
P.C. STA. 0+00 (AH)  
BEGIN RAMP "H"

Remove Exist. & Install New RM-2 (Yellow), 3 @ 55'± a.c.

Remove Exist. & Install New RM-2 (White) w/Post, 3 @ 65'± a.c.

Remove Exist. & Install New RM-2 (Yellow) w/Post, 15 @ 50'± a.c.

Remove Exist. & Install New RM-2 (White) w/Post, 10 @ 50'± a.c.

Remove Exist. & Install New RM-2 (White) w/Post, 16 @ 55'± a.c.

Remove Exist. & Install New RM-2 (White) w/Flexible Delineator Post (type A), 6 @ 20'± a.c.

Remove Exist. & Install New RM-2 (Yellow) w/Post, 14 @ 30'± a.c.

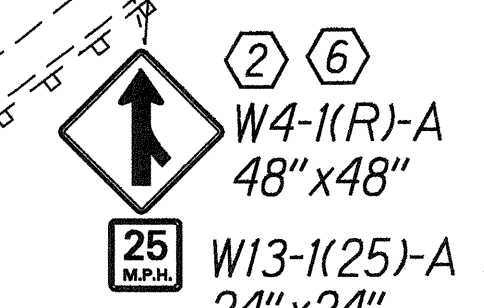
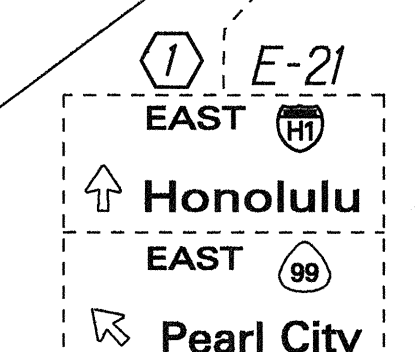
Remove Exist. & Install New RM-2 (White) w/Flexible Delineator Post (type B), 4 @ 50'± a.c.

Remove Exist. & Install New RM-2 (Yellow) w/Post, 3 @ 55'± a.c.

Remove Exist. & Install New RM-2 (Yellow) w/Post, 7 @ 50'± a.c.

Remove Exist. & Install New RM-2 (White) w/ Flexible Delineator Post (type B), 7 @ 50'± a.c.

SURVEY PLATTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	



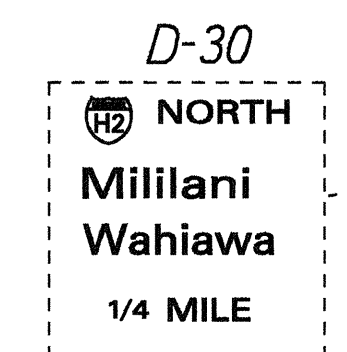
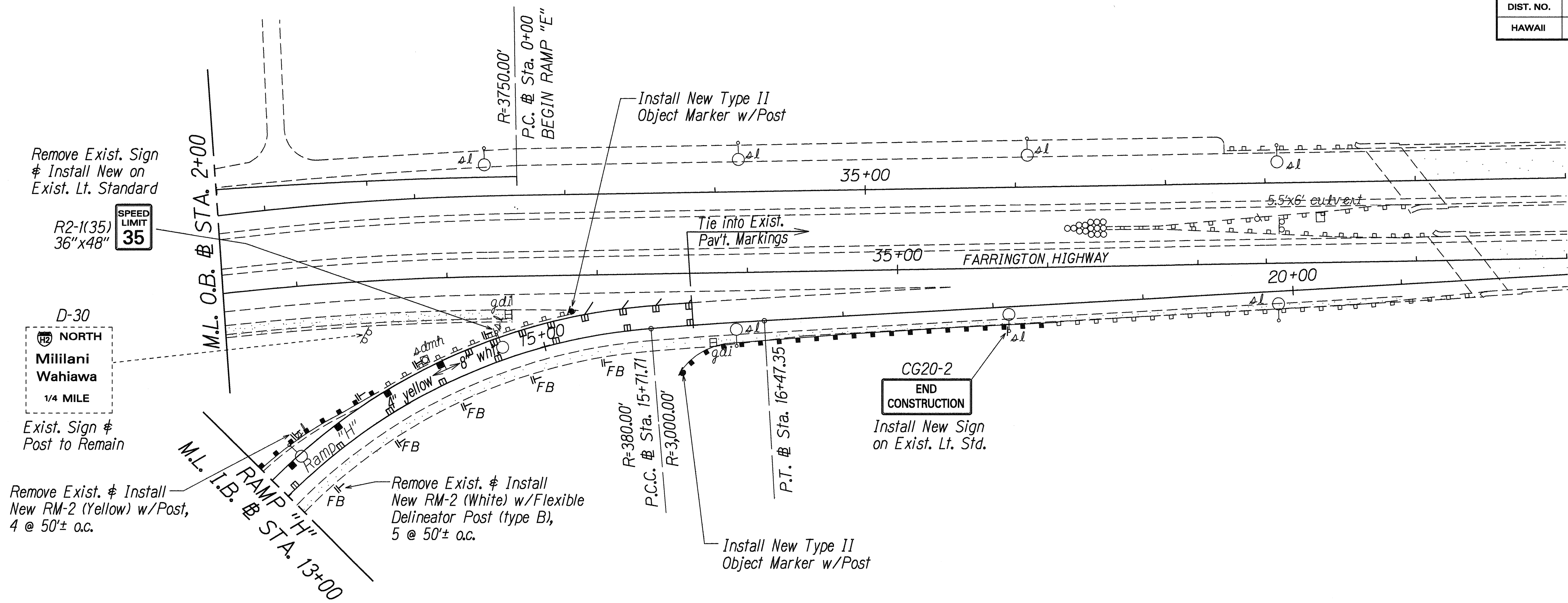
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PAVEMENT MARKING & SIGNING PLAN**

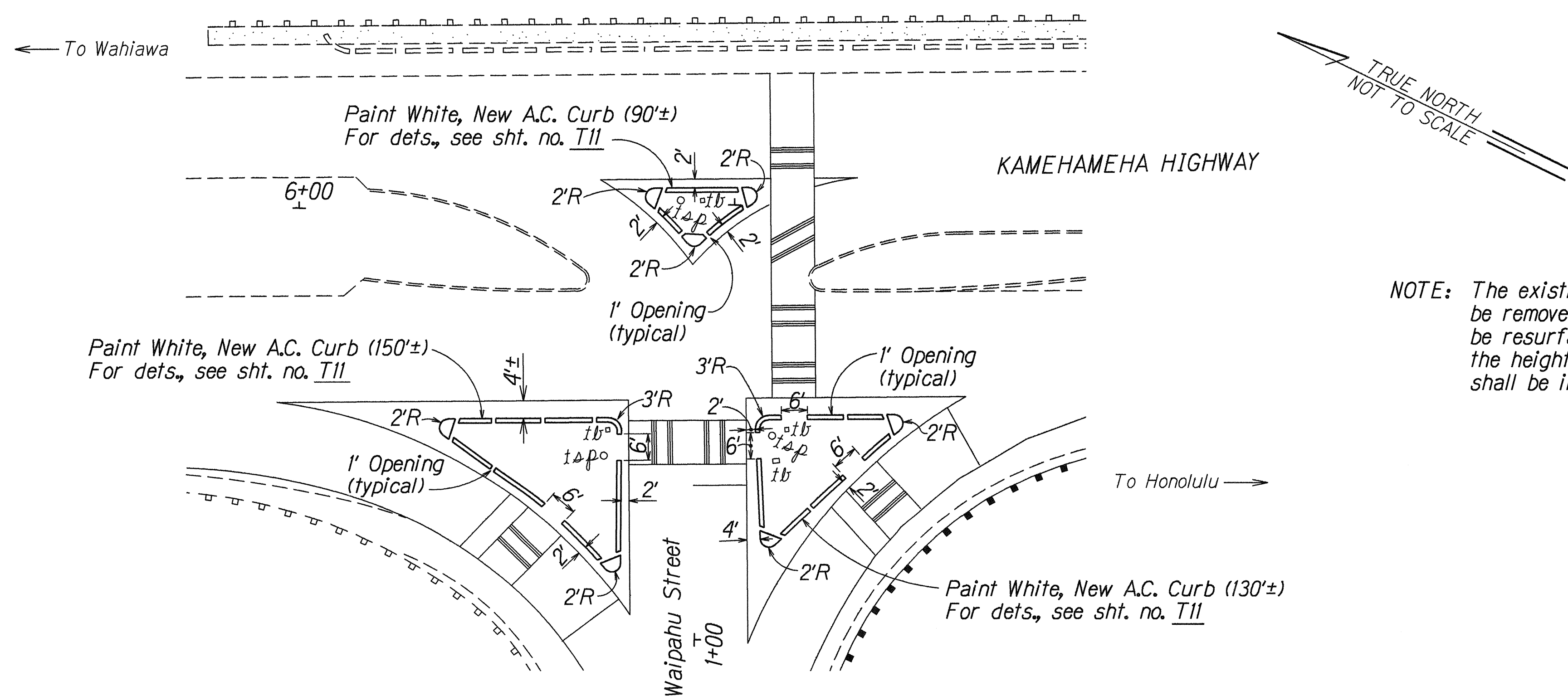
**KAMEHAMEHA HIGHWAY RESURFACING**  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

Scale: 1" = 40'      Date: Dec., 1994  
SHEET No. T5 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	50	58



TRUE NORTH  
SCALE: 1" = 40'



NOTE: The existing a.c. curb in the channelization island shall be removed. The existing pavement in the islands shall be resurfaced with A.C. Pavement, Mix IV to match the height of the new roadway a.c. pavement. This work shall be incidental to A.C. Pavement, Mix No. IV.

