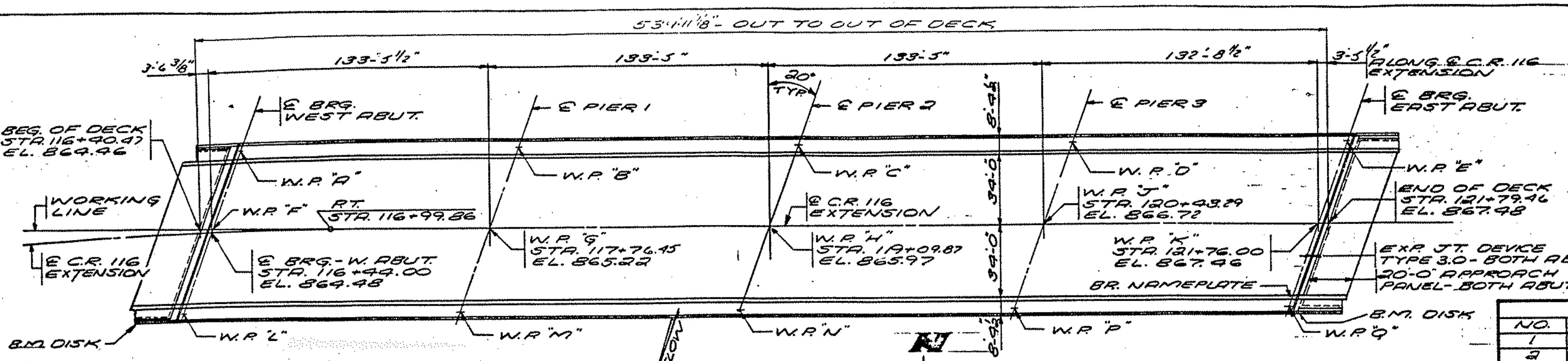
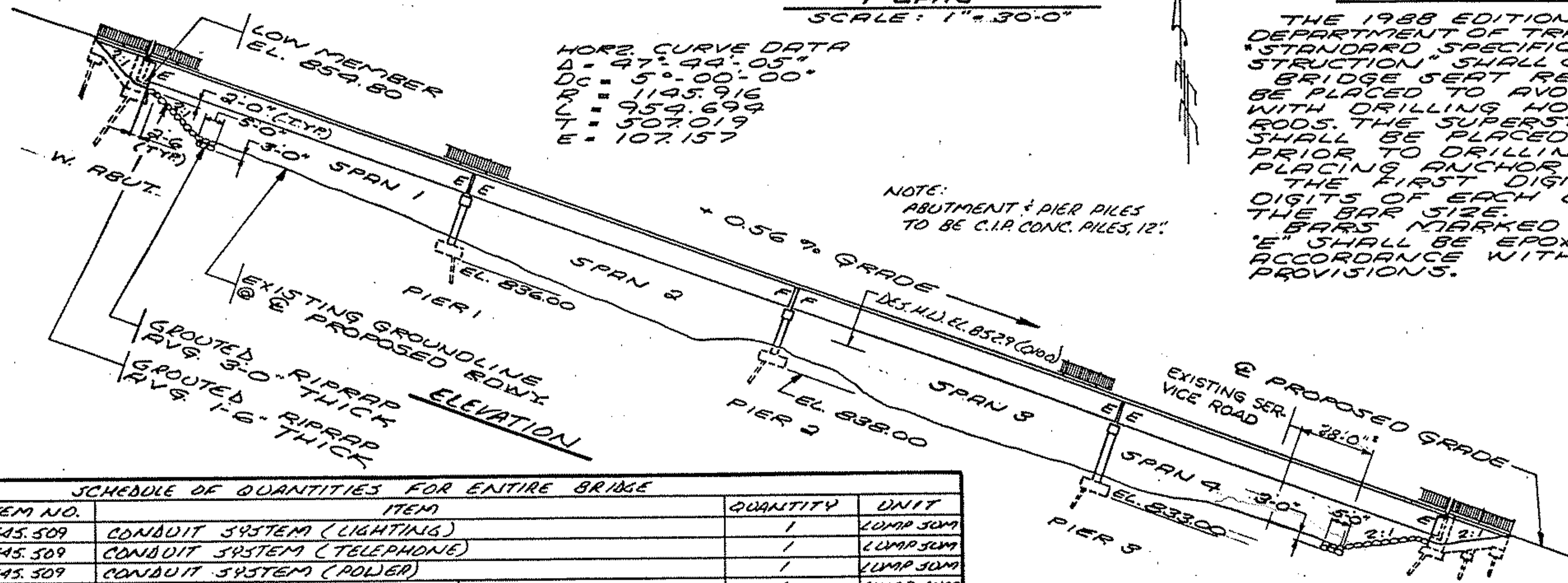


PLAN
SCALE: 1" = 30'-0"

HORZ. CURVE DATA
Δ = 47°-44'-05"
Dc = 5°-00'-00"
R = 1145.916
L = 954.694
T = 507.019
E = 107.157

NOTE:
ABUTMENT & PIER PILES TO BE C.I.P. CONC. PILES, 12".



ELEVATION

CONSTRUCTION NOTES

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATES THE BAR SIZE.

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

DESIGN DATA

1983 A.A.S.H.T.O. DESIGN SPECIFICATIONS LOAD FACTOR DESIGN METHOD.
HS25 LOADING INCLUDES 17 P.S.F. D.L. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.
REINFORCED CONCRETE:
f'c = 4000 P.S.I. n = 8
fy = 60000 P.S.I. REINFORCEMENT
STRUCTURAL STEEL:
fy = 36000 P.S.I. SPEC. 3306
fy = 50000 P.S.I. SPEC. 3309
PRESTRESSED CONCRETE:
f'c = 6000 P.S.I. n = 6 LOW RELAX.
f's = 270000 P.S.I. 270 K STRANDS
DECK AREA = 45,638 SQ. FT.
PROJECTED A.D.T. FOR 2009 = 19,150

B.M. EL. 873.23
S.E. CORNER SIDEWALK AT S.E. CORNER OF ICE ARENA.

LIST OF SHEETS

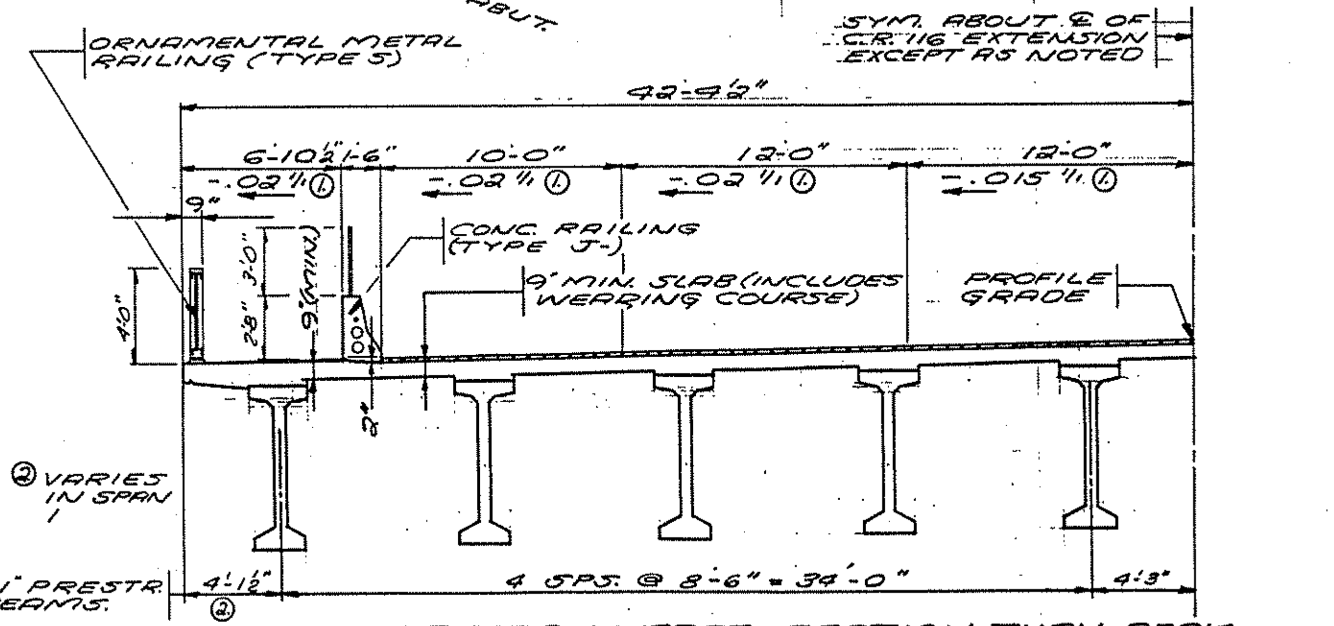
APPROVED: Paul K. [signature]
COUNTY ENGINEER
ANOKA COUNTY
DATE: 9/29/89

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION & THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Robert R. Tomczak
REG. NO. 6929
DATE:

① SLOPE WILL VARY FROM BEGINNING OF BRIDGE TO STA. 119+42.86 BECAUSE OF SUPERELEVATION TRANSITION FOR HORZ. CURVE. SEE SHT. 2 FOR SUPERELEVATION CHARTS.

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	QUANTITY	UNIT
2545.509	CONDUIT SYSTEM (LIGHTING)	1	LUMP SUM
2545.509	CONDUIT SYSTEM (TELEPHONE)	1	LUMP SUM
2545.509	CONDUIT SYSTEM (POWER)	1	LUMP SUM
2545.509	CONDUIT SYSTEM (WATERMAIN)	1	LUMP SUM
2545.509	CONDUIT SYSTEM (GAS MAIN)	1	LUMP SUM
2401.501	STRUCTURE CONCRETE (1A43)	679 (P)	CU. YD.
2401.501	STRUCTURE CONCRETE (3Y43)	753 (P)	CU. YD.
2401.512	BRIDGE SLAB CONCRETE (3X36)	45,678 (P)	SQ. FT.
2401.513	TYPE J RAILING CONCRETE (3X46)	1160 (P)	LIN. FT.
2401.515	SIDEWALK CONCRETE (3X46)	372 (P)	SQ. FT.
2404.501	CONCRETE OVERLAY (3U17A)	36,650 (P)	SQ. FT.
2401.541	REINFORCEMENT BARS EPOXY COATED	396,730 (P)	POUND
2401.541	REINFORCEMENT BARS	27,800 (P)	POUND
2402.595	BEARING ASSEMBLY	80	EACH
2405.502	PRESTRESSED CONCRETE BEAMS 81	5326 (P)	LIN. FT.
0901.601	SLOPE PREPARATION	1	LUMP SUM
0401.601	STRUCTURE EXCAVATION	1	LUMP SUM
2402.583	ORNAMENTAL METAL RAILING	1150	LIN. FT.
2557.501	WIRE FENCE, DESIGN 5-1	1160	LIN. FT.
2452.507	C.I.P. CONCRETE PILING, DELIVERED 12"	16,470	LIN. FT.
2452.508	C.I.P. CONCRETE PILING, DRIVEN 12"	16,470	LIN. FT.
2452.519	C.I.P. CONCRETE TEST PILES 65 FT. LG. 12"	4	EACH
2452.519	C.I.P. CONCRETE TEST PILES 80 FT. LG. 12"	6	EACH
2511.507	GROUTED RIPRAP	330	CU. YD.
2402.591	EXPANSION JOINT DEVICES, TYPE 3	182 (P)	LIN. FT.
0301.601	BRIDGE APPROACH PANELS	1	LUMP SUM
2405.511	DIAPHRAGMS FOR TYPE 81 PRESTRESSED BEAMS	1967 (P)	LIN. FT.
2545.509	CONDUIT SYSTEM (FUTURE UTILITIES)	1	LUMP SUM
0401.601	FOUNDATION PREPARATION (PIER 1)	1	LUMP SUM
0401.601	FOUNDATION PREPARATION (PIER 2)	1	LUMP SUM
0401.601	FOUNDATION PREPARATION (PIER 3)	1	LUMP SUM

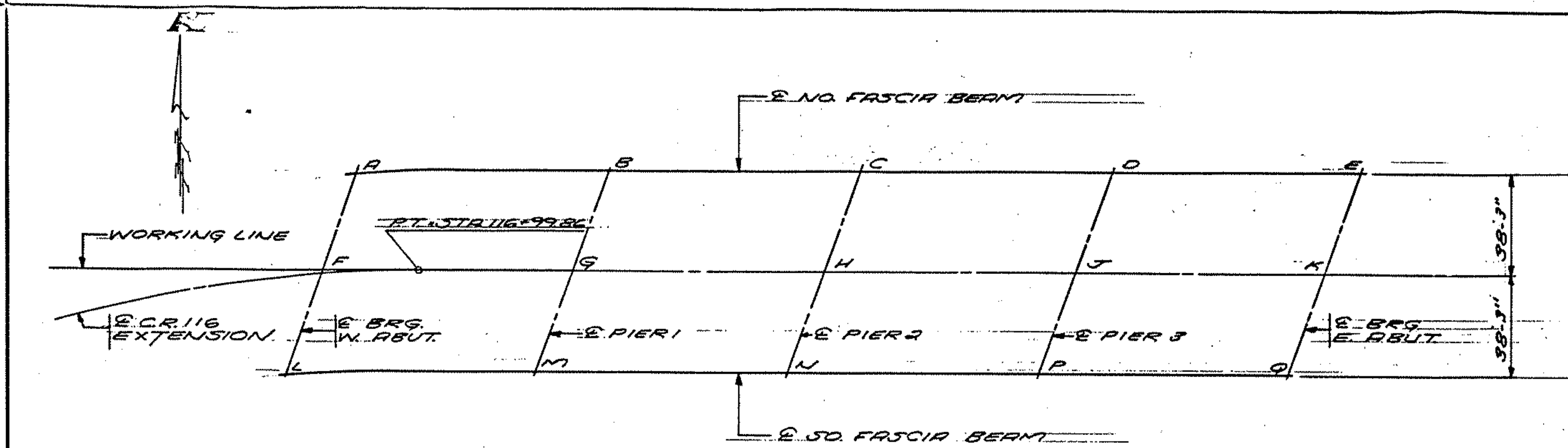


HALF TRANSVERSE SECTION THRU DECK
SCALE: 1/4" = 1'-0"

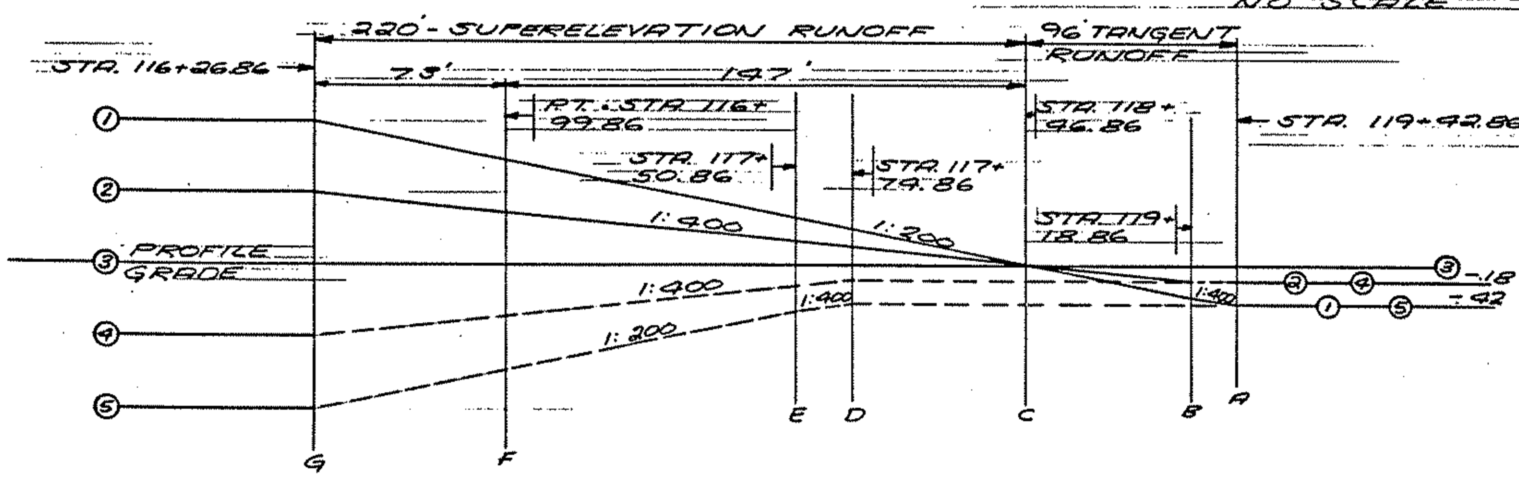
C.R. 116 EXTENSION
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545
C.R. 116 EXTENSION FROM C.R. 47 IN RAMSEY TO C.S.A.H. 7 IN ANOKA OVER THE RUM RIVER.
4-133' PRESTRESSED BEAM SPANS, 48'-0" RDWY., 2-10'-0" SHLDRS., 2-6'-0" SIDEWALKS
20° SKEW
SPAN IDENT. NO. 501
GENERAL PLAN AND ELEVATION
SEC. 25 TWP. 32N R25W
RAMSEY TOWNSHIP
ANOKA COUNTY

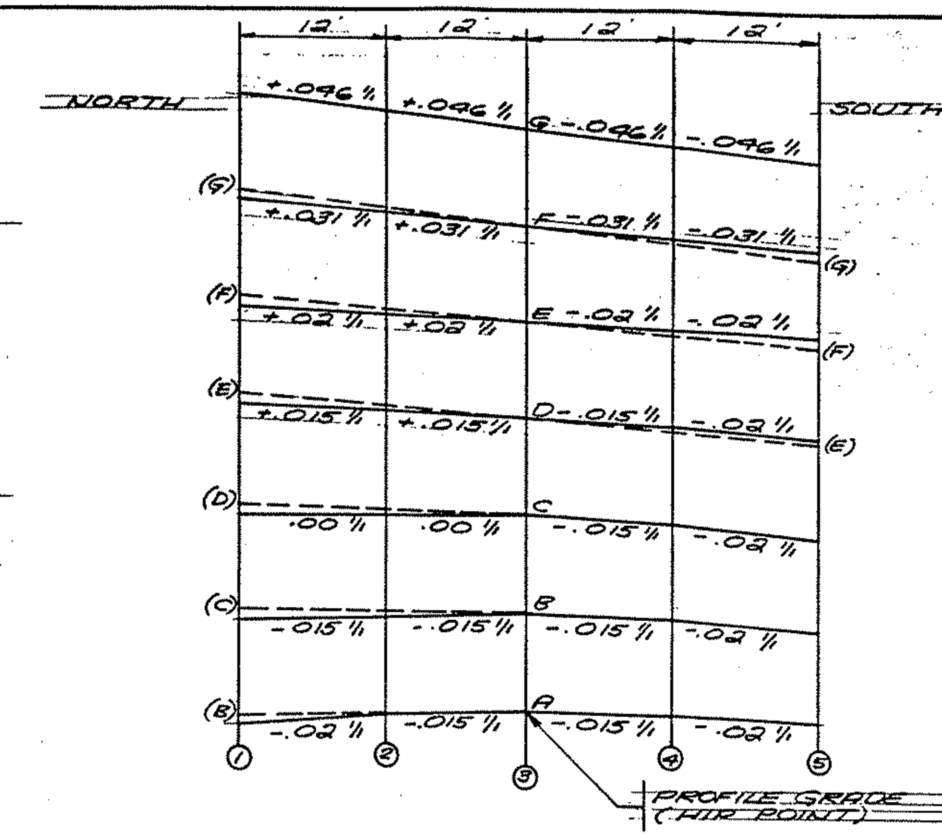
PLANS PREPARED BY: ERICKSON ENGINEERING 3390 REPUBLIC AVE., ST. LOUIS PK., MN. 55426 | C.P. 88-09-116 | SHEET 1A OF 46A SHEETS | 02545 | D.J.V. R.R.T.



BRIDGE LAYOUT SHOWING WORKING POINTS
NO SCALE



SUPERELEVATION CHART



SUPERELEVATION CHART

FULL SUPER = .096'/'
SUPERELEVATION RUNOFF = 220'
TANGENT RUNOFF = 96'

TOP OF SLAB TO BRIDGE SEAT

	W. ABUT.	PIER 1	PIER 2	PIER 3	E. ABUT.
SLAB	9"	9"	9"	9"	9"
STOOL	3"	3"	3"	3"	3"
BEAM	81"	81"	81"	81"	81"
BEARING	10"	6¼"	3¾"	6¼"	10"
TOTAL	8'-7"	8'-3¼"	8'-0¾"	8'-3¼"	8'-7"

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
A	116+59.51						39.92									
B	117+90.37	132.20					150.79									
C	119+23.79	265.62	133.42				281.88									
D	120+57.21			133.42												
E	121+89.92				132.71											
F	116+44.56	39.92														
G	117+76.45	124.08	40.70	152.23												
H	119+09.87	254.48	125.47	40.70				133.42								
J	120+43.29		255.79	125.47	40.70				133.42							
K	121+76.00			255.09	124.79	40.70			266.13	132.71						
L	116+27.32	82.99					43.06									
M	117+62.53	128.96	81.40				124.05	40.70	152.22							
N	118+95.95	249.56	130.38	81.40			259.32		40.70	152.23	282.65		132.42			
P	120+29.37		250.94	130.38	81.40			255.79	125.47	40.70	151.54		266.89	132.42		
Q	121+62.08			250.26	129.80	81.40			255.09	124.79	40.70				132.71	

ELEVATIONS

TOP OF SLAB	SLAB TO BR. ST.	BRIDGE SEAT	POINT
865.84	8.58	857.26	A
865.64	8.27	857.37	B
865.46	8.06	857.40	C
866.12	8.27	857.85	D
866.86	8.58	858.28	E
864.48			F
865.22			G
865.97			H
866.72			J
867.46			K
862.77	8.58	854.19	L
864.50	8.27	856.23	M
865.21	8.06	857.15	N
865.96	8.27	857.69	P
866.70	8.58	858.12	Q

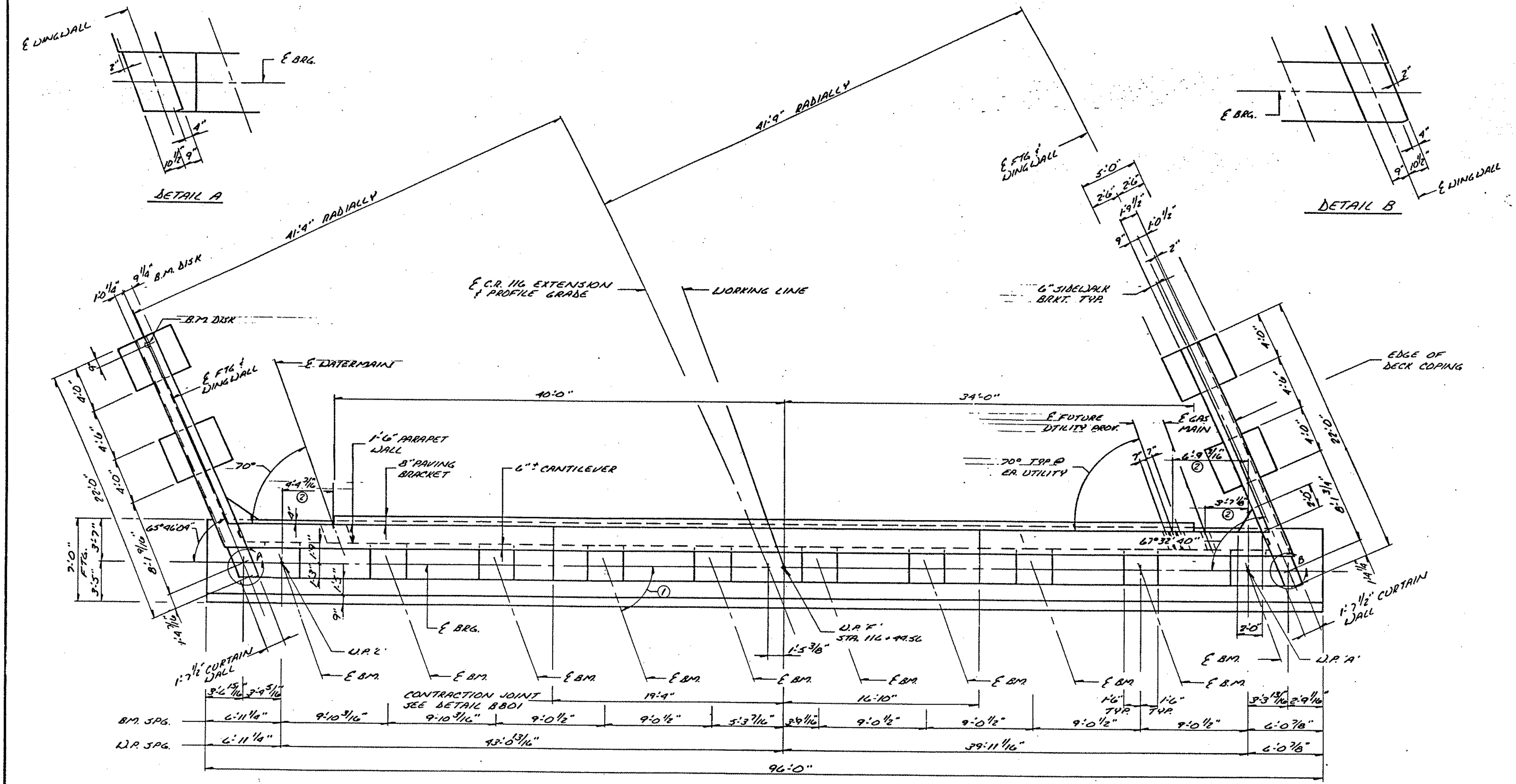
C.P. 88-09-116

BRIDGE LAYOUT

DRAWN: D.J.V. | CHECKED: R.B.T. | APPROVED:

SHEET 2A OF 46A SHEETS

BRIDGE NUMBER 02545



PLAN
NOT TO SCALE

① ANGLES VARY, SEE FRAMING PLAN.

② MEASURED ALONG BACKFACE OF PARAPET WALL, FROM W.PT. TO ℄ SLEEVE.

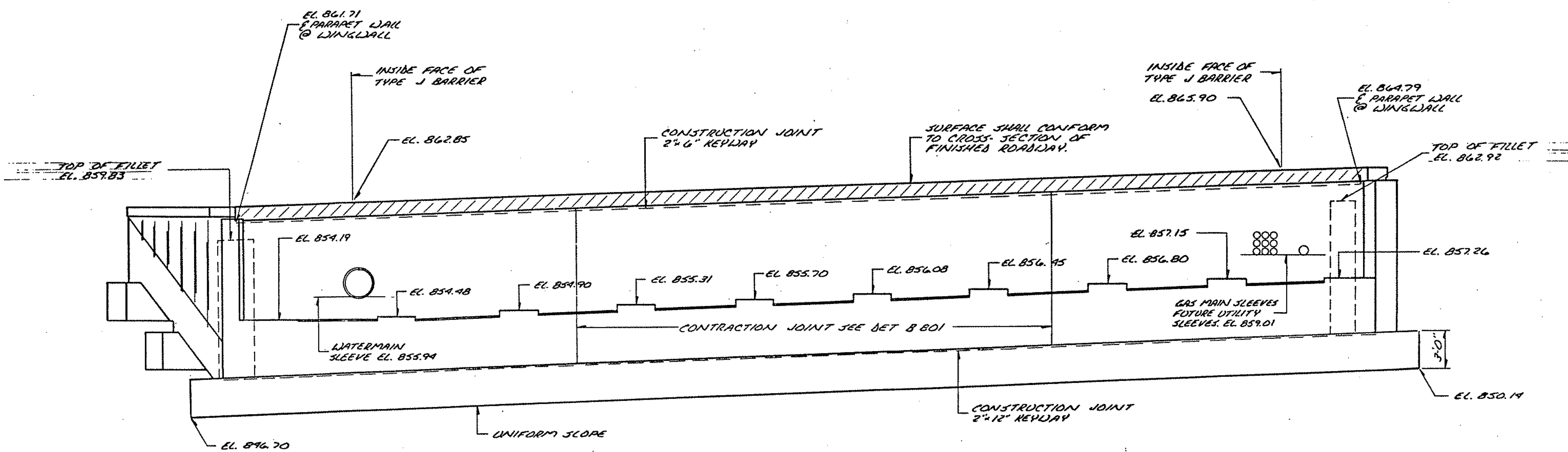
NOTE:
WATERMAIN SLEEVE SHALL BE 26"Ø × 2'-6" LG.
GASMAIN SLEEVE SHALL BE 12"Ø × 2'-2" LG.
9-5"Ø CONDUITS SHALL HAVE A 6"Ø × 2'-2" LG. SLEEVE.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

WEST ABUTMENT DETAILS

SHEET 3A OF 46A SHEETS | C.R. 88-09-116 | 02545 | DM RRT



ELEVATION

MINNESOTA DEPARTMENT
OF TRANSPORTATION

BRIDGE NO. 02545

WEST ABUTMENT
DETAILS

SHEET 4A OF 46A SHEETS
C.A 88-09-116

02545

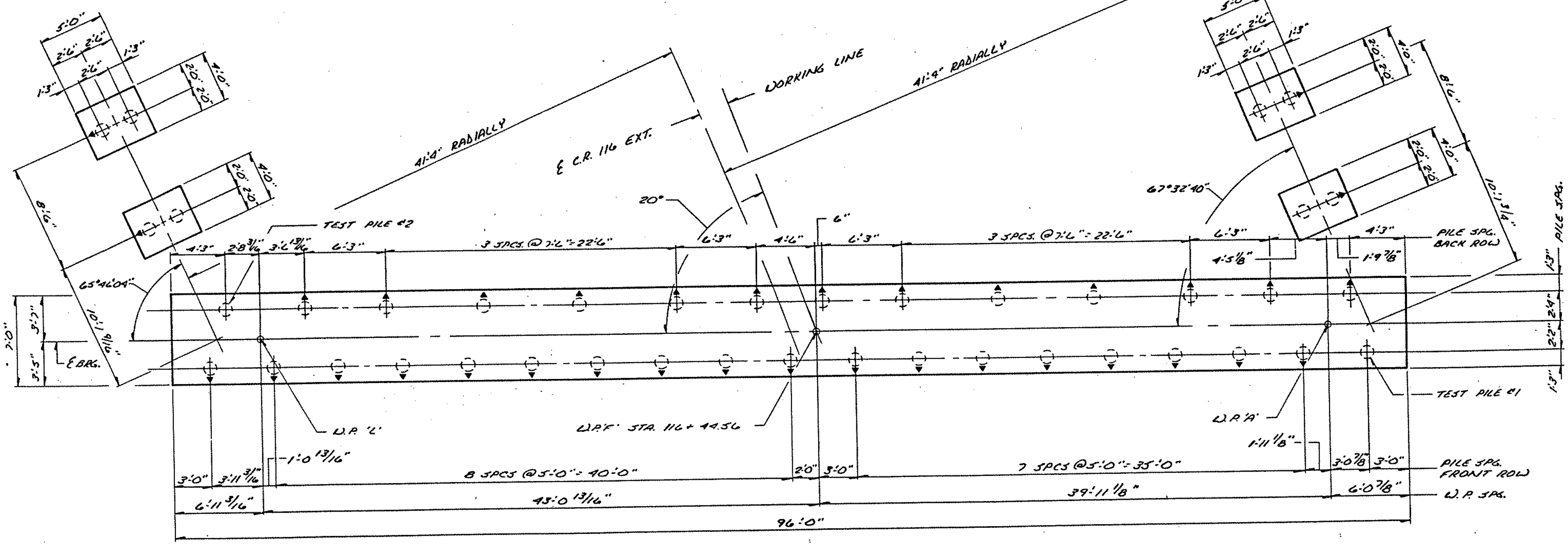
DM
RRT

PILE NOTES

2- CAST IN PLACE CONC. TEST PILES 65' LG.
31- CAST IN PLACE CONC. PILES ~ EST. LENGTH 55' LG.
8- CAST IN PLACE CONC. WINGWALL PILES ~ EST. LENGTH 55' LG.
41- CAST IN PLACE CONC. PILES REQ'D FOR WEST ABUTMENT

ALL PILES TO HAVE A NOMINAL DIAMETER OF 12".
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
PILES SHOWN THUS ○→ TO BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.
FOR PILE SPLICES SEE DETAIL B201.

COMPUTED PILE LOADS TONS PER PILE	
DEAD LOAD + EARTH PRESSURE	38.5
LIVE LOAD	4.9
TOTAL	43.4



FOOTING PLAN
SCALE 1/4" = 1'-0"

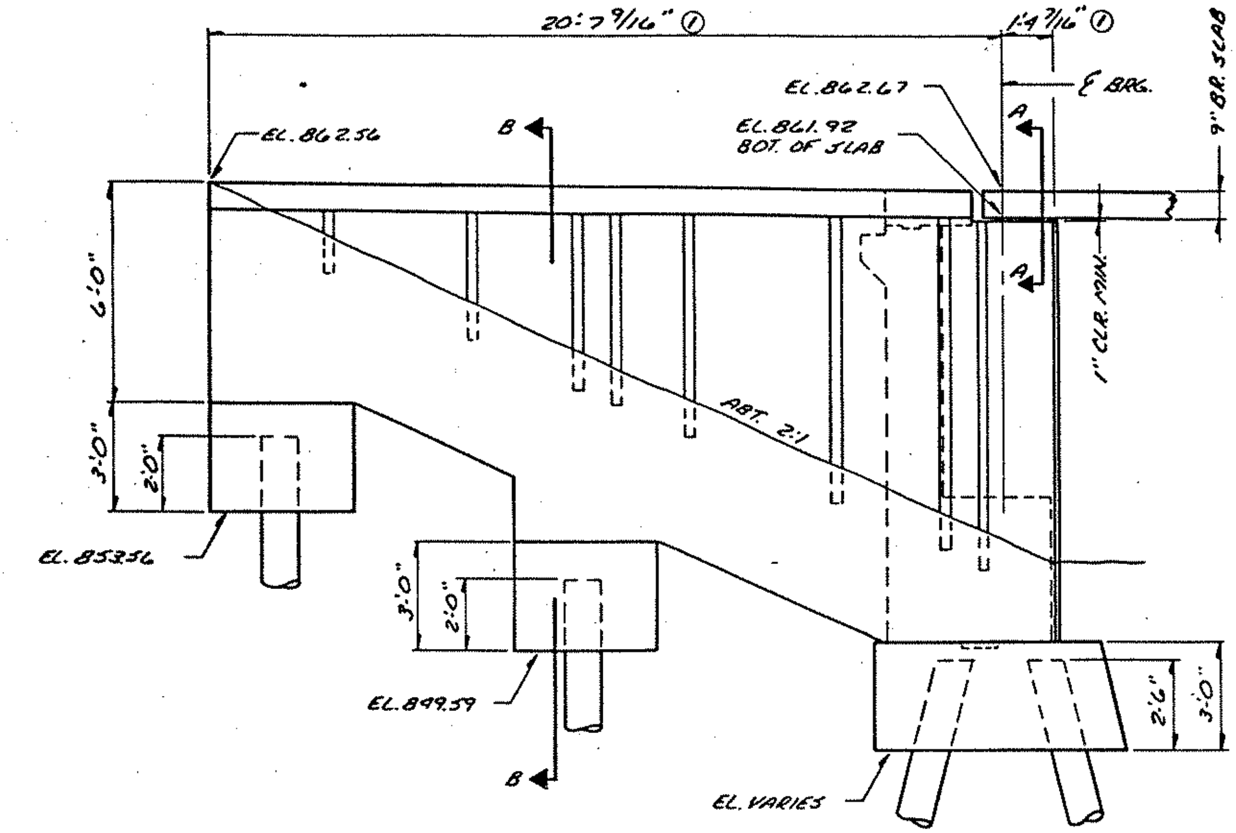
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

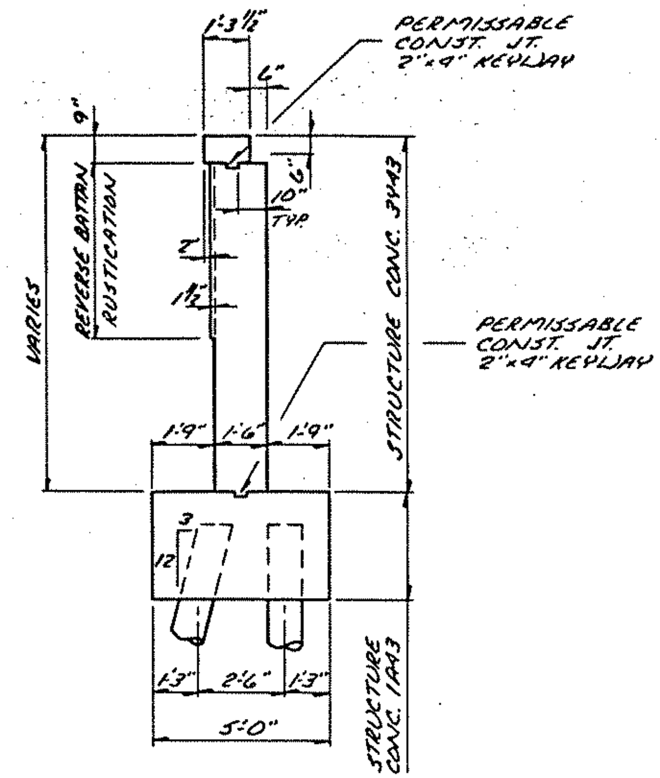
WEST ABUTMENT DETAILS

APPROVED "

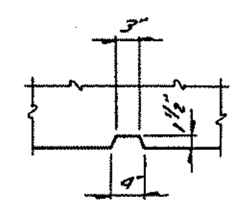
SHEET 5A OF 46A SHEETS | C.P. 88-09-116 | 02545 | DM / ART



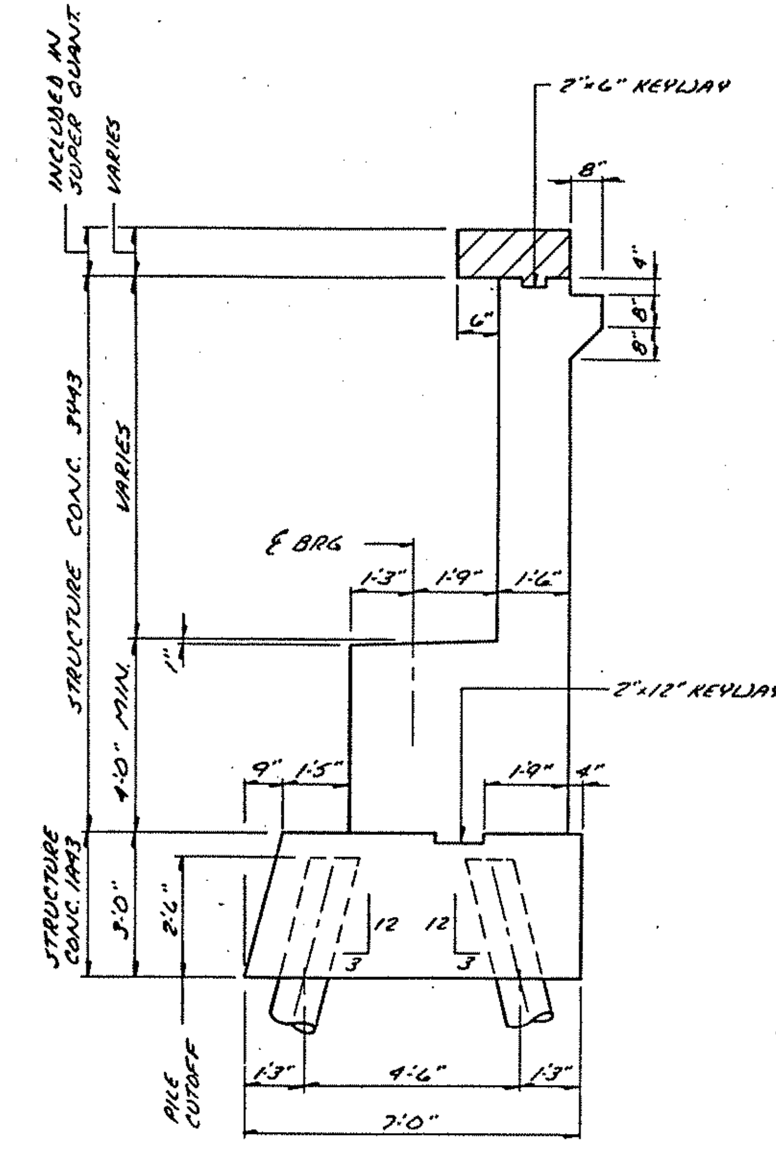
S.W. WINGWALL
SCALE 3/8" : 1'-0"



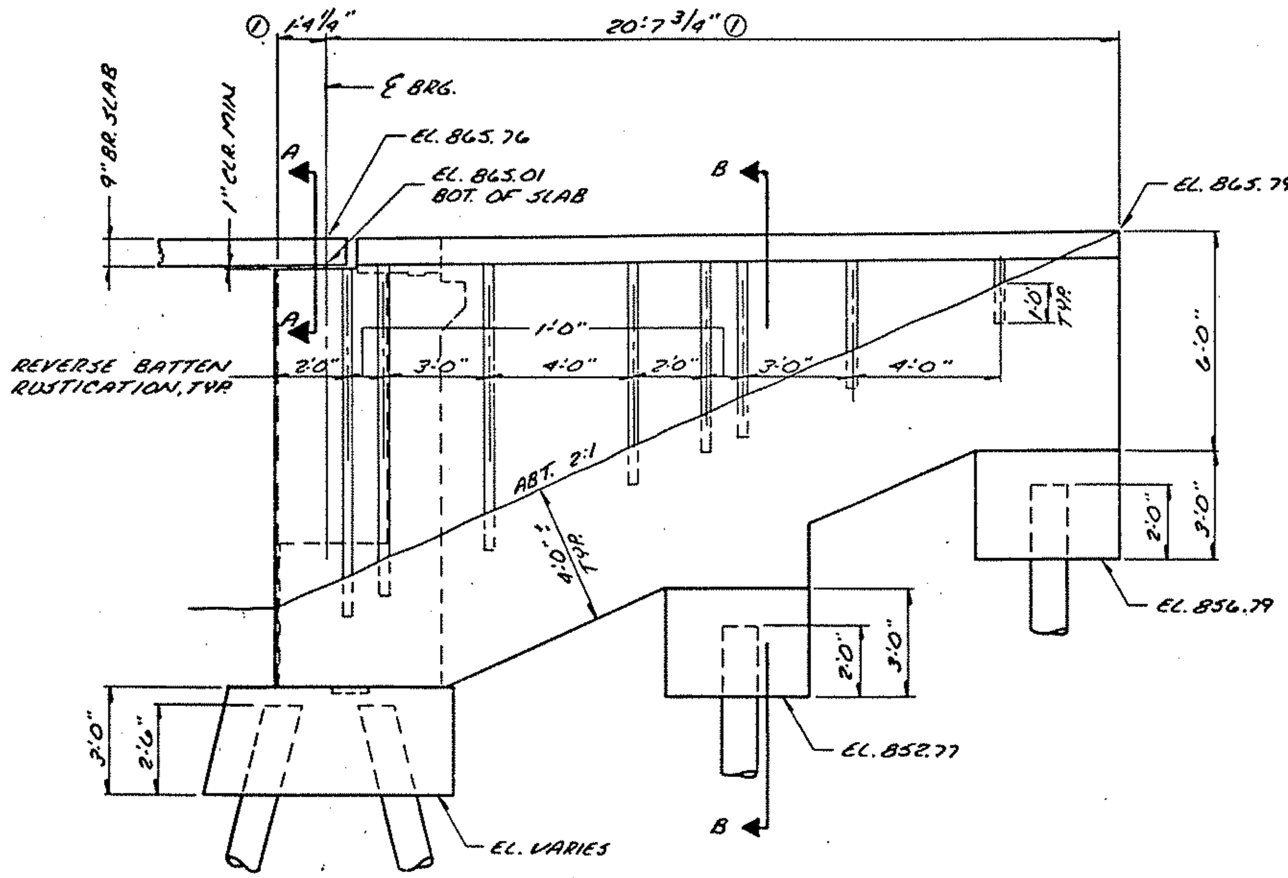
SECTION B-B



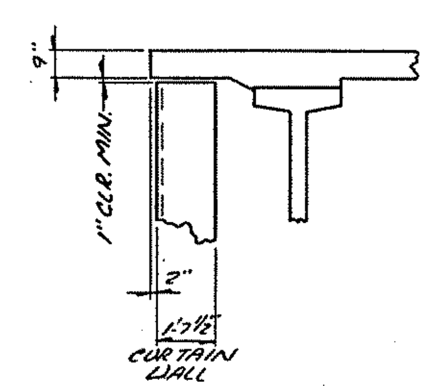
REVERSE BATTAN RUSTICATION DET.



SECTION THRU ABUTMENT



N.W. WINGWALL
SCALE 3/8" : 1'-0"



SECTION A-A

① MEASURED ALONG ℄ WINGWALL.

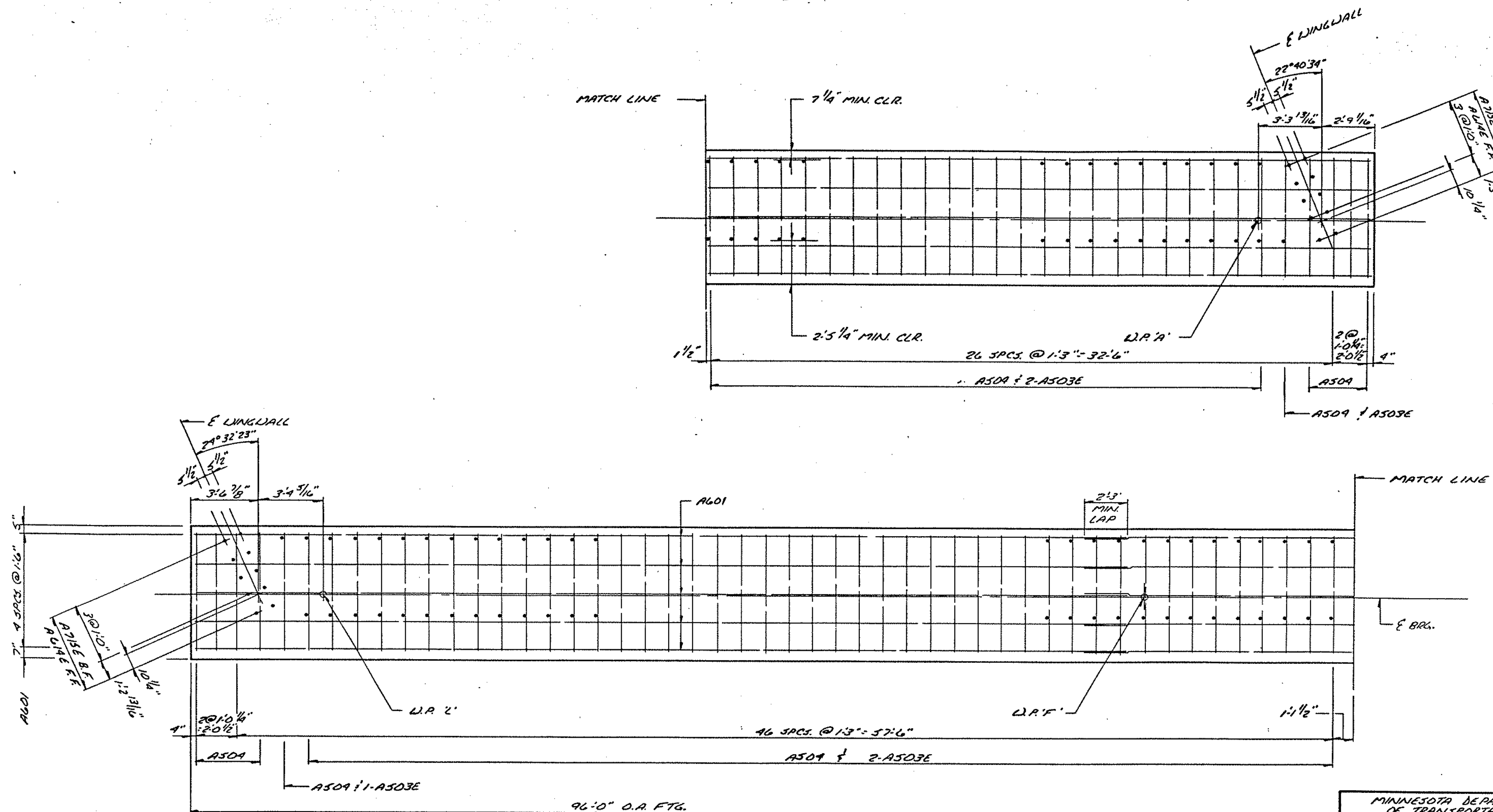
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

WEST ABUTMENT DETAILS

APPROVED

SHEET 6A OF 42 SHEETS	02545	DM
C.P. 88-09-116		RRT



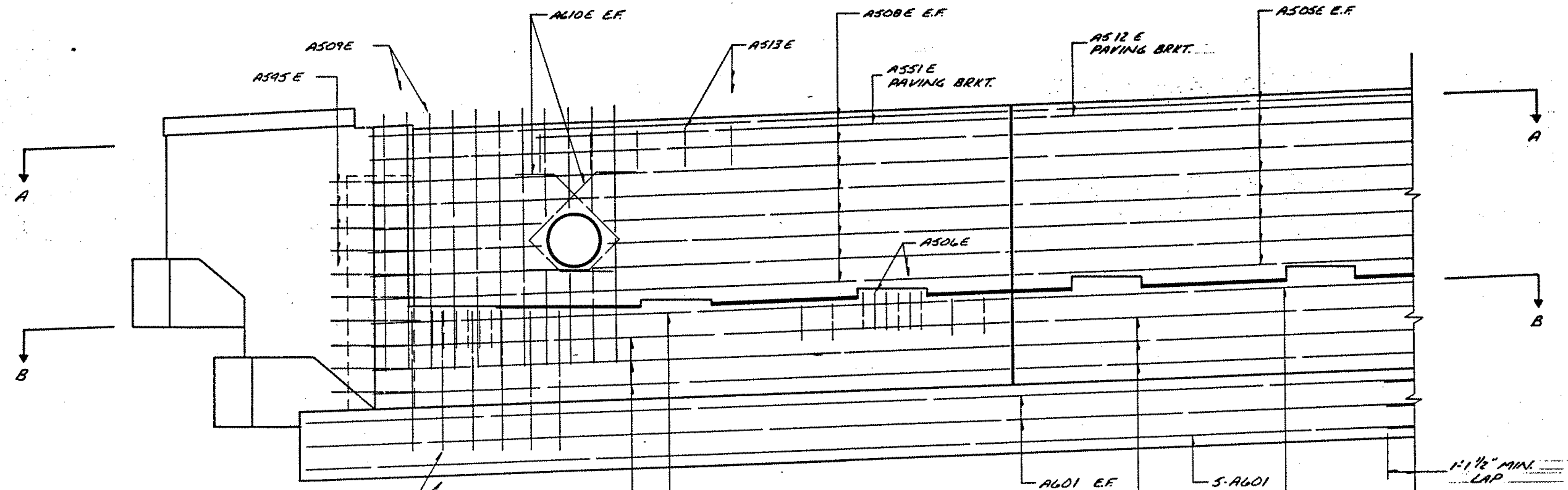
FOOTING PLAN
SCALE 3/8" = 1'-0"

MINNESOTA DEPARTMENT OF TRANSPORTATION

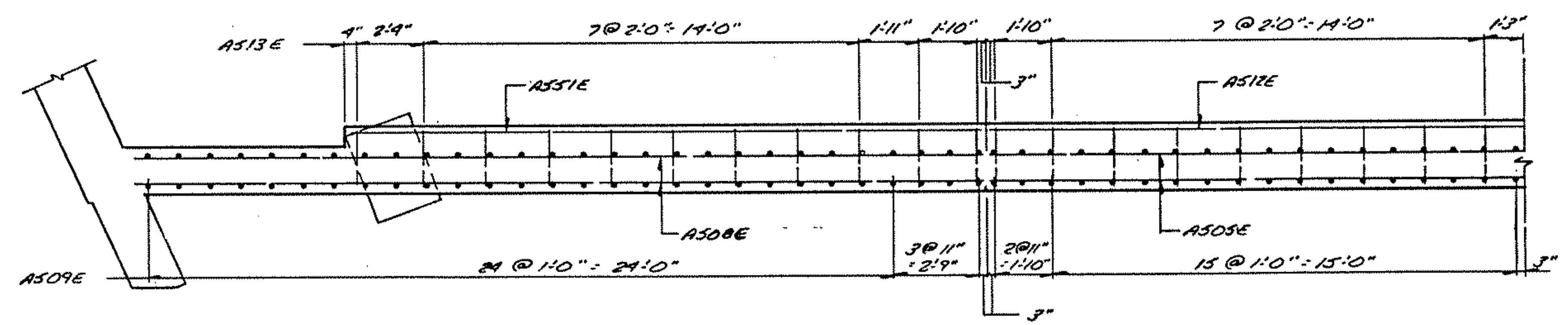
BRIDGE NO. 02545

WEST ABUTMENT REINFORCEMENT

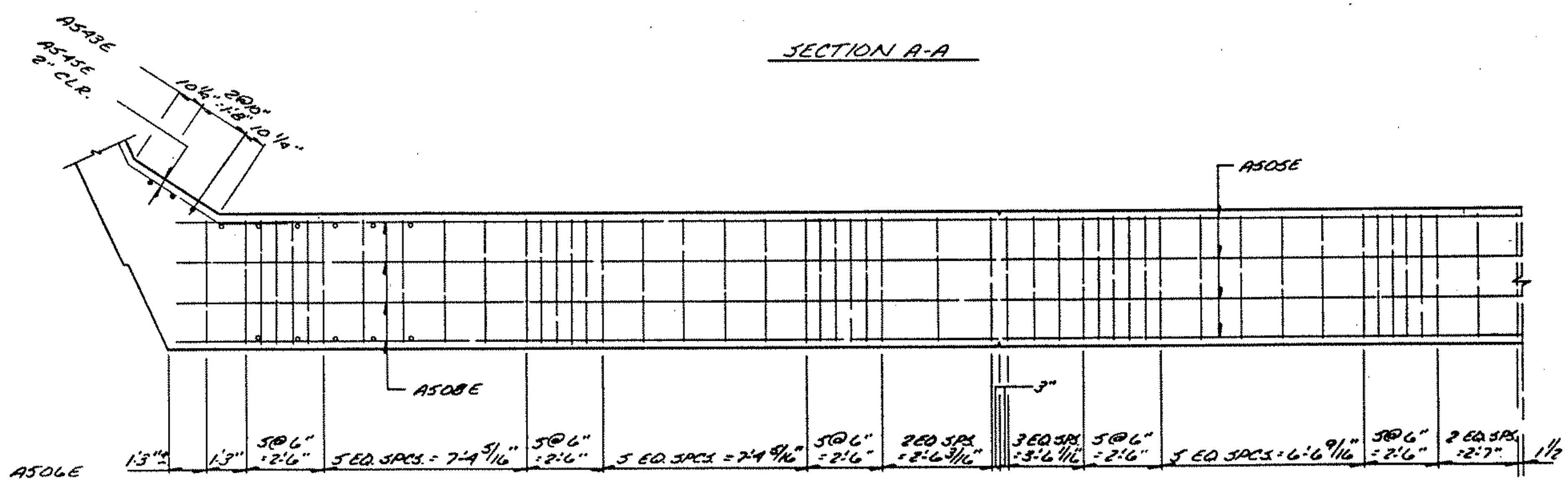
SHEET 7 OF 64 SHEETS	02545	DM
C.P. 88-09-116		RRT



ELEVATION
SCALE 3/8" = 1'-0"

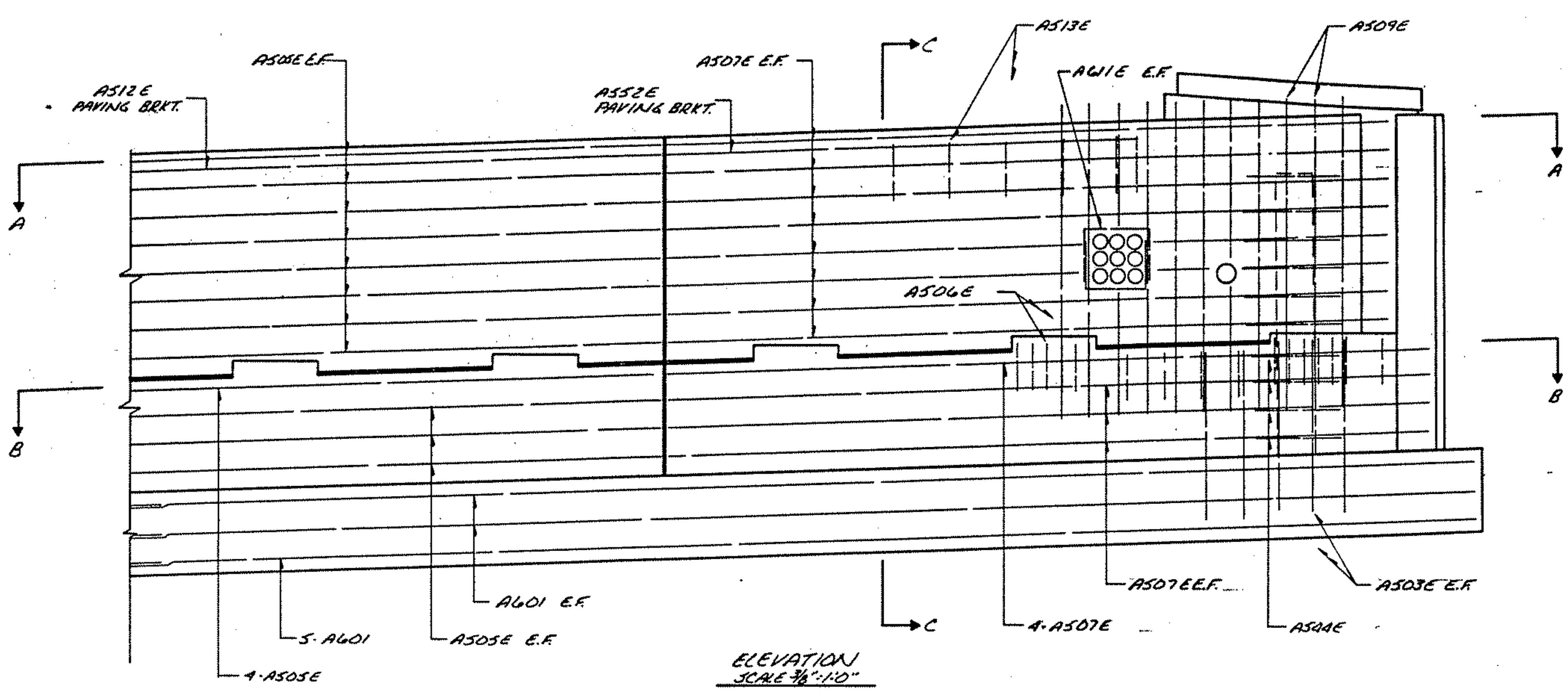


SECTION A-A

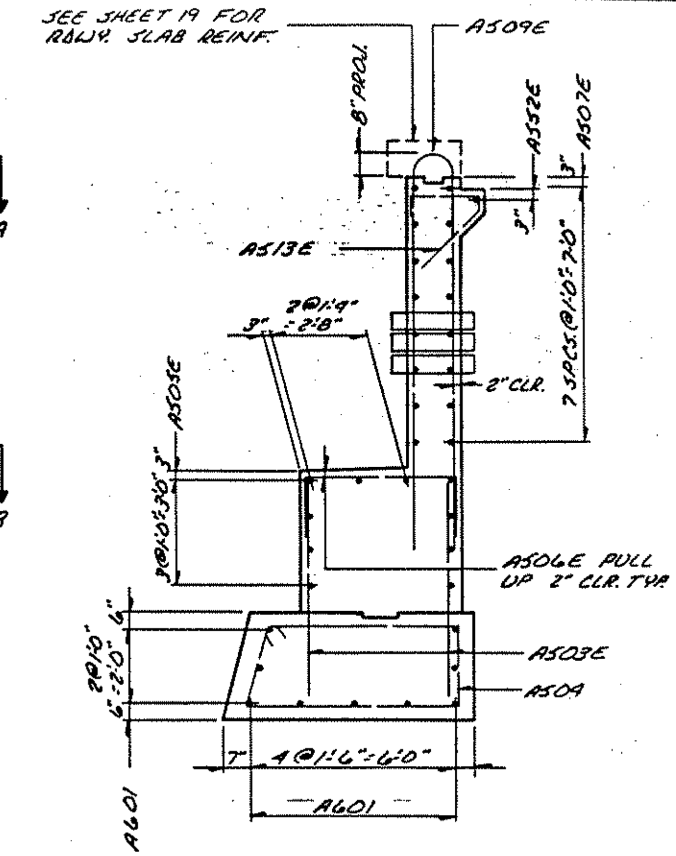


SECTION B-B

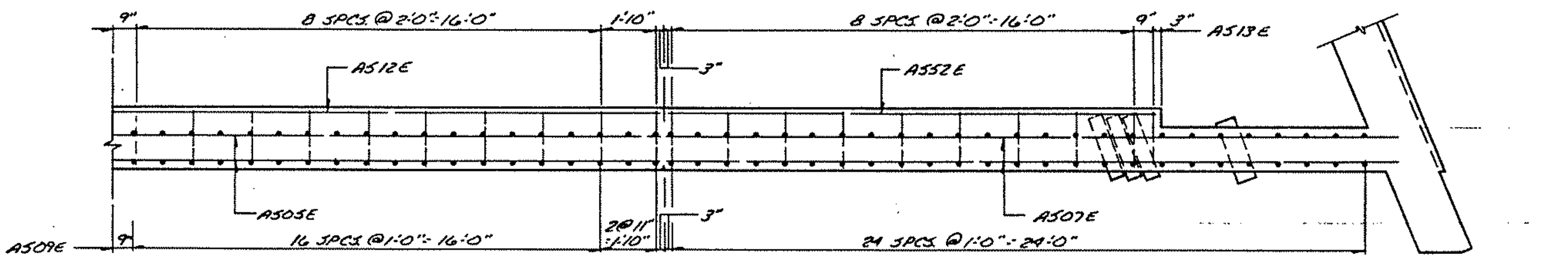
MINNESOTA DEPARTMENT OF TRANSPORTATION	
BRIDGE NO. 02545	
WEST ABUTMENT REINFORCEMENT	
"APPROVED"	
SHEET 8 OF 42 SHEETS — C.P. 88-09-116	02545 — LM / RRT



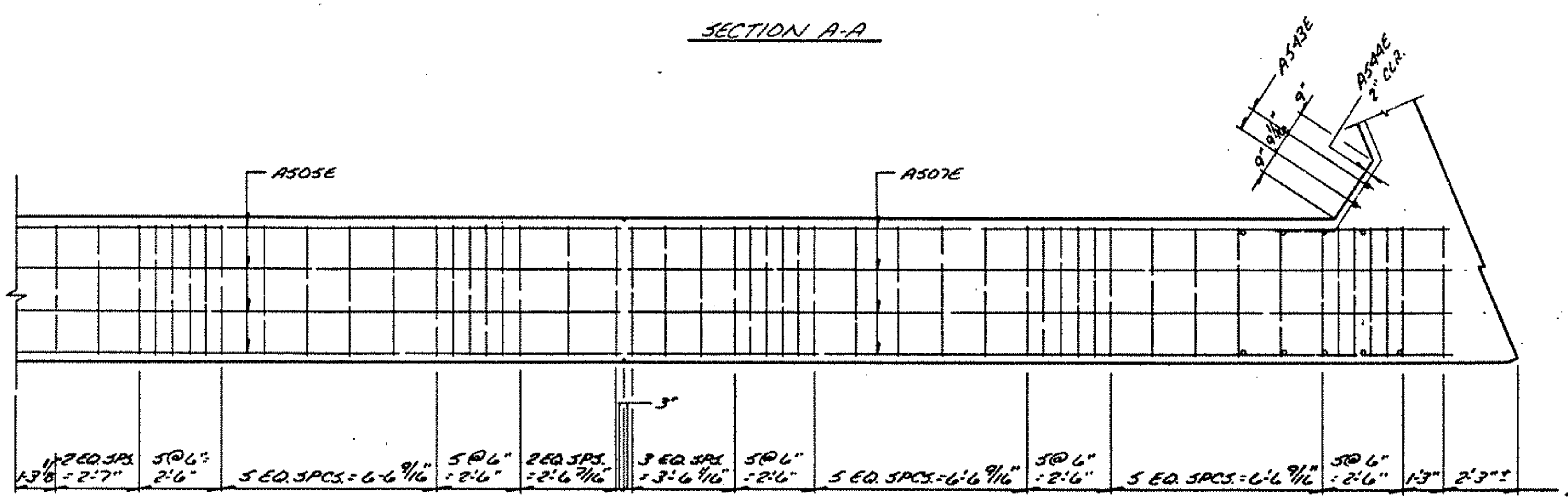
ELEVATION
SCALE 3/16" = 1'-0"



SECTION C-C



SECTION A-A



SECTION B-B

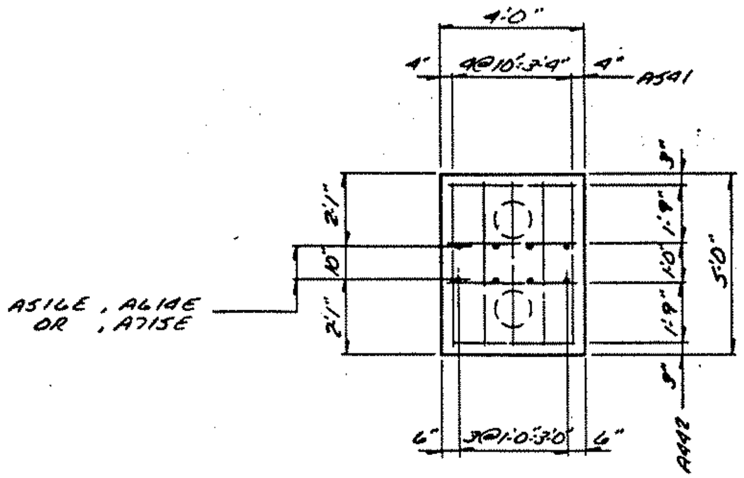
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

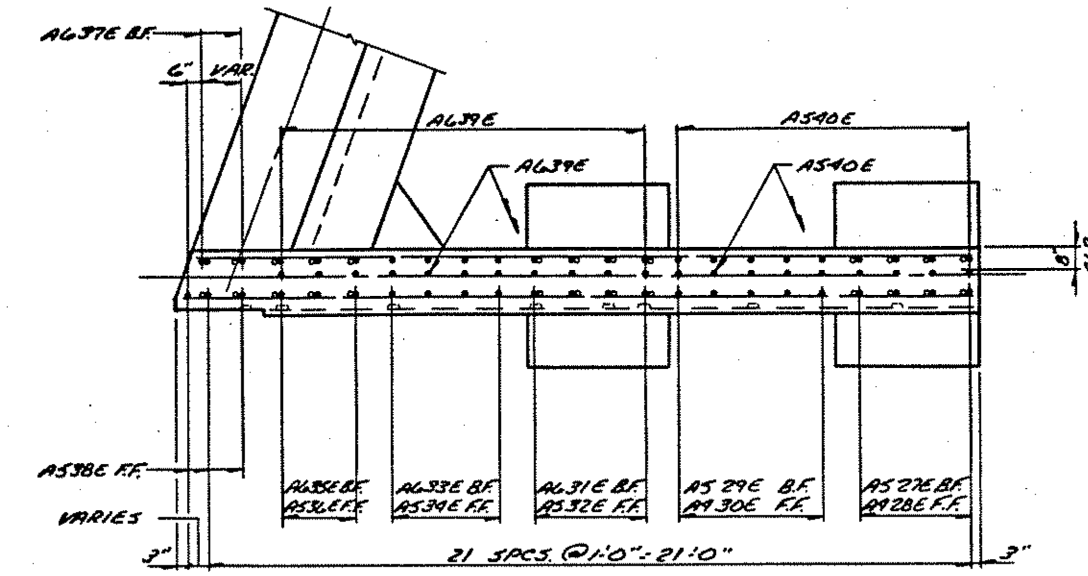
WEST ABUTMENT REINFORCEMENT

APPROVED

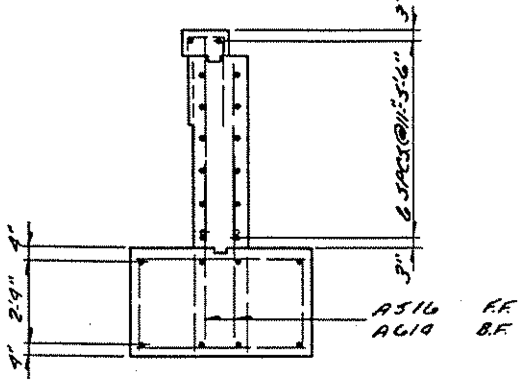
SHEET 9 OF 46 SHEETS | 02545 | DM
C.P. 88-09-116 | | RRT



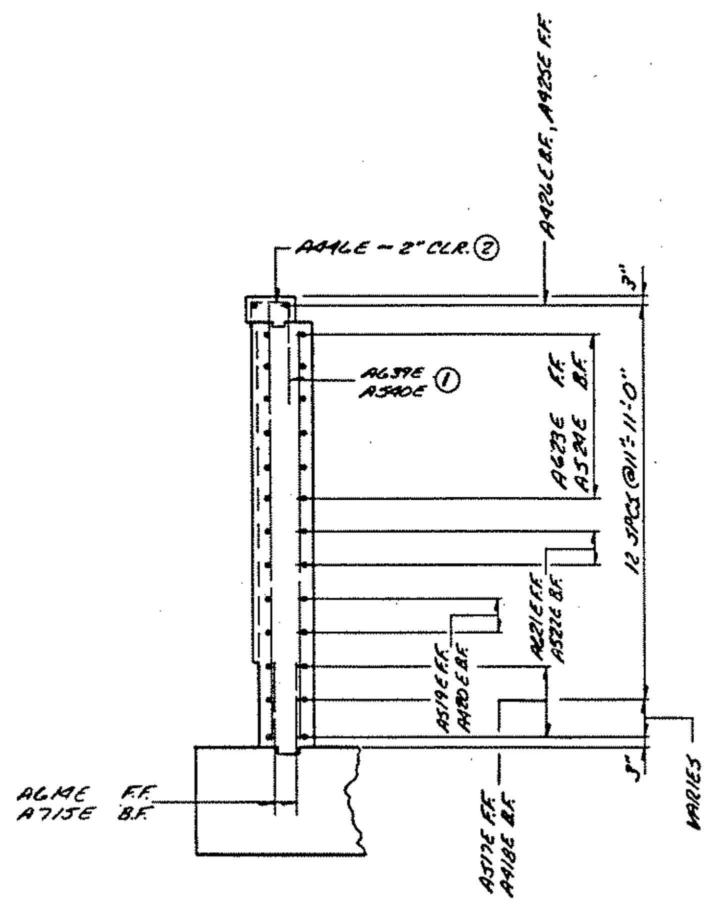
VIEW D-D



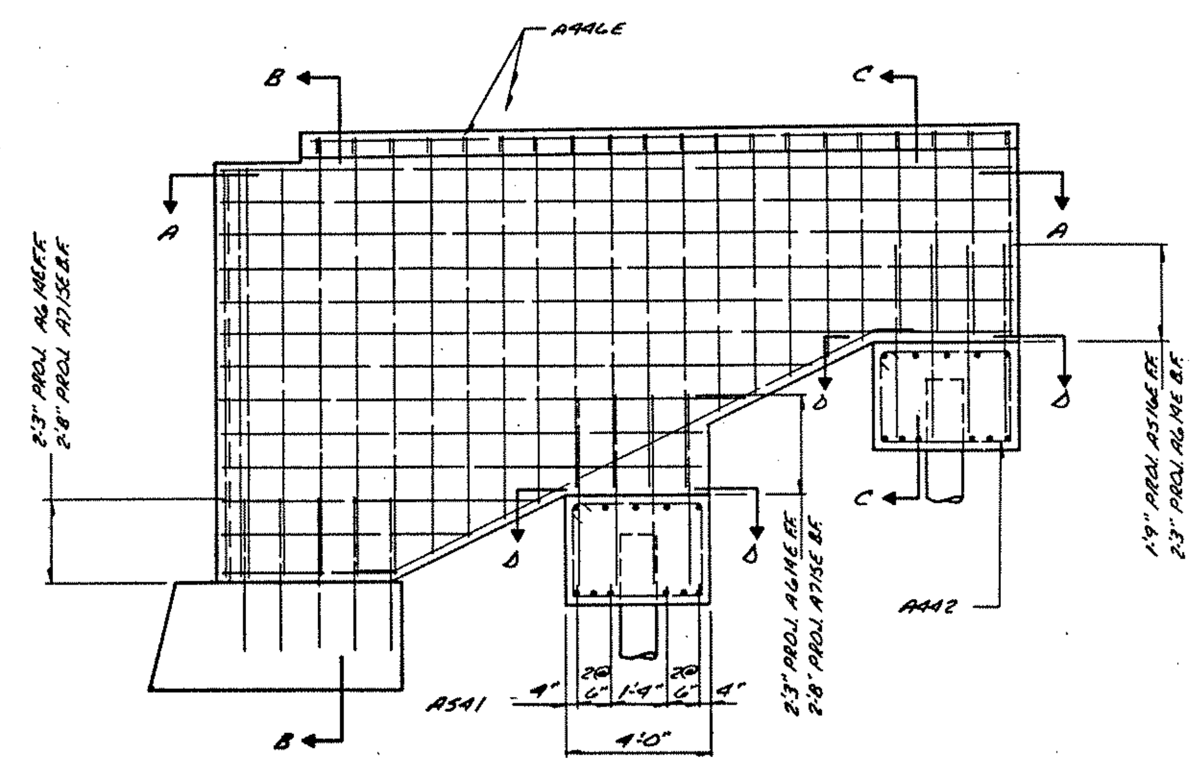
SECTION A-A



SECTION C-C



SECTION B-B

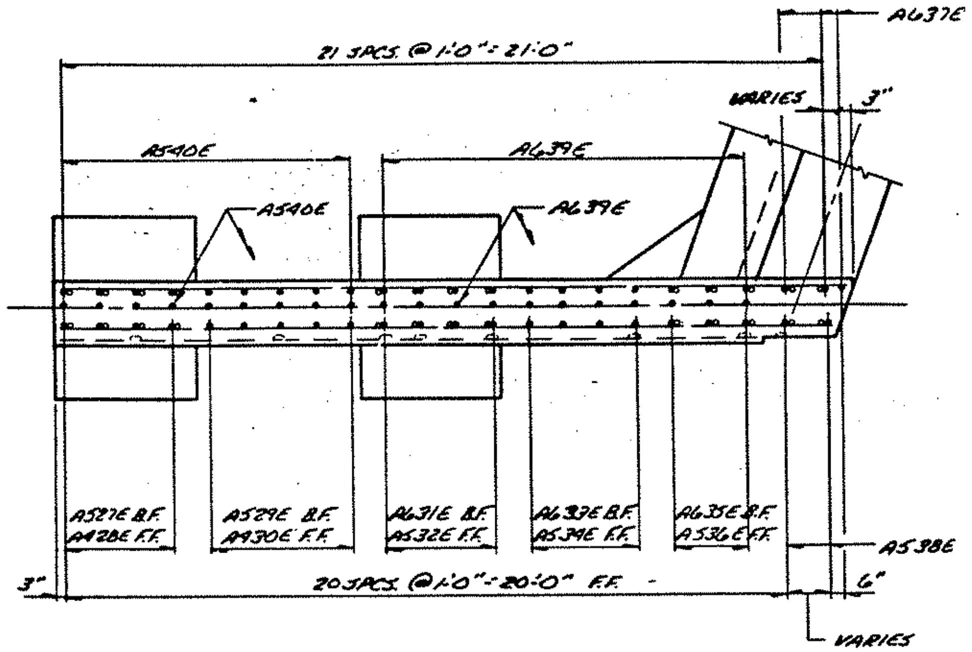


ELEVATION
SCALE 3/8"=1'-0"

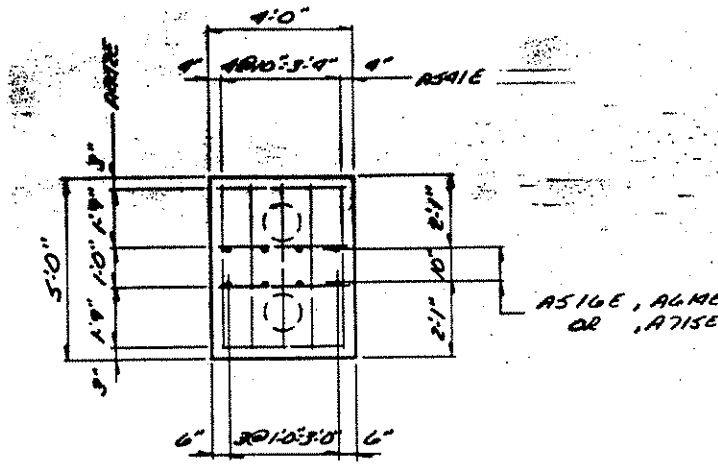
① SPACE A639E & A540E W/ VERTICAL BARS ALONG B.F. OF WINGWALL.

② SPACE A446E W/ VERTICAL BARS.

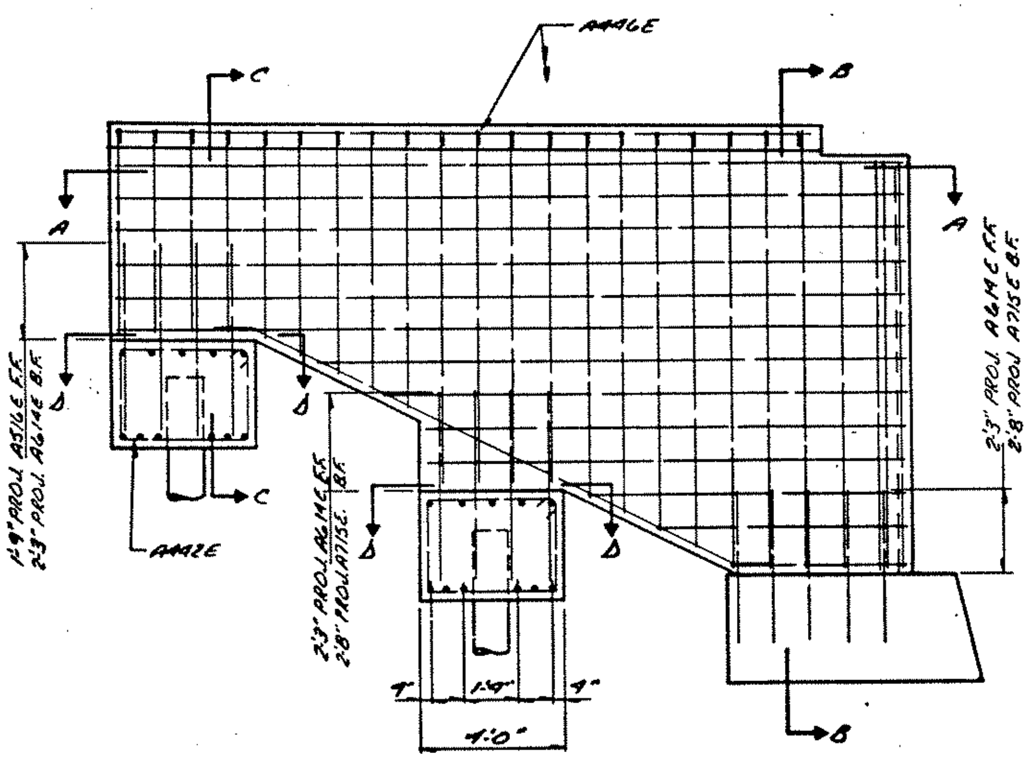
MINNESOTA DEPARTMENT OF TRANSPORTATION		
BRIDGE NO. 02545		
N.W. & S.E. WINGWALL REINFORCEMENT		
SHEET 10 OF 46 SHEETS C.P. 88-09-116	02545	DM RRT



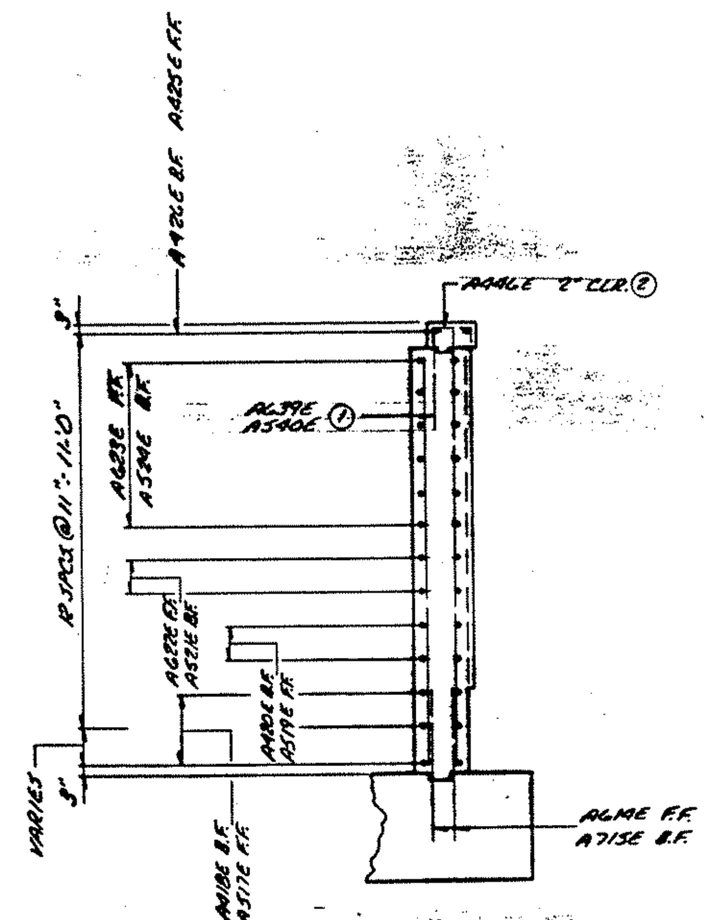
SECTION A-A



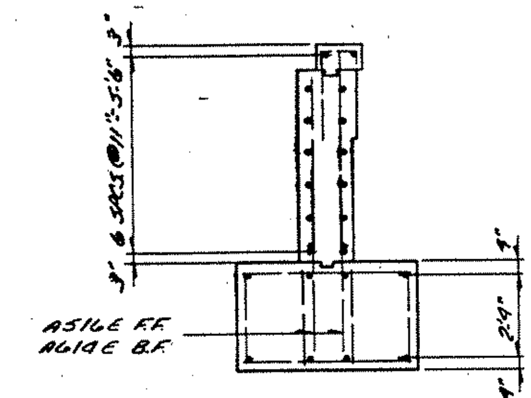
VIEW D-D



ELEVATION
SCALE 3/8" = 1'-0"



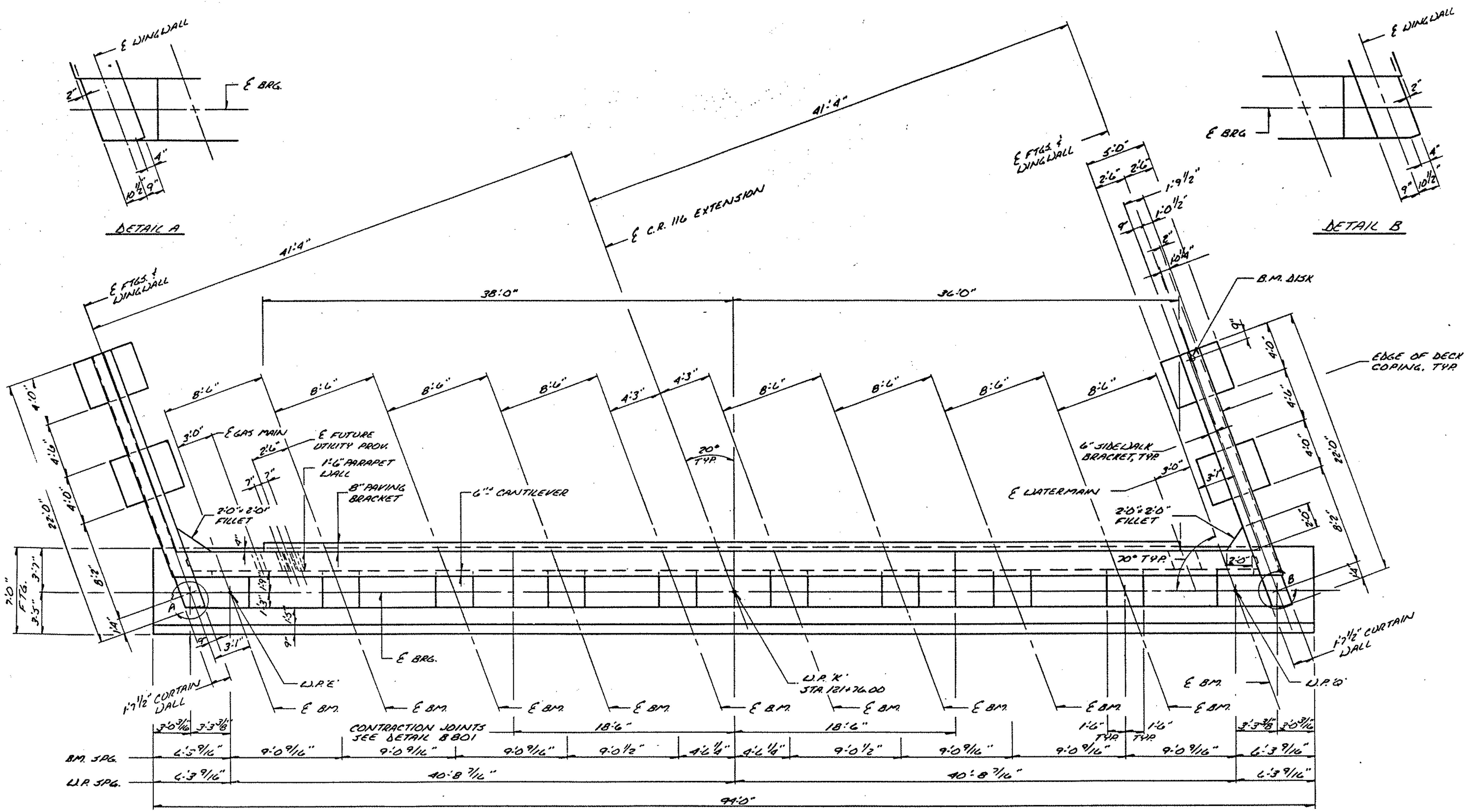
SECTION B-B



SECTION C-C

① SPACE A639E & A540E W/ VERTICAL BARS ALONG B.F. OF WINGWALL.
② SPACE A446E W/ VERTICAL BARS.

MINNESOTA DEPARTMENT OF TRANSPORTATION		
BRIDGE NO. 02545		
N.E. & S.W. WINGWALL REINFORCEMENT		
APPROVED		
SHEET 11 OF 45 SHEETS	02545	DM
C.R. 88-09-116		RRT



PLAN
SCALE 1/4" = 1'-0"

NOTE:
WATERMAIN SLEEVE SHALL BE 20" Ø x 2'-6" LG.
GAS MAIN SLEEVE SHALL BE 12" Ø x 2'-2" LG.
9-5" CONDUITS SHALL HAVE 6" Ø x 2'-2" SLEEVES.

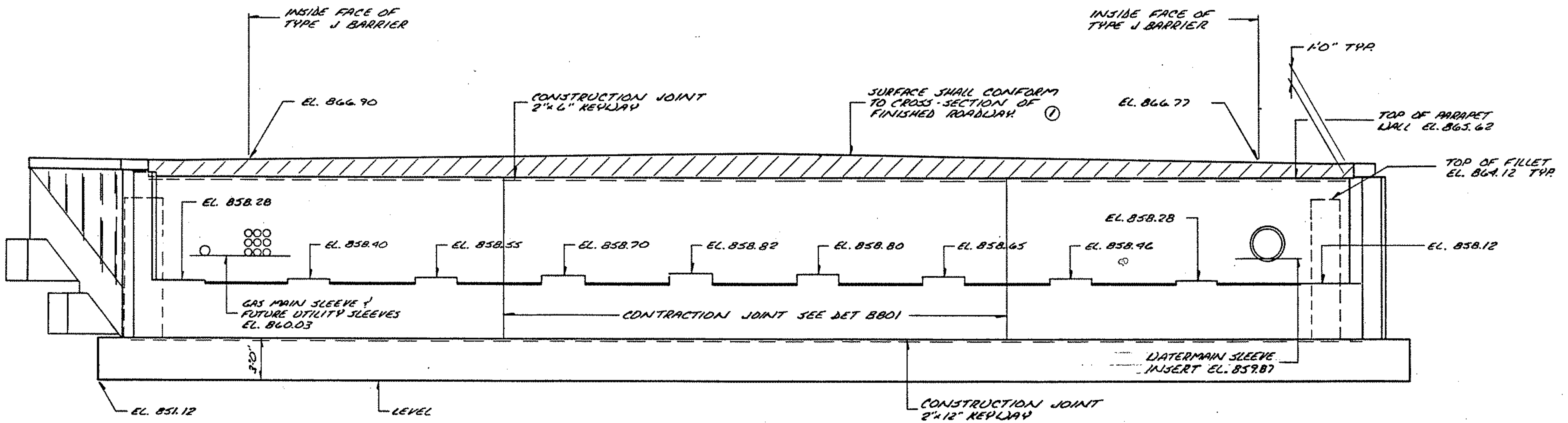
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

EAST ABUTMENT DETAILS

APPROVED "

SHEET 12A OF 46A SHEETS
C.R. 88-09-116
02545
DM
RRT



ELEVATION
SCALE 1/4"=1'-0"

① SHALL BE INCLUDED IN SUPERSTRUCTURE QUANTITIES.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

EAST ABUTMENT DETAILS

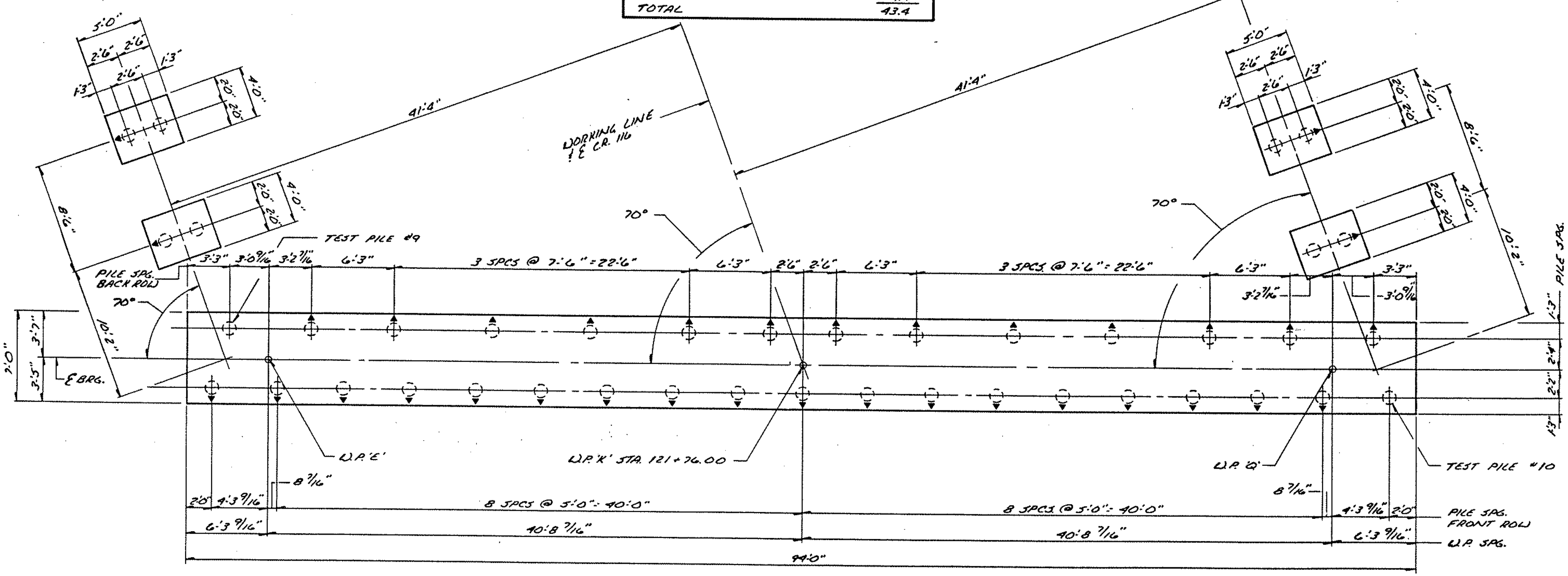
SHEET 13A OF 44A SHEETS
C.R. 88-09-116
02545
DM
RRT

PILE NOTES

2- CAST IN PLACE CONC. TEST PILES 65' LG.
31- CAST IN PLACE CONC. PILES ~ EST. LENGTH 55' LG.
8- CAST IN PLACE CONC. WINGWALL PILES - EST. LENGTH 55' LG.
41- CAST IN PLACE CONC. PILES REQ'D FOR EAST ABUTMENT

ALL PILES TO HAVE A NOMINAL DIAMETER OF 12".
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
PILES SHOWN THUS ○→ TO BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.
FOR PILE SPLICES SEE DETAIL B201.

