DESIGN DATA

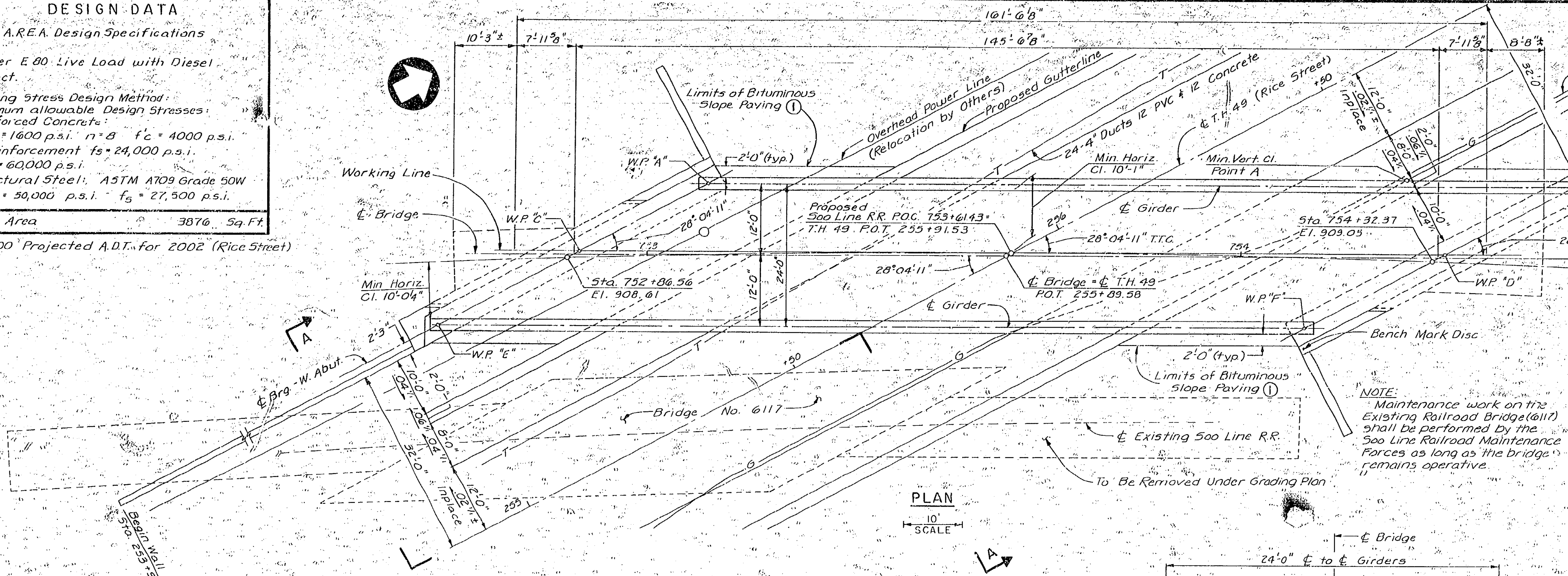
1984 A.R.E.A. Design Specifications

Cooper E 80 Live Load with Diesel Impact.

Working Stress Design Method:
Maximum allowable Design Stresses:
Reinforced Concrete:
f_c = 1600 p.s.i. n = 8 f'_c = 4000 p.s.i.
Reinforcement f_s = 24,000 p.s.i.
f_y = 60,000 p.s.i.
Structural Steel: ASTM A709 Grade 50W
f_y = 50,000 p.s.i. f_s = 27,500 p.s.i.

Deck Area 3876 Sq. Ft.

15,800 Projected A.D.T. for 2002 (Rice Street)



CONSTRUCTION NOTES

The 1983 edition of the Minnesota Department of Transportation "Standard Specifications for Construction" shall govern.

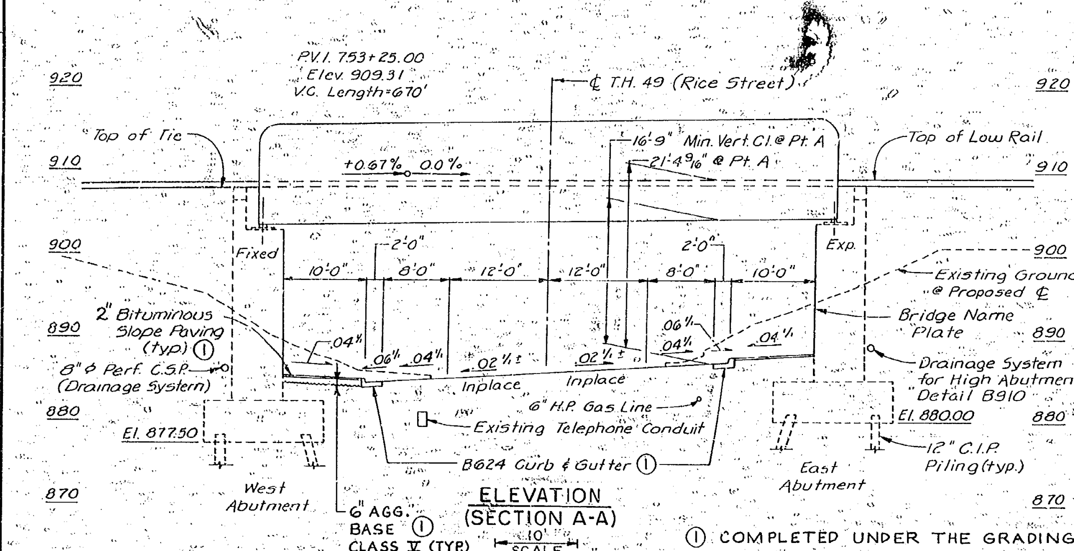
Bridge Seat Reinforcement shall be carefully placed to avoid interference with future drilling of holes for anchor rods. The Superstructure beams shall be erected in final position prior to grouting anchor rods.

The first digit or the first two digits following the letter of each bar mark indicate the bar size.

Bars marked with the suffix "E" shall be epoxy coated.

No time delay required for settlement of approach embankment fill.

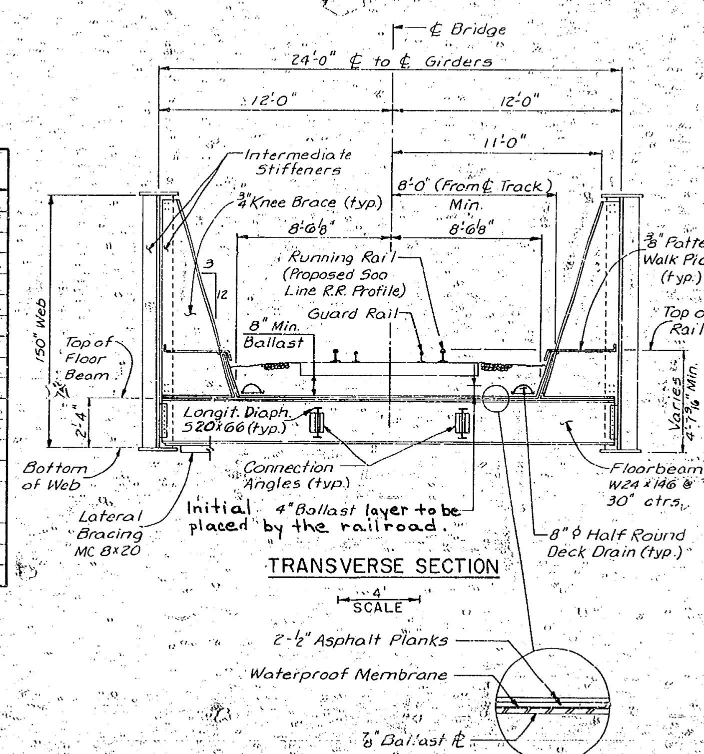
Railroad Maintenance will place all ballast, ties, rails, guard rail and fastening hardware under separate force account work under grading contract.



① COMPLETED UNDER THE GRADING CONTRACT

SHEET INDEX

No.	TITLE
1	General Plan and Elevation
2	Bridge Layout
3-5	Temporary Sheet Piling Details
6-7	West Abutment
8-9	East Abutment
10	Bill of Reinforcement and Rustication Details
11	Framing Plan and Beam Elevation
12	Floorbeam Details
13-14	Miscellaneous Steel Details
15	Ballast Plate Details
16-17	Walk Plate Details
18	Drainage Details
19-20	Bearing Details
21-24	Standard Details
25	Bridge Survey
26	Bridge Survey Plan and Profile



SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	0401.602	2401.501	2401.501	2401.541	2401.541	0401.601	2402.521	0402.601	0402.602	0402.602	0402.602
ITEM	THREADED COUPLERS (REINF. BARS) TYPE 8	Structure Concrete (1A43)	Structure Concrete (3Y43)	Reinforcement Bars	Reinforcement Bars (Epoxy Coated)	Structure Excavation	Structural Steel (3309)	Drainage System	Fixed Disc Bearing Assy. Type 1	Exp. Disc Bearing Assy. Type 1	Exp. Disc Bearing Assy. Type 2
UNIT	EACH	Cu. Yd.	Cu. Yd.	Pound	Pound	Lump Sum	Pound	Lump Sum	Each	Each	Each
QUANTITY	56	404 (P)	630 (P)	91,530 (P)	20,190 (P)	1	782,035	1	1	3	6
2452.507	2452.508	2452.519	0452.606	2477.503	0481.602	0481.602		2557.501	0502.603	0401.603	
Cast-In-Place Conc. Piling Delivered, 12"	Cast-In-Place Conc. Piling Driven, 12"	Cast-In-Place Conc. Test Piles 90' Long, 12"	Steel Sheet Piling (Temporary)	Zinc-Rich Paint System (New)	One-Ply Membrane Waterproofing	Dampproofing		Wire Fence Design 5-2	DRAINAGE SYSTEM TYPE (B910)	REV. BATTEN SURFACE TREATMENT	
Lin. Ft.	Lin. Ft.	Each	Lump Sum	SQ. FT.	Sq. Ft.	Sq. Ft.		Lin. Ft.	LUMP SUM	SQ. FT.	
11,700	11,700	8	1	32,218 (P)	3418 (P)	3826 (P)		53 (P)	1	3070 (P)	

AREA NO. 90 JOB NO. 910 REVIEWED BY C.S. HOVLAND DESIGN UNIT

State Proj. No. 6214-62002 T.H. 49 = 126

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Minnesota.

Amado J. Romano

Date 4/22/86 Reg. No. 7433

TRUNK HIGHWAY NO. 49
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

GENERAL PLAN AND ELEVATION

T.H. 49 UNDER SOO LINE RR CO. TRACK
1 MILE NO. OF JCT. I-694 & T.H. 49
IN SHOREVIEW AND VADNAIS HEIGHTS
146' THRU GIRDER
IDENTIFICATION NO. 305

SEC. 25 & 30 TWP. 30 N R22W & R23W RAMSEY COUNTY

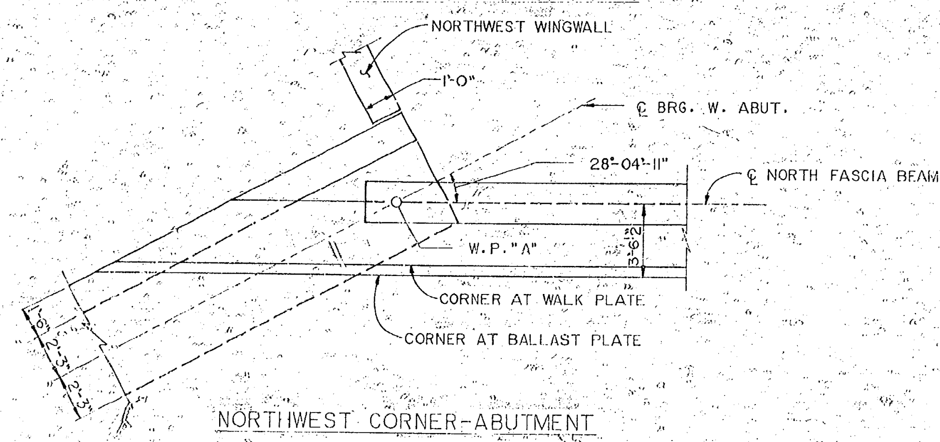
APPROVED: 10-28-87

Donald J. Flemming — BRIDGE ENGINEER

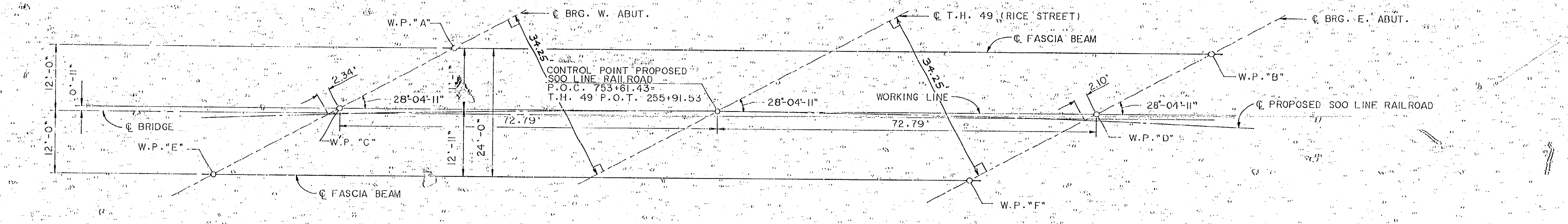
DEPUTY DIVISION DIRECTOR

DRAWN BY: DJR CHECKED BY: JTW IN CHARGE OF: JTW

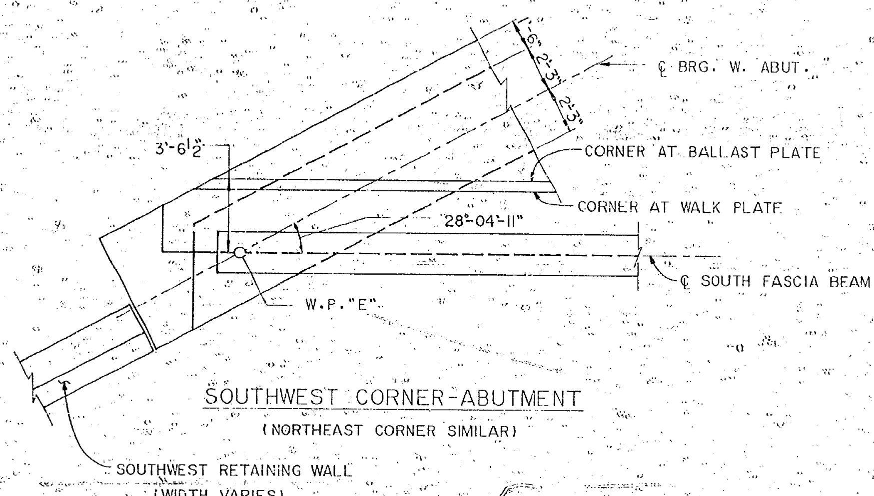
SHEET 1 OF 26 SHEETS 62002



NORTHWEST CORNER-ABUTMENT
(SOUTHEAST CORNER SIMILAR)



WORKING POINT LAYOUT



SOUTHWEST CORNER-ABUTMENT
(NORTHEAST CORNER SIMILAR)

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	"A"	"B"	"C"	"D"	"E"	"F"			
"A"	753 + 09.65		145.58	23.55	125.28		103.40			
"B"	754 + 54.55				23.55	192.09				
"C"	752 + 88.65				145.58	27.45	122.04			
"D"	754 + 34.19						27.45			
"E"	752 + 63.97						145.38			
"F"	754 + 10.23									

ELEVATIONS

TOP OF RAIL	TOP OF RAIL TO BR. SEAT	BRIDGE SEAT	POINT
908.70	5.45'	903.25	"A"
909.10	5.59'	903.51	"B"
908.60	—	—	"C"
909.04	—	—	"D"
908.53	5.59	902.94	"E"
90.00	5.59	903.41	"F"

RICE STREET TIES

POINT	STATION
"A"	255 + 50.85
"B"	256 + 79.31
"C"	255 + 27.30
"D"	256 + 55.75
"E"	254 + 99.85
"F"	256 + 28.31

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

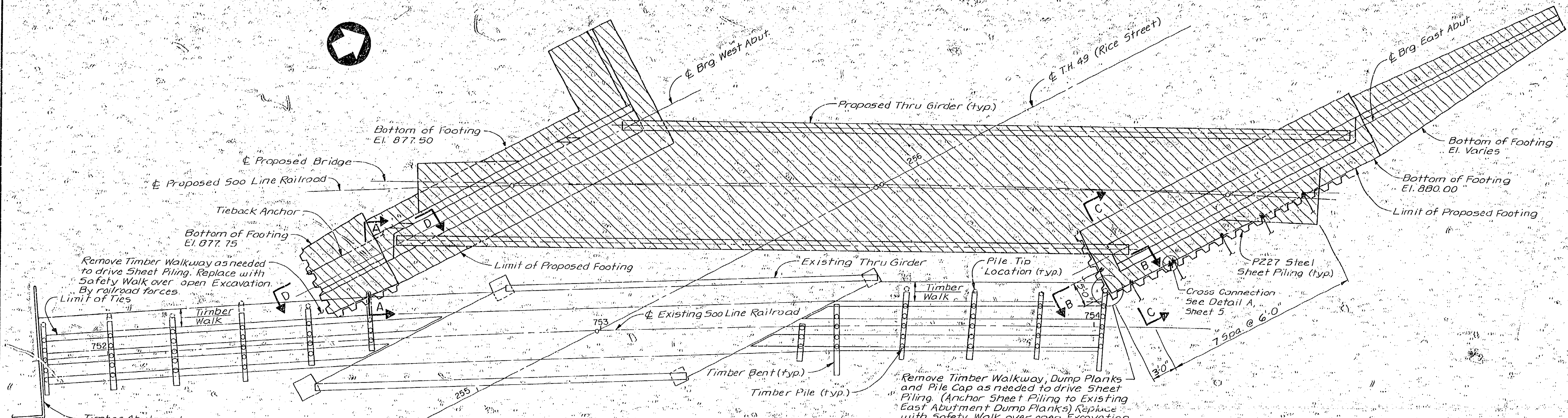
BRIDGE NO. 62002

BRIDGE LAYOUT

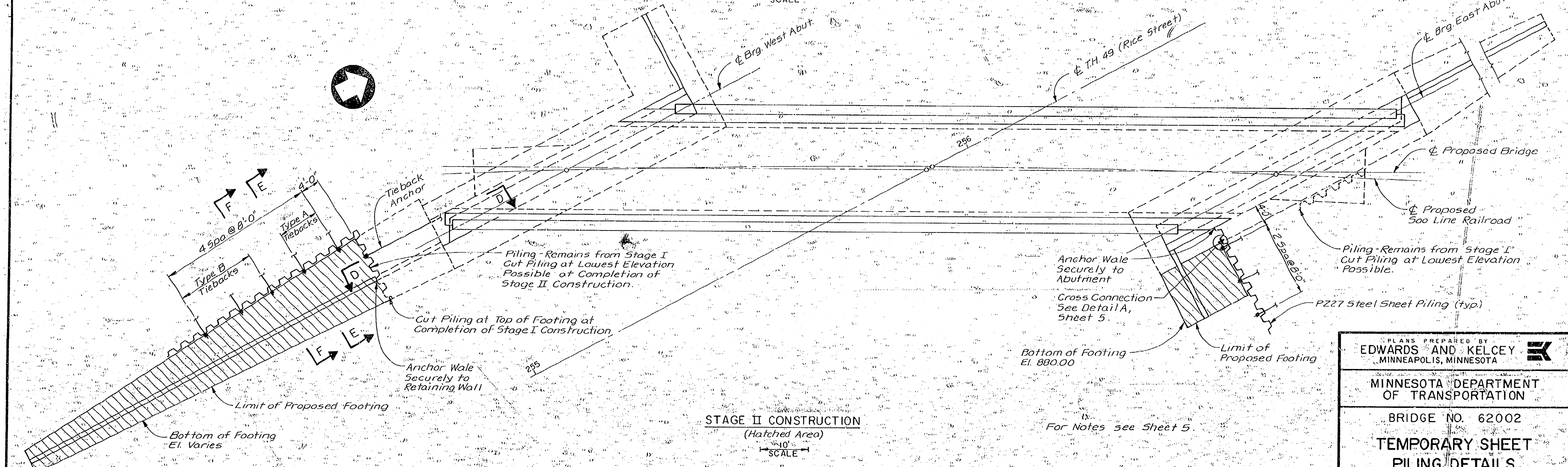
APPROVED: 10-28-87

DRAWN BY: DJR CHECKED BY: JTW IN CHARGE OF: JTW

SHEET 2 OF 26 SHEETS 62002



STAGE I CONSTRUCTION
(hatched Area)
10'
SCALE



STAGE II CONSTRUCTION
(Hatched Area)
10'
SCALE

For Notes see Sheet 5.

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MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

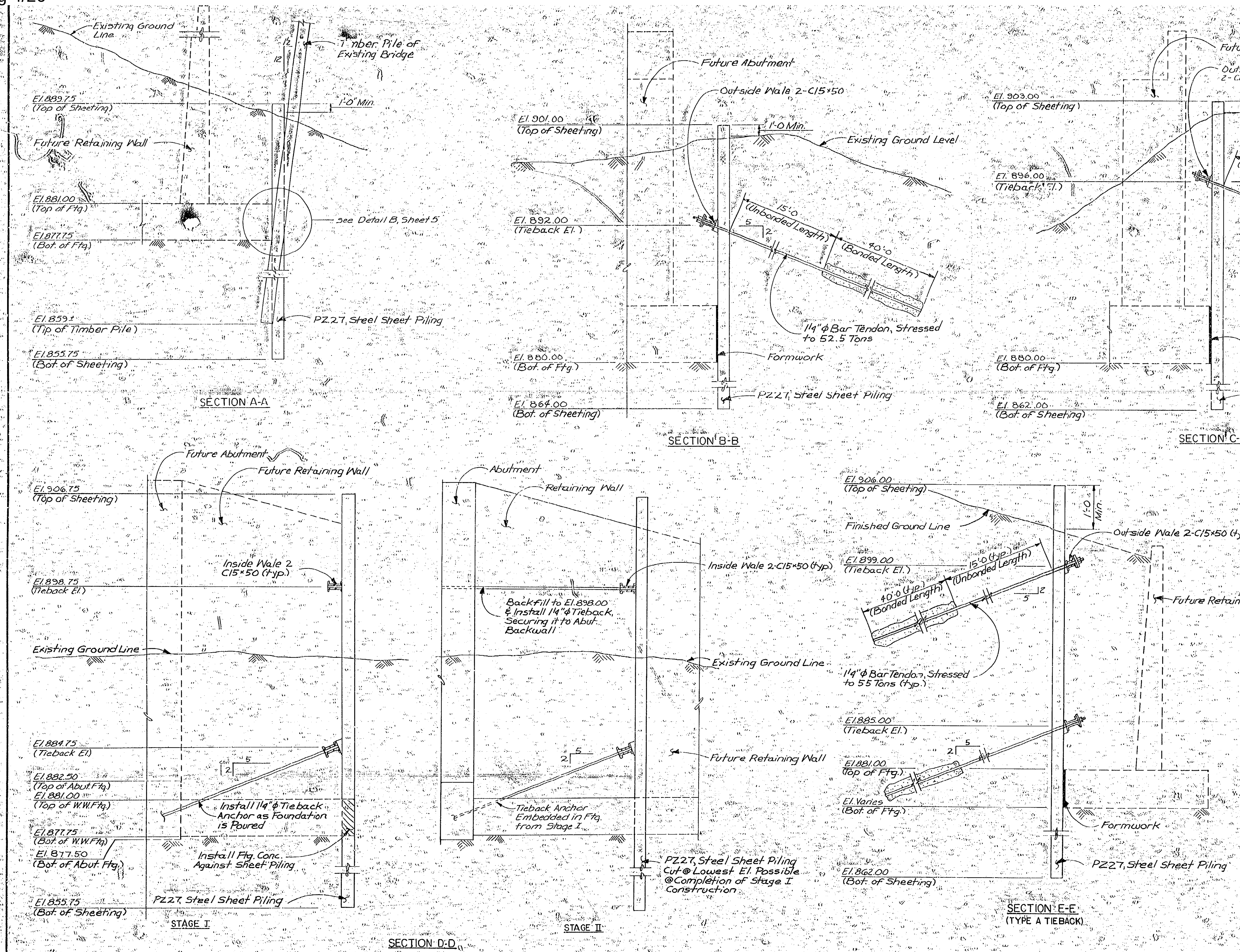
BRIDGE NO. 62002

TEMPORARY SHEET PILING DETAILS
(SHEET 1 OF 3)

APPROVED: 10-28-87

DRAWN BY: DJR CHECKED BY: SRK IN CHARGE OF: JTW

SHEET 3 OF 26 SHEETS 62002



For notes, see Sheet 5.

