

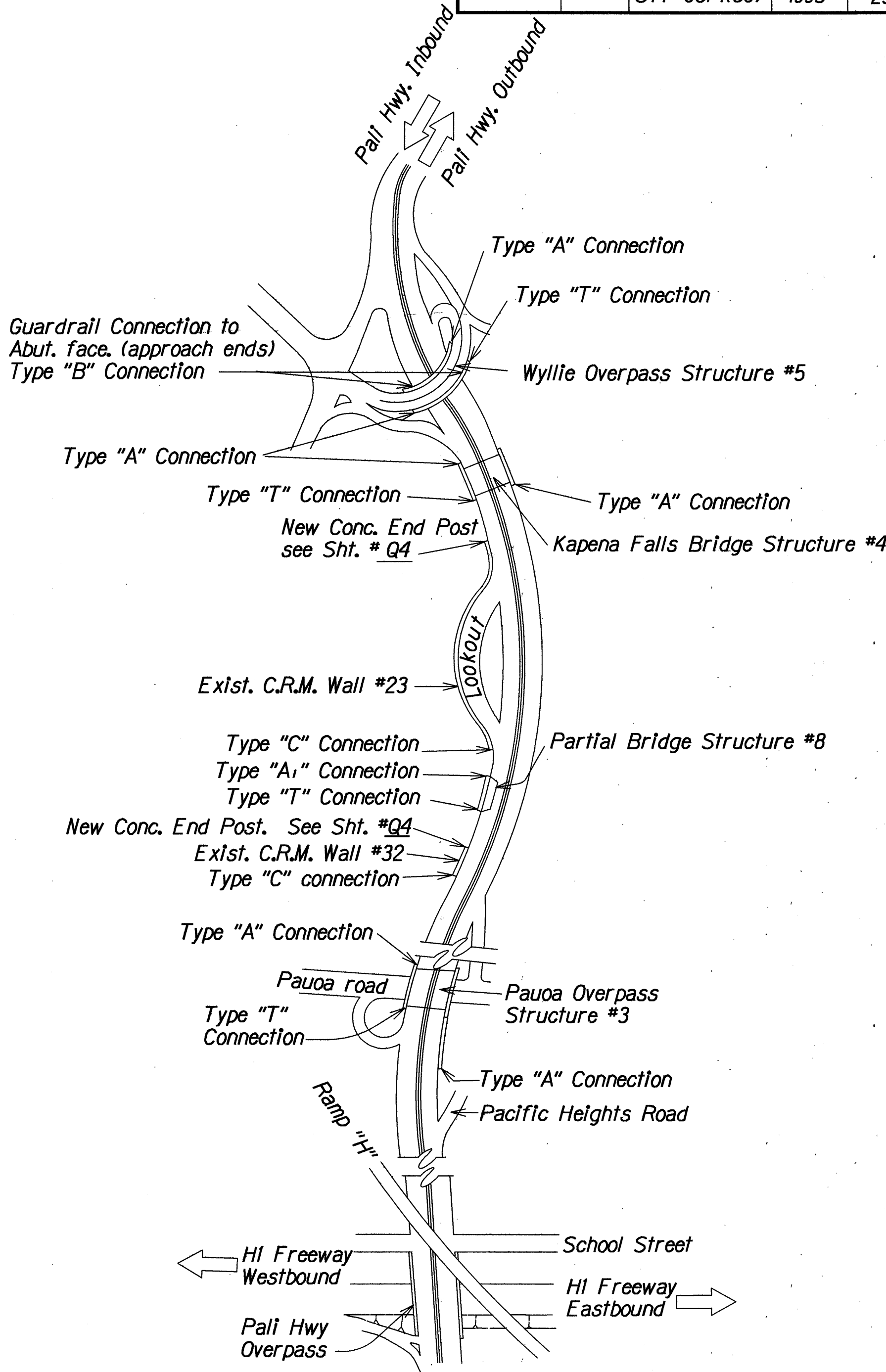
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-(130)	1993	23	41

GENERAL NOTES :

- See Standard Specifications for Road and Bridge Construction (Hawaii 1985) and Special Provisions.
- See State of Hawaii, D.O.T. Standard Plans, Sht. # TE-50 & TE-51 for metal guardrail and "Terminal Connector" details.
- All anchor bolts shall be high strength bolts conforming to the requirements of ASTM A 325.
- "Terminal Connector" shall be fabricated from 10 gauge steel conforming to the requirements of AASHTO M 180.
- All anchor bolts, cap PLs, nuts and washers shall be hot-dip galvanized.
- Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus 1/4" is attained.
- Large Impacting or vibratory type of equipment will not be permitted in the removal operation of the designated items nor for drilling of holes.
- Drilling of thru holes shall be done in such a manner that will prevent cone puncturing of the daylighting end.
- Any damage to existing structures due to the Contractor's operation shall be repaired at his expense, to the satisfaction of the Engineer.
- The Contractor shall verify all the dimensions in the field before commencing with work.
- The Contractor shall verify the location of all existing utility lines near structures and notify their respective owners before commencing with work.
- Contract items will be paid for in units indicated in the Estimated Quantities.

ESTIMATED QUANTITIES

ITEM No.	ITEM	UNIT	QUANTITY
606.8010	Type "A" Guardrail Connection	Ea.	6
606.8020	Type "A <sub>1</sub> " Guardrail Connection	Ea.	1
606.8030	Type "B" Guardrail Connection	Ea.	2
606.8040	Type "C" Guardrail Connection	Ea.	2
606.8050	Type "T" Guardrail Connection	Ea.	4
606.8060	New Concrete End Post with Guardrail Connection	Ea.	2



