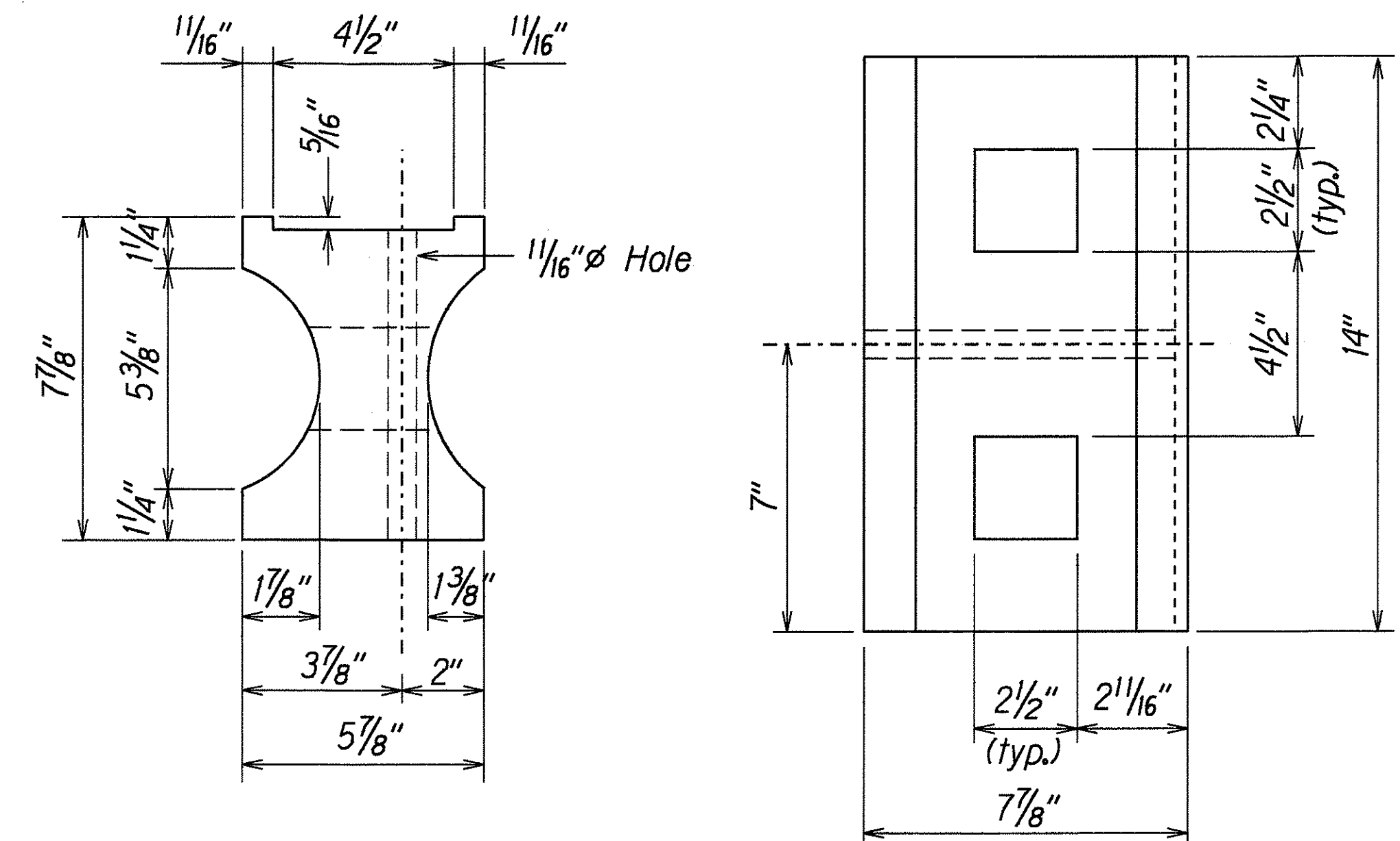


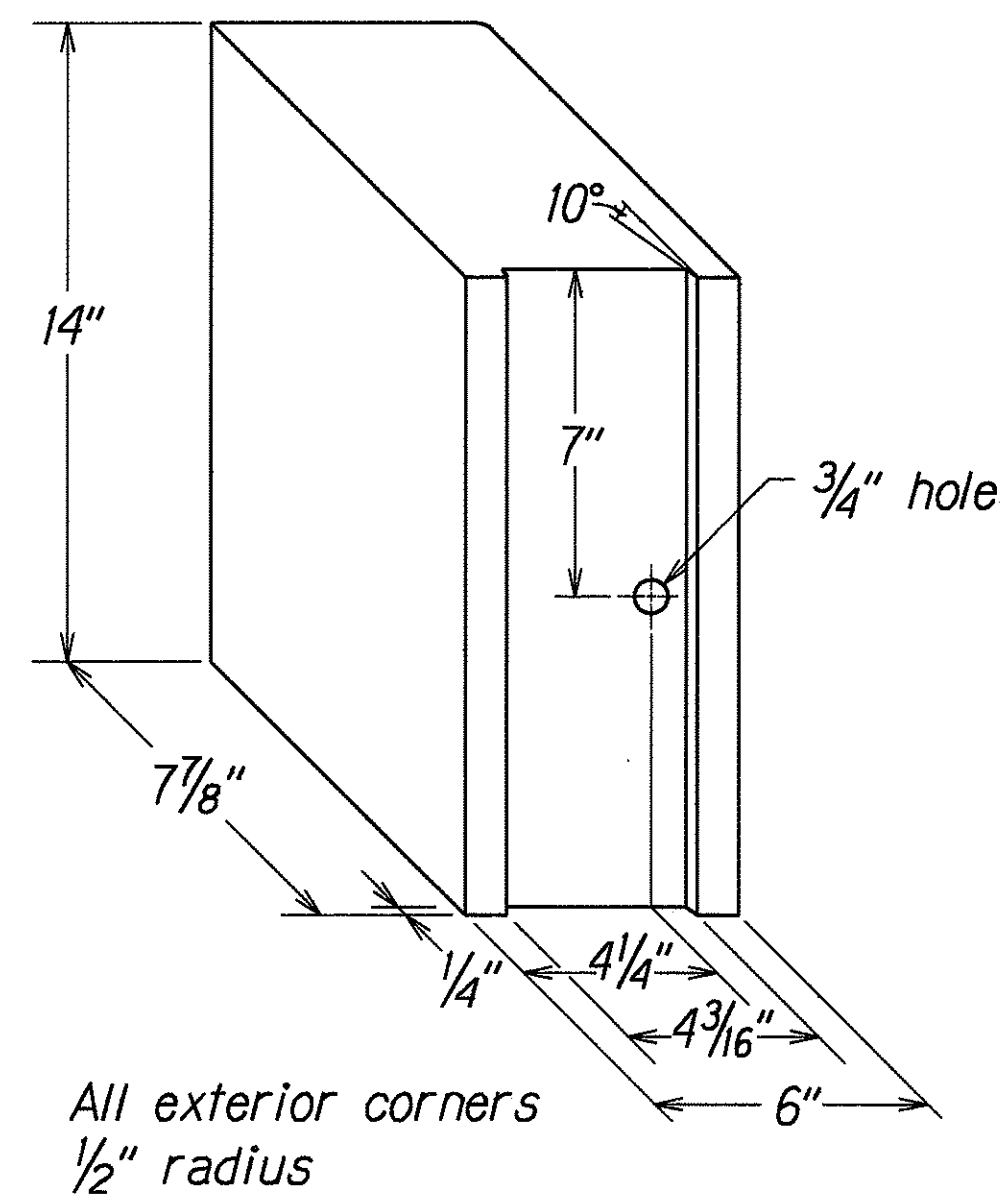
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	7	47

GENERAL NOTES

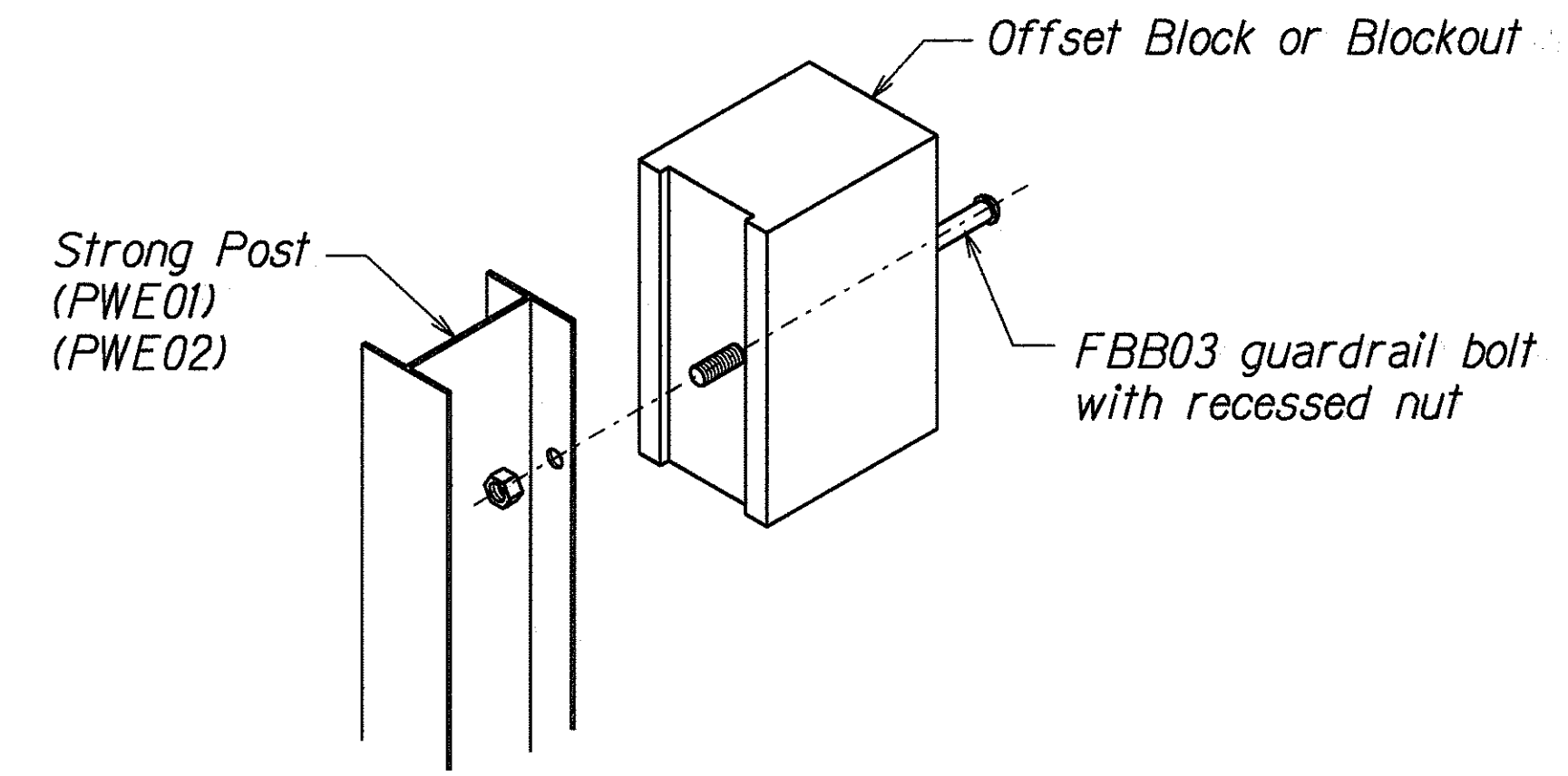
1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware," a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fastners, posts and rail elements have been converted from metric units into their present form.
4. The Recycled Plastic Block or Offset Block shall be approved by the State.
5. After the guardrail posts are installed in the paved area, the Contractor shall grout around the guardrail post and seal all cracks in the paved area that was caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to grouting. The cost for this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
6. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.



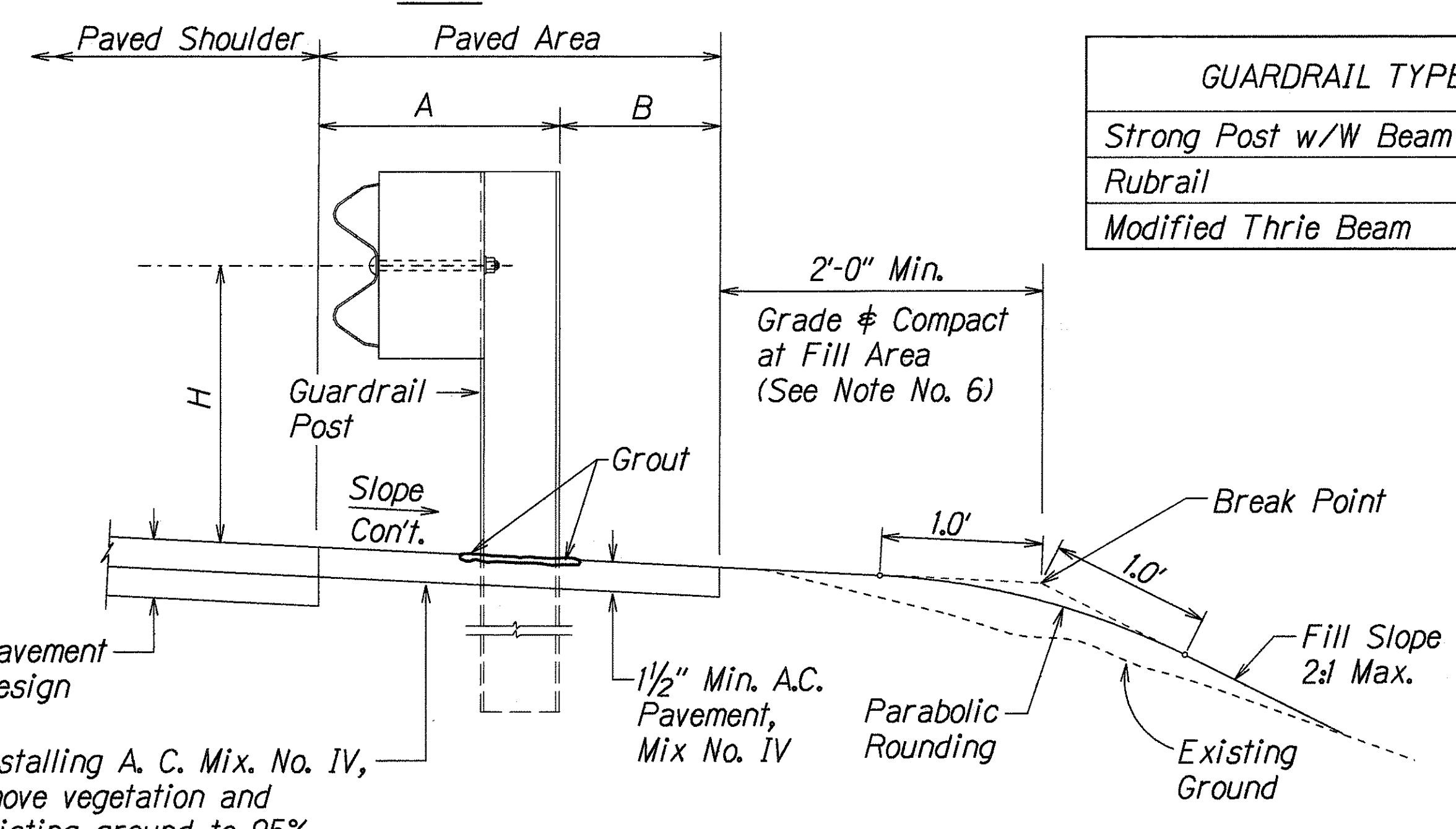
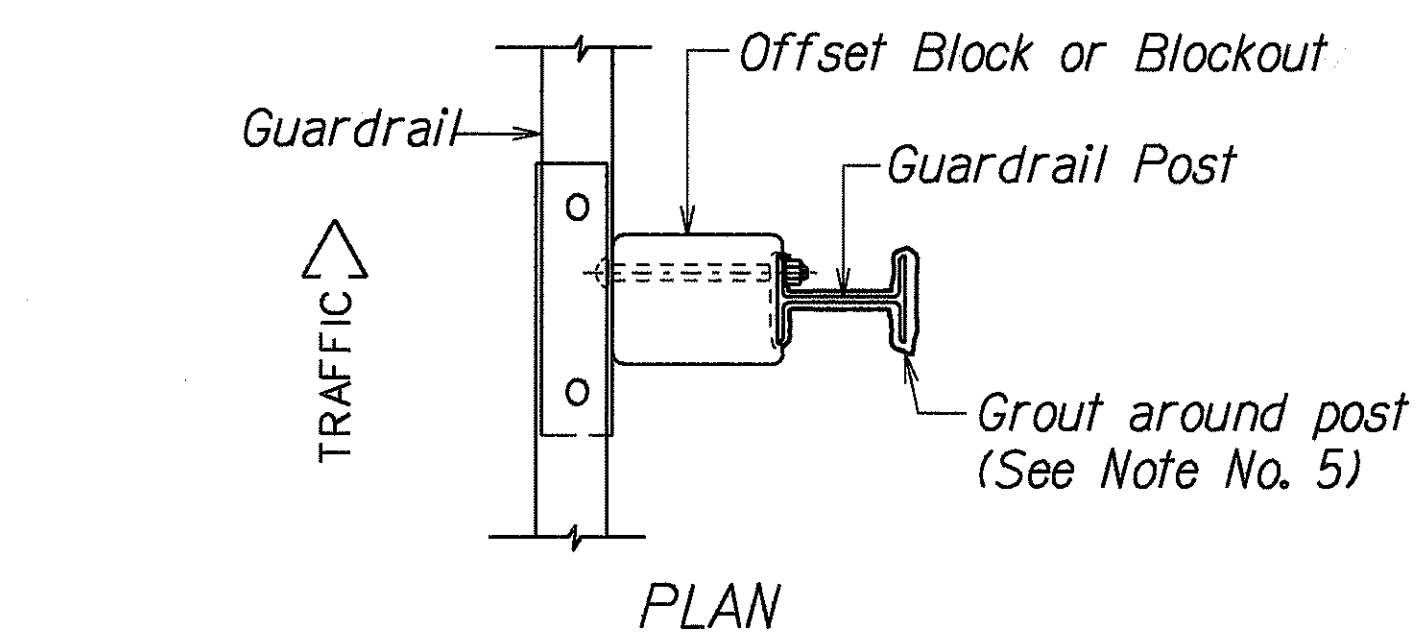
TOP
SIDE
RECYCLED PLASTIC BLOCKOUT (TYPE I)



RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)



Exploded View
(Rail and washer not shown)
STEEL POST AND BLOCK DETAIL



Prior to installing A. C. Mix. No. IV, level & remove vegetation and compact existing ground to 95% compaction.