PLANS PREPARED BY
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MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

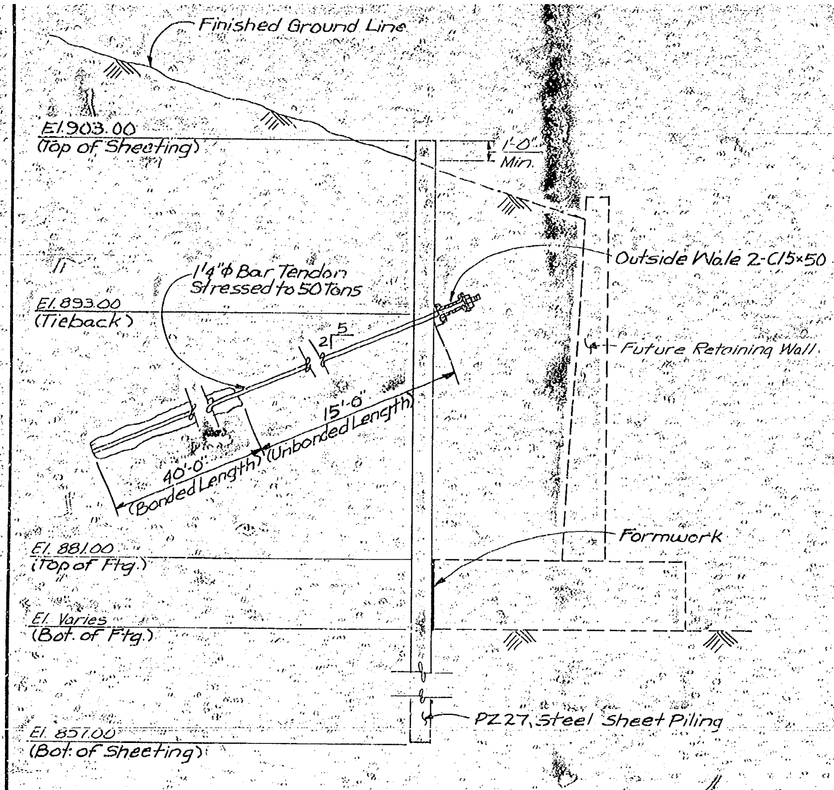
TEMPORARY SHEET PILING DETAILS

(SHEET 2 OF 3)

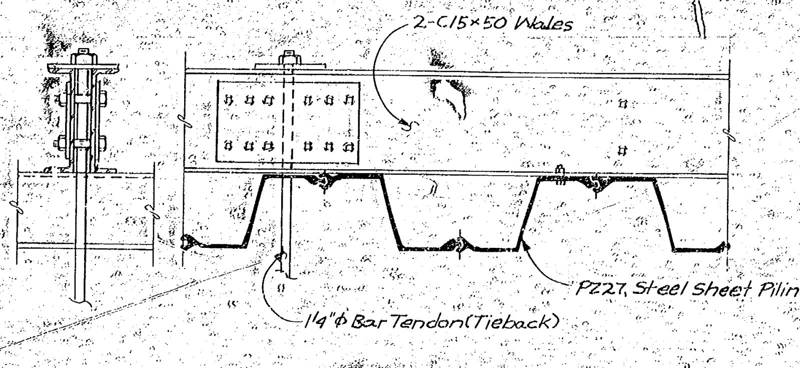
APPROVED: 10-28-87

DRAWN BY: KCP CHECKED BY: SRK IN CHARGE OF: JTW

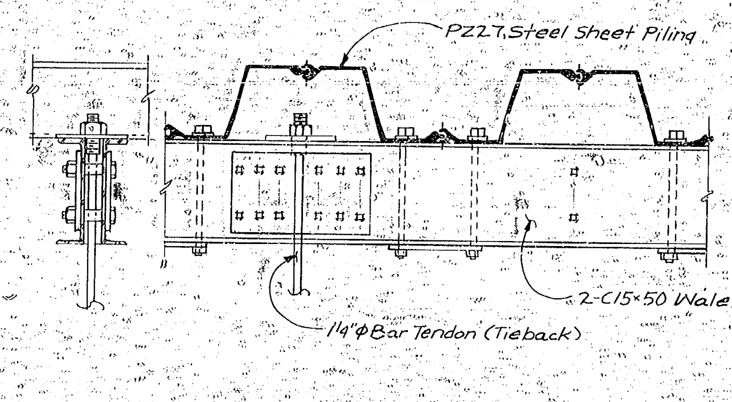
SHEET 4 OF 26 SHEETS 62002



SECTION F-F
(TYPE B TIEBACK)

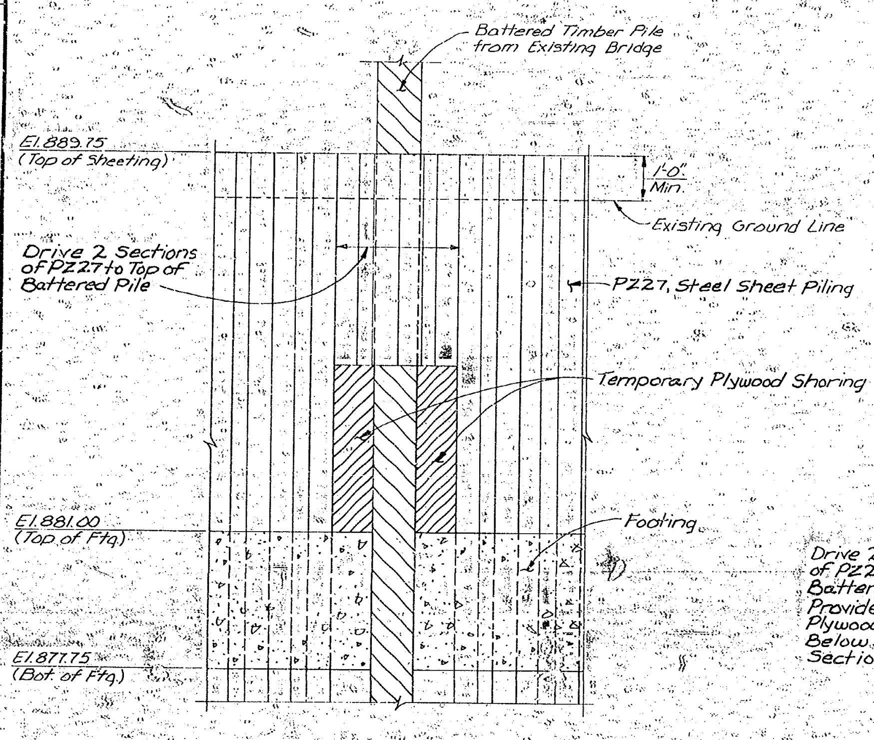


OUTSIDE WALE DETAIL

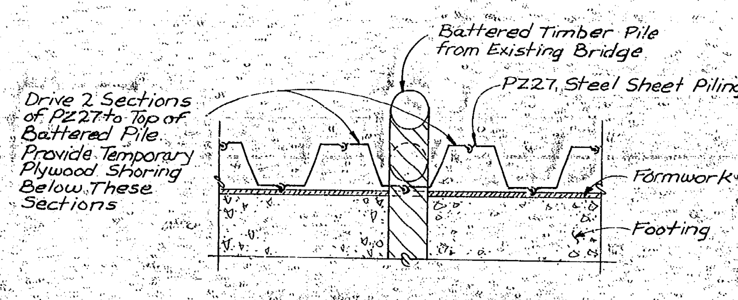


INSIDE WALE DETAIL

WALE DETAILS

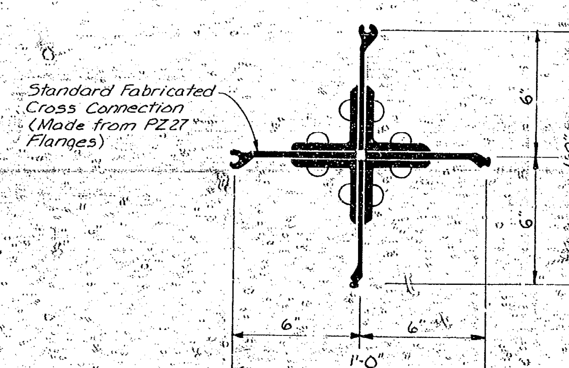


ELEVATION VIEW



PLAN VIEW AT TOP OF SHEETING

DETAIL B



DETAIL A

NOTES:

STRUCTURAL STEEL SHALL CONFORM TO MN/DOT 3306 (ASTM A36).

STEEL SHEET PILING SHALL CONFORM TO MN/DOT 3373 (ASTM A328).

DETAILS OF WALE & CONNECTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING RAILROAD PROPERTY, TRAFFIC AND TRAINMEN FROM DAMAGE AND ACCIDENT. SEE SPECIAL PROVISIONS FOR INSURANCE REQUIREMENTS AND SUBMITTAL PROCEDURES FOR PLANS SHOWING PROTECTIVE MEASURES THE CONTRACTOR INTENDS TO USE ADJACENT TO THE RAILROAD TRACKS.

ALL STEEL SHEET PILING IS TEMPORARY. PRICE BID FOR SHEET PILING SHALL INCLUDE FURNISHING, INSTALLING AND REMOVING ALL MATERIALS, INCLUDING SHEET PILING AND WALES.

AT STEEL SHEET PILING CORNERS, USE AN APPROPRIATE STANDARD FABRICATED CORNER.

EXCEPT FOR THE ELEVATIONS SHOWN, SECTION F-F ALSO APPLIES TO STAGE II - SOUTHEAST WINGWALL CONSTR.

NOTES ON CONSTRUCTION SEQUENCE:

STAGE I -

1. REMOVE TIMBER WALKWAY, PILE CAPS AND DUMP PLANKS AS NEEDED TO DRIVE SHEET PILING. BY RAILROAD FORCES.
2. DRIVE SHEET PILING AND EXCAVATE FOR FOOTING.
3. INSTALL SAFETY WALK AS REQUIRED.
4. BUILD BRIDGE NO. 62002 & RETAINING WALLS AS INDICATED. (SEE GRADING CONTRACT FOR RETAINING WALL PLANS)

STAGE II -

1. INSTALL SHEET PILING ON EAST ABUT. FOOTING.
2. BACKFILL BEHIND ABUTMENTS AND REMOVE EAST ABUTMENT SHEET PILING UP TO CROSS CONNECTION.
NOTE: SHEET PILING LOCATED UNDER EAST ABUTMENT APPROACH BLOCK TO REMAIN. REMOVE SHEET PILING LOCATED AT FRONT EDGE OF WEST ABUTMENT FOOTING.
3. INSTALL BALLAST, TIES, RAILS, ETC. ON PROPOSED ALIGNMENT. (BY RAILROAD)
4. DIVERT RAIL TRAFFIC TO PROPOSED ALIGNMENT.
5. REMOVE EXISTING BRIDGE.
6. CUT AND REMOVE SHEET PILING AT TOP OF FTG. FROM BACK FACE OF S.W. RETAINING WALL TO FRONT EDGE OF FTG. ATTACH THE REMAINDER OF THE SHEET PILING SECURELY TO THE BACK FACE OF THE RETAINING WALL.
7. DRIVE THE REST OF STAGE II SHEET PILING. REMOVE THE REMAINDER OF STAGE I SHEET PILING FROM EAST ABUTMENT AND ANCHOR THE WALE FOR STAGE II SHEET PILING SECURELY TO THE BACK FACE OF THE EAST ABUT.
8. COMPLETE EXCAVATION AND BUILD THE REMAINDER OF EAST ABUT. WINGWALL & S.W. RETAINING WALL. (SEE GRADING CONTRACT).
9. CUT SHEET PILING AT LOWEST ELEVATION POSSIBLE FROM BACK EDGE OF FOOTING TO BACK FACE OF SOUTHWEST RETAINING WALL.
10. BACKFILL AROUND THE SUBSTRUCTURES, REMOVE REMAINDER OF THE SHEET PILING AND GRADE TO FINAL CONTOUR.

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

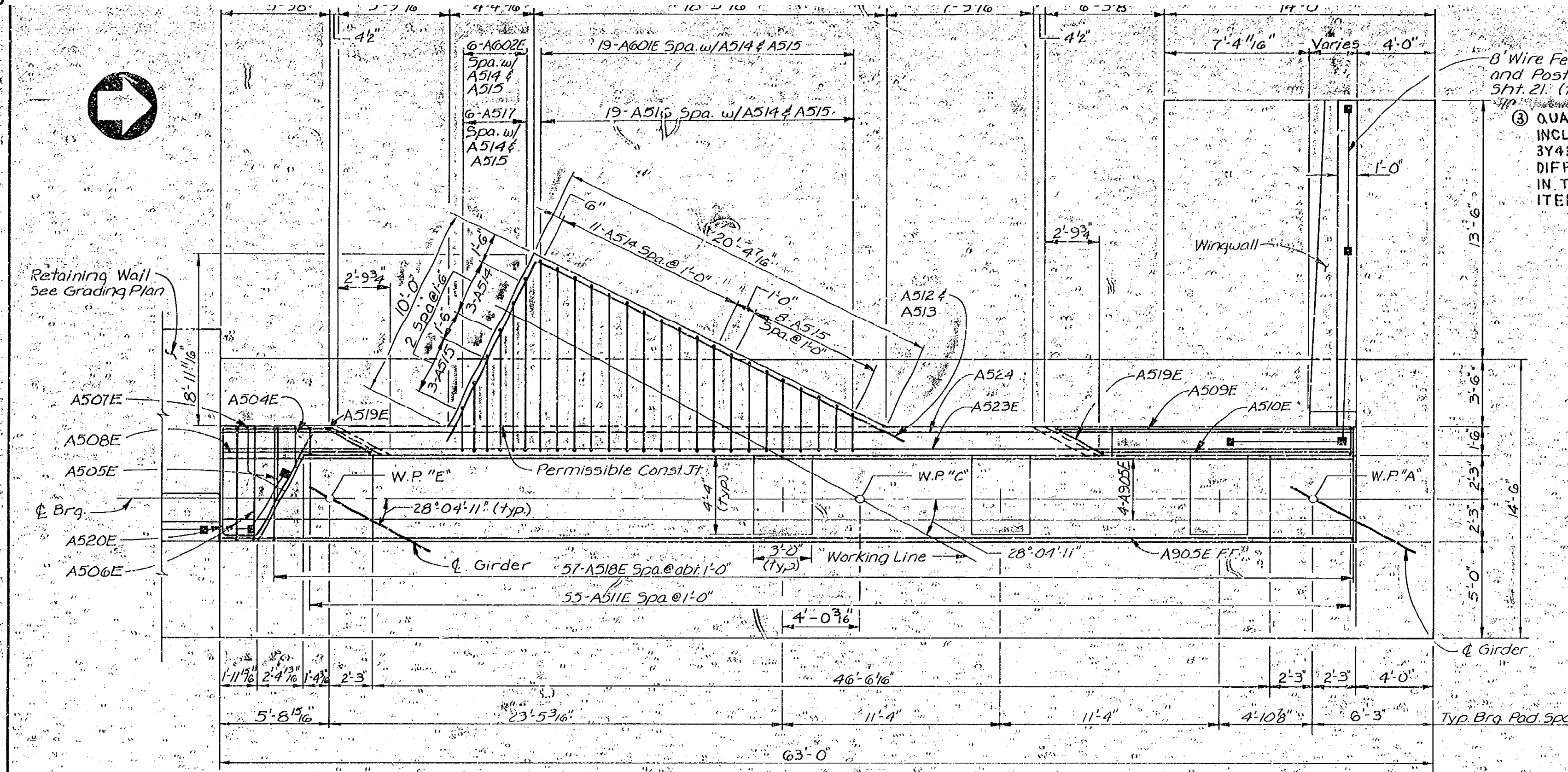
BRIDGE NO. 62002

TEMPORARY SHEET PILING DETAILS
(SHEET 3 OF 3)

APPROVED: 10-28-87

DRAWN BY: KCP CHECKED BY: SRK IN CHARGE OF: JTV

SHEET 5 OF 26 SHEETS 62002



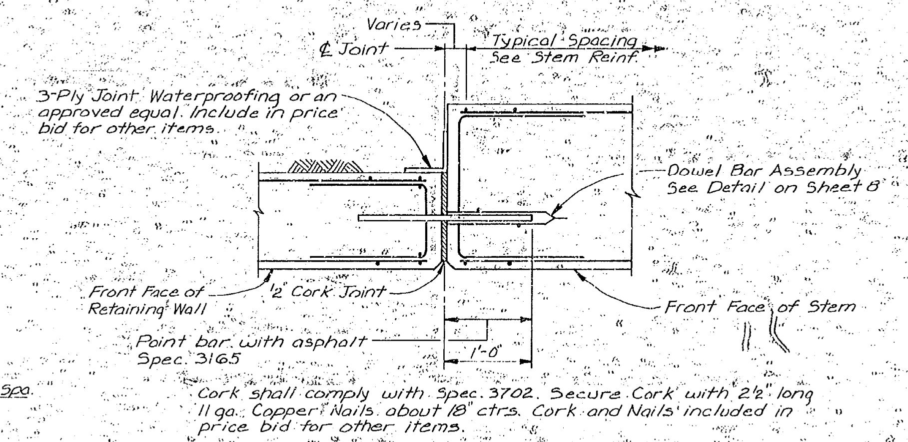
PLAN

8' Wire Fence, For Details and Post Spacing, see Sht. 21. (typ)

③ QUANTITY OF 3X33 CONCRETE IS INCLUDED IN THE QUANTITY OF 3Y43 CONCRETE. UNIT PRICE DIFFERENCE WILL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS.

SUMMARY OF QUANTITIES FOR WEST ABUTMENT			
	CONCRETE MIX NO. 1A43	204	C.Y.
	CONCRETE MIX NO. 3Y43	332	C.Y.
	REINFORCEMENT BARS	46,550	LB.
	REINFORCEMENT BARS (EPOXY COATED)	10,470	LB.
①	STRUCTURE EXCAVATION	832	C.Y.
②	CAST-IN-PLACE CONCRETE PILING DELIVERED	6000	L.F.
②	CAST-IN-PLACE CONCRETE PILING DRIVEN	6000	L.F.
	CAST-IN-PLACE CONCRETE TEST PILES, 90 FT. LONG	4	EACH
	DAMPPROOFING	2016	S.Y.
①	3-PLY JT. WATERPROOFING	100	L.F.
	REVERSE BATTEN SURFACE TREATMENT	1620	SQ. FT.

① COMPUTED FOR INFORMATIONAL PURPOSES ONLY.
② DOES NOT INCLUDE TEST PILES.



Cork shall comply with Spec. 3702. Secure Cork with 2½" long 11 ga. Copper Nails about 18" ctrs. Cork and Nails included in price bid for other items.

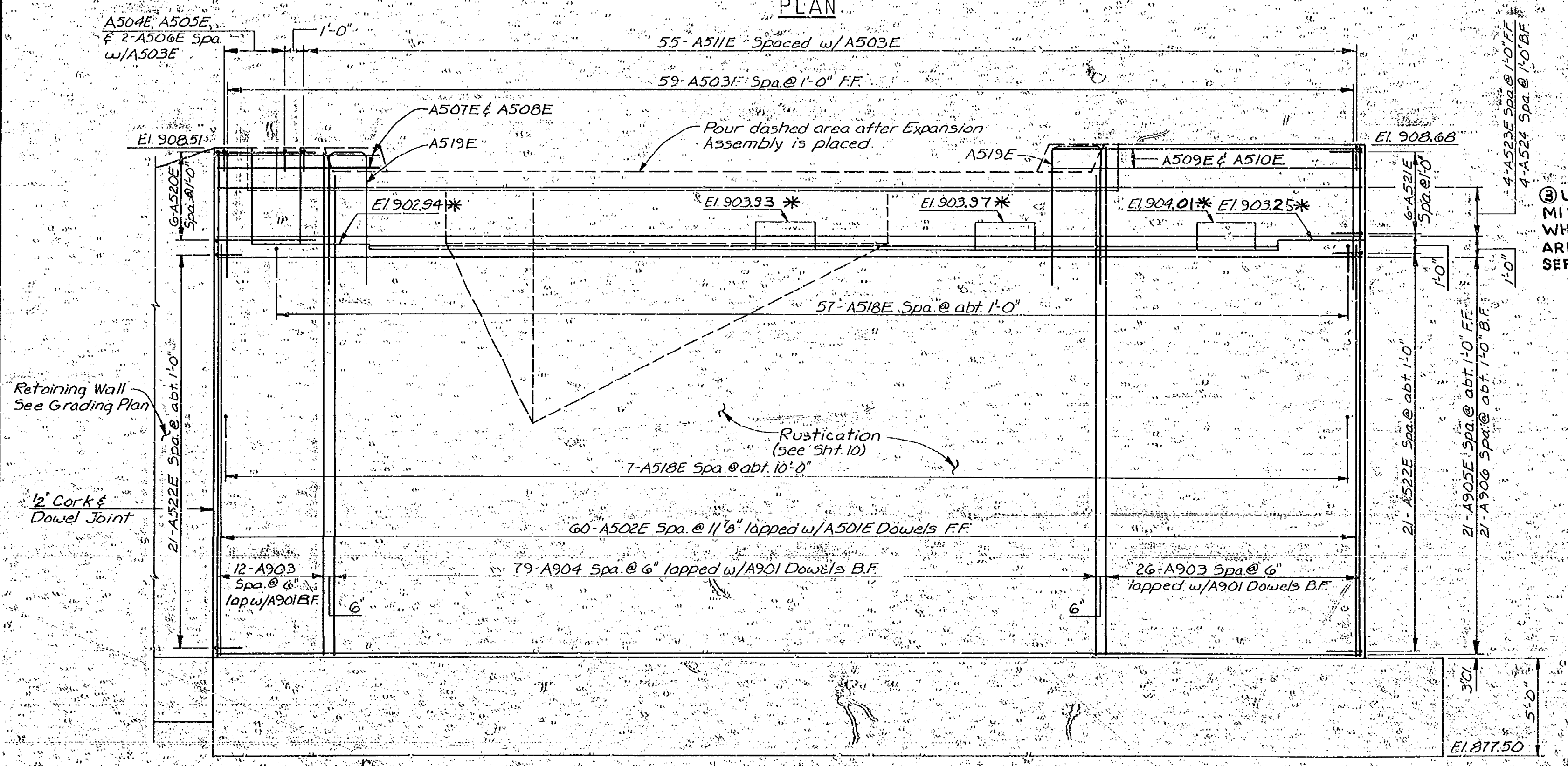
TYPICAL SECTION THRU STEM JOINT

NOTES:

* BEARING PADS WILL BE CAST SEPARATELY AFTER THE TYPE OF BEARING HAS BEEN SELECTED AND THE ACTUAL DETAILS HAVE BEEN DETERMINED AND FINALIZED.

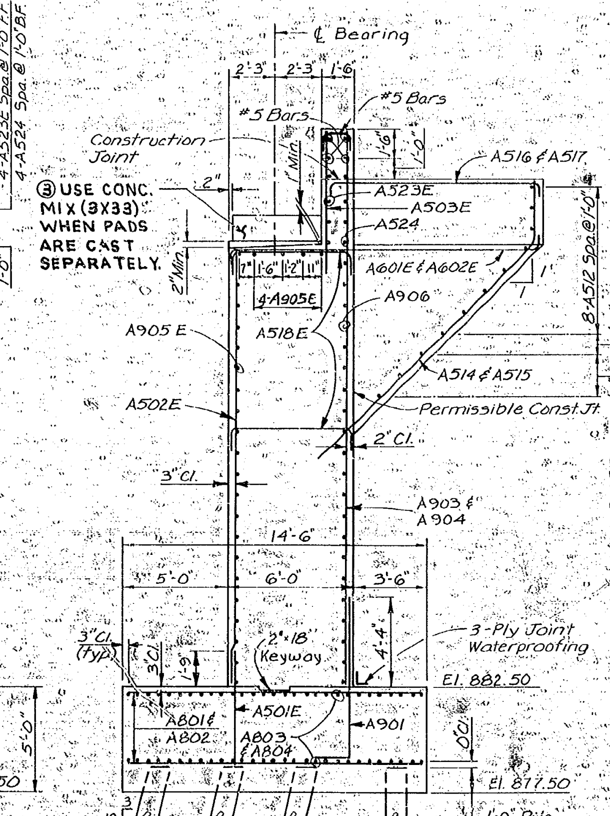
INCLUDE 3-PLY JOINT WATERPROOFING IN PRICE BID FOR OTHER ITEMS.
FOR BILL OF REINFORCEMENT AND BAR BEND DETAILS SEE SHEET 10.
FOR PILE NOTES, PILE SCHEDULE, AND PILE LOADS SEE SHEET 9.
FOR ADDITIONAL DETAILS SEE SHEETS 7,8 &9.
FOR RUSTICATION DETAIL SEE SHEET 10.
DAMPPROOFING SHALL BE APPLIED TO THE BACK FACE OF THE ABUTMENT FROM TOP OF FOOTING TO WITHIN 6" OF TOP OF PARAPET.
PLACE PROTECTIVE COATING ON BRIDGE SEAT AND 3" UP PARAPET WALLS. SEE SPECIAL PROVISIONS.

Bridge Seat Reinforcement must be placed carefully to avoid obstructing the future drilling of Anchor Rod holes. A518E bars should be placed w/ the nearest A533E or A401E bars in Bridge Seat areas.
For Bridge Seat Reinforcement see Sht. 7&9.
For Anchor Rod locations see Sht. 20.



ELEVATION

③ USE CONC. MIX (3X33) WHEN PADS ARE CAST SEPARATELY.



