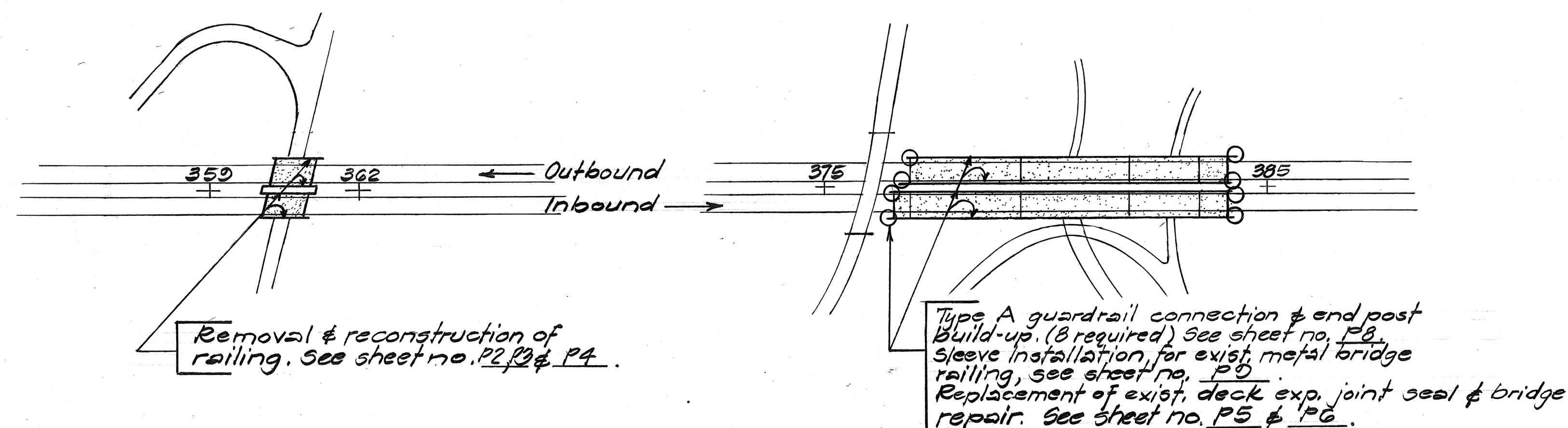
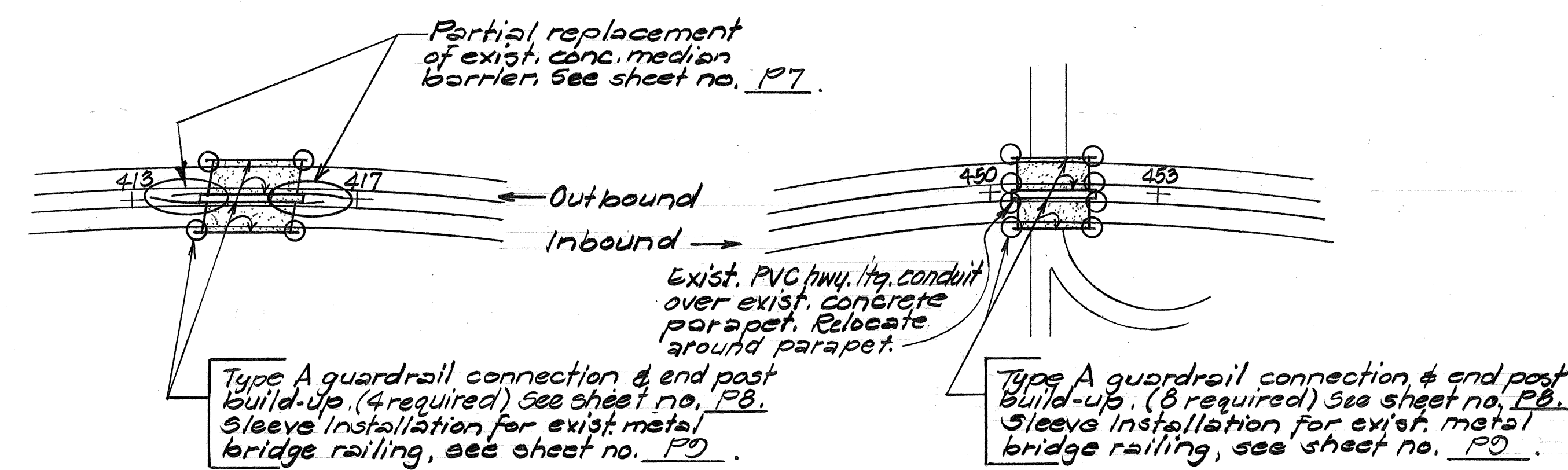




HOAEAE SEPARATION



WAIKELE STREAM BRIDGE

STRUCTURE NO. 414

STRUCTURE NO. 451

GENERAL NOTES

DESIGN SPECIFICATIONS:

(AASHTO) standard specifications for Hwy. Bridges (13th Edition) with subsequent interim specifications, 1984.

DESIGN STRESSES:

- $f_c = 1,200 \text{ psi}$ (0.4 f'_c)
- $f_s = 20,000 \text{ psi}$

MATERIALS:

- Reinforced Concrete - Class A.
- Reinforcing Steel - ASTM A615 Grade 40.
- Structural Steel - ASTM A-36.
- All anchor bolts shall be high strength bolts conforming to the requirements of ASTM A325.
- "Terminal Connector" shall be fabricated from 10 gage steel conforming to the requirements of AASHTO M180.

CONSTRUCTION REQUIREMENTS:

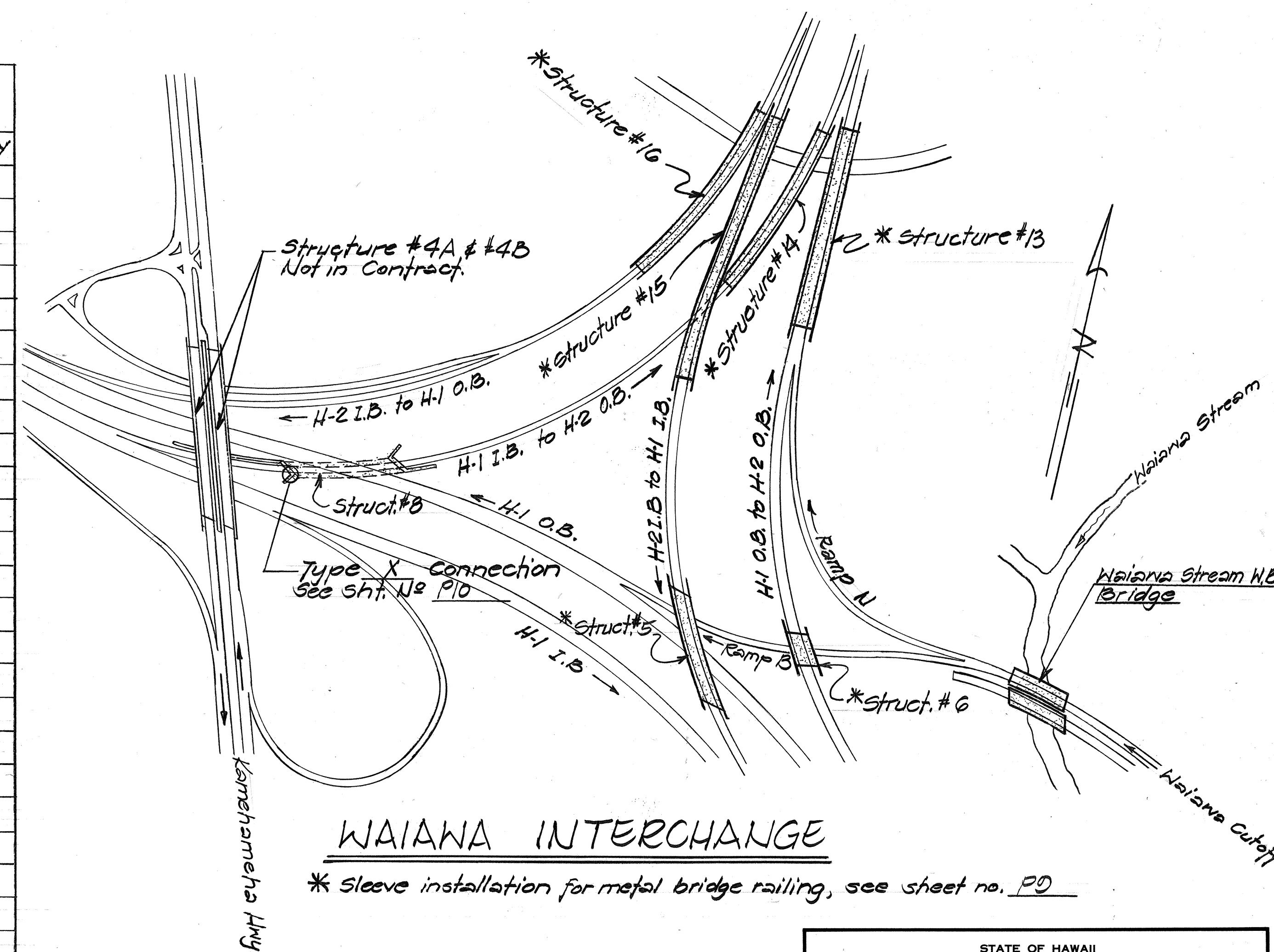
- See Standard Specifications for Road & Bridge Construction, (Hawaii 1985) & Special Provisions.
- See standard Detail sht DT-500 & DT-501 for details of spacer block & "Terminal Connector."
- "Terminal Connector", tapered & standard spacer, steel template, including all anchor bolts, cap & nuts and washers, shall be hot-dip galvanized after fabrication.
- First 25'-0" of guardrail adjoining "Terminal Connector" shall be of galvanized steel and supports spaced at 3'-1 1/2" o.c. See Typical Detail sht DT-500 for metal guardrail details.
- Items designated for removal shall be removed in such a manner as to preclude any damage to the existing structure. Large impacting or vibratory types of equipment will not be permitted in the removal operation, nor for drilling of holes. Small vibratory tools, approved by the Engineer, will be permitted.
- The Contractor shall be responsible for the location of existing reinforcement by whatever means, including the use of scanning devices, in his drilling operations.
- The Contractor shall be solely responsible for the protection of utilities and existing and new structures from damage due to construction, and shall repair any damage at his expense, to the satisfaction of the Engineer.
- The work necessary to connect guardrail to concrete end post shall include all labor, materials, tools, equipment and incidentals necessary to complete the work. This work will be measured and paid for in units of one.

GENERAL:

- Items noted incidental will not be paid for separately.
- The Contractor shall verify all dimensions in the field before commencing work.
- The Contractor shall verify the location of all existing utility lines near the structures, and notify their respective owners before commencing work.

ESTIMATED QUANTITIES

STR.	ITEM NO.	ITEM	UNIT	QUANTITY
Hoaeae Separation	202.0420	Removal of exist. concrete curb & metal railing	Lin. Ft.	505
	507.7100	Concrete barrier type railing & end post	Lin. Ft.	555
	507.9000	7/8" drilled holes for bridge railing dowels	Each	740
	507.9100	3/4" drilled holes for bridge railing dowels	Each	370
Waikale Stream Bridge	503.1085	Replacement of joint seals	Lump Sum	(440)
	507.3600	Installation of railing sleeve - Intermediate	Each	140
	507.3601	Installation of railing sleeve - End	Each	8
	507.7200	Type A guardrail connection & end post build-up	Each	8
Structure No. 414	510.1000	Repairs to Edge of Deck & Outer Face of Barrier Rail	Lump Sum	(2)
	202.0421	Removal of concrete median barrier	Lin. Ft.	62
	507.3600	Installation of railing sleeve - Intermediate	Each	40
	507.3601	Installation of railing sleeve - End	Each	8
Structure No. 451	507.7200	Type A guardrail connection & end post build-up	Each	4
	606.4160	Reconstruct concrete median barrier	Lin. Ft.	62
	507.3600	Installation of railing sleeve - Intermediate	Each	36
	507.3601	Installation of railing sleeve - End	Each	8
Structure No. 8	507.7200	Type A guardrail connection & end post build-up	Each	8
	622.5035	Relocate highway lighting conduit	Lin. Ft.	10
	507.9300	Type X connection	Each	1
	507.9301	Erect guardrail support block	Each	1
Structure Number 13	507.3600	Installation of railing sleeve - Intermediate	Each	33
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	10
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	42
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	42
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	56
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	42
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	42
	507.3601	Installation of railing sleeve - End	Each	4
	507.3600	Installation of railing sleeve - Intermediate	Each	4
	507.3601	Installation of railing sleeve - End	Each	4



WAIANA INTERCHANGE

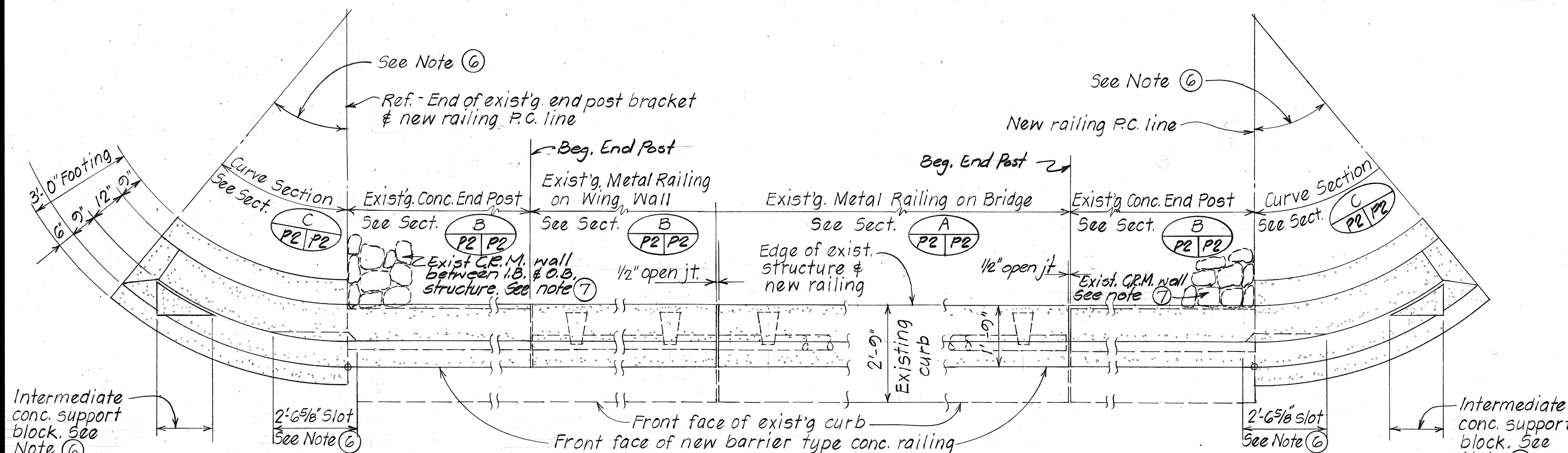
* Sleeve installation for metal bridge railing, see sheet no. P9.

