FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	15	40

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 Exrusion))

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)

STOP — Pavement Word (Tape, Type III or Thermoplastic Extrusion)

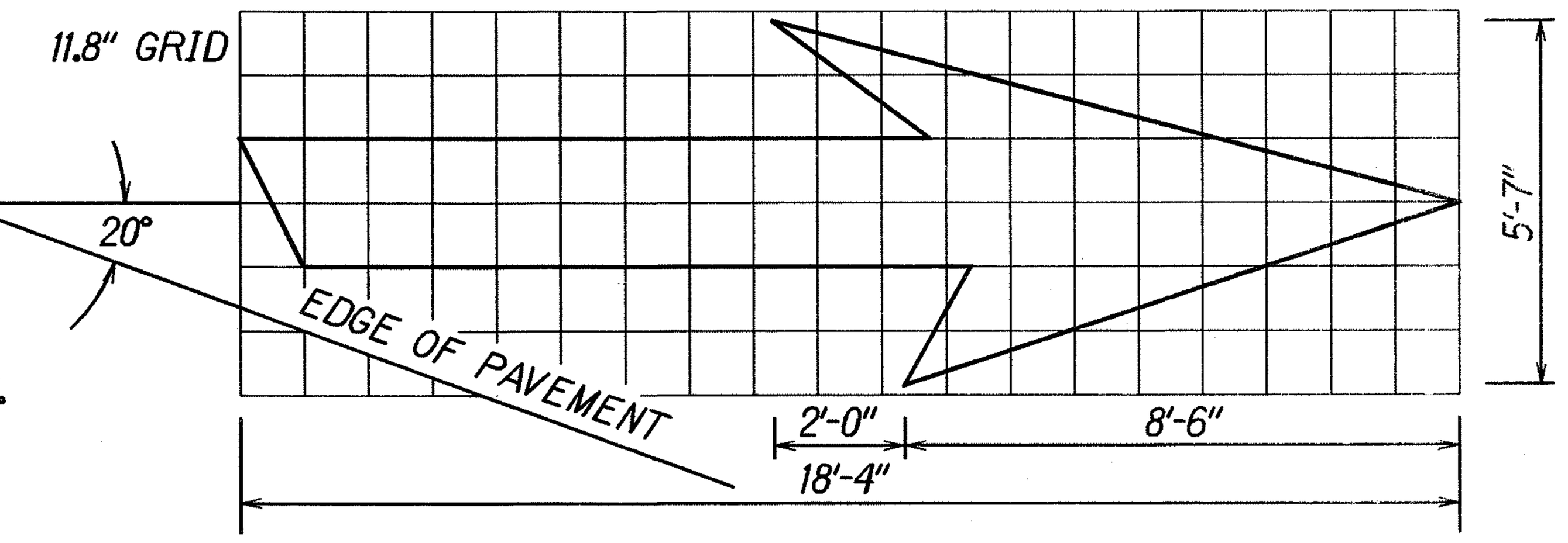
4 Each Type J Raised Pavement Markers
Type D Raised Pavement Markers @ 40'-0" o.c.
Type H Raised Pavement Markers (Reflective Surface facing no-passing direction)
4" Single Solid Yellow Stripe (Tape, Type I or Thermoplastic Extrusion)

10' 10' 10' 10' — 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)

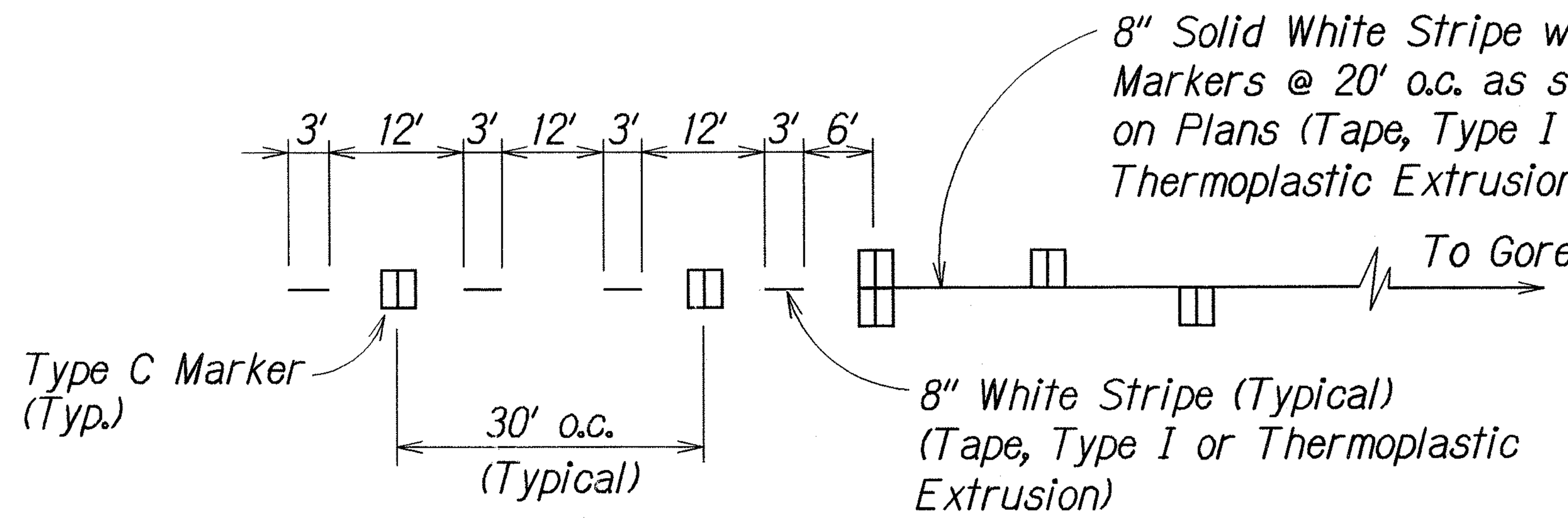
Reflector Marker (RM-5) Mounted on Existing Metal Guardrail

NOTES

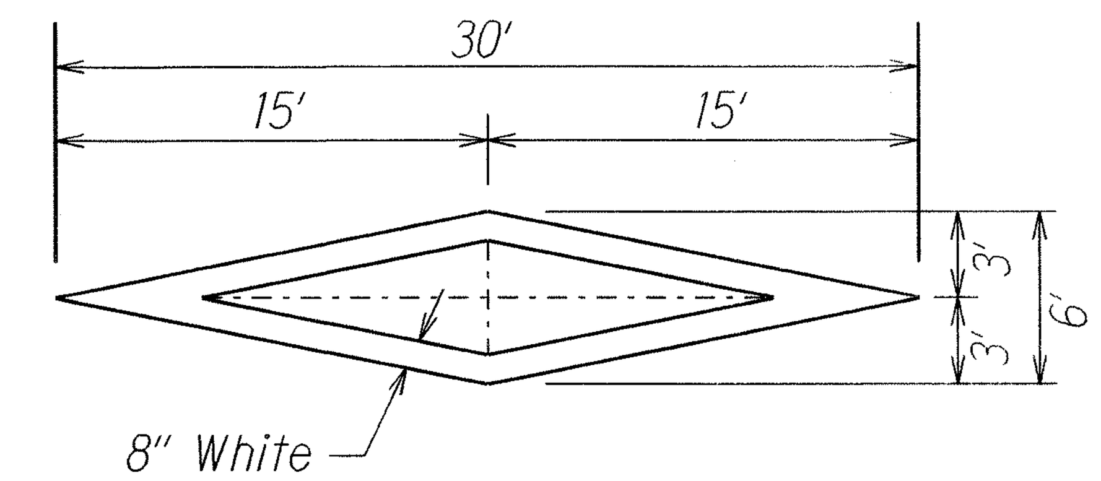
1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. Costs shall be incidental to the various pavement marking items.
3. Raised pavement markers shall not be installed within crosswalks.
4. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.
5. All pavement striping shall be as noted on the legend or plans.
6. 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.
7. Final locations of all signs shall be approved by the Engineer prior to any installation work.
8. 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.
9. At the end of each day's work, the Contractor shall maintain the zipper 1-inch guide stripes even within the cold plane areas that has it. This work shall be considered incidental to Contract Item 645.1000 - Traffic Control.



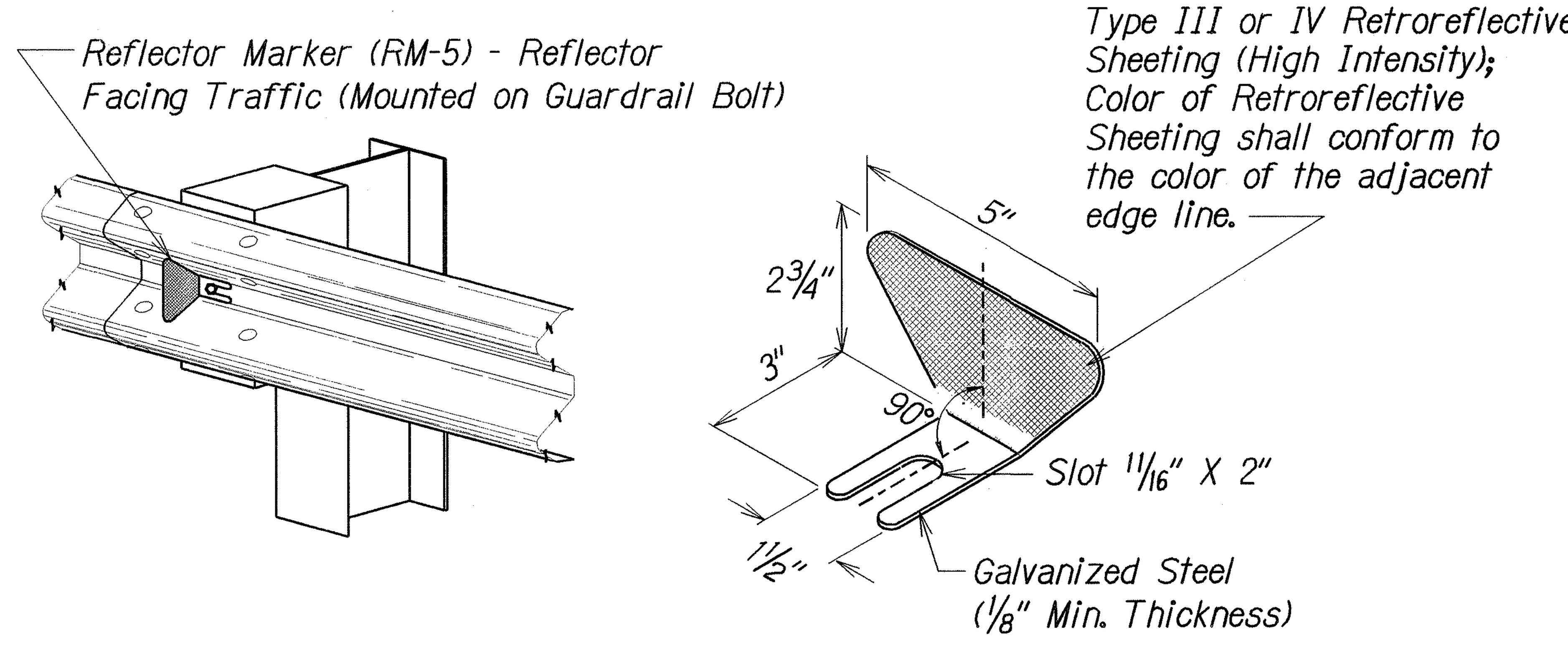
TYPE VI ARROW
RIGHT LANE DROP ARROW
(FOR LEFT LANE, USE MIRROR IMAGE)



LANE DROP MARKING
Not to Scale



PAVEMENT DIAMONDS
Not to Scale



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

Note:
Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be paid for under Contract Item No. 632.4200 - Reflector Marker (RM-5) mounted on existing guardrail. The Contractor shall be responsible for mounting RM-5's on all existing metal guardrails even when not shown on plans.

