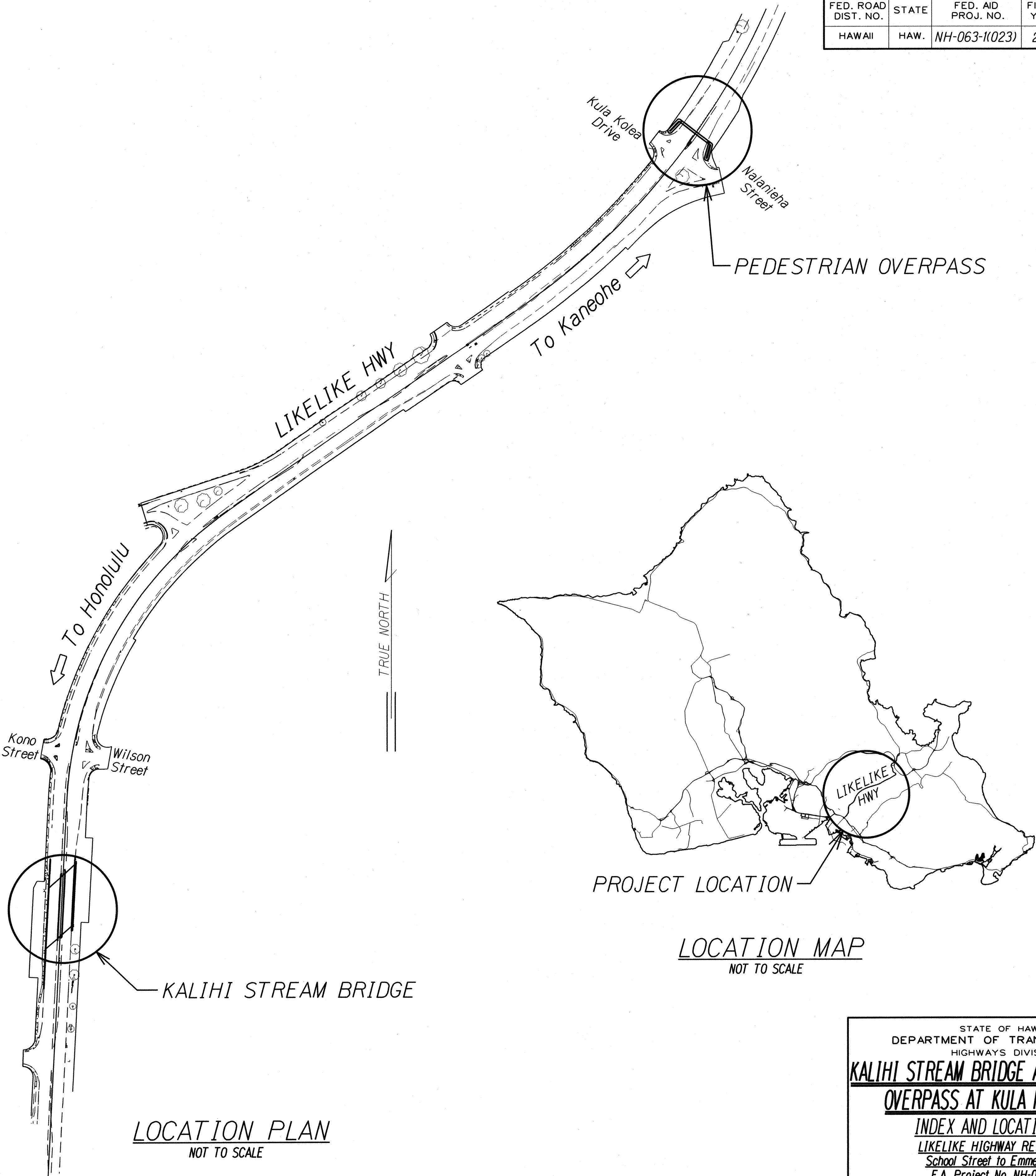


INDEX TO DRAWINGS

SHEET	DESCRIPTION
Q1	Kalihi Stream Bridge and Pedestrian Overpass at Kula Koea Drive - Index and Location Plan
Q2	Kalihi Stream Bridge and Pedestrian Overpass at Kula Koea Drive - General Notes, Symbols and Abbreviations
Q3	Kalihi Stream Bridge - Layout Plan
Q4	Kalihi Stream Bridge - Endpost No. 1 and Endpost No. 2 Demolition Plan
Q5	Kalihi Stream - Bridge Endpost No. 1 Modification Plan, Elevation and Sections
Q6	Kalihi Stream Bridge - New Endpost No. 2 Plan and Elevation
Q7	Kalihi Stream Bridge - New Endpost No. 2 Sections and Details
Q8	Kalihi Stream Bridge - Metal Handrail Upgrade Between Endposts No. 1 and No. 2
Q9	Kalihi Stream Bridge - Metal Guardrail Upgrade Between Endposts No. 3 and No. 4 Plan and Detail
Q10	Kalihi Stream Bridge - Metal Guardrail Upgrade Between Endposts No. 3 and No. 4 Details
Q11	Kalihi Stream Bridge - Endpost No. 5 Modification Plan and Elevation
Q12	Kalihi Stream - Bridge Endpost No. 5 Modification Sections and Details
Q13	Kalihi Stream Bridge - Endpost No. 5 Modification Conc.-Lined Drainage Ditch & Wall Opening Details
Q14	Kalihi Stream Bridge - Endpost No. 5 Modification Conc.-Lined Drainage Ditch & Wall Opening Details
Q15	Kalihi Stream Bridge - Endpost No. 8 Endpost and Guardrail Post Upgrade
Q16	Kalihi Stream Bridge - Endpost No. 8 Endpost and Guardrail Post Upgrade
Q17	Kalihi Stream Bridge - Metal Guardrail Type 3 Thrie Beam and Appurtenances Details
Q18	Pedestrian Overpass at Kula Koea Drive - Plan and Longitudinal Section
Q19	Pedestrian Overpass at Kula Koea Drive - Ramp
Q20	Pedestrian Overpass at Kula Koea Drive - Handrail Details



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	92	111

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DESIGNED BY	
N.	QUANTITIES BY	
	CHECKED BY	

db3/kate/7/10/2015.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE AND PEDESTRIAN OVERPASS AT KULA KOLEA DRIVE

INDEX AND LOCATION PLAN

LIKELIKE HIGHWAY RESURFACING

School Street to Emmeline Place

F.A. Project No. NH-063-1(023)

Scale: As Noted Date: June, 2015

GENERAL NOTES

DESIGN SPECIFICATIONS:

- A. AASHTO LRFD Bridge Design Specifications, 7th Edition 2014 including all interim revisions.
- B. State of Hawaii, Department of Transportation, Highways Division, "Design Criteria for Bridges and Structures", August 8, 2014.

MATERIALS:

- A. Structural Concrete for curbs, endposts, and bridge railings shall be a minimum f'c-4,000 psi in 28 days. A corrosion inhibitor amine carboxylate water-based admixture shall be added to the concrete. The minimum dosage shall be 1.5 lbs. per cubic yard of concrete.
- B. Reinforcing Steel: deformed reinforcing bars for concrete reinforcement shall meet the requirements of AASHTO M31M/M31-07 Grade 60 (ASTM A615, Grade 60).
- C. Structural steel: w-beam structural steel shapes shall conform to ASTM A992. Structural steel plates and bars shall conform to ASTM A36. All structural steel shall be hot-dip galvanized in accordance with ASTM F2329 after fabrication.
- D. Guardrail bolts and recessed nuts shall conform to FBB-01-5 from "A Guide to Standardized Highway Barrier Hardware" AASHTO-AGC-ARTBD Joint Committee Task Force 13 Report.
- E. Carriage bolts and nuts shall conform to FBC10-20 from "A Guide to Standardized Highway Barrier Hardware" AASHTO-AGC-ARTBD Joint Committee Task Force 13 Report.
- F. High strength bolts (heavy hex structural bolts) shall conform to ASTM A325, Type 3 unless otherwise specified and hot dipped galvanized in accordance with ASTM F2329.
- G. Bolts (hex and heavy hex bolts) shall conform to ASTM A307 unless otherwise specified and hot-dip galvanized in accordance with ASTM F2329.
- H. Anchor rods shall conform to ASTM F1554, Grade 105, Class 2A and hot-dip galvanized in accordance with ASTM F2329.
- I. Threaded anchor rods for steel bridge railing anchors and steel plate on backside of endpost shall conform to ASTM A449-10 Type I and hot-dip galvanized in accordance with ASTM F2329.
- J. Nuts for ASTM A325 bolts and ASTM F1554 anchor rods shall conform to ASTM A563-07a, Grade DH and hot-dip galvanized in accordance with ASTM F2329.
- K. Nuts for ASTM A307 (hex and heavy hex) bolts shall conform to ASTM A563, Hex Grade A and Heavy Hex Grade A and hot-dip galvanized in accordance with ASTM F2329.
- L. Washers for bolts shall conform to ASTM F436-11, Type I and hot dip galvanized in accordance with ASTM F2329.
- M. Epoxy adhesive for threaded rods and anchor bolts shall be "Glass Vial" or "Double Cartridge" type. Epoxies that require manual measuring or mixing will not be allowed. Epoxy shall meet the requirements of ASTM C881, Type IV, Grade 3, Class C. See Special Provisions Section 674.
- N. All welding shall be in accordance with the current edition of Bridge Welding Code ANSI/AASHTO/AWS D1.5.
- O. Non-shrink grout shall be a pre-mixed product consisting of non-staining, non-metallic aggregate cement, water reducing and plasticizing agents capable of developing a minimum compressive strength of 4000 psi in 3 days and 7000 psi in 21 days. The non-shrink grout shall contain at least 10 grams of migrating amine carboxylate corrosion inhibiting per 0.4 to 0.5 cubic feet of non-shrink grout.

REFERENCE:

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

GENERAL:

- A. 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.
- B. 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 at no cost to the State.
- C. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.
- D. The Contractor shall verify all dimensions & grades in the field before commencing with work.
- E. The Contractor shall verify the location of all existing utility lines near the work and notify their respective owners before commencing with work.
- F. All items noted incidental will not be paid for separately.
- G. For further clarification of this project, the Contractor can access the As-Built drawings from the previous associated projects in this area. The project nos. are US-S-0630(1), S-0630(9), F-063-1(17) and NH-063-1(19). The As-Built's are available at the Highway Design Section which is located in Room 609, 601 Kamokila Blvd, Kapolei Hi 96707.

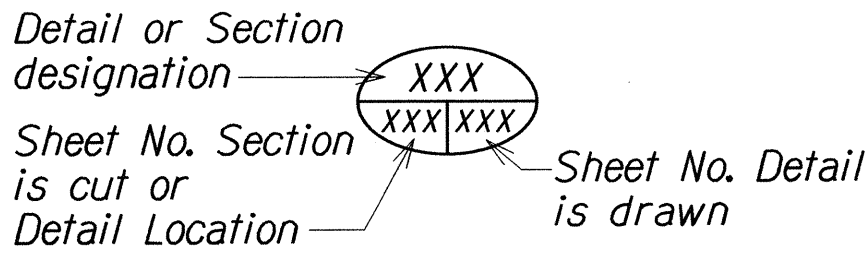
CONSTRUCTION REQUIREMENTS:

- A. Refer to Hawaii Standard Specifications for Road and Bridge Construction, 2005 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 LFRD Bridge Design Specifications.
- E. For cast-in-place concrete, minimum reinforcement cover:
Concrete cast against earth: 3"
Curbs and Railings: 2"
Slab top: 2"
- F. At time concrete is placed, reinforcing shall be free from mud, oil laitance or other coatings adversely affecting bond capacity.
- G. Reinforcement, dowels & other embedded items shall be positively secured before pouring.
- H. Minimum clear spacing between parallel bars shall be one and one-half (1½) times the diameter of the bars (for non-bundled bars), but in no case shall the clear distance between the bars be less than one and one-half (1½) times the maximum size of the coarse aggregate.
- I. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.
- J. All footings and concrete slabs shall bear on firm undisturbed natural soils or properly compacted structural fill.

CONSTRUCTION REQUIREMENTS, Con't:

- K. The Contractor shall verify all existing conditions as specified on the plans and shall verify all dimensions in the field prior to commencing with the work.
- L. Concrete removal shall be done in such a manner as to preclude any damage to the existing structures. Saw cut 1" deep along cut line of existing structure.
- M. Large vibratory type of equipment will not be permitted in the concrete removal operation nor for drilling holes. Only small vibratory hand tools (15 lbs. max.) approved by the Engineer will be allowed.
- N. Any damage to the existing structure due to the Contractor's operation or negligence shall be repaired by the Contractor at his expense to the satisfaction of the Engineer, with no additional cost to the State.
- O. 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.
- P. All existing reinforcing or anchor bolts that cannot be incorporated in the new work shall be completely removed or removed to a minimum depth of 1" below finish grade and the area patched with non-shrink grout.
- Q. All existing concrete faces receiving new concrete in the finish product shall be roughened and cleaned prior to placement of new pour, unless indicated otherwise or as directed by the Engineer.

SYMBOLS AND ABBREVIATIONS



⊗ - Bearing Abutment Seat Line
⊙ - Boring No. & Designation

Abut. Abutment
AC Asphaltic Concrete
Adj. Adjacent
Alt. Alternate
Approx. Approximate
Az. Azimuth

⊕ Baseline
Bal. Balance
Bet., Btwn. Between
B.F. Both faces
B.F.E. Bottom Footing Elevation
Bk. Back
Blt. Bolt
Bm. Beam
B, Bot., Bott. Bottom
Br. Bridge
Brg., Brgs. Bearing, Bearings
B.V.C. Beginning of Vertical Curve

⊔ Center Line
Cant. Cantilever
C.F. Cubic Feet
CiP Cast in Place
C.I.P. Cast Iron Pipe
C.J. Construction Joint
Cl., Clr. Clear
Col. Column
Conc. Concrete
Conn. Connection
Const. Construction
Cont. Continuous
CRM Cement Rubble Masonry
C.Y., Cu. Yd. Cubic Yards

Det. Detail
Dia., ∅ Diameter
Dim. Dimension
Dwg., Dwgs. Drawing, Drawings

EA, Ea., ea. Each
E.F. Each Face
Elec. Electrical
El., Elev. Elevation
Emb. Embankment
E.P. Edge of Pavement
Eq. Equal
Est. Estimated
E.W. Each Way
Exc. Excavation
Exist. Existing
Exp., (E) Expansion
Ext. Exterior

(F) Fixed
F'c Specified Strength of Concrete
F'ci Strength of Concrete at Time of Initial Prestress
F.F. Front Face
Fig. Figure
Fin. Finish
Fin. Gr. Finish Grade
Ftg. Footing

Ga. Gage, Gauge
Galv. Galvanized
Gir., G Girder
G.R.P. Grouted Rubble Paving
Gr. Grade
Grd. Ground

(H) Hinge
Horiz. Horizontal
HS High Strength
Ht. Height
Hwy. Highway

I.B. Inbound
I.F. Inside Face
In. Inch
Int. Interior
Inv. Invert

Jt. Joint

L Length
LBS., lb., lbs. Pound, Pounds
L.F., Lin. Ft. Linear Feet
Lg. Long
Longit. Longitudinal
L.S. Lump Sum
Lt. Left
Ltg. Std. Lighting Standard

Max. Maximum
Mech. Mechanical
Min. Minimum
Misc. Miscellaneous

N North
N.B. Northbound
N.F. Near Face
No., # Number
N.T.S. Not To Scale

O.B. Outbound
o.c. On Center
O.G. Outside Girder
Opn'g Opening
o/s, O/S Offset

P.B. Pull Box
P.C. Point of Curvature
P.C.C. Portland Cement Concrete
Perf. Perforated
PG-() Prestressed Girder-(Type)
PL Plate
P/S Prestressed Strands
Pt. Point
Pvmt. Pavement

R Radius
Rdwy Roadway
Ref. Reference
Reinf. Reinforcement
Ret. Retaining
Req'd Required
R.F. Rear Face
Rt. Right
R/W Right Of Way

S South
S.B. Southbound
Sect. Section
SF Square Feet
Shldr. Shoulder
Sht. Sheet
Spc. Space
Spcd. Spaced
Spcg. Spacing
Spec. Specification
Sprd. Spread
Sta. Station
Std. Standard
Stirr. Stirrup
Str. Straight
Struct. Structural
Symm. Symmetrical

T Top
Temp. Temporary
Thk. Thick, Thickness
T.O.D. Top Of Deck
Tot. Total
Transv. Transverse
Typ. Typical

Var. Varies
V.C. Vertical Curve
Vert. Vertical

W West
w/ With
W.W. Wingwall

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALIHI STREAM BRIDGE AND PEDESTRIAN OVERPASS AT KULA KOLEA DRIVE
GENERAL NOTES, SYMBOLS & ABBREVIATIONS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
F.A. Project No. NH-063-1(023)
Scale: As Noted Date: June, 2015

ORIGINAL PLAN
NOTE BOOK
DATE: SEP 2013
SURVEY PLOTTED BY: ATY
DRAWN BY: NH
CHECKED BY: NH
DATE: SEP 2013
DATE: SEP 2013
DATE: SEP 2013

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1
10/27/15

Added General Note G.

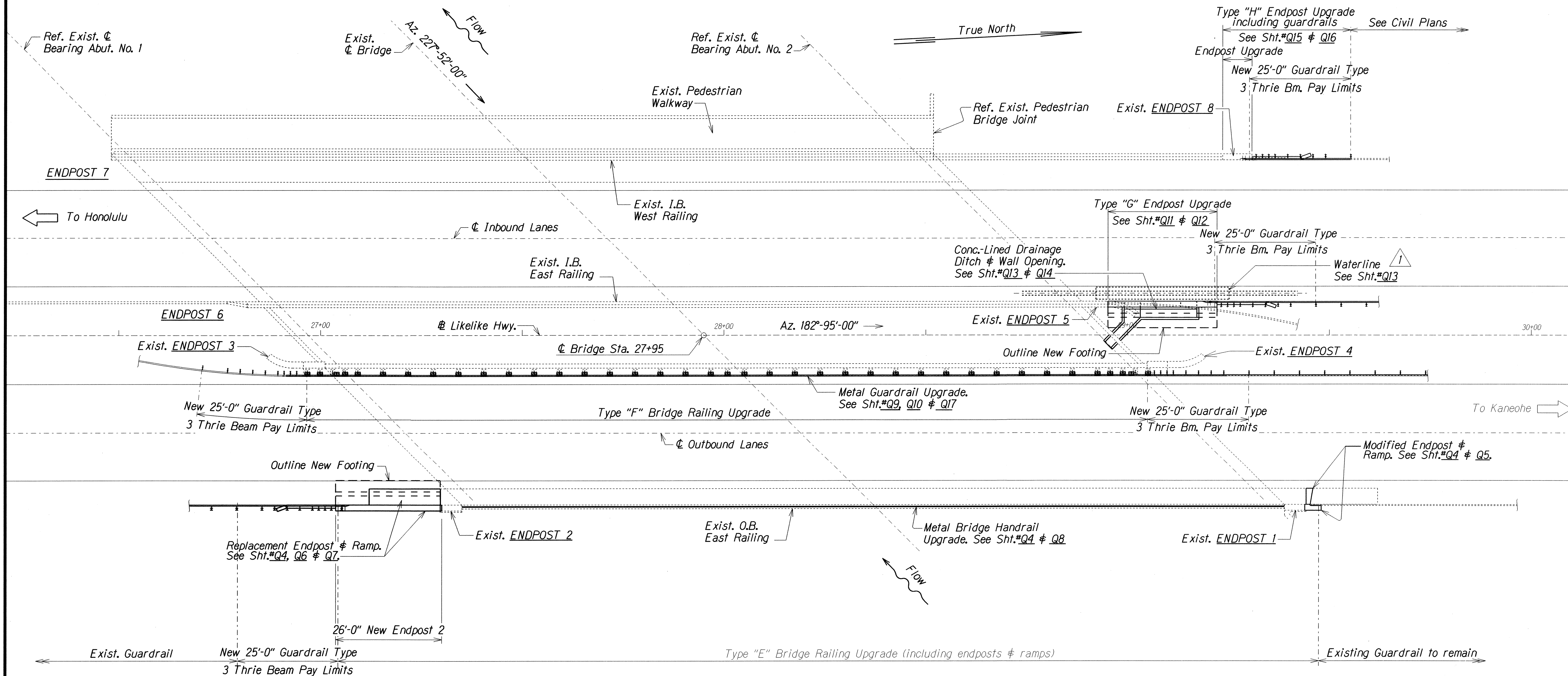
DATE

REVISION

SHEET No. Q2 OF 20 SHEETS

ADD. 93

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	ADD.94	111



LAYOUT PLAN--KALIHI STREAM BRIDGE
Not to Scale

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
DATE	

db3/lost/2/kalihi/ksb.q3-ADD.94.dgn

10/27/15 Changed Call-out.

DATE REVISION

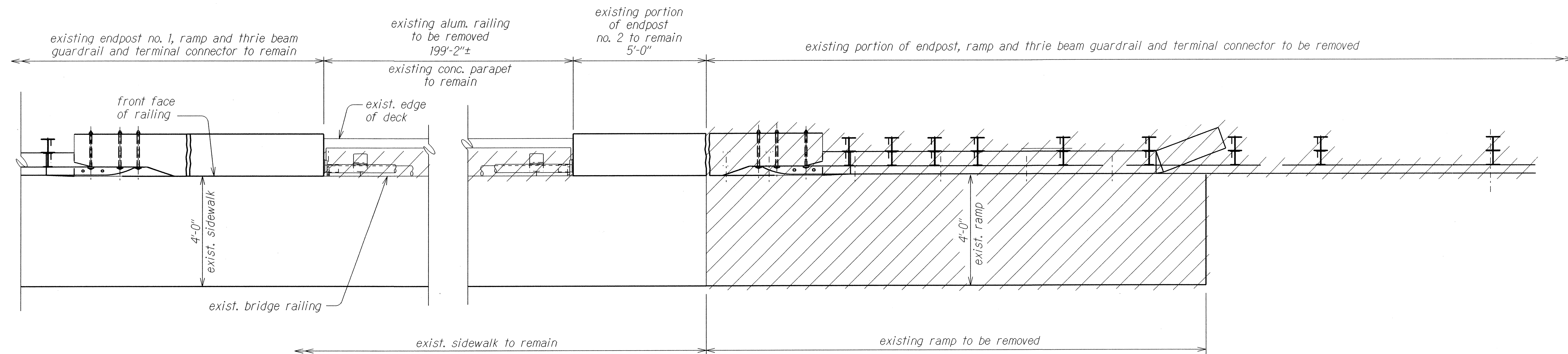
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALIHI STREAM BRIDGE
LAYOUT PLAN
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Federal Aid Project No. NH-063-1(023)

Scale: As Noted Date: June, 2015

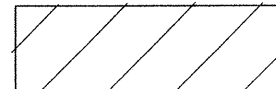
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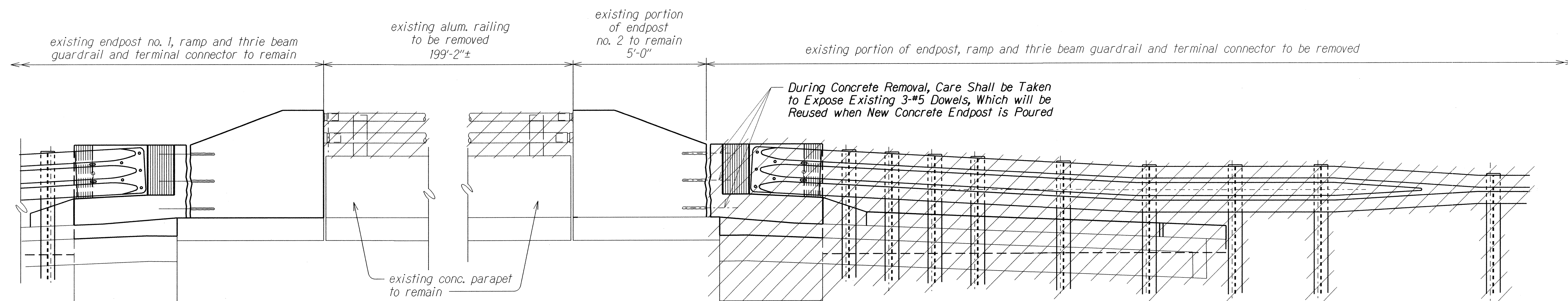
ADD. 94

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	ADD.95	111



PLAN

 Denotes removal.



ELEVATION

ENDPOST No. 1 & ENDPOST No. 2 DEMOLITION

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

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	SEP 2014
DRAWN BY	ATV
TRACED BY	JFL
QUANTITIES BY	JFL
CHECKED BY	DCO
N.	

063/kate/711kba4-ADDIdon

 10/27/15 Removed Note.

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALIHI STREAM BRIDGE
ENDPOST No. 1 AND ENDPOST No. 2
DEMOLITION PLAN
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
F.A. Project No. NH-063-1(023)
Scale: As Noted Date: June, 2015

SHEET No. 04 OF 20 SHEETS

ADD. 95

$\varnothing$ of Gap $\nless 1'x6\frac{1}{2}"x1\frac{1}{2}"$ Thk.
 Structural Steel Plate
 See Detail This Sheet

$\varnothing$ 2-1" $\varnothing$ x 15" Long
 Threaded Anchor Rods
 w/ Nut and Washer
 See General Notes

Modified Endpost No. 1

exist.
 guardrail
 to remain

1" Min.
 Sawcut

1'x6 $\frac{1}{2}"x1\frac{1}{2}"$
 Structural Steel
 Plate See Detail
 This Sheet

exist. dowels

New Metal Handrail
 See Sht. Q8

ref. exist. front face of endpost

Clean Gap Of Any Loose Debris
 And Fill with Non-Shrink Grout.
 See General Notes For Grout Req't

1/2" $\pm$ Sawcut

Match Existing Ramp Grade

4'-0" Modified Ramp

1/4":2

5% slope

Varies

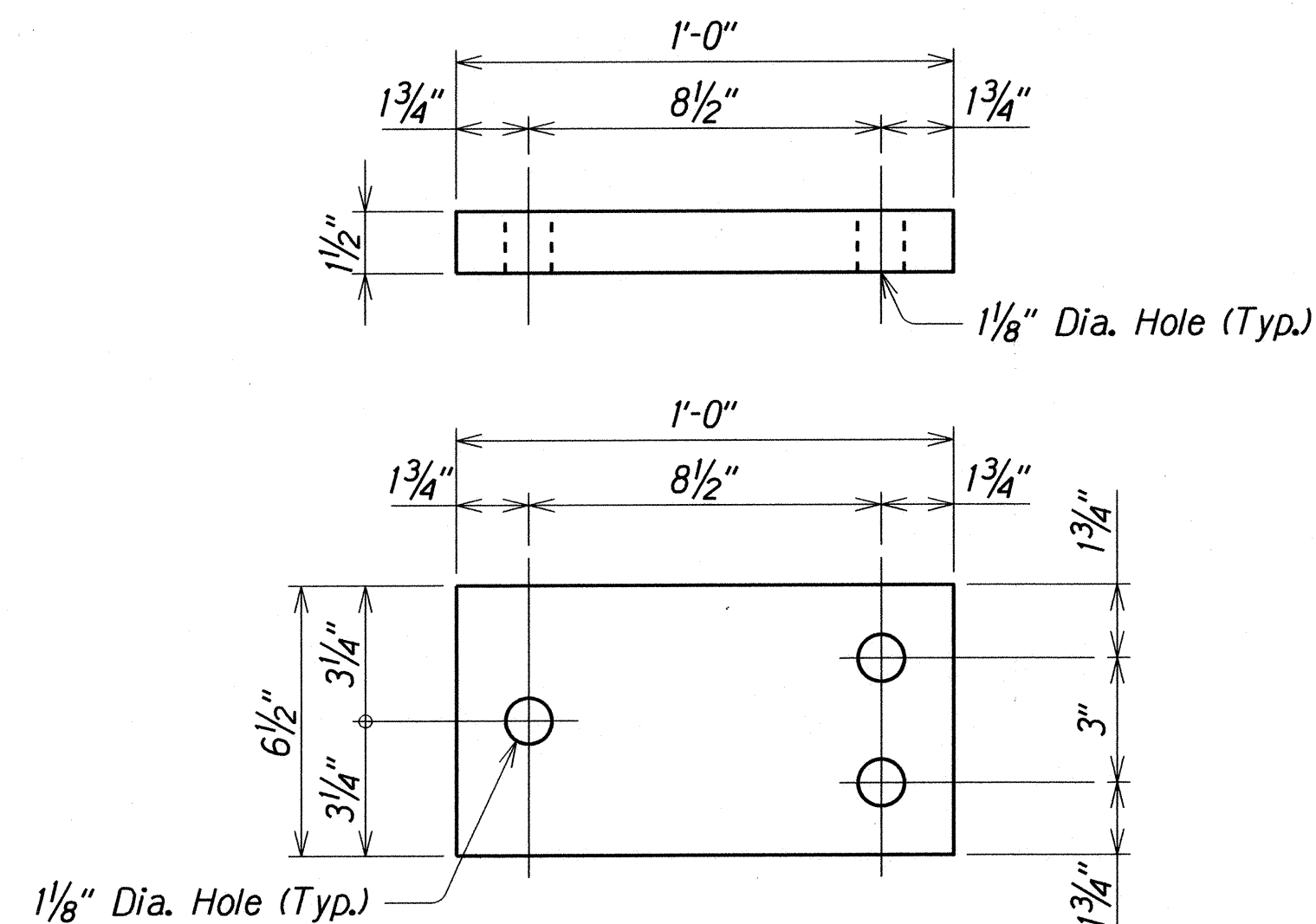
Match Existing Ramp Grade

existing ramp

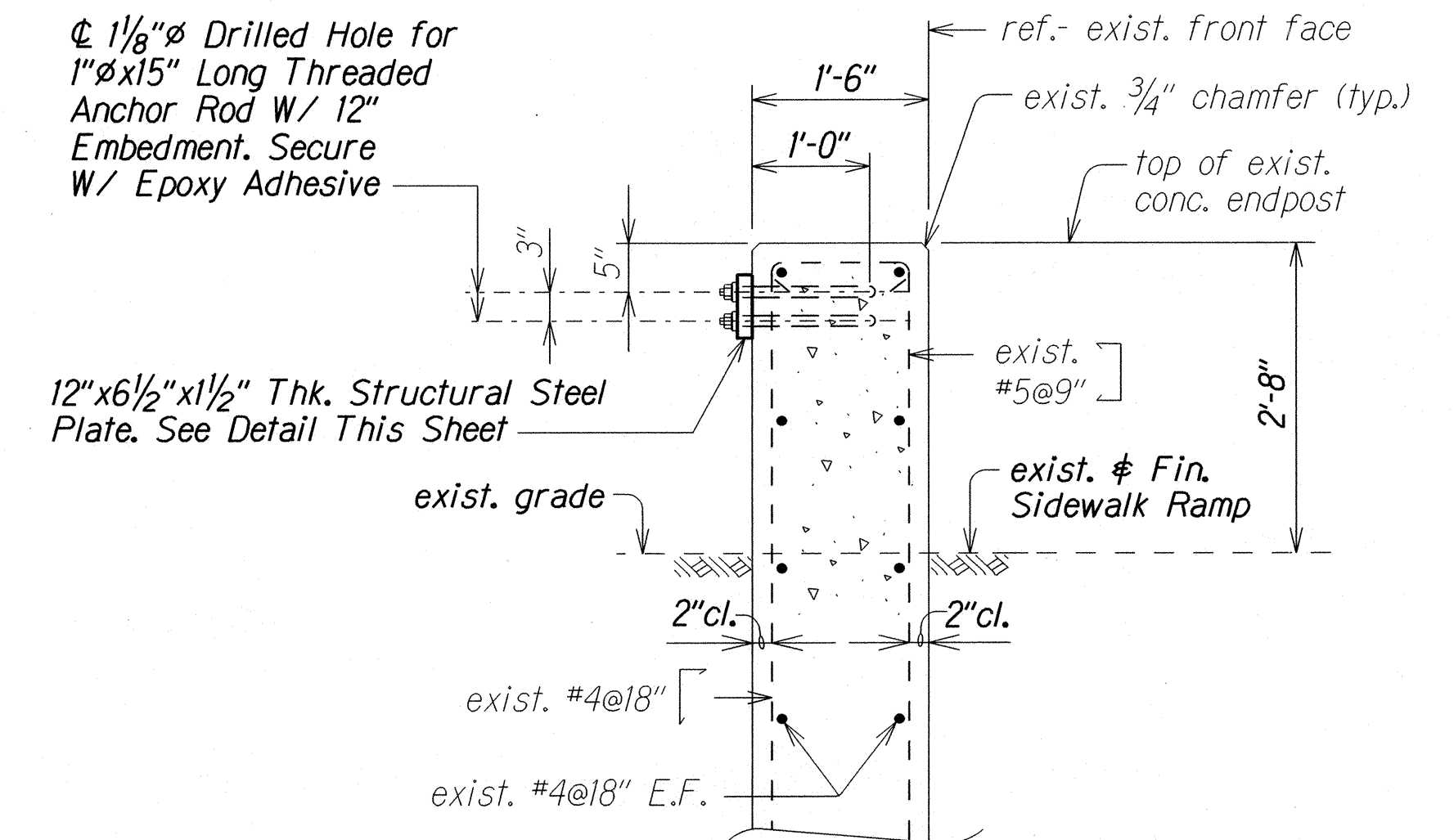
exist. sidewalk

Roughen & Clean Surface Before Pouring Pre-Packaged
 Concrete. Use Polymer-Modified, Cementitious Mortar
 such as SikaTop 122 Plus, Thorocrete Concrete Patch,
 Tamms Thin Patch or Equivalent

