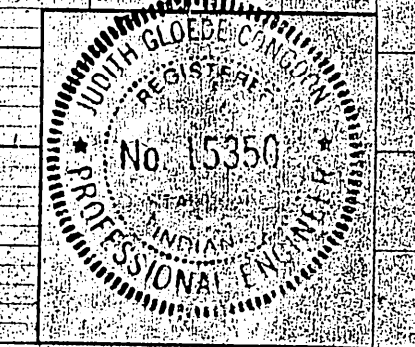
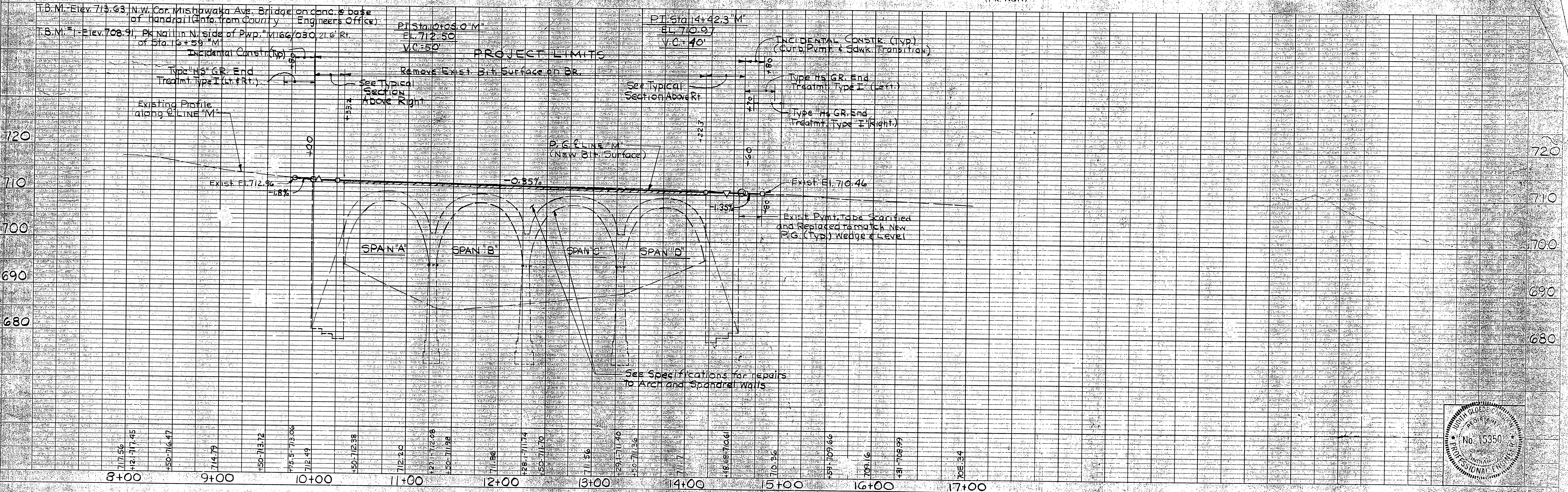
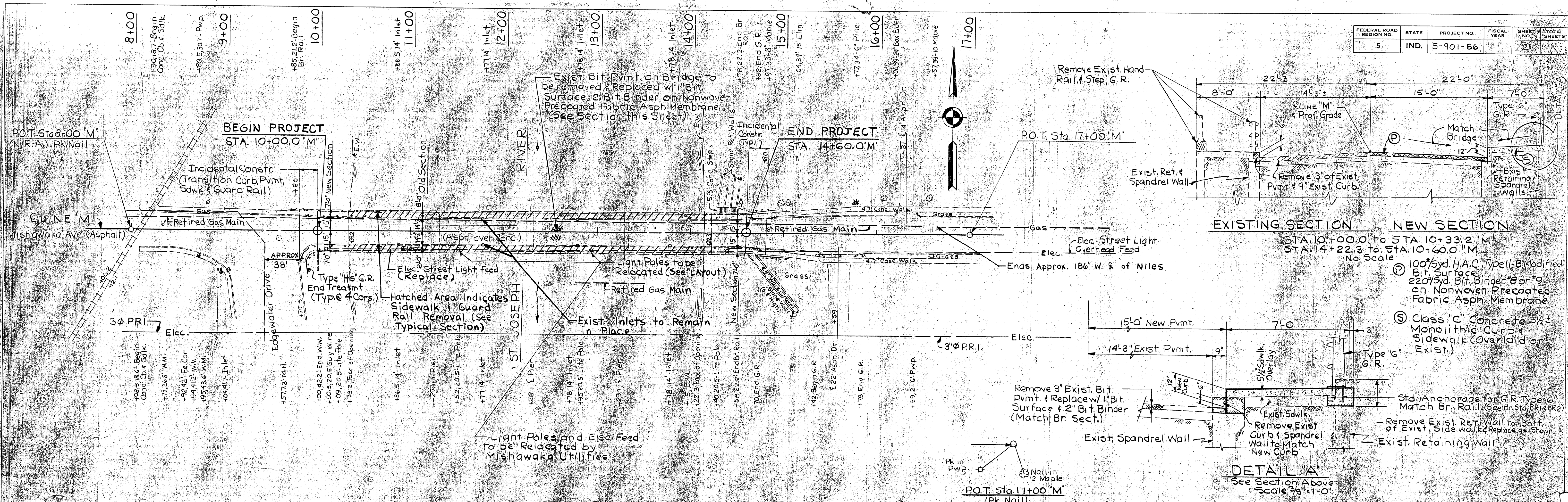
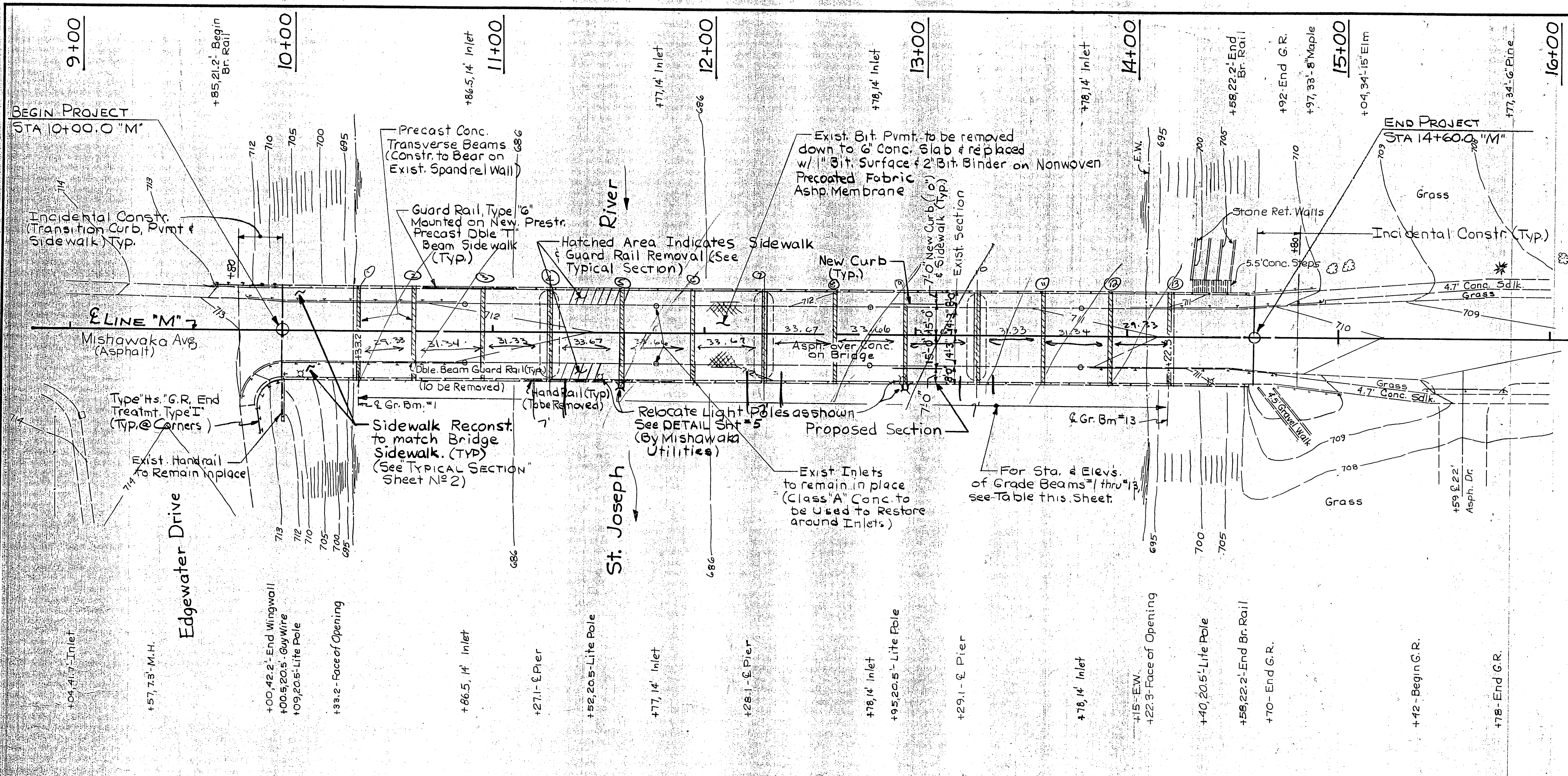


FEDERAL ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IND.	5-901-86		2	5

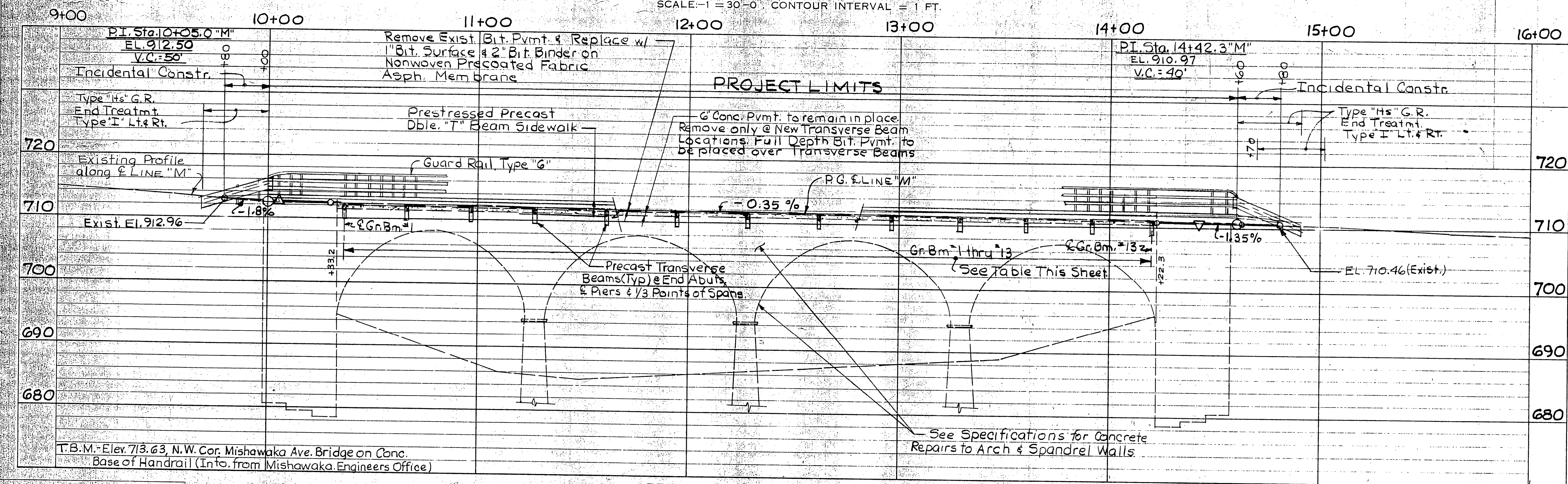


PROJECT NO.	LINE	SHEET NO.	TOTAL SHEETS
5-901-86		2	5

PLATE PLAN PROFILE R.P. STANDARD 1975



SITUATION PLAN
SCALE: 1" = 30'-0" CONTOUR INTERVAL = 1 FT.



PROFILE ON PROPOSED ROADWAY
SCALE: HORIZ. 1" = 30'-0" VERT. 1" = 10'-0"

PRESENT STRUCTURE
389'-1" SPAN, 28'-6" CLR. ROWY. W/ SDWK. LT. & RT.
CONCRETE SPANDREL ARCH BRIDGE

UTILITY OWNERS
GAS --- Northern Ind. Public Service Co.
ELECTRIC --- Mishawaka Municipal Utilities

NOTES
FOR TYPICAL SECTION, see Sht. #2 (Rdwy) & Sht. #4 (Bridge).
See Construction Sequence and Procedures Notes
for Incidental Constr. & Sidewalk Transition on
GEN. PLAN Sht. #4

TRANSVERSE GRADE BEAMS SEAT ELEVATIONS

BEAM NO	C STA.	PROFILE GRADE ELEVATION	OFFSET	GRADE BEAM SEAT ELEV.	USE ELEVATION
1	10+35.10	712.3947	-2.4375	709.9572	709.955
2	10+64.43	712.2920	"	709.8545	709.855
3	10+95.77	712.1823	"	709.7448	709.745
4	11+27.10	712.0726	"	709.6351	709.635
5	11+60.77	711.9548	"	709.5173	709.515
6	11+94.43	711.8370	"	709.3995	709.400
7	12+28.10	711.7192	"	709.2817	709.280
8	12+61.77	711.6014	"	709.1639	709.165
9	12+95.43	711.4836	"	709.0461	709.045
10	13+29.10	711.3658	"	708.9283	708.930
11	13+60.43	711.2561	"	708.8186	708.820
12	13+91.77	711.1464	"	708.7089	708.710
13	14+21.10	711.0437	-2.4375	708.6062	708.605

LAYOUT
REHABILITATION OF CONCRETE SPANDREL ARCH BRIDGE
4 SPANS - 93'-11", 101'-0", 101'-0", 93'-2"
1-30'-0" ROWY. W/ 6'-0" SDWK. & 1'-3" COPING LT. & RT. ON MISHAWAKA AVE
SKREW 0° 00'
44'-6" O TO O COPINGS

ST. JOSEPH COUNTY
SCALE: AS NOTED DATE: _____
SUBMITTED FOR APPROVAL: _____

DRAWING: OF SHEET: 3 OF 5
PROJECT: S-901-86 STATION: _____
BRIDGE CONTRACT NO. _____
BRIDGE FILE: _____



DRAWN: D.E.B. CKD: A.S.A.
DESIGNED: J.G.C. CKD: A.S.A.
TRACED: CKD

SP-22396

NOTE: FIELD NOTES, BOOK

DESIGN DATA
 1985 AASHTO Specifications & all subsequent Interims
 Sidewalk Designed for 85 psf Live Load
 Transverse Beams: $f_c = 4000\text{psi}$
 Double T Beams: $f_c = 4000\text{psi}$
 Double T Beams: $f_t = 5000\text{psi}$
 Reinforcing Steel: $F_y = 60,000\text{psi}$
 Prestressing Steel: $F_{pu} = 270,000\text{psi}$

GENERAL NOTES

CONSTRUCTION SEQUENCE AND PROCEDURES

1. Patching concrete which has deteriorated on the surface of the arches, piers, abutments, spandrel wall and retaining walls.
2. Removal of existing guard rail and hand rail and coordinate their storage with the owner.
3. Removal of existing sidewalks, sidewalk cantilevers and top portion of spandrel walls down to bottom of existing 6" concrete slab as shown on drawings.
4. Removal of existing bituminous pavement (3 1/2" - 4") without damaging the existing concrete pavement underneath as shown on drawings.
5. Removal of 6" retired gas main.
6. Removal of 6" concrete slab and earthfill within areas shown on the drawings for placement of precast concrete grade beams.
7. Removal of portions of approach sidewalks as shown on drawings.
8. Coordinate with utility for removal, temporary storage and relocation of lighting poles before sidewalk removal.
9. Recapping of spandrel walls for grade beam seats, compaction of disturbed arch fill under grade beams, setting of grade beams as shown on the drawings including the use of low strength fly ash concrete to fill around the beams.
10. Reconstruction of the concrete curb along the top of the existing spandrel walls.
11. Setting of the modified double tee beams.
12. Installation of guard rail Type "6" on the structure and guardrail buried ends on approaches.
13. Cleaning and patching of concrete pavement cracks and patching of pavement where retired gas main was removed.
14. Placement of non-woven precast fabric and bituminous binder and surface.
15. Construction of approach sidewalks.
16. Provide anchors for, and arrange for, reinstallation of bridge lighting. (Mishawaka Utilities)
17. Transition of new sidewalk and curb construction to existing sidewalk and curb within the incidental construction area.

The Contractor is advised that the Construction sequence and procedures for removal and reconstruction of the different items included in this contract shall be submitted for review by the Engineer before any of the demolition and reconstruction work can be started.
 The Contractor is cautioned that due to the poor condition of some segments of the existing sidewalk and sidewalk cantilevers, he should take particular care in the use of the sidewalk space and its demolition. The Contractor shall perform whatever inspection and calculation necessary for the safety of his equipment and his personnel in operation on portions of the existing sidewalk and shall assume full responsibility for their safety. (microfilm cards of the existing plans is available at the County Engineer's office, County-City Building, South Bend, Indiana).

GENERAL PLAN
 REHABILITATION OF CONCRETE SPANDREL ARCH BRIDGE
 4-SPANS-93'-11", 101'-0", 101'-0", 93'-2" SKREW 0° 00'
 1-30'-0" RDWY. w/6'-0" SDWK. & 11-3" COPINGS L&RT. 44'-6" O. to O. COPINGS OVER ST. JOSEPH RIVER ON MISHAWAKA AVE

ST. JOSEPH COUNTY

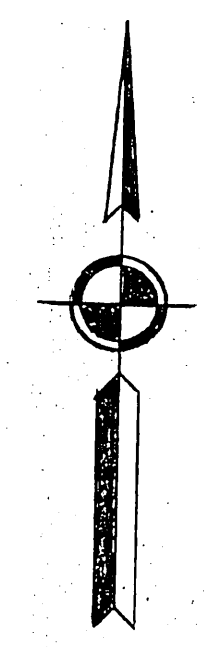
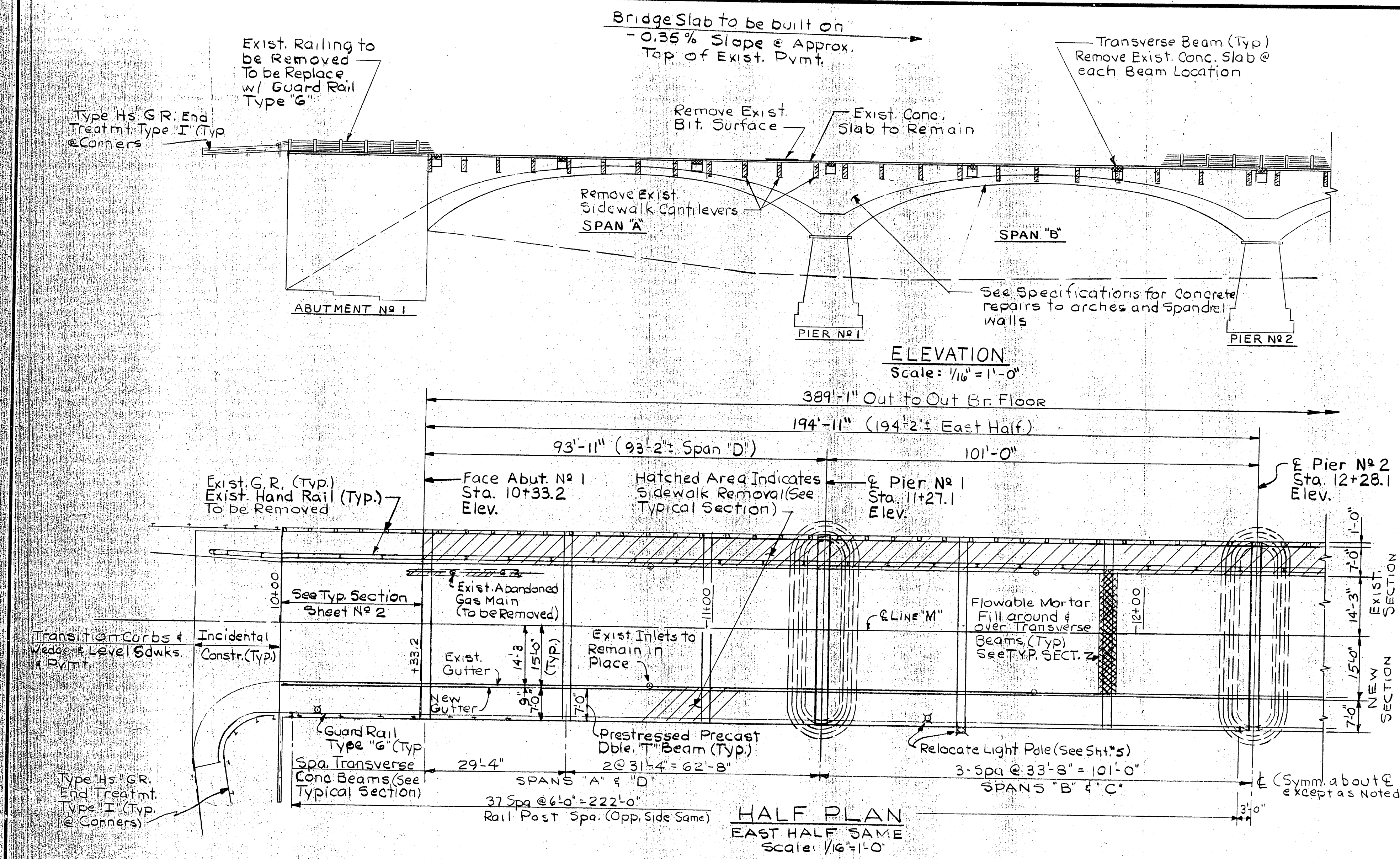
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DATE: -