ABUTMENT SECTION

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

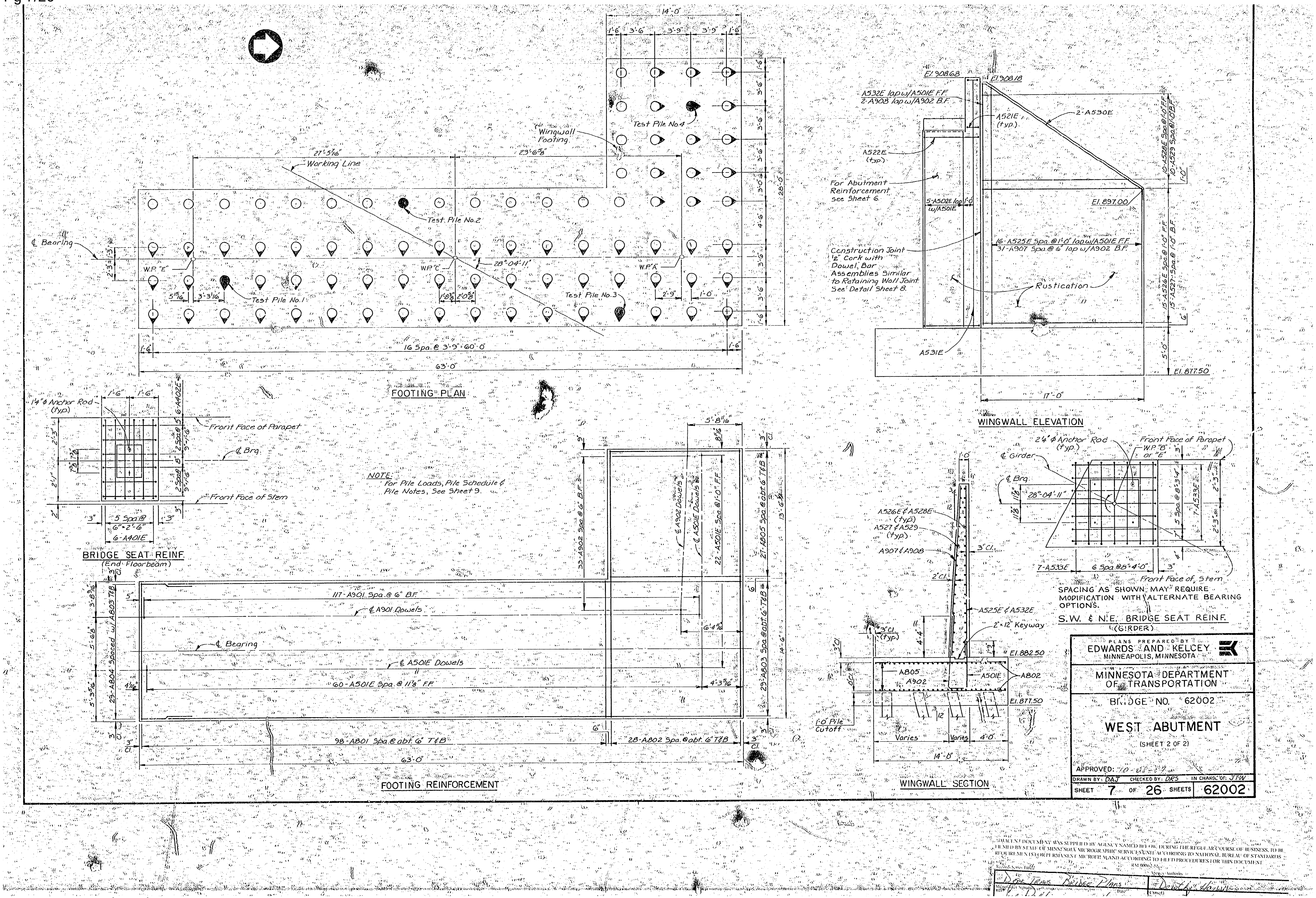
WEST ABUTMENT

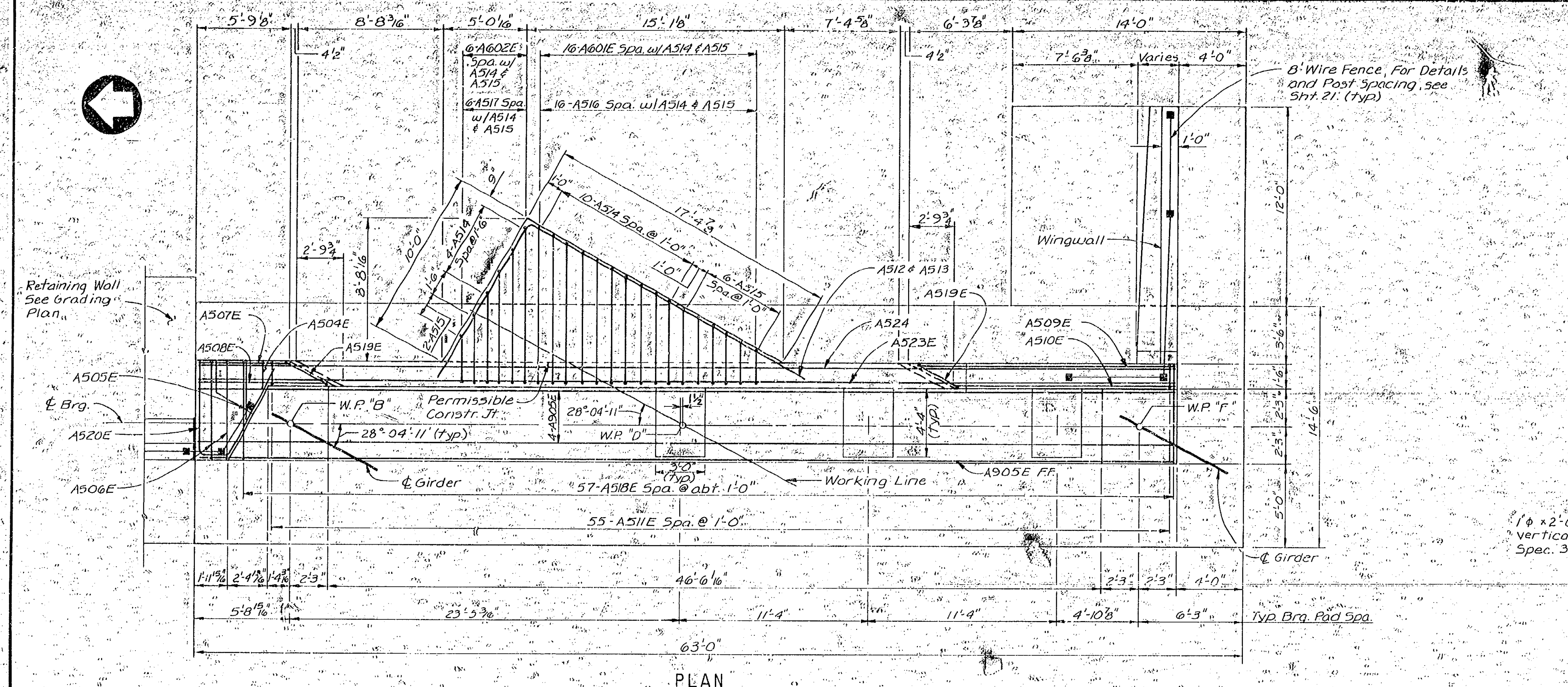
(SHEET 1 OF 2)

APPROVED: 10-28-87

DRAWN BY: DAJ CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 6 OF 26 SHEETS 62002

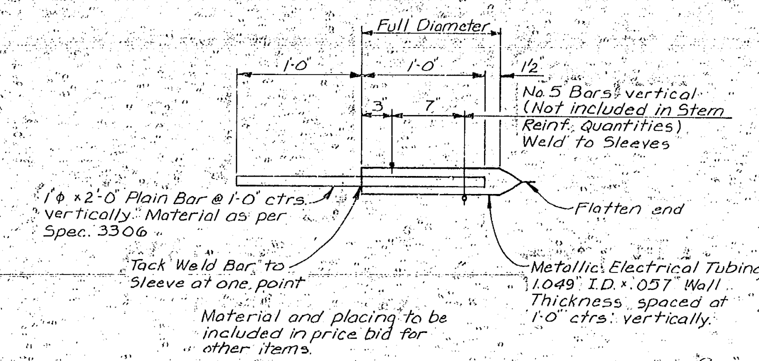

FOOTING PLAN
BRIDGE SEAT REINF.
(End Floorbeam)
NOTE:
For Pile Loads, Pile Schedule & Pile Notes, See Sheet 9.
FOOTING REINFORCEMENT
WINGWALL ELEVATION
WINGWALL SECTION
SPACING AS SHOWN MAY REQUIRE MODIFICATION WITH ALTERNATE BEARING OPTIONS.
S.W. & N.E. BRIDGE SEAT REINF.
(GIRDER)
PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 62002
WEST ABUTMENT
(SHEET 2 OF 2)
APPROVED:
DRAWN BY: DAJ
CHECKED BY: DRS
IN CHARGE OF: JTW
SHEET 7 OF 26 SHEETS 62002



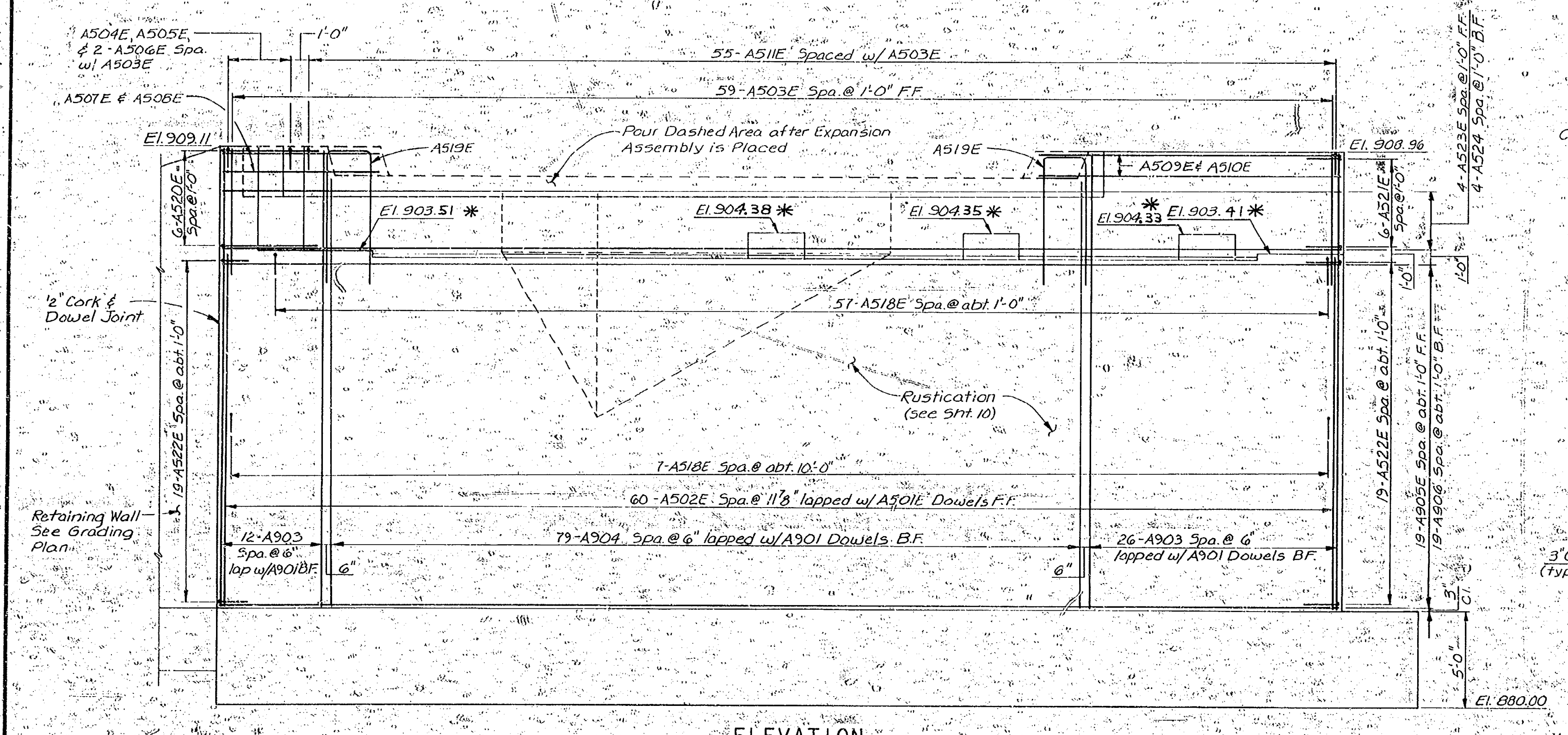
PLAN

SUMMARY OF QUANTITIES FOR EAST ABUTMENT		
	CONCRETE MIX NO. 1A43	200 C.Y.
	CONCRETE MIX NO. 3Y43	298 C.Y.
	REINFORCEMENT BARS	44,980 LB.
	REINFORCEMENT BARS (EPOXY COATED)	9,720 LB.
①	STRUCTURE EXCAVATION	816 C.Y.
②	CAST-IN-PLACE CONCRETE PILING DELIVERED	5700 L.F.
②	CAST-IN-PLACE CONCRETE PILING DRIVEN	5700 L.F.
	CAST-IN-PLACE CONCRETE TEST PILES, 90 FT. LONG	4 EACH
	DAMPPROOFING	1810 S.Y.
③	BRIDGE NAME PLATE	ONE UNIT
①	3-PLY JT. WATERPROOFING	95 L.F.
④	BENCH MARK DISK	ONE UNIT
	REVERSE BATTEN SURFACE TREATMENT	1450 SQ. FT.
	THREADED REINFORCEMENT BAR COUPLERS (TYPE 8)	56 EACH

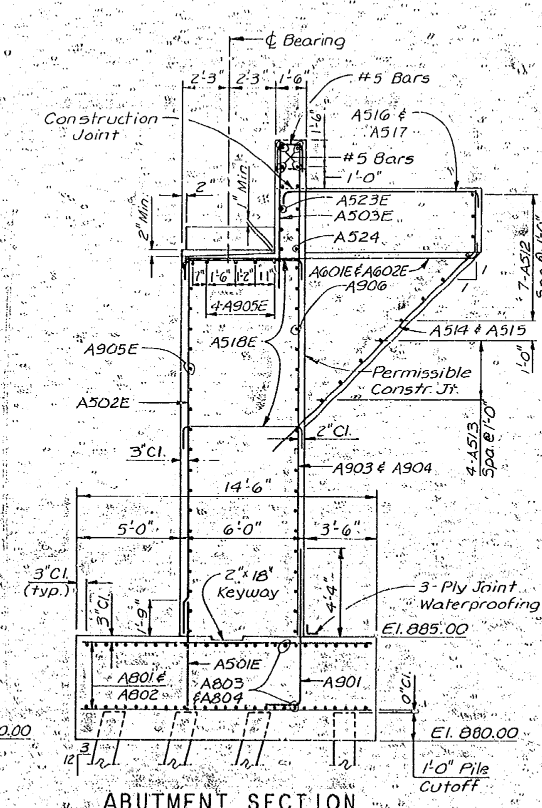
① Computed for informational purposes only.
② Does Not include Test Piles.
③ Include in Price Bid for other Items. Standard Bridge Details.
④ State will furnish disk. Payment for placing to be included in price bid for other items. See Standard Plate No. 9301 for placing.



DOWEL BAR ASSEMBLY



ELEVATION



ABUTMENT SECTION

NOTES:
INCLUDE 3-PLY JOINT WATERPROOFING IN PRICE BID FOR OTHER ITEMS.
FOR BILL OF REINFORCEMENT AND BAR BEND DETAILS SEE SHEET 10.
FOR PILE NOTES, PILE SCHEDULE, AND PILE LOADS SEE SHEET 9.
FOR ADDITIONAL DETAILS SEE SHEETS 6, 7 & 9.
FOR RUSTICATION DETAIL SEE SHEET 10.
DAMPPROOFING SHALL BE APPLIED TO THE BACK FACE OF THE ABUTMENT FROM TOP OF FOOTING TO WITHIN 6" OF TOP OF PARAPET.

Bridge Seat Reinforcement must be placed carefully to avoid obstructing the future drilling of Anchor Rod holes. A518E bars should be placed w/ the nearest A533E or A401E bars in Bridge Seat areas.
For Bridge Seat Reinforcement see Shts. 7 & 9.
For Anchor Rod locations see Sht. 20.
✳ SEE SHEET 6 FOR NOTE.

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

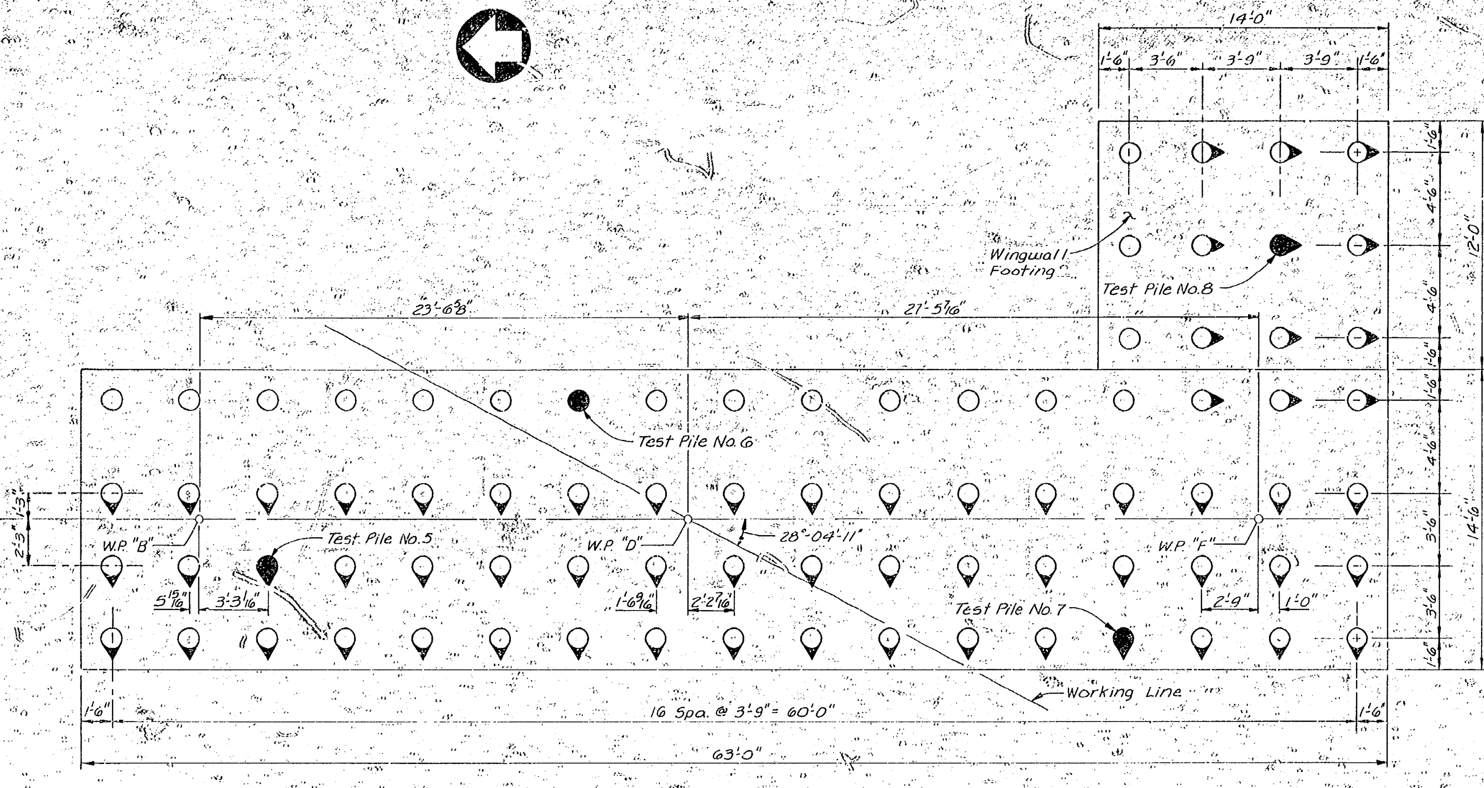
EAST ABUTMENT

(SHEET 1 OF 2)

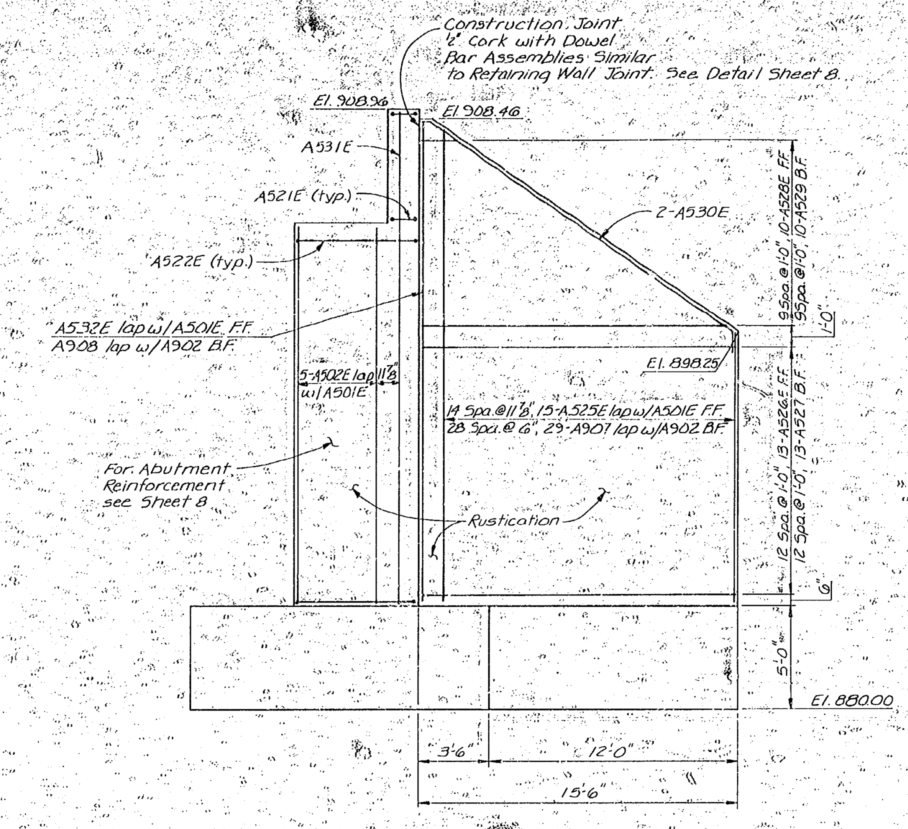
APPROVED: 10-28-87

DRAWN BY: DJR CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 8 OF 26 SHEETS 62002



FOOTING PLAN



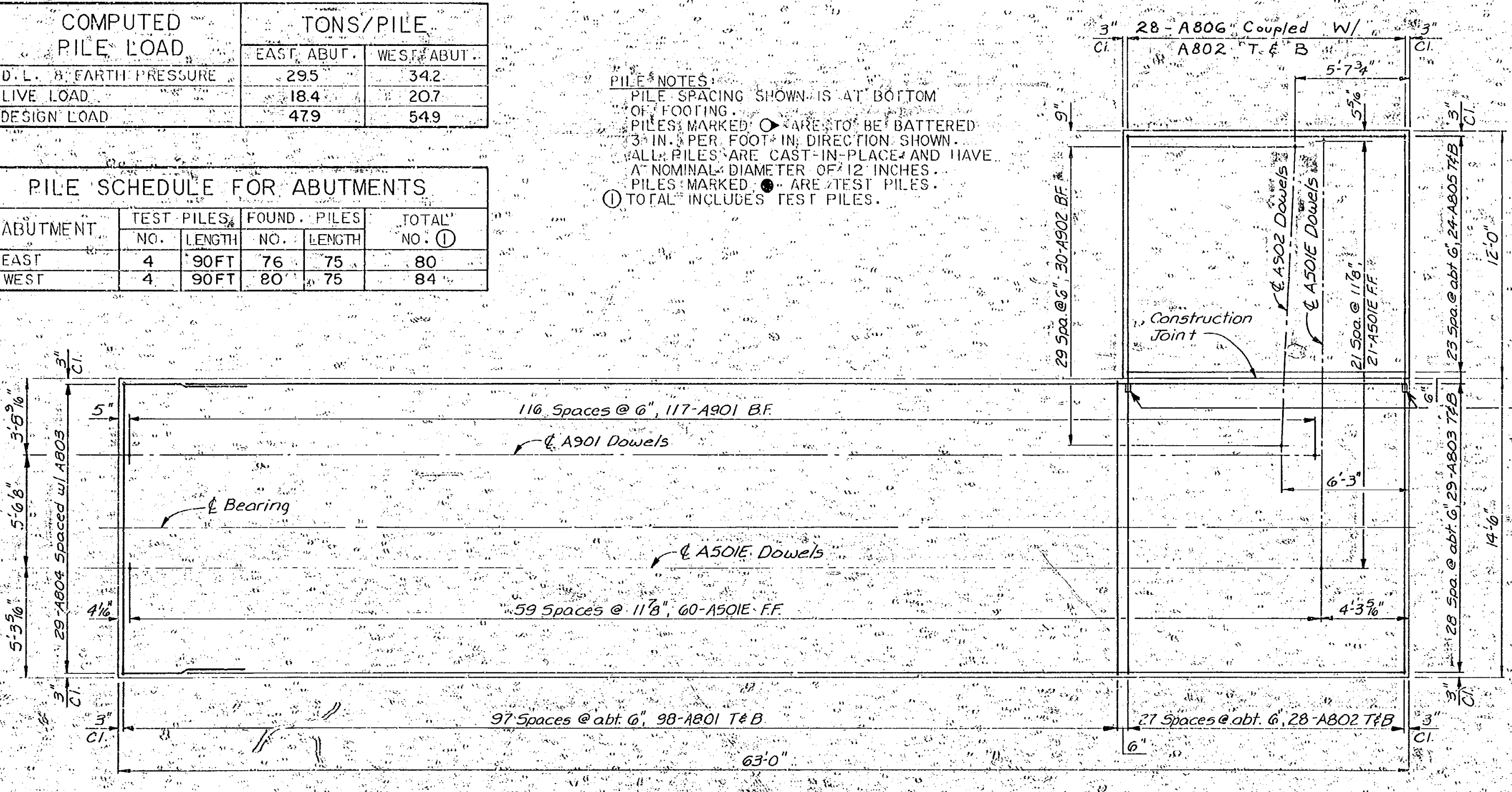
WINGWALL ELEVATION

COMPUTED PILE LOAD	TONS/PILE	
	EAST ABUT.	WEST ABUT.
D.L. & EARTH PRESSURE	29.5	34.2
LIVE LOAD	18.4	20.7
DESIGN LOAD	47.9	54.9

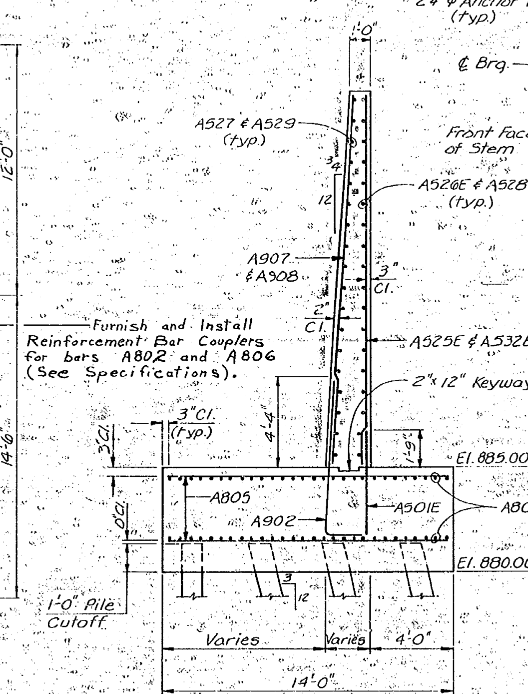
PILE SCHEDULE FOR ABUTMENTS

ABUTMENT	TEST PILES		FOUND. PILES		TOTAL NO. ①
	NO.	LENGTH	NO.	LENGTH	
EAST	4	90FT	76	75	80
WEST	4	90FT	80	75	84

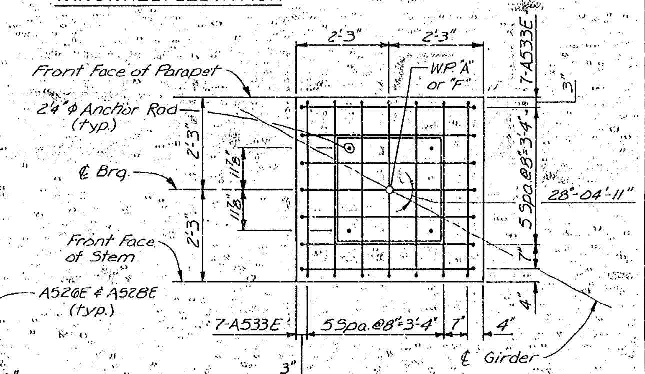
PILE NOTES:
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
PILES MARKED ○➤ ARE TO BE BATTERED 3 IN. PER FOOT IN DIRECTION SHOWN.
ALL PILES ARE CAST-IN-PLACE AND HAVE A NOMINAL DIAMETER OF 12 INCHES.
PILES MARKED ● ARE TEST PILES.
① TOTAL INCLUDES TEST PILES.