ELEVATION
TYPICAL GUARDRAIL INSTALLATION

GUARDRAIL TYPE	DIMENSION		
	H	A	B
Strong Post w/W Beam	1'-9 5/8"	1'-6"	1'-0"
Rubrail	2'-0"	1'-6"	2'-0"
Modified Thrie Beam	2'-0"	2'-0"	1'-0"

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
REVISIONS	
2/2/99	
2/2/99	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

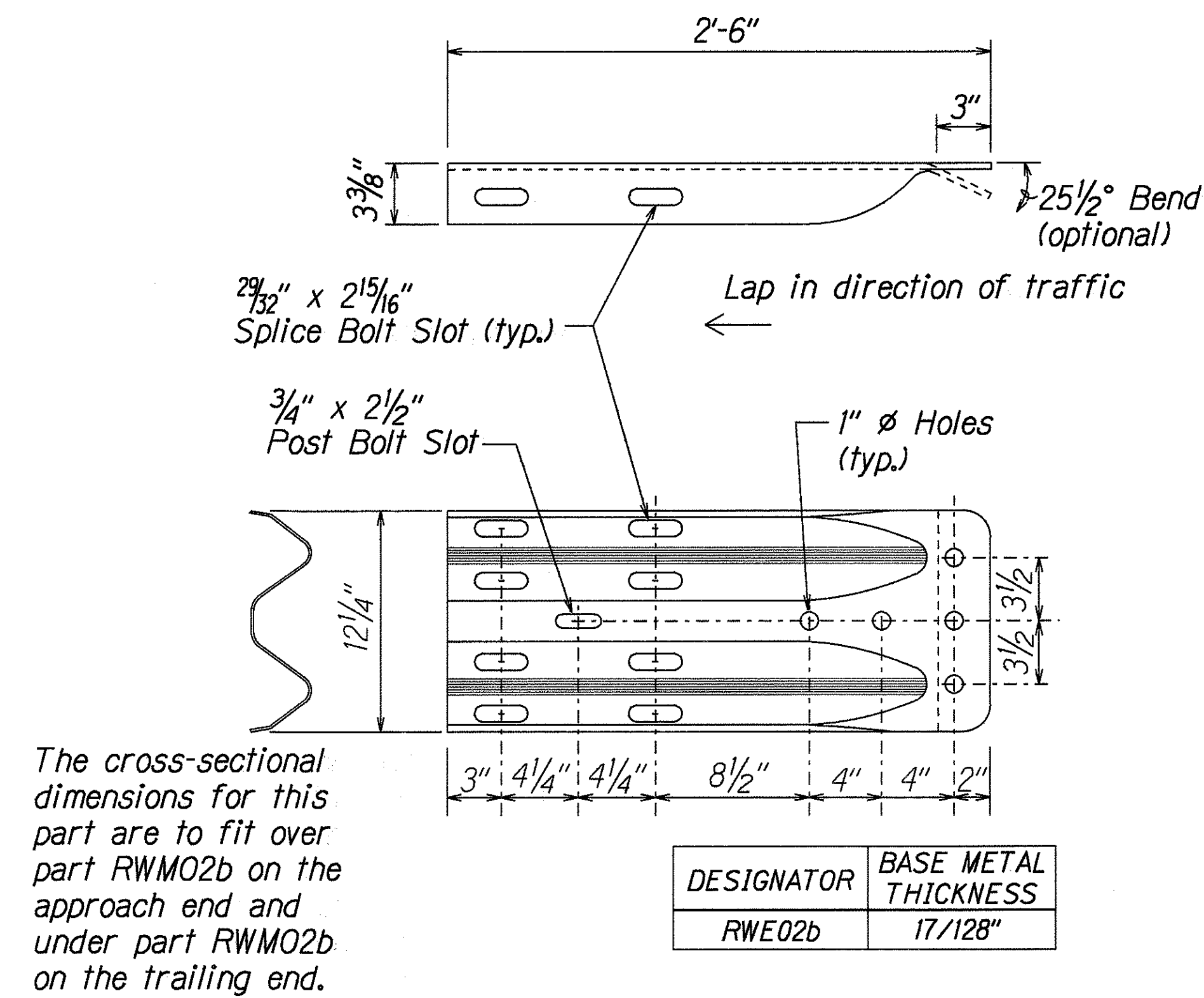
GUARDRAIL DETAILS & NOTES

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)

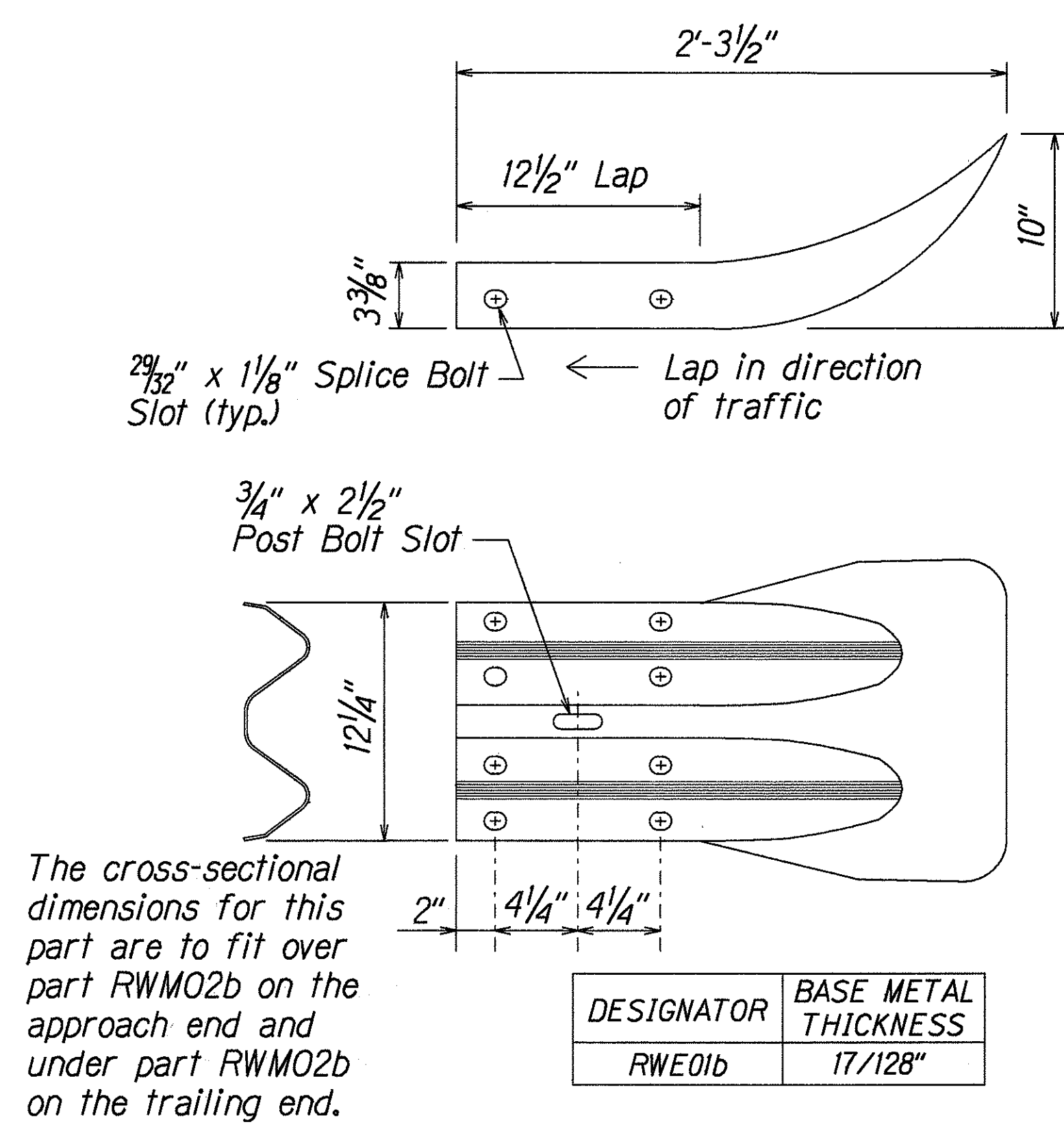
Scale: NTS
Date: April, 1999

SHEET No. 1 OF 5 SHEETS

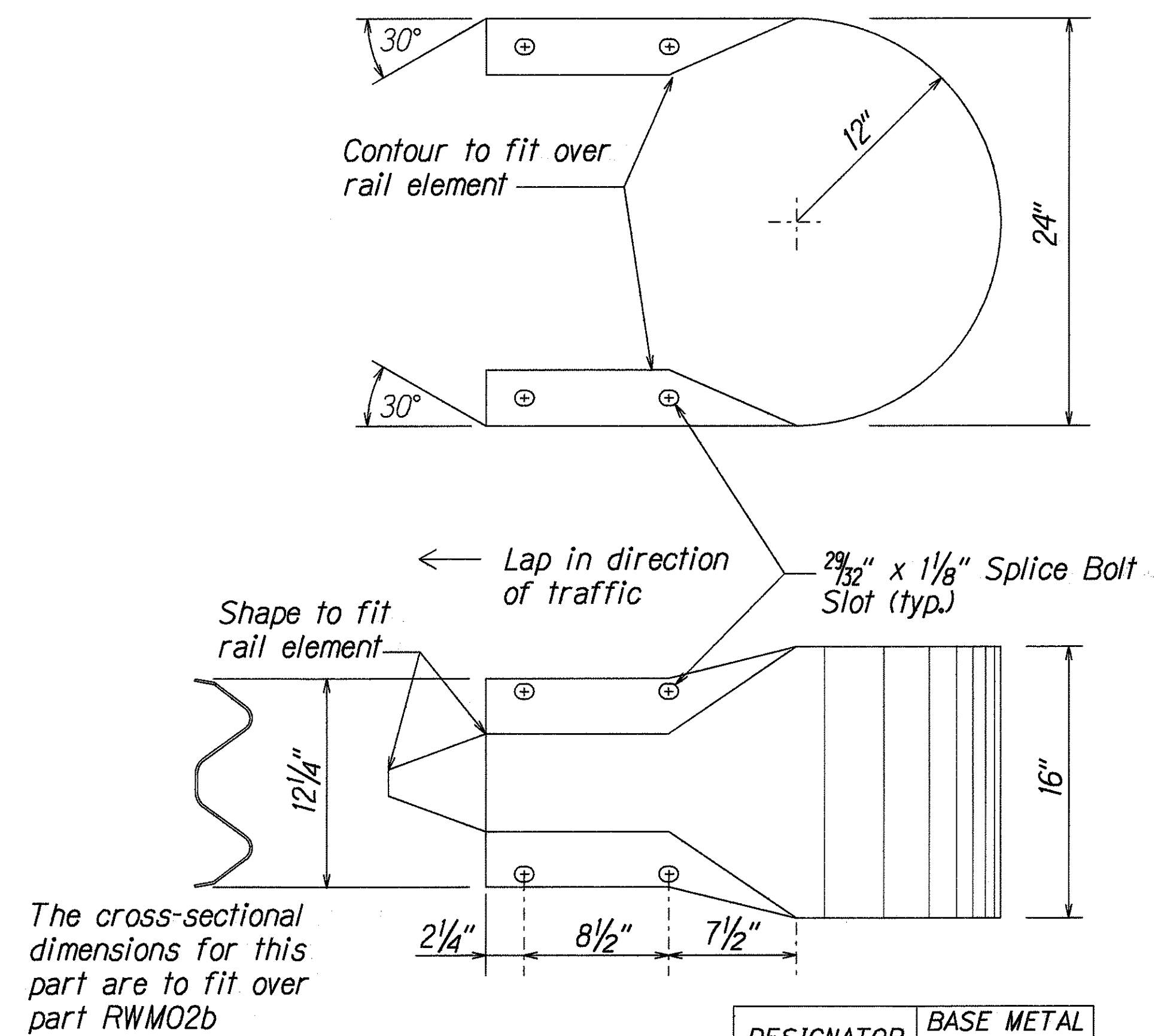
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	9	47



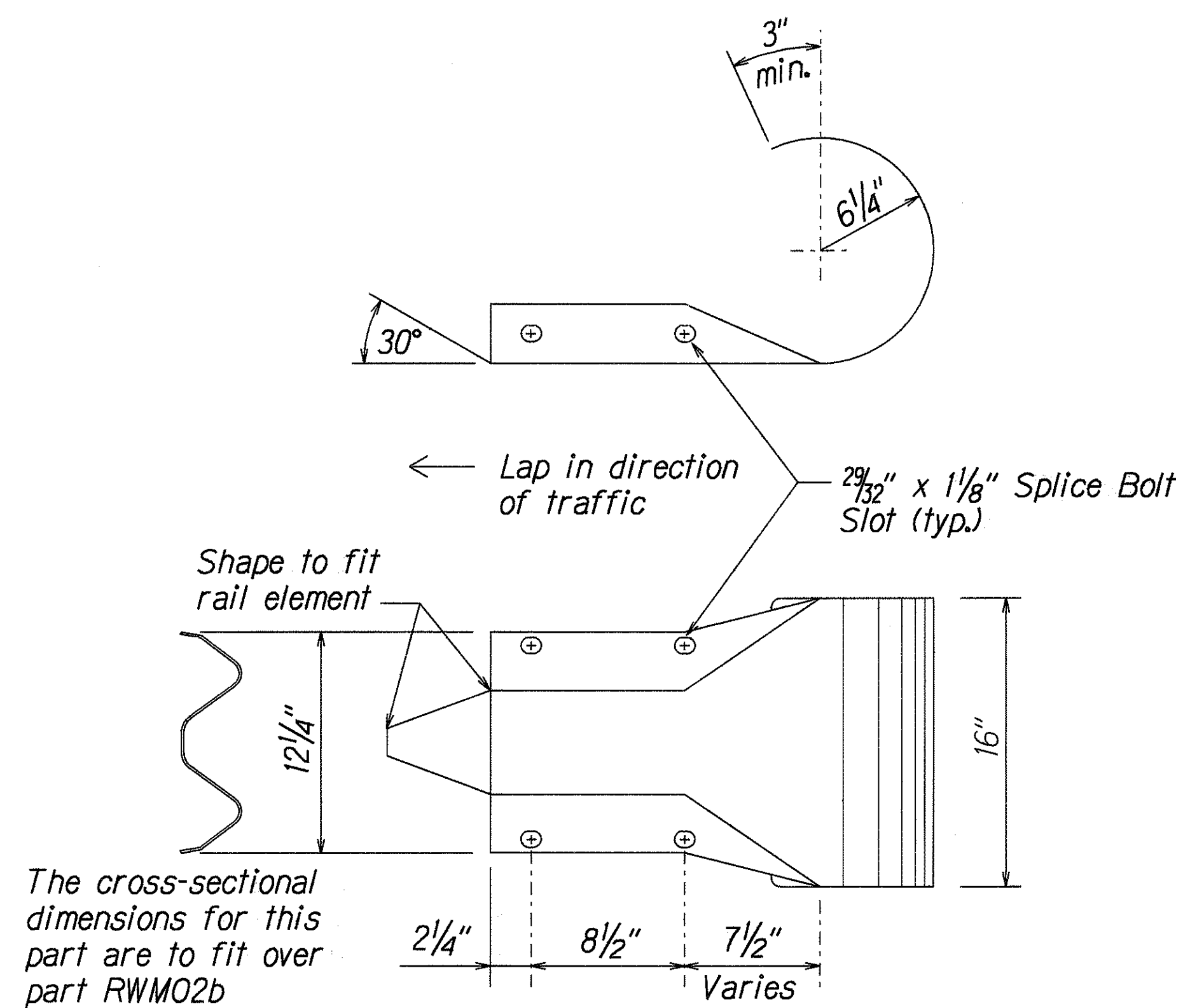
W-BEAM TERMINAL CONNECTOR (RWE02b)



W-BEAM END SECTION (FLARED RWE01b)



W-BEAM END SECTION (BUFFER RWE06b)



W-BEAM END SECTION (ROUNDED RWE03a)

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

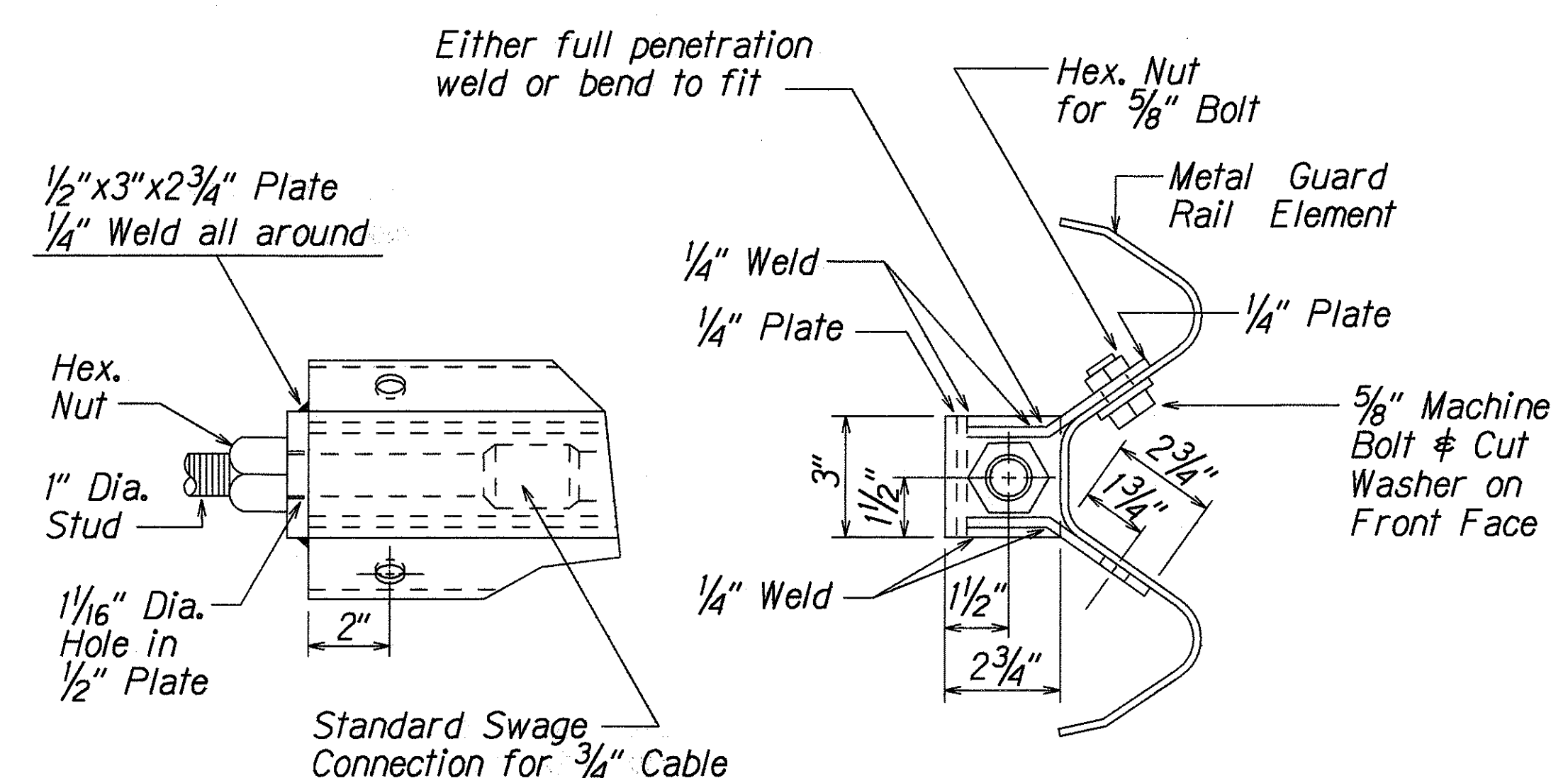
STRONG POST W-BEAM GUARDRAIL

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)

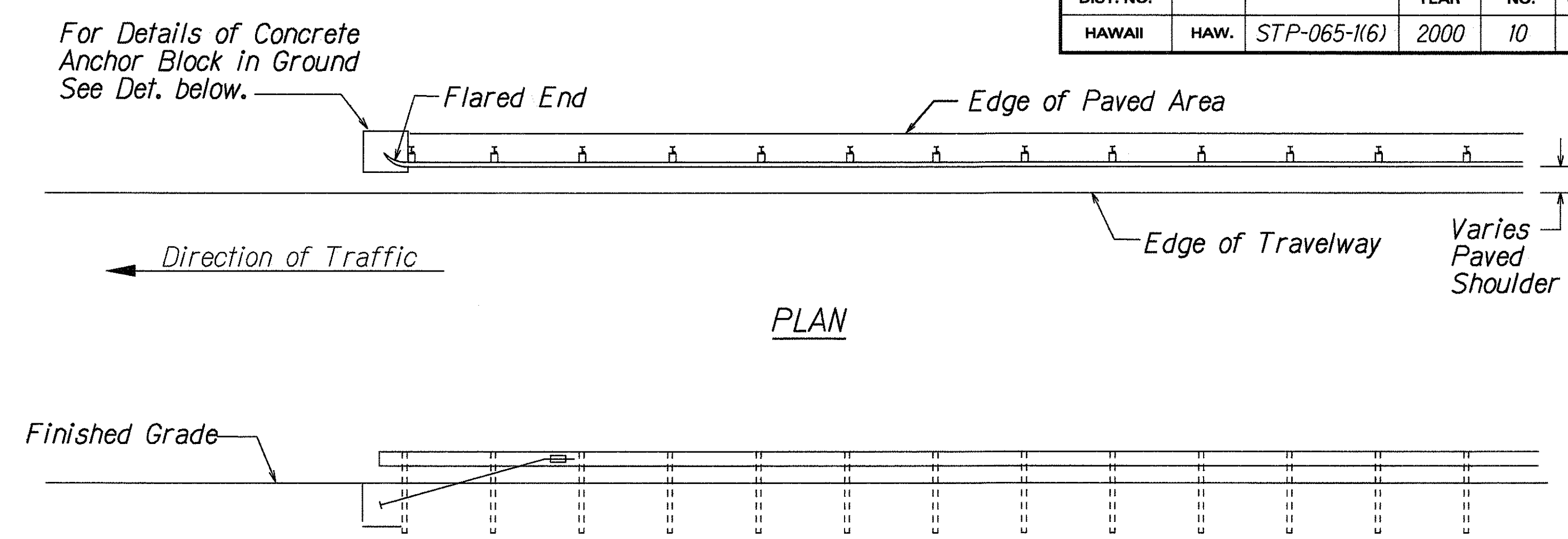
Scale: NTS Date: April, 1999

SHEET No. 3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	10	47



ANCHOR PLATE DETAILS



ELEVATION

TYPE "G" FLARE END TERMINAL

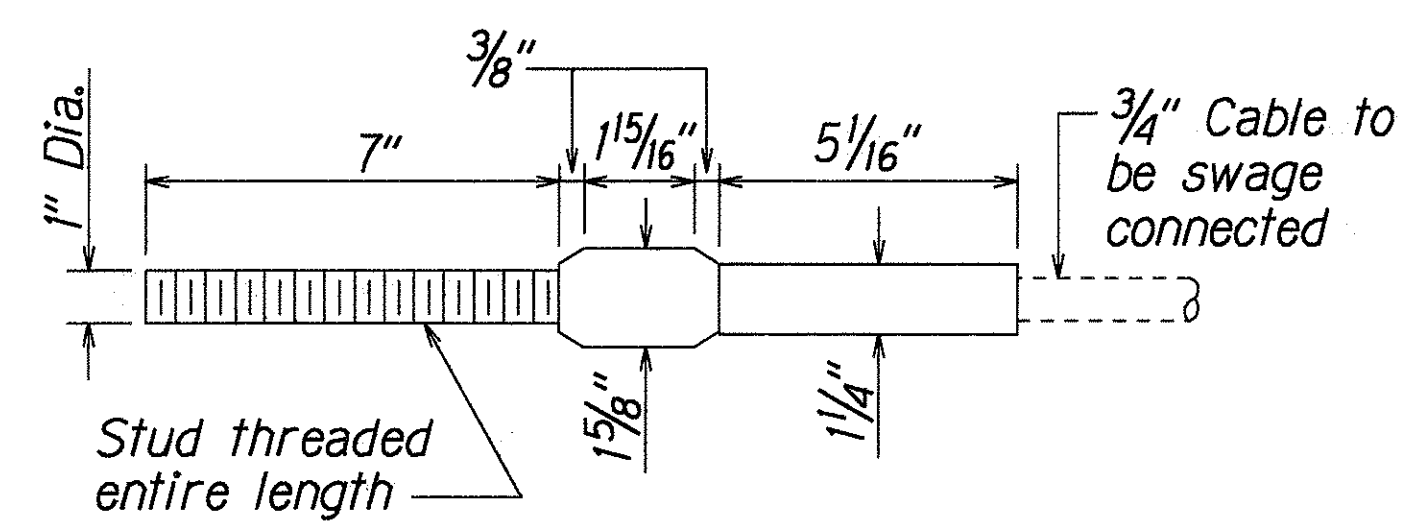
NOTE:

Type "G" Modified End Terminal is a site specific end terminal with a taper and radial termini. A site specific detailed drawing is required for all Type "G" Modified End Terminal and must receive Engineer's approval.

