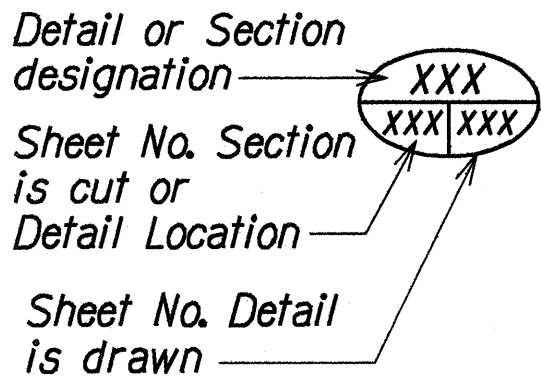


INDEX TO DRAWINGS

SHEET NO.	TITLE
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Q2	KALIHIWAI AND WAILUA STREAM BRIDGES Typical End Post Plan And Elevation
Q3	KALIHIWAI STREAM BRIDGE - Typical Sections
Q4	KALIHIWAI STREAM BRIDGE - End Post Plan And Elevation
Q5	KALIHIWAI STREAM BRIDGE - Sections
Q6	WAILUA STREAM BRIDGE - Layout Plan
Q7	WAILUA STREAM BRIDGE - Elevations
Q8	WAILUA STREAM BRIDGE - End Post Plan And Section
Q9	WAILUA STREAM BRIDGE - Bikeway Metal Railing Details
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Q12	KAPAA STREAM BRIDGE - Sections And Base Plate Details
Q13	KAPAA STREAM BRIDGE - Bikeway Metal Railing Details
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Q18	MOLOAA STREAM BRIDGE - Sections And Base Plate Details
Q19	WAIAKALUA STREAM BRIDGE - Layout Plan
Q20	WAIAKALUA STREAM BRIDGE - Metal Guardrail And Bikeway Metal Railing Details
Q21	Metal Guardrail Details
Q22	TYPICAL DETAILS - Typical Metal Guardrail Type 3 Thrie Beam And Appurtenances Details



GENERAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO LRFD Bridge Design Specifications, first edition including 1996 and 1997 interim revisions.

MATERIALS:

- A. Reinforced Concrete: Class A
B. Reinforced Steel: ASTM A 615, Grade 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 ASTM A 325 hot-dip galvanized after fabrication, unless noted otherwise.
G. All studs and threaded rods shall be ASTM A 449 unless noted otherwise $\neq$ hot-dip galvanized.
H. All welding shall be in accordance with the current edition of Reinforcing Steel Welding Code AWS D 1.4. Welding electrodes for structural steel shall be E 70.
I. Steel tubes shall be ASTM A 500 Grade B and hot-dip galvanized after fabrication.

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" Concrete cast against a smooth surface or finished to a smooth surface: 2"
F. At time concrete is placed, reinforcing shall be free from mud, oil latance 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 course 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 or properly compacted structural fill.
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 reinforcement bars shown with bends shall conform to standard ACI hooks unless otherwise noted.
M. 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.
N. 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 new pour, unless indicated otherwise or as ordered by the Engineer.
O. Existing structure to be removed shown by hatched lines. Removal shall be done in a such 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 accepted by the Engineer will be allowed. Any damaged to the existing structure due to the Contractor's operation or negligence shall be repaired at his expense with no cost to the State.

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. 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.
H. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.

GUARDRAIL NOTES:

1. All anchor bolts shall be high strength bolts conforming to the requirements of AASHTO M 164. See Special Provisions.
2. Terminal connector, Thrie Beam Metal Guardrail and Transition Section shall be fabricated from 10 guage steel conforming to the requirements of AASHTO M 180, Class B, Type II and shall be hot-dip galvanized after fabrication.
3. Guardrail post and spacer block including all anchor bolts, cap PL, bolts, nuts, and washers shall be hot-dip galvanized after fabrication.
4. Cap PL shall be fabricated from ASTM A 36.
5. 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.
6. Double (nest 1st panel) thrie beam elements at all end post connections.
7. Where double (nested) beam occur, 12" "Back-up Plate" not required.
8. Heads of through anchor bolts shall be placed on the traffic side of the rail.
9. See Q22 for Typical Guardrail Details.
10. Drilled holes for anchor bolts/studs shall be bolt/stud diameter plus ⅛ inch and filled with dual cartridge epoxy adhesive unless noted otherwise.

SYMBOLS AND ABBREVIATIONS

AB	Anchor bolt	El., Elev.	Elevation	PL	Plate
ϕ	And	Exist.	Existing	R	Radius
Bm.	Beam	Fin.	Finish	Ref.	Reference
$\mathcal{C}$	Center Line	Galv.	Galvanized	Sect.	Section
Cl., Ctr.	Clear	Horiz.	Horizontal	Sht.	Sheet
Cont.	Continuous	Hwy.	Highway	Spc.	Space
Det.	Detail	Jt.	Joint	S.S.	Stainless Steel
Dia., ϕ	Diameter	L	Length	Typ.	Typical
Dwg., Dwgs.	Drawing, Drawings	Max.	Maximum	Vert.	Vertical
EA, Ea, ea.	Each	Min.	Minimum	w/	With
		No., *	Number		

ESTIMATED QUANTITIES

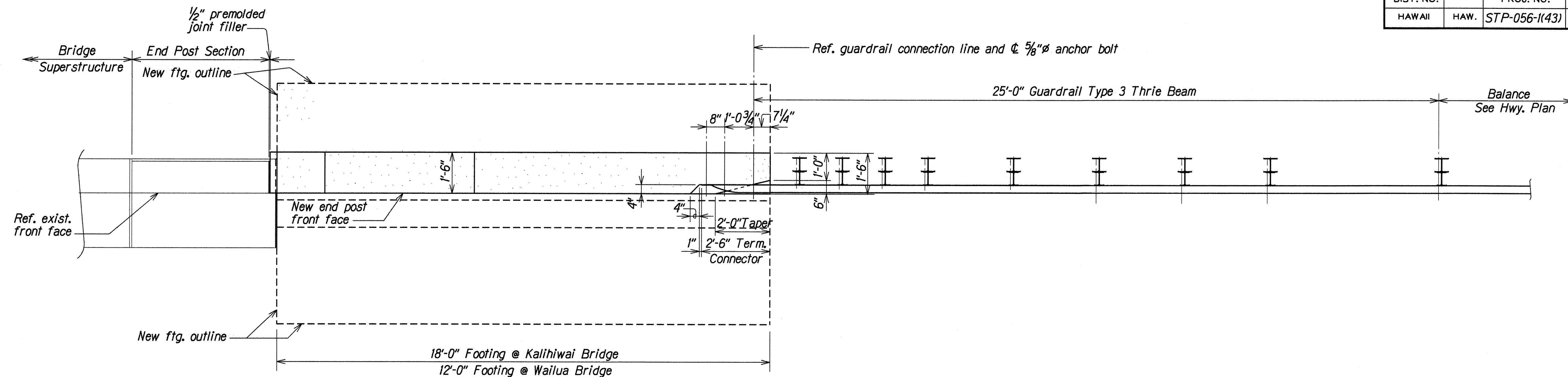
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503.0150	Concrete for New End Posts	60					28	C.Y.	88 cy.
507.0150	Steel Bridge Railing (Bike Rail)		124		480			L.F.	604 l.f.
507.0200	Steel Bridge Railing with Base Plate (Bike Rail)					316	866	L.F.	1182 l.f.
507.0250	Intermediate Steel Bridge Railing					237	707	L.F.	944 l.f.
606.3230	Guardrail Type 3 Thrie Beam on Embedded Metal Posts	100	114	102	132	70	75	L.F.	593 l.f.
606.3240	Guardrail Type 3 Thrie Beam on Posts with Base Plate		80	510	426	316		L.F.	1332 l.f.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	21	42

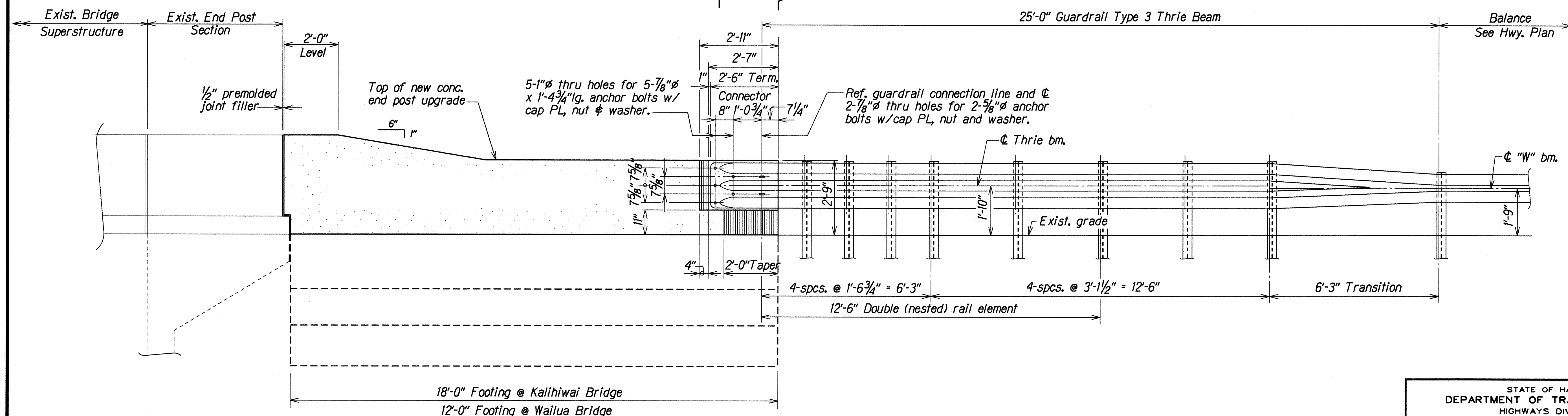
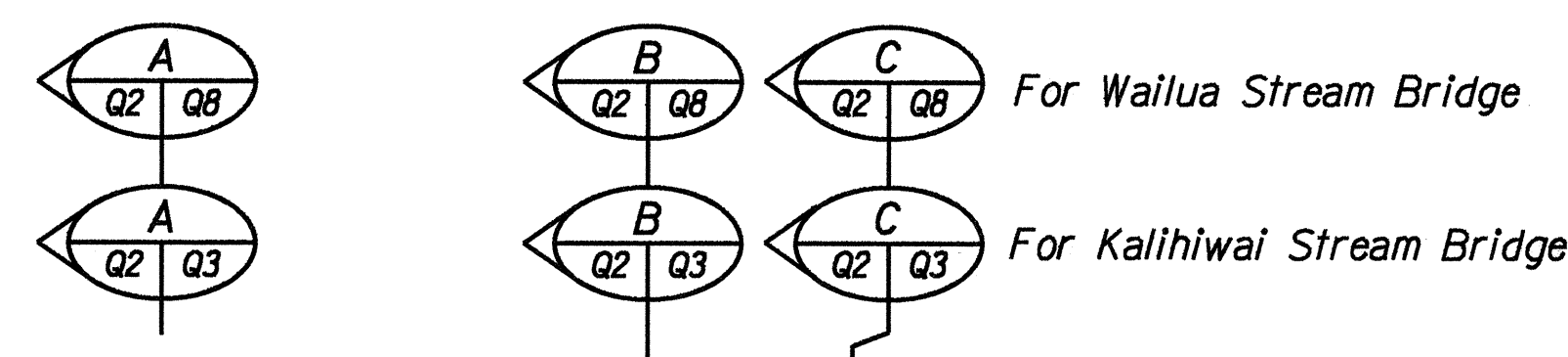
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DRAWN BY	APR 1992
DESIGNED BY	APR 1992
CHECKED BY	APR 1992
NOTE BOOK	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
END POST AND RAILING UPGRADE
INDEX, GENERAL NOTES,
ABBREVIATION AND ESTIMATED QUANTITIES
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)
Scale: As Noted Date: July 1999
SHEET No. Q1 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	22	42



PLAN



ELEVATION

TYPICAL PLAN AND ELEVATION

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

ORIGINAL PLAN	DATE
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DESIGNED BY W	APR 1999
CHECKED BY W	APR 1999
NOTED BY W	APR 1999
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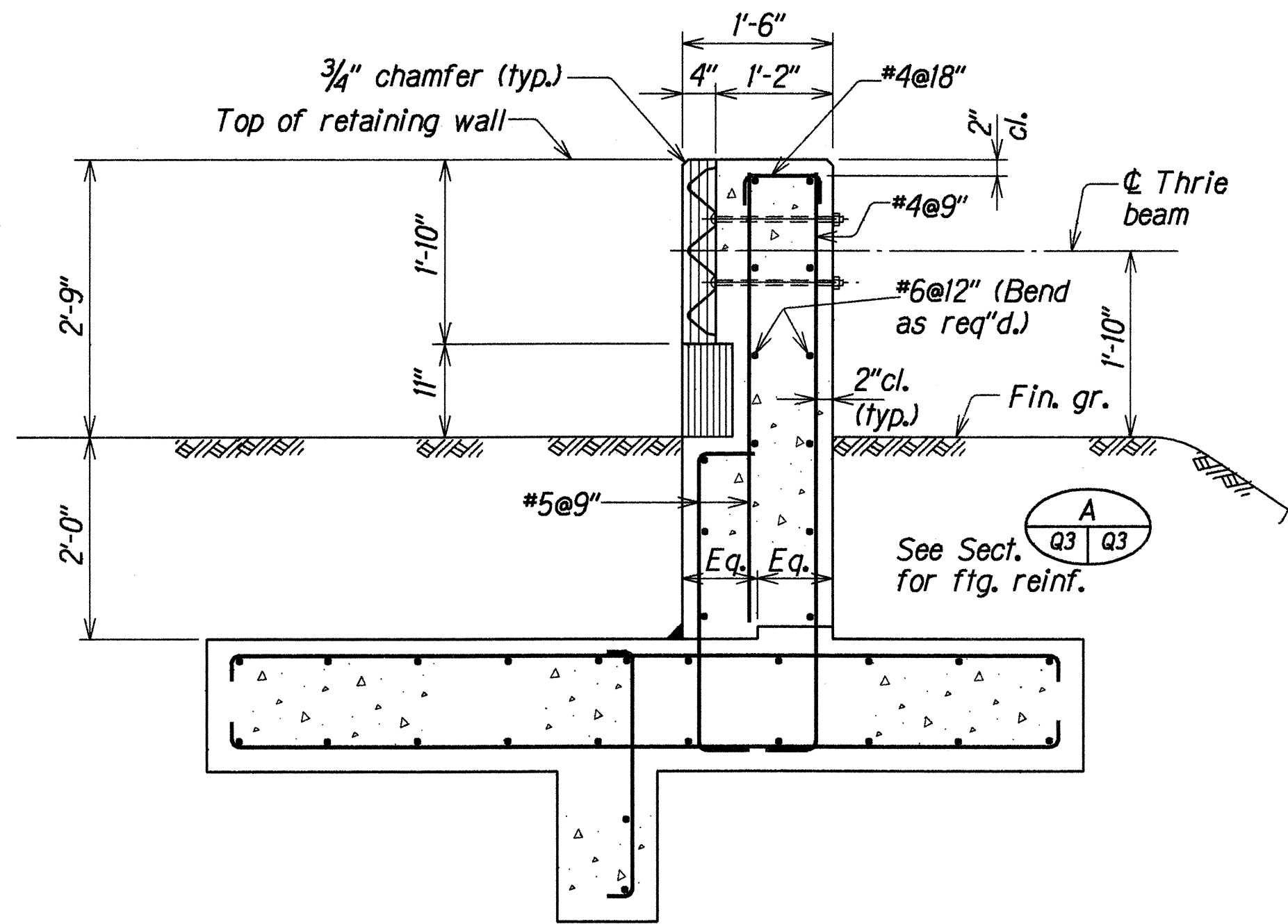
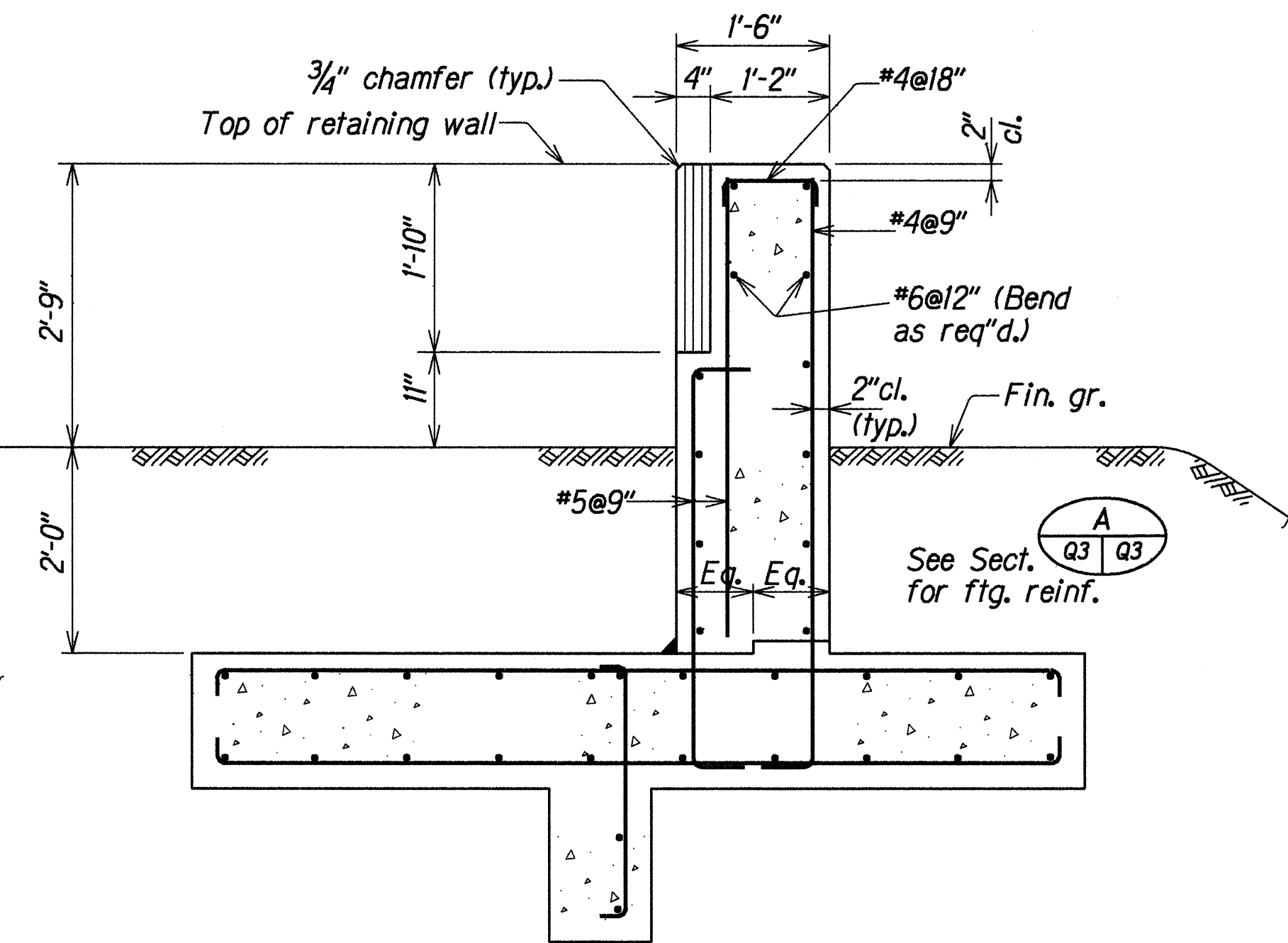
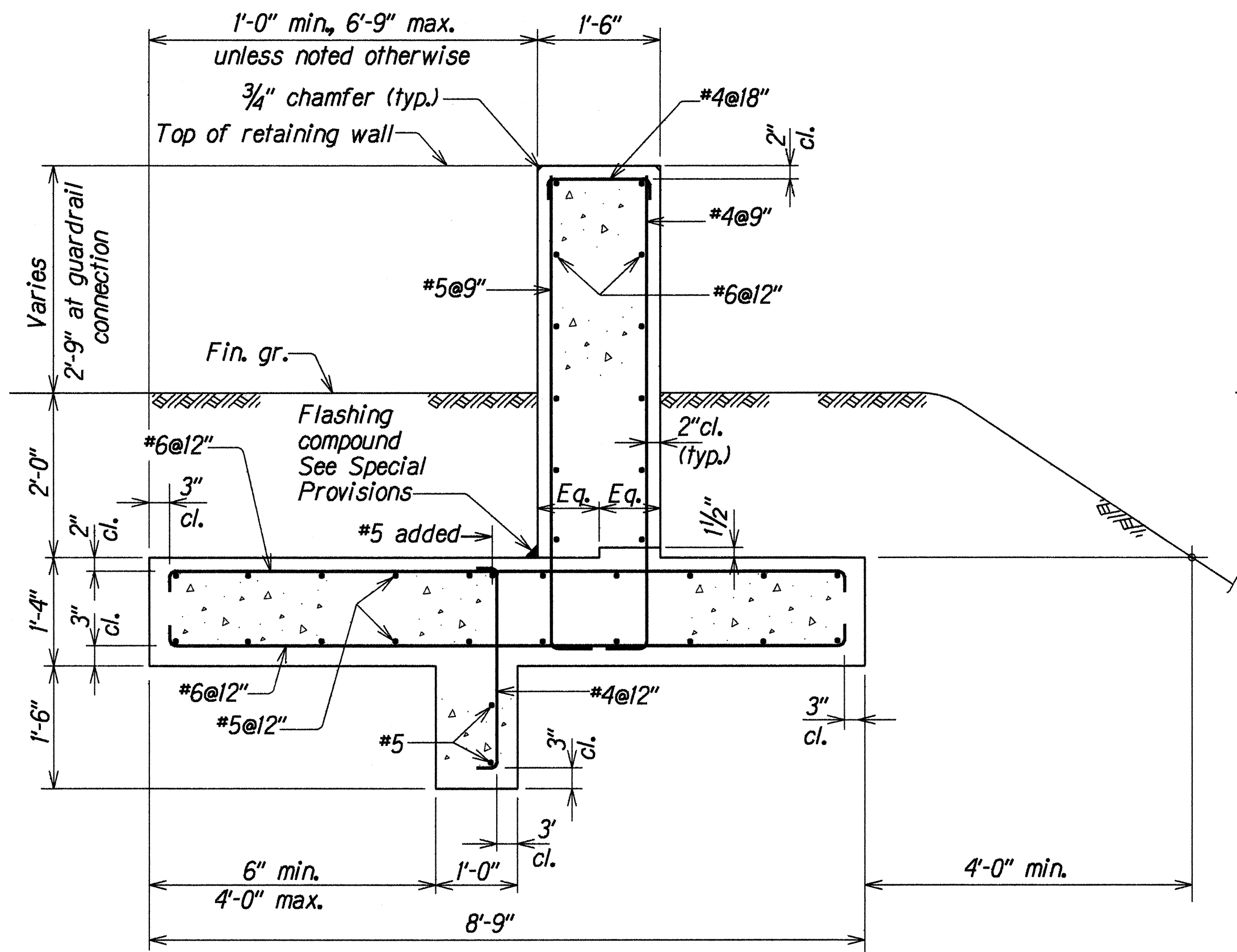
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHIWAI AND WAILUA STREAM BRIDGES
TYPICAL END POST PLAN AND ELEVATIONS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q2 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	23	42



SECTION B
Q2 Q3

SECTION C
Q2 Q3

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

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DRAWN BY	DATE
TRACED BY	DATE
NOTE BOOK	DATE
QUANTITIES BY	DATE
CHECKED BY	DATE

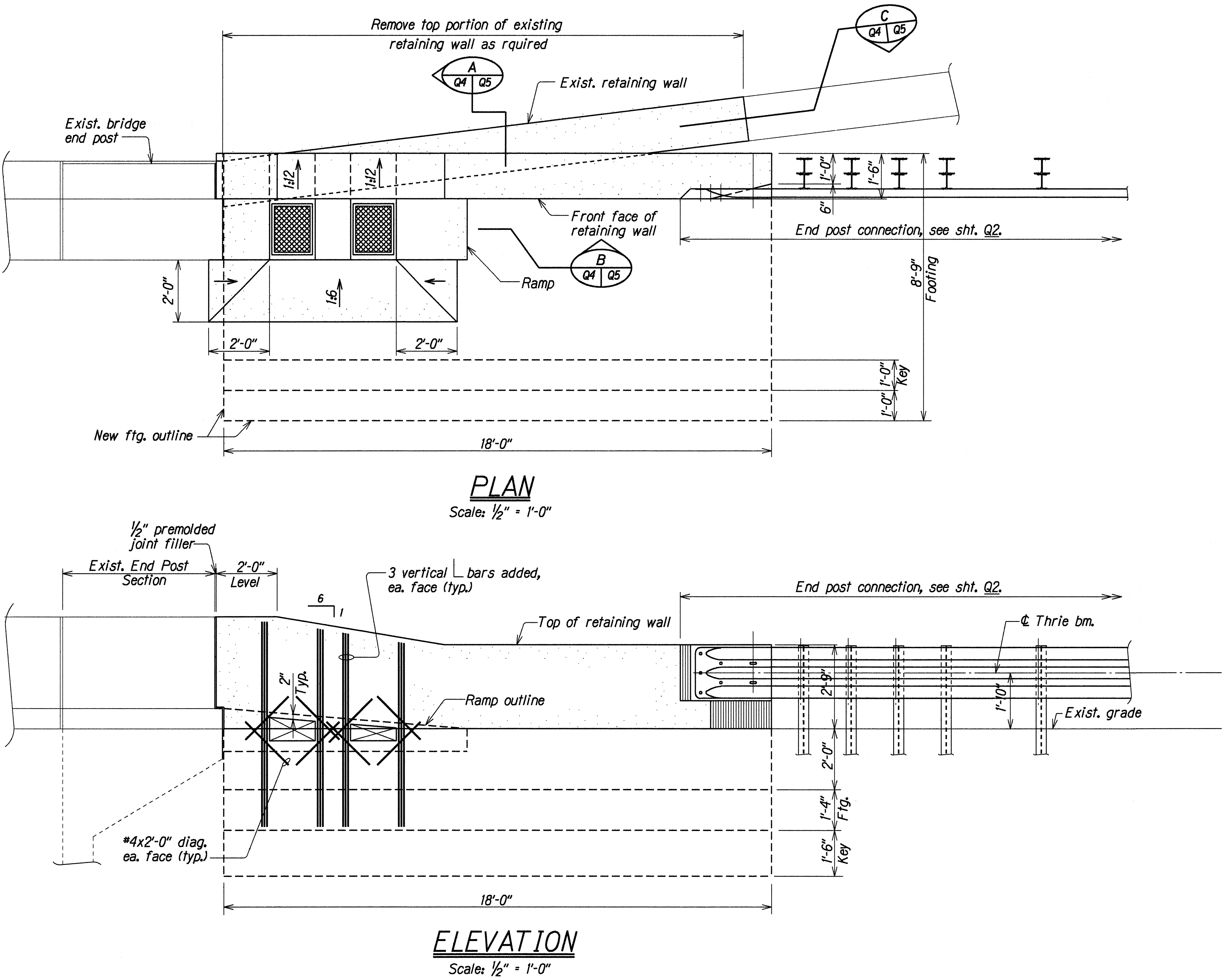
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHIWAI STREAM BRIDGE
TYPICAL SECTIONS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	24	42

NOTE:
 1. See Typical Plan, Elevation and Sections on shts. Q2 and Q4 for information. Data is similar, except as noted on drawings for specific structure.



