

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	583A-01-01M	2004	29	33

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Q4	JOINTS AND FOOTING STEP DETAILS
Q5	METAL RAILING DETAILS

GENERAL NOTES

DESIGN SPECIFICATIONS - AASHTO:

1. AASHTO LRFD Bridge Design Specifications, 1998, with 1999 & 2000 interim revisions.

MATERIALS:

1. Reinforced concrete: f'c = 3,000 psi (Class A)  
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 current edition of Structural Steel Welding Code AWS D 1.1. Welding electrodes for structural steel shall be E 70.  
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.

ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QTY.
507.0100	Aesthetic railing	LF	220

ABBREVIATIONS

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

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. Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.  
5. The minimum cover measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as noted otherwise:  
a. Concrete cast or finished to a smooth surface: 2"  
b. Concrete cast against and permanently exposed to earth: 3"  
6. At time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.  
7. Reinforcement, dowels and other embedded items shall be positively secured before pouring.  
8. Large impacting or vibratory type equipment will not be permitted in the drilling of holes.  
9. The holes for anchor bolts shall be drilled as shown into the existing concrete surfaces prior to fabrication of structural 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.  
10. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.

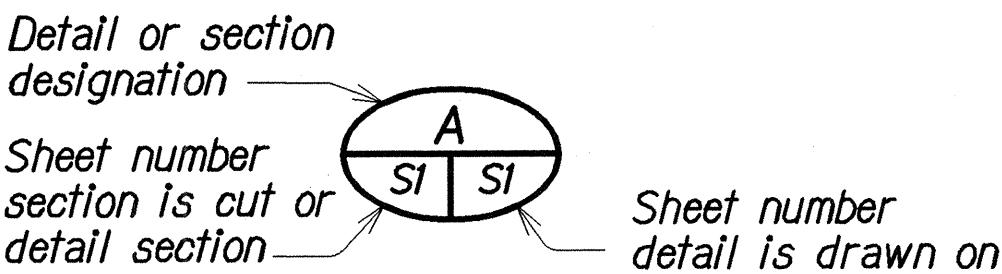
REFERENCE:

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. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.  
6. Reinforcing steel, concrete, excavation, structural backfill, and metal railing on top of concrete railing to be considered incidental to Item 507.0100 and not be paid for separately.

