FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	36	51

GENERAL NOTES:

GENERAL SPECIFICATIONS:

Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 1994; together with Special Provisions prepared for this contract.

DESIGN SPECIFICATIONS:

AASHTO LRFD Bridge Design Specifications and its subsequent interim revisions.

DESIGN LOADS:

Live Load: As per LRFD Design Specifications.

OTHER APPLICABLE SPECIFICATIONS:

Welding: Welding shall conform to the current edition of AWS D1.1

MATERIALS:

A. Concrete: Concrete shall be Class A type unless otherwise specified, shall attain a minimum compressive strength, f'c=3,000 psi at 28 days. Water/cement ratio = 0.45

B. Reinforcing Steel: Reinforcing steel shall conform to ASTM A 615, grade 60 unless otherwise specified. All reinforcing steel bars shall be galvanized (hot-dip process) after fabrication. Galvanizing (hot-dip process) shall conform to the requirements of ASTM A 767. All damaged areas of galvanized coatings shall be repaired in accordance with Standard Specifications.

C. Adhesive material: In general, the adhesive material shall have the bond strength capable of developing the tensile yield stress of reinforcing bars and anchor rods for given embedment lengths in the concrete of various strengths. The minimum tensile yield strength (Area of the bar times the yield stress of the reinforcing bar) for #5 shall have equal to or greater than 18.6 kips. Furthermore, the threaded rod anchors and reinforcing bar anchors shall have the bond strengths capable of developing 34.0 Kips and 27.9 Kips, respectively. The ultimate bond strength of the adhesive shall be greater than the yield strength of the reinforcing bars and anchor rods. The contractor shall submit to the engineer that the material proposed for use complies with and satisfies the requirements in accordance with contract. Refer to special provisions for more details and information.

D. Structural Steel: Structural Steel shall conform to ASTM A 36 unless otherwise specified.

E. Structural tube metal bridge railing: Rail and Post shall be hot-dip galvanized after assembled together. All bolts, nuts, and washers pertaining to shall be hot-dip galvanized after fabrication. Galvanizing (hot-dip process) shall conform to the requirements of ASTM A 123.

F. Guardrail: Thrie beam (type 3-rail) and Transition section shall be fabricated from 10gauge steel conforming to the requirements of AASHTO M180, type II, class B. Metal guardrail post and base plate on structure shall be hot-dip galvanized after assembled together. All bolts, nuts, and washes shall be hot-dip galvanized after fabrication. All adhesive anchoring threaded rods, nuts, and washers for guradrail plate connection shall conform to ASTM A 354, Gr. BC and shall be hot-dip galvanized after fabrication. Galvanizing (hot-dip process) shall conform to the requirements of ASTM A 153.

G. Welding Rod: Welding rod shall be of chemical composition and mechanical properties as close as possible to the base metal. Welding metal shall have tensile strength equal to 60 Ksi and shall be low-hydrogen type.

REINFORCEMENT:

A. Reinforcing bars shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures unless specified.

B. Reinforcing bars shall be securely tied at all intersections and at lap splices except where the spacing of intersections is less than one foot, in which case alternate intersections shall be tied.

C. In general, splicing of reinforcing steel, where permitted, shall be done in accordance with Section 602- Reinforcing Steel, of the Standard Specifications.

CONSTRUCTION NOTES:

A. Refer to Standard Specifications and Special Provisions.

B. The contractor shall notify the engineer as there actual field conditions may differ from as shown on the plans. The contractor shall measure and verify the dimensions as shown on the contract plans in the field.

C. As the actual field conditions may differ from as shown on plans, the contractor shall probe and verify the location of all existing utility lines before excavation or installation of guardrail posts starts. The contractor shall notify the respective owners before commencing work on excavation. The contractor shall be solely responsible for any damage done to the existing utility lines, conduits, structures, etc, and shall bear all the cost for repair.

D. The contractor shall coordinate his work with that performing concurrently on adjacent sites.

E. The contractor shall construct and provide adequate protection for safety of motorists and pedestrians on the work area or beneath the work zone against any falling objects. The contractor shall be solely responsible for any damage done to the properties and for injury sustained to motorists and pedestrians. The work for constructing protective measures at structure #10 and Halawa Heights Overpass shall be considered incidental to Concrete Bridge Parapet and Metal Guardrail, respectively, and will not be paid for separately.