WORK SITE PLAN  
Not to scale

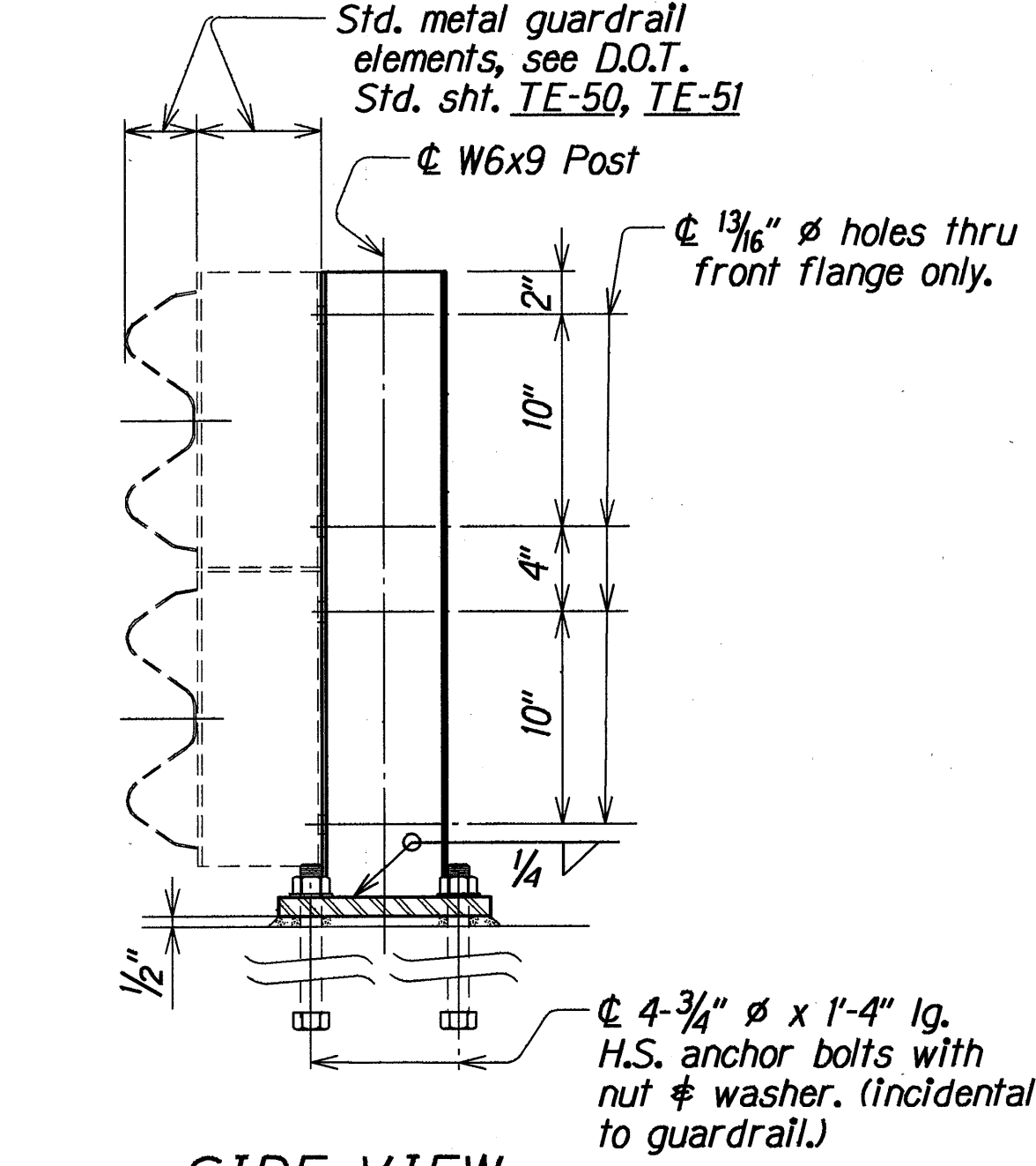
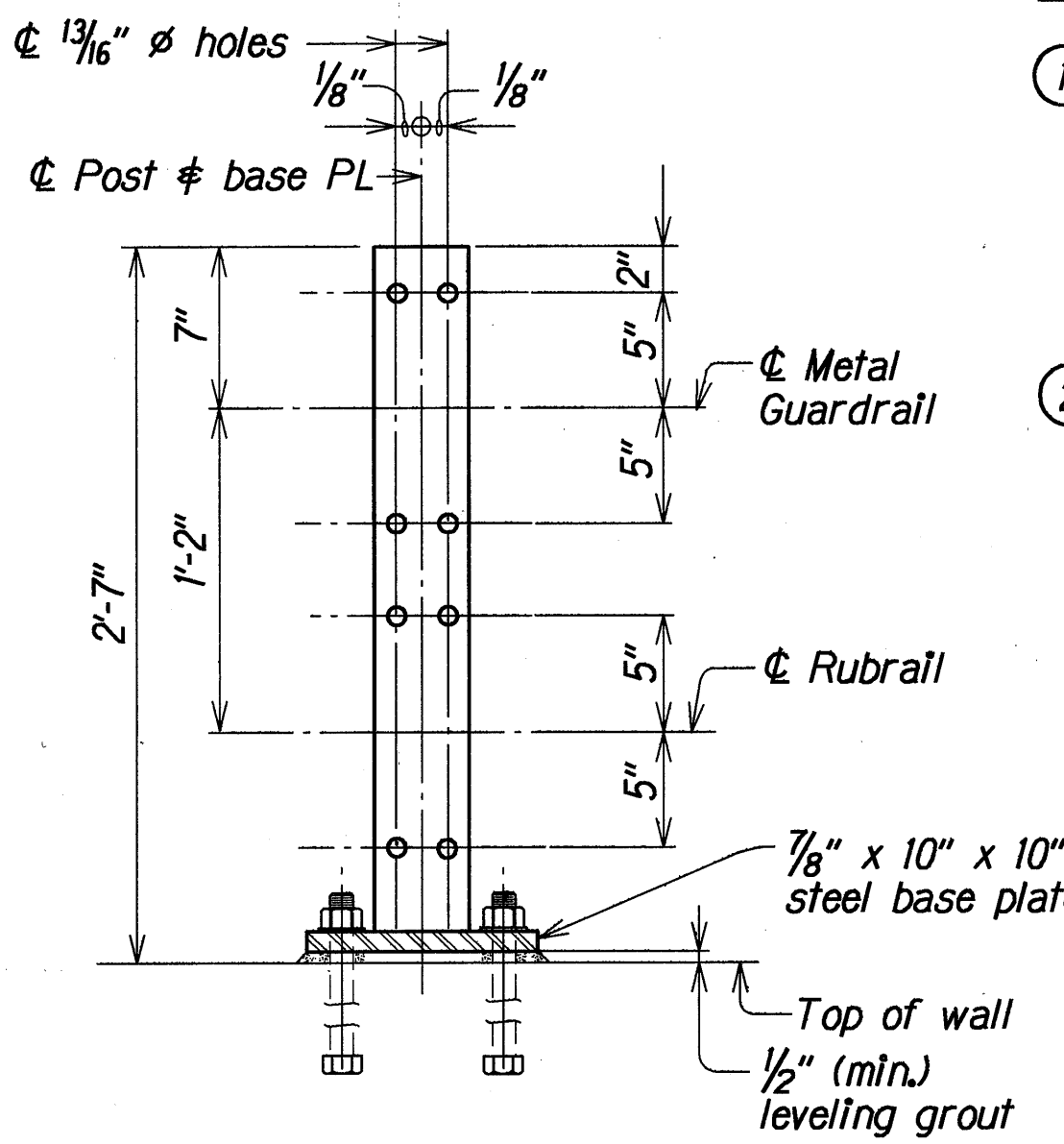
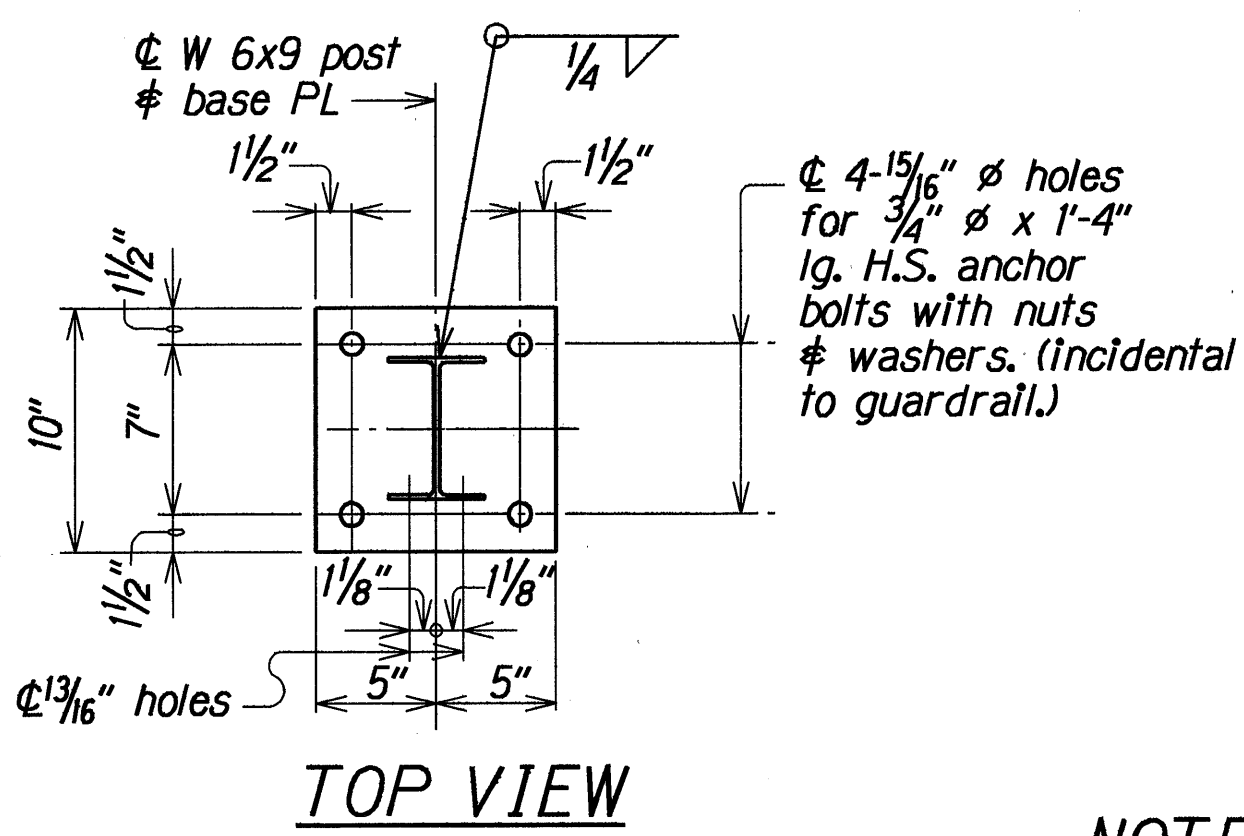
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	10/1/93
DESIGNED BY	TRACED BY	10/1/93
QUANTITIES BY	CHECKED BY	10/1/93
NO.		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL CONNECTION DETAILS**  
GENERAL NOTES, ESTIMATED QUANTITIES  
AND WORK SITE PLAN  
PALI HIGHWAY RESURFACING  
VINEYARD BOULEVARD TO COUNTRY CLUB ROAD  
F.A. Project No. STP-061-(130)

