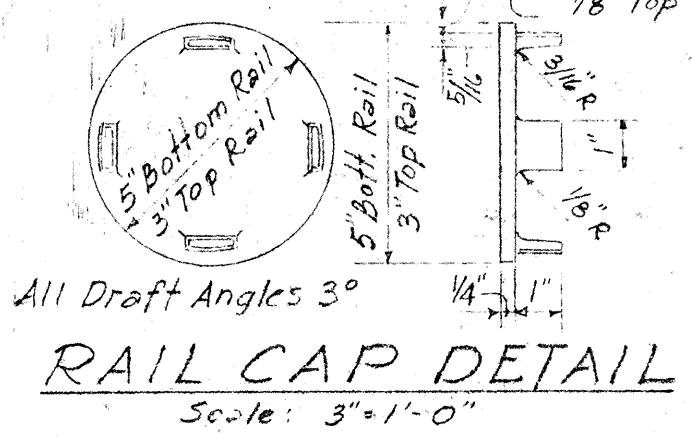
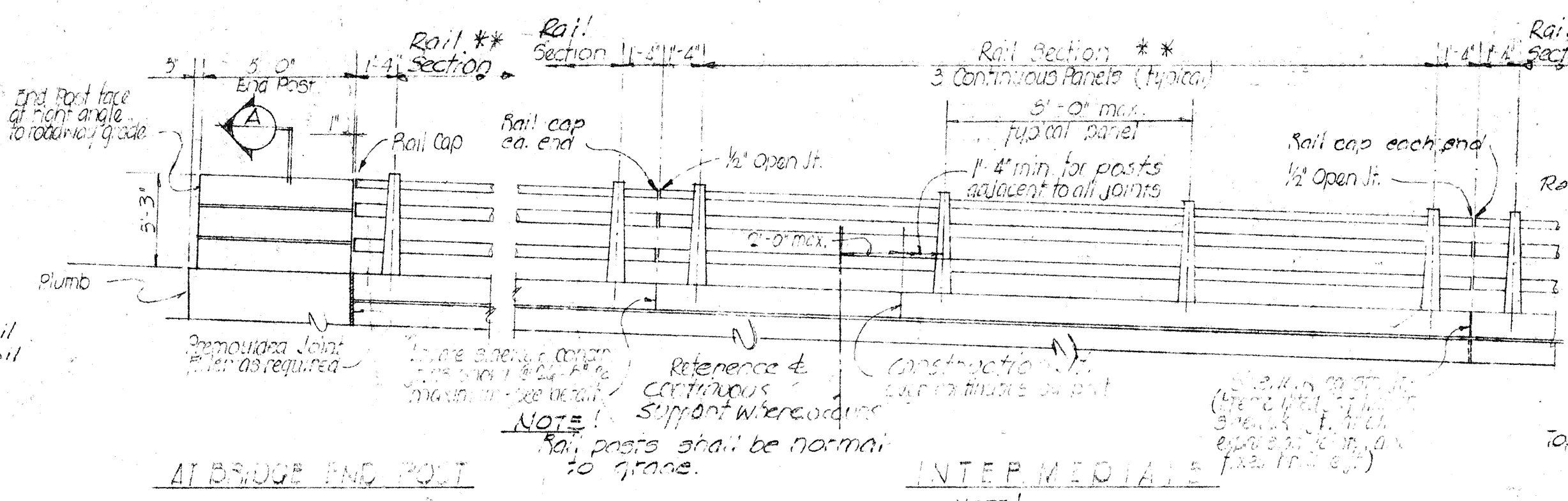


NOTE:

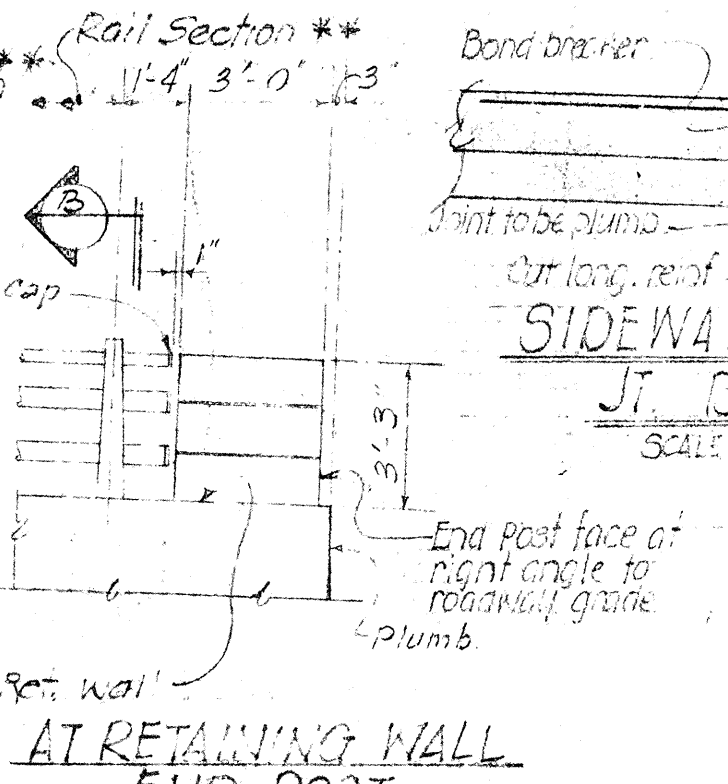
The contractor shall submit the railing to provide 3 continuous panels whenever possible. 1 or 2 continuous panels will be permitted to terminate the rail-out when 3 continuous panels cannot be made. Single panels will not be permitted.



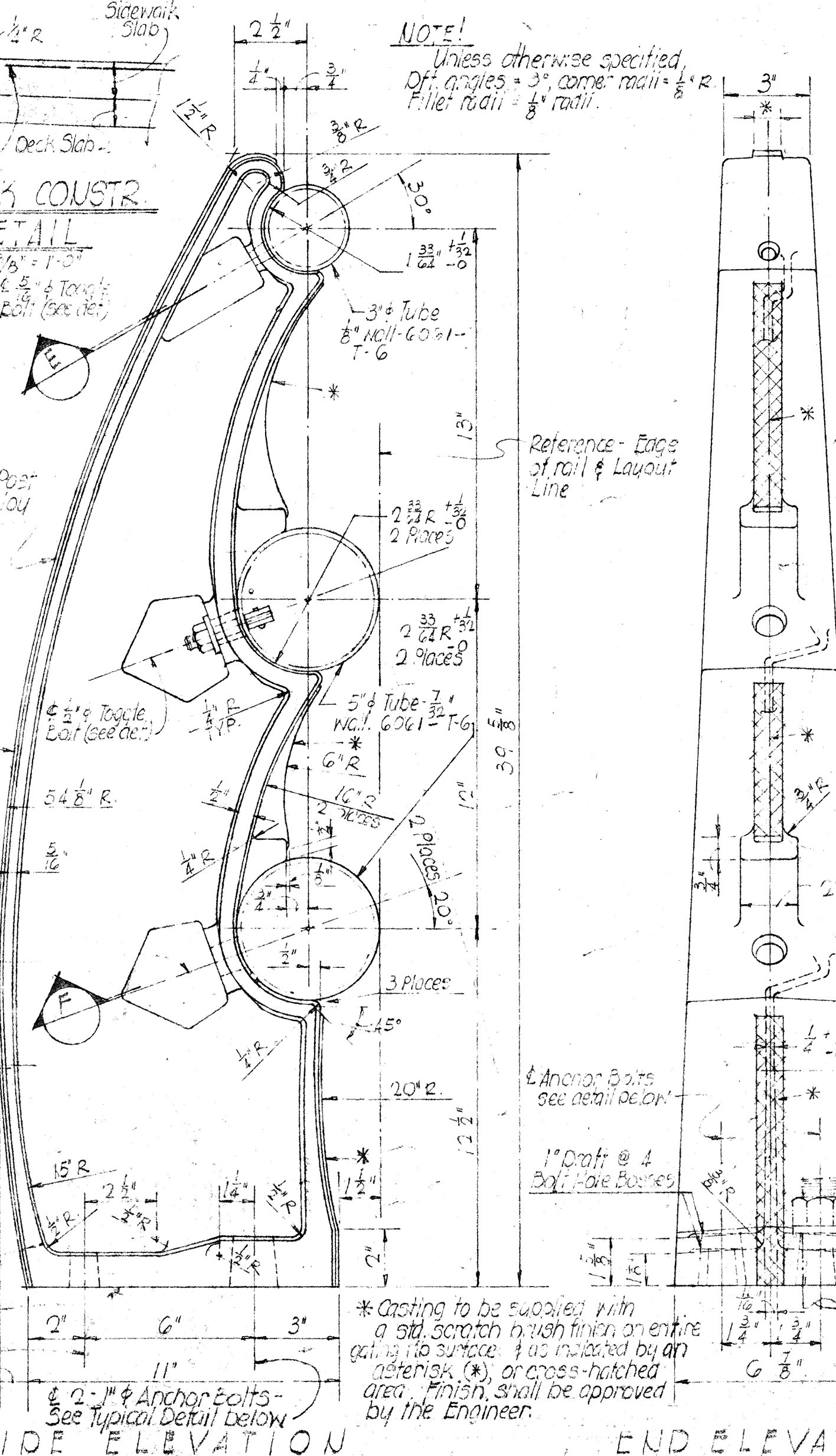
RAIL CAP DETAIL
Scale: 3"=1'-0"



EXTERIOR RAILING ELEVATION
Scale: 1"=1'-0"



AT RETAINING WALL
END POST
Scale: 1"=1'-0"



