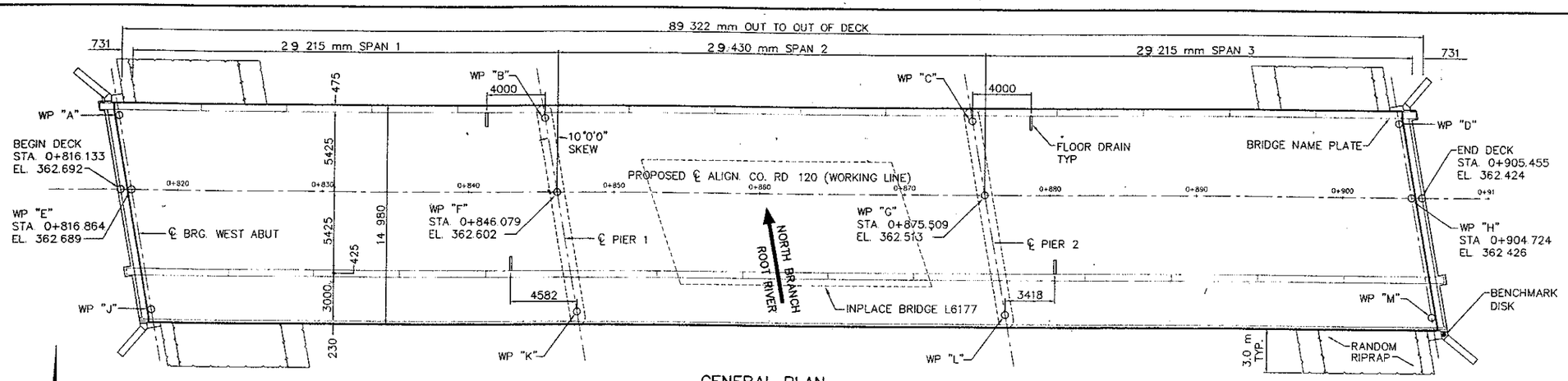


GENERAL PLAN

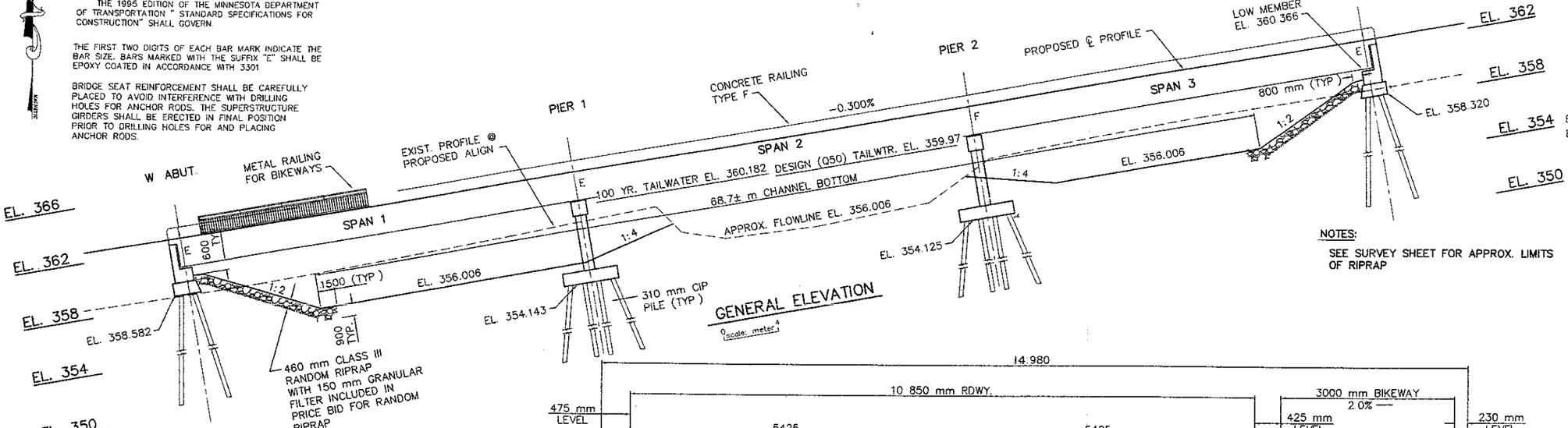
0 scale: meter 4

CONSTRUCTION NOTES

THE 1995 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION " STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH 3301

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

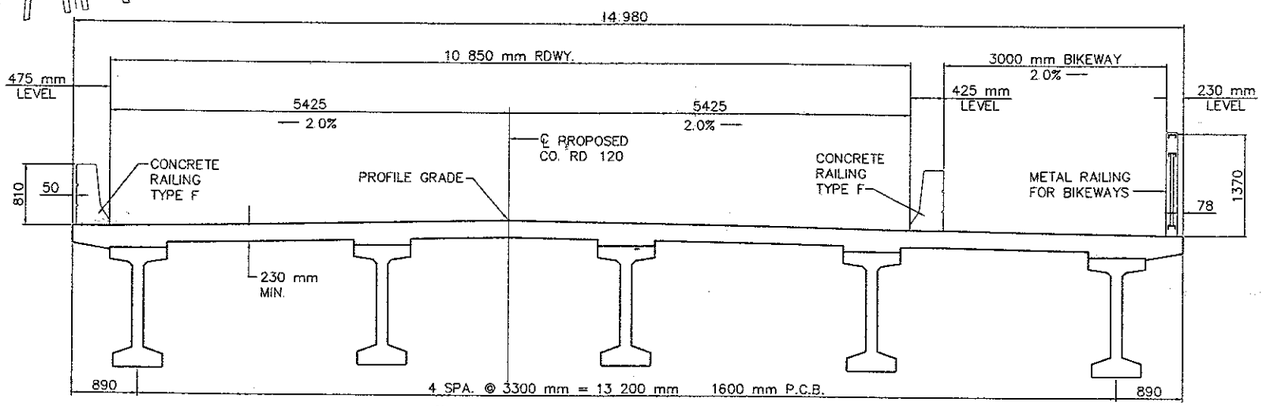


GENERAL ELEVATION

0 scale: meter 4

NOTES:

SEE SURVEY SHEET FOR APPROX. LIMITS OF RIPRAP



TYPICAL TRANSVERSE SECTION

0 scale: meter 2

minnesota metric

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

ITEM NO.	2021.501	2401.501	2401.501	2401.512
ITEM	MOBILIZATION	STRUCTURAL CONCRETE (1A43)	STRUCTURAL CONCRETE (3Y43)	BRIDGE SLAB CONCRETE (3Y33A)
UNIT	LUMP SUM	m^3	m^3	m^2
QUANTITY	1	146 (P)	166 (P)	1338 (P)

① BRIDGE NO.L6177 STA. 0+860± (NON-PARTICIPATING)

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	2401.513	2401.541	2401.541	2401.601	2401.601	2401.601	2401.601	2402.521	2402.546	2402.591	2402.595	2405.502	2405.511	2402.583	2442.501	2452.507	2452.508	2452.519	2452.519	2511.501
ITEM	TYPE F RAILING CONCRETE (3Y46A)	REINFORCEMENT BARS	REINFORCEMENT BARS (EPOXY COATED)	STRUCTURE EXCAVATION	FOUNDATION PREPARATION (PIER 1)	FOUNDATION PREPARATION (PIER 2)	SLOPE PREPARATION	STRUCTURAL STEEL (3306)	FLOOR DRAIN TYPE (B702M) MODIFIED	EXPANSION JOINT DEVICE TYPE 100	BEARING ASSEMBLY	PRESTRESSED CONCRETE BEAMS 1600mm	DIAPHRAGM FOR TYPE 1600mm PREST BMS.	~~METAL RAILING FOR BIKEWAYS~~	REMOVE OLD BRIDGE ①	C.I.P. CONC. PILING DELIVERED 310 mm	C.I.P. CONC. PILING DRIVEN 310 mm	C.I.P. CONC. TEST PILES 16 m LONG 310 mm	C.I.P. CONC. TEST PILES 11 m LONG 310 mm	RANDOM RIPRAP CLASS III
UNIT	m	kg	kg	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	kg	EACH	m	EACH	m	m	m	LUMP SUM	m	m	EACH	EACH	m^3
QUANTITY	181 (P)	6383 (P)	67 390 (P)	1	1	1	1	267 (P)	4	29.5 (P)	30	441 (P)	134 (P)	89.7 (P)	1	1108	1108	2	4	237

DESIGN DATA

1996 A.A.S.H.T.O. DESIGN SPECIFICATIONS
LOAD FACTOR DESIGN METHOD. MS 22.5 LOADING

DEAD LOAD INCLUDES:
0.82 kN/m^2 ALLOWABLE FOR FUTURE WEARING COURSE

MAXIMUM ALLOWABLE DESIGN STRESSES:

PRESTRESSED CONCRETE:
f'c = 45 MPa n = 1
fs = 1860 MPa LOW Relaxation Strands
.75 f'c for Initial Prestress

REINFORCED CONCRETE:
f'c = 28 MPa n = 8 fy = 420 MPa Reinf.

STRUCTURAL STEEL: fy = 250 MPa Spec. 3306

DECK AREA: 1338 m^2

CURRENT ADT 312 (1997)

DESIGN SPEED 90 km/h

BRIDGE OPERATING RATING MS 41.2

INDEX

SHEET NO.	DESCRIPTION
B1	BRIDGE GENERAL PLAN AND ELEVATION
B2	BRIDGE LAYOUT
B3–B5	WEST ABUT LAYOUT, DETAILS & REINF
B6–B8	EAST ABUT. LAYOUT DETAILS & REINF
B9	WEST & EAST ABUT BILL OF REINF
B10	PIER 1 & 2 LAYOUT
B11–B12	PIER 1 & 2 REINFORCEMENT
B13	PIER 1 & 2 BILL OF REINFORCEMENT
B14	FRAMING PLAN
B15	1600 mm PRESTRESSED CONC BEAM
B16	SUPER STRUCTURE LAYOUT
B17	SUPER STRUCTURE DETAILS
B18	SUPER STRUCTURE BILL OF REINF
B19	CONCRETE RAILING (TYPE F)
B20	METAIL RAILING FOR BIKEWAYS
B21–B22	WATERPROOF EXPANSION DEVICE
B23–B27	BRIDGE DETAILS
B28	SITE PLAN & BRIDGE SURVEY
B29	BRIDGE SURVEY PLAN & PROFILE
B30	BRIDGE SITE GRADING PLAN

B.M ELEV. 359.682 (M.S.L. 1929 Adj.)
S.W. HEADWALL OF BRIDGE NO. L6177

COUNTY APPROVAL

9/8/98 DATE — Michael Sheehan COUNTY ENGINEER, OLMSTED COUNTY

WIDSETH SMITH NOLTING
ENGINEERS ARCHITECTS LAND SURVEYORS PROJECT MANAGERS
ALEXANDRIA
PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

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

DATE 9/4/1998 REG. NO. 14230

CO. RD. 120 OLMSTED COUNTY

MINNESOTA DEPARTMENT OF TRANSPORTATION

Bridge No. 55546

ON CO. RD. NO. 120 OVER THE N. BRANCH OF ROOT RIVER, LOCATED 0.90 km E OF JCT. T.H. 63

29 215 mm-29 430 mm-29 215 mm PRESTRESSED CONCRETE BEAM SPAN, 10 800 ROADWAY CONCRETE PARAPET RAILING, METAL BIKEWAY RAILING, 10°0'0" SKEW

IDENTIFICATION NO. 501

GENERAL PLAN AND ELEVATION

SEC. 26 T 105 N R 14 W

HIGH FOREST TOWNSHIP OLMSTED COUNTY

APPROVED 12-31-98

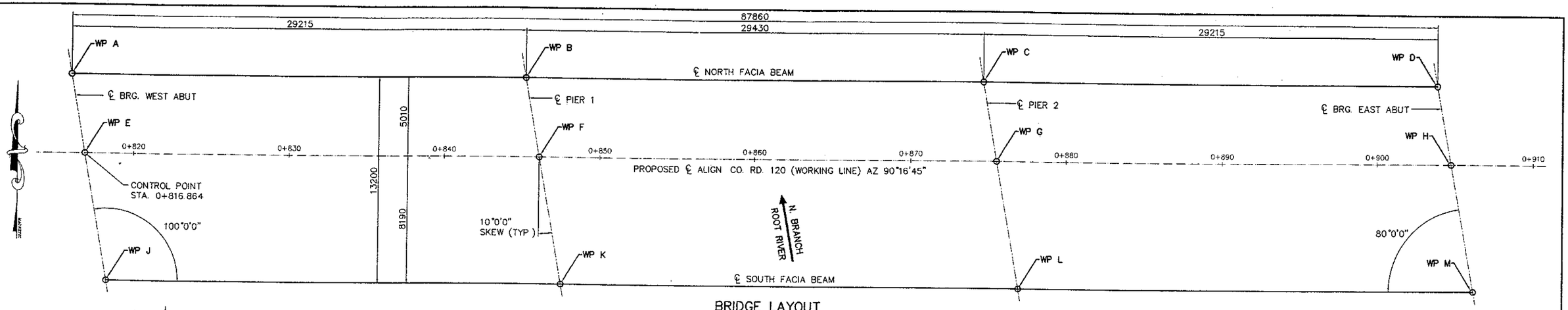
STATE BRIDGE ENGINEER

DES. BY T.J.M.	DR. BY J.A.K.
CHK. BY K.A.R.	CHK. BY T.J.M.

STATE PROJ. NO. 55-598-24 WSN 460A119

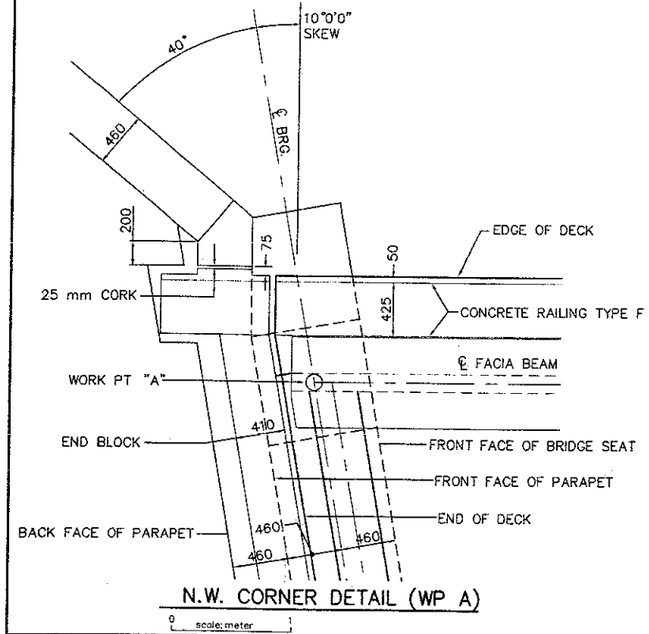
SHEET NO. B1 OF 30 SHEETS

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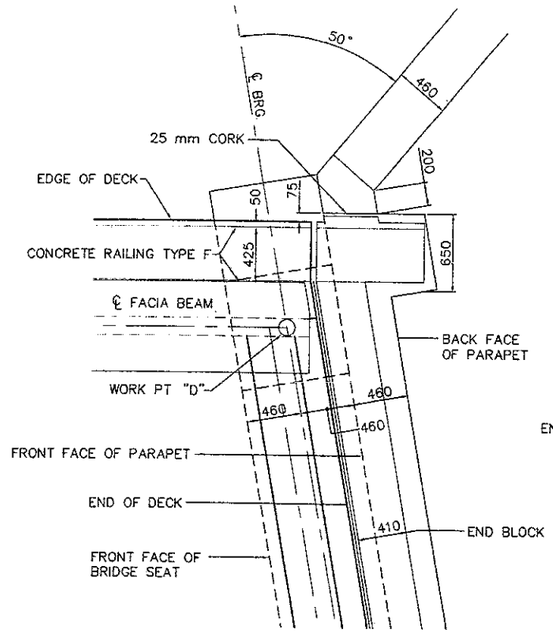
BRIDGE LAYOUT

0 scale: meter 3



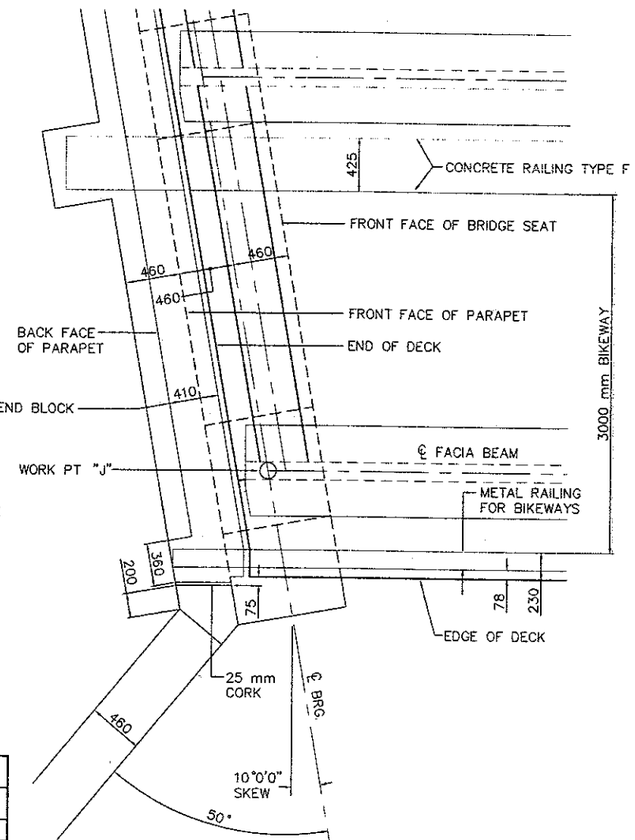
N.W. CORNER DETAIL (WP A)

0 scale: meter 1



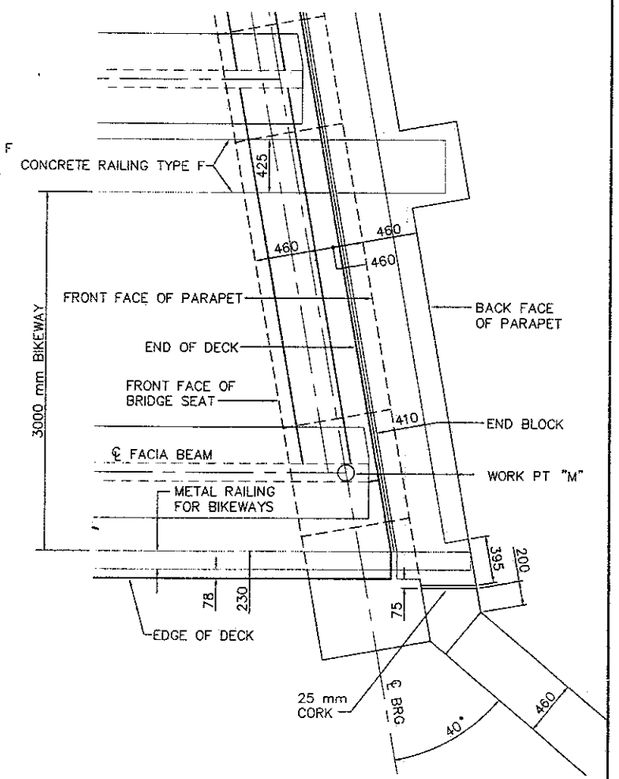
N.E. CORNER DETAIL (WP D)

0 scale: meter 1



S.W. CORNER DETAIL (WP J)

0 scale: meter 1



S.E. CORNER DETAIL (WP M)

0 scale: meter 1

TOP OF ROADWAY TO BRIDGE SEAT

	ABUT. W	PIER 1	PIER 2	ABUT. E
SLAB THICKNESS	230	230	230	230
STOOL HEIGHT	71	71	71	71
BEAM HEIGHT	1600	1600	1600	1600
BEARING PAD	157	118	80	118
TOTAL	2058	2019	1981	2019

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	A	B	C	D	E	F	G	H	J	K	L	M	ELEVATIONS: TOP OF SLAB	TOP OF SLAB TO BR. SEAT	BRIDGE SEAT	POINT
A	0+815.981		29 215			5087	30 513				34 193	62 385		362.592	2.058	360.534	A
B	0+845.196			29 430			5087	30 725		29 953		34 392	62 385	362.504	2.019	360.485	B
C	0+874.626				29 215			5087	30 513	57 844	30 146		34 193	362.416	1.981	360.435	C
D	0+903.841								5087		57 844	29 953		362.328	2.019	360.309	D
E	0+816.864						29 215			8316	31 734			362.689	2.058	360.631	E
F	0+846.079							29 430			8316	31 942		362.602	2.019	360.583	F
G	0+875.509								29 215			8316	31 734	362.513	1.981	360.532	G
H	0+904.724												8316	362.426	2.019	360.407	H
J	0+818.308										29 215			362.530	2.058	360.472	J
K	0+847.523											29 430		362.442	2.019	360.424	K
L	0+876.953												29 215	362.354	1.981	360.373	L
M	0+906.168													362.266	2.019	360.248	M

minnesota metric

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WSN 460A119

CERTIFIED BY: Timothy Moe PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

BRIDGE LAYOUT

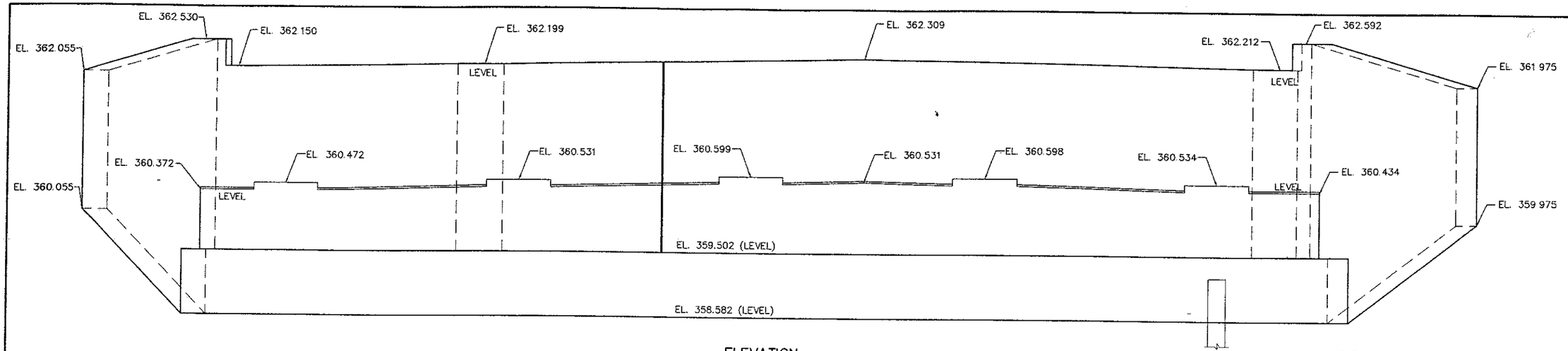
APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	J.A.K.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

State Proj.No.55-598-24 SHEET NO. B2 OF 30 SHEETS

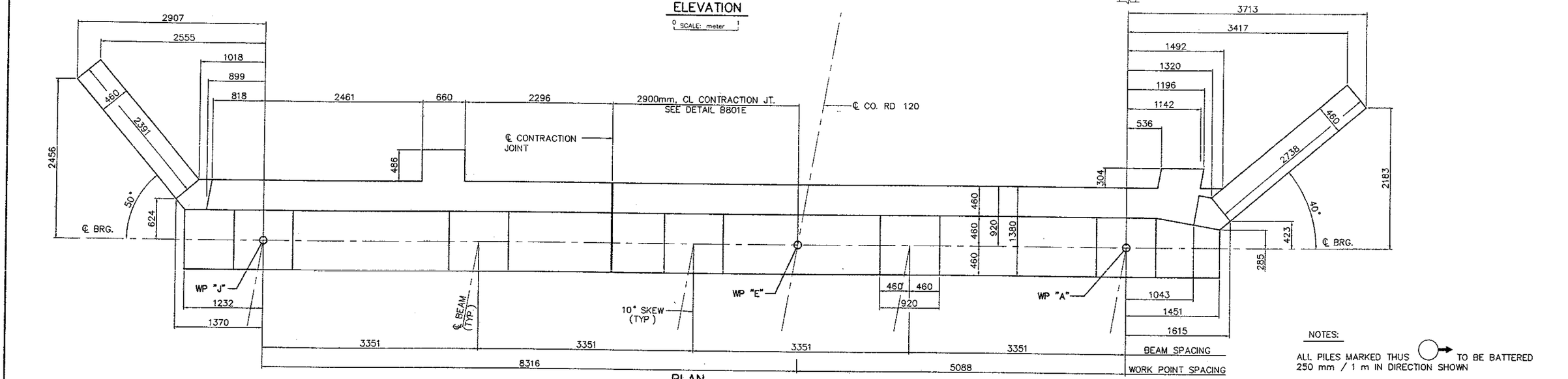
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52



ELEVATION

SCALE: meter



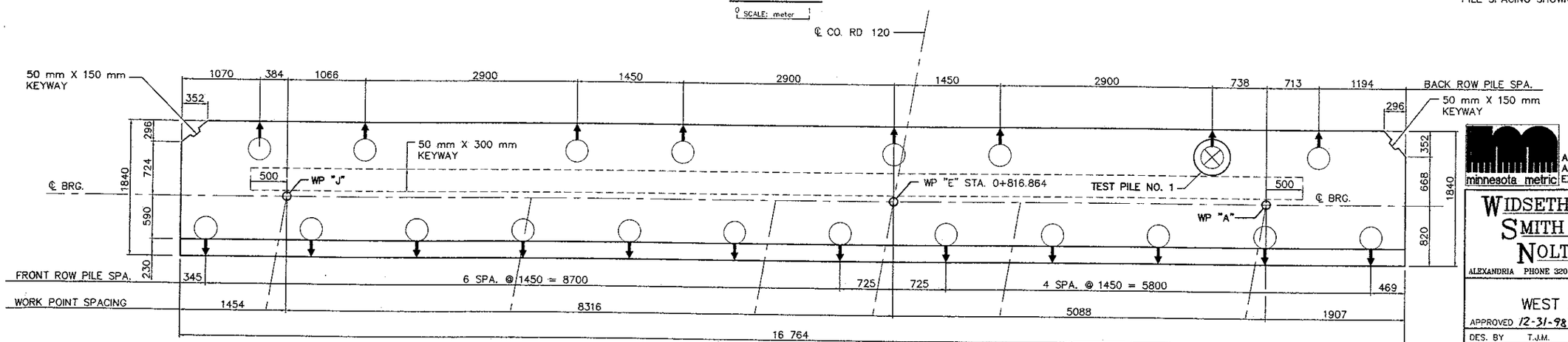
PLAN

SCALE: meter

NOTES:

ALL PILES MARKED THUS → TO BE BATTERED 250 mm / 1 m IN DIRECTION SHOWN

PILE SPACING SHOWN AT BOTTOM OF FOOTING.



FOOTING PLAN

SCALE: meter

WSN 460A119

minnesota metric

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WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
LAND SURVEYORS
PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

WEST ABUTMENT LAYOUT

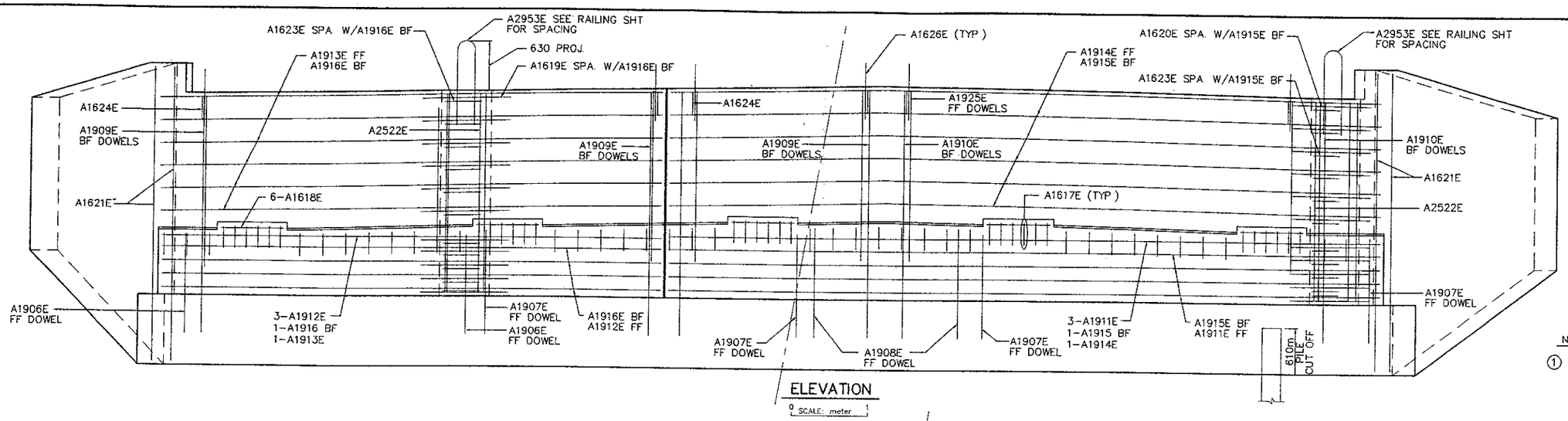
APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

State Proj. No. 55-598-24 SHEET NO. B3 OF 30 SHEETS

H:\DBT\460BR003\119\DWG\Wwabut.dwg Thu Sep 03 11:04:43 1998

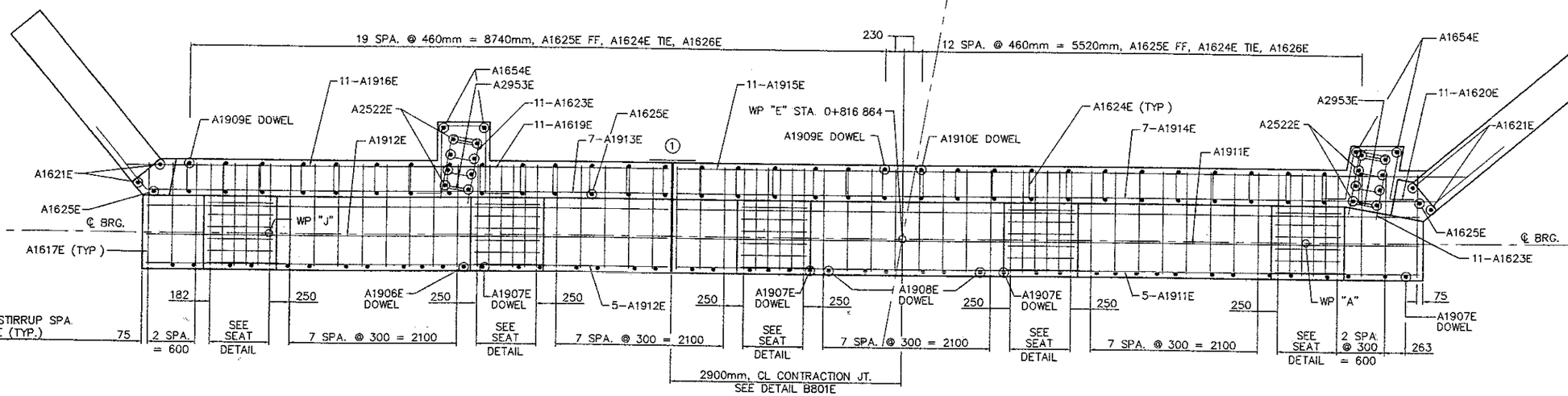


ELEVATION

SCALE: meter

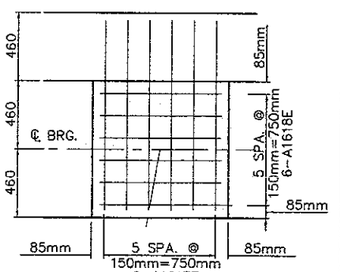
NOTES:

① 3 PLY JOINT WATERPROOFING OR APPROVED EQUAL, INCLUDED IN PRICE BID FOR OTHER ITEMS.