Scale: As Noted  
Date: April, 1993

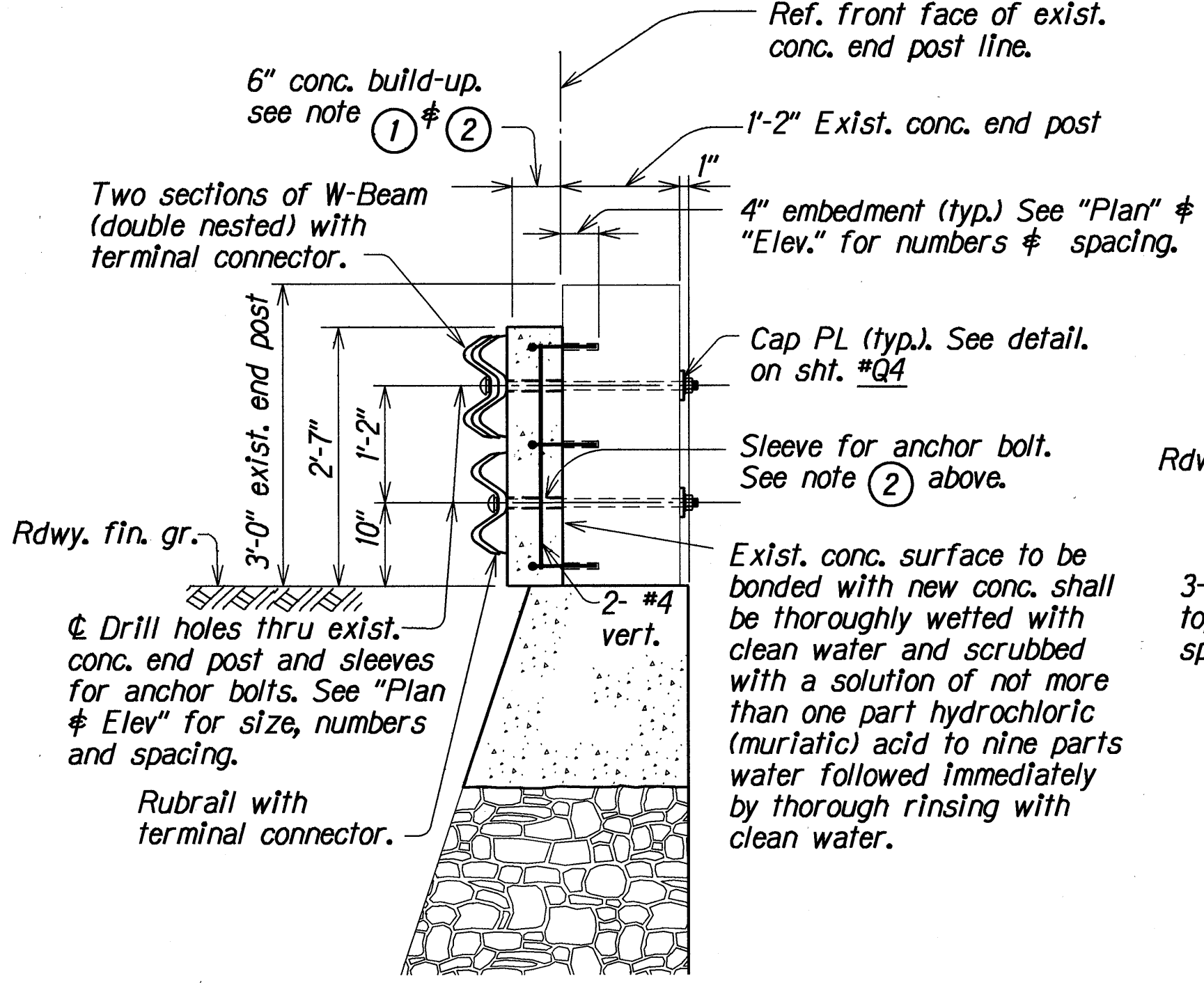
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-1(30)	1993	24	41



