200-924.623

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	17285	1	1

JOB# 17

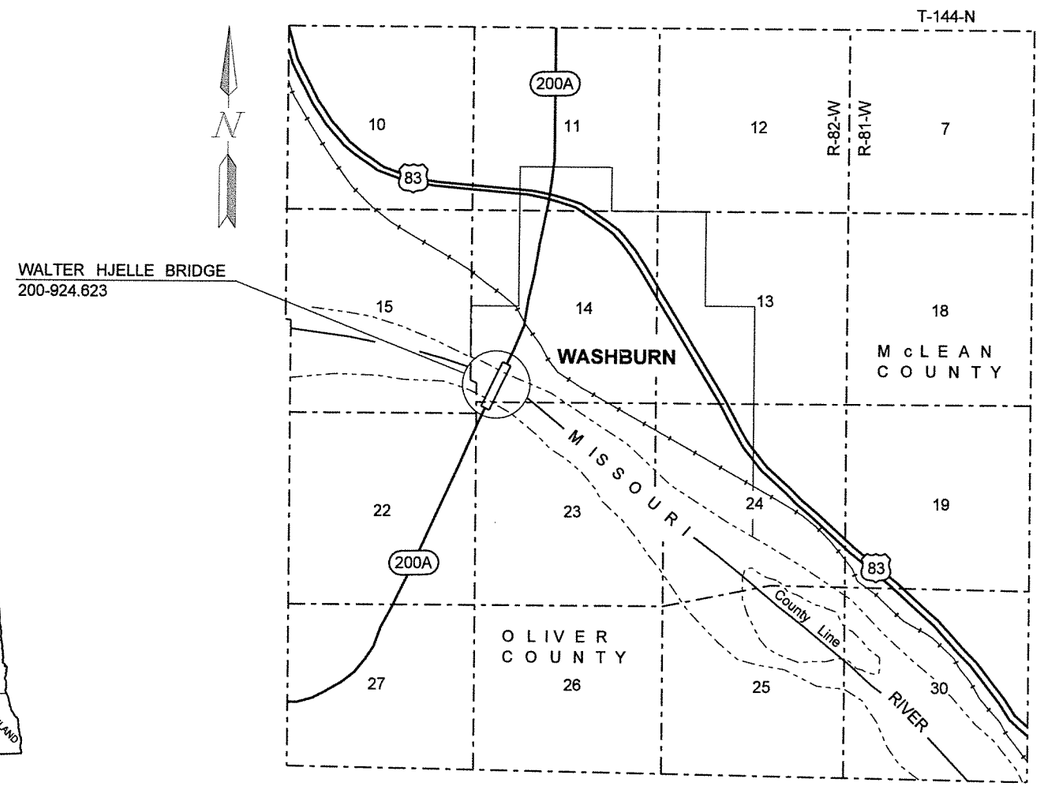
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

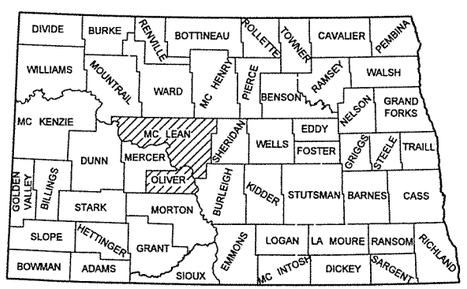
SNH-1-200(054)924

McLEAN AND OLIVER COUNTIES

EXPANSION JOINT REPLACEMENT

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2002; Standard Drawings currently in effect; and other Contract Provisions submitted herein.





STATE COUNTY MAP

APPROVED DATE _____

FEDERAL HIGHWAY ADMINISTRATION
U.S. DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 03/19/08

Terrence R. Udland
BRIDGE ENGINEER

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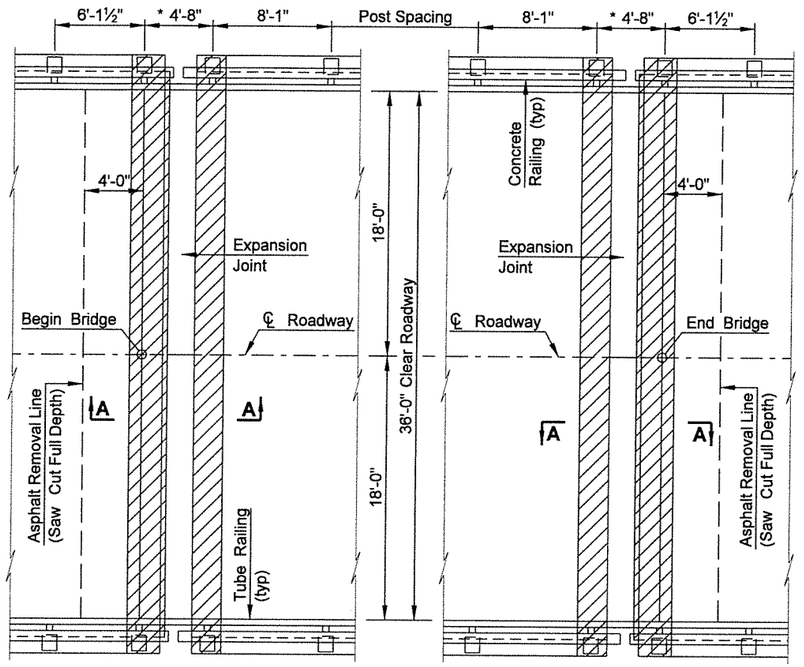
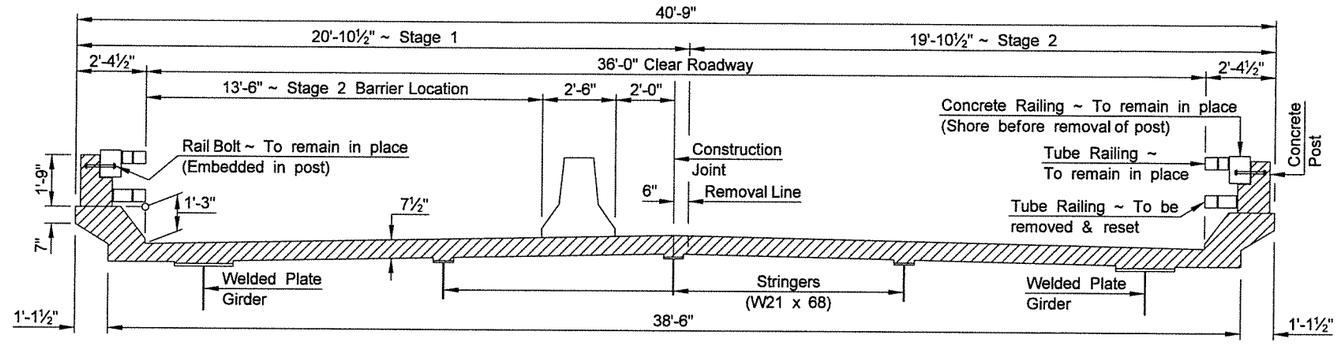
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	1



ABUTMENT 1 ABUTMENT 8

PLAN

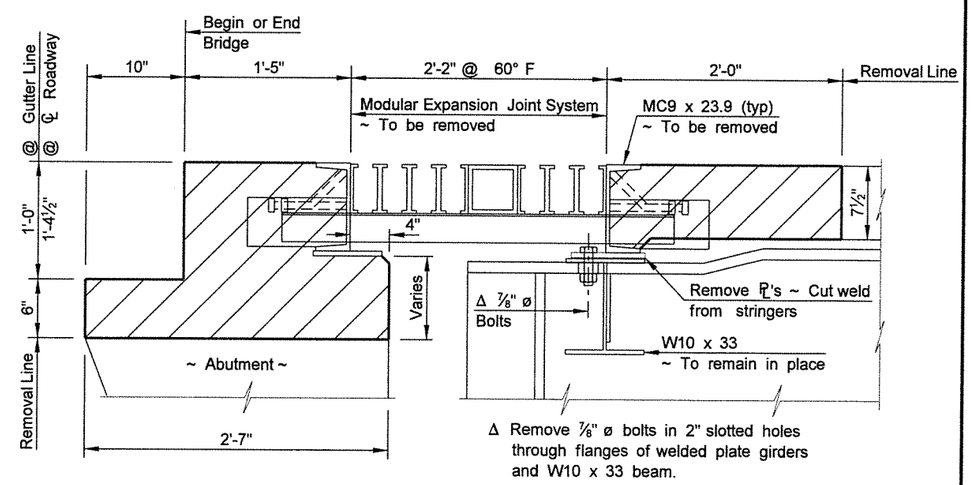


EXISTING SLAB SECTION

NOTE:

Existing slab and curbs shall be saw cut to a depth of 1" before removal. Concrete removal shall be cut as neat a line as possible without damaging the reinforcing steel projecting from the slab and curbs.

Hatched area indicates superstructure and abutment concrete to be removed.



(SHOWING REMOVAL OF EXISTING)

A-A

NOTES:

100 SCOPE OF WORK: This project consists of removing the existing modular expansion joints at each end of the bridge and replacing them with finger expansion joints.

100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, concrete inserts, rebar couplers and other miscellaneous items shall be included in the price bid for Class AAE-3 concrete.

202 REMOVAL OF CONCRETE: The Contractor shall remove the concrete in a manner that prevents any damage to the parts of the structure to remain. The concrete posts on each side of the expansion joints shall be removed and replaced. The Contractor shall also remove 4'-0" of the existing asphalt pavement approaching each end of the bridge. The existing asphalt pavement shall be saw cut full depth for the removal. The work needed to remove the superstructure and abutment concrete, including the posts, the asphalt pavement, and the existing modular expansion joint system and the work needed to remove and reset the bottom tube railing shall be included in the lump sum bid item "Removal of Concrete." Plans for the existing bridge are available at the NDDOT Bismarck District office or at the Bridge Division in the central office.

SHOP DRAWINGS: The Contractor shall submit shop drawings for the finger expansion joints to the Engineer for review.

408 HOT BITUMINOUS PAVEMENT: After the finger joint and concrete placement the asphalt pavement at the ends of the bridge shall be replaced. Class 5 aggregate shall be placed in the bottom of the excavation. The total depth of the asphalt shall be 5". The hot bituminous pavement shall be laid in approximately two equal depth lifts with the maximum depth of lift approximately 2½".

The asphalt cement shall be type PG 58-28 Asphalt Cement. The tack coat shall be SS1H, CSS1H, or MS1 Emulsified Asphalt.

The costs for Class 5 aggregate, asphalt cement and tack coat, including materials, equipment, and labor, will not be measured separately but shall be included in the price bid for "Hot Bituminous Pavement Cl 29."

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0111	REMOVAL OF CONCRETE	L SUM	1
408	0185	HOT BITUMINOUS PAVEMENT CL 29	TON	9
602	0130	CLASS AAE-3 CONCRETE	CY	15.5
612	0115	REINFORCING STEEL-GRADE 60	LBS	1,348
708	1100	SLOPE PROTECTION CONCRETE	SY	19
930	8681	FINGER EXPANSION JOINT	LF	77.0

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NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
WALTER HJELLE BRIDGE
WASHBURN

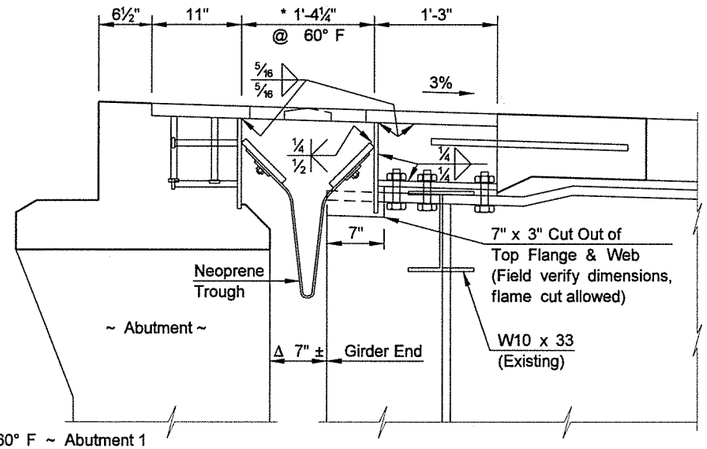
REMOVAL DETAILS

PROJECT: SNH-1-200(054)924

McLEAN & OLIVER COUNTIES

03/25/08 — Terrence R. Udland
DATE — BRIDGE ENGINEER

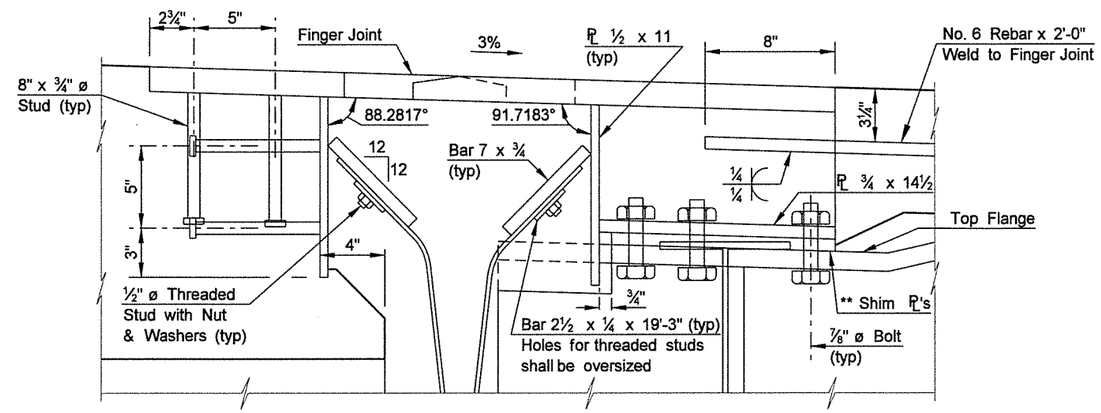
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	2



Δ 7" ± @ 60° F ~ Abutment 1
10" ± @ 60° F ~ Abutment 8

(ABUTMENT 1 SHOWN, ABUTMENT 8 SIMILAR)

SECTION AT EXPANSION JOINT

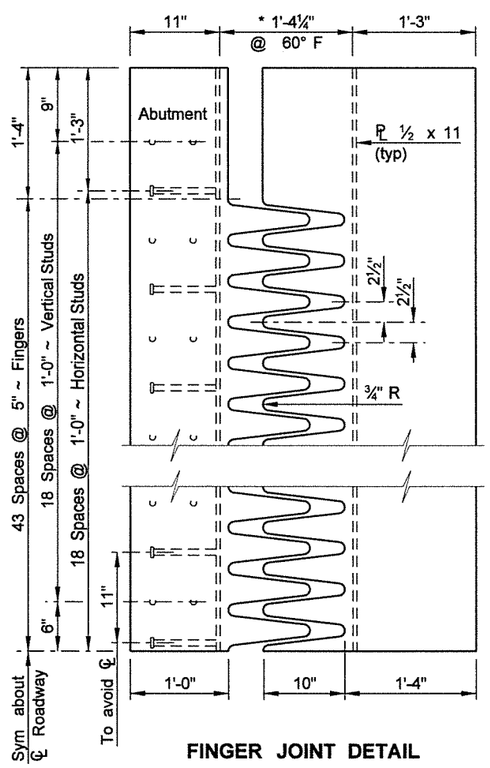


(ABUTMENT 1 SHOWN, ABUTMENT 8 SIMILAR)

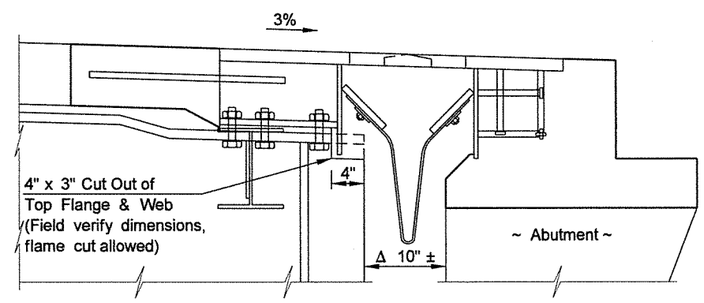
SECTION AT EXPANSION JOINT

** The theoretical shim thickness required is ¾" on top of the main girders and 9/16" on top of the stringers. If the top of the finger is not at the required elevation the shim thickness shall be adjusted.

* 1'-8¾" @ -30° F
1'-1¼" @ 120° F
Joint Adjustment = ½" / 10° F

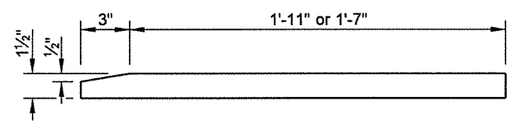


FINGER JOINT DETAIL



(ABUTMENT 8 SHOWN)

SECTION AT EXPANSION JOINT



FINGER ELEVATION

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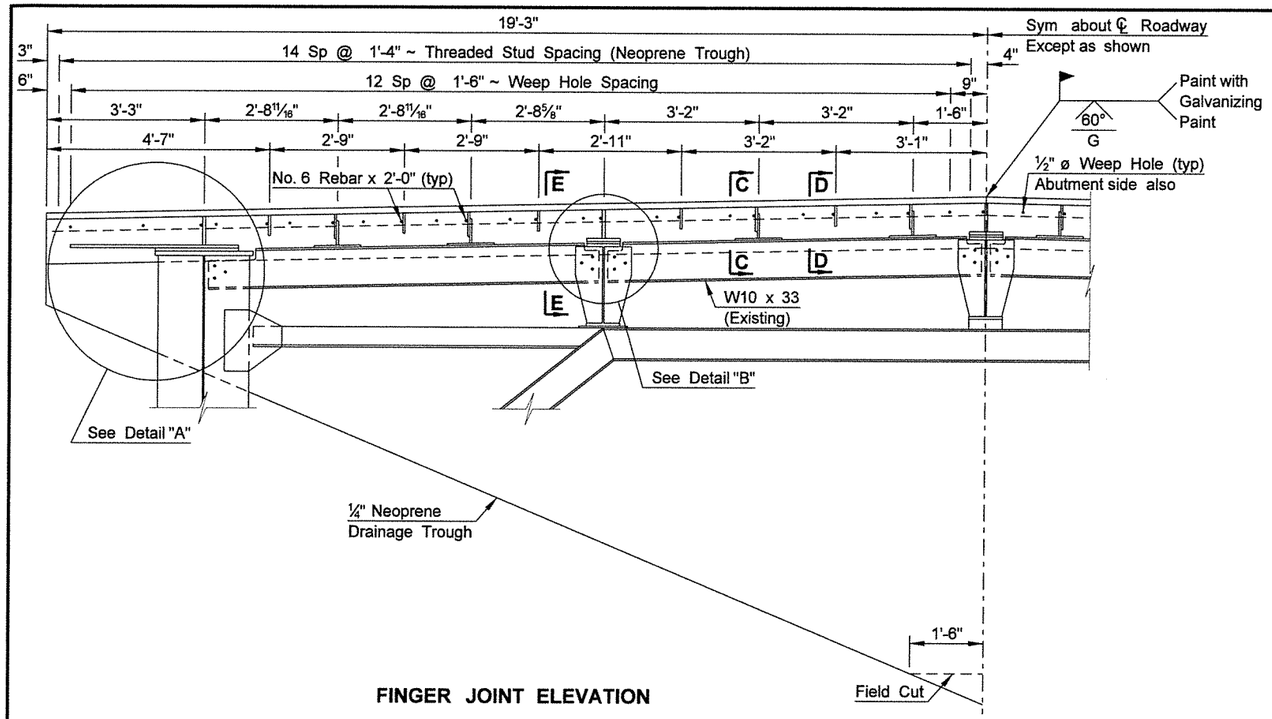
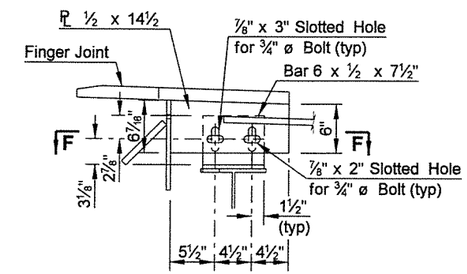
WALTER HJELLE BRIDGE
WASHBURN

FINGER EXPANSION JOINT DETAILS

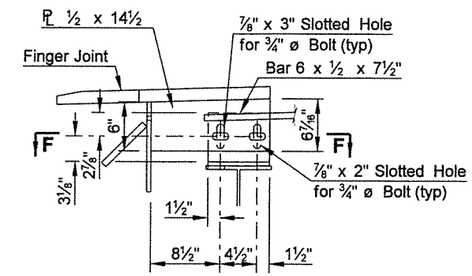
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	3



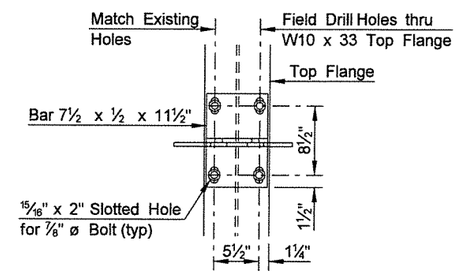
FINGER JOINT ELEVATION



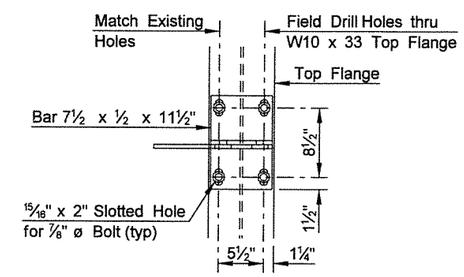
(ABUTMENT 1)
C-C



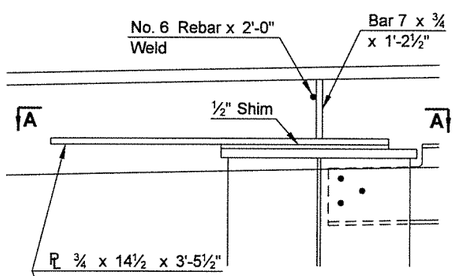
(ABUTMENT 8)
C-C



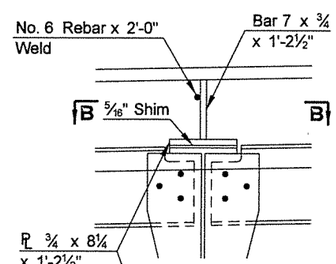
(ABUTMENT 1)
F-F



(ABUTMENT 8)
F-F



DETAIL "A"



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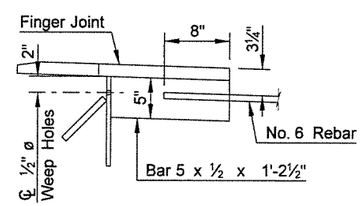
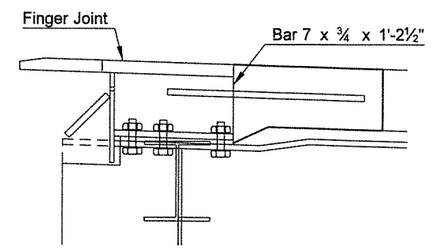
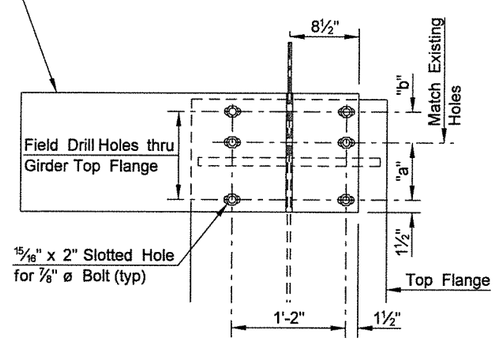


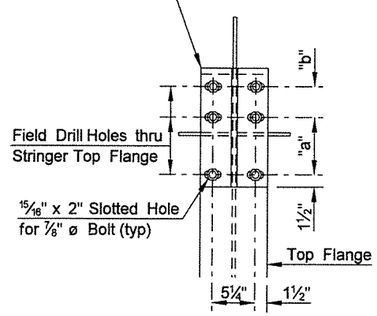
D-D



E-E



A-A



B-B

"a" = 7" ~ Abutment 1
"a" = 4" ~ Abutment 8
"b" = 3¾" ~ Abutment 1
"b" = 6¾" ~ Abutment 8

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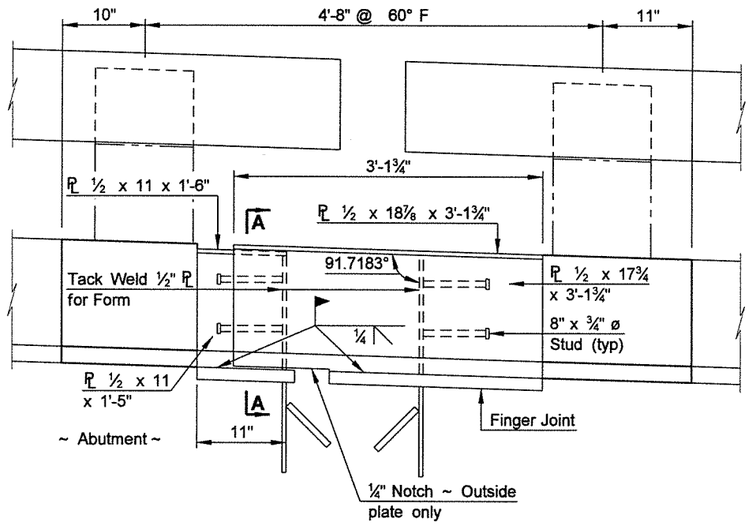
NOTE:

All finger expansion joint material shall be AASHTO M 270, Grade 50 and galvanized after fabrication.