COMPUTED PILE LOADS TONS PER PILE	
DEAD LOAD + EARTH PRESSURE	38.5
LIVE LOAD	4.9
TOTAL	43.4



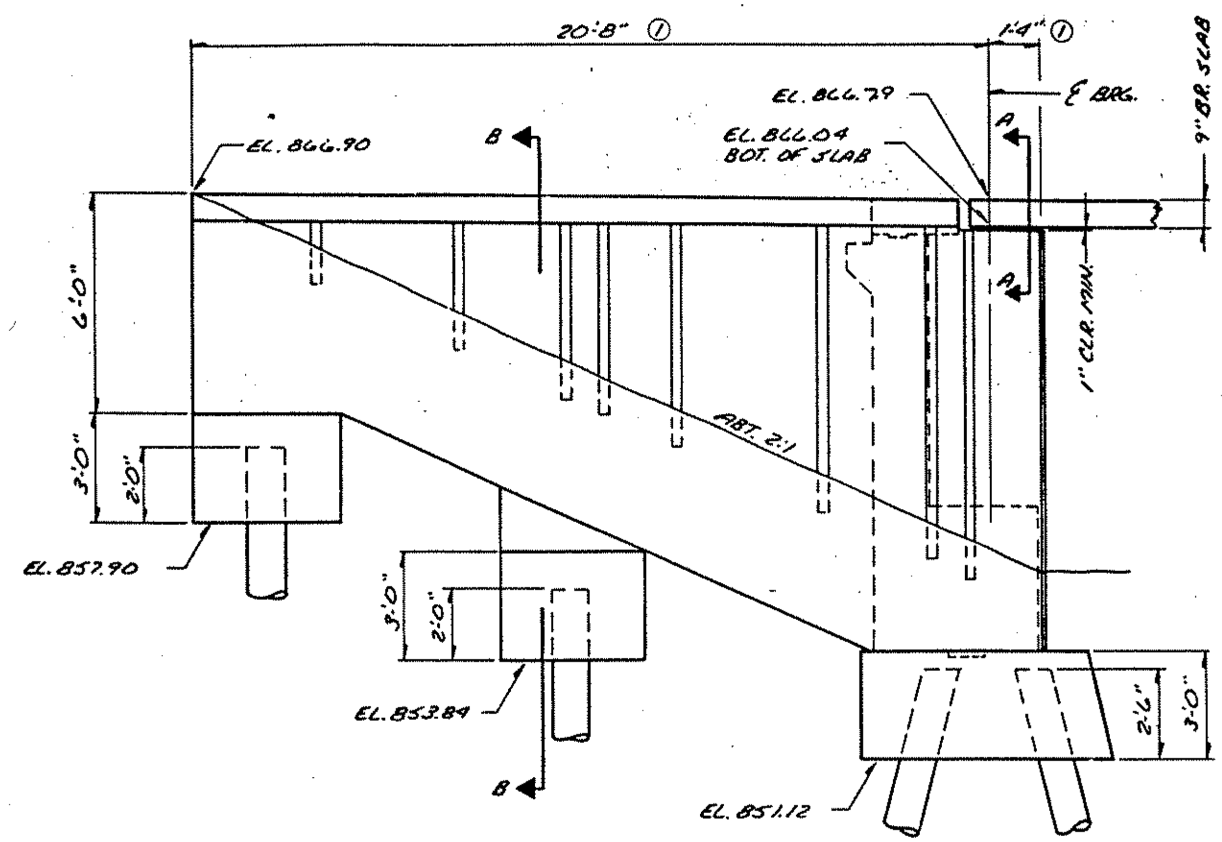
FOOTING PLAN
SCALE 1/4" = 1'-0"

MINNESOTA DEPARTMENT OF TRANSPORTATION

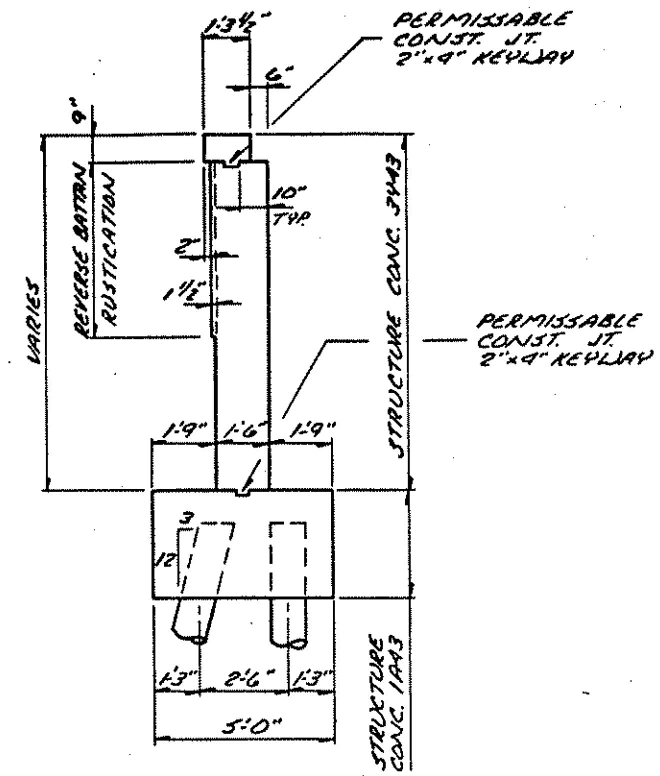
BRIDGE NO. 02545

EAST ABUTMENT DETAILS

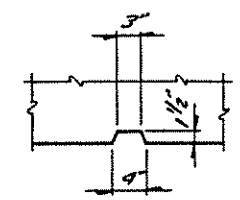
SHEET 14A OF 46A SHEETS	02545	DM
C.P. 88-09-116		ART



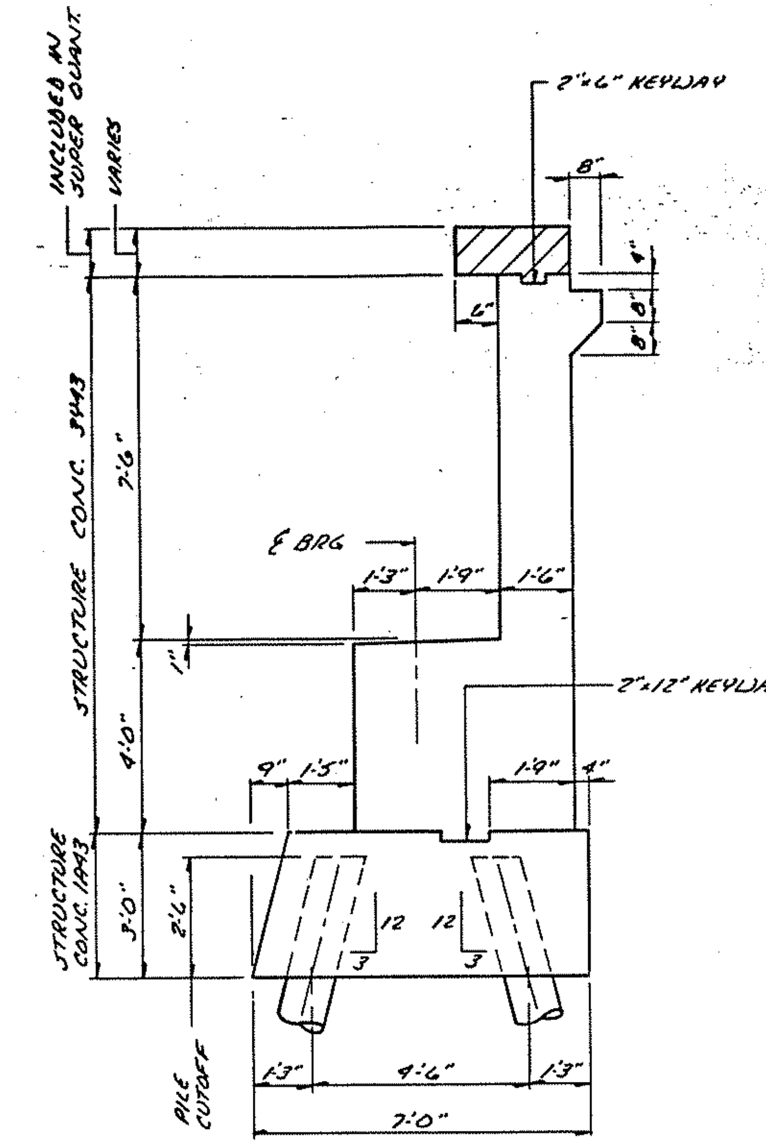
N.E. WINGWALL
SCALE 3/8" = 1'-0"



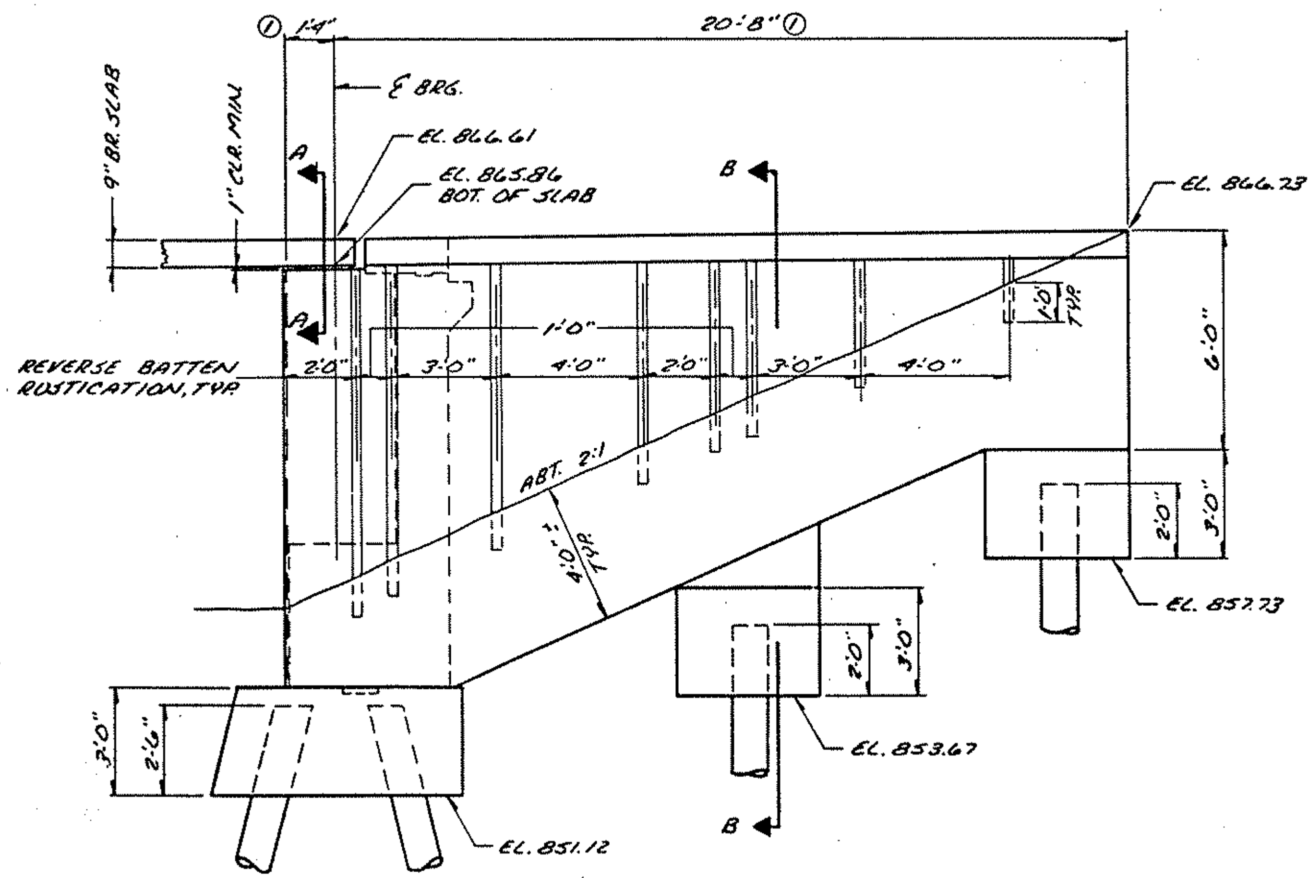
SECTION B-B



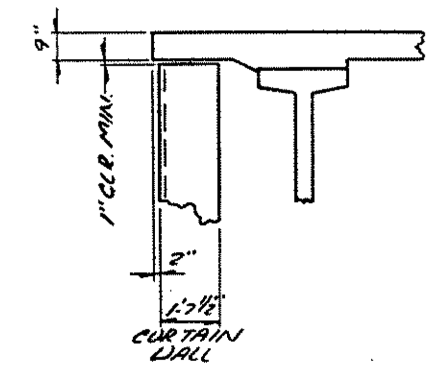
REVERSE BATTAN RUSTICATION DET.



SECTION THRU ABUTMENT



SE. WINGWALL
SCALE 3/8" : 1'-0"



SECTION A-A

① MEASURED ALONG ℄ WINGWALL

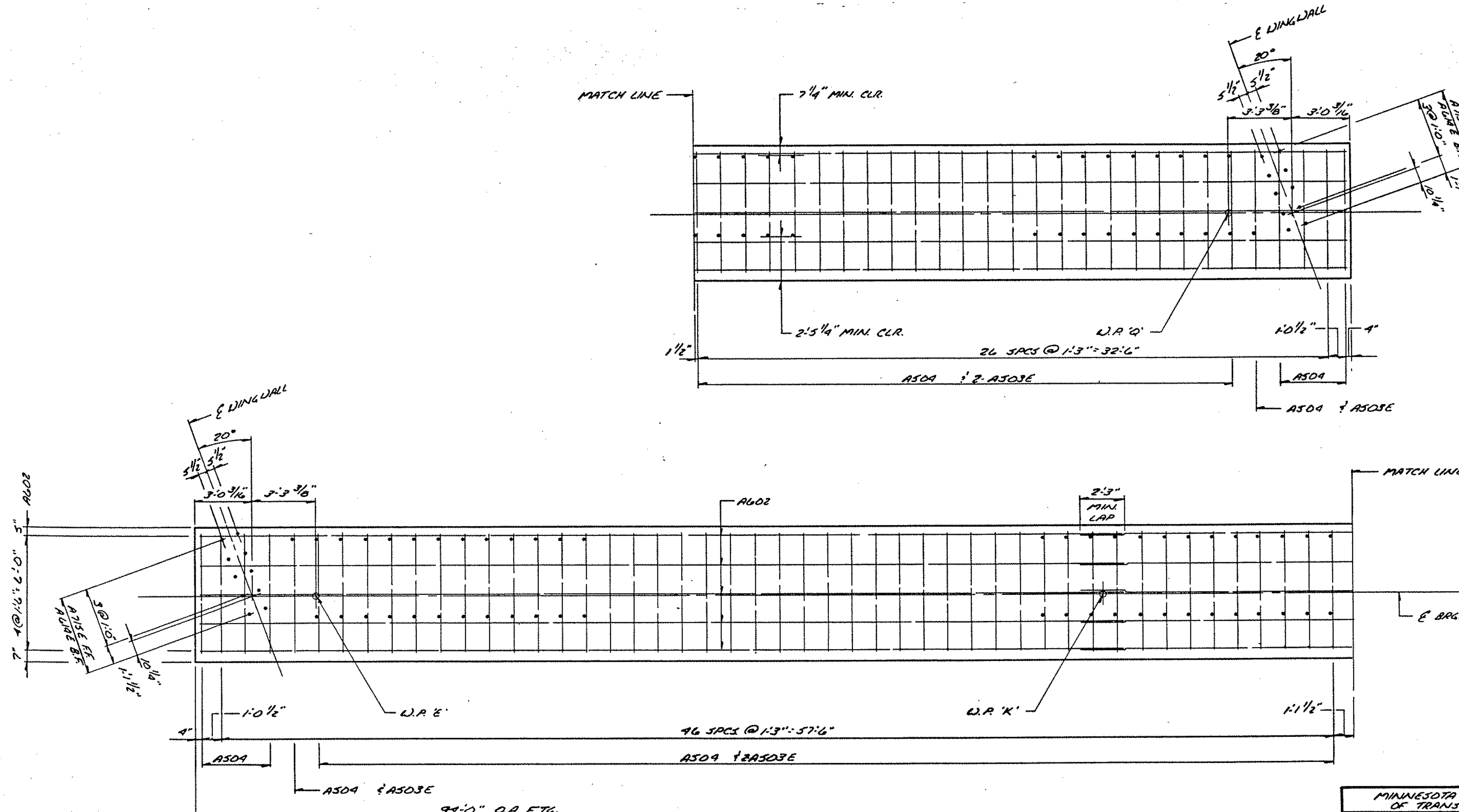
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

EAST ABUTMENT DETAILS

APPROVED

SHEET 15 OF 46 SHEETS	02545	DM
C.P. 88-09-116		RRT



FOOTING PLAN
SCALE 3/8" = 1'-0"

MINNESOTA DEPARTMENT OF TRANSPORTATION

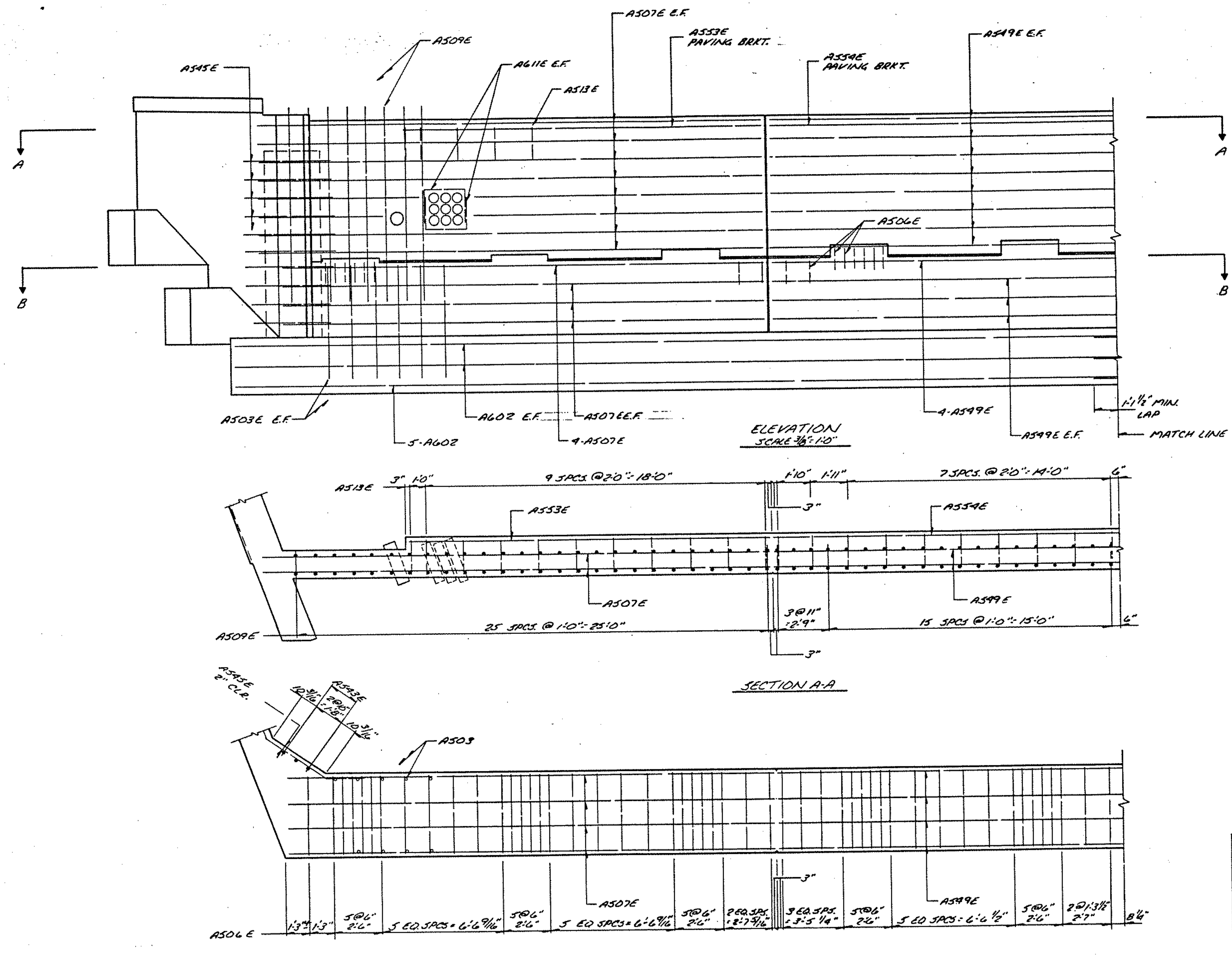
BRIDGE NO. 02545

EAST ABUTMENT REINFORCEMENT

APPROVED

SHEET 16A OF 46A SHEETS | 02545 | DM / RRT

C.P. 88-09-116



ELEVATION
SCALE 3/8" = 1'-0"

SECTION A-A

SECTION B-B

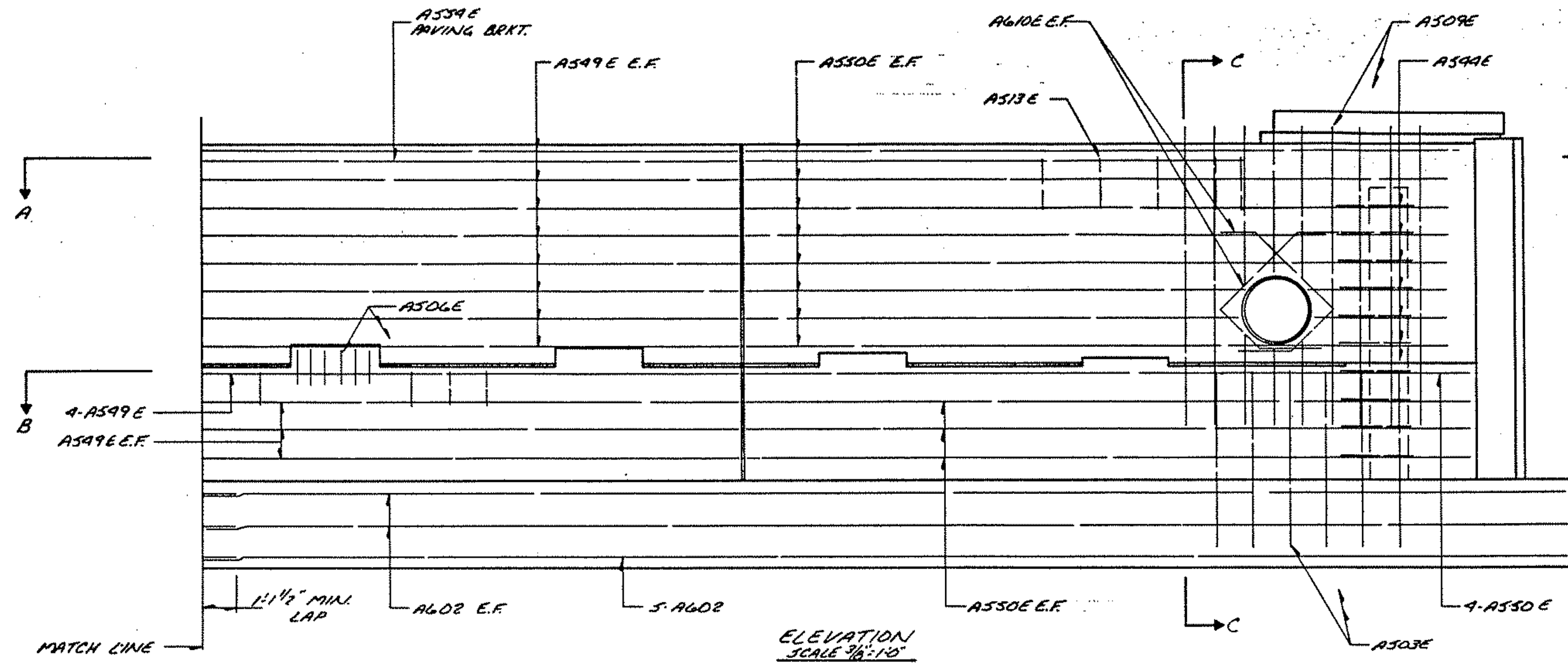
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

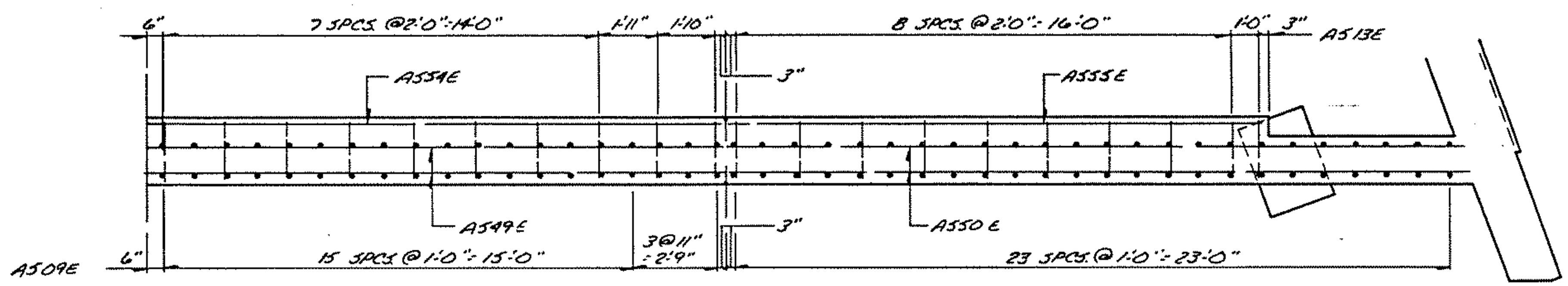
EAST ABUTMENT REINFORCEMENT

APPROVED

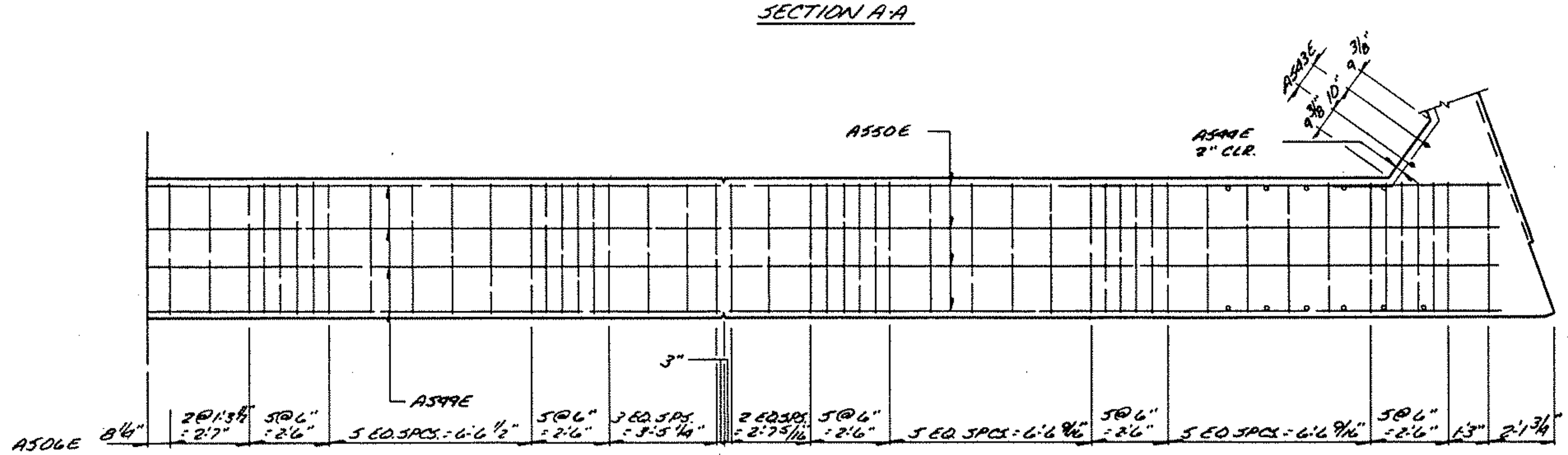
SHEET 17 OF 92 SHEETS	02545	DM
C.P. 88-09-116		RRT



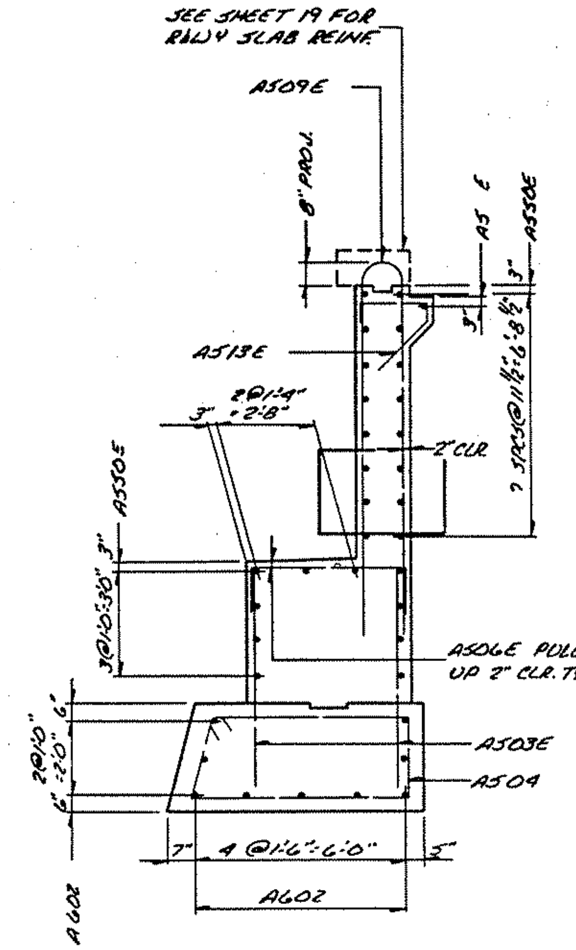
ELEVATION
SCALE 3/16":1'-0"



SECTION A-A



SECTION B-B



SECTION-C-C

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

EAST ABUTMENT REINFORCEMENT

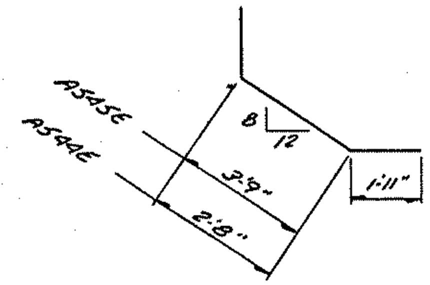
APPROVED

SHEET 18 OF 46 SHEETS	02545	DM
C.P. 88-09-116		RRT

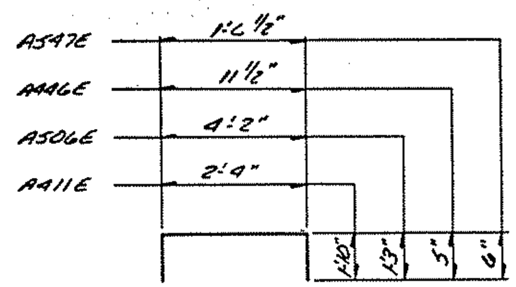
BILL OF REINFORCEMENT ~ 2 ABUTMENTS						
	BAR	W. ABUT	E. ABUT	LENGTH	SHAPE	LOCATION
(4)	A601	18		49'-0"	STRT.	FOOTING ~ LONGITUDINAL
(4)	A602		18	48'-0"	"	" "
	A503E	138	134	5'-9"	"	" ~ VERTICAL
	A504	78	76	16'-5"	BENT	" ~ TIES
	A505E	26		36'-0"	STRT.	BRIDGE SEAT/PARAPET WALL — LONG.
	A506E	100	100	6'-8"	BENT	" " ~ TIES
	A507E	26	26	25'-6"	STRT.	" "/PARAPET WALL ~ LONG.
	A508E	26		27'-2"	"	" " " " "
	A509E	90	88	29'-1"	BENT	" " ~ VERTICAL
	A610E	4	4	9'-0"	"	" " ~ CONDUIT SLEEVES
	A611E	4	4	6'-0"	"	" " " "
	A512E	1		36'-0"	STRT.	PAVING BRKT. ~ LONGITUDINAL
	A513E	40	41	4'-11"	BENT	" " ~ TIE
	A614E	26	26	4'-3"	STRT	WINGWALL ~ DOWEL
	A715E	18	18	4'-8"	"	" "
	A516E	8	8	3'-9"	"	" "
(5)	A517E	3	3	13'-6"	"	" ~ HORIZONTAL
(5)	A418E	3	3	13'-0"	"	" "
	A519E	4	4	13'-2"	"	" "
	A420E	4	4	12'-8"	"	" "
(5)	A621E	2	2	30'-10"	"	" "
(5)	A522E	2	2	30'-2"	"	" "
	A623E	12	12	21'-9"	"	" "
	A524E	12	12	21'-9"	"	" "
	A425E	2	2	19'-2"	"	" "
	A426E	2	2	18'-8"	"	" "
	A527E	8	8	4'-11"	"	" VERTICAL
	A428E	8	8	5'-8"	"	" "
(5)	A529E	5	5	12'-0"	"	" "
(5)	A430E	5	5	13'-6"	"	" "
	A631E	8	8	9'-0"	"	" "
	A532E	8	8	9'-9"	"	" "
(5)	A633E	4	4	20'-1"	"	" "
(5)	A534E	4	4	21'-7"	"	" "
	A635E	6	6	11'-3"	"	" "
	A536E	6	6	12'-0"	"	" "
	A637E	5	5	10'-6"	"	" "
	A538E	5	5	11'-3"	"	" "
	A639E	22	22	2'-9"	"	" "
	A540E	18	18	2'-5"	"	" "
	A541E	44	44	4'-8"	"	" FOOTING
	A442E	16	16	12'-9"	BENT	" "
	A543E	5	5	9'-8"	STRT.	FILLET ~ VERTICAL
	A544E	9	9	6'-6"	BENT	" TIE
	A545E	9	9	7'-7"	"	" "
	A446E	40	40	1'-9½"	"	WINGWALL ~ CAP
(6)	A547E	12	12	46'-0"	STRT.	ROADWAY SLAB ~ LONGITUDINAL
	A548E	46	46	2'-6½"	BENT	" " ~ TIE
	A549E		26	36'-8"	STRT.	BRIDGE SEAT/PARAPET WALL ~ LONG.
	A550E		26	23'-6"	"	" " " " "
	A551E	1		20'-5"	"	PAVING BRKT. ~ LONGITUDINAL
	A552E	1		17'-0"	"	" " "
	A553E		1	19'-4"	"	" " "
	A554E		1	36'-8"	"	" " "
	A555E		1	17'-3"	"	" " "

(1) COUNTY SHALL FURNISH DISKS. PAYMENT FOR PLACING IS TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STANDARD PLATE NO. 9301 FOR PLACEMENT.
(2) SEE SPECIAL PROVISIONS.
(3) DOES NOT INCLUDE TEST PILES
(4) 2'-3" MIN. LAP
(5) CUT 2 FROM 1
(6) 1'-11" MIN. LAP

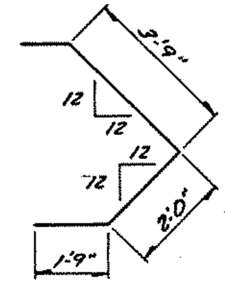
SUMMARY OF QUANTITIES ~ 2 ABUTMENTS				
	ITEM	W. ABUT.	E. ABUT.	TOTAL
	STRUCTURE CONCRETE (1A43)	80	78	158 CU. YD.
	STRUCTURE CONCRETE (3Y43)	129	123	252 CU. YD.
	REINFORCEMENT BARS	2630	2630	5260 POUND
	REINFORCEMENT BARS ~ EPOXY COATED	10,270	10,120	20,390 POUND
(2)	STRUCTURE EXCAVATION			1 L.SUM
(3)	C.I.P. CONCRETE PILING - DELIVERED	2145	2145	4290 LIN.FT.
(3)	C.I.P. CONCRETE PILING - DRIVEN	2145	2145	4290 LIN.FT.
	C.I.P. CONCRETE TEST PILES 65 FT. LG.	2	2	4 EACH
(1)	B.M. DISK (STANDARD PLATE NO. 9300)			



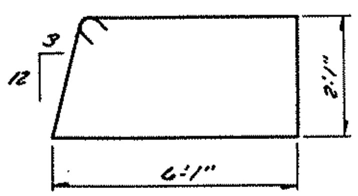
A544E & A545E



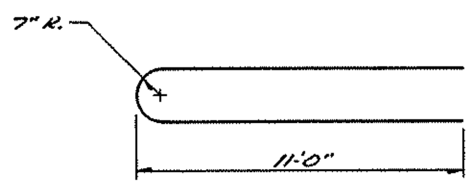
A611E, A506E, A446E & A548E



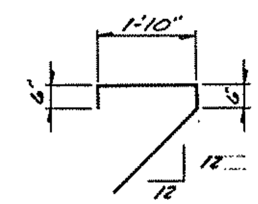
A610E



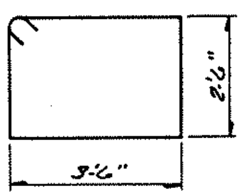
A504



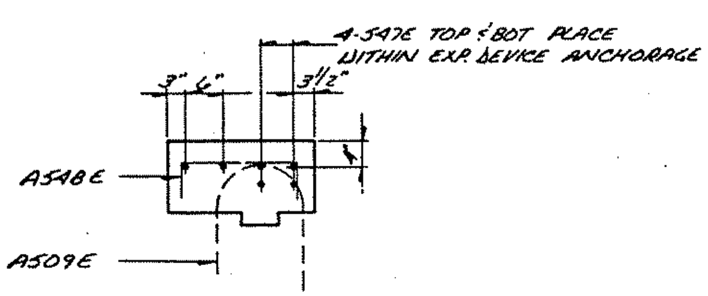
A509E



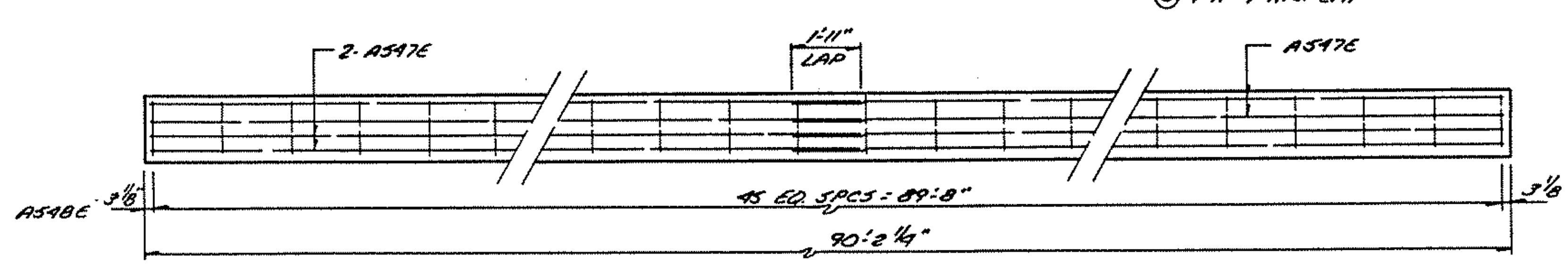
A513E



A442E



RDWY SLAB REINF. DETAIL



RDWY SLAB REINF. DETAIL

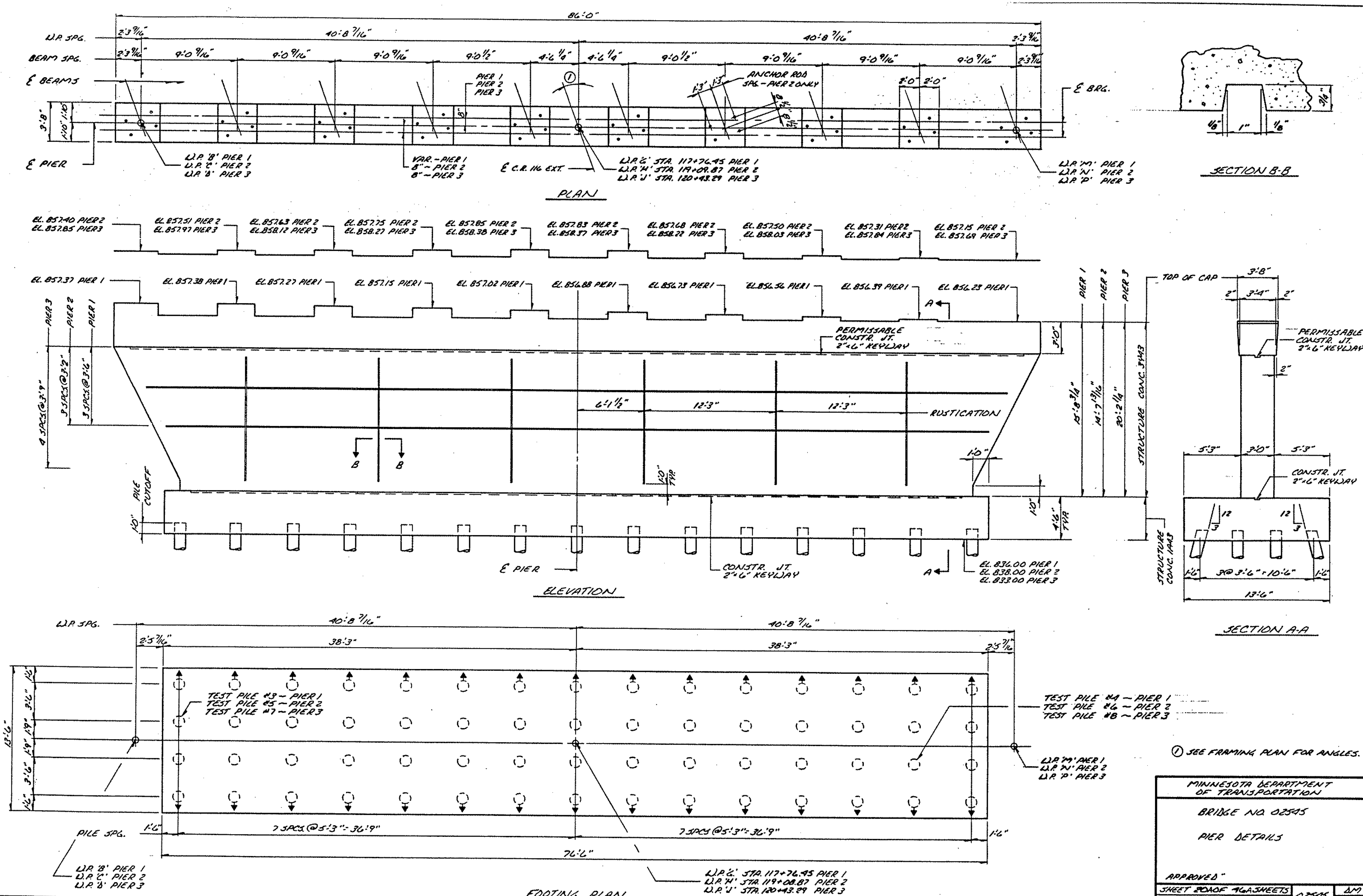
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

ABUTMENT QUANTITIES

APPROVED "

SHEET NO. OF SHEETS	02545	DM
C.P. 88-09-116		RKT



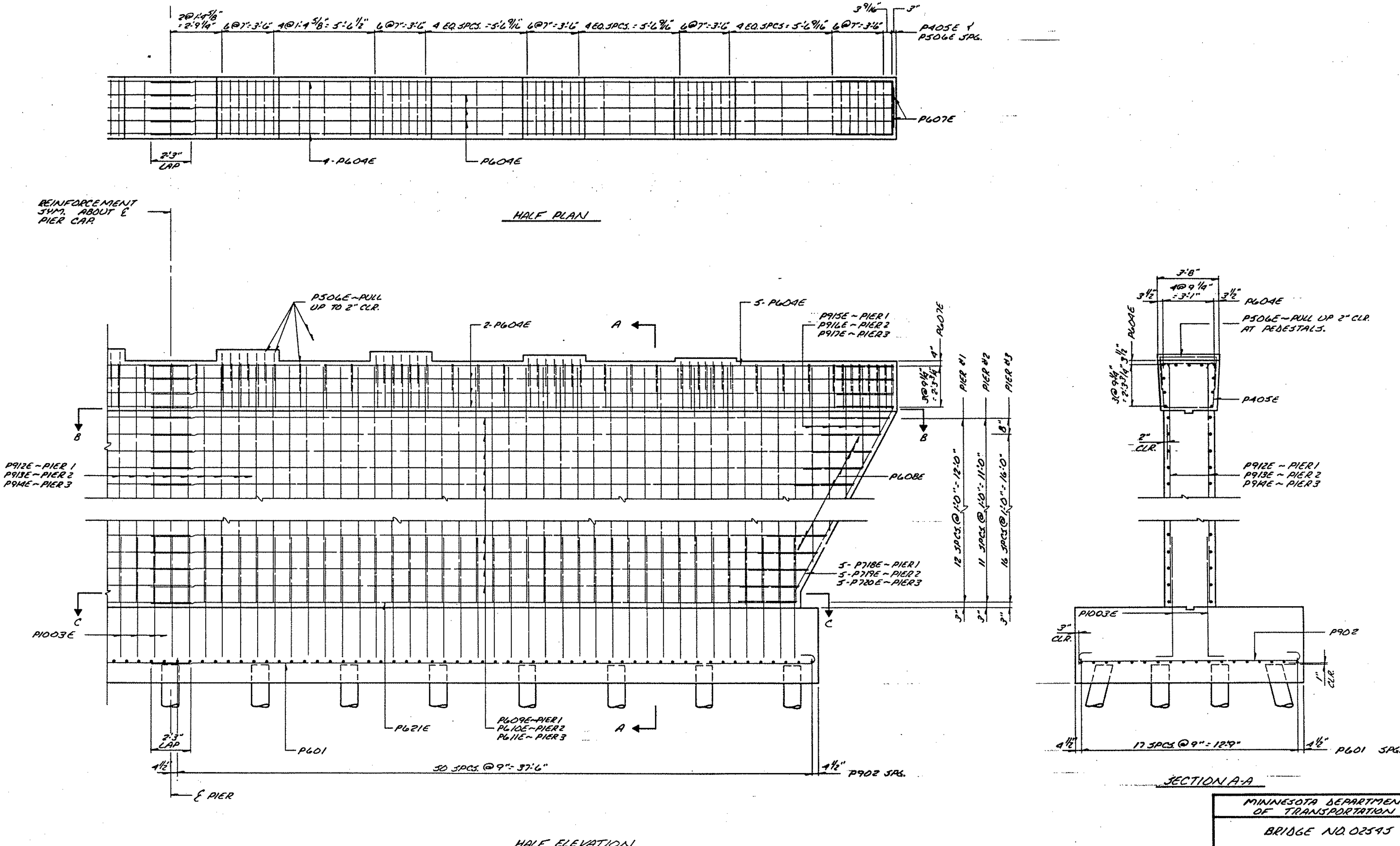
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

PIER DETAILS

APPROVED

SHEET 20A OF 46A SHEETS | 02545 | DM
C.P. 88-OP-116 | | RRT



SEE SHT. 22 FOR SECTION B-B & SECTION C-C.

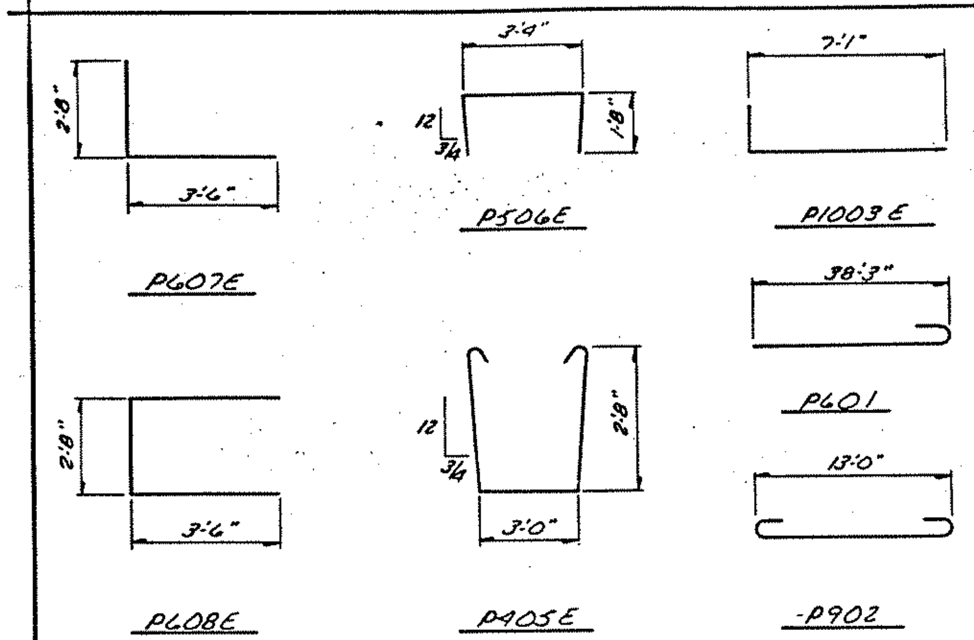
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

PIER REINFORCEMENT

APPROVED -

SHEET 21 OF 46 SHEETS	02545	DM
C.P. 88-09-116		RRT

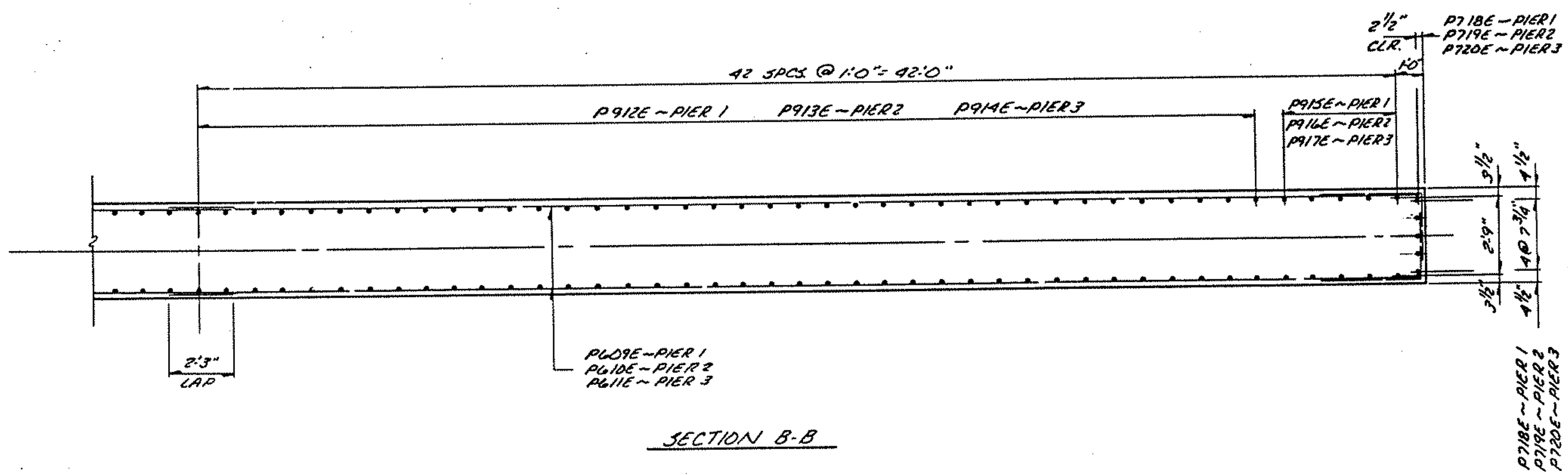


SUMMARY OF QUANTITIES ~ 3 PIERS					
ITEM	PIER 1	PIER 2	PIER 3	TOTAL	
STRUCTURE CONCRETE 3Y43	150	139	189	478	CU. YD.
STRUCTURE CONCRETE 1A43	172	172	172	516	CU. YD.
REINFORCEMENT BARS ~ EPOXY COATED	18990	18225	22,215	59930	POUND
REINFORCEMENT BARS	7513	7513	7514	22,540	POUND
(1) C.I.P. CONCRETE PILING ~ DEL'D	4060	4060	4060	12,180	LIN. FT.
(1) C.I.P. CONCRETE PILING ~ DRIVEN	4060	4060	4060	12,180	LIN. FT.
C.I.P. CONCRETE TEST PILES 80 FT. LG.	2	2	2	6	EACH
(2) FOUNDATION PREPARATION (PIER 1)	1			1	L.SUM
(2) FOUNDATION PREPARATION (PIER 2)		1		1	L.SUM
(2) FOUNDATION PREPARATION (PIER 3)			1	1	L.SUM

(1) DOES NOT INCLUDE TEST PILES
(2) SEE SPECIAL PROVISIONS

BILL OF REINFORCEMENT ~ 2 PIERS							
	BAR	PIER 1	PIER 2	PIER 3	LENGTH	SHAPE	LOCATION
(1)	P601	36	36	36	39'-6"	BENT	FOOTING ~ LONG.
	P902	102	102	102	15'-6"	"	" ~ TRANS.
	P1003E	150	150	150	8'-1"	"	" ~ VERTICAL
(1)	P604E	22	22	22	44'-0"	STRT.	CAP ~ LONG.
	P405E	99	99	99	9'-1"	BENT	" ~ STIRRUP
	P506E	99	99	99	6'-8"	"	" ~ TIE
	P607E	16	16	16	6'-2"	"	" @ ENDS
	P608E	26	24	36	9'-8"	"	SHAFT @ ENDS
(1)	P609E	2 SER. OF 13			38'-4" TO 43'-9"	STRT.	" ~ LONG.
(1)	P610E		2 SER. OF 12		38'-9" TO 43'-9"	"	" "
(1)	P611E			2 SER. OF 18	38'-9" TO 43'-9"	"	" "
	P912E	150			15'-3"	"	" ~ VERT.
	P913E		150		14'-2"	"	" "
	P914E			150	19'-8"	"	" "
(2)	P915E	10			17'-6"	"	" "
(2)	P916E		10		16'-4"	"	" "
(2)	P917E			10	21'-4"	"	" "
	P718E	10			14'-6"	"	" "
	P719E		10		13'-6"	"	" "
	P720E			10	18'-6"	"	" "
(1)	P621E	4	4	4	38'-1"	"	" ~ LONG.

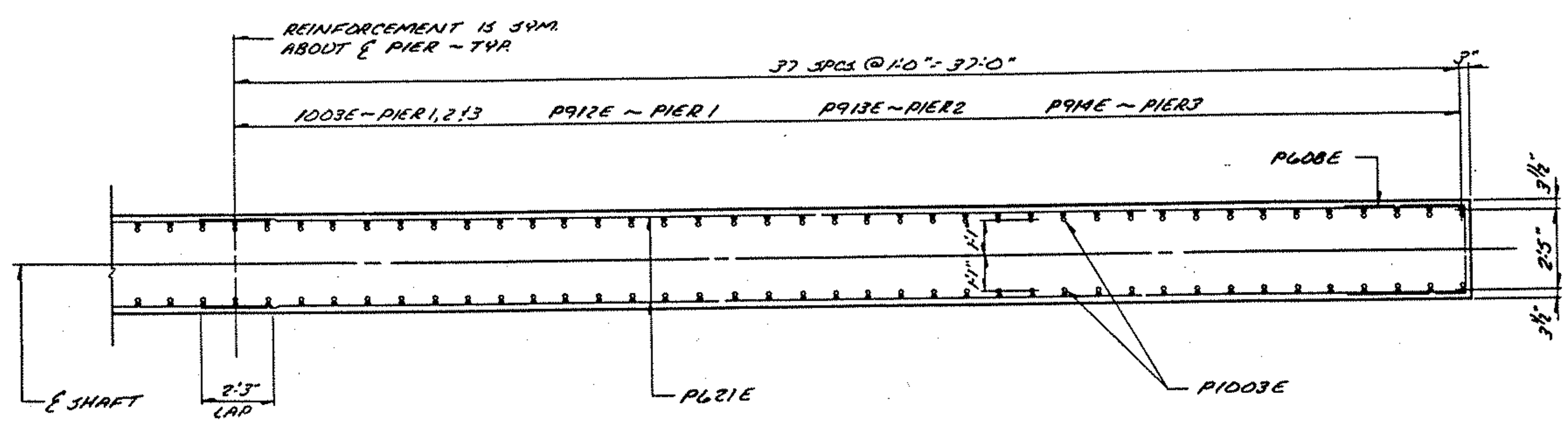
(1) 2'-3" MIN. LAP
(2) CUT 2 FROM 1



SECTION B-B

COMPUTED PILE LOADS TONS PER PILE	
DEAD LOAD	36.6
LIVE LOAD	4.0
OVERTURNING	15.0
TOTAL	$\frac{55.6}{1.25}$ =
	44.5

REDUCTION PER A.A.S.H.T.O. 1.2.22
GROUP III LOADING



SECTION C-C

PILE NOTES

6 - C.I.P. CONCRETE TEST PILES 80' LG.
174 - C.I.P. CONCRETE PILES EST. LENGTH 70'
180 - C.I.P. CONCRETE PILES REQ'D FOR 3 PIERS.

ALL PILES TO BE 12" C.I.P. CONC. PILES.
PILE SPG. SHOWN IS AT BOTTOM OF FTG.
FOR SPLICES SEE DETAIL B201.
PILES MARKED THUS ○→ TO BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.

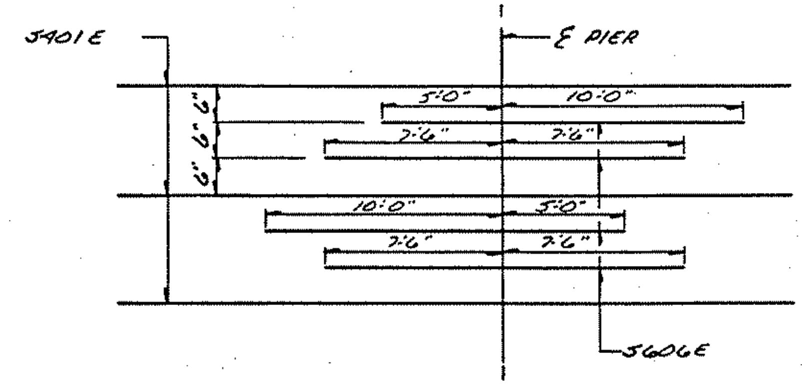
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

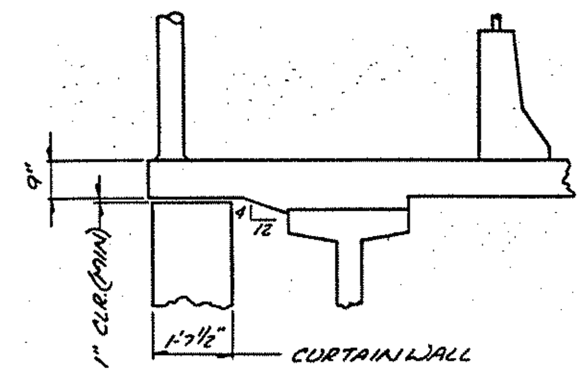
PIER REINFORCEMENT

APPROVED

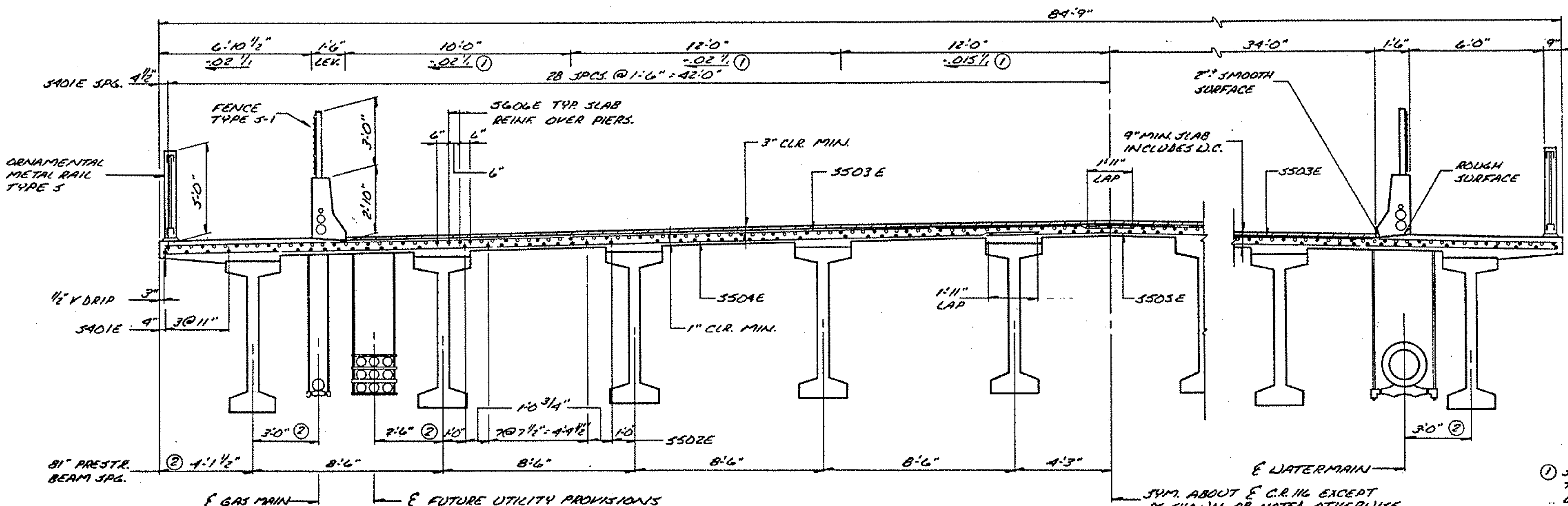
SHEET [illegible] OF [illegible] SHEETS	02545	DM
C.P. 88-09-116		RRT



5606E OVER PIERS



SLAB @ CURTAINWALL

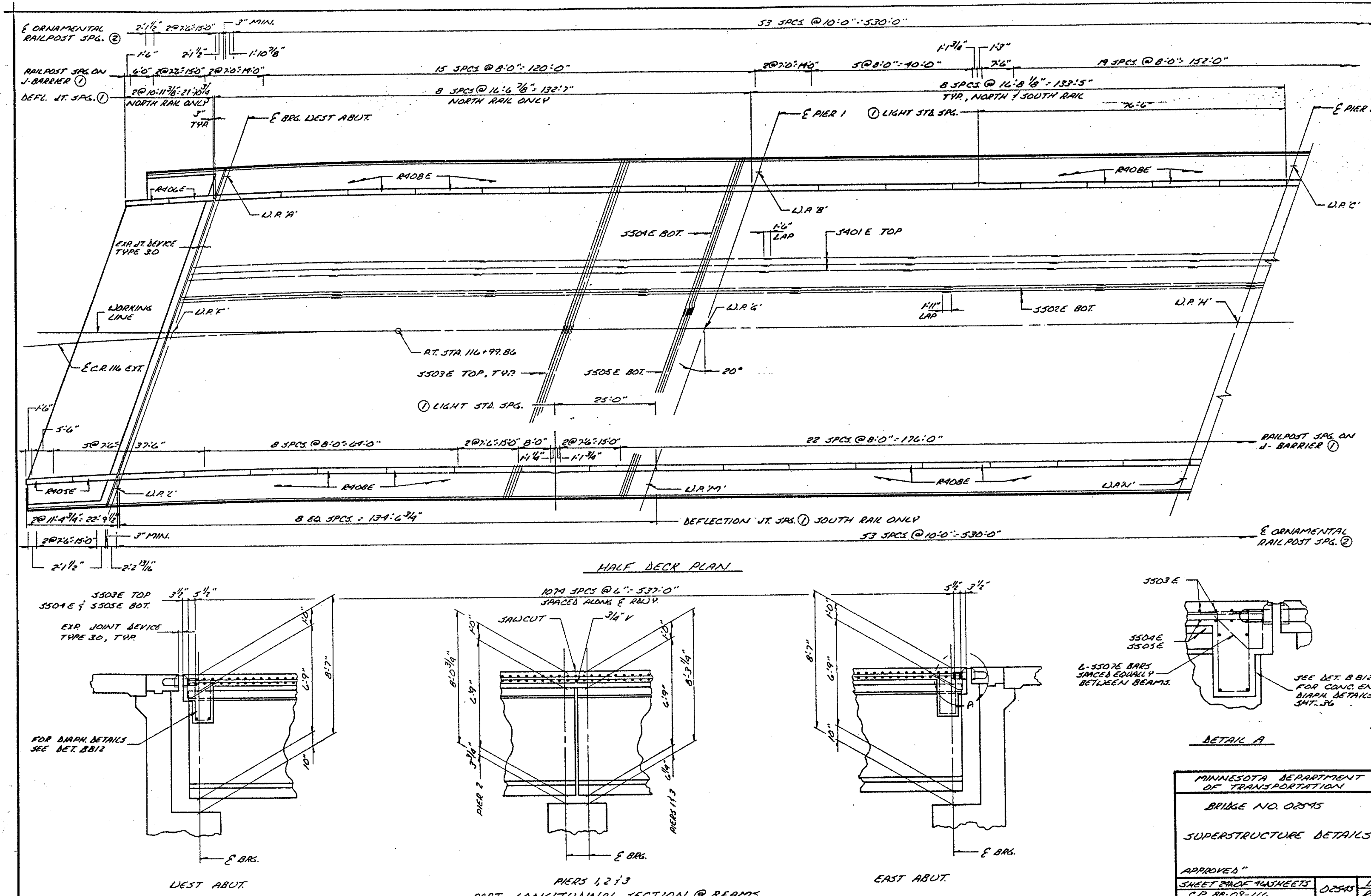


PART. TRANSVERSE SECTION THRU DECK
SCALE 3/8" = 1'-0"

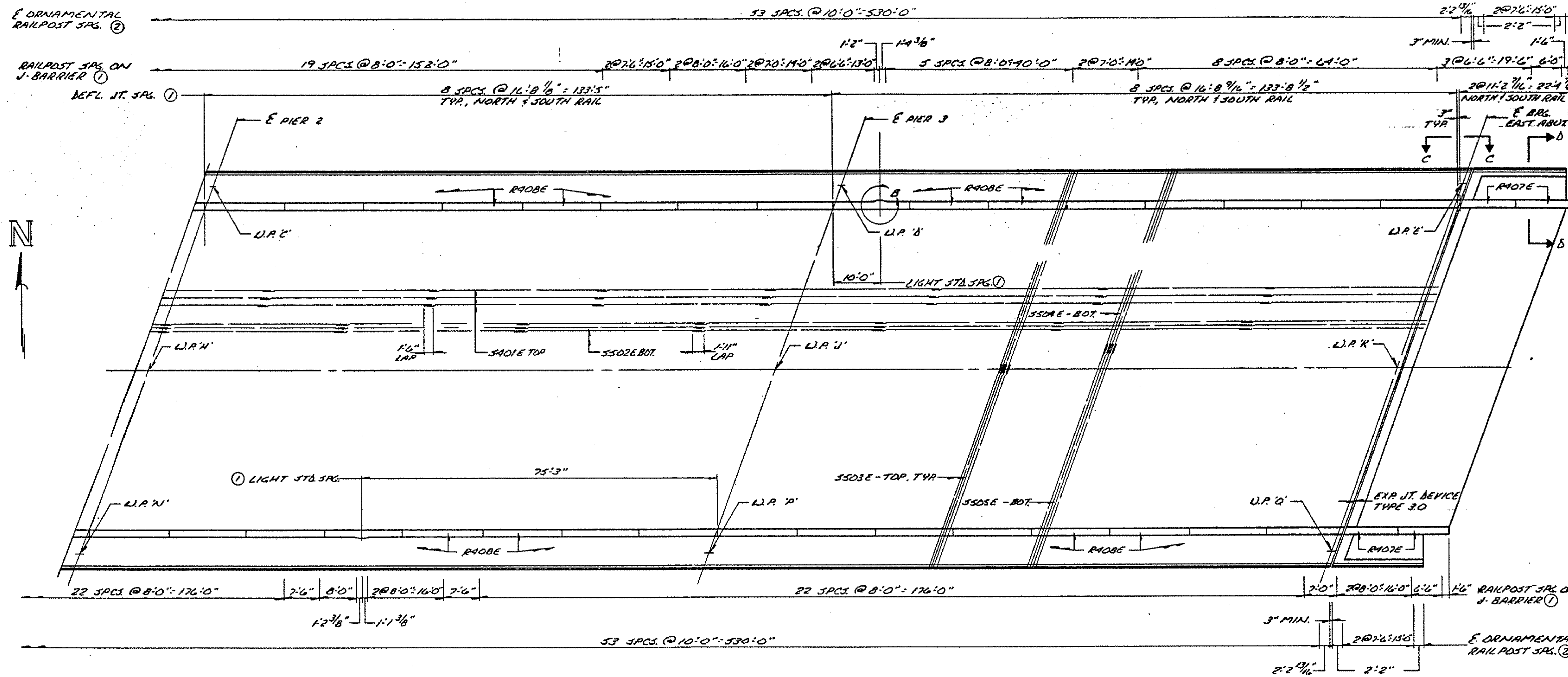
① SLOPE WILL VARY FROM BEG. OF BRIDGE TO STA. 119+42.86 BECAUSE OF SUPER-ELEVATION TRANSITION FOR HORIZ. CURVE. SEE SHEET 2 FOR TRANSITION CHART.

② VARIES IN SPAN 1.

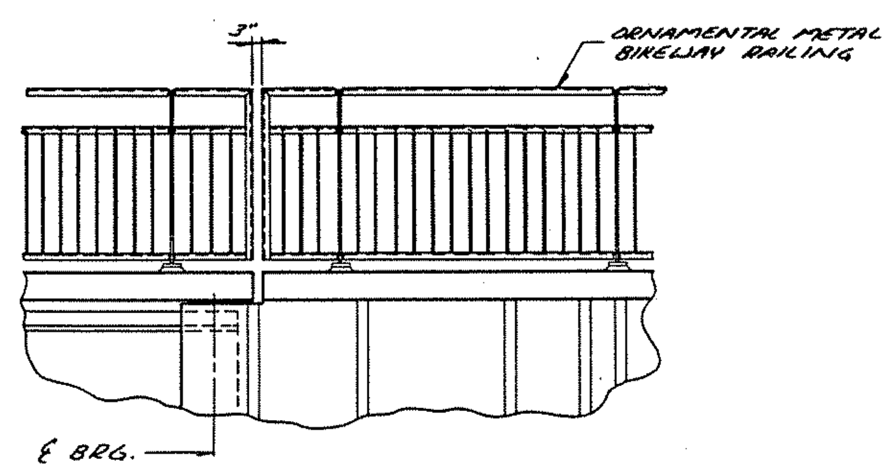
MINNESOTA DEPARTMENT OF TRANSPORTATION	
BRIDGE NO. 02545	
SUPERSTRUCTURE DETAILS	
APPROVED	
SHEET 23A OF 44 SHEETS / C.P. 88-09-116	02545 DM RRT



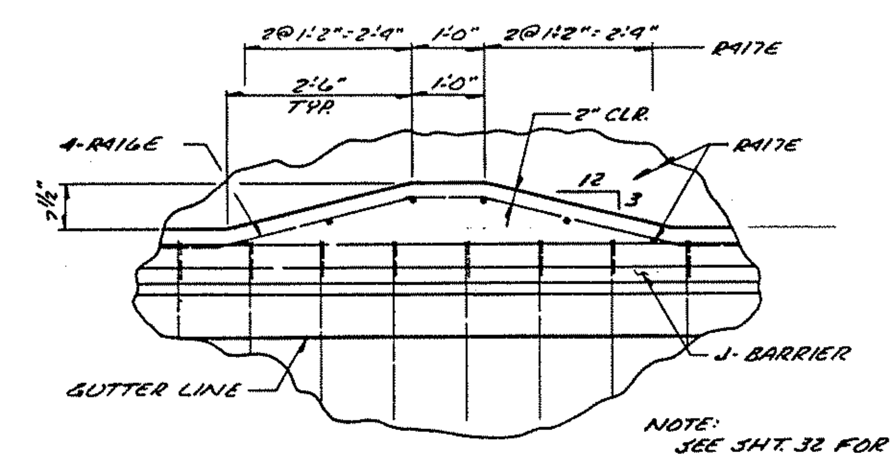
MINNESOTA DEPARTMENT OF TRANSPORTATION	
BRIDGE NO. 02595	
SUPERSTRUCTURE DETAILS	
APPROVED "	
SHEET 24 OF 46 SHEETS	02595
C.P. 88-09-116	DM RRT



HALF DECK PLAN



VIEW C-C



DETAIL B

NOTE:
SEE SHT. 32 FOR CONC. TYPE J RAIL REINFORCEMENT.

① MEASURED ALONG GUTTERLINE.
② MEASURED ALONG COPING.

NOTE:
SEE SHT. 26A FOR SECTION D-D

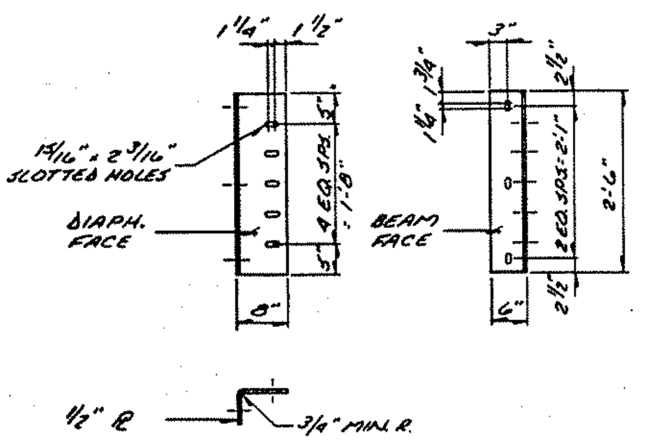
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

SUPERSTRUCTURE DETAILS

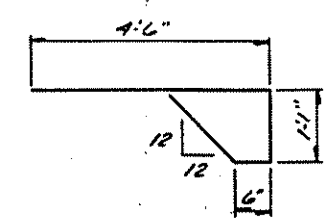
APPROVED

SHEET 25 OF 46 SHEETS | 02545 | DM
C.P. 88-09-116 | | RRT

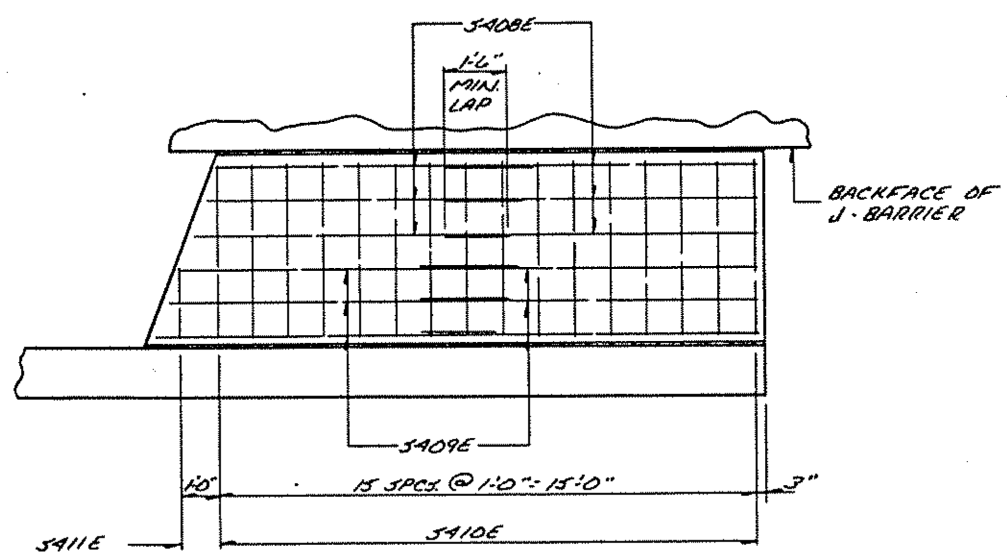


DIAPHRAGM SUPPORT

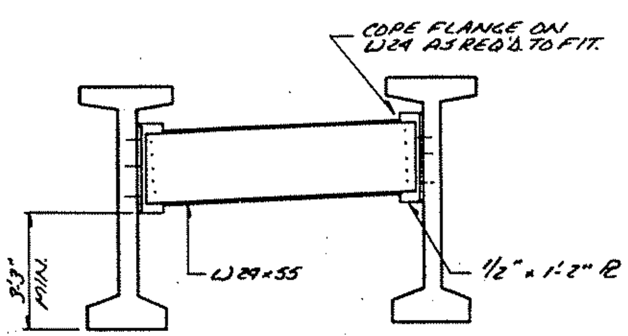
NOTE:
SEE DET. B406 FOR FASTENING PLATE TO PRESTR. BEAMS & TO DIAPHRAGMS.



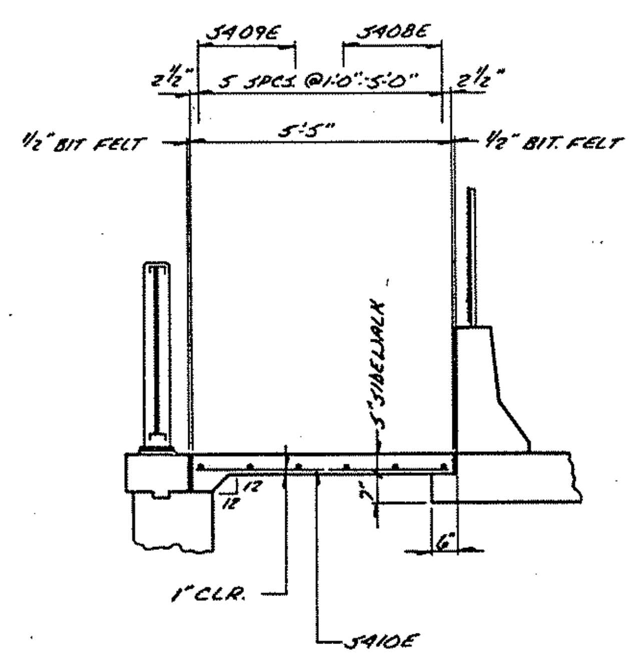
5507E



SIDEWALK PLAN



DIAPHRAGMS @ FACIA BAYS



SECTION D-D

	BILL OF REINFORCEMENT – SUPERSTRUCTURE				
	BAR	NO.	LENGTH	SHAPE	LOCATION
(1)	S401E	975	37'-1"	STRT.	SLAB ~ LONGITUDINAL
(2)	S502E	1260	40'-0"	"	" "
(3)	S503E	2154	45'-11"	"	" ~ TRANSVERSE, TOP
(3)	S504E	1077	41'-6"	"	" " , BOTTOM
(3)	S505E	1077	50'-6"	"	" " "
	S606E	336	15'-0"	"	" ~ LONGITUDINAL ~ OVER PIERS
	S507E	108	7'-6"	BENT	" @ ENDS
(16)	S408E	24	8'-8"	STRT.	SIDEWALK ~ LONGITUDINAL
(16)	S409E	24	9'-4"	"	" "
	S410E	69	5'-1"	"	" ~ TRANSVERSE
	S411E	4	1'-10"	"	" "
	S412E	90	7'-0"	BENT	END DIAPHRAGM
	S413E	36	6'-0"	STRT	" "
	S714E	36	8'-8"	"	" "
	S615E	18	15'-0"	BENT	" "
	S716E	32	5'-0"	STRT	" "

(1) 1'-6" LAP 15 LINES
(2) 1'-11" LAP 14 LINES
(3) 1'-11" LAP
(16) 1'-6" MIN. LAP

(4)	SUMMARY OF QUANTITIES ~ SUPERSTRUCTURE		
(5)	OVERLAY CONCRETE (3U17A)	36,650	SQ. FT.
(6)	BRIDGE SLAB CONCRETE (3X36)	45,678	SQ. FT.
(7)	STRUCTURE CONCRETE (3Y43)	23	CU. YD.
(8)	TYPE J RAILING CONCRETE (3X46)	1160	LIN. FT.
	REINFORCEMENT BARS EPOXY COATED	316,910	POUND
(14)	WIRE FENCE TYPE S-1	1160	LIN. FT.
	ORNAMENTAL METAL RAIL TYPE S	1150	LIN. FT.
(10)	PRESTR. CONC. BEAMS TYPE 81-134	40	EACH
	PRESTR. CONC. BEAMS ~~TYPE~~ 81	5326	LIN. FT.
	DIAPH. FOR CONC. BEAMS TYPE 81	1467	LIN. FT.
(9)	SIDEWALK CONCRETE (3X46)	372	SQ. FT.
(11)	EXP. JT. DEVICE, TYPE 3	170	LIN. FT.
(12)(11)	FIXED CURVED PLATE BRG. ASSEMBLY, TYPE 1	20	EACH
(12)(11)	EXP. CURVED PLATE BRG. ASSEMBLY, TYPE 1	40	EACH
(12)(11)	EXP. CURVED PLATE BRG. ASSEMBLY, TYPE 2	20	EACH
	BEARING ASSEMBL.	80	EACH
(13)	NAMEPLATE (SEE DETAIL B 201)		
(13)(11)	PREFORMED JOINT FILLER (SEE LIST BELOW)		
(11)	CONDUIT SYSTEM (TELEPHONE)	1	L. SUM
(11)	CONDUIT SYSTEM (POWER, NORTH J-BARRIER)	1	L. SUM
(11)	CONDUIT SYSTEM (POWER, SOUTH J-BARRIER)	1	L. SUM
(11)	CONDUIT SYSTEM (LIGHTING)	1	L. SUM
(11)	CONDUIT SYSTEM (WATERMAIN)	1	L. SUM
(11)	CONDUIT SYSTEM (GAS)	1	L. SUM
(11)	CONDUIT SYSTEM (FUTURE)	1	L. SUM

(4) INCLUDES RAIL QUANTITIES.
(5) OVERLAY CONCRETE (3U17A) APPROX. VOLUME IS 1018 CU. YDS.
(6) BRIDGE SLAB CONC. (3X36) APPROX. VOLUME IS 1150 CU. YDS.
(7) END DIAPHRAGM CONCRETE.
(8) APPROX. VOLUME IS 127 CU. YDS.
(9) SIDEWALK CONC. (3X46) APPROX. VOLUME IS 8 CU. YDS.
(10) PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTR. CONC. BEAMS 81 _ PER LINEAR FOOT.
(11) SEE SPECIAL PROVISIONS.
(12) PAYMENT FOR BEARINGS INCLUDED IN ITEM BEARING ASSEMBLY PER EACH.
(13) INCLUDED IN PRICE BID FOR OTHER ITEMS.
(14) CHAIN LINK FENCE ON TOP OF BARRIER.

LIST OF PREFORMED CORK JOINT FILLER
66 - 1" x 11" x 1'-7" RAIL DEFLECTION JOINTS

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

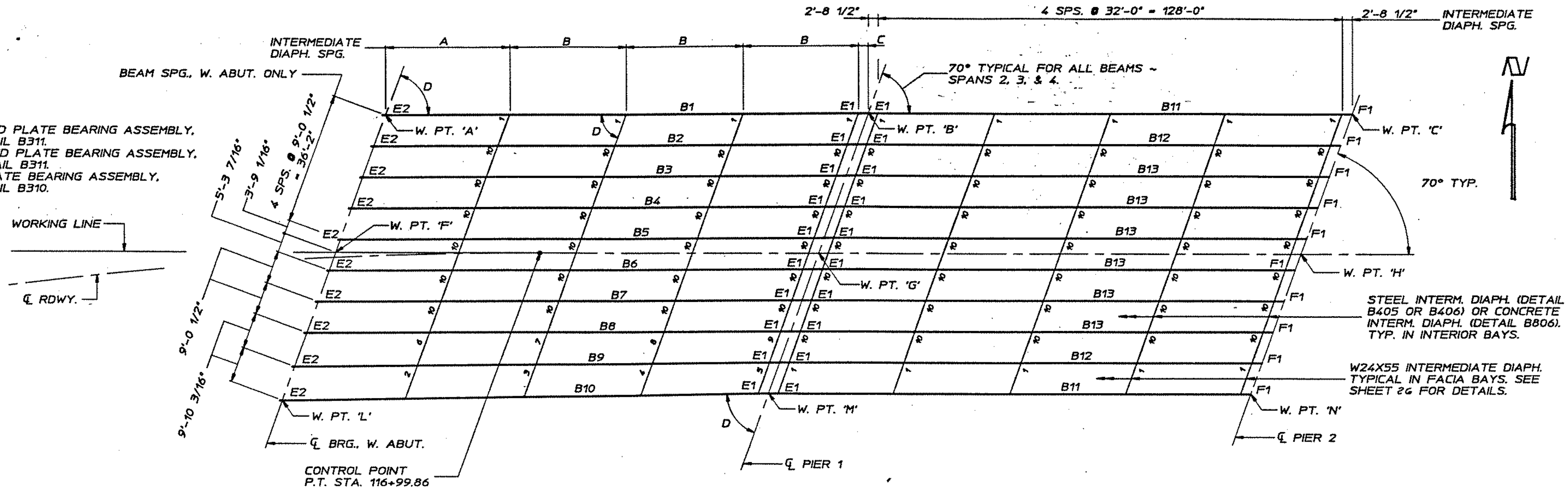
SUPERSTRUCTURE DETAILS

APPROVED:

SHEET 26A OF 46A SHEETS | C.P. 88-09-116 | 02545 | DM | RRT

NOTE:

E1 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B311.
E2 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 2. SEE DETAIL B311.
F1 = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B310.



INTERMEDIATE DIAPHRAGMS	
DIAPH.	⑤ LENGTH
1	9.04'
2	9.64'
3	9.45'
4	9.25'
5	9.06'
6	9.64'
7	9.45'
8	9.25'
9	9.06'
10	9.04'

⑤ MEASURED ℄ BEAM TO ℄ BEAM ALONG ℄ DIAPHRAGM.

FRAMING PLAN ~ SPANS 1 & 2

SCALE: 1" = 15'-0"

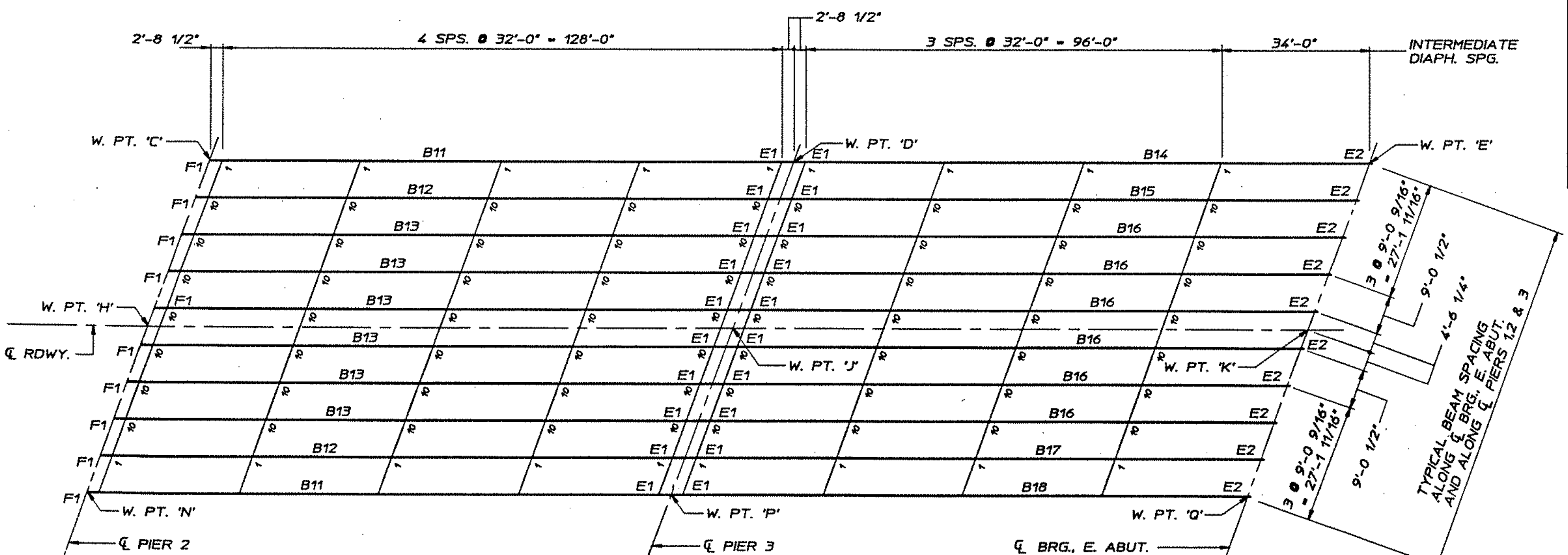
PRESTRESSED CONC. BEAM DIMENSIONS						
BEAM	① LENGTH	② LENGTH	③ A	④ B	③ C	D
B1	132.7517'	131.5017'	33.5017'	32.0000'	2.7083'	69.6819°
B2	132.7503'	131.5003'	33.5130'	31.9997'	2.7083'	69.6296°
B3	132.7490'	131.4990'	33.5010'	31.9994'	2.7082'	69.5730°
B4	132.7476'	131.4976'	33.5006'	31.9990'	2.7082'	69.5117°
B5	132.7463'	131.4963'	33.5003'	31.9987'	2.7082'	69.4458°
B6	132.7450'	131.4950'	33.5000'	31.9984'	2.7082'	69.3752°
B7	132.7436'	131.4936'	33.4996'	31.9981'	2.7081'	69.2996°
B8	132.7423'	131.4923'	33.4993'	31.9977'	2.7081'	69.2191°
B9	133.0233'	131.7733'	33.5705'	32.0657'	2.7139'	69.1334°
B10	133.3085'	132.0585'	33.6428'	32.1348'	2.7197'	69.0425°
B11 ~ B18	133.2500	132.0000	———	———	———	70.0000°

① OUT-TO-OUT LENGTH OF BEAM.

② ℄ BRG. TO ℄ BRG. OF BEAM.

③ MEASURED ℄ BRG. TO ℄ DIAPH. ALONG ℄ BEAM.

④ MEASURED ℄ DIAPH. TO ℄ DIAPH. ALONG ℄ BEAM.



FRAMING PLAN ~ SPANS 3 & 4

SCALE: 1" = 15'-0"

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

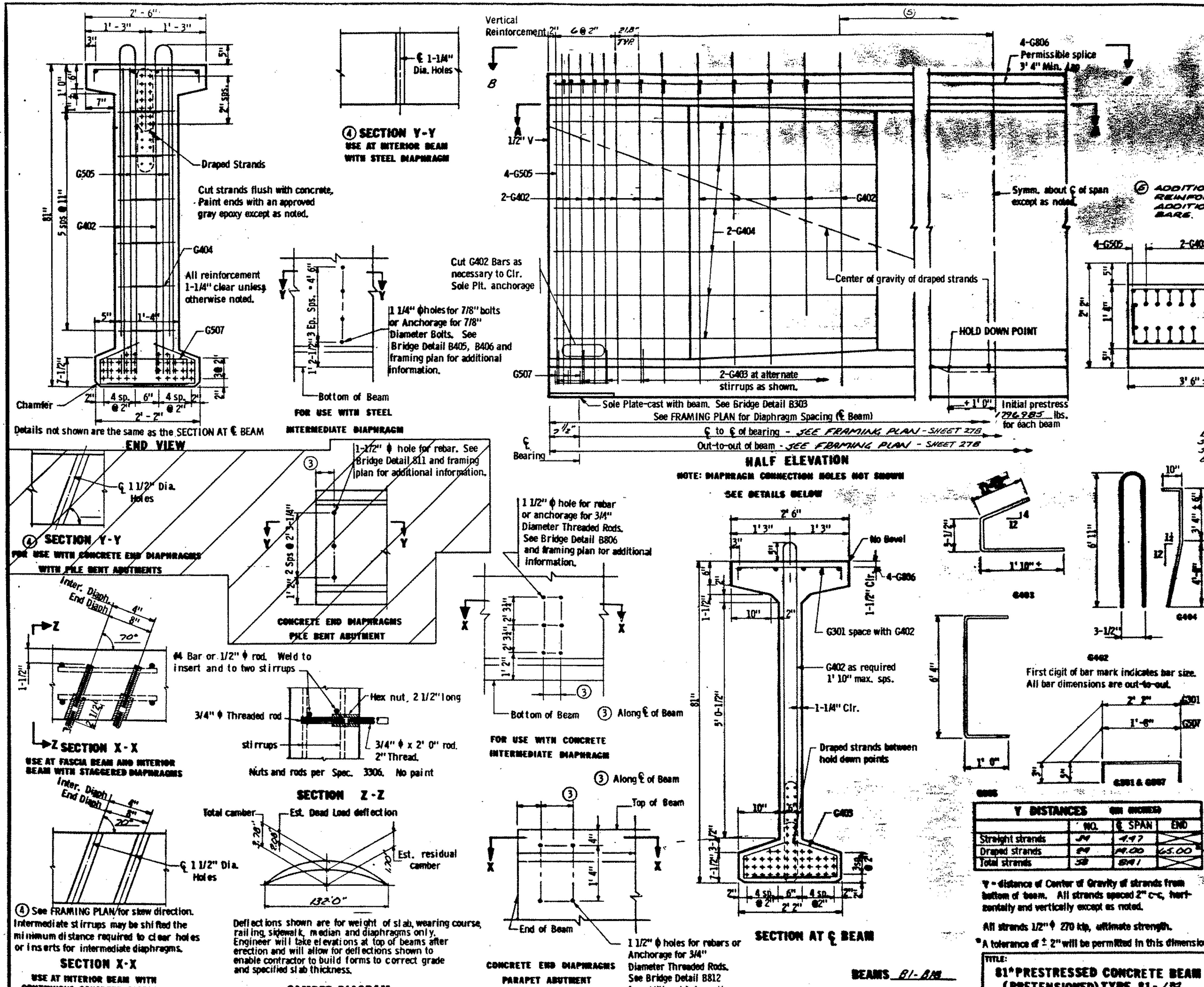
FRAMING PLAN

APPROVED:

C.P. 08-09-116

SHEET 27 OF 46 SHEETS

02545 RMT RRT



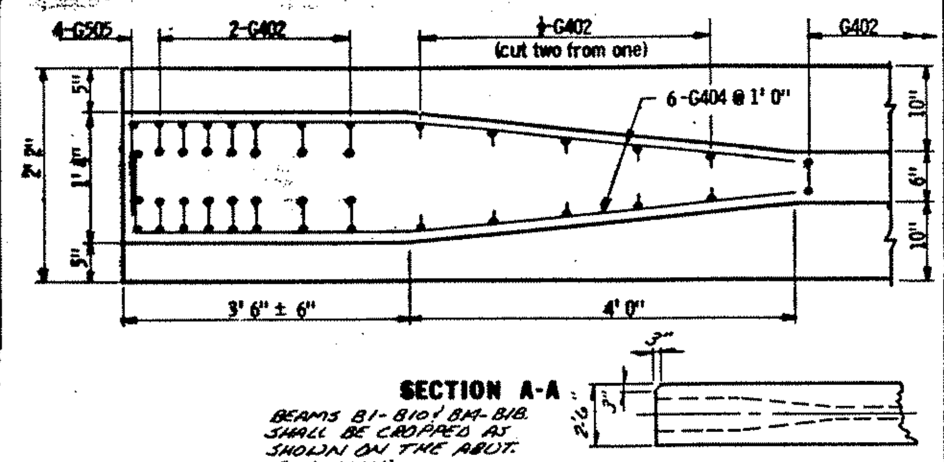
BAR	WT.
G301	1.80 lb.
G402	9.69 lb.
G403	2.37 lb.
*G404	5.47 lb.
G505	8.69 lb.
G806	
G507	2.61 lb.

* Min.

Beam Section Data

Wt. = 7230 lbs. + 875 lbs./ft.
Cross Sec Area at ℄ Of span = 840 in.^{2}
C.G. (from bottom) = 40.04in.
I = 735,614 in.^{4}
S_B = 18,371 in.^{3}
1/2" ϕ 270k strand wt./ft. = .525 lb.
1/2" ϕ 270k strand area = .1531 sq. in.
End Area = 1472 in.^{2}

⑤ ADDITIONAL G402 BARS ARE REQUIRED WHEN VERTICAL REINFORCEMENT SPACING IS GREATER THAN 2'-0". SPACE ADDITIONAL G402 BARS MIDWAY BETWEEN G401 & G403 BARS.



BEAMS B1-B10 & B14-B18 SHALL BE CROPPED AS SHOWN ON THE ABUT. END ONLY.

GENERAL NOTES:

Tops of beams shall be rough floated and broomed transversely for bond.

Provide handling hooks or devices as required by Contractor. Hooks or devices provided will be subject to approval of Engineer and shall be installed within 4' 0" of the end of beam.

A modified strand pattern or a bundled strand pattern which does not change center of gravity of strands may be submitted to the Engineer for approval.

A post-tensioned beam may be used as an alternate for the pretensioned design shown. Mn/DOT will provide plans for the post-tensioned alternate on request.

Each beam shall be marked, showing bridge number, casting date, and individual identification letters and numbers. Markings shall be made on the face of the beam, near the end, so located that they will be exposed after the end diaphragms have been cast. Fascia beams shall be marked on an inside face. All markings shall be stencilled and be clearly legible. For location of beams, see framing plan.

All material and work shown or noted on this sheet shall be included in unit price bid for prestressed concrete beams. See Spec. 2405

See framing plan for beam ends marked "X".

Approximate weight of beam ~~59.8~~ tons. 63 TONS

As an alternate to the diaphragm anchorages shown, the contractor may submit details of a cast - in - place anchorage to the engineer for approval. Anchorage must provide an ultimate pull out strength of 15 kips per anchorage.

Y DISTANCES (IN INCHES)	NO.	℄ SPAN	END
Straight strands	34	4.47	
Draped strands	24	14.00	65.00*
Total strands	58	8.41	

Y = distance of Center of Gravity of strands from bottom of beam. All strands spaced 2" c-c, horizontally and vertically except as noted.

All strands 1/2" ϕ 270 kip, ultimate strength.

*A tolerance of ± 2" will be permitted in this dimension.

MINIMUM CONCRETE STRENGTH - P.S.I.	① f'ci	② f'c
Required min. Concrete Strength	5900 P.S.I.	6300 P.S.I.

① Minimum concrete strength at time of prestress transfer.

② Minimum concrete strength when curing can be discontinued and beam transported and installed.

C.R. 88-09-NG

FIG 5-397.513

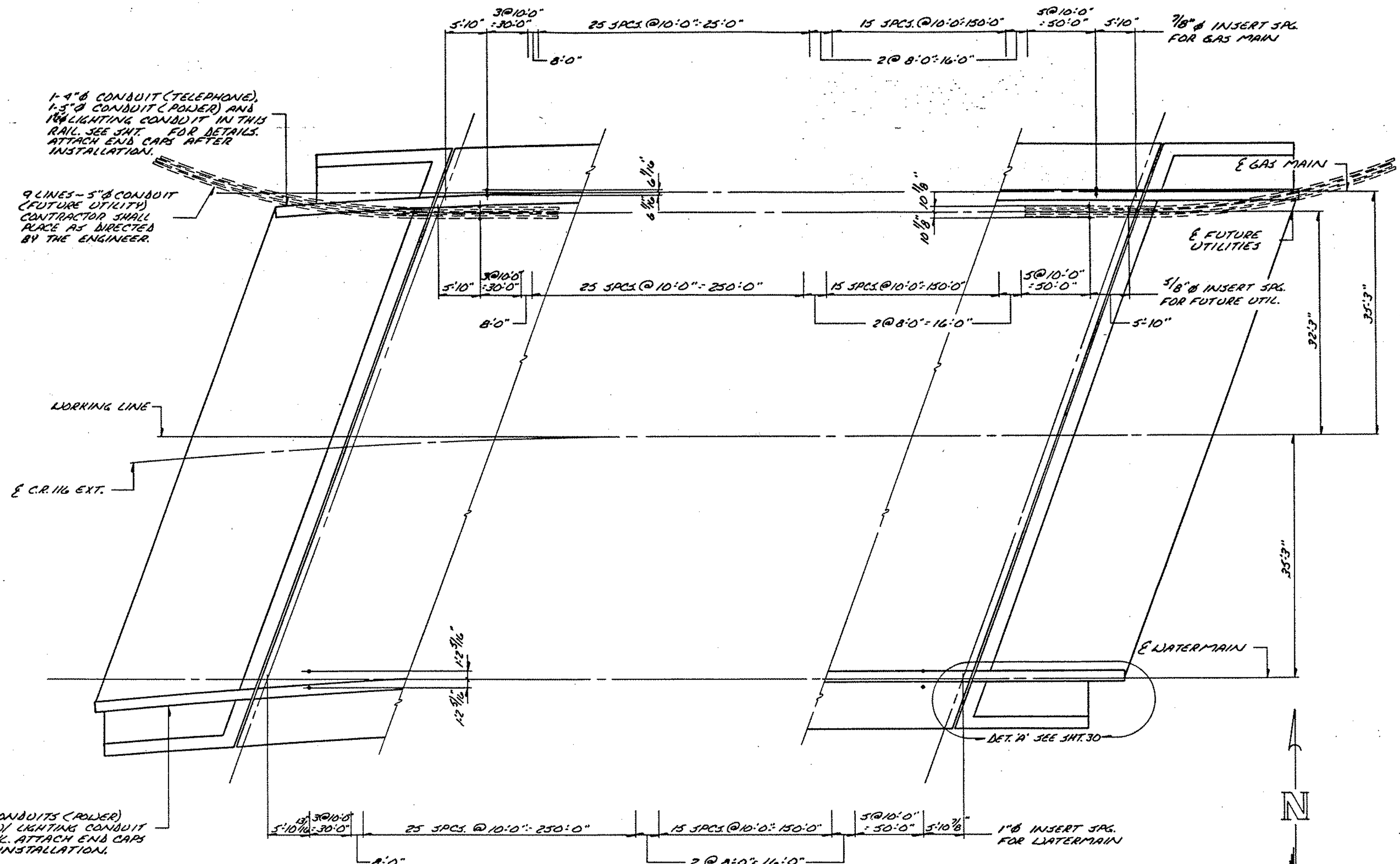
Approved: 2-22-80

TITLE:	DES:	DR: BM	APPROVED:	Bridge No.
81" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 81-L39	CHK:	CHK: RRT		02545
	Sheet No. 28A of 46A Sheets			

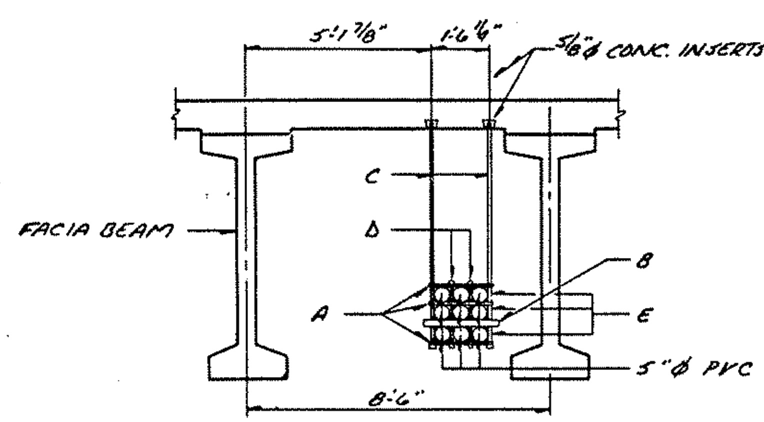
UTILITIES:

ANOKA COUNTY HWY. DEP'T. 1440 BUNKER LAKE BLVD. ANDOVER, MN. 55304 (612) 754-3520	FUTURE UTILITIES
CITY OF ANOKA 2015 1ST AVENUE ANOKA, MN. 55303 (612) 421-6630	POWER CONDUIT (SOUTH BARRIER) WATERMAIN
MIDWEST GAS 1930 N.W. COON RAPIDS BLVD. COON RAPIDS, MN. 55433 (612) 755-3800	GAS MAIN
ANOKA ELECTRIC CO-OP 2022 N. FERRY ST. ANOKA, MN. 55303 (612) 421-3761	POWER CONDUIT (NORTH BARRIER)
U.S. WEST COMM. 5910 SHINGLE CREEK PKWY BROOKLYN CTR., MN. 55430 (612) 569-2505	TELEPHONE CONDUIT (NORTH BARRIER)

NOTE:
CONTRACTOR SHALL CONTACT THE CITY OF ANOKA & MIDWEST GAS PRIOR TO BACKFILLING ABUTMENTS SEE SPECIAL PROVISIONS.