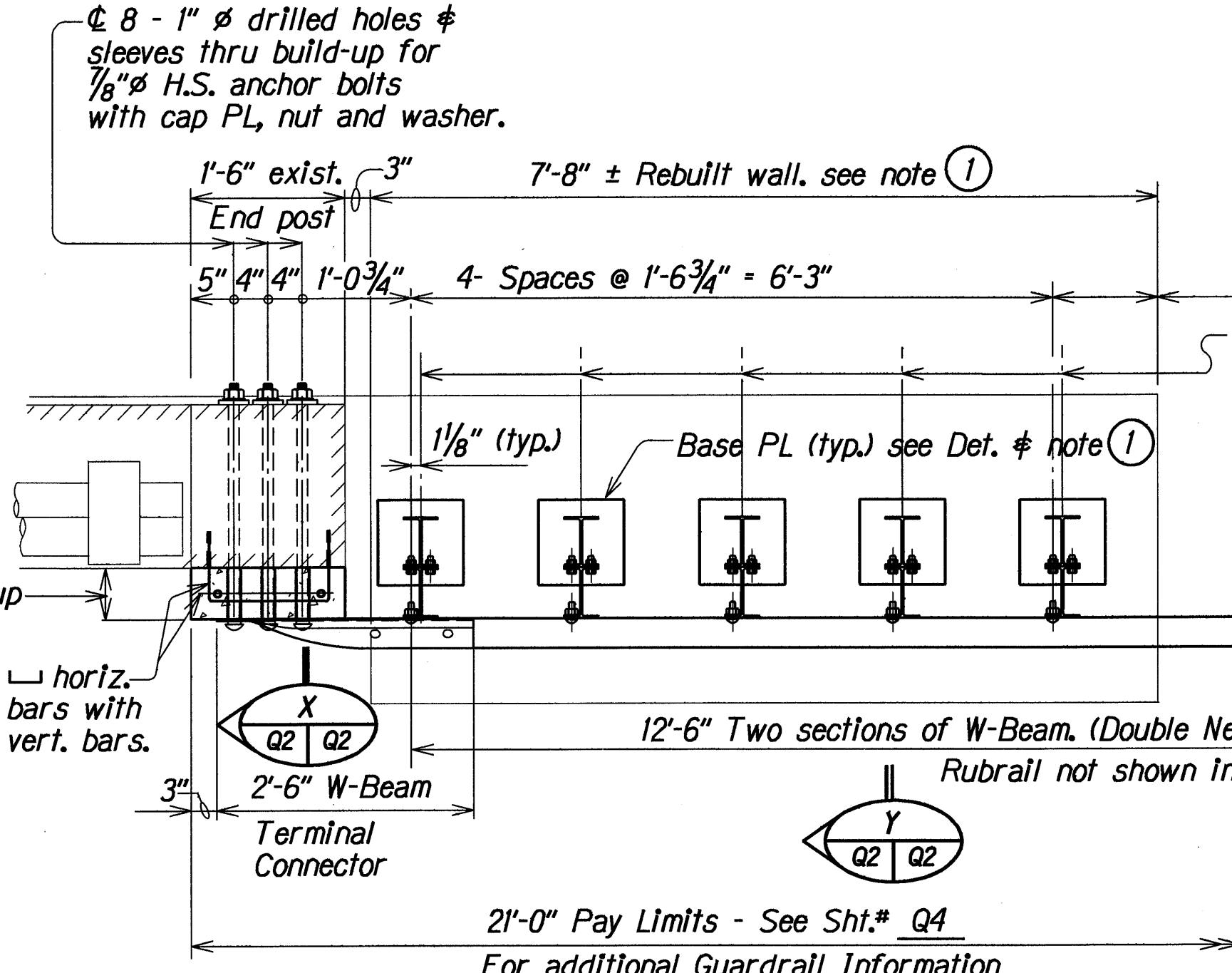
**GUARDRAIL POST ON BASE PLATE DETAIL**  
(Hot-dip galvanize after fabrication.)  
Scale : 1 1/2" = 1'-0"