FOOTING REINFORCEMENT



WINGWALL SECTION



SEE SAME DETAIL FOR WEST ABUT., SHT. 7

S.E. & N.W. BRIDGE SEAT REINF.
(Girder)

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

EAST ABUTMENT

(SHEET 2 OF 2)

APPROVED:

DRAWN BY: DJR CHECKED BY: DRS IN CHARGE OF: JTW

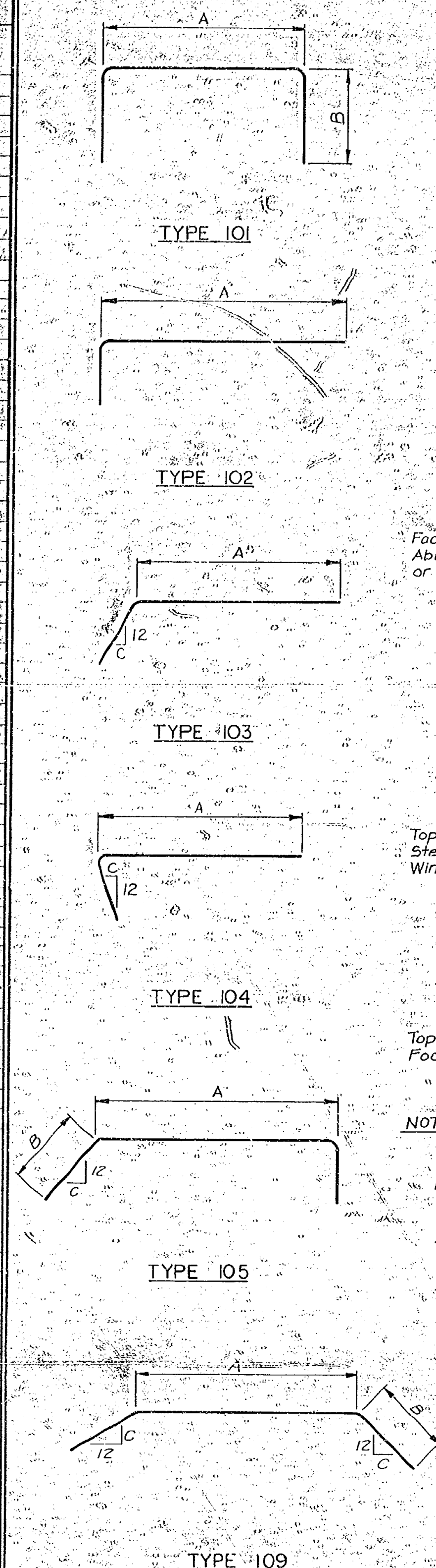
SHEET 9 OF 26 SHEETS 62002

WEST ABUT.

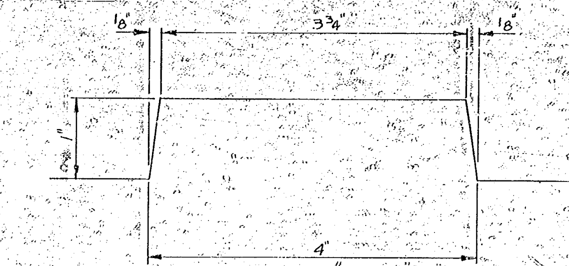
BAR	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LOCATION
A401E	18	8'-4"	101	4'-0"	2'-2"		Bridge Seat Horiz.
A402E	18	7'-0"	101	2'-8"	2'-2"		Bridge Seat Longit.
A501E	82	5'-6"	Str.				Footing Dowel
A502E	65	20'-1"	Str.				Stem Vert. F.F.
A503E	59	6'-7"	Str.				Parapet Vert. F.F.
A504E	1	6'-10"	101	2'-2"	2'-4"		Parapet Horiz.
A505E	1	8'-9"	101	4'-1"	2'-4"		" "
A506E	2	10'-3"	101	5'-7"	2'-4"		" "
A507E	2	5'-3"	Str.				Parapet Longit. B.F.
A508E	2	8'-1"	Str.				" " F.F.
A509E	2	19'-5"	Str.				" " B.F.
A510E	2	16'-11"	Str.				" " F.F.
A511E	55	5'-10"	101	1'-2"	2'-4"		Parapet Horiz.
A512	8	32'-0"	102	21'-2"			Approach Block Horiz.
A513	3	14'-4"	102	9'-4"			" " "
A514	14	16'-2"	103	2'-10"		12	Approach Block Vert.
A515	11	9'-2"	103	2'-10"		12	" " "
	1ea.	3'-7"	101	1'-11"			
A516	of 19	to		to	0'-10"		Approach Block Horiz.
	=19	11'-7"	101	9'-11"			
	1ea.	3'-6"	101	1'-10"			
A517	of 6	to		to	0'-10"		Approach Block Horiz.
	=6	10'-9"	101	8'-7"			
A518E	64	7'-3"	101	5'-7"	0'-10"		Bridge Seat Horiz.
A519E	2	15'-6"	101	2'-6"	6'-6"		Parapet Vert.
A520E	6	13'-1"	105	1'-7"	5'-11"	6	Parapet Horiz.
A521E	6	2'-10"	101	1'-2"	0'-10"		Parapet Horiz.
A522E	42	7'-3"	101	5'-7"	0'-10"		Stem Horiz.
A523E	4	58'-8"	Str.				Parapet Horiz. F.F.
A524	4	58'-8"	Str.				" " B.F.
	1ea.	25'-1"					
A525E	of 16	to	Str.				Wingwall Vert. F.F.
	=16	14'-9"					
A526E	15	16'-8"	Str.				Wingwall Horiz. F.F.
A527	15	16'-8"	Str.				" " B.F.
	1ea.	15'-1"					
A528E	of 10	to	Str.				Wingwall Horiz. F.F.
	=10	2'-0"					
	1ea.	15'-1"					
A529	of 10	to	Str.				Wingwall Horiz. B.F.
	=10	2'-0"					
A530E	2	21'-2"	109	19'-7"	1'-0"	8	Wingwall along top
A531E	1	26'-0"	Str.				Vert. Stem End Face
A532E	1	25'-6"	Str.				Wingwall Vert. F.F.
A533E	28	5'-9"	101	4'-1"	0'-10"		Bridge Seat
A801	196	14'-0"	Str.				Footing Trans.
A802	56	27'-6"	Str.				" "
A803	58	60'-0"	Str.				Footing Longit.
A804	58	7'-3"	Str.				" "
A805	54	13'-6"	Str.				" "
A901	117	9'-9"	102	8'-2"			Footing Dowel
A902	33	9'-9"	104	8'-2"		3/4	" "
A903	38	25'-10"	Str.				Stem Vert. B.F.
A904	79	24'-4"	Str.				" " "
A905E	25	58'-8"	Str.				Stem Horiz. F.F.
A906	21	58'-8"	Str.				" " B.F.
	1ea.	25'-1"					
A907	of 31	to	Str.				Wingwall Vert. B.F.
	=31	14'-9"					
A908	2	25'-6"	Str.				Wingwall Vert. B.F.
	1ea.	8'-4"	121	6'-4"			
A601E	of 19	to		to	1'-0"		Approach Block Horiz.
	=19	16'-4"	121	14'-4"			
	1ea.	8'-3"	121	6'-3"			
A602E	of 6	to		to	1'-0"		Approach Block Horiz.
	=6	15'-0"	121	13'-0"			

EAST ABUT.

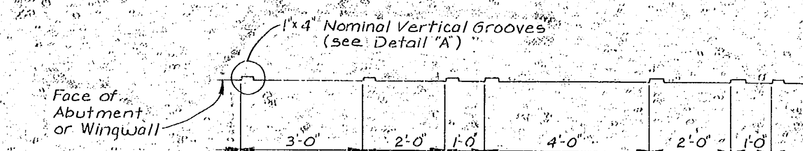
BAR	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LOCATION
A401E	18	8'-4"	101	4'-0"	2'-2"		Bridge Seat Horiz.
A402E	18	7'-0"	101	2'-8"	2'-2"		Bridge Seat Longit.
A501E	81	5'-6"	Str.				Footing Dowel
A502E	65	18'-0"	Str.				Stem Vert. F.F.
A503E	59	6'-7"	Str.				Parapet Vert. F.F.
A504E	1	6'-10"	101	2'-2"	2'-4"		Parapet Horiz.
A505E	1	8'-9"	101	4'-1"	2'-4"		" "
A506E	2	10'-3"	101	5'-7"	2'-4"		" "
A507E	2	5'-3"	Str.				Parapet Longit. B.F.
A508E	2	8'-1"	Str.				" " F.F.
A509E	2	19'-5"	Str.				" " B.F.
A510E	2	16'-11"	Str.				" " F.F.
A511E	55	5'-10"	101	1'-2"	2'-4"		Parapet Horiz.
A512	7	29'-1"	102	18'-3"			Approach Block Horiz.
A513	4	15'-5"	102	9'-7"			" " "
A514	14	15'-4"	103	2'-11"		12	Approach Block Vert.
A515	8	8'-2"	103	2'-11"		12	" " "
	1ea.	3'-6"	101	1'-10"			
A516	of 16	to		to	0'-10"		Approach Block Horiz.
	=16	10'-11"	101	9'-3"			
	1ea.	4'-2"	101	2'-6"			
A517	of 6	to		to	0'-10"		Approach Block Horiz.
	=6	10'-8"	101	9'-0"			
A518E	64	7'-3"	101	5'-7"	0'-10"		Bridge Seat Horiz.
A519E	2	15'-8"	101	2'-6"	6'-7"		Parapet Vert.
A520E	6	13'-1"	105	1'-7"	5'-11"	6	Parapet Horiz.
A521E	6	2'-10"	101	1'-2"	0'-10"		Parapet Horiz.
A522E	38	7'-3"	101	5'-7"	0'-10"		Stem Horiz.
A523E	4	58'-8"	Str.				Parapet Horiz. F.F.
A524	4	58'-8"	Str.				" " B.F.
	1ea.	22'-11"					
A525E	of 15	to	Str.				Wingwall Vert. F.F.
	=15	13'-4"					
A526E	13	15'-2"	Str.				Wingwall Horiz. F.F.
A527	13	15'-2"	Str.				" " B.F.
	1ea.	14'-8"					
A528E	of 10	to	Str.				Wingwall Horiz. F.F.
	=10	1'-8"					
	1ea.	14'-8"					
A529	of 10	to	Str.				Wingwall Horiz. B.F.
	=10	1'-8"					
A530E	2	19'-5"	109	17'-10"	1'-0"	8	Wingwall along top
A531E	1	23'-10"	Str.				Vert. Stem End Face
A532E	1	23'-4"	Str.				Wingwall Vert. F.F.
A533E	28	5'-9"	101	4'-1"	0'-10"		Bridge Seat
A801	196	14'-0"	Str.				Footing Trans.
*A802	56	19'-0"	Str.				" " *
A803	58	60'-0"	Str.				Footing Longit.
A804	58	7'-3"	Str.				" "
A805	48	13'-6"	Str.				" "
*A806	56	11'-9"	Str.				Footing Trans. *
A901	117	9'-9"	102	8'-2"			Footing Dowel
A902	30	9'-9"	104	8'-2"		3/4	" "
A903	38	23'-10"	Str.				Stem Vert. B.F.
A904	79	22'-4"	Str.				" " "
A905E	23	58'-8"	Str.				Stem Horiz. F.F.
A906	19	58'-8"	Str.				" " B.F.
	1ea.	23'-3"					
A907	of 29	to	Str.				Wingwall Vert. B.F.
	=29	13'-7"					
A908	1	23'-4"	Str.				Wingwall Vert. B.F.
	1ea.	8'-3"	121	6'-3"			
A601E	of 16	to		to	1'-0"		Approach Block Horiz.
	=16	15'-8"	121	13'-8"			
	1ea.	8'-11"	121	6'-11"			
A602E	of 6	to		to	1'-0"		Approach Block Horiz.
	=6	15'-5"	121	13'-5"			



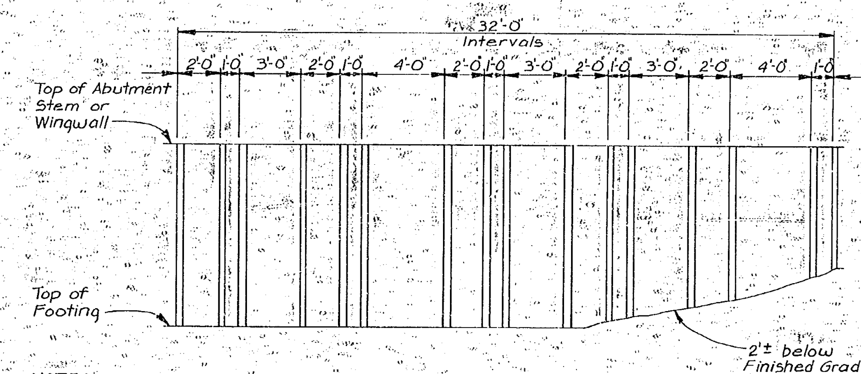
* See Specifications concerning "Reinforcement Bar Couplers" for these bars.



DETAIL "A"



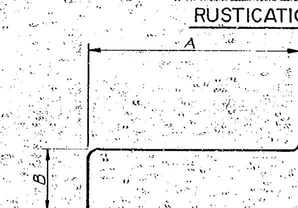
PLAN



ELEVATION

NOTE: Grooves shall be provided at Stem Joints between panels.

RUSTICATION DETAILS



TYPE 121

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

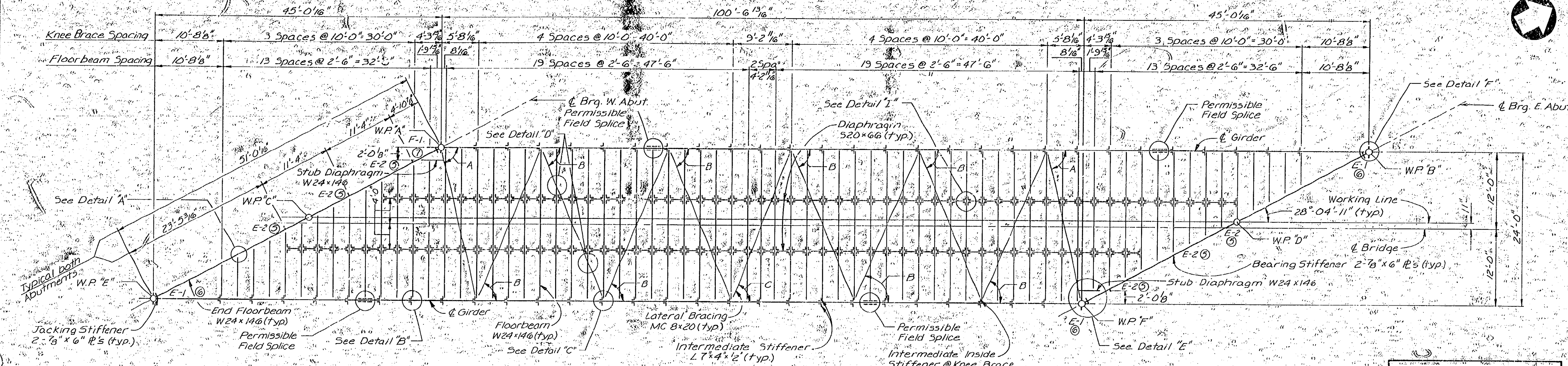
BRIDGE NO. 62002

BILL OF REINFORCEMENT AND RUSTICATION DETAILS

APPROVED: 10-28-87

DRAWN BY: DAJ CHECKED BY: DRS IN CHARGE OF: JTW

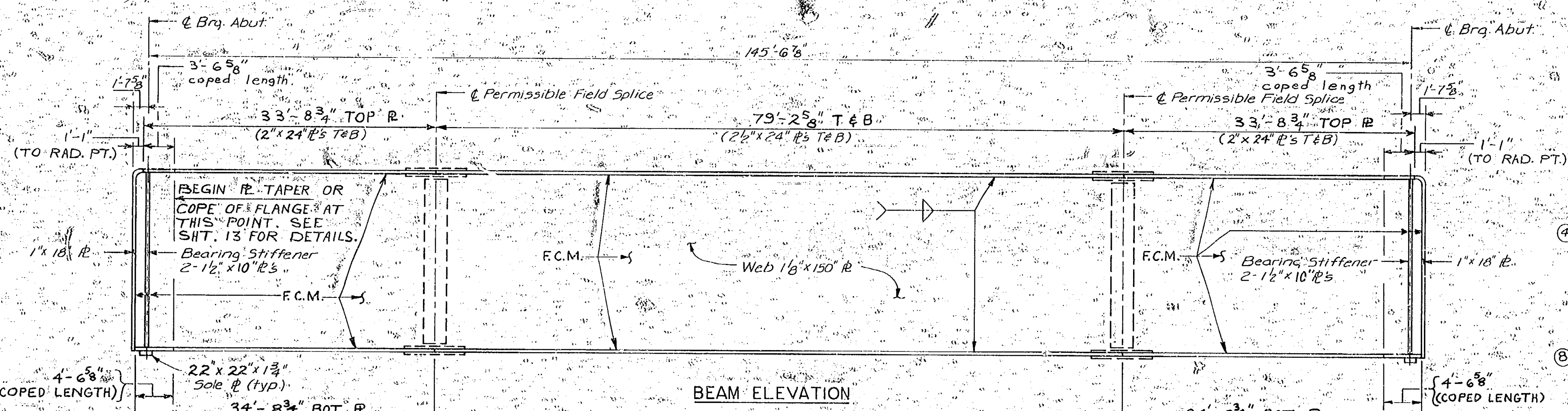
SHEET 10 OF 26 SHEETS | 62002



FRAMING PLAN

SCALE

LATERAL BRACING ANGLES	
ANGLE	MEASURE
A	76°-42'-12"
B	67°-22'-48"
C	68°-58'-36"



BEAM ELEVATION

②	Structural Steel (3309)	782,035 Pounds
⑦	Fixed Disk Bearing Assembly Type 1	1 Each
⑥	Expansion Disk Bearing Assembly Type 1	3 Each
⑤	Expansion Disk Bearing Assembly Type 2	6 Each
②	Zinc-Rich Paint System	1 Lump Sum
④①	One-Ply Membrane Waterproofing	3418 Sq. Ft.
③	Railroad Track Ballast Placed	34 Cu. Yd.
④	Drainage System	1 Lump Sum

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

① INCLUDES MEMBRANE WATERPROOFING & ASPHALT PLANK PROTECTION.
② TYPE OF STEEL DESIGNATED HERE IS FOR BIDDING PURPOSES ONLY. ACTUAL STEEL TYPE UTILIZED WILL BE ASTM A709 GRADE 50WF2 FOR FCM STEEL AND GRADE 50W FOR ALL OTHER STEEL.
⑧③ Ballast supplied and placed by Soo Line Railroad Company.
④ See Special Provisions.

NOTES:

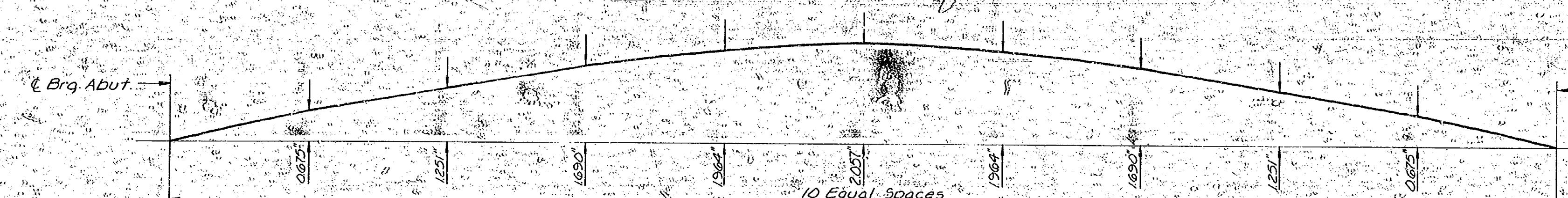
⑦ Bearing Code: F-1 Denotes Fixed Bearing Assembly Type 1, see Sht. 20.
⑥ E-1 Denotes Expansion Bearing Assembly Type 1, see Sht. 19.
⑤ E-2 Denotes Expansion Bearing Assembly Type 2, see Sht. 19.

See Sheet 14 for Structural Steel Notes.

Railroad will place Sub-ballast to a depth of 4" immediately after the installation of the Asphalt Plank protection.

Ballast, Ties, Rails and Hardware will be furnished and installed by the Railroad.

⑧ Work and material to be completed under force account work under grading contract.



CAMBER DIAGRAM

CAMBER NOTES:
CAMBER DIAGRAM SHOWN IS FOR BEAMS IN UNLOADED POSITION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS. BASE LINE IN CAMBER DIAGRAM IS A STRAIGHT LINE FROM ℄ BEARING TO ℄ BEARING. RESIDUAL CAMBER EQUALS 5/8".

