

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

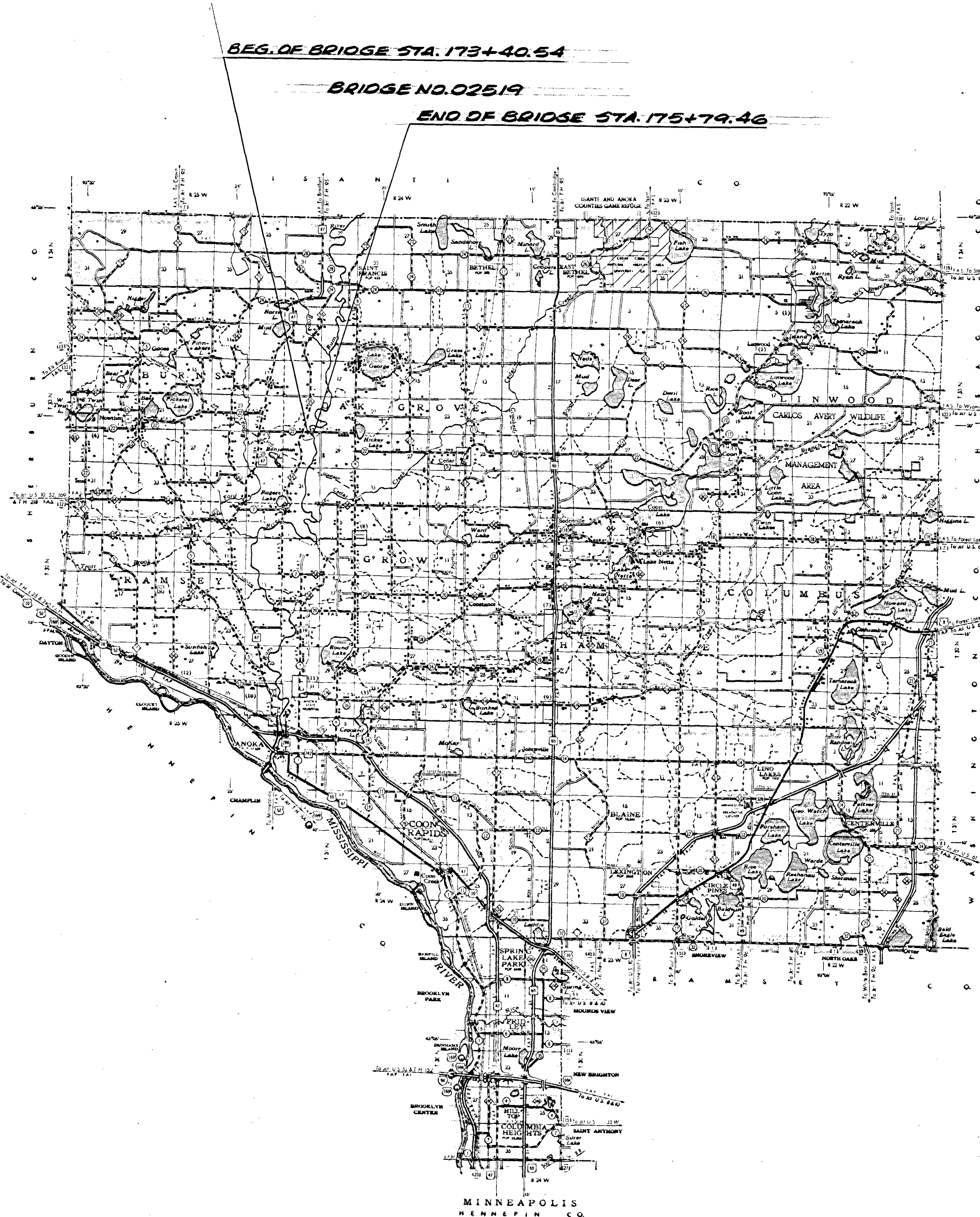
CONSTRUCTION PLAN FOR BRIDGE NO. 02519
County State Aid Highway No. 22
Between NOWTHEN And CEGAR
From A PT. 1213.17' EAST OF 50.14 TO A PT. 1451.09' EAST OF 50.14
PT. SEC. 19 T33N R24W TO PT. SEC. 19 T33N R24W
Give proper reference to Sections, Township and Range

GROSS LENGTH _____ FEET _____ MILES
BRIDGES-LENGTH 238.92 FEET 0.45 MILES
EXCEPTIONS-LENGTH _____ FEET _____ MILES
NET LENGTH 238.92 FEET 0.45 MILES

INDEX OF SHEETS
TITLE SHEET & LAYOUT MAP
SHT. 1-17 BRIDGE PLANS

CONVENTIONAL SIGNS

STATE LINE	---
COUNTY LINE	---
TOWNSHIP OR RANGE LINE	---
SECTION LINE	---
QUARTER LINE	---
SIXTEENTH LINE	---
RIGHT OF WAY LINE	---
PRESUB RIGHT OF WAY LINE	---
CONTROL OF ACCESS LINE	---
PROPERTY LINE (Except Land Line)	---
UNPLATTED PROPERTY	---
CORPORATE OR CITY LIMITS	---
TRUNK HIGHWAY CENTER LINE	---
RETAINING WALL	---
RAILROAD	---
RAILROAD RIGHT OF WAY LINE	---
RIVER OR CREEK	---
DAY RUN	---
DRAINAGE DITCH	---
ELECTRIC POWER LINE	---
TELEPHONE OR TELEGRAPH LINE	---
JOINT TELEPHONE AND POWER	---
CONDUIT	---
TELEPHONE CABLE-AERIAL	---
TELEPHONE CABLE UNDERGROUND	---
POWER CABLE UNDERGROUND	---
RAILROAD	---
GULCH	---
DROP INLET	---
SHARD FENCE	---
BARBED WIRE FENCE	---
WOODEN WIRE FENCE	---
CORNER LINE FENCE	---
RAILROAD SNOW FENCE	---
STONE WALL OR FENCE	---
WATER PIPE	---
SEWER PIPE	---
DRAIN TILE	---
SPRING	---
MARSH	---
TIMBER	---
ORCHARD	---
BRUSH	---
NURSERY	---
CATCH BASIN	---
MANHOLE	---
FIRE HYDRANT	---
STREET LIGHT	---
RAILROAD CROSSING SIGN	---
ELECTRIC CROSSING SIGN	---
CATTLE GUARD	---
OPENINGS (Highway Over)	---
UNDERPASS (Highway Under)	---
BRIDGE	---
BUILDING (One Story Frame)	---
FRAME	---
CONCRETE	---
STONE	---
BRICK	---
ST. STUCCO	---
IRON PIPE OR ROD	---
MONUMENT (STONE, CONCRETE, OR METAL)	---
WOODEN PILE	---
GRAVEL PIT	---
SAND PIT	---
ROCK QUARRY	---
MEANDER CORNER	---



DESIGN DESIGNATION
ADT (CURRENT YEAR) _____
ADT (FUTURE YEAR) _____
T (HEAVY COMMERCIAL) _____
_____ Ton Design
Design Speed _____ MPH
Design Speed not achieved at:
STA _____ TO STA _____ MPH
STA _____ TO STA _____ MPH

SPECIFICATIONS
THE "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", DATED JAN. 1, 1968, SHALL GOVERN

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.

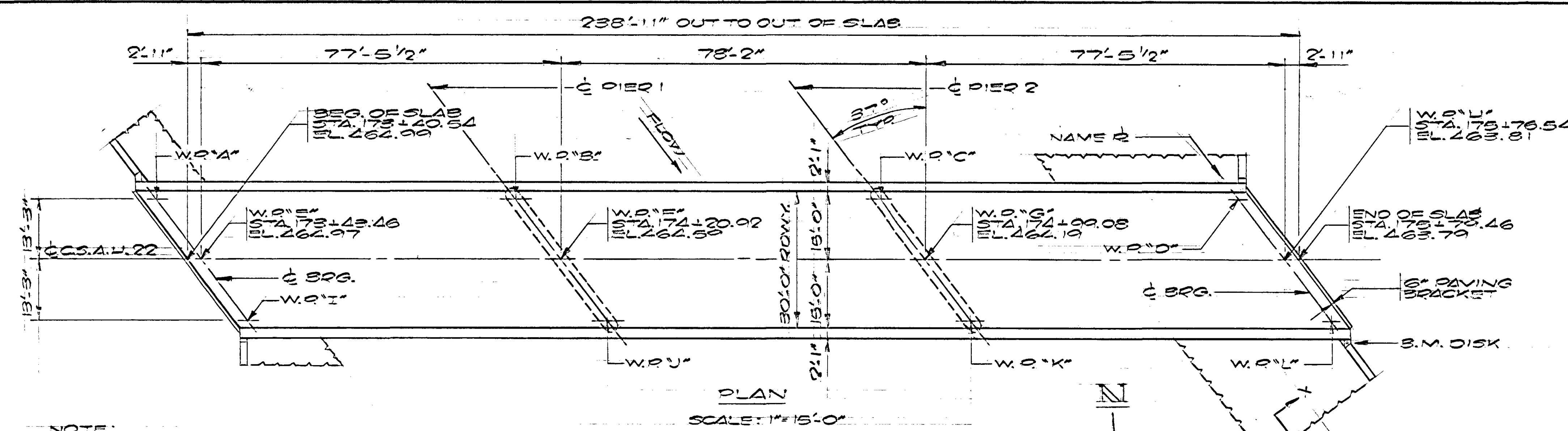
PLANS & R/W APPROVED *E. J. Lundholm* COUNTY ENGINEER DATE 9-4-68
ANOKA COUNTY REG. NO. 2551
RECOMMENDED FOR APPROVAL *George F. Weloff* DISTRICT ENGINEER
RECOMMENDED FOR APPROVAL *P. D. Swenson* BR. DESIGN & PLANNING ENGINEER
APPROVED 0124 1968 *Lawrence M. Fay* STATE AID ENGINEER

Minn. Proj. No. _____
S.A.P. 02-622-11

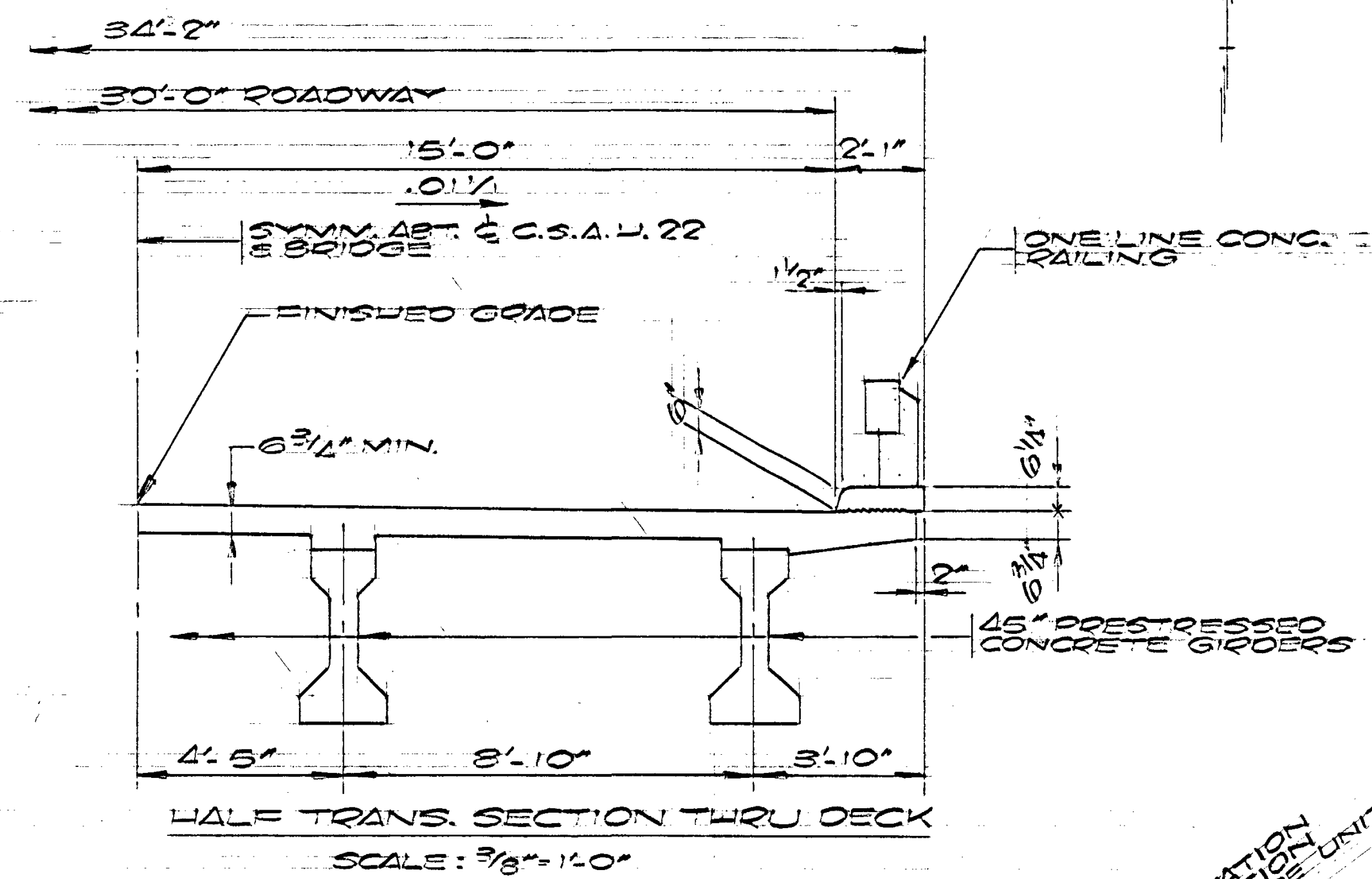
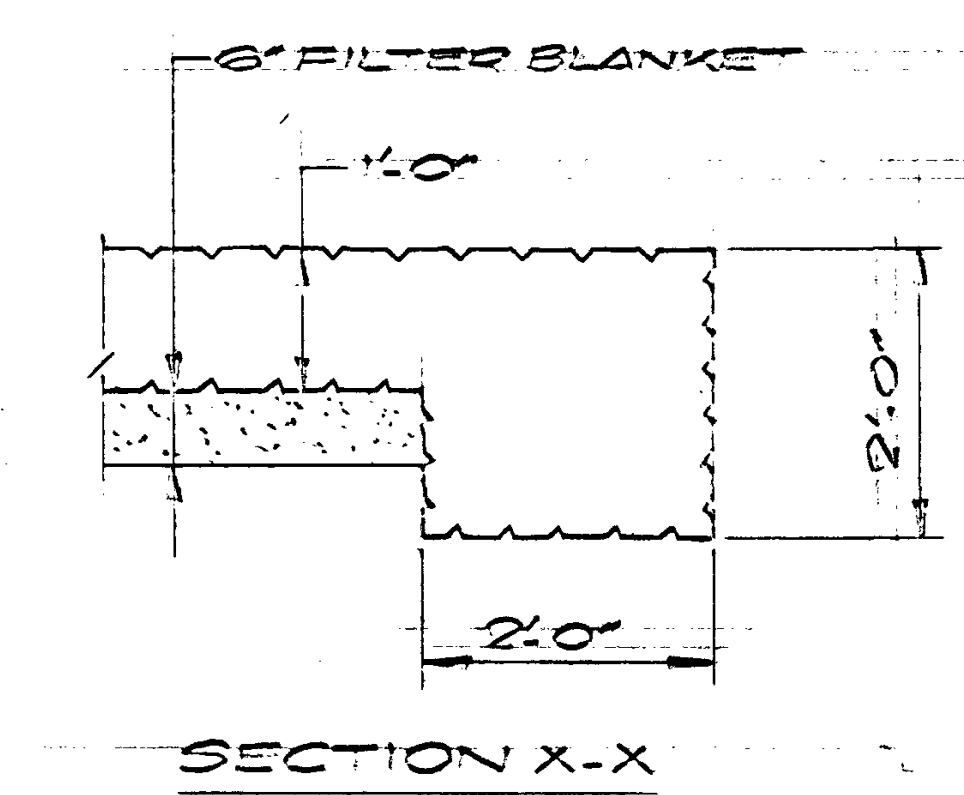
ANOKA County, Minnesota.

DESIGN DATA
 1965 A.A.S.H.O. DESIGN SPECIFICATIONS
 2-LANES W/20 LOADING WITH IMPACT
 $C_c = 1600$ P.S.I. $n = 8$
 $F_s = 20000$ P.S.I. INTERMEDIATE GRADE REINF.
 $F_s = 20000$ P.S.I. STRUCT. STEEL M.H.O. 3306

CONSTRUCTION NOTES
 THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION DATED JANUARY 1968 SHALL GOVERN.
 THE FIRST NUMBER OF EACH BAR MARK INDICATES THE BAR SIZE.



NOTE:
 LIMITS OF RIPRAP SHOWN ARE APPROXIMATE ONLY, EXACT LIMITS TO BE DETERMINED BY THE ENGINEER IN FIELD.



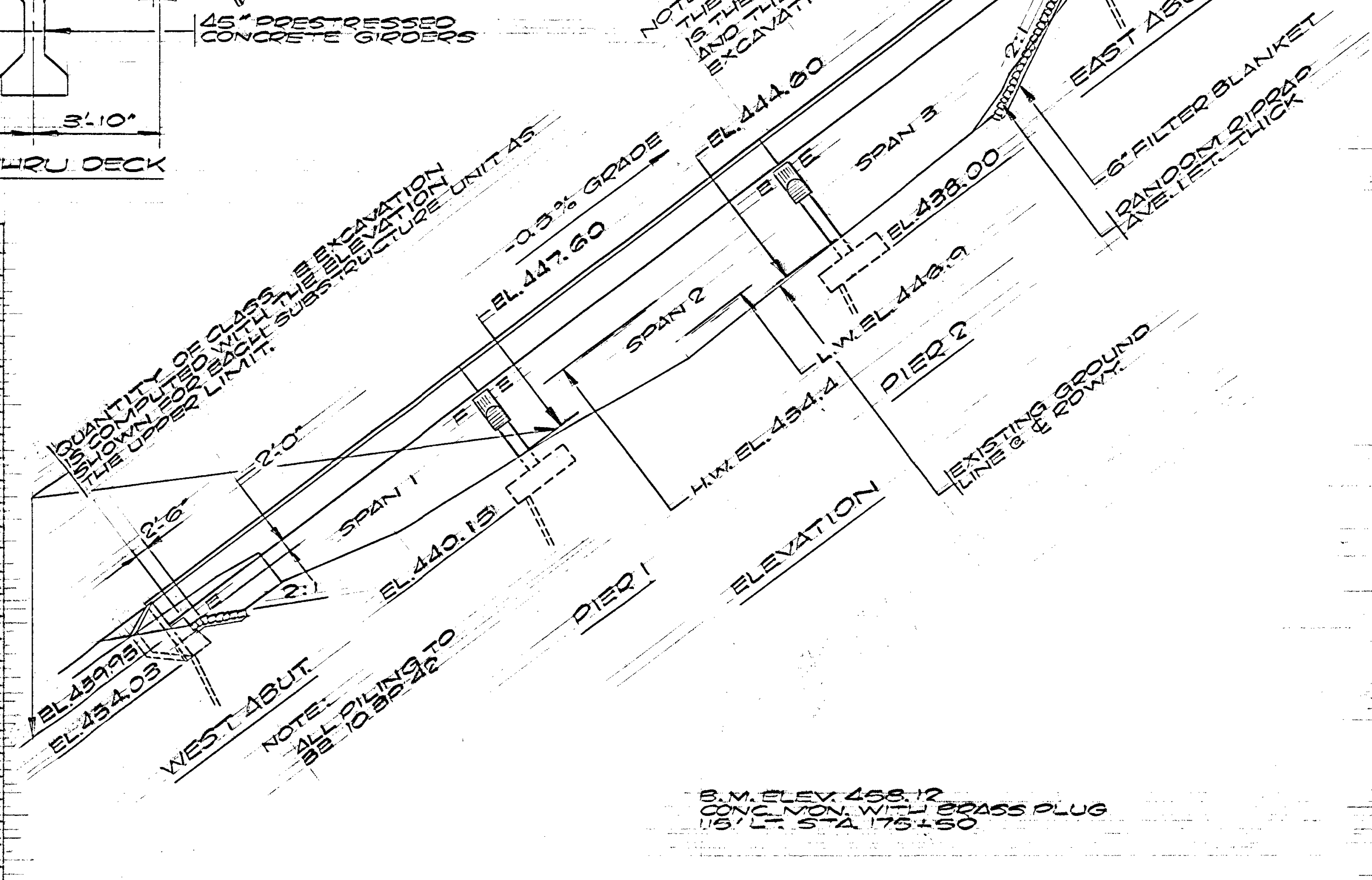
NOTE: THE LOW WATER ELEV. SHOWN IN THE PLANS IS THE LOWER LIMIT OF CLASS E EXCAVATION AND THE UPPER LIMIT OF CLASS WE EXCAVATION.

LIST OF SHEETS

NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT
3	ABUTMENT DETAILS
4	ABUTMENT REINFORCEMENT
5	ABUTMENT REINFORCEMENT
6	PIER DETAILS & REINFORCEMENT
7	SUPERSTRUCTURE DETAILS
8	SUPERSTRUCTURE DETAILS
9	SUPERSTRUCTURE DETAILS
10	PREST. CONG. GIRDERS TYPE (45-78)
11	CONCRETE RAILING
12-15	DETAILS
16	BRIDGE SURVEY
17	BRIDGE SURVEY, PLAN & PROFILE

SUMMARY OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	QUAN.	UNIT
2401.501	CONCRETE, MIX NO. 1A43	105	CU. YD.
2401.501	CONCRETE, MIX NO. 3Y43	356	CU. YD.
2401.501	CONCRETE, MIX NO. 3Y46A	33	CU. YD.
2401.521	STRUCTURE EXCAVATION, CLASS E	168	CU. YD.
2401.521	STRUCTURE EXCAVATION, CLASS WE	150	CU. YD.
2401.541	REINFORCEMENT BARS	90760	POUND
2402.521	STRUCTURAL STEEL, (3306)	550	POUND
2402.593	FIXED BEARING ASSEMBLIES, TYPE 1	4	UNIT
2405.501	PRESTRESSED CONCRETE GIRDERS, TYPE 45-78	12	GIRDER
2442.501	REMOVE OLD BRIDGE	1	BRIDGE
2511.501	RANDOM RIPRAP, CLASS A	115	CU. YD.
2511.504	FILTER BLANKET, TYPE 1	50	CU. YD.
2452.510	STEEL H-PIILING DRIVEN	1920	LIN. FT.
2452.511	STEEL H-PIILING DELIVERED	1260	LIN. FT.
2452.520	STEEL H-TEST PILES, 65 FEET LONG	4	PILE
2452.520	STEEL H-TEST PILES, 55 FEET LONG	4	PILE
2402.594	EXPANSION BEARING ASSEMBLIES, TYPE 2	20	UNIT



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Robert E. Erickson
 DATE 3-20-68 REG. NO. 2397
 APPROVED: *Robert E. Erickson*
 DATE 5/21/68 COUNTY ENGINEER ANOKA COUNTY

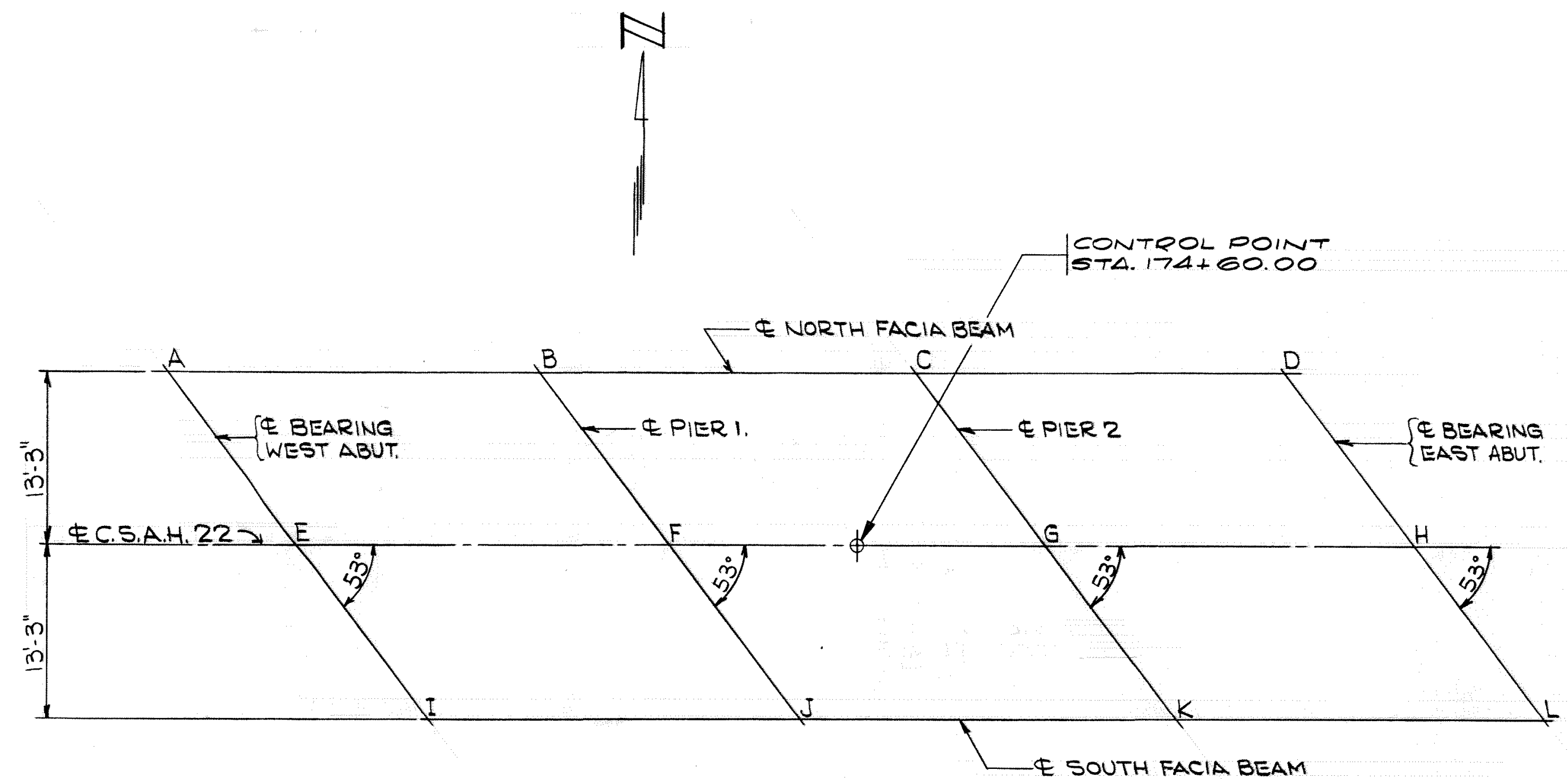
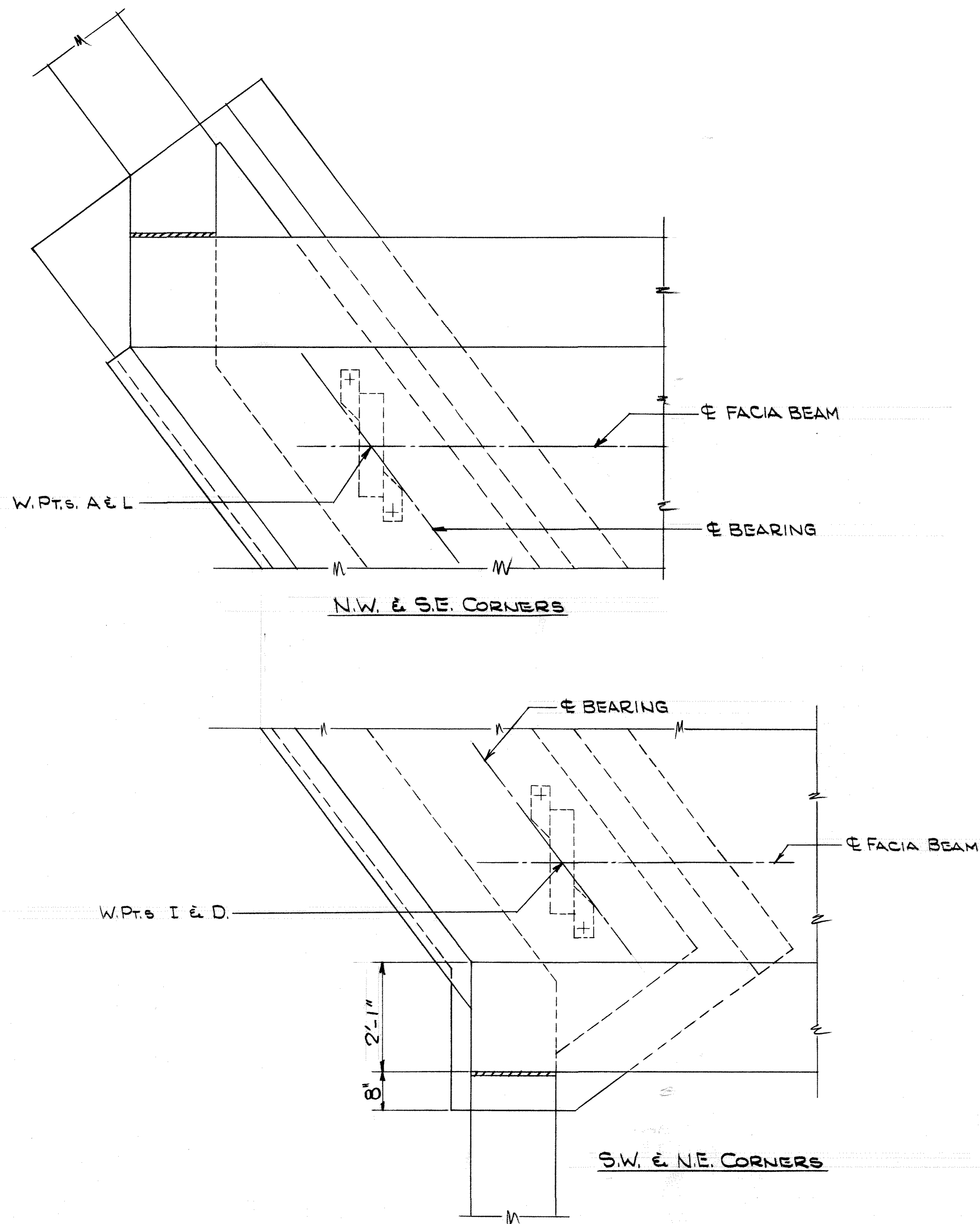
PLANS PREPARED BY ROBERT E. ERICKSON, ENGR'G. CO. 3540 REPUBLIC AVENUE ST. LOUIS PARK, MINNESOTA

C.S.A.U. 22 ANOKA COUNTY DEPARTMENT OF HIGHWAYS

BRIDGE NO. 02519
 6 MILES SOUTH OF ST. FRANCIS ON C.S.A.U. 22 OVER RUM RIVER
 80'-78'-80' PRESTRESSED CONCRETE GIRDER SPANS
 30' ROW, 37' SKEW, 2 CURVES 0'

GENERAL PLAN & ELEVATION SEC. 19 T33N 224W OAK GROVE TWP ANOKA COUNTY

APPROVED: *P. D. Sullivan* 9-25-68
 BRIDGE DESIGN & PLANNING ENGR.