F. All guardrail posts are erected plumb unless otherwise noted.

G. All guardrail posts should be installed in such way that face of spacer block is in parallel with guardrail and that both spacer block and guardrail are in contact. The engineer will determine in field as to the limitation of space between spacer block and guradrail. The contractor shall correct the problem at his own expense, as determined by the Engineer and to his satisfaction.

H. All bolts for anchor rods should be tightened so that no loosening of nuts will occur. Bolts should be tightened with as recommended in manufacturer's specifications only when adhesive material has cured and has gained adequate bond strength. Do not overtighten the anchor rods more than required.

I. The contractor shall pour concrete to the full height of the concrete parapet wall at locations where the construction and expansion joints are provided.

GENERAL:

A. A separate payment shall not be made for all work noted incidental on the contract plans.

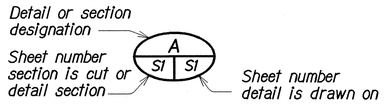
B. Standard detail drawings, in general, refer to numerous highway structures for specific design criteria and requirements. Except for design modifications as may be required for special conditions. For such modifications, refer to the corresponding detail drawings.

TRAFFIC NOTES:

A. The contractor shall provide traffic control signs and devices in accordance with current edition of Manual on Uniform Traffic Control Devices (MUTCD). The contractor shall provide adequate MUTCD, AASHTO RDG, and ADA compliant passage for motorists and pedestrians at all times until completion of the project.

B. All existing traffic regulatory and warning signs, markers, and reflectors that were removed temporarily shall be restored to their original locations.

SYMBOLS



ABBREVIATIONS

℄	Center line	Max.	Maximum
Cl.	Clear	Min.	Minimum
Cont.	Continuous	No.	Number
ø	Diameter	O.C.	On Center
EF	Each Face	Ref.	Reference
Exist.	Existing	Sht.	Sheet
Ga.	Gage, gauge	Thk.	Thick
Galv.	Galvanized	TS	Tubular Steel
Gr.	Grade	Typ.	Typical
I.D.	Inside diameter	W.W.	Wingwall
Jt.	Joint	w/	with
Lg.	Long		

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN DATE MAY 2004
	DRAWN BY	KMN
	TRACED BY	SK MAY 2004
NOTE BOOK	DESIGNED BY	SK MAY 2004
	QUANTITIES BY	BS MAY 2004
No. Initial Date	CHECKED BY	

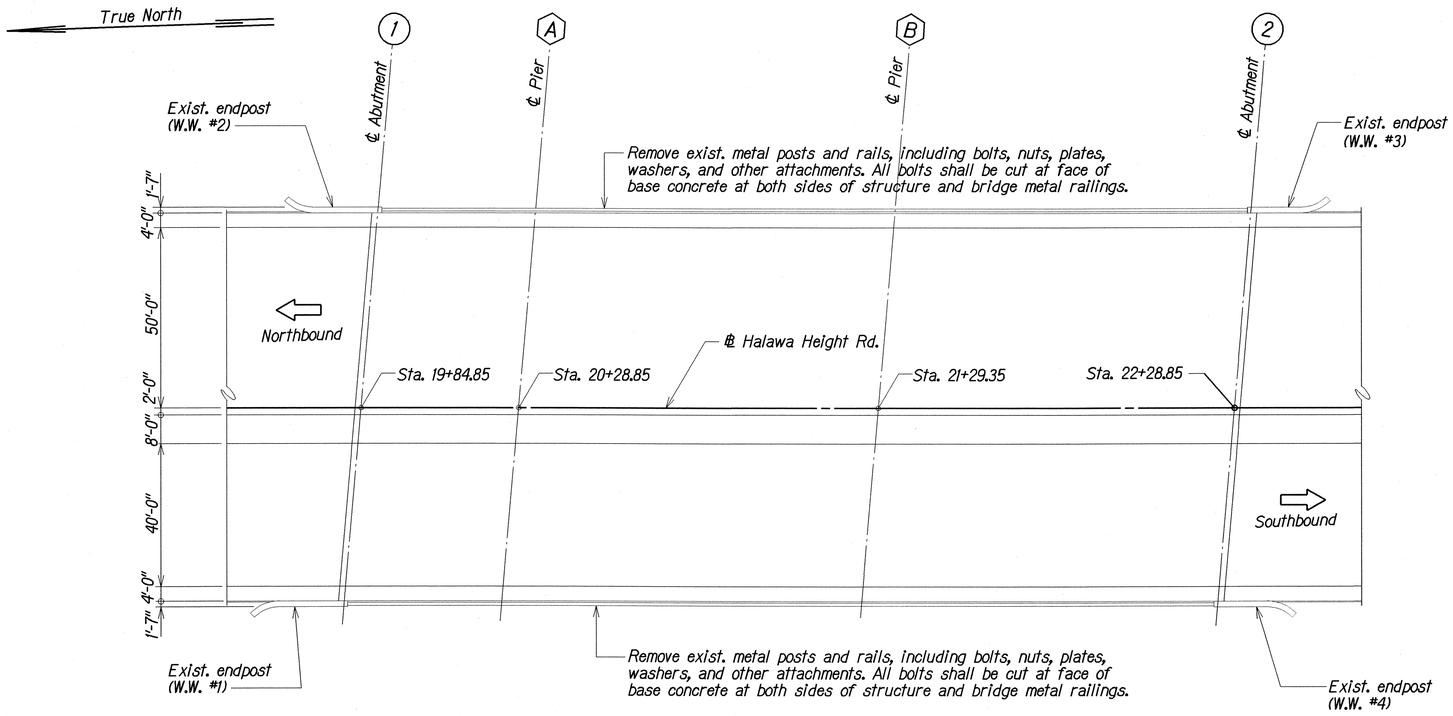
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HALAWA INTERCHANGE
BRIDGE NO. 10
GENERAL NOTES, SYMBOLS & ABBREVIATIONS
BRIDGE RAILING IMPROVEMENT
Project No. HWY-0-06-03M