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NOTED BY	APR 1999
DESIGNED BY	APR 1999
CHECKED BY	APR 1999
DATE	APR 1999

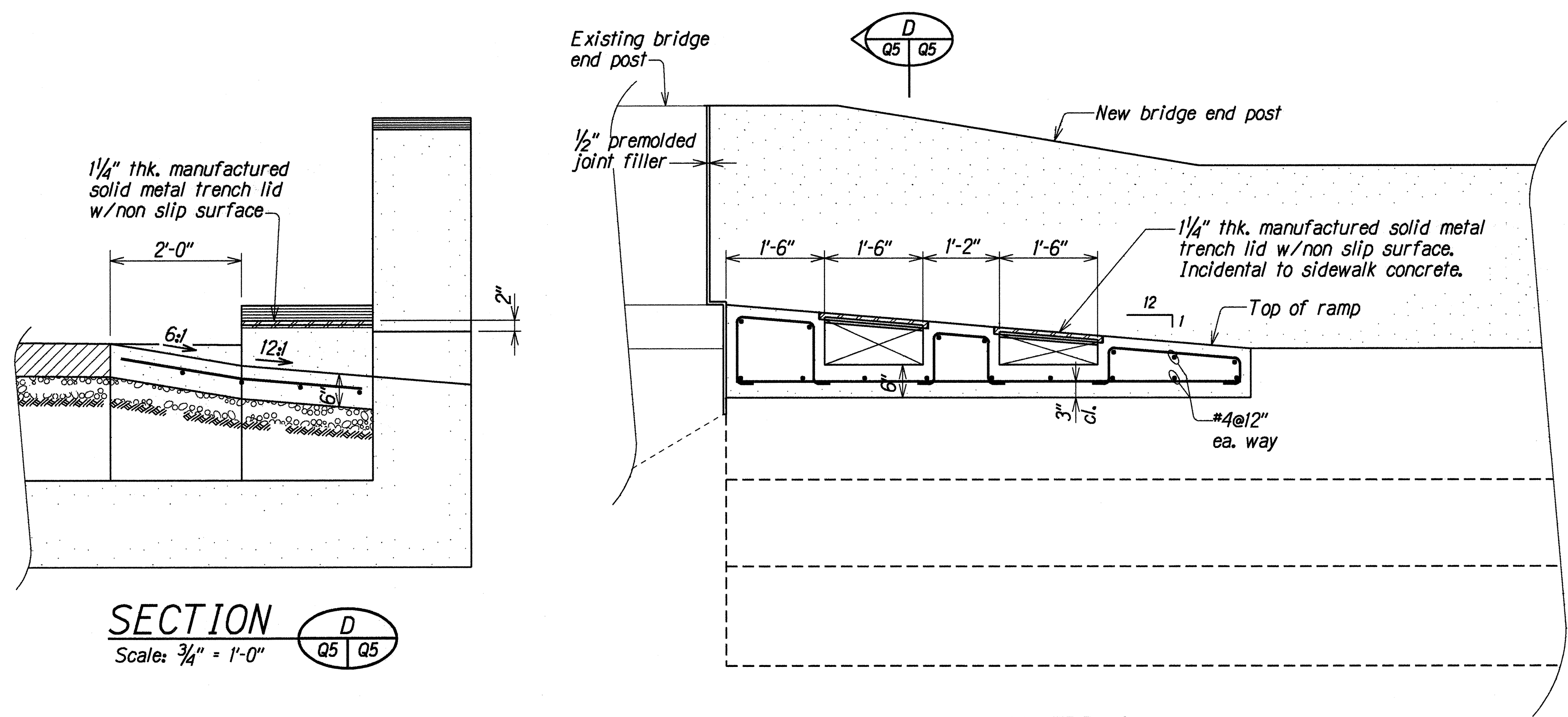
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 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

KALIHIWAI STREAM BRIDGE
 END POST PLAN AND ELEVATION
 Kuhio Highway
 Guardrail and Shoulder Improvements at Various Locations
 Federal Aid Project No. STP-056-1(43)

Scale: As Noted
 Date: July 1999

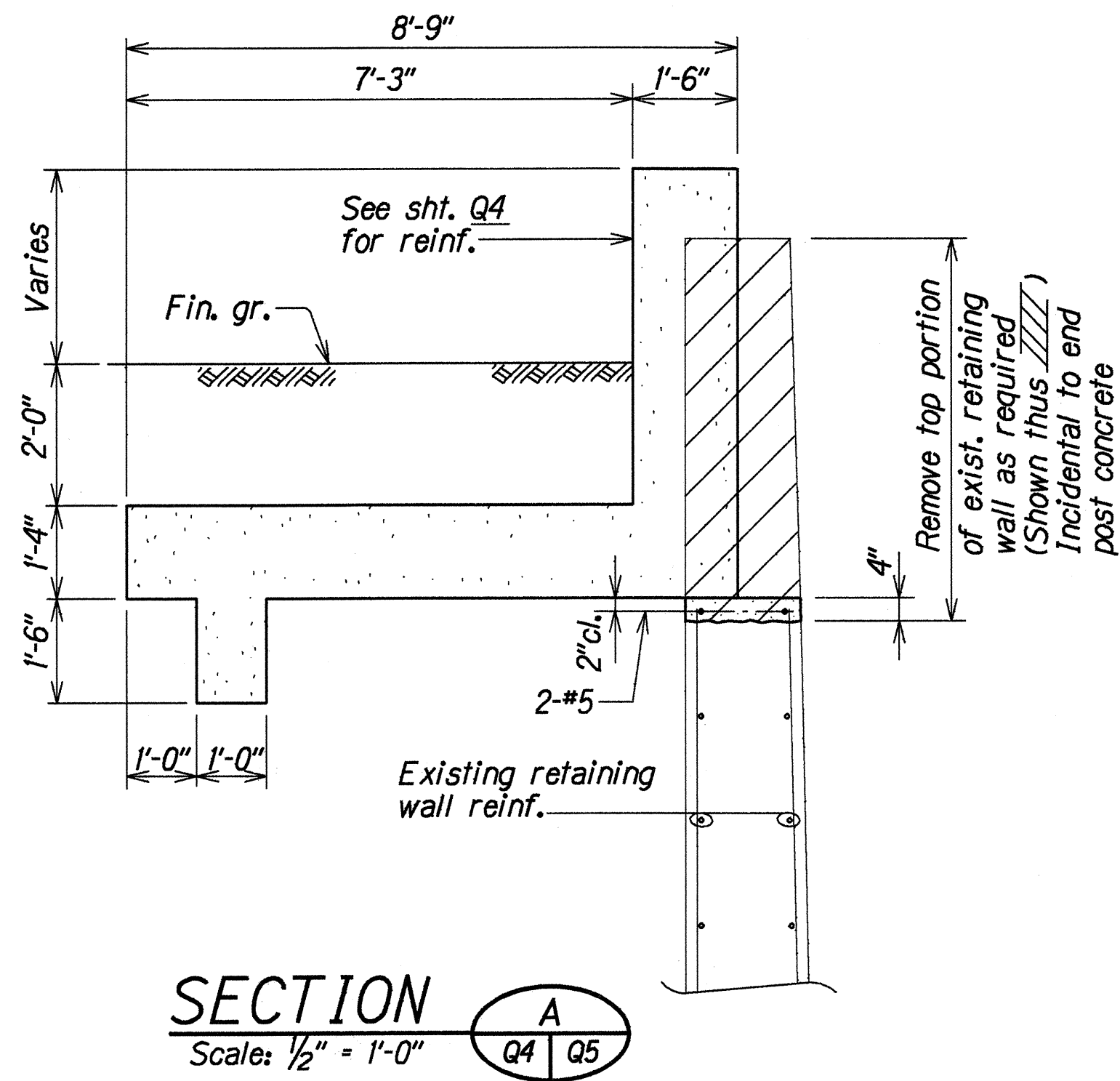
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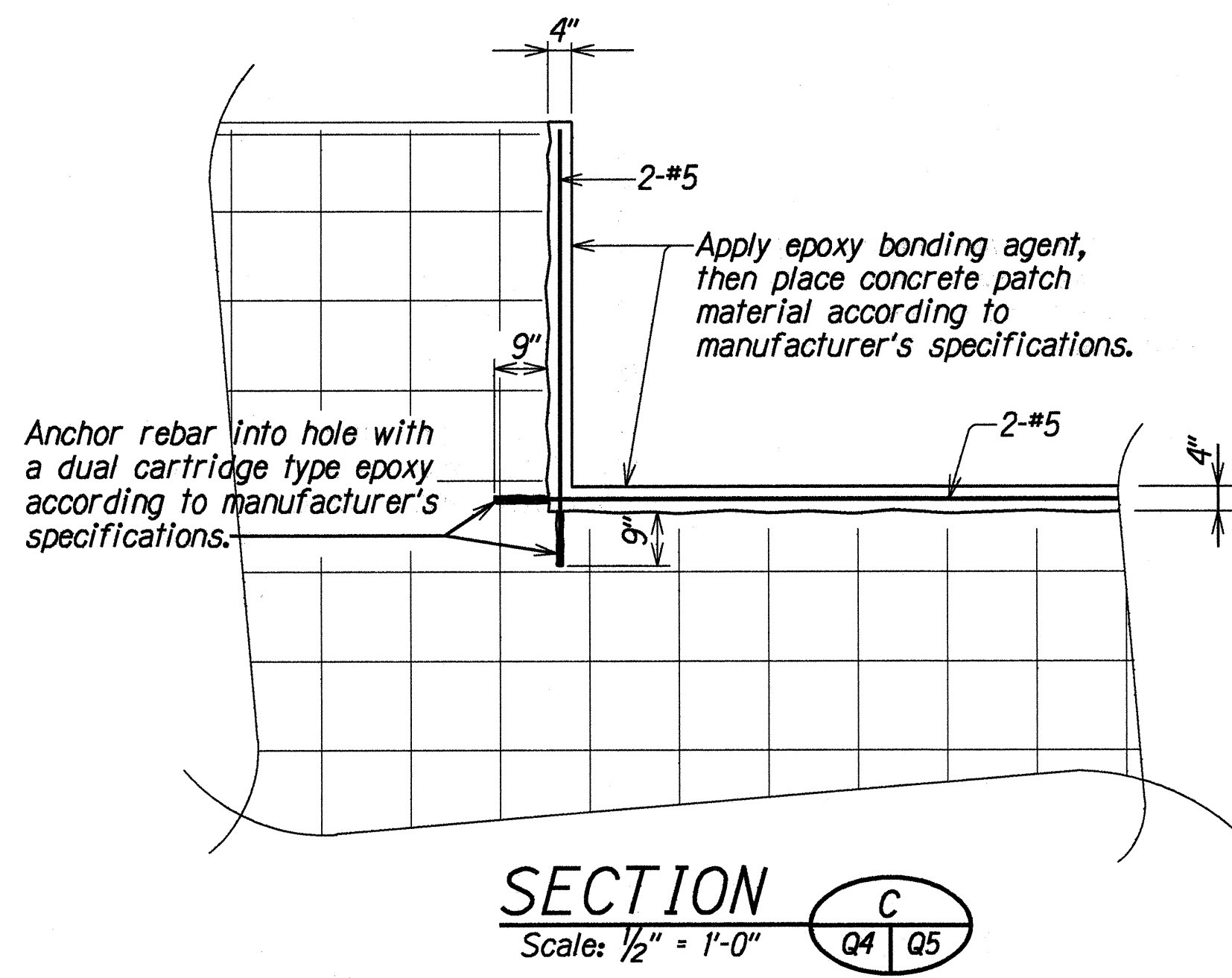


SECTION D
Q5 Q5
Scale: 3/4" = 1'-0"

SECTION B
Q4 Q5
Scale: 3/4" = 1'-0"



SECTION A
Q4 Q5
Scale: 1/2" = 1'-0"



SECTION C
Q4 Q5
Scale: 1/2" = 1'-0"

SURVEY PLOTTED BY	DATE
DRAWN BY	DATE
NOTES BY	DATE
CHECKED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

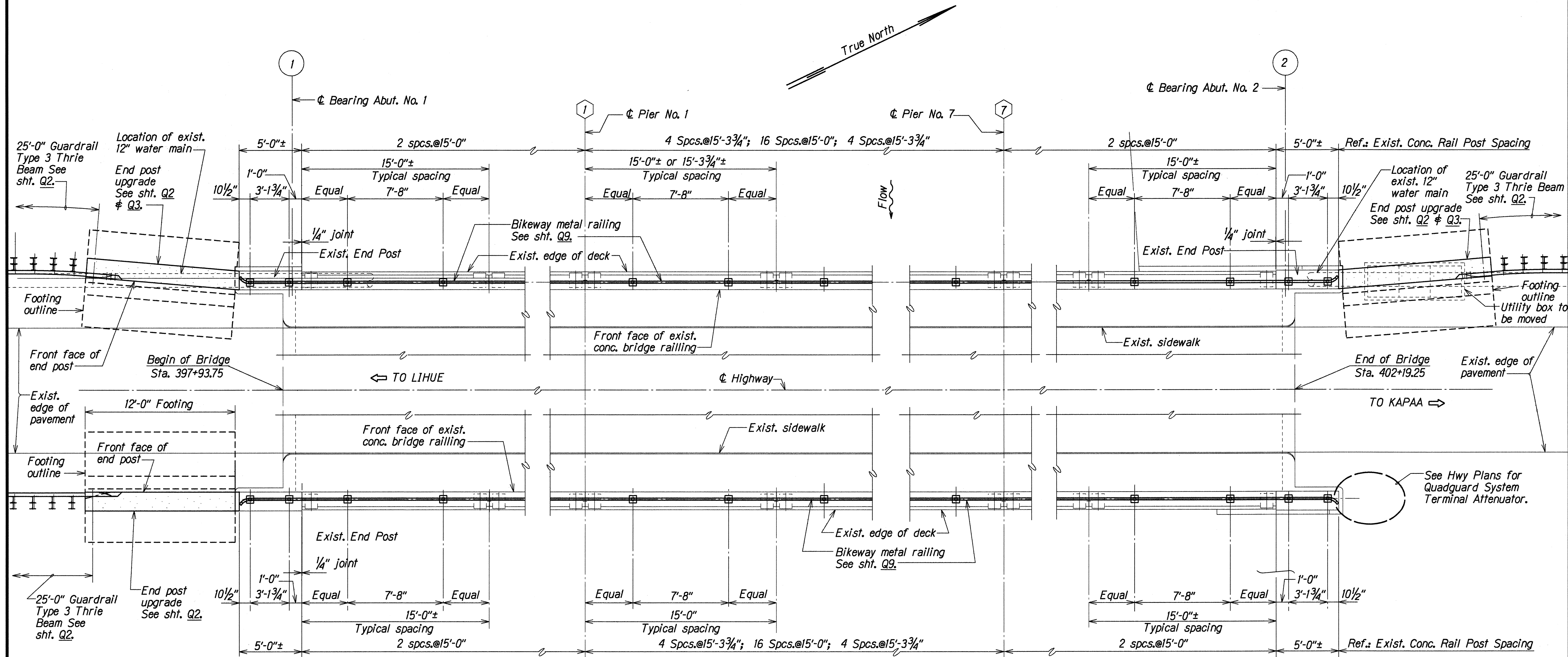
KALIHIWAI STREAM BRIDGE

SECTIONS

Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	26	42



NOTE:
End post work shall be staggered so construction will not occur on both sides of the road simultaneously.

LAYOUT PLAN
Scale: 1/4" = 1'-0"

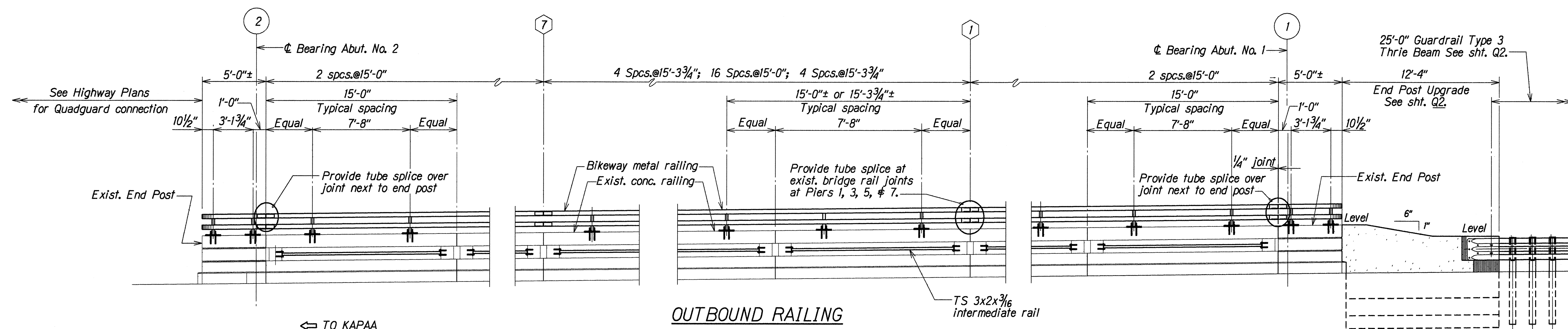
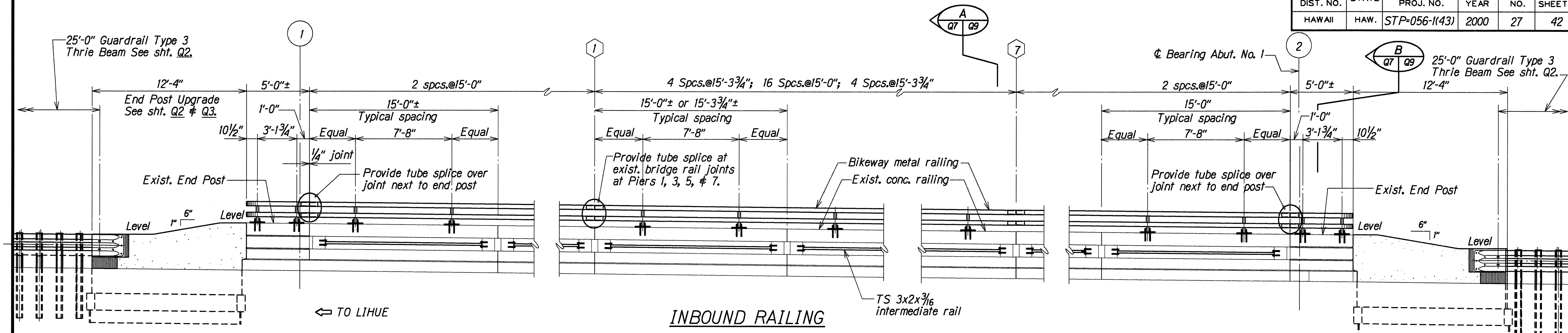
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CHECKED BY JN	MAY 1992
NOTED BY K6	MAY 1992

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAILUA STREAM BRIDGE
LAYOUT PLAN
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	27	42



ELEVATIONS

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

SURVEY PLOTTED BY	DATE
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TRACED BY	MAY 1999
QUANTITIES BY	MAY 1999
CHECKED BY	MAY 1999
ORIGINAL PLAN	
NOTE BOOK	
No.	17