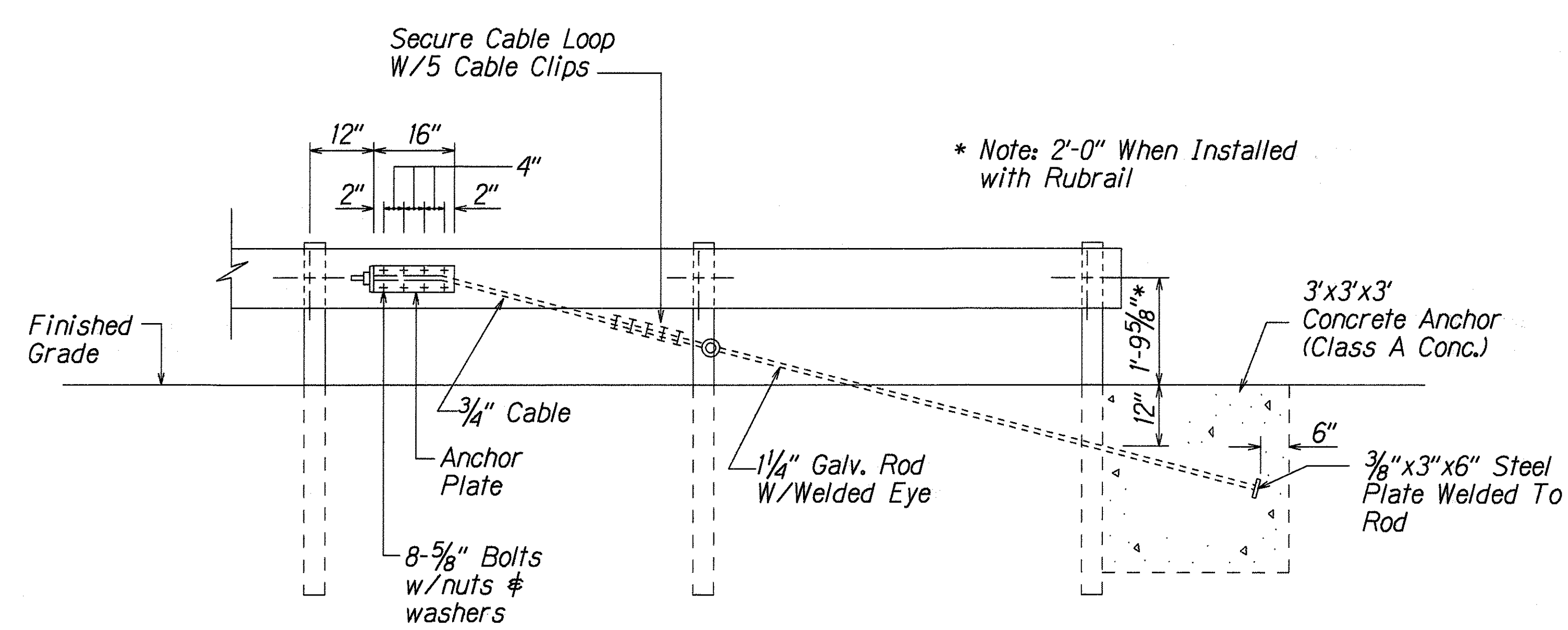
The taper (flare rate) of the guardrail shall follow the latest edition of AASHTO'S Roadside Design Guide (currently, Table 5.6 - Suggested Flare Rate for Barrier Design, page 5-21, Jan. 1996 edition).

The radius of the radial termini is an Engineer's judgement based on the site evaluation. The Engineer shall consider safety (minimize the spearing & blunt end situation); degree and potential seriousness of the hazard; bicycle and pedestrian accessibility; maintenance equipment accessibility; Right-of-Way availability; the smallest radii the metal w-beam/thrie-beam railing can be constructed (check with supplier/contractor); posted speed limit; angle of vehicle impact; and aesthetics when designing the Type "G" Modified End Terminal.

During construction, the Contractor shall layout the proposed Type "G" Modified End Terminal and receive approval from the Construction Engineer prior to installation.



STANDARD SWAGED FITTING AND STUD



ANCHOR BLOCK DETAIL

1. Concrete, G.R.P., excavation, anchor rod and miscellaneous appurtenances necessary to anchor the guardrail ends shall be incidental to metal guardrail.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	1
DESIGNED BY	Richard Akana	
QUANTITIES BY		
CHECKED BY		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)

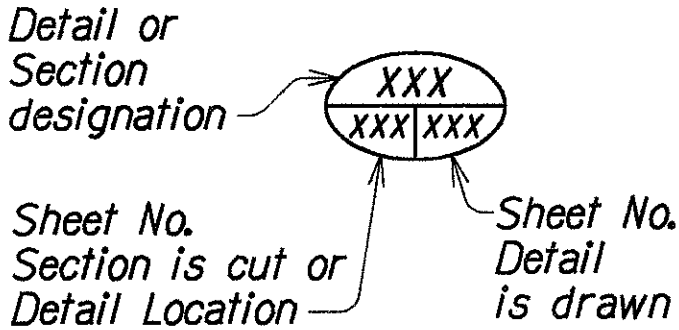
Scale: NTS Date: April, 1999

SHEET No. 4 OF 5 SHEETS

INDEX TO DRAWINGS	
SHEET NO.	DESCRIPTION
Q1	GUARDRAIL DETAILS - INDEX, GENERA NOTES, ESTIMATED QUANTITIES AND ABBREVIATIONS
Q2	GUARDRAIL DETAILS - TYPE 4E MEDIAN BARRIER AT STA. 30+85± PLAN, ELEVATION AND SECTIONS
Q3	GUARDRAIL DETAILS - TYOE 4F AND 4G MEDIAN BARRIER AT STA. 31+03± TO STA. 33+46±; SECTIONS
Q4	GUARDRAIL DETIALS - TYPE 4H MEDIAN BARRIER AT STA. 33+46± TO STA. 33+69±; PLAN, ELEVATION AND SECTIONS
Q5	GUARDRAIL DETAILS - TYPE 4I MEDIAN BARRIER AT STA. 35+06.75± TO STA. 35+24.75±; PLAN AND ELEVATION
Q6	GUARDRAIL DETAILS - TYPE 4I MEDIAN BARRIER AT STA. 35+06.75± TO STA. 35+24.75±; PLAN, ELEVATION AND SECTIONS
Q7	GUARDRAIL DETAILS - TYPE A END POST UPGRADE AT STA. 0+42; PLAN AND ELEVATION
Q8	GUARDRAIL DETAILS - TYPE A END POST UPGRADE AT STA. 0+42 SECTIONS
Q9	TYPICAL TYPE 3 METAL GUARDRAIL - THRIE BEAM DETAILS
Q10	TYPICAL TYPE 3 METAL GUARDRAIL - THRIE BEAM AND APPURTENANCES DETAILS

ABBREVIATIONS AND SYMBOLS

Abut.	Abutment	Max.	Maximum
AB	Anchor Bolt	Min.	Minimum
Alum.	Aluminum	MP	Mile Post
Approx.	Approximate	No., #	Number
℄	Baseline	N.T.S.	Not To Scale
Bal.	Balance	OB	Outbound
Beg.	Begin, Beginning	oc	On Center
Blk.	Block	OD	Outside Dimension
Bm.	Beam	o/s, O/S	Offset
Brg., Brgs.	Bearing, Bearings	PC	Point of Curvature
℄	Center Line	PL	Plate
Cl., Clr.	Clear	R	Radius
Conc.	Concrete	Rdwy.	Roadway
Cont.	Continuous	Ref.	Reference
Det.	Detail	Reinf.	Reinforcement
Dia., ø	Diameter	Req'd.	Required
Dim.	Dimension	R/W	Right of Way
Dwg., Dwgs.	Drawing, Drawings		
EA, Ea., ea.	Each	Sect.	Section
EF	Each Face	Sht.	Sheet
EP	Edge of Pavement	Spcs.	Spaces
ES	Edge of Shoulder	Spcg.	Spacing
Exist.	Existing	Sta.	Station
Exp., (E)	Expansion	Std.	Standard
FF	Front Face	Str.	Straight
Fin.	Finish	Symm.	Symmetrical
Ftg.	Footing		
Ga.	Gage, Gauge	T&B	Top and Bottom
Galv.	Galvanized	Thk.	Thick, Thickness
Gr.	Grade	TS	Tubular Steel
Horiz.	Horizontal	Typ.	Typical
HS	High Strength	Vert.	Vertical
Hwy.	Highway	w/	With
IB	Inbound		
Jt.	Joint		
LC	Length of Curve		
LF., Lin. Ft.	Linear Feet		
Lg.	Long		
Longit.	Longitudinal		
L.S.	Lump Sum		



GENERAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO LRFD Bridge Design Specifications, 1998

MATERIALS:

- A. Reinforced Concrete: Class A
- B. Reinforced Steel: ASTM A 615, Grade 40 or 60
- C. Admixture in concrete: See Special Provisions
- D. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.
- E. All structural steel shall be ASTM A 36 hot-dip galvanized after fabrication.
- F. All anchor bolts, washers and nuts shall be AASHTO M 164 hot-dip galvanized, unless noted otherwise.
- G. All welding shall be in accordance with the current edition of the Bridge Welding Code ANSI/AASHTO/AWS D 1.5 and the Reinforcing Steel Welding Code AWS D 1.4.

CONSTRUCTION METHODS:

- A. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 Edition and Special Provisions.
- B. Except as noted otherwise, all vertical dimensions are measured plumb.
- C. For steel reinforcing, stagger all splices where possible.
- D. Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.
- E. For cast-in-place concrete, minimum reinforcement cover:
Concrete cast against earth: 3"
Walls: 2"
- F. At the time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
- G. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
- H. Minimum clear spacing between parallel bars shall be one and one-half (1½) times the diameter of the bars (for non-bundled bars). But in no case shall the clear distance between the bars be less than one and one-half (1½) times the maximum size of the coarse aggregate.
- I. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.
- J. All footings shall bear on firm undisturbed natural soils. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with minimum of Class D concrete at no cost to the State.
- K. All existing reinforcing and anchor bolts that can be incorporated in the new work shall be bent or cut as required and cleaned before being utilized in the new work.
- L. All existing reinforcing and anchor bolts that cannot be incorporated in the new work shall be completely removed or removed to a minimum depth of one and one-half (1½) inches below finish grade and the area patched with mortar.

ESTIMATED QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	QAUNTITIES
507.7610	Type "A" End Post Upgrade	Ea.	1
606.3112	Guardrail Type 3 Thrie Beam Transition to End Post	LF	25
606.4160	Type "4E" Median Barrier	LF	18
606.4162	Type "4F" Median Barrier	LF	75
606.4164	Type "4G" Median Barrier	LF	173
606.4166	Type "4H" Median Barrier	LF	23
606.4168	Type "4I" Median Barrier	LF	18

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1161	2000	12	47

- M. All existing concrete face receivng new concrete in the finish product shall be roughened, cleaned and have concrete epoxy adhesive applied prior to placement of the new pour, unless indicated otherwise or as ordered by the Engineer.
- N. Epoxy fill shall be "Double Cartridge" type. Epoxies that require manual measuring or mixing shall not be allowed.

REFERENCE:

- A. Refer to Standard Plans for additional details and notes not covered by details and typical drawings.

GENERAL:

- A. All items noted incidental will not be paid for separately.
- B. The location of the existing utilities shown on the plans are approximate.
- C. The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
- D. The Contractor shall verify all grades and dimensions in the field before commencing with any work.
- E. The Contractor shall be solely responsible for the protection of adjacent property, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at no cost to the State.
- F. The Contractor shall conduct his work in such a manner and provide such temporary shoring or other measures as may be necessary to insure the safety of all concerned and to protect existing structures.
- G. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.

SURVEY PLOTTED BY	DATE	DATE	DATE	DATE	DATE
DRAWN BY	LMA	JULY 1999	JULY 1999	JULY 1999	JULY 1999
DESIGNED BY	JFU				
QUANTITIES BY	JFU				
CHECKED BY	DCO				
ORIGINAL PLAN					
NOTE BOOK					
NO.	20010411				

CC21440

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS

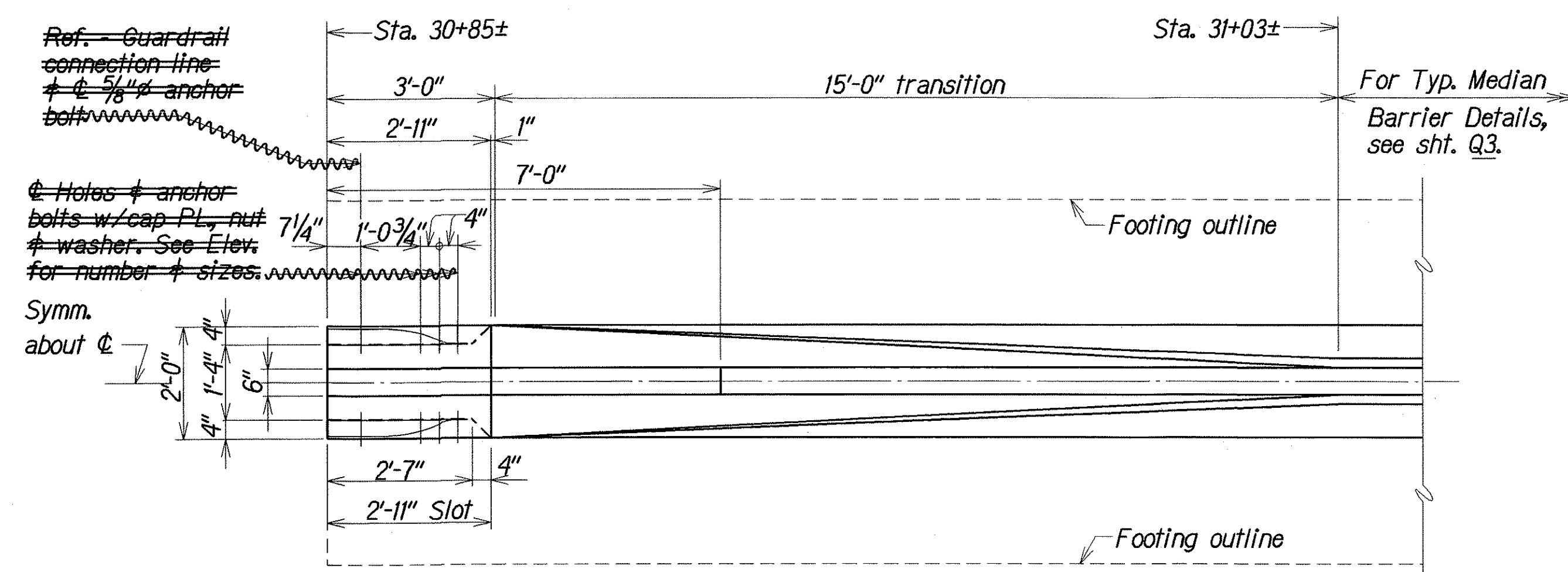
INDEX TO DRAWINGS, GENERAL NOTES,
ESTIMATED QUANTITIES AND ABBREVIATIONS

MOKAPI SADDLE ROAD
TRAFFIC SIGNALS AT H-3 ON-RAMP
Federal Aid Project No. STP-065-1161

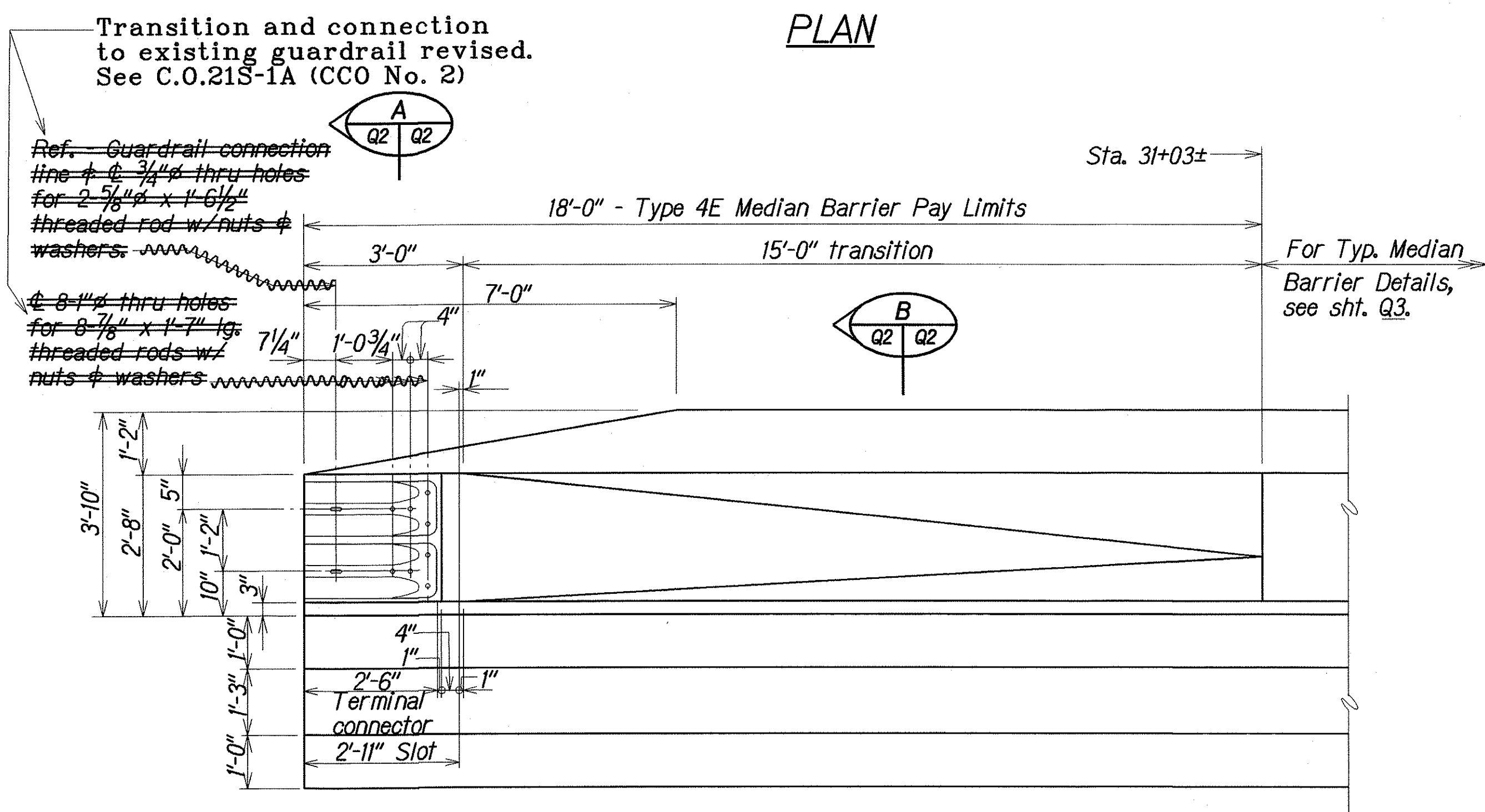
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SHEET No. Q1 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	13	47