ORIGINAL PLAN: SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE
NOTE BOOK: N. Oahiteq

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

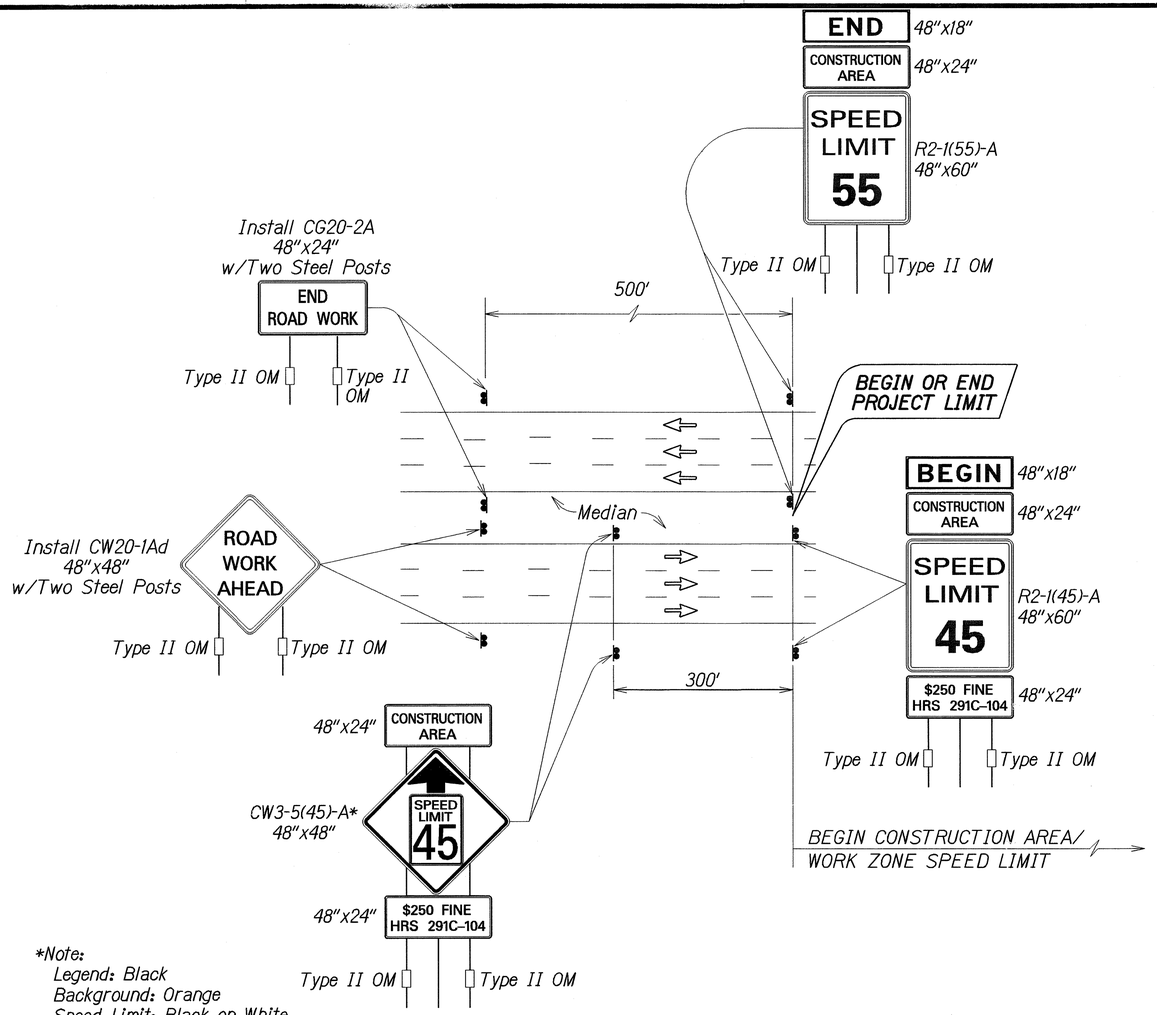
PAVEMENT MARKING LEGEND, DETAILS & NOTES

INTERSTATE ROUTE H-1
RESURFACING
Kalmakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: As Noted   Date: January 2007

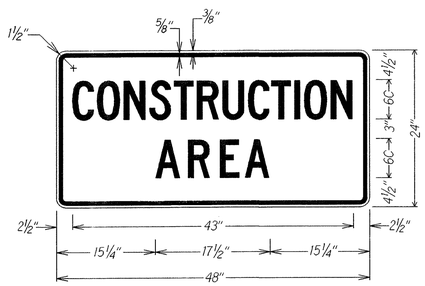
SHEET No. T1 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	16	40

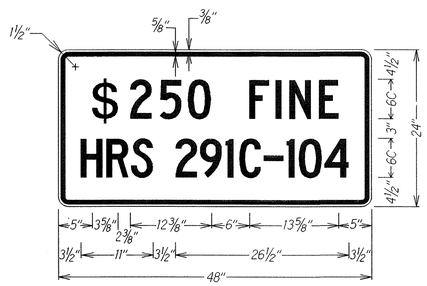


*Note:
Legend: Black
Background: Orange
Speed Limit: Black on White

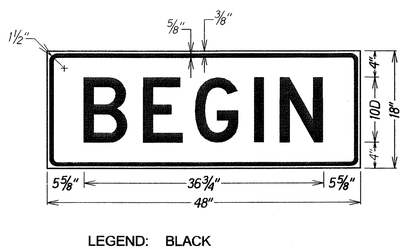
TYPICAL DETAIL FOR CONSTRUCTION SIGNS ON FREEWAY



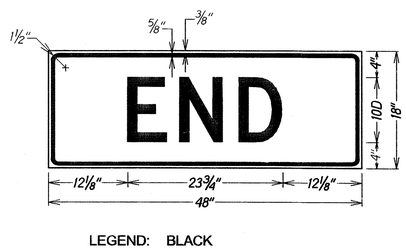
LEGEND: BLACK
BACKGROUND: ORANGE



LEGEND: BLACK
BACKGROUND: WHITE



LEGEND: BLACK
BACKGROUND: ORANGE



LEGEND: BLACK
BACKGROUND: ORANGE

Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/ construction phases (3 Days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
2. The Contractor shall erect at the beginning of the project and at the 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 freeway project and shall be maintained by the Contractor. These signs shall be placed in addition to the required traffic control signs called for in Section 645 - Traffic Control. The advance construction warning signs shall be new and become the property of the State. The Contractor shall remove, clean and deliver the signs and posts to the District Baseyard, or as directed by the Engineer, upon the completion of the project.
3. All existing regulatory speed limit signs within the work zone/project limits shall be covered and work zone speed limit sign assemblies (R2-1(45)-A and CW3-5(45)-A with "CONSTRUCTION AREA" and "$250 FINE HRS 291C-104" Supplemental Signs) shall be displayed during lane closure hours.
4. Upon the removal of the lane closure, all work zone speed limit signs shall be covered and existing speed limit signs within the work zone/project limits shall be restored.
5. Construction signs shall be installed on both the approaching and trailing ends of each work zone.
6. Each construction sign shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.1000 - Traffic Control.
7. All work zone speed sign assembly shall be mounted on three (3) 4.00 lbs./ft. galvanized flanged channel sign posts with a sign clearance height of five (5) feet. Sign stiffeners as specified by Standard Plan Sheet TE-02 shall be installed as needed or as directed by the Engineer.
8. The daily covering and uncovering of existing regulatory speed limit signs along with the installation, maintenance, removal and daily covering and uncovering of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.1000 - Traffic Control.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

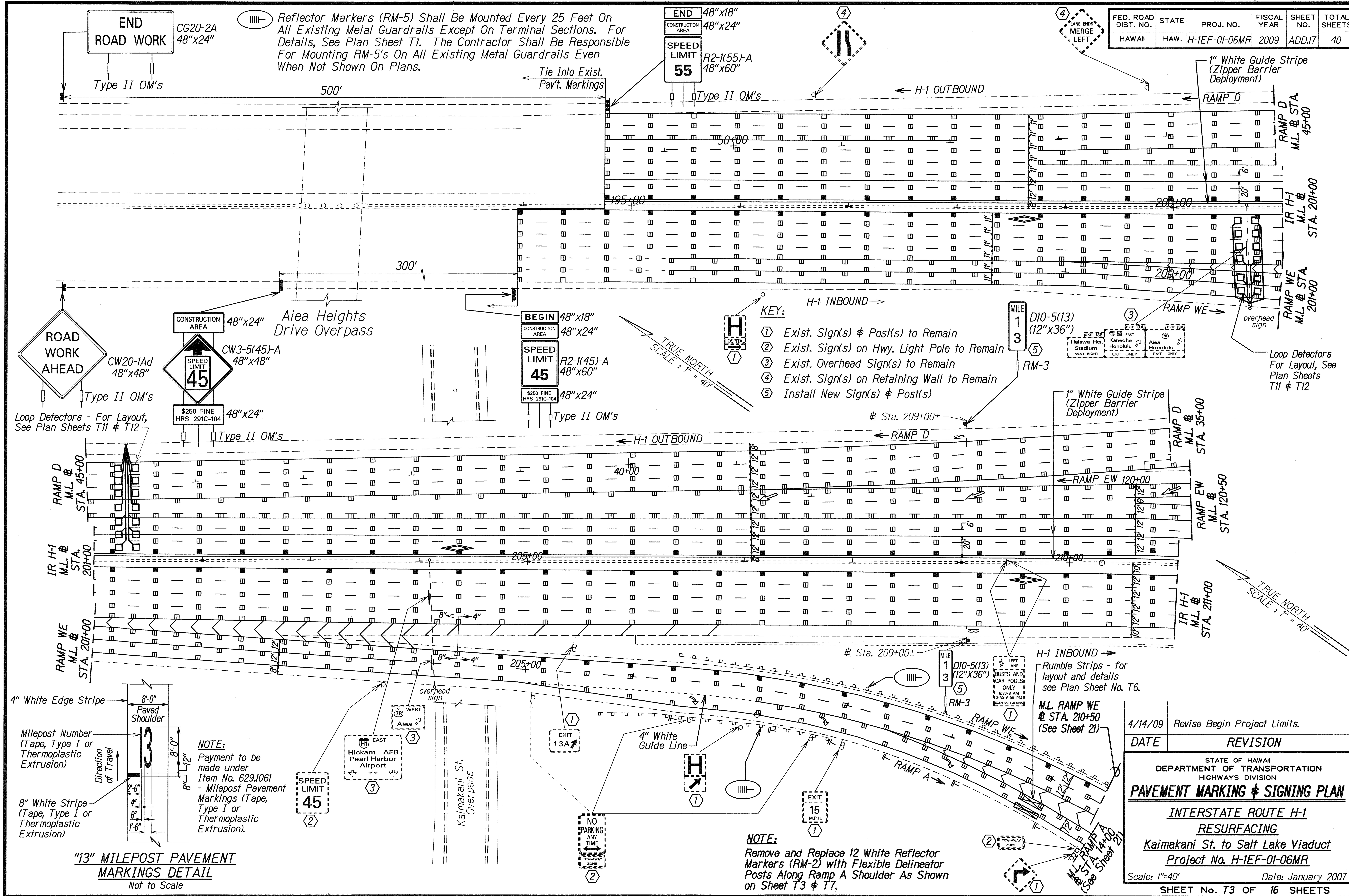
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FREEWAY WORK ZONE SIGNING
PLAN, NOTES & DETAILS

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Not To Scale Date: January 2007

SHEET No. T2 OF 16 SHEETS



END ROAD WORK
CG20-2A 48"x24"
Type II OM's
500'
Tie Into Exist. Pav't. Markings
END 48"x18"
CONSTRUCTION AREA 48"x24"
SPEED LIMIT 55
R2-1(55)-A 48"x60"
Type II OM's
H-1 OUTBOUND
LANE ENDS MERGE LEFT
1" White Guide Stripe (Zipper Barrier Deployment)
RAMP D
RAMP D M.L. ℄ STA. 45+00
50+00
195+00
200+00
IR H-1 M.L. ℄ STA. 201+00
201+00
RAMP WE M.L. ℄ STA. 201+00
RAMP WE
300'
Aiea Heights Drive Overpass
H-1 INBOUND
overhead sign
Loop Detectors For Layout, See Plan Sheets T11 & T12
ROAD WORK AHEAD
CW20-1Ad 48"x48"
Type II OM's
CONSTRUCTION AREA 48"x24"
SPEED LIMIT 45
CW3-5(45)-A 48"x48"
$250 FINE HRS 291C-104 48"x24"
Type II OM's
BEGIN 48"x18"
CONSTRUCTION AREA 48"x24"
SPEED LIMIT 45
R2-1(45)-A 48"x60"
$250 FINE HRS 291C-104 48"x24"
Type II OM's
TRUE NORTH SCALE : 1" = 40'
H HOSPITAL
MILE 1 3
D10-5(13) (12"x36")
RM-3
EXIT 13B Halawa Hts. Stadium NEXT RIGHT
EXIT 13A EAST Kaneohe Honolulu EXIT ONLY
EXIT 13A Aiea Honolulu EXIT ONLY
Loop Detectors - For Layout, See Plan Sheets T11 & T12
℄ Sta. 209+00±
1" White Guide Stripe (Zipper Barrier Deployment)
RAMP D M.L. ℄ STA. 35+00
RAMP D M.L. ℄ STA. 45+00
40+00
RAMP EW 120+00
RAMP EW M.L. ℄ STA. 120+50
IR H-1 M.L. ℄ STA. 201+00
205+00
210+00
IR H-1 M.L. ℄ STA. 211+00
TRUE NORTH SCALE : 1" = 40'
RAMP WE M.L. ℄ STA. 201+00
205+00
℄ Sta. 209+00±
MILE 1 3
D10-5(13) (12"x36")
RM-3
LEFT LANE BUSES AND CAR POOLS ONLY 5:30-8 AM 3:30-6:00 PM
H-1 INBOUND
Rumble Strips - for layout and details see Plan Sheet No. T6.
M.L. RAMP WE ℄ STA. 210+50 (See Sheet 21)
RAMP WE
RAMP A
M.L. RAMP A ℄ STA. 14+00 (See Sheet 21)
overhead sign
WEST Aiea
EAST Hickam AFB Pearl Harbor Airport
SPEED LIMIT 45
EXIT 13A
4" White Guide Line
H
NO PARKING ANY TIME TOW-AWAY ZONE
EXIT 15 M.P.H.
TOW-AWAY ZONE
Kaimakani St. Overpass
8" 4"
4" White Edge Stripe
8'-0" Paved Shoulder
Milepost Number (Tape, Type I or Thermoplastic Extrusion)
Direction of Travel
8" White Stripe (Tape, Type I or Thermoplastic Extrusion)
8'-0" 12" 8" 2'-6" 4" 6" 1'-6"

Reflector Markers (RM-5) Shall Be Mounted Every 25 Feet On All Existing Metal Guardrails Except On Terminal Sections. For Details, See Plan Sheet T1. The Contractor Shall Be Responsible For Mounting RM-5's On All Existing Metal Guardrails Even When Not Shown On Plans.

KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain
5. Install New Sign(s) & Post(s)

"13" MILEPOST PAVEMENT MARKINGS DETAIL

Not to Scale

NOTE:
Payment to be made under Item No. 629.1061 - Milepost Pavement Markings (Tape, Type I or Thermoplastic Extrusion).

NOTE:
Remove and Replace 12 White Reflector Markers (RM-2) with Flexible Delineator Posts Along Ramp A Shoulder As Shown on Sheet T3 & T7.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	ADD17	40

DATE	REVISION
4/14/09	Revise Begin Project Limits.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. T3 OF 16 SHEETS

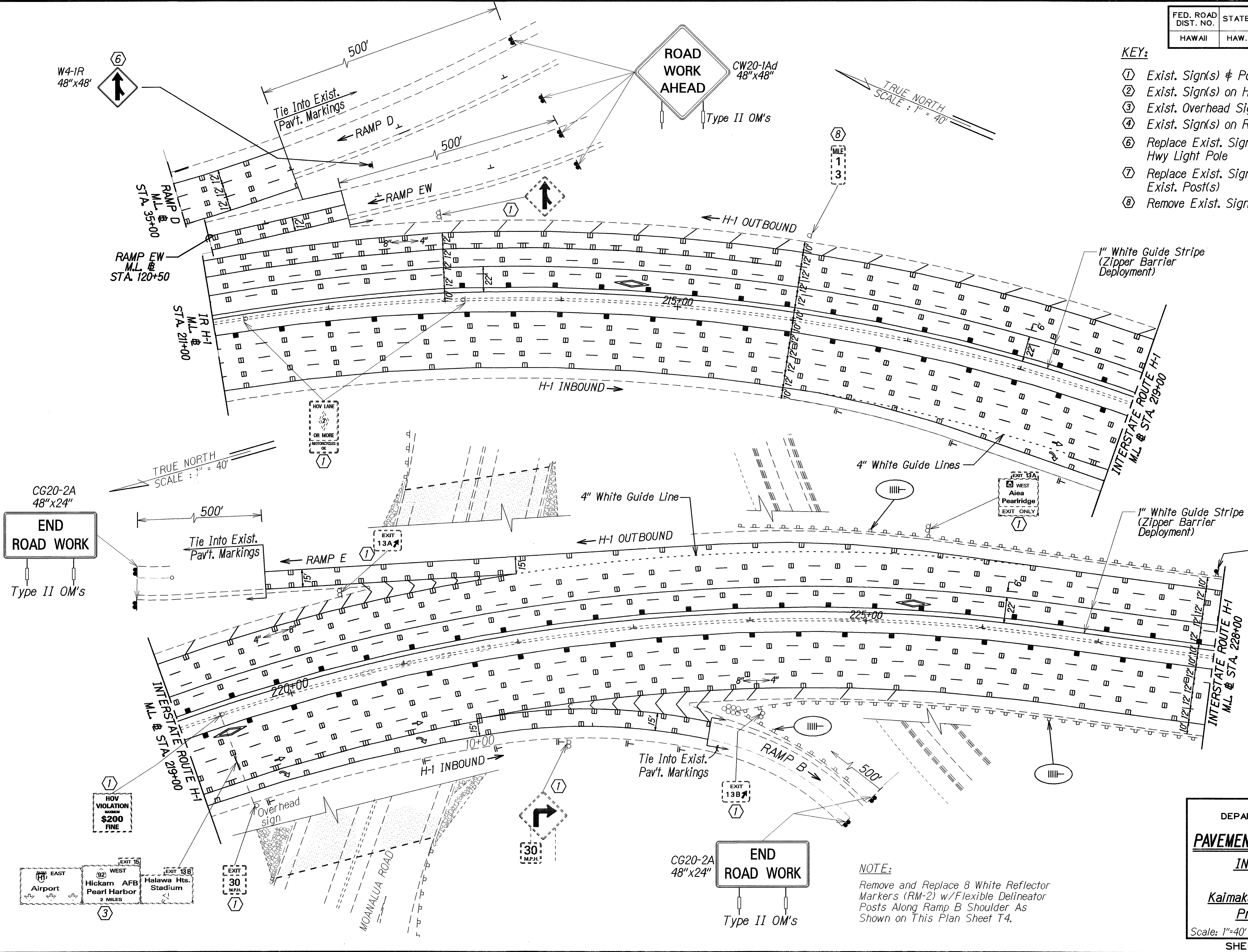
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | NOTE BOOK No. | DATE

ADD. 17

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	18	40

KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain
6. Replace Exist. Sign(s) & Install New On Hwy Light Pole
7. Replace Exist. Sign(s) & Install New On Exist. Post(s)
8. Remove Exist. Sign(s) & Post(s)



NOTE:

Remove and Replace 8 White Reflector Markers (RM-2) w/Flexible Delineator Posts Along Ramp B Shoulder As Shown on This Plan Sheet T4.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

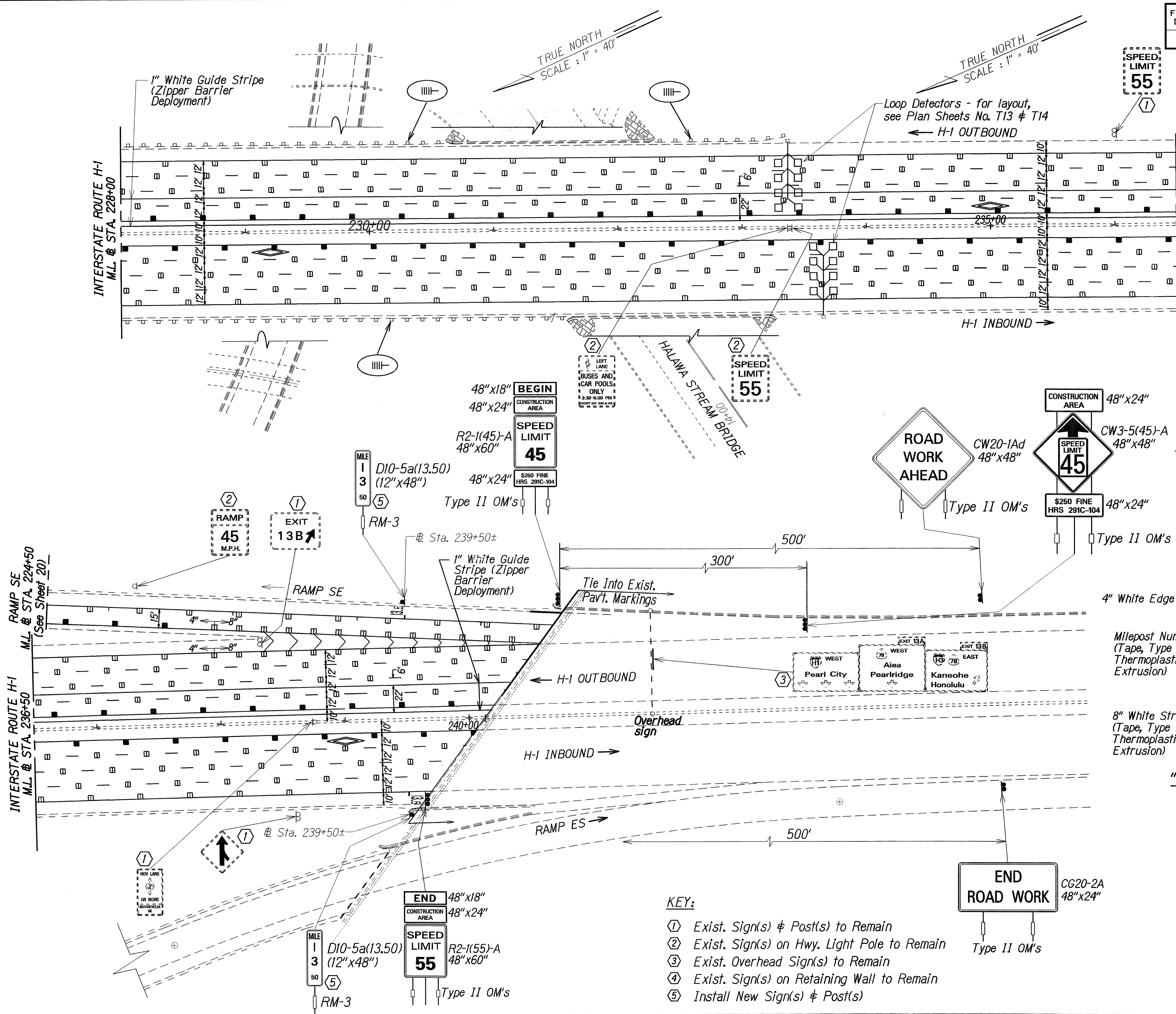
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

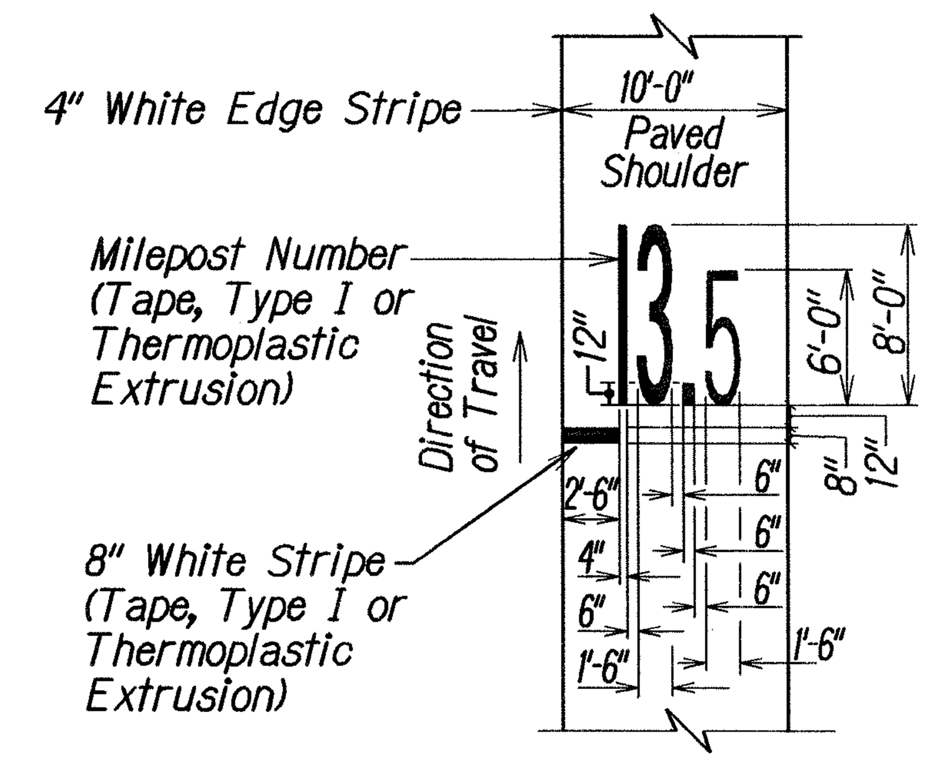
Scale: 1"=40' Date: January 2007

SHEET No. T4 OF 16 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | NOTE BOOK | DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	19	40





NOTE:
Payment to be made under Item No. 629.1061- Milepost Pavement Markings (Tape, Type I or Thermoplastic Extrusion).