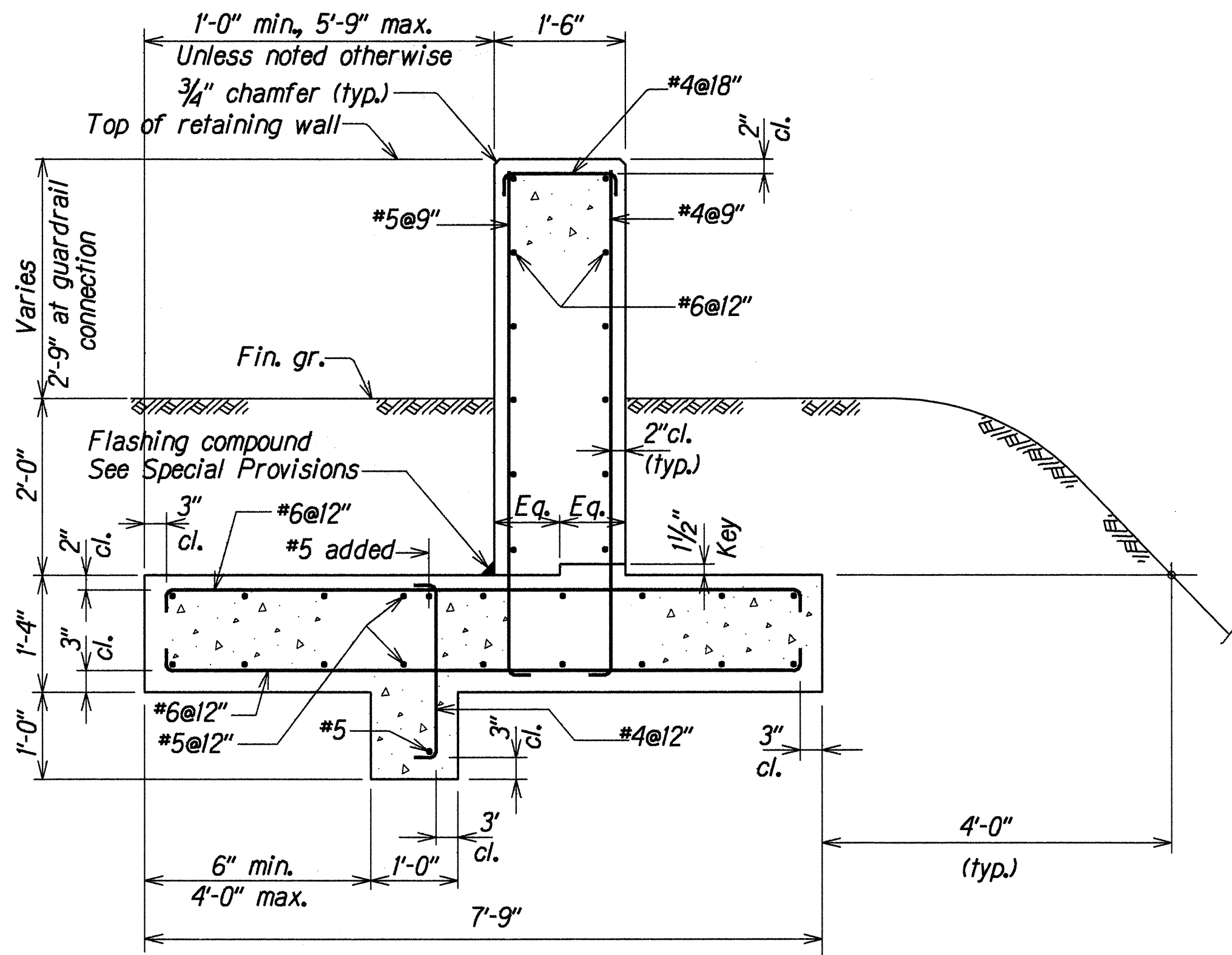
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAILUA STREAM BRIDGE
ELEVATIONS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

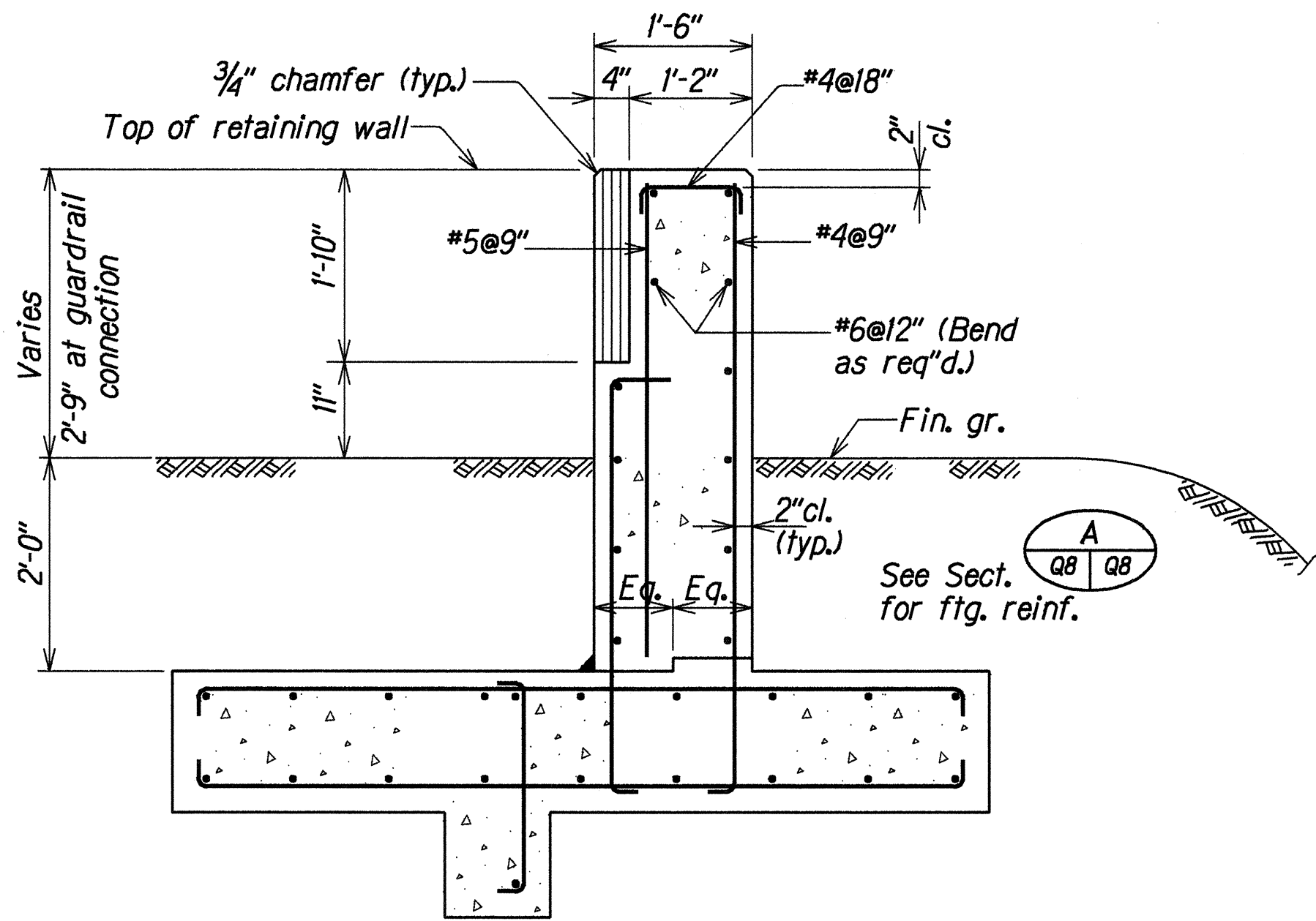
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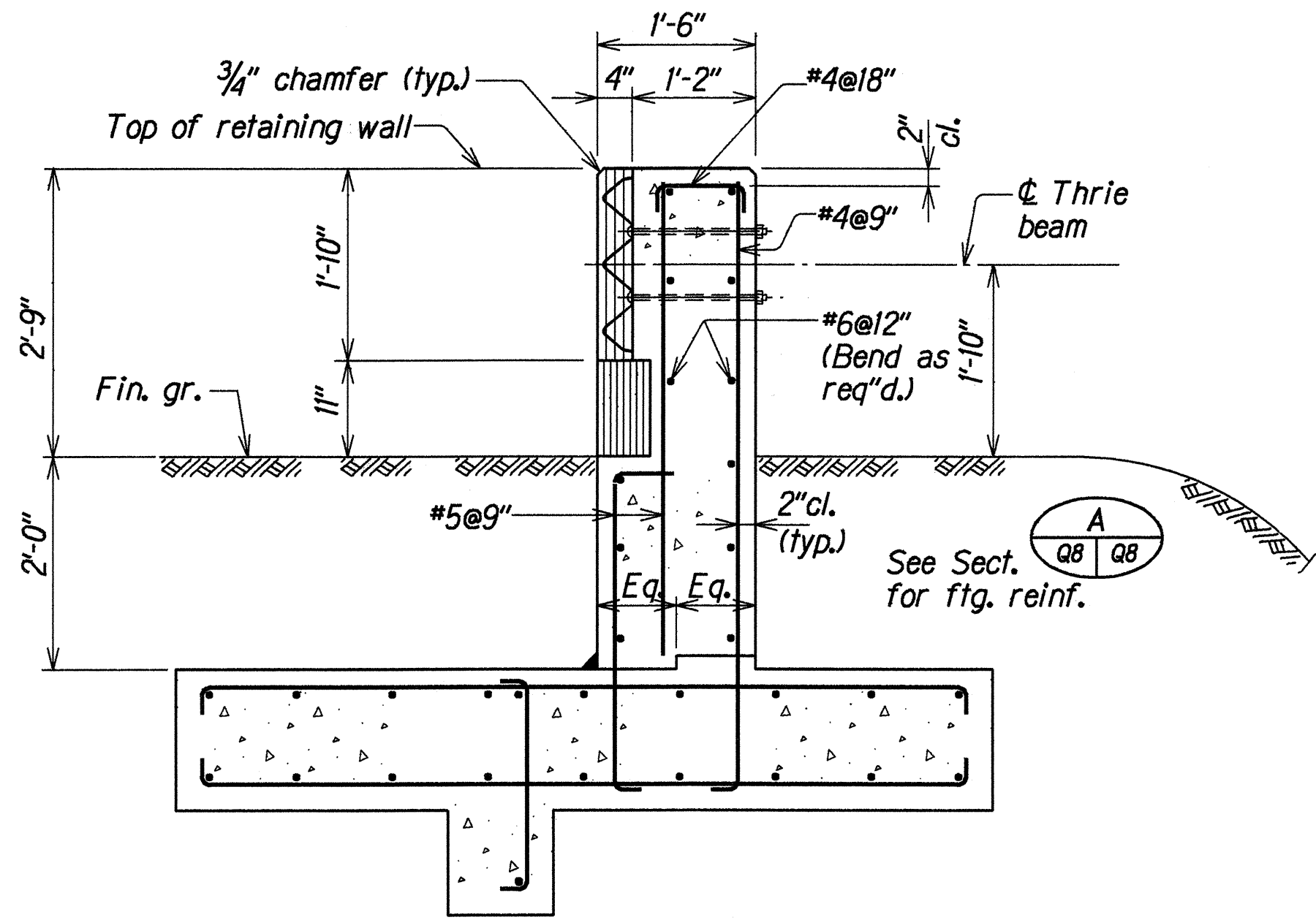
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HAWAII	HAW.	STP-056-1(43)	2000	28	42



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Q2 Q8

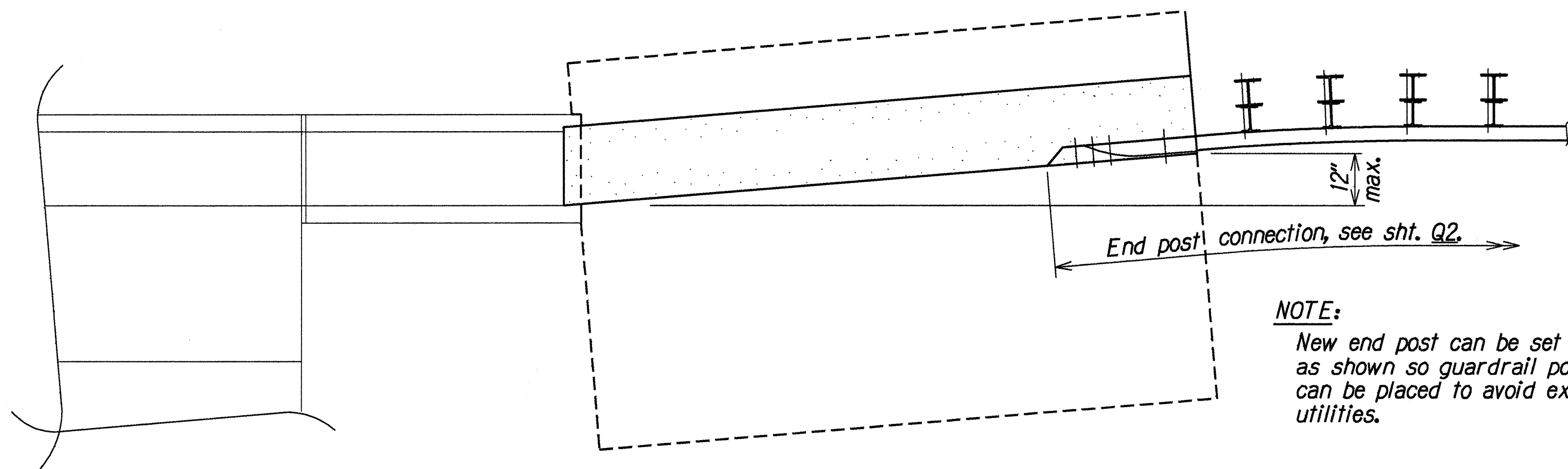


SECTION B
Q2 Q8



SECTION C
Q2 Q8

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



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

NOTE:
New end post can be set back as shown so guardrail posts can be placed to avoid existing utilities.

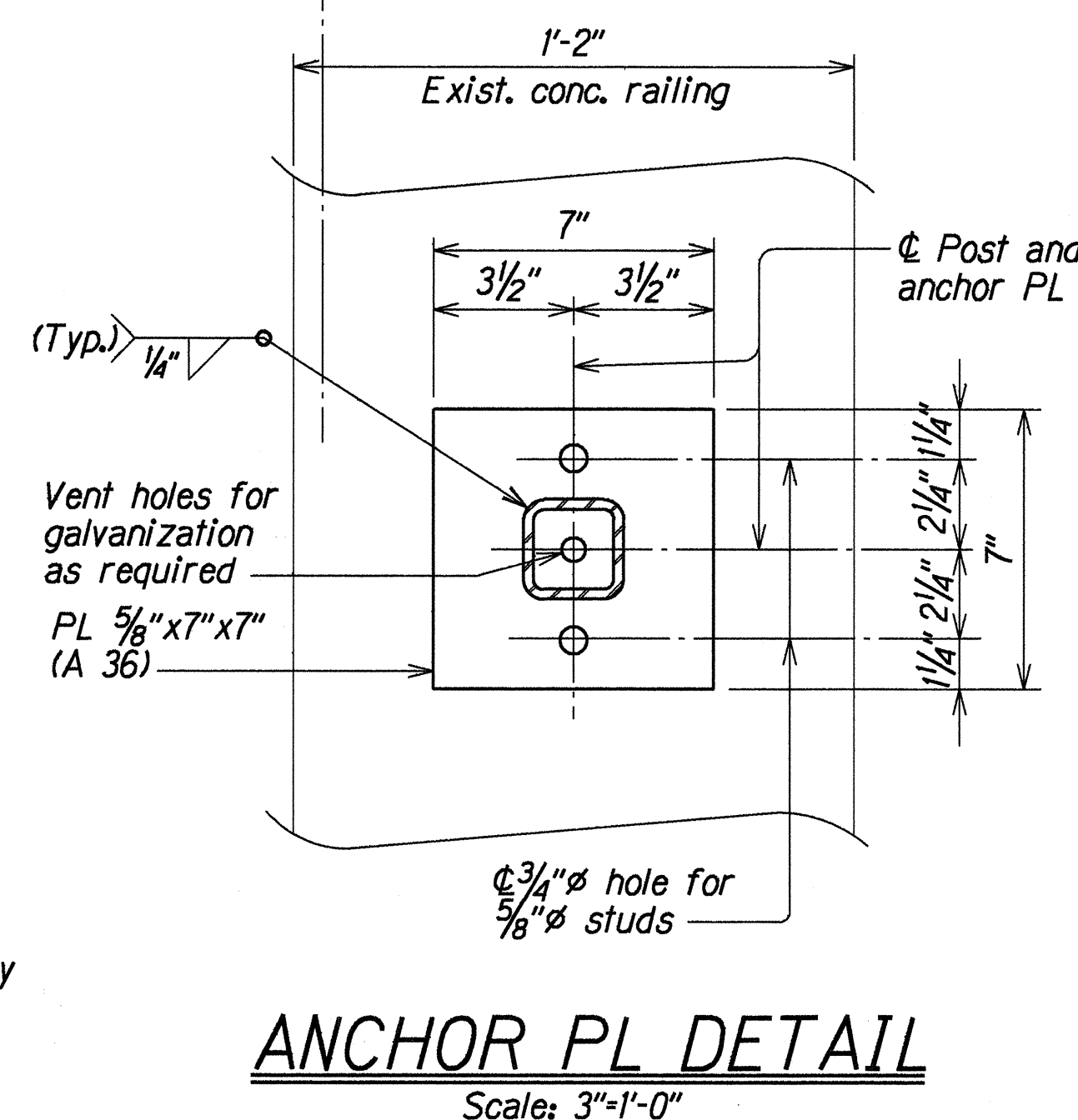
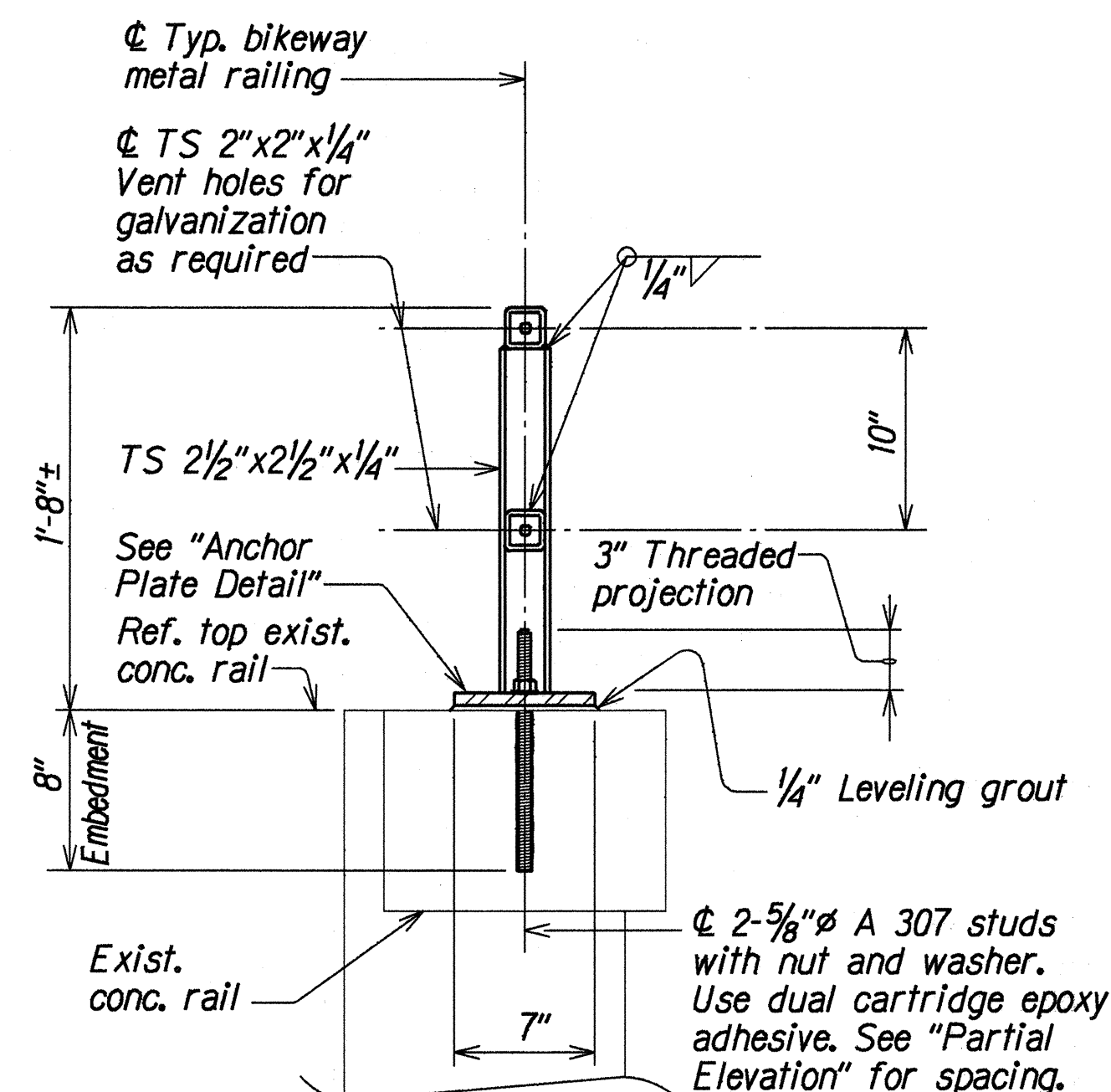
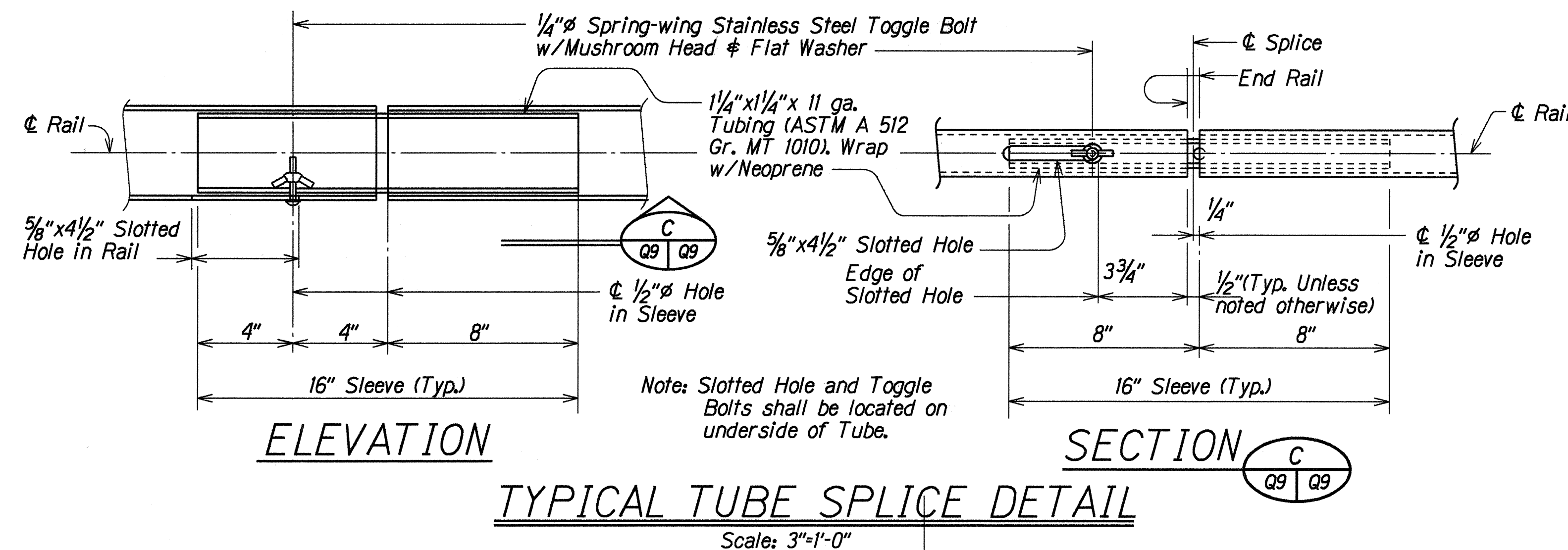
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NOTE BOOK	DRAWN BY	APR 1999
18	TRACED BY	APR 1999
	QUANTITIES BY	APR 1999
	CHECKED BY	APR 1999