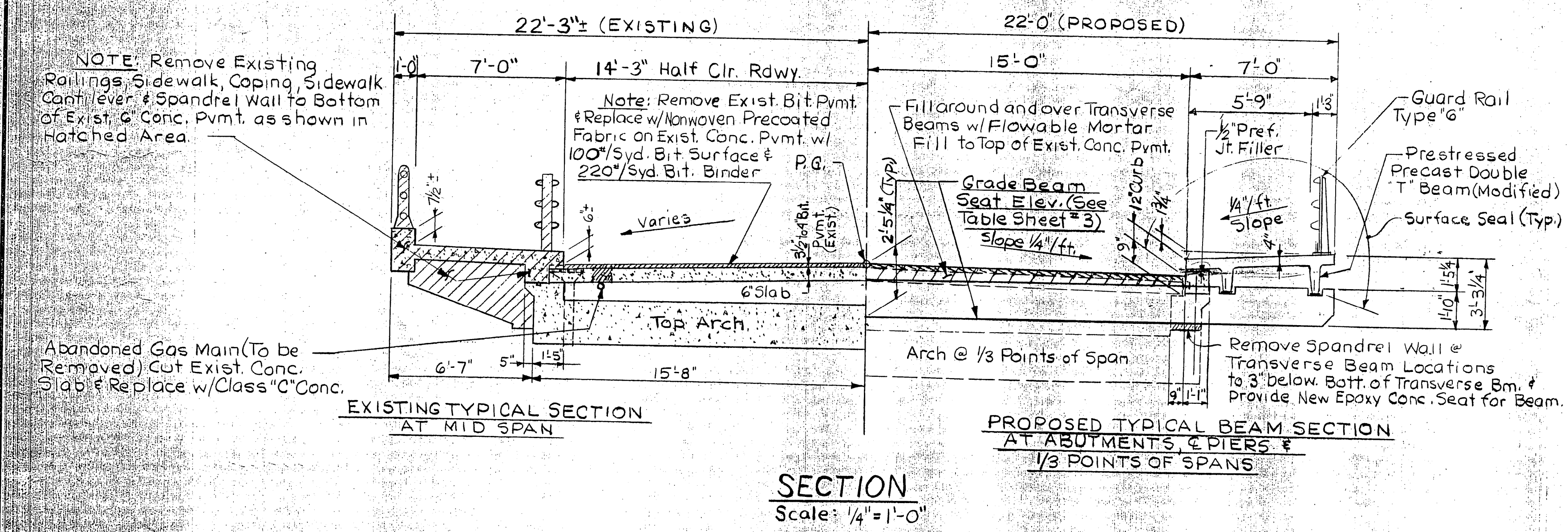
1987

SUBMITTED FOR APPROVAL:

DRAWING OF SHEET 4 OF 5
 PROJECT: S-901-86 STATION: -
 BRIDGE CONTRACT NO.
 BRIDGE FILE: -



Handwritten notes:
 44' 1.5' H
 1.9' H
 1.9' H
 CP = 3' 1/2" above top of Beam
 1/4" above top of Beam
 1/4" above top of Beam
 1/4" above top of Beam



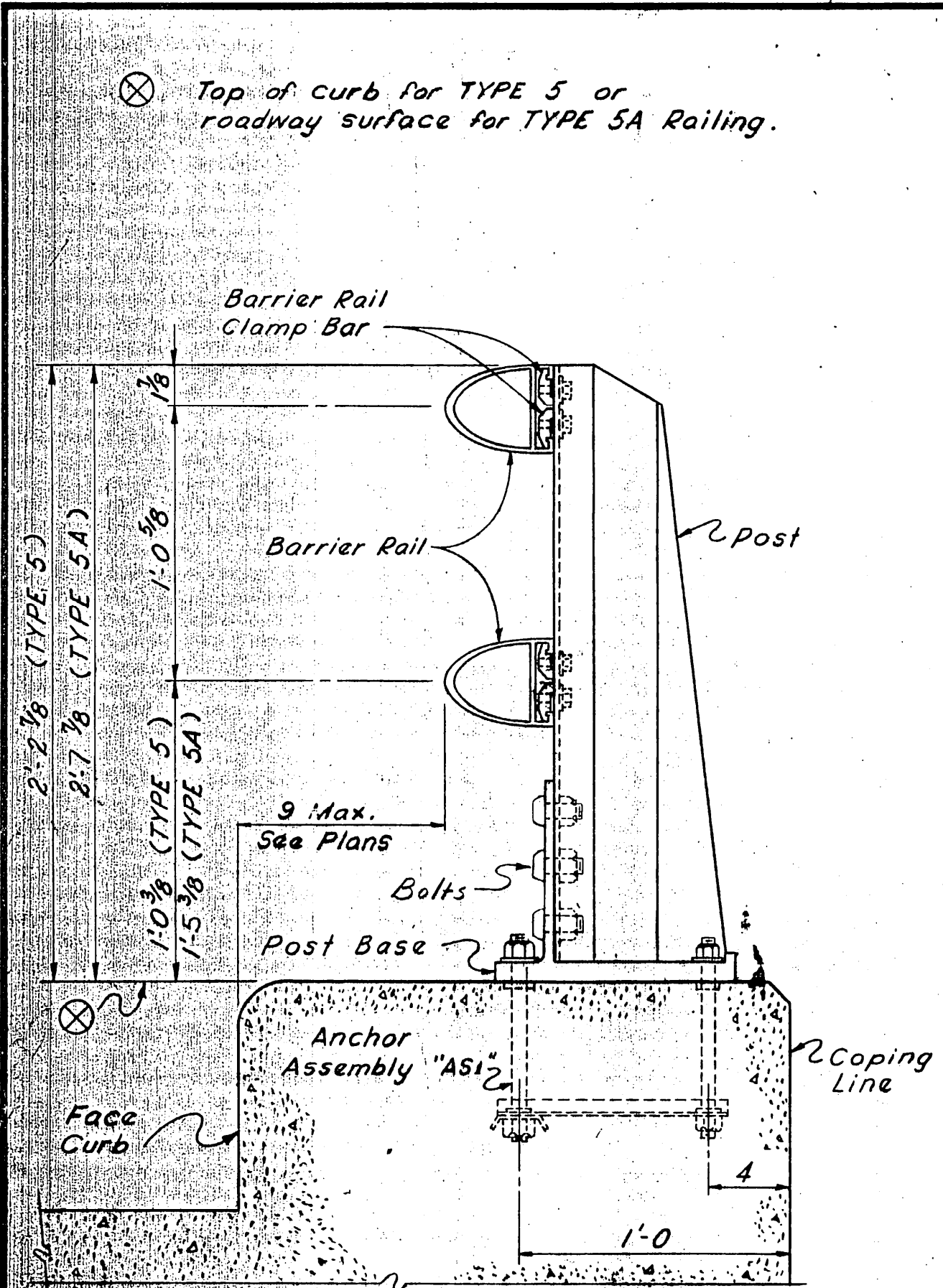
STANDARD DRAWINGS

BRIDGE	ROAD	PURPOSE
BR 1		Type "6" Alum. Guard Rail
BR 2		Alum. Bridge Railing
CI		Bar Bending Details
GR 2		Type "H5" Guard Rail
GR 4A		
GR 5		Alum. Guard Rail Terminal End
GR 10		Type "I" End Treatment S.B.G.R. & Conn.
DET. SH 1		
1, 1, 8, 12		
2A, 3, 3A		Standard Detour Signs
4, 5 & 5A		

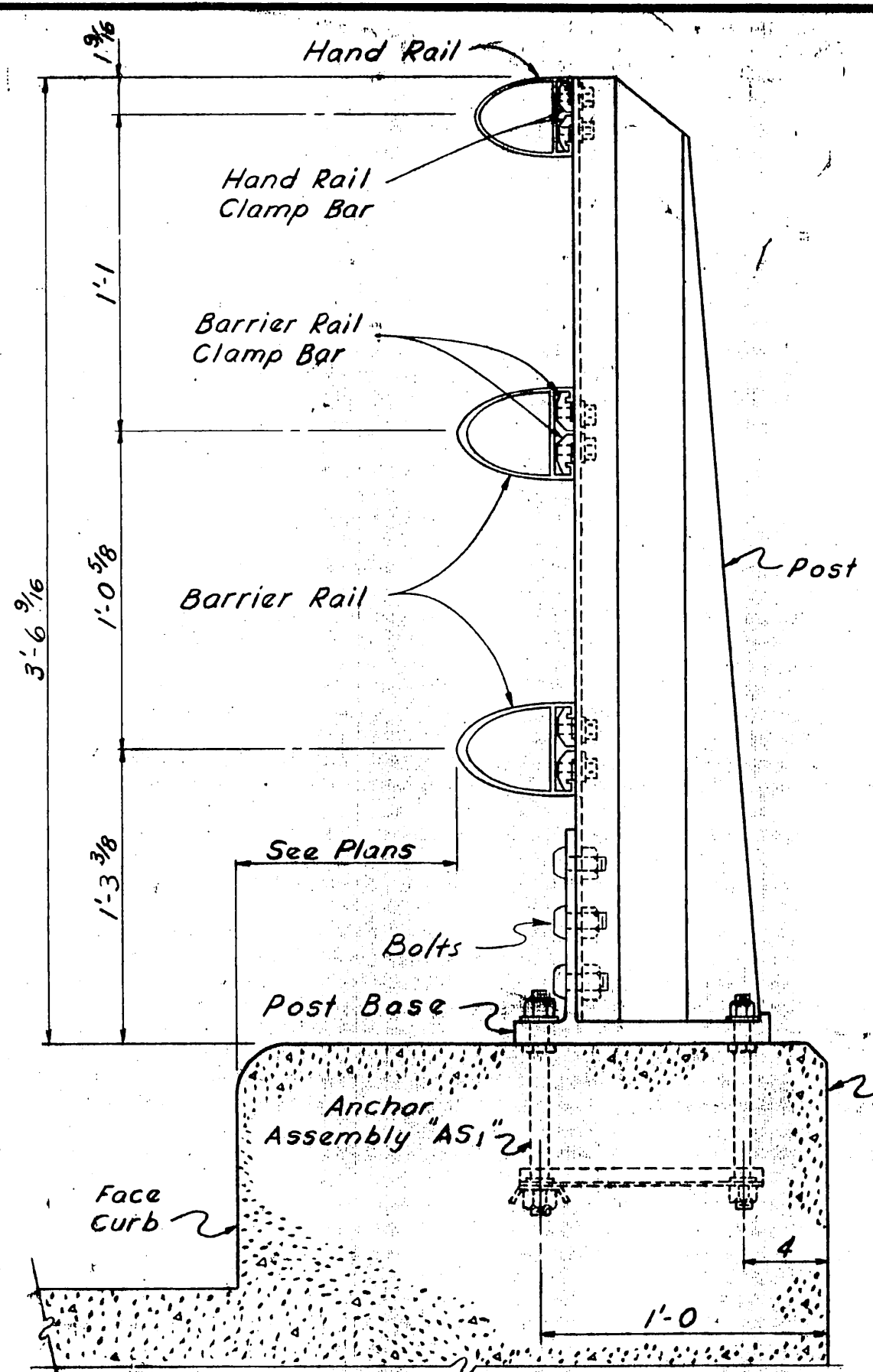
DESIGNED: A.S.A. CKD: J.G.C.
 DRAWN: D.A.B. CKD: A.S.A.
 CHECKED: [Signature] CKD: [Signature]

SF-22317

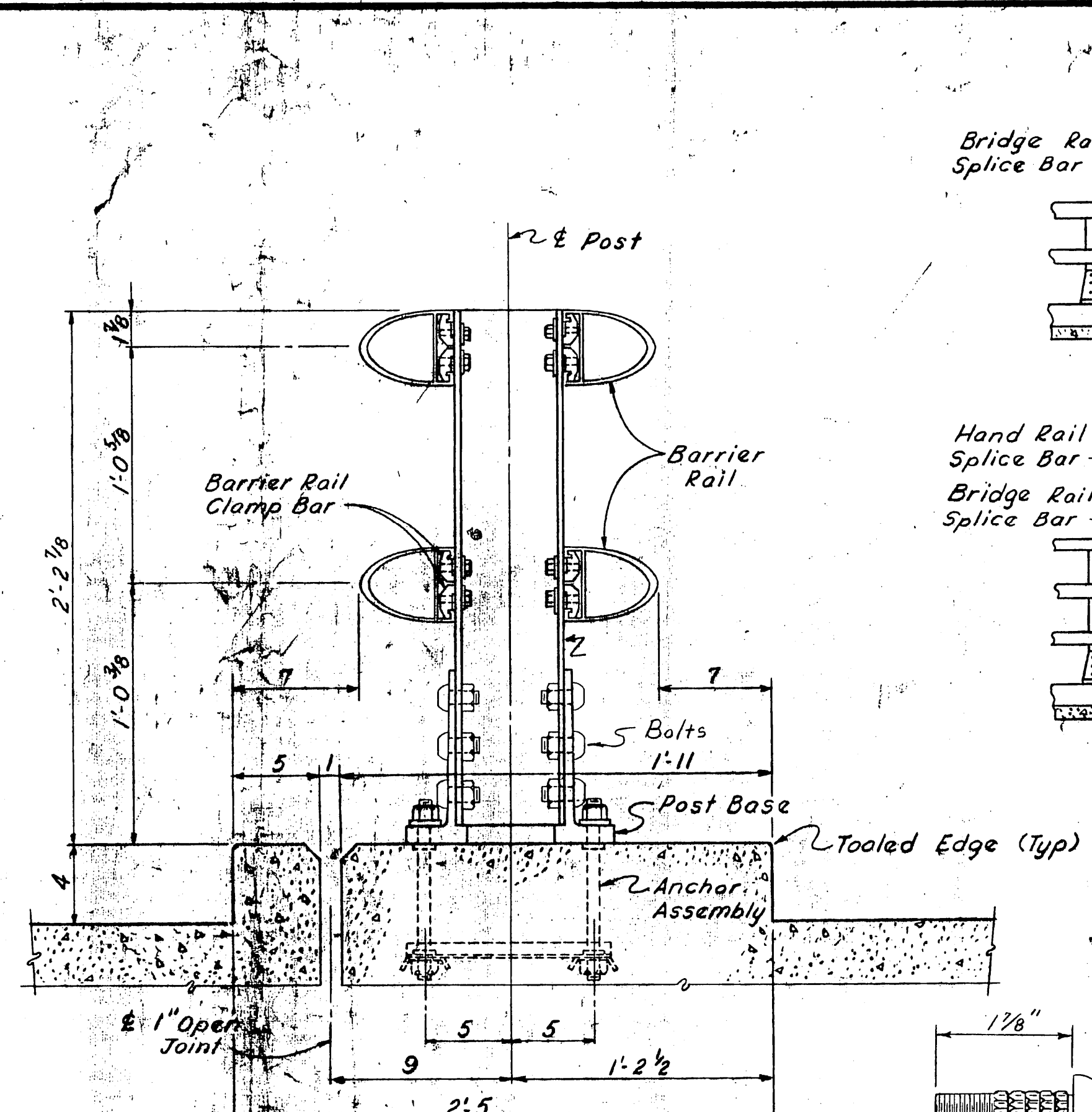
DO NOT DESTROY
FILE: OBSOLETE STANDARDS
BRIDGE DESIGN



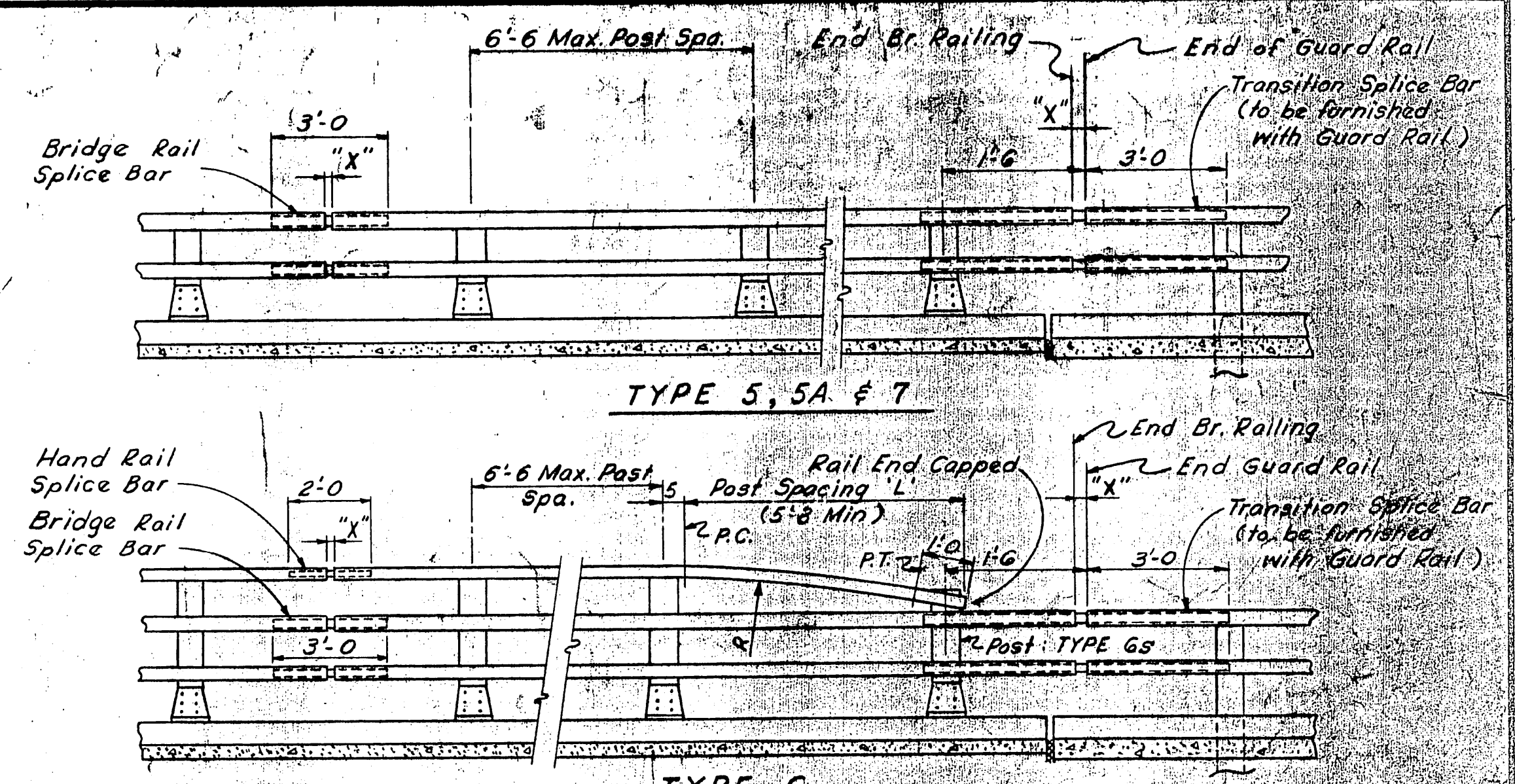
TYPES 5 & 5A



TYPE 6



TYPE 7



RAILING ELEVATIONS
R = 8L - 24 (ft.)

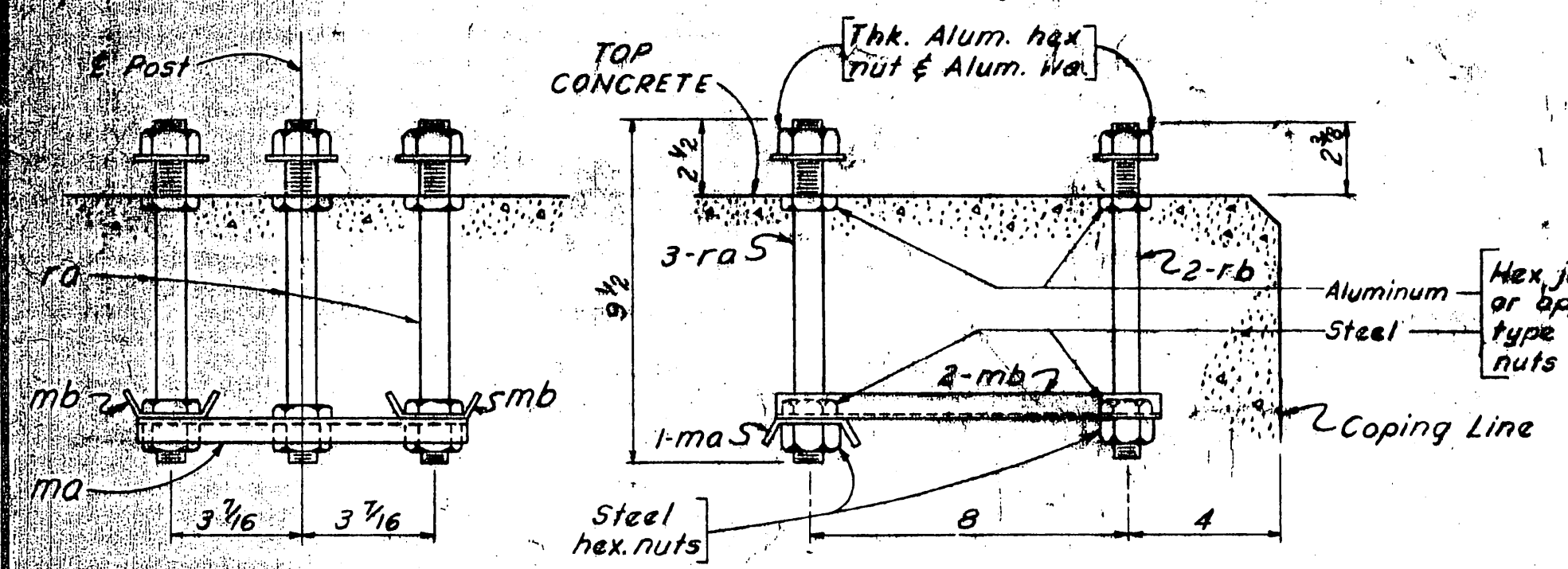
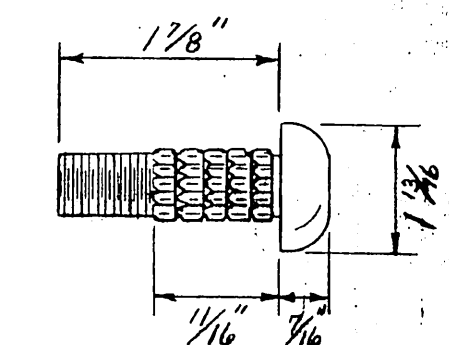
NOTE:
Opening "X" in rail to be 1 1/2" at all intermediate panels. See Plans for opening "X" in rail over deck exp. joint and at end of Br. Railing (1" + deck exp. joint opening).

