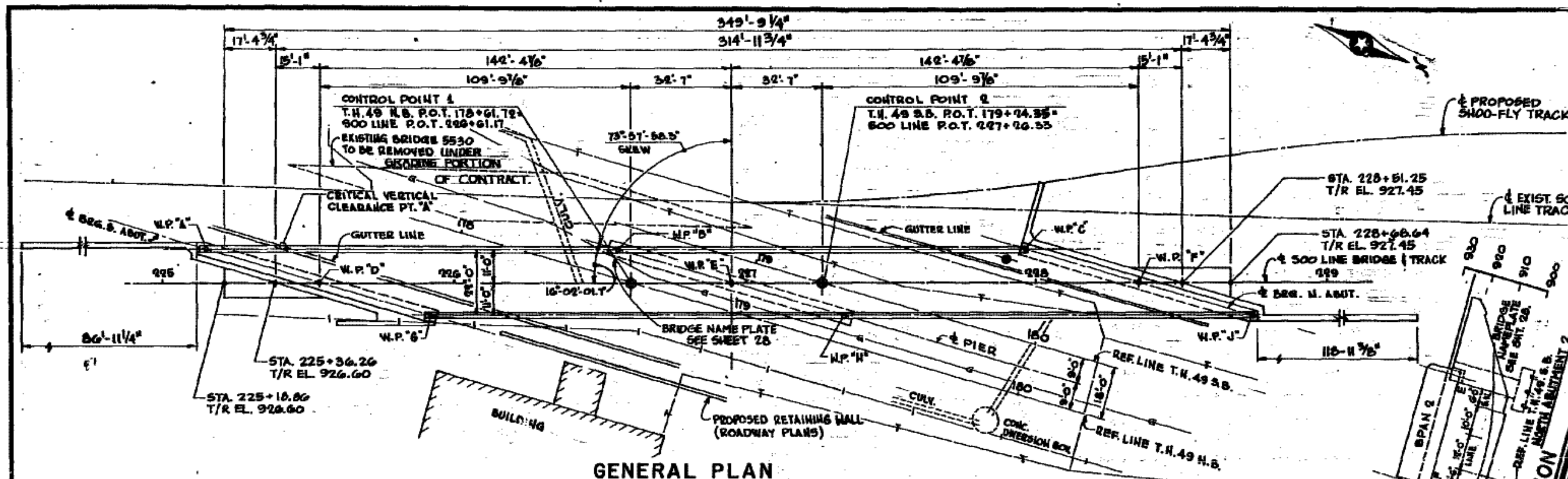
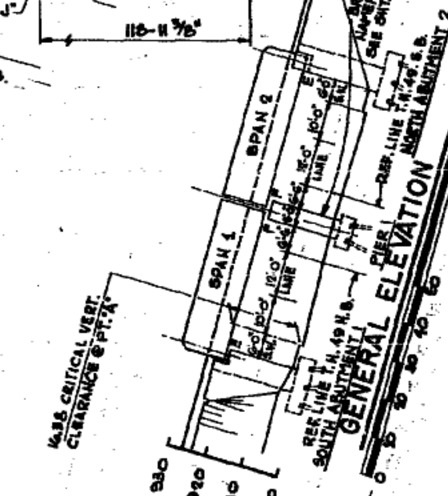
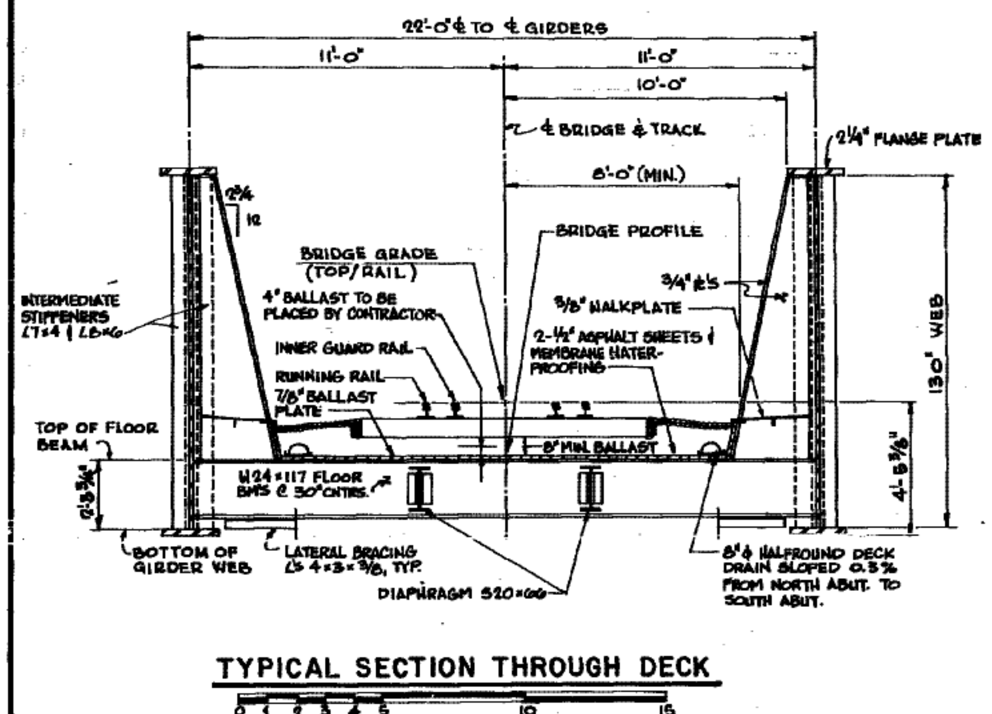
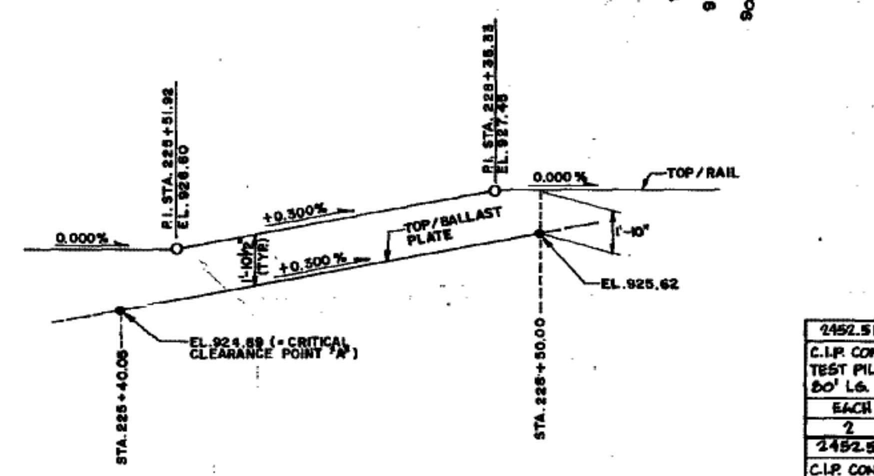






(P) ..... DENOTES PLAN QUANTITY PAY ITEMS AS PER MN/DOT 1901.



Fed. Proj. No. STATE FUNDS

DESIGN DATA

1984 A.R.E.A. DESIGN SPECIFICATIONS
LOADING: COOPER'S E-80 + DIESEL IMPACT
WORKING STRESS DESIGN METHOD.
STRUCTURAL STEEL:
ASTM A588: F_y = 50,000 P.S.I.
ASTM A325 HIGH-STRENGTH BOLTS
REINFORCED CONCRETE:
f'_c = 4000 P.S.I. n=8 F_y = 60,000 P.S.I. (REINF.)

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	WORKING POINT LAYOUT
3	GENERAL NOTES & STRESS TABLE
4	SOUTH ABUTMENT PLAN & ELEVATION
5	SOUTH ABUTMENT FOOTING PLAN & DETAILS
6	S. ABUT. ELEV. B-B & EAST WINGWALL ELEV. C-C
7	SOUTH ABUTMENT WEST WINGWALL
8	SOUTH ABUT. BILL OF REINFORCEMENT
9	NORTH ABUTMENT PLAN & ELEVATION
10	NORTH ABUTMENT FOOTING PLAN & DETAILS
11	N. ABUT. ELEV. B-B & WEST WINGWALL ELEV. C-C
12	NORTH ABUTMENT EAST WINGWALL
13	MISC. ABUTMENT DETAILS & QUANTITIES
14	NORTH ABUTMENT BILL OF REINFORCEMENT
15	PIER 1 DETAILS
16	PIER BAR LIST AND QUANTITIES
17	GIRDER ELEV. A & D AND SPAN 1 FRAMING PLAN
18	GIRDER ELEV. B & C AND SPAN 2 FRAMING PLAN
19	STEEL DETAILS
20	STEEL DETAILS
21	BEARING ASSEMBLIES
22	WALKPLATE / JOINT DETAILS AT ABUTMENTS
23	WALKPLATE / JOINT DETAILS AT PIER
24	BALLAST PLATE DETAILS
25	JOINT DETAILS
26	WATERPROOFING & DRAINAGE DETAILS (1 OF 2)
27	WATERPROOFING & DRAINAGE DETAILS (2 OF 2)
28	B101 AND B201 DETAILS
29	GENERAL PLAN - TRACK PROTECTION
30	DETAILS - TRACK PROTECTION
31	ELEVATIONS - TRACK PROTECTION
32	ELEVATIONS - TRACK PROTECTION
33	BRIDGE SURVEY
34	BRIDGE SURVEY PLAN & PROFILE
35	TEST BORING LOGS
36	TEST BORING LOGS
37	TEST BORING LOGS
38	TEST BORING LOGS
39	TEST BORING LOGS

I hereby certify that this drawing was prepared by me or under my direct supervision and that I am a duly registered ENGINEER under the laws of the State of MINNESOTA Reg. No. 15582

Date JUNE 5, 1986

BAKKE KOPP BALLOU & McFARLIN, INC.
CONSULTING ENGINEERS
MINNEAPOLIS, MINNESOTA

TRUNK HIGHWAY NO. 49
MINNESOTA
DEPARTMENT OF TRANSPORTATION

Bridge No. 62032

T.H. 49 (RICE ST.) UNDER SOO LINE RR., 0.5 MILES SOUTH OF JCT. T.H. 694 AND T.H. 49 IN SHOREVIEW.

SPANS 142-142 I.D. NO. 305

GENERAL PLAN AND ELEVATION

SEC. 31 & 36 T. 30 N. R. 22 23 W.
RAMSEY COUNTY

APPROVED: 6-13-86
BRIDGE ENGINEER — ASST. DIVISION DIRECTOR

DES. RLD — DR. W.K.
CHK. JFE — CHK. JFE

62032

ITEM NO.	0452.603	2452.519	2452.519	2452.519	2452.519
ITEM	STEEL SHEET PILING (TEMP.)	C.I.P. CONC. TEST PILES 80' LG. 12"	C.I.P. CONC. TEST PILES 90' LG. 12"	C.I.P. CONC. TEST PILES 100' LG. 12"	C.I.P. CONC. TEST PILES 110' LG. 12"
UNIT	LUMP SUM	EACH	EACH	EACH	EACH
QUANTITY	1	2	2	1	2

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	2401.501	2401.501	2401.541	2401.541	2402.521	2402.521	2402.593	2402.594	2402.594
ITEM	STRUCTURE CONCRETE (1A43)	STRUCTURE CONCRETE (3Y43)	REINFORCEMENT BARS	REINFORCEMENT BARS (EPOXY COATED)	STRUCTURAL STEEL (3306)	STRUCTURAL STEEL (3309)	FIXED BRG. ASSEMBLIES TYPE 1	EXP. BRG. ASSEMBLIES TYPE 1	EXP. BRG. ASSEMBLIES TYPE SPECIAL
UNIT	CU. YD.	CU. YD.	POUND	POUND	POUND	POUND	EACH	EACH	EACH
QUANTITY	746 (P)	1830 (P)	106176 (P)	57253 (P)	38369 (P)	1 178 370 (P)	4	4	16

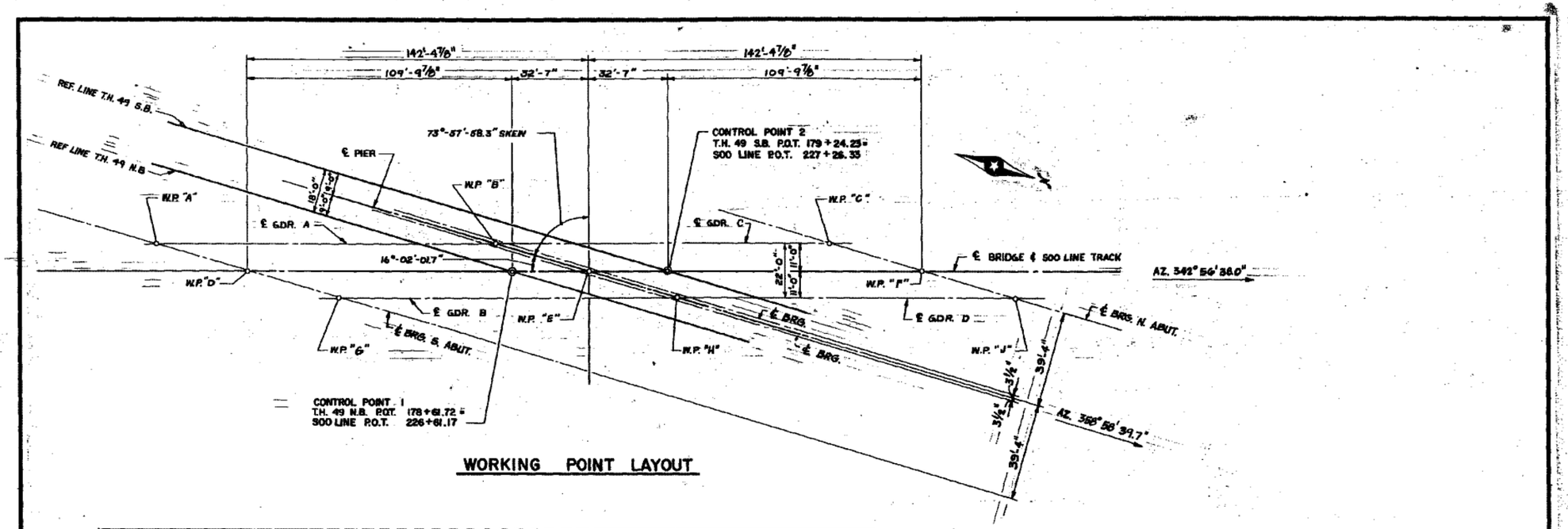
ITEM NO.	2451.503	2452.507	2452.508	0481.602	2477.503	2481.501	0105.603	0401.601	0402.601	0481.602	2452.519
ITEM	GRANULAR BACKFILL (C.V.)	C.I.P. CONC. PILES DELIV., 12"	C.I.P. CONC. PILES DRIVEN, 12"	ONE-PLY MEMBRANE WATERPROOFING	ZINC RICH PAINT SYSTEM (NEW)	THREE-PLY JT. WATERPROOFING	RAILROAD TRACK BALLAST	STRUCTURE EXCAVATION	DRAINAGE SYSTEM	DAMP-PROOFING	C.I.P. CONC. TEST PILES 120' LG. 12"
UNIT	CU. YD.	LIN. FT.	LIN. FT.	SQ. FT.	SQ. FT.	LIN. FT.	CU. YD.	LUMP SUM	LUMP SUM	SQ. FT.	EACH
QUANTITY	2482	22535	22535	5992 (P)	50720 (P)	764	64	1	1	7059 (P)	13

Form 40-16

Area No. 90 **Job No.** 911 REVIEW UNIT SASSEN

State Proj. No. 6214-62032 (T.H. 49=126) **Sheet No.** 1 **of 39 Sheets**

ADJACENT DOCUMENT WAS SUPPLIED BY AGENCY NAMED BELOW, DURING THE REGULAR COURSE OF BUSINESS



WORKING POINT LAYOUT

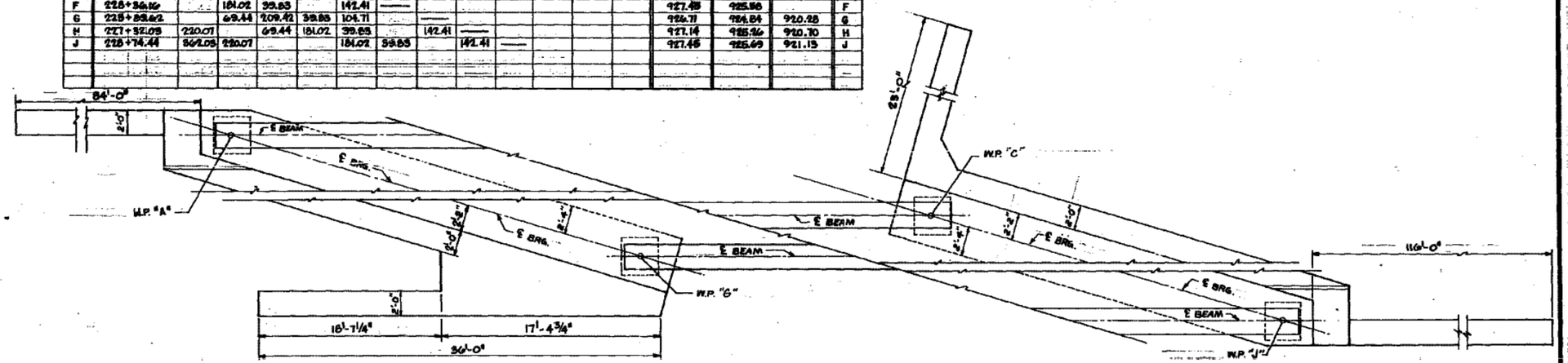
DIMENSIONS BETWEEN WORKING POINTS

PT	STATION	A	B	C	D	E	F	G	H	J	PT
A	225+13.00	——									A
B	226+55.47	142.41	——								B
C	227+97.88		142.41	——							C
D	228+51.34	53.85		——	——						D
E	226+93.75	181.02	53.85		142.41	——					E
F	228+34.16		181.02	53.85		142.41	——				F
G	228+88.62		69.44	209.42	53.85	104.71		——			G
H	227+32.08	220.07		69.44	181.02	53.85		142.41	——		H
J	228+74.44	361.08	220.07			181.02	53.85		142.41	——	J

ELEVATIONS

TOP OF RAIL EL.	TOP OF BALLAST PL.	BRIDGE SEAT EL.	PT
926.60	924.61	920.05	A
926.91	925.03	920.47	B
927.34	925.46	920.90	C
926.90	924.72		D
927.05	925.18		E
927.48	925.98		F
926.71	924.84	920.28	G
927.14	925.26	920.70	H
927.46	925.69	921.15	J

POINT	N-COORDINATE E-COORDINATE
CONTROL POINT NO. 1	35300.7342 931266.1256
CONTROL POINT NO. 2	35368.0870 931247.0110



TITLE	DES:	DR:	APPROVED:	Bridge No.
WORKING POINT LAYOUT	CHKD: JFK	CHKD: JFK	6-13-86	62032
	Sheet No. 2 of 39 Sheets			

GENERAL NOTES

CONCRETE

ALL CONCRETE SHALL CONFORM TO MN/DOT SPECIFICATION 2461.

ALL FOOTING CONCRETE SHALL BE 1A43. ALL CONCRETE FOR C.I.P. CONCRETE PILES SHALL BE 1C52. ALL OTHER CONCRETE SHALL BE 3Y43.

THE EDGES OF CONCRETE ON ALL EXPOSED CONSTRUCTION SHALL BE FINISHED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED.

SEE SPECIAL PROVISIONS FOR RUSTICATION AND SPECIAL SURFACE FINISH.

REINFORCEMENT BARS

ALL REINFORCING BARS SHALL BE OF DEFORMED BILLET STEEL CONFORMING TO MN/DOT 3301.

THE FIRST DIGIT OF A THREE-DIGIT BAR MARK, AND THE FIRST TWO DIGITS OF A FOUR-DIGIT BAR MARK, INDICATE THE BAR SIZE.

ALL BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT.

ALL BARS OF A SERIES SHALL VARY BY A CONSTANT INCREMENT. THE SHORTEST AND THE LONGEST BAR LENGTHS OF A SERIES GROUP ARE TABULATED IN THE BAR LIST.

REINFORCEMENT BARS SHALL BE SHIPPED TO THE JOB SITE IN BUNDLES WHICH ARE CLEARLY IDENTIFIED BY THE SPECIFIC LOCATION OF THE BARS, E.G., SOUTH ABUT. NORTH ABUT., ETC.

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.

THE CLEAR DISTANCE BETWEEN REINFORCEMENT BARS AND FACE OF CONCRETE SHALL BE 3" IN FOOTINGS, 2-3/4" AT THE FRONT FACE OF RUSTICATED WINGWALLS, AND 2" ELSEWHERE UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL

DESIGN AND WORKMANSHIP SHALL CONFORM TO CURRENT A.R.E.A. SPECIFICATIONS FOR STEEL RAILWAY BRIDGES, EXCEPT AS MAY BE MODIFIED BY NOTES BELOW.

ALL STRUCTURAL STEEL SHALL CONFORM TO MN/DOT 3309 EXCEPT FOR FLASHING, ANCHORAGES, EXPANSION DEVICES AND ITEMS NOTED OTHERWISE WHICH SHALL CONFORM TO MN/DOT 3306.

PATTERN PLATE FOR WALKWAYS SHALL BE STRUCTURAL STEEL (3306) AND SHALL BE GALVANIZED IN ACCORDANCE WITH MN/DOT 3394.

WEB PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF WEB SPLICES. THE LOCATION OF SPLICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER, AND SHALL BE A MINIMUM OF 1'-0" FROM STIFFENERS AND 3'-0" FROM FLANGE SPLICES.

STIFFENERS, FLOOR BEAMS AND GIRDER ENDS SHALL BE PERPENDICULAR TO GRADE.

WELDING SHALL CONFORM TO THE LATEST A.W.S. STRUCTURAL WELDING CODE. ALL WELD METAL MUST BE EQUIVALENT TO BASE METAL IN STRENGTH, CORROSION RESISTANCE AND PAINTABILITY.

ALL SHOP AND FIELD CONNECTIONS SHALL BE BOLTED USING 7/8" DIAMETER HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 (TYPE 3) UNLESS OTHERWISE NOTED. BOLTS SHALL BE HEAVY SEMI-FINISHED STRUCTURAL BOLTS WITH HEAVY HEX NUT AND ONE HARDENED WASHER UNDER THE TURNED ELEMENT. HOLES FOR 7/8" DIAMETER H.S. BOLTS SHALL BE 15/16" DIAMETER UNLESS OTHERWISE NOTED.

CAMBER DIAGRAM SHOWN IS FOR GIRDERS IN UNLOADED POSITION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS INCLUDING TRACK AND BALLAST.

SOLE PLATES AT BEARINGS TO BE INCLUDED IN WEIGHT OF STRUCTURAL STEEL MN/DOT 3309.

WEB-TO-FLANGE WELDS AND BUTT-WELDED SPLICES FOR FLANGE AND WEB PLATES SHALL BE MADE BY THE SUBMERGED ARC AUTOMATIC WELDING PROCESS.

ALL BUTT SPLICES SHALL BE FULL PENETRATION BUTT WELDS USING LOW HYDROGEN PROCESS AND SHALL BE GROUND FLUSH IN THE DIRECTION OF STRESS ON 4 SIDES. COPIES OF WELD TESTS SHALL BE SUBMITTED TO THE ENGINEER.

ZINC RICH PAINT SYSTEM COLOR SHALL BE BROWN. SEE SPECIAL PROVISIONS.

WEB, BOTTOM FLANGE, AND PORTIONS OF THE TOP FLANGE (AS NOTED ON THE PLANS) OF MAIN GIRDERS ARE "FRACTURE CRITICAL MEMBERS" AND ARE DESIGNATED ON THE PLANS BY THE NOTATION "FCM". THESE MEMBERS SHALL BE FABRICATED, TESTED AND INSPECTED IN ACCORDANCE WITH "FRACTURE CONTROL PLAN FOR FRACTURE CRITICAL MEMBERS." FROM THE CURRENT A.R.E.A. MANUAL FOR RAILWAY ENGINEERING.

FULL ASSEMBLY REAMING WILL BE REQUIRED PER Mn/DOT 2471.3E1F.

WATERPROOFING AND DAMPPROOFING

JOINT WATERPROOFING SHALL COMPLY WITH MN/DOT 2481. PLACE JOINT WATERPROOFING ON BACK OF ABUTMENT JOINTS AT AND ABOVE THE TOP OF FOOTING.

THE BACK SURFACE OF ABUTMENTS AND WINGWALLS SHALL BE DAMPPROOFED AS DESCRIBED IN THE SPECIAL PROVISIONS. SEE SH. 26 FOR UPPER LIMITS OF DAMPPROOFING.

THE SURFACE OF THE SUPERSTRUCTURE BALLAST PLATE AND SIDE RETAINER PLATES SHALL RECEIVE A WATERPROOF MEMBRANE AND PROTECTIVE COVER AS SHOWN ON SHEET 27 AND DESCRIBED IN THE SPECIAL PROVISIONS.

DRAINAGE SYSTEM

THE PRICE BID FOR THE DRAINAGE SYSTEM SHALL BE FOR THE COMPLETE SYSTEM FURNISHED AND INSTALLED.

BOTTOM PANS AND COVERS SHALL BE GALVANIZED ONLY. COLLARS, REDUCERS, DRAIN PIPES AND ALL CONNECTIONS TO BE GALVANIZED AND BITUMINOUS COATED AS DESCRIBED IN THE SPECIAL PROVISIONS.

SUBSTRUCTURE

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

QUANTITY SUMMARY FOR THE ABUTMENTS IS ON SHEET 13.

QUANTITY SUMMARY FOR THE PIER IS ON SHEET 16.

SUPERSTRUCTURE

THE CONTRACTOR SHALL PLACE 4" OF BALLAST ON THE COMPLETED DECK WATERPROOFING. THE REMAINING BALLAST, RAILS AND TIES SHALL BE FURNISHED AND INSTALLED BY RAILROAD FORCES.

OPTIONAL FIELD SPLICE

PAYMENT FOR STRUCTURAL STEEL WILL BE BASED ON WELDED SHOP FLANGE SPLICE.

BEARING ASSEMBLIES

THE POSITION OF THE EXPANSION BEARING ASSEMBLIES SHALL BE ADJUSTED SO THAT CENTERLINE OF THE ROCKER WEB WOULD BE VERTICAL AT 45°F.

LEGEND

(SPS) DENOTES SPACES	(LLH) DENOTES LONG LEG HORIZONTAL
(TYP) DENOTES TYPICAL	(CSK) DENOTES COUNTERSUNK
(EF) DENOTES EACH FACE	(EQ) DENOTES EQUAL
(FF) DENOTES FAR FACE	(OH) DENOTES OPPOSITE HAND
(NF) DENOTES NEAR FACE	(WP) DENOTES WORKING POINT
(SER) DENOTES SERIES	(GDR) DENOTES GIRDER
(BM) DENOTES BEAM	(T) DENOTES TOP
	(B) DENOTES BOTTOM

SUGGESTED CONSTRUCTION SEQUENCE

STEP	ITEM	RESPONSIBILITY
1	GRADING FOR TRACK REALIGNMENT	CONTRACTOR
2	TRACK REALIGNMENT AT NORTH ABUTMENT	RAILROAD CO.
3	INSTALL SHEET PILE PROTECTION FOR TRACK AND EXISTING BRIDGE	CONTRACTOR
4	REMOVE PORTION OF EAST WINGWALL OF EXISTING NORTH ABUTMENT TO ALLOW EXCAVATION FOR NEW ABUTMENT	CONTRACTOR
5	EXCAVATION FOR NEW ABUTMENTS EXCEPT FOR NORTHWEST WINGWALL	CONTRACTOR
6	DRIVING OF PILES AND CONSTRUCTION OF NEW ABUTMENTS AND WINGWALLS	CONTRACTOR
7	RICE STREET CLOSING	
8	EXCAVATION FOR PIER	CONTRACTOR
9	DRIVING OF PILES AND CONSTRUCTION OF NEW PIER	CONTRACTOR
10	ERECTION OF BRIDGE SUPERSTRUCTURE AND INSTALLATION OF MEMBRANE WATERPROOFING	CONTRACTOR
11	CONSTRUCT EMBANKMENT FOR NEW TRACK	CONTRACTOR
12	INSTALLATION OF BALLAST, TIES AND TRACK. TIE INTO EXISTING TRACK AND OPEN NEW BRIDGE TO TRAFFIC	RAILROAD CO.
13	REMOVE TEMPORARY TRACK AND ABANDONED EXISTING TRACK.	RAILROAD CO.
14	DEMOLISH EXISTING STRUCTURE	CONTRACTOR
15	COMPLETE PROJECT, RAILINGS, SIGNS, EARTHWORK, ETC.	CONTRACTOR

PREFORMED JOINT FILLER LIST

TYPE	NO.	SIZE	LOCATION
BIT. FELT	2	10" x 9" x 15"	WALKPLATE AT ABUTMENTS (2 FROM 1)
BIT. FELT	2	18" x 9" x 15"	WALKPLATE AT ABUTMENTS (2 FROM 1)
CORK	1	1" x 6'-9" x 25'-0"	E. WINGWALL, N. ABUT. (2 FROM 1)
CORK	1	1" x 6'-9" x 19'-8"	E. WINGWALL, N. ABUT. (2 FROM 1)
CORK	1	1" x 6'-4" x 22'-4"	W. WINGWALL, S. ABUT. (2 FROM 1)
CORK	1	1" x 5'-0" x 12'-8"	N. & S. WINGWALL (2 FROM 1)
POLYETHYLENE FOAM	1	1½" DIA. x 60'-0"	PIER JOINT IN BALLAST PLATE

STRESS TABLE

DESIGN DATA FOR GIRDERS

LIVE LOAD: COOPERS E-80 WITH DIESEL IMPACT
ASSUMED DEAD LOAD PER LINEAR FOOT OF GIRDER

TRACK AND BALLAST	1196 LBS./FT.
FLOOR	1410 LBS./FT.
GIRDER	779 LBS./FT.
TOTAL DEAD LOAD	3385 LBS./FT.