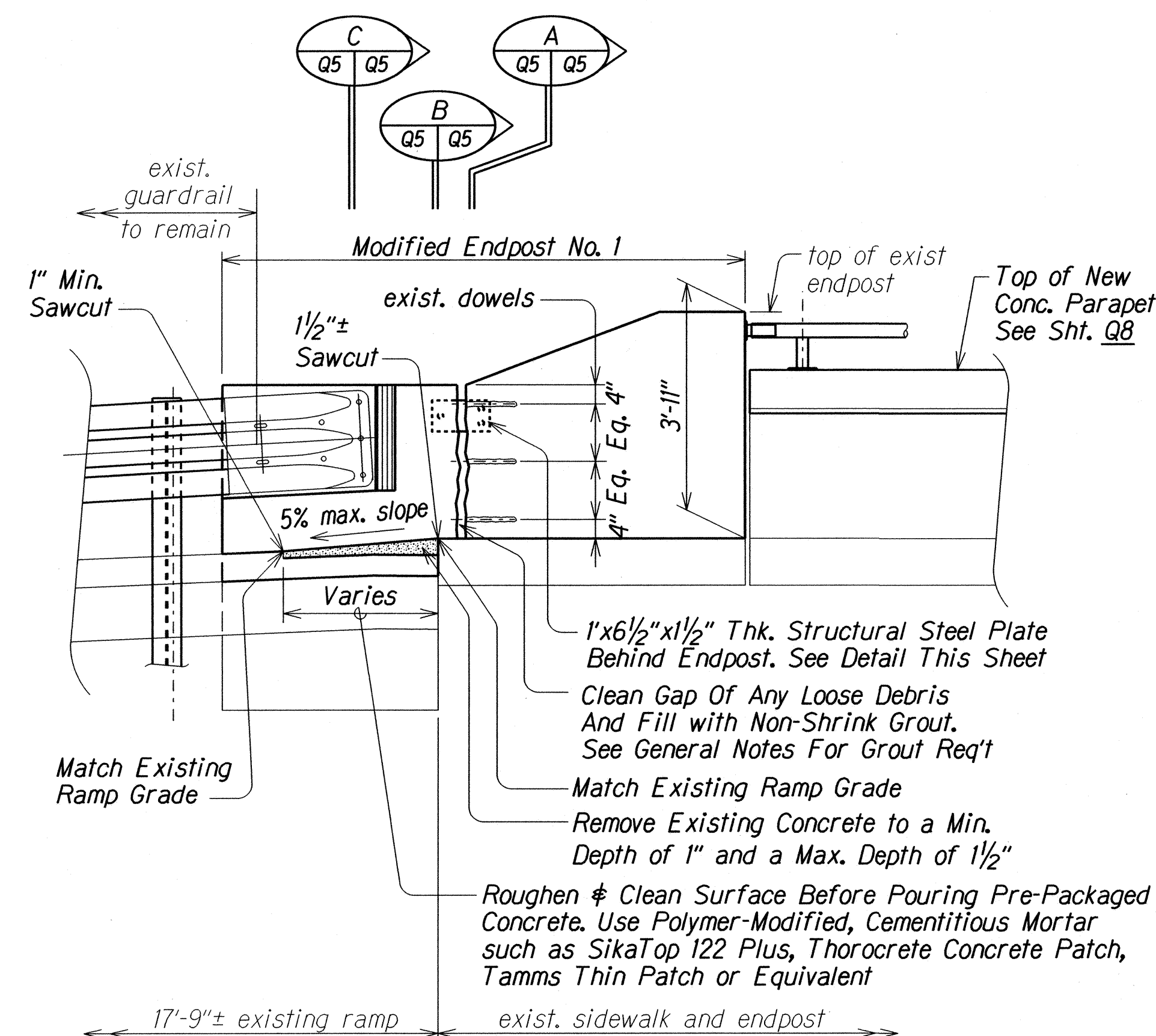
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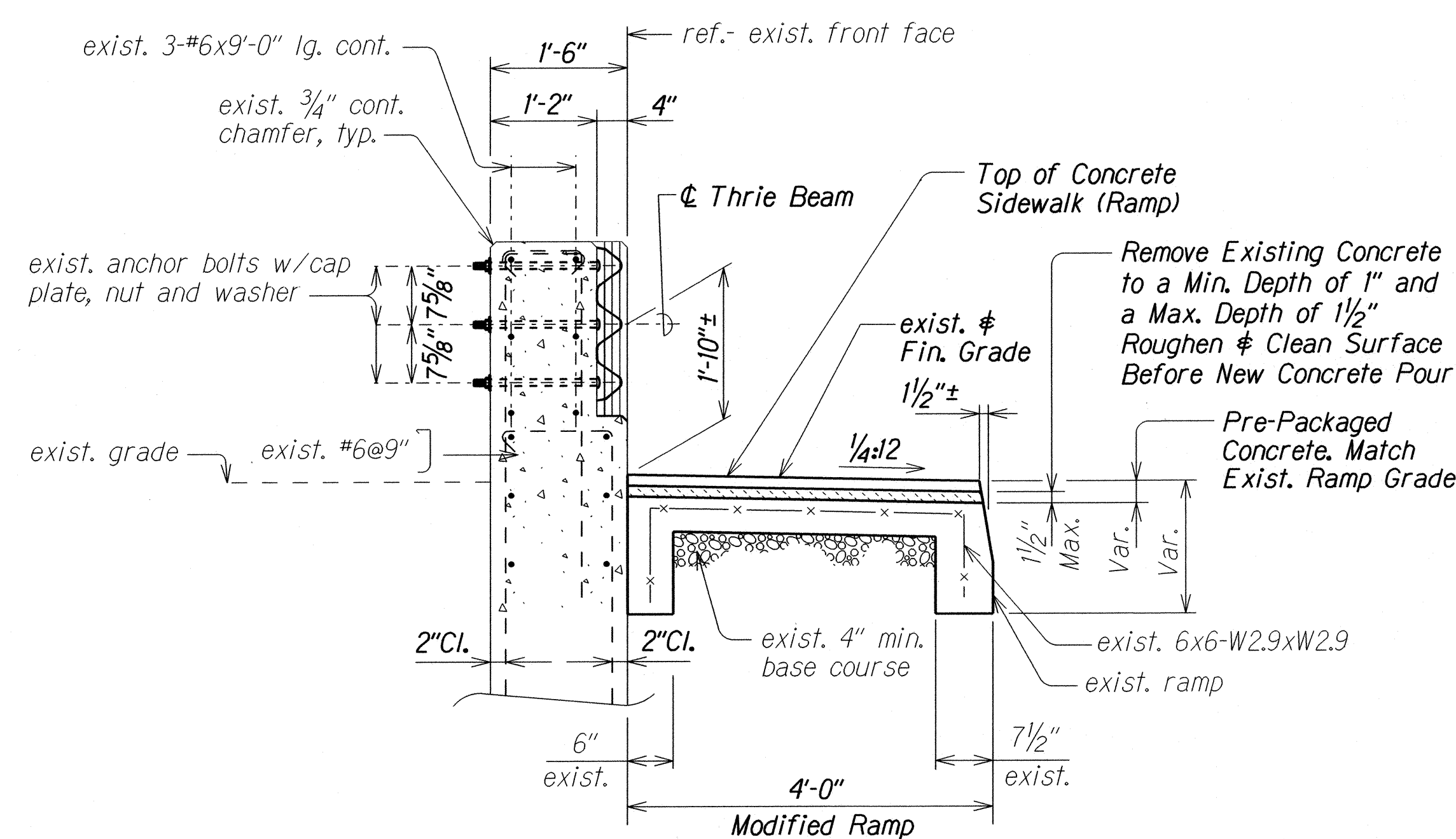
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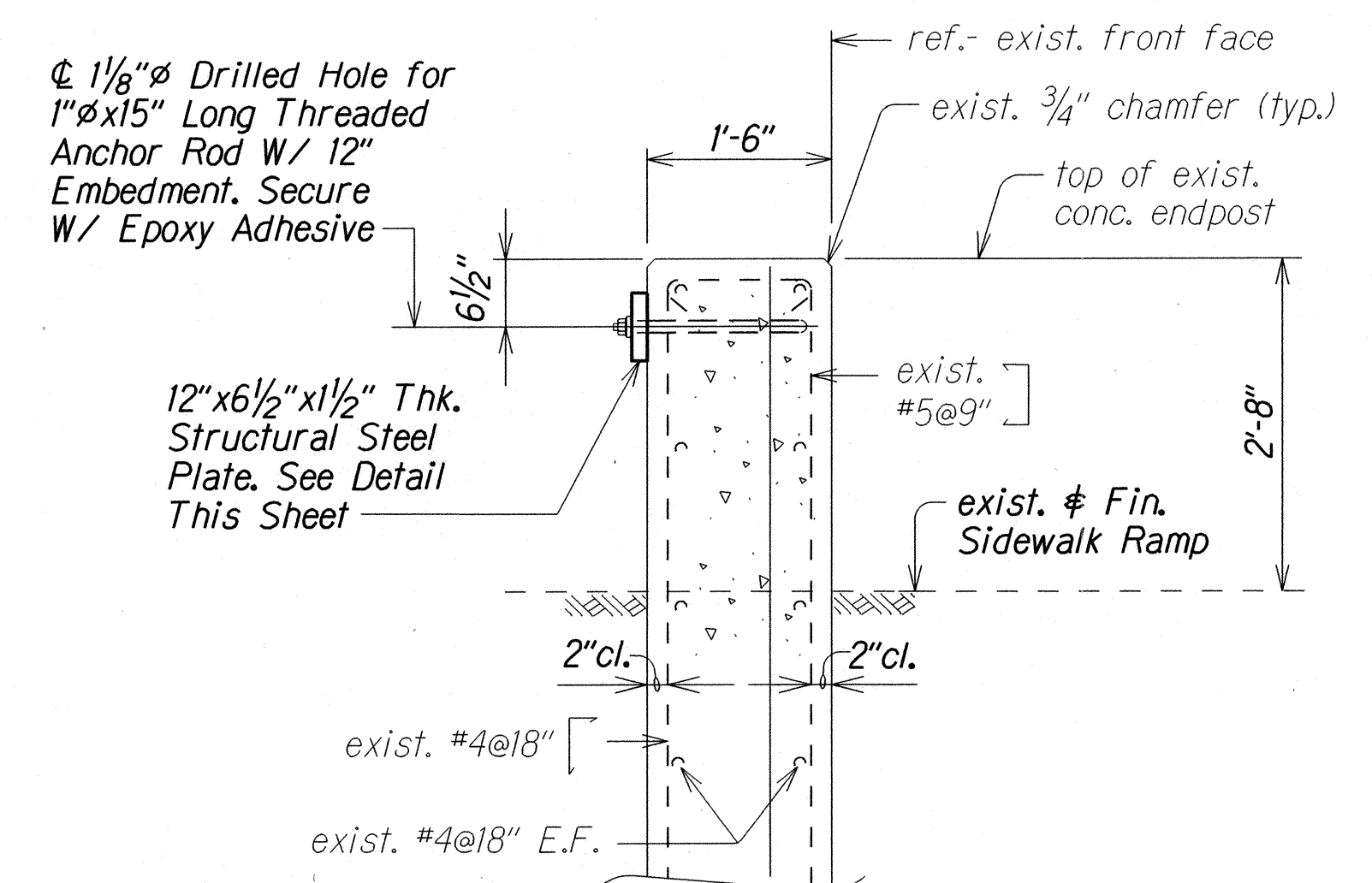
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Scale: $\frac{1}{2}"=1'-0"$



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



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

NOTE:
Endpost No. 1 work only involves Cleaning Gap
of Debris, Filling with Non-Shrink Grout and
installation of Structural Steel Plate.

SHEET No. 05 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	97	111

NOTE:
 1. See sht. Q17 for metal guardrail Type 3 thrie beam and appurtenances details.
 2. Ramp length and length of New Endpost to be determined by distance from existing sidewalk, Pt.(A) to existing grade, Pt.(B) at 5% max. slope.

Technical drawing of the New Endpost No. 2 for the Kalihi Stream Bridge. The drawing shows a side elevation of the bridge structure, including the new ramp, concrete endpost upgrade, and guardrail. Key features include:

- New Endpost No. 2:** A 26'-0" long structure with a 5'-0" section at the left end.
- Ramp:** A 17'-9"± ramp with a 5% max. slope, matching the existing grade at the right end.
- Guardrail:** A 25'-0" Guardrail Type 3 Thrie Beam Pay Limits section, including a 12'-6" double (nested) rail element and a 6'-3" transition.
- Foundation:** A 25'-8" footing.
- Details:** 5-1" thru holes for 5-7/8" x 1'-4" Lg. anchor bolts w/ cap PL, nut & washer. 2'-6" term. connector. 2'-8 3/4" sections. 4-spcs. @ 1'-6 3/4" = 6'-3". 4-spcs. @ 3'-1 1/2" = 12'-6". 6'-3" transition. 12'-6" double (nested) rail element. Limits of W6x15 Post & W6x12 Spacer.
- Labels:** Pt. A Beginning of New Ramp Match exist. sidewalk. Pt. B End of New Ramp Match exist. grade. Top of New Ramp. Top of New Conc. Endpost Upgrade. exist. & Fin. Grade.
- Dimensions:** 5'-0", 26'-0", 17'-9"±, 2'-8", 2'-1 1/2"±, 2'-0", 1'-6", 2'-0" Key, 2'-8 3/4", 1'-4", 7 5/8", 10", 1'-0", 3'-7", 2'-7", 1", 8" 1'-3/4", 7 1/4", 2'-8 3/4", 1'-10", 14'-8 1/4", 6'-3" Transition, 1'-9 3/4".
- Notes:** See Note 2. Ref. Guardrail Connection Line and & 2-7/8" thru holes for 2-5/8" x 1'-4" Lg. Anchor Bolts w/ Cap PL, Nut & Washer.
- Symbols:** F, A, B, C, D, E, Q6, Q7.
- Title:** KALIHI STREAM BRIDGE, NEW ENDPOST No. 2, STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION.

ELEVATION

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

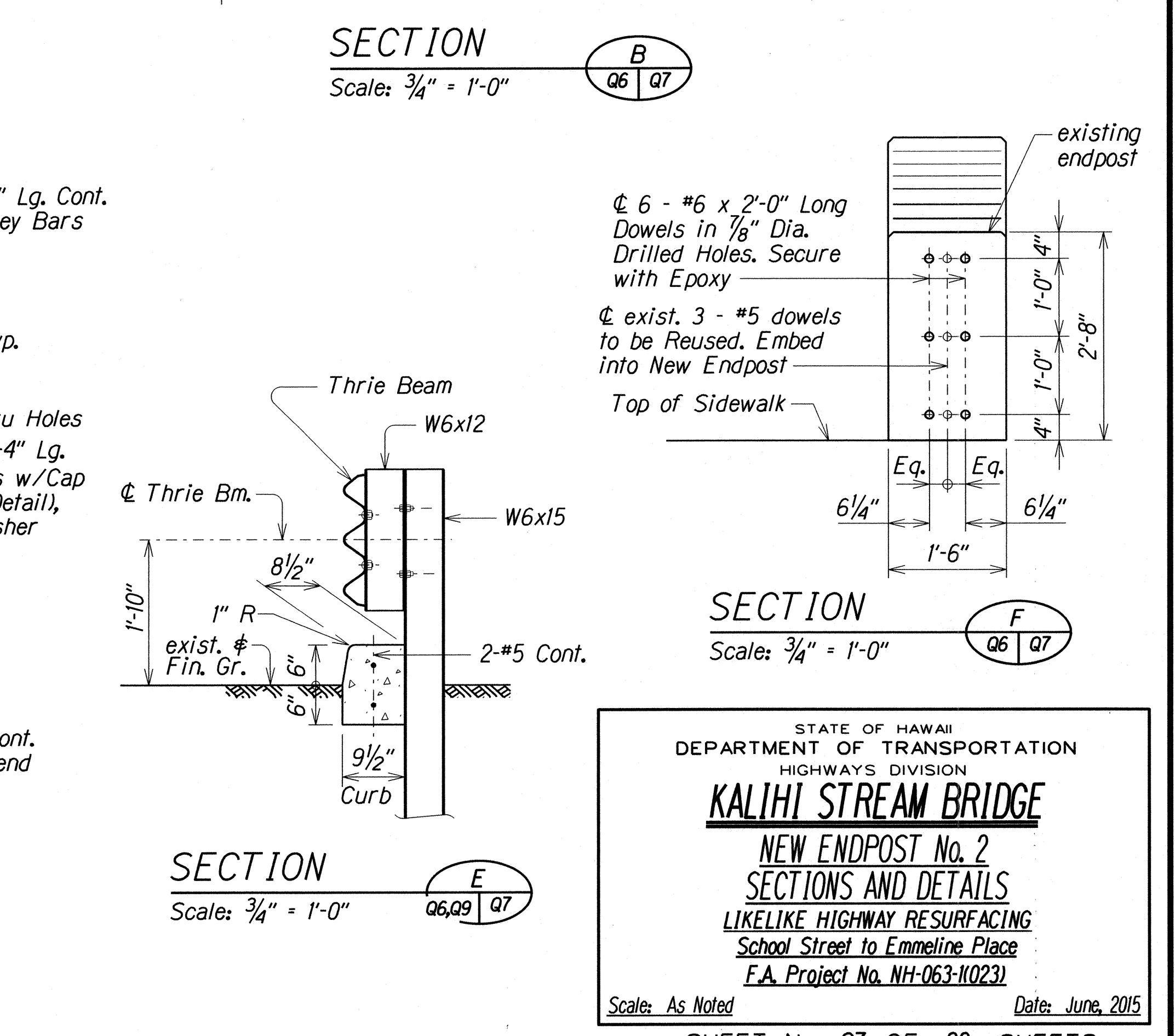
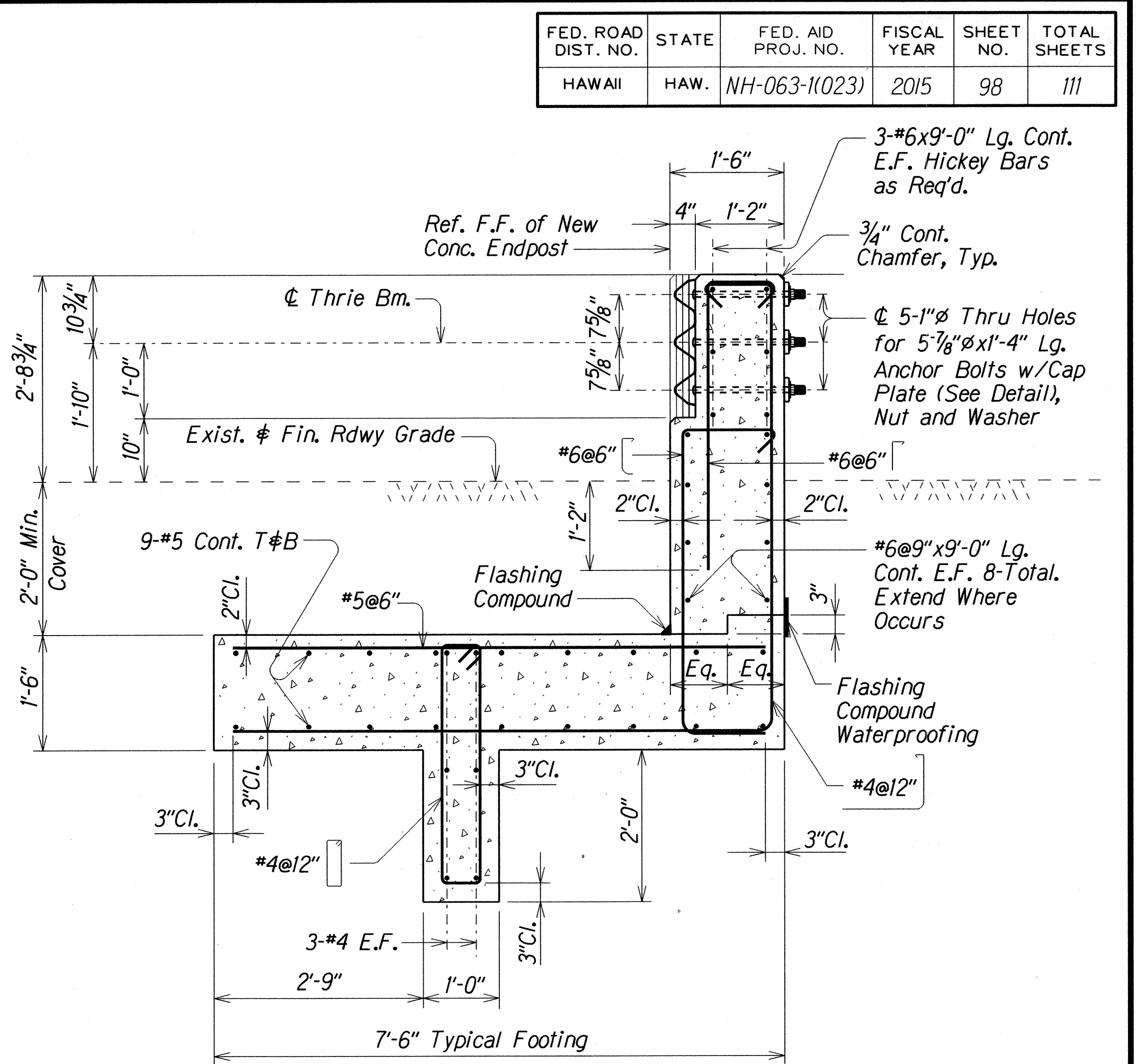
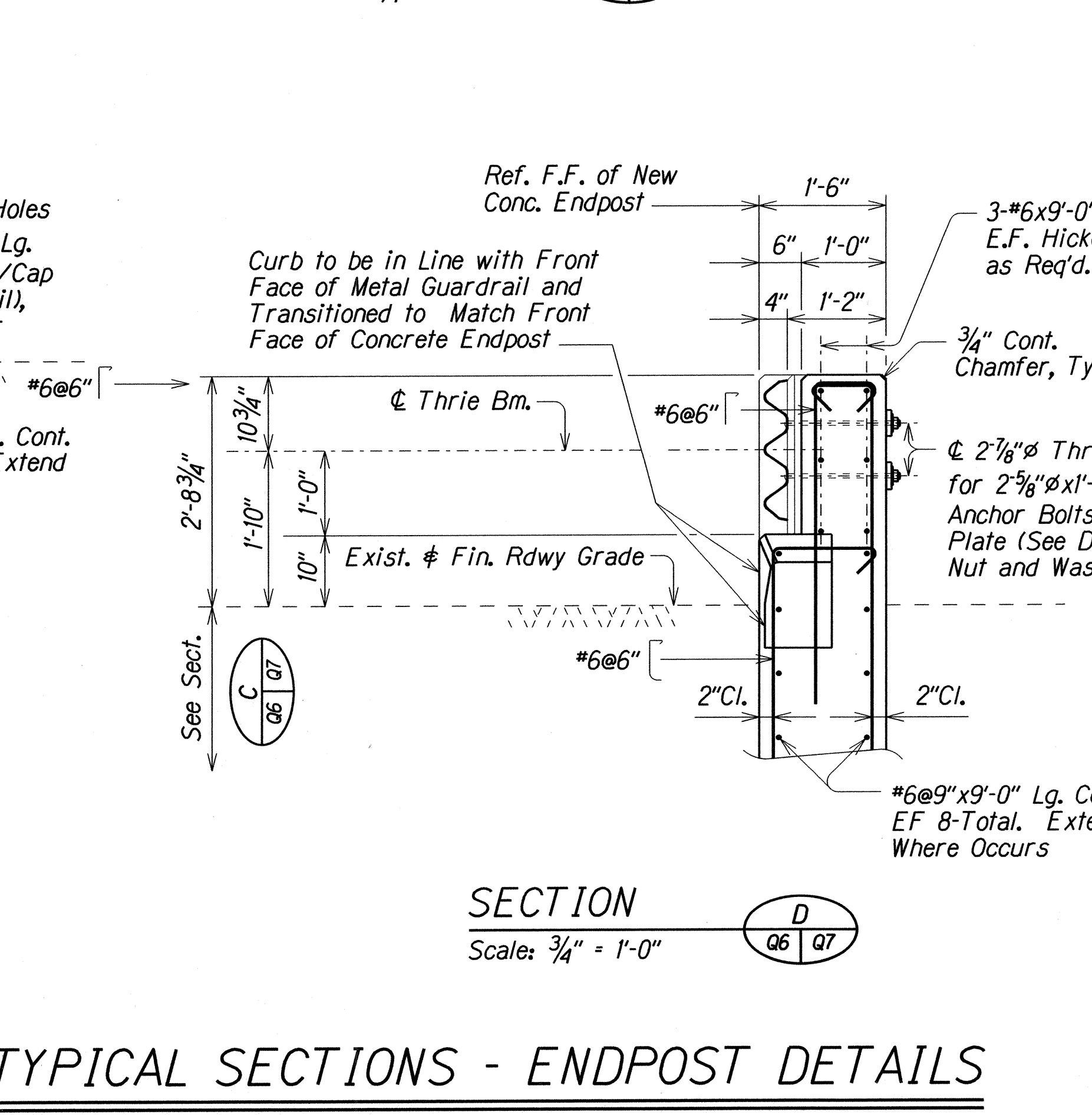
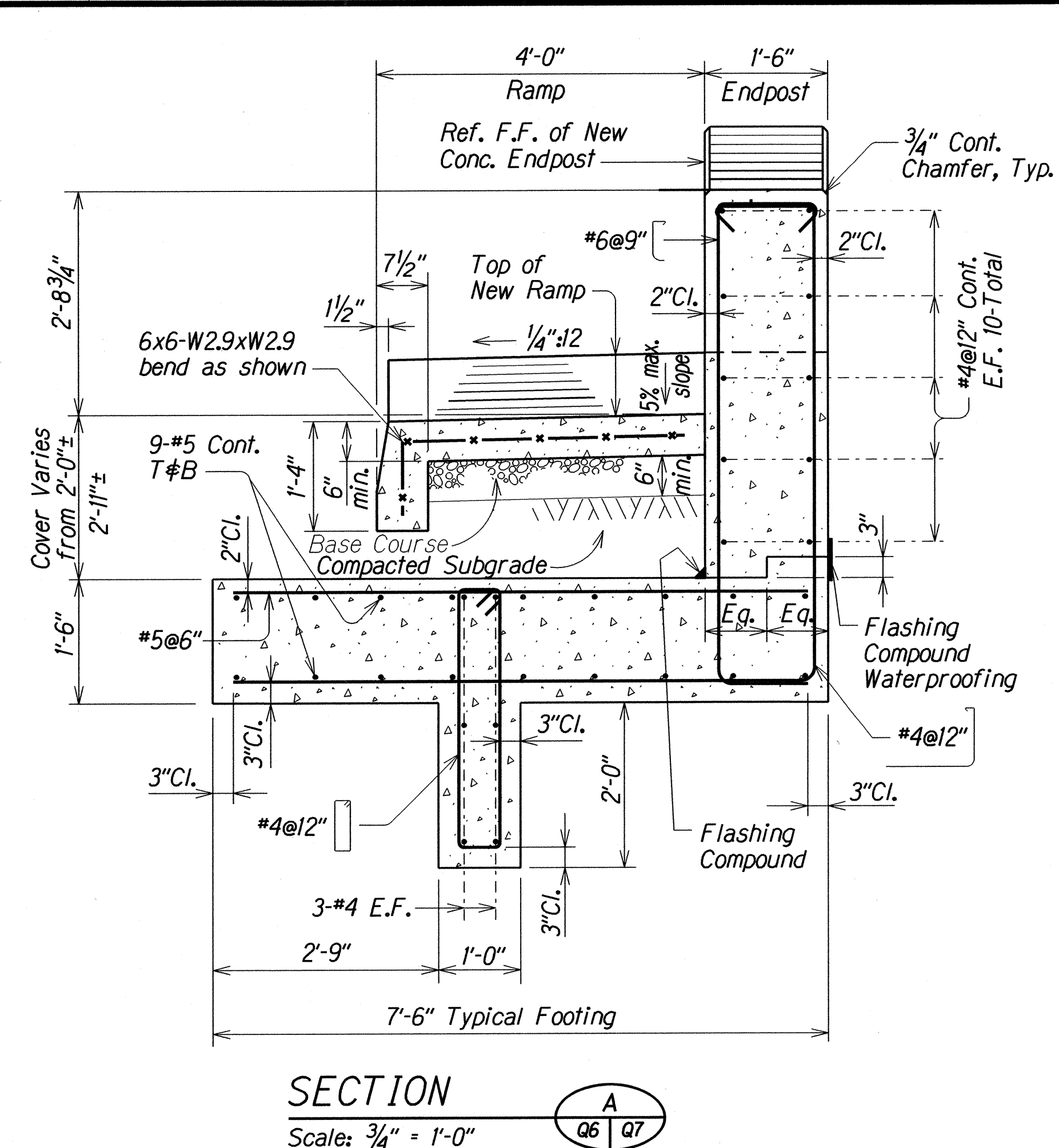
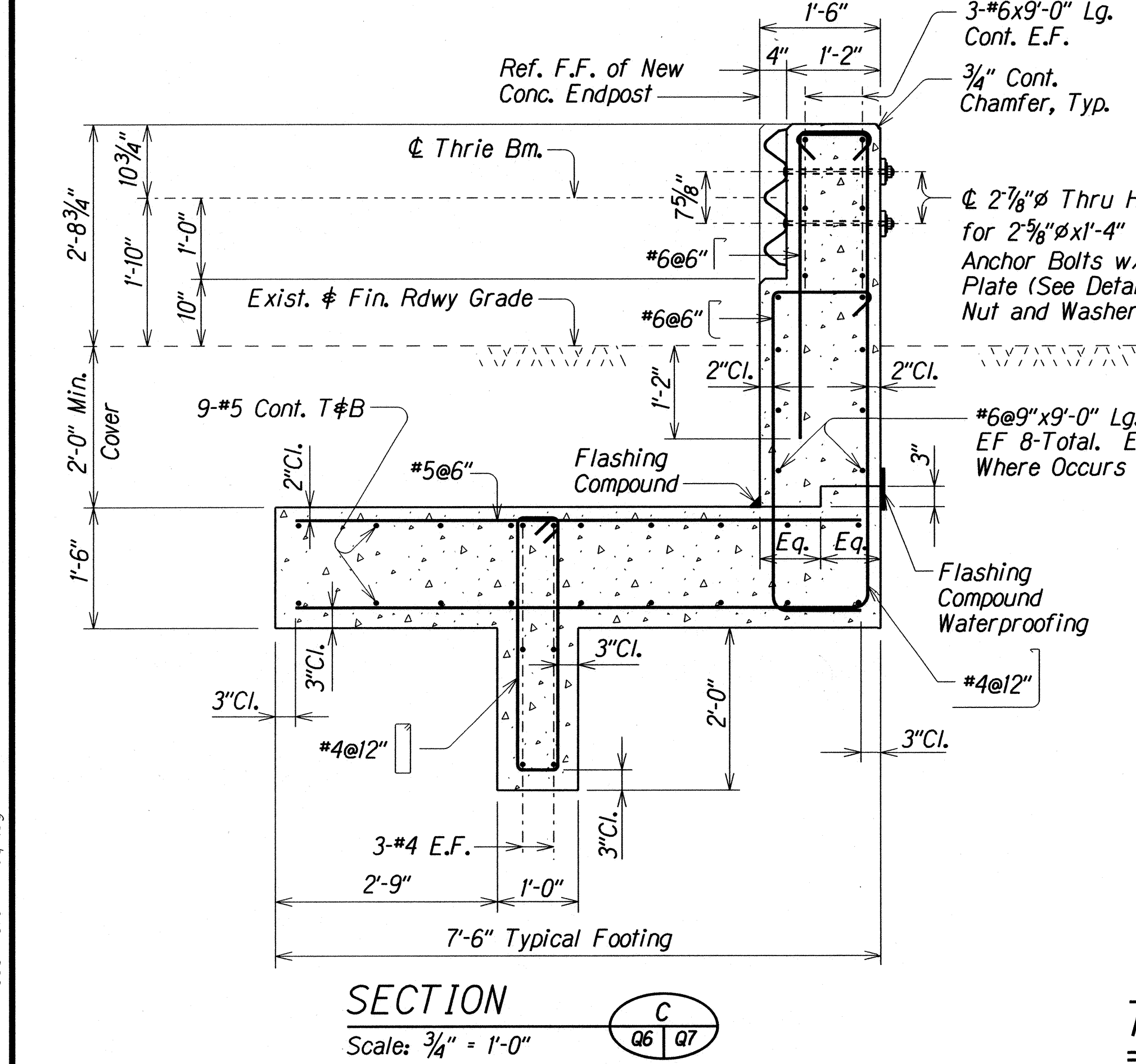
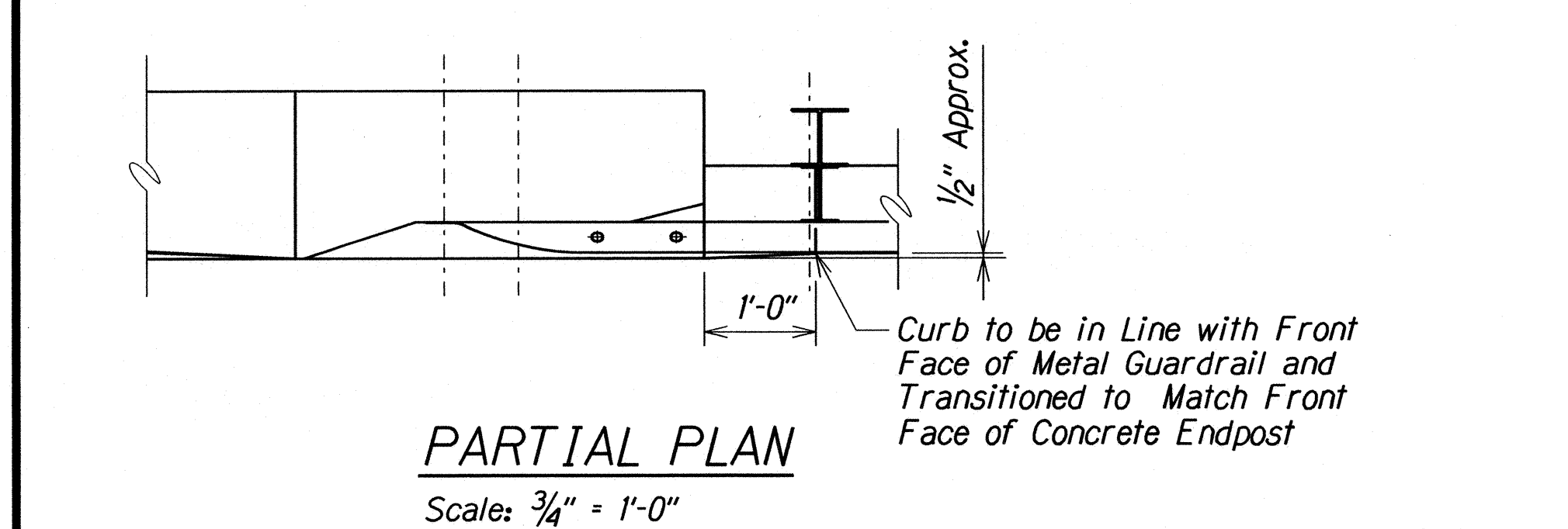
KALIHI STREAM BRIDGE