LAYOUT SHOWING WORKING POINTS
(NO SCALE)

NOTE:
THE ENGINEER WILL SET STAKES FOR THE CONTROL POINT & THE WORKING POINTS SHOWN ON THIS SHEET, & WILL RESET THESE POINTS AS HE DEEMS NECESSARY FOR PROPER PERFORMANCE OF THE WORK. HE WILL ALSO SET ONE OR MORE BENCH MARKS IN THE VICINITY OF EACH SUBSTRUCTURE UNIT FOR THE CONTRACTOR'S REFERENCE WHEN EXCAVATING & SUPERSTRUCTURE FORMS & FURNISH BEAM STOOD HEIGHTS AS HE DEEMS NECESSARY FOR PROPER PERFORMANCE OF THE WORK. THE DEPARTMENT WILL BE RESPONSIBLE FOR THE ACCURACY OF THE POINTS SET BY ITS PERSONNEL AS DEFINED ABOVE.
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE SUCH MEASUREMENTS FROM THE POINTS SET BY THE ENGINEER AS MAY BE NECESSARY FOR LAYOUT OF THE FORMS & STRUCTURAL MEMBERS, & TO PRESERVE THE STAKES & POINTS SET BY THE ENGINEER AS SET FORTH IN 1508.

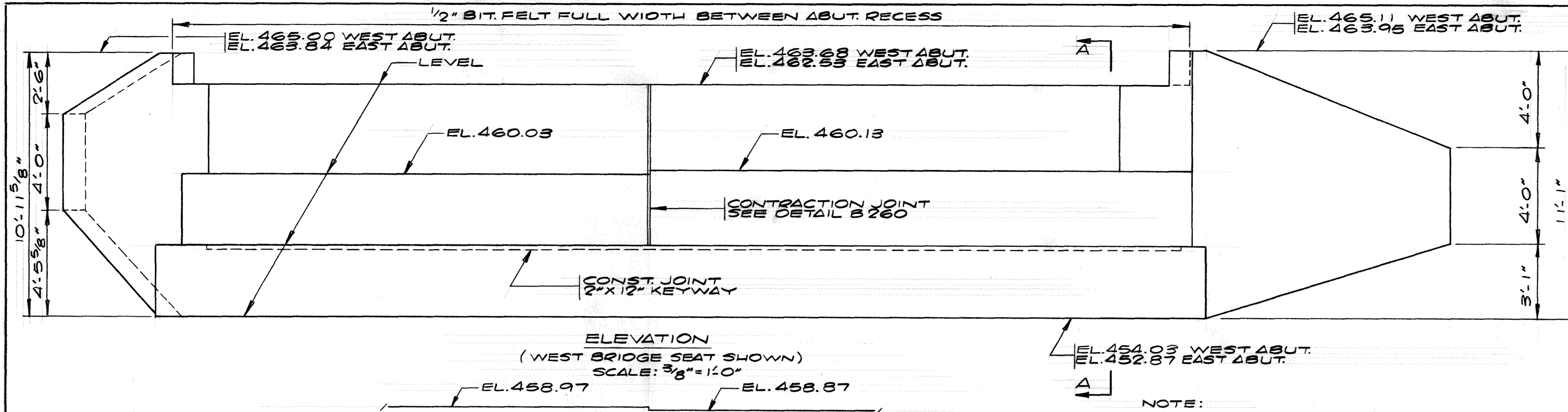
POINT	STATION	DIMENSIONS BETWEEN WORKING POINTS.											ELEVATIONS			
		A	B	C	D	E	F	G	H	I	J	K	L	TOP OF SLAB	SLAB TO BRIDGE SEAT	BRIDGE SEAT.
A	173+33.48													464.89	4.76	460.13
B	174+10.94	77.46'												464.51	4.76	459.75
C	174+89.10		78.16'											464.11	4.76	459.35
D	175+66.56			77.46'										463.73	4.76	458.97
E	173+43.46	16.59'	68.77'													
F	174+20.92	88.44'	16.59'	69.45'		77.46'										
G	174+99.08		89.13'	16.59'	68.77'		78.16'									
H	175+76.54			88.44'	16.59'			77.46'								
I	173+53.44	33.18'				16.59'	68.77'							464.79	4.76	460.03
J	174+30.90	100.96'	33.18'				16.59'	69.45'		77.46'				464.41	4.76	459.65
K	175+09.06		101.64'	33.18'				16.59'	68.77'		78.16'			464.01	4.76	459.25
L	175+86.52			100.96'	33.18'				16.59'			77.46'		463.63	4.76	458.87

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

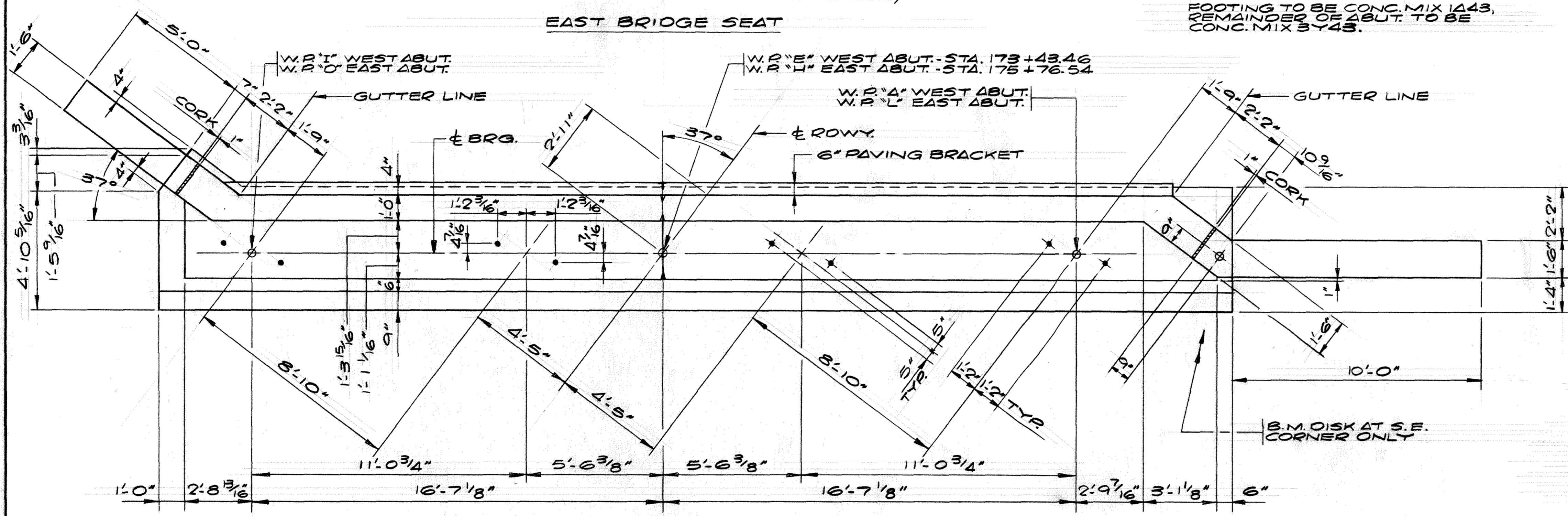
BRIDGE No. 02519

BRIDGE LAYOUT

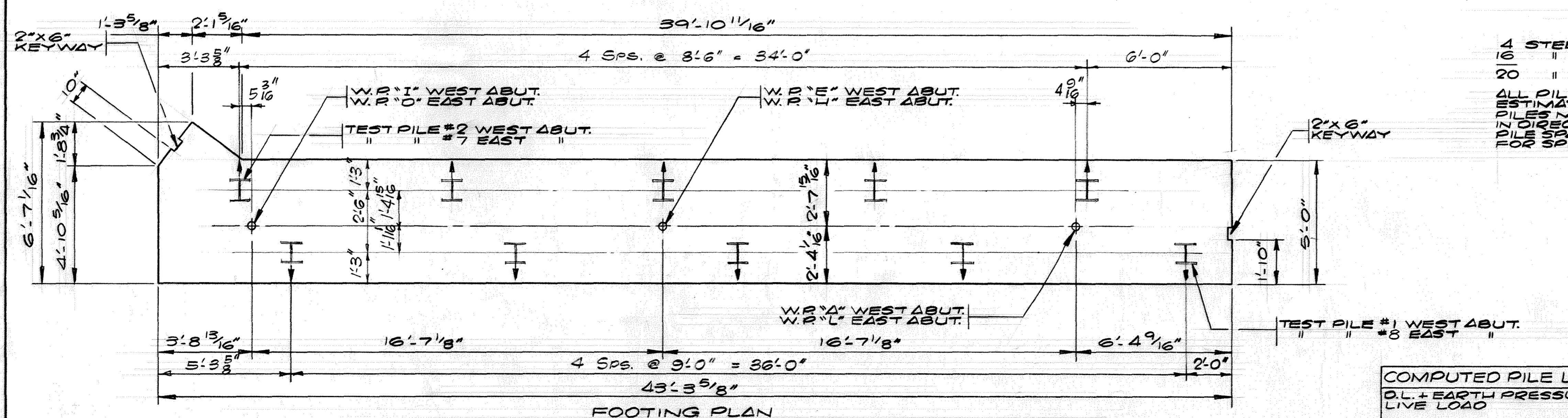
APPROVED: 9-25-68



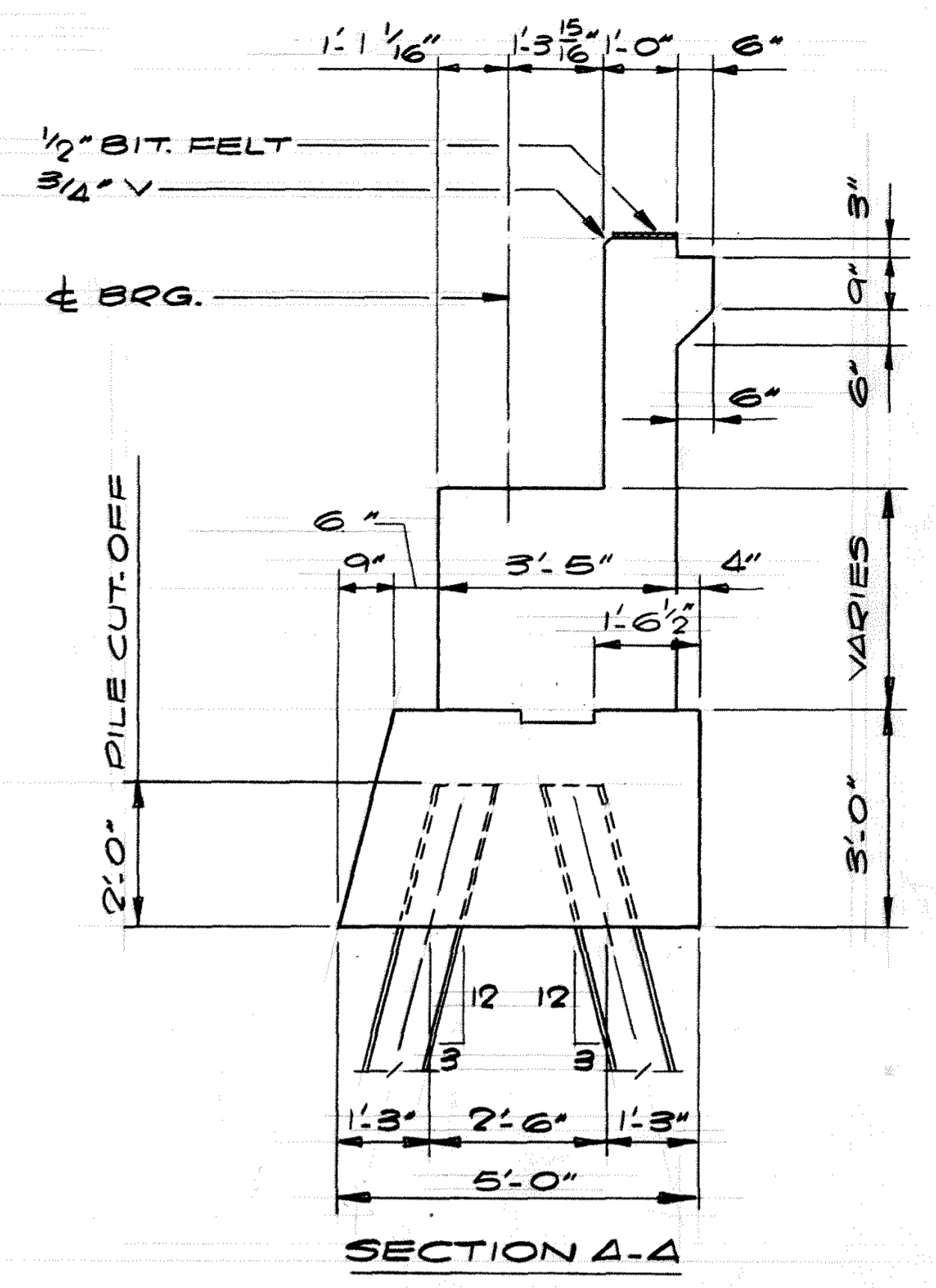
ELEVATION
(WEST BRIDGE SEAT SHOWN)
SCALE: 3/8" = 1'-0"



PLAN



FOOTING PLAN



SECTION A-A

NOTE:
FOOTING TO BE CONC. MIX 1A43,
REMAINDER OF ABUT. TO BE
CONC. MIX 3Y43.

SUMMARY OF QUANTITIES FOR 2 ABUTS.	
CONCRETE, MIX NO. 1A43	45 CU. YD.
CONCRETE, MIX NO. 3Y43	58 CU. YD.
REINFORCEMENT BARS	6550 LB.
CLASS E EXCAVATION	160 CU. YD.
B.M. DISK - STD. PLATE 9300	ONE
STEEL PILING DELIVERED	880 LIN. FT.
STEEL TEST PILES, 65 FT. LONG	4

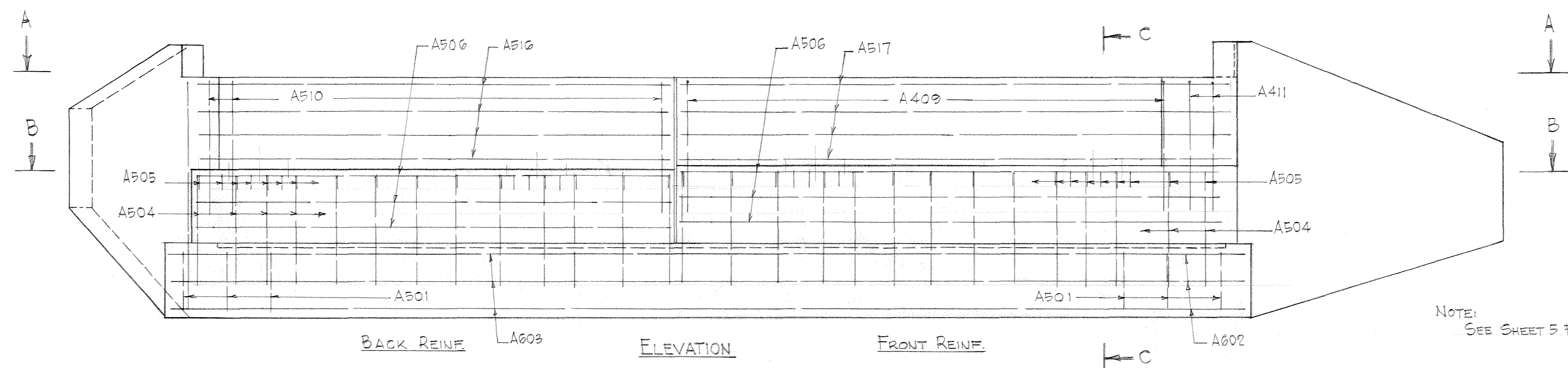
- ① COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD. # 9301 FOR PLACING.
- ② DOES NOT INCLUDE TEST PILES.

PILE NOTES

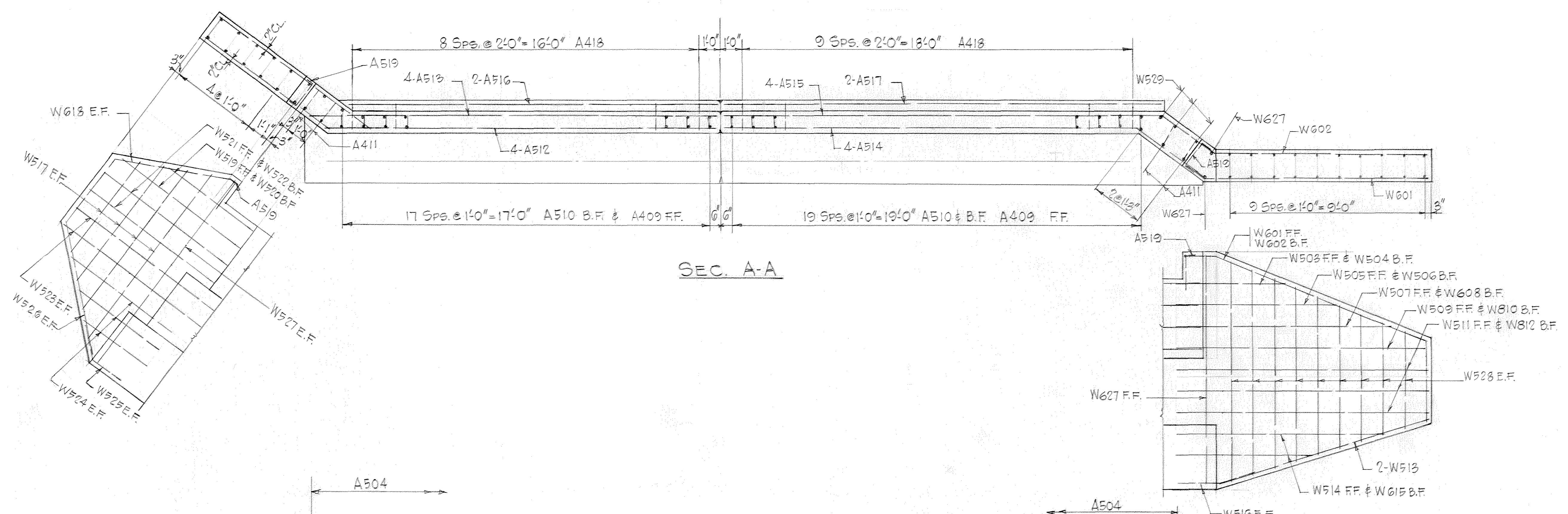
4 STEEL TEST PILES 65 FT. LONG
10 " PILES EST. LENGTH 35 FT.
20 " " " REQ'D. FOR BOTH ABUTS.
ALL PILES TO BE 10 GP 42.
ESTIMATED PENETRATION 1 FT. LESS THAN LENGTH GIVEN.
PILES MARKED THUS → TO BE BATTERED 3" PER FT.
IN DIRECTION SHOWN.
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
FOR SPLICES AND TIP REINFORCEMENT SEE DETAIL B221.

COMPUTED PILE LOADS - TONS/PILE	
O.L. + EARTH PRESSURE	39.47
LIVE LOAD	5.08
TOTAL	44.55

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
BRIDGE NO. 02519
ABUTMENT DETAILS
APPROVED: 9-25-68