PROPERTIES OF GIRDERS

GROSS SECTION	NET SECTION
A= 229.00 IN^2 ①	A = 202.00 IN^2 ①
A= 211.00 IN^2 ②	A = 184.00 IN^2 ②
Aw= 130.00 IN^2 ②	Aw= 103.00 IN^2 ②
I = 618 004 IN^4 ①	I = 581 007 IN^4 ①
Y_T= 67.25 IN ①	Y_T= 67.25 IN ①
Y_B= 67.25 IN ①	Y_B= 67.25 IN ①
S_T= 9180 IN^3 ①	S_T= 8641 IN^3 ①
S_B= 9180 IN^3 ①	S_B = 8641 IN^3 ①

① AT MID SPAN ② AT SUPPORT

MAXIMUM FORCES FOR GIRDERS

	MAX. SHEAR (KIPS)	MAX. MOMENT (KIP FT)
DEAD LOAD	209.10	7172.78
E-80 LIVE LOAD	295.30	9217.74
IMPACT	69.10	2156.95
TOTAL	573.50	18547.47

MAXIMUM STRESSES FOR GIRDERS

	SHEAR	MOMENT (T FLG.)	MOMENT (B FLG.)
DEAD LOAD	1.61	9.40	9.96
LIVE LOAD+IMPACT	2.80	14.90	15.80
TOTAL (KSI)	4.41	24.30	25.76

DEFLECTIONS

Δ (DL) = 1.40"
Δ (LL+I) = 2.17" (ALLOWABLE = 2.63")

MAXIMUM FORCES FOR FLOOR BEAMS

	MAX. SHEAR (KIPS)	MAX. MOMENT (KIP FT)
DEAD LOAD	5.45	37.30
E-80 LIVE LOAD	23.00	288.76
IMPACT	9.03	104.45
TOTAL	37.48	407.51

MAXIMUM STRESSES FOR FLOOR BEAMS

	SHEAR (K.S.I.)	MOMENT (K.S.I.)
DEAD LOAD	0.54	1.57
LIVE LOAD+IMPACT	3.19	15.53
TOTAL	3.72	17.10

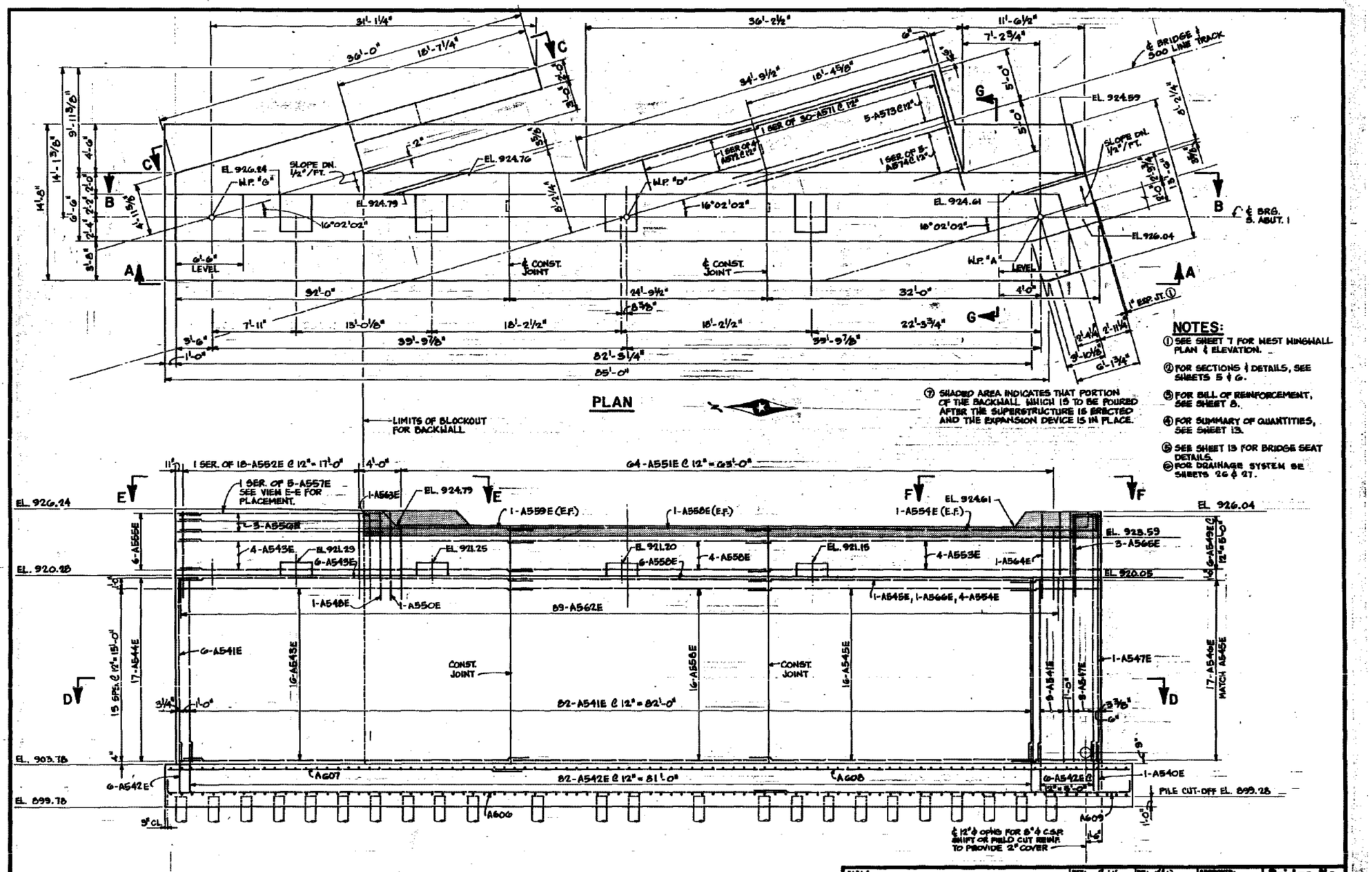
MAX. FORCES FOR END FLOOR BEAMS

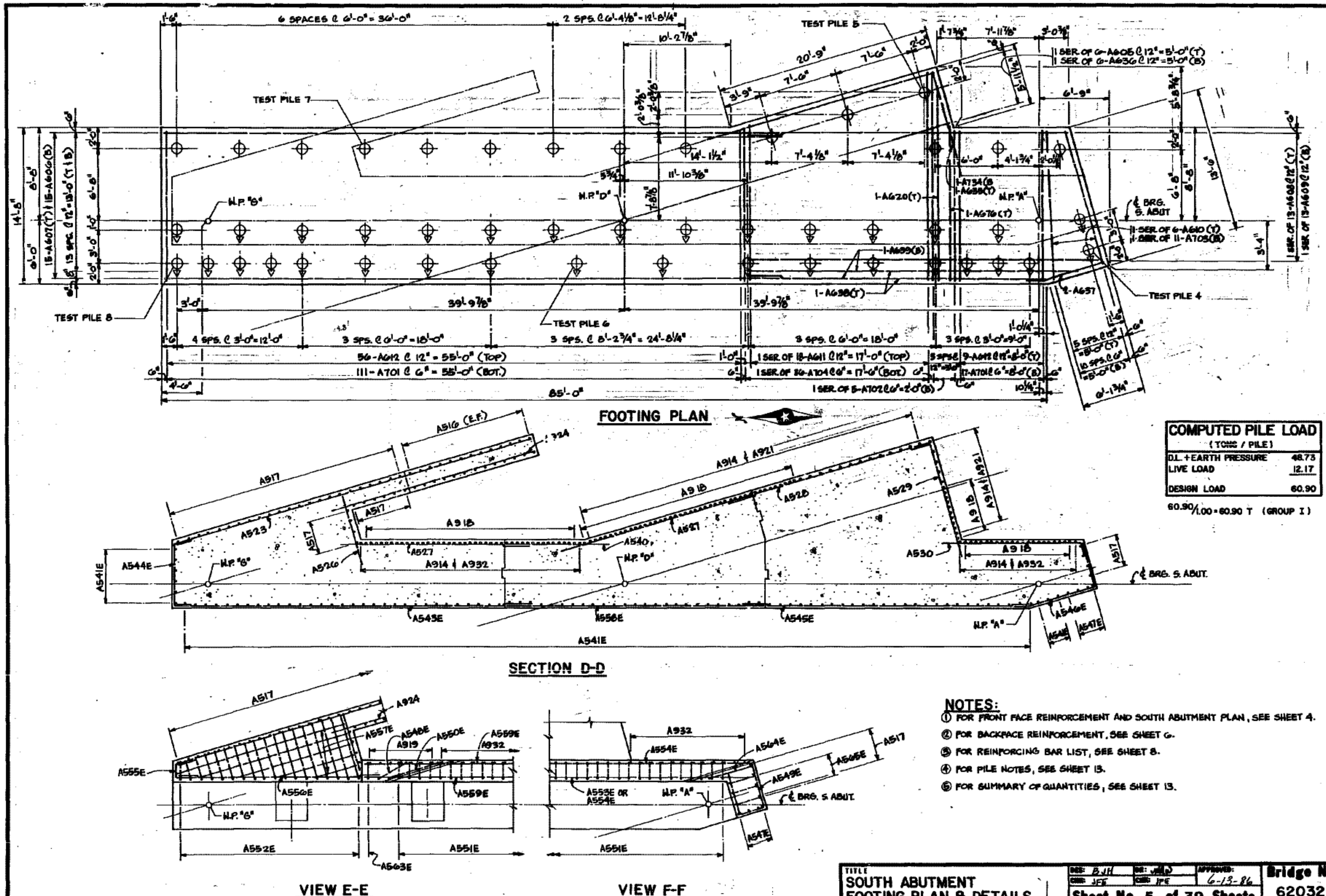
	MAX. SHEAR (KIPS)	MAX. MOMENT (KIP FT.)
DEAD LOAD	17.34	30.46
E-80 LIVE LOAD	103.09	308.55
IMPACT	40.62	121.87
TOTAL	161.05	460.88

MAX. STRESSES FOR END FLOOR BEAMS

	SHEAR (K.S.I.)	MOMENT (K.S.I.)
DEAD LOAD	1.26	0.80
LIVE LOAD+IMPACT	10.56	11.34
TOTAL	11.86	12.14

TITLE: GENERAL NOTES & STRESS TABLE	DES: JFE	DR: WK	APPROVED: 6-13-86	Bridge No. 62032
	CHK: CS-K	CHK: CS-K	Sheet No. 3 of 39 Sheets	





COMPUTED PILE LOAD (TONS / PILE)	
D.L. + EARTH PRESSURE	48.73
LIVE LOAD	12.17
DESIGN LOAD	60.90

60.90/1.00 = 60.90 T (GROUP I)

NOTES:

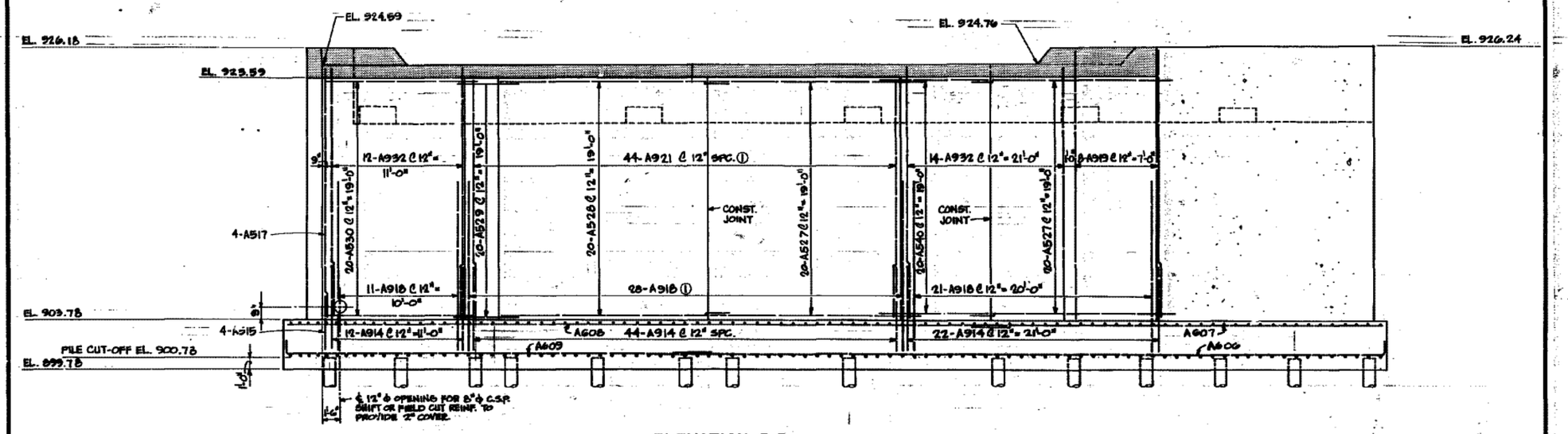
1. FOR FRONT FACE REINFORCEMENT AND SOUTH ABUTMENT PLAN, SEE SHEET 4.
2. FOR BACKFACE REINFORCEMENT, SEE SHEET 6.
3. FOR REINFORCING BAR LIST, SEE SHEET 8.
4. FOR PILE NOTES, SEE SHEET 13.
5. FOR SUMMARY OF QUANTITIES, SEE SHEET 13.

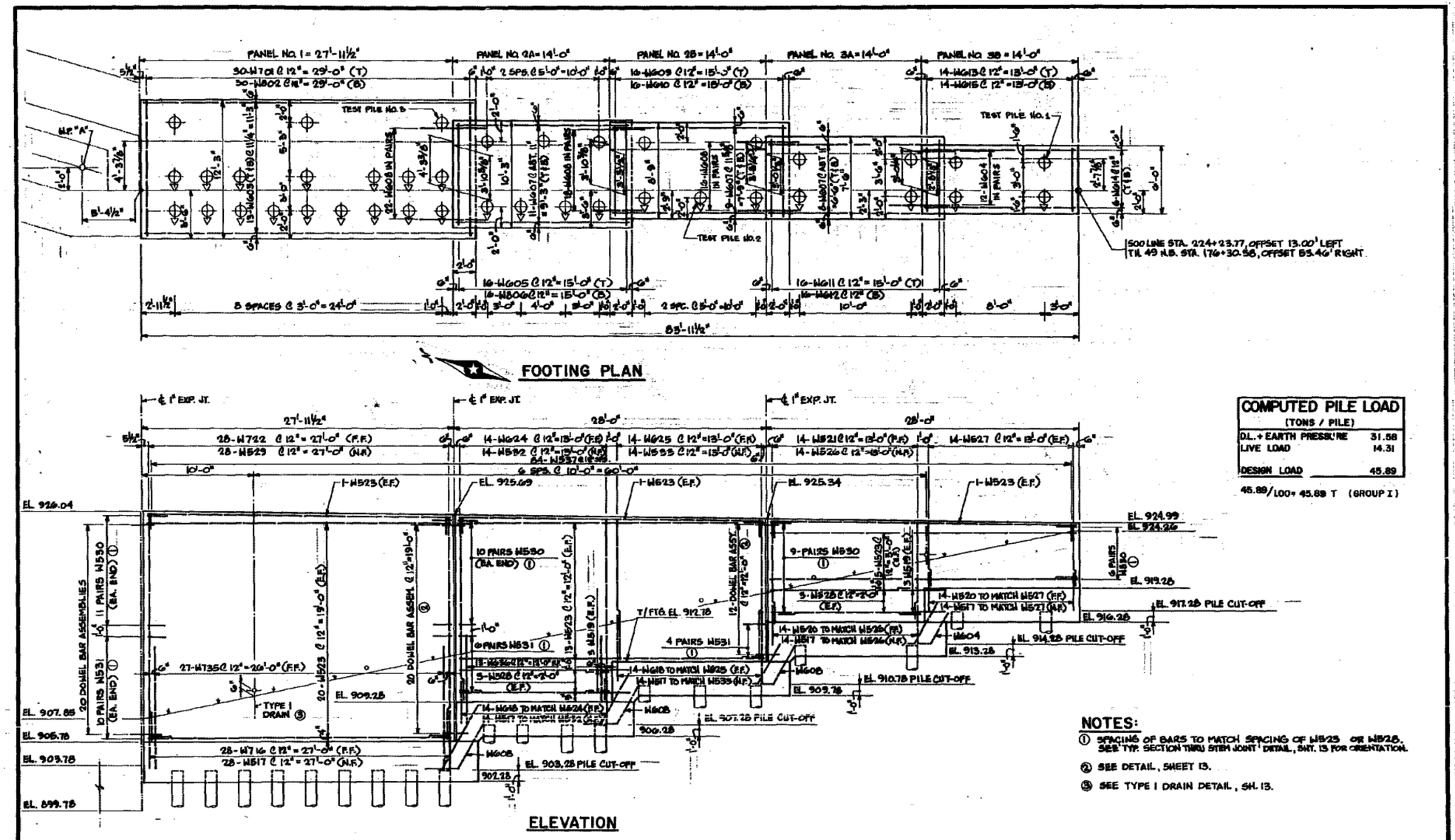
TITLE
SOUTH ABUTMENT
FOOTING PLAN & DETAILS

DES: BJH | DR: | APPROVED: 6-13-86
CHK: JFE | CHK: JFE

Sheet No. 5 of 39 Sheets

Bridge No. 62032



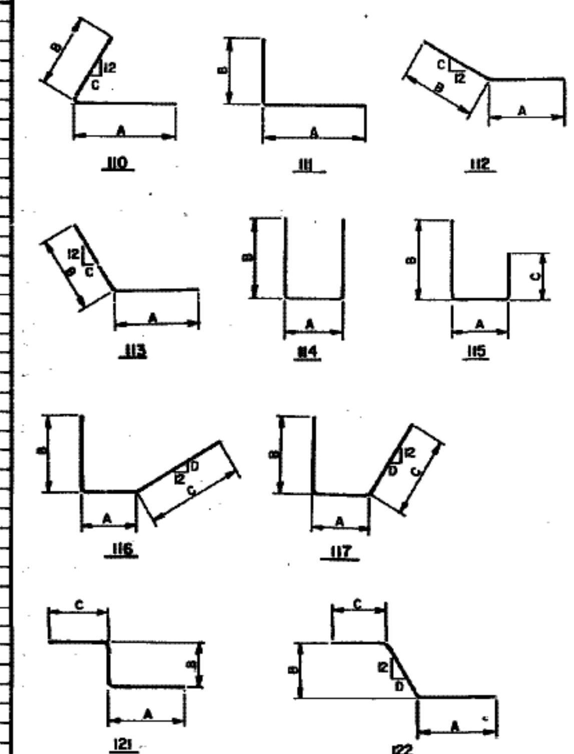


BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
SOUTH ABUTMENT UNCOATED BARS								
A 701	128	16'- 6"	114	14'- 2"	1'- 2"			TRANS. FTG.
A 702	1 SER	16'- 6"	114	14'- 2"	1'- 2"			TRANS. FTG.
	OF 5	22'- 2"		19'-10"				
A 703	1 SER	16'- 2"	114	13'- 0"	1'- 2"			TRANS. FTG.
	OF 11	17'- 2"		14'- 0"				
A 704	1 SER	16'-11"	114	14'- 7"	1'- 2"			TRANS. FTG.
	OF 36	21'-10"		19'- 6"				
A 605	1 SER	6'- 0"	STR					LONG. FTG.
	OF 6	23'- 0"						
A 606	15	60'- 0"	111	59'- 0"	1'- 0"			LONG. FTG.
A 607	15	60'- 0"	STR					LONG. FTG.
A 608	1 SER	29'- 7"	STR					LONG. FTG.
	OF 13	33'- 4"						
A 609	1 SER	30'-10"	111	29'-10"				LONG. FTG.
	OF 13	34'- 6"		33'- 6	1'- 0"			
A 610	1 SER	13'- 0"	STR					TRANS. FTG.
	OF 6	14'- 0"						
A 611	1 SER	14'- 8"	STR					TRANS. FTG.
	OF 18	19'- 6"						
A 612	65	14'- 2"	STR					TRANS. FTG.
A 914	78	8'- 8"	111	7'- 1"	1'- 7"			FOOTING DOWELS
A 515	30	4'- 7"	111	3'- 9"	0'-10"			FOOTING DOWELS
A 516	2 SER	9'- 5"	STR					VERT. WINGWALL
	OF 13	21'- 7"						
A 517	37	22'- 0"	STR					VERT. BACKWALL
A 918	60	14'- 8"	111	16'- 0"	1'- 7"			FOOTING DOWELS
A 919	8	22'- 0"	STR					VERT. BACKWALL
A 620	1	17'-10"	STR					FTG. TRANS.
A 921	44	19'- 6"	STR					VERT. BACKWALL
A 522	1 SER	23'- 4"	STR					HORIZ. W. WALL
	OF 13	35'- 0"						
A 523	10	35'- 8"	STR					HORIZ. W. WALL
A 924	29	22'- 0"	STR					HORIZ. W. WALL
A 925	1 SER	9'- 9"	STR					HORIZ. W. WALL
	OF 38	22'- 0"						
A 526	23	6'- 0"	STR					HORIZ. BACKWALL
A 527	40	18'- 6"	STR					HORIZ. BACKWALL
A 528	20	20'- 6"	STR					HORIZ. BACKWALL
A 529	20	13'- 6"	111	11'- 0"	2'- 6"			HORIZ. BACKWALL
A 530	20	16'- 0"	113	13'- 6"	2'- 6"	3-1/2		HORIZ. BACKWALL
A 531	2	18'- 0"	STR					DIAGONAL W.W.
A 932	26	20'- 6"	STR					VERT. BACKWALL
A 734	1	9'- 2"	111	8'- 0"	1'- 2"			TRANS. FOOTING
A 635	1	7'- 0"	STR					TRANS. FOOTING
A 636	1 SER	7'- 0"	111	6'- 0"	1'- 0"			LONG. FOOTING
	OF 6	24'- 0"		23'- 0"				
A 637	2	7'-11"	112	5'-10"	2'- 1"	3-1/4		LONG. FOOTING
A 638	2	31'- 6"	STR					LONG. FOOTING
A 639	2	32'- 8"	111	31'- 8"	1'- 0"			LONG. FOOTING
A 540	20	10'- 0"	STR					HORIZ. WALL
A 570	19	4'- 2"	114	1'- 8"	1'- 3"			W. WALL VERT.
A 571	1 SER	3'- 0"	STR					WEDGE TOP
	OF 30	11'- 3"						
A 572	1 SER	7'- 6"	STR					WEDGE TOP
	OF 4	18'- 3"						
A 573	5	20'- 8"	STR					WEDGE TOP
A 574	1 SER	6'- 6"	STR					WEDGE TOP
	OF 5	19'- 6"						
A 676	1	15'- 4"	STR					TRANS. FOOTING

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
SOUTH ABUTMENT EPOXY COATED BARS								
A 541E	95	16'- 0"	STR					VERT. WALL
A 542E	95	5'-10"	111	5'- 0"	0'-10"			FOOTING DOWEL
A 543E	26	34'- 6"	STR					HORIZ. ABUT.
A 544E	17	11'- 2"	117	6'- 2"	2'- 6"	2'- 6"	3-1/2	CORNER WALL
A 545E	17	28'- 0"	STR					HORIZ. ABUT.
A 546E	17	13'- 6"	116	6'- 7"	4'- 5"	2'- 6"	3-1/2	HORIZ. CORNER
A 547E	4	22'- 2"	STR					VERT. ABUT.
A 548E	1	12'-11"	115	3'- 5"	7'- 0"	2'- 6"		VERT. BACKWALL
A 549E	6	10'- 6"	115	2'- 6"	4'- 0"			HORIZ. BACKWALL
A 550E	1	15'- 8"	115	6'- 2"	7'- 0"	2'- 6"		VERT. BACKWALL
A 551E	64	10'- 2"	115	1'- 8"	6'- 0"	2'- 6"		VERT. BACKWALL
A 552E	1 SER	11'- 5"	115	1' 11"	7'- 0"	2'- 6"		VERT. BACKWALL
	OF 18	15'-11"		6'- 3"				
A 553E	4	31'- 4"	STR					HORIZ. BACKWALL
A 554E	6	32'- 4"	STR					HORIZ. BACKWALL
A 555E	6	6'- 7"	117	1'- 7"	2'- 6"	2'- 6"	3-1/2	CORNER
A 556E	3	20'- 0"	STR					HORIZ. BACKWALL
A 557E	1 SER	4'- 6"	STR					HORIZ.
	OF 5	17'- 0"						
A 558E	28	24'- 6"	STR					HORIZ.
A 559E	2	16'- 0"	STR					HORIZ. BACKWALL
A 562E	89	10'- 0"	114	6'- 0"	2'- 0"			ABUT. SEAT
A 563E	1	11'- 2"	115	1'- 8"	7'- 0"	2'- 6"		BACKWALL VERT.
A 564E	1	14'- 5"	115	4'-11"	7'- 0"	2'- 6"		BACKWALL VERT.
A 565E	3	12'- 1"	115	2'- 7"	7'- 0"	2'- 6"		BACKWALL VERT.
A 566E	1	29'- 3"	STR					SEAT HORIZ.
A 590E	20	8'- 8"	114	2'- 8"	3'- 0"			ABUT. SEAT
A 591E	16	10'- 3"	114	4'- 3"	3'- 0"			ABUT. SEAT