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

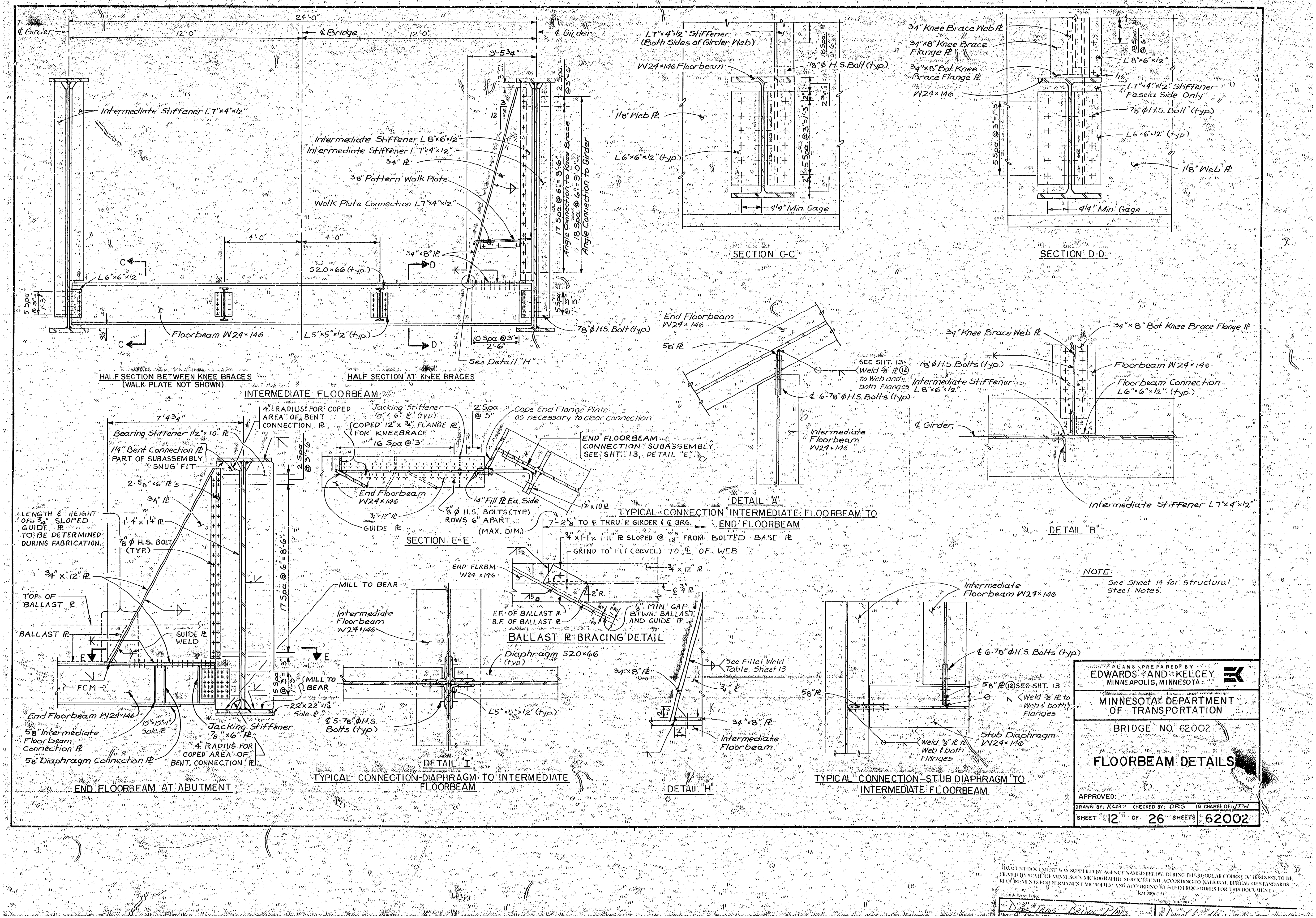
BRIDGE NO. 62002

FRAMING PLAN AND BEAM ELEVATION

APPROVED: 10-28-87

DRAWN BY: DJR/QAJ CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 11 OF 26 SHEETS 62002


HALF SECTION BETWEEN KNEE BRACES
(WALK PLATE NOT SHOWN)
HALF SECTION AT KNEE BRACES
INTERMEDIATE FLOORBEAM
SECTION C-C
SECTION D-D
DETAIL "A"
TYPICAL CONNECTION-INTERMEDIATE FLOORBEAM TO END FLOORBEAM
DETAIL "B"
SECTION E-E
BALLAST PL BRACING DETAIL
END FLOORBEAM AT ABUTMENT
DETAIL "I"
TYPICAL CONNECTION-DIAPHRAGM TO INTERMEDIATE FLOORBEAM
DETAIL "H"
TYPICAL CONNECTION-STUB DIAPHRAGM TO INTERMEDIATE FLOORBEAM
NOTE:
See Sheet 14 for Structural Steel Notes.
PLANS PREPARED BY
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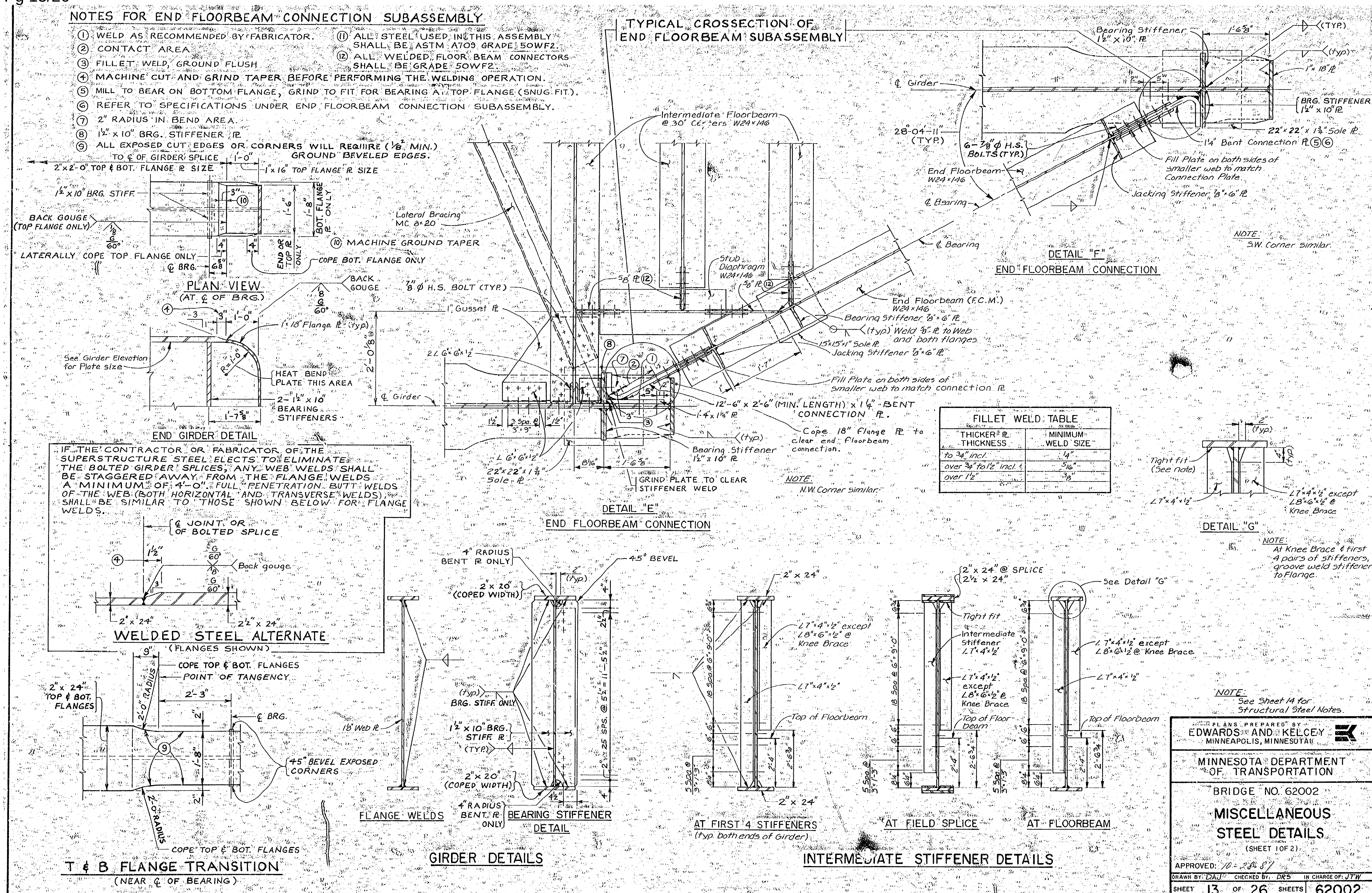
MINNEAPOLIS, MINNESOTA
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 62002
FLOORBEAM DETAILS
APPROVED:
DRAWN BY: KGP
CHECKED BY: DRS
IN CHARGE OF: JTW
SHEET 12 OF 26 SHEETS
62002

NOTES FOR END FLOORBEAM CONNECTION SUBASSEMBLY

1. WELD AS RECOMMENDED BY FABRICATOR.
2. CONTACT AREA
3. FILLET WELD, GROUND FLUSH
4. MACHINE CUT AND GRIND TAPER BEFORE PERFORMING THE WELDING OPERATION.
5. MILL TO BEAR ON BOTTOM FLANGE, GRIND TO FIT FOR BEARING AT TOP FLANGE (SNUG FIT).
6. REFER TO SPECIFICATIONS UNDER END FLOORBEAM CONNECTION SUBASSEMBLY.
7. 2" RADIUS IN BEND AREA.
8. 1½" x 10" BRG. STIFFENER ℞
9. ALL EXPOSED CUT EDGES OR CORNERS WILL REQUIRE (⅛" MIN.) GROUND BEVELED EDGES.
10. MACHINE GROUND TAPER
11. ALL STEEL USED IN THIS ASSEMBLY SHALL BE ASTM A709 GRADE 50WF2.
12. ALL WELDED FLOOR BEAM CONNECTORS SHALL BE GRADE 50WF2.



FILLET WELD TABLE	
THICKER ℞ THICKNESS	MINIMUM WELD SIZE
to ¾" incl.	¼"
over ¾" to 1½" incl.	5/16"
over 1½"	⅜"

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MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

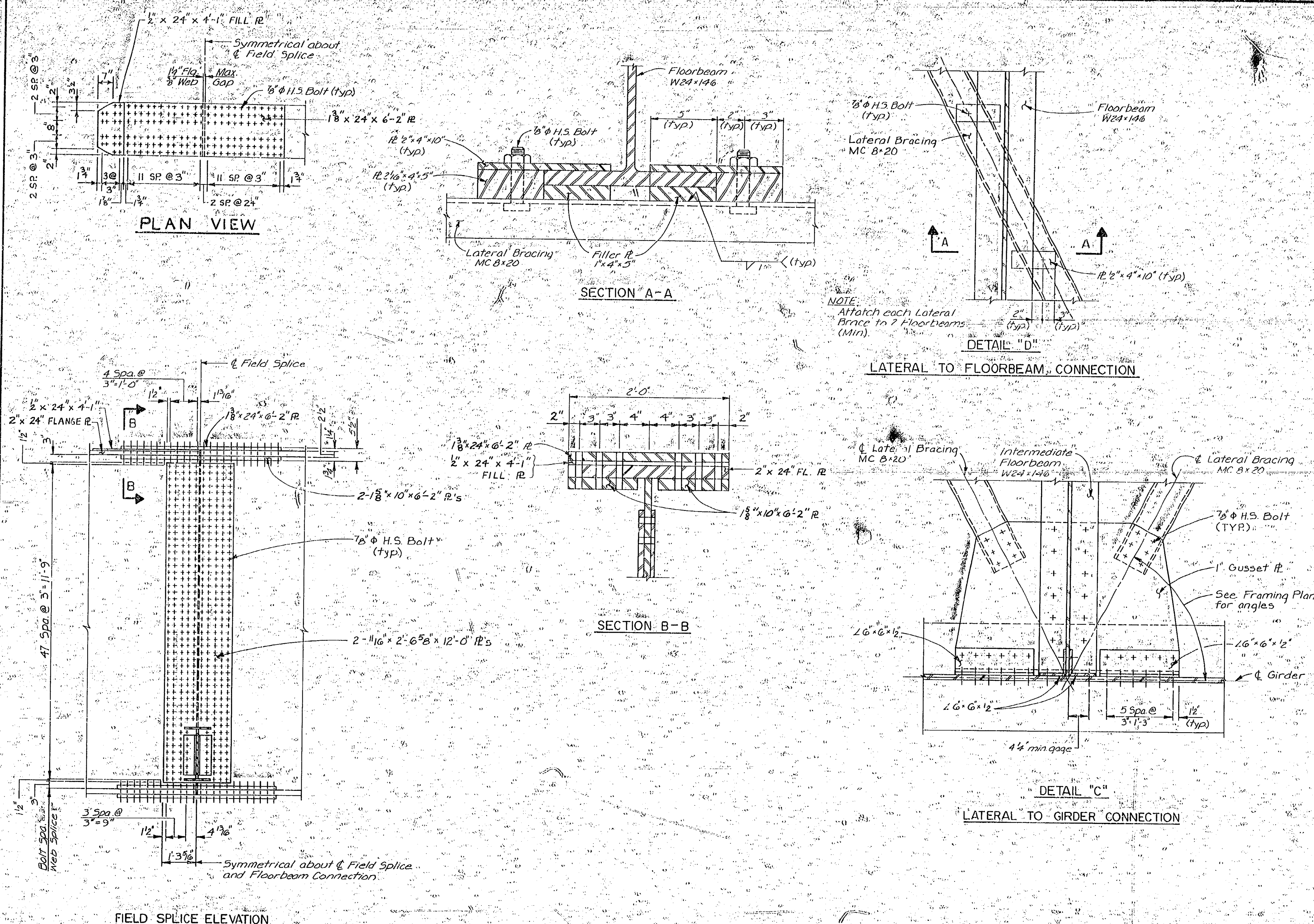
MISCELLANEOUS STEEL DETAILS

(SHEET 1 OF 2)

APPROVED: 10-28-87

DRAWN BY: DAU CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 13 OF 26 SHEETS 62002



STRUCTURAL STEEL NOTES

FRACTURE CRITICAL STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO ASTM A709 GRADE 50WF2 UNLESS OTHERWISE NOTED.

FIELD CONNECTIONS SHALL BE MADE WITH 7/8" HIGH STRENGTH BOLTS OR 7/8" PIN BOLTS, EXCEPT AS NOTED.

WEB PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF WEB SPLICES. LOCATION OF SPLICES SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER AND SHALL BE A MINIMUM OF 1'-0" FROM STIFFENERS OR FLANGE SPLICES.

BEARING STIFFENERS SHALL BE VERTICAL.

END OF BEAMS SHALL BE VERTICAL.

SOLE ℞'S SHALL BE SHOP WELDED TO THE BEAMS.

NO WELDING OR DRILLED HOLES FOR TEMPORARY ATTACHMENTS TO THE GIRDERS WILL BE PERMITTED. FULL ASSEMBLY REAMING PER MN/DOT 2471.3E IE WILL BE REQUIRED FOR ALL SUPERSTRUCTURE STL. THE SECTION TO BE ASSEMBLED FOR REAMING SHALL BE FROM ABUTMENT TO ABUTMENT.

PLACE NUT AND WASHER ON INSIDE OF GIRDER FOR ALL BOLTS THROUGH GIRDER WEB.

THE THROUGH GIRDERS ARE FRACTURE CRITICAL MEMBERS. THE MATERIALS, FABRICATION, WELDING, INSPECTION AND TESTING SHALL CONFORM TO SPECIFICATIONS GIVEN IN THE A.R.E.A. MANUAL, SECTION 15.1.14.

FOR SOLE PLATE DETAILS, SEE SHEET 20.

FOR THIS BRIDGE, WHEN TOP AND BOTTOM FLANGE PLATES ARE IDENTICAL IN SIZE AND LENGTH, THEY SHOULD ALL BE TREATED AS FRACTURE CRITICAL TO INSURE AGAINST IMPROPER TRANSPOSITION IN THE SHOP.

AFTER CUTTING THE WEB FOR CAMBERING AND PRIOR TO WELDING THE FLANGES TO WEB, THE EDGE SURFACE VALUES OF BOTH FLANGE AND WEB PLATES SHALL NOT EXCEED 1000 AS DEFINED BY ANSI 846.1 SURFACE TEXTURE.

THE STRUCTURAL STEEL FABRICATOR SHALL BE CERTIFIED UNDER THE A.I.S.C. QUALITY CERTIFICATION PROGRAM, CATEGORY III, MAJOR STEEL BRIDGES.

THE SKEWED OR END FLOORBEAMS (2 MEMBERS) SHALL ALSO BE CONSIDERED AS FRACTURE CRITICAL MEMBERS DUE TO SEVERAL WELDED CONNECTIONS FOR THE TRANSVERSE OR UNSKEWED FLOORBEAMS.

CONNECTIONS REQUIRING FULL ASSEMBLY REAMING AND REQUIRING WASHERS, SHALL BE MADE USING DIRECT TENSION INDICATING WASHERS MANUFACTURED AND INSTALLED PER ASTM F959.

ALL STRUCTURAL MEMBERS LABELED (F.C.M.) ARE FRACTURE CRITICAL MEMBERS.

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

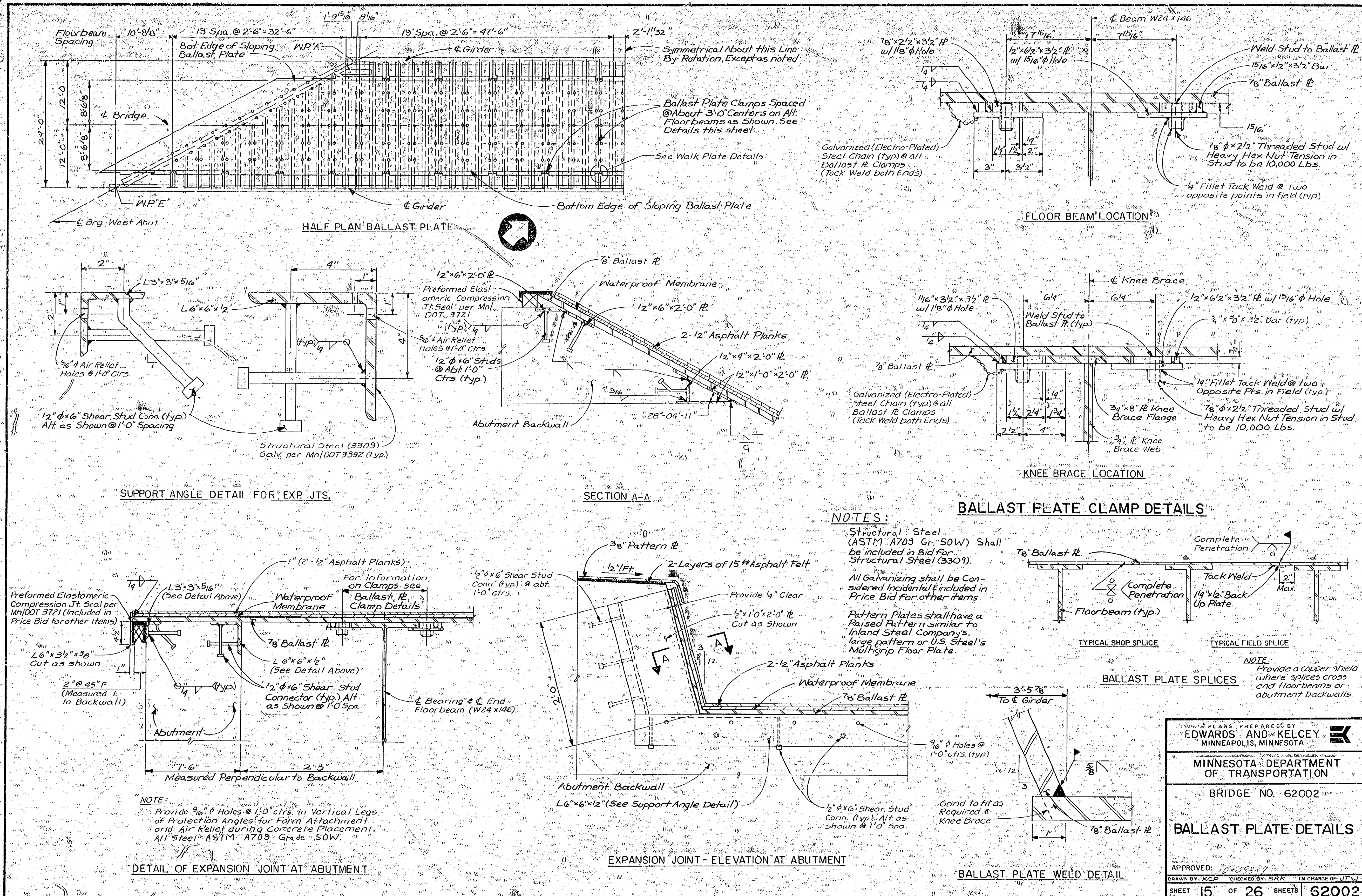
BRIDGE NO. 62002

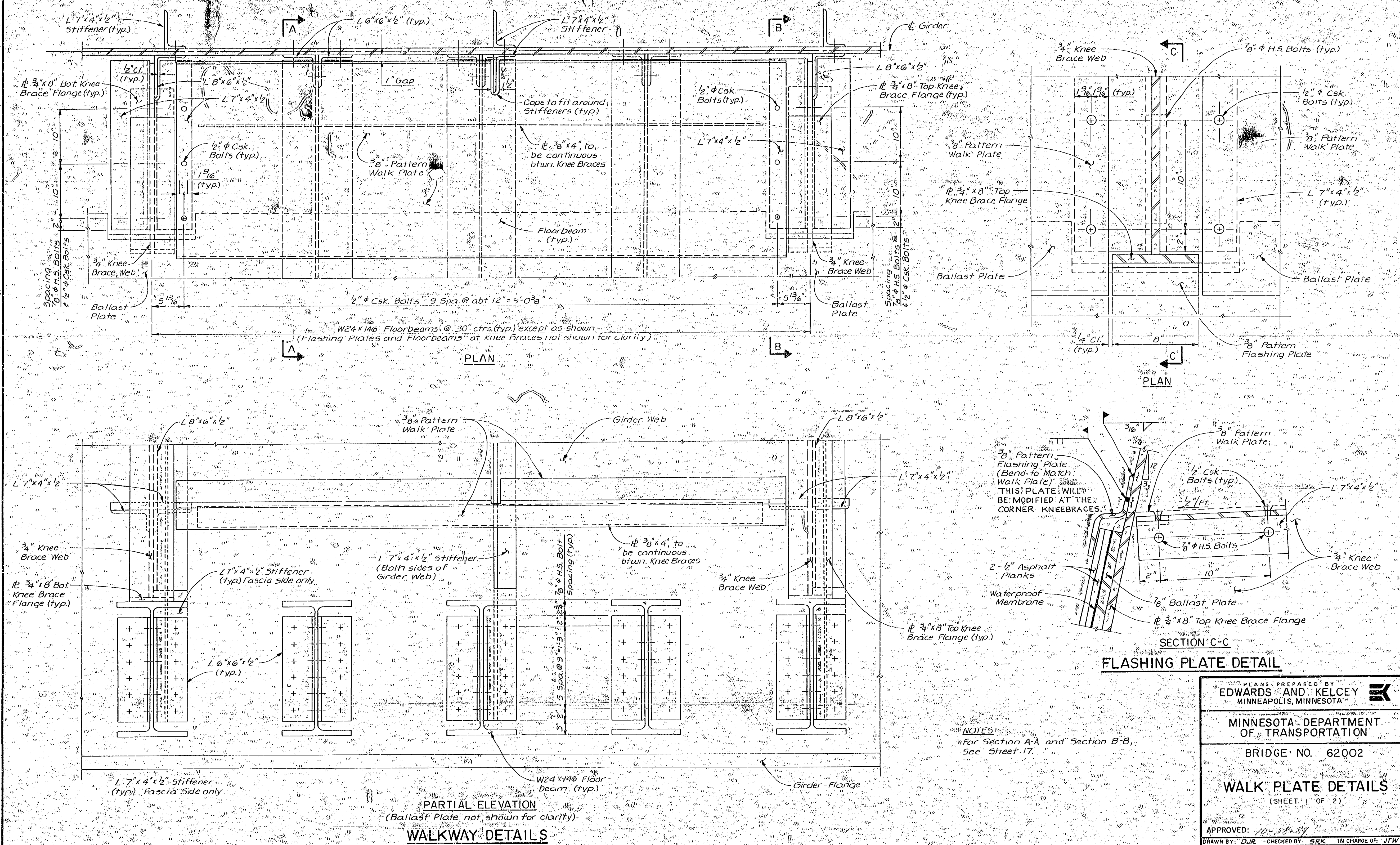
MISCELLANEOUS STEEL DETAILS
(SHEET 2 OF 2)

APPROVED: 10-28-87

DRAWN BY: DAJ CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 14 OF 26 SHEETS 62002


HALF PLAN BALLAST PLATE
Symmetrical About this Line By Rotation, Except as noted
Ballast Plate Clamps Spaced @ About 3'-0" Centers on Alt. Floorbeams as Shown. See Details this sheet.
See Walk Plate Details
Bottom Edge of Sloping Ballast Plate
℄ Brg. West Abut.
FLOOR BEAM LOCATION
KNEE BRACE LOCATION
BALLAST PLATE CLAMP DETAILS
SUPPORT ANGLE DETAIL FOR EXP. JTS.
SECTION A-A
NOTES:
Structural Steel (ASTM A709 Gr. 50W) Shall be included in Bid for Structural Steel (3309).
All Galvanizing shall be Considered Incidental & included in Price Bid for other items.
Pattern Plates shall have a Raised Pattern similar to Inland Steel Company's large pattern or U.S. Steel's Multigrip Floor Plate.
TYPICAL SHOP SPLICE
TYPICAL FIELD SPLICE
BALLAST PLATE SPLICES
NOTE: Provide a copper shield where splices cross end floorbeams or abutment backwalls.
NOTE: Provide 9/16" ϕ Holes @ 1'-0" ctrs. in Vertical Legs of Protection Angles for Form Attachment and Air Relief during Concrete Placement. All Steel ASTM A709 Grade 50W.
DETAIL OF EXPANSION JOINT AT ABUTMENT
EXPANSION JOINT - ELEVATION AT ABUTMENT
BALLAST PLATE WELD DETAIL
PLANS PREPARED BY EDWARDS AND KELCEY MINNEAPOLIS, MINNESOTA
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 62002
BALLAST PLATE DETAILS
DRAWN BY: KCP CHECKED BY: SRK
SHEET 15 OF 26 SHEETS 62002



NOTES:
For Section A-A and Section B-B, See Sheet 17.