WALTER HJELLE BRIDGE
WASHBURN

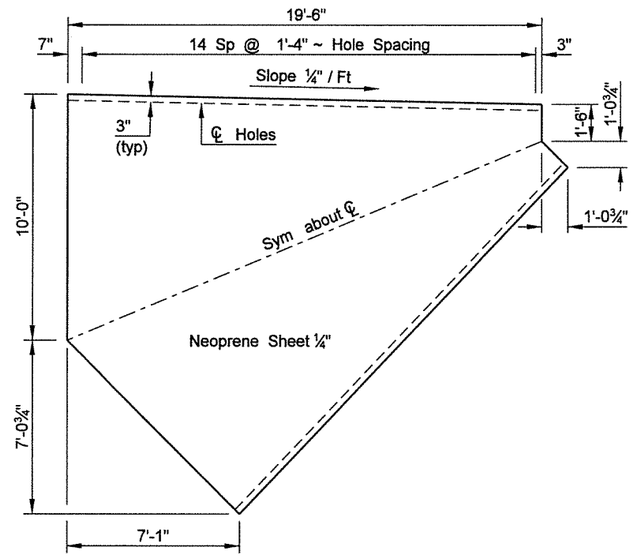
FINGER EXPANSION JOINT DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	4



(ABUTMENT 1 SHOWN, ABUTMENT 8 SIMILAR)

CURB EXPANSION JOINT ELEVATION



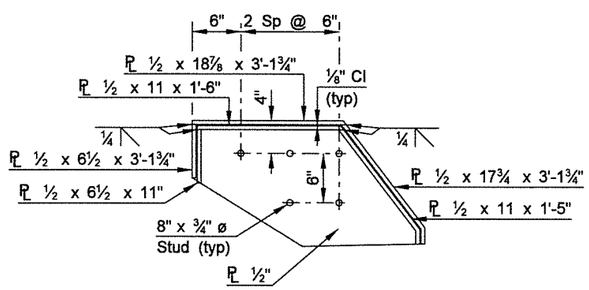
(4 REQUIRED)

NEOPRENE SHEET CUTTING DIAGRAM

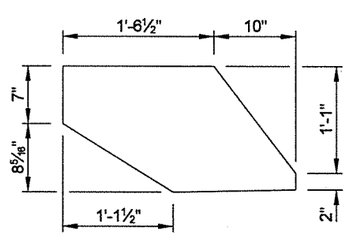
NOTE:

The nylon reinforced neoprene sheets shall meet the following requirements:

1. Tensile Strength = 1100 psi
2. Elongation = 300%
3. Durometer Hardness = 50



A-A



(SHOWING CURB DIMENSIONS)

A-A

NOTE:

All curb expansion joint material shall be AASHTO M 270, Grade 50 and galvanized after fabrication.

NOTE:

The cost of finger plates, curb plates, neoprene troughs, studs, shim plates, bolts, nuts, washers, and all labor and material required for the construction of the joints shall be included in the bid item "Finger Expansion Joint."

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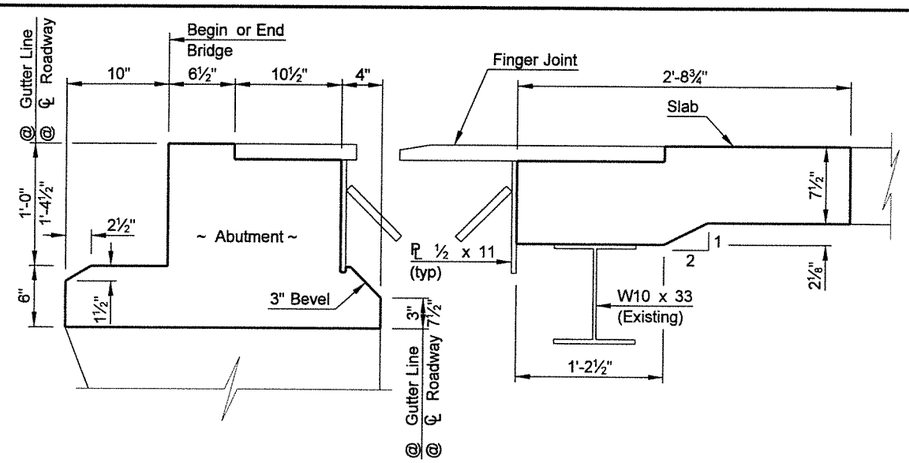
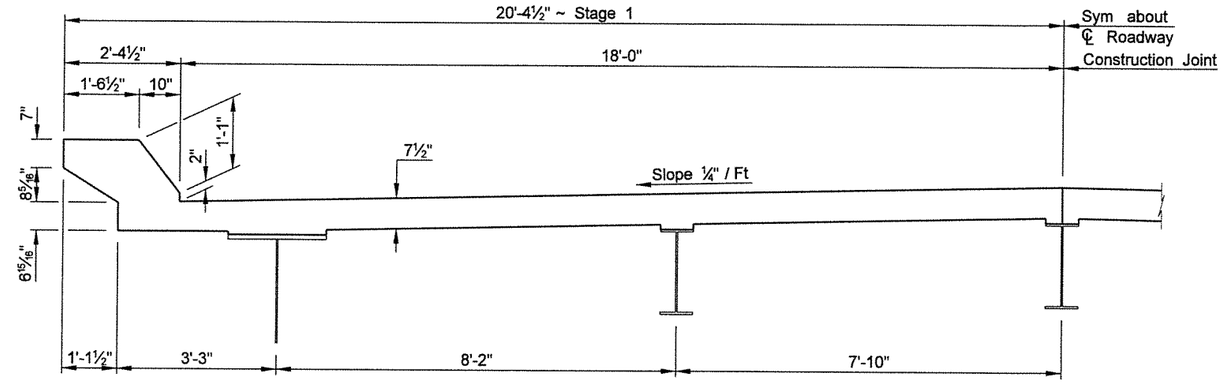
WALTER HJELLE BRIDGE
WASHBURN

CURB EXPANSION JOINT & NEOPRENE DRAINAGE TROUGH DETAILS

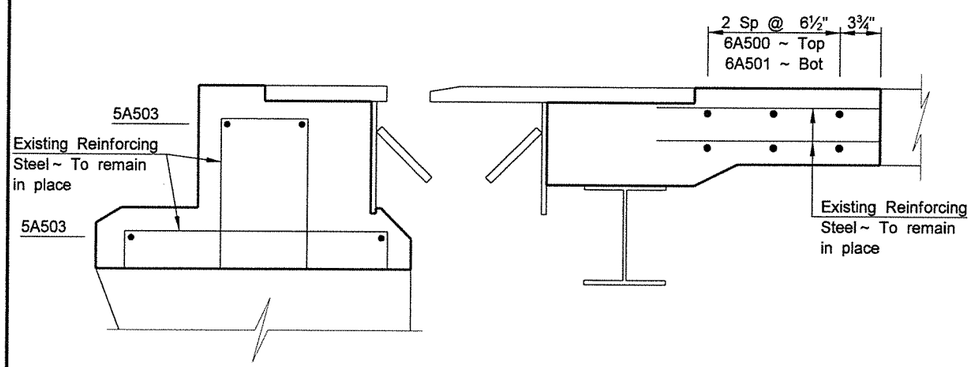
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	5



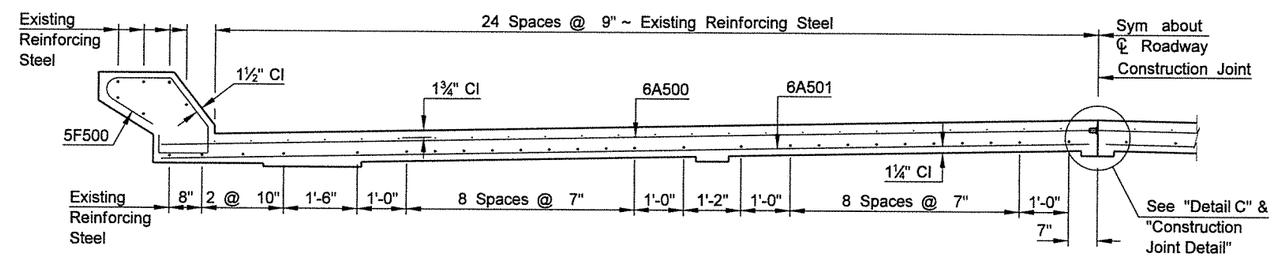
(SHOWING DIMENSIONS)
SECTION AT EXPANSION JOINT



(SHOWING DIMENSIONS)
SLAB SECTION



(SHOWING REINFORCING)
SECTION AT EXPANSION JOINT



(SHOWING REINFORCING)
SLAB SECTION

DESIGN STRENGTHS:

f'c = 4,000 psi ~ Class AAE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Δ The couplers shall be an approved mechanical connector capable of developing 125% of the specified yield strength of the reinforcing steel.

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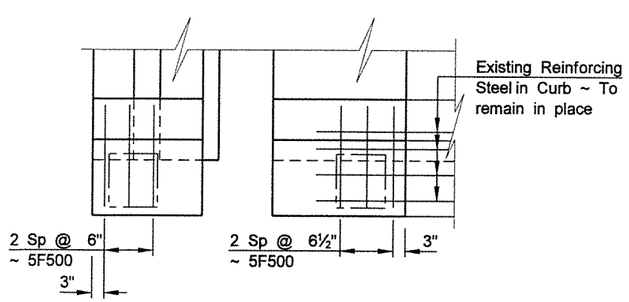
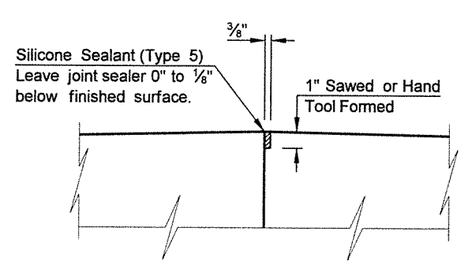
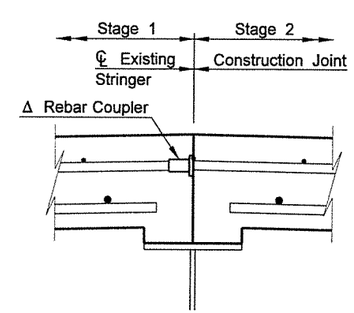


CURB PLAN



The work and material to install the joint shall be included in the pay item "Class AAE-3 Concrete."

CONSTRUCTION JOINT DETAIL



DETAIL C

QUANTITIES

SEE DWG 200-924.623-6

WALTER HJELLE BRIDGE
WASHBURN

SUPERSTRUCTURE & ABUTMENT DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SNH-1-200(054)924	170	6

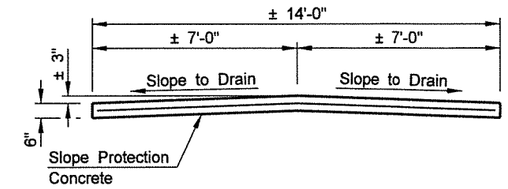
BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k	m
SUPERSTRUCTURE & ABUTMENTS	6	A500	12	19'-1"		19'-1"								
	6	A501	12	18'-11"		18'-11"								
	5	A502	16	1'-6"		1'-6"								
	5	A503	16	18'-11"		18'-11"								
	5	D500	16	3'-1"		1'-11"	1'-2"					12	7.4	
	6	D501	24	2'-4"		1'-1"	1'-3"					9.2	12	
	5	F500	24	5'-10"	4.5"	1'-0"	1'-3"	1'-1"	1'-7"	2.75"	6.5"	12	7.4	9.2
	3	N500	16	3'-0"	9"	5"	4"					0	12	
	3	N501	16	3'-10"	10"	9"	4"					0	12	

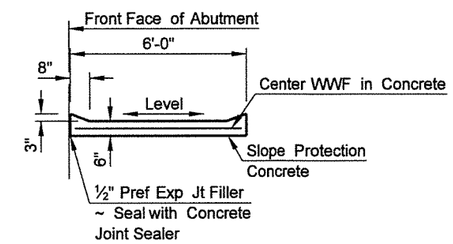
NOTES:

1. Fabrication and tolerances shall be in accordance with the CRSI Manual of Standard Practice.
2. All dimensions are out to out of bars.
3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted.
4. The "f" dimension indicates the inside radius unless otherwise noted.



(TO BE CENTERED BELOW NEOPRENE TROUGH)

ELEVATION

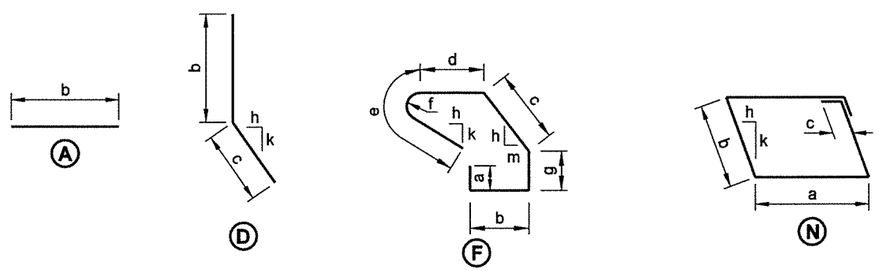


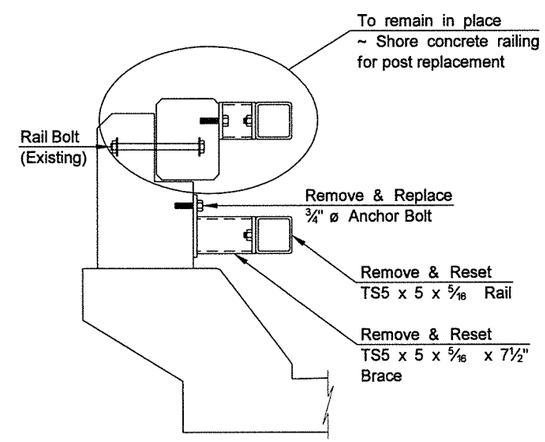
SIDE VIEW

SLOPE PROTECTION DETAILS

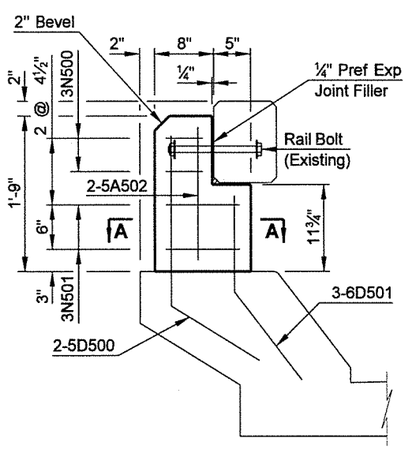
NOTE:

The welded wire fabric (WWF) shall be supplied in sheets. The WWF shall be made continuous with a minimum lap splice of 8". All labor, equipment and materials, including concrete, wire fabric and earth fill required to construct the concrete slope protection shall be included in the bid item "Slope Protection Concrete."

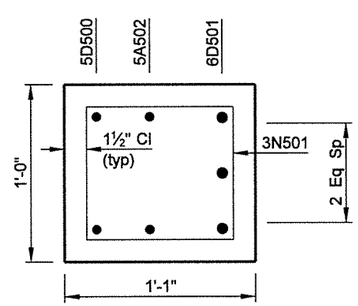




POST & RAILING DETAIL



CONCRETE POST DETAIL



A-A

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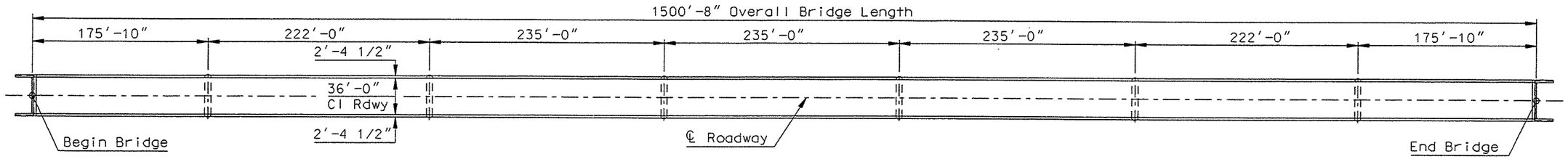
QUANTITIES	
CLASS AAE-3 CONCRETE	15.5 CY
REINFORCING STEEL	1,348 LBS

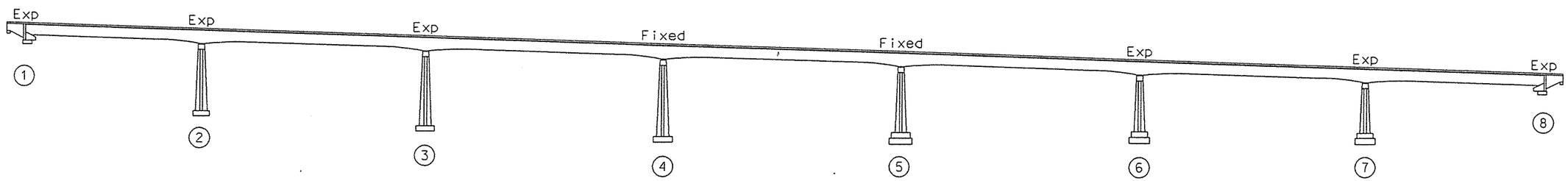
WALTER HJELLE BRIDGE
WASHBURN

REINFORCING BAR LIST & CONCRETE POST & SLOPE PROTECTION DETAILS

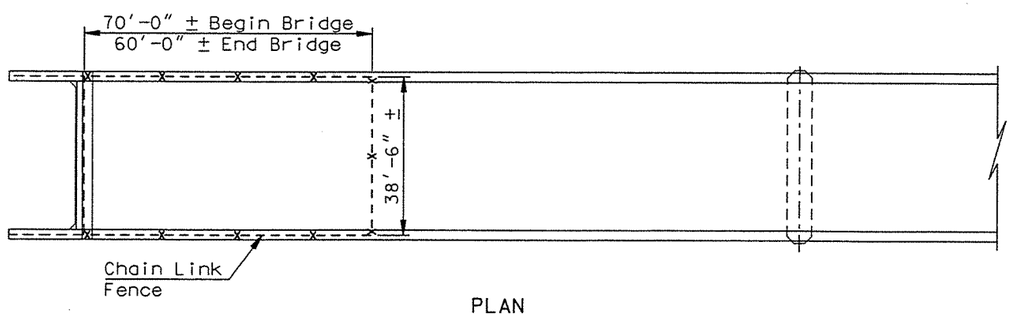
STATE	PROJECT NUMBER	SHEET NO.
ND	NH-1-200(041)924	3



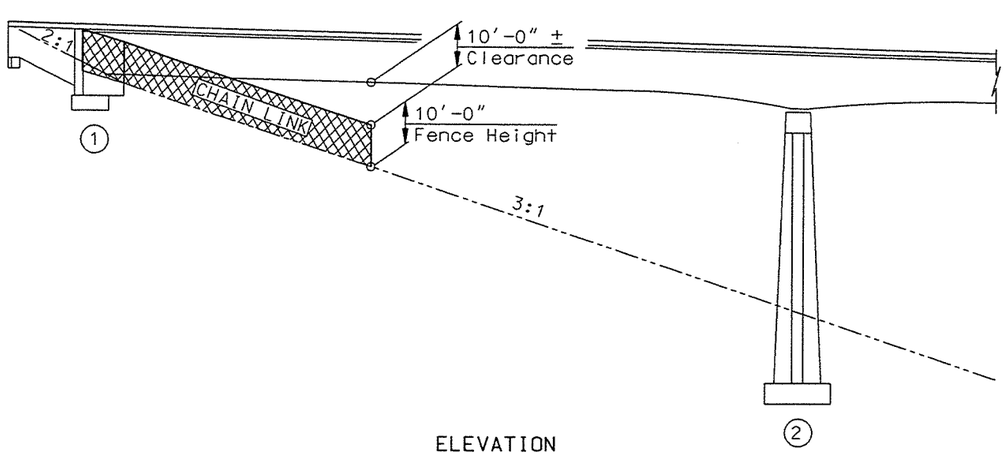
PLAN



ELEVATION



PLAN



ELEVATION

CHAIN LINK FENCE LAYOUT

NOTES:

100 SCOPE OF WORK: This project consists of cleaning and painting bridge structural steel, installing inspection walkway barriers and chain link fences, and installing double box beam rail retrofit and approach guardrail.

704 TRAFFIC CONTROL: The contractor shall submit a traffic control plan and layout to the engineer prior to starting each construction operation.

752 CHAIN LINK FENCE: The chain link fence shall be constructed according to Standard Drawing D-752-2. In addition, the top of the fence shall have a Y-arm with three rows of barbed wire on each side. The Y-arm and wire shall be included in the price bid for "Fence Chain Link With Barbed Wire."