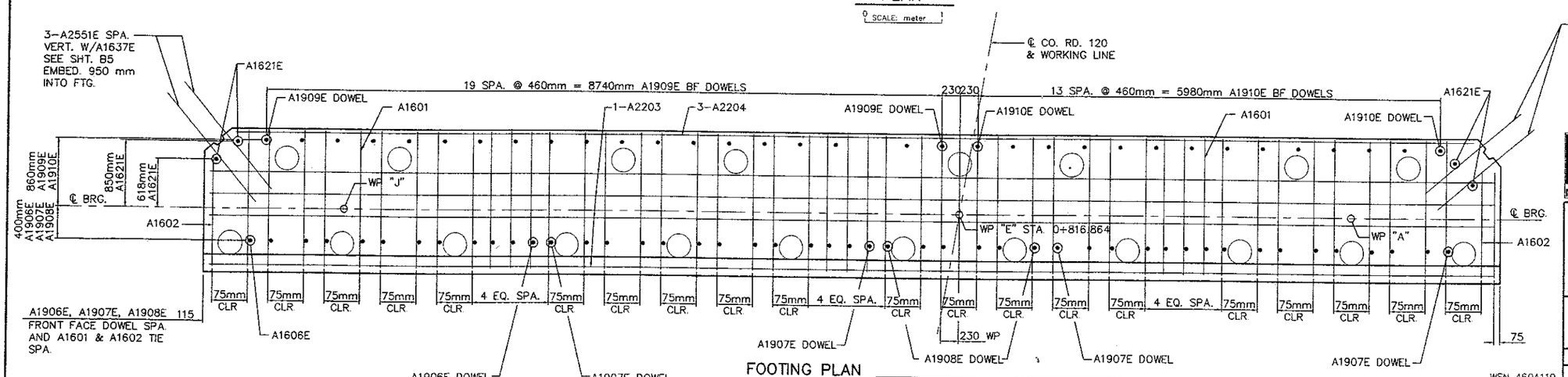
PLAN

SCALE: meter



SEAT DETAIL

SCALE: meter



FOOTING PLAN

SCALE: meter

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minnesota metric

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ARCHITECTS
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WEST ABUTMENT REINFORCEMENT

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

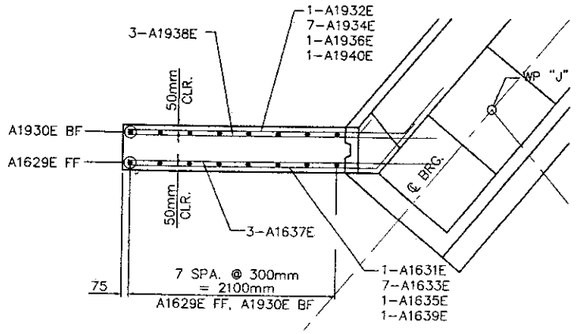
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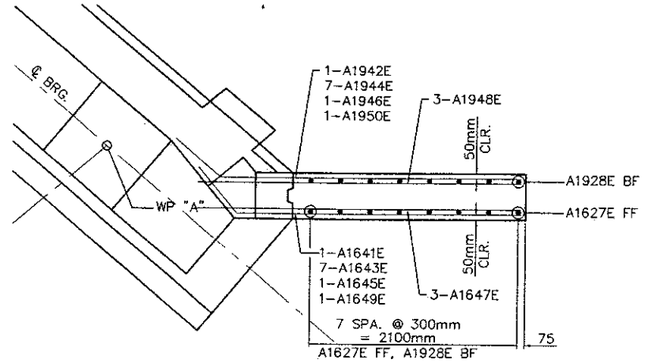
WSN 460A119

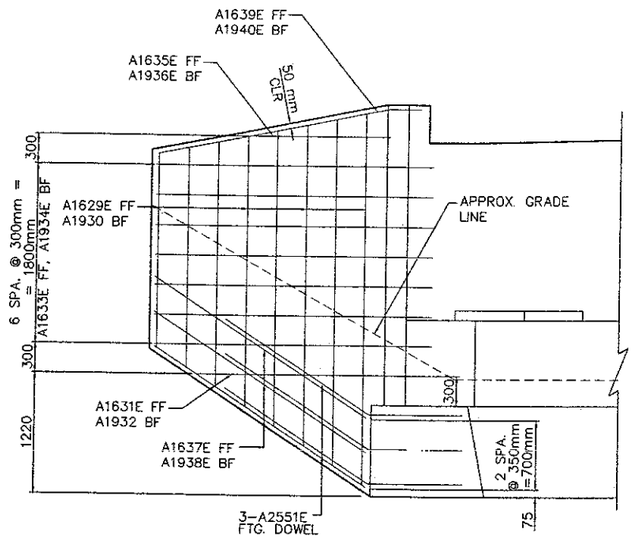
State Proj. No. 55-598-24

SHEET NO. B4 OF 30 SHEETS

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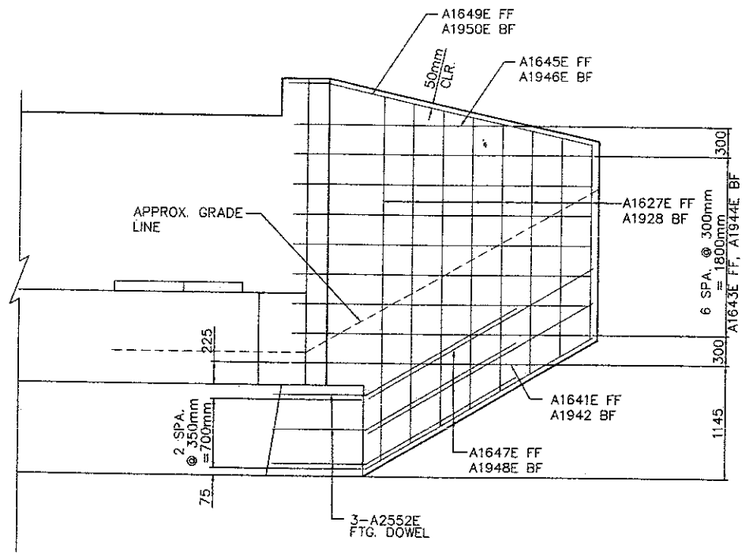






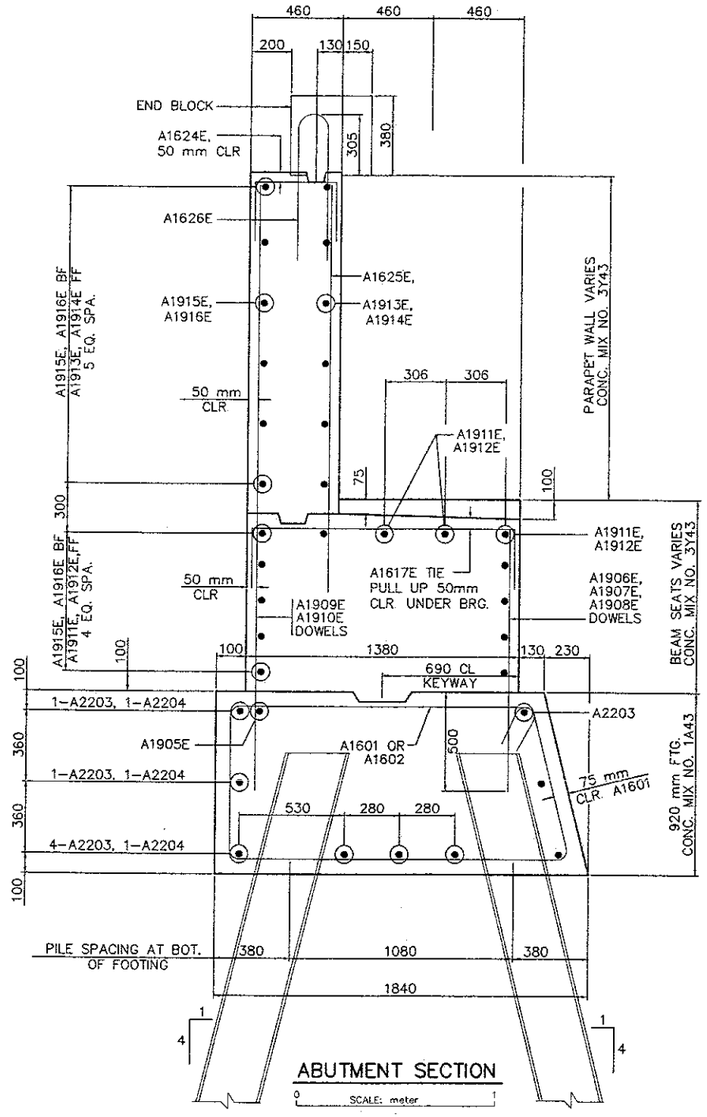
S.W. WINGWALL ELEVATION

SCALE: meter



N.W. WINGWALL ELEVATION

SCALE: meter



ABUTMENT SECTION

SCALE: meter

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
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PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

WEST ABUTMENT REINFORCEMENT

APPROVED 12-31-98

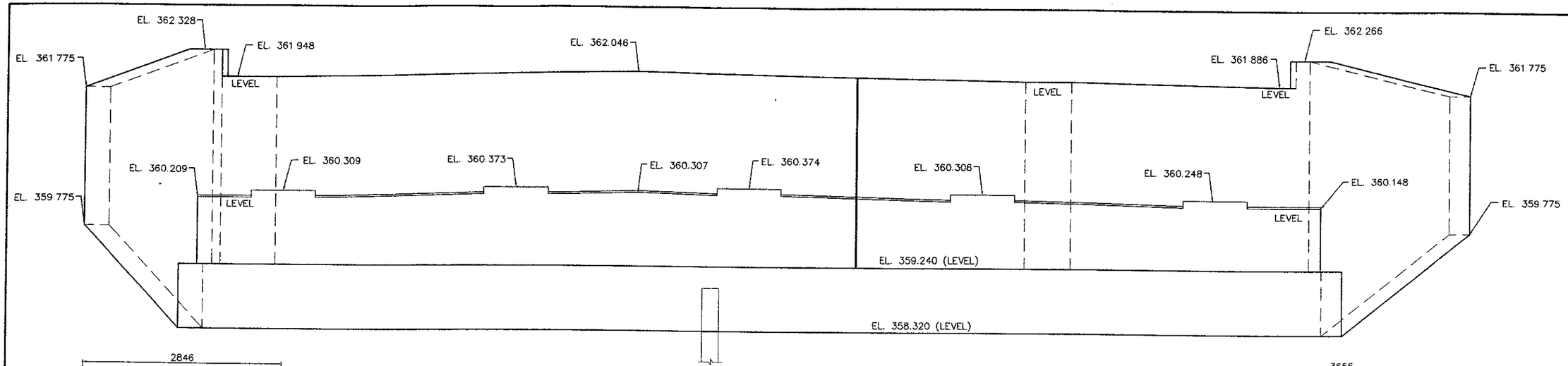
DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

WSN 460A119

CERTIFIED BY _____ PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

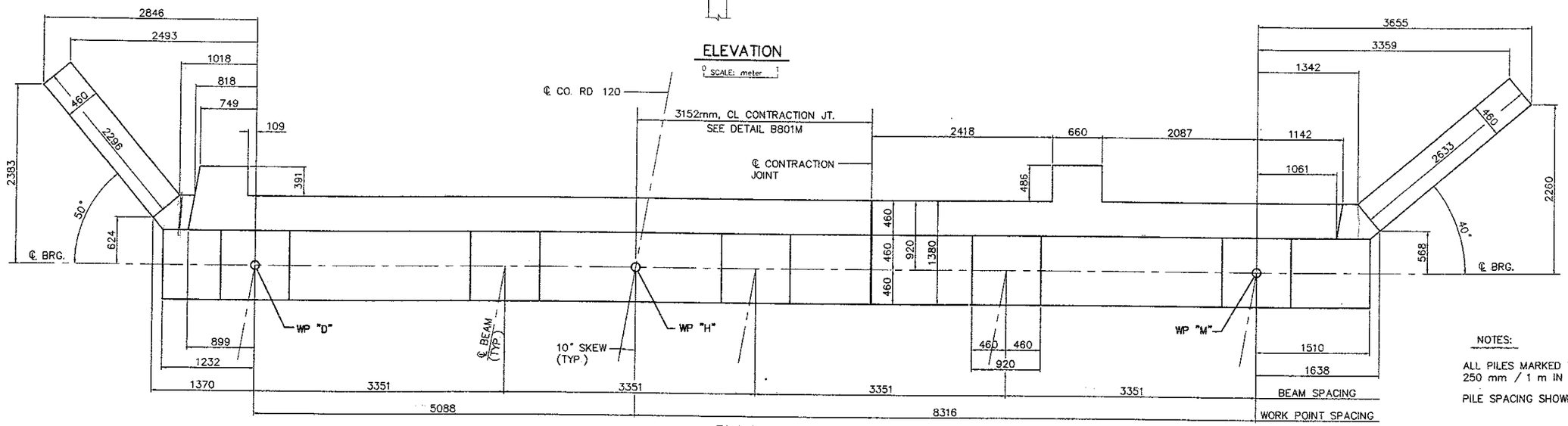
State Proj. No. 55-598-24

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ELEVATION

SCALE: meter



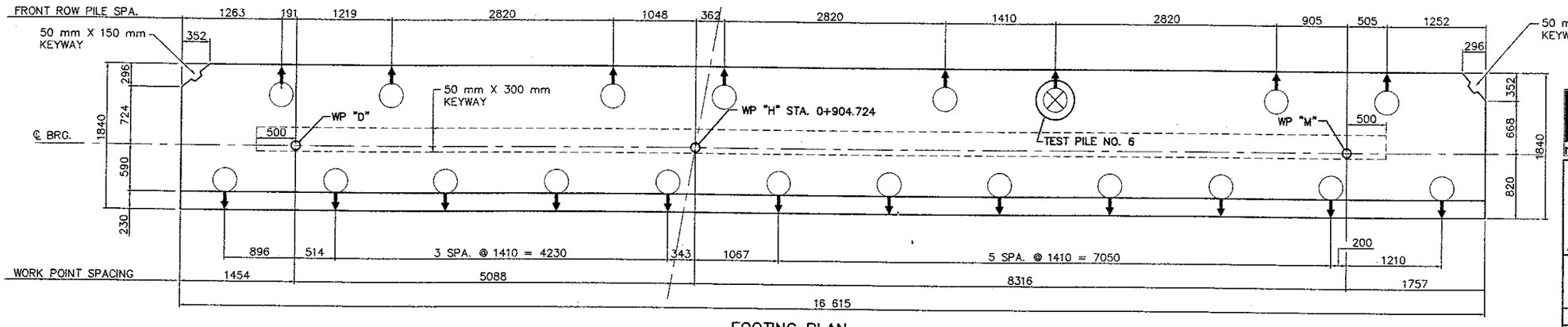
PLAN

SCALE: meter

NOTES:

ALL PILES MARKED THUS → TO BE BATTERED 250 mm / 1 m IN DIRECTION SHOWN

PILE SPACING SHOWN AT BOTTOM OF FOOTING.



FOOTING PLAN

SCALE: meter

WSN 460A119

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minnesota metric

WIDSETH SMITH NOLTING
ENGINEERS ARCHITECTS LAND SURVEYORS PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

EAST ABUTMENT LAYOUT

APPROVED 12-31-98

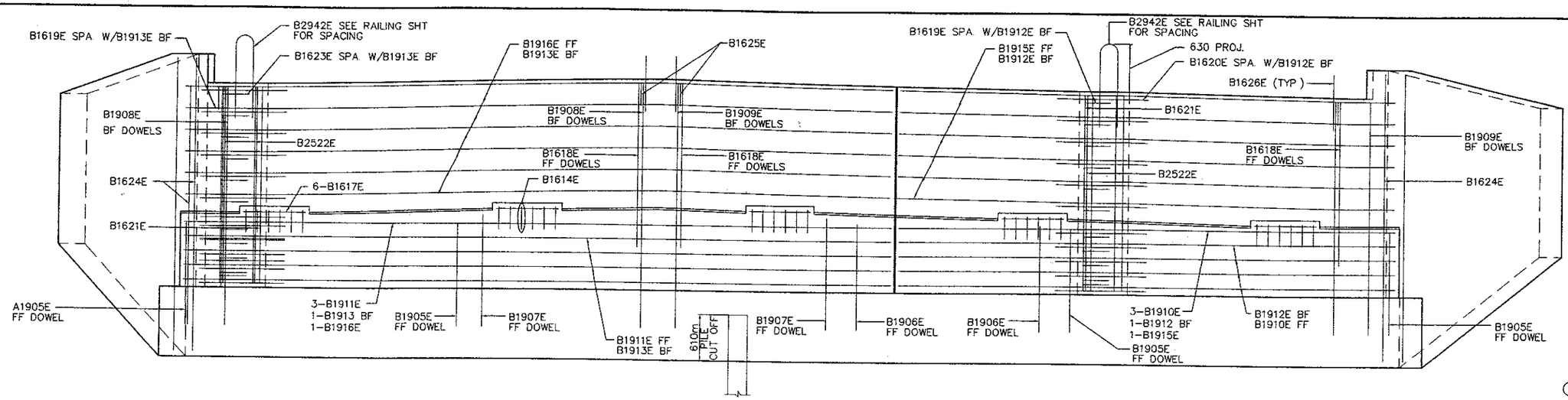
DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

CERTIFIED BY: [signature] PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

State Proj. No. 55-598-24

SHEET NO. B6 OF 30 SHEETS

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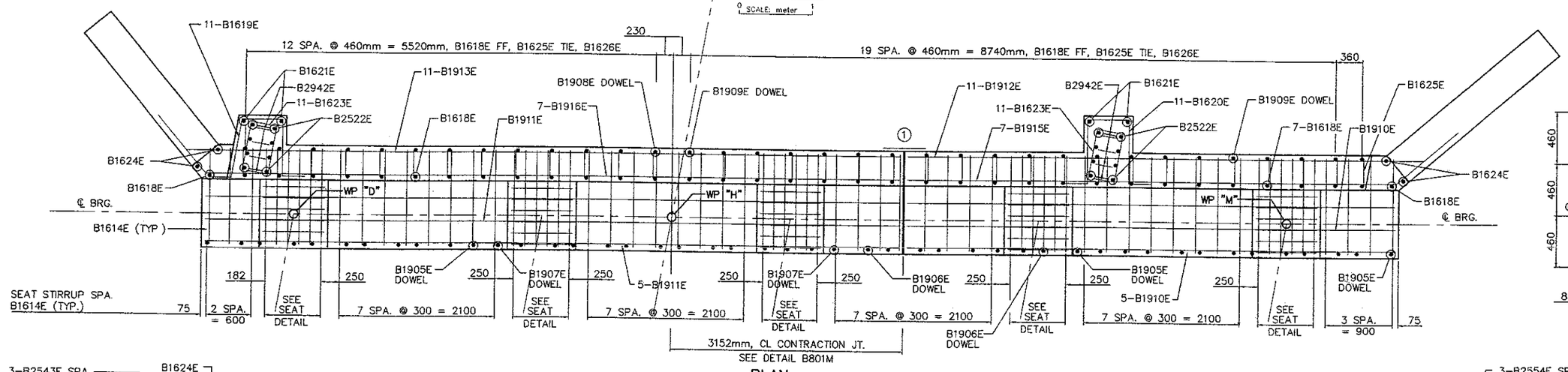


ELEVATION

0 SCALE: meter 1

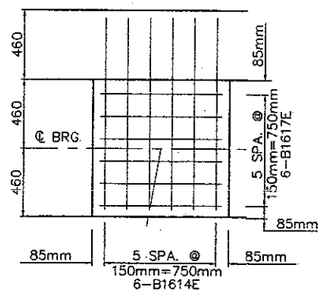
NOTES:

① 3 PLY JOINT WATERPROOFING OR APPROVED EQUAL, INCLUDED IN PRICE BID FOR OTHER ITEMS.



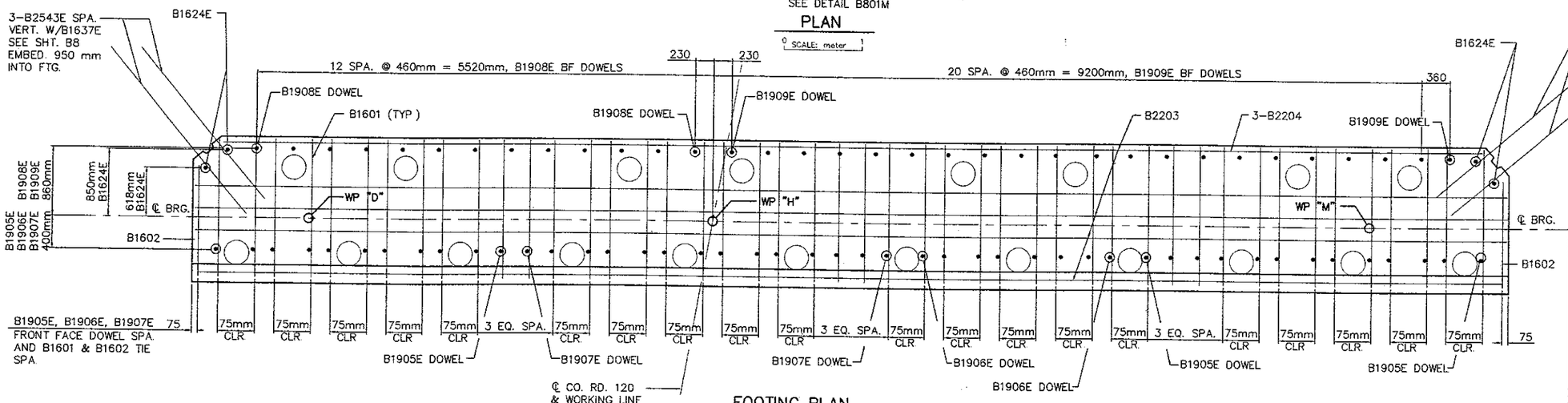
PLAN

0 SCALE: meter 1



SEAT DETAIL

0 SCALE: meter 1



FOOTING PLAN

0 SCALE: meter 1

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minnesota metric

WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
LAND SURVEYORS
PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

EAST ABUTMENT REINFORCEMENT

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

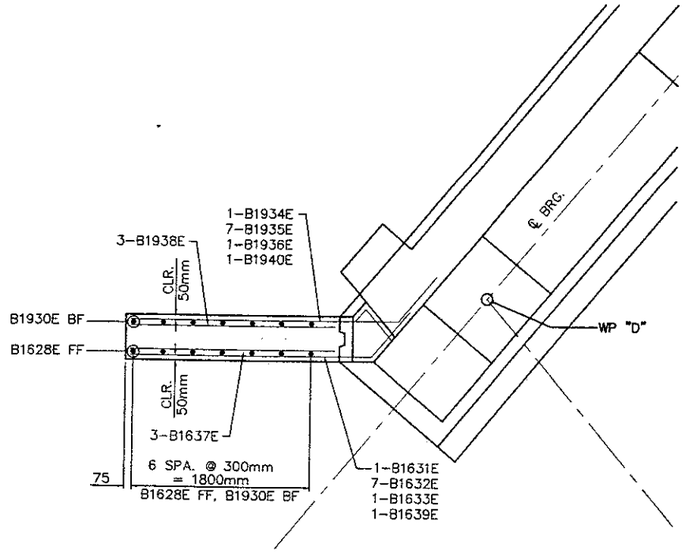
CERTIFIED BY: Timothy Moe PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

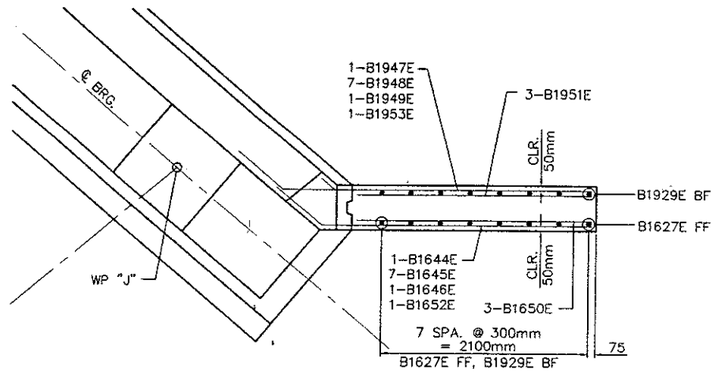
WSN 460A119

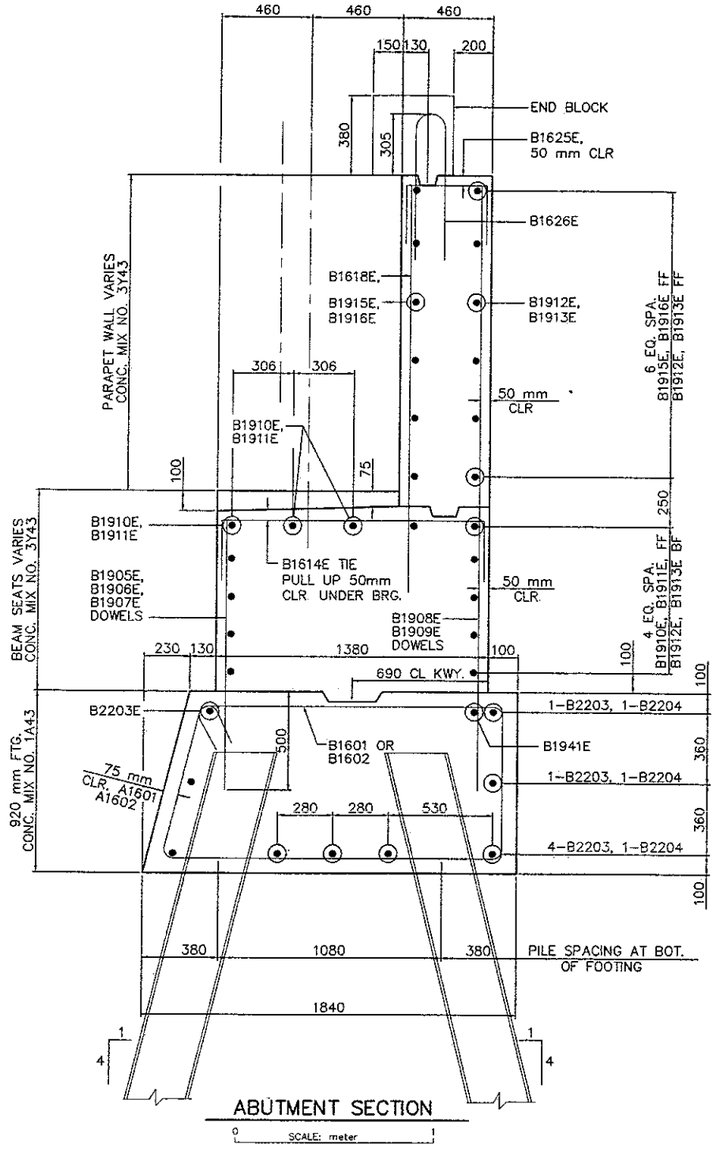
State Proj. No. 55-598-24

SHEET NO. B7 OF 30 SHEETS

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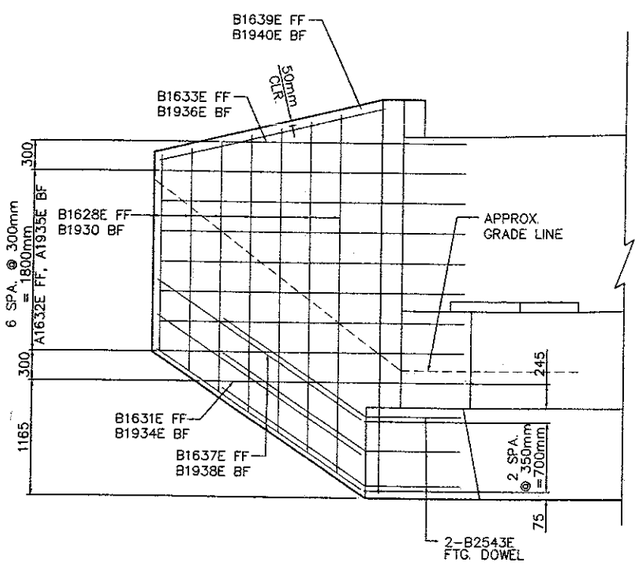