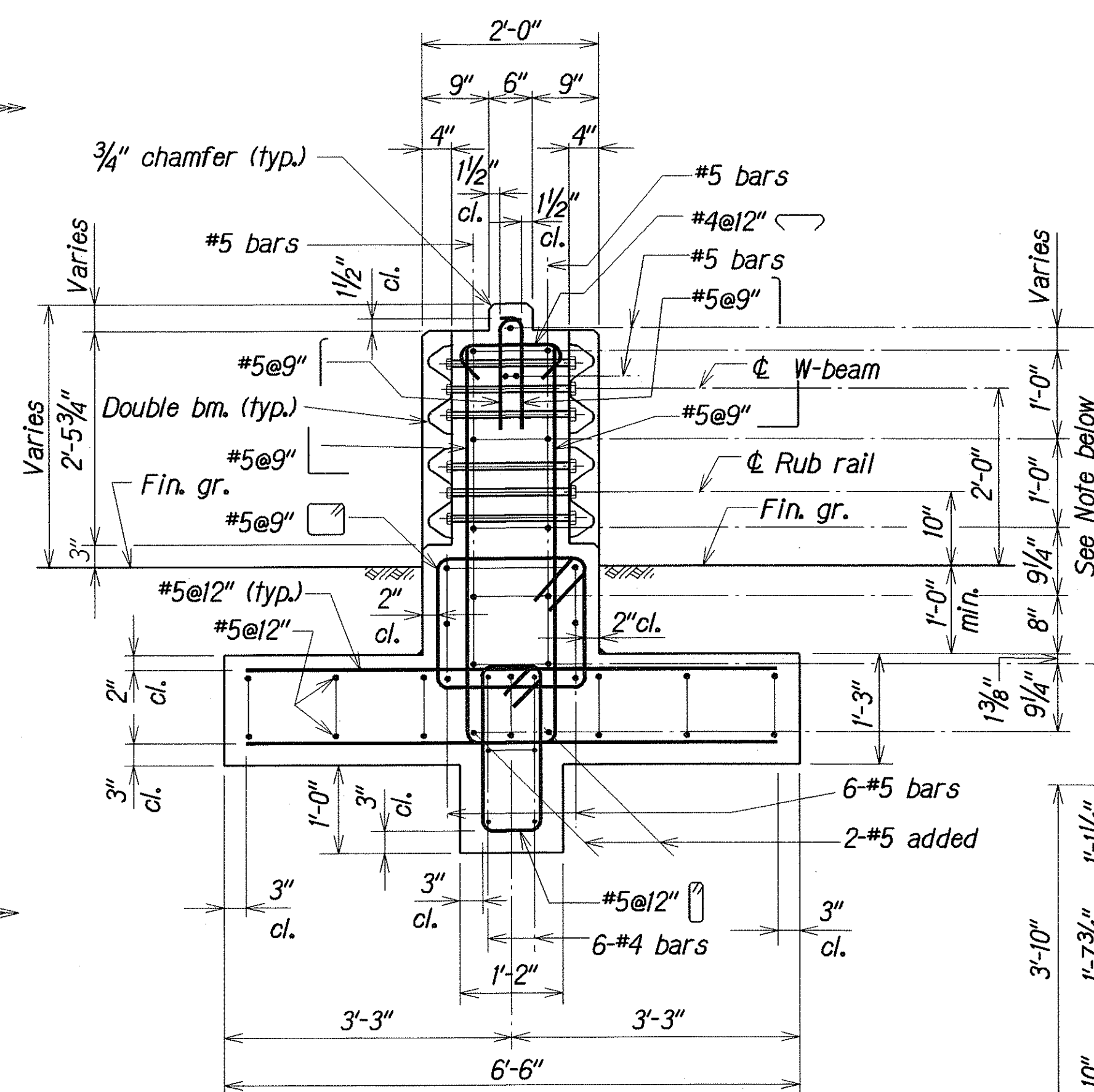


PLAN

ELEVATION

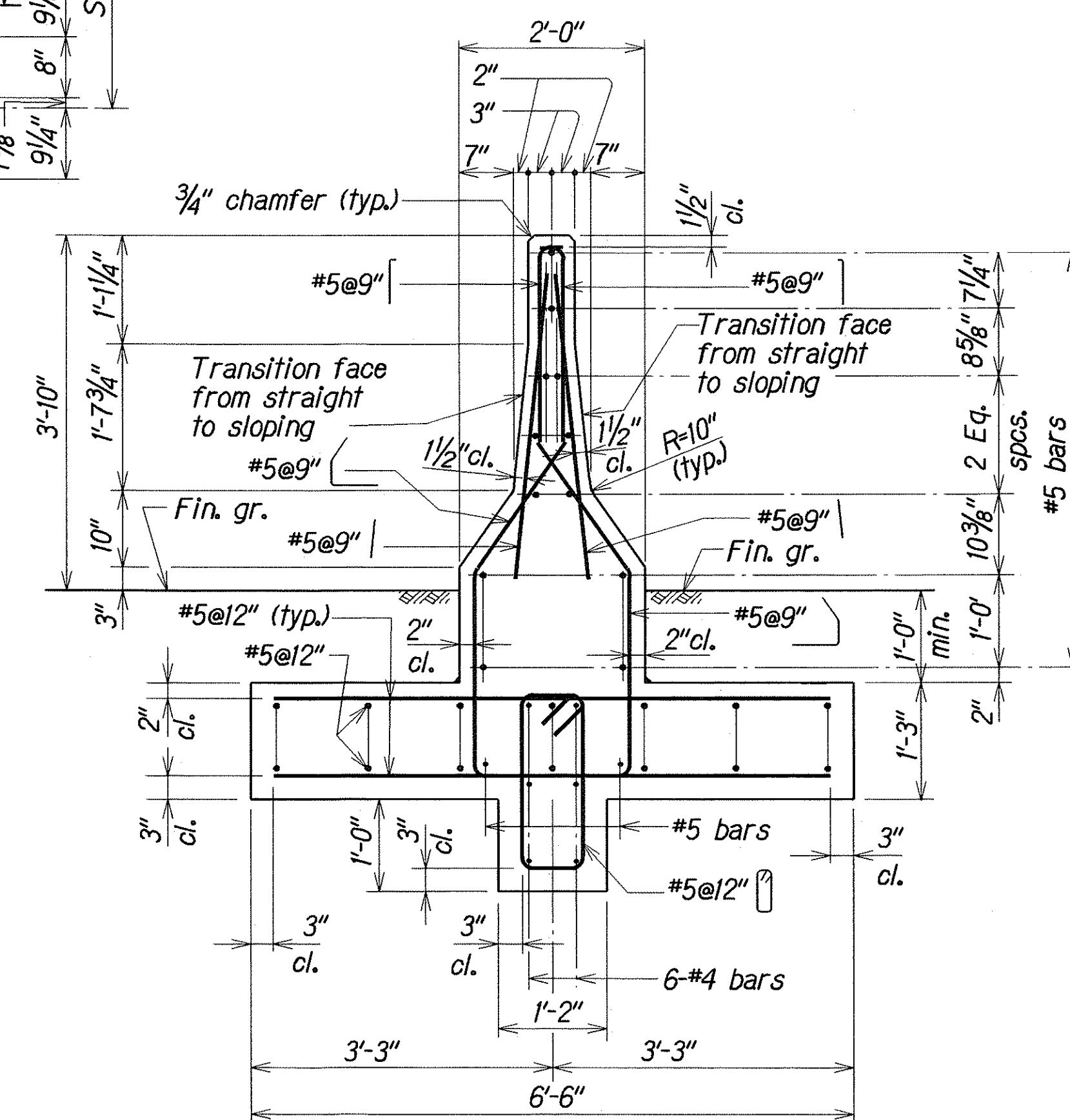
TYPE 4E MEDIAN BARRIER AT STA. 30+85±

Scale: $\frac{1}{2}" = 1'-0"$



SECTION

Scale: $\frac{3}{4}" = 1'-0"$



SECTION

Scale: $\frac{3}{4}" = 1'-0"$

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

GUARDRAIL DETAILS
TYPE 4E MEDIAN BARRIER AT STA. 30+85±
PLAN, ELEVATION AND SECTIONS

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

Scale: As Noted

Date: Aug. 1999

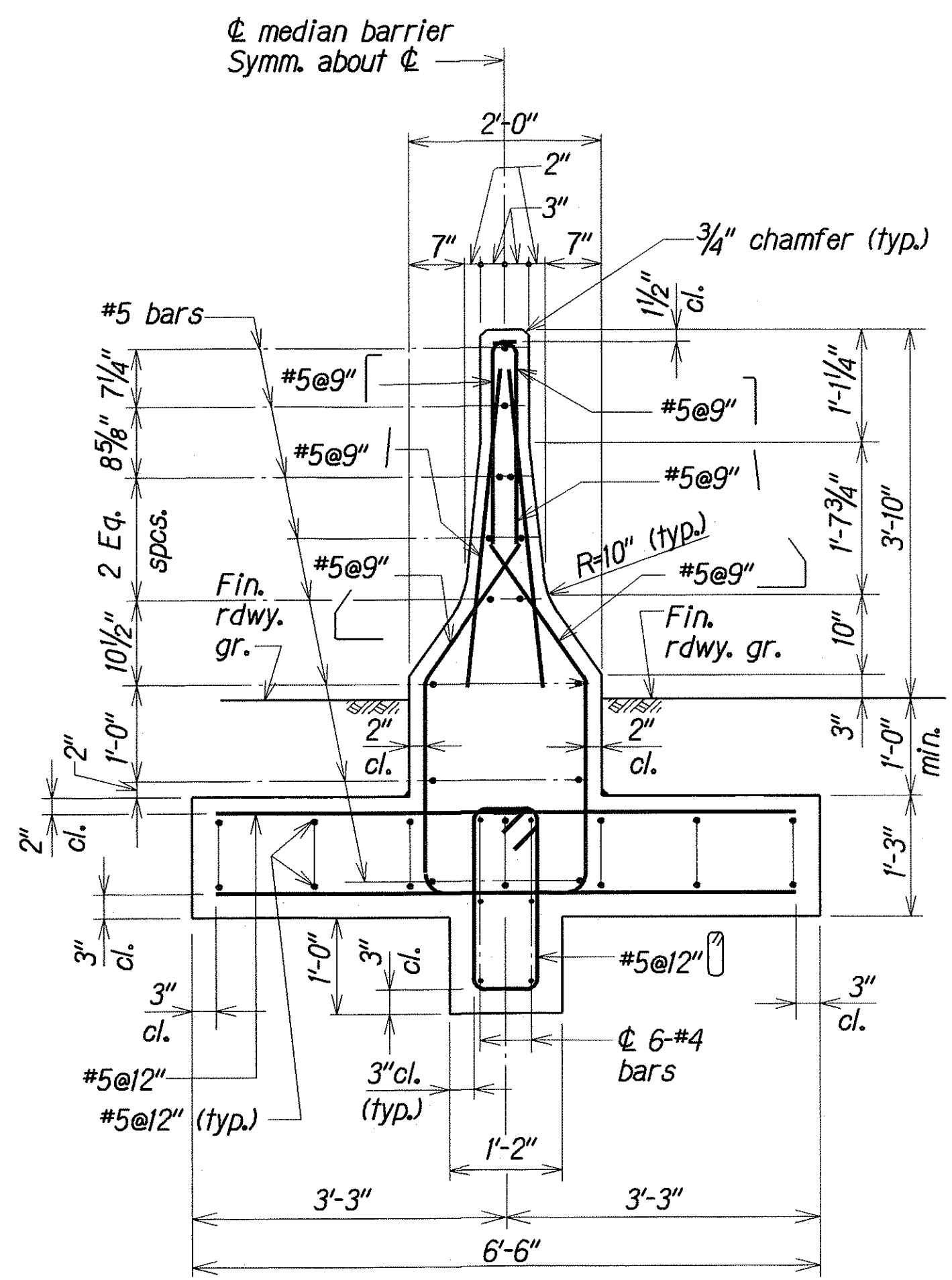
SHEET No. 02 OF 10 SHEETS

"AS-BUILT"

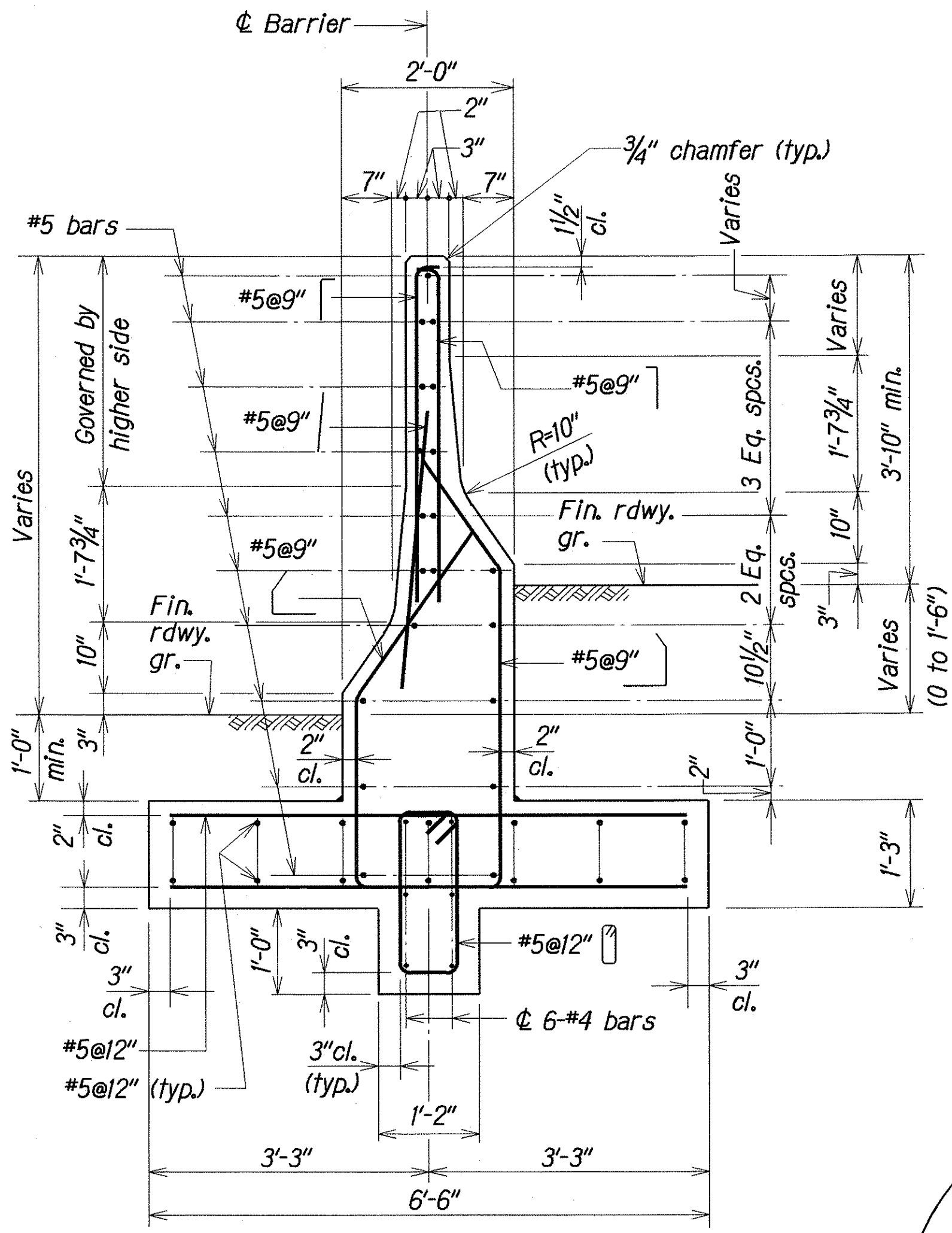
ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE <u>JULY 1999</u>
	DRAWN BY <u>LMA</u>	
	TRACED BY _____	
NOTE BOOK	DESIGNED BY <u>JFU</u>	<u>JULY 1999</u>
	QUANTITIES BY <u>JFU</u>	<u>JULY 1999</u>
	CHECKED BY <u>DCO</u>	<u>JULY 1999</u>

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	14	47

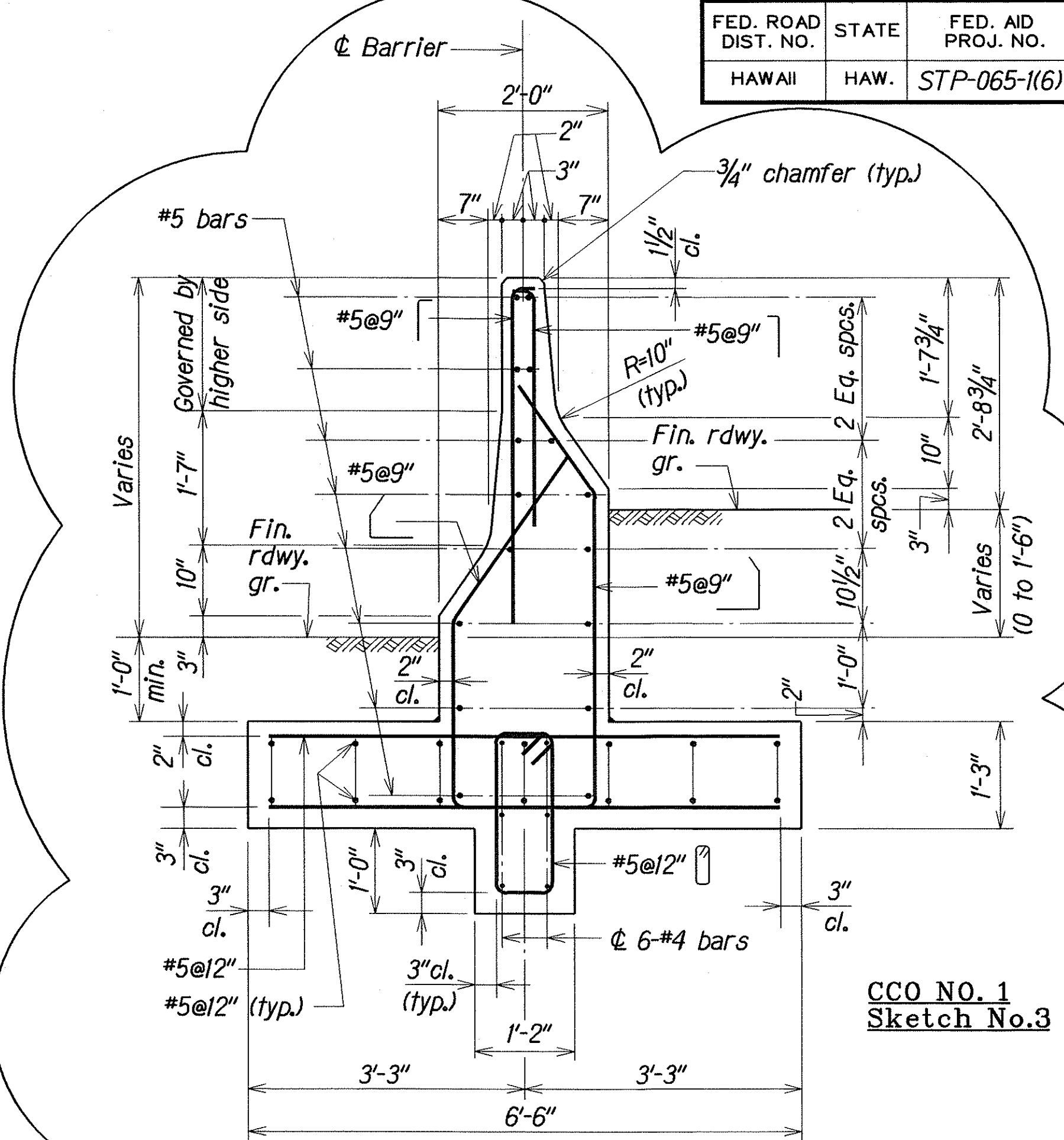
NOTE:
Pay limits for Type 4F & 4G
Median Barrier is from
Sta. 31+03± to Sta. 33+46±.