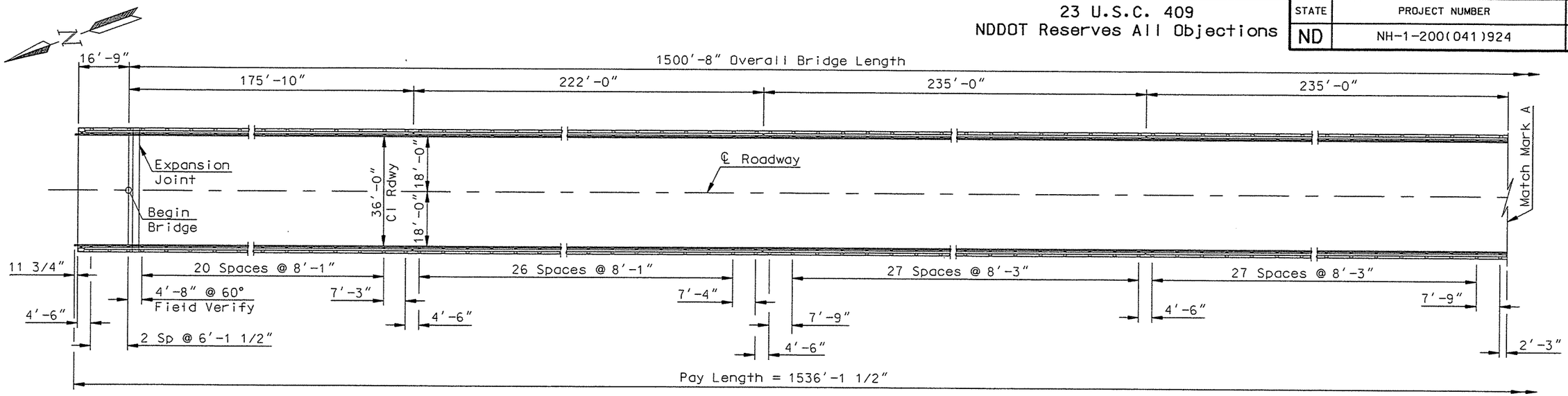
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	3002	DOUBLE BOX BEAM RAIL RETROFIT-ERAIL	LF	3072.3
630	0120	CLEANING & PAINTING	L SUM	1
752	0650	FENCE CHAIN LINK WITH BARBED WIRE	LF	337
930	9678	INSPECTION WALKWAY BARRIER	L SUM	1
930	9931	ANTI-GRAFFITI COATING	L SUM	1

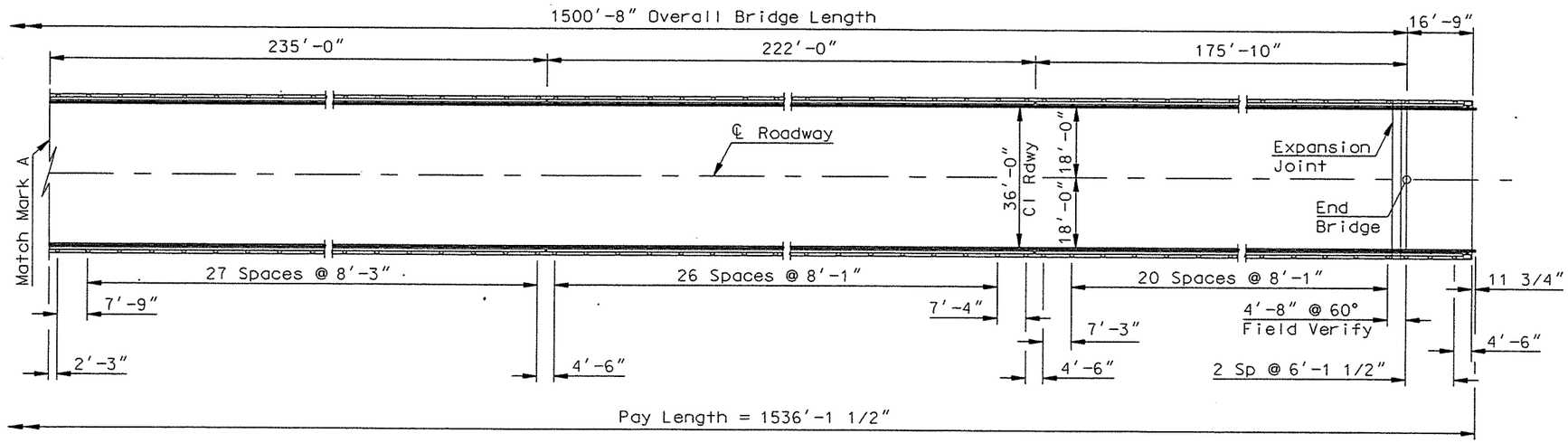
WALTER HJELLE BRIDGE
WASHBURN

BRIDGE LAYOUT &
CHAIN LINK FENCE LAYOUT

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	NH-1-200(041)924	11





PLAN

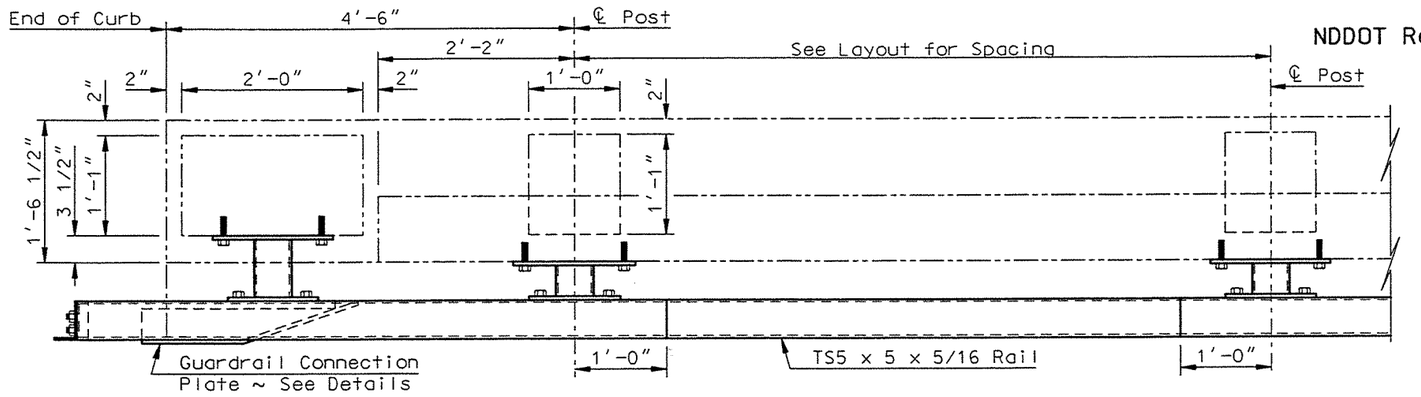
704 TRAFFIC CONTROL: The traffic control shall be according to Standard Drawing D-704-19, Type F for the rail retrofit installation. The traffic control shall be set up only while work is going on at the site during daylight hours. The traffic control shall be removed and normal traffic operations restored at the end of each workday. All traffic control devices, labor and equipment required for traffic control shall not be bid separately but shall be included in the lump sum bid item "Traffic Control."

WALTER HJELLE BRIDGE
WASHBURN

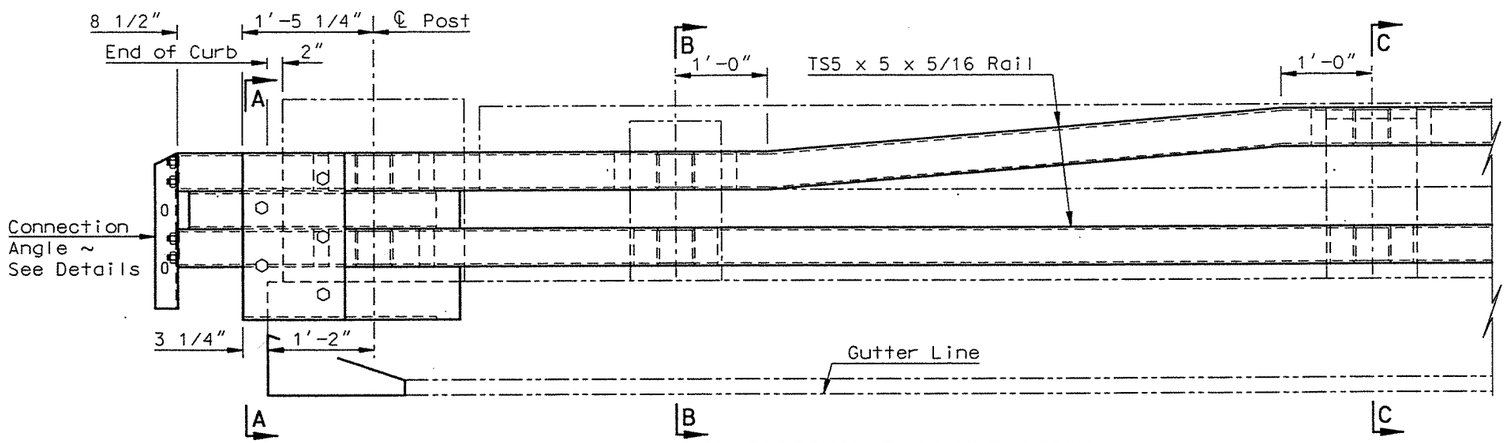
RAIL RETROFIT LAYOUT

23 U.S.C. 409
NDDOT Reserves All Objections

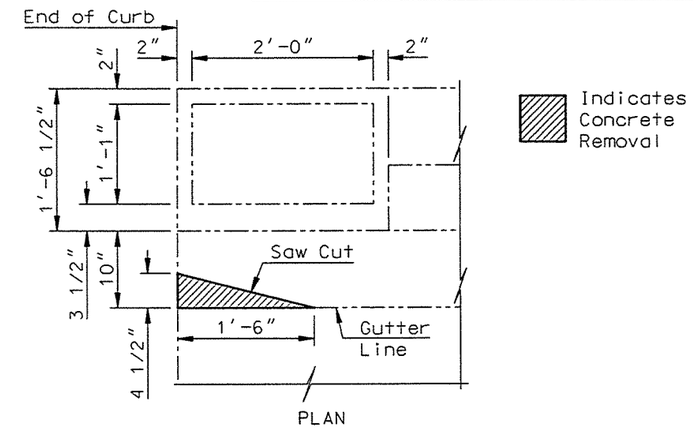
STATE	PROJECT NUMBER	SHEET NO.
ND	NH-1-200(041)924	12



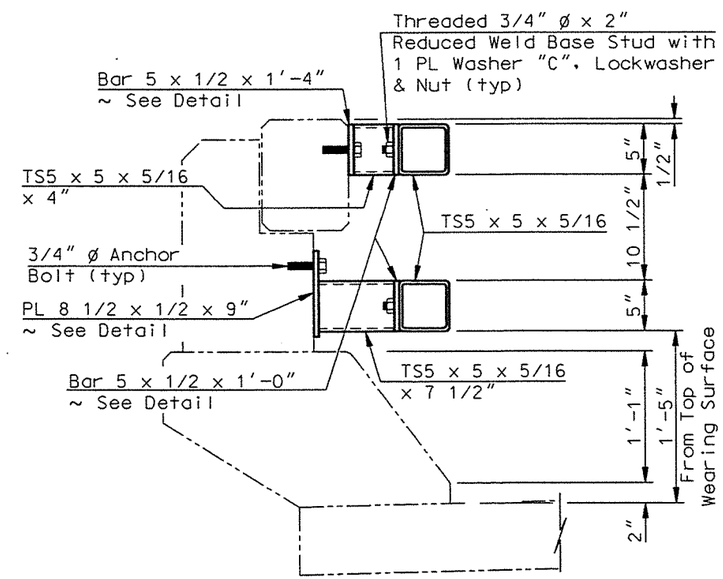
RAIL RETROFIT PART PLAN



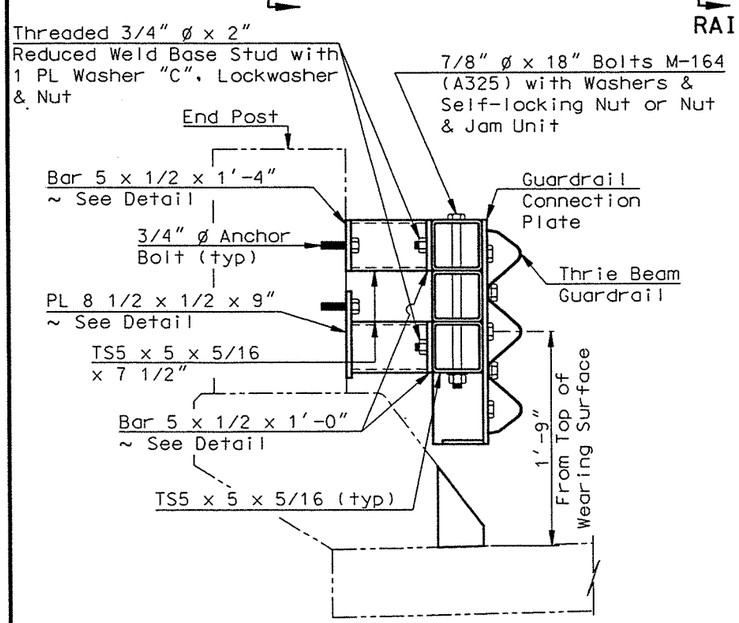
RAIL RETROFIT PART ELEVATION



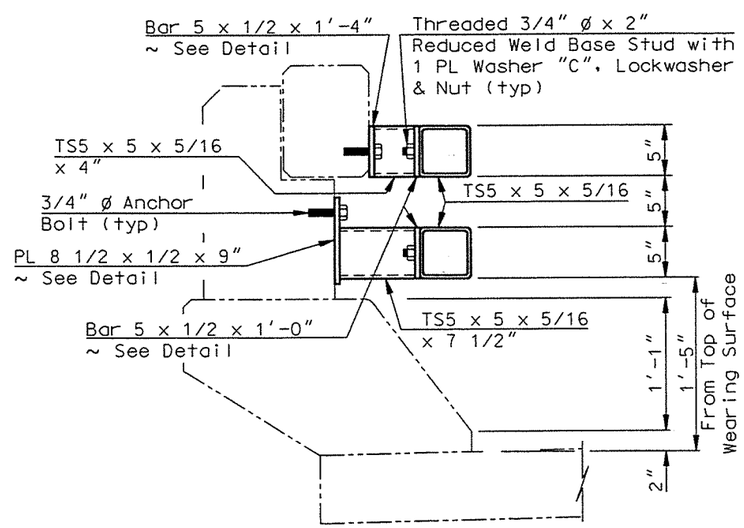
CONCRETE REMOVAL DETAIL



C-C



A-A



B-B

NOTE:

See Dwg 200-924.623-10 for notes and details not shown on this drawing.

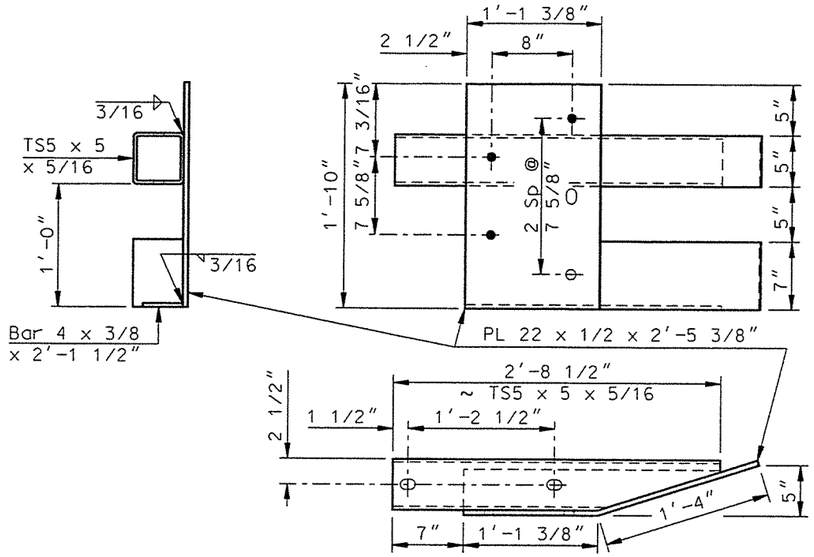
QUANTITIES
SEE DWG 200-924.623-10

WALTER HJELLE BRIDGE
WASHBURN

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

STATE	PROJECT NUMBER	SHEET NO.
ND	NH-1-200(041)924	13

23 U.S.C. 409
NDDOT Reserves All Objections

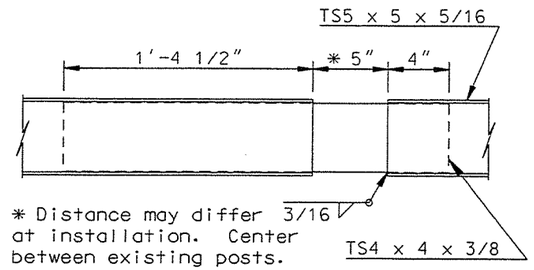


(4 REQUIRED)
GUARDRAIL CONNECTION PLATE DETAILS

The filled circles indicate drilled and tapped holes for 7/8" ø bolts M-164 (A325). See Detail "B."

The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M-164 (A325).

The slotted hole shown shall be 1" x 1 1/2" in the 1/2" plate for a 7/8" ø bolt M-164 (A325).



* Distance may differ at installation. Center between existing posts.

(AT EXPANSION JOINT)
RAIL SPLICE DETAIL

NOTES:

The bid item shall be "Double Box Beam Rail Retrofit-ERail." The pay length shall be end to end and in linear feet.

Rail elements shall be square structural tubing in accordance with ASTM Specification A500 Grade B.

Steel plates and angles shall conform to AASHTO Specification M-183, unless otherwise noted.

Railing shall be fabricated to the horizontal and vertical alignment of the structure.

Payment for the railing shall include compensation for furnishing and installing the guardrail connection plates and for sawing and removing portions of the curb.

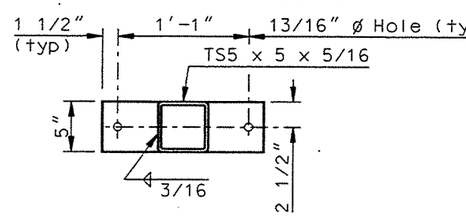
All structural steel including fasteners shall be hot-dip galvanized after fabrication according to AASHTO M111.

Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

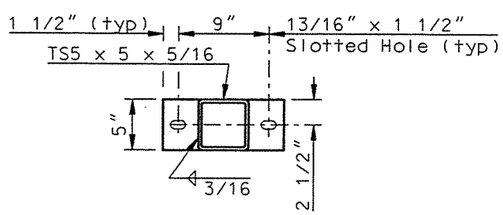
The anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

All anchor and splice bolts shall be galvanized and shall be AASHTO M-164 (A325).

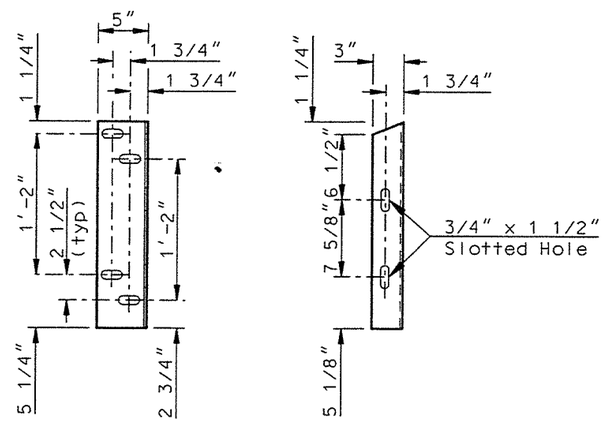
The contractor shall submit the shop drawings for double box beam rail retrofit for approval to the Construction Office before fabrication.



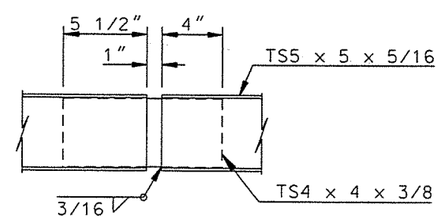
(CONCRETE RAIL CONNECTION)
BAR 5 X 1/2 X 1'-4" DETAIL



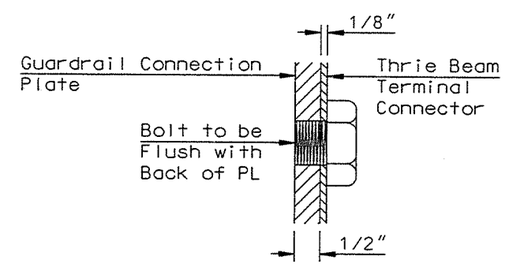
(RAIL CONNECTION)
BAR 5 X 1/2 X 1'-0" DETAIL



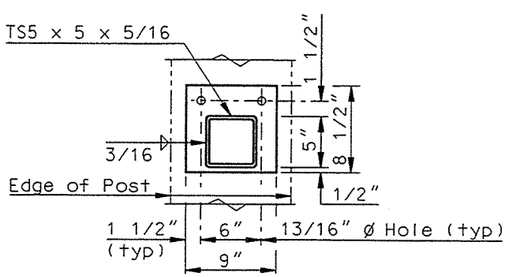
L5 x 3 x 1/4 x 1'-8 1/2"
CONNECTION ANGLE DETAILS



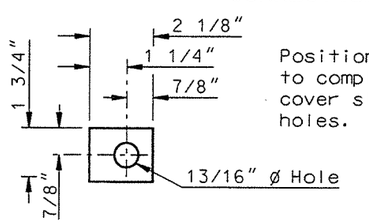
RAIL SPLICE DETAIL



DETAIL "B"

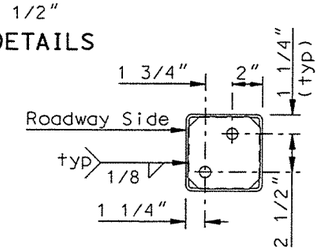


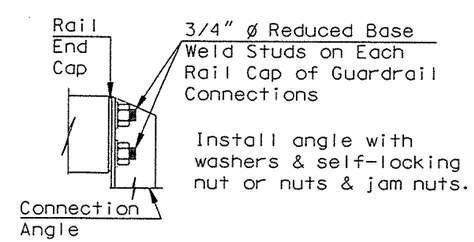
(CONCRETE POST CONNECTION)
PL 8 1/2 X 1/2 X 9" DETAIL



Position washers to completely cover slotted holes.

1/4" PL (AASHTO M-183)
PL WASHER "C"





Rail cap shall be a Bar 4 3/4 x 3/16 x 4 3/4".
Cope corners to 3/4" to provide for zinc drains.

RAIL CAP DETAILS

QUANTITIES	
E-RAIL RETROFIT	3072.3 LF

WALTER HJELLE BRIDGE
WASHBURN

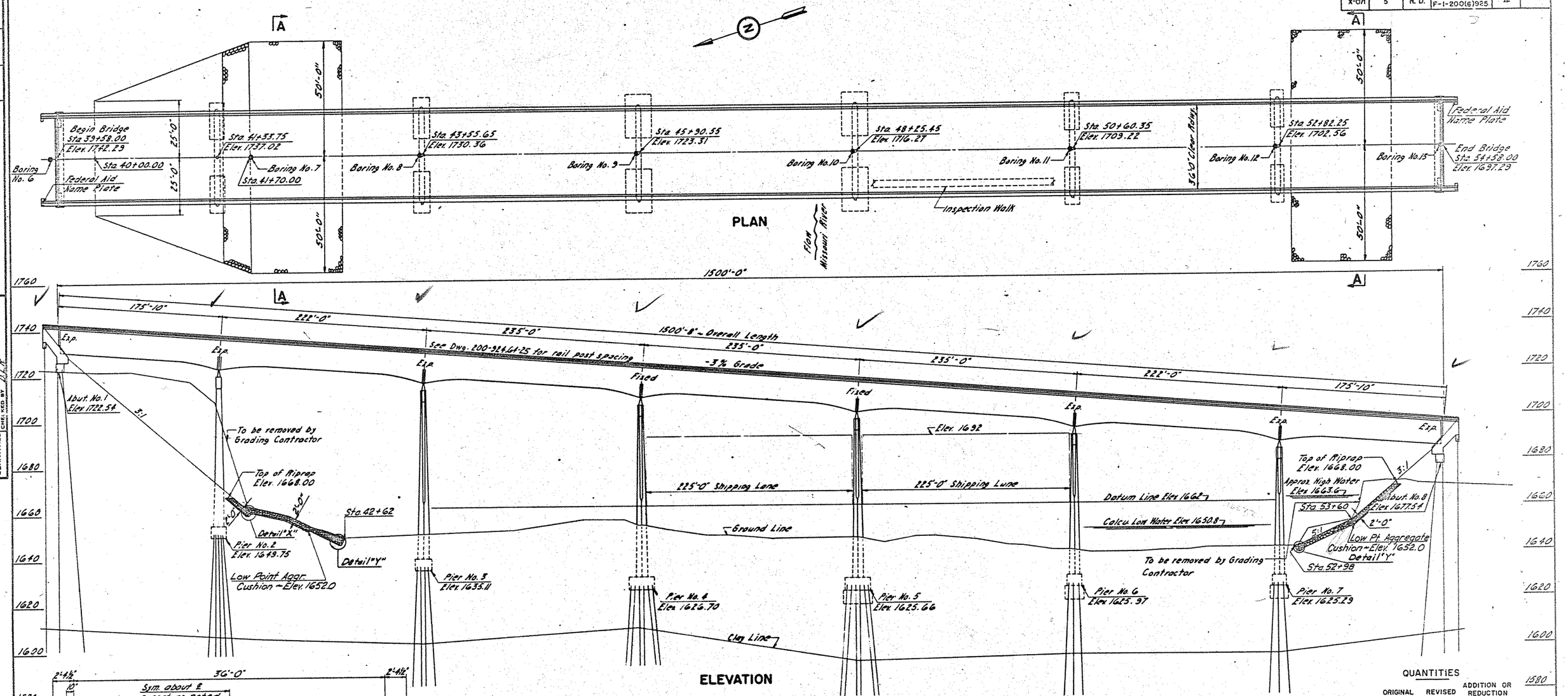
DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

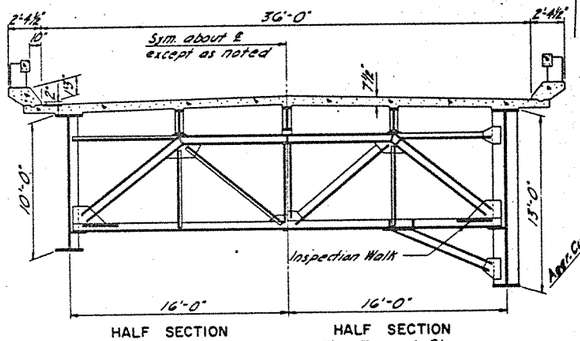
ERETRO1 02DDF003 BWR

200-924.623-10

.../bridge/200-924.623/eretro1.dgn 02/21/2002 01:43:56 PM

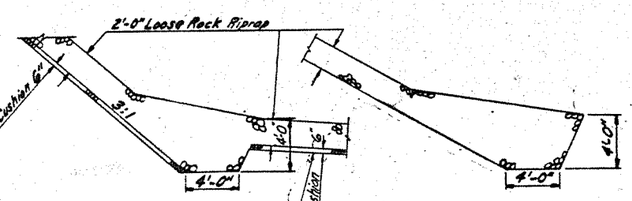
BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
X-071	5	N. D.	F-712(5) 8 F-1-200(6)925	4	



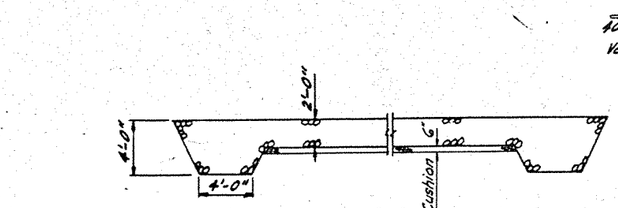


HALF SECTION
Floor Truss between supports

HALF SECTION
Floor Truss at Piers and at abutments



DETAIL "X" Orig. Gr.