GENERAL NOTES

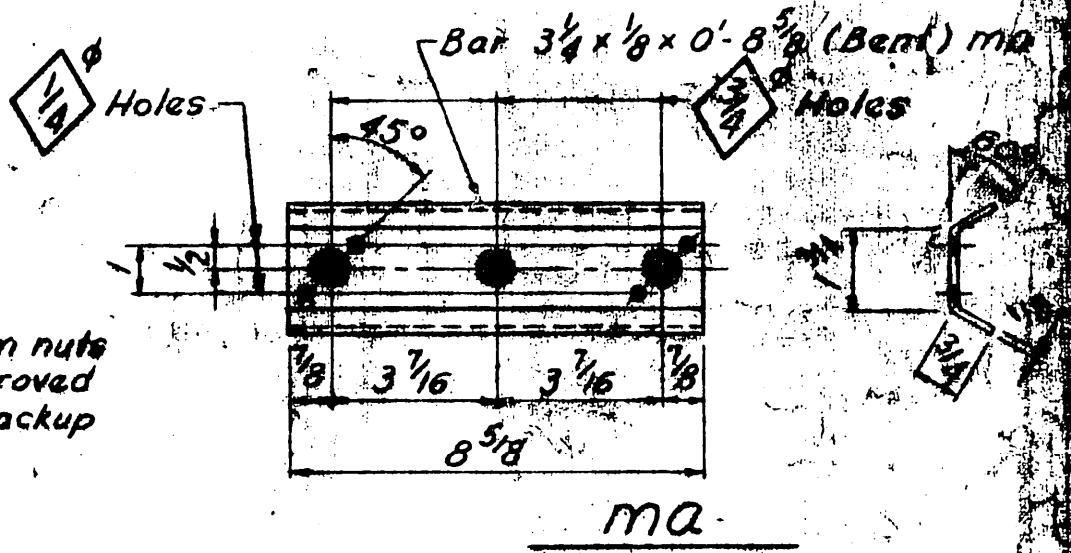
- Open holes as noted.
- Anchor assembly to be preset in concrete. See Floor Details for spacing of railing posts.
- All railing posts to be constructed perpendicular, both longitudinally and transversely, to the finished surface.
- All aluminum surfaces in contact with concrete shall be given one (1) shop coat of zinc chromate paint.
- End of tube sections to be sawed or milled. Cut ends to be smooth and free from burrs or ragged edges.
- Exposed ends of rail tube shall be closed with drive-in type Rail End Caps.
- Railing system shall be continuous. See Plans. Each joint in railing length shall be spliced as detailed on Standard BR. Rail tube sections to be spliced in the same panel. Each rail section shall be attached to a minimum of two (2), but preferably four (4) posts.
- Bridge resting will be paid for per linear foot of the type of railing measured out-to-out of barrier rail tube. The cost shall include all hardware and materials, including anchor assemblies, necessary to erect railing.
- The contractor shall furnish 3 copies of certified mill test reports covering rail material, posts, anchor bolts and all other material as requested by the Engineer.
- See Standard BRs for additional aluminum railing details.

BOLT DETAIL

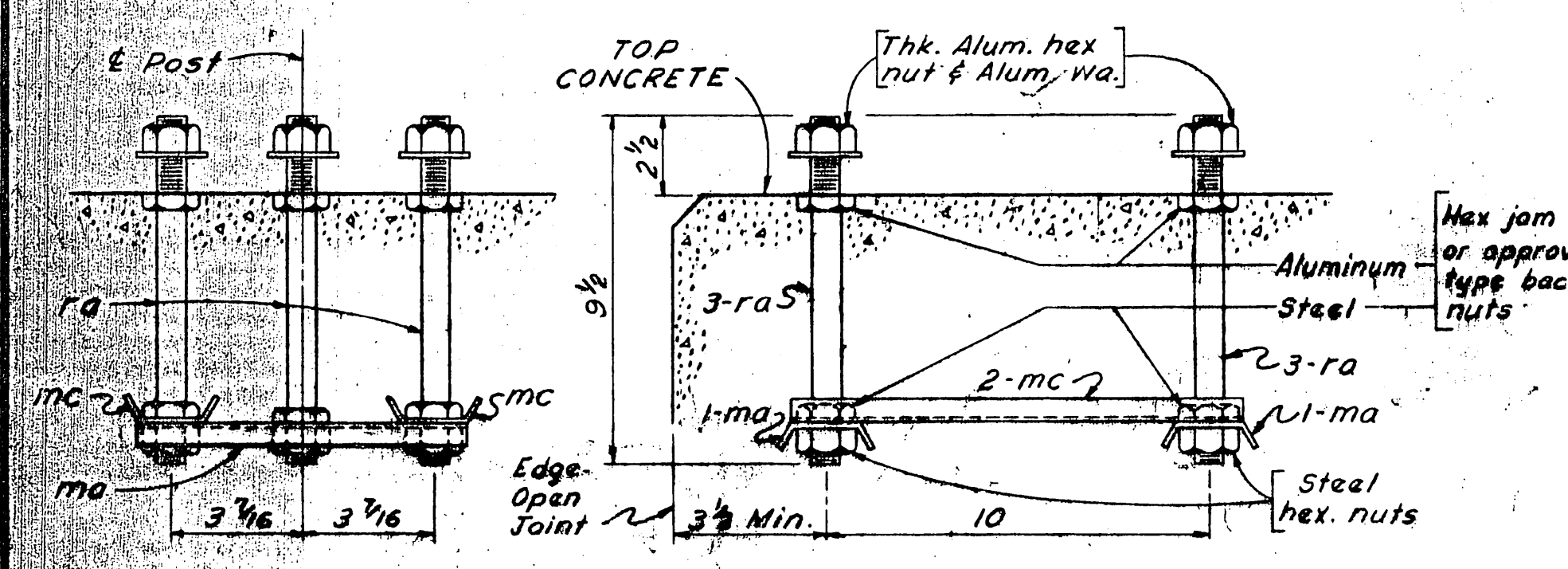
Bolts for post to base connection shall be 3/8" diameter high strength (A 325 or A 449) button head interrupted rib interference body (drive fit) hot dip galvanized, with 3/8" heavy hex lock nut and flat washer - hot dip galvanized. Button head shall be installed on traffic side of post.



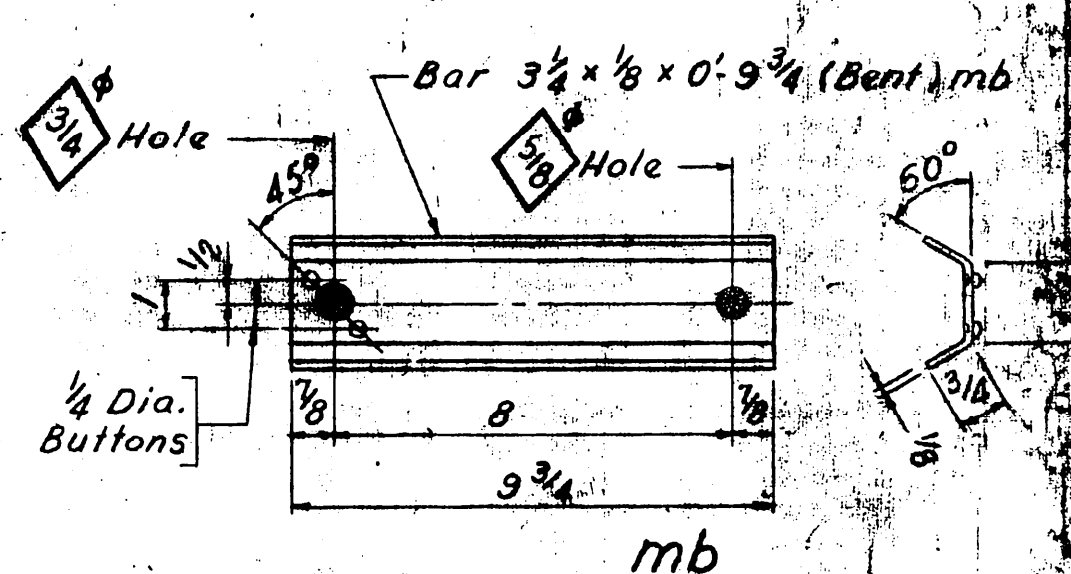
ANCHOR ASSEMBLY "AS1"



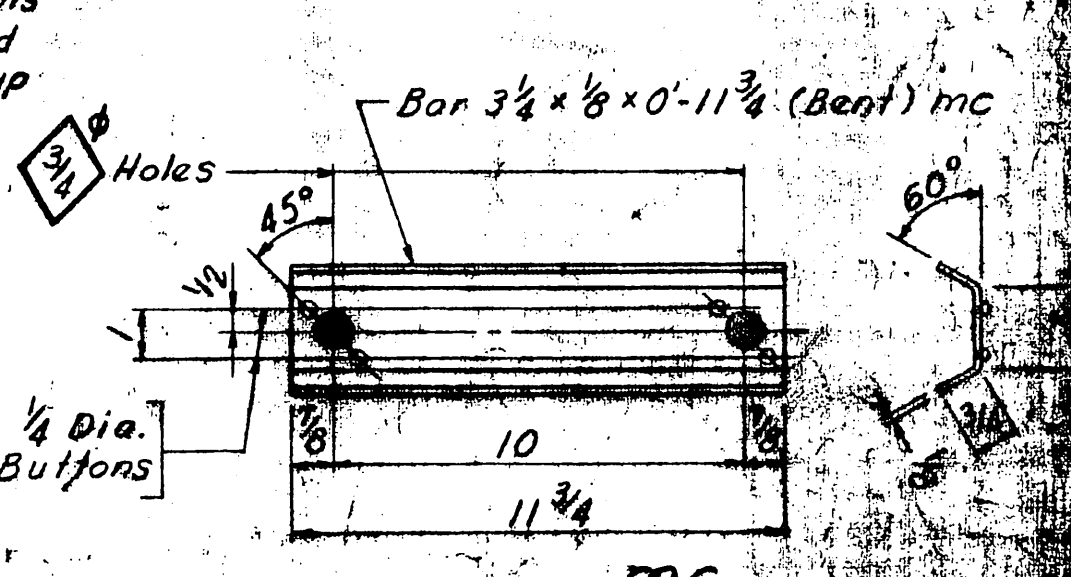
MA



ANCHOR ASSEMBLY "AS2"



MB



MC

NOTE:
Anchor Assembly aluminum washer sizes:
1/8" ID, 1 1/2" O.D., 1/8" thk
1/2" ID, 1 1/2" O.D., 1/8" thk

NOTE: If lock washers are used, bolt dia. shall not be less than minimum diameter of rail tube. Lock washers shall be furnished and shall be furnished with the nominal diameter.

REVISIONS	
8-1-63	Notes, Specs.
8-1-63	TYPES 5A & 6
2-2-70	Railing Elev. Exp. Drawing
3-1-71	BRIDGE RAILING, MATERIAL SPECIFICATIONS
9-1-73	TYPES 5A HEIGHT
12-1-76	TYPES 6 HEIGHT
11-9-80	Channel Nuts
10-23-91	Channel Nuts

REVISIONS	
8-7-61	Notes
2-22-60	Notes/Specs
5-27-61	Material Specs
7-2-65	Anchor Assembly
11-2-65	Anchor Bolts
11-2-65	Material Specs