NEW ENDPOST No. 2
PLAN AND ELEVATION

LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
F.A. Project No. NH-063-11(023)

Scale: As Noted Date: June, 2015

SHEET No. 06 OF 20 SHEETS



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DRAWN BY	XXX	XXX 2012
DESIGNED BY	XXX	XXX 2012
NOTE BOOK	XXX	XXX 2012
CHECKED BY	XXX	XXX 2012
N ₁		

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TYPICAL SECTIONS - ENDPPOST DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE

NEW ENDPOST No. 2
SECTIONS AND DETAILS

LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
F.A. Project No. NH-063-110231

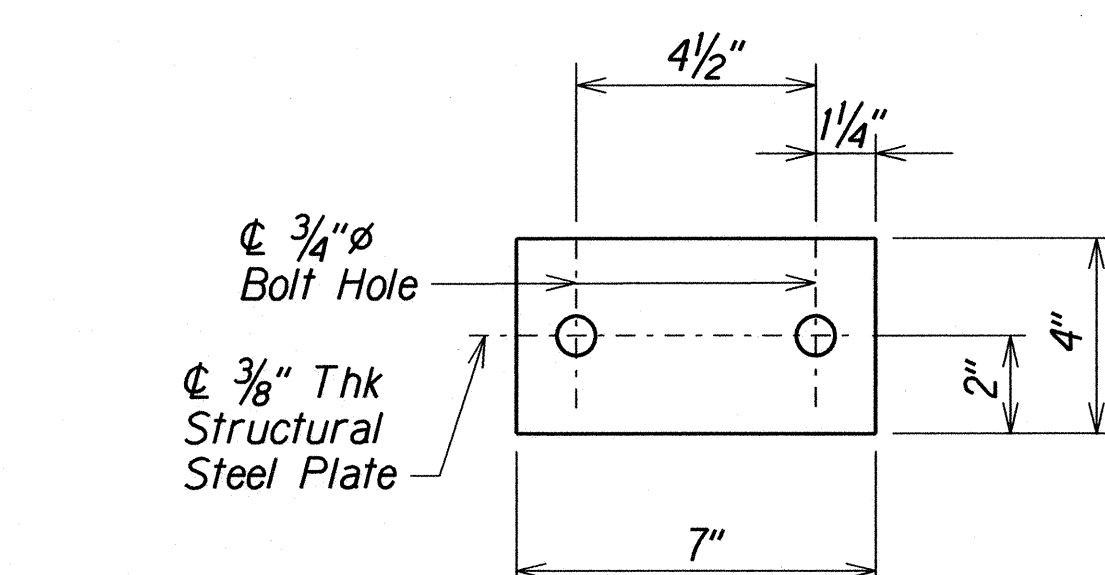
Scales: As Noted Date: June, 2015

SHEET No. Q7 OF 20 SHEETS

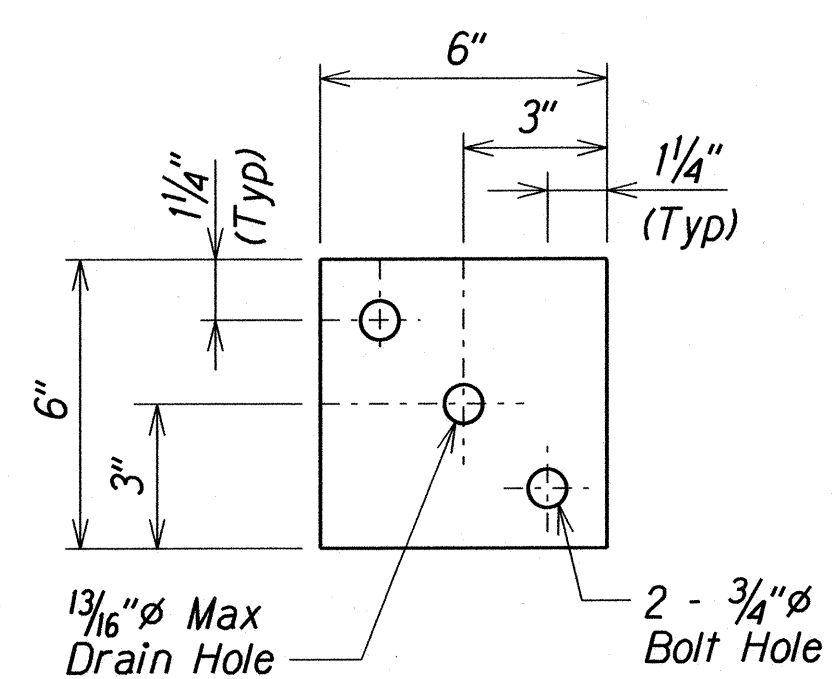
Plan view of the proposed 10' wide concrete curb and gutter section. The diagram shows a cross-section of the curb and gutter with various dimensions and spacing. The total width is 10 feet. The dimensions are: 3'-1 1/2"±, 3'-2"±, 24'-10"±, 24'-10"±, 25'-0"±, 3'-1 1/2"±, and 3'-1 1/2"±. The spacing between the curb and gutter is 4 eq. spaces @ 7'-3 1/4"±, 4 eq. spaces @ 7'-3 1/2"±, 3 eq. spaces @ 7'-7 1/4"±, 3 eq. spaces @ 7'-7 1/4"±, 3 eq. spaces @ 7'-8"±, 4 eq. spaces @ 7'-3 1/2"±, and 4 eq. spaces @ 7'-3 1/2"±. The diagram also shows existing endpost no. 1 and existing endpost no. 2.

Scale: $\frac{1}{8}'' = 1'-0''$

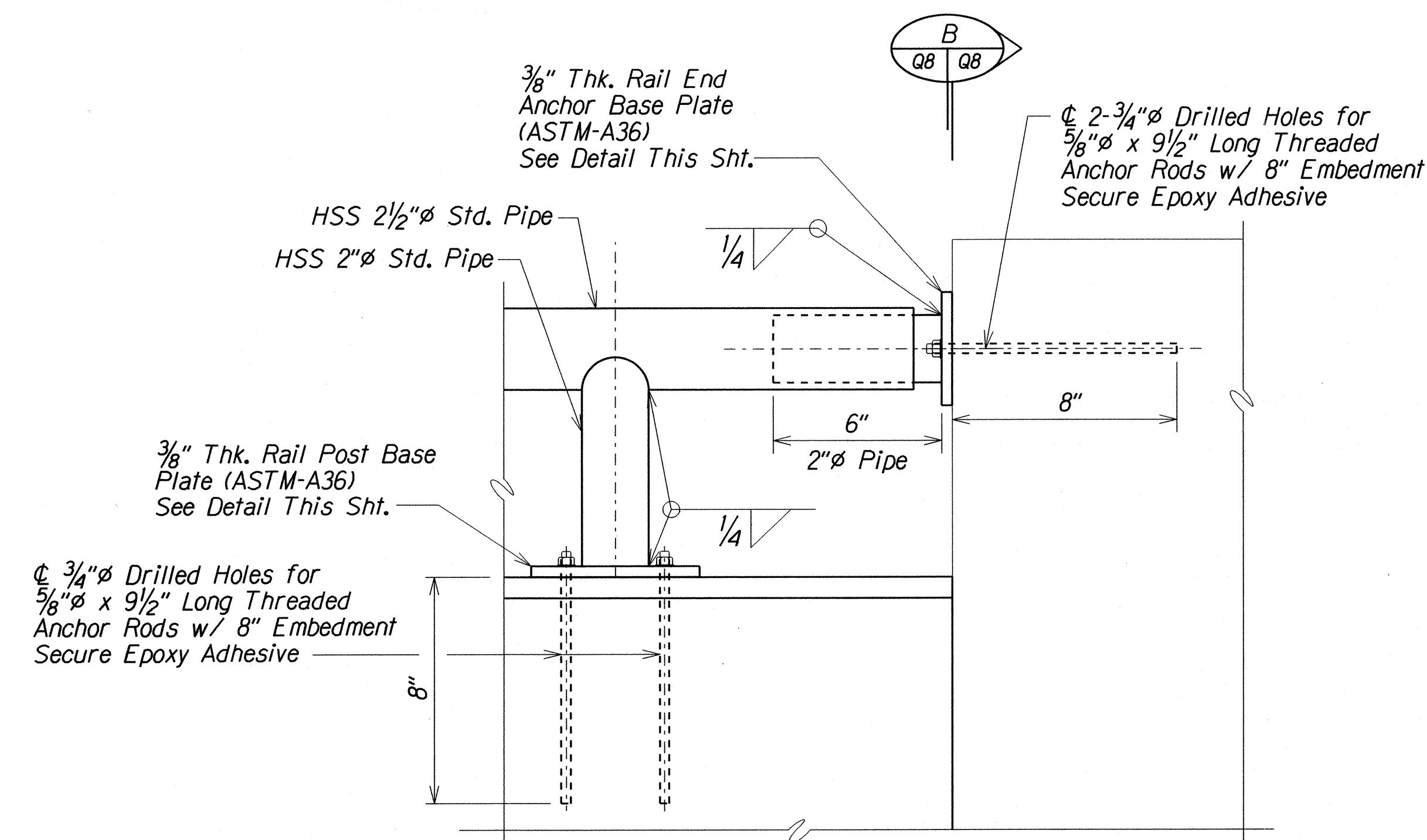
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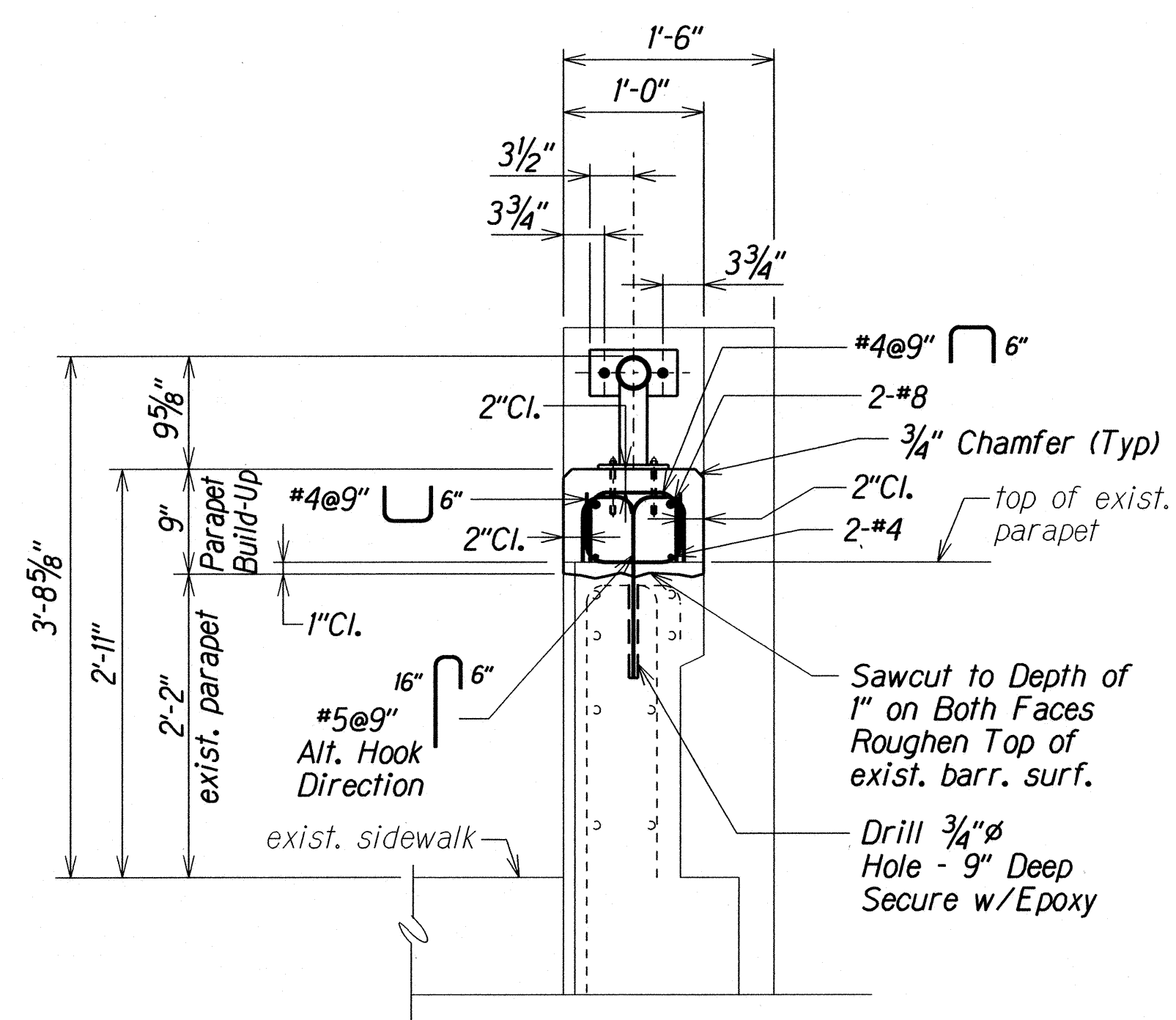
Scale: 3" = 1'-0"



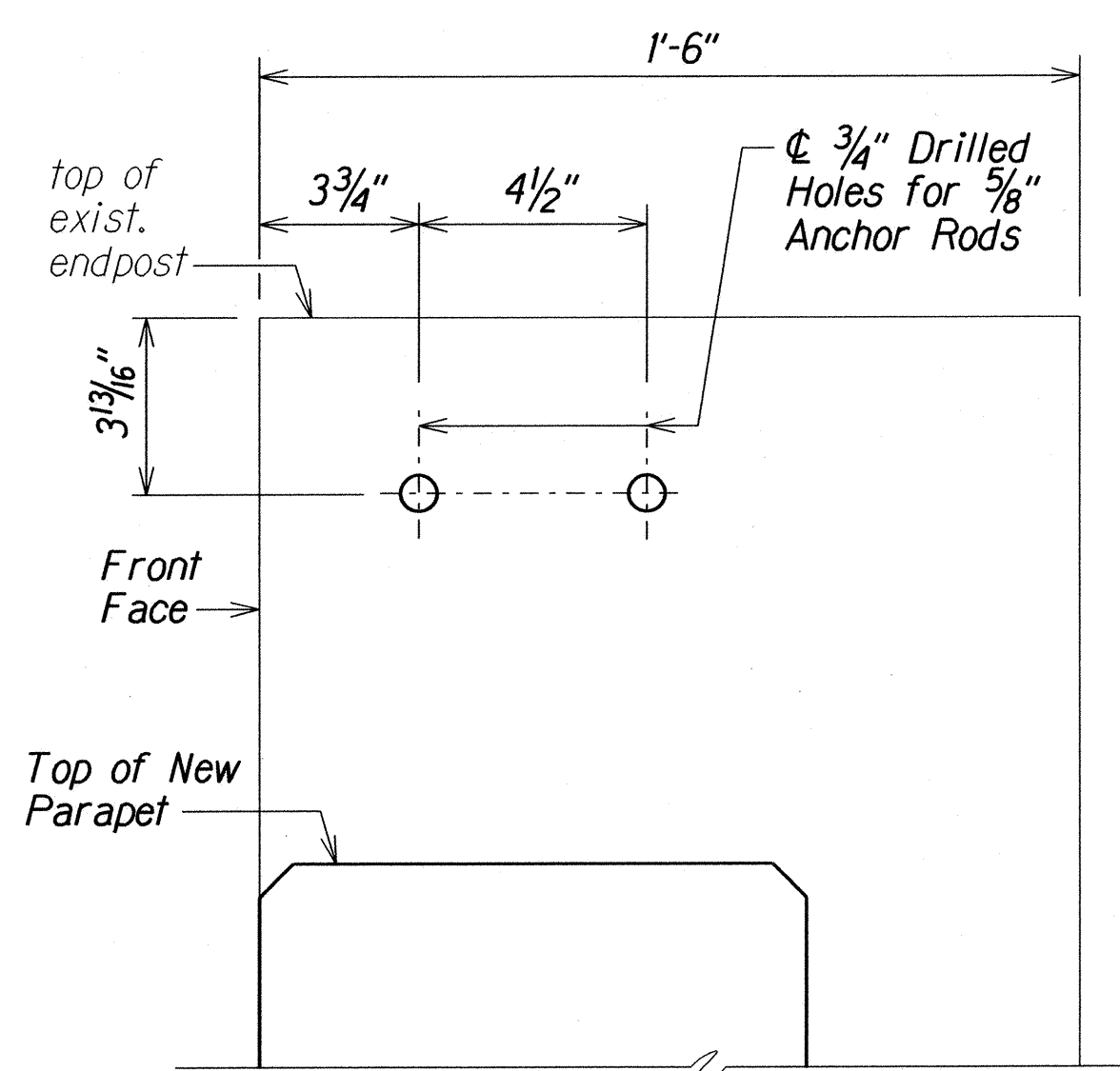
Scale: 3" = 1'-0"



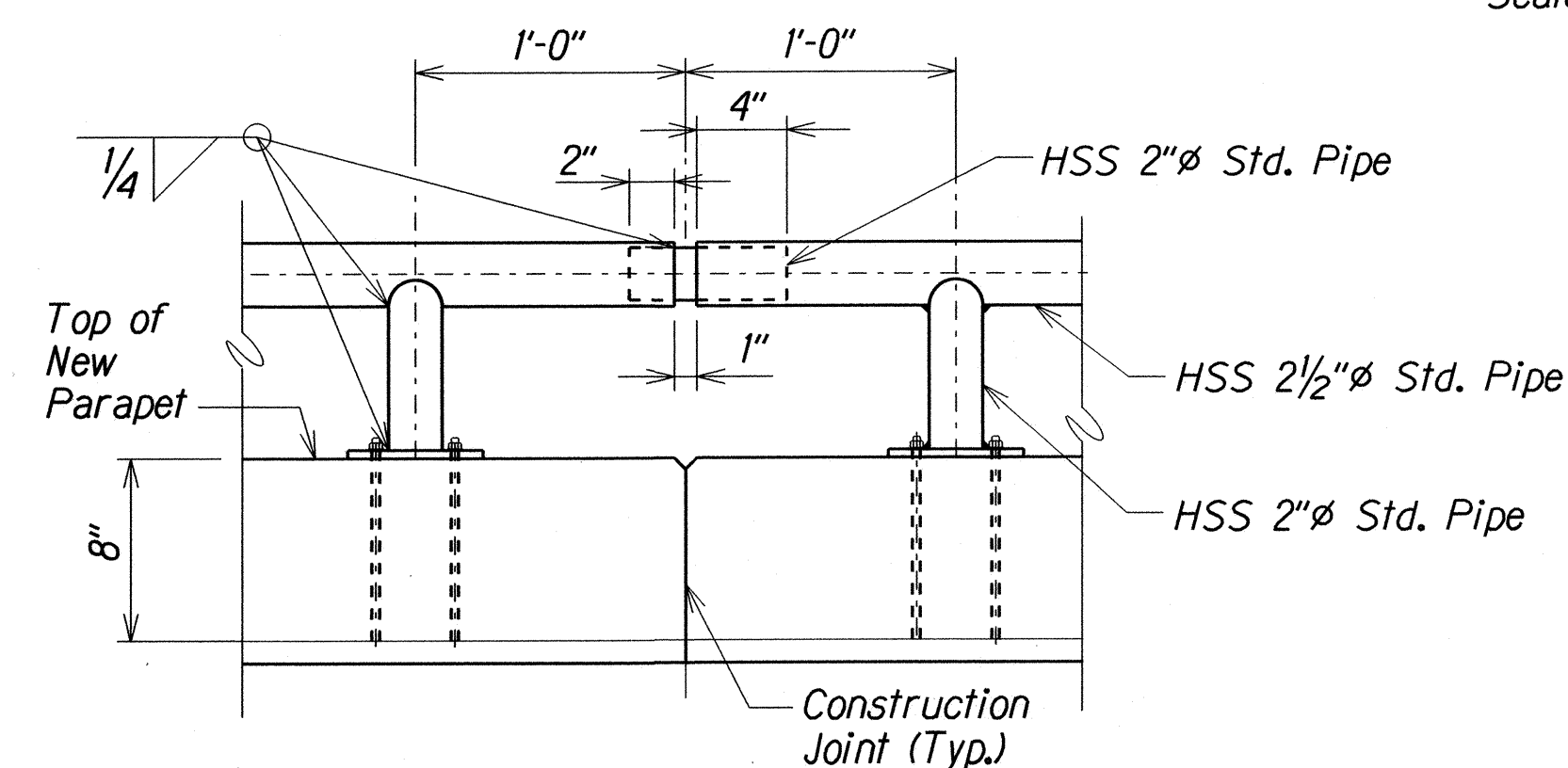
Scale: 3" = 1'-0"



Scale: 1" = 1'-0"



Scale: 3" = 1'-0"

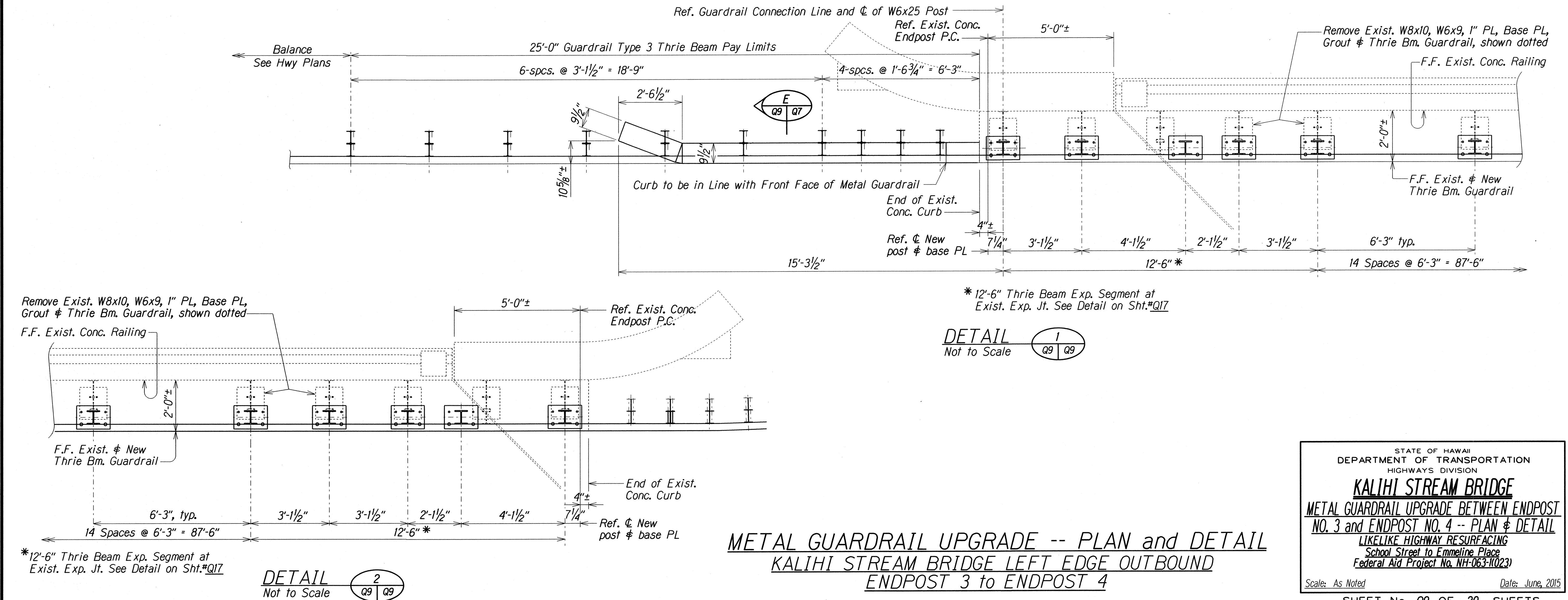
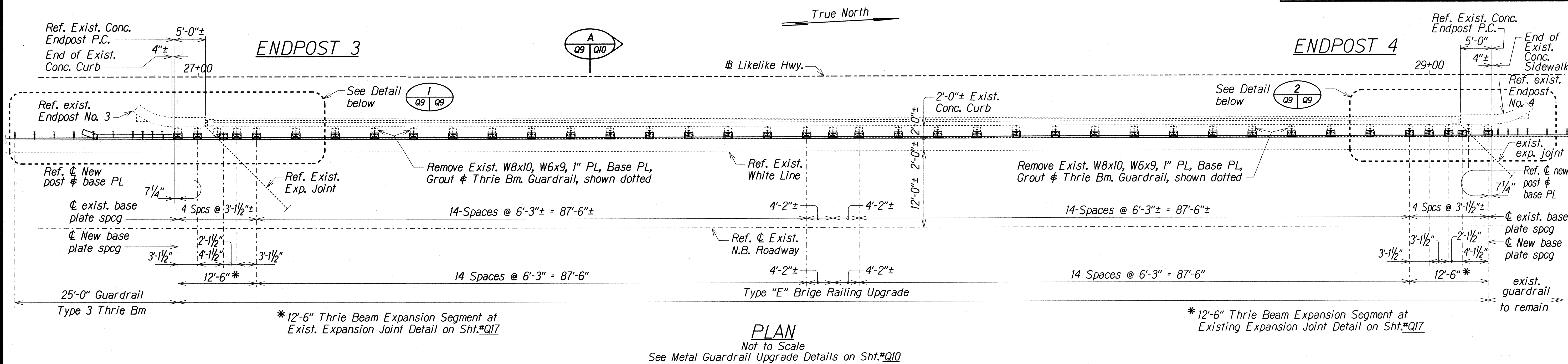


Scale: $1\frac{1}{2}'' = 1'-0''$

th3/kate/7likha8 dan

Scale: As Noted Date: June, 2015

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	100	111



METAL GUARDRAIL UPGRADE -- PLAN and DETAIL KALIHI STREAM BRIDGE LEFT EDGE OUTBOUND ENDPOST 3 to ENDPOST 4

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

KALIHI STREAM BRIDGE

METAL GUARDRAIL UPGRADE BETWEEN ENDPOST NO. 3 and ENDPOST NO. 4 -- PLAN & DETAIL

LIKELIKE HIGHWAY RESURFACING

School Street to Emmeline Place

Federal Aid Project No. NH-063-1(023)