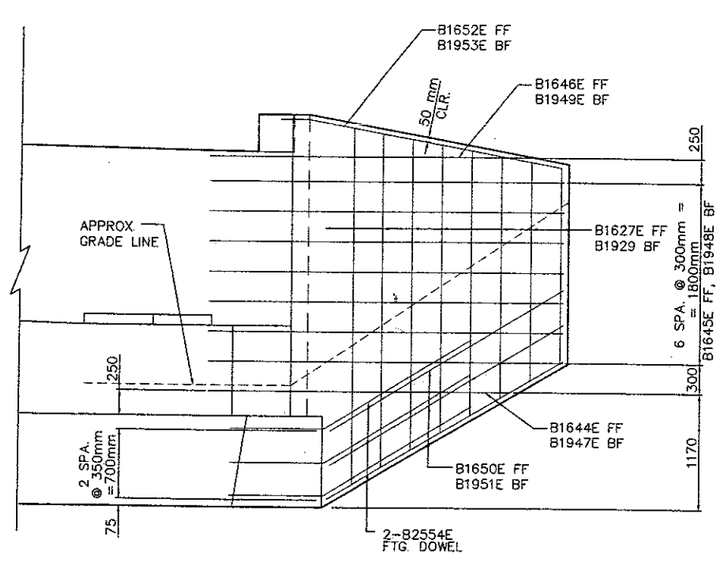
ABUTMENT SECTION

0 SCALE: meter



N.E. WINGWALL ELEVATION

0 SCALE: meter



S.E. WINGWALL ELEVATION

0 SCALE: meter

minnesota metric

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

WIDSETH SMITH NOLTING
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EAST ABUTMENT SECTION & WINGWALLS

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

WSN 460A119

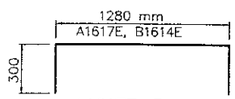
CERTIFIED BY _____ PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998

State Proj. No. 55-598-24

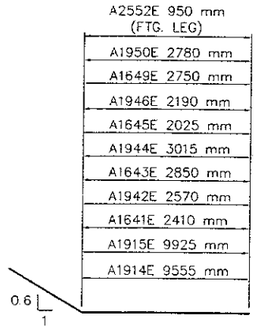
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BILL OF REINFORCEMENT
WEST ABUTMENT & WINGWALLS

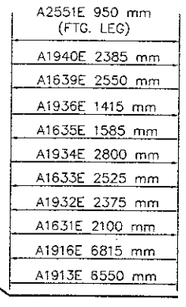
BAR	NO. OF BARS	LENGTH (mm)	SHAPE	LOCATION
A1601	48	4980	BENT	FOOTING TIES
A1602	3	4275	BENT	FOOTING TIES
A2203	6	16 610	STRAIGHT	FOOTING LONGT. FF
A2204	3	16 000	STRAIGHT	FOOTING LONGT. BF
A1905E	1	16 000	STRAIGHT	FTG. LONGT. DOWEL SUPPORT
A1906E	12	1320	STRAIGHT	FOOTING DOWEL FF
A1907E	29	1380	STRAIGHT	FOOTING DOWEL FF
A1608E	6	1450	STRAIGHT	FOOTING DOWEL FF
A1909E	1 SET OF 20	3095–3250	STRAIGHT	FOOTING DOWEL BF
A1910E	1 SET OF 14	3160–3250	STRAIGHT	FOOTING DOWEL BF
A1911E	7	9335	STRAIGHT	BRIDGE SEAT FF
A1912E	7	6545	STRAIGHT	BRIDGE SEAT FF
A1913E	7	7150	BENT	PARAPET WALL HORZ. FF
A1914E	7	10 155	BENT	PARAPET WALL HORZ. FF
A1915E	11	10 525	BENT	PARAPET WALL HORZ. BF
A1916E	11	7415	BENT	PARAPET WALL HORZ. BF
A1617E	68	1880	BENT	BRIDGE SEAT STIRRUP
A1618E	30	800	STRAIGHT	BRIDGE SEAT LONGT.
A1619E	11	2850	BENT	PARAPET BACKWALL TIE
A1620E	11	2600	BENT	PARAPET BACKWALL TIE
A1621E	4	3825	STRAIGHT	PARAPET WALL ENDS VERT.
A2522E	16	2600	STRAIGHT	RAILING SUPPORT DOWELS
A1623E	22	1650	BENT	RAILING SEAT TIE
A1624E	33	950	BENT	PARAPET TOP WALL TIE
A1625E	35	2230	STRAIGHT	PARAPET WALL DOWEL FF
A1626E	33	1555	BENT	END BLOCK TIE
A1627E	1 SET OF 8	1950 TO 3665	STRAIGHT	WINGWALL VERT. FF
A1928E	1 SET OF 8	1950 TO 3665	STRAIGHT	WINGWALL VERT. BF
A1629E	1 SET OF 8	1950 TO 3735	STRAIGHT	WINGWALL VERT. FF
A1930E	1 SET OF 8	1950 TO 3735	STRAIGHT	WINGWALL VERT. BF
A1631E	1	2700	BENT	WINGWALL HORZ. FF BOT.
A1932E	1	2975	BENT	WINGWALL HORZ. BF BOT.
A1633E	7	3125	BENT	WINGWALL HORZ. FF MID.
A1934E	7	3400	BENT	WINGWALL HORZ. BF MID.
A1635E	1	1850	BENT	WINGWALL HORZ. FF TOP
A1936E	1	1575	BENT	WINGWALL HORZ. BF TOP
A1637E	3	2580	STRAIGHT	WINGWALL HORZ. FF BOT.
A1938E	3	2580	STRAIGHT	WINGWALL HORZ. BF
A1639E	1	2820	BENT	WINGWALL TOP FF
A1940E	1	2545	BENT	WINGWALL TOP BF
A1641E	1	3010	BENT	WINGWALL HORZ. FF BOT.
A1942E	1	3170	BENT	WINGWALL HORZ. BF BOT.
A1643E	7	3450	BENT	WINGWALL HORIZ. FF MID.
A1944E	7	3615	BENT	WINGWALL HORZ. BF MID.
A1645E	1	2625	BENT	WINGWALL HORIZ. FF TOP
A1946E	1	2790	BENT	WINGWALL HORZ. BF TOP
A1647E	3	2620	STRAIGHT	WINGWALL HORIZ. FF BOT.
A1948E	3	2620	STRAIGHT	WINGWALL HORZ. BF BOT.
A1649E	1	3090	BENT	WINGWALL TOP FF
A1950E	1	2950	BENT	WINGWALL TOP BF
A2551E	6	2700	BENT	WINGWALL FOOTING DOWEL
A2552E	6	2700	BENT	WINGWALL FOOTING DOWEL
A2953E	8	3730	BENT	RAILING BASE
A1654E	4	2600	BENT	BACK WALL VERT. AT RAILING



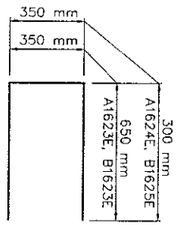
A1617E, B1614E



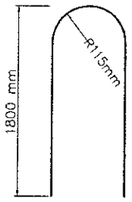
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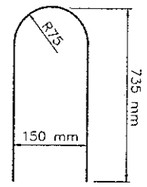
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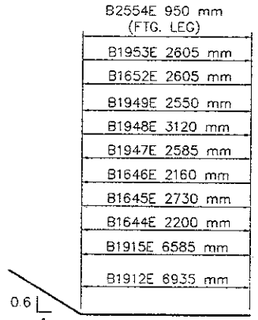
A1623E, A1624E
B1623E, B1625E



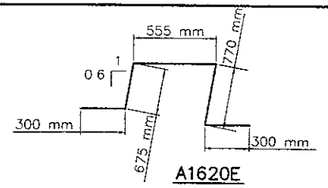
A2953E
B2942E



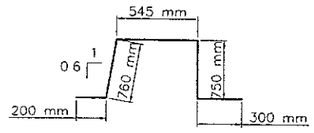
A1626E, B1626E



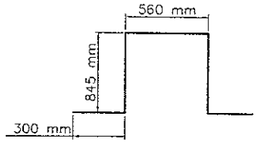
B1912E, B1915E, B1644E B1645E, B1646E, B1947E B1948E, B1949E, B1652E, B1953E & B2554E



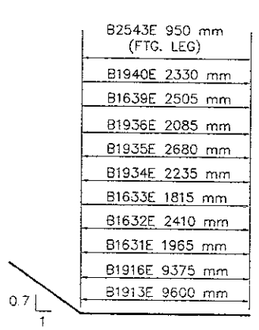
A1620E



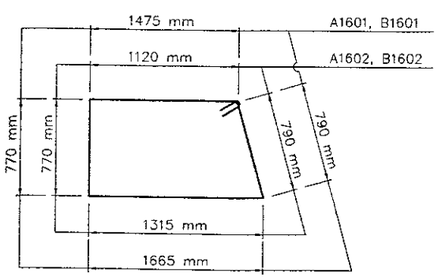
B1619E



A1619E, B1620E



B1913E, B1916E, B1631E, B1632E, B1633E, B1934E B1935E, B1936E, B1639E, B1940E & B2543E



A1601, A1602
B1601, B1602

SUMMARY OF QUANTITIES FOR WEST & EAST ABUTMENT		
STRUCTURAL CONCRETE (1A43)	53.0	m^3
STRUCTURAL CONCRETE (3Y43)	87.2	m^3
REINFORCEMENT BARS	1655	kg
REINFORCEMENT BARS (EPOXY COATED)	5898	kg
① C.I.P. CONC. PILING DEL'D., 310 mm	532	m
C.I.P. CONC.TEST PILES 16 m LONG, 310 mm	2	each
① C.I.P. CONC. PILING DRIVEN, 310 mm	532	m
② BENCH MARK DISK (STD PL NO.9300)	1	each

① DOES NOT INCLUDE TEST PILES

② COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD PLATE NO.9301 FOR PLACING.

FOR WEST & EAST ABUTMENTS	
COMPUTED PILE LOADS	– kN/PILE
DEAD LOAD	298
LIVE LOAD + EARTH PRESURE	60
DESIGN LOAD	358

PILE NOTES:
ALL PILES TO BE 310 m – C.I.P
SEE DETAIL B201M FOR PILE SPLICES
FOR TEST PILE LOCATIONS, SEE SURVEY SHEET 52.9

1 – 310 mm C.I.P. CONC. TEST PILES, 16 m LONG, WEST ABUT.
19 – 310 mm C.I.P. CONC. PILES, ESTIMATED LENGTH 14 m WEST ABUT
20 – 310 mm C.I.P CONC. PILES, REQUIRED FOR WEST ABUT 45.9

1 – 310 mm C.I.P. CONC. TEST PILES, 16 m LONG, EAST ABUT.
19 – 310 mm C.I.P. CONC. PILES, ESTIMATED LENGTH 14 m EAST ABUT
20 – 310 mm C.I.P CONC. PILES REQUIRED FOR EAST ABUT

BILL OF REINFORCEMENT
EAST ABUTMENT & WINGWALLS

BAR	NO. OF BARS	LENGTH (mm)	SHAPE	LOCATION
B1601	46	4980	BENT	FOOTING TIES
B1602	2	4275	BENT	FOOTING TIES
B2203	6	16 465	STRAIGHT	FOOTING LONGT. FF
B2204	3	15 900	STRAIGHT	FOOTING LONGT. BF
B1905E	24	1355	STRAIGHT	FOOTING DOWEL FF
B1906E	8	1400	STRAIGHT	FOOTING DOWEL FF
B1907E	14	1475	STRAIGHT	FOOTING DOWEL FF
B1908E	1 SET OF 13	3150–3250	STRAIGHT	FOOTING DOWEL BF
B1909E	1 SET OF 21	3095–3250	STRAIGHT	FOOTING DOWEL BF
B1910E	7	6570	STRAIGHT	BRIDGE SEAT HORZ. FF
B1911E	7	9370	STRAIGHT	BRIDGE SEAT HORZ. FF
B1912E	11	7535	BENT	PARAPET WALL HORZ. BF
B1913E	11	10 200	BENT	PARAPET WALL HORZ. BF
B1614E	69	1880	BENT	BRIDGE SEAT STIRRUP
B1915E	7	7185	BENT	PARAPET WALL HORZ. FF
B1916E	7	9975	BENT	PARAPET WALL HORZ. FF
B1617E	30	800	STRAIGHT	BRIDGE SEAT LONGT.
B1618E	36	2190	STRAIGHT	PARAPET WALL FF DOWEL
B1619E	11	2555	BENT	PARAPET BACKWALL TIE
B1620E	11	2850	BENT	PARAPET BACKWALL TIE
B1621E	4	2595	STRAIGHT	PARAPET WALL ENDS VERT.
B2522E	16	2595	STRAIGHT	RAILING SUPPORT DOWELS
B1623E	22	1650	BENT	RAILING SEAT TIE
B1624E	4	3820	STRAIGHT	PARAPET WALL ENDS VERT.
B1625E	34	950	BENT	PARAPET TOP WALL TIE
B1626E	33	1555	BENT	END BLOCK TIE
B1627E	1 SET OF 8	1950 TO 3565	STRAIGHT	WINGWALL VERT. FF
B1628E	1 SET OF 7	1950 TO 3590	STRAIGHT	WINGWALL VERT. FF
B1929E	1 SET OF 8	1950 TO 3565	STRAIGHT	WINGWALL VERT. BF
B1930E	1 SET OF 7	1950 TO 3590	STRAIGHT	WINGWALL VERT. BF
B1631E	1	2565	BENT	WINGWALL HORZ. FF BOT.
B1632E	7	3010	BENT	WINGWALL HORZ. FF MID.
B1633E	1	2415	BENT	WINGWALL HORZ. FF TOP
B1934E	1	2835	BENT	WINGWALL HORZ. BF BOT.
B1935E	7	3280	BENT	WINGWALL HORZ. BF MID.
B1936E	1	2685	BENT	WINGWALL HORZ. BF TOP
B1637E	3	2485	STRAIGHT	WINGWALL HORZ. FF BOT.
B1938E	3	2485	STRAIGHT	WINGWALL HORZ. BF BOT.
B1639E	1	2770	BENT	WINGWALL TOP FF
B1940E	1	2490	BENT	WINGWALL TOP BF
B1941E	1	15 900	STRAIGHT	FTG. LONGT. DOWEL SUPPORT
B2942E	8	3730	BENT	RAILING BASE
B2543E	6	2700	BENT	WINGWALL FOOTING DOWEL
B1644E	1	2800	BENT	WINGWALL HORZ. FF BOT.
B1645E	7	3330	BENT	WINGWALL HORIZ. FF MID.
B1646E	1	2760	BENT	WINGWALL HORZ. FF TOP
B1947E	1	3185	BENT	WINGWALL HORIZ. BF BOT.
B1948E	7	3720	BENT	WINGWALL HORZ. BF MID.
B1949E	1	3150	BENT	WINGWALL HORZ. BF TOP
B1650E	3	2755	STRAIGHT	WINGWALL HORIZ. FF
B1951E	3	2755	STRAIGHT	WINGWALL HORZ. BF
B1652E	1	3120	BENT	WINGWALL TOP FF
B1953E	1	2795	BENT	WINGWALL TOP BF
B2554E	6	2700	BENT	WINGWALL FOOTING DOWEL

minnesota metric

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m)

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WINGWALL AND QUANTITIES

APPROVED 12-31-98

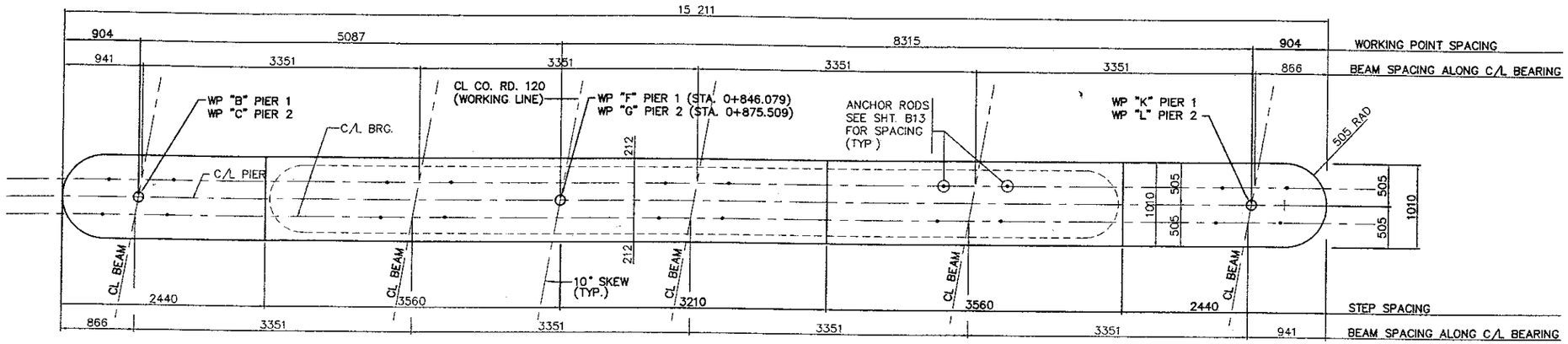
DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	28525

WSN 460A107

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State Aid Proj. No. 28–620–05 SHEET NO. B9 OF 30 SHEETS

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NOTES:

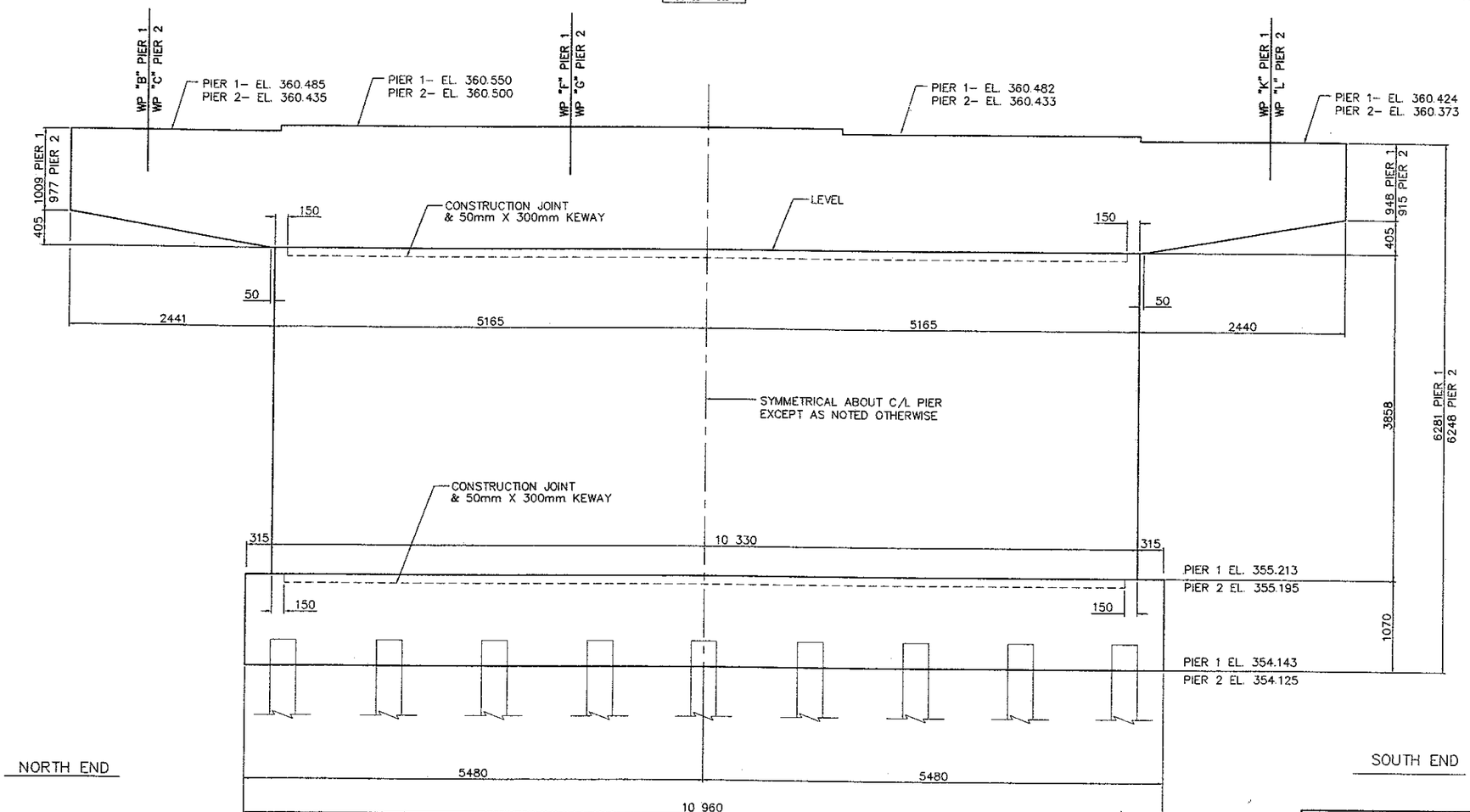
1 ANCHOR RODS ON PIER NO. 2 ONLY, SEE SHEET NO. B13 FOR ANCHOR ROD LAYOUT

PLAN

0 SCALE: meter 1

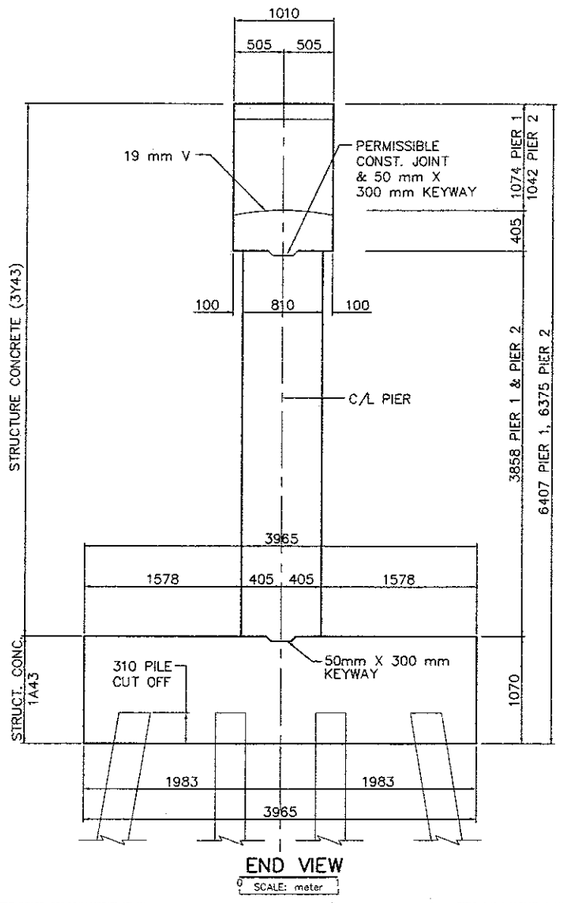
NORTH END

SOUTH END



ELEVATION

0 SCALE: meter 1



END VIEW

0 SCALE: meter

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

WIDSETH SMITH NOLTING

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ARCHITECTS
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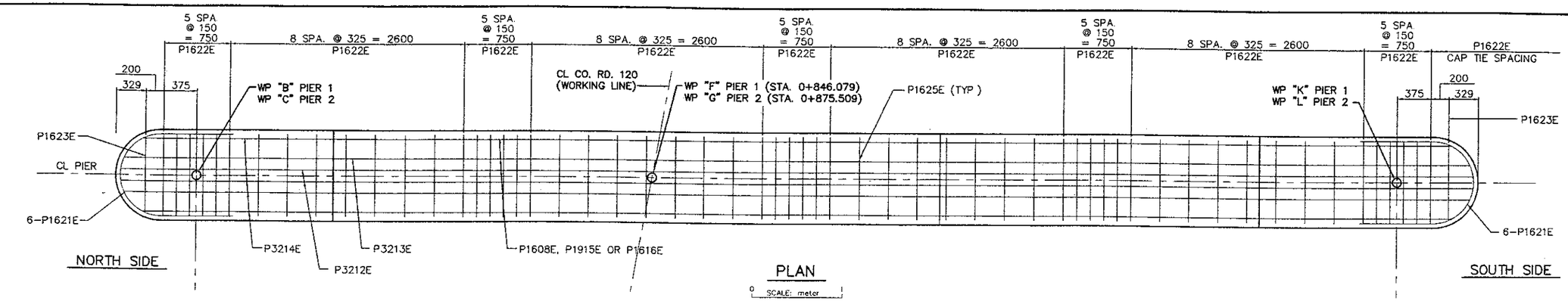
PIER 1 AND 2 LAYOUT

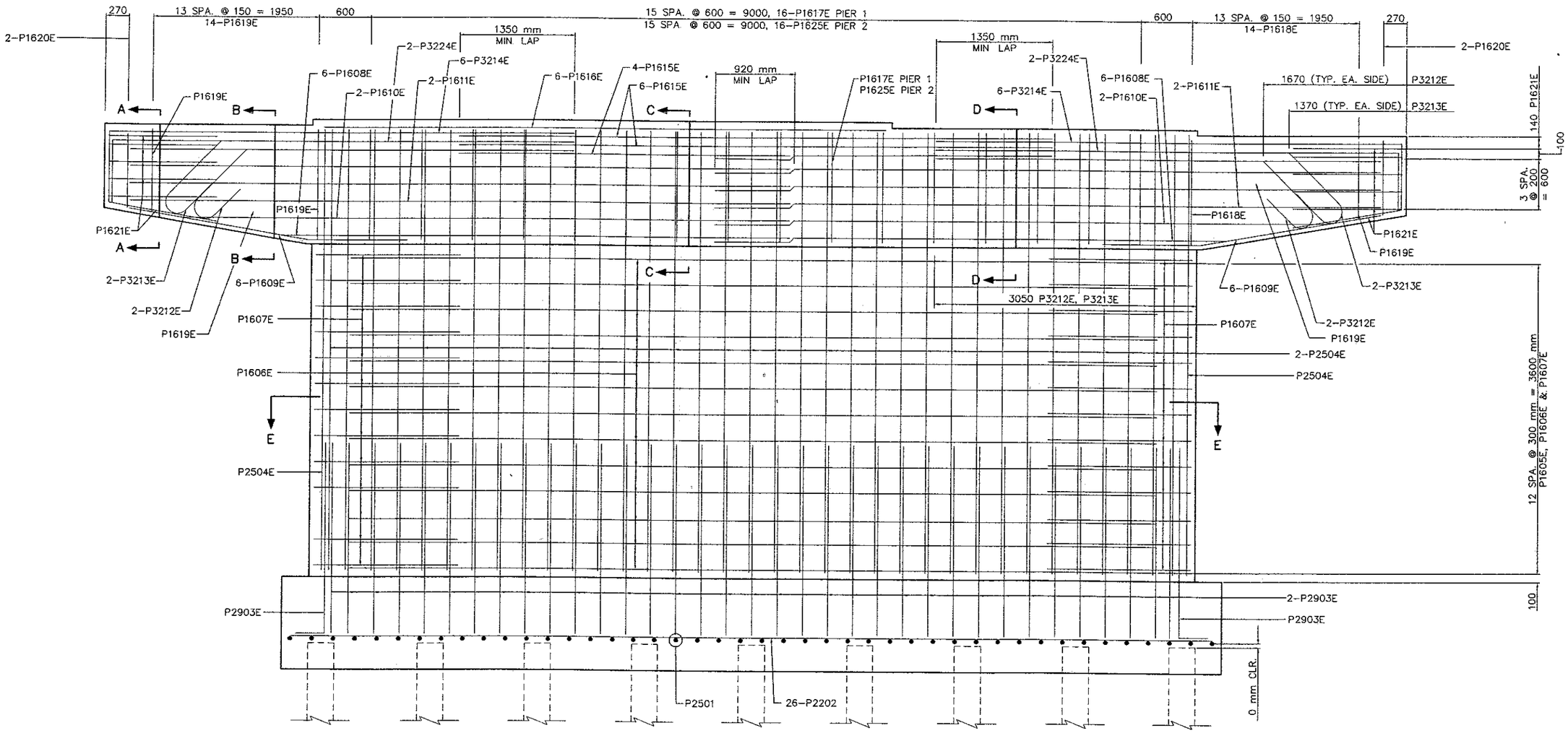
APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

State Proj. No. 55-598-24 SHEET NO. B10 OF 30 SHEETS

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ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

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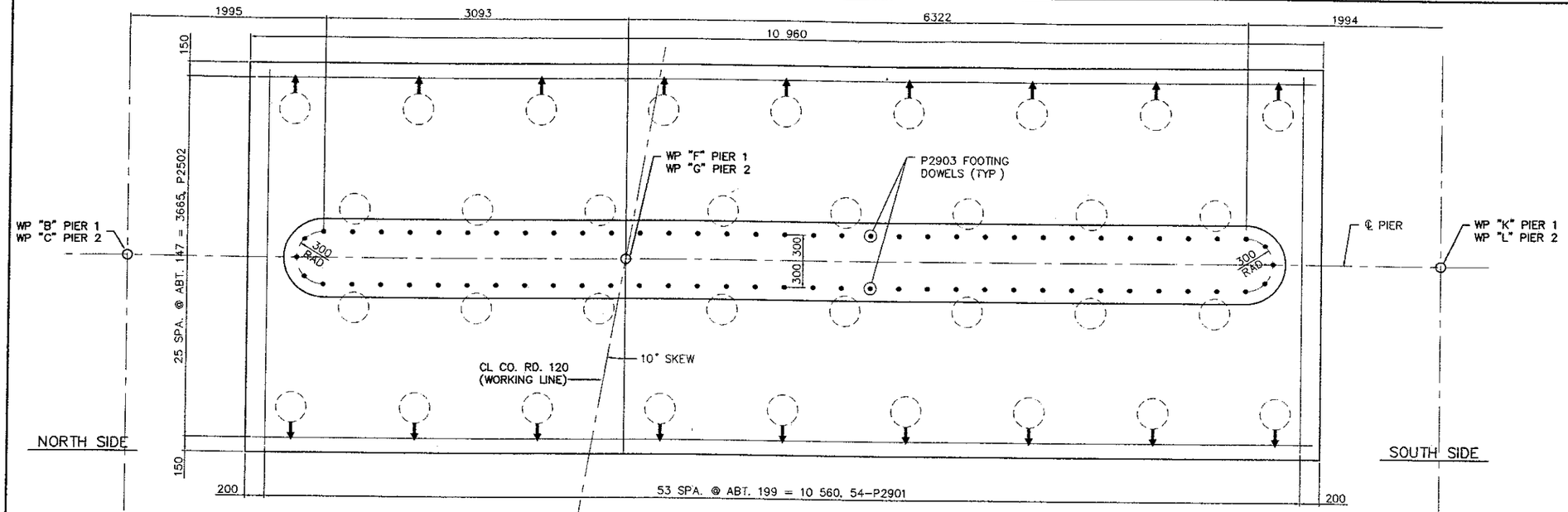
PIER 1 AND 2 REINFORCEMENT

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO. 55546
CHK. BY	K.A.R.	CHK. BY	T.J.M.	