DO NOT DESTROY
FILE: OBSOLETE STANDARDS
BRIDGE DESIGN

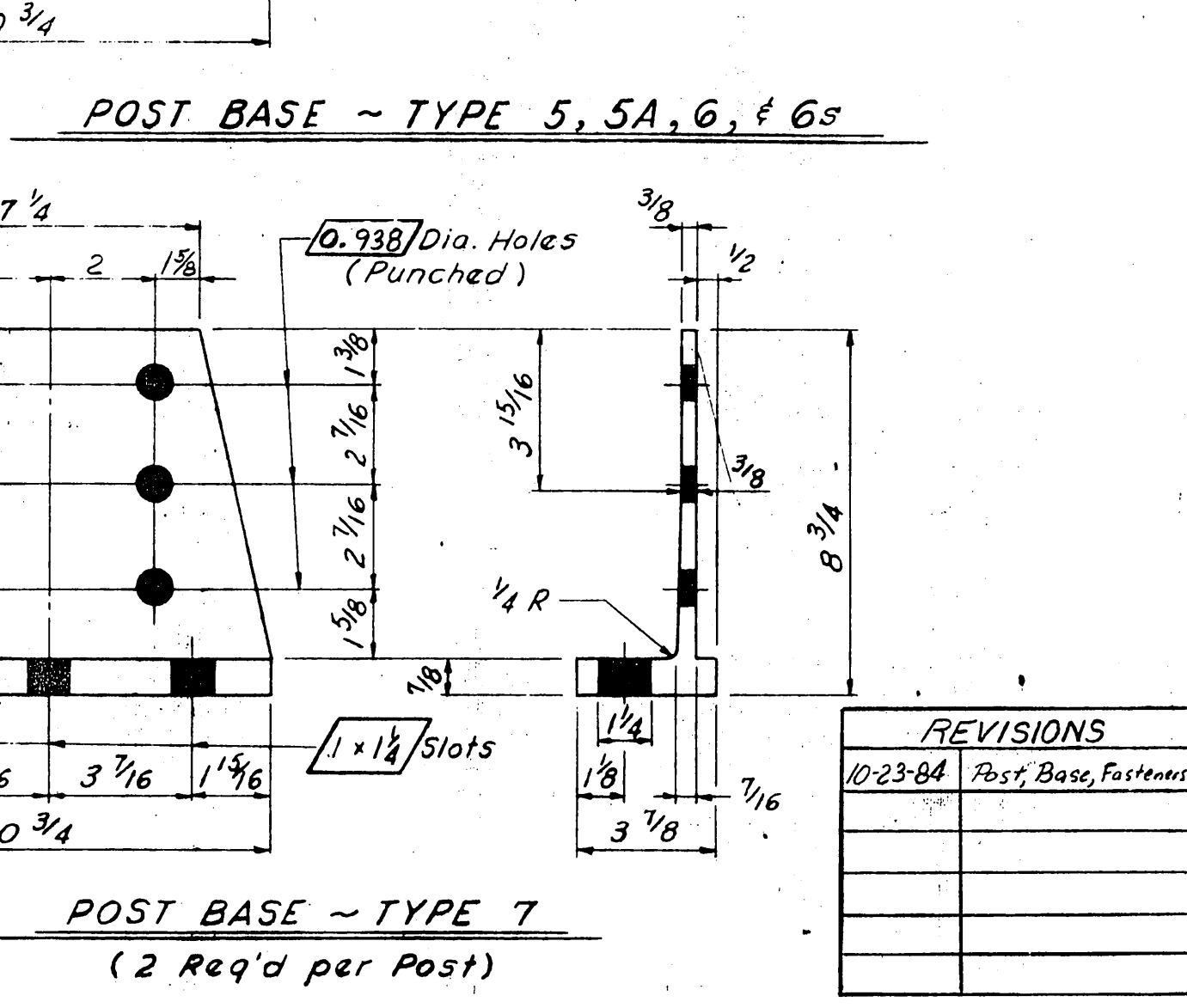
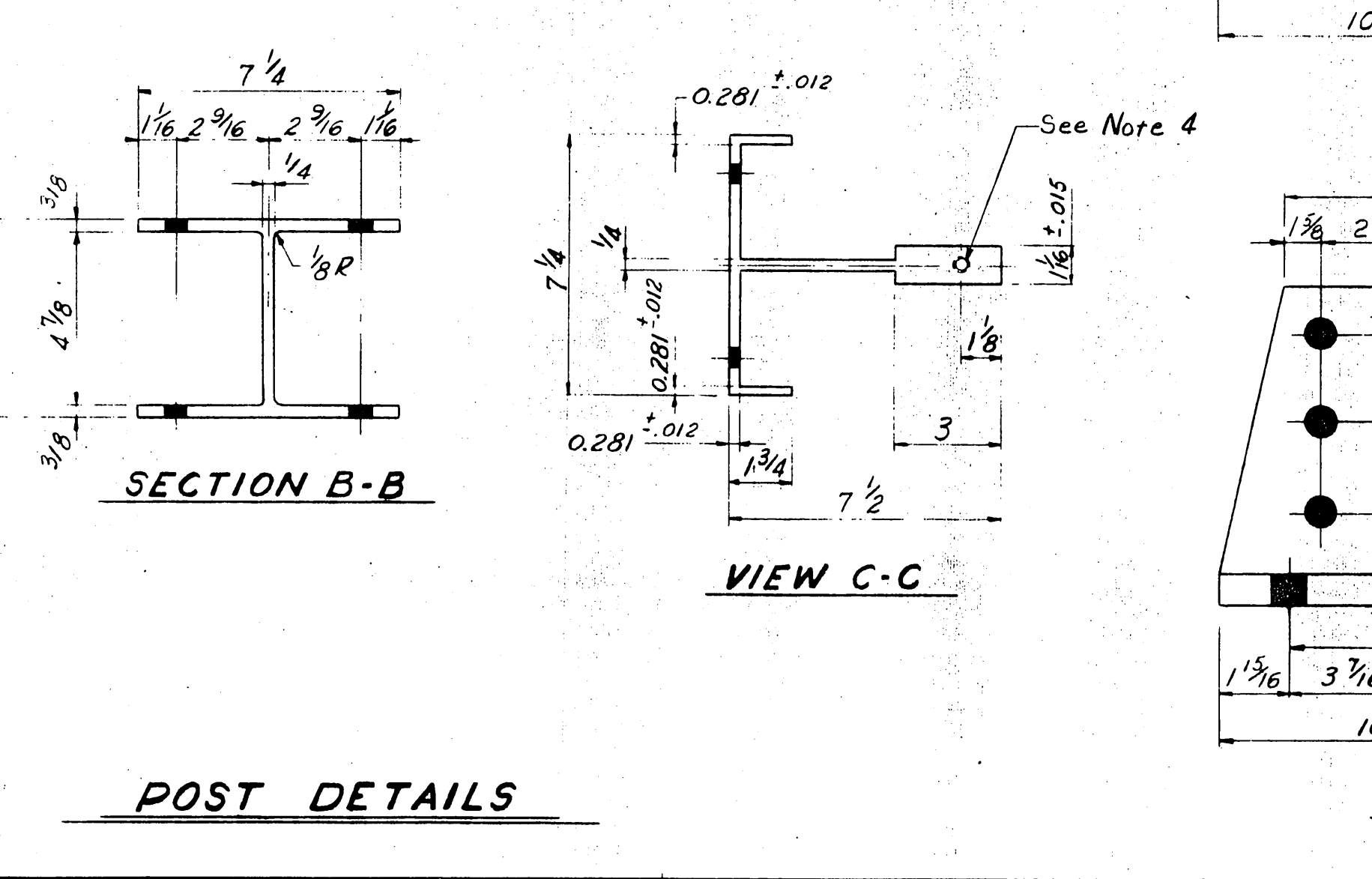
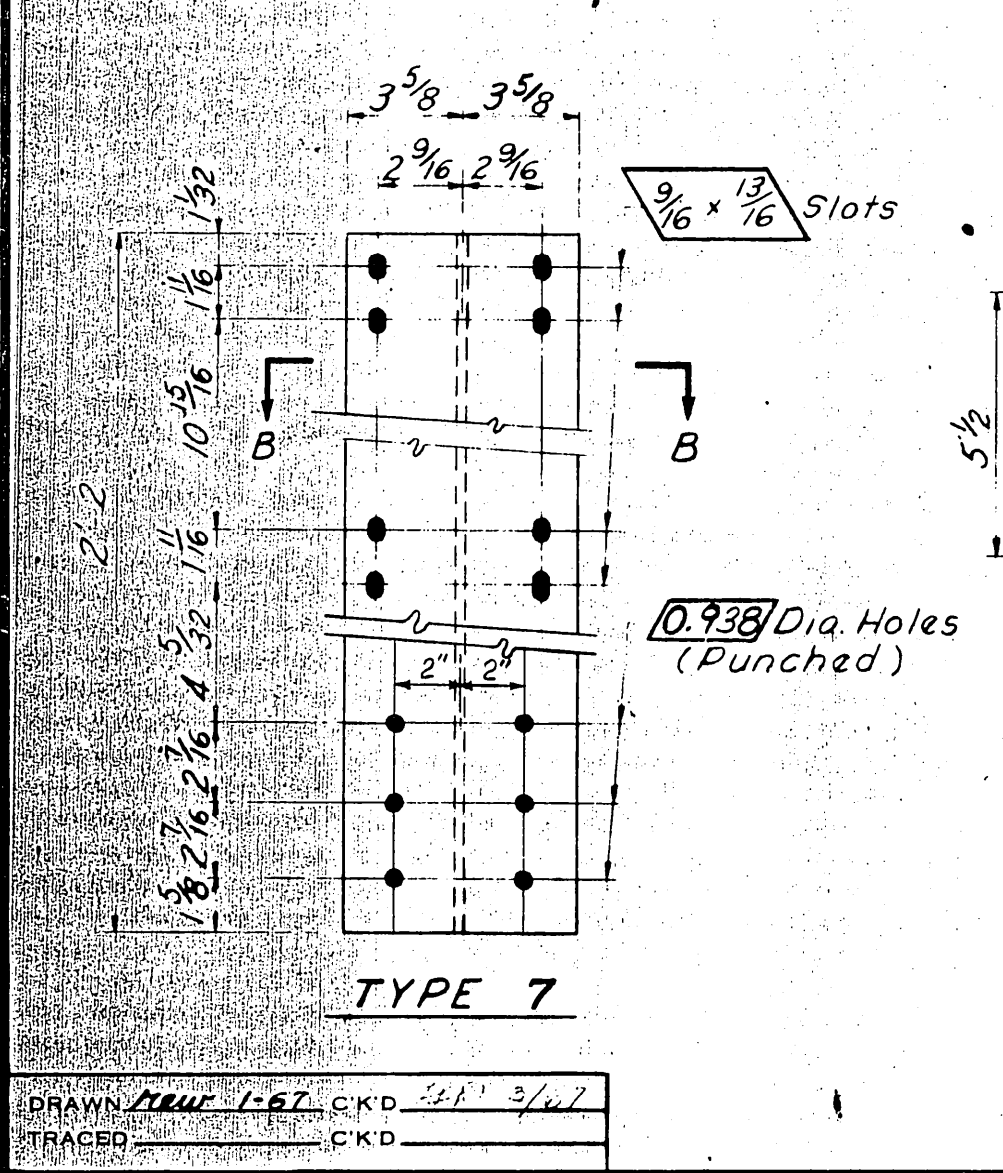
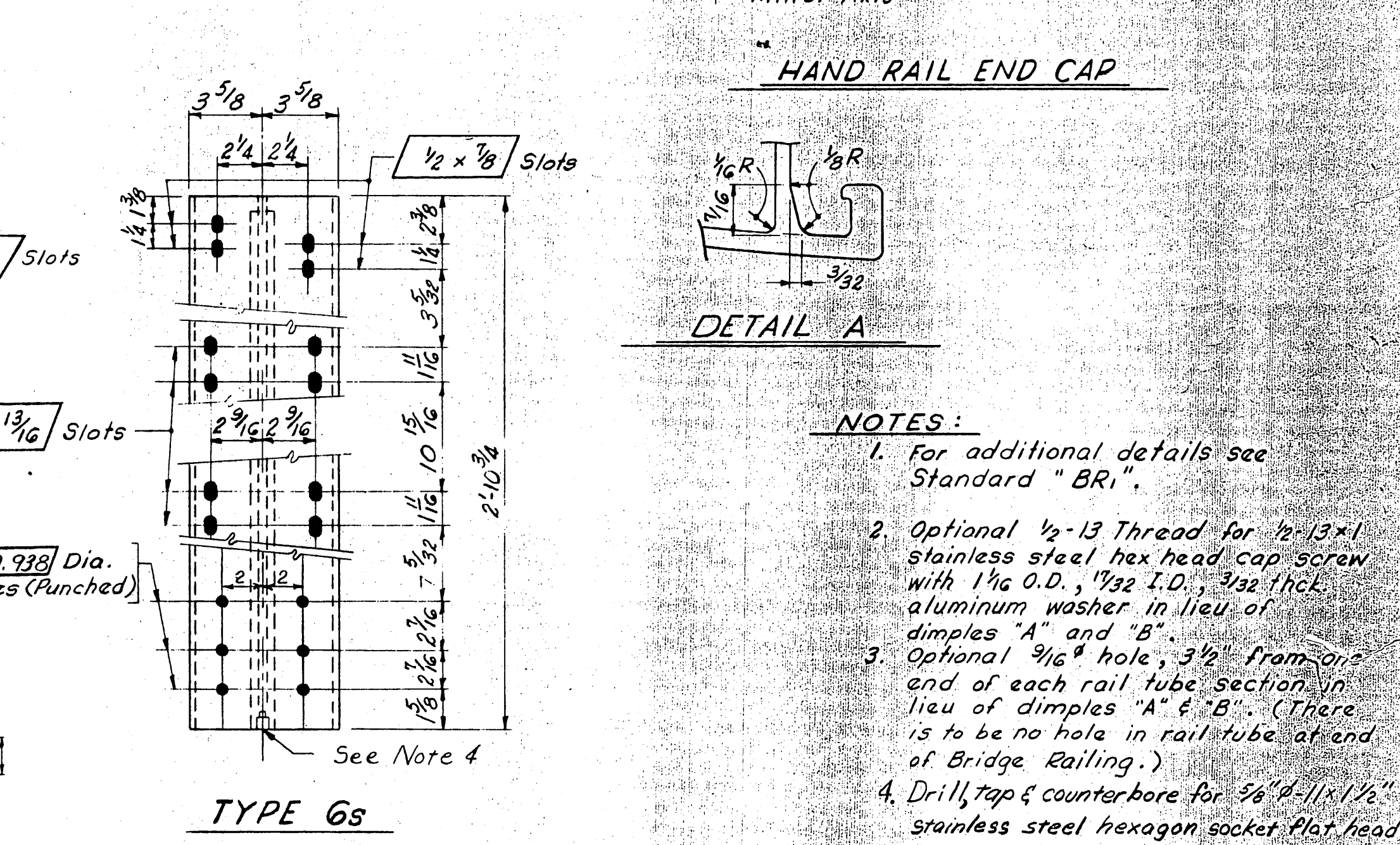
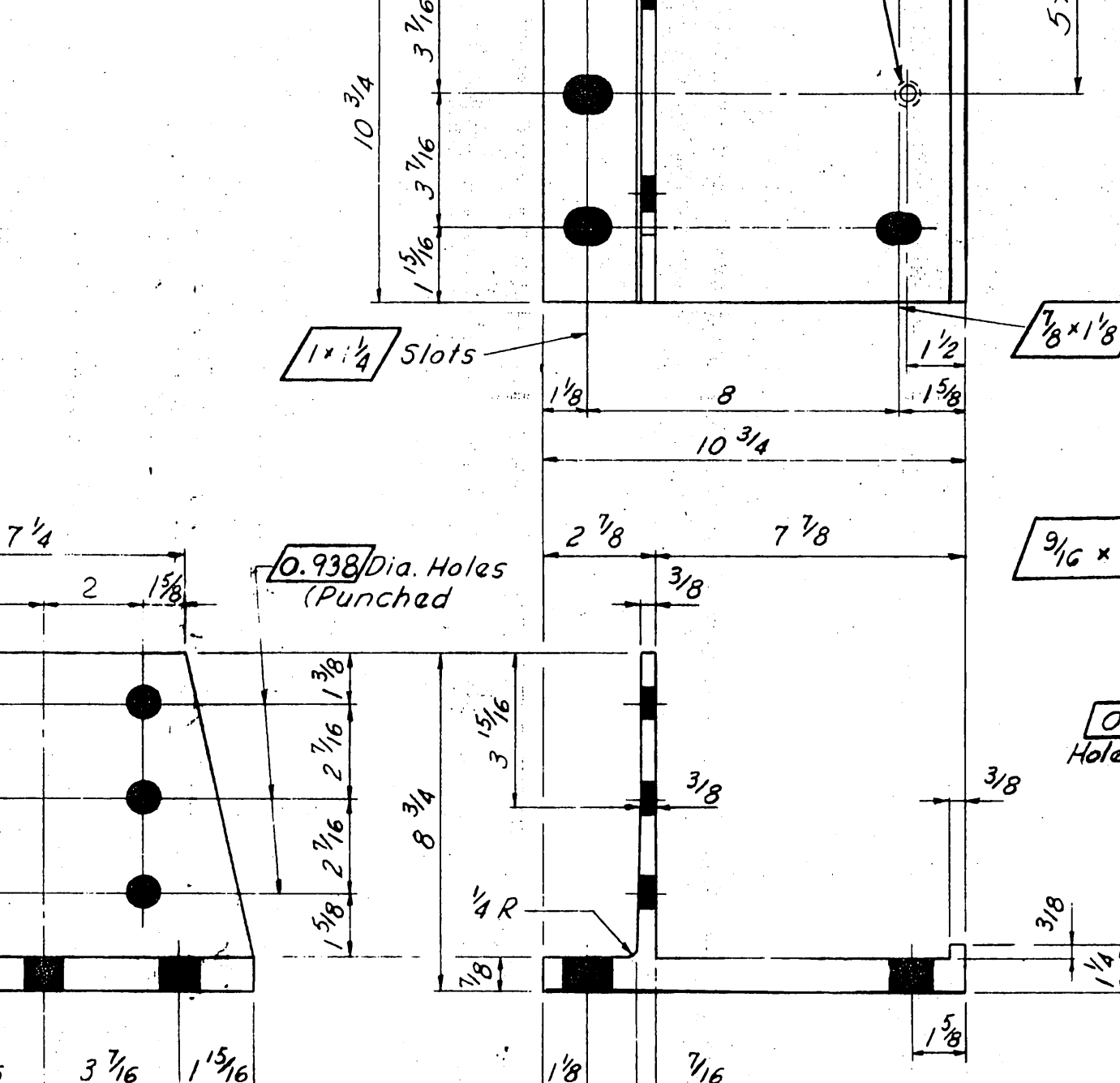
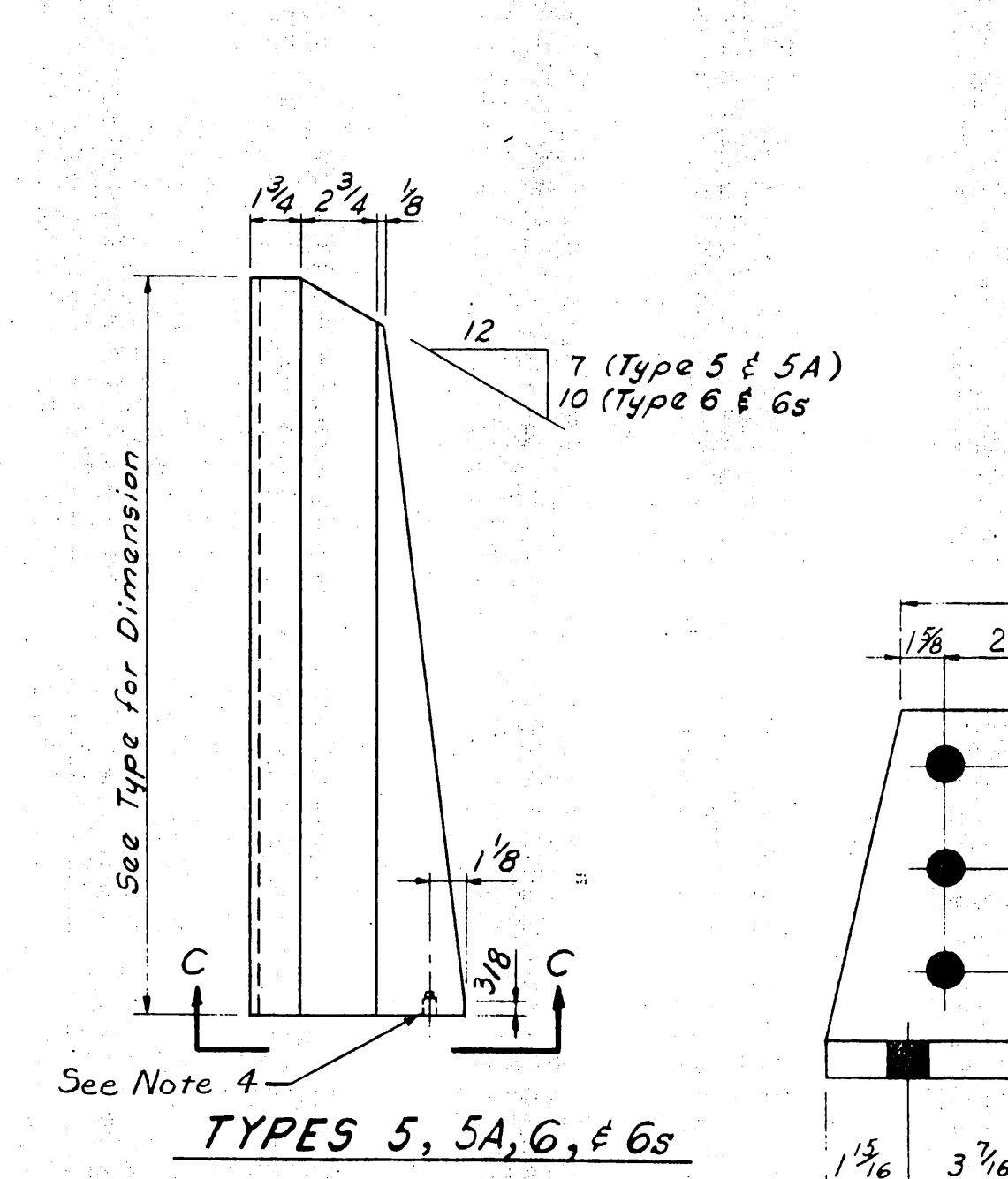
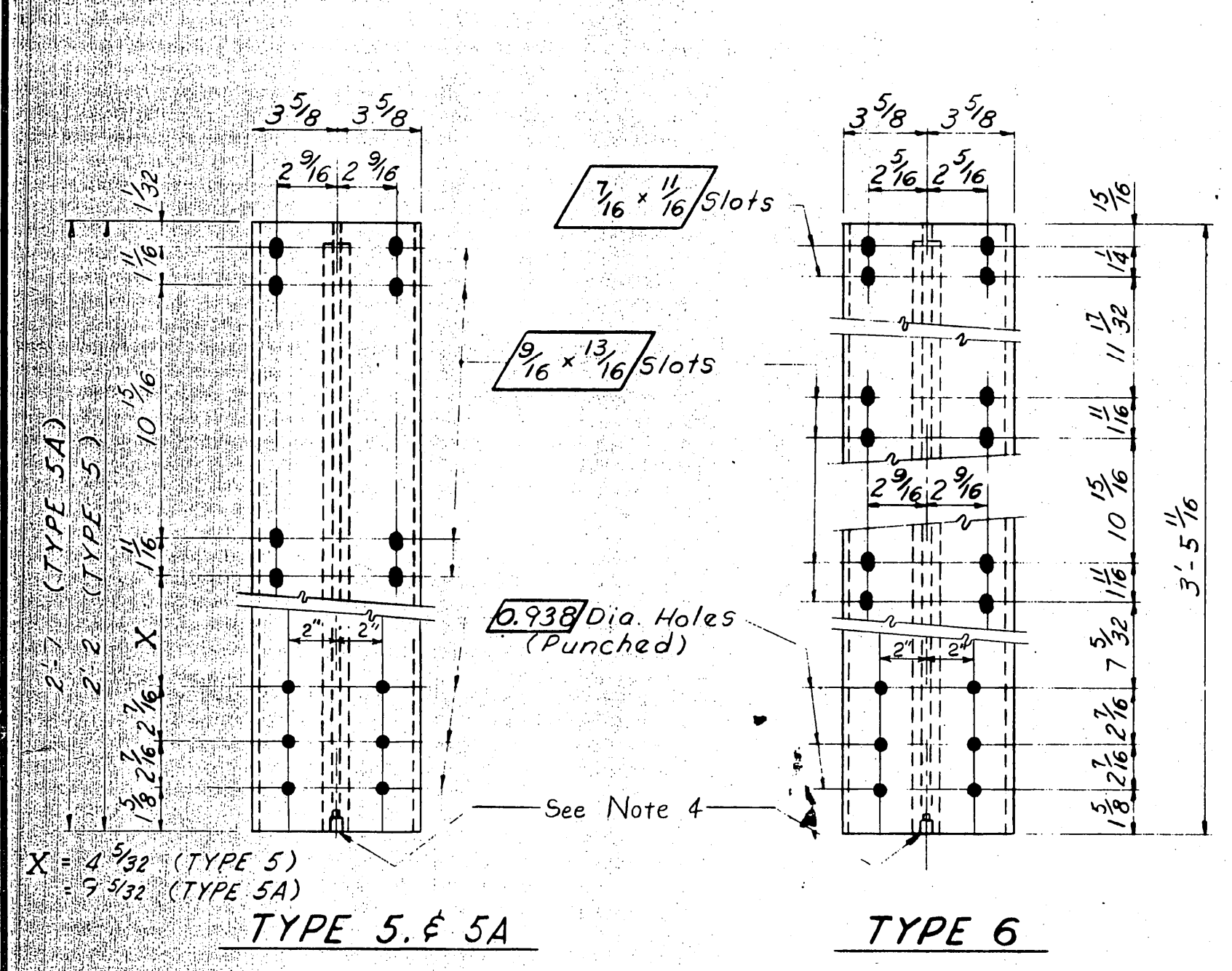
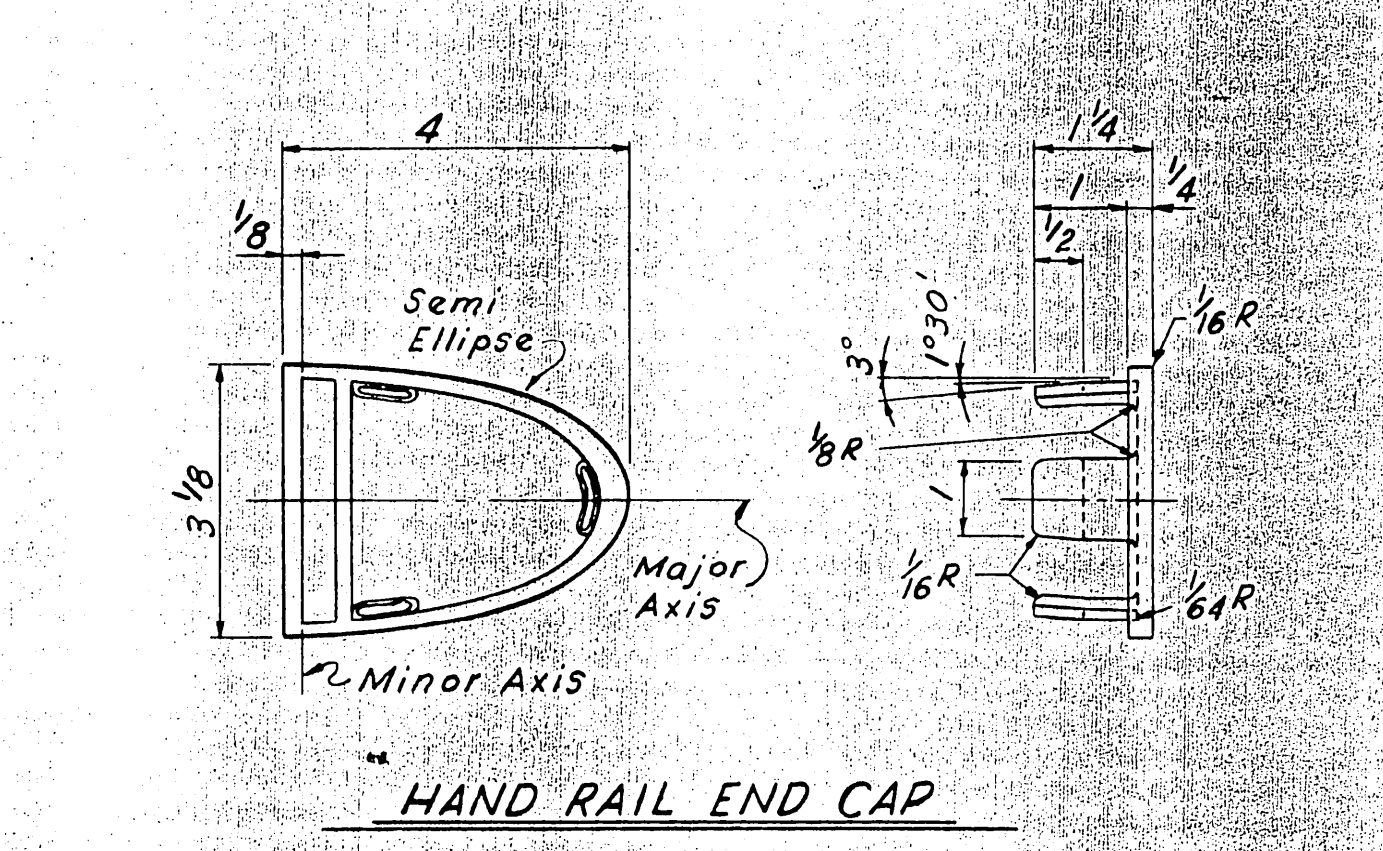
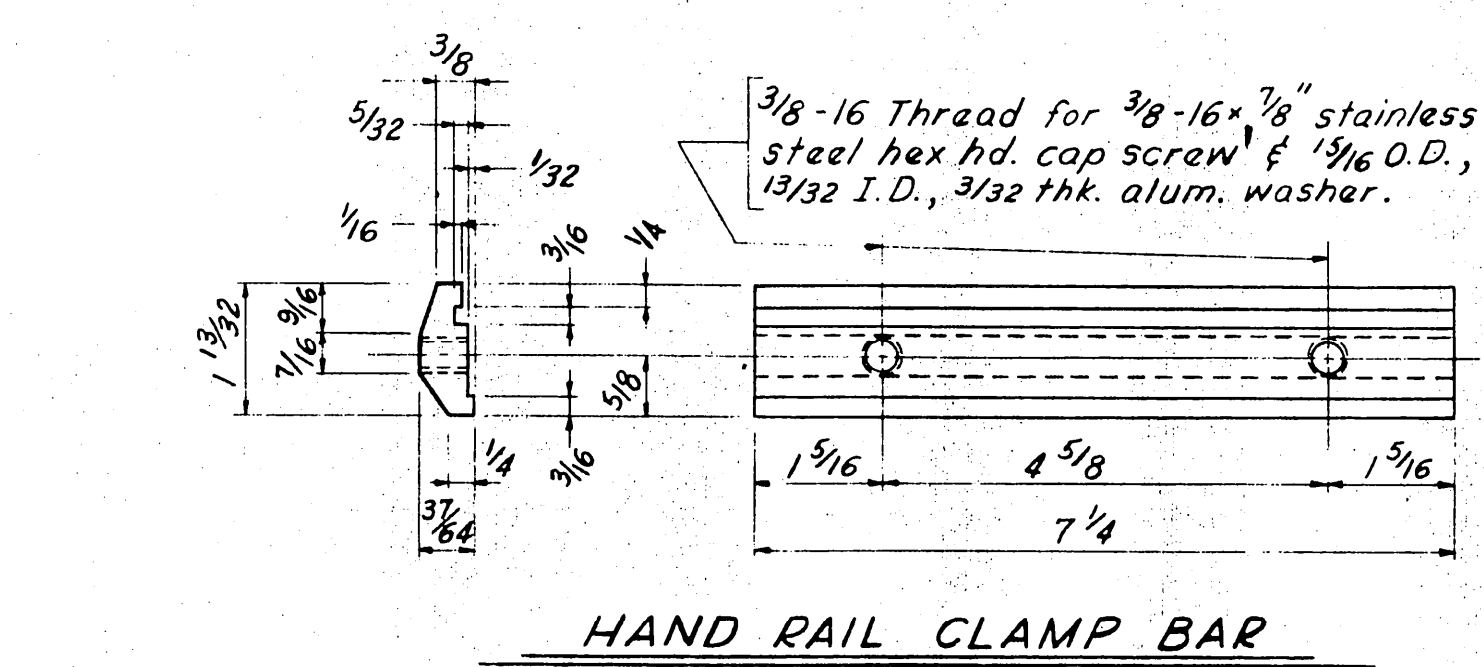
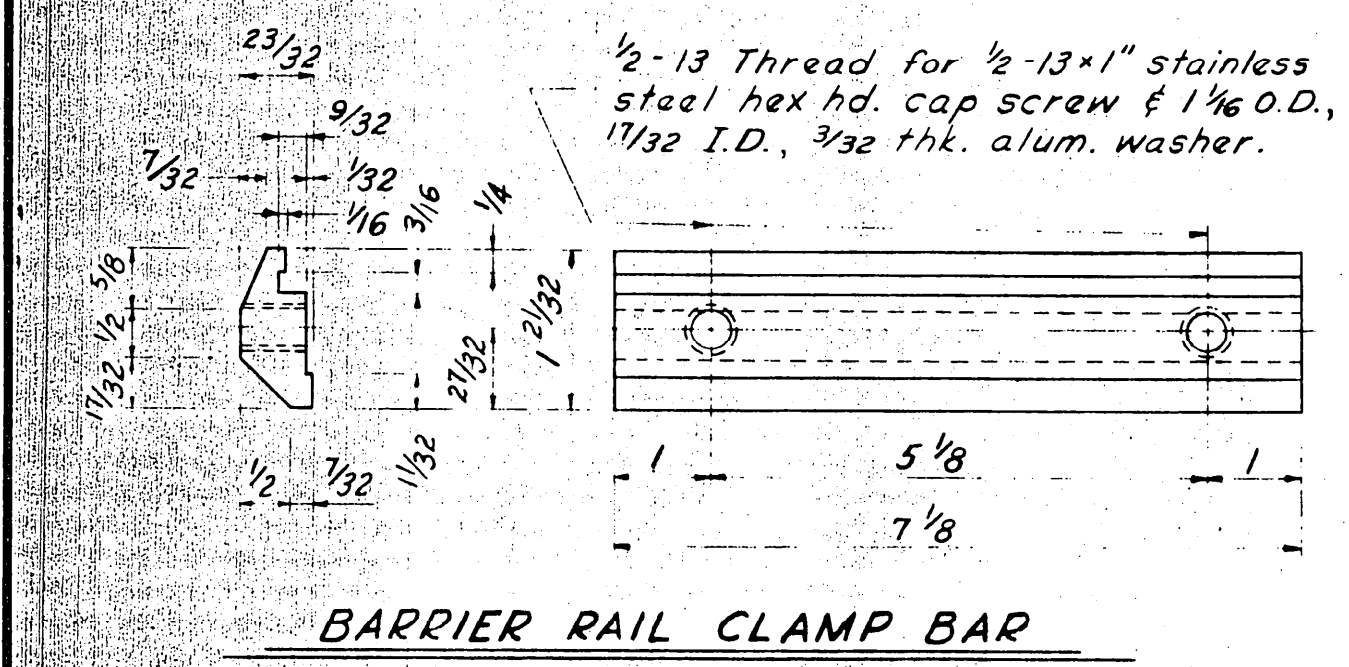
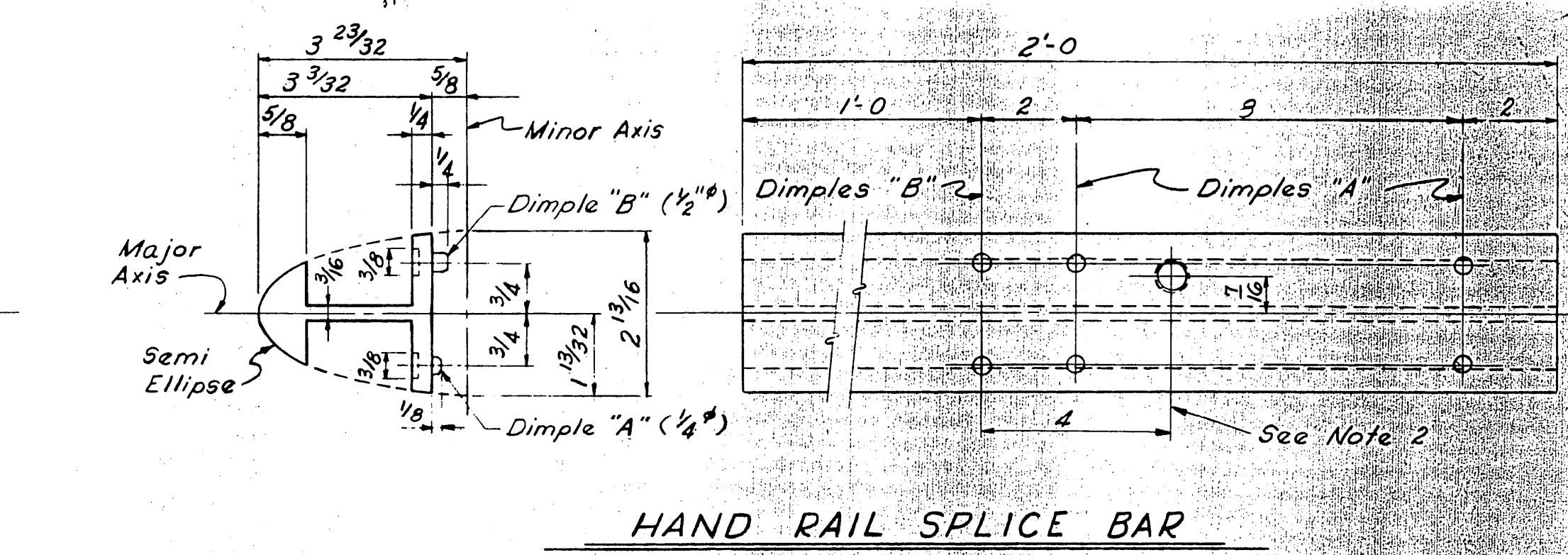
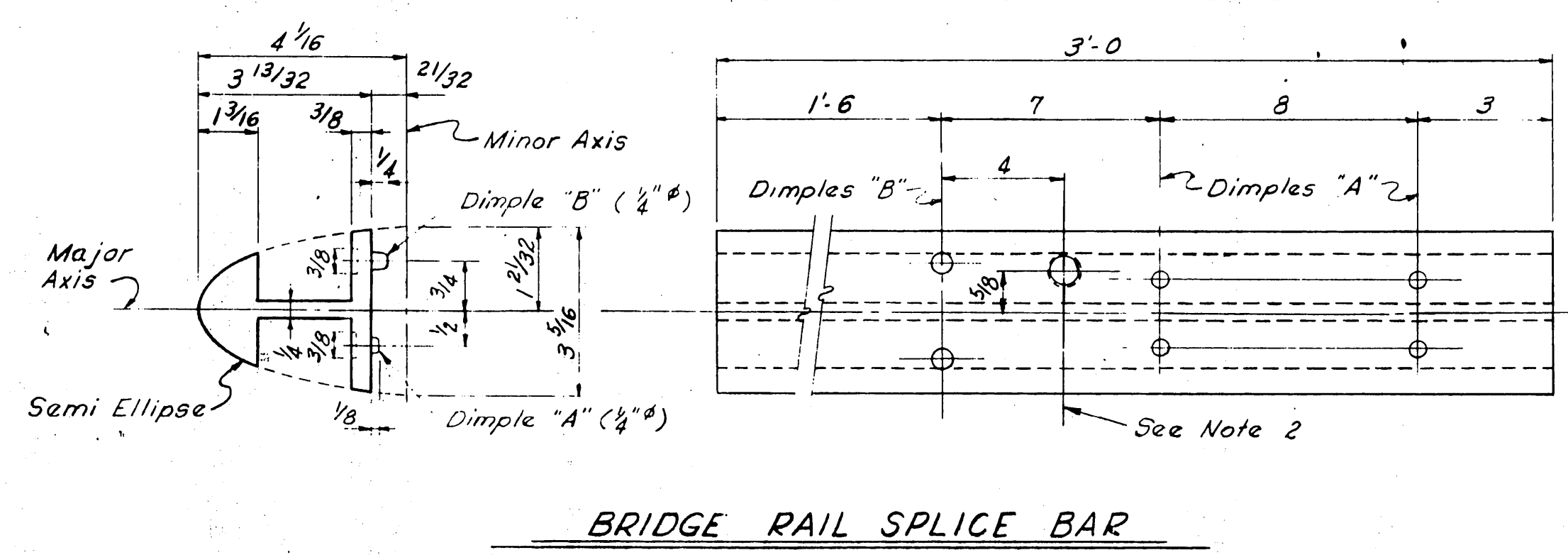
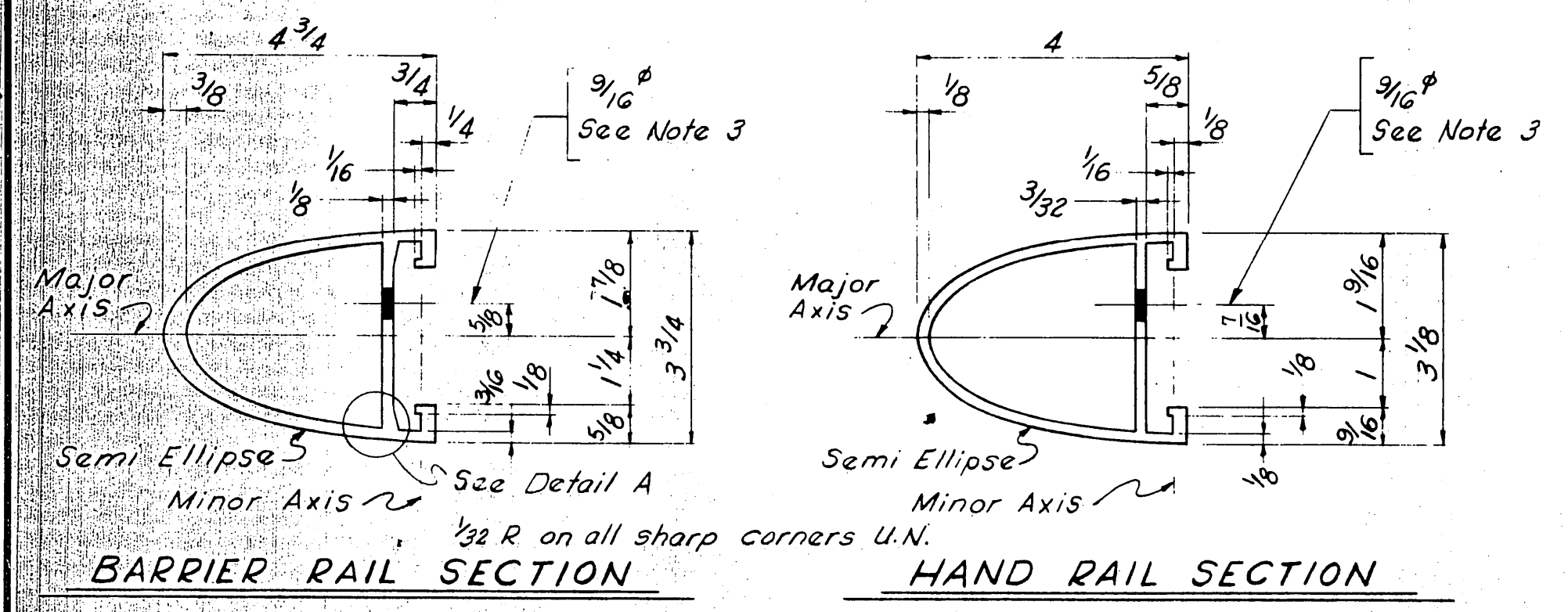
ALUMINUM BRIDGE RAILING
STATE OF INDIANA
JAN. 1967

