

CONSTRUCTION FOR EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION AND ALLOWED TO SETTLE FOR 3 DAYS. APPROACH FILL AND ROUGH GRADING PROVIDED UNDER GRADING PORTION OF CONTRACT. FORESLOPE SHALL BE PLACED AND COMPACTED IN SUBSTANTIAL CONFORMANCE WITH ITS FINAL SHAPE BEFORE ABUTMENT IS BACKFILLED.

- ① UNDER GRADING PORTION OF CONTRACT.
- ② BY OTHERS. SEE SPECIAL PROVISIONS.

DESIGN DATA	
1996 AND CURRENT INTERIM AASHTO DESIGN SPECIFICATIONS.	
LOAD FACTOR DESIGN METHOD	
MS22.5 LIVE LOAD	
BRIDGE OPERATING RATING MS 43	
DEAD LOAD INCLUDES 0.8 kN/m <sup>2</sup> ALLOWANCE FOR FUTURE OVERLAY MODIFICATIONS.	
MAXIMUM ALLOWABLE DESIGN STRESSES:	
REINFORCED CONCRETE:	
f' <sub>c</sub> = 28 MPa, n=8	
f <sub>y</sub> = 420 MPa FOR REINFORCEMENT, GRADE 420	
TOTAL DECK AREA = 723 m <sup>2</sup>	
ADT 11000 (1996)	
PROJ ADT 15200 (2016)	
DESIGN SPEED OVER= 60 Km/h	

LIST OF SHEETS	
NO	DESCRIPTION
1	GENERAL PLAN & ELEVATION
2	BRIDGE QUANTITIES AND BRIDGE SECTIONS
3	BRIDGE LAYOUT
4-8	ABUTMENT DETAILS
9-10	PIER DETAILS
11	ABUTMENT & PIER BAR LISTS & QUANTITIES
12-14	SUPERSTRUCTURE DETAILS
15	SUPERSTRUCTURE BAR LIST & QUANTITIES
16-20	STANDARD DETAILS
21-22	B DETAILS
23	BRIDGE SURVEY
24	BRIDGE SURVEY TYPICAL SECTIONS
25	BRIDGE SURVEY PLAN AND PROFILE
26	BRIDGE SURVEY PLAN AND PROFILE
27	RIPRAP DETAILS
28	AS BUILT BRIDGE DATA

**CONSTRUCTION NOTES**  
 THE 1995 EDITION OF THE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.  
 THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATE THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS.  
 THE BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.  
 DRAWINGS ARE NOT TO BE SCALED.  
 ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL ELEVATIONS ARE IN METERS (m) EXCEPT AS NOTED.

BM ELEV 266.551 (MSL 1929 ADJ)  
 TOP OF HYDRANT SW CORNER CROOKED LAKE BLVD AND CR 116

MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**BRIDGE NO 02564**

PROPOSED BRIDGE LOCATED ON CSAH 116, 2.3 Km EAST OF THE JUNCTION OF CSAH 116 AND CSAH 9  
 3 SPAN CAST-IN-PLACE CONCRETE SLAB BRIDGE  
 (313.6 m LANES, 114.2 m LANE, 1.2 m MEDIAN,  
 4.2 m TURN LANE, 3.0 m SDWKS EA SIDE  
 20°00'00" SKEW

IDENTIFICATION NO 209  
 SEC 33 TWP 32 N R 24 W  
 CITY OF ANDOVER ANOKA CO

**GENERAL PLAN AND ELEVATION**

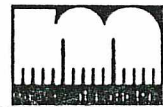
APPROVED: *Donald J. Manning*  
 STATE BRIDGE ENGINEER

DES: MAW DR: MAW  
 CHK: JOS CHK: JOS

02564

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

SIGNED *Nancy Daubnerger*  
 DATE MARCH 4, 1999 REG NO 25151

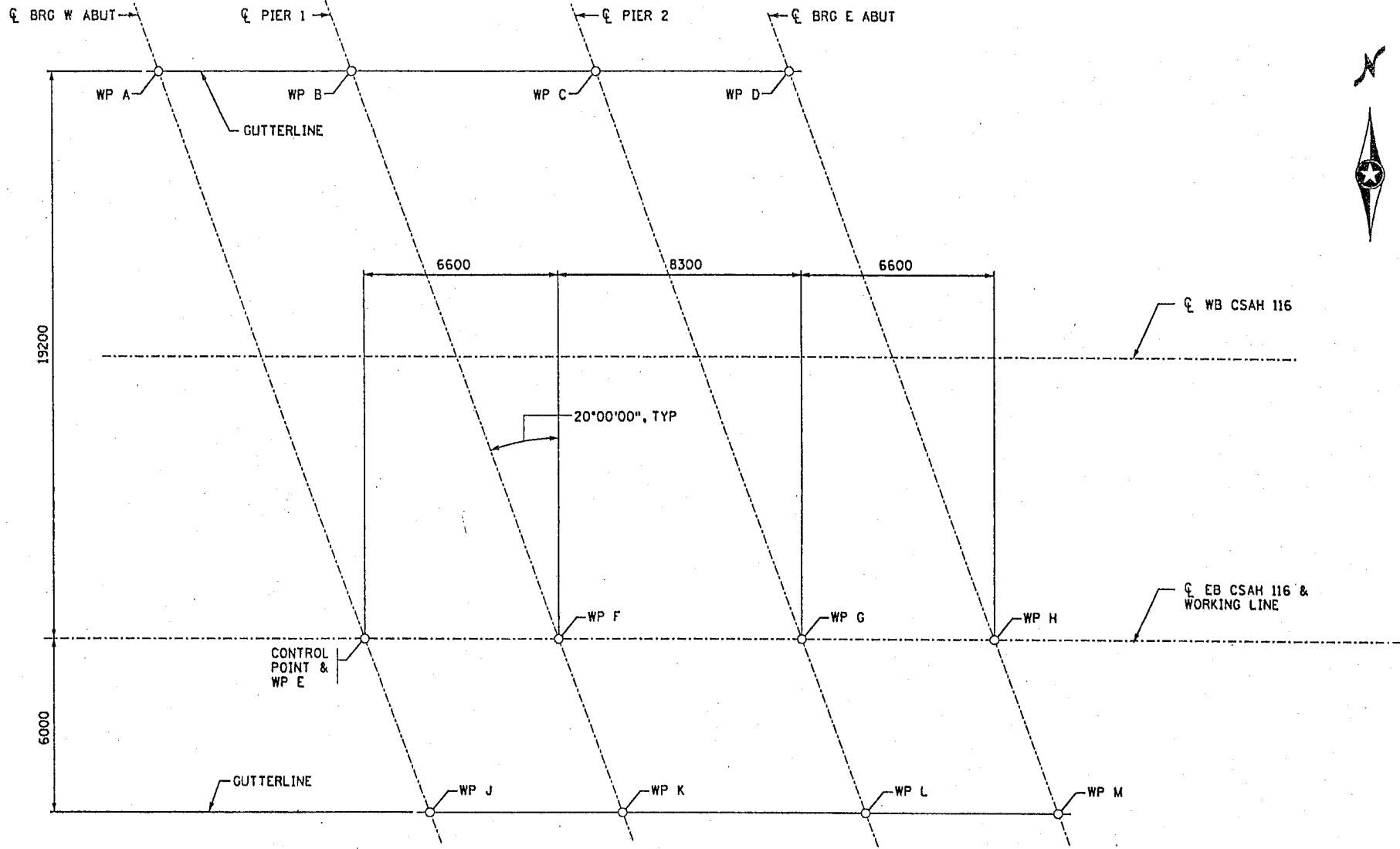


04 MAR 99

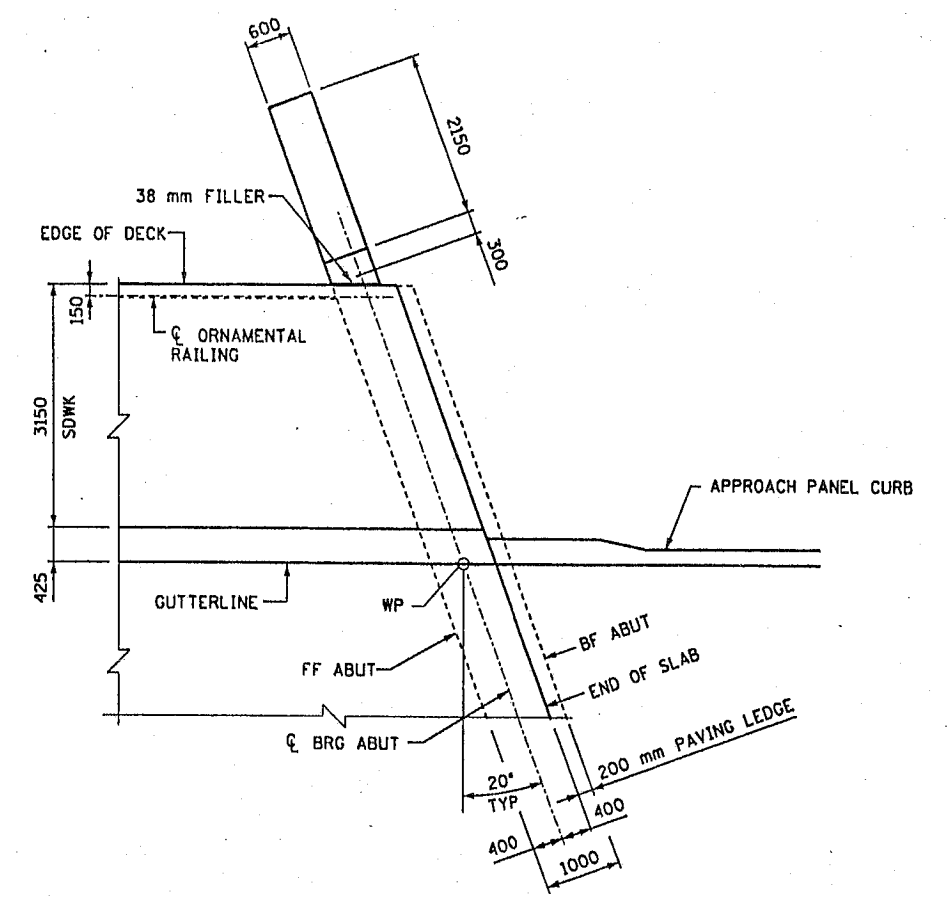
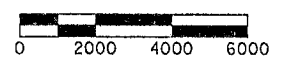
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20 m LT	---
5 EB CSAH 116	---
10 m RT	---