STATE OF HAWAII	
DEPARTMENT OF TRANSPORTATION	
HIGHWAYS DIVISION	
JOB SITE LOCATION PLAN,	
GENERAL NOTES &	
ESTIMATED QUANTITIES	
INTERSTATE ROUTE H-1 RESURFACING	
Kunia I.C. to Waiana I.C.	
F.A.I. Proj. No. 1R-HI-1 (181)	
Scale: As Noted	Date: July 1985
SHEET NO. P1 OF 10 SHEETS	

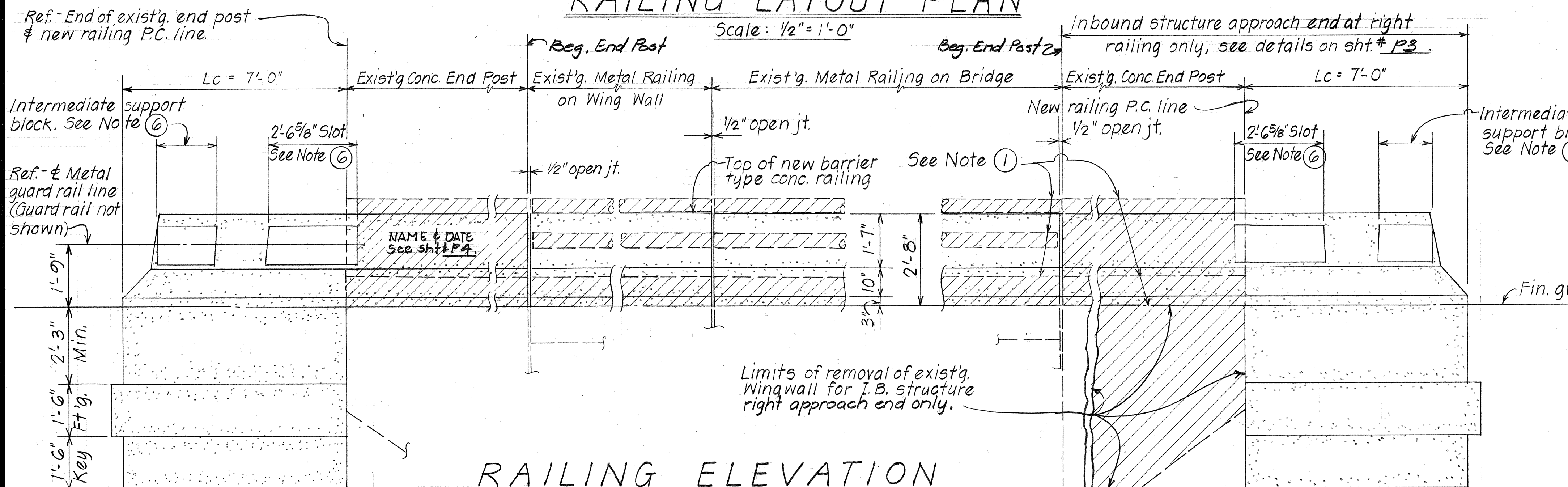
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(181)	1986	24	67

NOTES

- Existing structure shown by dashed lines. Removal of existing structure shown by hatched area.
- The Contractor shall erect portable concrete barrier during the removal & reconstruction of the bridge rail.
- Exposed existing reinforcement, not incorporated in the reconstruction of the bridge rail, shall be removed to a depth of 1" beneath finish grade and the resultant depression finished with mortar.
- Existing reinforcement incorporated in the new rail shall be cleaned & utilized as indicated and as directed by the Engineer.
- Concrete areas left exposed due to the removal of existing concrete shall be filled as necessary, ground smooth, and grooved to extend the roadway grade.
- For curve and section of new concrete railing and connection details of metal guardrail (slot & intermediate support block), see sht # P4.
- Remove portion of existing GRM wall as necessary to construct new conc. railing. Rebuild wall, after completion of railing, no higher than the adjoining concrete railing. This work shall be incidental to Item 202.0420.
- Insert contraction or control joint at 30' max. or as directed by the Engineer for the barrier rail. Use 1-layer 45# roofing paper at the keyed contraction joint or 1/8" x 1 1/2" deep groove w/ chamfer at control joint. If the control joint is to be saw cut, such cutting should be performed within 3 to 5 days from concrete pour.
- Place name and date (1967) of bridge on the left end post of both approaches. See sht # P4.

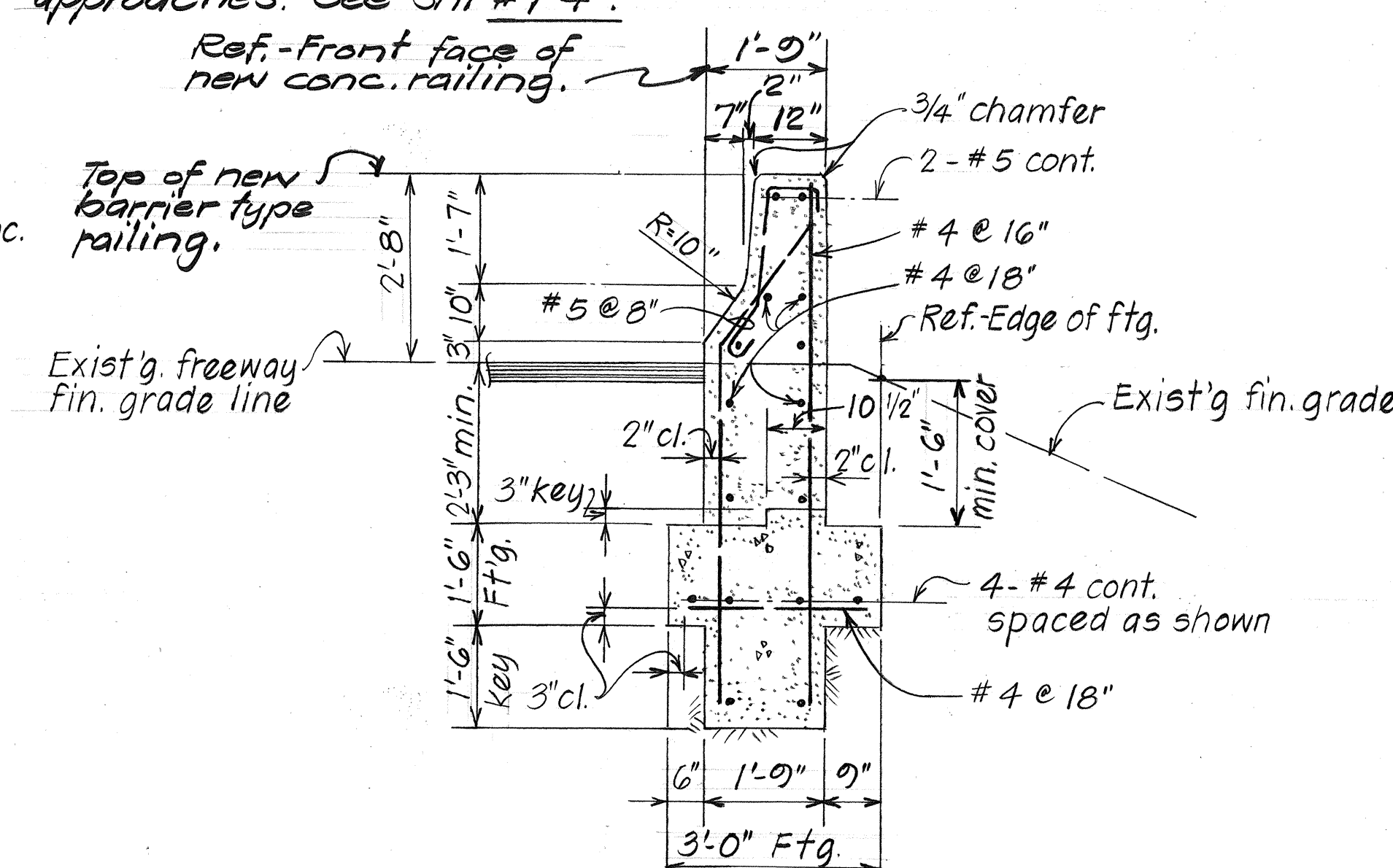


RAILING LAYOUT PLAN



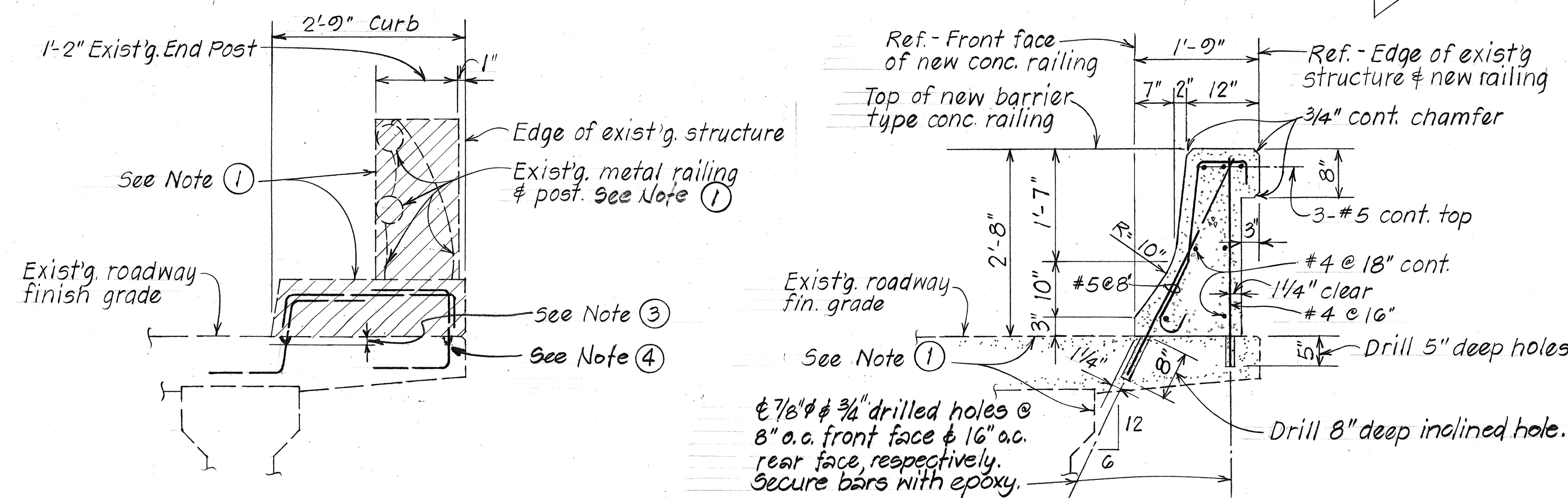
RAILING ELEVATION

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



TYPICAL SECTION

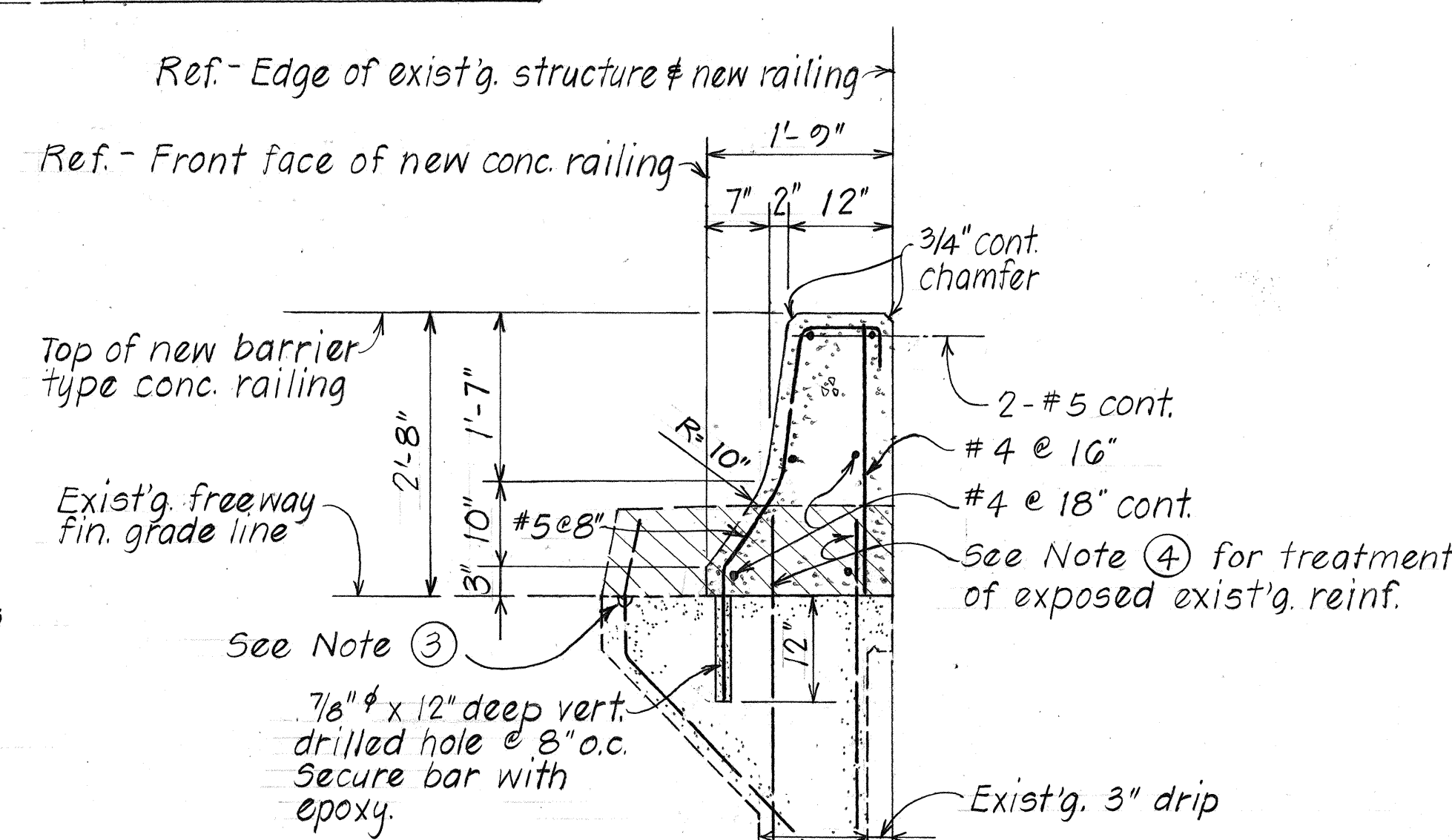
Scale: 3/4" = 1'-0"