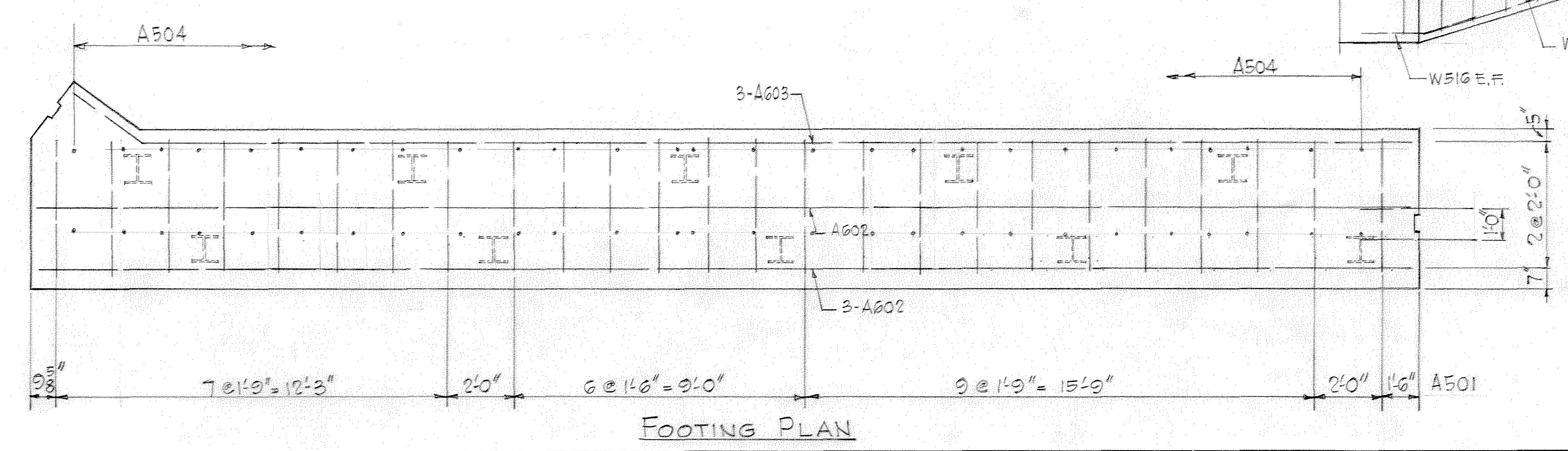


NOTE:
SEE SHEET 5 FOR SECTIONS B-B & C-C



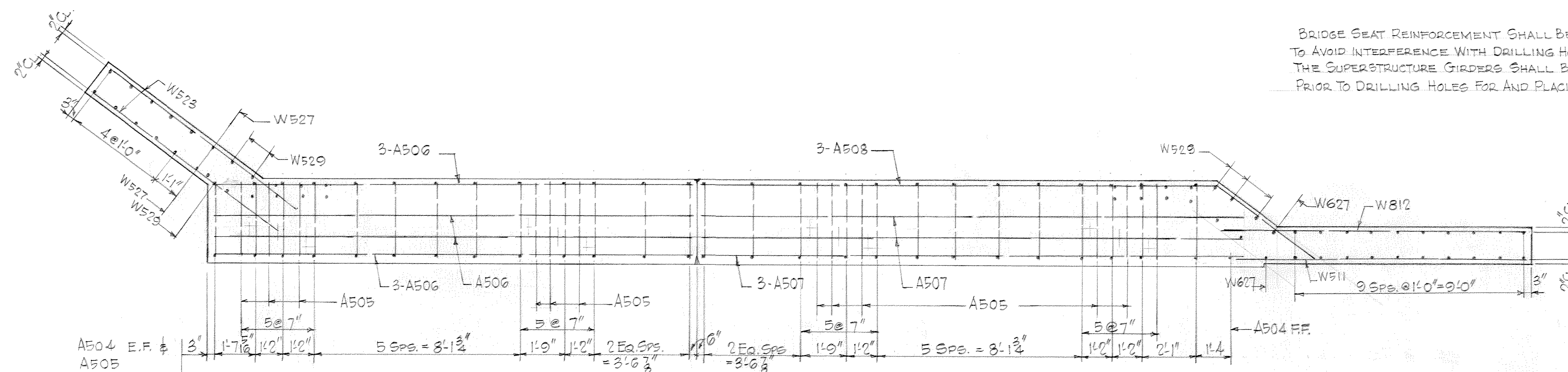
SEC. A-A

SYMBOLS:-
F.F. = FRONT FACE
B.F. = BACK FACE
E.E. = EACH FACE



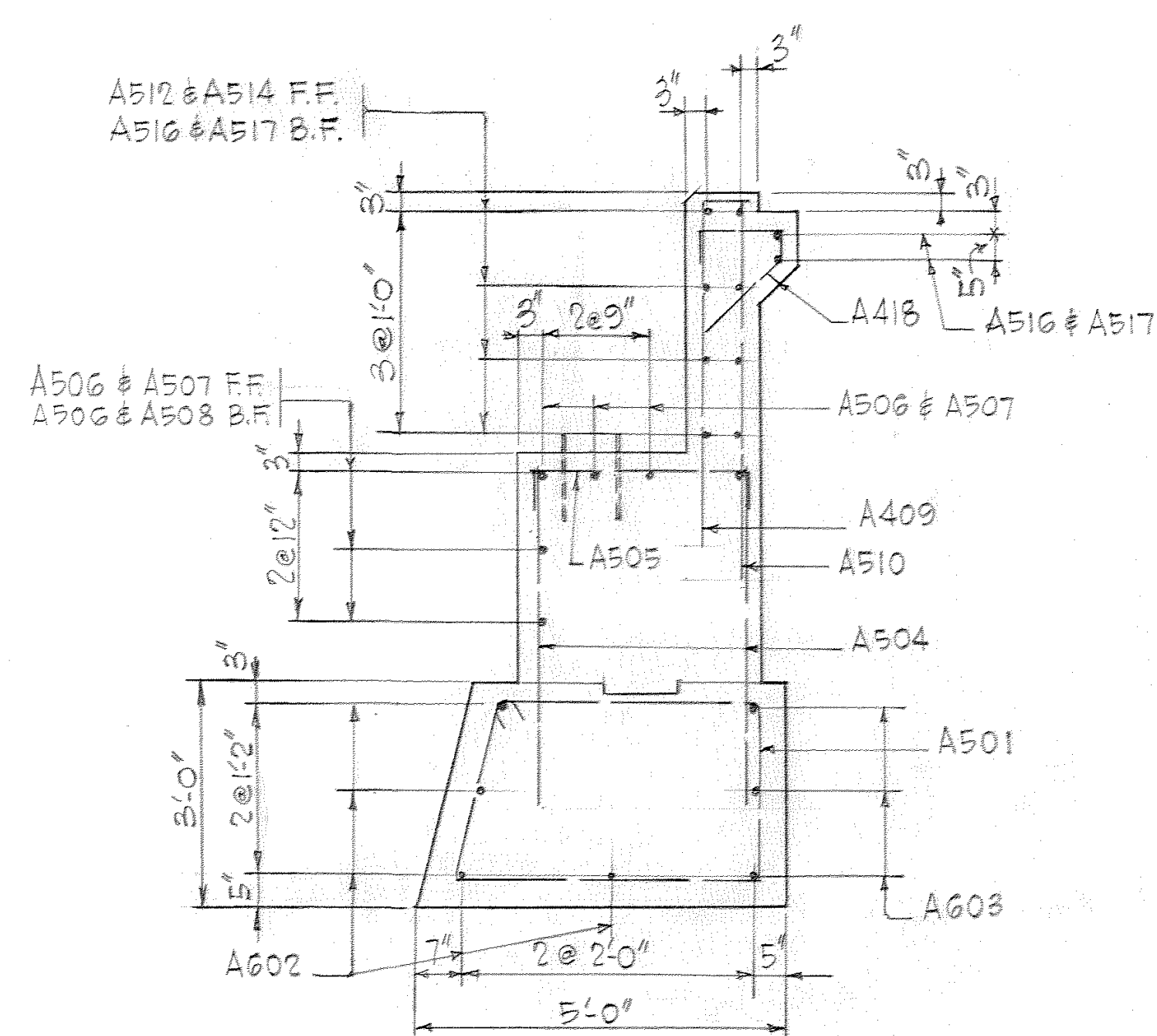
FOOTING PLAN

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
BRIDGE NO 02519
ABUTMENT REINFORCEMENT
APPROVED: 9-25-68

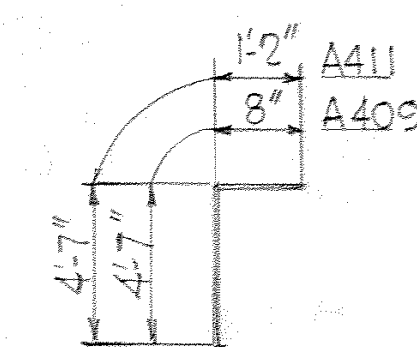
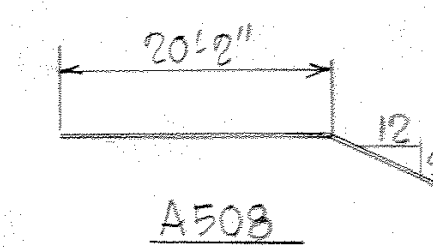


BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR BOLTS. THE SUPERSTRUCTURE GIRDERS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR BOLTS.

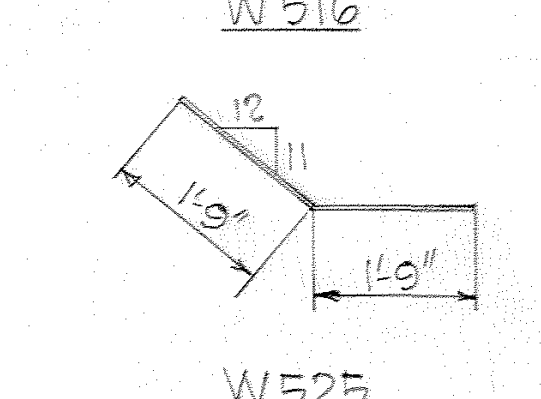
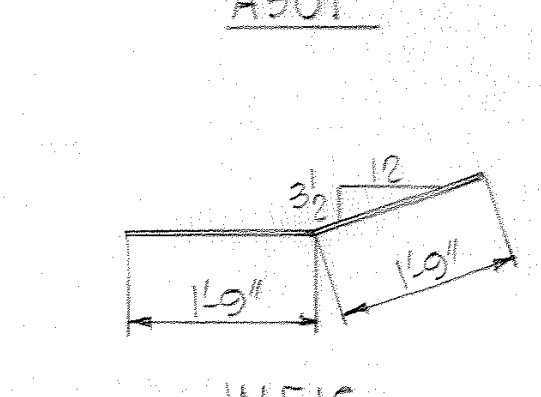
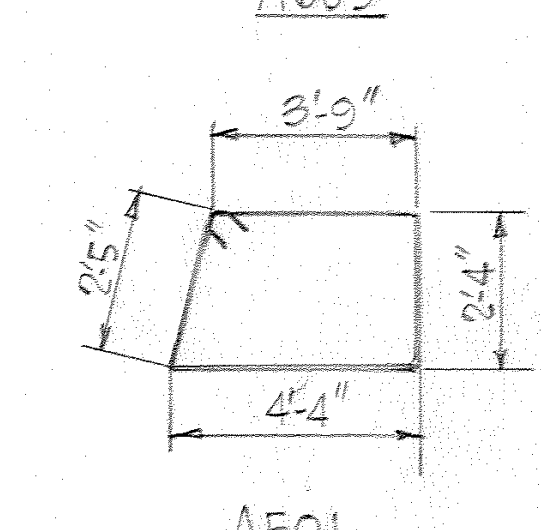
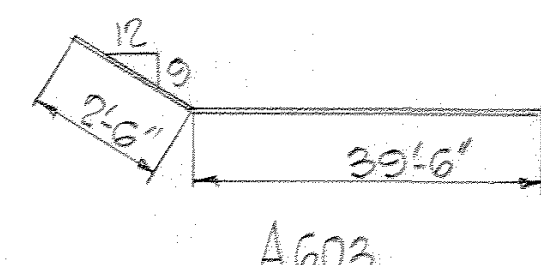
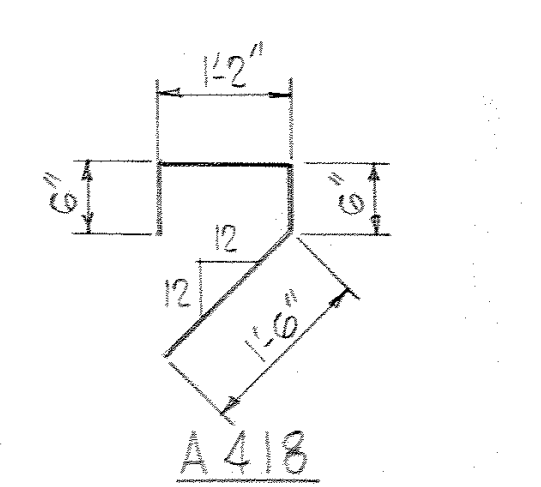
SEC. B-B



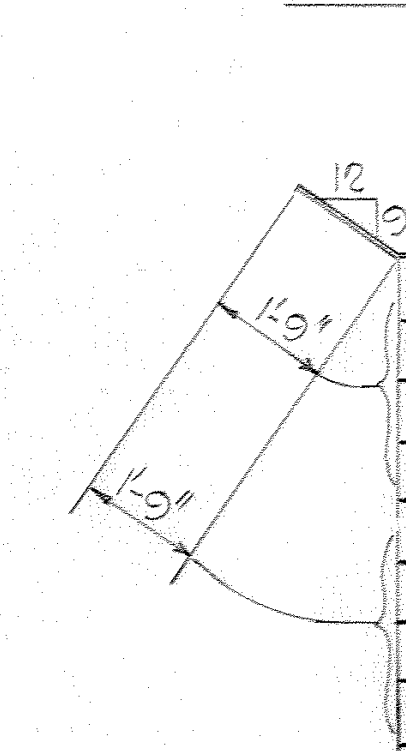
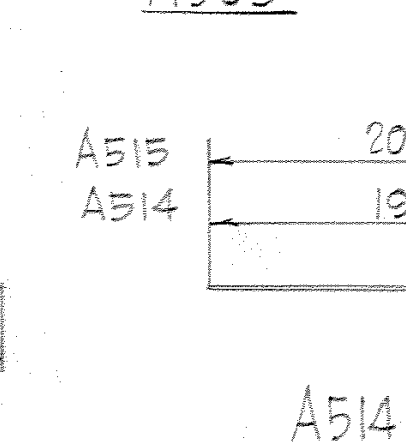
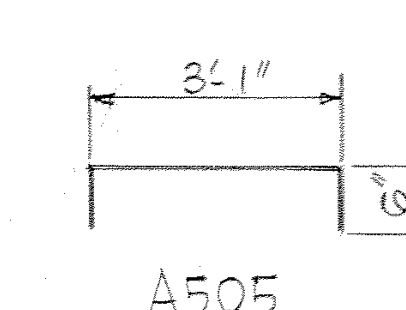
SEC. C-C



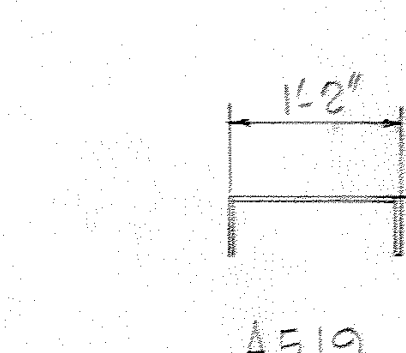
A409 & A411



W525



W503 TO W810 INCL.



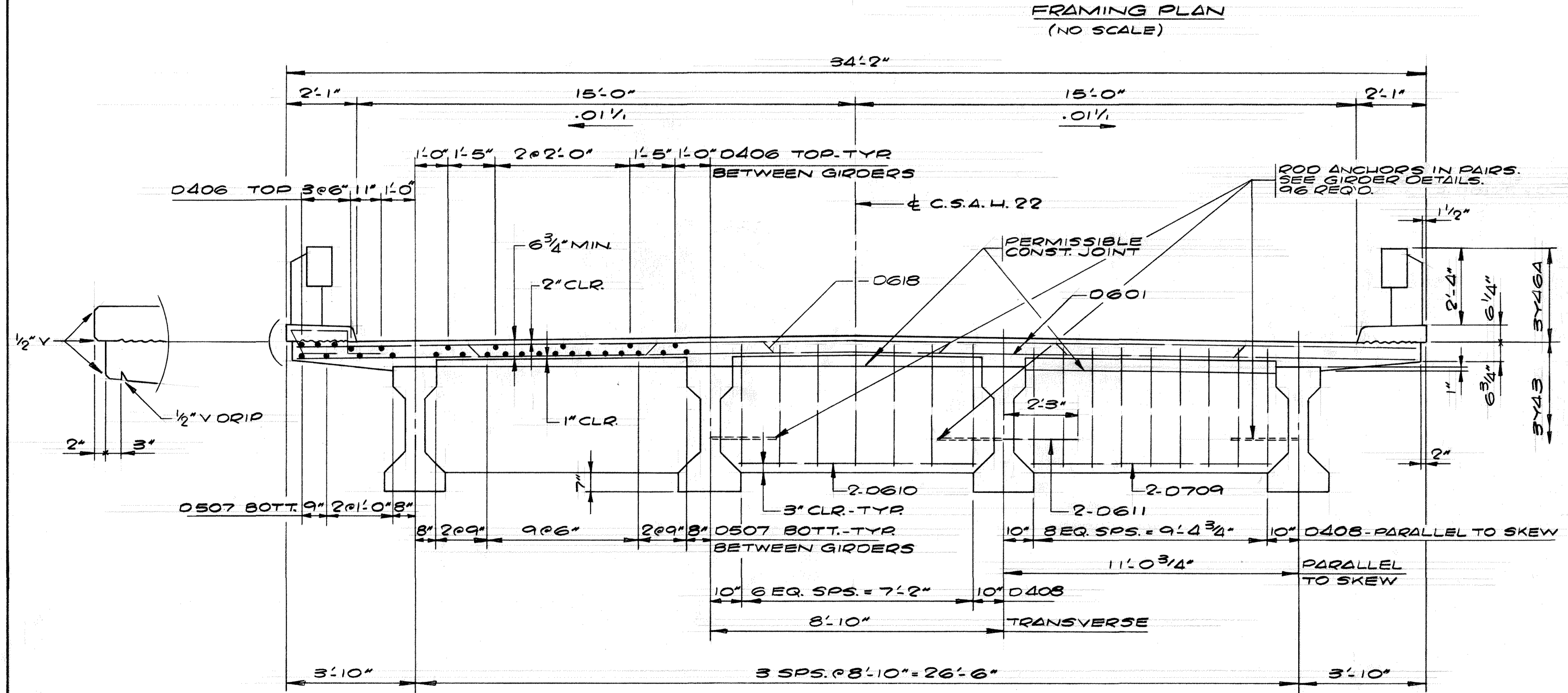
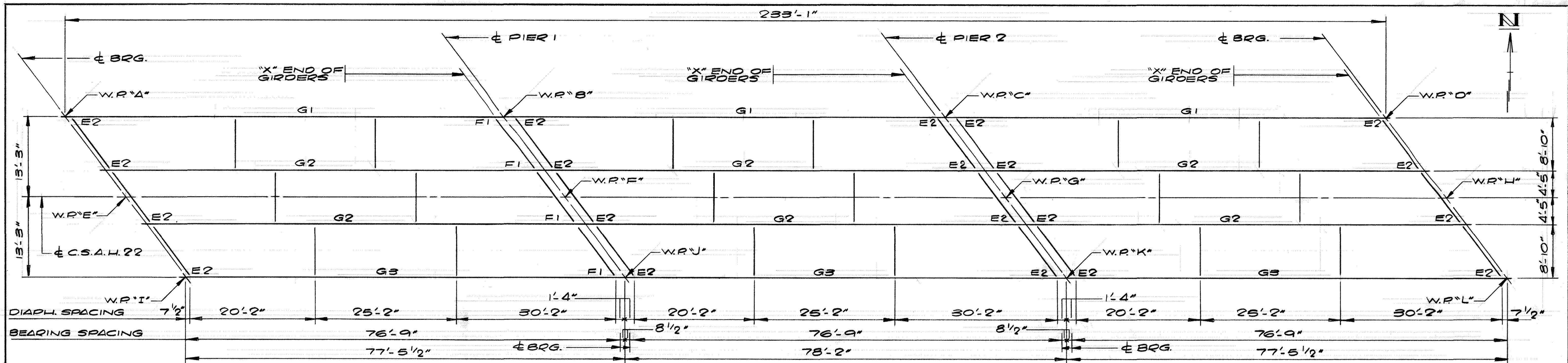
W618

BILL OF REINFORCEMENT FOR BOTH ABUTMENTS

BAR	NO	SIZE	LENGTH	SHAPE	LOCATION
A501	50	5	13.8"	□	FOOTING - TIES
A602	8	6	42'-10"	—	" - LONGIT.
A603	8	6	42'-0"	—	" - "
A504	106	5	5'-0"	—	BRIDGE SEAT - VERT.
A505	76	5	4'-1"	—	" - " - HORIZ. - TRANSV.
A506	16	5	19'-0"	—	" - " - " - LONGIT.
A507	10	5	21'-4"	—	" - " - " - "
A508	6	5	25'-0"	—	" - " - " - "
A409	76	4	5'-8"	—	PARAPET - VERT. - FRONT
A510	76	5	5'-1"	—	" - " - " - BACK
A411	8	4	5'-8"	—	" - " - FRONT
A512	8	5	18'-0"	—	" - HORIZ. - "
A513	8	5	18'-9"	—	" - " - BACK
A514	8	5	22'-9"	—	" - " - FRONT
A515	8	5	23'-3"	—	" - " - BACK
A516	4	5	17'-0"	—	PAVING BRACKET - HORIZ.
A517	4	5	20'-0"	—	" - " - "
A418	38	4	3'-8"	∇	" - " - VERT.
A419	4	5	2'-2"	□	WINGWALL - TOP
W601	2	6	17'-3"	BEND IN FIELD	WINGWALL - 10 FT
W602	2	6	16'-5"	" " "	" - "
W503	2	5	5'-6"	—	" - "
W504	2	5	4'-11"	—	" - "
W505	2	5	7'-9"	—	" - "
W506	2	5	7'-2"	—	" - "
W507	2	5	10'-3"	—	" - "
W608	2	6	9'-8"	—	" - "
W509	2	5	12'-0"	—	" - "
W810	2	8	11'-5"	—	" - "
W511	6	5	12'-9"	—	" - "
W812	6	8	12'-0"	—	" - "
W513	4	5	10'-0"	—	" - "
W514	2	5	16'-0"	—	" - "
W615	2	6	16'-0"	—	" - "
W516	4	5	3'-6"	—	" - "
W517	8	5	14'-9"	—	WINGWALL - 5 FT.
W618	4	6	11'-0"	—	" - "
W519	2	5	11'-10"	—	" - "
W520	2	5	14'-10"	—	" - "
W521	4	5	7'-0"	—	" - "
W522	4	5	8'-6"	—	" - "
W523	8	5	9'-3"	—	" - "
W524	6	5	13'-6"	—	" - "
W525	4	5	3'-6"	—	" - "
W526	4	5	6'-6"	—	" - "
W627	8	6	10'-8"	—	" - "
W528	18	5	14'-10"	—	" - 10 FT.
W529	12	5	9'-4"	—	" - "

* CUT 2 FROM 1

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
BRIDGE No 02519
ABUTMENT REINFORCEMENT
APPROVED 9-25-48



SUMMARY OF QUANTITIES FOR SUPERST.	
①	CONCRETE, MIX NO. 3Y43 226 CU. YD.
	CONCRETE, MIX NO. 3Y46A 38 CU. YD.
	REINFORCEMENT BARS 71040 LB.
	PRESTRESSED CONC. GIRDERS TYPE (45-78) 12
	STRUCTURAL STEEL, 9306 550 LB.
④	PREFORMED JOINT FILLER (SEE LIST SH. 9)
④	COUNTY NAME & -DETAIL NO. 2101 ONE
③	PROTECTION ANGLE
③	8-1 1/2" x 1'-0" STO. PIPE SLEEVES @ 2.72 #/FT.
	FIXED BRG. ASSEMBLIES (TYPE 1) 4
	EXP BRG. ASSEMBLIES (TYPE 2) 20

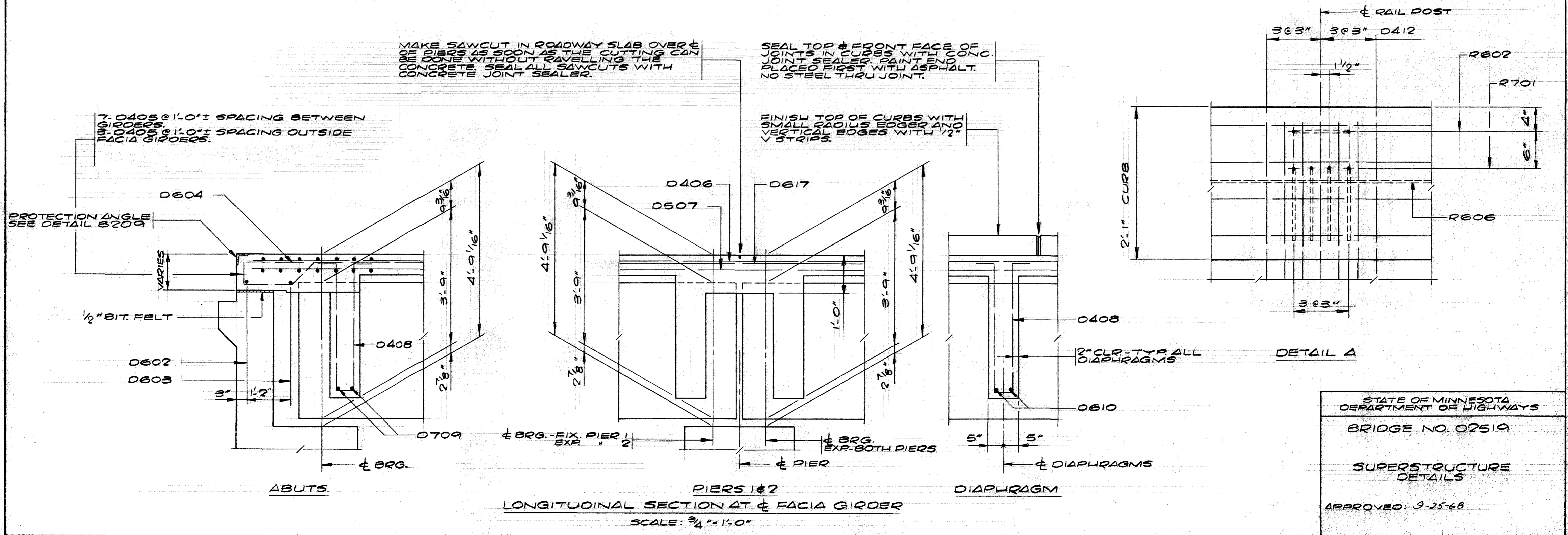
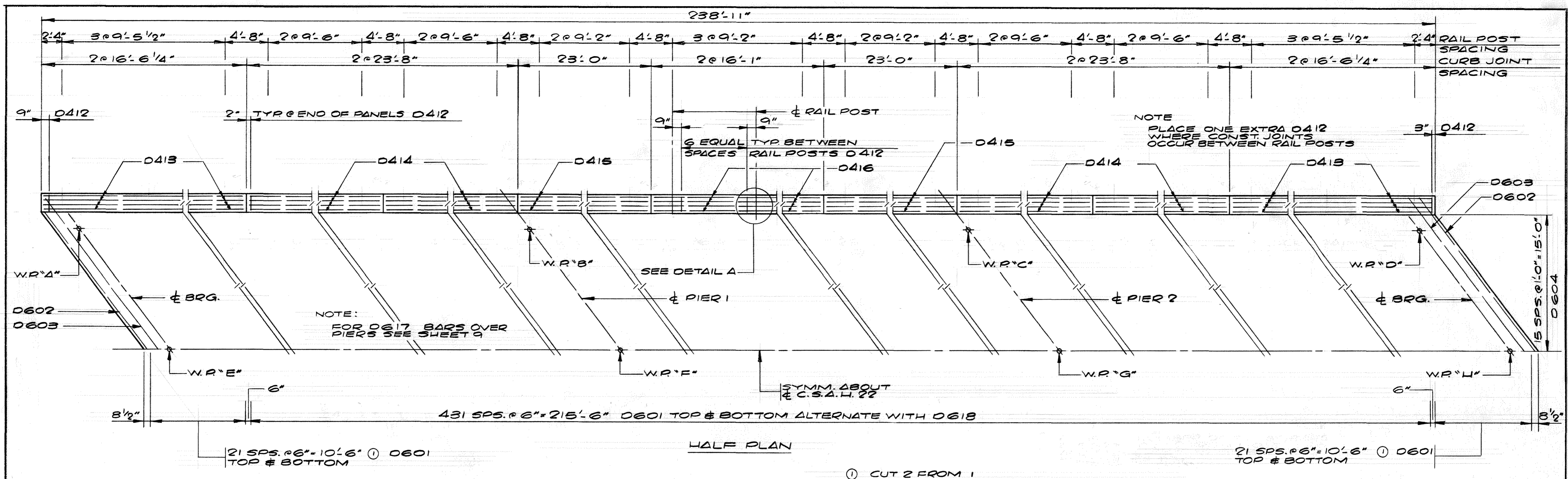
- ① THE VOLUME OF DECK CONCRETE FOR PAYMENT SHALL BE COMPUTED USING AN AVERAGE STOOD HEIGHT OF 2 1/4"
- ②
- ③ INCLUDED IN WEIGHT OF STRUCTURAL STEEL
- ④ TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 02519

SUPERSTRUCTURE
DETAILS

APPROVED: 9-25-68



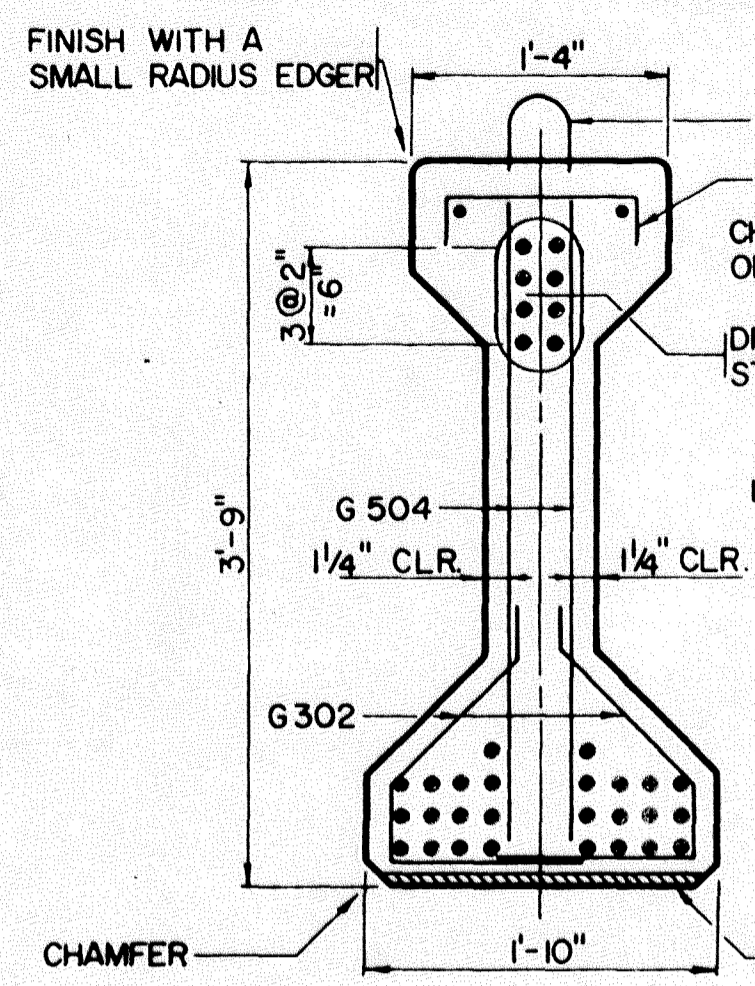
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 02519