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

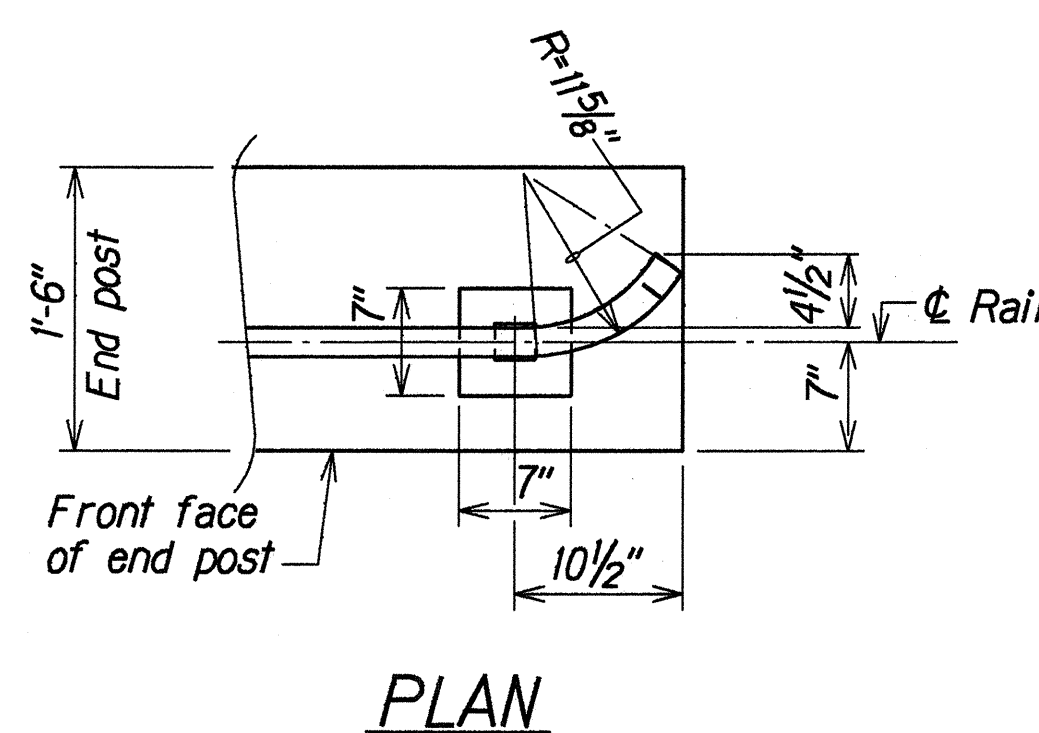
WAILUA STREAM BRIDGE
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Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

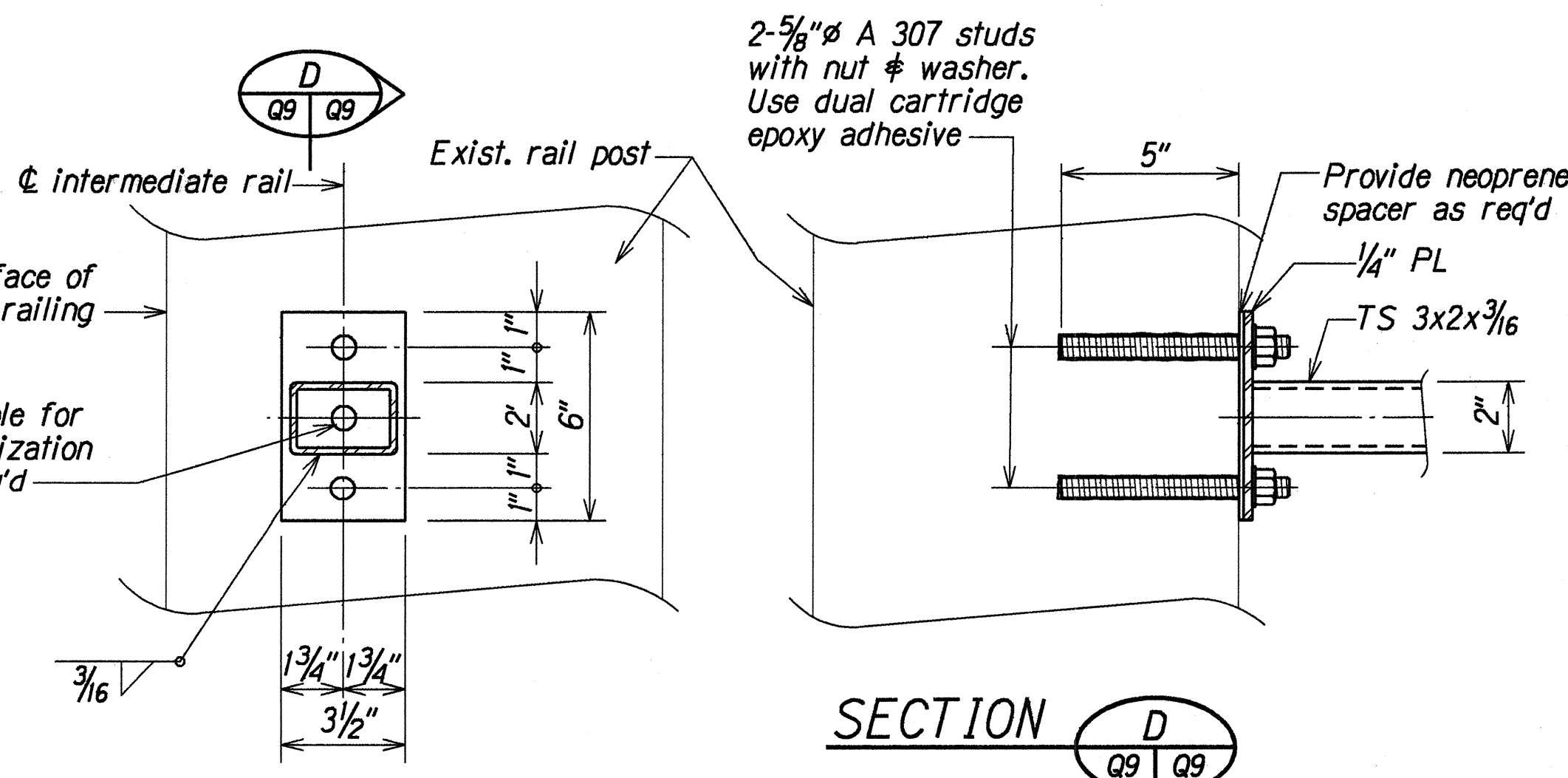
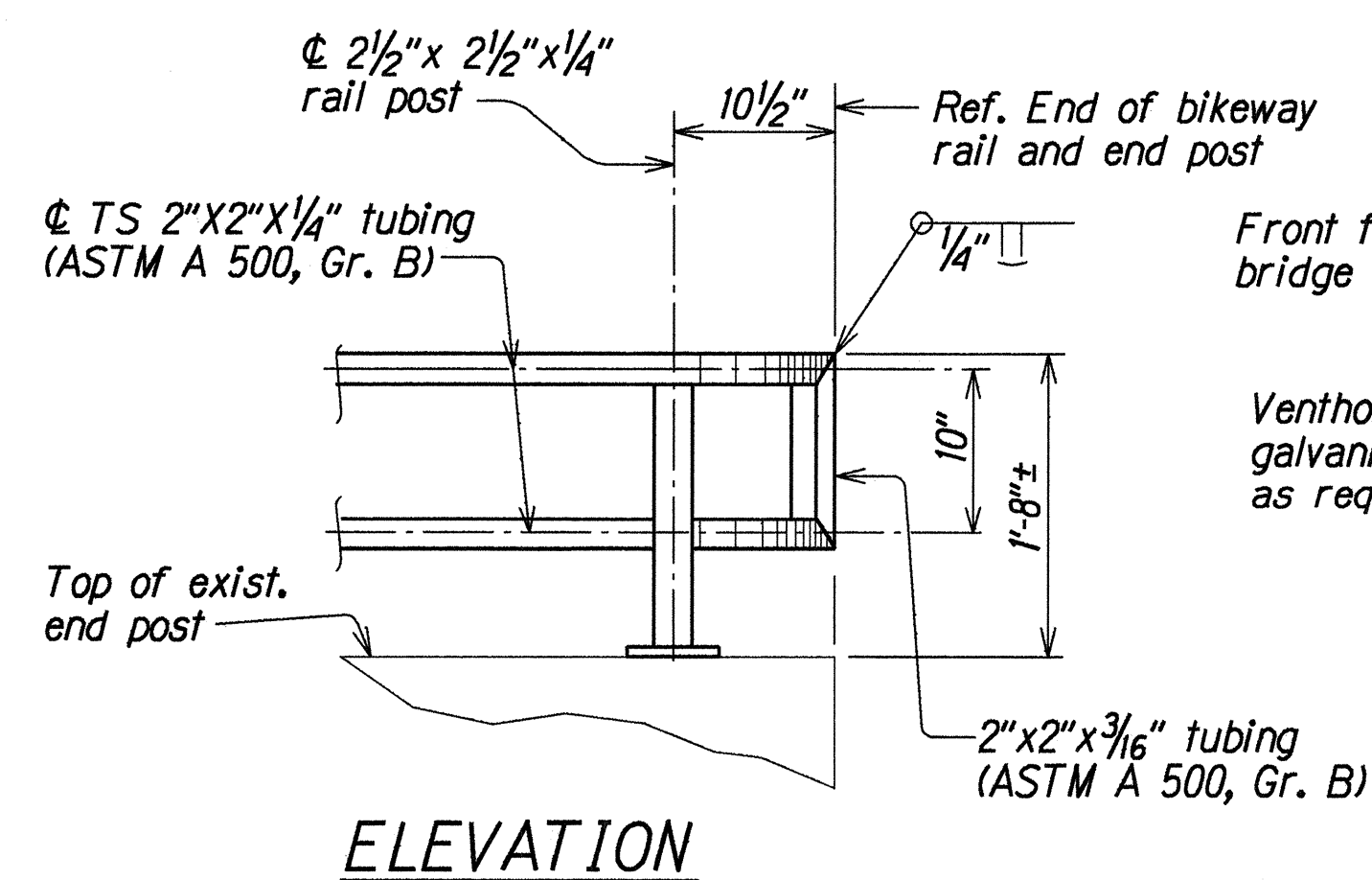
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HAWAII	HAW.	STP-019-2(35)	2000	29	42



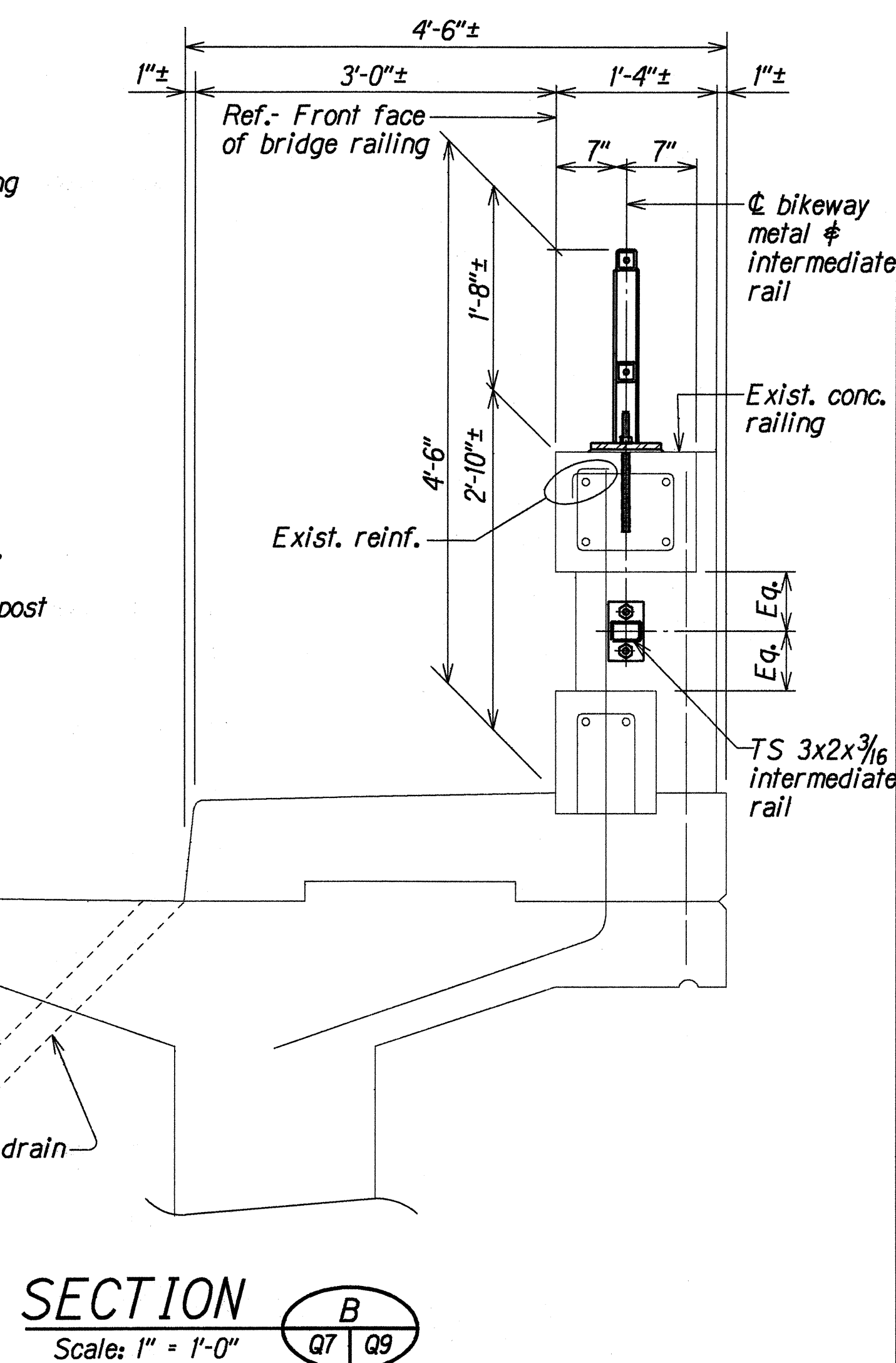
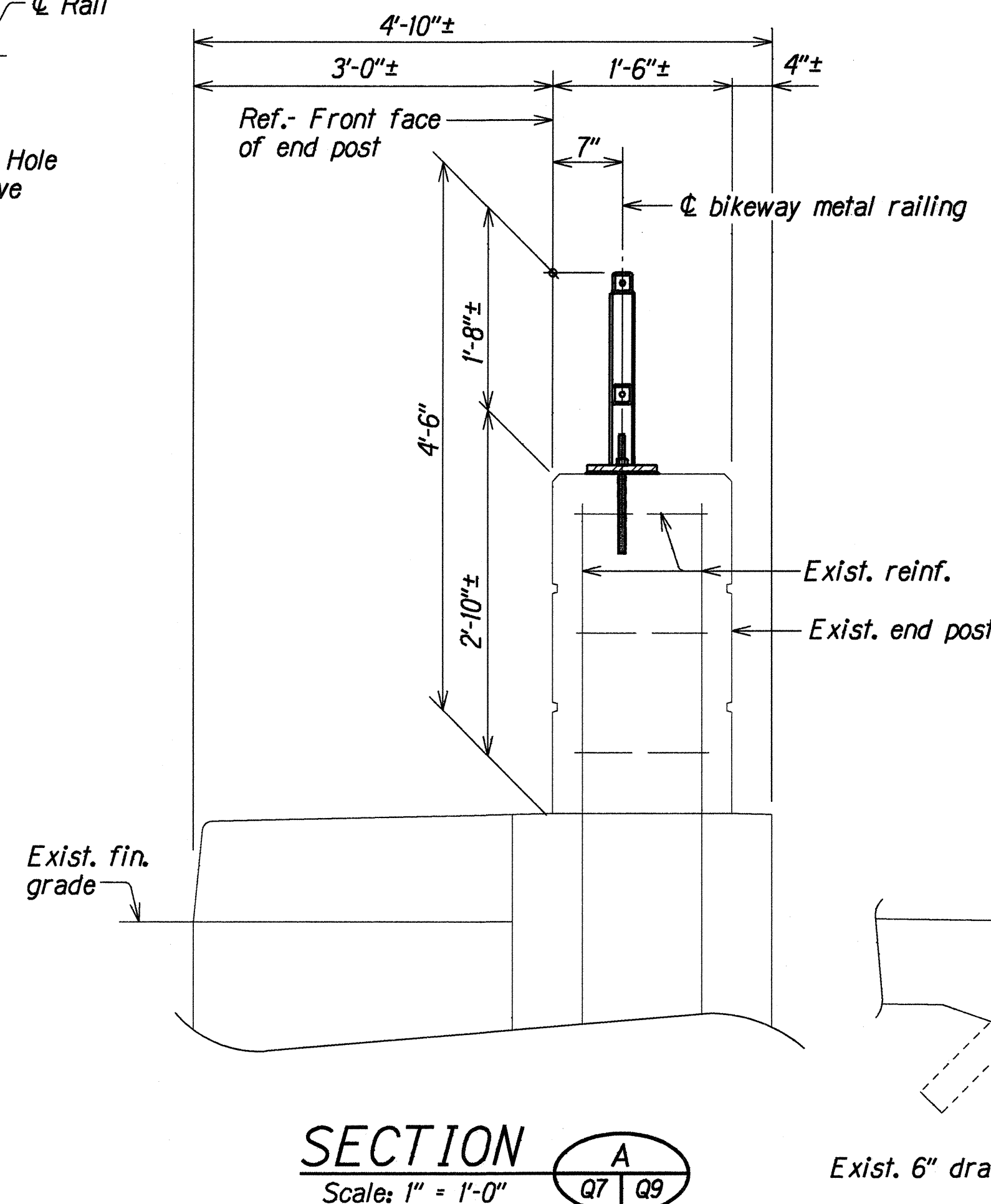
TYPICAL SECTION
BIKEWAY METAL RAILING
Scale: 1/2" = 1'-0"



TYPICAL END DETAIL AT BIKEWAY METAL RAILING
Scale: 1" = 1'-0"



INTERMEDIATE RAIL DETAIL
Scale: 3" = 1'-0"



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

SURVEY PLOTTED BY	DATE
DRAWN BY	MAY 1999
CHECKED BY	MAY 1999
NOTED BY	MAY 1999
QUANTITIES BY	MAY 1999
CHECKED BY	MAY 1999

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAILUA STREAM BRIDGE

BIKEWAY METAL RAILING DETAILS

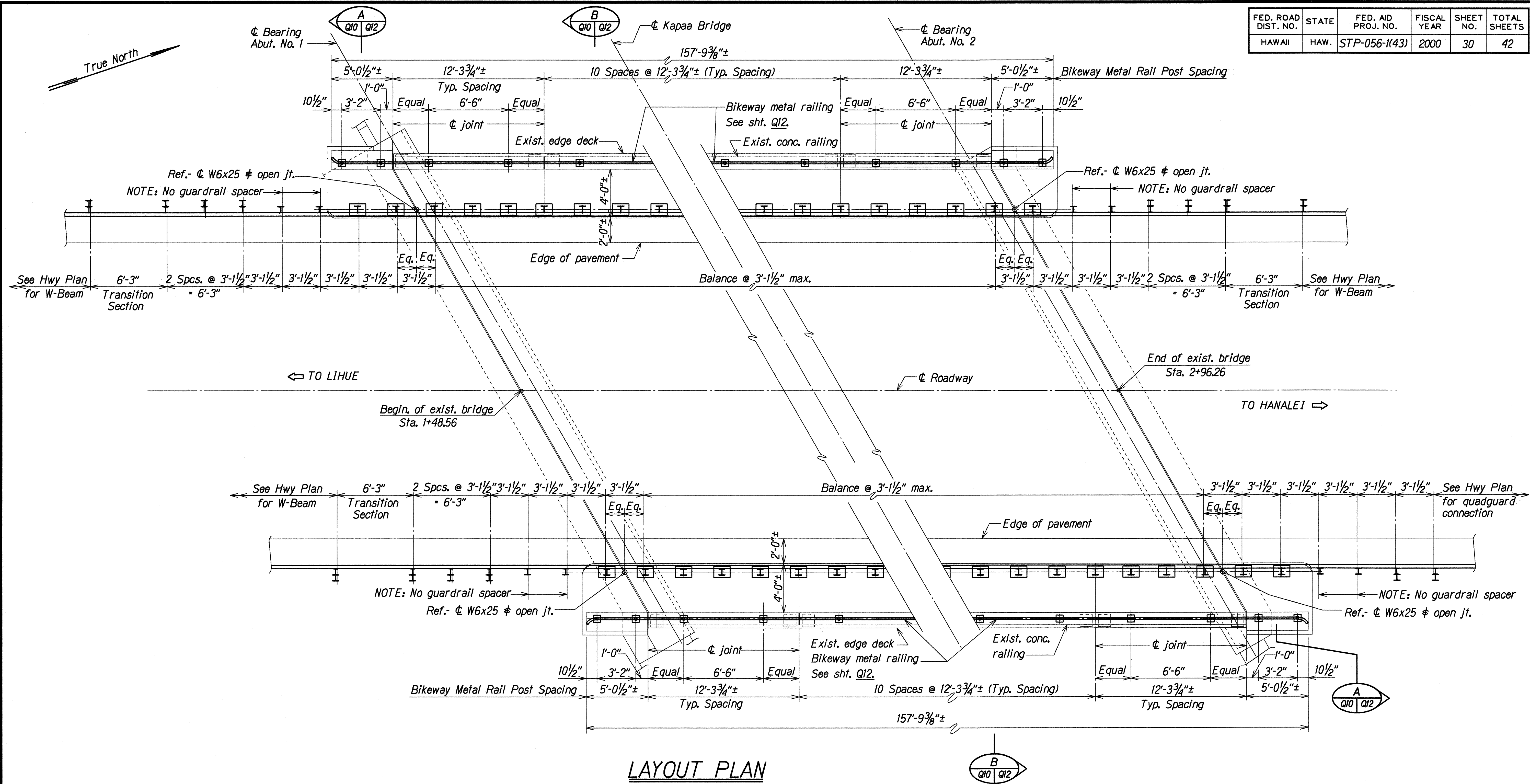
Kuhio Highway

Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q9 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	30	42



SURVEY PLOTTED BY	DATE
DRAWN BY	APR 1999
TRACED BY	APR 1999
QUANTITIES BY	APR 1999
CHECKED BY	APR 1999
ORIGINAL PLAN	
NOTE BOOK	
N ^o .	

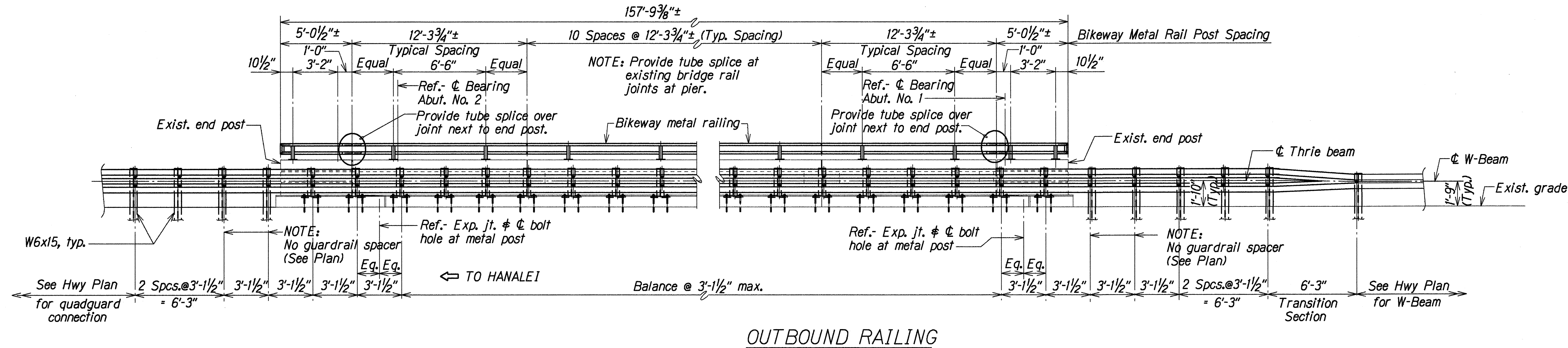
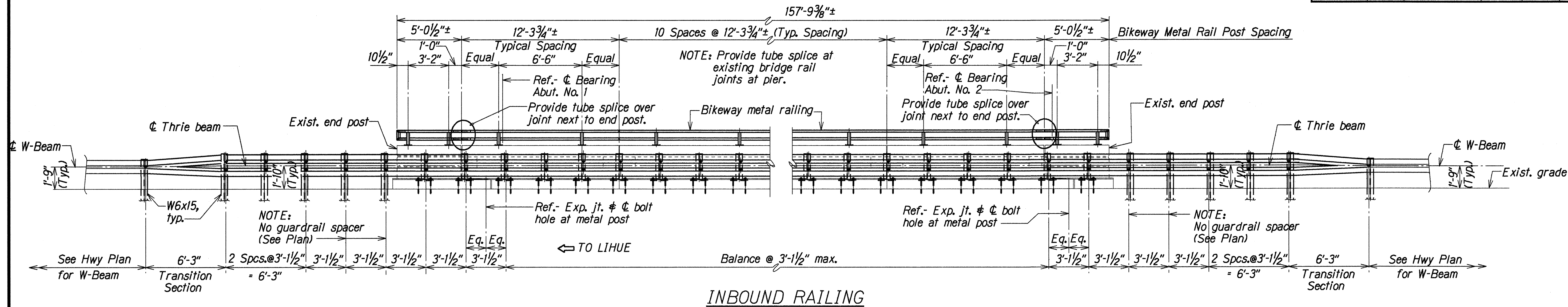
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KAPAA STREAM BRIDGE
LAYOUT PLAN
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

SHEET No. Q10 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	31	42



- NOTES**
1. Provide TS 2x2x3/8 intermediate rail at existing bridge rail. See Q12 for details.
 2. Adjust guardrail post spacing on bridge to avoid placing anchors into sidewalk joints.