AT EXISTING

TYPICAL SECTION THRU RAILING

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



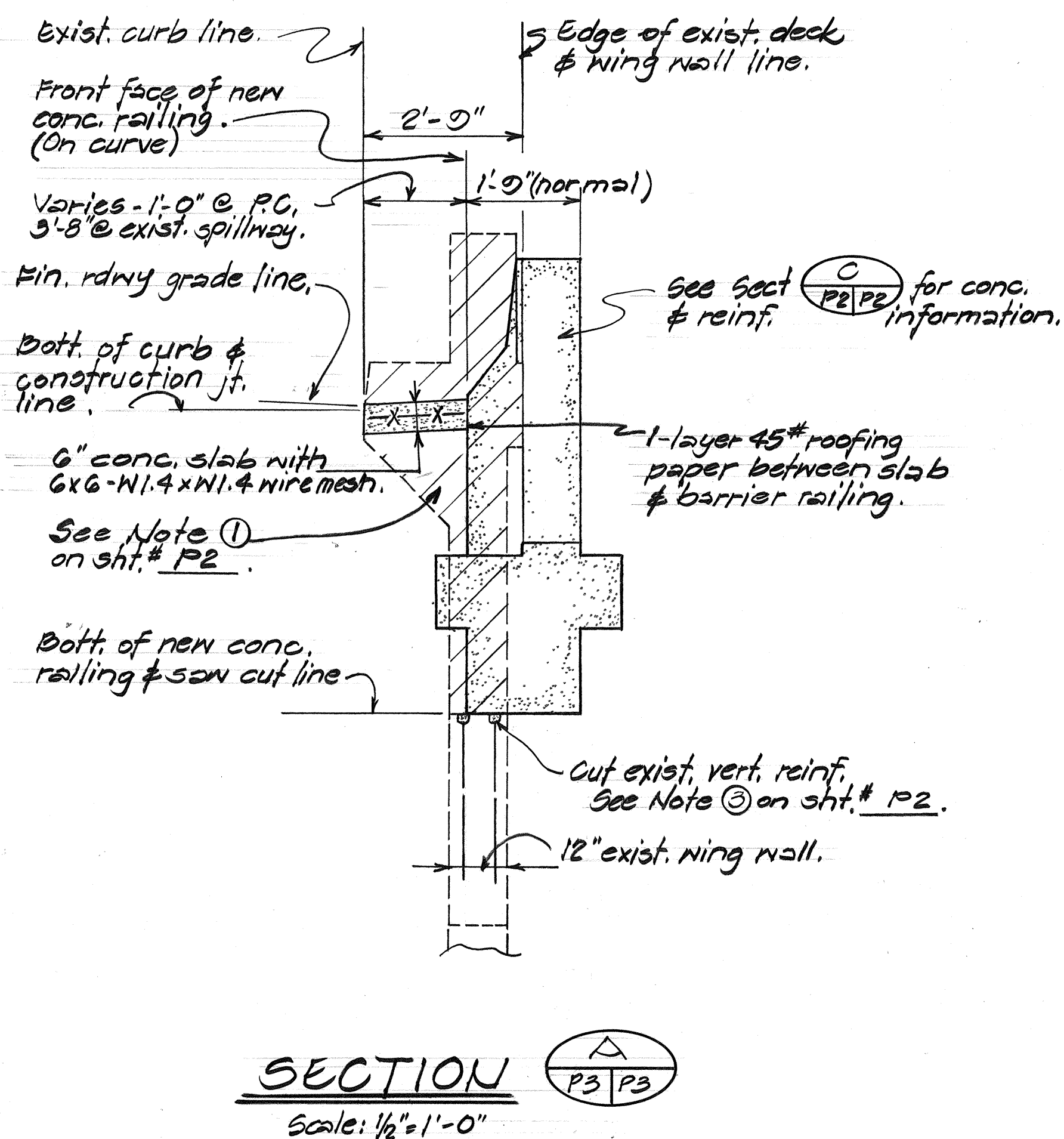
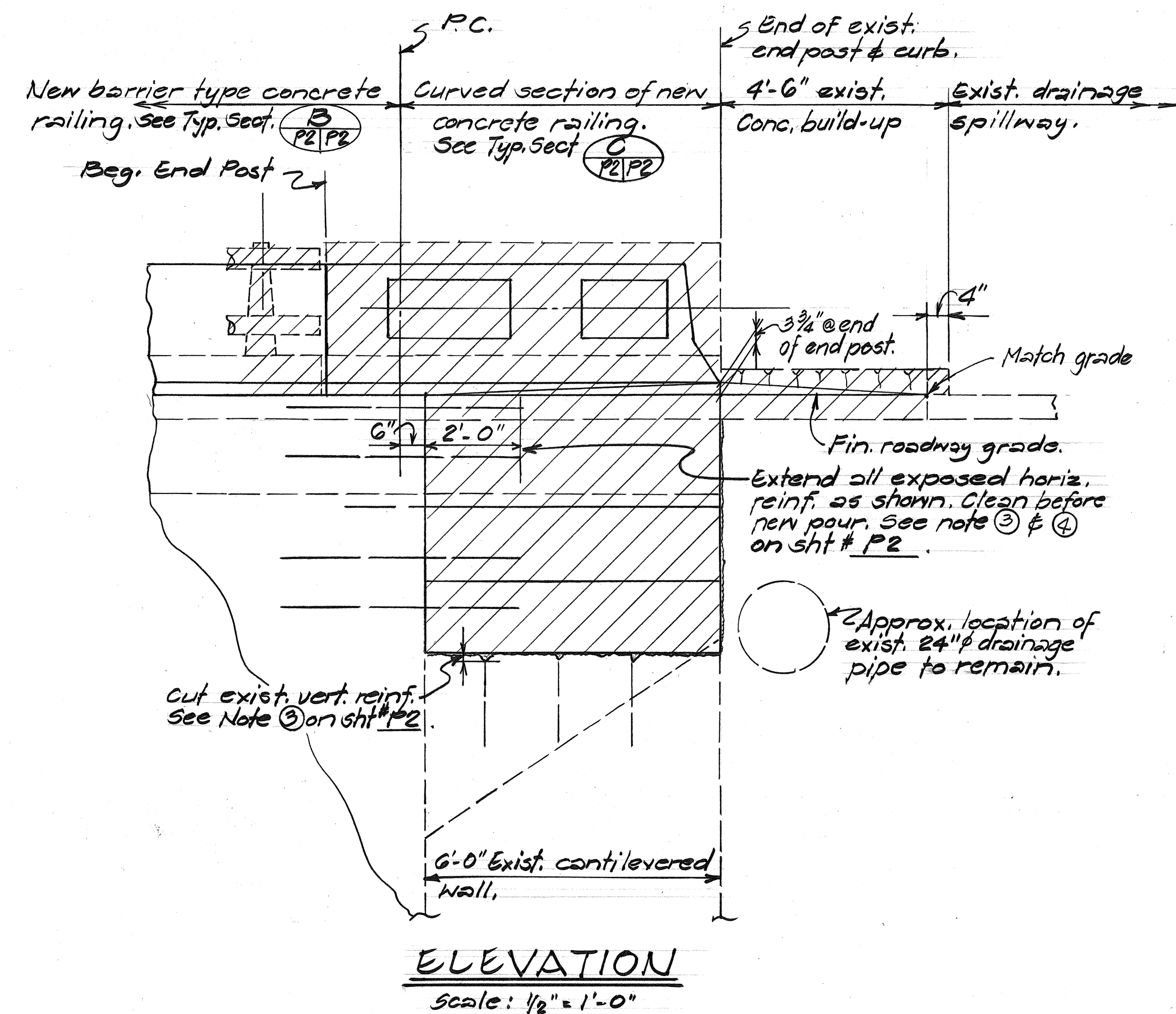
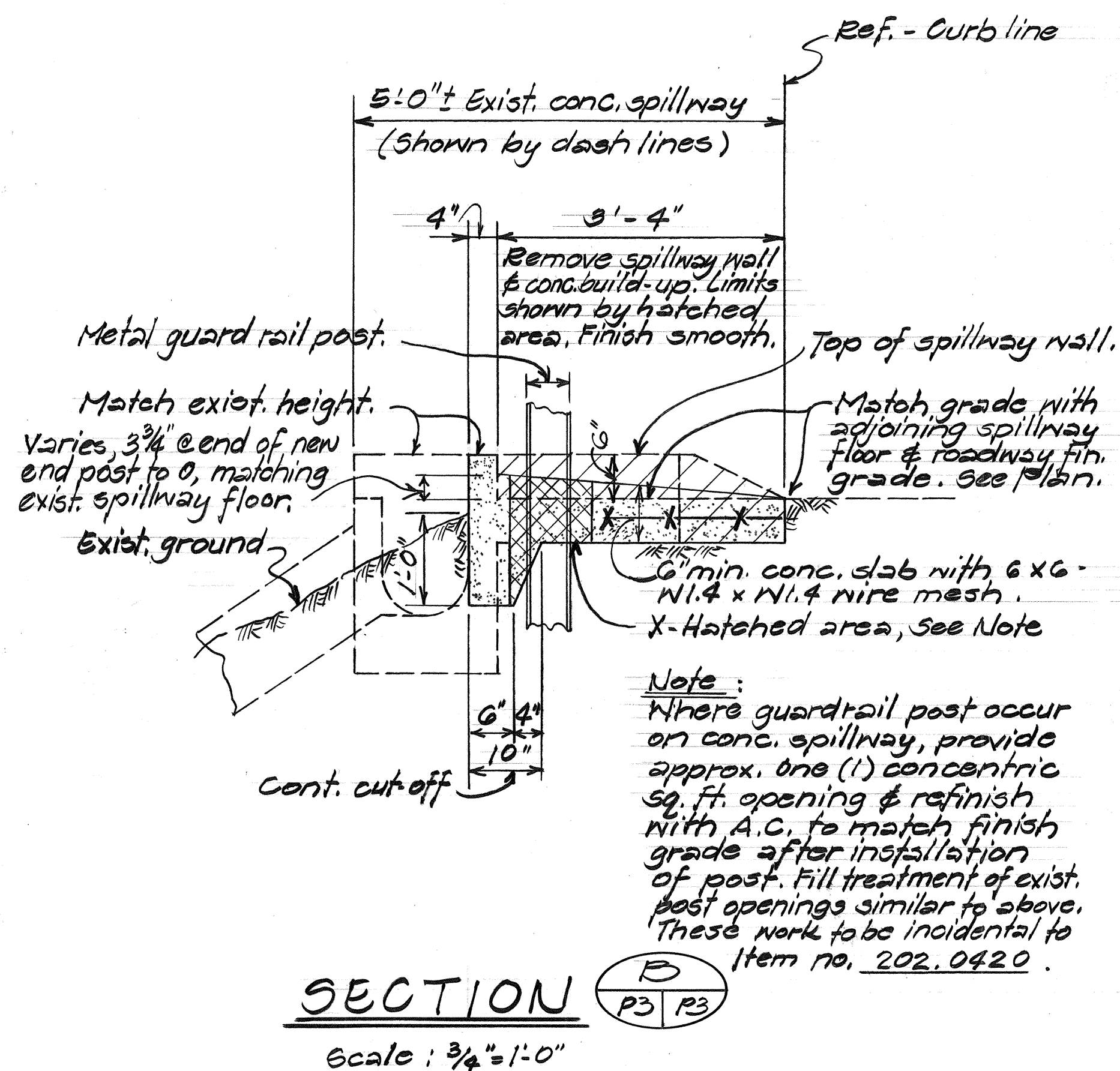
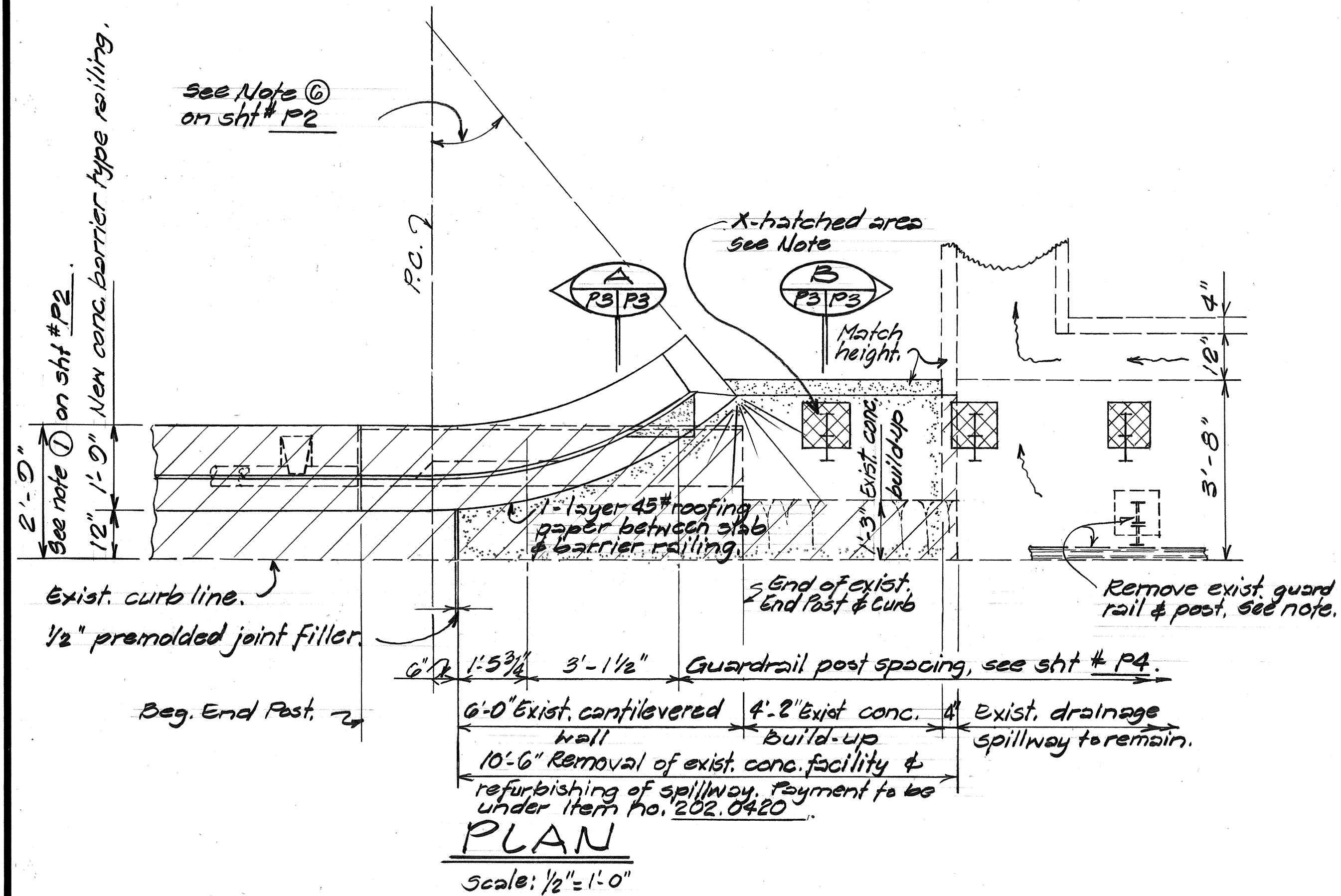
TYPICAL SECTION

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

SURVEY PLOTTED BY	DATE
DRAWN BY	7/29/85
DESIGNED BY	May 85
QUANTITIES BY	
CHECKED BY	L.A. G.T.
ORIGINAL PLAN	
NOTE BOOK	
No.	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
HOAEAE SEPARATION
REMOVAL & RECONSTRUCTION OF RAILING
INTERSTATE ROUTE HI-1 RESURFACING
Kunia I.C. to Waiawa I.C.
P.A.I. Proj. No. IR-HI-1 (181)
Scale: As Noted Date: July 1985
SHEET NO. P2 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(181)	1986	25	67



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HOAEE SEPARATION - INBOUND STRUCT.

**APPROACH END RIGHT END POST
REMOVAL & RECONSTRUCTION OF RAILING**

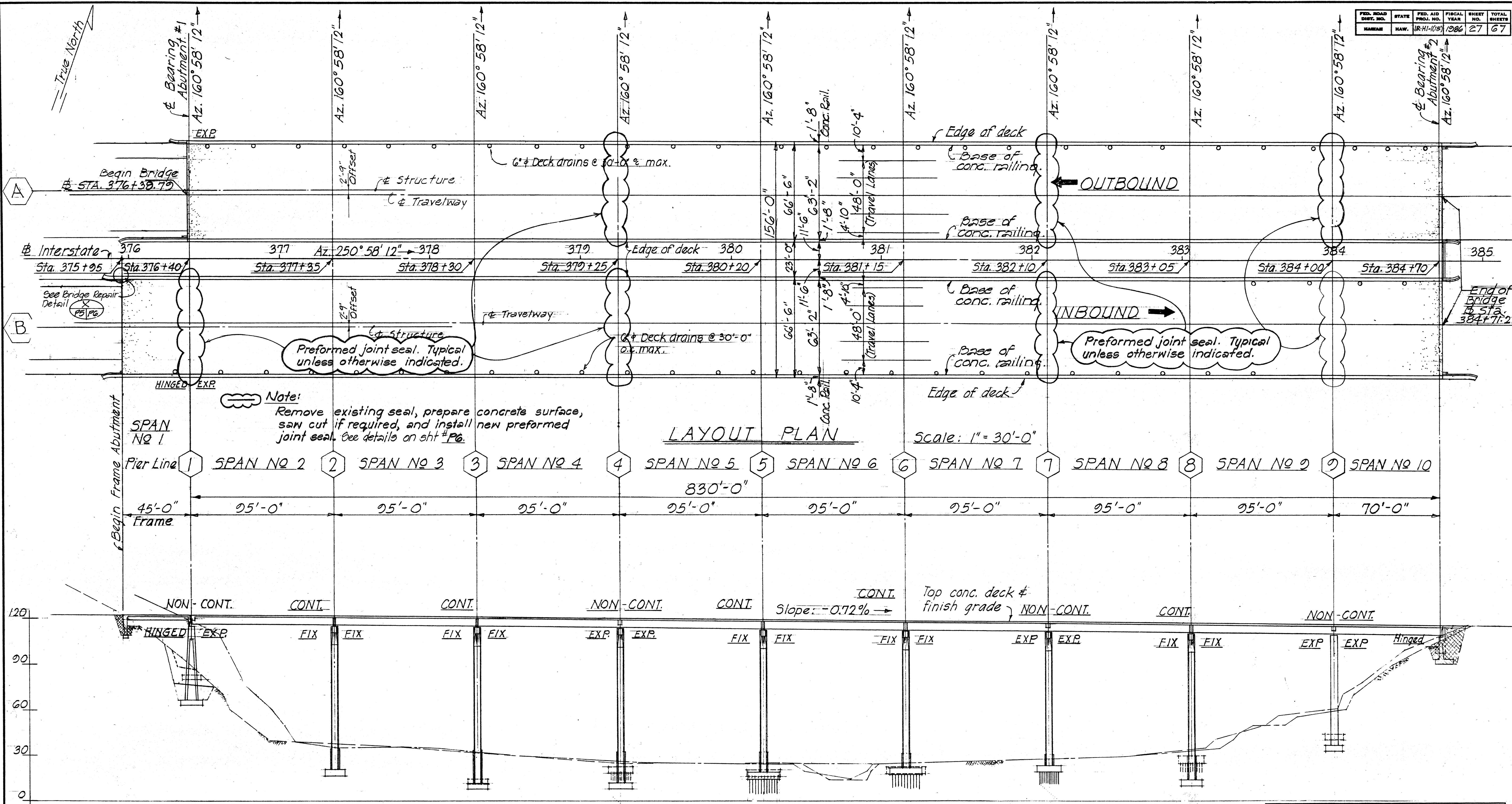
INTERSTATE ROUTE H-1 RESURFACING
Kunia I.C. to Waiawa I.C.
F.A.I. Proj. No. IR-HI-1 (181)

Scale: As Noted Date: July 1985

SHEET NO. P3 OF 10 SHEETS

26

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-108	1986	27	67



Note:
Remove existing seal, prepare concrete surface, saw cut if required, and install new preformed joint seal. See details on sht #P6.

