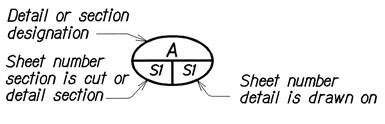
INDEX TO DRAWINGS

ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
507.5000	Lakeside Separation No. 1 - Upgrade Concrete Bridge Railing	LF	334
507.7501	Lakeside Separation No. 1 - Inbound Type "D" Transition Endpost	LS	1
507.7502	Lakeside Separation No. 1 - Outbound Type "D" Transition Endpost	LS	1
507.7505	Station 294+09.50 - Outbound Modified Type "D" Transition Endpost	LS	1
606.7500	Guardrail Type 3 - Thrie Beam Transition	LF	125

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY KMH	JUL 2002
	TRACED BY	JUL 2002
NOTE BOOK	DESIGNED BY DKT	JUL 2002
No. Jmoo001	QUANTITIES BY DKT	JUL 2002
	CHECKED BY PS	JUL 2002

SYMBOLS



GENERAL NOTES

DESIGN SPECIFICATIONS - AASHTO:

1. AASHTO LRFD Bridge Design Specifications, 1998, with 1999, 2000, 2001 and 2002 interim reivisions.

MATERIALS:

1. Reinforced concrete: Class A (f'c = 3,000 psi min.)
2. Reinforcing steel: ASTM A 615, Grade 60.
3. Admixture in concrete: See Special Provisions
4. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.
5. All structural steel shall be ASTM A 36 hot-dip galvanized after fabrication.
6. All anchor bolts, washers and nuts shall be ASTM A 325, hot-dip galvanized after fabrication, unless noted otherwise.
7. All welding shall be in accordance with the AWS Structural Welding Code - Reinforcing Steel AWS D 1.4. - 98.
8. Epoxy shall be "Double Cartridge" type with static mixer. Epoxies that require manual measuring or mixing will not be allowed. Epoxy shall meet the requirements of ASTM C 881, Type IV, Grade 3, Class C.

CONSTRUCTION METHODS:

1. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 Edition and Special Provisions.
2. Except as noted otherwise, all dimensions are measured plumb.
3. For concrete finish, see Special Provisions.
4. For steel reinforcing, all splices shall be staggered where possible.
5. Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.
6. For cast-in-place concrete, minimum reinforcement cover unless shown otherwise: concrete cast against earth: 3" walls: 2"
7. At time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
8. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
9. All footings shall bear on firm undisturbed natural soils or properly compacted structural fill.
10. All existing reinforcing and anchor bolts that can be incorporated in the new work shall be bent as required and cleaned before being utilized in the new work.
11. 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 1½ inches below finish grade and the area patched with mortar.

ABBREVIATIONS

AB	Anchor Bolt	F.F.	Front Face	PL	Plate
Abut.	Abutment	Fin.	Finish	R	Radius
Alum.	Aluminum	Ftg.	Footing	Rdwy.	Roadway
Approx.	Approximate	Ga.	Gage, gauge	Ref.	Reference
℄	Baseline	Galv.	Galvanized	Req'd	Required
Bal.	Balance	gdi	Exist. grated drop inlet	Reinf.	Reinforcing
Beg.	Begin, Beginning	Gr.	Grade	sdmh	Exist. storm drain manhole
Bm.	Beam	Horiz.	Horizontal	Sect.	Section
Brg., Brgs.	Bearing, Bearings	HS	High Strength	Shld.	Shoulder
℄	Center line	IB	Inbound	Sht.	Sheet
cdi	Exist. conc. drop inlet	Jt.	Joint	Spcs.	Spaces
Cl.	Clear	L	Length	Spcg.	Spacing
Col.	Column	LC	Length of Curve	Sta.	Station
Conc.	Concrete	Lg.	Long	Std.	Standard
Cont.	Continuous	Longit.	Longitudinal	Struct.	Structural
CR	Corrosion Resistant	Max.	Maximum	Str.	Structure
Det.	Detail	Min.	Minimum	T&B	Top and Bottom
Dia., ø	Diameter	No.	Number	Term.	Terminal
Diag.	Diagonal	NIC	Not In Contract	Thk.	Thick
Ea.	Each	oc	On Center	TS	Tubular Steel
EF	Each Face	OB	Outbound	Typ.	Typical
EP	Edge of Pavement	OD	Outside Dimension	Vert.	Vertical
Eq.	Equal			w/	with
Exist.	Existing				
Exp.	Expansion				

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	55	234

12. All existing concrete faces receiving new concrete in the finish product shall be roughened and cleaned prior to placement of the new pour, unless indicated otherwise or as directed by the Engineer.
13. Existing structure shown by dashed lines. Limits of removal of existing structure shown by x-hatched lines. Saw-cut 1" deep along cut line of existing structure. 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, nor for drilling of holes. 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 no additional cost to the State, and to the satisfaction of the Engineer.
14. ½" joint to be formed with premolded joint filler. Item is considered incidental and will not be paid for separately.
15. 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 course aggregate.
16. Large impacting or vibratory type equipment will not be permitted in the drilling of holes.
17. The holes for anchor bolts shall be drilled as shown into the existing concrete surfaces prior to fabrication of reinforcing steel elements. If the drill contacts any existing rebar, the hole shall be filled with epoxy grout and a replacement hole shall be drilled. The Contractor shall not damage any existing rebars. Any damage by the Contractor shall be repaired at the Contractor's expense and at no cost to the State. The drilled holes shall be ⅛" larger. Blow the hole clean with compressed air, brush the hole, and blow it clean again. Holes should be clean and sound, and as per the epoxy manufacture recommendations.

REFERENCE:

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

GENERAL:

1. All items noted incidental will not be paid for separately.
2. The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
3. The Contractor shall verify all grades and dimensions in the field before commencing with any work.
4. 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 the Contractor's own expense, to the satisfaction of the Engineer. He 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.
5. Excavation for all footings and footing keys shall be accomplished by maintaining as near a vertical cut as possible.
6. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with a minimum of Class D concrete at the Contractor's expense and as directed by the Engineer.
7. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.
8. Excavating, demolishing and/or disposing existing concrete end post and backfilling for new concrete end post shall not be paid for separately but shall be considered incidental.
9. Where existing endpost has bridge name and year, new end post shall have existing bridge name and year installed, and shall be considered incidental. See Std. Plan Sht. B-01 for details.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

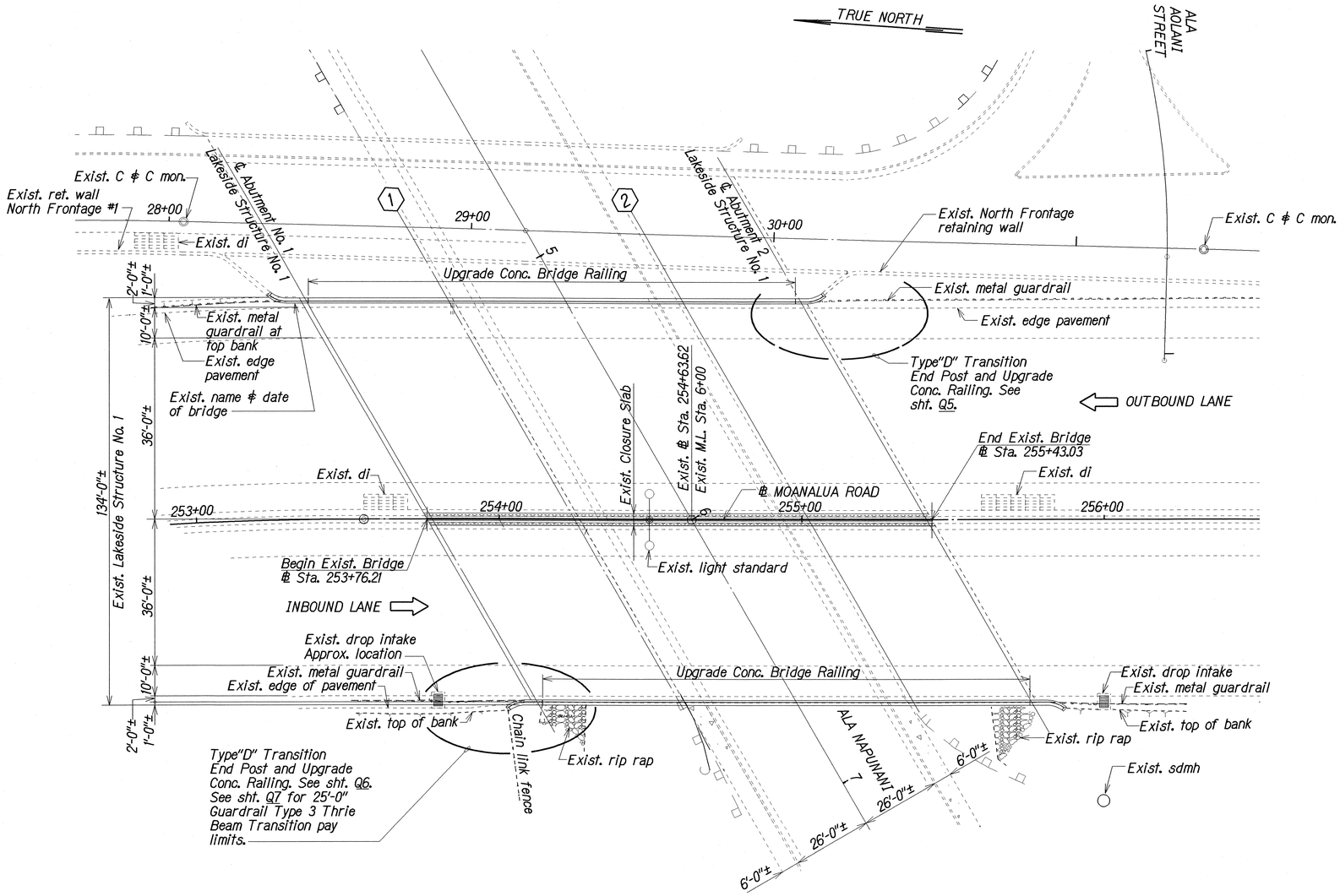
LAKESIDE STRUCTURE NO. 1
INDEX, NOTES, ESTIMATED QUANTITIES ABBREVIATIONS AND SYMBOLS

MOANALUA FREEWAY RESURFACING
Halawa Interchange To Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

SHEET No. Q1 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	56	234



EXISTING LAYOUT PLAN

Scale: 1" = 20'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	LMA — JUL 2002
	DRAWN BY	
	TRACED BY	DKT — JUL 2002
NOTE BOOK	DESIGNED BY	DKT — JUL 2002
	QUANTITIES BY	PS — JUL 2002
No. Imooka	CHECKED BY	

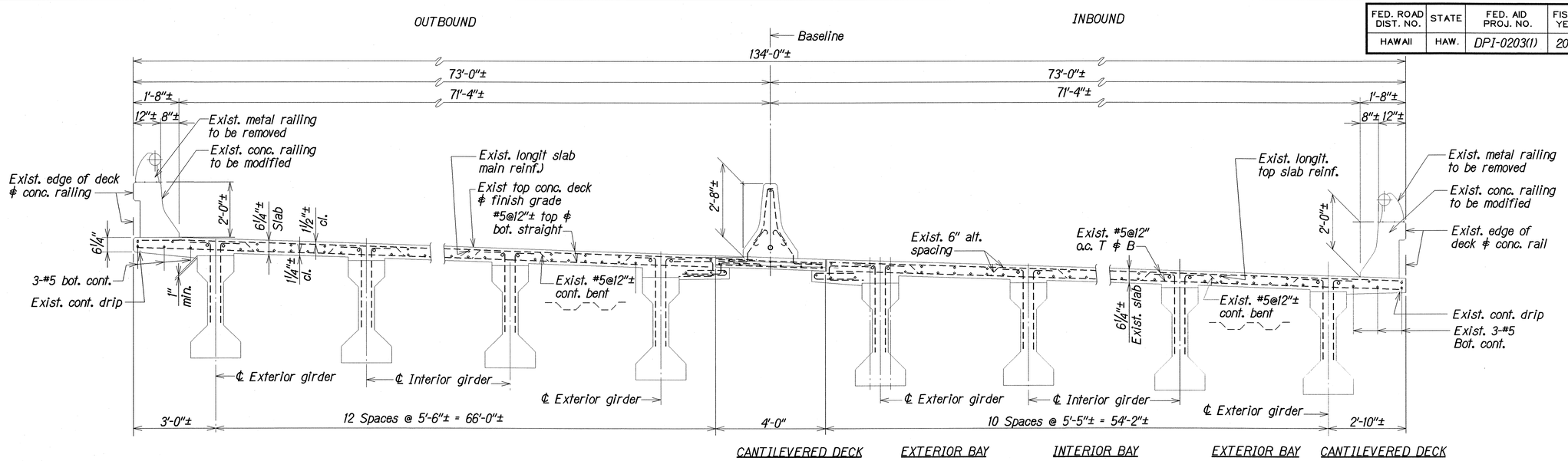
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1
EXISTING LAYOUT PLAN
MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted — Date: July, 2002