SURVEY PLOTTED BY	DATE
DRAWN BY	APR 1999
CHECKED BY	APR 1999
NOTED BY	APR 1999
QUANTITIES BY	APR 1999
CHECKED BY	APR 1999
DATE	APR 1999

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

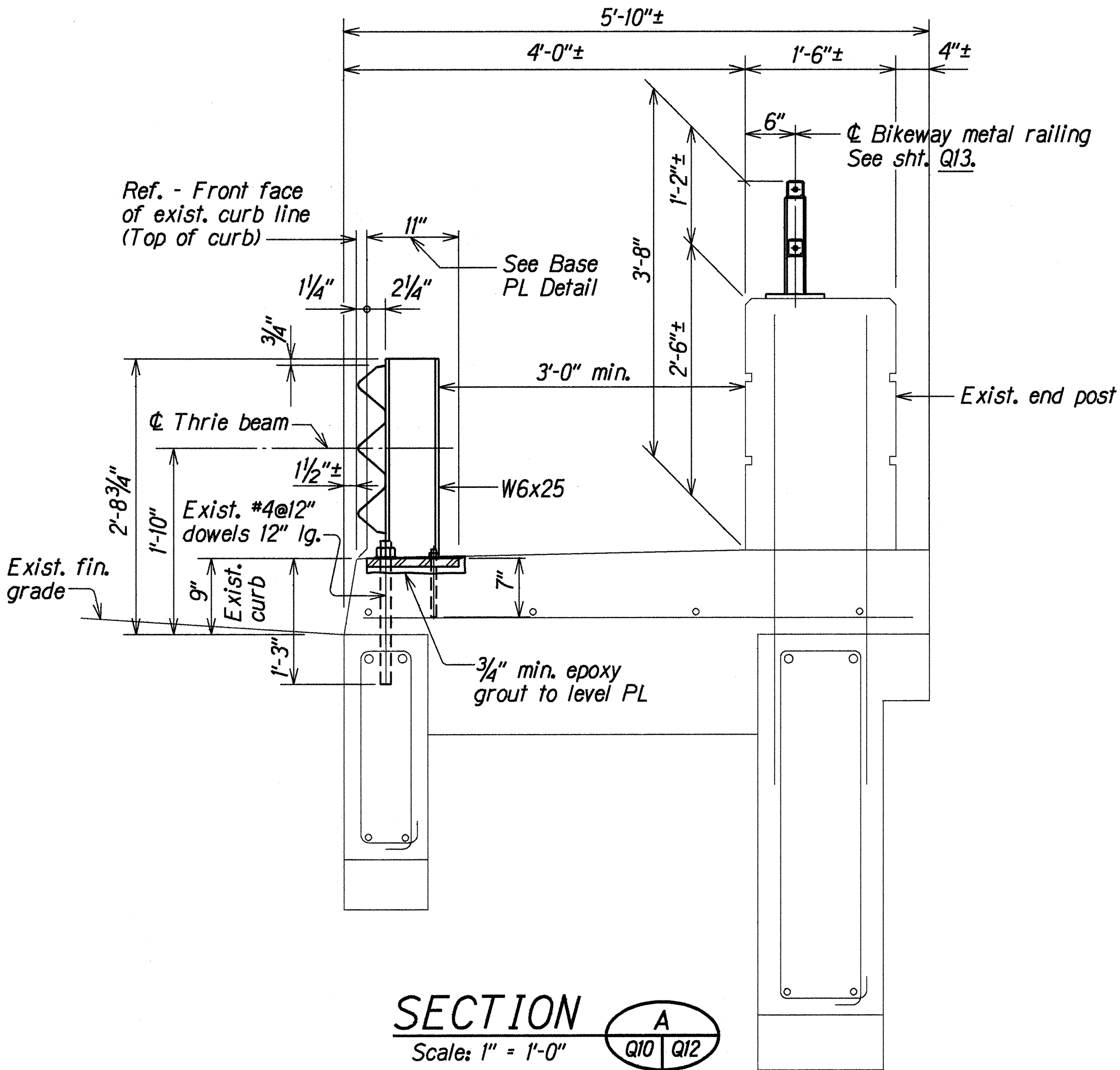
KAPAA STREAM BRIDGE
ELEVATIONS

Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

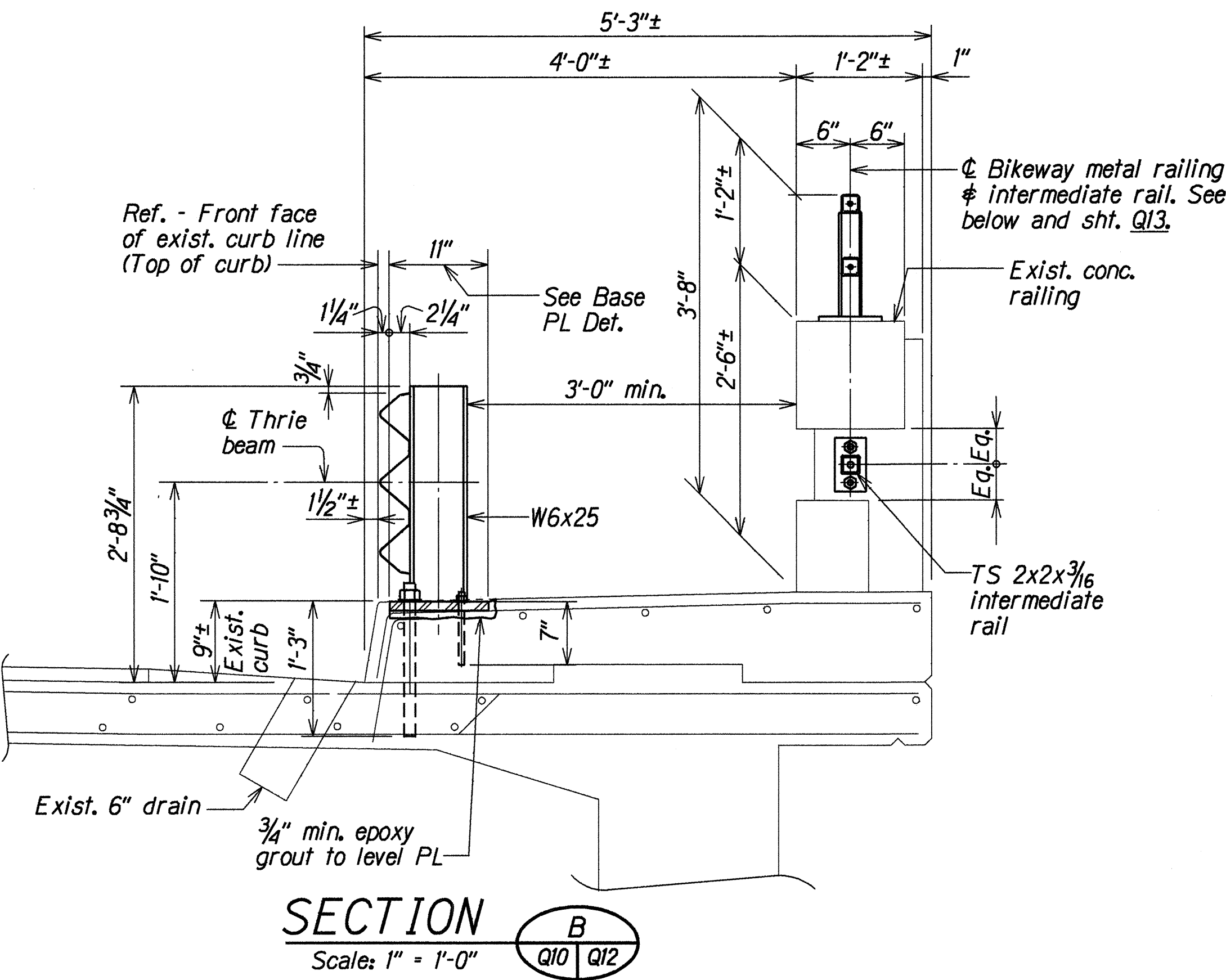
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SHEET No. 31 OF 22 SHEETS

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HAWAII	HAW.	STP-056-1(43)	2000	32	42

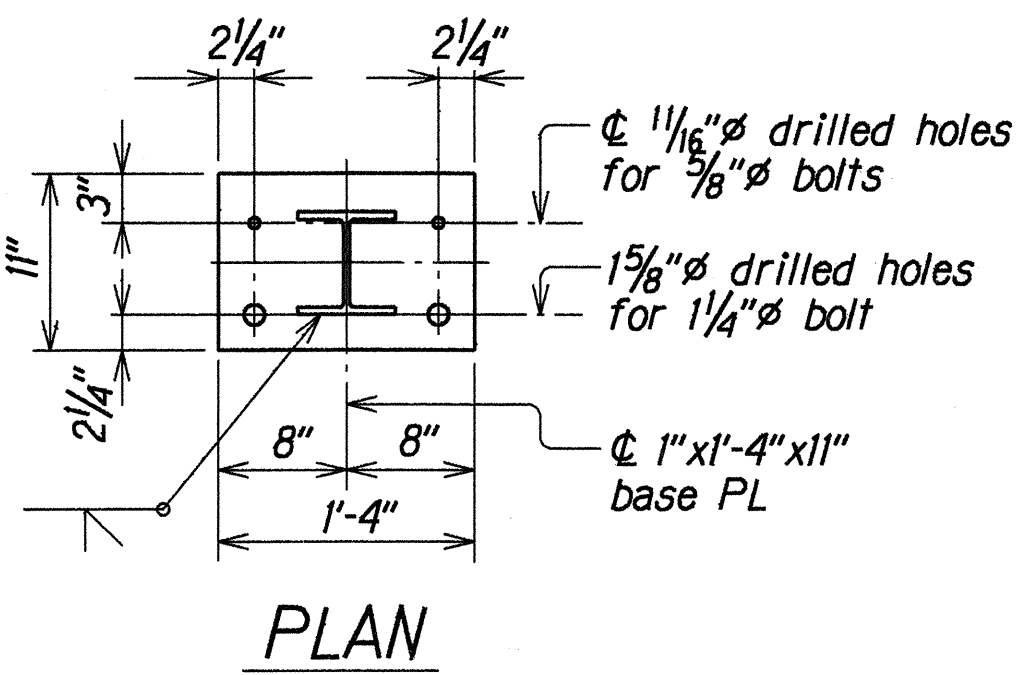


SECTION A
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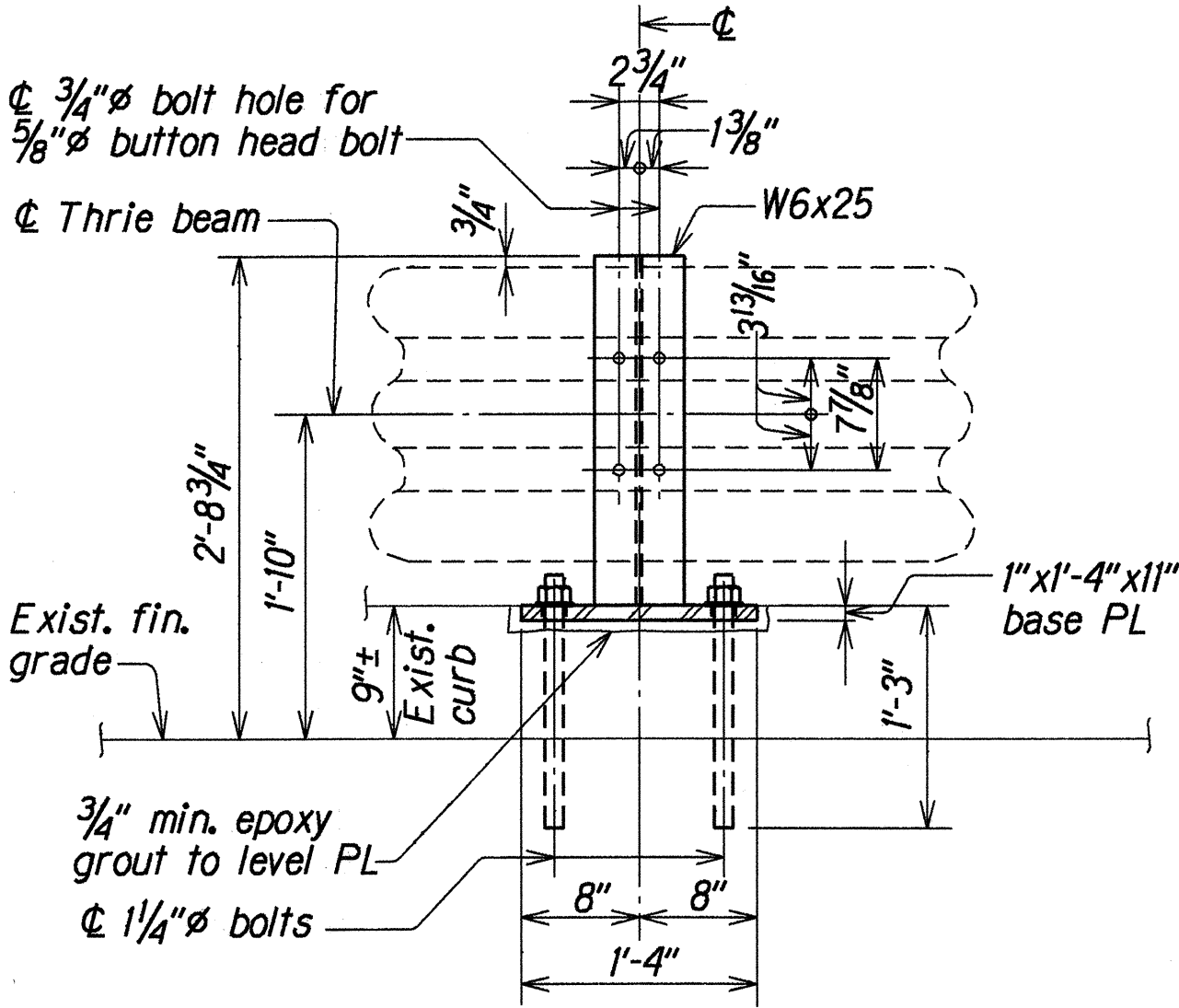


SECTION B
Scale: 1" = 1'-0"

NOTE:
Cut into exist. sidewalk, 1 3/4"x1'-5"x12", to receive base plate. Fill within 3/4" epoxy grout to level base plate as required.

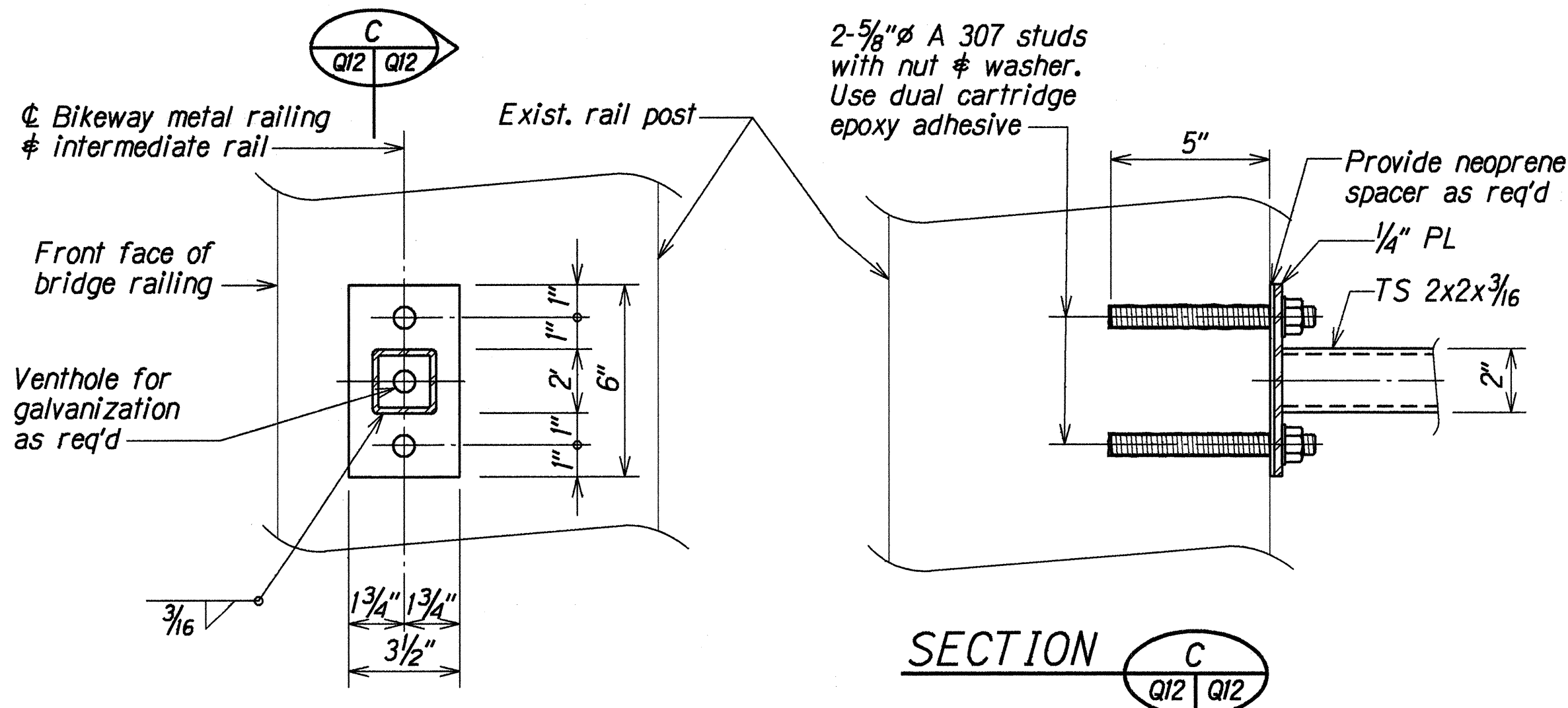


PLAN



ELEVATION

BASE PL DETAIL
Scale: 1" = 1'-0"



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

INTERMEDIATE RAIL DETAIL
Scale: 3" = 1'-0"

ORIGINAL PLAN	DATE	SEP 1999
SURVEY PLOTTED BY	LMA	SEP 1999
DRAWN BY	DKT	SEP 1999
DESIGNED BY	DKT	SEP 1999
CHECKED BY	DKT	SEP 1999
NO.	100	

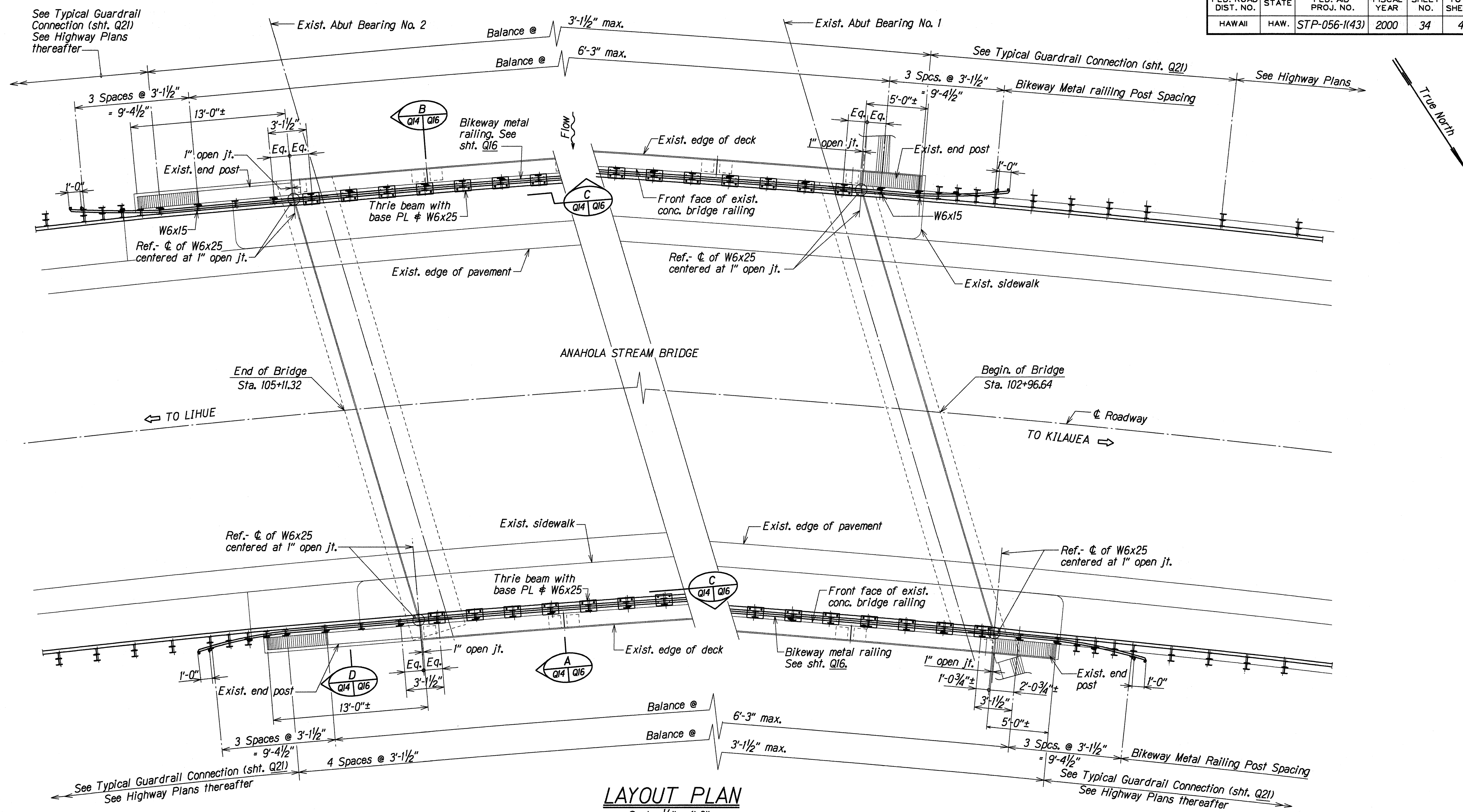
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KAPAA STREAM BRIDGE
SECTIONS AND BASE PLATE DETAILS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

SHEET No. Q12 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	34	42



LAYOUT PLAN
Scale: 1/4" = 1'-0"

SURVEY PLOTTED BY	DATE
PLAN	JUN 1999
DRAWN BY	
NOTED BY	JUN 1999
CHECKED BY	
DATE	JUN 1999

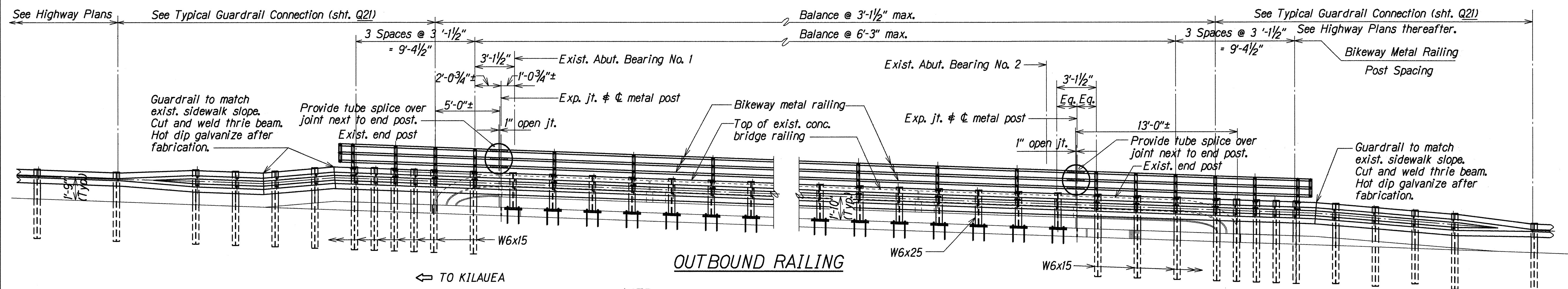
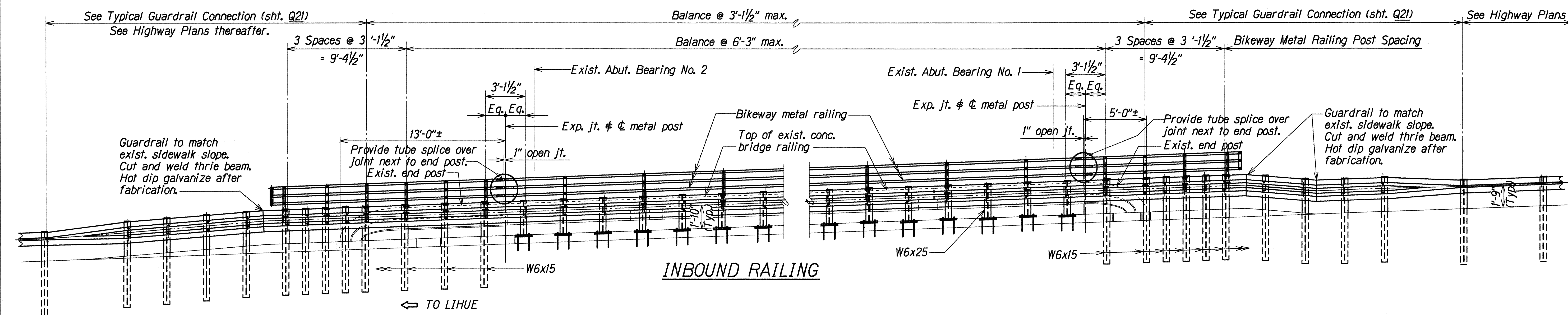
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ANAHOLA STREAM BRIDGE
PLAN
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q14 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	35	42



NOTE:

Adjust guardrail post spacing on bridge to avoid placing anchors into sidewalk joints.