LAYOUT PLAN

Scale: 1" = 30'-0"

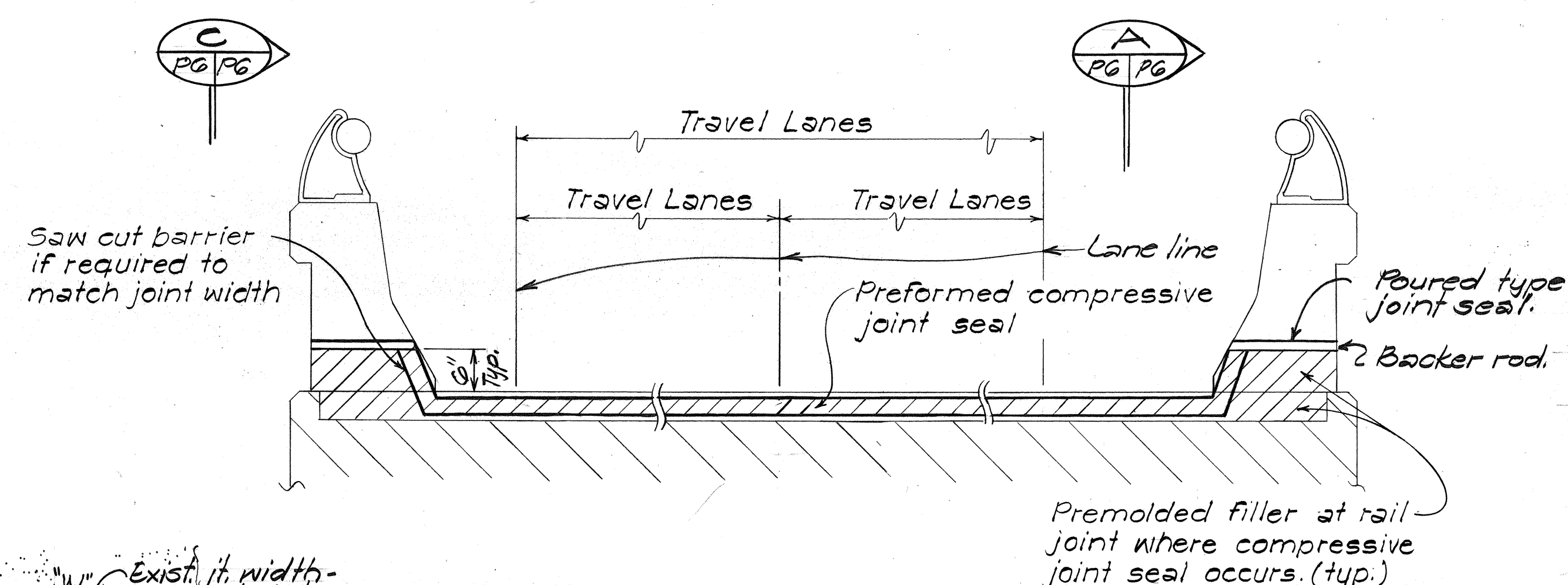
LONGITUDINAL SECTION ALONG INBOUND BRIDGE (OUTBOUND BRIDGE SIMILAR)

SCALE: 1" = 30'-0"

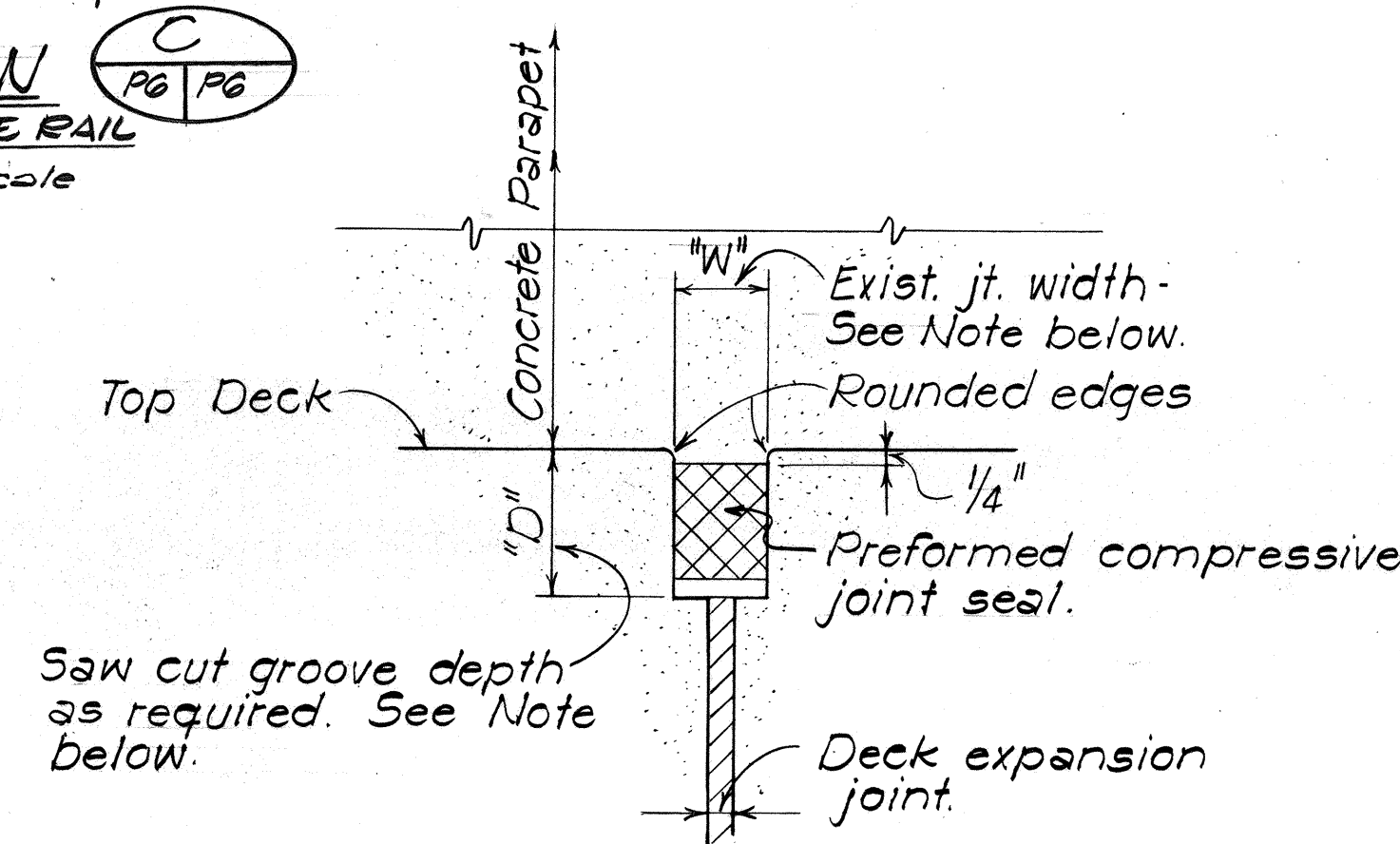
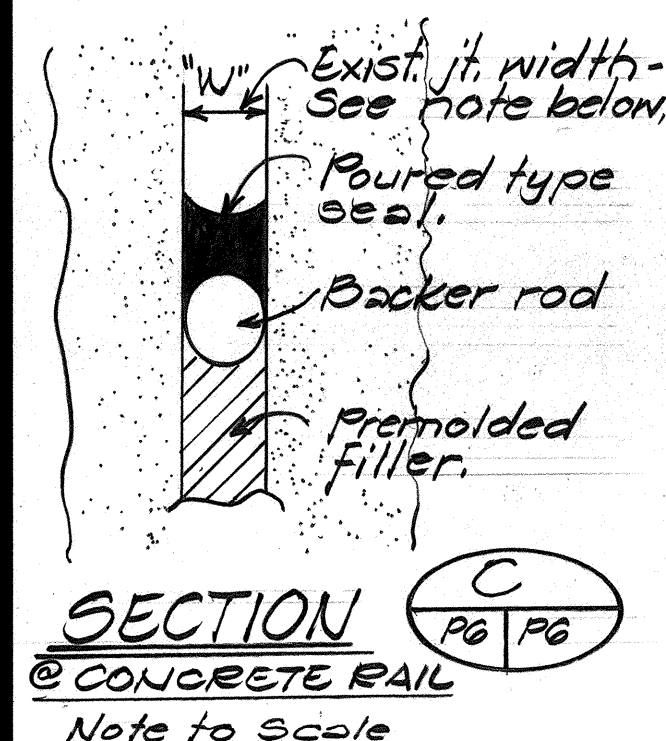
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKALE STREAM BRIDGE
REPLACEMENT OF BRIDGE DECK
JOINT SEALS
INTERSTATE ROUTE H-1 RESURFACING
Kunia I.C. to Waiawa I.C.
F.A.I. Proj. No. IR-HI-1 (181)
Scale: As Noted Date: July 1985
SHEET No. P5 OF 10 SHEETS

DESIGNED BY	DATE
CHECKED BY	DATE
NOTED BY	DATE
APPROVED BY	DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1R-HI-1(181)	1986	28	67



TYPICAL SECTION AT JOINT SEAL
Scale: 3/4" = 1'-0"



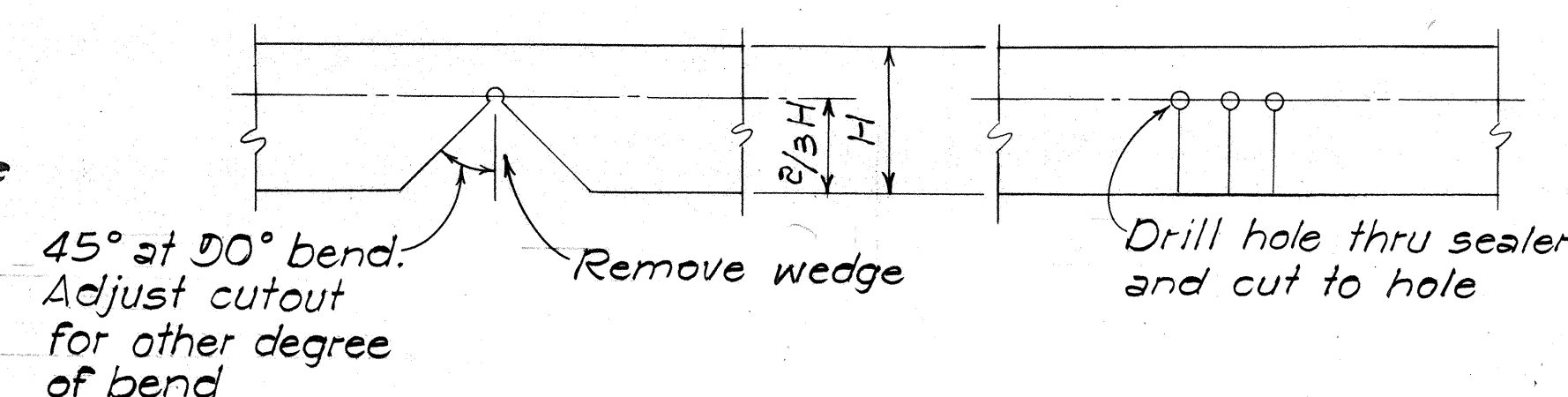
SECTION A
PG PG
Not to Scale

SEAL DETAIL
Not to Scale

NOTE:

"W" - Existing joint width. This width shall also be the installation width of the new preformed joint seal. The new preformed joint seal size shall be determined by this installation width as recommended by the manufacturer and shall be approved by the Engineer. This width "W" shall be saw cut, if required, as approved by the Engineer.

"D" - Groove depth as recommended by the manufacturer. This depth shall be obtained by saw cutting, as required.



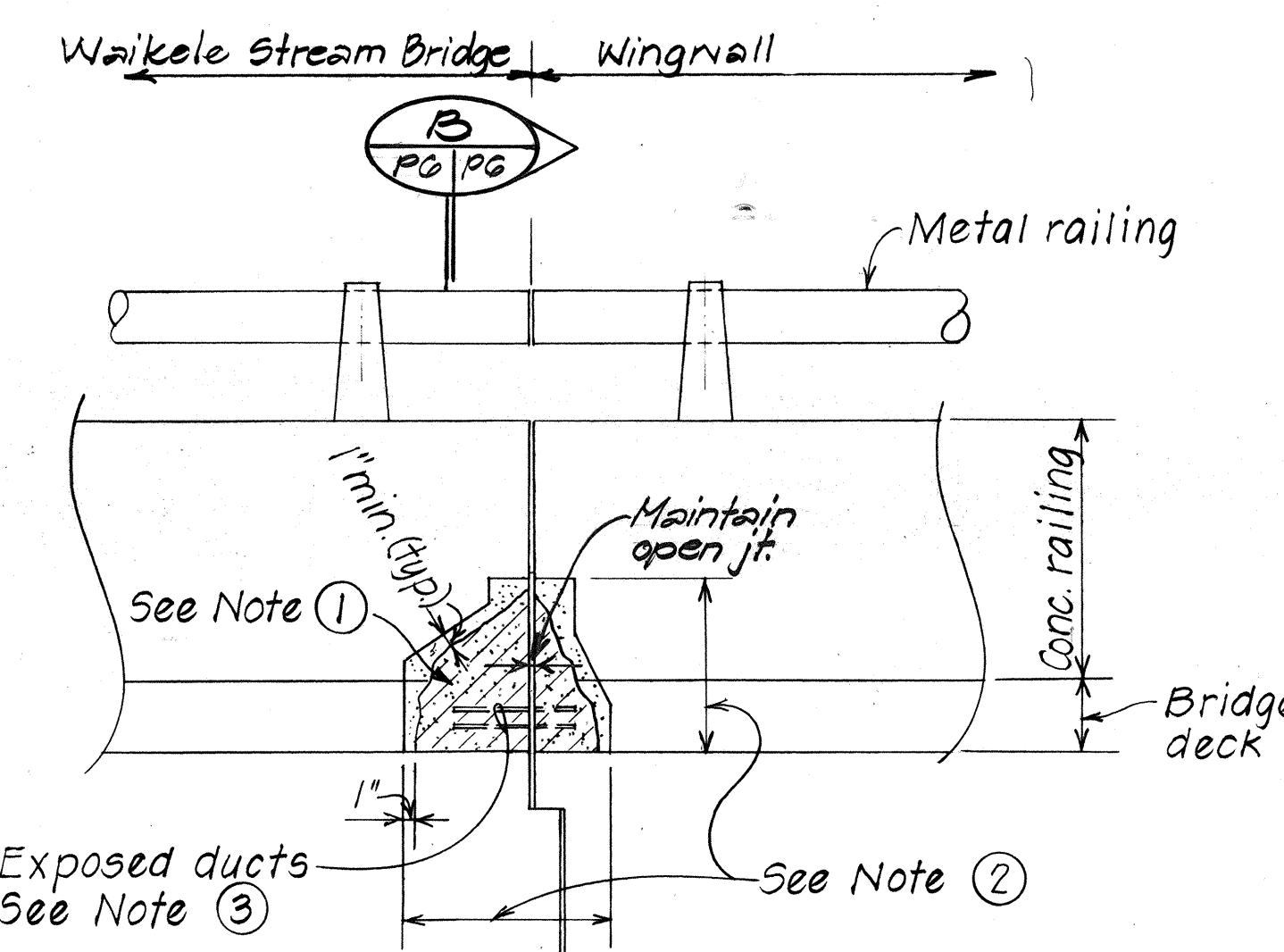
DOWNTURN **UPTURN**
DETAIL OF SEAL AT BEND
Not to Scale

NOTES:

1. Maintenance of Traffic and Traffic Control - See Subsection 104.04 of the Standard Specifications and Section 645 of the Special Provisions.
2. Saw cutting of concrete shall be incidental to joint seal & will not be paid for separately.