NEW A.C. CURB DETAIL  
Not to scale

SURVEY PLOTTED BY	DATE
DRAWN BY Elaine Isobe	2-4-94
DESIGNED BY Casey Abe	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
102.ruby	
102@hawaii.gov	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

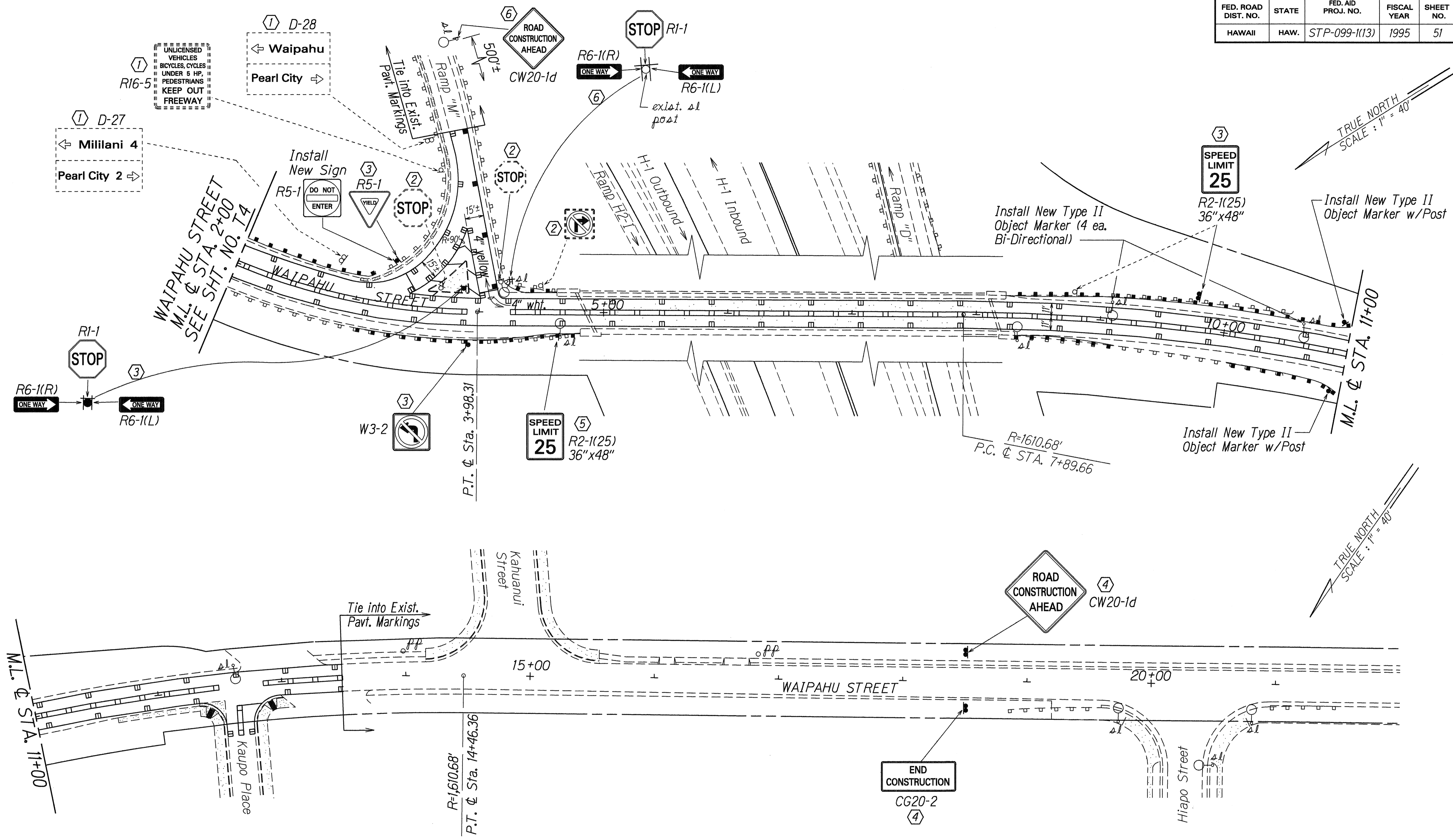
**PAVEMENT MARKING & SIGNING PLAN**

KAMEHAMEHA HIGHWAY RESURFACING  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

Scale: As Noted Date: Dec., 1994

SHEET No. T6 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	51	58



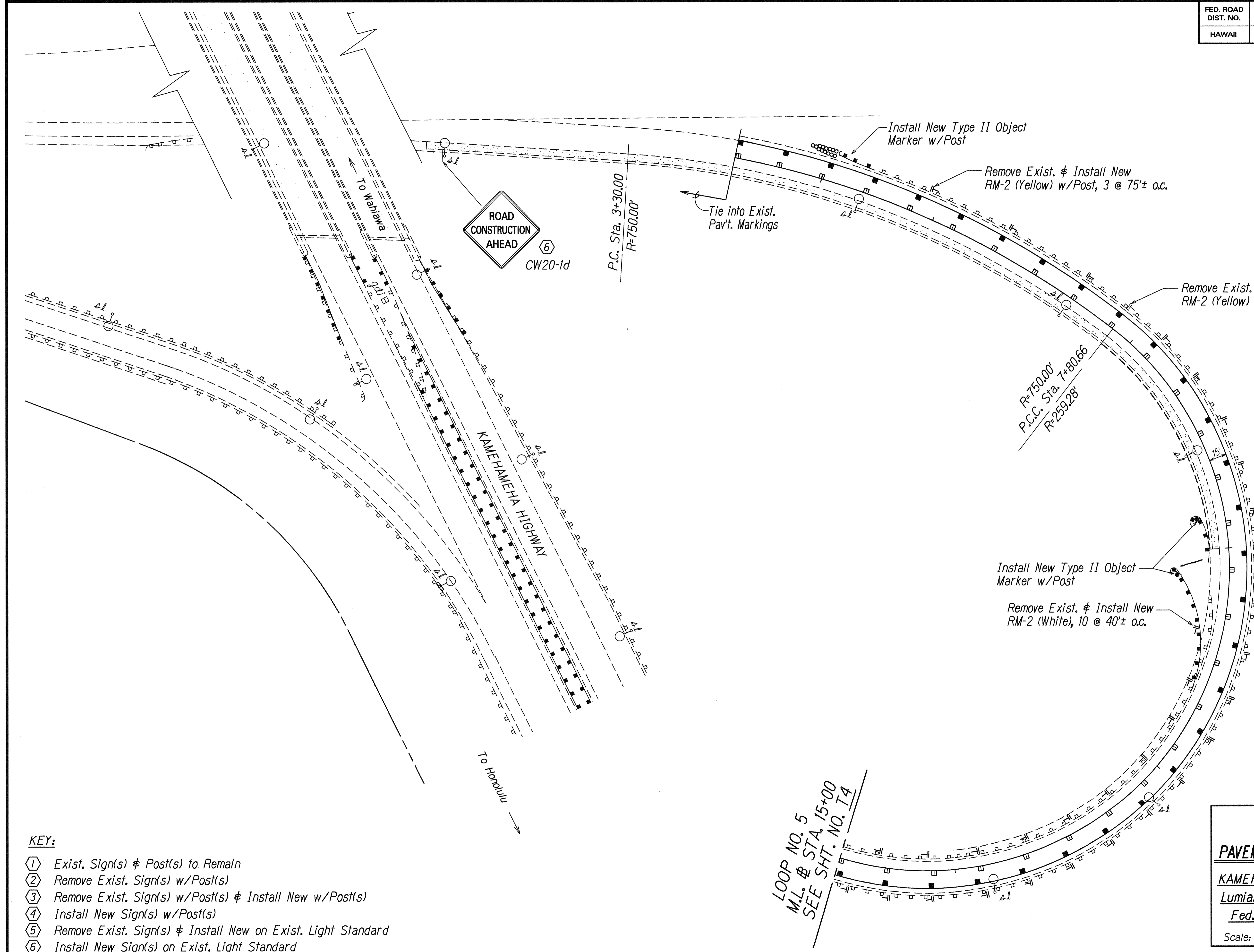
**KEY:**

- 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 w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Install New Sign(s) on Exist. Light Standard

SURVEY PLOTTED BY: DATE: 8/15/94  
 DRAWN BY: Filina, Linda  
 NOTE BOOK: TRANSMITTED BY Cassy, Aha  
 142, 143  
 QUANTITIES BY: S&S  
 CHECKED BY: S&S

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
 KAMEHAMEHA HIGHWAY RESURFACING  
 Lumiaina Street to Farrington Highway  
 Fed. Aid Project No. STP-099-1(13)  
 Scale: 1" = 40' Date: Dec., 1994  
 SHEET No. 77 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	52	58



TRUE NORTH  
SCALE: 1" = 40'

**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 w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Install New Sign(s) on Exist. Light Standard

SURVEY PLOTTED BY	DATE
DRAWN BY	3-22-94
TRACED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

LOOP NO. 5  
M.L. & STA. 15+00  
SEE SHT. NO. T4

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

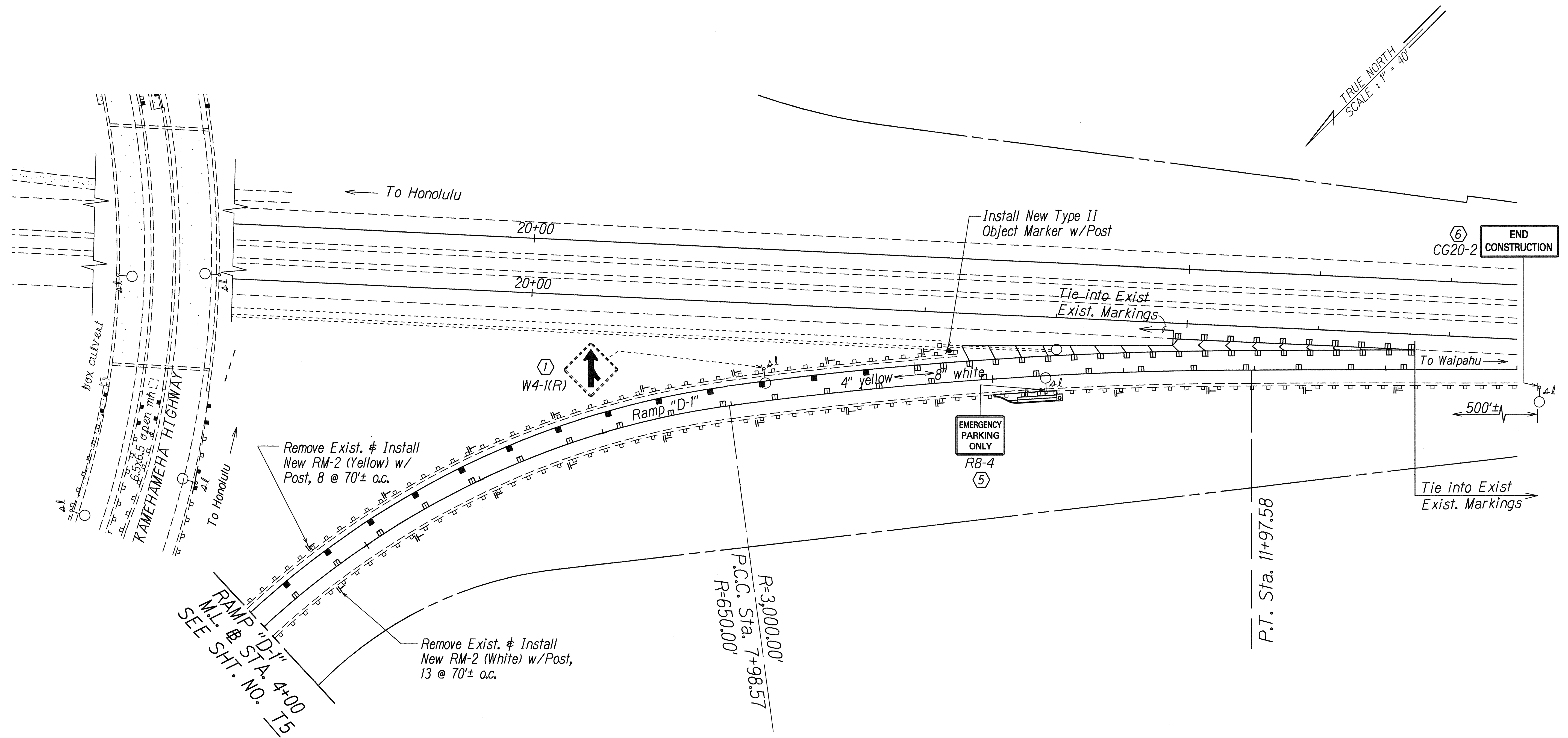
**PAVEMENT MARKING & SIGNING PLAN**

**KAMEHAMEHA HIGHWAY RESURFACING**  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

Scale: 1" = 40'      Date: Dec., 1994

SHEET No. T8 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	53	58



SURVEY PLOTTED BY	DATE
DRAWN BY Elaine Isoda	12/16/94
TRACED BY Casey Abe	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