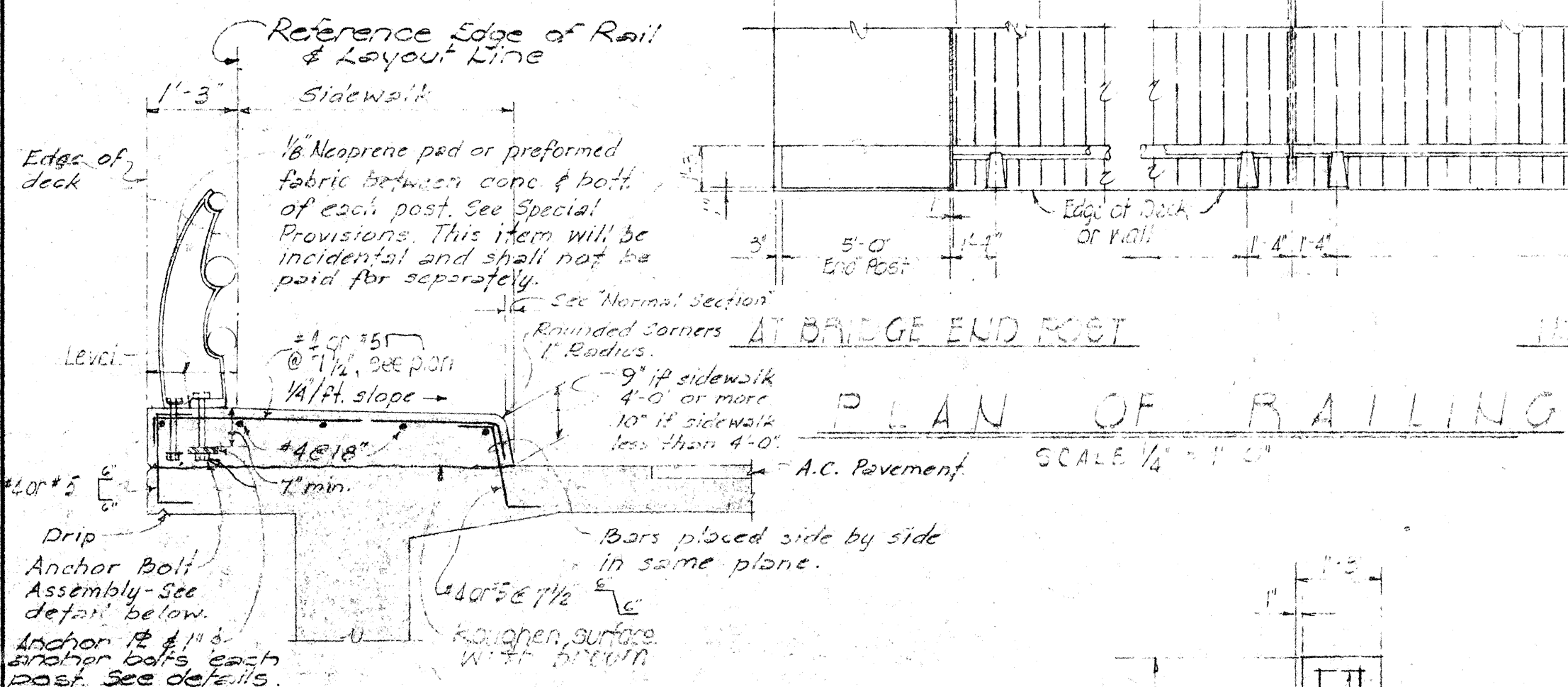
SIDE ELEVATION
Scale: 1"=1'-0"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1066	1966	234	235

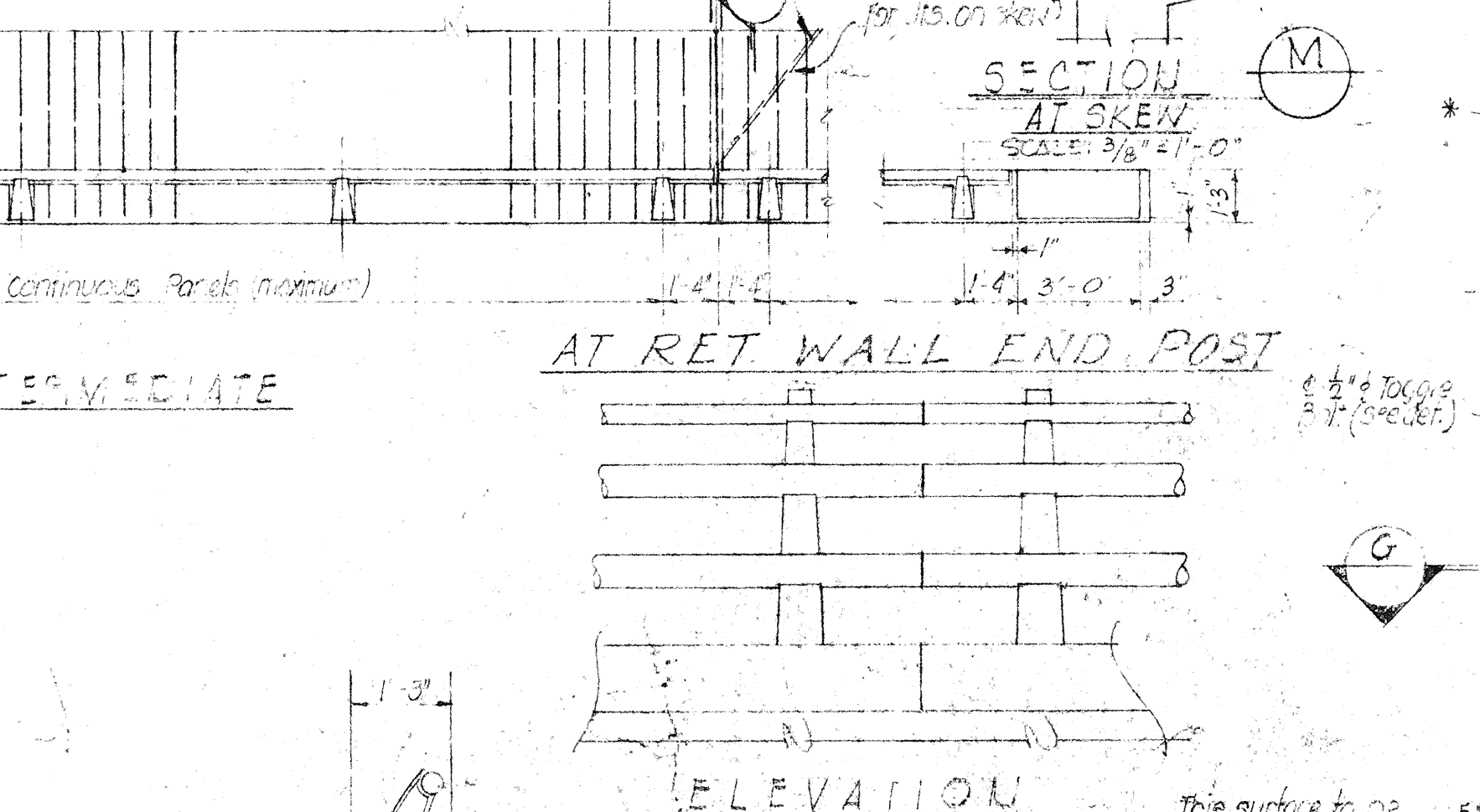
SECTION E
Scale: 3"=1'-0"

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

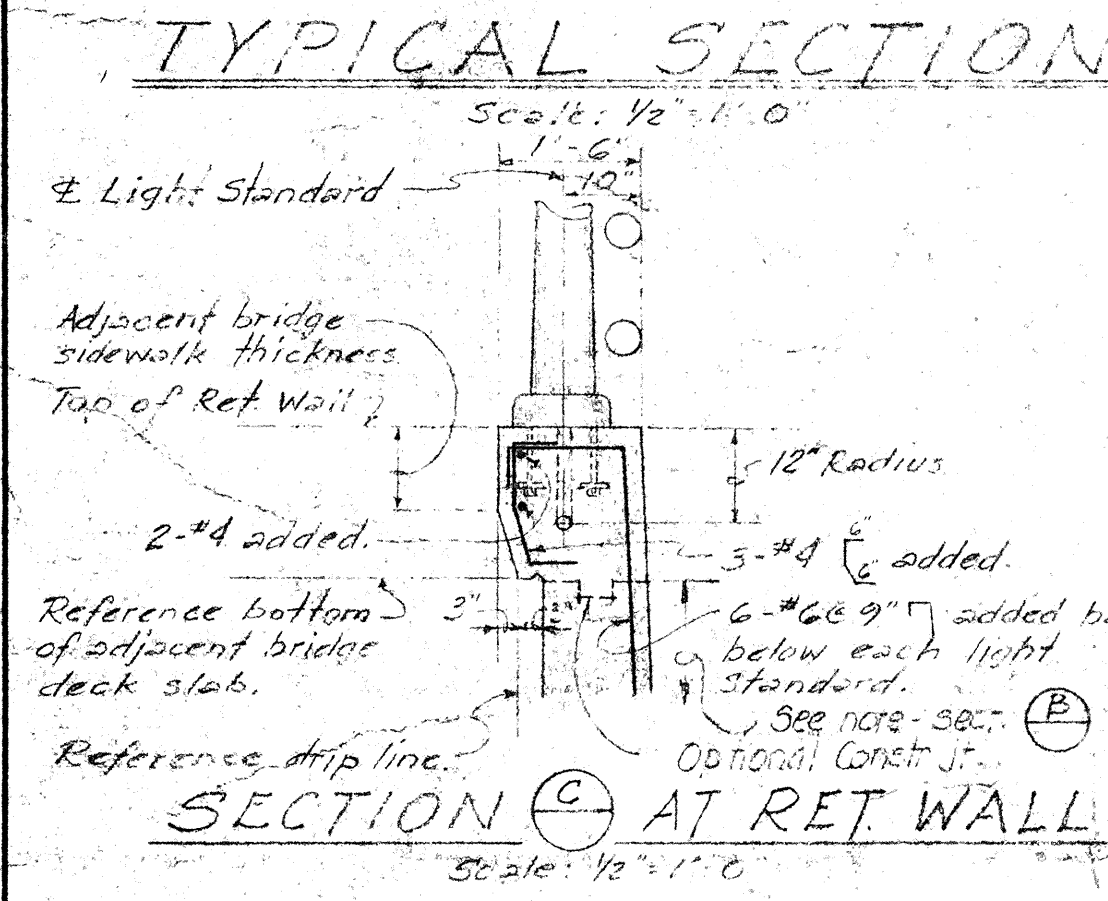
SECTION G
Scale: 3"=1'-0"