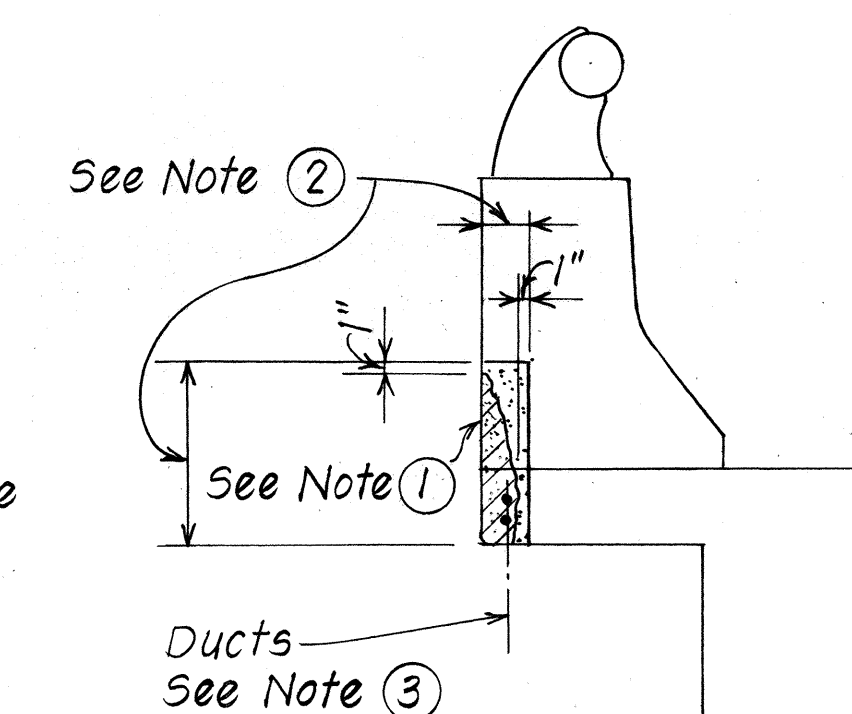
SYMBOLS

= Denotes repair work of existing bridge structure.



ELEVATION

BRIDGE REPAIR DETAILS
Scale: 3/4" = 1'-0"



SECTION B
PG PG
SECTION X
PG PG

NOTE:

- ① Hatched area denotes approximate damaged area from which loose or unsound concrete to be removed.
- ② Limits of concrete removal and concrete patch. (Approx. 2.0 sq. ft.) Apply bonding agent immediately before placing epoxy mortar. Finish to match existing surfaces.
- ③ Care shall be taken as not to damage any existing reinforcement and ducts.

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
WAIKELE STREAM BRIDGE
REPLACEMENT OF JOINT SEALS
AND BRIDGE REPAIR DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Kunia I.C. to Waiawa I.C.
F.A.I. Proj. No. IR-HI-1 (181)
Scale: As Noted Date: July 1985
SHEET NO. PG OF 10 SHEETS

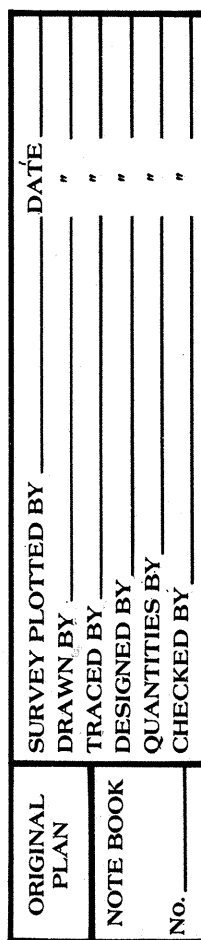
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE NO. 414

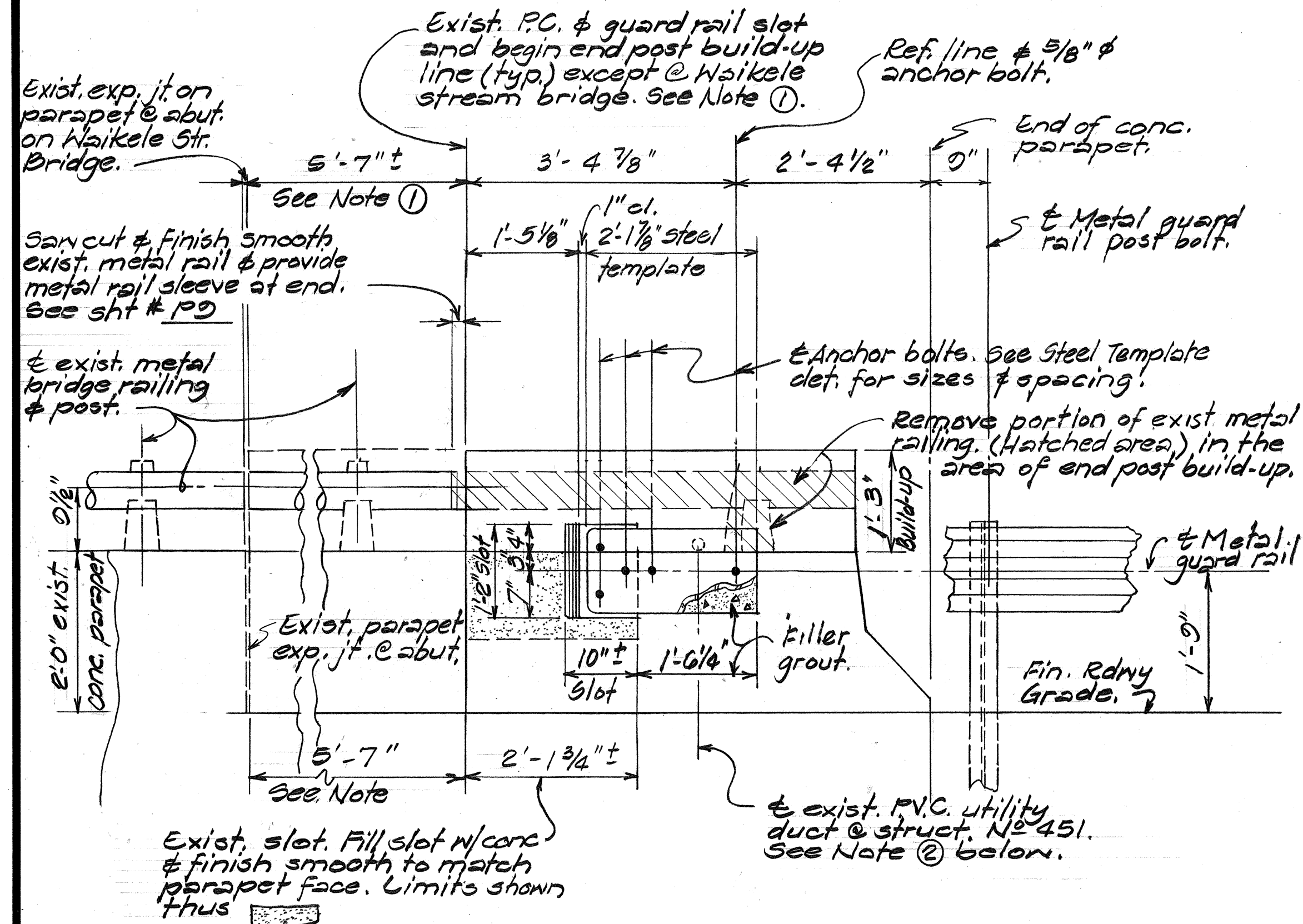
PARTIAL REPLACEMENT OF EXISTING
CONCRETE MEDIAN BARRIER DETAILS
INTERSTATE ROUTE H-1 RESURFACING
KUNIA I.C. TO WAIKANA I.C.
F.A.I. Proj. No. IR-HI-1 (181)

Scale: As Noted Date: July 1985

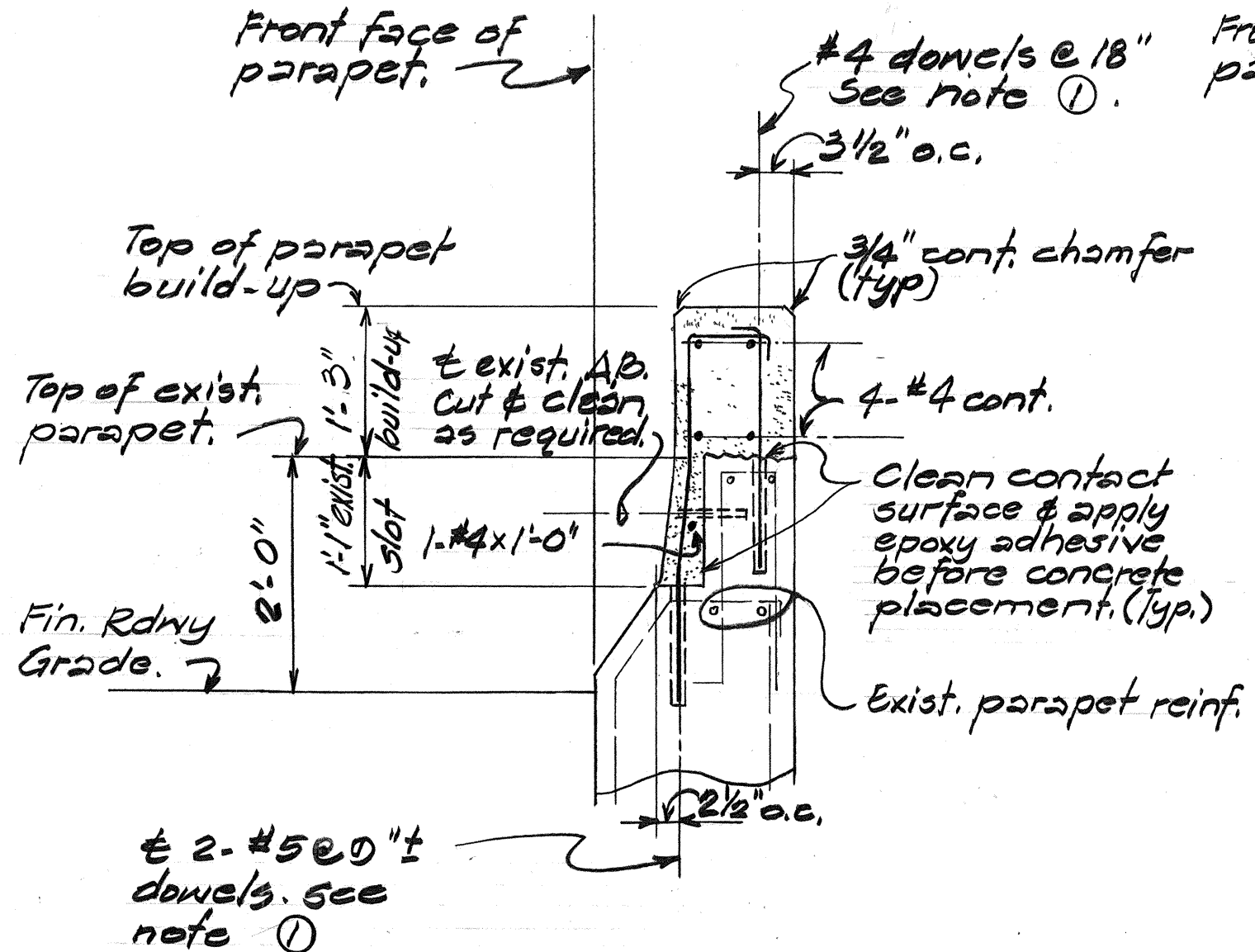
SHEET NO. P70 OF 10 SHEETS



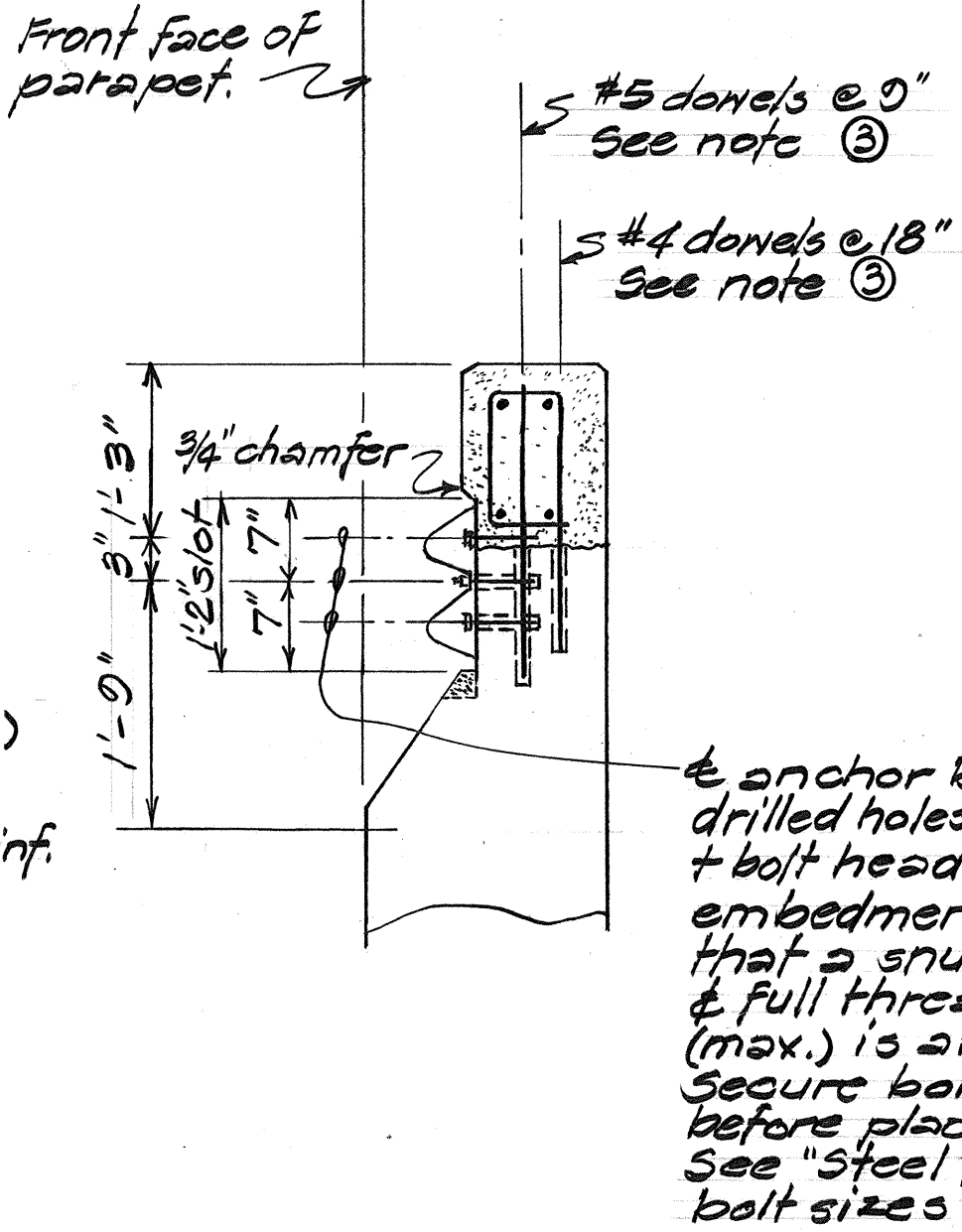
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(181)	1986	30	67