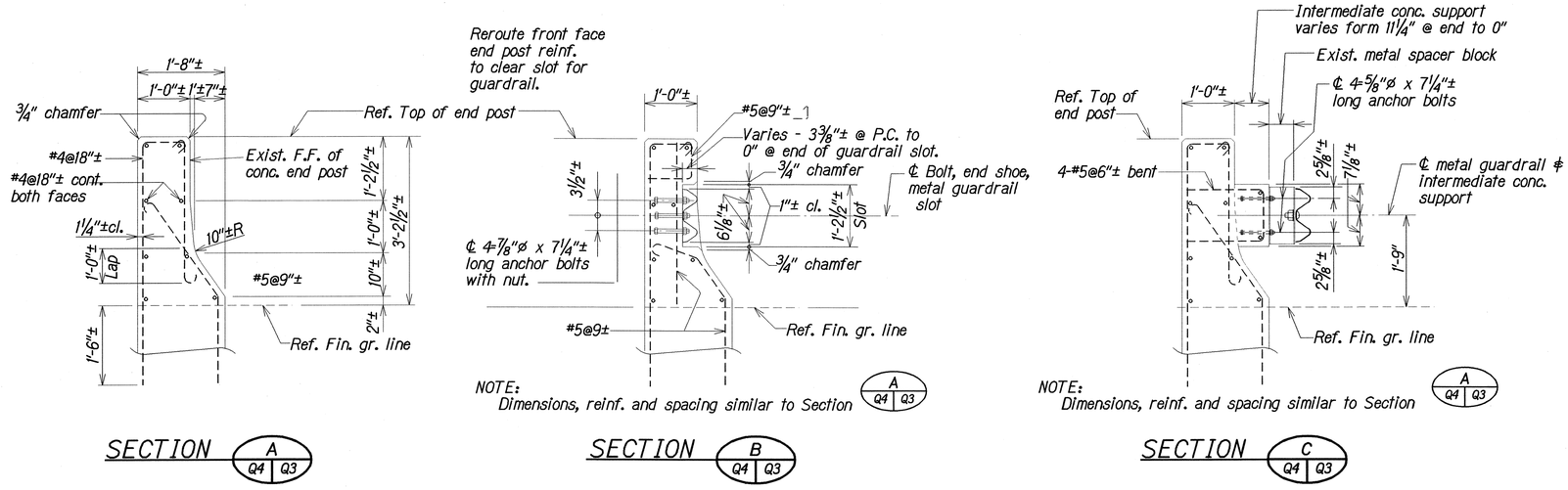
SHEET No. Q2 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	57	234



EXISTING NORMAL DECK SECTION

Scale: ½" = 1'-0"



NOTE: Dimensions, reinf. and spacing similar to Section A Q4 | Q3

SECTION A Q4 | Q3

NOTE: Dimensions, reinf. and spacing similar to Section A Q4 | Q3

SECTION B Q4 | Q3

NOTE: Dimensions, reinf. and spacing similar to Section A Q4 | Q3

SECTION C Q4 | Q3

EXISTING END POST DETAILS

Scale: ¾" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	LMA	DATE	JUL2002
	DRAWN BY			
	TRACED BY			
NOTE BOOK	DESIGNED BY	DKY		JUL 2002
No. Imooth3	QUANTITIES BY	DKY		JUL 2002
	CHECKED BY	PS		JUL 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

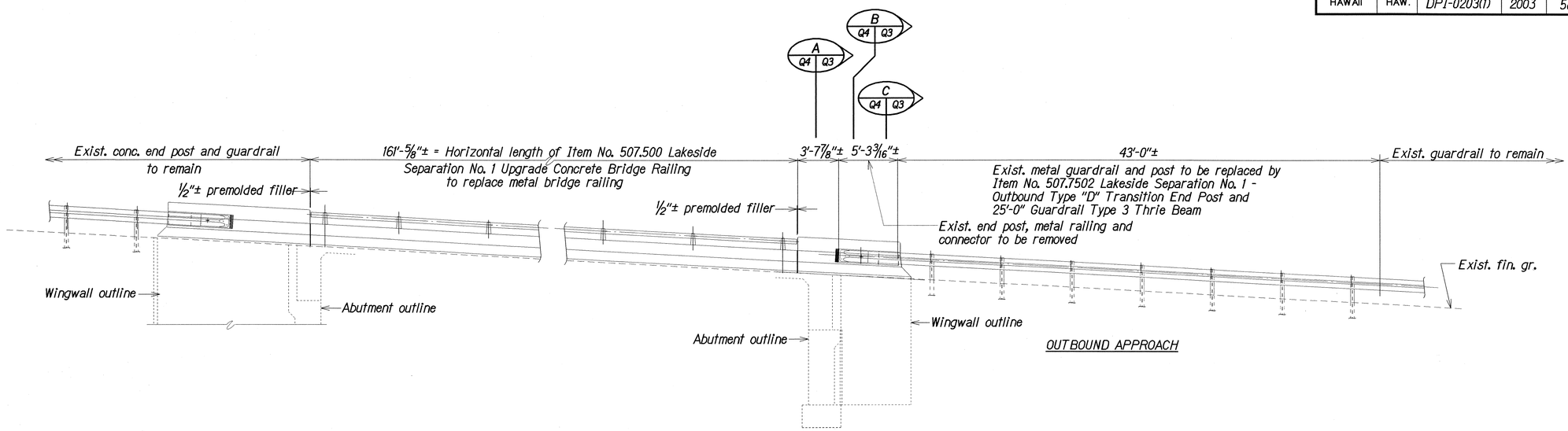
LAKESIDE STRUCTURE NO. 1
EXISTING NORMAL DECK SECTION
EXISTING END POST DETAILS

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July 2002

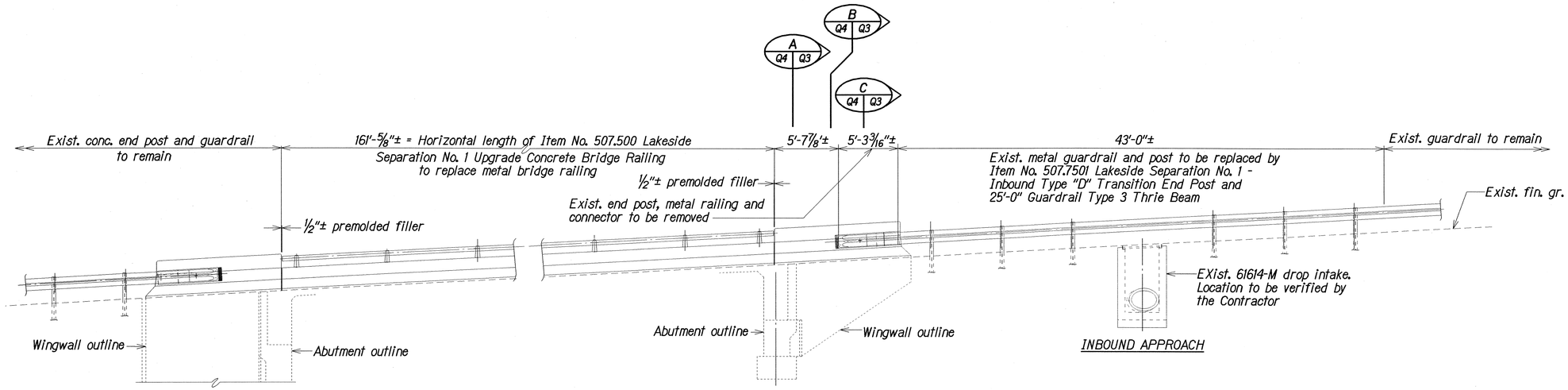
SHEET No. Q3 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	58	234



OUTBOUND APPROACH

OUTBOUND



INBOUND APPROACH

INBOUND

EXISTING ELEVATIONS

Scale: 1" = 5'-0"

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	DRAWN BY		
NOTE BOOK	TRACED BY		
No. Imoabu4	DESIGNED BY	DKT	JUL 2002
	QUANTITIES BY	DKT	JUL 2002
	CHECKED BY	PS	JUL 2002

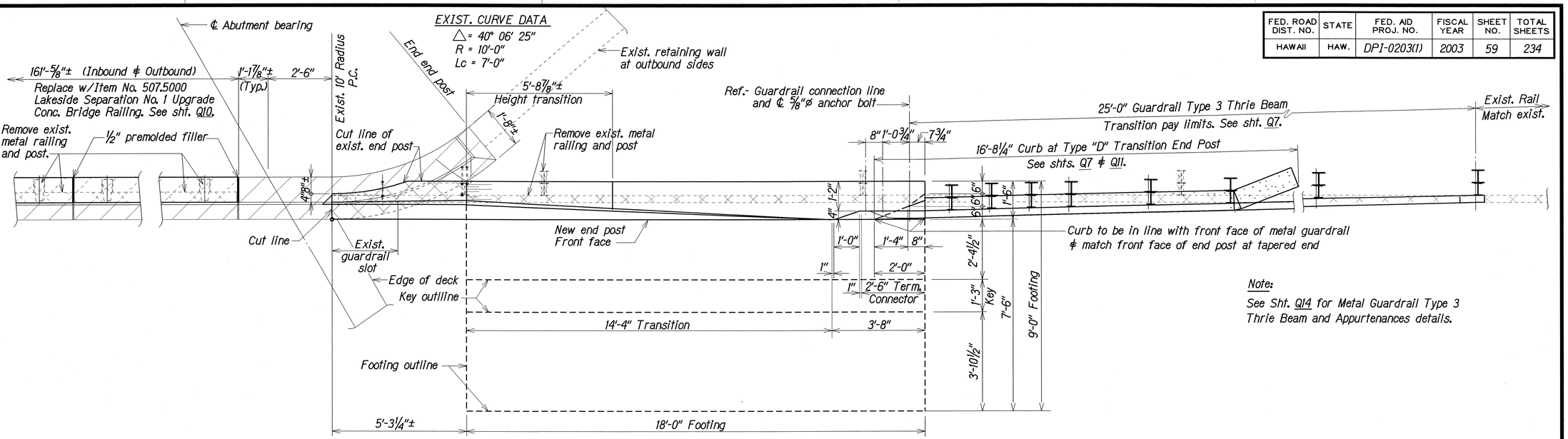
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1
EXISTING ELEVATIONS
INBOUND AND OUTBOUND
MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

SHEET No. Q4 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	59	234



ELEVATION

LAKESIDE SEPARATION NO. 1 - OUTBOUND END POST TYPE "D" TRANSITION

Scale: ½" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	LMA	DATE JUL 2002
	DRAWN BY		
NOTE BOOK	TRACED BY		
No. Initials	DESIGNED BY	DKT	JUL 2002
	QUANTITIES BY	DKT	JUL 2002
	CHECKED BY	PS	JUL 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1
OUTBOUND TYPE "D" TRANSITION END POST - PLAN AND ELEVATION

MOANALUA FREEWAY RESURFACING
Halawa Intrchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted — Date: July, 2002

SHEET No. Q5 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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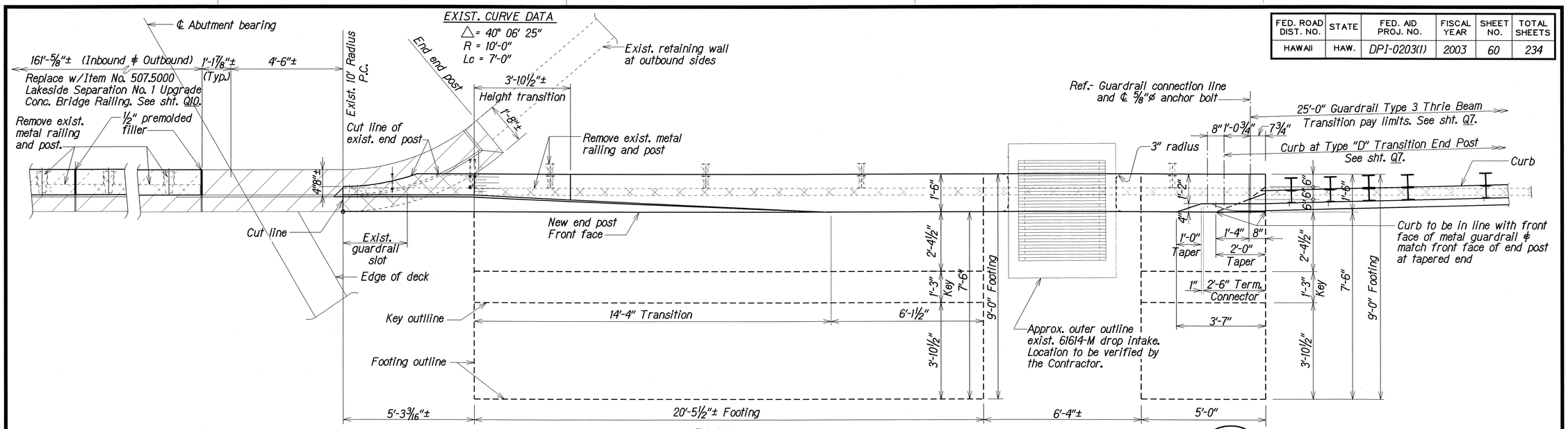