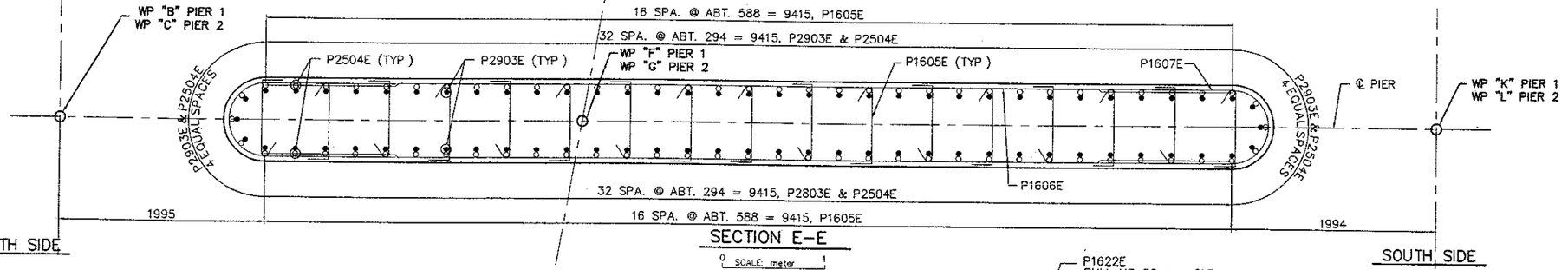
State Proj. No. 55-598-24 SHEET NO. B11 OF 30 SHEETS

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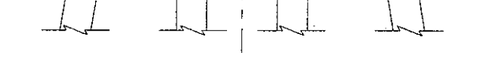
FOOTING PLAN

SCALE: meter



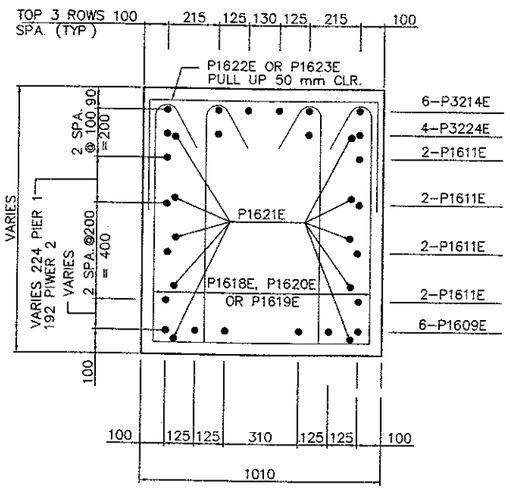
SECTION E-E

SCALE: meter



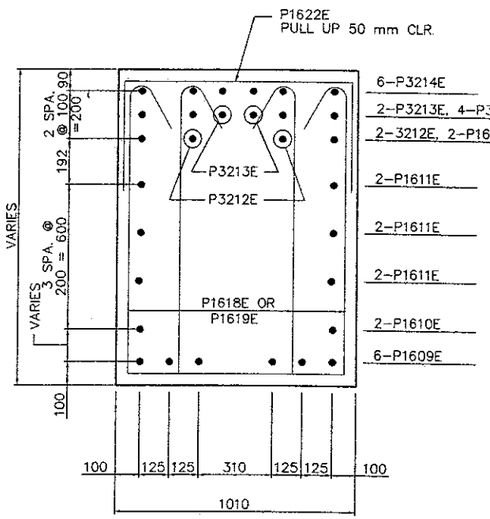
END VIEW

SCALE: meter



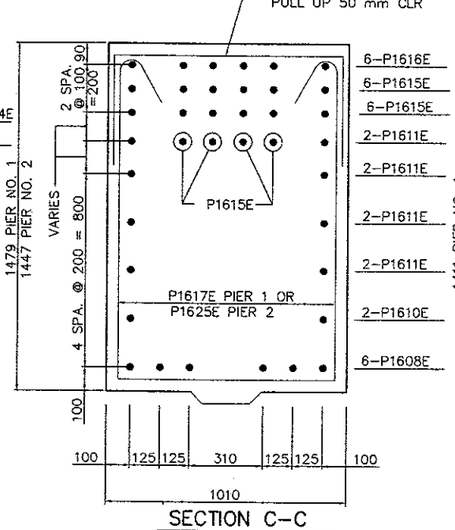
SECTION A-A

SCALE: meter



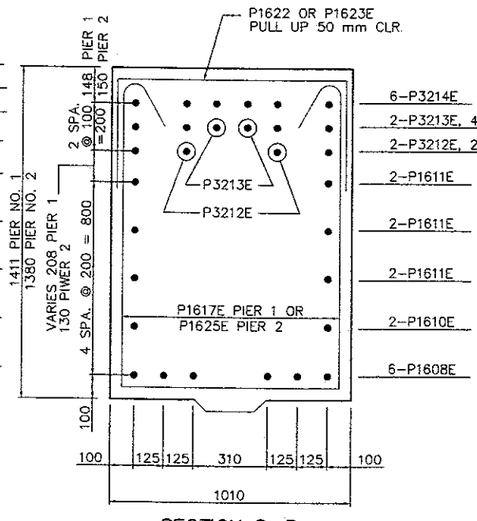
SECTION B-B

SCALE: meter



SECTION C-C

SCALE: meter



SECTION D-D

SCALE: meter

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

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PIER 1 AND 2 REINFORCEMENT

APPROVED 12-31-98

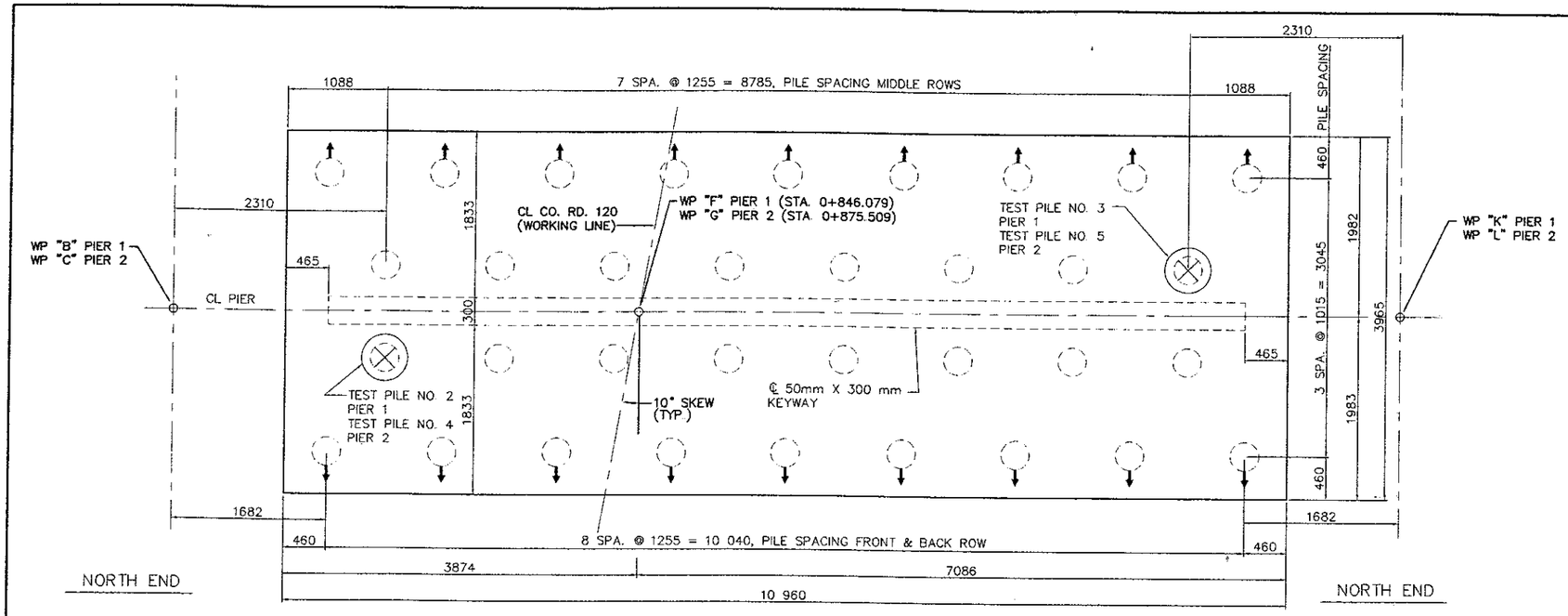
DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

WSN 460A119

CERTIFIED BY [signature] PROFESSIONAL ENGINEER REG. NO 14280 9/1 1998

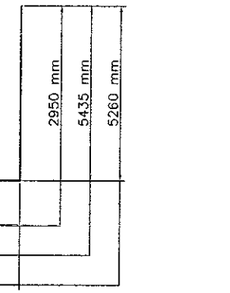
State Proj. No. 55-598-24 SHEET NO. B120F 30 SHEETS

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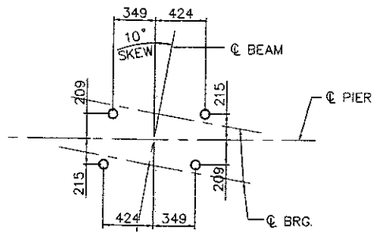


FOOTING PLAN

0 SCALE: meter 1



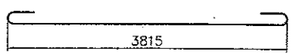
P2903E, P3214E & P3224E



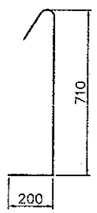
ANCHOR ROD LAYOUT

0 SCALE: meter 1

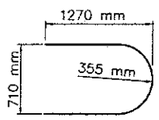
BAR SHAPES:



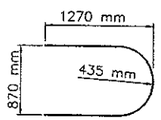
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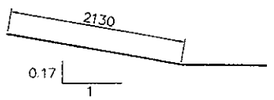
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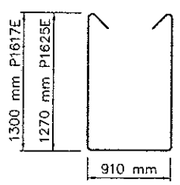
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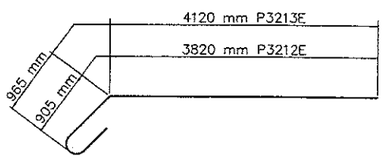
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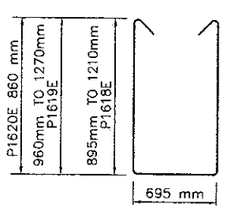
P1609E



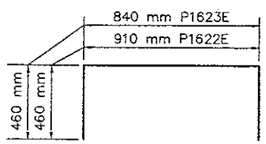
P1617E & P1625E



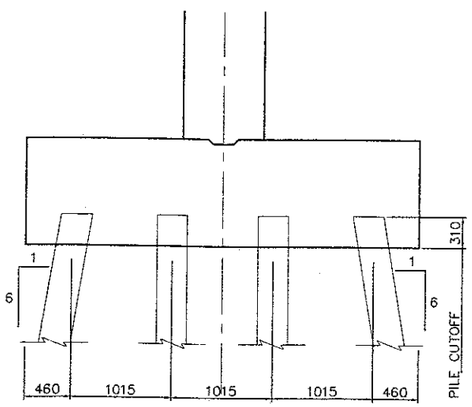
P3212E & P3213E



P1618E, P1619E, P1620E



P1622E & P1623E



END VIEW

0 SCALE: meter 1

BILL OF REINFORCEMENT PIER 1 & 2

BAR	PIER 1	PIER 2	LENGTH	SHAPE	LOCATION
P2901	54	54	4565	BENT	FOOTING HORIZONTAL
P2502	26	26	10 810	STRAIGHT	FOOTING LONGITUDINAL
P2903E	72	72	3425	BENT	FOOTING DOWEL
P2504E	72	72	5110	STRAIGHT	PIER STEM VERTICAL
P1605E	221	221	1065	BENT	PIER STEM TIE
P1606E	26	26	9415	STRAIGHT	PIER STEM HORIZONTAL
P1607E	26	26	2950	BENT	PIER STEM HORZ. ENDS
P1608E	12	12	5965	STRAIGHT	PIER CAP HORIZONTAL BOT.
P1609E	12	12	3275	BENT	PIER CAP HORZ. ENDS
P1610E	4	4	7145	STRAIGHT	PIER CAP HORIZONTAL
P1611E	16	16	7770	STRAIGHT	PIER CAP HORIZONTAL
P3212E	4	4	5150	BENT	PIER CAP HORIZONTAL
P3213E	4	4	5510	BENT	PIER CAP HORIZONTAL
P3214E	12	12	6225	BENT	PIER CAP HORIZONTAL
P1615E	16	16	6925	STRAIGHT	PIER CAP HORIZONTAL
P1616E	6	6	6550	STRAIGHT	PIER CAP HORIZONTAL
P1617E	16		3790	BENT	PIER CAP STIRRUP
P1618E	1 SETS OF 14	1 SETS OF 14	2765–3395	BENT	PIER CAP STIRRUP
P1619E	1 SETS OF 14	1 SETS OF 14	2895–3515	BENT	PIER CAP STIRRUP
P1620E	4	4	2695	BENT	PIER CAP STIRRUP
P1621E	12	12	3040	BENT	PIER CAP HORIZONTAL
P1622E	58	58	1830	BENT	PIER CAP TIE
P1623E	2	2	1760	BENT	PIER CAP TIE
P3224E	2	2	6150	BENT	PIER CAP HORIZONTAL
P1625E		16	3730	BENT	PIER CAP STIRRUP

SUMMARY OF QUANTITIES FOR PIER 1 & PIER 2

	STRUCTURE CONCRETE (1Y43)	92.8	m^3
	STRUCTURE CONCRETE (3Y43)	104.6	m^3
	REINFORCEMENT BARS	4728	kg
	REINFORCEMENT BARS (EPOXY COATED)	10 315	kg
①	CIP CONC. PILING DELIVERED 310 mm	576	m
①	CIP CONC. PILING DRIVEN 310 mm	576	m
	CIP CONC. TEST PILING 11 m LONG	4	EACH
	FOUNDATION PREPARATION PIER 1	1	LUMP SUM
	FOUNDATION PREPARATION PIER 2	1	LUMP SUM

① DOES NOT INCLUDE TEST PILES.

COMPUTED PILE LOAD kN/PILE	PIER 1	PIER 2
DEAD LOAD	235	235
LIVE LOAD	28	28
OVERTURNING	187	187
TOTAL	450	450
✳ DESIGN LOAD	360	360

✳ $\frac{450}{1.25}$ = 360 kN REDUCTION AS PER AASHTO 3.22.1 GROUP VI LOADING

PILE NOTES:

ALL PILES TO BE 310 m – C.I.P
SEE DETAIL B201M FOR PILE SPLICES
FOR TEST PILE LOCATIONS, SEE SURVEY SHEET

PILES MARKED THUS → TO BE BATTERED 167 mm / 1 m IN DIRECTION SHOWN

PILE SPACING SHOWN AT BOTTOM OF FOOTING.

2 – 310 mm C.I.P. CONC. TEST PILES, 11 m LONG, PIER 1
32 – 310 mm C.I.P. CONC. PILES, ESTIMATED LENGTH 9 m PIER 1
34 – C.I.P CONC REQUIRED FOR PIER 1

2 – 310 mm C.I.P. CONC. TEST PILES, 11 m LONG, PIER 2
32 – 310 mm C.I.P. CONC. PILES, ESTIMATED LENGTH 9 m PIER 2
34 – C.I.P CONC REQUIRED FOR PIER 2

minnesota metric

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

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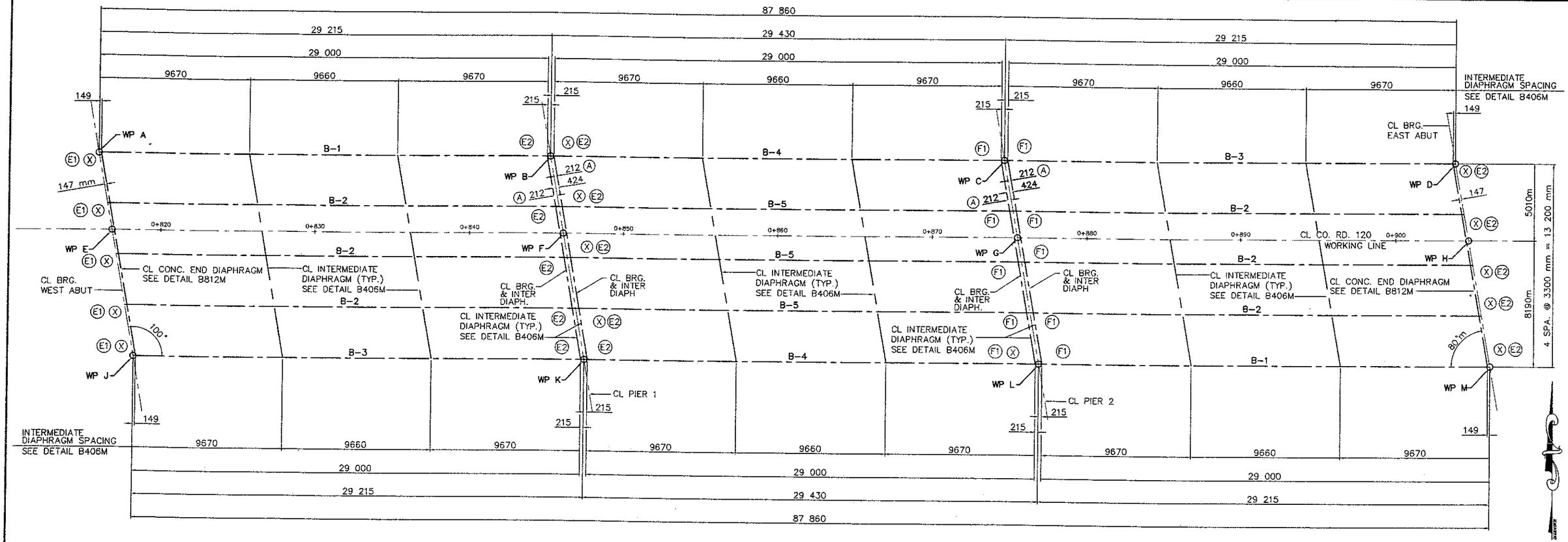
PIER 1 AND 2 BILL OF REINFORCEMENT AND QUANTITIES

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO. 55546
CHK. BY	K.A.R.	CHK. BY	T.J.M.	

State Proj. No. 55–598–24 SHEET NO. B130F 30 SHEETS

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FRAMING PLAN

0 SCALE: meter 5

NOTES:

1. DIMENSIONS ARE MEASURED ALONG CL OF BEAM
2. (X) "X" END OF BEAM
3. (A) INTERSECTION OF THIS LINE & THE BEAM CL IS THE LOCATION OF DIAPHRAGM
4. (E1) EXPANSION CURVED PLATE BRG. ASSEMBLY, TYPE E1 SEE DETAIL B311M
5. (E2) EXPANSION CURVED PLATE BRG. ASSEMBLY, TYPE E2 SEE DETAIL B311M
6. (F1) FIXED CURVED PLATE BRG. ASSEMBLY, TYPE F1 SEE DETAIL B310M

minnesota metric ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

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FRAMING PLAN

APPROVED 12-31-98

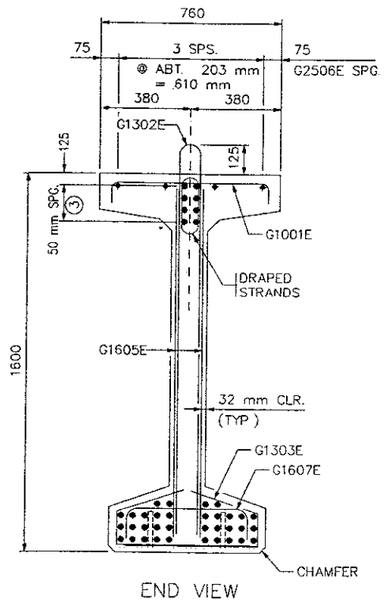
DES. BY	T.J.M.	DR. BY	C.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

WSN 460A119

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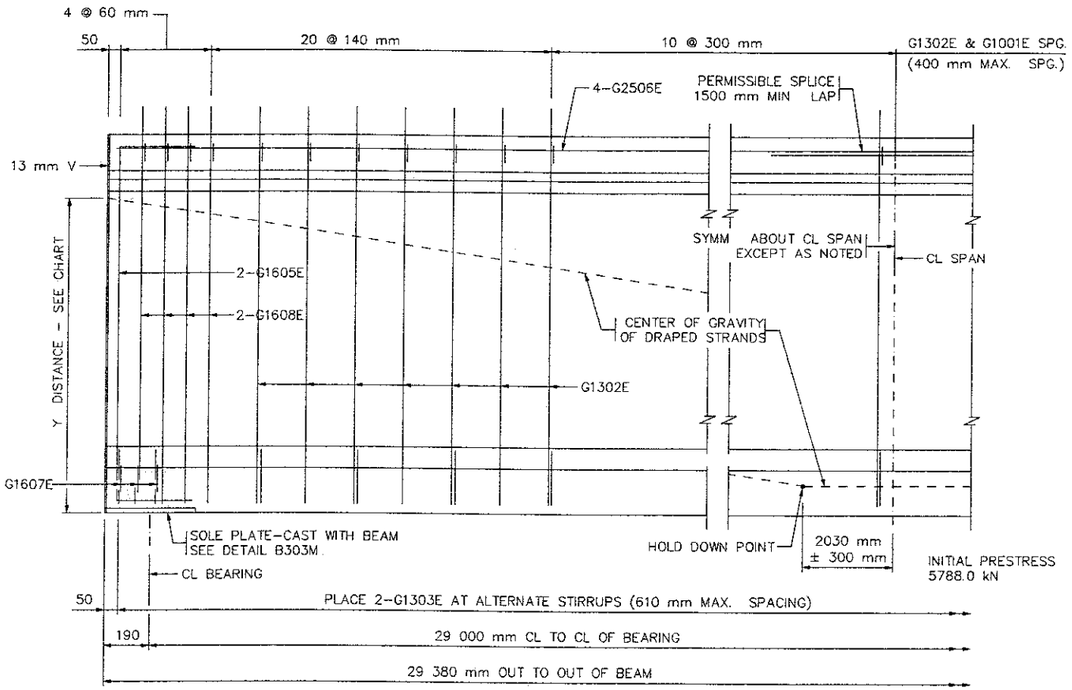
State Proj. No. 55-598-24 SHEET NO. B14 OF 30 SHEETS

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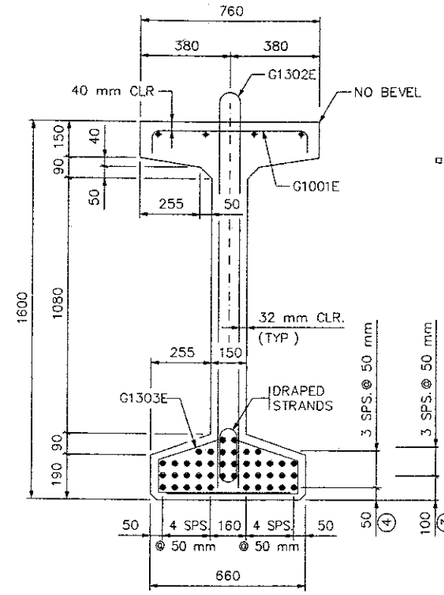


END VIEW

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED



BEAM ELEVATION

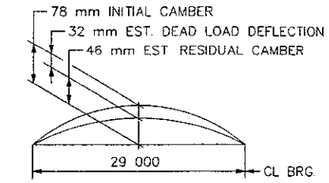


SECTION AT CL SPAN

Y DISTANCES (IN MILLIMETERS)			
	NO.	CL SPAN	END
STRAIGHT STRANDS	34	112	
DRAPED STRANDS	8	175	1397 ▫
TOTAL STRANDS	42	126	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 50 mm CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED

▫ A TOLERANCE OF ± 25 mm WILL BE PERMITTED IN THIS DIMENSION

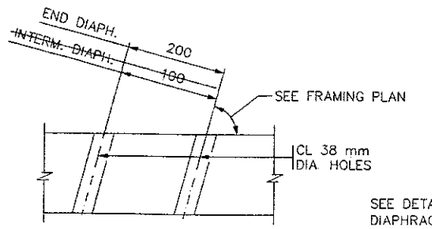


CAMBER DIAGRAM

INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

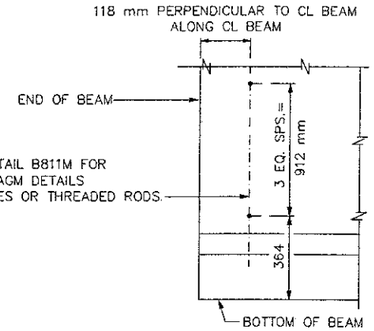
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE

ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS

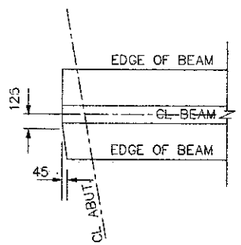


SECTION X-X

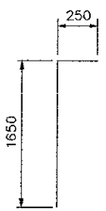
INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM



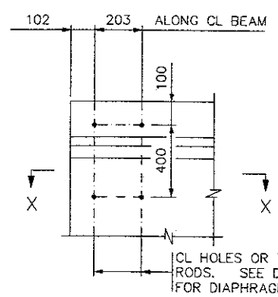
CONCRETE END DIAPHRAGM



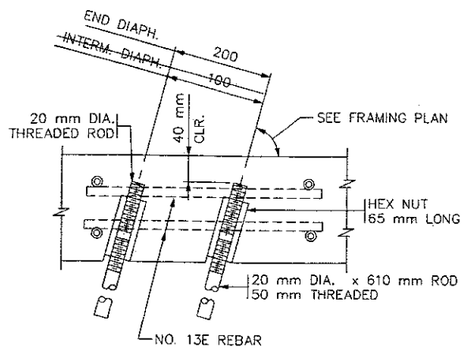
BEAM COPING



G1608E

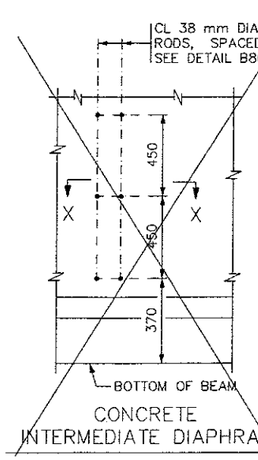


CONCRETE END DIAPHRAGMS

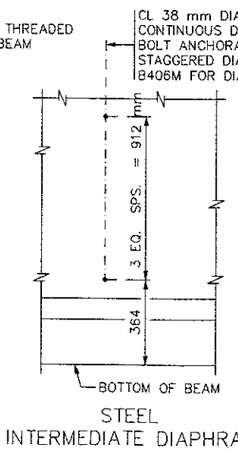


SECTION X-X

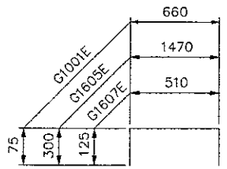
USE AT FACIA BEAM AND INTERIOR BEAMS WITH STAGGERED DIAPHRAGMS.