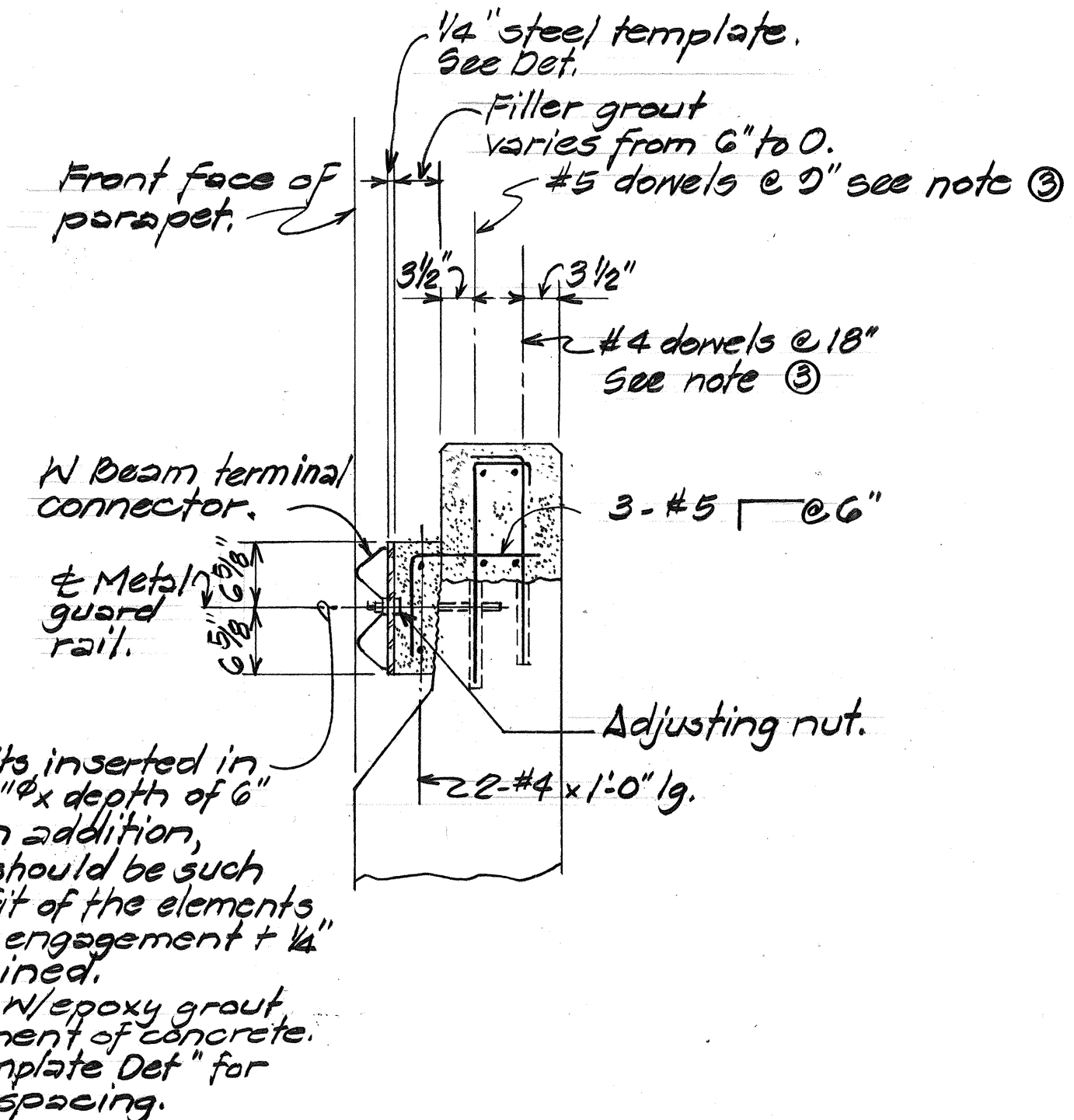
ELEVATION
Scale: 3/4" = 1'-0"



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



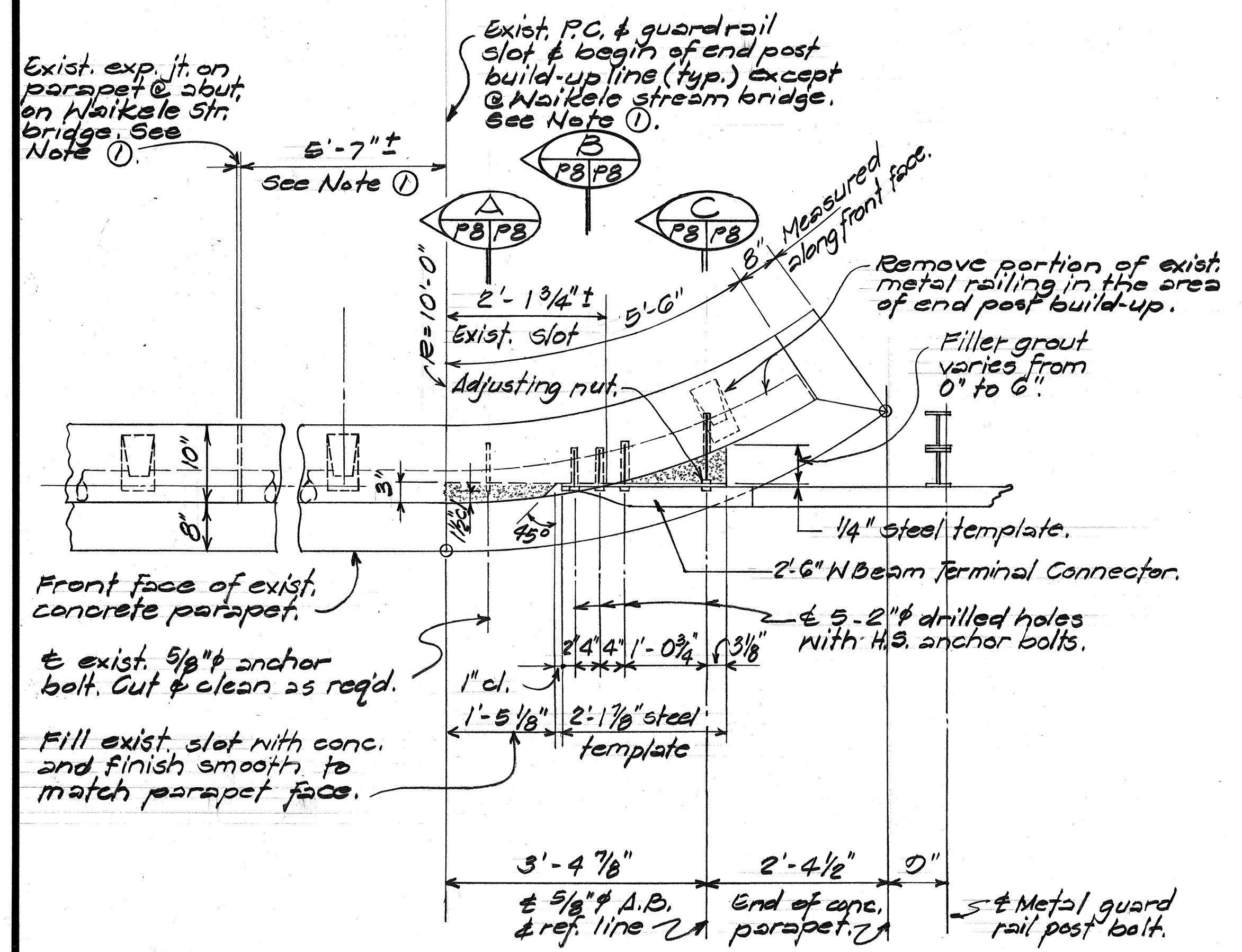
SECTION B
Scale: 3/4" = 1'-0"



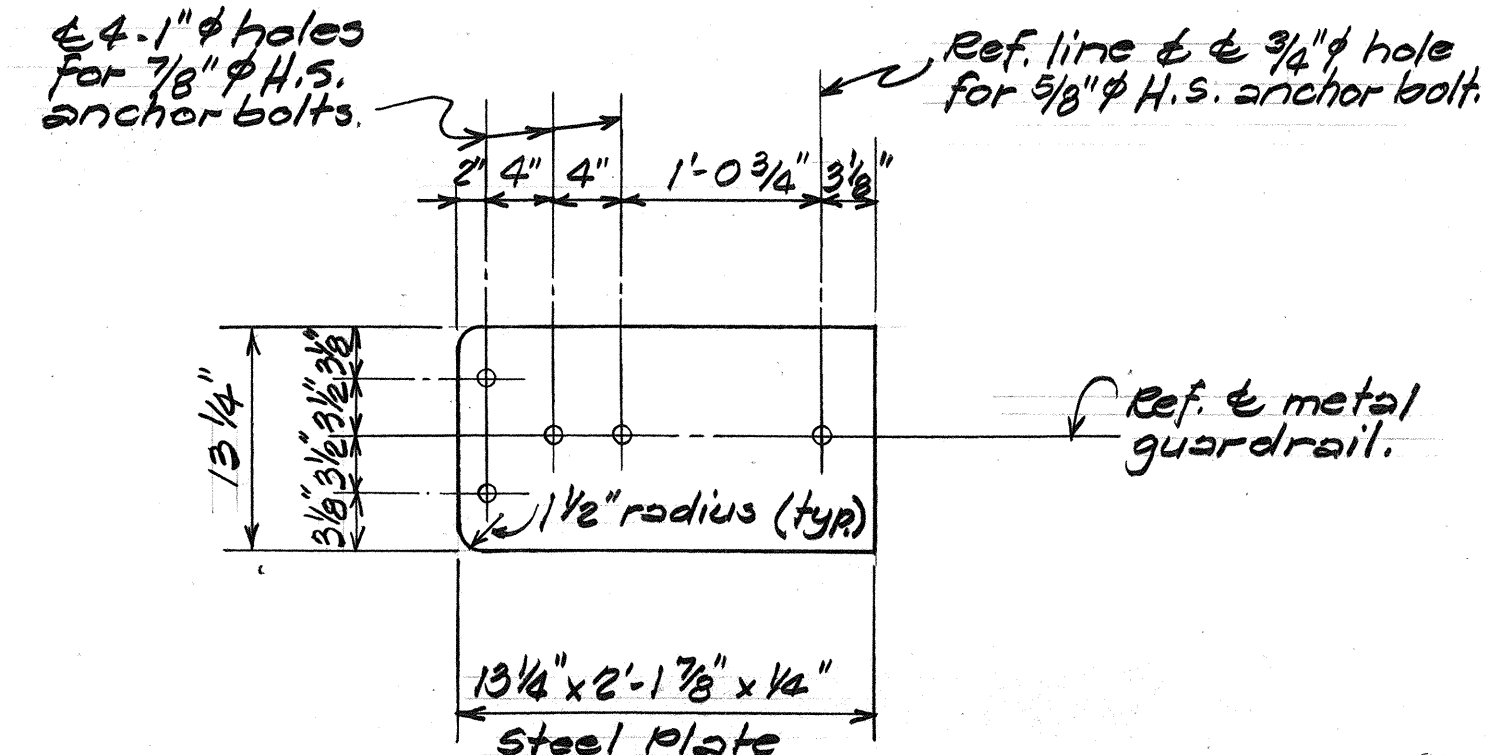
SECTION C
Scale: 3/4" = 1'-0"

NOTE:

- ① Begin end post build-up typically at P.C. of end post, except that at the trailing ends of I.B. structure, left, and O.B. structure, approach end left and trailing end right, of Waikale Stream Bridge, begin at the existing expansion joint on parapet at abutment.
- ② Reroute existing highway lighting duct at the left approach end of the I.B. structure of Structure No. 451, as directed by the Engineer. To be paid on a lump-sum basis, linear foot basis.
- ③ #5 & #4 dowels shall be secured with epoxy in 7/8" x 10" and 3/4" x 8" deep drilled holes respectively.
- ④ End post build-up will not be measured for payment separately, but shall be incidental to Type A Guardrail Connection.



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



STEEL TEMPLATE DETAIL
Scale: 1" = 1'-0"

TYPICAL TYPE A GUARDRAIL CONNECTION AND END POST BUILD-UP DETAILS Scale: As Noted

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE A GUARDRAIL CONNECTION AND END POST BUILD-UP DETAILS

INTERSTATE ROUTE H-1 RESURFACING
Kunia I.C. to Waialae I.C.
F.A.I. Proj. No. IR-HI-1(181)

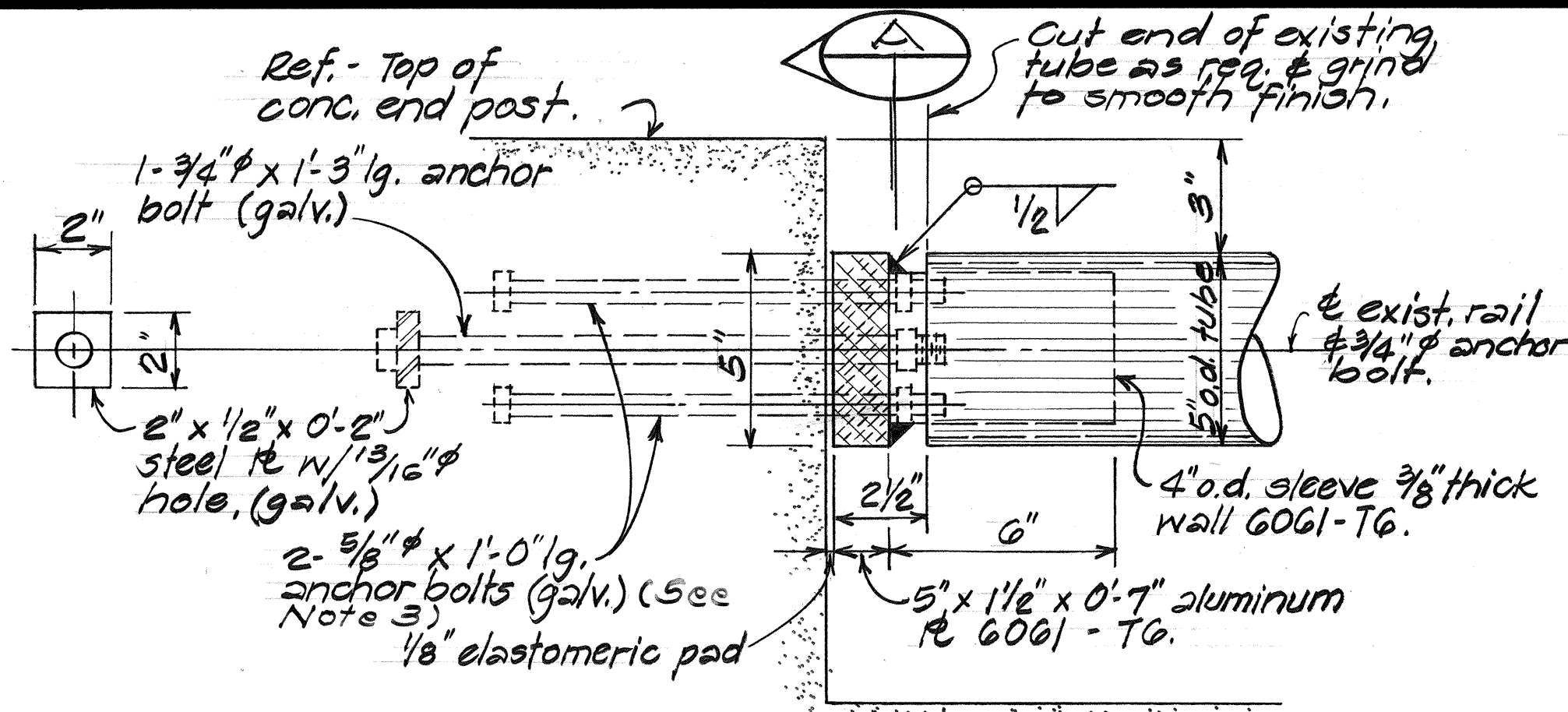
Scale: As Noted Date: July 1986

SHEET No. P8 OF 10 SHEETS

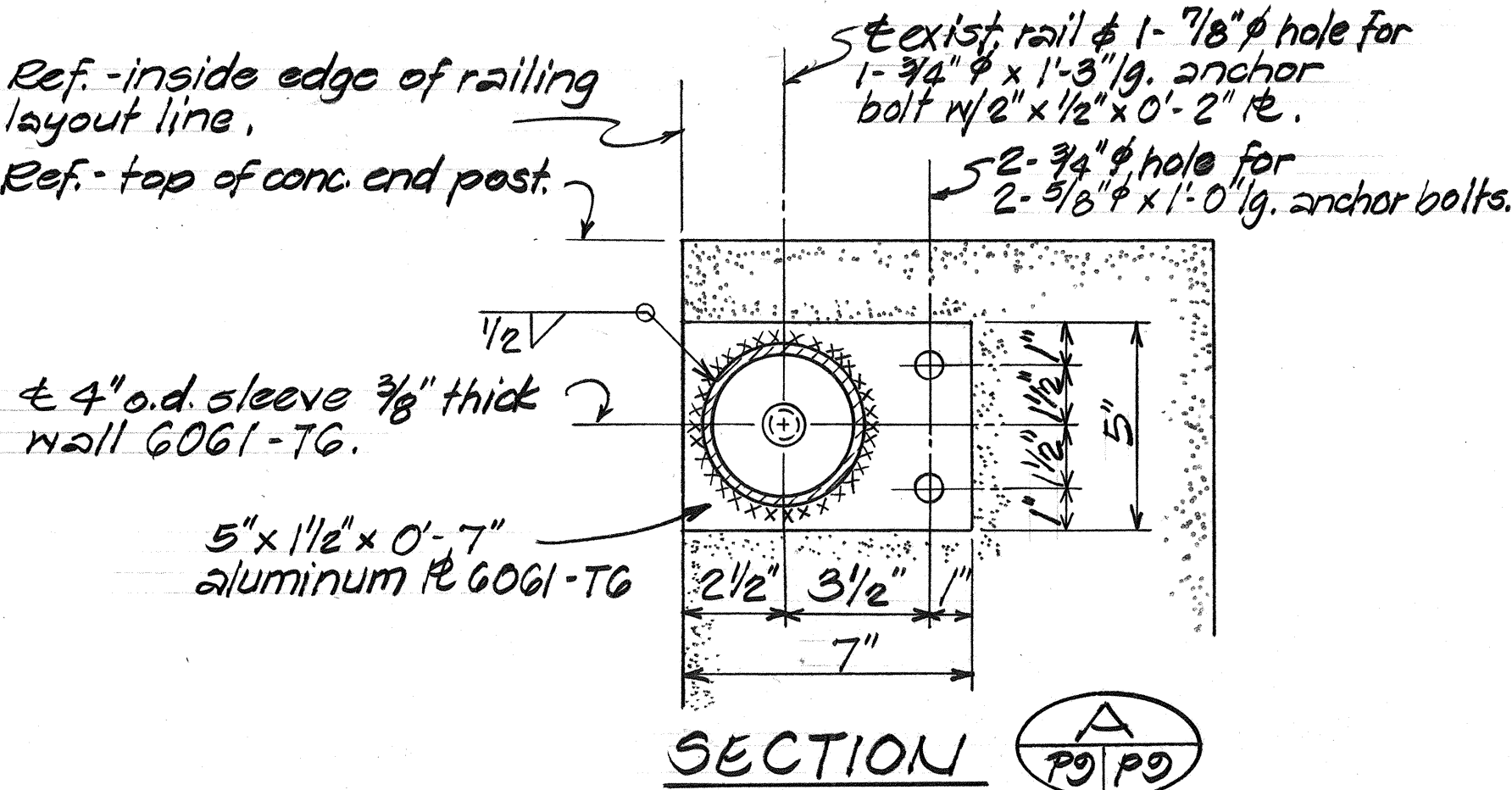
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(181)	1986	31	67