DEVELOPED ELEVATIONS

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
PLAN	LMA	JUN 1992
NOTE BOOK	DRAWN BY	JUN 1992
QUANTITIES BY	JUN 1992	
CHECKED BY	JUN 1992	
N.	MS	

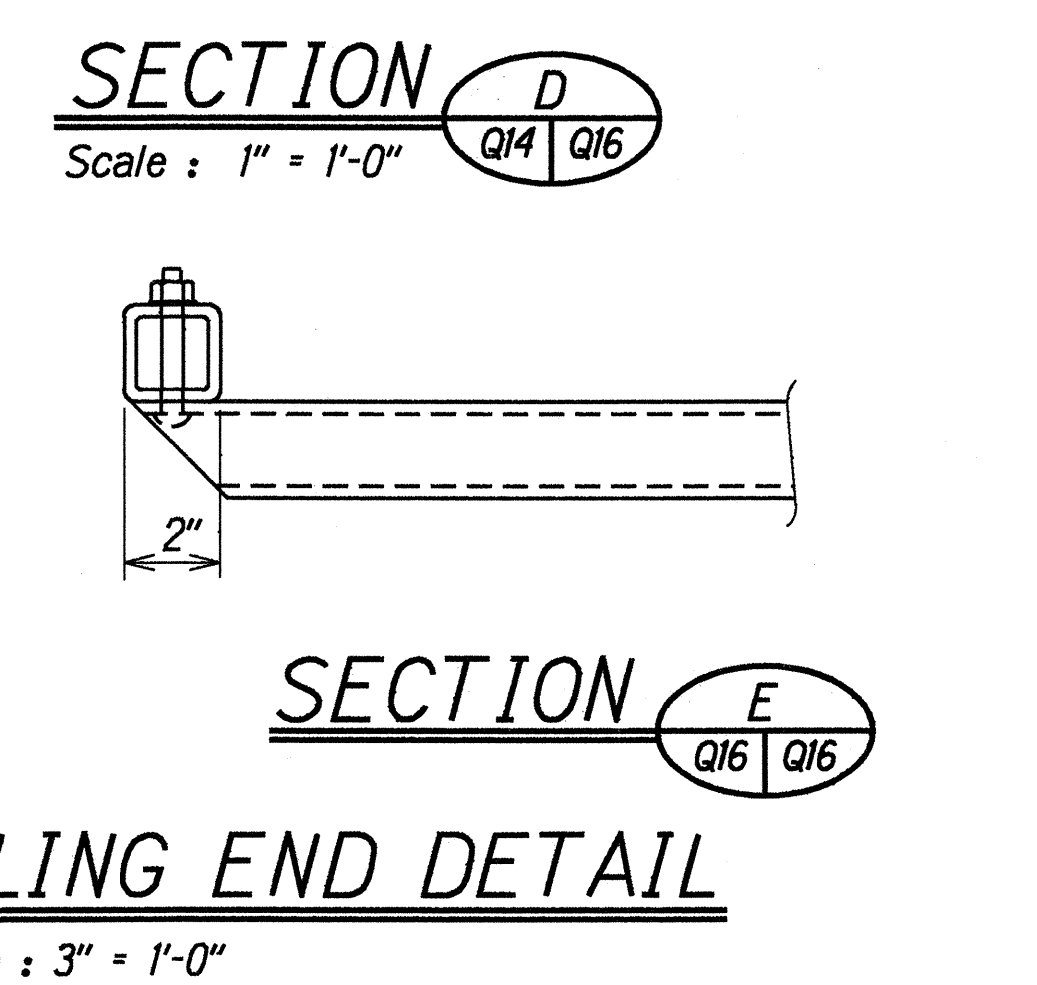
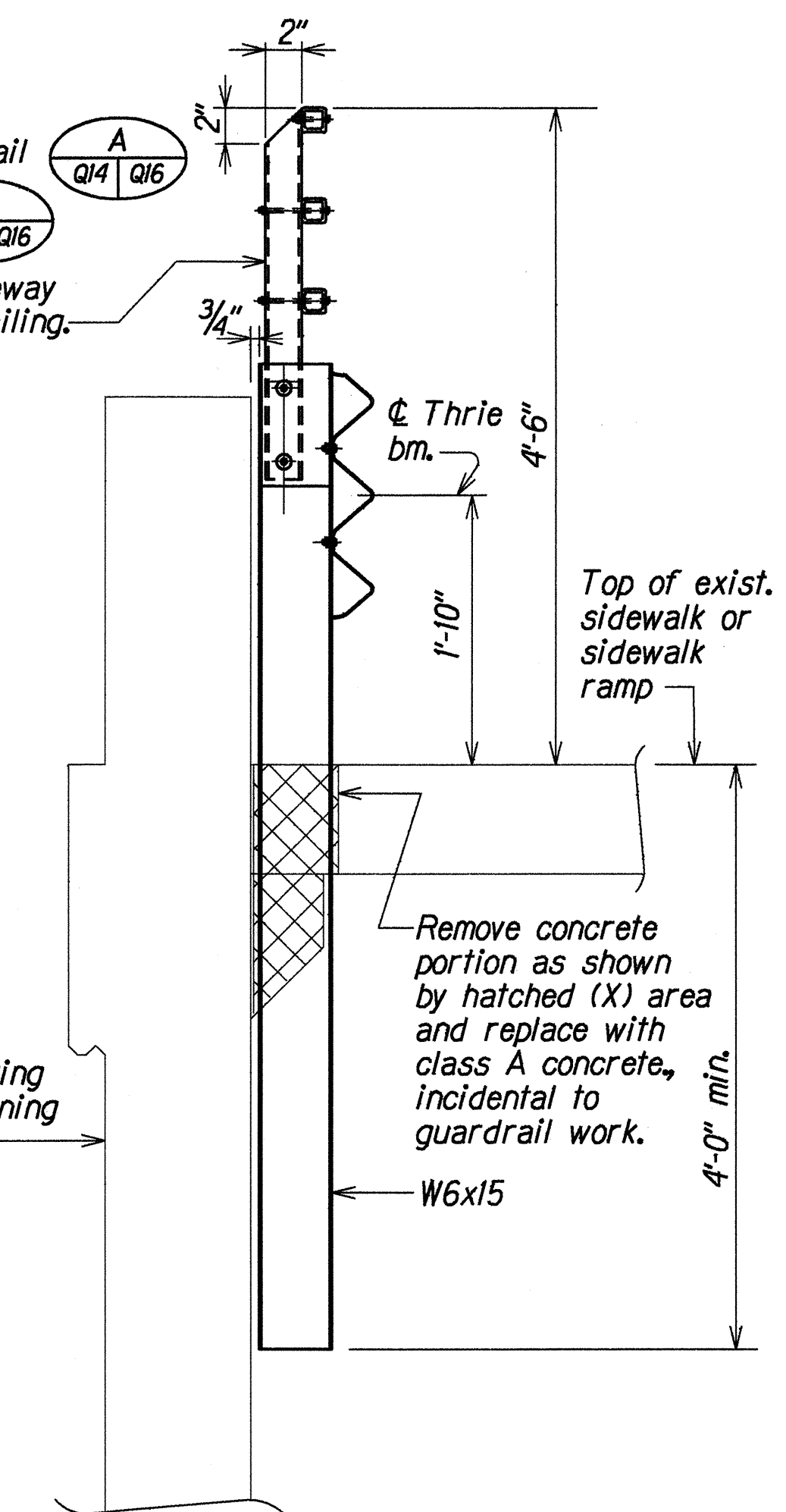
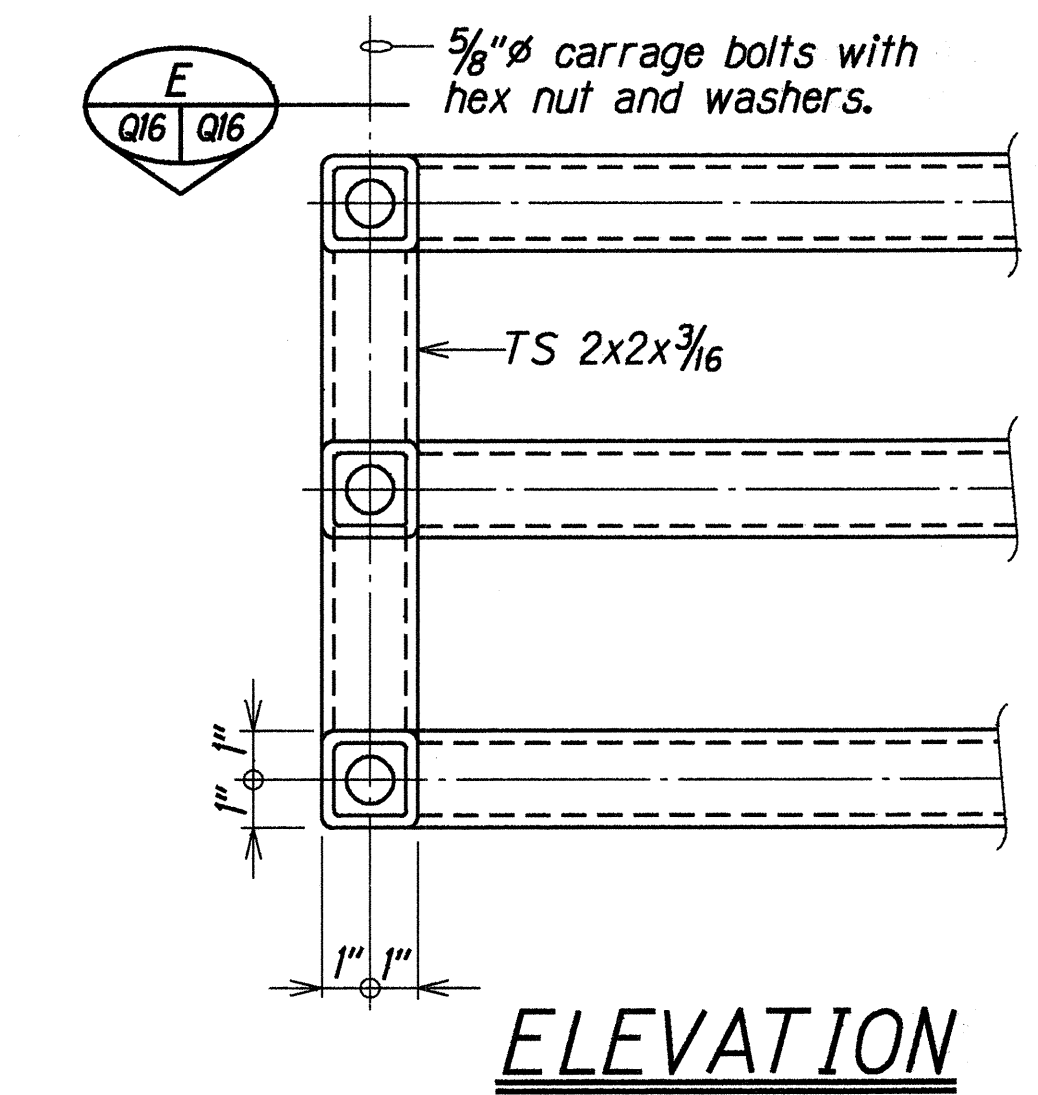
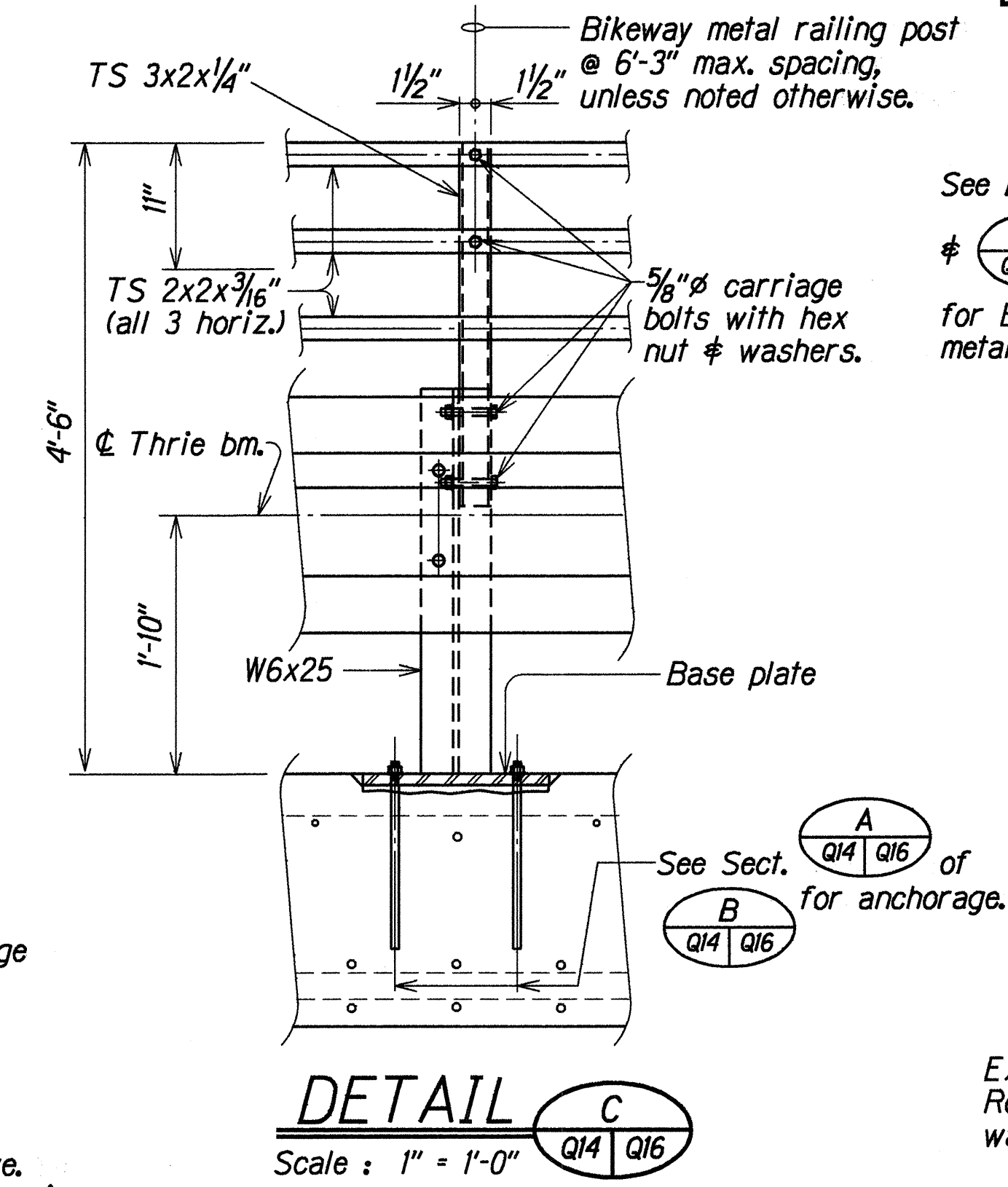
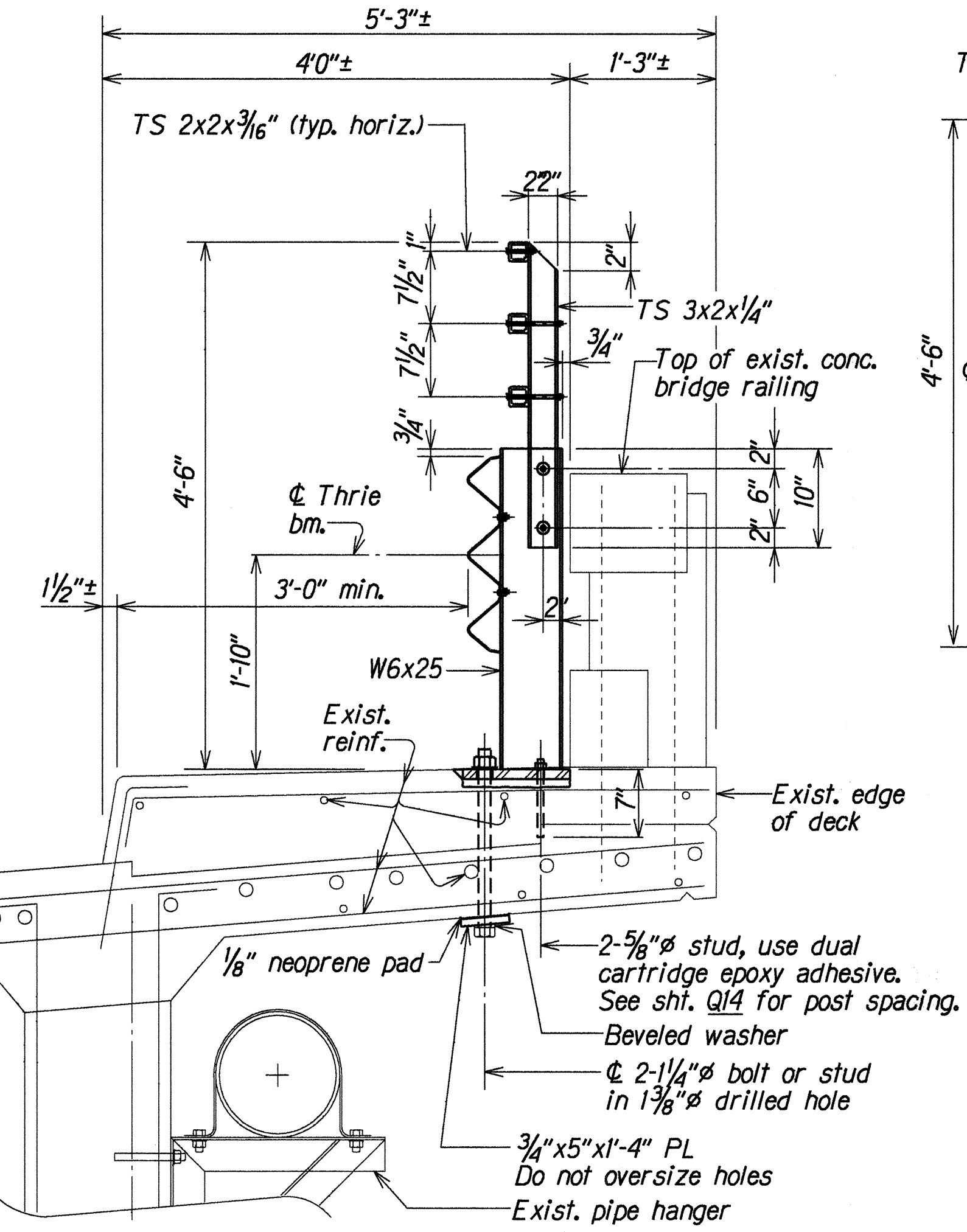
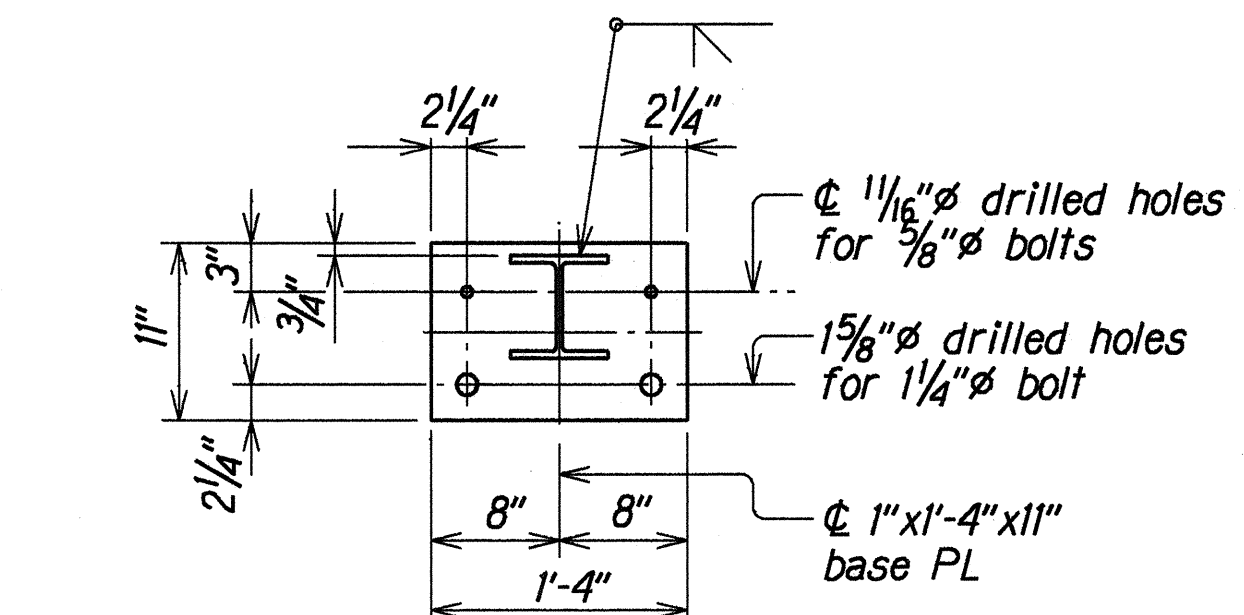
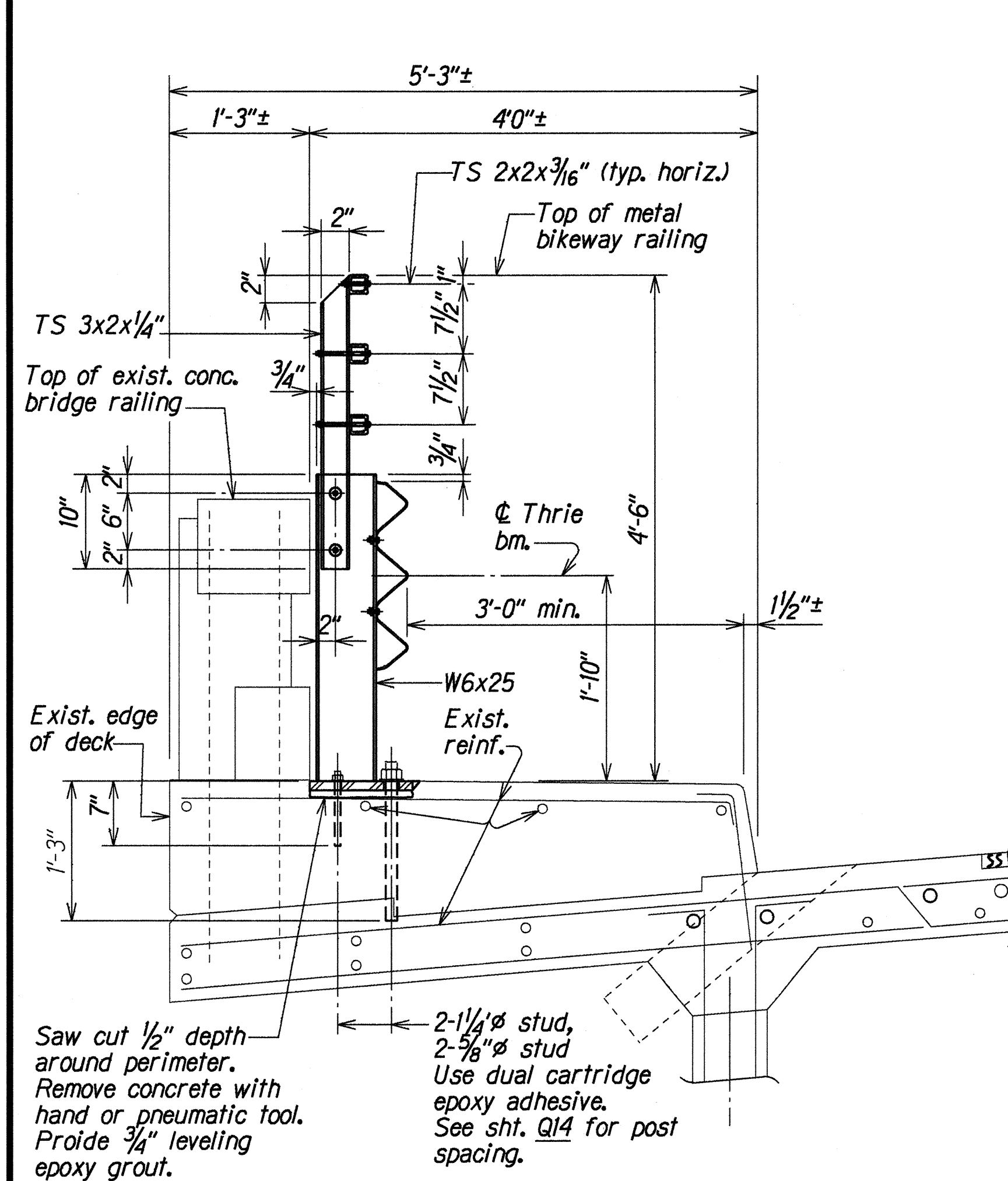
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ANAHOLA STREAM BRIDGE
DEVELOPED ELEVATION
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q15 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	36	42