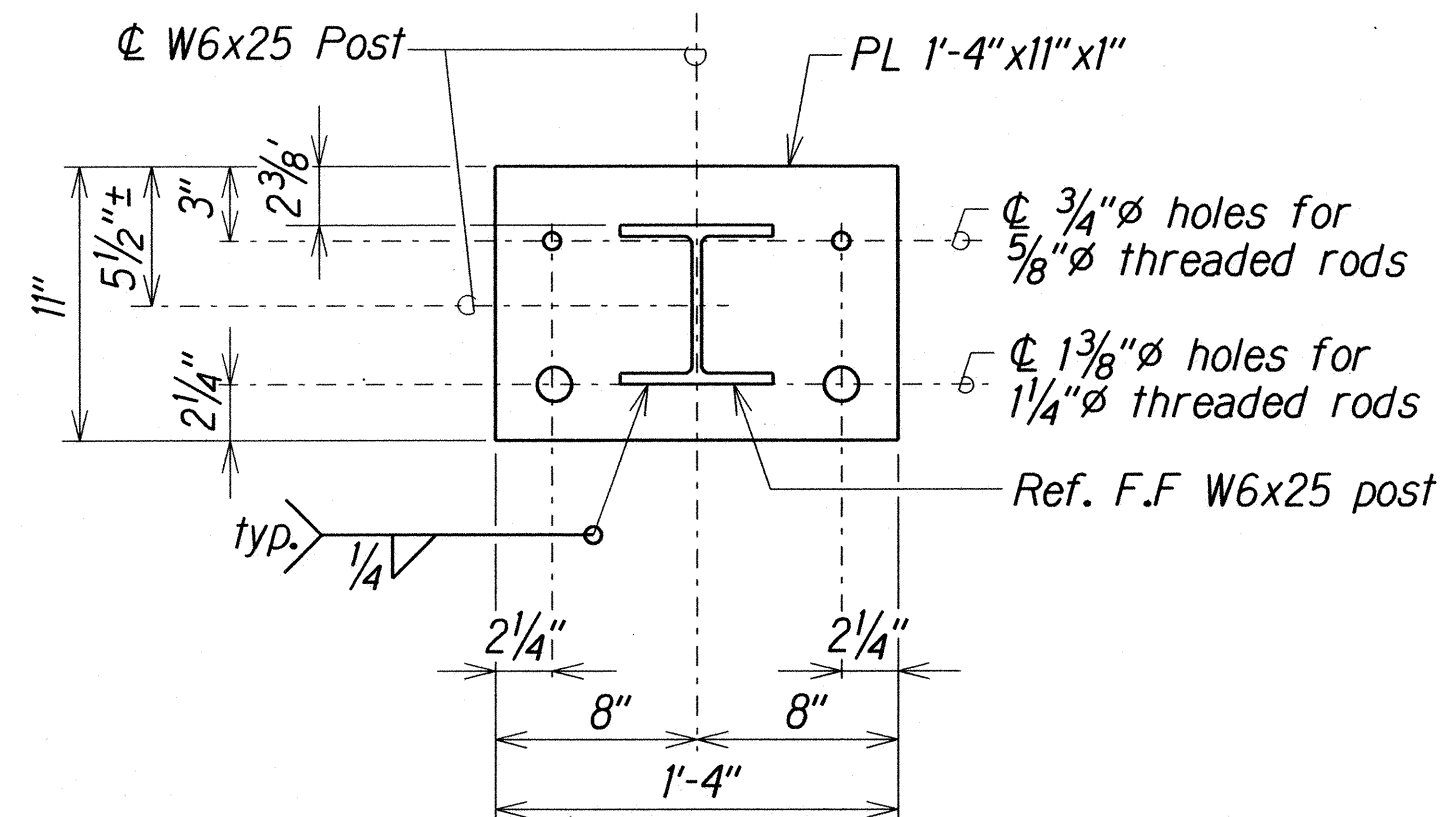
Scale: As Noted

Date: June, 2015

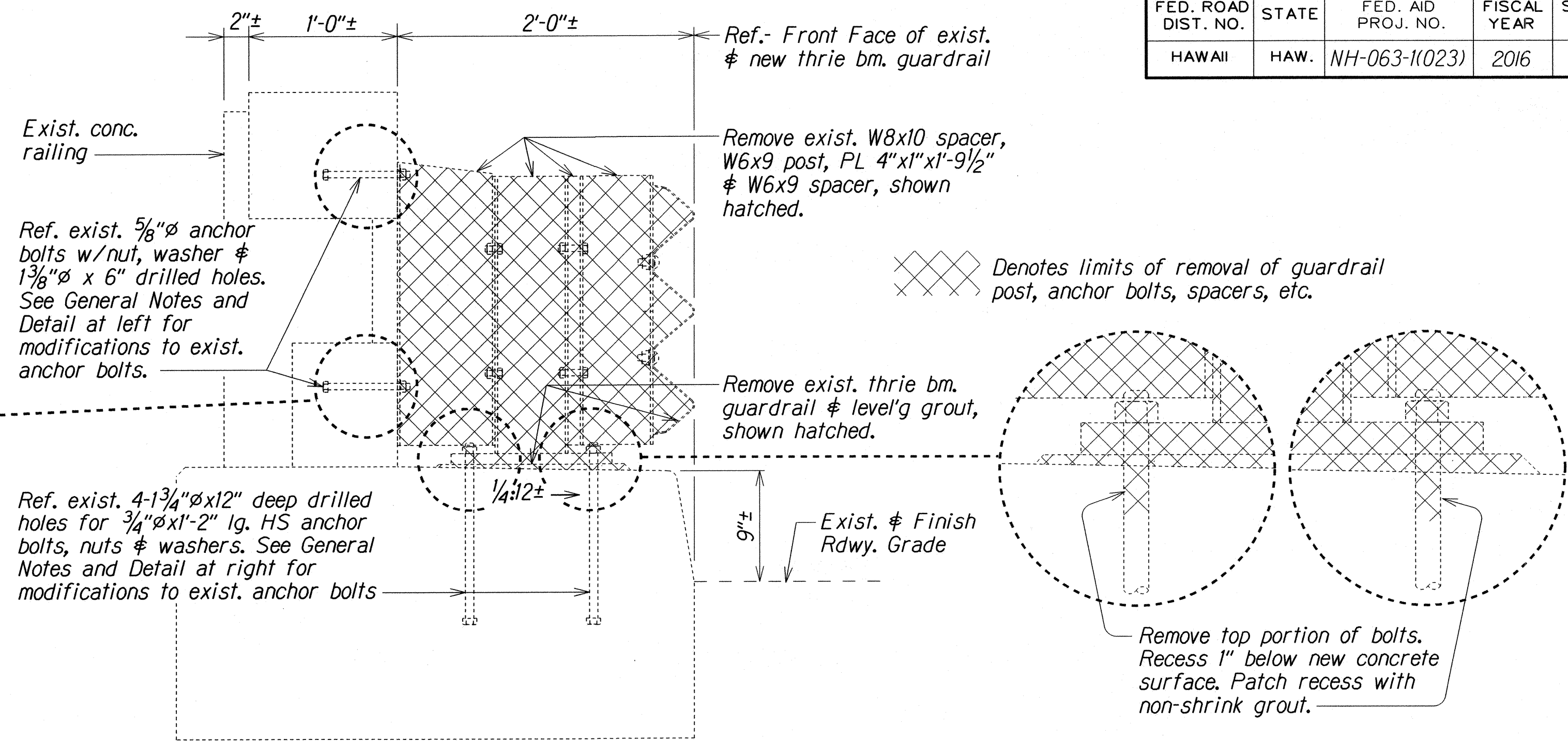
SHEET No. Q9 OF 20 SHEETS

100

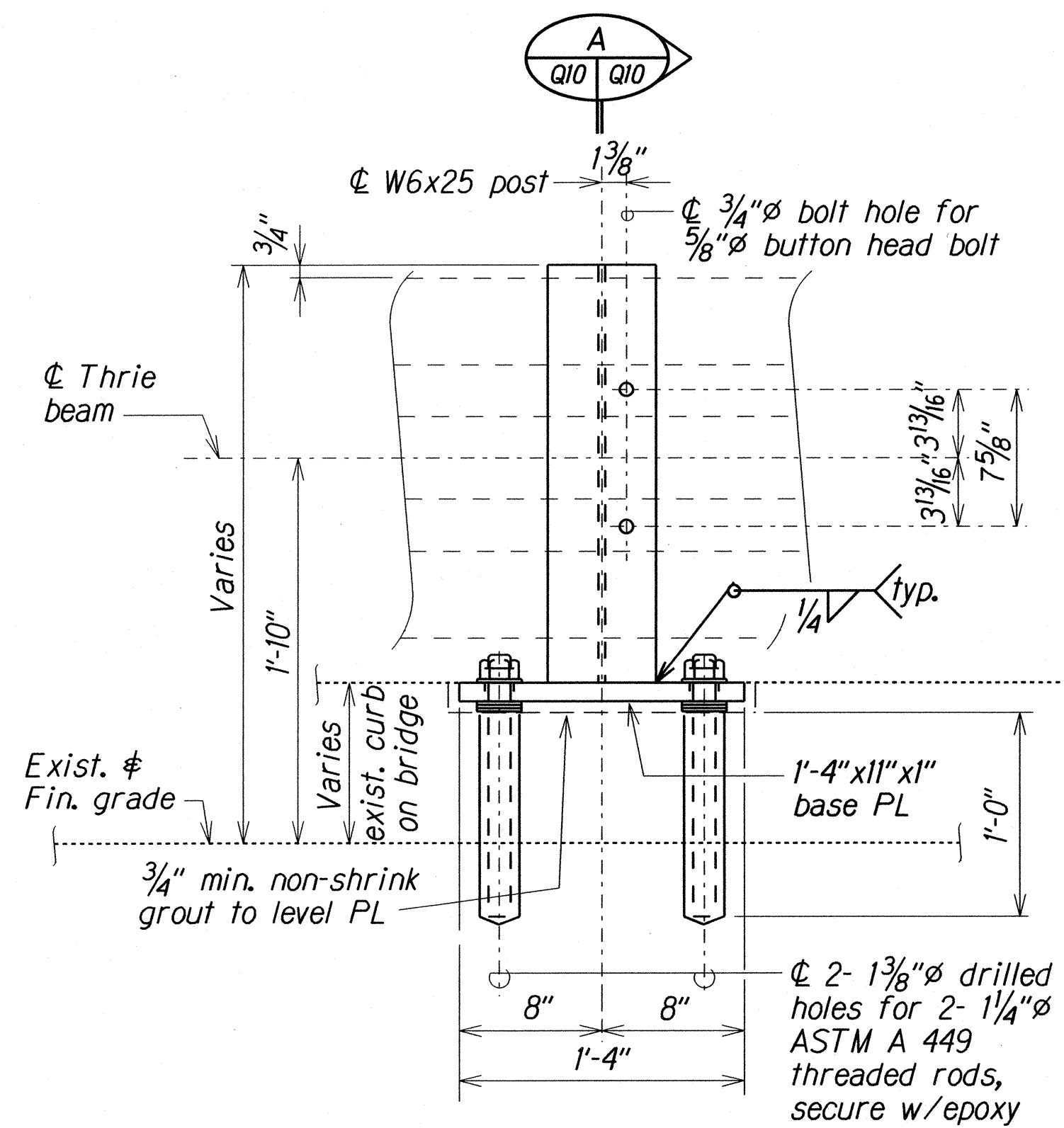
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	101	111



PLAN VIEW -- PL 1'-4"x11"x1"

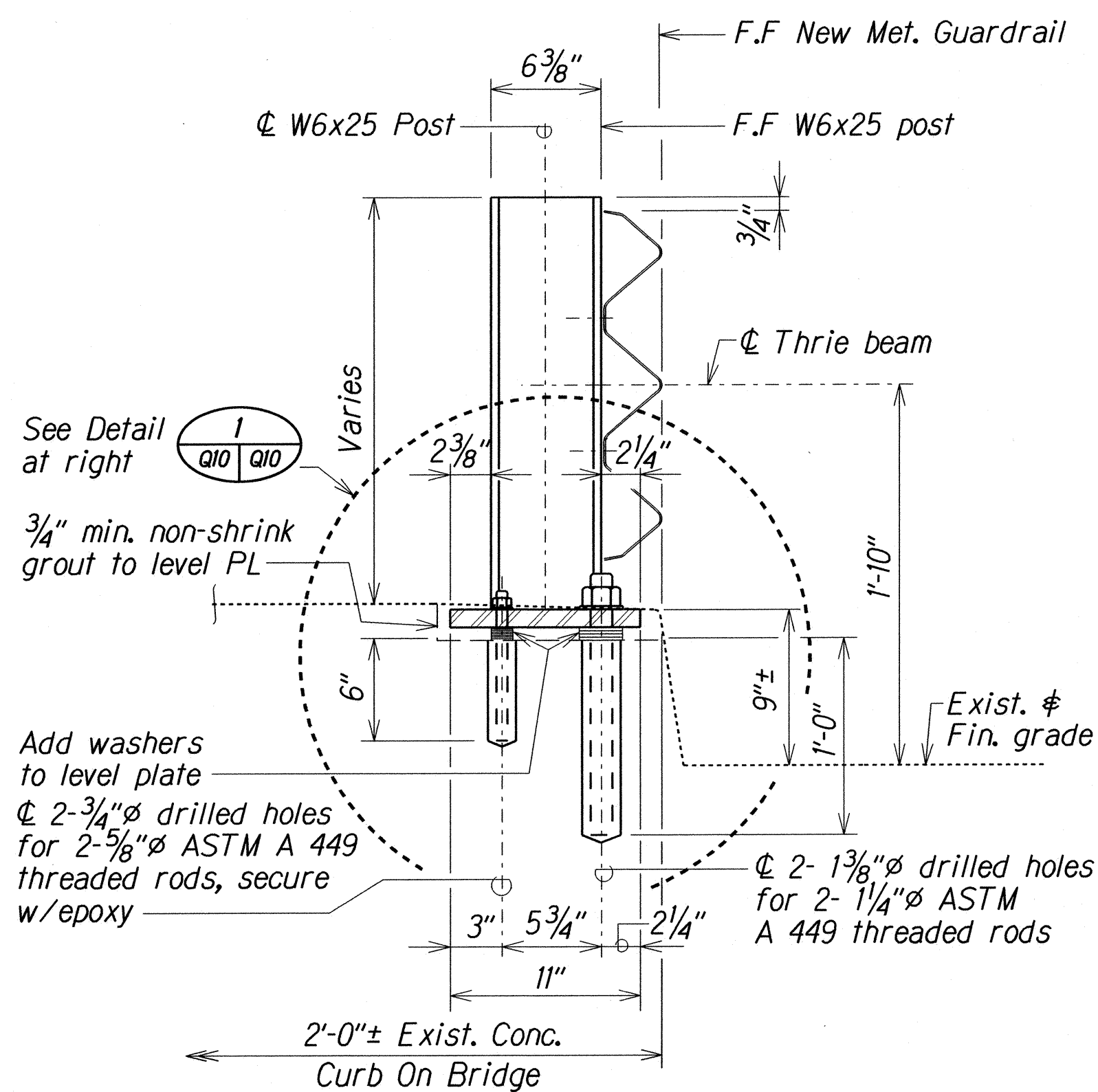


TYPICAL SECTION THRU EXISTING METAL GUARDRAIL
Not to Scale

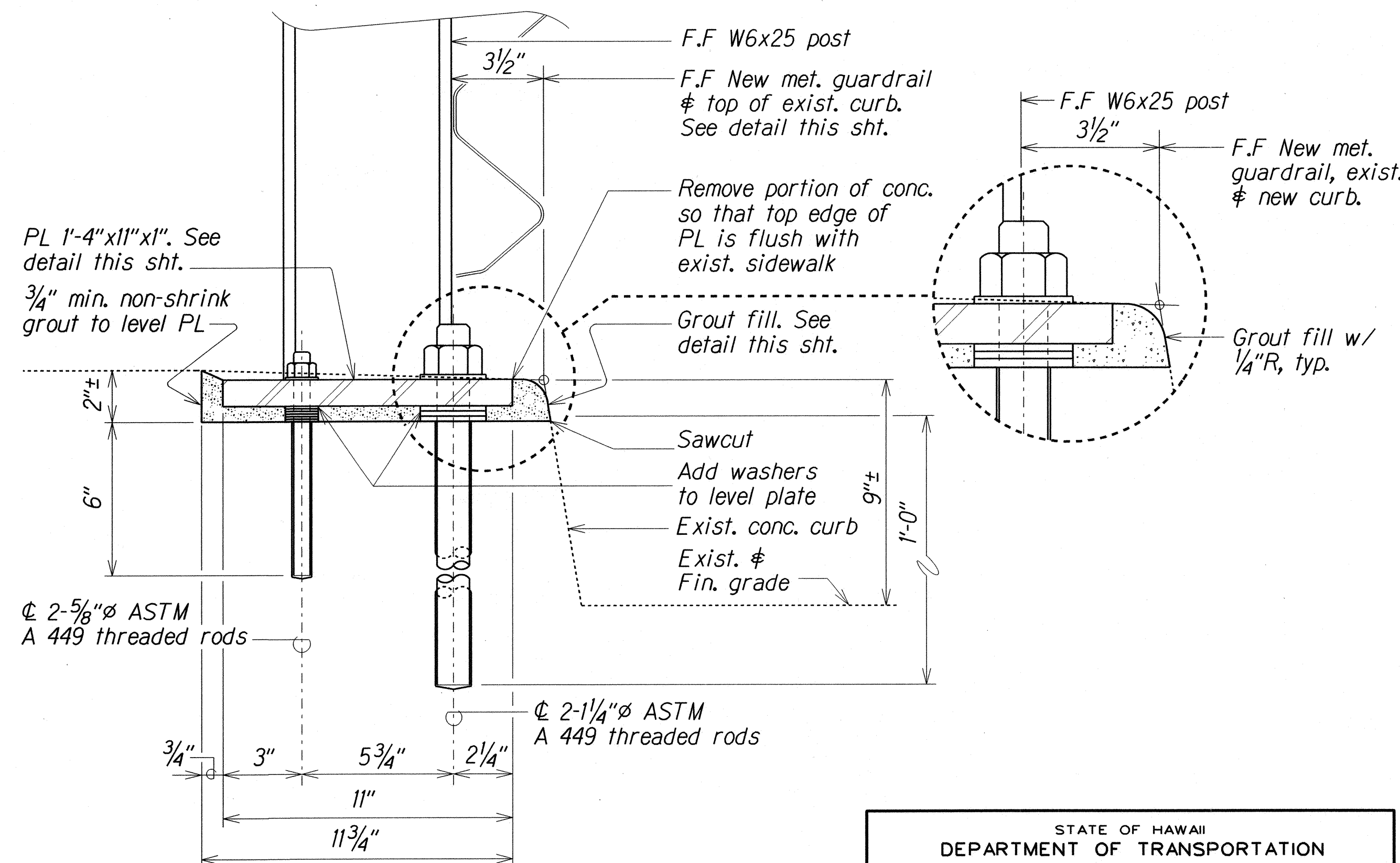


ELEVATION

NEW BASE PLATE
Scale: 1 1/2" = 1'-0"



SECTION A-A
09, Q10, Q10



DETAIL 1-Q10
Not to Scale

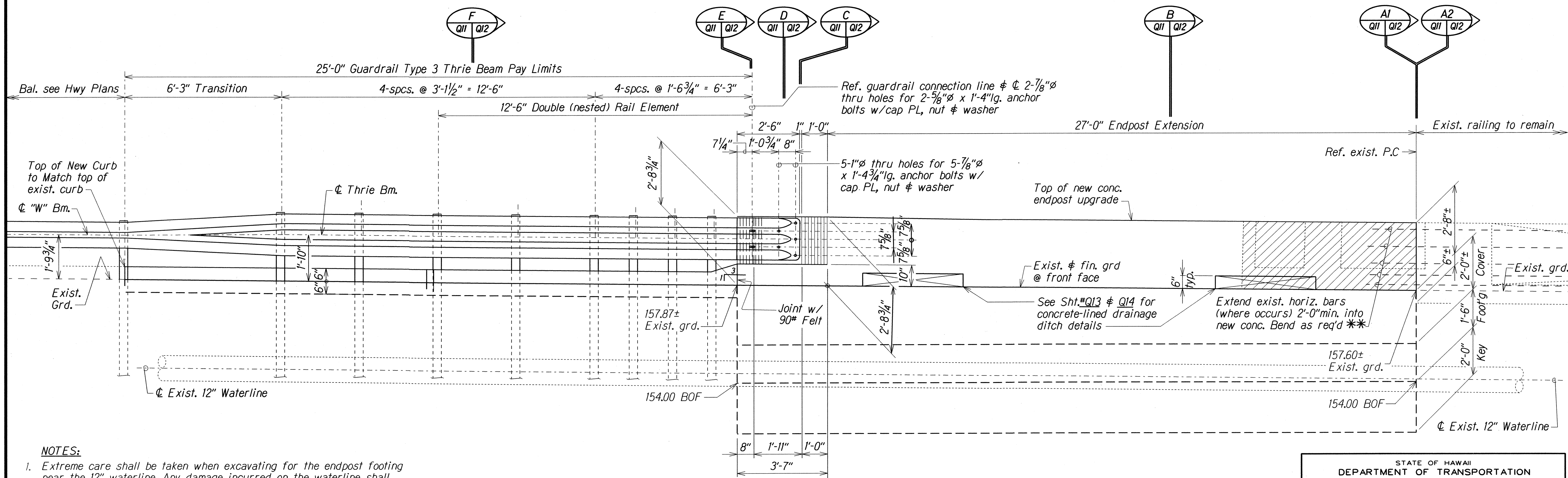
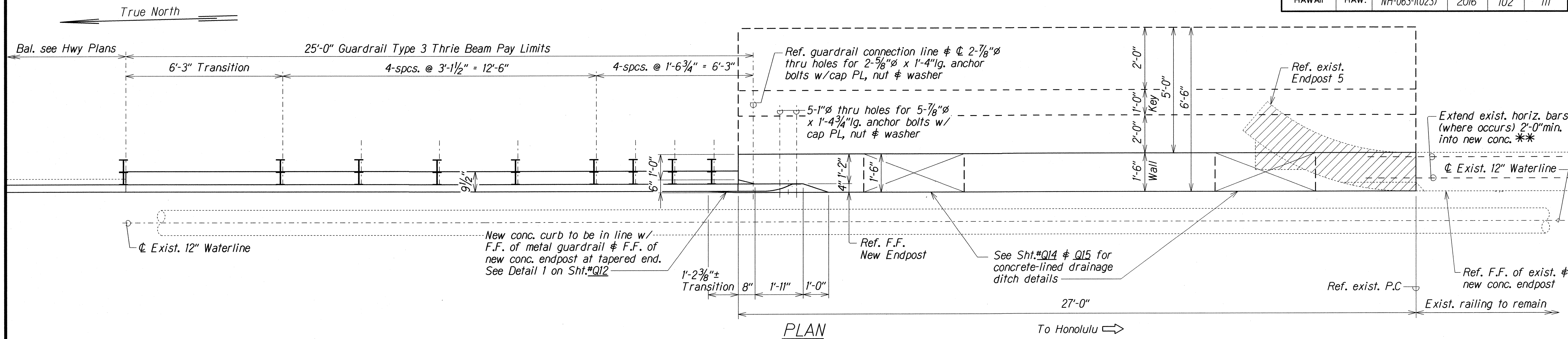
METAL GUARDRAIL UPGRADE DETAILS BETWEEN ENPOST NO. 3 and ENPOST NO. 4, KALIHI STREAM BRIDGE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE
METAL GUARDRAIL UPGRADE BETWEEN
ENDPOST NO. 3 and ENDPOST NO. 4 DETAILS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Federal Aid Project No. NH-063-1(023)

Scale: As Noted
Date: June, 2015

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	102	111



NOTES:

1. Extreme care shall be taken when excavating for the endpost footing near the 12" waterline. Any damage incurred on the waterline shall be the sole responsibility of the Contractor and all repairs and associated costs shall be borne by the Contractor.
2. Denotes limits of exist. conc. endpost removal
3. * If existing concrete endpost extends below existing ground, it shall also be removed.
4. ** During concrete removal, care shall be taken to preserve the existing horizontal reinforcing and not damage the concrete face. Small demolition and chipping tools less than 15-lbs. shall be used.

KALIHI STREAM BRIDGE -- ENDPOST NO. 5
MODIFICATION PLAN and ELEVATION

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

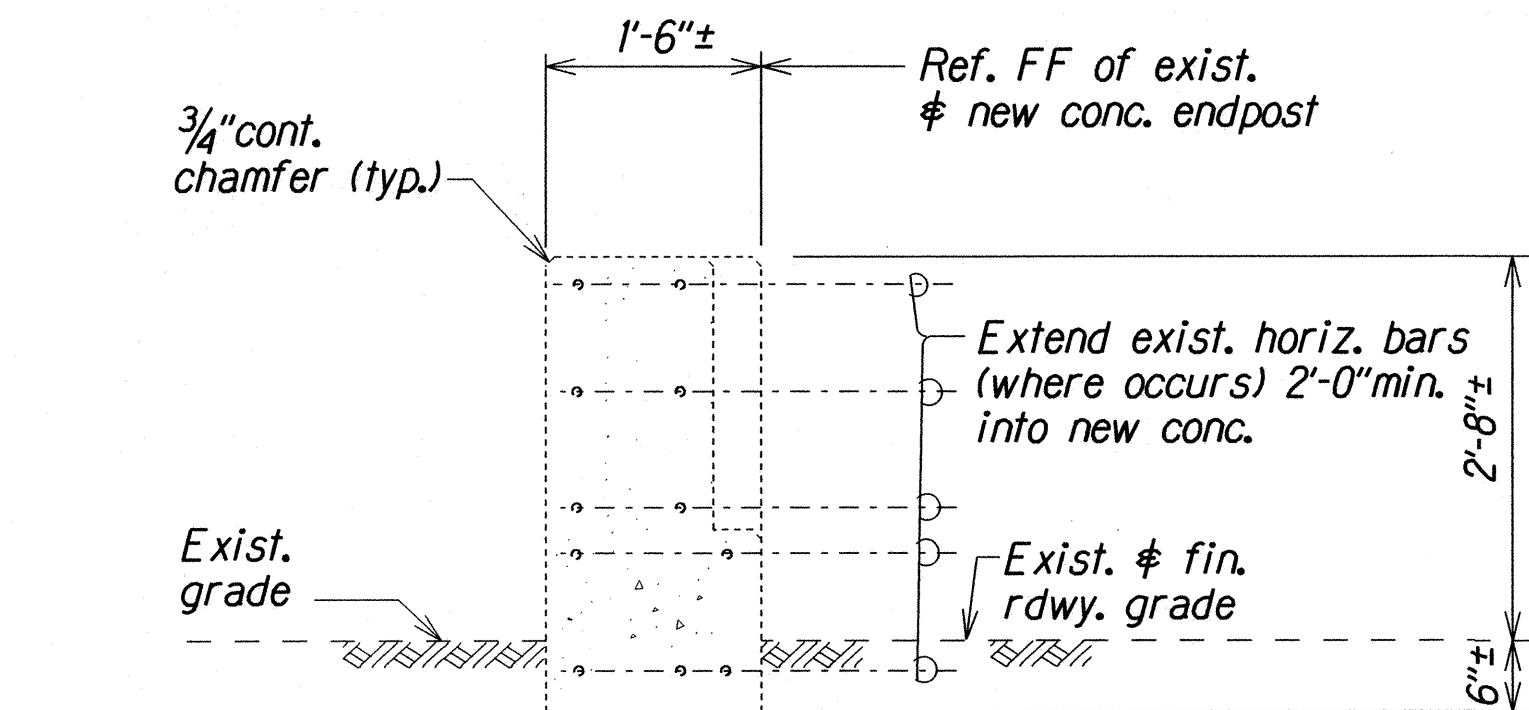
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE
ENDPOST NO. 5
MODIFICATION PLAN and ELEVATION
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Federal Aid Project No. NH-063-1(023)

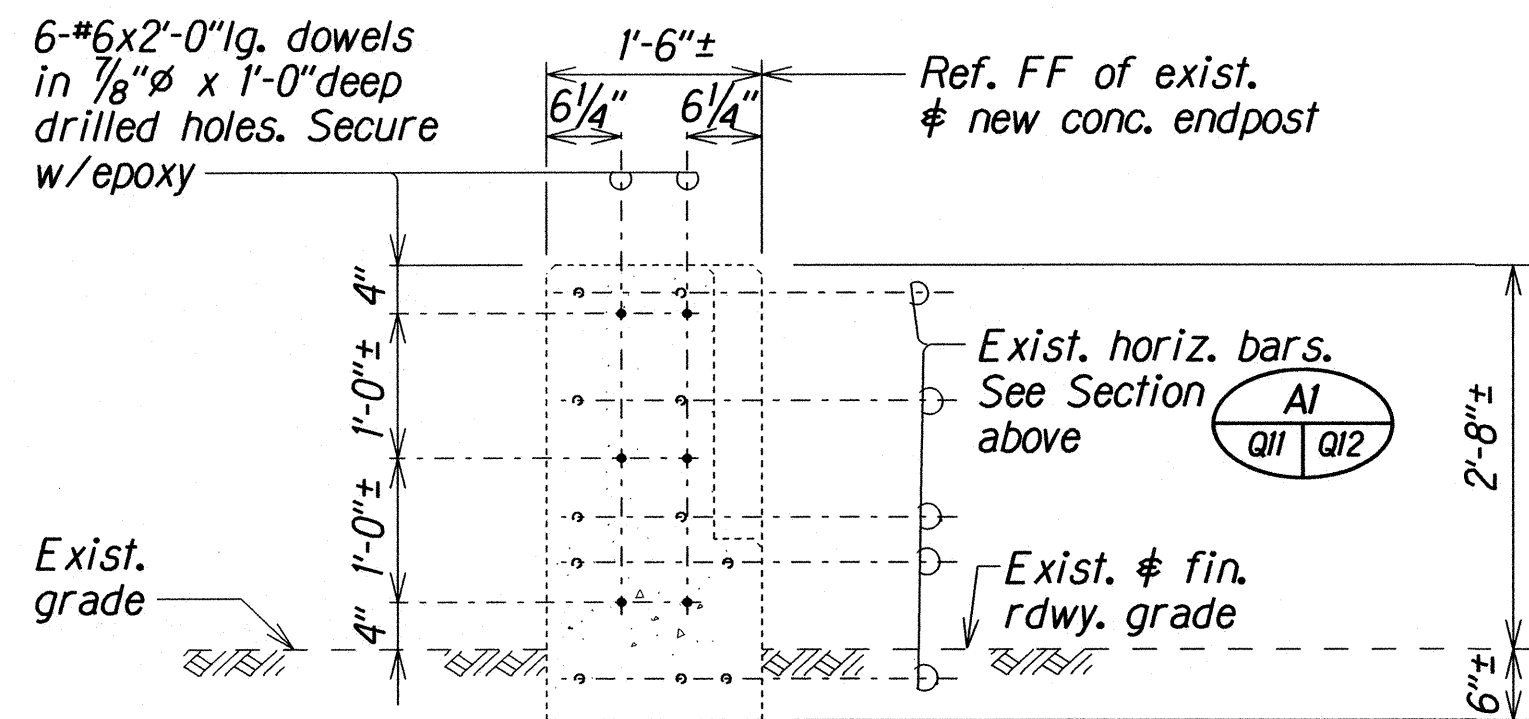
Scale: As Noted Date: June, 2015

SHEET No. 111 OF 20 SHEETS

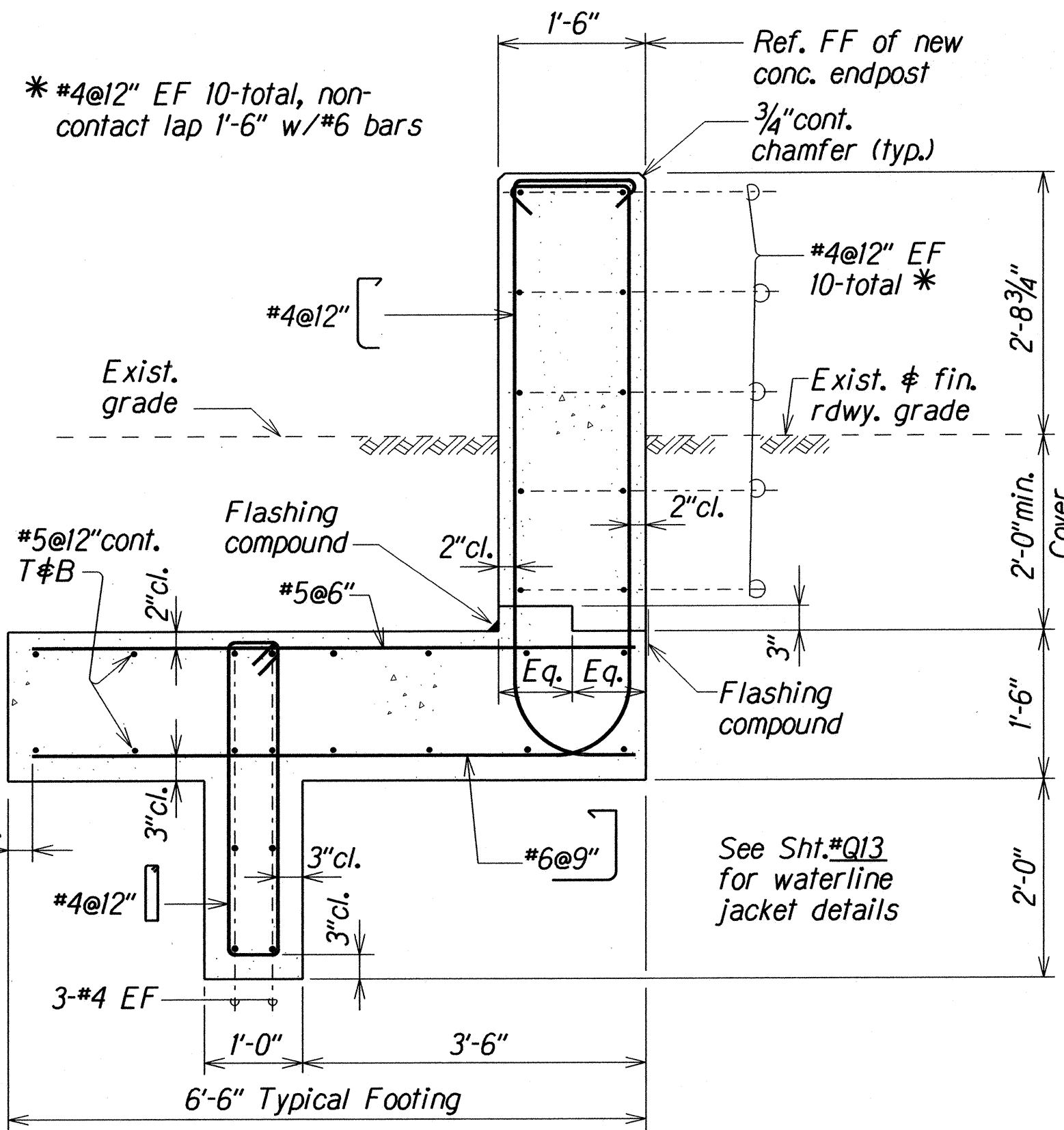
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-11023	2016	103	111