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

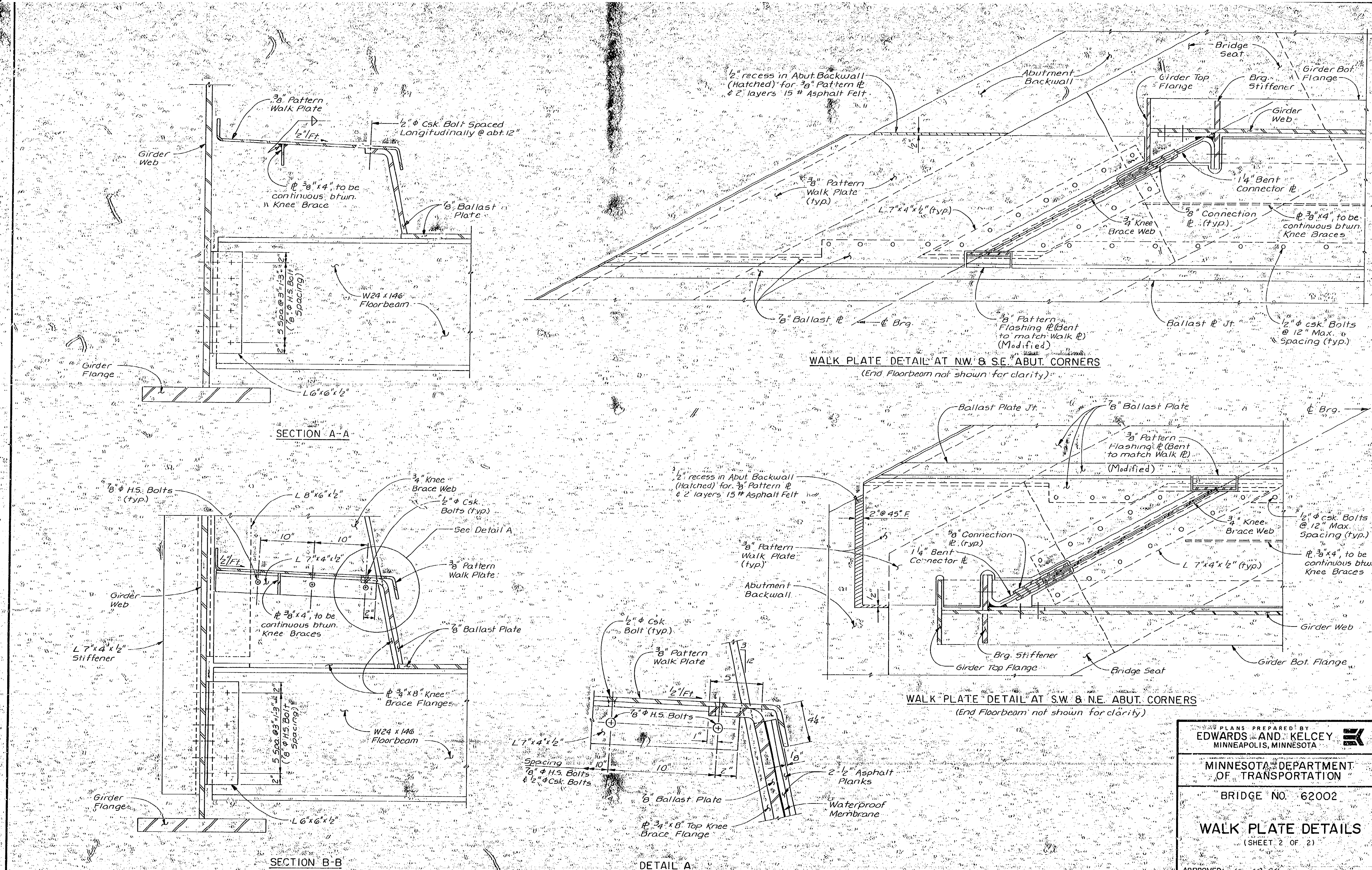
BRIDGE NO. 62002

WALK PLATE DETAILS
(SHEET 1 OF 2)

APPROVED: 10-28-87

DRAWN BY: DJR CHECKED BY: SRK IN CHARGE OF: JTW

SHEET 16 OF 26 SHEETS 62002



PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62002

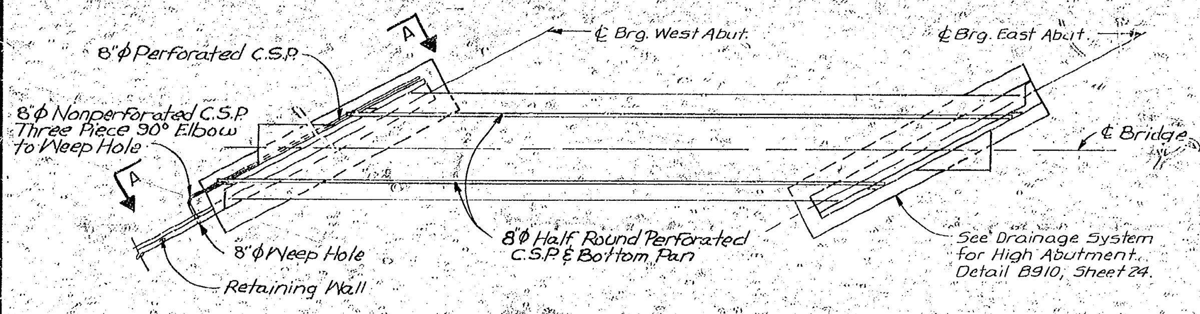
WALK PLATE DETAILS

(SHEET 2 OF 2)

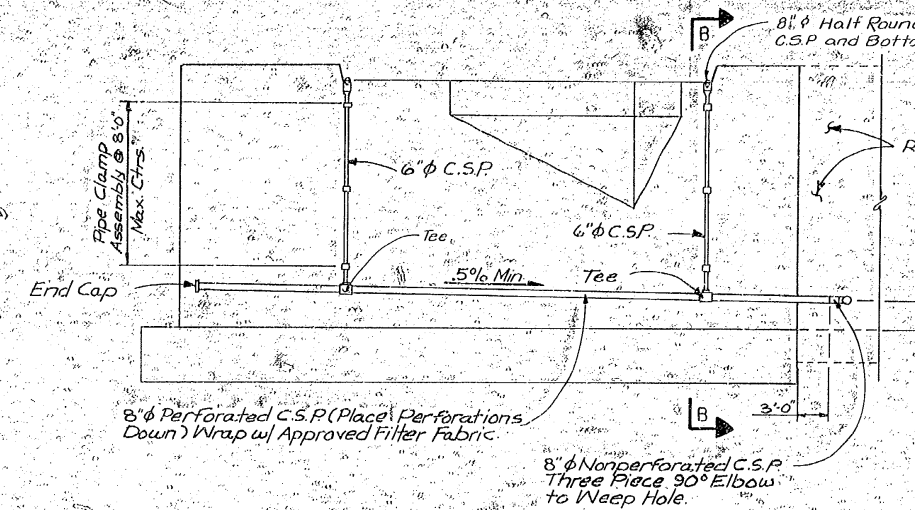
APPROVED: 12-25-87

DRAWN BY: DJR CHECKED BY: SRK IN CHARGE OF: JJW

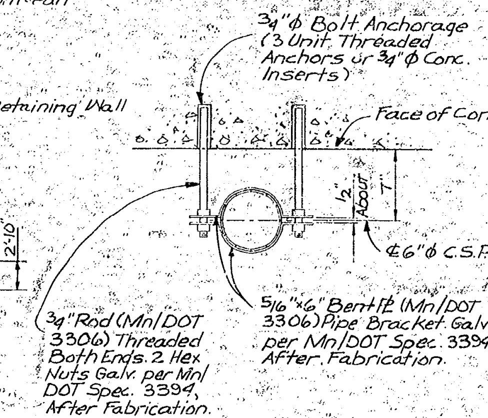
SHEET 17 OF 26 SHEETS 62002



DRAINAGE PLAN



SECTION A-A



SECTION D-D: PIPE CLAMP ASSEMBLY

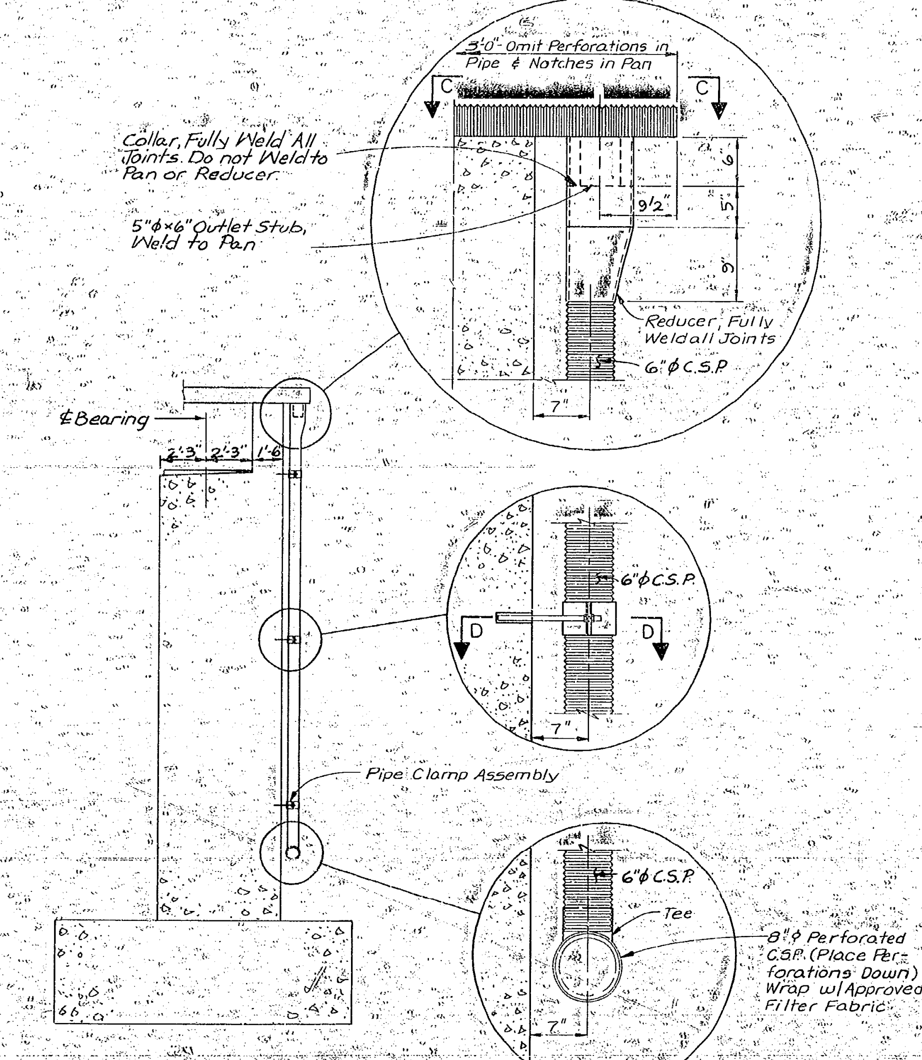
(1) INCLUDED UNDER PAYMENT FOR "DRAINAGE SYSTEM", WEST ABUTMENT ONLY.

(2) INCLUDED UNDER PAYMENT FOR "DRAINAGE SYSTEM (B910)", EAST ABUTMENT ONLY.

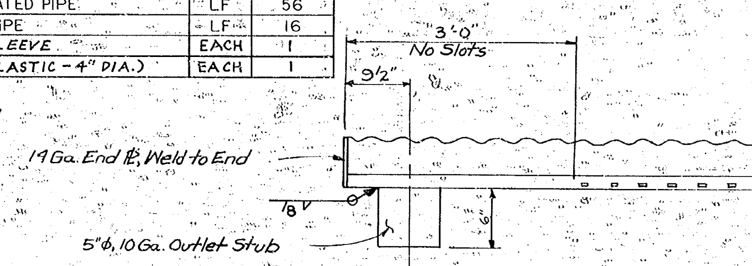
QUANTITY SUMMARY FOR DRAINAGE SYSTEM

Note	ITEM	UNIT	QUAN.
(1)	8" ϕ HALF ROUND PERFORATED CSP	LF	326
(1)	8" ϕ PERFORATED CSP	LF	61
(1)	6" ϕ CSP	LF	40
(1)	8" ϕ CSP	LF	6
(1)	REDUCER	EACH	2
(1)	END PLATE	EACH	4
(1)	COLLAR	EACH	2
(1)	BOTTOM PAN	LF	326
(1)	TEE CONNECTION	EACH	2
(1)	THREE PIECE 90° ELBOW	EACH	1
(2)	45° ELBOW	EACH	1
(1)	END CAP (GALV. MET. CAP 8"ϕ)	EACH	1
(1)	PIPE CLAMP ASSEMBLIES	EACH	6
(1)	OUTLET STUB	EACH	2
(2)	4" ϕ PERFORATED PIPE	LF	56
(2)	4" ϕ DRAIN PIPE	LF	16
(2)	4" ϕ OVERSLEEVE	EACH	1
(2)	END CAP (PLASTIC - 4" DIA.)	EACH	1

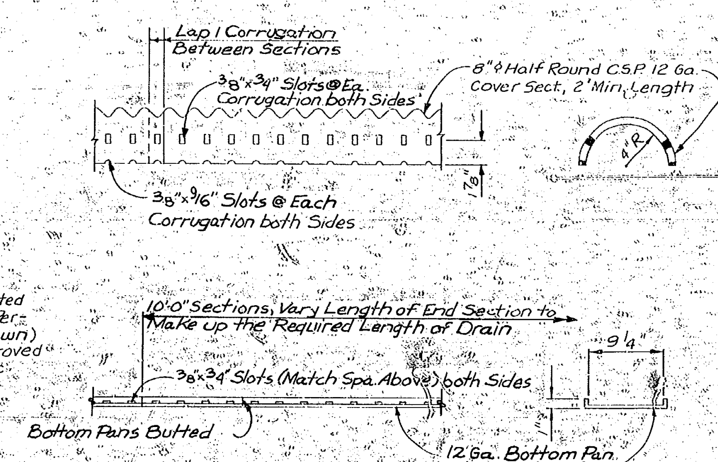
SUPERSTRUCTURE
DRAINAGE SYSTEM NOTES:
ALL HALF ROUND CORRUGATED METAL PIPE COVER SECTIONS, BOTTOM PANS, OUTLET STUBS, CORRUGATED METAL PIPE AND FITTINGS, AND END PLATES SHALL BE GALVANIZED AND BITUMINOUS COATED IN ACCORDANCE WITH MN/DOT 3394 AND MN/DOT 3227 TYPE A.



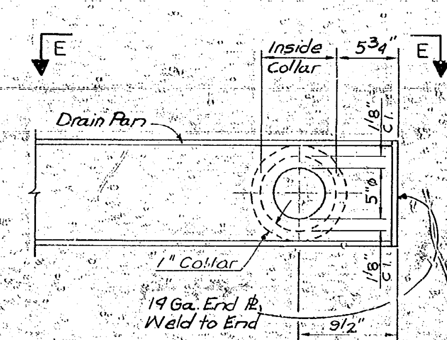
SECTION B-B
WEST ABUTMENT SECTION



SECTION E-E



DECK DRAIN DETAILS



VIEW C-C

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

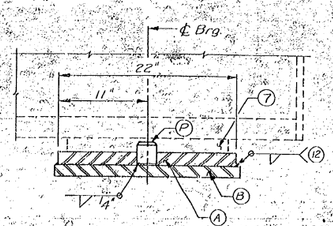
BRIDGE NO. 62002

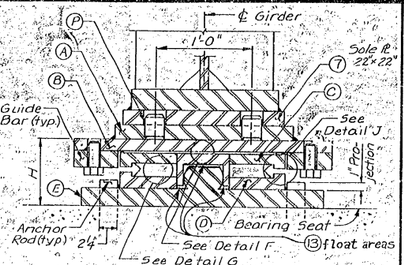
DRAINAGE DETAILS

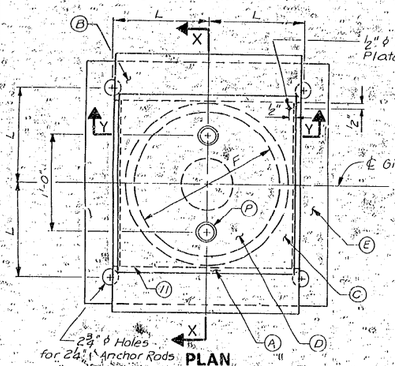
APPROVED: 10-28-87

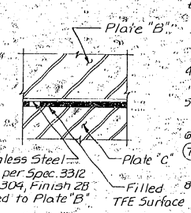
DRAWN BY: DJR-KEA CHECKED BY: DRS IN CHARGE OF: JTW

SHEET 18 OF 26 SHEETS 62002



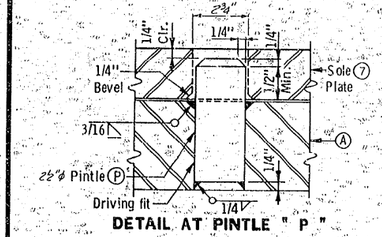


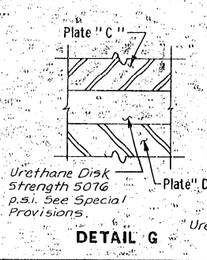


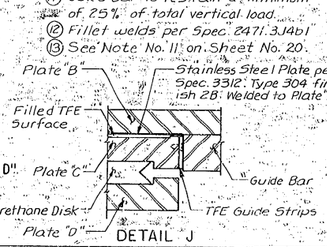


NOTES:

1. All steel plates and anchor rods shall comply with Spec. ~~3306 or 3309~~ except as noted.
2. Pintles shall comply with Spec. 3314, Type II.
3. Galvanize all structural steel plates and pintles after assembly per Spec. 3394
4. ~~The radius of the curved plate "A" shall be 1'-0" min. and 1'-6" max. Finish to 250 micro. The finished thickness of the plate may be 1/16" less than shown.~~
4. The structural steel plates shall be flat after fabrication, galvanizing and welding.
5. Certain parts of the bearing assembly are patented, see Spec. 1703
6. Total design movement of bearing is 1/2".
7. Sole Plate 1/2 ~~min.~~ thickness required and is included in Steel Beam quantity.
8. Details, dimensions and materials not shown are to be submitted by the manufacturer of the Bearing Assembly to the Engineer for approval.
9. All material shown to be included in the price bid for each Bearing Assembly, except as noted.
10. For TFE information, see AASHTO
11. Guide Bar to restrain a minimum of 25% of total vertical load.
12. Fillet welds per Spec. 2471.3J4b1
13. See Note No. 11 on Sheet No. 20.



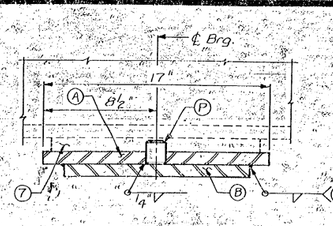


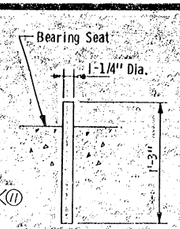


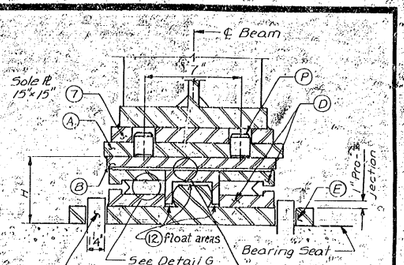
BEARING ASSEMBLY DIMENSIONS

TOTAL LOAD (KIPS)	PLATE A	PLATE B	DIA. F	PLATE C	PLATE D	PLATE E (Maximum)	DIM. L	DIM. H	ASSEMBLY TYPE
51	4-1/2" x 2" x N	8-3/4" x 3/4" x (N-1")					4-7/16"	3-5/8"	
76	4-1/2" x 2" x N	9-5/8" x 3/4" x (N-1")					4-13/16"	3-3/4"	
101	4-1/2" x 2" x N	10-1/2" x 3/4" x (N-1")					5-3/16"	3-15/16"	
126	4-1/2" x 2" x N	11-1/8" x 3/4" x (N-1")					5-7/16"	4"	
166	4-1/2" x 2" x N	11-7/8" x 7/8" x (N-1")					5-3/4"	4-3/16"	
198	4-1/2" x 2" x N	13" x 7/8" x (N-1")					6-3/16"	4-5/16"	
248	4-1/2" x 2" x N	14-1/8" x 1" x (N-1")					6-9/16"	4-1/2"	
292	4-1/2" x 2-1/2" x N	15" x 1" x (N-1")					6-15/16"	4-7/8"	
347	4-1/2" x 2-1/2" x N	15-3/4" x 1-1/8" x (N-1")					7-3/8"	5-1/2"	
395	4-1/2" x 2-1/2" x N	16-5/8" x 1-3/16" x (N-1")					7-11/16"	5-5/8"	
1000	22" x 22" x 1 3/4"	32 3/8" x 23" x 1/2"	17 1/2"	20 3/8" x 20 3/8" x 2"	20 3/8" ϕ x 2"	30" x 30" x 2 1/4"	11 5/8"	8 3/16"	E-1

APPROVED:	STATE OF MINNESOTA	REVISION	DETAIL NO.
September 22, 1980	DEPARTMENT OF TRANSPORTATION	July 26, 1982	B314
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES	DISK TYPE BEARING ASSEMBLY	Jan. 27, 1984	MODIFIED
Issued by: OFFICE OF ENGINEERING STANDARDS	STEEL BEAMS (GUIDED EXPANSION)		

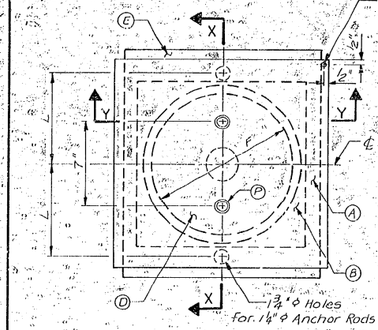


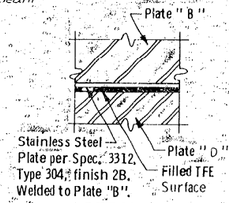


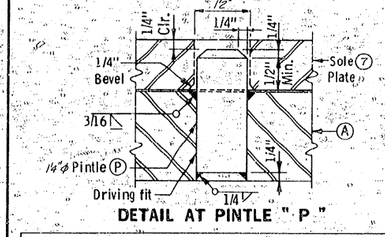


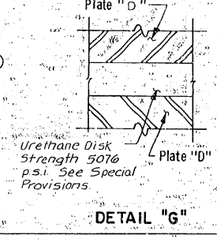
NOTES:

1. All steel plates and anchor rods shall comply with Spec. ~~3306 or 3309~~ except as noted.
2. Pintles shall comply with Spec. 3314, Type II.
3. Galvanize all structural steel plates and pintles after assembly per Spec. 3394
4. ~~The radius of the curved plate "A" shall be 1'-0" min. and 1'-6" max. Finish to 250 micro. The finished thickness of the plate may be 1/16" less than shown.~~
4. The structural steel plates shall be flat after fabrication, galvanizing and welding.
5. Certain parts of the bearing assembly are patented, see Spec. 1703
6. Total design movement of bearing is 2".
7. Sole Plate 1 ~~min.~~ thick required and is included in Steel Beam quantity.
8. Details, dimensions and materials not shown are to be submitted by the manufacturer of the Bearing Assembly to the Engineer for approval.
9. All material shown to be included in the price bid for each Bearing Assembly, except as noted.
10. For TFE information, see AASHTO
Ⓐ Mark ℄ of Bearing Plates "B" and "C" to facilitate placement.
11. Fillet welds per Spec. 2471.3J4b1
12. See Note No. 11 on Sheet No. 20.