ELEVATION

LAKESIDE SEPARATION NO. 1 - INBOUND TYPE "D" TRANSITION END POST

Scale: ½" = 1'-0"

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY LMA	JUL 2002
	TRACED BY DKF	JUL 2002
NOTE BOOK	DESIGNED BY DKF	JUL 2002
No. Imoo6p6	QUANTITIES BY PS	JUL 2002
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1
INBOUND TYPE "D" TRANSITION END POST - PLAN AND ELEVATION

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

SHEET No. Q6 OF 14 SHEETS

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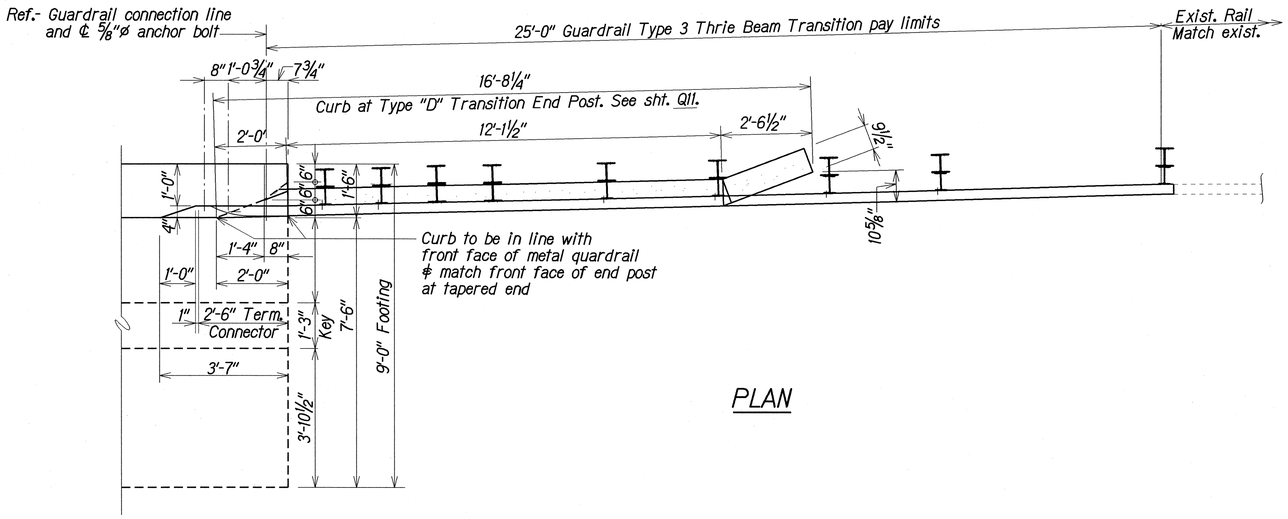
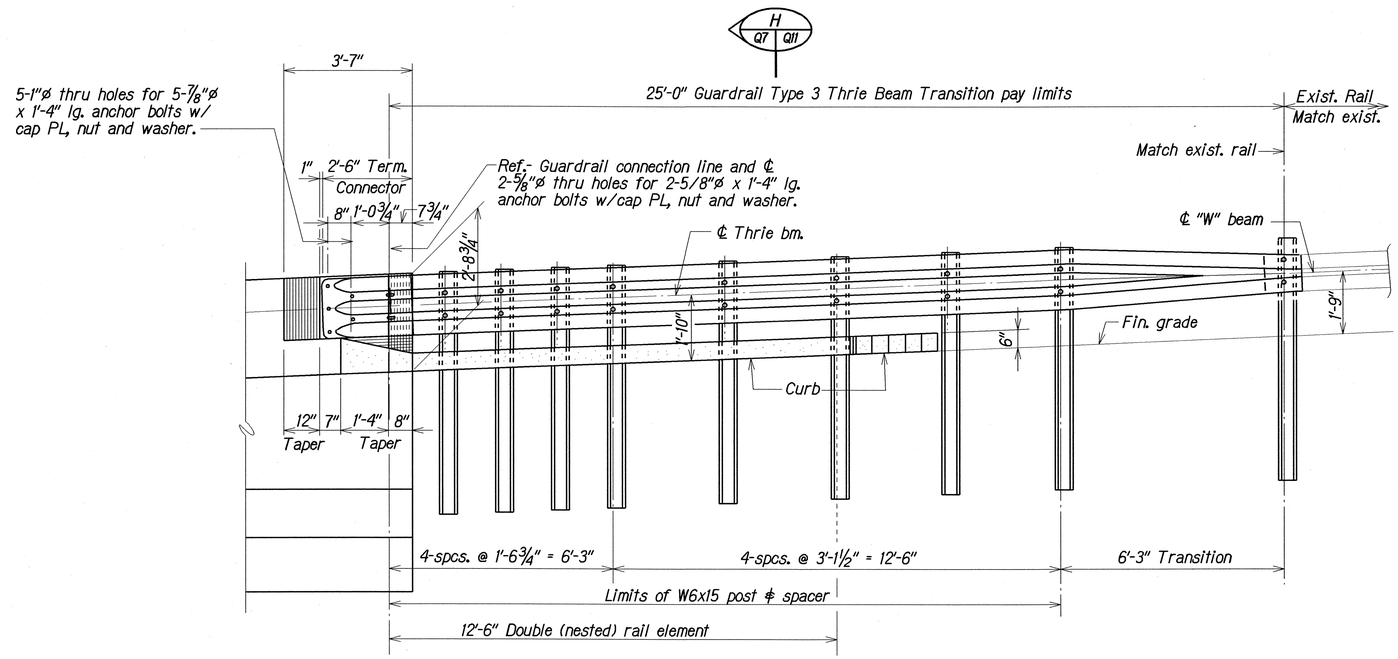
DB3 - Bridge Design Section

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	61	234



PLAN



ELEVATION

LAKESIDE SEPARATION NO. 1 - INBOUND

TYPE "D" TRANSITION END POST - TYPE 3 THRIE BEAM METAL GUARDRAIL

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

Note:

See Sht. Q14 for Metal Guardrail Type 3 Thrie Beam and Appurtenances details.

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY KMN	JUL 2002
	TRACED BY	
	DESIGNED BY DKT	JUL 2002
NOTE BOOK	QUANTITIES BY DKT	JUL 2002
No. 7100007	CHECKED BY PS	JUL 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

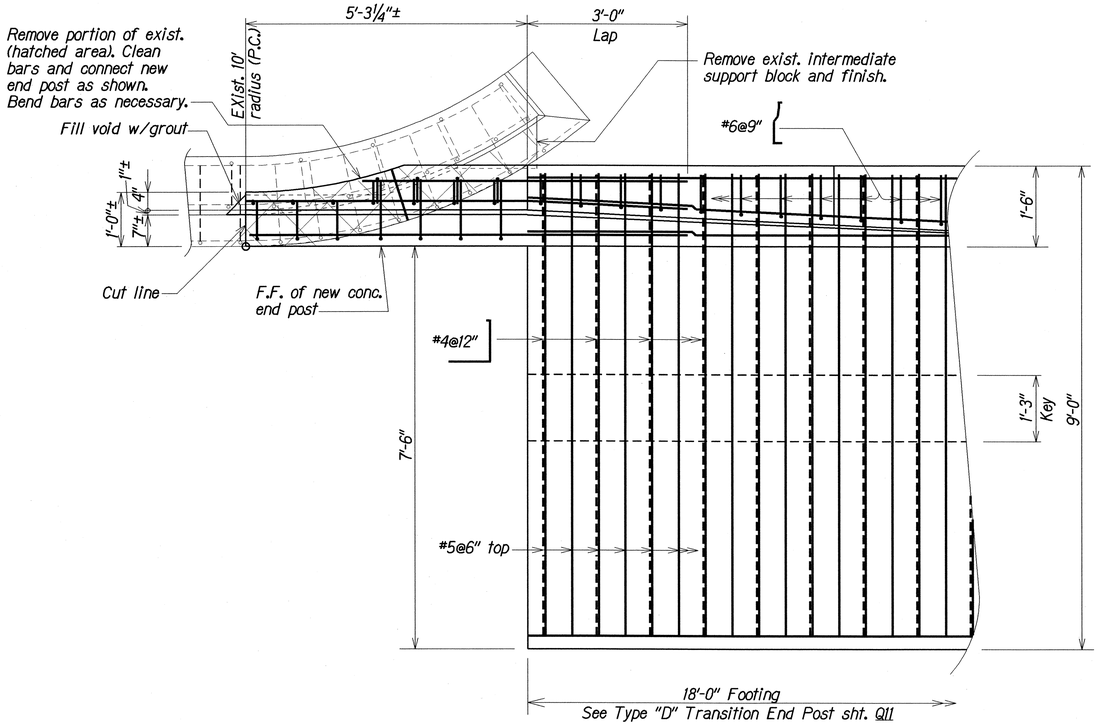
LAKESIDE STRUCTURE NO. 1
INBOUND TYPE "D" TRANSITION END POST
TYPE 3 THRIE BEAM METAL GUARDRAIL
MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

SHEET No. Q7 OF 14 SHEETS

61

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	62	234



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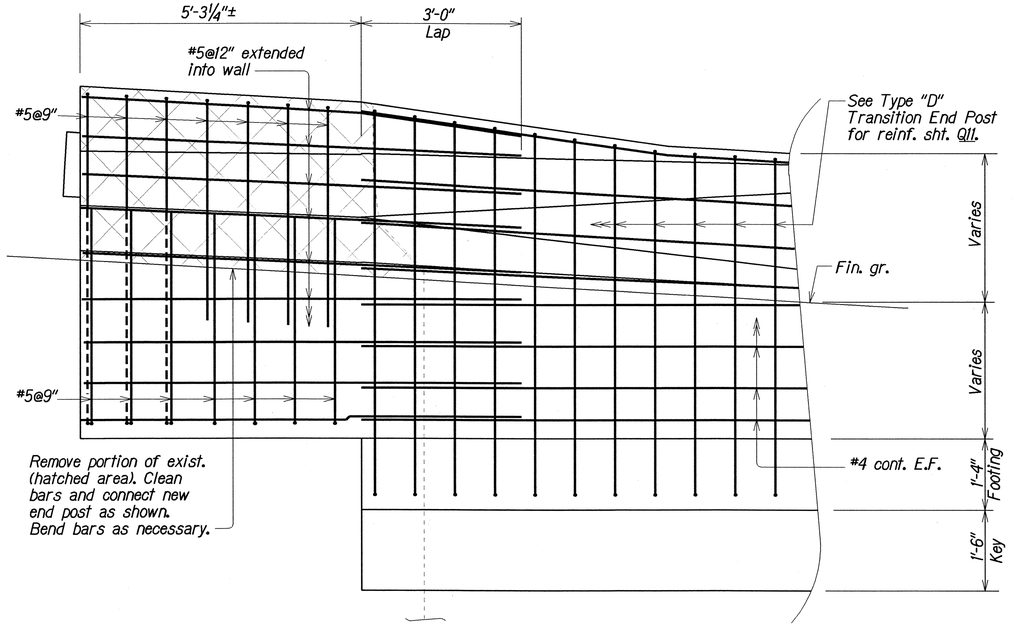
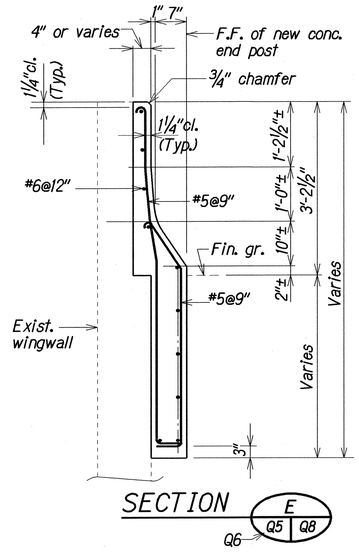