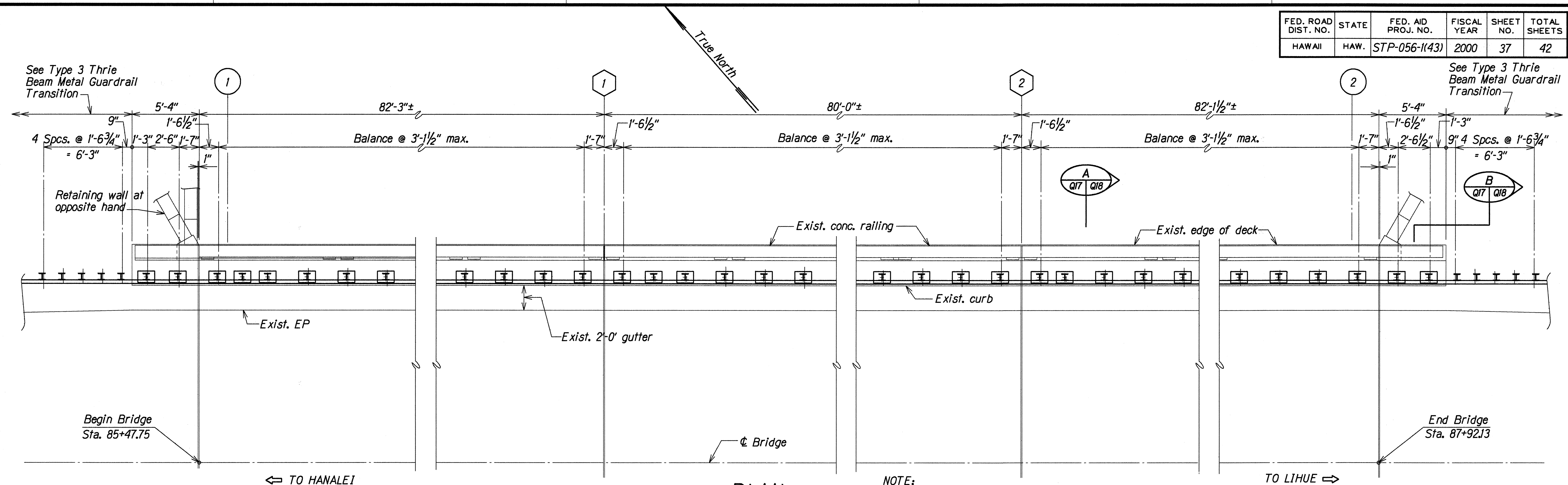
BIKEWAY RAILING END DETAIL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ANAHOLA STREAM BRIDGE
Sections and Bikeway Metal Railing Details
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)
Scale: As Noted Date: July 1999

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTED BY	DRAWN BY	MAY 1999
DESIGNED BY	CHECKED BY	MAY 1999
NO. 106		XXX 1999

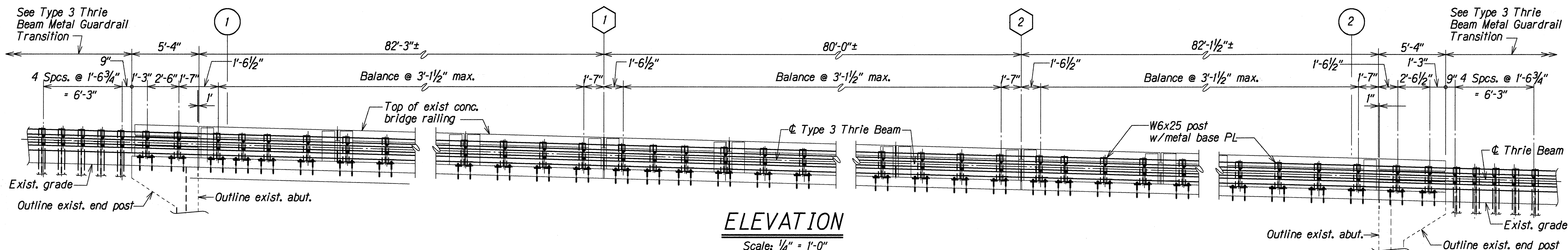
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	37	42



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

NOTE:

1. Provide guardrail on both sides of the bridge. Post locations symmetrical about ϕ bridge.
2. Adjust guardrail post spacing on bridge to avoid deck drains.
3. Adjust guardrail post spacing on bridge to avoid placing anchors into sidewalk joints.



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

SURVEY PLOTTED BY	DATE
DRAWN BY	APR 1999
TRACED BY	APR 1999
NOTED BY	APR 1999
QUANTITIES BY	APR 1999
CHECKED BY	APR 1999
ORIGINAL PLAN	
NOTE BOOK	
NO. 17	

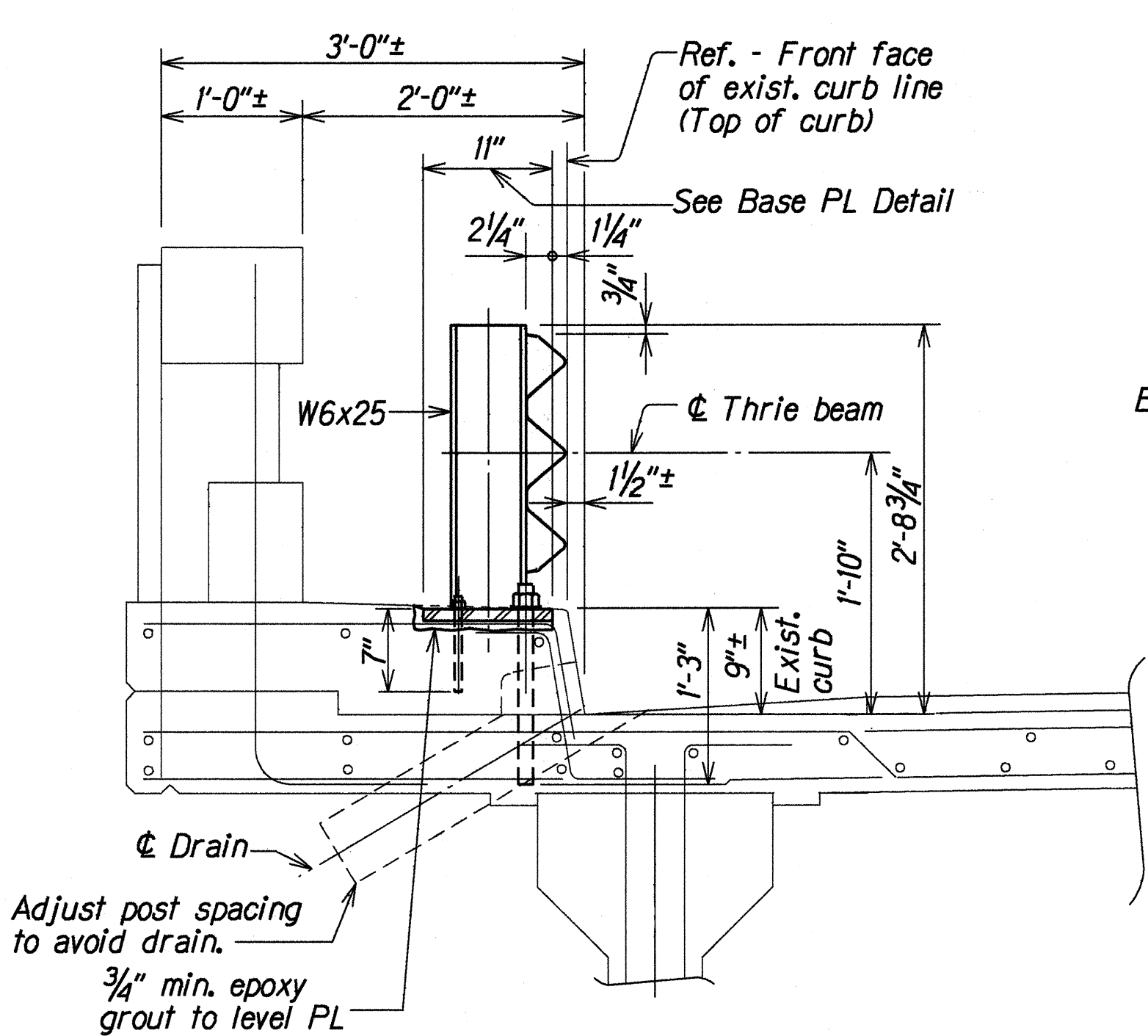
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MOLOKAA STREAM BRIDGE
PLAN AND ELEVATION
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

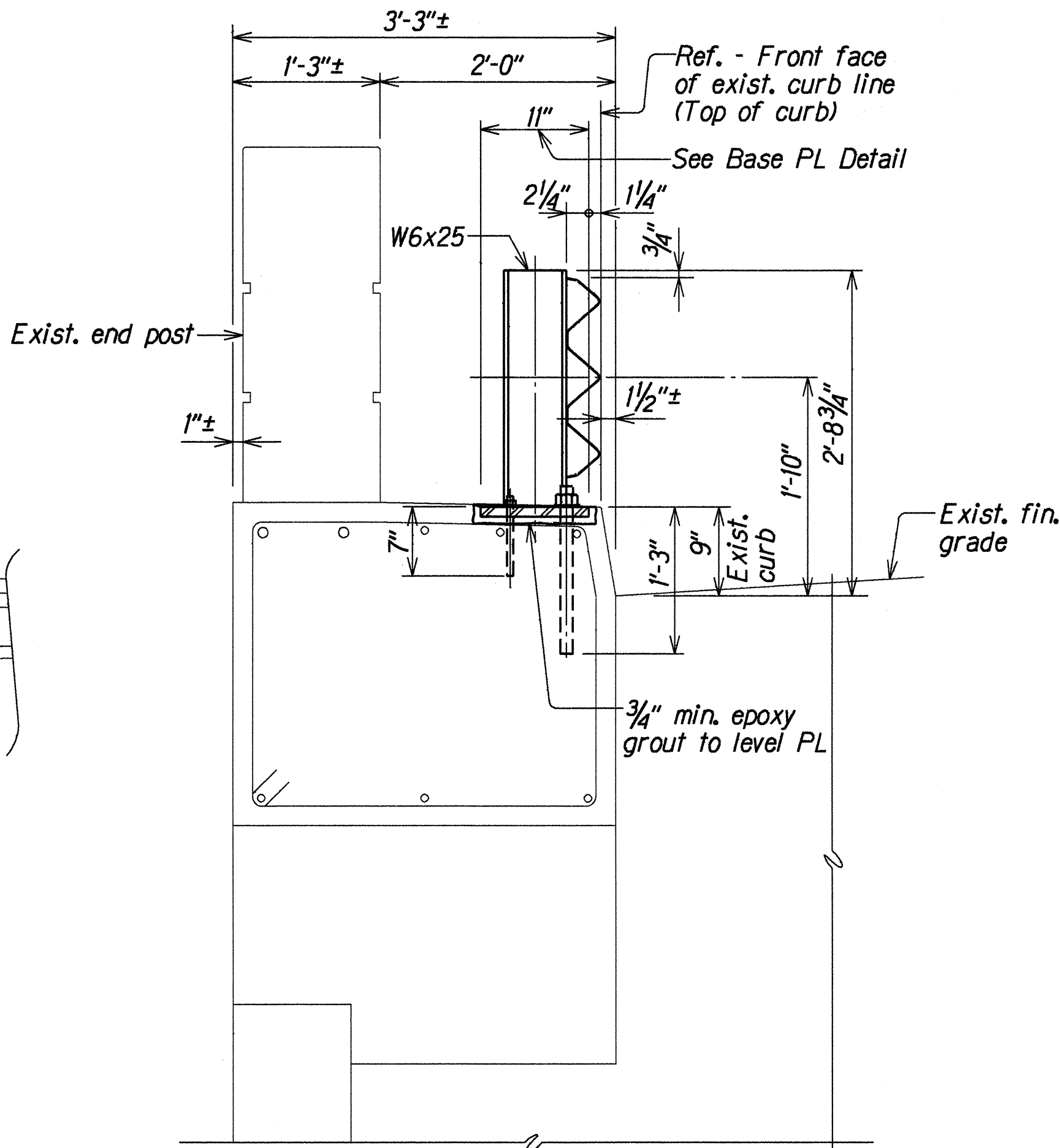
Scale: As Noted Date: July 1999

SHEET No. Q17 OF 22 SHEETS

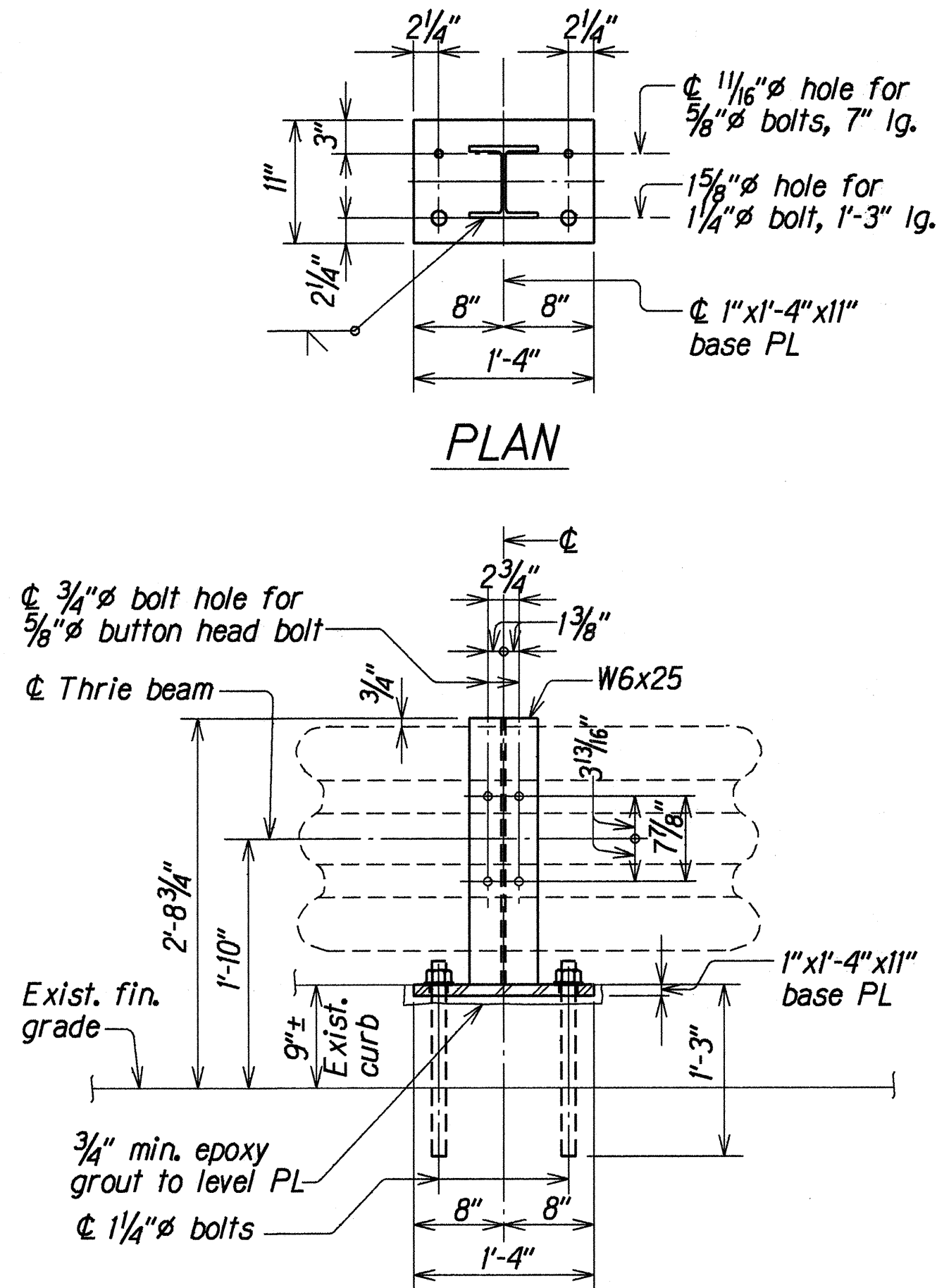
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	38	42



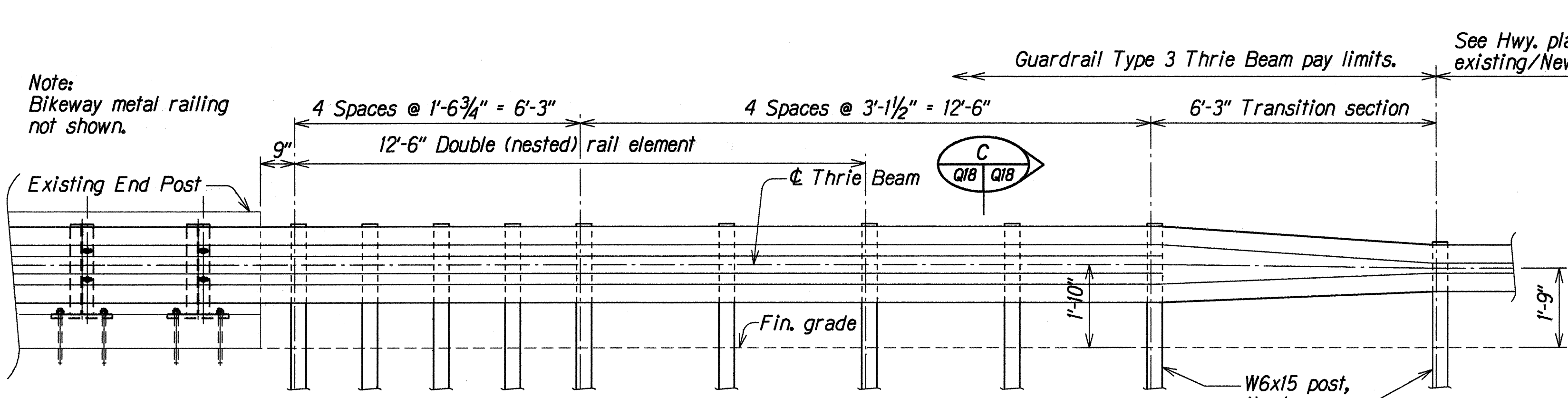
SECTION A
Scale: 1" = 1'-0"



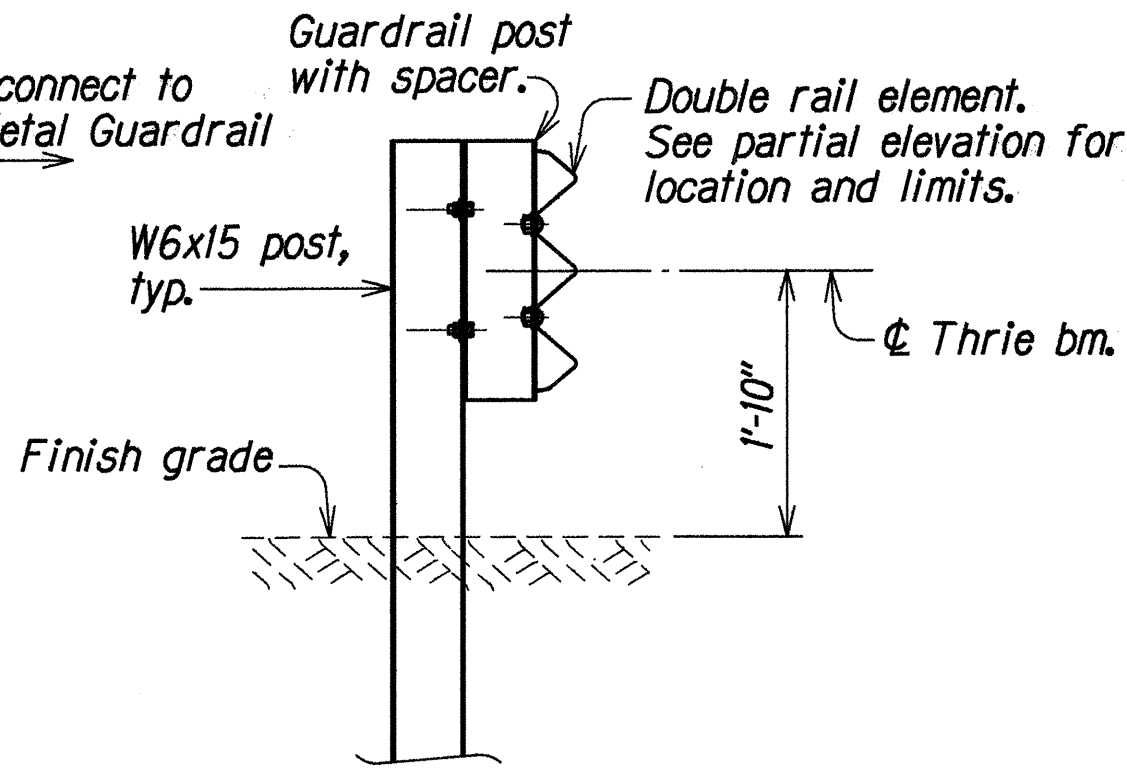
SECTION B
Scale: 1" = 1'-0"