DETAIL "Y"

A-A

QUANTITIES

	ORIGINAL	REVISED	ADDITION OR REDUCTION	
LOOSE ROCK RIPRAP	1900	2165	265	C.Y.
AGGREGATE CUSHION	240	220	-20	C.Y.

100 50 20 0
Horiz. Scale = 1" = 50'

40 20 10 0
Vertical Scale = 1" = 20'

CHANGE ORDER DATE: 8/24/70

DESIGN LOADING
HS20 (1944)

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

MISSOURI RIVER
BRIDGE LAYOUT

PROJECT F-712(5) 8 STA. 45+90.55
F-1-200(6)925
OLIVER AND McLEAN COUNTIES

APPROVED
7/27/70
DATE

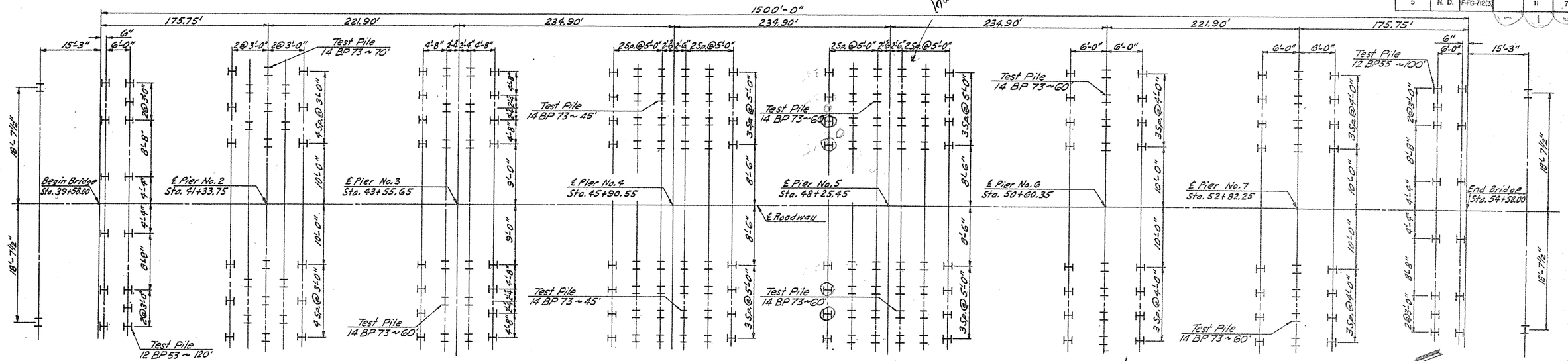
Allen J. Anderson
BRIDGE ENGINEER

ALLEN J. ANDERSON REGISTERED PROFESSIONAL ENGINEER

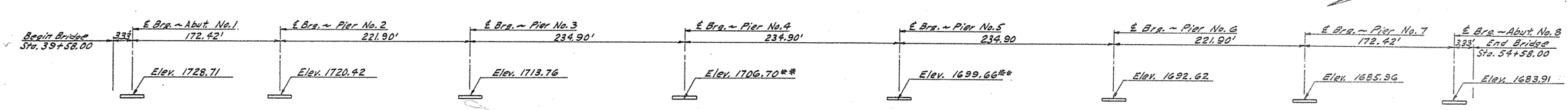
C.O.-200-924.64

DETAILS	MADE BY	L.E.B.
	CHECKED BY	D.L.R.
TRACING	MADE BY	L.E.B.
	CHECKED BY	D.L.R.
QUANTITIES	MADE BY	L.E.B.
	CHECKED BY	D.L.R.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	F-FG-7(2)3		11	70



PILING LAYOUT
(Not to Scale)



BEARING PLATE LAYOUT
Elevations are to top of Masonry Plates except Piers 4 and 5
*(Not to Scale) ** Top of finished concrete*

HYDRAULIC DESIGN DATA

DRAINAGE AREA	184,500 SQ. MI.
DESIGN FREQUENCY	50-YEAR
DESIGN DISCHARGE	90,000 C.F.S.
DESIGN STREAM VELOCITY	5.7 F.P.S.
WATERWAY PROVIDED BELOW DESIGN STAGE	15,800 SQ.FT. APPROX.
DEPTH OF FLOW	23.3 FT. MAX.
STREAM GRADIENT	0.000163 FT./FT.
FREEBOARD PROVIDED	24.5 FT. APPROX.

DESIGN STRESSES:

CONCRETE: fc = 1200 PSI - CLASS AE-1
fc = 1200 PSI - CLASS AE-3
fc = 1700 PSI - CLASS AAE-3
REINFORCING STEEL: fs = 20,000 PSI
STRUCTURAL STEEL: fs = 20,000 PSI - A36
fs = 23,000 PSI - A441 (OVER 1½" TO 4")
fs = 25,000 PSI - A441 (OVER ¾" TO 1½")
fs = 27,000 PSI - A441 (¾" AND UNDER)

BENCH MARKS

NO.	DESCRITION	LOCATION	ELEV.
105	IRON PIN	1114 + 28 - 153' LT.	1663.22
106	" "	1130 + 70 - 62' LT.	1666.68
B	" " BY T. POLE	38 + 28 - 46' RT.	1727.13
C	" " BY FN. POST	41 + 70.3 - ℄	1661.53
D	" " " " "	57 + 86.4 - ℄	1665.37

*Below bottom of footing

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	WIND		TEMP.	STREAM FLOW	ICE	DESIGN LOAD	MAXIMUM REQUIRED LOAD	MINIMUM PENETRATION REQUIRED*
ABUT. #1	27.1 T.	15.9 T.	17.6 T.						60.6 T.	70.0 T.	60'
PIER #2	72.0 T.	10.1 T.	13.1 T.						95.2 T.	97.0 T.	40'
PIER #3	72.4 T.	10.2 T.	13.1 T.						95.7 T.	97.0 T.	35'
PIER #4	34.7 T.		17.4 T.		25.9 T.	16.6 T.			94.6 T.	97.0 T.	25'
PIER #5	29.5 T.		11.9 T.		23.6 T.			23.1 T.	88.1 T.	97.0 T.	35'
PIER #6	73.0 T.	11.9 T.	9.3 T.				1.0 T.		95.1 T.	97.0 T.	35'
PIER #7	65.9 T.	11.0 T.	11.4 T.				0.1 T.		88.4 T.	97.0 T.	35'
ABUT. #8	27.1 T.	15.9 T.	17.6 T.						60.6 T.	70.0 T.	60'
ABUT. WINGS									40.0 T.	70.0 T.	

ESTIMATE OF QUANTITIES

SPEC. NO.	CODE NO.	BID ITEM (SUPERSTRUCTURE CONTRACT)		
704	0100	CONCRETE SLOPE PROTECTION	195	SQ.YD.
610	1134	CLASS AE-3 CONCRETE (CURBS & SLAB)	1609.4	C.Y.
610	0138	CLASS AAE-3 CONCRETE (RAILING, POSTS AND END POSTS)	96.76	C.Y.
612	0110	REINFORCING STEEL (GRADE 40)	563,102	LBS.
616	4412	STRUCTURAL STEEL (A-441) WELDED BEAM	938,286	LBS.
616	0362	STRUCTURAL STEEL (A-36) WELDED BEAM	1,142,833	LBS.
	8220	NON SHRINK GROUT	1.4	C.Y.
750	0100	LINSEED OIL TREATMENT	281	GAL.
	8218	FLOOR GRID	3578	SQ.FT.
	3000	BRIDGE BENCH MARKS	1	SET
208	0100	CLASS 1 EXCAVATION	95	C.Y.
610	1112	CLASS AE-1 CONCRETE (SUBSTRUCTURE)	135.4	C.Y.
228	0100	SELECT BACKFILL	280	C.Y.

SPEC. NO.	CODE NO.	BID ITEM (SUBSTRUCTURE CONTRACT)		
208	0100	CLASS 1 EXCAVATION	909	C.Y.
208	0110	CLASS 2 EXCAVATION	6580	C.Y.
610	1112	CLASS AE-1 CONCRETE (SUBSTRUCTURE)	3470.2	C.Y.
610	1039	CLASS AE-3 CONCRETE (FOUNDATION SEAL)	865.5	C.Y.
612	0110	REINFORCING STEEL (GRADE 40)	496,833	LBS.
616	0362	STRUCTURAL STEEL (A-36) WELDED BEAM	575	LBS.
616	5880	STRUCTURAL STEEL (A-588) MISCELLANEOUS	3275	LBS.
622	0040	STEEL PILING (12 BP 53)	2800	LIN. FT.
622	0060	STEEL PILING (14 BP 73)	9060	LIN. FT.
622	1430	STEEL TEST PILES (12 BP 53) @ 120'	1	EACH
622	1390	STEEL TEST PILES (12 BP 53) @ 100'	1	EACH
622	2050	STEEL TEST PILES (14 BP 73) @ 70'	1	EACH
622	2030	STEEL TEST PILES (14 BP 73) @ 60'	5	EACH
622	1970	STEEL TEST PILES (14 BP 73) @ 45'	2	EACH
	8203	COFFERDAM PIER NO. 3	1	EACH
	8204	COFFERDAM PIER NO. 4	1	EACH
	8205	COFFERDAM PIER NO. 5	1	EACH
	8206	COFFERDAM PIER NO. 6	1	EACH
	8207	COFFERDAM PIER NO. 7	1	EACH
	2094	GUARD RAIL	556	LIN. FT.
	8219	PIER MARKERS	10	EACH
	1040	AGGREGATE CUSHION	240	C.Y.
	3006	CLEARANCE GUAGES	LUMP SUM	
702	0130	LOOSE ROCK RIPRAP	1900	C.Y.

INDEX OF DRAWINGS

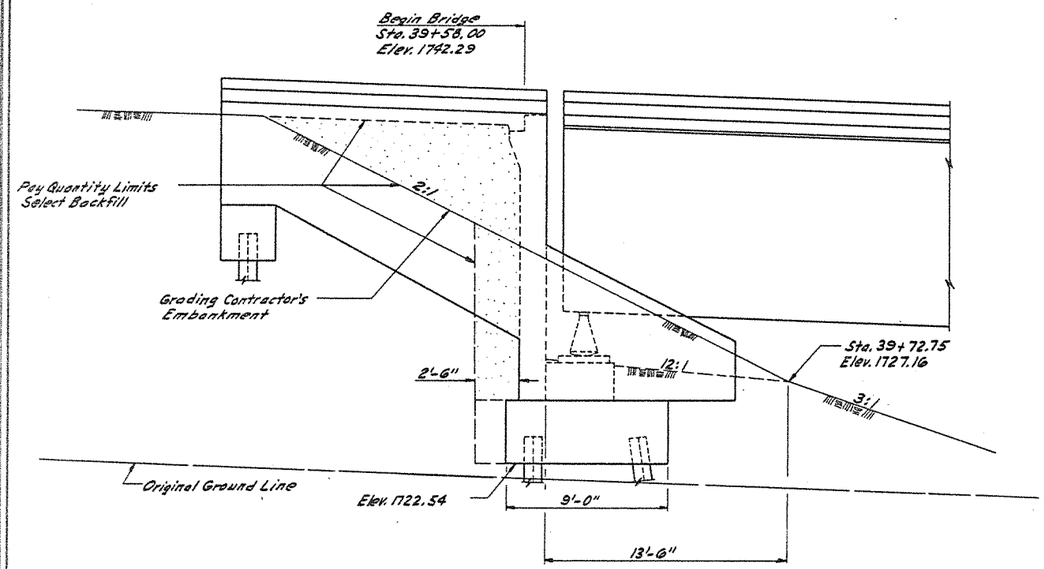
DESCRIPTION	DWG. NO.	DESCRIPTION	DWG. NO.
BRIDGE LAYOUT	200A-18.5	STANDARD RAILING DETAIL	H-0155
PILING & BRG. PLATE LAYOUT, DESIGN DATA	200A-18.5-1	PILING SPLICE DETAILS	H-0401
NOTES	200A-18.5-2	BRIDGE BENCH MARKS	7.6
EMBANKMENT DETAILS	200A-18.5-3	FEDERAL AID NAME PLATE	14.98
BORING LOGS	200A-18.5-4	SCREED CHAIRS	H-0501
BORING LOGS	200A-18.5-5	SLOPE PROTECTION	7.5A
ABUTMENT 1 & 8	200A-18.5-6	PRECAST CONCRETE DITCH LINER	4.27
ABUTMENT 1 & 8	200A-18.5-7		
PIER NO. 2	200A-18.5-8		
PIER NO. 3	200A-18.5-9		
PIER NO. 4	200A-18.5-10	SEE SS-21 PILING	
PIER NO. 5	200A-18.5-11	SP-35A FOR STRUCTURAL STEEL	
PIER NO. 6	200A-18.5-12	SP-27 FOR SELECT BACKFILL	
PIER NO. 7	200A-18.5-13	SP FOR GIRDER ERECTION	
PIER CAP DETAIL, RAILING & MARKERS	200A-18.5-14	SP-32 FOR REINFORCEMENT	
PIER BAR LISTS & BENT BAR DETAILS	200A-18.5-15	SP-34 FOR QUICK SETTING ANCHOR GROUT	
BEARINGS	200A-18.5-16	SP FOR COFFERDAMS	
FLOOR TRUSS DIAPHRAGM	200A-18.5-17	SP-29 FOR OPTIONAL CONCRETE SURFACE FINISH -	
GIRDER SPANS 1 & 7	200A-18.5-18	SP-33 FOR PAINTING	
GIRDER SPANS 2 & 6	200A-18.5-19		
GIRDER SPANS 3 & 5	200A-18.5-20		
GIRDER SPAN 4	200A-18.5-21		
MISC. STEEL DETAILS	200A-18.5-22		
SCREED ELEVATIONS & INSPECTION WALK	200A-18.5-23		
SLAB & RAILING	200A-18.5-24		
SLAB DETAILS	200A-18.5-25		

MISSOURI RIVER BRIDGE
PILING & BRG. PLATE LAYOUT
DESIGN DATA

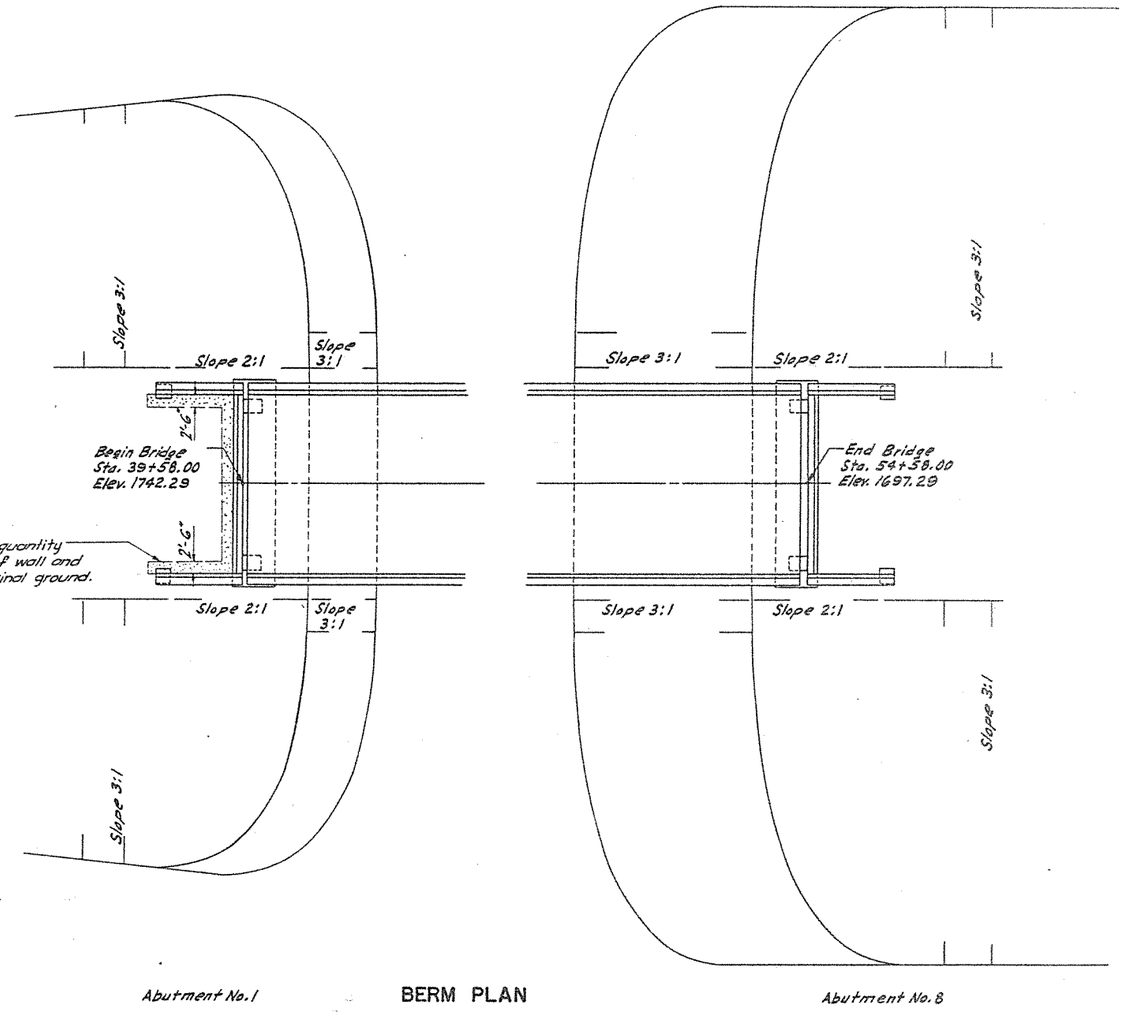
DETAILS	MADE BY	C.H.W. & W.D.A.
	CHECKED BY	O.L.R.
TRACING	MADE BY	E.D.H.
	CHECKED BY	O.L.R.
QUANTITIES	MADE BY	
	CHECKED BY	

200A-18.5-1

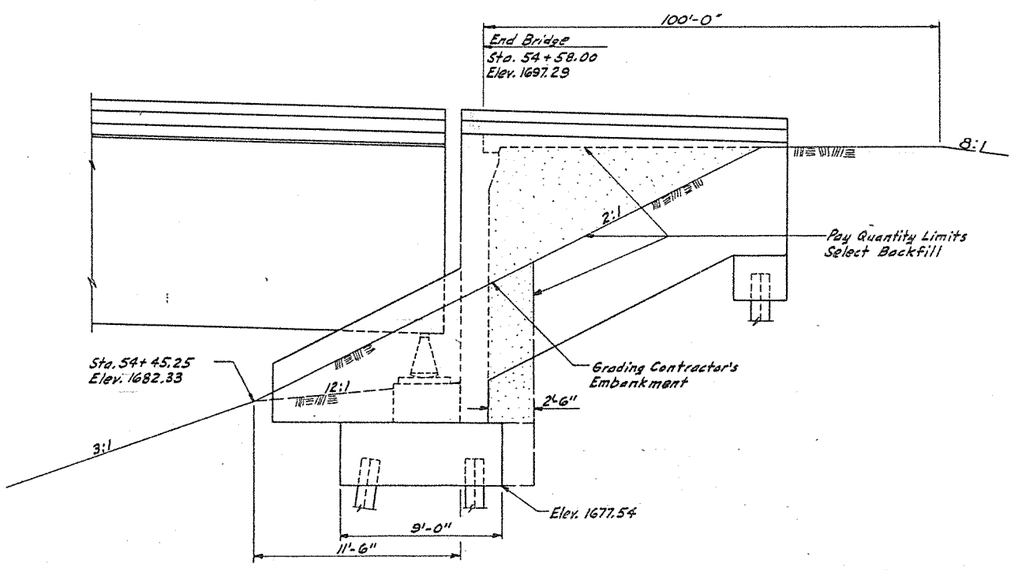
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	F-FG-7121(3)		13	70



BERM ELEVATION
Abutment No. 1



Abutment No. 1 — **BERM PLAN** — Abutment No. 8



BERM ELEVATION
Abutment No. 8

QUANTITIES

MISSOURI RIVER BRIDGE

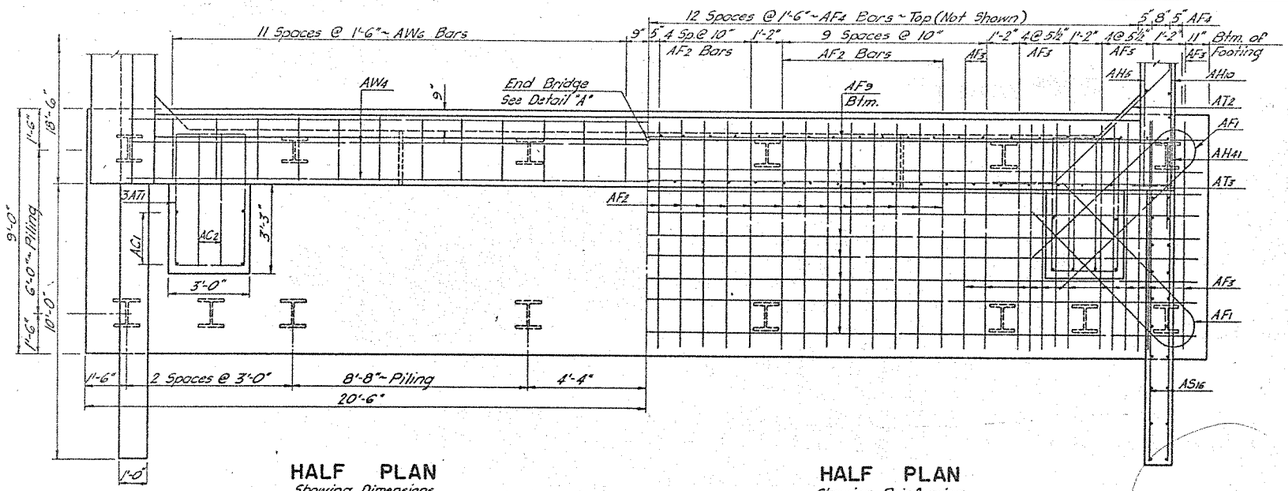
EMBANKMENT DETAILS

QUANTITIES MADE BY L.E.G. CHECKED BY D.L.B.

