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) Pavement Word (Tape, Type III or Thermoplastic STOP 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 10' 10' 10' 10' Stripe @ 10'-0" o.c. w/Type C Markers @ 40'-0" o.c.

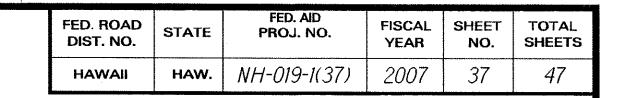
(Tape, Type III or Thermoplastic Extrusion)

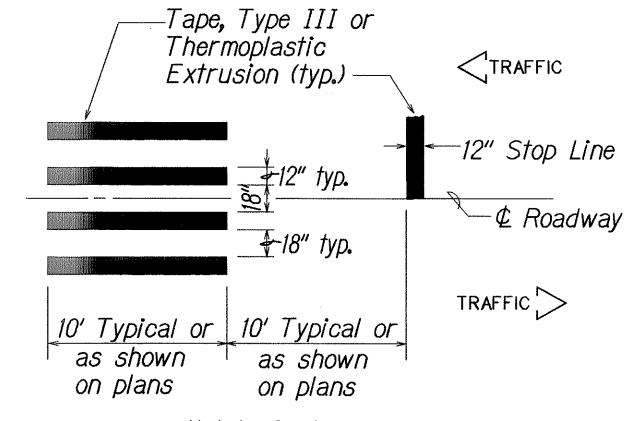
LEGEND

SURVEY PLOTTED R
DRAWN BY M. Taka
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

<u>NOTES</u>

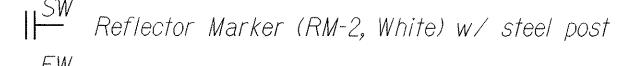
- 1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
- 2. Existing pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. Costs shall be incidental to the various 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. All pedestrian warning signs with supplemental sign shall be on a fluorescent yellow-green retroreflective background with a black legend and border.



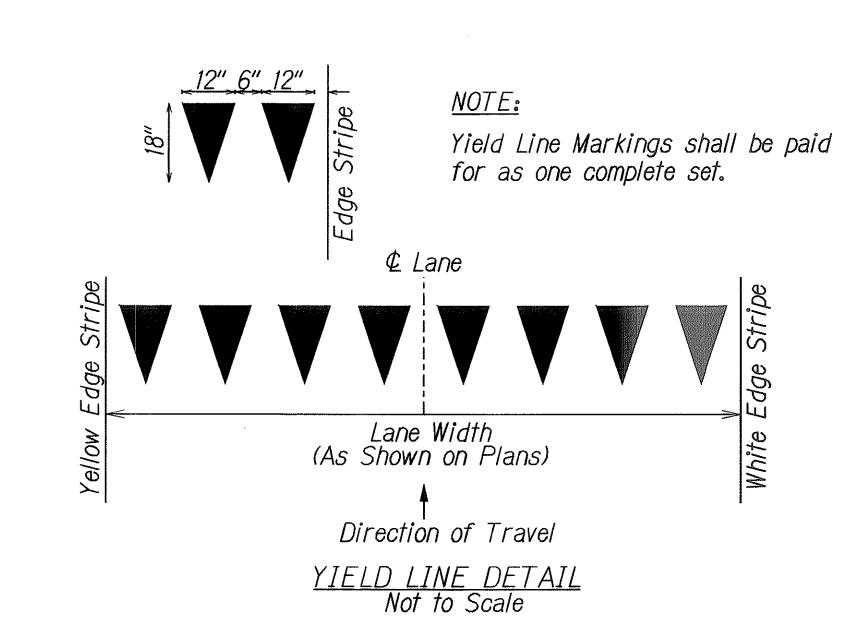


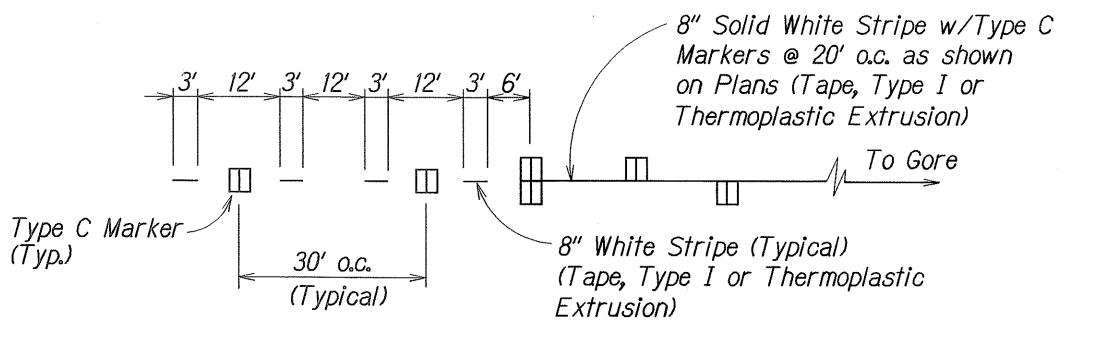
Not to Scale
CROSSWALK STRIPING DETAIL





| FW Reflector Marker (RM-2, White) w/ flexible post





LANE DROP MARKING

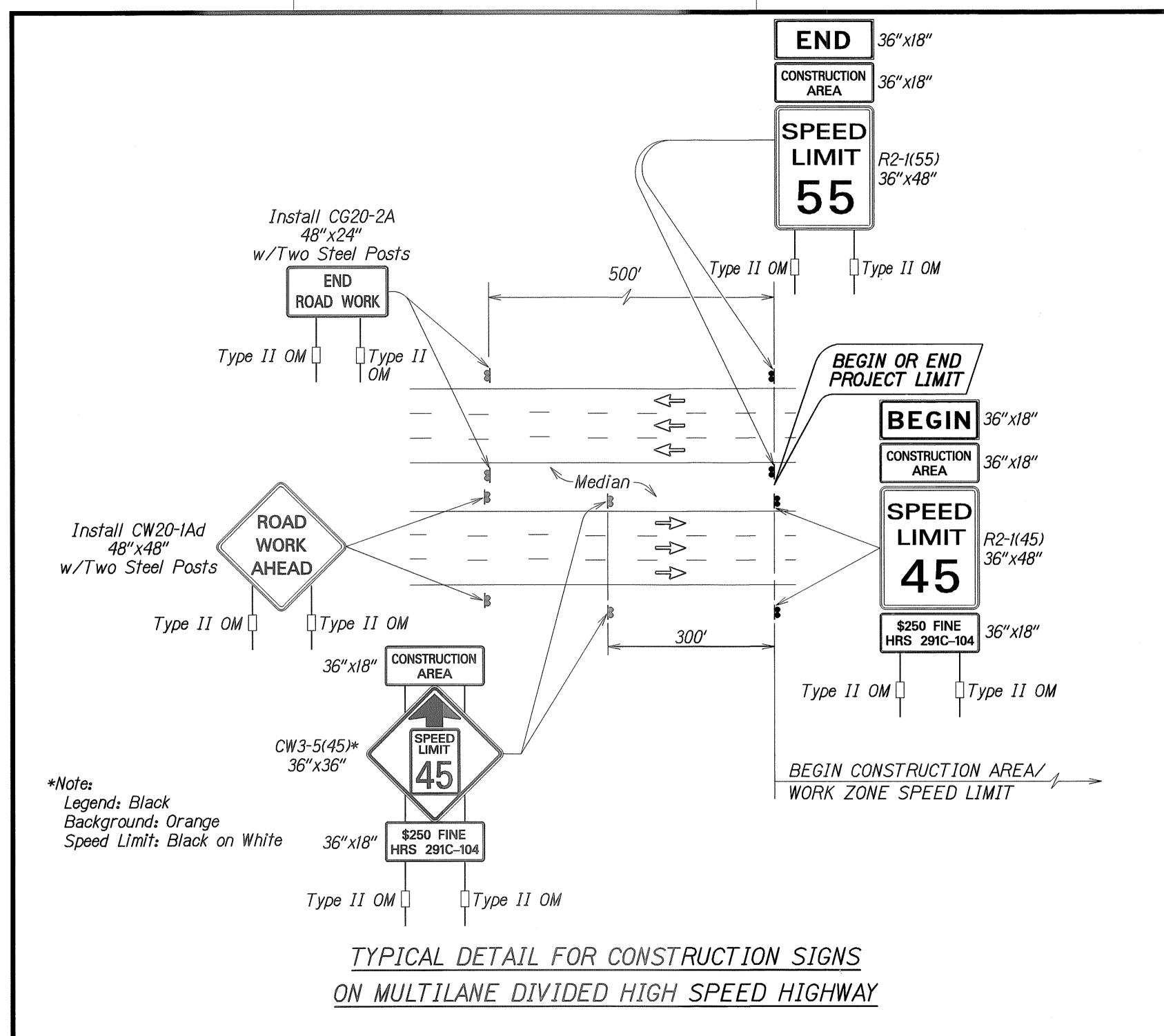
Not to Scale

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PAVEMENT MARKING
LEGEND, DETAILS NOTES
HAWAII BELT ROAD GUARDRAIL

SHOULDER IMPROVEMENTS
Paauhau Road to Papalele Road and Various Locations
Federal Aid Project No. NH-019-1(37)