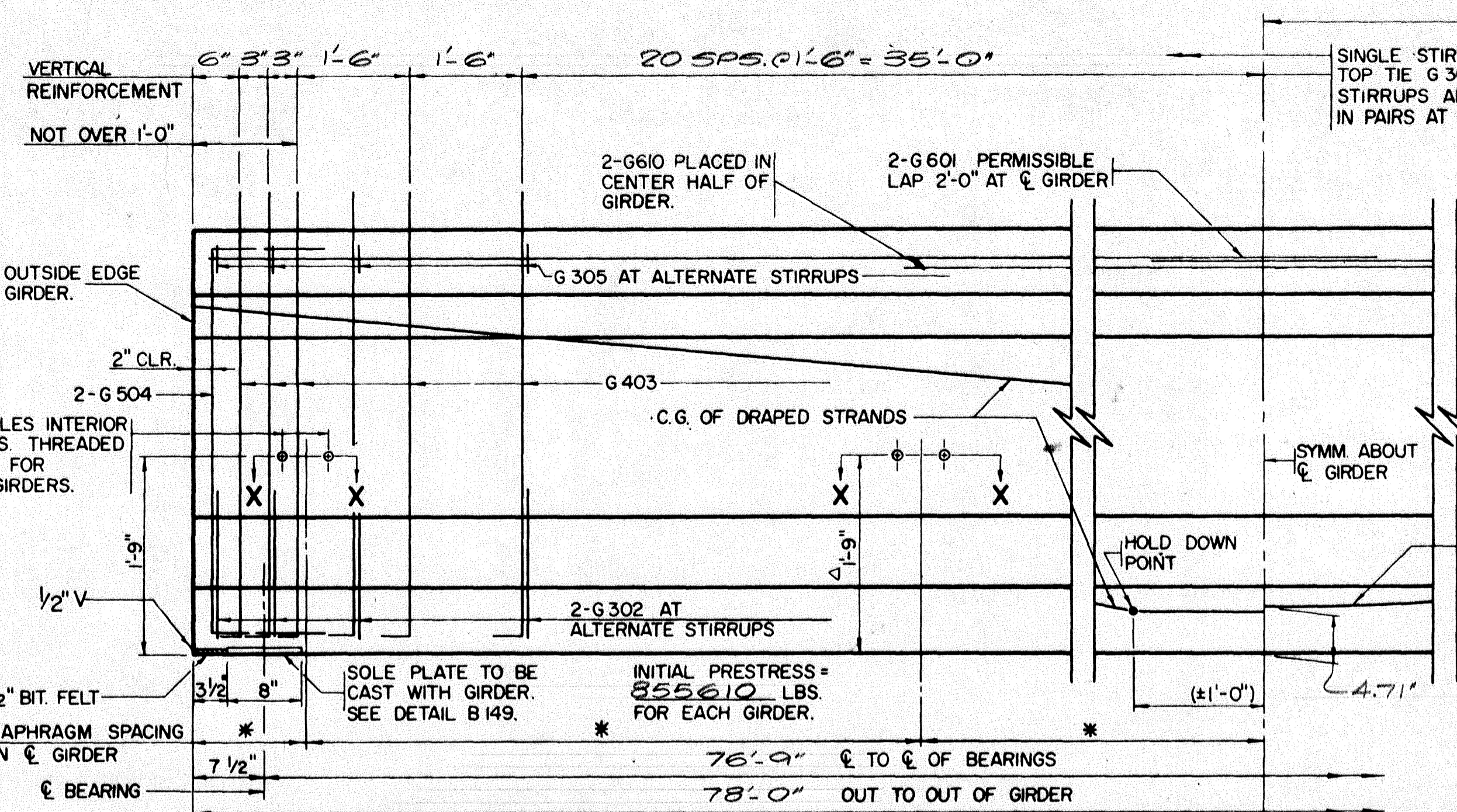
SUPERSTRUCTURE
DETAILS

APPROVED: 9-25-68

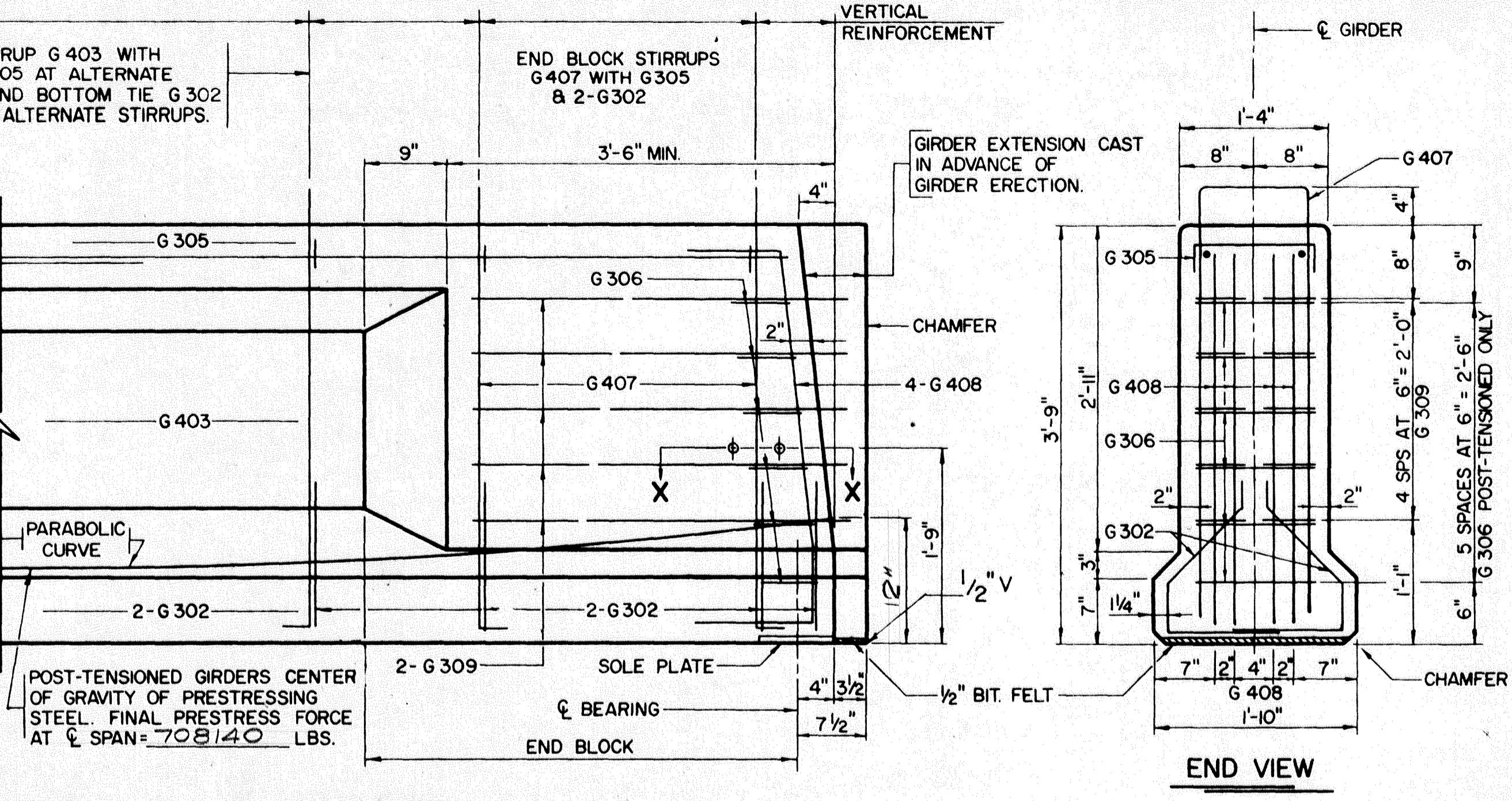
CUT PRE-TENSIONED STRANDS FLUSH WITH CONCRETE. PAINT END WITH A PROTECTIVE COATING OF A GRAY EPOXY FORMULATION.



END VIEW
DETAILS NOT SHOWN ARE THE SAME AS SECTION AT G GIRDER.

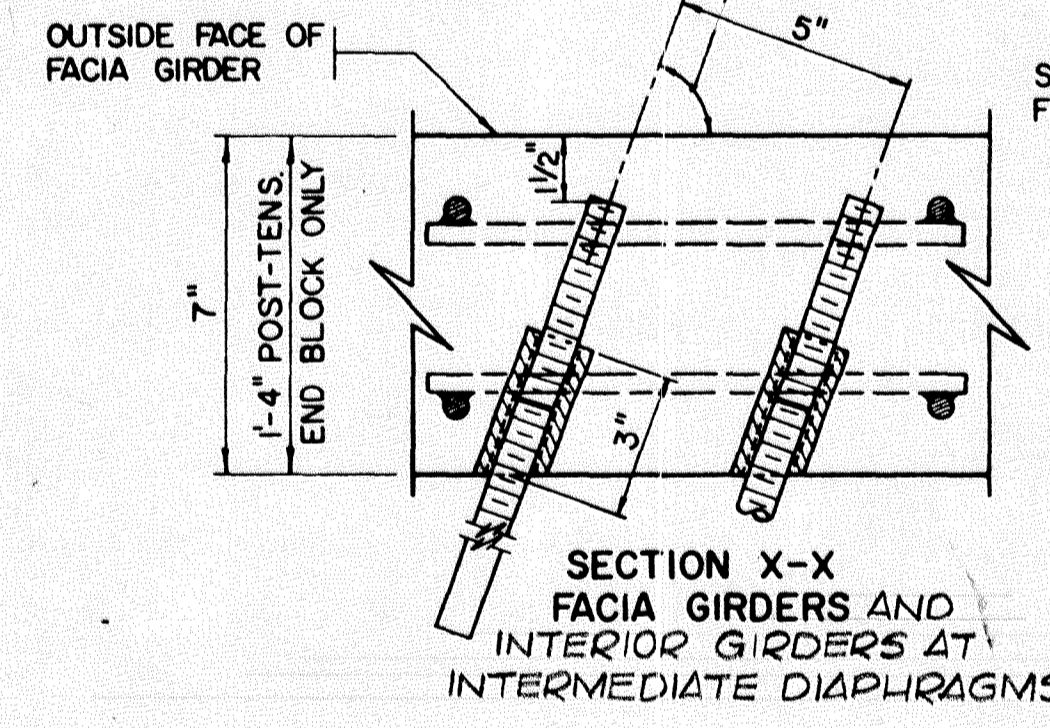


HALF ELEVATION PRE-TENSIONED GIRDER
APPROX. WT. 22.8 TONS

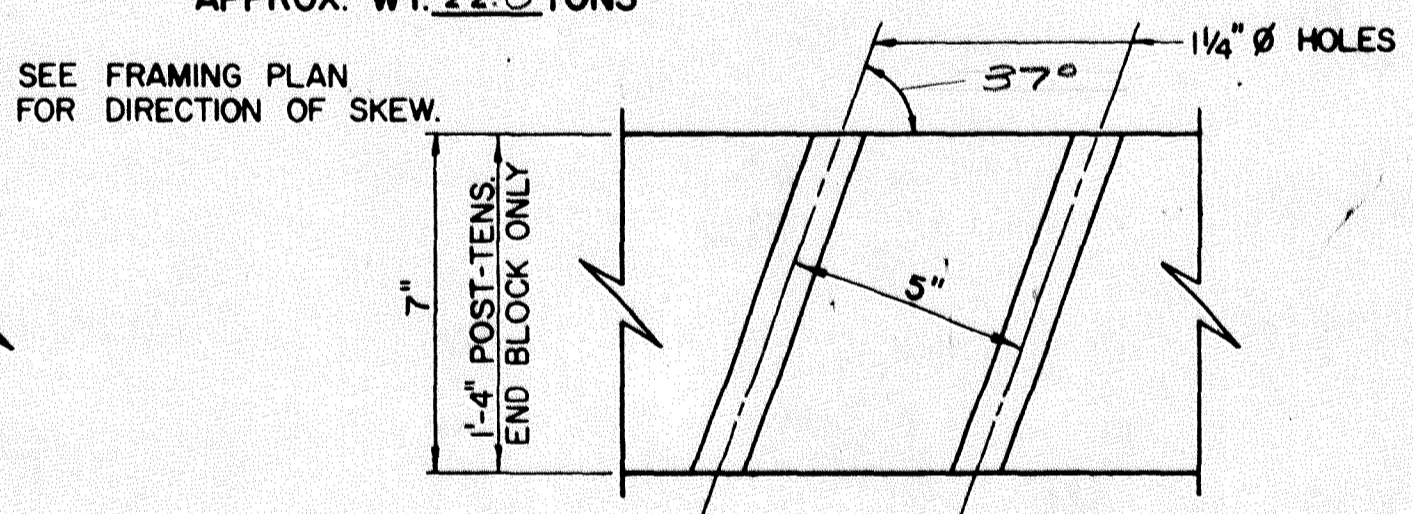


HALF ELEVATION POST-TENSIONED GIRDER
DETAILS AND DIMENSIONS NOT SHOWN ARE THE SAME AS FOR PRE-TENSIONED GIRDERS.

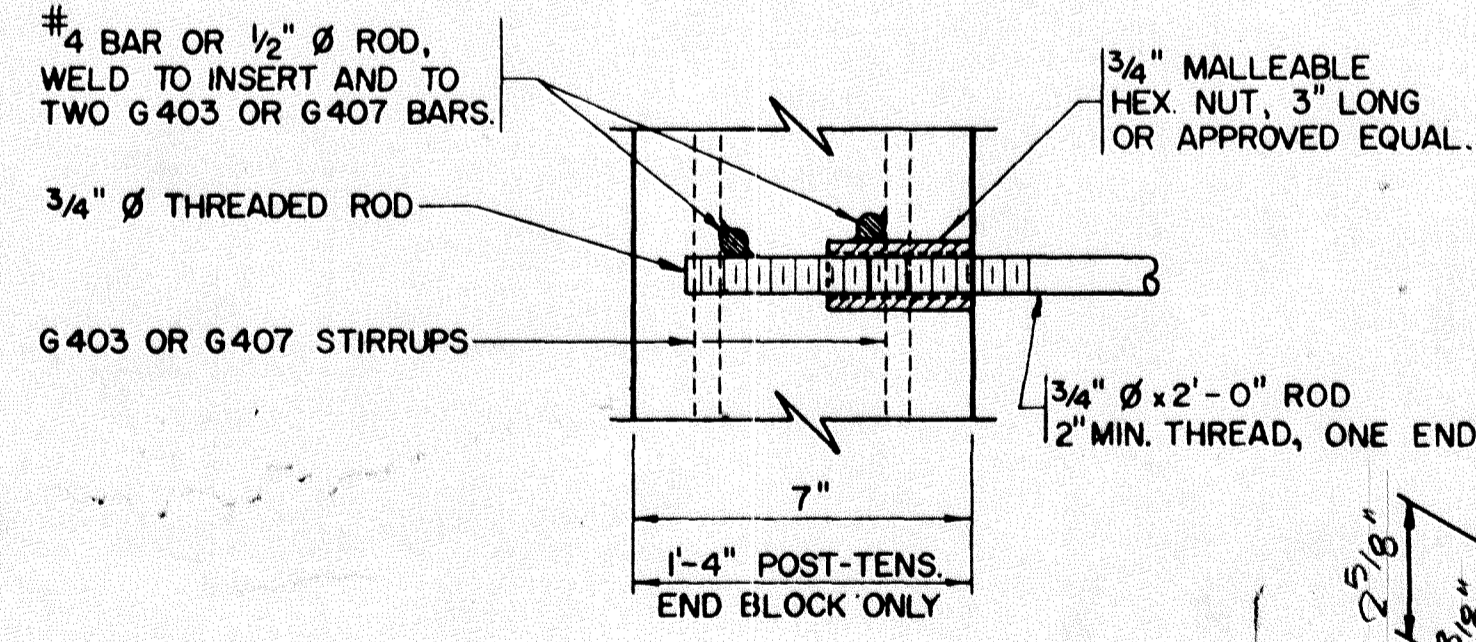
37° END DIAPHRAGMS
90° INTERMEDIATE DIAPH.



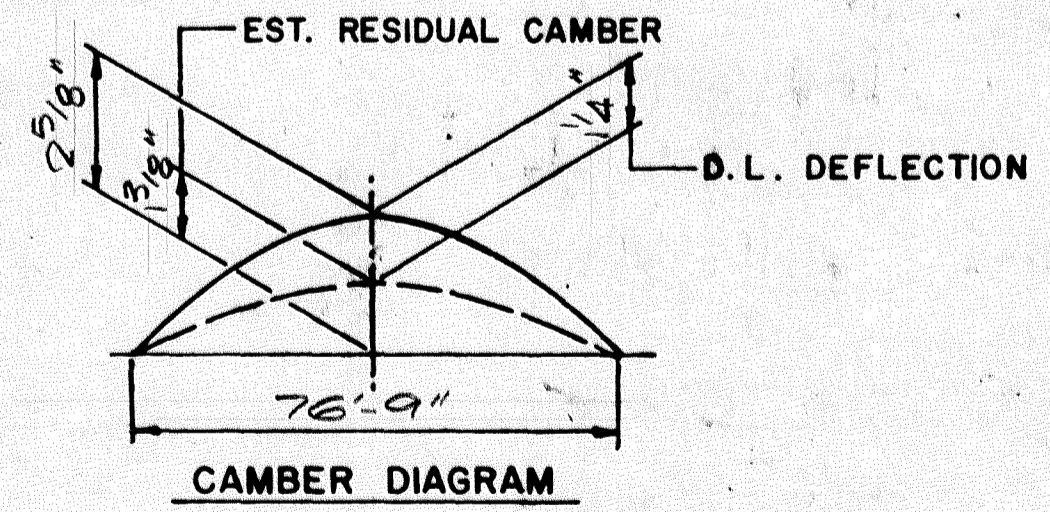
SECTION X-X FACIA GIRDERS AND INTERIOR GIRDERS AT INTERMEDIATE DIAPHRAGMS



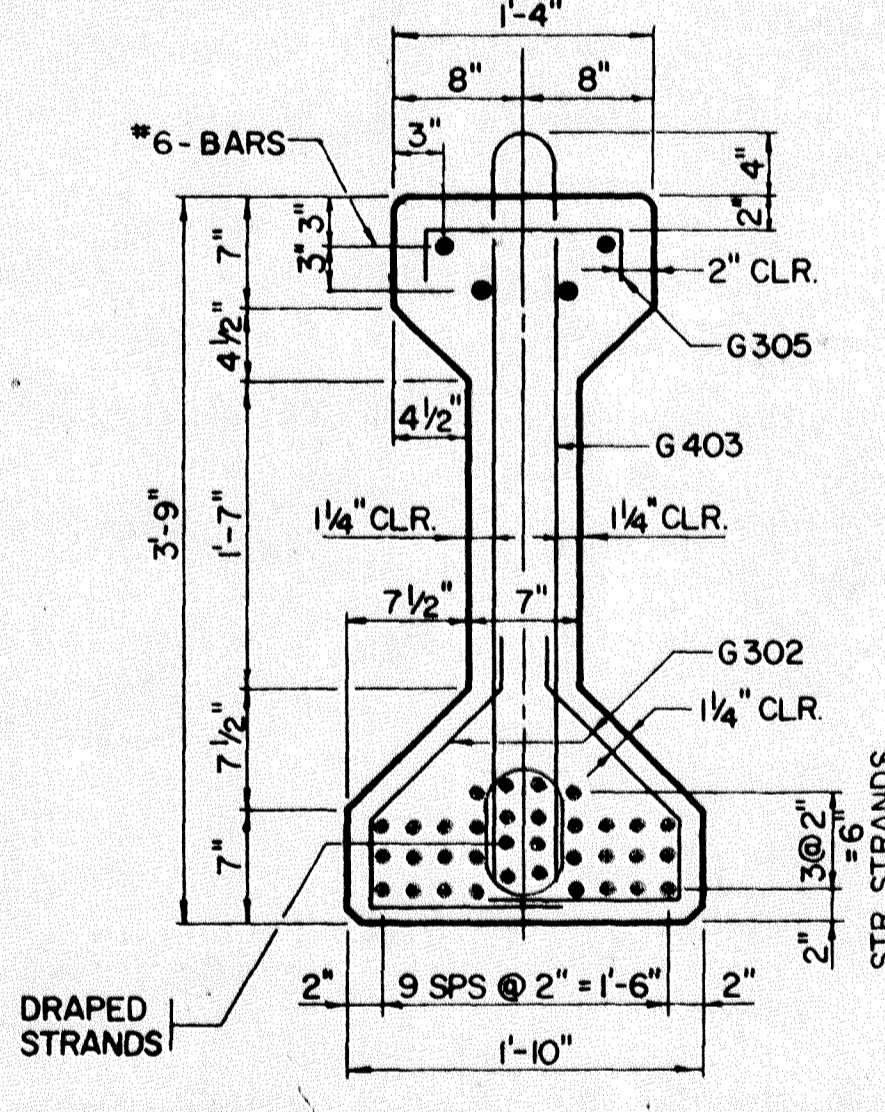
SECTION X-X INTERIOR GIRDERS AT END DIAPHRAGMS



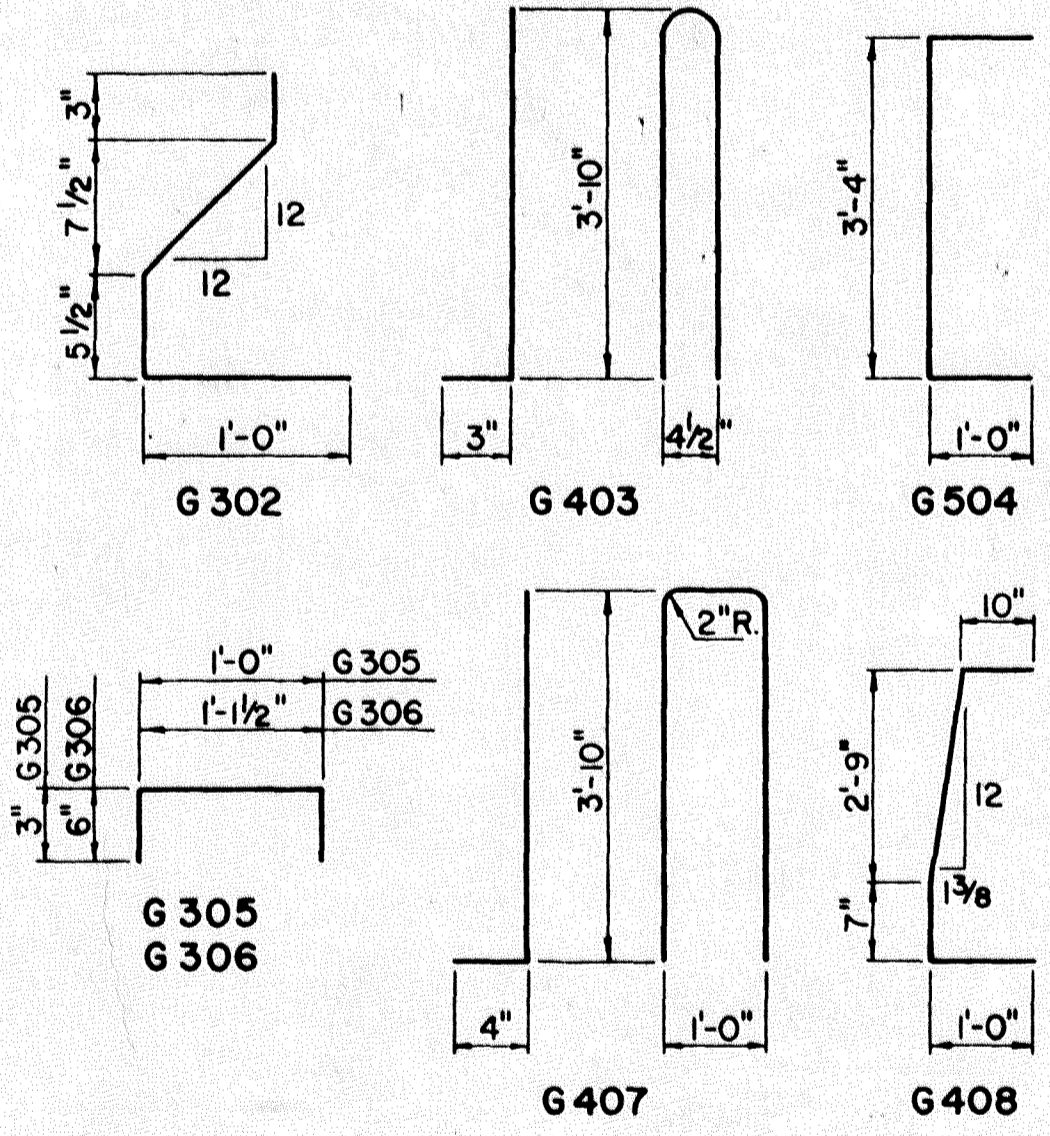
SECTION THRU THREADED INSERTS AND RODS IN FACIA GIRDERS AND IN INTERMEDIATE GIRDERS AT STAGGERED DIAPHRAGMS (NO PAINT)



DEFLECTIONS SHOWN ARE FOR WEIGHT OF SLAB, CURB, RAILING, AND DIAPHRAGMS ONLY. THE ENGINEER WILL TAKE ELEVATIONS AT TOP OF GIRDERS AFTER ERECTION AND WILL ALLOW FOR DEFLECTIONS SHOWN TO ENABLE THE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.

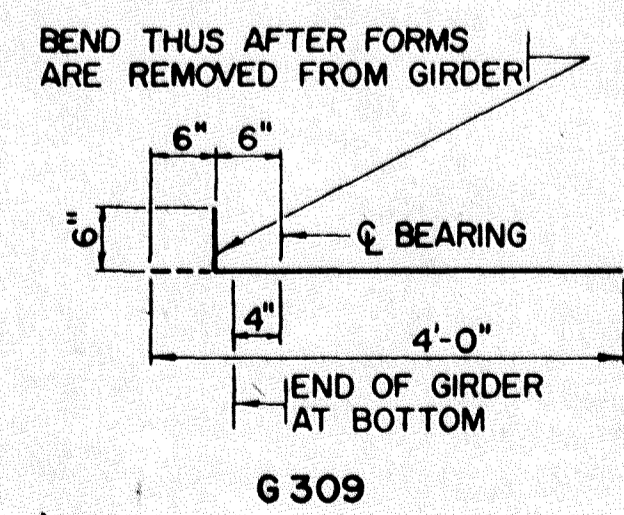


SECTION AT G GIRDER (STRANDS FOR PRE-TENSIONED SHOWN)



Y DISTANCES (IN INCHES)			
	NO.	G SPAN	END
STRAIGHT STRANDS	26	4.31	
DRAPED STRANDS	8	6.00	3700*
TOTAL STRANDS	34	4.71	

Y = DISTANCE OF CENTER OF GRAVITY OF PRE-TENSIONED STRANDS FROM BOTTOM OF GIRDER. ALL STRANDS SPACED AT 2" CENTERS BOTH DIRECTIONS.
ALL STRANDS 1/2" Ø.
*A TOLERANCE OF ±2" WILL BE PERMITTED IN THIS DIMENSION.