200A-18.5-3

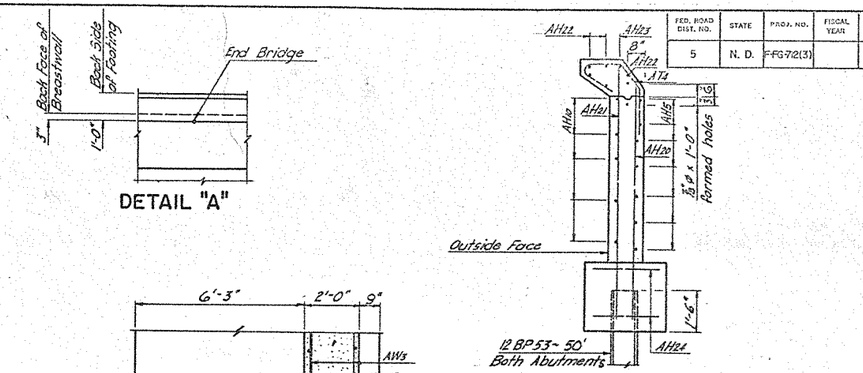
200A-18.5-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	F-FG-912(3)		16	70

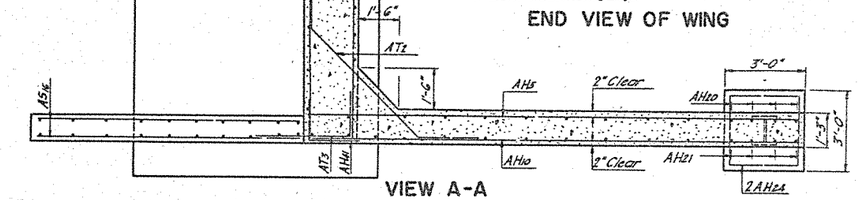


HALF PLAN
Showing Dimensions
Showing Details & Reinforcing at Top of wall

HALF PLAN
Showing Reinforcing
(Curb on wing not included)

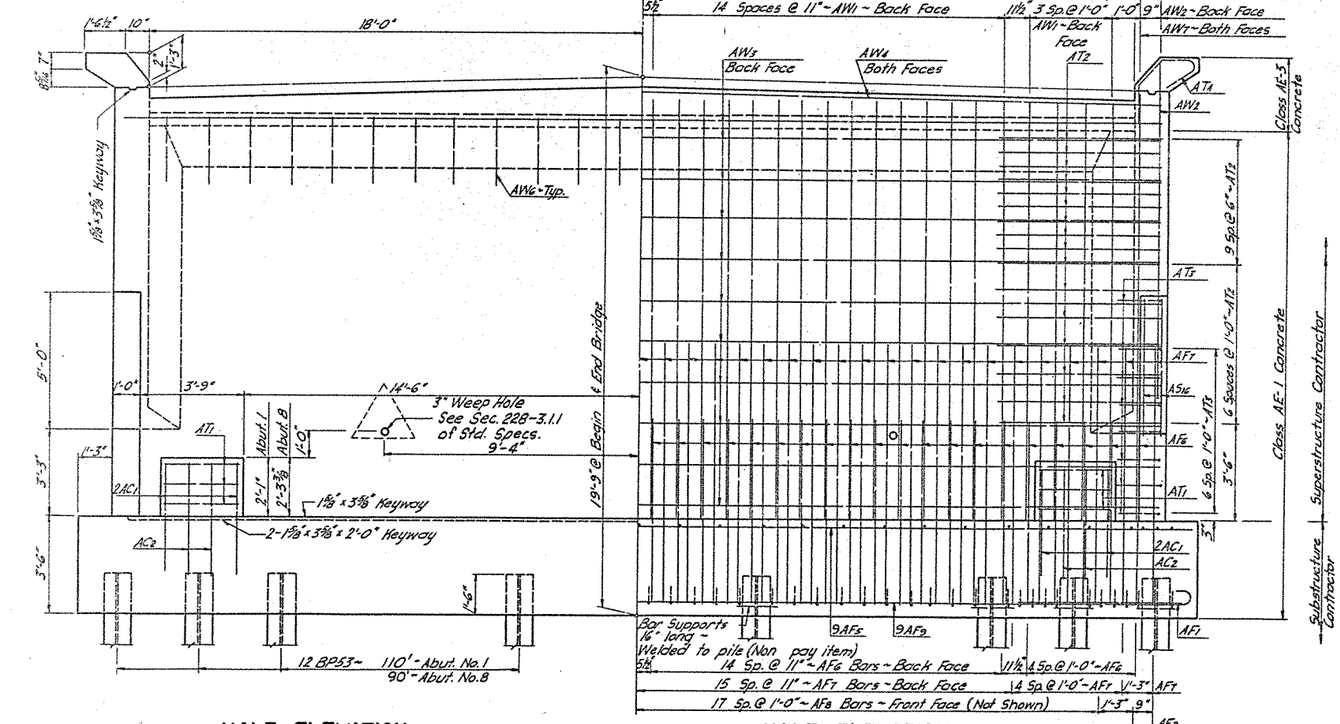


DETAIL "A"



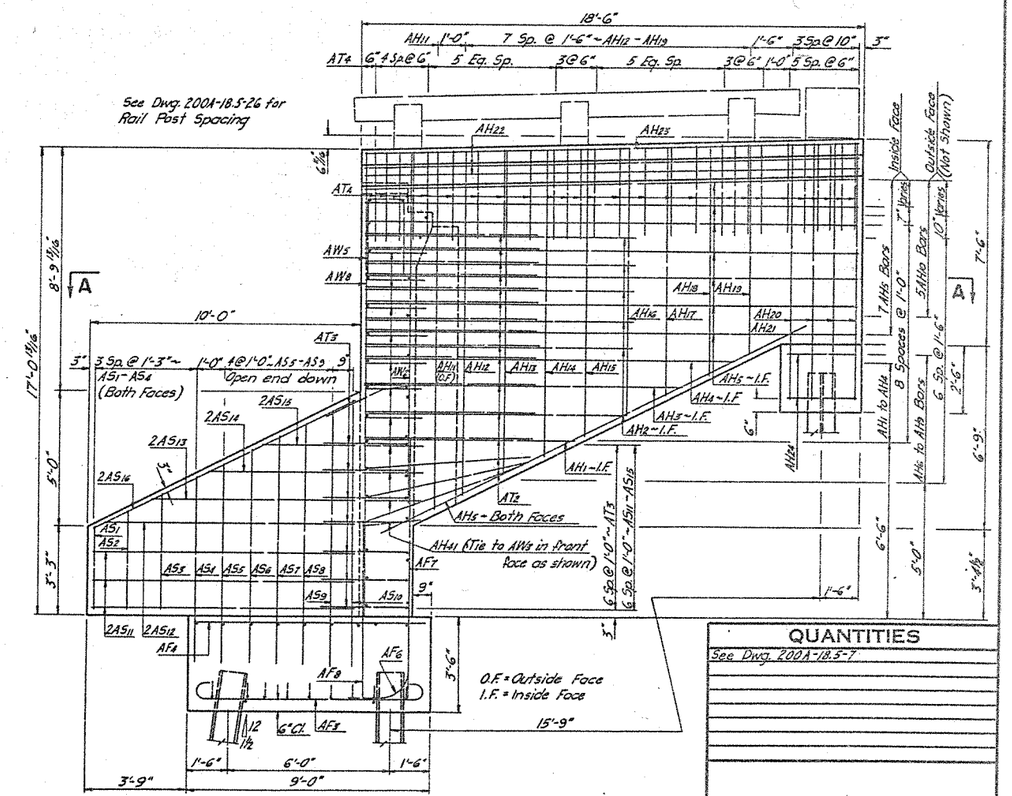
VIEW A-A
Wing & Support Wall Showing Reinforcing

END VIEW OF WING



HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing



WING ELEVATION
Abutment No. 1 Shown

QUANTITIES

See Dwg. 200A-18.5-7

MISSOURI RIVER BRIDGE

19'-9" ABUTMENT

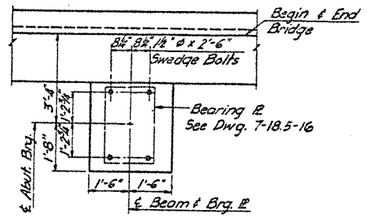
CHECKED BY E.D.H. MADE BY E.D.H. CHECKED BY L.E.G.

QUANTITIES

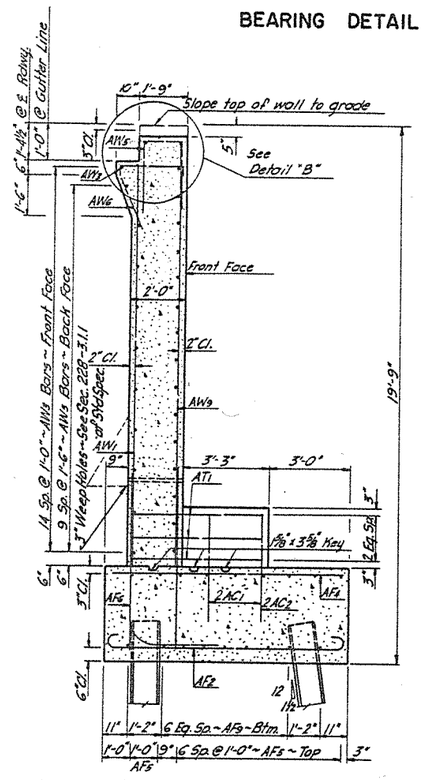
200A-18.5-6

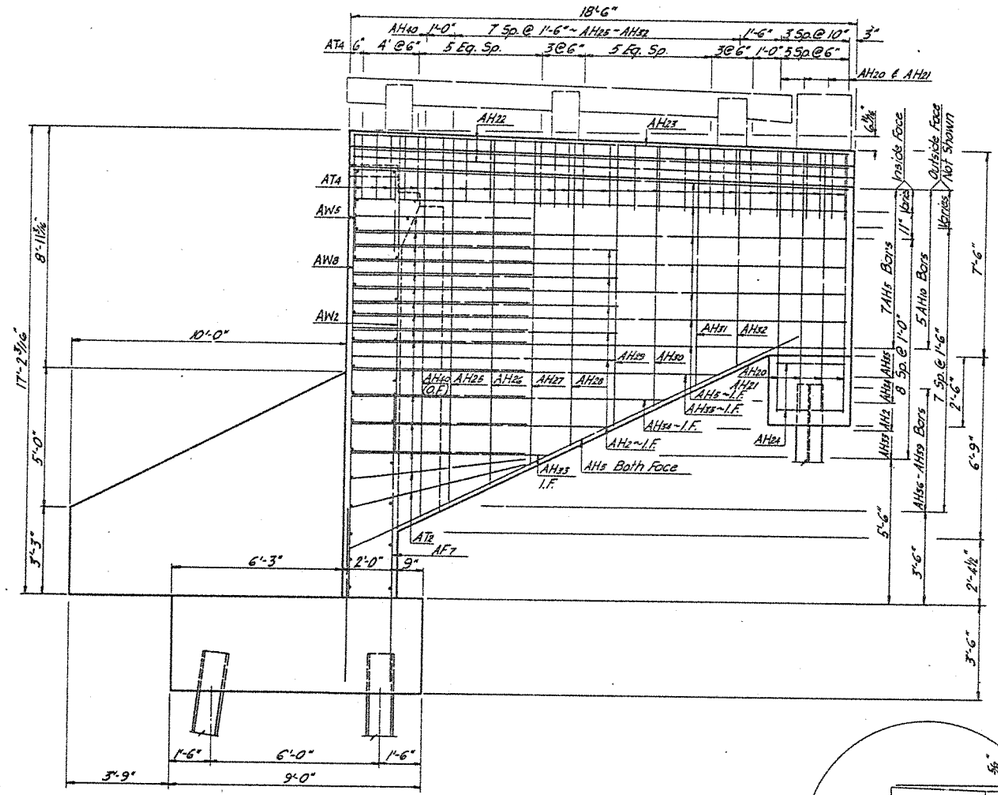
200A-18.5-6

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	F-FG-7(23)		17	70



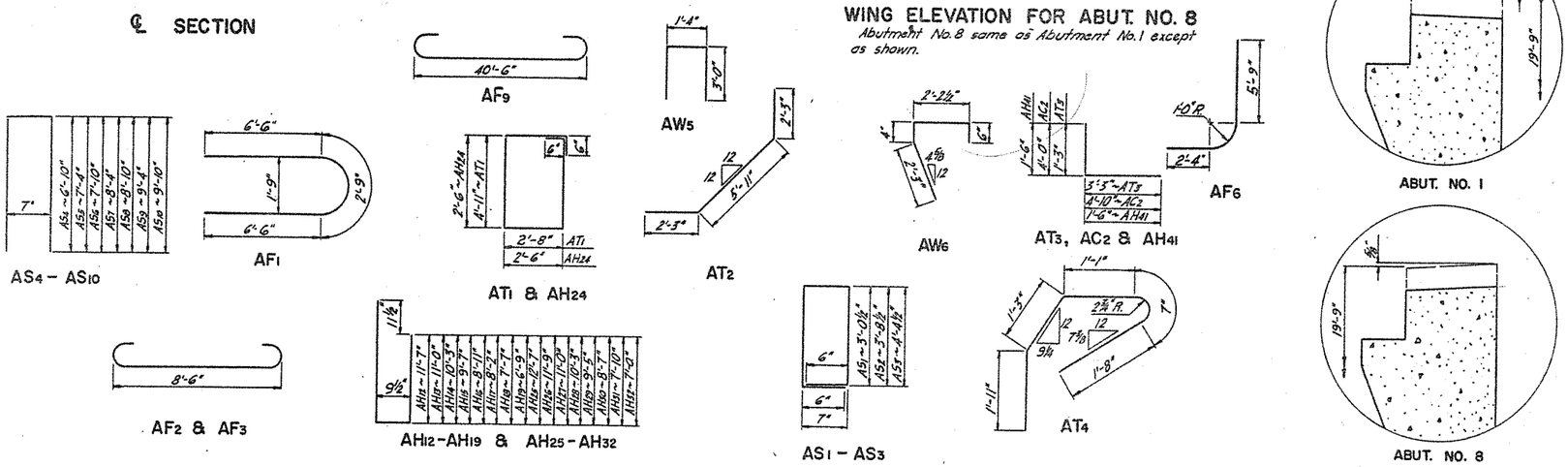
BEARING DETAIL





WING ELEVATION FOR ABUT. NO. 8

Abutment No. 8 same as Abutment No. 1 except as shown.



BENT BAR DETAILS

BAR LIST (TWO ABUTMENTS)

MARK	NUMBER ABUT. NO. 1	NUMBER ABUT. NO. 8		SIZE	LENGTH	SHAPE	UNIT WT.
AF2	39	39		8	6'-4"	Str.	16.91
AF3	9	9		10	42'-2"	Bent	181.45
AC1	8	8		5	4'-0"	Str.	4.17
AC2	4	4		5	8'-9"	Bent	9.13
AS1	2	2		4	7'-3"	Bent	4.84
AS2	2	2		4	8'-7"	"	5.73
AS3	2	2		4	9'-11"	"	6.62
AS4	2	2		4	14'-0"	"	9.35
AS5	2	2		4	15'-0"	"	10.01
AS6	2	2		4	16'-0"	"	10.68
AS7	2	2		4	17'-0"	"	11.35
AS8	2	2		4	18'-0"	"	12.02
AS9	2	2		4	19'-0"	"	12.68
AS10	2	2		4	20'-0"	"	13.35
AS11	12	12		4	9'-8"	Str.	6.45
AS12	4	4		4	9'-4"	"	6.23
AS13	4	4		4	7'-6"	"	5.01
AS14	4	4		4	5'-4"	"	3.56
AS15	4	4		4	3'-5"	"	2.28
AS16	4	4		6	10'-6"	"	15.77
SP1*			1	4	3'-8"	Str.	
SP5*			1	5	4'-0"	"	
SP6*			1	6	4'-6"	"	
SP7*			1	7	5'-0"	"	

Substructure Contract

Substructure Contract

MARK	NUMBER ABUT. NO. 1	NUMBER ABUT. NO. 8		SIZE	LENGTH	SHAPE	UNIT WT.
AW1	39	39		9	14'-9"	Str.	50.15
AW2	2	2		8	13'-0"	"	34.71
AW3	26	26		5	39'-0"	"	39.64
AW4	2	2		6	38'-0"	"	57.08
AW5	35	35		4	7'-3"	Bent	4.84
AW6	24	24		5	5'-0"	"	5.22
AW7	4	4		8	15'-9"	Str.	41.84
AW8	2	2		8	16'-10"	"	44.95
AW9	35	35		8	15'-4"	"	40.95
AT1	6	6		5	15'-6"	Bent	16.17
AT2	32	32		7	10'-3"	"	21.30
AT3	16	16		4	4'-6"	"	3.00
AT4	54	54		5	6'-6"	"	6.78
AH1	2			7	8'-0"	Str.	16.36
AH2	12	12		7	9'-9"	"	19.93
AH3	2			7	12'-0"	"	24.53
AH4	2			7	14'-0"	"	28.62
AH5	18	18		7	18'-2"	"	37.14
AH6	2			5	5'-0"	"	5.22
AH7	2			5	8'-0"	"	8.34
AH8	2			5	11'-0"	"	11.47
AH9	2			5	14'-0"	"	14.60
AH10	10	10		5	18'-2"	"	18.95
AH11	2			5	13'-1"	"	13.65
AH12	2			5	24'-8"	Bent	25.75
AH13	2			5	23'-6"	"	24.51
AH14	2			5	22'-0"	"	22.95
AH15	2			5	20'-8"	"	21.56
AH16	2			5	19'-4"	"	20.17
AH17	2			5	17'-10"	"	18.60
AH18	2			5	16'-8"	"	17.39
AH19	2			5	15'-0"	"	15.65
AH20	8	8		6	8'-5"	Str.	12.64
AH21	8	8		6	9'-4"	"	14.02
AH22	10	10		5	18'-2"	"	18.95
AH23	2	2		6	18'-2"	"	27.29
AH24	4	4		6	10'-3"	Bent	15.40
AH25		2		5	26'-8"	"	27.82
AH26		2		5	25'-0"	"	26.08
AH27		2		5	23'-3"	"	24.51
AH28		2		5	22'-0"	"	22.95
AH29		2		5	20'-4"	"	21.27
AH30		2		5	18'-8"	"	19.47
AH31		2		5	17'-2"	"	17.91
AH32		2		5	15'-6"	"	16.17
AH33		2		7	7'-8"	Str.	15.67
AH34		2		7	11'-8"	"	23.85
AH35		2		7	13'-8"	"	27.94
AH36		2		5	3'-8"	"	3.83
AH37		2		5	6'-8"	"	6.95
AH38		2		5	9'-8"	"	10.08
AH39		2		5	12'-8"	"	13.21
AH40		2		5	14'-1"	"	14.69
AH41	22	22		4	2'-11"	Bent	1.95
AF1	4	4		8	15'-9"	Bent	42.06
AF2	26	26		9	9'-10"	"	33.43
AF3	26	26		8	10'-2"	"	27.15
AF4	31	31		5	8'-6"	Str.	8.87
AF5	9	9		8	40'-0"	"	106.81
AF6	40	40		9	9'-8"	Bent	32.87
AF7	41	41		9	9'-6"	Str.	32.30

Substructure Contract

* Sample replacement bar to be spliced to bar from which 2'-0" sample has been cut. Furnish only one set for the entire bridge. This is not a pay item and shall be included in the unit price bid for reinforcing steel.

Railing and end posts included on drawing 200A-18.5-25

QUANTITIES (SUBSTRUCTURE CONTRACT)		
Abutment No. 1		
Class AE-1 Concrete	47.8	C.Y.
Reinforcing Steel	8139	Lb.
Abutment No. 8		
Class AE-1 Concrete	47.8	C.Y.
Reinforcing Steel	8139	Lb.

QUANTITIES (SUPERSTRUCTURE CONTRACT)		
Abutment No. 1		
Class AE-1 Concrete	67.2	C.Y.
Reinforcing Steel	8779	Lb.
Class AE-3 Concrete	3.0	C.Y.
Abutment No. 8		
Class AE-1 Concrete	68.2	C.Y.
Reinforcing Steel	8785	Lb.
Class AE-3 Concrete	3.0	C.Y.

MISSOURI RIVER BRIDGE

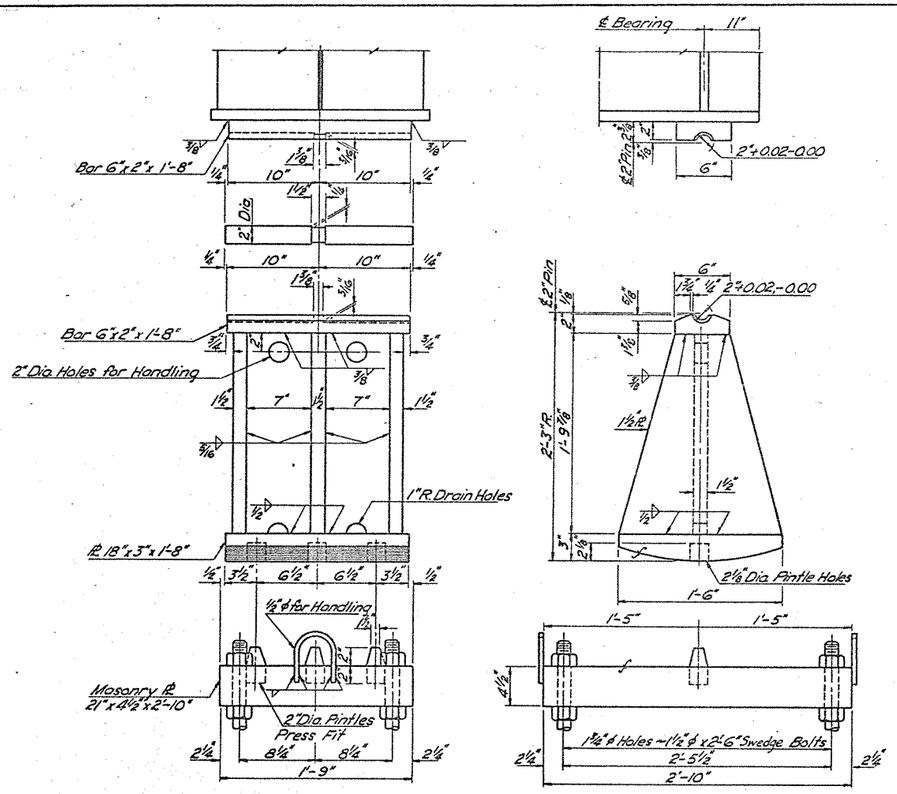
19'-9" ABUTMENT

QUANTITIES MADE BY F.D.H. CHECKED BY K.E.C.