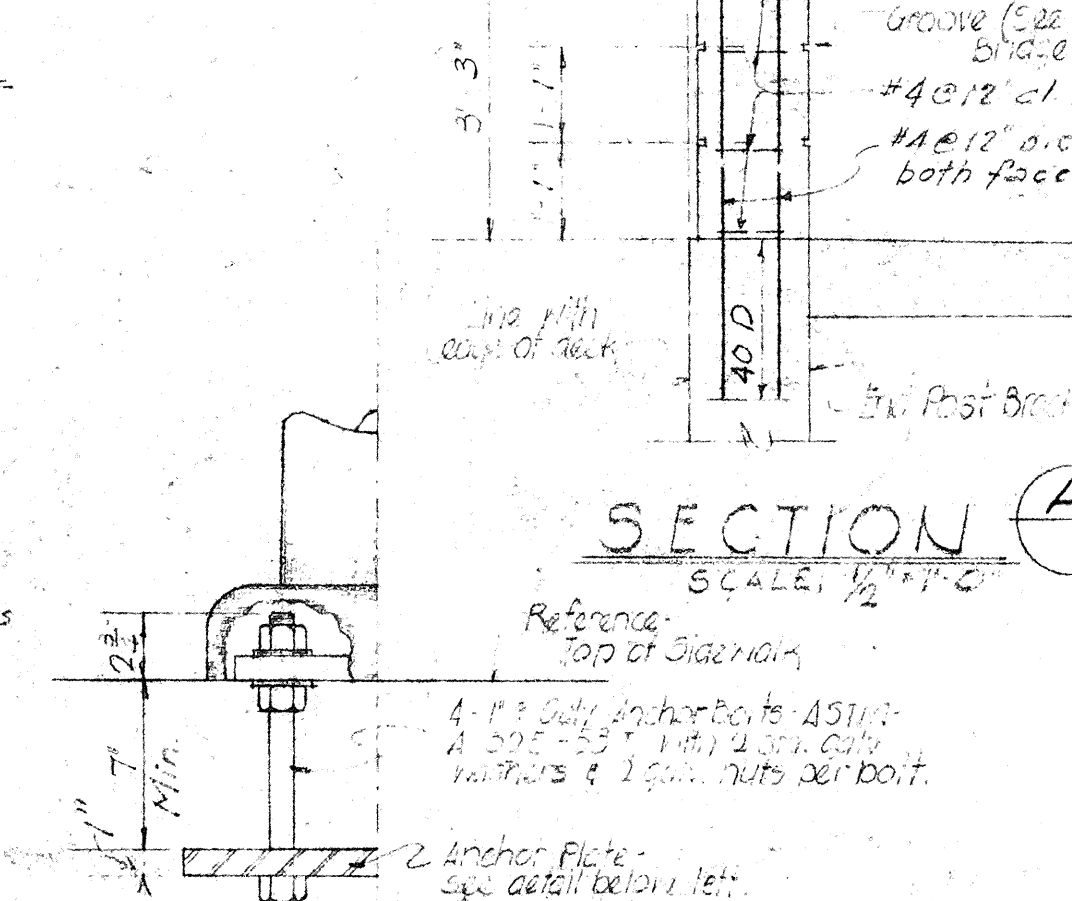
PLAN OF RAILING
Scale: 1"=1'-0"



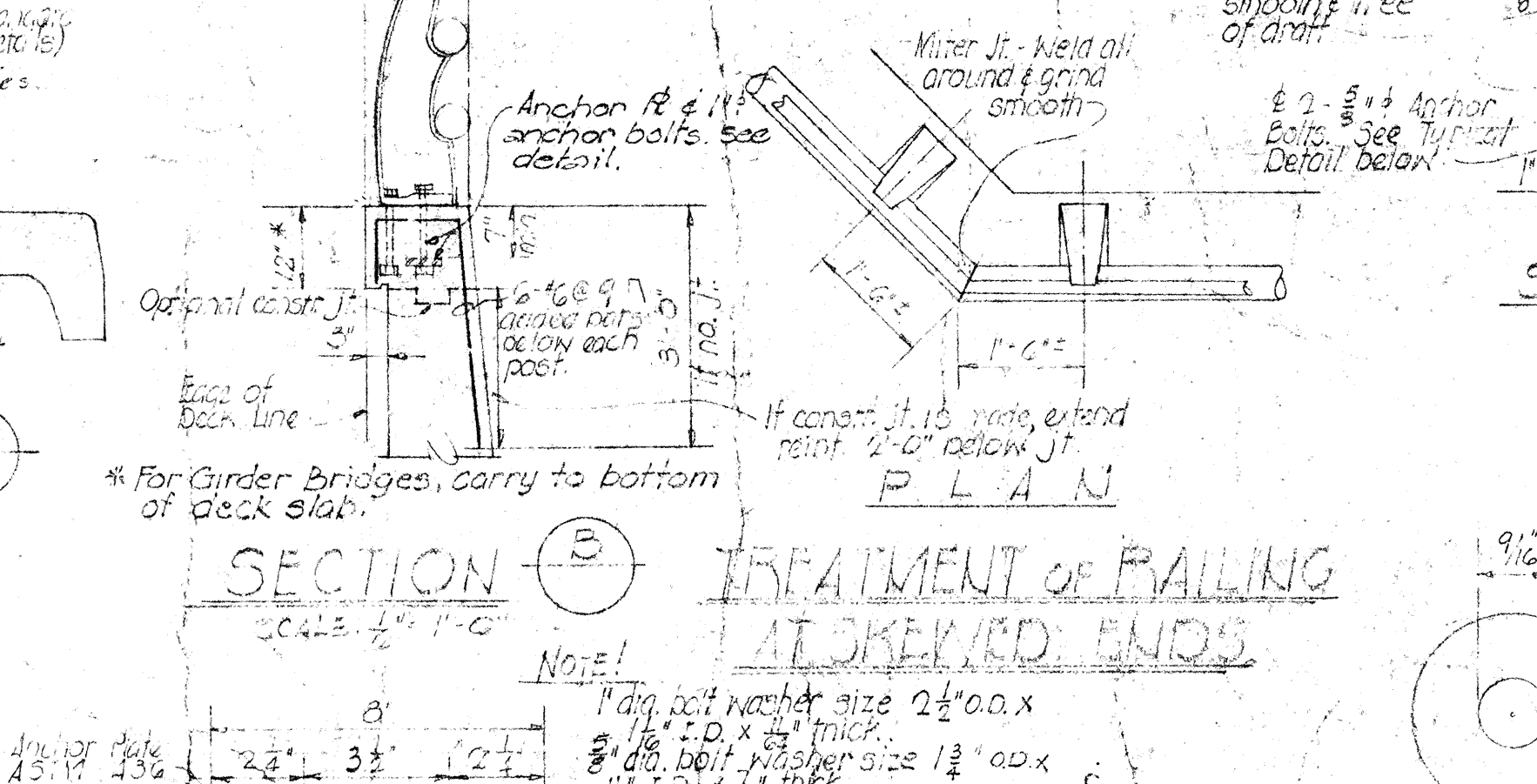
ELEVATION
Scale: 1"=1'-0"



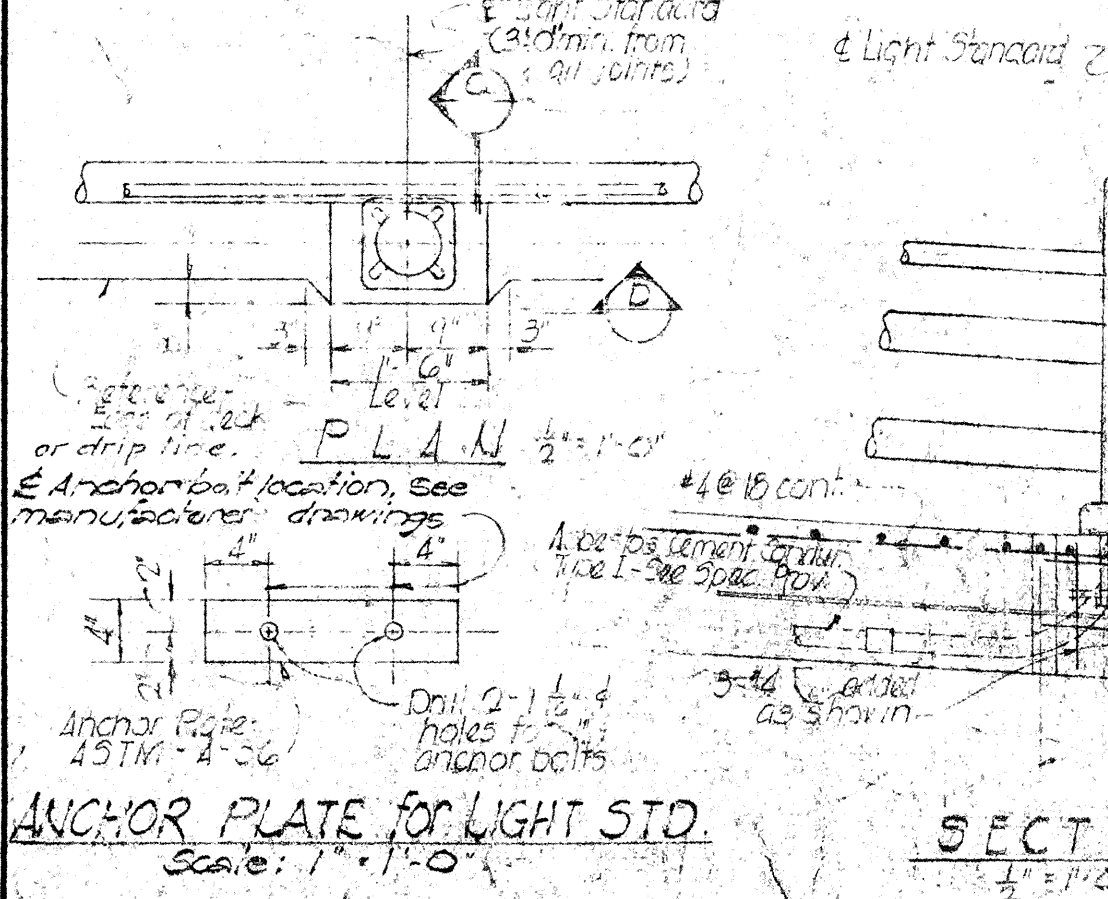
TYPICAL SECTION
Scale: 1"=1'-0"