BEND THIS AFTER FORMS ARE REMOVED FROM GIRDER

GENERAL NOTES

CONCRETE WITH A MINIMUM REQUIRED CONCRETE STRENGTH, AS SHOWN IN THE MINIMUM CONCRETE STRENGTHS TABLE, OF 5000 P.S.I. PER M.H.D. 2405.2A.
FOR CONCRETE WITH A MINIMUM REQUIRED CONCRETE STRENGTH, AS SHOWN IN THE MINIMUM CONCRETE STRENGTHS TABLE, OF GREATER THAN 5000 P.S.I., SEE SPECIAL PROVISIONS.
PRESTRESSING STEEL FOR PRE-TENSIONED GIRDERS PER M.H.D. 3348.
PRESTRESSING STEEL FOR POST-TENSIONED GIRDERS PER M.H.D. 3349 OR M.H.D. 3350.
INSERTS AND 3/4" RODS SHALL BE STRUCTURAL STEEL PER M.H.D. 3306.
ALL REINFORCEMENT BAR DIMENSIONS ARE OUT TO OUT. FIRST FIGURE IN BAR MARK INDICATES SIZE OF BAR.
TOPS OF GIRDERS SHALL BE ROUGH FLOATED & BROOMED TRANSVERSELY FOR BOND.
PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR. HOOKS OR DEVICES PROVIDED WILL BE SUBJECT TO APPROVAL OF ENGINEER AND SHALL BE INSTALLED WITHIN 4'-0" OF THE END OF GIRDER.
A MODIFIED STRAND PATTERN WHICH DOES NOT CHANGE CENTER OF GRAVITY OF STRANDS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
EACH GIRDER SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE GIRDER, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. FACIA GIRDERS SHALL BE MARKED ON AN INSIDE FACE. ALL MARKINGS SHALL BE STENCILED, AND BE CLEARLY LEGIBLE. FOR LOCATION OF GIRDERS, SEE FRAMING PLAN.
ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR FURNISHING PRESTRESSED CONCRETE GIRDERS. SEE M.H.D. 2405.
SEE FRAMING PLAN FOR GIRDER ENDS MARKED "X".

	MINIMUM CONCRETE STRENGTHS-PS.I.			
	PRE-TENSIONED		POST-TENSIONED	
	①③④ fci	②③④ fci	①②③④ fci	
COMPUTED MIN. CONC. STRENGTH	4465	5344	5528	
REQUIRED MIN. CONC. STRENGTH	4500	5344	5528	

- MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- MINIMUM CONCRETE STRENGTH WHEN CURING CAN BE DISCONTINUED AND GIRDER TRANSPORTED AND INSTALLED.
- REQUIRED MINIMUM CONCRETE STRENGTH SHALL BE USED. COMPUTED MINIMUM CONCRETE STRENGTH IS FOR INFORMATION ONLY.
- WHEN THE REQUIRED MINIMUM CONCRETE STRENGTH IS GREATER THAN 5000 P.S.I., SEE SPECIAL PROVISIONS.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 02519

45" PRESTRESSED
CONCRETE GIRDER
TYPE (45-78)

APPROVED: 9-25-68

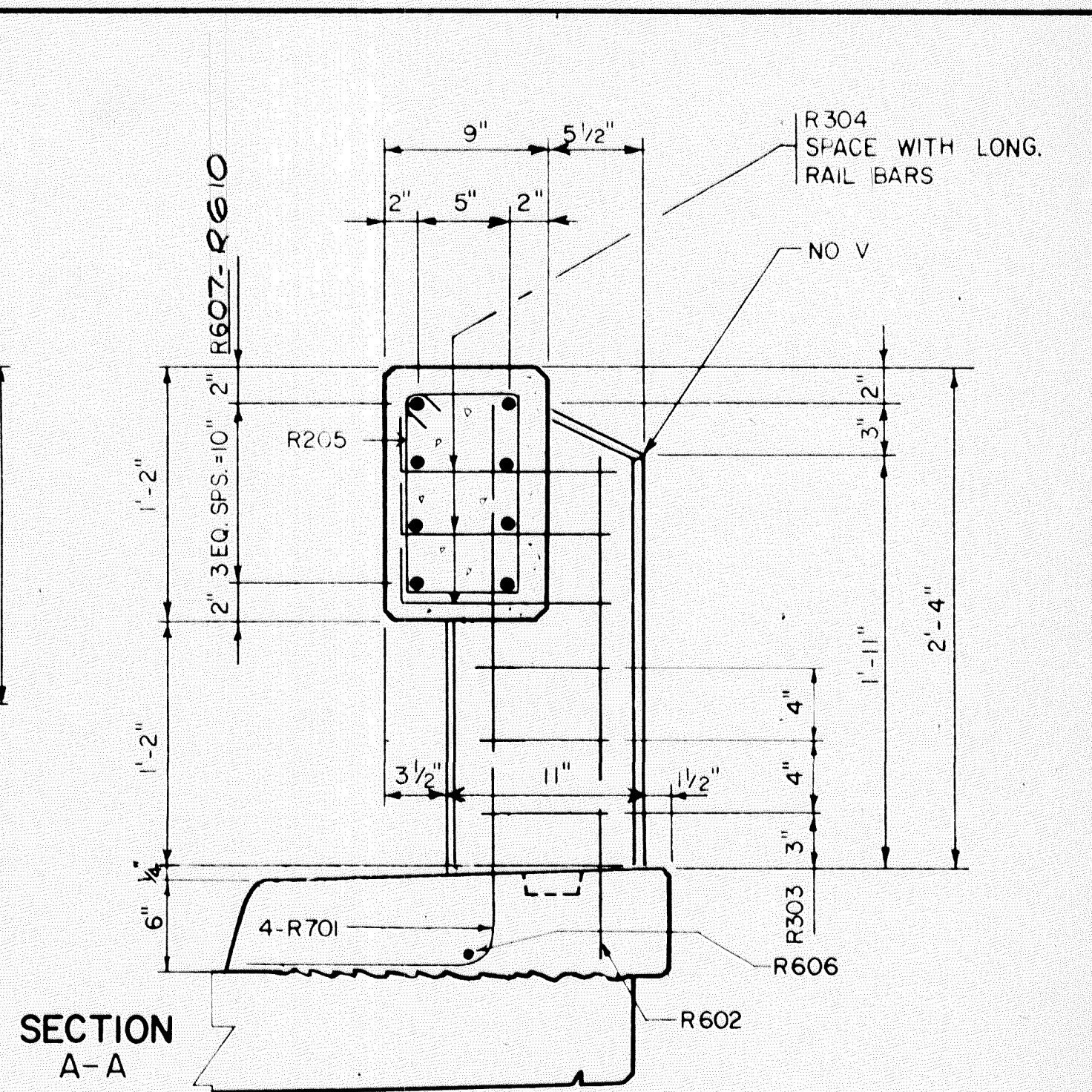
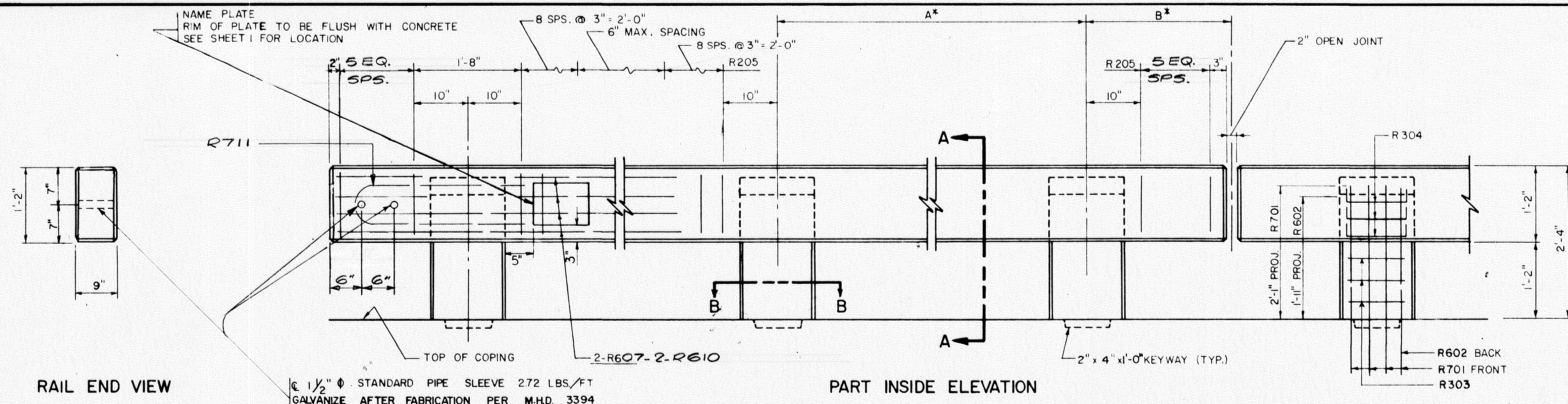
GIRDERS G1, G2 & G3

SHEET 10 OF 17 SHEETS 02519

DES	
DR	
CH	

DRAWN: 7-1-63 4-27-66
REVISED: 10-25-63 3-10-67
2-17-64 6-22-67
5-25-64 8-1-67
11-16-64 8-18-67

GIRDERS G1, G2 & G3

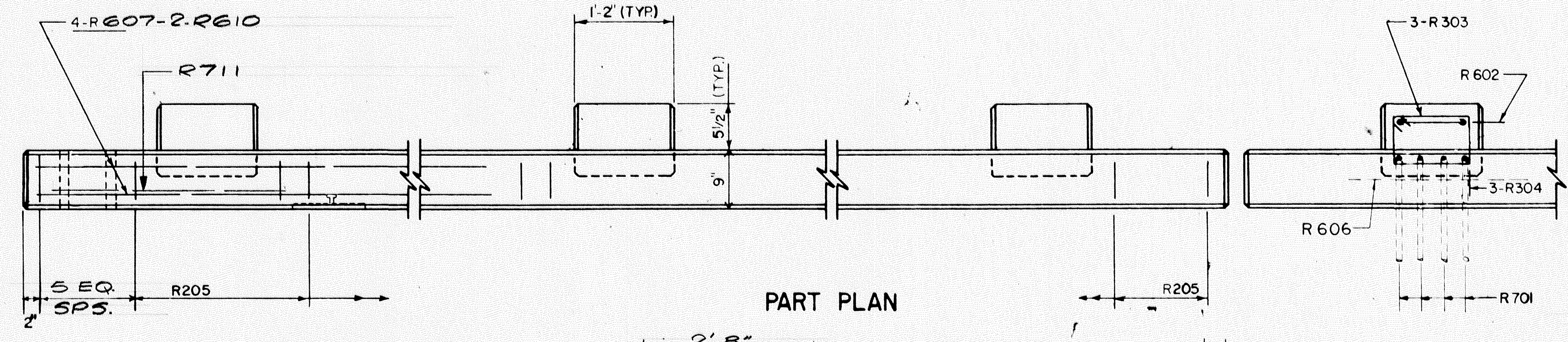


RAIL END VIEW

PART INSIDE ELEVATION

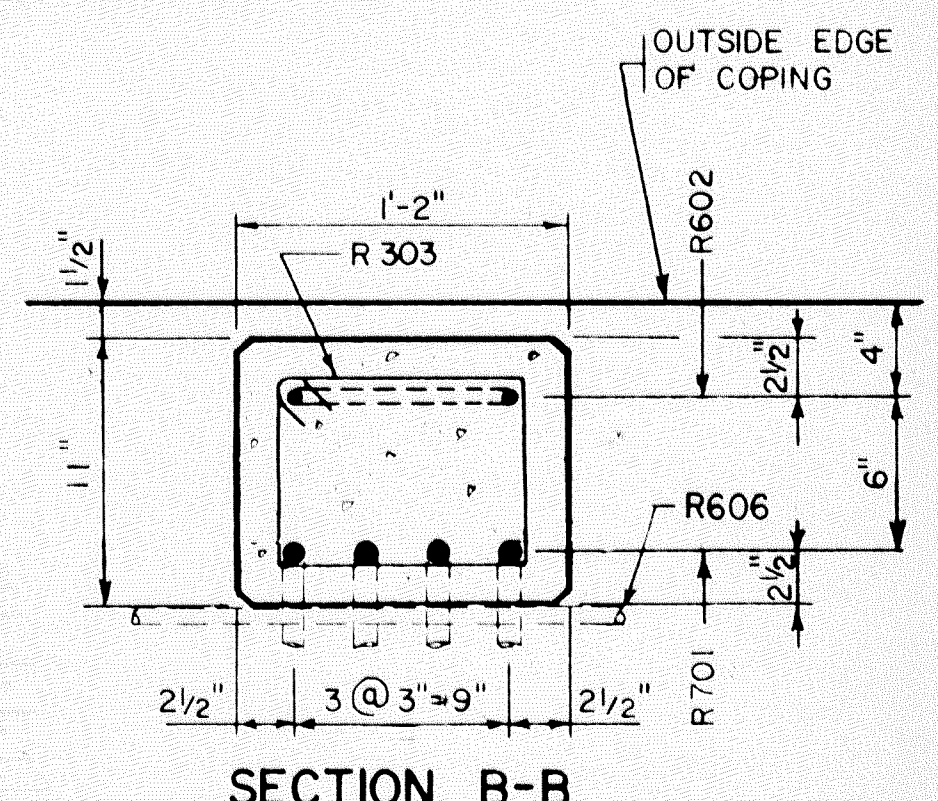
SECTION A-A

1/2" STANDARD PIPE SLEEVE 272 LBS./FT
GALVANIZE AFTER FABRICATION PER M.H.D. 3394



BILL OF REINFORCEMENT FOR RAILING

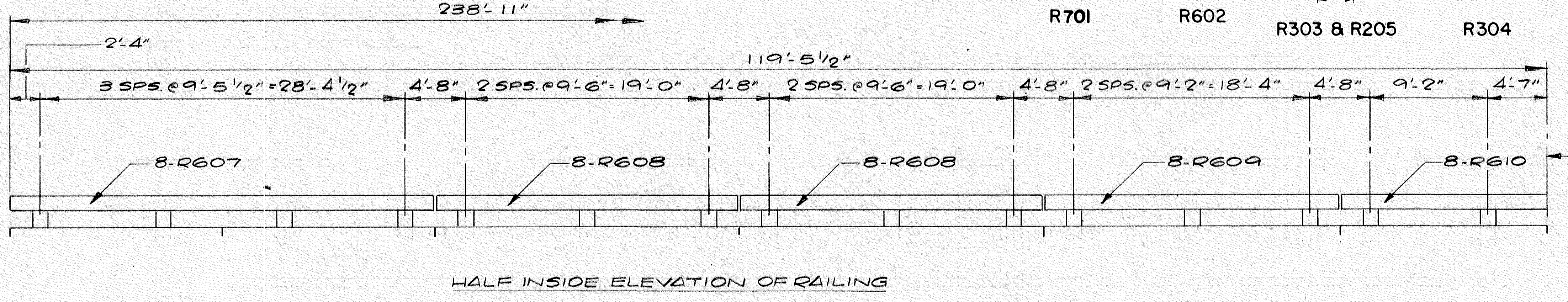
+MARK	NO.	LENGTH	SHAPE	LOCATION
R701	240	3'-8"	BENT	POST
R602	60	5'-6"	"	POST
R303	180	3'-9"	"	POST
R304	180	3'-4"	"	POST
R205	1252	3'-6"	"	RAIL
R606	60	3'-6"	STR.	CURB
R607	32	32'-7"	"	RAIL
R608	64	23'-1"	"	"
R609	32	22'-5"	"	"
R610	16	31'-7"	"	"
R711	4	5'-8"	BENT	"



PART PLAN

SECTION B-B

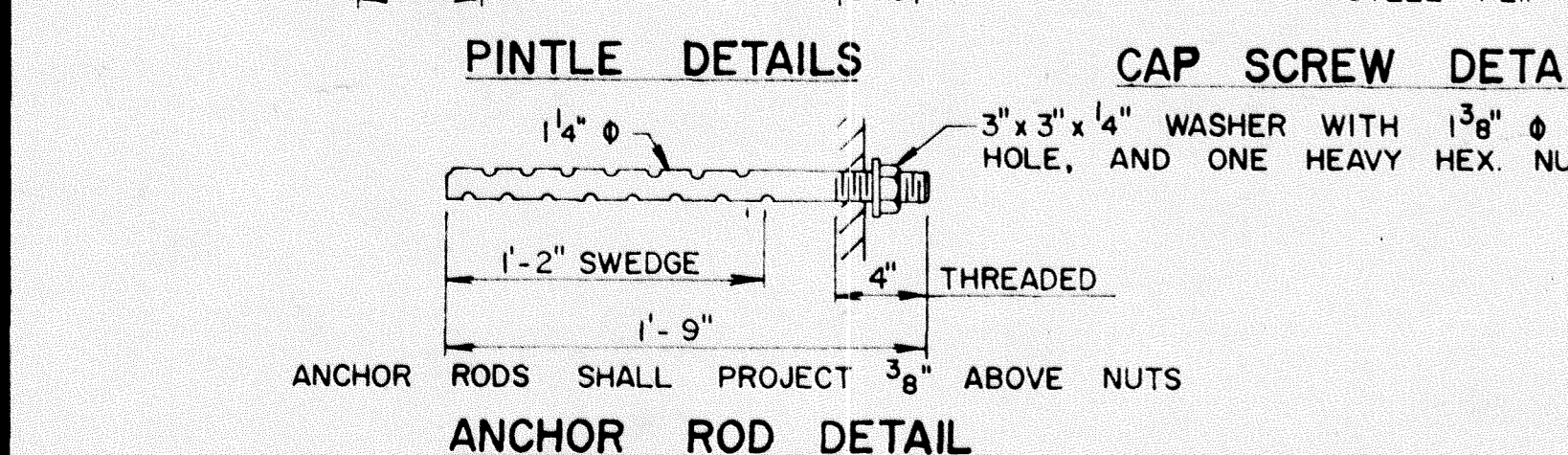
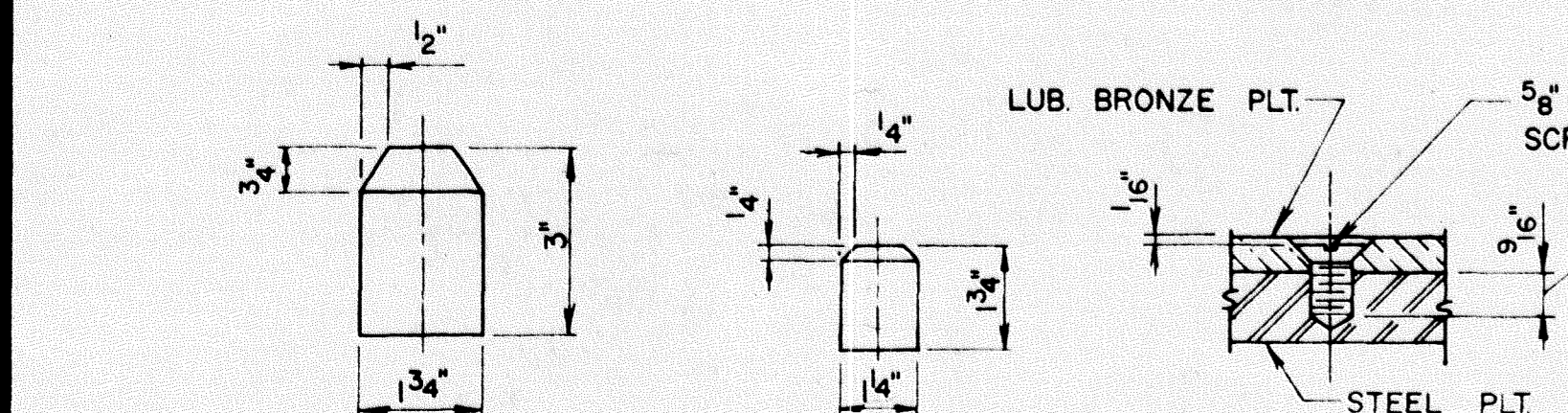
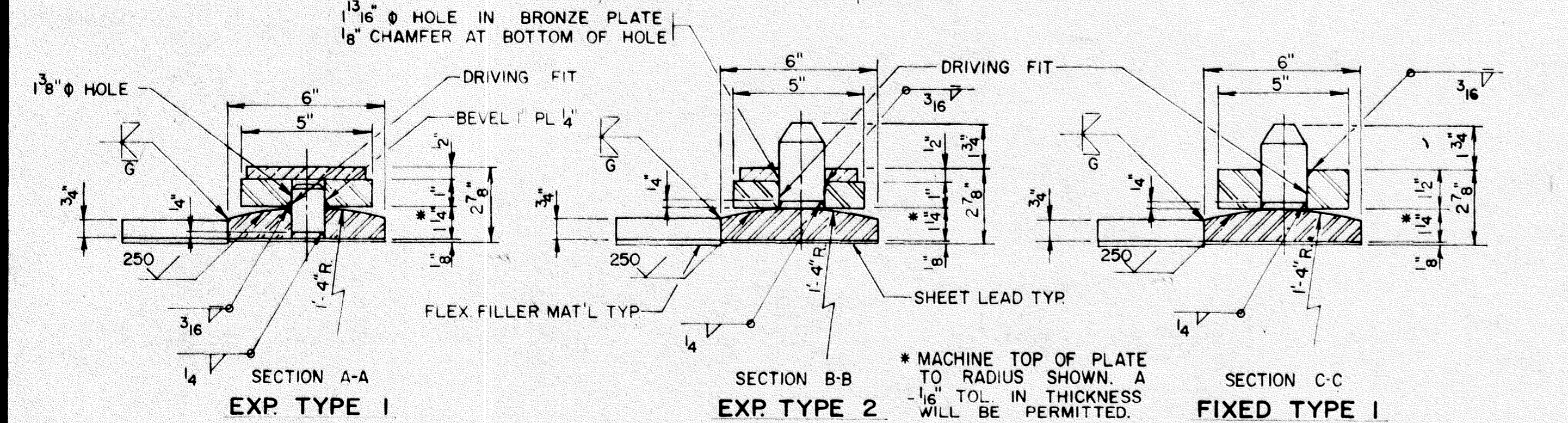
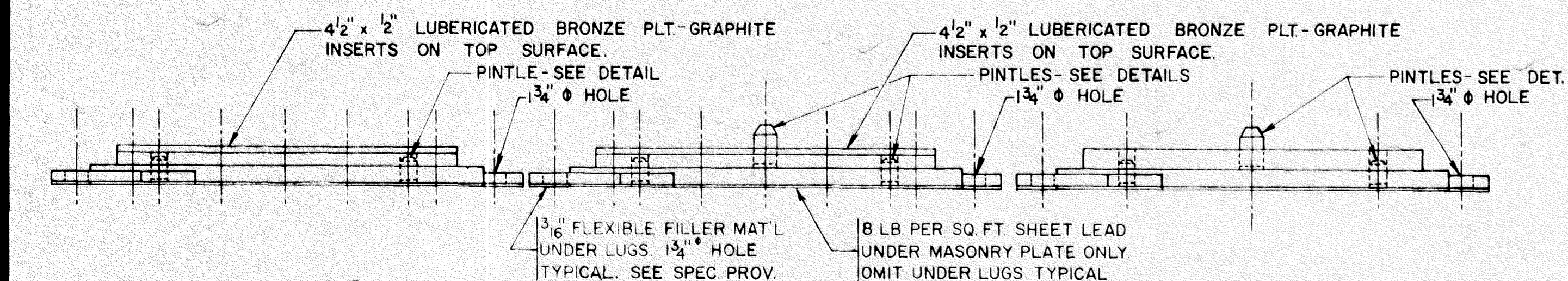
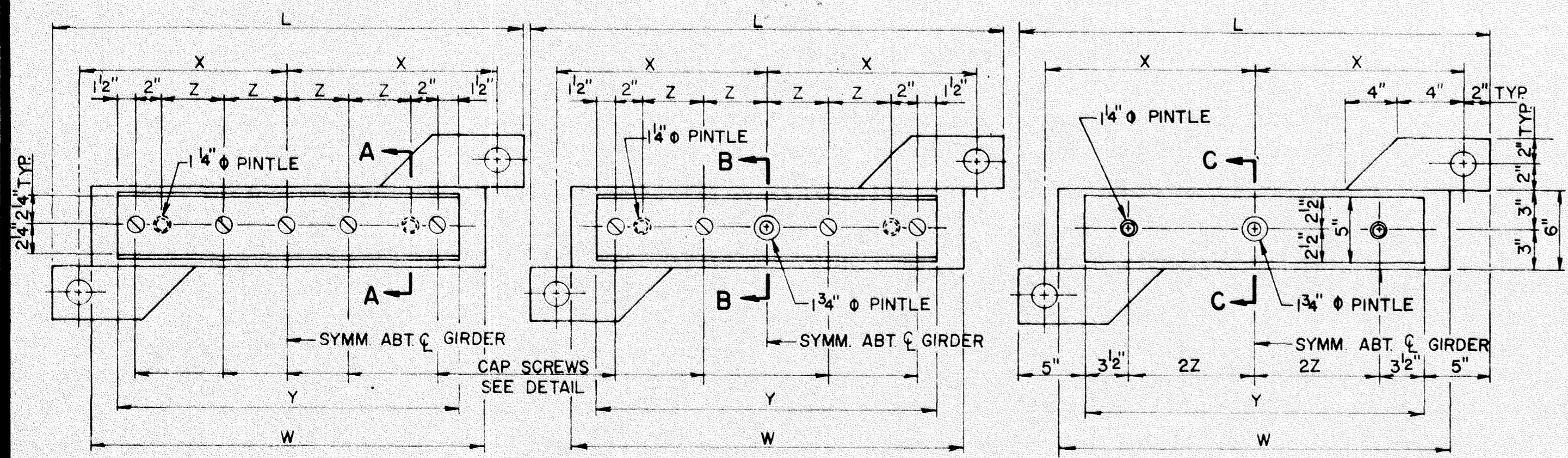
NOTES:
 RAIL POSTS AND RAILING TO BE CONCRETE MIX NO. 3Y464.
 ALL RAIL POSTS NORMAL TO GRADE.
 FINISH ALL EDGES OF RAILING AND RAIL POSTS TO A 1/2" V EXCEPT WHERE OTHERWISE NOTED.
 RAILING QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE. RECOMMENDED BAR BEND DIAMETERS ARE REQUIRED.
 ALL BAR DIMENSIONS ARE OUT TO OUT ALL BAR DETAILS SHALL CONFORM TO ACI 315 (LATEST EDITION)
 *DIMENSION "A" NOT OVER 10'-0"
 *DIMENSION "B" NOT OVER 2'-4"
 +FIRST NUMBER IN BAR MARK INDICATES SIZE OF BAR.
 SPECIAL CARE SHALL BE EXERCISED IN FINISHING THE SURFACE OF THE CONCRETE SLAB IN THE AREA OF THE POSTS SO THAT THE VERTICAL REINFORCEMENT FOR THE POSTS CAN BE CAREFULLY PLACED WITH RESPECT TO DEPTH OF ANCHORAGE.



HALF INSIDE ELEVATION OF RAILING

DRAWN 7-22-63
 REVISED 8-6-63
 REVISED 8-13-63
 REVISED 8-27-63
 REVISED 8-14-64
 REVISED 9-9-64
 REVISED 2-26-65
 REVISED 8-10-66
 REVISED 9-26-66
 REVISED 6-25-67
 REVISED 7-20-67

C.S.A.H. 22 ANOKA COUNTY
 STATE OF MINNESOTA
 DEPARTMENT OF HIGHWAYS
 BRIDGE NO. 02519
 CONCRETE RAILING
 FOR 6" BRUSH CURB
 APPROVED 9-25-68
 SHEET 11 OF 17 SHEETS 02519
 B.R.C. J.M.G.



NOTES

LUBRICATED BRONZE PLATE SHALL COMPLY WITH M.H.D. 3329.

ALL PLATES, EXCEPT LUBRICATED BRONZE, SHALL COMPLY WITH M.H.D. 3306.

PINTLES SHALL COMPLY WITH M.H.D. 3314, TYPE II

STEEL PLATES AND PINTLES SHALL BE GALVANIZED PER M.H.D. 3394. NO PAINT.

ANCHOR RODS SHALL BE GALVANIZED PER M.H.D. 3392. NO PAINT.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

POSITION OF ANCHOR ROD LUGS SHOWN IS FOR LEFT SKEWS; FOR RIGHT SKEWS LUGS ARE TO BE REVERSED.