RECOMMENDED FOR APPROVAL
APPROVED
APPROVED
APPROVED



BRIDGE
STD
BR

Original Do NOT DESTROY
 FILE OBSOLETE STANDARDS
 BRIDGE DESIGN



- NOTES:**
- For additional details see Standard "BR1".
 - Optional 1/2-13 Thread for 1/2-13x1 stainless steel hex head cap screw with 1/16 O.D., 1/32 I.D., 3/32 thick aluminum washer in lieu of dimples "A" and "B".
 - Optional 3/16" hole, 3/8" from end of each rail tube section in lieu of dimples "A" & "B". (There is to be no hole in rail tube at end of Bridge Railing.)
 - Drill, tap & counter-bore for 5/8"-11x1 1/2" stainless steel hexagon socket flat head cap screw. Countersink flush to 1/32" recessed.

ALUMINUM BRIDGE RAILING DETAILS

STATE OF INDIANA

JAN. 1967

REVISIONS	REVISIONS
10-23-64 Post Base, Fasteners	11-29-67 POST BASE WELD SYMBOL
	8-1-69 TYPE 5A
	2-2-70 RAIL SECTION
	3-1-71 RAIL SECT. ADJUST. SPLICE BAR
	9-1-73 TYPE 5A HEIGHT
	11-1-78 TYPE 6 L.C.S. HEIGHT

RECOMMENDED FOR APPROVAL
C. J. Klingel
 ENGINEER OF BRIDGE DESIGN

APPROVED
H. W. ...
 CHIEF DIVISION OF DESIGN

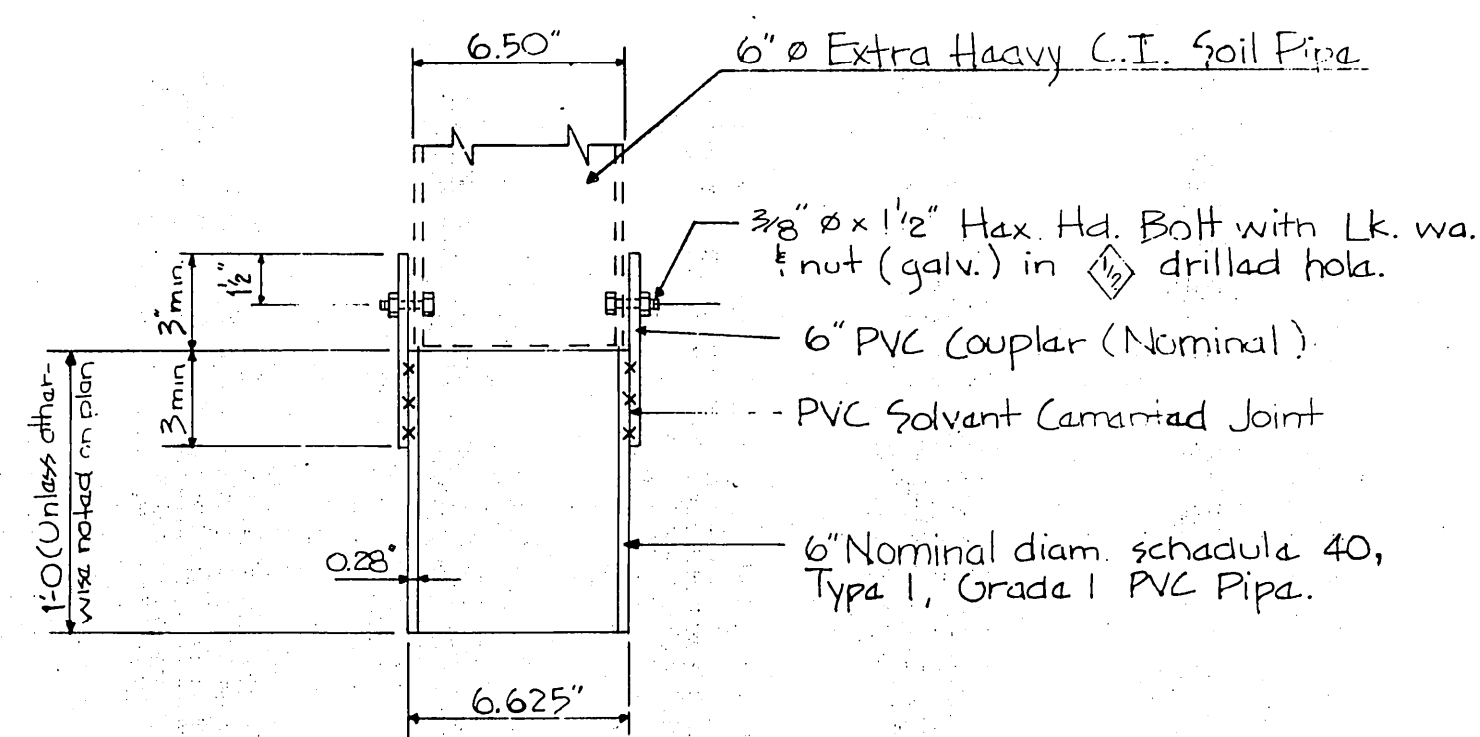
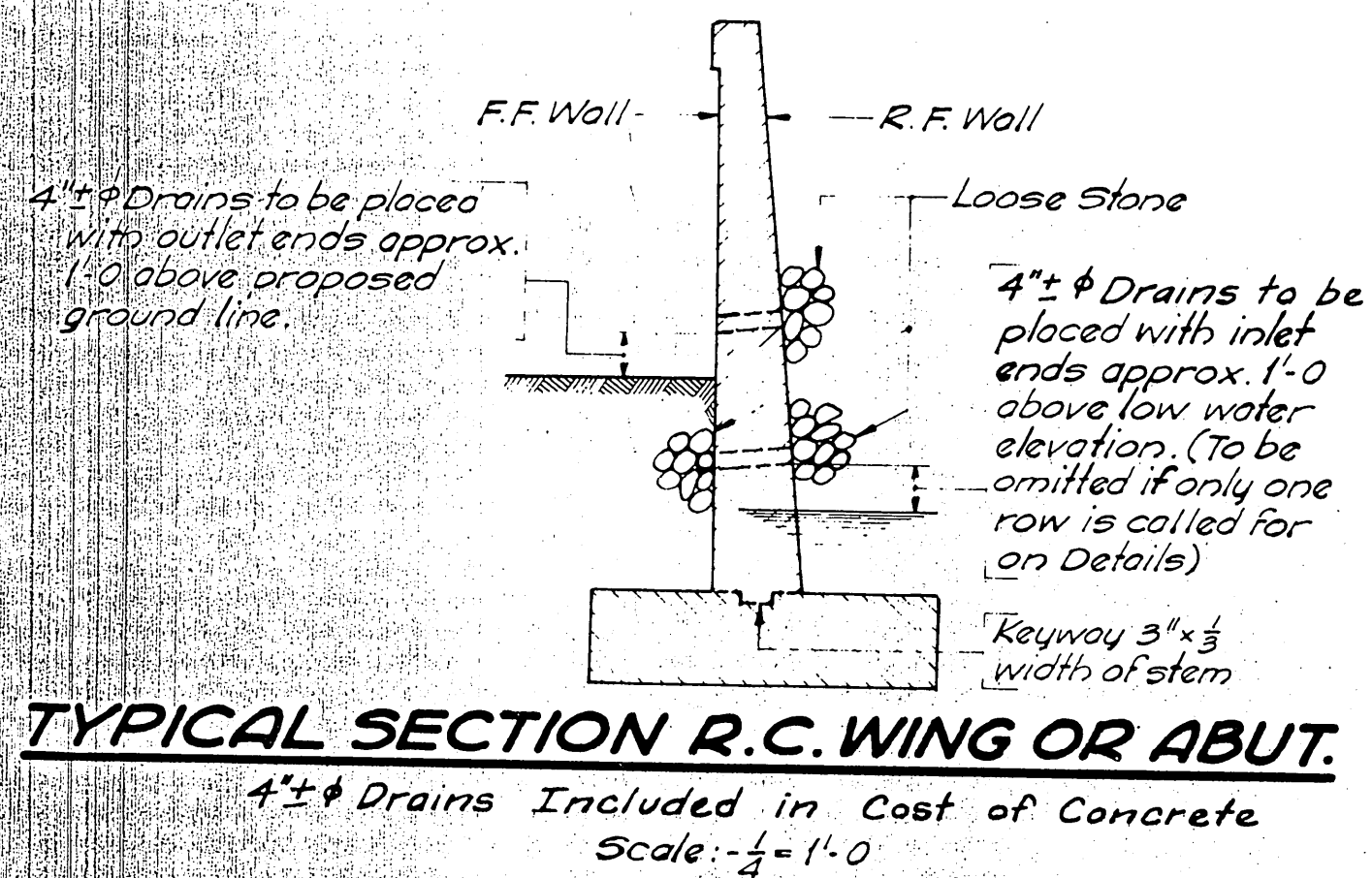
APPROVED
...
 CHIEF HIGHWAY ENGINEER