TYPE 4F



TYPE 4G



TYPE 4G

REVISED CONCRETE BARRIER DETAIL
STA. 32+56± TO STA. 33+49±

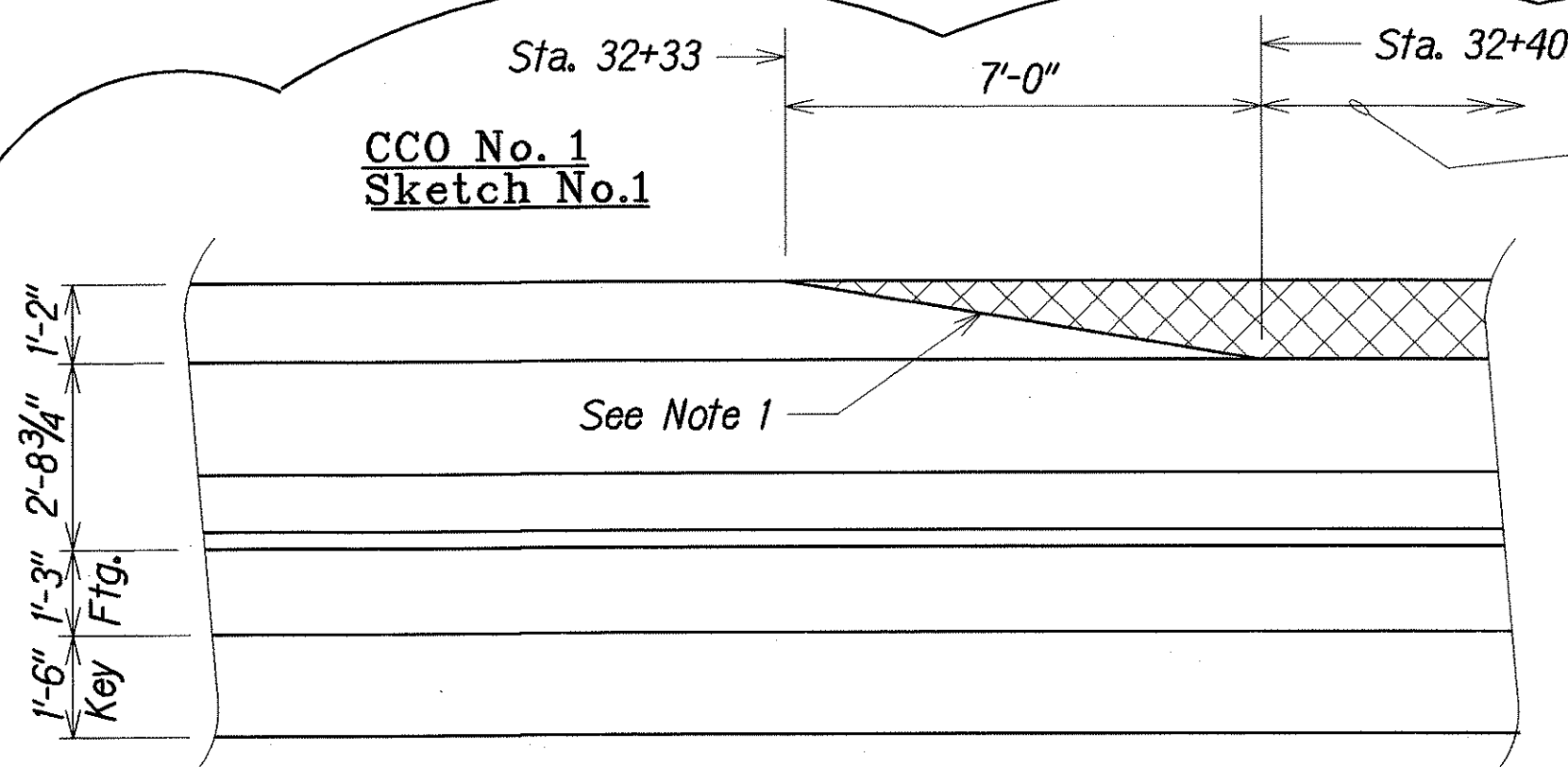
Scale: 3/4" = 1'-0"

TYPE 4F & 4G MEDIAN BARRIER AT STA. 31+03± TO STA. 33+46± 32+33

Scale: 3/4" = 1'-0"

See sketches nos. 1, 2 & 3
(CCO No. 1)

(CCO No.1)



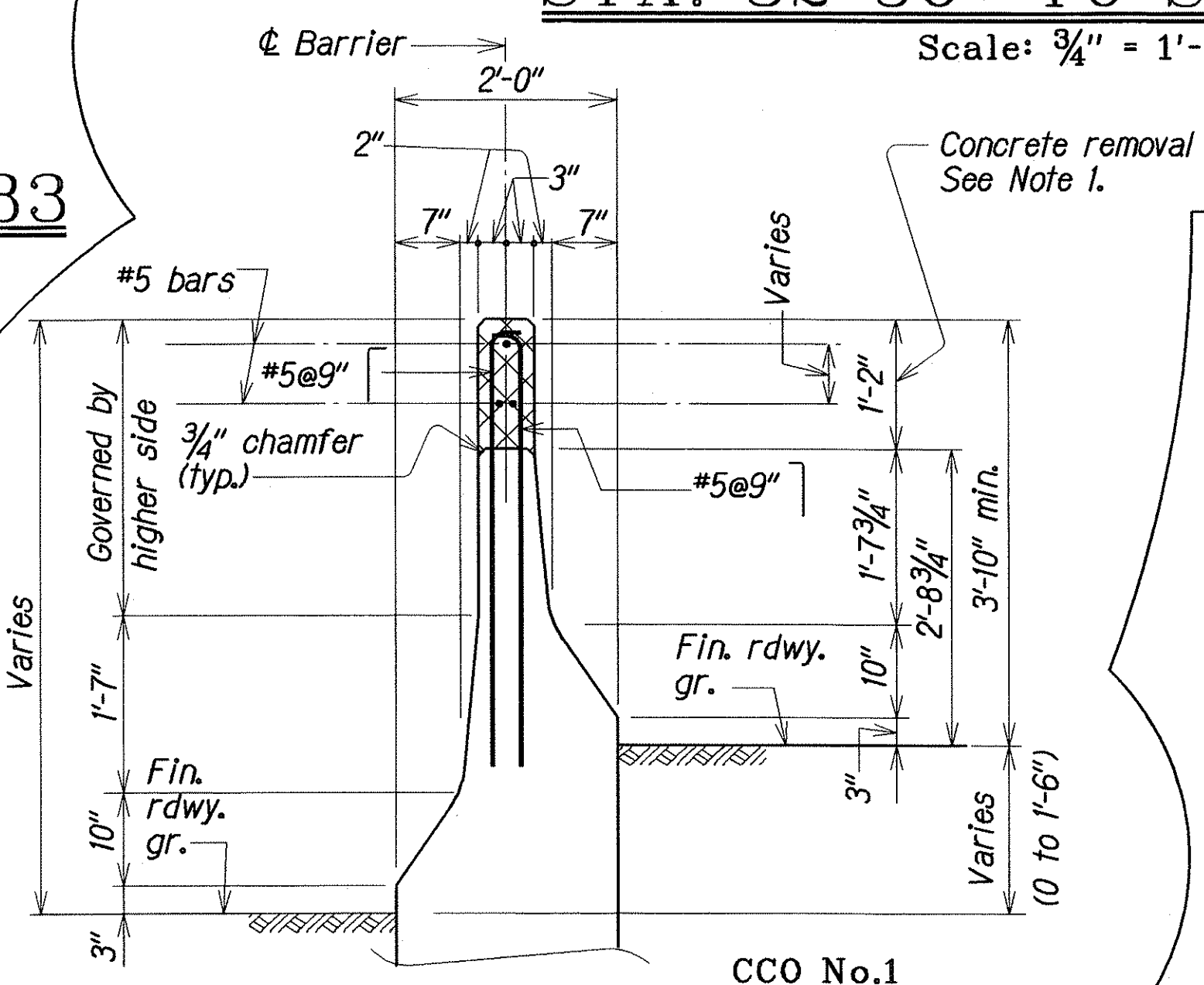
ELEVATION
CONCRETE REMOVAL DETAIL
STA. 32+33 TO STA. 32+40

Scale: 3/8" = 1'-0"

NOTE:

1. Removal of exist. concrete shown by cross hatched lines. Sawcut the entire width (6") to achieve a flat surface. After sawcutting and removal of concrete provide 3/4" chamfer on both sides of concrete barrier.
2. Remove existing exposed reinforcing (vert. & horiz.) to a depth of 1 1/2" below the sawcut line and the area shall be patched with mortar.

These details added during "As Built" posting.



TYPE 4G

CONCRETE REMOVAL DETAIL
STA. 32+40 TO 32+56±

Scale: 3/4" = 1'-0"

LEGEND FOR
AS-BUILT POSTINGS

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

AT STA. 31+03± TO STA. 33+49±
SECTIONS AND ELEVATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS
TYPE 4F AND 4G MEDIAN BARRIER
AT STA. 31+03± TO 33+46± SECTIONS

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

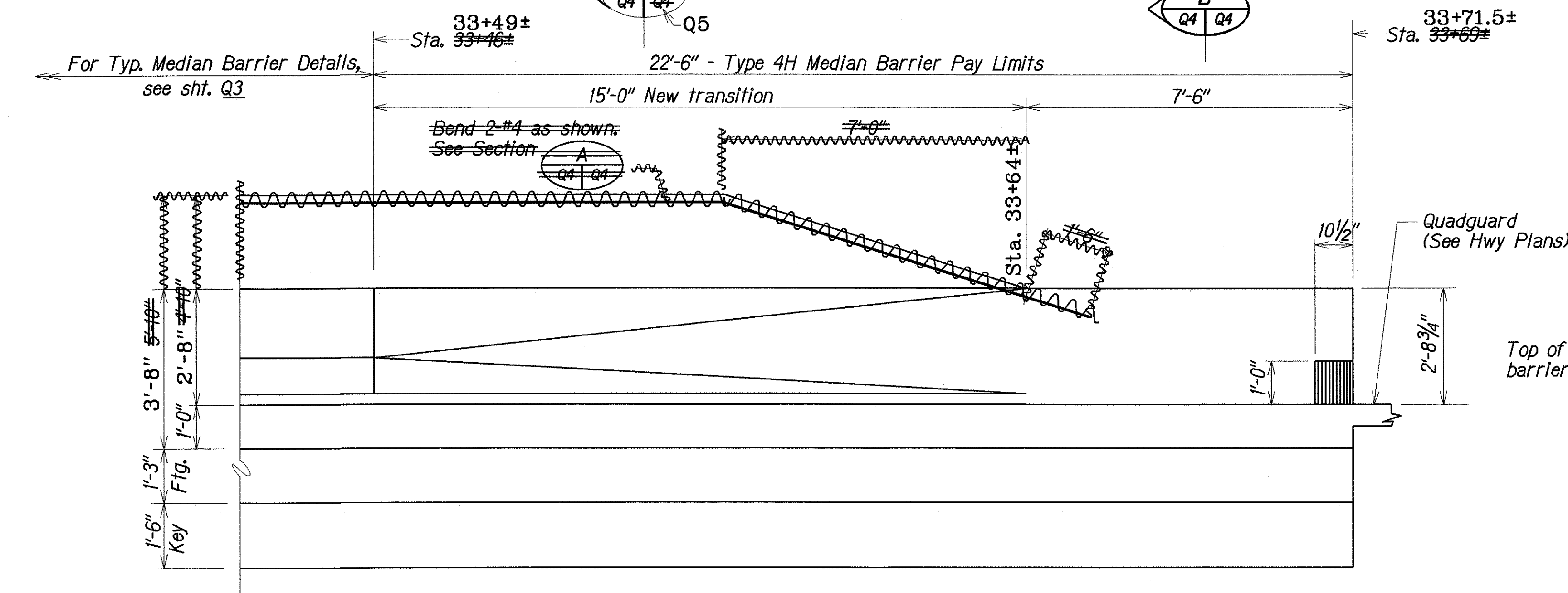
Scale: As Noted Date: Aug. 1999

SHEET No. Q3 OF 10 SHEETS

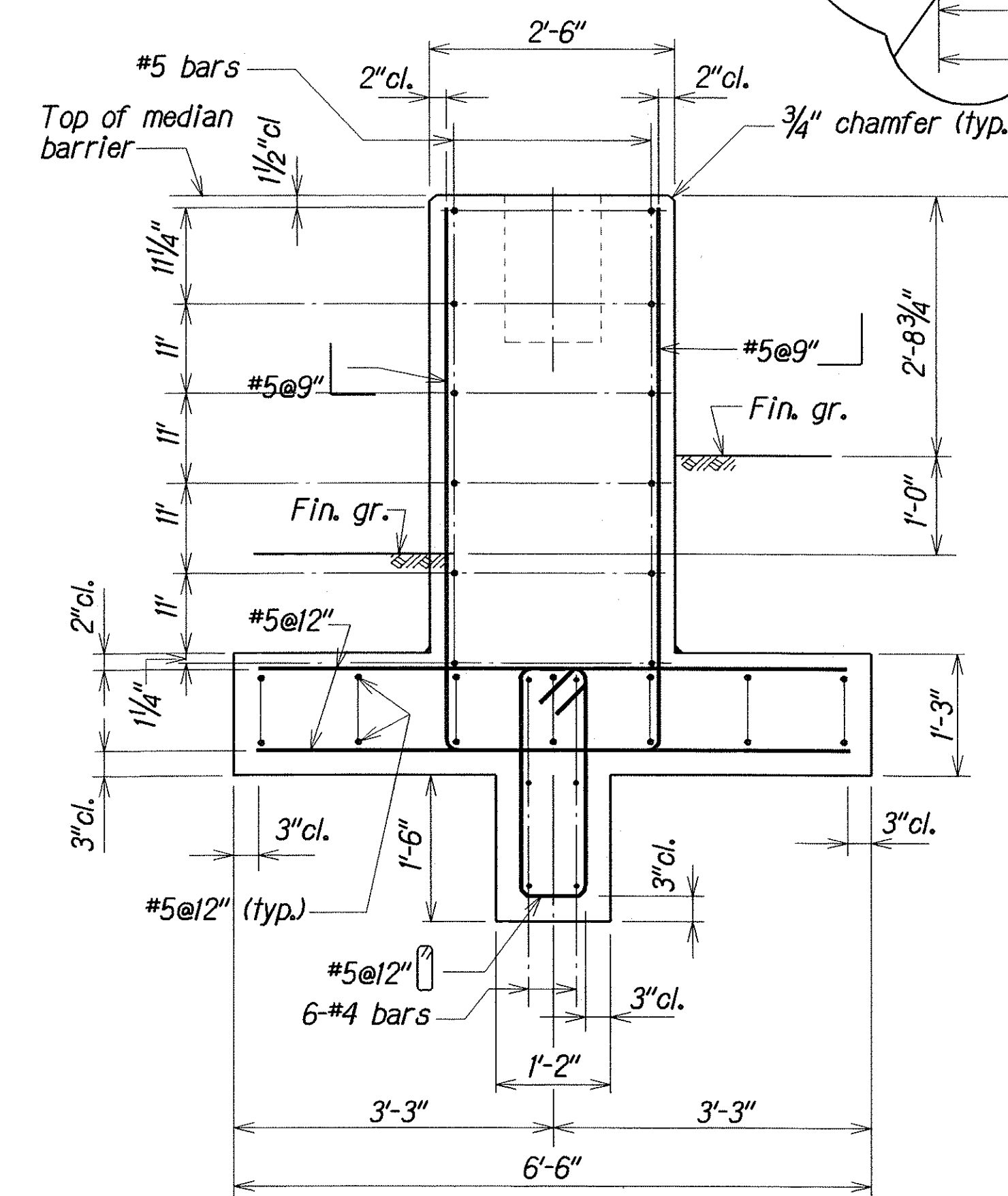
SURVEY PLOTTED BY	DATE
DRAWN BY	JULY 1999
NOTED BY	JULY 1999
CHECKED BY	JULY 1999
ORIGINAL PLAN	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

"AS-BUILT"

Structural drawing of a concrete barrier wall section, labeled "SECTION A". The drawing shows a cross-section of a wall with a sloped front face and a vertical back face. Key dimensions include a total height of 3'-10", a base width of 6'-6", and a top width of 2'-0". Reinforcement includes #5 bars at 9" spacing, #5 bars at 12" spacing, and #6 bars at 4" spacing. A note specifies that the height of the sloped side varies from 1'-2" to 1'-7" maximum. The drawing is marked with "N/C" and "Bend 2-#4 to suit sloping transition. See Elev."



CCO No.1
Sketch No. 4



NOTE: ** Less than 1'-0"

SECTION 

Scale: $\frac{3}{4}" = 1'-0"$

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

GUARDRAIL DETAILS

TYPE 4H MEDIAN BARRIER AT STA. 33+46.1 TO STA. 33+69.1

PLAN, ELEVATION AND SECTIONS

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

Scale: As Noted Date: Aug. 1999

SHEET No. 04 OF 10 SHEETS

"AS-BUILT"

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE <u>JULY 1999</u>
	DRAWN BY <u>LMA</u>	
	TRACED BY _____	
	DESIGNED BY <u>JFU</u>	<u>JULY 1999</u>
	QUANTITIES BY <u>JFU</u>	<u>JULY 1999</u>
	CHECKED BY <u>DCO</u>	<u>JULY 1999</u>
Sheet No. <u>2ms/bd4</u>		

Sta. 35+06.75±

18'-0" - Type 41 Median Barrier Pay Limits

10'-0" 5'-1" Transition 2'-11"

6'-6" 1'-3" 4'-0" 2'-6" 1'-3"

10 1/2"

Footing outline

2'-6" 2'-0" 2'-7" 2'-11" Slot

Ref. - Front face

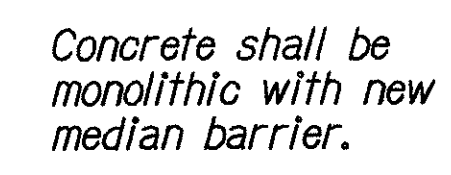
Ref. - Guardrail connection line

2-5/8" threaded rods

1" holes & threaded rod w/ nuts & washers. See Elevation for number and sizes

Symm. about CL

Transition and connection
to existing guardrail revised.
See plan sht. C.O. 21S-1
(CCO No. 2.)