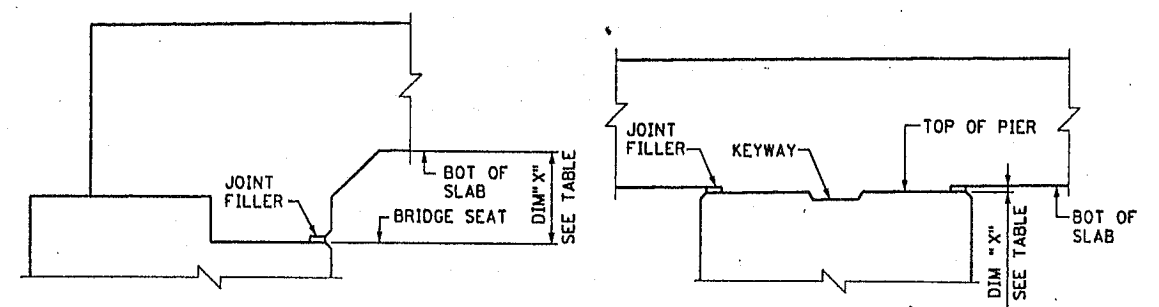




WORKING POINT LAYOUT



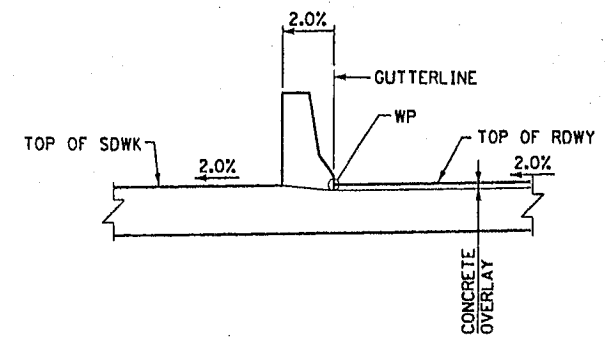
TYPICAL CORNER LAYOUT



DIMENSION "X" AT ABUTMENTS

DIMENSION "X" AT PIERS

POINT NUMBER	POINT	STATION	X COORDINATE	Y COORDINATE	DIMENSIONS BETWEEN WORKING POINTS											ELEVATIONS			POINT		
					A	B	C	D	E	F	G	H	J	K	L	M	TOP OF SLAB	TOP OF SLAB TO BR SEAT		BRIDGE SEAT	
A	3+030.716	9983.100	7569.783															265.070	650	264.420	A
B	3+037.317	9989.699	7569.888	6600														265.140	444	264.696	B
C	3+045.617	9997.998	7570.020	14900	8300													265.228	444	264.784	C
D	3+052.217	10004.598	7570.125	21500	14900	6600												265.298	650	264.648	D
E	3+037.705	9990.393	7550.697	20432	19204	20766	24067											265.144	650	264.494	E
F	3+044.305	9996.992	7550.802	23522	20432	19245	20766	6600										265.214	444	264.770	F
G	3+052.605	10005.291	7550.934	29116	24543	20432	19204	14900	8300									265.302	444	264.858	G
H	3+059.205	10011.890	7551.039	34355	29116	23522	20432	21500	14900	6600								265.372	650	264.722	H
J	3+039.889	9992.672	7544.733	26817	25331	25843	28054	6385	7450	14061	20227							265.047	650	264.397	J
K	3+046.489	9999.271	7544.837	29729	26817	25215	25843	10638	6385	8568	14061	6600						265.117	444	264.673	K
L	3+054.789	10007.570	7544.969	34850	30665	26817	25331	18107	12080	6385	7450	14900	8300					265.205	444	264.761	L
M	3+061.389	10014.169	7545.074	39697	34850	29729	26817	24433	18107	10638	6385	21500	14900	6600				265.275	650	264.625	M



WORKING POINT SCHEMATIC

TOP OF ROADWAY TO BRIDGE SEAT				
	W ABUT	PIER 1	PIER 2	E ABUT
SLAB THICKNESS	425	425	425	425
DIMENSION "X"	225	19	19	225
TOTAL	650	444	444	650



CERTIFIED BY *Nancy Dubenberger*  
PROFESSIONAL ENGINEER  
REC NO 25151 DATE MARCH 4, 1999

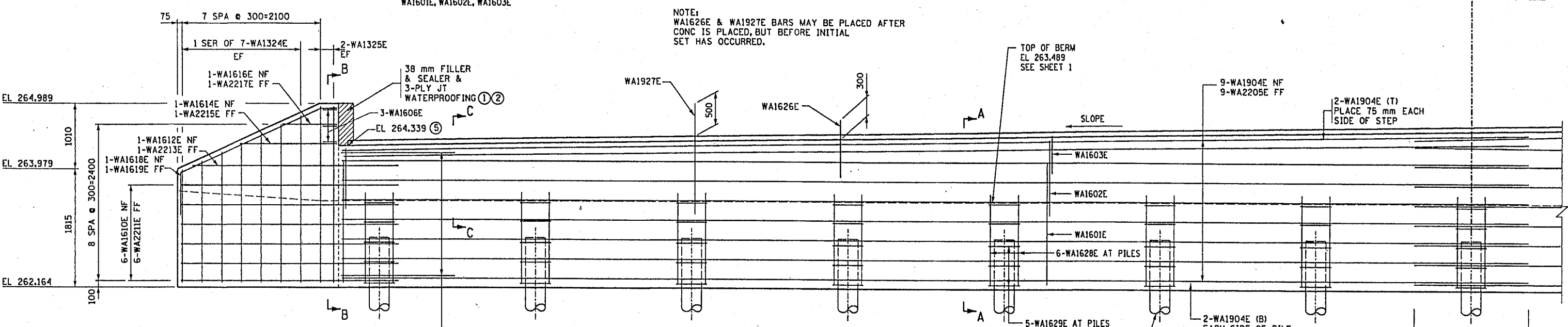
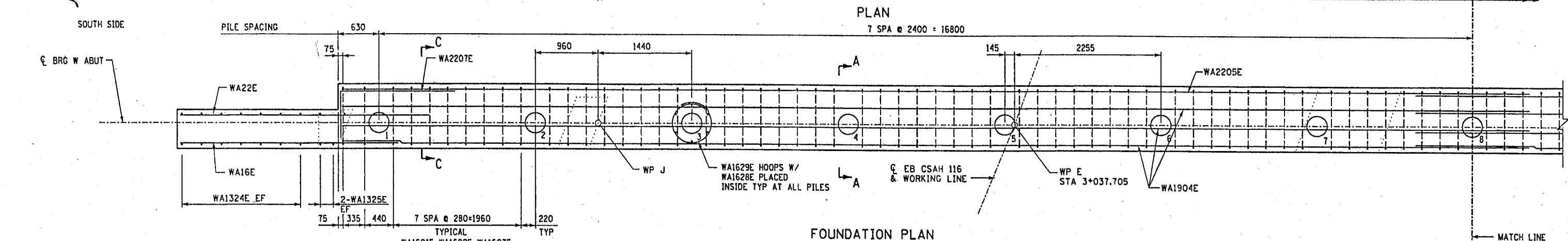
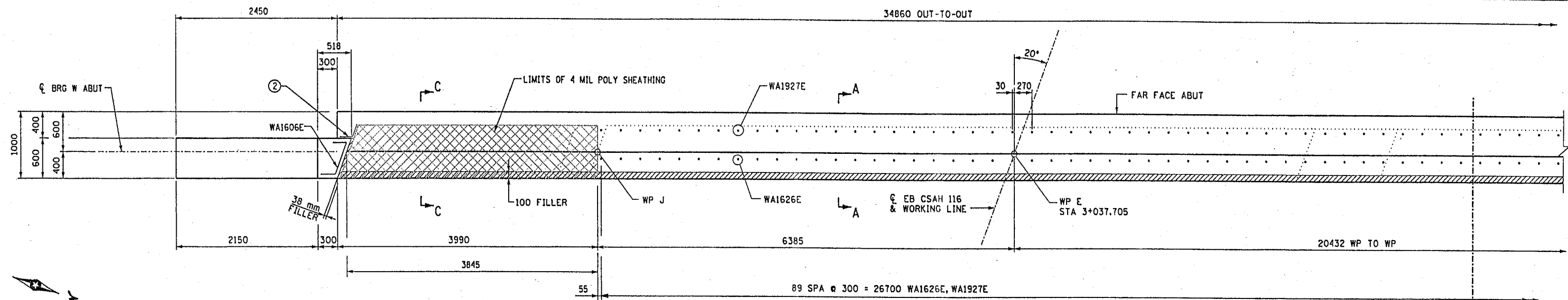
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SAP 02-716-04

DES: MAW DR: MAW APPROVED: 4-5-99  
CHK: JDS CHK: JDS  
SHEET NO 03 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99

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- NOTES:
- SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF JOINT FILLER WITH NON-STAINING, GRAY, NON ASPHALTIC JOINT SEALER. (25 mm DEEP AND HOLD 3 mm BELOW SURFACE OF CONCRETE.)
  - 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.
  - SEE SHEET II FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - NF=NEAR FACE  
FF=FAIR FACE  
EF=EACH FACE  
BF=BACK FACE
  - ELEVATION TAKEN ALONG Q OF BEARING.



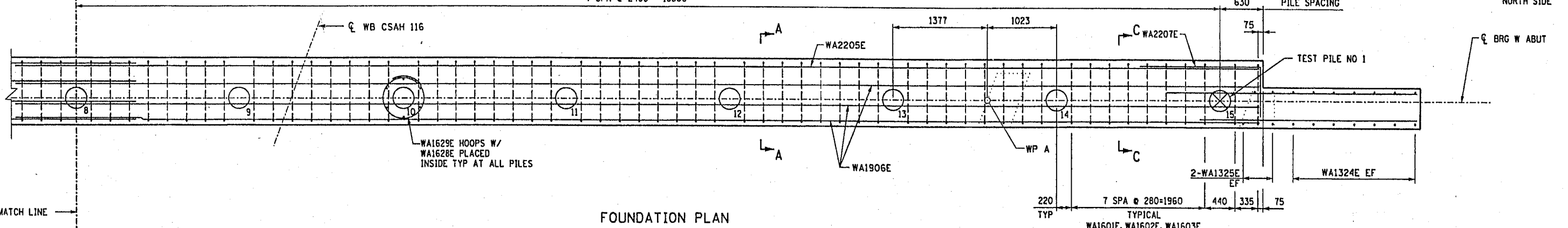
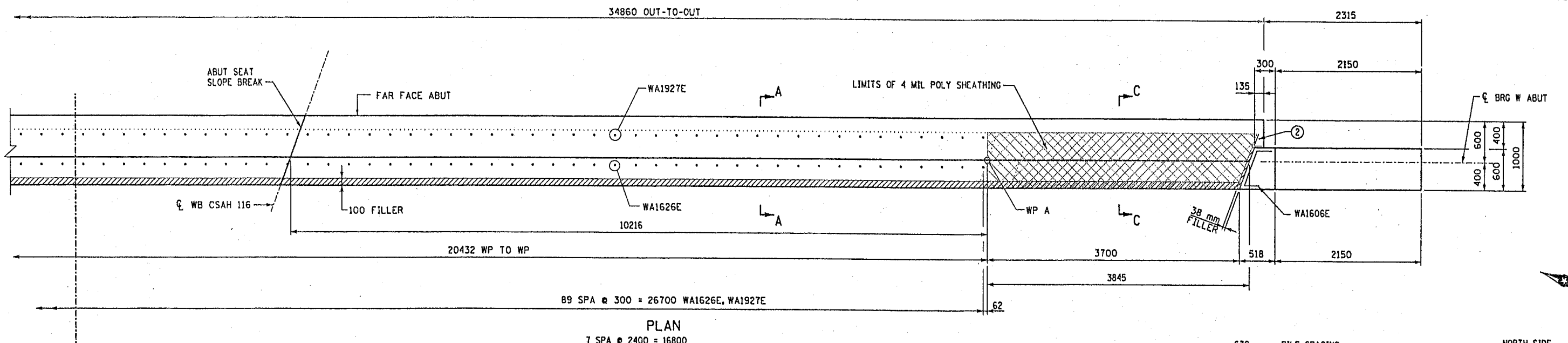
CERTIFIED BY *Nancy Daubinger*  
PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

TITLE: WEST ABUTMENT DETAILS  
SAP 02-716-04

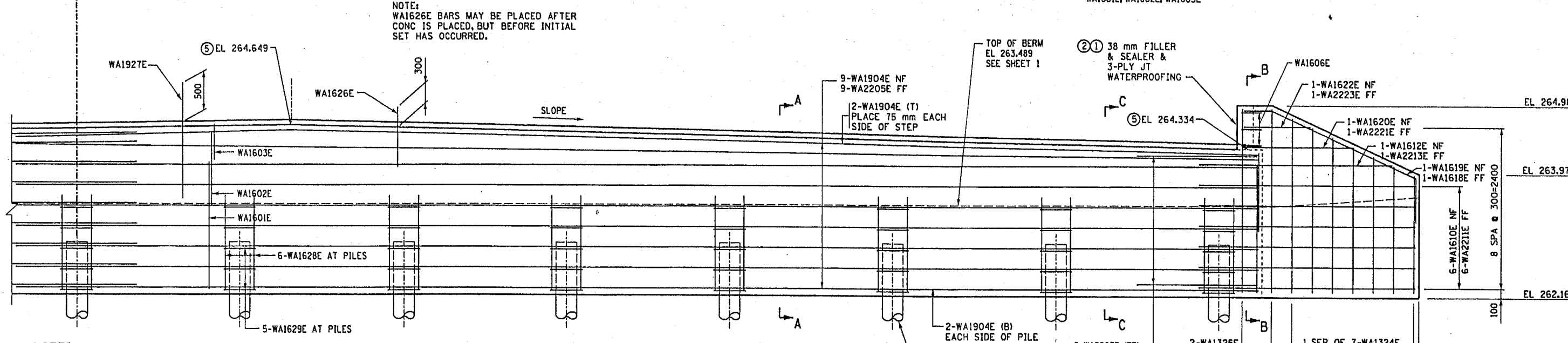
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CHK: JDS CHK: JDS  
SHEET NO 84 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99 J:\struct\bunker\br\lga\bank\wal.dgn



NOTE:  
WA1626E BARS MAY BE PLACED AFTER CONC IS PLACED, BUT BEFORE INITIAL SET HAS OCCURRED.