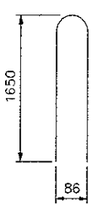
CONCRETE INTERMEDIATE DIAPHRAGM



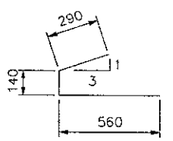
STEEL INTERMEDIATE DIAPHRAGM



G1001E, G1605E & G1607E



G1302E



G1303E

GENERAL NOTES:

PRESTRESSING STRANDS SHALL BE 13 mm DIA. 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416M, GRADE 1860.

TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

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. FACIA BEAMS SHALL BE MARKED ON THE INSIDE FACE. ALL MARKINGS SHALL BE STENCILED 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 END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WEIGHT OF BEAM IS 33.4 METRIC 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 67 kN PER ANCHORAGE.

MINIMUM CONCRETE STRENGTH - MPa		
	① f'ci	② f'c
REQUIRED MIN. CONCRETE STRENGTH	37	45

① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER

② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.

③ DRAPED STRANDS.

④ STRAIGHT STRANDS.

S.P. NO. 55-598-24

BEAMS B1 - B5

FIG. 5-397.516M

APPROVED: MONTH DATE, 1996

STATE BRIDGE ENGINEER

460A119

CERTIFIED BY: PROFESSIONAL ENGINEER

REG. NO. 14290 9/4 1998

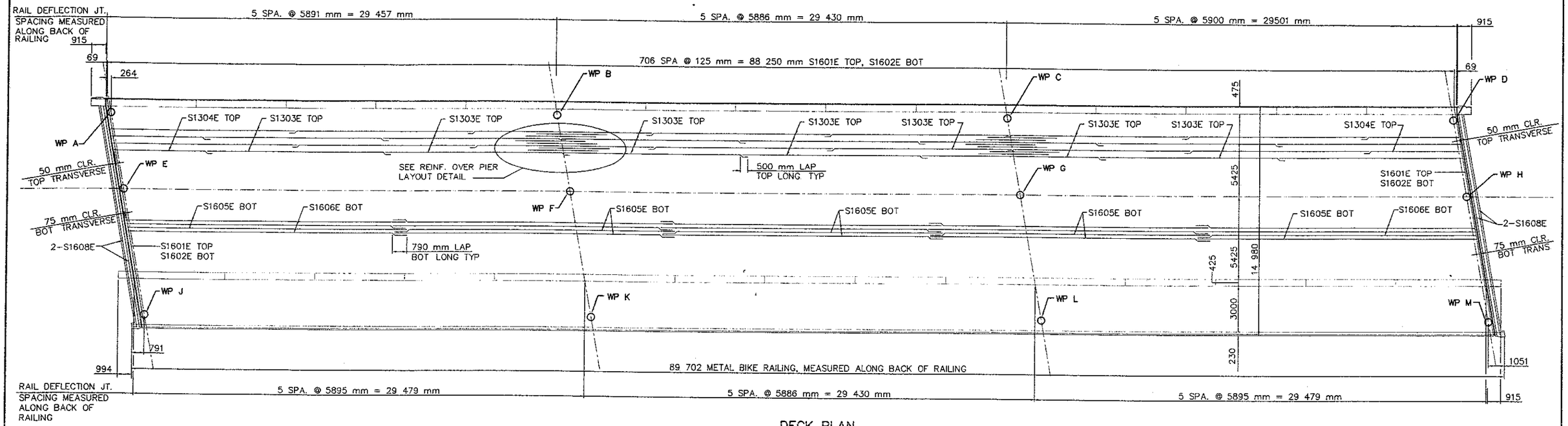
TITLE: 1600 mm PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 1600-29.4

DES: T.J.M.	DR: G.A.M.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

Sheet No. B15 of 30 Sheets

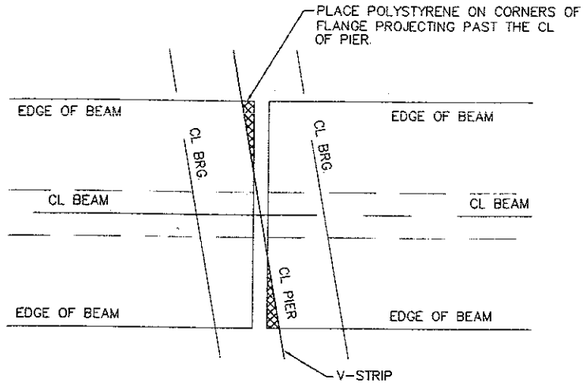
Bridge No. 55546

H:\460\460B1DGN\119\DNG\39751Ga.dwg Thu Sep 03 14:04:05 1998



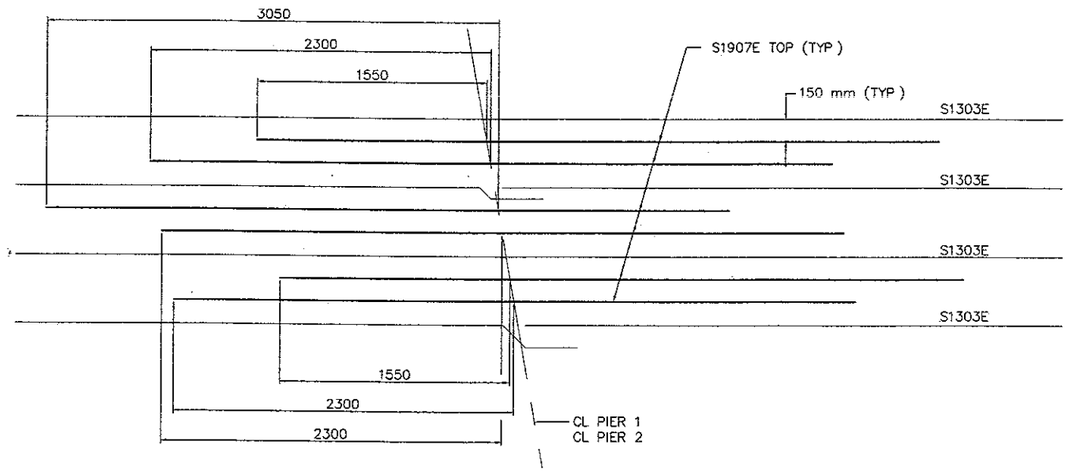
DECK PLAN

0 SCALE: meter 4



SAWCUT AT PIERS

0 SCALE: meter 0.5



ADDITIONAL REINFORCEMENT OVER PIERS

0 SCALE: meter

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

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WIDSETH SMITH NOLTING ENGINEERS ARCHITECTS LAND SURVEYORS PROJECT MANAGERS

ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

WSN 460A119

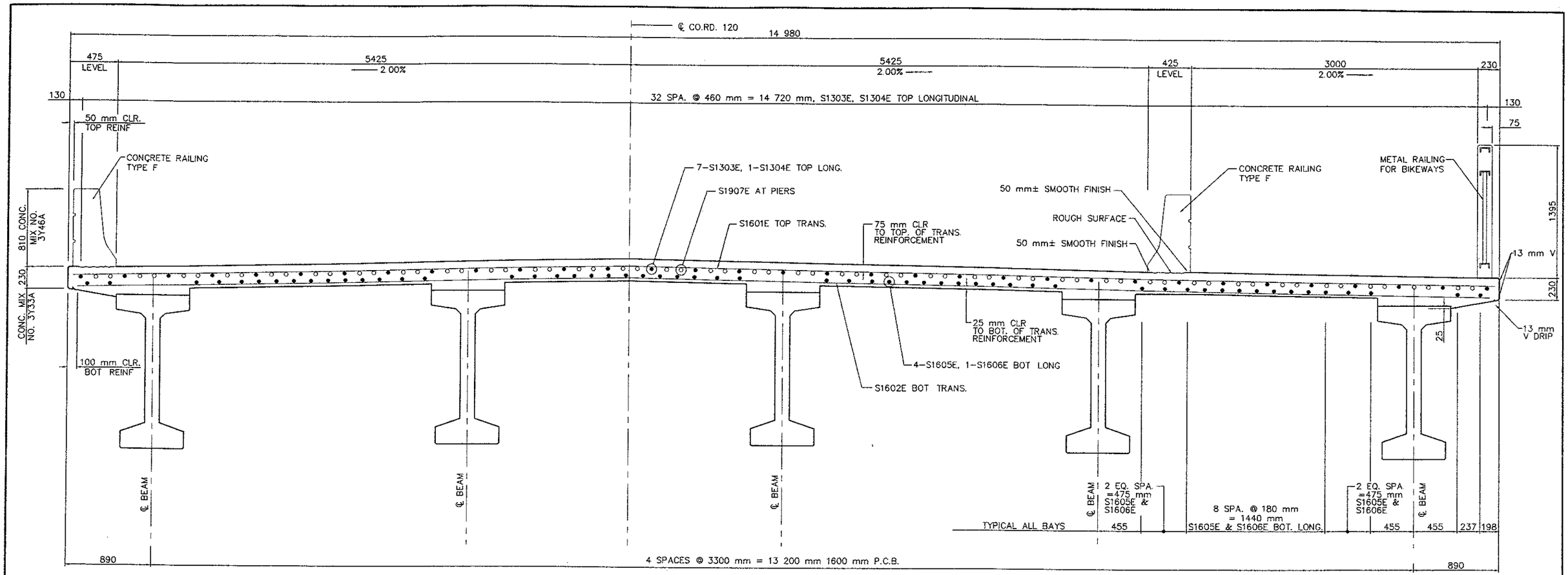
SUPERSTRUCTURE LAYOUT

APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO. 55546
CHK. BY	K.A.R.	CHK. BY	T.J.M.	

State Proj. No. 55-598-24 SHEET NO. B16OF 30 SHEETS

H:\JOB\460B\DGN\119\DWG\Wdeck.dwg Thu Sep 03 11:13:32 1998



TRANSVERSE SECTION THRU DECK

0 SCALE: meter

minnesota metric

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

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WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
LAND SURVEYORS
PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

SUPERSTRUCTURE DETAILS

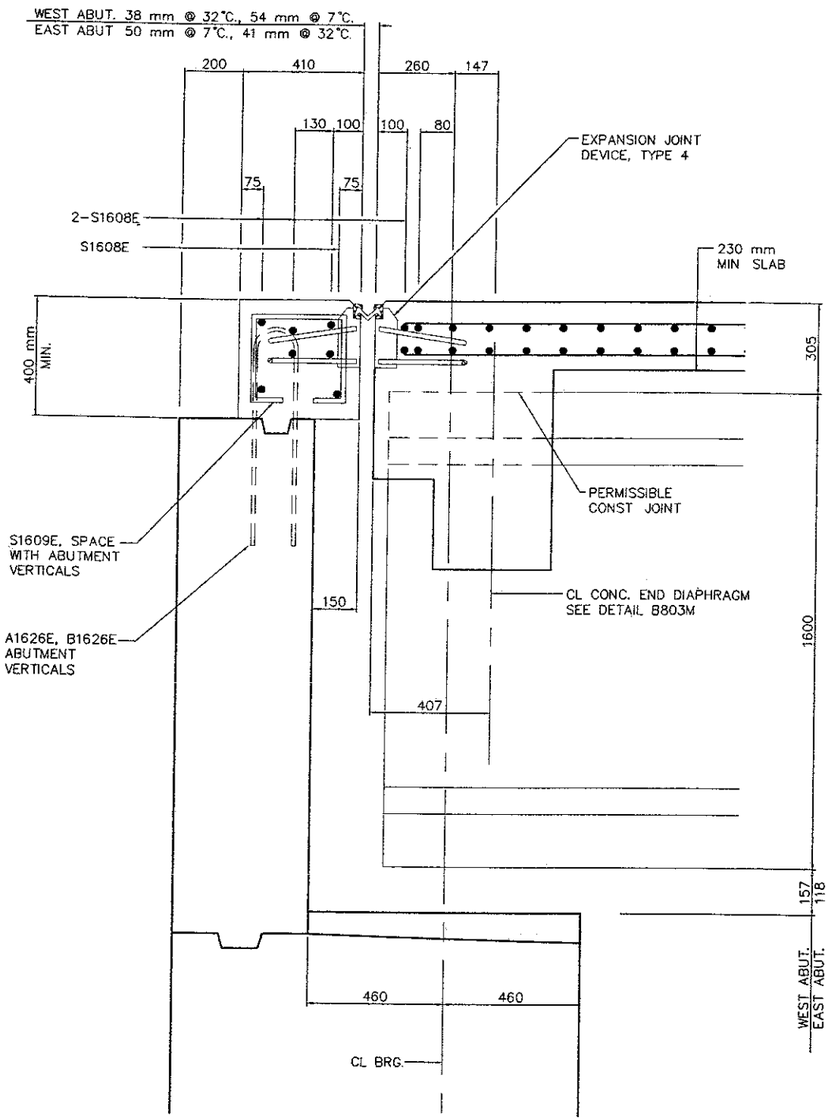
APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO. 55546
CHK. BY	K.A.R.	CHK. BY	T.J.M.	

WSN 460A119

State Proj. No. 55-598-24 SHEET NO. B17 OF 30 SHEETS

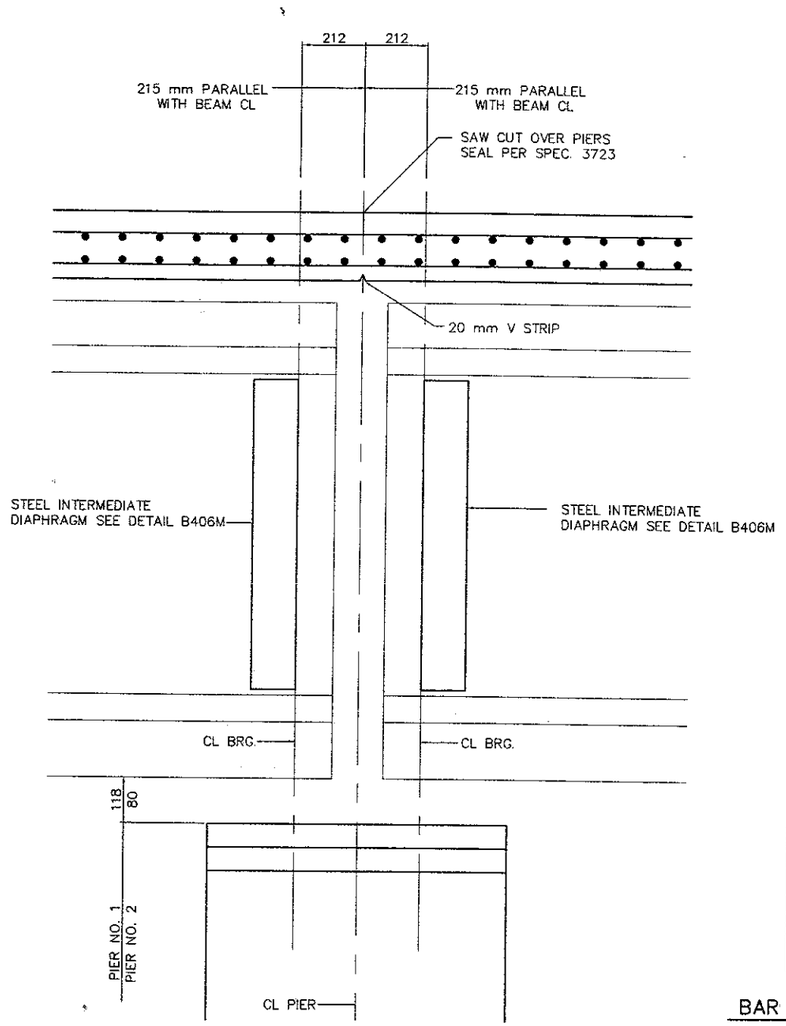
H:\08\460A119\DWG\Wdecksec.dwg Thu Sep 03 11:14:04 1998



SECTION AT ABUTMENT

0 SCALE: meter 0.5

DIMENSION SHOWN IS PERPENDICULAR TO ABUTMENT CL



SECTION AT PIER

0 SCALE: meter 0.5

DIMENSION SHOWN IS PERPENDICULAR TO PIER CL

① SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE		
STRUCTURAL CONCRETE (3Y43)	8.5	m^3
③ BRIDGE SLAB CONCRETE (3Y33A)	1338	m^2
⑦ TYPE F RAILING CONCRETE (3Y46A)	180.8	m
REINFORCEMENT BARS, EPOXY COATED	51 176	kg
⑥ PRESTRESSED CONCRETE BEAMS, TYPE 1600 mm	15	EACH
PRESTRESSED CONCRETE BEAMS 1600 mm	440.7	m
DIAPH. FOR TYPE 1600 mm PRESTR. CONC. BEAMS	134	m
STRUCTURAL STEEL (3306)	267	kg
BEARING ASSEMBLY	30	EACH
⑤ EXP. CURVED PLATE BRG. ASSEMBLY, TYPE E1	5	EACH
⑤ EXP. CURVED PLATE BRG. ASSEMBLY, TYPE E2	5	EACH
⑤ EXP. CURVED PLATE BRG. ASSEMBLY, TYPE E3	10	EACH
⑤ FIXED CURVED PLATE BRG. ASSEMBLY, TYPE F1	10	EACH
FLOOR DRAINS TYPE B706M MODIFIED	4	EACH
EXPANSION JOINT DEVICE TYPE 100	29.5	m
④ NAME PLATE (SEE DETAIL B101M)	1	EACH
④⑧ 3-PLY JOINT WATERPROOFING	5.5	m
②④ CORK 25x280 (RAILING)	15.5	m
POLYSTYRENE AT PIERS 1000 x 25 x 350	0.35	m

NOTES:

① INCLUDES RAILING REINFORCEMENT & END DIAPHRAGM QUANTITIES

② SEE SPECIAL PROVISIONS

③ APPROX. VOLUME 322 m^3 BASED ON AN AVERAGE STOOL HEIGHT OF 48 mm

④ TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS

⑤ PAYMENT FOR BEARINGS INCLUDED IN ITEM BEARING ASSEMBLIES PER EACH

⑥ PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTRESSED CONCRETE BEAMS 1015 mm PER LINEAR METER.

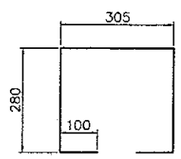
⑦ APPROX. VOLUME 49 m^3

⑧ EXTEND WATERPROOFING FOR VERTICAL JOINTS TO SURFACE OF DECK/WINGWALL.

BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

BAR	NO.	LENGTH (mm)	SHAPE	LOCATION
S1601E	707	15 110	STRAIGHT	TOP TRANS.
S1602E	707	15 005	STRAIGHT	BOTTOM TRANS.
S1303E	231	12 192	STRAIGHT	TOP LONG.
S1304E	33	6445	STRAIGHT	TOP LONG.
S1605E	224	18 288	STRAIGHT	BOTTOM LONG.
S1606E	56	18 245	STRAIGHT	BOTTOM LONG.
S1607E	128	4600	STRAIGHT	OVER PIERS
S1608E	18	15 105	STRAIGHT	END BLOCK HORZ.
S1609E	64	1065	BENT	END BLOCK TIE

BAR SHAPES:



S1609E

minnesota metric ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

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WSN 460A119

State Proj. No. 55-598-24 SHEET NO. B18 OF 30 SHEETS

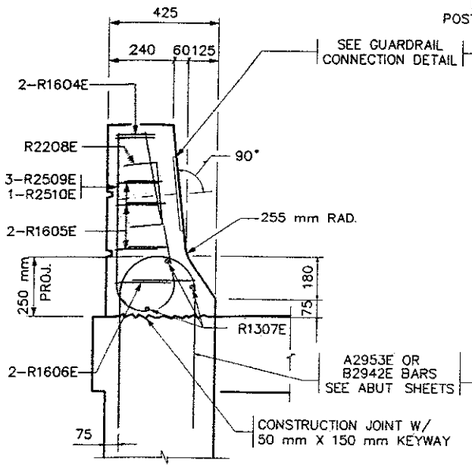
WIDSETH SMITH NOLTING
ENGINEERS
ARCHITECTS
LAND SURVEYORS
PROJECT MANAGERS
ALEXANDRIA PHONE 320-762-8149 FAX 320-762-0263 www.wsn-mn.com

SUPERSTRUCTURE DETAILS & REINF.

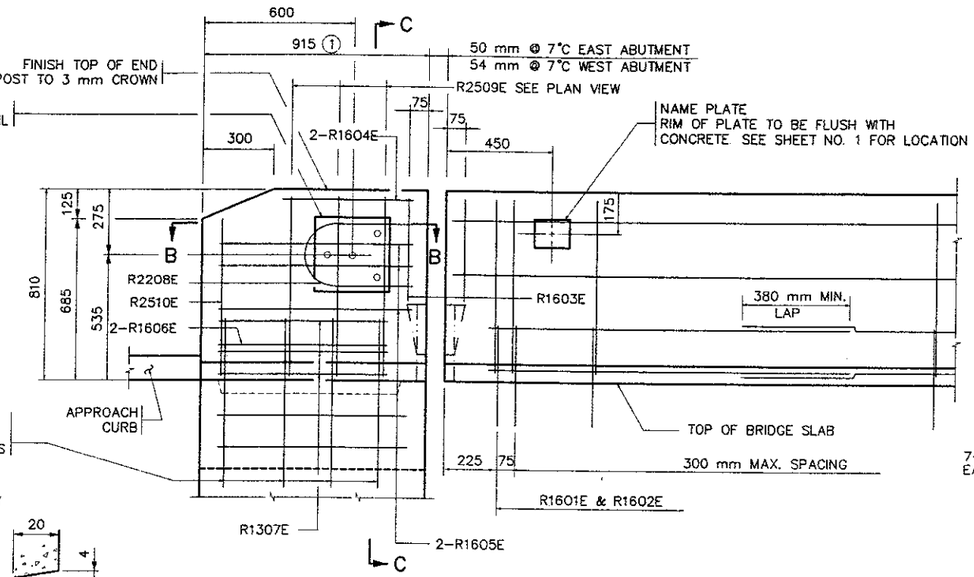
APPROVED 12-31-98

DES. BY	T.J.M.	DR. BY	G.A.M.	BRIDGE NO.
CHK. BY	K.A.R.	CHK. BY	T.J.M.	55546

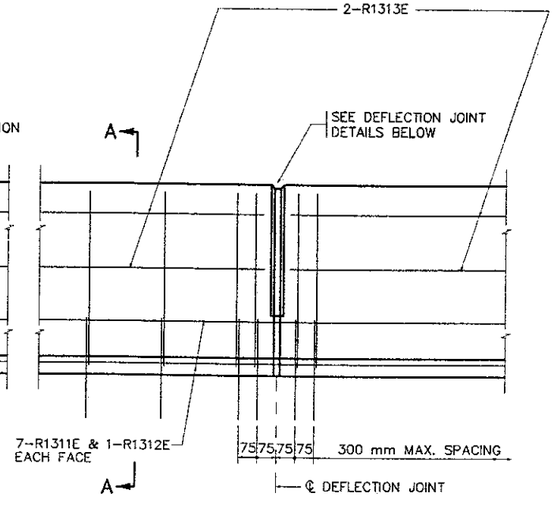
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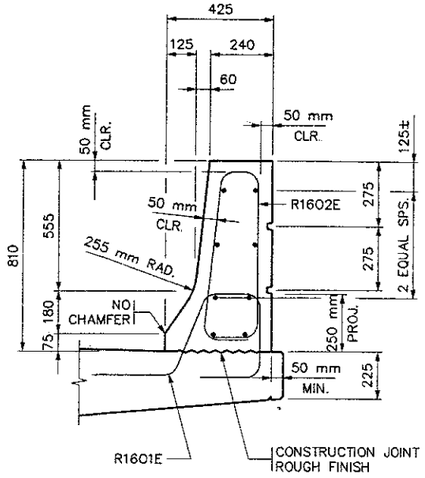
SECTION C-C



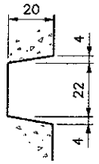
END POST



DEFLECTION JOINT



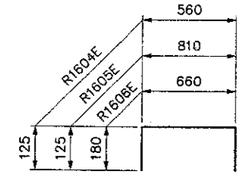
SECTION A-A



RAIL RUSTICATION

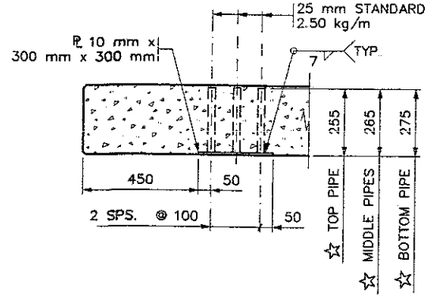
EXPANSION JOINT
(EXPANSION DEVICE NOT SHOWN)

INSIDE ELEVATION OF RAILING

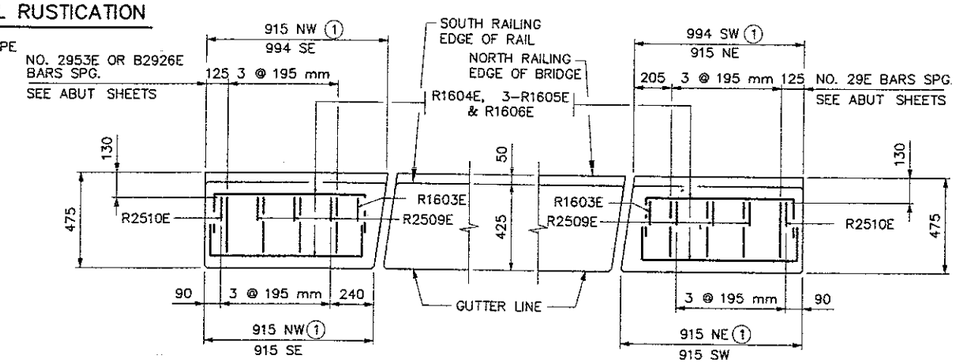


R1604E, R1605E & R1606E

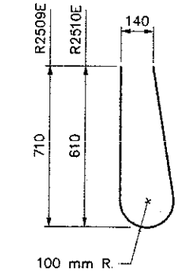
BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH (mm)	SHAPE	LOCATION
R1601E	660	1570		RAIL DOWEL
R1602E	660	1930		RAIL VERTICAL
R1603E	8	1380		RAIL VERTICAL
R1604E	8	810		END POST
R1605E	24	1060		END POST
R1606E	8	1020		END POST
R1307E	12	810		END POST
R2208E	4	1240		END POST
R2509E	12	1530		END POST
R2510E	4	1330		END POST
R1311E	56	12 192		RAIL LONGITUDINAL BOT.
R1312E	8	5605		RAIL LONGITUDINAL BOT.
R1313E	120	5790		RAIL LONGITUDINAL SPAN 1



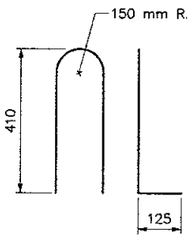
SECTION B-B
(REINFORCEMENT NOT SHOWN.)
☆ DIMENSIONS INCLUDE 10 mm PLATE.



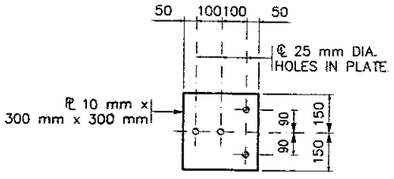
PLAN VIEW OF END POSTS



R2509E & R2510E

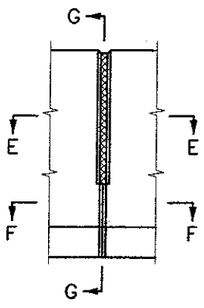


R2208E

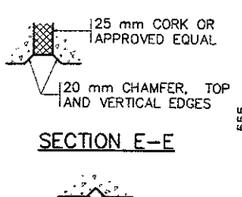


GUARDRAIL CONNECTION DETAIL

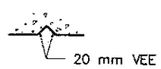
GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 9.9 kg



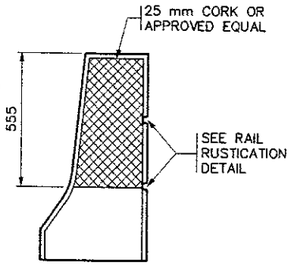
ELEVATION



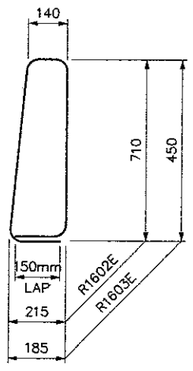
SECTION E-E



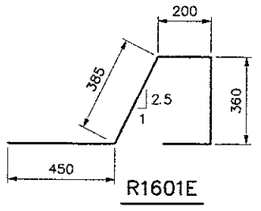
SECTION F-F



SECTION G-G



R1602E & R1603E



R1601E

DEFLECTION JOINT DETAILS

GENERAL NOTES:

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED.

CONCRETE RAILING = 5.82 kN/m (0.247 m³/m)

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306.

FINISH ALL EDGES OF RAIL WITH 13 mm VEE, EXCEPT WHERE OTHERWISE NOTED.

SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

RAIL QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 6 METERS.

RAIL TO BE CONCRETE MIX NO. 3Y46.