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
SOUTH ABUTMENT WEST WINGWALL UNCOATED BARS								
W 701	30	11'- 9"	STR					TRANS. FTG.
W 802	30	14'- 5"	114	11'- 9"	1'- 4"			TRANS. FTG.
W 603	26	29'- 6"	STR					LONG. FTG.
W 604	13	9'- 4"	122	2'- 0"	4'- 7"	2'- 0"	7	LONG. FTG.
W 605	16	9'- 9"	STR					TRANS. FTG.
W 806	16	12'- 5"	114	9'- 9"	1'- 4"			TRANS. FTG.
W 607	56	15'- 6"	STR					LONG. FTG.
W 608	56	10'- 4"	122	2'- 0"	5'- 6"	2'- 0"	7	LONG. FTG.
W 609	16	8'- 3"	STR					TRANS. FTG.
W 610	16	10'- 3"	114	8'- 3"	1'- 0"			TRANS. FTG.
W 611	16	7'- 0"	STR					TRANS. FTG.
W 612	16	9'- 0"	114	7'- 0"	1'- 0"			TRANS. FTG.
W 613	14	5'- 6"	STR					TRANS. FTG.
W 614	12	13'- 6"	STR					LONG. FTG.
W 615	14	7'- 6"	114	5'- 6"	1'- 0"			TRANS. FTG.
W 716	28	5'-11"	110	1'- 2"	4'- 9"	1-3/8		FTG. DOWELS
W 517	84	4'- 7"	111	3'- 9"	0'-10"			FTG. DOWELS
W 618	28	5'- 9"	110	1'- 0"	4'- 9"	1-3/8		FTG. DOWELS
W 519	12	4'- 0"	STR					WALL HORIZ.
W 520	28	4'- 7"	110	0'-10"	3'- 9"	1-3/8		FTG. DOWELS
W 521	14	8'- 9"	STR					WALL VERT.
W 722	28	19'-10"	STR					WALL VERT.
W 523	82	27'- 6"	STR					WALL HORIZ.
W 624	14	16'- 2"	STR					WALL VERT.
W 625	14	12'- 5"	STR					WALL VERT.
W 526	14	8'- 8"	STR					WALL VERT.
W 527	28	5'- 6"	STR					WALL VERT.
W 528	12	13'- 6"	STR					WALL HORIZ.
W 529	28	19'- 9"	STR					VERT. WALL
W 530	114	3'- 5"	111	1'- 9"	1'- 8"			END HORIZ.
W 531	60	4'- 6"	111	1'- 9"	2'- 7"			END HORIZ.
W 532	14	16'- 0"	STR					VERT. WALL
W 533	14	12'- 4"	STR					VERT. WALL
W 735	27	11'- 8"	110	1'- 2"	10'- 6"	1-3/8		DOWELS
W 636	13	9'- 9"	110	1'- 0"	8'- 9"	1-3/8		DOWELS
W 537	84	4'- 1"	117	1'- 7"	1'- 3"	1'- 3"	1-3/8	WALL TOP

BAR BENDING DIAGRAMS

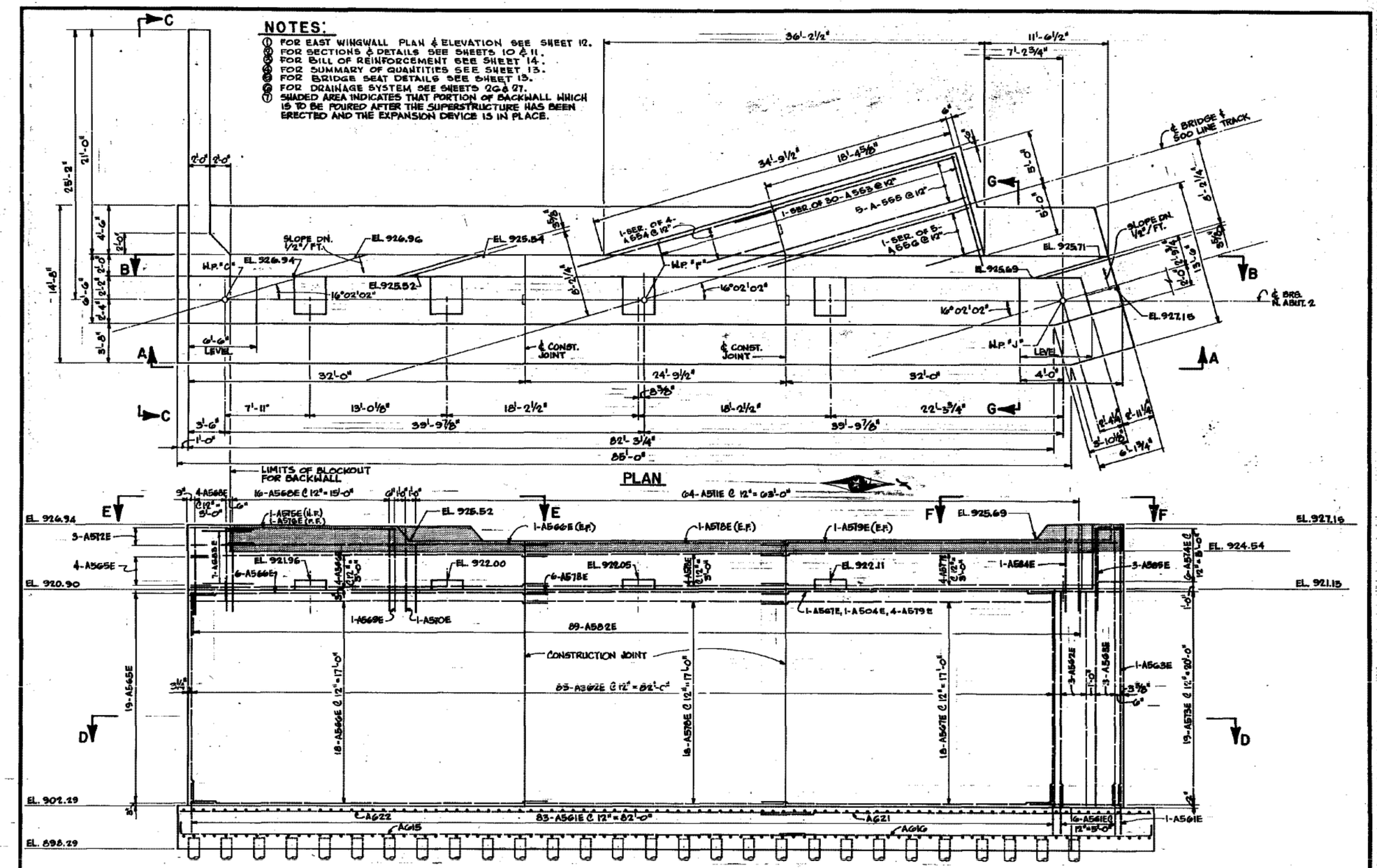


NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SOUTH ABUT. BILL OF REINFORCEMENT	Des BJH	Drw JmR	Approved 6-13-86	Bridge No. 62032
	Chk JFE	Chk JFE		
	Sheet No. 8 of 39 Sheets			

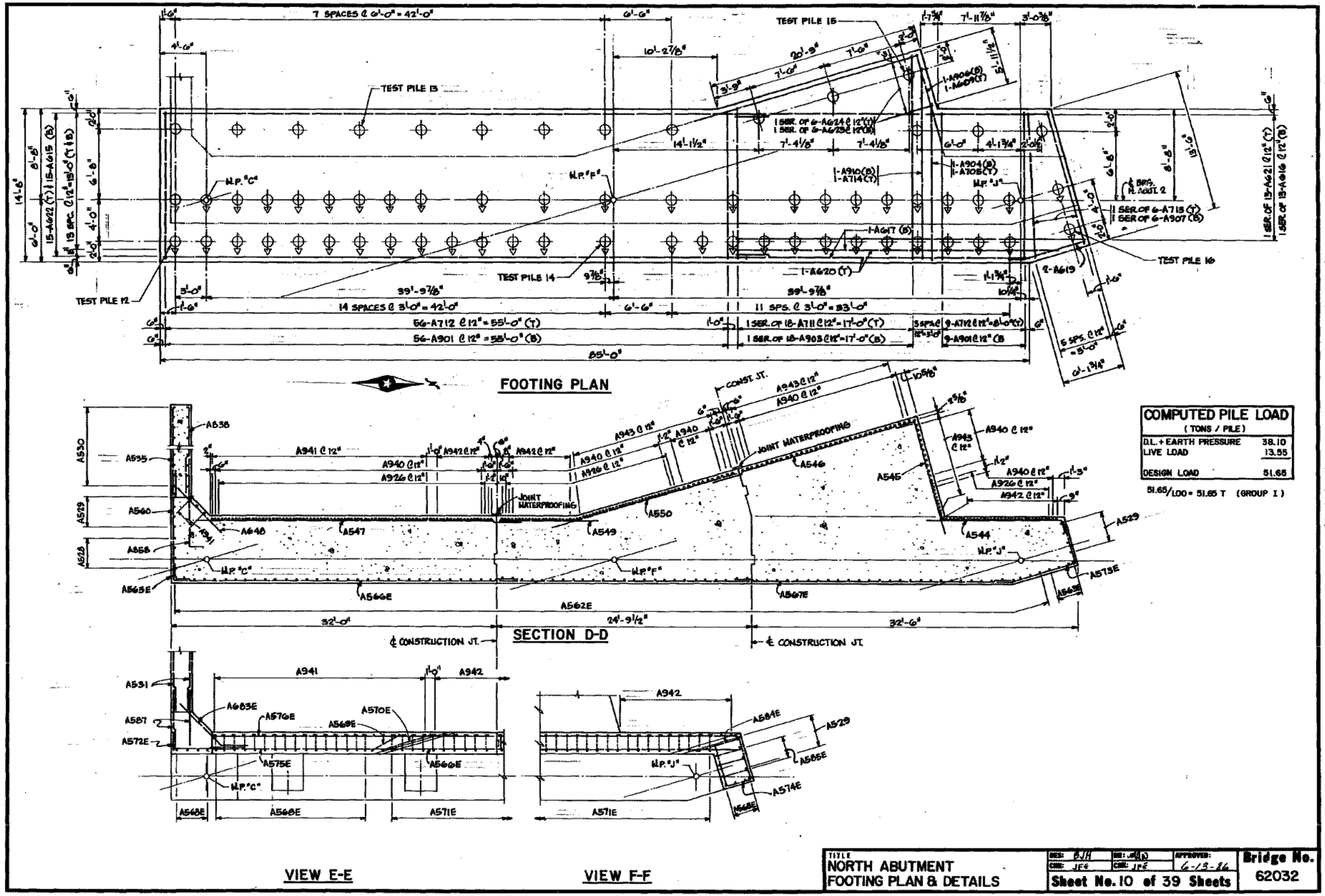
NOTES:

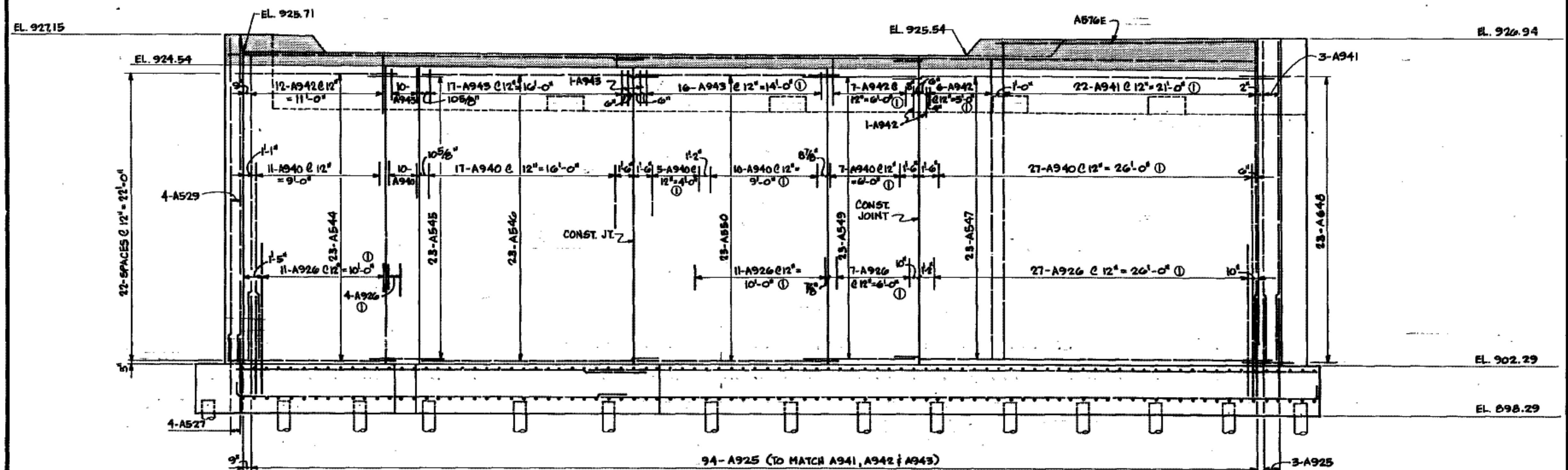
1. FOR EAST WINGWALL PLAN & ELEVATION SEE SHEET 12.
2. FOR SECTIONS & DETAILS SEE SHEETS 10 & 11.
3. FOR BILL OF REINFORCEMENT SEE SHEET 14.
4. FOR SUMMARY OF QUANTITIES SEE SHEET 13.
5. FOR BRIDGE SEAT DETAILS SEE SHEET 15.
6. FOR DRAINAGE SYSTEM SEE SHEETS 26 & 27.
7. SHADED AREA INDICATES THAT PORTION OF BACKWALL WHICH IS TO BE POURED AFTER THE SUPERSTRUCTURE HAS BEEN ERECTED AND THE EXPANSION DEVICE IS IN PLACE.



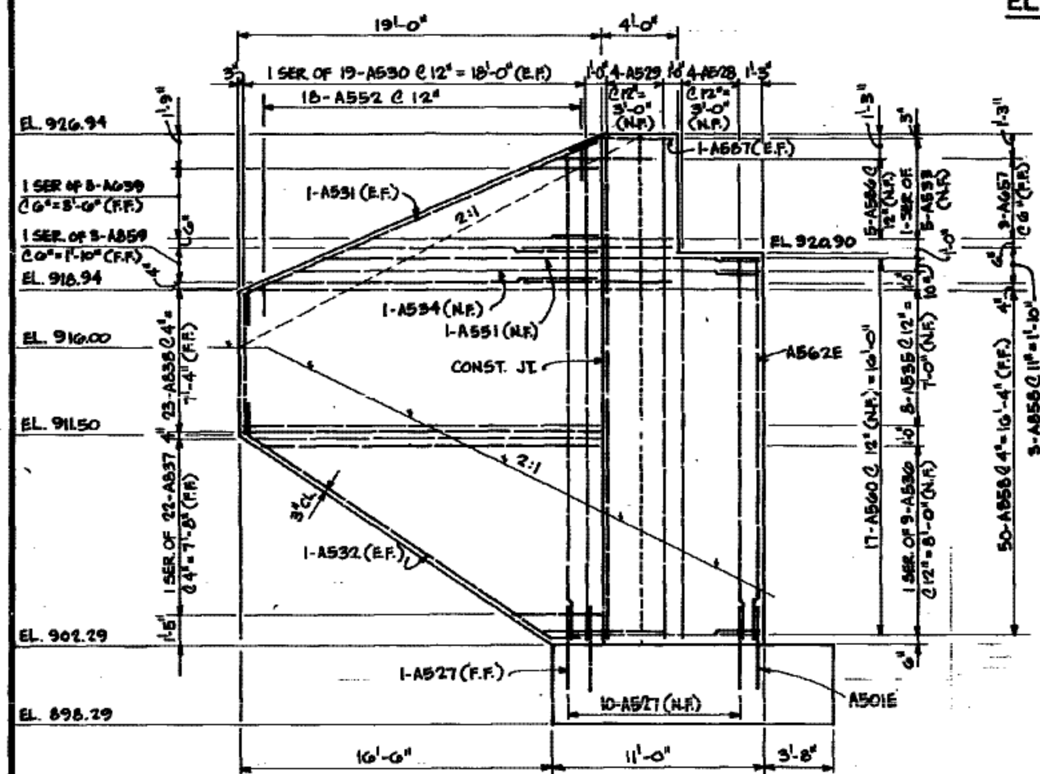
TITLE: NORTH ABUTMENT PLAN AND ELEVATION	DES: BJH	DR: MRC	APPROVED: 6-13-86
	CHK: JPS	CHK: JPS	Sheet No. 9 of 39 Sheets

Bridge No. 62032

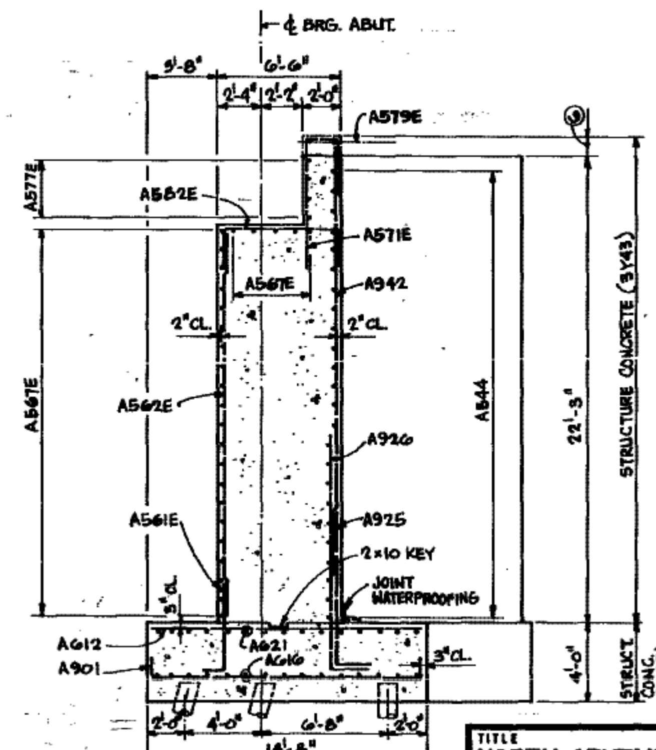




ELEVATION B-B



WEST WINGWALL ELEVATION C-C



SECTION G-G

NOTES:

① FOR SPACING OF REINFORCEMENT, SEE SECTION D-D, SHEET 10.

② FOR FRONT FACE REINFORCEMENT, SEE SHEET 9.

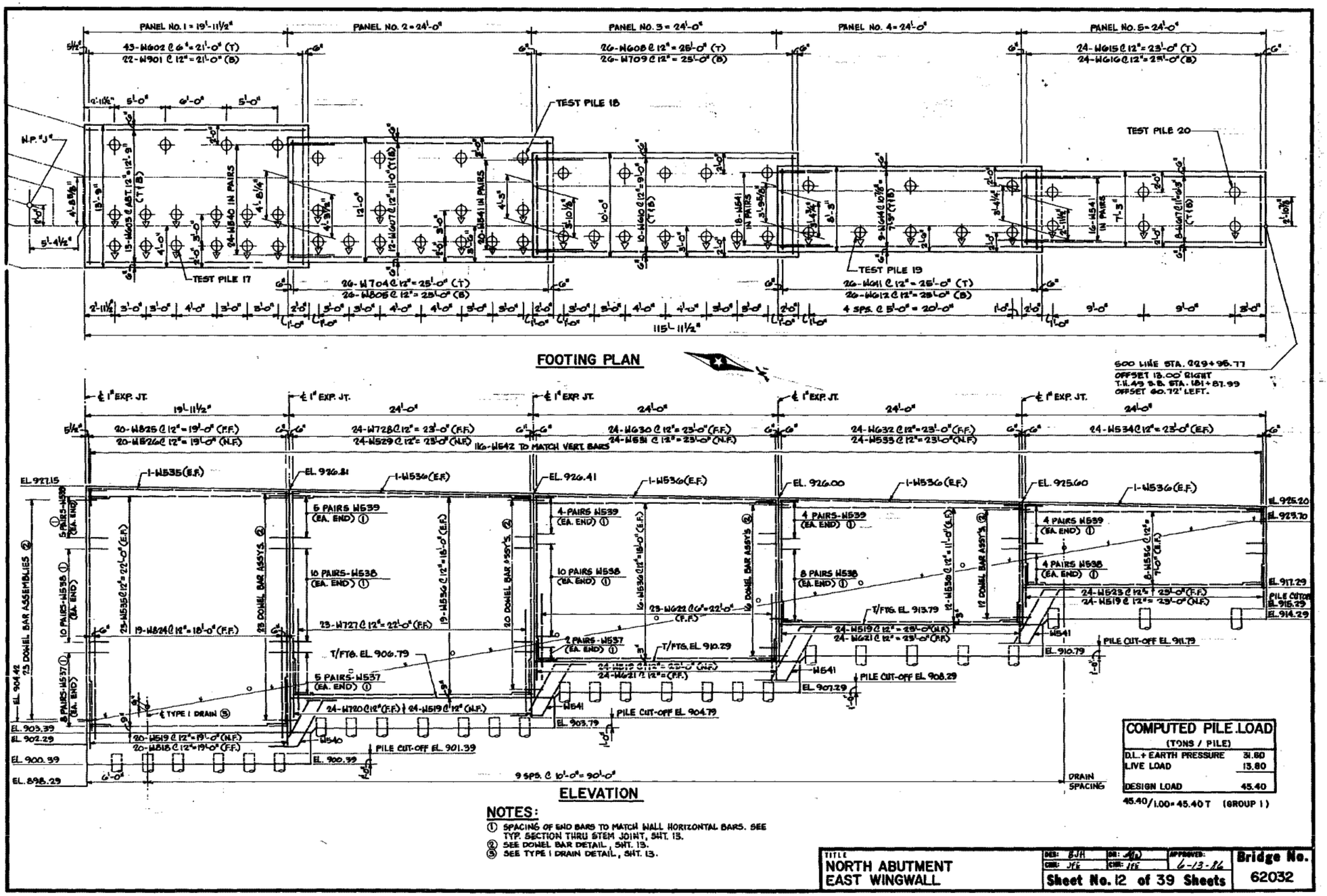
③ FOR REINFORCEMENT BAR LIST, SEE SHT. 14.

④ FOR SUMMARY OF QUANTITIES, SEE SHT. 13.

⑤ WINGWALL MUST BE CONSTRUCTED AFTER THE TEMPORARY TRESTLE HAS BEEN REMOVED. SEE SHEET 29 FOR TEMPORARY SHEATHING AND SHEET 3 FOR SUGGESTED CONSTRUCTION SEQUENCE NOTES.

⑥ SEE SHEET 25 FOR EXPANSION DEVICE DETAILS.

TITLE				
NORTH ABUTMENT ELEV. B-B & WEST WINGWALL ELEV. C-C	DES: BJH / CHK: JFE	DR: MAN / CHK: JFE	APPROVED: 6-13-86	Bridge No. 62032
	Sheet No. 11 of 39 Sheets			



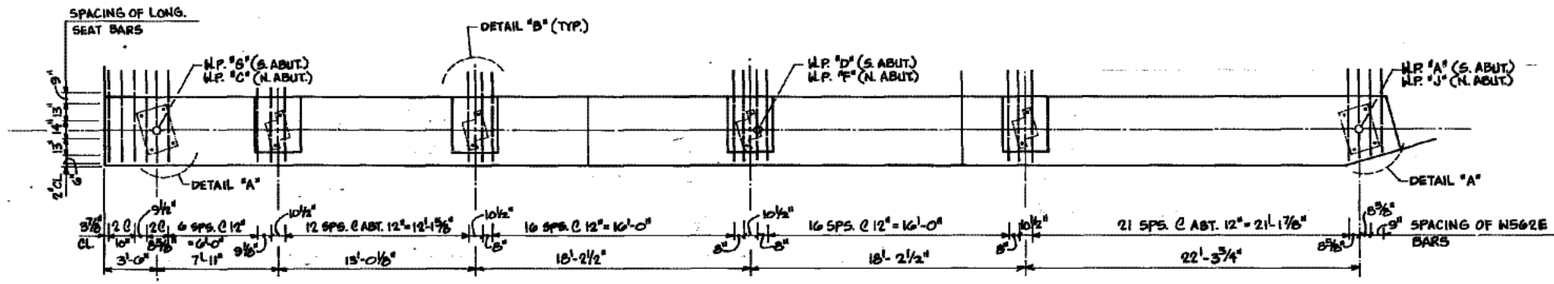
COMPUTED PILE LOAD (TONS / PILE)	
D.L.+ EARTH PRESSURE	31.60
LIVE LOAD	13.80
DESIGN LOAD	45.40

45.40/1.00 = 45.40 T (GROUP I)

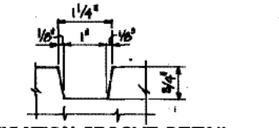
NOTES:

① SPACING OF END BARS TO MATCH WALL HORIZONTAL BARS. SEE TYP. SECTION THRU STEM JOINT, SHT. 13.
② SEE DOWEL BAR DETAIL, SHT. 13.
③ SEE TYPE I DRAIN DETAIL, SHT. 13.

TITLE	DES: BJH	DR: JRD	APPROVED:	Bridge No.
NORTH ABUTMENT EAST WINGWALL	CHK: JFE	CHK: JFE	6-13-86	62032
	Sheet No. 12 of 39 Sheets			

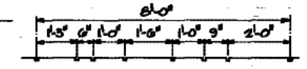


TYPICAL ABUTMENT SEAT REINFORCEMENT

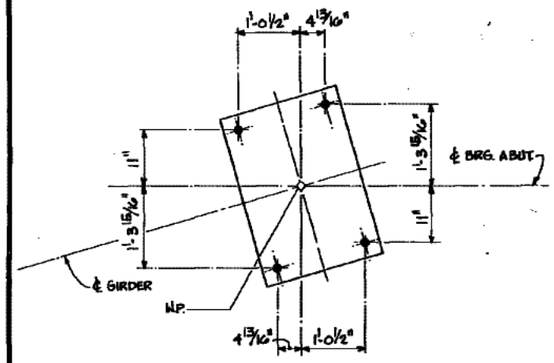


RUSTICATION GROOVE DETAIL

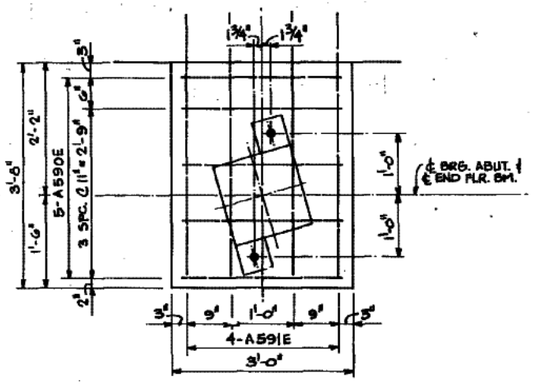
EXPOSED SURFACES OF ABUTMENT WINGWALLS SHALL RECEIVE A RUSTICATION TREATMENT CONSISTING OF VERTICAL GROOVES AT A RANDOM SPACING. SPACING OF VERTICAL RUSTICATIONS SHALL VARY BETWEEN 0" AND 2'-0" (PER DETAIL). SEE "TYP. WALL SECTION" FOR VERTICAL LIMITS OF RUSTICATION GROOVES.



TYPICAL REPEATING RUSTICATION GROOVE PATTERN



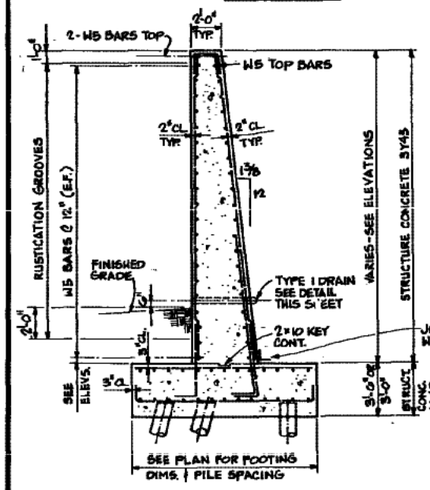
DETAIL "A"



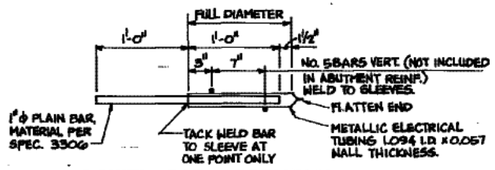
DETAIL "B"

SUMMARY OF QUANTITIES FOR ABUTMENTS

	ITEM	UNIT	ABUT. 1	ABUT. 1 WINGWALL	ABUT. 1 TOTAL	ABUT. 2	ABUT. 2 WINGWALL	ABUT. 2 TOTAL
	STRUCTURE CONCRETE (1A43)	CU. YD.	208	106	306	208	141	349
	STRUCTURE CONCRETE (3Y43)	CU. YD.	567	129	696	605	217	822
	REINFORCEMENT BARS (EPOXY COATED)	POUND	7703	—	7703	7815	—	7815
	REINFORCEMENT BARS	POUND	23524	16058	39582	39356	24230	64186
③	STRUCTURE EXCAVATION	LUMP SUM						
	GRANULAR BACKFILL (C.V.)	CU. YD.	765	290	1058	932	492	1424
④	CAST-IN-PLACE CONC. PILING, DELIVERED	LIN. FT.	4730	3350	8080	6600	3830	10430
④	CAST-IN-PLACE CONC. PILING, DRIVEN	LIN. FT.	4730	3350	8080	6600	3830	10430
①	TYPE I DRAIN	EACH	—	7	7	—	10	10
⑤	3-PLY JOINT WATERPROOFING	LIN. FT.	173	165	338	188	237	425
③②①	PREFORMED JOINT FILLER							
①	DOWEL BAR ASSEMBLIES	EACH	—	52	52	—	94	94
③	DAMP PROOFING	SQ. FT.	995	1006	2951	2494	1604	4098
	C.I.P. CONC. TEST PILES, 80' LG.	EACH			—		2	2
	C.I.P. CONC. TEST PILES, 90' LG.	EACH			—		2	2
	C.I.P. CONC. TEST PILES, 100' LG.	EACH		1	1			—
	C.I.P. CONC. TEST PILES, 110' LG.	EACH		2	2			—
	C.I.P. CONC. TEST PILES, 120' LG.	EACH	5		5	5		5

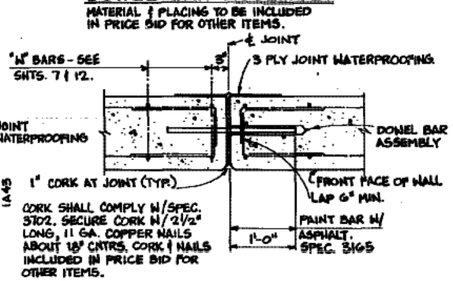


TYP. WALL SECTION



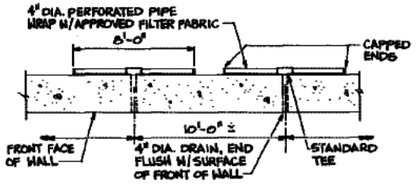
DOWEL BAR ASSEMBLY

MATERIAL & PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.