SCALE WEIGHTS SHALL BE FURNISHED IN ACCORDANCE WITH THE REQUIREMENTS OF M.H.D. 24713MI AND SHALL BE LISTED ON THE SHIPPING STATEMENTS FOR THE INDIVIDUAL ITEMS.

BEARING ASSEMBLY SCHEDULE

WIDTH OF BOTTOM FLANGE OF GIRDER	L	W	X	Y	Z	MAX. REACTION (KIPS)
1'-4"	2'-2"	1'-8"	0'-11"	1'-4"	2'-4"	120
1'-6"	2'-4"	1'-10"	1'-0"	1'-6"	2'-6"	132
1'-10"	2'-8"	2'-2"	1'-2"	1'-10"	3'-4"	156
2'-2"	3'-0"	2'-6"	1'-4"	2'-2"	4'-4"	180

1964 AND 1968 SPEC.

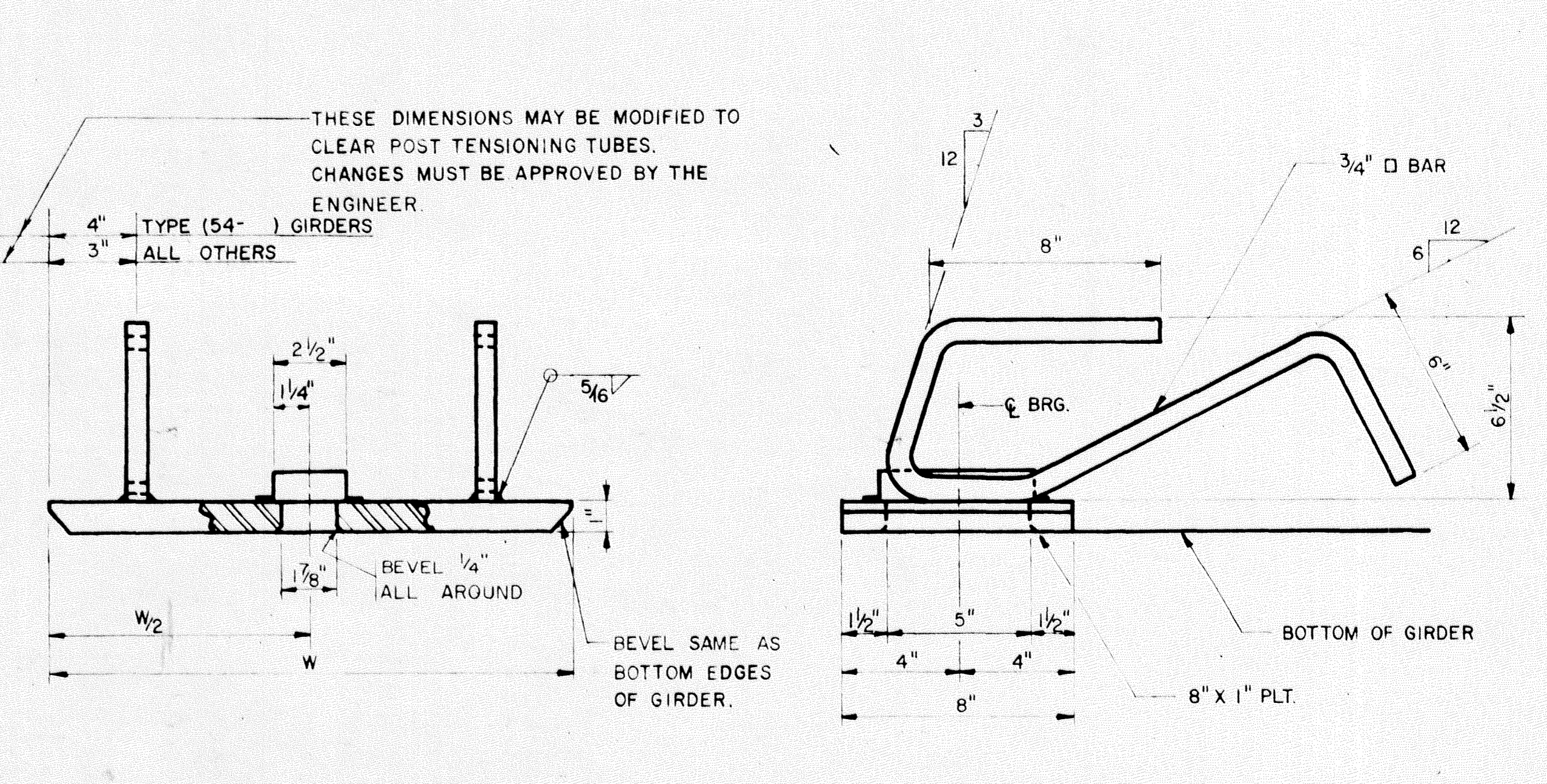
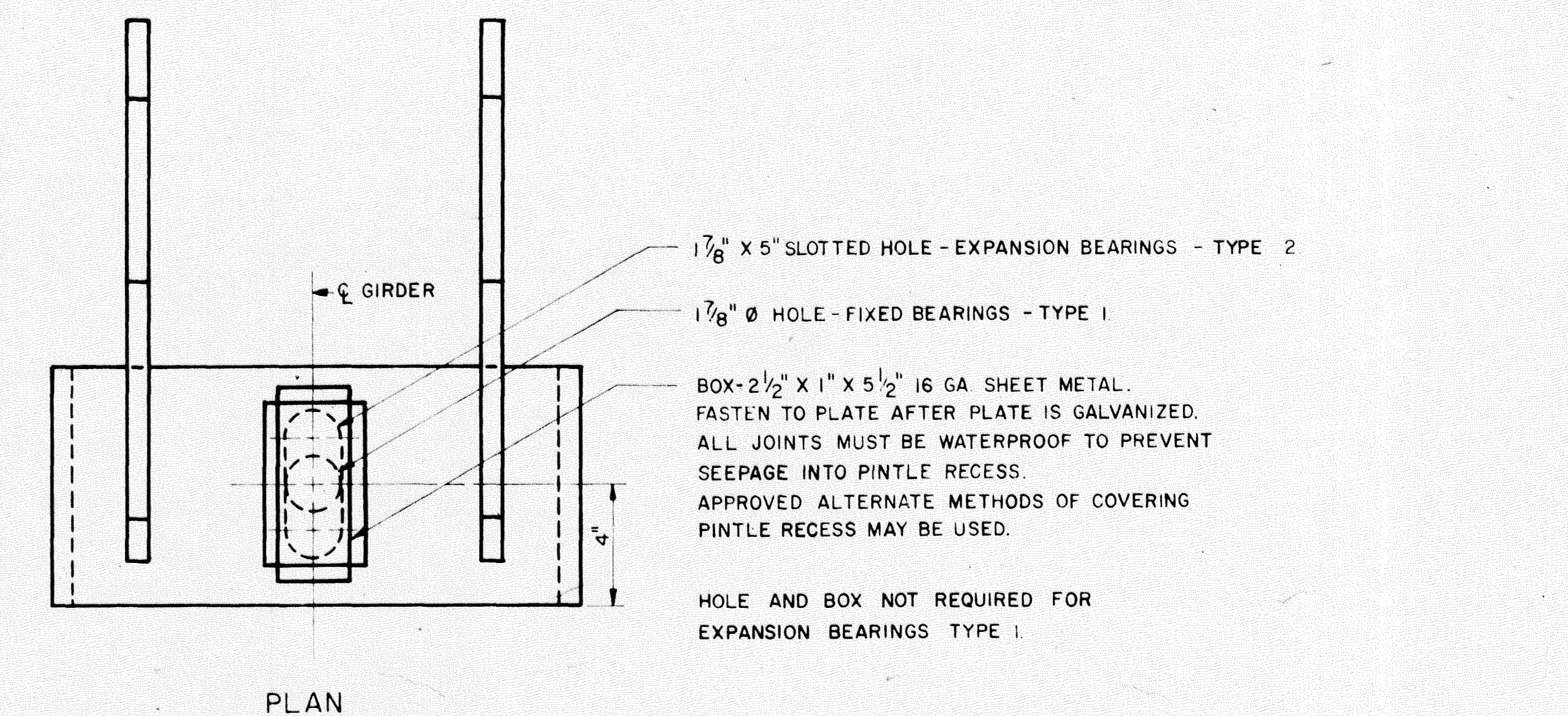
APPROVED _____ 1968

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE ENGINEER

REVISIONS

DETAIL NO. B147



END VIEW

AREA AT HOLE SHOWN AS A SECTION. DIMENSION "W" TO BE THE WIDTH AT BOTTOM FLANGE OF THE GIRDER.

SIDE ELEVATION

SHOWING PLACEMENT IN GIRDER

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER M.H.D. 3306.

SOLE PLATE TO BE HOT DIPPED GALVANIZED AS PER M.H.D. 3394 AFTER FABRICATION.

PAYMENT FOR SOLE PLATES TO BE INCLUDED IN PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

APPROVED 12/22 1959

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE ENGINEER

REVISIONS

DETAIL NO. B149

1964 AND 1968 SPECIF.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

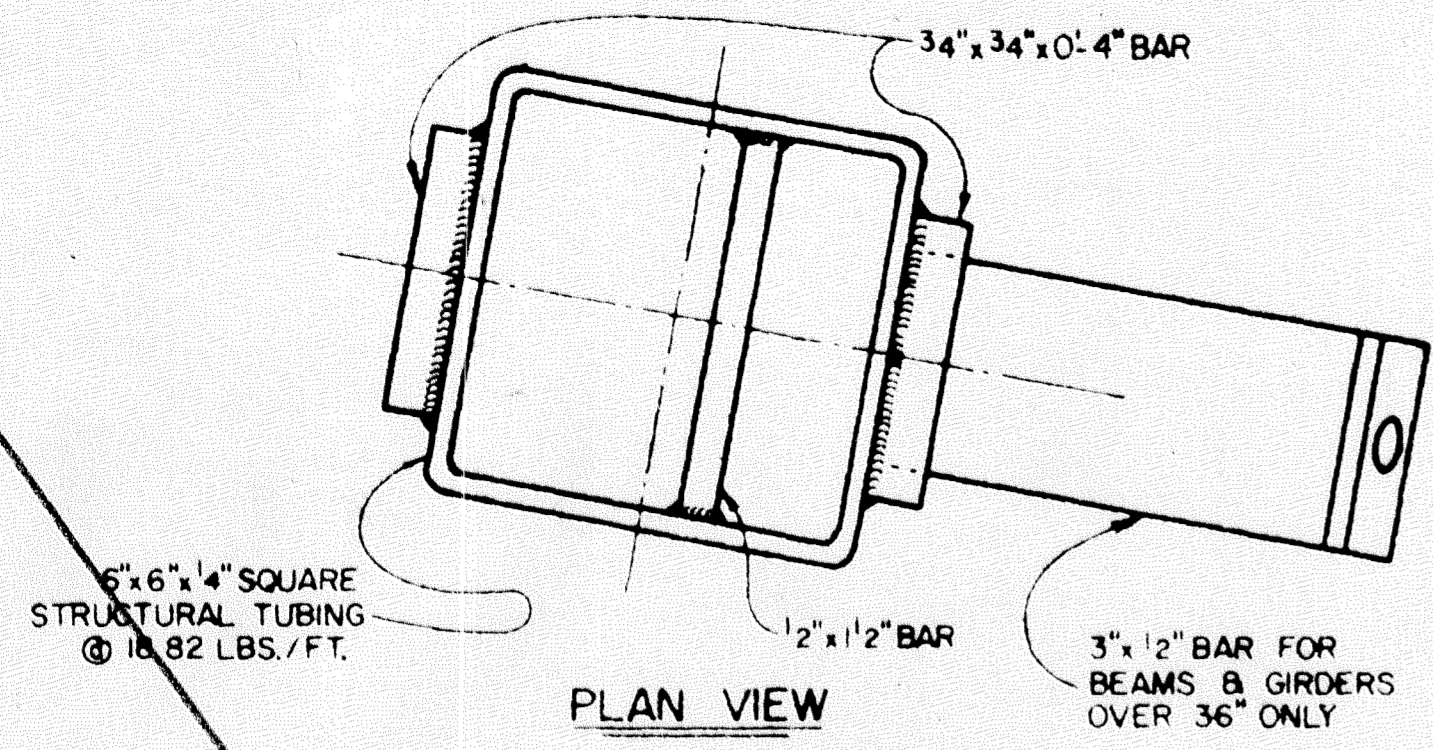
Bridge No. 02519

DETAILS

APPROVED 2-25-68

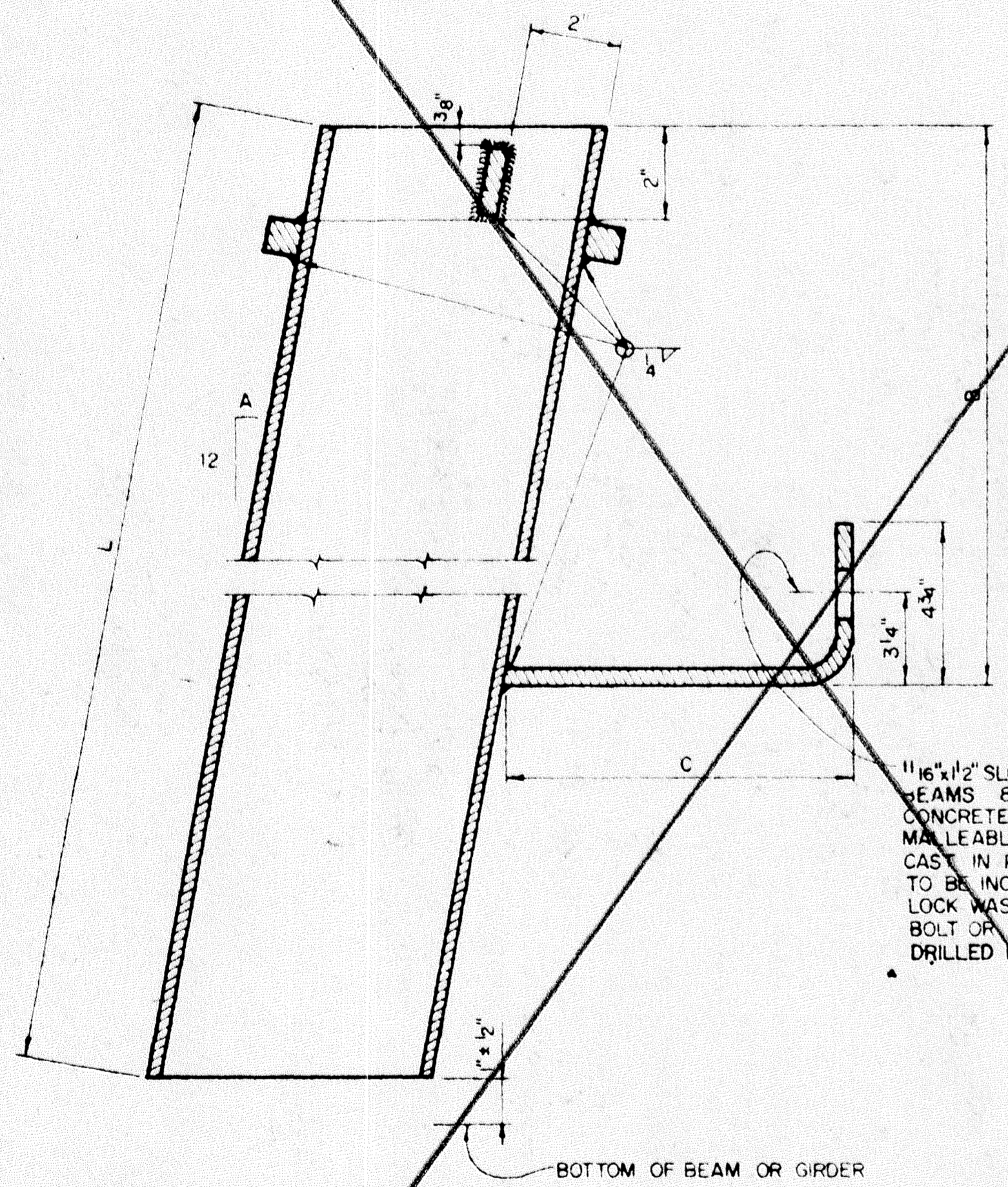
02519

Sheet No. 12 of 17 Sheets



DIMENSIONS				
	L	A	B	C
28" PC.G.	2-11"	0	0	0
36" PC.G.	3-7"	0	0	0
40" PC.G.	3-11"	3-4"	2-7"	8-1/2"
45" PC.G.	4-4"	3-8"	3-0"	10-5"
54" PC.G.	5-1"	1-8"	3-6"	10-2"
WF BEAMS				
WELDED BM.				

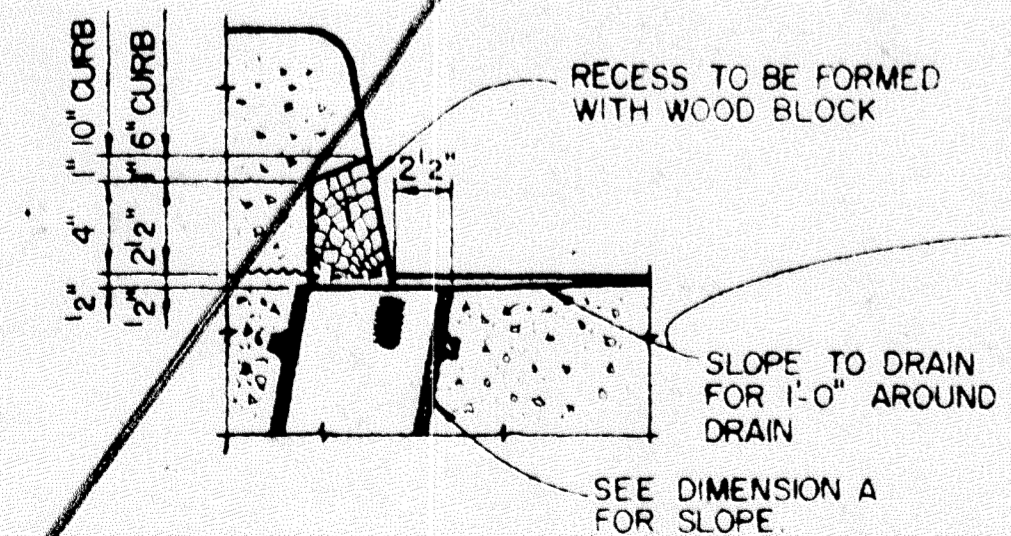
DIMENSIONS ARE BASED ON $\frac{1}{2}$ " OF GIRDER $1\frac{1}{2}$ " INSIDE GUTTER LINE AND A DISTANCE OF 8" FROM TOP OF GIRDER TO TOP OF SLAB AT GUTTER. REVISE AS NECESSARY TO CONFORM TO PLAN DETAILS.



1/16" x 1/2" SLOTTED HOLES FOR 5/8" BOLTS FOR STEEL BEAMS & 5/8" CAP SCREW FOR PRESTRESSED CONCRETE GIRDERS. AN APPROVED STEEL OR MALLEABLE IRON CONCRETE INSERT SHALL BE CAST IN PRESTRESSED CONCRETE GIRDERS. INSERTS TO BE INCLUDED IN PRICE BID FOR GIRDERS. LOCK WASHER & 3 CUT WASHER FILLS FOR EACH BOLT OR CAP SCREW. HOLES IN BEAMS TO BE DRILLED IN SHOP.

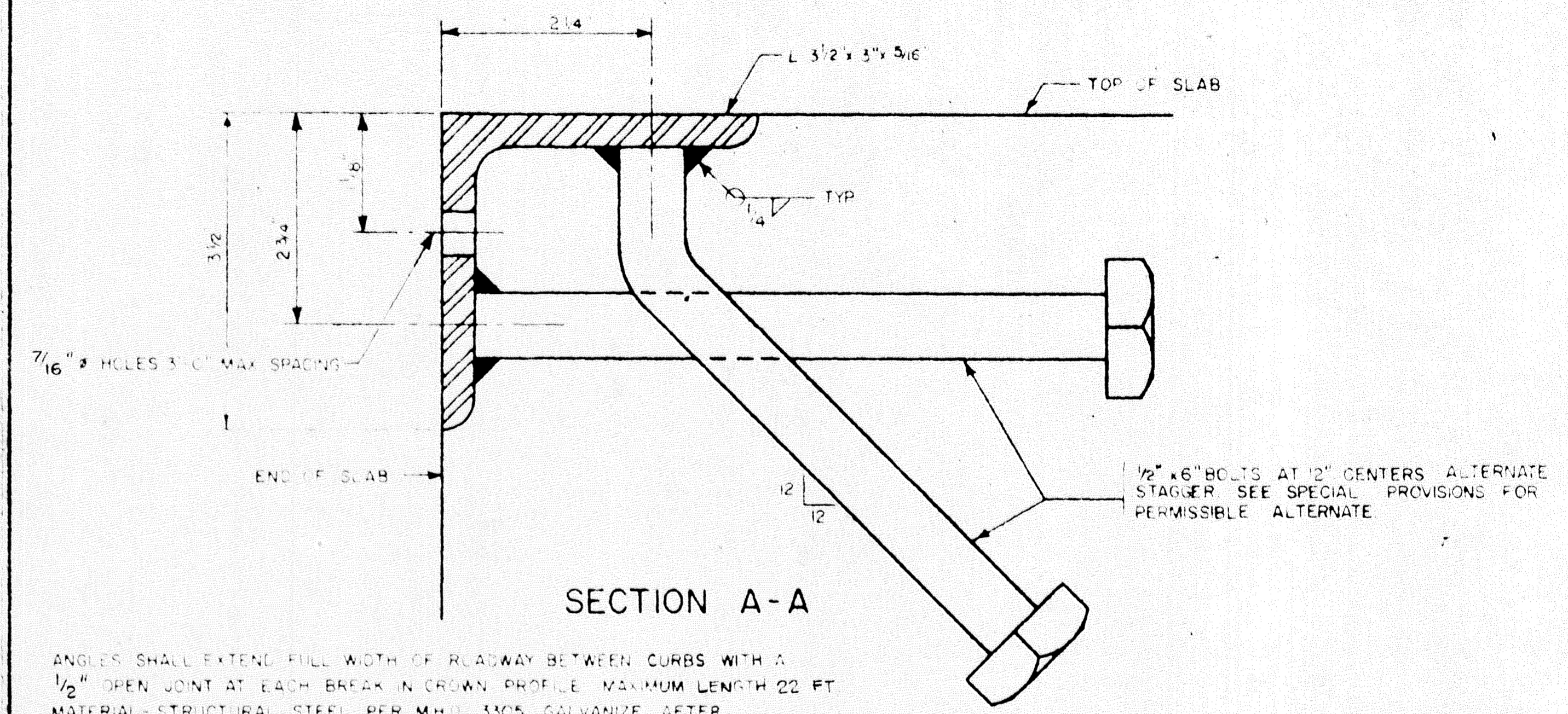
NOTE
MATERIAL M.H.D. 3306
GALVANIZE BOLTS, INSERTS, & WASHERS PER M.H.D. 3392
GALVANIZE OTHER MATERIALS PER M.H.D. 3394 AFTER FABRICATION

SECTION THRU DRAIN



PLACEMENT DIAGRAM

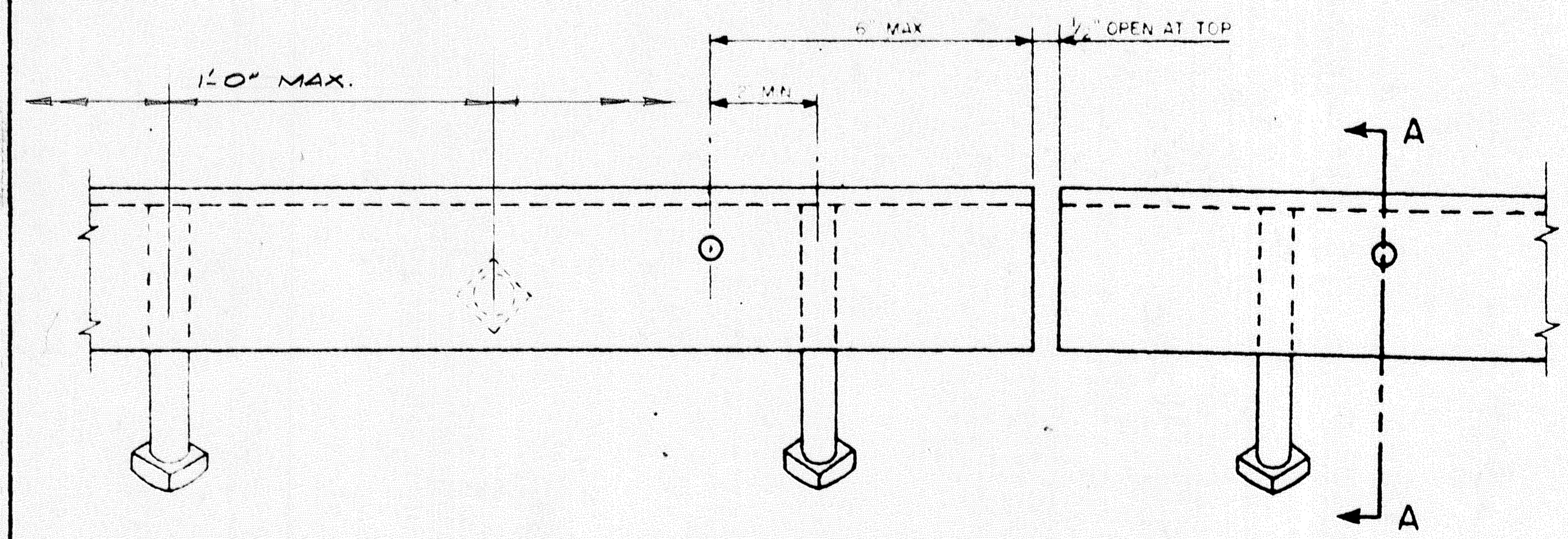
TYPE



SECTION A-A

ANGLES SHALL EXTEND FULL WIDTH OF ROADWAY BETWEEN CURBS WITH A 1/2" OPEN JOINT AT EACH BREAK IN CROWN PROFILE. MAXIMUM LENGTH 22 FT. MATERIAL-STRUCTURAL STEEL PER M.H.D. 3305. GALVANIZE AFTER FABRICATION PER M.H.D. 3394

SET ANGLE TO PROPER GRADE AND CROWN.