Scale: As Shown Date: August 2006
SHEET No. 71 OF 11 SHEETS

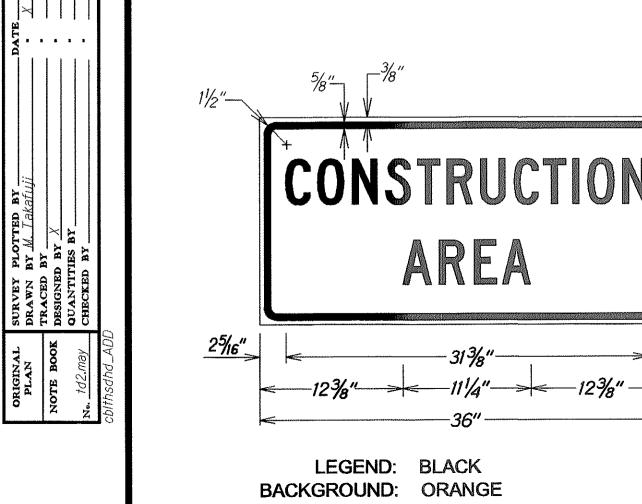
37

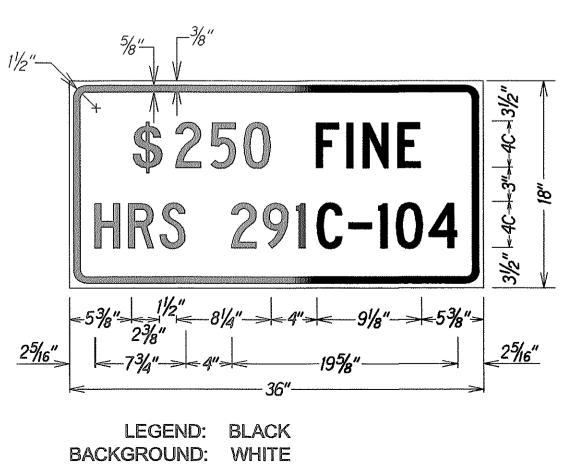


FED. AID PROJ. NO. FISCAL SHEET TOTAL FED. ROAD STATE DIST. NO. YEAR **HAW.** *NH-019-1(37)* 2007 ADD.38 47

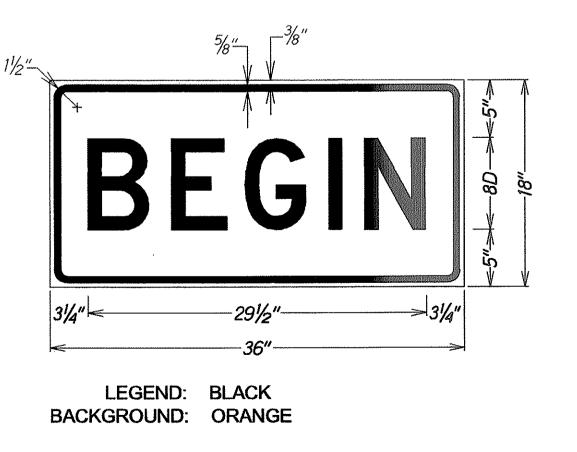
Work Zone Note:

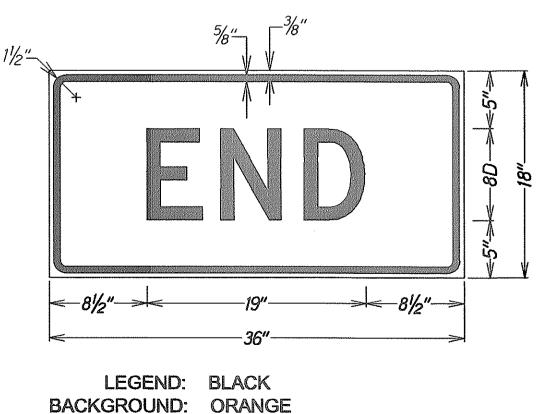
- 1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
- 2. All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (R2-1(45) and R2-5b(45) with "CONSTRUCTION AREA" and "\$250 FINE HRS 291C-104" Supplemental Signs).
- 3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
- 4. Each construction warning sign and work zone speed limit assembly shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.0100 Traffic Control.
- 5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project limits shall be restored back to their original locations and configurations.
- 6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
- 7. The removal and restoration of existing regulatory speed limit signs with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.0100 - Traffic Control.





25/16"





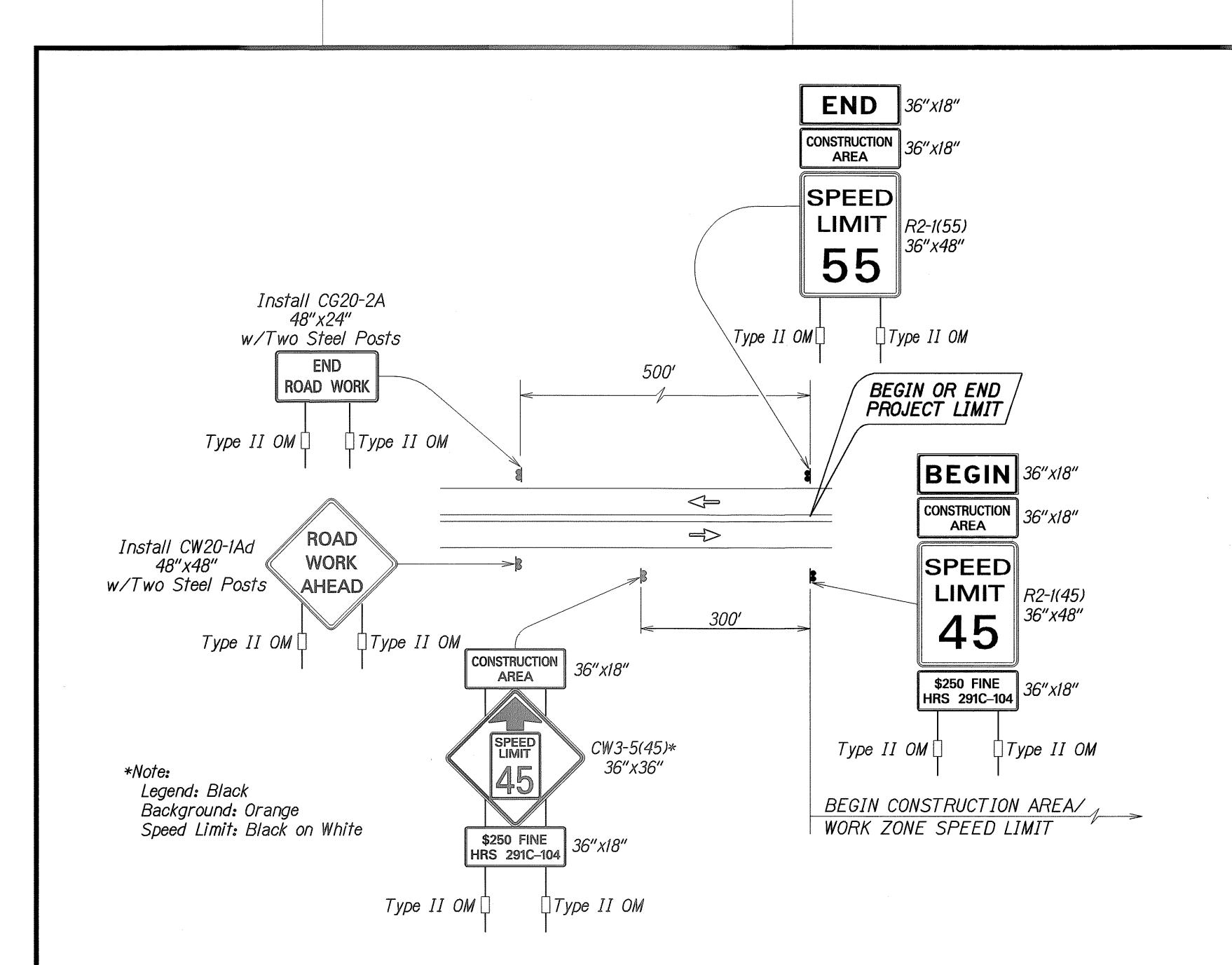
4/26/07 Revised notes.