**ELEVATION
BASE PL DETAIL**
Scale: 1" = 1'-0"



TYPE 3 THRIE BEAM METAL GUARDRAIL TRANSITION
Scale: 1/2" = 1'-0"



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

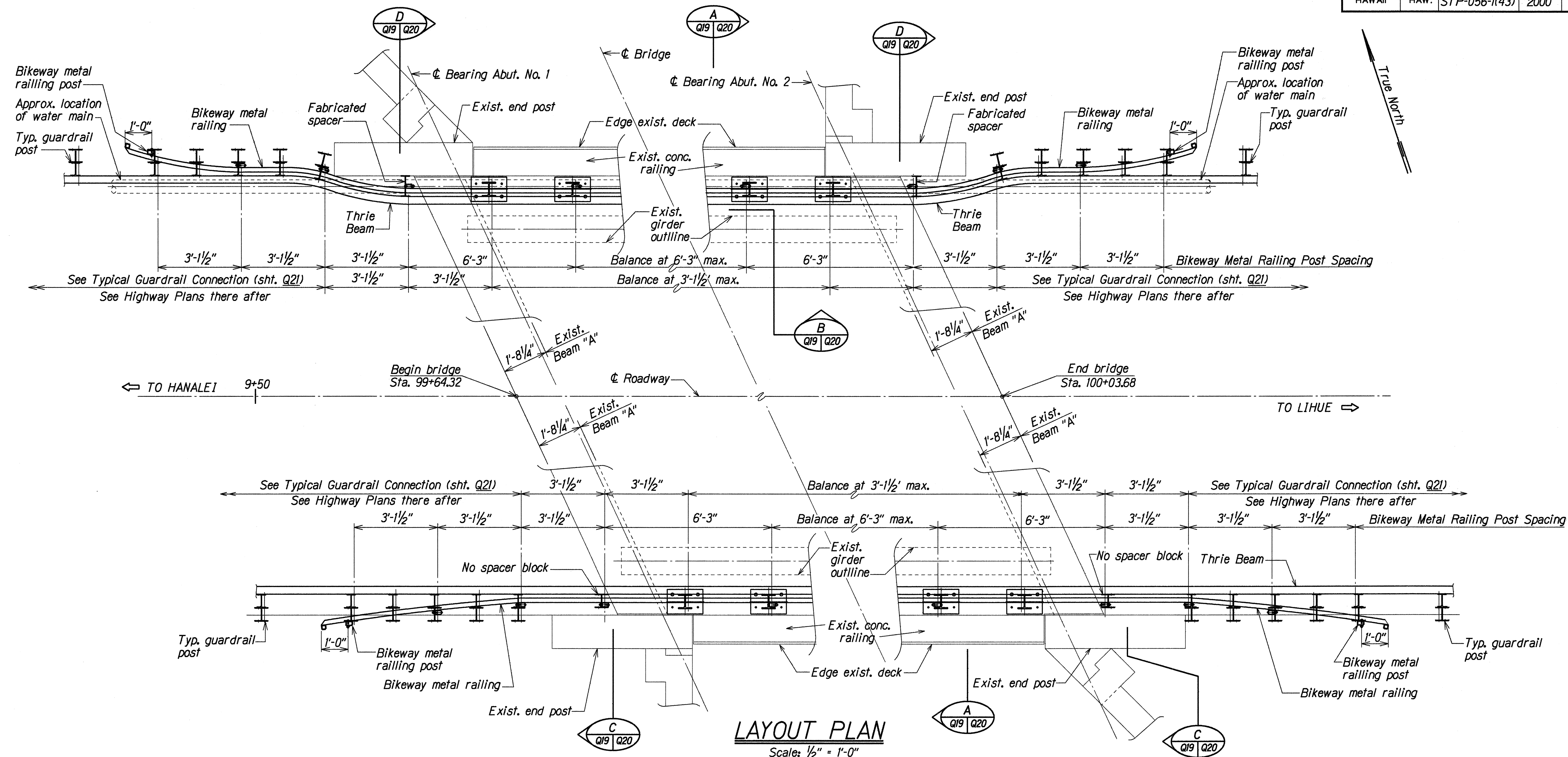
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MOLOAA STREAM BRIDGE
SECTIONS AND BASE PLATE DETAILS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted
Date: July 1999

SURVEY PLOTTED BY	DATE
DRAWN BY	APR 1999
CHECKED BY	APR 1999
NOTED BY	APR 1999
QUANTITIES BY	APR 1999
CHECKED BY	APR 1999

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	39	42



ORIGINAL PLAN	DATE
DRAWN BY LWA	APR 1999
TRACED BY JW	APR 1999
NOTED BY JW	APR 1999
CHECKED BY JOO	APR 1999
DATE	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

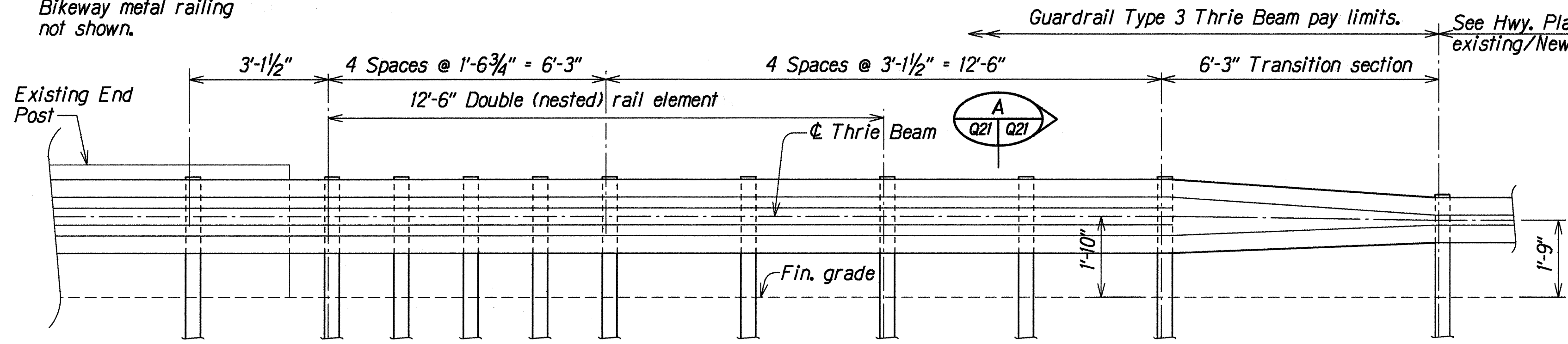
WAIAKALUA STREAM BRIDGE
LAYOUT PLAN
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q19 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	41	42

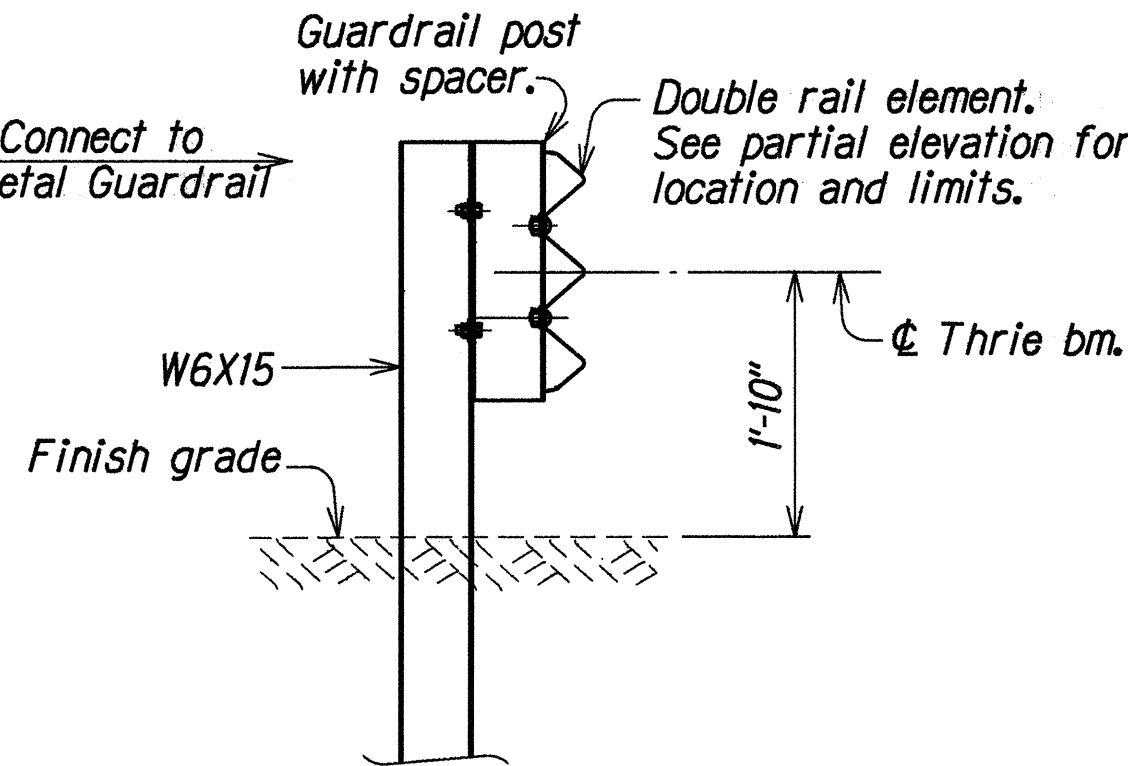
NOTE:
Bikeway metal railing
not shown.



PARTIAL ELEVATION

TYPE 3 THRIE BEAM METAL GUARDRAIL TRANSITION

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



SECTION

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

A
Q21 Q21

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DRAWN BY	LMA	APR 1999
DESIGNED BY	W	APR 1999
CHECKED BY	W	APR 1999
NOTED BY	W	APR 1999
SCALE	1/2"	1'-0"

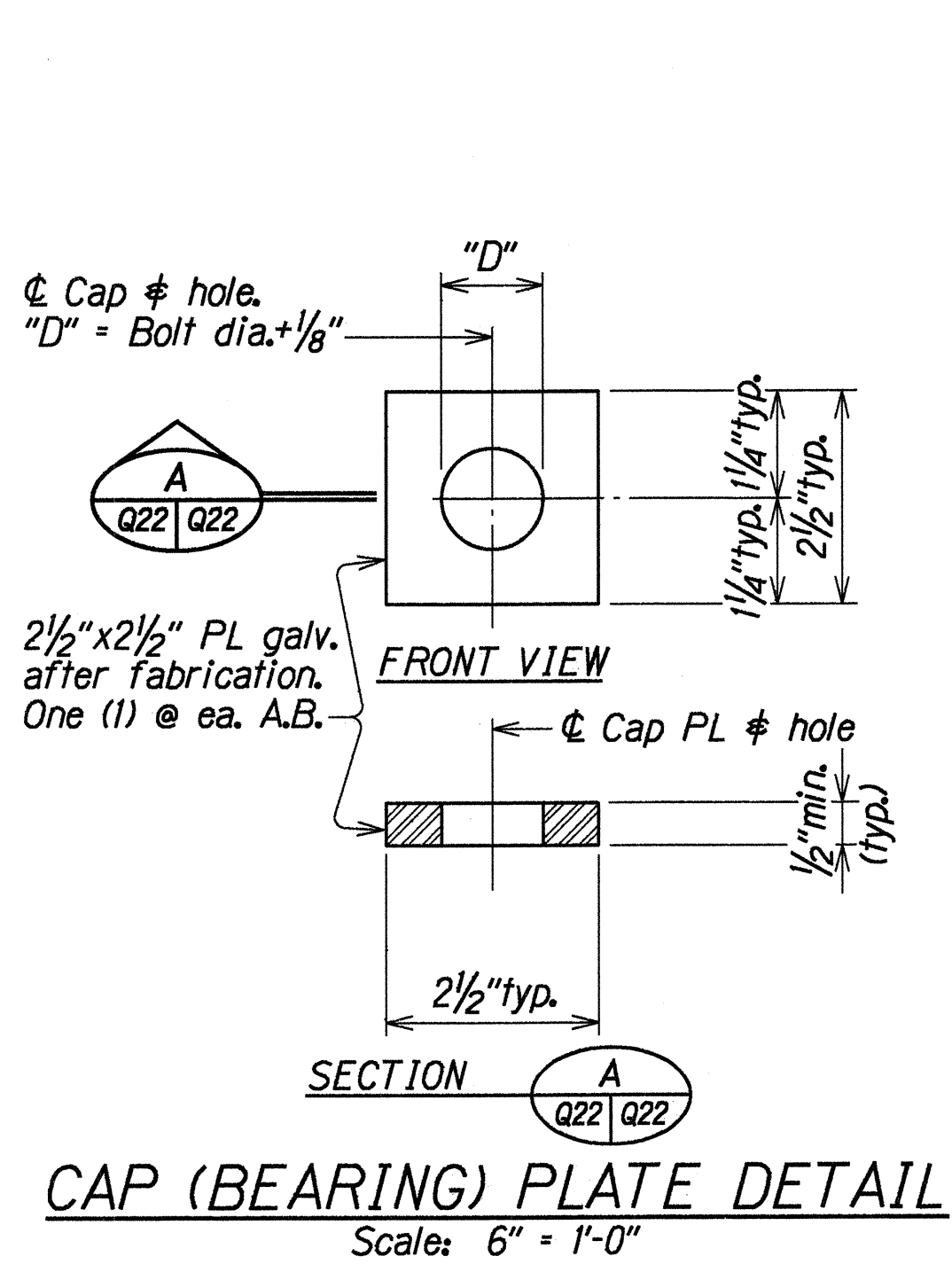
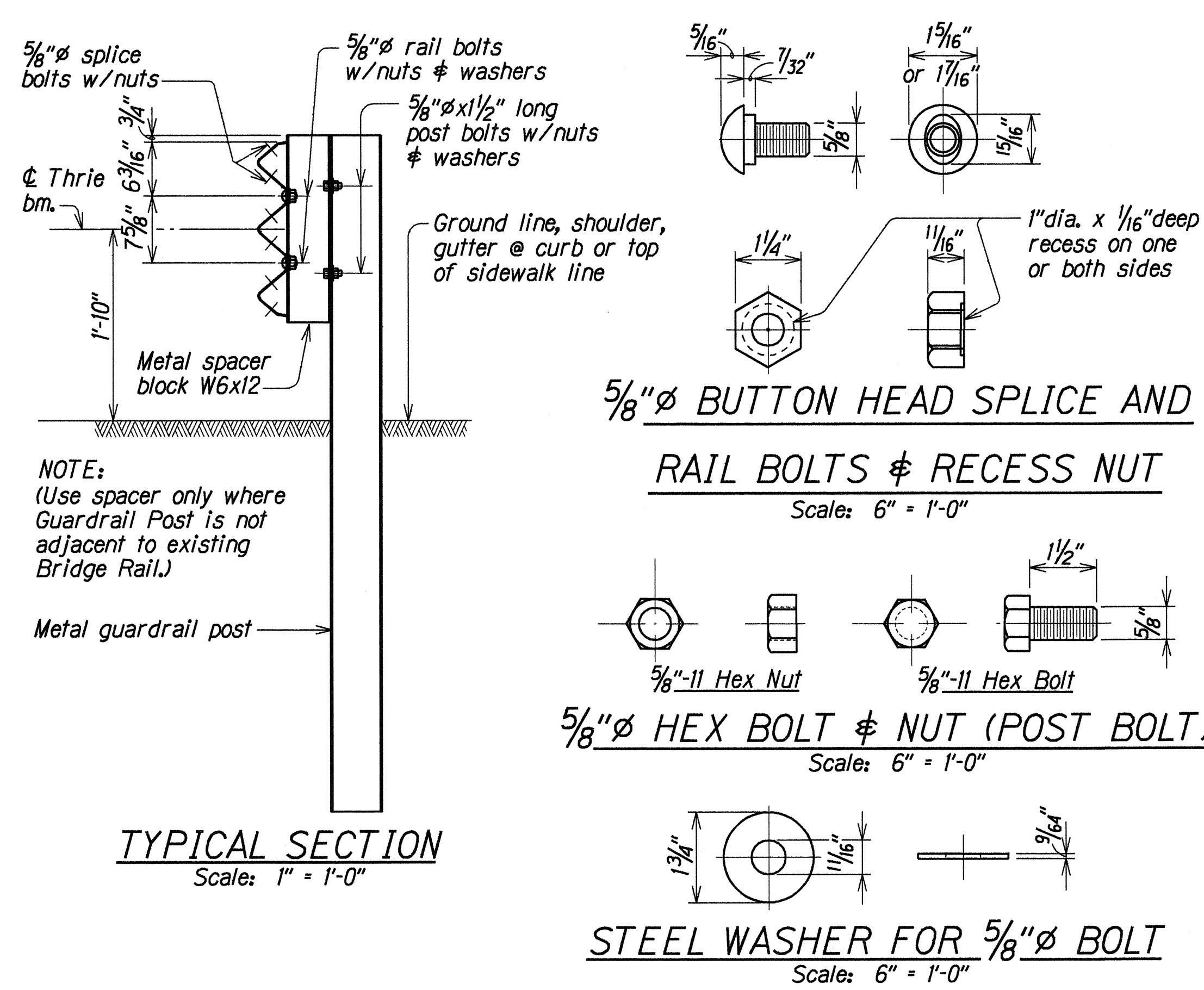
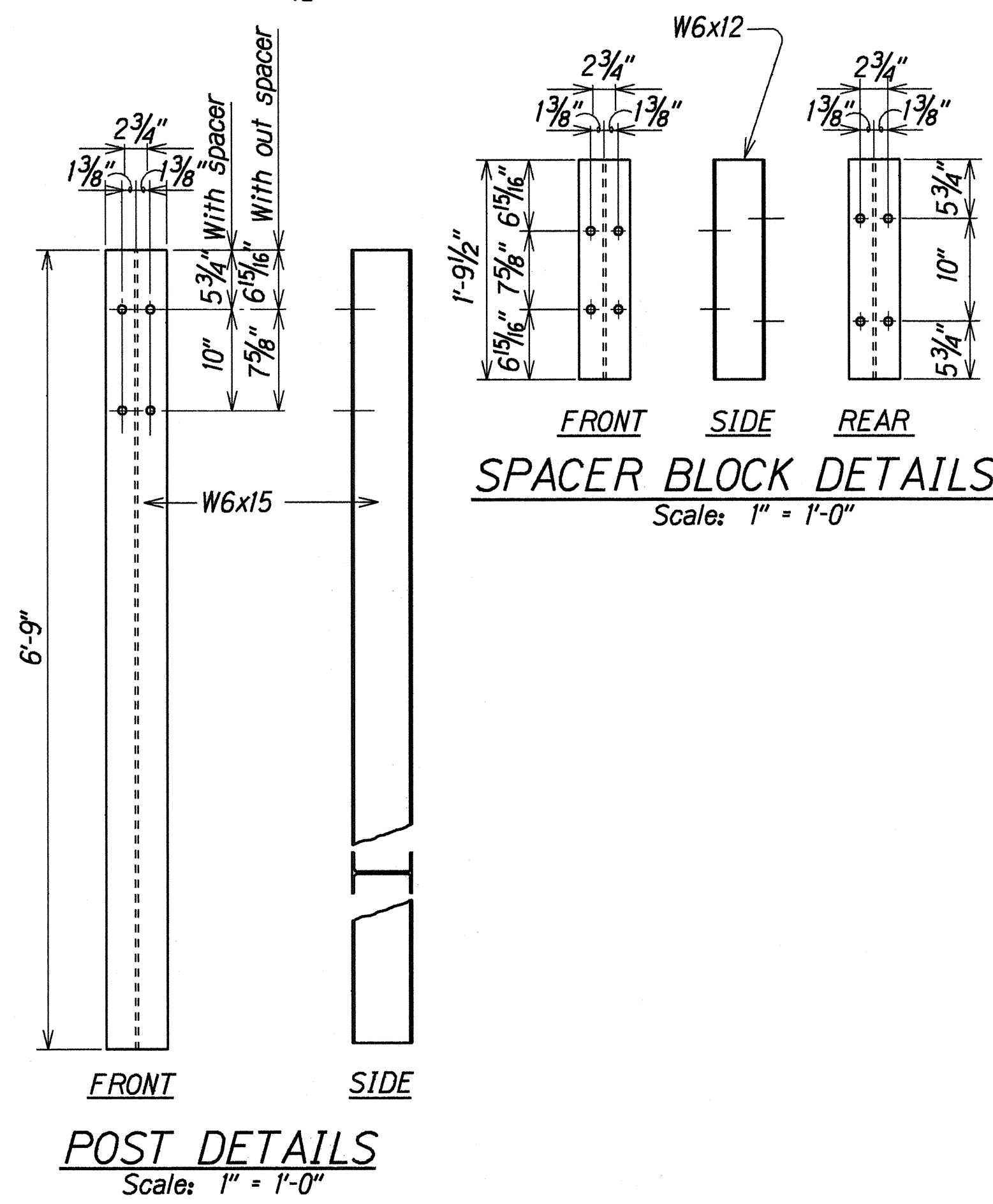
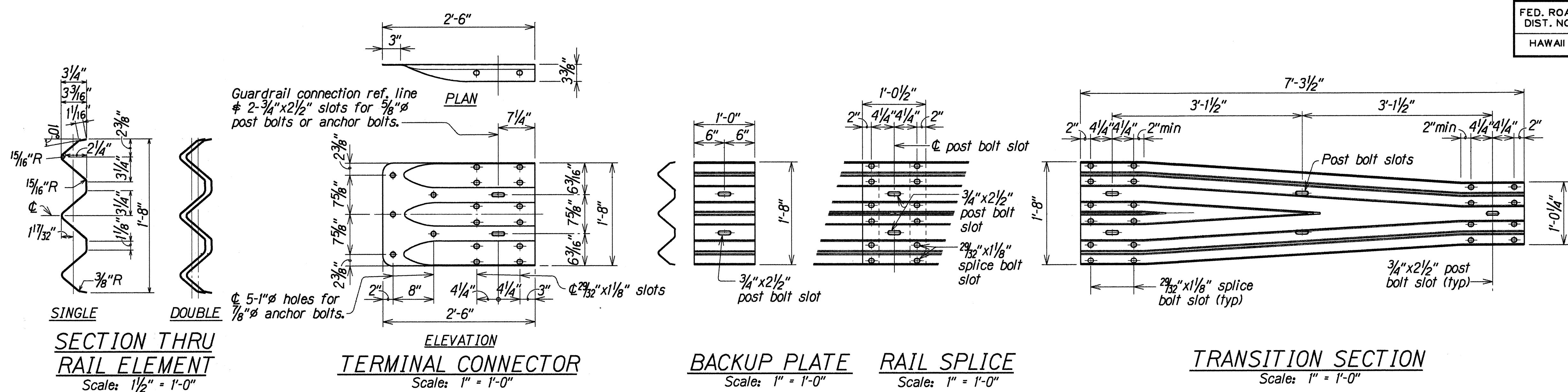
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METAL GUARDRAIL DETAILS
Kuhio Highway
Guardrail and Shoulder Improvements at Various Locations
Federal Aid Project No. STP-056-1(43)

Scale: As Noted Date: July 1999

SHEET No. Q21 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-056-1(43)	2000	42	42



METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

SURVEY PLOTTED BY	DATE
DRAWN BY	APR 1999
CHECKED BY	APR 1999
NOTED BY	APR 1999
QUANTITIES BY	APR 1999
CHECKED BY	APR 1999
ORIGINAL PLAN	
NOTE BOOK	
N _o	122

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
TYPICAL METAL GUARDRAIL TYPE 3
THRIE BEAM AND APPURTENANCES DETAILS

Scale: As Noted
Date: July 1999