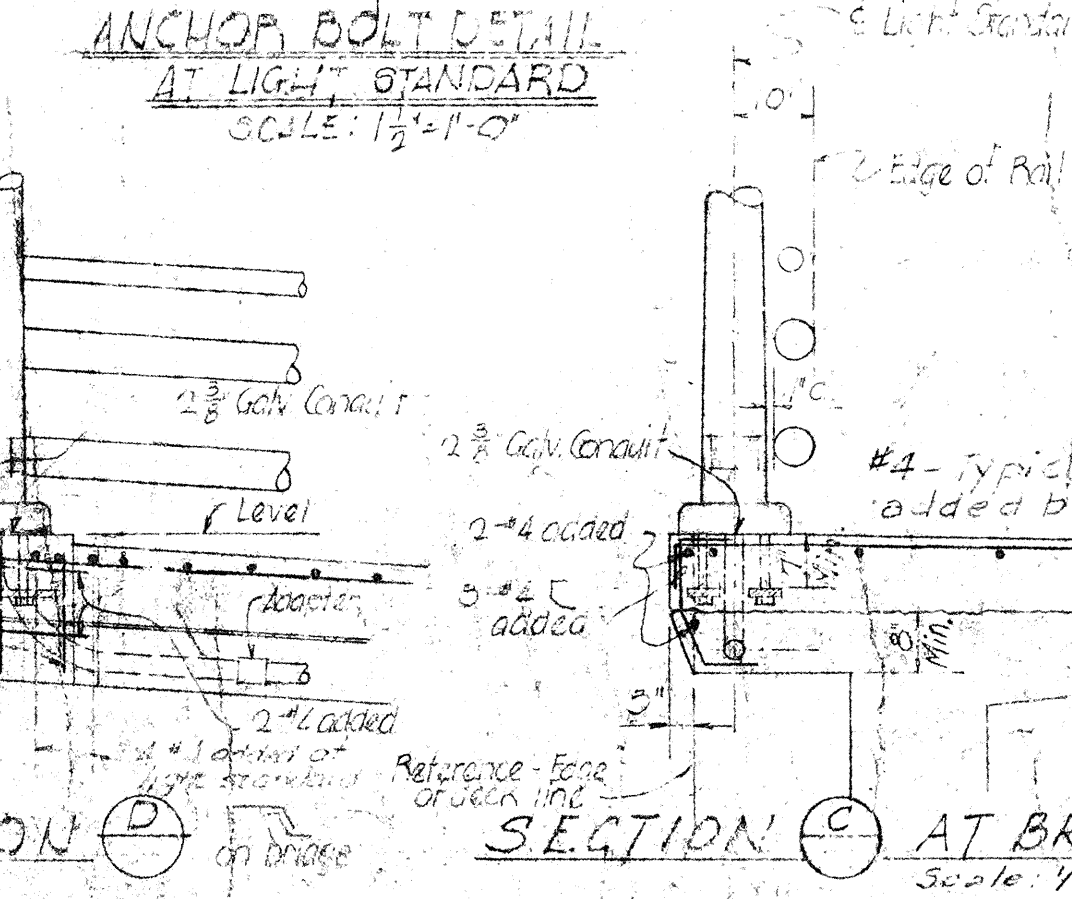
SECTION A
Scale: 1"=1'-0"



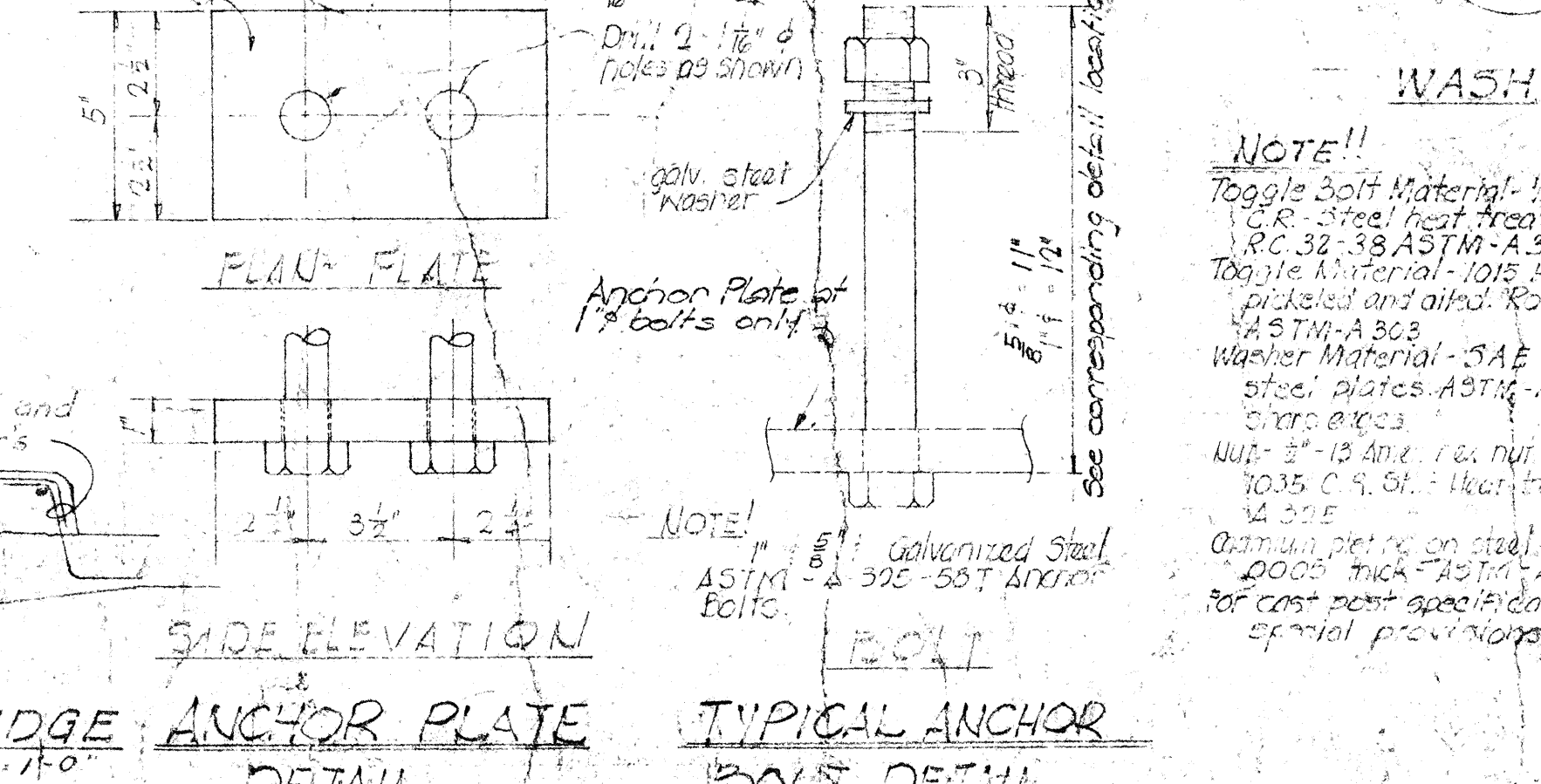
SECTION B
Scale: 1"=1'-0"



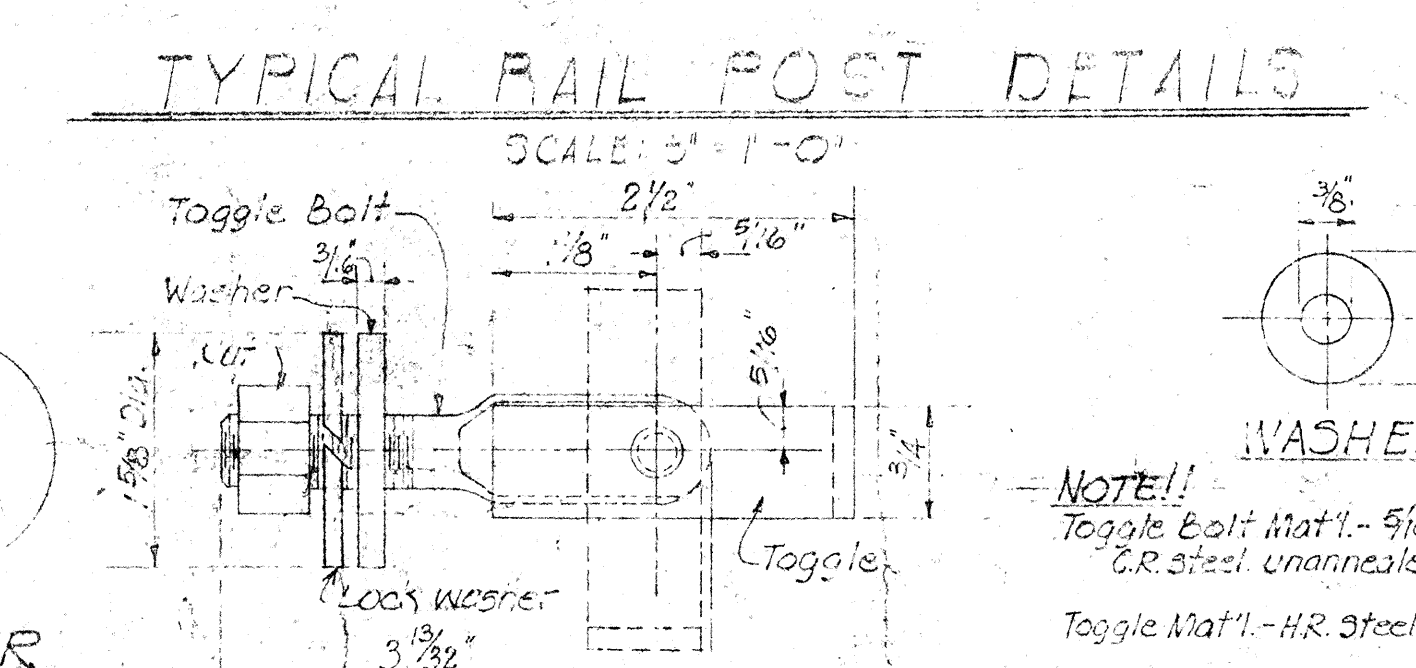
SECTION C AT RET WALL
Scale: 1"=1'-0"