REVISION DATE STATE OF HAWAII **DEPARTMENT OF TRANSPORTATION**

HIGH SPEED DIVIDED HIGHWAY WORK ZONE SIGNING PLAN, NOTES&DETAILS

HAWAII BELT ROAD Guardrail ♦ Shoulder Improvements Paauhau Road to Papalele Road and Various Locations Federal Aid Project No. NH-019-1(37) Not To Scale Date: August 2006 SHEET No. *T2* OF *11*

ADD. 38



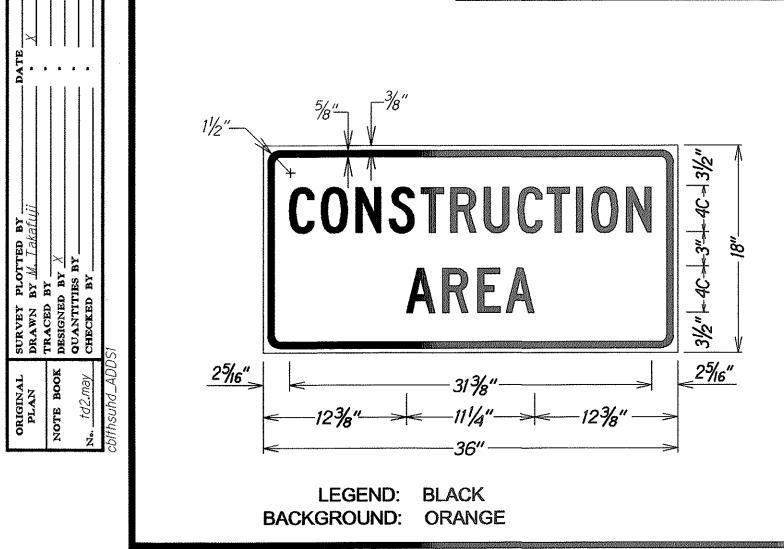
FED. ROAD DIST. NO. STATE PROJ. NO. FISCAL SHEET NO. SHEETS

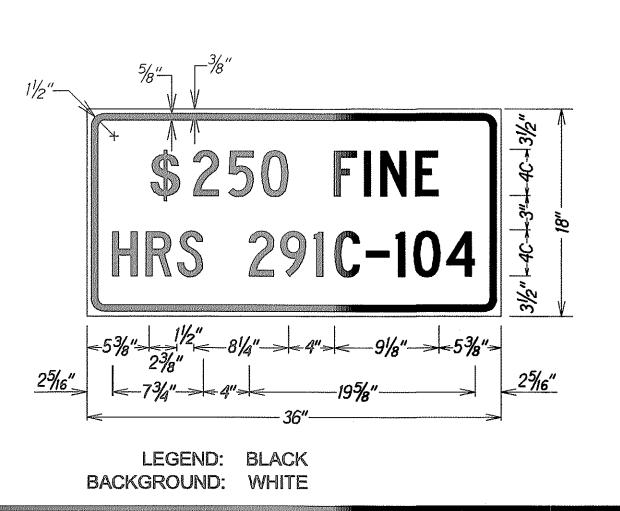
HAWAII HAW. NH-019-1(37) 2007 ADD. 47

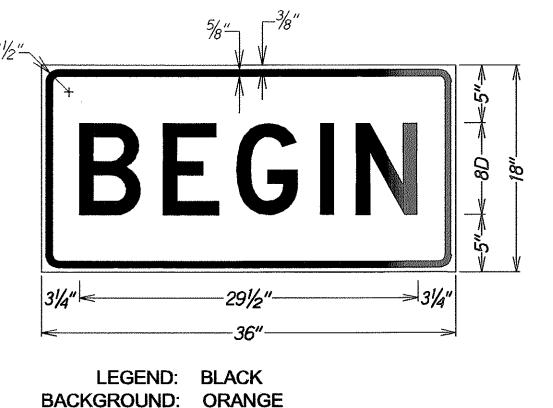
Work Zone Note:

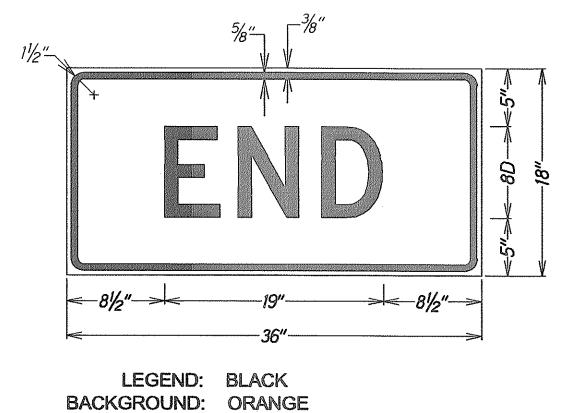
- 1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
- 2. All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (R2-1(45) and R2-5b(45) with "CONSTRUCTION AREA" and "\$250 FINE HRS 291C-104" Supplemental Signs).
- 3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
- 4. Each construction warning sign and work zone speed limit assembly shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.0100 Traffic Control.
- 5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project limits shall be restored back to their original locations and configurations.
- 6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
- 7. The removal and restoration of existing regulatory speed limit signs with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.0100 Traffic Control.

TYPICAL DETAIL FOR CONSTRUCTION SIGNS ON TWO LANE OR MULTILANE UNDIVIDED HIGH SPEED HIGHWAY









Added plan sheet to contract plans.

DATE

REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGH SPEED UNDIVIDED HIGHWAY
WORK ZONE SIGNING PLAN, NOTES DETAILS
HAWAII BELT ROAD
Guardrail & Shoulder Improvements