Scale: $\frac{1}{2}" = 1'-0"$

CCO No. 1
Sketch No. 4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

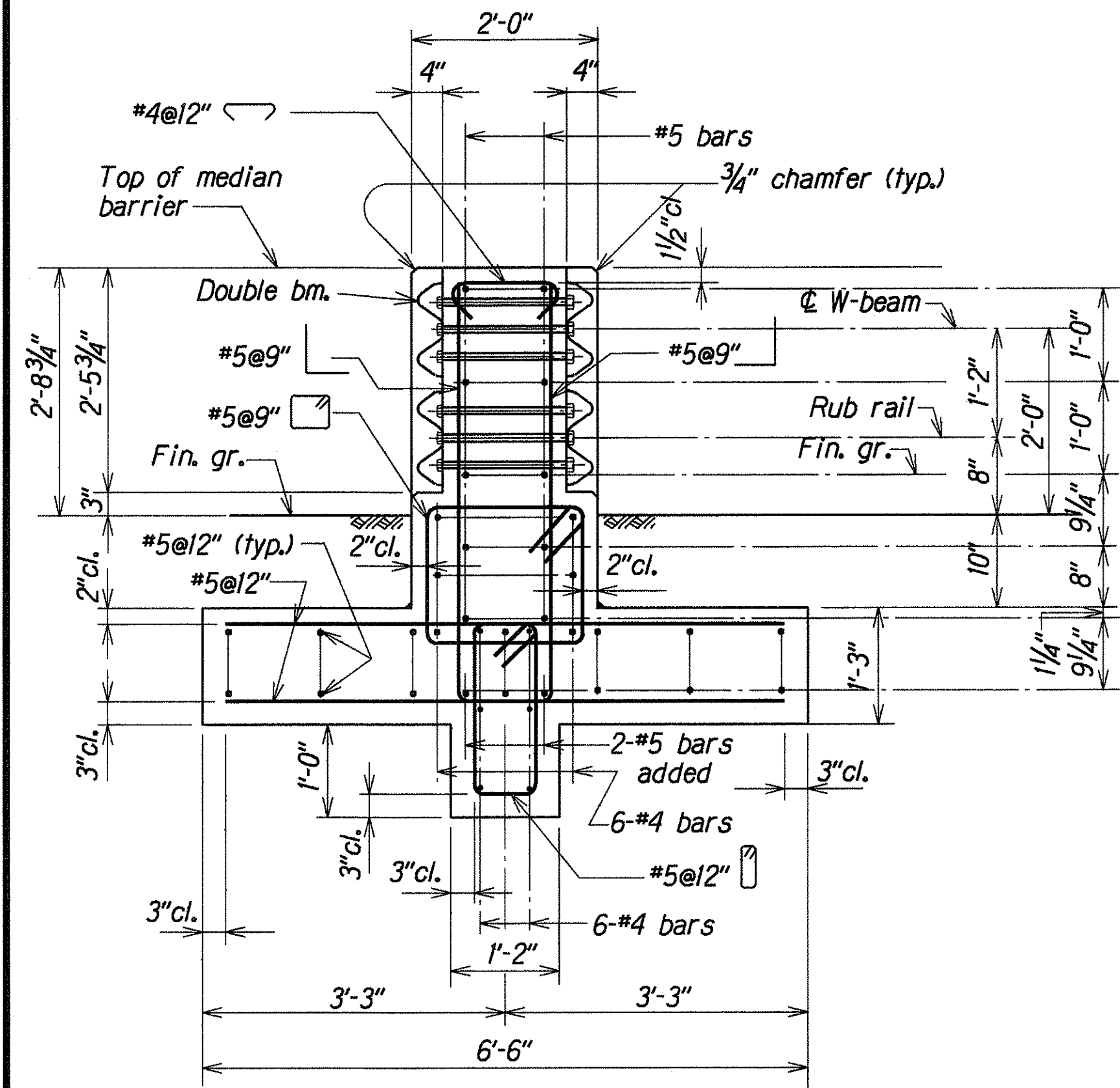
GUARDRAIL DETAILS
TYPE 41 MEDIAN BARRIER

AT STA. 35+06.75± TO STA. 35+24.75±, PLAN & ELEVATION
MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

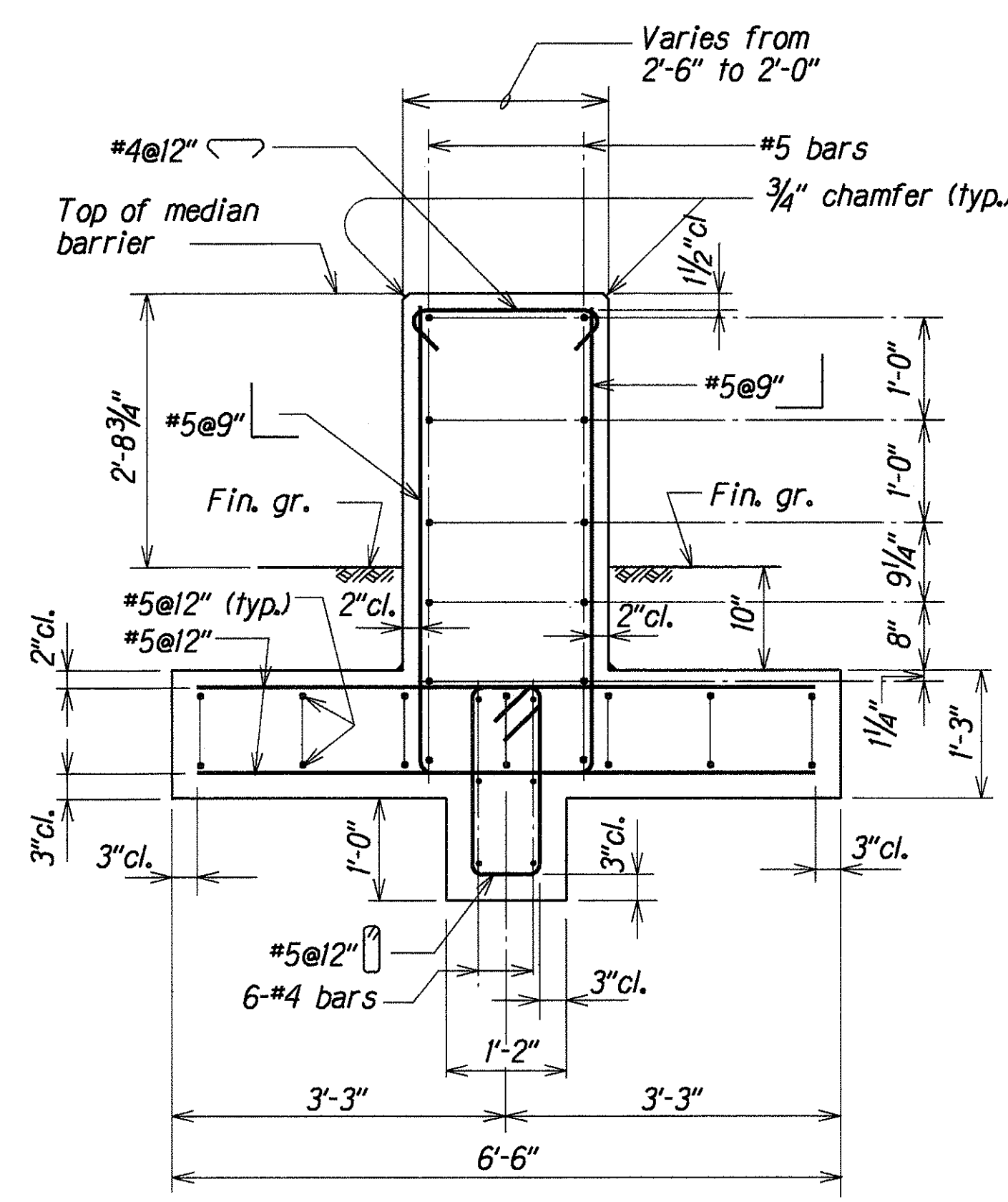
Scale: As Noted Date: Aug. 1999

SHEET No. Q5 OF 10 SHEETS

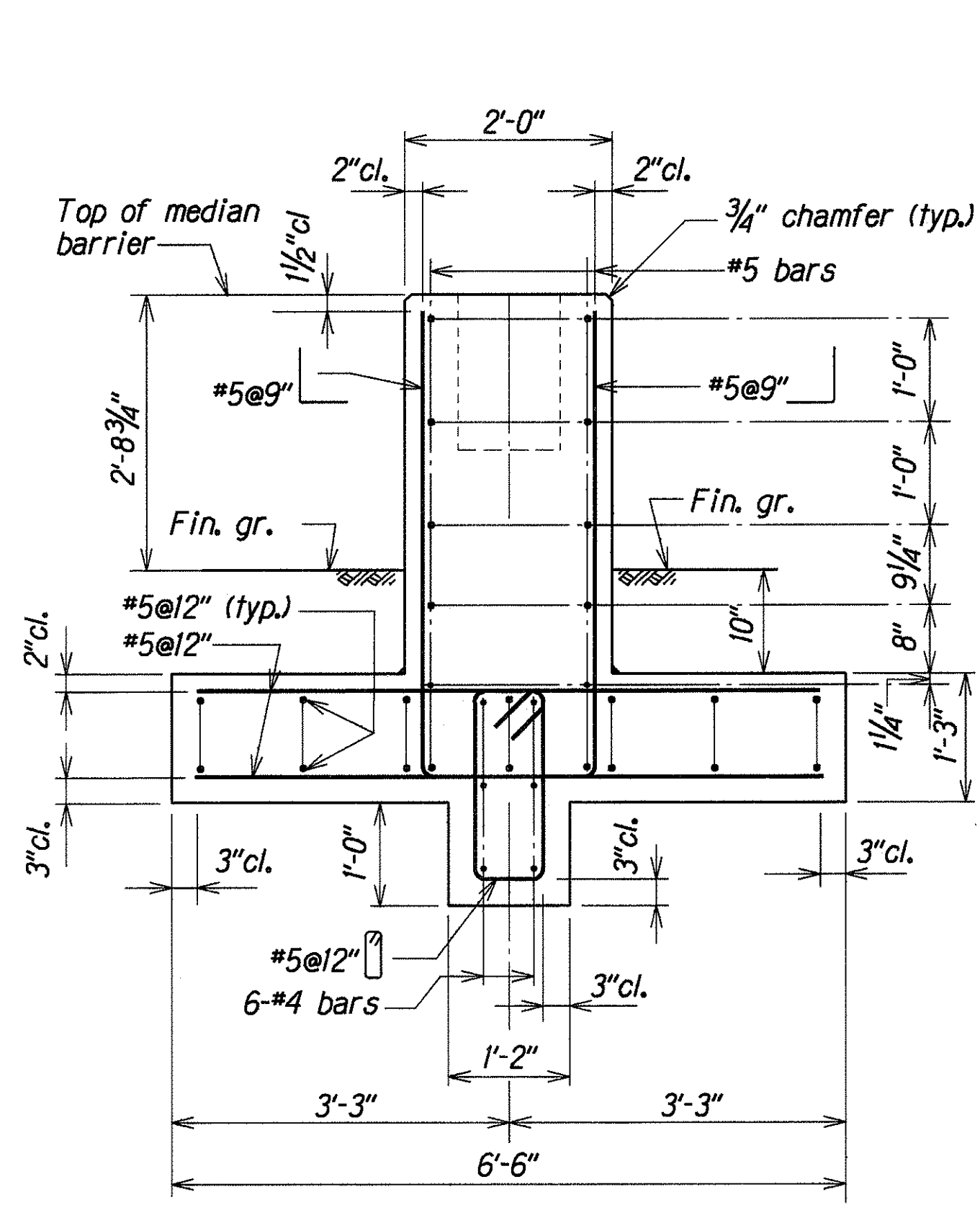
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
L-HAWAII	HAW.	STP-065-1(6)	2000	17	47



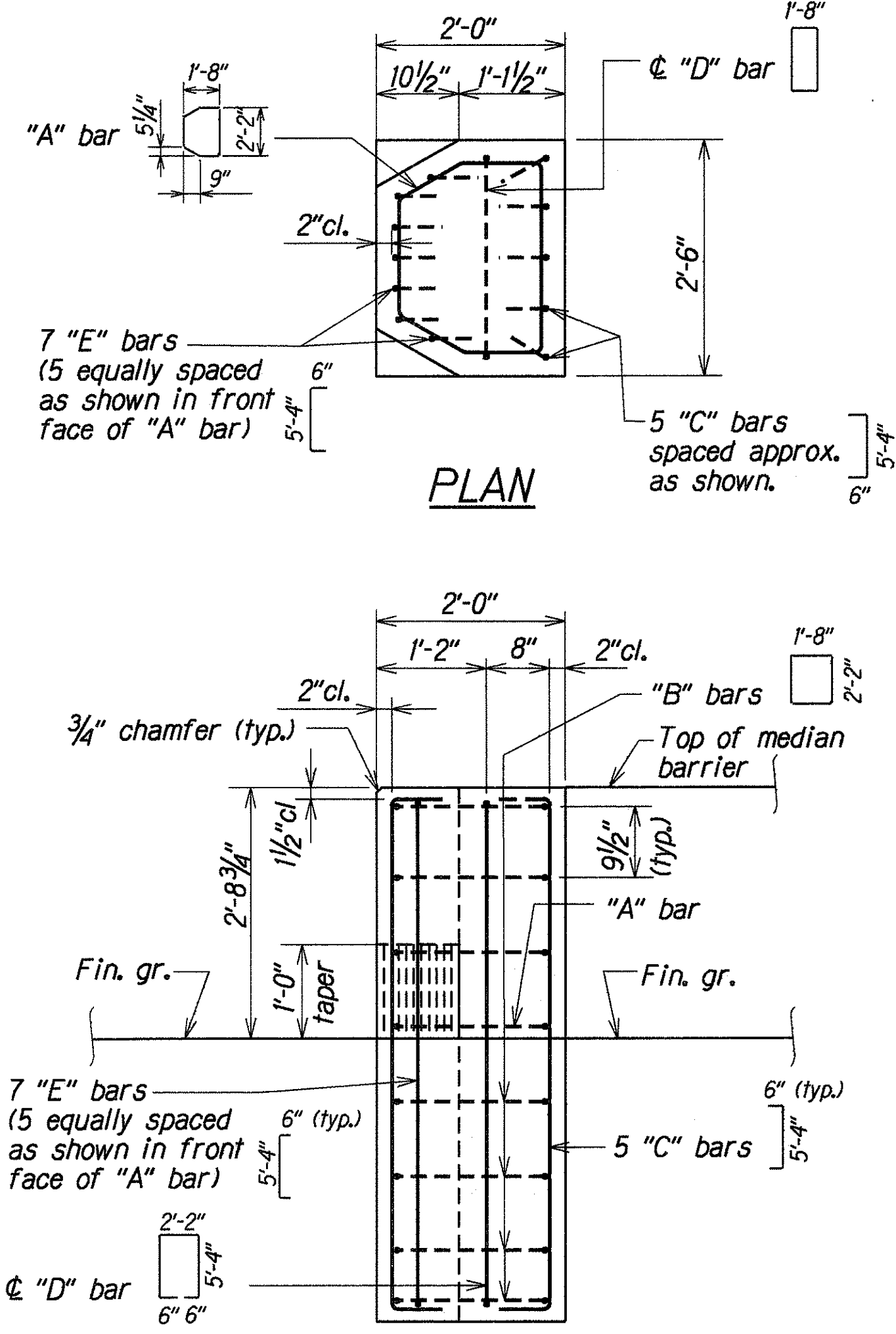
SECTION A
Scale: 3/4"=1'-0"



SECTION B
Scale: 3/4"=1'-0"



SECTION C
Scale: 3/4"=1'-0"



ELEVATION

SECTION D
Scale: 3/4"=1'-0"

TYPE 4I MEDIAN BARRIER AT STA. 35+06.75± TO STA. 35+24.75±

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DESIGNED BY	LM	JULY 1999
CHECKED BY	LM	JULY 1999
NOTED BY	LM	JULY 1999
DATE	LM	JULY 1999

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS

TYPE 4I MEDIAN BARRIER

AT STA. 35+06.75± TO STA. 35+24.75±; PLAN, ELEVATION & SECTIONS

MOKAPU SADDLE ROAD

Traffic Signals at H-3 On-Ramp

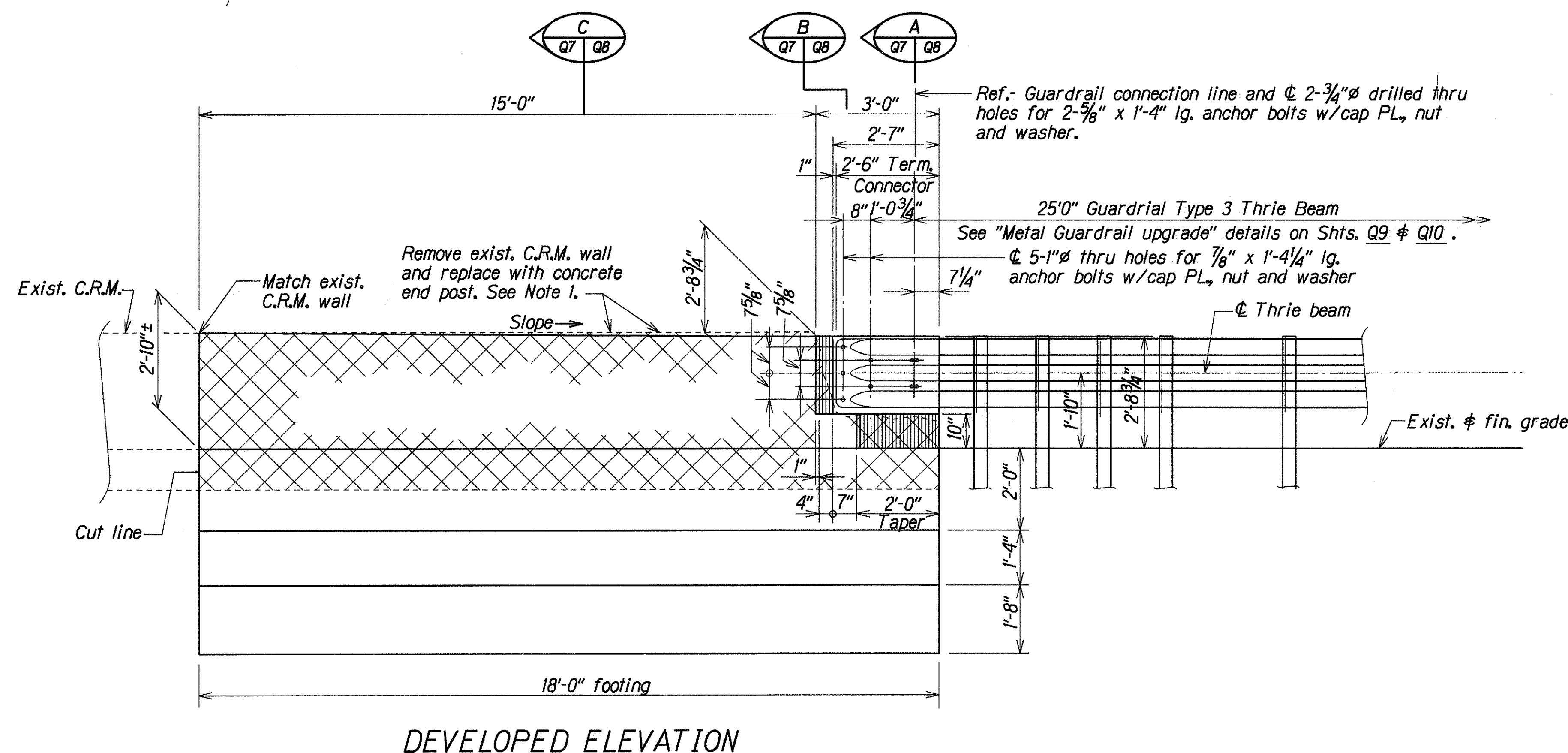
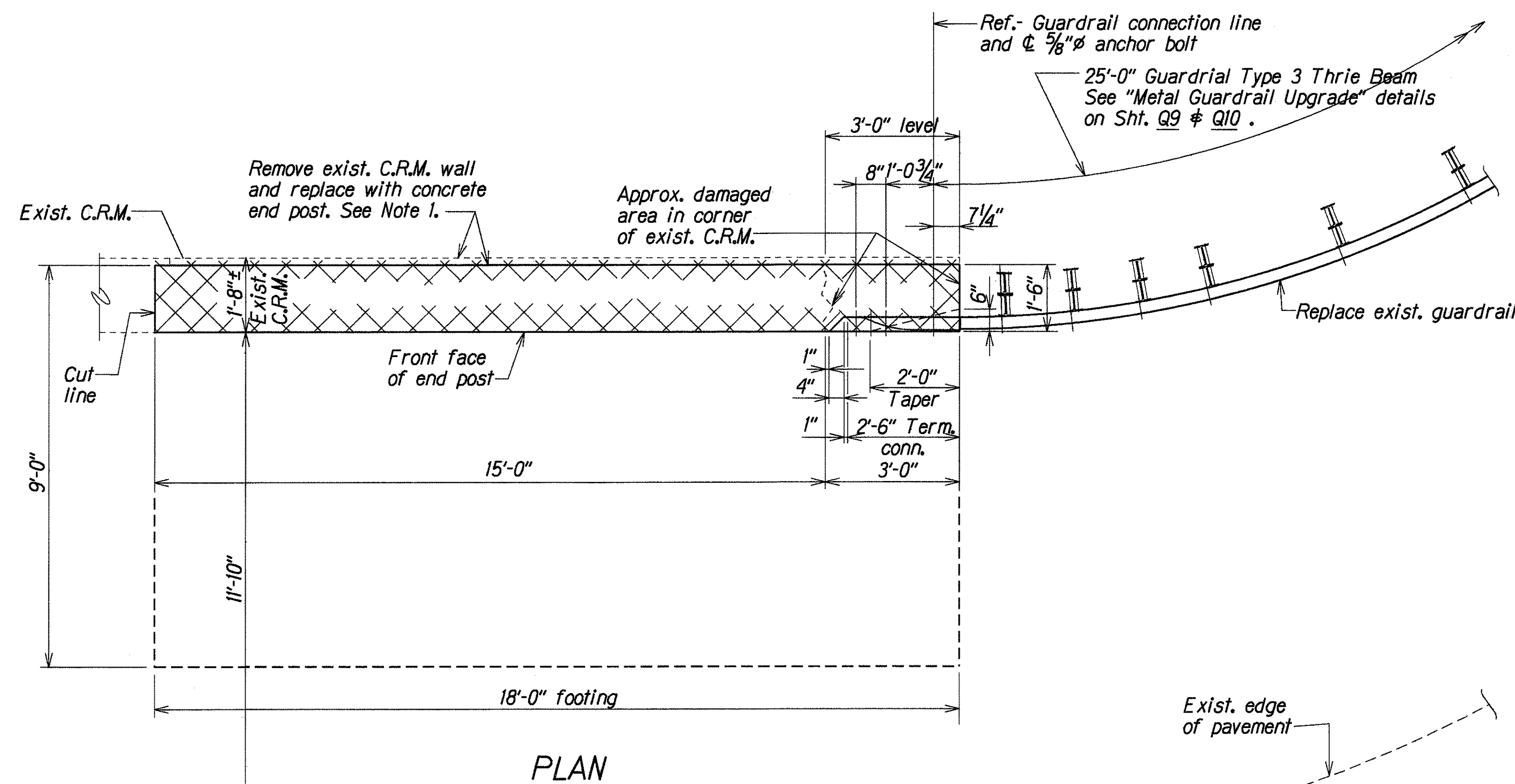
Federal Aid Project No. STP-065-1(6)

Scale: As Noted Date: Aug. 1999

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	18	47

NOTE:

1. Limits of exist. C.R.M. wall removal is shown by x - hatched lines. Removal shall be done in such a manner as to preclude any damage to the existing structures. Large vibratory type of equipment will not be permitted in the removal operation. Only small vibratory hand tools approved by the Engineer will be allowed. Any damage to the existing structure due to the Contractor's operation or negligence shall be repaired at his expense with not additional cost to the State, and to the satisfaction of the Engineer.