BRIDGE STD.
BR2

FLINGELHART
 2120
 REGISTERED PROFESSIONAL ENGINEER

DO NOT DESTROY
 FILE OBSOLETE STANDARDS
 BRIDGE DESIGN

DO NOT DESTROY
 FILE OBSOLETE STANDARDS
 BRIDGE DESIGN



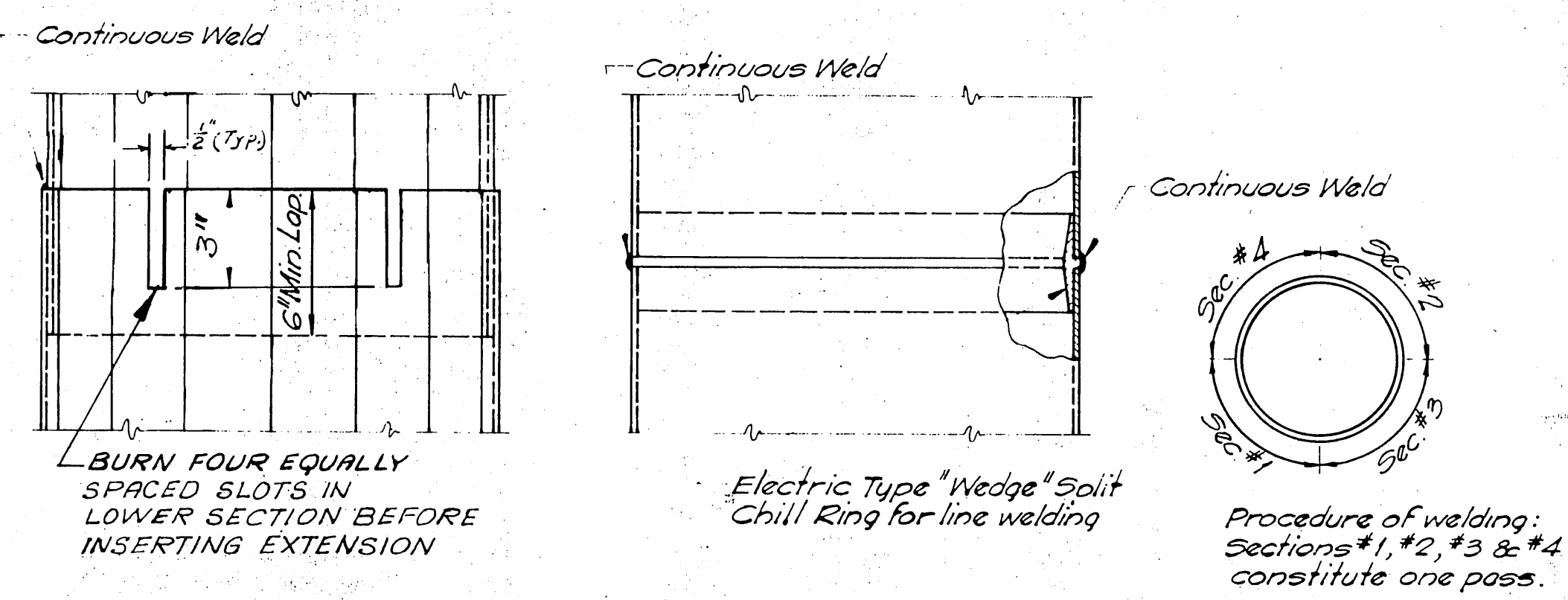
Bar Diameter "D" (Ins. diameter)

Bar Size	Standard	*Special
#3 thru #8	5d	5d
#9 thru #11	8d	5d

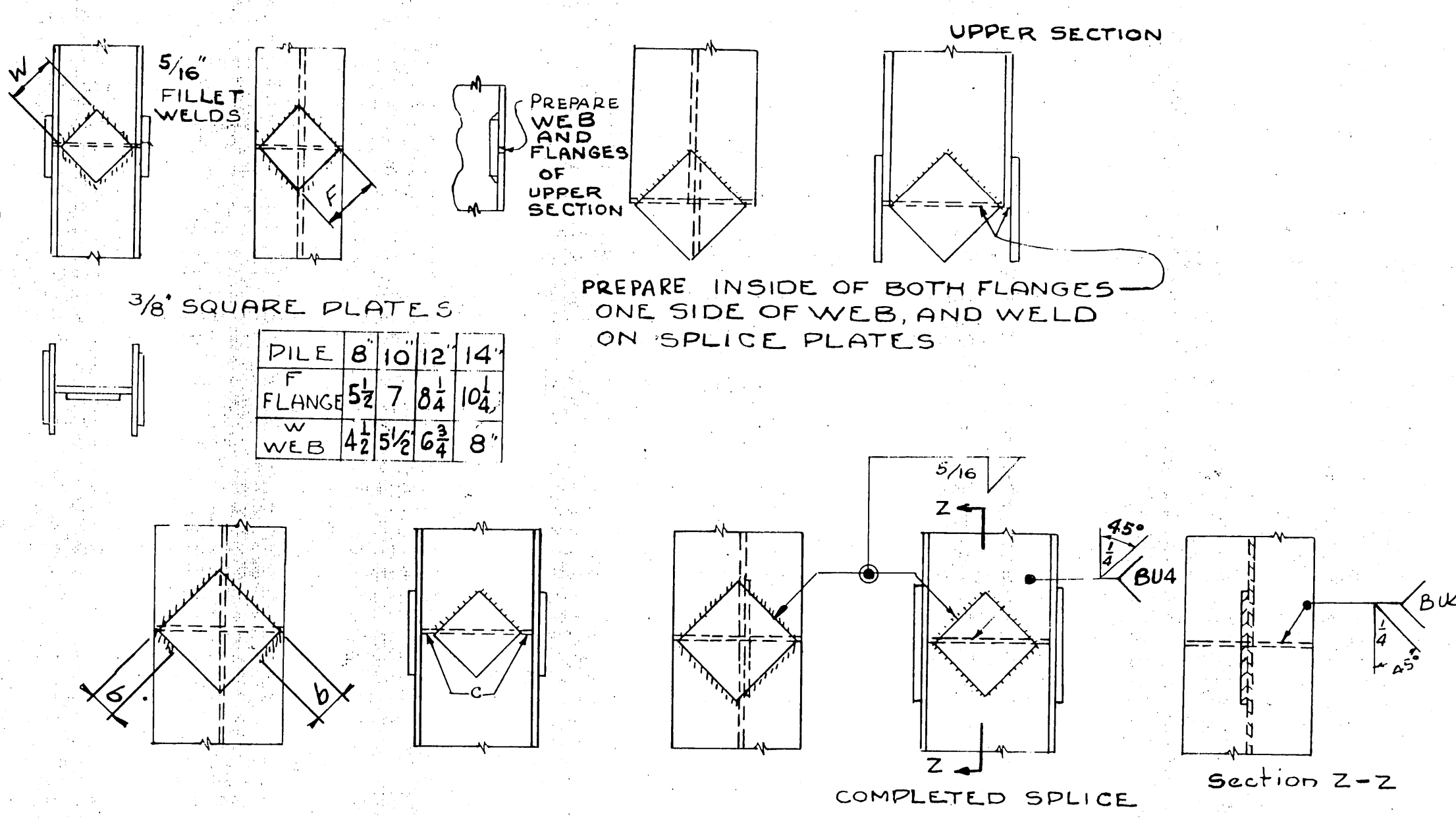
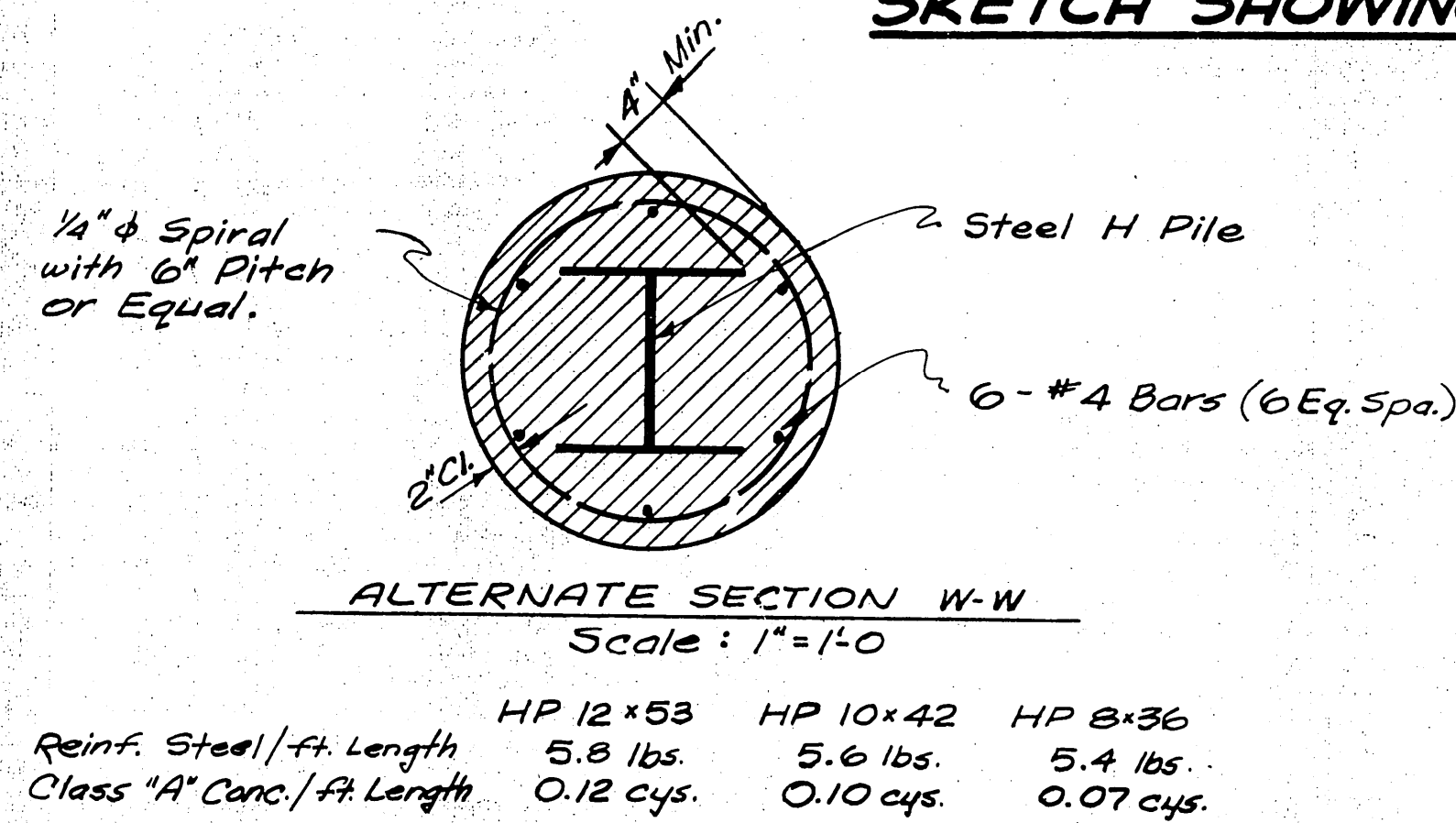
* See only use used for Grade 40 Bars with bends of 180° or less.

Bar Size	STANDARD				*SPECIAL			
	Approx. length One 90° bend	Approx. length One 180° bend	Approx. length One 90° bend	Approx. length One 180° bend	Approx. length One 90° bend	Approx. length One 180° bend	Approx. length One 90° bend	Approx. length One 180° bend
#3	5"	5"	5"	5"	5"	5"	5"	5"
#4	6"	6"	6"	6"	6"	6"	6"	6"
#5	7"	7"	7"	7"	7"	7"	7"	7"
#6	8"	8"	8"	8"	8"	8"	8"	8"
#7	9"	9"	9"	9"	9"	9"	9"	9"
#8	10"	10"	10"	10"	10"	10"	10"	10"
#9	11"	11"	11"	11"	11"	11"	11"	11"
#10	12"	12"	12"	12"	12"	12"	12"	12"
#11	13"	13"	13"	13"	13"	13"	13"	13"

Length = Length to be added to detailing dimension to get total bar length (Assumes No. Xc-Y)

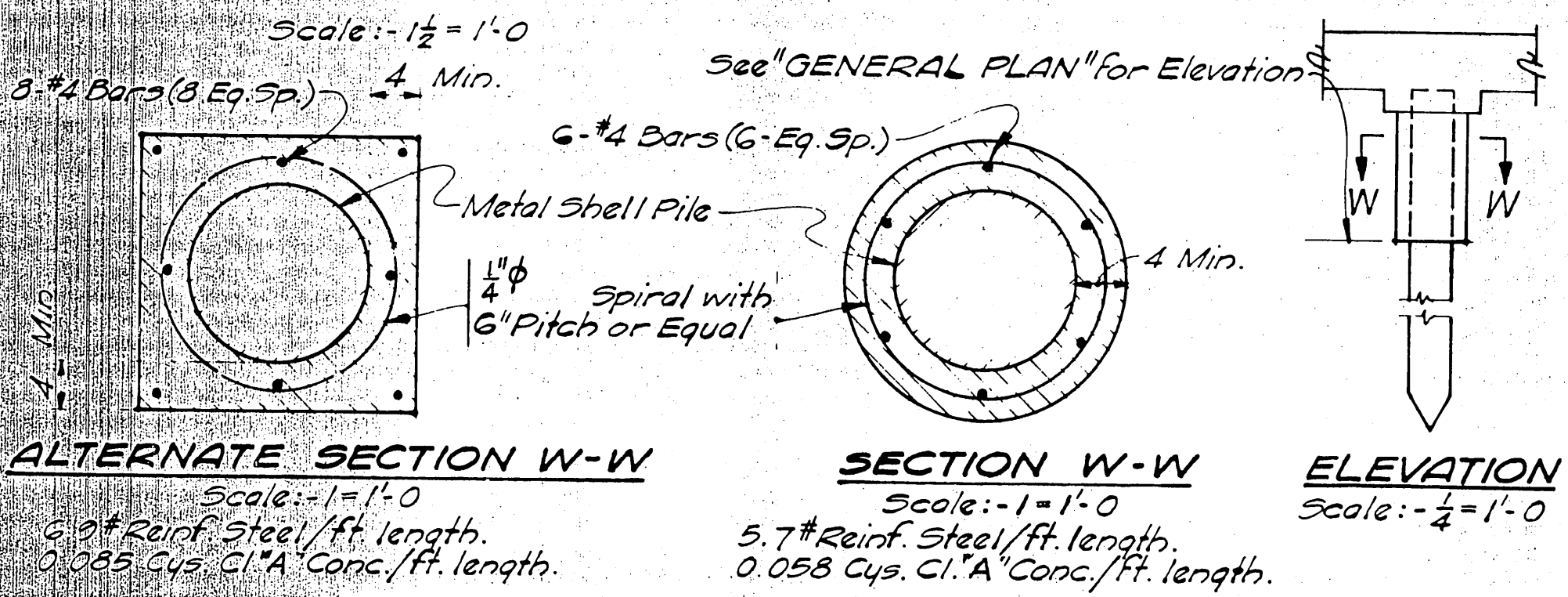


SKETCH SHOWING METHOD OF SPLICING PILE SHELLS IN FIELD
 Scale: 1/2" = 1'-0"



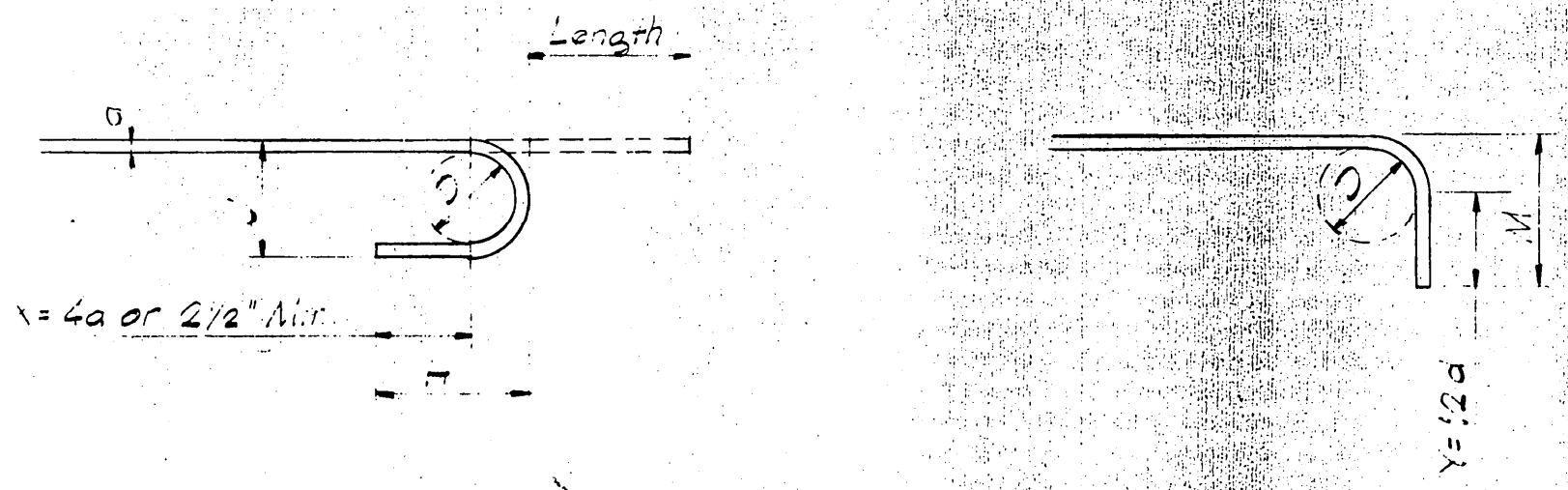
- PLACE UPPER SECTION ON LOWER SECTION
- Hold upper section in place with Pile Line, then Plumb Pile.
 - Weld Fillet for 2" Length on each Outside Corner of Flange Plates.
 - Weld Prepared Butt Joint for 1/2" Length at each corner of Flanges.
 - Remove Pile Line.
 - Complete all Welds.

SKETCHES SHOWING METHOD OF SPLICING STEEL H PILES



PILE ENCASEMENT DETAILS

NOTE: Smooth type removable forms shall be used. Do not use corrugated metal pipe as forms.



REINFORCING BAR NOTES

1. Dimensions on bending diagrams are measured out to out of bars.
 2. Dimensions on details are measured on center lines of bars, except where "COVER" is indicated.
 Bent bars are given a three or four digit bar mark.
 The last two digits 01 to 99 indicate the mark.
 The digit or digits preceding the last two indicate the size of bar.
 Straight bars are designated by size and length.
 Standard size hooks shown on this sheet to be used on all hooked bars unless noted.
 See this sheet for bar bending details.
 See Bridge Plans or Structure Plans for lap and embedment lengths.

SPLICE BAR NOTES

1. Samples of reinforcing steel shall consist of bars (2) of length.
 For straight bars, make cut 5' from end.
 For bent bars use any bars that have straight portion longer than 1/2 diameter plus 6" and make cuts 30 diameters plus 6" and 30 diameters plus 6" from the same point or hooked end.
 So the bars to lap with bars from which test samples are cut, making laps 30 diameters at each cut end.

MISCELLANEOUS DETAILS STATE OF INDIANA

REVISIONS
3-1-72 HP Sections, 2' cl
6-1-72 Split Ring, Notes
3-17-77 Bar Bending, Notes
5-1-77 Splice Bar Notes

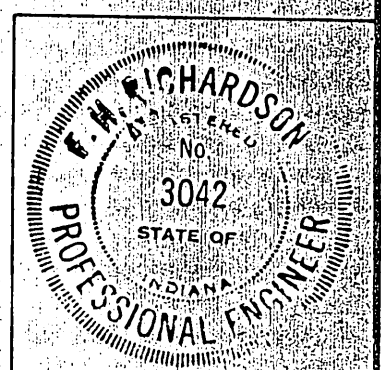
DATE: February 1, 1971

APPROVED: F.H. Richardson
 ENGINEER OF BRIDGE DESIGN

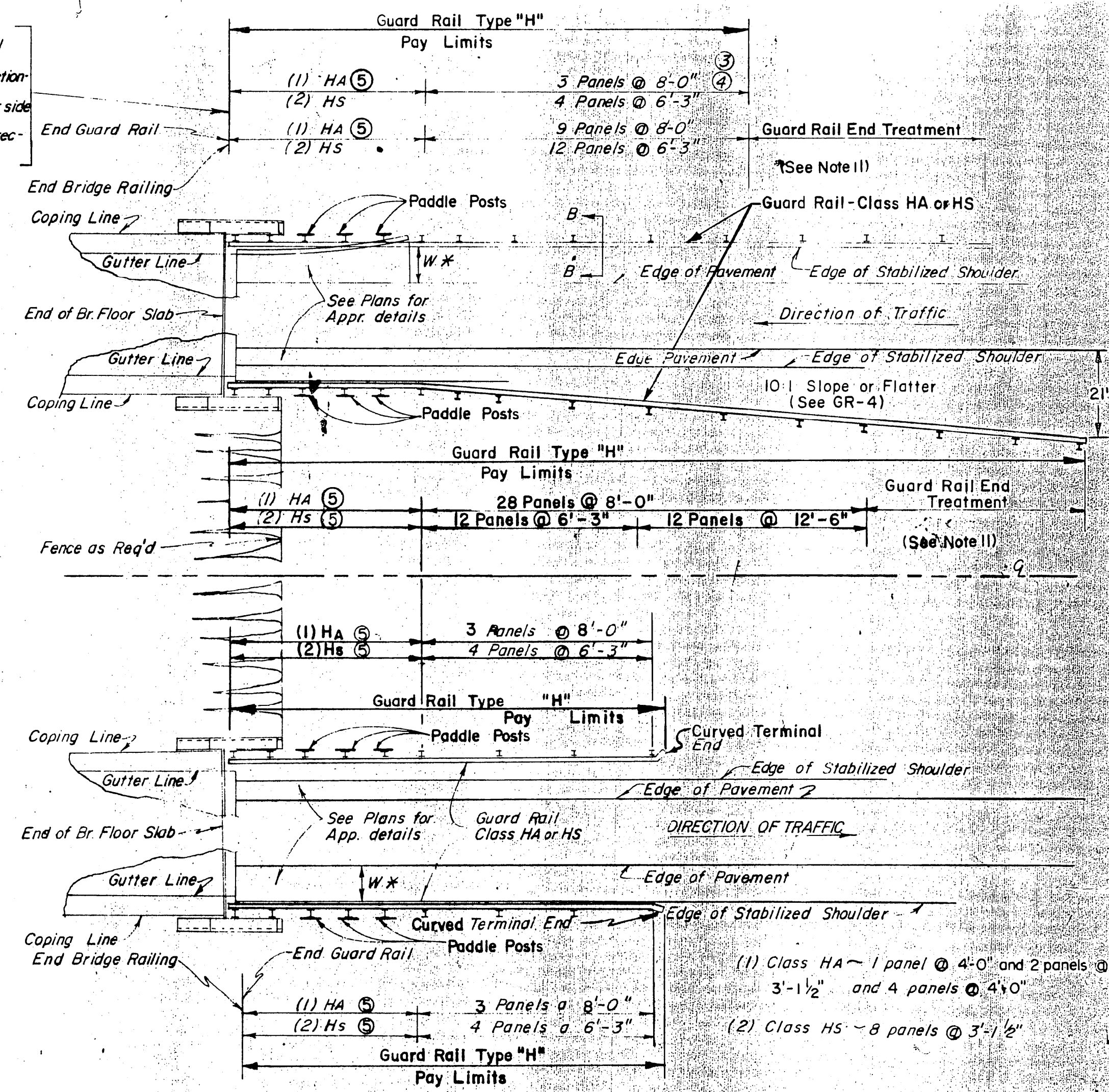
APPROVED: J.R. Foster
 CHIEF DIVISION OF DESIGN

APPROVED: M.W. Steinhamp
 CHIEF HIGHWAY ENGINEER

BRIDGE STD. C1



Typical installations at all four corners of two directional structures and shoulder side of incoming lane of one directional structures.