HAWAII BELT ROAD

Guardrail Shoulder Improvements

Papalele Road to Paauhau Road

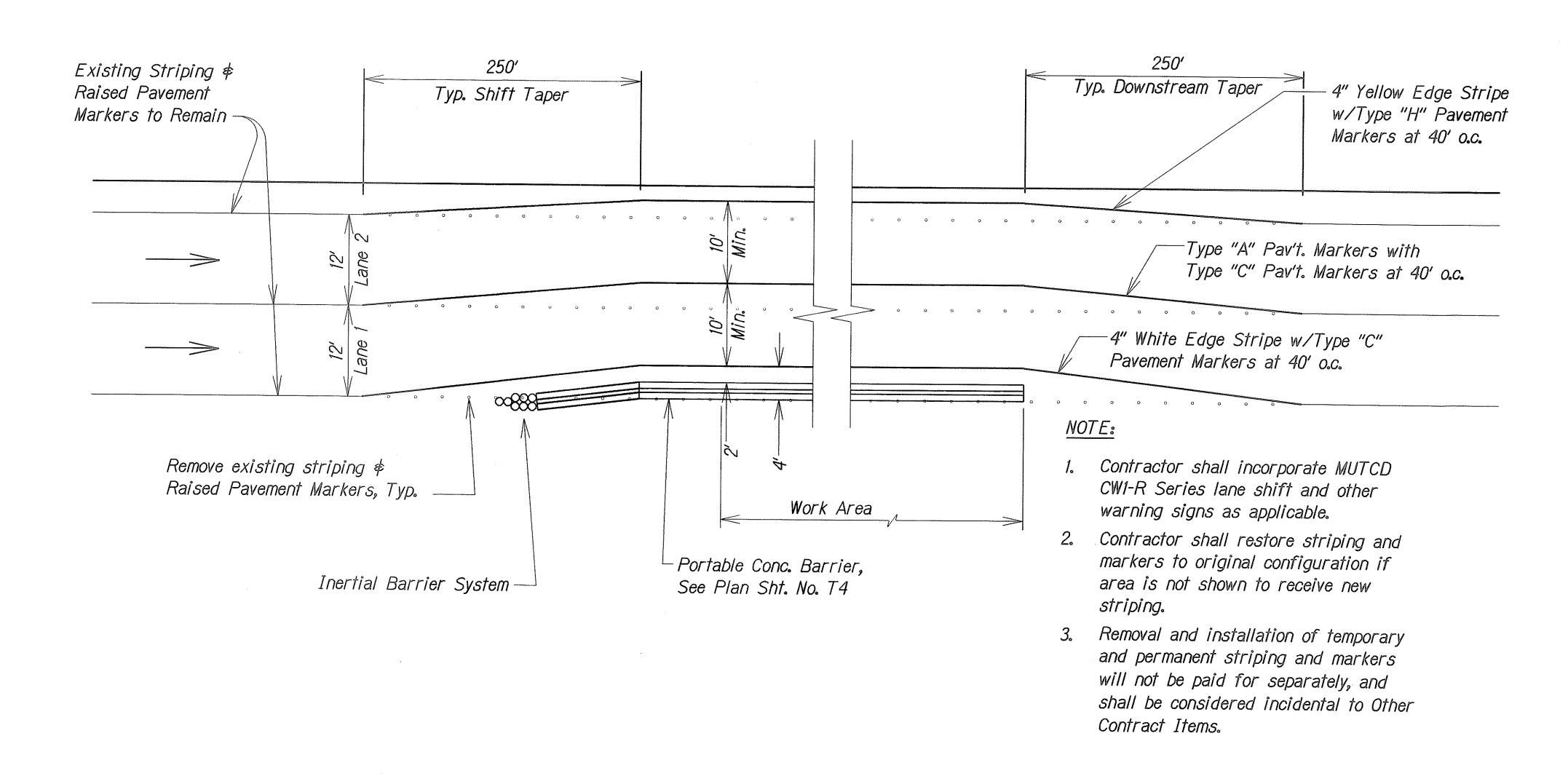
Federal Aid Project No. NH-019-1(37)

Not To Scale

SHEET No. T2A OF 11 SHEETS

ADD. 38S-1

 FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(37)	2007	39	47



TEMPORARY STRIPING PLAN - LANE SHIFT ON 2 LANE ROAD Not To Scale

DEPARTMENT OF TRANSPORTATION

TEMPORARY STRIPING PLAN

<u>HAWAII BELT ROAD</u>

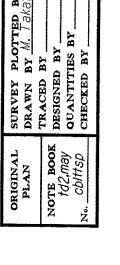
Guardrail ♦ Shoulder Improvements

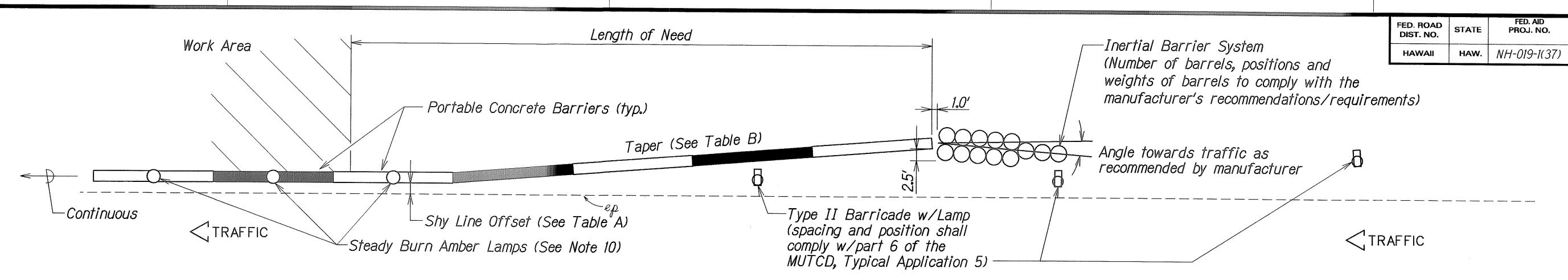
Paauhau Road to Papalele Road and Various Locations Federal Aid Project No. NH-019-1(37)

Scale: As Noted

Date: August 2006 SHEET No. 73 OF 11 SHEETS

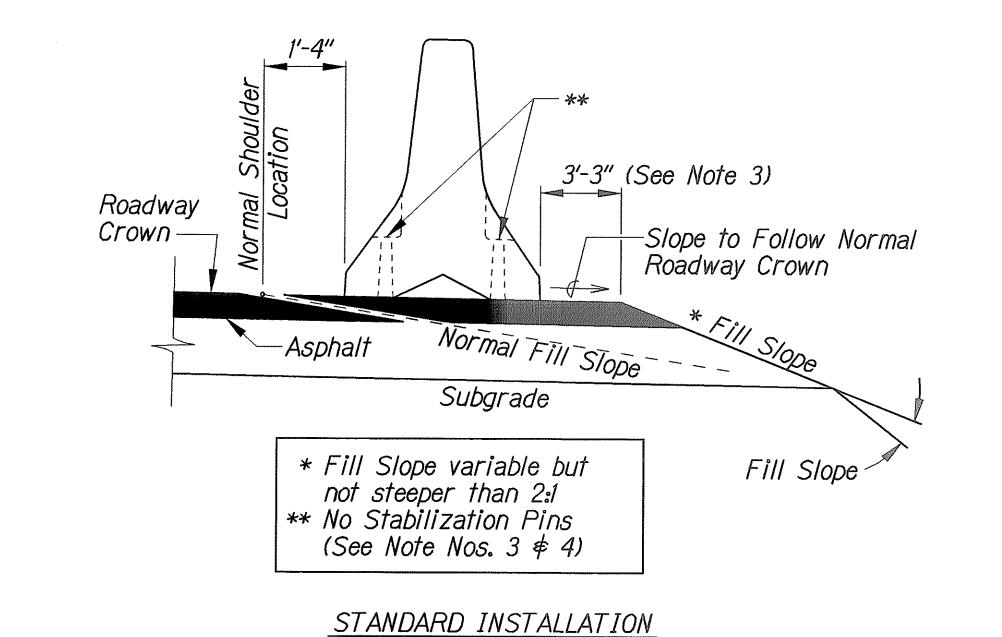
39





TYPICAL DETAIL - PORTABLE CONCRETE BARRIER END TREATMENT Scale: 1" = 10'-0"

		MET.	AL REINFOR	RCEMENT TABLE
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	Horizontal in Barrier Tied Inside V-1 Bars	#5	(6)	19'-3"
H-2	Centered Above Scuppers Long. Transversely	#5	(6)	6'-6''
H-3	Tied Above H-1 Bars to Support H-2, Tied to V-1	#4	(2)	<u>1′-6</u> ″
S-1	Horizontal in Top of Wing Wall ∳ in Floor Back Wall	#4	(2)	Lifting Hole $R=3\frac{3}{8}$
S-2	Horizontal Around Slots Between V-1's @ Scuppers	#4	(2)	R=1/2" Slots 5'-1" Bar w/(4) 1/2"R Bends \$ Min. 1'-0" Overlap
V-1	Vertical in Barrier (3) Each End ∳ (2) at Each Scupper	#5	(16)	Total Length 4'-9" R=2 ³ / ₁₆ " 12° 4 ³ / ₈ "



(See Note No. 1)

TABLE B

MAXIMUM TAPERS

DESIGN SPEED

(mph)

70

65

60

55

50

45

40

35

≤*30*

FOR CONCRETE BARRIER

28:1

26:1

24:1

18:1

17:1

15:1

13:1

TAPER

INSIDE BEYOND SHY LINE SHY LINE

20:1

19:1

18:1

16:1

14:1

12:1

11:1

9:1

8:1

TABLE A SHY LINE OFFSETS * DESIGN SPEED SHY LINE OFFSETS (mph) 10.0' 65 9.0' 60 8.5' 55 7.0' 6.5' 50 45 6.0' 40 5.0' 35 4.5' *30* 3.5' ≤ 25 2.0'

NOTES:

1. For end treatment, layout, crash cushions and where

FISCAL SHEET TOTAL YEAR NO. SHEETS

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- needed see Project Plans or Special Provisions.