- NOTES:
- SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF JOINT FILLER WITH NON-STAINING, GRAY, NON ASPHALTIC JOINT SEALER. 125 mm DEEP AND HOLD 3 mm BELOW SURFACE OF CONCRETE.
  - 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.
  - SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - NF=NEAR FACE  
FF=FAIR FACE  
EF=EACH FACE  
BF=BACK FACE
  - ELEVATION TAKEN ALONG  $\phi$  OF BEARING.



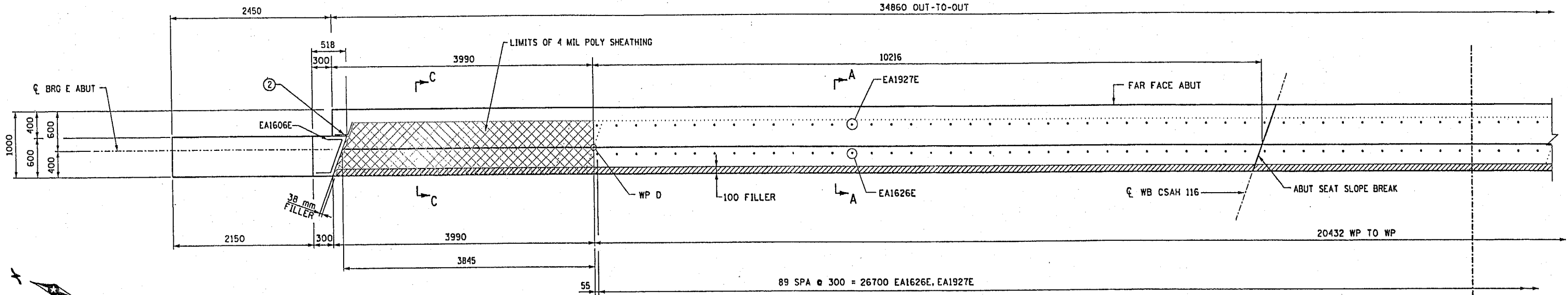
CERTIFIED BY  
*Nancy Daubinger*  
PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

TITLE:  
WEST ABUTMENT DETAILS  
SAP 02-716-04

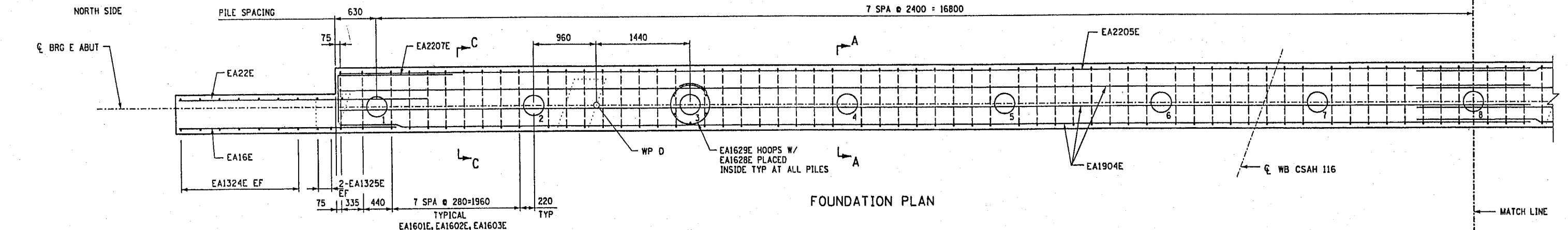
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SHEET NO 05 OF 28 SHEETS

BRIDGE NO  
02564

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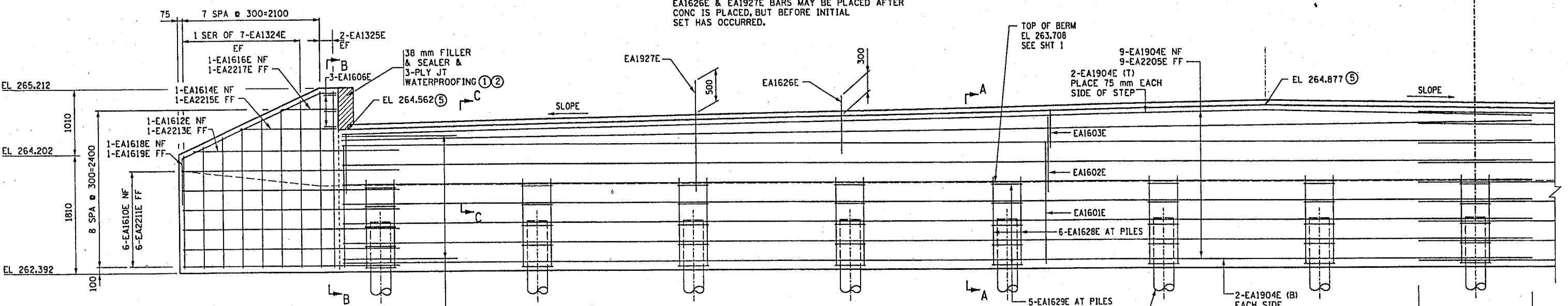


PLAN  
7 SPA @ 2400 = 16800



FOUNDATION PLAN

NOTE:  
EA1626E & EA1927E BARS MAY BE PLACED AFTER  
CONC IS PLACED, BUT BEFORE INITIAL  
SET HAS OCCURRED.



ELEVATION

- NOTES:
- SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF JOINT FILLER WITH NON-STAINING, GRAY, NON ASPHALTIC JOINT SEALER, (25 mm DEEP AND HOLD 3 mm BELOW SURFACE OF CONCRETE).
  - 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.
  - SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - NF=NEAR FACE  
FF=Far FACE  
EF=EACH FACE  
BF=BACK FACE
  - ELEVATION TAKEN ALONG  $\phi$  OF BEARING.



CERTIFIED BY *Nancy Daubner*  
PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

TITLE:  
EAST ABUTMENT DETAILS  
SAP 02-716-04

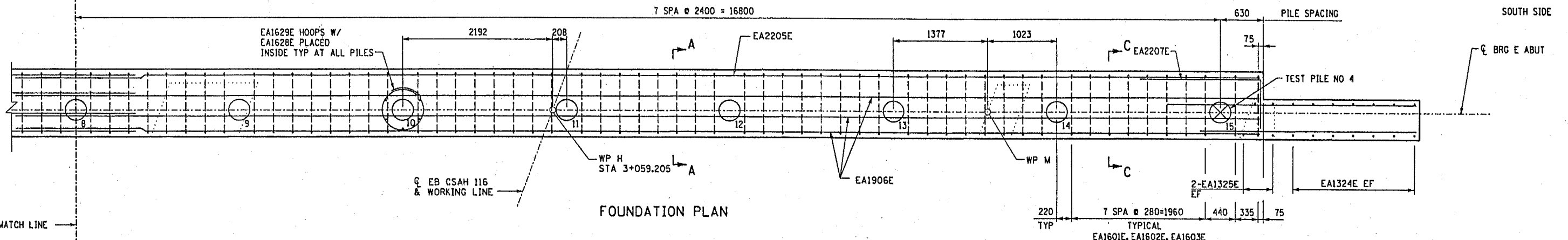
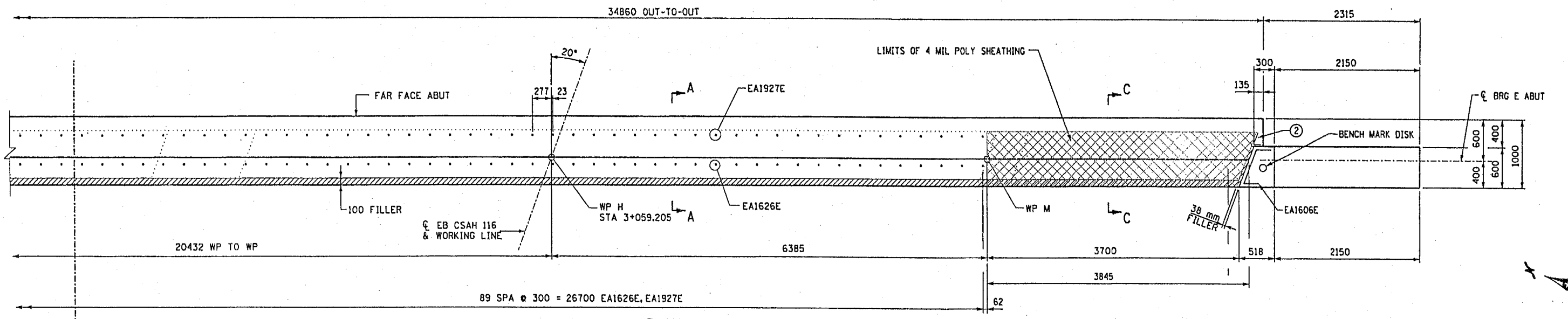
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CHK:	CHK:	