Scale: As Noted Date: May, 2004

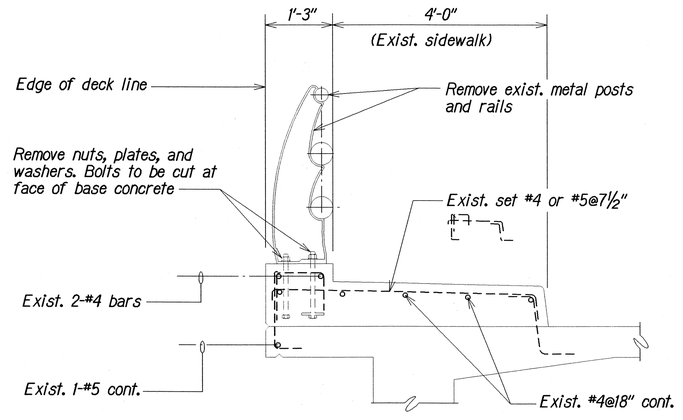
SHEET No. 01 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	37	51



EXISTING PLAN

Scale: 1" = 20'-0"



EXIST. TYPICAL SECTION

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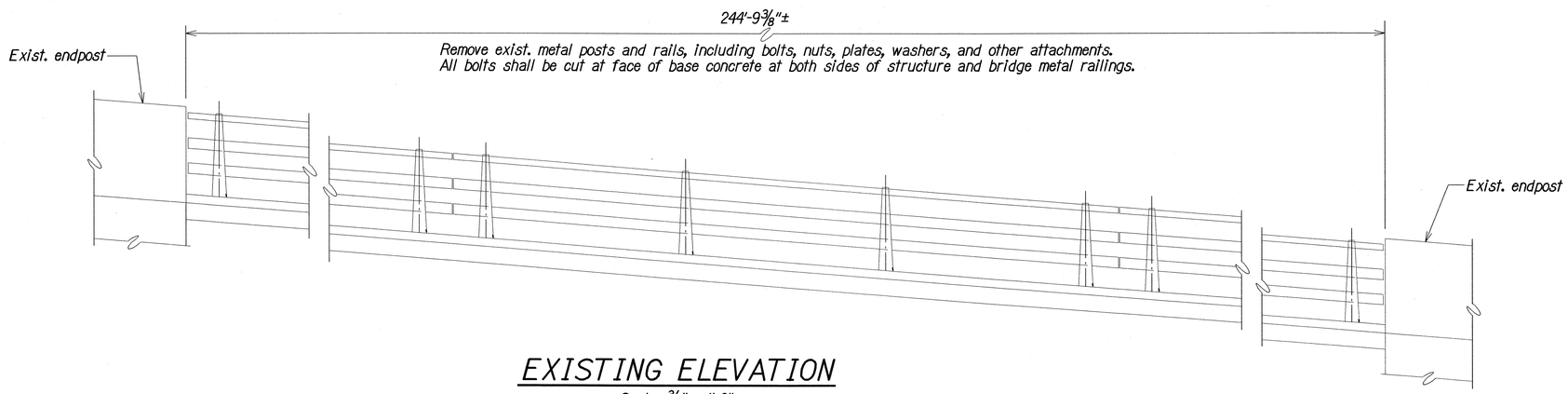