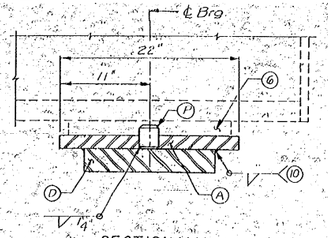


BEARING ASSEMBLY DIMENSIONS

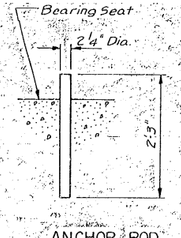
TOTAL LOAD (KIPS)	PLATE A	PLATE B	DIA. F	PLATE D	PLATE E (Maximum)	DIM. L	DIM. H	ASSEMBLY TYPE
51	4-1/2" x 2" x N	8-3/4" x 3/4" x (N-1")	4 9/16"	6-1/2" Dia.	14-7/8" x 1" x 1'-2 7/8"	4-7/16"	3-5/8"	
76	4-1/2" x 2" x N	9-5/8" x 3/4" x (N-1")	5-1/2"	7-1/2" Dia.	15-5/8" x 1-1/16" x 1'-3-5/8"	4-13/16"	3-3/4"	
101	4-1/2" x 2" x N	10-1/2" x 3/4" x (N-1")	6-5/16"	8-1/2" Dia.	16-3/8" x 1-1/8" x 1'-4-3/8"	5-3/16"	3-15/16"	
126	4-1/2" x 2" x N	11-1/8" x 3/4" x (N-1")	7"	9-1/4" Dia.	16-7/8" x 1-1/8" x 1'-4-7/8"	5-7/16"	3-15/16"	
166	4-1/2" x 2" x N	11-7/8" x 3/4" x (N-1")	7-5/8"	10-1/8" Dia.	17-1/2" x 1-3/16" x 1'-5-1/2"	5-3/4"	4-1/16"	
198	4-1/2" x 2" x N	13" x 7/8" x (N-1")	8-13/16"	11-1/2" Dia.	18-3/8" x 1-3/16" x 1'-6-3/8"	6-3/16"	4-5/16"	
248	4-1/2" x 2" x N	14-1/8" x 1" x (N-1")	9-13/16"	12-1/2" Dia.	19-1/8" x 1-1/4" x 1'-7-1/8"	6-9/16"	4-1/2"	
292	4-1/2" x 2-1/2" x N	15" x 1" x (N-1")	10-5/8"	13-5/8" Dia.	19-7/8" x 1-5/16" x 1'-7-7/8"	6-15/16"	4-7/8"	
347	4-1/2" x 2-1/2" x N	15-3/4" x 1-1/8" x (N-1")	11-9/16"	14-3/4" Dia.	20-3/4" x 1-7/16" x 1'-8-3/4"	7-3/8"	5-1/2"	
395	4-1/2" x 2-1/2" x N	16-5/8" x 1-3/16" x (N-1")	12-5/16"	15-5/8" Dia.	21-3/8" x 1-1/2" x 1'-9-3/8"	7-11/16"	5-5/8"	
300	17" x 17" x 1"	13 3/4" x 13 3/4" x 1 1/2"	9 3/8"	11 3/8" ϕ x 1"	20" x 16" x 1 1/4"	7 3/8"	4 1/4"	E-2

APPROVED:	STATE OF MINNESOTA	REVISION	DETAIL NO.
December 31, 1980	DEPARTMENT OF TRANSPORTATION	July 26, 1982	B315
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES	DISK TYPE BEARING ASSEMBLY	Jan. 27, 1984	MODIFIED
Issued by: OFFICE OF ENGINEERING STANDARDS	STEEL BEAMS (FREE EXPANSION)		

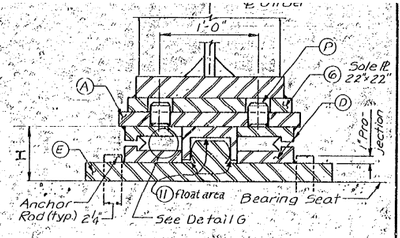
TITLE:	DES:	DR:	APPROVED:	Bridge No.
BEARING DETAILS	CHK:	CHK:	10-31-80	62002
	Sheet No. 19 of 26 Sheets			



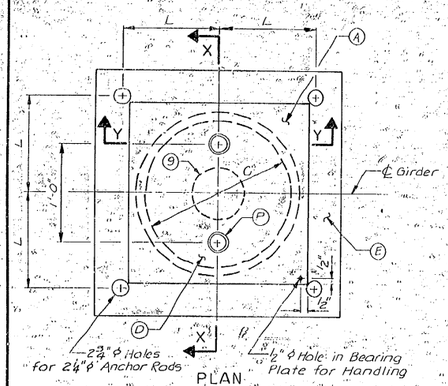
SECTION Y-Y
(Plate E & Lower Plate D Not Shown)



ANCHOR ROD DETAIL



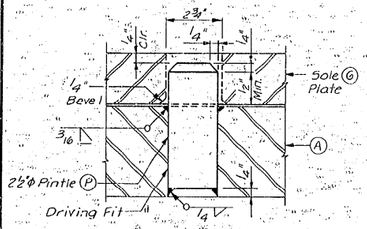
SECTION X-X



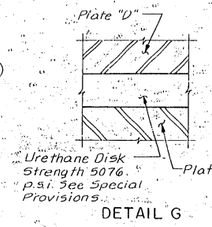
PLAN
(Steel Girder & Sole Plate Not Shown)

NOTES:

1. All Steel Plates and Anchor rods shall comply with Spec. 3309 except as noted.
2. Pintles shall comply with Spec. 3314, Type II.
3. Galvanize all structural steel plates and pintle after assembly per Spec. 3394.
4. The structural steel plates shall be flat after fabrication, galvanizing, and welding.
5. Certain parts of the bearing assembly are patented, see Spec. 1703.
6. Sole Plate 1 3/4" thickness required, and is included in Steel Beam Quantity.
7. Details, dimensions and Materials not shown are to be submitted by the manufacturer of the Bearing Assembly to the Engineer for approval.
8. All material shown to be included in the price bid for each Bearing Assembly, except as noted.
9. Shear Restriction Mechanism to restrain a minimum of 25% of total vertical load.
10. Fillet welds per Spec. 2471.3.J.4.b).
11. Deflection space required for deflection of urethane disc material. Deflection is to be determined from loading and modulus of elasticity of disc material by manufacturer.



DETAIL AT PINTLE "P"

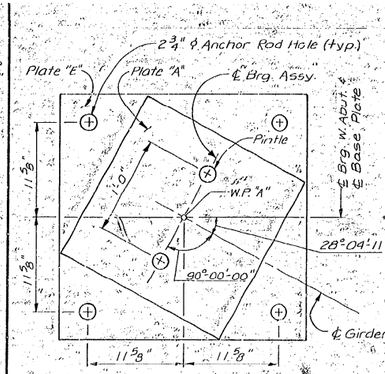


DETAIL G

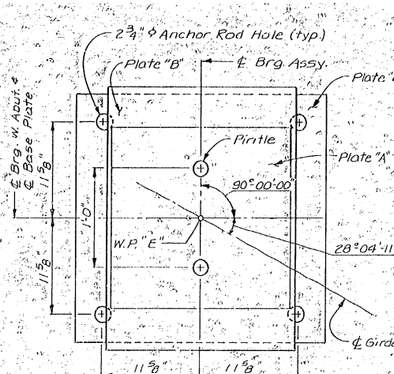
BEARING ASSEMBLY DIMENSIONS

TOTAL LOAD (KIPS)	PLATE A	PLATE B	DIA. C	PLATE D	PLATE E (MAXIMUM)	DIM. L	DIM. H	ASSEMBLY TYPE
1000	22"x22"x1 3/4"		17 1/2"	20 3/8"x8"x2"	30"x30"x2 1/4"	11 5/8"	6 13/16"	F-1

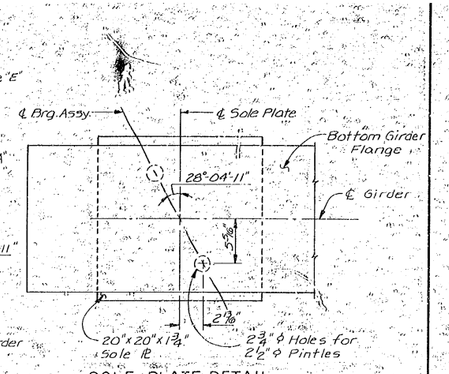
DISK TYPE BEARING ASSEMBLY
STEEL BEAMS
(FIXED)



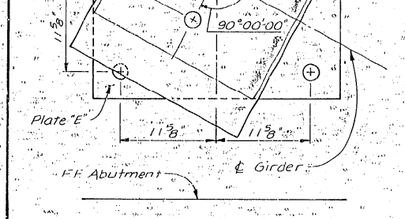
ANCHOR ROD DETAIL
(Northwest Corner, F-1)



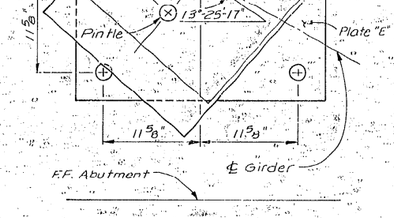
ANCHOR ROD DETAIL
(Southwest Corner, E-1)



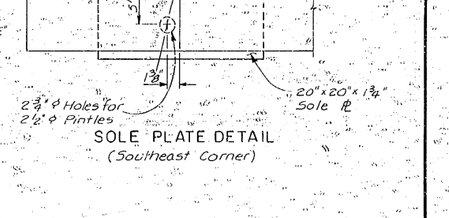
SOLE PLATE DETAIL
(Southwest Corner)



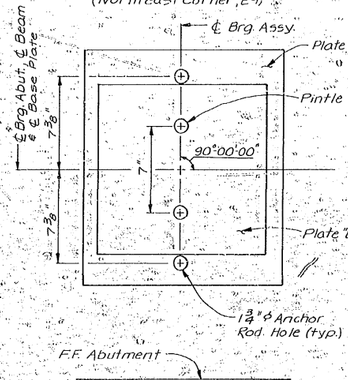
ANCHOR ROD DETAIL
(Northeast Corner, E-1)



ANCHOR ROD DETAIL
(Southeast Corner, E-1)



SOLE PLATE DETAIL
(Southeast Corner)



ANCHOR ROD DETAIL
(Multi-Directional Bearing, E-2)

NOTES:

Anchor Rod Holes must be drilled before Superstructure Beams are Erected.

Grout Anchor Rods after Superstructure Beams are Erected in final position.

Type E-1 Expansion Bearings are oriented to align with the direction of expansion from the Fixed Bearing.

PLANS PREPARED BY
EDWARDS AND KELCEY
MINNEAPOLIS, MINNESOTA

MINNESOTA DEPARTMENT OF TRANSPORTATION

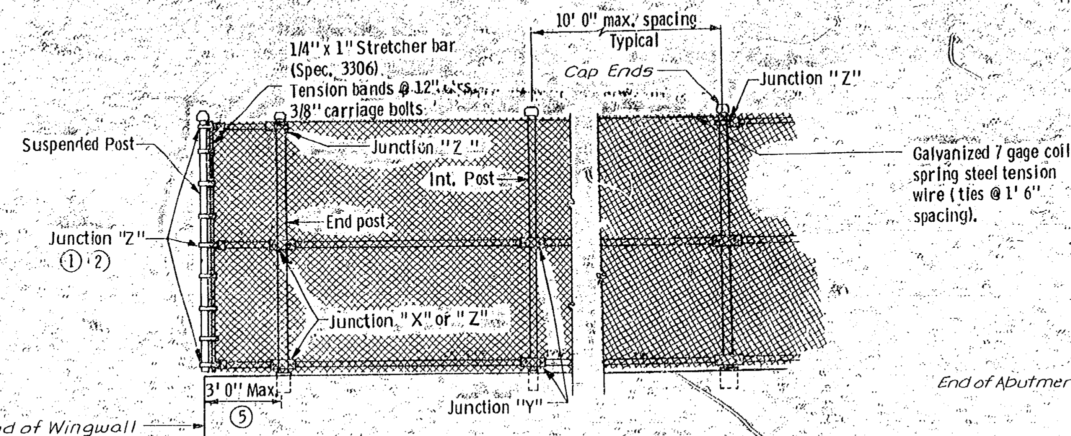
BRIDGE NO. 62002

BEARING DETAILS

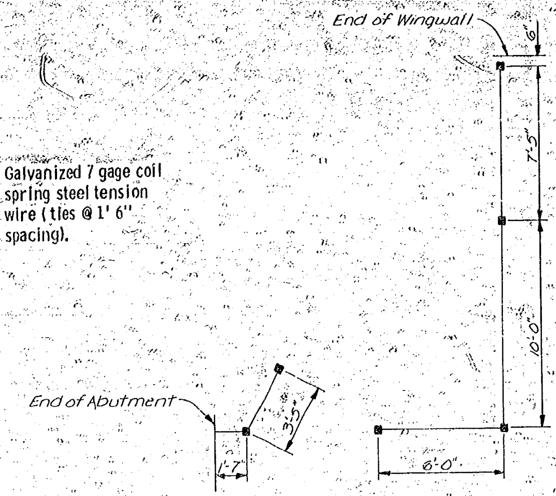
APPROVED: 70-38-04

DRAWN BY: DJR CHECKED BY: DRS IN CHARGE OF: JTW

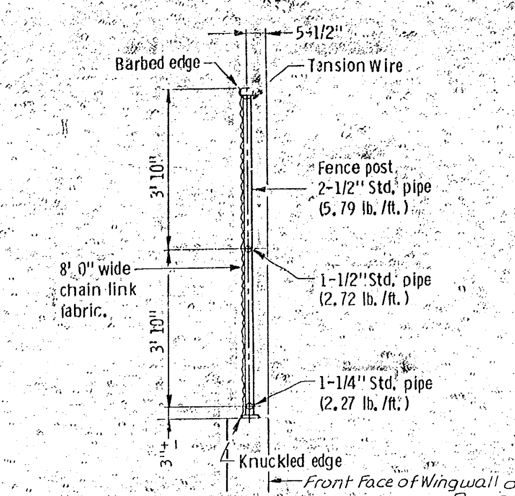
SHEET 20 OF 26 SHEETS 62002



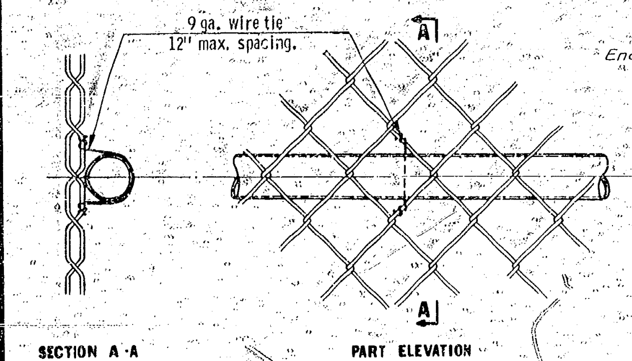
PART ELEVATION



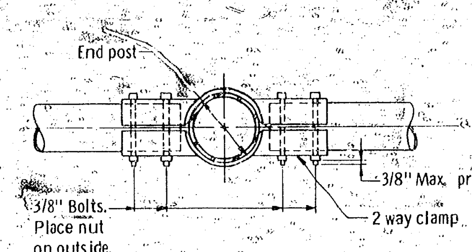
FENCE POST SPACING



TYPICAL SECTION THRU FENCE



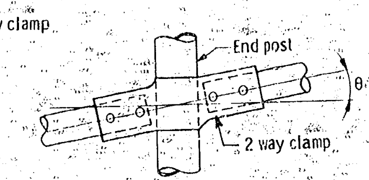
FABRIC TIE



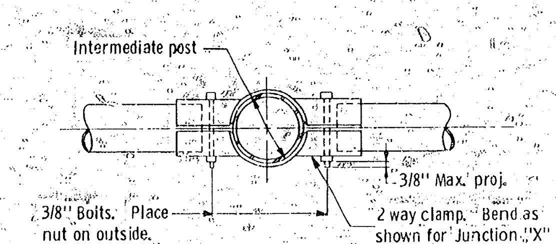
JUNCTION "X"

Bend 2 way clamp as follows:

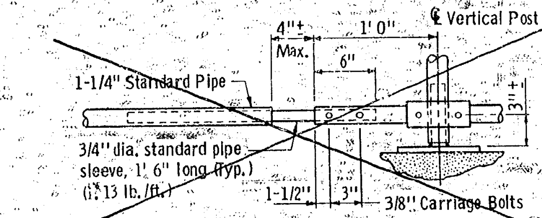
GRADE OF FENCE	θ
0° to 2°	0°
2° to 6°	4°
6° to 10°	8°
33° to 37°	35°



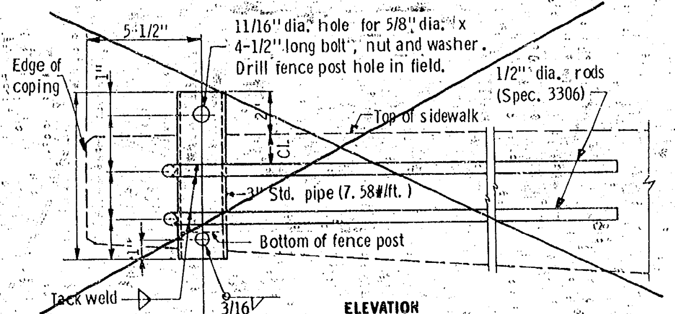
ELEVATION
JUNCTION "X"

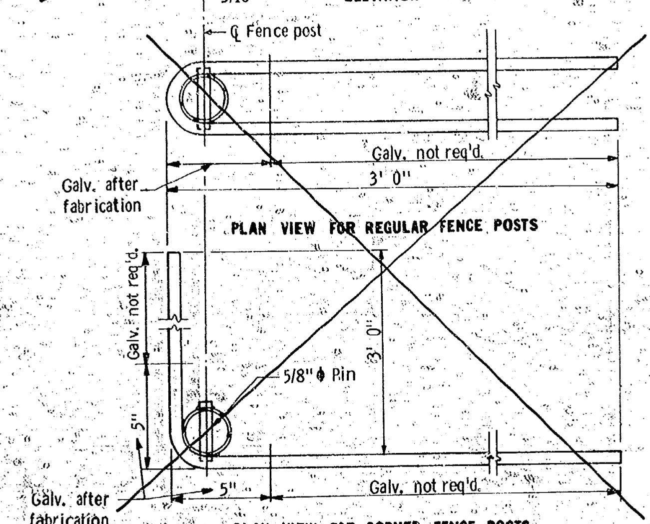


JUNCTION "Y"



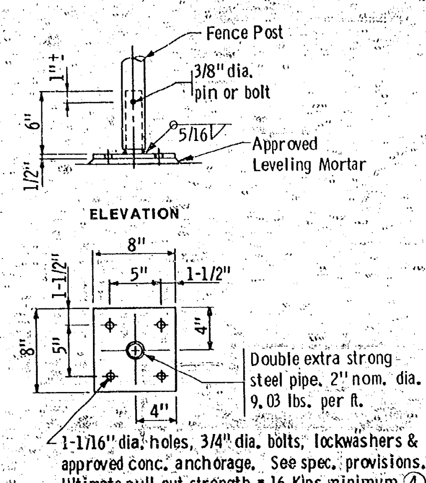
PIPE SLEEVE DETAIL
For 4" maximum bridge expansion





PIPE ANCHORAGE FOR FENCE POSTS

TYPE 1

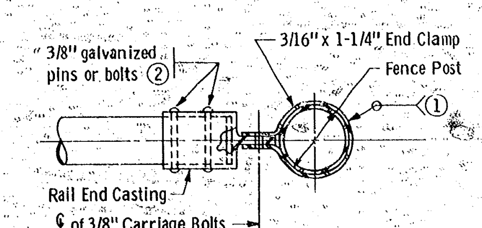


FENCE POST ANCHORAGE
Estimated Weight = 14 lbs.
Structural Steel per Spec. 3306
Structural Pipe per Spec. 3362

~~③ ℄ of anchorage to be a min. of 6" from deflection joints.~~

④ Place reinforcement in Wingwall to clear concrete anchorage.

TYPE 2



JUNCTION "Z"

① Weld clamps to the posts between the end & suspended posts.

② Provide two 3/8" dia. pins or bolts on the rail end castings between the end & suspended posts.

GENERAL NOTES:

For material, workmanship, galvanizing, electrical grounds, and payment, see Special Provisions and Spec. 2557, except as noted.

For post ~~spacing,~~ location, ~~type of anchorages, and other details,~~ see sht. nos. 6 & 8.

Maximum spacing for 2-1/2" std. pipe posts = 10' 0". Post spacings of 10 ft. are desired for efficient use of std. pipe lengths.

Posts shall be vertical.

Galvanize the Fence Post Anchorage after fabrication per Spec. 3394. Galvanize the fasteners per Spec. 3392.

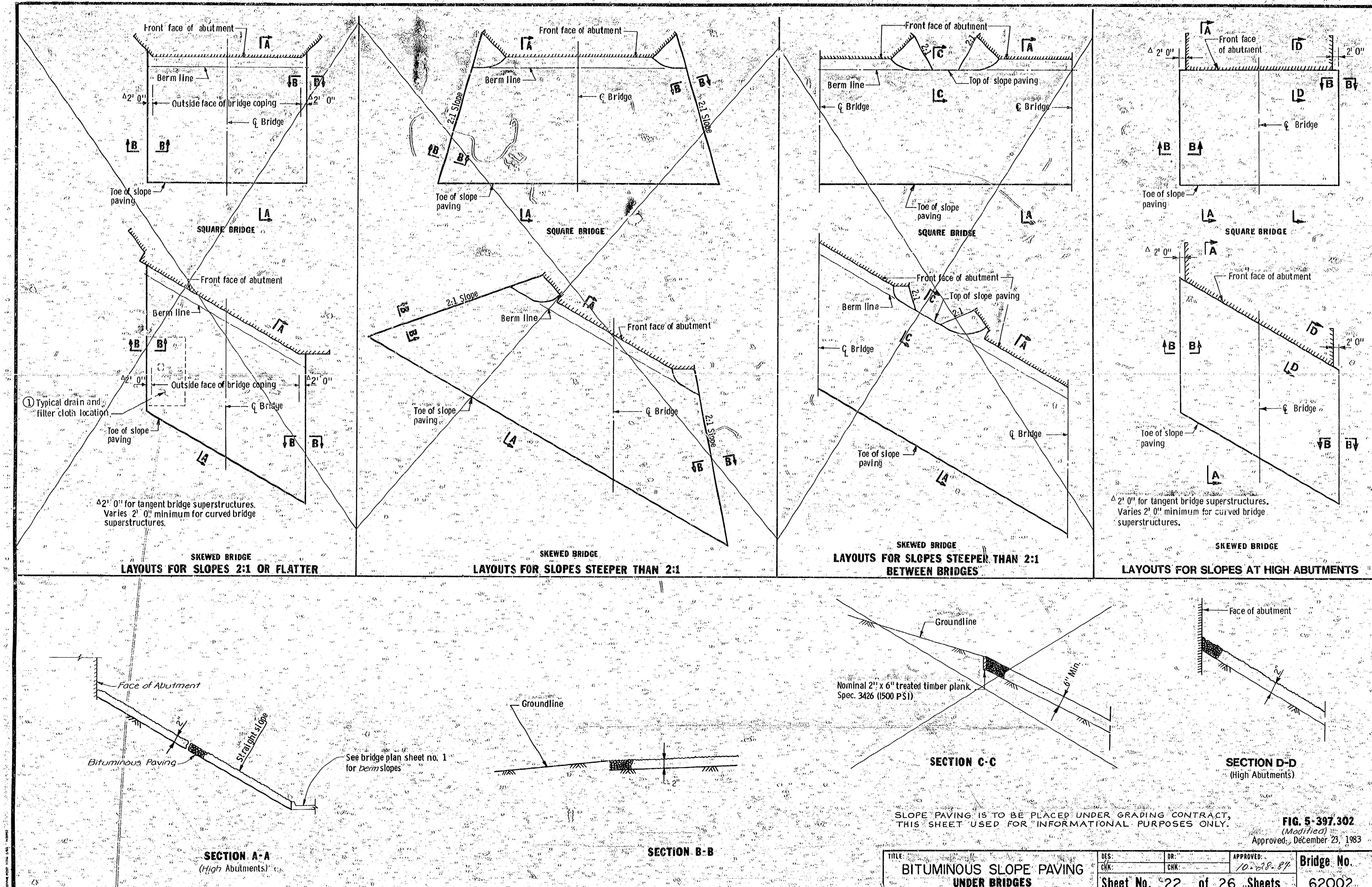
All posts shall have a means to securely hold the top tension wire in position and allow for the removal and replacement of a post without damaging the top wire.

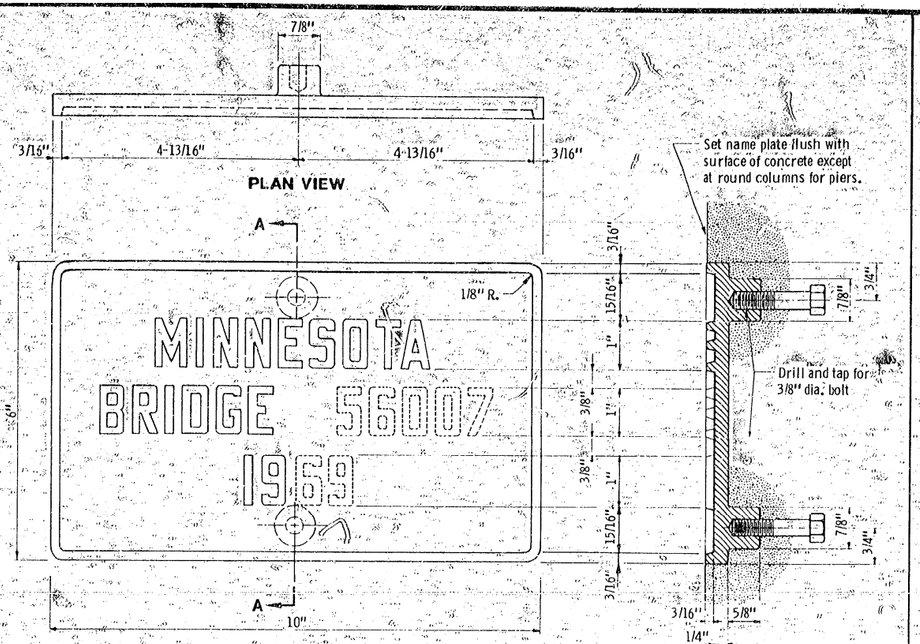
Wire ties may be 9 gage galvanized steel or 0.179" minimum aluminum alloy conforming to ASTM B211, Alloy 1100-H18. Use 12-1/2 gage galvanized hog rings for tension wire ties.