CORK SHALL COMPLY W/SPEC. 3702. SECURE CORK W/ 2½" LONG, 11 GA. COPPER NAILS ABOUT 18" CNTRS. CORK & NAILS INCLUDED IN PRICE BID FOR OTHER ITEMS.

TYP. SECTION THRU STEM JOINT



TYPE I DRAIN

DRAIN PIPE SHALL BE 4" ϕ THERMO-PLASTIC PIPE CONFORMING TO MN/DOT. 3245.

QUANTITY NOTES:

① INCLUDED IN PRICE BID FOR OTHER ITEMS.
② SEE SCHEDULE ON SHEET 3.
③ SEE SPECIAL PROVISIONS.
④ DOES NOT INCLUDE TEST PILES.

PILE NOTES:

1. PILE LOAD TABULATIONS ARE SHOWN ON THE DRAWINGS FOR EACH SUBSTRUCTURE UNIT:
   S. ABUT. 1 — SH. 5
   WEST WINGWALL — SH. 7
   NORTH ABUTMENT 2 — SH. 10
   EAST WINGWALL — SH. 12
2. ALL PILES SHOWN THUS ⊕D SHALL BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.
3. ALL PILES ARE C.I.P. CONC. W/ STEEL SHELLS CONFORMING TO SPEC. 3371. PILE SHELLS SHALL HAVE A NOMINAL DIA OF 12". SEE SPECIAL PROVISIONS.
4. PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
5. FOR SPLICES, SEE DETAIL 8201, SH. 28
6. C.I.P. CONC. PILE TABULATION

SUBSTRUCTURE UNIT	TEST PILES NO.	TEST PILES LENGTH	FOUND PILES NO.	FOUND PILES EST. LGTH.	TOTAL NO. OF PILES
S. ABUT. 1	5	120'	43	110'	48
W. WINGWALL	—	—	—	—	—
PANELS 1 & 2A	1	100'	28	90'	29
PANELS 2B & 3	2	110'	11	100'	13
N. ABUT. 2	5	120'	60	110'	65
E. WINGWALL	—	—	—	—	—
PANELS 1, 2 & 3	2	80'	41	70'	43
PANELS 4 & 5	2	90'	12	80'	14

TITLE: MISC. ABUTMENT DETAILS & QUANTITIES

DES: [illegible] DR: [illegible] APPROVED: 6-13-86
CHK: JFE CHK: JFE

Sheet No. 13 of 39 Sheets

Bridge No. 62032

NORTH ABUTMENT — UNCOATED BARS

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
A 901	67	17'- 4"	114	4'- 2"	1'- 7"			TRANS. FTG.
A 903	1 SER	17'-10"	114	4'- 8"	1'- 7"			TRANS. FTG.
	OF 18	23'- 0"		19'-10"				TRANS. FTG.
A 904	1	18'- 6"	114	15'- 4"	1'- 7"			TRANS. FTG.
A 705	1	15'- 4"	STR					TRANS. FTG.
A 906	1	9'- 7"	111	8'- 0"	1'- 7"			TRANS. FTG.
A 907	1 SER	15'- 8"	114	12'- 6"	1'- 7"			TRANS. FTG.
	OF 6	17'- 2"		14'- 0"				
A 909	1	8'- 0"	STR					TRANS. FTG.
A 910	1	22'- 0"	114	18'-10"	1'- 7"			TRANS. FTG.
A 611	1 SER	14'- 8"	STR					TRANS. FTG.
	OF 18	19'-10"						
A 712	67	14'- 2"	STR					TRANS. FTG.
A 713	1 SER	12'- 6"	STR					TRANS. FTG.
	OF 6	14'- 0"						
A 714	1	18'-10"	STR					TRANS. FTG.
A 615	15	60'- 0"	111	59'- 0"	1'- 0"			LONGIT. FTG.
A 616	1 SER	32'- 4"	111	31'- 4"	1'- 0"			LONGIT FTG.
	OF 13	35'- 9"		34'- 9"				
A 617	2	35'- 0"	111	34'- 0"	1'- 0"			LONGIT FTG.
A 619	2	8'-10"	112	5'-10"	3'- 0"	3-1/4		LONGIT. FTG.
A 620	2	33'- 0"	STR					LONGIT. FTG.
A 621	1 SER	30'- 4"	STR					LONGIT. FTG.
	OF 13	33'- 9"						LONGIT. FTG.
A 622	15	60'- 0"	STR					LONGIT. FTG.
A 623	1 SER	7'- 0"	111	6'- 0"	1'- 0"			LONGIT. FTG.
	OF 6	24'- 0"	STR	23'- 0"				LONGIT. FTG.
A 624	1 SER	6'- 0"	STR					LONGIT. FTG.
	OF 6	23'- 0"						
A 925	94	9'- 0"	111	7'- 5"	1'- 7"			FTG. DOWELS
A 926	60	11'- 7"	111	10'- 3"	1'- 4"			FTG. DOWELS
A 527	16	4'-10"	111	4'- 0"	0'-10"			FOOTING DOWEL
A 528	4	18'- 4"	STR					VERT. WALL
A 529	8	24'- 5"	STR					VERT. WALL
A 530	2 SER	7'- 1"	STR					VERT. WALL
	OF 19	24'- 1"						
A 531	2	22'- 4"	113	2'- 0"	20'- 4"	5		DIAG. WALL
A 532	2	22'- 2"	118	2'- 0"	18'- 2"	2'- 0"	6-5/8	DIAG. WALL
A 533	1 SER	2'- 6"	STR					HORIZ. WALL
	OF 5	12'- 0"						
A 534	1	16'- 6"	STR					HORIZ. WALL
A 535	8	18'- 9"	STR					HORIZ. WALL
A 536	1 SER	2'-10"	STR					HORIZ. WALL
	OF 9	17'- 2"						
A 837	1 SER	4'- 6"	STR					HORIZ. WALL
	OF 22	18'- 3"						
A 838	23	18'- 9"	STR					HORIZ. WALL
A 639	1 SER	3'- 8"	STR					HORIZ. WALL
	OF 8	12'- 0"						
A 940	97	17'- 7"	111	16'- 0"	1'- 7"			FTG. DOWEL
A 941	25	24'- 5"	STR					VERT. BACKWALL
A 942	27	23'- 0"	STR					VERT. BACKWALL
A 943	45	22'- 0"	STR					VERT. BACKWALL
A 544	23	16'- 0"	113	13'- 6"	2'- 6"	3-1/2		HORIZ. BACKWALL
A 545	23	13'- 6"	111	11'- 0"	2'- 6"			HORIZ. BACKWALL
A 546	23	20'- 6"	STR					HORIZ. BACKWALL
A 547	23	22'- 6"	STR					HORIZ. BACKWALL
A 648	23	6'- 6"	STR					HORIZ. BACKWALL
A 549	23	10'- 0"	STR					HORIZ. BACKWALL
A 550	23	18'- 6"	STR					HORIZ. BACKWALL
A 551	1	14'- 7"	STR					HORIZ. WALL
A 552	18	5'- 0"	114	1'-5½"	1'- 9"			TOP
A 553	1 SER	3'- 0"	STR					WEDGE TOP
	OF 30	11'- 3"						
A 554	1 SER	7'- 6"	STR					WEDGE TOP
	OF 4	18'- 3"						
A 555	5	20'- 8"	STR					WEDGE TOP
A 556	1 SER	6'- 6"	STR					WEDGE TOP
	OF 5	19'- 6"						
A 657	9	7'- 3"	111	6'- 3"	1'- 0"			W. WALL HORIZ.
A 858	53	9'- 9"	111	8'- 0"	1'- 9"			W. WALL HORIZ.
A 859	1 SER	13'- 2"	STR					W. WALL HORIZ.
	OF 3	17'- 7"						
A 560	17	10'- 1"	STR					W. WALL HORIZ.
A 586	5	5'- 7"	STR					W. WALL HORIZ.
A 587	2	5'- 4"	112	3'- 4"	2'- 0"			W. WALL HORIZ.

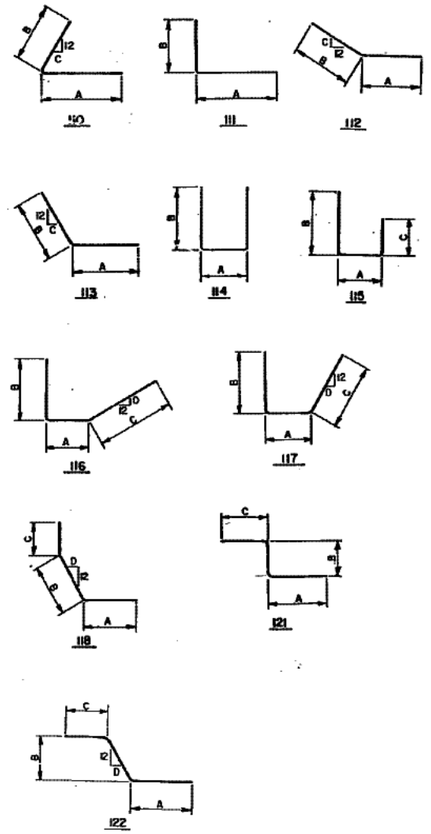
NORTH ABUTMENT — EPOXY COATED

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
A 561E	90	5'-10"	111	5'- 0"	0'-10"			FOOTING DOWEL
A 562E	86	18'- 5"	STR					VERT. WALL
A 563E	4	24'- 6"	STR					VERT. WALL
A 504E	1	29'- 3"	STR	24'- 6"				SEAT HORIZ.
A 565E	23	4'- 0"	111	2'- 0"	2'- 0"			CORNER
A 566E	28	34'- 3"	STR					HORIZ. WALL
A 567E	19	28'- 0"						HORIZ. WALL
A 568E	20	11'- 5"	115	1'- 8"	7'- 3"	2'- 6"		VERT. BACKWALL
A 569E	4	12'-11"	115	3'- 5"	7'- 0"	2'- 6"		VERT. BACKWALL
A 570E	1	15'- 8"	115	6'- 2"	7'- 0"	2'- 6"		VERT. BACKWALL
A 571E	64	10'- 2"	115	1'- 8"	5'- 0"	2'- 6"		VERT. BACKWALL
A 572E	3	6'- 9"	111	4'- 3"	2'- 6"			CORNER
A 573E	19	13'- 6"	116	6'- 7"	4'- 5"	2'- 6"	3-1/2	HORIZ. CORNER
A 574E	6	10'- 6"	114	2'- 6"	4'- 0"			BACKWALL
A 575E	1	15'- 6"	STR					HORIZ. BACKWALL
A 576E	1	21'- 0"	STR					HORIZ. BACKWALL
A 577E	4	31'- 4"	STR					HORIZ. BACKWALL
A 578E	30	24'- 6"	STR					HORIZ. WALL
A 579E	6	32'- 4"	STR					HORIZ. BACKWALL
A 590E	20	8'- 8"	114	2'- 8"	3'- 0"			ABUT. SEAT
A 591E	16	10'- 3"	114	4'- 3"	3'- 0"			ABUT. SEAT
A 582E	89	10'- 0"	114	6'- 0"	2'- 0"			ABUT. SEAT
A 683E	7	8'- 6"	112	2'- 0"	6'- 6"	12		FILLET
A 584E	1	14'- 6"	115	4'-11"	7'- 0"	2'- 6"		BACKWALL VERT.
A 585E	3	12'- 1"	115	2'- 7"	7'- 0"	2'- 6"		BACKWALL VERT.

NORTH ABUTMENT EAST WINGWALL — UNCOATED BARS

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
W 901	22	16'- 5"	114	13'-3"	1'- 7"			TRANS. FTG.
W 602	45	13'- 3"	STR					TRANS. FTG.
W 603	28	19'- 7"	STR					LONGIT. FTG.
W 704	26	11'- 6"	STR					TRANS. FTG.
W 805	26	13'-10"	114	11'- 6"	1'- 2"			TRANS. FTG.
W 607	24	25'- 6"	STR					LONG. FTG.
W 608	26	9'- 6"	STR					TRANS. FTG.
W 709	26	12'- 2"	114	9'- 6"	1'- 4"			TRANS. FTG.
W 610	20	25'- 6"	STR					LONG. FTG.
W 611	26	7'- 9"	STR					TRANS. FTG.
W 612	26	9'- 9"	114	7'- 9"	1'- 0"			TRANS. FTG.
W 614	18	25'- 6"	STR					LONG. FTG.
W 615	24	6'- 9"	STR					TRANS. FTG.
W 616	24	8'- 9"	114	6'- 9"	1'- 0"			TRANS. FTG.
W 617	16	23'- 6"	STR					LONG. FTG.
W 818	20	7'-10"	110	1'- 4"	6'- 6"	1-3/8		FTG. DOWELS
W 519	116	5'- 4"	111	0'-10"	4'- 6"			FTG. DOWELS
W 720	24	6'- 8"	110	1'- 2"	5'- 6"	1-3/8		FTG. DOWELS
W 621	24	6'- 0"	110	1'- 0"	5'- 0"	1-3/8		FTG. DOWELS
W 622	23	9'- 6"	110	1'- 0"	8'- 6"	1-3/8		FTG. DOWELS
W 523	24	5'- 4"	110	0'-10"	4'- 6"	1-3/8		FTG. DOWELS
W 824	20	13'- 4"	110	1'- 4"	12'- 0"	1-3/8		FTG. DOWELS
W 825	20	23'- 5"	STR					VERT. WALL
W 526	20	23'- 3"	STR					VERT. WALL
W 727	23	11'-10"	110	1'- 2"	10'- 8"			FTG. DOWELS
W 728	24	19'- 6"	STR					VERT. WALL
W 529	24	19'- 4"	STR					VERT. WALL
W 630	24	15'- 9"	STR					VERT. WALL
W 531	24	15'- 5"	STR					VERT. WALL
W 632	24	11'- 8"	STR					VERT. WALL
W 533	24	11'- 7"	STR					VERT. WALL
W 534	48	7'- 8"	STR					VERT. WALL
W 535	48	19'- 7"	STR					HORIZ. WALL
W 536	118	23'- 7"	STR					HORIZ. WALL
W 537	44	4'- 5"	111	1'- 9"	2'- 8"			WALL END
W 538	184	3'-10"	111	1'- 9"	2'- 1"			WALL END
W 539	100	3'- 3"	111	1'- 9"	1'- 6"			WALL END
W 540	28	9'- 8"	122	2'- 0"	4'-11"	2'- 0"	7	FOOTING DOWEL
W 541	58	9'-10"	122	2'- 0"	5'- 1"	2'- 0"	7	FOOTING DOWEL
W 542	116	5'- 1"	117	1'- 7"	1'- 9"	1'- 9"	1-3/8	

BAR BENDING DIAGRAMS



NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

NORTH ABUT. BILL OF REINFORCEMENT

Des BJH | Drw JmR/JH | Approved
Chk JFE | Chk JFE | 6-13-86

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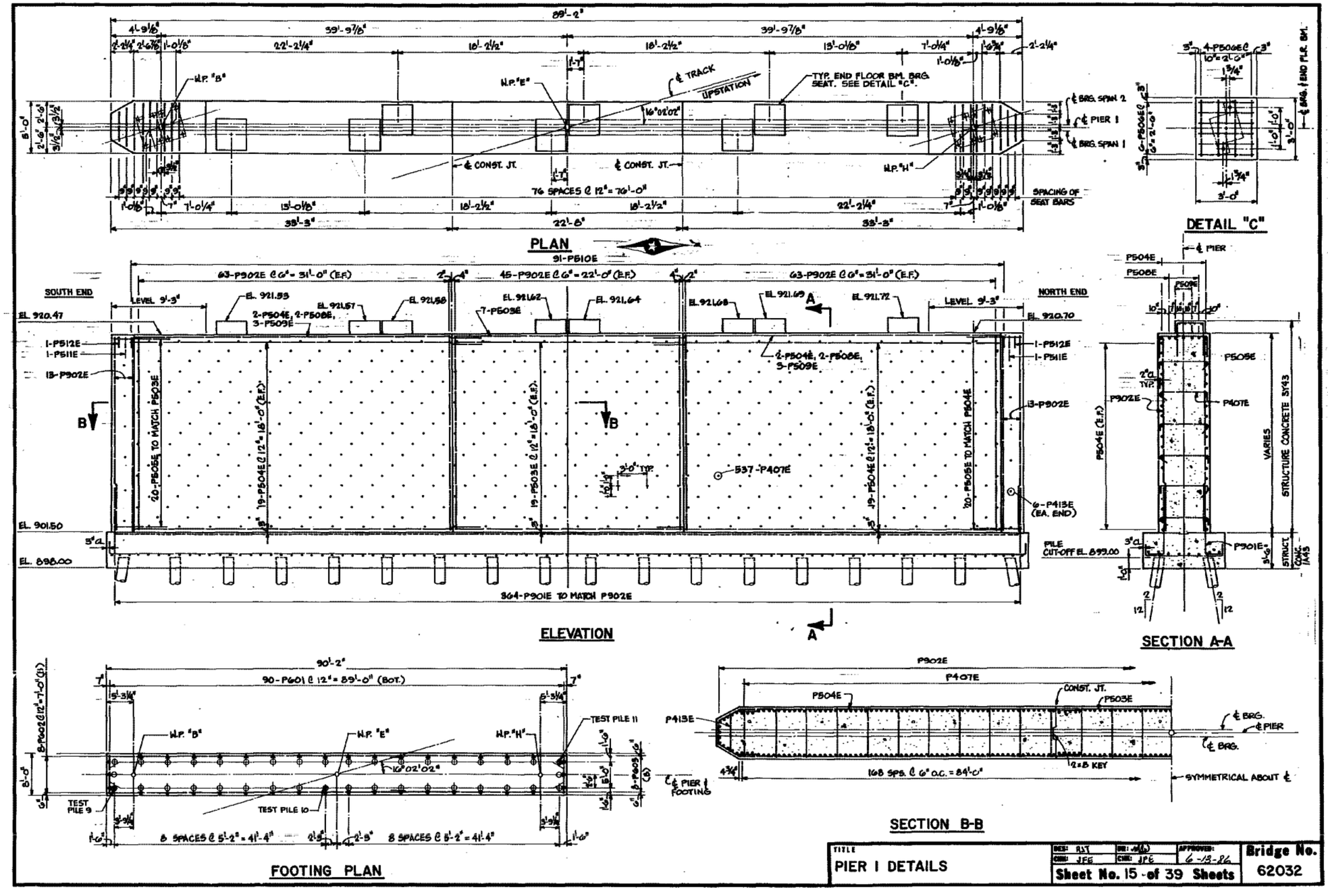
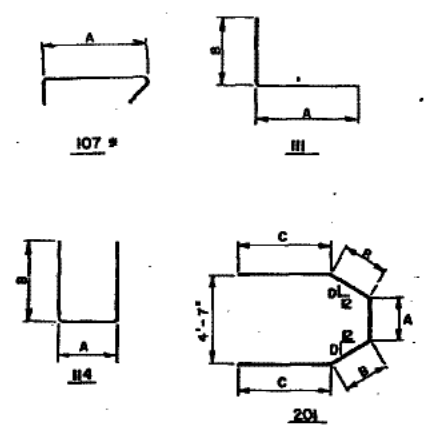
Bridge No. 62032



TITLE	DES: RJT	DET: JMH	APPROVED:	Bridge No.
PIER 1 DETAILS	CHK: JFE	CHK: JFE	6-13-86	62032
	Sheet No. 15 of 39 Sheets			

BAR	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	LOCATION
				PIER				
				UNCOATED BARS				
P 601	90	9'- 6"	114	7'- 6"	1'- 0"			TRANS. FTG.
P 602	8	60'- 0"	111	59'- 0"	1'- 0"			LONGIT. FTG.
P 603	8	33'- 6"	111	32'- 6"	1'- 0"			LONGIT. FTG.
				EPOXY COATED				
P 901E	364	8'- 5"	111	6'-10"	1'- 7"			FOOTING DOWELS
P 902E	364	18'- 9"	STR					VERT. SHAFT
P 503E	45	22'- 4"	STR					HORIZ. SHAFT
P 504E	80	32'-10"	STR					HORIZ. SHAFT
P 505E	40	10'-11"	201	2'- 3"	2'- 4"	2'- 0"	6-7/8	END HORIZ.
P 506E	80	8'- 8"	114	2'- 8"	3'- 0"			BRG. SEAT
P 407E	537	5'- 9"	107	4'- 8"				TIES SHAFT
P 508E	4	34'- 4"	STR					BRG. SEAT
P 509E	6	34'- 9"	STR					BRG. SEAT
P 510E	89	7'- 2"	114	4'- 8"	1'- 3"			SEAT TRANS.
P 511E	2	6'- 4"	114	3'-10"	1'- 3"			SEAT TRANS.
P 512E	2	5'- 5"	114	2'-11"	1'- 3"			SEAT TRANS.
P 413E	12	4'- 9"	107	3'-8¼"				TIES SHAFT

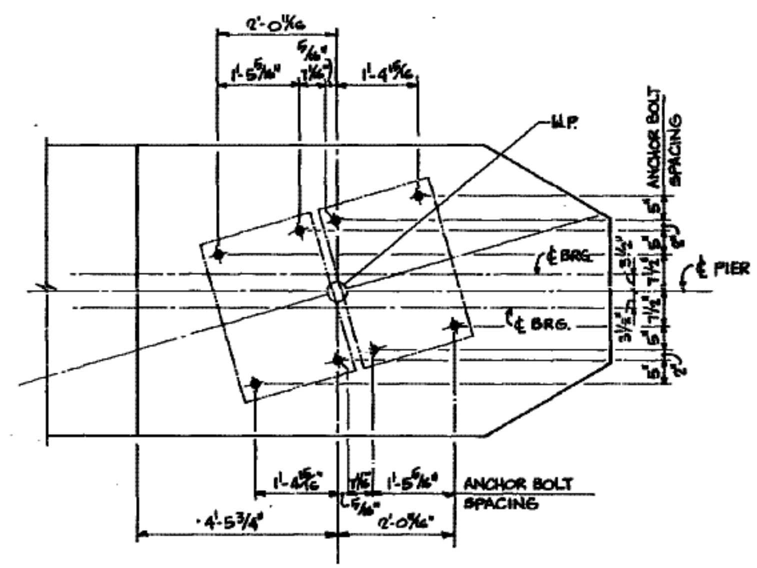
BAR BENDING DIAGRAMS:



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.



ANCHOR BOLT LAYOUT FOR FIXED BRG. ASSYS. AT PIER

SUMMARY OF QUANTITIES FOR PIERS

	ITEM	UNIT	QUANTITY
	STRUCTURE CONCRETE 1A43	CU. YD.	94
	STRUCTURE CONCRETE 3Y43	CU. YD.	314
	REINFORCEMENT BARS	POUND	2408
	REINFORCEMENT BARS (EPOXY COATED)	POUND	41740
①	C.I.P. CONCRETE PILING DELIVERED	LIN. FT.	4025
①	C.I.P. CONCRETE PILING DRIVEN	LIN. FT.	4025
	C.I.P. CONCRETE TEST PILES 120 FT. LG.	EACH	3
⑤	STRUCTURE EXCAVATION	LUMP SUM	

QUANTITY NOTES:

⑤ SEE SPECIAL PROVISIONS

① DOES NOT INCLUDE TEST PILES.