SHEET NO 86 OF 28 SHEETS

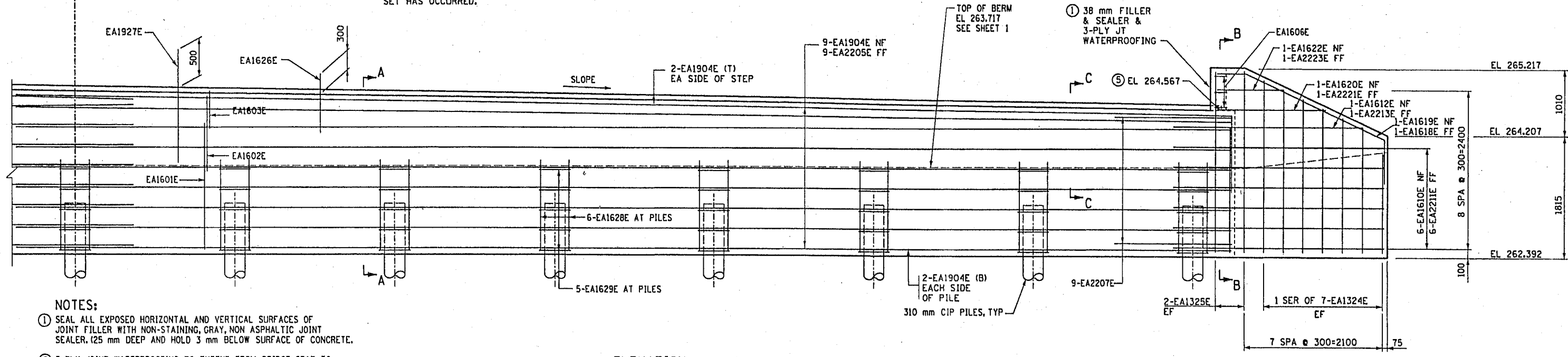
BRIDGE NO  
02564

04 MAR 99

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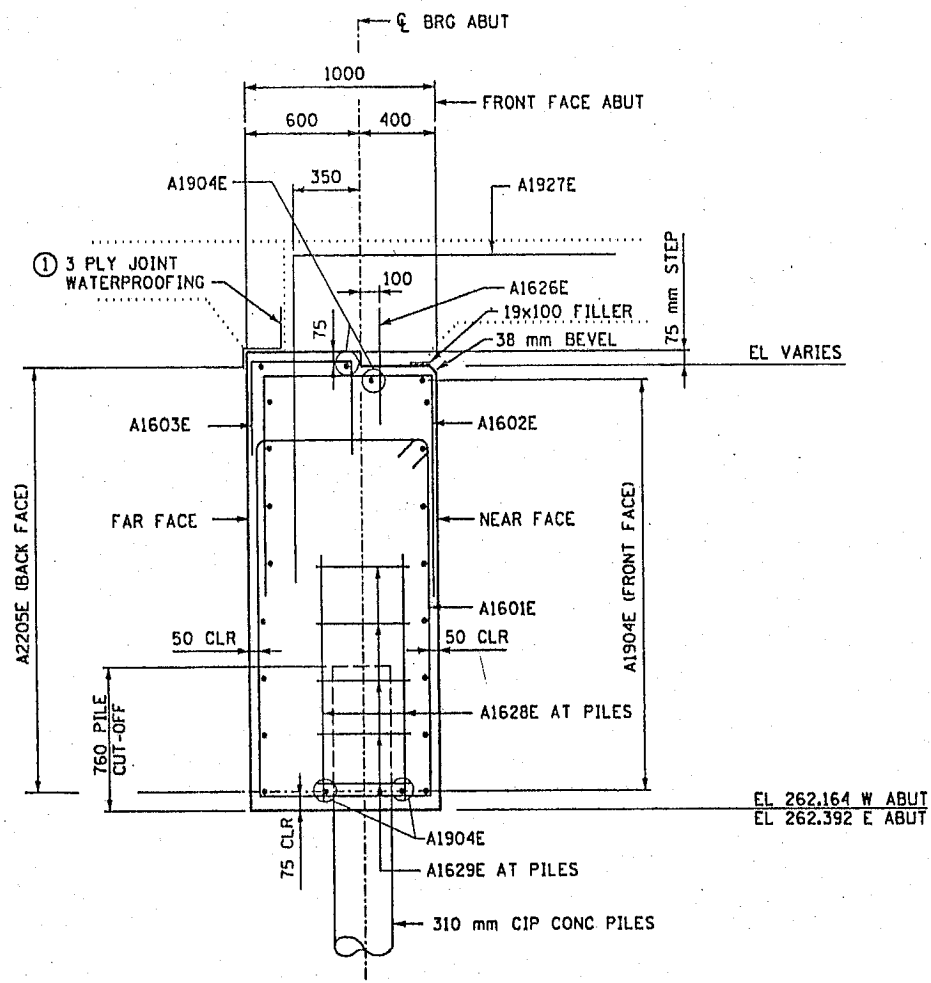
NOTE:  
EA1626E AND EA1927E BARS MAY BE PLACED AFTER CONC IS PLACED, BUT BEFORE INITIAL SET HAS OCCURRED.



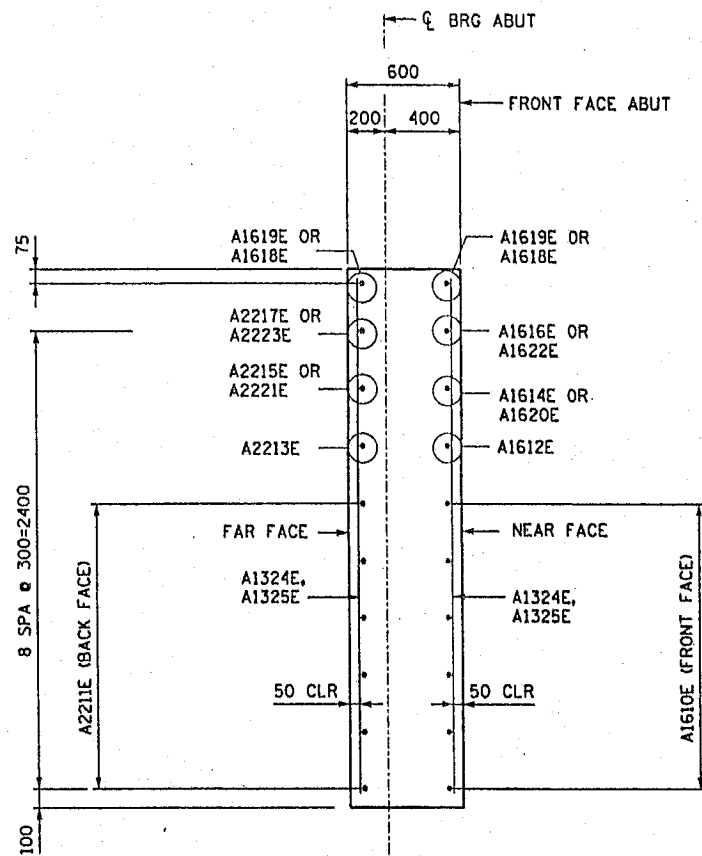
- NOTES:
- SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF JOINT FILLER WITH NON-STAINING, GRAY, NON ASPHALTIC JOINT SEALER. 125 mm DEEP AND HOLD 3 mm BELOW SURFACE OF CONCRETE.
  - 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.
  - SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - NF=NEAR FACE  
FF=FAIR FACE  
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BF=BACK FACE
  - ELEVATION TAKEN ALONG  $\phi$  OF BEARING.

ELEVATION

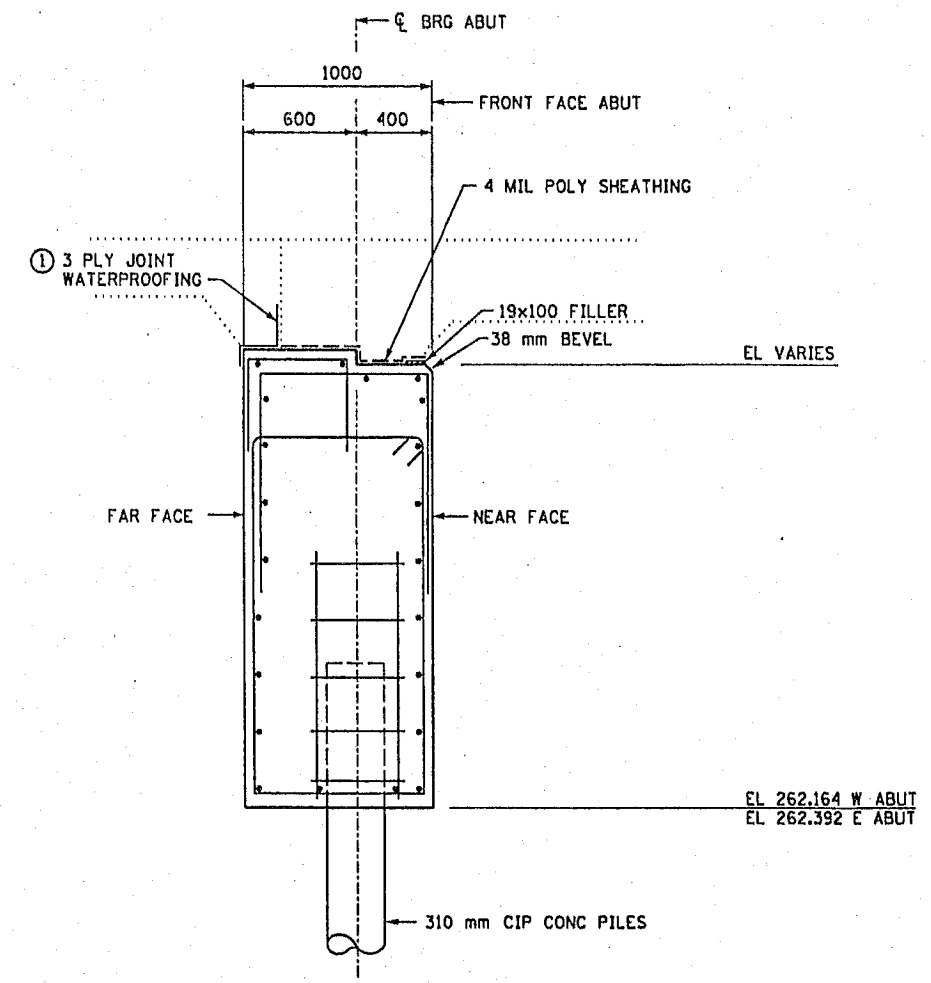
	CERTIFIED BY	Nancy Dauberberger	TITLE:	EAST ABUTMENT DETAILS	DES: NTD	DR: MAW	APPROVED:	BRIDGE NO
	REG NO	25151	DATE	MARCH 4, 1999	CHK: JDS	CHK: JDS	4-5-99	02564
SAP 02-716-04					SHEET NO 37 OF 28 SHEETS			



SECTION A-A



SECTION B-B



SECTION C-C

SEE SECTION A-A FOR ADDITIONAL DETAIL

COMPUTED PILE LOADS-KN/PILE	
DL & EARTH PRESSURE	239.8
LIVE LOAD	82.1
DESIGN LOAD	321.9

PILE NOTES:

- 1 CIP TEST PILES 31 m LONG 310 mm.
- 14 CIP PILING EST LENGTH 28 m LONG 310 mm.
- 15 CIP PILING 310 mm REQUIRED FOR EACH ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING. PILES TO HAVE A NOMINAL DIAMETER OF 310 mm.

ALL PILING TO BE DRIVEN TO A MINIMUM LENGTH OF 28 m. HAMMER SIZE IS TO BE BASED ON ABILITY TO DRIVE THE PILES 535 kn.

NOTES:

- 1 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.
- 2 SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.

04 MAR 99

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CERTIFIED BY  
*Nancy Daubinger*  
 PROFESSIONAL ENGINEER  
 REG NO 25151 DATE MARCH 4, 1999

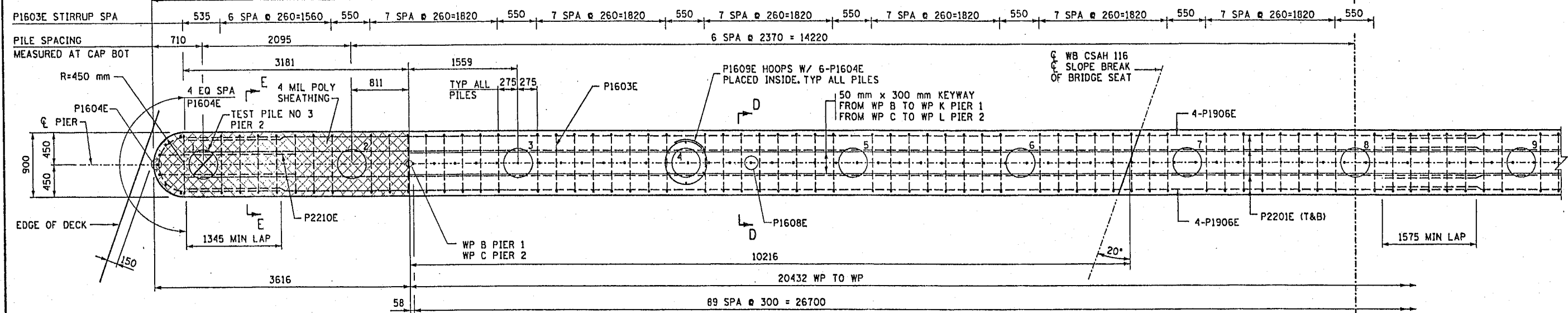
TITLE:  
 ABUTMENT DETAILS  
 SAP 02-716-04