(1) END POST DIMENSIONS ARE ALONG GUTTER LINE OR OUTSIDE FACE OF END POST

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

WSN 460A119

CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 14280 9/4/1998

REVISION DATE

STANDARD SHEET NO. FIG. 5-397.114M

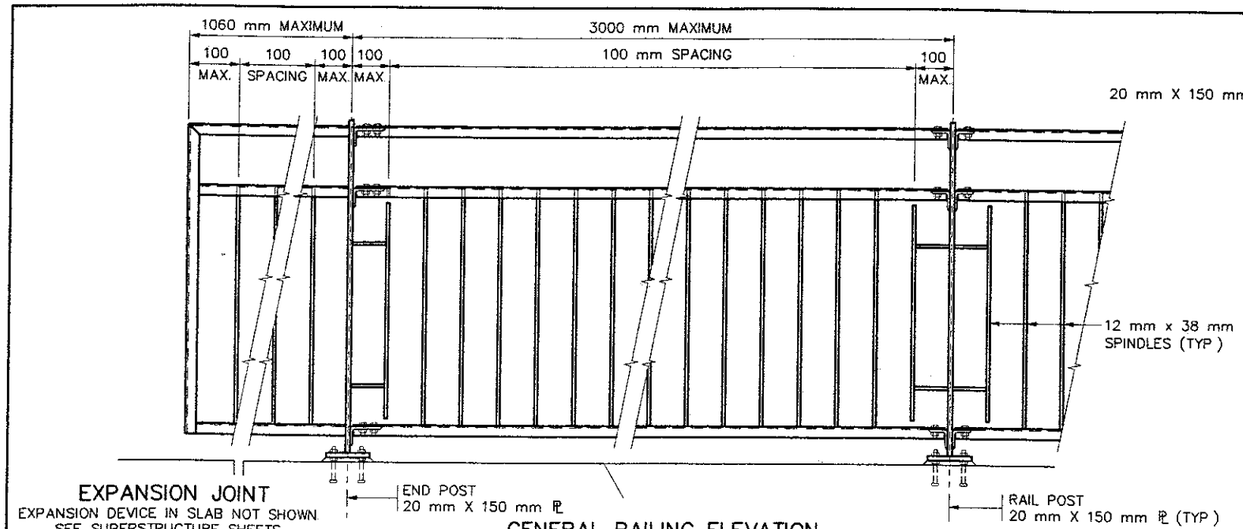
TITLE: CONCRETE RAILING (TYPE F)
WITH INTEGRAL END POST
(WITHOUT CONCRETE WEARING COURSE)

DES: DR: APPROVED: 12-31-98
CHK: CHK:

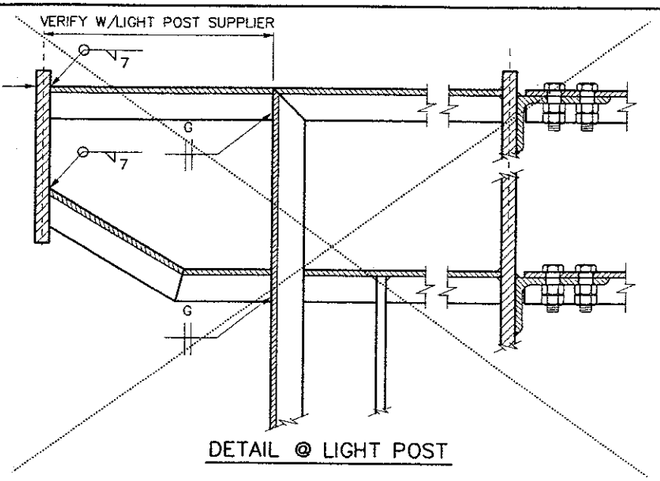
Sheet No. B19 of 30 Sheets

Bridge No. 55546

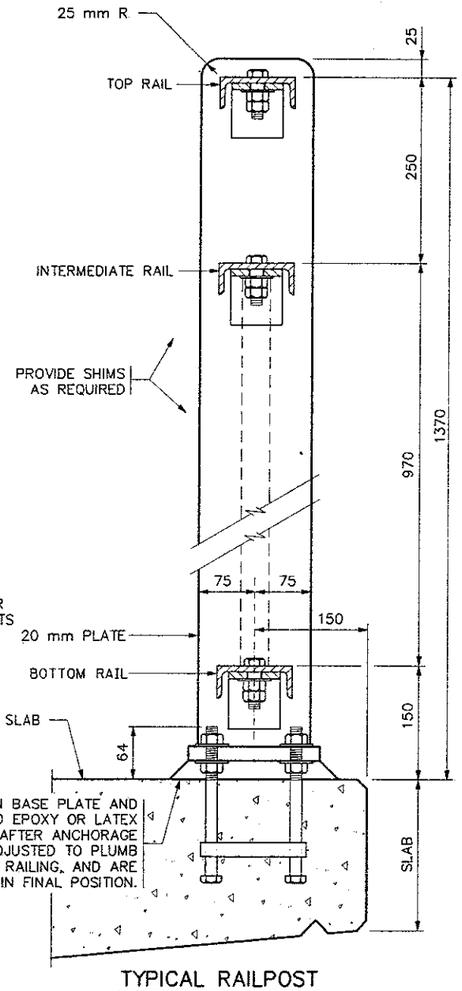
STATE PROJ. NO. 55-598-24



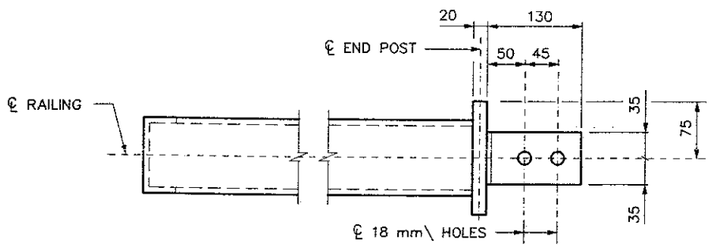
GENERAL RAILING ELEVATION



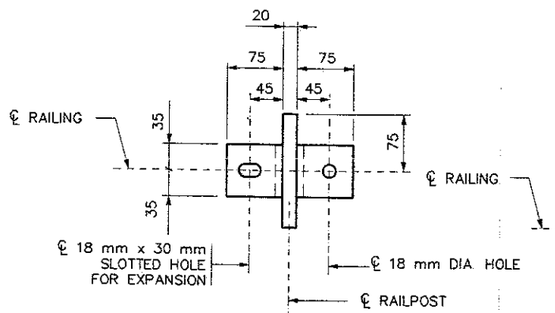
DETAIL @ LIGHT POST



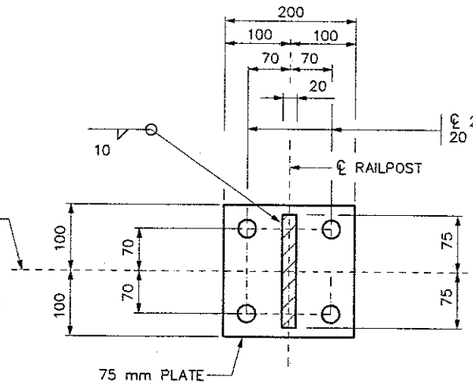
TYPICAL RAILPOST



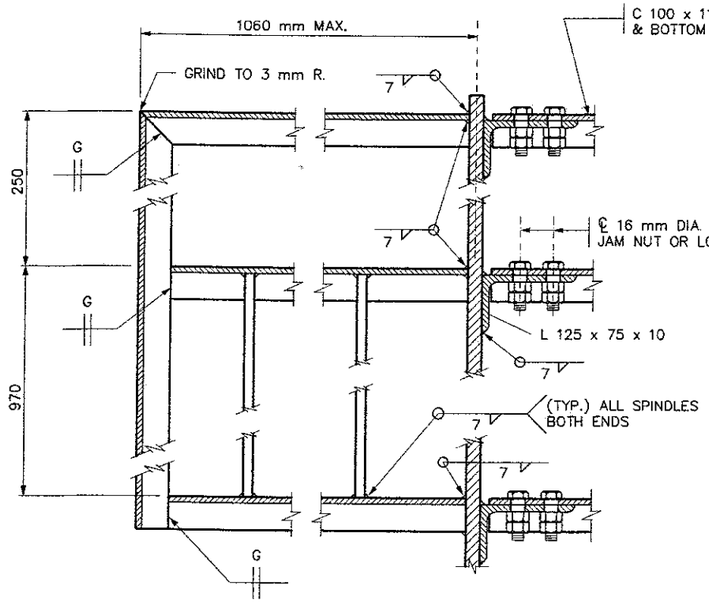
TOP VIEW
(RAILING NOT SHOWN)



TOP VIEW
(RAILING NOT SHOWN)

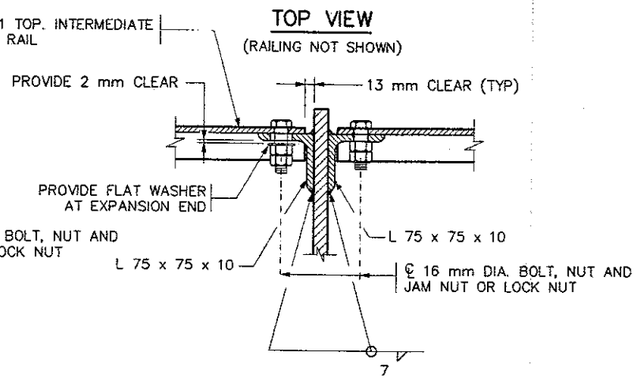


RAILPOST BASE PLATE



PART ELEVATION

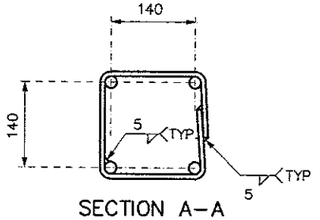
END POST DETAILS



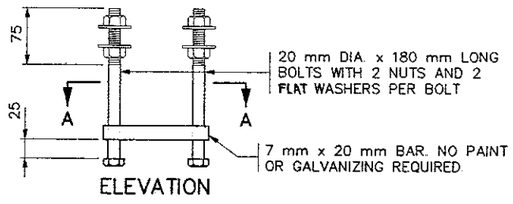
PART ELEVATION

TYPICAL INTERMEDIATE POST RAILING CONNECTIONS

NOTE:
TOP, INTERMEDIATE & BOTTOM RAIL CONNECTIONS SIMILAR.



SECTION A–A



ELEVATION

③ 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.

GENERAL NOTES:

ALL RAILPOSTS TO BE SET VERTICAL.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.

ALL MATERIAL SHALL COMPLY WITH SPEC. 3306.

GALVANIZE BOLTS, NUTS, AND WASHERS PER SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC. 3394 AFTER FABRICATION.

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.

SEE SPECIAL PROVISIONS FOR ADDITIONAL PAINTING REQUIREMENTS AT AESTHETIC LOCATIONS.

ALL RAILING MEMBERS SHALL BE FLAT AFTER FABRICATION AND GALVANIZING TO WITHIN 3 mm IN 3000 mm BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

③ SEE SPECIFICATION FOR DRILLED ANCHOR ALTERNATE.

REVISED: MODIFIED

FIG. 5-397.150

STATE PROJ. NO. 55-598-24

CERTIFIED BY: PROFESSIONAL ENGINEER
REG. NO. 14280 9/4 1998

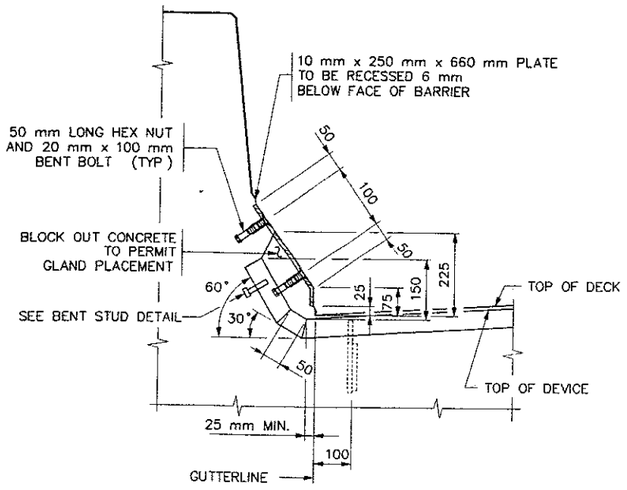
TITLE: METAL RAILING FOR BIKEWAYS
460A119

DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

Sheet No. B20 of 30 Sheets

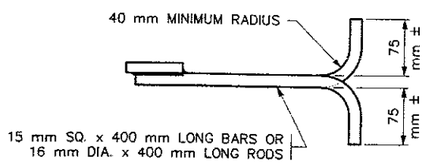
Bridge No. 55546

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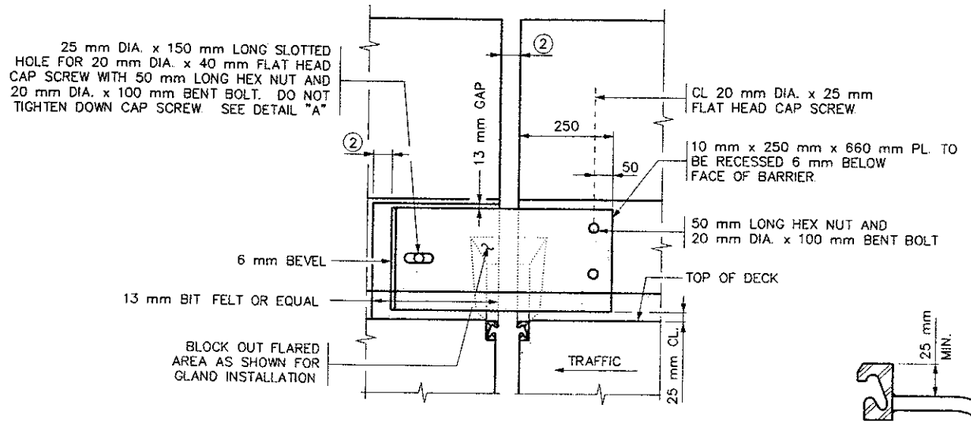


SECTION THROUGH RAILING

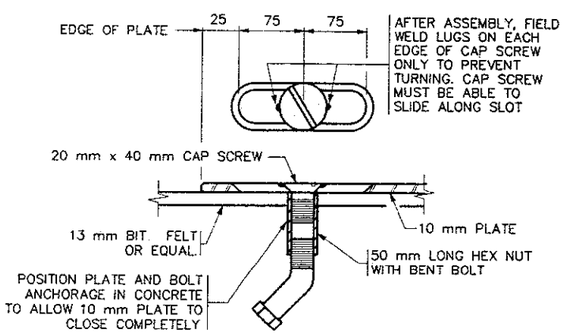
(TYPE F RAILING)



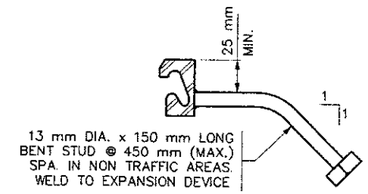
BAR-ROD DETAIL



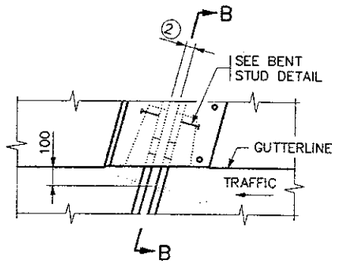
RAILING ELEVATION



DETAIL "A"

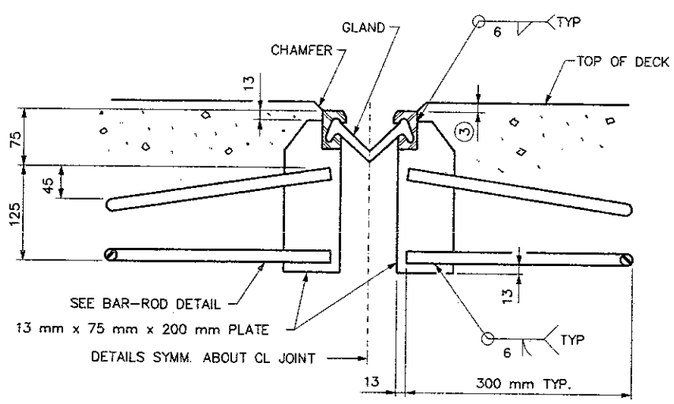


BENT STUD DETAIL



PLAN VIEW @ EXPANSION DEVICE

(MEDIAN OR SIDEWALK ALTERNATE)



SECTION A-A

NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

JOINTS IN 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 OR SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF 1 mm IN 1 METER.

CAP SCREWS SHALL BE COUNTERSUNK 2 mm BELOW TOP OF PLATE.

LENGTH OF PAYMENT FOR DEVICE IS FROM OUT TO OUT OF EXTRUSION ALONG CENTERLINE OF JOINT.

(1) DIMENSIONS ARE ALONG CENTERLINE OF JOINT.

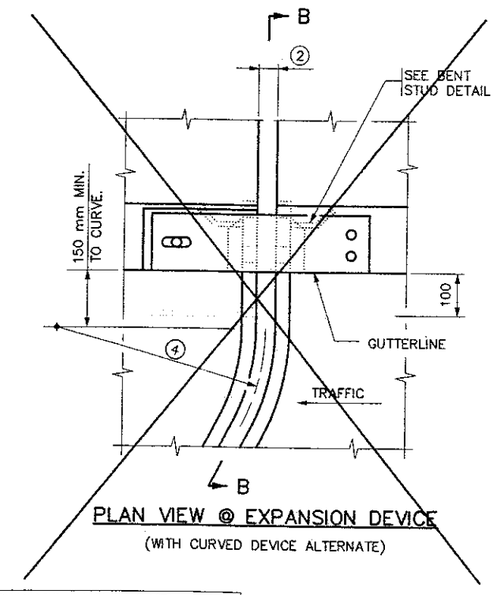
(2) 39 mm AT 7°C; 55 mm AT 32°C WEST ABUT.
51 mm AT 7°C; 51 mm AT 32°C EAST ABUT.

(3) 3 mm (6 mm MAX.)
13 mm (16 mm MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15° AND LESS THAN 50°

(4) SEE SUPERSTRUCTURE DETAILS FOR RADIUS.

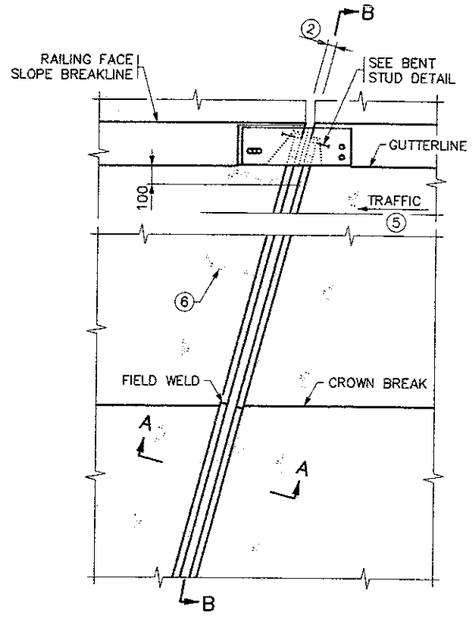
(5) SEE SHEET 1 FOR DIRECTION OF TRAFFIC.

(6) PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO CL ROADWAY



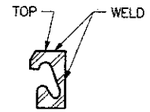
PLAN VIEW @ EXPANSION DEVICE

(WITH CURVED DEVICE ALTERNATE)

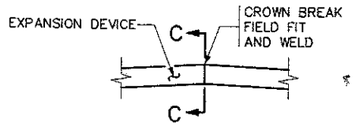


PLAN VIEW @ EXPANSION DEVICE

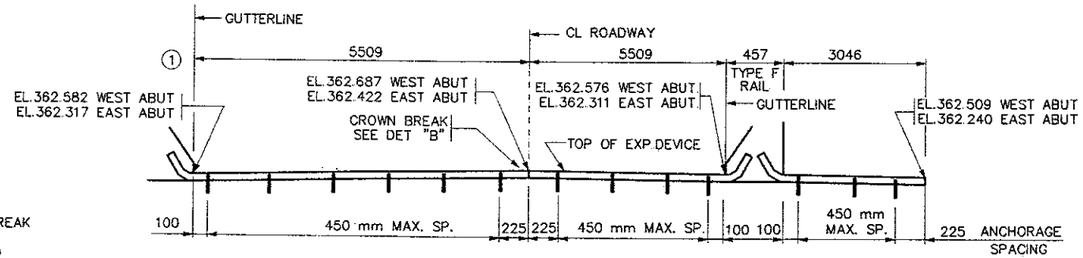
(WITH STRAIGHT DEVICE)



SECTION C-C



DETAIL B



SECTION B-B ~ ALONG CL JOINT

(ELEVATIONS SHOWN ARE 3 mm BELOW TOP OF SLAB @ CL JT.)

APPROVED: MONTH DATE, 1996

STATE BRIDGE ENGINEER

S.P. 55-598-24

FIG. 5-397.627M

CERTIFIED BY: PROFESSIONAL ENGINEER

REG. NO. 14280 9/4 1998

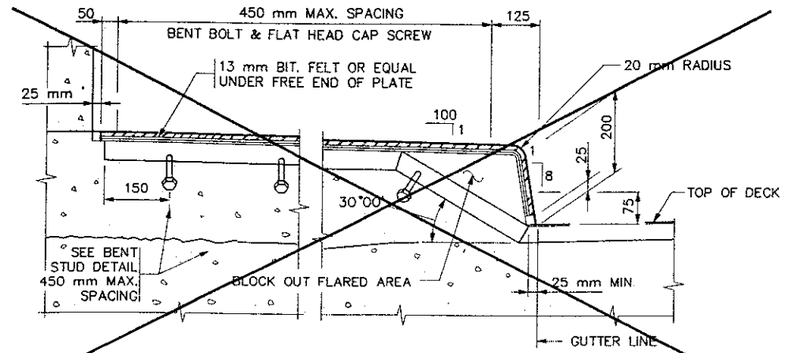
TITLE: WATERPROOF EXPANSION DEVICE (WITH TYPE F BARRIER)

460A119

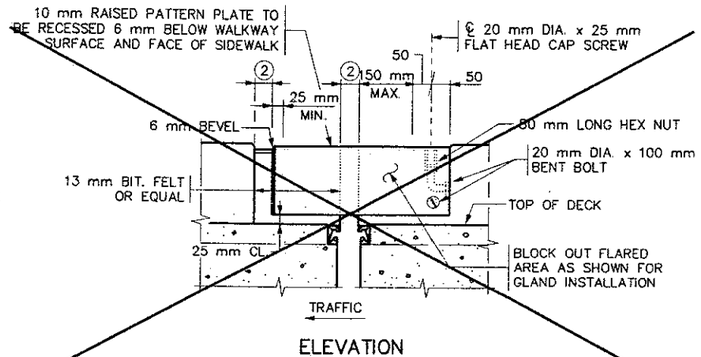
DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

Sheet No. B21 of 30 Sheets

Bridge No. 55546

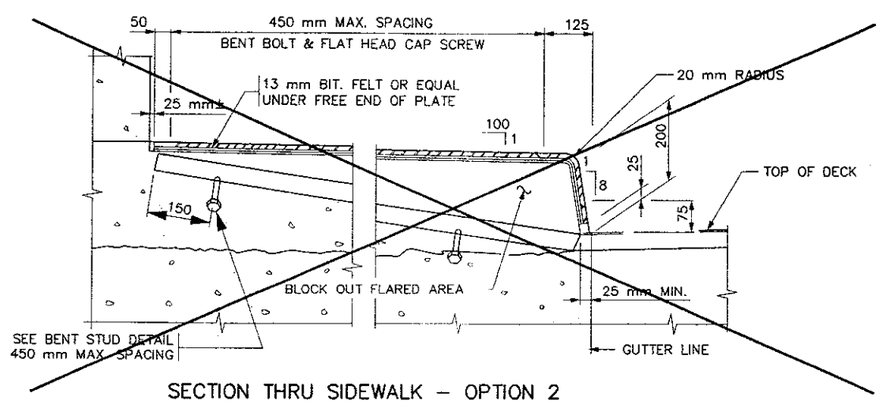


SECTION THRU SIDEWALK – OPTION 1

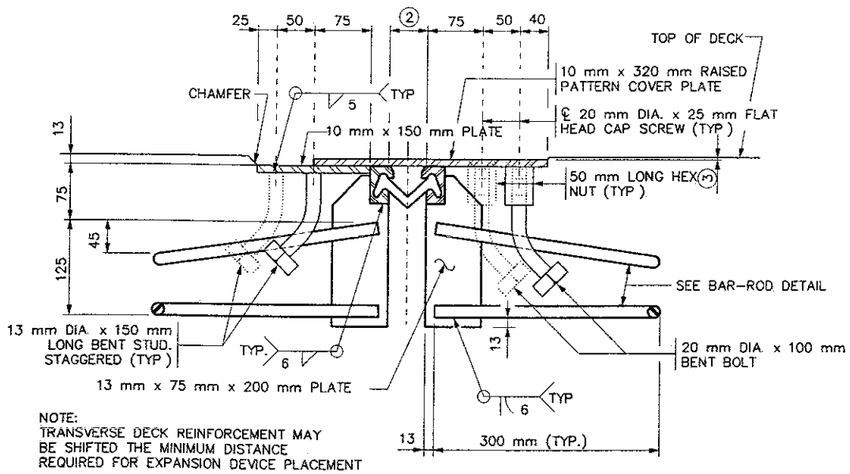


ELEVATION

SIDEWALK DETAILS

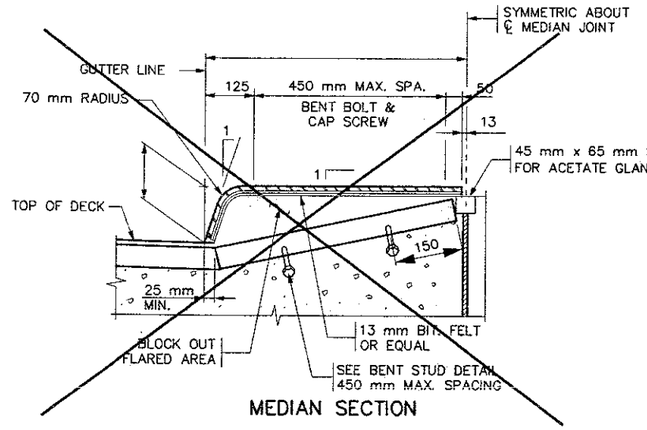


SECTION THRU SIDEWALK – OPTION 2

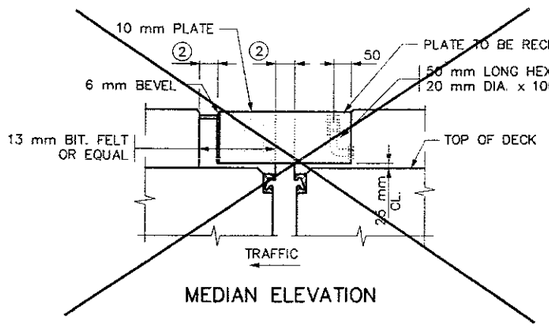


NOTE:
TRANSVERSE DECK REINFORCEMENT MAY BE SHIFTED THE MINIMUM DISTANCE REQUIRED FOR EXPANSION DEVICE PLACEMENT

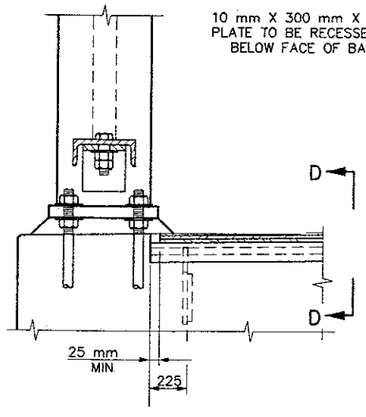
SECTION D–D



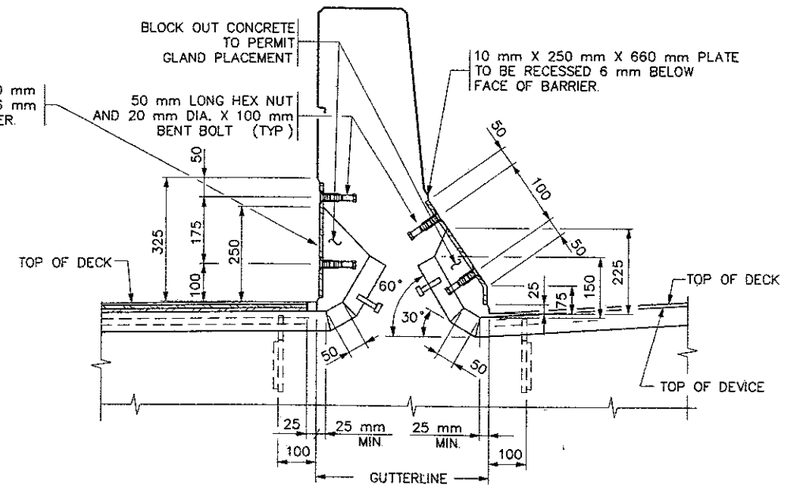
MEDIAN SECTION



MEDIAN ELEVATION



METAL RAILING FOR BIKEWAY

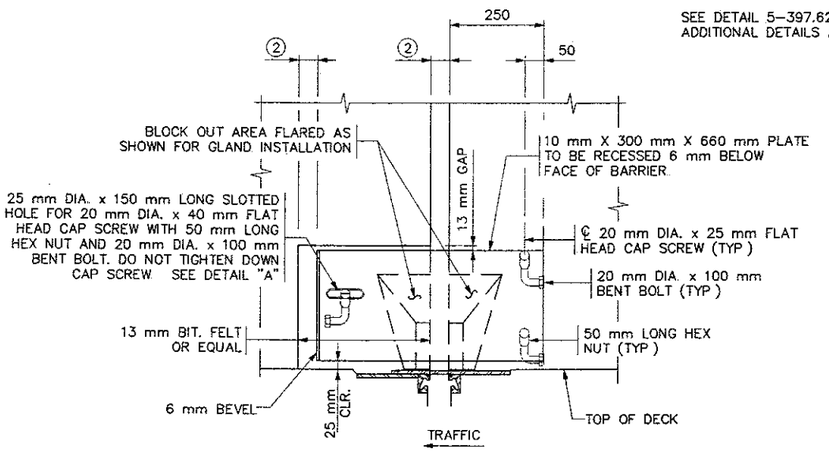


TYPE F RAILING

SECTION THROUGH RAILINGS – INTEGRAL SIDEWALK

NOTES:

SEE DETAIL 5–397.627M FOR ADDITIONAL DETAILS AND NOTES.