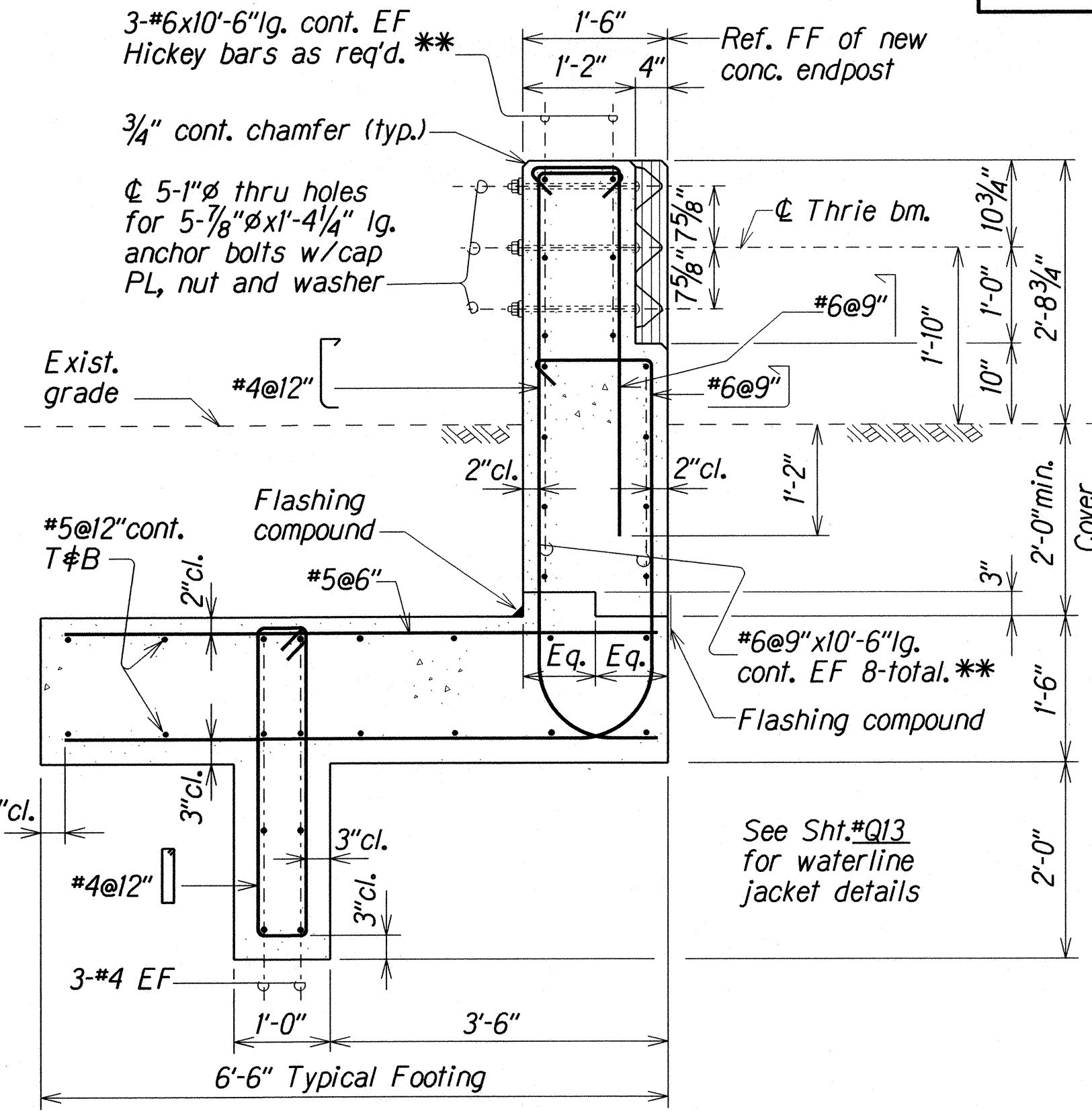
SECTION (Existing) AI
Scale: 3/4" = 1'-0"



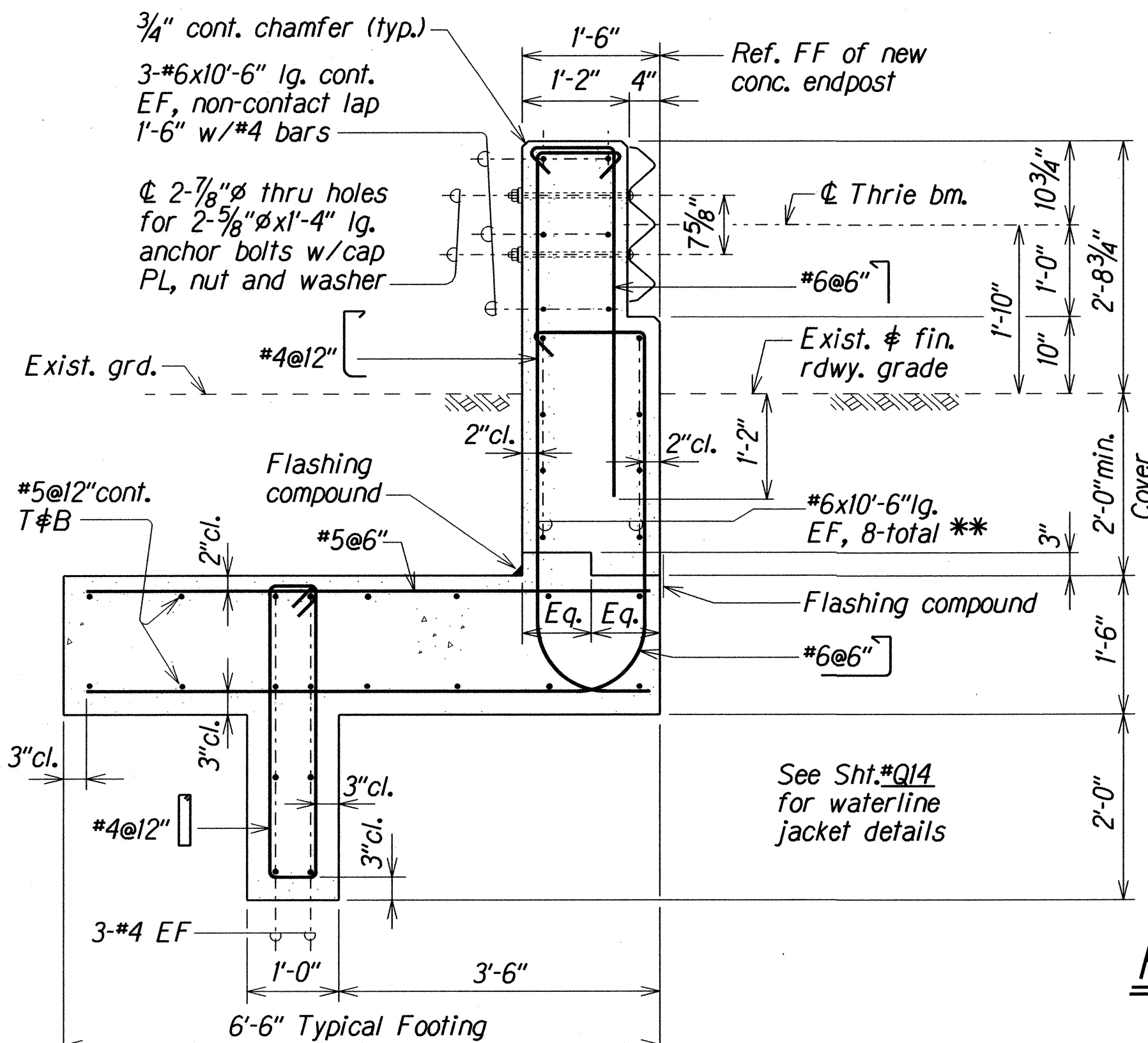
SECTION (New) A2
Scale: 3/4" = 1'-0"



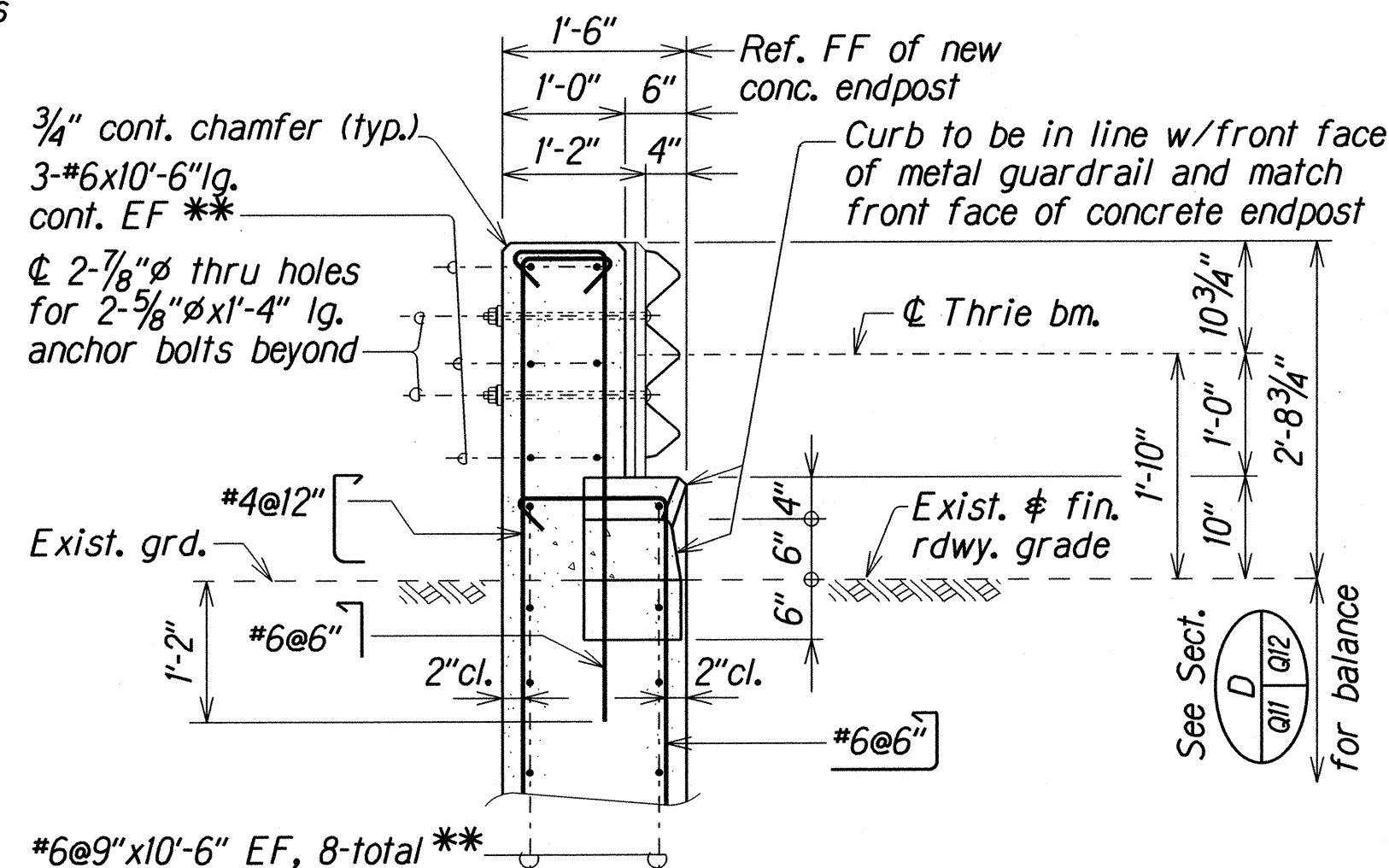
SECTION B
Scale: 3/4" = 1'-0"



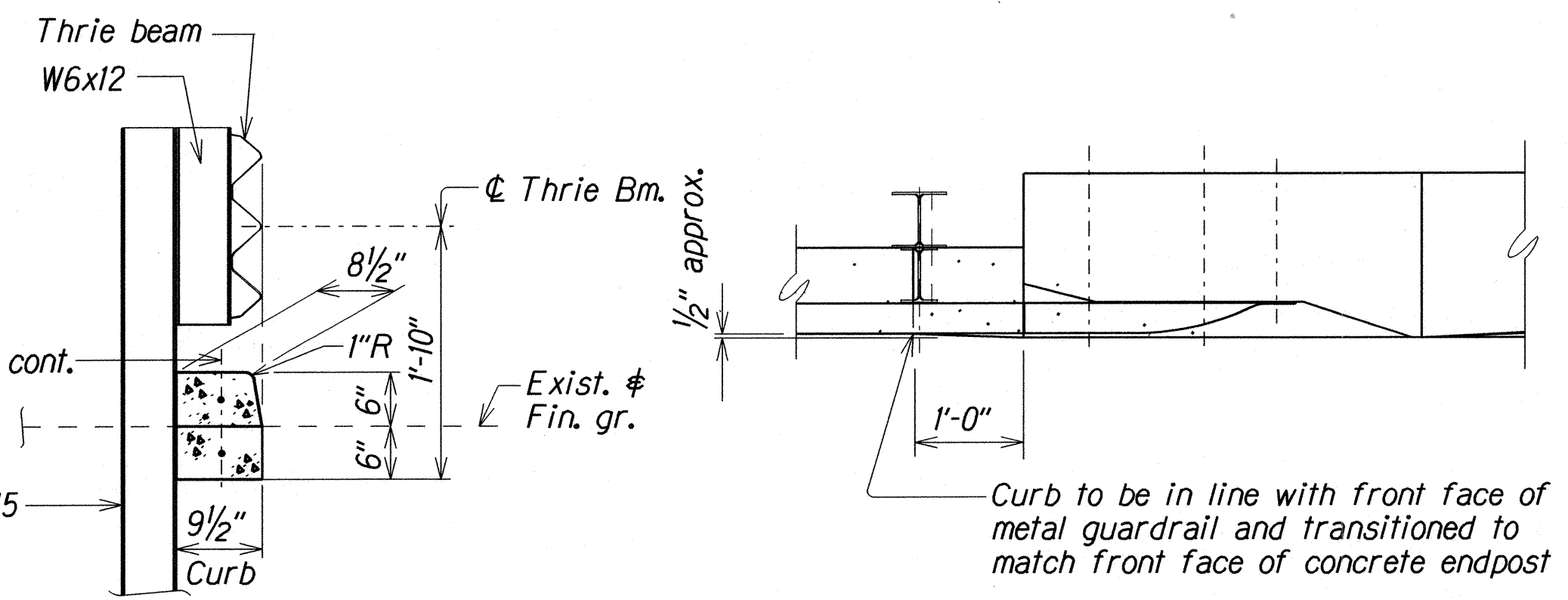
SECTION C
Scale: 3/4" = 1'-0"



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



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



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

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

KALIHI STREAM BRIDGE -- ENDPOST NO. 5 MODIFICATION SECTIONS and DETAILS

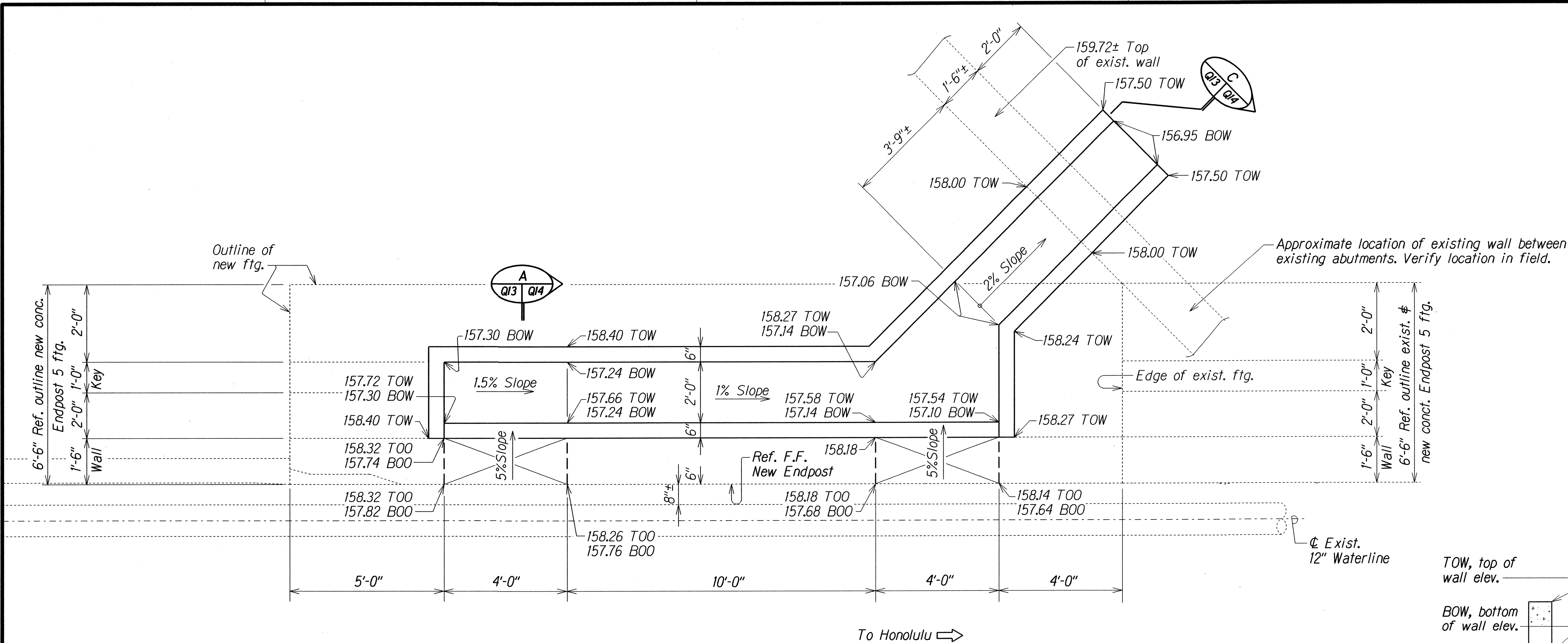
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE
ENDPOST NO. 5
MODIFICATION SECTIONS and DETAILS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Federal Aid Project No. NH-063-11023

Scale: As Noted Date: Jun, 2015

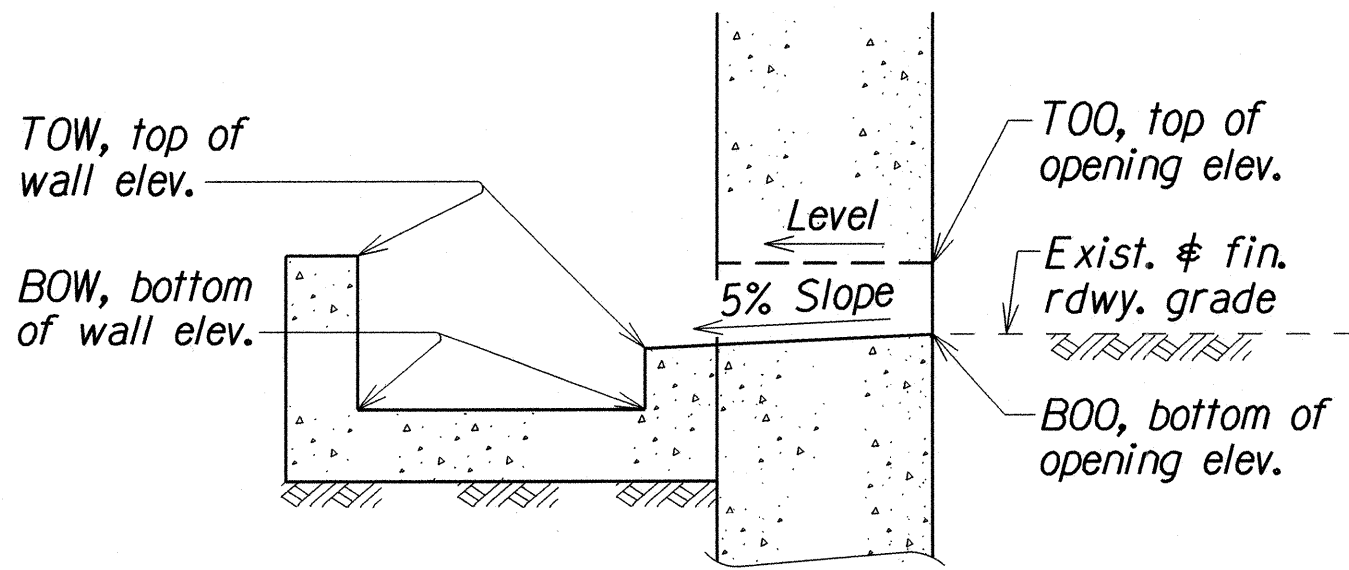
SHEET No. Q12 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	104	111

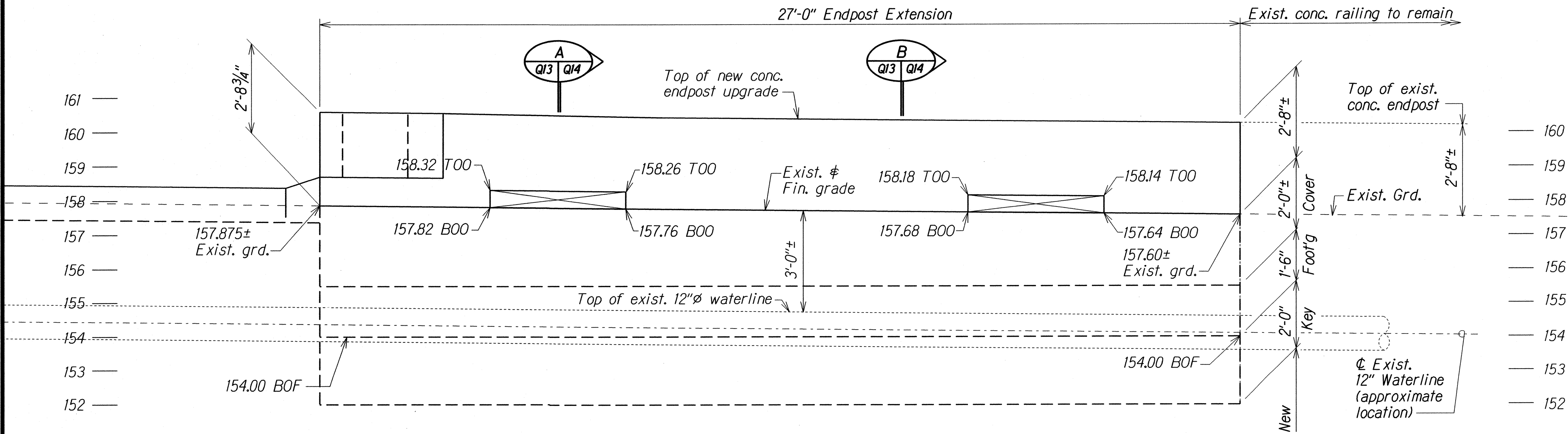


NOTE: All grades shown are approximate and are to be verified in the field by the Contractor.

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



KEY TO ABBREVIATIONS-
CONCRETE-LINED DRAINAGE DITCH
Scale: 3/4" = 1'-0"



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

Note:
Extreme care shall be taken when excavating for the endpost footing near the 12" waterline. Any damage incurred on the waterline shall be the sole responsibility of the Contractor and all repairs and associated costs shall be borne by the Contractor.

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

db3/kate/7/11/bq13.dgn

KALIHI STREAM BRIDGE -- ENDPOST NO. 5 CONCRETE-LINED DRAINAGE DITCH & WALL OPENING DETAILS

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

KALIHI STREAM BRIDGE

ENDPOST NO. 5

CONC.-LINED DRAINAGE DITCH & WALL OPEN'G DETAILS

LIKELIKE HIGHWAY RESURFACING

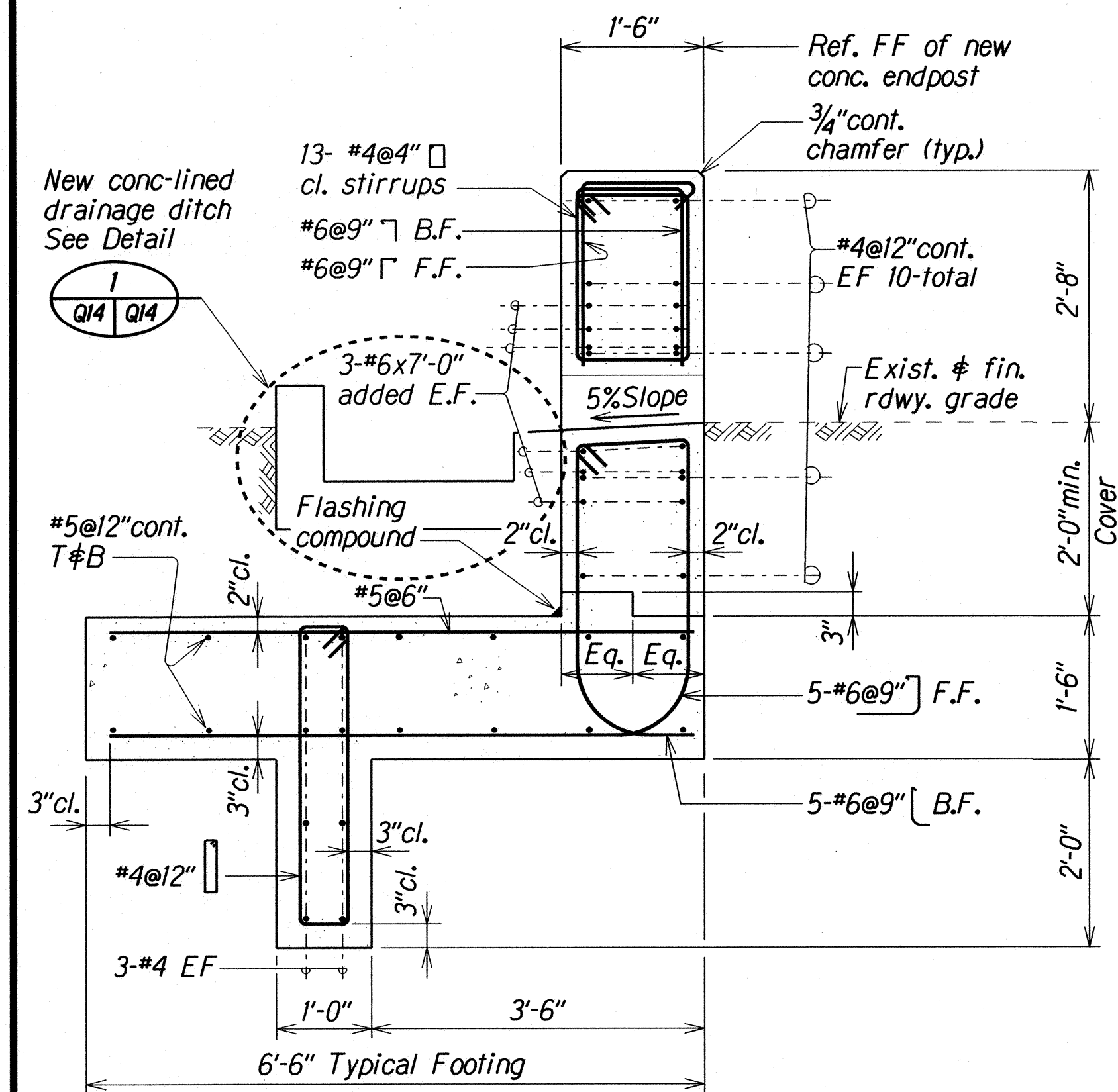
School Street to Emmeline Place

Federal Aid Project No. NH-063-1(023)