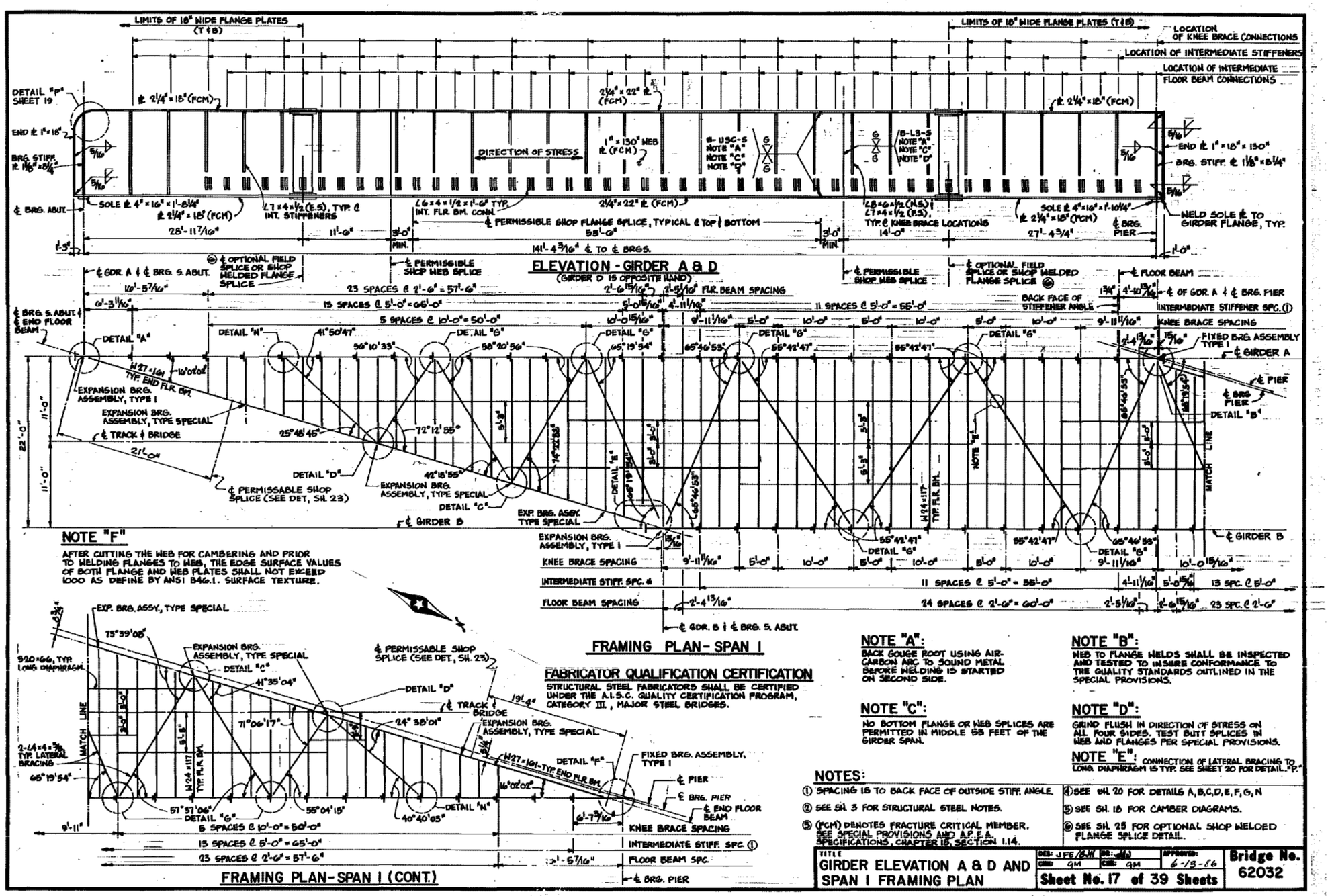
PILE NOTES:

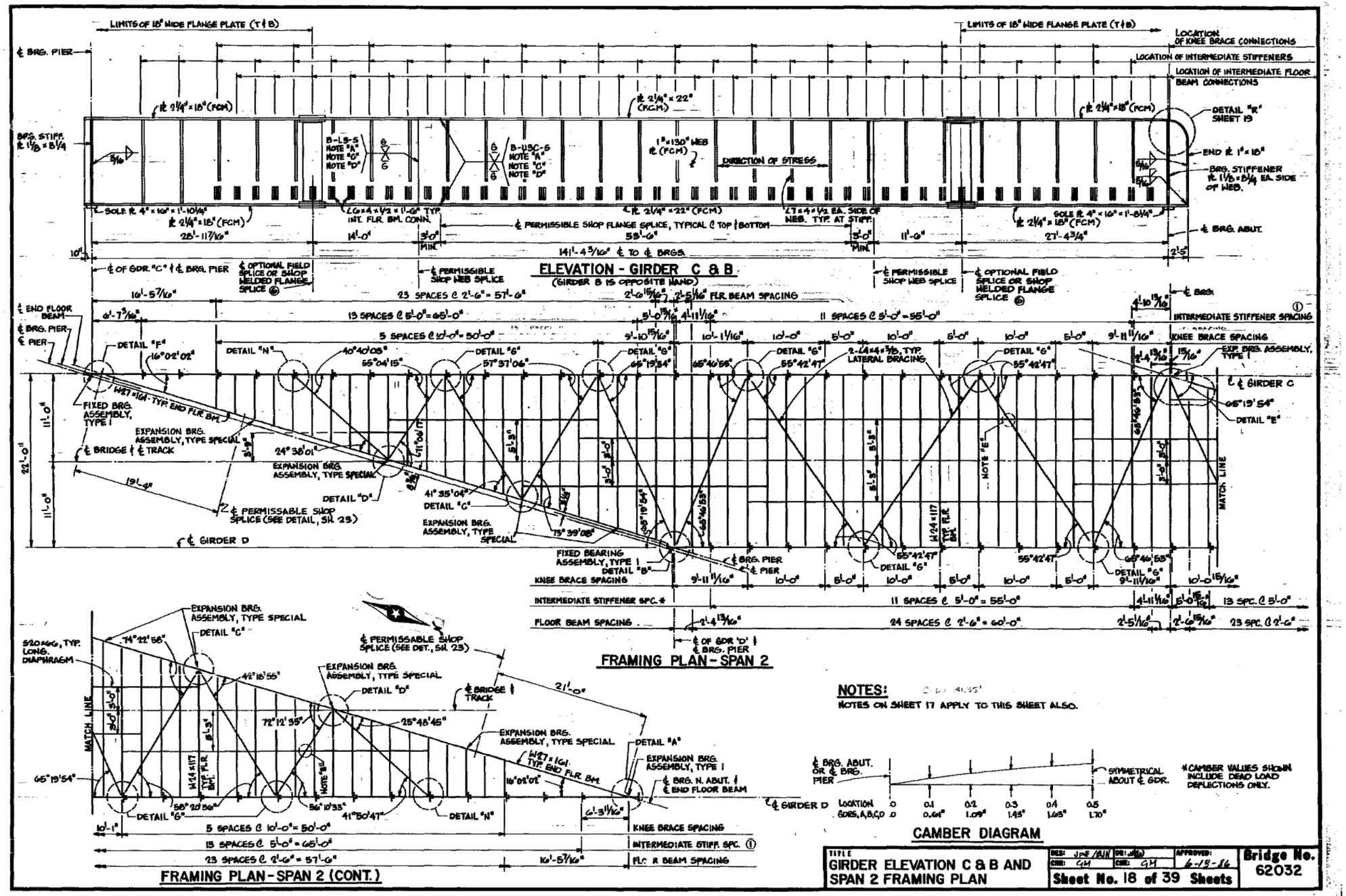
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
PILES TO HAVE A NOMINAL DIAM. OF 12".
3 12" CAST IN PLACE CONC. TEST PILES 120' LONG.
35 12" CAST IN PLACE CONC. TEST PILES EST. LENGTH 115'.
38 12" CAST IN PLACE CONC. PILES REQ'D FOR PIER.
PILES MARKED THUS O TO BE BATTERED 2" PER FT. IN DIRECTION SHOWN OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

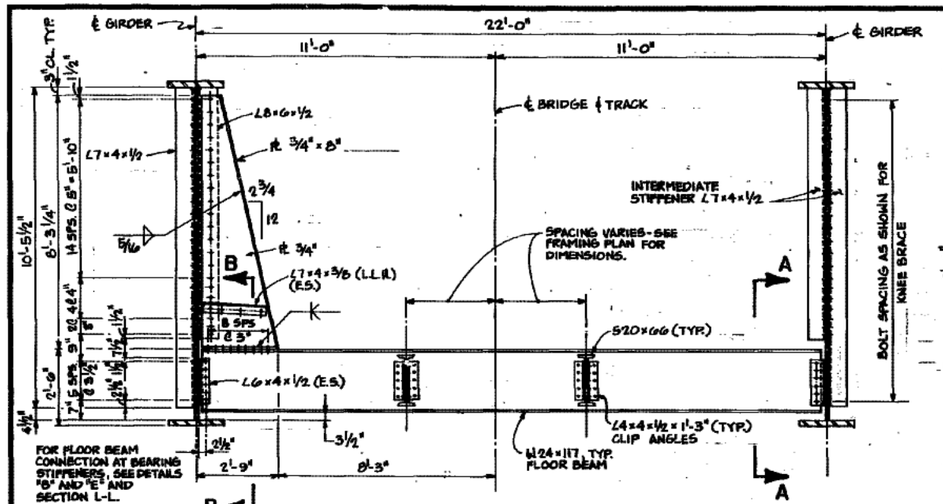
COMPUTED PILE LOAD (TONS / PILE)	
D.L.	34.90
LIVE LOAD	19.70
OVERTURNING	17.90
DESIGN LOAD	72.50

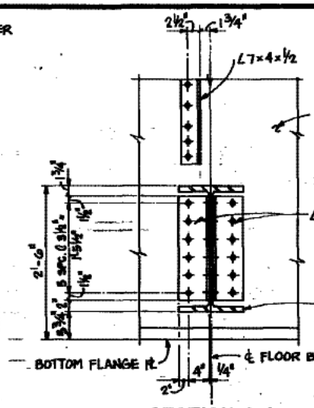
72.50/1.25= 58 TONS A.R.E.A. GR. III

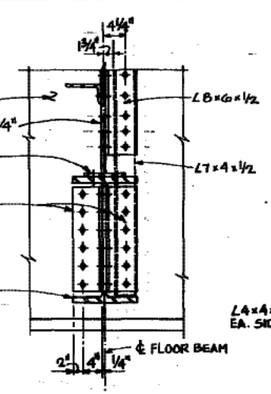
PIER BAR LIST & QUANTITIES	Des. RJT	Drw. JmR	Approved 6-13-86	Bridge No. 62032
	Chk. JPG	Chk. JPG		
	Sheet No. 16 of 39 Sheets			

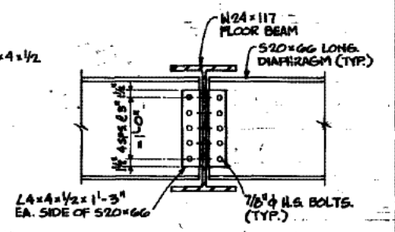


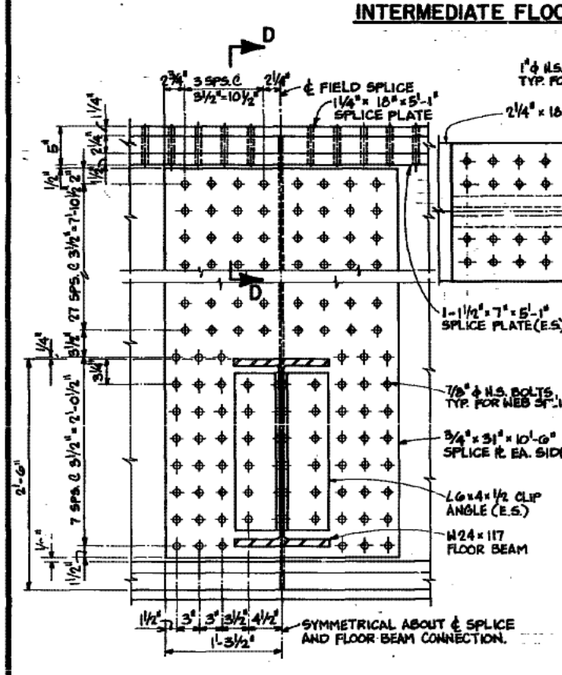


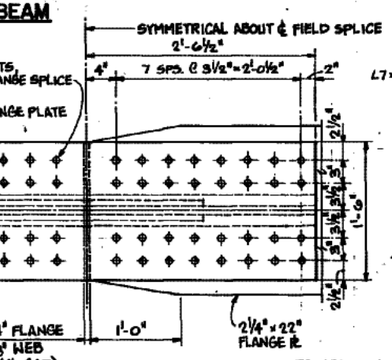


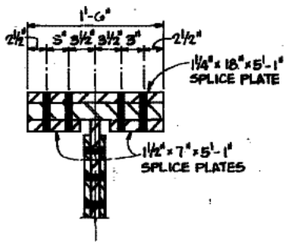


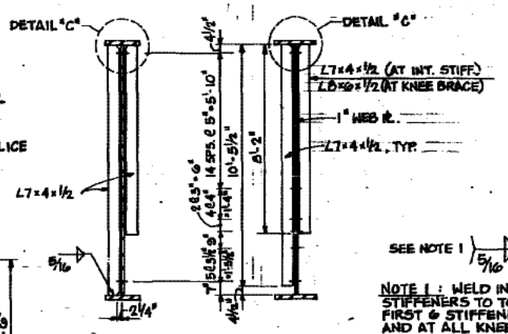


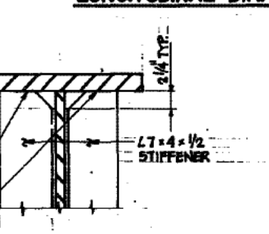






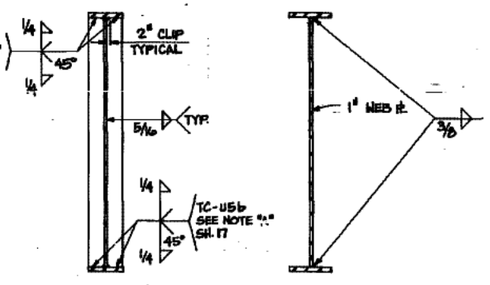


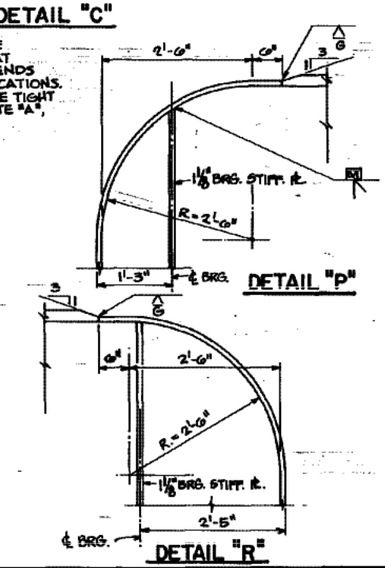




NOTE 1 : WELD INTERMEDIATE STIFFENERS TO TOP FLANGE AT FIRST 6 STIFFENERS FROM ENDS AND AT ALL KNEE BRACE LOCATIONS. ALL OTHER STIFFENERS TO BE TIGHT FIT TO TOP FLANGE. SEE NOTE "A", SHEET 17 FOR WELD.

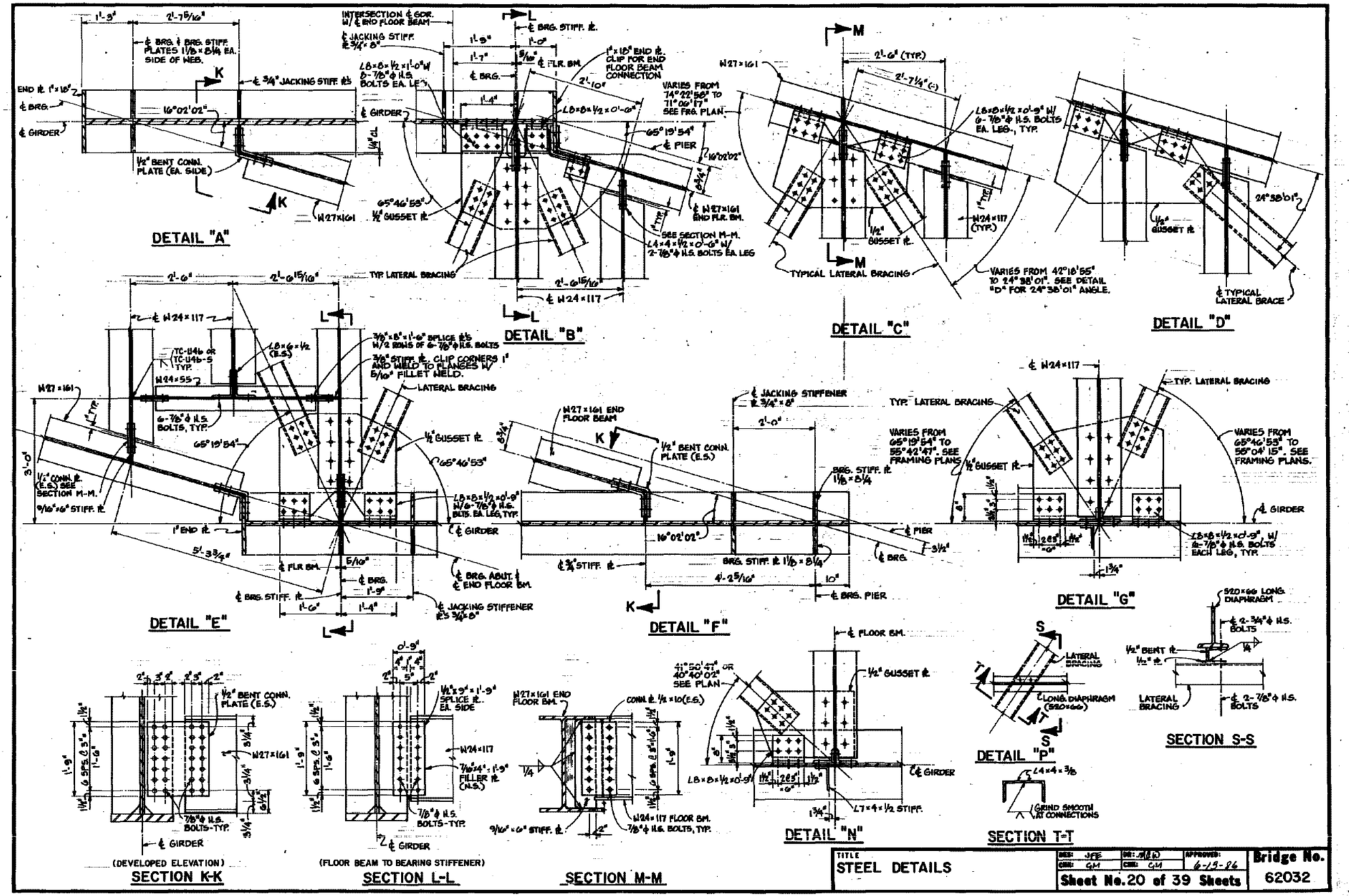
INTERMEDIATE STIFFENER DETAILS

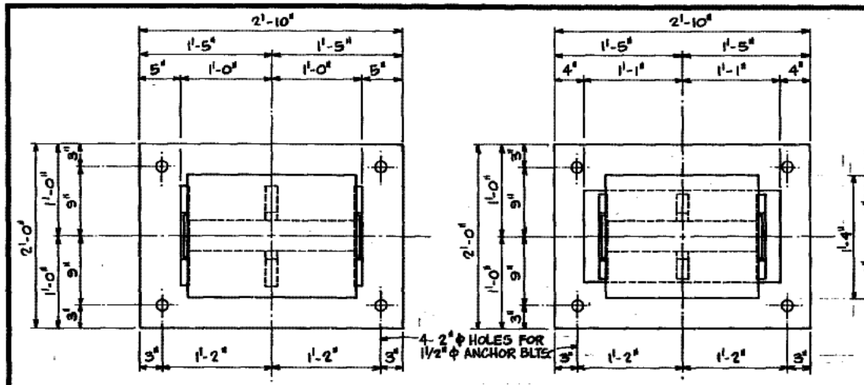




GIRDER DETAILS

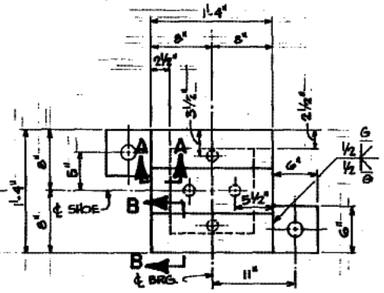
TITLE: STEEL DETAILS	DES: JFS / DR: MD / APPROVED: 6-19-86	CHK: GM / CHK: GM	Bridge No. 62032
	Sheet No. 19 of 39 Sheets		





PLAN

PLAN



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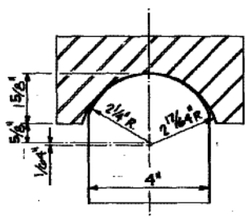
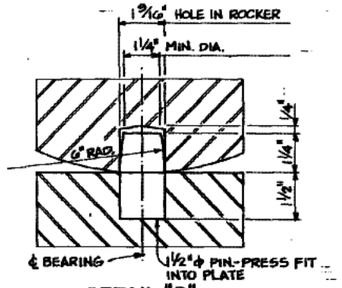
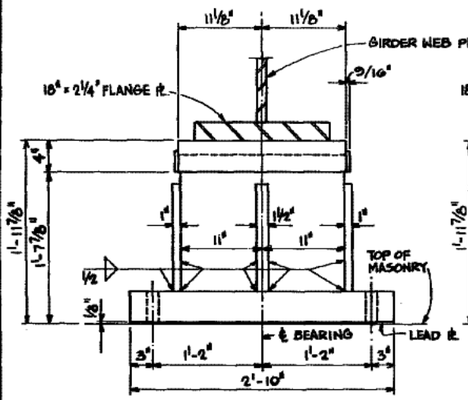


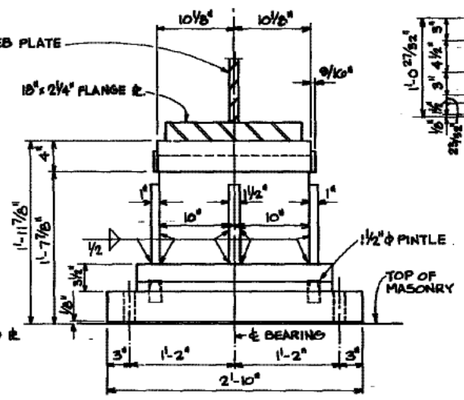
DETAIL "A"



DETAIL "B"



FRONT ELEVATION



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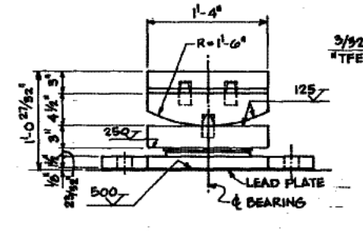
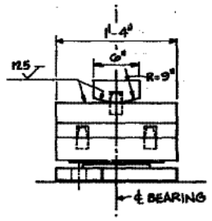
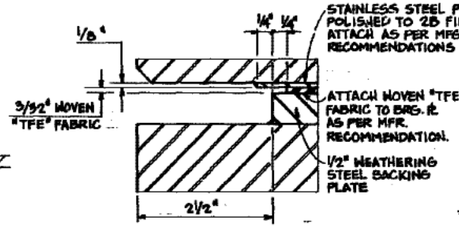


FRONT ELEVATION

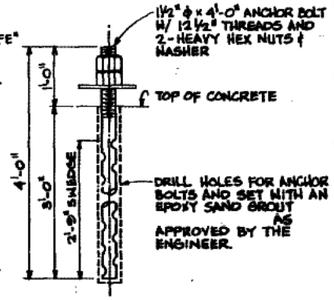


SIDE ELEVATION

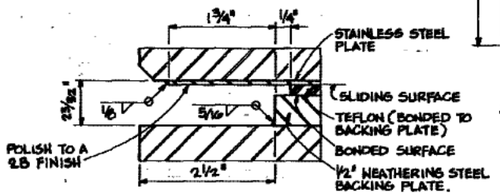
EXPANSION BEARING ASSEMBLY – TYPE SPECIAL



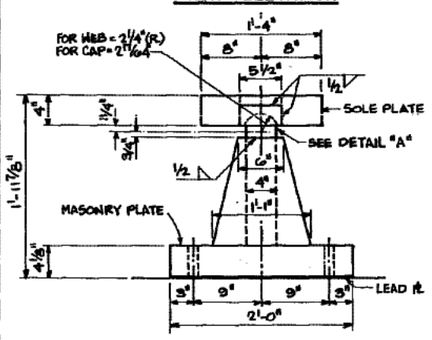
SECTION A-A



ANCHOR BOLT DETAIL

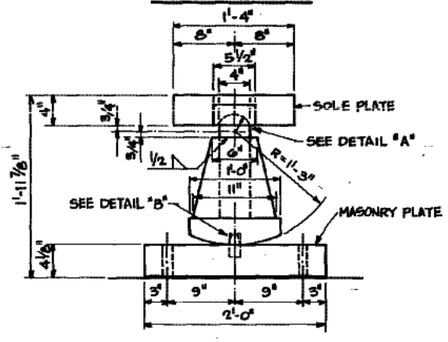


SECTION B-B



SIDE ELEVATION

FIXED BEARING ASSEMBLY-TYPE I



SIDE ELEVATION

EXPANSION BEARING ASSEMBLY – TYPE I

BEARING ASSEMBLY NOTES:

PINTLES SHALL COMPLY WITH MN/DOT 3314, TYPE II. ALL OTHER STRUCTURAL STEEL, INCLUDING ANCHOR BOLTS, SHALL COMPLY WITH MN/DOT 3309.

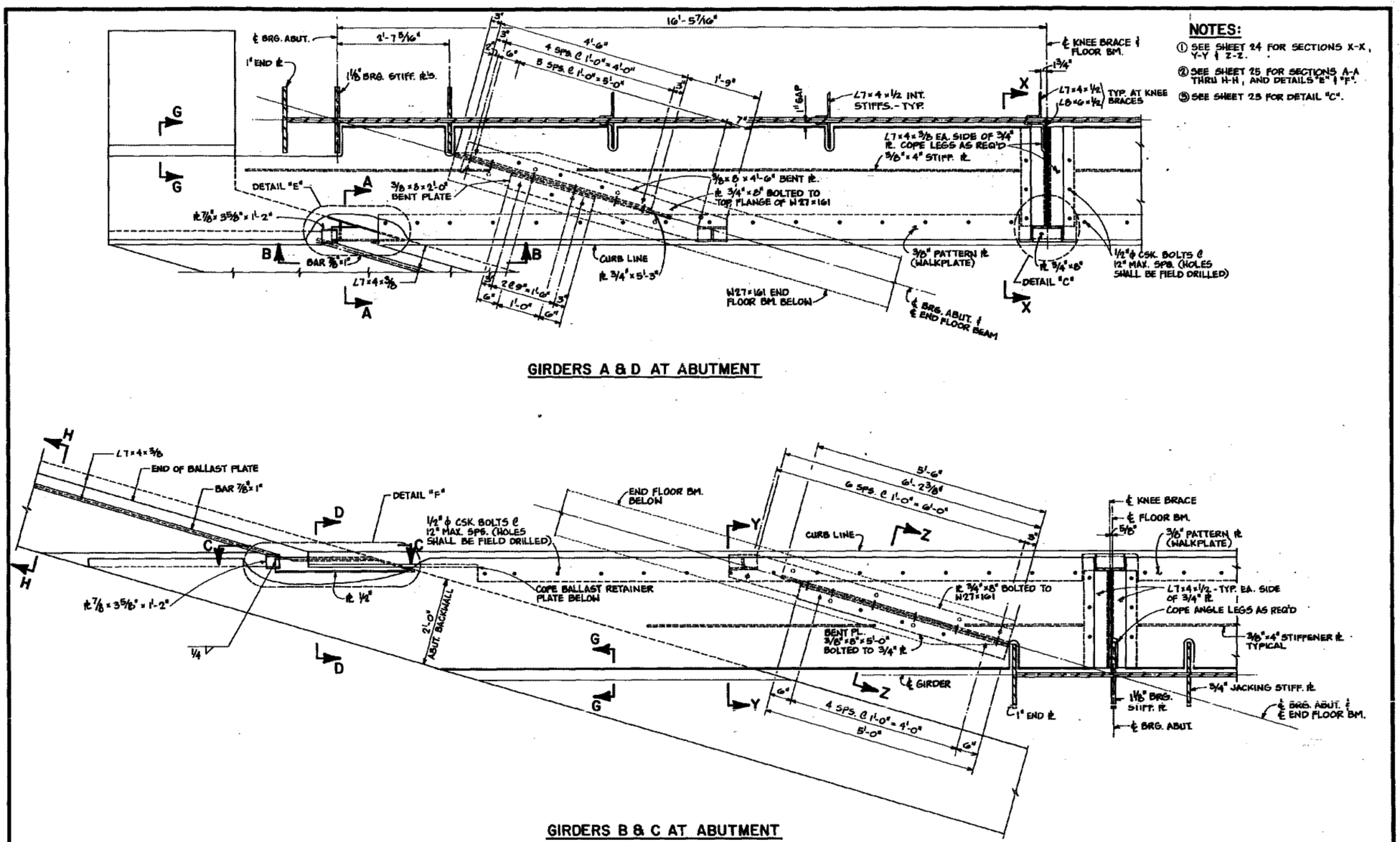
BEARING ASSEMBLY WELDMENTS SHALL BE STRESS RELIEVED BY HEAT TREATING PRIOR TO FINISH MACHINING, PER CURRENT A.W.S. STRUCTURAL WELDING CODE, ART. 4.4. PLATES SHALL BE FLAT AFTER FABRICATION AND WELDING.

BEARINGS SHALL BE ASSEMBLED INTO UNITS FOR SHIPMENT.

SOLE PLATES ARE INCLUDED IN WEIGHT OF STRUCTURAL STEEL, MN/DOT 3309. ALL OTHER MATERIAL ON THIS SHEET IS INCLUDED IN BEARING ASSEMBLY FOR PAYMENT.

FOR BONDED WOVEN TEFLON FABRIC, SEE SPECIAL PROVISIONS.