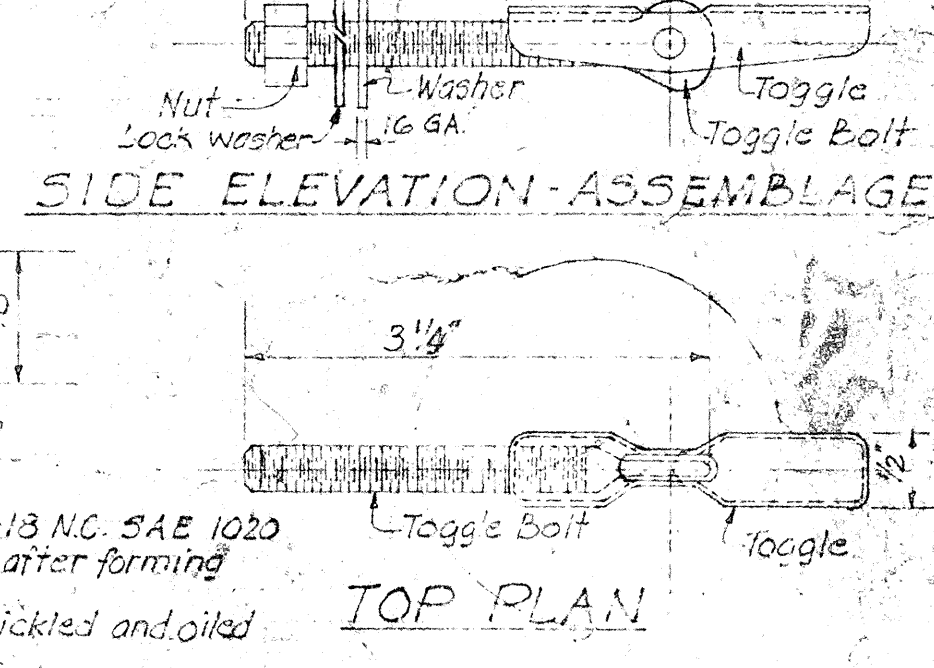
SECTION D
Scale: 1"=1'-0"



SECTION E AT BRIDGE
Scale: 1"=1'-0"



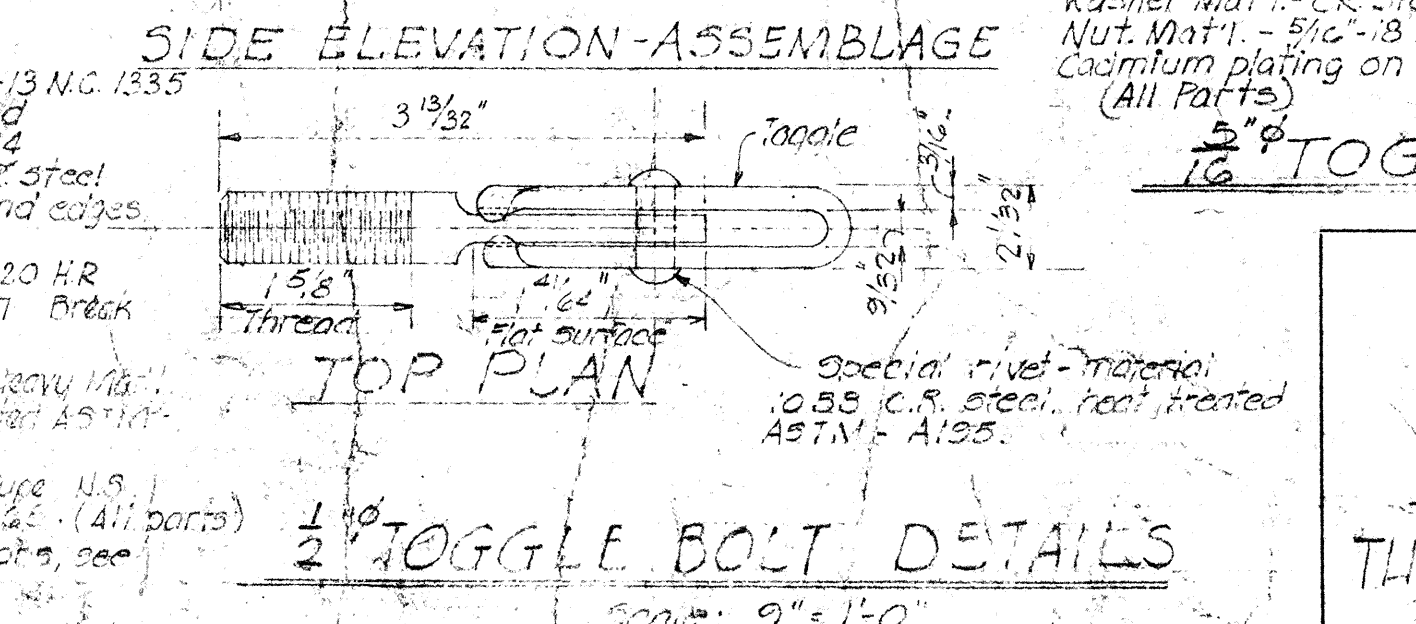
TYPICAL RAIL POST DETAILS
Scale: 1"=1'-0"



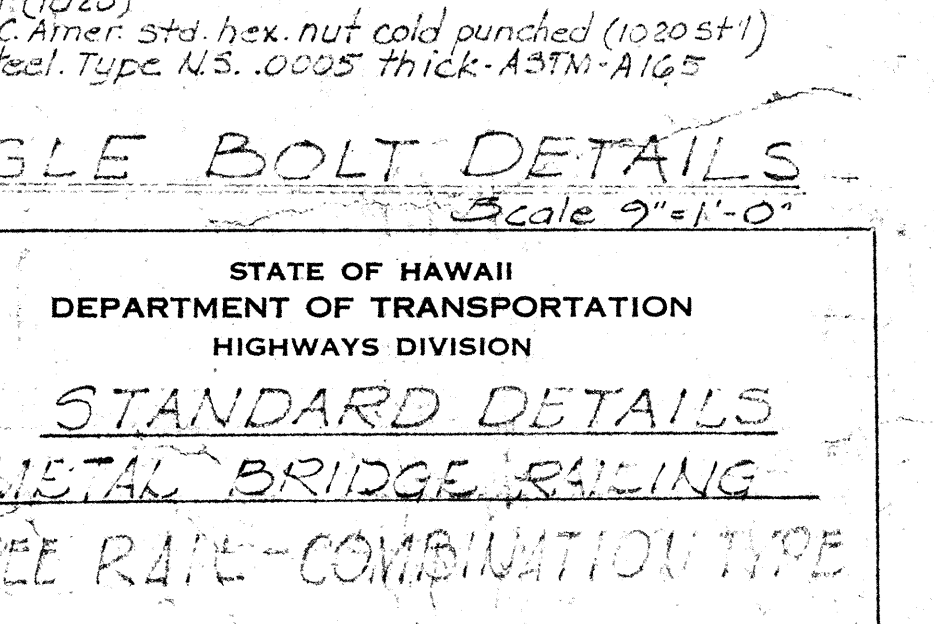
SIDE ELEVATION-ASSEMBLY
Scale: 1"=1'-0"

DETAILS OF RAILING AT LIGHT STANDARD
Scale: 1"=1'-0"

ANCHOR PLATE DETAIL
Scale: 1"=1'-0"



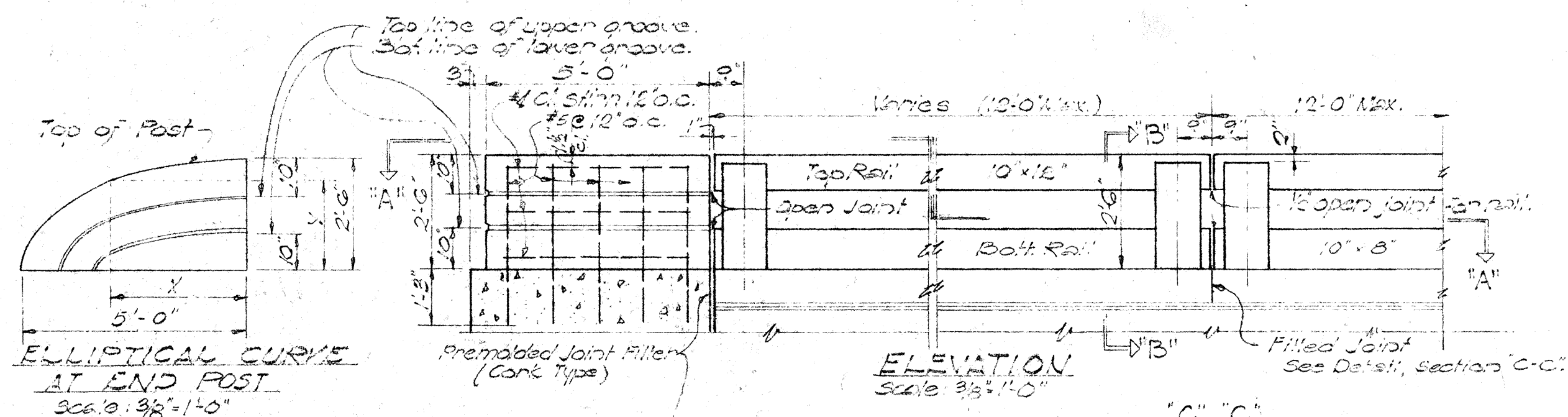
TYPICAL ANCHOR BOLT DETAIL
Scale: 1"=1'-0"



TOGGLE BOLT DETAILS
Scale: 1"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
METAL BRIDGE RAILING
THREE RAIL-COMBINATION TYPE
Scale: As Noted
SHEET No. 2 OF 3 SHEETS

