

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-89M	1989	24	27

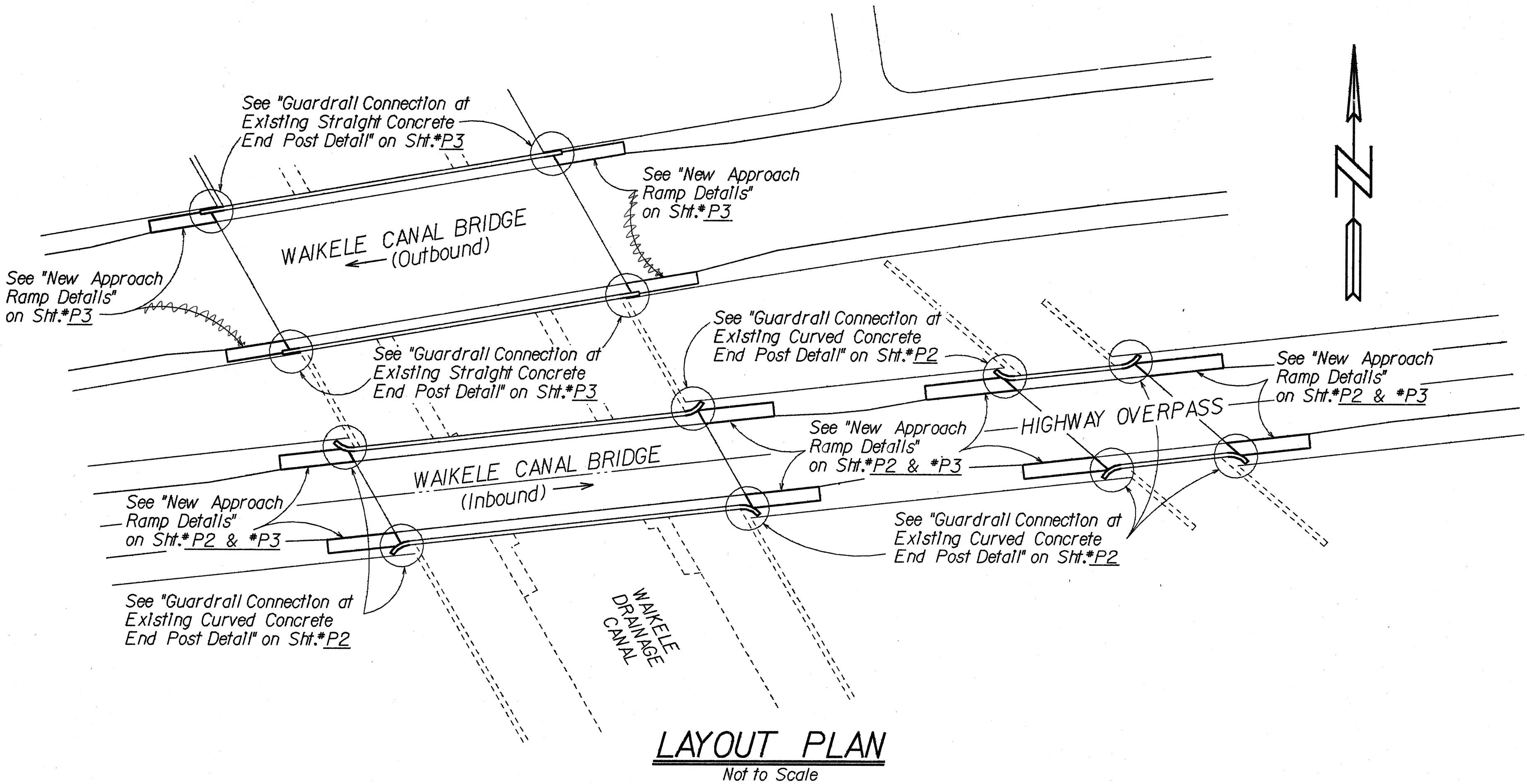
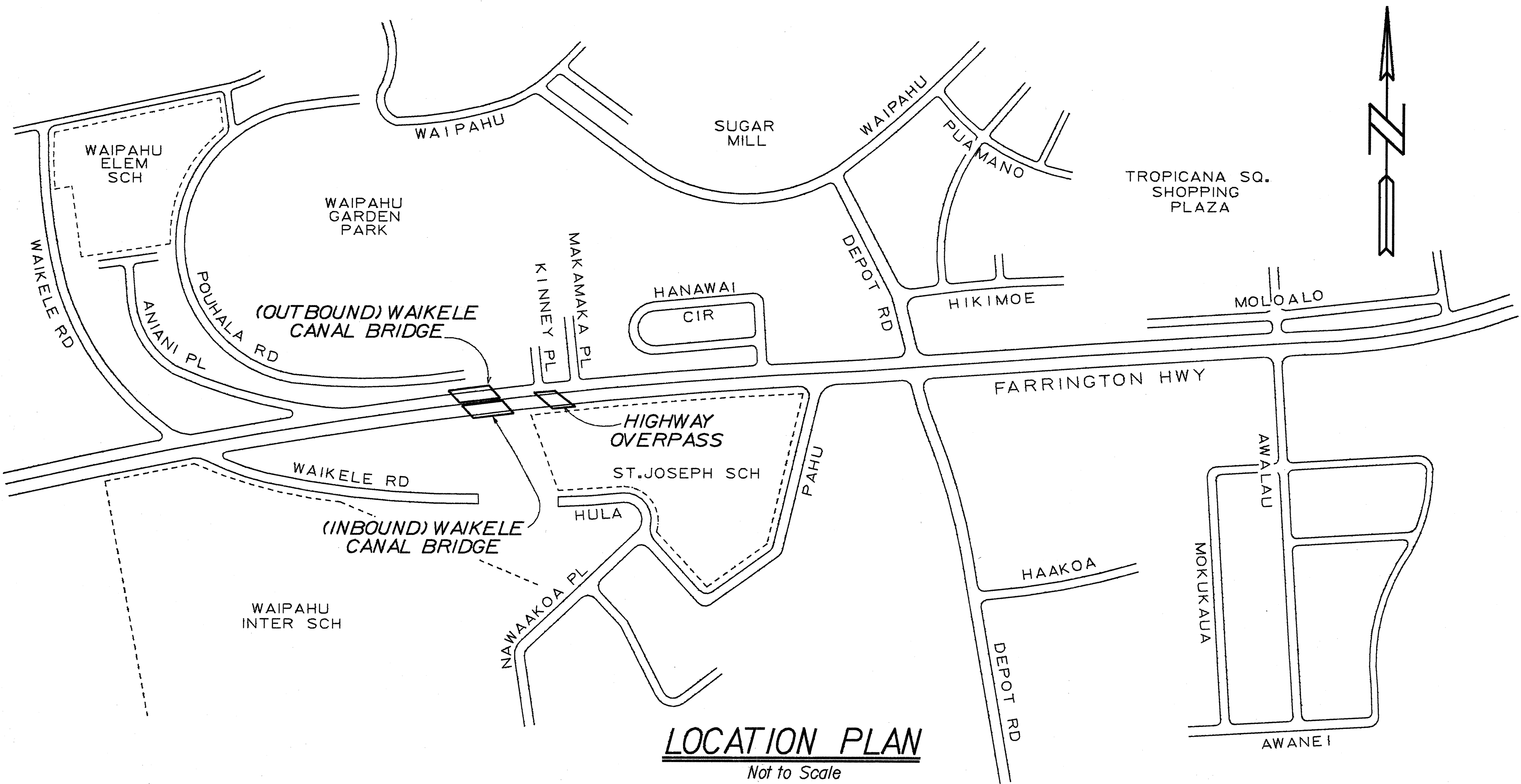
GENERAL NOTES:

CONSTRUCTION REQUIREMENTS:

- See Standard Specifications for Road and Bridge Construction, (Hawaii 1985) and Special Provisions.
- Items designated for removal shall be removed in such a manner as to preclude any damage to the existing structure. Large impacting or vibratory type 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.
- Drilling of through holes shall be done in such manner that will preclude cone puncturing of the daylighting end.
- The Contractor shall be solely responsible for the protection of utilities and existing and new structures from damage due to his operation 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.
- See Sheet P4 for additional requirements.