INSIDE ELEVATION

(CONCRETE PARAPET RAILING & BACK OF TYPE F RAILING)

S.P. NO. 55–598–24

FIG. 5–397.630M

CERTIFIED BY: PROFESSIONAL ENGINEER

REG. NO. 14280 9/4 1998

TITLE: WATERPROOF EXPANSION DEVICE (WITH RAISED MEDIAN OR SIDEWALK)

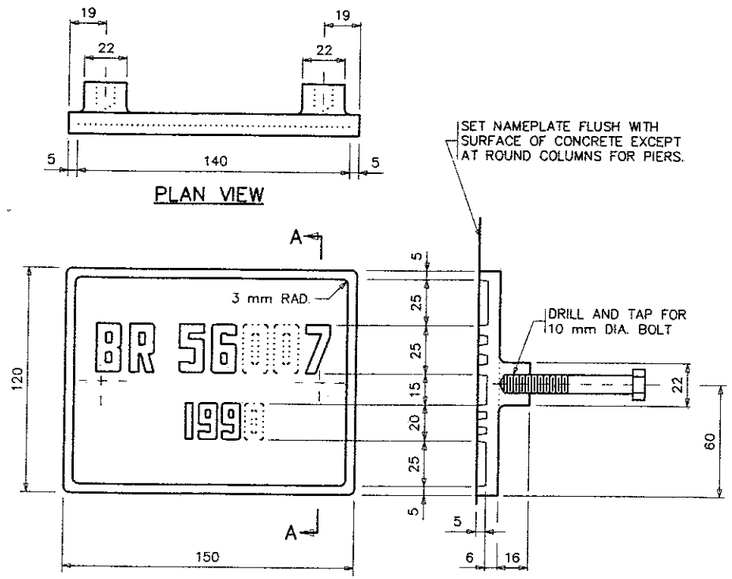
460A119

DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

Sheet No. B22 of 30 Sheets

Bridge No. 55546

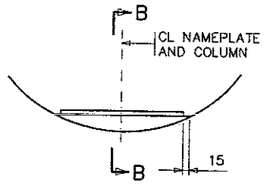
M:\CAD\460a119\460a1197\460a1197d01.dwg Thu Sep 03 14:10:31 1998



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

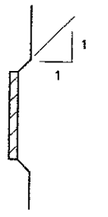
BRIDGE 55546

YEAR 1998



NAMEPLATE PLACEMENT

(ROUND CONCRETE PIER COLUMNS)



SECTION B–B

NUMBERS FOR NAMEPLATE

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 75 mm IN 300 mm

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 10 mm DIA. x 75 mm LONG WITH EACH PLATE.

ALL DIMENSIONS FOR 19 mm HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 25 mm HIGH LETTERS AND NUMBERS.

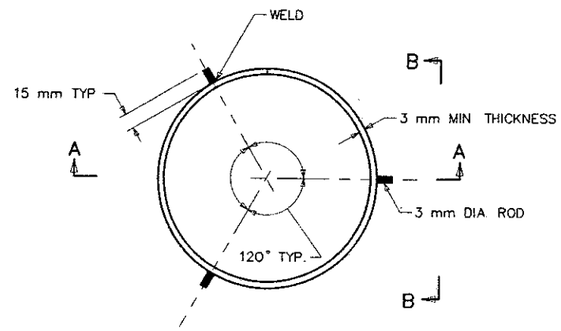
APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101M
STATE BRIDGE ENGINEER			

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

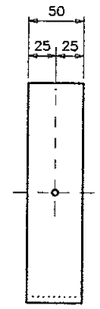
CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 16280 9/4 1998

STATE PROJ. NO. 55-598-24 460A119



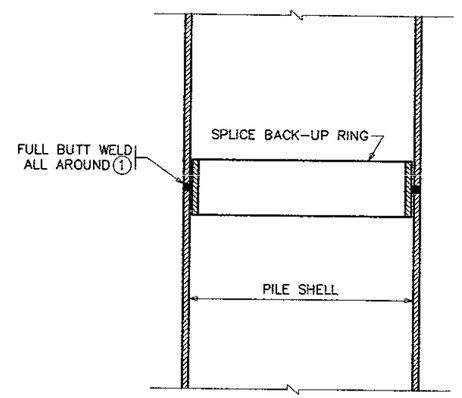
PLAN VIEW SPLICE

(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 ELECTRODE 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 121° C.

LOW–HYDROGEN ELECTRODES SHALL BE PLACED IN A HOLDING OVEN FOR AT LEAST 8 HOURS IF THEY HAVE BEEN EXPOSED TO THE ATMOSPHERE FOR MORE THAN 2 HOURS.

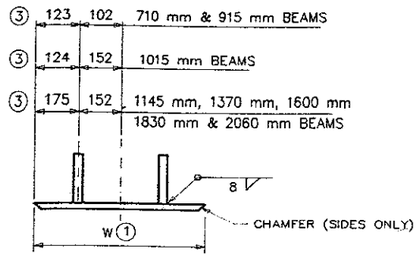
ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN –18° C. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 0° C., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 21° C. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

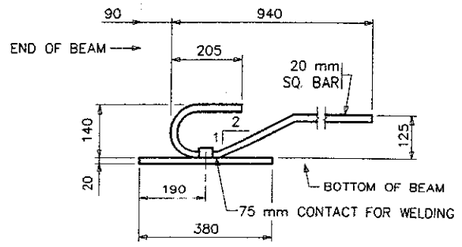
(1) FOR PILE SHELL THICKNESSES GREATER THAN 13 mm, USE A B–U4a WELD CONFIGURATION.

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming	PILE SPLICE (CAST IN PLACE CONCRETE PILES)		B201M
STATE BRIDGE ENGINEER			

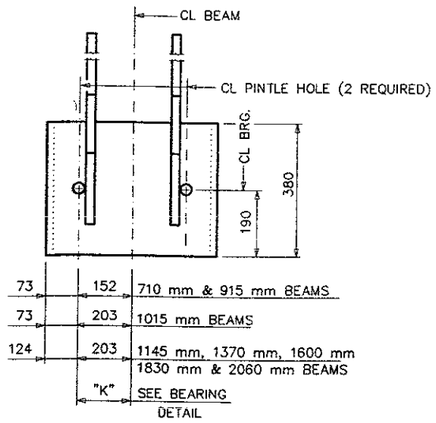
TITLE:	DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98	Bridge No.
DETAILS	CHK: K.A.R.	CHK: T.J.M.	Sheet No. B23 of 30 Sheets	55546



FRONT VIEW

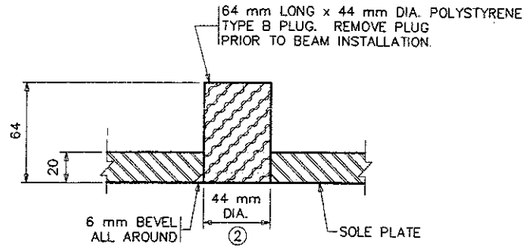


SIDE VIEW



TOP VIEW

BEAM SIZE	① W VALUE (mm)
710 mm, 915 mm	450
1015 mm	552
1145 mm, 1370 mm 1600 mm, 1830 mm, 2060 mm	654



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 6 mm

② FOR 38 mm DIA. PINTLES.

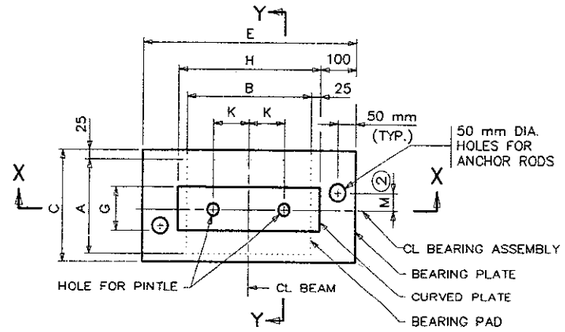
③ THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS, HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

APPROVED: APRIL 2, 1997 Donald J. Flemming STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)	REVISION	DETAIL NO. B303M

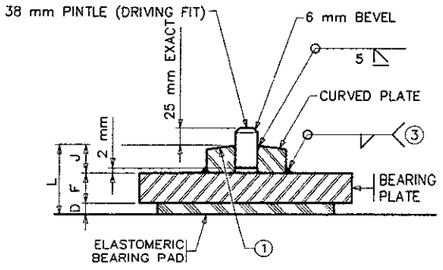
ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 14280 9/4 19 98

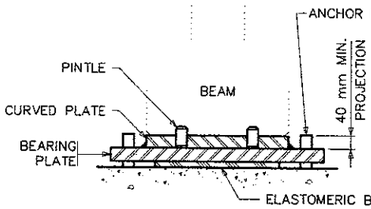
STATE PROJ. NO. 55-598-24



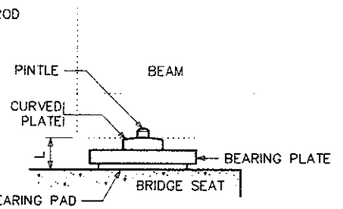
PLAN



SECTION Y-Y

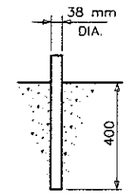


SECTION X-X



END ELEVATION

(ANCHOR RODS NOT SHOWN)



ANCHOR ROD DETAIL

TABLE (ALL DIMENSIONS IN mm)

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE A	B	D	SHAPE FACTOR	BEARING PLATE SIZE C	E	F	CURVED PLATE SIZE G	H	J	PINTLE DIA.	PINTLE DISTANCE K ④	ANCHOR ROD OFFSET M ②	ASSY. HEIGHT L
F1	PIER 2	1600	305	610	13	8.0	355	860	32	115	660	35	38	203	70	80

NOTES:

ELASTOMERIC MATERIALS & PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH SPEC. 3306. GALVANIZE PER SPEC. 3392.

ALL PLATES SHALL BE FLAT AFTER FABRICATION AND GALVANIZING. WELDING DISTORTION OF BEARING PLATES SHALL BE STRAIGHTENED TO WITHIN 2 mm OF FLATNESS BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

PINTLES SHALL COMPLY WITH SPEC. 3309.

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 400 mm MIN. AND 600 mm MAX. FINISH TO 6.35 MICROMETERS. THE FINISHED THICKNESS OF THE PLATE MAY BE 2 mm LESS THAN SHOWN

② OFFSET MAY BE OPPOSITE OF THAT SHOWN SEE ANCHOR ROD LAYOUT FOR DETAILS.

③ WELDING PER SPEC. 2471

④ SEE DETAIL B303M FOR PINTLE DISTANCE K.

DESIGN DATA:

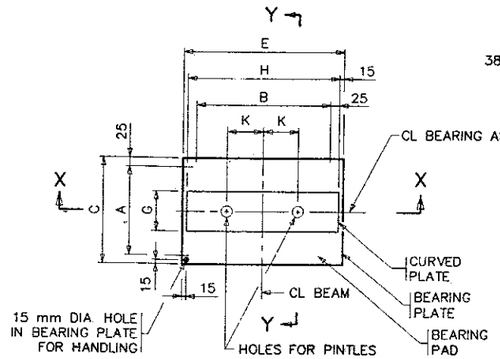
MAXIMUM HORIZONTAL LOAD IS 312 kN FOR 38 mm DIA. PINTLES.

APPROVED: APRIL 2, 1997 Donald J. Flemming STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)	REVISION	DETAIL NO. B310M

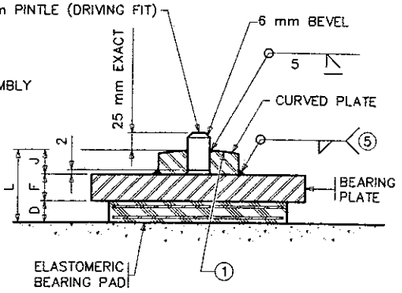
TITLE:	DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98	Bridge No.
DETAILS	CHK: K.A.R.	CHK: T.J.M.	Sheet No. B24 of 30 Sheets	55546

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1998 DO NOT PLOT ON DGN: Bridge\Details\b310m.dgn

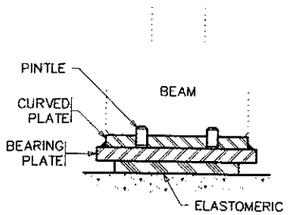


PLAN

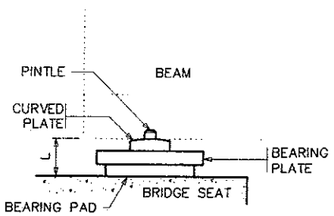


SECTION Y–Y

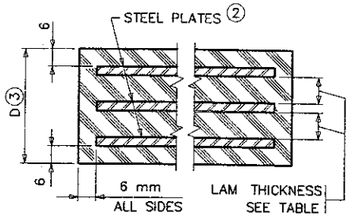
(ENLARGED BEARING ASSEMBLY)



SECTION X–X



END ELEVATION



SECTION THROUGH BEARING PAD

TABLE (ALL DIMENSIONS IN mm)

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			PINTLE DIA.	PINTLE DISTANCE	ASSY. HEIGHT
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J		K (4)	L
E1	WEST ABUT.	1600	255	610	93	7	3	6	10	9.4	305	690	29	115	660	35	38	203	157
E2	EAST ABUT & PIER 1	1600	255	610	54	4	3	3	10	9.4	305	690	29	115	660	35	38	203	118

NOTES:

ELASTOMERIC MATERIALS & PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306

ALL PLATES SHALL BE FLAT AFTER FABRICATION AND GALVANIZING. WELDING DISTORTION OF BEARING PLATES SHALL BE STRAIGHTENED TO WITHIN 2 mm OF FLATNESS BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

PINTLES SHALL COMPLY WITH SPEC. 3309

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 400 mm MIN. AND 600 mm MAX. FINISH TO 6.35 MICROMETERS. THE FINISHED THICKNESS OF THE PLATE MAY BE 2 mm LESS THAN SHOWN.

(2) DO NOT GALVANIZE THESE PLATES.

(3) THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

(4) SEE DETAIL B303M FOR PINTLE DISTANCE K.

(5) WELDING PER SPEC. 2471

DESIGN DATA:

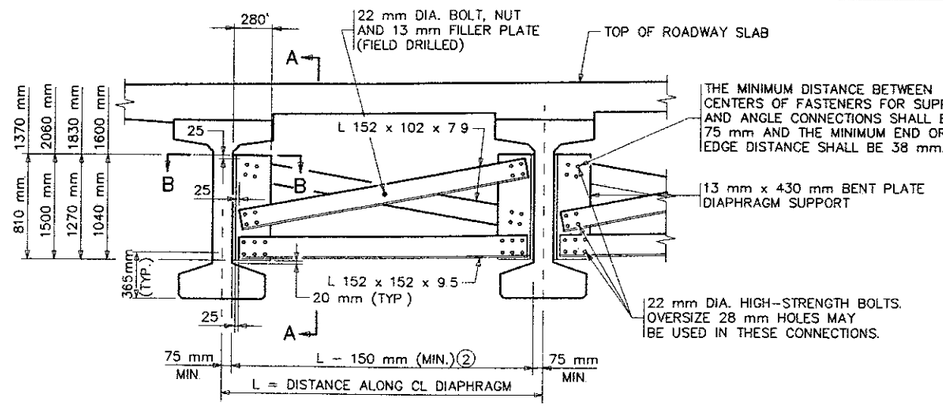
MAXIMUM HORIZONTAL LOAD IS 312 kN FOR 38 mm DIA. PINTLES.

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311M

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

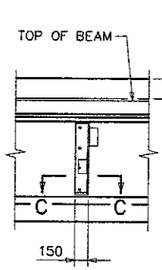
CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 16280 9/4 1998

STATE PROJ. NO. 55-598-24 460A119

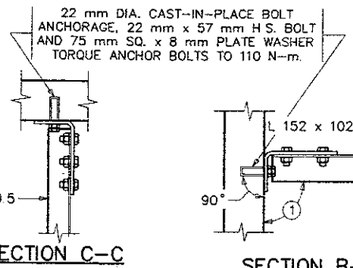


PART TRANSVERSE SECTION

(SQUARE BRIDGE SHOWN)



SECTION A–A

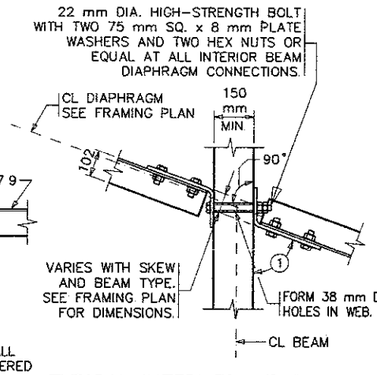


SECTION C–C

(FASCIA BEAM)

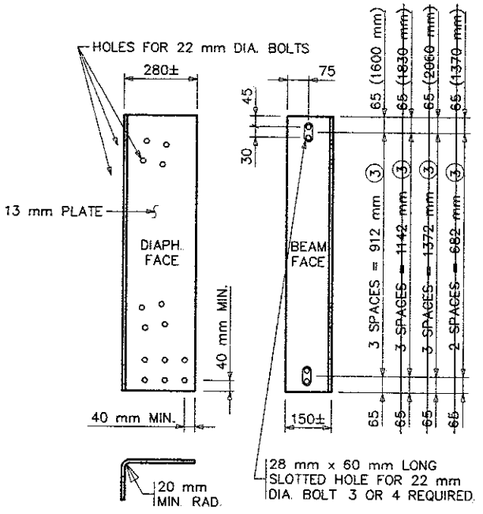
SECTION B–B

TYPICAL SECTION AT ALL FASCIA BEAM AND STAGGERED DIAPH. CONNECTIONS



TYPICAL INTERMEDIATE DIAPHRAGM

TYPICAL SECTION AT CONTINUOUS INTERIOR DIAPHRAGMS



DIAPHRAGM SUPPORT

NOTES:

ALL STEEL SHALL CONFORM TO SPEC. 3306.

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND 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.

FOR BOLT LENGTHS GREATER THAN 215 mm, USE HIGH STRENGTH BOLTS PER SPEC, SAE GRADE 5 OR BETTER. SEE SPEC. 2405.3M FOR INSTALLATION.

FABRICATOR SHALL OBTAIN END BLOCK LOCATION FROM PRECASTOR TO DETERMINE DIAPHRAGM LENGTHS AT BEAM ENDS.

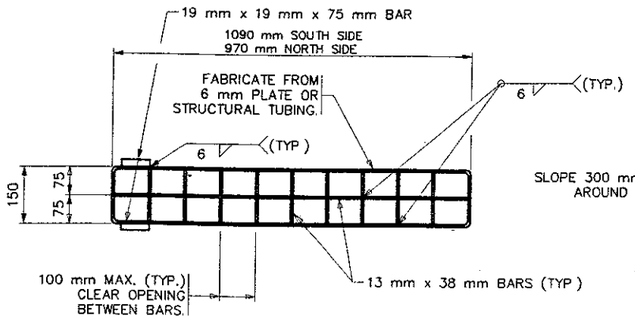
(1) FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR ANGLES OVER 20°, USE 90°

(2) IF DIAPHRAGMS ARE USED AT ENDS OF BEAMS, REDUCE THE LENGTH FOR END BLOCKS ACCORDINGLY

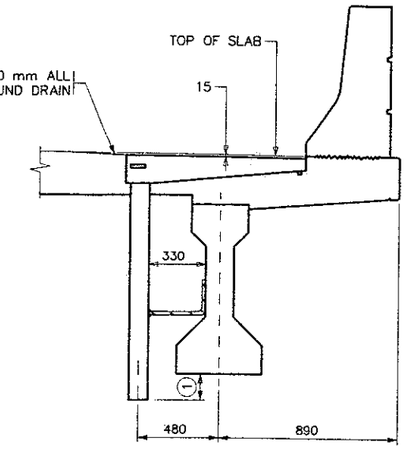
(3) BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS. SEE PRESTRESSED CONCRETE BEAM SHEETS FOR MORE INFORMATION.

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming STATE BRIDGE ENGINEER	STEEL INTERMEDIATE BOLTED DIAPHRAGM (FOR 1370 mm – 2060 mm PRESTRESSED CONCRETE BEAMS)		B406M

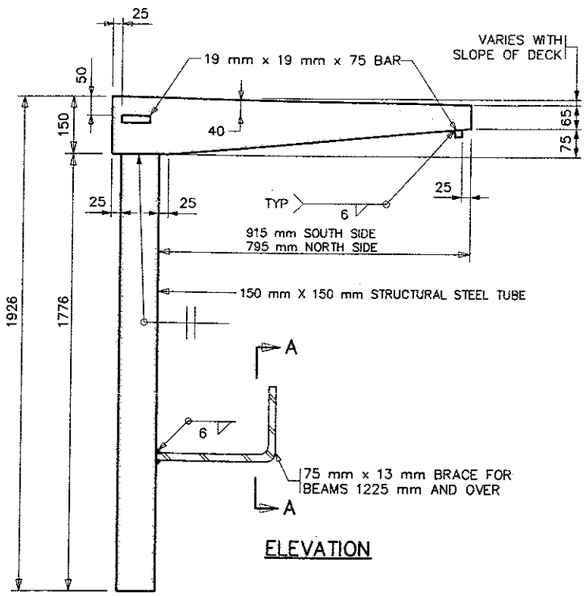
TITLE:	DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98	Bridge No.
DETAILS	CHK: K.A.R.	CHK: T.J.M.		55546
	Sheet No. B25 of 30 Sheets			



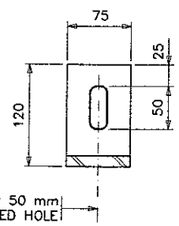
PLAN



FLOOR DRAIN
PLACEMENT DIAGRAM



ELEVATION



SECTION A–A

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER SPEC. 3306.

GALVANIZE MATERIAL PER SPEC. 3394 AFTER FABRICATION.

PAYMENT FOR FLOOR DRAIN TYPE 2 SHALL INCLUDE ALL MATERIAL SHOWN ON THIS DETAIL.

(1) 25 mm± BELOW BOTTOM OF BEAM EXCEPT ON RURAL STREAM CROSSINGS WHERE DRAIN SHOULD BE EVEN TO BOTTOM OF BEAM.

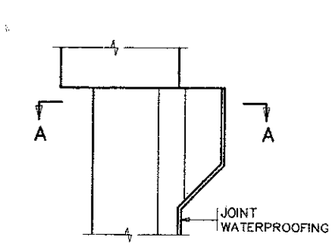
APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming STATE BRIDGE ENGINEER	BRIDGE OFFSET FLOOR DRAIN (STRUCTURAL TUBE)		B706M

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

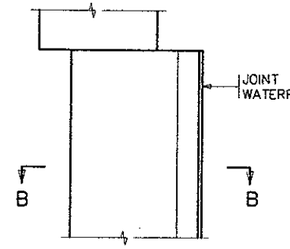
CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG. NO. 14290 9/4 19 98

STATE PROJ. NO. 55-598-24

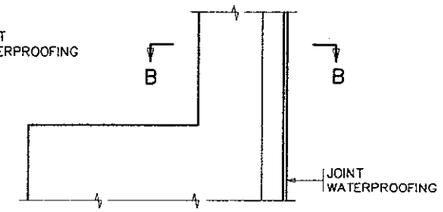
460A119



SECTION THROUGH PARAPET

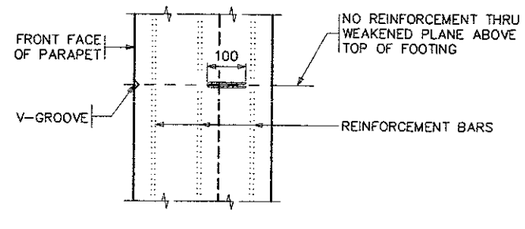


SECTION THROUGH PARAPET

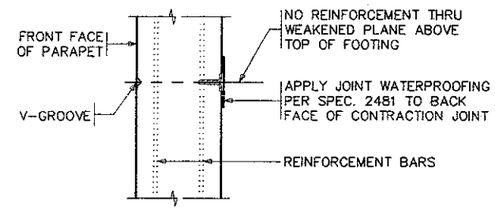


SECTION THROUGH BRIDGE SEAT

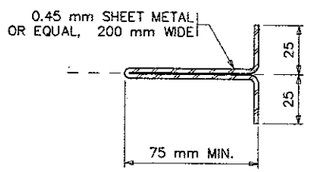
PART SECTION
THROUGH ABUTMENT AT JOINT



SECTION A–A



SECTION B–B



BACK 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 SHOWN. THE SEPARATION OF THE HORIZONTAL REINFORCEMENT BARS IN THE BACK OF THE PARAPET AND BACK FACE OF THE ABUTMENT SHALL NOT BE LESS THAN 40 mm NOR MORE THAN 75 mm, CENTERED AS SHOWN, REGARDLESS OF THE PROCEDURE USED FOR FORMING THE DUMMY JOINT

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.

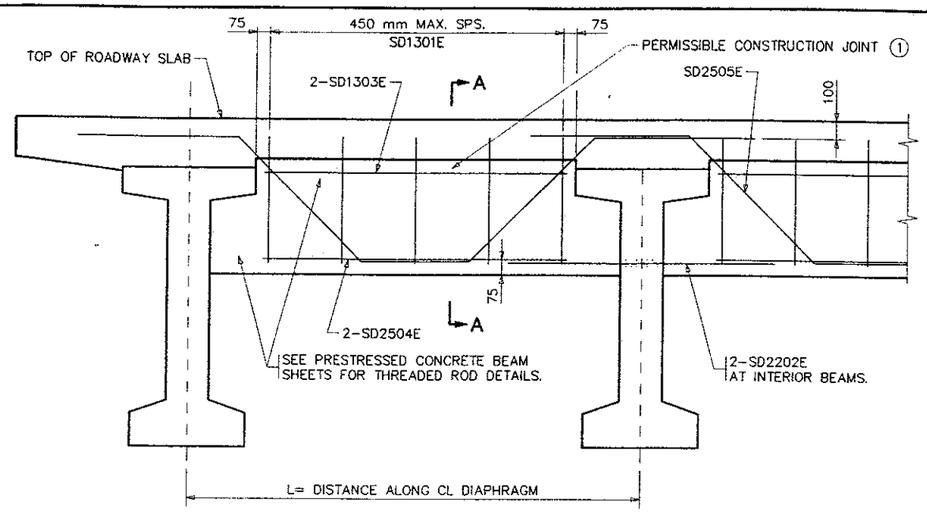
APPROVED: JULY 10, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming STATE BRIDGE ENGINEER	CONTRACTION JOINT		B801M

TITLE: DETAILS

DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

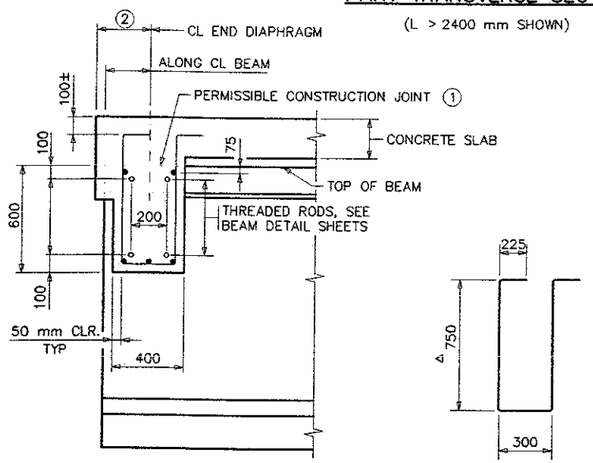
Sheet No. B26 of 30 Sheets

Bridge No. 55546



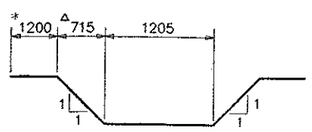
PART TRANSVERSE SECTION

(L > 2400 mm SHOWN)



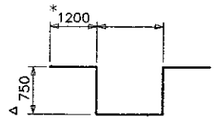
SECTION A-A

SD1301E



SD2505E

(IF L > 2400 mm)



SD1606E (3)

(IF L ≤2400 mm)

* CHECK LENGTH OVER FACIA BEAM

△BASED ON 75 mm STOOL

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM					
DISTANCE "L" ALONG CL OF DIAPHRAGM	BARS REQUIRED				
	STRAIGHT		BENT		
	NO.	SIZE	NO.	SIZE	
UP TO 2400 mm	2	19E	1	16E	(3)
OVER 2400 mm TO 3350 mm	2	22E	1	19E	
OVER 3350 mm TO 3960 mm	2	25E	1	25E	
OVER 3960 mm TO 4570 mm	2	29E	1	32E	
OVER 4570 mm TO 5485 mm	2	36E	1	36E	

BILL OF REINFORCEMENT FOR END DIAPHRAGM				
BAR	NO.	LENGTH	SHAPE	LOCATION
SD1301E	48	2250 mm		VERTICAL TIE
SD2202E	12	1525 mm		LONG. THRU BEAM
SD1303E	16	2475 mm		LONG. TOP
SD2504E	16	2475 mm		LONG. BOTTOM
SD2505E	8	5625 mm		LONGITUDINAL
SD1606E				LONGITUDINAL

NOTES:

DIAPHRAGM CONCRETE TO BE MIX NO. 3Y43.