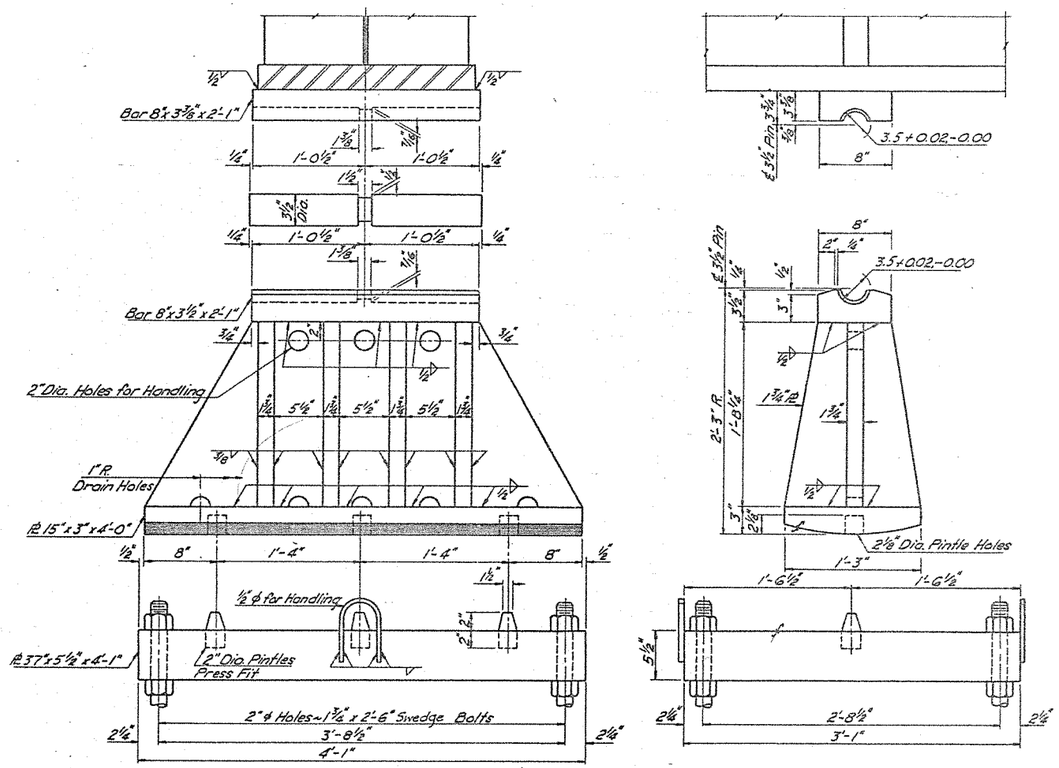
200A-18.5-7

200A-18.5-7

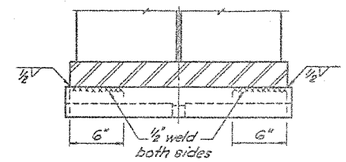
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	F-FG-712(3)		26	70



EXPANSION BEARING AT ABUTMENTS 1 & 8



EXPANSION BEARING AT PIERS 2 & 7



BOLSTER TO FLANGE WELD

At Piers 4 & 5

MATERIALS:

All material to be A36 steel. At the option of the fabricator, steel castings, ASTM A27 Grade 70-36 may be furnished for the rockers and pedestals.

Bearings 2, 3, 6 & 7 may be cast the same providing the larger dimensions of each are used.

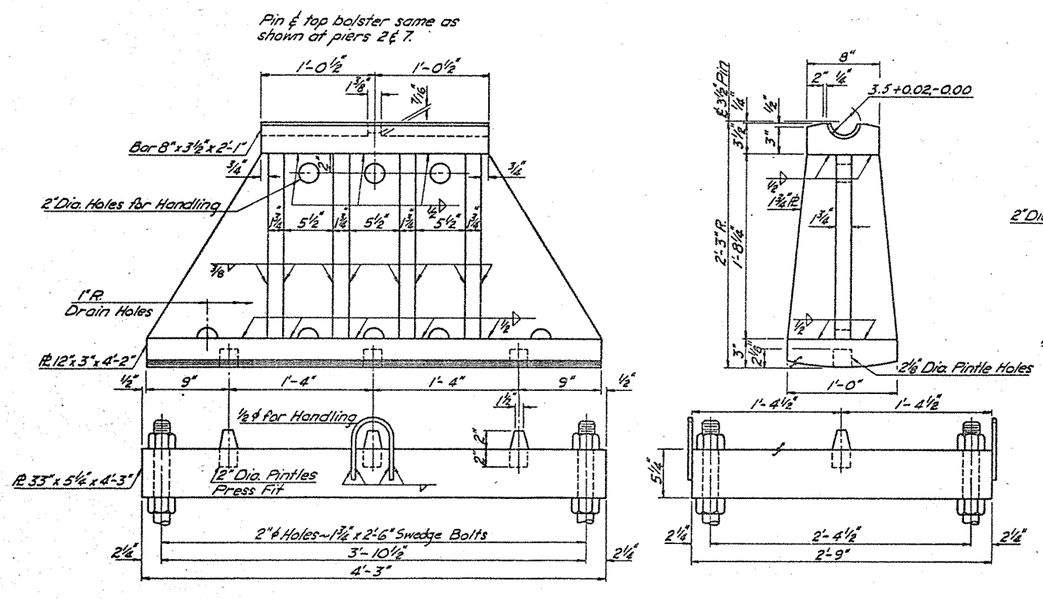
In either case, they will be measured and paid for as structural steel (A36).

Lead sheets shall be paid for by the pound as structural steel (A36).

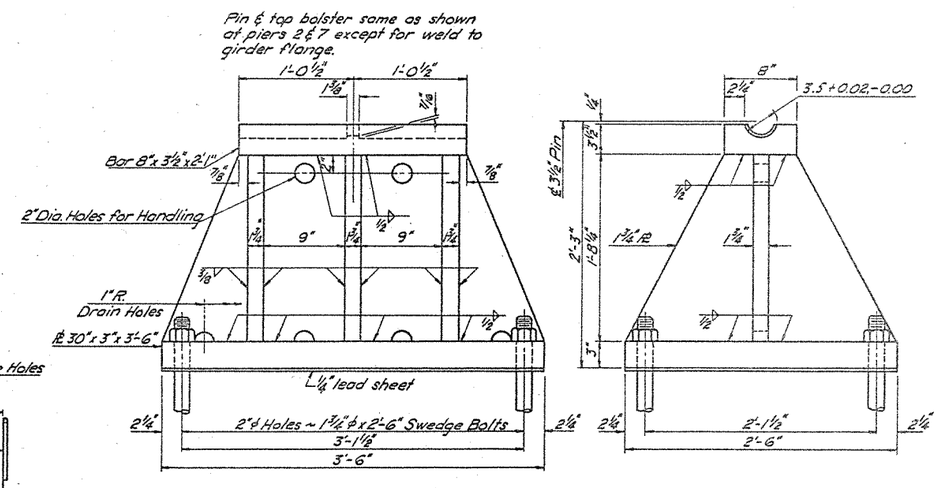
ERECTION:

The masonry plates at the abutments and piers 2, 3, 6 and 7 shall be adjusted to correct elevations and true bearing by means of the two nuts on each swedge bolt after the girders and crossframes have been erected. Non-shrinking mortar, or slightly expanding mortar (See Special Provision) shall then be placed between the bridge seat and the plates so that the entire space is completely filled with mortar.

The bearing areas at piers 4 and 5 shall be finished to correct elevation and true bearing, by grinding if necessary, and the fixed bearings placed on ⅛" thick lead sheets.



EXPANSION BEARING AT PIERS 3 & 6



FIXED BEARING AT PIERS 4 & 5

QUANTITIES	
Structural Steel	25,638 Lb.

MISSOURI RIVER BRIDGE

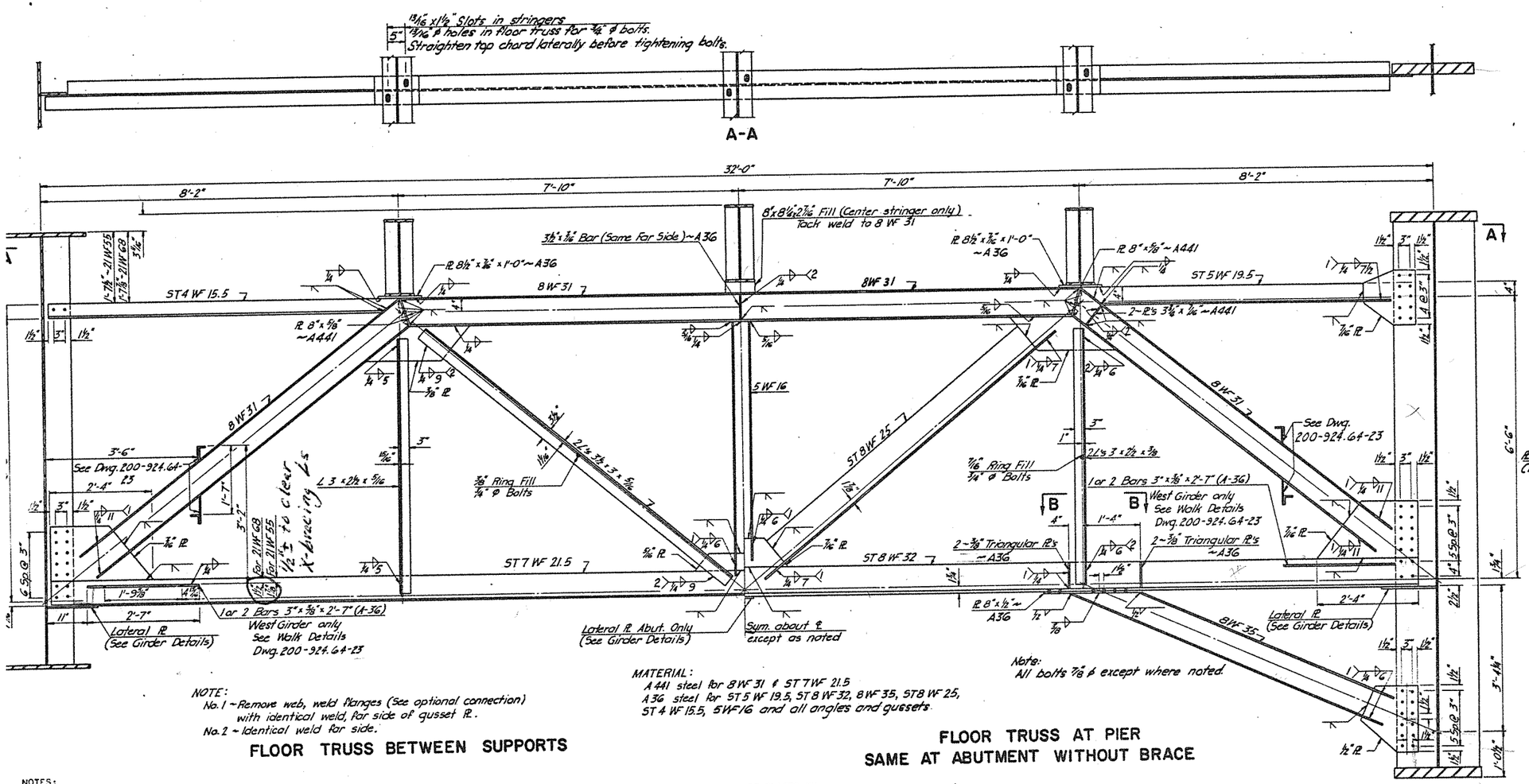
BEARING DETAILS

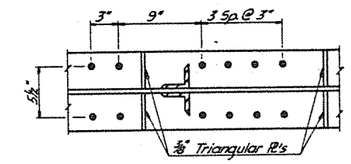
CHECKED BY G.A.L.
MADE BY G.A.P.
QUANTITIES CHECKED BY G.A.L.

200A-18.5-16

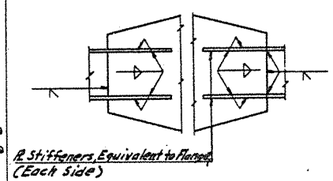
200A-18.5-16

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	F-712(5) 6 F-I-200(6)925	14	





B-B



OPTIONAL CONNECTION

Where the WF members connect to a gusset PL, the contractor has the option of forking the WF or cutting square and adding stiffeners as shown.

NOTE:
No. 1 ~ Remove web, weld flanges (see optional connection) with identical weld, for side of gusset PL.
No. 2 ~ Identical weld for side.

FLOOR TRUSS BETWEEN SUPPORTS

MATERIAL:
A 441 steel for 8WF 31 & ST 7WF 21.5
A36 steel for ST 5 WF 19.5, ST 8 WF 32, 8WF 35, ST 8 WF 25, ST 4 WF 15.5, 5WF16 and all angles and gussets.

Note:
All bolts 7/8" ø except where noted.

FLOOR TRUSS AT PIER
SAME AT ABUTMENT WITHOUT BRACE

NOTES:

MATERIALS:

BEARINGS, FLOOR TRUSSES, INSPECTION WALK GRID, AND ICE NOSE ANGLES ARE AS NOTED.

GIRDER FLANGES AND FLANGE SPLICE PLATES SHALL CONFORM TO ASTM A 441.

GIRDER WEBS AND WEB SPLICE PLATES, STIFFENERS, CHANNEL SHEAR DEVICES, STRINGERS, LATERAL BRACING, INSPECTION WALK BRACKETS AND RAILING, AND MISCELLANEOUS ITEMS SHALL CONFORM TO ASTM A 36.

BOLTS SHALL BE 7/8" HIGH STRENGTH BOLTS EXCEPT AS NOTED.

FABRICATION AND SHOP ASSEMBLY:

THE GIRDERS SHALL BE CAMBERED IN THE SHOP AS DETAILED ON DWG. 200-924.64-21. THE SHOP CAMBER DIAGRAMS REPRESENT THE RISE ABOVE CHORDS BETWEEN THE CENTERLINES OF BEARING THAT IS REQUIRED TO BE CUT INTO THE WEB PLATE OF THE GIRDERS TO COMPENSATE FOR THE DEAD LOAD DEFLECTION OF THE DECK, INCLUDING THE GIRDERS, AND THE RISE REQUIRED DUE TO THE VERTICAL CURVE OF THE ROADWAY. AT THE BOTTOM FLANGE, THE CAMBER SHALL BE ADDED TO THE RISE REQUIRED FOR THE GIRDER HAUNCH.

ALL OF THE GIRDER SECTIONS FOR ONE COMPLETE SPAN SHALL BE PLACED ON THEIR SIDES AND IN THEIR CORRECT RELATIVE POSITION BEFORE DRILLING OR REAMING THE HOLES FOR THE GIRDER SPLICES WITHIN THE SPAN. ACCURACY IN THE POSITIONING OF THE GIRDER SECTIONS IS IMPORTANT.

PRIOR TO REAMING THE FIELD SPLICE BOLT HOLES, A MINIMUM OF THREE (3) CONTIGUOUS GIRDER SECTIONS SHALL BE ASSEMBLED AND THE PROPER ALIGNMENT BETWEEN SECTIONS MAINTAINED WHILE REAMING THE HOLES. TEMPLATES SHALL NOT BE USED IN LIEU OF THE ABOVE SHOP ASSEMBLY.

THE SHOP FABRICATION AND ERECTION DRAWINGS MUST INDICATE FOUR PICK-UP POINTS FOR EACH MEMBER TO BE USED DURING ERECTION.

PAINT:

PAINT AND PAINTING SHALL CONFORM TO SECTIONS 718 AND 870-1.2 OF THE STANDARD SPECIFICATIONS AND TO SPECIAL PROVISION 33.

COMMERCIAL BLAST CLEANING OF ALL EXPOSED MAIN AND SECONDARY STEEL MEMBERS SHALL BE REQUIRED.

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT (INCLUDING TOPS OF UPPER GIRDER AND STRINGER FLANGES BUT NOT SHEAR DEVICES), ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED, AND TWO FIELD COATS OF ENAMEL.

THE FIRST FIELD COAT SHALL CONFORM TO GREEN COLOR NO. 24260 AND THE SECOND COAT SHALL CONFORM TO GRAY-GREEN COLOR NO. 24300. COLOR CHIPS ARE ON FILE IN THE BRIDGE DIVISION OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT, BISMARCK.

MISCELLANEOUS:

ALTERNATE SHEAR DEVICES WILL BE PAID FOR ON THE BASIS OF THE COMPUTED WEIGHT OF CHANNEL SHEAR DEVICES AS A 36 STEEL. THE STUD CONNECTORS ON THE STRINGERS WILL BE PAID FOR ON THE BASIS OF THEIR OWN COMPUTED WEIGHT AS A 36 STEEL.

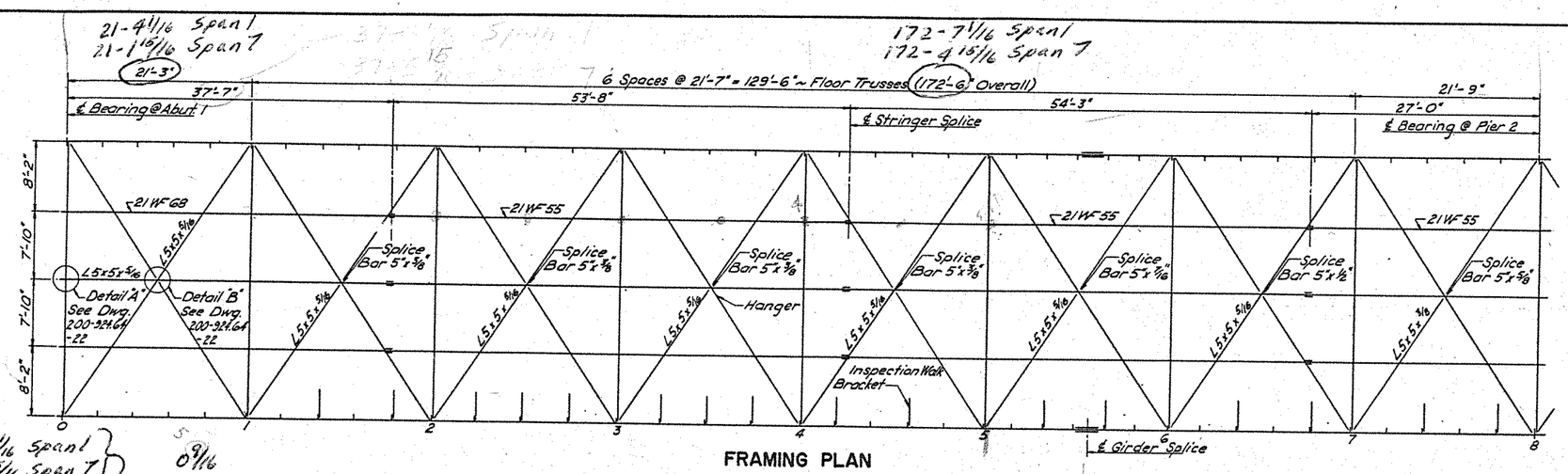
QUANTITIES
See Drawing 200-924.64-22

MISSOURI RIVER BRIDGE

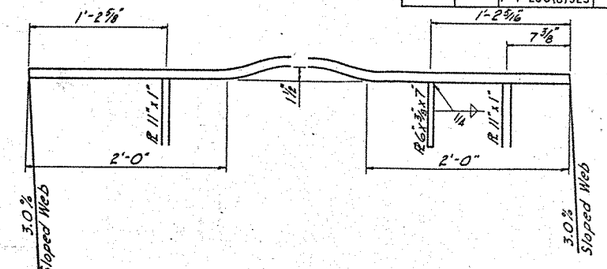
FLOOR TRUSS DIAPHRAGM

200-924.64-17

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
5	N. D.	F-712(5) 8 F-I-200(6)925	15

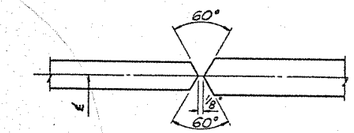


FRAMING PLAN



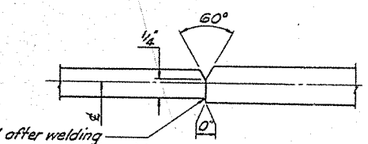
AT ABUTMENT NO. 1 AT ABUTMENT NO. 8

DETAIL "D"



WEB JOINT

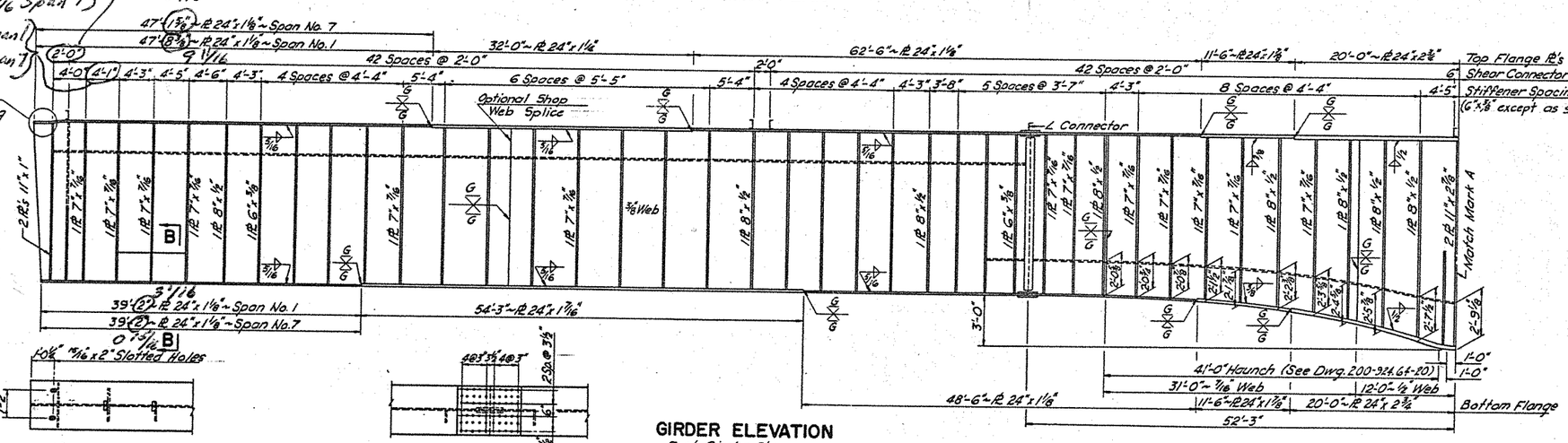
For Manual Shielded Arc Welding Use Joint BU3b



Weld after welding at least one pass on other side.

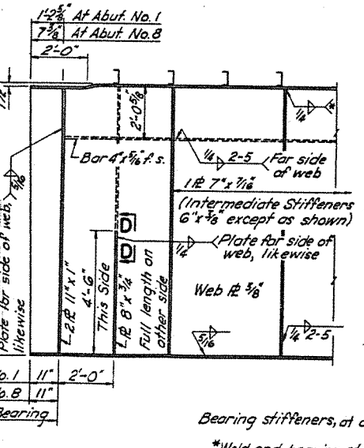
ALTERNATE WEB JOINT

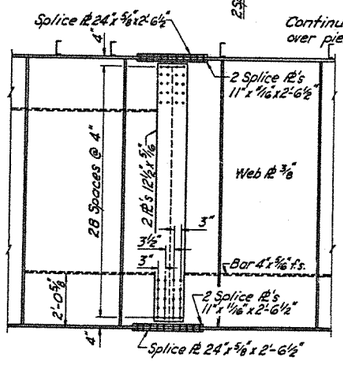
Use submerged arc joint B-L28-S as a suitable replacement for BU3b, modified for 7/8", 11/16" & 1/2" web plates.

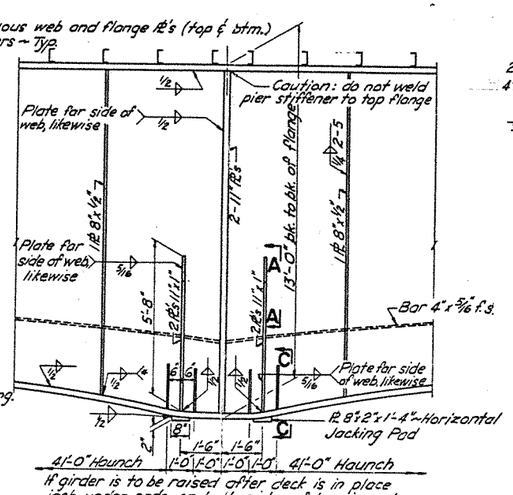


GIRDER ELEVATION

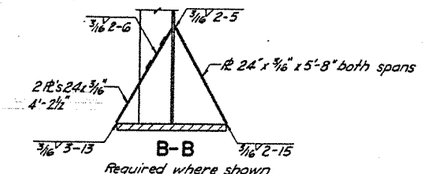
East Girder Shown





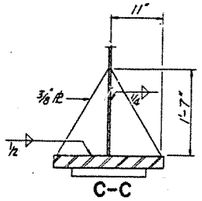


If girder is to be raised after deck is in place jack under pads on both sides of bearing at the same time.

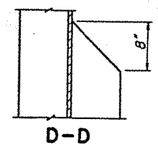


B-B

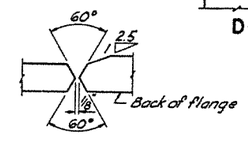
Required where shown in Spans 1 and 7 only.



C-C

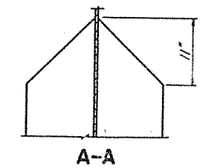


D-D



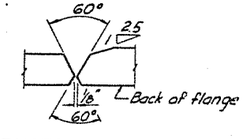
FLANGE JOINT

For manual shielded arc welding use joint B-U3b.