Scale: As Noted

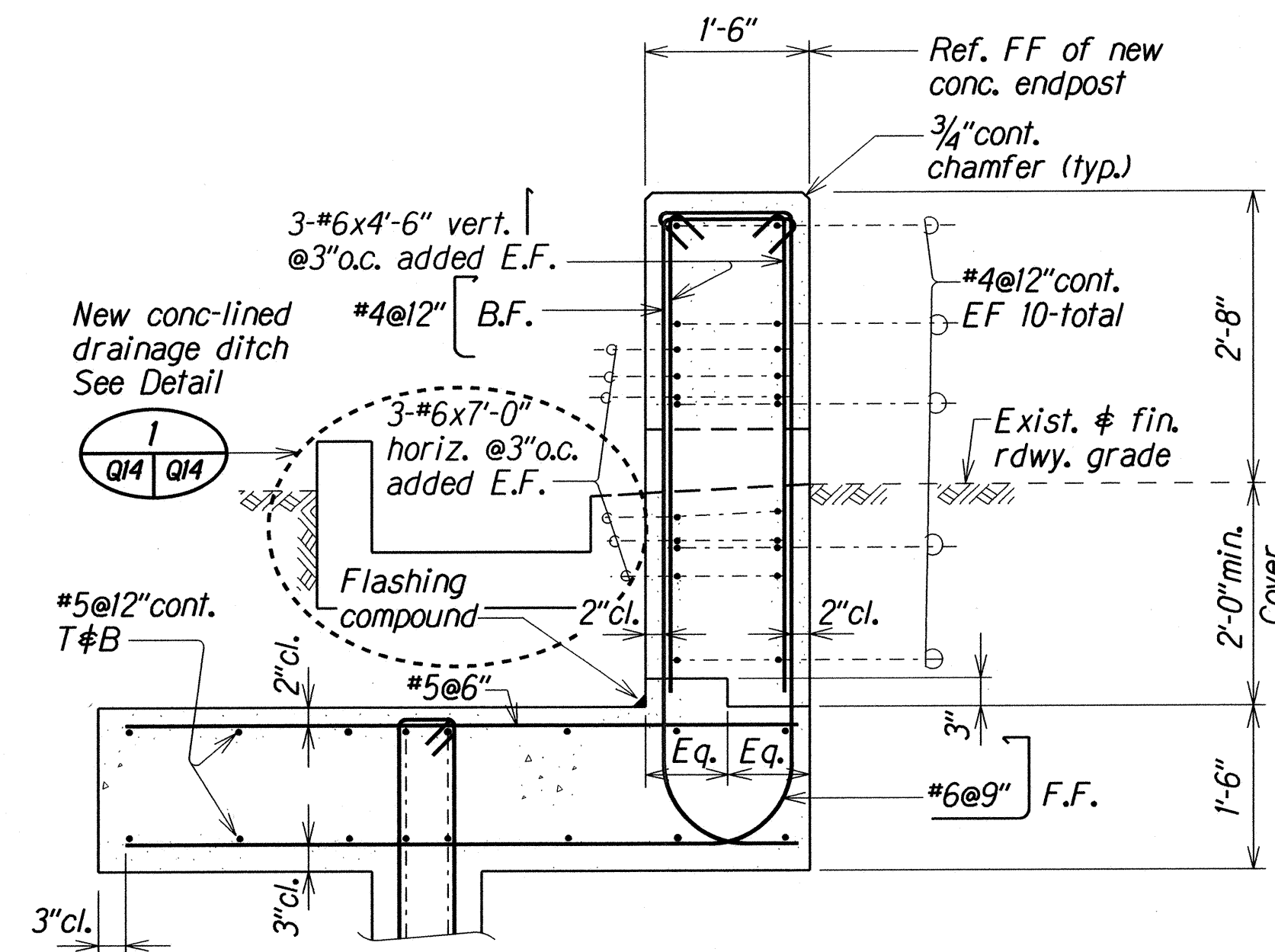
Date: June, 2015

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2016	105	111



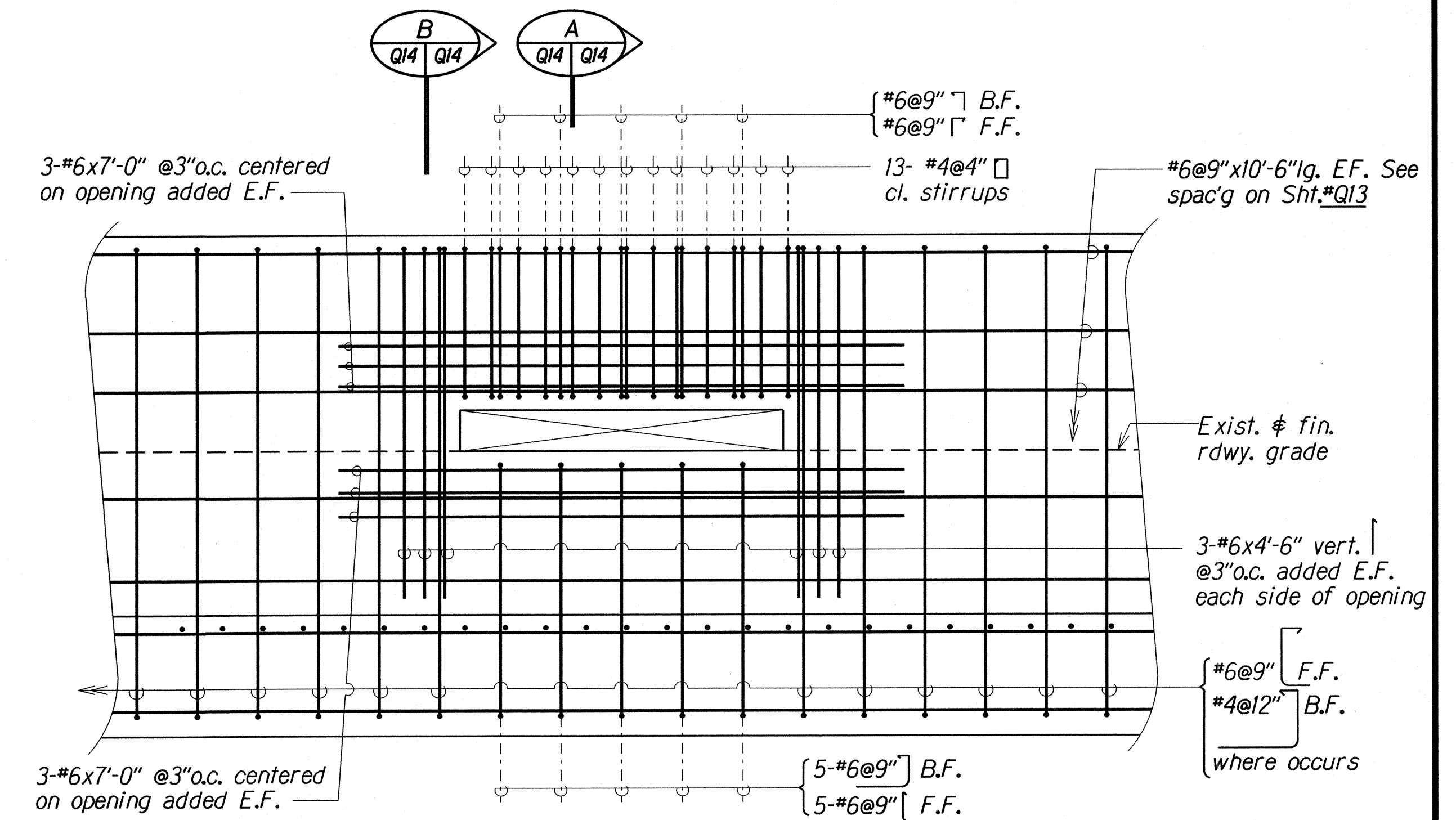
SECTION 

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

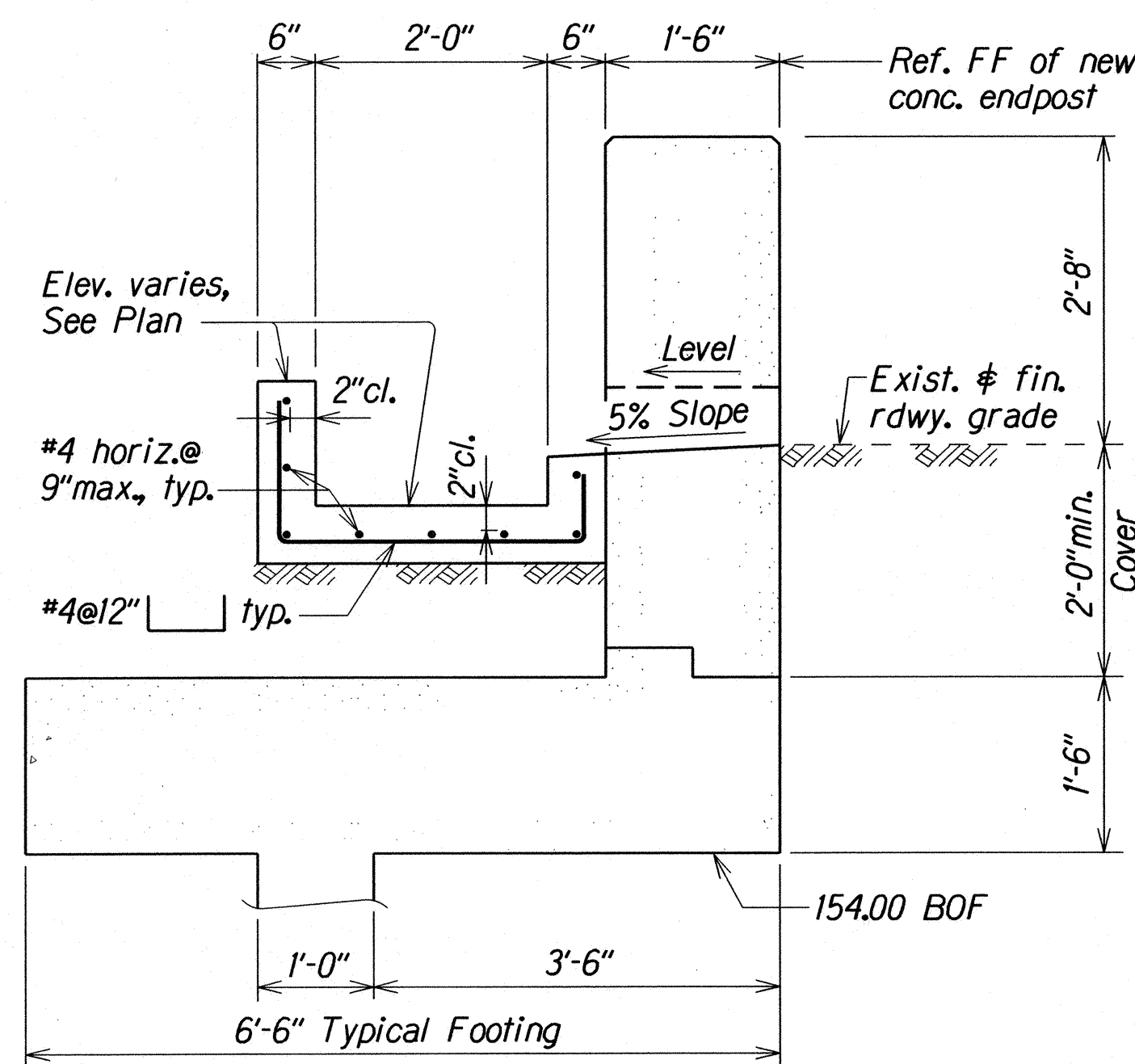


SECTION 

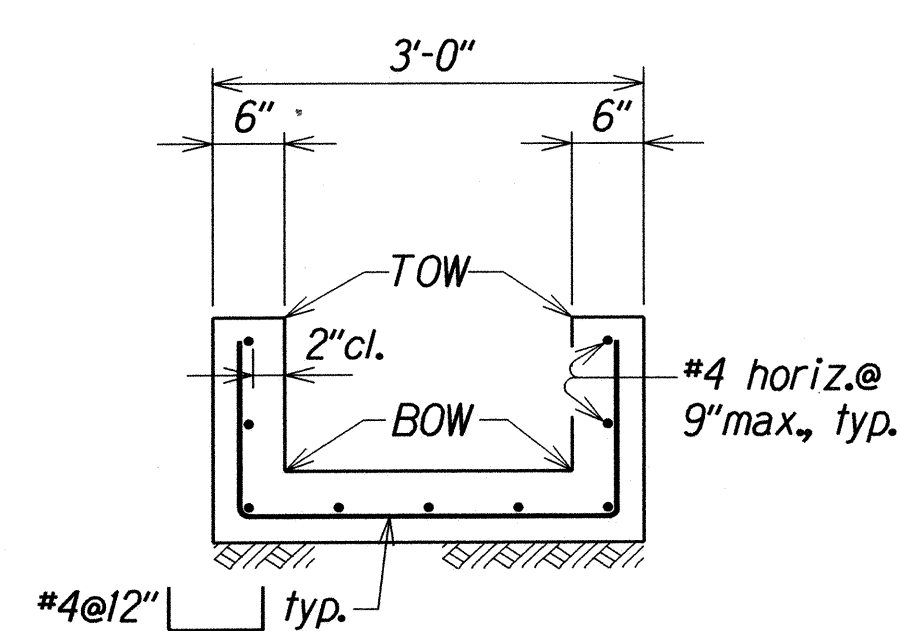
Scale: $\frac{3}{4}" = 1'-0"$



ELEVATION--WALL OPENING
Scale: $\frac{3}{4}'' = 1'-0''$



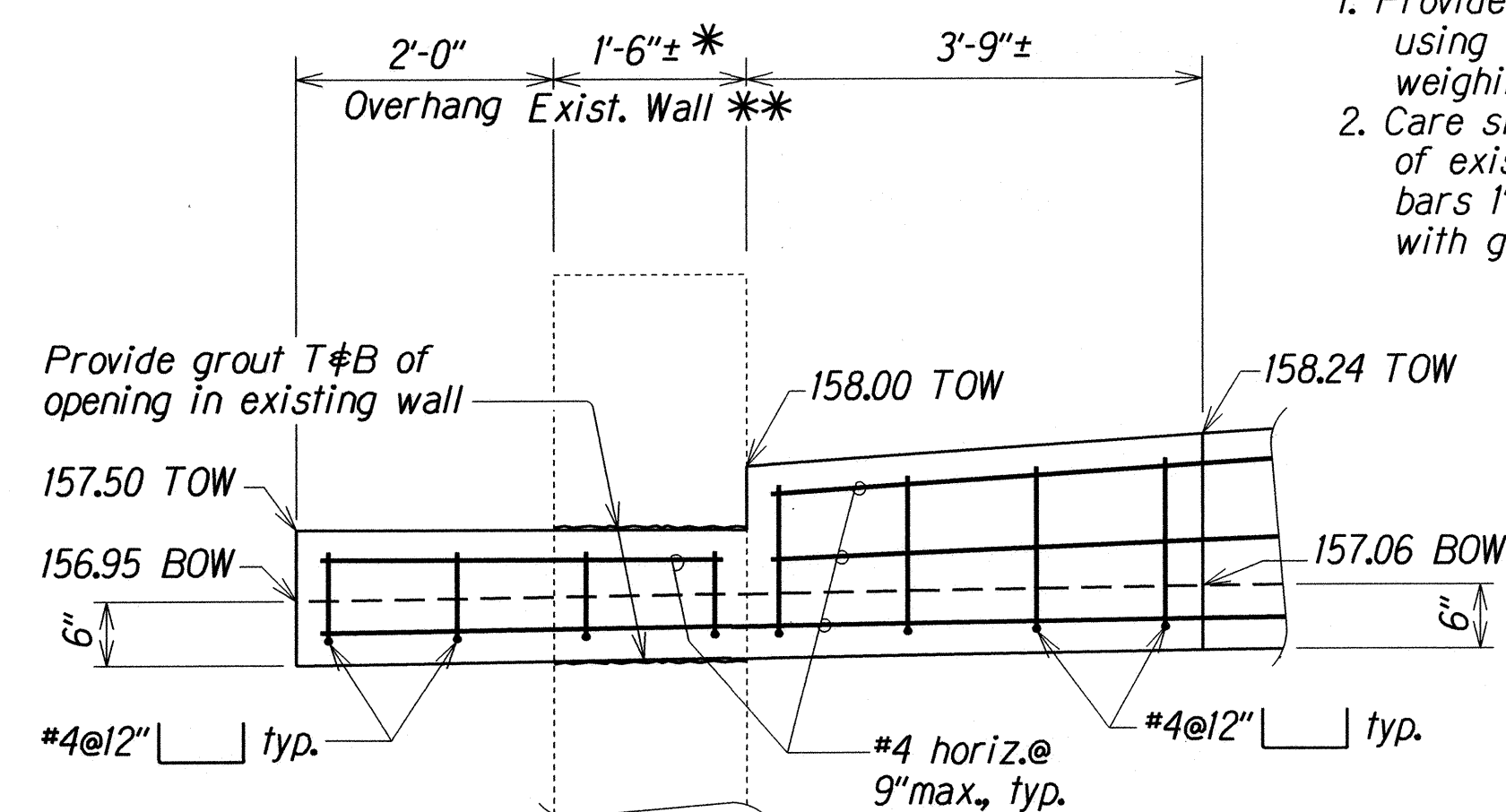
TYPICAL SECTION
DITCH ALONG ENDPST
Scale: $\frac{3}{4}'' = 1'-0''$



DETAIL

CONCRETE-LINED
DRAINAGE DITCH

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



SECTION 

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

* *Verify in field*

- 1. Provide opening in existing wall using chipping or pneumatic weighing 15 lbs. or less.
- 2. Care shall be taken in removal of existing reinforcing. Burn back bars 1" beyond opening and seal with grout

Provide grout T&B of
opening in existing wall

158.00 TOW

158.24 TOW

—157.06 BOW

#4 horiz

 typ.

KALIHI STREAM BRIDGE -- ENDPOST NO. 5
CONCRETE-LINED DRAINAGE DITCH & WALL OPENING DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE

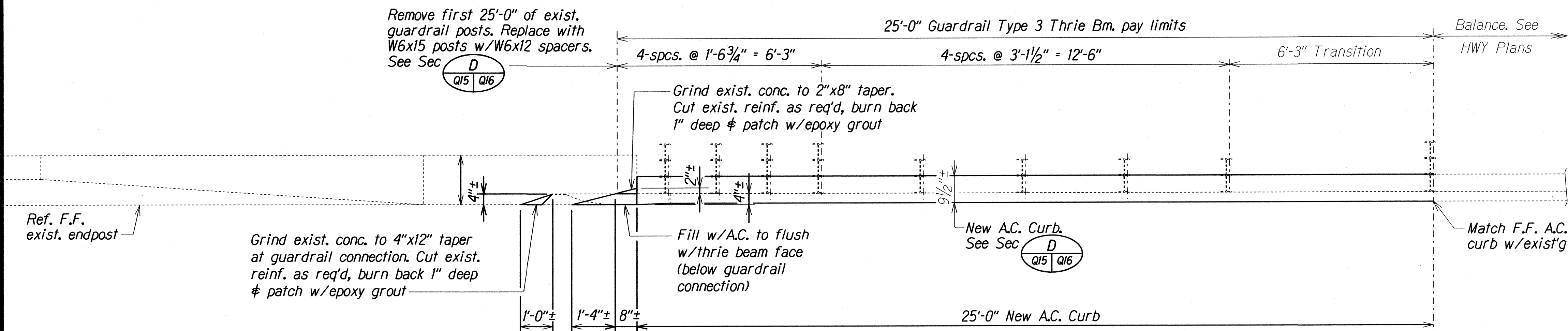
ENDPOST NO. 5

CONC.-LINED DRAINAGE DITCH & WALL OPEN'G DETAILS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmaline Place
Federal Aid Project No. NH-063-11(023)

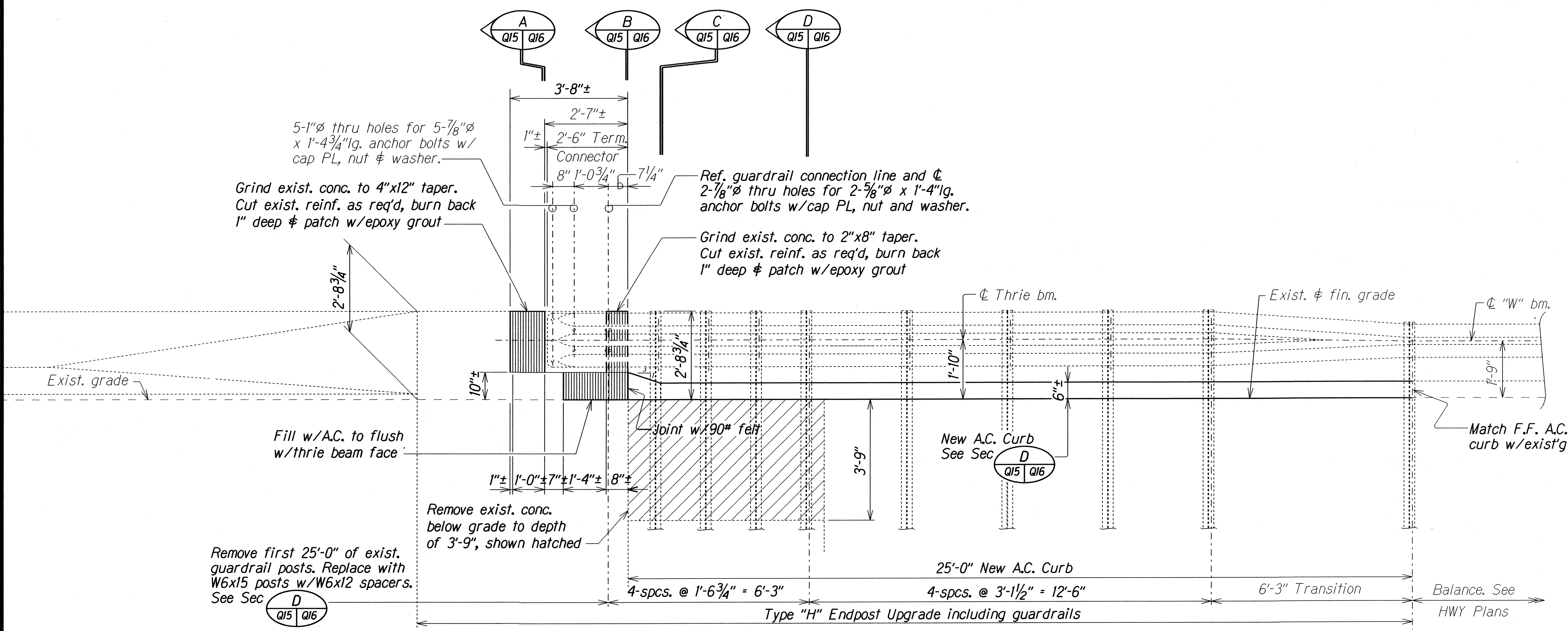
Scale: As Noted Date: June, 2015

SHEET No. 014 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	106	111



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



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

KALIHI STREAM BRIDGE -- ENDPOST NO. 8
ENDPOST and GUARDRAIL POST UPGRADE

DATE	____
SURVEY PLOTTED BY	____
DESIGNED BY	____
TRACED BY	____
NOTE BOOK	____
QUANTITIES BY	____
CHECKED BY	____

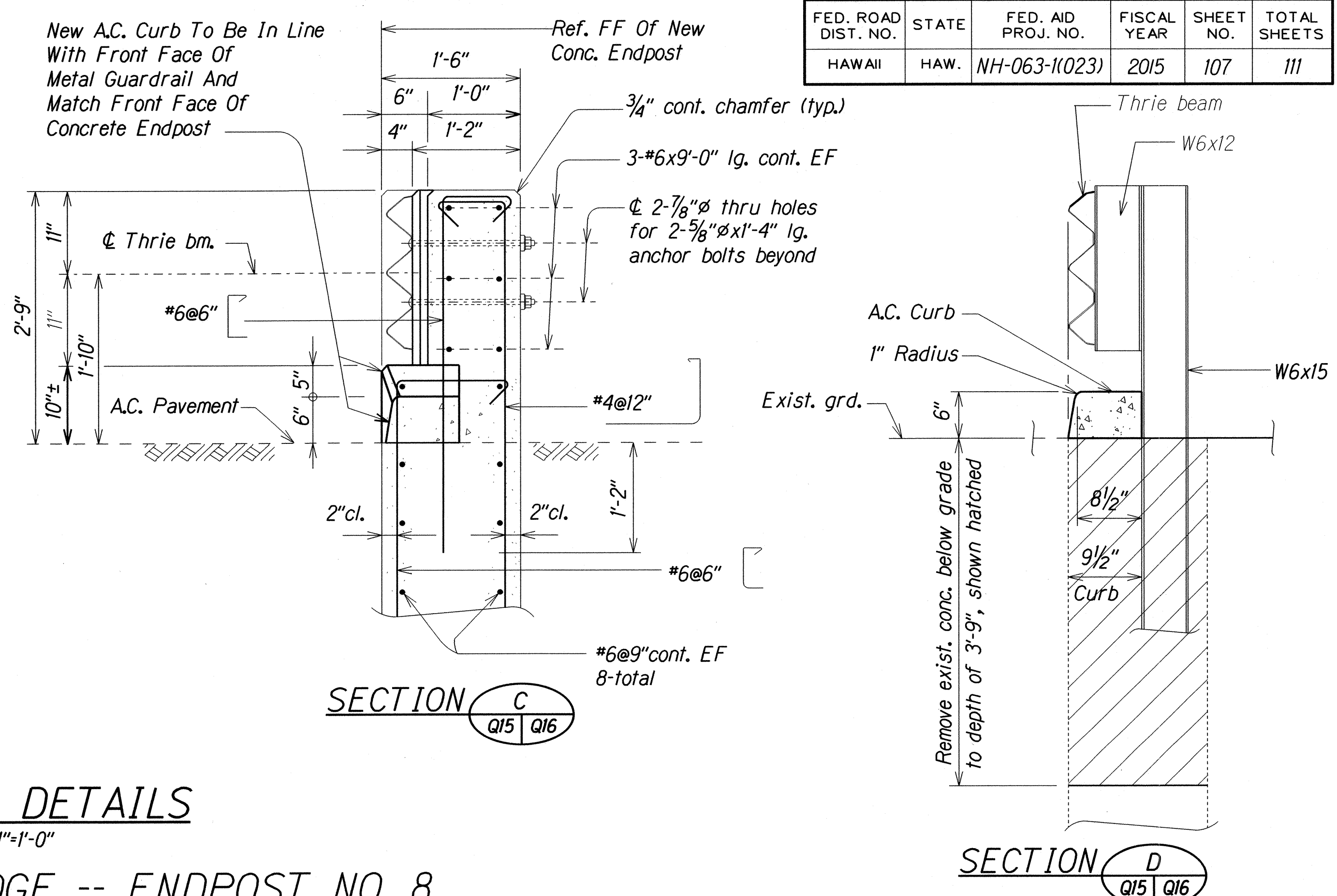
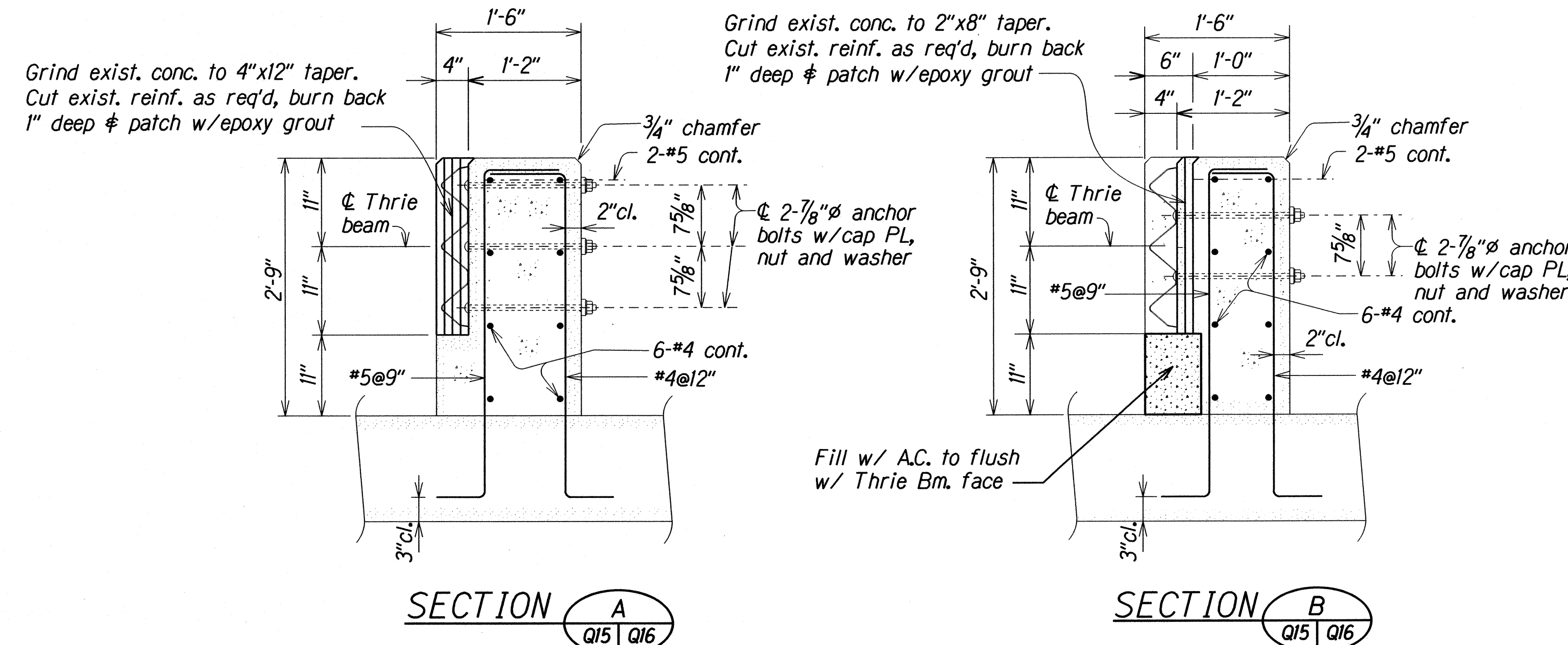
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE
ENDPOST NO. 8
ENDPOST and GUARDRAIL POST UPGRADE
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Federal Aid Project No. NH-063-1(023)

Scale: As Noted Date: June, 2015

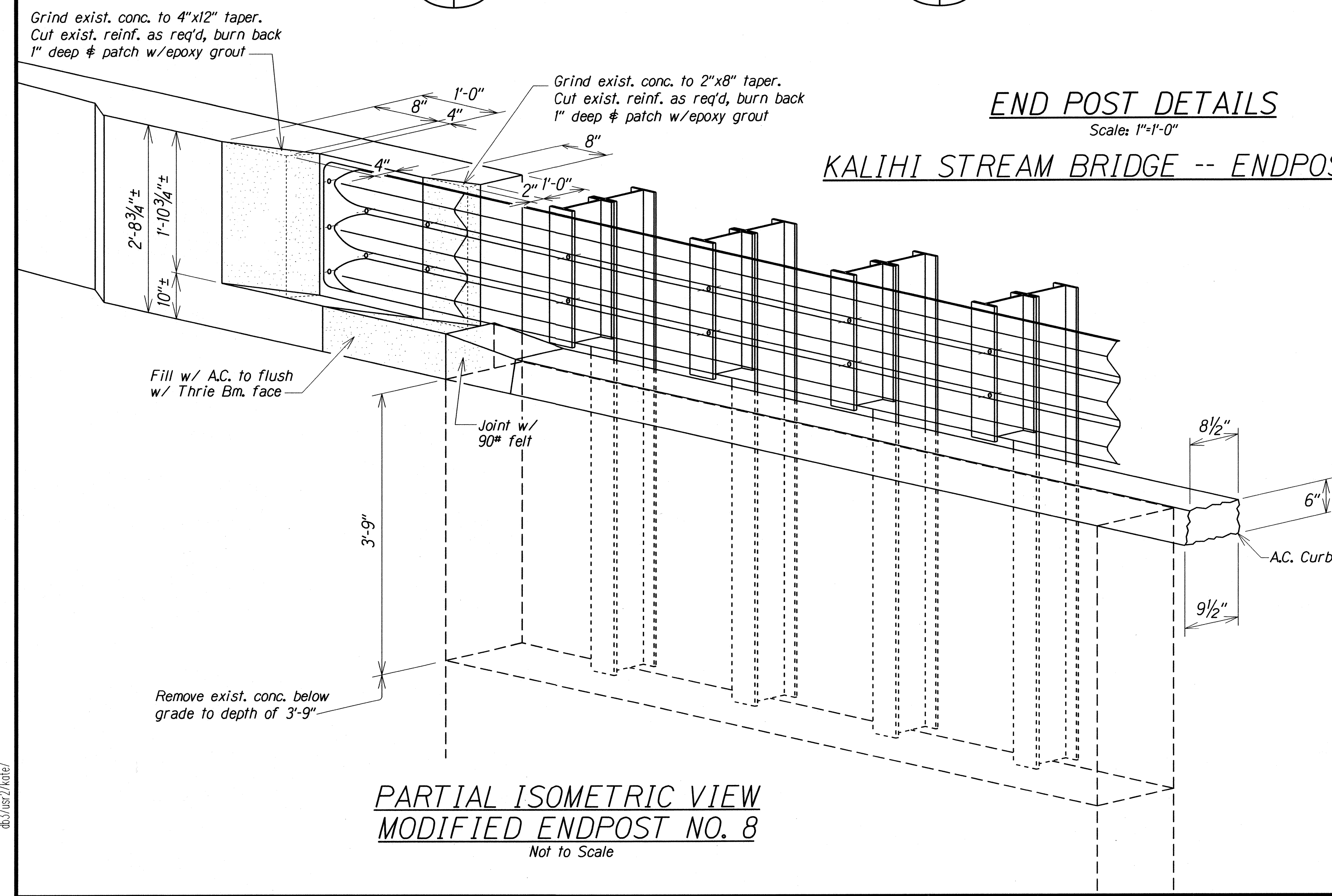
SHEET No. Q15 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-110231	2015	107	111



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

KALIHI STREAM BRIDGE -- ENDPOST NO. 8



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE

ENDPOST NO. 8

ENDPOST and GUARDRAIL POST UPGRADE

LIKELIKE HIGHWAY RESURFACING

School Street to Emmeline Place

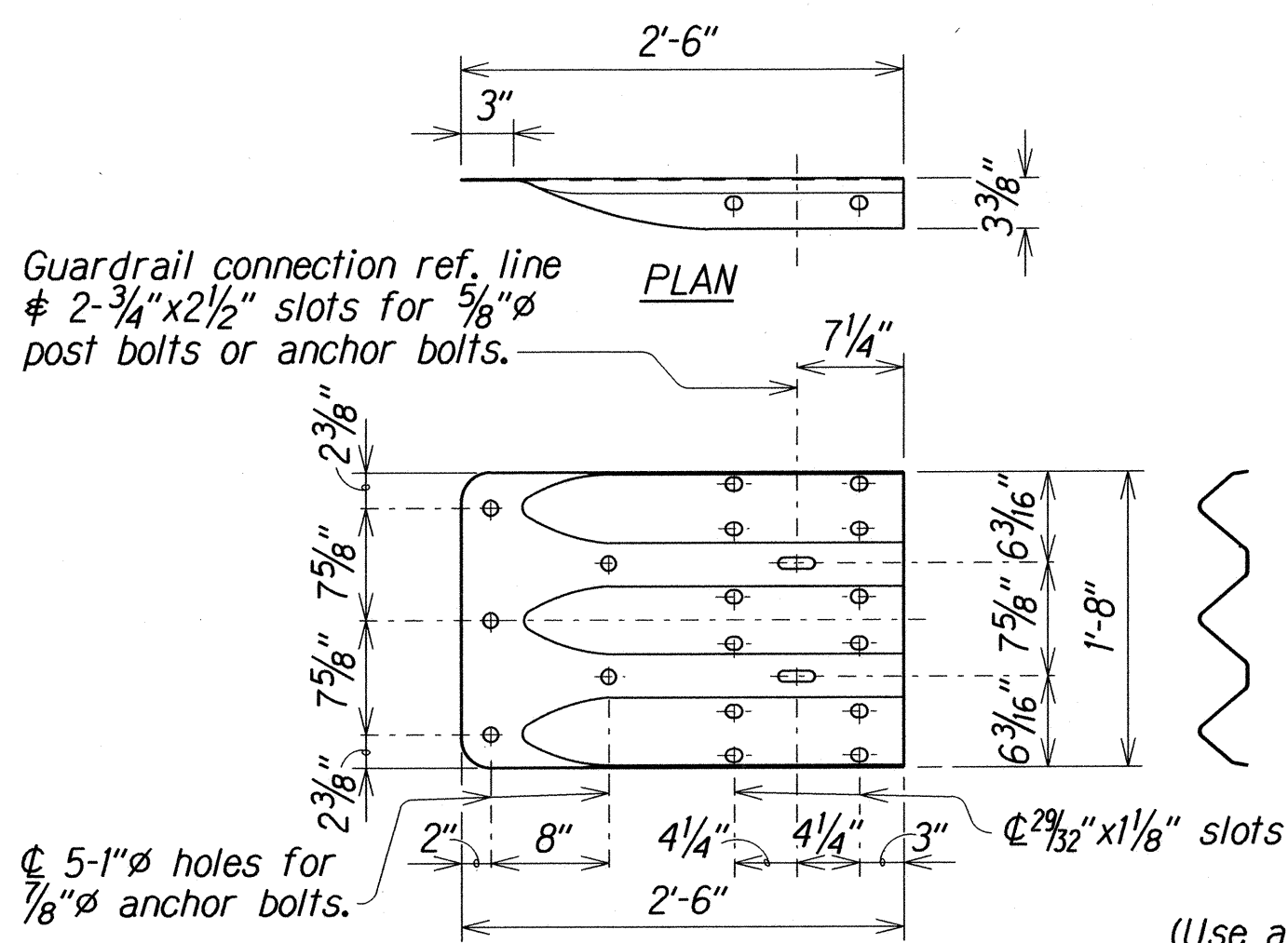
Federal Aid Project No. NH-063-110231

Scale: As Noted Date: June, 2015

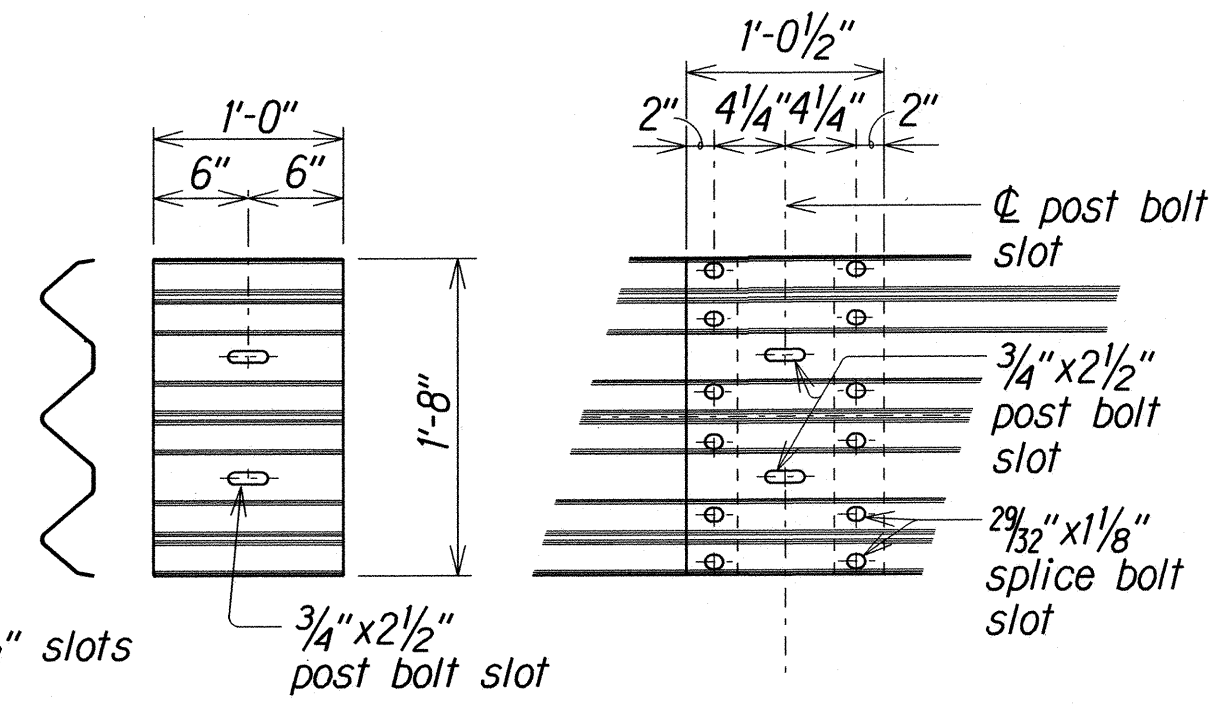
SHEET No. Q16 OF 20 SHEETS

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 1/4" (max) is attained.
- E. "Terminal Connector", "Transition Section" and thrie beam shall be fabricated from 10 gauge 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.