Revised
June 64
April 65
March 66
July 66
Oct. 66



Top of Post

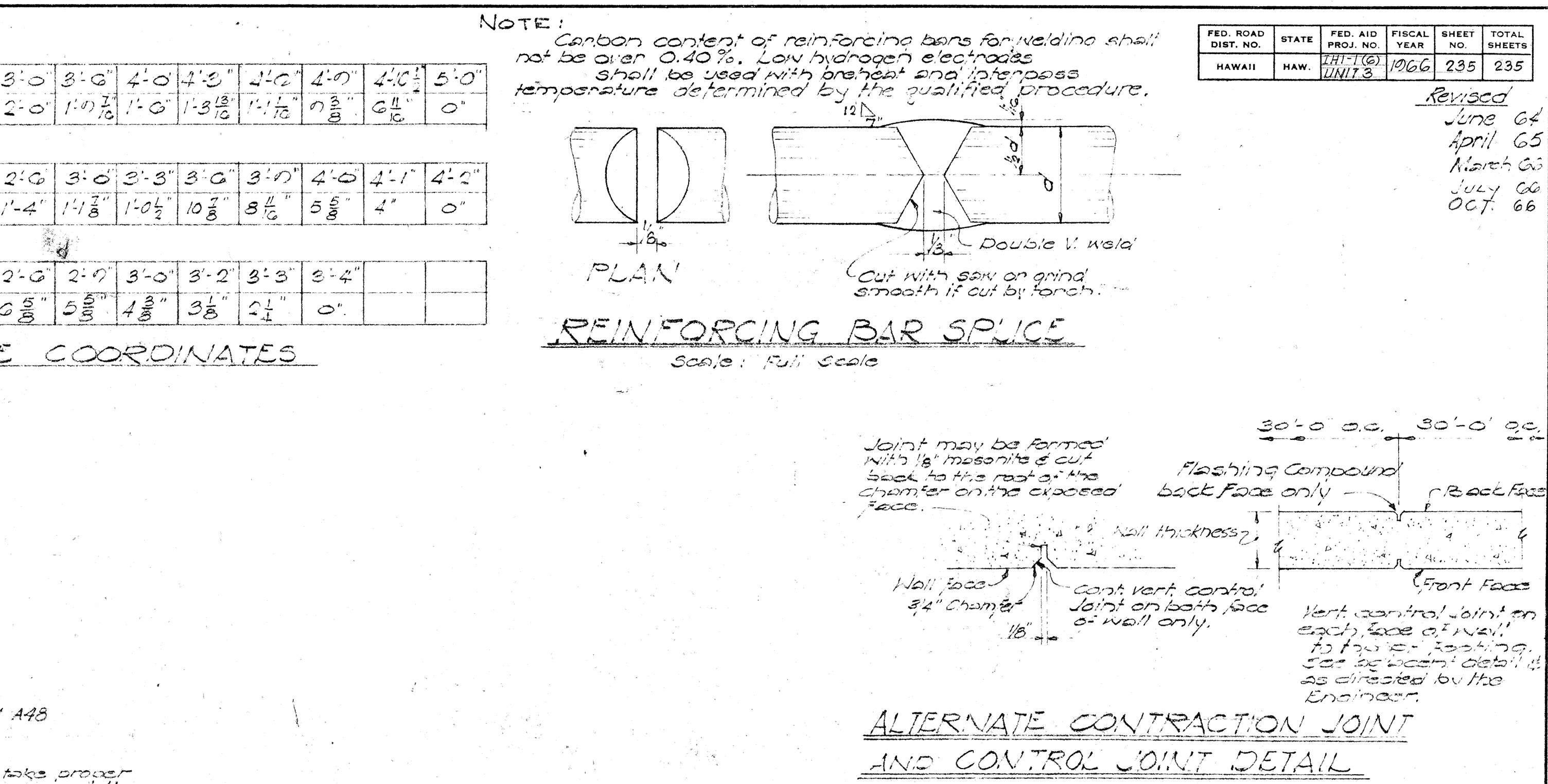
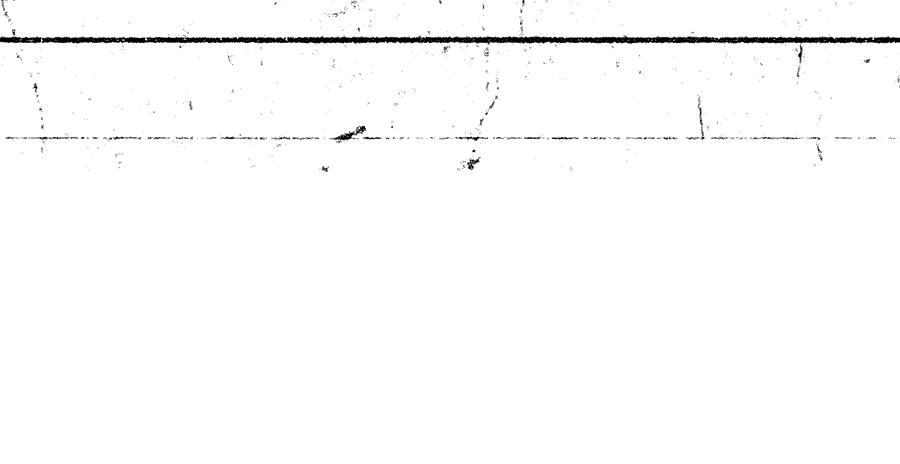
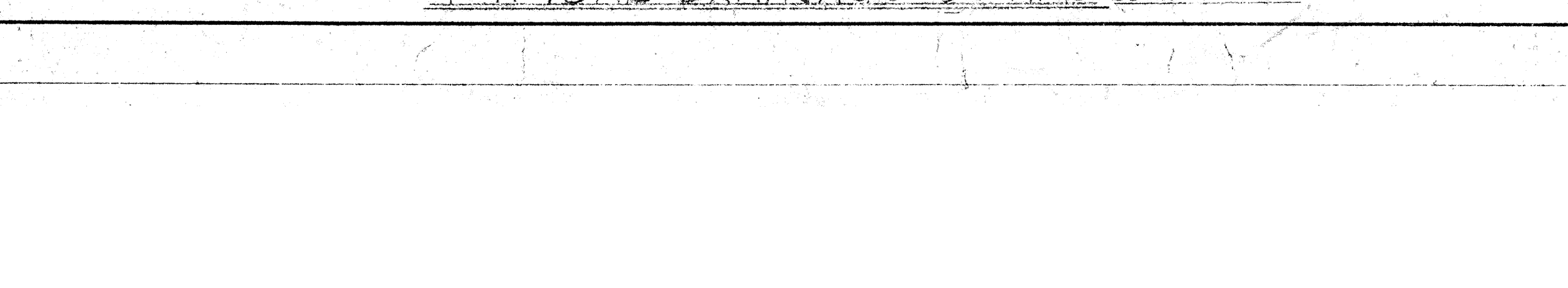
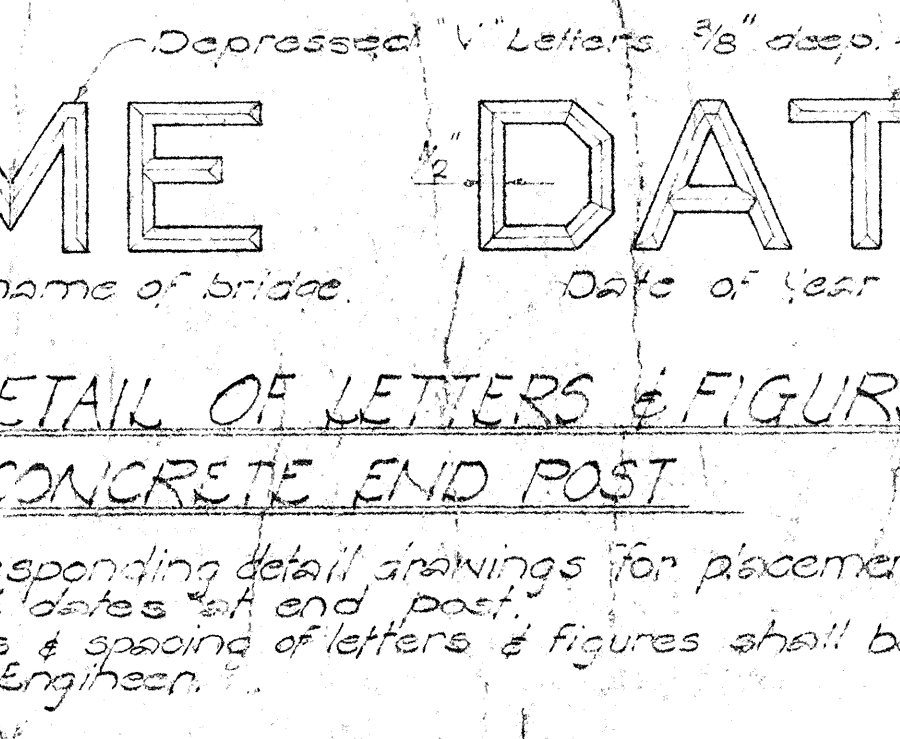
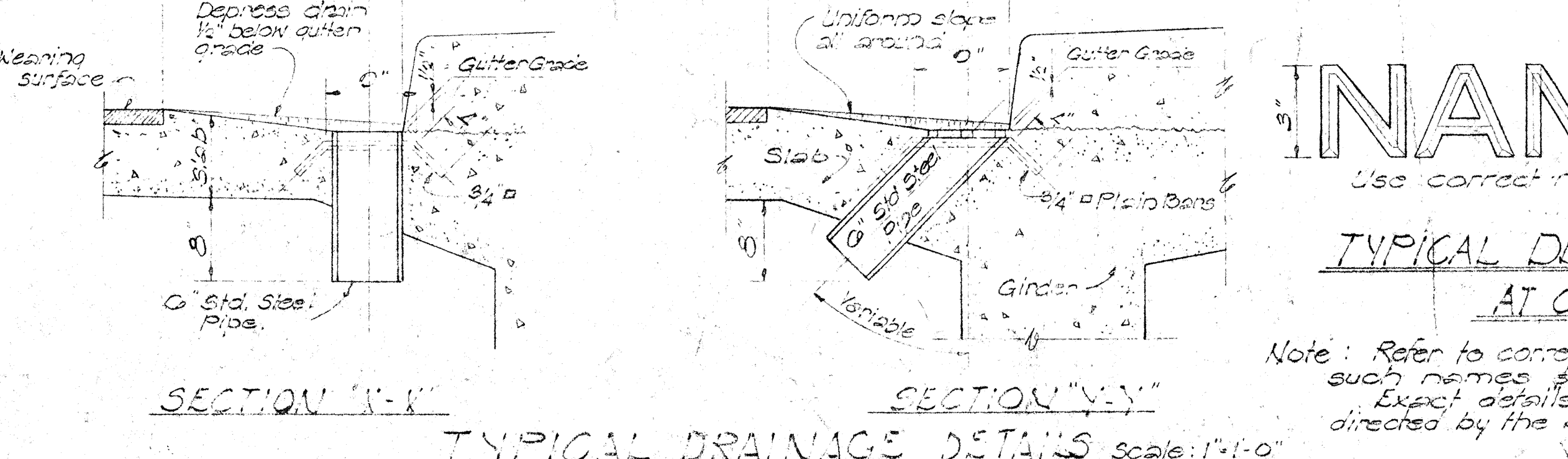
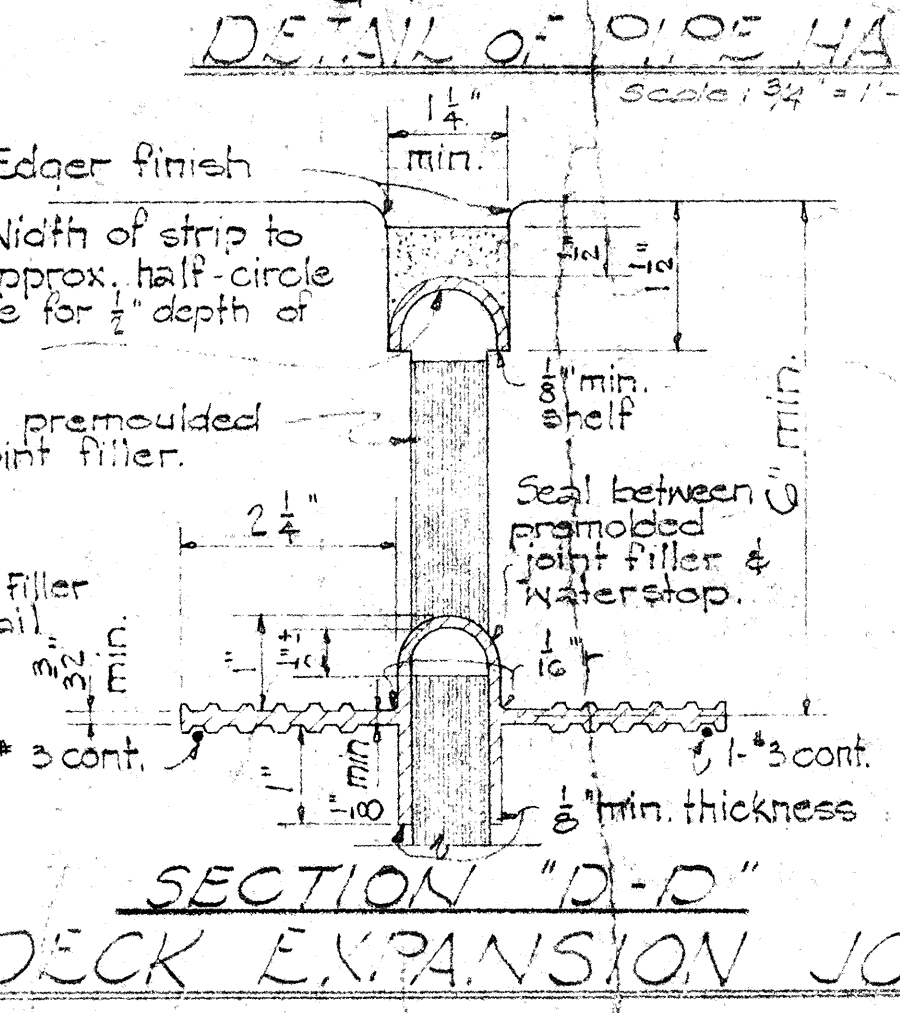
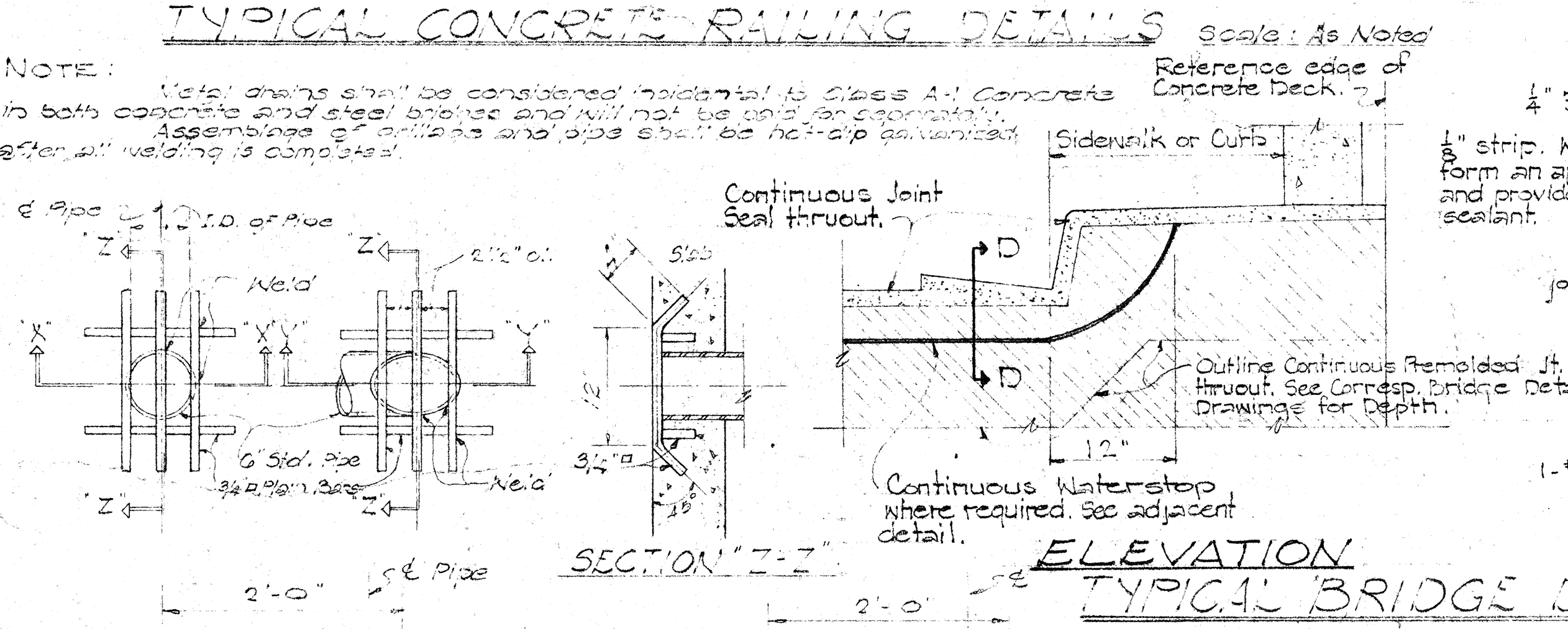