 2. Barriers must be pinned together and cannot exceed the Table of Maximum Tapers.
- 3. The concrete barrier "Standard Installation" design allows for 3'-3" of outward lateral movement if the barrier is struck. Barrier installations that require less than the 3'-3" of outward lateral movement should have stabilization pins.
- 4. ASTM A-36 steel shall be used for the connection pin, connection loops and stabilization pins. A one piece pin with a 3" rounded top may be used in place of the detailed connection pin if the one piece pin meets ASTM A-36 requirements.
- 5. A 4" white PVC sleeve may be used to form the lifting hole and if used the sleeve is to be left in place.
- 6. Concrete shall be Class A and reinforcing shall be Grade 60.
- 7. Identification and date of design will be as follows:

PROPERTY OF HDOT OCT 2001

Text letters and numbers shall be shown as on Standard Plan Sht. No. B-01. "PROPERTY OF HDOT" may be changed depending upon ownership. All Portable Concrete Barriers made for HDOT will be subject to rejection, if "PROPERTY OF HDOT" is not imprinted. The Contractor shall bear the cost of the rejected Portable Concrete Barriers.

- 8. Minimum tangent length for portable Concrete Barrier System shall be 100' (5 units). This minimum does not include the required system length of the Inertial Barrier
- 9. Install steady burn amber lamps on portable concrete barriers @ 20.0' o.c. Installing, maintaining and removing each steady burn amber lamp including changing of batteries and bulbs shall be considered incidental to applicable portable concrete barrier items.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

PORTABLE CONCRETE BARRIER

HAWAII BELT ROAD GUARDRAIL **♦ SHOULDER IMPROVEMENTS** Paauhau Road to Papalele Road and Various Locations

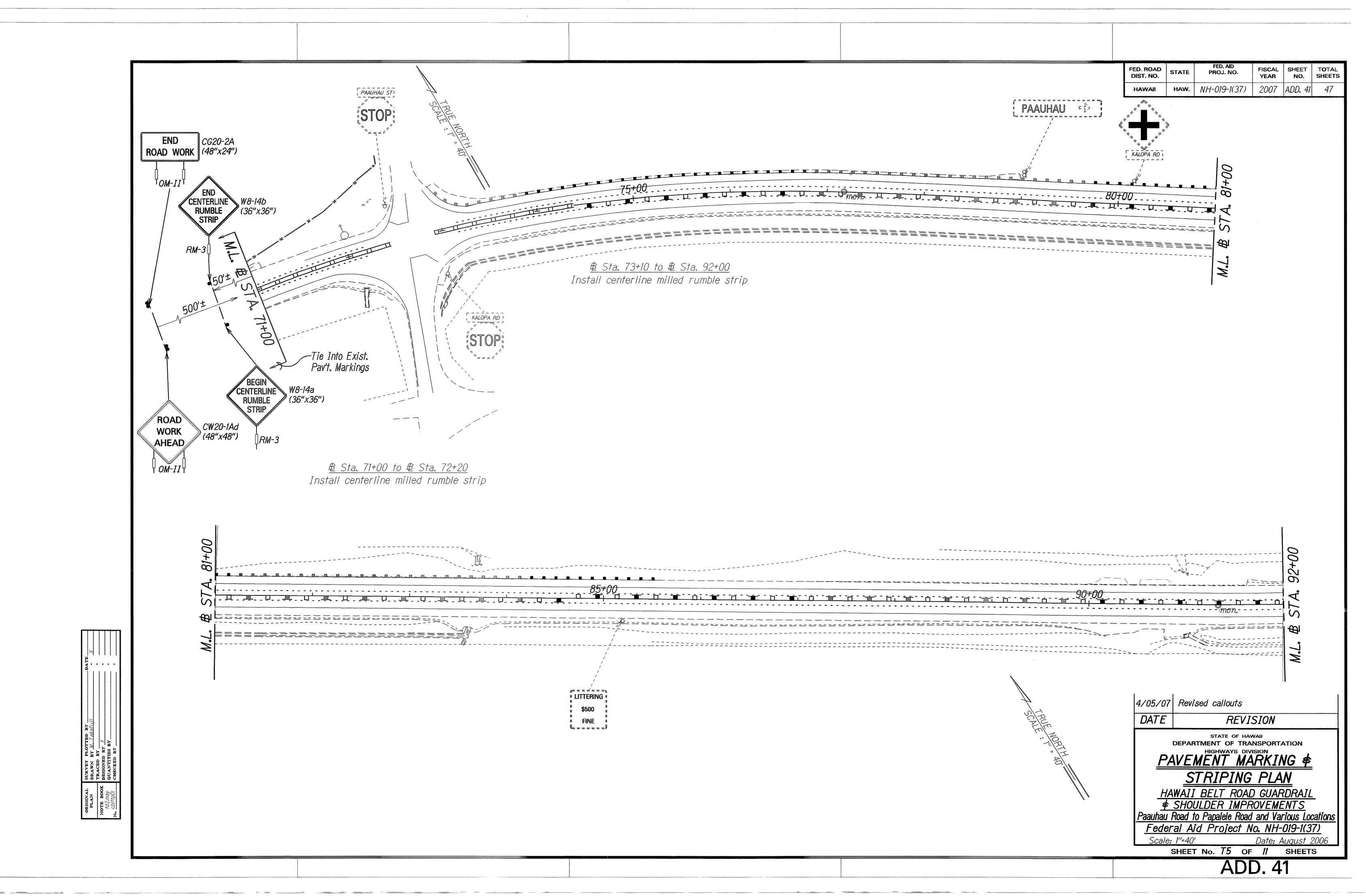
Federal Aid Project No. NH-019-1(37) Scale: As Noted Date: August 2006