DES: NTD DR: MAW APPROVED: 4-5-99  
 CHK: JDS CHK: JDS  
 SHEET NO 08 OF 28 SHEETS

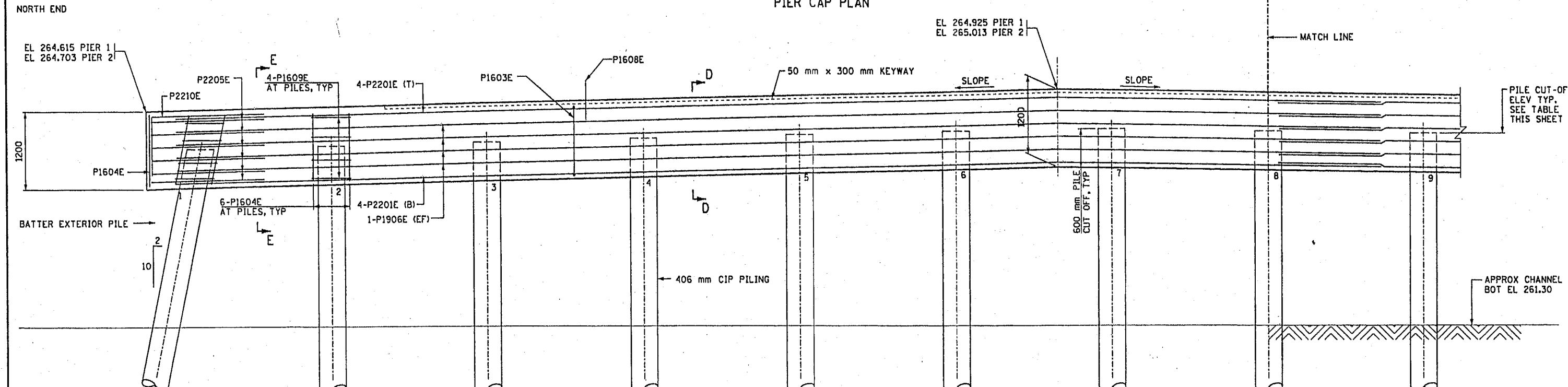
BRIDGE NO  
 02564



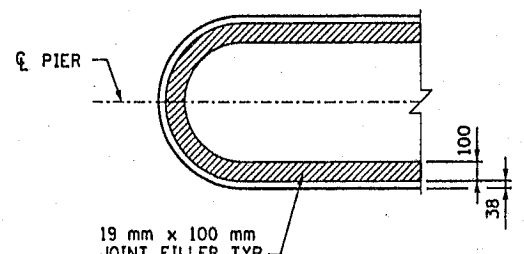
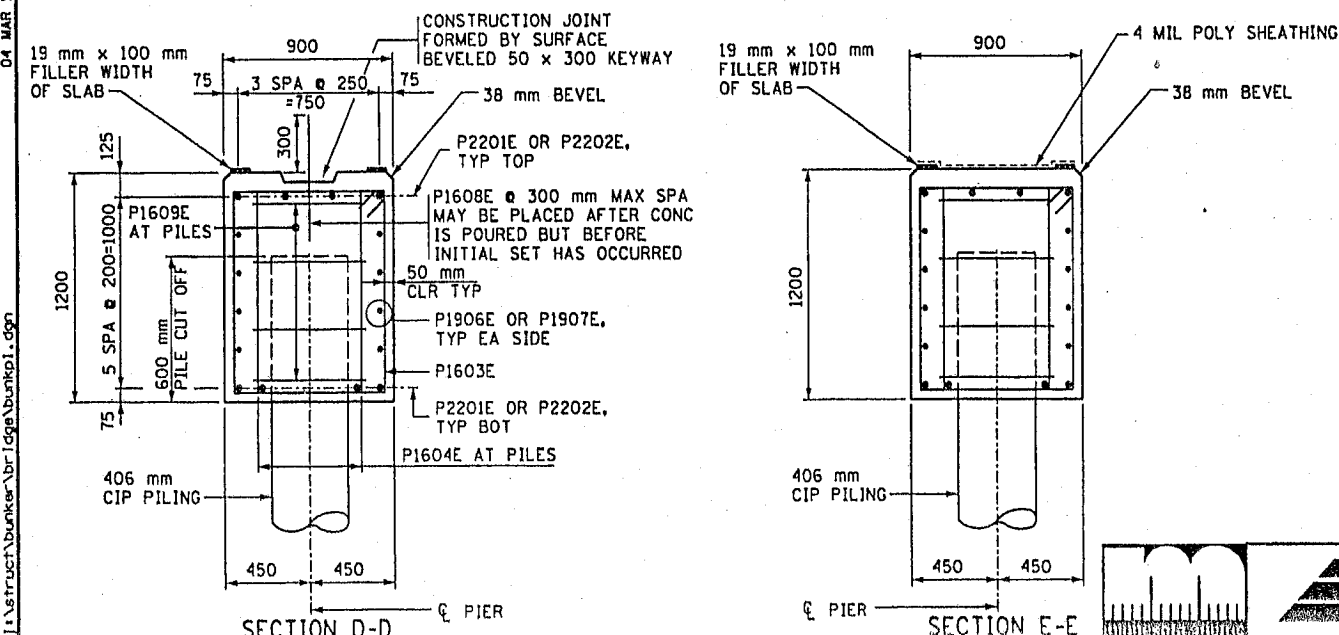
17025



PIER CAP PLAN



PIER ELEVATION



JOINT FILLER DETAIL

COMPUTED PILE LOADS-KN/PILE	
DEAD LOAD	259.6
LIVE LOAD	122.9
DESIGN LOAD	382.5

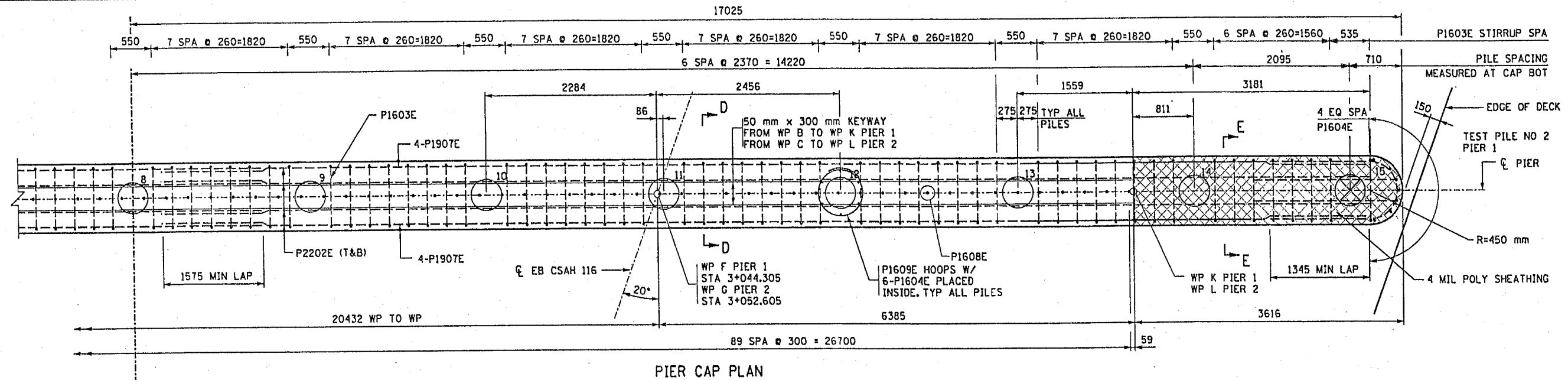
**PILE NOTES:**  
 1 CIP TEST PILES 33 m LONG 406 mm.  
 14 CIP PILING EST LENGTH 30 m LONG 406 mm.  
 15 CIP PILING 406 mm REQUIRED FOR EACH PIER.  
 PILE SPACING SHOWN IS AT BOTTOM OF CAP.  
 PILES TO HAVE A NOMINAL DIAMETER OF 406 mm.  
 ALL PILING TO BE DRIVEN TO A MINIMUM LENGTH OF 30 m. HAMMER SIZE IS TO BE BASED ON ABILITY TO DRIVE THE PILES 535 kn.

**NOTES:**  
 1 ALL REINFORCING TO BE PLACED 50 mm CLR UNLESS OTHERWISE SHOWN OR NOTED.  
 2 SEE SHEET II FOR BAR LIST AND SUMMARY OF QUANTITIES.

PILE NO	PILE CUT-OFF ELEVATIONS	
	PIER 1	PIER 2
1	264.031	264.119
2	264.078	264.166
3	264.131	264.219
4	264.184	264.272
5	264.237	264.325
6	264.290	264.378
7	264.313	264.401
8	264.277	264.365
9	264.241	264.329
10	264.205	264.293
11	264.169	264.257
12	264.133	264.221
13	264.097	264.185
14	264.061	264.149
15	264.031	264.119

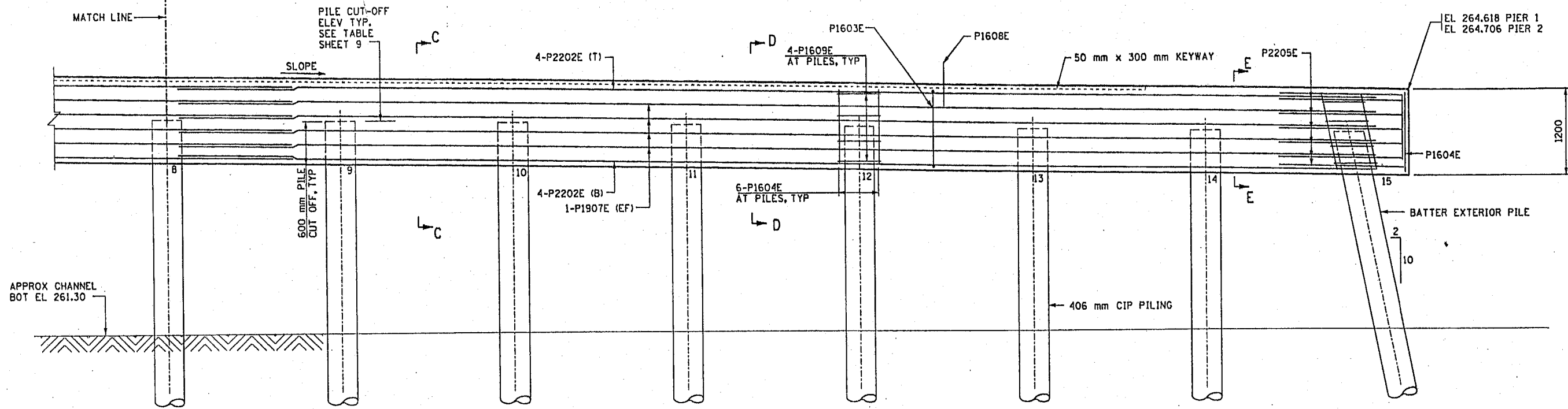
CERTIFIED BY *Nancy Daubinger* PROFESSIONAL ENGINEER  
 REG NO 25151 DATE MARCH 4, 1999  
 TITLE: PIER DETAILS  
 SAP 02-716-04

DES: NTD DR: MAW APPROVED: 4.5.99  
 CHK: JDS CHK: JDS  
 SHEET NO 139 OF 28 SHEETS BRIDGE NO 02564



PIER CAP PLAN

SOUTH END



PIER ELEVATION

- NOTES:
- 1 ALL REINFORCING TO BE PLACED 50 mm CLR UNLESS OTHERWISE SHOWN OR NOTED.
  - 2 SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - 3 SEE SHEET 9 FOR ADDITIONAL DETAILS.