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 structures and notify their respective owners before commencing with work.



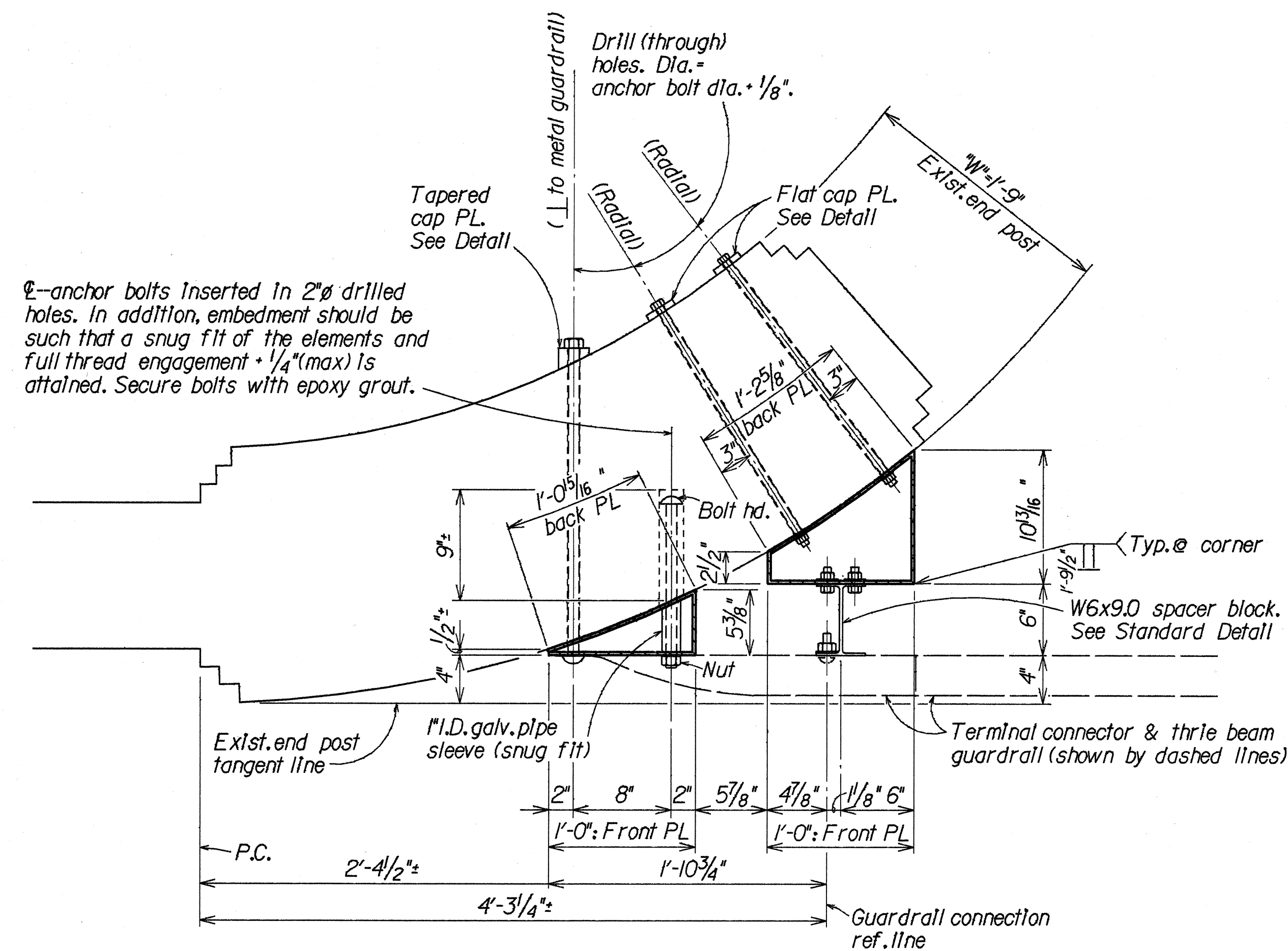
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOCATION AND LAYOUT PLANS
GENERAL NOTES & ESTIMATED QUANTITIES
FARRINGTON HWY RESURFACING AT
WAIKELE CANAL BRIDGE & HWY OVERPASS
Project No. 7101A-01-89M

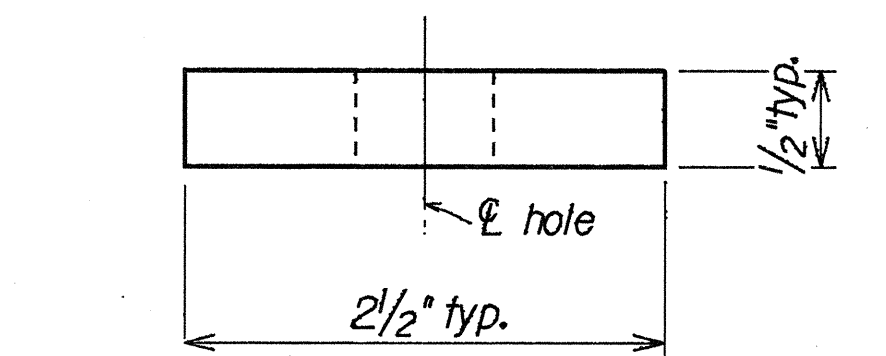
Scale: As Shown
Date: March 1989

SHEET No. P1 OF 4 SHEETS

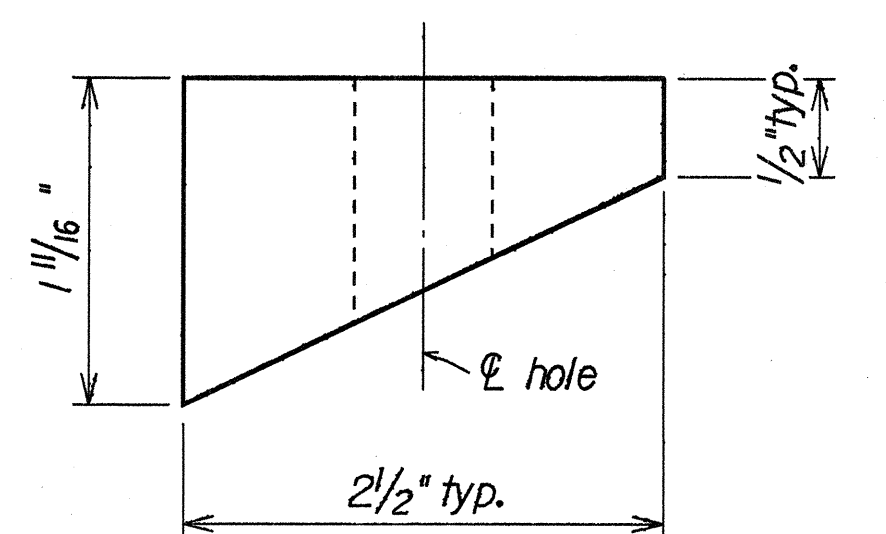
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-QI-89M	1989	25	27