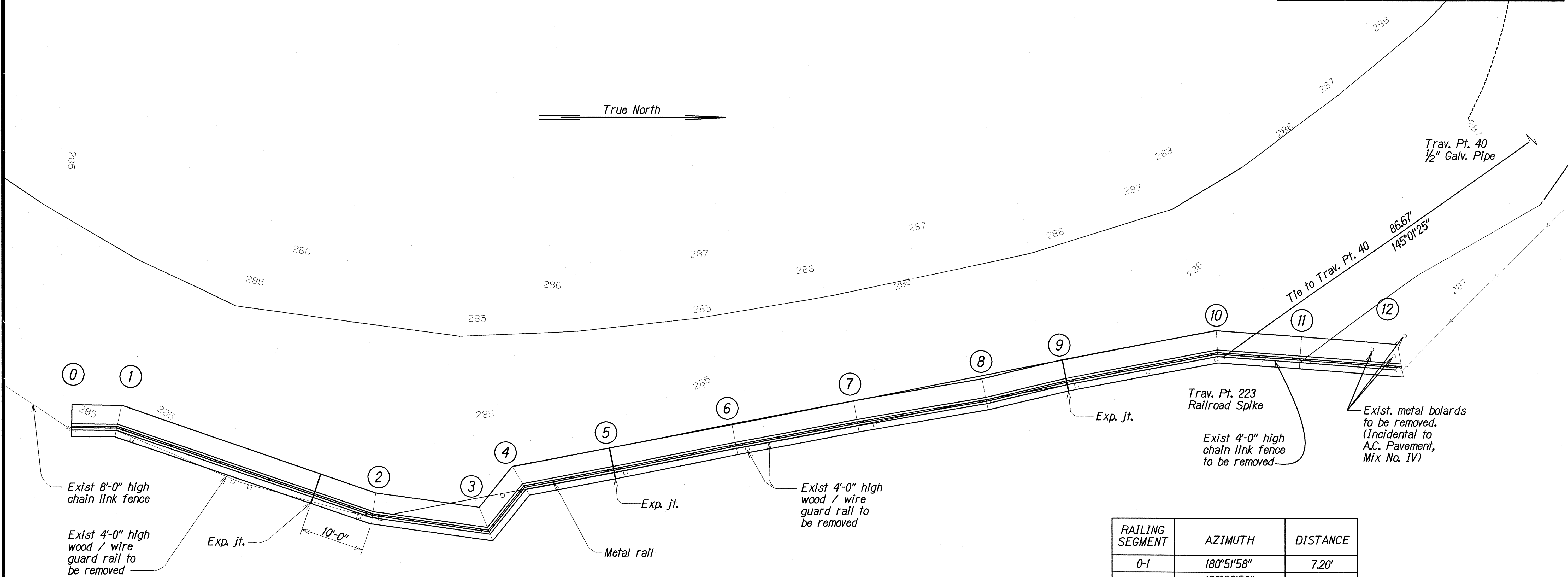
SYMBOLS



SURVEY PLOTTED BY	DATE
DRAWN BY	Aug. 2003
DESIGNED BY	Aug. 2003
CHECKED BY	Aug. 2003
NOTED BY	Aug. 2003
REVIEWED BY	Aug. 2003
ORIGINAL PLAN	
NOTE BOOK	
REVISIONS	
1. Initials/Date	
2. Initials/Date	
3. Initials/Date	
4. Initials/Date	
5. Initials/Date	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>AESTHETIC RAILING</b>	
<b>INDEX, GENERAL NOTES, ABBREVIATIONS</b>	
<b>SYMBOLS AND ESTIMATED QUANTITIES</b>	
<b>MAALO ROAD RESURFACING</b>	
<b>Project No. 583A-01-01M</b>	
Scale: As Noted	Date: Aug. 2003
SHEET No. Q1 OF Q5 SHEETS	

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LAYOUT PLAN  
Scale: 1/8" = 1'-0"

RAILING SEGMENT	AZIMUTH	DISTANCE
0-1	180°51'58"	7.20'
1-2	198°59'58"	43.10'
2-3	187°49'27"	18.57'
3-4	128°38'40"	9.05'
4-5	169°10'28"	14.51'
5-6	169°10'28"	19.85'
6-7	169°10'28"	19.65'
7-8	169°10'28"	20.85'
8-9	169°10'28"	13.12'
9-10	169°10'28"	24.47'
10-11	184°09'20"	13.15'
11-12	184°20'23"	16.23'

NOTES:

1. All distance measured from  $\phi$  rail. See Typical Section.
2. Control joints to be placed at distance not more than 30 feet along  $\phi$  of wall, but not within 3 feet on any angle in wall.
3. All control joints to be perpendicular to FF wall.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	Dec. 2001
NOTE: Ref: 5/2001	DESIGNED BY	Dec. 2001
5/2001	CHECKED BY	Dec. 2001