**NOTE:**

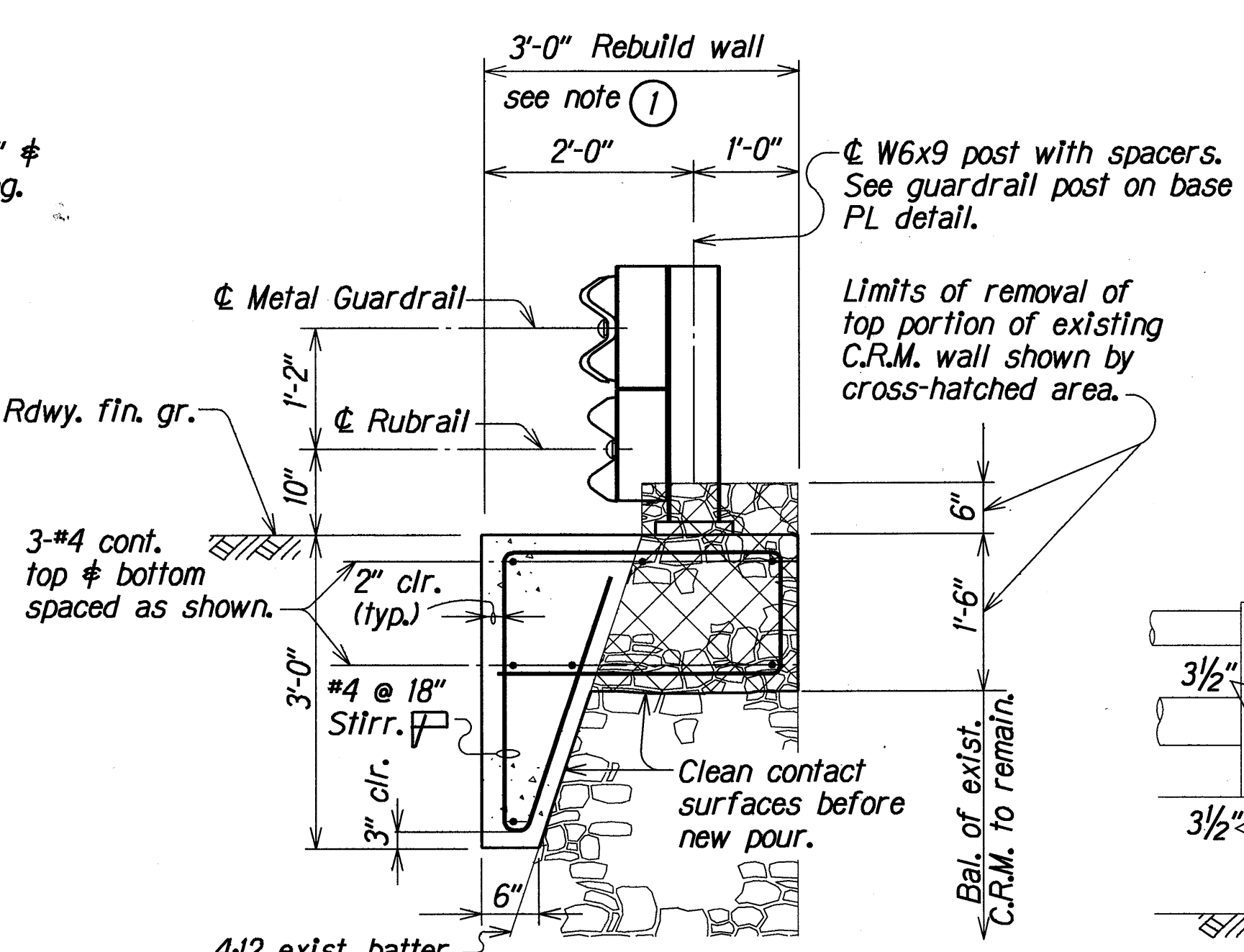
- ① Type (A) Guardrail Connection similar to Type (A) Guardrail Connection except omit 7'-8" ± rebuilt wall with guardrail post on base plate and 6" conc. build-up at existing end post. See *sht. #Q4* for additional information.
- ② At Type (A) Connection only. Provide sleeve for anchor bolts thru 6" concrete build-up area. Inside diameter of sleeve shall be the same as that of the adjoining hole. Cut sleeve ends to match flush with abutting face.