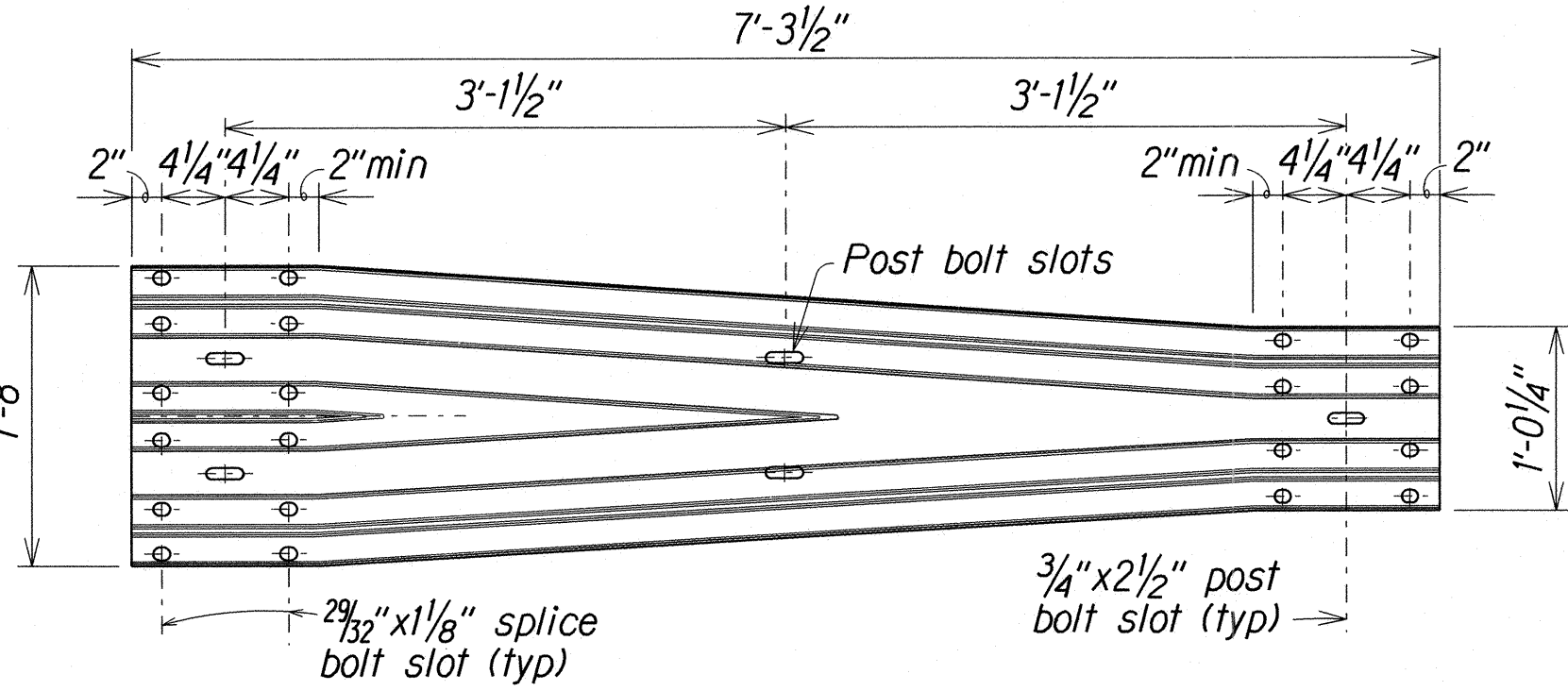


TERMINAL CONNECTOR
Scale: 1" = 1'-0"

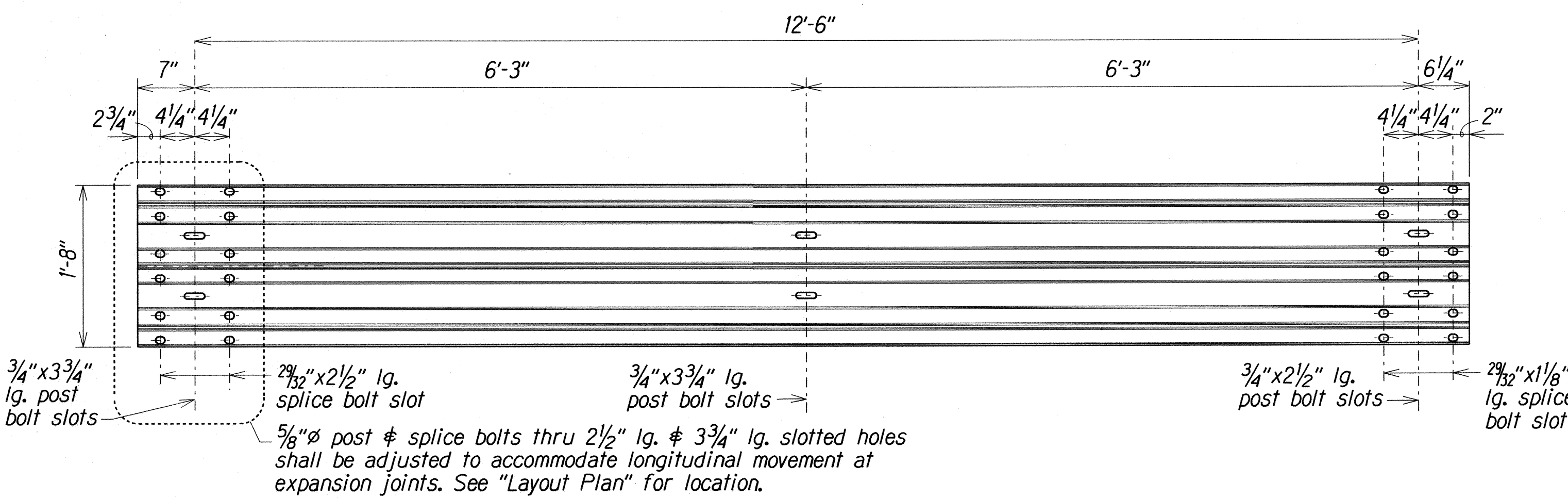


BACKUP PLATE
Scale: 1" = 1'-0"

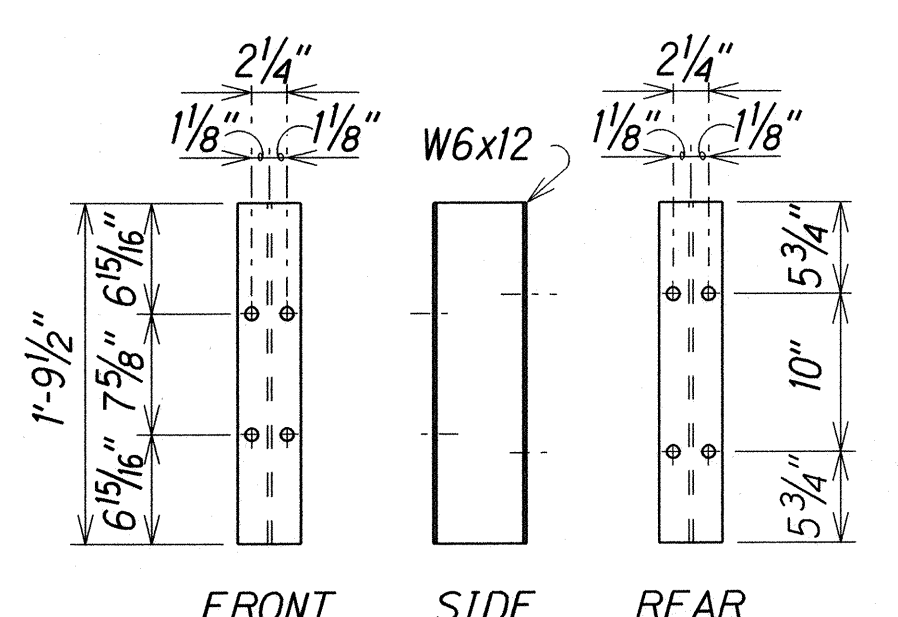
RAIL SPLICE
Scale: 1" = 1'-0"



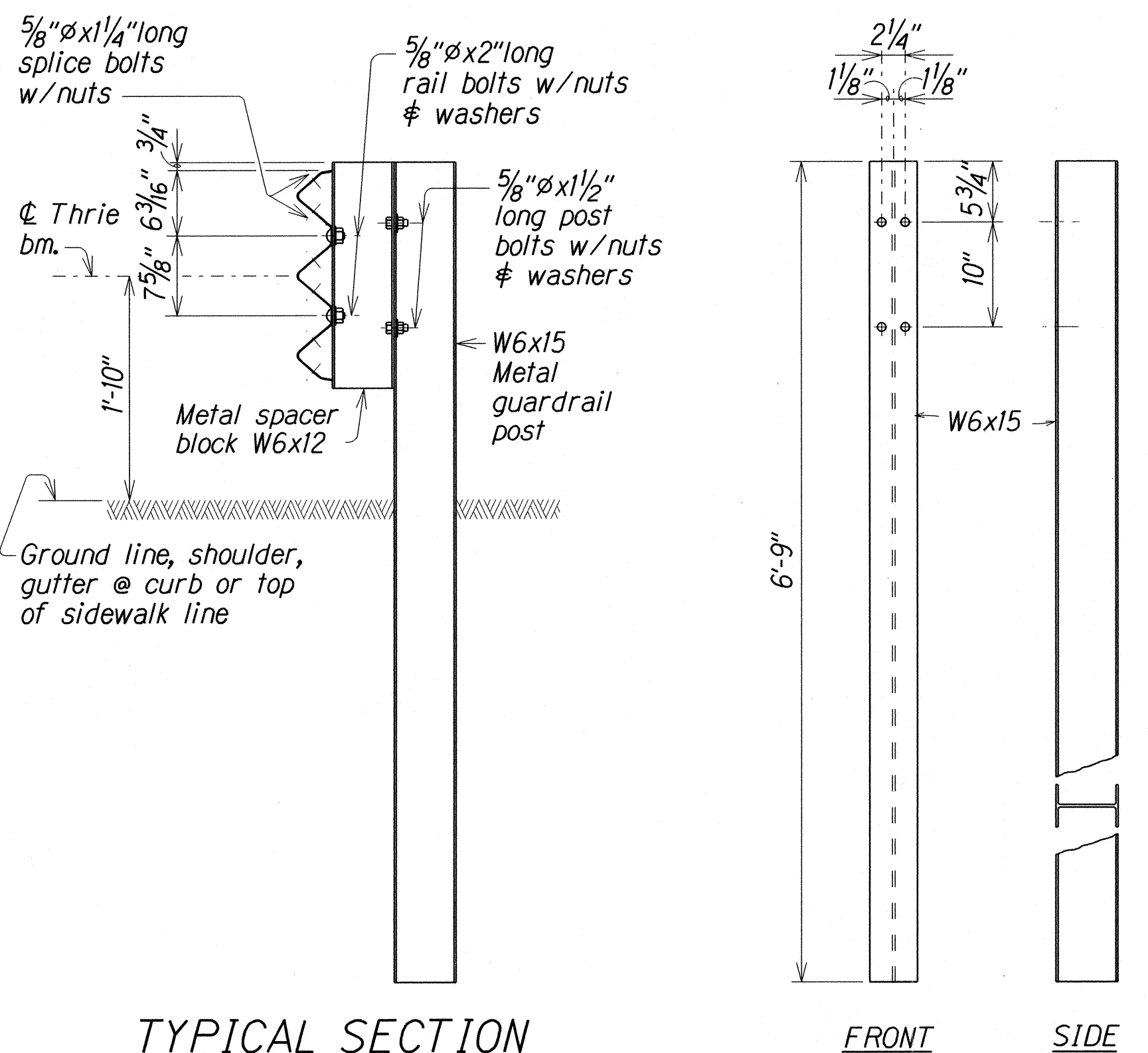
TRANSITION SECTION
Scale: 1" = 1'-0"



THRIE BEAM EXPANSION SECTION
Scale: 1" = 1'-0"

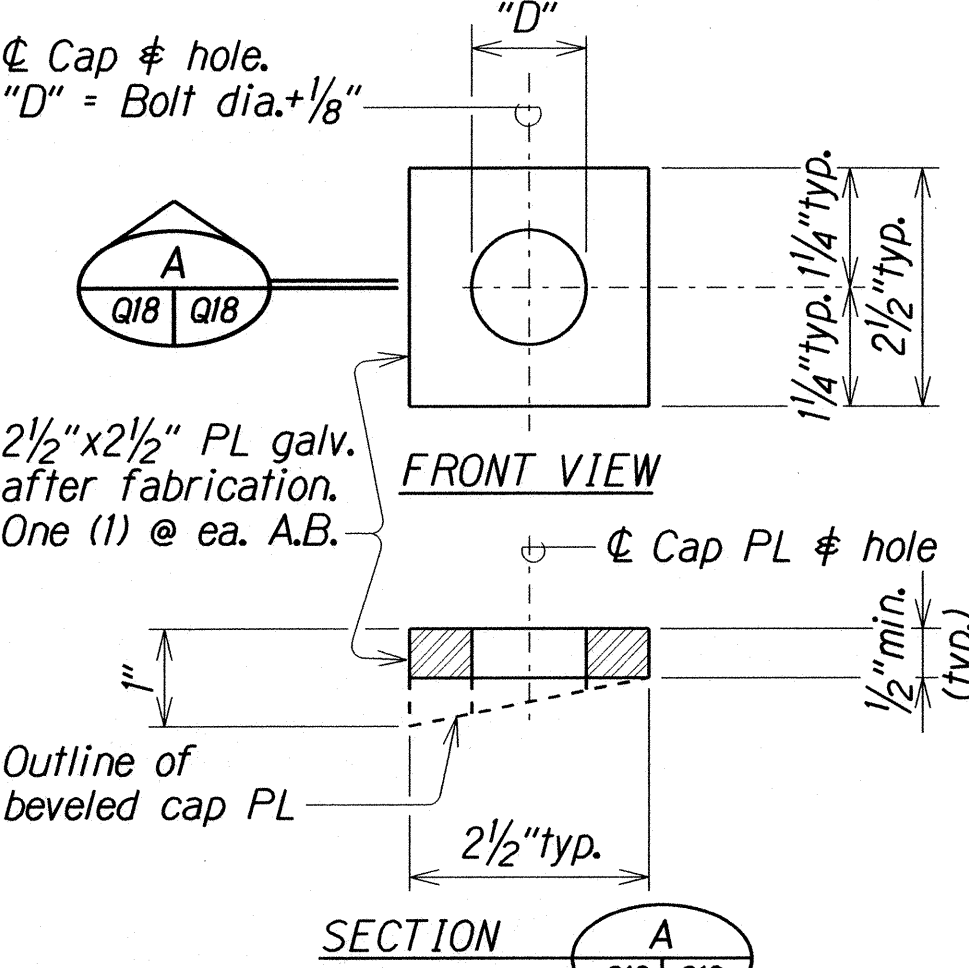


SPACER BLOCK DETAILS
Scale: 1" = 1'-0"

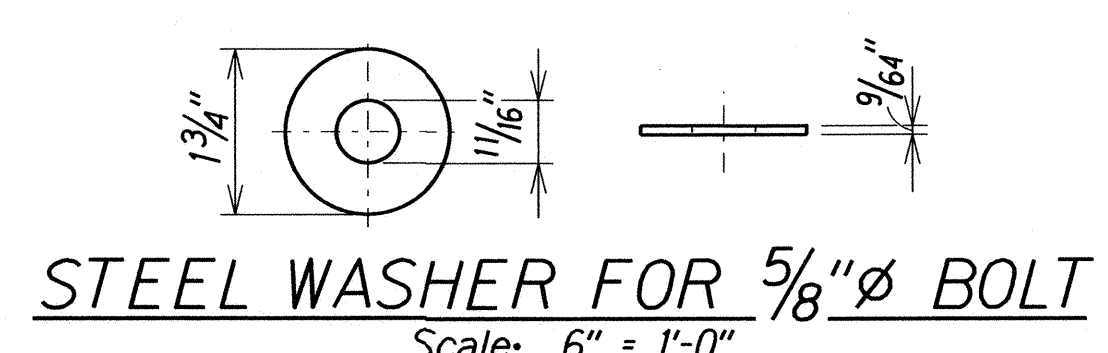


TYPICAL SECTION
METAL GUARDRAIL ON METAL POST
WITH METAL SPACER BLOCK
Scale: 1" = 1'-0"

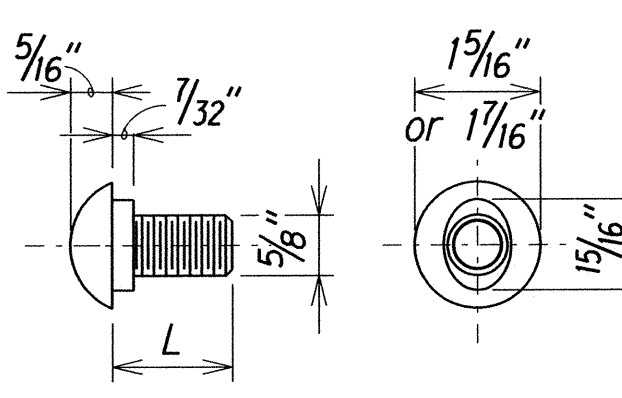
POST DETAILS
Scale: 1" = 1'-0"



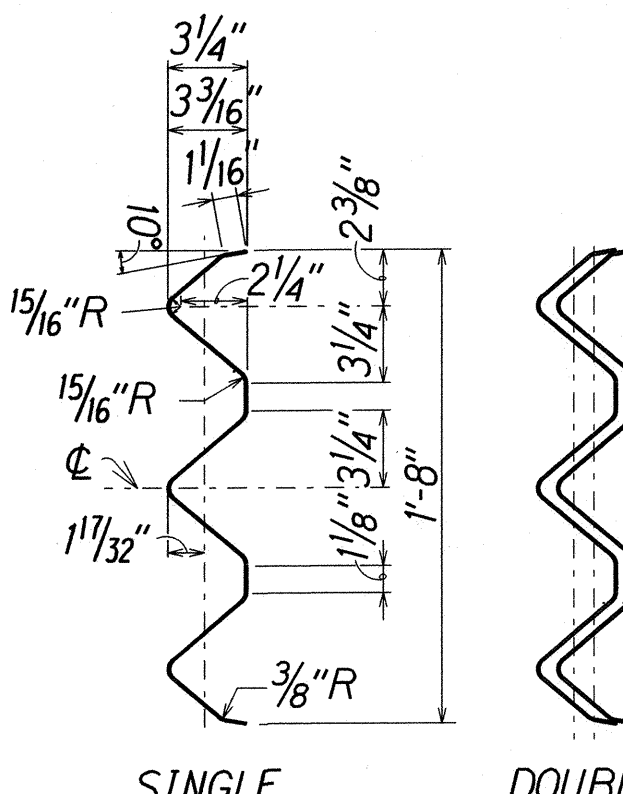
CAP (BEARING) PLATE DETAIL
Scale: 6" = 1'-0"



STEEL WASHER FOR 5/8" BOLT
Scale: 6" = 1'-0"



5/8" BOLT
Scale: 6" = 1'-0"



SECTION THRU
RAIL ELEMENT
Scale: 1 1/2" = 1'-0"

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

DATE	MAY 2003
DESIGNED BY	KIM
TRACED BY	DKT
DESIGNED BY	DKT
QUANTITIES BY	DKT
CHECKED BY	PT'S
ORIGINAL PLAN	
NOTE BOOK	
N.	

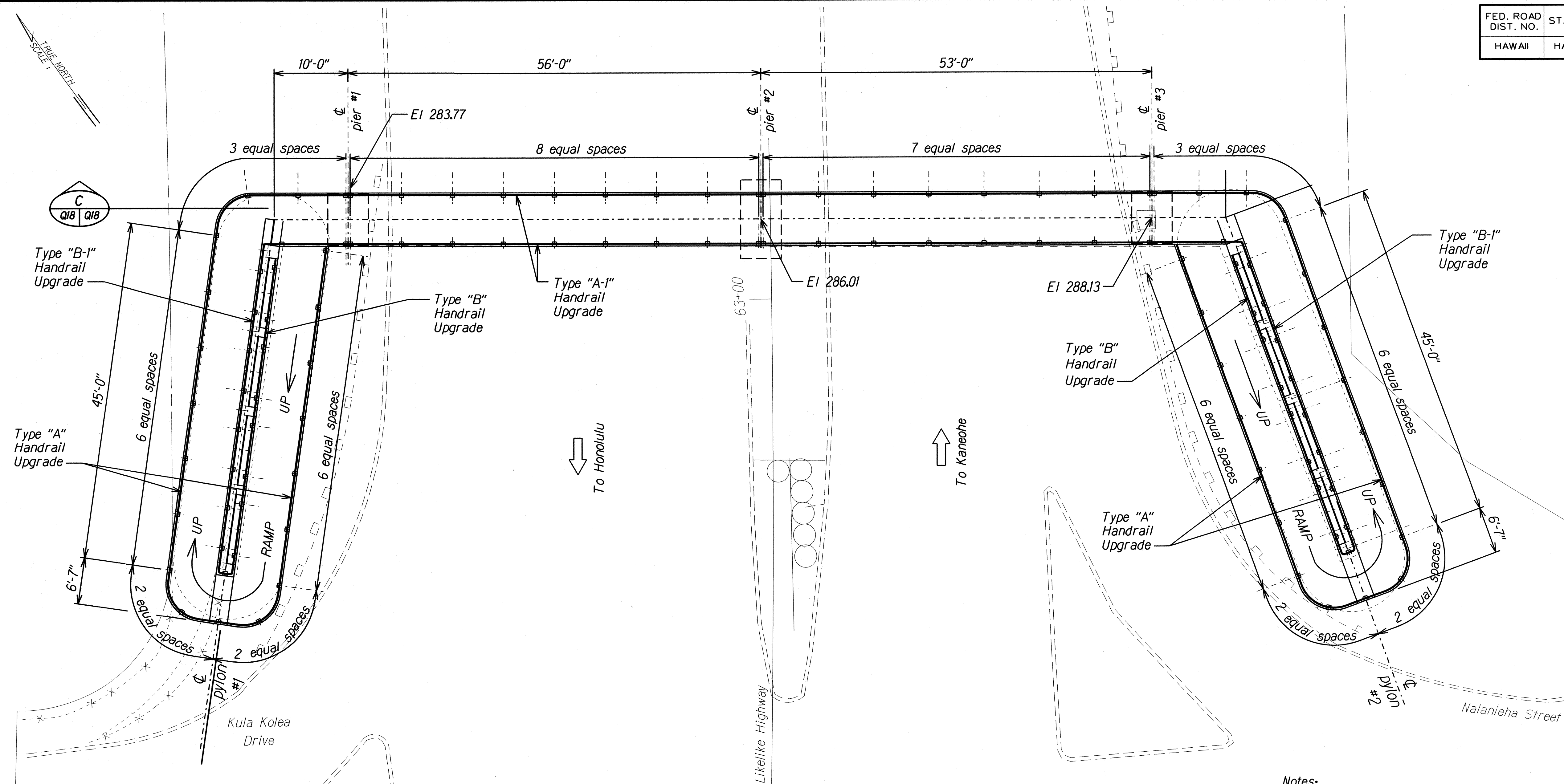
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KALIHI STREAM BRIDGE
METAL GUARDRAIL TYPE 3 THRIE BEAM
AND APPURTENANCES DETAILS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
F.A. Project No. NH-063-1(023)

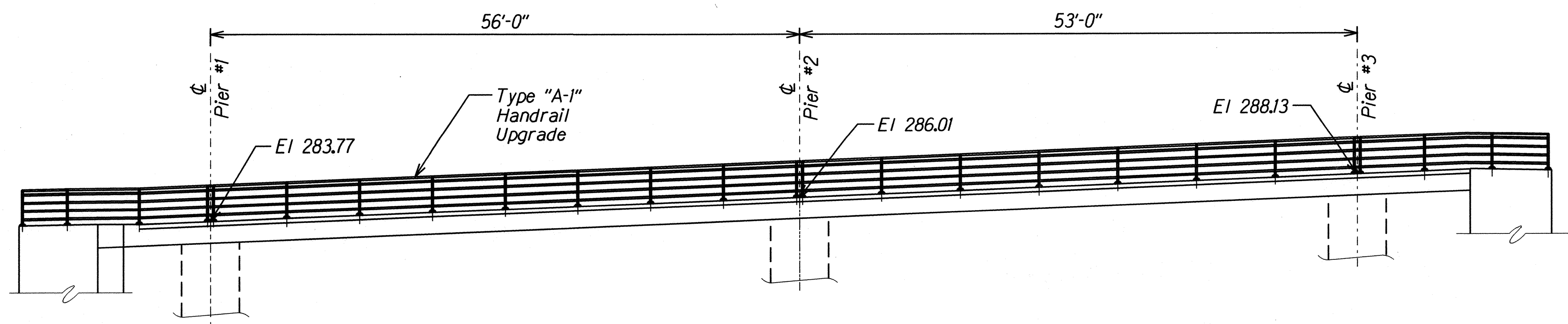
Scale: As Noted
Date: June, 2015

SHEET No. Q17 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	109	111



PLAN
HAND RAIL LAYOUT
SCALE: 1/8"=1'-0"



LONGITUDINAL SECTION
SCALE: 1/8"=1'-0"

- Notes:
1. All work show on this sheet shall be paid for under Item No. 507.7514 - Type "I" Pedestrian Overpass Railing Upgrade.
 2. When working on the Pedestrian Overpass, the Contractor shall ensure that all vehicles traveling on Likelike Highway and under the Pedestrian Overpass are not affected by the construction work. The Contractor shall also ensure that no debris, tools, equipment, etc. can fall onto the highway. The Contractor shall provide a temporary catchment system to ensure that nothing from their work falls onto the highway below.
 3. When working on the Pedestrian Overpass, the Contractor shall ensure that all pedestrians and bicyclists can safely use the Pedestrian Overpass at all times. At all construction areas on the Pedestrian Overpass, provide a protected, three feet (minimum) wide sidewalk area for pedestrians and bicyclists to pass the construction zone.