A-A

Slope top of all jacking stiffeners.



ALTERNATE FLANGE JOINT

If submerged arc welding is used AWS B-U3b-S is an acceptable replacement for B-U3b (Manual) AWS B-L3-S is acceptable for plates 1 1/2" or less in thickness.

Bearing stiffeners, at abuts. & piers shall be milled to bear before welding.

*Weld end bearing stiffeners at abutment to both flanges and all other transverse stiffeners to flange nearest longitudinal stiffener and not to other flange. Use fillet welds, of size required by plate thickness, on both sides. Provide tight fit where not welded.

ENLARGED GIRDER DETAILS

QUANTITIES

See Drawing 200-924.64-22

MISSOURI RIVER BRIDGE

GIRDER DETAILS

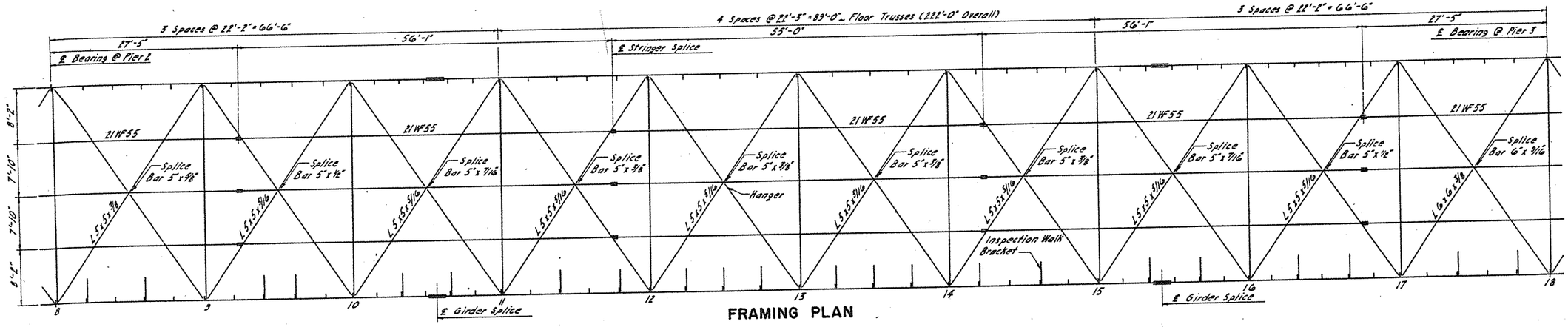
SPANS NO. 1 & NO. 7

N	MADE BY	M.E.W.	
	CHECKED BY	D.O.A.	
DETAILS	MADE BY	L.E.G.	
	CHECKED BY	G.A.L.	
TRACING	MADE BY	D.L.R.	
	CHECKED BY	G.A.L.	
QUANTITIES	MADE BY	L.E.G.	
	CHECKED BY	G.A.L.	

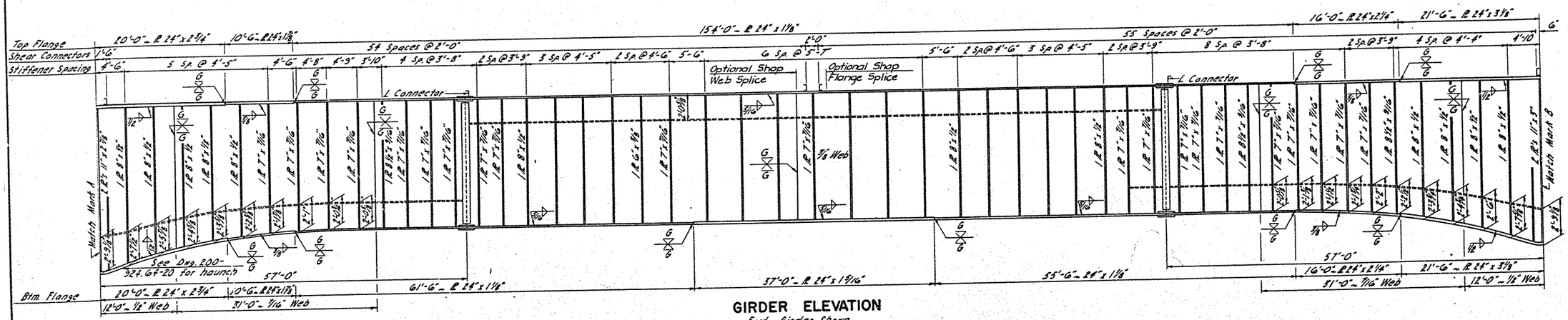
REVISIONS | DATE | MADE BY

200-924.64-18

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	F-712(5) & F-I-200(6)925	16	

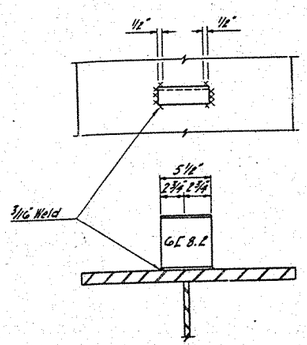


FRAMING PLAN

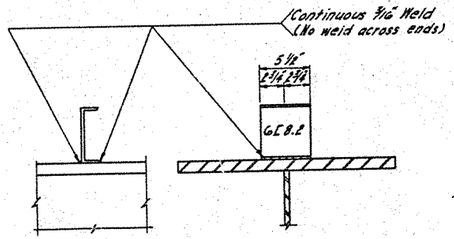


GIRDER ELEVATION

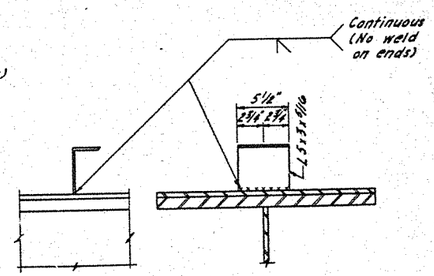
East Girder Shown
(Stiffeners 6"x 3/8" except as shown)



Use in region over the piers between girder splice points.

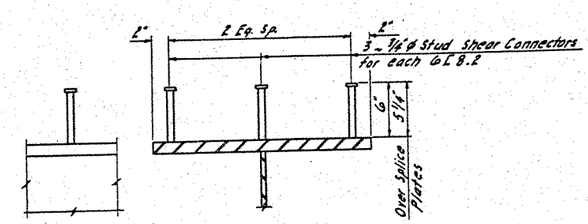


Use in positive moment region except over splice R's



Use over splice R's

SHEAR DEVICE DETAILS



ALTERNATE SHEAR DEVICE

QUANTITIES
See Drawing 200-924.64-22

MISSOURI RIVER BRIDGE

GIRDER DETAILS

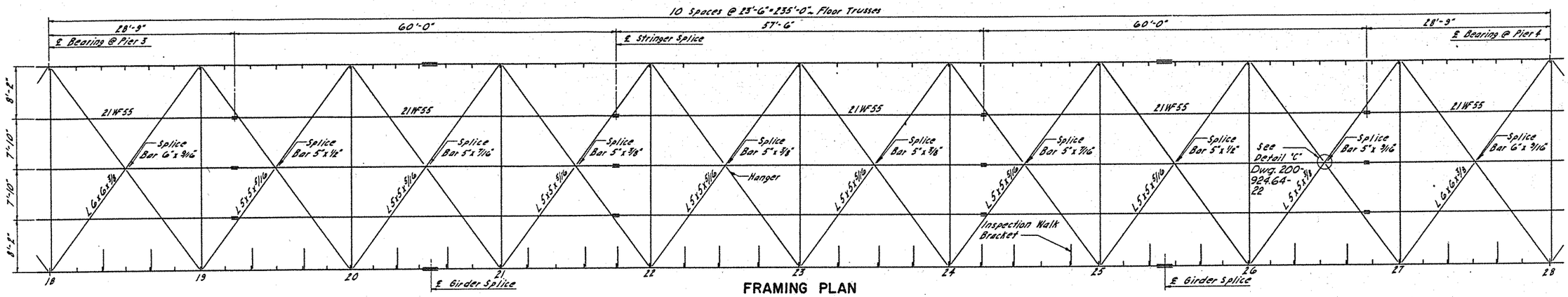
SPANS NO. 2 & NO. 6

200-924.64-19

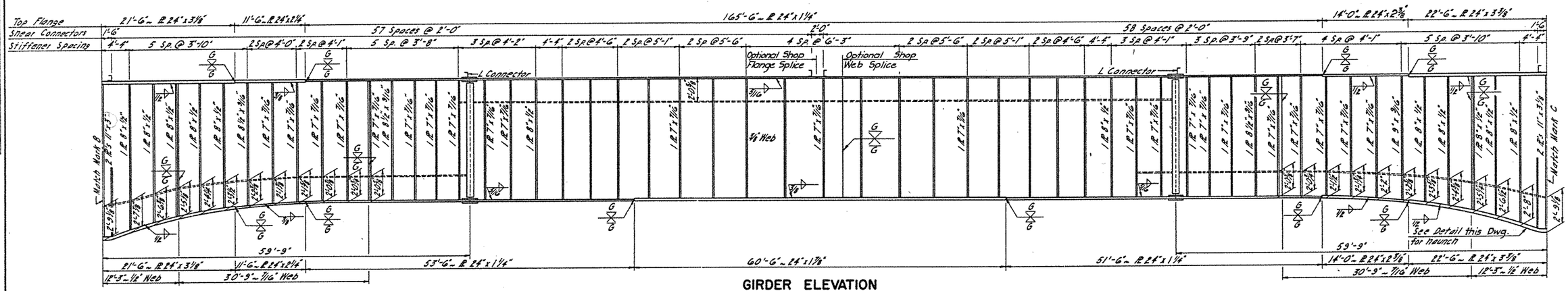
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TO SH
5	N. D.	F-712(5) & F-I-200(6)925	17	

DESIGN	MADE BY	M.E.W.
	CHECKED BY	D.O.A.
	MADE BY	L.E.G.
	CHECKED BY	G.A.L.
TRACING	MADE BY	L.E.G.
	CHECKED BY	F.D.H.
QUANTITIES	MADE BY	L.E.G.
	CHECKED BY	G.A.L.

REVISIONS — DATE — MADE BY

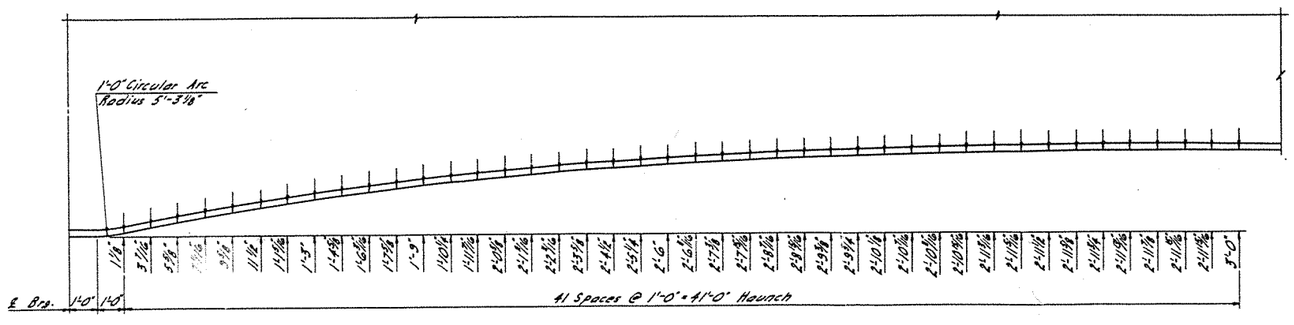


FRAMING PLAN



GIRDER ELEVATION

East Girder Shown
(Stiffeners 6" x 5/8" except as shown)



GIRDER HAUNCH DETAIL

BENTS 2 THRU 7

QUANTITIES

See Drawing 200-924.64-22

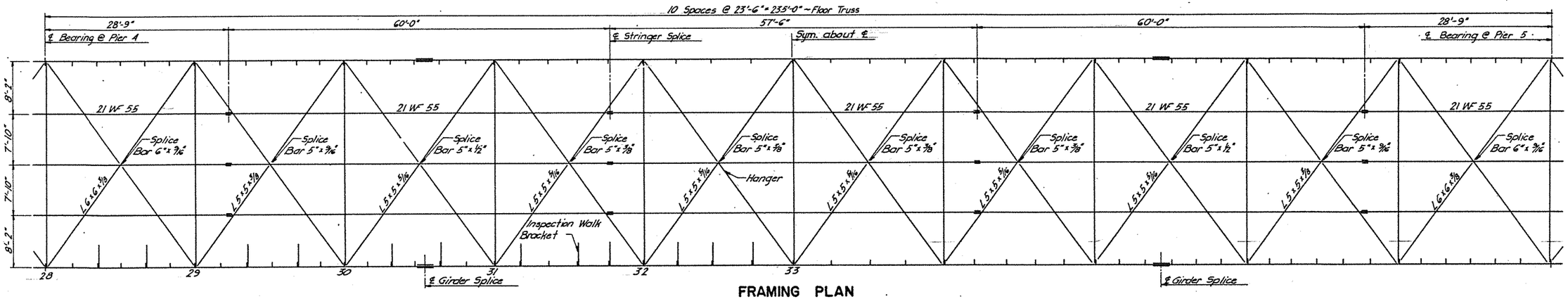
MISSOURI RIVER BRIDGE

GIRDER DETAILS

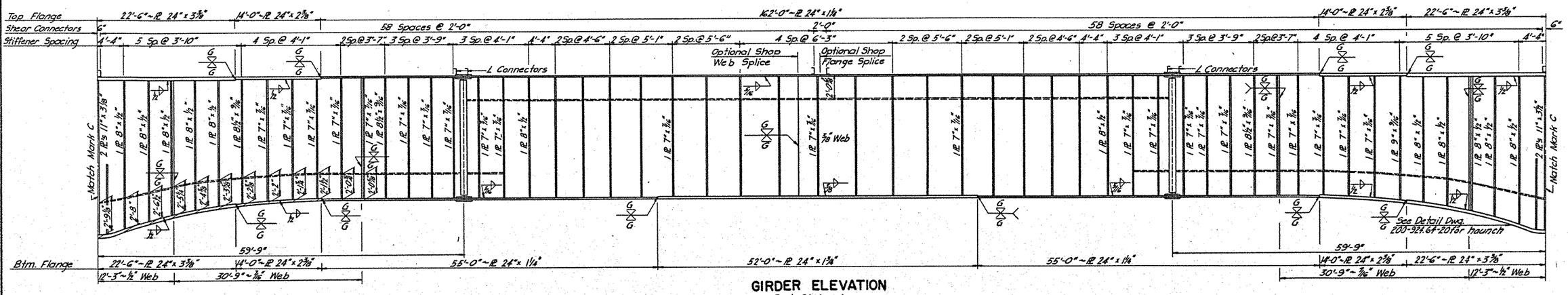
SPANS NO. 3 & NO. 5

200-924.64-20

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	F-712(5) 8 F-I-200(6)925	18	

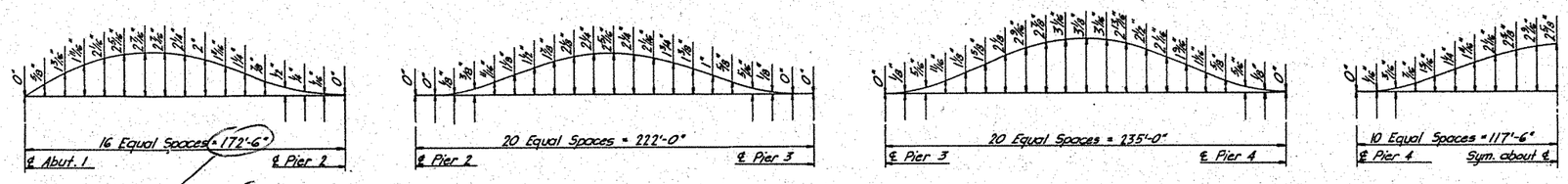


FRAMING PLAN



GIRDER ELEVATION

East Girder shown
(Stiffeners 6" x 5/8" except as shown)



172-7 1/16 span 1
172-4 15/16 span 7

SHOP CAMBER DIAGRAM

See Note Dwg. No. 200-924.64-17

QUANTITIES

See Drawing 200-924.64-22

MISSOURI RIVER BRIDGE

GIRDER DETAILS

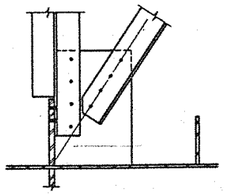
SPAN NO. 4

200-924.64-21

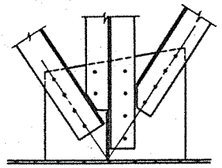
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
5	N. D.	F-712(5) 8 F-1-200(6)925	19

REVISIONS	BY	DATE

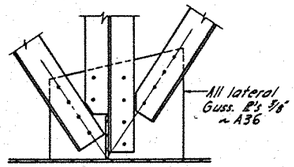
DESIGN	MADE BY	M.E.H.
	CHECKED BY	D.C.A.
DETAILS	MADE BY	L.E.C.
	CHECKED BY	G.A.L.
TRACING	MADE BY	L.E.C.
	CHECKED BY	G.A.L.
QUANTITIES	MADE BY	L.E.C.
	CHECKED BY	G.A.L.



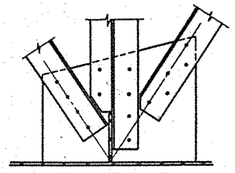
Panel Pt. 0



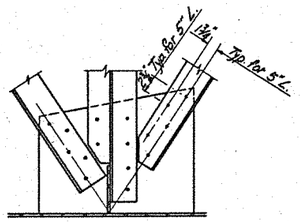
Panel Pt. 1, 3, 13, 23, 33



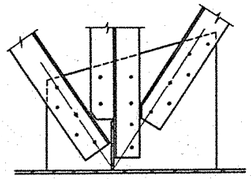
Panel Pt. 2, 4, 12, 14, 22, 24, 32



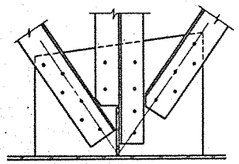
Panel Pt. 5, 15, 25



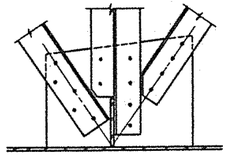
Panel Pt. 6, 10, 16, 20



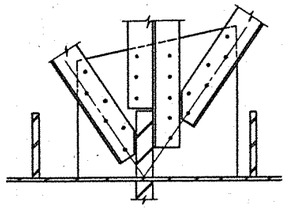
Panel Pt. 7



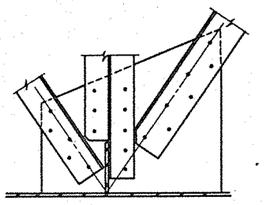
Panel Pt. 9



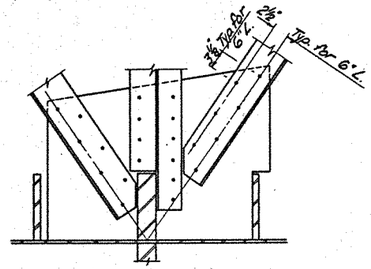
Panel Pt. 11, 21, 31



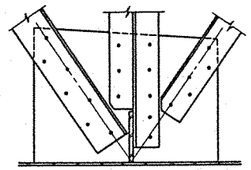
Panel Pt. 8



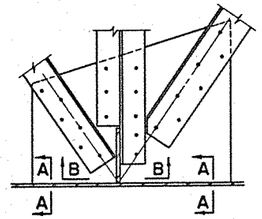
Panel Pt. 17



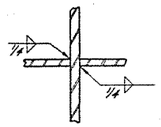
Panel Pt. 18, 28



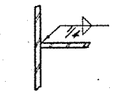
Panel Pt. 19



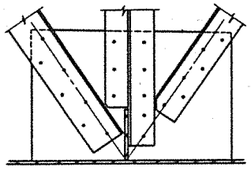
Panel Pt. 27
Welds same at other panel points



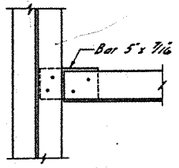
B-B



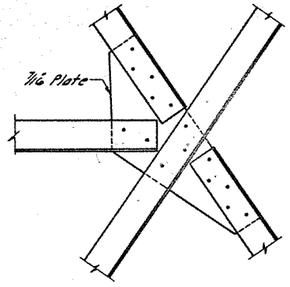
A-A



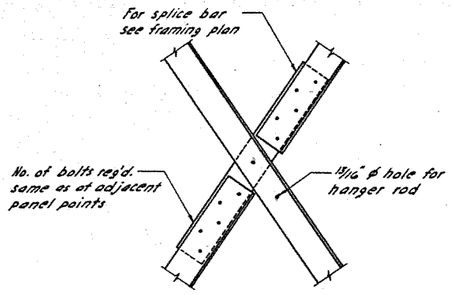
Panel Pt. 29



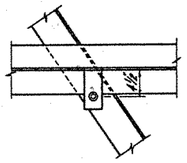
DETAIL "A"

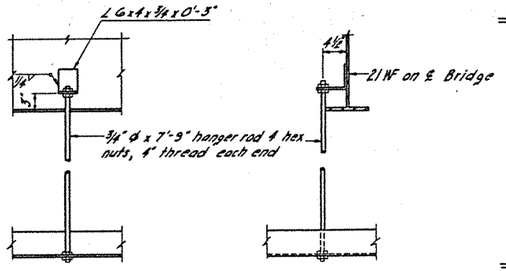


DETAIL "B"

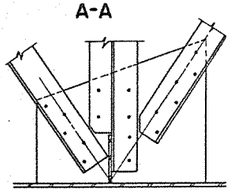


DETAIL "C"

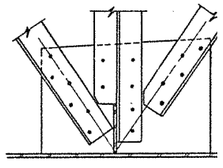




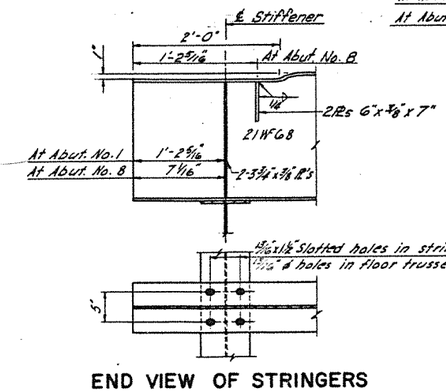
HANGER DETAIL
One required in each panel



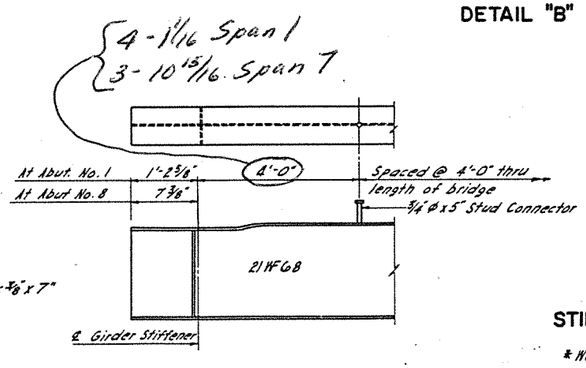
Panel Pt. 26



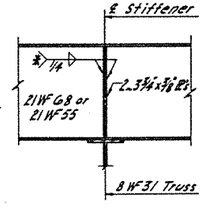
Panel Pt. 30



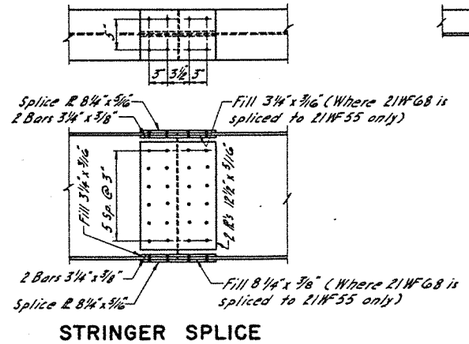
END VIEW OF STRINGERS



STUDS ON STRINGERS



STIFFENERS ON STRINGERS
At each interior floor truss
* Weld to web and bottom flange.
Tight fit at top flange.
(Both sides of web)



STRINGER SPLICE

QUANTITIES

Structural Steel (A241)	938.22
Structural Steel (A36)*	1,087.