PART. DECK PLAN
SCALE 1/8" = 1'-0"



A: 1/2" x 2" PVC PLATE.
B: 2" x 2" ALUMINUM SQUARE TUBING.
C: 5/8" ø x 6'-6" 11NC THREADED STEEL HANGER RODS, NUTS & WASHERS (PLATED).
D: INTERMEDIATE RODS 3/4" 11NC THREADED STEEL RODS, NUTS & WASHERS (PLATED).
E: 5/8" PVC SPACER TUBES.

HANGER SYSTEM

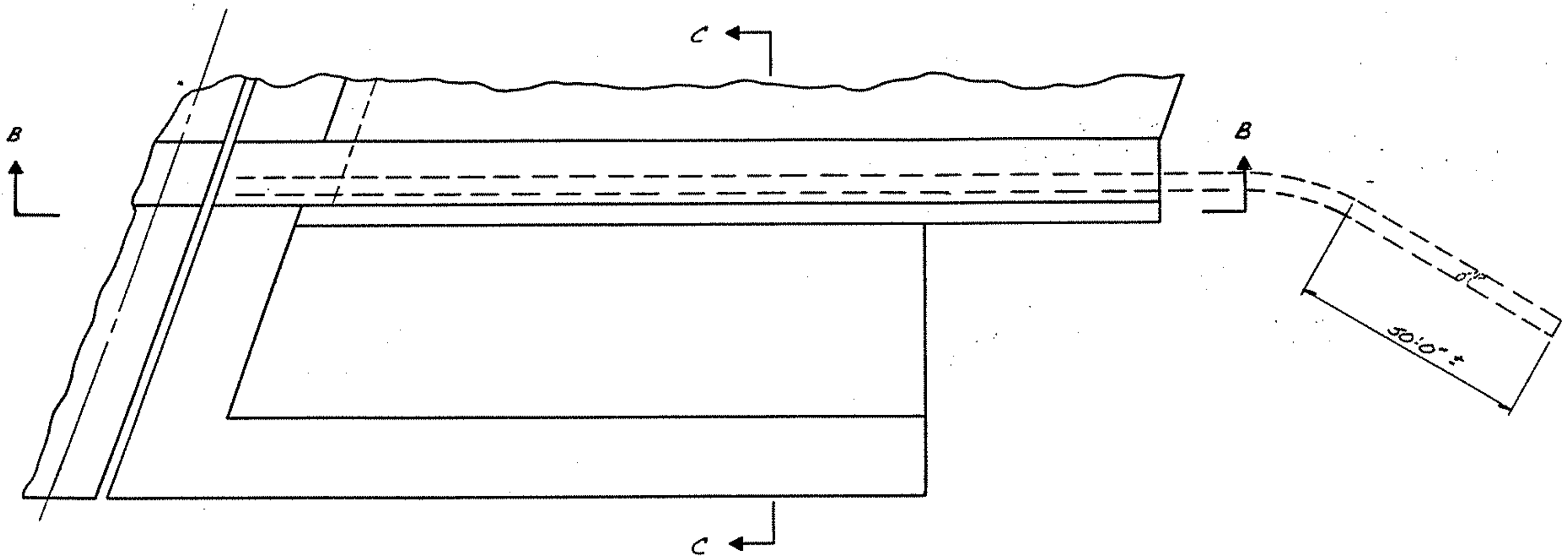
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02545

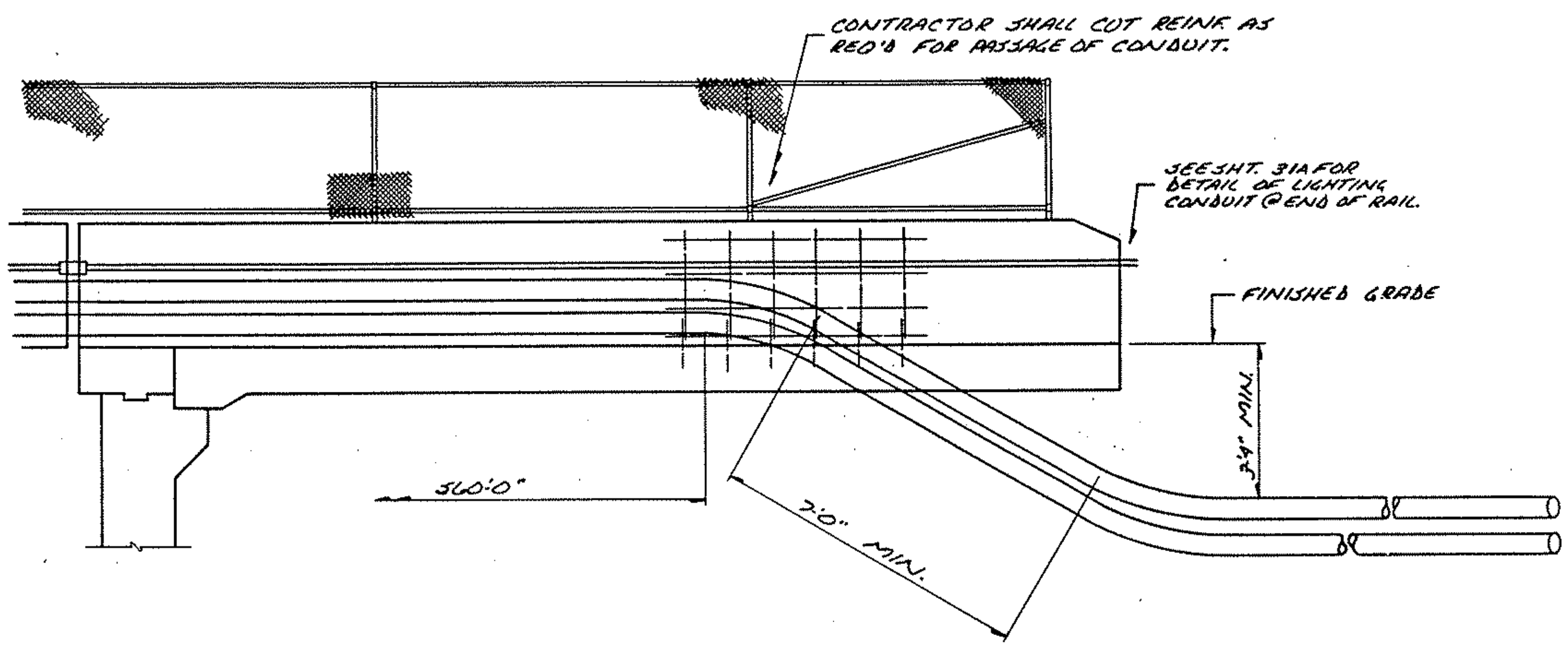
UTILITY DETAILS

APPROVED

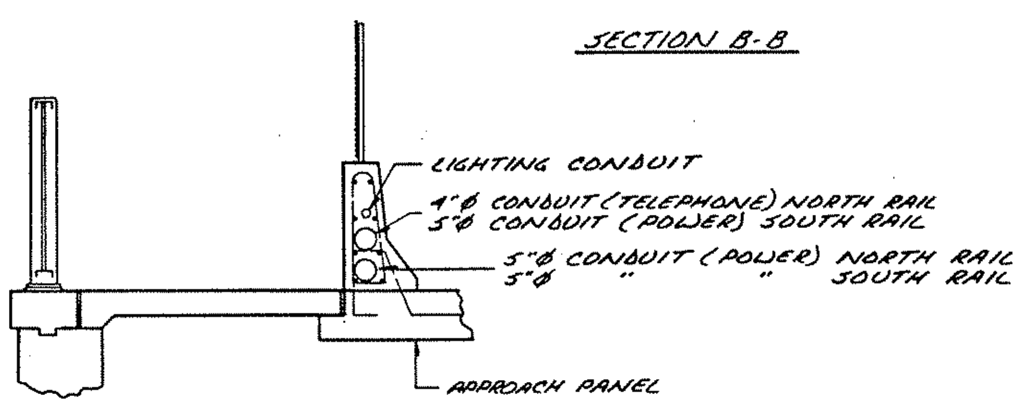
SHEET 29 OF 96 SHEETS	02545	DM
C.P. 88-09-116		RRT



DETAIL 'A'
S.E. CORNER SHOWN, OTHER CORNERS SIMILAR



SECTION B-B



SECTION C-C

(1)(6) QUANTITIES FOR WATERMAIN SYSTEM

(10)	SLEEVES THRU ABUTMENTS ~ 26"Ø I.D.	2 EACH
(11)	1"Ø THREADED INSERTS	108 EACH

(2)(6) QUANTITIES FOR GAS MAIN SYSTEM

(10)	SLEEVES THRU ABUTMENTS ~ 12"Ø I.D.	2 EACH
(11)	7/8"Ø THREADED INSERTS	108 EACH

(3)(6) QUANTITIES FOR FUTURE UTILITY SYSTEM

(10)	SLEEVES THRU ABUTMENTS ~ 6"Ø I.D.	18 EACH
(11)	5/8"Ø THREADED INSERTS	108 EACH
	5"Ø PVC CONDUIT	1260 L.F.
(7)	HANGER & ROLLER ASSEMBLY	4 EACH
	END CAPS ~ 5"Ø P.V.C.	36 EACH
	EXPANSION & DEFLECTION FITTINGS	18 EACH

(4)(6) QUANTITIES FOR TELEPHONE CONDUIT SYSTEM

	4"Ø FIBERGLASS CONDUIT	680 L.F.
(8)	BENDS	6 EACH
	END CAPS ~ 4"Ø F.R.E.	2 EACH
	EXPANSION & DEFLECTION FITTINGS	2 EACH

(5)(6) QUANTITIES FOR POWER CONDUIT SYSTEM

	ITEM	N. RAIL	S. RAIL	UNIT
(9)	BENDS	6	12	EACH
	END CAPS ~ 5"Ø F.R.E.	2	4	EACH
	5"Ø FIBERGLASS CONDUIT	680	1360	L.F.
	EXPANSION & DEFLECTION FITTINGS	2	4	EACH

(1) ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR WATERMAIN SYSTEM.
(2) ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR GAS MAIN SYSTEM.
(3) ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR FUTURE UTILITY SYSTEM.
(4) ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR TELEPHONE CONDUIT SYSTEM.
(5) ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR POWER CONDUIT SYSTEM.
(6) SEE SPECIAL PROVISIONS.
(7) SEE SHT. 29 FOR HANGER DETAILS.
(8) BENDS WILL HAVE A 42" R., 30° ANGLE & A 22" LENGTH.
(9) BENDS WILL HAVE A 60" R., 30° ANGLE & A 31.4" LENGTH.
(10) SLEEVES SHALL BE AS PER SPEC. 3362 & GALV. AS PER SPEC. 3394.
(11) CONC. INSERTS SHALL BE AN APPROVED TYPE MALLEABLE IRON MATERIAL AS PER SPEC. 3329, GRADE 35018. TAP AFTER GALV.

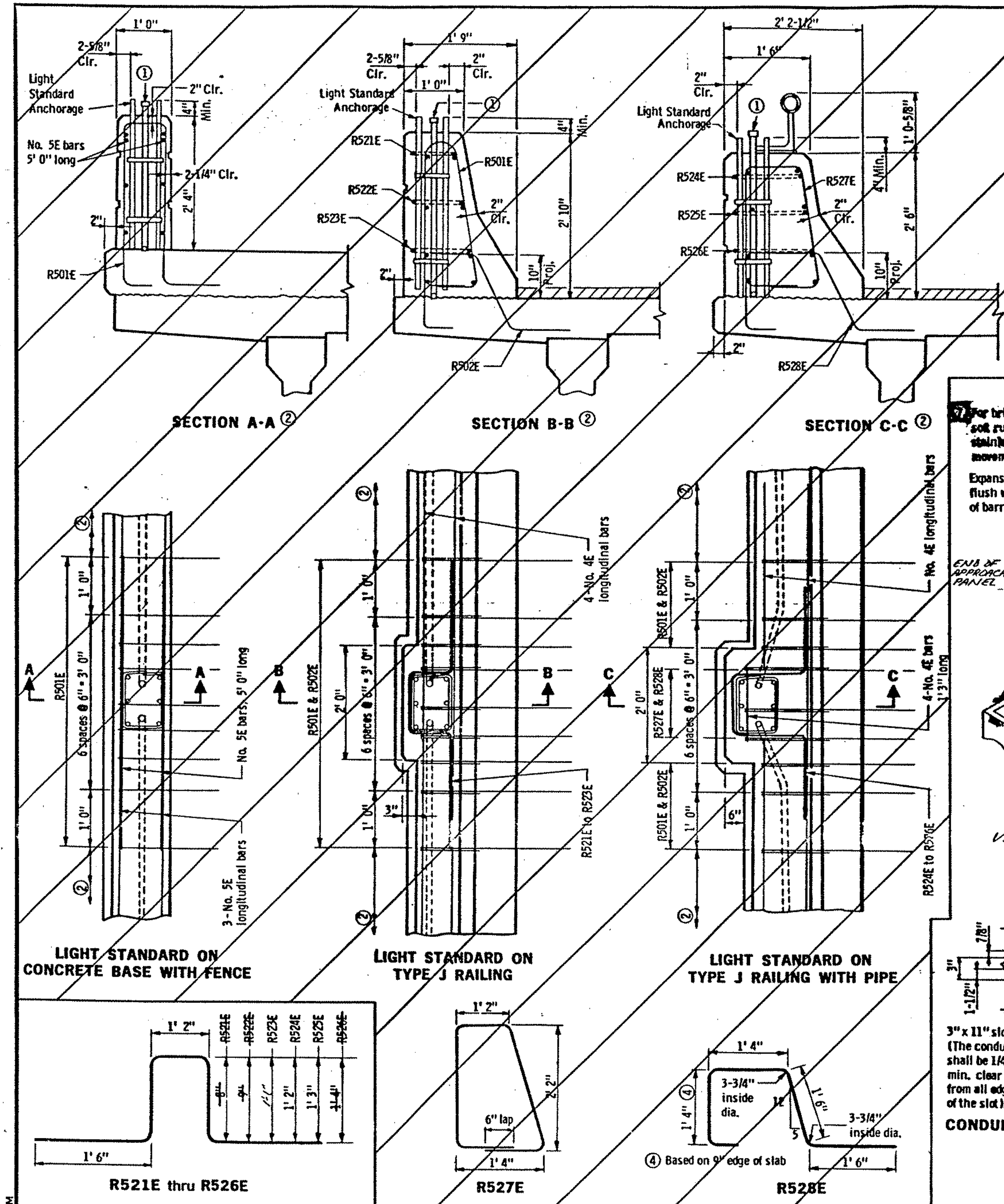
MINNESOTA DEPARTMENT OF TRANSPORTATION

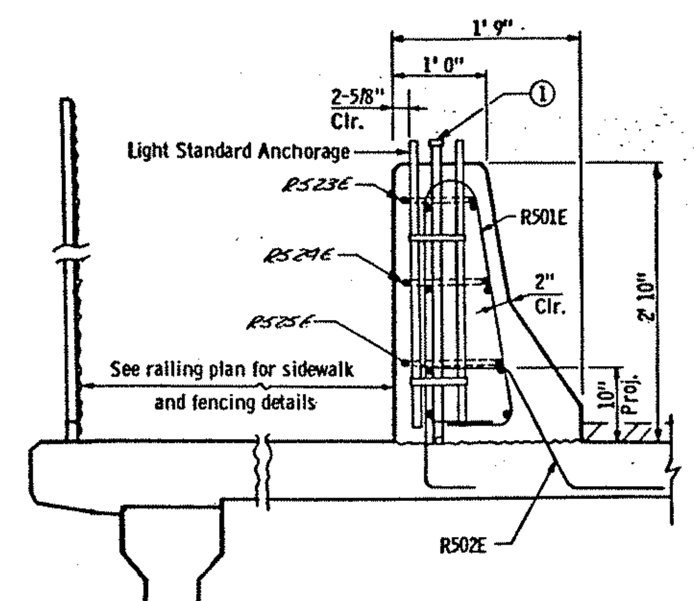
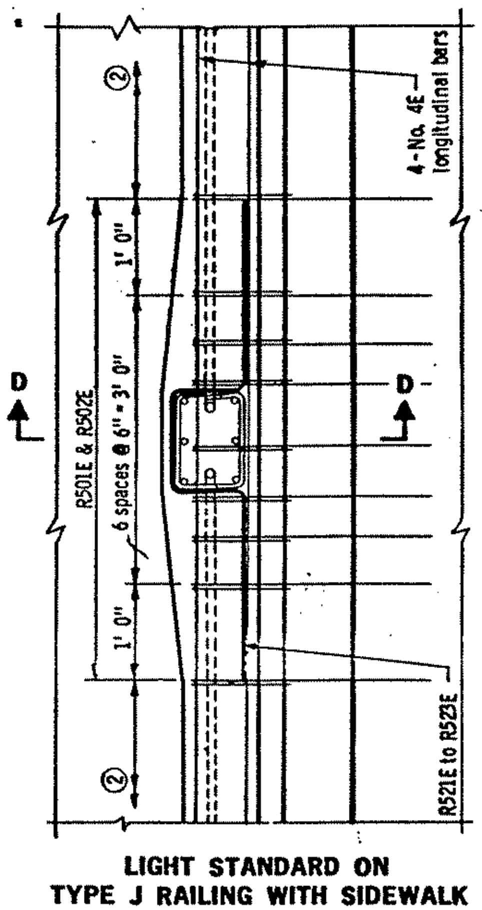
BRIDGE NO. 02545

UTILITY DETAILS

APPROVED "

SHEET 30A OF 46 SHEETS | 02545 | DM RRT
C.P. 88-09-116



SUMMARY OF QUANTITIES CONDUIT SYSTEM (LIGHTING)

	Precast Conc. Handholes (Std. Plate 8117)	4	Units
	Light Standard Anchorage	4	Units
③	1-1/2" dia. Conduit	1200	Lin. Ft.
	1-1/2" dia. Conduit End Caps	4	Units
	Expansion Fittings	4	Units
	Reinforcement Bars (EPOXY COATED)	85	Lbs.

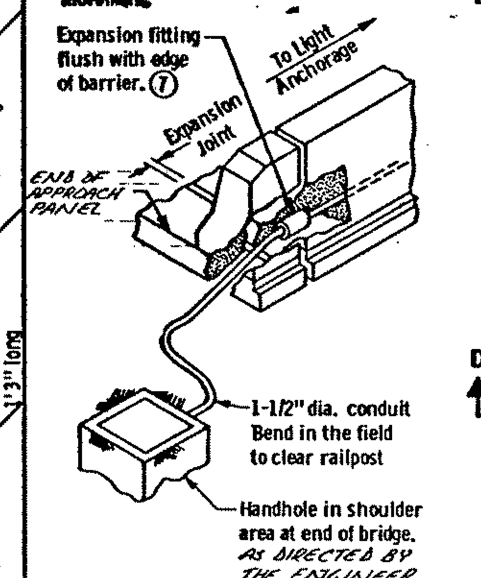
③ System to be grounded.

All material listed above is included in "CONDUIT SYSTEM LIGHTING"

BILL OF REINFORCEMENT FOR RAILING

BAR	NO.	LENGTH	SHAPE	LOCATION
~~R521E~~		~~5' 6"~~	~~Bent~~	~~Light Std. Long.~~
~~R522E~~		~~5' 8"~~	~~Bent~~	~~Light Std. Long.~~
R523E	4	6' 4"	Bent	Light Std. Long.
R524E	4	6' 6"	Bent	Light Std. Long.
R525E	4	6' 8"	Bent	Light Std. Long.
~~R526E~~		~~6' 10"~~	~~Bent~~	~~Light Std. Long.~~
~~R527E~~		~~7' 4"~~	~~Bent~~	~~Light Std. Vert.~~
~~R528E~~		~~6' 2"~~	~~Bent~~	~~Light Std. Vert.~~

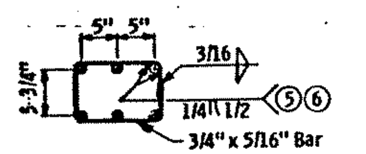
⑦ For bridges with skew over 15°, wrap 1/2" thick soft rubber pad around expansion fitting, with two stainless steel clamps, to provide for lateral movement.



VIEW AT END OF RAIL (SIDEWALK NOT SHOWN)

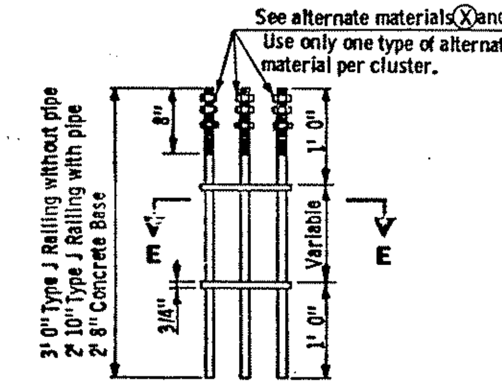
⑤ Welding permitted for alternate Ⓧ. Use stainless steel electrode-Type 308 for welding or repairing.

⑥ Welding permitted for alternate Ⓨ. For procedures and electrodes refer to Spec. 2471.3J and Spec. 3339.

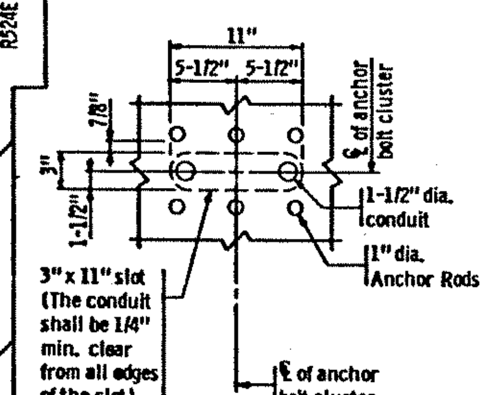


SECTION E-E

See alternate materials Ⓧ and Ⓨ. Use only one type of alternate material per cluster.



ELEVATION ANCHOR BOLT CLUSTER



CONDUIT PLACEMENT DETAIL

Ⓧ Six 1" dia. stainless steel rods, with 8" lg. threads, and eighteen stainless steel hex. nuts. Stainless steel to have a min. yield point of 60 KSI and to be approved by the Structural Metals Engineer.

Ⓨ Six 1" dia. Type C steel rods with 8" lg. threads and upper 10" of rods (threads plus 2") galvanized, all as per Spec. 3385, and eighteen galvanized steel hex. nuts. Remaining 26" of rod cluster shall be either galvanized or epoxy coated after fabrication. Epoxy coat as per special provisions.

① The 1-1/2" dia. conduit shall extend 3" above the railing and be capped.

② See standard railing sheets for additional reinforcement placement and detail dimensions.

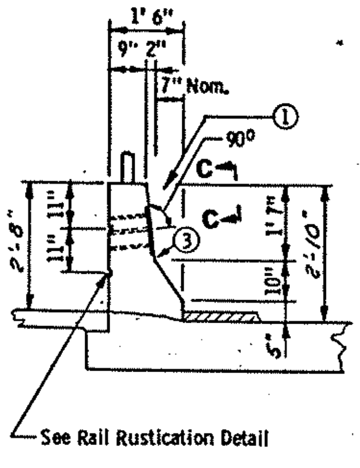
GENERAL NOTES:
Bars marked with the suffix "E" shall be epoxy coated in accordance with the special provisions.

Approved: June 27, 1980
Revised: Sept. 11, 1981

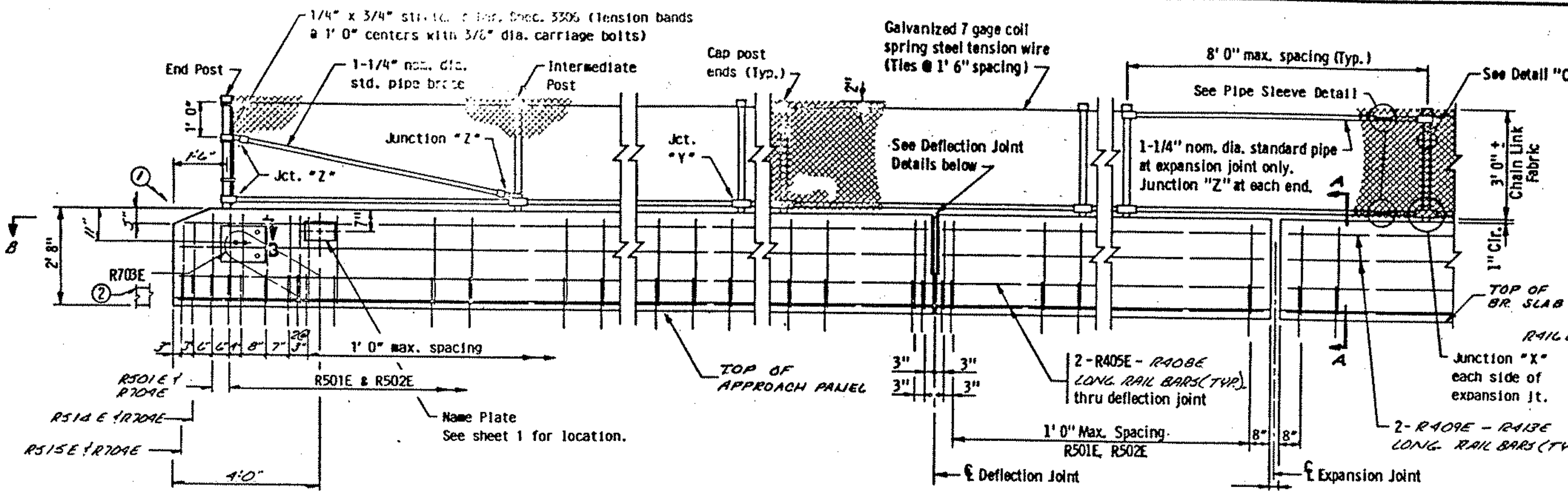
FIG. 5-397.403

TITLE:	DES:	DR:	APPROVED:	Bridge No.
CONDUIT SYSTEM FOR LIGHTING (RAILING)	CHK:	CHK:		02595
	Sheet No. 31A of 46A Sheets			

C.P. 88-09-116



END VIEW



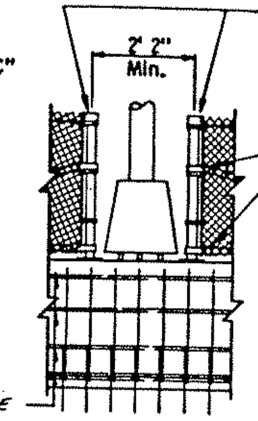
DEFLECTION JOINT

EXPANSION JOINT
(EXPANSION DEVICE NOT SHOWN)

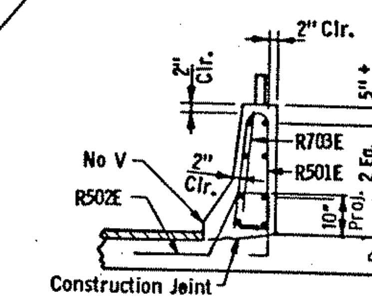
An expansion joint is required only if an expansion device is used. Provide pipe sleeve in span between the vertical posts at expansion joint. See Superstructure Sheets for location.

① SEE GUARDRAIL CONNECTION DETAIL FOR WEST END OF RAIL ONLY. NO GUARDRAIL CONNECTION OR RAIL BEVEL REQ'D @ EAST END.
② Top of approach curb
③ 6" Minimum, 10" Maximum Radius

INSIDE ELEVATION OF RAILING INTEGRAL END POST



LIGHT STANDARD
See Standard Bridge Detail Sheets for light anchorage and conduit system details.



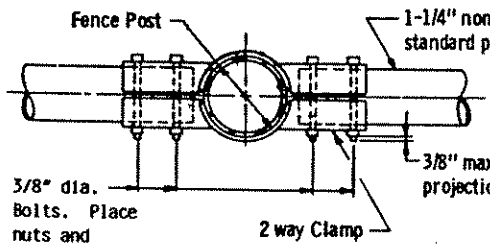
SECTION A-A

BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	1339	6' 1"	Bent	Rail Vertical
R502E	1335	5' 6"	Bent	Rail Vertical
R703E	4	6' 6"	Bent	Integral End Post
R704E	12	5' 6"	Bent	Integral End Post
R405E	4	21'-11"	Straight	Rail Longitudinal
R406E	4	21'-0"	Straight	Rail Longitudinal
R407E	8	21'-6"	"	" "
④ R408E	200	22'-10"	"	" "
R409E	8	10'-7"	"	" "
R410E	8	11'-0"	"	" "

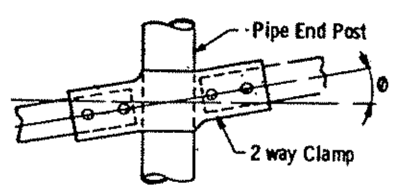
Conc. Railing - 0.109 Cu. Yds. per ft. and 440 lbs. per ft.

R411E	16	10'-10"	STRT.	RAIL - LONG.
R412E	32	16'-1"	"	" "
R413E	229	16'-3"	"	" "
R514E	4	5'-7"	BENT	" - VERT.
R515E	4	5'-5"	"	" "
④ R416E	16	10'-0"	"	" - LONG.
⑤ R417E	24	2'-4"	STRT.	" - VERT.

④ 1'-6" LAP 25 LINES
⑤ SEE SHT. 25A FOR PLACEMENT DET.

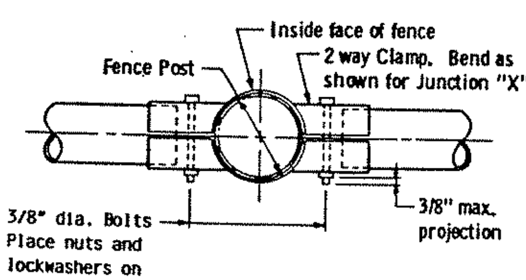


PLAN VIEW

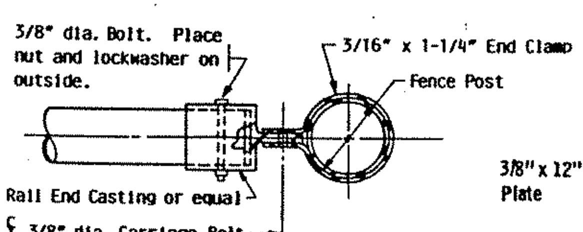


ELEVATION

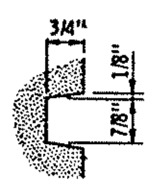
JUNCTION "X"



JUNCTION "Y"



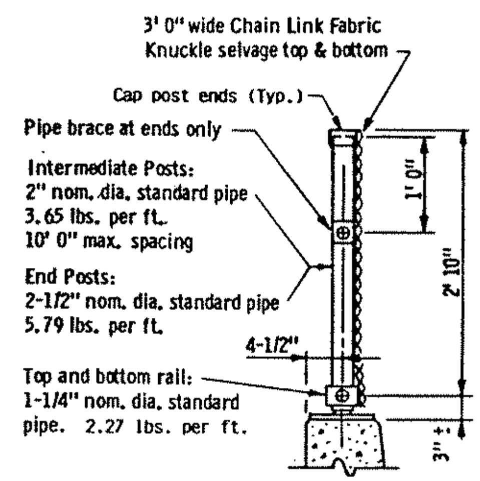
JUNCTION "Z"



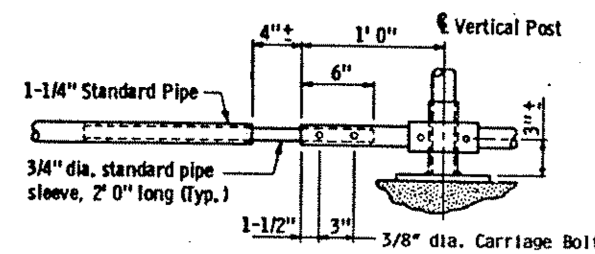
RAIL RUSTICATION

2-WAY CLAMP BENDING TABLE

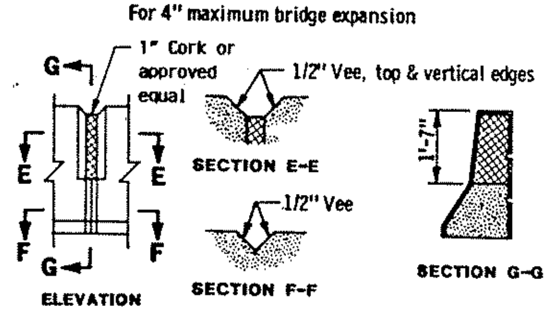
Grade of Fence	θ
0° to 2°	0°
2° to 6°	4°
6° to 10°	8°



TYPICAL SECTION THRU FENCE
(Intermediate Post Shown)

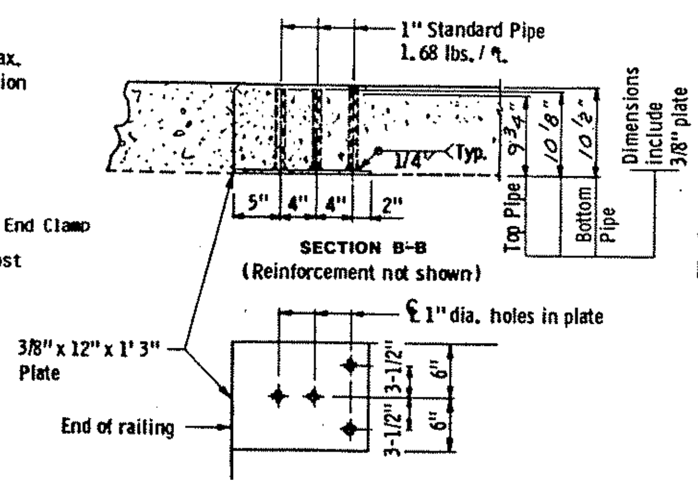


PIPE SLEEVE DETAIL
For 4" maximum bridge expansion

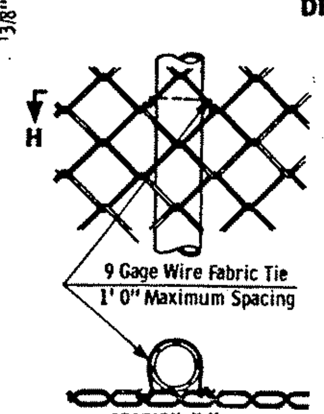


ELEVATION

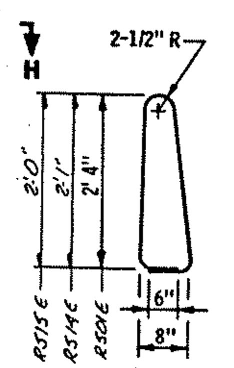
DEFLECTION JOINT DETAILS



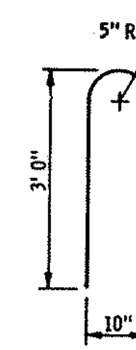
GUARDRAIL CONNECTION DETAIL



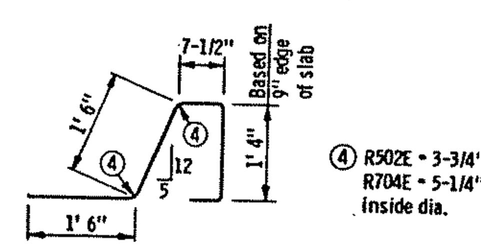
DETAIL "C"



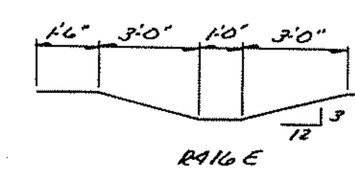
R501E, R514E & R515E



R703E



R502E & R704E



R416E

GENERAL NOTES

Bars marked with the suffix "E" shall be epoxy coated in accordance with Spec. 3301

Finish all edges of rail with 1/2" vee except where otherwise noted.

Fence post anchorages shall be Type B.

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.

End Post bracing is not to exceed 500 ft. maximum interval.

Concrete in the rail base shall be Mix No. 3X46

All material in the concrete base is included in the superstructure quantities.

For spacing of fence posts, joints and electrical grounds, see superstructure sheets.

Fence posts & anchorages shall be set vertical, unless otherwise noted.

See special provisions for requirements not included on this sheet and for basis of payment.

Guardrail connection shall be Structural Steel Spec. 3306 and galvanized after fabrication per Spec. 3394

The guard rail connection is included in the price bid for other items.

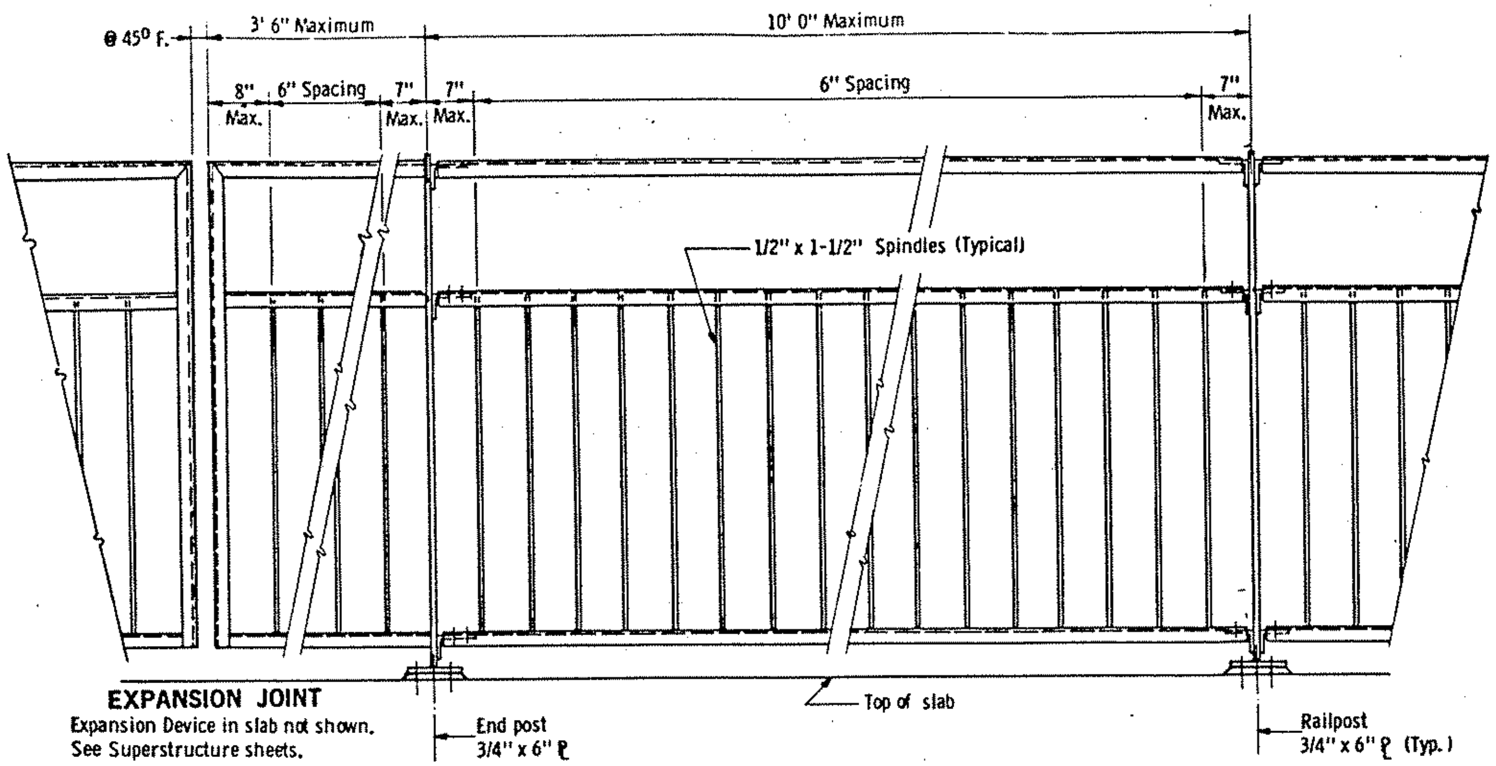
Maximum spacing of deflection joints shall be 20' 0".

The length of railing concrete is to be measured for payment between the outside faces of railing.

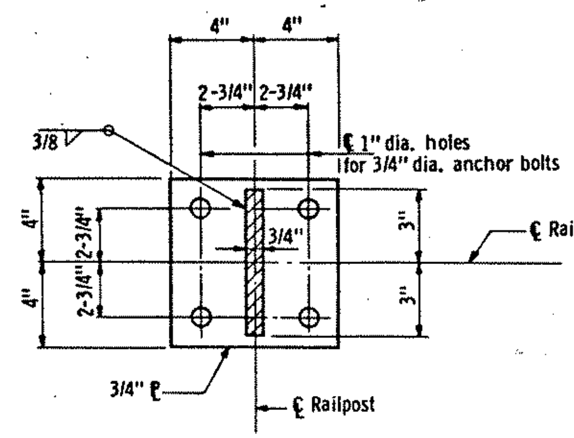
℄ of fence post anchorage shall be a minimum of 6" from joints.

C.P. 88-09-116

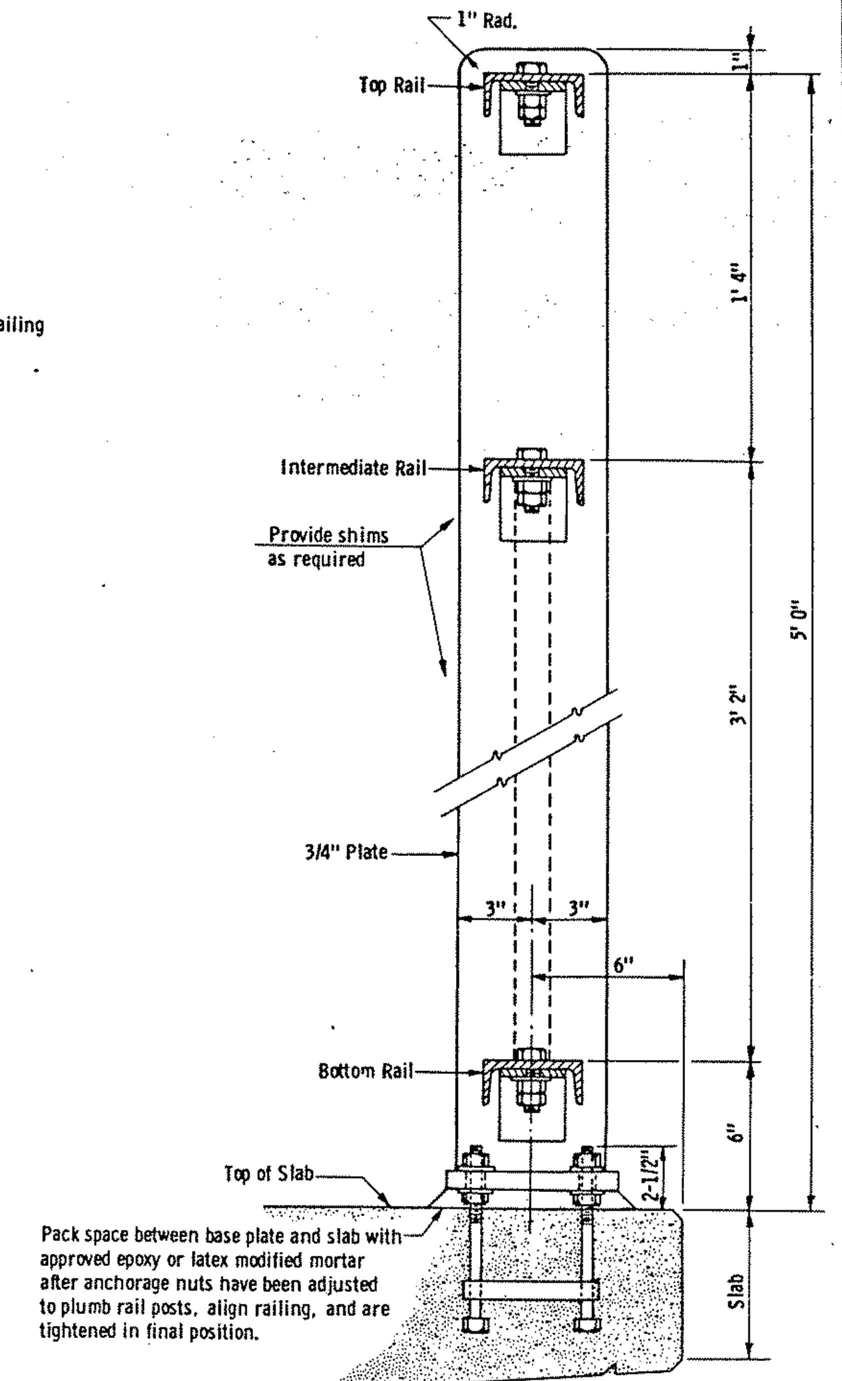
TITLE: BIKEWAY RAILING CONCRETE (TYPE J) & FENCE Integral End Post - No Sidewalk - w/o Wearing Course	REVISED:	APPROVED: Nov. 26, 1985	FIG. 5-397.156
	DES: / DR:	APPROVED:	Bridge No.
	CHK: / CHK:		02545
	Sheet No. 32A of 46A Sheets		



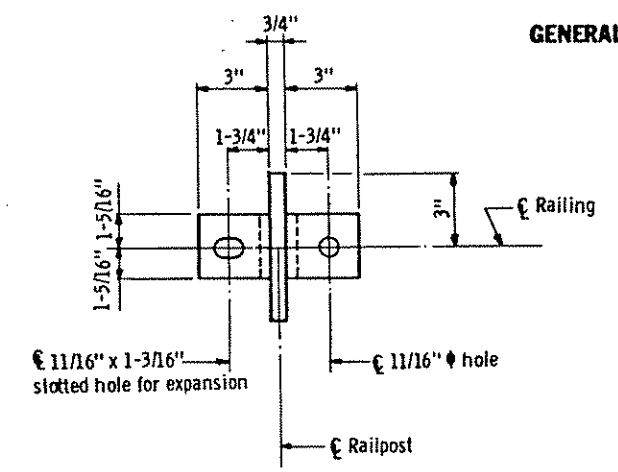
GENERAL RAILING ELEVATION



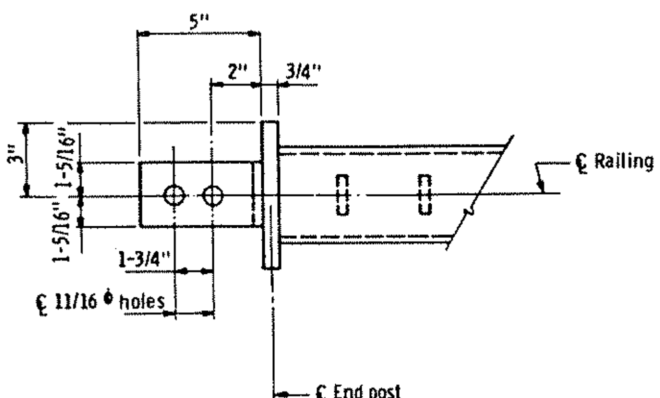
RAILPOST BASE ℄



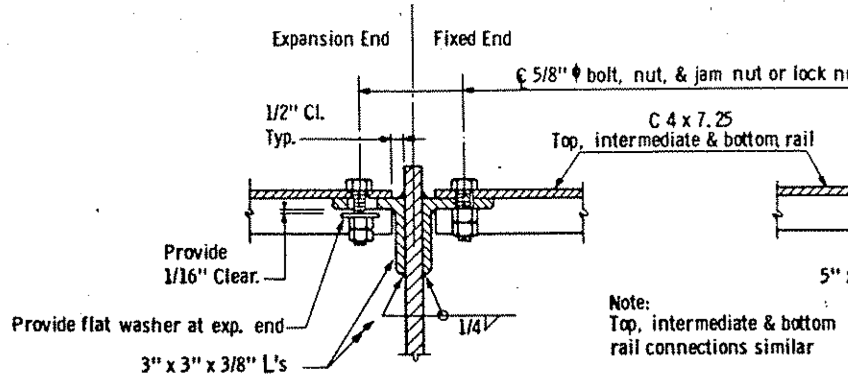
TYPICAL RAILPOST



TOP VIEW
(Railing not shown)



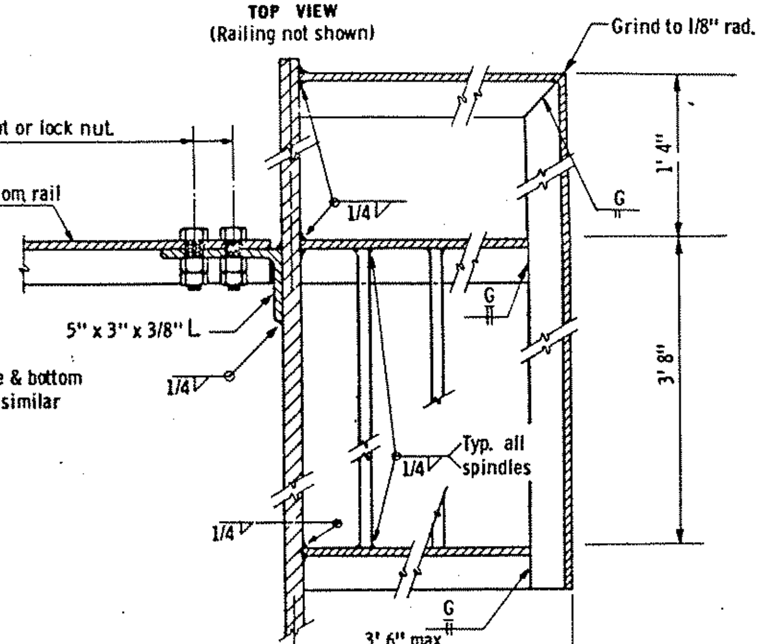
TOP VIEW
(Railing not shown)



Note:
Top, intermediate & bottom rail connections similar

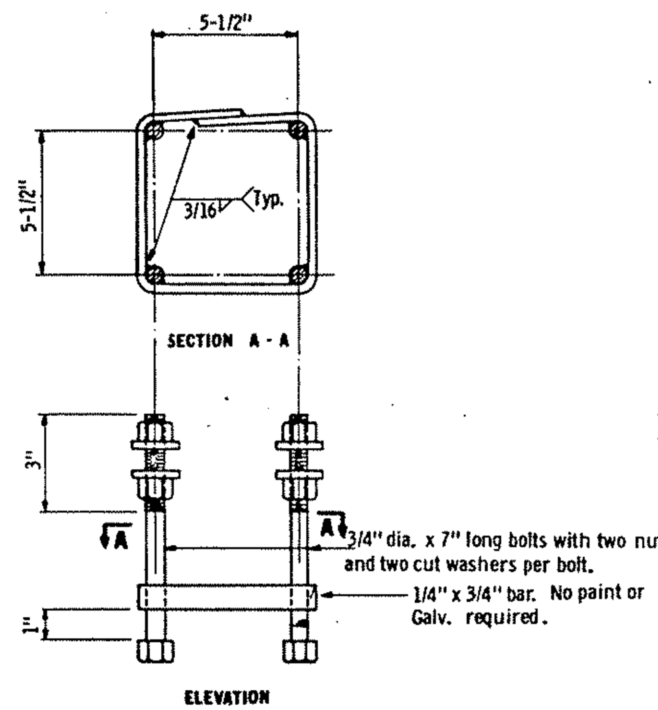
PART ELEVATION

TYP. INTERMEDIATE POST RAILING CONNECTIONS



PART ELEVATION

END POST DETAILS



RAILPOST ANCHORAGE

This railing will be used only when there is a barrier between the bikeway and the roadway, or on a bikeway bridge with no vehicular traffic.

All rail posts normal to grade.

Anchorages shall be accurately placed to provide correct alignment of railing. Set normal to grade.

All structural steel shall comply with Spec. 3306.

Galvanize bolts, nuts, and washers per Spec. 3392.

Galvanize all other structural steel per Spec. 3394 after fabrication.

Check special provisions for additional painting requirements at aesthetic locations.

Price bid for metal railing includes all material shown on this sheet.

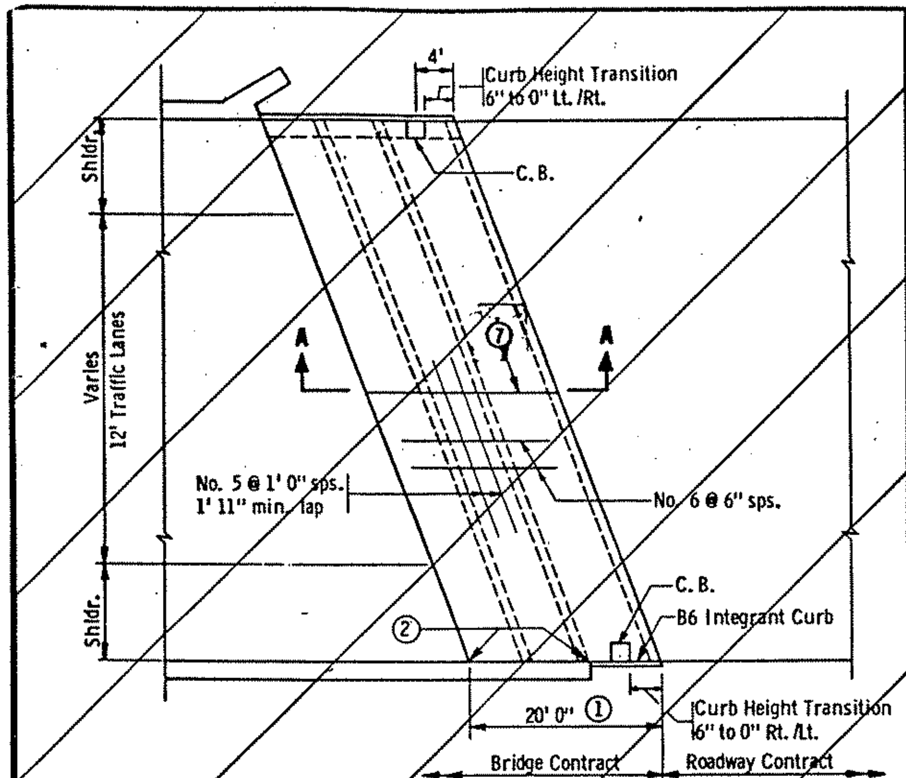
Length of "metal railing" for payment will be measured from end to end of channel with no deduction for open joint.

All railing members shall be flat after fabrication and galvanizing to within 1/8" in 10 ft. by mechanical means without damage to the zinc coating.

C.P. 88-09-116 Revised: June 10, 1983 Approved: July 22, 1980 FIG. 5-397.150

TITLE:	DES:	DR:	APPROVED:	Bridge No.
METAL RAILING FOR BIKEWAYS	CHK:	CHK:		
	Sheet No. 33A of 46A Sheets			02545

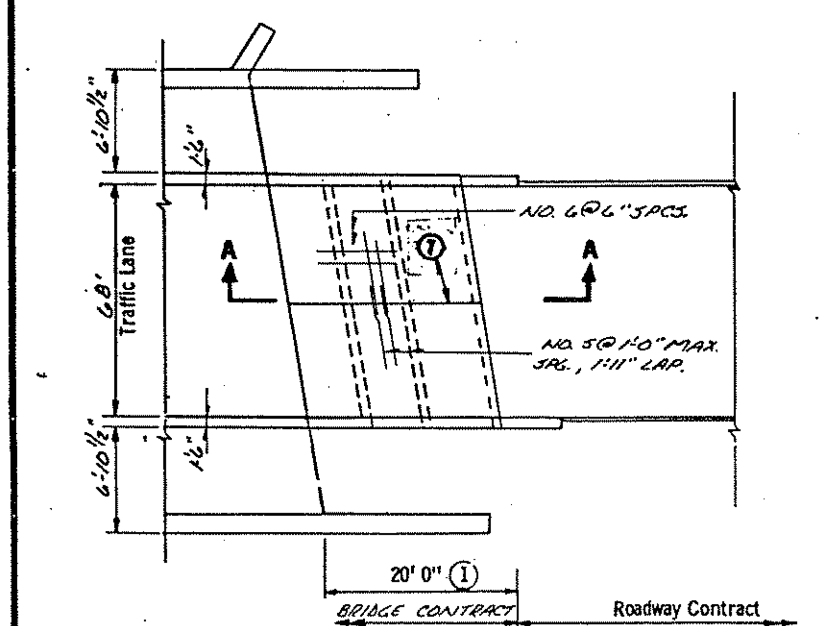
17M



PARALLEL WINGWALLS LESS THAN 14 FT. IN LENGTH

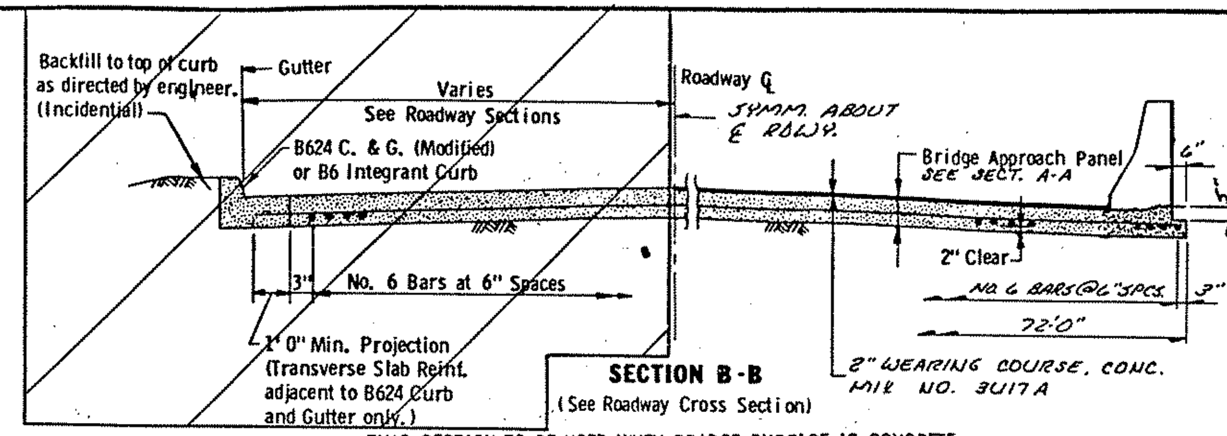
① Use No. 6 @ 6" longitudinal and No. 5 @ 1' 0" transverse reinforcement

~~② See Joint Detail~~

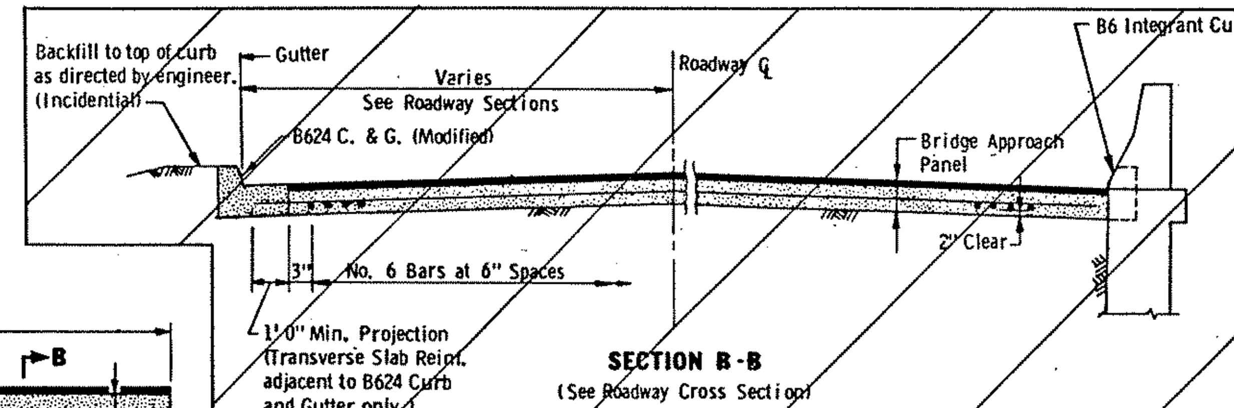


PARALLEL WINGWALLS 14 FT. AND OVER

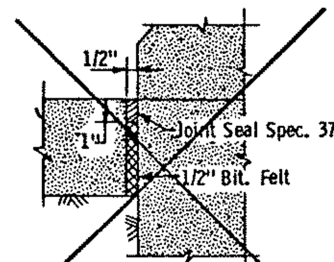
MULTI-LANE AND TWO LANE ROADWAYS
BITUMINOUS PAVEMENT



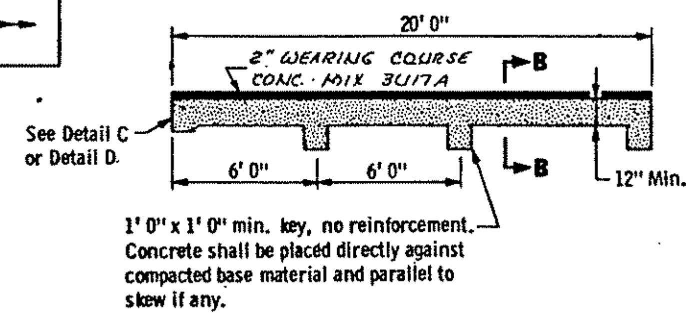
SECTION B-B
(See Roadway Cross Section)
THIS SECTION TO BE USED WHEN BRIDGE SURFACE IS CONCRETE



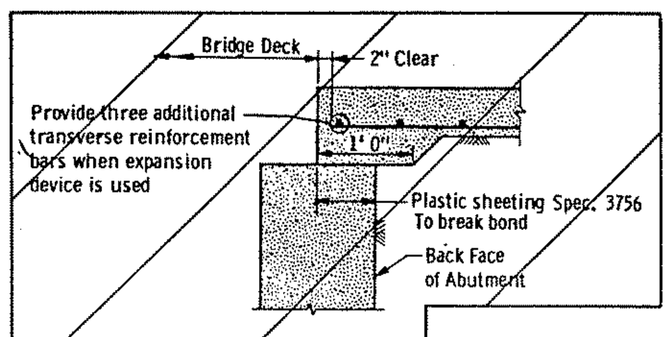
SECTION B-B
(See Roadway Cross Section)
THIS SECTION TO BE USED WHEN BRIDGE SURFACE IS BITUMINOUS



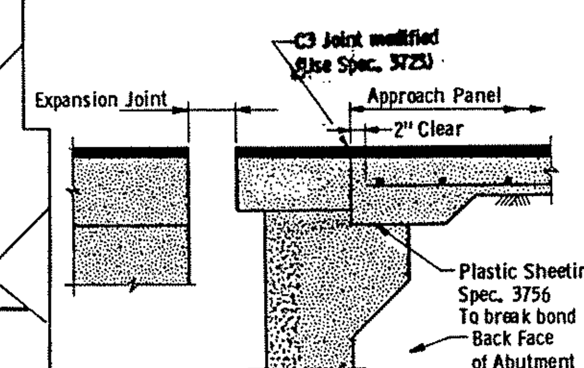
JOINT DETAIL



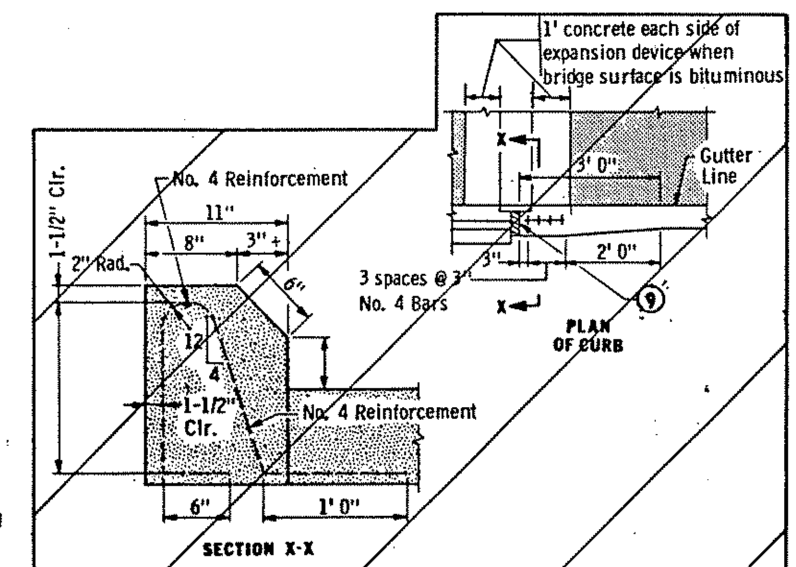
SECTION A-A



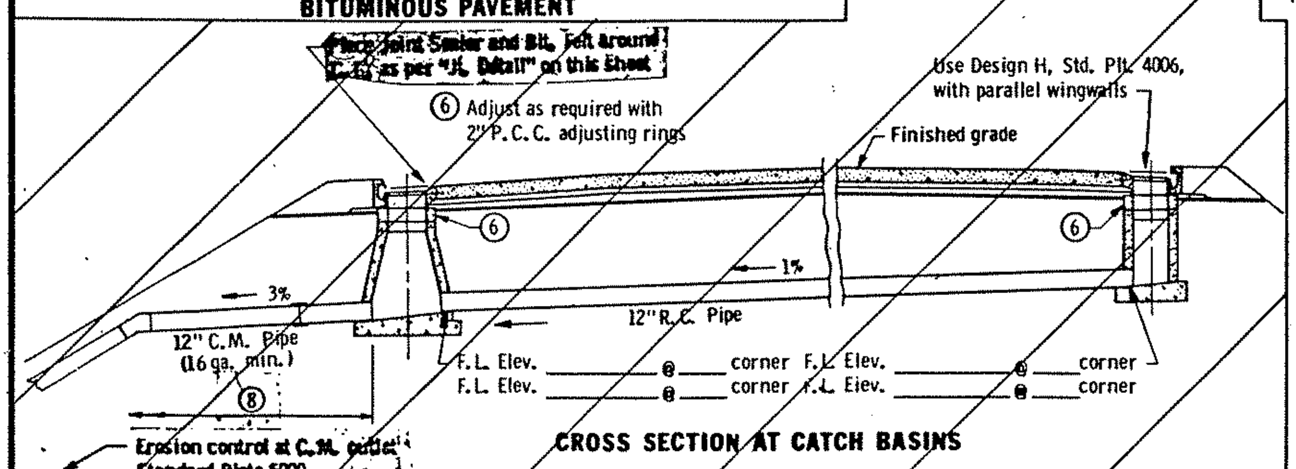
DETAIL C



DETAIL D



CURB TRANSITION DETAILS
FOR USE WHEN BRIDGE EXPANSION JOINT IS BETWEEN END OF APPROACH PANEL AND BRIDGE SLAB



CROSS SECTION AT CATCH BASINS

The summary of quantities for approach panel is as-shown below. Any additional minor items and slight changes of quantities required shall be furnished by the contractor with no additional compensation except as noted.

ITEM	*MANUAL REFERENCE
Sodding at Pipe Culverts	Std. Plts. 9102
Riprap at CMP Outlets	Std. Plts. 3134
Metal Apron for CM Pipe	Std. Plts. 3123
Curb and Gutter	Std. Plt. 7100
Catch Basin Details	Std. Plt. 4002
Catch Basin Details	Std. Plt. 4006
Precast Concrete Base	Std. Plt. 4011
Catch Basin Frame	Std. Plt. 4129
Catch Basin Curb Box	Std. Plt. 4160
Catch Basin Grate	Std. Plt. 4151
Catch Basin Installation	Std. Plt. 7111
Metal Pipe Flume	Std. Plt. 5000
Longitudinal Joints	Std. Plt. 1140
Integrant Curbs	Std. Plt. 7000
Contraction Joint	Std. Plt. 1120
Conc. Short Cone & Adj. Ring	Std. Plt. 4010

*Specification Ref. Std. Plts. 0001 & 0002
Reinforcement shall be lapped as per Spec. 2472.3D

	③ SUMMARY OF QUANTITIES FOR BRIDGE APPROACH PANELS		
④	Concrete Mix No. 3X42	127	Cu. Yd.
⑤	Catch Basins	—	Req'd.
	Metal Apron	—	Req'd.
	Reinforcement Bars (EPOXY)	15,310	Lbs.
⑧	12" C. M. Pipe Drain	—	Lin. Ft.
	Curb, Design	—	Lin. Ft.
	12" R. C. Pipe Drain	—	Lin. Ft.
	CONC. MIX 3U17A	17	CU. YD.
	Sod	—	Sq. Yd.
	Random Riprap Class "A"	—	Cu. Yd.

③ Quantities listed are for approach panels at both ends of bridge

Payment will be included in the single lump sum price for "Item 301.601 Bridge Approach Panels."

④ The Volume of concrete shown is based on an average slab depth of 12" plus the volume of keys and sills as dimensioned. (Concrete for Curb Design B618 is not included in this quantity.)

⑤ Includes all concrete work and all castings and appurtenances necessary to construct the catch basins as shown and noted.

⑦ Permissible L2KT longitudinal joint. See Standard Plan Sheet 5-297.22

⑧ Pipe drains in location shown to be paid for by the lineal foot as a seperate item.

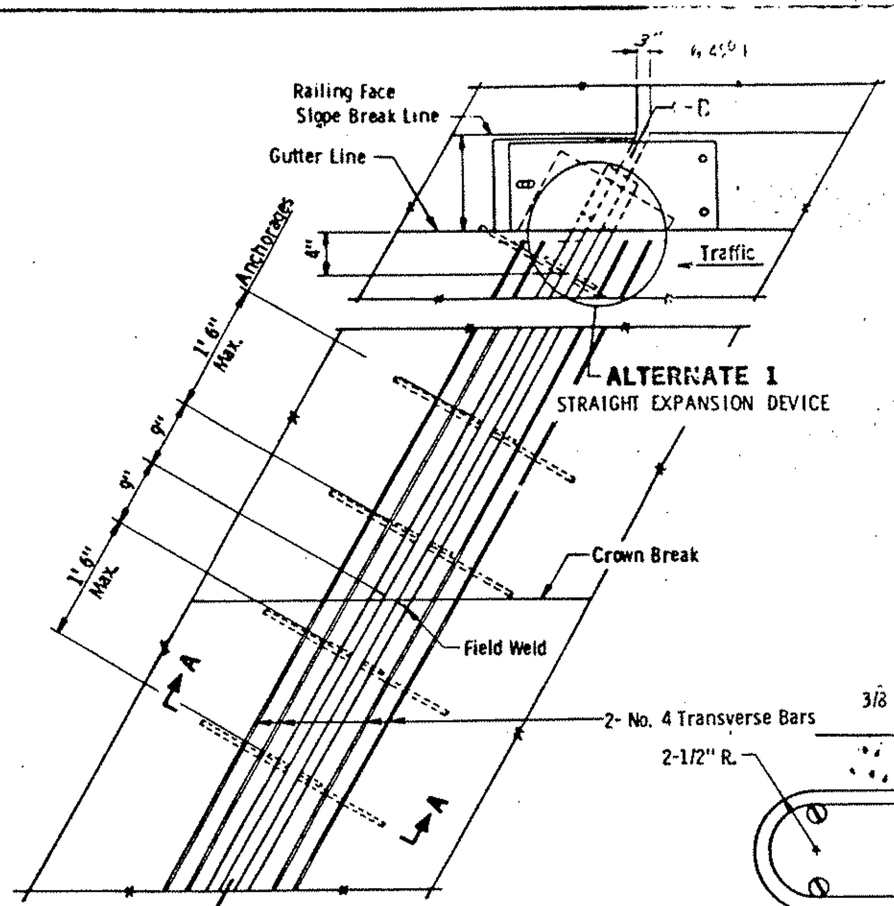
⑨ Leave a void between junction of bridge railing and curb 8" min.). Fill void with polystyrene.

Fig. 5-397.308

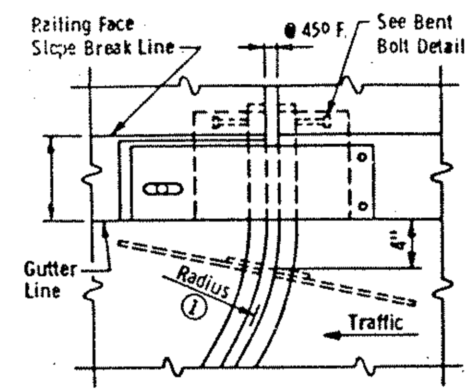
Revised: July 22, 1982 Approved: June 13, 1978

C.A88-09-116

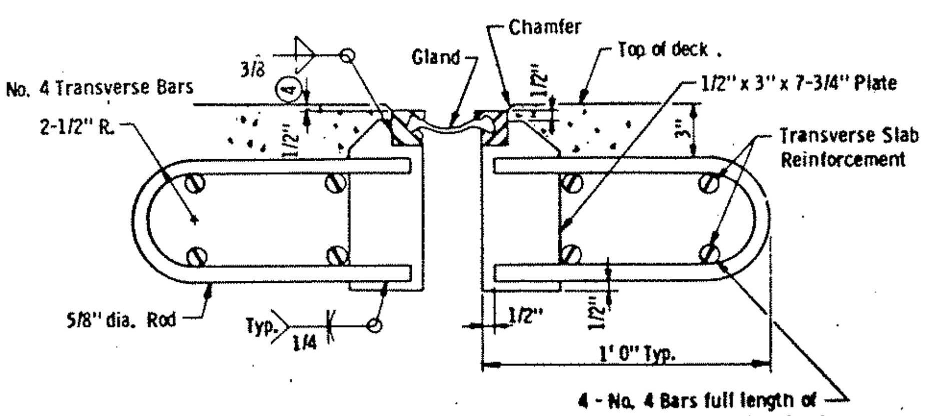
TITLE: BRIDGE APPROACH PANEL ALL SKEWS (BITUMINOUS PAVEMENT)	DES:	DR:	APPROVED:	Bridge No.
	CHK:	CHK:		
	Sheet No. 34A of 46A Sheets			02545



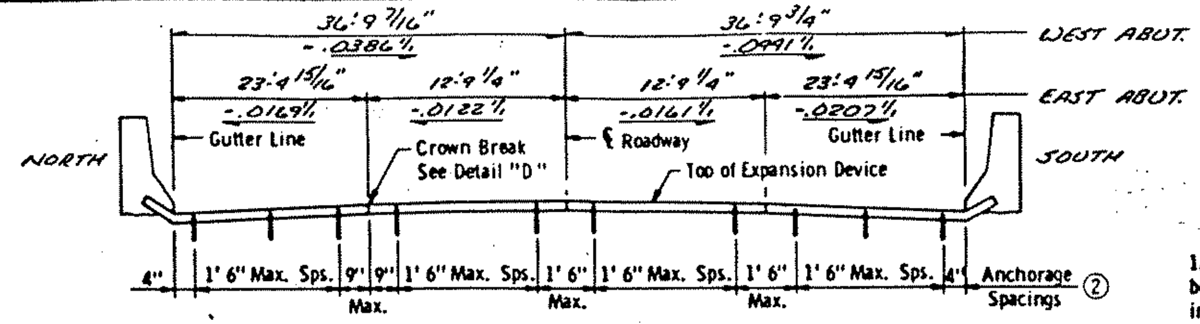
PLAN VIEW AT EXPANSION DEVICE



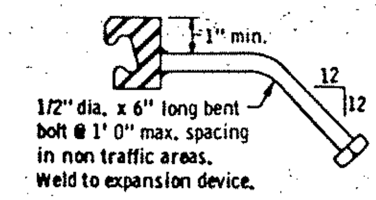
ALTERNATE 2
CURVED EXPANSION DEVICE



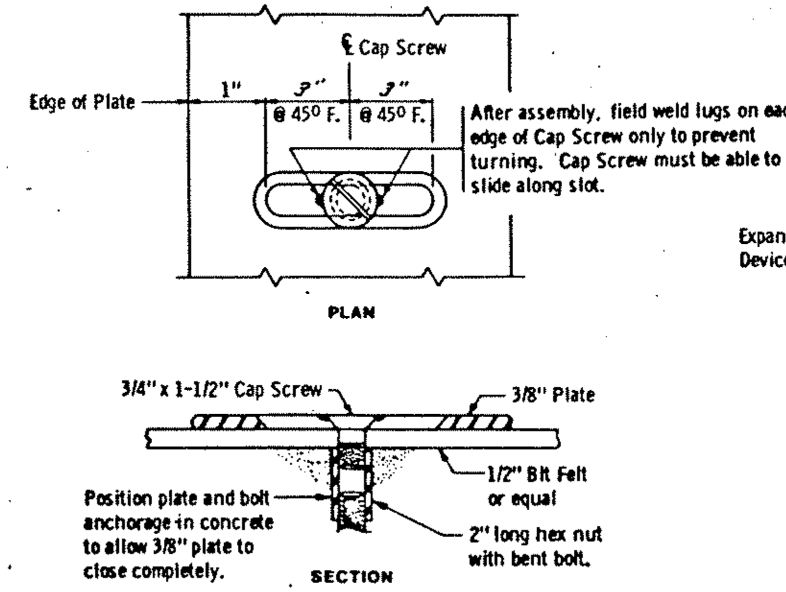
SECTION A-A
ANCHORAGE



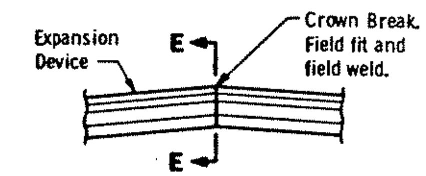
SECTION B-B



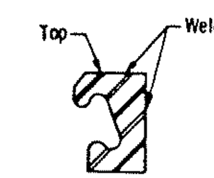
BENT BOLT DETAIL



DETAIL C
SLOTTED HOLE & CAP SCREW



DETAIL D



SECTION E-E

NOTES:

Galvanize structural steel after fabrication as per Spec. 3394.

Joints in roadway plate or extrusion shall be located at breaks in transverse profile and as otherwise required. Joints shall be close fit and welded. Repair after welding as per Spec. 2471.3L.

Structural steel shall comply with Spec. 3306, Spec. 3307 & Spec. 3309.

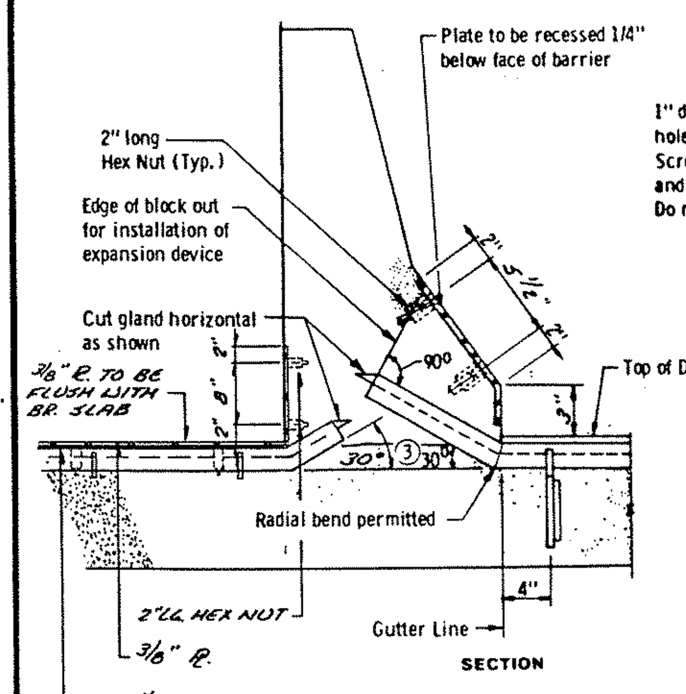
Expansion device shall be straightened to a tolerance of 1/8" in 10 ft.

Cap screws shall be countersunk 1/16" below top of plate.

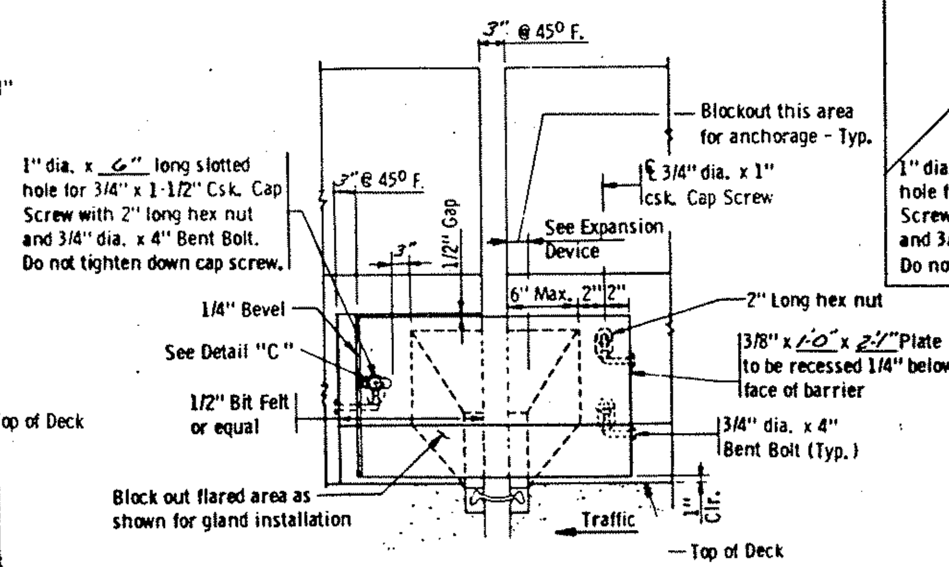
Galvanize screws and nuts as per Spec. 3392.

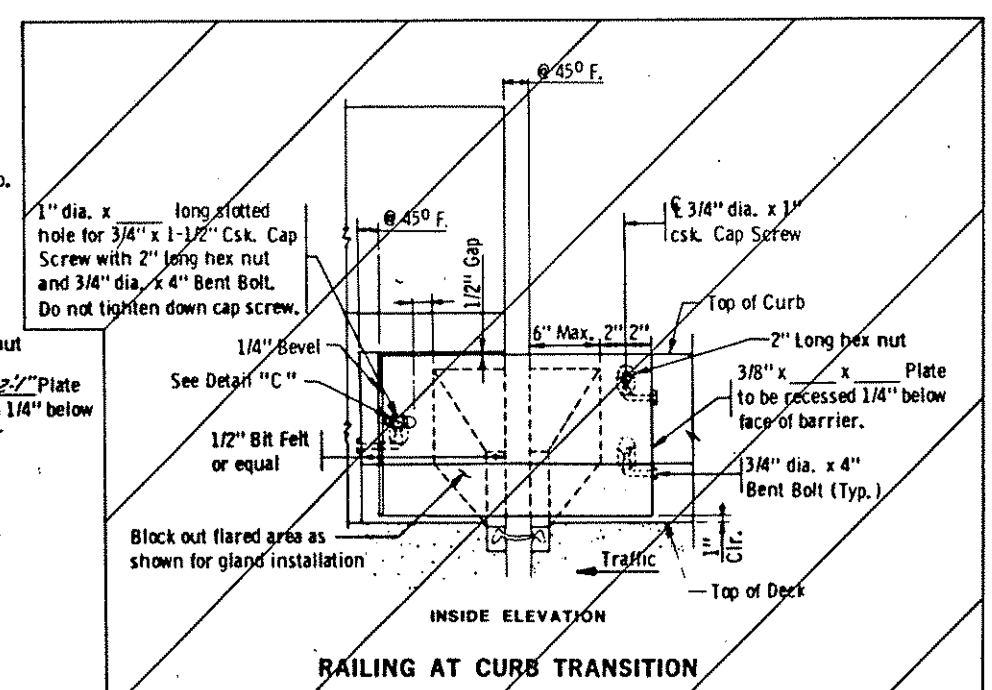
See superstructure sheets for expansion device alternate at railing.

When expansion devices are used at ends of bridge, the bridge contractor shall furnish expansion device and gland. The roadway contractor shall install the part of the expansion device which includes the gland as shown on this sheet.



RAILING OR MEDIAN
SQUARE BRIDGE APPLICATION





RAILING AT CURB TRANSITION

1. Varies 18" to 24"
2. Dimension along centerline of joint.
3. For roadway skews over 25° use 45°.
4. 5/8" max. when Snowplow Fingers are used. Use 1/8" (with 1/4" max.) when Snowplow Fingers are not used.

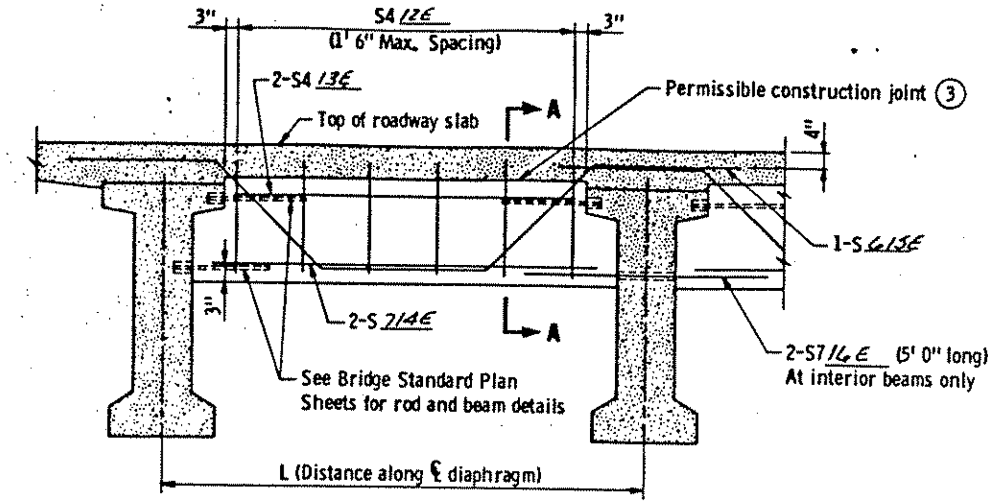
FIG. 5-397.627

Revised: October 15, 1982 Approved: July 16, 1982

C.P. 88-09-116

TITLE:	DES:	DR:	APPROVED:	Bridge No.
WATERPROOF EXPANSION DEVICE WITH TYPE J BARRIER	CHK:	CHK:		
	Sheet No. 35A of 46A Sheets			02545

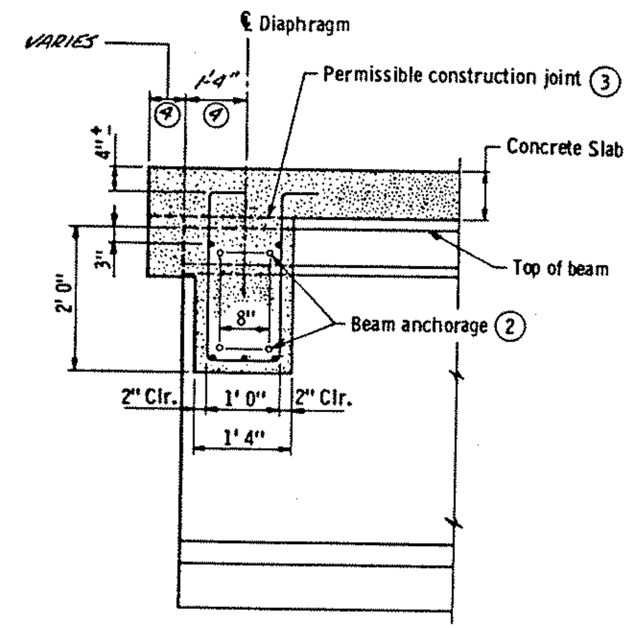
17M



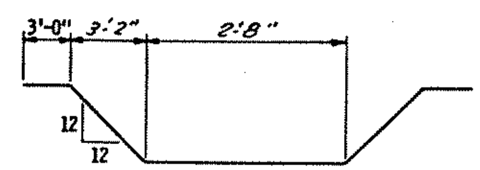
PART TRANSVERSE SECTION AT END DIAPHRAGM

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

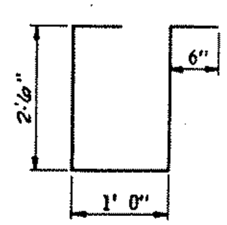
BEAM SPACING ℄ TO ℄ (1)	BARS REQUIRED STRAIGHT NO.	BARS REQUIRED STRAIGHT SIZE	BARS REQUIRED BENT NO.	BARS REQUIRED BENT SIZE
Up to 8'	2	6	1	5
→ Over 8' to 11'	2	7	1	6
Over 11' to 13'	2	8	1	8
Over 13' to 15'	2	9	1	10
Over 15' to 18'	2	11	1	11



SECTION A-A



S 615E



S4 12E

NOTE:

(1) Distance measured along ℄ of diaphragm.

(2) BEAM ANCHORAGES
Fascia beams only: four 3/4" dia. threaded rods.
Interior beams: Two 3/4" dia. threaded rods on top two No. 7 bars on bottom.

(3) When a construction joint is used at this location, diaphragm falsework shall remain in place until the diaphragm concrete has obtained the required strength.

(4) ALONG ℄ BEAM.

(5) All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantites (except threaded rods are included in payment for prestressed beams).

APPROVED: July 26, 1977

Developed by: ENGINEERING STANDARDS AND BRIDGES AND STRUCTURES

Issued by: ENGINEERING STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

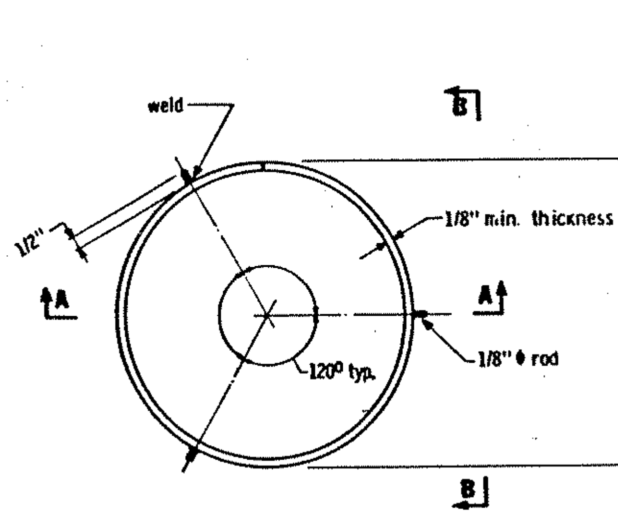
CONCRETE END DIAPHRAGM

63" - 81" PRESTRESSED CONCRETE BEAMS (PARAPET ABUTS.)

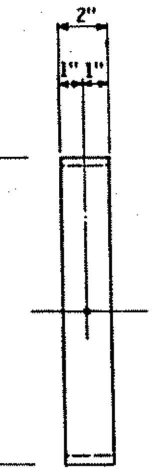
REVISIONS
Aug. 23, 1978
Sept. 22, 1982

DETAIL NO. **B812**

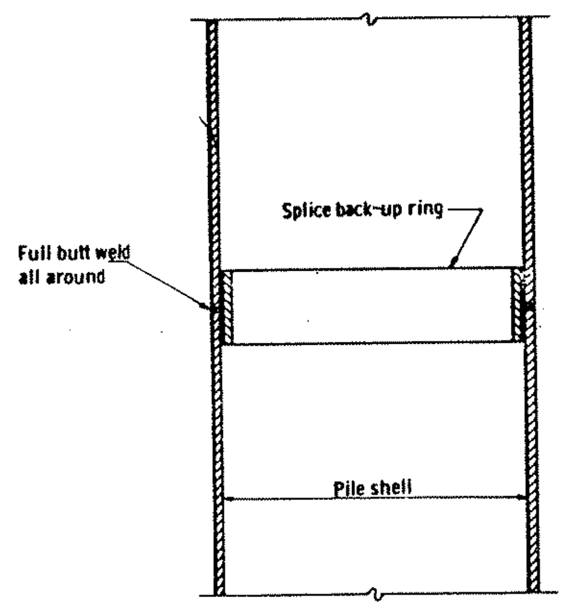
SHEET 36A OF 46A SHEETS | DETAILS | 02595
C.P. 88-09-116



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.

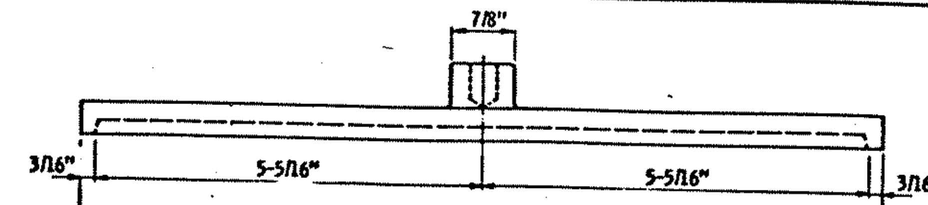
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than 250° F

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.

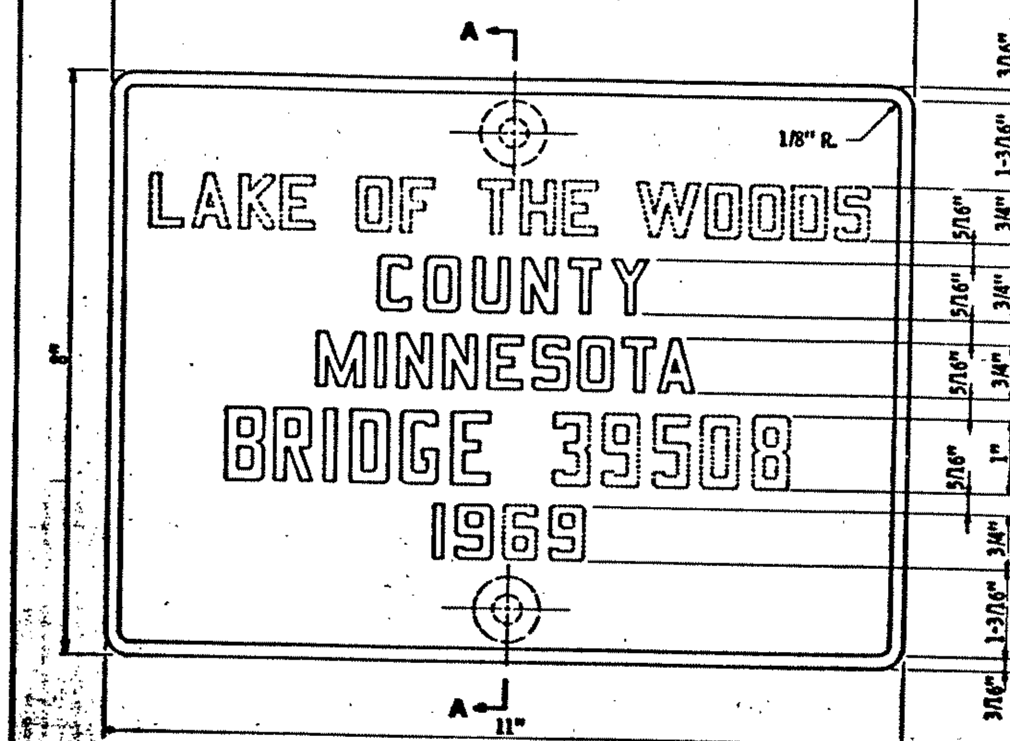
Electrodes which have become wet, soiled or damaged shall not be used.