RAILING NOTES:

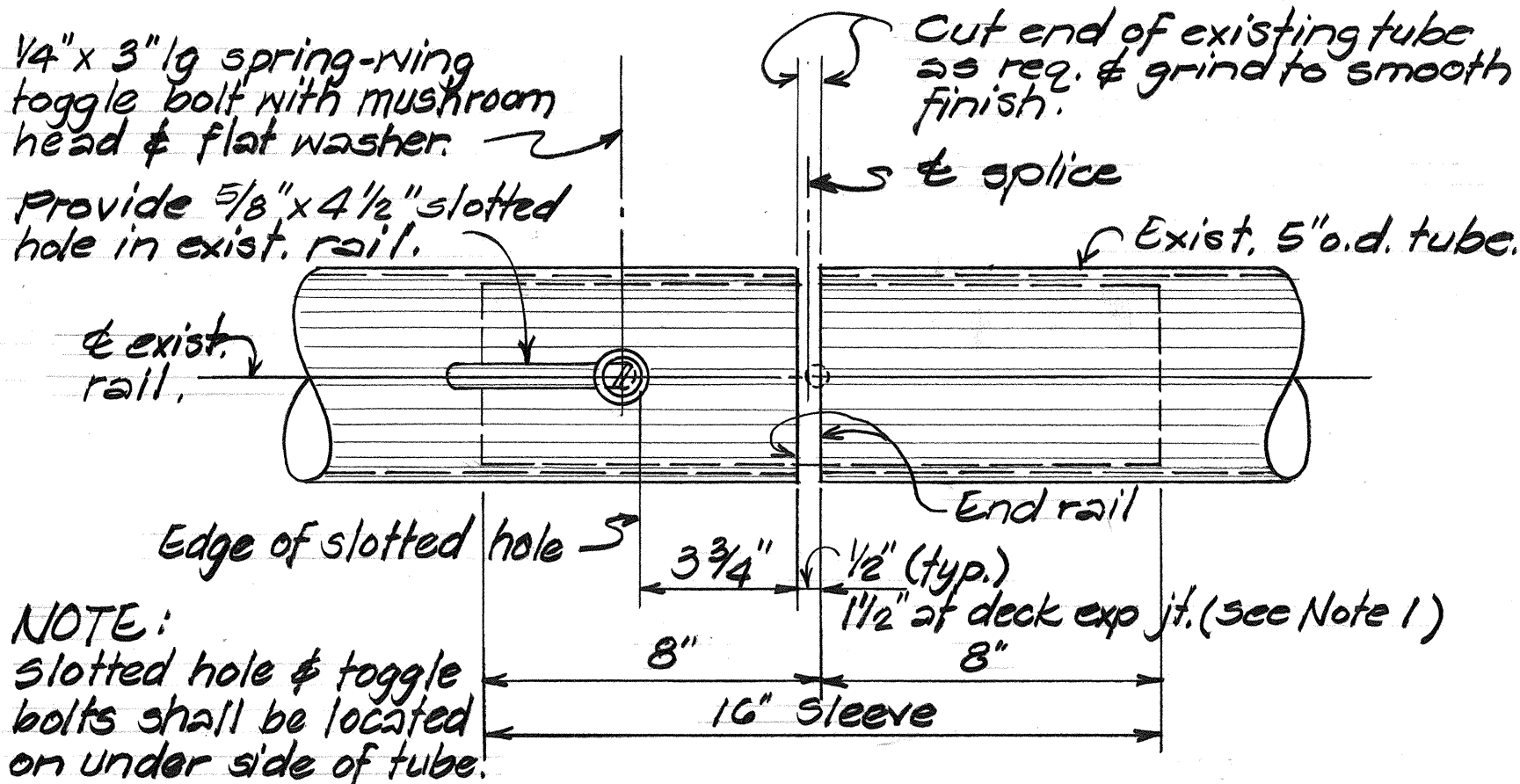
1. Rail splice shall be located in the tube spanning deck joints. Increase joint width in tube to 1 1/2" and increase sleeve length accordingly.
2. Anchor bolts shall be embedded such that the threads are excluded from the shear plane and approximately 2 threads are exposed above the nut.
3. (C.C.O. No. 4)
For Structure Numbers 5, 6, 13, 14, 15 and 16, the anchor bolts were retrofitted into the existing concrete end posts using expansion bolts. Payment was made on a lump sum basis.



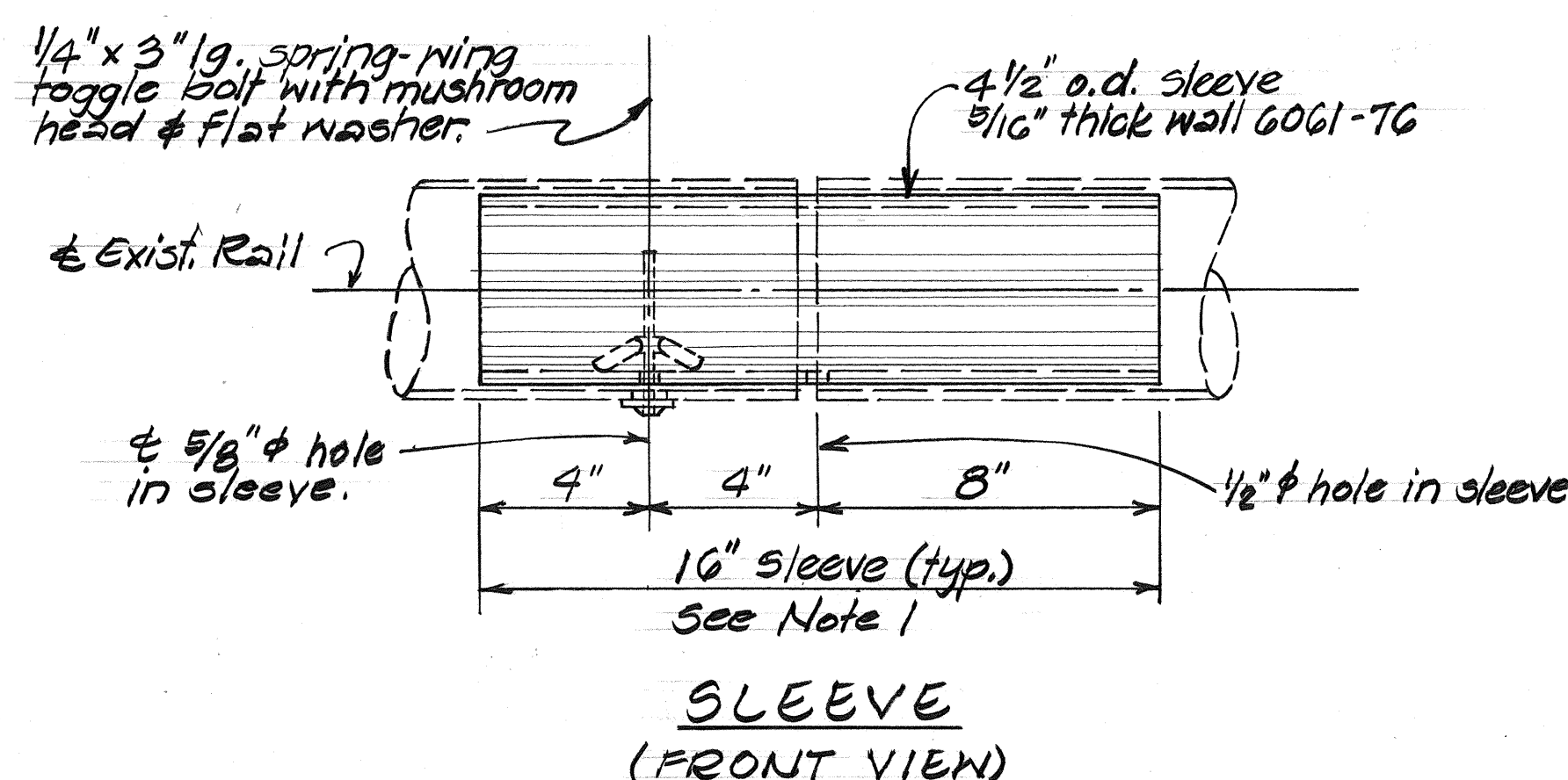
TYPICAL DETAIL



METAL RAIL SLEEVE AT END Scale: 3"=1'-0"



ELEVATION



TUBE SPLICE DETAIL Scale: 3"=1'-0"

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
NO.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

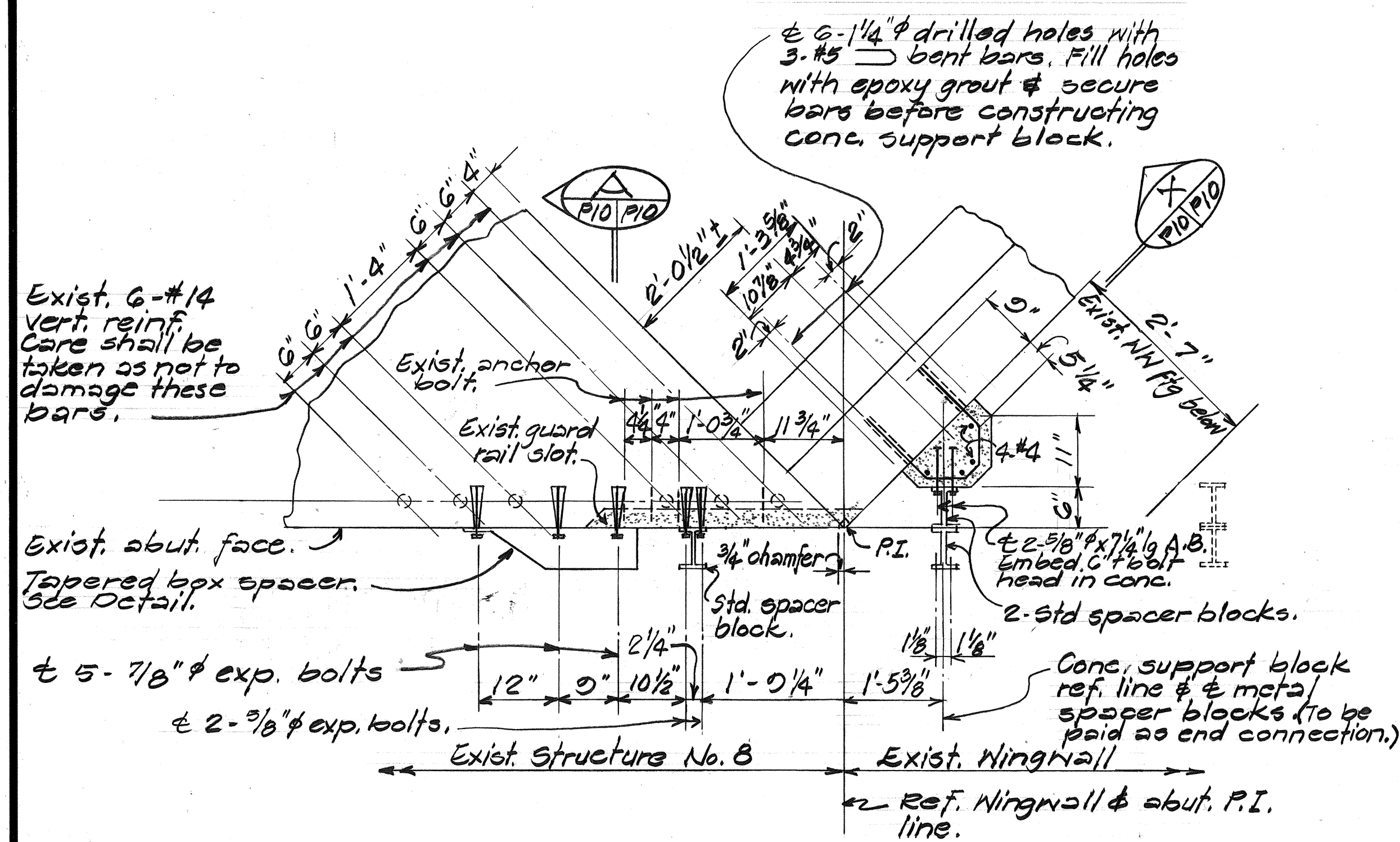
METAL RAIL SLEEVE AT END
TUBE SPLICE DETAIL

INTERSTATE ROUTE H-1 RESURFACING
KUHIA I.C. to WAIALAE I.C.
F.A.I. Proj. No. IR-HI-1(181)

Scale: As Noted Date: July 1985

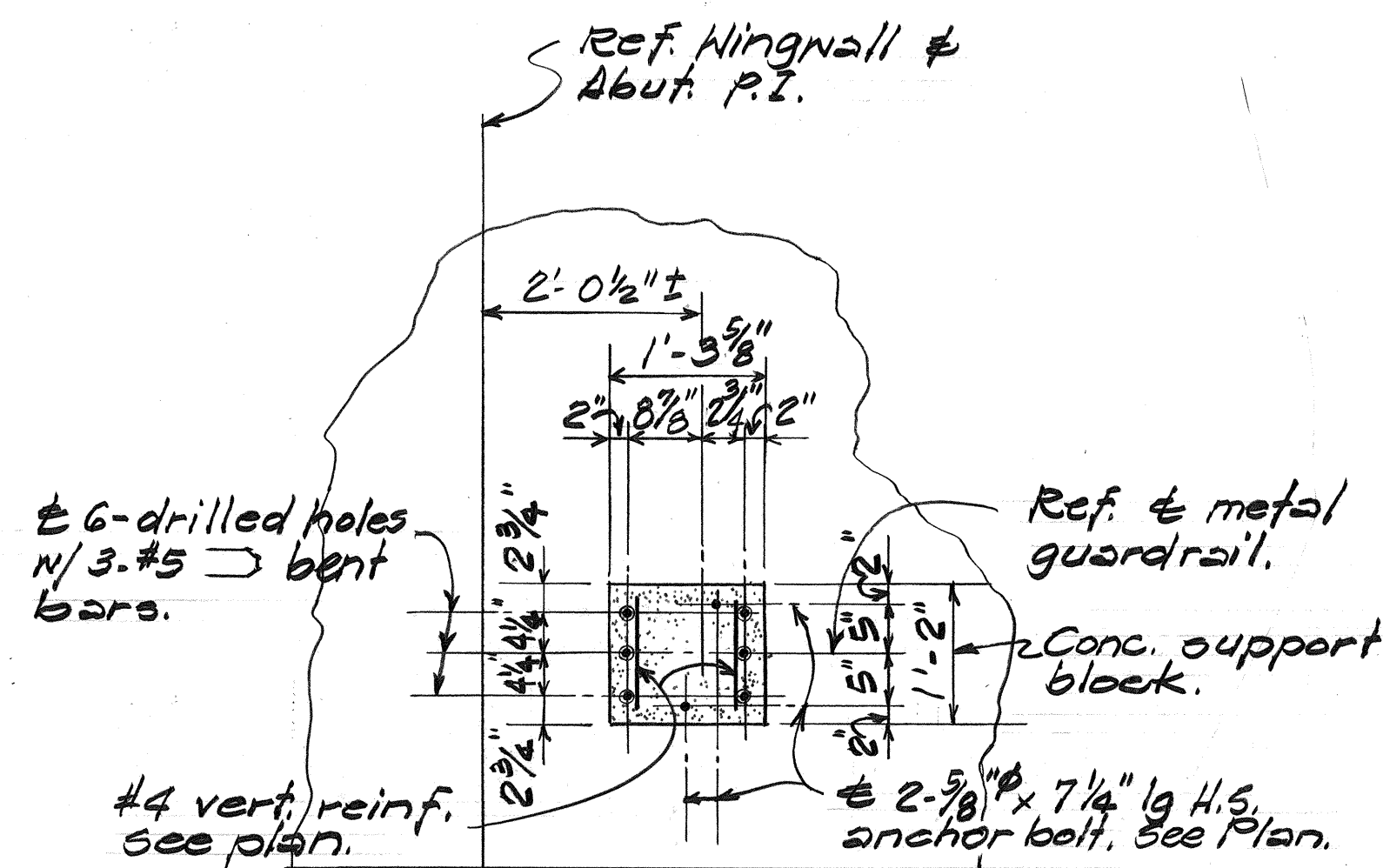
SHEET NO. 31 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	12-HI-1(181)	1986	32	67