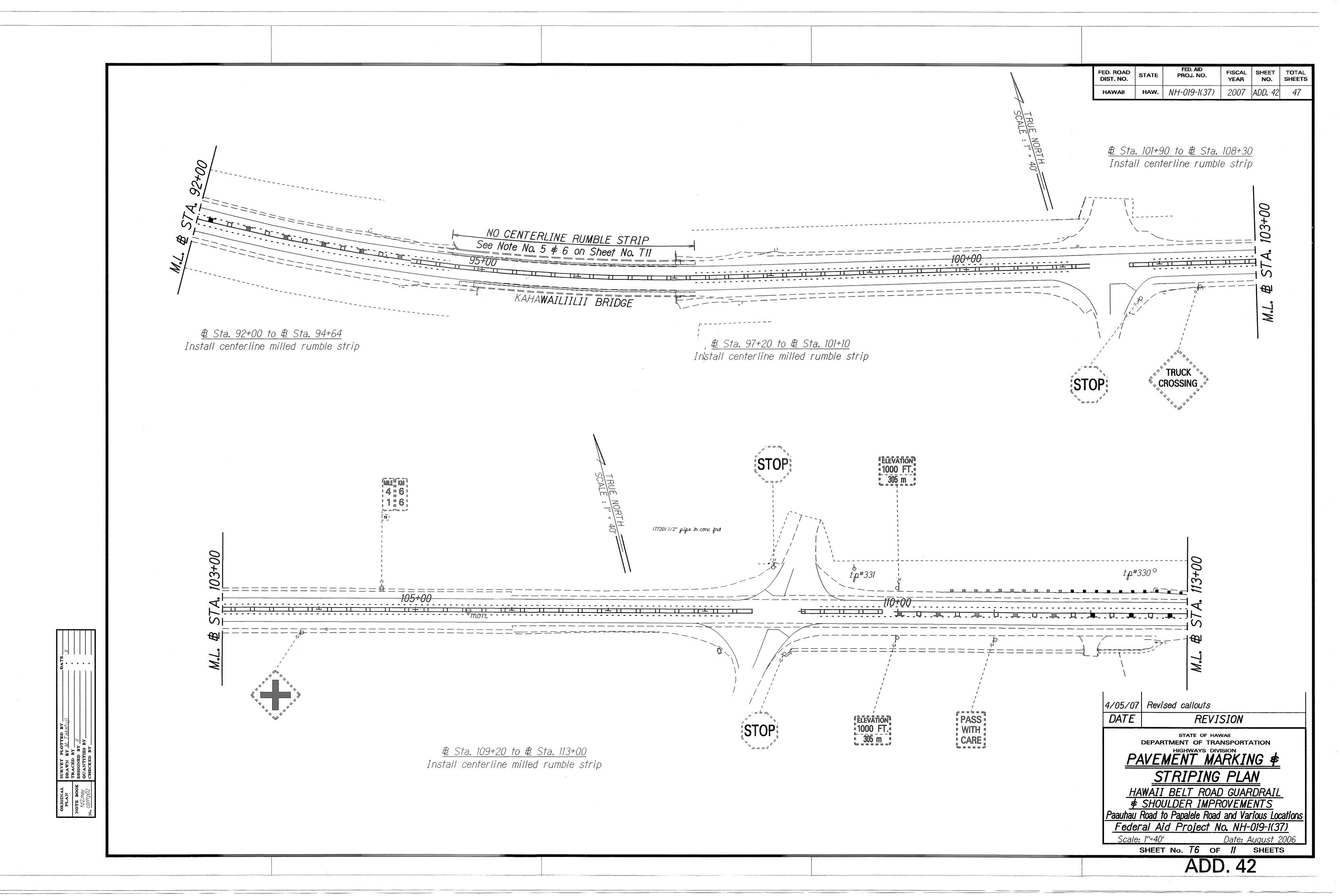
SHEET No. 74 OF 11 SHEETS

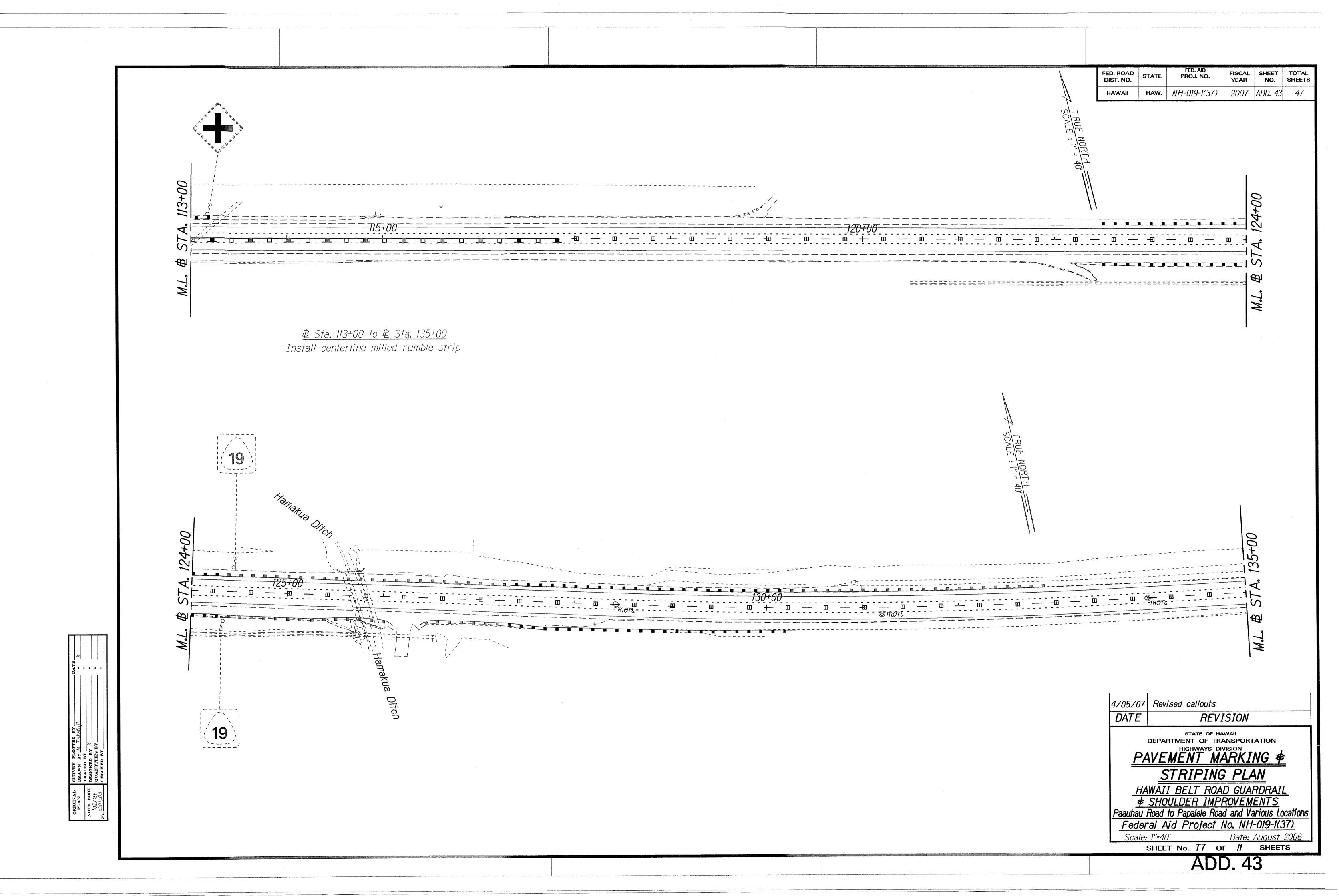
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BY afuji	
SURVEY PLOTTED BY	'Y X
EY PL	TRACED BY DESIGNED B QUANTITIES CHECKED BY
SURVI DRAW	NOTE BOOK DESIGNED BY ACCED BY
ORIGINAL PLAN	Note Book td2.may ccbttpcb_ADD
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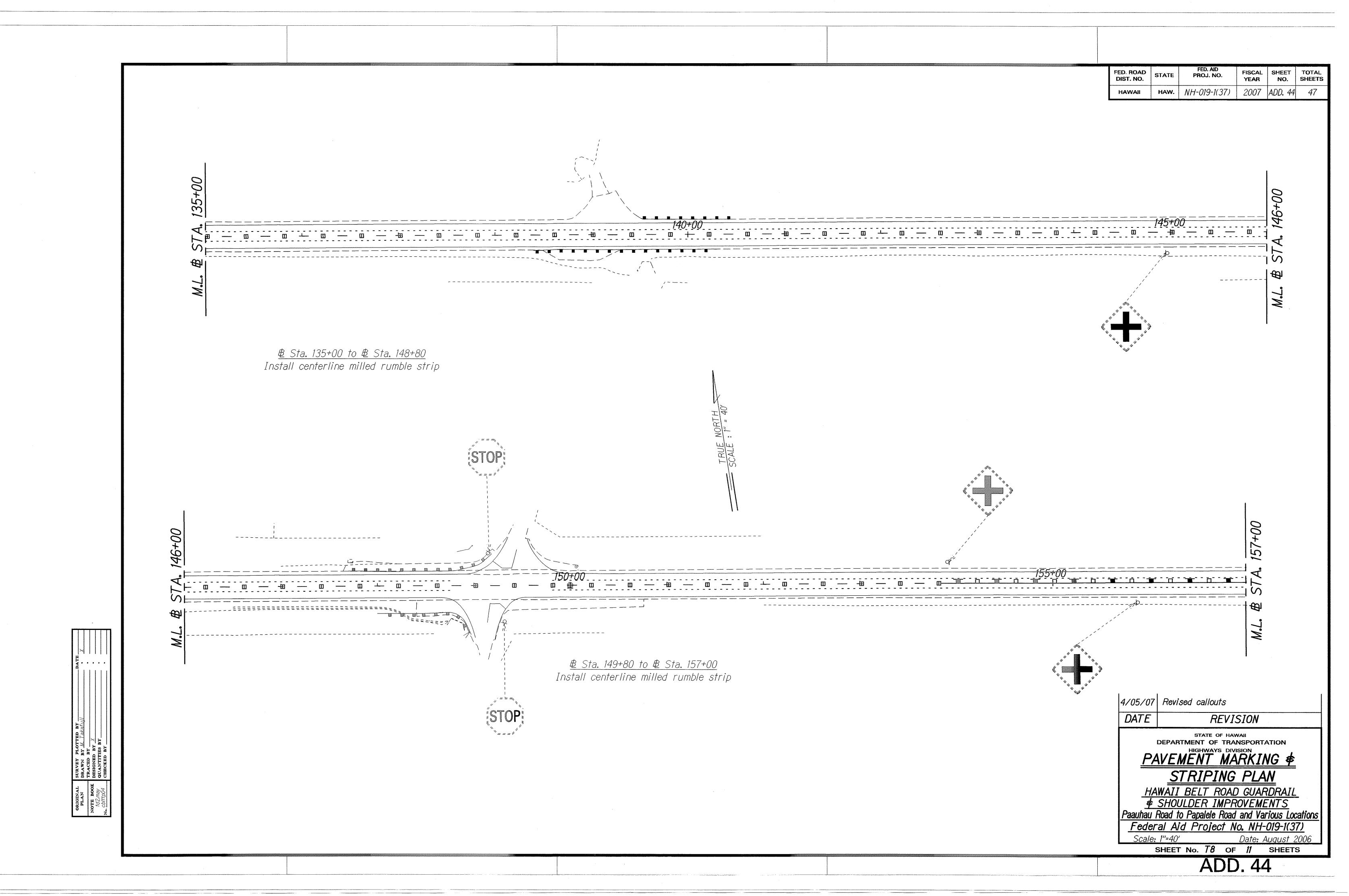
* Note: Minimum shy line offset for tangent sections shall be 2'-0".