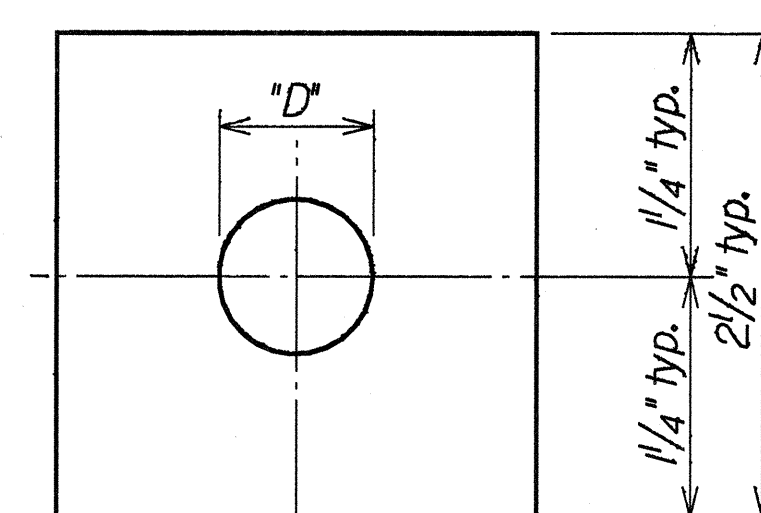
TOP VIEW



PLAN--FLAT



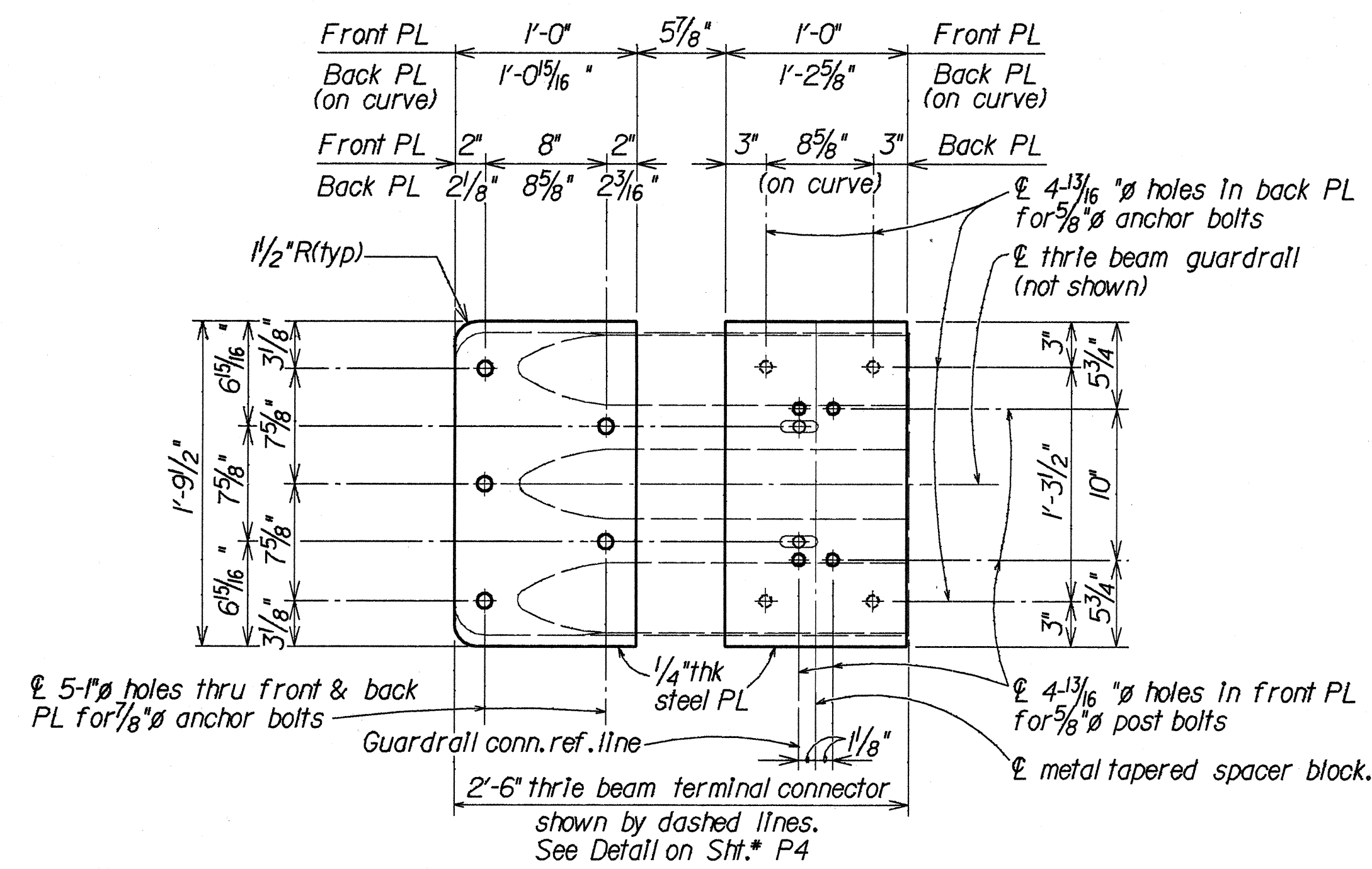
PLAN-TAPERED



ELEVATION

CAP PL DETAIL

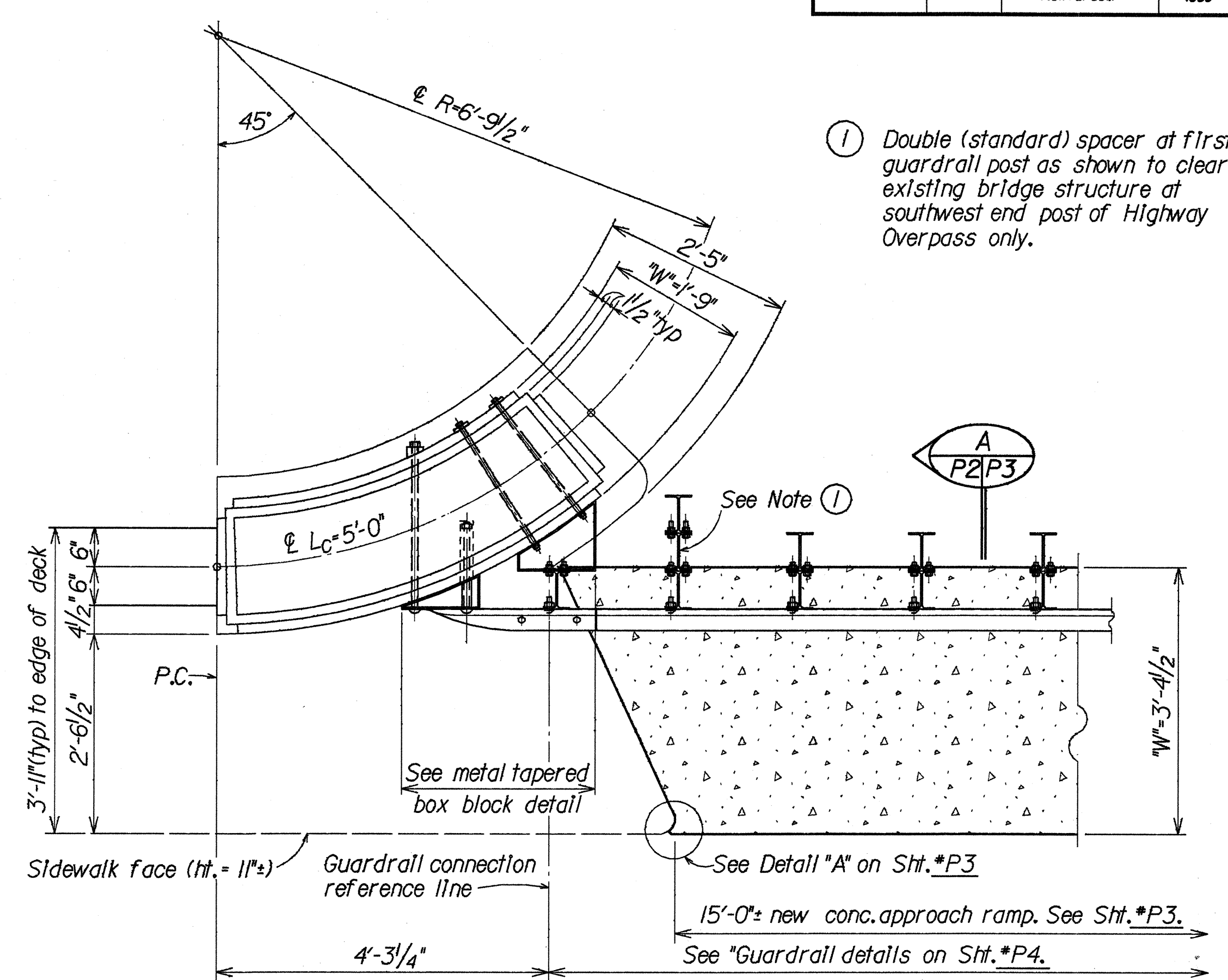
Scale: 1" = 1'