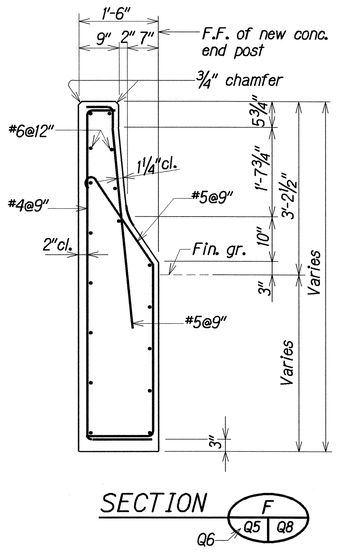
ELEVATION



SECTION E

Q5 | Q8

Q6



SECTION F

Q5 | Q8

Q6

OUTBOUND TYPE "D" TRANSITION END POST CONNECTION TO EXISTING CURVED END POST

Scale: ¾" = 1'-0"

ORIGINAL PLANS	SURVEY PLOTTED BY	LMA	DATE	JUL 2002
	DRAWN BY			
	TRACED BY	DKY		JUL 2002
NOTE BOOK	DESIGNED BY	DKY		JUL 2002
No. Tmoa0068	QUANTITIES BY	PS		JUL 2002
	CHECKED BY			

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1

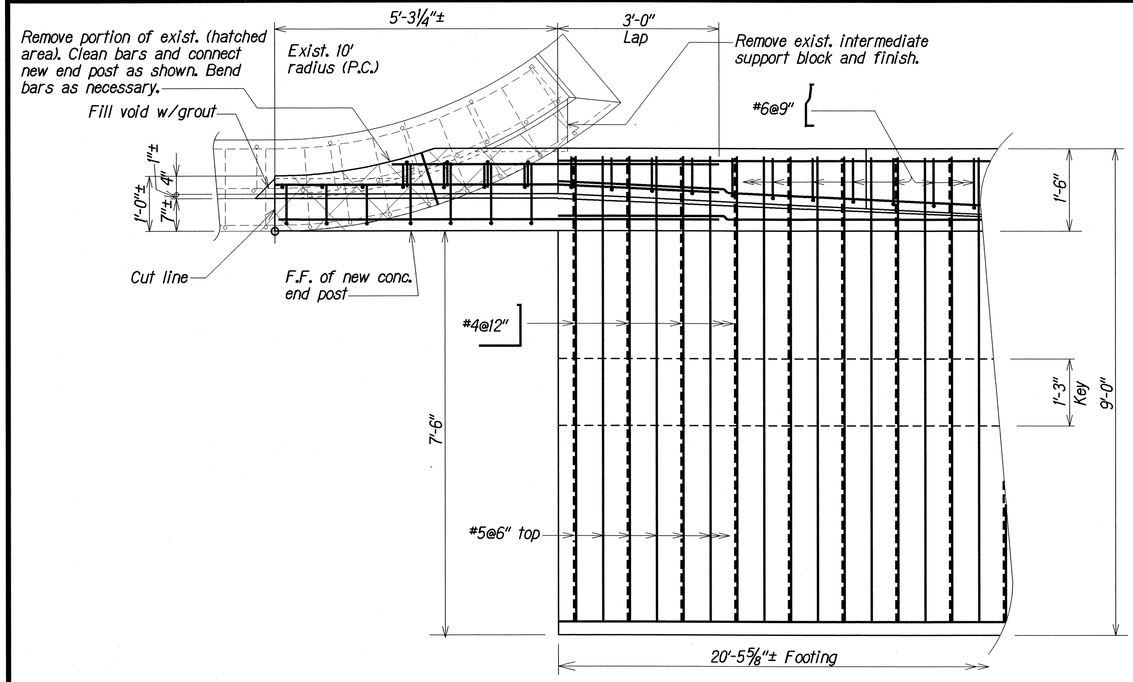
OUTBOUND MODIFIED TYPE "D" TRANSITION END POST CONNECTION TO EXISTING CURVED END POST AND SECTIONS

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

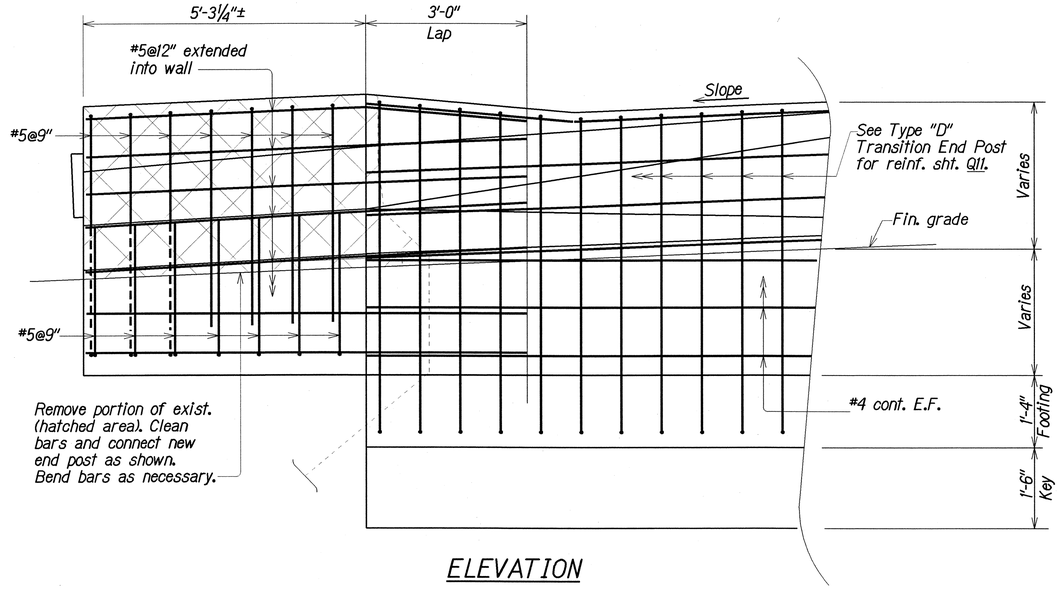
Scale: As Noted Date: July, 2002

SHEET No. Q8 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	63	234



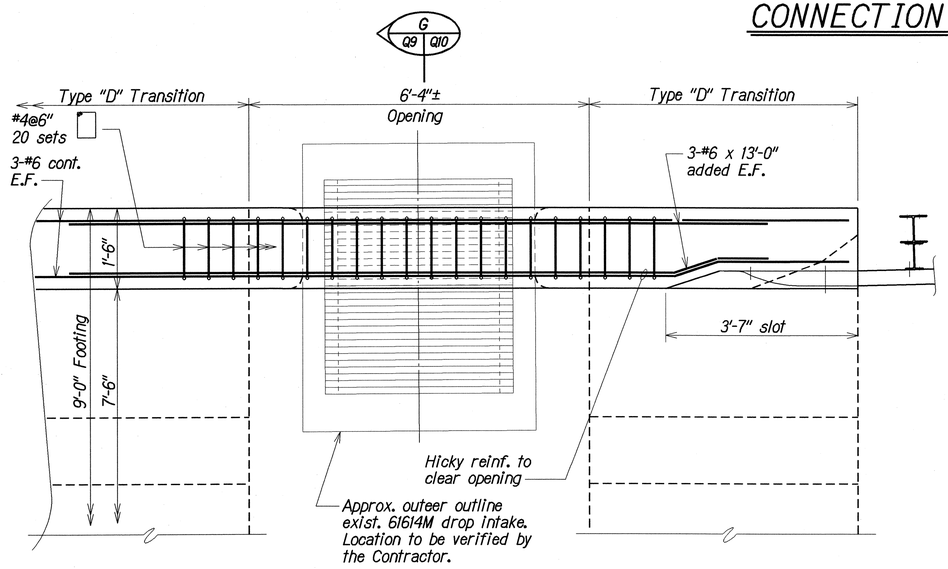
PLAN



ELEVATION

INBOUND TYPE "D" TRANSITION END POST CONNECTION TO EXISTING CURVED END POST

Scale: ¾" = 1'-0"



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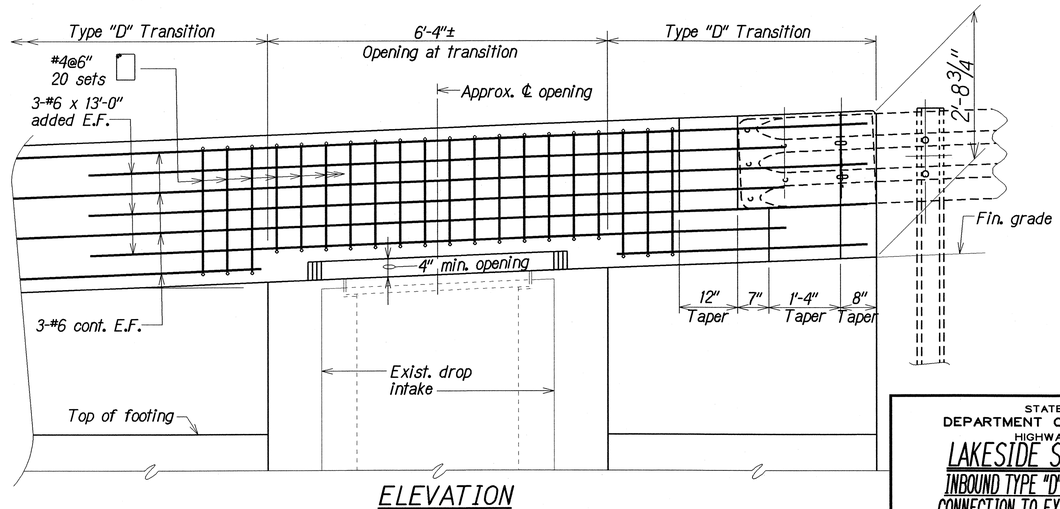

ELEVATION

INBOUND - REINFORCING OVER EXISTING DROP INTAKE

Scale: ¾" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY		DATE
	DRAWN BY	LMA	JUL 2002
	TRACED BY		
NOTE BOOK	DESIGNED BY	DKT	JUL 2002
No. Imodod	QUANTITIES BY	DKT	JUL 2002
	CHECKED BY	PS	JUL 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAKESIDE STRUCTURE NO. 1

INBOUND TYPE "D" TRANSITION END POST CONNECTION TO EXISTING CURVED END POST REINFORCING OVER EXISTING DROP INTAKE

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

SHEET No. Q9 OF 14 SHEETS

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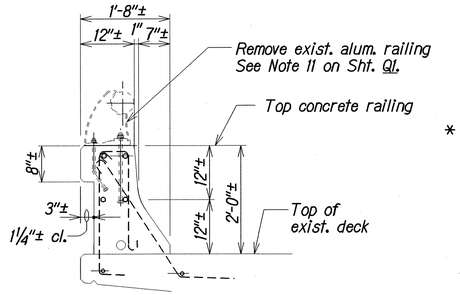
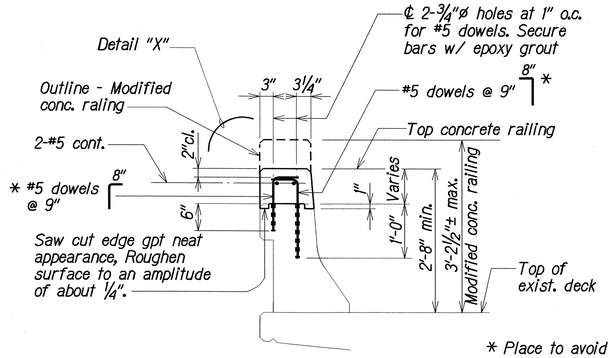
TRK - Bridge Design Section

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	64	234



EXISTING SECTION

Scale: ¾" = 1'-0"



UPGRADE SECTION

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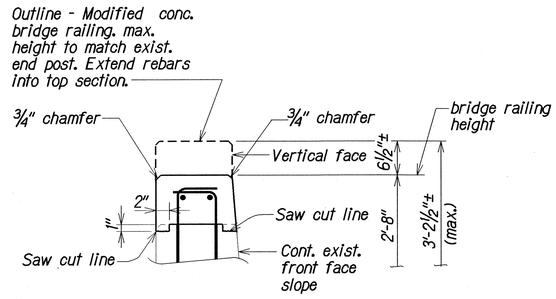
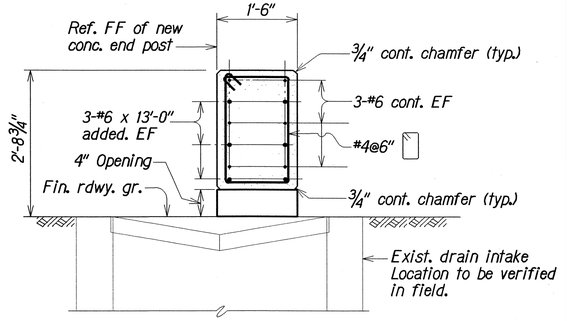


DETAIL "X"

Not to Scale



BEAM SECTION (Over Inbound Drain)

Scale: ¾"=1'-0"

G | Q6 | Q10 | Q9

TYPICAL CONCRETE RAILING UPGRADE

GLARE SCREEN UPGRADE NOTES:

MATERIALS:

A. Reinforced Concrete: Class A (f'c = 3,000 psi min.)

B. Reinforced Steel: See Special Provisions Section 709. All reinforcing bars used for the Guardrail Type 4, Glare Screen Upgrade to Median Barrier shall be deformed.