EXISTING ELEVATION

Scale: ⅜" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN MAY. 2004
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	SK MAY. 2004
N:\misha2.dgn	QUANTITIES BY	SK MAY. 2004
	CHECKED BY	PS MAY. 2004

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HALAWA INTERCHANGE
BRIDGE NO. 10
EXISTING PLAN, ELEVATION, AND TYPICAL SECTION

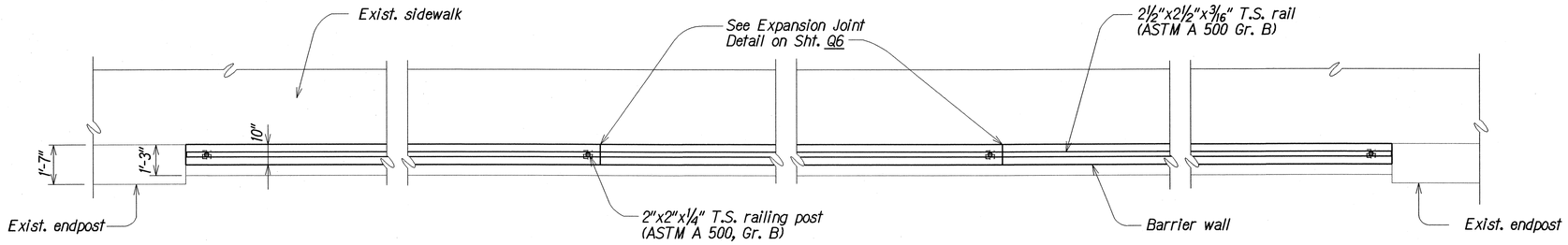
BRIDGE RAILING IMPROVEMENT
Project No. HWY-0-06-03M

Scale: As Noted Date: May, 2004

SHEET No. Q2 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	38	51

True North



PART RAILING PLAN

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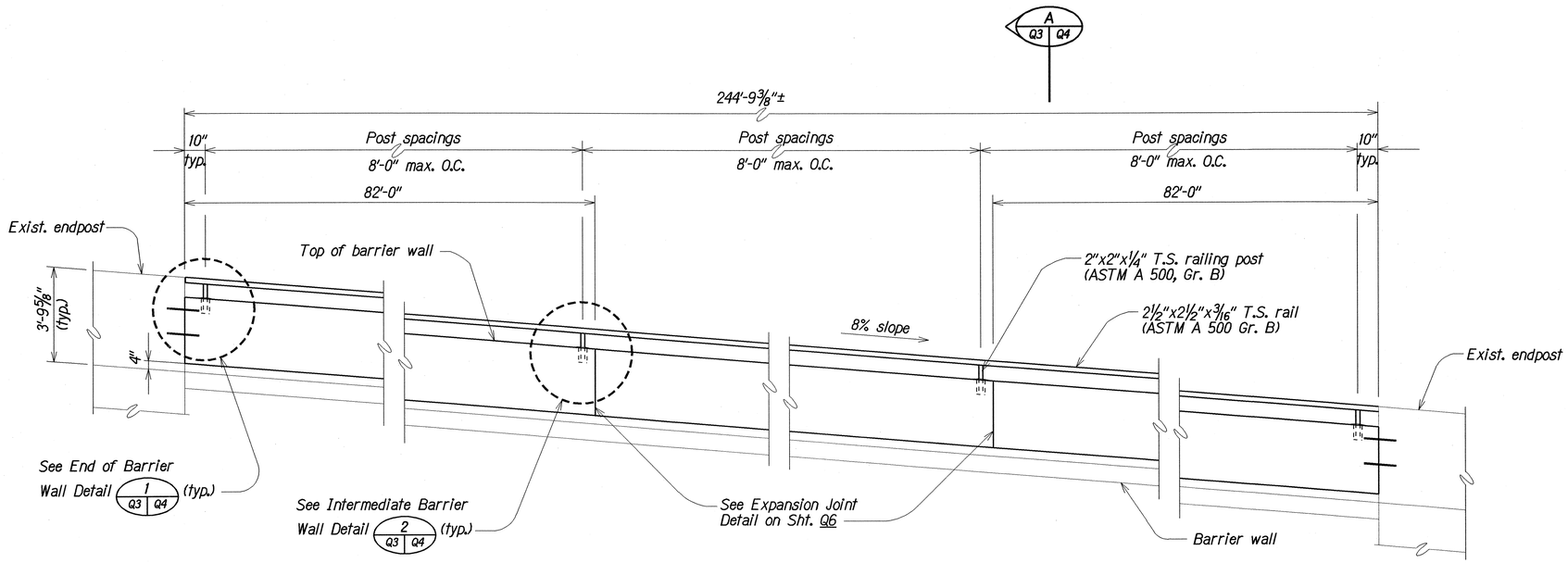