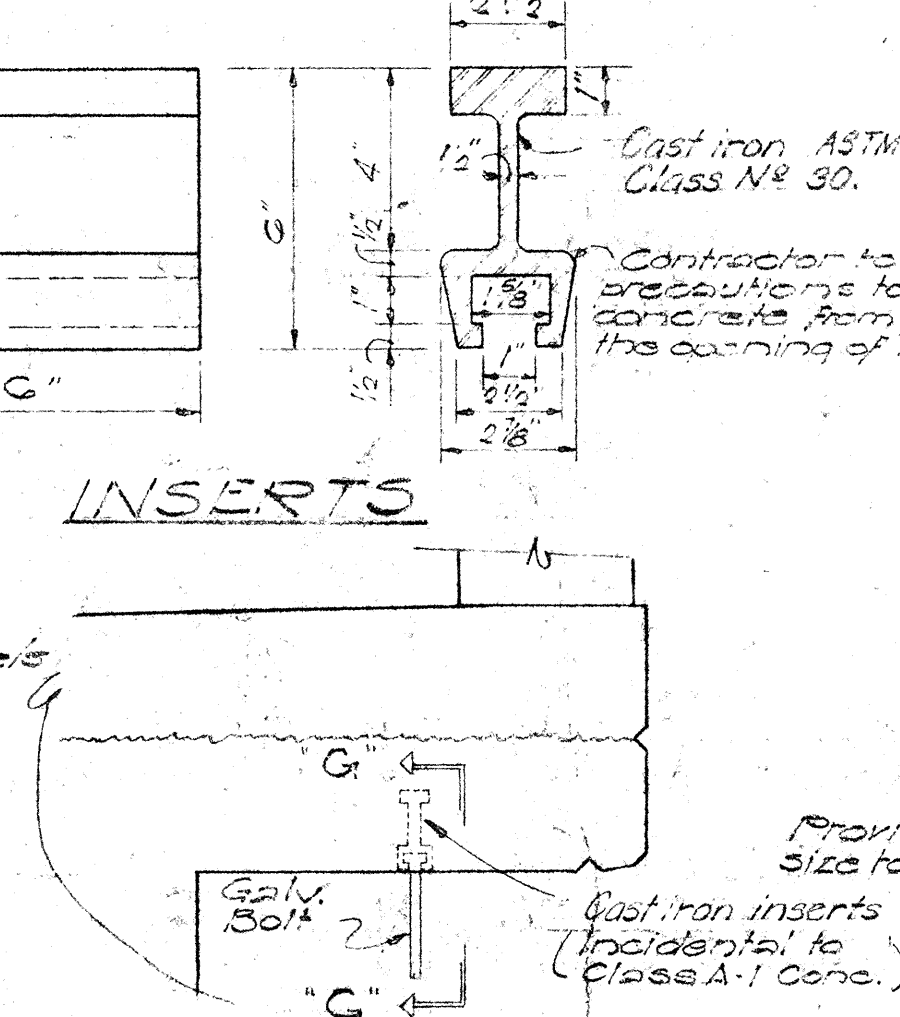
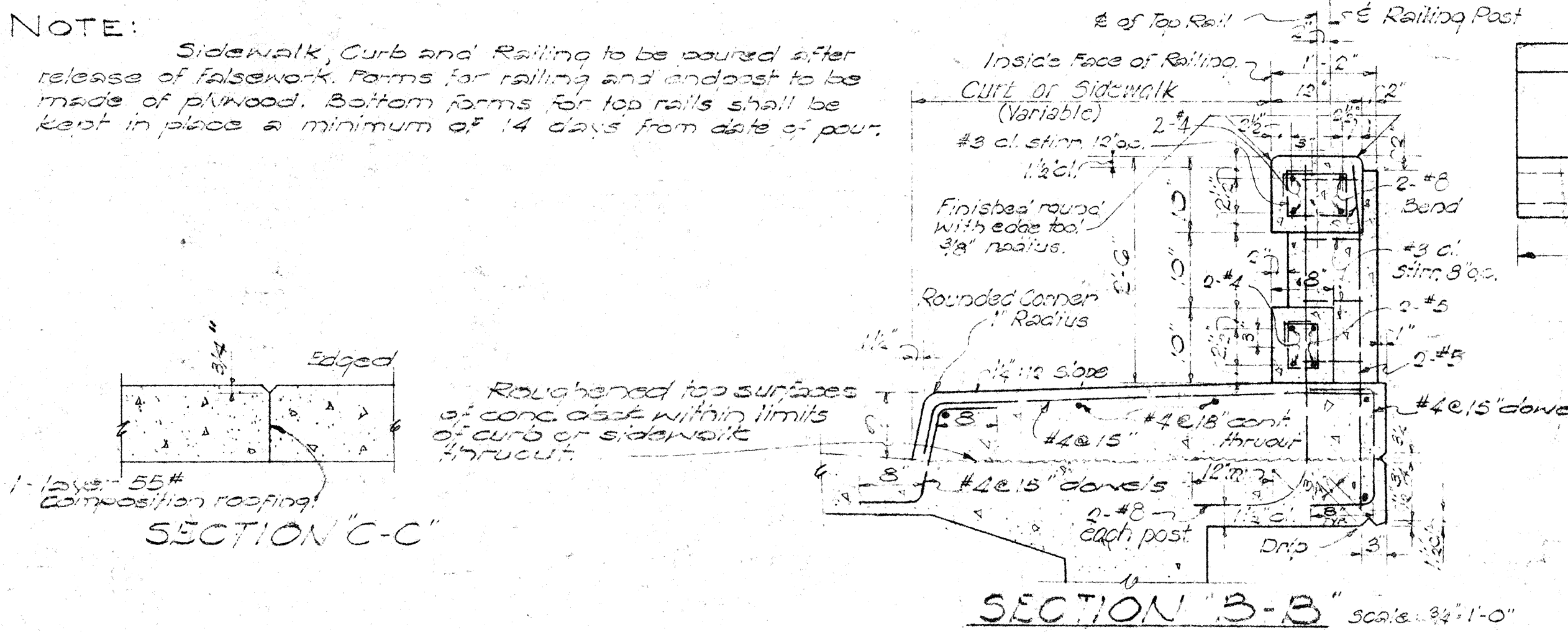
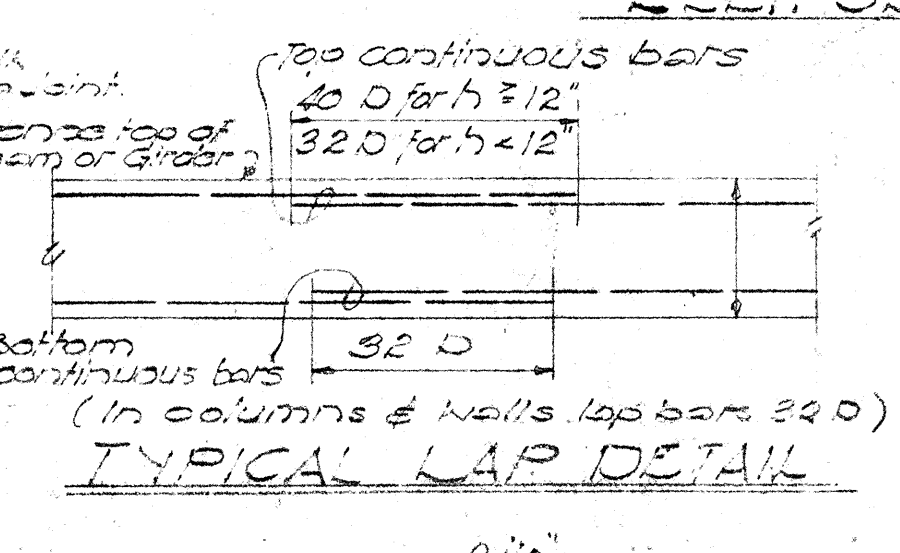
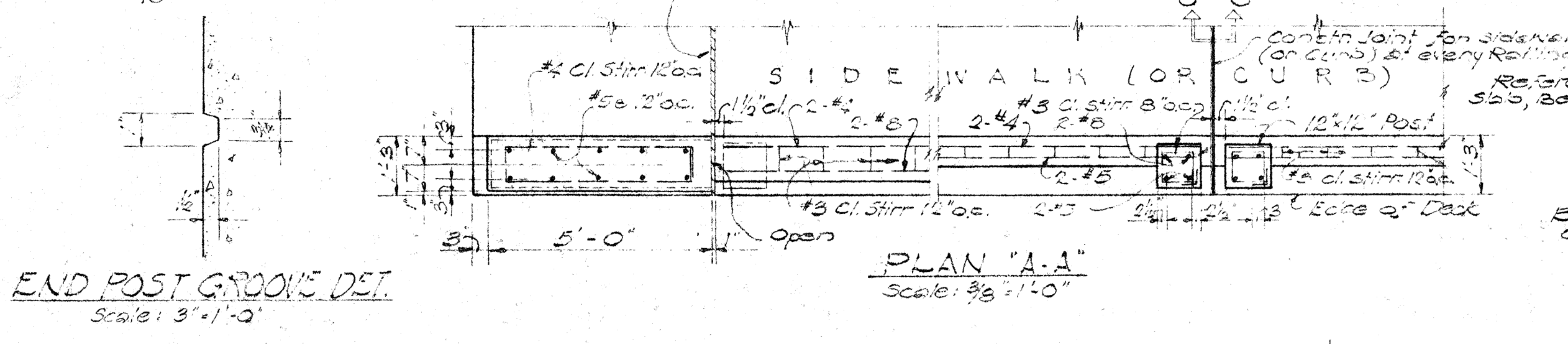
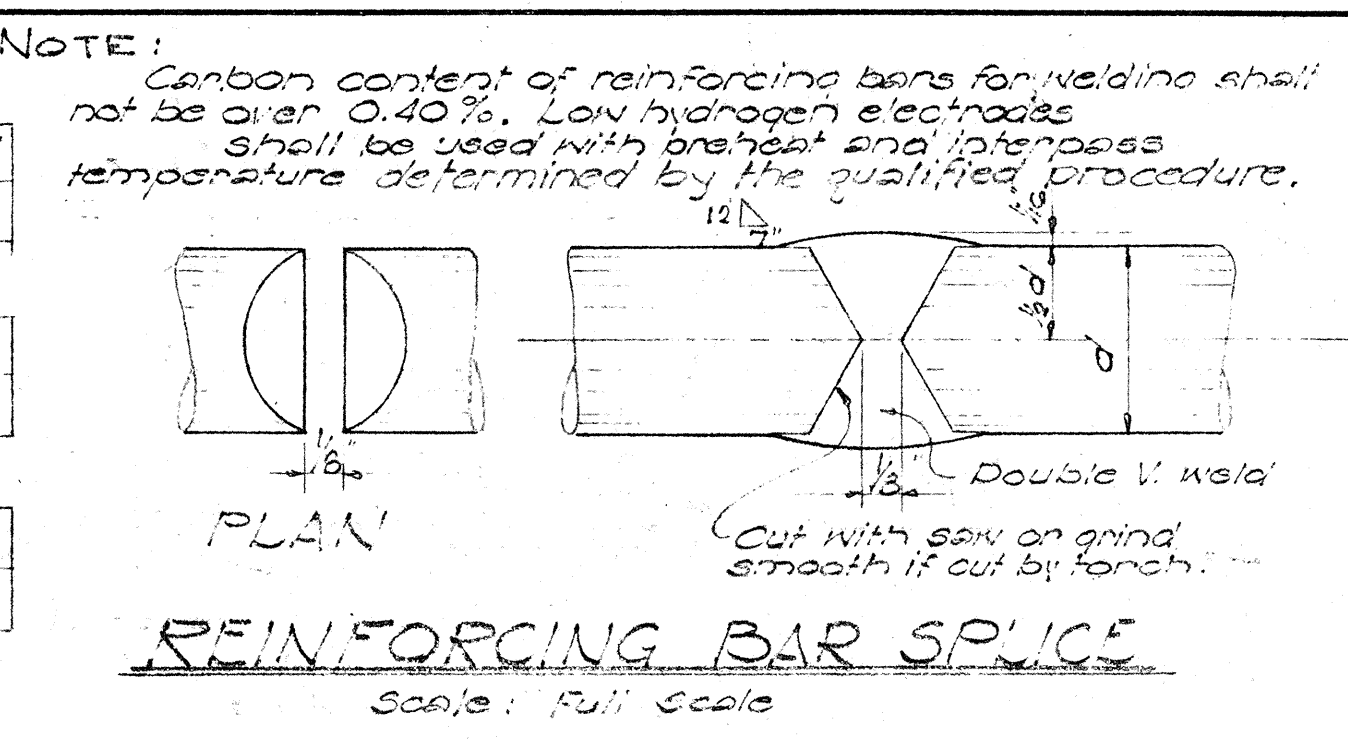
X	0	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"
Y	2'-0"	2'-6"	2'-10"	2'-10"	2'-10"	2'-10"	2'-10"	2'-10"	2'-10"	2'-10"