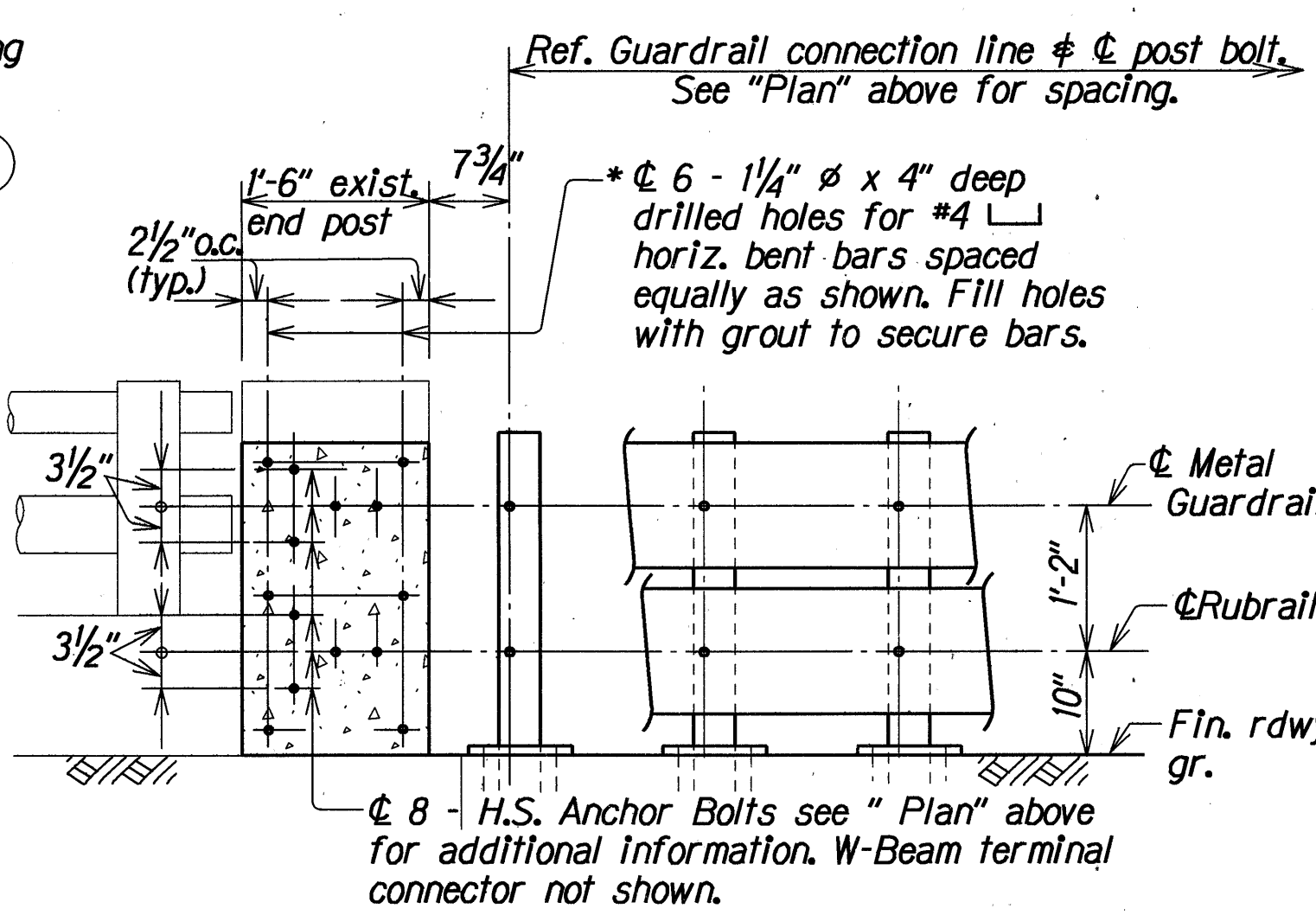
**SECTION X**  
Q2 Q2



**PLAN**



**SECTION Y**  
Q2 Q2



**ELEVATION**

**TYPE (A) METAL GUARDRAIL CONNECTION DETAIL**  
(TYPE (A) METAL GUARDRAIL CONNECTION SIMILAR EXCEPT AS NOTED OTHERWISE)  
Scale : 3/4" = 1'-0"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL CONNECTION DETAILS**  
TYPE (A), (A), SECTIONS AND BASE PL DETAILS  
PALI HIGHWAY RESURFACING  
VINEYARD BOULEVARD TO COUNTRY CLUB ROAD  
F.A. Project No. STP-061-1(30)

Scale: As Noted  
Date: April, 1993



End of exist. C.R.M. wall.

Exist. C.R.M. Wall #23  $\phi$  32". See "Work Site Plan" on sht. #Q1 for location.

$\phi$  Guardrail post bolt.

5'-0" New conc. Anchor block.

4"  $\pm$  Bal. to be determined in field.

1'-6" 1'-0 3/4" 4" 4" 1'-9 1/4"

Provide sleeve for anchor bolt thru concrete.

1'-6"

May require drilling of hole in guardrail for post bolt.

Metal guardrail

2'-6" W-Bm.

$\phi$  4-1"  $\phi$  holes  $\phi$  7/8"  $\phi$  H.S. anchor bolts with cap PL, nut & washer

Terminal connector

See Hwy. plan for guardrail post spacing and alignment.

Ref. Guardrail Connection Line  $\phi$   $\phi$  3/4"  $\phi$  hole for 5/8"  $\phi$  H.S. anchor bolt with cap PL, nut & washer.

**PLAN**

[illegible]

See "Plan" above

Ref. Guardrail Connection Line  
 $\phi$   $\frac{3}{4}$ "  $\phi$  hole for  $\frac{5}{8}$ "  $\phi$  H.S. anchor bolt with cap PL, nut & washer.

4"  $\pm$  Bal. to be determined in field.

5'-0" New conc. Anchor block.  
 Type "C" Guardrail Connection pay limits.

$\phi$  4-1"  $\phi$  holes  $\phi$   $\frac{7}{8}$ "  $\phi$  H.S. anchor bolts with cap PL, nut & washer.

Top of wall

$\phi$  Metal guardrail

Fin. roadway grade

2'-6" @ wall #23  
 2'-9" @ wall #32

WYLLIE O.P. (STRUCT.#5) TYPE (B) GUARDRAIL  
CONNECTION TO ABUTMENT FACE

(APPROACH ENDS ONLY)

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

PLAN

Ref. Line #

1'-4" @ Wall #23  
1'-7" @ Wall #32

Guardrail, See "Plan" & "Elev." for number of holes, sizes & spacing.

Top of wall

1'-6" (Typ.)

4-#4 cont.

#4 @ 18" stirr.

Sleeve for anchor bolts.

Cap PL see detail on shi.# Q4

Remove portion of exist. C.R.M. wall (shown by x-hatched lines) to accommodate new conc. anchor block. Clean contact surfaces before new pour.

1'-9" (Typ.)

7" Bal.

Fin. roadway grade

TYPICAL SECTION

TYPE © GUARDRAIL CONNECTION DETAIL

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

Ref. Guardrail Connection line & post bolt.

Type 1 Guardrail Connection pay limits.

For guardrail post spacing & limits see Hwy. plan.

Cap PL see detail on sht. #Q4

# Q4

C.R.M. (lines) anchor ces

Lap in direction of traffic

2'-6" W-Beam

Terminal Connector

3"

Direction

PLAN

TYPE (T) GUARDRAIL CONNECTION DETAIL

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

Technical drawing of a W-beam terminal connector. The drawing shows a side view of the connector assembly. Key dimensions and components include:

- 7 3/4"**: Dimension for the vertical post.
- 1'-6" Exist. Conc. end post**: Label for the existing concrete end post.
- 5" 4" 4" 5"**: Dimensions for the spacing between the four drill holes.
- 4 - 1"Ø Drill holes for 7/8"Ø H.S. anchor bolts, with cap PL's, nuts and washers.**: Description of the anchor bolts.
- 1'-9"**: Dimension for the vertical post.
- 3/2"**: Dimension for the horizontal spacing between the anchor bolts.
- Ø Metal guardrail**: Label for the metal guardrail.
- Fin. roadway grade**: Label for the finished roadway grade.
- Note: W-Beam Terminal Connector not shown.**: Note indicating the connector is not shown.