04 MAR 99

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CERTIFIED BY *Nancy Daubner*  
PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

TITLE: PIER DETAILS  
SAP 02-716-04

DES: NTD	OR: MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

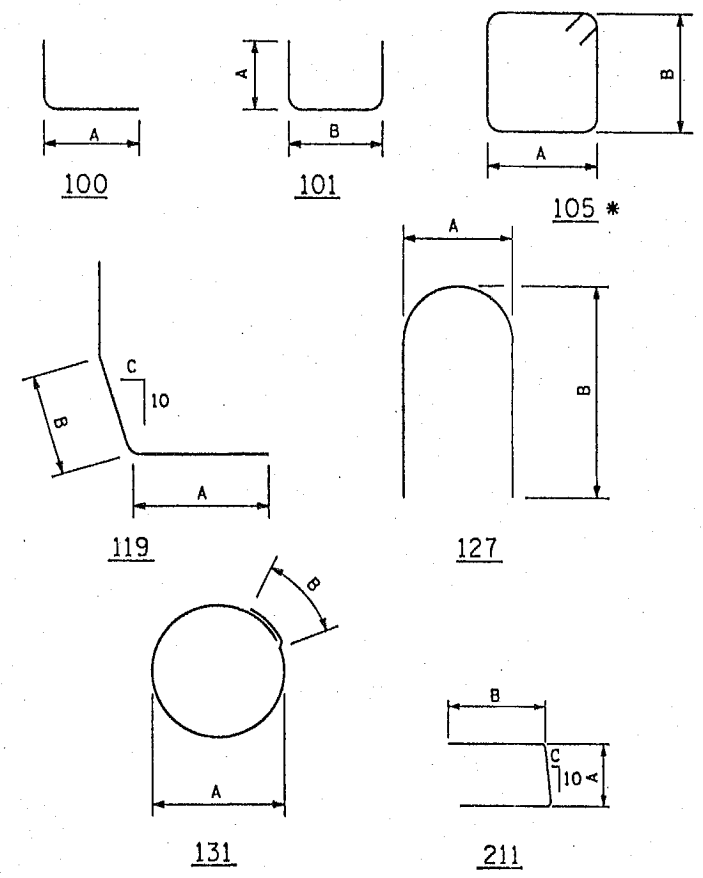
SHEET NO B10 OF 28 SHEETS

BRIDGE NO 02564

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
WEST ABUTMENT									
EPOXY COATED BARS									
WA1601E		116	5820	105	900	1870			STIRRUP
WA1602E		116	3500	101	1300	900			TOP TIE
WA1603E		116	1460	101	480	500			TOP TIE
WA1904E		26	18100	STR					HORIZ
WA2205E		18	18300	STR					HORIZ
WA1606E		6	900	211	470	200	4		WING HORIZ
WA2207E		18	2560	100	1760				HORIZ
WA1610E		12	3810	STR					WING HORIZ FF
WA2211E		12	4210	STR					WING HORIZ BF
WA1612E		2	3620	STR					WING HORIZ FF
WA2213E		2	4020	STR					WING HORIZ BF
WA1614E		1	1560	STR					WING HORIZ FF
WA2215E		1	1710	STR					WING HORIZ BF
WA1616E		1	930	STR					WING HORIZ FF
WA2217E		1	1070	STR					WING HORIZ BF
WA1618E		2	3510	119	400	2320	5		DIAG WING
WA1619E		2	3650	119	400	2320	5		DIAG WING
WA1620E		1	1700	STR					WING HORIZ FF
WA2221E		1	1550	STR					WING HORIZ BF
WA1622E		1	1060	STR					WING HORIZ FF
WA2223E		1	840	STR					WING HORIZ BF
WA1324E	4	7	1720	STR					WING VERT
			2570						
WA1325E		8	2700	STR					WING VERT
WA1626E		90	600	STR					DWL ABUT
WA1927E		90	3400	100	1700				DWL ABUT
WA1628E		90	1300	STR					AT PILES
WA1629E		75	2760	131	600	875			AT PILES

EAST ABUTMENT									
EPOXY COATED BARS									
EA1601E		116	5820	105	900	1870			STIRRUP
EA1602E		116	3500	101	1300	900			TOP TIE
EA1603E		116	1460	101	480	500			TOP TIE
EA1904E		26	18100	STR					HORIZ
EA2205E		18	18300	STR					HORIZ
EA1606E		6	900	211	470	200	4		WING HORIZ
EA2207E		18	2560	100	1760				HORIZ
EA1610E		12	3810	STR					WING HORIZ FF
EA2211E		12	4210	STR					WING HORIZ BF
EA1612E		2	3620	STR					WING HORIZ FF
EA2213E		2	4020	STR					WING HORIZ BF
EA1614E		1	1560	STR					WING HORIZ FF
EA2215E		1	1710	STR					WING HORIZ BF
EA1616E		1	930	STR					WING HORIZ FF
EA2217E		1	1070	STR					WING HORIZ BF
EA1618E		2	3510	119	400	2320	5		DIAG WING
EA1619E		2	3650	119	400	2320	5		DIAG WING
EA1620E		1	1700	STR					WING HORIZ FF
EA2221E		1	1550	STR					WING HORIZ BF
EA1622E		1	1060	STR					WING HORIZ FF
EA2223E		1	840	STR					WING HORIZ BF
EA1324E	4	7	1720	STR					WING VERT
			2570						
EA1325E		8	2700	STR					WING VERT
EA1626E		90	600	STR					DWL ABUT
EA1927E		90	3400	100	1700				DWL ABUT
EA1628E		90	1300	STR					AT PILES
EA1629E		75	2760	131	600	875			AT PILES

BAR BENDING DIAGRAMS



\* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

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

SUMMARY OF QUANTITIES ABUTMENTS AND PIERS

ITEM	UNIT	W ABUT	PIER 1	PIER 2	E ABUT	TOTAL
STRUCTURE CONCRETE (3Y43)	m3	90	36	36	90	252
REINFORCEMENT BARS (EPOXY COATED)	KG	5800	2810	2810	5800	17220
③ C-I-P CONC PILING DELIVERED 310 mm	m	392			392	784
③ C-I-P CONC PILING DRIVEN 310 mm	m	392			392	784
③ C-I-P CONC PILING DELIVERED 406 mm	m		420	420		840
③ C-I-P CONC PILING DRIVEN 406 mm	m		420	420		840
C-I-P CONC TEST PILES 31 m LONG 310 mm	EACH	1			1	2
C-I-P CONC TEST PILES 33 m LONG 406 mm	EACH		1	1		2
② STRUCTURE EXCAVATION	LUMP SUM					1
⑤① BENCH MARK DISK	EACH				1	1

QUANTITY NOTES

- ① INCLUDED IN PRICE BID FOR OTHER ITEMS.
- ② SEE SPECIAL PROVISIONS.
- ③ DOES NOT INCLUDE TEST PILES.
- ④ SEE SPECIAL PROVISIONS.
- ⑤ STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
PIER 1									
EPOXY COATED BARS									
1P2201E		8	18300	STR					LONGIT CAP
1P2202E		8	16450	STR					LONGIT CAP
1P1603E		112	3880	105	800	1000			STIRRUPS
1P1604E		100	1000	STR					VERT
1P2205E		12	3880	127	760	1720			LONGIT ENDS
1P1906E		8	18300	STR					LONGIT CAP
1P1907E		8	16450	STR					LONGIT CAP
1P1608E		90	600	STR					CAP DOWELS
1P1609E		60	2760	131	600	875			PILE TIES
1P2210E		4	2475	100	1575				TOP ENDS
PIER 2									
EPOXY COATED BARS									
2P2201E		8	18300	STR					LONGIT CAP
2P2202E		8	16450	STR					LONGIT CAP
2P1603E		112	3880	105	800	1000			STIRRUPS
2P1604E		100	1000	STR					VERT
2P2205E		12	3880	127	760	1720			LONGIT ENDS
2P1906E		8	18300	STR					LONGIT CAP
2P1907E		8	16450	STR					LONGIT CAP
2P1608E		90	600	STR					CAP DOWELS
2P1609E		60	2760	131	600	875			PILE TIES
2P2210E		4	2475	100	1575				TOP ENDS

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PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

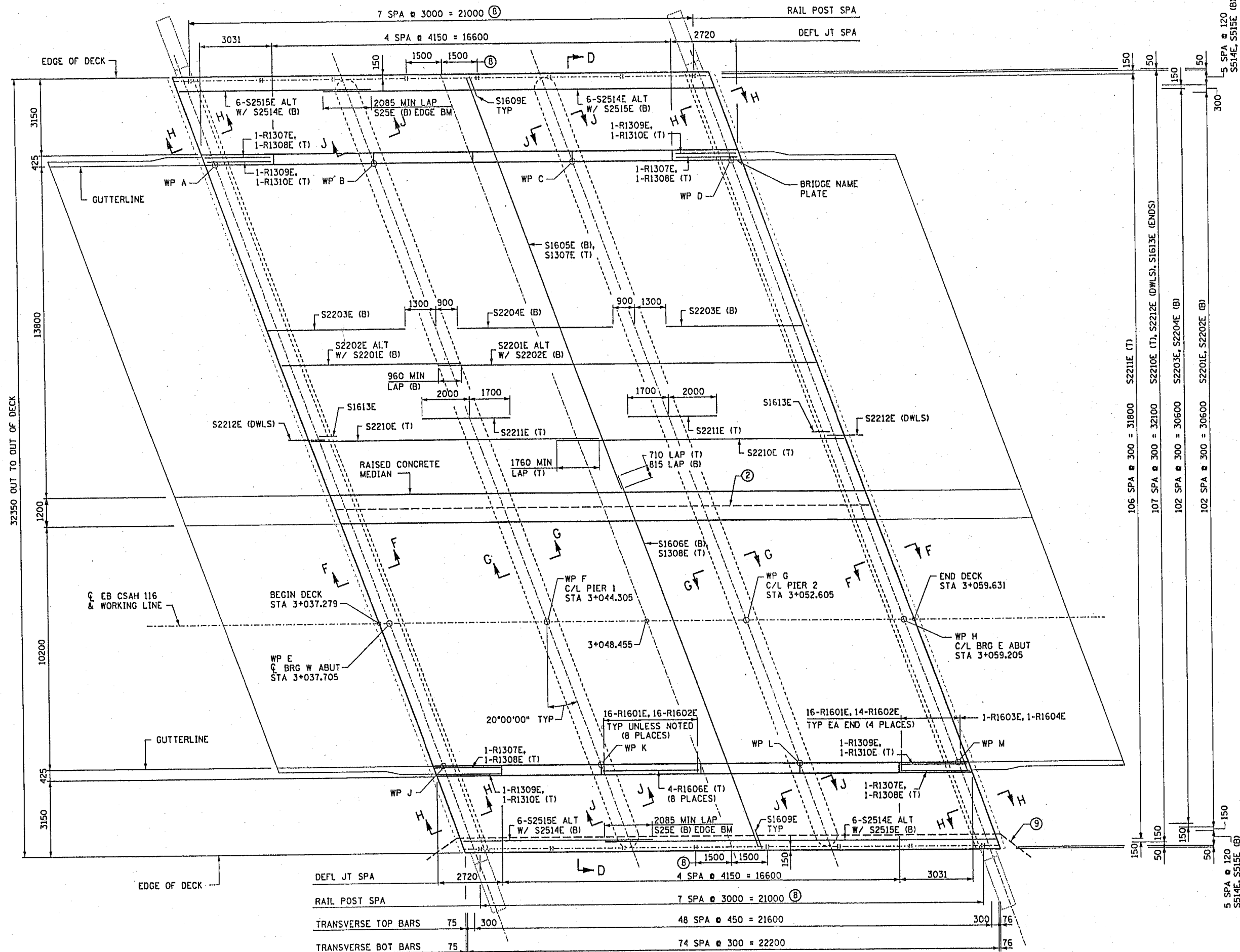
TITLE: ABUTMENT & PIER BAR LISTS & QUANTITIES  
SAP 02-716-04

DES: MAW DR: MAW APPROVED: 4-5-99  
CHK: JDS CHK: JDS  
SHEET NO 111 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99

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RAIL POST SPA  
DEFL JT SPA

3031  
4 SPA @ 4150 = 16600  
2720

EDGE OF DECK  
3150  
425  
13800  
1200  
10200  
425  
3150  
EDGE OF DECK

32350 OUT TO OUT OF DECK

106 SPA @ 300 = 31800 S2211E (T)  
107 SPA @ 300 = 32100 S2210E (T), S2212E (DWLS), S1613E (ENDS)  
102 SPA @ 300 = 30600 S2203E, S2204E (B)  
102 SPA @ 300 = 30600 S2201E, S2202E (B)  
5 SPA @ 120 S2514E, S2515E (B)