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 Douglas Differt Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION	MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE** **CAST-IN-PLACE CONCRETE PILES**		DETAIL NO. **B201**



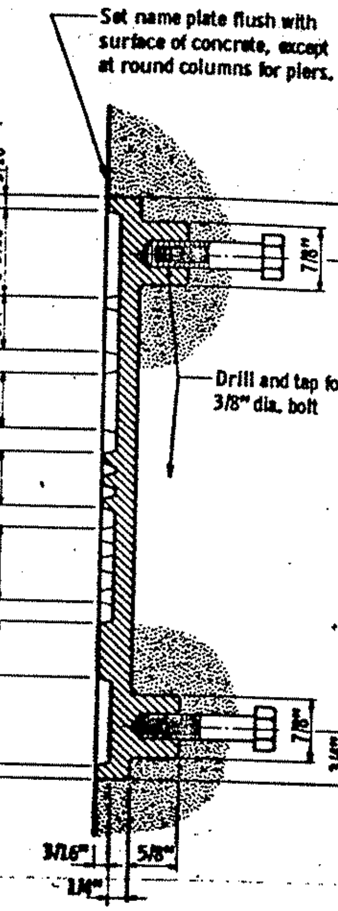
PLAN VIEW



ELEVATION

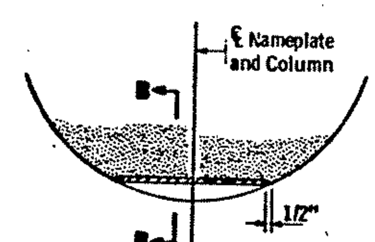
The dotted letters & numbers shown above are for illustration.
Data to be shown on name plate is as follows:

COUNTY ANOKA
BRIDGE 02545
YEAR 1989

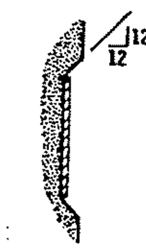


SECTION A-A

LETTERS & NUMBERS FOR NAMEPLATES



NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)



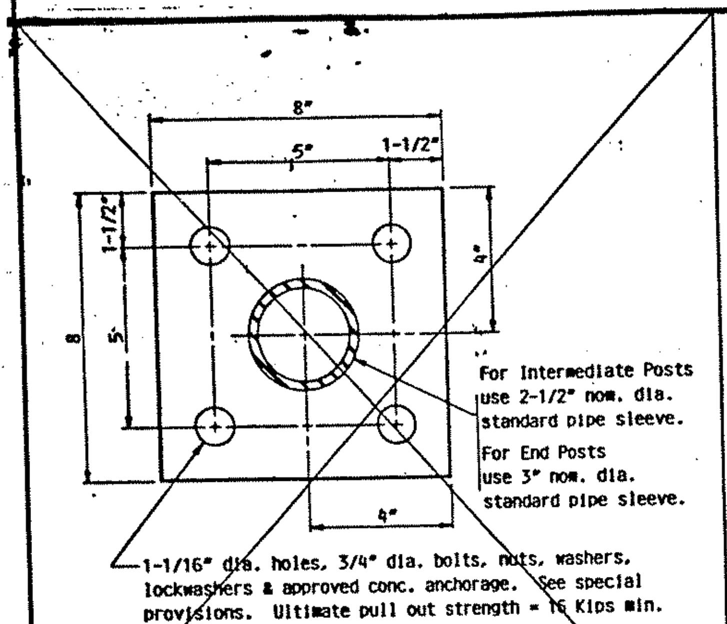
SECTION B-B

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.
All dimensions for 3/4" high letters and numbers shall be in direct proportion to those shown for the 1" high letters and numbers.

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** **COUNTY BRIDGES**	REVISION	DETAIL NO. **B103**

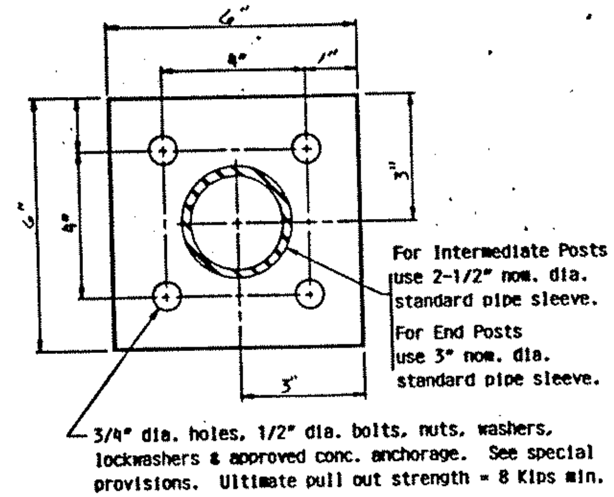
SHEET 37A OF 46A SHEETS | DETAILS 02545
C.P. 88-02-116



PLAN VIEW

TYPE A

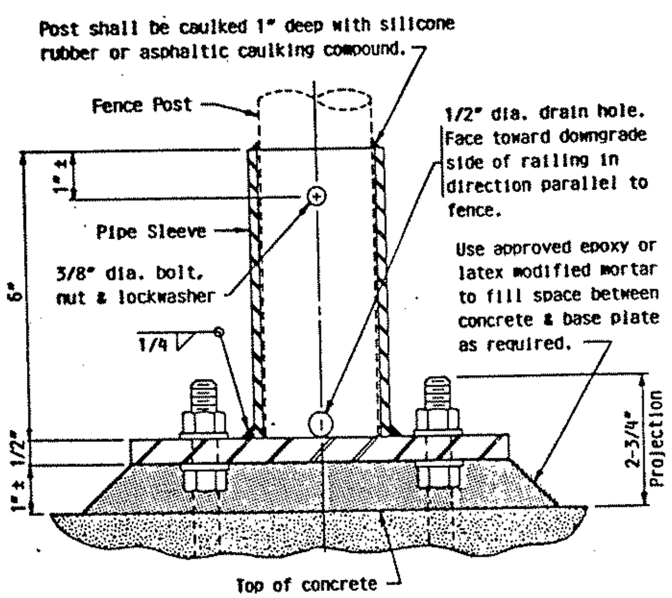
Estimated Weight = 11 or 12 lbs.



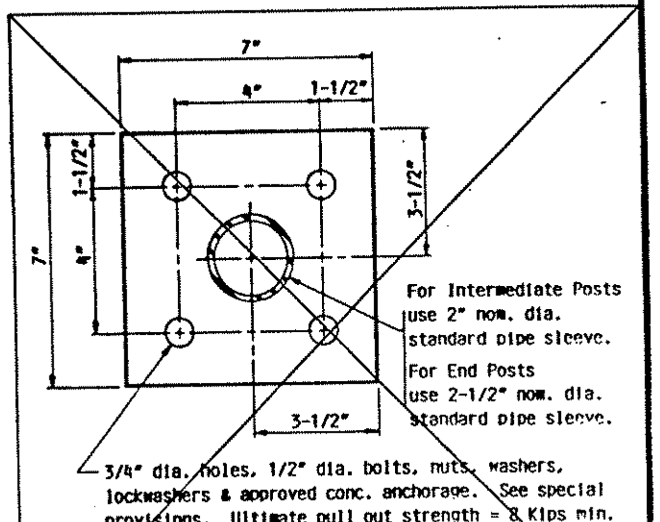
PLAN VIEW

TYPE B

Estimated Weight = 10 or 11 lbs.



TYPICAL SECTION



PLAN VIEW

TYPE C

Estimated Weight = 9 or 10 lbs.

NOTES:

Structural Steel per Spec. 3306
Structural Pipe per Spec. 3362

Galvanize the fence post anchorage after fabrication per Spec. 3394. Galvanize the fasteners per Spec. 3392

STANDARD PIPE WEIGHTS:

2" nom. dia.	= 3.65 lbs./ft.
2-1/2" nom. dia.	= 5.79 lbs./ft.
3" nom. dia.	= 7.58 lbs./ft.

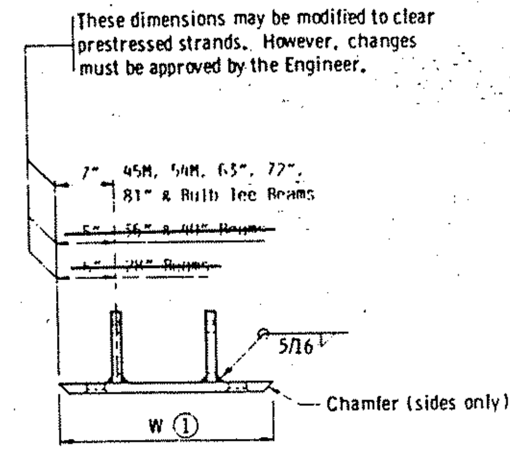
APPROVED: Nov. 26, 1985
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES
Issued by: OFFICE OF ENGINEERING STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

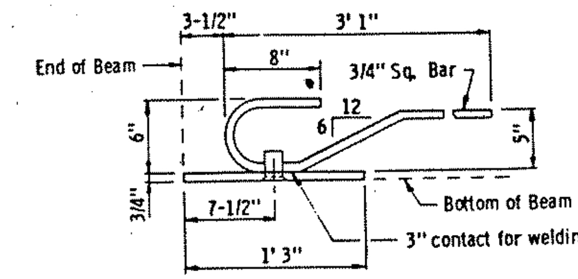
FENCE POST ANCHORAGE

REVISION

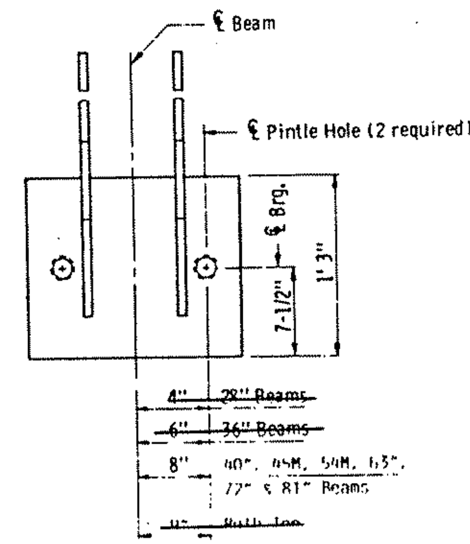
DETAIL NO. B905



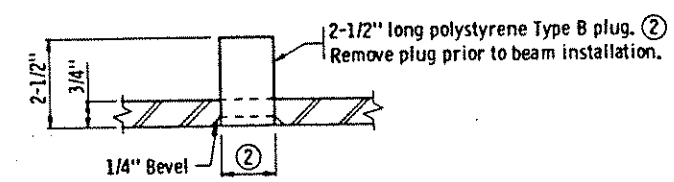
FRONT VIEW



SIDE VIEW



TOP VIEW



PINTLE HOLE DETAIL

NOTES:

Material to be structural steel per Spec. 3306

Sole plate for Bearing Assembly to be hot dipped galvanized per Spec. 3394 after fabrication.
Pintle holes shall be free of zinc build up from galvanizing.

Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

① Dimension "W" to be the width at the bottom flange of the beam minus 1/4".

② 1-1/2" dia. for 1-1/4" dia. pintles.
1-3/4" dia. for 1-1/2" dia. pintles.
Check bearing assemblies for pintle size used.

APPROVED March 1, 1982
Developed by ENGINEERING STANDARDS and BRIDGES & STRUCTURES
Issued by ENGINEERING STANDARDS

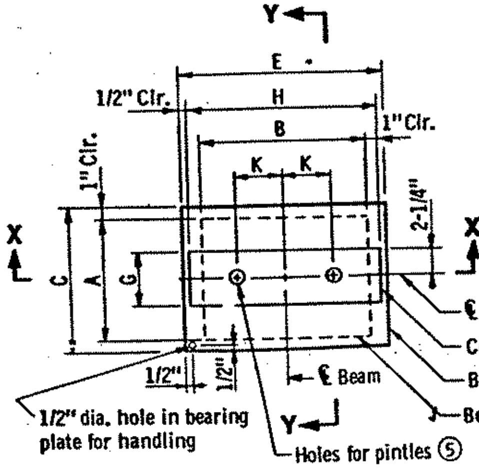
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

SOLE PLATE
PRESTRESSED CONCRETE BEAMS
(FOR BEARINGS WITH PINTLES)

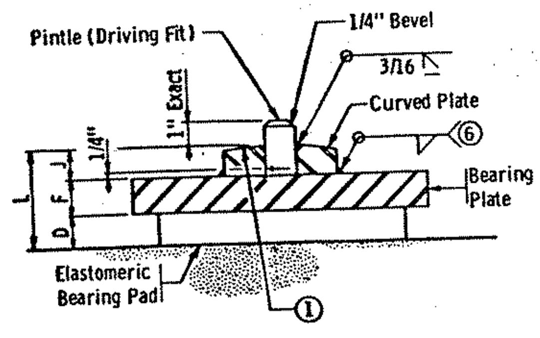
REVISION

DETAIL NO. B303

SHEET 38A OF 46A SHEETS	DETAILS	02545
C.P. 88-09-116		



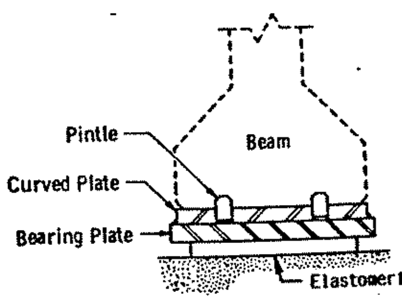
PLAN



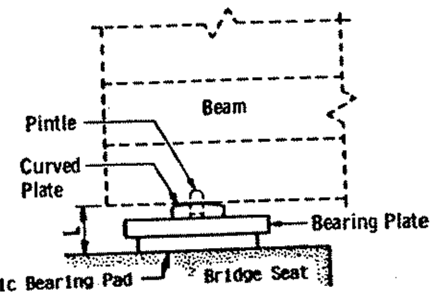
SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)

PINTLE SPACING TABLE

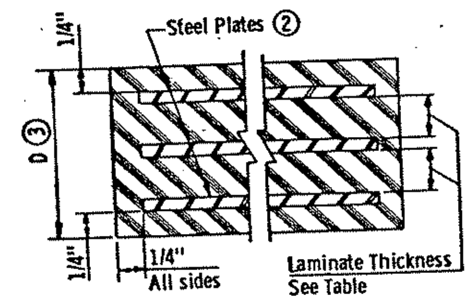
BEAM SIZE	K
28"	4"
36"	6"
40", 45M 54M, 63" 72" & 81"	8"
Bulb Tee	9"



SECTION X-X



END ELEVATION



SECTION THRU BEARING PAD

TABLE ④

Beam Size	Bearing Pad Size			Steel Plates		Laminates		Shape Factor	Bearing Plate Size			Curved Plate Size			Pintle Dia.	Pintle Spacing	Assy. Height	Assembly Type
	A	B	D	No.	Thick.	No.	Thick.		C	E	F	G	H	J		K	L	
81"	12"	24"	3 3/4"	6	1/8"	5	1/2"	8.0	14"	27"	1 1/4"	4 1/2"	26"	1 1/4"	1 1/2"	8"	6 1/4"	E1
81"	12"	24"	7 1/2"	12	1/8"	11	1/2"	8.0	14"	27"	1 1/4"	4 1/2"	26"	1 1/4"	1 1/2"	8"	10"	E2

NOTES:

For elastomeric materials & pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates shall comply with Spec. 3306, except as noted.

All plates shall be flat after fabrication and galvanizing. Welding distortion of bearing plates shall be straightened to within 1/16" of flatness by mechanical means without damage to the zinc coating.

Pintles shall comply with Spec. 3314, Type II

Galvanize structural steel bearing assembly after fabrication per Spec. 3394, except as noted.

Payment for bearing assembly shall include all material on this detail.

① The radius of the curved plate shall be 1' 0" min. & 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.

② Do not galvanize these plates.

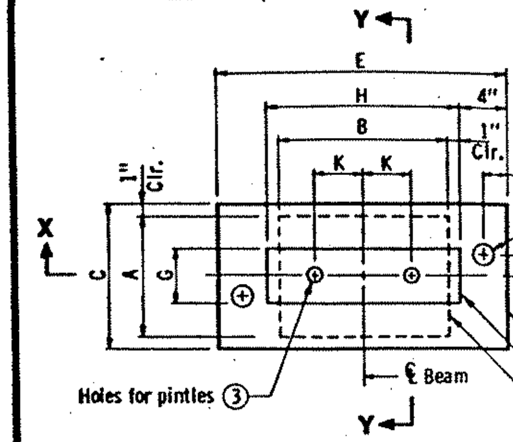
③ The total thickness shown includes the steel plates.

④ See Bridge Design Manual for design requirements.

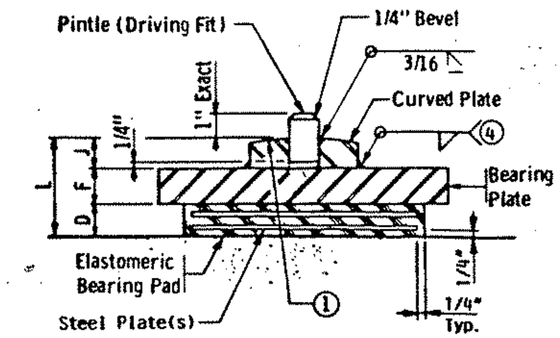
⑤ 1-1/4" dia. pintle for total loads to 200 Kips. 1-1/2" dia. pintle for total loads over 200 Kips.

⑥ For sole plate or bearing plate thicknesses up to 1-1/2", use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4", use 3/8" fillet welds; for thicknesses over 2-1/4", use 1/2" fillet welds with minimum preheat of 300°.

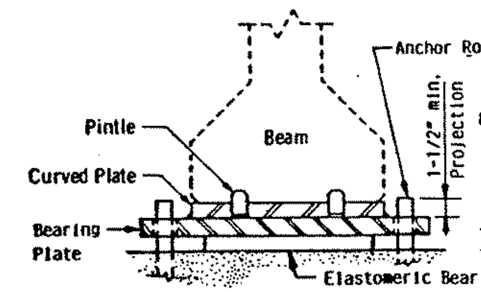
APPROVED: Aug 4, 1987	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	**CURVED PLATE BEARING ASSEMBLY** PRESTRESSED CONCRETE BEAMS (EXPANSION)		**B311**



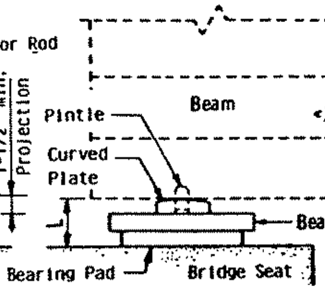
PLAN



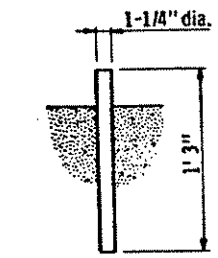
SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)



SECTION X-X



END ELEVATION
(Anchor Rods Not Shown)



ANCHOR ROD DETAIL

PINTLE SPACING TABLE

BEAM SIZE	K
28"	4"
36"	6"
40", 45M 54M, 65", 72" & 81"	8"
Bulb Tee	9"

TABLE ②

Beam Size	Bearing Pad Size			Steel Plates		Laminates		Shape Factor	Bearing Plate Size			Curved Plate Size			Pintle Dia.	Pintle Spacing	Anchor Rod Offset	Assy. Height	Assembly Type
	A	B	D	No.	Thick.	No.	Thick.		C	E	F	G	H	J		K	M	L	
81"	12"	24"	1 1/4"	2	1/8"	1	1/2"	8.0	14"	34"	1 1/4"	4 1/2"	26"	1 1/4"	1 1/2"	8"	0"	3 3/4"	F1

NOTES:

For elastomeric materials & pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates & anchor rods shall comply with Spec. 3306, except as noted.

All plates shall be flat after fabrication and galvanizing. Welding distortion of bearing plates shall be straightened to within 1/16" of flatness by mechanical means without damage to the zinc coating.

Pintles shall comply with Spec. 3314, Type II

Galvanize anchor rods and structural steel bearing assembly after fabrication per Spec. 3394, except as noted.

Payment for bearing assembly shall include all material on this detail.

① The radius of the curved plate shall be 1' 0" min. & 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.

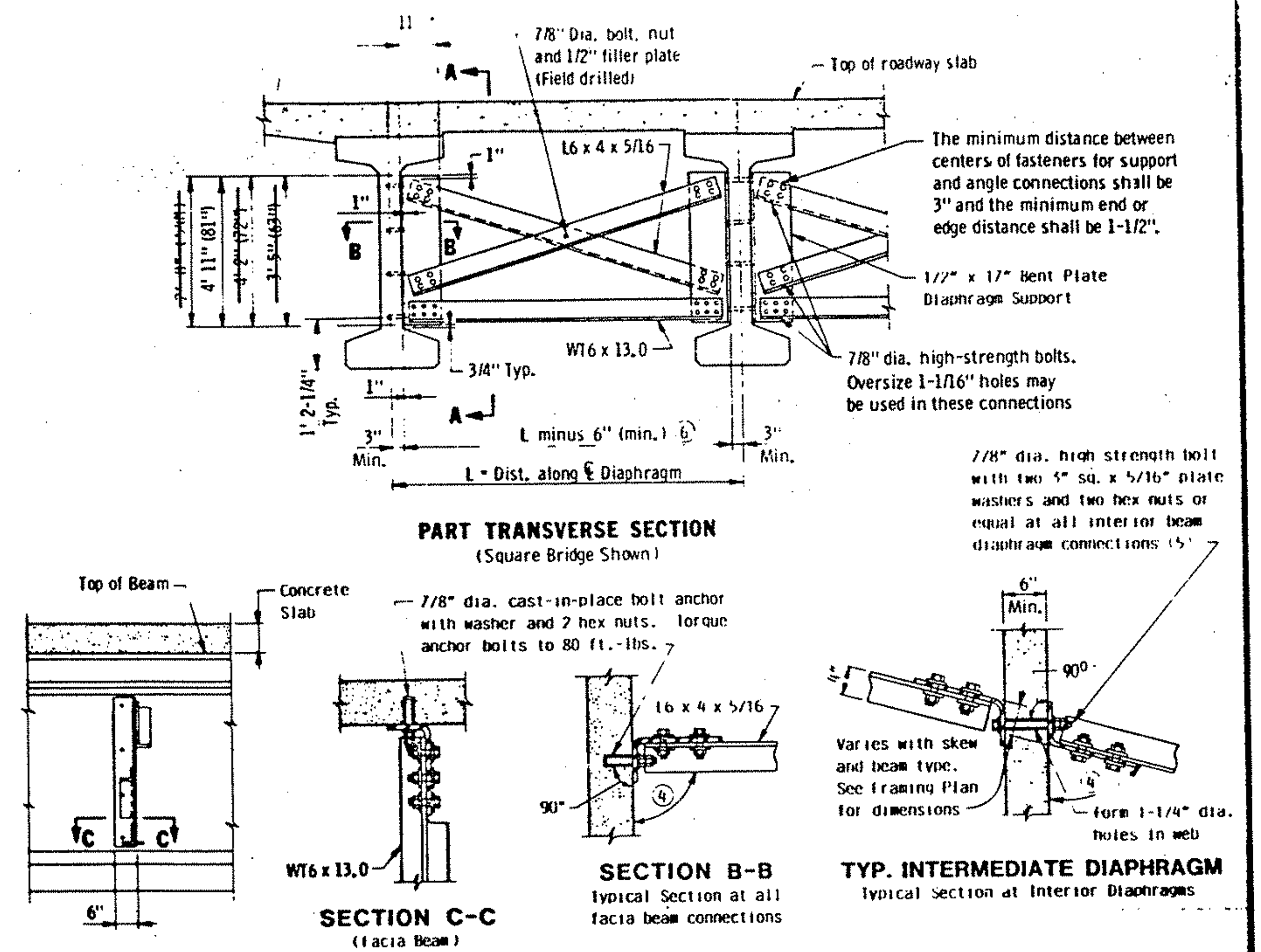
② See Bridge Design Manual for design requirements.

③ 1-1/4" dia. pintle for total loads to 200 Kips. 1-1/2" dia. pintle for total loads over 200 Kips.

④ For bearing plate thicknesses up to 1-1/2" use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4" use 3/8" fillet welds; for thicknesses over 2-1/4" use 1/2" fillet welds with minimum preheat of 300°.

APPROVED Aug 4, 1987	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by ENGINEERING STANDARDS	**CURVED PLATE BEARING ASSEMBLY** PRESTRESSED CONCRETE BEAMS (FIXED)		**B310**

SHEET 39 OF 46 SHEETS C.P. 88-09-116	DETAILS	02545



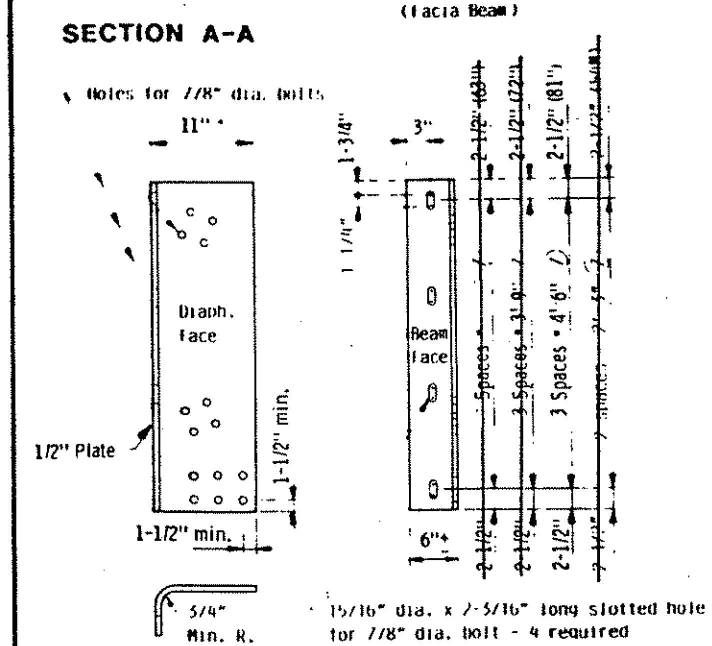
PART TRANSVERSE SECTION
(Square Bridge Shown)

SECTION A-A

SECTION C-C
(Facia Beam)

SECTION B-B
Typical Section at all facia beam connections

TYP. INTERMEDIATE DIAPHRAGM
Typical Section at Interior Diaphragms



DIAPHRAGM SUPPORT

NOTES:

All structural steel shown on this detail, including bolts and washers, shall be included in the payment for diaphragms for prestressed beams.

2. Diaphragms over the piers are considered to be intermediate, if the slab is continuous.

3. For bolt lengths greater than 9", use high strength bolts per Spec. SAE Grade 5 or better.

4) For skew angles under 20°, use 90° less the skew angle. For angles over 20°, use 90°.

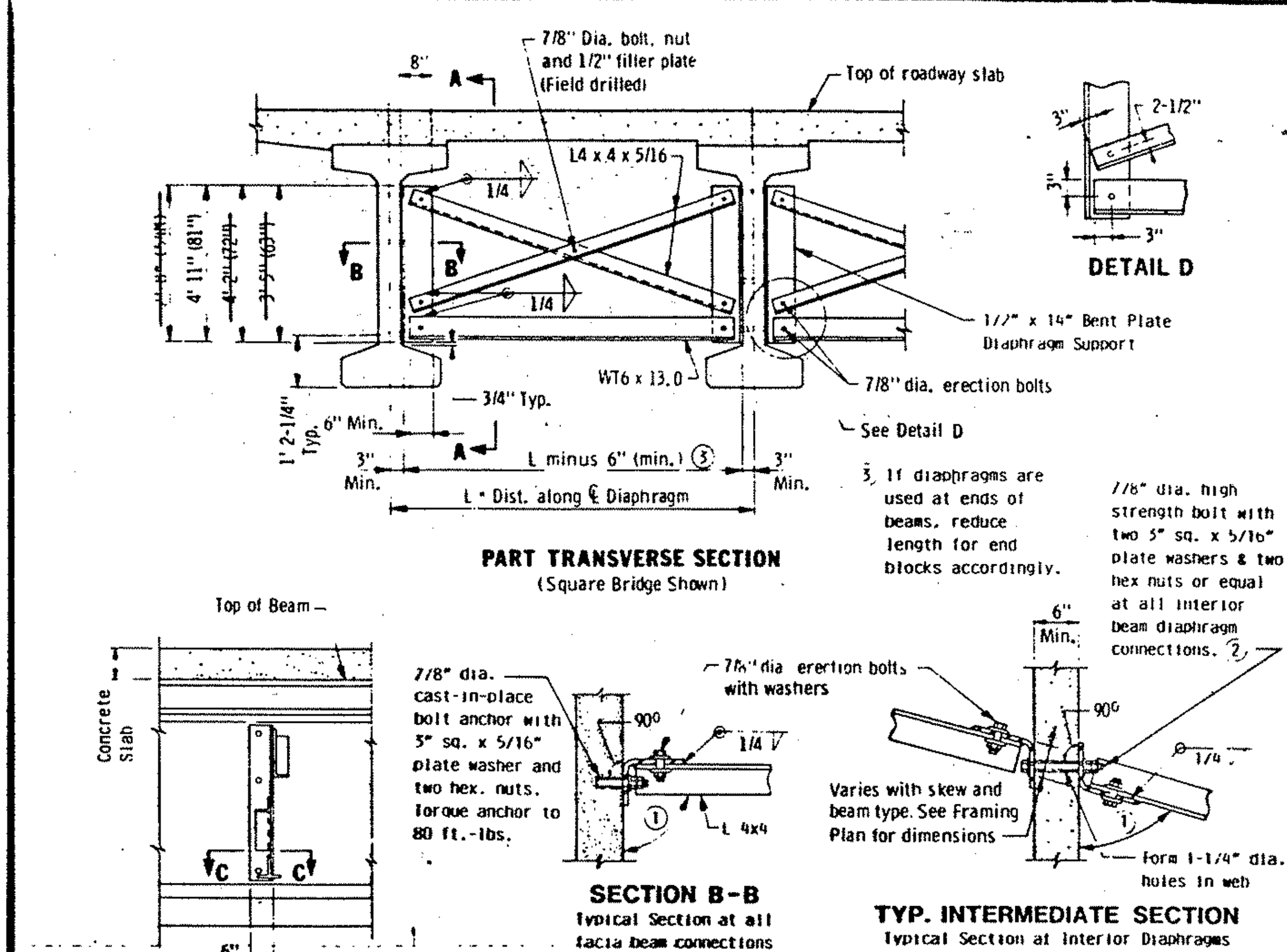
5. As an alternative to the 7/8" bolt connection, the contractor may submit details and catalogue or performance information of a cast in place anchorage to the Engineer for approval.

6. If diaphragms are used at ends of beams, reduce the length for end blocks accordingly.

7. Bolt holes shall be spaced so as to miss prestressed strands in concrete beams. See prestressed concrete beam sheets for more information.

8. See Spec. 2405.3M for installation.

APPROVED: September 24, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION STEEL INTERMEDIATE BOLTED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONC. BEAMS	REVISION	DETAIL NO B406

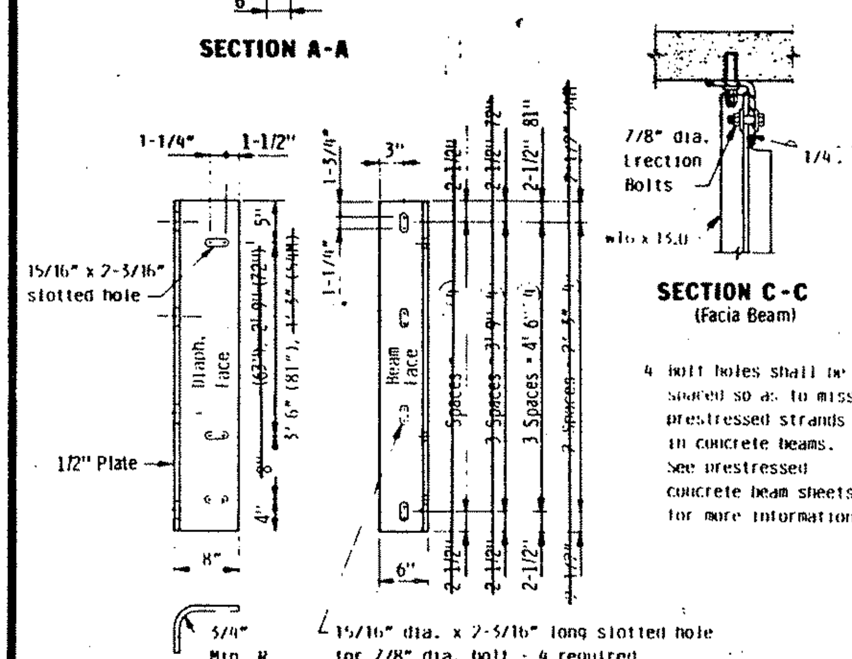


PART TRANSVERSE SECTION
(Square Bridge Shown)

SECTION A-A

SECTION B-B
Typical Section at all facia beam connections

TYP. INTERMEDIATE SECTION
Typical Section at Interior Diaphragms



SECTION C-C
(Facia Beam)

DIAPHRAGM SUPPORT

1) For skew angles under 20°, use 90° less the skew angle. For skew angles over 20°, use 90°.

2) As an alternative to the 7/8" bolt connection, the contractor may submit details and catalogue or performance information of a cast in place anchorage to the Engineer for approval.

GENERAL NOTES:

See Spec. 2405.3M for installation.

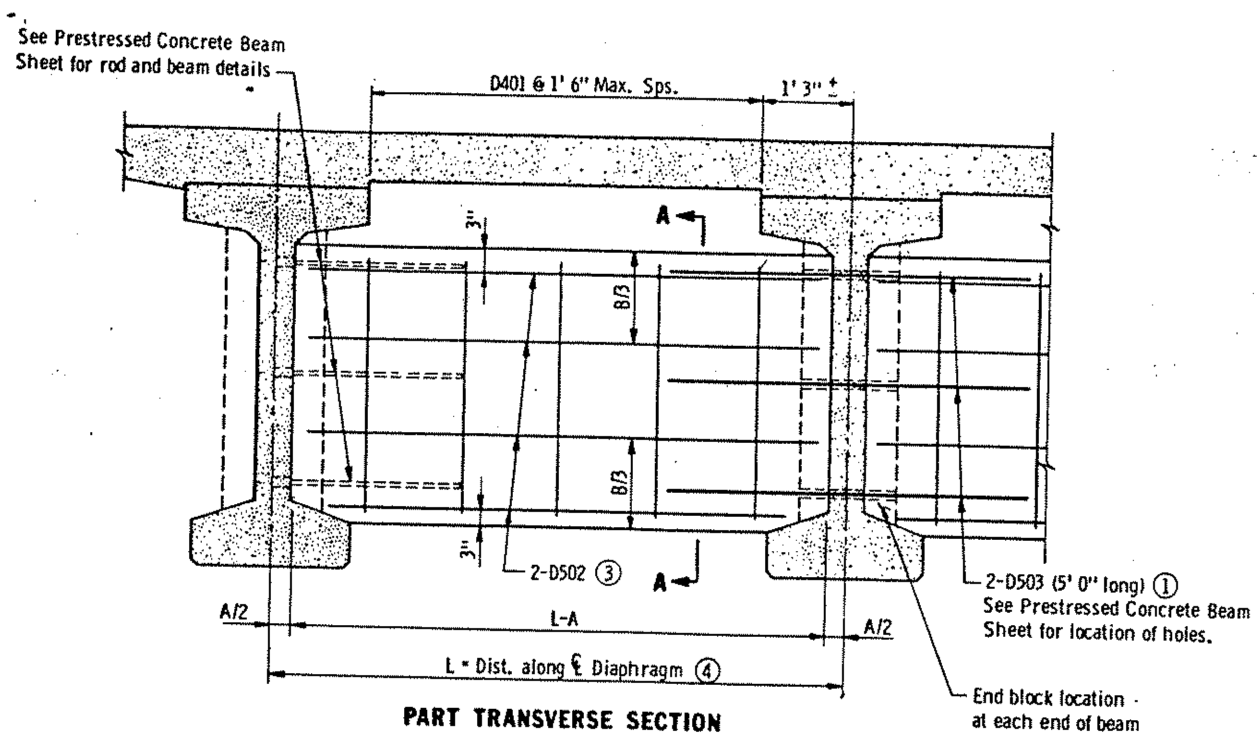
The leg of the 14" plate shall be shop bent to conform to the diaphragm. A 1/2" x 6" x 8" angle may be used for diaphragms perpendicular to beams.

For bolt lengths greater than 9", use high strength bolts per Spec. SAE Grade 5 or better.

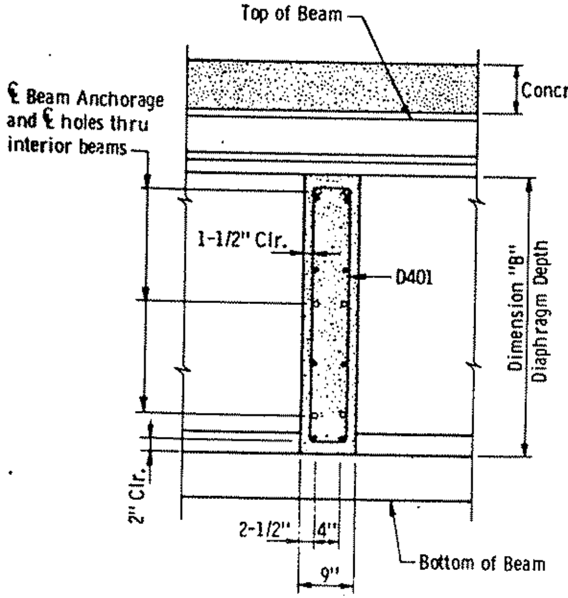
All structural steel shown on this detail, including bolts & washers, shall be included in the payment for diaphragms for prestressed beams.

Diaphragms over the piers are considered to be intermediate if the slab is continuous.

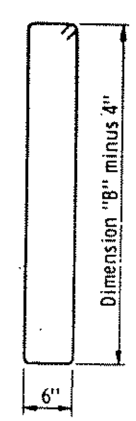
APPROVED: September 24, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION STEEL INTERMEDIATE WELDED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONC. BEAMS	REVISION	DETAIL NO. B405



PART TRANSVERSE SECTION



SECTION A-A



D401

Beam Height	Dim. "A" for comp. volume	Diaph. Dim. "B"	Bar D401 Length
63"	6-3/4"	3' 10"	8' 9"
72"	6-5/8"	4' 7"	10' 3"
81"	6-1/2"	5' 4"	11' 9"

Concrete Volume Per Diaphragm

$$\frac{(L - A) \times B \times 0.75}{27} = \text{Cubic Yards}$$

BAR	LENGTH	SHAPE	LOCATION
D401	11'-5"	Bent	Diaph. Vert.
D502	8'-1"	Str.	Diaph. Horz.
D503	5'-0"	Str.	Diaph. Horz.

GENERAL NOTES

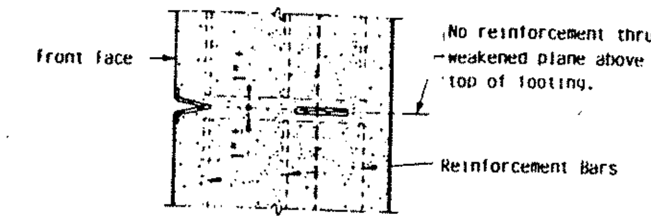
① For Diaphragms 20° and over, use threaded rods as shown on standard prestressed concrete beam sheet.

② All diaphragm concrete and reinforcement bars shown on this detail to be included in payment for diaphragms for prestressed beams. Threaded rods are included in payment for prestressed concrete beams.

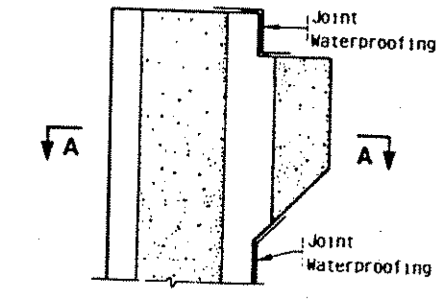
③ Reduce length of horizontal reinforcement as necessary at end block locations.

④ Payment length for diaphragms.

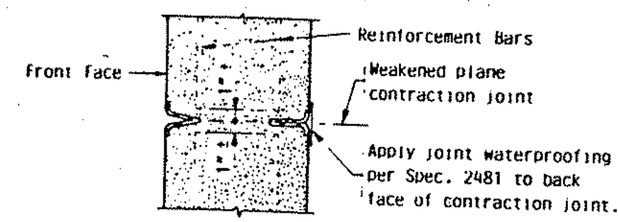
APPROVED Sept. 28 1977 Developed by BRIDGE STANDARDS AND THE BRIDGES & STRUCTURES SECTION Issued by RESEARCH & STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **CONCRETE INTERMEDIATE DIAPHRAGM** (FOR 63"-81" PRESTRESSED CONCRETE BEAM SPANS)	REVISION Jan. 23, 1980	DETAIL NO. **B806**



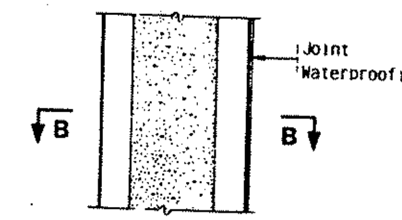
SECTION A-A



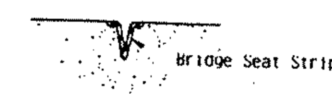
SECTION THRU PAVING BRACKET



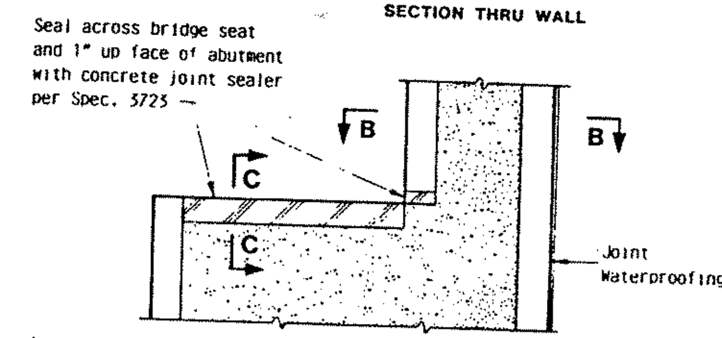
SECTION B-B



SECTION THRU WALL

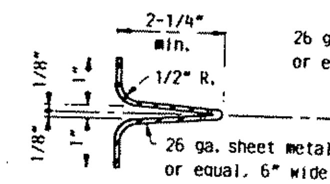


SECTION C-C

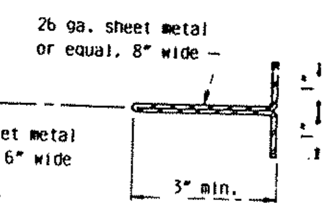


SECTION THRU BRIDGE SEAT

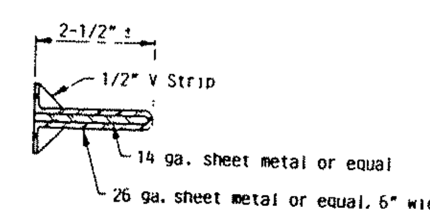
PART SECTION THRU ABUTMENT AT JOINT



BRIDGE SEAT and FRONT STRIP



BACK STRIP



ALTERNATE BRIDGE SEAT and FRONT STRIP

NOTES:

The methods and materials indicated on this sheet shall be considered as suggested only. Variations will be permitted, subject to approval by the Engineer, but must provide dummy joints of a depth not less than the depth shown, and a width at the front face of the abutment of not greater than 5/16". The separation of the horizontal reinforcement bars shall be not less than 1-1/2" nor more than 3", centered as shown, regardless of the procedure used for forming the dummy joint.

If the front and bridge seat strips are galvanized metal, they shall be securely fastened to the forms so that they will be removed with the forms. If a suitable plastic or other durable material, satisfactory to the Engineer, is used, the material may be left in place.

The back strip may be galvanized metal, a suitable plastic, or other durable material satisfactory to the Engineer. The back strip shall remain in place after the forms are removed.

The cost of forming the joint shall be included in the price bid for other items.

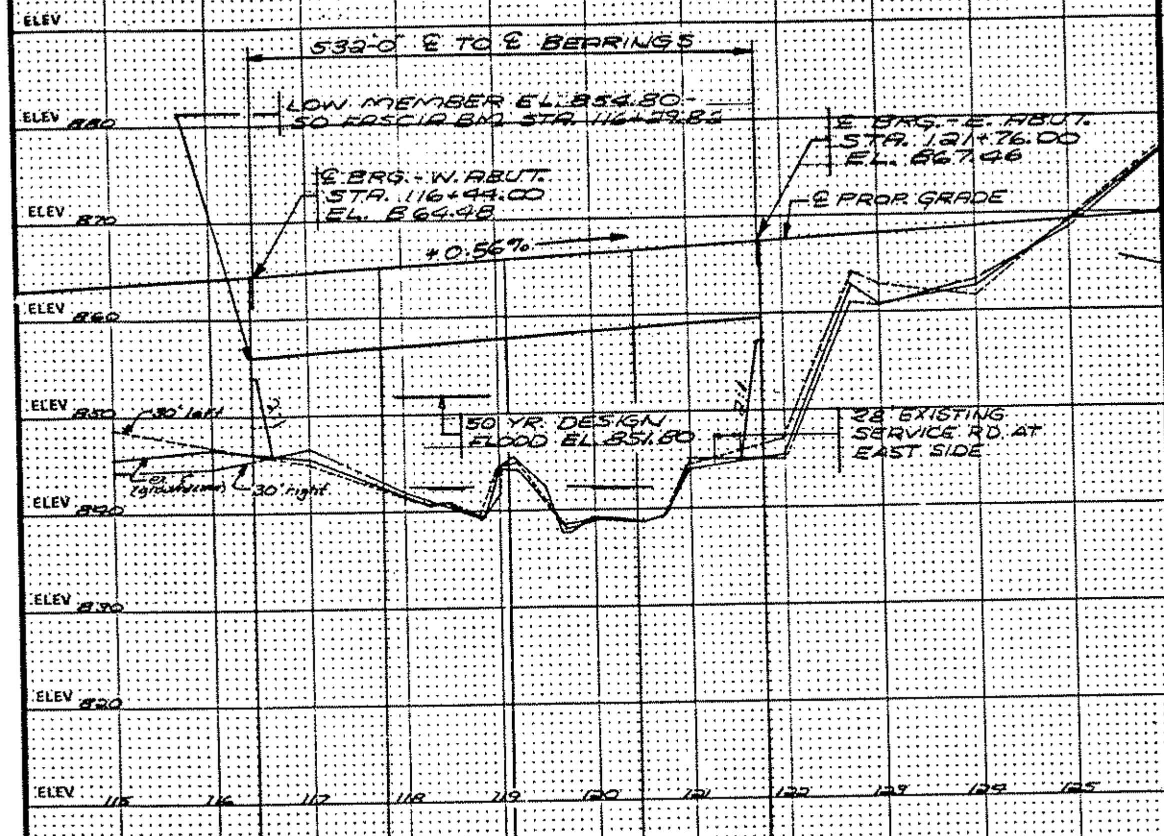
APPROVED February 20, 1987 Developed by ENGINEERING STANDARDS AND BRIDGES & STRUCTURES Issued by ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONTRACTION JOINT	REVISION	DETAIL NO. **B801**

SHEET 44A OF 46A SHEETS C.P. 88-09-116	DETAILS	02545

Fed. Proj. No.

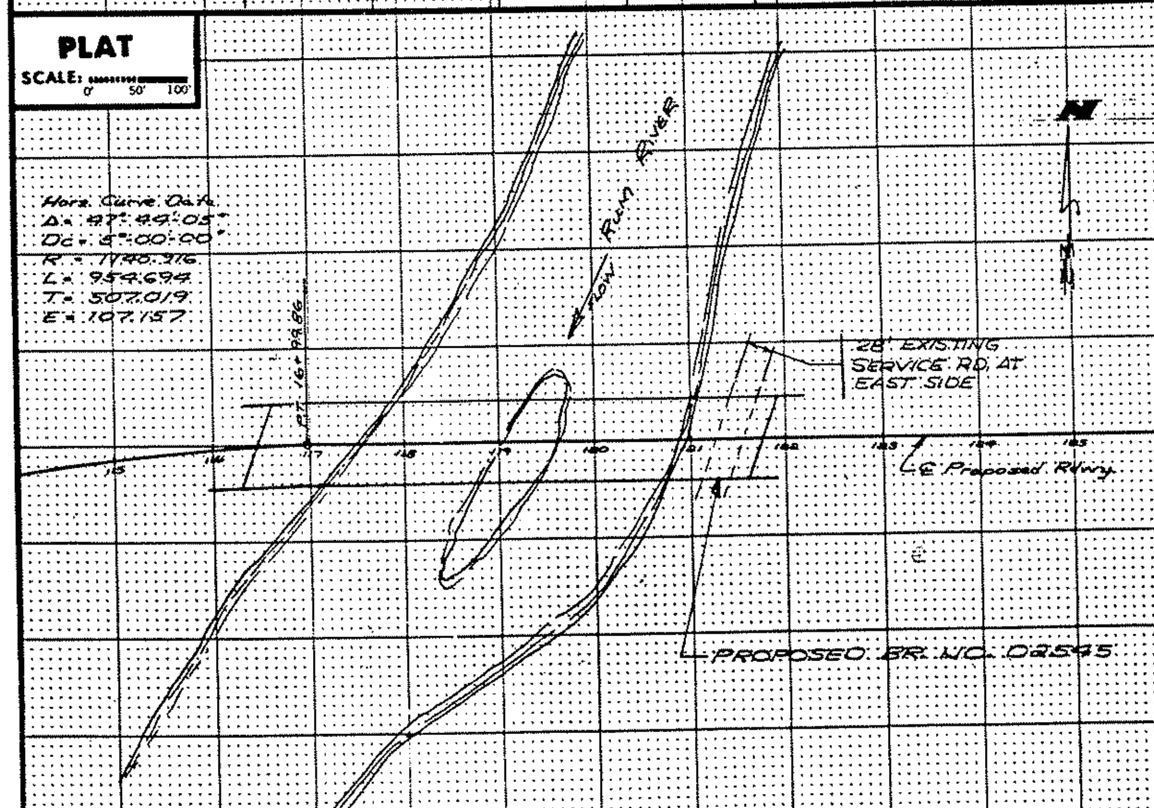
CONTRACTED PROFILE

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



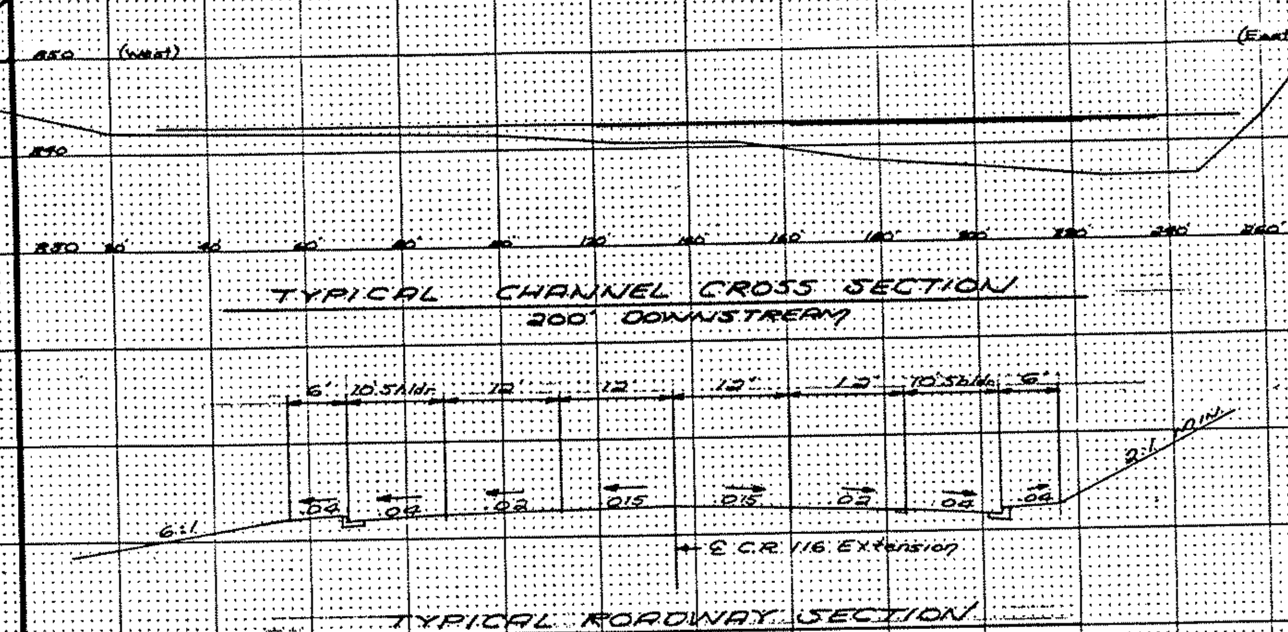
PLAT

SCALE: 0' 50' 100'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



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 RUM RIVER

Drainage area 1520 SQ. MILES

Max. flood on record UNKN. Design flood (100 yr. freq.) 15,300 C.F.S.

Max. observed highwater elevation UNKN. ~~Design highwater elevation~~ 852.9

Design mean velocity through structure 3.2 F.P.S.

Low superstructure at or above elevation 854.8

Flowline elevation 839.0 ± Skew angle 20°

Waterway area req'd. below elevation 852.76 4880 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

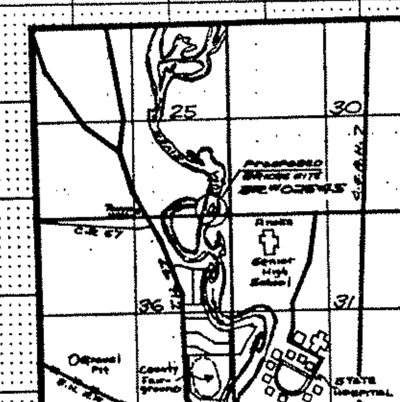
DATE ....

4 - 133' PRESTRESSED BEAM SPANS
48' ROADWAY, 2 - 10'-0" SHOULDERS,
2 - 6'-0" SIDEWALKS

Bridge survey sheets made from: SURVEY NOTES FROM SURVEY DONE ERICKSON ENGINEERING

Bench mark elevation 873.23 ~~(M.S.L. 1929 Adj.)~~

Location: S.E. COR. SIDEWALK @ S.E. COR. ICE ARENA



INDEX MAP
(FOUR SECTIONS)

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT.................. ON C.R. 116 (EXT.) (T.H., C.S.A.H., C.R. etc.)

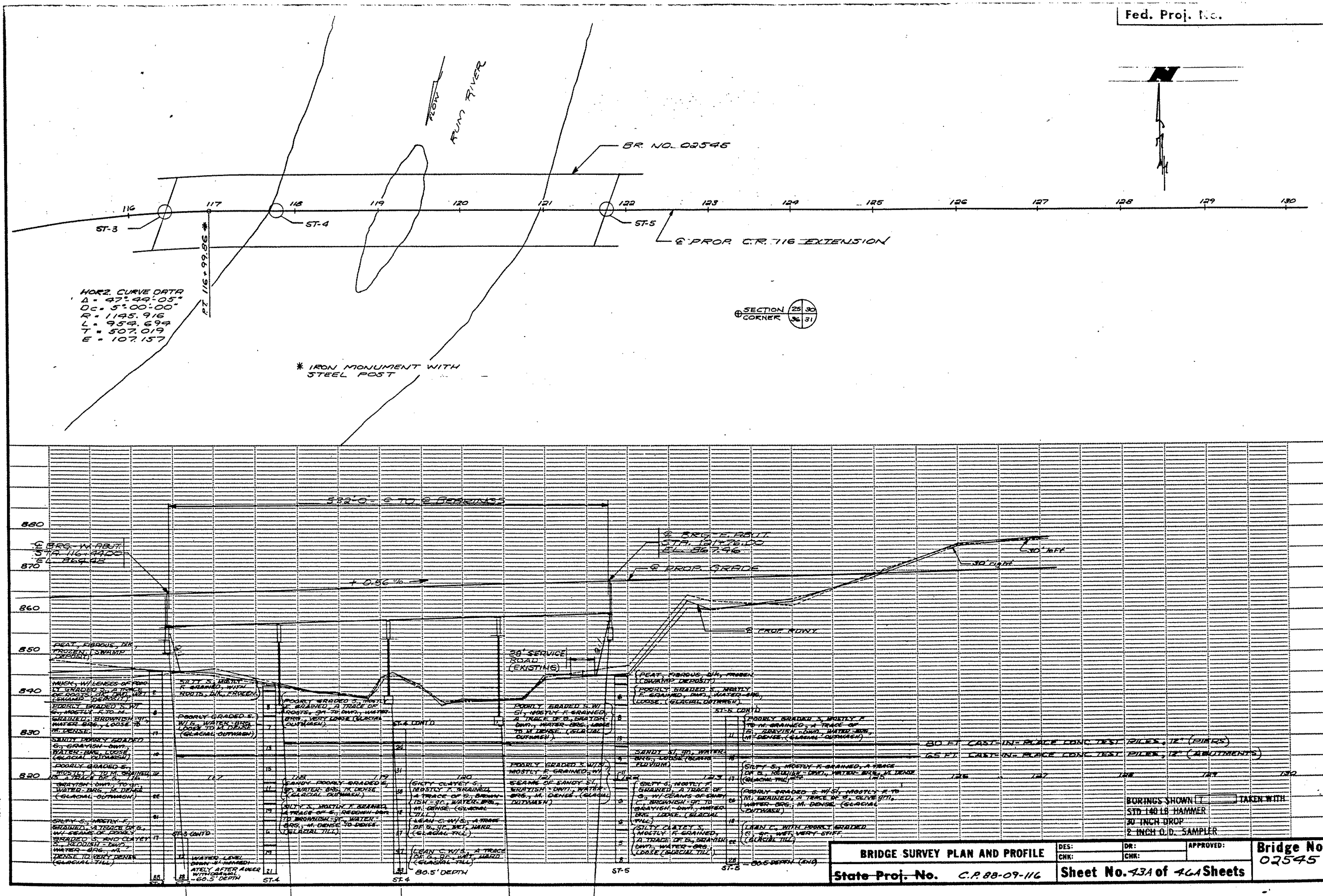
PROPOSED BRIDGE LOCATED ON C.R. 116 Extension From C.R. 47 in Ramsey to C.S.A.H. 7 in Anoka

SEC. 25 TWP. 32N R. 25W

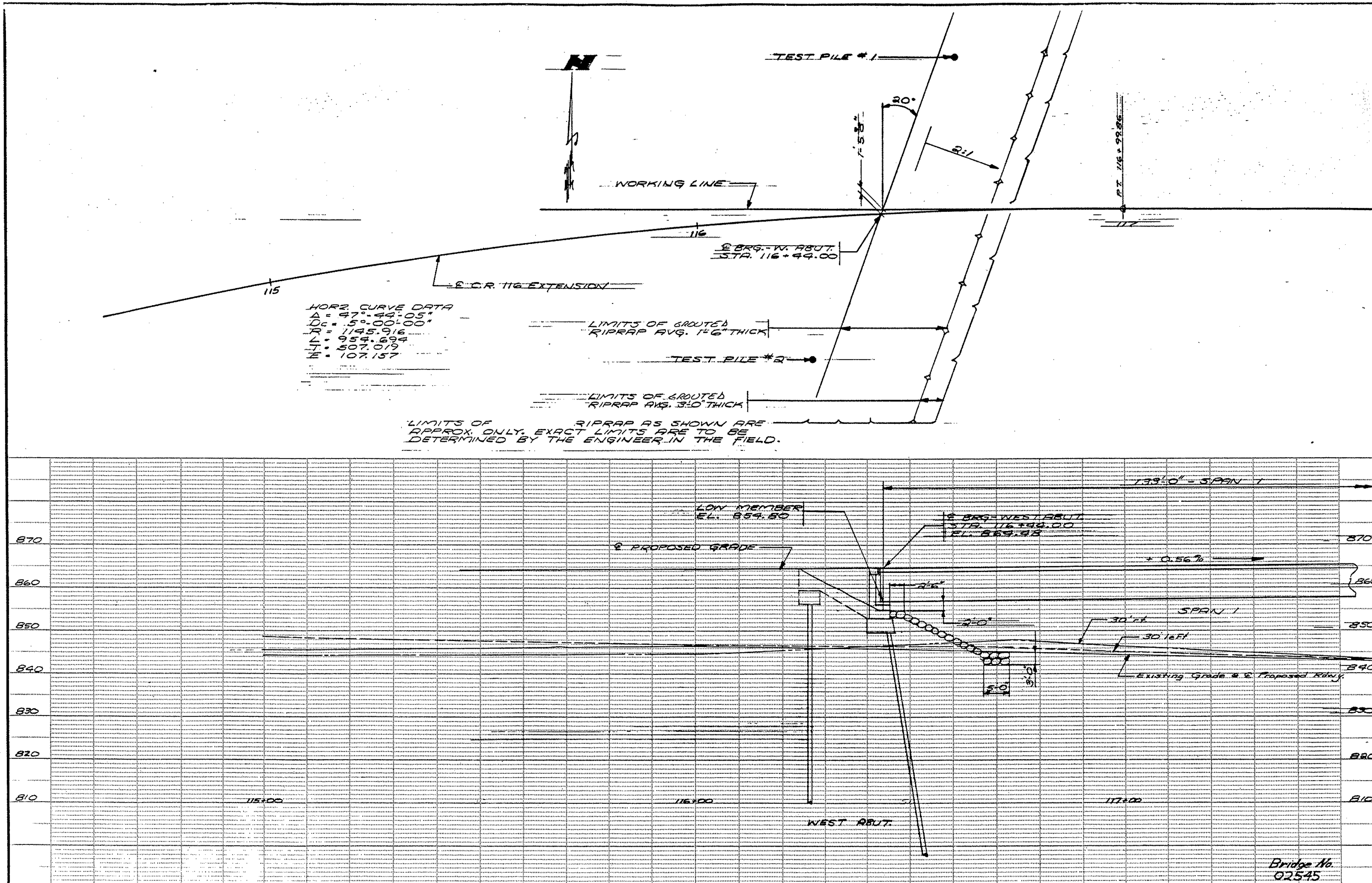
TOWNSHIP RAMSEY COUNTY ANOKA

BRIDGE NO. 02545

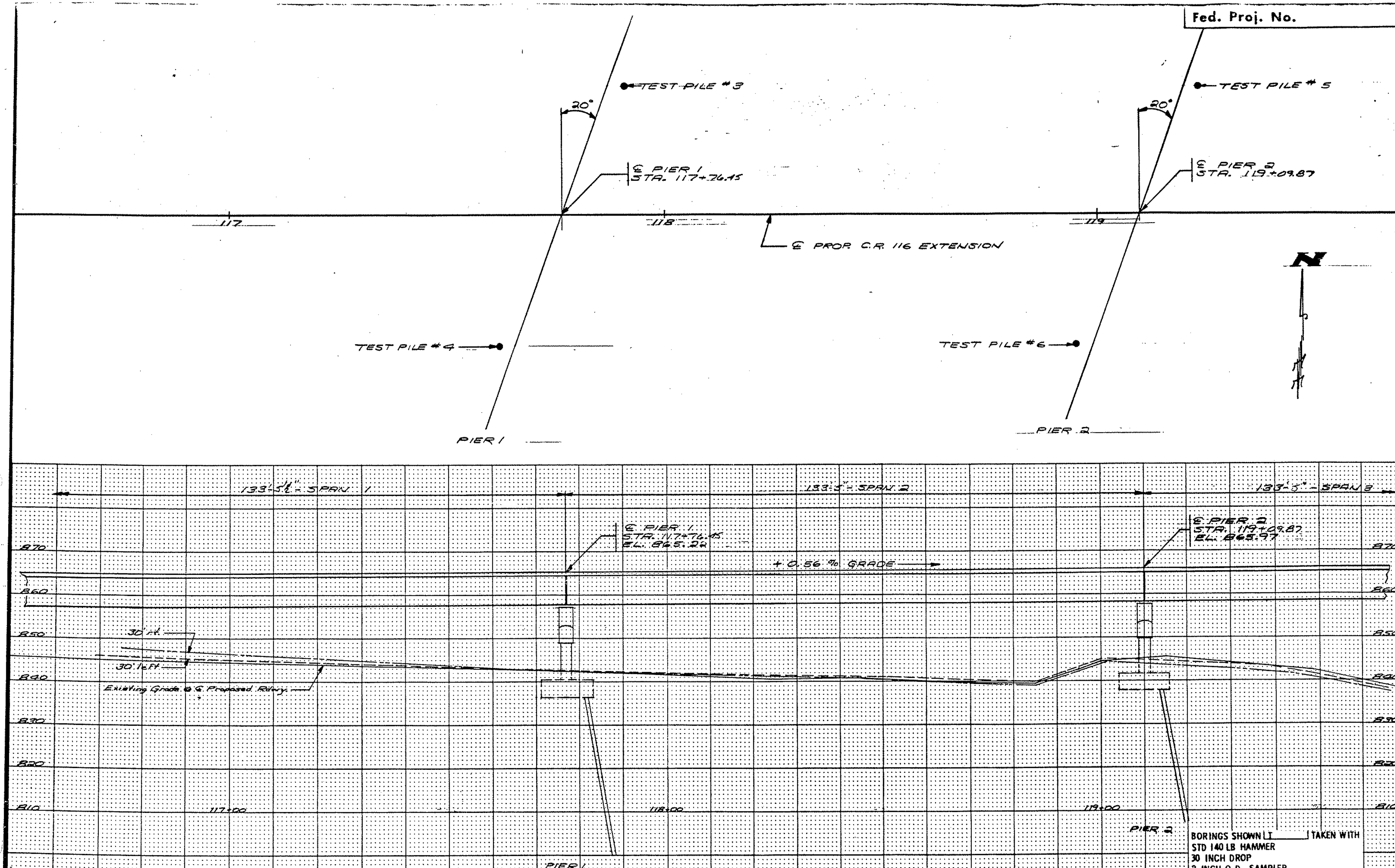
Area No.	Job No.	~~State Proj. No.~~ C.P. 88-09-116	Sheet No. 42A of 46A Sheets



Fed. Proj. No.
N
FLOW
RUM RIVER
BR. NO. 02546
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
ST-3
ST-4
ST-5
℄ PROP. C.R. 116 EXTENSION
P.T. 116+99.86 *
HORZ. CURVE DATA
Δ = 47° 49' 05"
Dc = 5° 00' 00"
R = 1145.916
L = 954.694
T = 507.019
E = 107.157
* IRON MONUMENT WITH STEEL POST
SECTION CORNER
25 30
36 31
582'-0" ℄ TO ℄ BEARINGS
℄ BRG. W. ABUT. STA. 116+94.00 EL. 864.43
℄ BRG. E. ABUT. STA. 121+76.00 EL. 867.46
℄ PROP. GRADE
+ 0.56 %
30' right
30' left
℄ PROP. R/W/Y
880
870
860
850
840
830
820
28' SERVICE ROAD (EXISTING)
PEAT, FIBROUS, BLK., FROZEN, (SWAMP DEPOSIT)
80 FT. CAST-IN-PLACE CONC. TEST PILES, 12" (PIERS)
65 FT. CAST-IN-PLACE CONC. TEST PILES, 12" (ABUTMENTS)
ST-3 CONT'D
ST-4 CONT'D
ST-5 CONT'D
80.5' DEPTH
80.5' DEPTH (END)
BORINGS SHOWN [ ] TAKEN WITH
STD. 140 LB. HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER
BRIDGE SURVEY PLAN AND PROFILE
DES:
CHK:
DR:
CHK:
APPROVED:
Bridge No. 02545
State Proj. No. C.P. 88-09-116
Sheet No. 43A of 46A Sheets



State Proj. No. C.P. 88-09-116 Sheet No. 44A of 46A Sheets

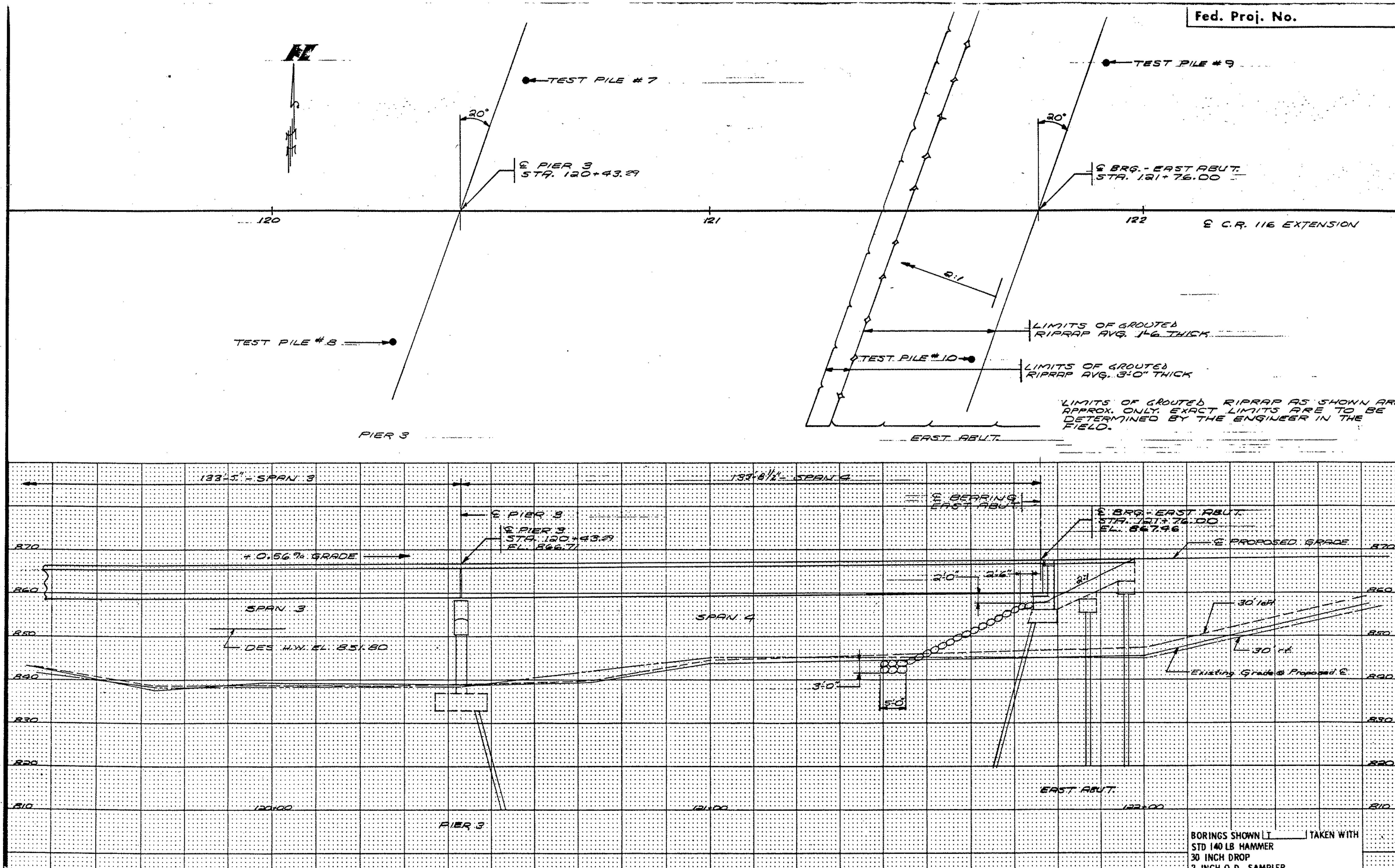


Fed. Proj. No.

BORINGS SHOWN | | TAKEN WITH
STD 140 LB HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER

BRIDGE SURVEY PLAN AND PROFILE	DES:	DR:	APPROVED:	Bridge No.
	CHK:	CHK:		02595
~~State Proj. No.~~ C.P. 88-09-116	Sheet No. 45 of 464 Sheets			

Fed. Proj. No.



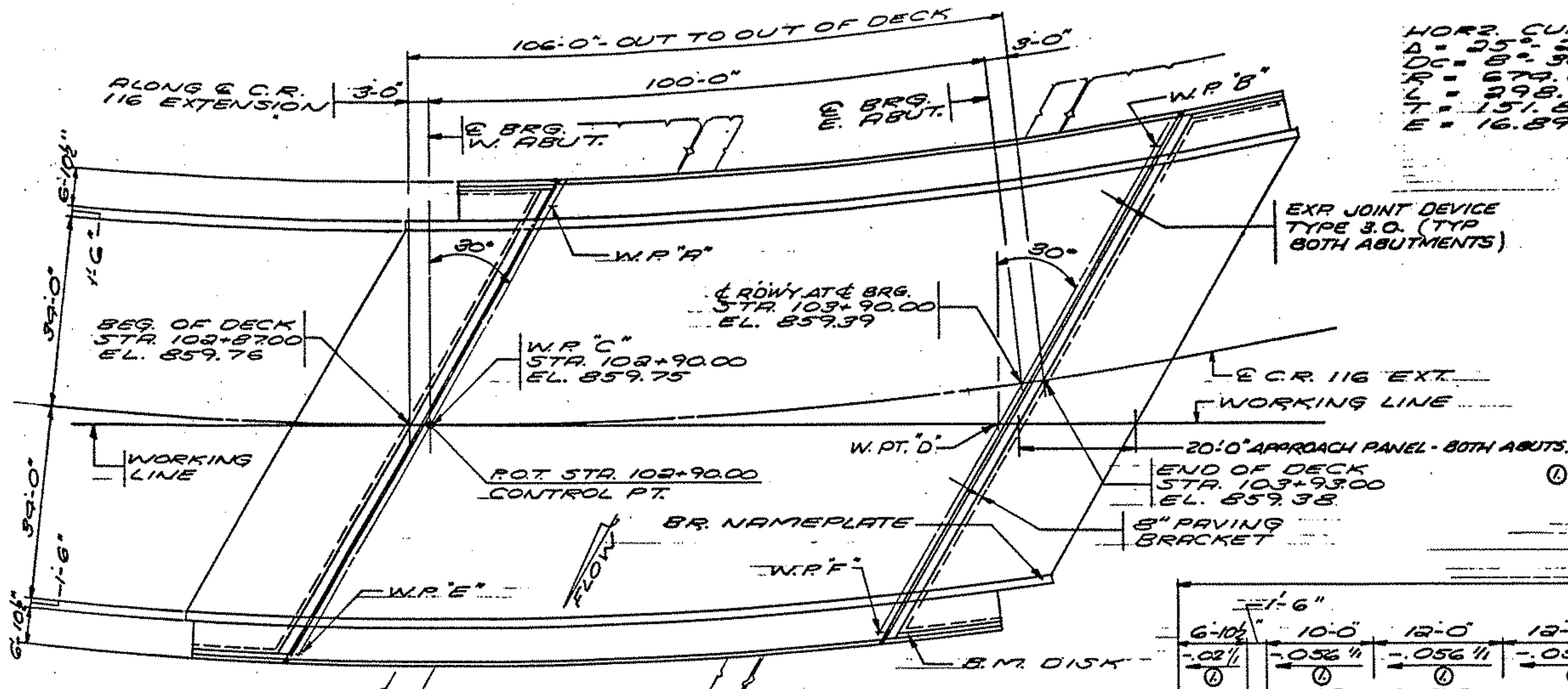
BRIDGE SURVEY PLAN AND PROFILE

DES: | DR: | APPROVED:
CHK: | CHK:

~~State Proj. No.~~ C.R. 88-09-116

Sheet No. 46A of 46A Sheets

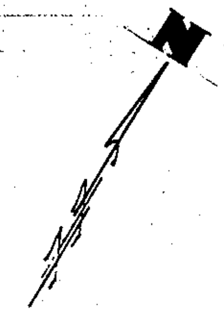
Bridge No. 02545

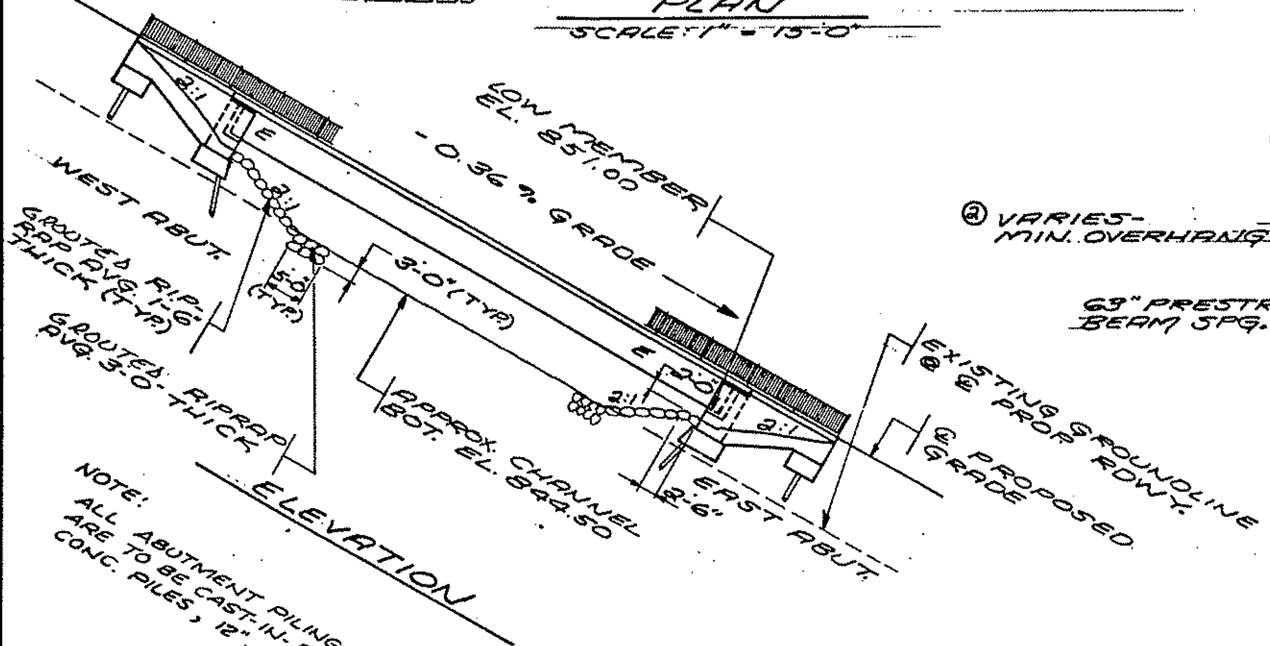


PLAN

SCALE: 1" = 15'-0"

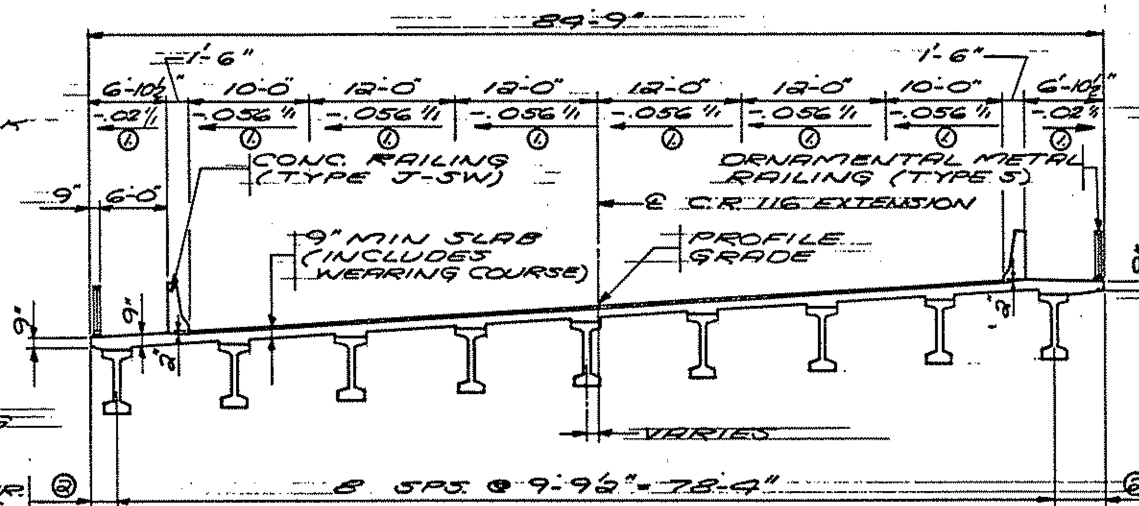
HORZ. CURVE DATA
Δ = 25° - 23' - 29"
Dc = 8° - 30' - 00"
R = 674.068'
L = 298.722
T = 151.855
E = 16.893





ELEVATION

NOTE:
ALL ABUTMENT PILING ARE TO BE CAST-IN-PL CONC. PILES, 12".



TRANSVERSE SECTION THRU DECK

① BRIDGE DECK TO BE AT FULL SUPER OF .056'/' FROM BEG. OF BRIDGE TO STA. 103+71.77. FROM STA. 103+71.77 TO END OF DECK TO BE IN SUPEREL. TRANSITION. SEE SHT. 2 FOR CHART.

DESIGN DATA

1989 A.A.S.H.T.O. DESIGN SPECIFICATIONS LOAD FACTOR DESIGN METHOD
HS25 LOADING INCLUDES 17 P.S.F. D.L. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS
REINFORCED CONCRETE:
f'c = 4000 P.S.I. n = 8
fy = 60000 P.S.I. REINFORCEMENT
STRUCTURAL STEEL:
fy = 36,000 P.S.I. SPEC. 3306
fy = 50000 P.S.I. SPEC. 3309
PRESTRESSED CONCRETE:
f'c = 6000 P.S.I. n = 6 LOW RELAX
f's = 270000 P.S.I. 270 STRANDS
DECK AREA = 9158 SQ. FT.
PROJECTED A.D.T. FOR 2009 = 19,150

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT
3-5	WEST ABUTMENT DETAILS
6-8	WEST ABUTMENT REINFORCEMENT
9-11	EAST ABUTMENT DETAILS
12-14	EAST ABUTMENT REINFORCEMENT
15 & 16	SUPERSTRUCTURE DETAILS
17-19	SUPERSTRUCTURE REINFORCEMENT
20	SUPERSTRUCTURE QUANTITIES
21	FRAMING PLAN
22	63" PRESTRESSED CONCRETE BEAMS
23	BIKEWAY RAILING CONC. RAIL, TYPE J & FENCE
24	ORNAMENTAL METAL RAILING, TYPE 5
25 & 26	WATERPROOF EXPANSION DEVICE
27	BRIDGE APPROACH PANELS
28	UTILITIES
29-34	DETAILS
35	BRIDGE SURVEY
36	BRIDGE SURVEY - PLAN & PROFILE

B.M. EL. 873.23
S.E. COR. SIDEWALK @ S.E. COR. ICE ARENA

APPROVED:
Paul K. Ruud
COUNTY ENGINEER
ANOKA COUNTY
DATE: 9/29/89

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION & THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Brian D. Walter
REG. NO. 13896
DATE: 9/25/89

SCHEDULE OF QUANTITIES FOR THE ENTIRE BRIDGE

ITEM NO.	ITEM	UNIT	QUANTITY
2401.501	STRUCTURE CONCRETE (1A43)	CU. YD.	147 (P)
2401.501	STRUCTURE CONCRETE (3Y43)	CU. YD.	242 (P)
2401.512	BRIDGE SLAB CONCRETE (3X36)	SQ. FT.	9158 (P)
2401.513	TYPE J RAILING CONCRETE (3X46)	LIN. FT.	298 (P)
2401.515	SIDEWALK CONCRETE (3X46.)	SQ. FT.	356 (P)
2404.501	CONCRETE OVERLAY (3U17A)	SQ. FT.	7303 (P)
2401.541	REINFORCEMENT BARS, EPOXY COATED	POUND	90870 (P)
2401.541	REINFORCEMENT BARS	POUND	5750 (P)
2402.591	EXPANSION JOINT DEVICES, TYPE 3	LIN. FT.	208 (P)
2402.595	BEARING ASSEMBLY	EACH	18
2405.502	PRESTRESSED CONCRETE BEAMS, TYPE 63	LIN. FT.	912 (P)
2405.511	DIAPHRAGMS FOR TYPE 63 PRESTRESSED BEAMS	LIN. FT.	158 (P)
2402.583	ORNMENTAL METAL RAILING	LIN. FT.	281
2557.501	WIRE FENCE, DESIGN, SI	LIN. FT.	294
2545.509	CONDUIT SYSTEM (TELEPHONE)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (POWER)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (WATERMAIN)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (GAS MAIN)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (FUTURE UTILITIES)	LUMP SUM	1
2452.507	CAST-IN-PLACE CONCRETE PILING, DELIVERED, 12"	LIN. FT.	3685
2452.508	CAST-IN-PLACE CONCRETE PILING, DRIVEN, 12"	LIN. FT.	3685
2452.519	CAST-IN-PLACE CONCRETE TEST PILES 65 FT. LG., 12"	EACH	4
0301.601	BRIDGE APPROACH PANELS	LUMP SUM	1
0401.601	STRUCTURE EXCAVATION	LUMP SUM	1
0401.601	SLOPE PREPARATION	LUMP SUM	1
2511.507	GROUTED RIPRAP	CU. YD.	370

CONSTRUCTION NOTES

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

BRIDGE SEAT REINFORCEMENT SHALL BE PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE BEAMS SHALL BE PLACED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR ANCHOR RODS.

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATES THE BAR SIZE.

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

C.P. 88-09-116

C.R. 116 EXTENSION
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02546

C.R. 116 EXTENSION FROM C.R. 47 IN RAMSEY TO C.S.A.H. 7 IN ANOKA OVER THE RUM RIVER
100' PRESTRESSED BEAM SPAN. - 48'-0" ROADWAY, 2-6'-0" SIDEWALKS
30° SKEW, 8°-30'-00" CURVE
SPAN IDENT. NO. 501

GENERAL PLAN AND ELEVATION

SEC. 25 TWP. 32N R25W
RAMSEY TOWNSHIP
ANOKA COUNTY

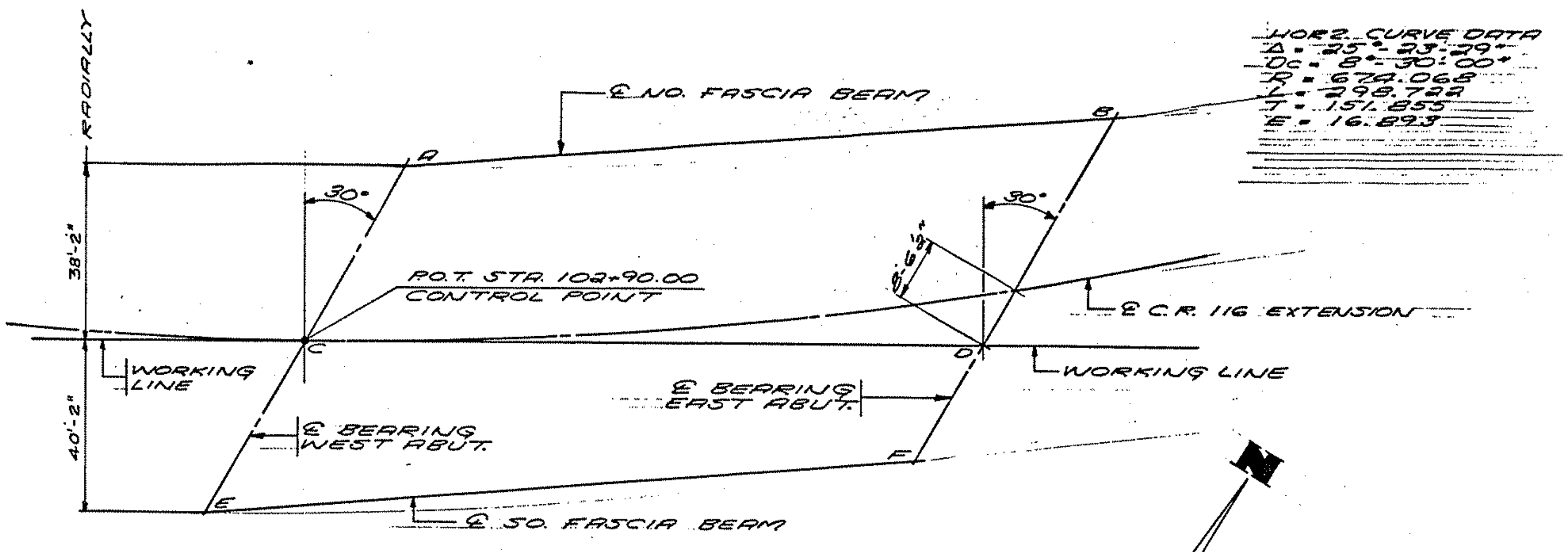
APPROVED:

PLAN PREPARED BY: ERICKSON ENGINEERING 3340 REPUBLIC AVE. ST LOUIS PK., MINN. 55426

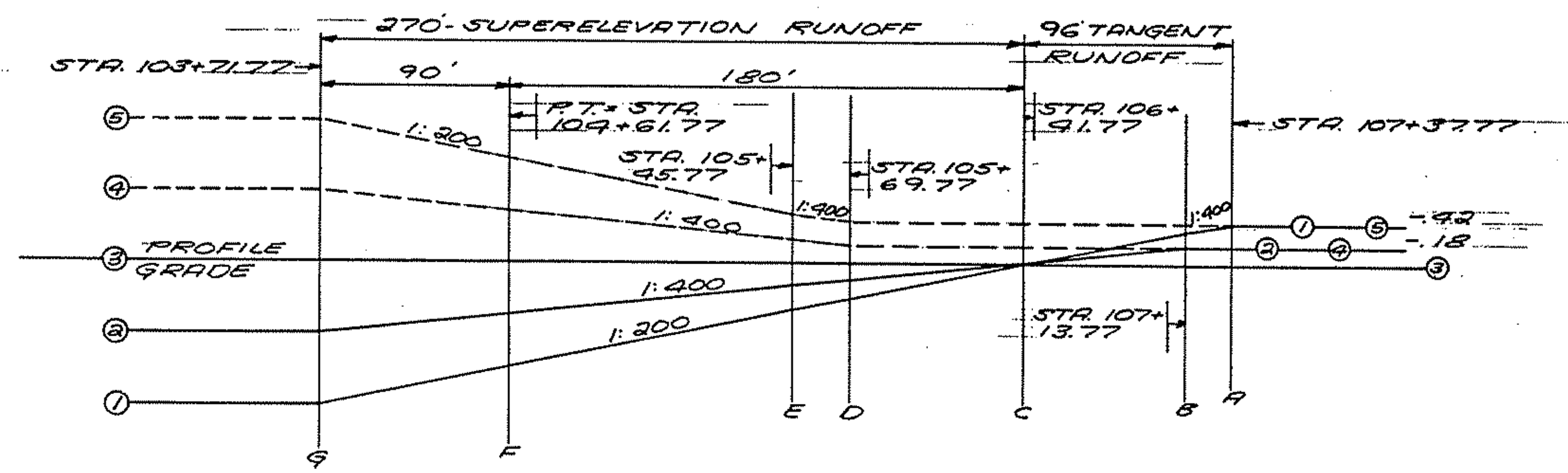
SHEET 1B OF 36B SHEETS

02546

D.J.V.
R.R.T.



BRIDGE LAYOUT SHOWING WORKING POINTS
NO SCALE

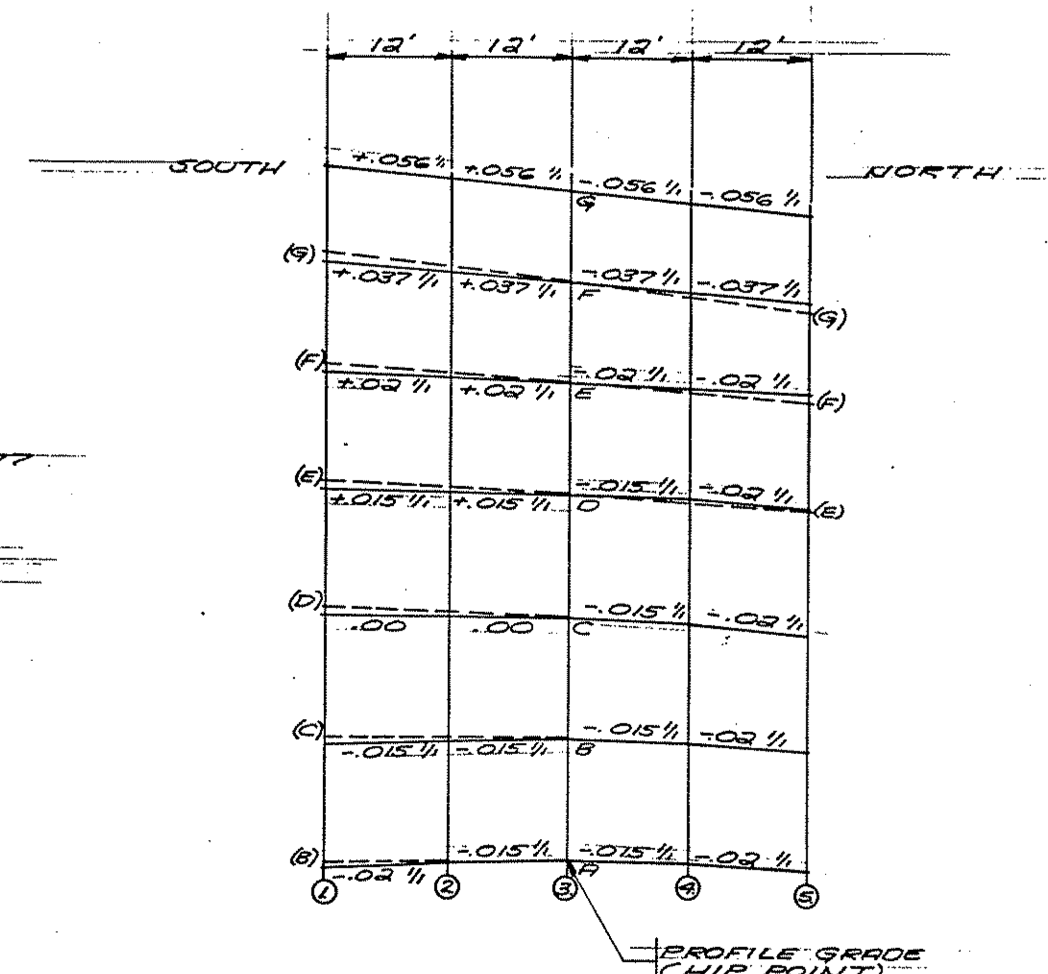


⑥ TOTALS SHOWN FOR BEAMS ARE FOR BOTH ABUTMENTS

SUPERELEVATION CHART

TOP OF SLAB TO BRIDGE SEAT ⑥					
	BEAM B1	BEAM B2	BEAM B3	BEAM B4	BEAMS B5-B9
SLAB	9"	9"	9"	9"	9"
STOOL	7 3/8"	6 3/4"	5 13/16"	4 15/16"	3 5/8"
BEAM	63"	63"	63"	63"	63"
BEARING	4 3/8"	4 3/8"	4 3/8"	4 3/8"	4 3/8"
TOTAL	6'-11 3/4"	6'-11 1/8"	6'-10 3/16"	6'-9 5/16"	6'-8"

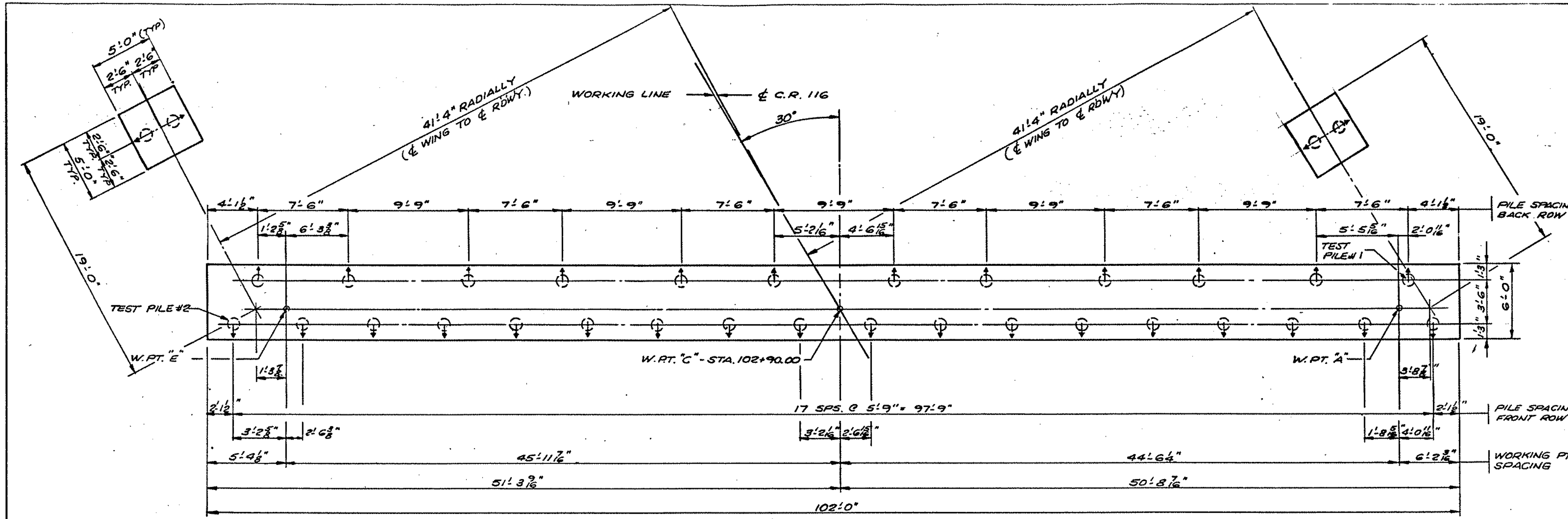
DIMENSIONS BETWEEN WORKING POINTS								ELEVATIONS			
POINT	STATION	A	B	C	D	E	F	TOP OF SLAB	SLAB TO BR. SEAT	BRIDGE SEAT	POINT
A	103 + 13.60		102.93	44.52	82.64		91.22	857.62	6.98	850.64	A
B	104 + 22.83			134.34	58.28	172.91		857.61	6.98	850.63	B
C	102 + 90.00					45.95	82.79	859.75			C
D	103 + 84.73					124.85	41.89	859.76			D
E	102 + 68.31						97.45	861.72	6.67	855.05	E
F	103 + 60.56							861.39	6.67	854.72	F



SUPERELEVATION CHART
FULL SUPER = .056'/'
SUPERELEVATION RUNOFF = 270'
TANGENT RUNOUT = 96'

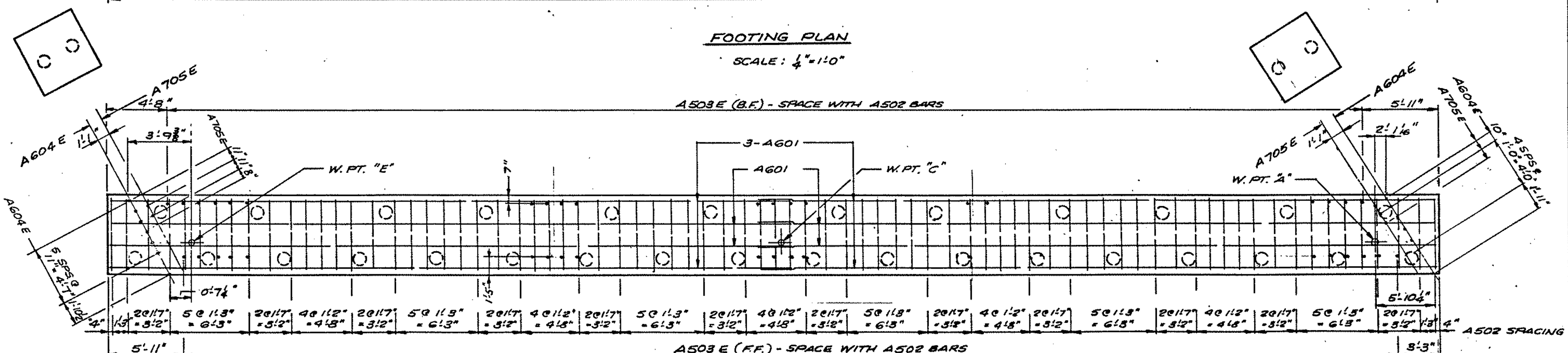
C.R. 88-09-116

BRIDGE LAYOUT	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED:	BRIDGE NUMBER 02546
	SHEET 28 OF 36B SHEETS			



FOOTING PLAN

SCALE: 1/4" = 1'-0"



FOOTING PLAN

(SHOWING REINFORCEMENT)

PILE NOTES

2 - CAST-IN-PLACE CONCRETE TEST PILES 65 FT. LONG
28 - " " " " PILES EST. LENGTH 55 FT.
4 - " " " " " " 55 FT.
34 - " " " " " REQ'D FOR WEST ABUTMENT

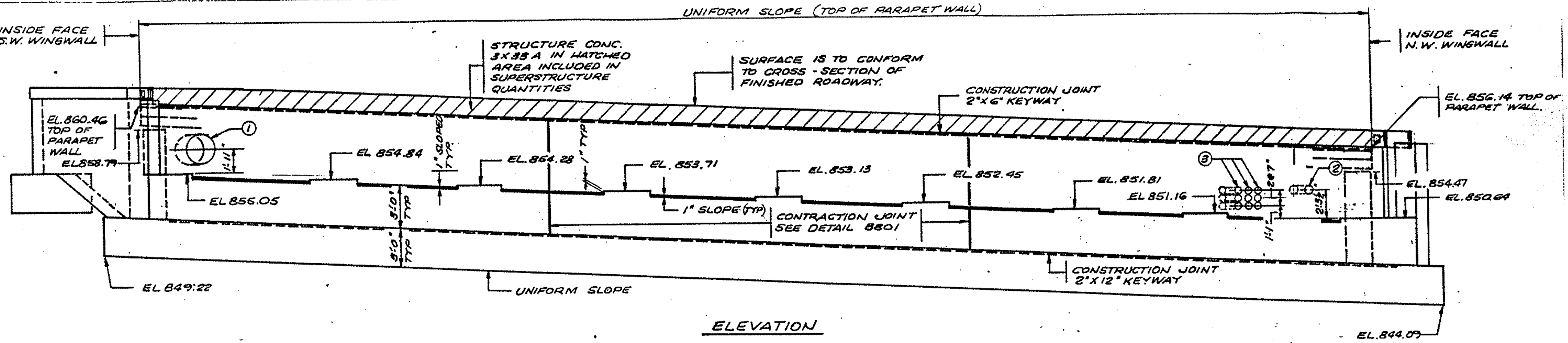
PILE SPACING SHOWN IS AT BOTTOM OF FOOTINGS

PILES MARKED ⊖→ TO BE BATTERED 3" PER FT. IN DIRECTION SHOWN

PILES TO HAVE A NOMINAL DIAMETER OF 12".