RAILING ELEVATION

(Other side is similar)

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY KMN	MAY 2004
	TRACED BY	MAY 2004
NOTE BOOK	DESIGNED BY SK	MAY 2004
N:\misc\3.dgn	QUANTITIES BY	
	CHECKED BY PS	MAY 2004

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

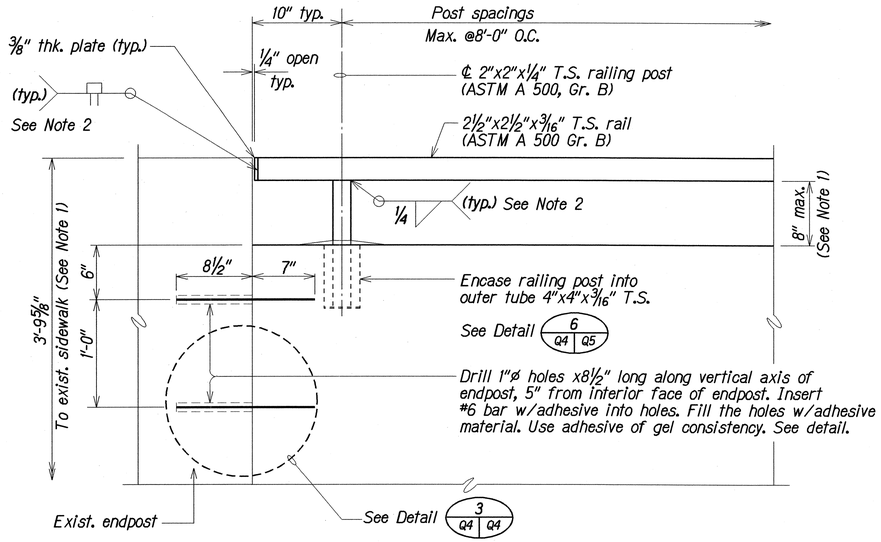
HALAWA INTERCHANGE
BRIDGE NO. 10
PART RAILING PLAN AND ELEVATION

BRIDGE RAILING IMPROVEMENT
Project No. HWY-0-06-03M

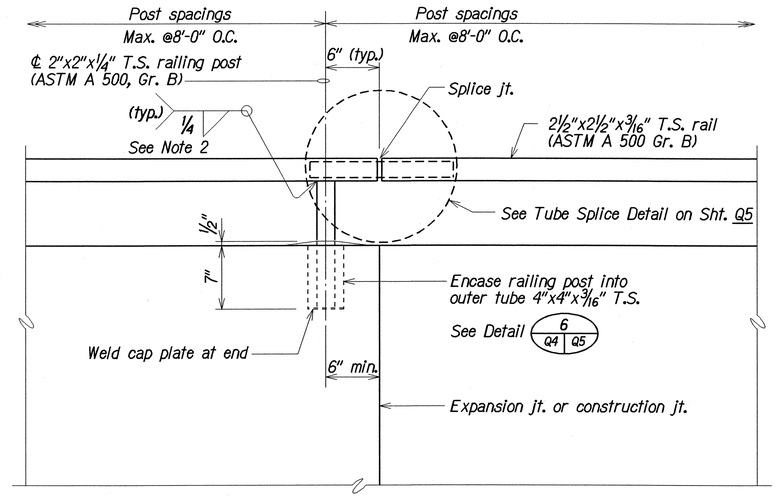
Scale: As Noted Date: May, 2004

SHEET No. Q3 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	39	51



END OF BARRIER WALL DETAIL 1 Q3 Q4



INTERMEDIATE DETAIL 2 Q3 Q4

BARRIER WALL DETAILS

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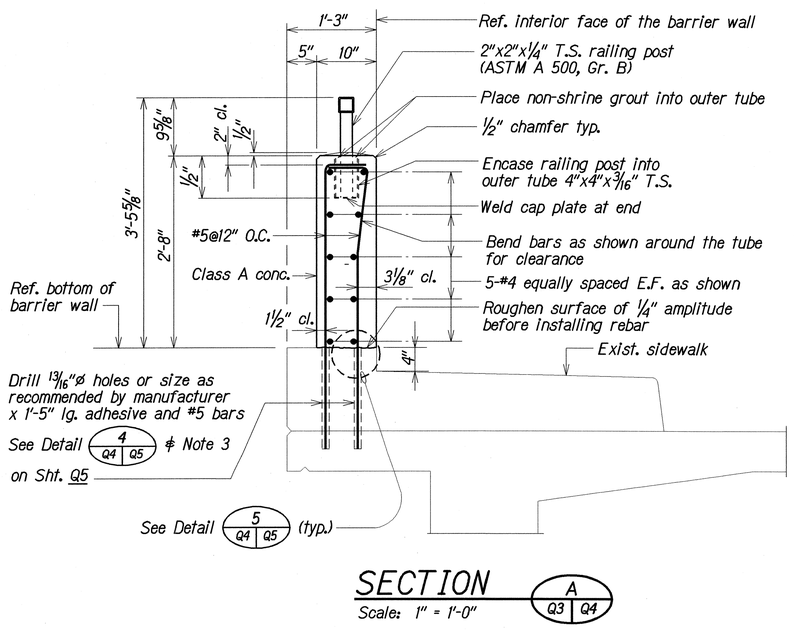
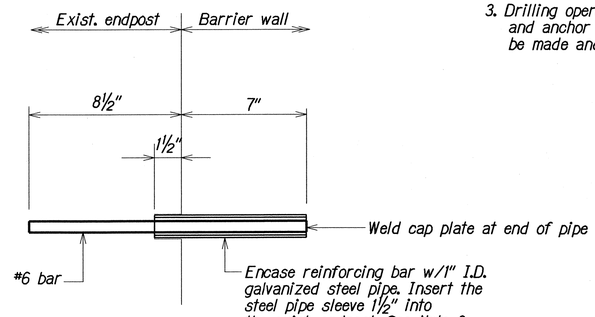


SECTION A Q3 Q4

Scale: 1" = 1'-0"



DETAIL 3 Q4 Q4

Scale: 3" = 1'-0"

NOTES:

1. The contractor shall verify and measure the height of exist. endpost prior to fabricating metal railings.
2. Rail and post shall be hot-dip galvanized after assembled together. Apply zinc rich coating over weld. Two coatings with min. 95% zinc by weight after galvanized. Remove weld residues thoroughly before galvanizing.
3. Drilling operation, furnishing materials, and installation of reinforcing bars, plates, and anchor bolts shall be incidental to metal railing. A separate pay item will not be made and will not be paid for separately.

ORIGINAL PLANS	SURVEY PLOTTED BY	KMN	DATE	MAY 2004
	DRAWN BY			
NOTE BOOK	TRACED BY	SK		MAY 2004
	DESIGNED BY	SK		MAY 2004
	QUANTITIES BY	PC		MAY 2004
	CHECKED BY			