ALL DIAPHRAGM CONCRETE AND REINFORCEMENT BARS SHOWN ON THIS DETAIL TO BE INCLUDED IN PAYMENT FOR SUPERSTRUCTURE QUANTITIES.

THREADED RODS ARE INCLUDED IN PAYMENT FOR PRESTRESSED CONCRETE BEAMS.

(1) USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN IN PLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

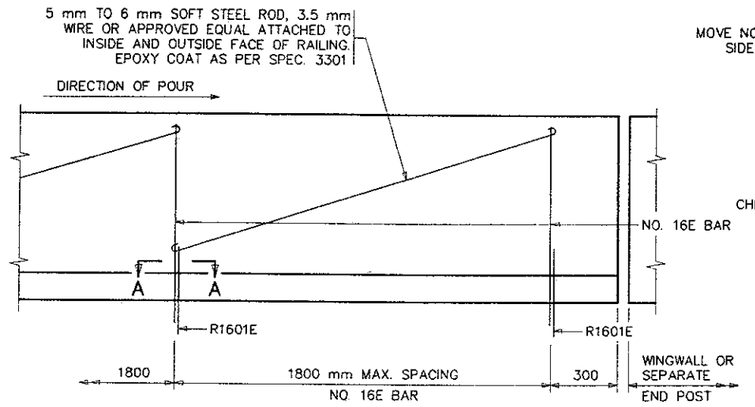
(2) PERPENDICULAR TO CENTERLINE OF DIAPHRAGM. SEE PLANS FOR DIMENSIONS.

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming	CONCRETE END DIAPHRAGM (1600 mm – 2060 mm PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)		B812M
STATE BRIDGE ENGINEER			

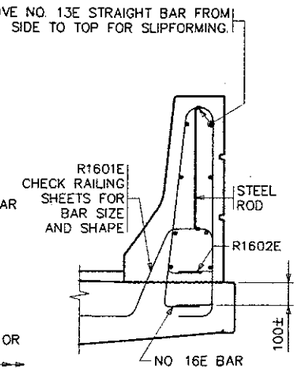
ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

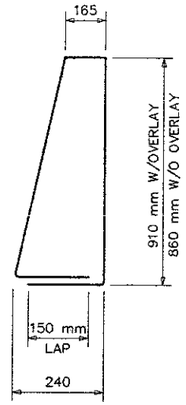
CERTIFIED BY ..... PROFESSIONAL ENGINEER REG. NO. 14280 9/4 1998



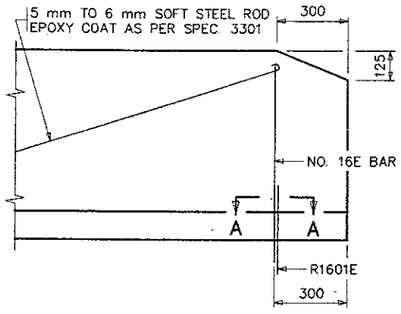
INSIDE ELEVATION OF RAILING



RAILING SECTION

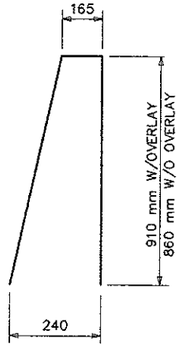


NO. 16E BAR



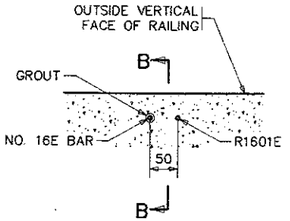
INSIDE ELEVATION OF RAILING

AT END OF WINGWALL

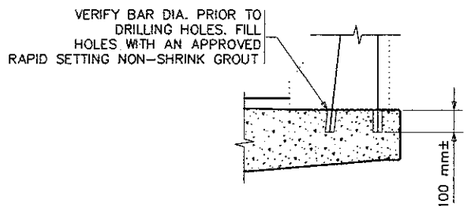


NO. 16E BAR

DRILLED IN ALTERNATE



SECTION A-A



SECTION B-B

INSTALLATION DETAILS
FOR NO. 16E BAR (DRILLED IN ALTERNATE)

NOTES:

CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.

FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET

FORM RAIL FOR A MINIMUM OF 1200 mm ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Donald J. Flemming	CONCRETE RAILING (TYPE F) (SLIPFORM ALTERNATE)		B830M
STATE BRIDGE ENGINEER			

STATE PROJ. NO. 55-598-24

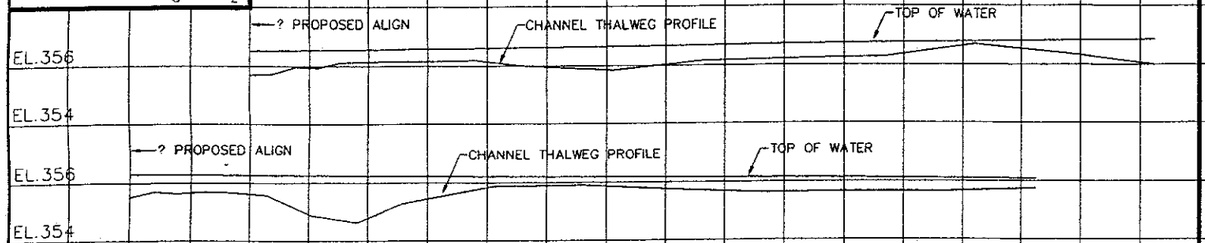
460A119

TITLE:	DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98	Bridge No.
DETAILS	CHK: K.A.R.	CHK: T.J.M.	Sheet No. B27 of 30 Sheets	55546

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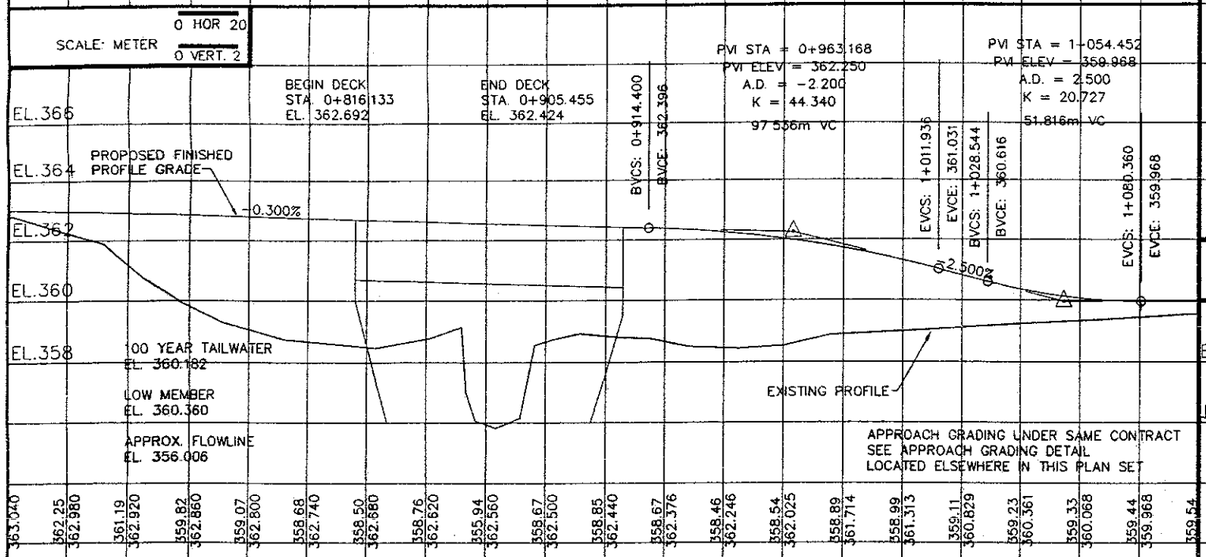
SCALE: METER HOR 0 20 VERT. 0 2

PROFILE 300 m UPSTREAM LOOKING UPSTREAM — UPSTREAM (SOUTH)

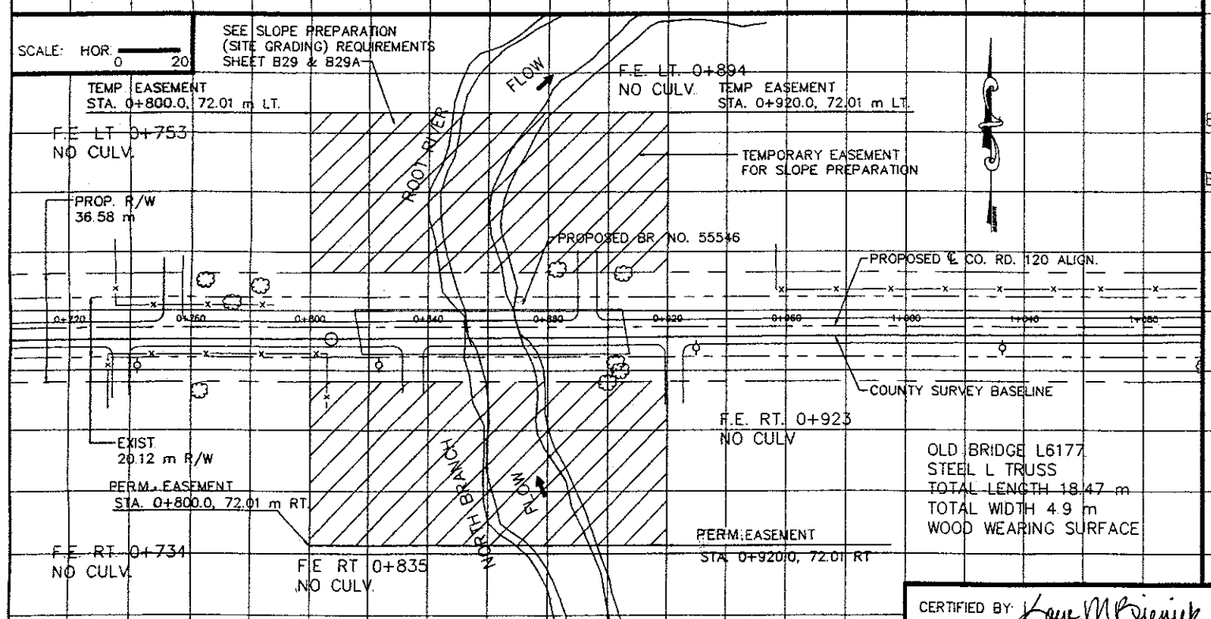


PROFILE 300 m DOWNSTREAM LOOKING DOWNSTREAM — DOWNSTREAM (NORTH)

SCALE: METER 0 HOR 20 0 VERT. 2

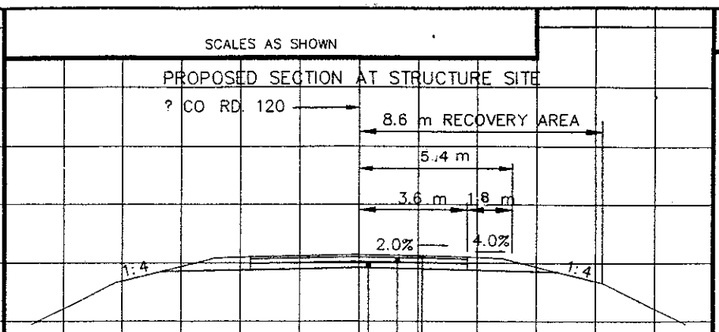


SCALE: HOR. 0 20



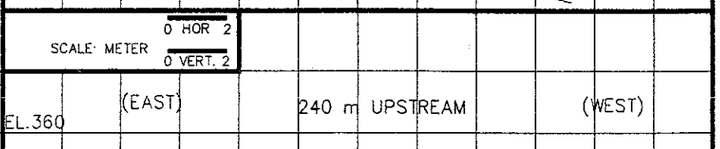
SCALES AS SHOWN

PROPOSED SECTION AT STRUCTURE SITE



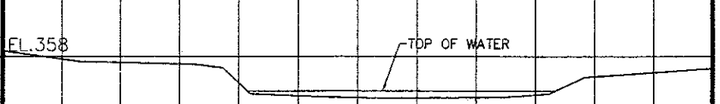
NOTE:
APPROACH GRADING UNDER SAME CONTRACT

EXISTING SECTION AT STRUCTURE SITE

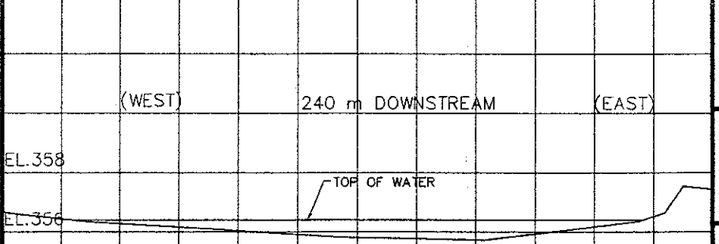


SCALE: METER 0 HOR 2 0 VERT. 2

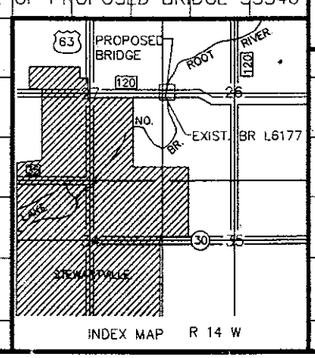
240 m UPSTREAM — (EAST) (WEST)



240 m DOWNSTREAM — (WEST) (EAST)



SITE OF PROPOSED BRIDGE 55546



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 8/20/98

Stream or ditch designation NORTH BRANCH ROOT RIVER
Drainage area 319.9 km²
Max. flood on record UNKNOWN Design flood(50 yr freq.) 442.88 m³/s
Max. observed highwater elev. 360.120 Design tailwater elev. 359.970
Design mean velocity through structure 1.55 m/s
Low superstructure at or above elevation 360.240
Flowline elevation 356.005 Skew angle 10°0'0"
Waterway area req'd. below elev. 359.970 = 283.00 m² at Rt. angles to channel.

In the interest of flood plain zoning the reg. flood(100yr freq)is 528.96 m³/s *
at stage 360.180 & mean velocity of 1.60 m/s with 0.120 m swellhead.
The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Naterial Resources.
ABUT. SCOUR—NEGLIGIBLE—CLASS III RIPRAP PROTECTION REQUIRED ON INSLOPES.
POTENTIAL CONTRACTION SCOUR 0.305 METERS.
ESTIMATED DEPTH OF PIER SCOUR 1.220 METERS.

* BASED ON 28 m² OF OVERFLOW AREA BETWEEN 360.300 AND 360.095

FOUNDATION ENGINEERS RECOMMENDATION

DATE _____

Bridge survey sheets made from: OLMSTED CO. FIELD SURVEY
Bench mark elevation 359.682 (M.S.L. 1929 Adj.)
Location S.W. HEADWALL OF BRIDGE NO. L6177

ALL DIMENSIONS ARE IN MILLIMETERS (mm) & ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

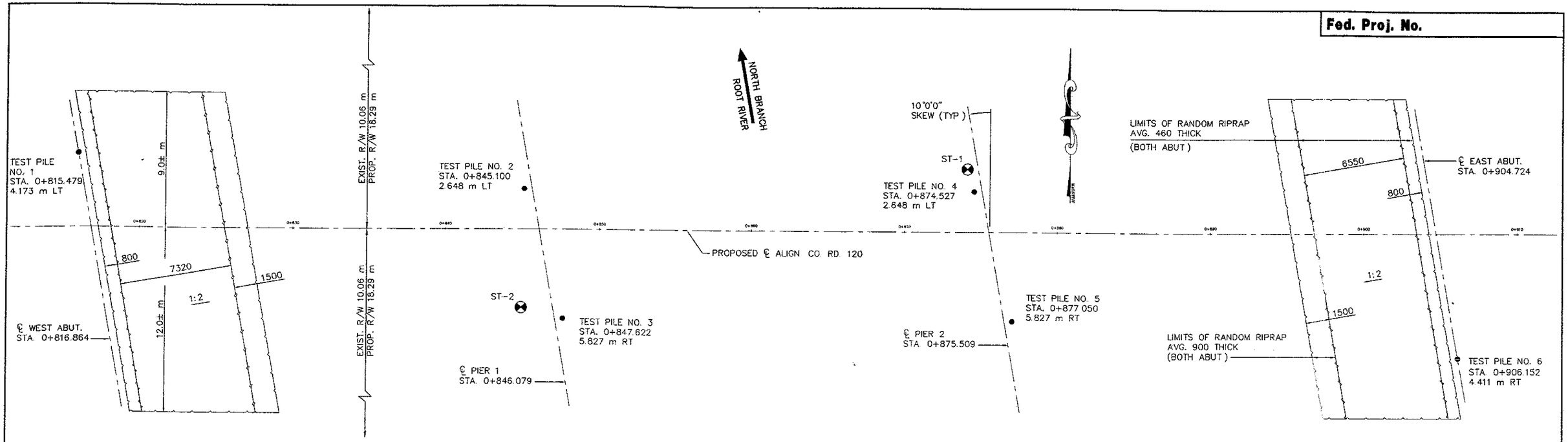
MINNESOTA
DEPARTMENT OF TRANSPORTATION

AT KILOMETER POINT 0.9 ON CO. RD. 120
PROPOSED BRIDGE LOCATED 0.9 KM
EAST OF THE JCT. T.H. 63
SEC. 26 TWP. 105 N R. 14 W
TOWNSHIP HIGH FOREST COUNTY OLMSTED
BRIDGE NO. 55546
12-31-98

CERTIFIED BY: Lowell M. Pieniek PROFESSIONAL ENGINEER REG. NO 19917 6/9 1998

S P 55-598-24 WSN 460A119

Fed. Proj. No.



LIMITS OF RANDOM RIPRAP ARE APPROX ONLY
EXACT LIMITS SHALL BE DETERMINED BY
THE ENGINEER IN THE FIELD.

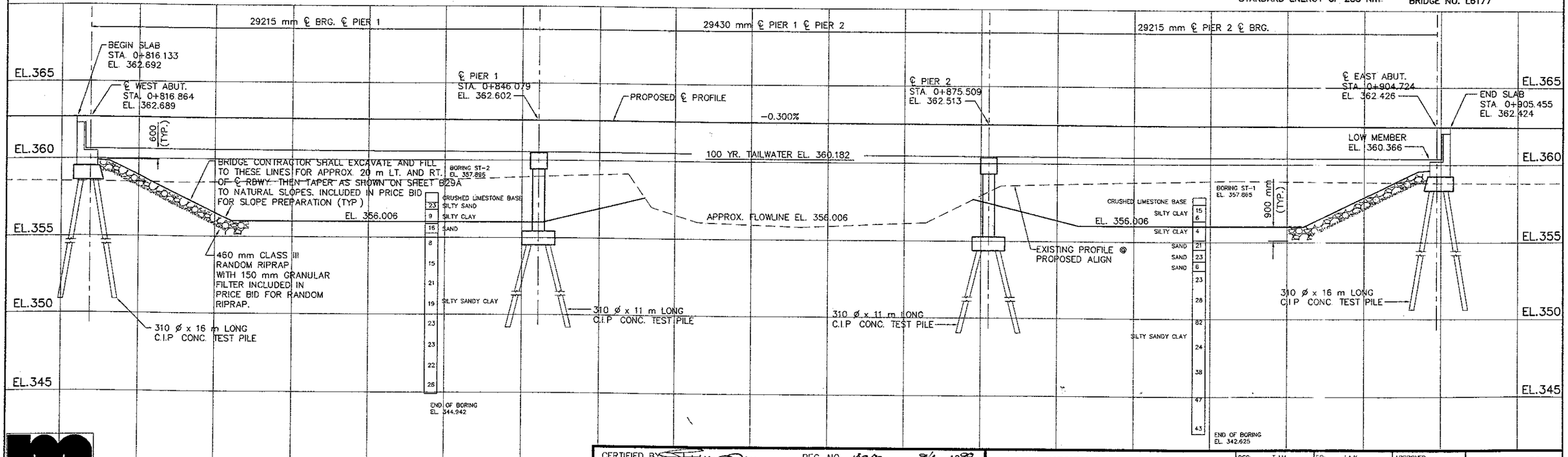
APPROX. QUANTITY GRANULAR FILTER INCLUDED IN PRICE BID FOR RANDOM RIPRAP CL III — 59 m³

PLAN

0 scale: meter 3

BORING SHOWN ST-1 & ST-2
BLOWS PER 0.3 m WITH
63.5 kg HAMMER AND A
STANDARD ENERGY OF 285 Nm

BENCHMARK:
ELEV. 359.682 (M.S.L. 1929 Adj)
S.W. HEADWALL OF
BRIDGE NO. L6177



ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

minnesota metric

CERTIFIED BY _____ PROFESSIONAL ENGINEER REG. NO. 18280 7/4 1998

WSN 460A119

BRIDGE SURVEY PLAN AND PROFILE

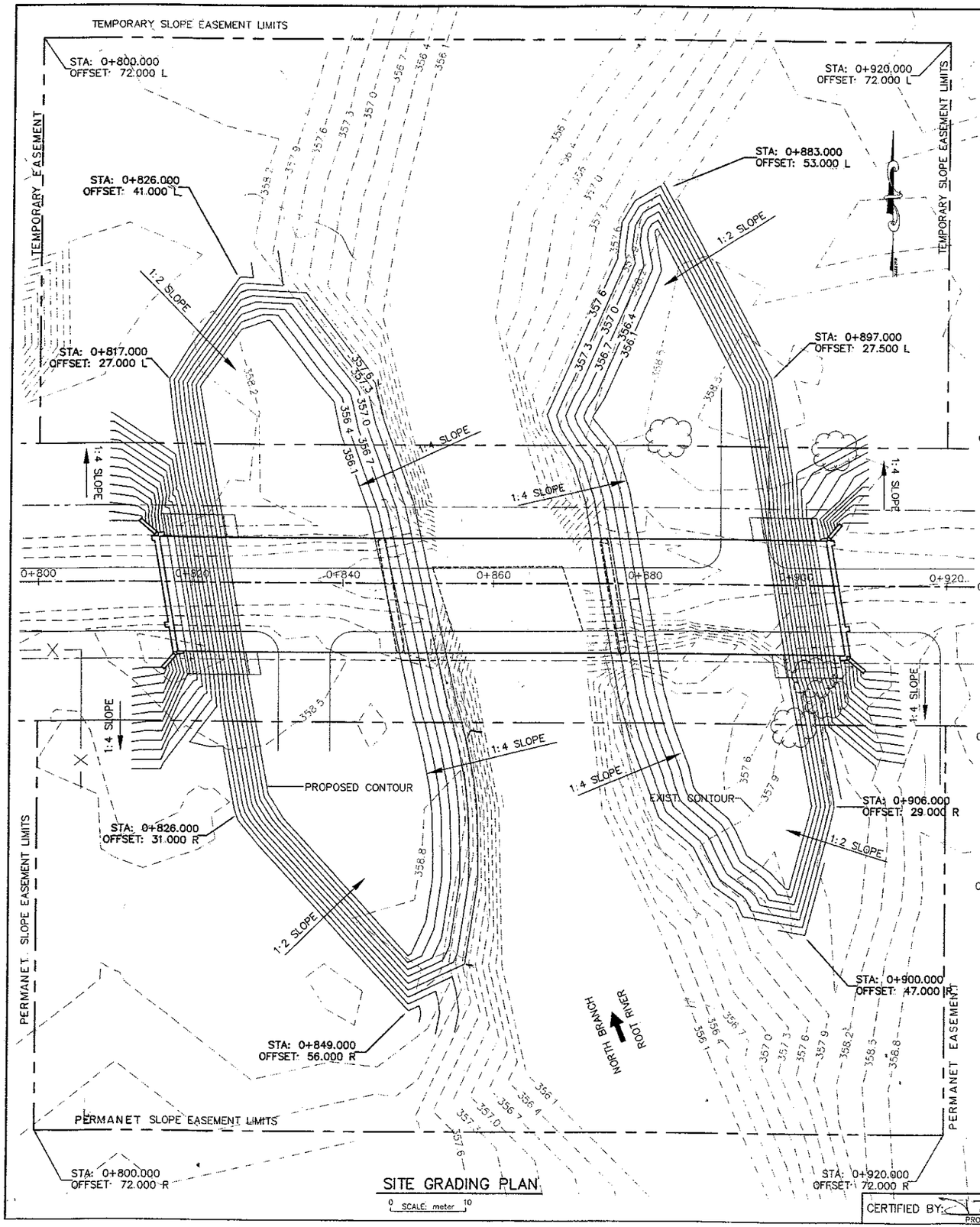
DES: T.J.M.	DR: J.A.K.	APPROVED: 12-31-98
CHK: K.A.R.	CHK: T.J.M.	

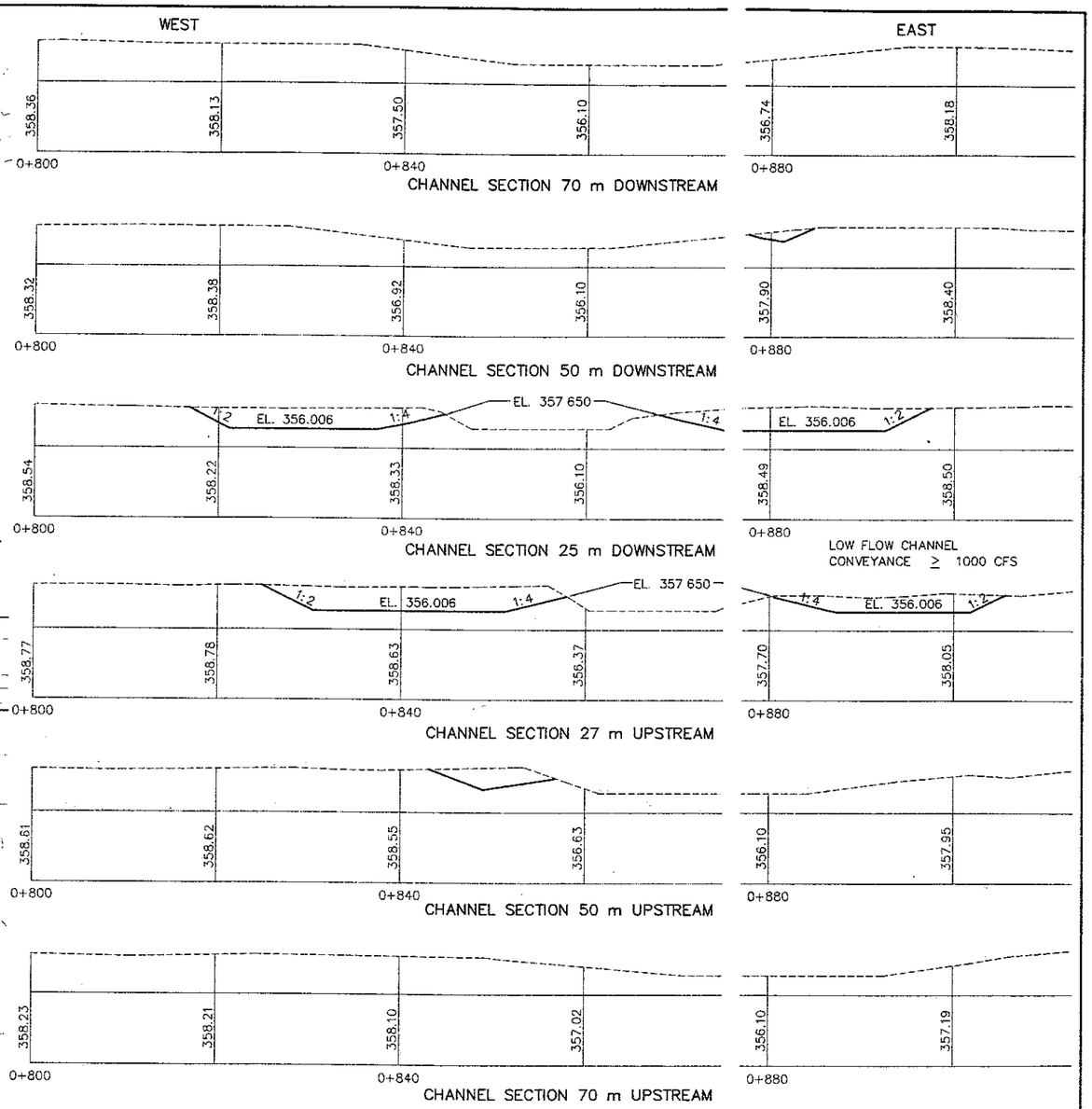
State Proj. No. 55-598-24

Sheet No. B29 of 30 Sheets

Bridge No. 55546

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NOTE:
CONTOUR INTERVAL 0.3 meters (EXIST & PROPOSED)

FOR INFORMATIONAL PURPOSES
- TOTAL EXCAVATION OF 9350 m^3
- TOTAL EMBANKMENT OF 420 m^3
- TOTAL EXC. & EMB. ARE A INPLACE VOLUME

ALL WORK INCLUDED IN PRICE BID FOR ITEM
2401 601 SLOPE PREPARATION

EXCAVATED MATERIAL TO BE UTILIZED IN ROADWAY EMBANKMENT. SEE APPROACH GRADING PORTION OF PLANS

minne a metric ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

WSN 460A119
DSETH SMITH NOLTING
ENGINEERS ARCHITECTS LAND SURVEYORS PROJECT MANAGERS
ALEXAN A PHONE 320-762-8149 FAX 320-762-0283 www.wsn-mn.com

CERTIFIED BY: _____ PROFESSIONAL ENGINEER REG NO 14280 9/4 1998

State Proj. No.55-598-24

SITE GRADING PLAN

APPR(D 12-31-98
DES. | CHK.
T.J.M. | DR. BY J.A.K.
K.A.R. | CHK. BY T.J.M.
BRIDGE NO. 55546

SHEET NO. B30 OF 30 SHEETS

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