GENERAL NOTES

- ① All aluminum surfaces in contact with concrete shall be given one shop coat of zinc chromate paint.
- ② Guard Rail shall be built parallel to ground line as nearly as possible. Adjust rail vertically to maintain a uniform appearance.
- ③ Exposed ends of the Aluminum rails shall be closed by drive-in type Rail End Caps, including Guard Rail End Treatment.
- ④ End of tube sections to be sawed or milled. Cut ends to be true, smooth and free from burrs and ragged edges.
- ⑤ Where guard rail of one kind is used in any individual run, the same kind shall be used for the entire run except the following condition, if more guard rail than the minimum requirements is needed at bridge approaches, as shown on the guard rail standards, and contractor elects to use a different kind beyond the required approach rail he shall use Connector Type A-S as shown on GR-10.
Railing system shall be continuous. Rail tube sections shall be attached to a minimum of two (2) posts or have a minimum length of 18'-0" whichever governs and shall be spliced in the same panel. Each joint in rail length shall be spliced as detailed.
- ⑥ Guard Rail will be paid for per linear foot measured along top of rail for the limits as shown on this sheet for the type specified and shall include all hardware necessary. For connection to bridge wings, see Bridge Standard, BR-5.
- ⑦ Any guard rail that is placed on a radius of 150'-0" or less shall be shop curved and will be paid for at 1.3 times the measured length of guard rail of the type specified.
- ⑧ All posts shall be driven, except where driving conditions prohibit the use of normal driving equipment. In cases where rock or other non-penetration material is encountered, a hole shall be drilled to the depth necessary to accommodate the required post, length and a diameter not less than 12". The hole shall then be backfilled and compacted with earth in layers of not more than 6" and the post then driven.
- ⑨ Material for Guard Rail class HA is to be aluminum and material for Guard Rail class HS is to be steel. For section B-B and Guard Rail Details, see standard sheet GR-5 for Aluminum Guard Rail, or standard sheet GR-2 for Steel Guard Rail.
- ⑩ Class HA or HS guard rail spliced to the bridge railing shall be paid for as Guard Rail Type H.
- ⑪ End Treatment shall be paid for as Guard Rail End Treatment Type I Type II as specified in the Plans. See sheets GR-10, B, GR-10A for details.

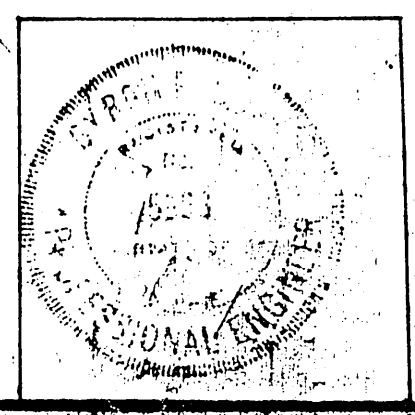
LEGEND

- ⊗ = When Curb is used "W" shall be such that the face of Guard Rail be 3" behind face of Curb.
- Ⓜ = 10'-3" from edge of pavement.
- ③ = To be used on all secondary road where the traffic count is less than 750 ADT.
- ④ = If the shoulder is unstabilized, the face of guard rail is to be 1'-0" in from the shoulder line.
- ⑤ = The First Three (3) Posts After the Extended Wing End Shall be Paddle Posts As Shown on Standard Sheets GR-2 & GR-5.

- (1) Class HA ~ 1 panel @ 4'-0" and 2 panels @ 3'-1 1/2" and 4 panels @ 4'-0"
- (2) Class HS ~ 8 panels @ 3'-1 1/2"