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

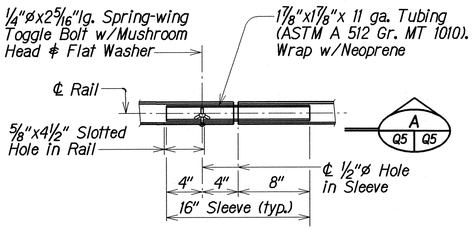
HALAWA INTERCHANGE
BRIDGE NO. 10
BARRIER WALL DETAILS SECTION AND DETAIL

BRIDGE RAILING IMPROVEMENT
Project No. HWY-0-06-03M

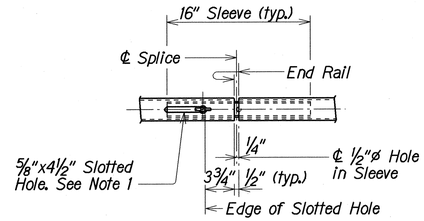
Scale: As Noted Date: May, 2004

SHEET No. Q4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	40	51



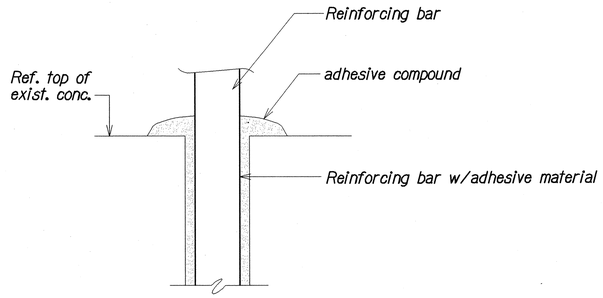
ELEVATION



SECTION A Q5 Q5

TUBE SPLICE DETAIL

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

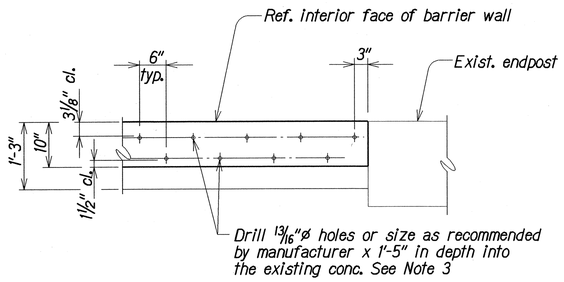


DETAIL 5 Q4 Q5

Not to scale

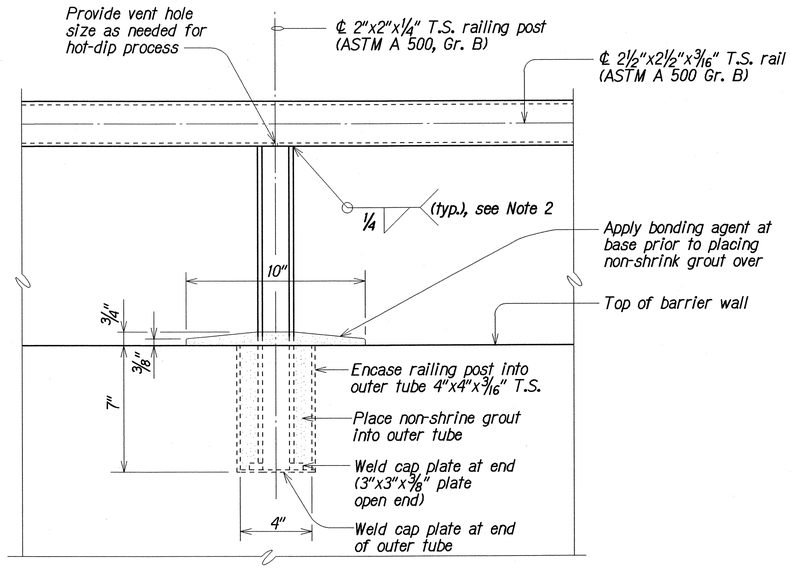
NOTES:

1. Slotted hole and toggle bolts shall be located on underside of tube.
2. Apply zinc rich coating over weld. Two coatings with min. 95% zinc by weight, after galvanized.
3. The contractor shall drill holes at least 2 inches away from where exist. expansion joints occur, into the base concrete. Place reinforcing bars into the holes filled w/ adhesive compounds. All drilled holes shall be clean, dry, and free of fine particles before injecting adhesive compounds into the holes. All holes shall be scrubbed with a suitable mechanical brush and cleaned out. Adhesive with vertical reinforcing bars (#5) near the exterior face of the barrier wall shall be cured and hardened first. After that, adhesive anchors (#5) in the holes near the interior face of the barrier wall shall be poured and hardened. All reinforcing bars shall be securely fastened and shall not be disturbed until the adhesive compounds has adequately cured and hardened. Concrete shall be poured into the form only when an adhesive compound has gained adequate strengths. All reinforcing bars shall be installed as vertical as possible. The contractor shall pay special attention to the applications, limitations, and handling of adhesive. The preparation and the execution of the work shall be done in accordance with manufacturer's recommendations, when dealing with adhesive compounds.
4. Drilling hole operation, furnishing adhesive material, and reinforcing bar installation for concrete parapet shall be considered incidental to concrete parapet and will not be paid for separately.