Top Line of Upper Groove

X	0	0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
Y	1'-8"	1'-7 1/2"	1'-7 1/2"	1'-6 1/2"	1'-5 1/2"	1'-4"	1'-3 1/2"	1'-3 1/2"	1'-2 1/2"	1'-2 1/2"

Bottom Line of Lower Groove

X	0	0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
Y	1'-0"	0 7/8"	0 7/8"	0 7/8"	0 7/8"	0 7/8"	0 7/8"	0 7/8"	0 7/8"	0 7/8"



GENERAL NOTES

- All concrete shall be Class A-1 unless otherwise noted.
- Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - a - 1 1/2" for stirrups of beams & pier caps.
 - b - 2" for ties of columns.
 - c - 2" for frames walls.
 - d - 3" for footings.
- Concrete seals receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top surfaces of the concrete seals shall be finished with a steel trowel to a smooth level at the elevation shown on the plans.
- Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
- Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
- Reinforcing bars longer than stock lengths and smaller than #14 may be lap welded in accordance with the requirements of the Standard Specifications unless otherwise required. #14 and #18 reinforcement shall be spliced with full penetration butt welds as specified below. Location of bottom bars at or near the centerline of the span and top bars at or near continuous supports shall be avoided. Welded splices shall be made at locations and according to procedures approved by the Engineer. Minimum spacing between parallel bars shall be 0.75 times the diameter of bars, but in no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate.
- All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
- Concrete finish - See Special Provisions.
- All welders and welding procedures for reinforcing steel shall be qualified according to the requirements of California State Highways Test Method No. Cal. 501-D.
- Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
- Except as otherwise noted on drawings all exterior corners & re-entrant angles in concrete work shall be chamfered 3" x 3". See Standard Specifications.
- Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood, except that metal forms may be permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.
- Neoprene pads where required are incidental to concrete and will not be paid for separately.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

April 6, 1964

SHEET No. 7-3 OF 3 SHEETS

235

DATE: _____
SURVEYED BY: _____
DRAWN BY: _____
CHECKED BY: _____
NOTE BOOK: _____
No. _____