COMPUTED PILE LOADS - TONS PER PILE	
DEAD LOAD + EARTH PRESSURE	38.1
LIVE LOAD	6.3
TOTAL	44.4

WEST ABUTMENT DETAILS C.P. 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 38 OF 36B SHEETS			

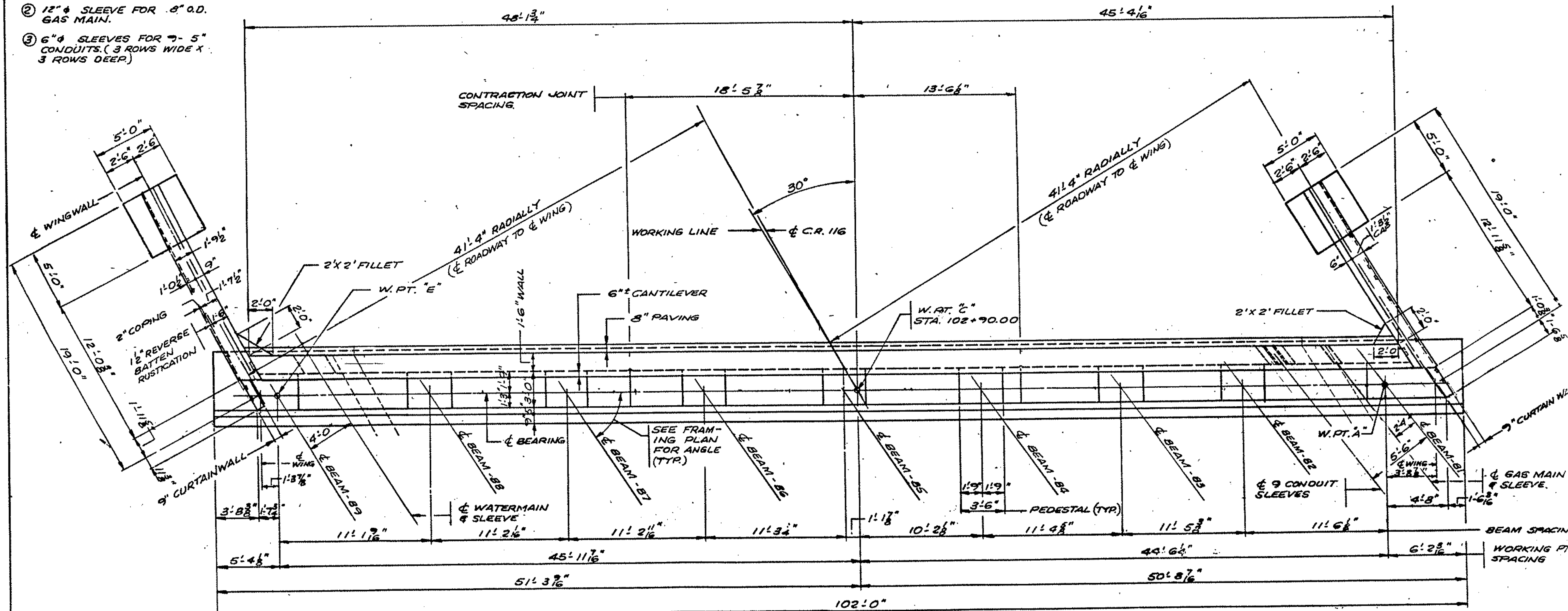


ELEVATION

① 26" ϕ SLEEVE FOR 16" INSULATED WATERMAIN (24" O.D)

② 12" ϕ SLEEVE FOR 8" O.D. GAS MAIN.

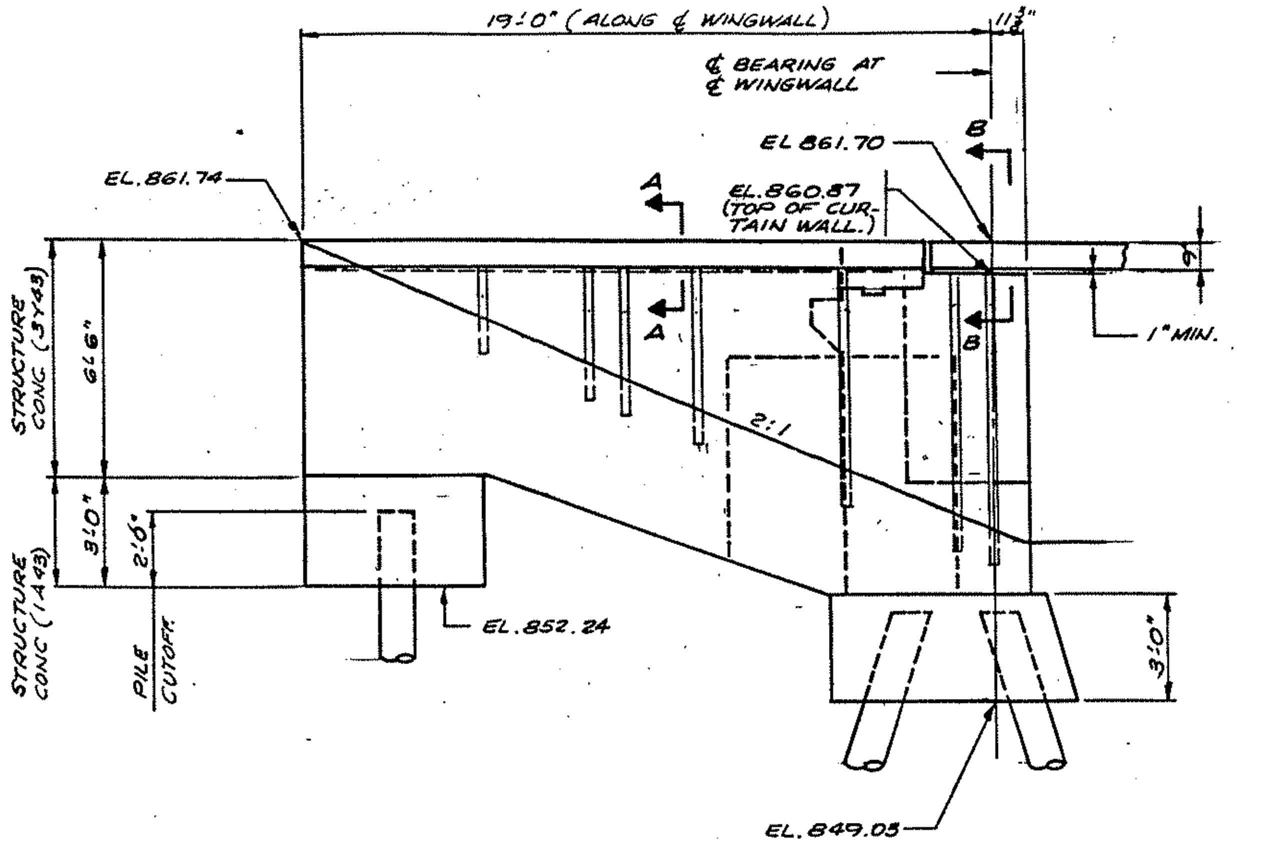
③ 6" ϕ SLEEVES FOR 9-5" CONDUITS. (3 ROWS WIDE X 3 ROWS DEEP.)



PLAN

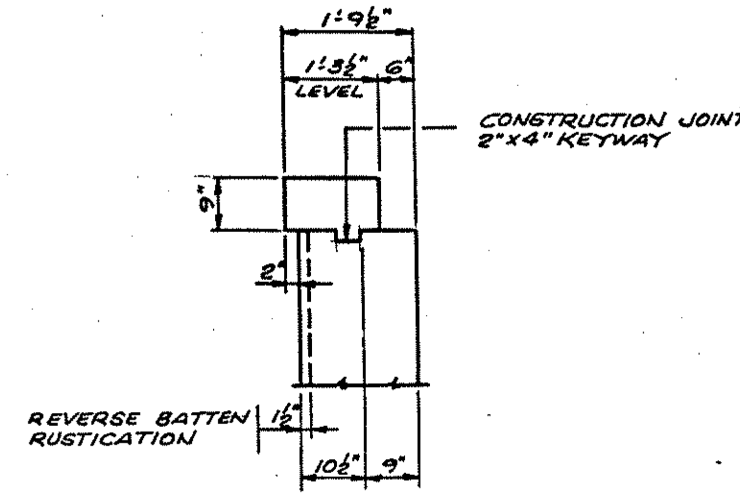
SCALE: 1/4"=1'-0"

WEST ABUTMENT DETAILS C.R 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 48 OF 86B SHEETS			

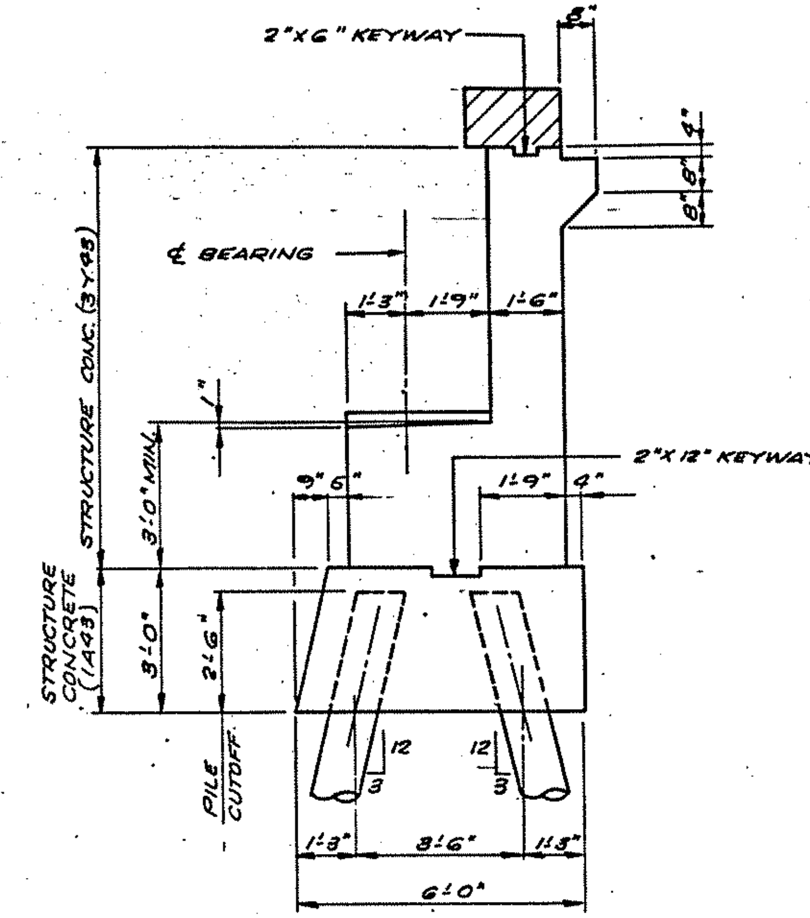


S.W. WINGWALL

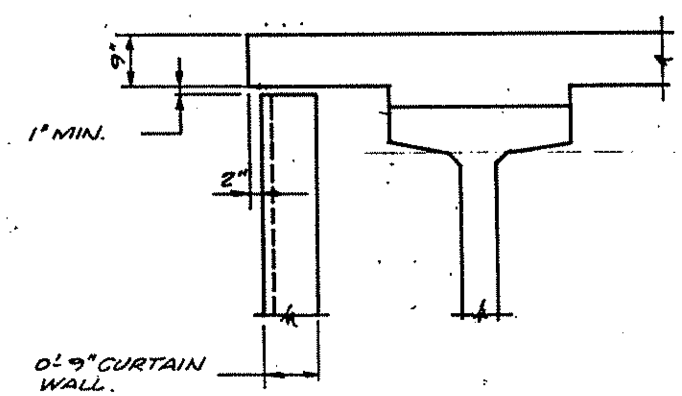
SCALE: 3/8" = 1'-0"



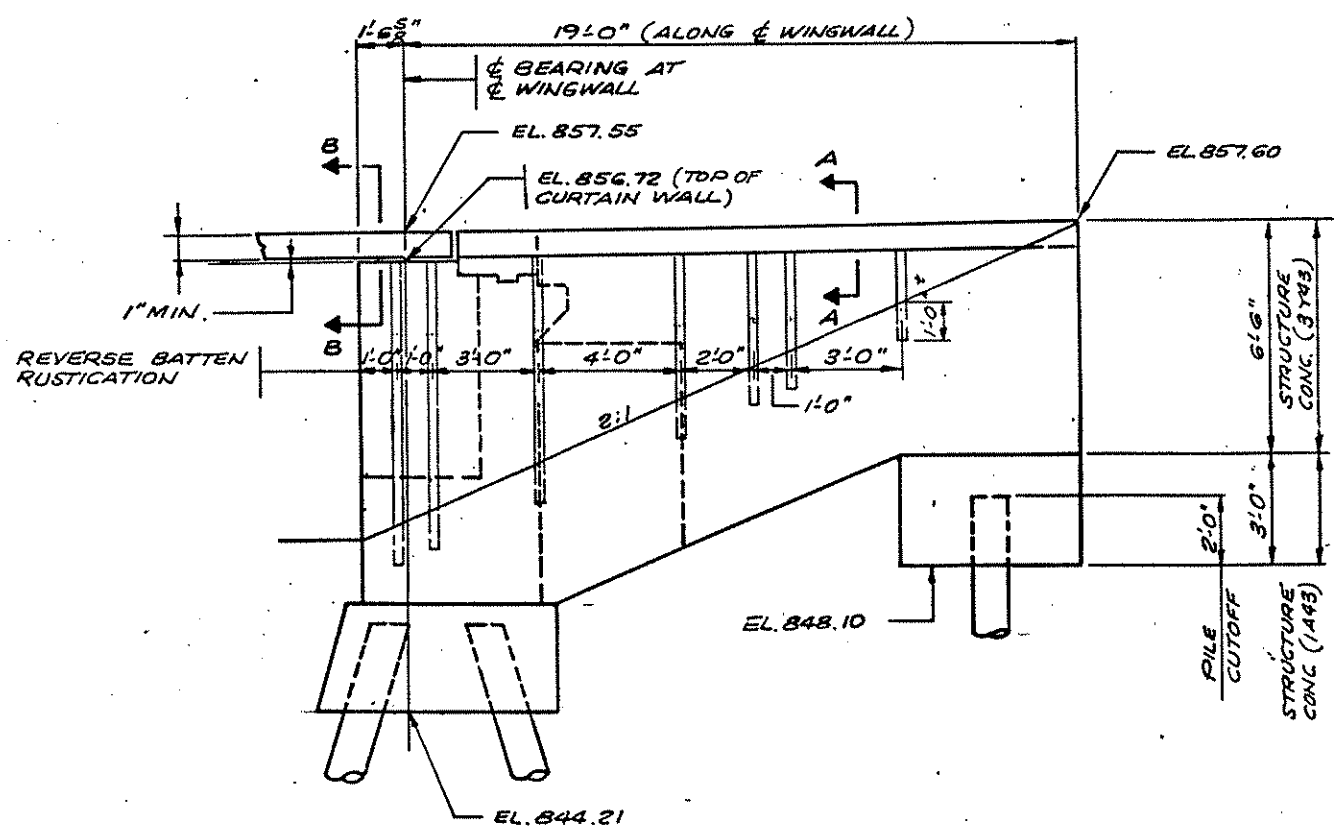
SECTION A-A



SECTION THRU ABUTMENT

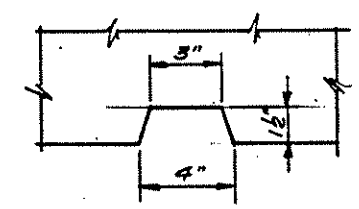


SECTION B-B



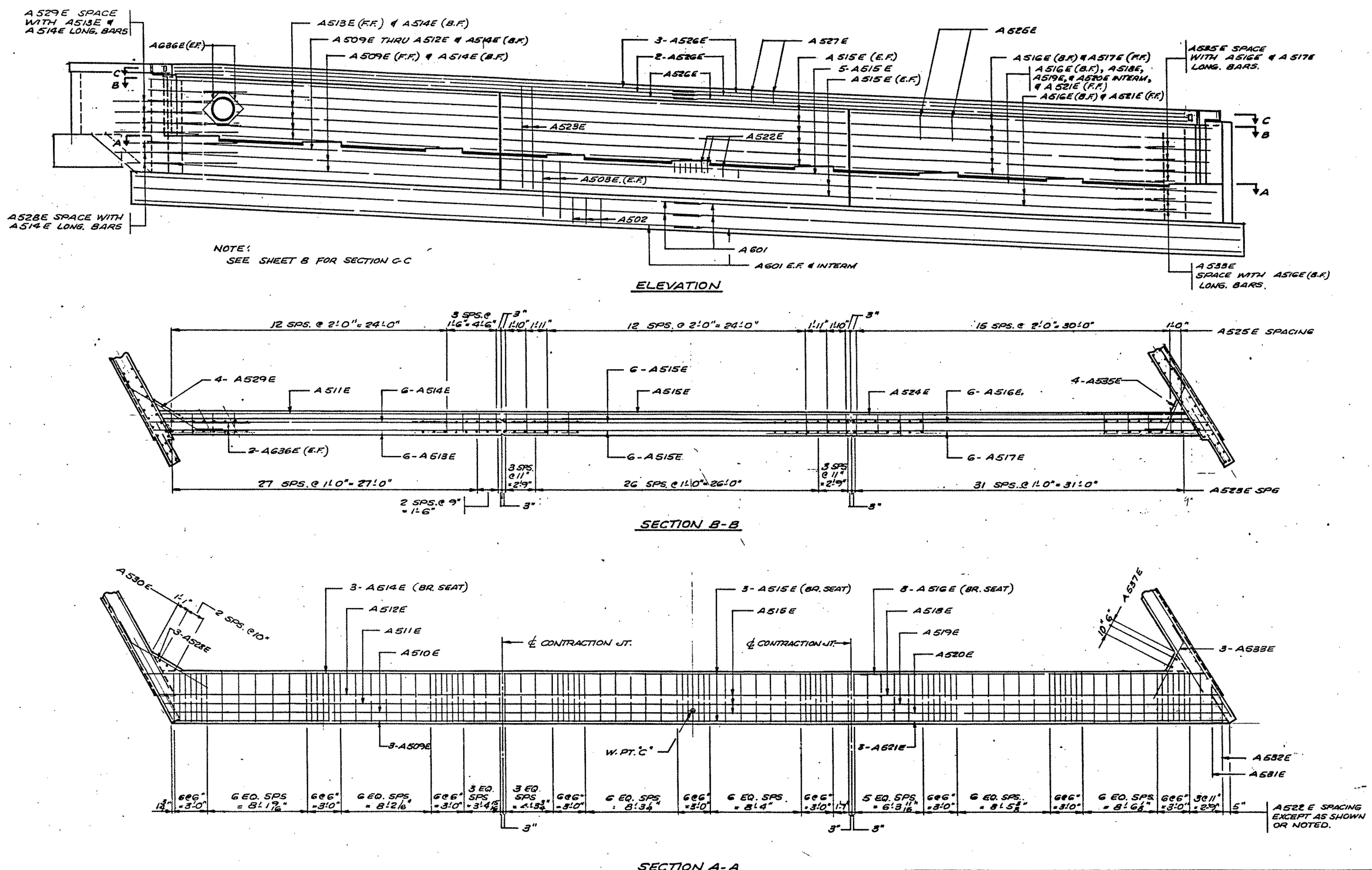
N.W. WINGWALL

SCALE: 3/8" = 1'-0"

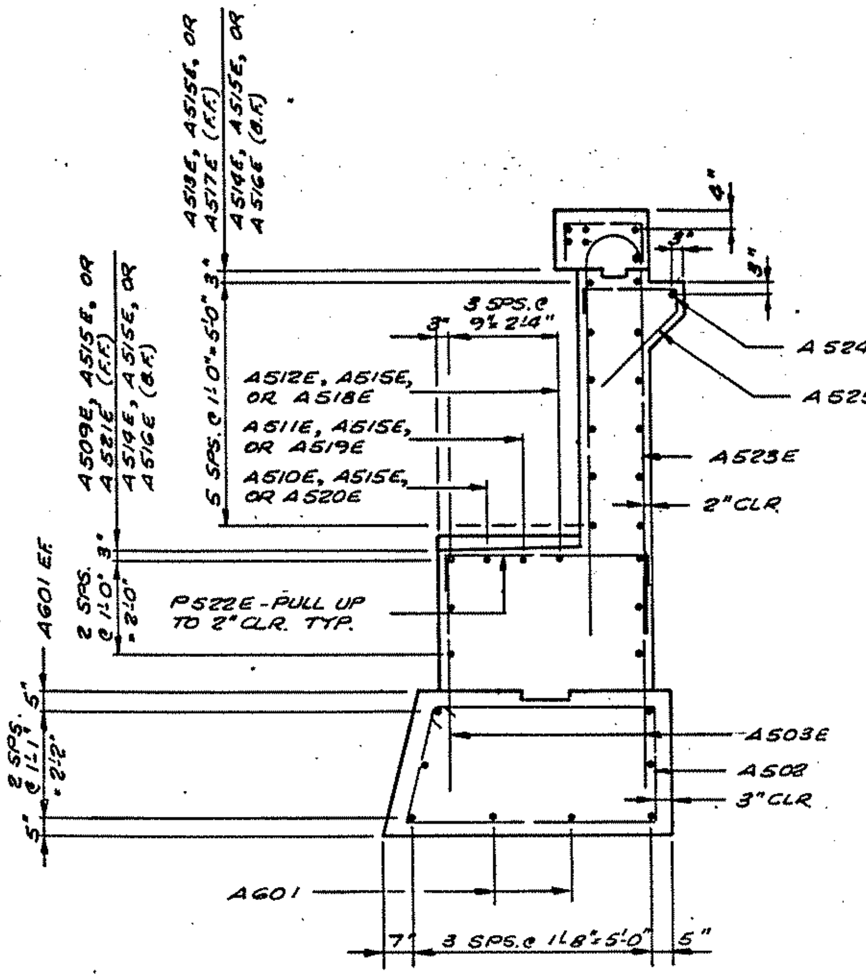


REVERSE BATTEN RUSTICATION DETAIL

WEST ABUTMENT DETAILS	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
C.P. 88-09-116	SHEET 58 OF 368 SHEETS			



WEST ABUTMENT REINFORCEMENT C.R. 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 68 OF 568 SHEETS			



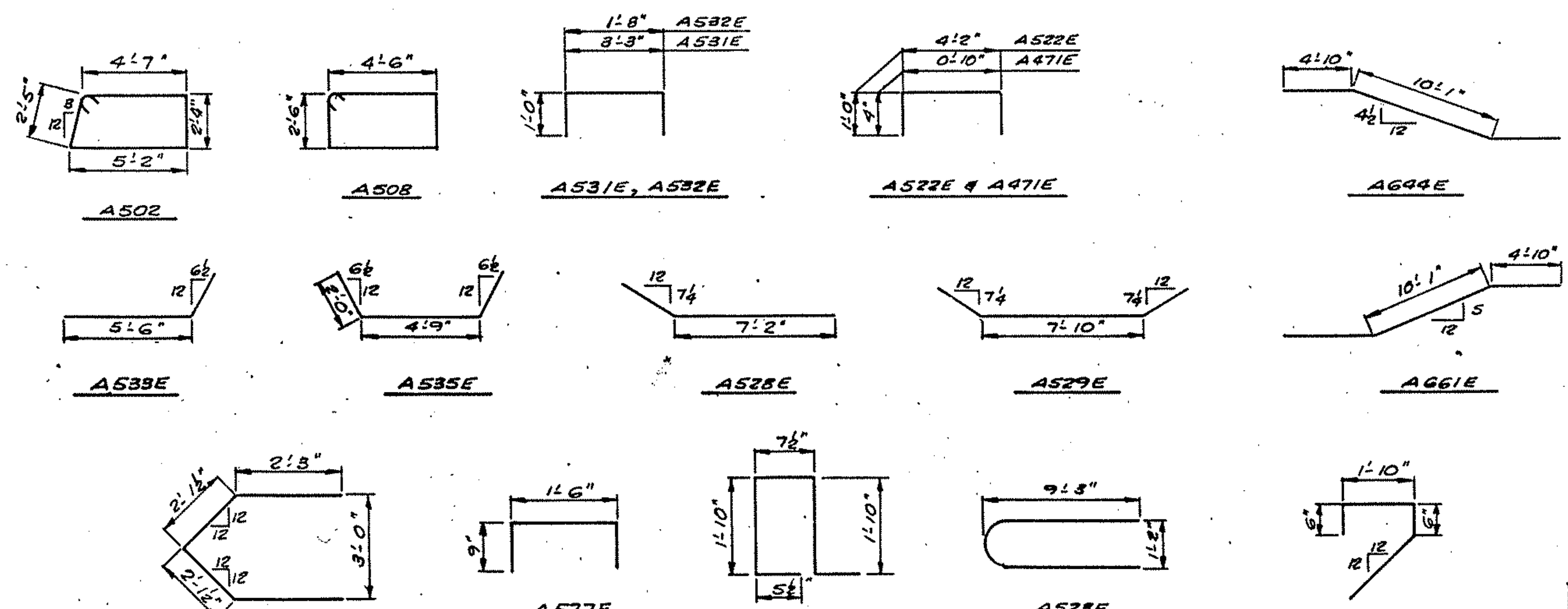
SECTION THRU ABUTMENT

BILL OF REINFORCEMENT FOR WEST ABUTMENT CONT'D.

BAR	NO.	LENGTH	SHAPE	LOCATION
A542E	1-SERIES OF 8 BARS	FROM 6'-10" TO 11'-3"	STR.	S.W. WINGWALL - LONG. F.F.
A448E	"	"	"	" " - " - B.F.
A644E	2	20'-2"	BENT	" " - " - E.F.
A445E	10	5'-6"	STR.	S.W. & N.W. " - VERT- F.F.
A546E	10	6'-6"	"	" " " " - " - B.F.
A447E	1-SERIES OF 5 BARS	FROM 5'-6" TO 6'-10"	STR.	S.W. WINGWALL - " - F.F.
A548E	"	"	"	" " " - " - B.F.
A549E	1-SERIES OF 5-BARS	FROM 7'-2" TO 8'-6"	"	" " " - " - F.F.
A650E	"	"	"	" " " - " - B.F.
A551E	3	8'-8"	"	" " " - " - F.F.
A662E	4	8'-8"	"	" " " - " - B.F.
A553E	6	8'-7"	"	" " " - " - E.F.
A564E	7	5'-7"	"	" " " - LONG. - B.F.
A555E	6	20'-2"	"	N.W. WINGWALL - LONG - F.F.
A456E	6	16'-10"	"	" " " - " - B.F.
A557E	1	14'-8"	"	" " " - " - F.F.
A458E	1	11'-4"	"	" " " - " - B.F.
A559E	1 SERIES OF 8-BARS	FROM 7'-10" TO 12'-2"	"	" " " - " - F.F.
A460E	"	FROM 4'-7" TO 8'-11"	"	" " " - " - B.F.
A661E	2	20'-10"	BENT	" " " - " - E.F.
A462E	1-SERIES OF 5-BARS	FROM 5'-6" TO 7'-1"	STR.	" " " - VERT. - F.F.
A563E	"	"	"	" " " - " - B.F.
A564E	1-SERIES OF 5-BARS	FROM 7'-7" TO 9'-1"	"	" " " - " - F.F.
A665E	"	"	"	" " " - " - B.F.
A666E	3	9'-3"	"	" " " - " - F.F.
A667E	3	9'-3"	"	" " " - " - B.F.
A568E	6	9'-2"	"	" " " - " - E.F.
A569E	7	6'-3"	"	" " " - LONG - B.F.
A470E	1-SERIES OF 3 BARS	FROM 17'-2 TO 17'-7"	"	N.W. WINGWALL - LONG
A471E	36	1'-6"	BENT	N.W. & S.W. WINGWALLS - TIES
A472E	36	6'-3"	"	" " " " - "
A473E	1-SERIES OF 8-BARS	FROM 16'-9" TO 17'-2"	STR.	S.W. WINGWALL - LONG

BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A601	16	52'-0"	STR.	FOOTING - LONG.
A502	77	15'-6"	BENT	" - STIRRUPS
A503E	141	4'-10"	STR.	" - DOWELS
A604E	22	4'-9"	"	FOOTINGS - "
A705E	6	5'-7"	"	" - "
A506E	10	4'-2"	"	WING FOOTINGS - DOWELS
A507	22	4'-6"	"	" " - LONG & TRANSV.
A508	8	14'-9"	BENT	" " - STIRRUPS
A509E	8	28'-10"	STR.	BRIDGE SEAT - LONG - F.F.
A510E	1	29'-3"	"	" " - " - INTERM.
A511E	2	29'-8"	"	" " - " - " & PAVING BRKT.
A512E	1	30'-1"	"	" " - " - "
A513E	6	30'-9"	"	PARAPET WALL - LONG - F.F.
A514E	9	30'-11"	"	" " & BR. ST. - LONG - B.F.
A515E	22	31'-10"	"	" " " " " - LONG & PAV. BRKT.
A516E	9	33'-6"	"	" " " " " - " - B.F.
A517E	6	34'-3"	"	PARAPET WALL - LONG - F.F.
A518E	1	34'-6"	"	BRIDGE SEAT - LONG. - INTERM.
A519E	1	35'-0"	"	" " - " - "
A520E	1	35'-6"	"	" " - " - "
A521E	3	36'-7"	"	" " - " - F.F.
A522E	106	6'-2"	BENT	BRIDGE SEAT - TIES
A523E	95	19'-2"	"	PARAPET WALL - VERT.
A524E	1	81'-4"	STR.	PAVING BRACKET - LONG.
A525E	50	5'-2"	BENT	" " - TIES
A526E	12	47'-9"	STR.	ROADWAY SLAB - LONG.
A527E	48	3'-0"	BENT	" " - TIES
A628E	3	9'-2"	"	FILLET - TIES - S.W. WINGWALL
A529E	4	11'-10"	"	" - " - " "
A530E	3	6'-4"	STR.	" - VERT. - " "
A531E	1	5'-3"	BENT	BRIDGE SEAT - TIES
A532E	1	3'-8"	"	" " - "
A533E	3	7'-6"	"	FILLET - TIES - N.W. WINGWALL
A535E	4	8'-9"	"	" - " - " " "
A636E	4	8'-9"	"	PARAPET WALL - TIES - E.F.
A537E	2	6'-9"	STR.	" - VERT - " " "
A538E	6	19'-7"	"	S.W. WINGWALL - LONG. - F.F.
A439E	6	17'-7"	"	" " " - " - B.F.
A540E	1	13'-10"	"	" " " - " - F.F.
A441E	1	11'-10"	"	" " " - " - B.F.

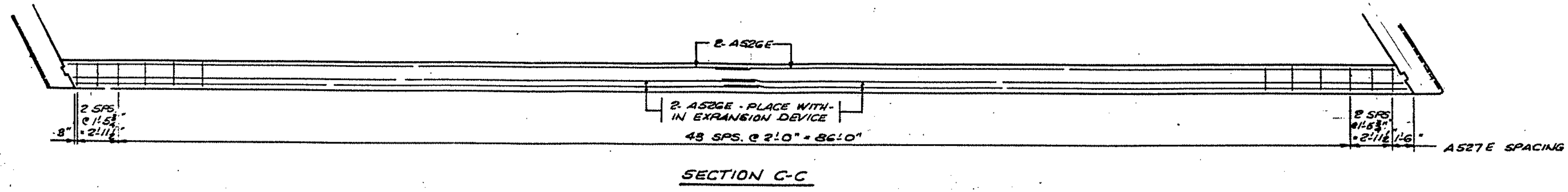


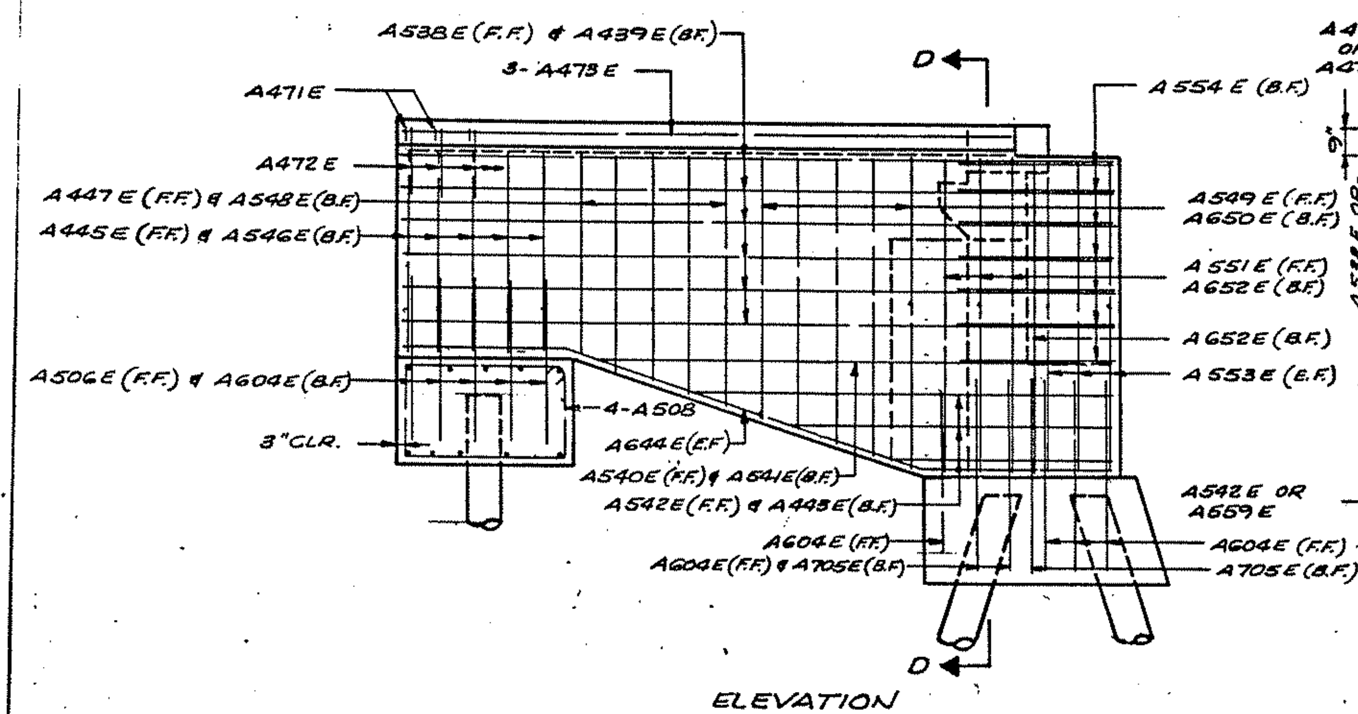
SUMMARY OF QUANTITIES FOR WEST ABUTMENT

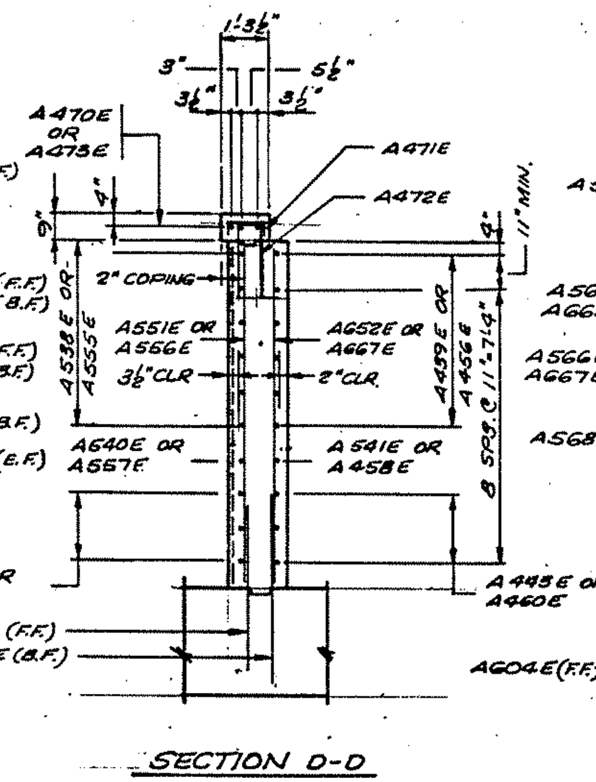
STRUCTURE CONCRETE 1A43	70	CU.YD.
STRUCTURE CONCRETE 3Y43	100	CU.YD.
REINFORCEMENT BARS, EPOXY COATED	8800	POUND
REINFORCEMENT BARS	2720	POUND
STRUCTURE EXCAVATION		LUMP SUM
(1) CAST-IN-PLACE CONCRETE PILING DELIVERED, 12"	1760	LIN.FT.
(1) CAST-IN-PLACE CONCRETE PILING DRIVEN, 12"	1760	LIN.FT.
CAST-IN-PLACE CONCRETE TEST PILES 65 FT. LG, 12"	2	EACH

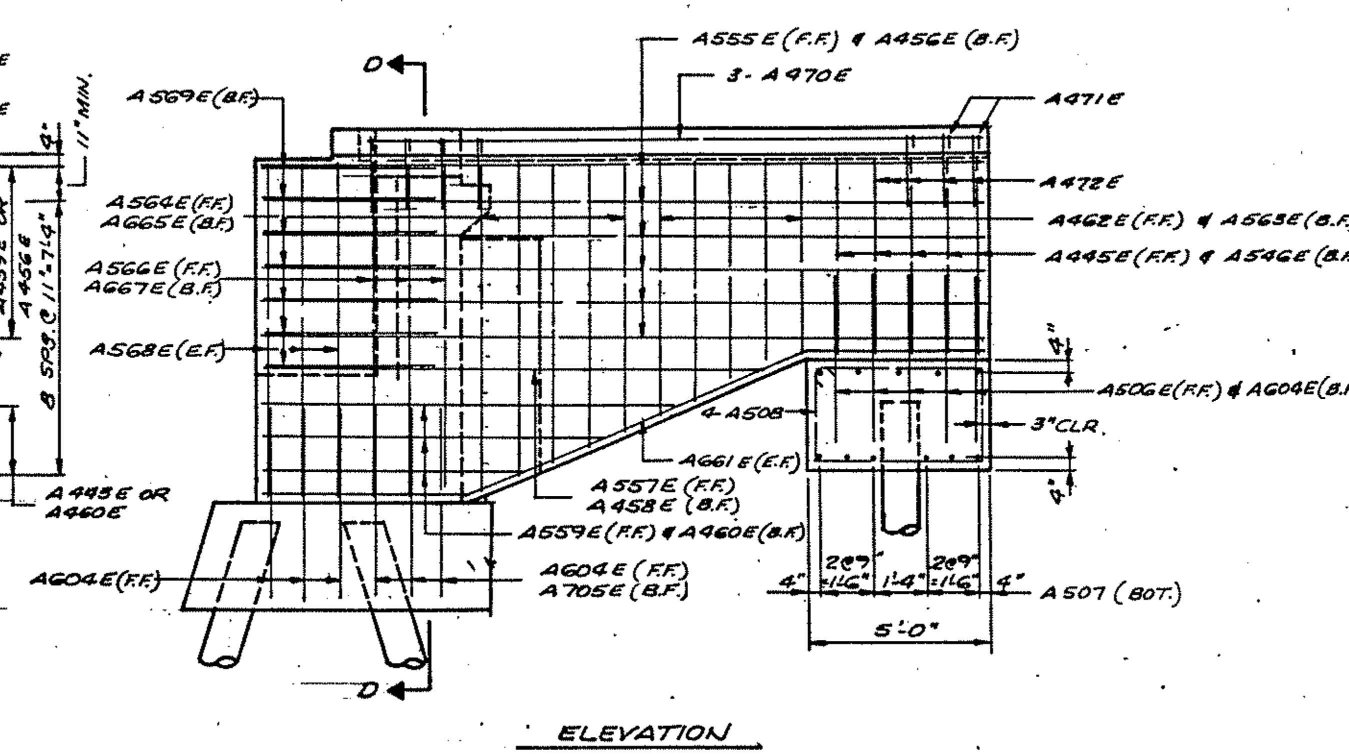
(1) DOES NOT INCLUDE TEST PILES

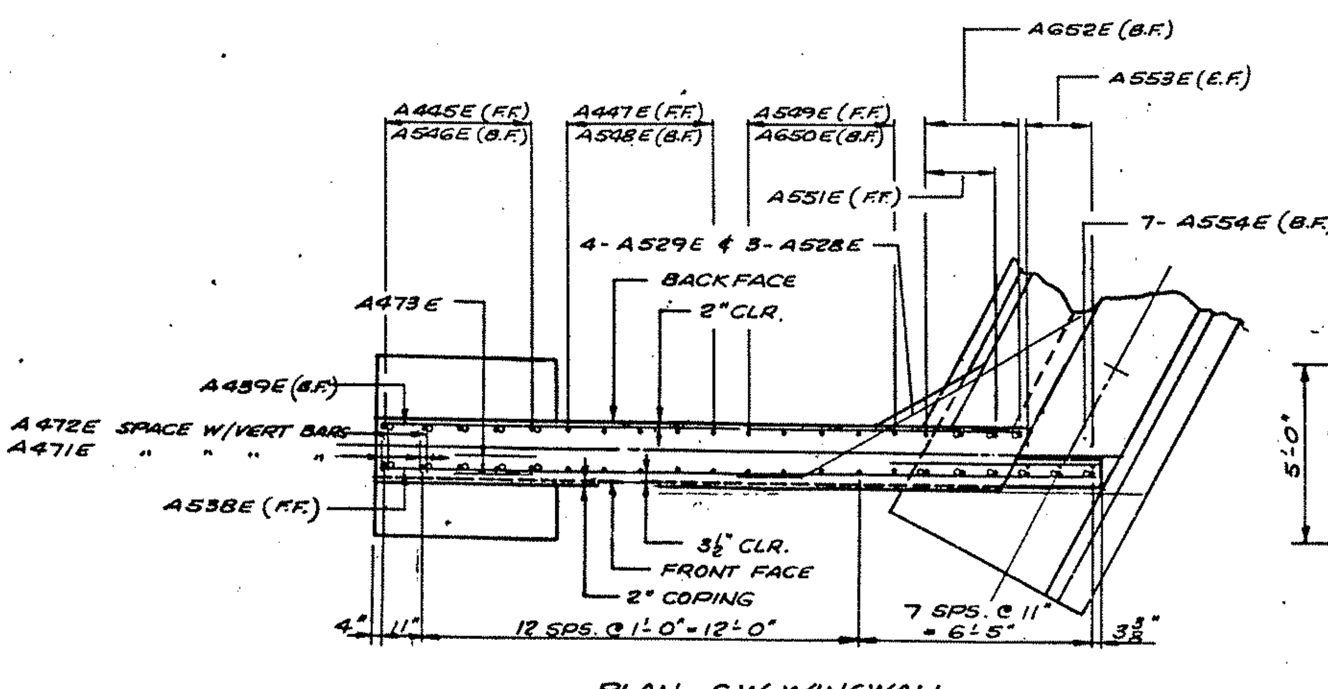
WEST ABUTMENT REINFORCEMENT C.P. 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 78 OF 363 SHEETS			

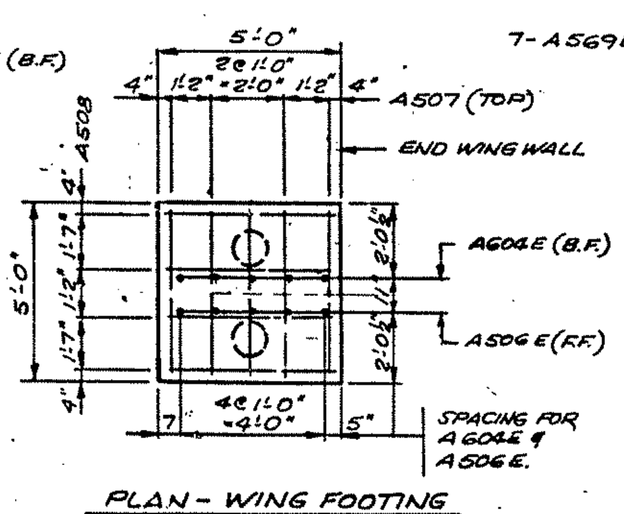


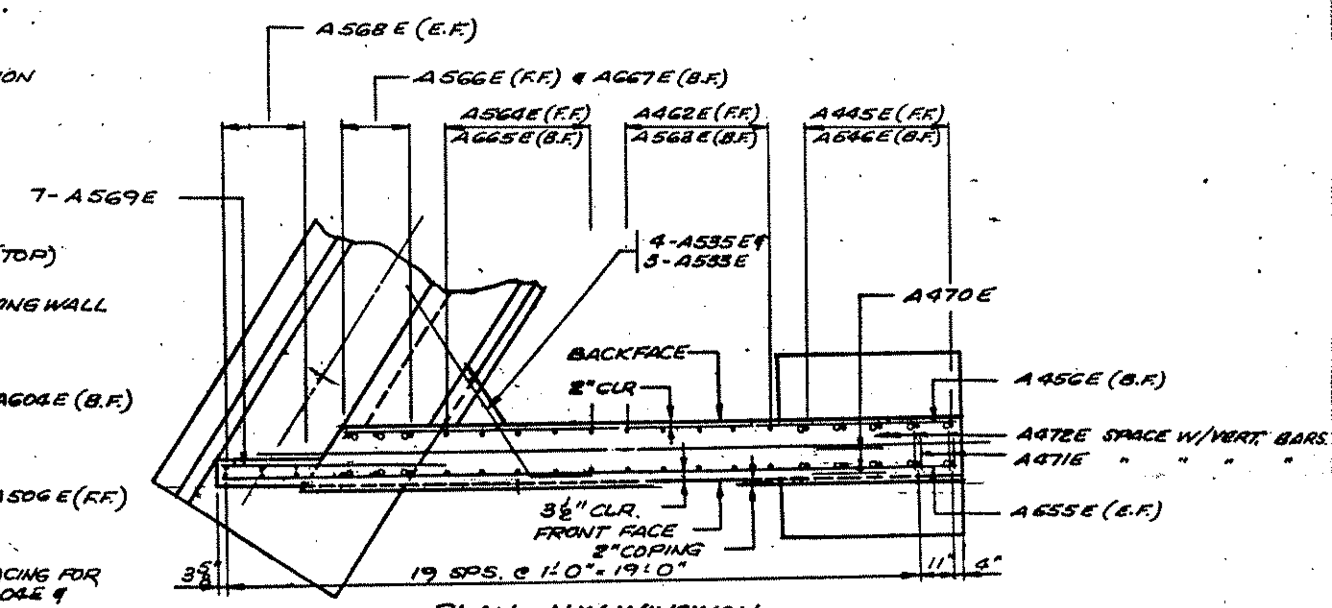










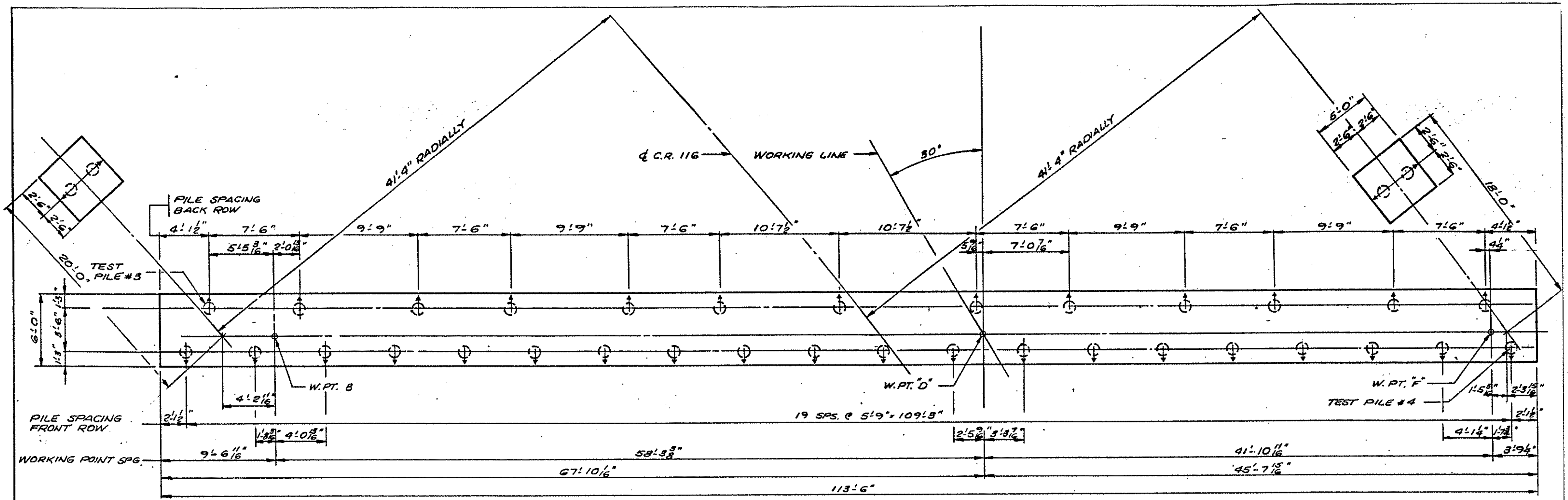


NOTES:

F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE

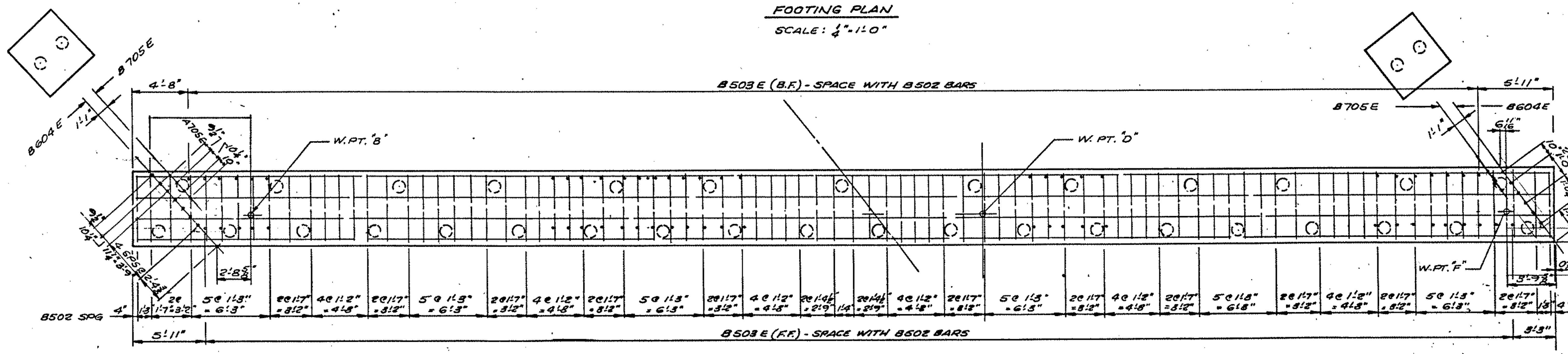
SEE SHEET 6 FOR LOCATION OF SECTION C-C

WEST ABUTMENT REINFORCEMENT C.P. 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO 02546
	SHEET 88 OF 368 SHEETS			



FOOTING PLAN

SCALE: 1/4" = 1'-0"



FOOTING PLAN

(SHOWING REINFORCEMENT)

PILE NOTES

2- CAST-IN-PLACE CONCRETE ABUT. TEST PILES 65 FT. LONG
31- " " " " " PILES EST. LENGTH 55 FT.
4- " " " " WING " " " 65 "
37- " " " " PILES REQ'D FOR EAST ABUTMENT.

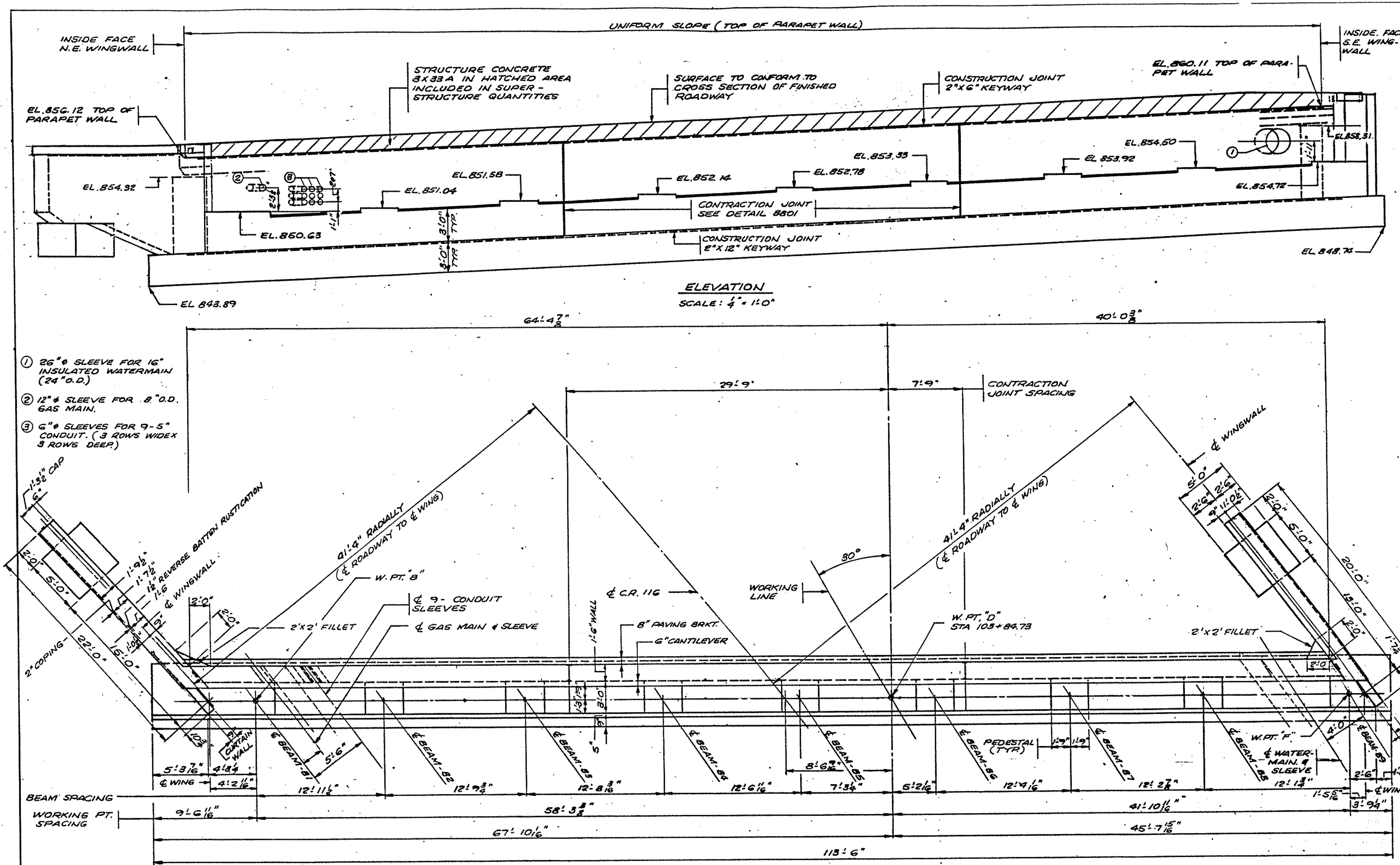
PILE SPACING SHOWN IS AT BOTTOM OF FOOTINGS

PILES MARKED ⊖→ TO BE BATTERED 3" PER FT. IN DIRECTION SHOWN

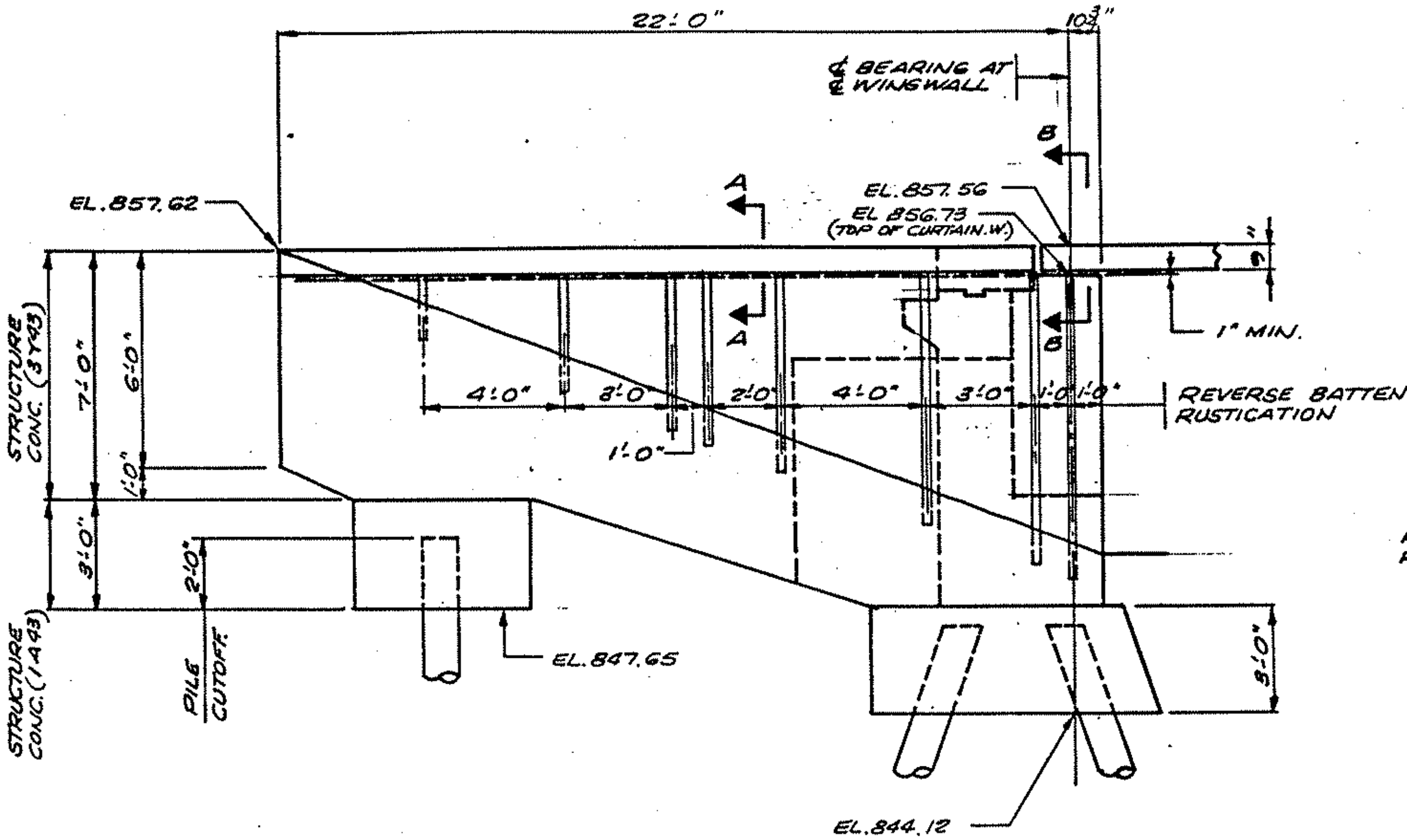
PILES TO HAVE A NOMINAL DIAMETER OF 12".

COMPUTED PILE LOADS - TONS PER PILE	
DEAD LOAD + EARTH PRESSURE	36.1
LIVE LOAD	5.7
TOTAL	41.8

EAST ABUTMENT REINFORCEMENT C.R. 88-09-116	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO 02546
	SHEET 98 OF 368 SHEETS			

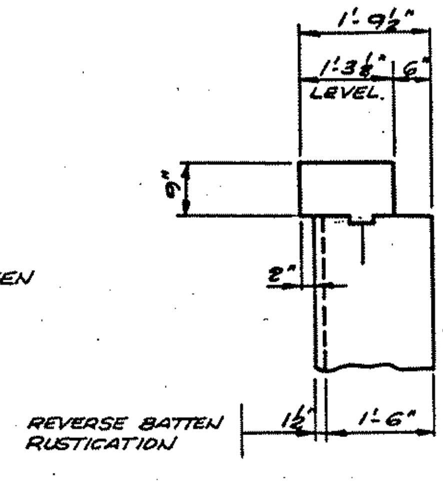


EAST ABUTMENT DETAILS	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO. 02546
C.R. 85-09-116	SHEET 108 OF 368 SHEETS			

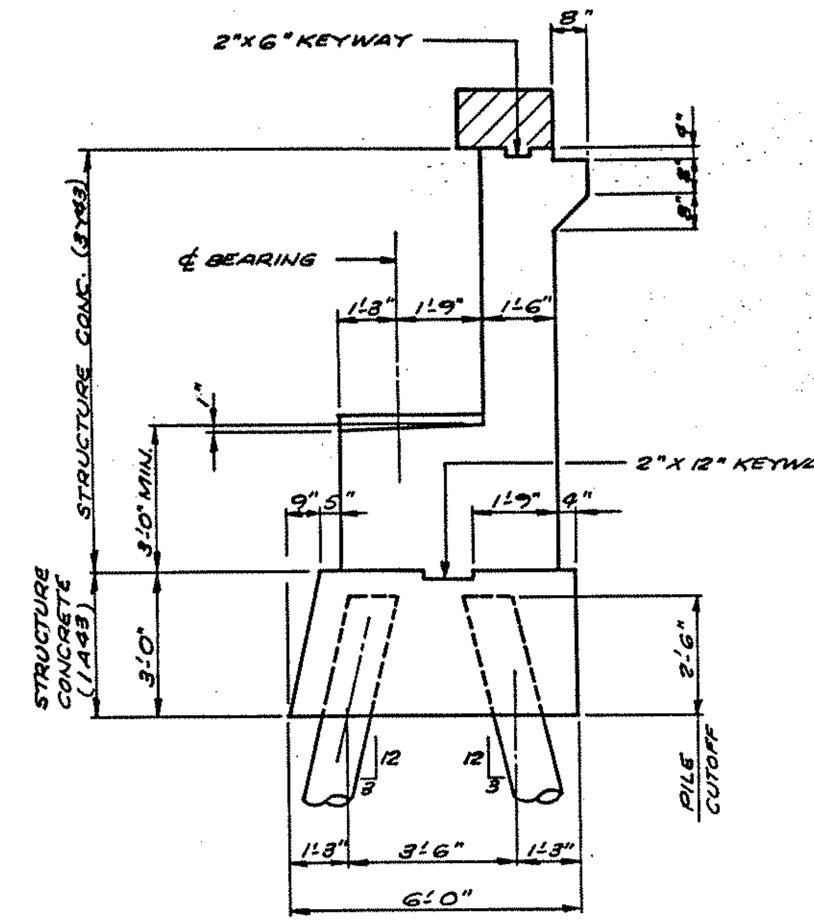


N.E. WINGWALL

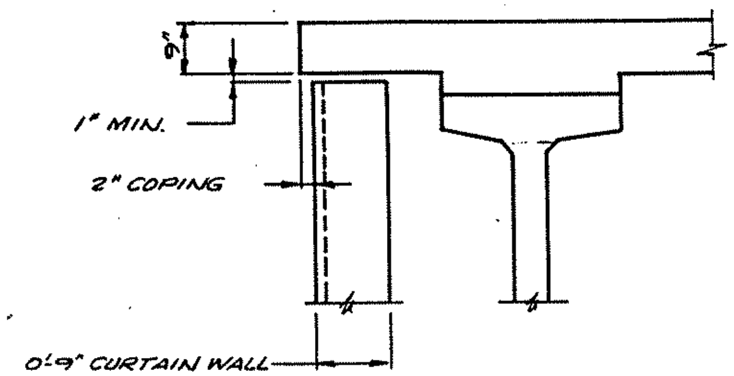
SCALE : ⅜"=1'-0"



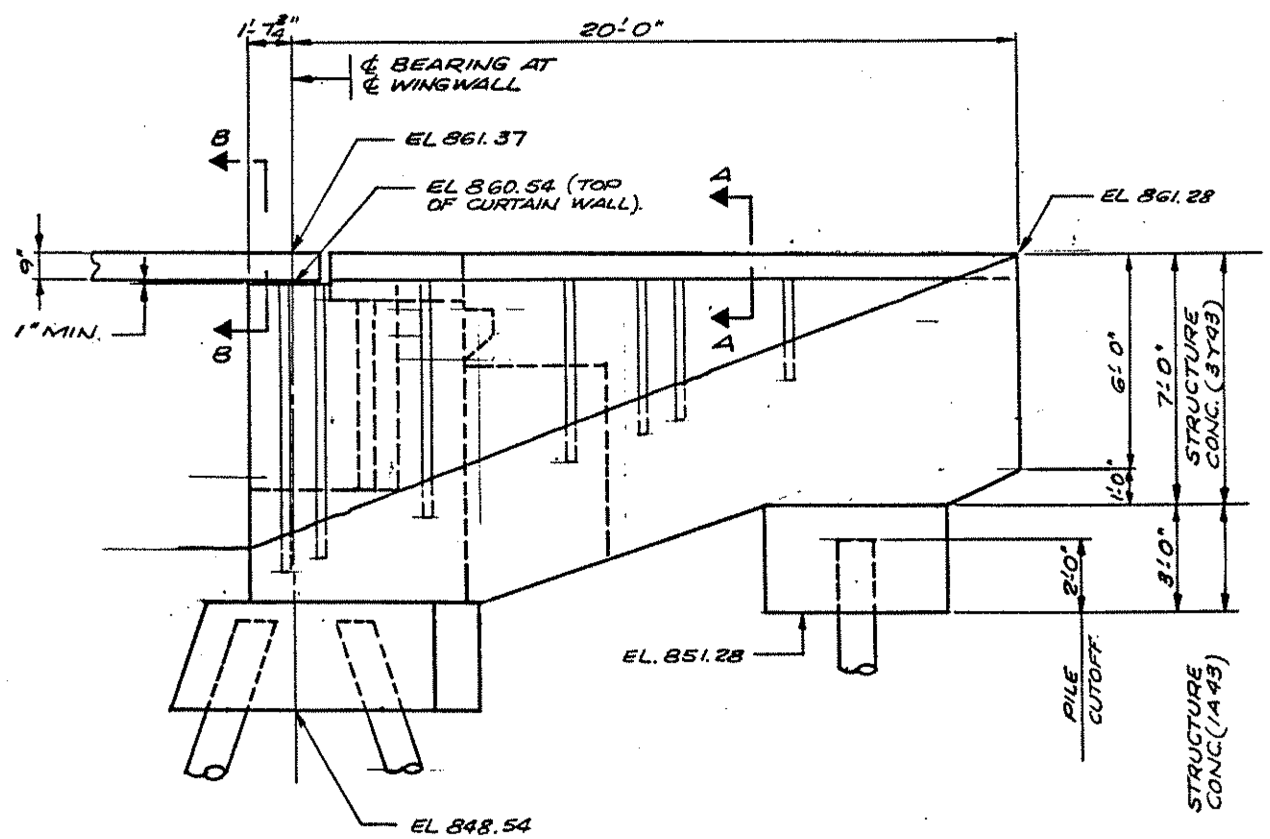
SECTION A-A



SECTION THRU ABUTMENT

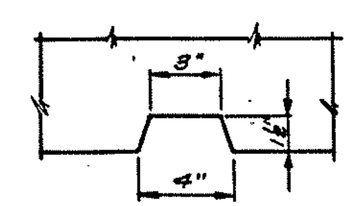


SECTION B-B



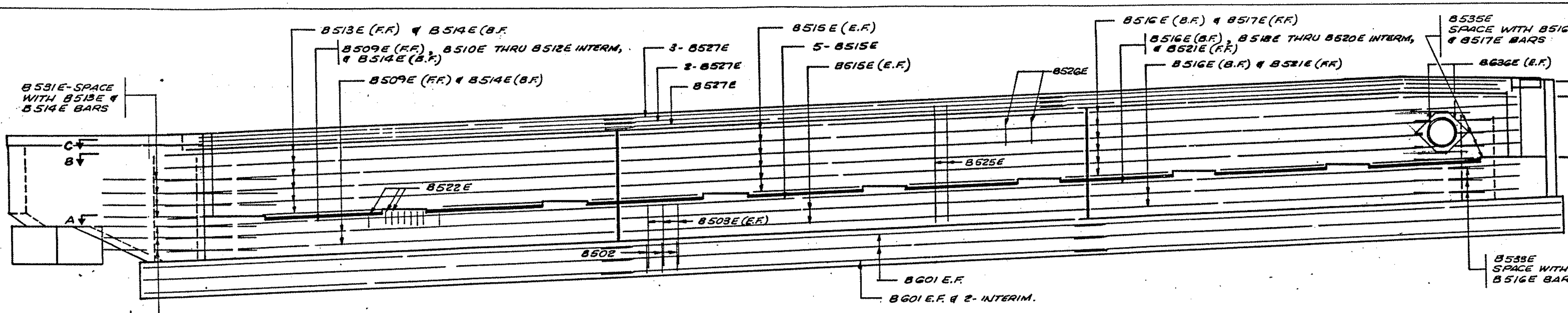
S.E. WINGWALL

SCALE : ⅜"=1'-0"

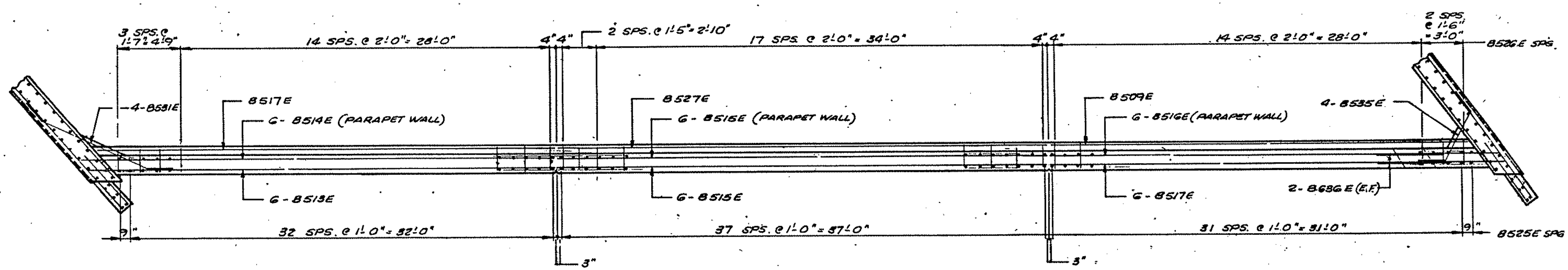


REVERSE BATTEN RUSTICATION DETAIL

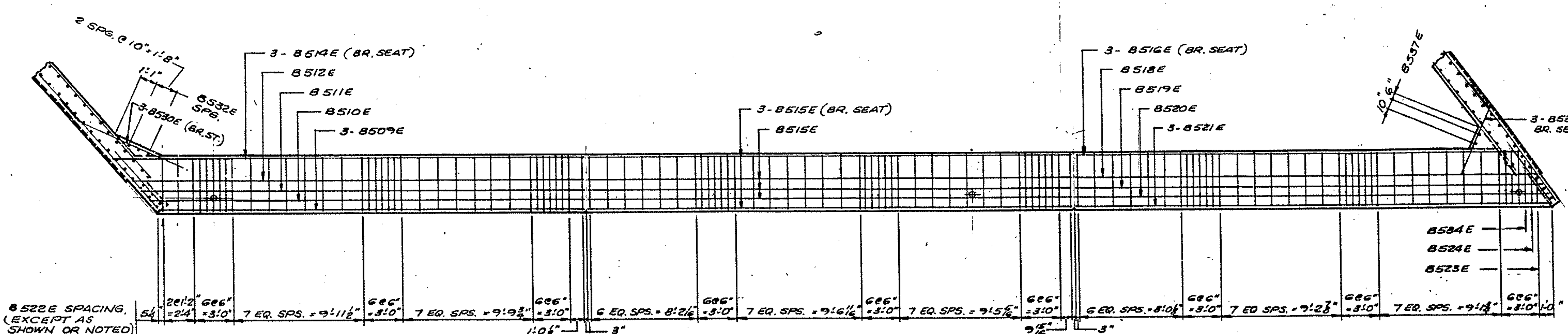
EAST ABUTMENT DETAILS C.A. 88-09-116	DRAWN W.NJ.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 118 OF 368 SHEETS			



ELEVATION

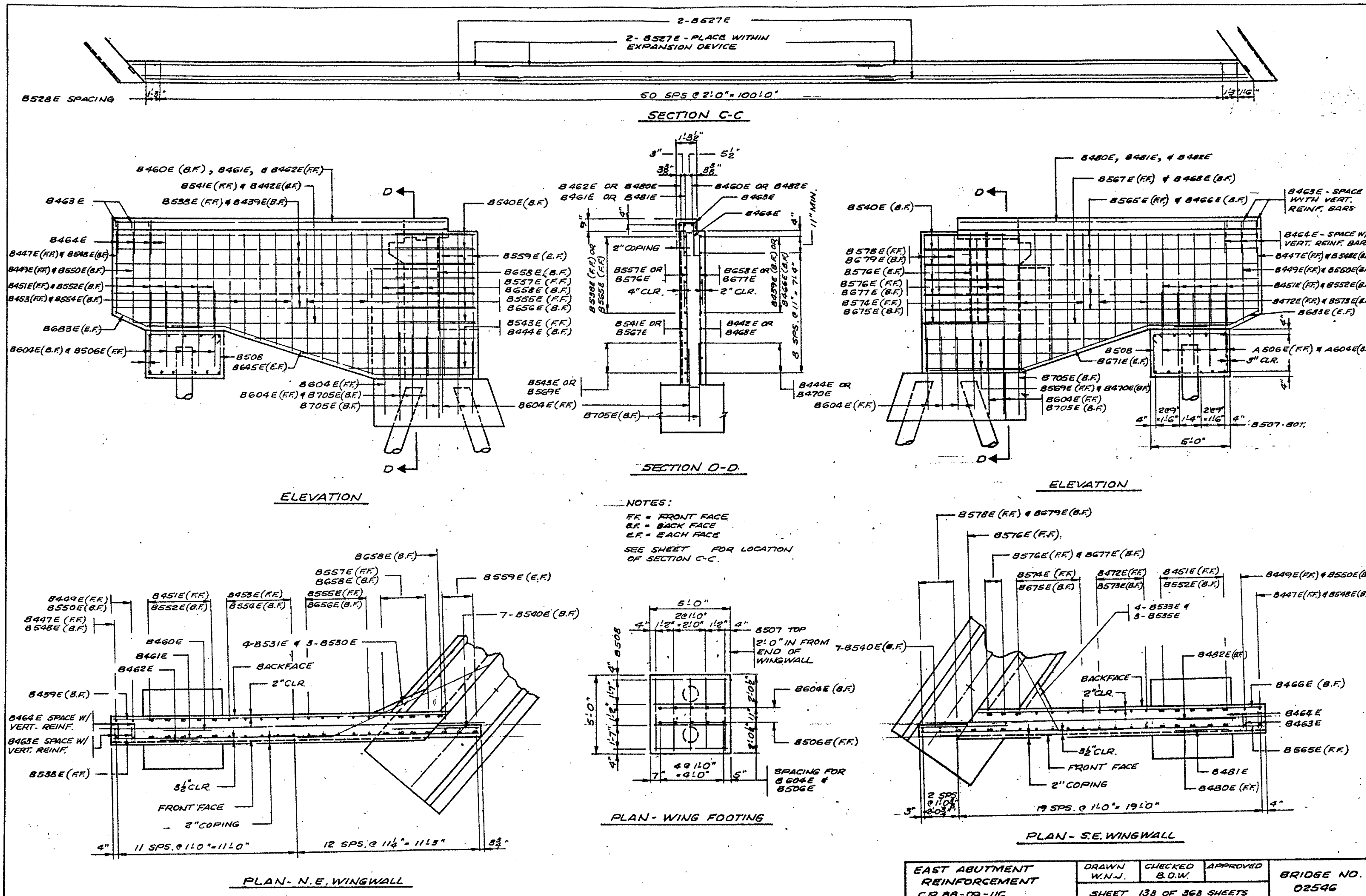


SECTION B-B

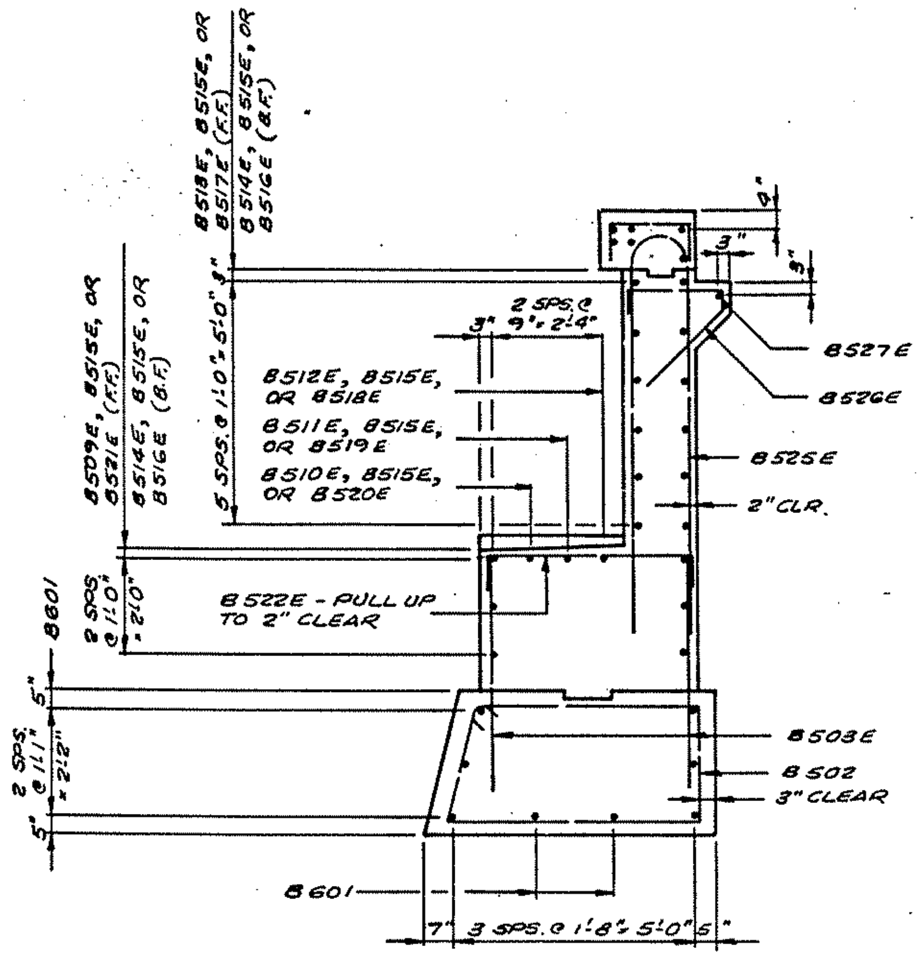


SECTION A-A

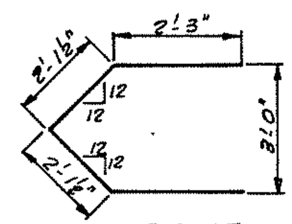
EAST ABUTMENT REINFORCEMENT C.P. 88-09-116	DRAWN W.N.J	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
	SHEET 128 OF 868 SHEETS			



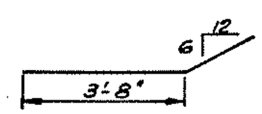
2-8627E
2-8527E - PLACE WITHIN EXPANSION DEVICE
8528E SPACING
50 SPS @ 2'-0" = 100'-0"
SECTION C-C
ELEVATION
SECTION D-D
ELEVATION
NOTES:
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE
SEE SHEET FOR LOCATION OF SECTION C-C.
2" COPING
4" CLR.
2" CLR.
8 SPS. @ 11" = 7'-4"
11" MIN.
PLAN - N.E. WINGWALL
BACKFACE
FRONT FACE
2" COPING
11 SPS. @ 1'-0" = 11'-0"
12 SPS. @ 11¼" = 11'-3"
PLAN - WING FOOTING
5'-0"
2'-0" IN FROM END OF WINGWALL
SPACING FOR 8604E & 8506E
4 @ 1'-0" = 4'-0"
PLAN - S.E. WINGWALL
19 SPS. @ 1'-0" = 19'-0"
3½" CLR.
EAST ABUTMENT REINFORCEMENT
C.R. 88-09-11C
DRAWN W.N.J.
CHECKED B.D.W.
APPROVED
SHEET 138 OF 368 SHEETS
BRIDGE NO. 02546



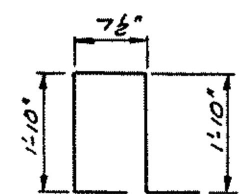
SECTION THRU ABUTMENT



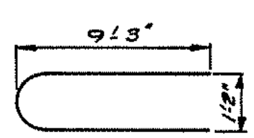
B636E



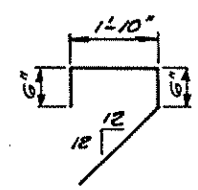
B688E



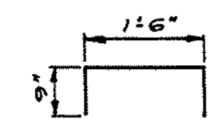
B464E



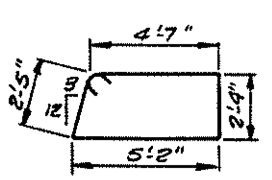
B525E



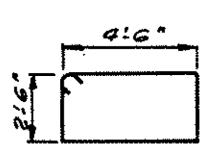
B526E



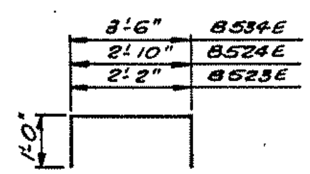
B529E



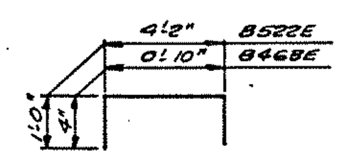
B502



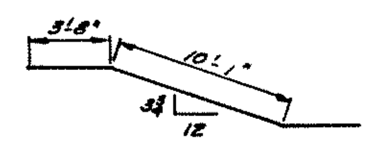
B508



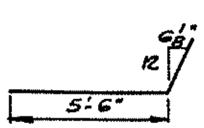
B523E, B524E, & B534E



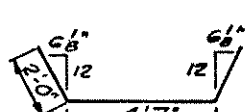
B522E & B468E



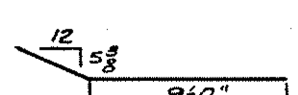
B645E & B646E



B533E

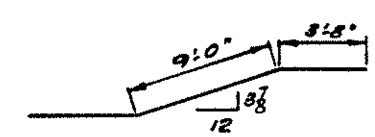


B535E



B530E

B531E



B671E

BILL OF REINFORCEMENT FOR EAST ABUTMENT CON'T'D.

BAR	NO.	LENGTH	SHAPE	LOCATION
B548E	2	5'-1"	STR.	N.E. WINGWALL - VERT.-B.F.
B449E	2	5'-7"	"	" " - " - F.F.
B550E	2	5'-7"	"	" " - " - B.F.
B451E	10	6'-0"	"	" " - " - F.F.
B552E	10	6'-0"	"	" " - " - B.F.
B453E	1-SERIES OF 5-BARS	FROM 6'-1" TO 7'-6"	"	" " - " - F.F.
B554E	"	"	"	" " - " - B.F.
B555E	"	FROM 7'-10" TO 9'-3"	"	" " - " - F.F.
B656E	"	"	"	" " - " - B.F.
B557E	4	9'-6"	"	" " - " - F.F.
B658E	6	9'-6"	"	" " - " - B.F.
B559E	6	9'-4"	"	" " - " - E.F.
B460E	1	19'-11"	"	" " - LONG.
B461E	1	19'-6"	"	" " - "
B462E	1	19'-2"	"	" " - "
B463E	39	1'-6"	BENT	" " - TIES
B464E	39	5'-3"	"	" " - "
B565E	6	21'-3"	STR.	S.E. WINGWALL - LONG. - F.F.
B466E	6	17'-8"	"	" " - " - B.F.
B567E	1	20'-2"	"	" " - " - F.F.
B468E	1	16'-7"	"	" " - " B.F.
B569E	1-SERIES OF 3-BARS	FROM 6'-10" TO 12'-7"	"	" " - " - F.F.
B470E	"	"	"	" " - " - B.F.
B671E	2	18'-6"	BENT	" " - " - E.F.
B472E	1-SERIES OF 4 BARS	FROM 6'-7" TO 7'-0"	STR.	" " - VERT - F.F.
B573E	"	"	"	" " - " - B.F.
B574E	1-SERIES OF 5 BARS	FROM 7'-4" TO 8'-7"	"	" " - " - F.F.
B675E	"	"	"	" " - " - B.F.
B576E	3	8'-9"	STR.	" " - " - F.F.
B677E	2	8'-9"	"	" " - " - B.F.
B578E	3	8'-6"	"	" " - " - F.F.
B679E	3	8'-6"	"	" " - " - B.F.
B480E	1	18'-6"	"	" " - LONG
B481E	1	18'-4"	"	" " - "
B482E	1	18'-1"	"	" " - "
B688E	4	6'-8"	BENT	" & N.E. " - "

BILL OF REINFORCEMENT FOR EAST ABUTMENT

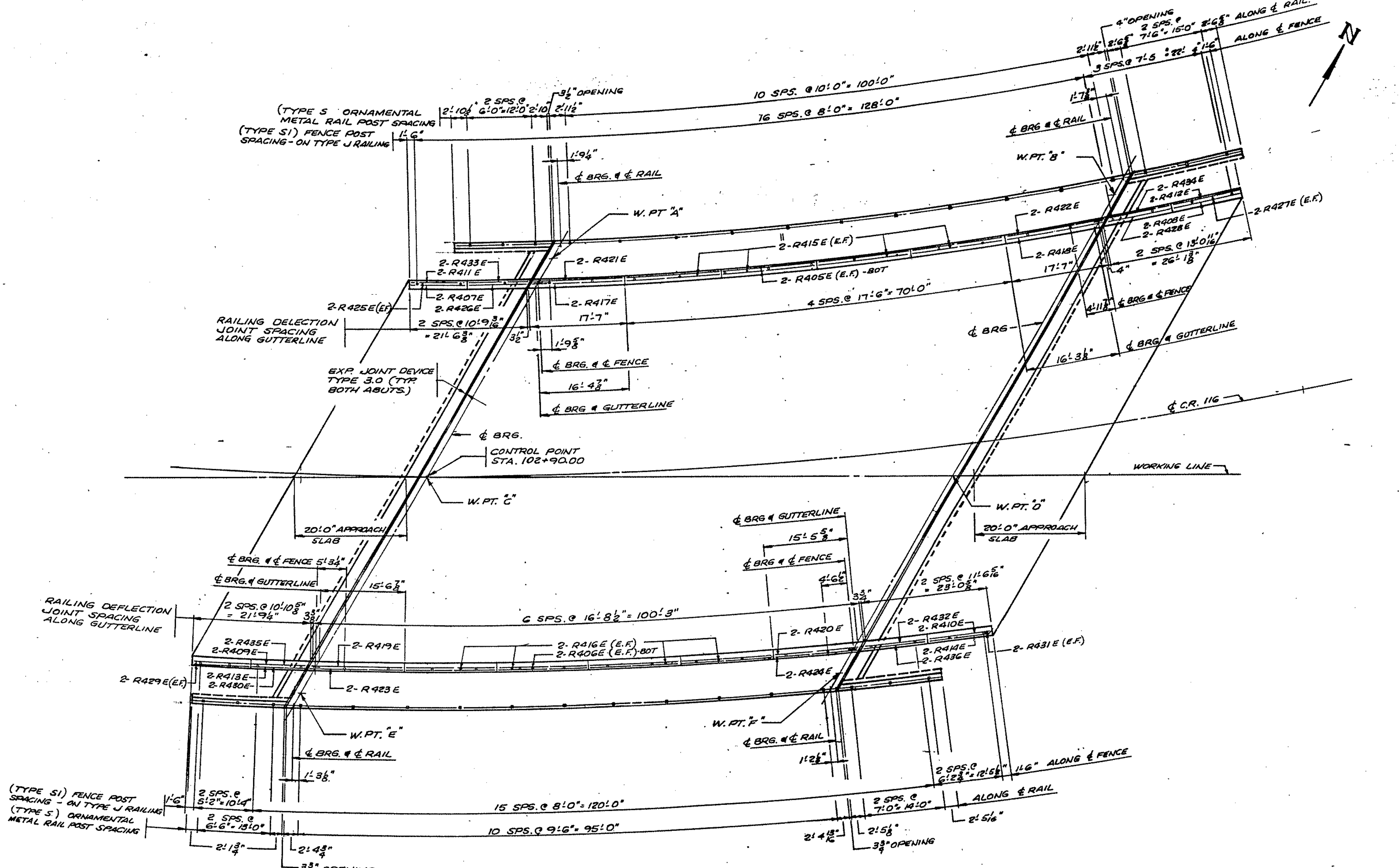
BAR	NO	LENGTH	SHAPE	LOCATION
B601	24	39'-2"	STR.	FOOTING - LONG.
B502	86	15'-6"	BENT	" - STIRRUPS
B503E	169	4'-10"	STR.	" - DOWELS
B604E	23	4'-9"	"	" - "
B705E	7	5'-7"	"	" - "
B506E	10	4'-2"	"	" - "
B507	22	4'-6"	"	WING FTG - LONG & TRANSV.
B508	8	14'-9"	BENT	" " - STIRRUPS
B509E	4	32'-9"	STR.	BR. SEAT - LONG - F.F. & PAVING BRKT.
B510E	1	33'-5"	"	" " - " - INTERM.
B511E	1	34'-0"	"	" " - " - "
B512E	1	34'-8"	"	" " - " - "
B518E	6	35'-1"	"	PARAPET WALL - LONG - F.F.
B514E	9	86'-0"	"	" " & BR. SEAT - LONG. - B.F.
B515E	21	37'-4"	"	" " " " " - "
B516E	9	84'-0"	"	" " " " " - " - B.F.
B517E	7	34'-9"	"	" " - LONG. - B.F. & PAVING BRKT.
B518E	1	36'-6"	"	BRIDGE SEAT - LONG. - INTERM.
B519E	1	37'-0"	"	" " - " - "
B520E	1	37'-6"	"	" " - " - "
B521E	3	37'-3"	"	" " - " - F.F.
B522E	112	6'-2"	BENT	" " - TIES
B523E	1	4'-2"	"	" " - "
B524E	1	4'-10"	"	" " - "
B525E	105	19'-2"	"	PARAPET WALL - VERT.
B526E	55	5'-8"	"	PAVING BRACKET - TIES
B527E	1	37'-4"	STR.	" " - LONG
B528E	18	36'-0"	"	ROADWAY SLAB - LONG
B529E	53	8'-0"	BENT	" " - TIES
B530E	3	11'-0"	"	N.E. WINGWALL - FILLET - TIES
B531E	4	13'-0"	"	" " - " "
B532E	3	7'-0"	STR.	" " - " - VERT.
B533E	3	7'-6"	BENT	S.E. WINGWALL - FILLET - TIES
B534E	1	5'-6"	"	BRIDGE SEAT - TIES
B535E	4	8'-7"	"	S.E. WINGWALL - FILLET - TIES
B636E	4	8'-9"	"	PARAPET WALL - TIES
B537E	2	6'-4"	STR.	S.E. WINGWALL - " VERT.
B538E	6	22'-6"	"	N.E. WINGWALL - LONG - F.F.
B439E	6	20'-5"	"	" " - " - B.F.
B540E	7	5'-0"	"	" " - " - B.F.
B541E	1	21'-5"	"	" " - " - F.F.
B542E	1	19'-4"	"	" " - " - B.F.
B543E	1-SERIES OF 5-BARS	FROM 8'-11" TO 13'-10"	"	" " - " - F.F.
B444E	"	"	"	" " - " - B.F.
B645E	2	20'-1"	BENT	" " - " - E.F.
B447E	2	5'-1"	STR.	" " - VERT - F.F.