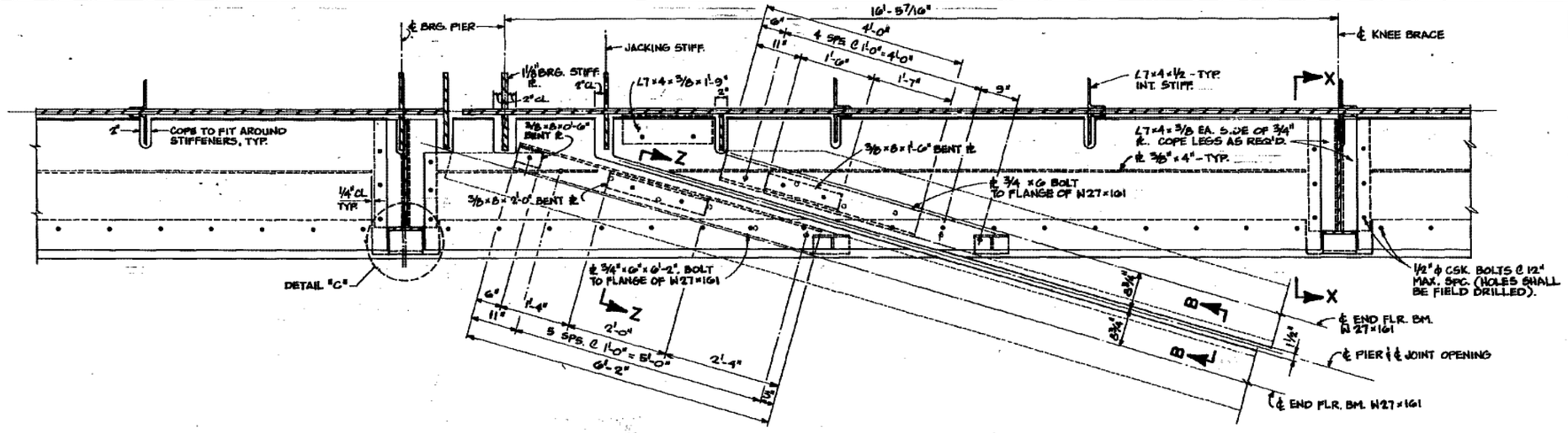
TITLE	DES: JPG	DR: MRH	APPROVED: 6-13-86	Bridge No.
BEARING ASSEMBLIES	CHK: BJH	CHK: BJH	Sheet No. 21 of 39 Sheets	62032



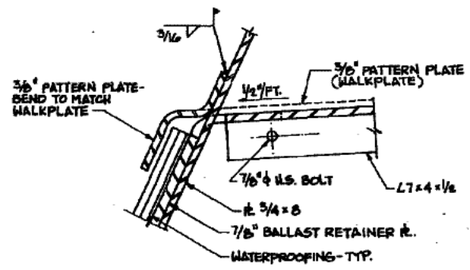
GIRDERS A & D AT ABUTMENT

GIRDERS B & C AT ABUTMENT

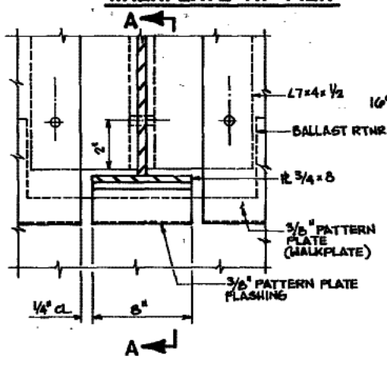
TITLE	DES: AAH	DR: AAH	APPROVED:	Bridge No.
WALKPLATE / JOINT DETAILS AT ABUTMENTS	CHK: GM	CHK: GM	6-19-86	62032
	Sheet No. 22 of 39 Sheets			



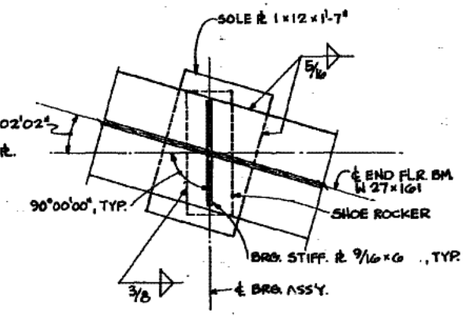
WALKPLATE AT PIER



SECTION A-A



DETAIL "C"



SECTION J-J

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

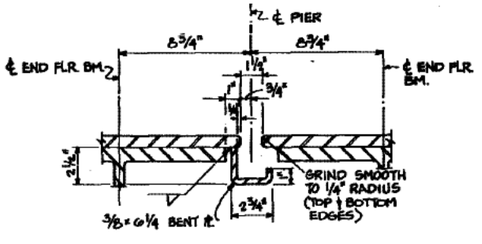
	ITEM	UNIT	QUANTITY
①	STRUCTURAL STEEL (3306)	POUND	38 363
	STRUCTURAL STEEL (3309)	POUND	1,173,570
⑤	FIXED BEARING ASSEMBLIES	EACH	4
⑤	EXPANSION BRG. ASSYS, TYPE 1	EACH	4
⑤	EXPANSION BRG. ASSYS, TYPE 2	EACH	16
②⑤	DRAINAGE SYSTEM	LUMP SUM	1
⑤	ONE PLY MEMBRANE WATERPROOFING	SQ. FT.	5992
	RAILROAD TRACK BALLAST	CU. YD.	64

QUANTITY NOTES:

① INCLUDES PATTERN PLATE FOR WALKWAYS
② SEE SHEET 20 FOR SUMMARY OF QUANTITIES
⑤ SEE SPECIAL PROVISIONS

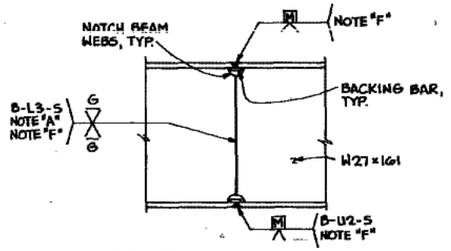
NOTES:

① SEE SHEET 24 FOR SECTIONS X-X & Z-Z.



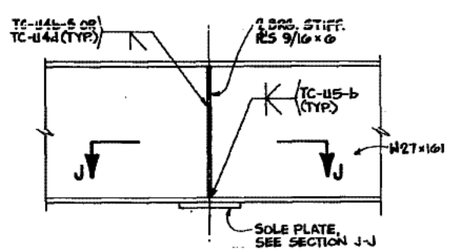
JOINT AT PIERS

SECTION B-B



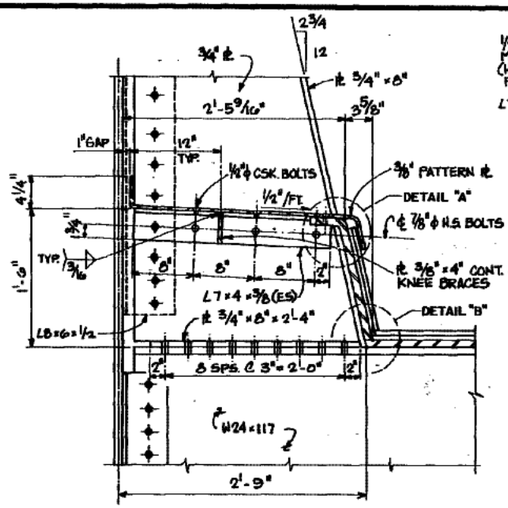
PERMISSABLE SHOP SPLICE - END FLOOR BEAM

NOTE F: GRIND FLUSH IN DIRECTION OF STRESS ON EXTERIOR SIDES.

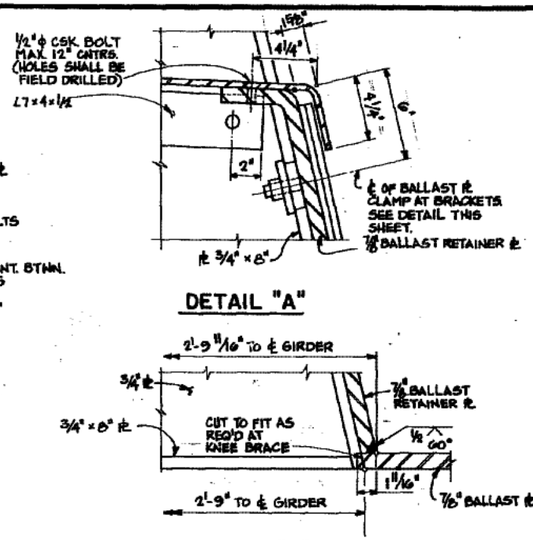


BEARING STIFFENER - END FLOOR BEAM

TITLE: WALKPLATE / JOINT DETAILS AT PIER	DES: JAB	DR: JAB	APPROVED: 6-13-86
	CHK: GM	CHK: GM	Bridge No. 62032
	Sheet No. 23 of 39 Sheets		

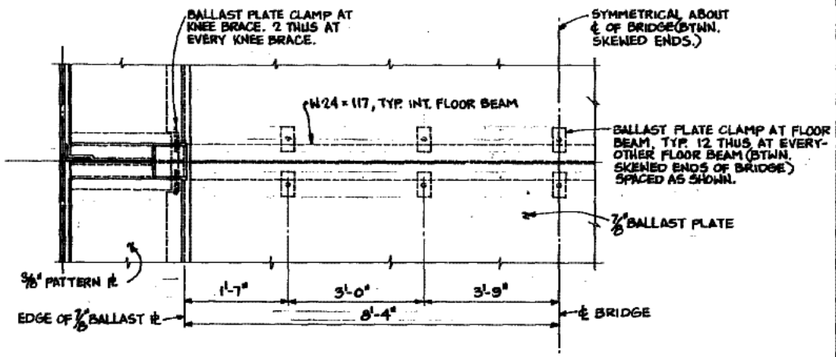


TYP. SECTION X-X

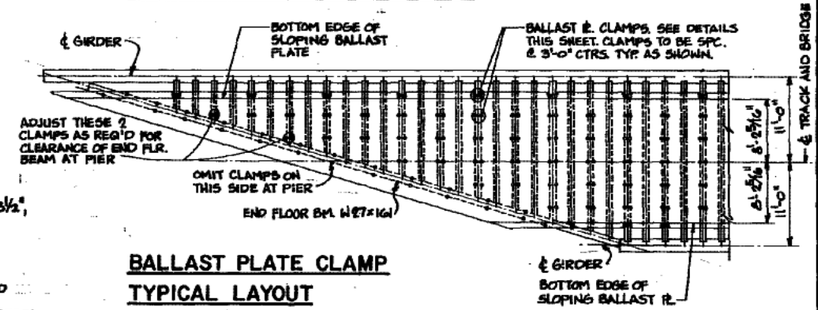


DETAIL "A"

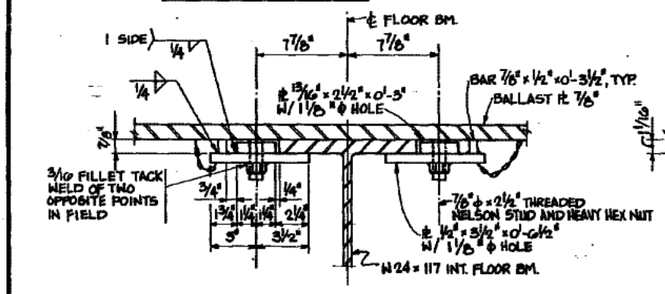
DETAIL "B"



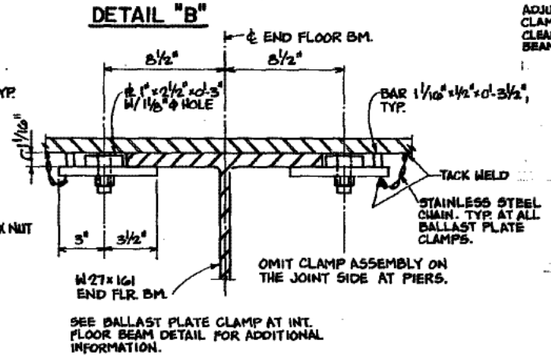
BALLAST PLATE CLAMP DETAIL



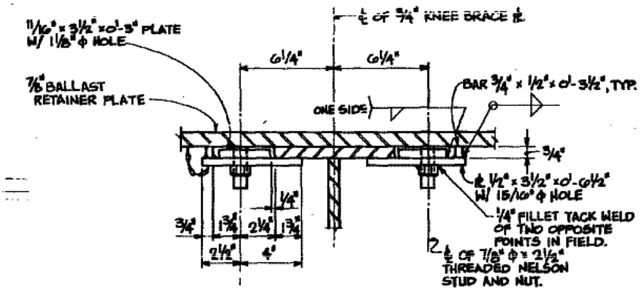
BALLAST PLATE CLAMP TYPICAL LAYOUT



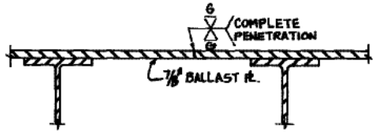
BALLAST PLATE CLAMP AT INT. FLOOR BEAM



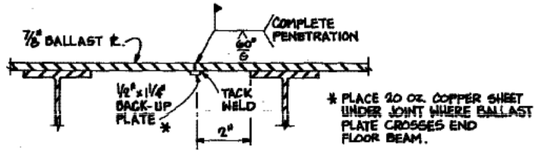
BALLAST PLATE CLAMP AT END FLOOR BM.



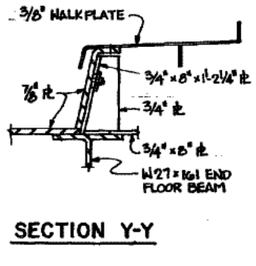
BALLAST PLATE CLAMP AT KNEE BRACE



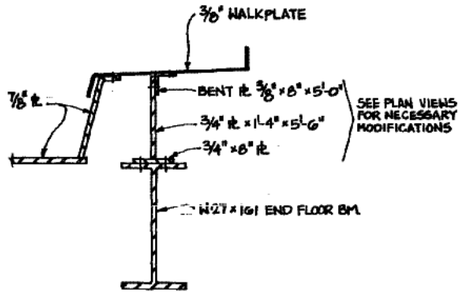
TYP. SHOP SPLICE FOR BALLAST PLATE



TYP. FIELD SPLICE FOR BALLAST PLATE

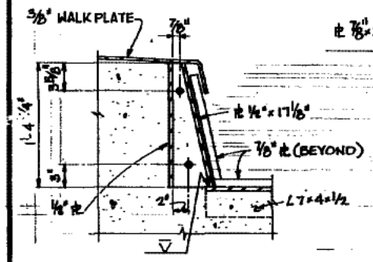


SECTION Y-Y

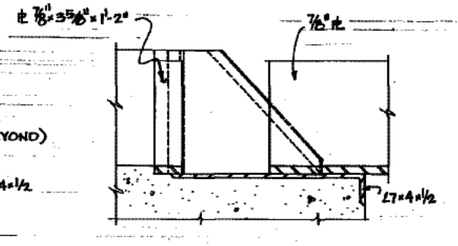


SECTION Z-Z

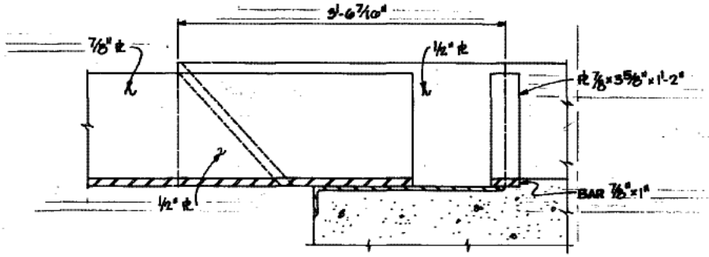
TITLE	DES: JMA	DET: JMA	APPROVED:	Bridge No.
BALLAST PLATE DETAILS	CHK: GM	CHK: GM	6-19-86	62032
	Sheet No. 24 of 39 Sheets			



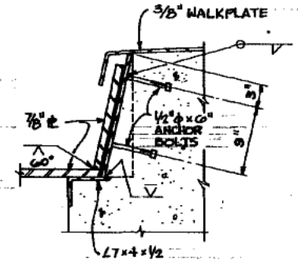
SECTION A-A



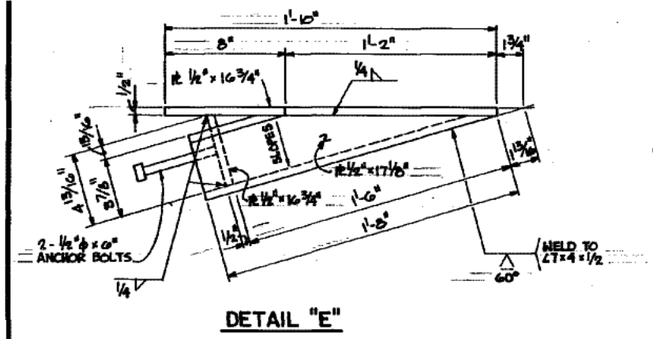
SECTION B-B



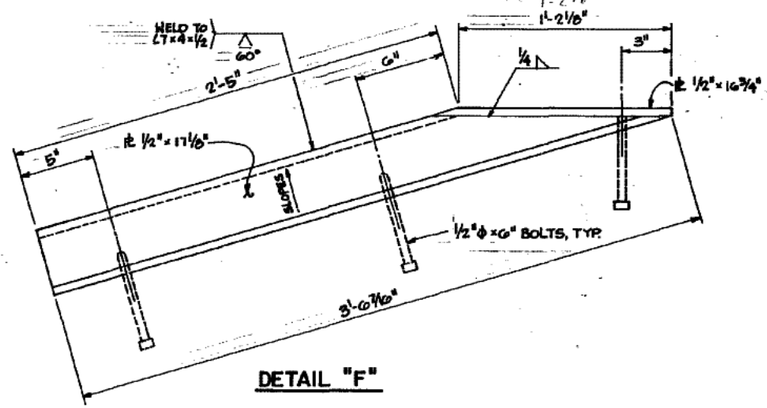
SECTION C-C



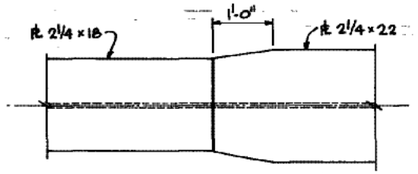
SECTION D-D



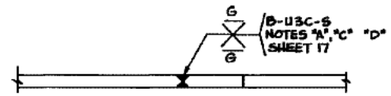
DETAIL "E"



DETAIL "F"

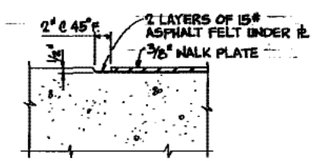


PLAN

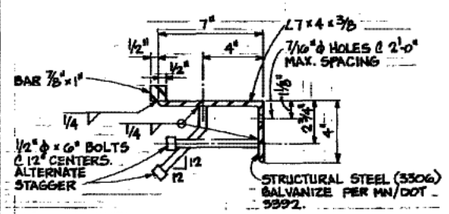


ELEVATION

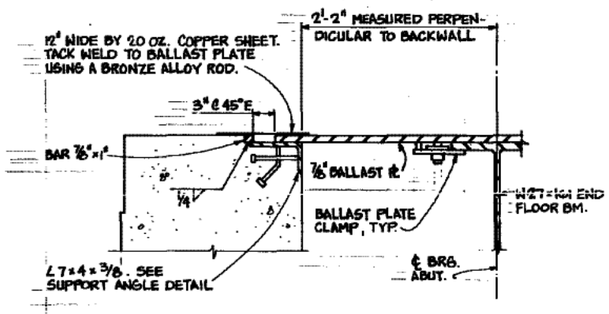
SHOP WELDED FLANGE SPLICE



SECTION G-G



SUPPORT ANGLE DETAIL FOR EXPANSION JOINTS



SECTION H-H

TITLE	DES: AJW	DRN: AJW	APPROVED:
JOINT DETAILS	CHK: GM	CHK: GM	6-13-86
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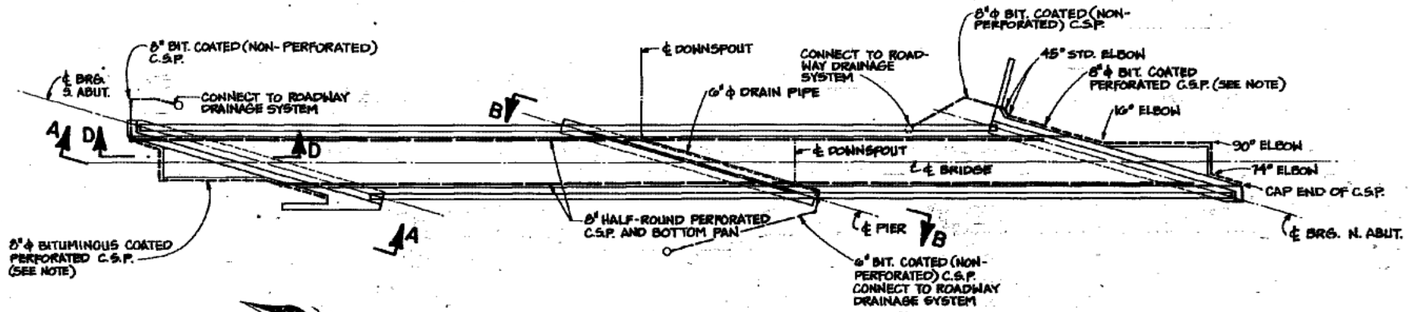
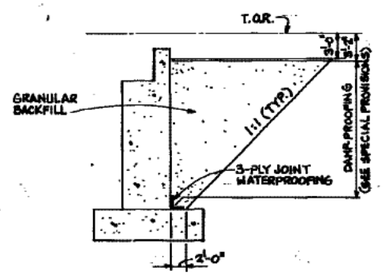
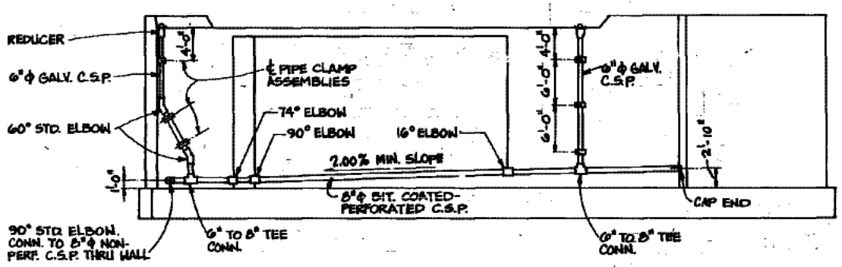


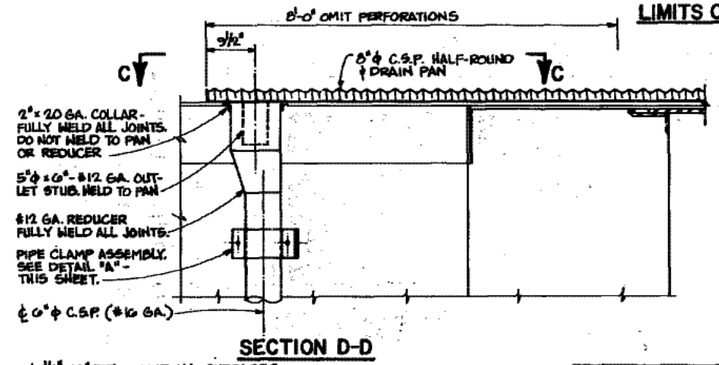
DRAINAGE PLAN



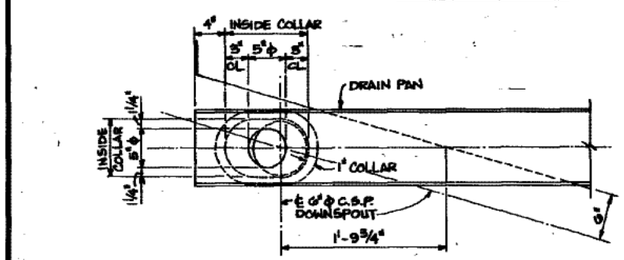
LIMITS OF GRANULAR BACKFILL



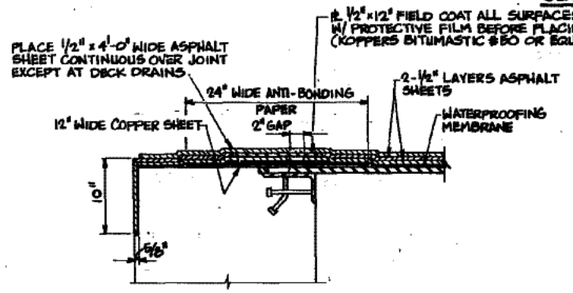
ELEVATION A-A



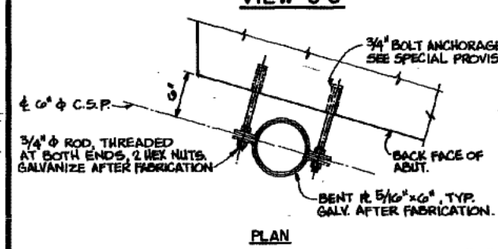
SECTION D-D



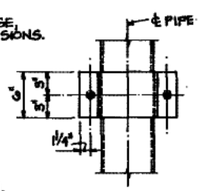
VIEW C-C



WATERPROOFING AT ABUTMENT

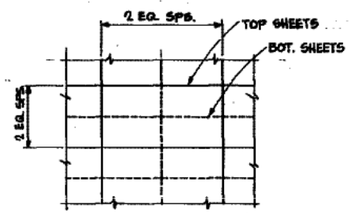


PLAN



ELEVATION

DETAIL "A"



TYPICAL ASPHALT SHEET PLACEMENT

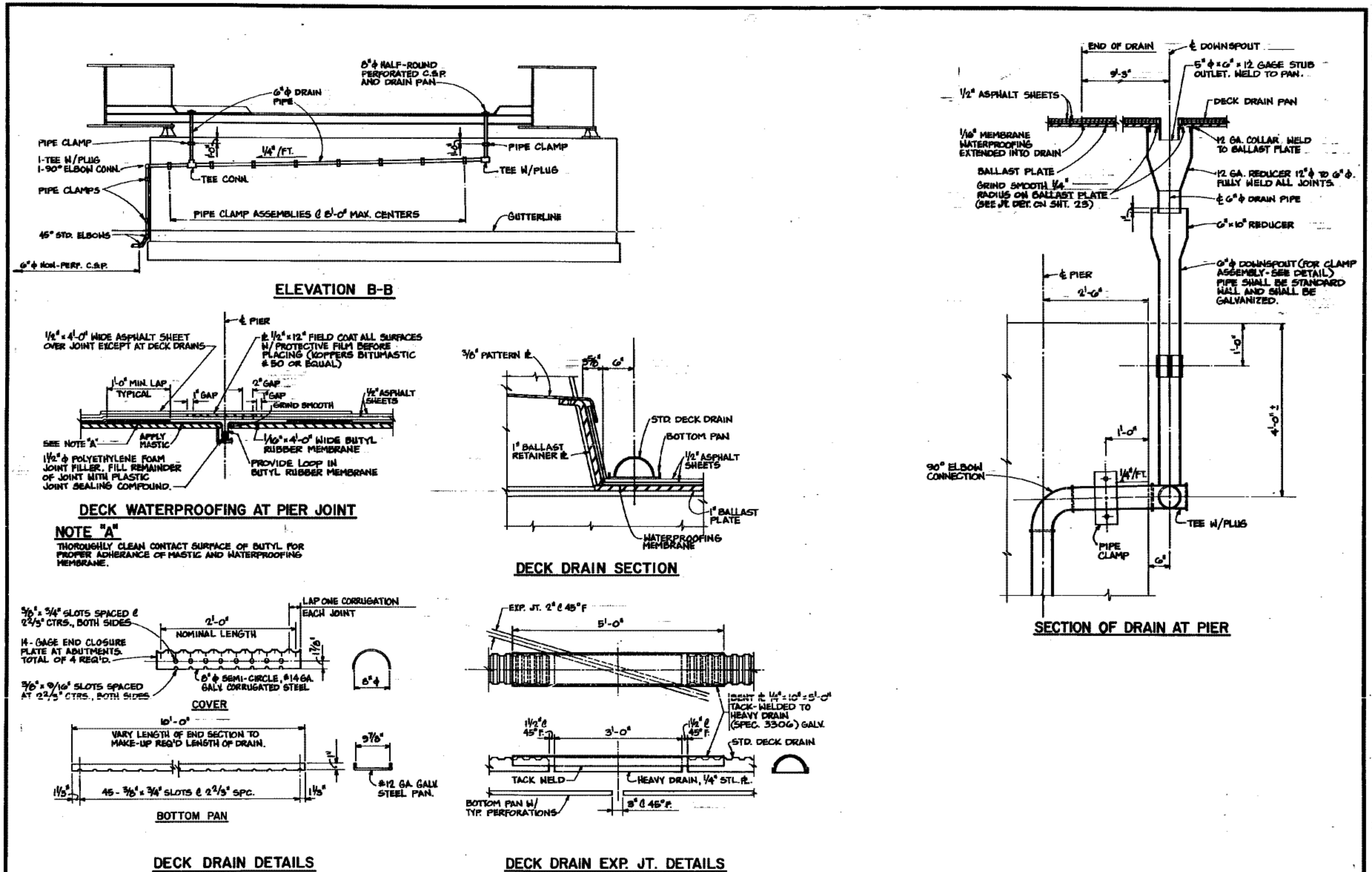
NOTE:
WRAP 8"ϕ BIT. COATED C.S.P. WITH GEOTEXTILE CONFORMING TO SPEC. 3733, TYPE I.