"13.5" MILEPOST PAVEMENT MARKINGS DETAIL
Not to Scale

KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain
5. Install New Sign(s) & Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

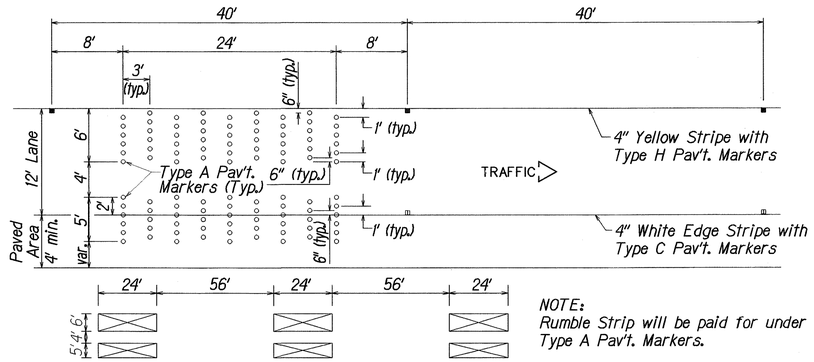
INTERSTATE ROUTE H-1
RESURFACING
Kalmakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. T5 OF 16 SHEETS

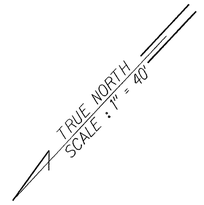
ORIGINAL PLAN / SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / NOTE BOOK / DATE

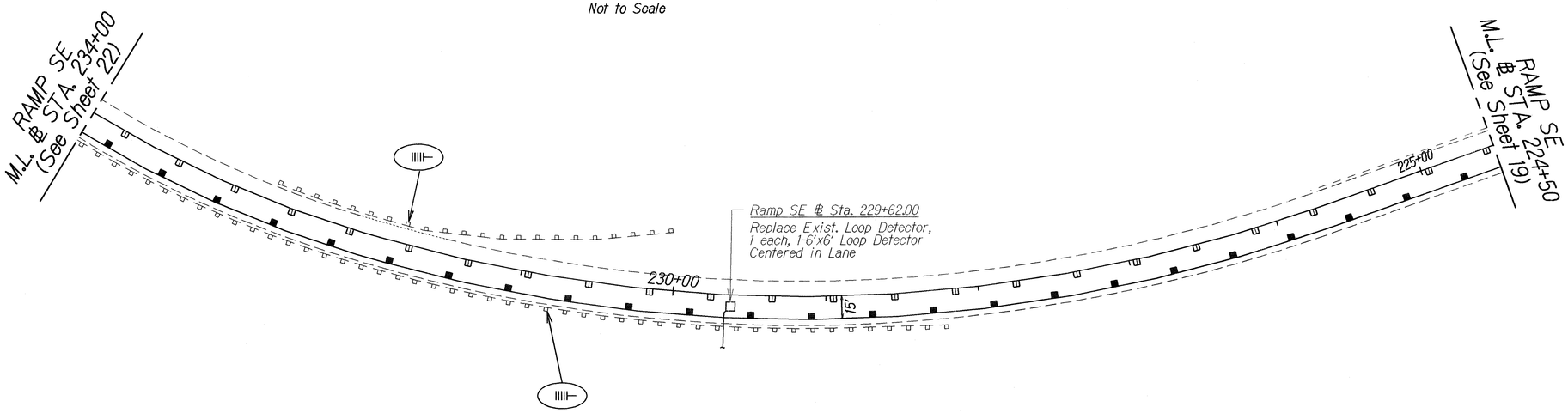
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	20	40



TYPICAL RUMBLE STRIP - LAYOUT & DETAIL

Not to Scale





KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

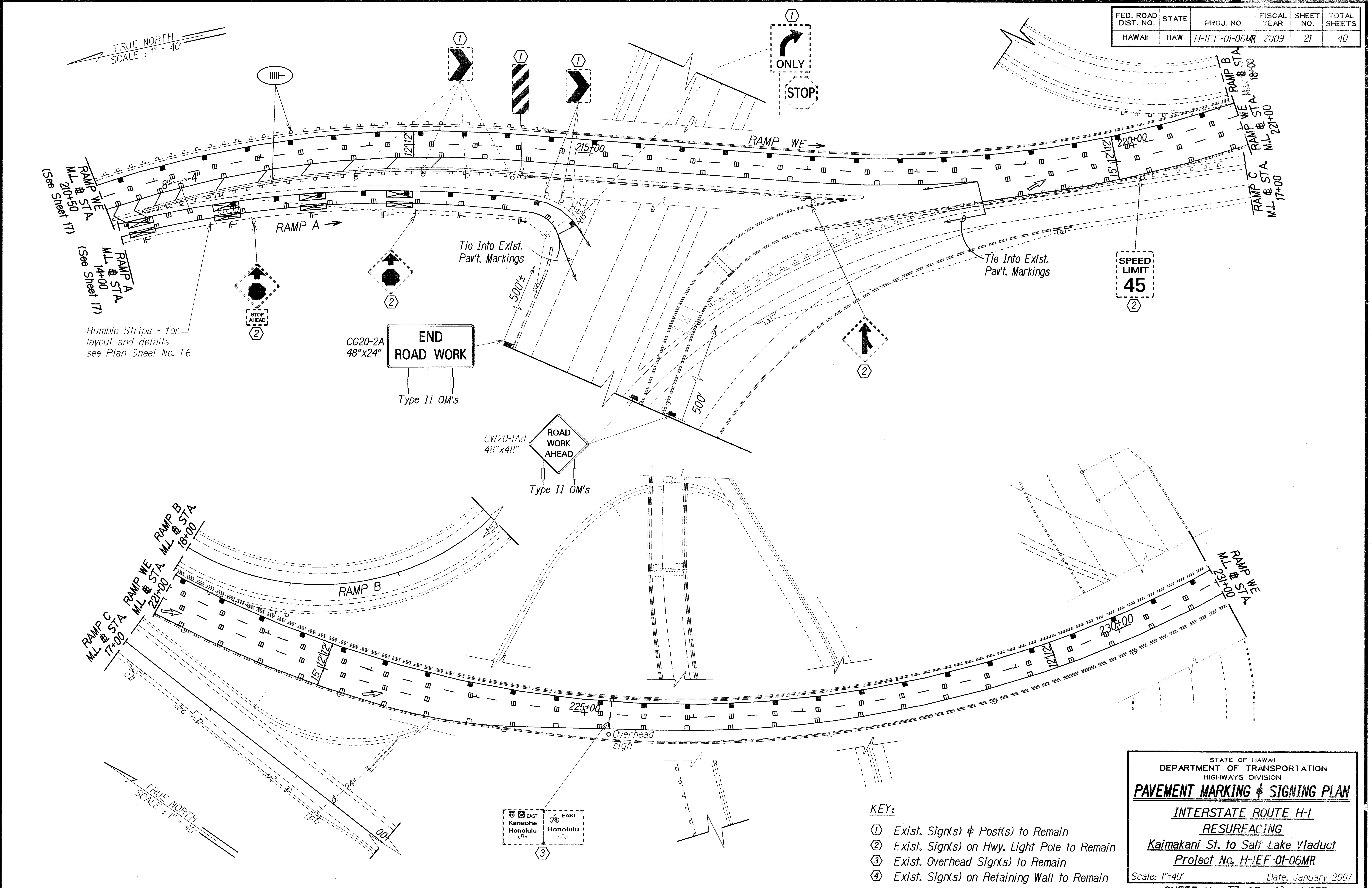
PAVEMENT MARKING & SIGNING PLAN

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. 16 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	21	40



KEY:

① Exist. Sign(s) ⌀ Post(s) to Remain
② Exist. Sign(s) on Hwy. Light Pole to Remain
③ Exist. Overhead Sign(s) to Remain
④ Exist. Sign(s) on Retaining Wall to Remain

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

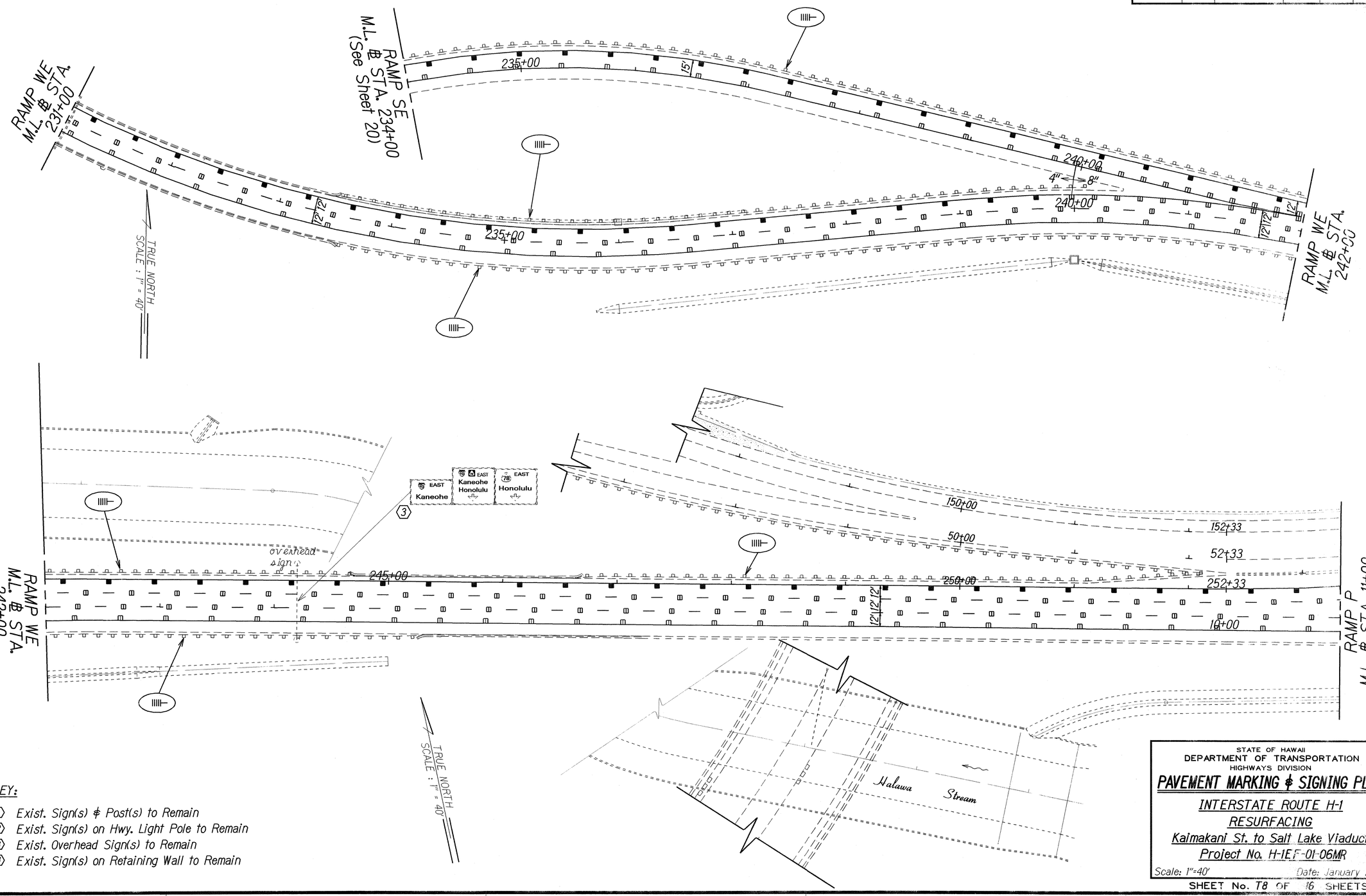
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40'   Date: January 2007

SHEET No. T7 OF 16 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	22	40



KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
N.	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

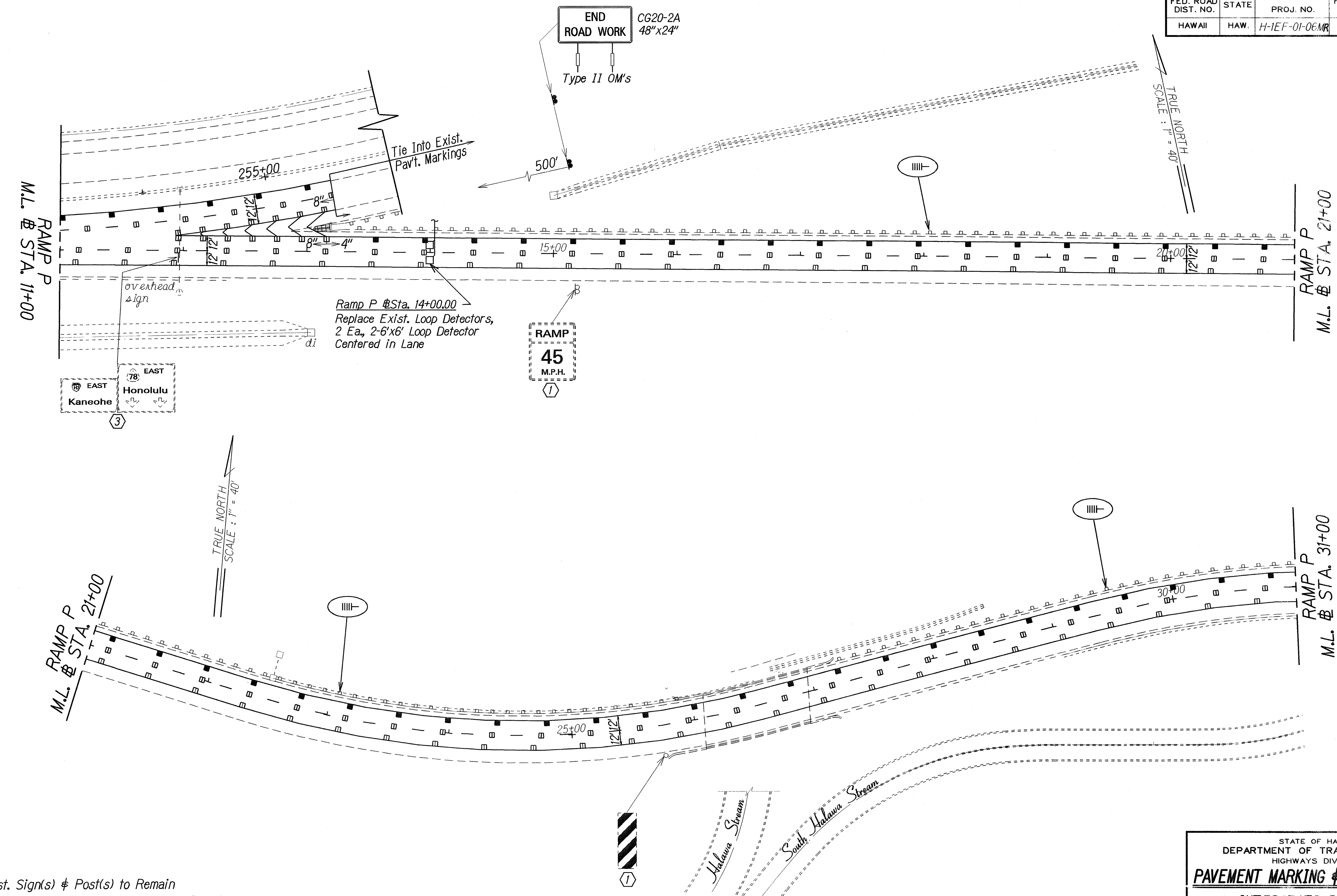
PAVEMENT MARKING & SIGNING PLAN

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. T8 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-IEF-01-06MR	2009	23	40