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.

CONSTRUCTION REQUIREMENTS:

A. The Contractor shall be responsible for determining the location of existing reinforcement by whatever means including the use of scanning devices in his drilling operations

B. The top surface of the concrete glare screen upgrade shall not vary by more than ¼" from the lower edge of a 10 foot long straight edge. Where the ground beneath the barrier has settled, the g;are screen upgrade height shall be increased as necessary (more than 1'-2") to meet the above requirement.

C. The increasing of the glare screen upgrade height (more than 1'-2") shall be considered incidental to Guardrail Type 4, Glare Screen Upgrade to Median Barrier, and will not be paid for separately.

D. Vertical joints on glare screen upgrade shall match the existing barrier joints in location and type and shall be considered incidental to Guardrail Type 4, Glare Screen Upgrade to Median Barrier and will not be paid for separately.

E. The Contractor shall maintan a 2" clearance from the edge of the new concrete glare screen upgrade to existing light standard bases, sign support bases or pier columns

F. The Contarctor shall install new 2" PVC Schedule 80 pipes with appurtenaces as shown and shall be considered incidental to Guardrail Type 4, Glare Screen Upgrade to Median Barrier and will not be paid for separately.

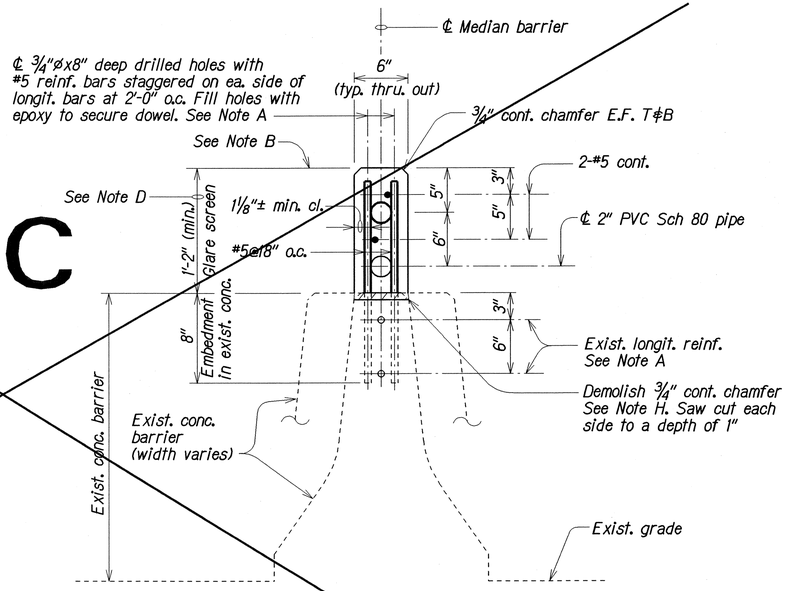
G. Maintain 2" minimum cover unless otherwise shown.

H. Demolish the top of barriers ¾" as shown. For barriers greater than 6" roughen and clean the surface ¼" min. to provide bond with new concrete.

I. All galvanized reinforcing bars shall be securely tied in place with galvanized steel wire prior to pouring of concrete. All stainless steel or stainless steel clad reinforcing bars shall be securely tied in place with AISI 316L stainless steel tie wire prior to pouring of concrete. All chairs and lifts shall be plastic.

J. All reinforcing bars used for the Guardrail Type 4, Glare Screen Upgrade to Median Barrier shall be isolated from direct contact with any adjacent dissimilar steel with ⅛" neoprene tubing. The neoprene tubing shall be sized appropriately and slit longitudinally to slip over the (galcvanized, stainless steel or stainless steel clad) reinforcing.

NIC



TYPICAL SECTION

Scale: 1½" = 1'-0"

GUARDRAIL TYPE 4 GLARE SCREEN UPGRADE TO MEDIAN BARRIER

ORIGINAL PLAN	SURVEY PLOTTED BY		DATE
	DRAWN BY	KMN/LEA/KSG	JUL 2002
	TRACED BY		JUL 2002
NOTE BOOK	DESIGNED BY	DKT	JUL 2002
	QUANTITIES BY	DKT	JUL 2002
No. Imoaloa01	CHECKED BY	PS	JUL 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

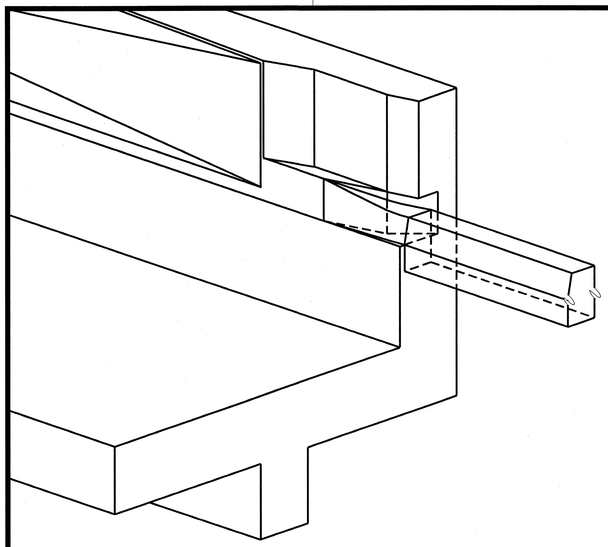
TYPICAL DETAILS
TYPICAL CONCRETE RAILING UPGRADE
BEAM SECTION AT DRAIN

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted Date: July, 2002

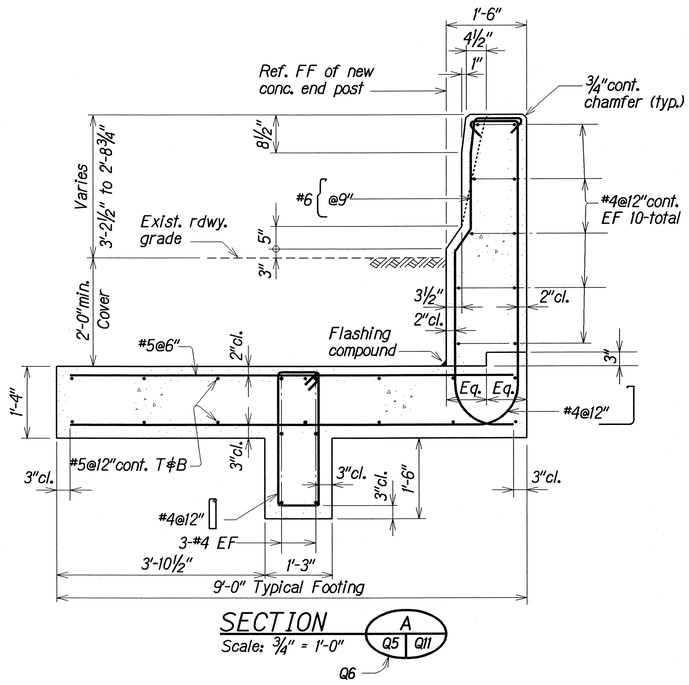
SHEET No. Q10 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	65	234

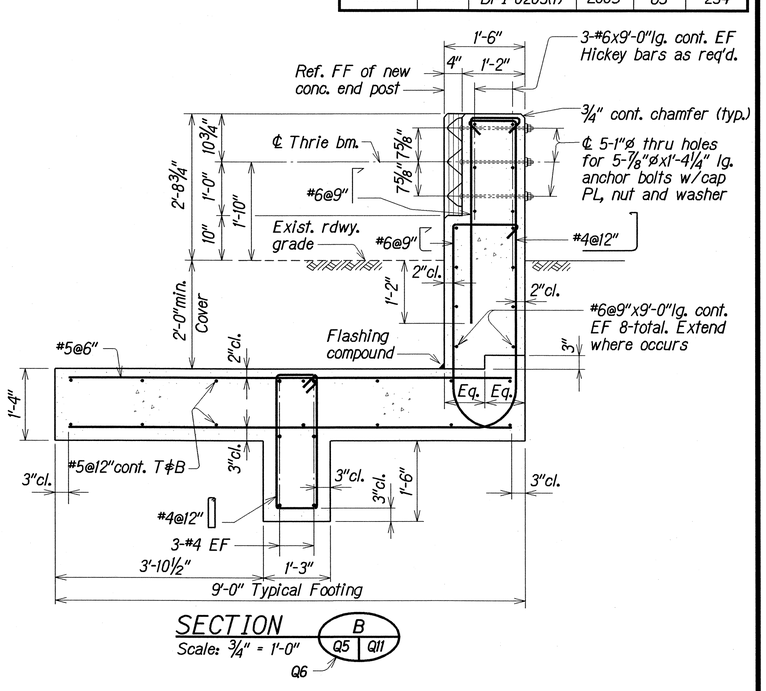


PARTIAL ISOMETRIC VIEW
TYPE "D" ENDPOST

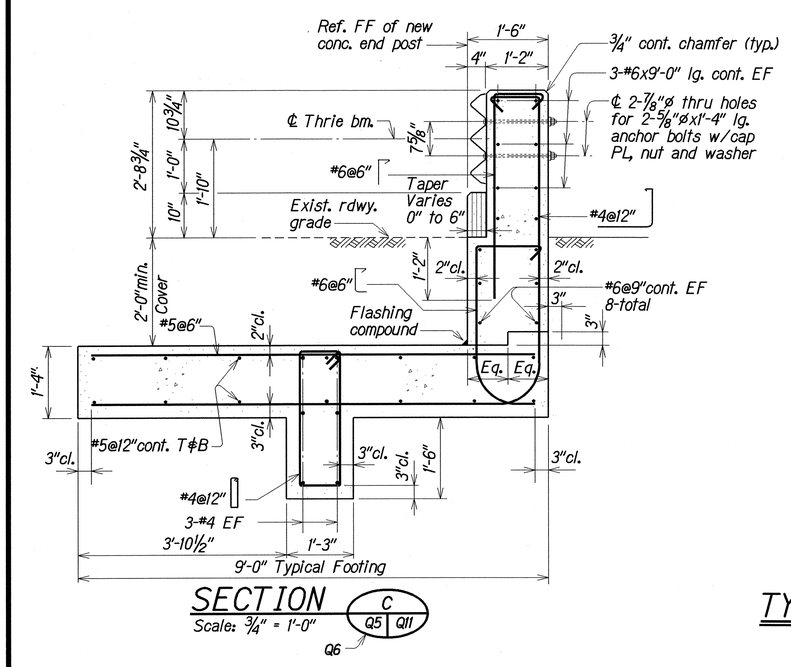
Not to Scale



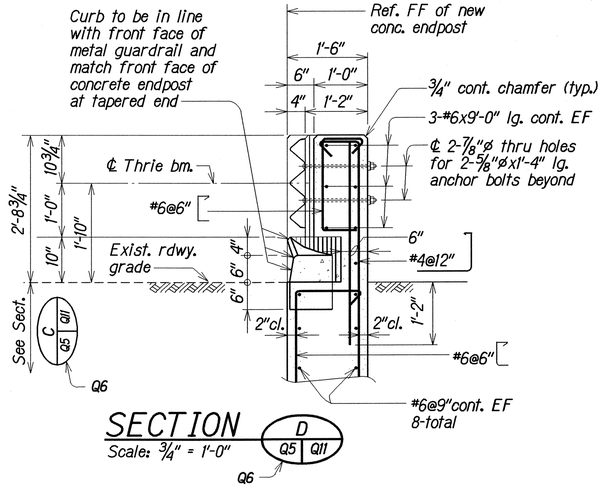
SECTION A (Q5 | Q11) — Q6
Scale: ¾" = 1'-0"



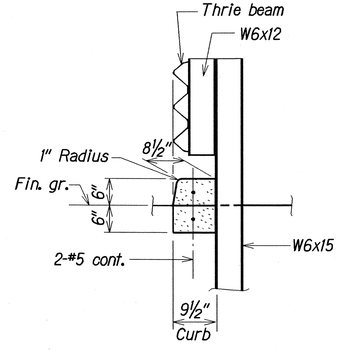
SECTION B (Q5 | Q11) — Q6
Scale: ¾" = 1'-0"