FRONT VIEW

METAL TAPERED BOX SPACER BLOCK DETAIL

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



PLAN

GUARDRAIL CONNECTION DETAIL AT
EXISTING CURVED CONCRETE END POST

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

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
	DRAWN BY <u>KSC</u>	
NOTE BOOK	TRACED BY _____	
	DESIGNED BY <u>TS</u>	
	QUANTITIES BY <u>TS</u>	
NO. <u>WAMEL2</u>	CHECKED BY <u>ITA</u>	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**METAL SPACER BLOCK AND GUARDRAIL
CONNECTION DETAILS**

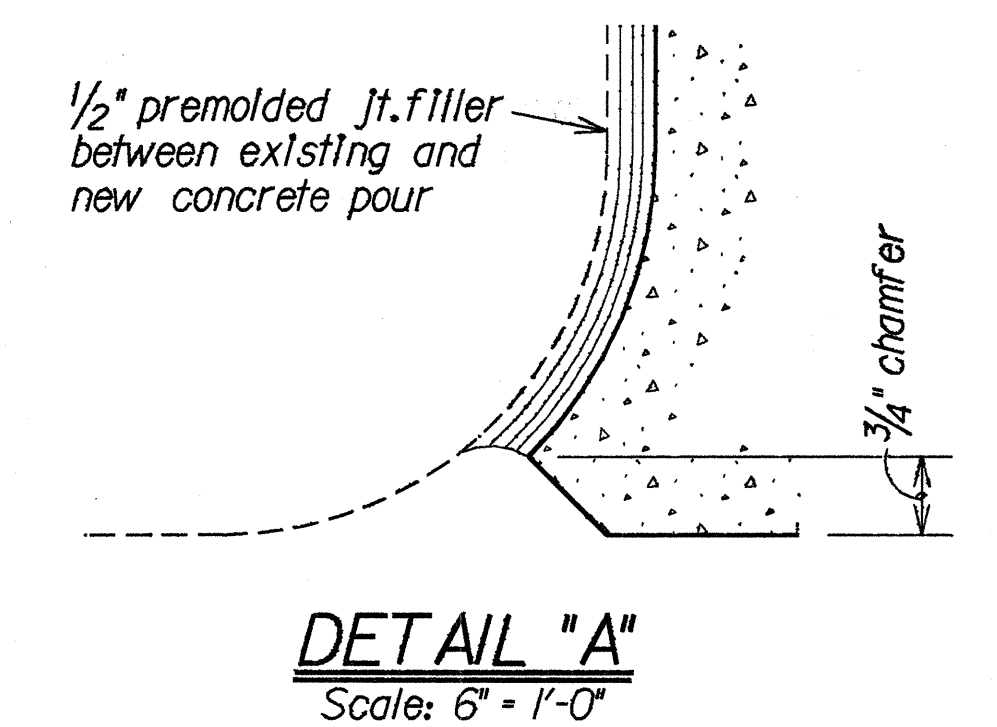
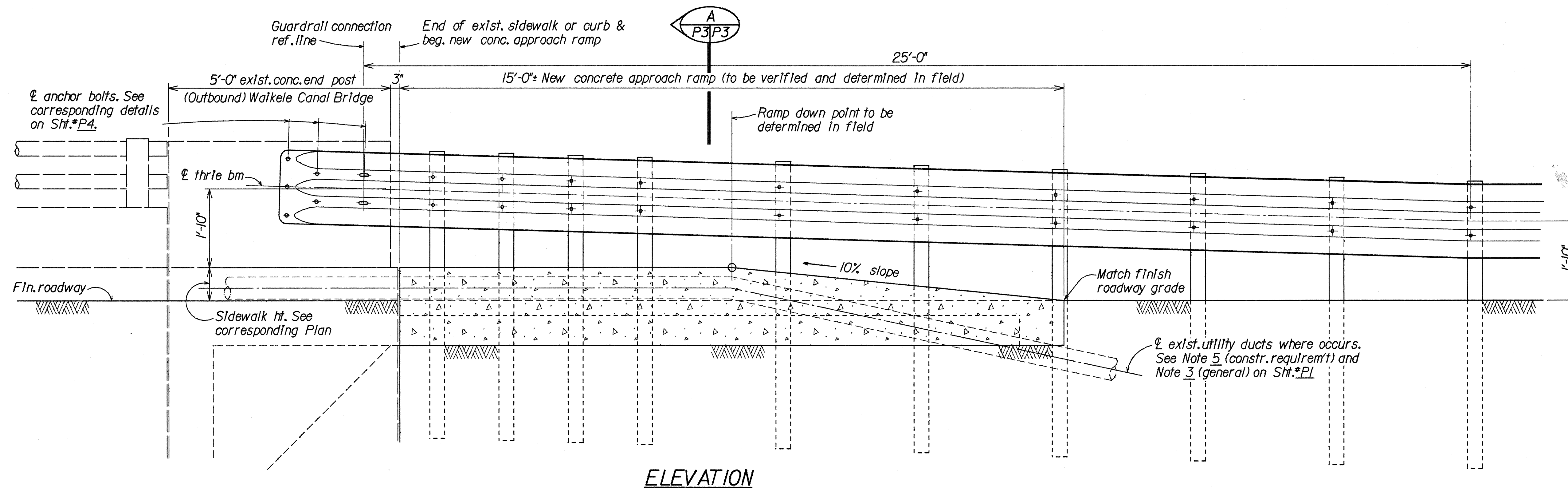
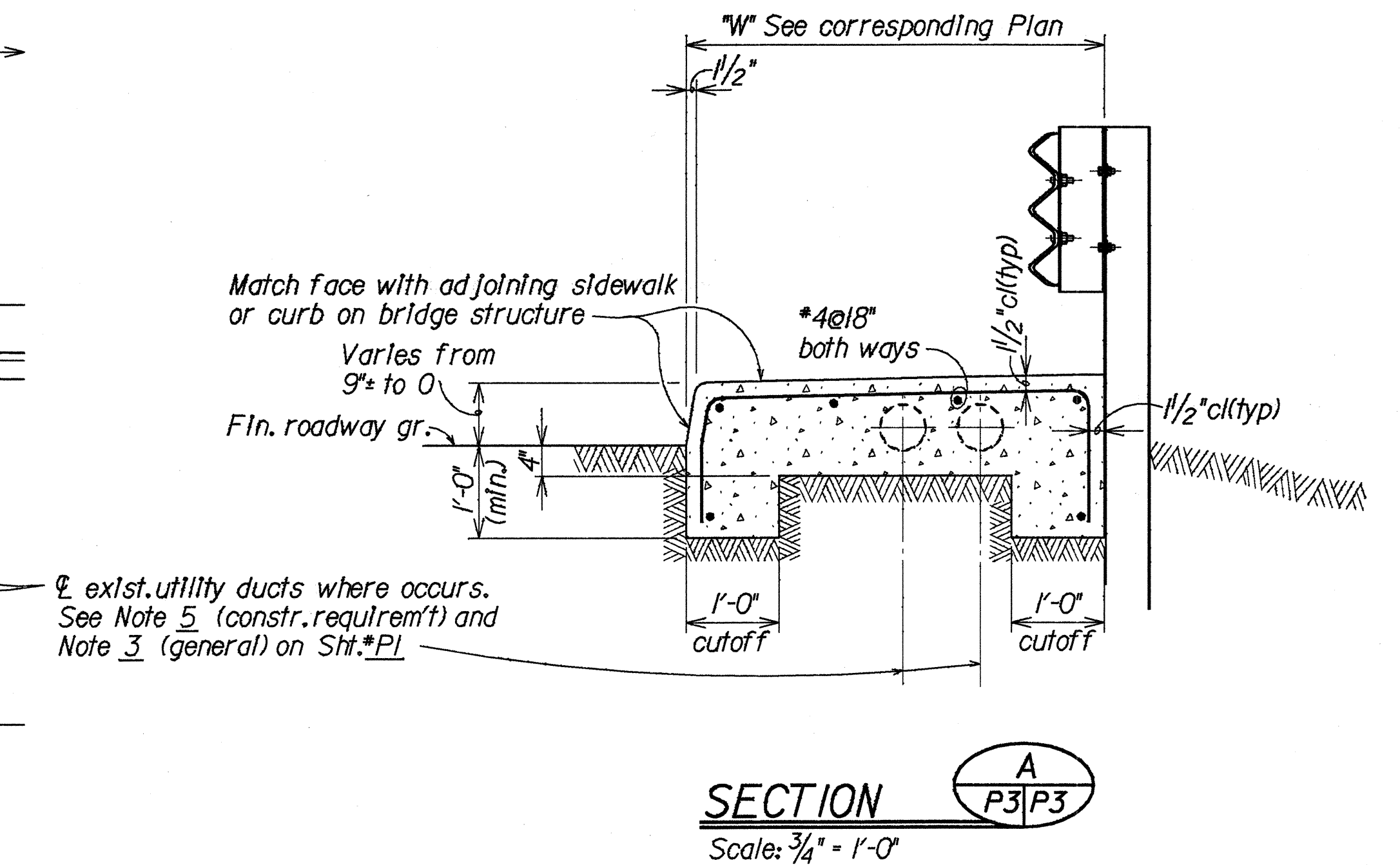
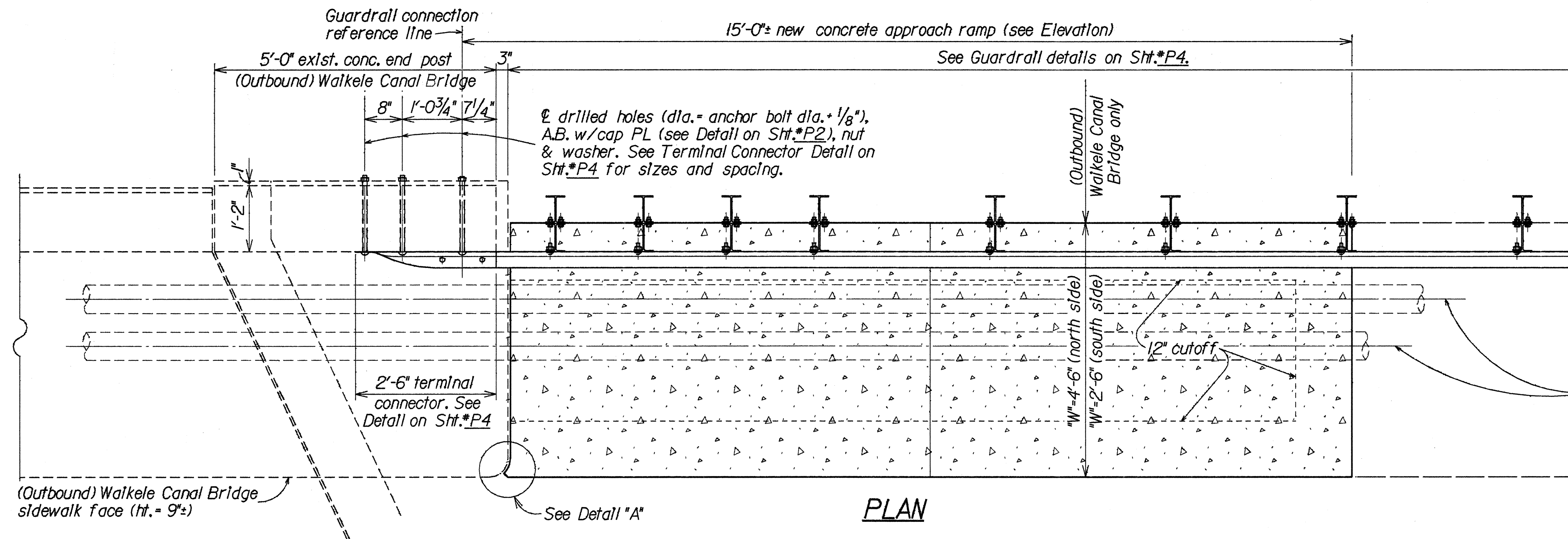
FARRINGTON HWY RESURFACING AT
WAIKELE CANAL BRIDGE & HWY OVERPASS