KEY:

① Exist. Sign(s) & Post(s) to Remain

② Exist. Sign(s) on Hwy. Light Pole to Remain

③ Exist. Overhead Sign(s) to Remain

④ Exist. Sign(s) on Retaining Wall to Remain

ORIGINAL PLAN | NOTE BOOK | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

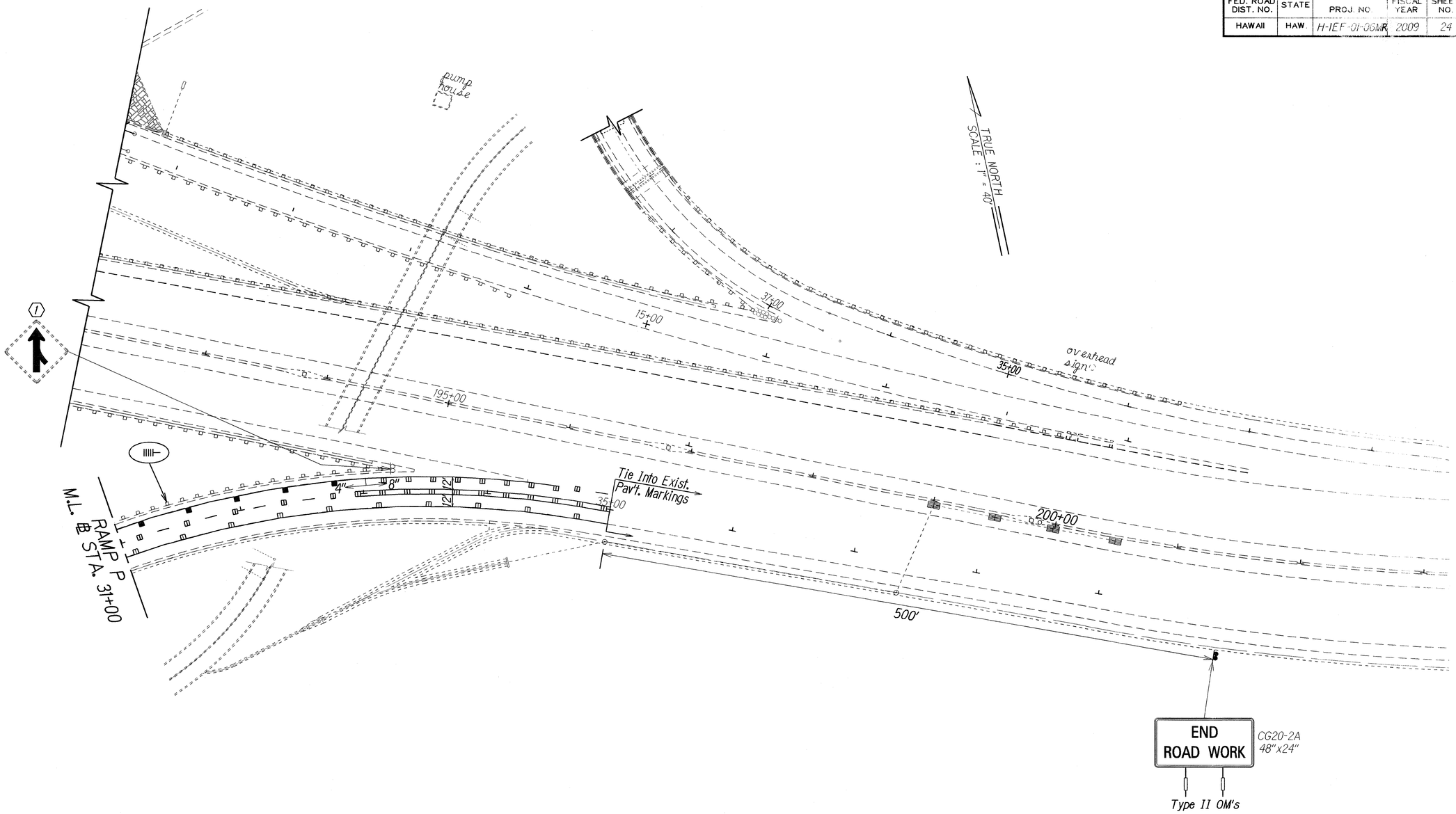
PAVEMENT MARKING & SIGNING PLAN

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-IEF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. T9 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	24	40



KEY:

1. Exist. Sign(s) & Post(s) to Remain
2. Exist. Sign(s) on Hwy. Light Pole to Remain
3. Exist. Overhead Sign(s) to Remain
4. Exist. Sign(s) on Retaining Wall to Remain

ORIGINAL PLAN

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NOTE BOOK	
No.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

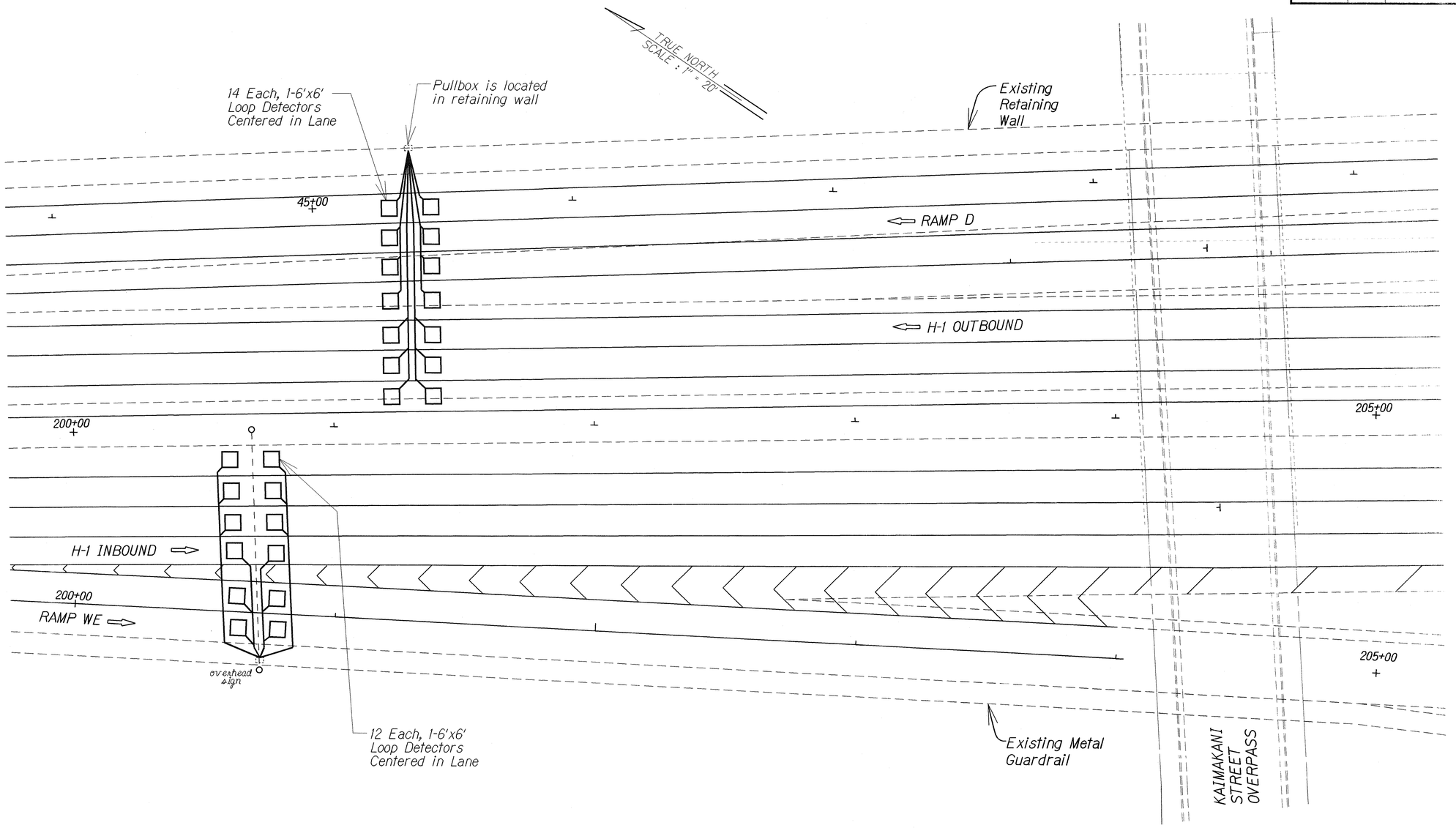
PAVEMENT MARKING & SIGNING PLAN

INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Scale: 1"=40' Date: January 2007

SHEET No. T10 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	25	40



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	PLANS PREP. BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

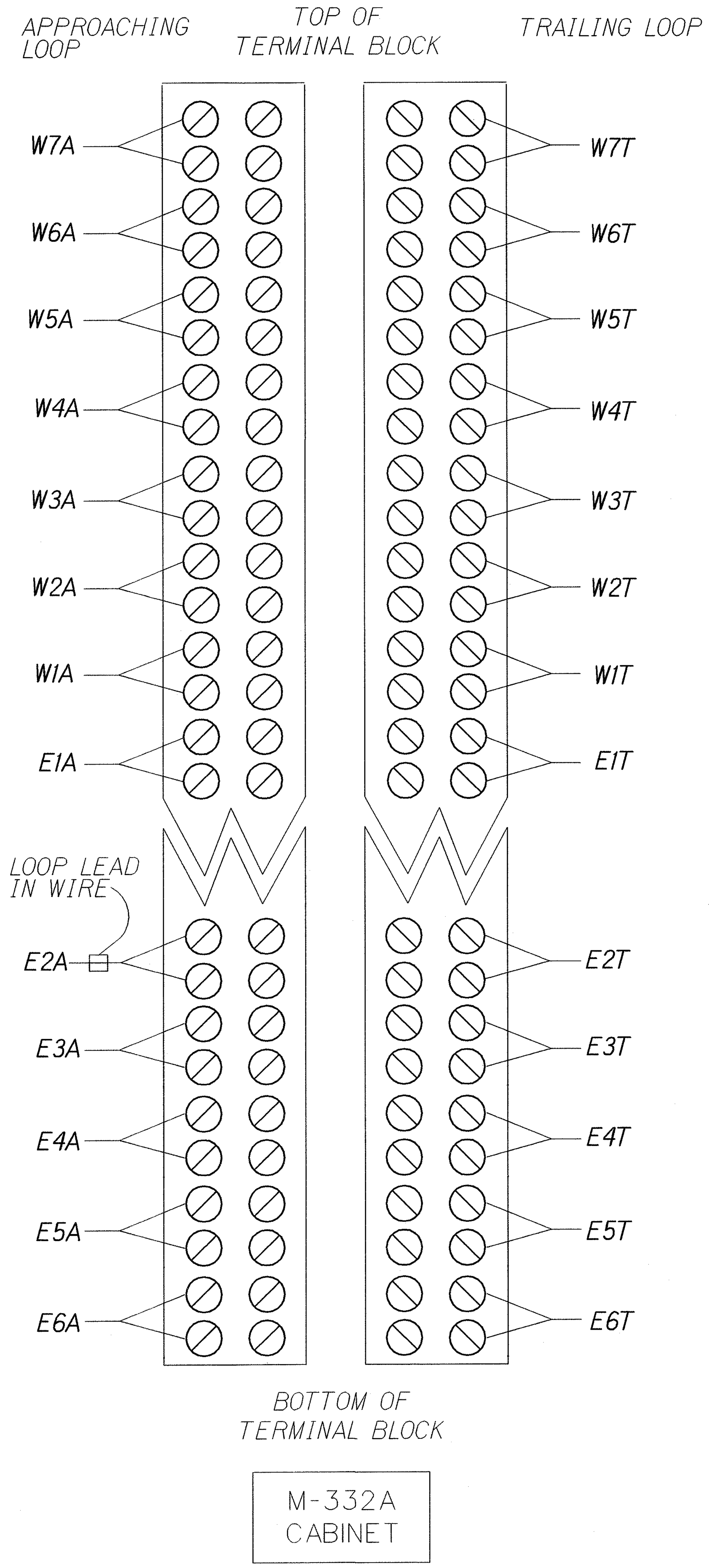
LOOP DETECTOR PLAN

Vicinity of Kaimakani Street Overpass
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