SECTION C (Q5 | Q11) — Q6
Scale: ¾" = 1'-0"



SECTION D (Q5 | Q11) — Q6
Scale: ¾" = 1'-0"



SECTION H (Q5 | Q11) — Q6, Q7
Scale: ¾" = 1'-0"

TYPE "D" TRANSITION END POST DETAILS

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN	JUL 2002
	DRAWN BY		
NOTE BOOK	TRACED BY	DKT	JUL 2002
	DESIGNED BY	DKT	JUL 2002
No. 7mod001	QUANTITIES BY	PTS	JUL 2002
	CHECKED BY		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

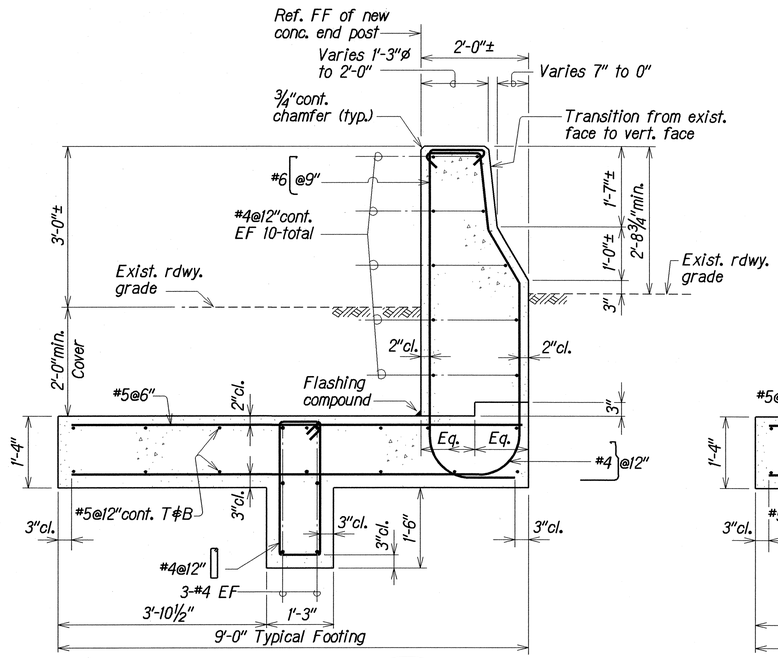
TYPE "D" TRANSITION END POST DETAILS
SECTIONS AND PARTIAL ISOMETRIC VIEW

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

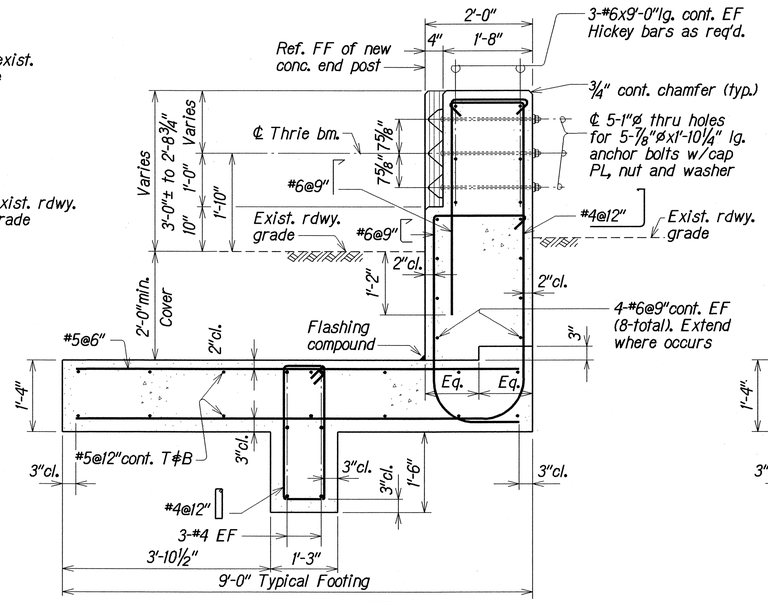
Scale: As Noted — Date: July 2002

SHEET No. Q11 OF 14 SHEETS

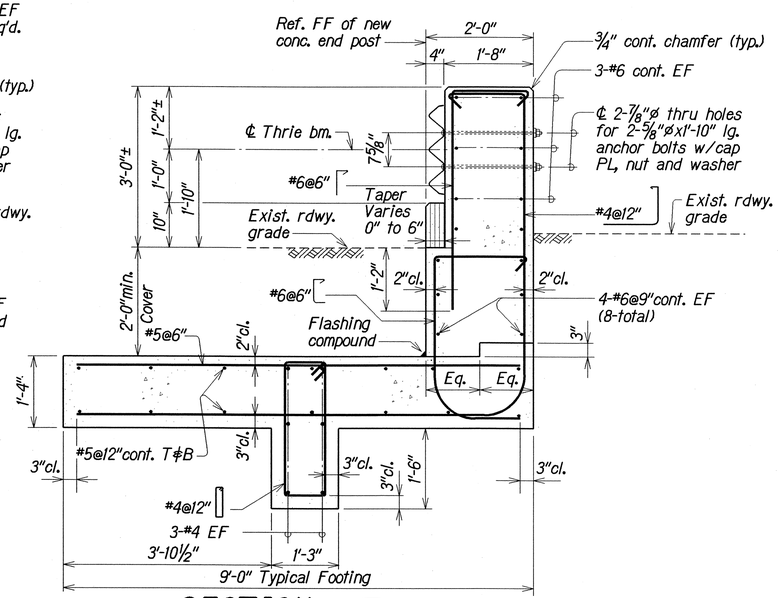
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0230(1)	2003	67	234



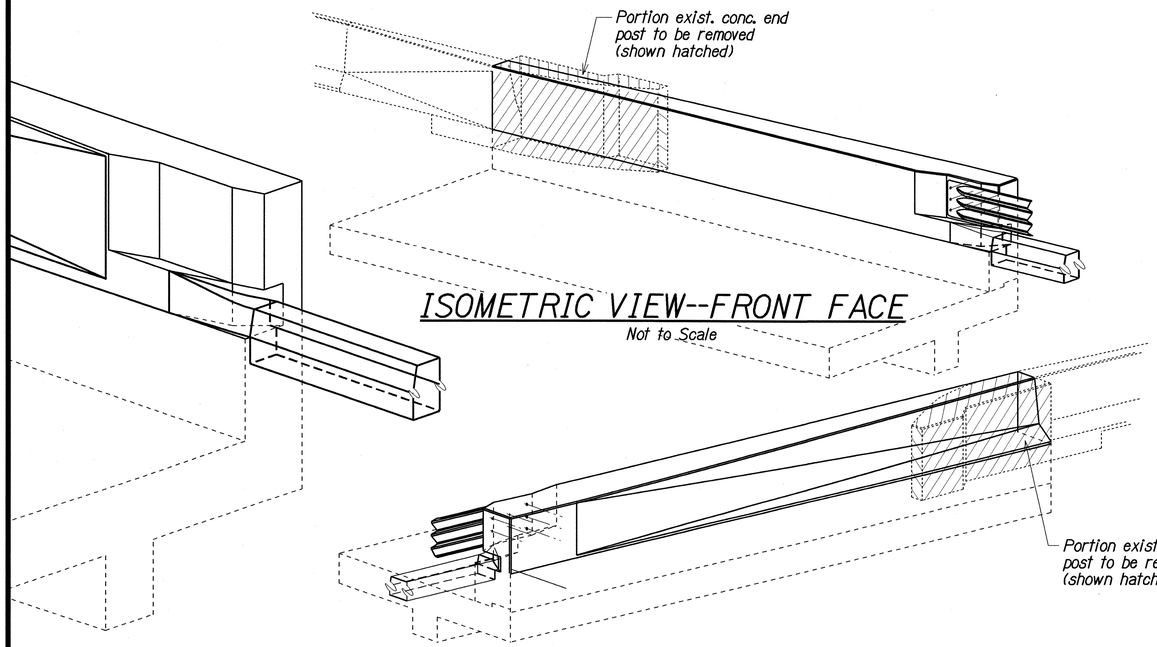
SECTION A (Q12 | Q13)
Scale: 3/4" = 1'-0"



SECTION B (Q12 | Q13)
Scale: 3/4" = 1'-0"



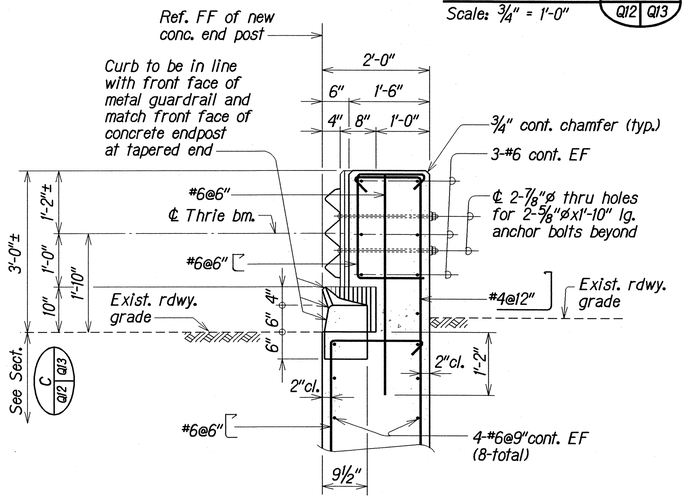
SECTION C (Q12 | Q13)
Scale: 3/4" = 1'-0"



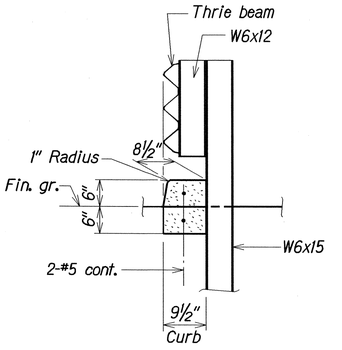
ISOMETRIC VIEW--FRONT FACE
Not to Scale

NEW END POST
Not to Scale

ISOMETRIC VIEW--BACK FACE
Not to Scale



SECTION D (Q12 | Q13)
Scale: 3/4" = 1'-0"



SECTION E (Q12 | Q13)
Scale: 3/4" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	KSG	DATE: JUL 2002
	DRAWN BY		
	TRACED BY	DKT	JUL 2002
NOTE BOOK	DESIGNED BY	DKT	JUL 2002
N:/moad13.dgn	QUANTITIES BY	PST	JUL 2002
	CHECKED BY		

MODIFIED TYPE "D" TRANSITION END POST DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MODIFIED TYPE "D" TRANSITION END POST DETAILS

SECTIONS AND VIEWS

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted — Date: July, 2002

SHEET No. Q13 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	68	234

NOTES:

A. The work necessary to connect guardrail to concrete end post shall include all labor, materials, tools, equipment and incidentals necessary to complete the work and will not be paid for separately.

B. Lap terminal connector and rail element in direction of traffic to prevent snagging.

C. All anchor bolts shall be high strength bolts conforming to the requirements of ASTM 325 and Standard Specification, Section 713.04.

D. Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus ¼" (max) is attained.

E. "Terminal Connector", "Transition Section" and thrie beam shall be fabricated from 10gauge steel conforming to the requirements of AASHTO M 180, Type II, Class B.

F. "Terminal Connector" and standard spacer, including all anchor bolts, cap PL, nuts and washers, shall be hot-dip galvanized after fabrication.

G. Cap PL shall be fabricated from ASTM A 36.

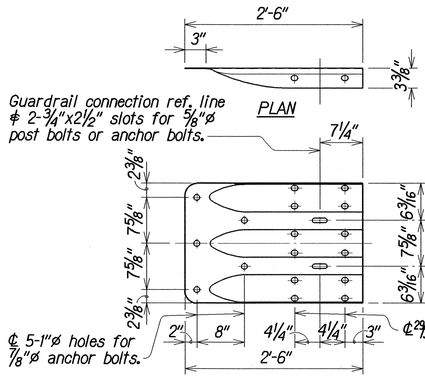
H. First 25'-0" of guardrail adjoining "Terminal Connector" shall be galvanized steel and supports spaced as shown on the detail drawings. This section of rail shall be placed on tangent to end post or parallel to roadway, unless conditions at site renders it impossible to do so. Flare point to be determined in field.

I. Double (nest 1st panel) thrie beam elements at all end post connections, except on highways with one-way traffic pattern, use single thrie beam elements at end post on trailing end only.