**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 w/Post(s)
- ④ Install New Sign(s) w/Post(s)
- ⑤ Remove Exist. Sign(s) & Install New on Exist. Light Standard
- ⑥ Install New Sign(s) on Exist. Light Standard

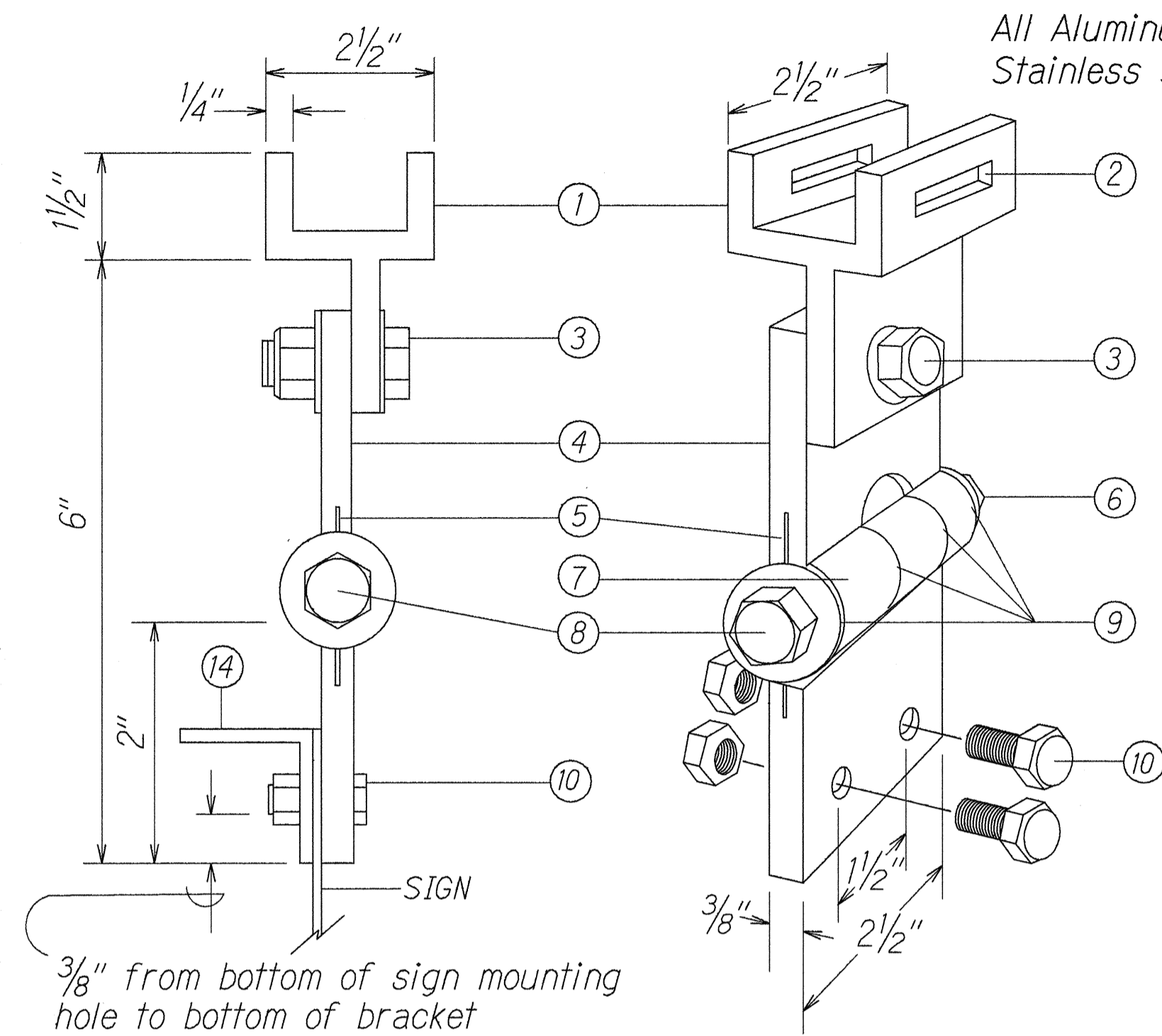
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PAVEMENT MARKING & SIGNING PLAN**

KAMEHAMEHA HIGHWAY RESURFACING  
Lumiaina Street to Farrington Highway  
Fed. Aid Project No. STP-099-1(13)