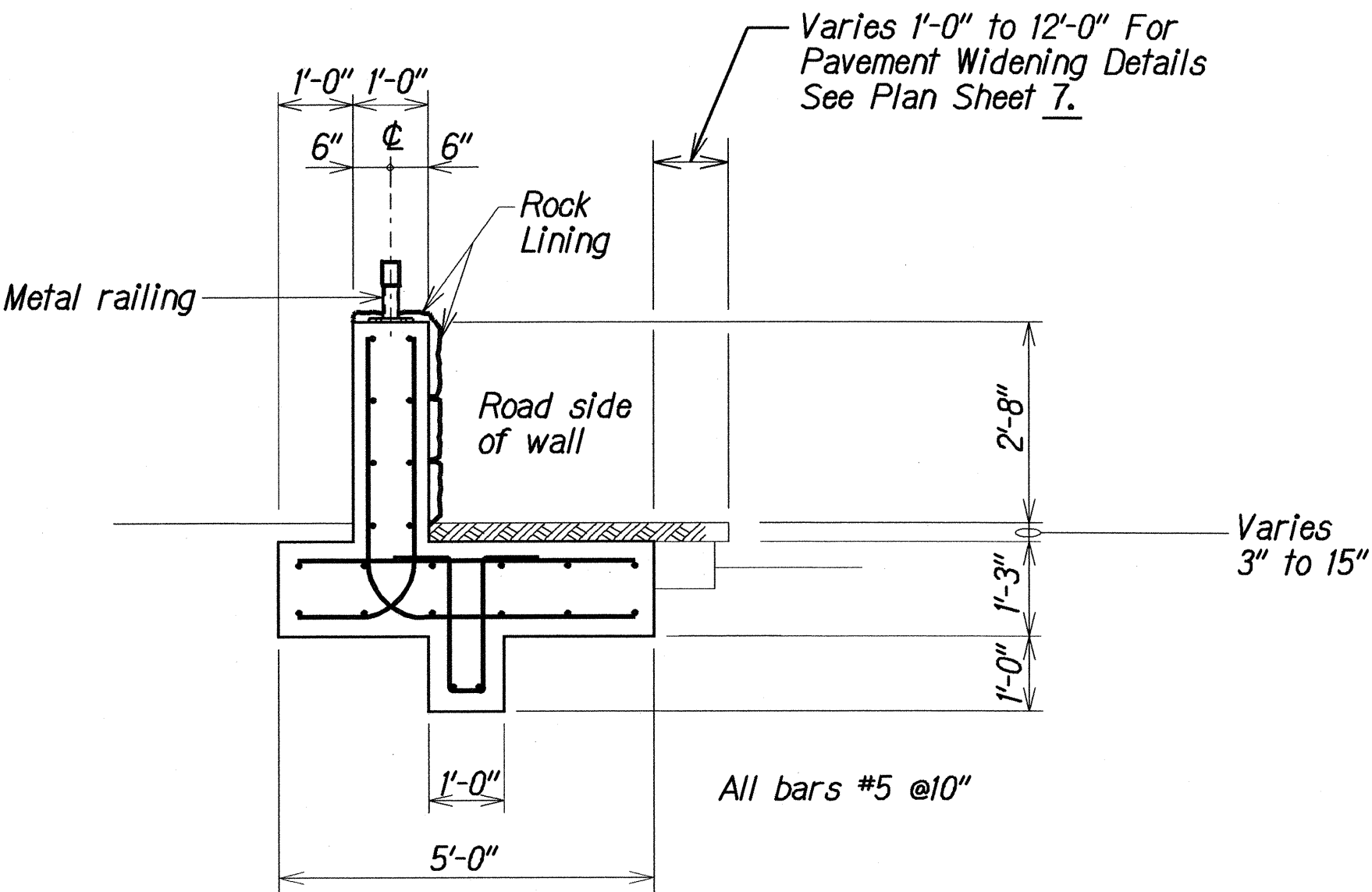
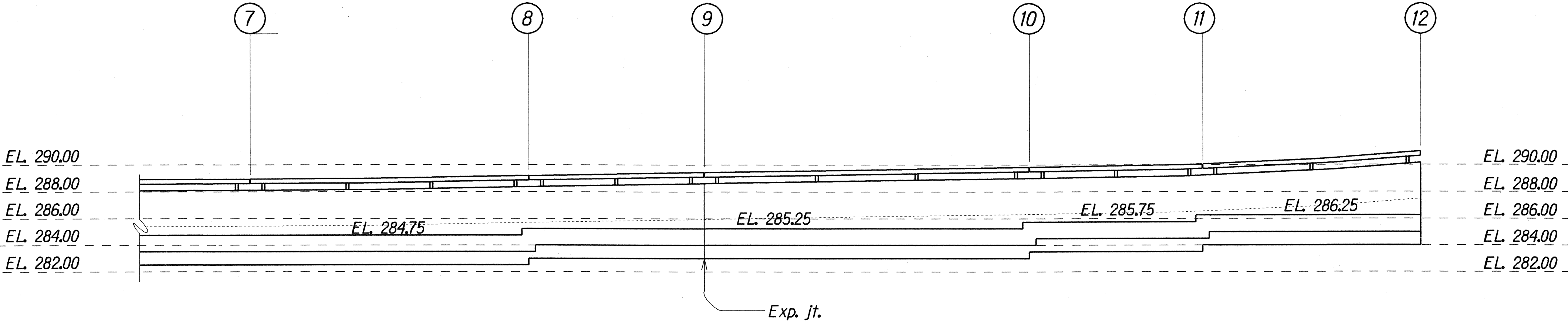
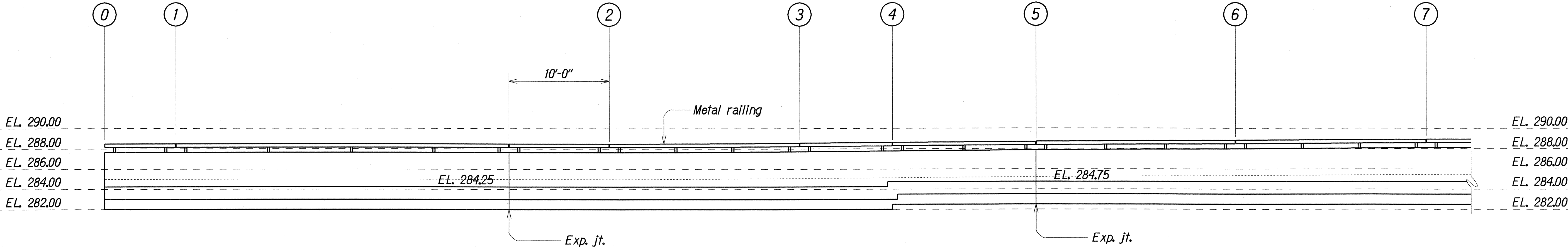
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**AESTHETIC RAILING**  
**LAYOUT PLAN**  
MAALO ROAD RESURFACING  
Project No. 583A-01-01M