6-S2515E ALT W/ S2514E (B)  
2085 MIN LAP S25E (B) EDGE BM  
S1609E TYP  
6-S2514E ALT W/ S2515E (B)  
1-R1309E, 1-R1310E (T)  
1-R1307E, 1-R1308E (T)  
BRIDGE NAME PLATE  
WP A  
WP B  
WP C  
WP D  
S1605E (B), S1307E (T)  
S2203E (B)  
S2204E (B)  
S2203E (B)  
S2202E ALT W/ S2201E (B)  
S2201E ALT W/ S2202E (B)  
960 MIN LAP (B)  
2000 1700  
1700 2000  
S1613E  
S2212E (DWLS)  
S2210E (T)  
S2211E (T)  
S2211E (T)  
S1613E  
S2212E (DWLS)  
710 LAP (T)  
815 LAP (B)  
S2210E (T)  
S1606E (B), S1308E (T)  
WP F C/L PIER 1 STA 3+044.305  
WP G C/L PIER 2 STA 3+052.605  
END DECK STA 3+059.631  
WP H C/L BRG E ABUT STA 3+059.205  
20°00'00" TYP  
16-R1601E, 16-R1602E TYP UNLESS NOTED (8 PLACES)  
WP K  
WP L  
16-R1601E, 14-R1602E TYP EA END (4 PLACES)  
1-R1603E, 1-R1604E  
WP M  
1-R1309E, 1-R1310E (T)  
WP J  
1-R1307E, 1-R1308E (T)  
WP N  
6-S2515E ALT W/ S2514E (B)  
2085 MIN LAP S25E (B) EDGE BM  
S1609E TYP  
6-S2514E ALT W/ S2515E (B)  
1-R1309E, 1-R1310E (T)  
4-R1606E (T) (8 PLACES)  
1-R1307E, 1-R1308E (T)  
1500 1500  
150

DEFL JT SPA 2720  
RAIL POST SPA 7 SPA @ 3000 = 21000  
TRANSVERSE TOP BARS 75 300 48 SPA @ 450 = 21600 300 76  
TRANSVERSE BOT BARS 75 74 SPA @ 300 = 22200 76

DECK PLAN

- NOTES:
- SEE SHEET 15 FOR BAR LISTS AND QUANTITIES.
  - CONSTRUCTION JOINT IN SLAB.
  - SEE SHEET 16 FOR CONCRETE RAILING TYPE F DETAILS.
  - SEE SHEET 17 FOR ORNAMENTAL RAILING DETAILS.
  - SEE SHEETS 13 & 14 FOR SECTIONS D-D, E-E & F-F.
  - RAILING CONCRETE SHALL NOT BE PLACED WHILE SLAB IS SUPPORTED ON FALSEWORK.
  - ALL DIMENSIONS SHOWN ARE ON A HORIZONTAL PLANE.
  - RAIL POST SPACING SYMMETRICAL ABOUT BRIDGE C/L.
  - 75 mm DIA NON-METALLIC CONDUIT (SIGNALS), EXTEND 1600 mm BEYOND EACH END OF SLAB AND CAP.



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PROFESSIONAL ENGINEER  
REC NO 25151 DATE MARCH 4, 1999

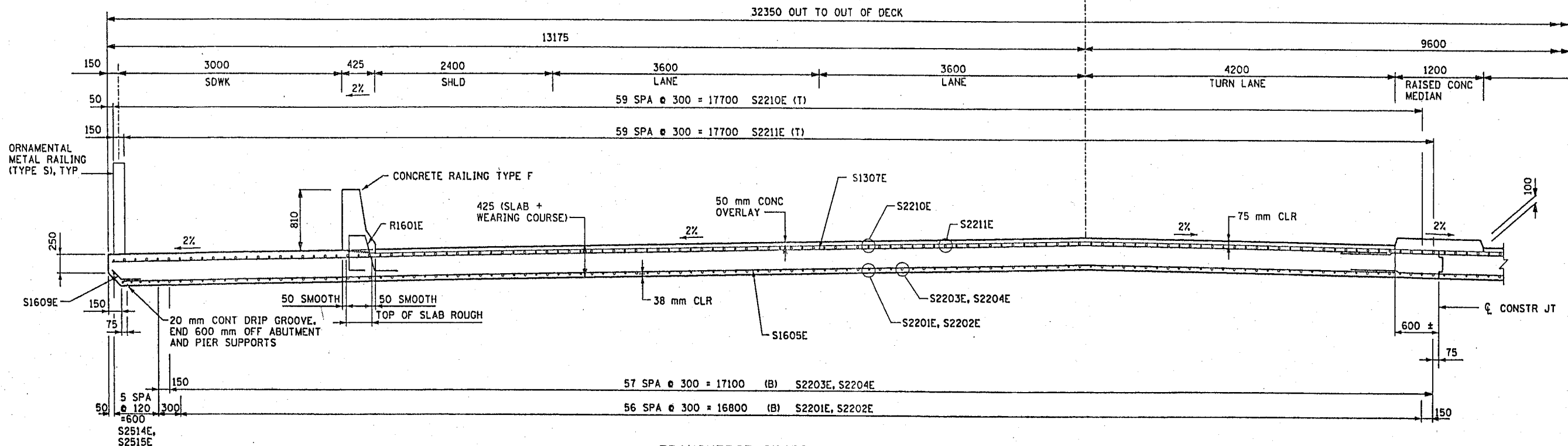
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SAP 02-716-04

DES: NTD DR: MAW APPROVED: 4-5-99  
CHK: JDS CHK: NTD

BRIDGE NO 02564  
SHEET NO 12 OF 28 SHEETS

NORTH SIDE

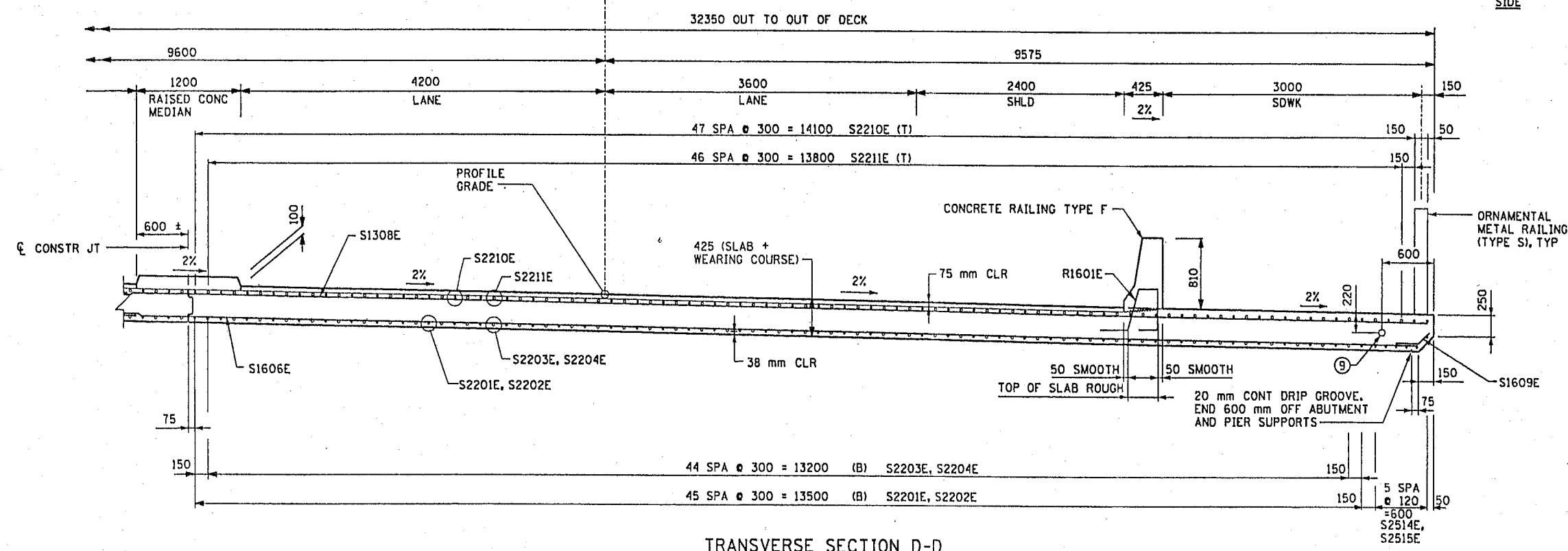
WB CSAH 116



TRANSVERSE SECTION D-D

EB CSAH 116 & WORKING LINE

SOUTH SIDE



TRANSVERSE SECTION D-D

- NOTES:
- 1 SEE SHEET 15 FOR BAR LISTS AND QUANTITIES.
  - 2 NOT USED.
  - 3 SEE SHEET 16 FOR CONCRETE RAILING TYPE F DETAILS.
  - 4 SEE SHEET 17 FOR ORNAMENTAL RAILING DETAILS.
  - 5 SEE SHEETS 13 & 14 FOR SECTIONS E-E & F-F.
  - 6 RAILING CONCRETE SHALL NOT BE PLACED WHILE SLAB IS SUPPORTED ON FALSEWORK.
  - 7 ALL DIMENSIONS SHOWN ARE ON A HORIZONTAL PLANE.
  - 8 THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).
  - 9 75 mm DIA NON-METALLIC CONDUIT (SIGNALS).

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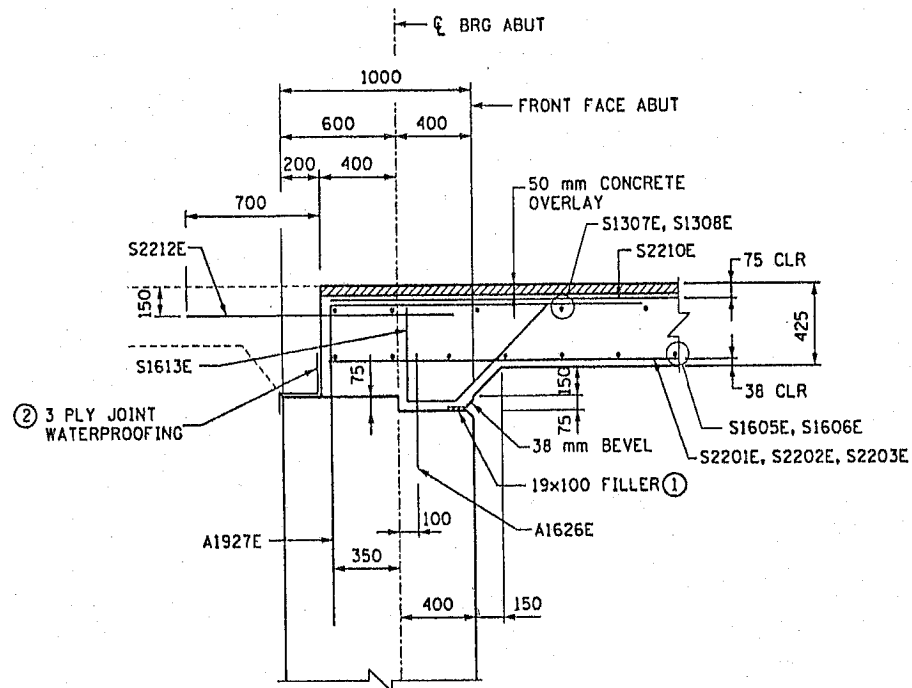
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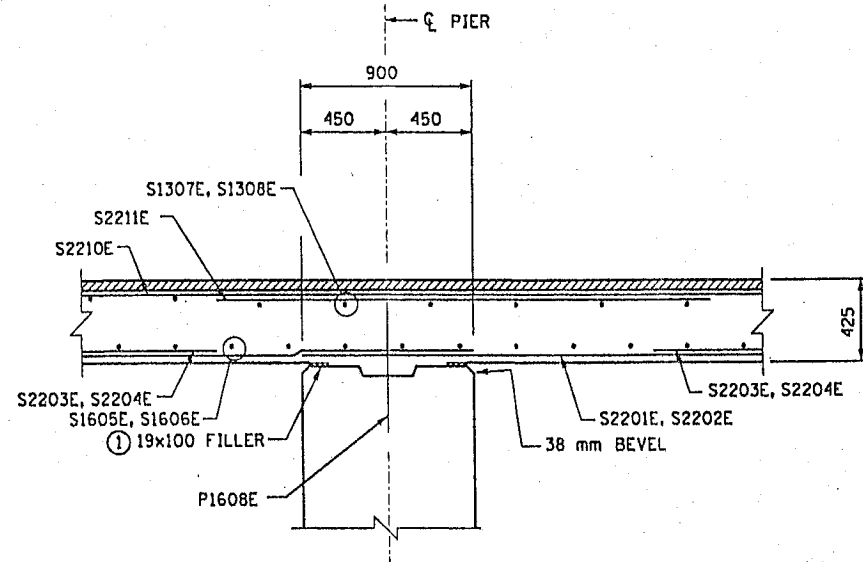
CERTIFIED BY *Nancy Dauterger*  
 PROFESSIONAL ENGINEER  
 REG NO 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE DETAILS  
 SAP 02-716-04