Scale: 1" = 40' Date: Dec., 1994

SHEET No. T9 OF 14 SHEETS

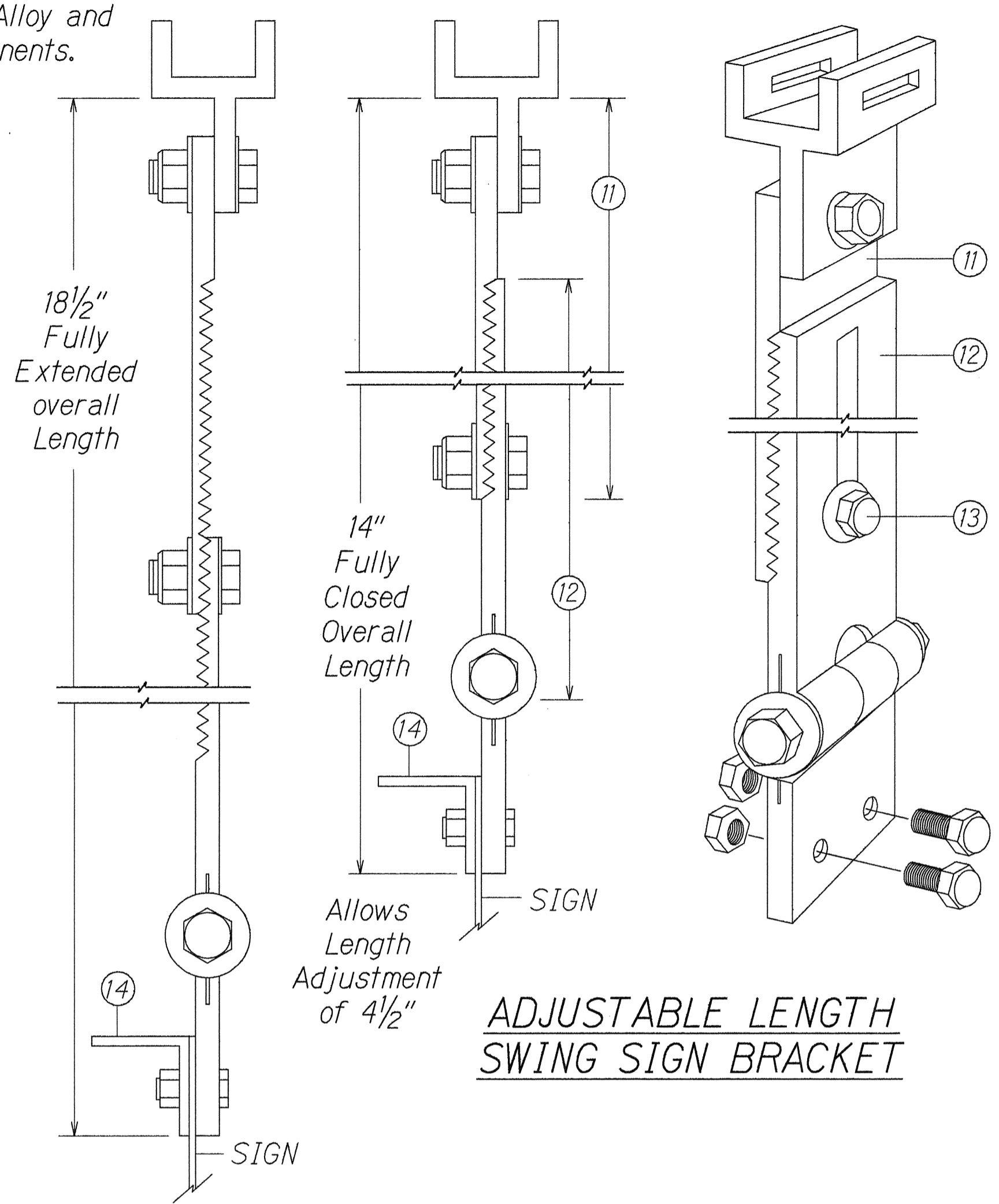


**FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET**

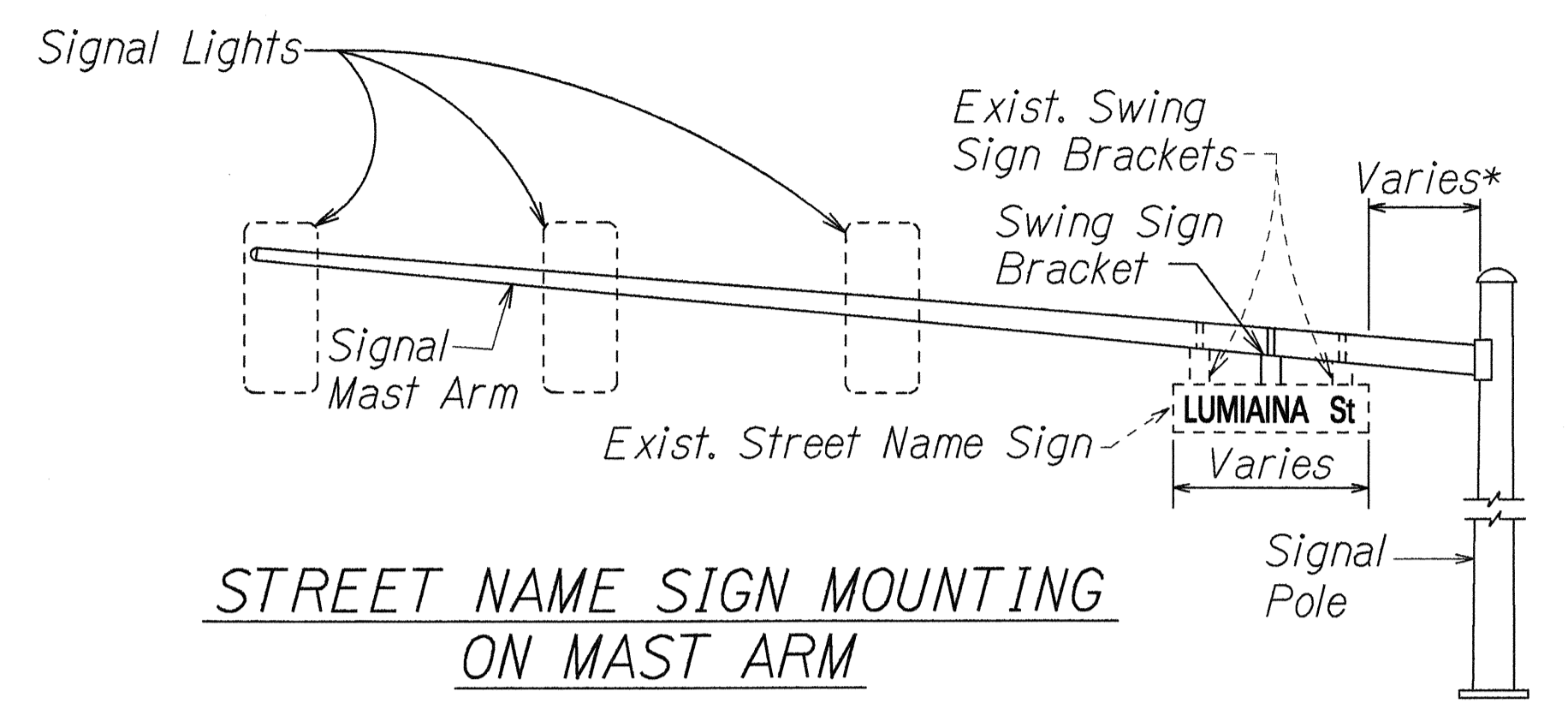
- ① Pivotal Upper Bracket
- ② 1 5/8" x 1/4" Slot for double strapping to electrolier mast arm. (M2G-34S(HD) .030" x 3/4" Heavy Duty Stainless Steel Strap with M2G-34B(HD) Buckle recommended.)
- ③ 1/2" - 13 x 1 1/2" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut and 1/16" Stainless Steel 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 Oilite Bushing
- ⑩ Sign Mounting Sets, consisting of two each 5/16" - 18 x 1" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut. Two holes on 1 1/2" centers provide positive lock sign mounting to bracket.
- ⑪ 8 1/4" overall length Upper Adjustable Sign Bracket section
- ⑫ 9" overall length Lower Adjustable Sign Bracket section, including Axle Housing (8" overall length to top of Axle Housing)
- ⑬ 1/2" - 13 x 1 1/2" Stainless Steel Hex Bolt with Stainless Steel Hex Lock Nut and 1/16" Stainless Steel Washers (both sides). Loosen lock nut, adjust bracket teeth to level sign.
- ⑭ 1 1/4" x 1 1/4" x 1/8" Aluminum Angle

Note: Dimensions may vary slightly.

All Aluminum 6061T6 Alloy and Stainless Steel Components.



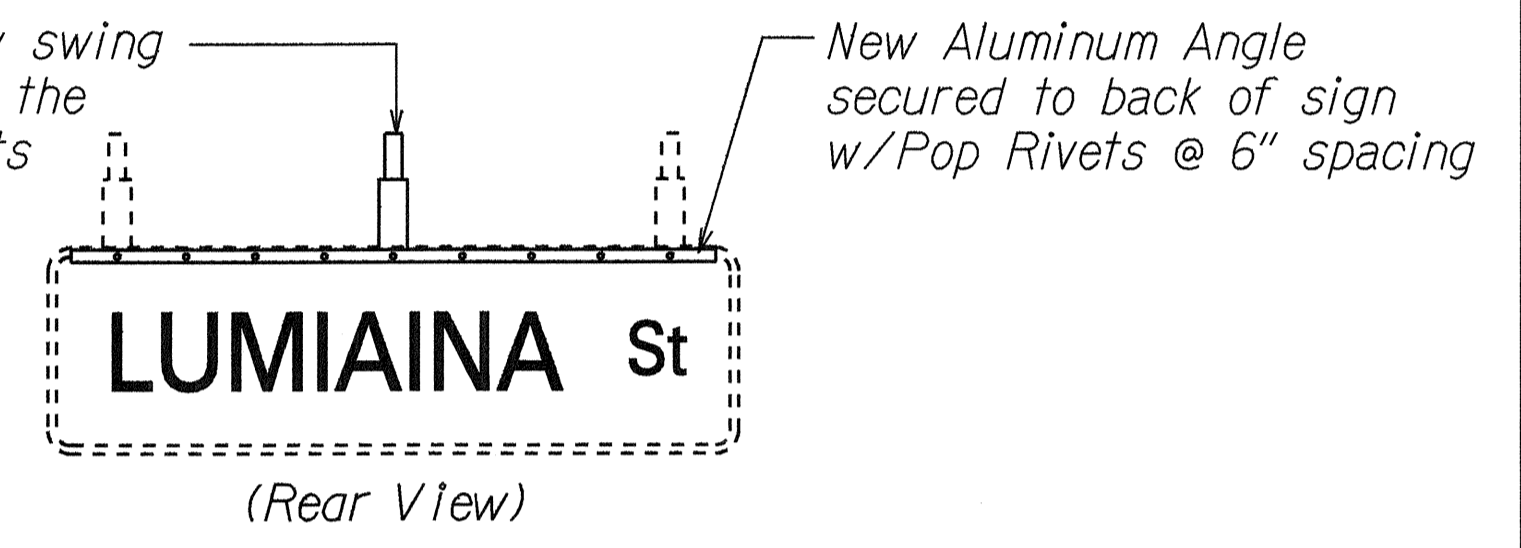
**ADJUSTABLE LENGTH SWING SIGN BRACKET**



**STREET NAME SIGN MOUNTING ON MAST ARM**

\*To be determined by the Engineer

The contractor shall install new swing sign bracket at the midpoint of the two existing swing sign brackets



**TYPICAL SWING BRACKET LAYOUT**

**NOTES FOR ADDITIONAL SWING SIGN BRACKET W/ALUMINUM ANGLE**

- The Contractor shall install an additional Swing Sign Bracket w/Aluminum Angle on the following existing street name signs mounted on existing traffic signal mast arms.
- The accepted quantities of Swing Sign Brackets w/Aluminum Angle 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 & Al. Angle.
- The Swing Sign Brackets w/Aluminum Angle shall be paid under Item No. 621.1550-Swing Sign Bracket w/Aluminum Angle of the Proposal Schedule.

Street Name	No. of Signs	No. of Brackets w/Aluminum Angle
LUMIAINA St.	2	2
LUMIAUUAU St.	2	2
WAIPAHU St.	2	2
<b>TOTAL</b>	<b>6</b>	<b>6</b>

SURVEY PLANNED BY DATE 7/94  
 DRAWN BY E. L. 1509  
 TRACED BY C. S. 1509  
 NOTE BOOK 102/10/1509  
 QUANTITIES BY  
 CHECKED BY  
 ORIGINAL PLAN  
 NOTE BOOK 102/10/1509  
 N. S. 1509

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

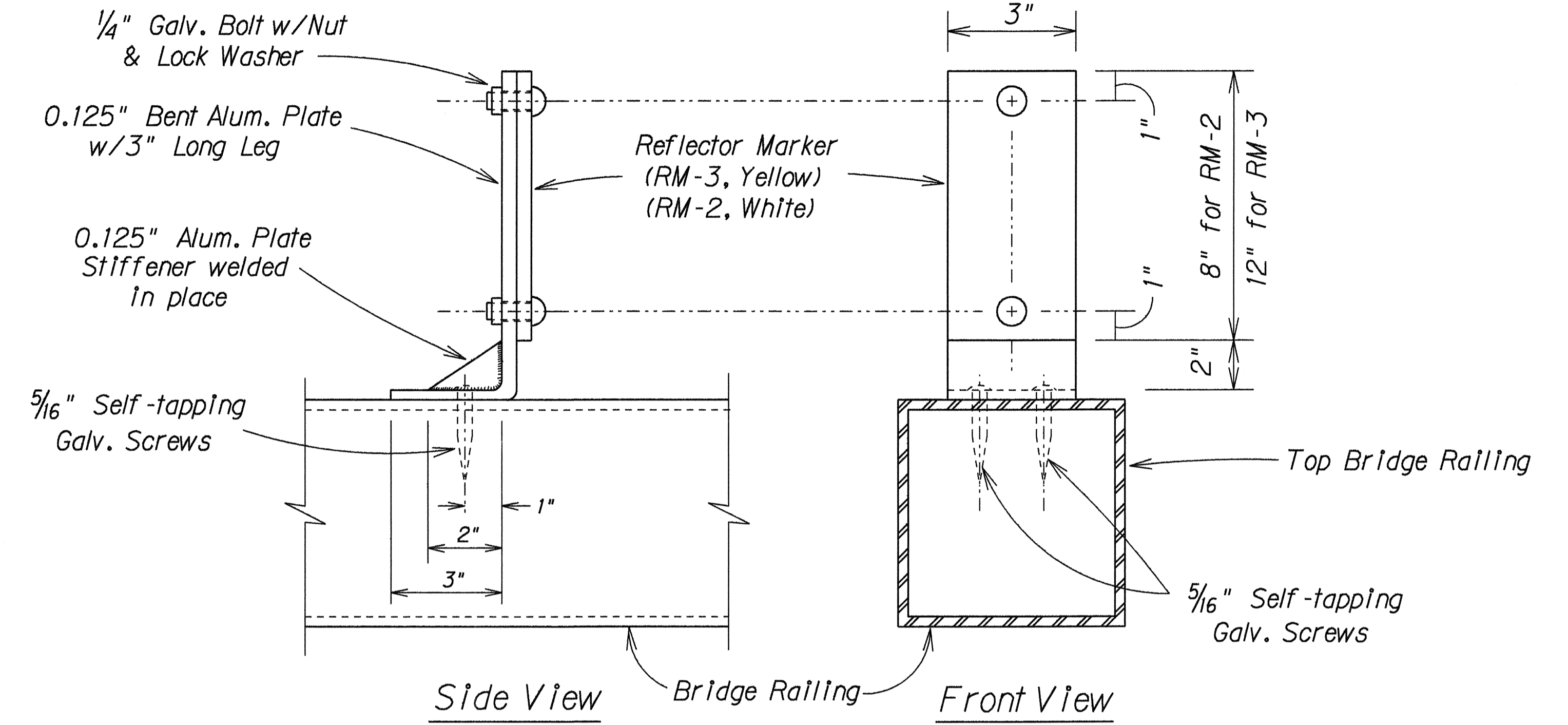
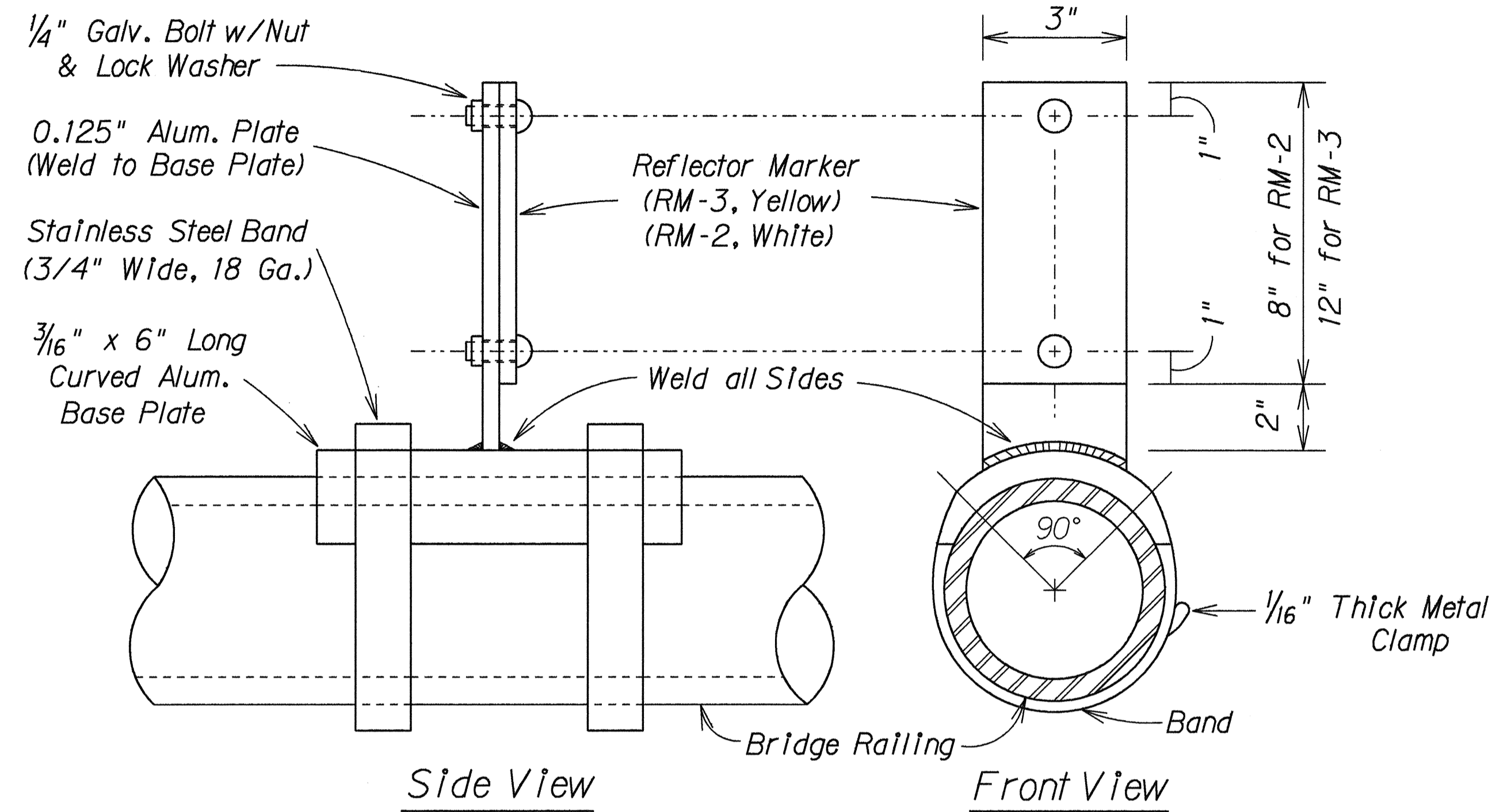
**SWING SIGN BRACKET DETAIL**