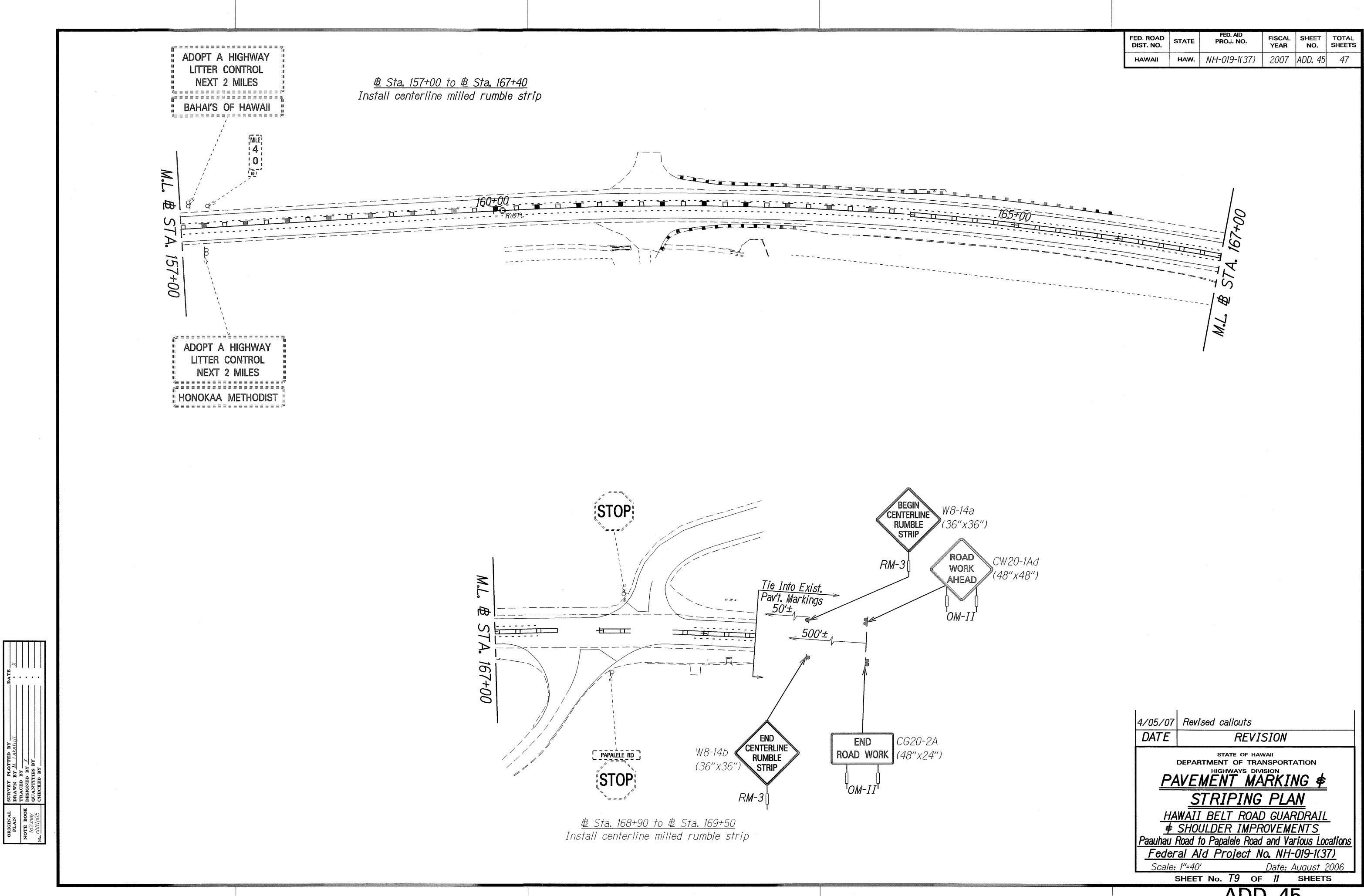
4/26/07 Revised End Treatment call out. DATE REVISION