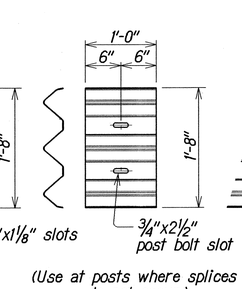
J. Where double (nested) beam occur, 12" "Back-up Plate" not required.

K. Heads of through anchor bolts shall be placed on the traffic side of the rail.

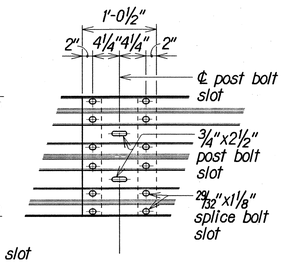
L. All steel shapes, rails and plates shall conform to ASTM A 36 specifications.



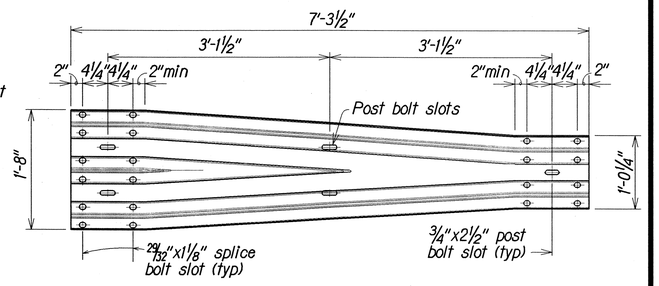
TERMINAL CONNECTOR
Scale: 1" = 1'-0"



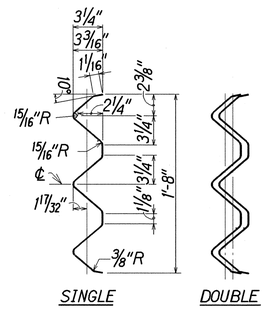
BACKUP PLATE
Scale: 1" = 1'-0"



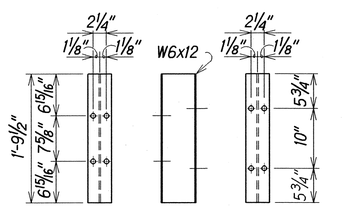
RAIL SPLICE
Scale: 1" = 1'-0"



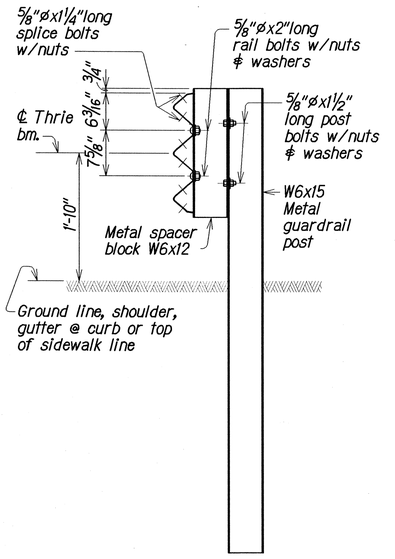
TRANSITION SECTION
Scale: 1" = 1'-0"



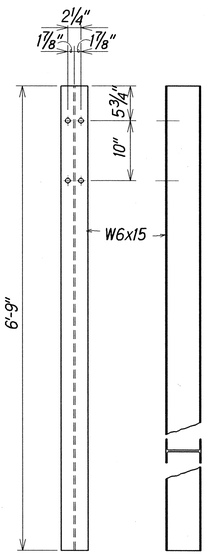
SECTION THRU RAIL ELEMENT
Scale: 1½" = 1'-0"



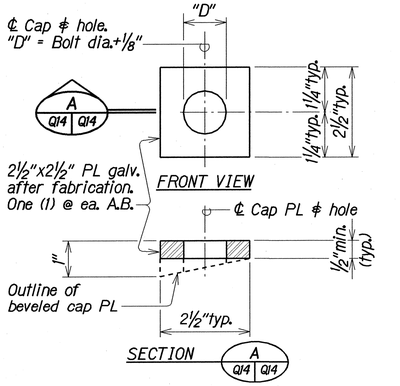
SPACER BLOCK DETAILS
Scale: 1" = 1'-0"



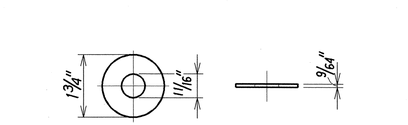
TYPICAL SECTION
METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK
Scale: 1" = 1'-0"



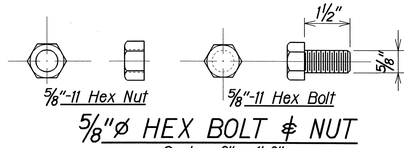
POST DETAILS
Scale: 1" = 1'-0"



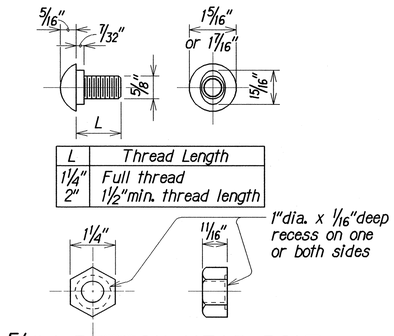
CAP (BEARING) PLATE DETAIL
Scale: 6" = 1'-0"



STEEL WASHER FOR ⅝"ø BOLT
Scale: 6" = 1'-0"



⅝"ø HEX BOLT ℄ NUT
Scale: 6" = 1'-0"



⅝"ø BUTTON HEAD BOLT ℄ RECESS NUT
Scale: 6" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY		DATE
	DRAWN BY	KMN	JUL 2002
	TRACED BY		
NOTE BOOK	DESIGNED BY	OKT	JUL 2002
	QUANTITIES BY	OKT	JUL 2002
No. Tmoobd14	CHECKED BY	PYS	JUL 2002

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

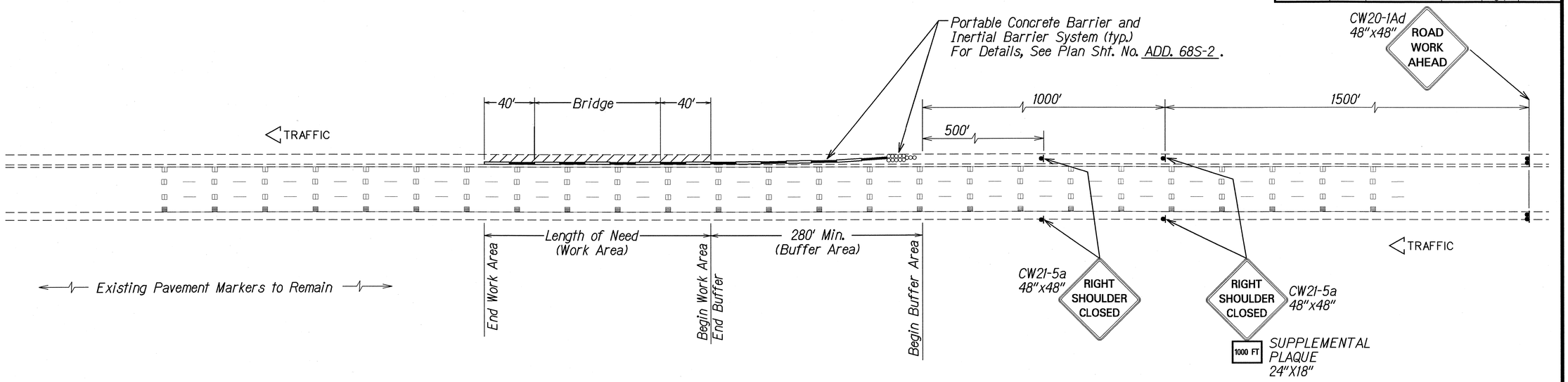
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "D" & MODIFIED TYPE "D" END POST UPGRADE DETAILS
METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS
MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Fed. Aid Project No. DPI-0203(1)

Scale: As Noted — Date: July, 2002

SHEET No. Q14 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	ADD.68 S-1	234



TYPICAL END POST CONNECTION UPGRADE CONSTRUCTION PHASE

Not to Scale

LEGEND

▬	Portable Concrete Barrier
▨	Construction Area
●	Construction Signs
◁ TRAFFIC	Direction of Traffic

CONSTRUCTION PHASING NOTES

1. End Post Connection upgrade work shall be done during the appropriate Construction Phase where End Post is located. Any requests for adjustments in sequence of Construction Phasing shall be submitted in writing and approved by the Engineer. The Contractor's attention is directed to Subsection 108.08 - Failure to Complete on Time and Liquidated Damages of the Special Provisions.
2. All temporary Signs, Type II Barricades with Steady burn amber lamps, and TL-3 rated Inertial Barrier System/Crash Cushion used during each Construction Phase shall be considered incidental to the State Furnished Portable Concrete Barrier bid item.
3. Relocation and/or removal of temporary signs, posts, portable concrete barriers and TL-3 rated Inertial Barrier System/Crash Cushion used for Construction Phasing shall be considered incidental to their respective contract items.
4. All temporary signs and delineators for the purposes of Construction Phasing shall become the property of the Contractor at the completion of the project.
5. The Contractor shall delete the use of the ground anchorage steel pin for State Furnished Portable Concrete Barrier.
6. Portable concrete barrier panels not in use during construction work shall not be stockpiled or otherwise stored within the highway rights-of-way except at locations approved by the Engineer.
7. The Contractor shall periodically wash down signs, delineators and portable concrete barriers called for in the Construction Phasing Plans as deemed necessary by the Engineer. This work shall be considered incidental to the various contract items and no payment will be made therefore.
8. The location of pavement markings and signs, delineators and portable concrete guardrail panels used in the Construction Phasing shall be as shown on the plans and/or as determined in the field by the Engineer.
9. Install Steady Burn Amber Lamps on portable concrete barrier @ 20.0' o.c. Installing, maintaining and changing batteries of the Portable Mounted Steady Burn Amber Lamps shall be considered incidental to the State Furnished Portable Concrete Barrier bid item.
10. The Type II Barricades with steady burn amber lamp used during Construction Phase shall be considered incidental to the various contract items.

ORIGINAL PLAN
SURVEY PLOTTED BY _____ DATE _____
DRAWN BY M. Takahiri
TRACED BY _____
DESIGNED BY Steven Yoshida
QUANTITIES BY _____
CHECKED BY _____
NOTE BOOK _____
N. 1d2.may
7mastph_ADD1

DATE	REVISION
6/18/03	Supplemental sheet to contract plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION PHASING

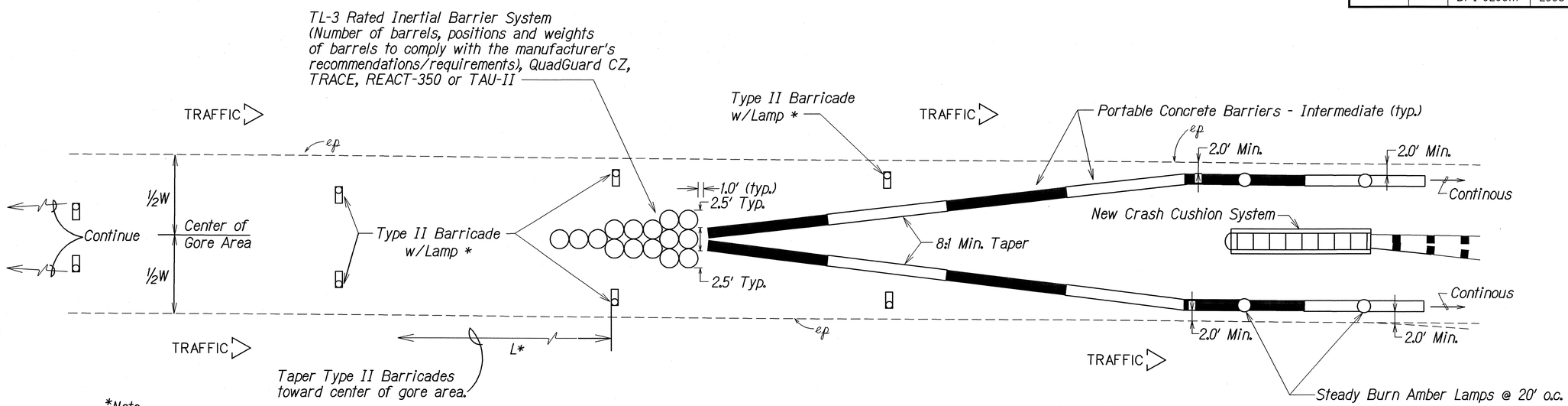
MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Federal Aid Project DPI-0203(1)

Not to Scale — Date: June 2003

SHEET No. 1 OF 2 SHEETS

ADD. 68S-1

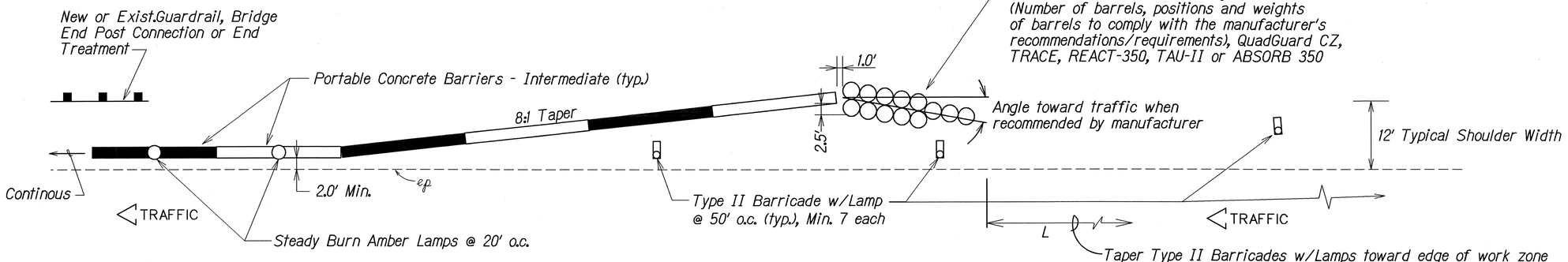
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	ADD.68 S-2	234



*Note:
Taper lengths (L) and amounts of Type II Barricades w/Lamps needed are as follows:

1. Sta. 200+32±, Lt.:
   200 L.F. w/12 each @ 50' o.c.
2. Sta. 314+60±, Rt.:
   100 L.F. w/18 each @ 25' o.c.
3. Sta. 318+42±, Rt.:
   150 L.F. w/10 each @ 50' o.c.