Project No. 7101A-01-89M

Scale: As Shown Date: March 1989

SHEET No. P2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-89M	1989	20	27



GUARDRAIL CONNECTION AND NEW APPROACH RAMP AT EXISTING STRAIGHT CONCRETE END POST

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**GUARDRAIL CONNECTION AND NEW
APPROACH RAMP DETAILS**

FARRINGTON HWY RESURFACING AT
WAIKALE CANAL BRIDGE AND HWY OVERPASS

Project No. 7101A-01-89M

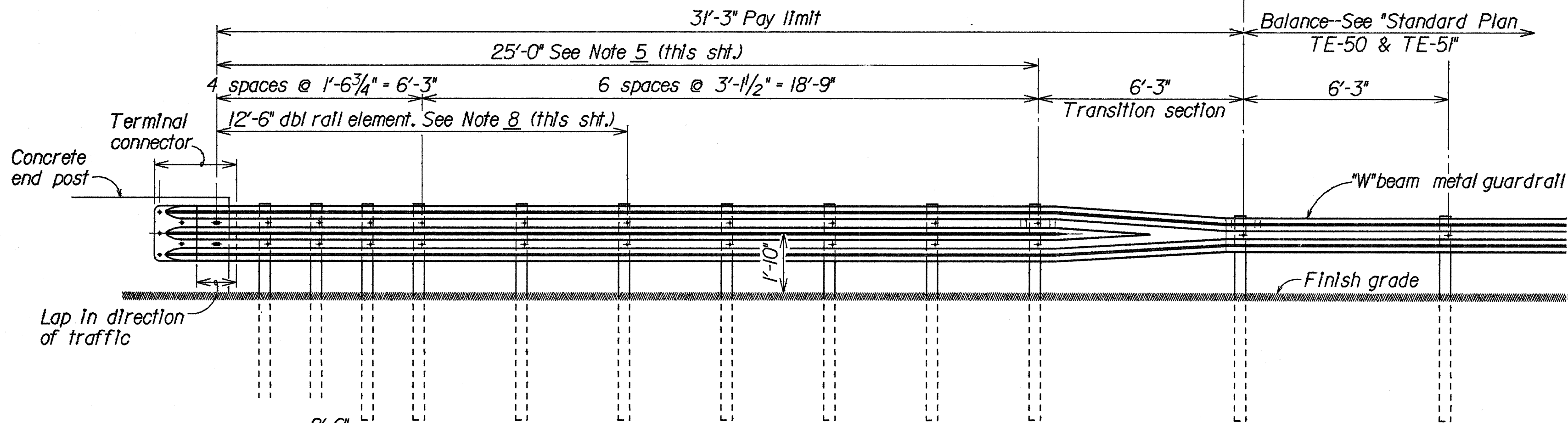
Scale: As Shown Date: March 1989

SHEET No. P3 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-89M	1989	27	27

NOTES:

- "Terminal Connector" shall be fabricated from 10 gauge steel conforming to the requirements of AASHTO M180.
- All anchor bolts shall be high strength bolts conforming to the requirements of ASTM 325.
- Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus $\frac{1}{4}$ " (max) is attained.
- "Terminal Connector", tapered box and standard spacer; including all anchor bolts, cap PL, 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 as shown on the detail drawings.
- Heads of through anchor bolts shall be placed on the traffic side of the end block; those at the thru spacer block excepted.
- Where double (nested) beam occur, 12" "Backup Plate" not required.
- Double (nest 1st panel) thru beam elements at all end post connections, except on highways with one-way traffic pattern, use single thru beam element at end post on trailing end only.

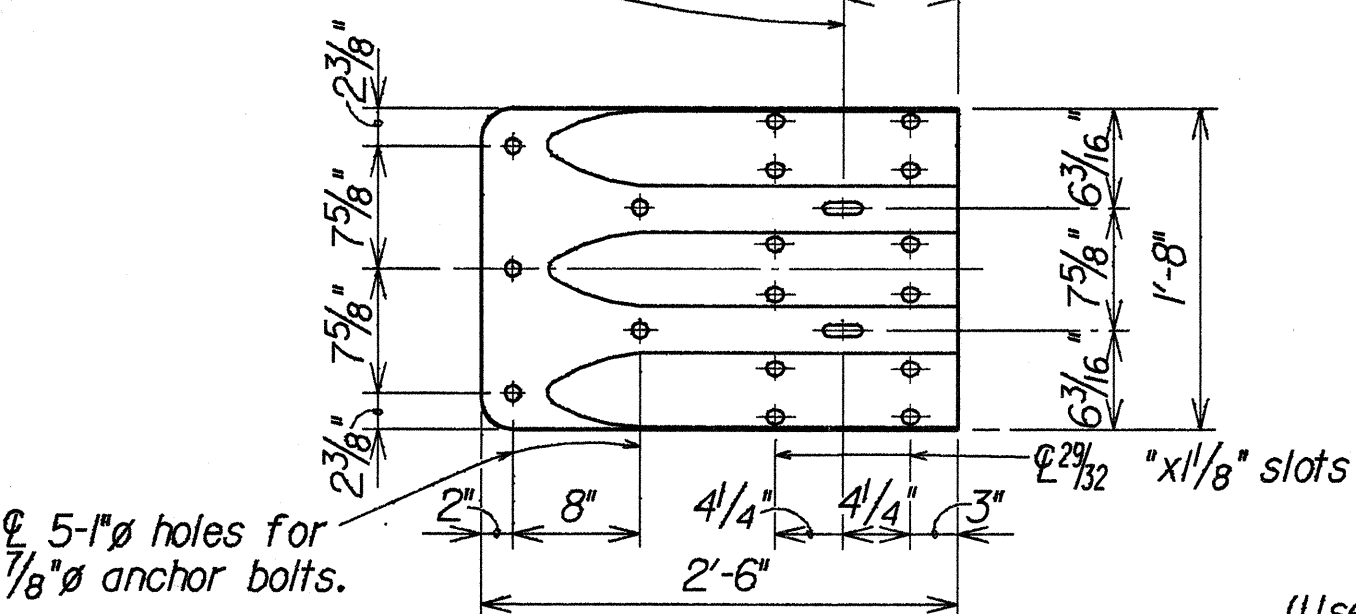


GUARDRAIL POST SPACING DETAIL

Scale: $\frac{3}{8}$ " = 1'-0"

Guardrail connection ref. line & 2- $\frac{3}{4}$ " x 2 $\frac{1}{2}$ " slots for $\frac{5}{8}$ " post bolts or anchor bolts.

PLAN



ELEVATION

TERMINAL CONNECTOR

Scale: 1" = 1'-0"