QUANTITY SUMMARY FOR DRAINAGE SYSTEM
(SEE SPECIAL PROVISIONS)

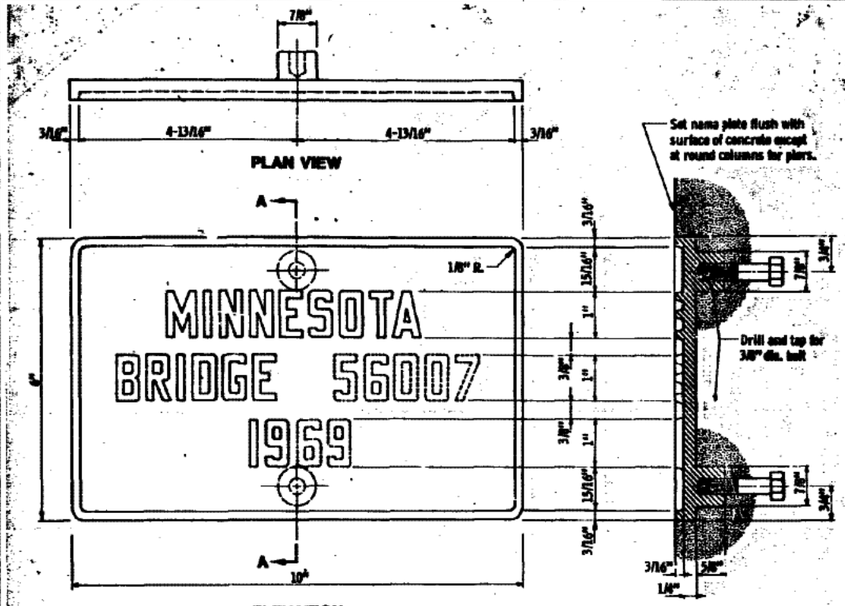
	ITEM	UNIT	QUANTITY
(1)	8"ϕ HALF-ROUND C.S.P.	LIN. FT.	600
(1)	BOTTOM PAN	LIN. FT.	606
	5"ϕ x 6" OUTLET STUB (WELD TO PAN)	UNIT	4
(1)	COLLAR	UNIT	4
(1)	REDUCER (#12 GA.)	UNIT	4
	PIPE CLAMP ASSEMBLIES	UNIT	19
(1)	END ℞ FOR 8"ϕ HALF-ROUND C.S.P.	UNIT	4
(1)	8"ϕ REMY DRAIN HALF-ROUND W/ ℞ ½"x 10" x 5'-0"	UNIT	2
(1)	6"ϕ GALV. C.S.P.	LIN. FT.	58
(1)	8"ϕ 60° C.S.P. ELBOW	UNIT	2
(1)	6" TO 8" REDUCER TEE	UNIT	2
(1)	8"ϕ PERFORATED C.S.P.	LIN. FT.	175
(2)(1)	8"ϕ NON-PERFORATED C.S.P.	LIN. FT.	69
(1)	8"ϕ 16° C.S.P. ELBOW	UNIT	2
(1)	8"ϕ 74° C.S.P. ELBOW	UNIT	2
(1)	8"ϕ 90° C.S.P. ELBOW	UNIT	3
(1)	8"ϕ 45° C.S.P. ELBOW	UNIT	2
(1)	6"ϕ DRAIN PIPE	LIN. FT.	95
(1)	6"ϕ 90° ELBOW	UNIT	1
(1)	6" x 10" REDUCER	UNIT	2
(1)	6" TEE	UNIT	3
(1)	6"ϕ 45° ELBOW	UNIT	2
(2)(1)	6"ϕ NON-PERFORATED C.S.P.	LIN. FT.	56
	GEOTEXTILE	SQ. YD.	41

(1) BITUMINOUS COATED
(2) ASSUMED FOR RUNS TO STORM SEWER.

TITLE	DES:	DET:	APPROVED:	Bridge No.
WATERPROOFING & DRAINAGE DETAILS (1 OF 2)	CHK: BJH	CHK: BJH	6-19-86	62032
	Sheet No. 26 of 39 Sheets			


ELEVATION B-B
6" ϕ HALF-ROUND PERFORATED C.S.P. AND DRAIN PAN
6" ϕ DRAIN PIPE
PIPE CLAMP
1-TEE W/PLUG
1-90° ELBOW CONN.
PIPE CLAMPS
1/4"/FT.
TEE CONN.
TEE W/PLUG
PIPE CLAMP ASSEMBLIES @ 8'-0" MAX. CENTERS
GUTTERLINE
45° STD. ELBOWS
6" ϕ NON-PERF. C.S.P.
DECK WATERPROOFING AT PIER JOINT
℄ PIER
1/2" x 4'-0" WIDE ASPHALT SHEET OVER JOINT EXCEPT AT DECK DRAINS
℄ 1/2" x 12" FIELD COAT ALL SURFACES W/ PROTECTIVE FILM BEFORE PLACING (KOPPERS BITUMASTIC # 50 OR EQUAL)
1'-0" MIN. LAP TYPICAL
1" GAP
2" GAP
GRIND SMOOTH
1/2" ASPHALT SHEETS
SEE NOTE "A"
APPLY MASTIC
1/16" x 4'-0" WIDE BUTYL RUBBER MEMBRANE
PROVIDE LOOP IN BUTYL RUBBER MEMBRANE
1 1/2" ϕ POLYETHYLENE FOAM JOINT FILLER. FILL REMAINDER OF JOINT WITH PLASTIC JOINT SEALING COMPOUND.
NOTE "A"
THOROUGHLY CLEAN CONTACT SURFACE OF BUTYL FOR PROPER ADHERANCE OF MASTIC AND WATERPROOFING MEMBRANE.
DECK DRAIN SECTION
3/8" PATTERN ℄
STD. DECK DRAIN
BOTTOM PAN
1" BALLAST RETAINER ℄
1/2" ASPHALT SHEETS
1" BALLAST PLATE
WATERPROOFING MEMBRANE
SECTION OF DRAIN AT PIER
END OF DRAIN
℄ DOWNSPOUT
5" ϕ x 6" x 12 GAGE STUB OUTLET. WELD TO PAN.
1/2" ASPHALT SHEETS
DECK DRAIN PAN
1/16" MEMBRANE WATERPROOFING EXTENDED INTO DRAIN
12 GA. COLLAR. WELD TO BALLAST PLATE
BALLAST PLATE
12 GA. REDUCER 12" ϕ TO 6" ϕ. FULLY WELD ALL JOINTS.
GRIND SMOOTH 1/4" RADIUS ON BALLAST PLATE (SEE JT. DET. ON SHT. 25)
℄ 6" ϕ DRAIN PIPE
6" x 10" REDUCER
6" ϕ DOWNSPOUT (FOR CLAMP ASSEMBLY - SEE DETAIL) PIPE SHALL BE STANDARD WALL AND SHALL BE GALVANIZED.
℄ PIER
2'-6"
1'-0"
4'-0" ±
90° ELBOW CONNECTION
1/4"/FT.
TEE W/PLUG
PIPE CLAMP
DECK DRAIN DETAILS
3/8" x 3/4" SLOTS SPACED @ 2 2/3" CTRS., BOTH SIDES
2'-0" NOMINAL LENGTH
LAP ONE CORRUGATION EACH JOINT
14-GAGE END CLOSURE PLATE AT ABUTMENTS. TOTAL OF 4 REQ'D.
3/8" x 9/16" SLOTS SPACED AT 2 2/3" CTRS., BOTH SIDES
8" ϕ SEMI-CIRCLE, #14 GA. GALV. CORRUGATED STEEL
COVER
10'-0"
VARY LENGTH OF END SECTION TO MAKE-UP REQ'D LENGTH OF DRAIN.
45 - 3/8" x 3/4" SLOTS @ 2 2/3" SPC.
#12 GA. GALV. STEEL PAN.
BOTTOM PAN
DECK DRAIN EXP. JT. DETAILS
EXP. JT. 2" @ 45° F
5'-0"
BENT ℄ 1/4" x 10" x 5'-0" TACK-WELDED TO HEAVY DRAIN (SPEC. 3306) GALV.
3'-0"
STD. DECK DRAIN
TACK WELD
HEAVY DRAIN, 1/4" STL. ℄
BOTTOM PAN W/ TYP. PERFORATIONS
3" @ 45° F.

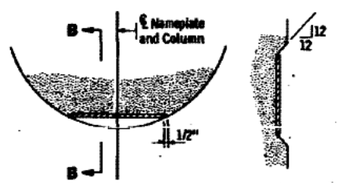
TITLE	DES:	DR:	APPROVED:	Bridge No.
WATERPROOFING & DRAINAGE DETAILS (2 OF 2)	CHK: BJH	CHK: BJH	6-12-86	62032
	Sheet No. 27 of 39 Sheets			



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

BRIDGE 62032
YEAR 1987

NUMBERS FOR NAMEPLATES



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.

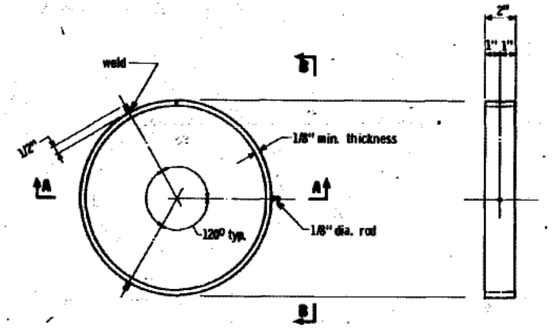
Draft on letters and numbers shall not be more than 3" in 12".

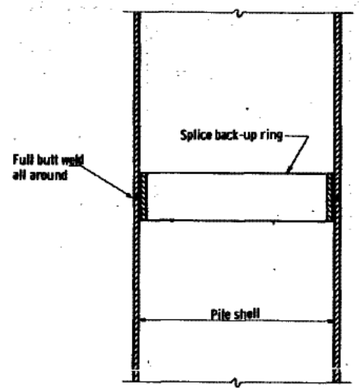
Horizontal spacing of letters and numbers shall produce a balanced layout in proportion to spacing shown.

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	DIVISION	DETAIL NO. **B101**





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.

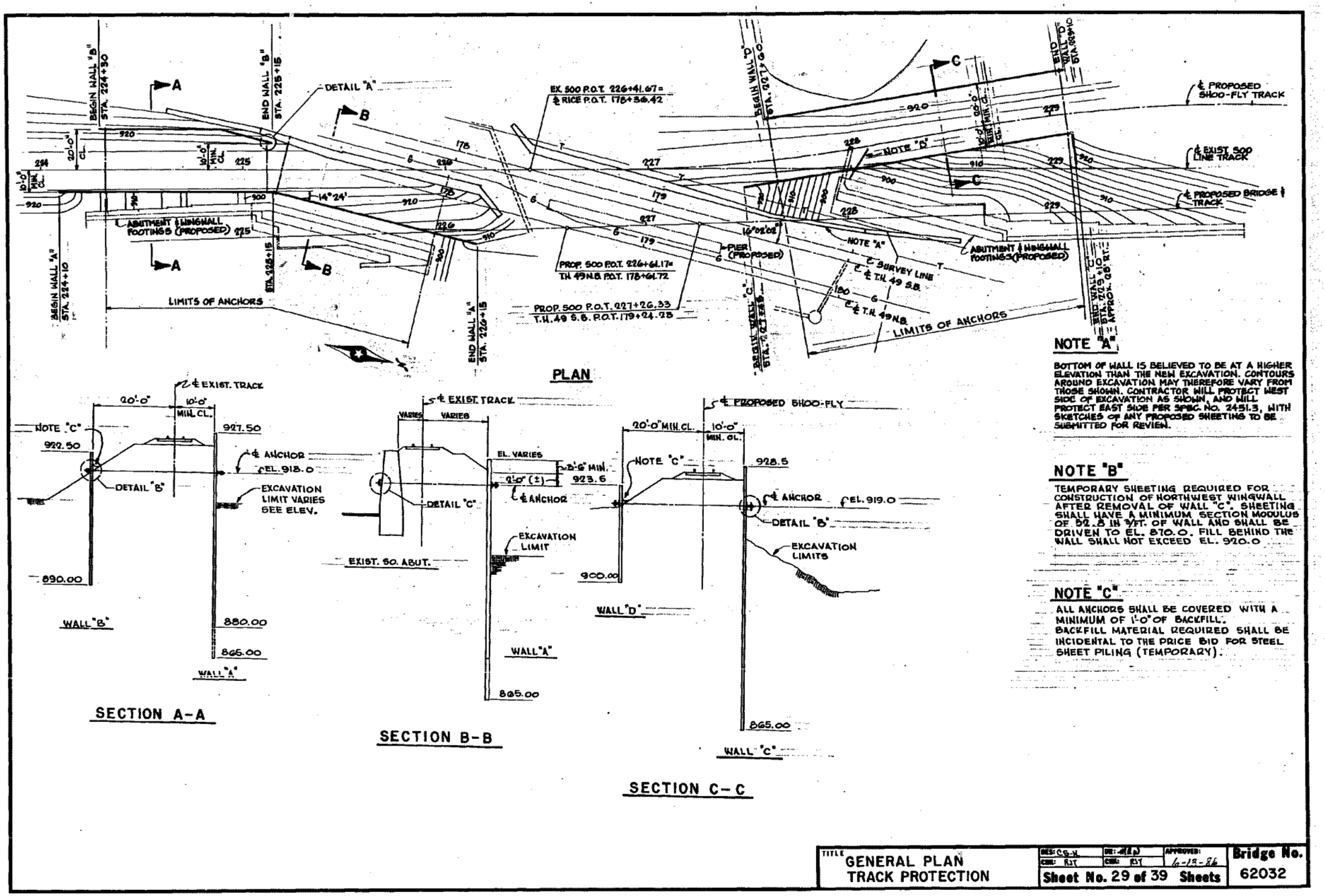
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.

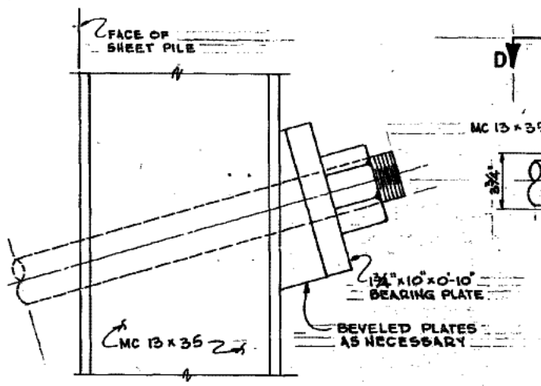
Electrodes which have become wet, soiled or damaged shall not be used.

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 weld...

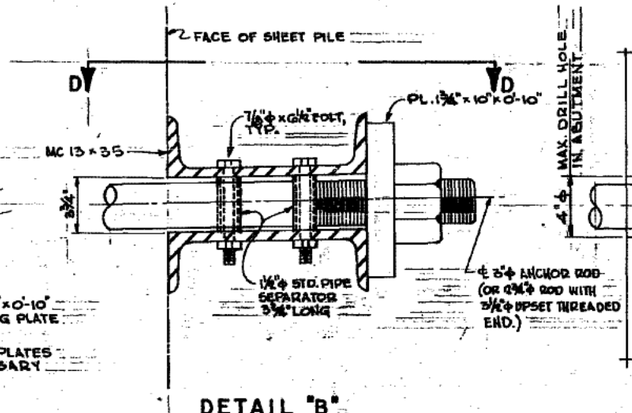
APPROVED July 21, 1972 Engineer of Standards & Research RESEARCH AND STANDARDS DIVISION	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE** CAST-IN-PLACE CONCRETE PILES		DETAIL NO. **B201**

TITLE: B101 AND B201 DETAILS	DES: MN/DOT CHK: BJH	DR: MN/DOT CHK: BJH	APPROVED: 6-15-86	Bridge No. 62032
	Sheet No. 28 of 39 Sheets			

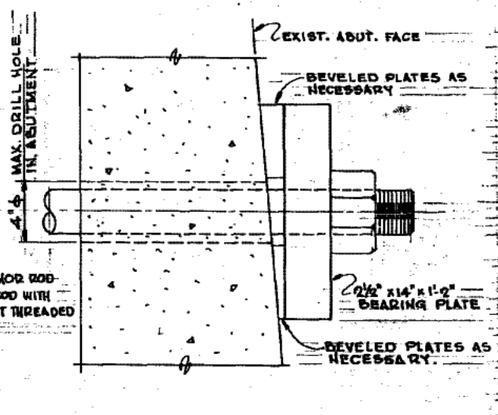




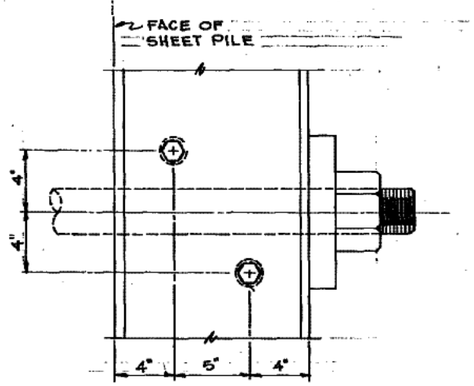
DETAIL "A"



DETAIL "B"



DETAIL "C"



SECTION D-D

⑤ ① TABLE OF ESTIMATED QUANTITIES FOR TEMPORARY TRACK PROTECTION		
② STEEL SHEET PILING	SQ.FT.	21430
③ STEEL SHEET PILING	SQ.FT.	6340
④ STRUCTURAL STEEL (330G)	LB.	98120

① ESTIMATED QUANTITIES ARE LISTED FOR CONTRACTOR'S CONVENIENCE ONLY. QUANTITIES ARE BASED ON ANCHOR ROD SPACINGS OF 4'-11" AND 6'-7". ANY ADDITIONAL ITEMS REQUIRED AS SHOWN ON THE PLANS OR AS REQUIRED BY CONTRACTORS CONSTRUCTION METHODS SHALL BE PROVIDED BY THE CONTRACTOR WITH NO INCREASE IN COMPENSATION. ALL ITEMS ARE TO BE INCLUDED IN PRICE BID FOR STEEL SHEET PILING (TEMPORARY).
② SECTION MODULUS ≥ 52.8 IN³/FT.
③ SECTION MODULUS ≥ 37.1 IN³/FT.
④ THE ESTIMATED QUANTITY FOR STRUCTURAL STEEL (330G) INCLUDES WALES, ANCHOR RODS AND HEAVY HEX NUTS, BEARING PLATES, PIPE SEPARATORS AND BOLTS.
⑤ MATERIALS LISTED ARE THE PROPERTY OF THE CONTRACTOR AFTER REMOVAL.

CONSTRUCTION NOTES

THE PLAN LIMITS OF SHEET PILE WALLS ARE APPROXIMATE ONLY AND SHALL BE ADJUSTED TO FIT ACTUAL FIELD CONDITIONS AS NEEDED. THE LOCATION OF EXISTING ABUTMENT AND RETAINING WALLS AS SHOWN ON THE PLAN AND ELEVATION SHEETS ARE APPROXIMATE ONLY.

ALL PILING SHALL CONFORM TO ASTM A572 STEEL, GRADE 50.

ALL STRUCTURAL STEEL SHALL CONFORM TO SPEC. 3306.

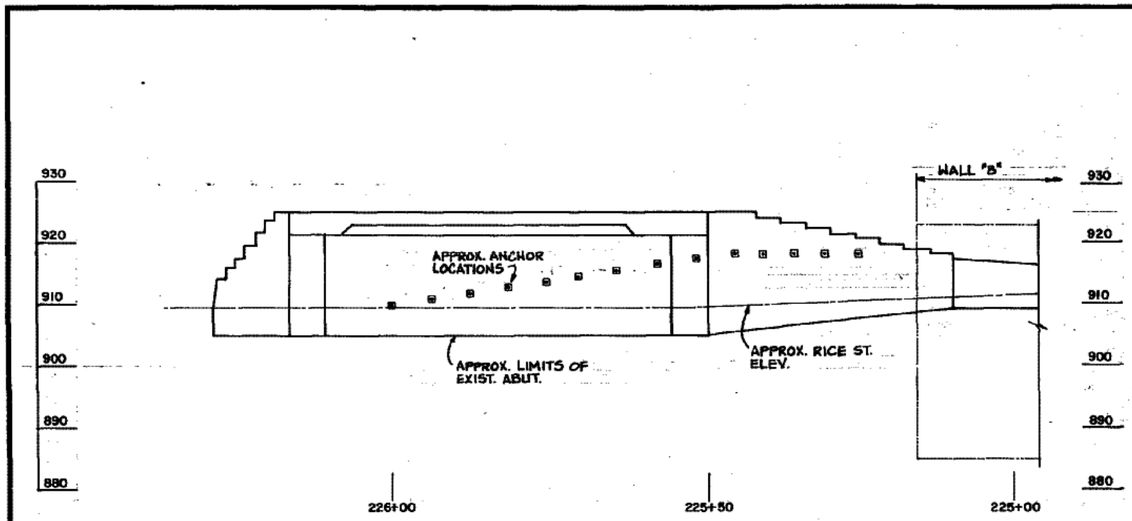
EXCAVATION ALONG WALLS "A" AND "C" SHALL BE LIMITED TO AN 8 FT. CUT BELOW EXISTING GROUND LINE PRIOR TO PLACEMENT OF ANCHORS AND WALES.

CARE SHALL BE TAKEN TO PROPERLY ALIGN ANCHORS WITH THE WALES. ANY MISALIGNMENT MUST BE CONNECTED WITH THE USE OF BEVELED PLATES AS NEEDED. KINKS OR BENDS IN THE ANCHOR RODS WILL NOT BE PERMITTED.

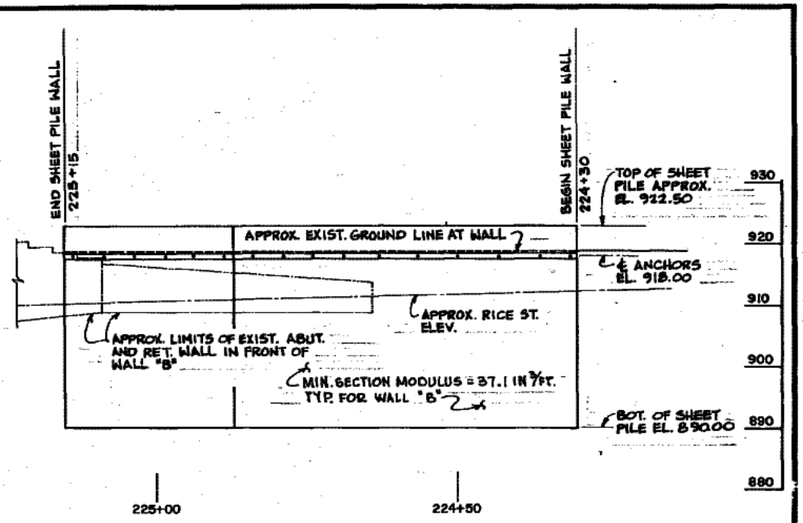
WALES NEED NOT BE SPLICED BUT POINTS OF DISCONTINUITY SHALL BE LOCATED A MAXIMUM OF 3'-6" FROM THE ADJACENT ANCHORS AND SHALL BE LOCATED AT A POINT WHERE THE WALE IS NOT IN DIRECT CONTACT WITH THE SHEETING.

WALES SHALL BE CONTINUOUS OVER A MINIMUM OF 4 ANCHORS.

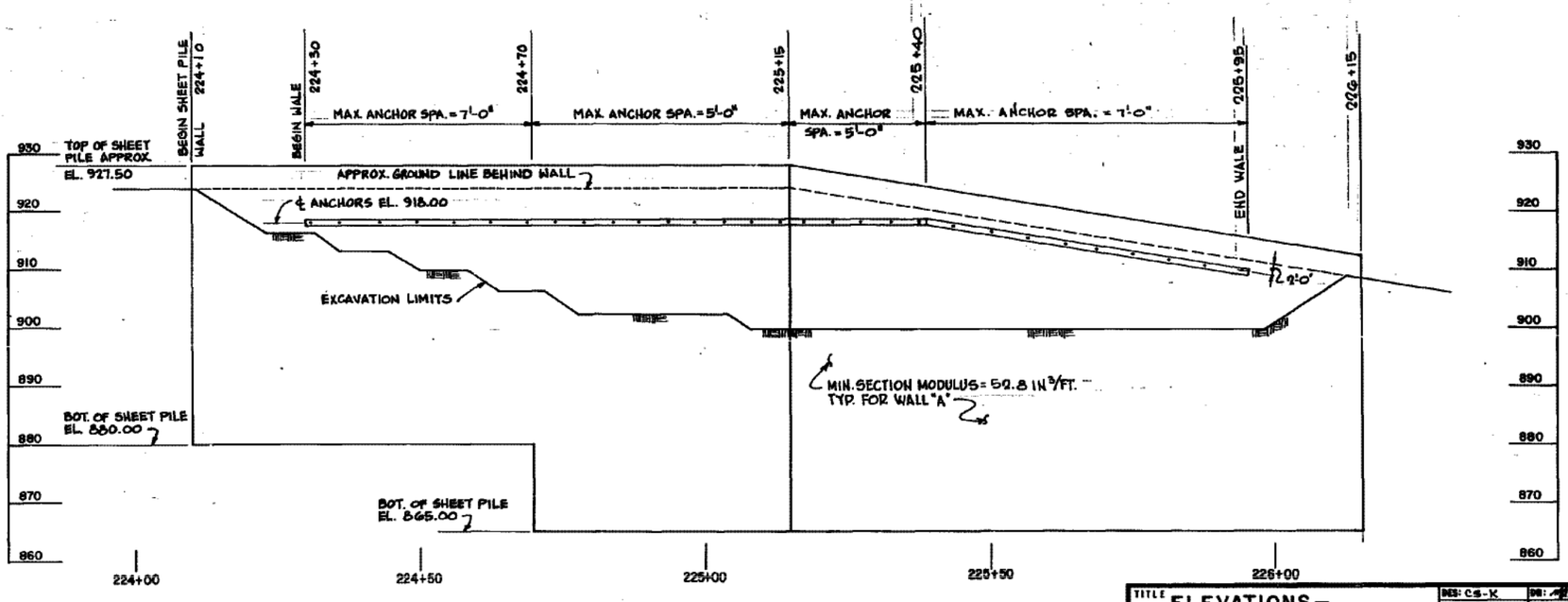
TITLE	DES: C.S.-V.	DR: W.E.	APPROVED: 6-19-86	Bridge No.
DETAILS — TRACK PROTECTION	CHK: RJT	CHK: RJT	Sheet No. 30 of 39 Sheets	62032