SUMMARY OF QUANTITIES FOR EAST ABUTMENT

	STRUCTURE CONCRETE 1A43	77	CU.YD.
	STRUCTURE CONCRETE 3Y43	113	CU.YD.
	REINFORCEMENT BARS, EPOXY COATED	9550	POUND
	STRUCTURE EXCAVATION		LUMP SUM
(1)	CAST-IN-PLACE CONCRETE PILING DELIVERED, 12"	1925	LIN.FT.
(1)	CAST-IN-PLACE CONCRETE PILING DRIVEN, 12"	1925	LIN.FT.
	CAST-IN-PLACE CONCRETE TEST PILES 65 FT. LG., 12"	2	EACH
	REINFORCEMENT BARS	3030	POUND

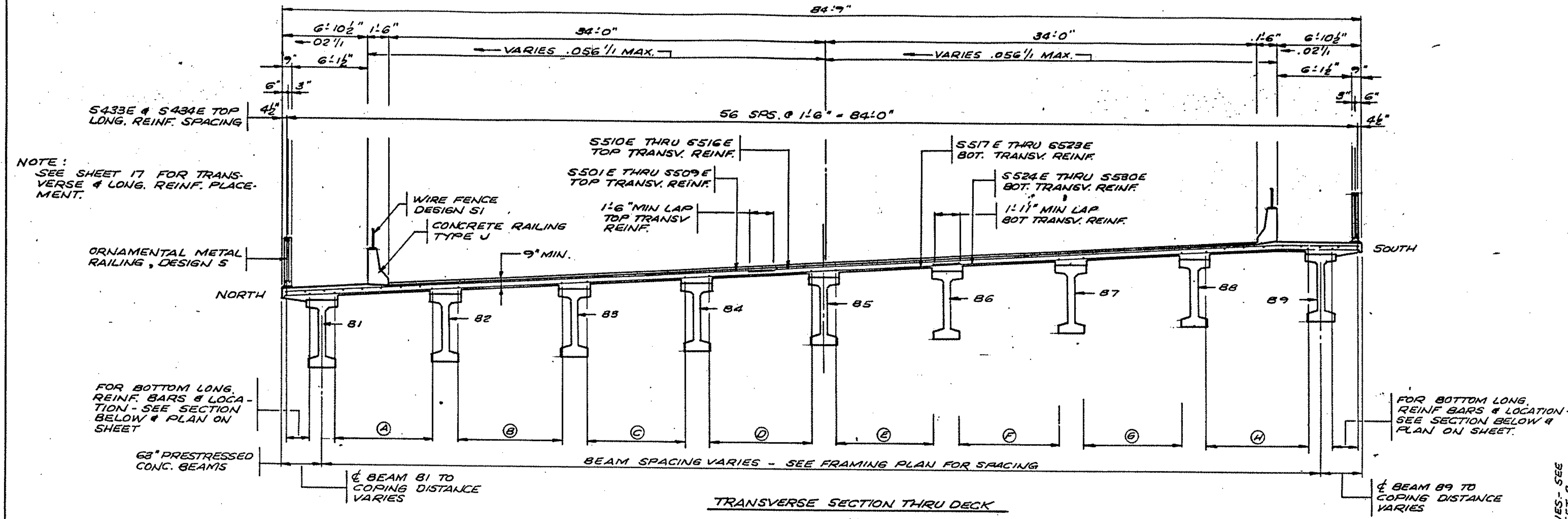
(1) DOES NOT INCLUDE TEST PILES

EAST ABUTMENT REINFORCEMENT C.R. 88-09-116	DRAWN W.H.J.	CHECKED B.O.W.	APPROVED	BRIDGE NO. 02546
	SHEET 148 OF 368 SHEETS			



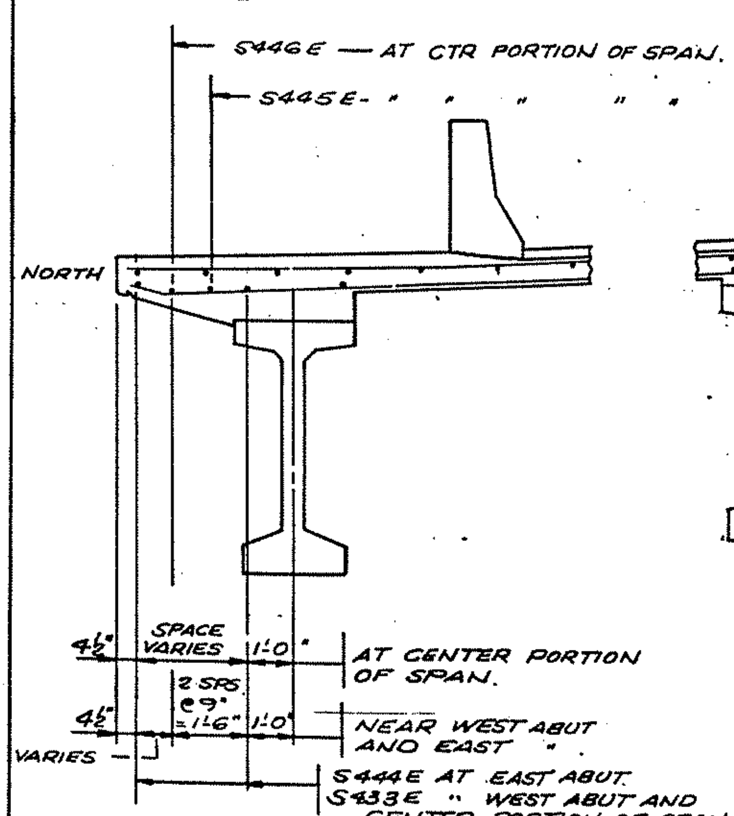
PLAN OF DECK

SUPERSTRUCTURE DETAILS	DRAWN W.N.J.	CHECKED B.D.W.	APPROVED	BRIDGE NO. 02546
C.P. 88-09-116	SHEET 158 OF 368 SHEETS			



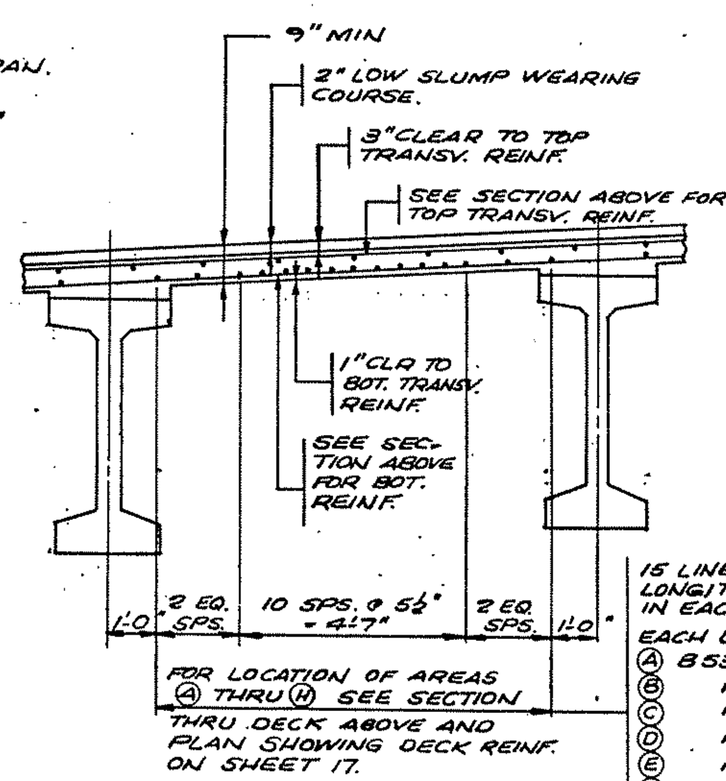
TRANSVERSE SECTION THRU DECK

SCALE: ¼" = 1'-0"



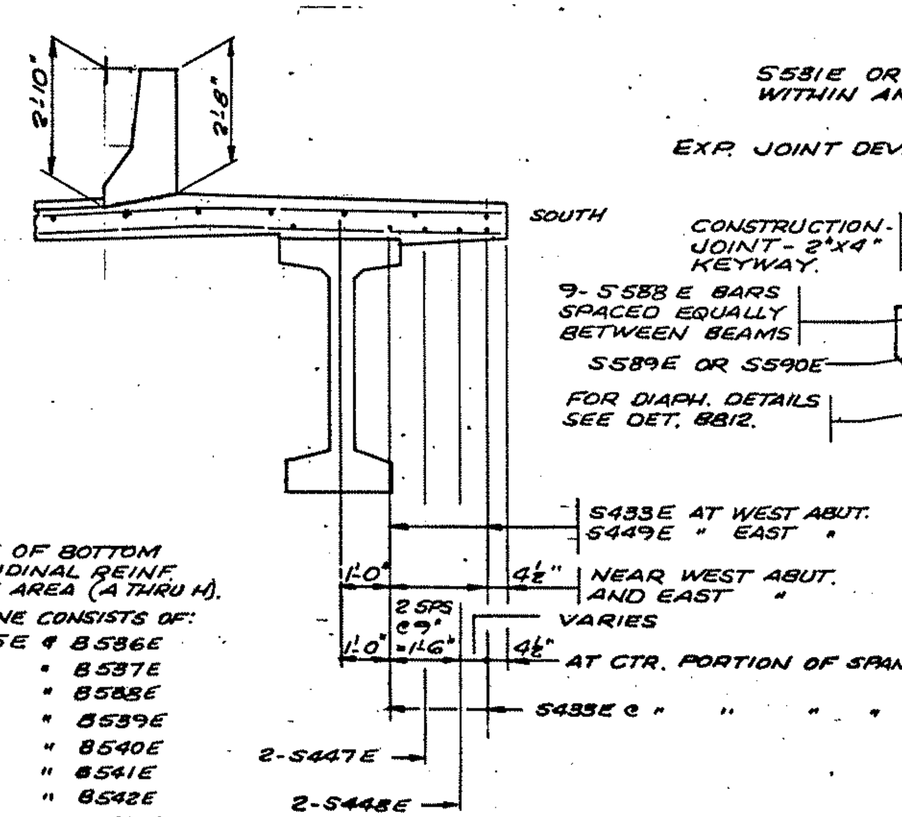
SECTION THRU DECK AT BEAM 81

(SHOWING BOTTOM LONG. REINF.)



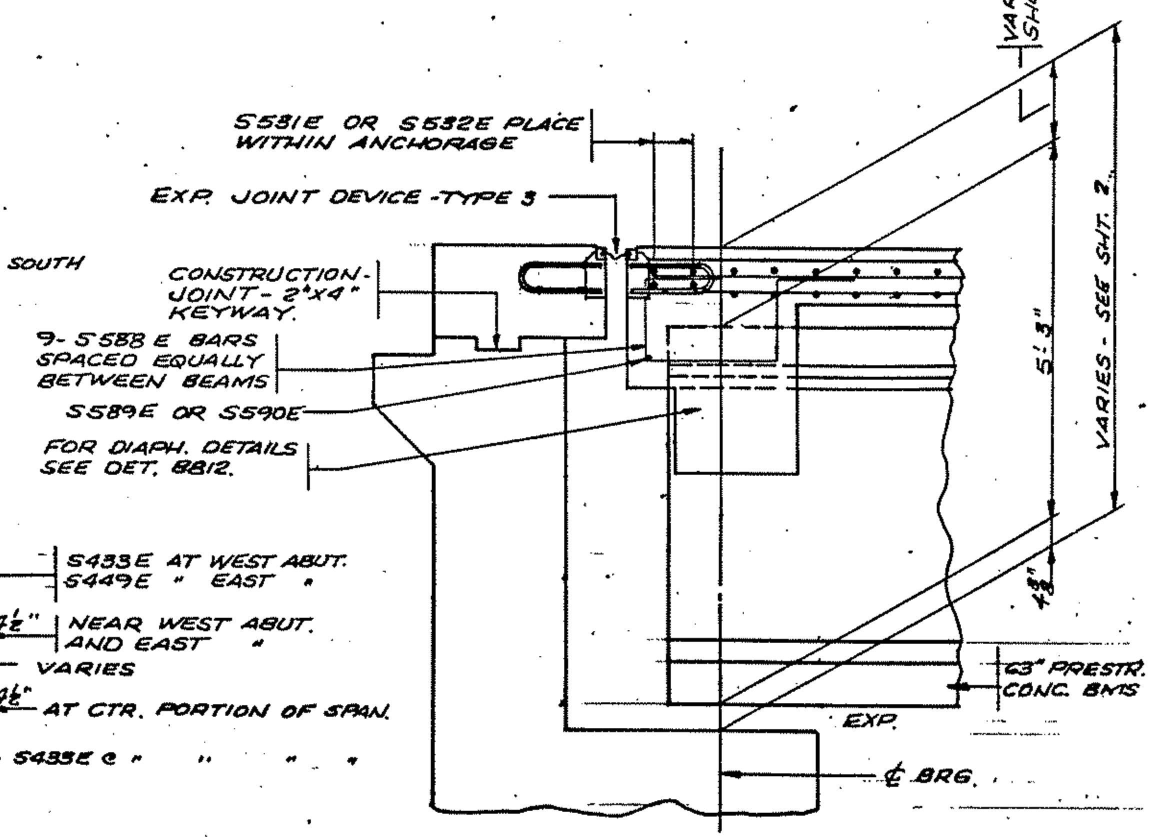
TYPICAL SECTION BETWEEN BEAMS AT AREAS A THRU H

(SHOWING BOTTOM LONG. REINF.)



SECTION THRU DECK AT BEAM 89

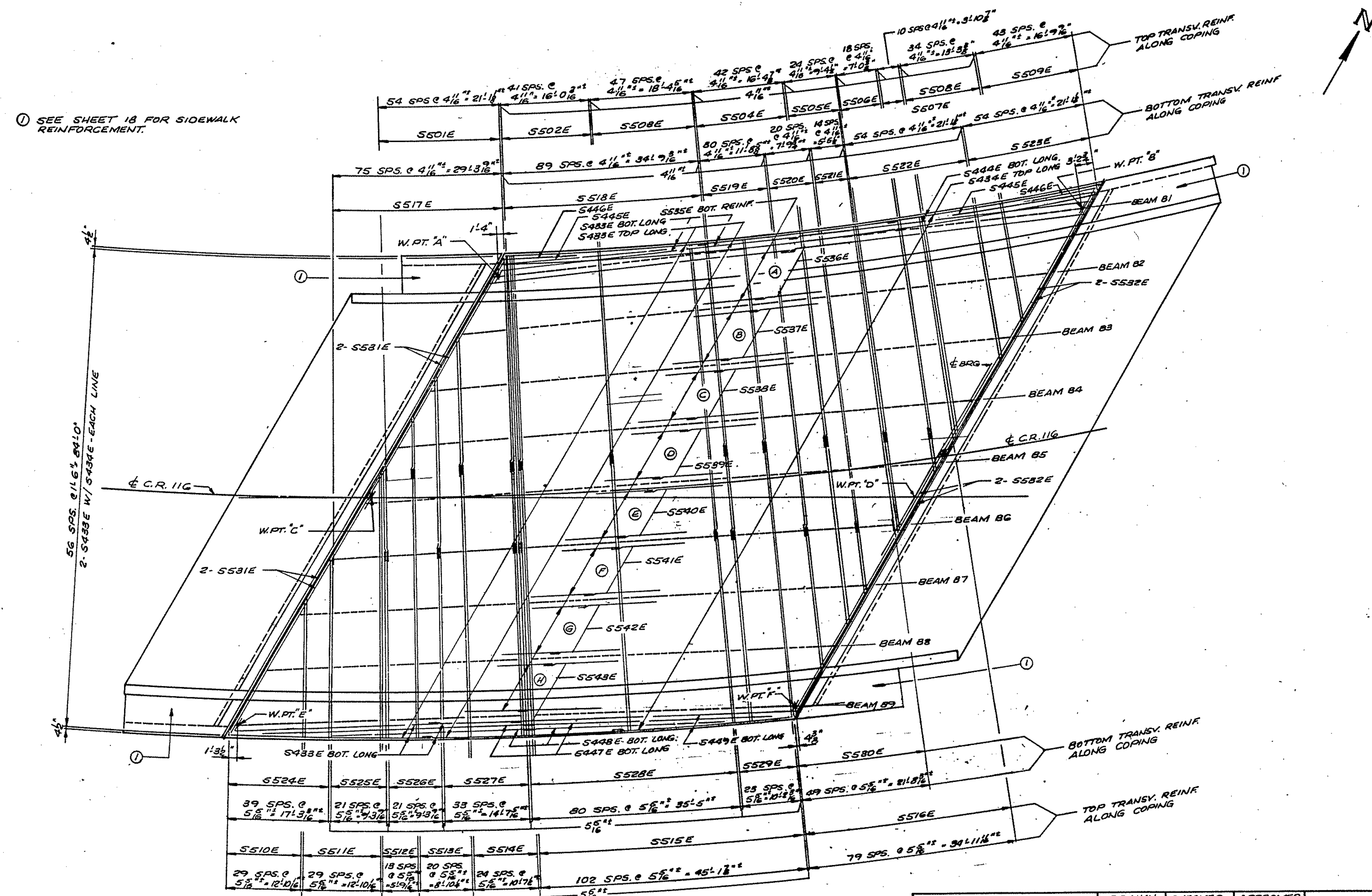
(SHOWING BOTTOM LONG. REINF.)



LONGITUDINAL SECTION AT BEAM

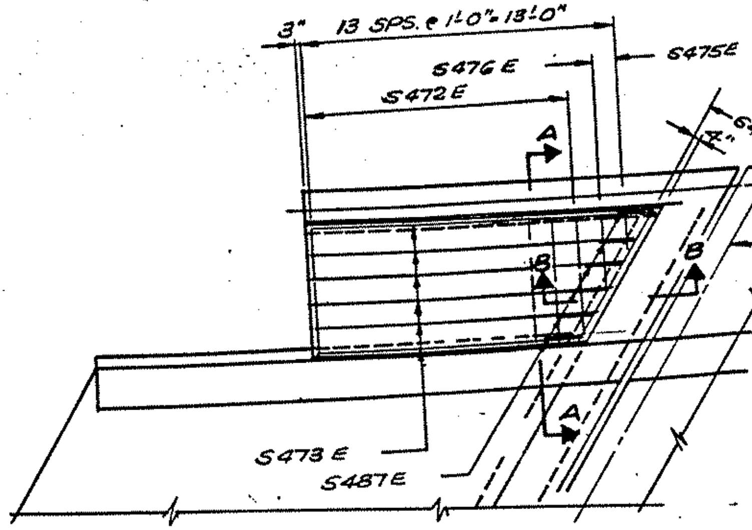
SCALE: ½" = 1'-0"

SUPERSTRUCTURE DETAILS	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO. 02546
C.P. 88-09-116	SHEET 16B OF 36 B SHEETS			

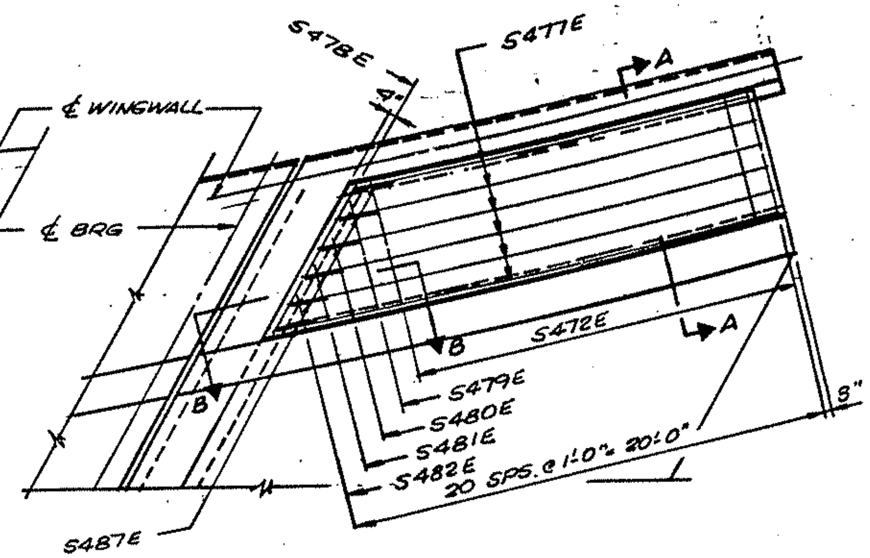


DECK PLAN

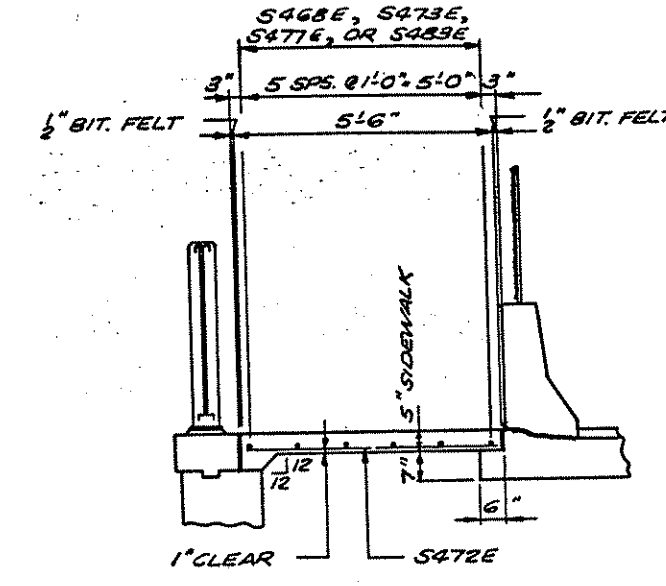
SUPERSTRUCTURE REINFORCEMENT	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO 02546
C.R. 88-09-116	SHEET 17B OF 36B SHEETS			



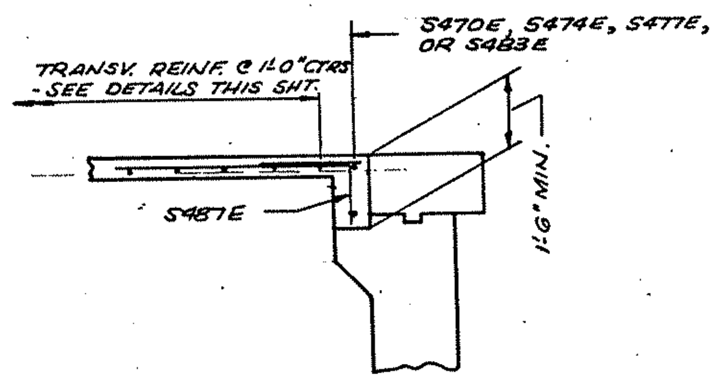
SIDEWALK AT N.W. CORNER



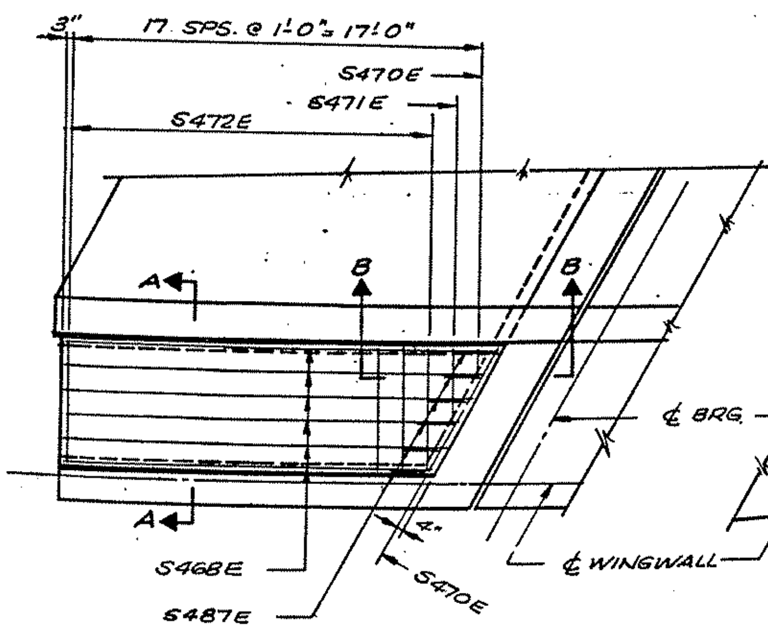
SIDEWALK AT N.E. CORNER



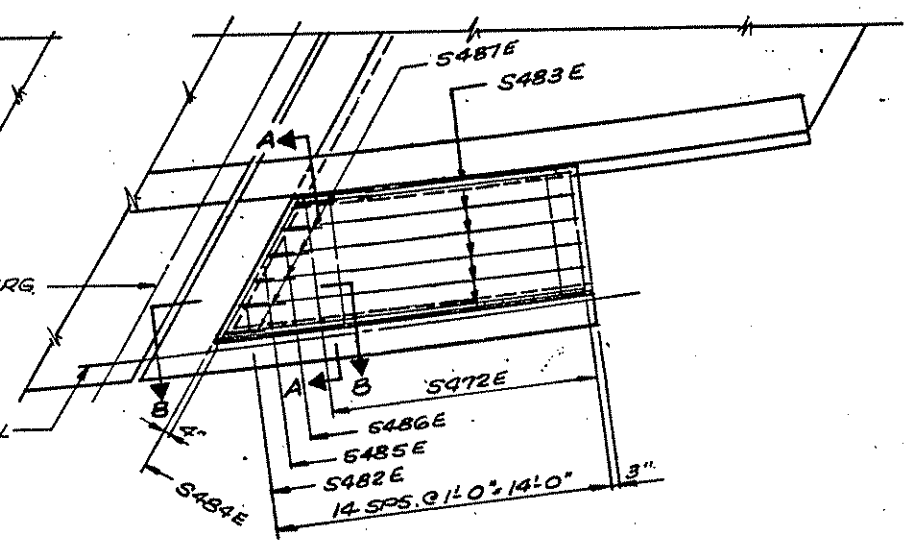
SECTION A-A



SECTION B-B

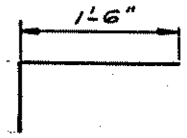


SIDEWALK AT S.W. CORNER

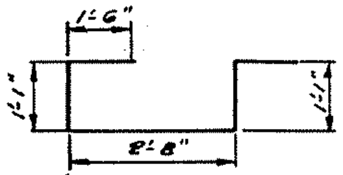


SIDEWALK AT S.E. CORNER

SUPERSTRUCTURE REINFORCEMENT	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO 02546
C.P. 88-09-116	SHEET 18B OF 368 SHEETS			



S487E



S588E

BILL OF REINFORCEMENT FOR SUPERSTRUCTURE CONT'D.

BAR	NO.	LENGTH	SHAPE	LOCATION
S765E	28	5'-0"	STR.	END DIAPHRAGM - TIES
S466E	72	7'-9"	BENT	" " - "
S467E	32	8'-2"	"	" " - "
S468E	1-SERIES OF 6 BARS	FROM 16'-2" TO 17'-9"	STR	S.W. SIDEWALK - LONG.
S469E	1	5'-9"	"	" " " - TRANSV - END
S470E	1	1'-2"	"	" " " - "
S471E	1	2'-2"	"	" " " - "
S472E	57	5'-1"	"	ALL " - "
S473E	1-SERIES OF 6 BARS	FROM 11'-5" TO 14'-5"	"	N.W. " - LONG.
S474E	1	6'-0"	"	" " " - TRANSV. "
S475E	1	2'-3"	"	" " " - "
S476E	1	3'-11"	"	" " " - "
S477E	1-SERIES OF 6 BARS	FROM 16'-9" TO 21'-5"	"	N.E. " - LONG
S478E	1	6'-10"	"	" " " - TRANSV- "
S479E	1	4'-7"	"	" " " - "
S480E	1	3'-6"	"	" " " - "
S481E	1	2'-5"	"	" " " - "
S482E	2	1'-4"	"	N.E. & S.E. " - "
S483E	1-SERIES OF 6 BARS	FROM 11'-4" TO 15'-2"	"	S.E. " - LONG.
S484E	1	6'-4"	"	" " " - TRANSV. "
S485E	1	2'-8"	"	" " " - "
S486E	1	4'-0"	"	" " " - "
S487E	24	2'-7"	BENT	ALL SIDEWALKS - TIES.
S588E	144	7'-11"	"	SLAB ENDS - BETWN BMS - TIES
S589E	8	10'-3"	STR.	" " - " " - LONG
S590E	8	11'-0"	"	" " - " " - "

BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

BAR	NO	LENGTH	SHAPE	LOCATION
S501E	1 SERIES OF 55 BARS	FROM 3'-0" TO 27'-6"	STR.	SLAB - TRANSV - TOP
S502E	42	38'-0"	"	" " - "
S503E	48	37'-6"	"	" - " - "
S504E	43	38'-0"	"	" - " - "
S505E	25	38'-6"	"	" - " - "
S506E	19	39'-0"	"	" - " - "
S507E	11	39'-6"	"	" - " - "
S508E	1 SERIES OF 95 BARS	FROM 22'-0" TO 38'-11"	"	" - " - "
S509E	1-SERIES OF 44 BARS	FROM 21'-6" TO 1'-8"	"	" - " - "
S510E	1-SERIES OF 30 BARS	FROM 1'-5" TO 29'-7"	"	" - " - "
S511E	1-SERIES OF 30 BARS	FROM 25'-4" TO 46'-10"	"	" - " - "
S512E	14	47'-6"	"	" - " - "
S513E	21	48'-0"	"	" - " - "
S514E	25	48'-6"	"	" - " - "
S515E	103	49'-0"	"	" - " - "
S516E	1-SERIES OF 80 BARS	FROM 48'-0" TO 2'-8"	"	" - " - "
S517E	1-SERIES OF 76 BARS	FROM 2'-6" TO 52'-0"	"	" - " - BOTTOM
S518E	90	52'-6"	"	" - " - "
S519E	31	53'-0"	"	" - " -
S520E	21	53'-6"	"	" - " - "
S521E	15	54'-0"	"	" - " - "
S522E	1-SERIES OF 55 BARS	FROM 54'-0" TO 27'-4"	"	" - " - "
S523E	1-SERIES OF 55 BARS	FROM 26'-10" TO 1'-8"	"	" - " - "
S524E	1-SERIES OF 40 BARS	FROM 1'-5" TO 32'-2"	"	" - " - "
S525E	22	33'-0"	"	" - " - "
S526E	22	33'-6"	"	" - " - "
S527E	34	34'-0"	"	" - " - "
S528E	81	34'-6"	"	" - " - "
S529E	24	34'-0"	"	" - " - "
S530E	1-SERIES OF 50 BARS	FROM 38'-7" TO 4'-0"	"	" - " - "
S531E	4	49'-10"	"	" - " - WEST END
S532E	4	55'-1"	"	" - " - EAST "
S433E	114	35'-0"	"	" - LONG. - TOP & BOT.
S434E	1-SERIES OF 57 BARS	FROM 29'-6" TO 38'-8"	"	" - " - " " "
S535E	120	53'-0"	"	" - " - BOTTOM
S536E	15	54'-2"	"	" - " - "
S537E	15	53'-2"	"	" - " - "
S538E	15	52'-4"	"	" - " - "
S539E	15	51'-7"	"	" - " - "
S540E	15	50'-10"	"	" - " - "
S541E	15	50'-2"	"	" - " - "
S542E	15	49'-7"	"	" - " - "
S543E	15	49'-0"	"	" - " - "
S444E	4	38'-8"	"	" - " - "
S445E	4	30'-0"	"	" - " - "
S446E	2	12'-0"	"	" - " - "
S447E	2	45'-0"	"	" - " - "
S448E	2	36'-0"	"	" - " - "
S449E	2	29'-6"	"	" - " - "
S450E	10	7'-11"	"	END DIAPHRAGM - LONG - TOP
S451E	6	8'-2"	"	" " - " - "
S452E	6	9'-9"	"	" " - " - "
S453E	6	11'-3"	"	" " - " - "
S464E	4	11'-7"	"	" " - " - "
S855E	10	8'-9"	"	" " - " - BOT.
S856E	6	9'-0"	"	" " - " - "
S857E	6	9'-9"	"	" " - " - "
S858E	6	10'-1"	"	" " - " - "
S859E	4	10'-5"	"	" " - " - "
S860E	5	17'-1"	BENT	" " - "
S861E	3	17'-11"	"	" " - "
S862E	3	18'-1"	"	" " - "
S863E	3	18'-5"	"	" " - "
S864E	2	19'-6"	"	" " - "

SUPERSTRUCTURE REINFORCEMENT	DRAWN W.N.J.	CHECKED R.R.T	APPROVED	BRIDGE NO. 02546
C.P. 88-09-116	SHEET 198 OF 368 SHEETS			

	LIST OF PREFORMED CORK
6 8	14 PCS. 11"X 1" X 1'-7" — RAIL DEFLECTION JOINTS

	LIST OF PREFORMED BITUM. FELT
6 8	1-PC. 5"X ½"X 11'-9" - N.W. SIDEWALK AT TYPE J RAILING
	1- " " " " " 18'-4" - S.W. " " " " "
	1- " " " " " 22'-1" - N.E. " " " " "
	1- " " " " " 11'-7" - S.E. " " " " "
	1-PC. 9"X ½"X 15'-1" - N.W. " " ABUT WINGWALL
	1-PC. " " " " 15'-6" - S.W. " " " "
	1- " " " " " 17'-0" - N.E. " " " "
	1- " " " " " 15'-10" - S.E. " " " "

	QUANTITIES FOR 16"ϕ INSULATED WATERMAIN PROVISIONS		
8 13	1" CONCRETE INSERTS	22	EACH
	26"ϕ SLEEVES FOR (24"ϕ) INSULATED WATERMAIN.	2	EACH

	QUANTITIES FOR 8"ϕ GAS MAIN PROVISIONS		
8 13	7/8" CONCRETE INSERTS	22	EACH
	12"ϕ SLEEVES FOR 8" GAS MAIN.	2	EACH

8	QUANTITIES FOR CONDUIT SYSTEM (POWER)			
	ITEM	NO. RAIL	SO. RAIL	UNIT
	EXPANSION DEFLECTION FITTINGS	2	4	EACH
10	BENDS	6	12	EACH
	END CAPS	2	4	EACH
	5"ϕ FIBERGLASS CONDUIT	247	478	LIN FT.

	QUANTITIES FOR CONDUIT SYSTEM (TELEPHONE)		
8	4"ϕ FIBERGLASS CONDUIT	247	LIN.FT.
	EXPANSION DEFLECTION FITTINGS	2	EACH
11	BENDS	6	EACH
	END CAPS		

	QUANTITIES FOR CONDUIT SYSTEM PROVISIONS (FUTURE)		
8	5"ϕ P.V.C. CONDUIT	1224	LIN. FT.
13	5/8" CONCRETE INSERTS	22	EACH
12	1/2"X 2" X 1'-10 5/16" PLATE	12	EACH
12	2"X 2"X 2'-2 5/16" SQUARE TUBING	4	EACH
12	5/8"ϕ X 4'-9" 11NC THREADED STEEL HANGER RODS, NUTS, & WASHERS (PLATED)	8	EACH
12	5/8"ϕ X 2'-0" 11NC THREADED STEEL INTERMEDIATE RODS, NUTS AND WASHERS (PLATED)	8	EACH
12	5/8" X 5.72 LG P.V.C. SPACER TUBES	48	EACH
	CAPS FOR 5"ϕ P.V.C. CONDUIT	36	EACH
	6"ϕ SLEEVES FOR 5"ϕ CONDUIT	18	EACH
	EXPANSION DEFLECTION FITTINGS	8	EACH

	1 SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE		
2	BRIDGE SLAB CONCRETE (3X36)	9158	SQ. FT.
3	STRUCTURE CONCRETE (3Y43)	29	CU. YD.
5	TYPE J RAILING CONCRETE (3X46)	298	LIN. FT.
4 8	WEARING COURSE CONCRETE MIX NO. 3U17A	7303	SQ. FT.
	REINFORCEMENT BARS, EPOXY COATED	72 520	POUND
8	EXPANSION JOINT DEVICE, TYPE 3.	208	LIN. FT.
	EXPANSION CURVED PLATE BRG. ASSEMBLY, TYPE E1	18	EACH
	PRESTRESSED CONCRETE BEAMS, TYPE 63	912	LIN. FT.
9	PRESTRESSED CONCRETE BEAMS, TYPE 63-(97 THRU 102)	9	EACH
7	B.M. DISK - SEE STANDARD PL NO. 9300	1	UNIT
	DIAPHRAGMS FOR TYPE 63 PRESTRESSED BEAMS	158	LIN. FT.
	WIRE FENCE DESIGN S1	294	LIN. FT.
	ORNAMENTAL METAL RAILING, DESIGN S	281	LIN. FT.
6	NAME PLATE (SEE DETAIL B108)	1	EACH
8	CONDUIT SYSTEM (POWER)	1	LUMP SUM
8	CONDUIT SYSTEM (TELEPHONE)	1	LUMP SUM
8	CONDUIT SYSTEM PROVISIONS (FUTURE)	1	LUMP SUM
8	GAS MAIN PROVISIONS	1	LUMP SUM
8	WATERMAIN PROVISIONS	1	LUMP SUM
	SIDEWALK CONCRETE (3X46)	856	SQ. FT.
6 8	PREFORMED JOINT FILLER		

1. INCLUDES RAILING QUANTITIES
2. BRIDGE SLAB CONCRETE (3X36) VOLUME IS APPROX. 261 CU.YDS. THE VOLUMN IS COMPUTED USING AN AVG STOOL HEIGHT OF 4".
3. END DIAPHRAGM CONCRETE
4. LOW SLUMP CONC. WEARING COURSE VOLUME IS APPROX. 46 CU.YD.
5. TYPE J RAILING CONC (3X46) IS APPROX. 33 CU.YDS.
6. INCLUDED IN PRICE BID FOR OTHER ITEMS.
7. COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING TO BE INCLUDED IN OTHER ITEMS. SEE STD PLATE NO. 9301 FOR PLACING.
8. SEE SPECIAL PROVISIONS
9. PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTRESSED CONCRETE BEAMS, TYPE 68 PER LINEAL FOOT.
10. BENDS WILL HAVE A 60" RADIUS, 30° ANGLE, & 31.4" LENGTH.
11. BENDS WILL HAVE A 42" RADIUS, 30° ANGLE, & 22" LENGTH.
12. INCLUDED IN HANGER ASSEMBLY
13. CONC. INSERTS SHALL BE AN APPROVED TYPE MALLEABLE IRON MATERIAL AS PER SPEC. 3324, GRADE 35018. TAP AFTER GALV.

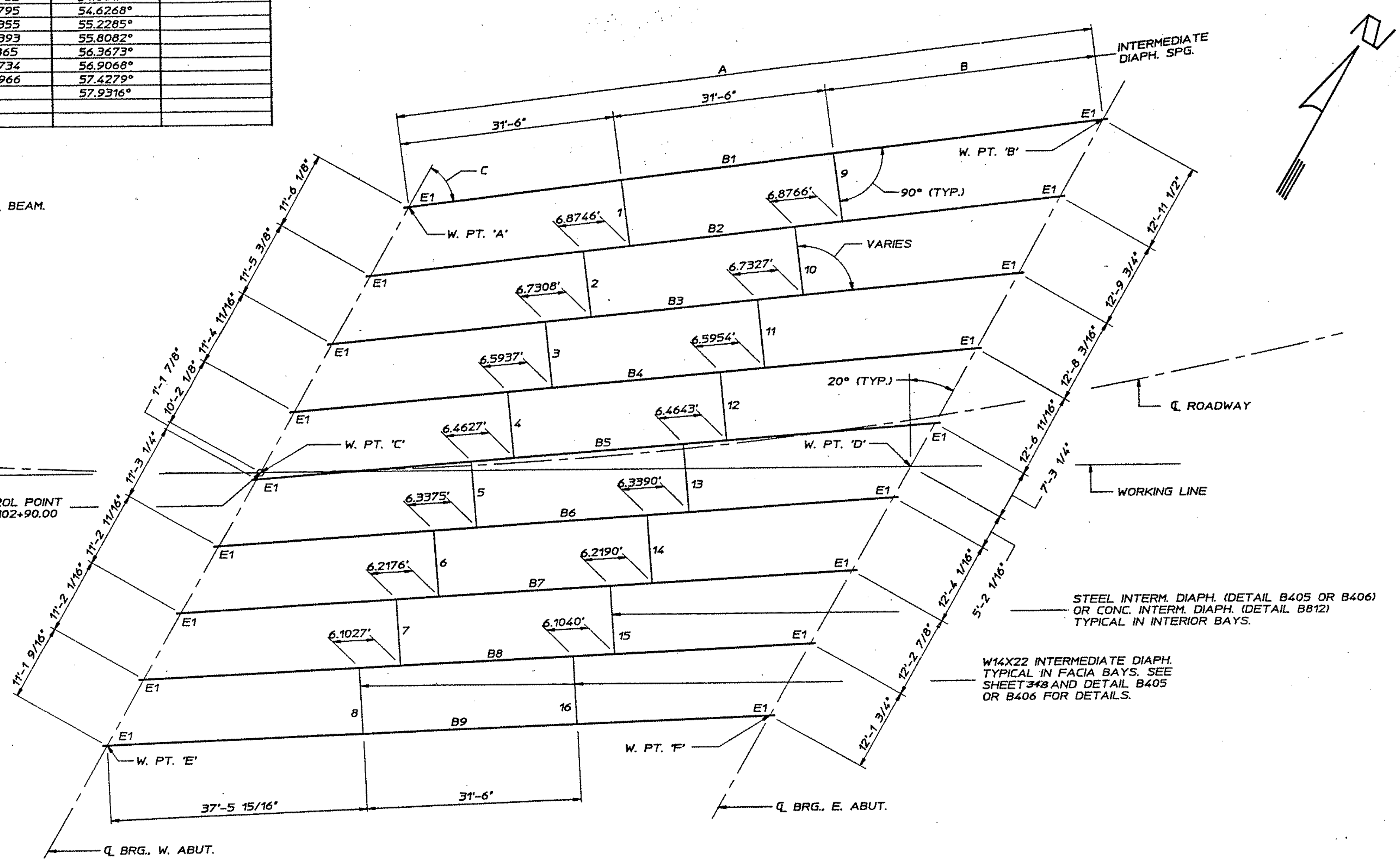
SUPERSTRUCTURE QUANTITIES C.R. 83-09-116	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO. 02546
	SHEET 208 OF 368 SHEETS			

PRESTRESSED CONC. BEAM DIMENSIONS					
BEAM	①	②	B ③	C	
B1	104.1812	102.9312	39.9312	53.3516°	
B2	103.3262	102.0762	39.0762	54.0017°	
B3	102.5295	101.2795	38.2795	54.6268°	
B4	101.7855	100.5355	37.5355	55.2285°	
B5	101.0893	99.8393	36.8393	55.8082°	
B6	100.4365	99.1865	36.1865	56.3673°	
B7	99.8234	98.5734	35.5734	56.9068°	
B8	99.2466	97.9966	34.9966	57.4279°	
B9	98.7030	97.4530		57.9316°	

① OUT-TO-OUT LENGTH OF BEAM.

② ℄ BRG. TO ℄ BRG. OF BEAM.

③ MEASURED ℄ BRG. TO ℄ DIAPH. ALONG ℄ BEAM.



DIAPHRAGM DIMENSIONS ⑤	
DIAPH.	LENGTH
1	9.6724'
2	9.6787'
3	9.6845'
4	9.6898'
5	9.6948'
6	9.6993'
7	9.7036'
8	9.7075'
9	10.0298'
10	10.0224'
11	10.0153'
12	10.0086'
13	10.0021'
14	9.9960'
15	9.9901'
16	9.9844'

⑤ MEASURED ℄ BEAM TO ℄ BEAM ALONG ℄ DIAPHRAGM.

FRAMING PLAN

SCALE: 1/8" = 1'-0"

C.P. 88-09-116

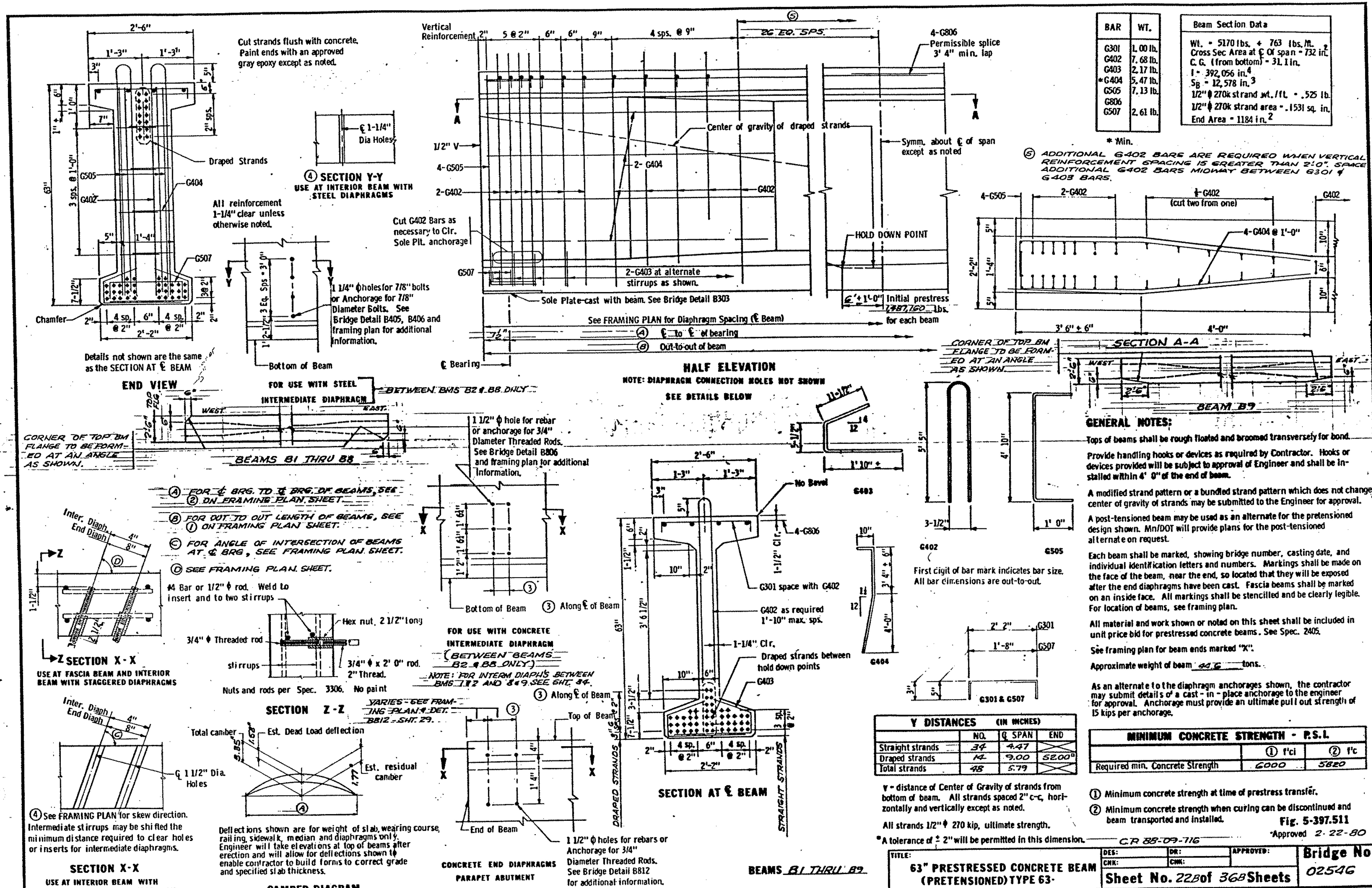
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02546

FRAMING PLAN

APPROVED:

SHEET 218 OF 368 SHEETS | 02546 | RMT RRT



BAR	WT.
G301	1.00 lb.
G402	7.68 lb.
G403	2.17 lb.
*G404	5.47 lb.
G505	7.13 lb.
G806	
G507	2.61 lb.

* Min.

Beam Section Data

- Wt. = 5170 lbs. + 763 lbs./ft.
- Cross Sec Area at ℄ Of span = 732 in.^{2}
- C.G. (from bottom) = 31.1 in.
- I = 392,056 in.^{4}
- S_B = 12,578 in.^{3}
- 1/2" ϕ 270k strand wt./ft. = .525 lb.
- 1/2" ϕ 270k strand area = .1531 sq. in.
- End Area = 1184 in.^{2}

GENERAL NOTES:

Tops of beams shall be rough floated and broomed transversely for bond.

Provide handling hooks or devices as required by Contractor. Hooks or devices provided will be subject to approval of Engineer and shall be installed within 4' 0" of the end of beam.

A modified strand pattern or a bundled strand pattern which does not change center of gravity of strands may be submitted to the Engineer for approval.

A post-tensioned beam may be used as an alternate for the pretensioned design shown. Mn/DOT will provide plans for the post-tensioned alternate on request.

Each beam shall be marked, showing bridge number, casting date, and individual identification letters and numbers. Markings shall be made on the face of the beam, near the end, so located that they will be exposed after the end diaphragms have been cast. Fascia beams shall be marked on an inside face. All markings shall be stencilled and be clearly legible. For location of beams, see framing plan.

All material and work shown or noted on this sheet shall be included in unit price bid for prestressed concrete beams. See Spec. 2405.

See framing plan for beam ends marked "X".

Approximate weight of beam 44.6 tons.

As an alternate to the diaphragm anchorages shown, the contractor may submit details of a cast - in - place anchorage to the engineer for approval. Anchorage must provide an ultimate pull out strength of 15 kips per anchorage.

Y DISTANCES (IN INCHES)

	NO.	℄ SPAN	END
Straight strands	34	4.47	
Draped strands	14	9.00	52.00*
Total strands	48	5.79	

Y = distance of Center of Gravity of strands from bottom of beam. All strands spaced 2" c-c, horizontally and vertically except as noted.

All strands 1/2" ϕ 270 kip, ultimate strength.

*A tolerance of ± 2" will be permitted in this dimension.

MINIMUM CONCRETE STRENGTH - P.S.I.

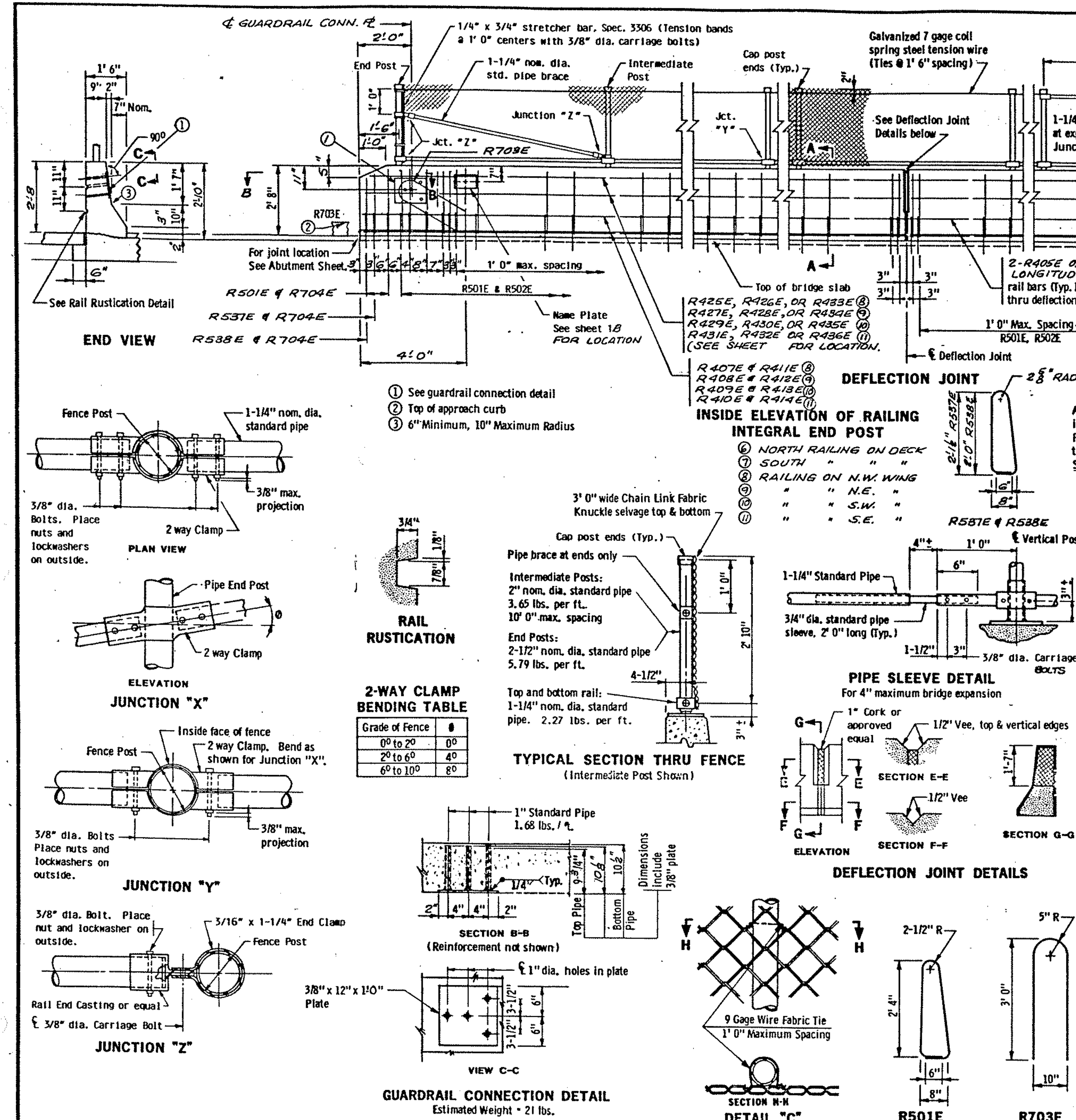
	① f'ci	② f'c
Required min. Concrete Strength	6000	5820

① Minimum concrete strength at time of prestress transfer.

② Minimum concrete strength when curing can be discontinued and beam transported and installed.

Fig. 5-397.511
Approved 2-22-80
C.R. 88-09-716

TITLE:	DES:	DR:	APPROVED:	Bridge No.
63" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 63-	CHK:	CHK:		02546
	Sheet No. 228 of 368 Sheets			



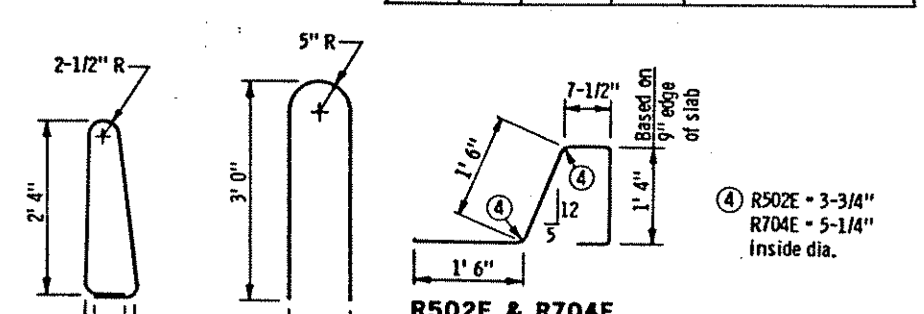
2-WAY CLAMP BENDING TABLE

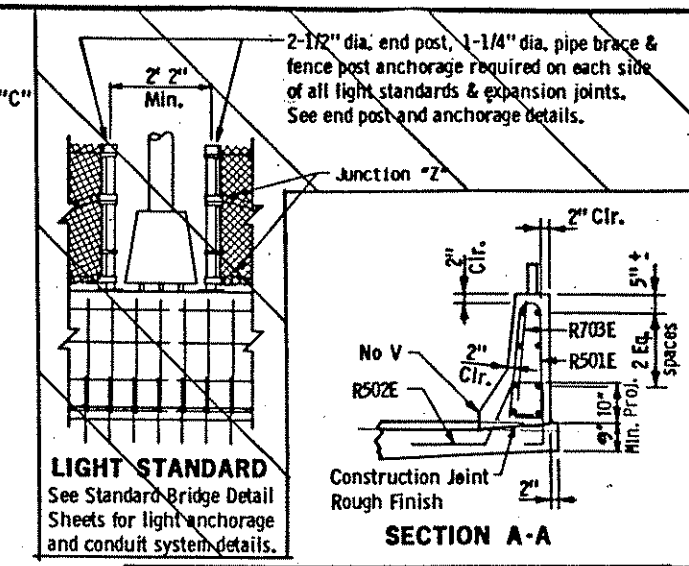
Grade of Fence	Φ
0° to 2°	0°
2° to 6°	4°
6° to 10°	8°

GUARDRAIL CONNECTION DETAIL

Estimated Weight = 21 lbs.

DETAIL "C"





BILL OF REINFORCEMENT FOR RAILING

BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	337	6' 1"	Bent	Rail Vertical
R502E	335	5' 6"	Bent	Rail Vertical
R703E	4	6' 6"	Bent	Integral End Post
R704E	12	5' 6"	Bent	Integral End Post
⑤ R405E	12	36'-1"	Straight	NORTH RAIL- LONG - E.F.
⑤ R406E	12	34'-5"	Straight	SOUTH " - " - E.F.
R407E	2	21'-9"	"	NORTH " - " - F.F.
R408E	2	25'-1"	"	" " - " - F.F.
R409E	2	21'-5"	"	SOUTH " - " - F.F.
R410E	2	21'-9"	"	" " - " - F.F.

Conc. Railing = 0.109 Cu. Yds. per ft. and 405 lbs. per ft.

⑤ 3 LINES, 1'-6" MIN. LAP

BILL OF REINFORCEMENT - RAILING - CONT'D.

BAR	NO.	LENGTH	SHAPE	LOCATION
R411E	2	22'-0"	STR.	NORTH RAIL-LONG - B.F.
R412E	2	24'-8"	"	" " - " - B.F.
R413E	2	21'-0"	"	SOUTH " - " - B.F.
R414E	2	21'-1"	"	" " - " - B.F.
R415E	16	17'-1"	"	NORTH " - " - E.F.
R416E	16	16'-4"	"	SOUTH " - " - E.F.
R417E	2	16'-8"	"	NORTH " - " - F.F.
R418E	2	17'-10"	"	" " - " - F.F.
R419E	2	16'-6"	"	SOUTH " - " - F.F.
R420E	2	16'-2"	"	" " - " - F.F.
R421E	2	16'-4"	"	NORTH " - " - B.F.
R422E	2	18'-3"	"	" " - " - B.F.
R423E	2	15'-10"	"	SOUTH " - " - B.F.
R424E	2	15'-9"	"	" " - " - B.F.
R425E	4	10'-4"	"	NORTH " - " - E.F.
R426E	2	11'-11"	"	" " - " - F.F.
R427E	4	12'-8"	"	" " - " - E.F.
R428E	2	12'-0"	"	" " - " - F.F.
R429E	4	10'-6"	"	SOUTH " - " - E.F.
R430E	2	10'-1"	"	" " - " - F.F.
R431E	4	11'-2"	"	" " - " - E.F.
R432E	2	10'-2"	"	" " - " - F.F.
R433E	2	11'-2"	"	NORTH " - " - B.F.
R434E	2	11'-7"	"	" " - " - B.F.
R435E	2	10'-3"	"	SOUTH " - " - B.F.
R436E	2	10'-5"	"	" " - " - B.F.
R531E	4	5'-8"	BENT	N & S. " - VERT.
R538E	4	5'-5"	"	" " " " - "

GENERAL NOTES

Bars marked with the suffix "E" shall be epoxy coated in accordance with Spec. 3301

Finish all edges of rail with 1/2" vee except where otherwise noted.

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.

End Post bracing is not to exceed 500 ft. maximum interval.

Concrete in the rail base shall be Mix No. 3X46

All material in the concrete base is included in the superstructure quantities.

For spacing of fence posts, joints and electrical grounds, see superstructure sheets.

Fence posts & anchorages shall be set vertical, unless otherwise noted.

See special provisions for requirements not included on this sheet and for basis of payment.

Guardrail connection shall be Structural Steel Spec. 3306 and galvanized after fabrication per Spec. 3394

The guard rail connection is included in the price bid for other items.

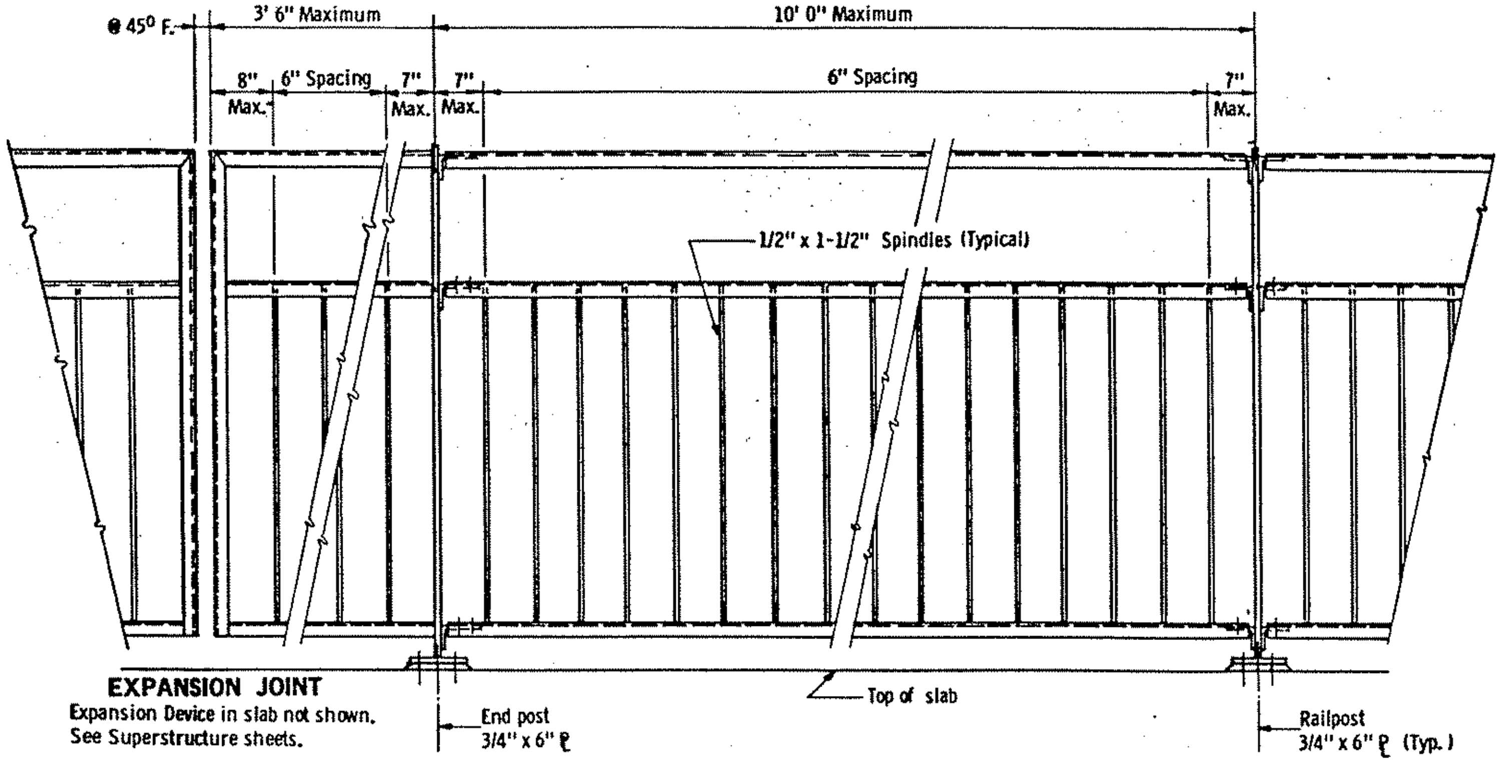
Maximum spacing of deflection joints shall be 20' 0".

The length of railing concrete is to be measured for payment between the outside faces of railing.

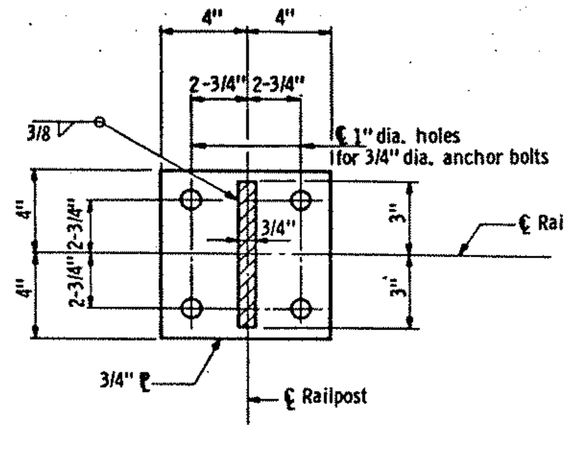
℄ of fence post anchorage shall be a minimum of 6" from joints.

C.R 88-09-116

REVISED:	APPROVED: Nov. 26, 1985	FIG. 5-397.156	
TITLE: BIKEWAY RAILING CONCRETE (TYPE J) & FENCE Integral End Post - No Sidewalk - w/o Wearing Course	DES: DR: CHK: CHK:	APPROVED:	Bridge No. 02546
	Sheet No. 238 of 368 Sheets		

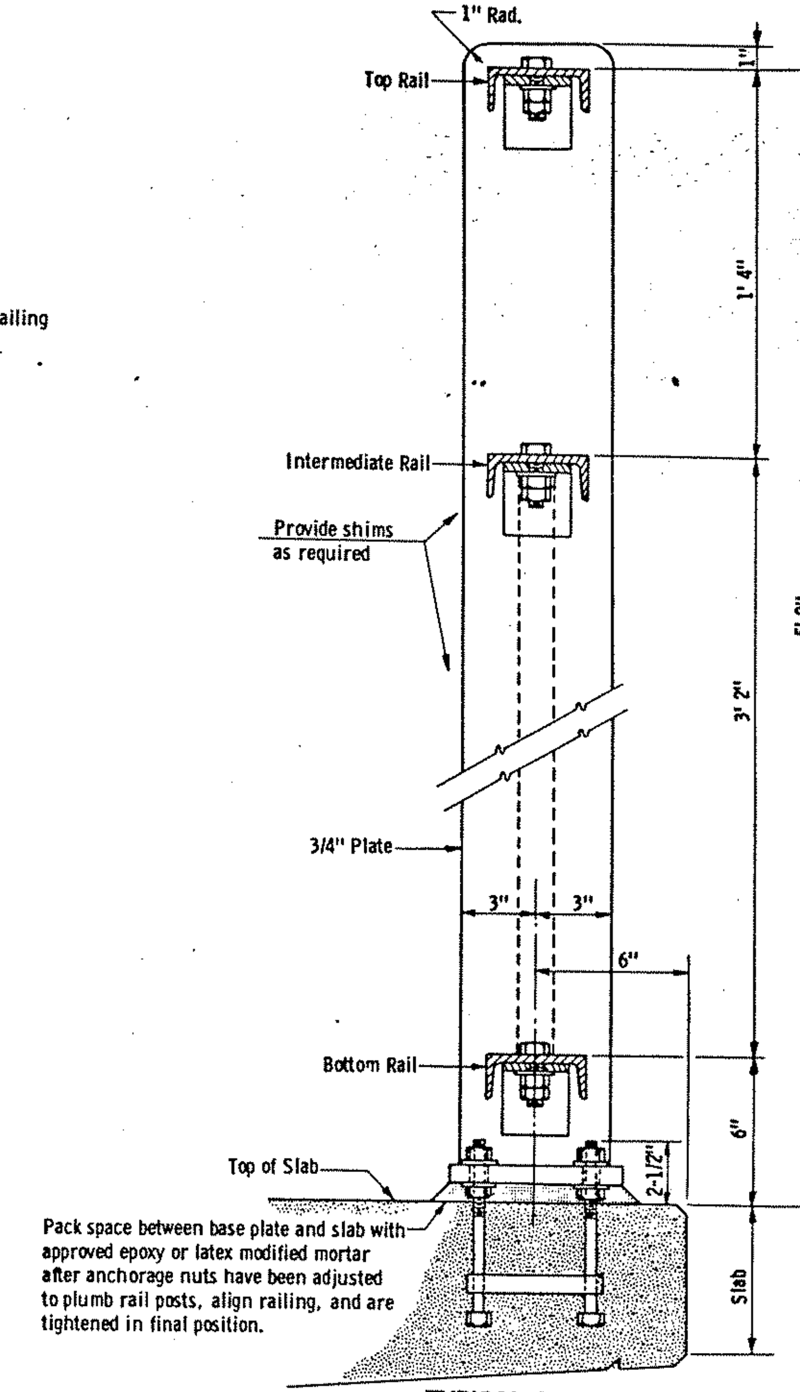


GENERAL RAILING ELEVATION

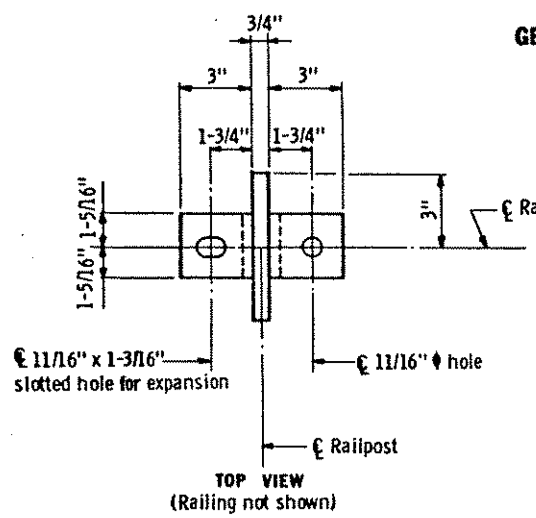


RAILPOST BASE ℘

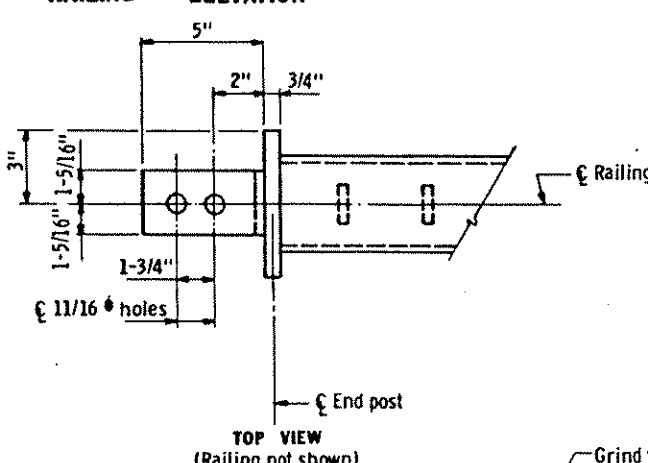
NOTE: SEE SHEET 15B FOR ANCHORAGE SPACING.



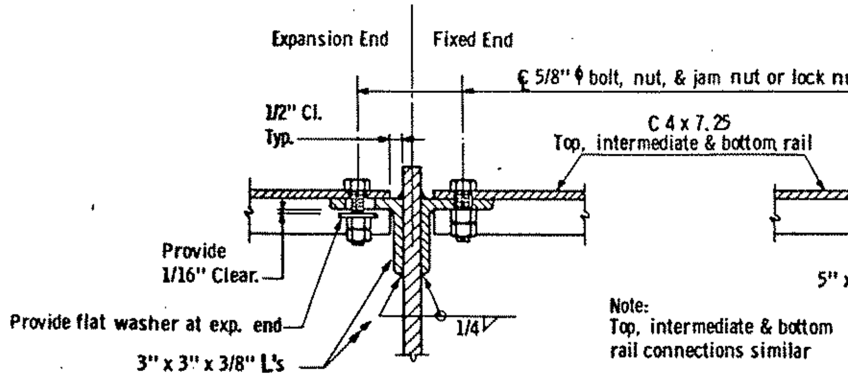
TYPICAL RAILPOST



TOP VIEW
(Railing not shown)

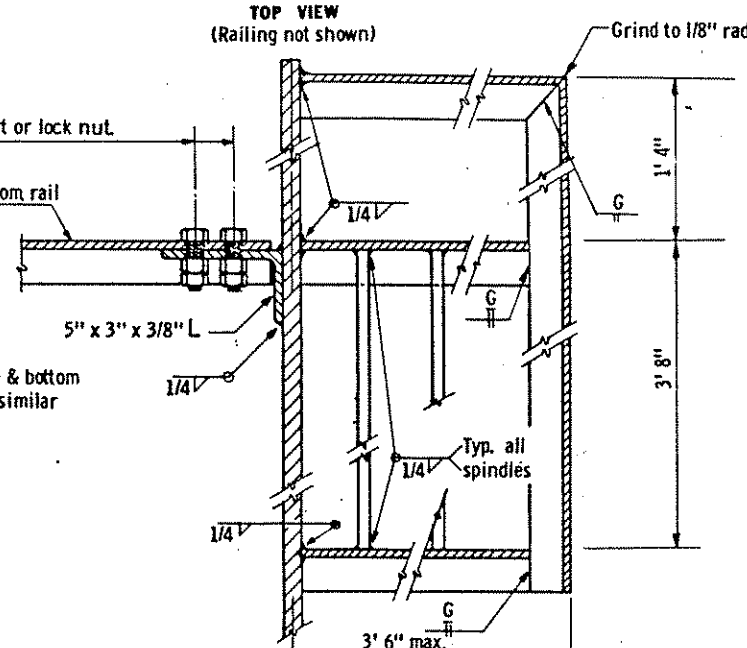


TOP VIEW
(Railing not shown)



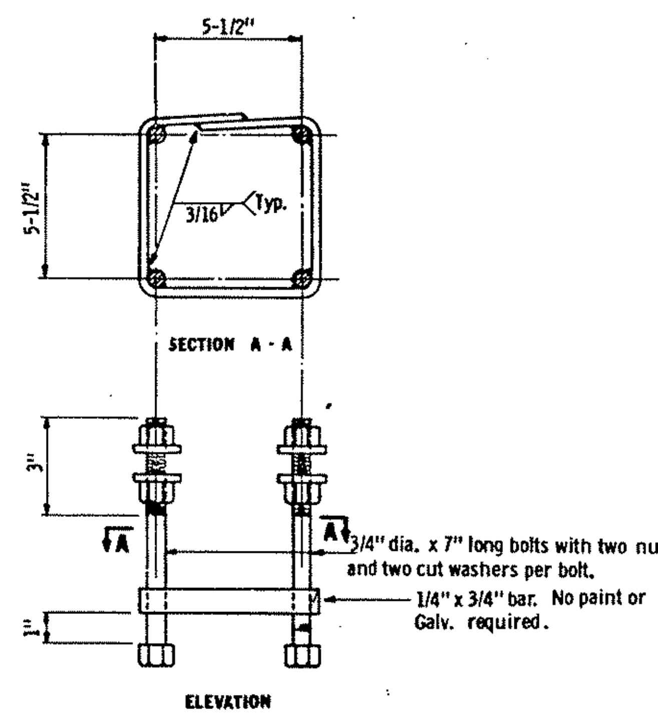
PART ELEVATION

TYP. INTERMEDIATE POST RAILING CONNECTIONS



PART ELEVATION

END POST DETAILS



RAILPOST ANCHORAGE

This railing will be used only when there is a barrier between the bikeway and the roadway, or on a bike-way bridge with no vehicular traffic.

All rail posts normal to grade.

Anchorages shall be accurately placed to provide correct alignment of railing. Set normal to grade.

All structural steel shall comply with Spec. 3306.

Galvanize bolts, nuts, and washers per Spec. 3392.

Galvanize all other structural steel per Spec. 3394 after fabrication.

Check special provisions for additional painting requirements at aesthetic locations.

Price bid for metal railing includes all material shown on this sheet.

Length of "metal railing" for payment will be measured from end to end of channel with no deduction for open joint.

All railing members shall be flat after fabrication and galvanizing to within 1/8" in 10 ft. by mechanical means without damage to the zinc coating.

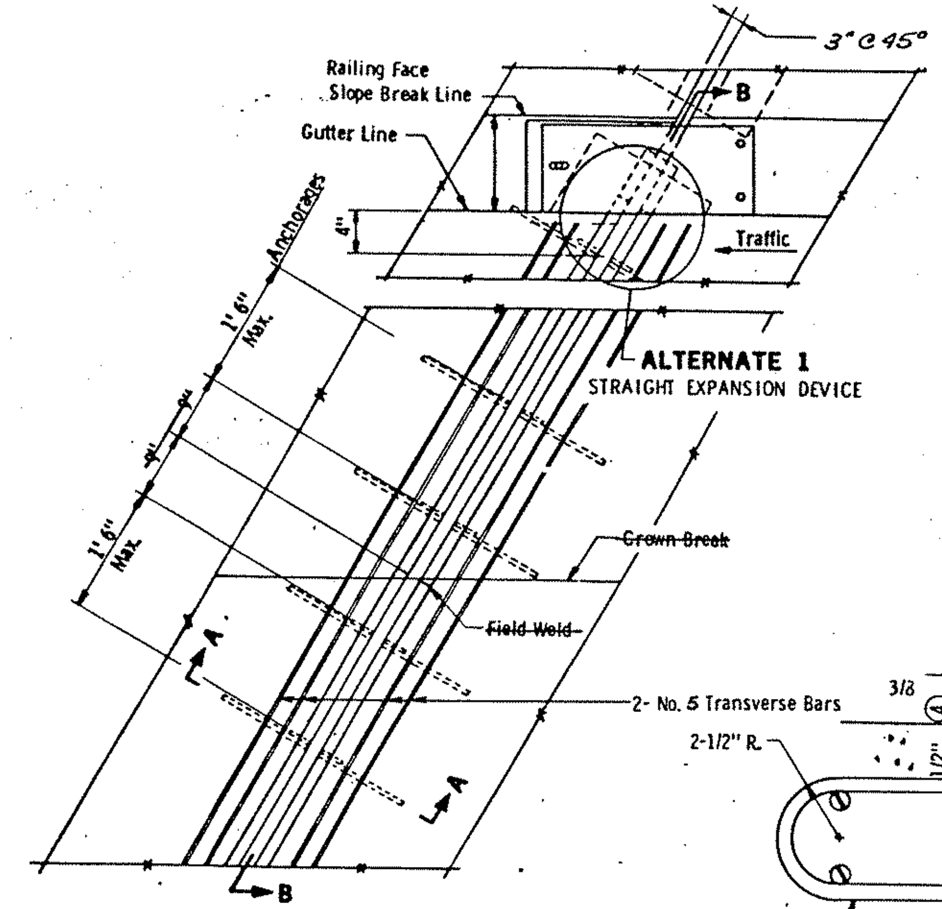
Revised: June 10, 1983

Approved: July 22, 1980

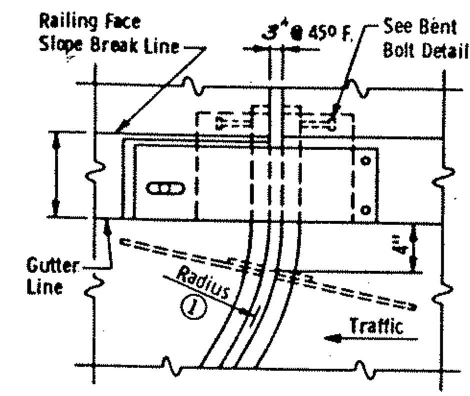
FIG. 5-397.150

TITLE:	DES:	DR:	APPROVED:	Bridge No.
METAL RAILING FOR BIKEWAYS C.P. 88-09-116	CHK:	CHK:		02546
	Sheet No. 24B of 36B Sheets			

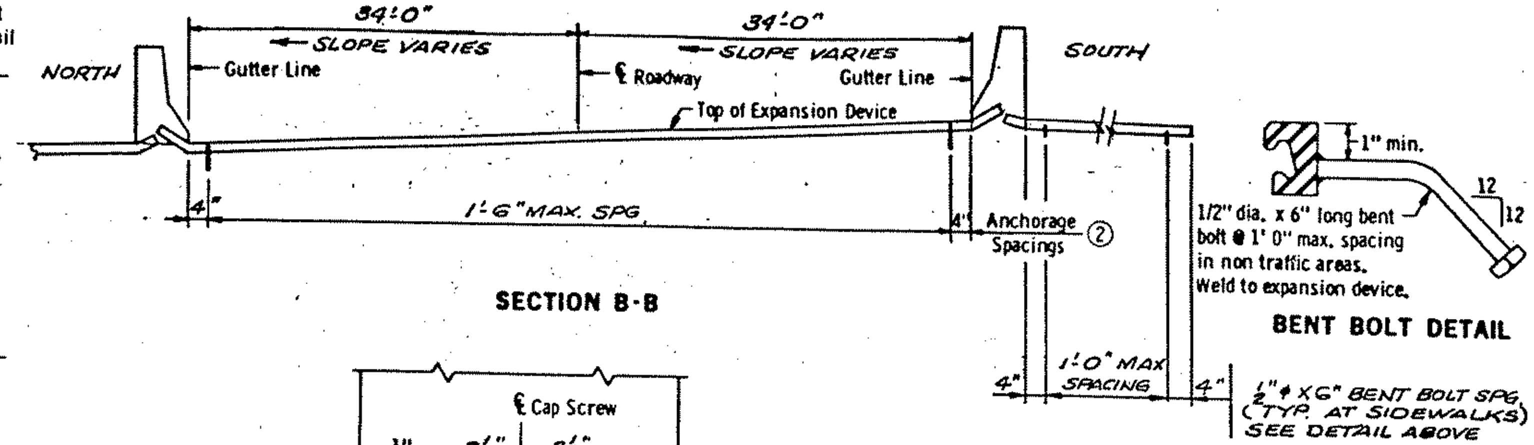
17M



PLAN VIEW AT EXPANSION DEVICE

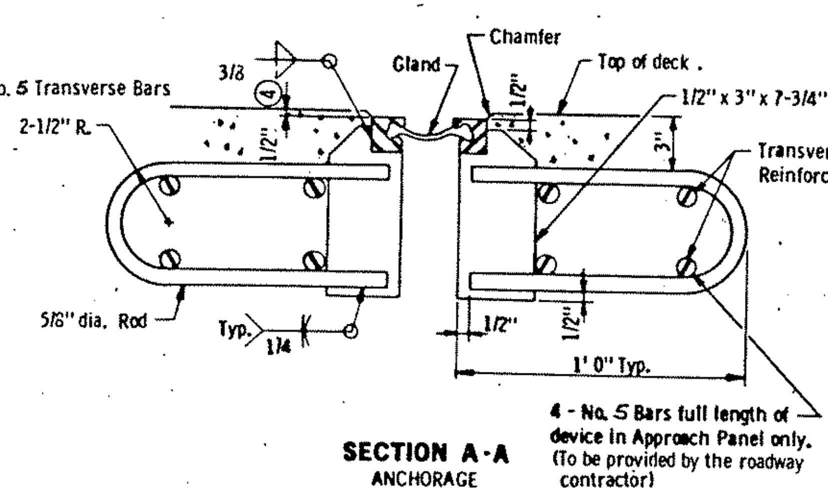


ALTERNATE 2
CURVED EXPANSION DEVICE

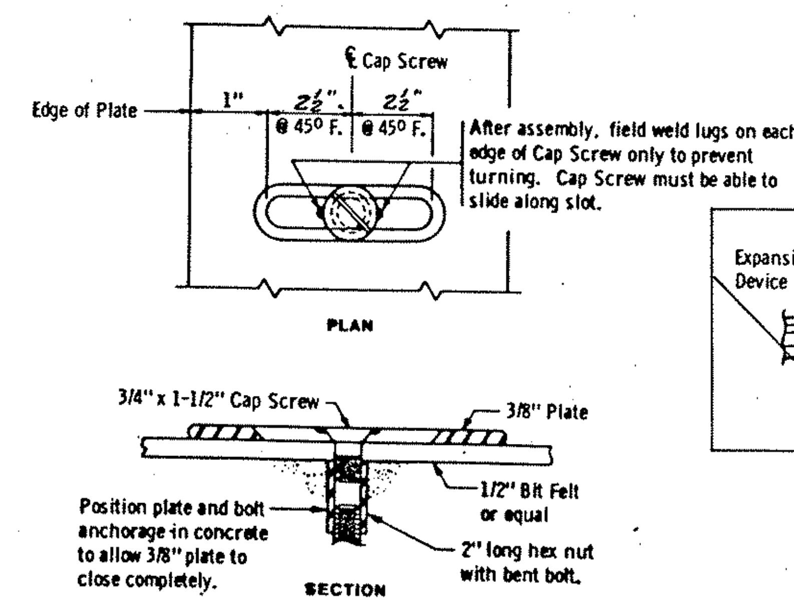


SECTION B-B

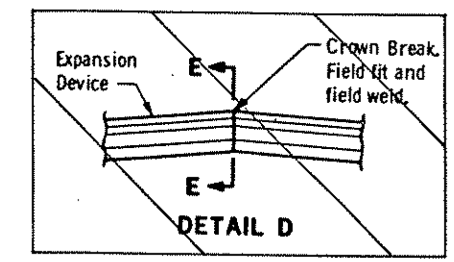
BENT BOLT DETAIL



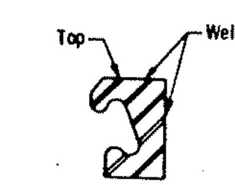
SECTION A-A
ANCHORAGE



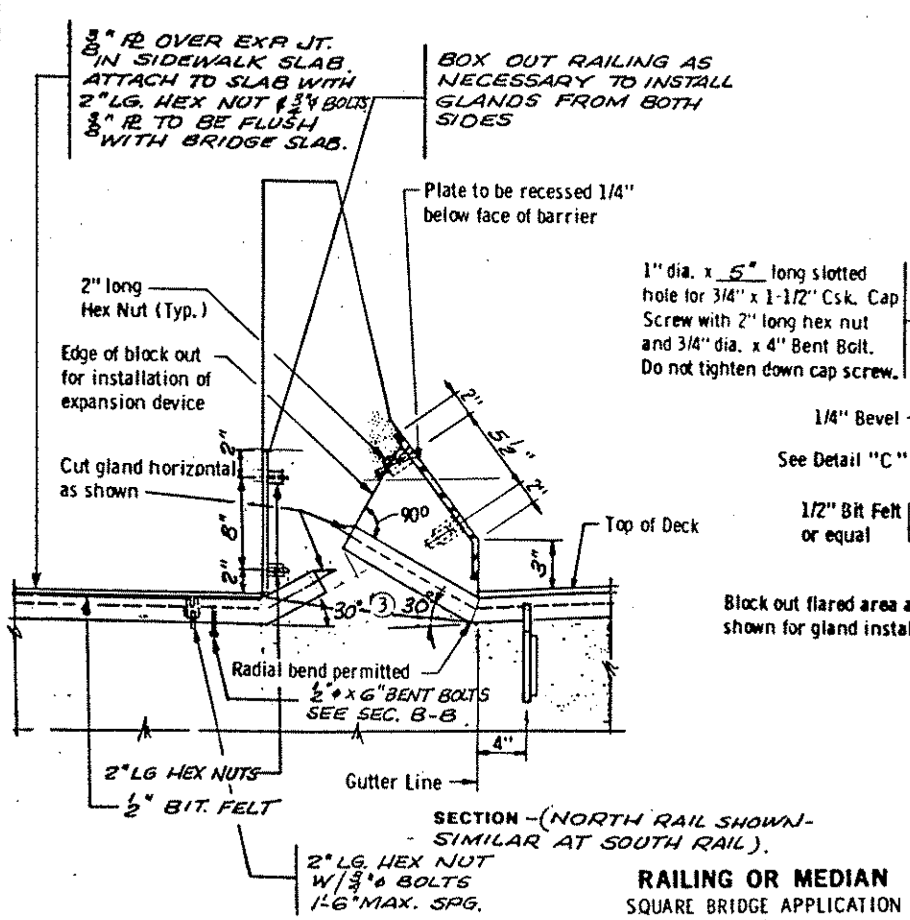
DETAIL C
SLOTTED HOLE & CAP SCREW



DETAIL D

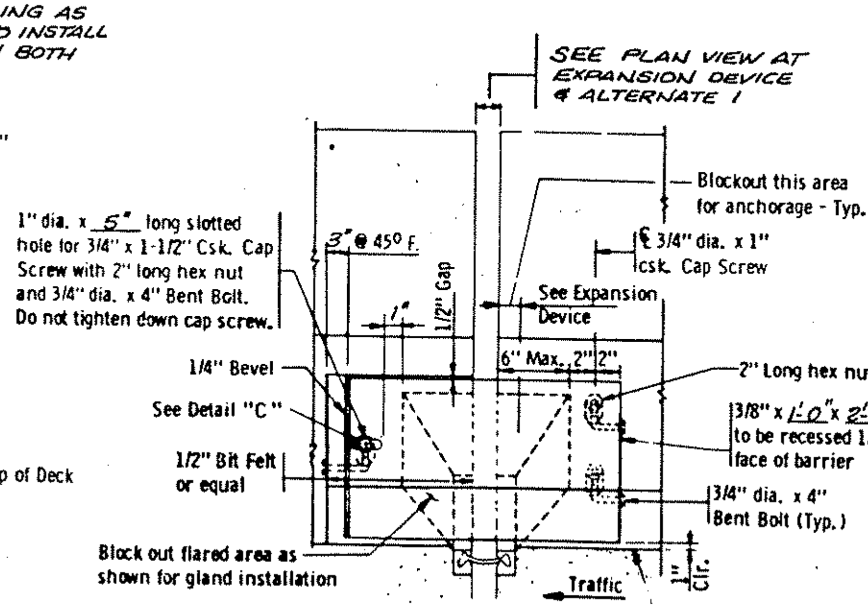


SECTION E-E

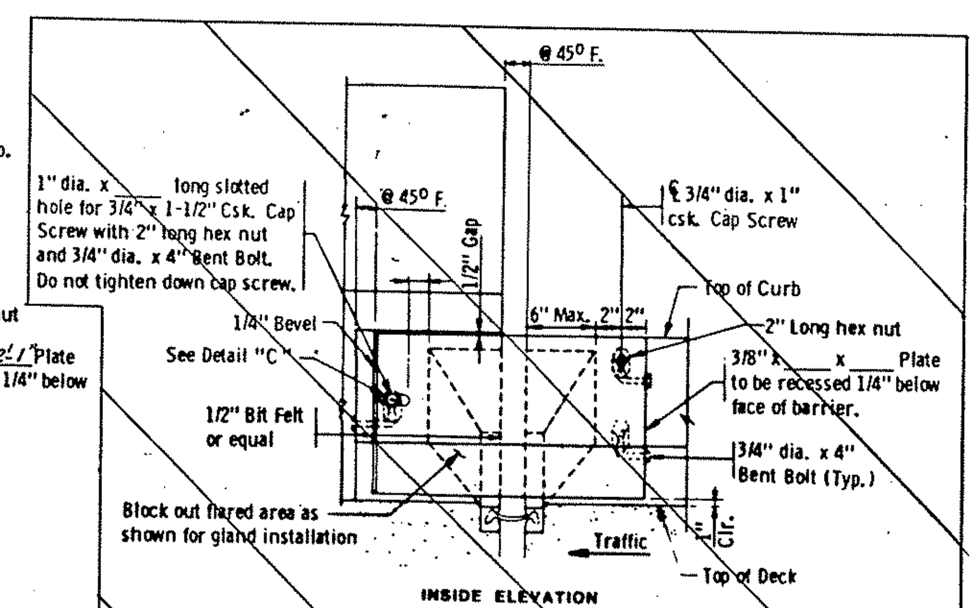


SECTION -(NORTH RAIL SHOWN- SIMILAR AT SOUTH RAIL).

RAILING OR MEDIAN
SQUARE BRIDGE APPLICATION



INSIDE ELEVATION



RAILING AT CURB TRANSITION

NOTES:

Galvanize structural steel after fabrication as per Spec. 3394.

Joints in roadway plate or extrusion shall be located at breaks in transverse profile and as otherwise required. Joints shall be close fit and welded. Repair after welding as per Spec. 2471.3L.

Structural steel shall comply with Spec. 3306, Spec. 3307 & Spec. 3309.

Expansion device shall be straightened to a tolerance of 1/8" in 10 ft.

Cap screws shall be countersunk 1/16" below top of plate.

Galvanize screws and nuts as per Spec. 3392.

See superstructure sheets for expansion device alternate at railing.

When expansion devices are used at ends of bridge, the bridge contractor shall furnish expansion device and gland. The roadway contractor shall install the part of the expansion device which includes the gland as shown on this sheet.

① Varies 18" to 24"

② Dimension along centerline of joint.

③ For roadway skews over 25° use 45°.

④ 5/8" max. when Snowplow Fingers are used. Use 1/8" (with 1/4" max.) when Snowplow Fingers are not used.

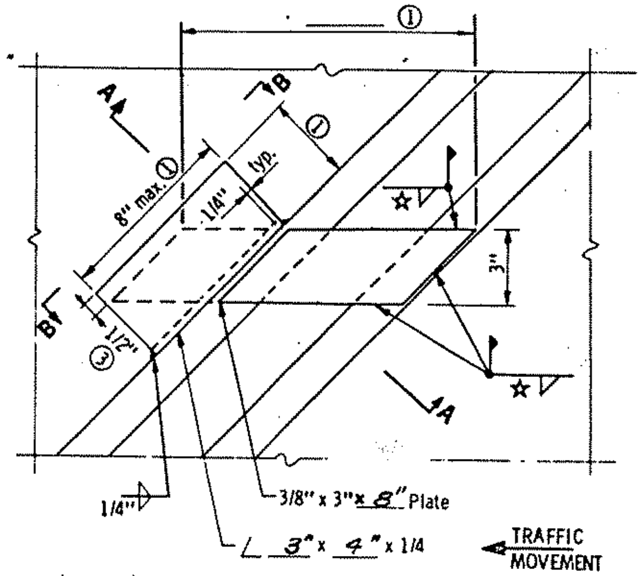
FIG. 5-397.627

Revised: October 15, 1982 Approved: July 16, 1982

C.P. 88-09-116

TITLE:	DES:	DR:	APPROVED:	Bridge No.
WATERPROOF EXPANSION DEVICE WITH TYPE J BARRIER	CHK:	CHK:		
	Sheet No. 25B of 36B Sheets			02546

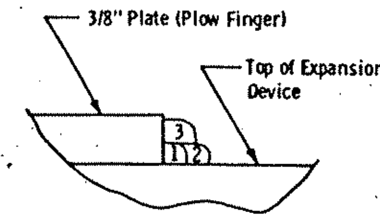
17M



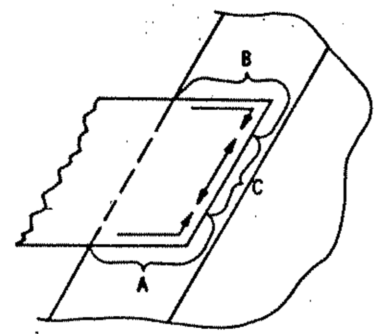
① Varies with skew and expansion opening

③ Minimum in closed position

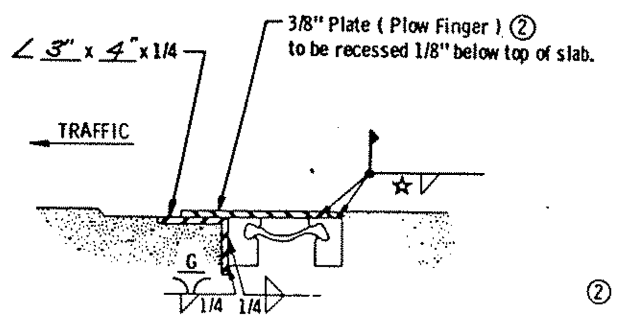
DETAIL "C"



DETAIL D



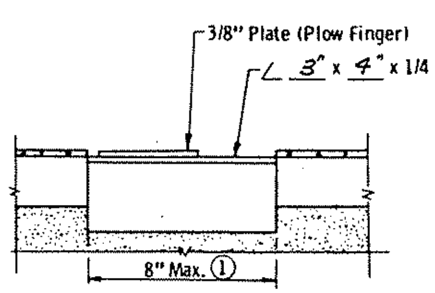
DETAIL E



Section A - A

FINGER

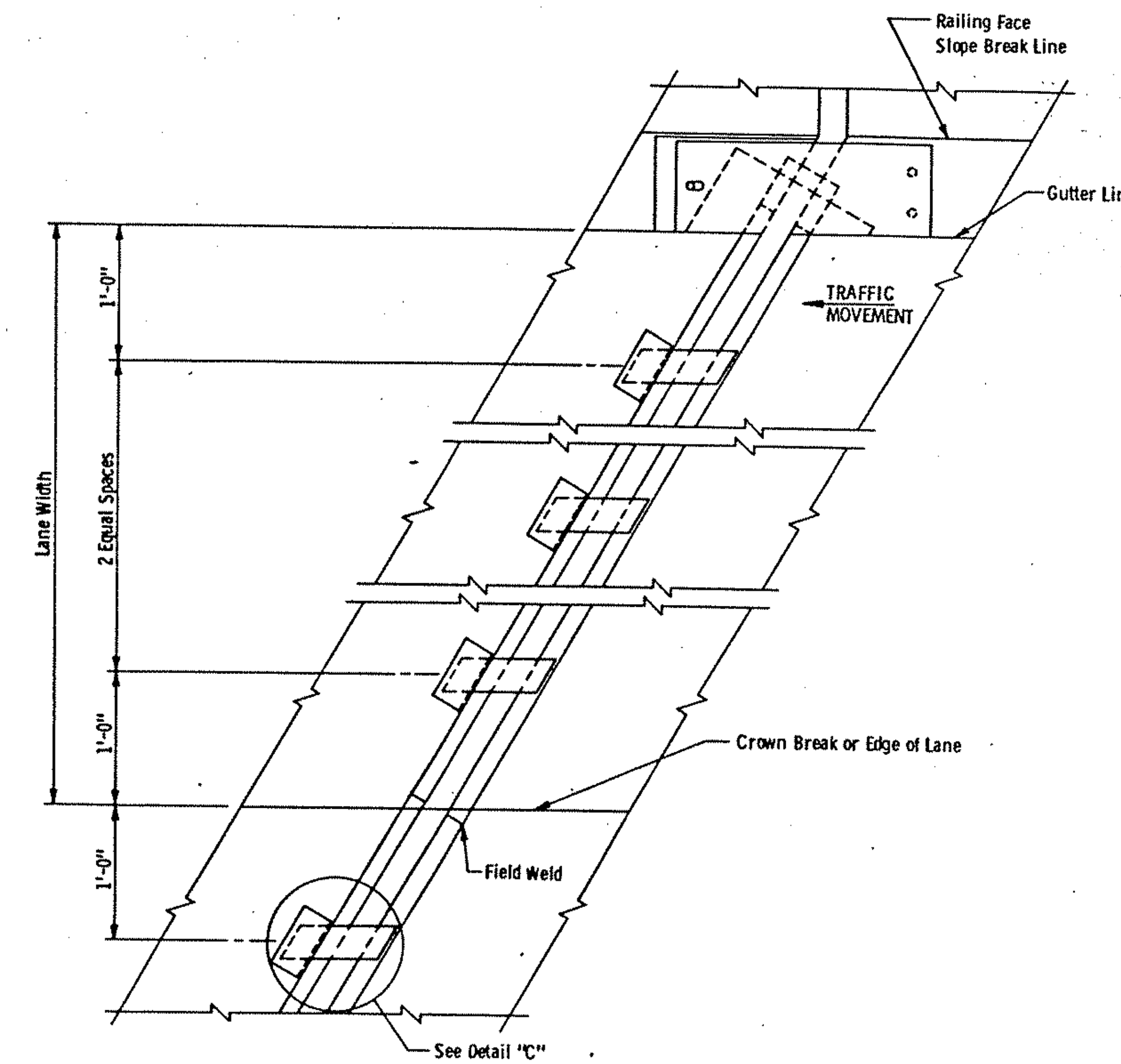
② Field bend after welding to full bearing.