TYPE A END POST UPGRADE AT STA. 0+42

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

SURVEY PLOTTED BY	DATE
DRAWN BY	JULY 1999
TRACED BY	JULY 1999
CHECKED BY	JULY 1999
QUANTITIES BY	JULY 1999
CHECKED BY	JULY 1999

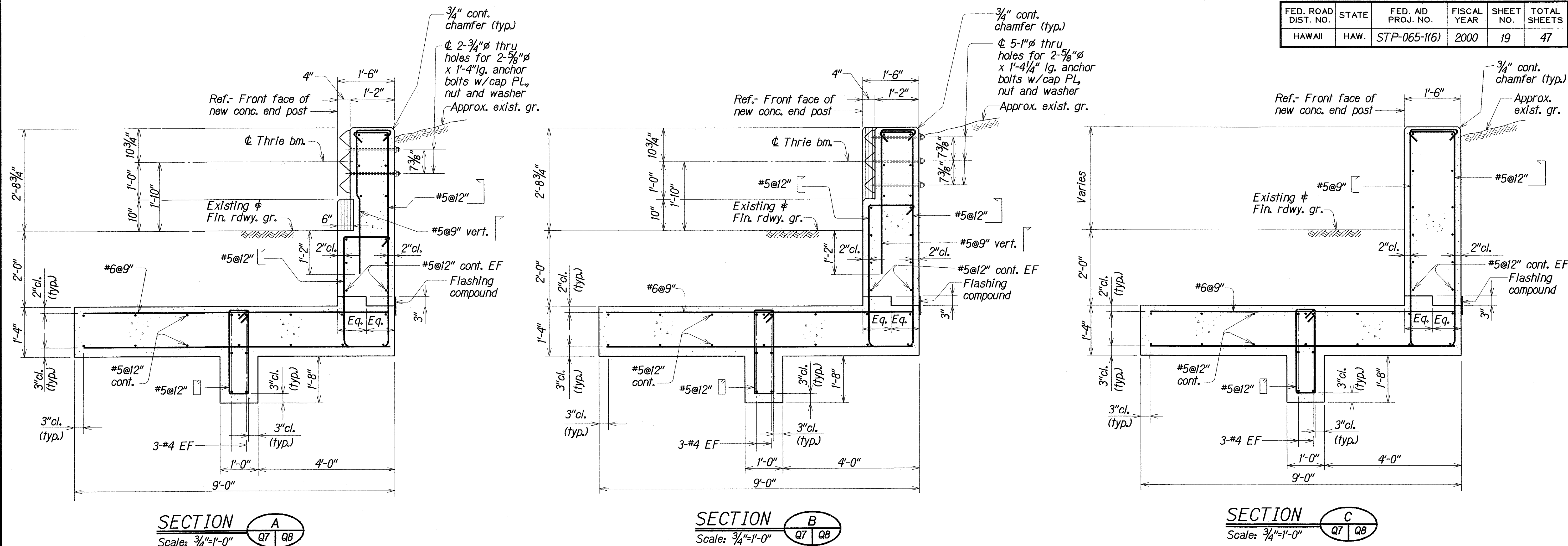
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS
TYPE A END POST UPGRADE AT STA. 0+42
PLAN AND ELEVATION
MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

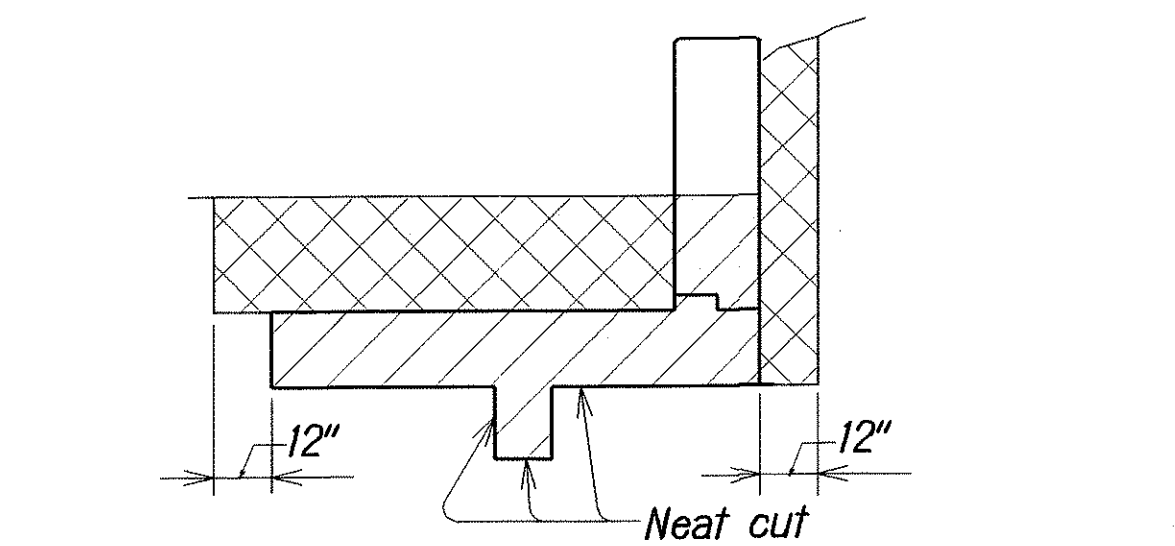
Scale: As Noted Date: Aug. 1999

SHEET No. Q7 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	19	47



TYPE A END POST UPGRADE DETAILS



TYPICAL STRUCTURE EXCAVATION AND BACKFILL

NOTE:

Structure excavation shown thus

Structure backfill shown thus

Structure backfill material shall conform to glassphalt base course. See Section 312 of Standard Specifications.

CLSM (Controlled Low Strength Material for Utilities and Structures). (Field change) See Section 313 of Special Provisions.

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

GUARDRAIL DETAILS

TYPE A END POST UPGRADE AT STA 0+42

SECTIONS

MOKAPU SADDLE ROAD

Traffic Signals at H-3 On-Ramp

Federal Aid Project No. STP-065-1(6)

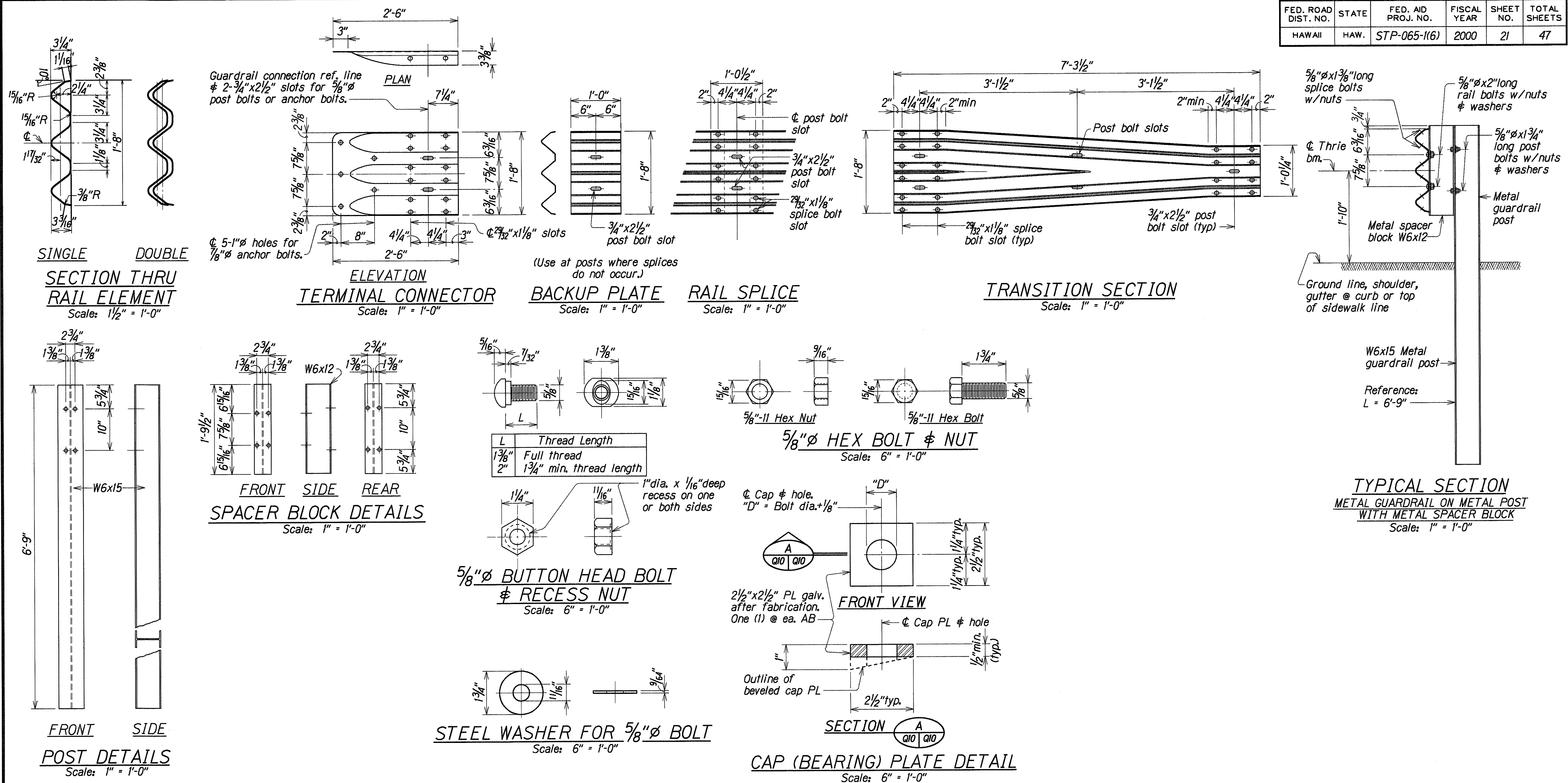
Scale: As Noted

Date: Aug. 1999

ORIGINAL PLAN	DATE
DESIGNED BY	DATE
TRACED BY	DATE
NOTE BOOK	DATE
QUANTITIES BY	DATE
CHECKED BY	DATE

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	21	47



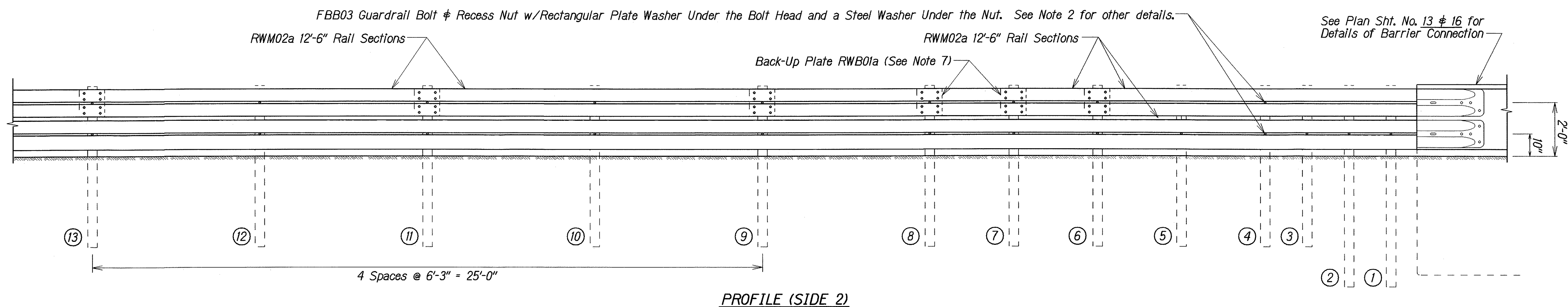
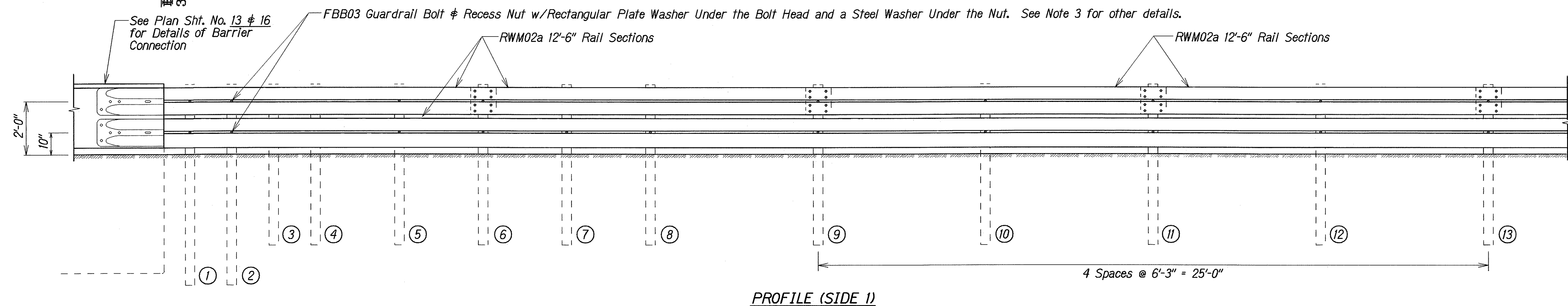
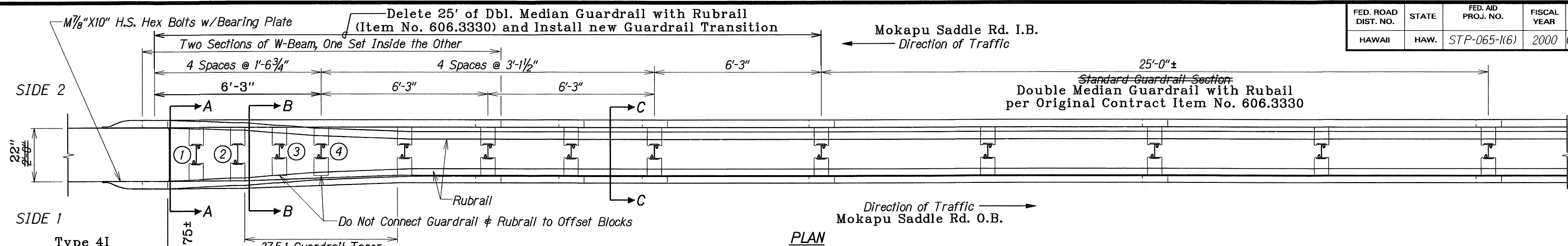
ORIGINAL PLAN	DATE	DESIGNED BY	CHECKED BY
NOTE BOOK	MAY 1999	DESIGNED BY	CHECKED BY
QUANTITIES BY	MAY 1999	DESIGNED BY	CHECKED BY
CHECKED BY	MAY 1999	DESIGNED BY	CHECKED BY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL TYPE 3 METAL GUARDRAIL
THRIE BEAM AND APPURTENANCES DETAILS

MOKAPU SADDLE ROAD
Traffic Signals at H-3 On-Ramp
Federal Aid Project No. STP-065-1(6)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	C.O.21S-1	47



NOTES:

- Standard barrier hardware has been used to develop this guardrail transition. Designations provided related to standard elements detailed in "A Guide on Standardized Highway Barrier Rail Hardware", 1995, AASHTO-AGC-ARBTA Joint Committee.
- Do not bolt side 2 nested W-beam to posts and blocks on posts 1, 2, 3 and 5. Bolt blocks directly to posts.
- Do not bolt side 1 W-beam and rubrail W-beam to posts and blocks on posts 3 and 4. Bolt blocks directly to posts.
- Use of plate washer (FWR01) is optional.

- Offset drill wood blocks for rubrail to sit squarely on the post flange for posts 1 through 4. Secure blocks to posts 1 through 3 with M15 carriage bolts.
- Posts 1, 2, 3, 4 and 6 require an additional hole to attach to lower blocks and/or rubrail.
- At post 7 back-up plate bolted to block only.
- Posts 1 and 2 are W8x13x8'-0". Posts 3 through 12 are W6x8.5x6'-6".