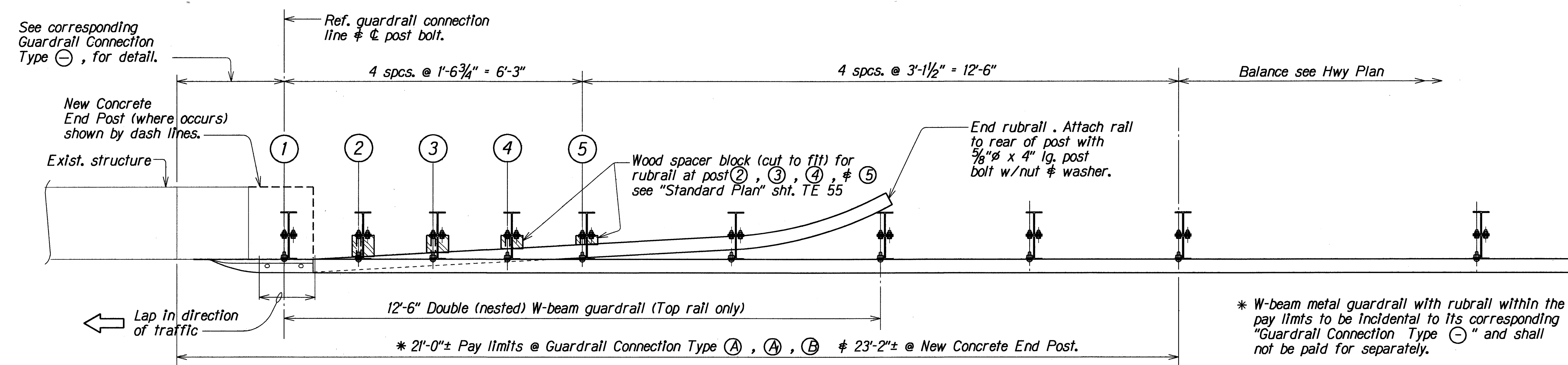
ELEVATION

Scale: As Noted Date: April, 1993

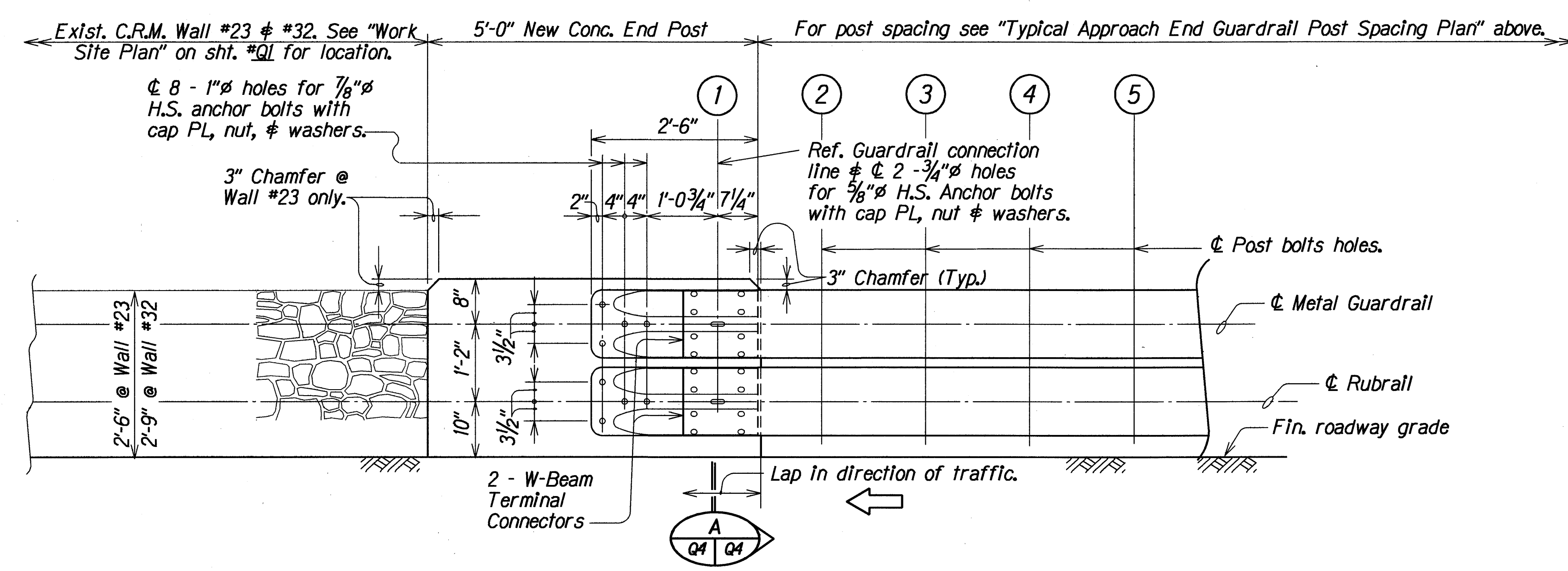
SHEET No. 03 OF 4 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY CHO	APR 1993
NOTE BOOK	TRACED BY	
	DESIGNED BY TS	APR 1993
	QUANTITIES BY TS	APR 1993
IN. ph0403	CHECKED BY MST/TS	APR 1993