TYPICAL DETAIL
CRASH CUSHION SYSTEM CONSTRUCTION
Scale: 1" = 10'-0"



TYPICAL DETAIL
END TREATMENT, GUARDRAIL OR BRIDGE END POST CONNECTION CONSTRUCTION
Scale: 1" = 10'-0"

ORIGINAL PLAN
SURVEY PLOTTED BY — DATE
DRAWN BY M. Takafuji
TRACED BY
DESIGNED BY Steven Yoshida
NOTE BOOK
QUANTITIES BY
CHECKED BY
No. 142/may
7moatcphd_ADD62

DATE	REVISION
6/18/03	Supplemental sheet to contract plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION PHASING DETAILS

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Federal Aid Project DPI-0203(1)

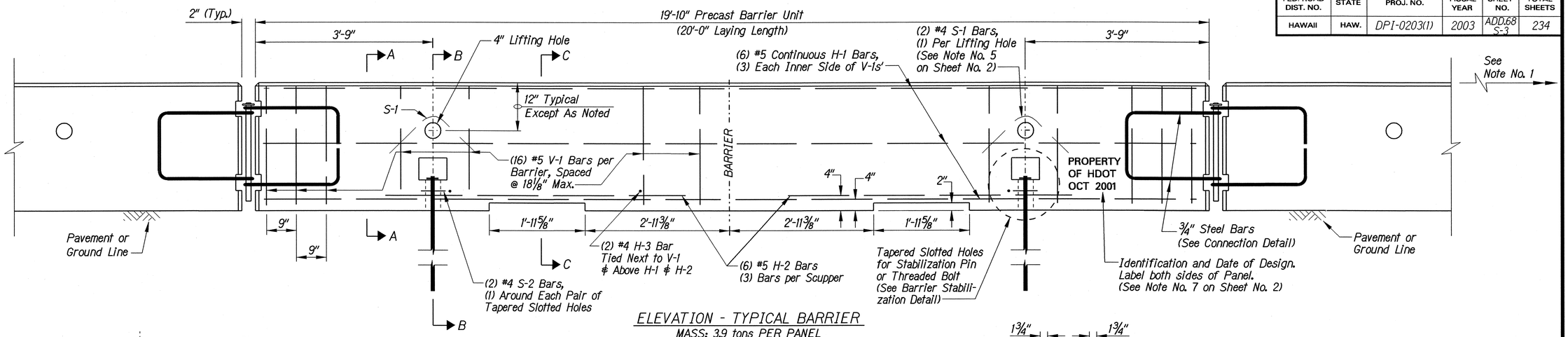
Scale: 1" = 10' Date: June 2003

SHEET No. 2 OF 2 SHEETS

ADD. 68S-2

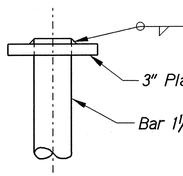
TD2 - Traffic Design Section

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	ADD.68 S-3	234

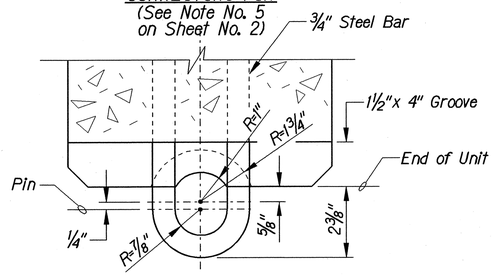


ELEVATION - TYPICAL BARRIER

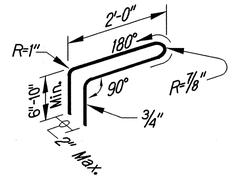
MASS: 3.9 tons PER PANEL



CONNECTING PIN
(See Note No. 5 on Sheet No. 2)

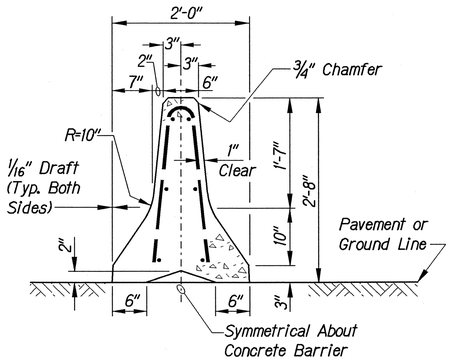


SECTION E-E

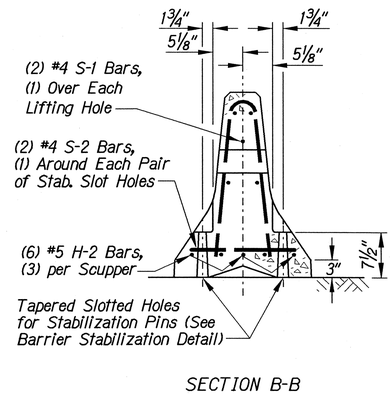


STEEL BAR

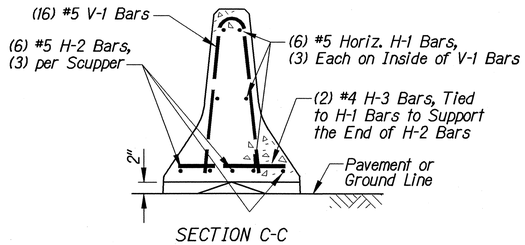
CONNECTION DETAILS
(See Note No. 5 on Sheet No. 2)



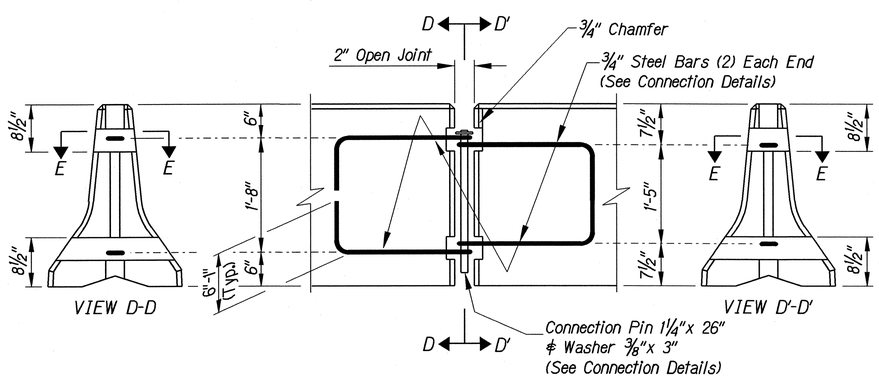
SECTION A-A



SECTION B-B



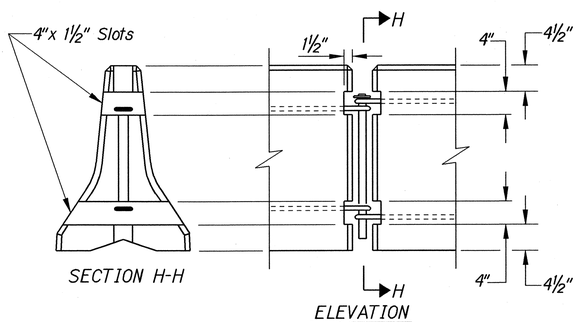
SECTION C-C



VIEW D-D

VIEW D'-D'

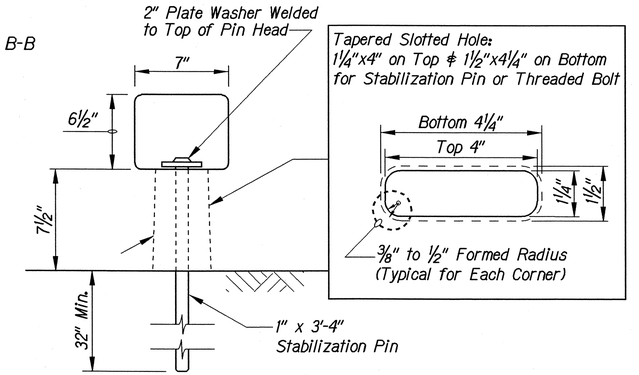
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



BARRIER STABILIZATION DETAIL
(See Note Nos. 3 & 4 on Sheet No. 2)

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 6/18/03
	DRAWN BY J. Tochiba	
NOTE BOOK dd2.mny	TRACED BY	
	DESIGNED BY	
No. Tmcatpch.	QUANTITIES BY	
	CHECKED BY	

DATE	REVISION
6/18/03	Supplemental sheet to contract plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PORTABLE CONCRETE BARRIER

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Federal Aid Project No. DPI-0203(1)

Not To Scale — Date: June 2003

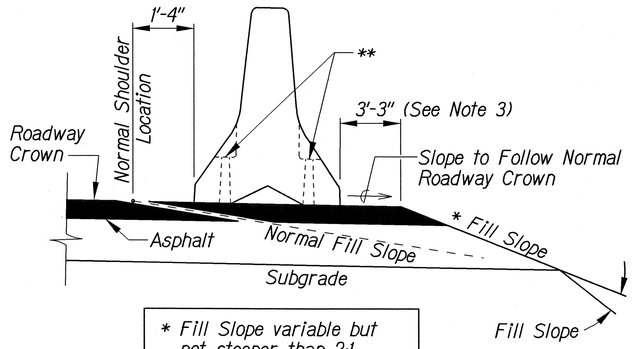
SHEET No. 1 OF 2 SHEETS

ADD. 68S-3

rd01/02

TD2 - Traffic Design Section

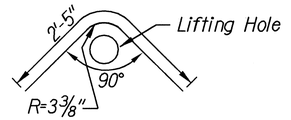
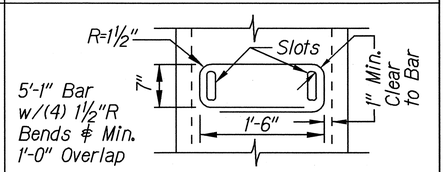
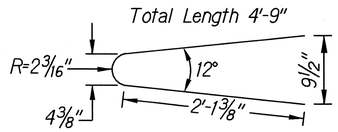
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DPI-0203(1)	2003	ADD.68 S-4	234



* Fill Slope variable but not steeper than 2:1
** No Stabilization Pins (See Note Nos. 3 & 4)

STANDARD INSTALLATION
(See Note No. 1)

METAL REINFORCEMENT 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)	1'-6"
S-1	Horizontal in Top of Wing Wall & in Floor Back Wall	#4	(2)	
S-2	Horizontal Around Slots Between V-1's @ Scuppers	#4	(2)	
V-1	Vertical in Barrier (3) Each End & (2) at Each Scupper	#5	(16)	

NOTES:

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

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY X
TRACED BY
DESIGNED BY S. Yoshida
QUANTITIES BY
CHECKED BY
DATE 6/18/03
NOTE BOOK tdz.mey
No. Imaster262

04/01/02

DATE	REVISION
6/18/03	Supplemental sheet to contract plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PORTABLE CONCRETE BARRIER

MOANALUA FREEWAY RESURFACING
Halawa Interchange to Kahauiki Interchange
Federal Aid Project No. DPI-0203(1)

Not To Scale — Date: June 2003

SHEET No. 2 OF 2 SHEETS

ADD. 68S-4