ORIGINAL PLAN	DATE
NOTED BY	XXX 1997
DESIGNED BY	XXX 1997
QUANTITIES BY	XXX 1997
CHECKED BY	XXX 1997

db3/kate/7/11/bq18.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

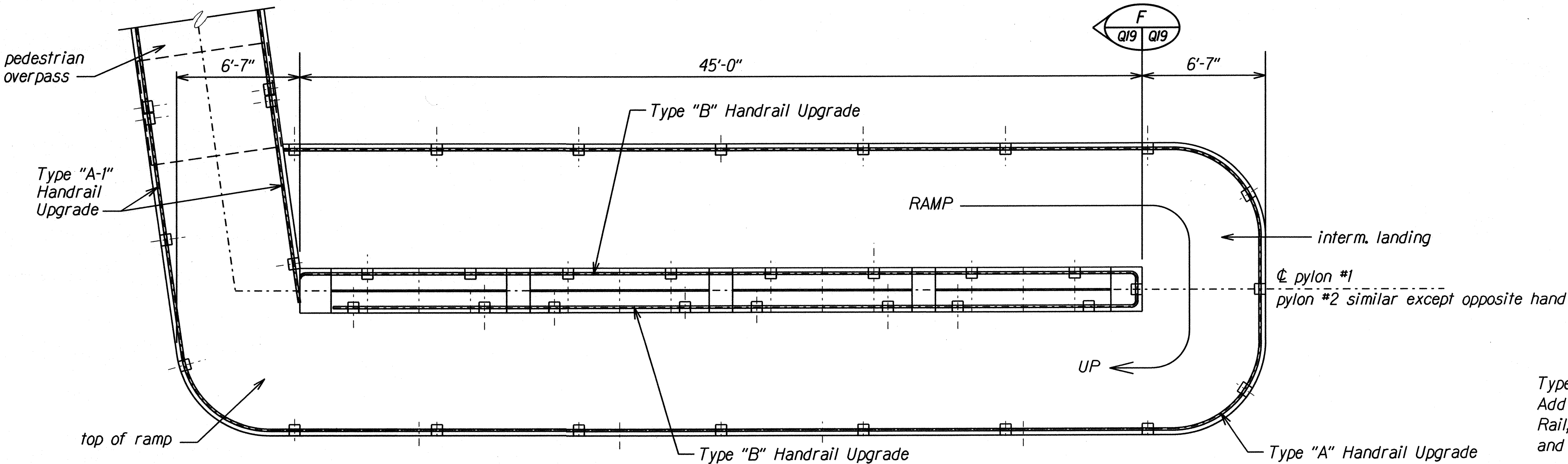
**PEDESTRIAN OVERPASS AT
KULA KOLEA DRIVE**

PLAN AND LONGITUDINAL SECTION
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Project No. NH-063-1(023)

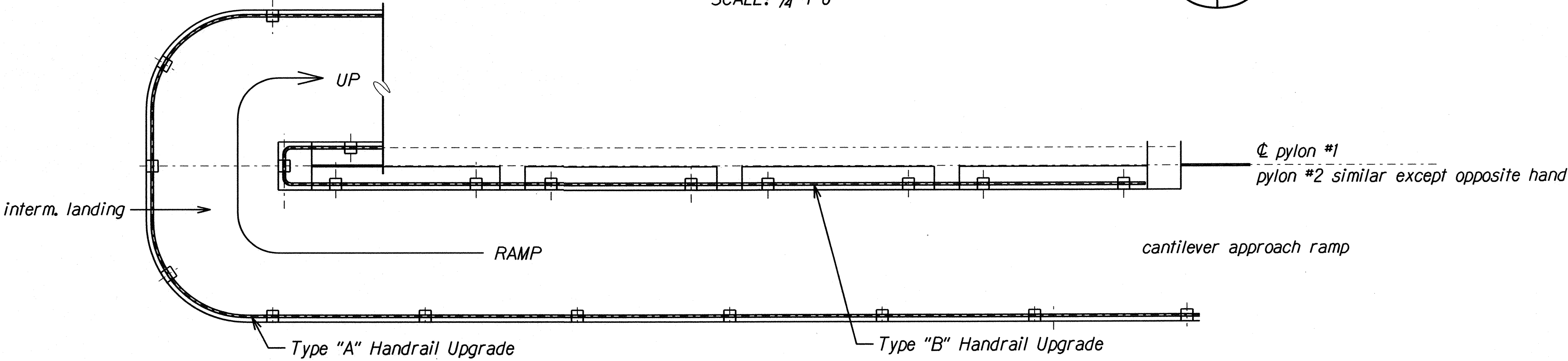
Scale: As Noted Date: June, 2015

SHEET No. Q18 OF 20 SHEETS

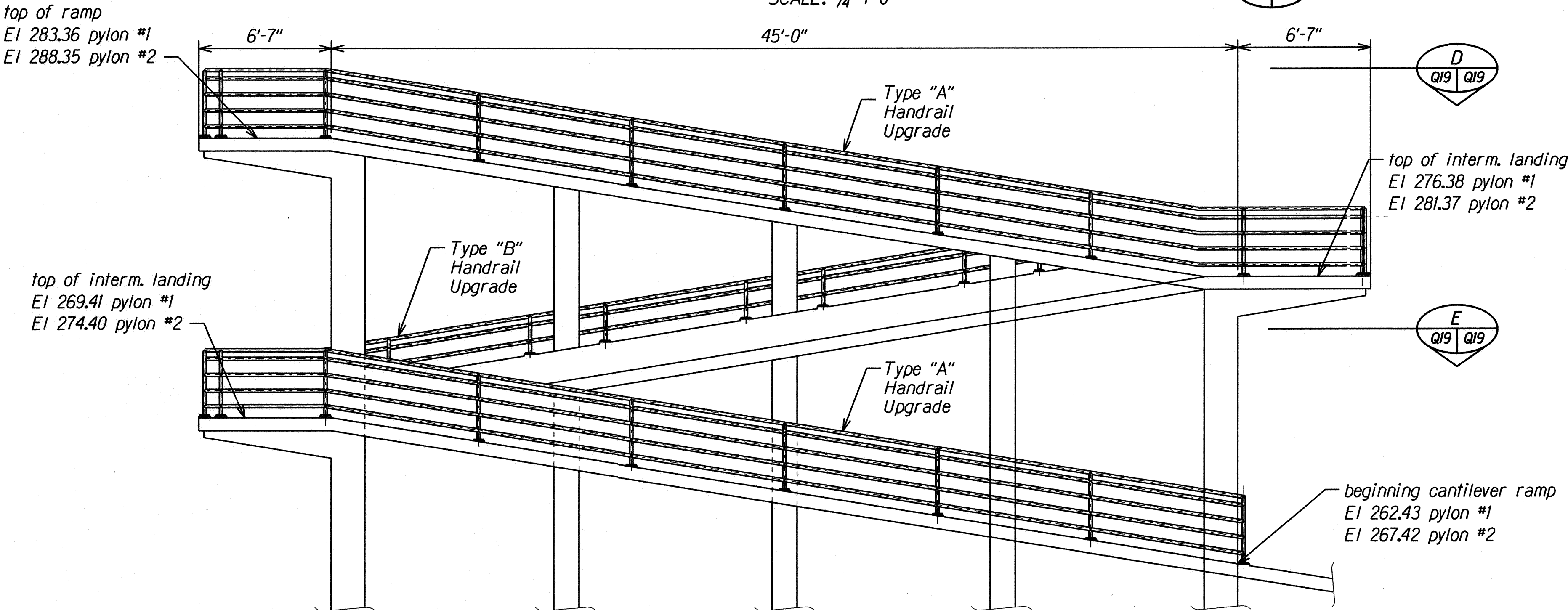
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	110	111



PLAN - RAMP AT PYLON #1, RAMP AT PYLON #2 SIMILAR EXCEPT OPPOSITE HAND
SCALE: 1/4"=1'-0"



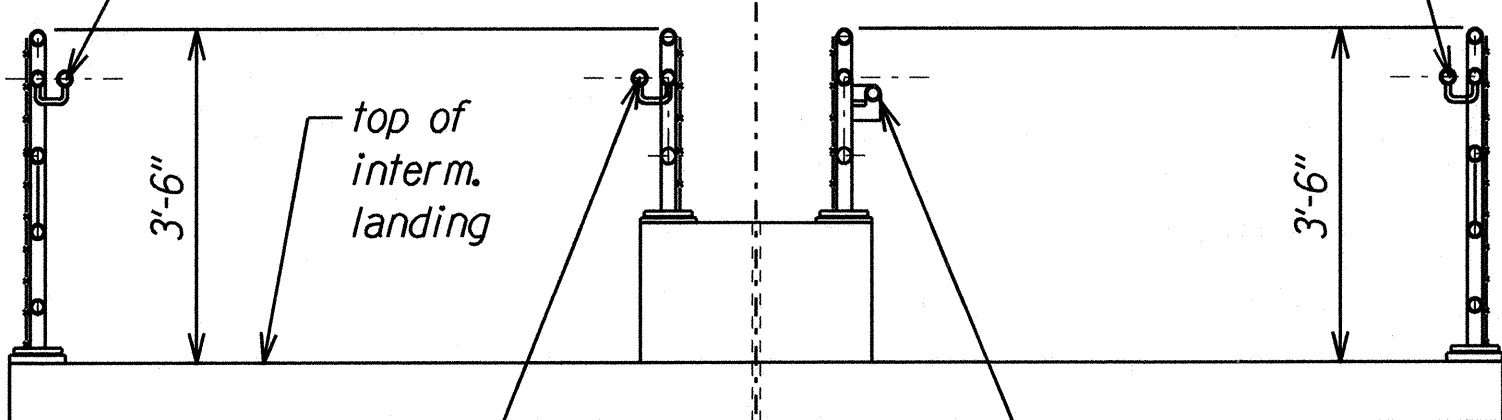
PLAN - RAMP AT PYLON #1, RAMP AT PYLON #2 SIMILAR EXCEPT OPPOSITE HAND
SCALE: 1/4"=1'-0"



ELEVATION - RAMP AT PYLON #1, RAMP AT PYLON #2 SIMILAR EXCEPT OPPOSITE HAND
SCALE: 1/4"=1'-0"

Type "A" Handrail Upgrade
Add 1 1/2" $\varnothing$ XS Post, Horiz.
Rail, Steel Plate Base Guard
and Handrail on exist.

Type "A" Handrail Upgrade
Add 1 1/2" $\varnothing$ XS Post, Horiz.
Rail, Steel Plate Base Guard
and Handrail on exist.



SECTION
SCALE: 1/2"=1'-0"

- Note:
1. All work shown on this sheet shall be paid for under Item No. 507.7514 - Type "I" Pedestrian Overpass Railing Upgrade.
 2. Contractor shall field verify all dimensions.
 3. Chain link fence to be placed at outer side of all railing.

ORIGINAL PLAN	DATE	XXX 1991
NOTED BY	DESIGNED BY	XXX 1991
QUANTITIES BY	CHECKED BY	XXX 1991
NO.		

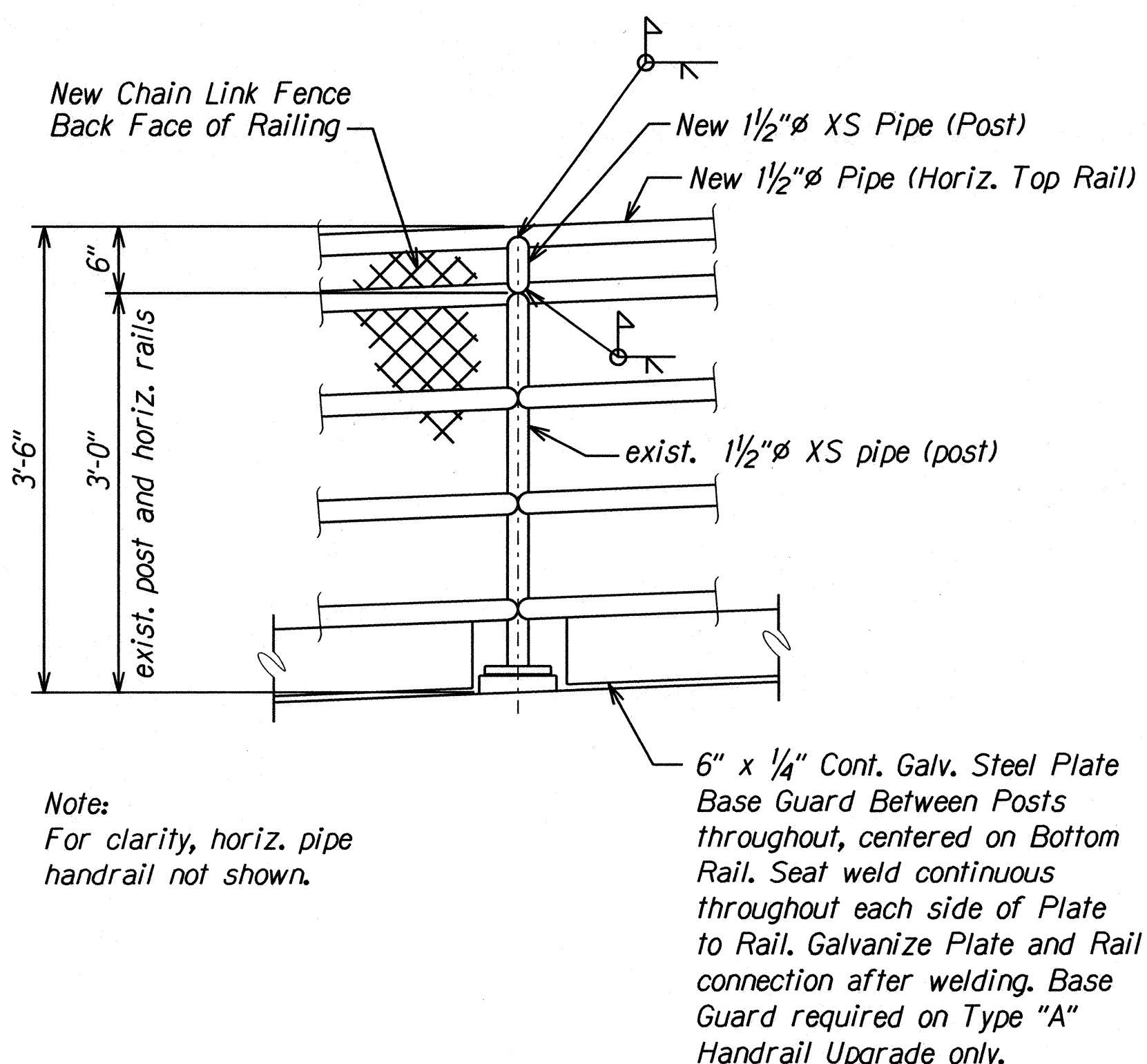
db3/kate/likelike.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

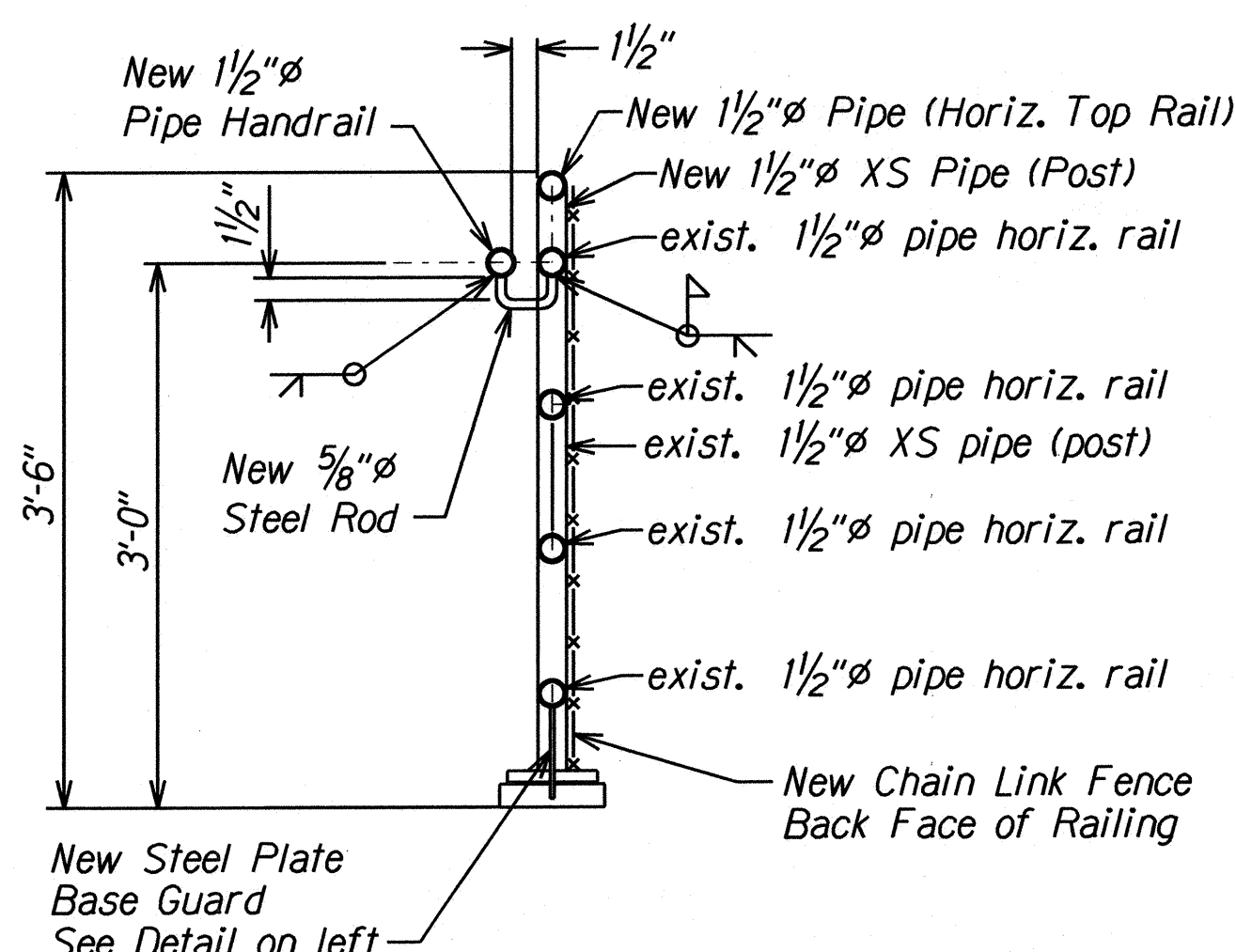
PEDESTRIAN OVERPASS AT
KULA KOLEA DRIVE
RAMP
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Project No. NH-063-1(023)

Scale: As Noted
Date: June, 2015

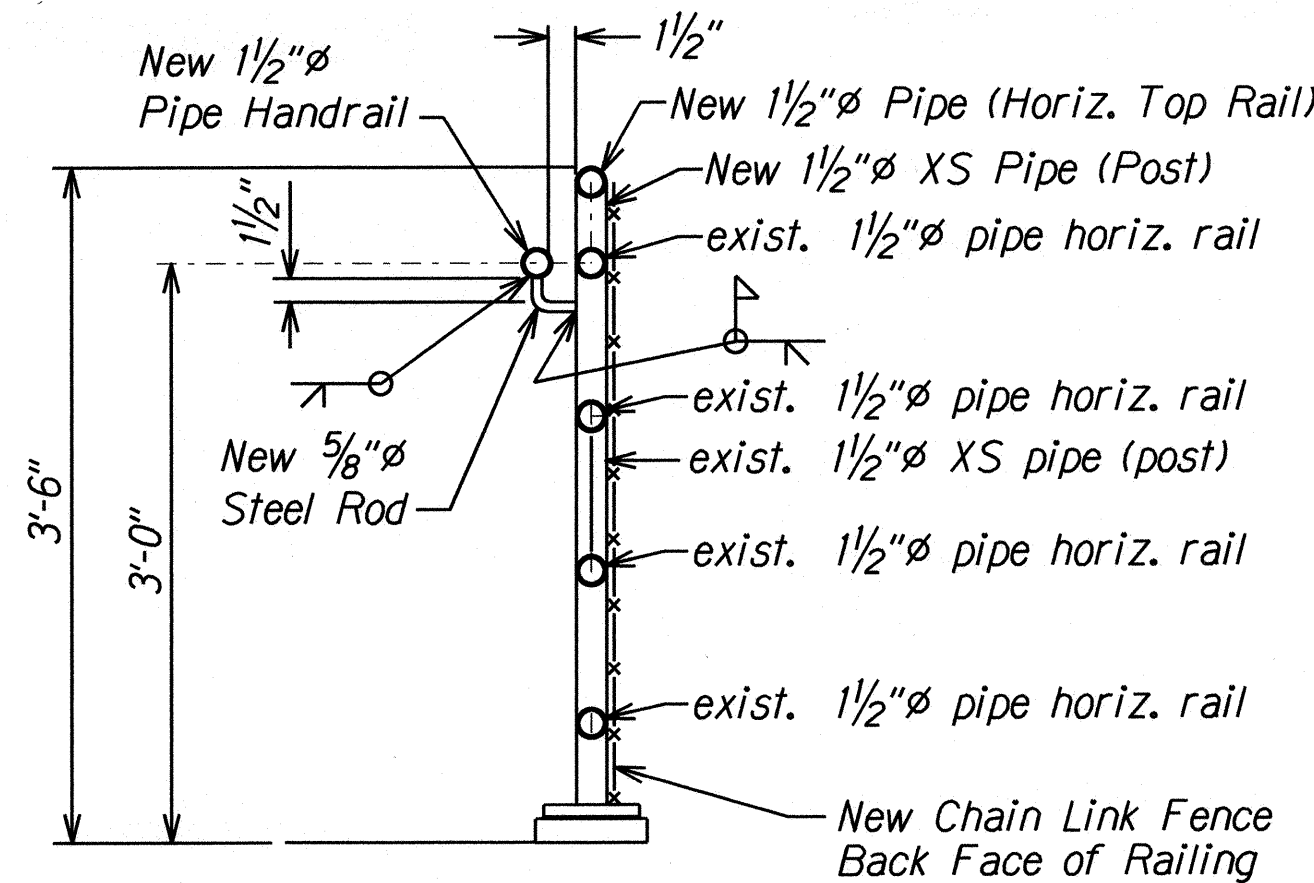
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-063-1(023)	2015	111	111



PARTIAL ELEVATION AT TYPES "A" & "A-1" UPGRADES
SCALE: 1"=1'-0"



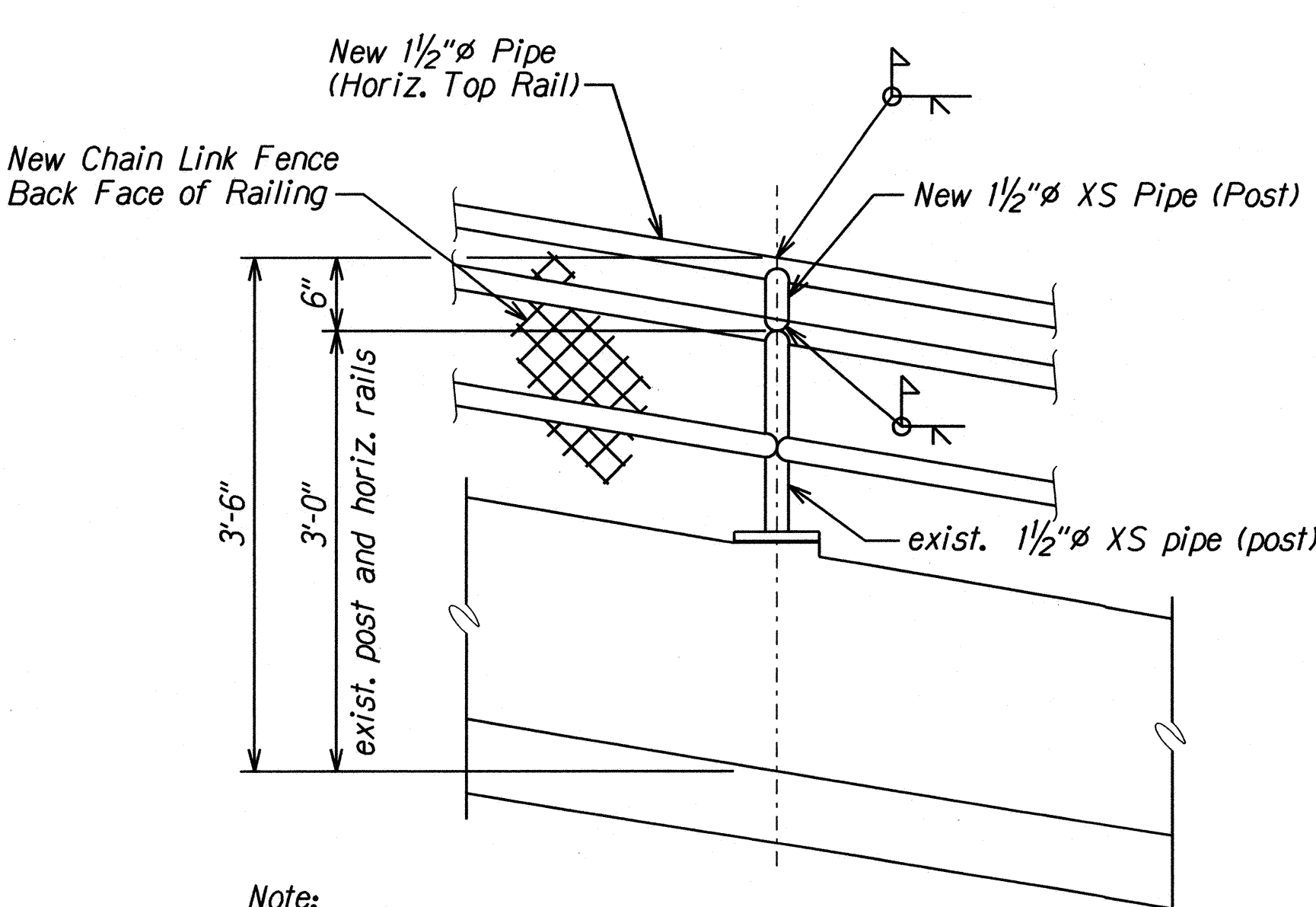
BETWEEN EXISTING POSTS
SCALE: 1"=1'-0"



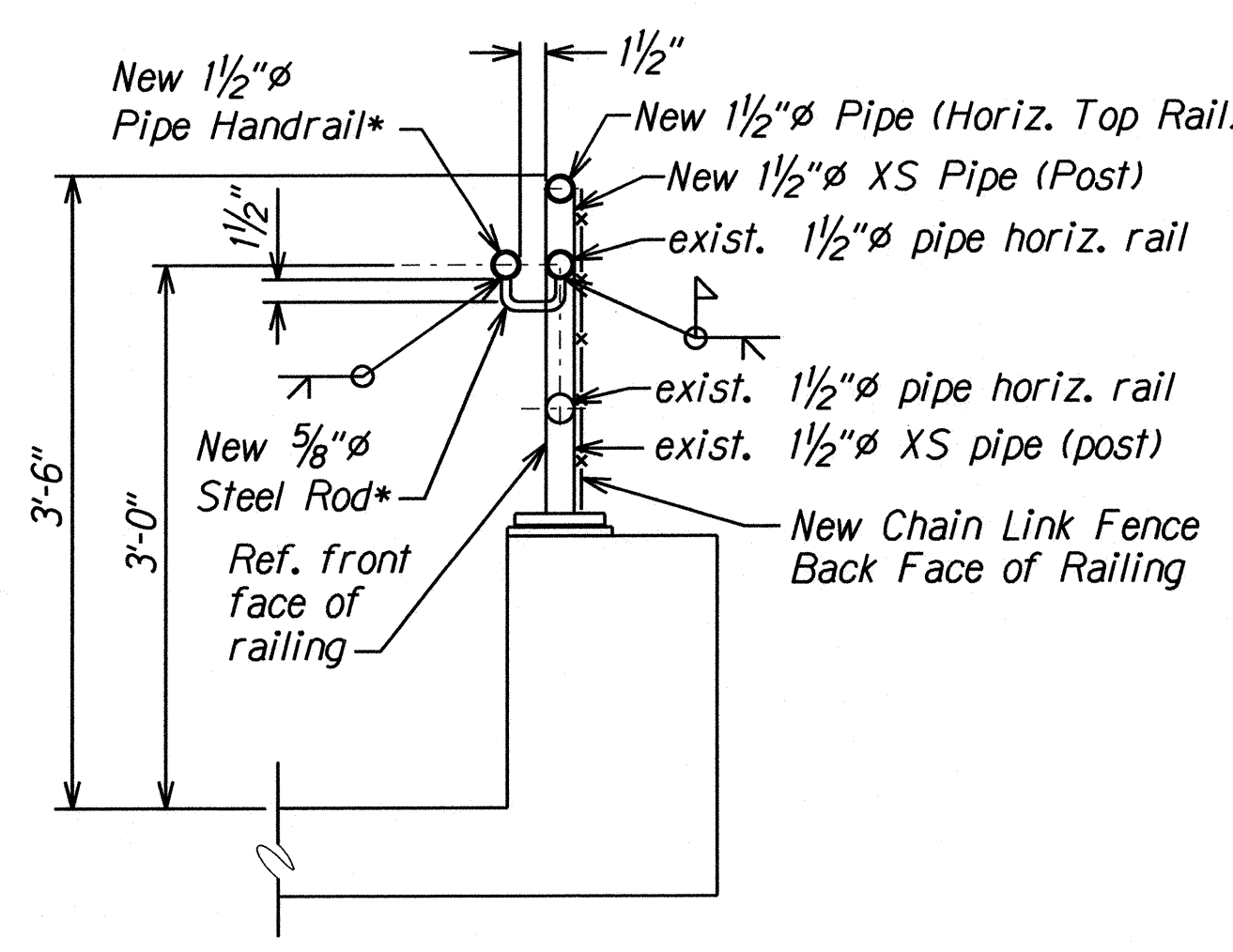
AT EXISTING POSTS
SCALE: 1"=1'-0"

Note:
All work shown on this sheet shall be paid for under Item
No. 507.7514 - Type "I" Pedestrian Overpass Railing Upgrade.

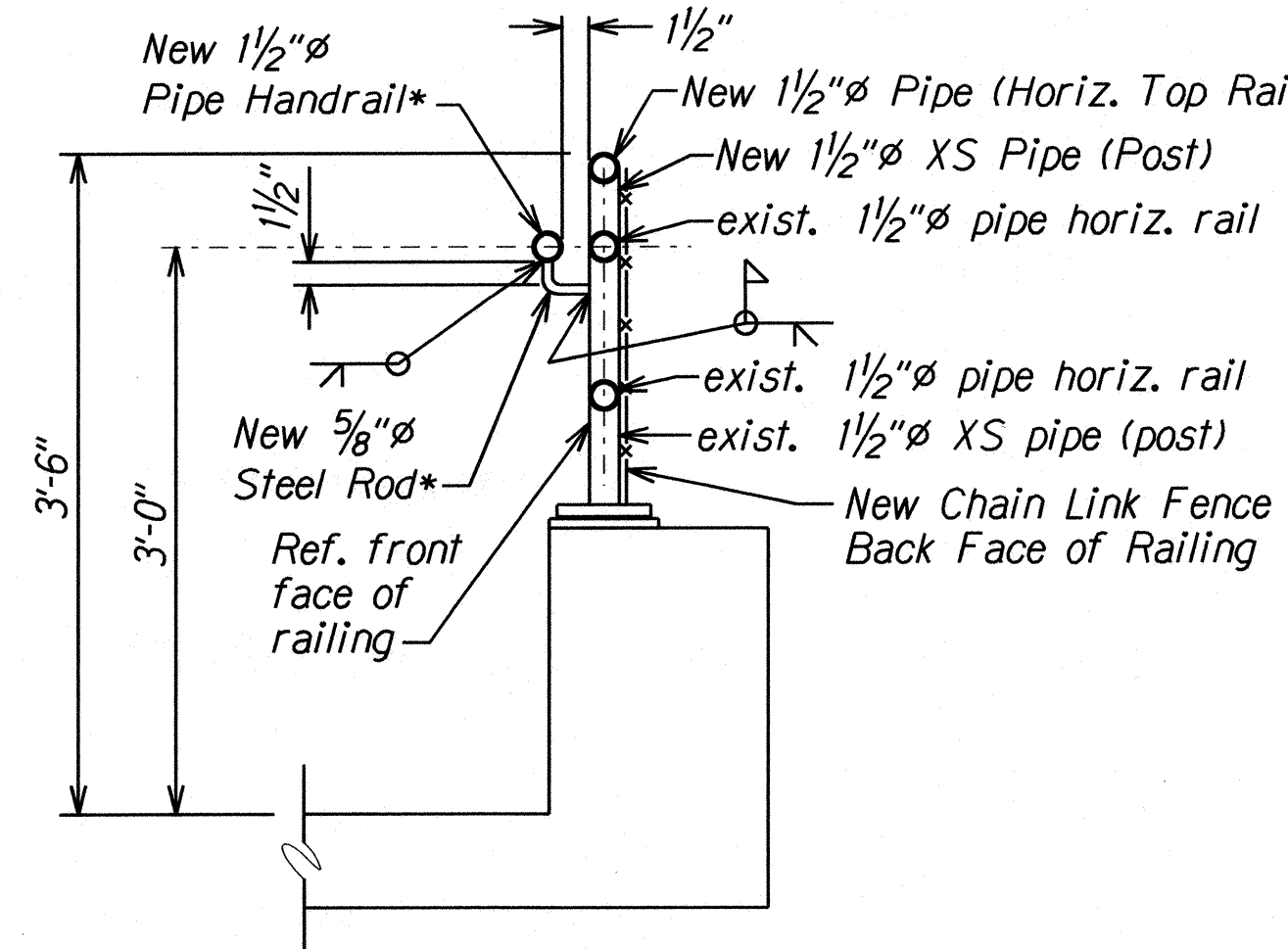
TYPE "A" & "A-1" HANDRAIL UPGRADES
TYPE "A" HANDRAIL UPGRADE AT RAMP
TYPE "A-1" HANDRAIL UPGRADE AT OVERPASS



PARTIAL ELEVATION AT TYPES "B" & "B-1" UPGRADES
SCALE: 1"=1'-0"



BETWEEN EXISTING POSTS
SCALE: 1"=1'-0"



AT EXISTING POSTS
SCALE: 1"=1'-0"

TYPE "B" & "B-1" HANDRAIL UPGRADES
TYPE "B" EXIST. RAMP RAILING W/ EXIST. HANDRAIL
TYPE "B-1" EXIST. RAMP RAILING W/O HANDRAIL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**PEDESTRIAN OVERPASS AT
KULA KOLEA DRIVE**
HANDRAIL DETAILS
LIKELIKE HIGHWAY RESURFACING
School Street to Emmeline Place
Project No. NH-063-1(023)

Scale: As Noted
Date: June, 2015

SHEET No. Q20 OF 20 SHEETS

ORIGINAL PLAN	DATE
DRAWN BY	XXX
DESIGNED BY	XXX
QUANTITIES BY	XXX
CHECKED BY	XXX
DATE	XXX/XXX/XXX

db3/kate/7/10/2015.dgn