Approved: May 17, 1982
Revised: January 20, 1983

Fig. 5-397.205

TITLE: 8 FT. WIRE FENCE FOR PEDESTRIAN WALKS (USE WITH TYPE J RAILNG)	DES:	DR:	APPROVED: 10-20-87	Bridge No.
	CHK:	CHK:		62002
	Sheet No. 21 of 26 Sheets			


Front face of abutment
Berm line
Outside face of bridge coping
℄ Bridge
Toe of slope paving
Δ2' 0"
SQUARE BRIDGE
① Typical drain and filter cloth location
Δ2' 0" for tangent bridge superstructures. Varies 2' 0" minimum for curved bridge superstructures.
SKEWED BRIDGE
LAYOUTS FOR SLOPES 2:1 OR FLATTER
2:1 Slope
LAYOUTS FOR SLOPES STEEPER THAN 2:1
Top of slope paving
LAYOUTS FOR SLOPES STEEPER THAN 2:1 BETWEEN BRIDGES
Front face of abutment
LAYOUTS FOR SLOPES AT HIGH ABUTMENTS
Face of Abutment
Bituminous Paving
Straight slope
See bridge plan sheet no. 1 for berm slopes
SECTION A-A
(High Abutments)
Groundline
SECTION B-B
Nominal 2" x 6" treated timber plank. Spec. 3426 (1500 PSI)
6" Min.
SECTION C-C
Face of abutment
SECTION D-D
(High Abutments)
SLOPE PAVING IS TO BE PLACED UNDER GRADING CONTRACT. THIS SHEET USED FOR INFORMATIONAL PURPOSES ONLY.
FIG. 5-397.302
(Modified)
Approved: December 23, 1983
TITLE: BITUMINOUS SLOPE PAVING UNDER BRIDGES
DES: DR: APPROVED: 10-18-84
CHK: CHK:
Sheet No. 22 of 26 Sheets
Bridge No. 62002



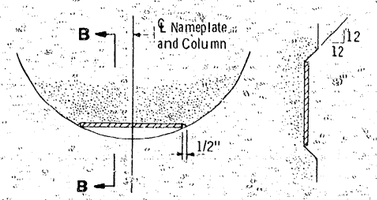
ELEVATION

SECTION A-A

The dotted numbers shown above are for illustration.
Data to be shown on name plate is as follows:

BRIDGE 62002
YEAR 1988

NUMBERS FOR NAMEPLATES



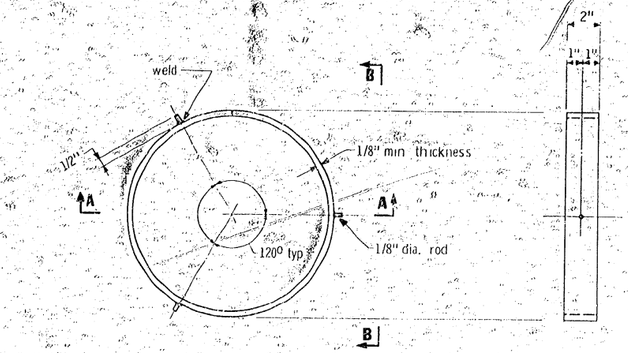
SECTION B-B

NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)

NOTES:

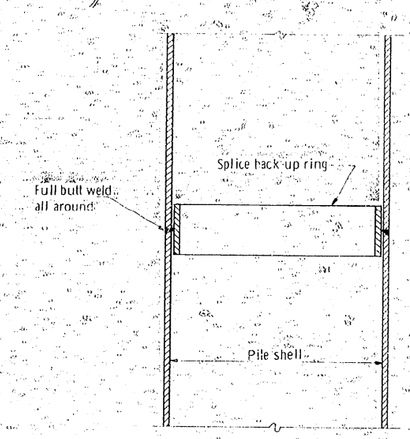
No shop drawing required.
Material shall comply with Spec. 3327
Letters and numbers shall conform to those shown.
Draft on letters and numbers shall not be more than 3° in 12".
Horizontal spacing of letters and numbers shall produce a balanced layout in proportion to spacing shown.
Top surface of letters, numbers and frames shall be burnished.
Furnish 2 steel bolts 3/8" dia. x 3" long with each plate.

APPROVED: May 1, 1985 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **BRIDGE NAMEPLATE** TRUNK HIGHWAY BRIDGES	REVISION	DETAIL NO. **B101**



PLAN VIEW
(Pile not shown)

SECTION B-B
(Pile not shown)



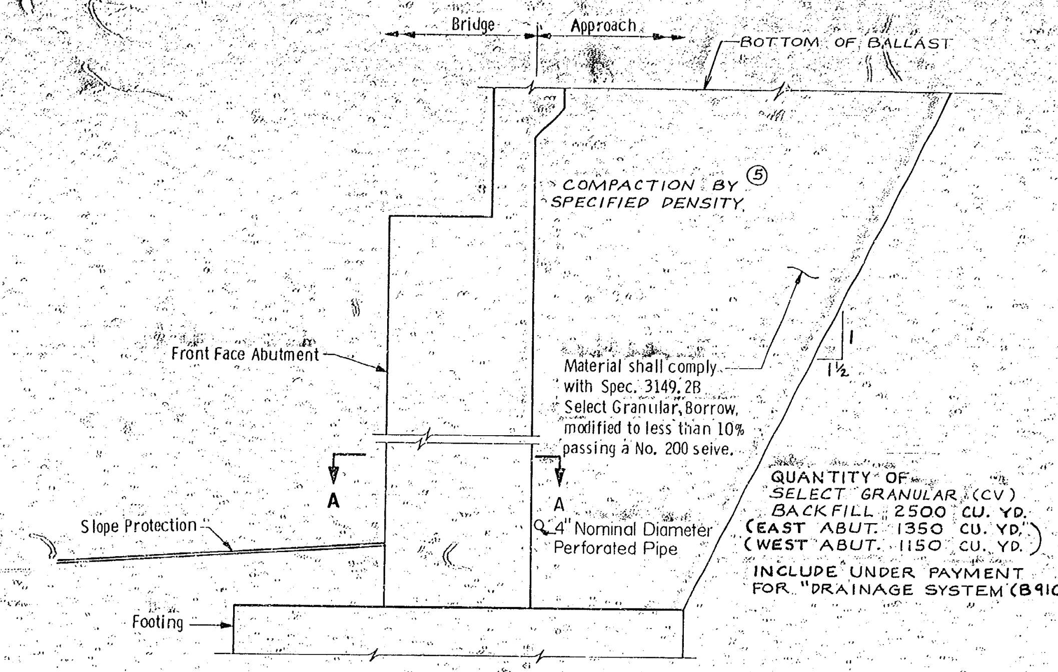
SECTION A-A

NOTES:

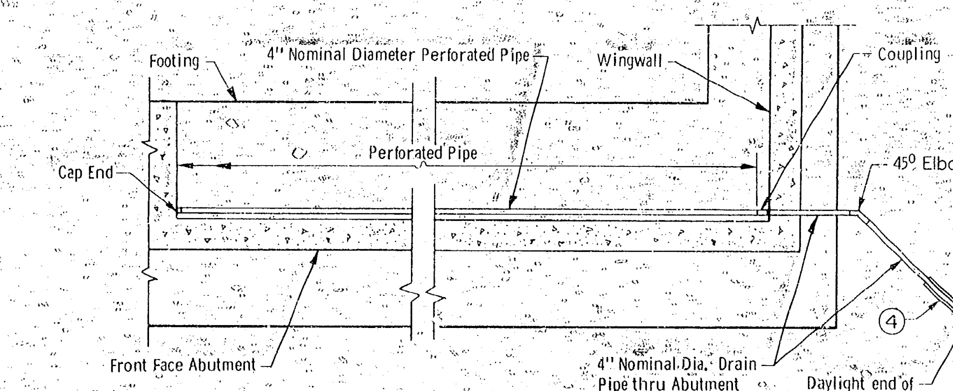
Approved commercial pile splice back-up ring may be used in lieu of the type detailed. Back-up ring shall have a tight fit.
Welding electrodes shall be A. W. S. Type E7016 or E7018 (low-hydrogen)
Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than 250° F.
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.
Electrodes which have become wet, soiled or damaged shall not be used.
Welding shall not be done when the ambient temperature is lower than 0° F or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature during welding.

APPROVED July 21, 1972 Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE** CAST-IN-PLACE CONCRETE PILES		DETAIL NO. **B201**

TITLE: DETAILS	DES. / DR. / CHK. / CHK.	APPROVED: 10-28-91	Sheet No. 23 of 26 Sheets	Bridge No. 62002



SECTION THRU ABUTMENT



SECTION A-A

NOTES:

1. All pipe shall be as per Spec. 3245
2. Wrap perforated pipe with Geotextile as per Spec. 3733, Type I. Attach to pipe as per Spec. 2502
3. See bridge plans for notes and "Summary of Quantities".

④ 5 ft. long corrugated metal oversleeve with rodent screen on end, or a Precast Concrete Headwall.

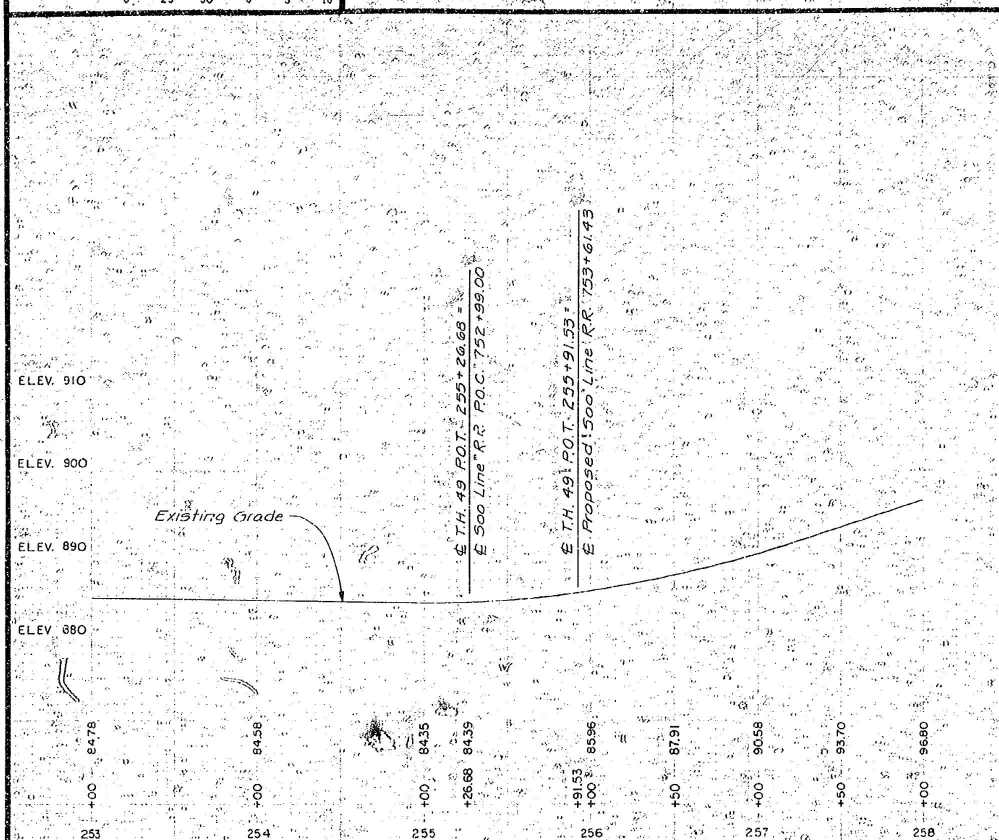
⑤ TOP 6'-0" COMPACTED TO WITHIN 98% OF OPTIMUM PROCTOR, THE REST AT 95%.

APPROVED: March 13, 1985 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **DRAINAGE SYSTEM** **FOR HIGH ABUTMENTS**	REVISION	DETAIL NO. **B910** MODIFIED

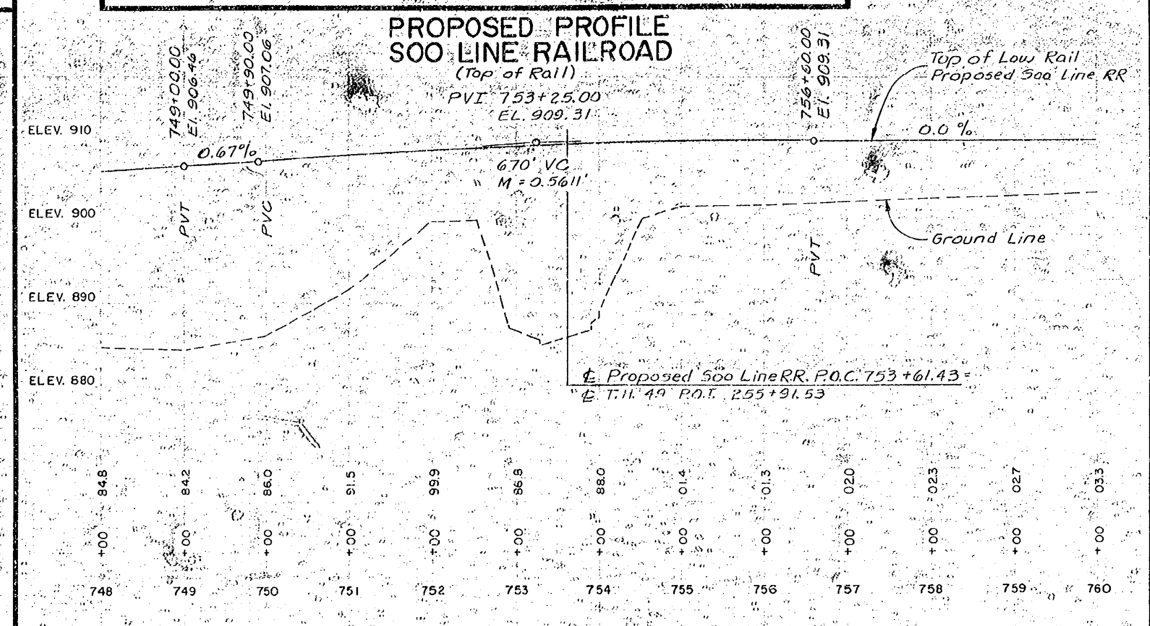
TITLE: DETAILS	DES:	DR:	APPROVED:	Bridge No.
	CHK:	CHK:		62002
	Sheet No. 24 of 26 Sheets			

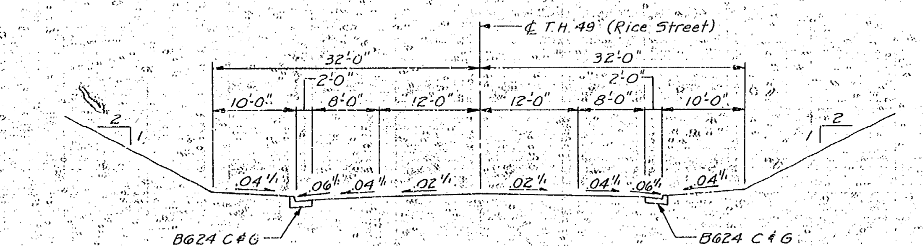
CONTRACTED PROFILE
SCALE: HOR. 0' 25' 50' VER. 0' 5' 10'

℄ PROFILE T.H. 49 (RICE ST.)

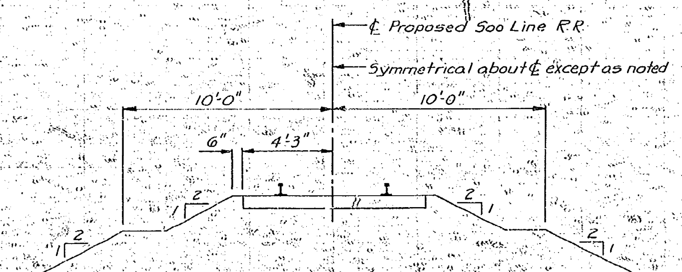


TYPICAL SECTIONS & PERTINENT DATA
SCALES AS SHOWN





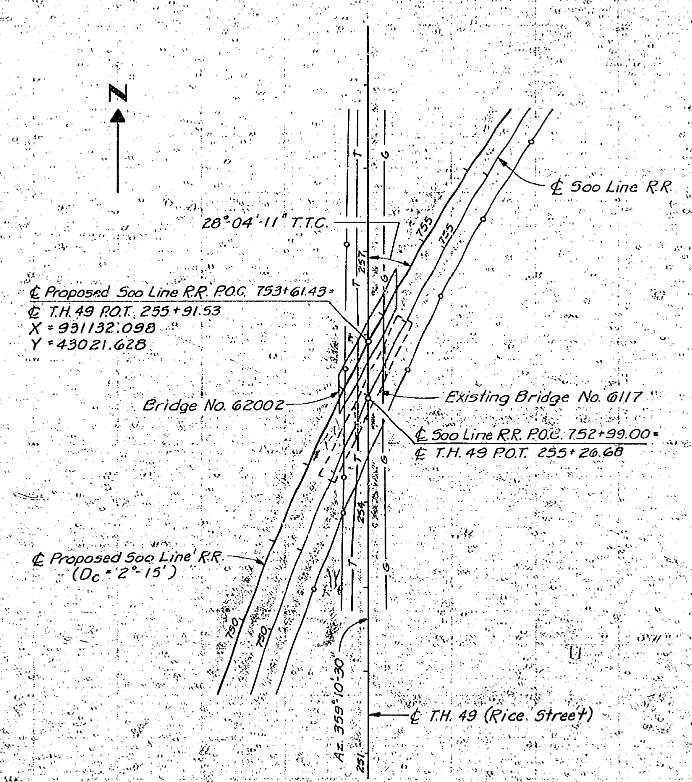
TYPICAL SECTION
T.H. 49



TYPICAL EMBANKMENT SECTION

PLAT
SCALE: 0 50' 100'

SOO LINE R.R.
P.I. 755+52.15
X 931129.86
Y 43223.96
Δ 31°37'23"
D 2°15'00"
T. 808.81'
TS 747+43.34
P.I. 748+60.01
L.T. 116.67'
S.T. 58.34'
Ls 175.00'
S.C. 749+18.34
P.I. 755+45.87
Δc 27°41'09"
Dc 2°15'00"
R 2546.64'
T 627.53
Lc 1230.55'
C.S. 761+48.89
P.I. 762+07.23
L.T. 116.67'
S.T. 58.34'
Ls 175.00'
S.T. 763+23.89



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.
2. Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area etc.
3. Apparent highwater elevation .... Obtained from ....
4. Other data: Approx. velocity of water at time of survey..........

HYDRAULIC ENGINEERS RECOMMENDATION

DATE ....

Stream or ditch designation ....
Drainage area ....
Max. discharge on record .... Design discharge (.......... yr. freq.) .... C.F.S.
Max. observed highwater elevation .... Design highwater elevation ....
Design mean velocity through structure .... F.P.S.
Low superstructure at or above elevation ....
Flowline elevation .... Skew angle ....
Waterway area req'd. below elevation .... = ... Sq. Ft. at Rt. angles to channel

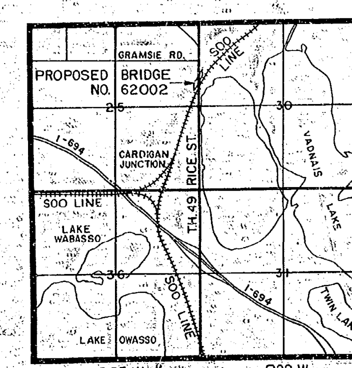
In the interest of flood plain zoning the regional flood (100 yr. freq.) is .... C.F.S. at stage .... and mean velocity of .... F.P.S. with .... Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE ....

Bridge survey sheets made from: Mn/Dot Field Survey 12/78

Bench mark elevation 927.22 (M.S.L. 1929 Adj.)
Location: Brass Cap 100' N of Rice St. & County Road "F" 25' W. of ℄ Rice St.



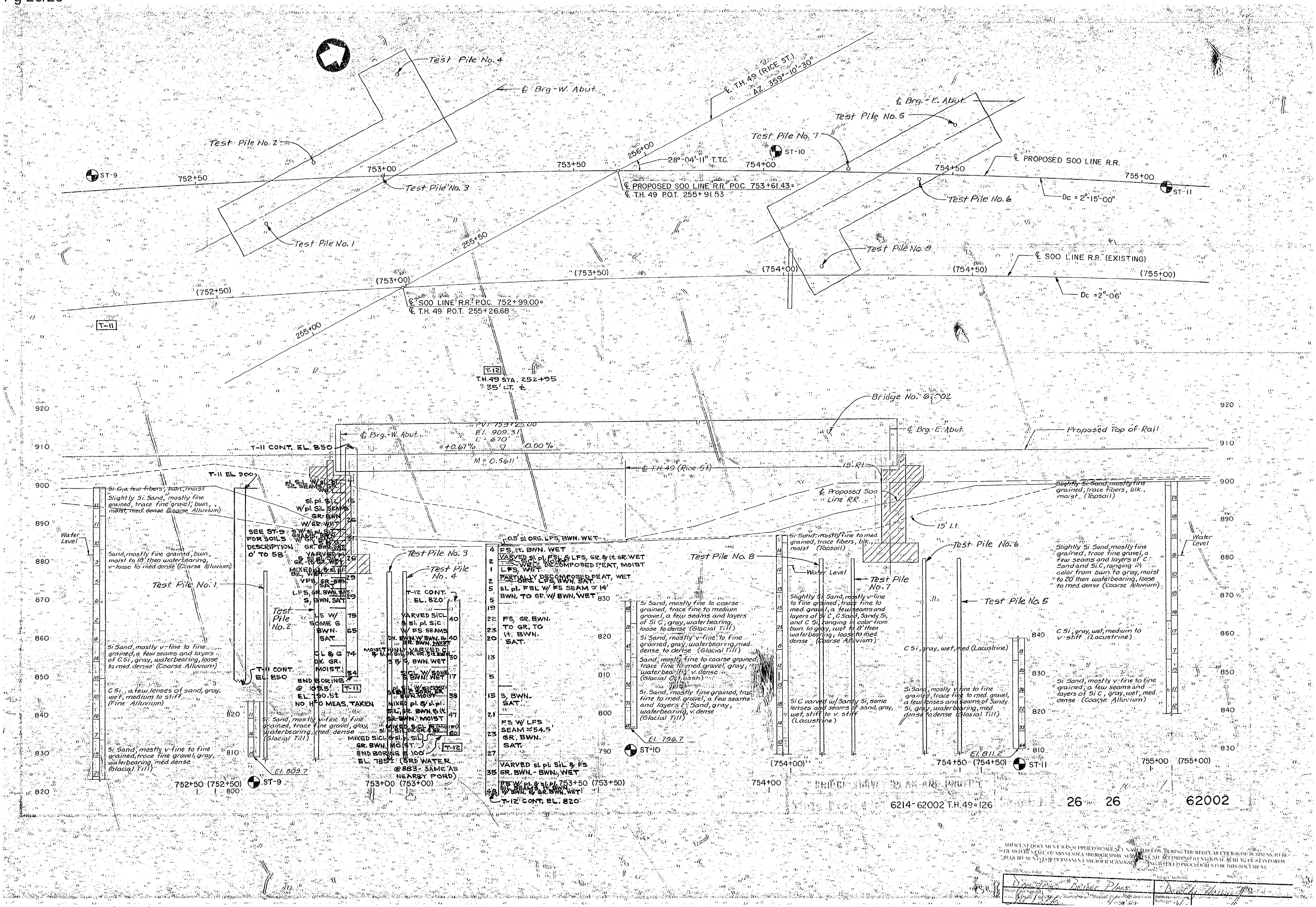
INDEX MAP
(FOUR SECTIONS)

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE SURVEY

AT MILE POINT .... ON T.H. 49 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 1 MILES NORTH OF JCT. I-694 AND T.H. 49
SEC. 25 & 30 TWP. 30N R 22 W & R 23W
TOWNSHIP SHOREVIEW & VADNAIS HEIGHTS COUNTY RAMSEY
BRIDGE NO. 62002
REPLACES BR. 6117

Area No. 92 **Job No.** 102 **State Proj. No.** 6214-62002 T.H. 49 = 126 **Sheet No.** 25 of 26 **Sheets**


Test Pile No. 4
℄ Brg-W. Abut.
℄ T.H. 49 (RICE ST.)
AZ. 359°-10'-30"
℄ Brg.-E. Abut.
Test Pile No. 5
Test Pile No. 7
ST-10
Test Pile No. 2
256+00
28°-04'-11" T.T.C.
℄ PROPOSED SOO LINE R.R.
ST-9
752+50
753+00
753+50
754+00
754+50
755+00
ST-11
Test Pile No. 3
℄ PROPOSED SOO LINE R.R. POC. 753+61.43=
℄ T.H. 49 P.O.T. 255+91.53
Test Pile No. 6
Dc = 2°-15'-00"
Test Pile No. 1
255+50
Test Pile No. 8
℄ SOO LINE R.R. (EXISTING)
(753+00)
(753+50)
(754+00)
(754+50)
(755+00)
(752+50)
℄ SOO LINE R.R. POC. 752+99.00=
℄ T.H. 49 P.O.T. 255+26.68
Dc = 2°-06'
255+00
T-11
T-12
T.H.49 STA. 252+95
35' LT. ℄
Bridge No. 62002
PVI 753+25.00
El. 909.31
L = 670'
+0.67%
0.00%
M = 0.5611
℄ Brg.-W. Abut.
℄ Brg.-E. Abut.
Proposed Top of Rail
T-11 CONT. EL. 850
T-11 EL 900
℄ T.H. 49 (Rice St.)
15' Rt.
℄ Proposed Soo Line R.R.
15' Lt.
SEE ST-9 FOR SOILS DESCRIPTION 0' TO 58'
Water Level
Test Pile No. 1
Test Pile No. 2
Test Pile No. 3
Test Pile No. 4
Test Pile No. 8
Test Pile No. 7
Test Pile No. 6
Test Pile No. 5
T-12 CONT. EL. 820'
T-11 CONT. EL. 850
END BORING @ 109.5' EL. 790.5±
NO. H2O MEAS. TAKEN
END BORING @ 100' EL. 785±
GRD WATER @ 883 - SAME AS NEARBY POND
T-12 CONT. EL. 820
El. 809.7
El. 796.7
El. 811.2
Si Sand, mostly v-fine to fine grained, a few seams and layers of C Si, gray, waterbearing, loose to med. dense (Coarse Alluvium)
C Si, a few lenses of sand, gray, wet, medium to stiff (Fine Alluvium)
Si Sand, mostly v-fine to fine grained, trace fine gravel, gray, waterbearing, med. dense (Glacial Till)
C Si, gray, wet, med (Lacustrine)
C Si, gray, wet, medium to v-stiff (Lacustrine)
Si Sand, mostly v-fine to fine grained, a few seams and layers of Si C, gray, wet, med. dense (Coarse Alluvium)
6214-62002 T.H. 49=126
26 26
62002