Scale: As Noted  
SHEET No. Q2 OF Q5 SHEETS

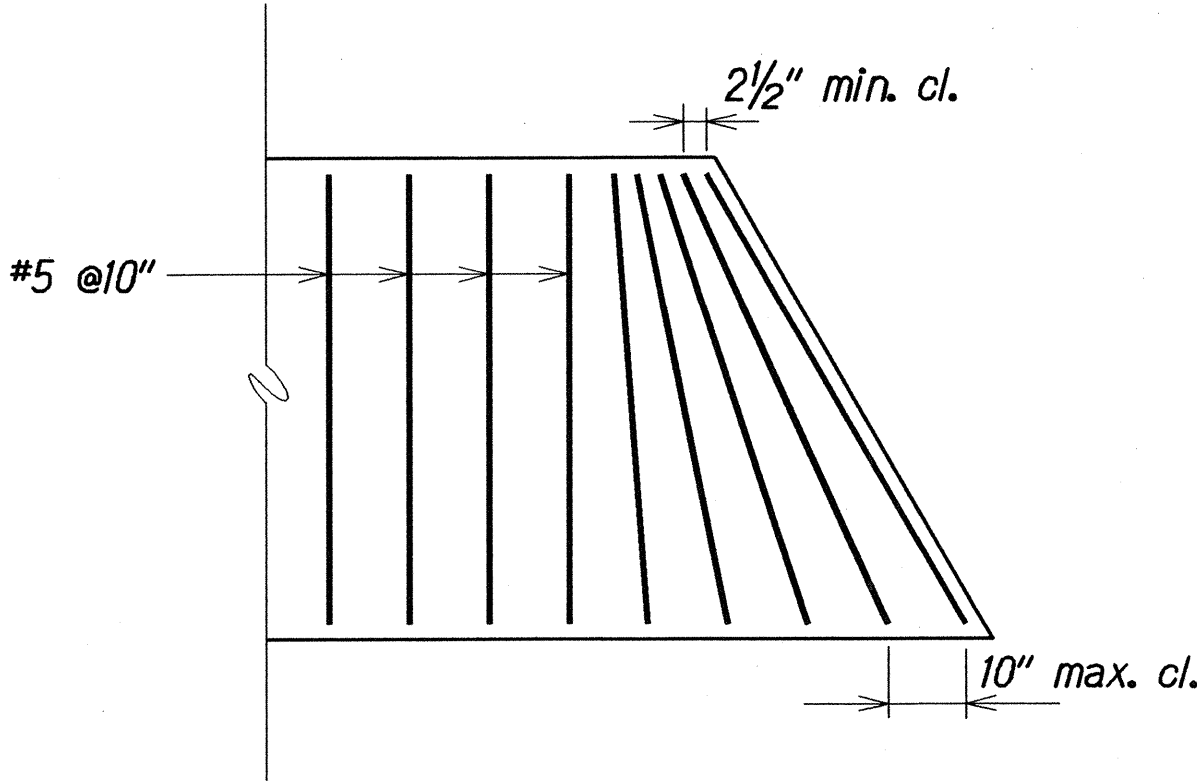
Date: Aug. 2003

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**TYPICAL SECTION**  
1/2" = 1'-0"

**ELEVATION**  
3/16" = 1'-0"



**TYPICAL BAR FLARING PLAN**  
1/2" = 1'-0"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**AESTHETIC RAILING  
ELEVATION AND SECTION**  
MAALO ROAD RESURFACING  
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Scale: As Noted Date: Aug. 2003  
SHEET No. Q3 OF Q5 SHEETS