*Includes stud connectors on strin

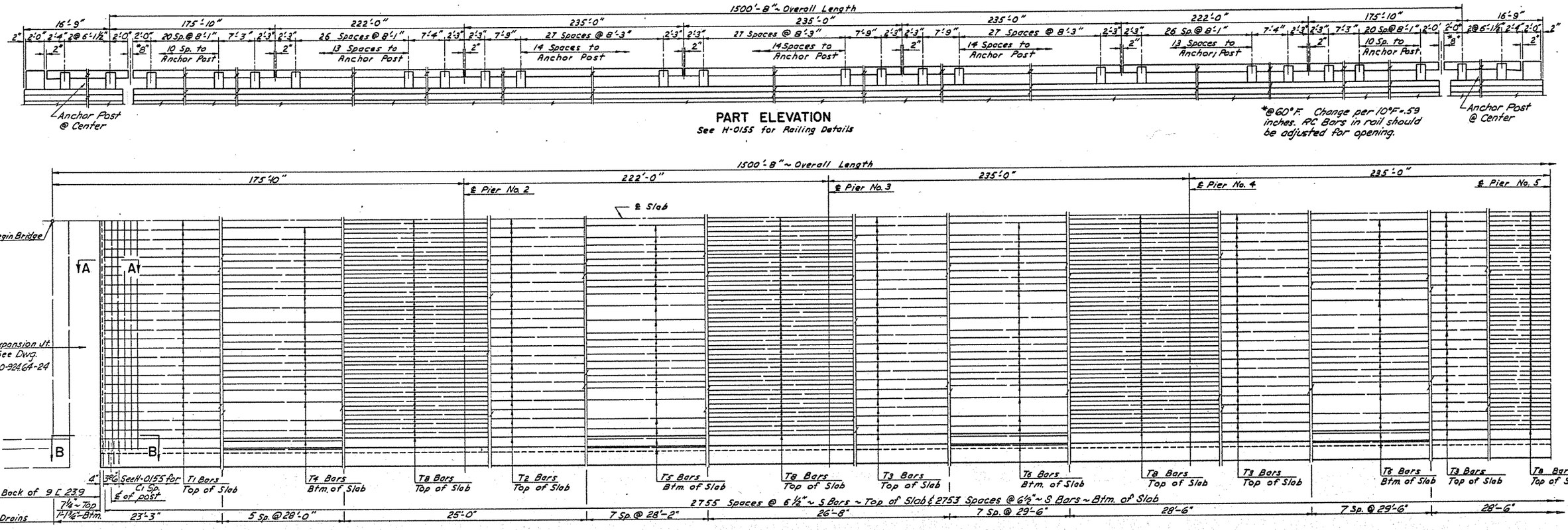
MISSOURI RIVER BRIDG

MISC. STEEL DETAIL

200-924.64-2

200-924.64-2

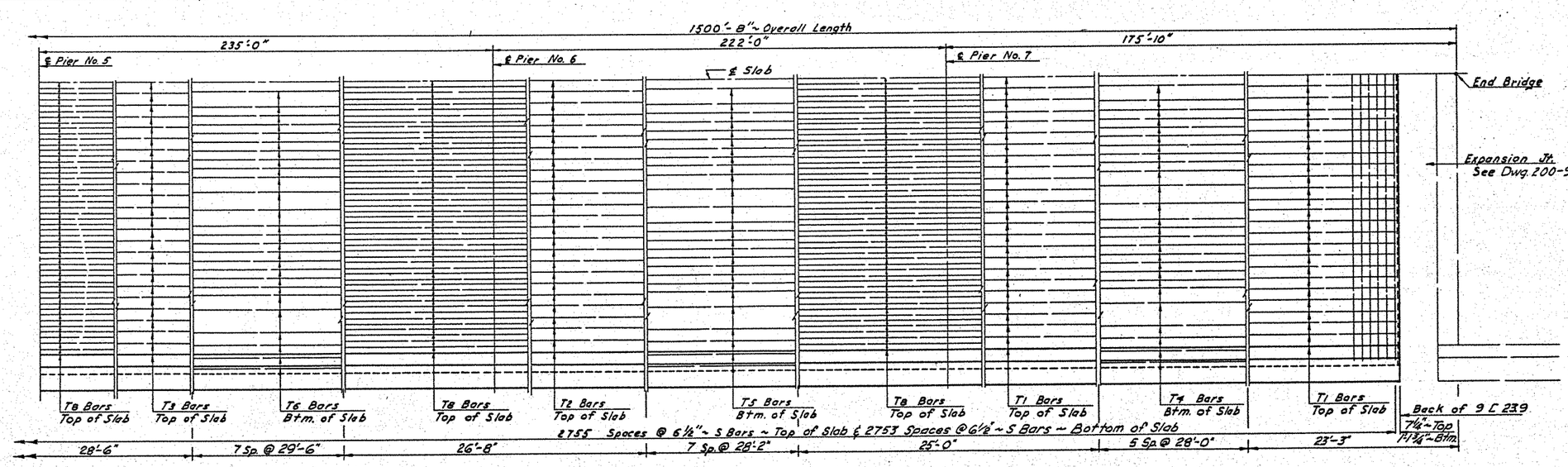
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	F-712(5) & F-1-200(6)925	22	



PART ELEVATION

See H-0155 for Railing Details

*@60°F. Change per 10°F=.59 inches. RC Bars in rail should be adjusted for opening.



PART PLAN

Part Showing top of slab reinforcing
Part Showing bottom of slab reinforcing

1971
FEDERAL AID
PROJECT
F-1-200(6) 925
NORTH DAKOTA
200-924.64

FEDERAL AID NAME PLATE
2 REQUIRED

Designed for 25 #/S.F. F.W.S.

QUANTITIES

See Dwg. 200-924.64-26

MISSOURI RIVER BRIDGE

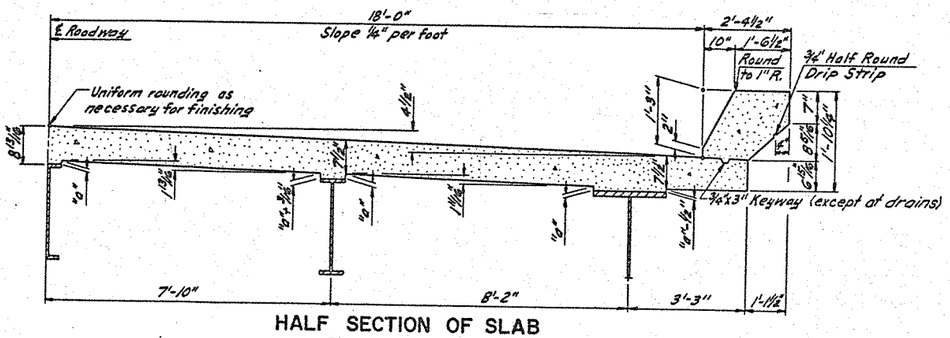
SLAB & RAILING DETAILS

DETAIL: S.A.L. CHECKED BY F.D.H.
TRACING: J.A.E. CHECKED BY F.D.H.
QUANTITIES: MADE BY L.E.S. CHECKED BY F.D.H.

200-924.64-25

200-924.64-25

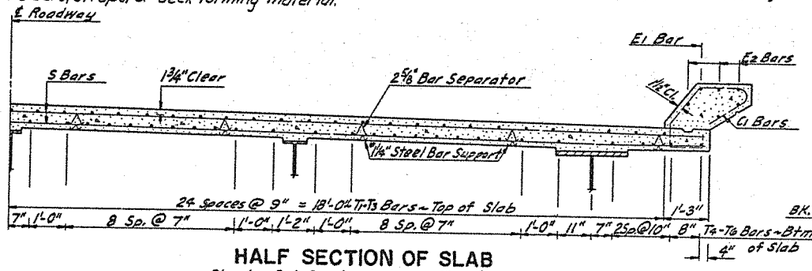
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	F-712(5) 8 F-1-200(6)925	23	



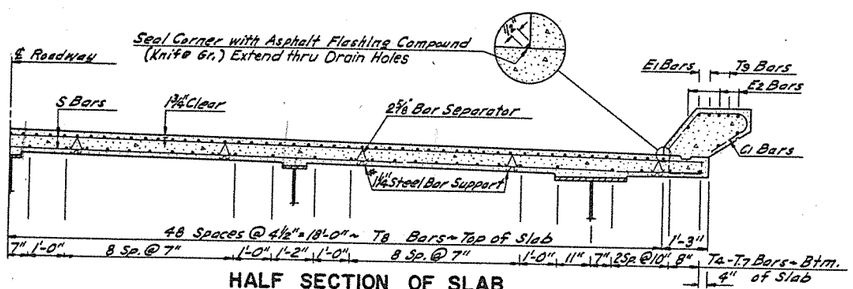
HALF SECTION OF SLAB
Showing Dimensions

"a" equals 1 1/2" @ bearings of piers and abutments. At intermediate points "a" equals screed elevation at ℄ roadway minus top of girder elevation minus (.938 outside girders)(.796 inside stringers)(.632 ℄ Stringers).

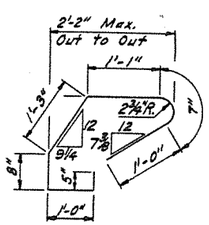
Variable expandable metal joist form supports will not be allowed across flange field splices. The field welding of structural or reinforcing steel will not be permitted for the purpose of attaching tie bars, straps, or deck forming material.



HALF SECTION OF SLAB
Showing Reinforcing between Piers & Abutments

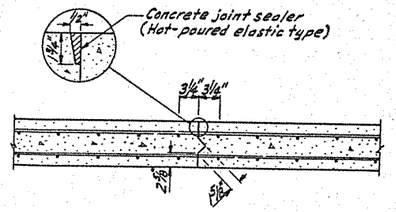


HALF SECTION OF SLAB
Showing Reinforcing over Piers

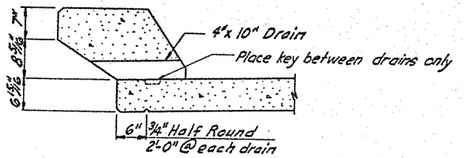


C BAR

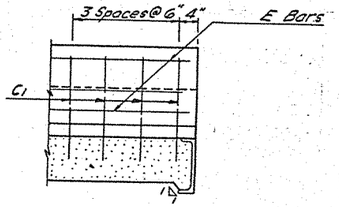
BENT BAR DETAIL



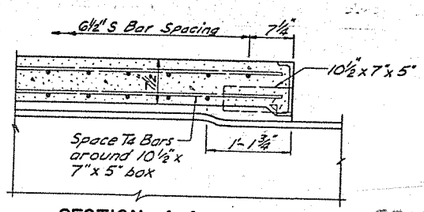
TYPICAL TRANSVERSE CONSTRUCTION JOINT



DECK DRAIN DETAIL



SECTION B-B

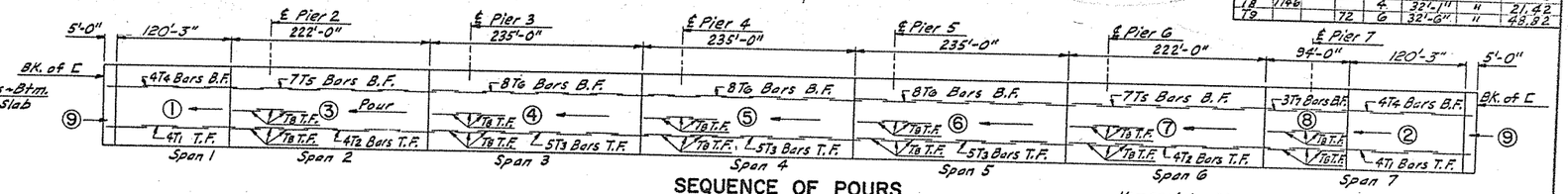


SECTION A-A

5510
WILL PAY FOR
5512
CTS 3-28-71

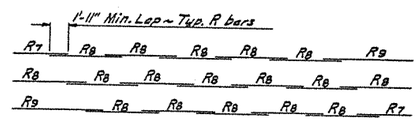
SUPERSTRUCTURE

MARK	NUMBER: SLAB	NUMBER: RAILING & POSTS	NUMBER: CURB	SIZE	LENGTH	SHAPE	UNIT WT.
C	3320			5	5'-9"	Bent	6.00
E1			80	6	39'-3"	Str.	58.96
E2			390	5	39'-10"	"	41.55
P4			1104	6	4'-0"	Bent	6.01
P5			54	6	4'-9"	"	7.13
P6			772	5	4'-9"	"	4.95
P7		772		3	3'-9"	"	1.41
P8		736		3	2'-9"	"	1.03
P9		36		3	4'-3"	"	1.60
RC		2684		3	2'-10"	"	1.06
R1		16		6	33'-1"	Str.	49.69
R2		88		6	36'-1"	"	54.20
R3		16		6	39'-1"	"	58.71
R4		16		6	30'-3"	"	45.44
R5		136		6	33'-3"	"	49.94
R6		16		6	36'-3"	"	54.45
R7		24		6	32'-2"	"	48.32
R8		204		6	35'-2"	"	52.82
R9		24		6	38'-2"	"	57.33
R10		24		6	16'-1"	"	24.16
S	5512			6	38'-2"	"	57.33
T1	392			3	32'-4"	"	12.14
T2	392			3	33'-4"	"	12.52
T3	735			3	29'-6"	"	11.08
T4	416			5	32'-11"	"	34.34
T5	728			5	33'-9"	"	34.77
T6	1248			5	31'-0"	"	32.34
T7	156			5	32'-4"	"	33.73
T8	1746			4	32'-11"	"	21.42
T9		72		6	32'-6"	"	48.82

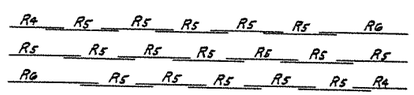


SEQUENCE OF POURS
All Pours are made from right to left
For curb sequence see note, this drawing

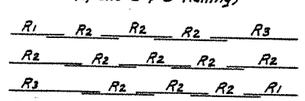
Nomenclature:
T.F. = Top Face
B.F. = Bottom Face



R BAR SPLICING DETAIL
(Spans 3, 4, & 5 Railing)

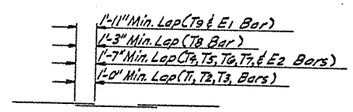


R BAR SPLICING DETAIL
(Spans 2 & 6 Railing)

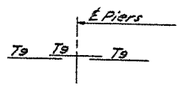


R BAR SPLICING DETAIL
(Spans 1 & 7 Railing)

Use R10 bars in railing over wing wall



BAR SPLICING DETAIL



T9 BAR SPLICING DETAIL
(Curbs Only)

Curbs shall be poured in maximum sections of 150'. A minimum of 12 hours is required between adjacent pours. The surface of adjacent pours shall be coated with a waterproof bonding epoxy, to be approved by the Engineer. Surface to be coated shall be free of dust, soils and residues.

Deck drain spacing may be adjusted to fit C1 Bars.

*Bolster legs shall be galvanized according to ASTM-153 or shall be of stainless steel with minimum chromium content of 14% and a max. carbon content of .12%.

Designed for 25#/S.F. F.W.S.

QUANTITIES

Class AE-3 Concrete	1596.7 C.Y.
Class AAE-3 Concrete	96.73 C.Y.
Reinforcing Steel	545,209 Lbs.

Railing, posts, and end post quantities are included

MISSOURI RIVER BRIDGE

SLAB, END BEAM

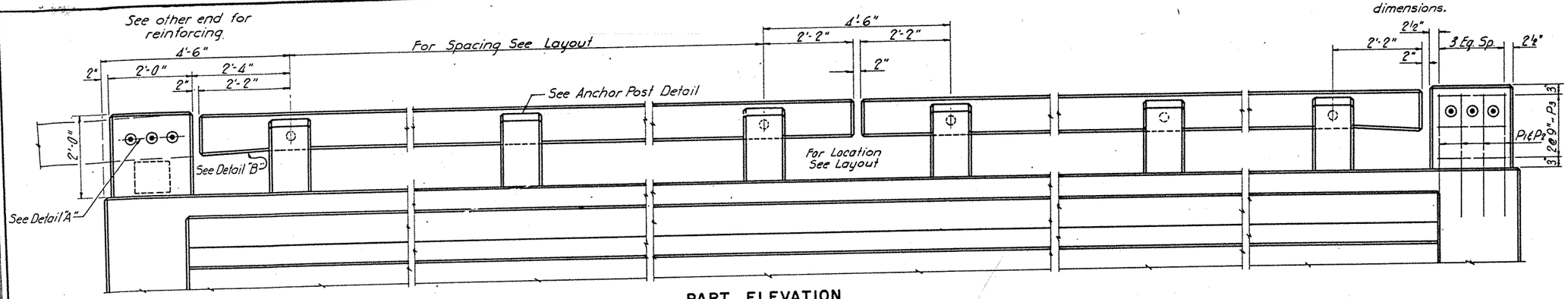
MISC. DETAILS

QUANTITIES MADE BY L.E.S. CHECKED BY K.D.H.

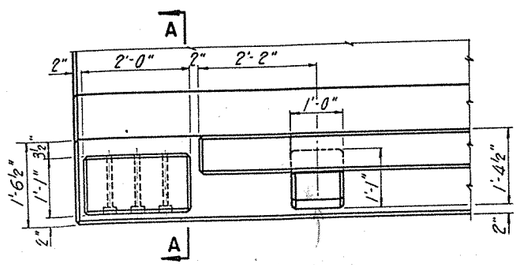
200-924.64-26

200-924.64-2

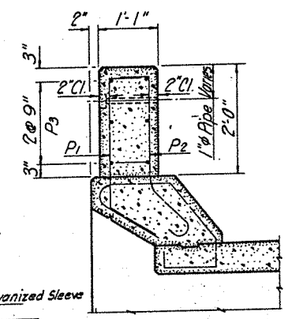
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N.D.	E-7(2)(5) & E-1-200(6)(1925)	24	



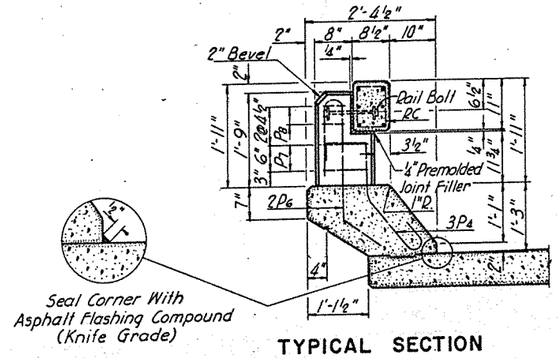
PART ELEVATION



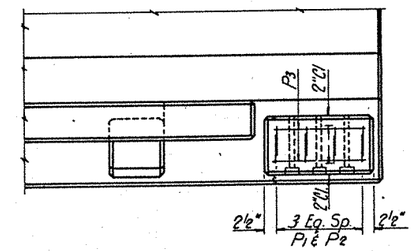
PART PLAN



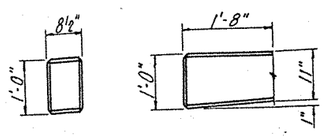
A-A



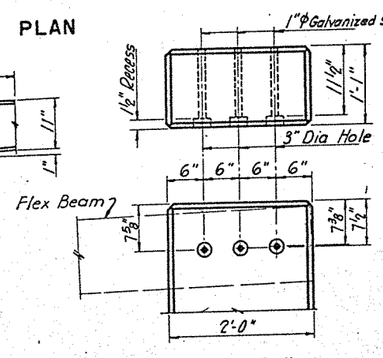
TYPICAL SECTION



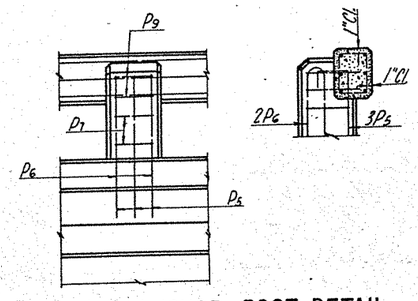
PART PLAN



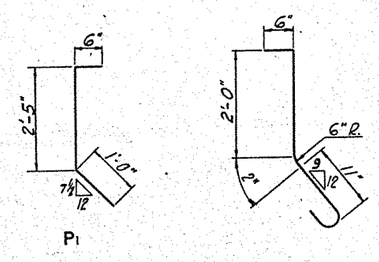
DETAIL "B"

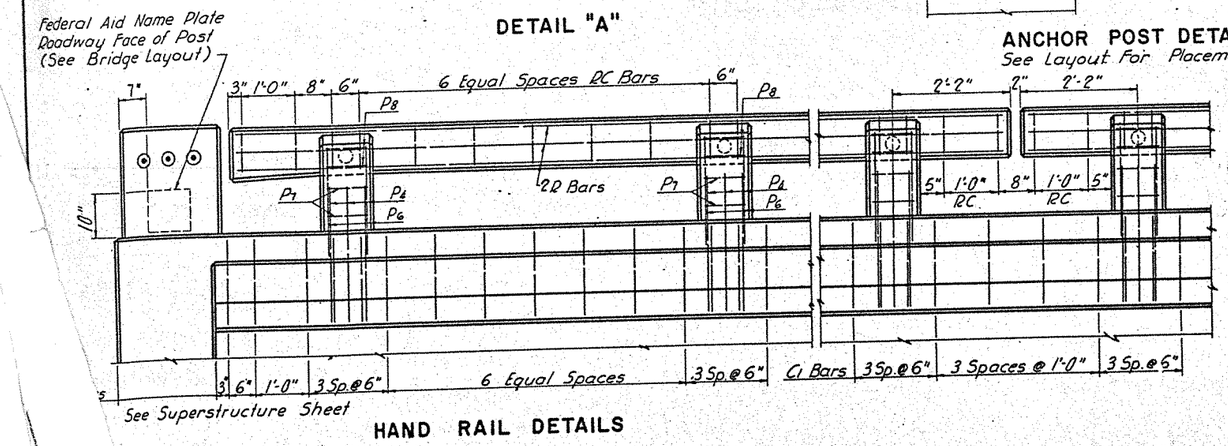


DETAIL "A"



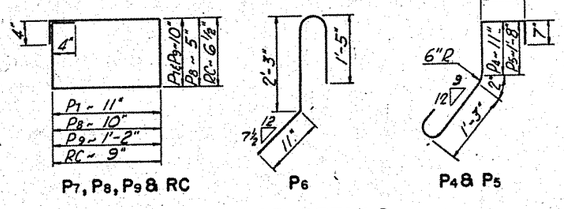
ANCHOR POST DETAIL
See Layout For Placement



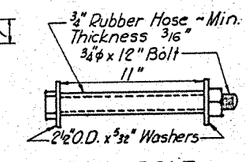


See Superstructure Sheet

HAND RAIL DETAILS



BENT BAR DETAILS
Dimensions shown are out to out



RAIL BOLT
(Galvanized)
To be included in the unit price bid for Class AAE-3 Concrete.

NOTES:

All concrete above top of curb shall be Class AAE-3.

"Rubbed Surface Finish" will be required for the roadway faces of curbs, the outside vertical faces of curb and slab, and all faces of rails, intermediate and end posts.

Designed in accordance with 1965 A.A.S.H.O. Specifications.

* Number of bars shown on superstructure sheet.
** Number, length & splicing information of R bars shown on superstructure sheet.

BAR LIST
(BARS FOR FOUR END POSTS)

MARK	NO.	SIZE	LENGTH	SHAPE
P1	16	5	3'-9"	Bent
P2	16	5	4'-0"	"
P3	24	4	1'-8"	Str.

BAR LIST
(BARS FOR RAILING AND POSTS)

MARK	NO.	SIZE	LENGTH	SHAPE
P4	*	6	4'-0"	Bent
P5	*	6	4'-9"	"
P6	*	5	4'-9"	"
P7	*	3	3'-9"	"
P8	*	3	2'-9"	"
P9	*	3	4'-3"	"
RC		3	2'-10"	Bent
R**	**	6	**	Str.

QUANTITIES 4 END POSTS *

Class AAE-3 Concrete	0.64 Cu. Yd.
Reinforcing Steel	156 Lbs.

* Railing and end post quantities are included in slab quantities on superstructure sheet.

STANDARD RAILING DETAILS

H-0155

DETAILS | TRACING | QUANTITIES