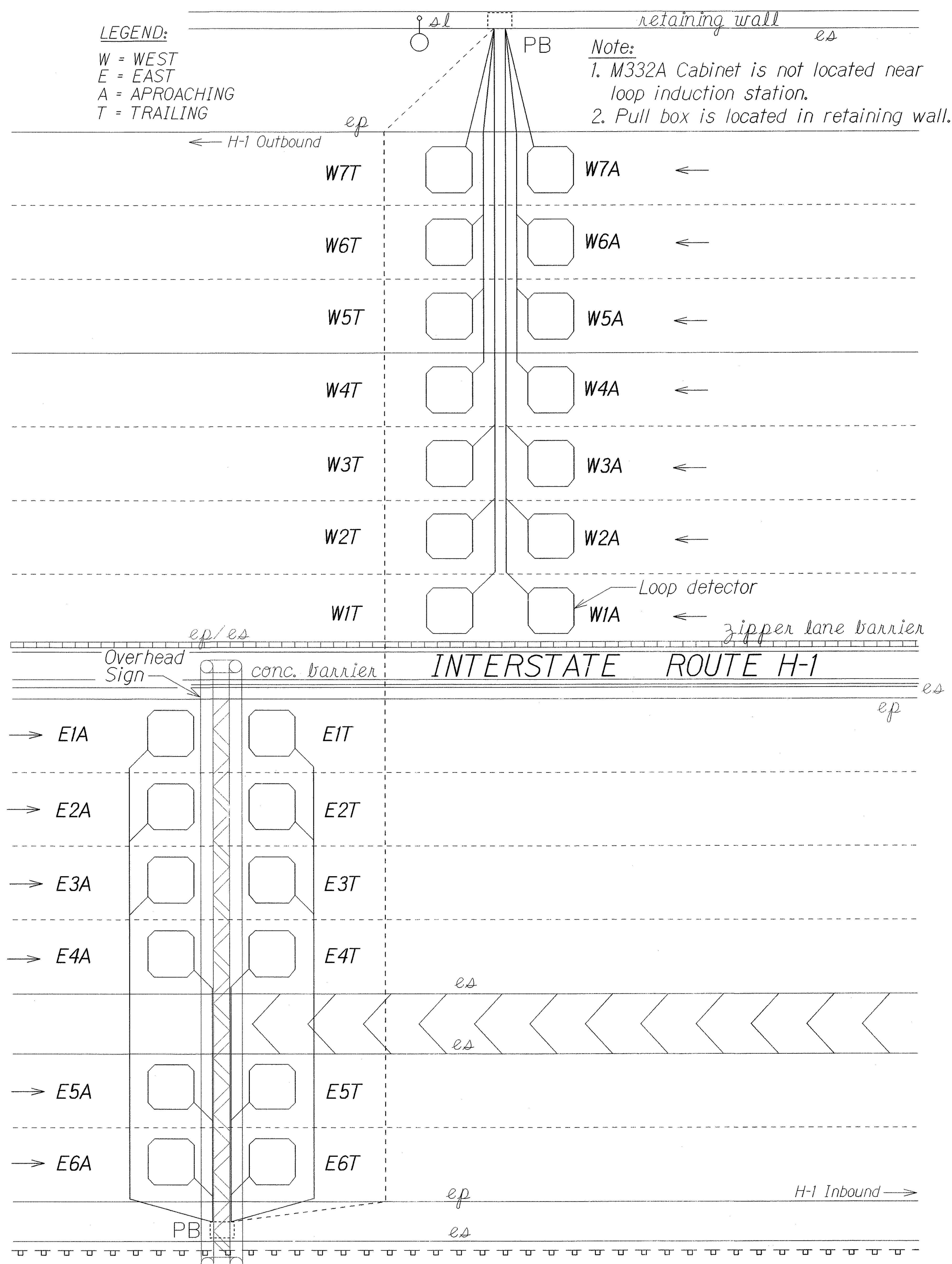
Scale: 1"=20' Date: January 2007

SHEET No. T11 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	26	40



CONNECTING LAYOUT OF LOOP LEAD-IN WIRES TO TERMINAL BLOCK INSIDE M-332A CABINET



LAYOUT AND LABELING OF LOOPS

LOOP DETECTOR LAYOUT

Vicinity of Kaimakani Street Overpass

Not to Scale

GENERAL NOTES

1. The locations of new inductance loops shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
2. The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing inductance loops.
3. Continuity of inductance loops and lead-in wires shall be tested and warranted for one year from date of acceptance by the Contractor.
4. The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
5. The Contractor shall verify the locations of the existing utilities and underground structures whether or not shown on plans.
6. The Contractor shall assume that existing underground utilities not shown on the plans may exist, therefore, he shall contact the different utility companies for information and toning.
7. The Contractor shall be held liable for any damages incurred to the existing utilities and underground structures as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the STATE.
8. Changes to the contract plans and specifications shall not be permitted, unless otherwise authorized by the Engineer upon written justification and request for approval by the Contractor.

LOOP LAYOUT NOTES

1. Detector loop shall consist of three turns of 1/C #12 cable meeting IMSA SPEC 51-5 or equivalent embedded in a 3/8" minimum sawcut, except as noted.
2. Loop and lead-in to the first pullbox shall be one continuous wire. Lead-in wires from the same loop shall be twisted in pairs, two turns per foot. DO NOT twist one loop-pairs with another loop-pairs.
3. All lead-in wires shall be crimped with open end lugs that will fit into the terminal board slots snugly.
4. The Contractor shall connect the inductance wires on each terminal slot.
5. The left lane in the direction of traffic flow is designated as Lane 1, and the lane next to its right as Lane 2 and so on as indicated on plans.
6. Vacuum and clean sawcut thoroughly before installing sensors and/or cables and filling with approved sealant.
7. All loop lead-in wires in all enclosures including pullboxes shall be identified and labeled by direction of traffic flow and lane numbers as shown on plans.
8. All cables and wires terminated within an enclosure shall have a minimum 12" additional slack.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR PLAN

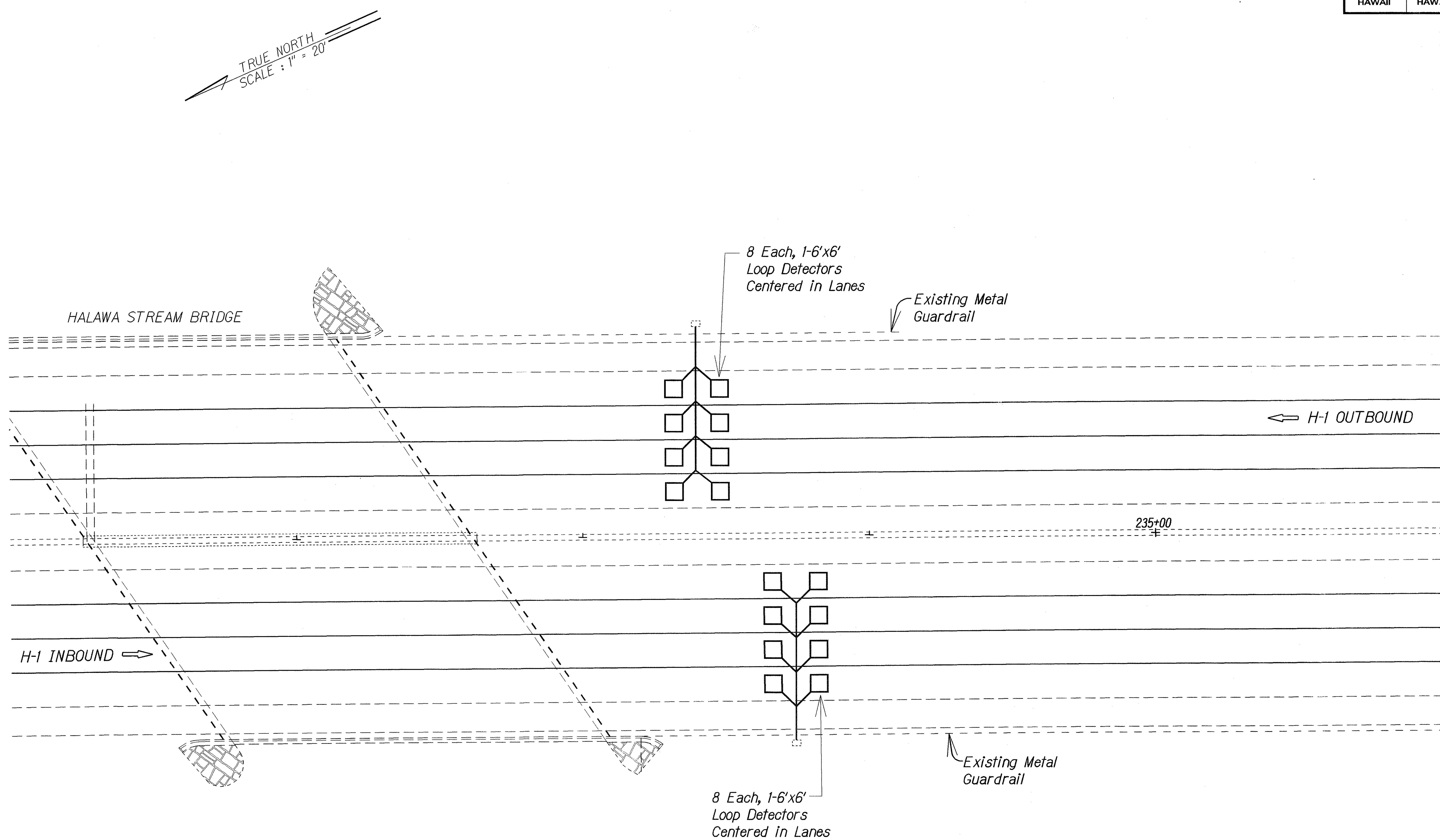
Vicinity of Kaimakani Street Overpass
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Not to Scale — Date: January 2007

SHEET No. T12 OF 16 SHEETS

ORIGINAL PLAN — NOTE BOOK — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-IEF-01-06MR	2009	27	40



ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
NOTE BOOK
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

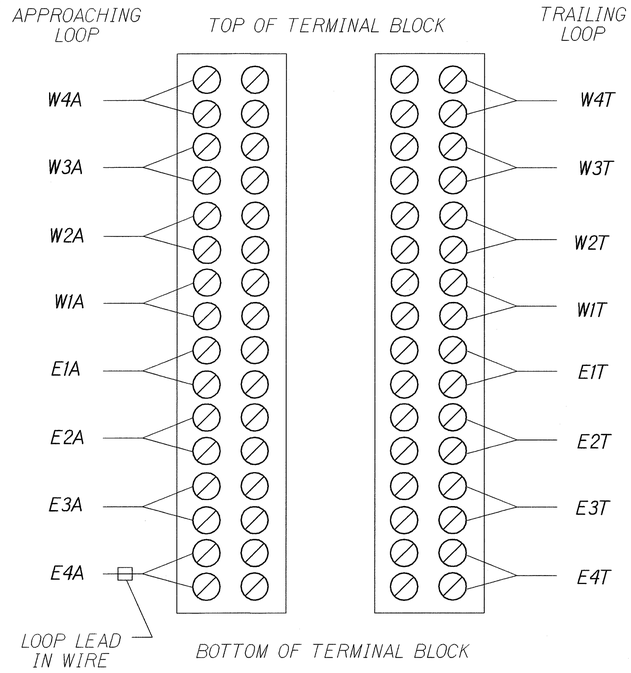
LOOP DETECTOR PLAN

Vicinity of Halawa Stream Bridge
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-IEF-01-06MR

Scale: 1"=20' Date: January 2007

SHEET No. T13 OF 16 SHEETS

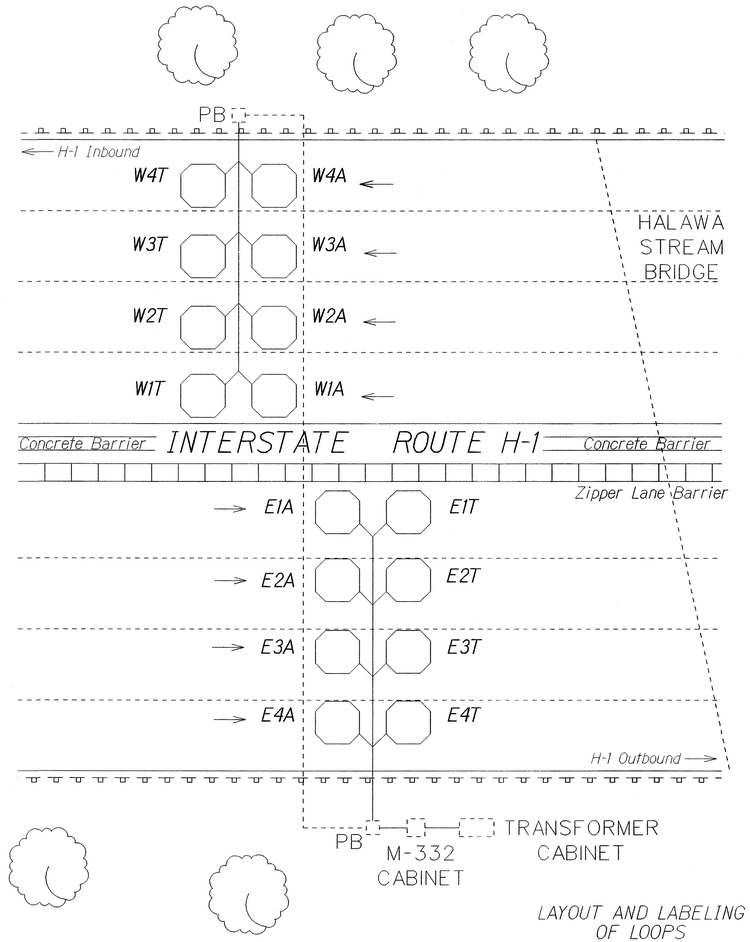
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-IEF-01-06MR	2009	28	40



M-332 CABINET

CONNECTING LAYOUT OF LOOP LEAD-IN WIRES TO TERMINAL BLOCK INSIDE M-332 CABINET

LEGEND:
W = WEST
E = EAST
A = APROACHING
T = TRAILING



LAYOUT AND LABELING OF LOOPS

GENERAL NOTES

1. The locations of new inductance loops shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
2. The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing inductance loops.
3. Continuity of inductance loops and lead-in wires shall be tested and warranted for one year from date of acceptance by the Contractor.
4. The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
5. The Contractor shall verify the locations of the existing utilities and underground structures whether or not shown on plans.
6. The Contractor shall assume that existing underground utilities not shown on the plans may exist, therefore, he shall contact the different utility companies for information and toning.
7. The Contractor shall be held liable for any damages incurred to the existing utilities and underground structures as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the STATE.
8. Changes to the contract plans and specifications shall not be permitted, unless otherwise authorized by the Engineer upon written justification and request for approval by the Contractor.