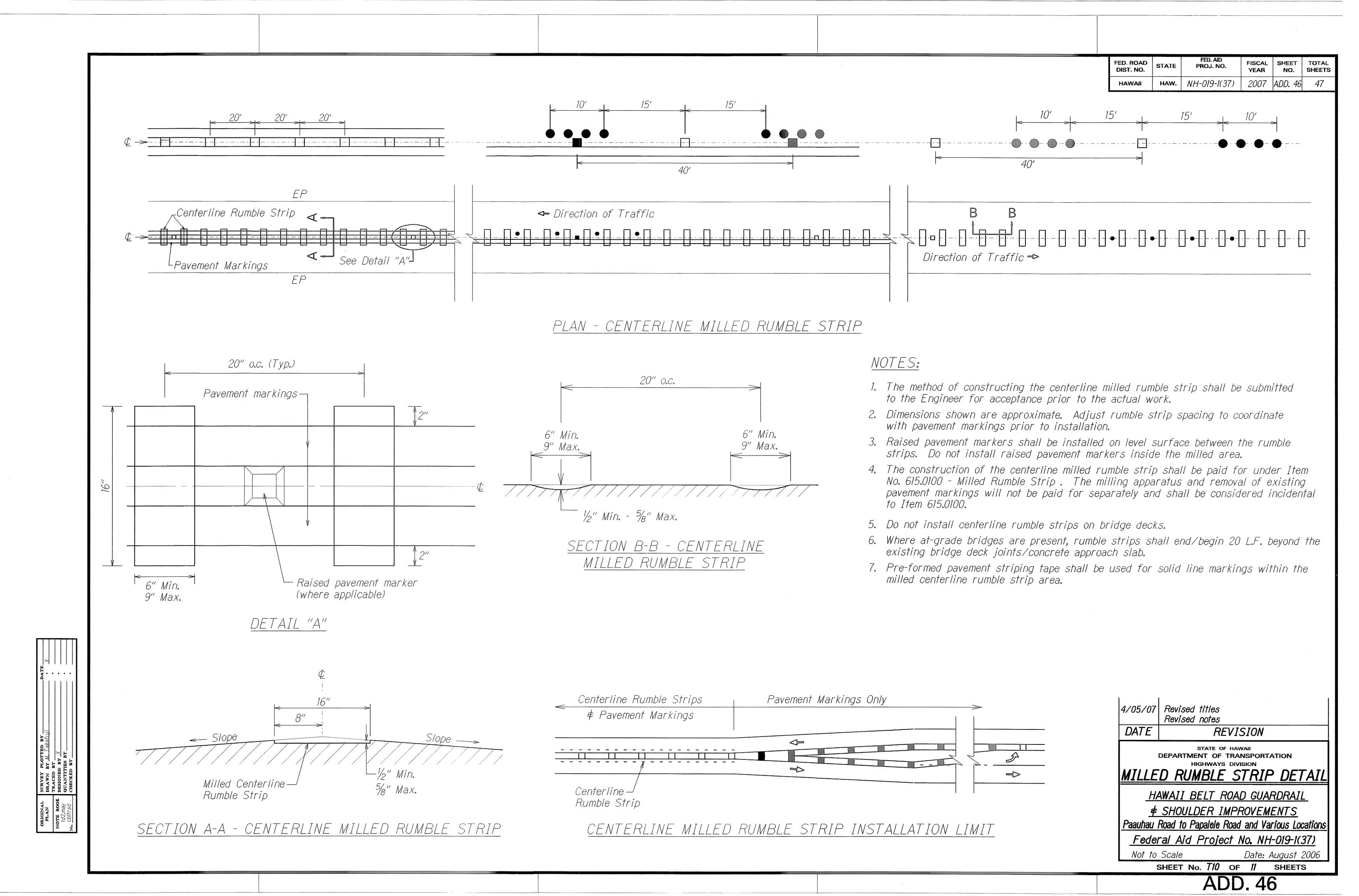


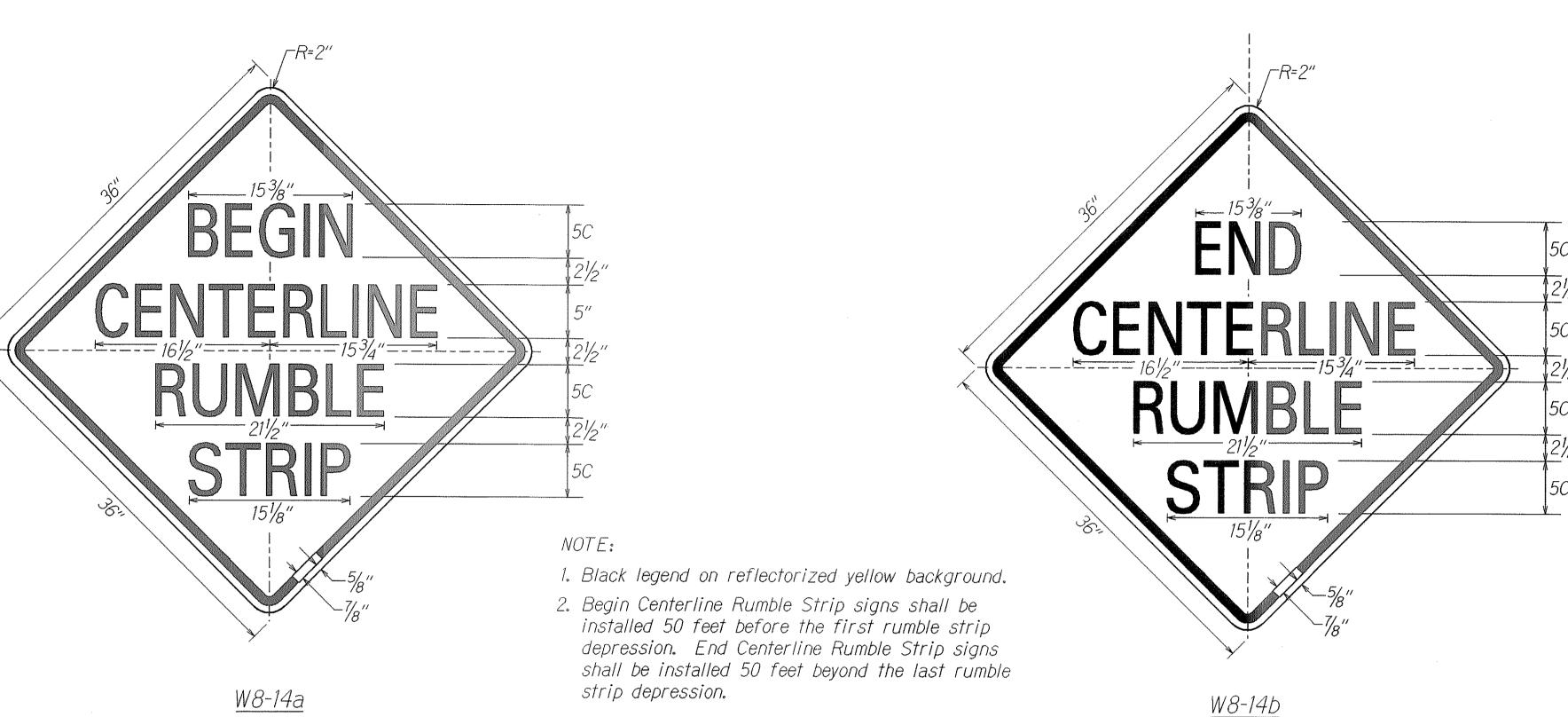






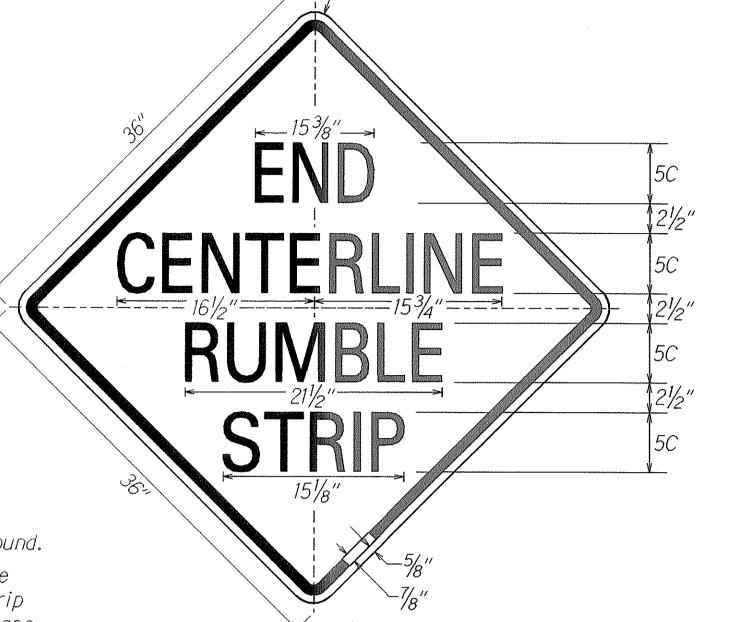
ADD. 45





SIGN NOTES

- 1. All signs 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 *Highways" (MUTCD)*
 - b. "Standard Highway Signs"
 - c. "Standard Alphabets for Highway Signs"
- 2. Borders, messages, arrows, symbols and shield shall conform to details as shown on the plans and as specified in the MUTCD.
- 3. Sign messages shall be as indicated on the plan, or as directed by the Engineer.
- 4. Backing for all new Regulatory and Warning Signs shall not be spliced.
- 5. Final locations of all signs shall be accepted by the Engineer prior to any installation work.
- 6. 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.
- 7. 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.
- 8. All signs shall be installed on square tube posts, unless otherwise noted.
- 9. Sign posts shall be painted with yellow reflective paint, except where located behind guardrails. Such paint work shall be considered incidental to sign items.
- 10. Contractor shall mark the back of all signs using labels and equipment provided by the State. Payment to be incidental to various contract items.



DEPARTMENT OF TRANSPORTATION

CENTERLINE RUMBLE STRIP SIGN DETAILS AND NOTES

FED. AID PROJ. NO.

HAW. NH-019-1(37)

FISCAL YEAR

2007

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HAWAII BELT ROAD GUARDRAIL **♦ SHOULDER IMPROVEMENTS** Paauhau Road to Papalele Road and Various Locations

Federal Aid Project No. NH-019-1(37) Not to Scale

Date: August 2006

SHEET No. 711 OF 11 SHEETS