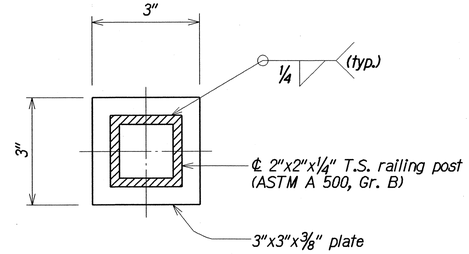
DETAIL 4 Q4 Q5

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



DETAIL 6 Q4 Q5

Scale: 3" = 1'-0"



CAP PLATE PLAN

Not to scale

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN	DATE MAY. 2004
	DRAWN BY		MAY. 2004
	TRACED BY		MAY. 2004
NOTE BOOK	DESIGNED BY	SK	MAY. 2004
	QUANTITIES BY	PS	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

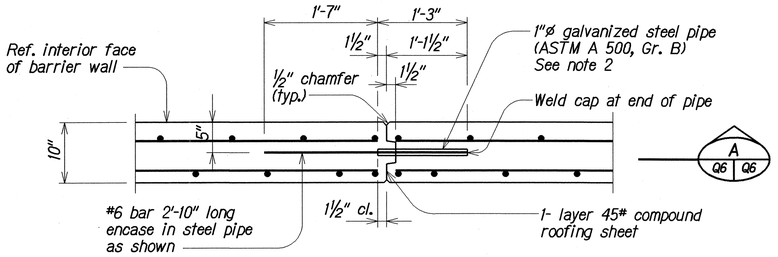
HALAWA INTERCHANGE
BRIDGE NO. 10
TUBE SPLICE AND DETAILS

BRIDGE RAILING IMPROVEMENT
Project No. HWY-0-06-03M

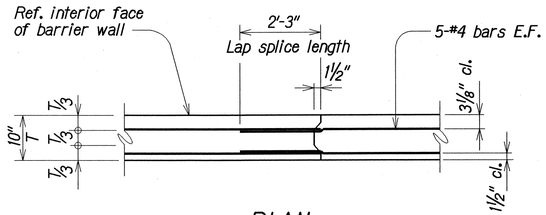
Scale: As Noted Date: May, 2004

SHEET No. Q5 OF 6 SHEETS

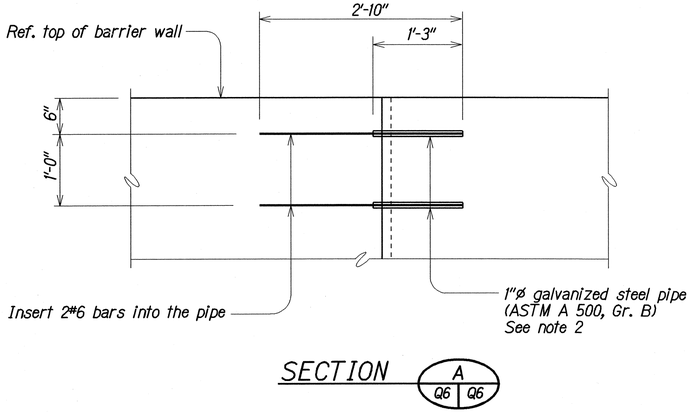
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-03M	2004	41	51



PLAN



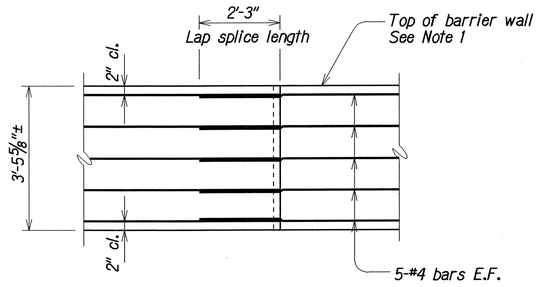
PLAN



SECTION A (Q6 | Q6)

TYPICAL EXPANSION JOINT AT BARRIER WALL

Scale: 1" = 1'-0"



ELEVATION

TYPICAL CONSTRUCTION JOINT AT BARRIER WALL

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

NOTES:

1. For each construction joint at barrier wall, the contractor shall pour concrete to the full height of the wall.
2. Galvanized steel pipe incidental to concrete parapet wall.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY KMN	MAY 2004
NOTE BOOK	TRACED BY	MAY 2004
N:\...\misc\fyi.dgn	DESIGNED BY SK	MAY 2004
	QUANTITIES BY SK	MAY 2004
	CHECKED BY PS	MAY 2004

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HALAWA INTERCHANGE
BRIDGE NO. 10
TYPICAL EXPANSION JOINT AND CONSTRUCTION JOINT DETAILS
BRIDGE RAILING IMPROVEMENT

Scale: As Noted | Project No. HWY-0-06-03M | Date: May, 2004

SHEET No. Q6 OF 6 SHEETS