**KAMEHAMEHA HIGHWAY RESURFACING  
Lumiaina Street to Farrington Highway  
Fed. Aid. Proj. No. STP-099-1(13)**

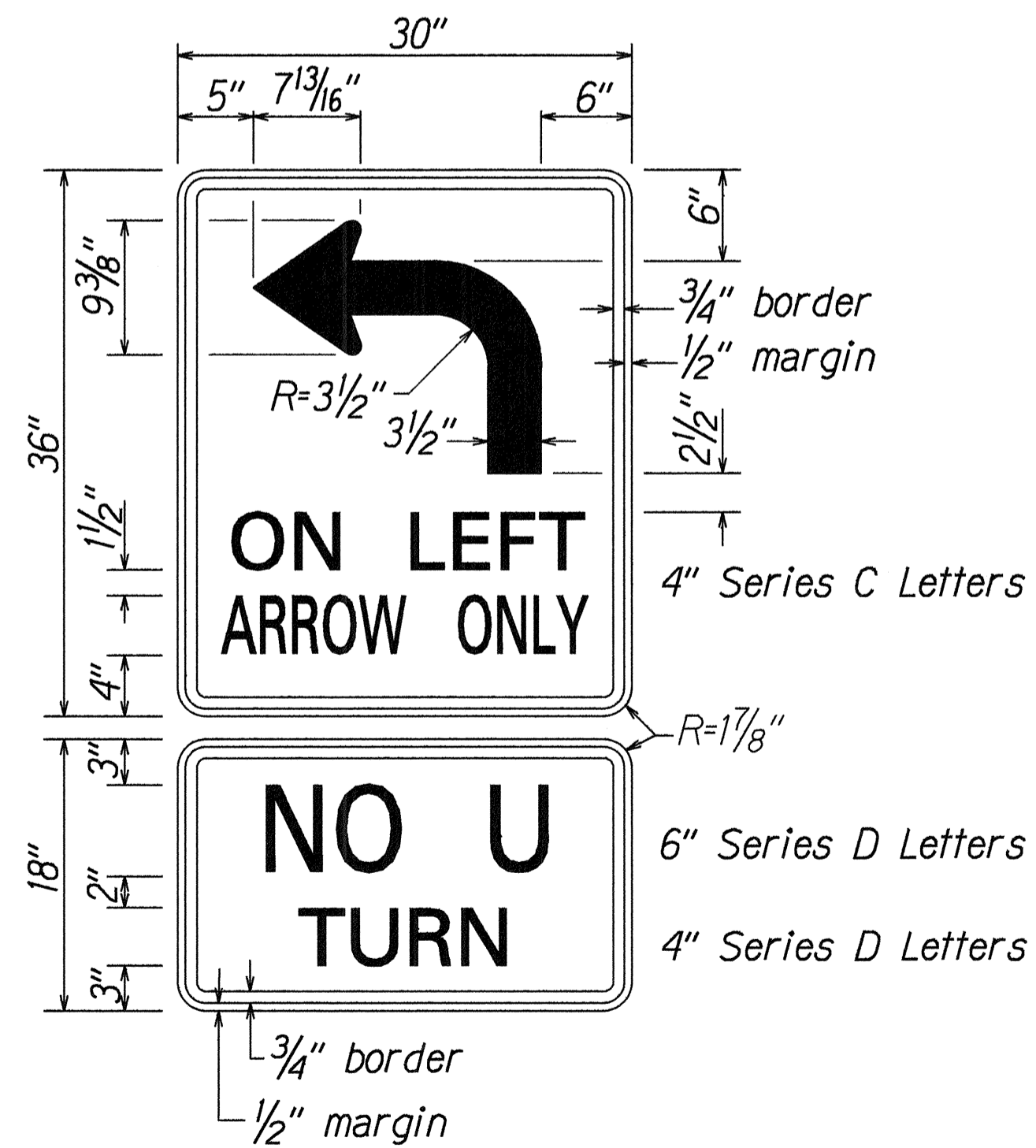
Not to Scale Date: Dec., 1994

SHEET No. T10 OF 14 SHEETS

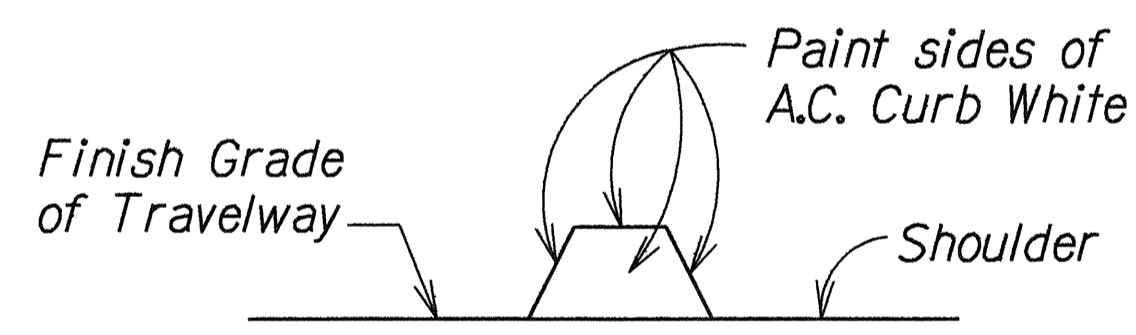
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	55	58



DETAILS OF BRACKETS FOR REFLECTOR MARKERS  
MOUNTED ON BRIDGE RAILINGS  
Not to Scale



R17-3  
Not to Scale



PAINTING OF A.C. CURB  
Not to Scale

ORIGINAL PLAN	DATE	3/29/94
SURVEY PLOTTED BY		
DRAWN BY		
DESIGNED BY		
QUANTITIES BY		
CHECKED BY		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**MISCELLANEOUS DETAILS**

KAMEHAMEHA HIGHWAY RESURFACING  
Lumiaina Street to Farrington Highway  
Fed. Aid Proj. No. STP-099-1(13)

Not to Scale Date: Dec., 1994  
SHEET No. 111 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	56	58

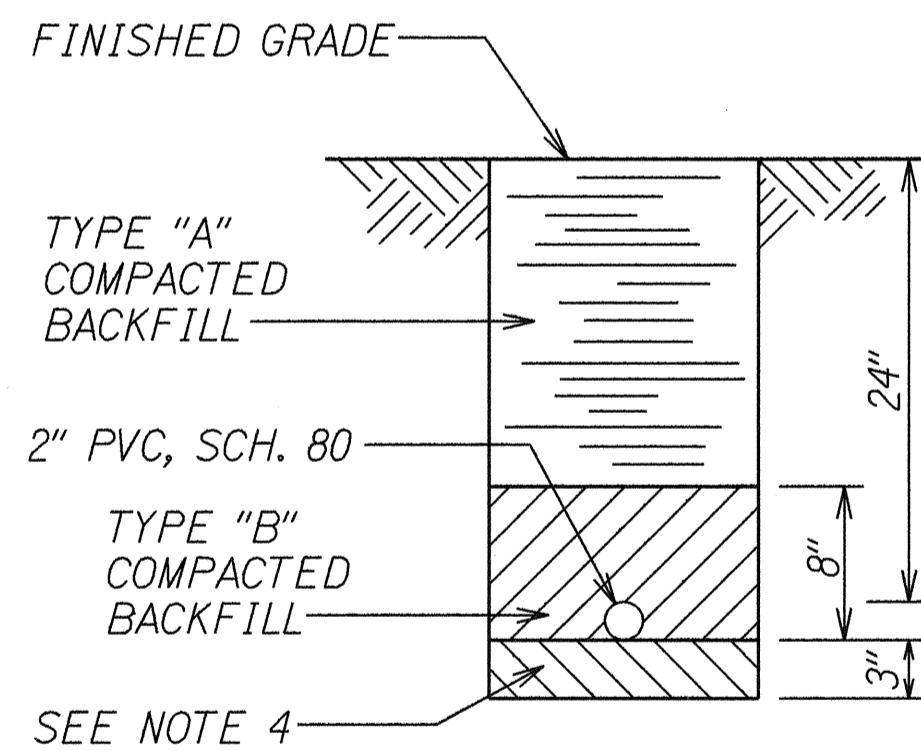
**NOTES:**

1. ALL CONDUIT SHALL BE "PVC" SCHED. 80 FOR DIRECT BURIED
2. BACKFILL OVER CONCRETE DUCT SECTIONS SHALL BE TYPE "A"
3. BACKFILL OVER DIRECT BURIED CONDUITS SHALL BE TYPE "B"
4. IF THE NORMAL MATERIAL IN THE BOTTOM OF A TRENCH CONTAINING A DIRECT BURIAL CONDUIT IS NOT TYPE "B" AN ADDITIONAL 3" SHALL BE EXCAVATED AND TYPE "B" BACKFILL PROVIDED.