LOOP LAYOUT NOTES

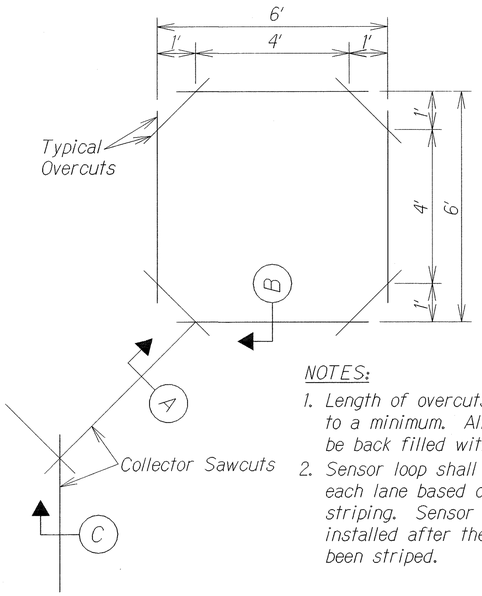
1. Detector loop shall consist of three turns of 1/C #12 cable meeting IMSA SPEC 51-5 or equivalent embedded in a 3/8" minimum sawcut, except as noted.
2. Loop and lead-in to the first pullbox shall be one continuous wire. Lead-in wires from the same loop shall be twisted in pairs, two turns per foot. DO NOT twist one loop-pairs with another loop-pairs.
3. All lead-in wires shall be crimped with open end lugs that will fit into the terminal board slots snugly.
4. The Contractor shall connect the inductance wires on each terminal slot.
5. The left lane in the direction of traffic flow is designated as Lane 1, and the lane next to its right as Lane 2 and so on as indicated on plans.
6. Vacuum and clean sawcut thoroughly before installing sensors and/or cables and filling with approved sealant.
7. All loop lead-in wires in all enclosures including pullboxes shall be identified and labeled by direction of traffic flow and lane numbers as shown on plans.
8. All cables and wires terminated within an enclosure shall have a minimum 12" additional slack.

LOOP DETECTOR LAYOUT
Vicinity of Halawa Stream Bridge
Not to Scale

ORIGINAL PLAN | SURVEY PLOTTED BY ____ DATE ____ | DRAWN BY ____ | TRACED BY ____ | NOTE BOOK ____ | DESIGNED BY ____ | QUANTITIES BY ____ | CHECKED BY ____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
LOOP DETECTOR PLAN
Vicinity of Halawa Stream Bridge
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-IEF-01-06MR
Not to Scale — Date: January 2007
SHEET No. T14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06MR	2009	29	40

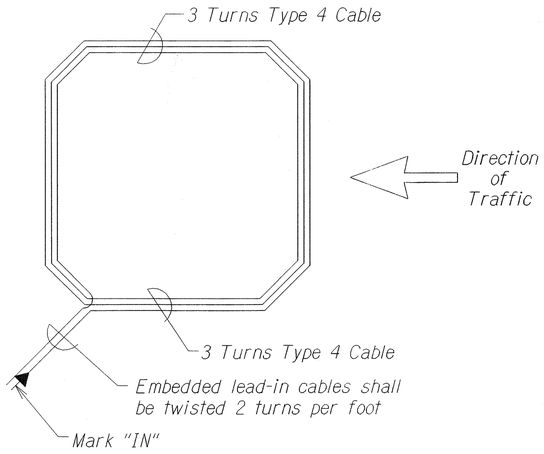


NOTES:

1. Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with approved sealant.
2. Sensor loop shall be centered in each lane based on the final lane striping. Sensor loop shall be installed after the roadway has been striped.

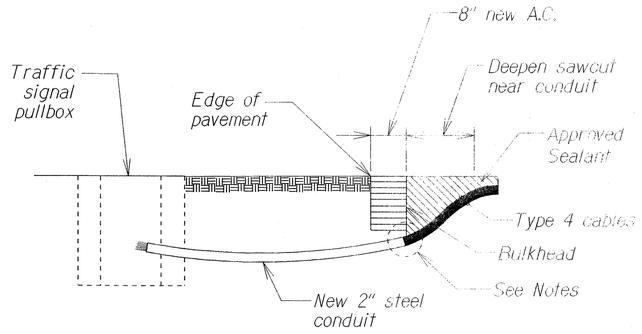
TYPICAL SENSOR LOOP SAWCUT DETAIL

Not to Scale



TYPICAL SENSOR LOOP WIRING DIAGRAM

Not to Scale



NOTES ON CONSTRUCTION AT END OF SAWCUT:

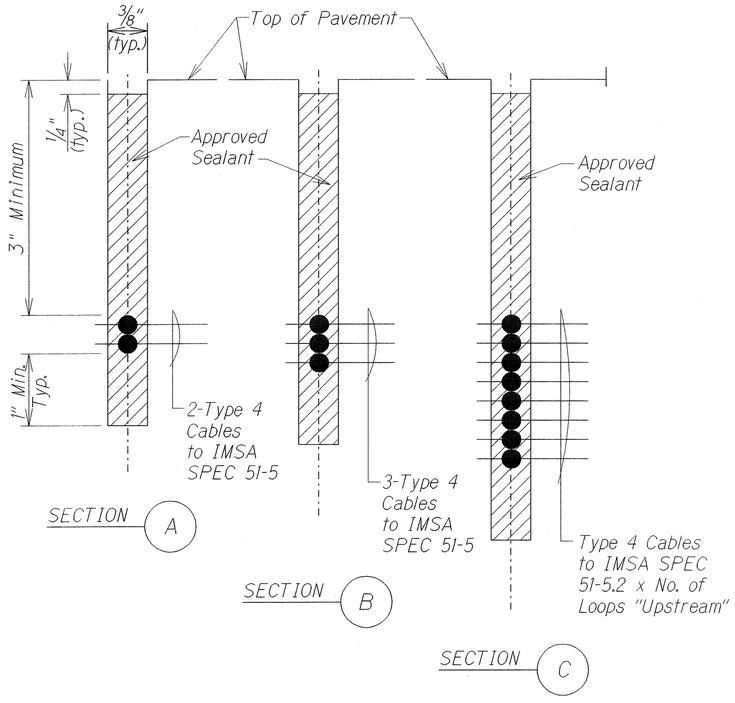
1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place approved sealant in sawcut.
4. Backfill over conduit with new A.C.

CONDUIT TO SAWCUT TRANSITION

Not to Scale

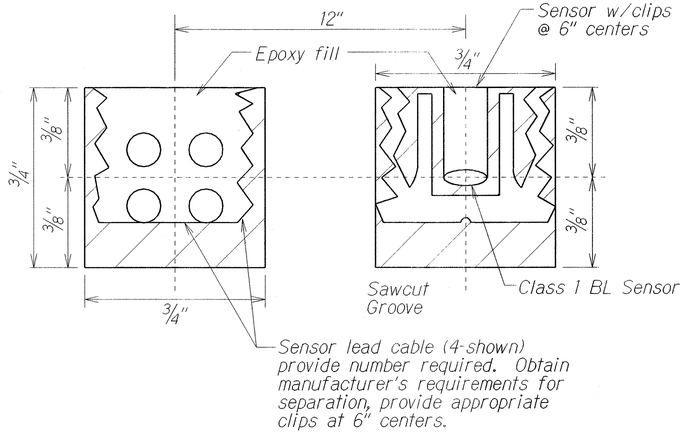
NOTES:

1. BL Sensors shall be terminated with "BNC" type connectors or connectors appropriate to the counting equipment (Automatic Traffic Recorder).
2. BL Sensor shall be centered in each lane based on the final lane striping. BL sensor shall be installed after the roadway has been striped.



TYPICAL SECTION THROUGH SENSOR LOOP

Not to Scale



CLASS 1 BL SENSOR AND LEAD INSTALLATION DETAIL

Not to Scale

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
DATED
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

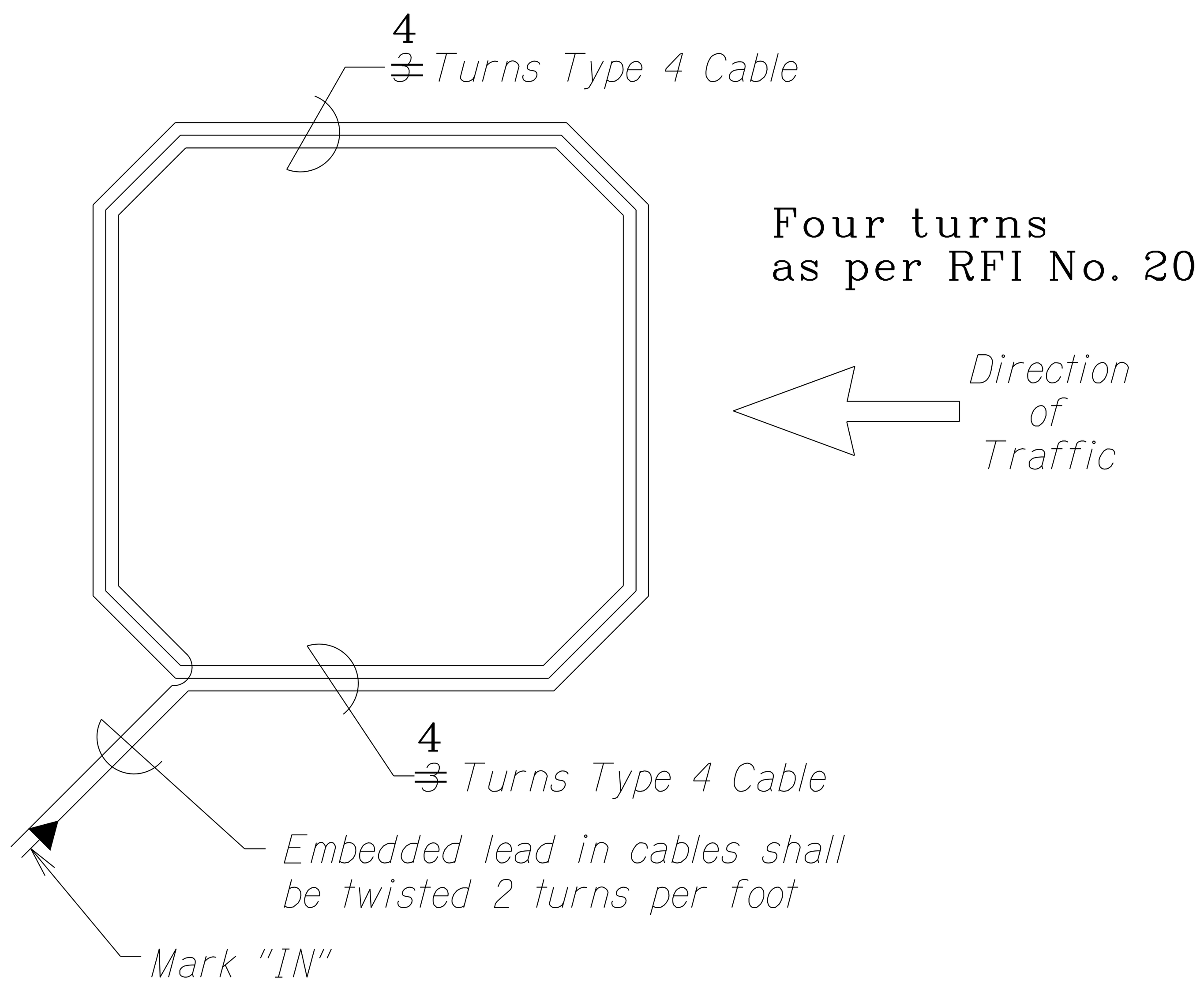
LOOP DETECTOR DETAIL

Vicinity of Kaimakani Street Overpass
INTERSTATE ROUTE H-1
RESURFACING
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06MR