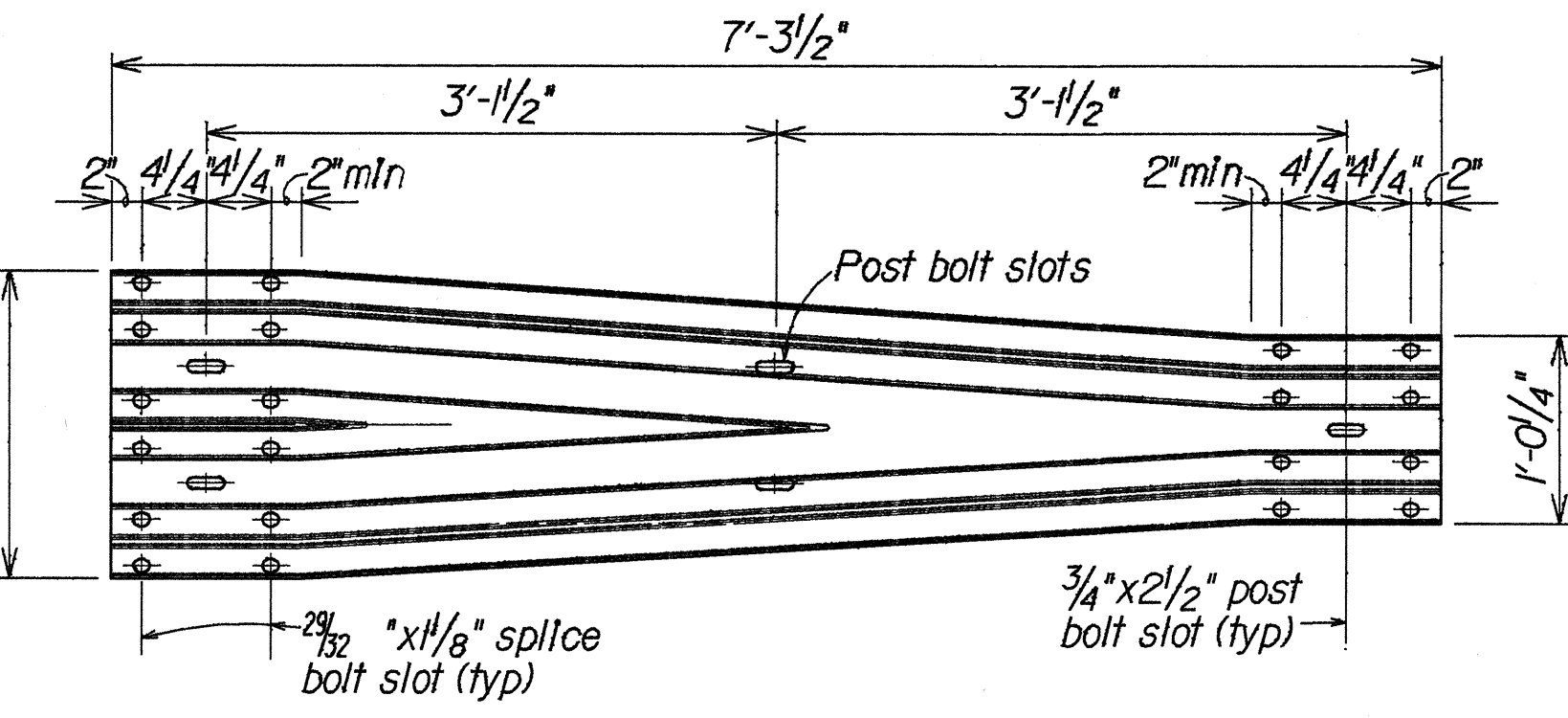
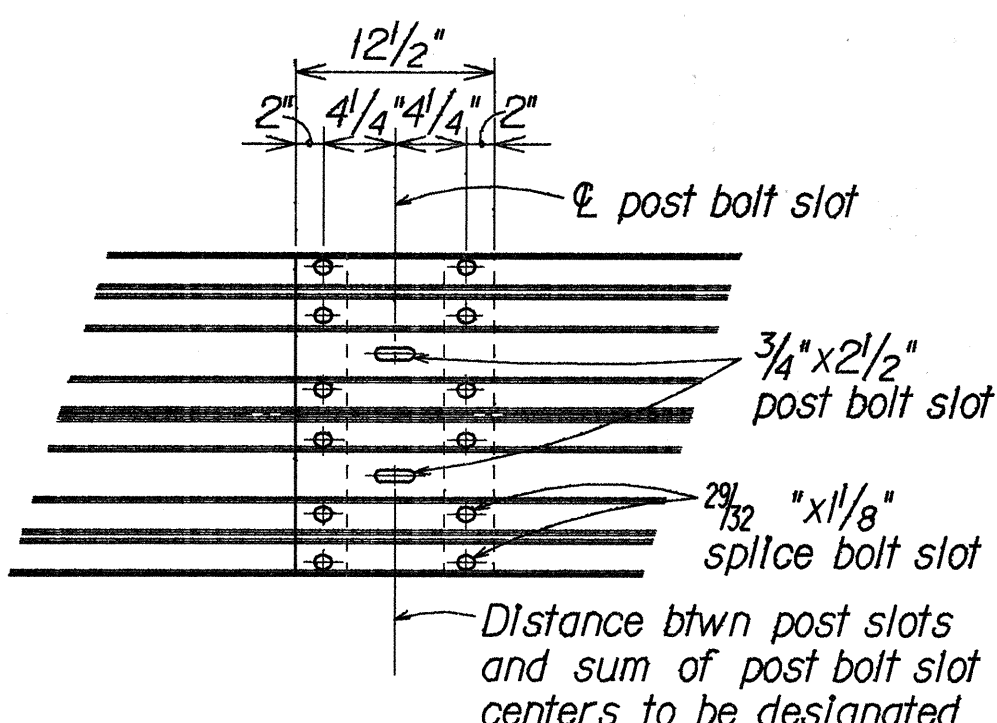
BACKUP PLATE

Scale: 1" = 1'-0"

(Use at posts where splices do not occur. Omit at double rail element section)

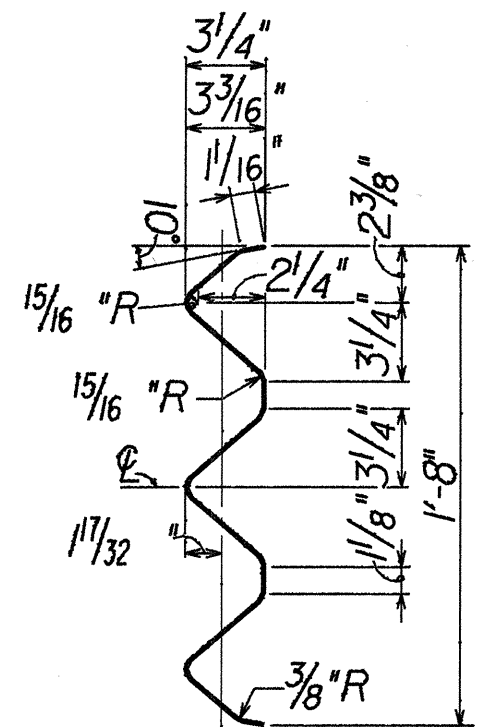
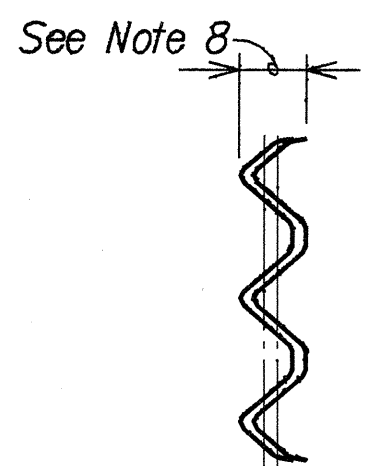
RAIL SPLICE

Scale: 1" = 1'-0"



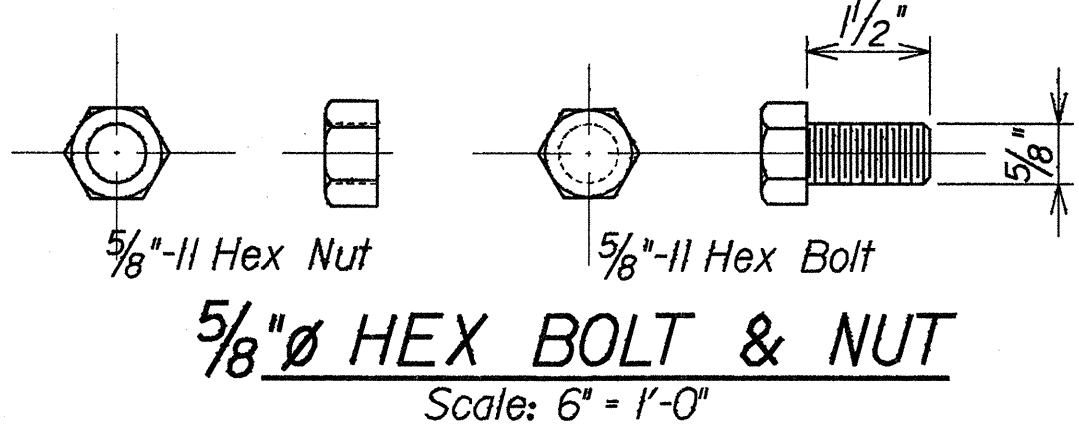
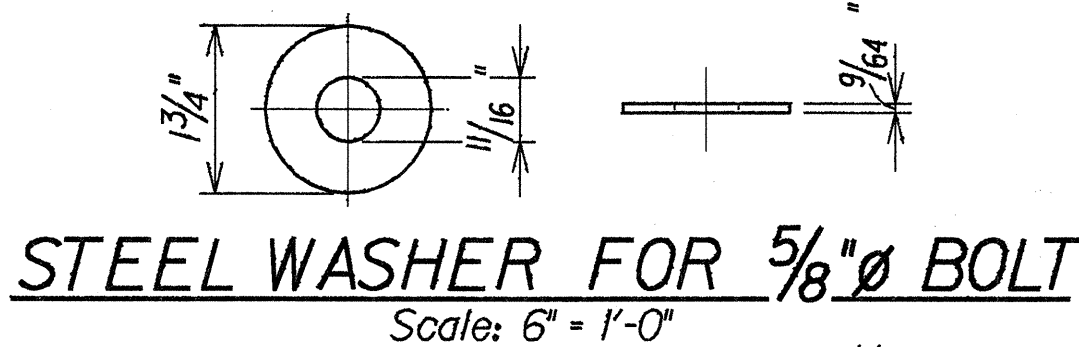
TRANSITION SECTION