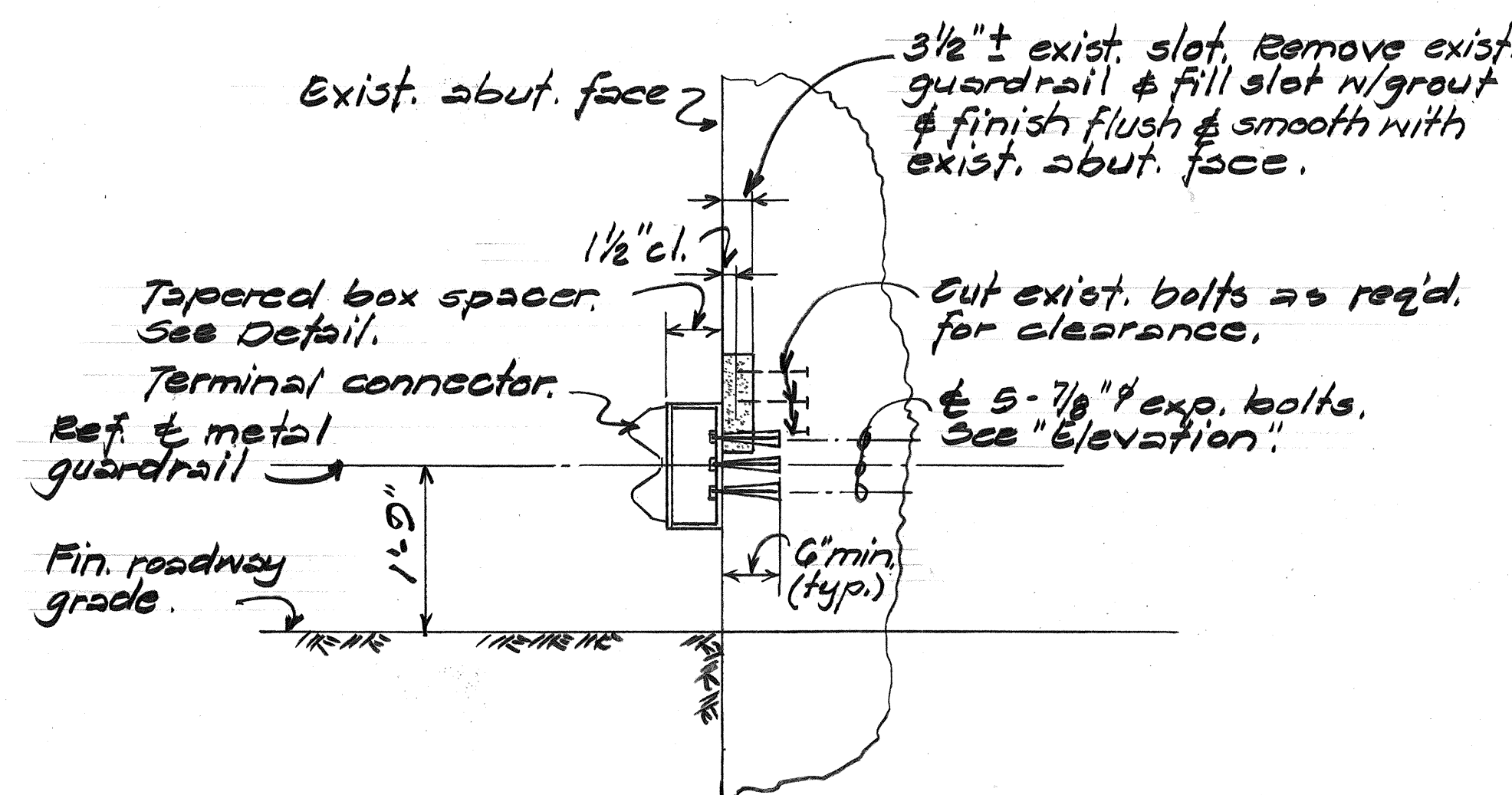
PLAN

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



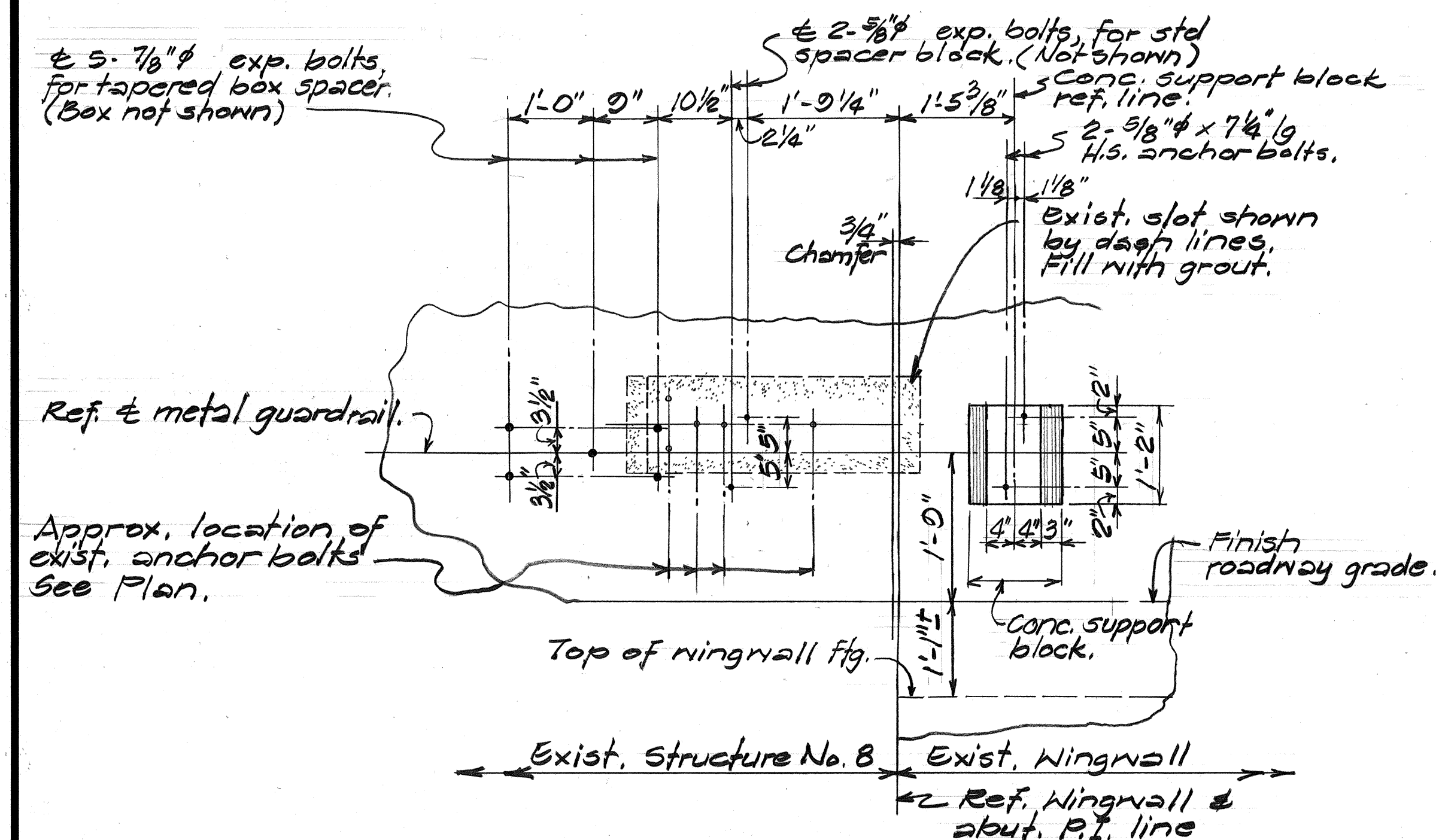
SECTION

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



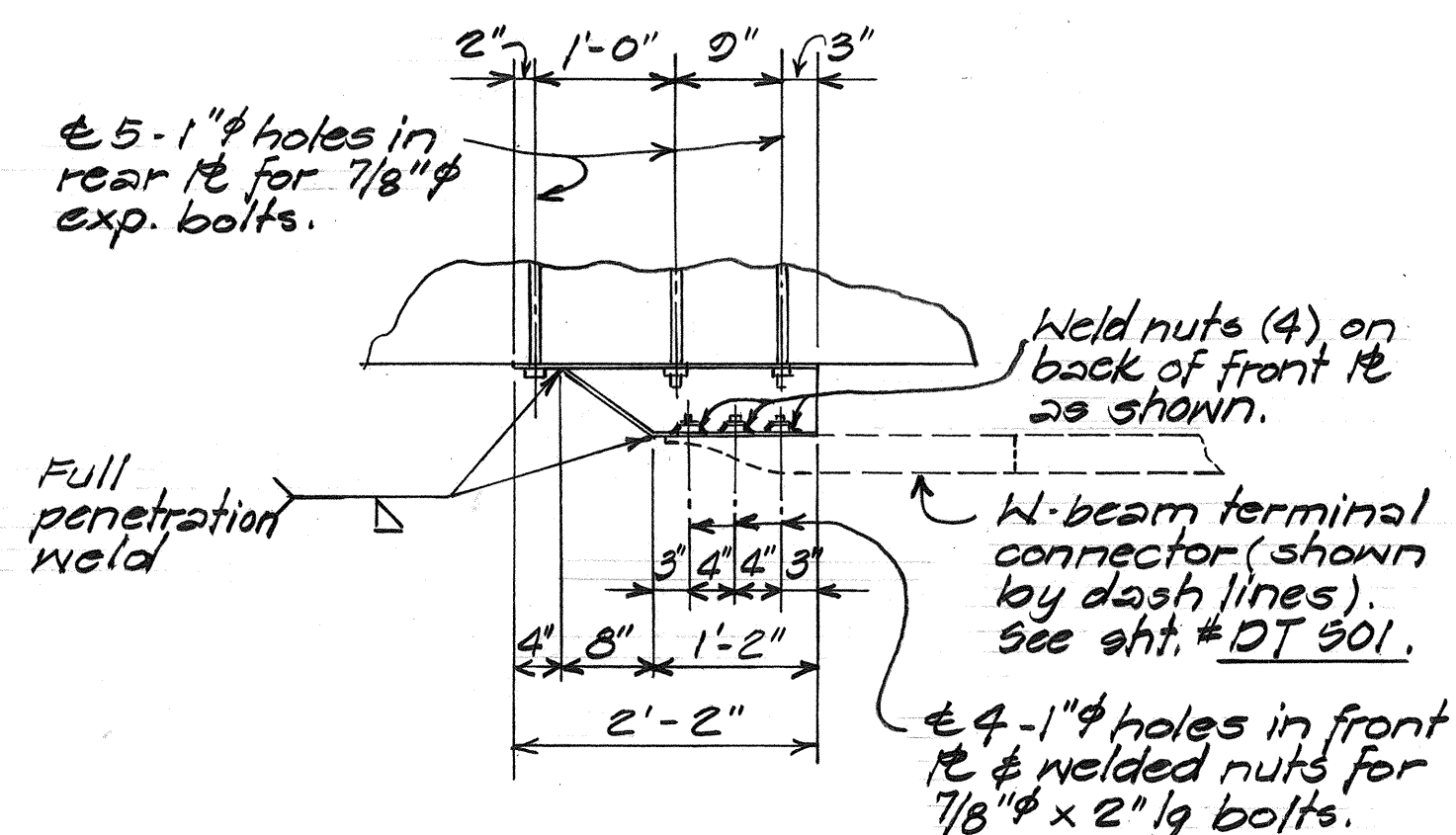
SECTION

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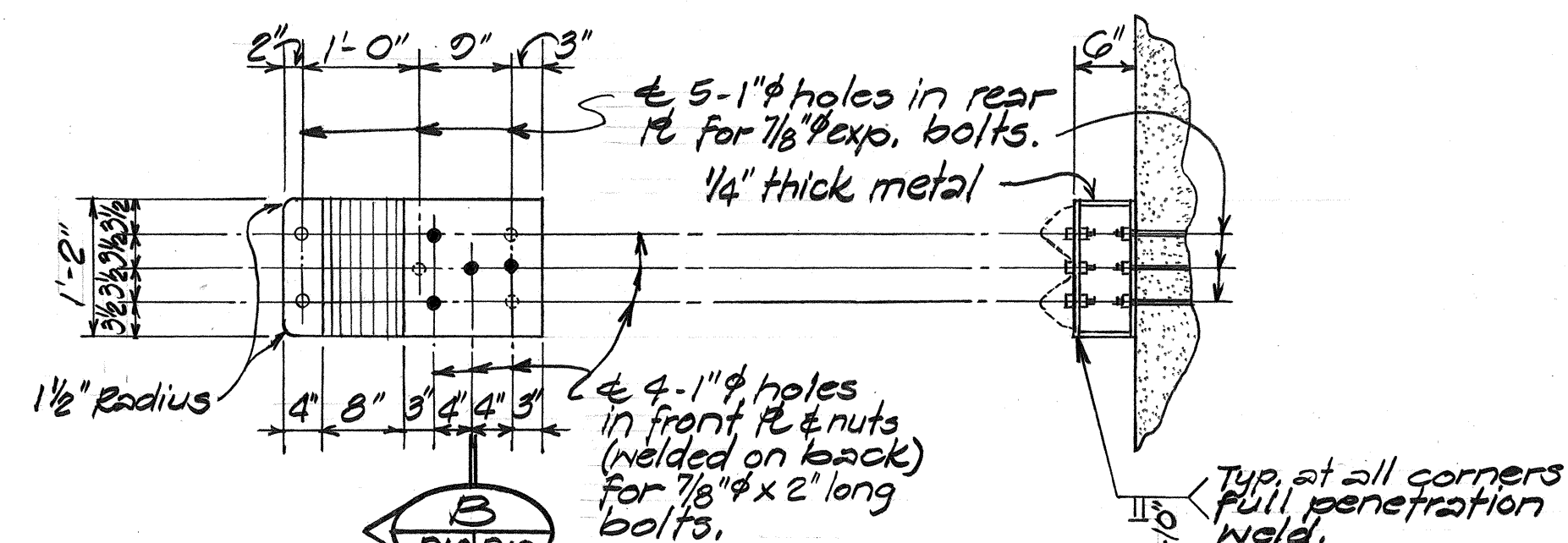


ELEVATION

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



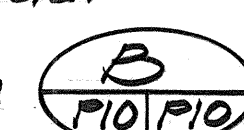
PLAN



ELEVATION

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

SECTION



TYPE "X" CONNECTION AT EXISTING STRUCTURE NO 8

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

TYPICAL TAPERED BOX SPACER DETAILS

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
TYPE "X" CONNECTION DETAILS
AND
TYP. TAPERED BOX SPACER DET.
INTERSTATE ROUTE H-1 RESURFACING KUNIA I.C. TO WAIKANA I.C. F.A.I. Proj. No. IR-HI-1 (181)
Scale: As Noted Date: July 1985
SHEET No. P10 OF 10 SHEETS