EXISTING SOUTH ABUTMENT ELEVATION

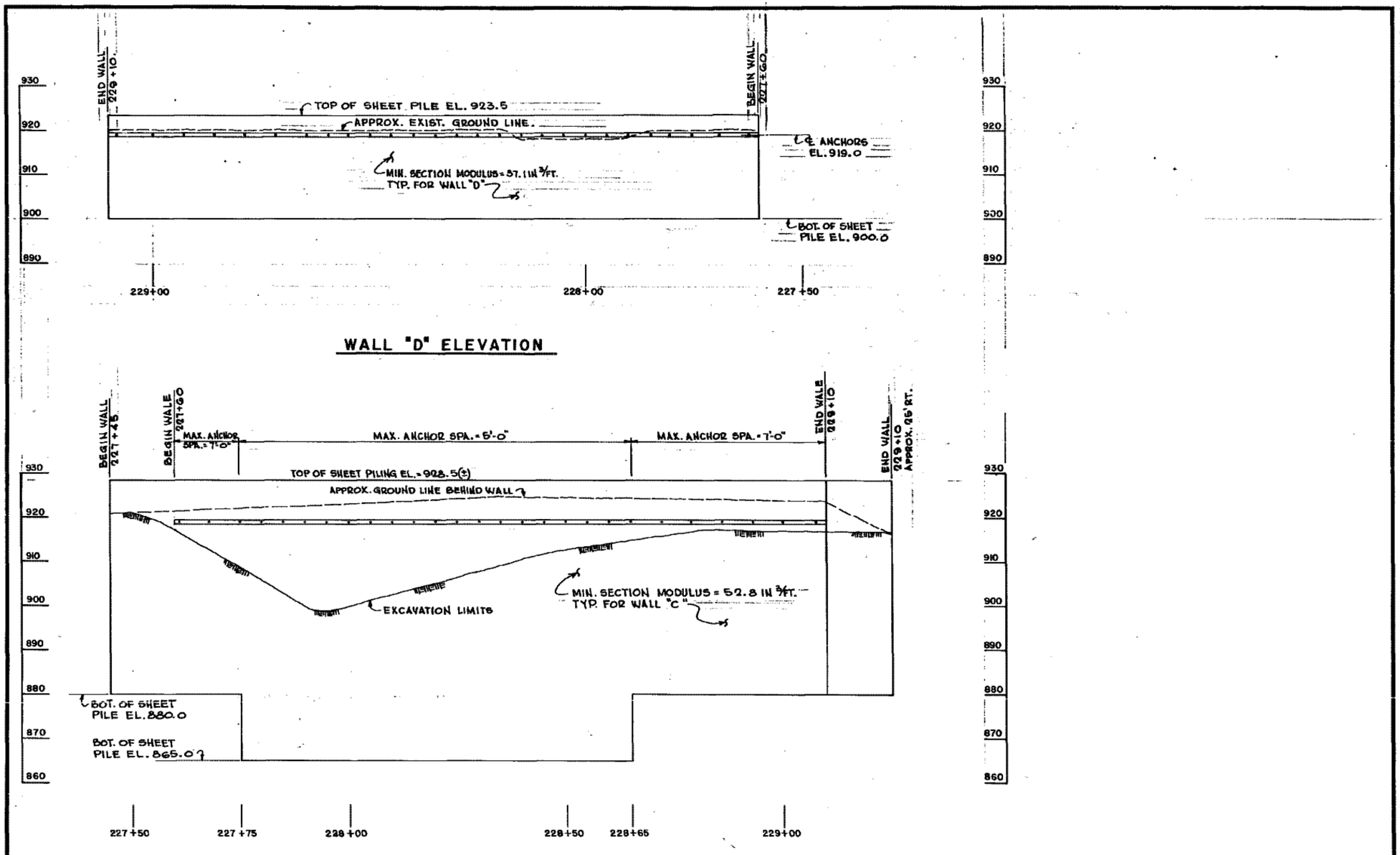


ELEVATION - WALL "B"



DEVELOPED ELEVATION - WALL "A"

TITLE: ELEVATIONS — TRACK PROTECTION	DES: CS-K / CHK: RJT	DR: MJD / CHK: RJT	APPROVED: 6-19-86
Sheet No. 31 of 39 Sheets			Bridge No. 62032



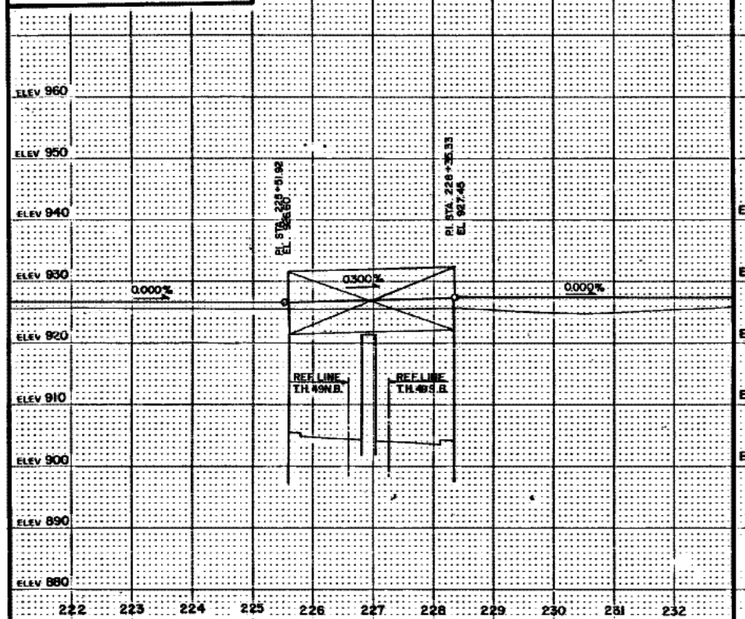
WALL "D" ELEVATION

DEVELOPED WALL "C" ELEVATION

TITLE				
ELEVATIONS — TRACK PROTECTION	DES: GS-K / CHK: RJT	DR: W.K. / CHK: RJT	APPROVED: 6-13-86	Bridge No. 62032
	Sheet No. 32 of 39 Sheets			

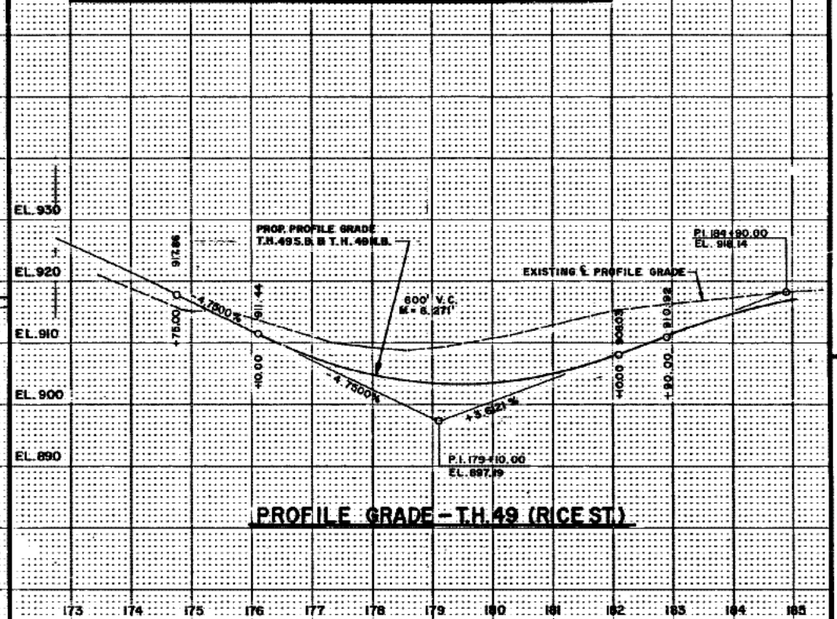
CONTRACTED PROFILE

SCALE: HOR. ..... VER. ..... 0' 50' 100' 0' 5' 10'



TYPICAL SECTIONS & PERTINENT DATA

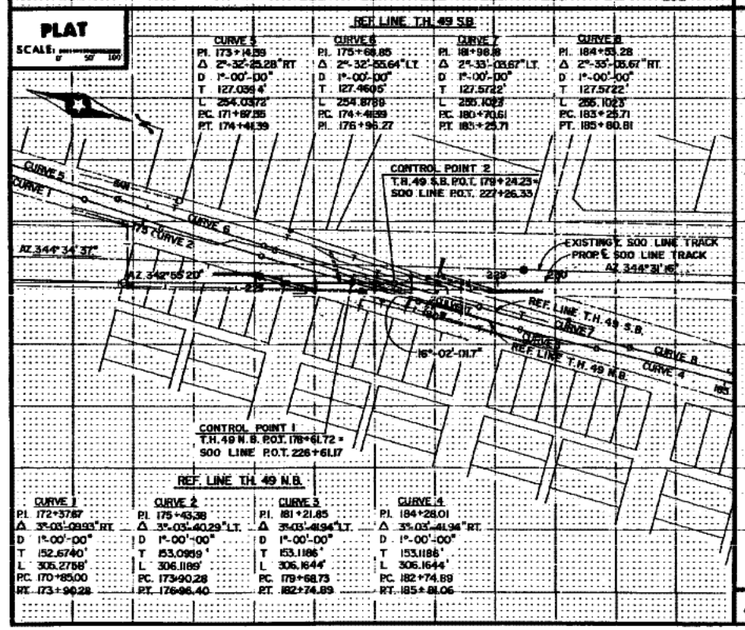
SCALES AS SHOWN



PROFILE GRADE - T.H. 49 (RICE ST.)

PLAT

SCALE: 0' 50' 100'



CURVE 1: PI. 172+37.87; Δ 35-03-09.33" RT.; D 1°-00'-00"; T 152.6740'; L 305.2788'; PC. 170+85.00; PT. 173+90.28

CURVE 2: PI. 175+43.38; Δ 35-03-40.29" LT.; D 1°-00'-00"; T 153.0989'; L 306.1189'; PC. 173+90.28; PT. 176+96.40

CURVE 3: PI. 181+21.85; Δ 35-03-41.96" LT.; D 1°-00'-00"; T 153.1186'; L 306.1644'; PC. 179+68.73; PT. 182+74.89

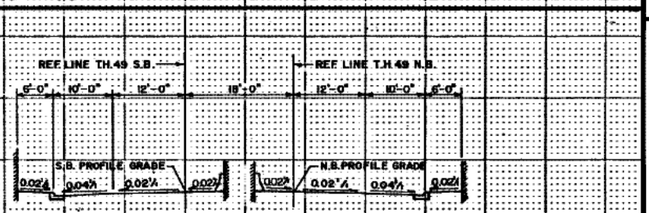
CURVE 4: PI. 194+28.01; Δ 35-03-41.96" RT.; D 1°-00'-00"; T 153.1186'; L 306.1644'; PC. 182+74.89; PT. 185+81.06

CURVE 5: PI. 173+14.39; Δ 2°-32'-25.28" RT.; D 1°-00'-00"; T 127.0394'; L 254.0372'; PC. 171+87.35; PT. 174+41.39

CURVE 6: PI. 175+69.85; Δ 2°-32'-55.64" LT.; D 1°-00'-00"; T 127.4605'; L 254.8788'; PC. 174+41.99; PI. 176+96.27

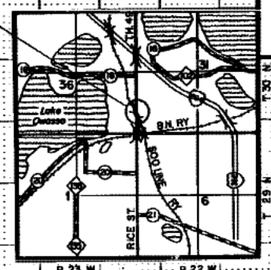
CURVE 7: PI. 188+96.88; Δ 2°-33'-03.67" LT.; D 1°-00'-00"; T 127.5722'; L 255.1023'; PC. 180+70.61; PT. 185+25.71

CURVE 8: PI. 184+55.28; Δ 2°-33'-03.67" RT.; D 1°-00'-00"; T 127.5722'; L 255.1023'; PC. 183+25.71; PT. 185+80.81



TYP. SECTION OF T.H. 49 WITHIN BRIDGE LIMITS

PROP. BRIDGE NO. 62032



Fed. Proj. No.

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. flood on record ..... Design flood (..... 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 .....
Floodline 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. freeboard. 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: DATA PROVIDED BY Mn.DOT, AND DATA FROM B.K.B.M. SURVEY WORK (AUG. 1984)

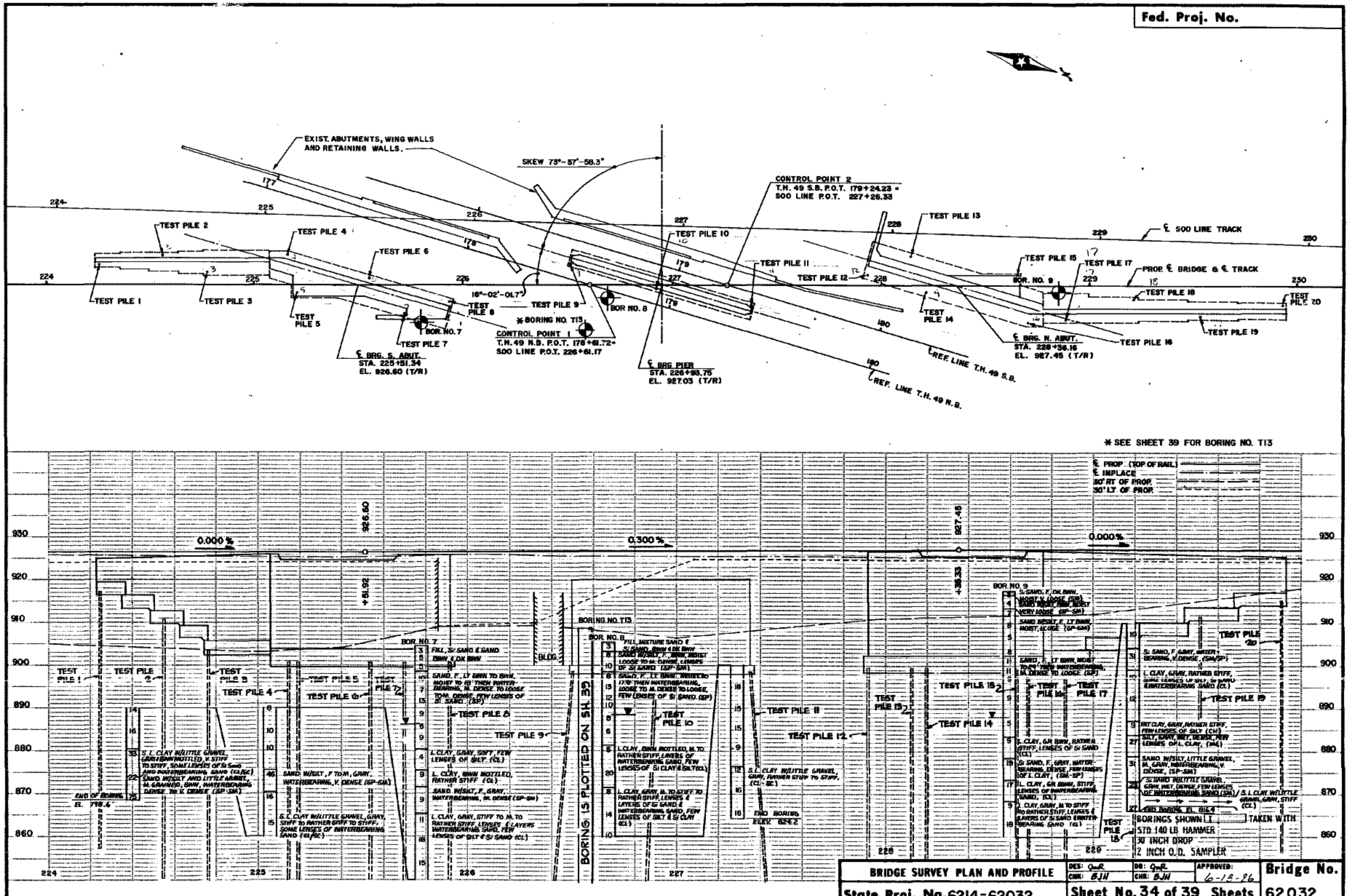
Bench mark elevation 909.92 (M.S.L. 1929 Adj.)
Location: TOP NUT ON HYD. AT T.H. 49 SURVEY LINE STA. 178+98, 37' RT.

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT ..... ON T.H. 49 (RICE ST.) (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.47 MILES SOUTH OF JCT T.H. 49 AND T.H. 694
SEC. 31 & 36 TWP. 30N R. 22 W & 23 W
TOWNSHIP ..... COUNTY RAMSEY
BRIDGE NO. 62032

Area No. 90 Job No. 911 | State Proj. No. 6214-62032 (T.H. 49-126) | Sheet No. 33 of 39 Sheets


Fed. Proj. No.
EXIST. ABUTMENTS, WING WALLS AND RETAINING WALLS.
SKEW 73°-57'-58.3"
CONTROL POINT 2
T.H. 49 S.B. P.O.T. 179+24.23 = SOO LINE P.O.T. 227+26.33
CONTROL POINT 1
T.H. 49 N.B. P.O.T. 178+61.72 = SOO LINE P.O.T. 226+61.17
℄ 500 LINE TRACK
PROP. ℄ BRIDGE & ℄ TRACK
℄ BRG. S. ABUT.
STA. 225+51.34
EL. 926.60 (T/R)
℄ BRG PIER
STA. 226+93.75
EL. 927.03 (T/R)
℄ BRG. N. ABUT.
STA. 228+36.16
EL. 927.45 (T/R)
REF. LINE T.H. 49 S.B.
REF. LINE T.H. 49 N.B.
BOR. NO. 7
BOR. NO. 8
BOR. NO. 9
BORING NO. T13
* SEE SHEET 39 FOR BORING NO. T13
BORING IS PLOTTED ON SH. 39
0.000 %
0.300 %
0.000 %
END OF BORING EL. 798.6
BORINGS SHOWN TAKEN WITH
STD. 140 LB HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER
BRIDGE SURVEY PLAN AND PROFILE
State Proj. No. 6214-62032
Sheet No. 34 of 39 Sheets
APPROVED: 6-13-86
Bridge No.
62032

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO 7
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 904.6')	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
	FILL, MIXTURE OF SILTY SAND AND SAND, brown and dark brown	FILL	3		1	SB				
			5		2	SB				
6			5		3	SB				
	SAND, fine grained, light brown to brown, moist to 18' then waterbearing, medium dense to loose to medium dense, a few lenses of silty sand (SP)	COARSE ALLUVIUM	10		4	SB				
			7		5	SB				
			13		6	SB				
			9		7	SB				
			6	▼	8	SB				
			9		9	SB				
24	LEAN CLAY, gray, soft, a few lenses of silt (CL)	FINE ALLUVIUM	4		10	SB	27	97*	31 49	
29	LEAN CLAY, brown mottled, rather stiff (CL)									
30	Continued on next page									

*Estimated dry density

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO 7 (con't)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
30	LEAN CLAY (con't) (CL)	FINE ALLUVIUM (con't)	9		11	SB				
33	SAND W/SILT, fine grained, gray, waterbearing, medium dense (SP-SM)	COARSE ALLUVIUM	9		12	SB				
39	LEAN CLAY, gray, stiff to medium to rather stiff, lenses and layers of waterbearing sand, a few lenses of silt and silty sand (CL)	FINE ALLUVIUM	11		13	SB				
			18		14	SB				
			15		15	SB				
			8		16	SB	35	86		
60	Continued on next page									

*Estimated dry density

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO 7 (con't)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
60	LEAN CLAY (con't) (CL)	FINE ALLUVIUM (con't)	10		17	SB	NSR			
			10		18	SB				
69	SAND W/SILT, fine to medium grained, gray, waterbearing, very dense (SP-SM)	COARSE ALLUVIUM	46		19	SB				
74	SANDY LEAN CLAY W/A LITTLE GRAVEL, gray, stiff to rather stiff to stiff, some lenses of waterbearing sand (CL/SC)	TILL	16		20	SB				
			15		21	SB				
			14		22	SB	15	19*	27 44	
90	Continued on next page									

*Estimated dry density

TITLE: TEST BORING LOGS

DES: S.E.C. DET: S.E.C. APPROVED: 6-13-86
CHK: BJH

Sheet No. 35 of 39 Sheets

Bridge No. 62032

LOG OF TEST BORING

JOB NO 120-12463 VERTICAL SCALE 1" = 4' BORING NO 7 (con't)

PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	LAB TESTS D	LAB TESTS LL PL	LAB TESTS Qu
90	SANDY LEAN CLAY W/A LITTLE GRAVEL (con't) (CL-SC)	TILL (con't)	16		23	SB				
94	SANDY LEAN CLAY W/A LITTLE GRAVEL, gray and brown mottled, very stiff to stiff, some lenses of silty sand and waterbearing sand (CL/SC)		33		24	SB				
100	SAND W/SILT AND A LITTLE GRAVEL, medium grained, brown, waterbearing, dense to very dense (SP-SM)	COARSE ALLUVIUM	22		25	SB				
106	End of Boring		75		26	SB				

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLED DEPTHS	WATER LEVEL
11-7	3:10	21'	19½'		to	19'
11-8	2:00	106'	19½'		to	NMR
11-8	2:45	106'	None		to	NMR
					to	

START 11-7-84 COMPLETE 11-8-84

METHOD HSA 0' - 19½' @ 2:00
DM 19½' -104½'

CREW CHIEF Kulhanek

TITLE: TEST BORING LOGS

DES: S.E.C. DR: S.E.C. APPROVED: 6-13-86
CHK: AR CHK: BH

Sheet No. 36 of 39 Sheets

Bridge No. 62032

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 8
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 905.2')	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	LAB TESTS D	LAB TESTS LL / PL	LAB TESTS Qu
	FILL, MIXTURE OF SAND AND SILTY SAND, brown and dark brown	FILL	3		1	SB				
2	SAND W/SILT, fine grained, brown, moist, loose to medium dense, lenses of silty sand (SP-SM)	COARSE ALLUVIUM	8		2	SB				
			10		3	SB				
7	SAND, fine grained, light brown, moist to 17½' then waterbearing, loose to medium dense to loose, a few lenses of silty sand (SP)		8		4	SB				
			13		5	SB				
			12		6	SB				
			10		7	SB				MA
			8	▼	8	SB				
			6		9	SB	NSR			
24	LEAN CLAY, brown mottled, medium to rather stiff, layers of waterbearing sand, a few lenses of silty clay and silt (CL)	FINE ALLUVIUM	5		10	SB	24	*101		
30	Continued on next page									

*Estimated dry density

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 8 (cont)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	LAB TESTS D	LAB TESTS LL / PL	LAB TESTS Qu
30	LEAN CLAY (cont) (CL)	FINE ALLUVIUM (cont)	20		11	SB				
34	LEAN CLAY, gray, medium to stiff to rather stiff, lenses and layers of silty sand and waterbearing sand, a few lenses of silt and silty clay (CL)		8		12	SB	NSR			
			14		13	SB				
			10		14	SB	27	*97		
			18		15	SB				
			15		16	SB				
60	Continued on next page									

*Estimated dry density

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 8 (cont)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	LAB TESTS D	LAB TESTS LL / PL	LAB TESTS Qu
60	LEAN CLAY (cont) (CL)	FINE ALLUVIUM (cont)	15		17	SB				
69	SANDY LEAN CLAY W/A LITTLE GRAVEL, gray, rather stiff to stiff (CL/SC)	TILL	9		18	SB				
			12		19	SB				
			16		20	SB				
81	End of Boring		16		21	SB				

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTH	WATER LEVEL
11-6	9:00	21'	19½'		to	17½'
11-7	12:15	81'	19½'		to	NMR
11-7	1:40	81'	None		to	NMR
					to	

START 11-6-84 COMPLETE 11-7-84
METHOD HSA 0-19½' 12-15
DM 19½' - 79½'
CREW CHIEF Kulhanek

TITLE: TEST BORING LOGS
DES: S.E.C. DR: S.E.C. APPROVED: 6-13-86
CHK: G.R CHK: BJH
Sheet No. 37 of 39 Sheets
Bridge No. 62032

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 9
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 917.4)	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
1	SILTY SAND, fine grained, dark brown, moist, very loose (SM)	TOPSOIL	3		1	SB				
	SAND W/SILT, brown, moist, very loose (SP-SM)	COARSE ALLUVIUM	4		2	SB				
			7		3	SB				
4	SAND W/SILT, fine grained, light brown, moist, loose (SP-SM)		8		4	SB				
			5		5	SB				
			8		6	SB				
15	SAND, fine grained, light brown, moist to 29' then waterbearing, medium dense to loose (SP)		11		7	SB				
			11		8	SB				
			9		9	SB				
			9		10	SB				
			11	▼	11	SB				
30	Continued on next page									

SOIL EXPLORATION ST PAUL, MN 55114

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 9 (con't)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
30	SAND (con't) (SP)	COARSE ALLUVIUM (con't)	5		12	SB				
34	LEAN CLAY, grayish brown, rather stiff, lenses of silty sand (CL)	FINE ALLUVIUM	9		13	SB				
39	SILTY SAND, fine grained, gray, waterbearing, dense, a few lenses of lean clay (SM/SP)	COARSE ALLUVIUM	19		14	SB				MA
44	LEAN CLAY, grayish brown, stiff, lenses of waterbearing sand (CL)	FINE ALLUVIUM	17		15	SB				
49	LEAN CLAY, gray, medium to stiff to rather stiff, lenses and layers of silty sand and waterbearing sand (CL)		9		16	SB	27	* 97		
			18		17	SB				
60	Continued on next page									

*Estimated dry density

SOIL EXPLORATION ST PAUL, MN 55114

SE-3 (77-8)-4

LOG OF TEST BORING

JOB NO. 120-12463 VERTICAL SCALE 1" = 4' BORING NO. 9 (con't)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL PI	Qu
60	LEAN CLAY (con't) (CL)	FINE ALLUVIUM	10		18	SB				
63	SILTY SAND, fine grained, gray, waterbearing, very dense (SM/SP)	COARSE ALLUVIUM	31		19	SB				
68	LEAN CLAY, gray, rather stiff, some lenses of silt, silty sand and waterbearing sand (CL)	FINE ALLUVIUM	10		20	SB				
			12		21	SB				
80	FAT CLAY, gray, rather stiff, a few lenses of silt (CH)		9		22	SB	39	* 82	99 33	
83½	SILT, gray, wet, dense, a few lenses of lean clay (ML)		27		23	SB				
88½	SAND W/SILT AND A LITTLE (See #1) (SP-SM)	COARSE ALLUVIUM								
90	Continued on next page									

#1 - GRAVEL, medium grained, gray, waterbearing, very dense (SP-SM)

*Estimated dry density

SOIL EXPLORATION ST PAUL, MN 55114

SE-3 (77-8)-4

TITLE	DES: S.E.C.	DR: S.E.C.	APPROVED:	Bridge No.
TEST BORING LOGS	CHK: G.M.P.	CHK: B.H.	6-13-86	62032
	Sheet No. 38 of 39 Sheets			

LOG OF TEST BORING

JOB NO 120-12463 VERTICAL SCALE 1" = 4' BORING NO 9 (con't)
PROJECT PROPOSED BRIDGE & ROADWAY IMPROVEMENTS, RICE STREET, LITTLE CANADA, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE NO	SAMPLE TYPE	LAB TESTS W	D	LL / PL	Qu
90	SAND W/SILT AND A LITTLE GRAVEL (con't (SP-SM)	COARSE ALLUVIUM (con't)	31		24	SB				
94	SILTY SAND W/A LITTLE GRAVEL, (See #1 (SM)									
95½	SANDY LEAN CLAY W/A LITTLE GRAVEL, gray, stiff (CL)	TILL	23		25	SB				
					26	SB				
101	End of Boring		27		27	SB	WSR			
	#1 - gray, wet, dense, a few lenses of waterbearing sand (SM)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTH	WATER LEVEL
11-6	8:45	31'	29½'		to	29'
11-6	12:40	101'	29½'		to	NMR
11-6	2:50	101'	None		to	NMR
					to	

START 11-5-84 COMPLETE 11-6-84
METHOD HSA 0' - 29½' @ 12:40
DM 29½' - 99½'
CREW CHIEF Kulhanek

SOIL EXPLORATION COMPANY — ST PAUL, MN 55114

EL. 908.70

900	16	SI. ORG. LFS, BMM - LT. BMM DAMP TO 4'
	8	
	18	FS W/ pl. FSL SEAMS
	16	@ 6' ; 6.5' & 18.5'
	17	RED BMM (MOIST TO 10',
890	18	DAMP TO 12.5' MOIST
	19	TO 20.5' ; SAT. TO 26'
	15	lt BMM W/ GR.-BMM 10' TO 26'
	15	
880	12	VARVED FS, LFS & SIPI. FSL; LT. BMM & BMM TO 28'
	11	LT. GR & GR. TO 30.3' ; WET
	5	SICL W/ 3 SEAMS 82'-84' ; GR-BMM-GR MOIST
870	6	S ; BMM W/ 10S ; SAT.
		VERVED ; pl. SIL & FS; GR & GR-BMM; WET
	3	SICL; GR; MOIST FS; BMM; SAT.
		SICL; GR; MOIST FS; BMM; SAT.
860	14	SICL; GR; MOIST FS; BMM; SAT.
	16	FS W/ SICL SEAMS @ 27' W/ 3" SICL LAYER @ 57.5'; BMM W/ GR-BMM ; WET
	28	
850		
	20	
840	18	SICL ; GR. MOIST
	54	
		FS; BMM ; WET
830	53	S ; BMM ; MOIST
	33	
	36	CLT ; DK. GR. MOIST TO 91', DAMP TO 101.5'
820	28	
	24	
810	22	SIPI. SLT ; BMM ; MOIST
	75/8	S & G ; BMM TO 111.5' ; LT BMM ; WET
800	75	
	100	
790	75	END OF BORING EL. 789.20

BORING NO. T13

TITLE	DES: S.E.C.	DET: S.E.C.	APPROVED:	Bridge No.
TEST BORING LOGS	CHK: B.R.	CHK: B.H.	6-15-86	62032
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