Scale: 1" = 1'-0"



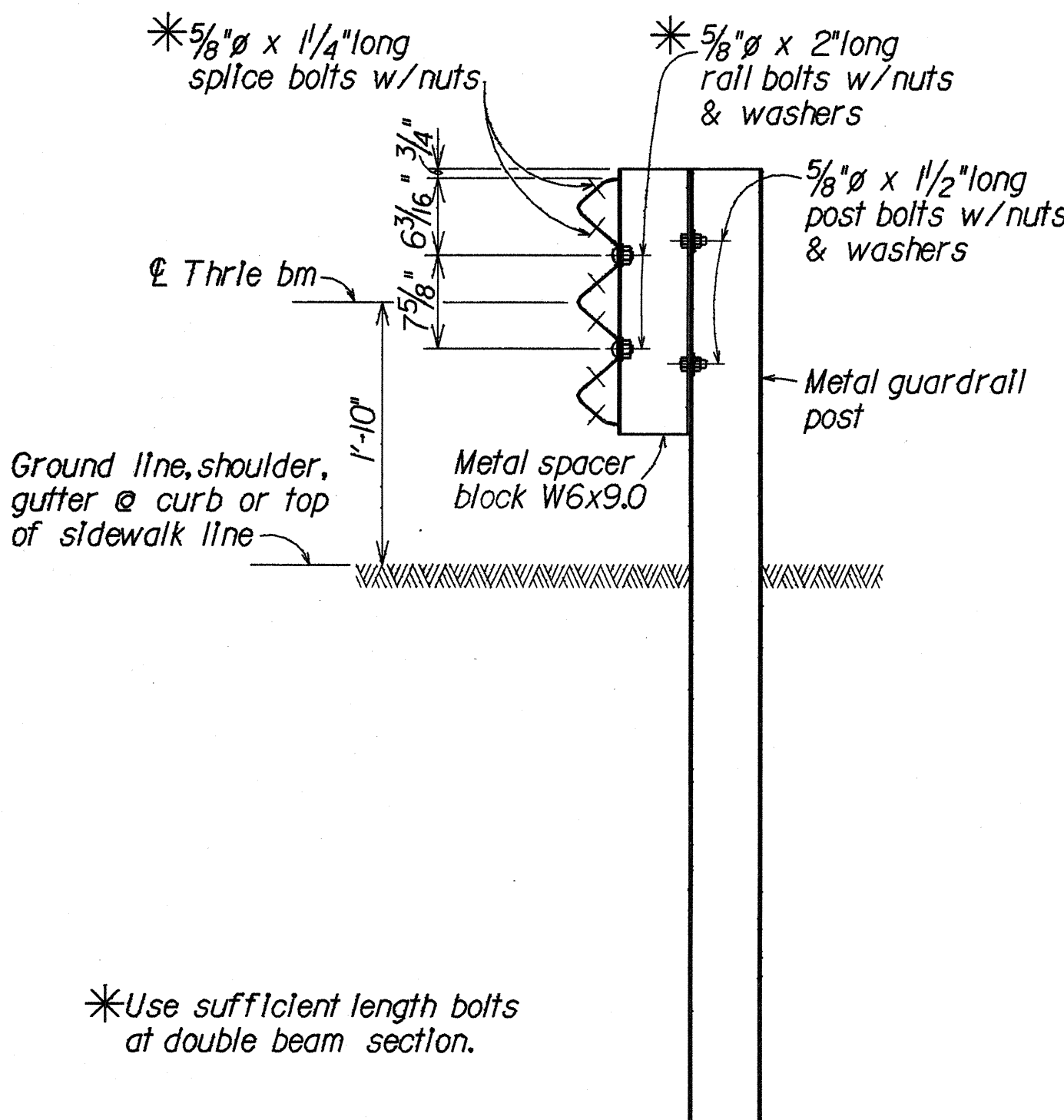
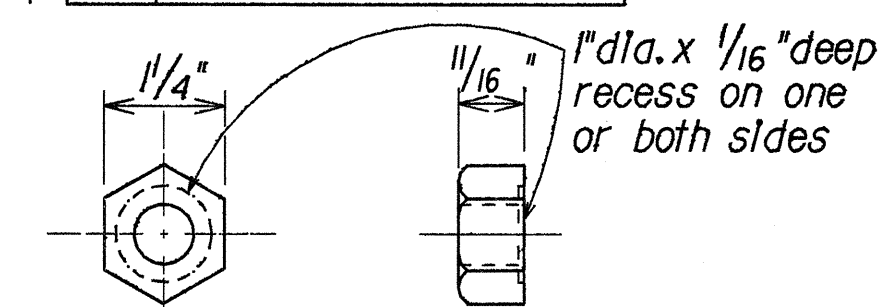
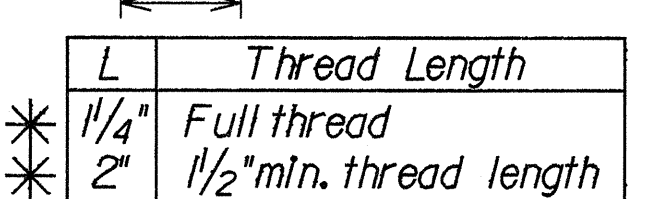
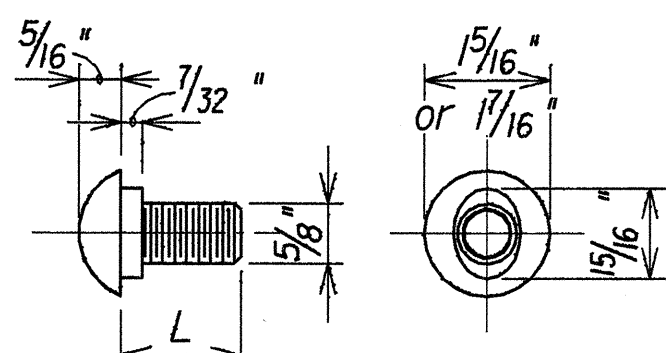
SECTION THRU RAIL ELEMENT

Scale: 1 $\frac{1}{2}$ " = 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"

*Use sufficient length bolts at double beam section.

TYPE 3 THRIE BEAM GUARDRAIL AND APPURTENANCES DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GUARDRAIL TYPE 3 THRIE BEAM
APPURTENANCES AND POST SPACING DETAILS
FARRINGTON HWY RESURFACING AT
WAKELE CANAL BRIDGE & HWY OVERPASS
Project No. 7101A-01-89M
Scale: As Shown Date: March 1989
SHEET No. P4 OF 4 SHEETS