GUARD RAIL CLASS HA or HS STATE OF INDIANA

SEPTEMBER 1972

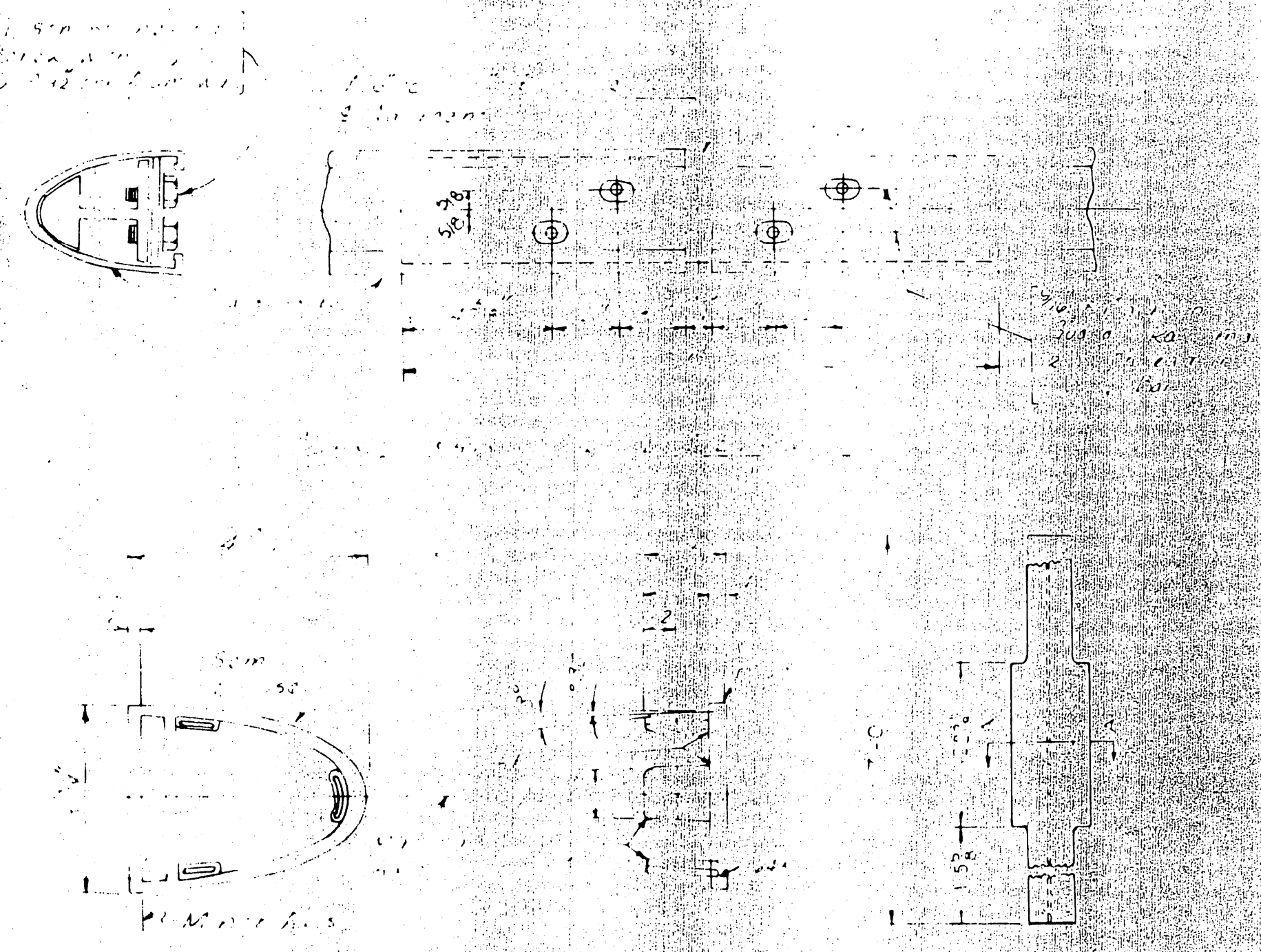
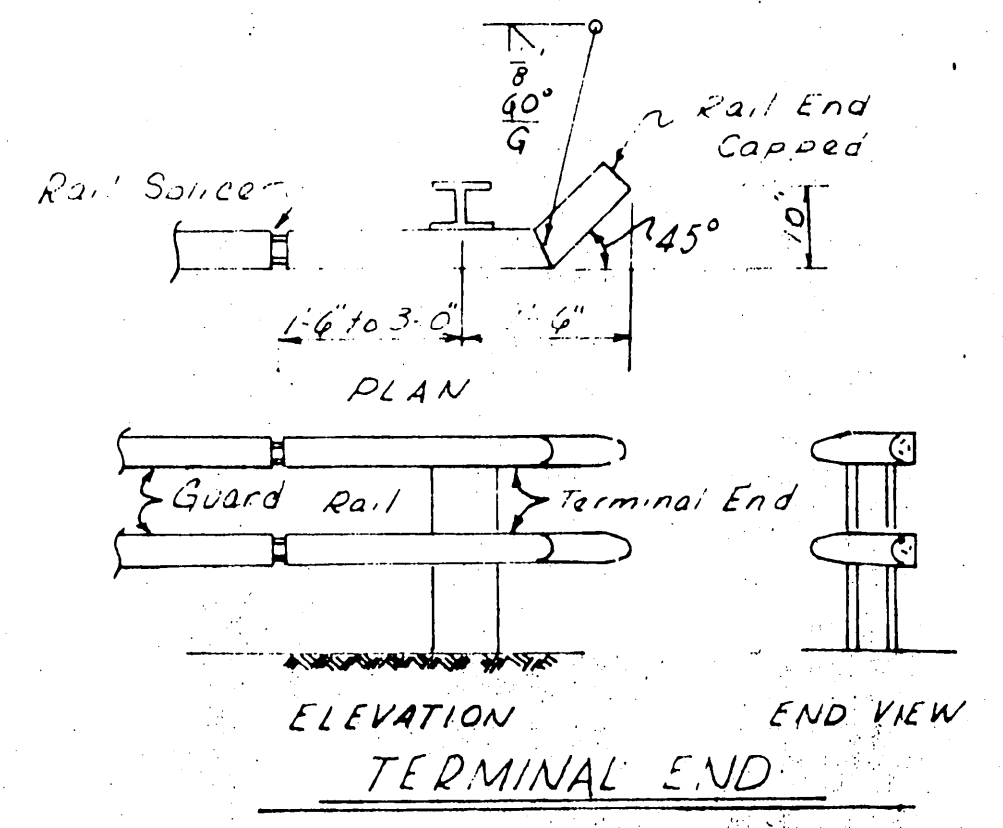
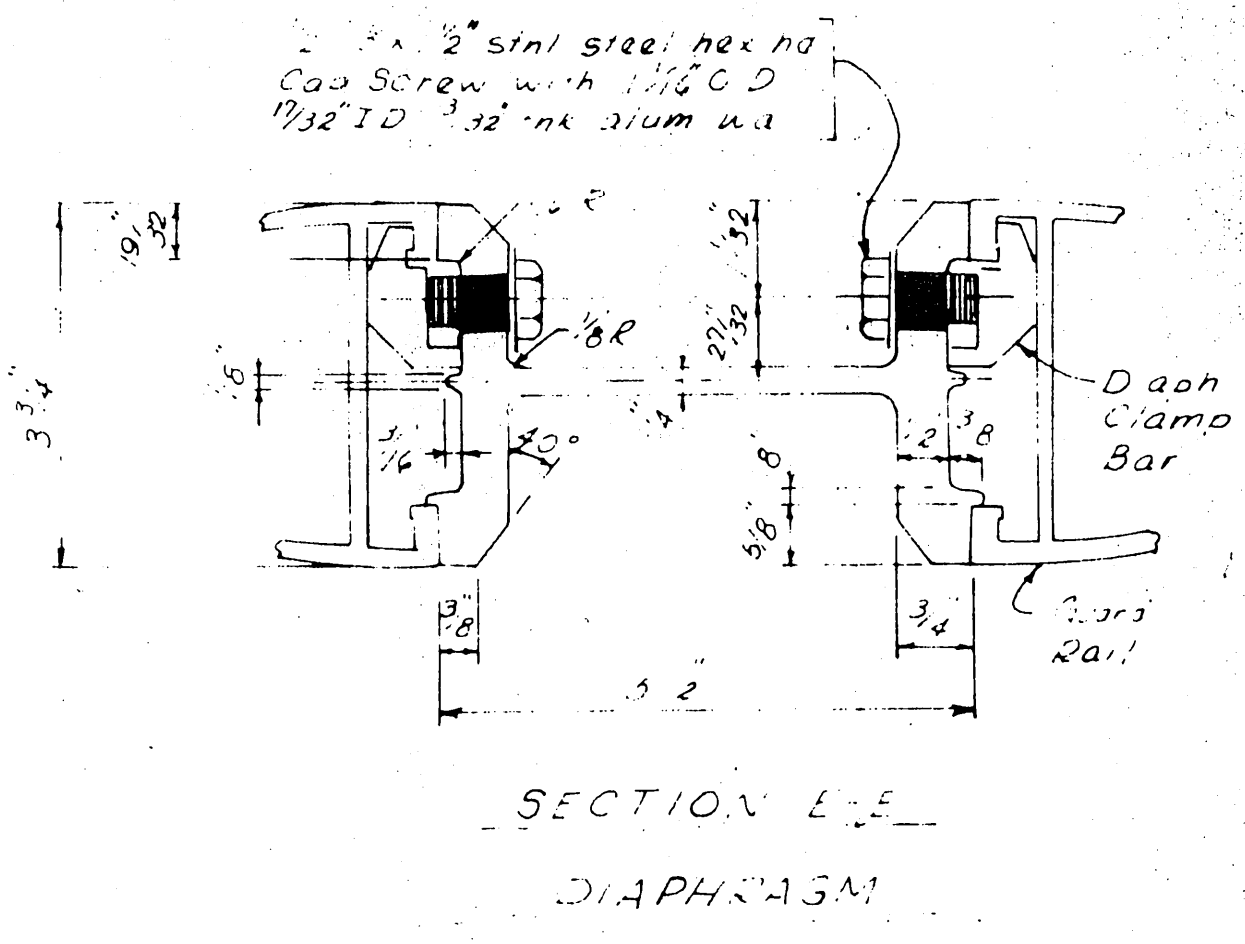
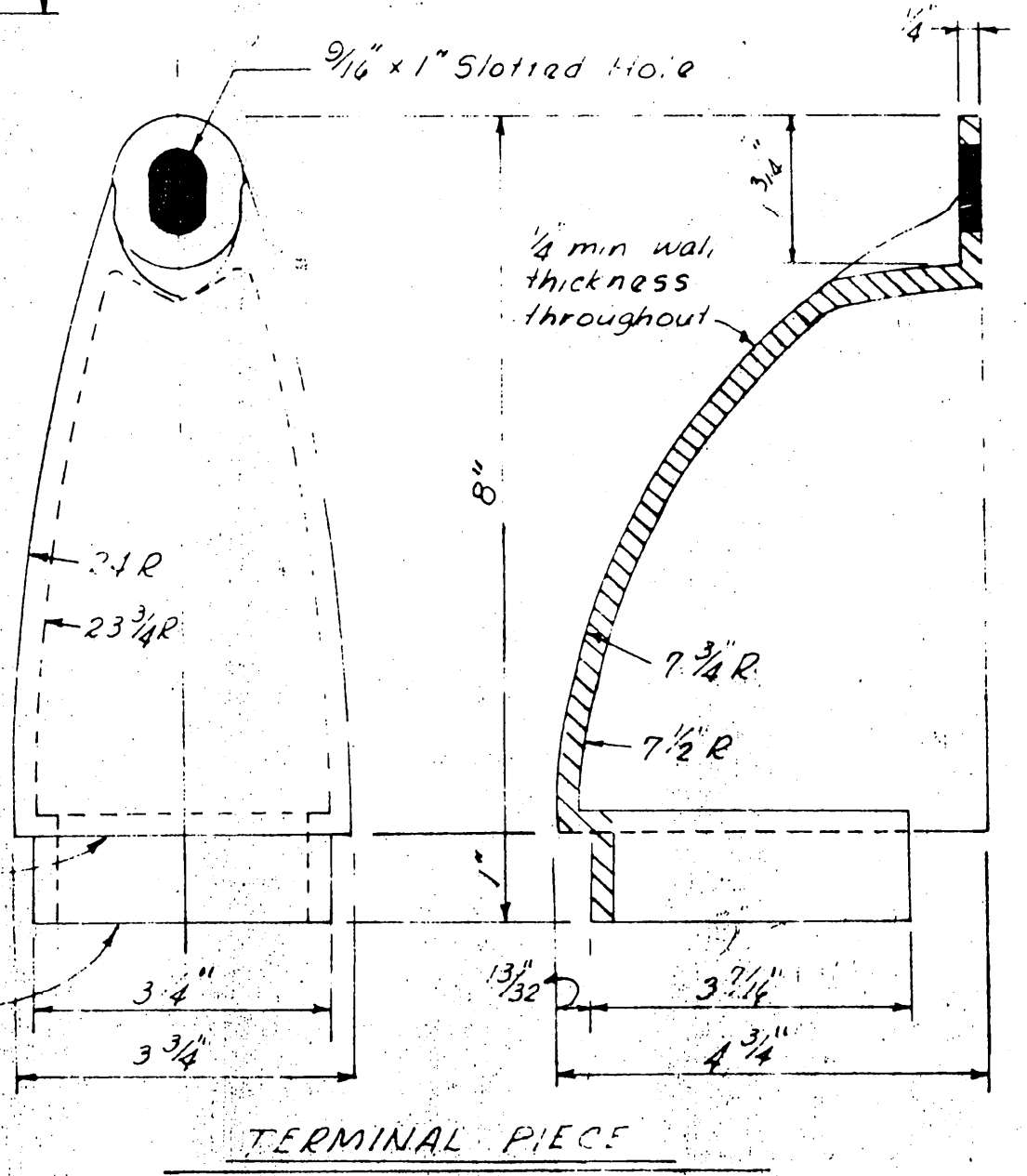
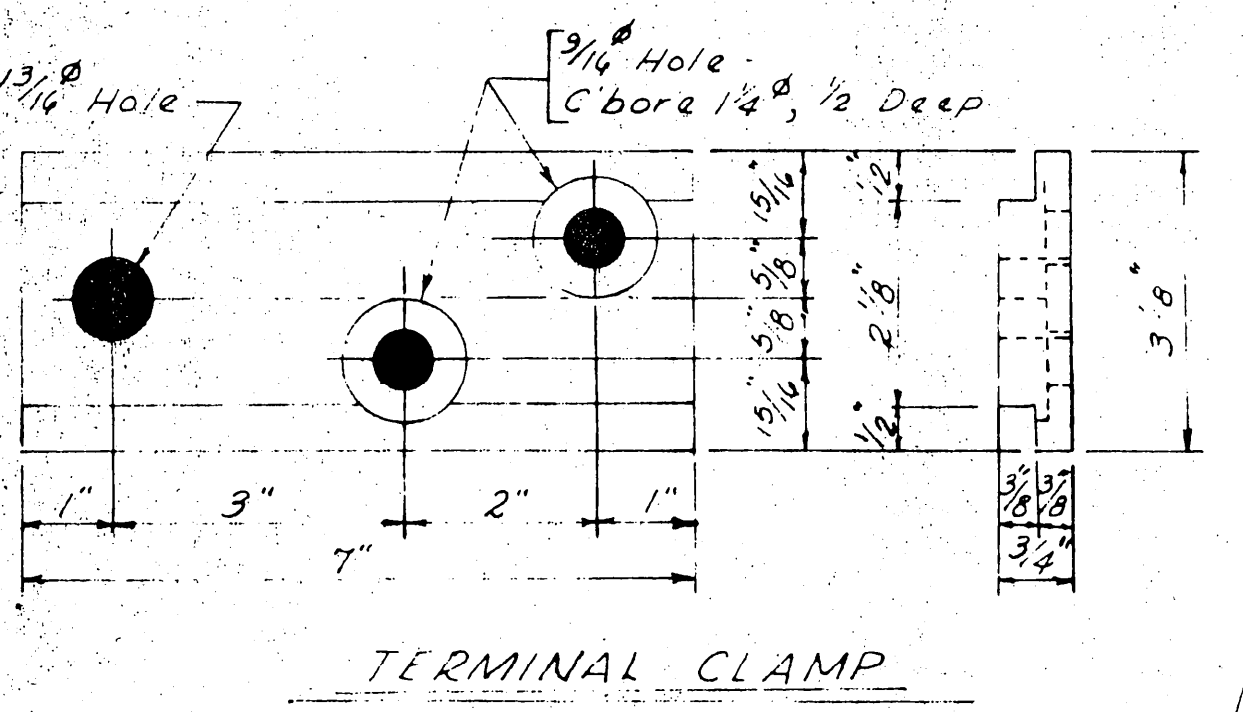
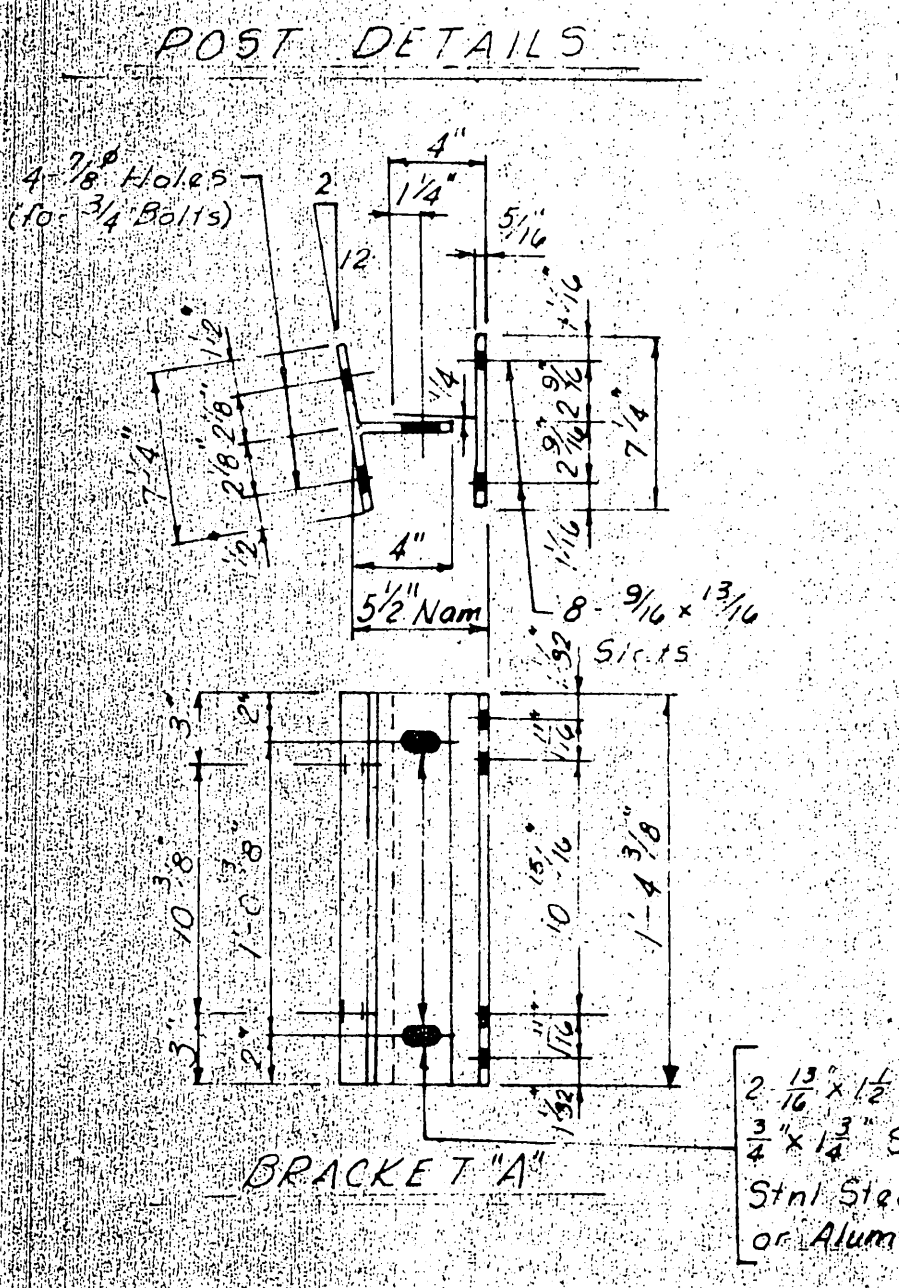
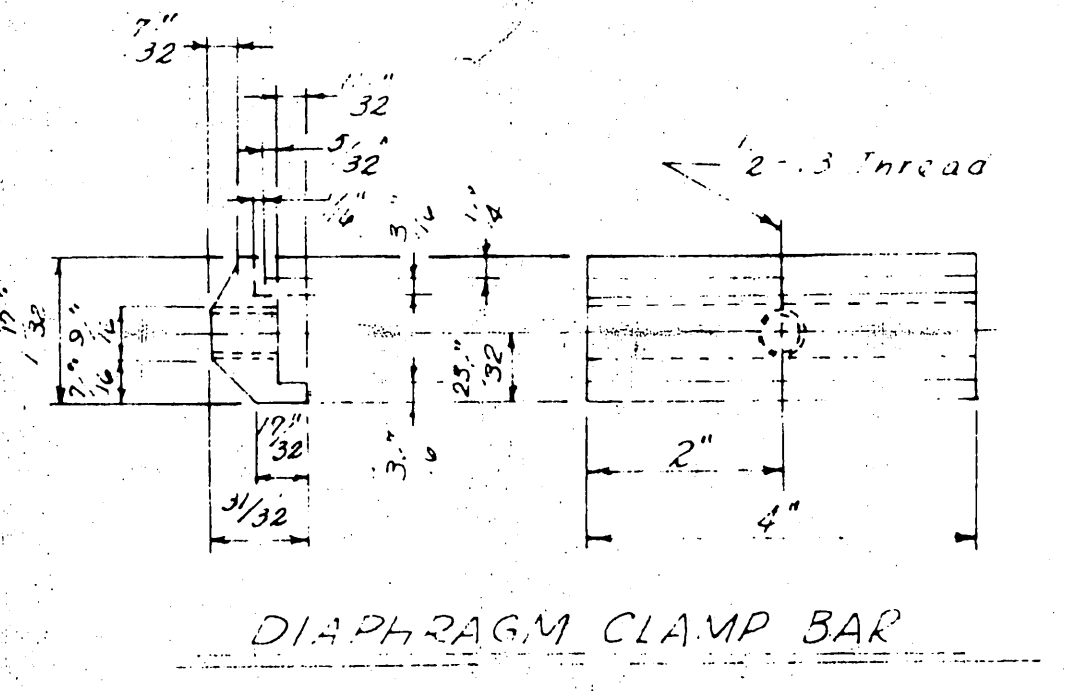
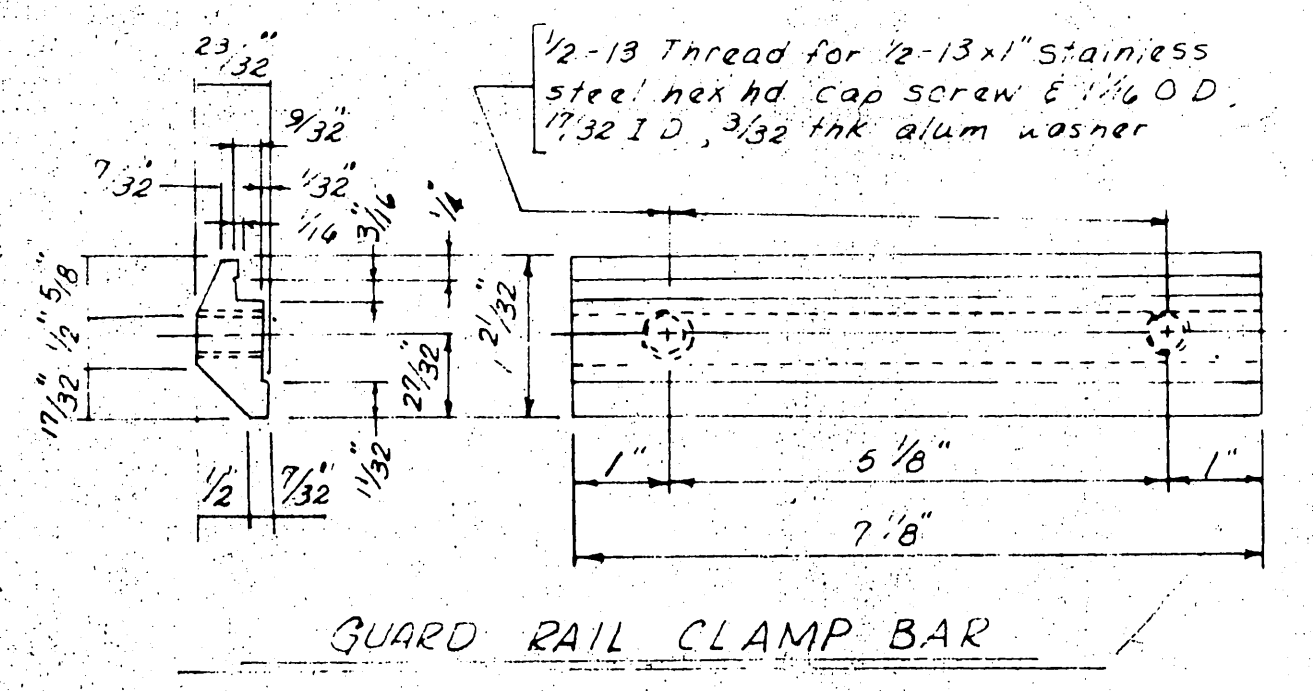
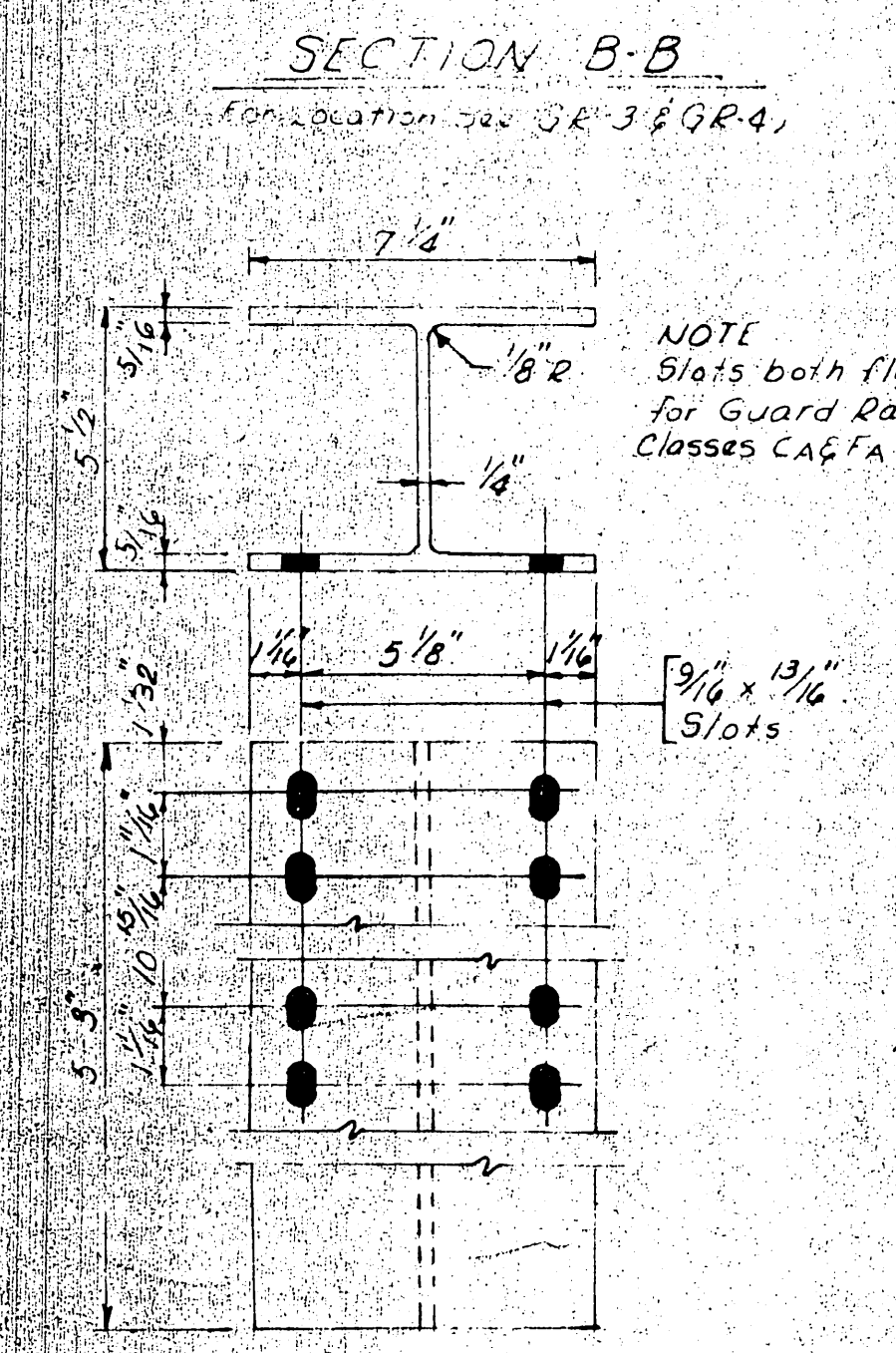
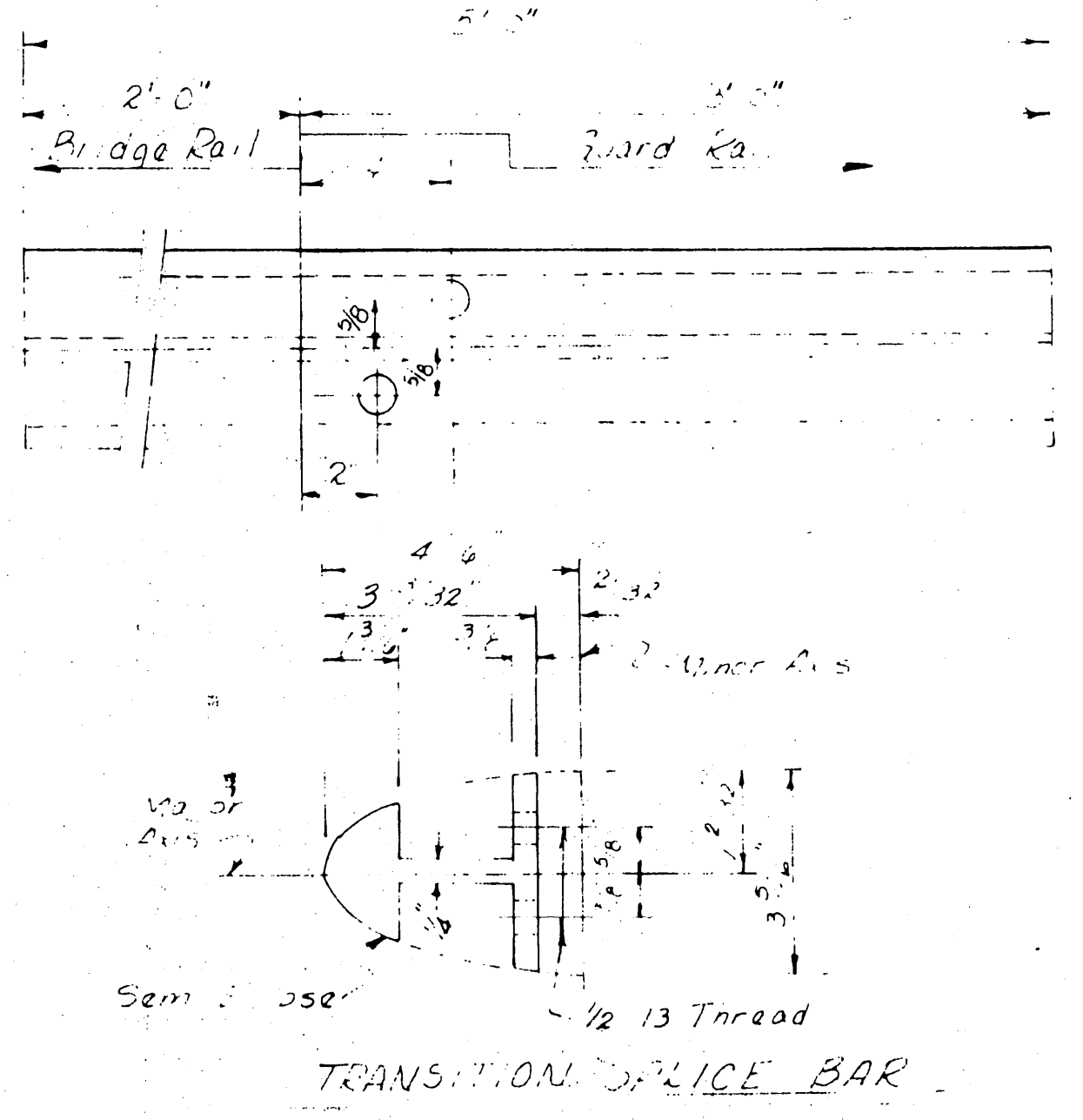
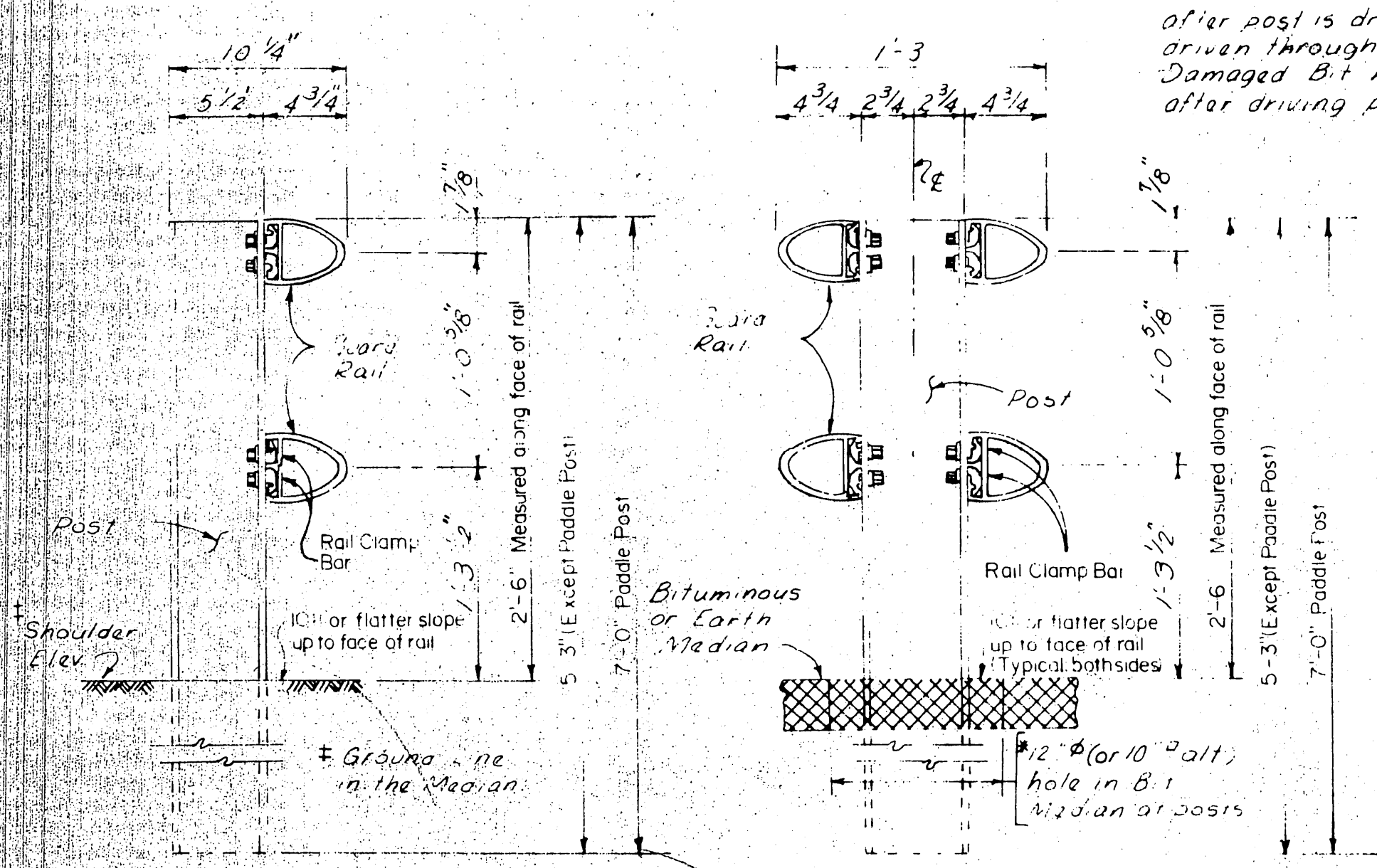


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REVISIONS	
1-2-74	Spec's
10-2-78	B.C.T. and Post Paddles
12-1-78	Guard Rail End Treatment
2-1-79	Median Length
4-1-82	Paddle Post Note (1) Legend (5)

SHEET GR4A

* Bituminous material may be placed after post is driven or post may be driven through bit mat as an alternate. Damaged Bit mats are to be repaired after driving posts.



- NOTES
- 1 Paddle Posts shall have paddle on rear flange of post as shown except for Class CA which shall have paddles on both front and rear flanges.
 - 2 For installation details of Guard Rail End Treatment see sheet GR-10.

ALUMINUM GUARD RAIL DETAILS

STATE OF INDIANA

FEBRUARY 1971

RECOMMENDED FOR APPROVAL
ENGINEER OF ROAD DESIGN

APPROVED
CHIEF DIVISION OF DESIGN

APPROVED
CHIEF HIGHWAY ENGINEER

REVISIONS	
10-1-71	AL Post Paddle
9-1-76	Post Type 'A'
4-1-82	Paddle Post Notes (1) & (2)

SHEET
GR5