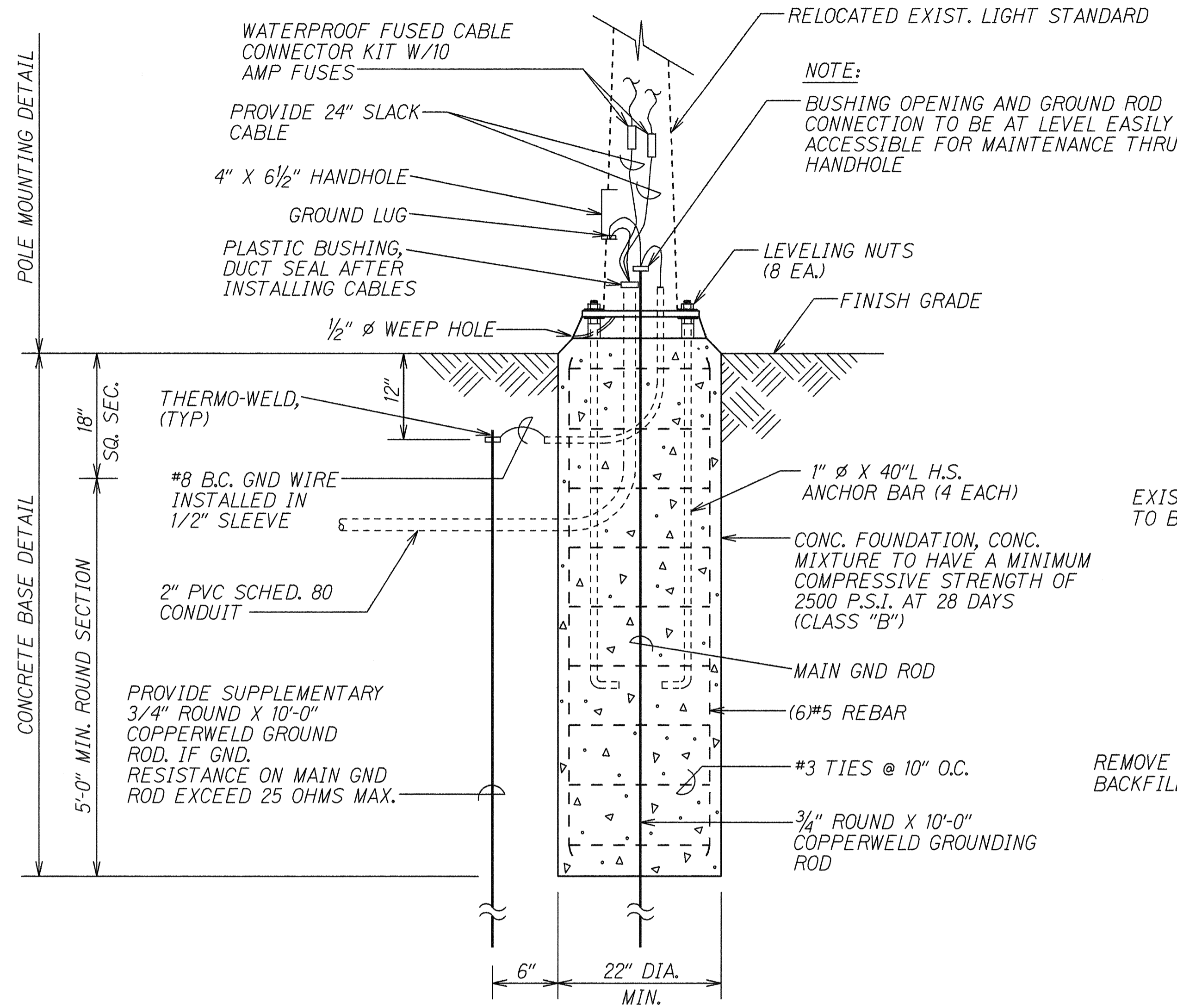
**BACKFILL TYPES ARE:**

TYPE "A": BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH AND GRAVEL USED, THE MAXIMUM ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.

TYPE "B": BEACH SAND, EARTH, OR EARTH AND GRAVEL. IF EARTH AND GRAVEL USED, MIXTURE MUST PASS A 1/2" MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