Not to Scale — Date: January 2007

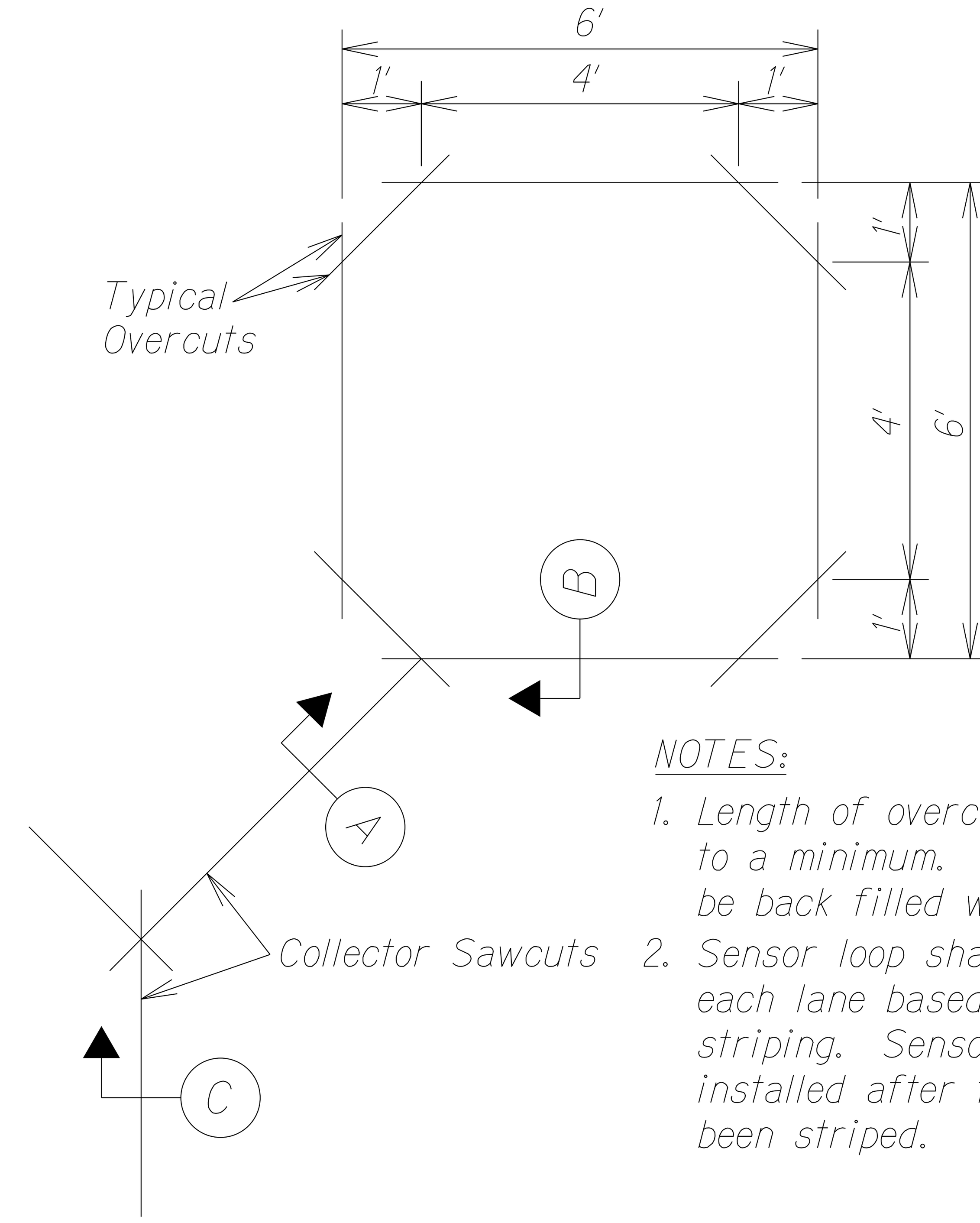
SHEET No. 115 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H-1EF-01-06M	2007	30	30



TYPICAL SENSOR LOOP WIRING DIAGRAM

Not to Scale

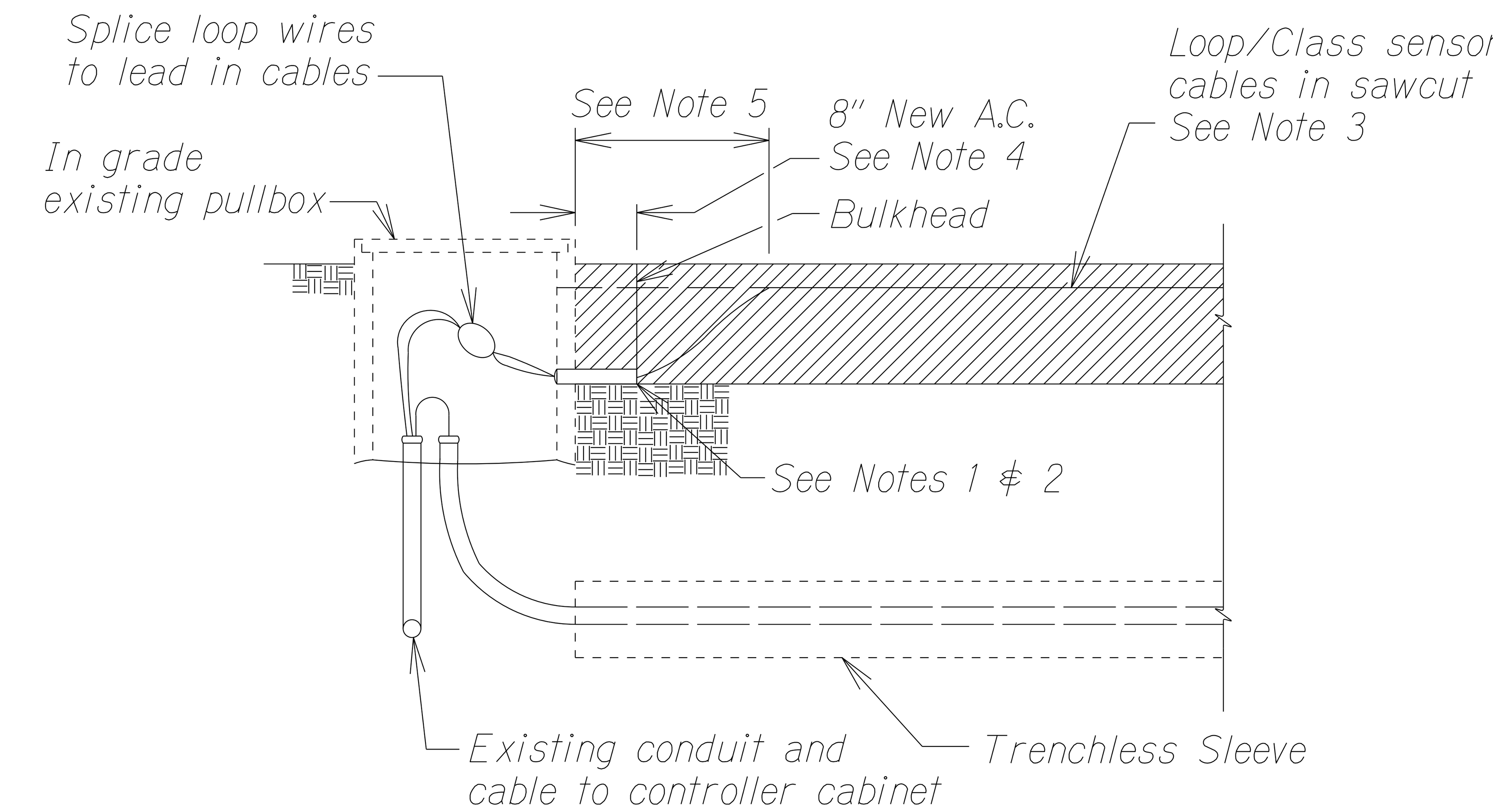


NOTES:

1. Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.
2. Sensor loop shall be centered in each lane based on the final lane striping. Sensor loop shall be installed after the roadway has been striped.

TYPICAL SENSOR LOOP SAWCUT DETAIL

Not to Scale

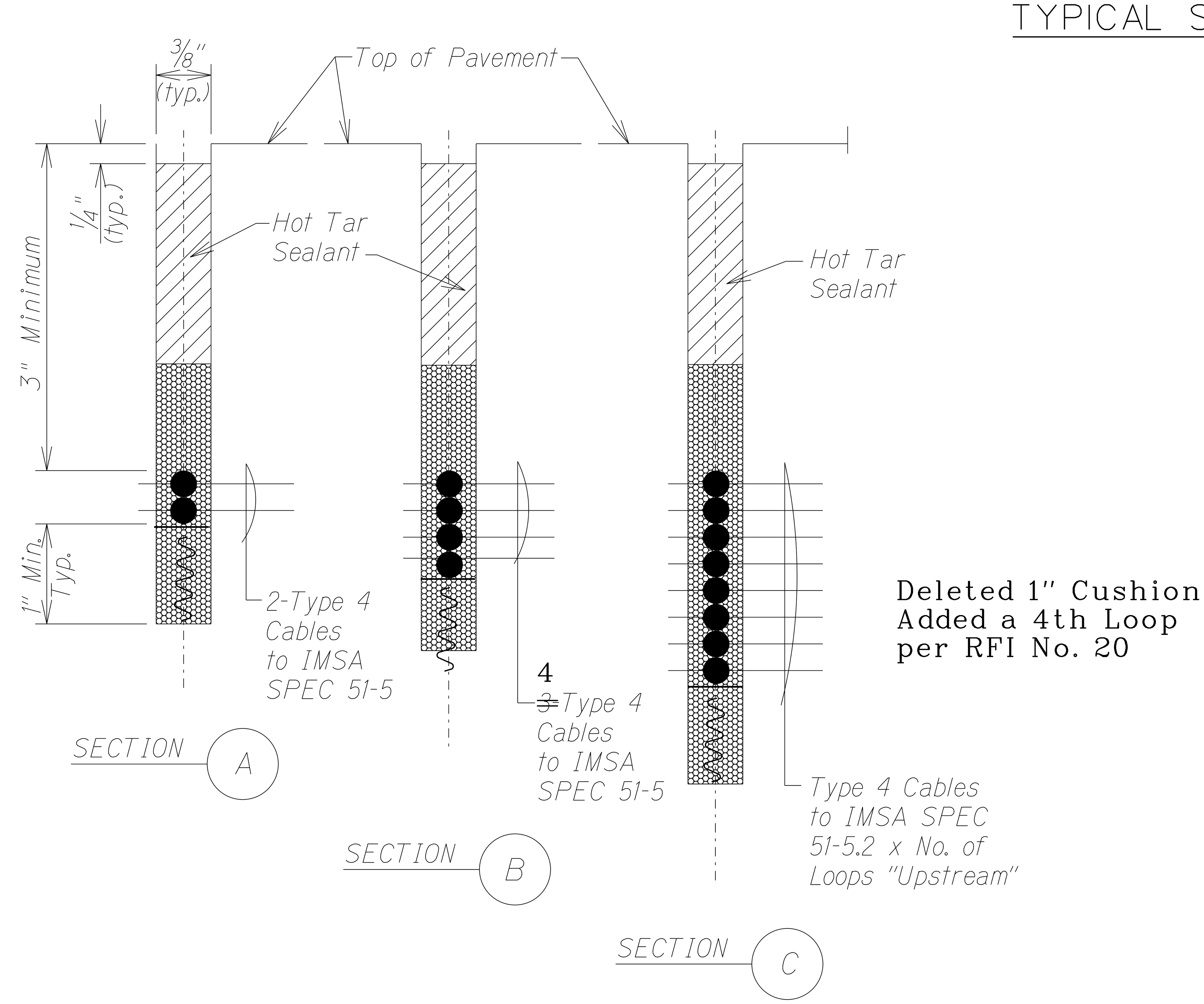


NOTES ON CONSTRUCTION AT END OF SAWCUT:

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. Where pavement extends to pullbox, continue sawcut to pullbox location and core side of pullbox for entrance of loop cables. After installation of cables, provide waterproof sealant around cable entrance.

DETAIL OF LOOP DETECTOR INSTALLATION
AT EDGE OF ROADWAY

Not to Scale



TYPICAL SECTION THROUGH SENSOR LOOP

Not to Scale

LEGEND FOR AS-BUILT POSTINGS	
~~∿∿∿∿~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAIL

Vicinity of Halawa Stream Bridge
INTERSTATE ROUTE H-1 FREEWAY
PAVEMENT PRESERVATION
Kaimakani St. to Salt Lake Viaduct
Project No. H-1EF-01-06M

Not to Scale　　Date: January 2007

SHEET No. T16 OF 16 SHEETS

ORIGINAL PLAN | NOTE BOOK | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

"AS-BUILT"