ELEVATION

APPROVED 3-21-1967

A.P. Anderson
BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
STEEL FLOOR DRAINS FOR BRIDGES

REVISIONS

DETAIL NO.
B10

APPROVED 3-24-1963

R. C. Bonita
BRIDGE ENGINEER

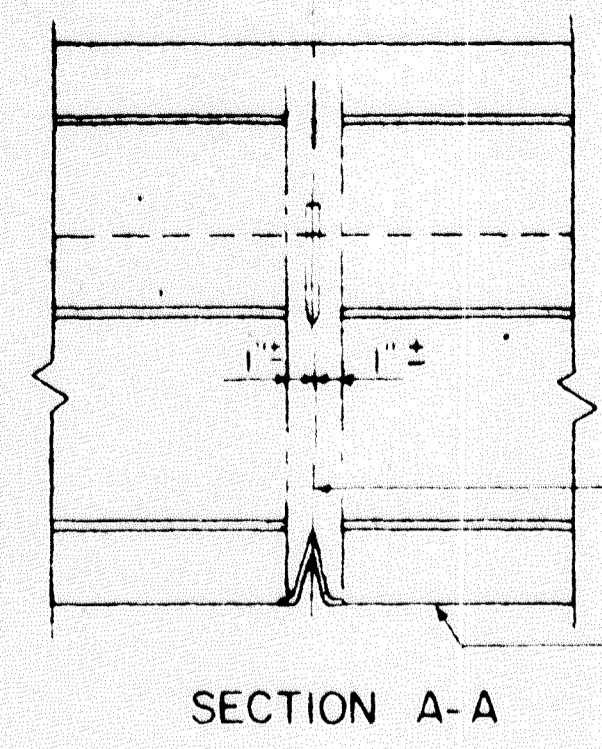
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
PROTECTION ANGLE FOR END OF SLAB

1968 SPECS.

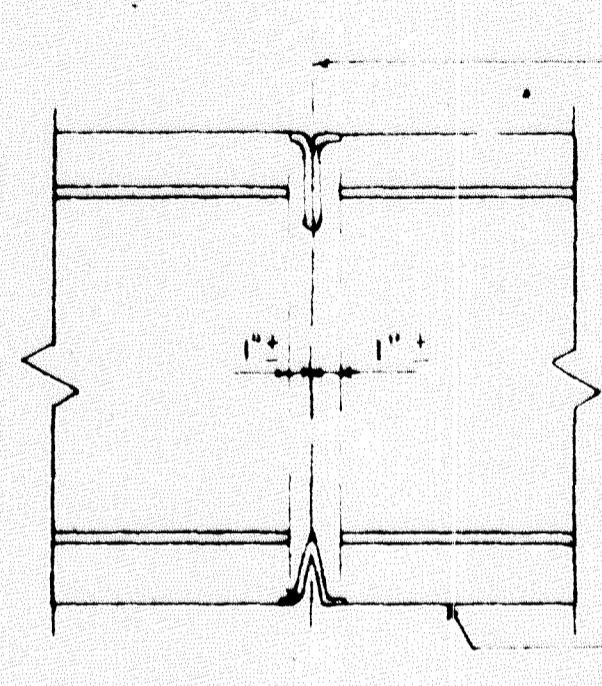
REVISIONS
3/8/65
2/19/68

DETAIL NO.
B209

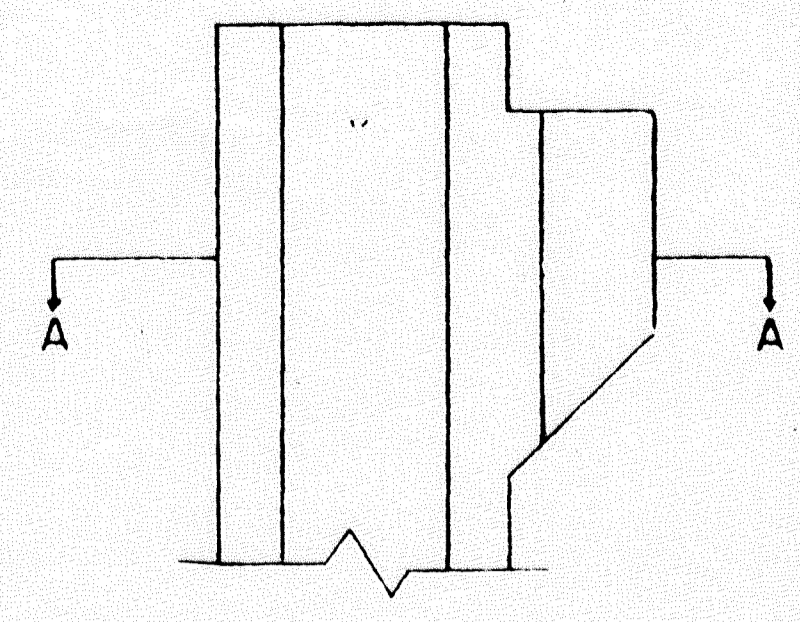
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAY
C.S.A.H. # 22 ANOKA COUNTY
Bridge No.
02519
1968 SPECS.
DETAILS
APPROVED 3-25-63
02519
Sheet No. 13 of
17 Sheets



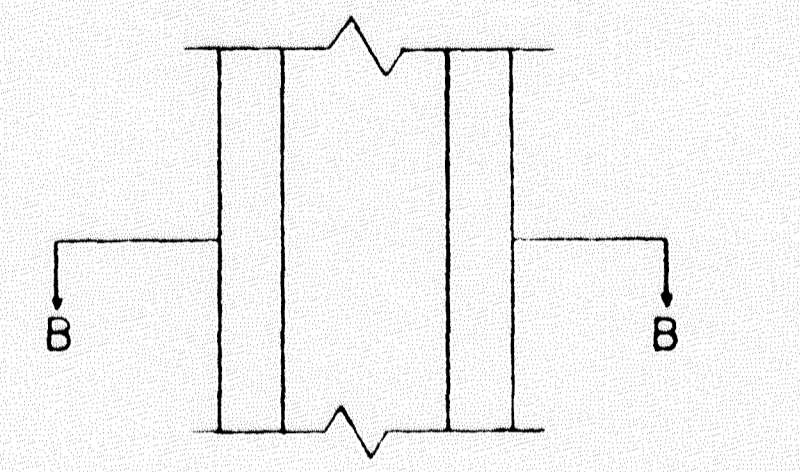
NO REINFORCEMENT THRU WEAKENED PLANE ABOVE TOP OF FOOTING
FRONT FACE



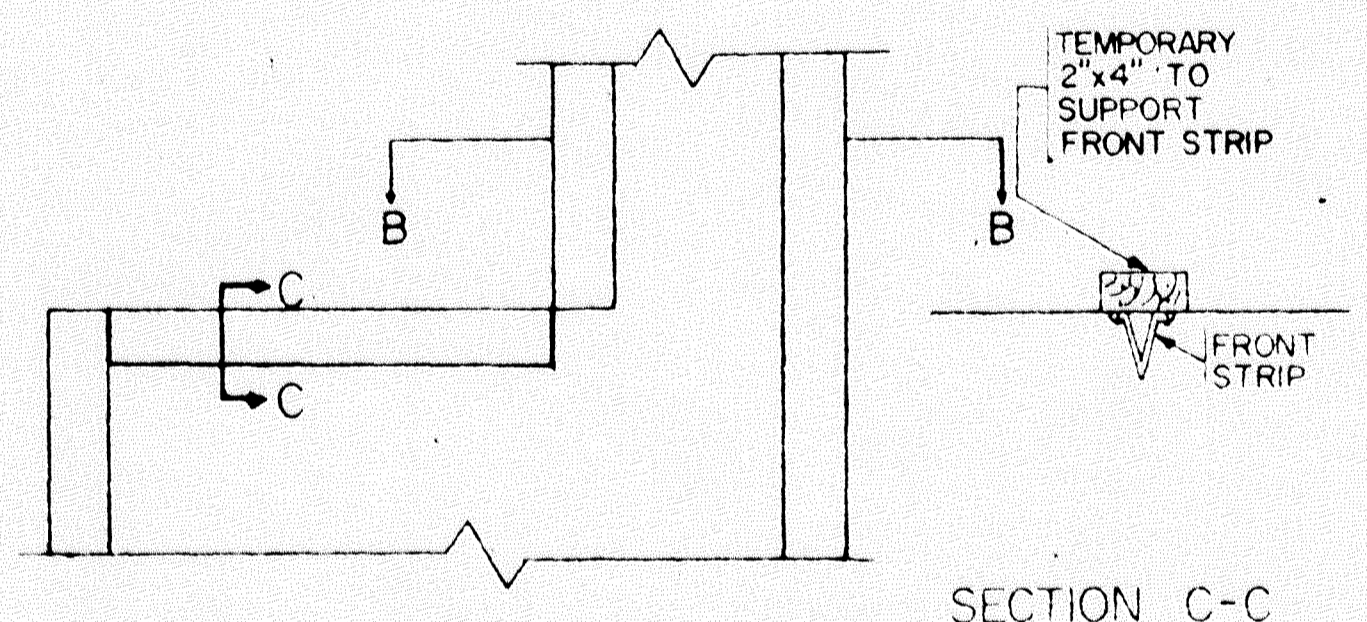
WEAKENED PLANE CONTRACTION JOINT
FRONT FACE



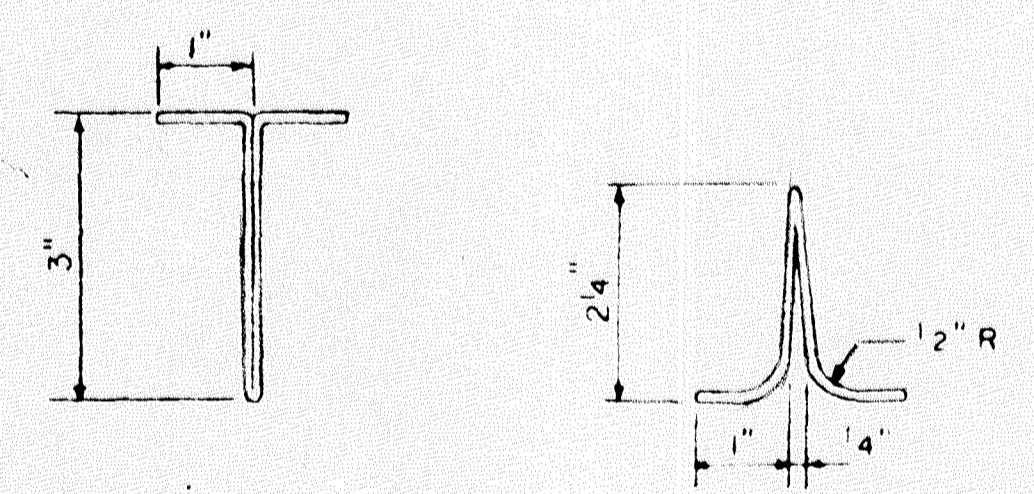
SECTION THRU PAVING BRACKET



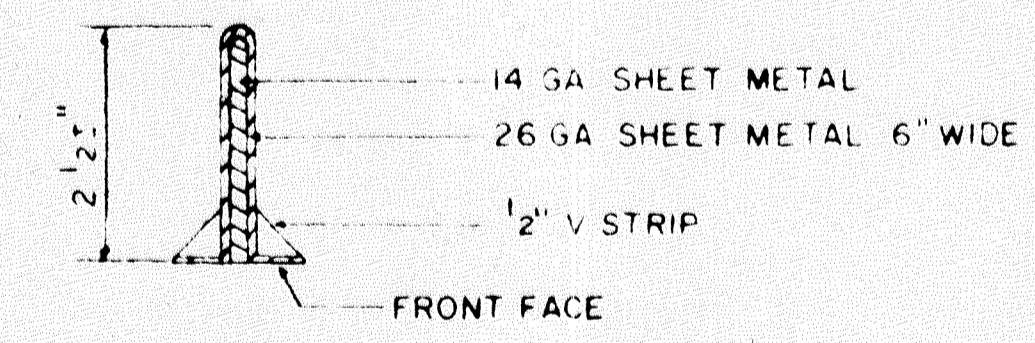
SECTION THRU WALL



SECTION THRU BRIDGE SEAT ON PARAPET ABUTMENT



BACK STRIP 8" WIDE
FRONT STRIP 6" WIDE

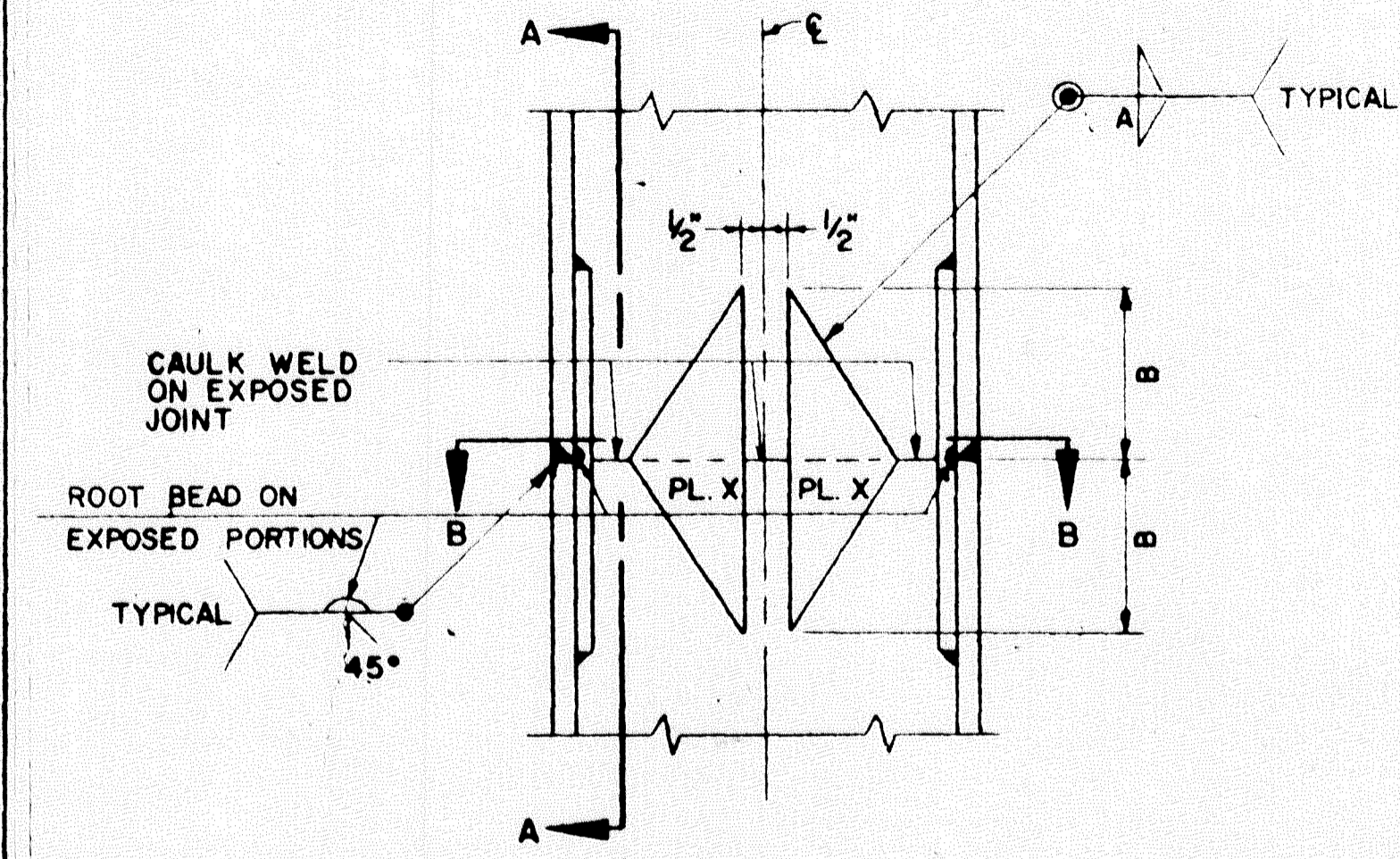


ALTERNATE FRONT STRIP

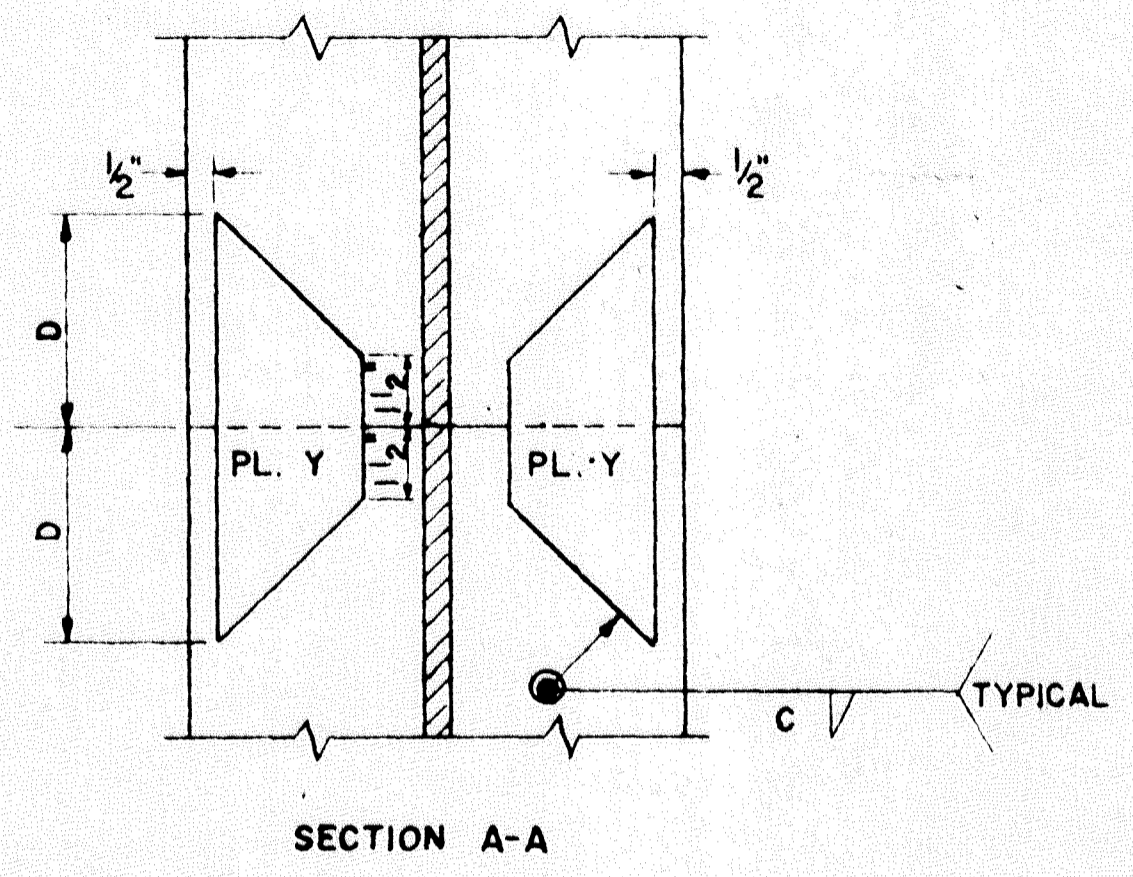
NOTES
METAL STRIP TO BE 26 GA GALVANIZED SHEET METAL.
FASTEN TO FORMS WITH 7/8" ROOFING NAILS ABOUT 6" CENTERS.
FRONT STRIP TO BE REMOVED WITH FORMS.
BACK STRIP REMAINS IN PLACE.
ALL METAL IN FRONT FACE TO BE OILED FOR EASY REMOVAL.
COST OF FORMING JOINT TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

NOTE
THE METHODS AND MATERIALS INDICATED HEREON SHALL BE CONSIDERED AS SUGGESTED ONLY. VARIATIONS WILL BE PERMITTED, SUBJECT TO APPROVAL BY THE ENGINEER, BUT MUST PROVIDE DUMMY JOINTS OF A DEPTH NOT LESS THAN THE DEPTH SHOWN, AND A WIDTH AT THE FRONT FACE OF THE ABUTMENT OF NOT GREATER THAN 3/8". THE SEPARATION OF THE HORIZONTAL REINFORCEMENT BARS SHALL BE NOT LESS THAN 1/2" NOR MORE THAN 3", CENTERED AS SHOWN, REGARDLESS OF THE PROCEDURE USED FOR FORMING THE DUMMY JOINT.
IF A SUITABLE PLASTIC OR OTHER DURABLE MATERIAL, SATISFACTORY TO THE ENGINEER, IS USED FOR THE FRONT STRIP, THE MATERIAL MAY BE LEFT IN PLACE.
STRIPS TO BE REMOVED SHALL BE OILED OR GREASED AS NECESSARY TO PERMIT REMOVAL WITHOUT SPALLING THE CONCRETE.

1964 & 1968 SPECS.

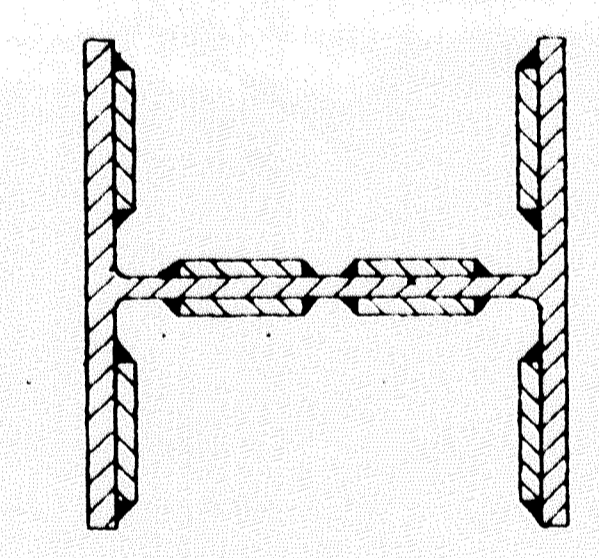


CAULK WELD ON EXPOSED JOINT
ROOT BEAD ON EXPOSED PORTIONS
TYPICAL
45°

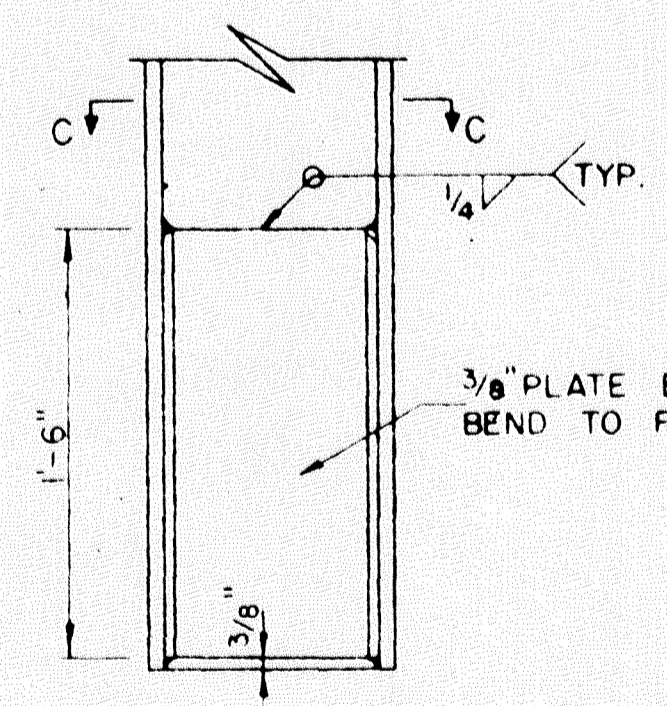


SECTION A-A

PILE SECTION	SIZE	PLATE X		PLATE Y	
		A	B	C	D
10BP42	2 1/2 x 3/8	4	4	3 x 3/8	5/16 4
10BP57	2 1/2 x 1/2	5/16	4	3 x 1/2	5/16 5
12BP53	3 1/2 x 3/8	1/4	5	4 x 3/8	5/16 5
12BP74	3 1/2 x 1/2	5/16	6	4 x 1/2	5/16 6
14BP73	4 1/2 x 3/8	1/4	7	5 x 3/8	5/16 6
14BP89	4 1/2 x 7/16	5/16	7	5 x 1/2	5/16 7
14BP102	4 1/2 x 1/2	5/16	7	5 x 9/16	3/8 7
14BP117	4 1/2 x 5/16	3/8	7	5 x 5/8	3/8 8



SECTION B-B



SECTION C-C

EACH PILE TIP REINFORCEMENT WILL BE PAID FOR IN AMOUNT EQUAL TO 5 LIN. FT.

NO PILE TIPS SHALL BE REINFORCED EXCEPT BY WRITTEN ORDER OF THE ENGINEER

DETAIL OF PILE TIP REINFORCEMENT

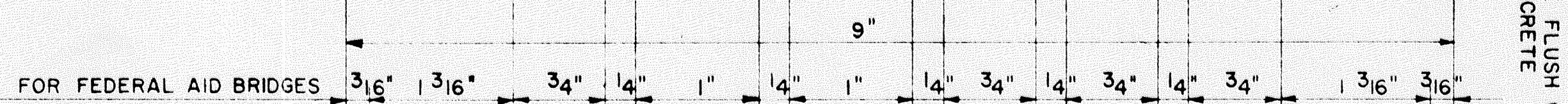
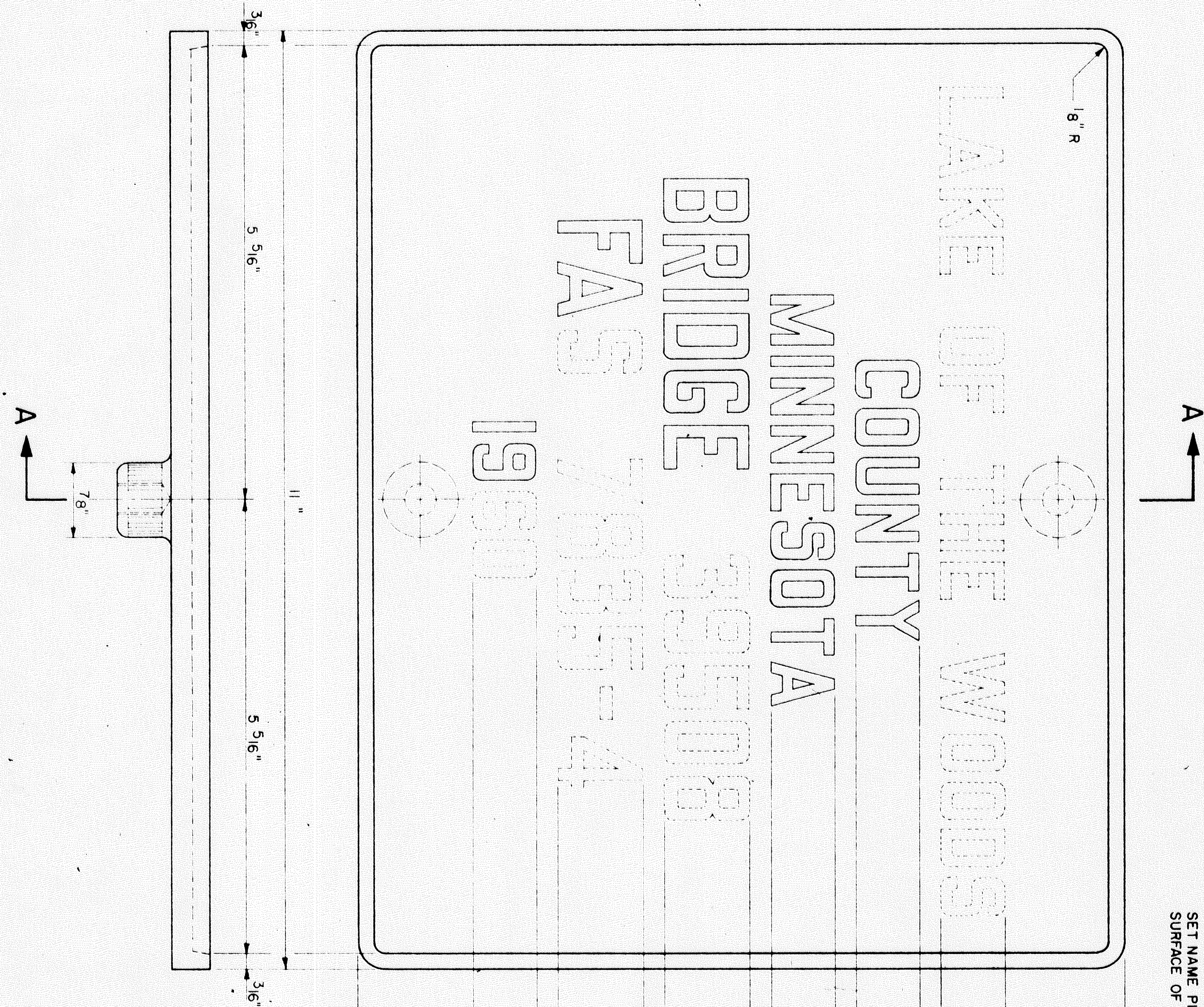
NOTES:
PILE ENDS AT SPLICE TO BE SQUARE.
WELDING SEQUENCE:
A. PILES SPLIKED ON SKIDS BEFORE DRIVING
1. BUTT WELD FLANGES.
2. WELD WEB SPLICE PLATES.
3. WELD FLANGE SPLICE PLATES.
4. MAKE CAULK WELDS & ROOT BEADS.
B. PILES SPLIKED IN LEADS.
1. WELD SPLICE PLATES TO EXTENSION BEFORE ASSEMBLY.
2. CLAMP SECTIONS TOGETHER AND HOLD RIGID.
3. BUTT WELD FLANGES.
4. WELD SPLICE PLATES TO DRIVEN SECTION.
5. MAKE CAULK WELDS & ROOT BEADS.
WELDING ELECTRODES M.H.D. 3339.
WITH D.C. REVERSE POLARITY (ELECTRODE POSITIVE) ONLY.
USE A.S.T.M. CLASSIFICATION E6010.
WITH D.C. REVERSE POLARITY OR AC USE A.S.T.M. CLASSIFICATION E6011.
WHERE MOISTURE CONTROL IS PROPERLY ENFORCED A.S.T.M. CLASSIFICATION E6010 OR E7016 MAY BE USED.
RECOMMENDED MOISTURE CONTENT, PER CENT OF COATING
E6010 3.0 TO 50% D.C.R. ONLY
E6011 2.0 TO 40% AC OR D.C.R.
E6010 LESS THAN 0.4% AC OR D.C.R.
E7016 LESS THAN 0.4% AC OR D.C.R.
ALL WELDING PER M.H.D. 2471.3J
STEEL PLATES PER M.H.D. 3306

1968 SPECS.

APPROVED SEPT 5 1963	STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS	REVISIONS 8-26-64 9-1-65 2-19-68	DETAIL NO. B260
CONTRACTION JOINT			

APPROVED 12-19-1958	STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS	REVISIONS 6-2-59 7-31-62 12-2-63 11-15-65 2-19-68	DETAIL NO. B221
SPLICES FOR STEEL H BEARING PILES & PILE TIP REINFORCEMENT 10" TO 4"			

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
C.S.A.H. 22 ANOKIA COUNTY
Bridge No.
02519
02519
Sheet No. 14 of
17 Sheets



NOTES
 NUMBERS AND LETTERS SHALL CONFORM TO THOSE SHOWN ON DETAIL NO. 2102.
 DRAFT ON LETTERS SHALL NOT BE MORE THAN 3" IN 12".
 HORIZONTAL SPACING OF LETTERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
 TOP SURFACE OF LETTERS AND FRAMES SHALL BE BURNISHED.
 BACKGROUND OF PLATE SHALL HAVE A DEEP BROWN OXIDIZED FINISH.
 FURNISH 2 STEEL BOLTS 3/8" Ø X 3" LONG WITH EACH PLATE.
 PLATES ORDERED IN PAIRS SHALL BE CAST FROM THE SAME HEAT.