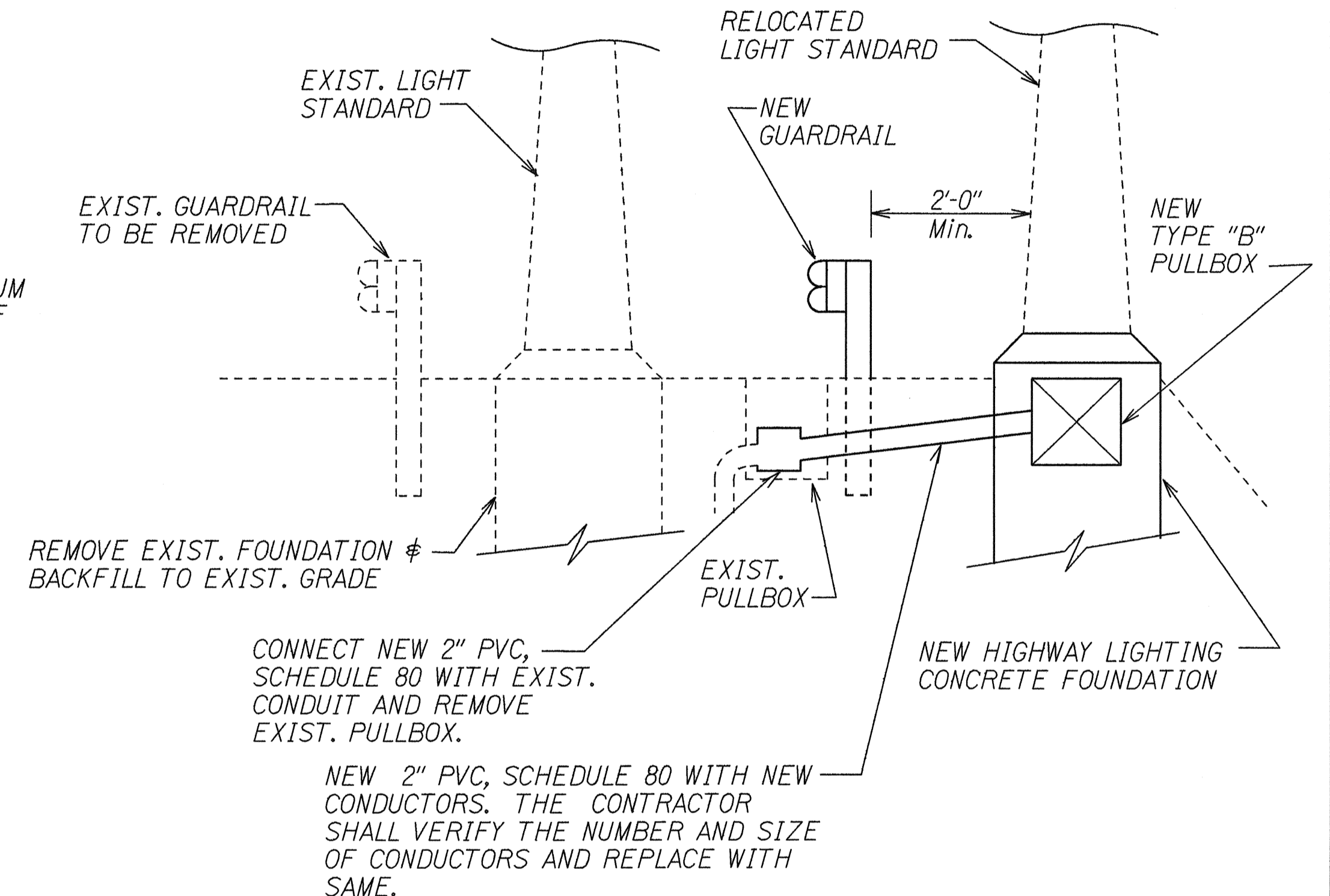


**TYPICAL STREET LIGHT DUCT SECTION (DIRECT BURIED)**  
NOT TO SCALE



**HIGHWAY LIGHTING CONCRETE FOUNDATION DETAIL**  
NOT TO SCALE

**NOTE:**  
BUSHING OPENING AND GROUND ROD CONNECTION TO BE AT LEVEL EASILY ACCESSIBLE FOR MAINTENANCE THRU HANDHOLE

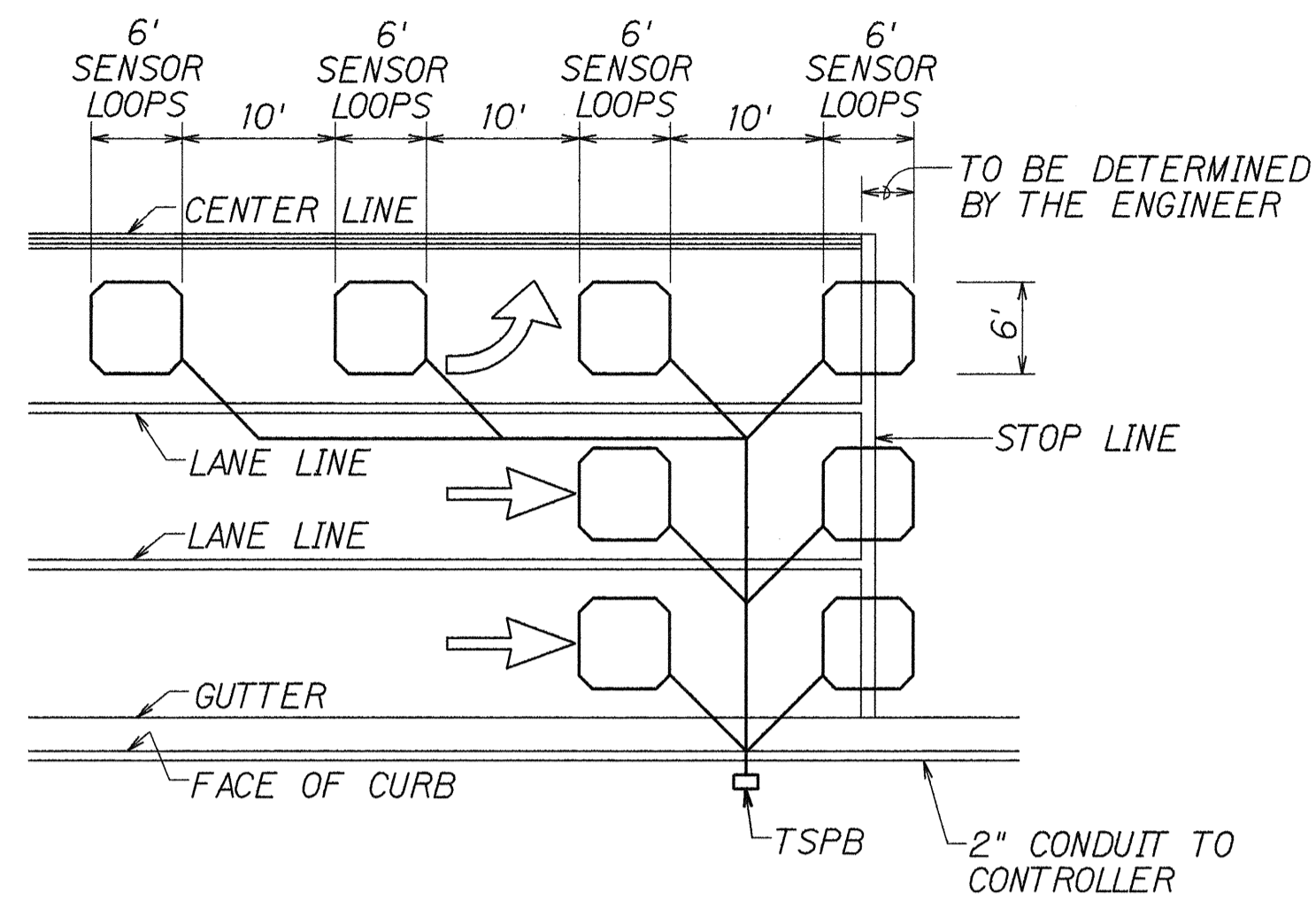


**KAM. HWY. @ STA. 4+00 LT.**  
**HIGHWAY LIGHTING DETAIL**  
NOT TO SCALE

DATE	12/24
SURVEY PLATTED BY	
DRAWN BY	ELINE
NOTED BY	CASSY
CHECKED BY	HEMMS

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**MISCELLANEOUS HIGHWAY LIGHTING DETAILS**  
KAMEHAMEHA HIGHWAY RESURFACING  
Lumaina Street to Farrington Highway  
Fed. Aid Proj. No. STP-099-1(13)  
Scale: As Noted Date: Dec., 1994  
SHEET No. 112 OF 14 SHEETS

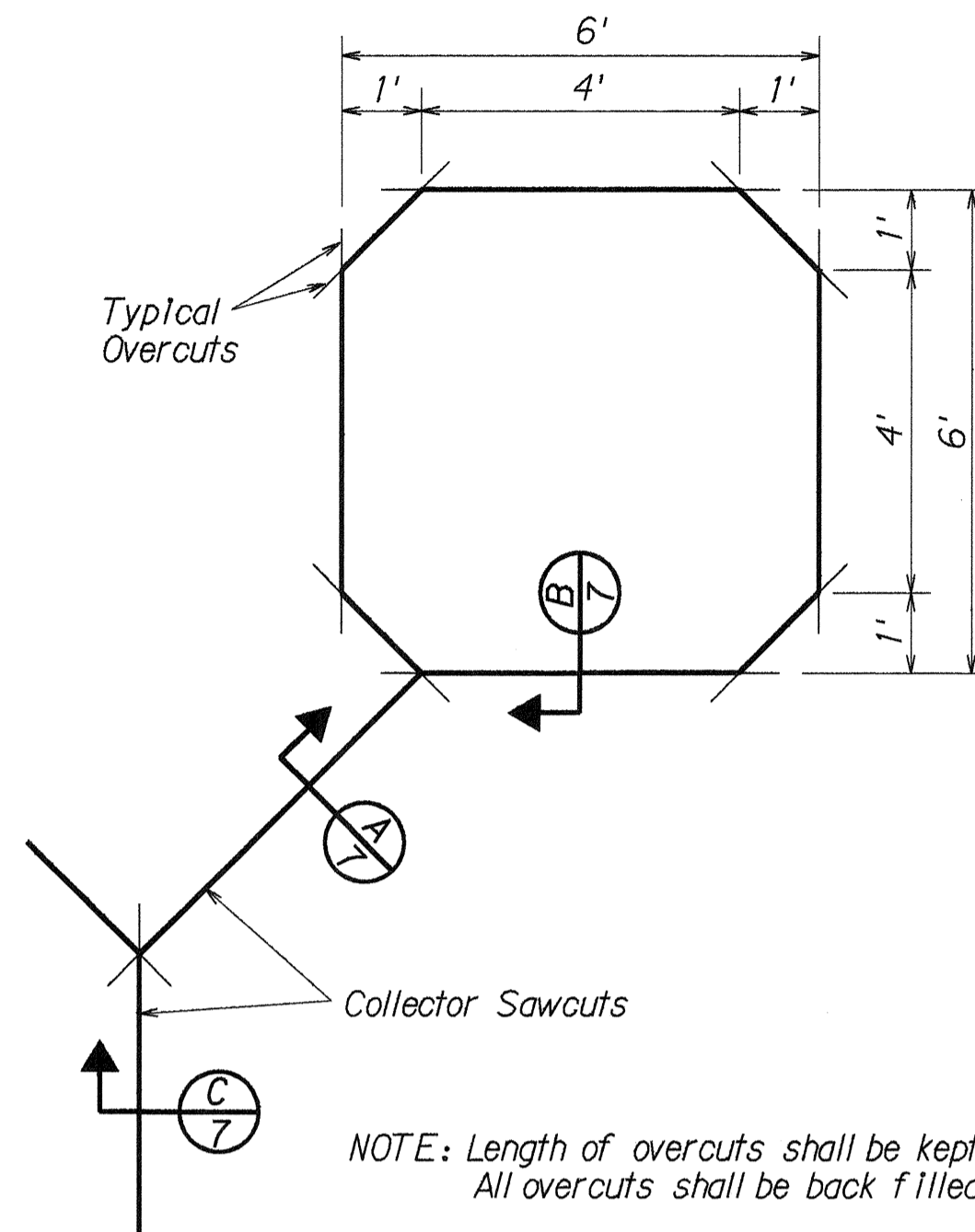
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	57	58



**NOTES:**

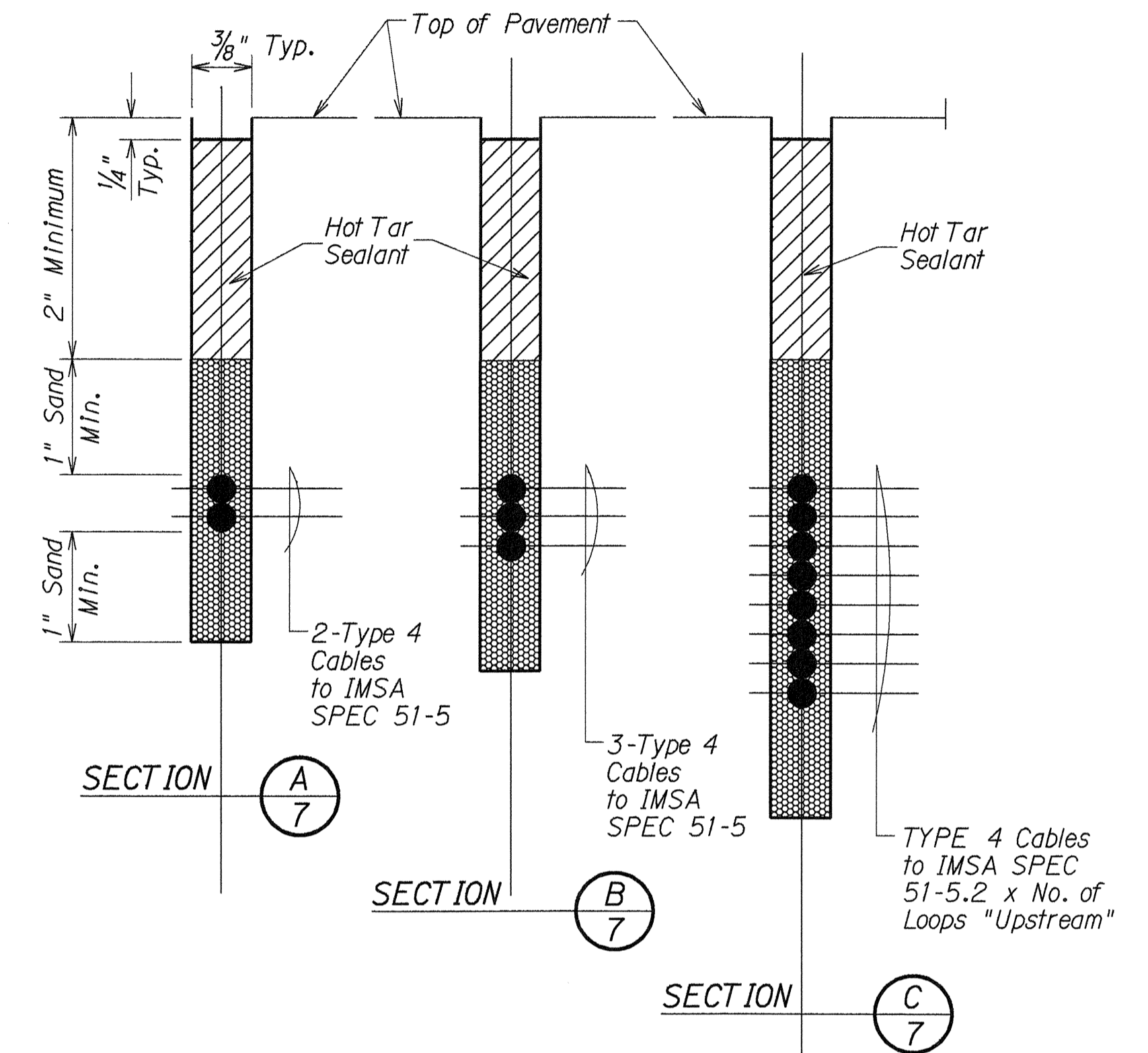
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT



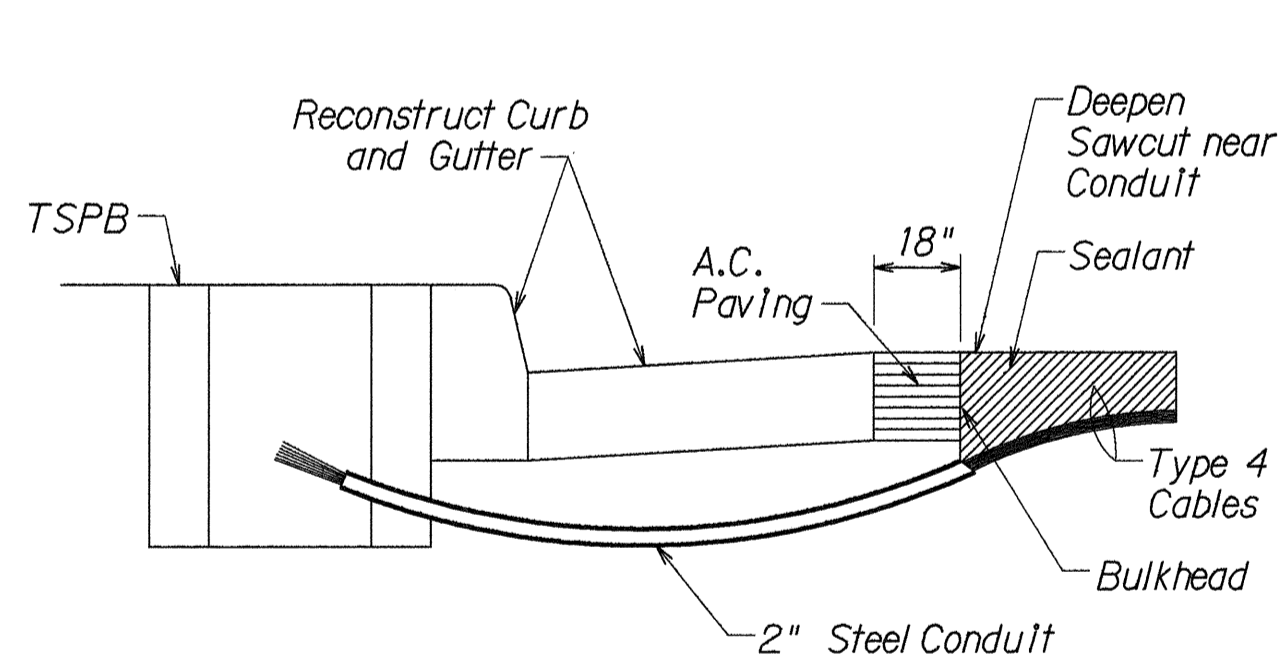
NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



**NOTE:**

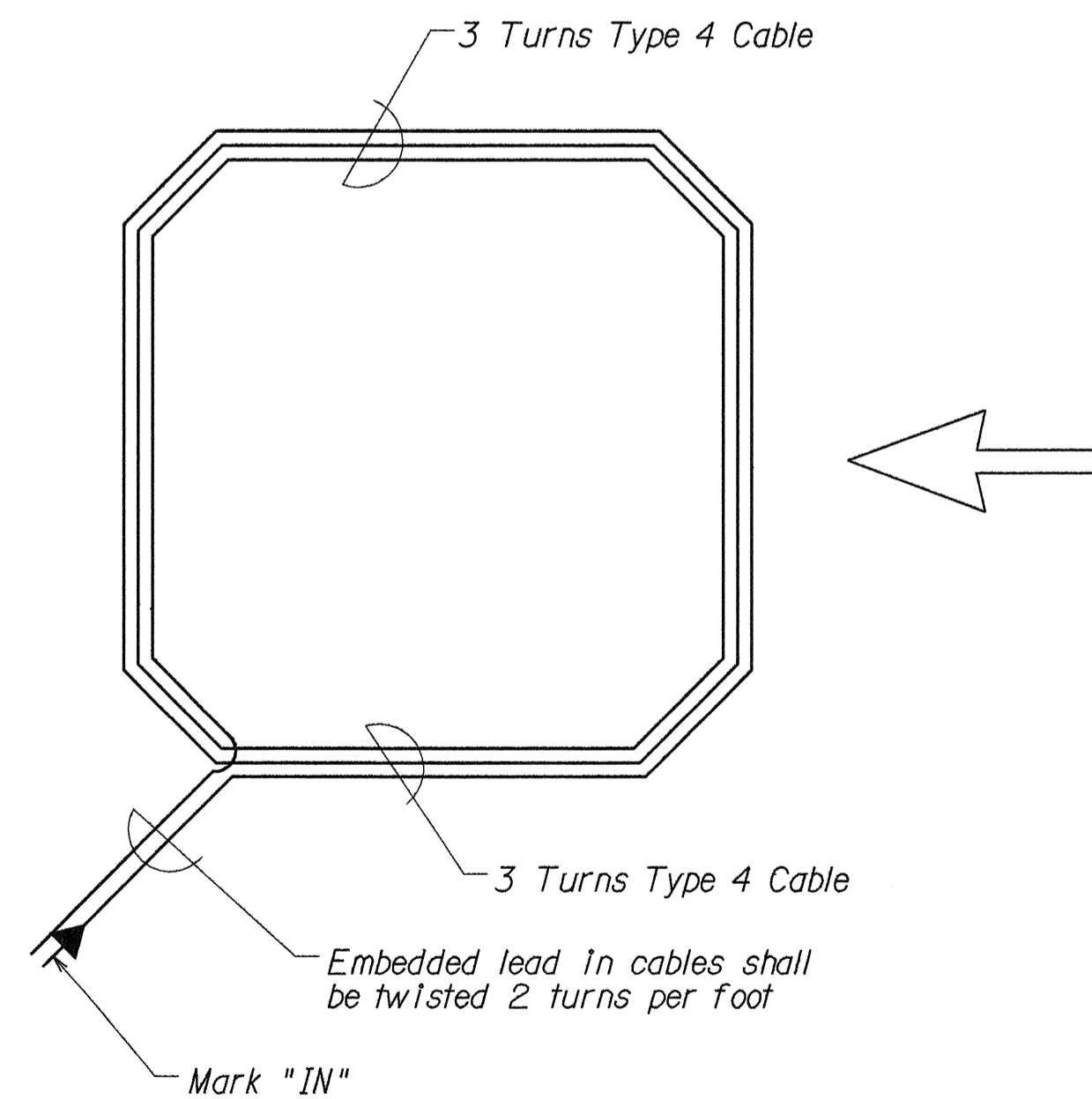
REFER TO TE-40 OF THE STATE HIGHWAYS STANDARD PLANS FOR TYPICAL TRENCH SECTION FOR CONDUIT DETAIL.



NOTES ON CONSTRUCTION AT END OF SAWCUT

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

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



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 51-5
- TYPE 5 Cable from Signal Loop to Signal Head: Stranded, No. 14, Single Conductor
- TYPE 6 Service Cable: Solid, No. 6, 3 Conductors

ORIGINAL PLAN SURVEY PLOTTED BY DATE  
 DRAWN BY  
 TRACED BY  
 NOTE BOOK NO. 102, July  
 QUANTITIES BY  
 CHECKED BY  
 (Signature)

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**LOOP DETECTOR DETAILS**  
 KAMEHAMEHA HIGHWAY RESURFACING  
 Lumiaina Street to Farrington Highway  
 Fed. Aid Proj. No. STP-099-1(13)  
 Not to Scale Date: Dec., 1994  
 SHEET No. 113 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-099-1(13)	1995	58	58

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	1		
R1-2	YIELD	3	1		
R2-1(25)	SPEED LIMIT 25			1	1
R2-1(35)	SPEED LIMIT 35			3	2
R5-1	DO NOT ENTER		1		
R6-1(R)			2		
R6-1(L)			2		
R7-4	NO STOPPING OR STANDING		1		
R7-107a		5			
R8-4	EMERGENCY PARKING ONLY		1		
R9-3a			4		
R17-3	ON LEFT ARROW ONLY NO U TURN			1	
W5-1	ROAD NARROWS		1		
W4-1(R)			1		1
W13-1(25)-A	25 M.P.H.		1		
	TOTAL	9	16	5	4

PAVEMENT MARKING SUMMARY	
DESCRIPTION	QUANTITY
PAVEMENT MARKERS	
TYPE A _____	1,196 EA.
TYPE C _____	1,289 EA.
TYPE D _____	69 EA.
TYPE H _____	590 EA.
TAPE - TYPE I OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	3,310 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	1,345 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW) _____	1,295 L.F.
TAPE - TYPE II OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	16,240 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	7,100 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	8,885 L.F.
8-INCH PAVEMENT STRIPE (YELLOW) _____	3,690 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	1,340 L.F.
12-INCH PAVEMENT STRIPE (YELLOW) _____	1,545 L.F.
DOUBLE 4-INCH PAVEMENT STRIPE (YELLOW) _____	5,910 L.F.
TAPE - TYPE III OR THERMOPLASTIC EXTRUSION	
4-INCH PAVEMENT STRIPE (WHITE) _____	2,075 L.F.
4-INCH PAVEMENT STRIPE (YELLOW) _____	555 L.F.
8-INCH PAVEMENT STRIPE (WHITE) _____	2,080 L.F.
12-INCH PAVEMENT STRIPE (WHITE) _____	540 L.F.
CROSSWALK MARKINGS _____	37 LANES
PAVEMENT ARROW _____	37 EA.
PAVEMENT WORD _____	10 EA.
PAINT	
ASPHALT CONCRETE CURB (WHITE) _____	1,120 L.F.

TYPE II OBJECT MARKER & REFLECTOR MARKER SUMMARY										
TYPE	QUANTITY									
	W/O POST		W/STEEL POST		W/FLEXIBLE POST (TYPE A)		W/FLEXIBLE POST (TYPE B)		MOUNT ON BRIDGE RAILING	
	YELLOW	WHITE	YELLOW	WHITE	YELLOW	WHITE	YELLOW	WHITE	YELLOW	WHITE
RM-2			105	86		6	10	29	20	20
RM-3			13		1					
RM-4			4							
OM-II	4		10							

MILEPOST MARKER SUMMARY				
LOCATION	SIGN NO. AND MESSAGE		QUANTITY	
	W/POST	W/O POST	W/POST	W/O POST
# STA. 4+75± RT. & LT.	D10-2	17	4	0
	D10-7	99		
	TOTAL		4	0

CONSTRUCTION SIGN SUMMARY			
SIGN NO.	MESSAGE	W/POSTS	W/O POST
CG20-2	END CONSTRUCTION	2	3
CW20-1d	ROAD CONSTRUCTION AHEAD	2	5
	TOTAL	4	8

SURVEY PLOTTED BY \_\_\_\_\_ DATE 3/29/94  
 ORIGINAL PLAN \_\_\_\_\_  
 DRAWN BY B. Hill  
 TRACED BY \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_  
 102.1 by \_\_\_\_\_  
 QUANTITIES BY \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**TRAFFIC SUMMARIES**  
 KAMEHAMEHA HIGHWAY RESURFACING  
 Lumiaina Street to Farrington Highway  
 Fed. Aid Proj. No. STP-099-1(13)  
 Date: Dec., 1994  
 SHEET No. T14 OF 14 SHEETS