VIEW B-B

☆ WELDING PROCEDURE FOR PLOW FINGERS

1. Remove all zinc galvanizing from edge of plow finger, and area of extrusion to be welded.
2. All welding shall be done with 1/8 inch AWS Spec. 5.1 Type E7016 or E7018 electrode.
3. Remove all weld slag and other residue between passes.
4. Weld pass 1 in Areas A and B first, then Area C, follow with pass 2 and 3 in same order as shown in Detail D and E.
5. Allow at least 5 minutes cooling time between each of nine weld passes.
6. Repair all galvanizing, damaged by removal and welding, in accordance with Spec. 2471.3L.



PLAN VIEW AT EXPANSION JOINT

Maximum spacing of plow fingers to be 4'-0" except as noted.

NOTES:

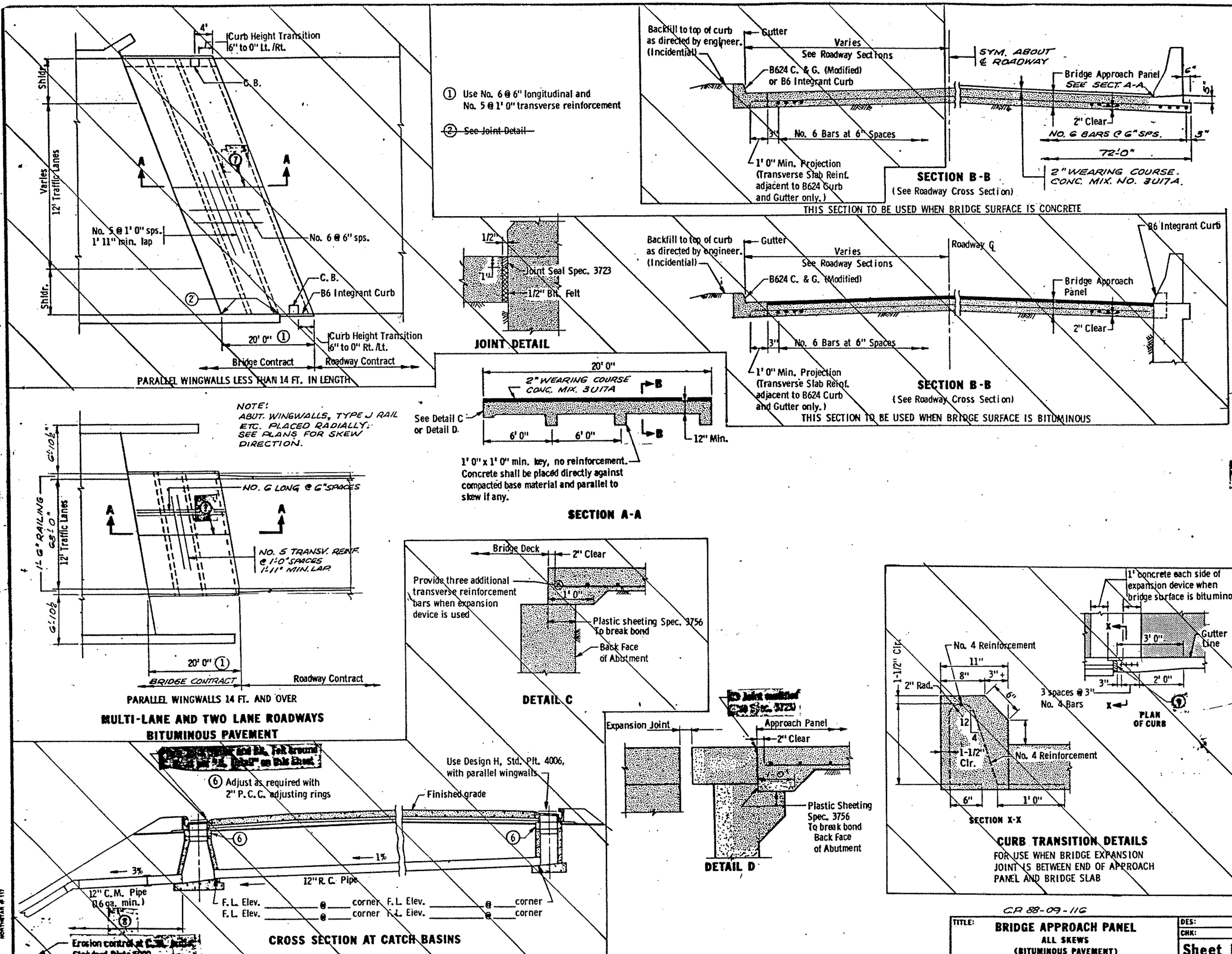
Galvanize all areas damaged by removal and welding in accordance with Spec. 2471.3L.

Fig. 5-397.628

Approved: October 9, 1980

C.R. 88-09-116

TITLE: WATERPROOF EXPANSION DEVICE SNOW PLOW PROTECTION (Use on skews over 10^0 and less than 45^0)	DES:	DR:	APPROVED:	Bridge No.
	CHK:	CHK:		
	Sheet No. 26B of 36B Sheets			02546



The summary of quantities for approach panel is as-shown below. Any additional minor items and slight changes of quantities required shall be furnished by the contractor with no additional compensation except as noted.

ITEM	*MANUAL REFERENCE
Sodding at Pipe Culverts	Std. Plts. 9102
Riprap at CMP Outlets	Std. Plts. 3134
Metal Apron for CM Pipe	Std. Plts. 3123
Curb and Gutter	Std. Plt. 7100
Catch Basin Details	Std. Plt. 4002
Catch Basin Details	Std. Plt. 4006
Precast Concrete Base	Std. Plt. 4011
Catch Basin Frame	Std. Plt. 4129
Catch Basin Curb Box	Std. Plt. 4160
Catch Basin Grate	Std. Plt. 4151
Catch Basin Installation	Std. Plt. 7111
Metal Pipe Flume	Std. Plt. 5000
Longitudinal Joints	Std. Plt. 1140
Integrant Curbs	Std. Plt. 7000
Contraction Joint	Std. Plt. 1120
Conc. Short Cone & Adj. Ring	Std. Plt. 4010

*Specification Ref. Std. Plts. 0001 & 0002
Reinforcement shall be lapped as per Spec. 2472.3D

③ SUMMARY OF QUANTITIES FOR BRIDGE APPROACH PANELS

④	Concrete Mix No. 3X42	135	Cu. Yd.
⑤	~~Catch Basins~~		~~Req'd.~~
	~~Metal Apron~~		~~Req'd.~~
	Reinforcement Bars (EPOXY)	12320	Lbs.
⑧	~~12" C. M. Pipe Drain~~		~~Lin. Ft.~~
	~~Curb, Design~~		~~Lin. Ft.~~
	~~12" R. C. Pipe Drain~~		~~Lin. Ft.~~
	CONC. MIX 3U17A	18	CU. YD.
	~~Sod~~		~~Sq. Yd.~~
	~~Random Riprap Class "A"~~		~~Cu. Yd.~~

③ Quantities listed are for approach panels at both ends of bridge

Payment will be included in the single lump sum price for "Item 301.601 Bridge Approach Panels."

④ The Volume of concrete shown is based on an average slab depth of 12" plus the volume of keys and sills as dimensioned. (Concrete for Curb Design 8618 is not included in this quantity.)

⑤ Includes all concrete work and all castings and appurtenances necessary to construct the catch basins as shown and noted.

⑦ Permissible L2KT longitudinal joint. See Standard Plan Sheet 5-297.221

⑧ Pipe drains in location shown to be paid for by the lineal foot as a separate item.

⑨ Leave a void between junction of bridge railing and curb 2" min. Fill void with polystyrene.

Fig. 5-397.308

Revised: July 22, 1982 (Approved: June 13, 1978)

CR 88-09-116

TITLE: BRIDGE APPROACH PANEL
ALL SKEWS
(BITUMINOUS PAVEMENT)

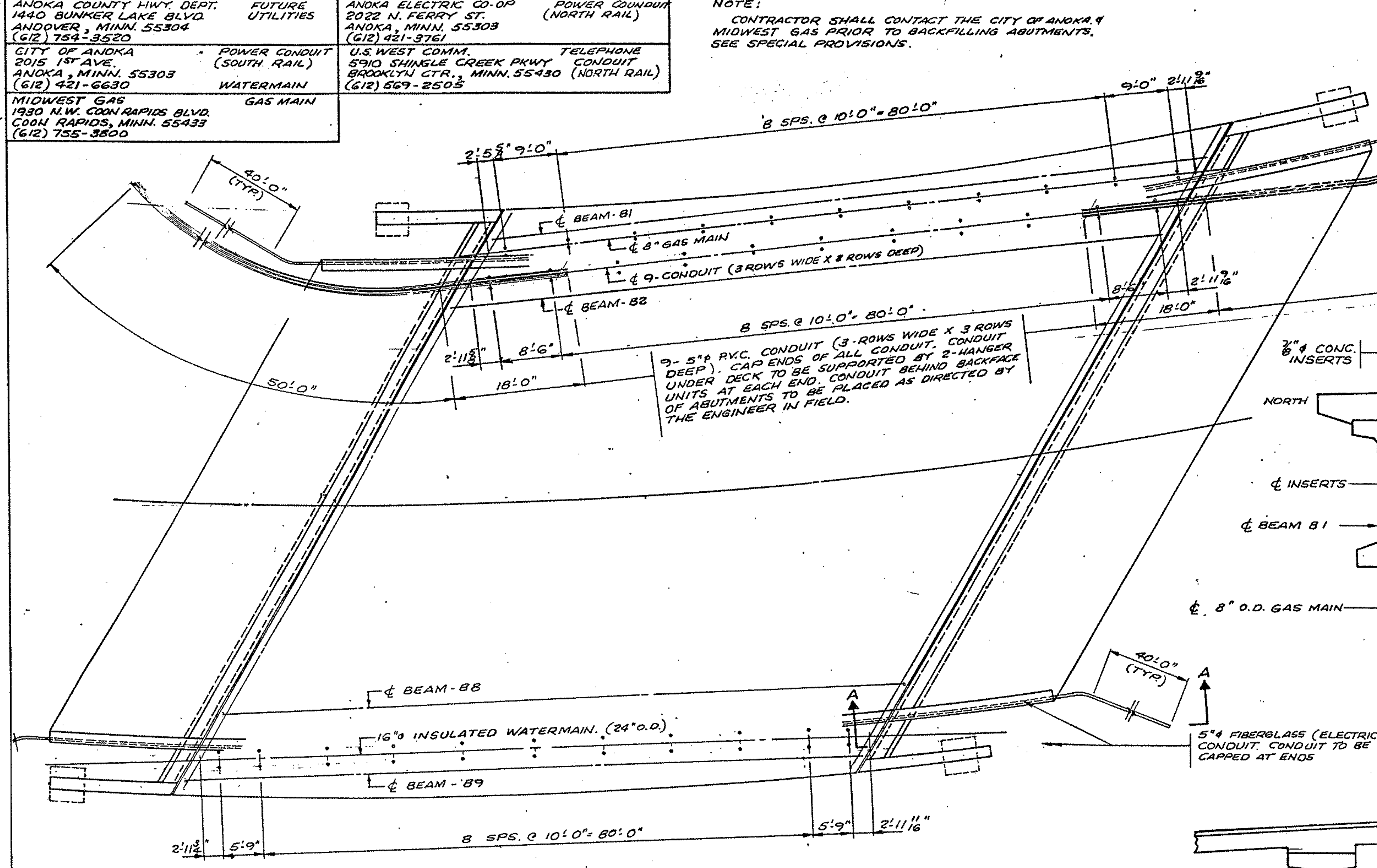
DES: | DR: | APPROVED:
CHK: | CHK:

Sheet No. 278 of 368 Sheets

Bridge No. 02546

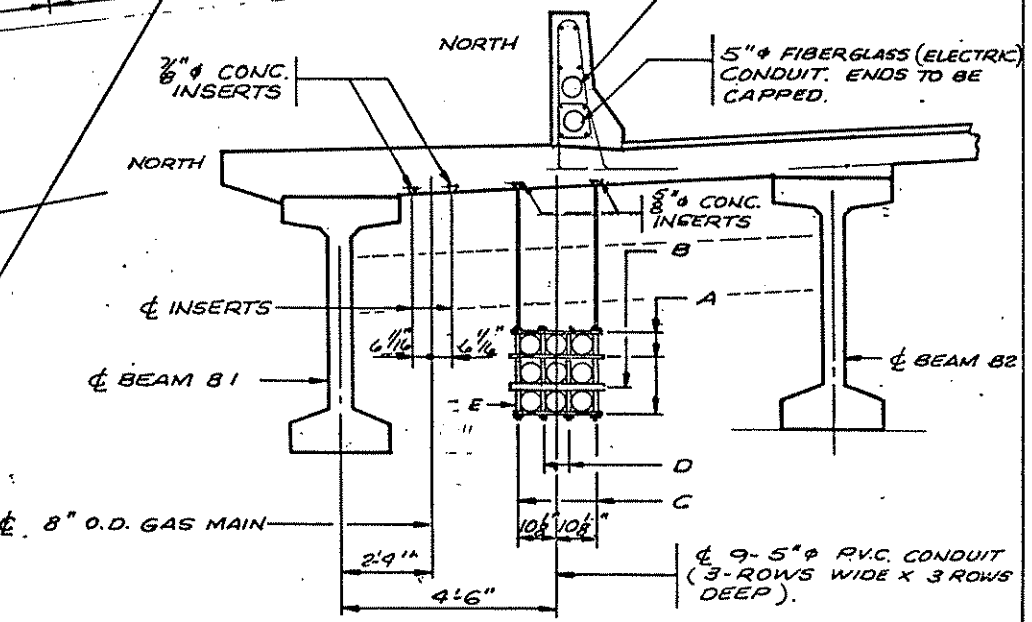
UTILITIES			
ANOKA COUNTY HWY. DEPT. 1440 BUNKER LAKE BLVD. ANDOVER, MINN. 55304 (612) 754-3520	FUTURE UTILITIES	ANOKA ELECTRIC CO-OP 2022 N. FERRY ST. ANOKA, MINN. 55303 (612) 421-3761	POWER CONDUIT (NORTH RAIL)
CITY OF ANOKA 2015 1ST AVE. ANOKA, MINN. 55303 (612) 421-6630	POWER CONDUIT (SOUTH RAIL) WATERMAIN	U.S. WEST COMM. 5910 SHINGLE CREEK PKWY BROOKLYN CTR., MINN. 55430 (612) 569-2505	TELEPHONE CONDUIT (NORTH RAIL)
MIDWEST GAS 1930 N.W. COON RAPIDS BLVD. COON RAPIDS, MINN. 55433 (612) 755-3800	GAS MAIN		

NOTE:
CONTRACTOR SHALL CONTACT THE CITY OF ANOKA & MIDWEST GAS PRIOR TO BACKFILLING ABUTMENTS. SEE SPECIAL PROVISIONS.



PLAN

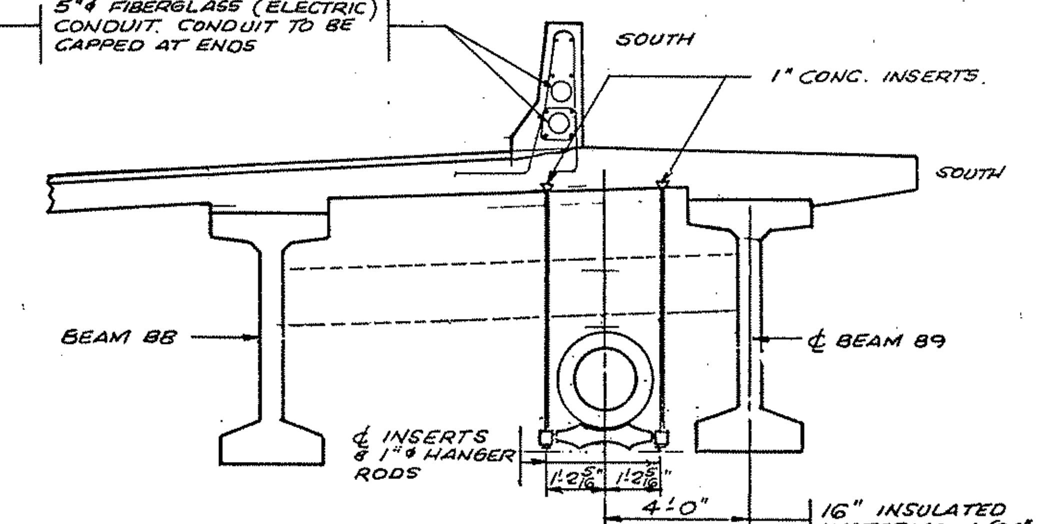
SCALE: 1/8" = 1'-0"



SECTION THRU DECK AT NORTH RAILING

(SHOWING UTILITY LOCATIONS)

5"φ FIBERGLASS (ELECTRIC) CONDUIT. CONDUIT TO BE CAPPED AT ENDS



SECTION THRU DECK AT SOUTH RAILING

(SHOWING UTILITY LOCATIONS)

P.V.C. HANGER NOTES

A = 1/2" X 2" P.V.C. PLATE

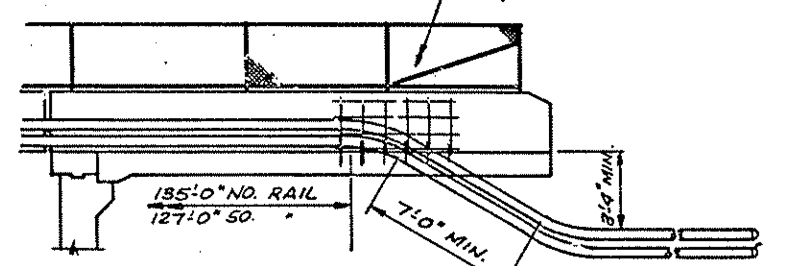
B = 2" X 2" ALUMINUM SQUARE TUBING

C = 5/8"φ X 4'-9" 11NC THREADED STEEL HANGER RODS, NUTS AND WASHERS (PLATED)

D = INTERMEDIATE RODS 3/4"φ X 2'-0" 11NC THREADED STEEL RODS, NUTS AND WASHERS (PLATED).

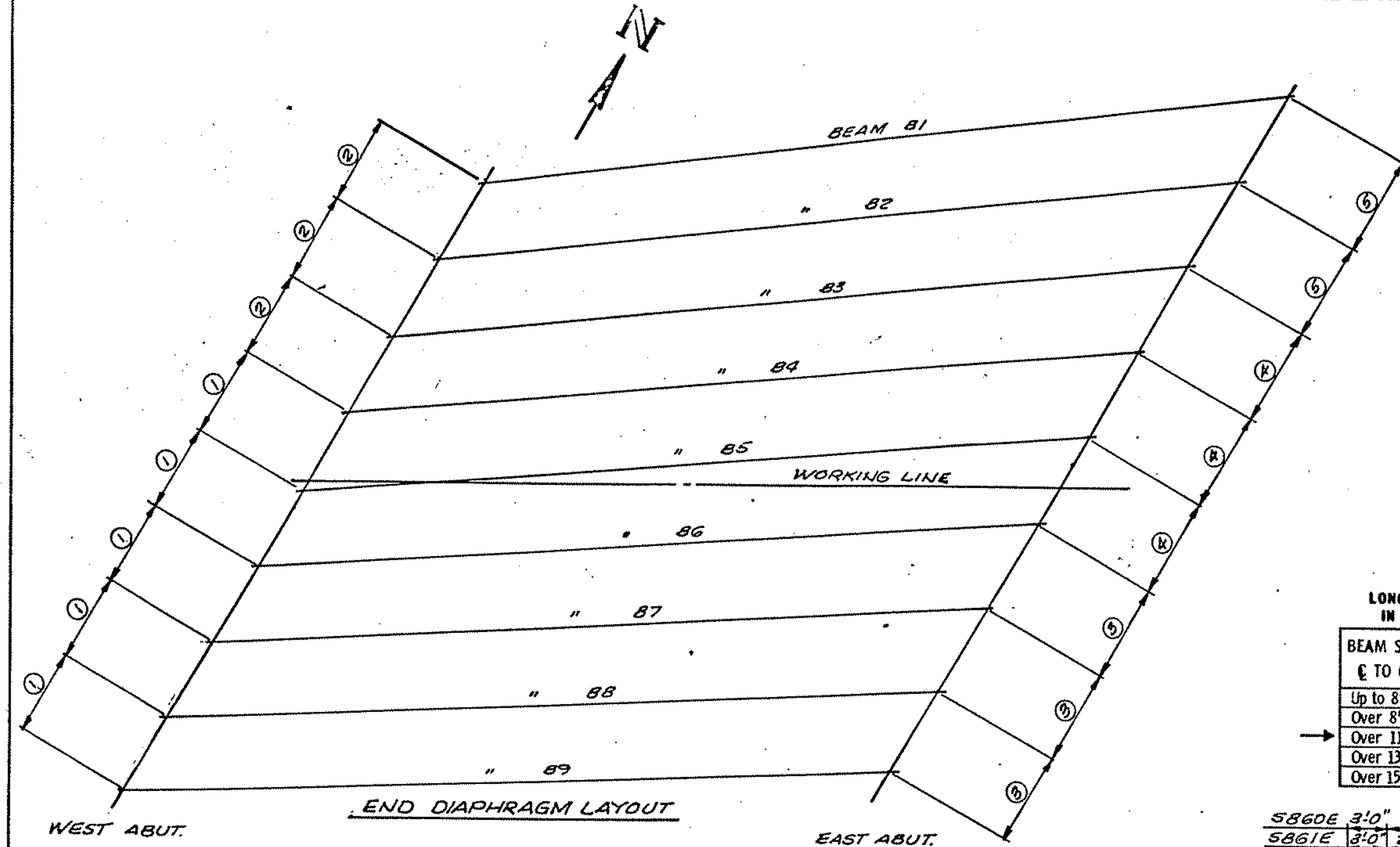
E = 5/8" P.V.C SPACER TUBES FOR 5"φ CONDUIT.

CONTRACTOR SHALL CUT REINF. AS REQ'D FOR PASSAGE OF CONDUIT

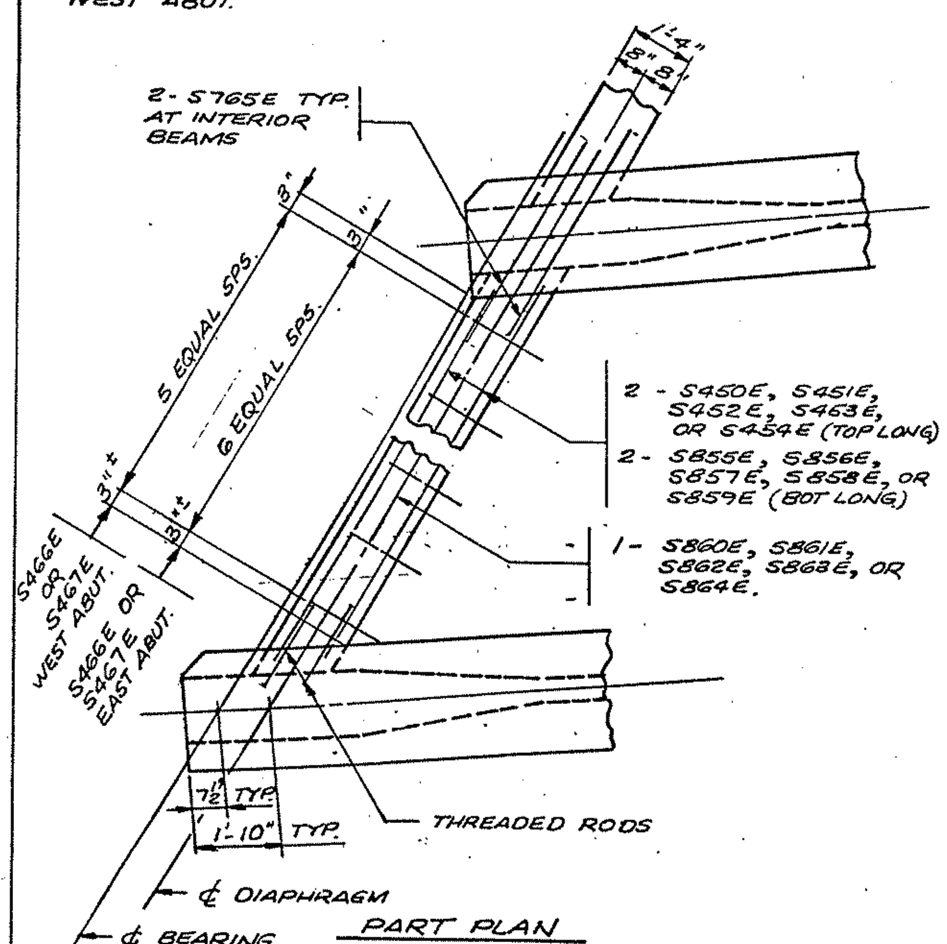


SECTION A-A

UTILITY DETAILS	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO. 02546
C.P. 88-09-116	SHEET 288 OF 368 SHEETS			



END DIAPHRAGM LAYOUT



PART PLAN
END DIAPHRAGM
(SIMILAR AT EAST ABUT)

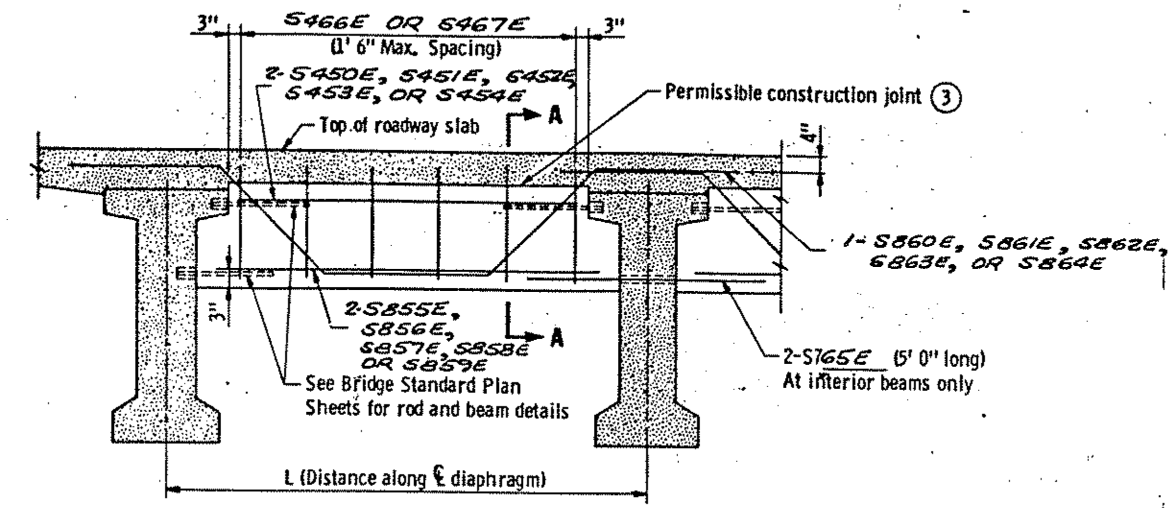
(1) 2-S450E, 2-S855E, 1-S860E, & 6-S466E

(2) 2-S451E, 2-S856E, 1-S861E, & 6-S467E

(3) 2-S452E, 2-S857E, 1-S862E, & 7-S466E

(4) 2-S453E, 2-S858E, 1-S863E, & 7-S466E

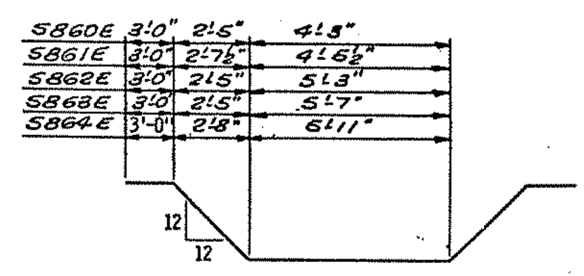
(5) 2-S454E, 2-S859E, 1-S864E, & 7-S467E



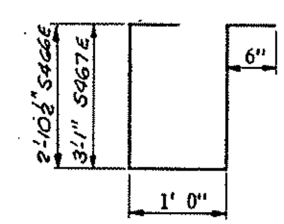
PART TRANSVERSE SECTION AT END DIAPHRAGM

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

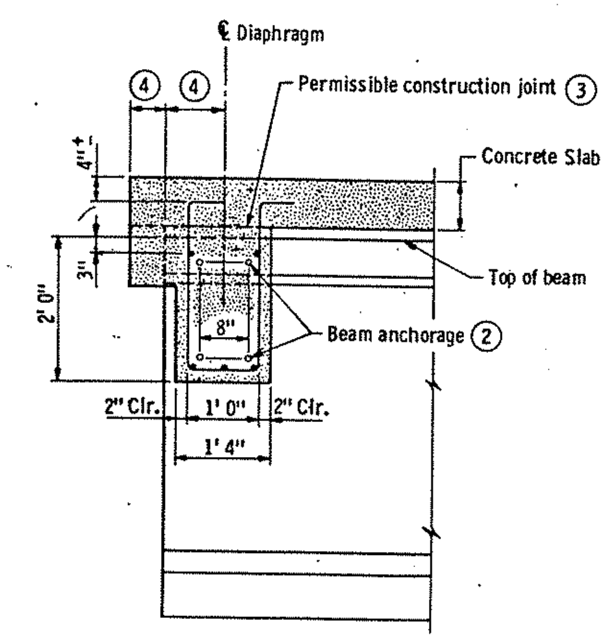
BEAM SPACING ℄ TO ℄ (1)	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	NO.	SIZE
Up to 8'	2	6	1	5
Over 8' to 11'	~~2~~	~~7~~	1	6
Over 11' to 13'	2	~~8~~	1	8
Over 13' to 15'	2	9	1	10
Over 15' to 18'	2	11	1	11



S860E THRU S864E



S466E & S467E



SECTION A-A

NOTE:

(1) Distance measured along ℄ of diaphragm.

(2) BEAM ANCHORAGES
Fascia beams only: four 3/4" dia. threaded rods.
Interior beams: Two 3/4" dia. threaded rods on top two No. 7 bars on bottom.

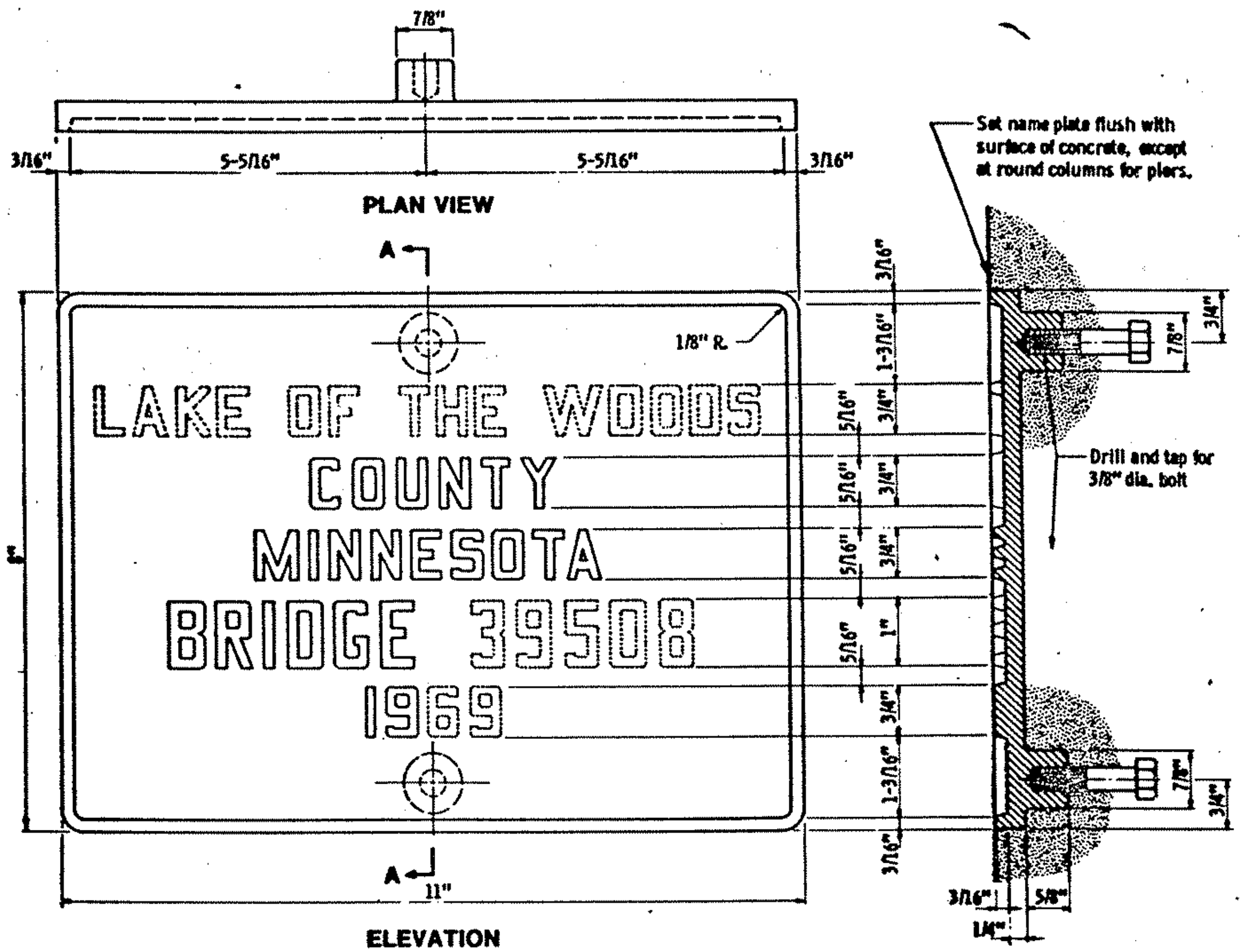
(3) When construction joint is used at this location, diaphragm falsework shall remain in place until completion of slab curing period.

(4) See plans for dimensions.

(5) All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantites (except threaded rods are included in payment for prestressed beams).

APPROVED: July 26, 1977 Developed by: ENGINEERING STANDARDS AND BRIDGES AND STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **END DIAPHRAGM** **(63"-81" PRESTRESSED CONCRETE BEAM SPAN WITH PARAPET ABUTS.)**	REVISION AUG. 25, 1978	DETAIL NO. **B812**

DETAILS C.P. 88-09-116	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED	BRIDGE NO. 02546
	SHEET 298 OF 368 SHEETS			

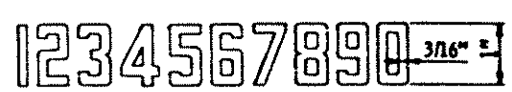


ELEVATION

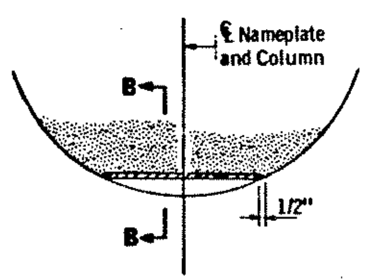
SECTION A-A

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

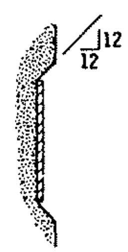
COUNTY ANOKA
BRIDGE 02546
YEAR 1989



LETTERS & NUMBERS FOR NAMEPLATES



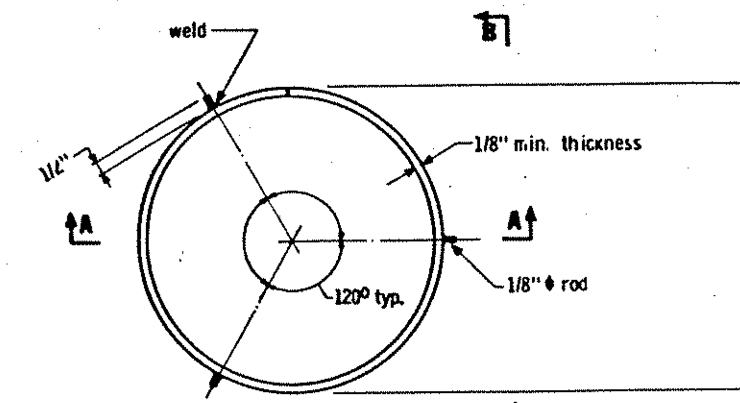
NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)



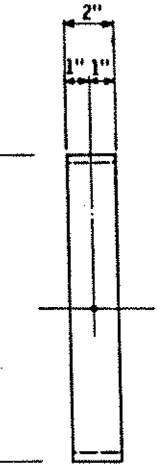
SECTION B-B

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.
All dimensions for 3/4" high letters and numbers shall be in direct proportion to those shown for the 1" high letters and numbers.

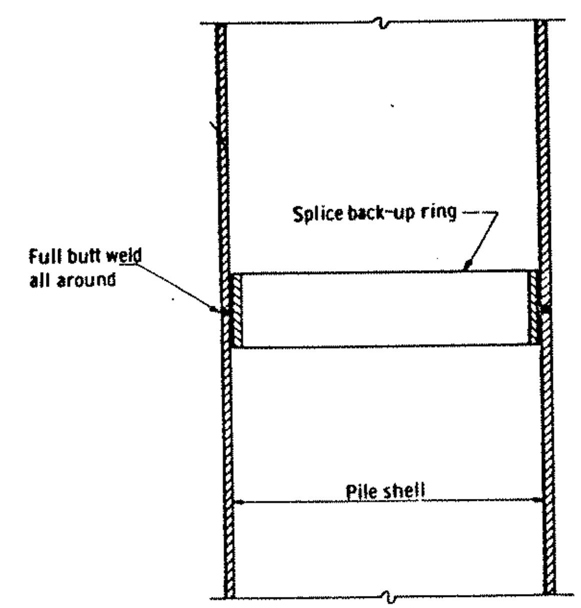
APPROVED: May 1, 1985 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION BRIDGE NAMEPLATE COUNTY BRIDGES	REVISION	DETAIL NO. B103



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

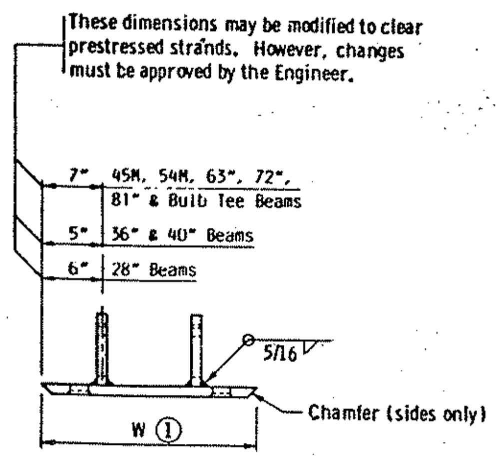
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.

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

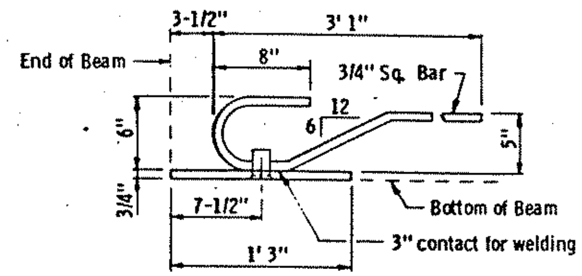
Welding shall not be done when the ambient temperature is lower than 0° F. or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature during welding.

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

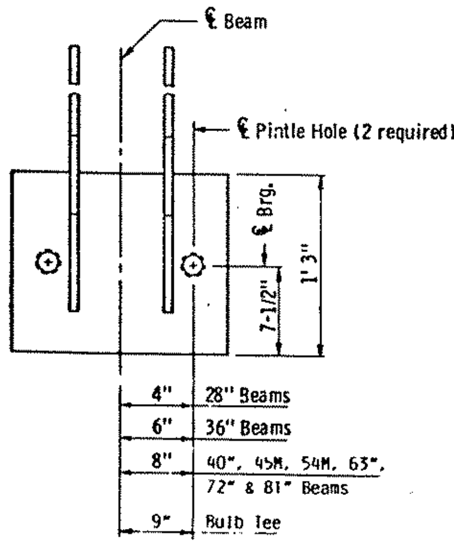
DETAILS C.P. 88-09-116	DRAWN	CHECKED	APPROVED	BRIDGE NO. 02546
	SHEET 308 OF 368 SHEETS			



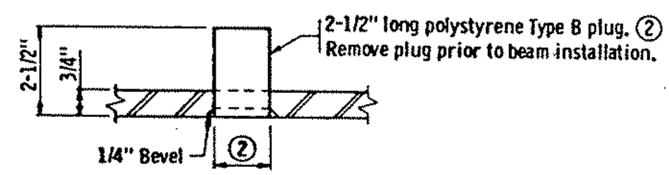
FRONT VIEW



SIDE VIEW



TOP VIEW



PINTLE HOLE DETAIL

NOTES:

Material to be structural steel per Spec. 3306

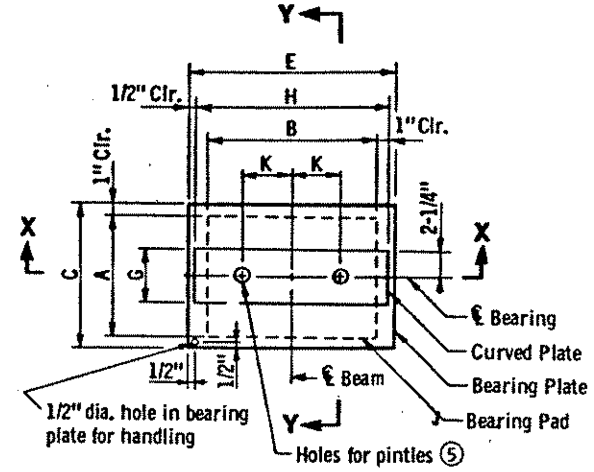
Sole plate for Bearing Assembly to be hot dipped galvanized per Spec. 3394 after fabrication.
Pintle holes shall be free of zinc build up from galvanizing.

Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

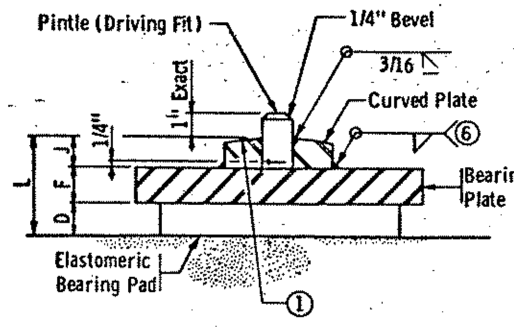
① Dimension "W" to be the width at the bottom flange of the beam minus 1/4".

② 1-1/2" dia. for 1-1/4" dia. pintles.
1-3/4" dia. for 1-1/2" dia. pintles.
Check bearing assemblies for pintle size used.

APPROVED: March 12, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **SOLE PLATE** **PRESTRESSED CONCRETE BEAMS** **(FOR BEARINGS WITH PINTLES)**	REVISION	DETAIL NO. **B303**



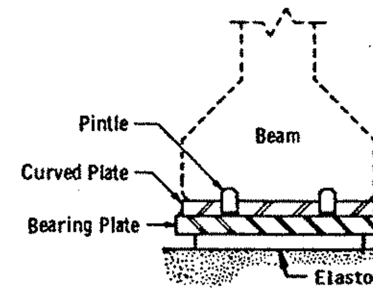
PLAN



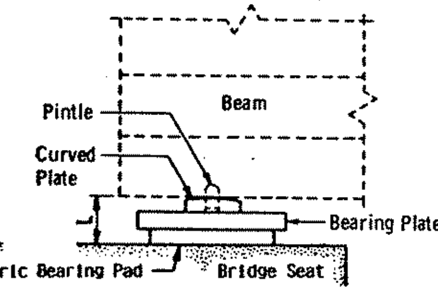
SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)

PINTLE SPACING TABLE

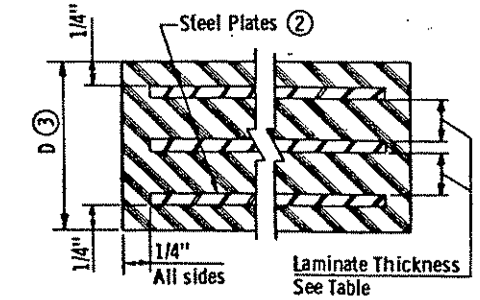
BEAM SIZE	K
28"	4"
36"	6"
40", 45M 54M, 63" 72" & 81	8"
Bulb Tee	9"



SECTION X-X



END ELEVATION



SECTION THRU BEARING PAD

TABLE ④

Beam Size	Bearing Pad Size			Steel Plates		Laminates		Shape Factor	Bearing Plate Size			Curved Plate Size			Pintle Dia.	Pintle Spacing	Assy. Height	Assembly Type
	A	B	D	No.	Thick.	No.	Thick.		C	E	F	G	H	J		K	L	
63"	72"	24"	7 3/8"	8	1/8"	7	1/2"	8.0	14	27	1 1/4"	4 1/2"	26	1 1/4"	1 1/2"	8"	4 3/4"	1

NOTES:

For elastomeric materials & pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates shall comply with Spec. 3306, except as noted.

All plates shall be flat after fabrication and galvanizing. Welding distortion of bearing plates shall be straightened to within 1/16" of flatness by mechanical means without damage to the zinc coating.

Pintles shall comply with Spec. 3314, Type II

Galvanize structural steel bearing assembly after fabrication per Spec. 3394, except as noted.

Payment for bearing assembly shall include all material on this detail.

① The radius of the curved plate shall be 1' 0" min. & 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.

② Do not galvanize these plates.

③ The total thickness shown includes the steel plates.

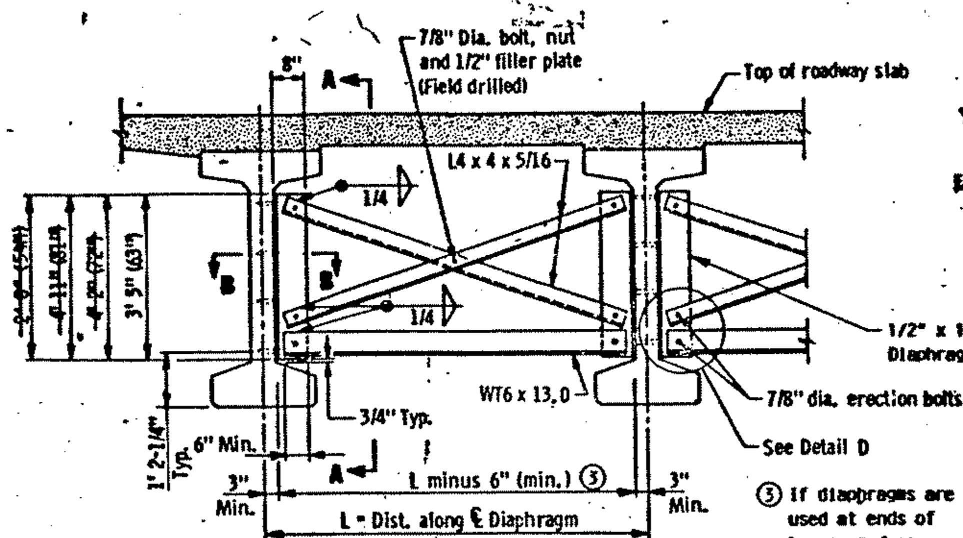
④ See Bridge Design Manual for design requirements.

⑤ 1-1/4" dia. pintle for total loads to 200 Kips.
1-1/2" dia. pintle for total loads over 200 Kips.

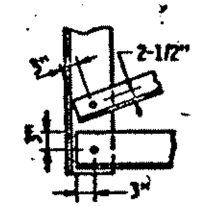
⑥ For sole plate or bearing plate thicknesses up to 1-1/2", use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4", use 3/8" fillet welds; for thicknesses over 2-1/4", use 1/2" fillet welds with minimum preheat of 300°.

APPROVED: Aug 4, 1987 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **CURVED PLATE BEARING ASSEMBLY** **PRESTRESSED CONCRETE BEAMS** **(EXPANSION)**	REVISION	DETAIL NO. **B311**

DETAILS C.R 88-09-116	DRAWN	CHECKED	APPROVED	BRIDGE NO. 02546
	SHEET 318 OF 368 SHEETS			

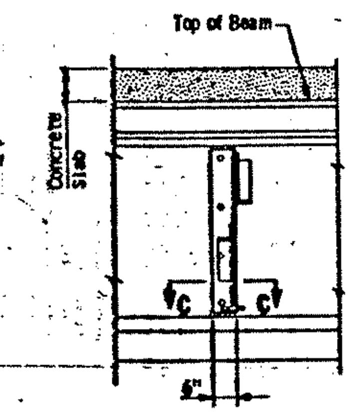


PART TRANSVERSE SECTION
(Square Bridge Shown)

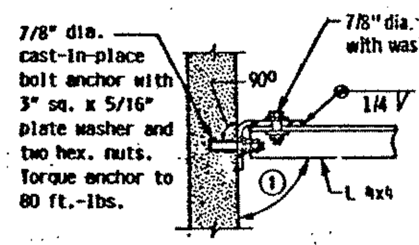


DETAIL D

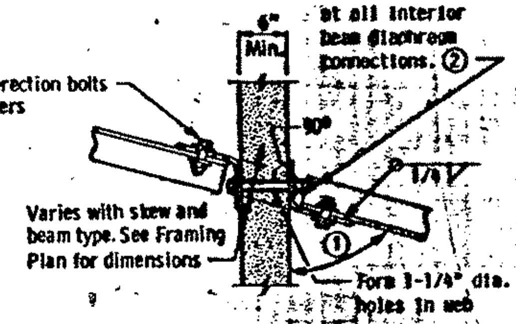
③ If diaphragms are used at ends of beams, reduce length for end blocks accordingly.



SECTION A-A



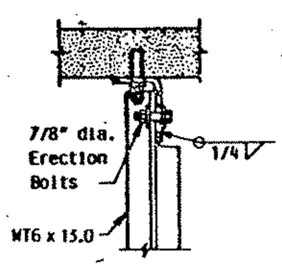
SECTION B-B
Typical Section at all Facia beam connections



TYP. INTERMEDIATE SECTION
Typical Section at Interior Diaphragms

① For skew angles under 20°, use 90° less the skew angle. For skew angles over 20°, use 90°.

② As an alternative to the 7/8" bolt connection, the contractor may submit details and catalogue or performance information of a cast-in-place anchorage to the Engineer for approval.



SECTION C-C
(Facia Beam)

④ Bolt holes shall be spaced so as to miss prestressed strands in concrete beams. See prestressed concrete beam sheets for more information.

GENERAL NOTES:

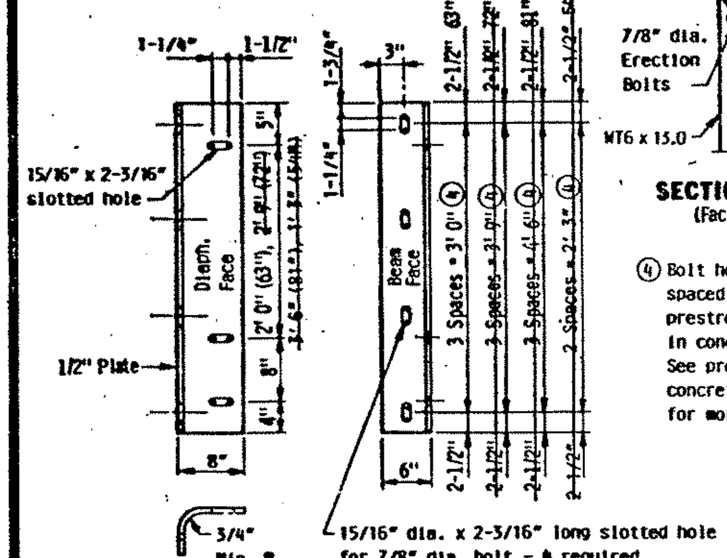
See Spec. 2405.3M for installation.

The leg of the 14" plate shall be shop bent to conform to the diaphragm. A 1/2" x 6" x 6" angle may be used for diaphragms perpendicular to beams.

For bolt lengths greater than 9", use high strength bolts per Spec. SAE Grade 5 or better.

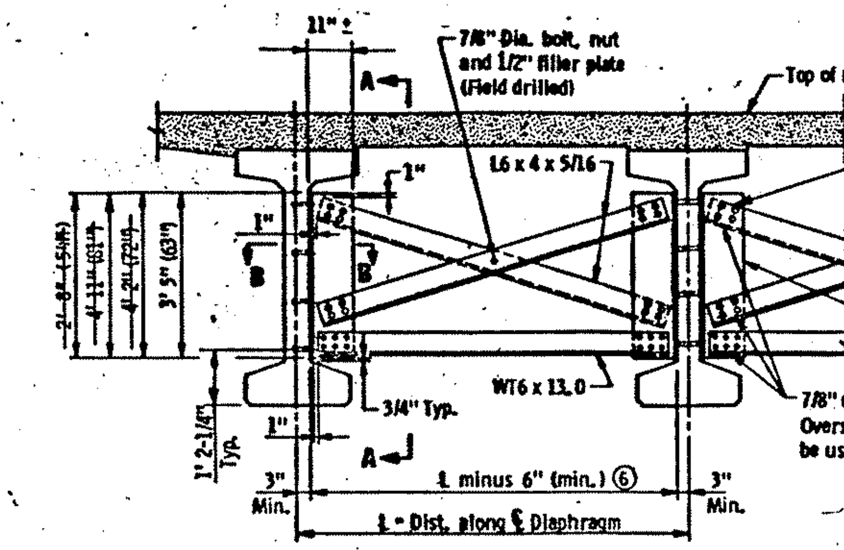
All structural steel shown on this detail, including bolts & washers, shall be included in the payment for diaphragms for prestressed beams.

Diaphragms over the piers are considered to be intermediate if the slab is continuous.



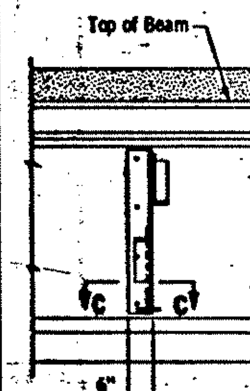
DIAPHRAGM SUPPORT

APPROVED: September 24, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION STEEL INTERMEDIATE WELDED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONC. BEAMS	REVISION	DETAIL NO. B405

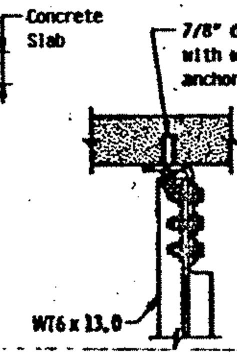


The minimum distance between centers of fasteners for support and angle connections shall be 3" and the minimum end or edge distance shall be 1-1/2".

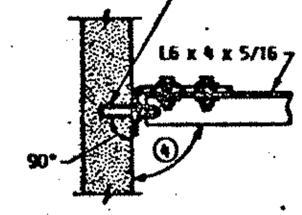
PART TRANSVERSE SECTION
(Square Bridge Shown)



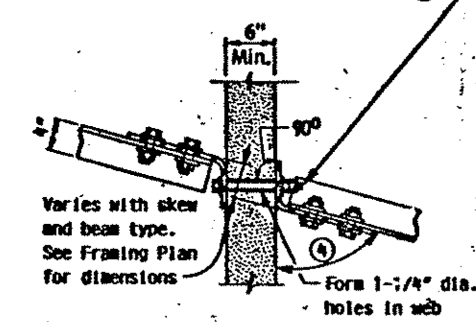
SECTION A-A



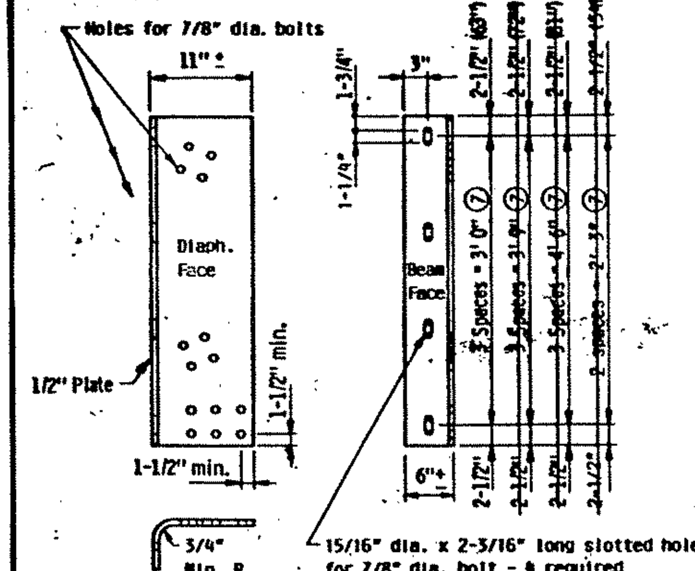
SECTION C-C
(Facia Beam)



SECTION B-B
Typical Section at all facia beam connections



TYP. INTERMEDIATE DIAPHRAGM
Typical Section at Interior Diaphragms



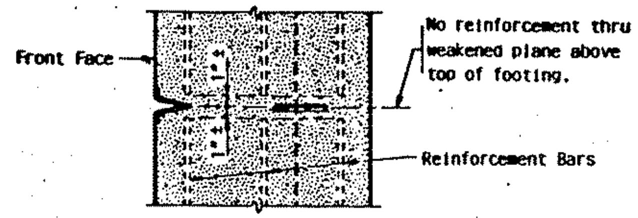
DIAPHRAGM SUPPORT

NOTES:

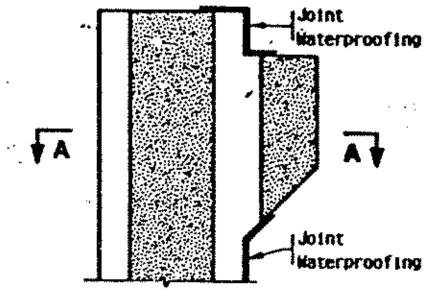
1. All structural steel shown on this detail, including bolts and washers, shall be included in the payment for diaphragms for prestressed beams.
2. Diaphragms over the piers are considered to be intermediate, if the slab is continuous.
3. For bolt lengths greater than 9", use high strength bolts per Spec. SAE Grade 5 or better.
4. ④ For skew angles under 20°, use 90° less the skew angle. For angles over 20°, use 90°.
5. ⑤ As an alternative to the 7/8" bolt connection, the contractor may submit details and catalogue or performance information of a cast-in-place anchorage to the Engineer for approval.
6. ⑥ If diaphragms are used at ends of beams, reduce the length for end blocks accordingly.
7. ⑦ Bolt holes shall be spaced so as to miss prestressed strands in concrete beams. See prestressed concrete beam sheets for more information.
8. See Spec. 2405.3M for installation.

APPROVED: September 24, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION STEEL INTERMEDIATE BOLTED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONC. BEAMS	REVISION	DETAIL NO. B406

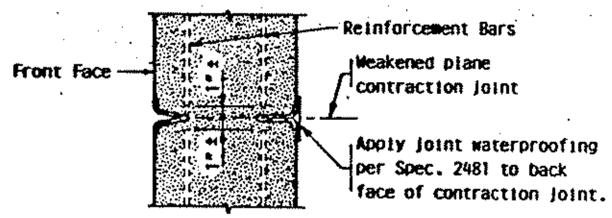
DETAILS CR 88-09-116	DRAWN	CHECKED	APPROVED	BRIDGE NO. 02546
	SHEET 32 OF 36 SHEETS			



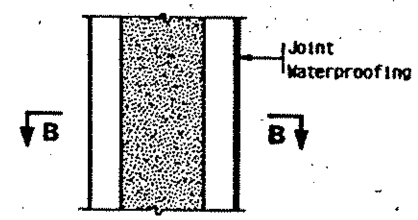
SECTION A-A



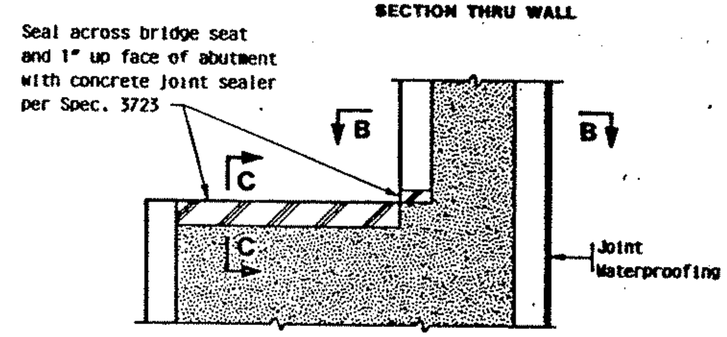
SECTION THRU PAVING BRACKET

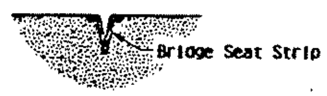


SECTION B-B



SECTION THRU WALL

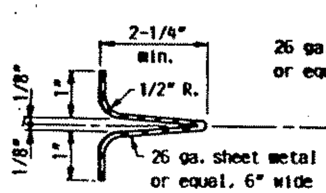




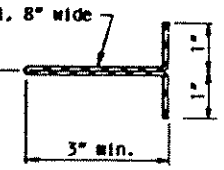
SECTION C-C

SECTION THRU BRIDGE SEAT

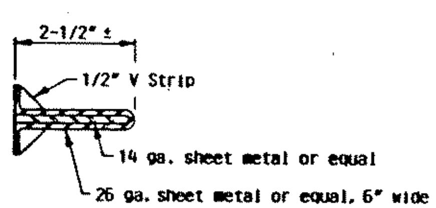
PART SECTION THRU ABUTMENT AT JOINT



BRIDGE SEAT and FRONT STRIP



BACK STRIP



ALTERNATE BRIDGE SEAT and FRONT STRIP

NOTES:

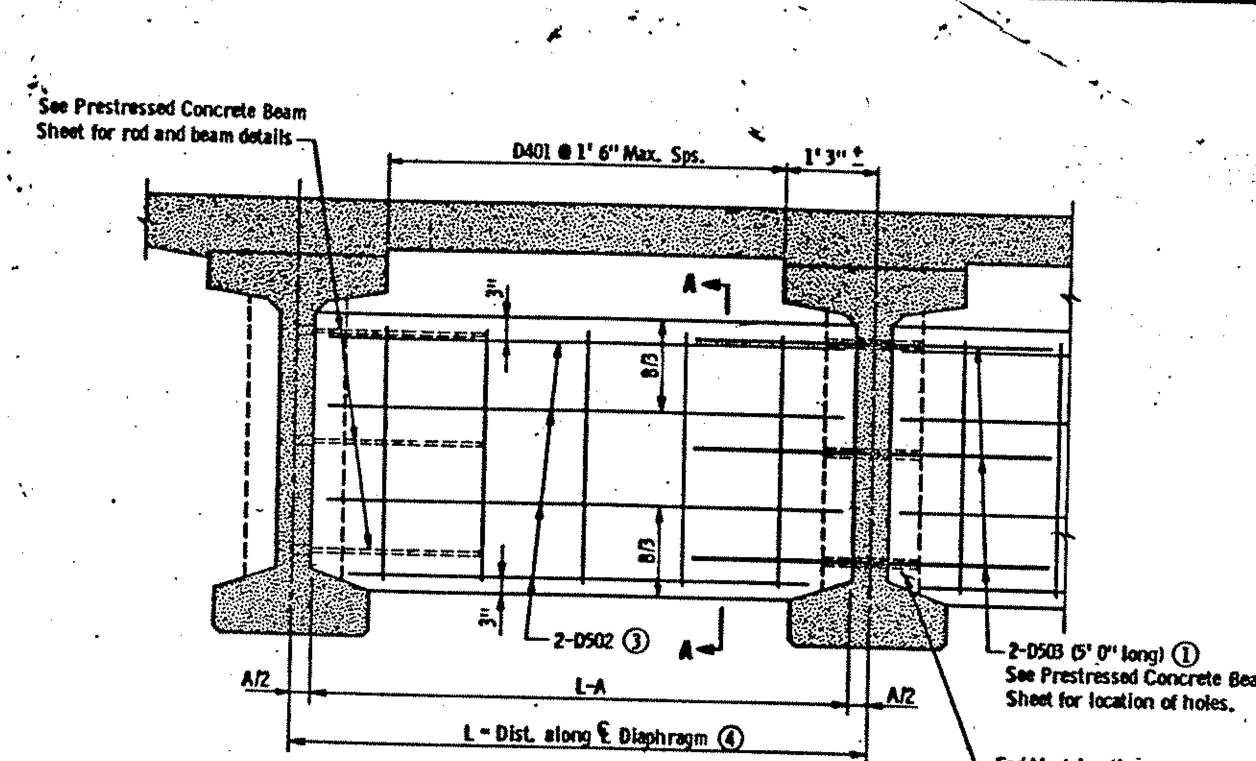
The methods and materials indicated on this sheet shall be considered as suggested only. Variations will be permitted, subject to approval by the Engineer, but must provide dummy joints of a depth not less than the depth shown, and a width at the front face of the abutment of not greater than 5/16". The separation of the horizontal reinforcement bars shall be not less than 1-1/2" nor more than 3", centered as shown, regardless of the procedure used for forming the dummy joint.

If the front and bridge seat strips are galvanized metal, they shall be securely fastened to the forms so that they will be removed with the forms. If a suitable plastic or other durable material, satisfactory to the Engineer, is used, the material may be left in place.

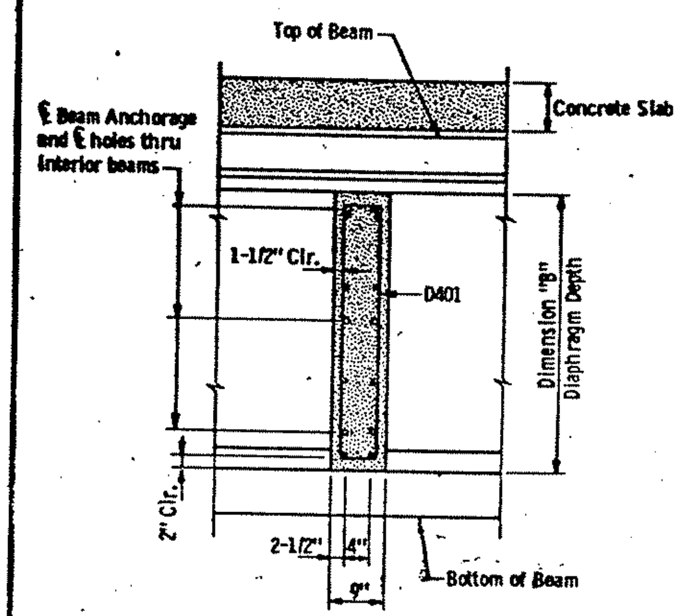
The back strip may be galvanized metal, a suitable plastic, or other durable material satisfactory to the Engineer. The back strip shall remain in place after the forms are removed.

The cost of forming the joint shall be included in the price bid for other items.

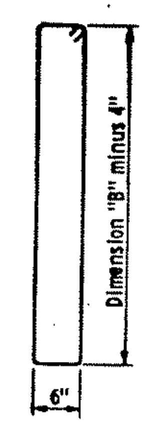
APPROVED: February 20, 1987 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONTRACTION JOINT	REVISION	DETAIL NO. B801



PART TRANSVERSE SECTION



SECTION A-A



D401

Beam Height	Dim. "A" for comp. volume	Diaph. Dim. "B"	Bar D401 Length
63"	6-3/4"	3' 10"	8' 9"
~~72"~~	~~6-5/8"~~	~~4' 7"~~	~~10' 3"~~
~~81"~~	~~6-1/2"~~	~~5' 4"~~	~~11' 9"~~

Concrete Volume Per Diaphragm

$$\frac{(L-A)\times B\times 0.75}{27} = \text{Cubic Yards}$$

	BAR	LENGTH	SHAPE	LOCATION
	D401	8'-9"	Bent	Diaph. Vert.
⑤	D502	VARIES	Str.	Diaph. Horz.
	D503	5'-0"	Str.	Diaph. Horz.

⑤ SEE FRAMING PLAN

GENERAL NOTES

① For Diaphragms 20° and over, use threaded rods as shown on standard prestressed concrete beam sheet.

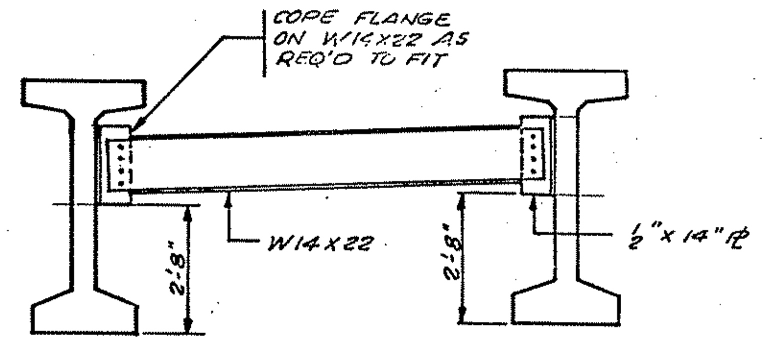
② All diaphragm concrete and reinforcement bars shown on this detail to be included in payment for diaphragms for prestressed beams. Threaded rods are included in payment for prestressed concrete beams.

③ Reduce length of horizontal reinforcement as necessary at end block locations.

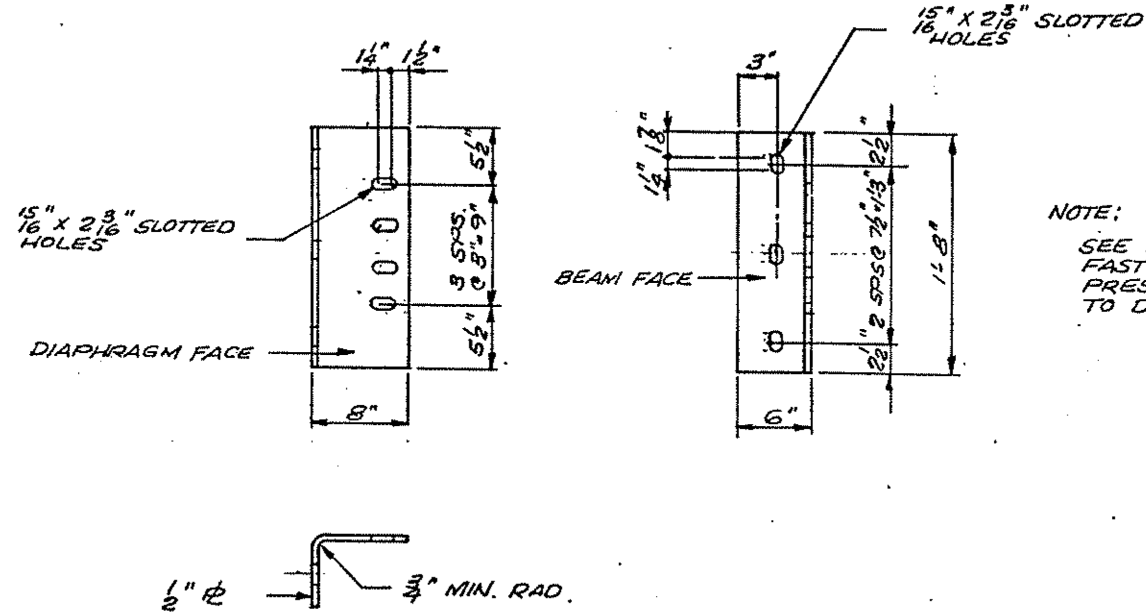
④ Payment length for diaphragms.

APPROVED: Sept. 28, 1977 Developed by: BRIDGE STANDARDS AND THE BRIDGES & STRUCTURES SECTION Issued by: RESEARCH & STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONCRETE INTERMEDIATE DIAPHRAGM (FOR 63"-81" PRESTRESSED CONCRETE BEAM SPANS)	REVISION Jan. 23, 1980	DETAIL NO. B806

DETAILS C.P. 88-09-116	DRAWN	CHECKED	APPROVED	BRIDGE NO. 02546
	SHEET 33B OF 303 SHEETS			

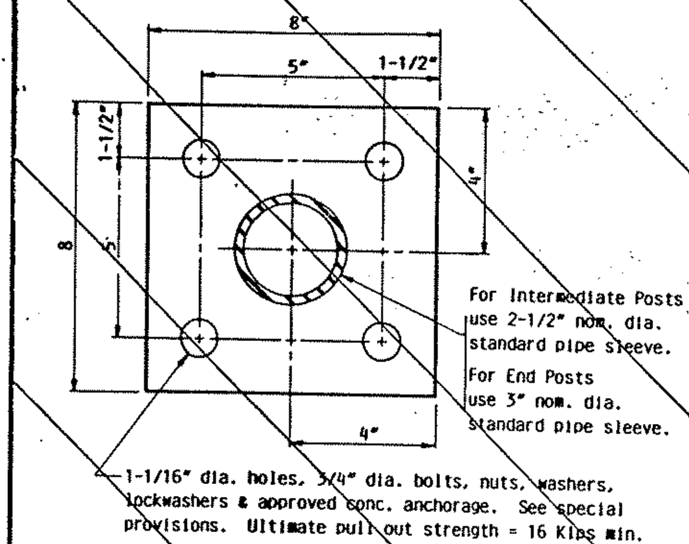


DIAPHRAGMS AT FACIA BAYS



DIAPHRAGM SUPPORT

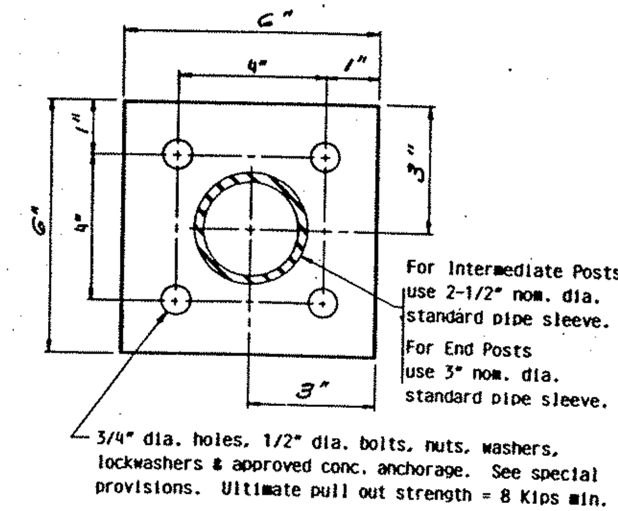
NOTE:
SEE DETAIL B406 FOR FASTENING BENT ℄ TO PRESTRESSED BEAMS & TO DIAPHRAGMS.



PLAN VIEW

TYPE A

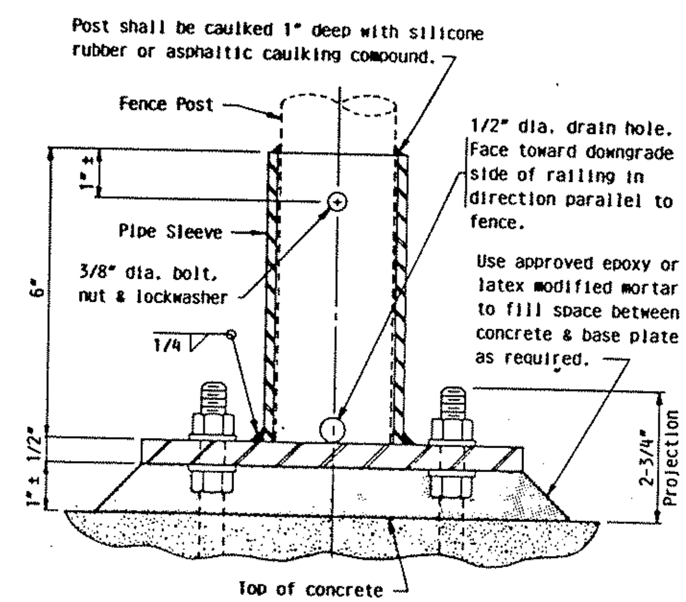
Estimated Weight = 11 or 12 lbs.



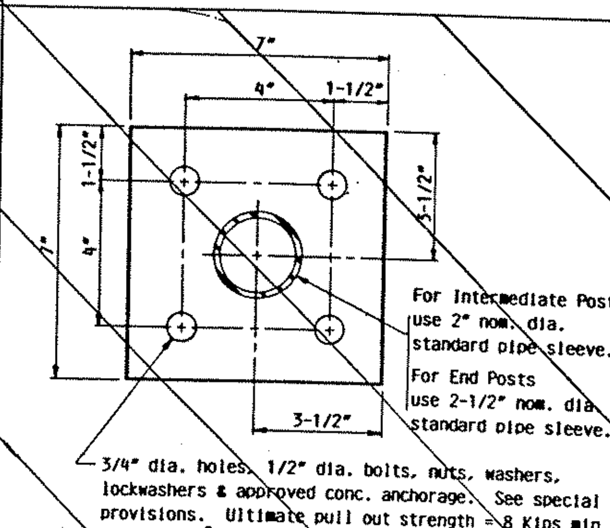
PLAN VIEW

TYPE B

Estimated Weight = 8 or 9 lbs.



TYPICAL SECTION



PLAN VIEW

TYPE C

Estimated Weight = 9 or 10 lbs.

NOTES:

Structural Steel per Spec. 3306
Structural Pipe per Spec. 3362

Galvanize the fence post anchorage after fabrication per Spec. 3394. Galvanize the fasteners per Spec. 3392

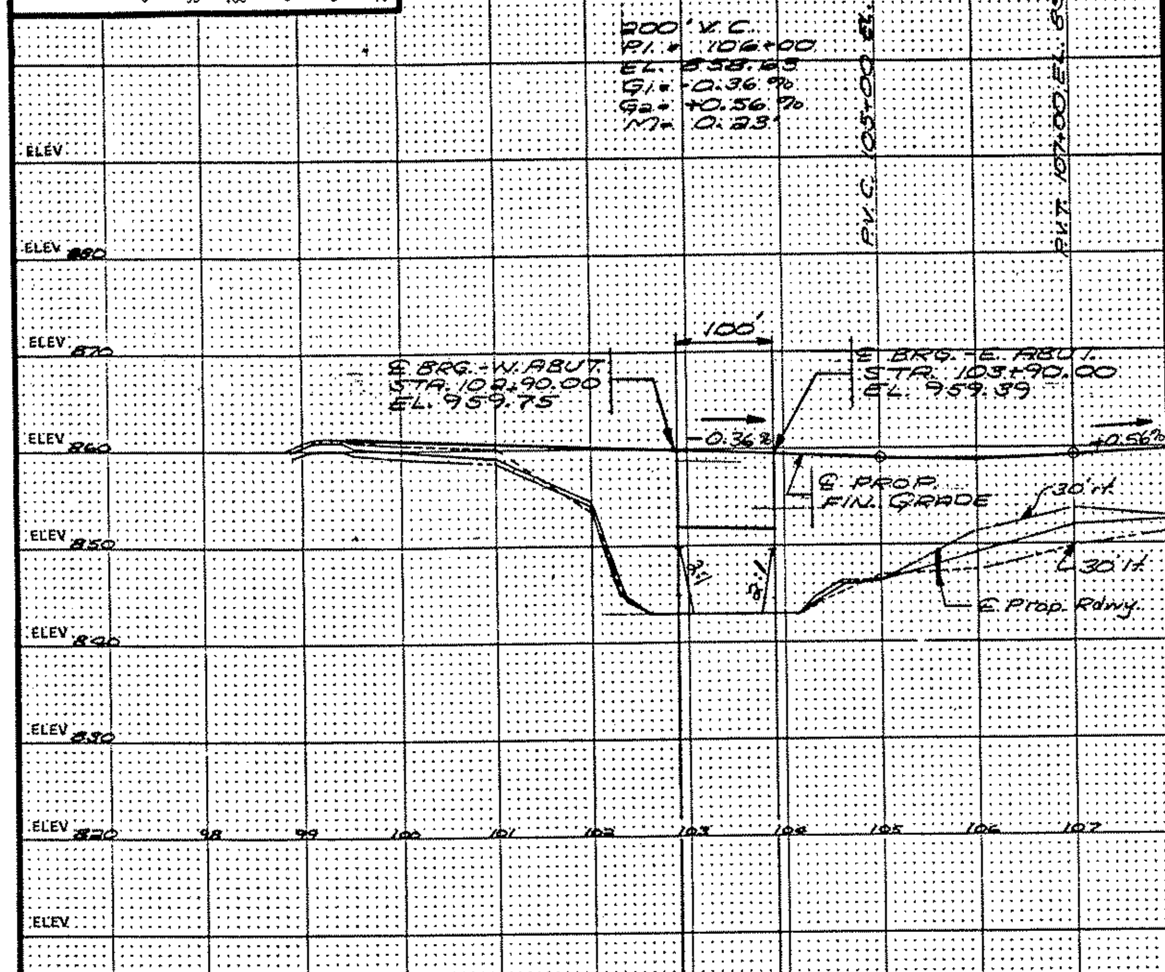
STANDARD PIPE WEIGHTS:
2" nom. dia. = 3.65 lbs./ft.
2-1/2" nom. dia. = 5.79 lbs./ft.
3" nom. dia. = 7.58 lbs./ft.

APPROVED: Nov. 26, 1985 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **FENCE POST ANCHORAGE**	REVISION	DETAIL NO. **B905**

DETAILS C.P. 88-09-116	DRAWN	CHECKED	APPROVED	BRIDGE NO. 02546
	SHEET 348 OF 368 SHEETS			

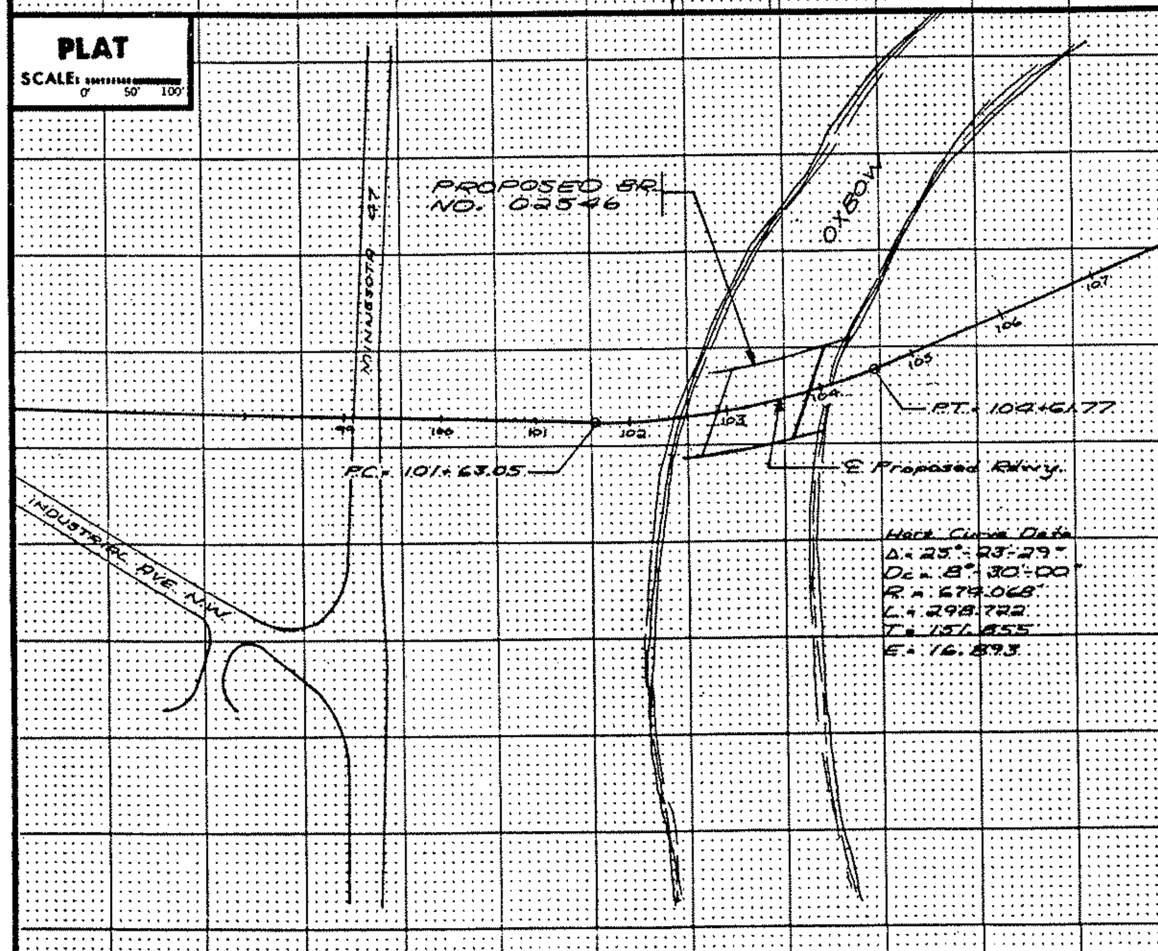
CONTRACTED PROFILE

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



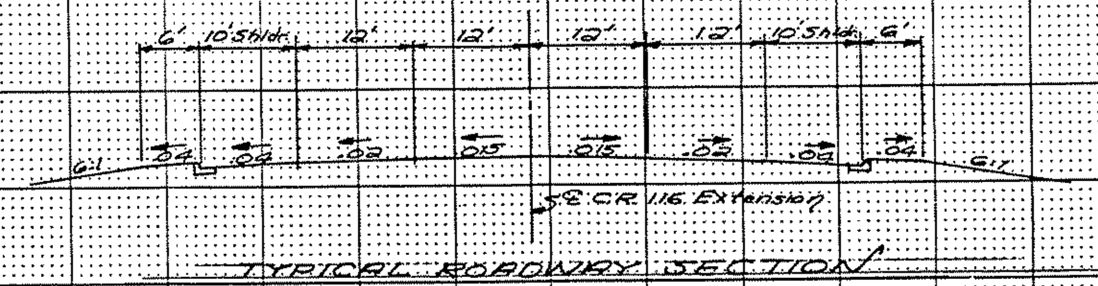
PLAT

SCALE: 0' 50' 100'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



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 RUM RIVER

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 ....

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

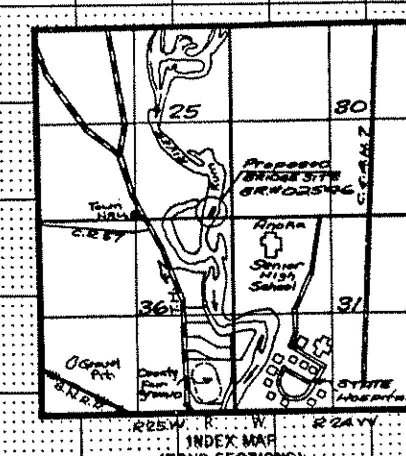
DATE ....

100' PRESTRESSED BEAM SPAN
48' ROADWAY, 2-10'-0" SHOULDERS,
2-6'-0" SIDEWALKS
30° SKEW
8°-30'-00" CURVE

Bridge survey sheets made from: SURVEY NOTES FROM SURVEY DONE BY ERICKSON ENGINEERING

Bench mark elevation 873.23 (M.S.L. 1929 Adj.)

Location: S.E. COR. SIDEWALK @ S.E. COR. ICE ARENA



MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT .... ON C.R. 116 (Ext.) (T.H., C.S.A.H., C.R. etc.)

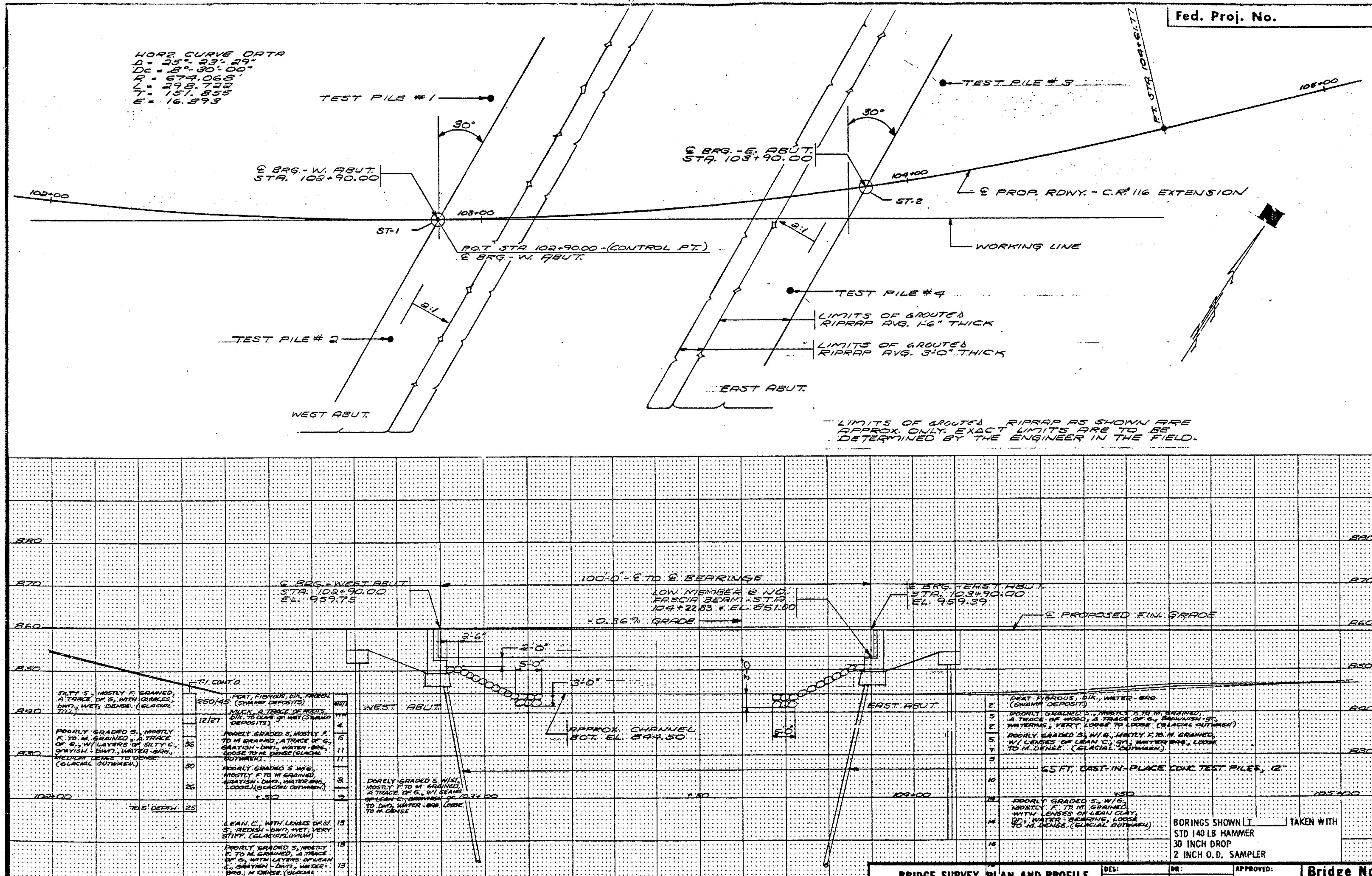
PROPOSED BRIDGE LOCATED ON C.R. EXTENSION From C.R. 47 in Ramsey to C.S.A.H. 7 in Anoka.

SEC. 25 TWP. 32N R. 25W

TOWNSHIP RAMSEY COUNTY ANOKA

BRIDGE NO. 02546

Area No. **Job No.** **State Proj. No.** C.P. 88-09-116 **Sheet No.** 358 **of** 368 **Sheets**

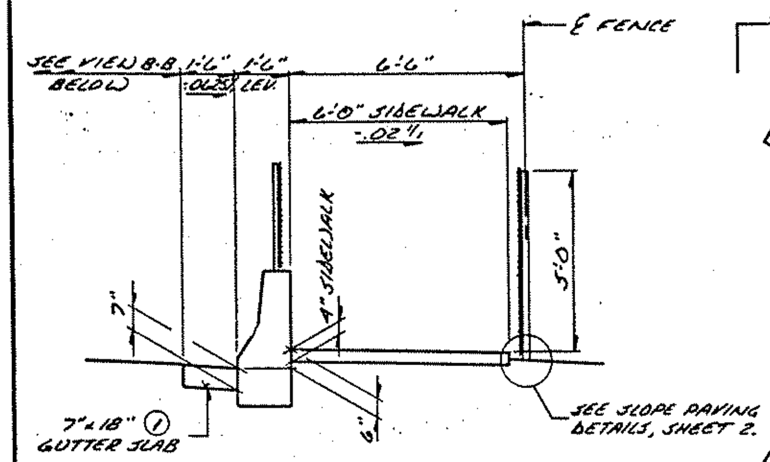


Fed. Proj. No.

BORINGS SHOWN [T] TAKEN WITH
STD 140 LB HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER

C.P. 88-09-116

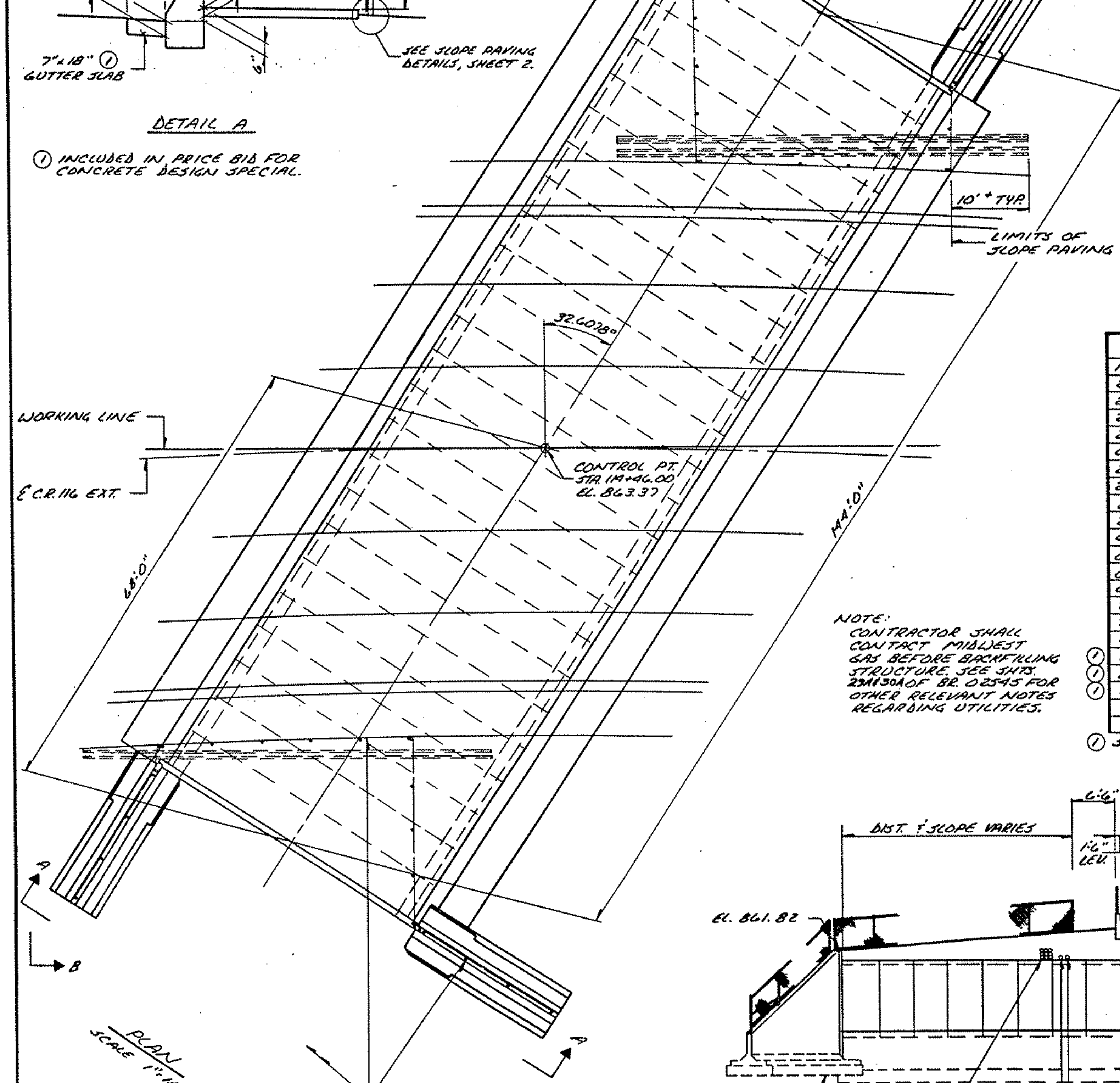
BRIDGE SURVEY PLAN AND PROFILE	DES:	DR:	APPROVED:	Bridge No.
	CHK:	CHK:		02546
State Proj. No. SF2	Sheet No. 36B of 36B Sheets			



DETAIL A

① INCLUDED IN PRICE BID FOR CONCRETE DESIGN SPECIAL.