NUMBERS AND LETTERS SHOWN DOTTED ARE TO BE OBTAINED FROM BRIDGE PLANS.

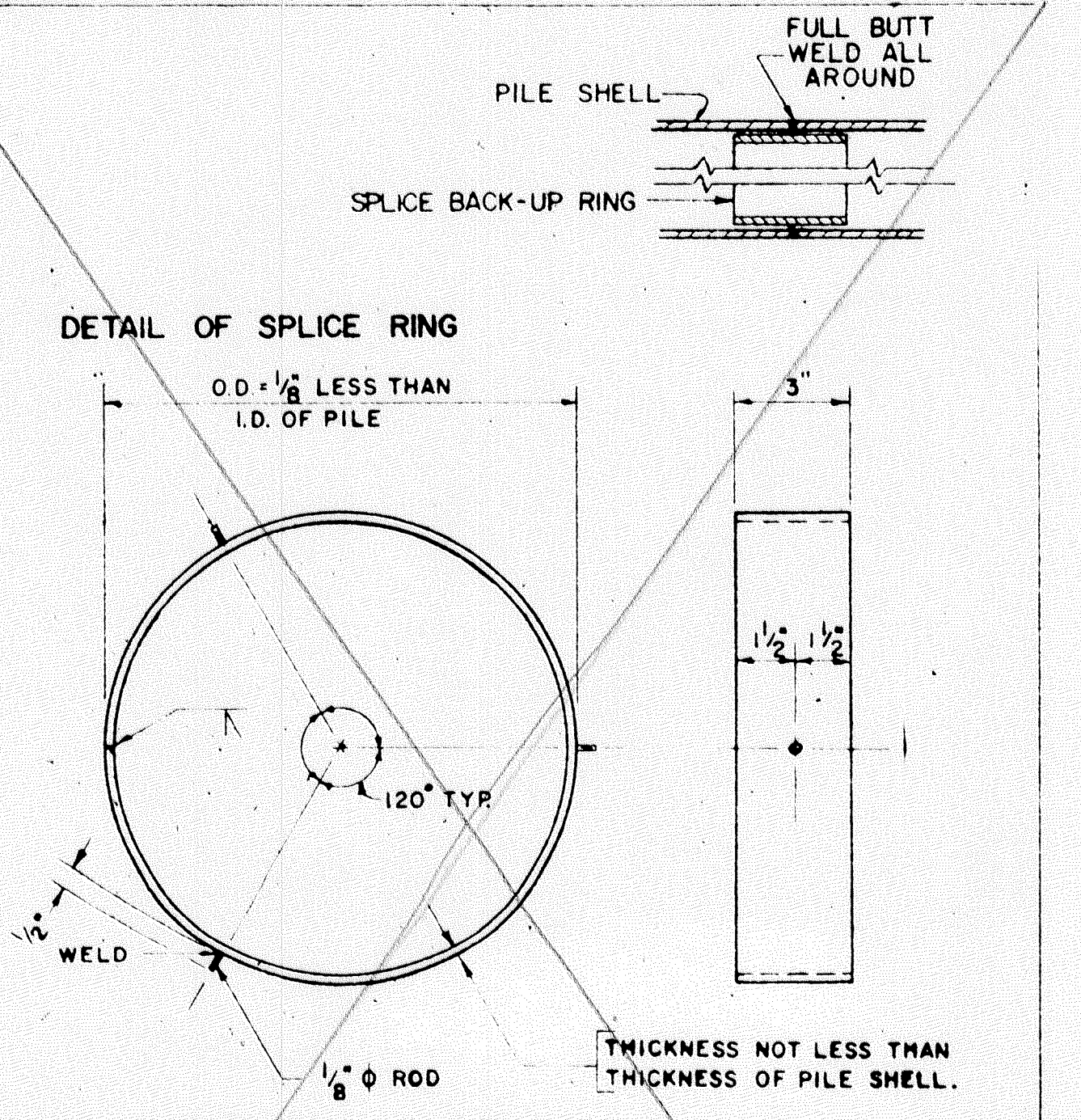
SPECIFICATION REFERENCE 2471.3 H, 3327 (BRONZE CASTINGS) 1968 SPECS.

LAKE OF THE WOODS
 COUNTY
 MINNESOTA
 BRIDGE
 39508
 FAS
 7835-4
 1960

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 1234567890

NOTE:
 ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN ABOVE FOR THE 1" HIGH LETTERS AND NUMBERS. THE THICKNESS OF THE LETTERS AND NUMBERS SHALL BE 3/16".

APPROVED 7/3/1959 A. E. LaBonte BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS LETTERS FOR BRIDGE NAME PLATES	REVISIONS DETAIL NO. 2102
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FOR 35000 PSI YIELD MATERIAL IN PILE SHELL
 USE WELDING ELECTRODE AWS-ASTM CLASS E 6010, 6011, 6016, OR 7016
 FOR 45000 PSI YIELD MATERIAL IN PILE SHELL
 USE WELDING ELECTRODE AWS-ASTM CLASS E 7016.
 ELECTRODES CONTAINING IRON POWDER SHALL NOT BE USED.
 STRUCTURAL STEEL FOR THE RING SHALL BE PER MHD 3306 OR MATERIAL FROM A PILE SHELL.

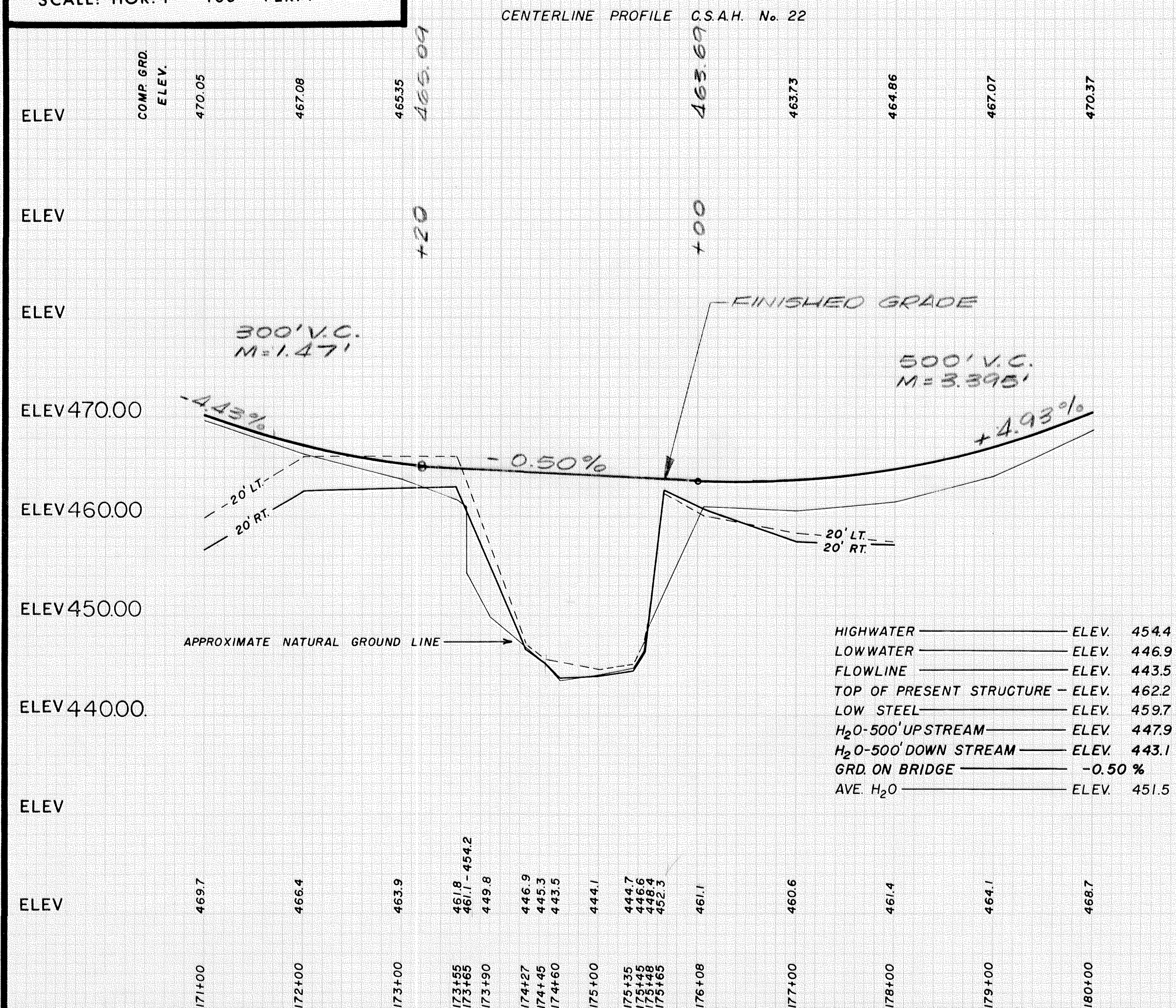
APPROVED 5-23-58 A. E. LaBonte BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS SPICES FOR CAST IN PLACE CONCRETE PILES	REVISIONS DETAIL NO. 6/2/59 1/17/64 10/27/64 9/14/65 3/6/68 B220
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APPROVED JULY 3 1959 A. E. LaBonte BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS BRIDGE NAME PLATE FOR COUNTY BRIDGES	REVISIONS 2-19-68	DETAIL NO. 2101
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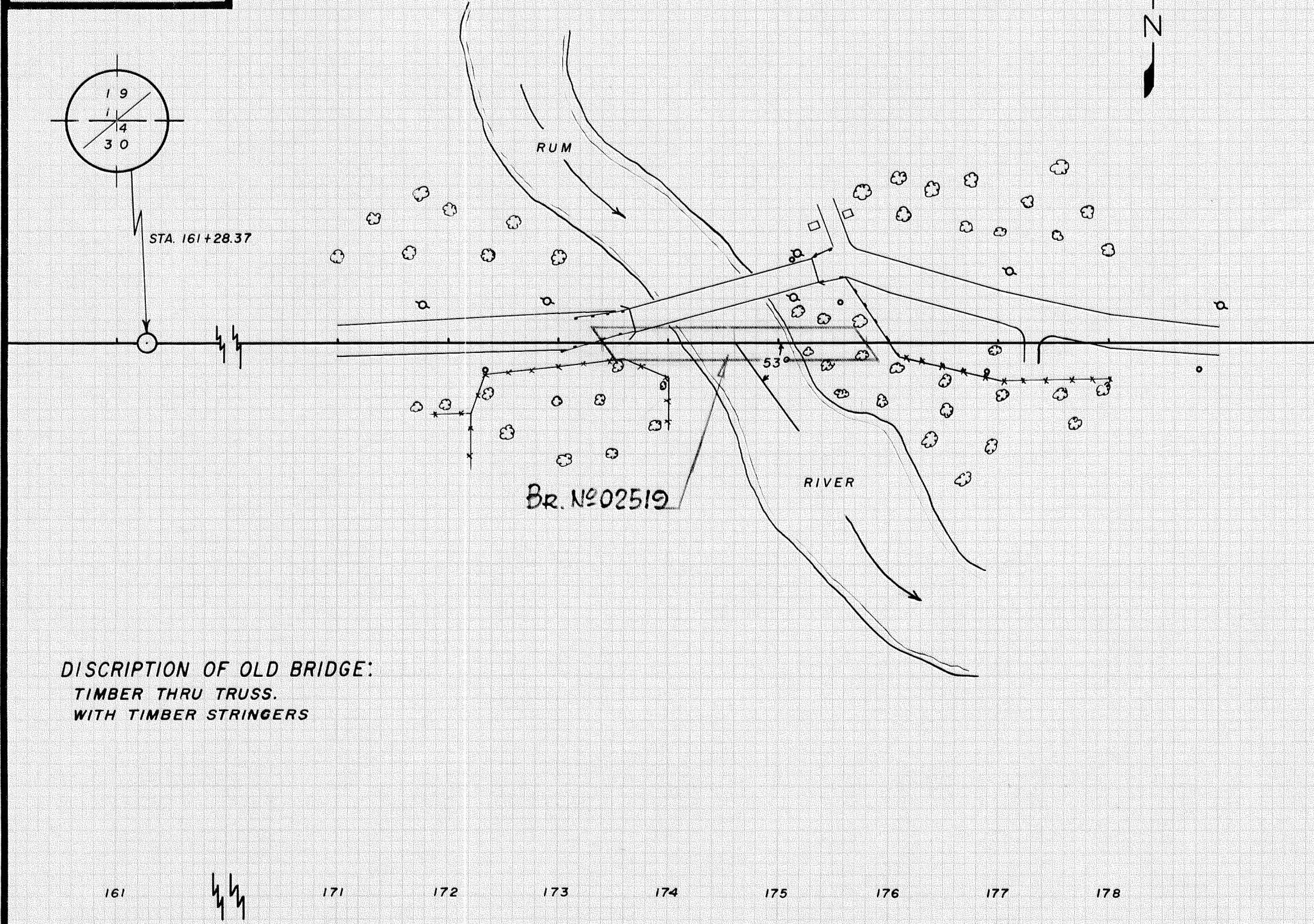
STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS C.S.A.H. #22 ANOKA COUNTY Bridge No. 02519
DETAILS
APPROVED 9-25-68
02519
Sheet No. 15 of 17 Sheets

CONTRACTED PROFILE

SCALE: HOR. 1" = 100' VER. 1" = 10'



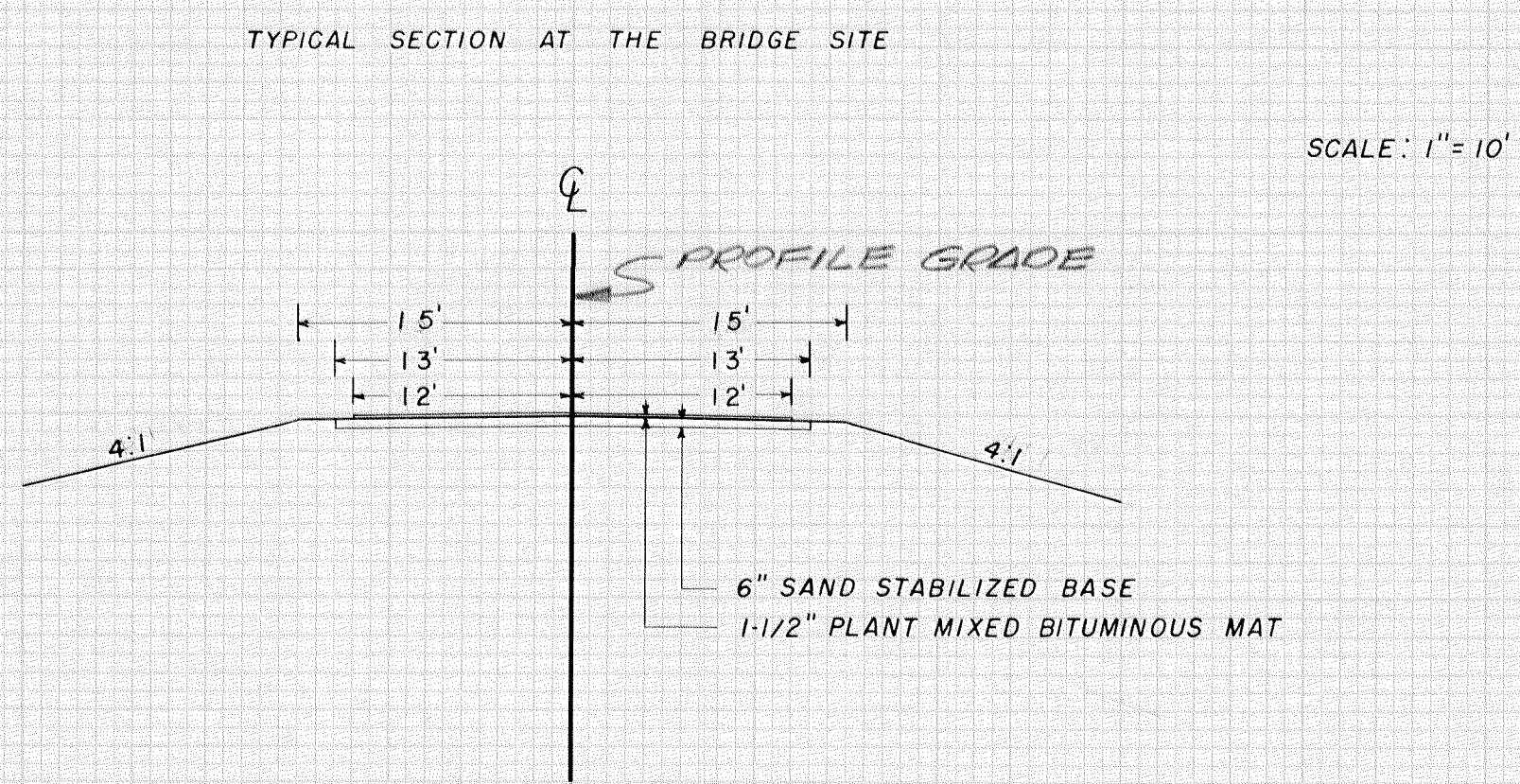
PLAT
SCALE: 1" = 100'



DISCRIPTION OF OLD BRIDGE:
TIMBER THRU TRUSS.
WITH TIMBER STRINGERS

TYPICAL SECTIONS & PERTINENT DATA

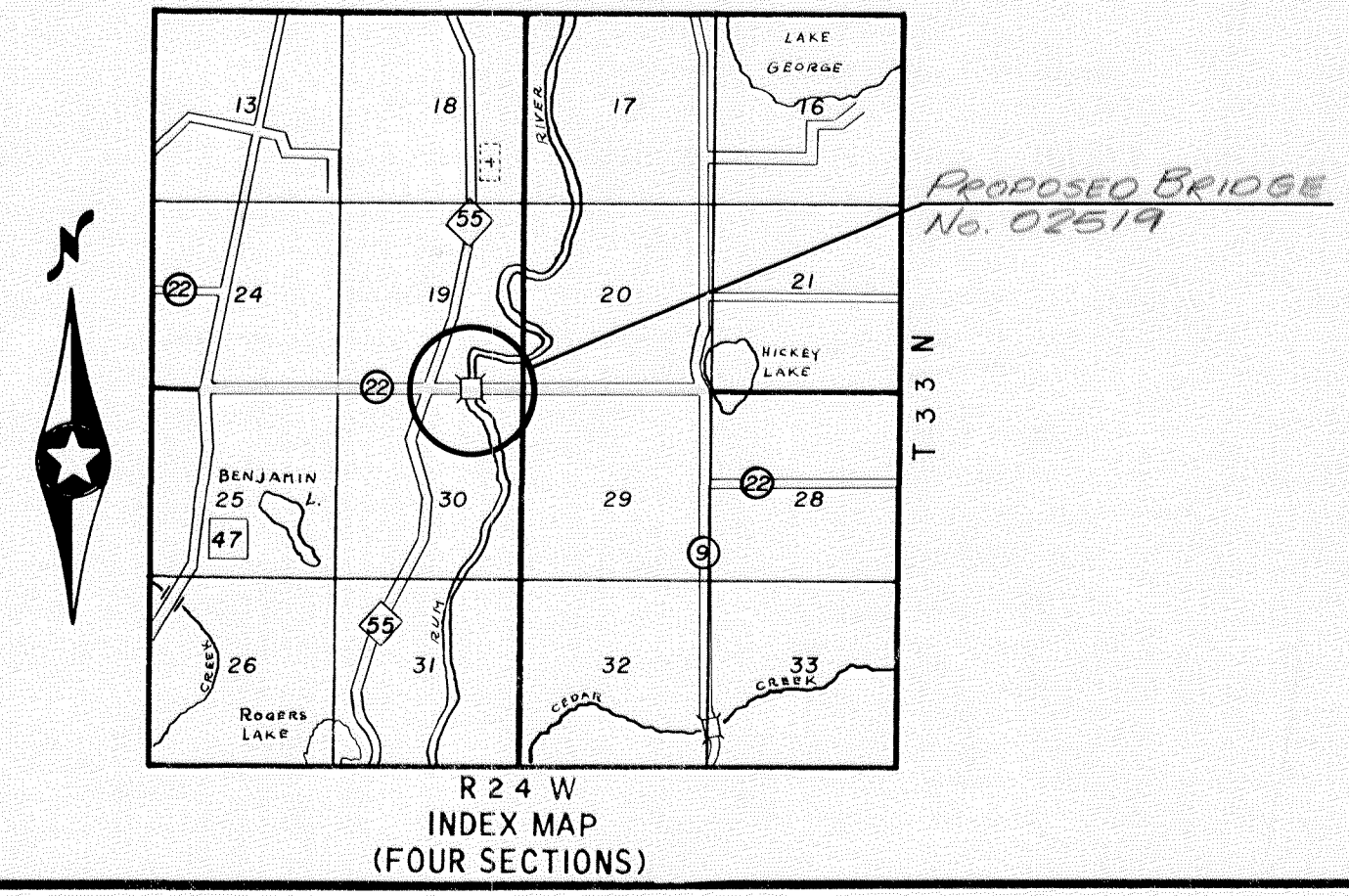
SCALES AS SHOWN



B.M. ELEV 458.12 (M.S.L. 19 ADJ.)
CONC. MON. WITH BRASS PLUG
115' LT. STA. 175 + 50

SEE SHEET 17 OF 17 SHEETS FOR PLAN AND PROFILE

Fed. Proj. No.



FOLLOW SEPARATE "INSTRUCTIONS FOR PREPARATION OF BRIDGE SURVEYS" WHEN MAKING BRIDGE SURVEYS.

DATA

- Preliminary recommendations of Engineer in charge of Bridge Surveys:
 - Net span length and type of bridge: **3-78' PRESTRESSED CONCRETE GIRDER**
 - Width of roadway on bridge: **30'-0"**
 - Number and width of sidewalks, if any: _____
 - Locate center of bridge at station: **STA. 174+60**
 - If a skew bridge is recommended, the angle of skew should be: **37°**
 - Is piling required? **YES**
- Special features: Waterfalls, dams, exceptional floods, ice, driftwood, sliding banks, logging, etc. **NONE**
- Changes: In height or length from that of old bridge, and reasons why: _____
- Other bridges in vicinity:
 - Over same stream (particularly structures which carry high water without overflow of roadway); give location, length, height above water, net cross-sectional area at high water stage and estimated age: **BRIDGE No. 02501, ST. FRANCIS, MINN. 391' LONG, 23' ABOVE H₂O, 5 YEARS OLD. BRIDGE, 7-1/2 MILES NORTH OF ANOKA, C.S.A.H. No. 7, 238' LONG, 12-1/2' ABOVE H₂O, 65 YEARS OLD.**
 - Over or under same highway or railroad; give location, length, horizontal and vertical clearances and estimated age: **NONE**
 - Reasons why these bridges are, or are not, fair indications of what length the proposed bridge should be: **NONE**
- If structure is over a drainage ditch, is ditch gradient liable to be altered? **NO**
- Navigation clearances required, if any: **NONE**
- Information and evidence in regard to high water stages was obtained as follows: **REC. STREAM GAGING STATION AT SITE, AND OBSERVATION CONFIRM READING, 4/20/65. HIGHEST RECORDED READING**
- Must contractor provide for traffic during construction of proposed bridge? **NO**
If so, by what means? _____

HYDRAULIC ENGINEERS RECOMMENDATION
DRAINAGE AREA 1360 SQ. MI., DESIGN DISCHARGE 50-YEAR 10,000 CFS, DESIGN HIGHWATER 50-YEAR 455.24 FT., MAX. OBSERVED HIGHWATER 455.33 FT., WATERWAY AREA BELOW EL. 455.24 1470 SQ. FT., MEAN VELOCITY 6.8 FPS.

HIGH AND LOW WATER ELEVATIONS
 Data obtained from STAFF GAGE ON OLD BRIDGE reflects highest water elevation in the area of this construction to be **454.4** and the lowest water elevation to be **446.9**. The above figures are for informational purposes only. The state neither warrants nor represents that these figures for high water and low water are in any way indicative of the high water or low water to be expected or encountered during this construction.

SHIPPING POINT
 Proposed Bridge is **11** miles **NORTH** of *** ANOKA** which is the nearest Railroad shipping point.
 *(Give name of town, station or siding)
 Date _____ Project or County Engineer _____
 Date _____ District Engineer _____

STATE OF MINNESOTA
 DEPARTMENT OF HIGHWAYS
BRIDGE SURVEY
 FOR
 PROPOSED BRIDGE LOCATED **6** MILES **SOUTH** OF **ST. FRANCIS** ON **G.S.A.H. 22** (TOWN OR CITY) (T.N., C.S.A.H. OR C.A.R. NUMBER)
 SEC. **19** TWP. **33 N** R. **24 W**
 TOWNSHIP **OAK GROVE** COUNTY **ANOKA**
 SURVEY MADE DURING MONTH OF **AUGUST** 19 **66**
 SURVEY MADE BY **CURTIS R. VEVEA**
 BRIDGE NO. **02519**

S.A.P. 02-622-11

Sheet No. 16 of 17 Sheets