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

GUARDRAIL TRANSITION DETAIL
AT TYPE 41 MEDIAN BARRIER
MOKAPU SADDLE ROAD
Traffic Signals At H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)

Not To Scale
Date: Oct. 2000

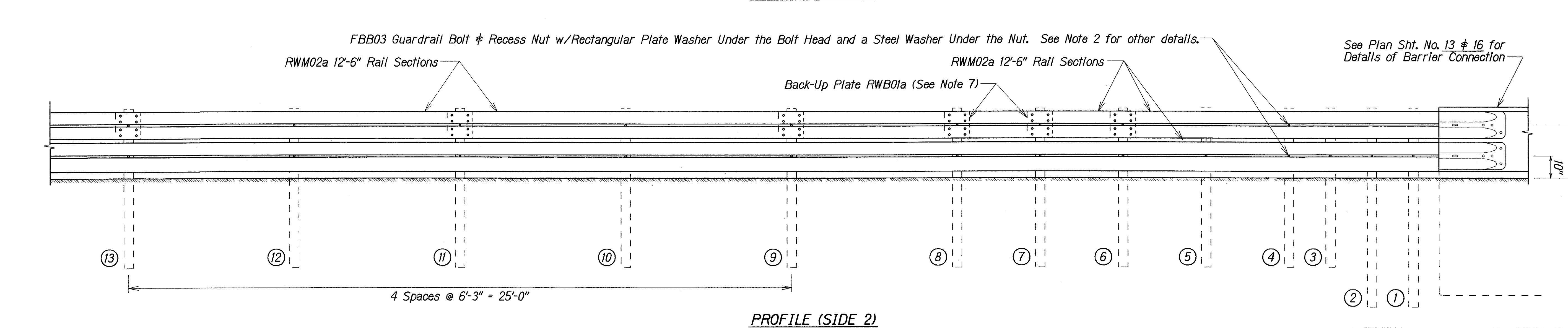
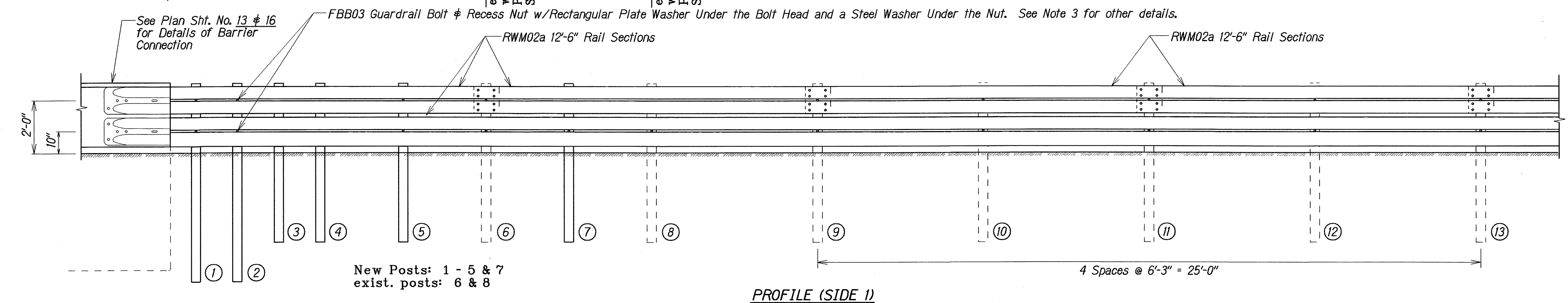
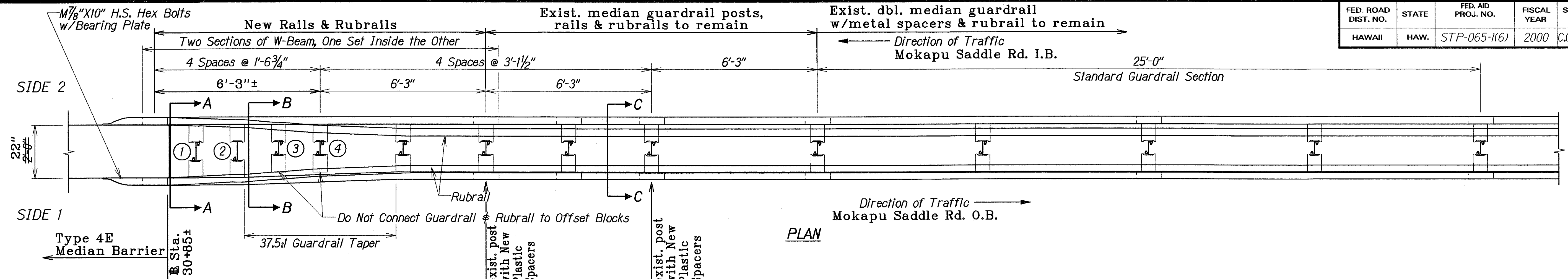
SHEET No. 1 OF 2 SHEETS

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

"AS-BUILT"

C.O. 21S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	C.O.21S-1	47



NOTES:

- Standard barrier hardware has been used to develop this guardrail transition. Designations provided related to standard elements detailed in "A Guide on Standardized Highway Barrier Rail Hardware", 1995, AASHTO-AGC-ARBTA Joint Committee.
- Do not bolt side 2 nested W-beam to posts and blocks on posts 1, 2, 3 and 5. Bolt blocks directly to posts.
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- Offset drill wood blocks for rubrail to sit squarely on the post flange for posts 1 through 4. Secure blocks to posts 1 through 3 with M15 carriage bolts.
- Posts 1, 2, 3, 4 and 6 require an additional hole to attach to lower blocks and/or rubrail.
- At post 7 back-up plate bolted to block only.
- Posts 1 and 2 are W8x13x8'-0". Posts 3 through 12 are W6x8.5x6'-6".

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

Note: This tracing prepared during "As-Built" posting.

"AS-BUILT"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

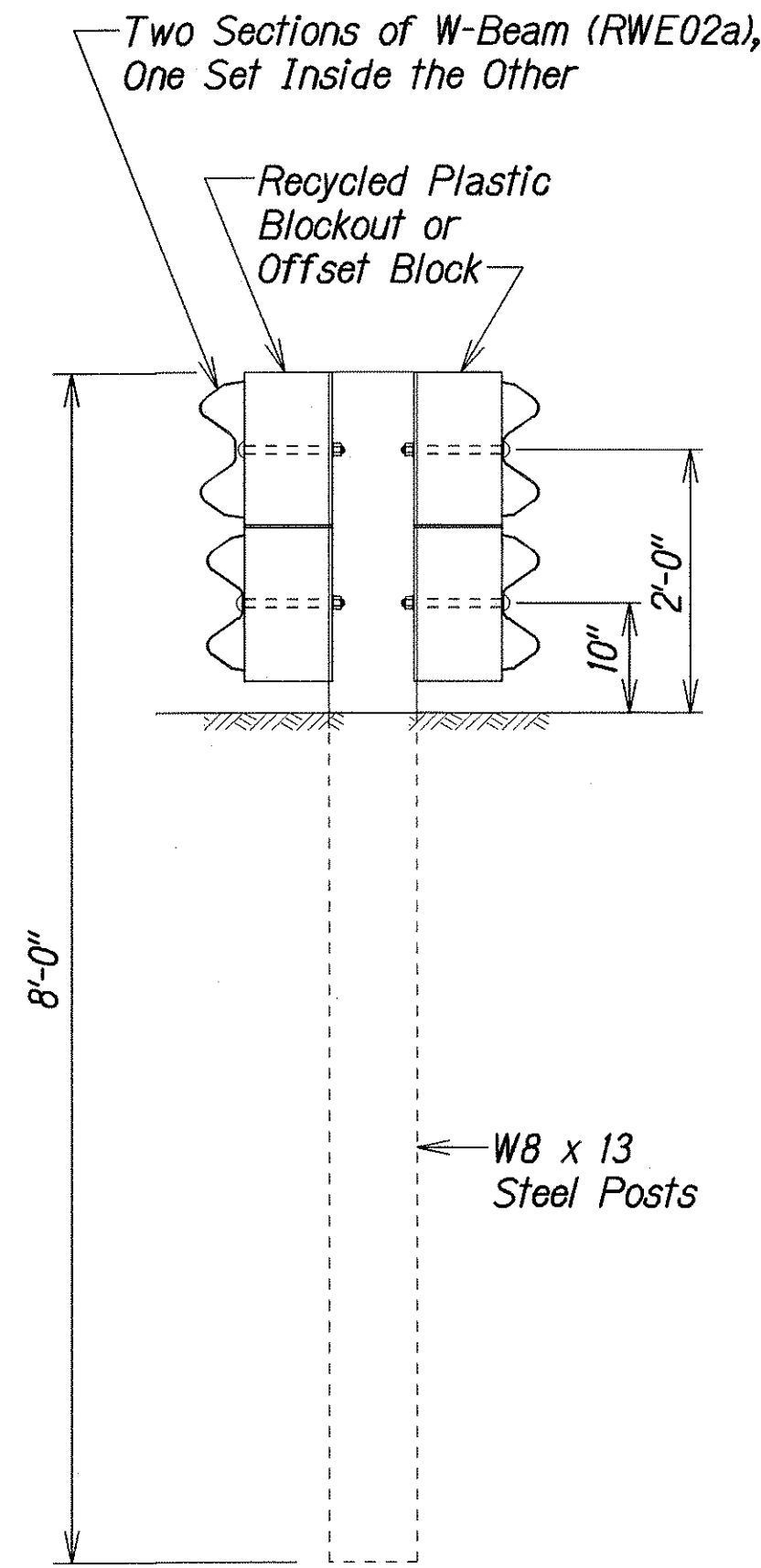
GUARDRAIL TRANSITION DETAIL
AT TYPE 4E MEDIAN BARRIER
MOKAPU SADDLE ROAD
Traffic Signals At H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)
Not To Scale Date: Oct. 2000

SHEET No. 1 OF 2 SHEETS

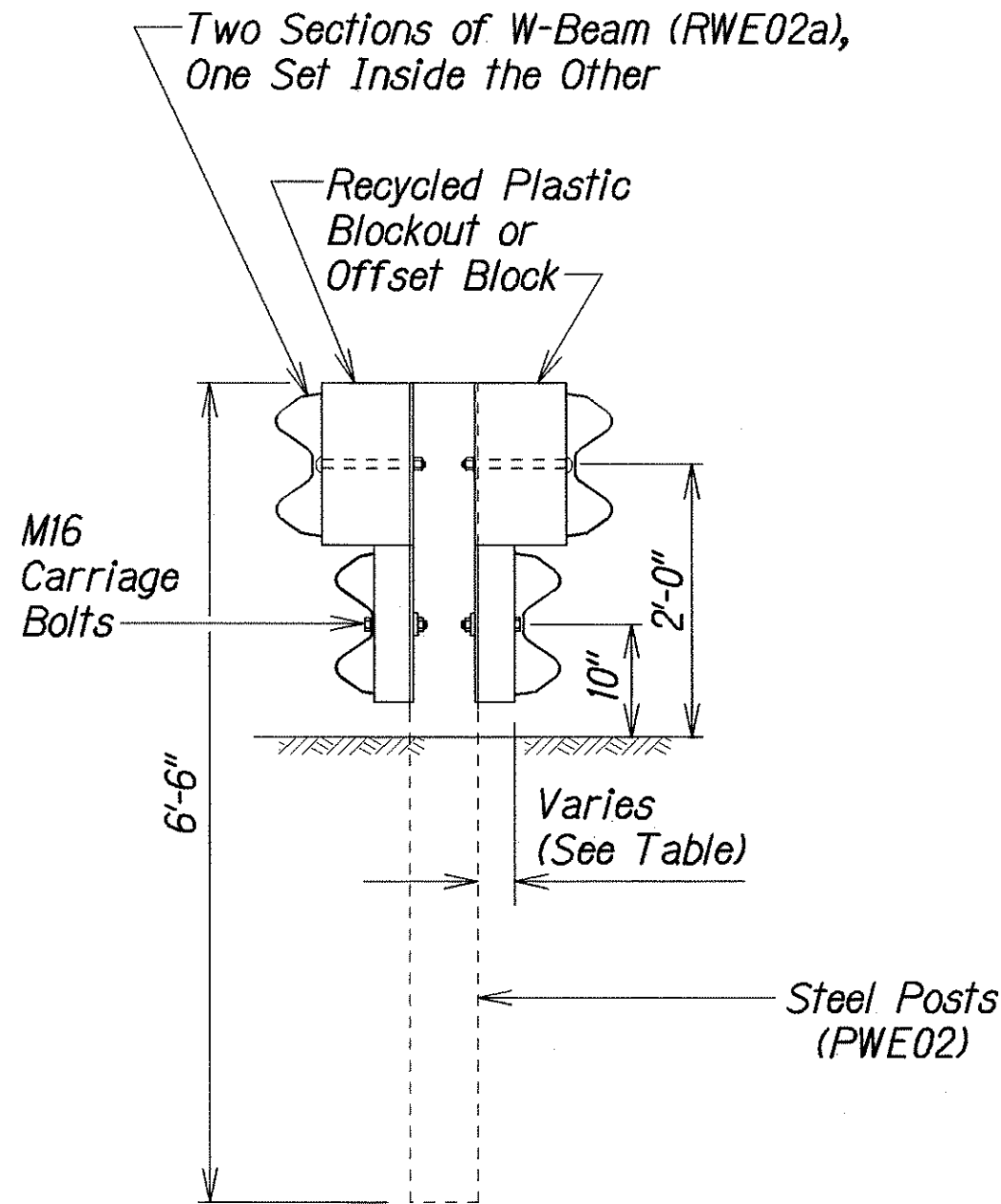
C.O. 21S-1A

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	

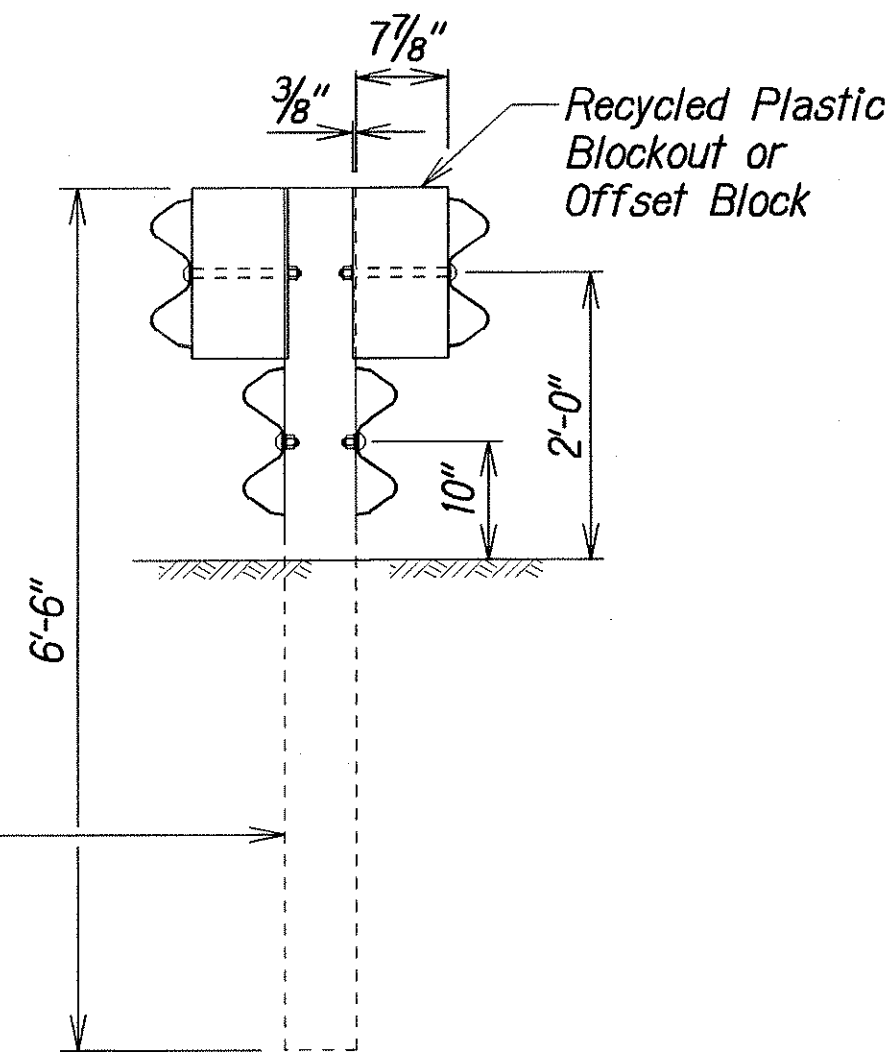
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(6)	2000	C.O.21S-2	47



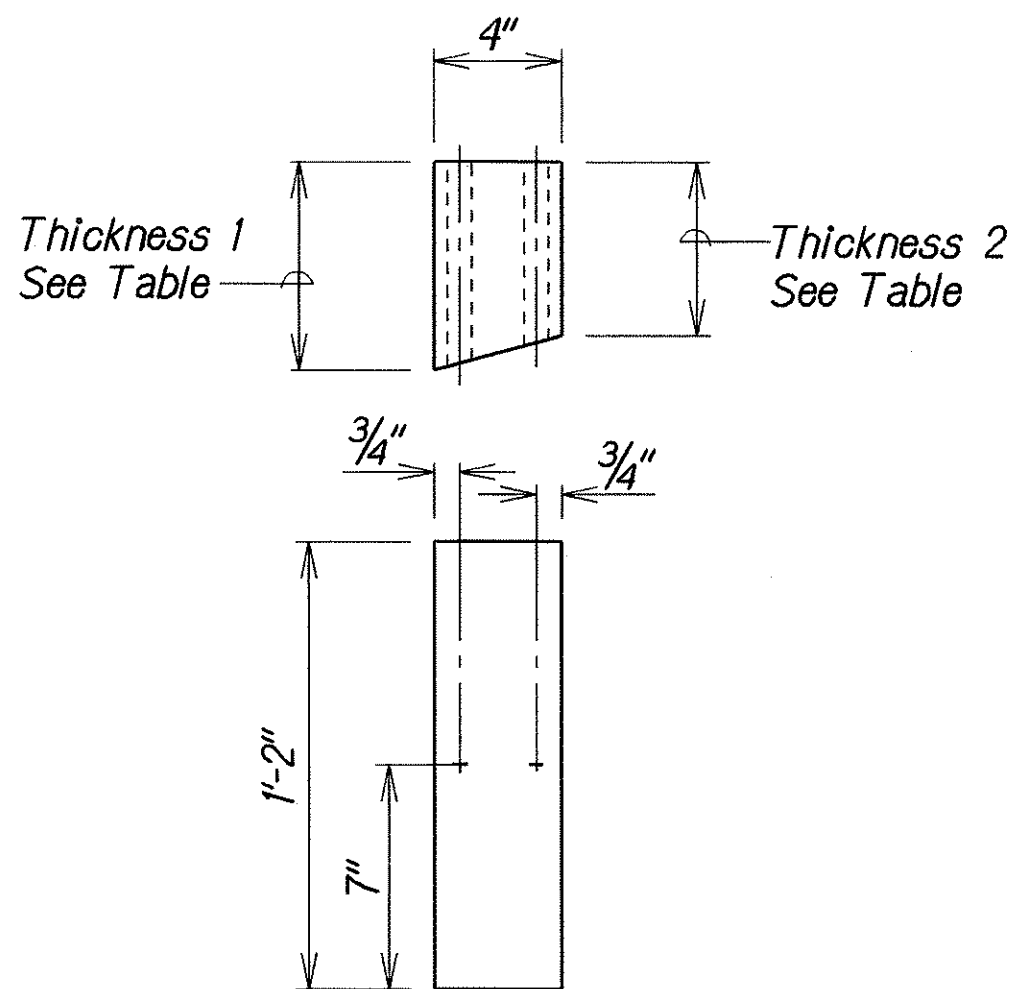
SECTION A-A
(Typ. @ Posts 1 & 2)



SECTION B-B
(Typ. @ Posts 3 & 4)



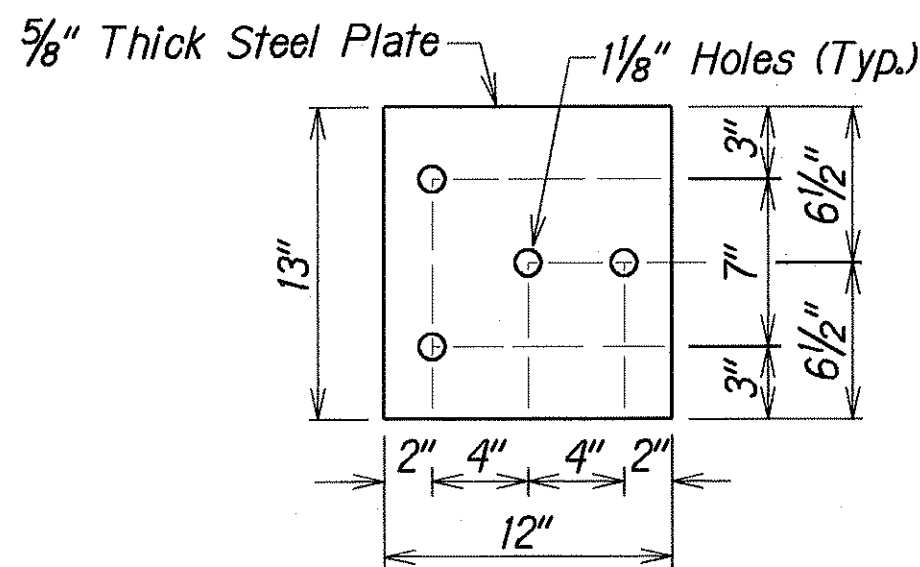
SECTION C-C



WOOD BLOCK
FOR RUBRAIL

WOLMANIZED OR EQUIVALENT

WOOD BLOCKS FOR RUBRAIL 14" X 4"		
POST	THICKNESS 1	THICKNESS 2
①	6 1/2"	6 1/4"
②	5 1/8"	5"
③	4"	3 5/8"
④	2 5/8"	2 3/8"



BEARING PLATE

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

GUARDRAIL TRANSITION DETAIL

MOKAPU SADDLE ROAD
Traffic Signals At H-3 On-Ramp
Fed. Aid Project No. STP-065-1(6)

Not To Scale
Date: Oct. 2000

SHEET No. 2 OF 2 SHEETS

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

"AS-BUILT"

C.O. 21S-2