B.M. EL. 873.23
S.E. COR. SIDEWALK @
S.E. COR. OF ICE ARENA.



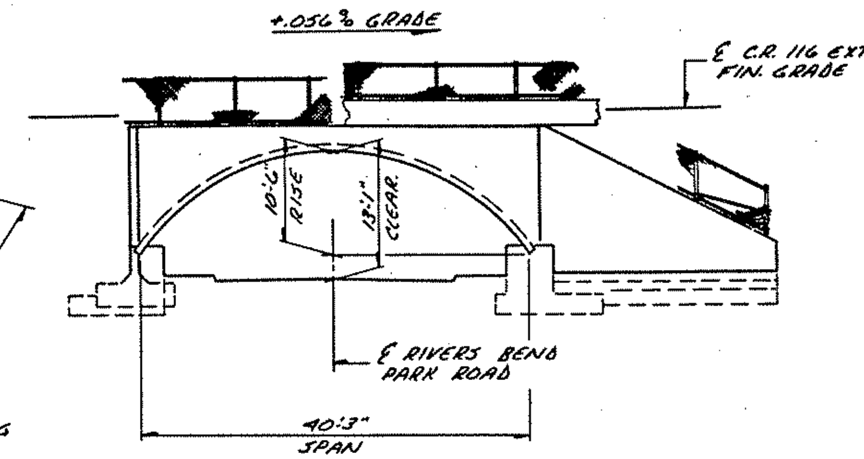
PLAN
SCALE 1"=10'-0"

NOTE:
WIRE FENCE DES. 60-9322 FOLLOWS LIMITS OF SLOPE PAVING. POSTS ARE SHOWN ON PLAN.

NOTE:
CONTRACTOR SHALL CONTACT MIDWEST GAS BEFORE BACKFILLING STRUCTURE. SEE SHTS. 29,&30 OF BR. 02545 FOR OTHER RELEVANT NOTES REGARDING UTILITIES.

THE FOLLOWING STANDARD PLATES APPROVED BY THE F.H.W.A., SHALL APPLY ON THIS PROJECT:

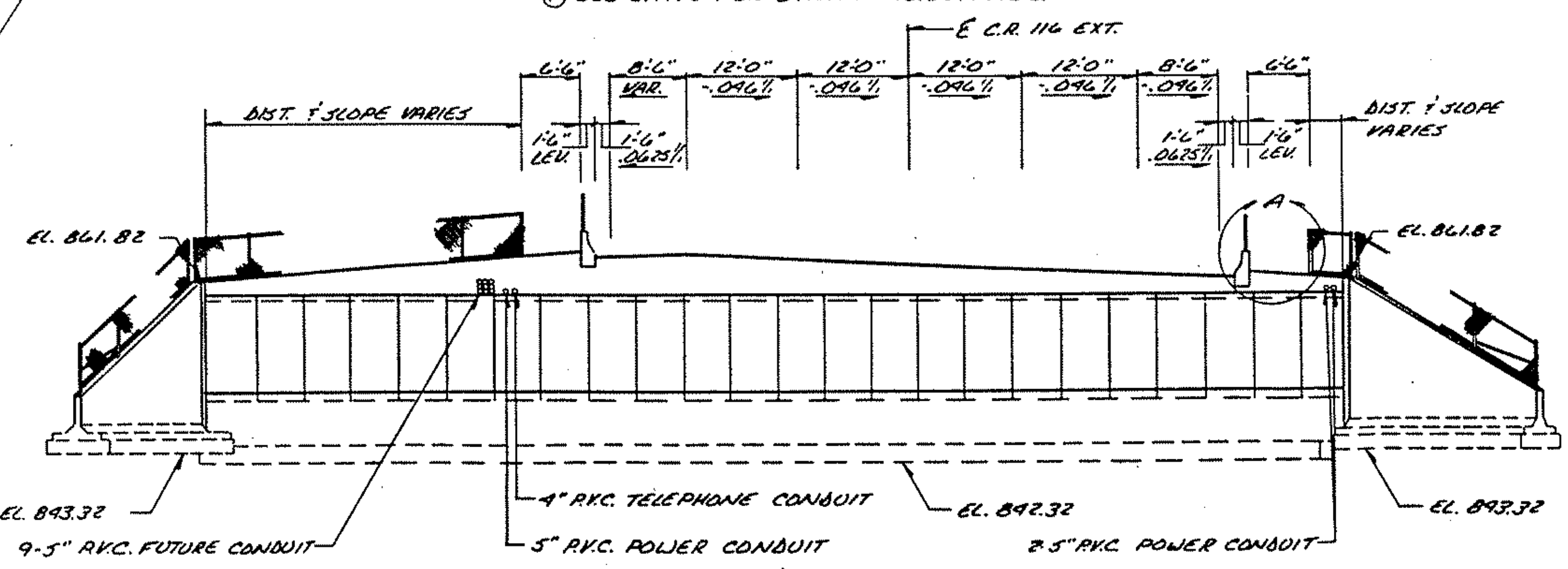
STANDARD PLATES	
PLATE NO.	DESCRIPTION
0005A	SPEC. REFERENCE TO STANDARD PLATES
7035J	CONCRETE WALK
9322I	CHAIN LINK FENCE



VIEW A-A

SCHEDULE OF ESTIMATED QUANTITIES			
ITEM NO.	ITEM	QUANT.	UNIT
2401.501	STRUCTURE CONCRETE (3Y43) 199	~~306~~(P)	CU. YD.
2401.501	STRUCTURE CONCRETE (1A43) 306	~~199~~(P)	CU. YD.
2401.541	REINFORCEMENT BARS	39,950(P)	POUND
2401.515	SIDEWALK CONCRETE (3X46)	680	SQ. FT.
0401.601	STRUCTURE EXCAVATION	1	L. SUM
2451.507	GRANULAR BEDDING (C.V.)	320(P)	CU. YD.
2514.501	CONCRETE SLOPE PAVING	150	SQ. YD.
2559.501	TRAFFIC BARRIER DESIGN SPECIAL	471	LIN. FT.
2557.501	WIRE FENCE DESIGN 60-9322	150	LIN. FT.
0501.603	PRECAST REINF. CONC. ARCH	144(P)	LIN. FT.
0501.606	PRECAST HEADWALLS	2 (P)	EACH
0501.606	PRECAST WINGWALLS END SECTIONS	4 (P)	EACH
0531.603	CONCRETE DESIGN SPECIAL	471	LIN. FT.
2557.501	WIRE FENCE, DESIGN S-1	471	LIN. FT.
2402.590	ELASTOMERIC BEARING PAD TYPE I	50	EACH
2451.503	GRANULAR BACKFILL (C.V.)	6375 (P)	CU. YD.
① 2545.509	CONDUIT SYSTEM (TELEPHONE)	1	L. SUM
① 2545.509	CONDUIT SYSTEM (POWER)	1	L. SUM
① 2545.509	CONDUIT SYSTEM (FUTURE UTILITIES)	1	L. SUM

① SEE SHT. 3 FOR UTILITY QUANTITIES.



VIEW B-B

DESIGN DATA

1983 A.A.S.H.T.O. AND INTERIM SPECIFICATIONS.

INSIDE HEIGHT (RISE) 13.1 FT.
INSIDE WIDTH (SPAN) 36.75 FT.
ARCH LENGTH 144.0 FT.
SKEW ANGLE 32.6078 DEG.
MAX. DEPTH OF FILL
UNIT WEIGHT FILL 120 pcf
ANGLE INTERNAL FRICTION 30 DEG.
Fy = 60,000 P.S.I. REINFORCEMENT
Fc = 5000 P.S.I. PRECAST CONC. ELEMENT
Fc = 4000 P.S.I. C.I.P. CONC.

LIST OF SHEETS	
NO.	DESCRIPTION
1	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT & SLOPE PAVING DET.
3-4	ABUTMENT & FOOTING DET.
5	PRECAST CONC. ARCH DET.
6	PRECAST CONC. HEADWALL DET.
7	PRECAST CONC. WINGWALL DET.
8	EXCAVATIONS, BACKFILL & BARRIER DET.
9	SURVEY SHEET
10	SURVEY SHEET — PLAN & PROFILE

CONSTRUCTION NOTES

THE 1988 EDITION OF THE MINNESOTA DEP'T. OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS CONFORMING TO ASTM A615, GRADE 60, OR STEEL FABRIC ASTM 185 GRADE 65 MAY BE USED.

ALL REINFORCEMENT TO HAVE A MINIMUM COVER OF 1½" UNLESS OTHERWISE NOTED.

ALL EXPOSED CONCRETE EDGES SHALL BE FORMED W/ ½" OR ¾" VEE UNLESS NOTED.

CONSTRUCTION TO BE IN ACCORDANCE WITH SPEC. 2411, EXCEPT AS NOTED.

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE BAR SIZE.

APPROVED: Paul K. Ruud
ANOKA COUNTY ENGINEER
DATE:

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

Brian D. Walter
REG. NO. 13896
DATE: 9/25/89

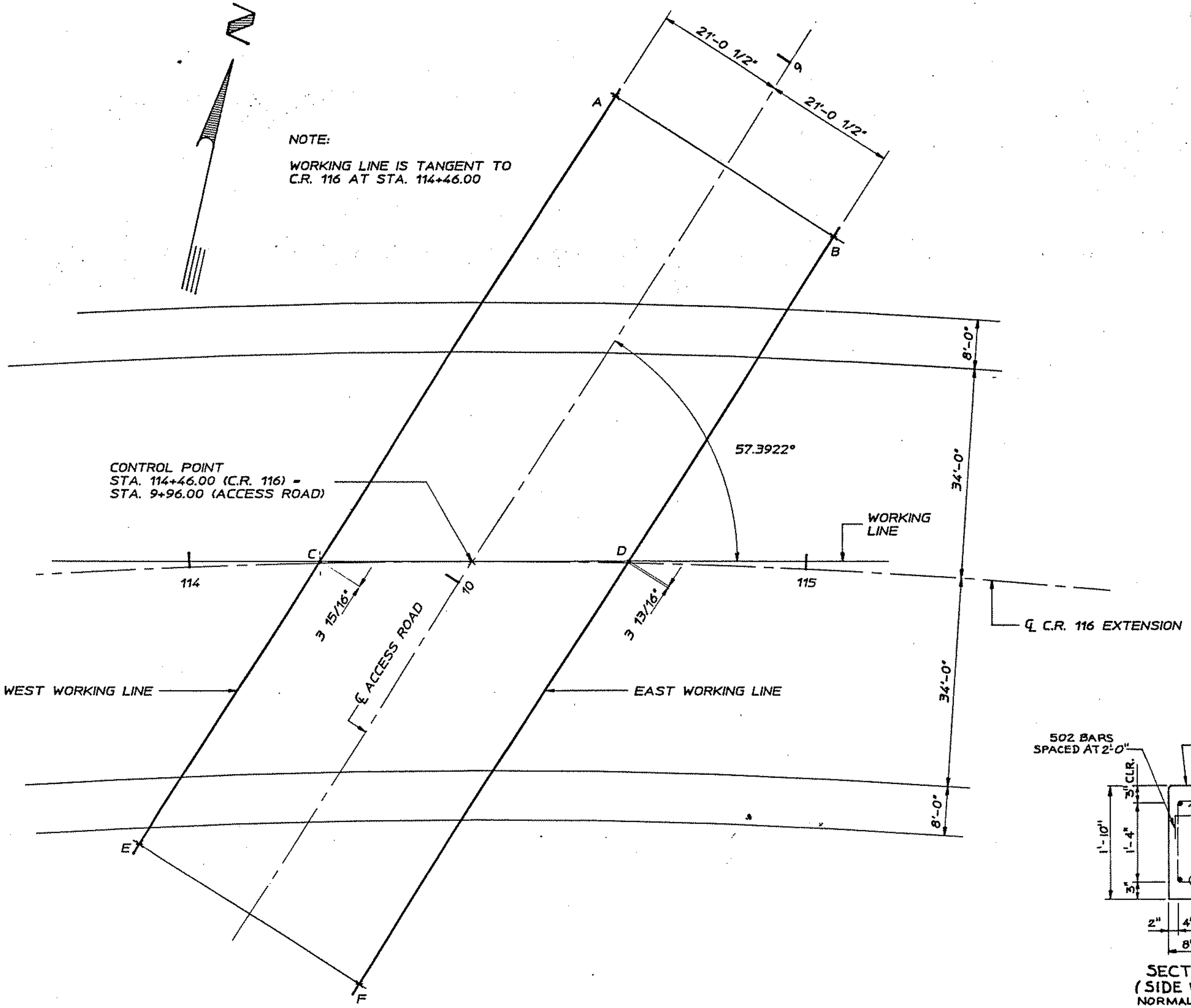
PLANS PREPARED BY:
ERICKSON ENGINEERING
3340 REPUBLIC AVE.
ST. LOUIS PARK, MN. 55426

C.R. 116 EXTENSION
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 96834
C.R. 116 EXTENSION FROM C.R. 47 IN RAMSEY TO C.S.A.H. 7 IN ANOKA OVER RIVERS BEND PARK ROAD.

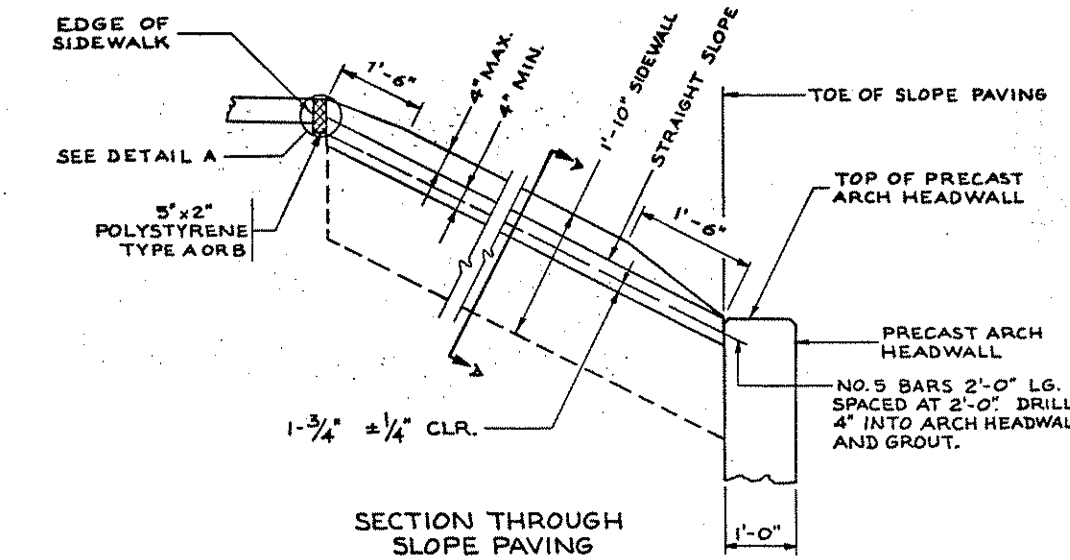
GENERAL PLAN & ELEVATION
SEC. 25 TWP. 32 N. R. 25 W
RAMSEY TWP. ANOKA COUNTY

SHEET 1C OF 10C SHEETS	96834	DM
C.P. 88-09-116		BDW

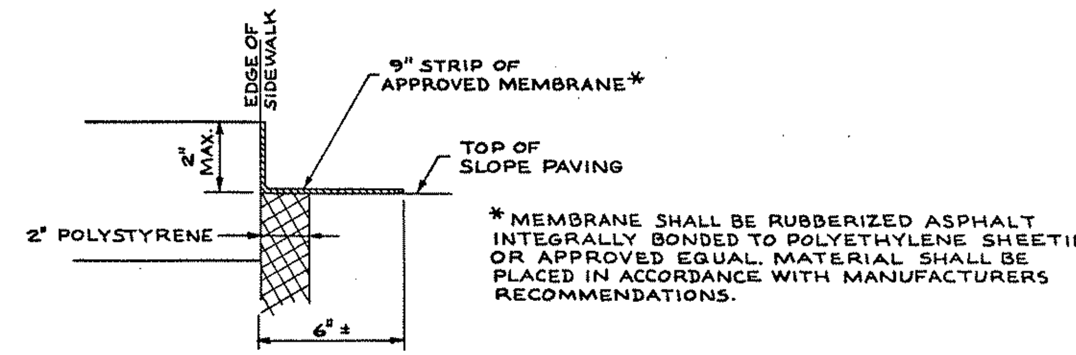


LAYOUT SHOWING WORKING POINTS

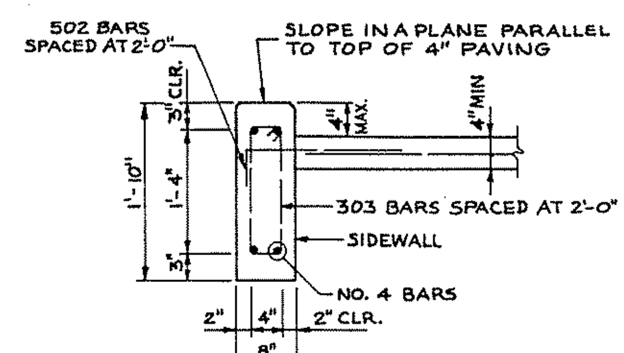
SCALE: 1"=10'-0"



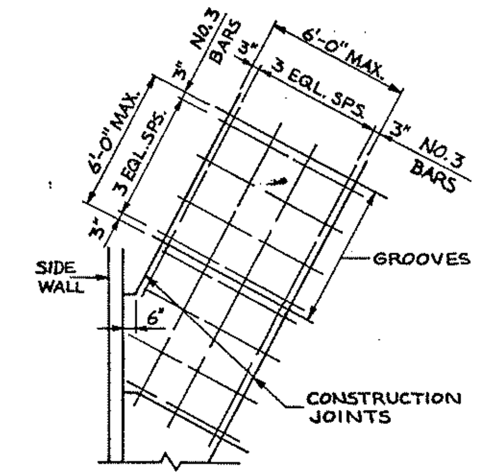
SECTION THROUGH SLOPE PAVING



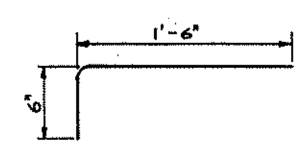
DETAIL A



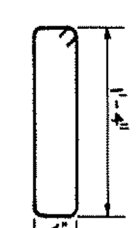
SECTION A-A
(SIDE WALL)
NORMAL TO SLOPE



PAVING DETAIL



502



303

NOTES:
FOR LIMITS OF SLOPE PAVING SEE PG. 8.

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	A	B	C	D	E	F
A	114+67.79		42.09	89.46	75.38		150.02
B	115+02.06			98.87	62.54	150.02	
C	114+21.02				49.96	54.54	68.89
D	114+70.98					91.69	81.46
E	113+89.40						42.09
F	114+25.88						

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 96834

BRIDGE LAYOUT
& SLOPE PAVING DETAILS

APPROVED:

C.P. 88-09-116	96834	RMT
SHEET 2C OF 10C SHEETS		BDW

QUANTITIES FOR FUTURE UTILITY SYSTEM		① ④
5"ø PVC CONDUIT	540 L.F.	
END CAPS 5"ø PVC	18 EACH	

QUANTITIES FOR TELEPHONE CONDUIT SYSTEM		② ④
4" PVC CONDUIT	60 L.F.	
END CAPS 4"ø PVC	2 EACH	

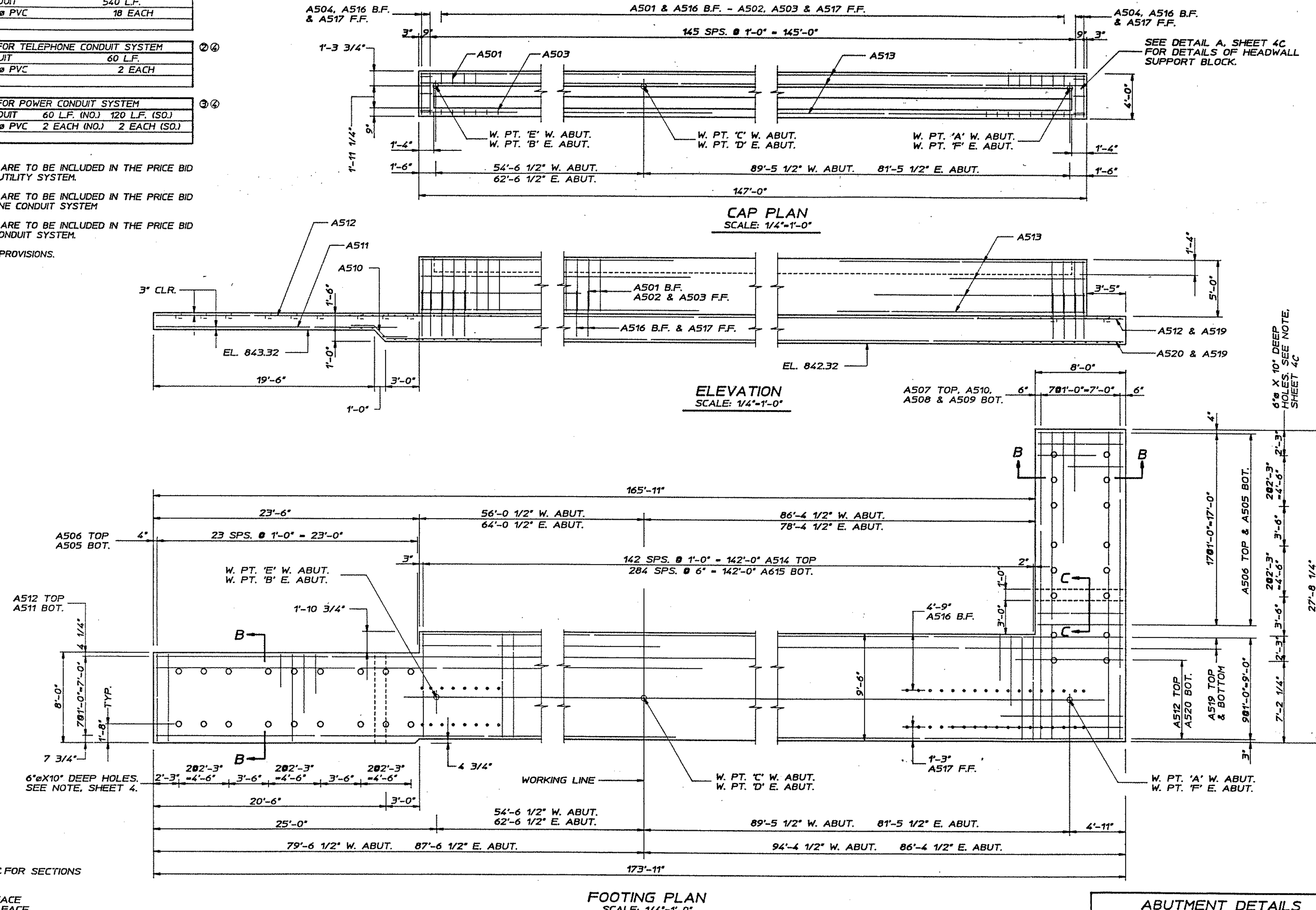
QUANTITIES FOR POWER CONDUIT SYSTEM			③ ④
5"ø PVC CONDUIT	60 L.F. (NO.)	120 L.F. (SO.)	
END CAPS 5"ø PVC	2 EACH (NO.)	2 EACH (SO.)	

① ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR FUTURE UTILITY SYSTEM.

② ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR TELEPHONE CONDUIT SYSTEM

③ ITEMS LISTED ARE TO BE INCLUDED IN THE PRICE BID FOR POWER CONDUIT SYSTEM.

④ SEE SPECIAL PROVISIONS.

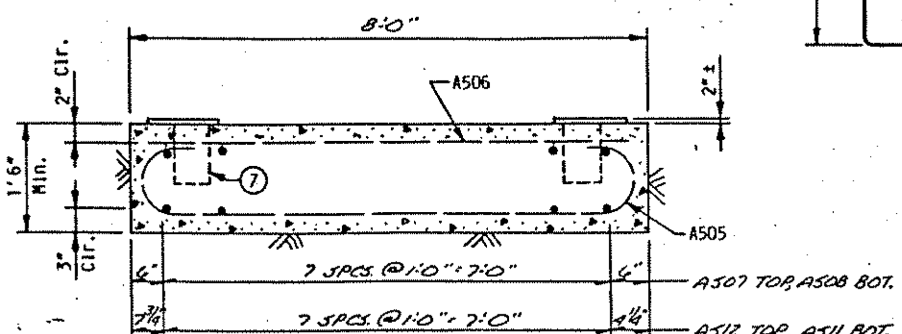


NOTE:

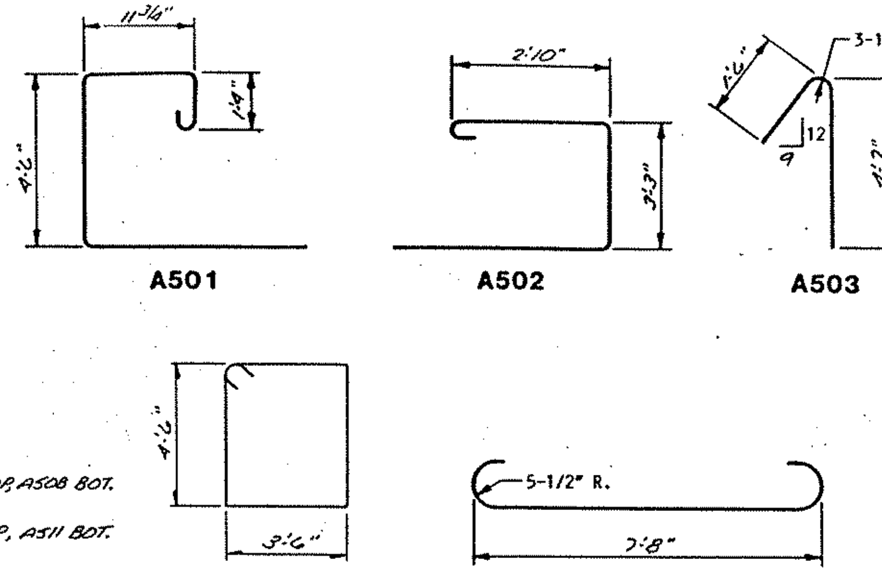
SEE SHEET 4C FOR SECTIONS B-B AND C-C.

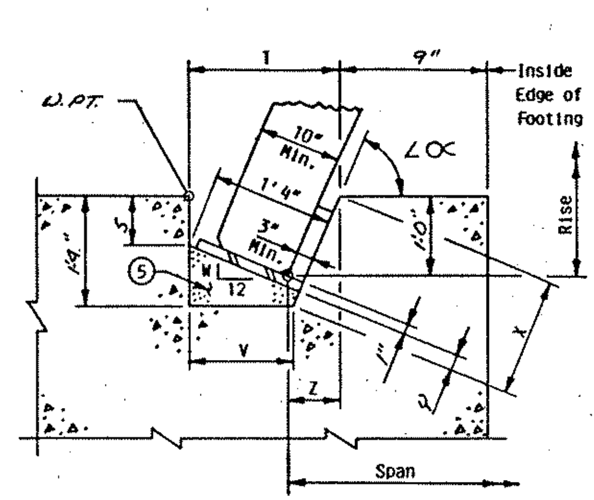
B.F. = BACK FACE
F.F. = FRONT FACE

ABUTMENT DETAILS		
C.P. 88-09-116	96834	RMT
SHEET 3C OF 10C SHEETS		BDW



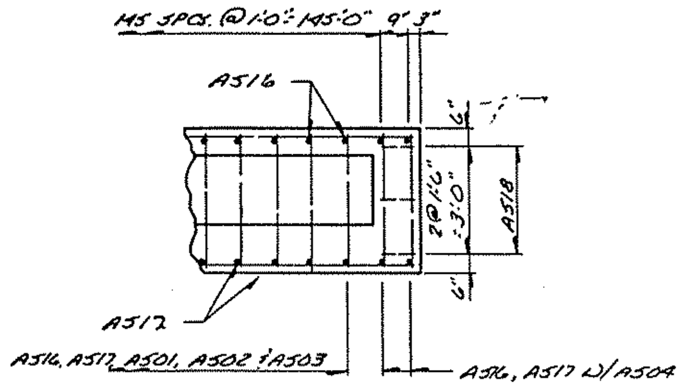
SECTION B-B



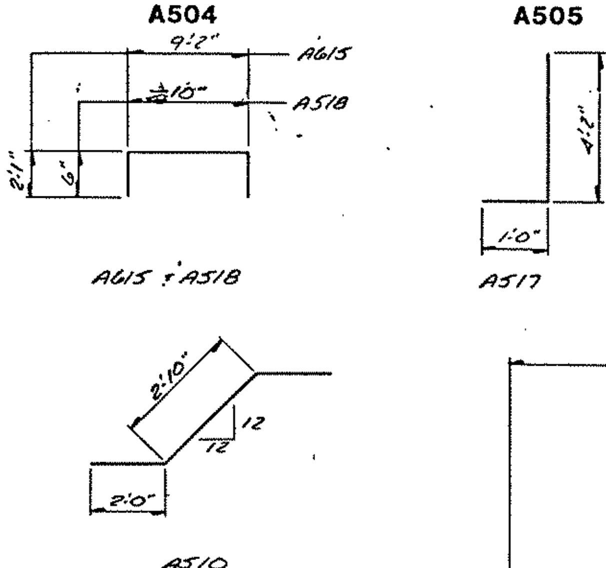


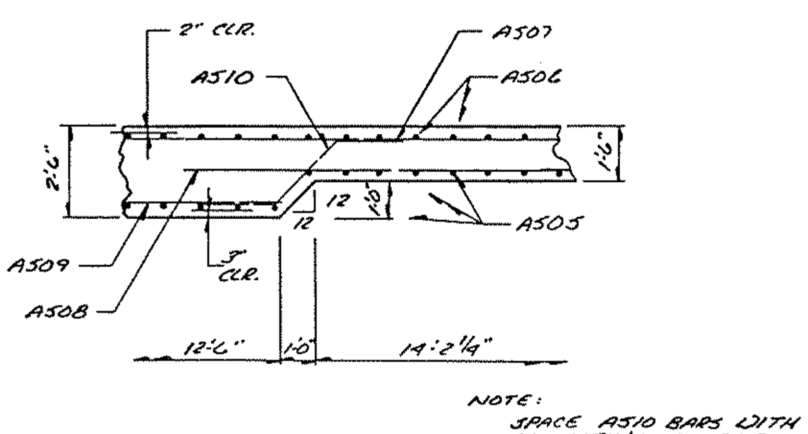
ARCH NOTCH DETAIL

SPAN	∠α Deg.	S	T	V	W	X	Y	Z
40'-2 9/16"	55.15	5 3/8"	1'-11 1/4"	1'-0 1/8"	8.356	1'-5 11/16"	1 13/16"	1'-0"

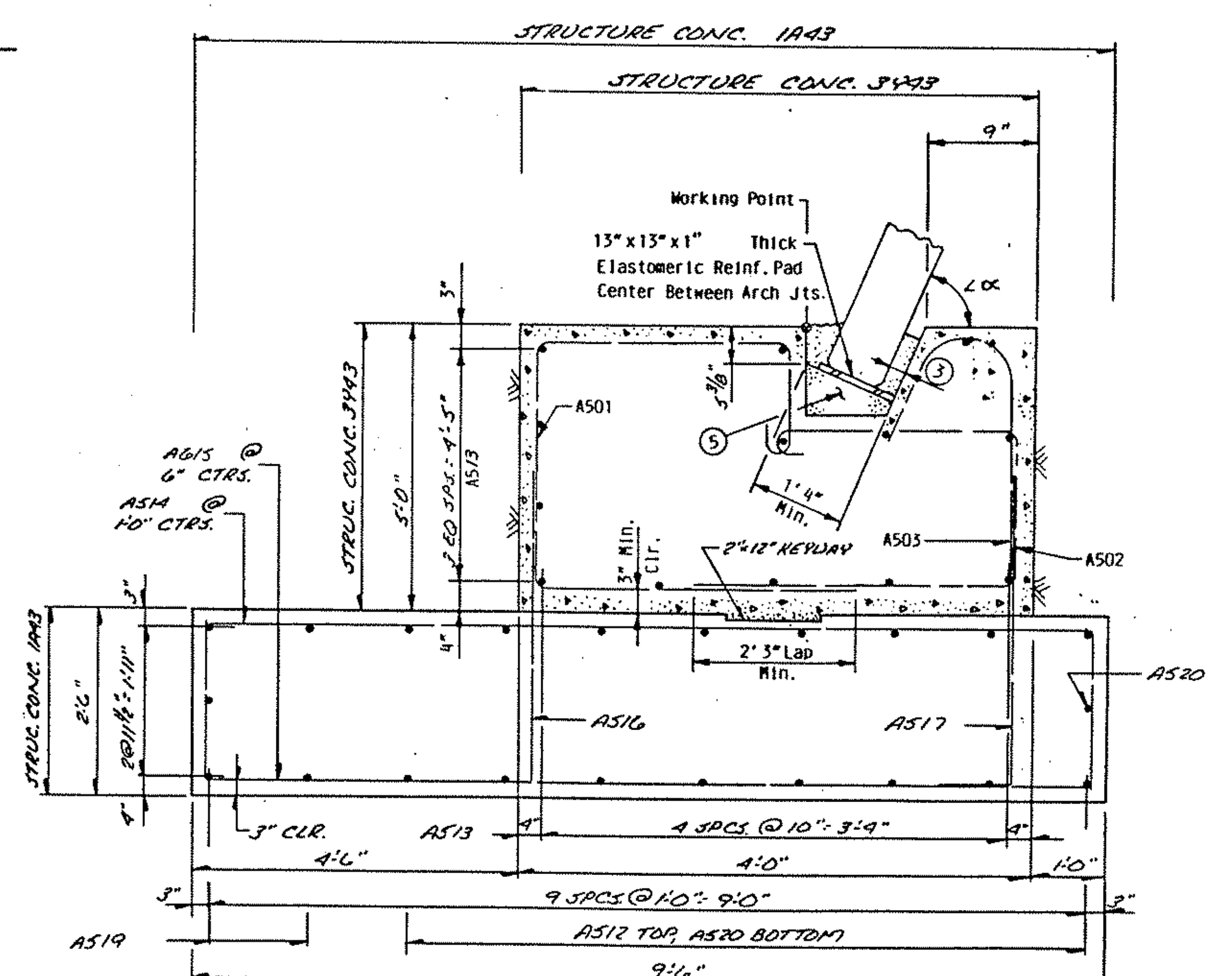


DETAIL A





SECTION C-C



SECTION THRU FOOTING

C.P. 88-09-116

BILL OF REINFORCEMENT FOR FOOTINGS

	BAR	NO.	LENGTH	SHAPE	LOCATION
	A501	288	10'-4"	Bent	CAP
	A502	288	9'-7"	Bent	CAP
	A503	288	6'-2"	Bent	CAP
	A504	8	16'-11"	Bent	CAP @ ENDS
	A505	84	10'-2"	Bent	Bottom Wingwall Ftg. ~ TRANSV.
	A506	84	7'-8"	Straight	Top Wingwall Ftg. ~ TRANSV.
	A507	16	27'-9"	Straight	Top WINGWALL FTG. ~ LONG.
	A508	16	16'-0"	Straight	BOT. WINGWALL FTG. ~ LONG.
	A509	16	12'-2"	"	BOT. WINGWALL FTG. ~ LONG.
	A510	32	6'-10"	BENT	BOT. WINGWALL FTG. ~ LONG.
	A511	16	21'-2"	STRT.	BOT. WINGWALL FTG. ~ LONG.
10	A512	80	36'-3"	"	TOP & BOT. ARCH FTG.
11	A513	104	38'-4"	"	TOP & BOT. CAP
	A514	286	9'-2"	"	TOP ARCH. FTG. ~ TRANSV.
	A615	570	13'-4"	BENT	BOT. ARCH FTG. ~ TRANSV.
	A516	296	4'-2"	STRT.	DOWEL
	A517	296	5'-2"	BENT	DOWEL
	A518	12	1'-10"	"	CAP @ ENDS
10	A519	50	31'-7"	STRT.	TOP ARCH. FTG. ~ LONG.
10	A520	90	32'-2"	STRT.	BOT. ARCH FTG. ~ LONG.

	SCHEDULE OF QUANTITIES ~ 2 FOOTINGS		
	STRUCTURE CONC. 1A43	306	Cu. Yds.
	Reinforcement Bars	39,950	Pounds
	Structure Excavation	1	L.SUM
△	Elastomeric Bearing Pad (1"x13"x13")	50	Each
	STRUCTURE CONC. 3Y43	199	CU. YD.

△ See Bridge Design Manual for Bearing Pad Standard Design Tables.

NOTES:

1. Layout arch sections and headwalls on concrete footings. Adjust locations and joints as necessary. Mark locations on concrete footing after adjustments have been made.
2. ~~Drill 2" Dia. holes at assembly for precast apron dowels, precast apron slab option only.~~
3. Provide tapered shims, remove prior to grouting notch as directed by Engineer.
4. ~~As an option the contractor may use a C-I-P, or Precast Slab.~~
5. Concrete to be accurately placed in notch and cured prior to placement of elastomeric bearing pad and arch section. May be poured integrally with footing.
6. Vertical joint to have bond breaker and Horizontal joint to have 1/2"x9" bit felt for C-I-P option.
7. 6" dia. holes x10" deep for 1" dia. by 1'6" long deformed bars into wingwalls. As an alternate, 2" dia. by 10" deep holes may be drilled into footing after the wingwalls have been placed. Check wingwall details FOR HOLE LOCATION. BARS SHALL BE INCLUDED IN PAYMENT FOR WINGWALLS.
8. Number of wingwall units, holes and pads, will vary with type of arch used.
9. See general plan and layout sheet for exact location.
10. 1'-11" MIN. LAP ~ 5 LINES
11. 1'-11" MIN. LAP ~ 4 LINES

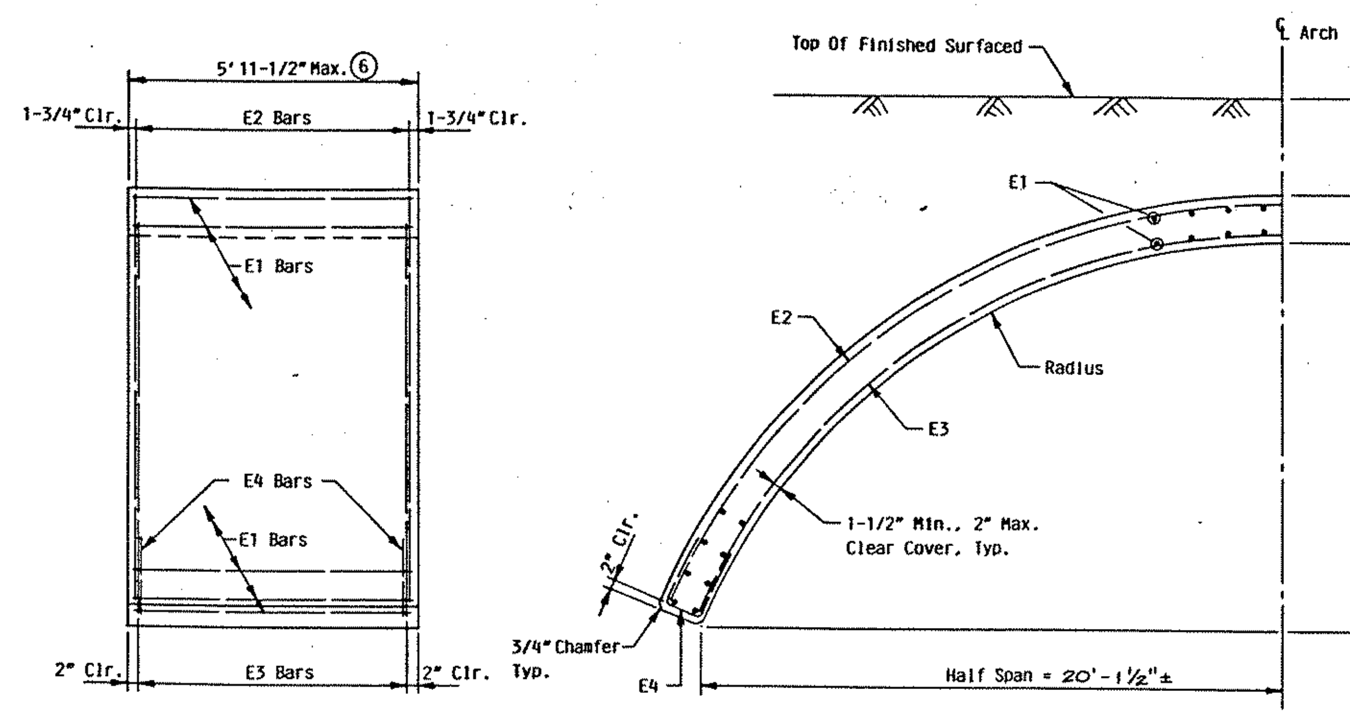
COMPUTED SOIL PRESSURE K/Sq.Ft.	
D.L.+ Earth Pressure	4.8 K/SQ.FT.
Live Load	0.8 K/SQ.FT.
Design Load	5.6 K/SQ.FT.

C.R 88-09-116

REVISED: March 8, 1988	APPROVED: Sept. 14, 1987	FIG. 5-397.783

PRECAST CONCRETE ARCH STRUCTURE SPREAD FOOTING DETAILS

DES:	DR: DM	APPROVED:	Bridge No.
CKR:	CHK: BBW		96839
Sheet No. 4C of 10C Sheets			



SIDE ELEVATION

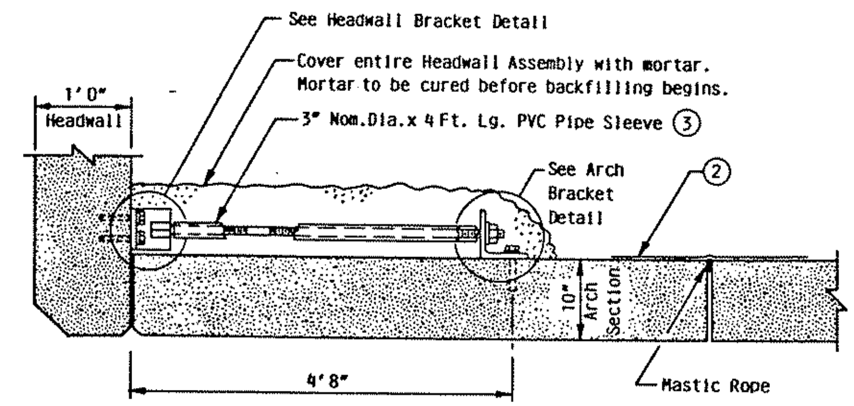
HALF END ELEVATION

ARCH ELEMENT

**ARCH ELEMENT REINFORCEMENT TABLE								
SPAN	FILL HEIGHT (1'-6" TO 6'-0")				FILL HEIGHT			
	E1	E2	E3	E4	E1	E2	E3	E4
FT.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.	SIZE & MAX. SPS.
* 40'-3"	#4 @ 9"	#5 @ 6"	#5 @ 6"	#4 @ 6"				

* IF 65,000 PSI. REINFORCING MESH IS USED, STEEL AREAS CAN BE REDUCED BY 8%

** QUANTITY AND LENGTH OF REINFORCEMENT TO BE SUBMITTED WITH SHOP DRAWINGS



HEADWALL & ARCH BRACKET ASSEMBLY

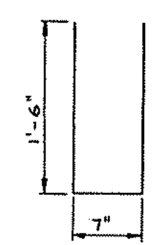
ARCH SIZE TABLE		
SPAN	RISE	RADIUS
40'-3"	10'-6"	24'-6"

NOTES:

All Structural Steel to be Spec.3306 & Galvanized after fabrication as per Spec. 3394.

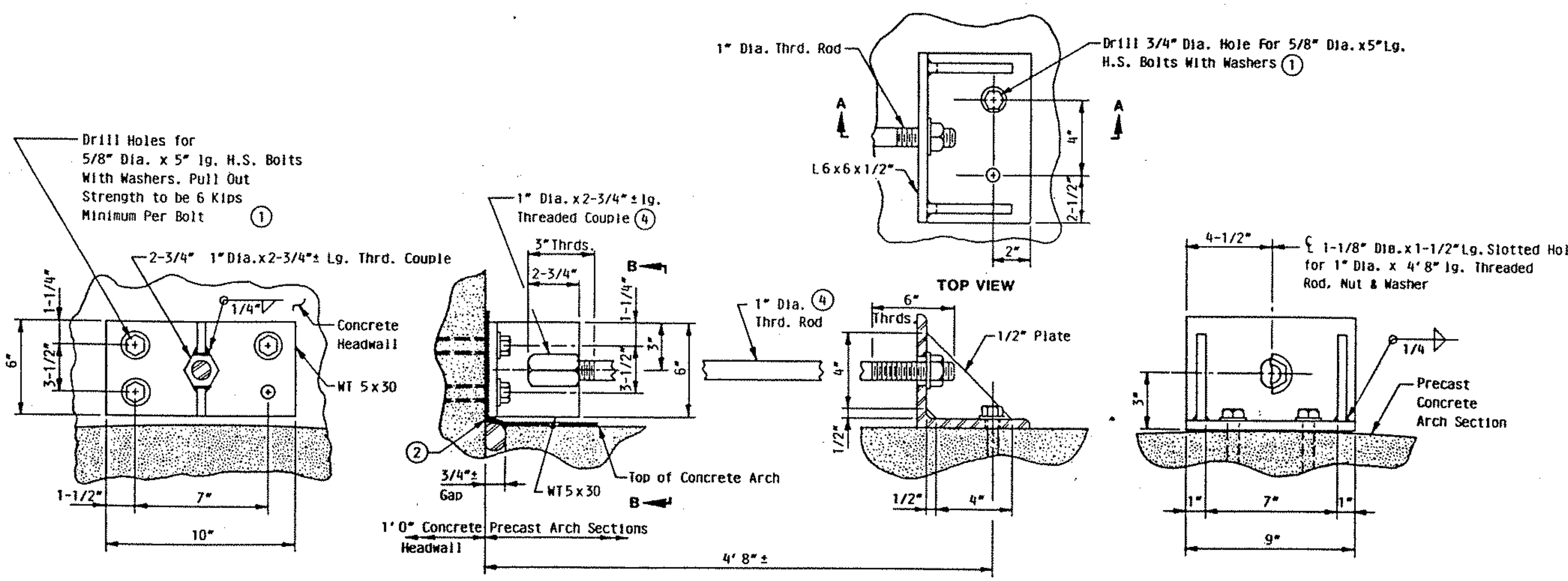
Bolts Nuts & Washers to be Galvanized as per Spec.3392.

Provisions for handling and moving of Arch Element Sections will be the contractors responsibility.



E4

1. See Special Provisions for Concrete Bolt Anchorage information.
2. Place 1-1/2" dia. preformed mastic in joint and except at headwall brackets cover with 24" wide geotextile at all arch joints. Place geotextile material just prior to backfilling. See Spec. 2501.3C5
3. Cut to length in field. Pipe sleeve to enclose total length of rod. Wrap 1" dia. rod with polystyrene or equal to maintain rod in center of P.V.C. pipe.
4. A325 steel bolts, threaded couples, threaded rods and hex nuts.
5. Alternate type brackets may be used as approved by the engineer.
6. Laying lengths to be 6'0" which includes 1/2" gap between arch sections.



VIEW B-B

SIDE VIEW

TOP VIEW

SECTION A-A

END VIEW

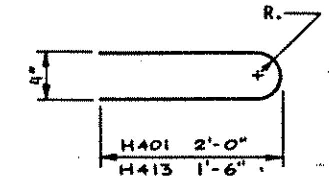
HEADWALL BRACKET 5
(PVC Pipe Sleeve Not Shown)

ARCH BRACKET

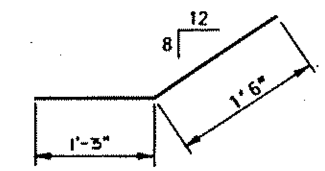
C.P. 88-09-116

PRECAST CONCRETE ARCH STRUCTURE ARCH DETAILS	REVISED: March 8, 1988	APPROVED: Sept. 14, 1987	FIG. 5-397.786
	DES: / CHK:	DR: / CHK:	APPROVED:
	Sheet No. 5C of 10C Sheets		Bridge No. 96834

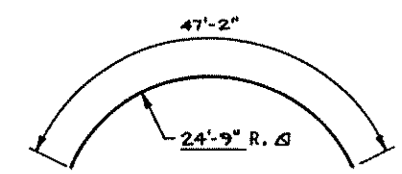
SPAN	RISE	RADIUS	HEADWALL HEIGHT	HEADWALL WIDTH	OPENING HEIGHT	OPENING WIDTH
40'-3"	10'-6"	24'-6"	12'-0"	42'-8 15/16"	9'-6"	38'-8 15/16"



H401 & H413



H402



H503

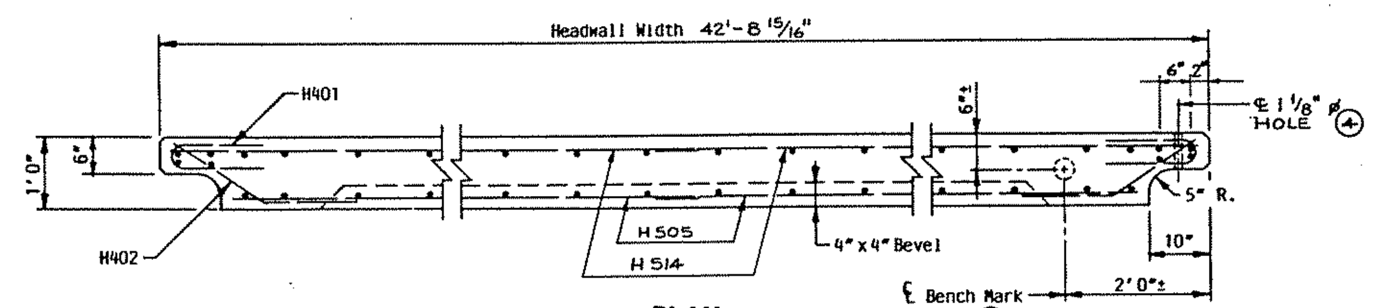
Arch Radius

QUANTITIES FOR ONE HEADWALL

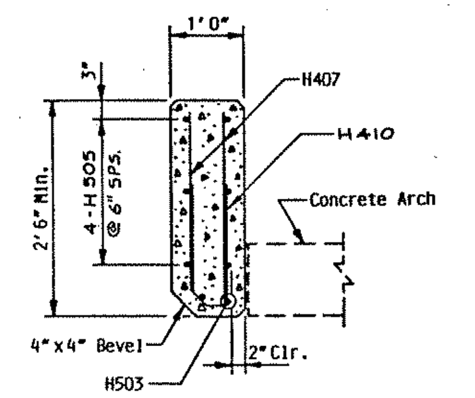
BAR	NO.	LENGTH	SHAPE	LOCATION
* BILL OF REINFORCEMENT FOR HEADWALL				
H401	26	4'-3"	Bent	Ends-Horizontal
H402	24	2' 9"	Bent	Ends-Horizontal
H503	2	47'-2"	Curve	Radius, Arch
△ H504	20	18'-0"	Straight	Front & Back-Horizontal
H505	8	21'-6"	Straight	Front -Horizontal
H406	12	11'-6"	Straight	Front & Back-Vertical
△ H407	39	13'-0"	Straight	Front & Back-Vertical
H410	39	4'-0"	BENT	RADIUS-VERTICAL
H412	2	4'-4"	BENT	ENDS-HORIZONTAL
H413	4	3'-3"	BENT	ENDS-HORIZONTAL
H514	8	22'-3"	STRAIGHT	BACK-HORIZONTAL
H415	2	4'-0"	BENT	ENDS-HORIZONTAL

* QUANTITY AND LENGTH OF BARS TO BE SUBMITTED WITH SHOP DRAWINGS.

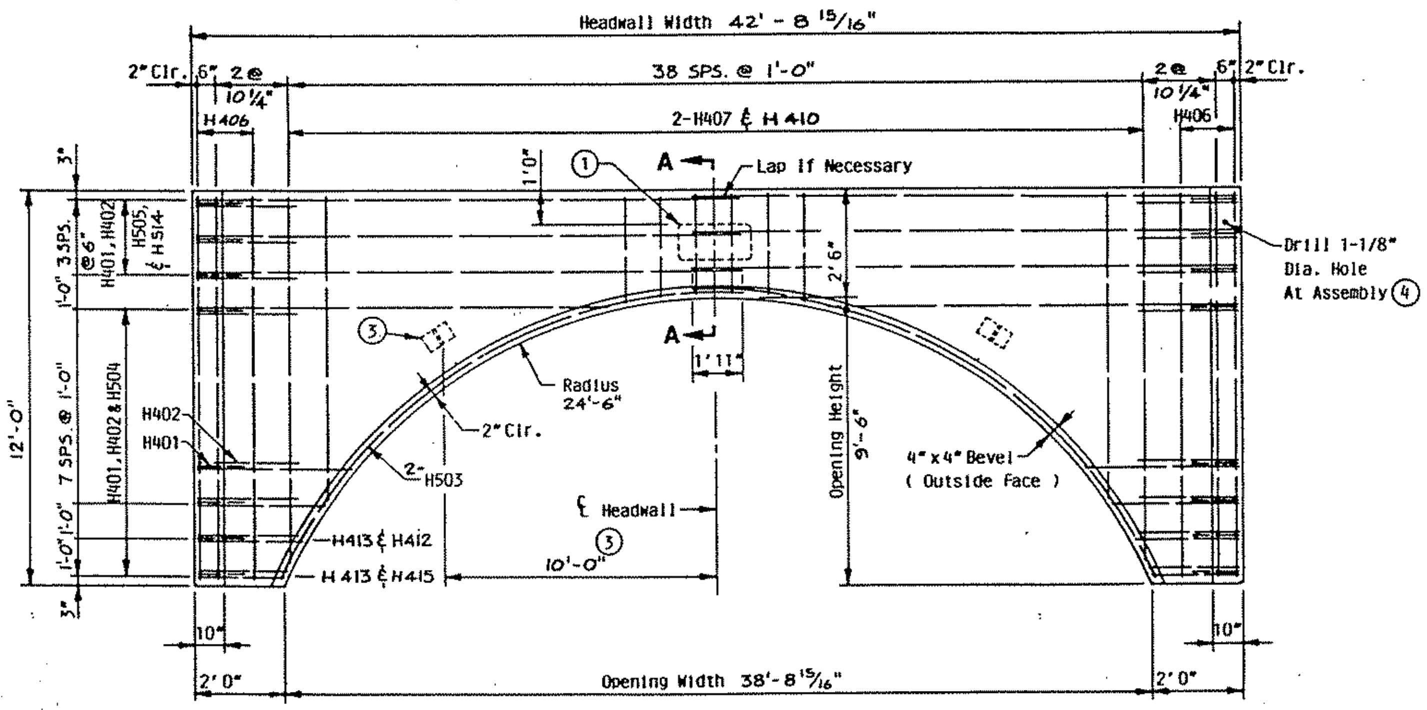
△ CUT 2 FROM 1, ONE LONG AND ONE SHORT



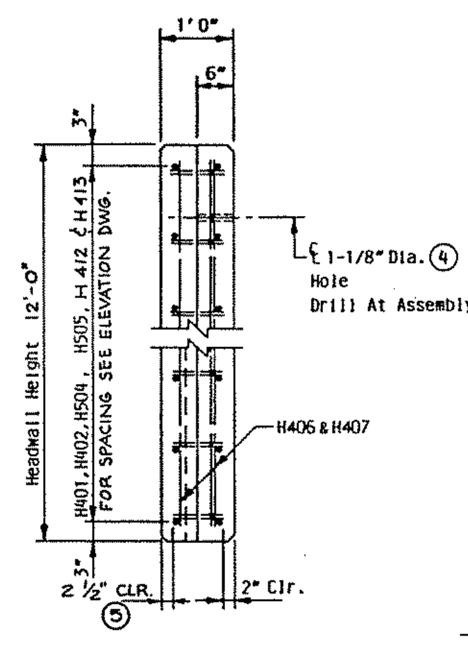
PLAN



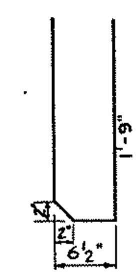
SECTION A-A



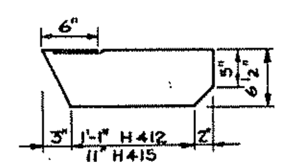
ELEVATION



END VIEW



H410



H412 & H415

NOTES:

Rustication is required to be approved by the engineer.

Precast concrete headwalls shall be Mix No.3W36.

If fencing is required, see standard bridge detail B905 for post anchorage details.

(1) Mold bridge number and year built on each headwall face. Numbers to be 6" minimum height, 3/4" minimum depth in concrete and centered on outside face of headwall as shown.

(2) State will furnish disk. Payment for placing to be included in price bid for other items. See Standard Plate No.9301 and Bridge Design Manual.

(3) See Fig.5-397.786 FOR HEADWALL BRACKET DETAILS.

(4) Use 1" diameter bolt to tie headwall and wingwall sections together on parallel wingwalls only.

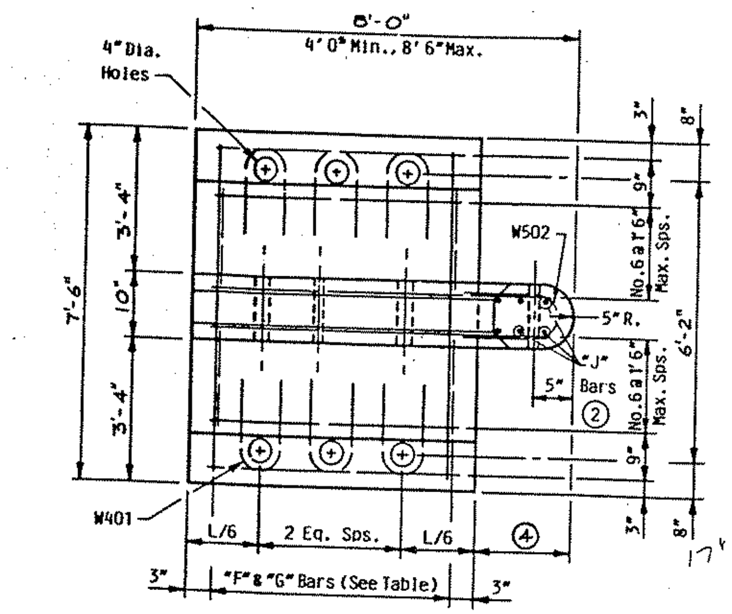
(5) MAXIMUM DEPTH OF SURFACE TREATMENT IS 3/4".

C.P. 88-09-116

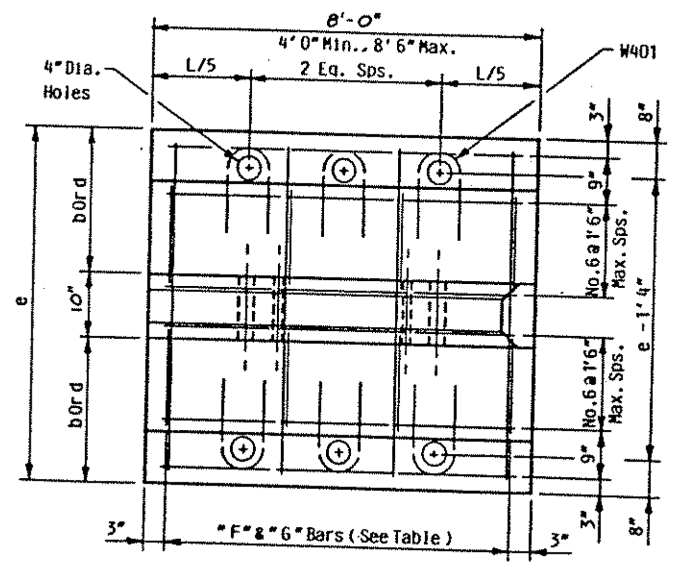
REVISED: March 8, 1988	APPROVED: Sept.14, 1987	FIG. 5-397.787

PRECAST CONCRETE ARCH STRUCTURE
HEADWALL DETAILS

DES:	DR:	APPROVED:	Bridge No. 96834
CHK:	CHK:		
Sheet No. 6C of 10C Sheets			



PLAN VIEW
(Wingwall Adjacent To Headwall)

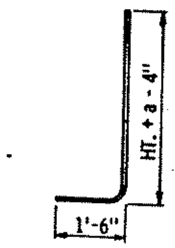


PLAN VIEW
(Typical Wingwall)

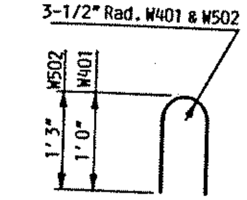
WINGWALL SECTION TABLE						
HT.	a △	b & d	c	e	"F" Bars	"G" Bars
4'	10"	2' 1"	10"	5' 0"	No.4 @ 1'6"	No.5 @ 1'6"
5'	10"	2' 1"	10"	5' 0"	No.4 @ 1'6"	No.5 @ 1'6"
6'	10"	2' 1"	10"	5' 0"	No.4 @ 1'6"	No.5 @ 1'6"
7'	10"	2' 1"	10"	5' 0"	No.4 @ 11"	No.5 @ 1'6"
8'	10"	2' 1"	10"	6' 0"	No.5 @ 1'0"	No.5 @ 1'6"
9'	10"	2' 7"	10"	6' 0"	No.5 @ 8"	No.5 @ 1'3"
10'	10"	2' 7"	10"	6' 0"	No.6 @ 9"	No.5 @ 1'0"
11'	10"	2' 7"	10"	6' 0"	No.6 @ 6"	No.6 @ 10"
12'	10"	2' 7"	10"	6' 0"	No.7 @ 7"	No.6 @ 9"
13'	10"	3' 4"	10"	7' 6"	No.7 @ 6-1/2"	No.7 @ 9"
14'	10"	3' 4"	10"	7' 6"	No.8 @ 7"	No.8 @ 10"
15'	10"	3' 4"	10"	7' 6"	No.8 @ 6"	No.8 @ 9"
16'	10"	3' 4"	10"	7' 6"	No.8 @ 5"	No.8 @ 8"

When the wingwall height (HT.) is between the table values shown, use the larger HT. values for reinforcement, etc.

△ Minimum value is 10".



F BAR



W401 & W502

NOTES:

All reinforcement to have 1-1/2" min. cover except as noted.

Finish all edges of concrete with 1/2" chamfer unless otherwise noted.

Footing width is to be constant, based on the maximum height of the culvert wingwall. Footing is computed using an allowable soil pressure of 2000 P.S.F.

Precast Concrete Sections shall be Mix. No. 3W36 with no calcium chloride allowed.

The reinforcing shall be Grade 60, or better.

Leveling pads on C.I.P. concrete footings are required.

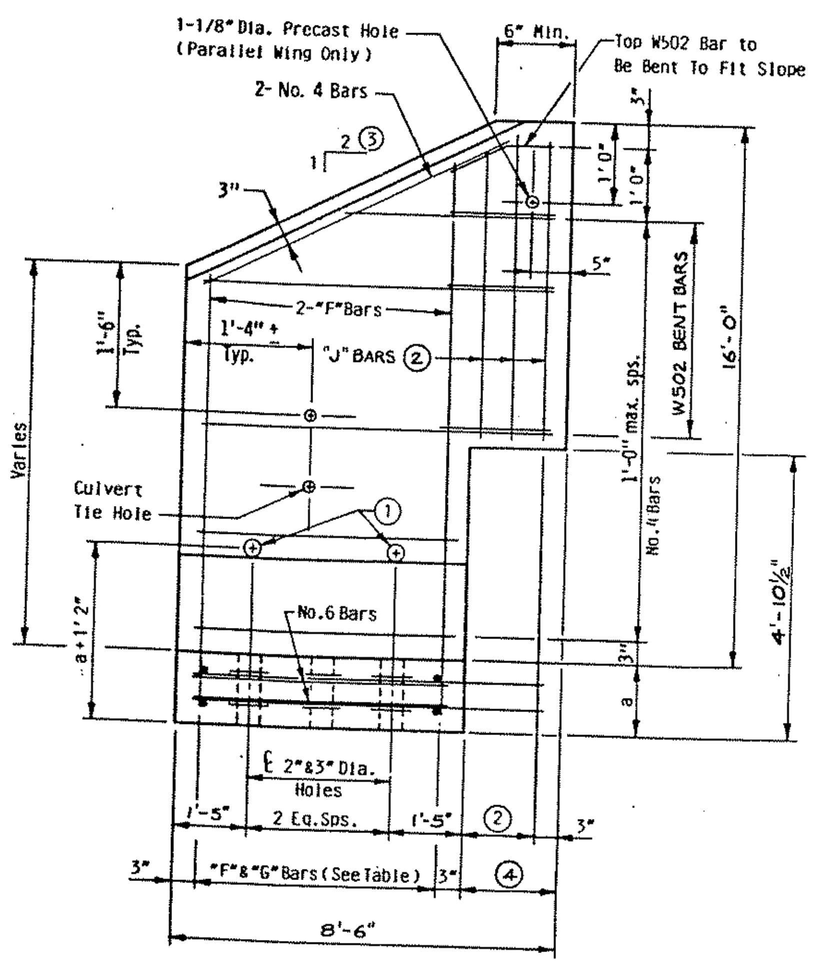
① 2" dia. weep hole when required. Cover fill side of weep holes with geotextile material, by an approved method.

② "J" bars to be same size & spacing as "F" bars.

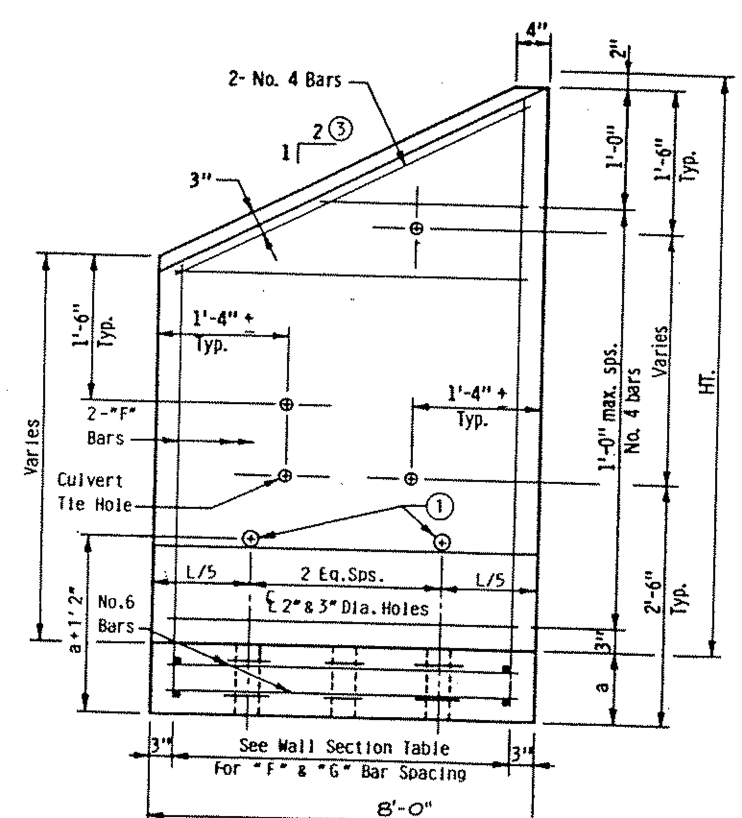
③ 2:1 maximum slope.

④ THIS DIMENSION SHALL BE 1'-2" FOR WINGWALLS PERPENDICULAR TO HEADWALL AND 1'-11¾" FOR WINGWALLS PARALLEL TO HEADWALL.

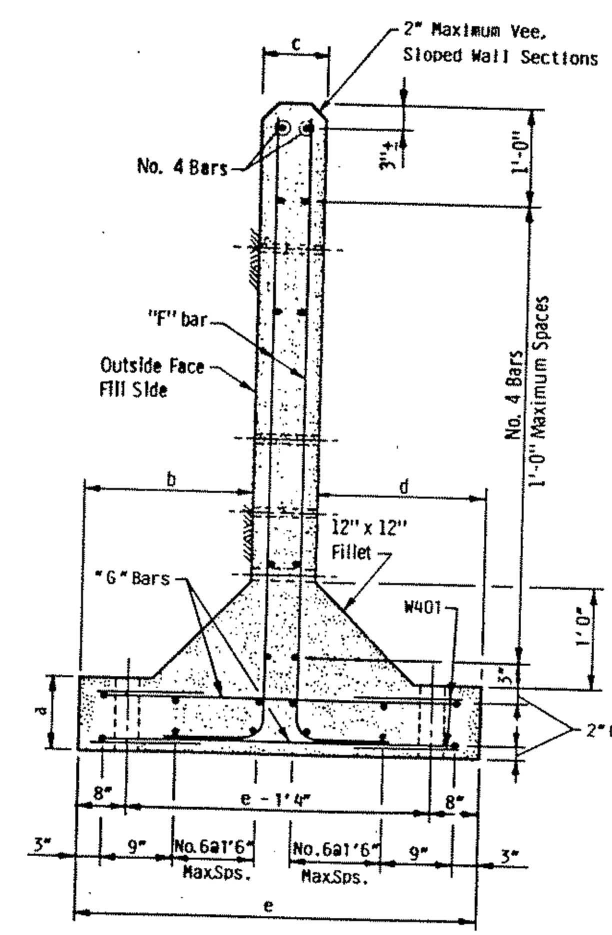
⑤ IF 65,000 PSI REINFORCING MESH IS USED, STEEL AREAS CAN BE REDUCED BY 8%.



SIDE VIEW
(Wingwall Adjacent to Headwall)



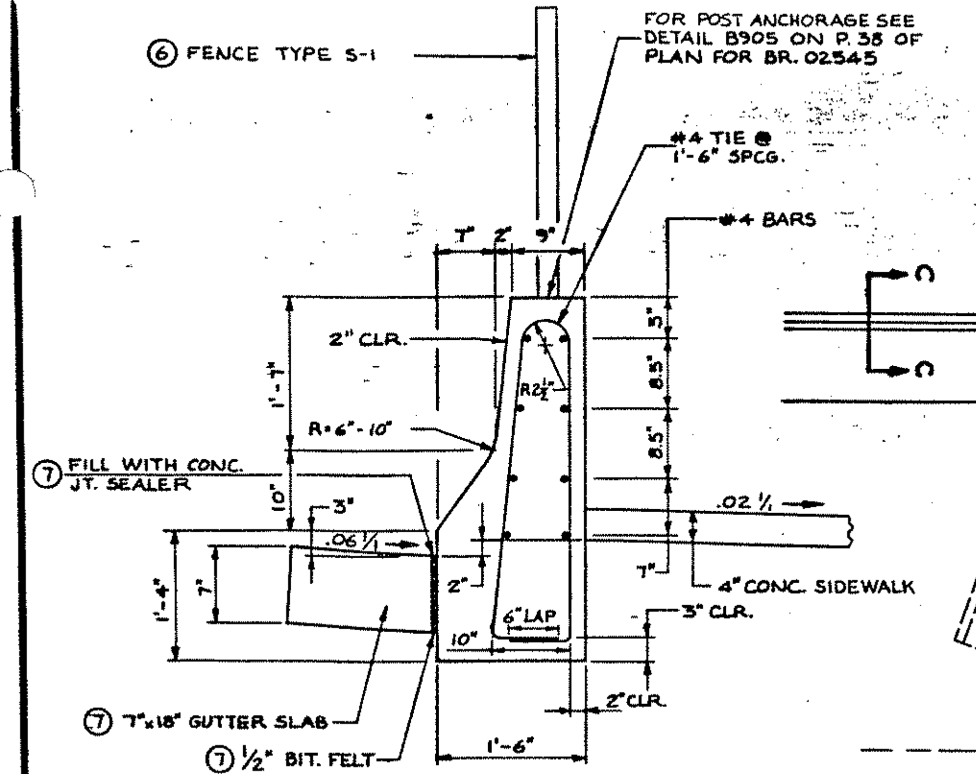
SIDE VIEW
(Typical Wingwall)



TYPICAL SECTION THRU WINGWALL

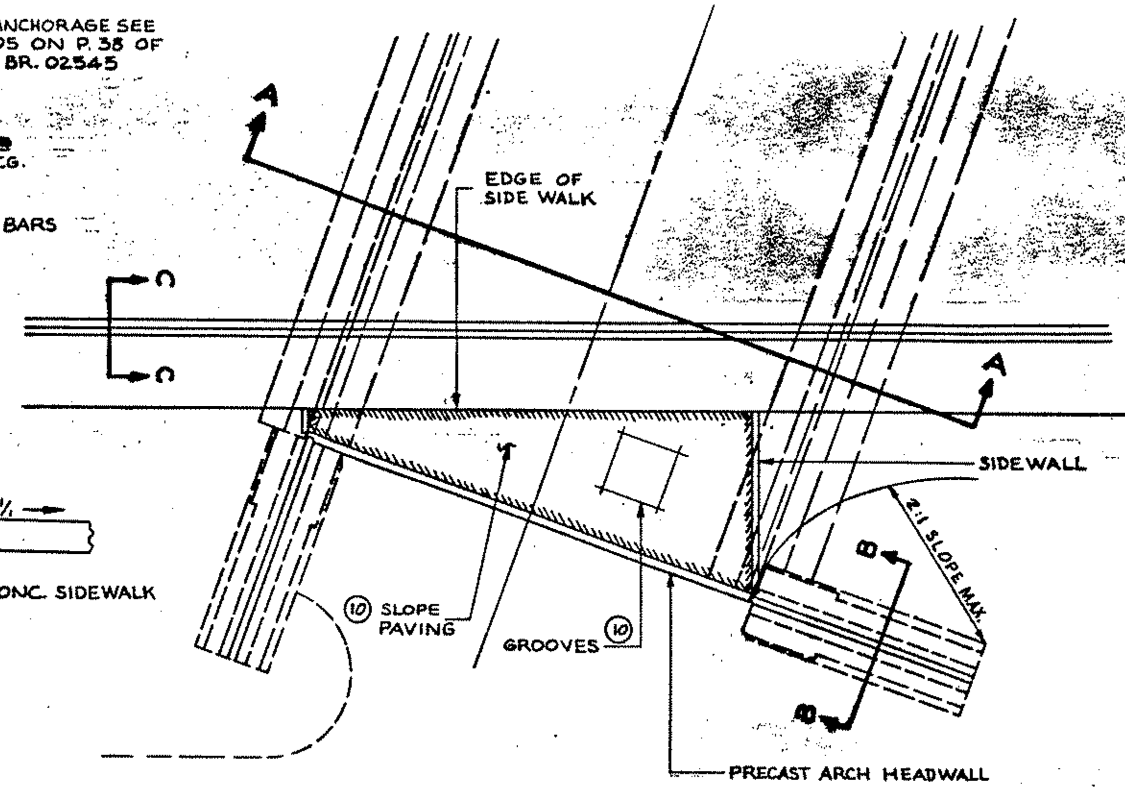
C.P. 88-09-116

PRECAST CONCRETE ARCH STRUCTURE WINGWALL DETAILS	REVISED: March 8, 1988	APPROVED: Sept. 14, 1987	FIG. 5-397.788
	DES.: / DR.: / CHK.: / CHK.:	APPROVED:	Bridge No. 96834
	Sheet No. 7C of 10C Sheets		



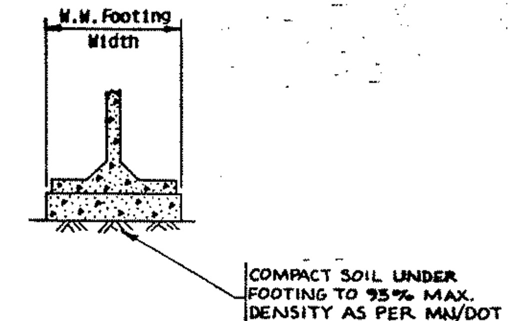
SECTION C-C (SEE SHEET 38A)

(9) CONC. RAILING = 0.160 CU. YDS. PER FOOT
(9) REINFORCING = 8.98 LBS. PER FOOT



NOTE: SEE SHEET 1 FOR LOCATION OF FENCES S-1 AND 60-9322

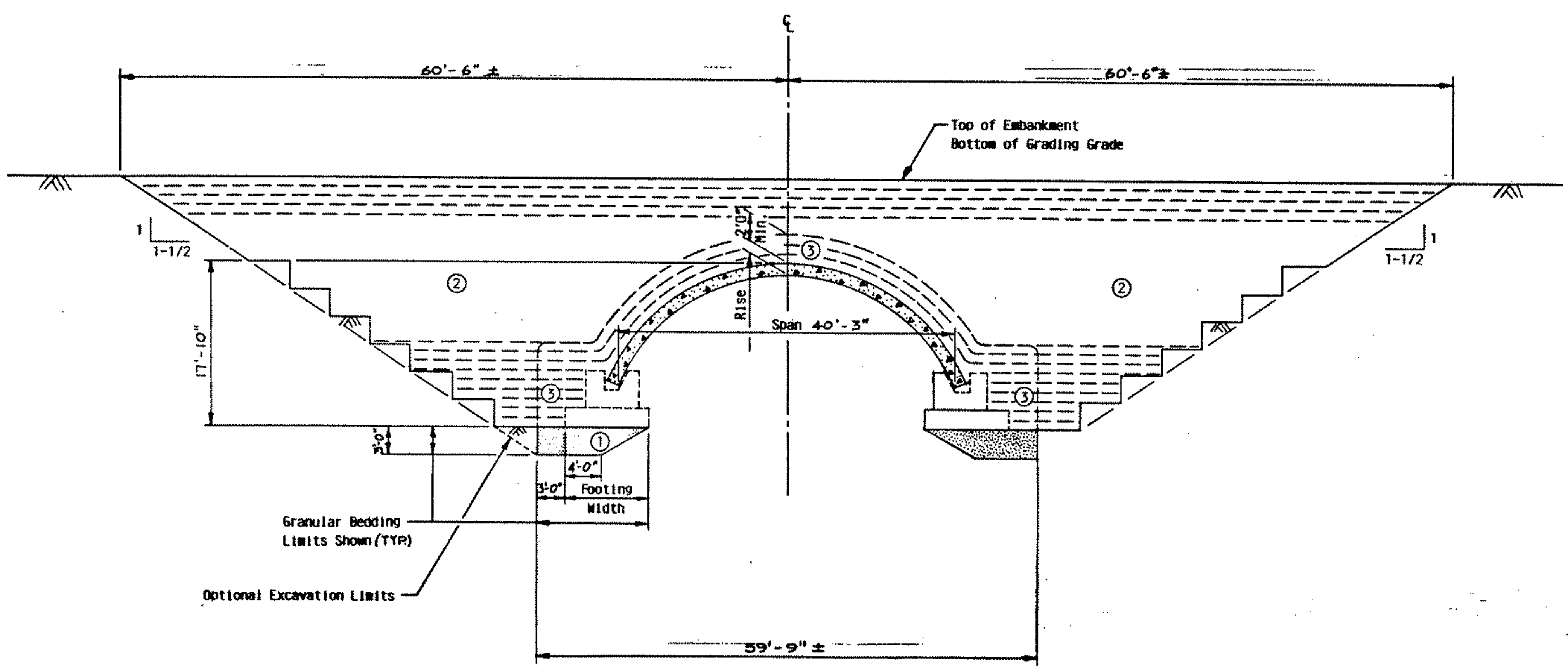
PLAN



SECTION B-B

GENERAL CONSTRUCTION NOTES:

1. To avoid excessive vibration in the arch, the following practice must be followed during the compaction operation.
   A.) Eccentric rotating weights of vibrating rollers shall rotate at least 30 revolutions per second.
   B.) Vibrating rollers shall not be started or stopped within 6 feet of the structure.
2. Excavate and stockpile all soils encountered below proposed embankment widenings per Mn/DOT Spec. 2105.2C for future use as slope dressing.
3. Construction equipment less than 30 tons total weight will be allowed to cross or be operated adjacent to precast elements only after a minimum of two feet of cover has been placed and compacted.
4. Dewater as directed by the engineer until excavation, backfill, compaction, concrete footings & grout are placed & cured.
5. Grade slopes adjacent to wingwalls to prevent erosion.



SECTION A-A

DETAIL NOTES:

(1) All granular bedding under footings shall meet or exceed Mn/DOT specification 3149.2F granular bedding. Placement of this granular bedding shall follow Mn/DOT Spec. 2451.3D and shall be compacted to no less than 100% maximum density as per Mn/DOT Spec. 2105.3F1. Class E, shall not extend outside of headwalls.

(2) All granular backfill shall be compacted to not less than 95% maximum density as per Mn/DOT Spec. 2105.3F1 (AASHTO T-99). Granular backfill shall meet or exceed Mn/DOT Spec. 3149.2D Granular backfill. All material shall be placed in 8- inch compacted lifts unless the contractor can show he can obtain 95% density with greater lifts. Mn/DOT Spec. 2451.3C and 2451.3D shall apply. The backfill material on both sides of the structure is to be placed so that the difference in elevation on one side is never greater than 2 feet higher than the other side.

(3) Hand compaction equipment is required in the area within 3 feet of the arch elements, walls and wingwalls.

(4) ALL REINFORCEMENT BARS IN J-BARRIER TO BE EPOXY COATED.

(5) J-BARRIER CONC. MIX NO. 3X46

(6) FOR DETAILS OF J-BARRIER DEFLECTION JOINTS & FENCE, SEE SHEET NO. 32A OF PLAN FOR BR. # 02545. SPACE DEFLECTION JOINTS AT 20' SPACING.

(7) INCLUDED IN PRICE BID FOR CONCRETE DESIGN SPECIAL.

(8) BEGIN J-BARRIER AT STA. 113+85.00 WITH STD. GUARD RAIL CONNECTION DETAIL AS SHOWN ON SHEET NO. 32A OF PLAN FOR BR. 02545.

(9) INCLUDED IN PRICE BID FOR TRAFFIC BARRIER DESIGN SPECIAL.

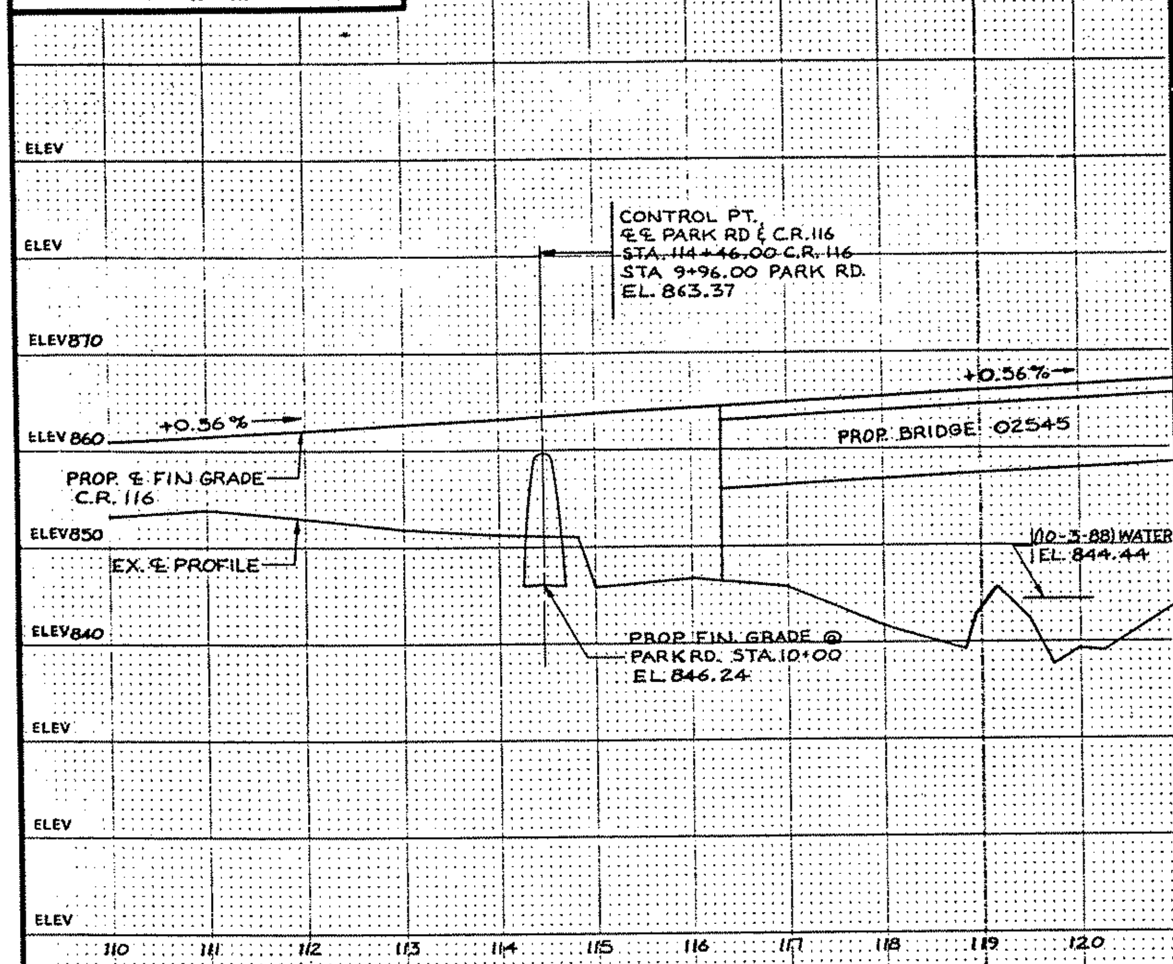
(10) FOR DETAILS OF SLOPE PAVING, SEE SHEET 2.

C.P. 88-09-116

REVISED:	APPROVED: Sept. 14, 1987	FIG. 5-397.789	
PRECAST CONCRETE ARCH STRUCTURE EXCAVATION & BACKFILL	DES:	DR:	APPROVED:
	CHK:	CHK:	Bridge No. 96834
	Sheet No. 8C of 10C Sheets		

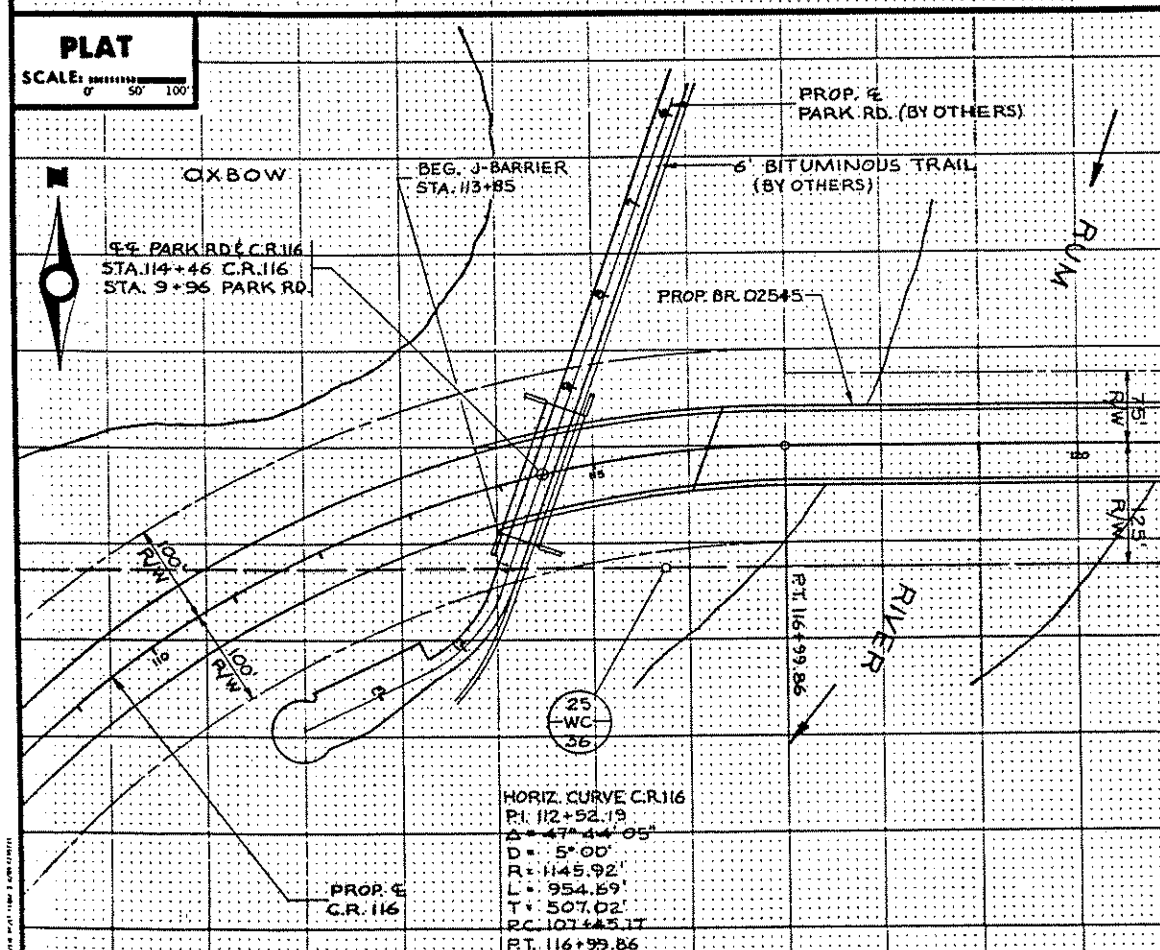
CONTRACTED PROFILE

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



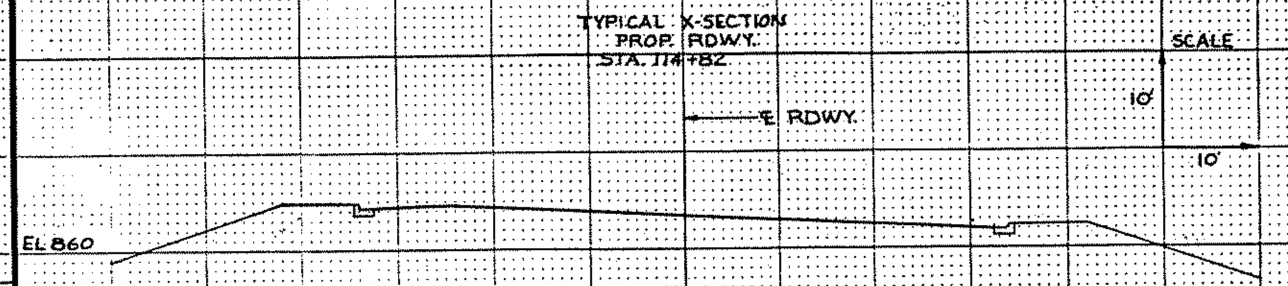
PLAT

SCALE: 0' 50' 100'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



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 ....
Flowline elevation .... Skew angle ....
Waterway area req'd. below elevation .... = ... Sq. Ft. at Rt. angles to channel

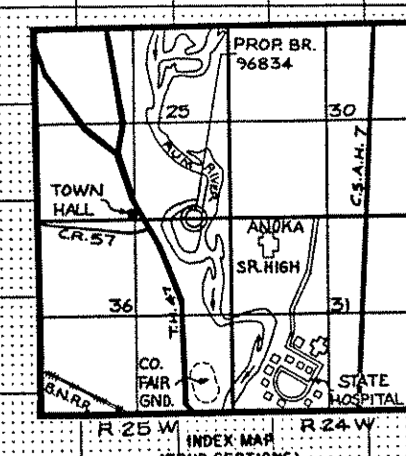
In the interest of flood plain zoning the regional flood (100 yr. freq.) is .... C.F.S. at stage .... and mean velocity of .... F.P.S. with .... Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of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

FOUNDATION ENGINEERS RECOMMENDATION

DATE ....

Bridge survey sheets made from: ANOKA CO. GRADING PLAN FOR C.P. 85-05-116

Bench mark elevation 873.23 ~~(M.S.L. 1929 Adj.)~~
Location: S.E. COR. SIDEWALK @ S.E. COR. ICE ARENA



MINNESOTA
DEPARTMENT OF TRANSPORTATION

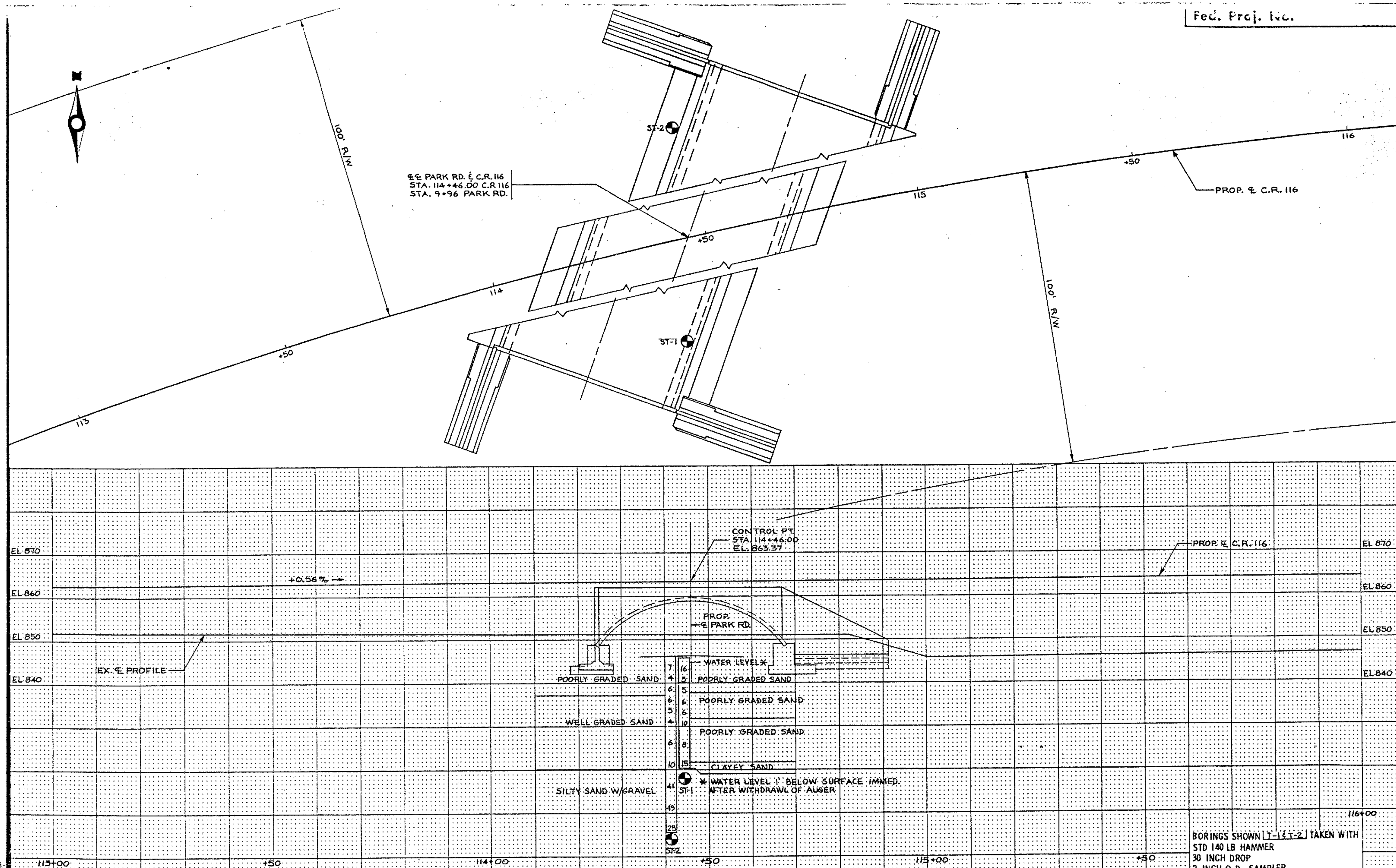
BRIDGE SURVEY

AT MILE POINT .... ON C.R. 116 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED ON C.R. EXTENSION FROM C.R. 47 IN RAMSEY TO CSAH 7 IN ANOKA
SEC. 24 TWP 32 N R 25 W
TOWNSHIP RAMSEY COUNTY ANOKA

BRIDGE NO. 96834

Area No. Job No. ~~State~~ CO. Proj. No. 88-09-116 Sheet No. 9C of 10C Sheets

Fed. Proj. No.



BRIDGE SURVEY PLAN AND PROFILE	DES: / CHK:	DR: / CHK:	APPROVED:	Bridge No. 96834
~~State~~ CO. Proj. No. 88-09-116	Sheet No. 10c of 10c Sheets			