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-061-1(30)	1993	26	41

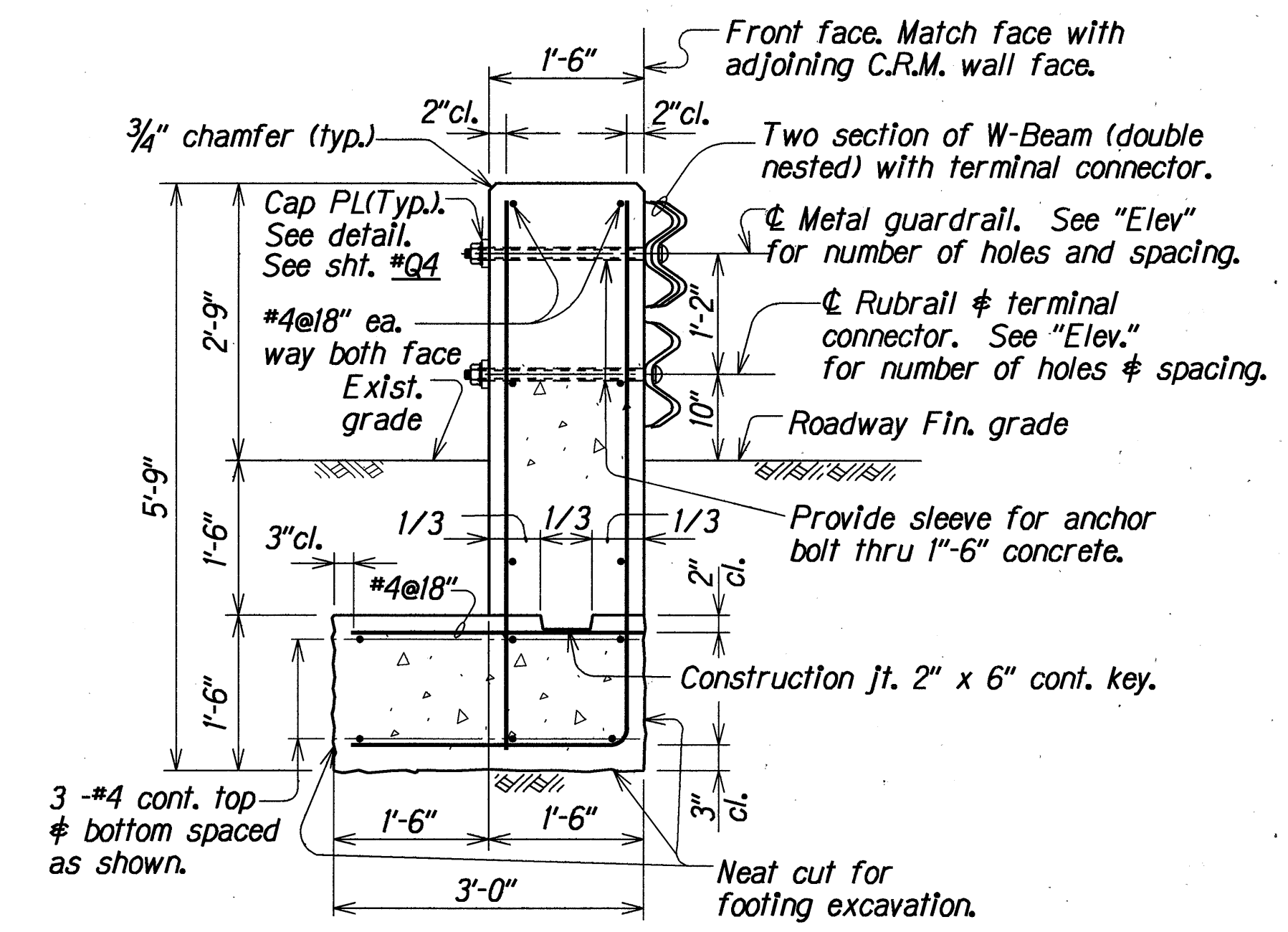


**TYPICAL PAY LIMIT & APPROACH END GUARDRAIL POST SPACING PLAN**  
Scale: 3/4" = 1'-0"

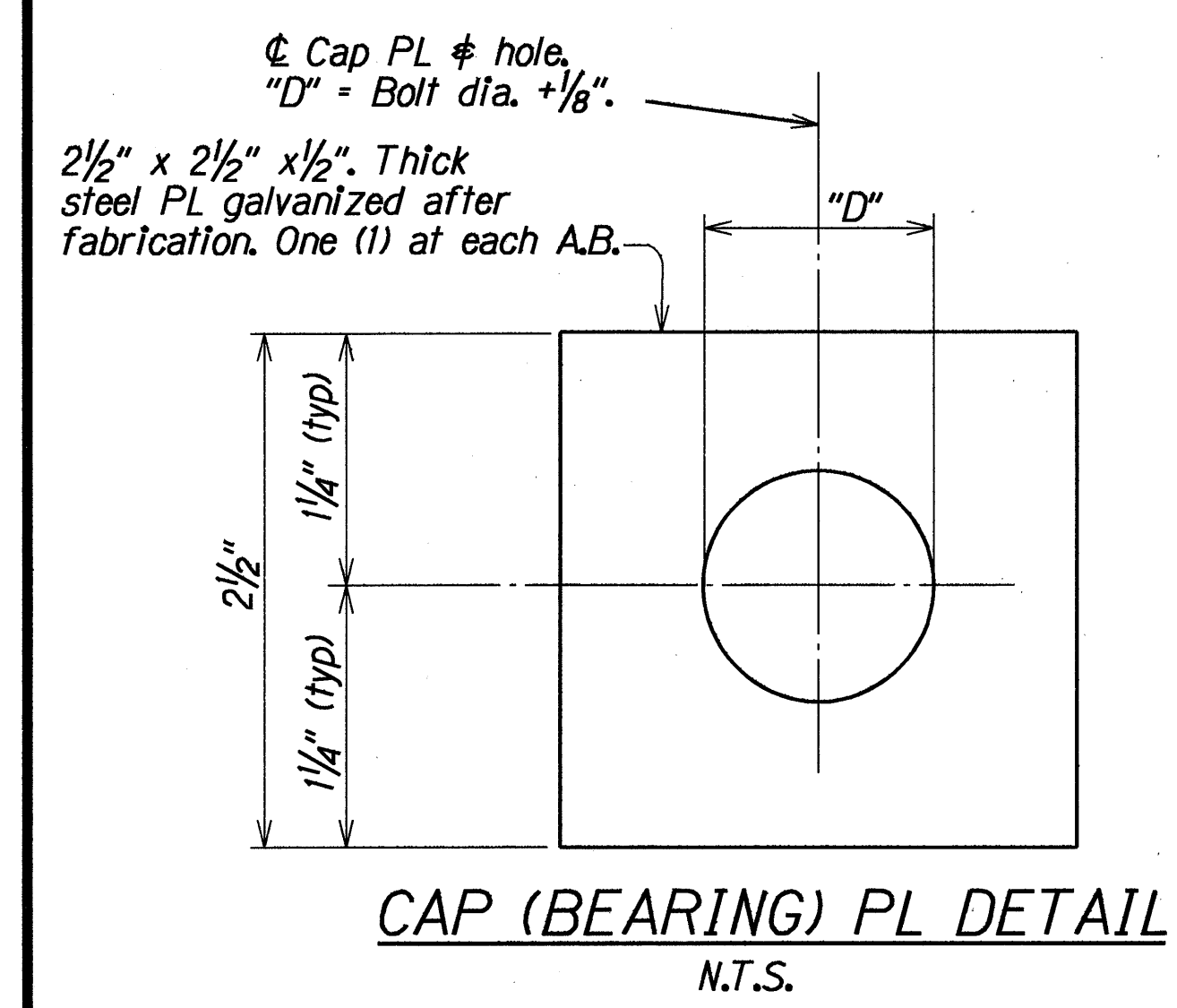


**ELEVATION**

**NEW CONCRETE END POST WITH GUARDRAIL CONNECTION DETAIL**  
Scale: 3/4" = 1'-0"



**SECTION A-A**



ORIGINAL PLAN	DATE	APR 1993
DESIGNED BY	DESIGNED BY	DESIGNED BY
NOTED BY	NOTED BY	NOTED BY
CHECKED BY	CHECKED BY	CHECKED BY

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL CONNECTION DETAILS**  
**TYPICAL PAY LIMIT AND POST SPACING**  
**NEW CONCRETE END POST**  
PALI HIGHWAY RESURFACING  
VINEYARD BOULEVARD TO COUNTRY CLUB ROAD  
F.A. Project No. STP-061-1(30)

Scale: As Noted Date: April, 1993

SHEET No. Q4 OF 4 SHEETS