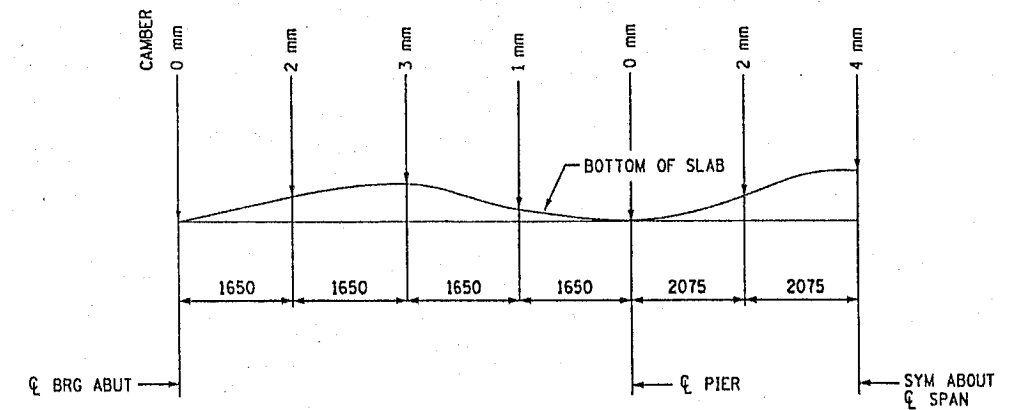
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CHK: JDS	CHK: NTD	SHEET NO B13 OF 28 SHEETS	



SECTION F-F

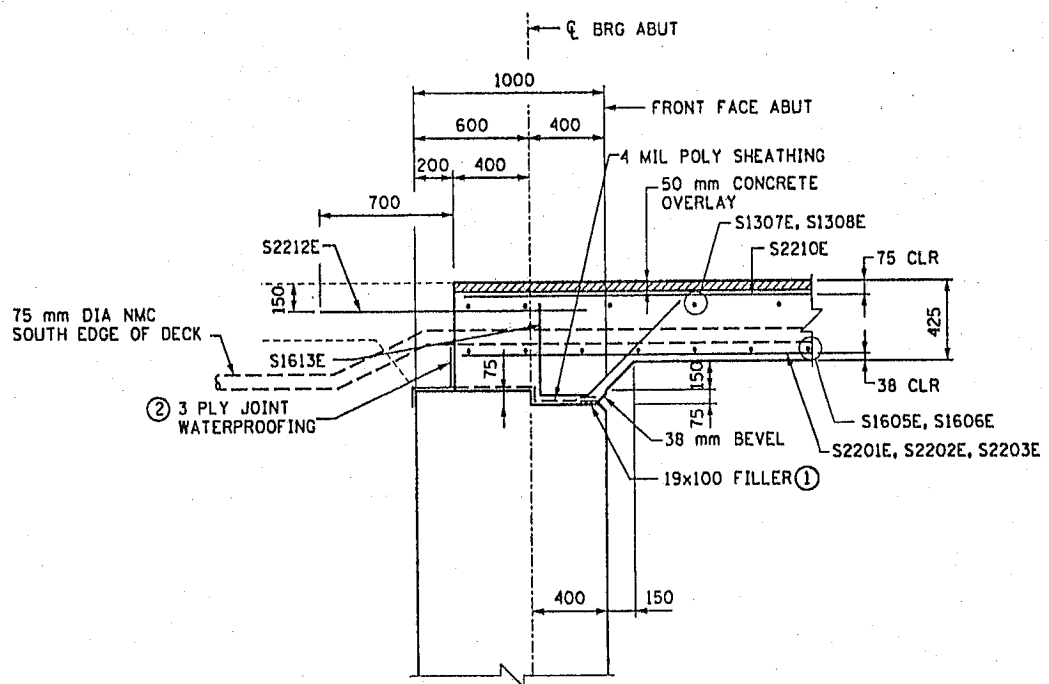


SECTION G-G

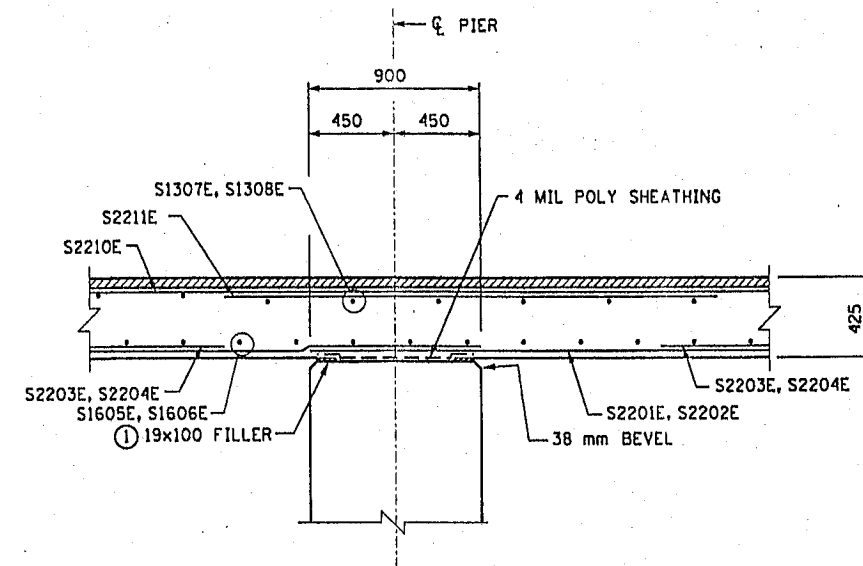


CAMBER DIAGRAM

CAMBER SPAN AS SHOWN TO PROVIDE FOR DEADLOAD DEFLECTION & FUTURE PLASTIC FLOW. CAMBER DOES NOT INCLUDE ALLOWANCE FOR PROFILE VERTICAL CURVE OR FORM DEFLECTION AND SETTLEMENT. DEAD LOAD DEFLECTION ONLY EQUALS APPROXIMATELY 40% OF CAMBER VALUES SHOWN.



SECTION H-H



SECTION J-J

NOTES:

- ① SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF JOINT FILLER WITH NON-STAINING, GRAY, NON ASPHALTIC JOINT SEALER. (25 mm DEEP AND HOLD 3 mm BELOW SURFACE OF CONCRETE).
- ② 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.

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**ESEH**

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PROFESSIONAL ENGINEER  
REG NO. 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE DETAILS  
SAP 02-716-04

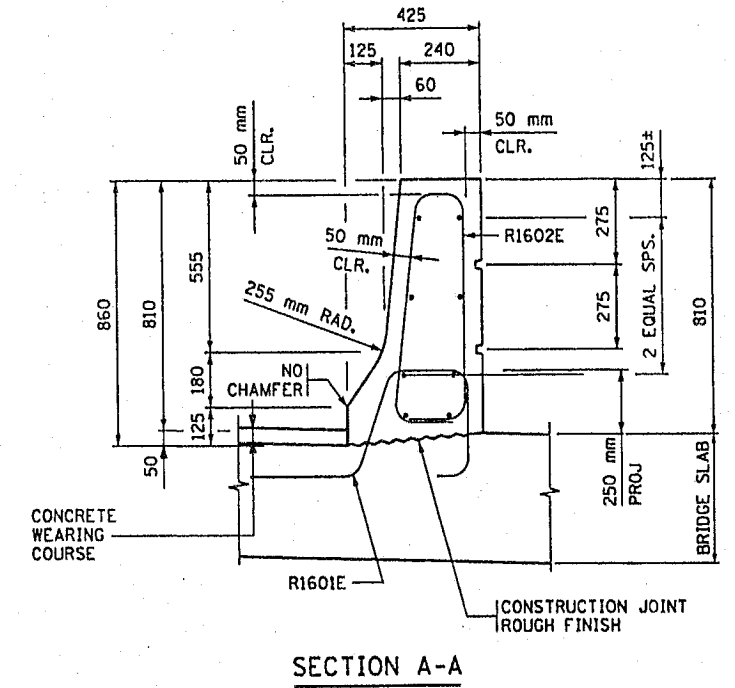
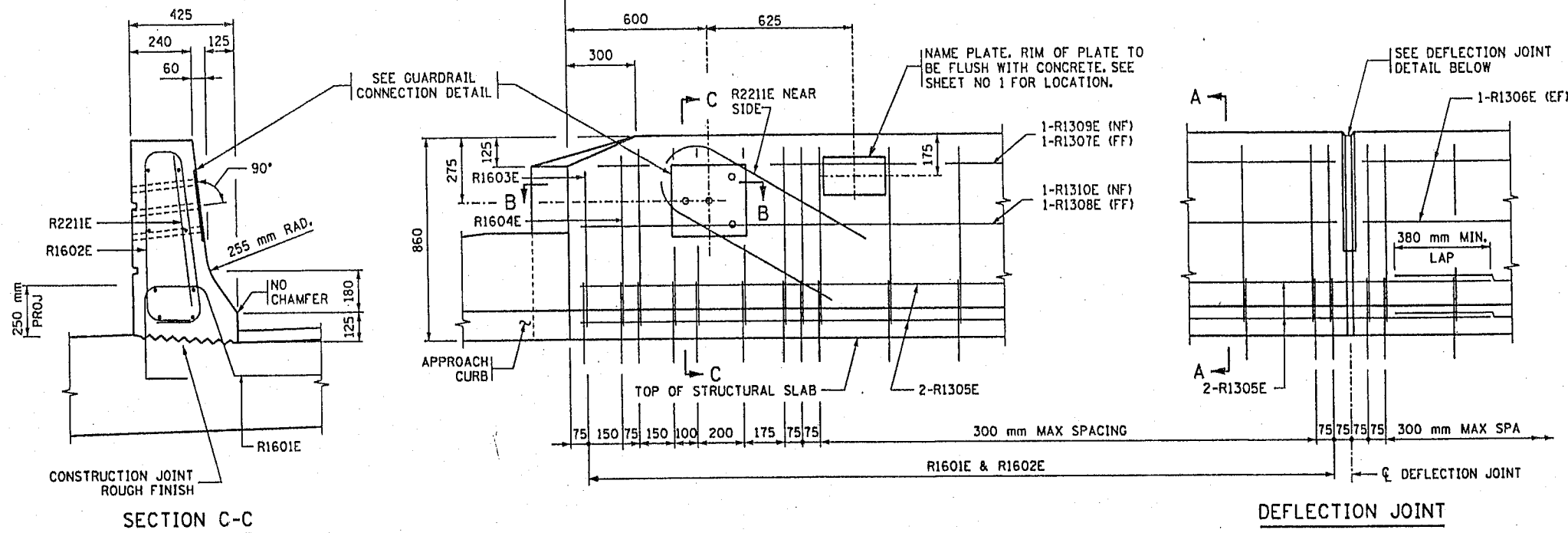
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SHEET NO 014 OF 28 SHEETS

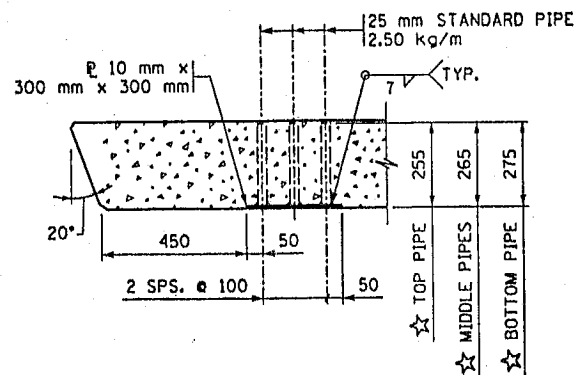
BRIDGE NO 02564



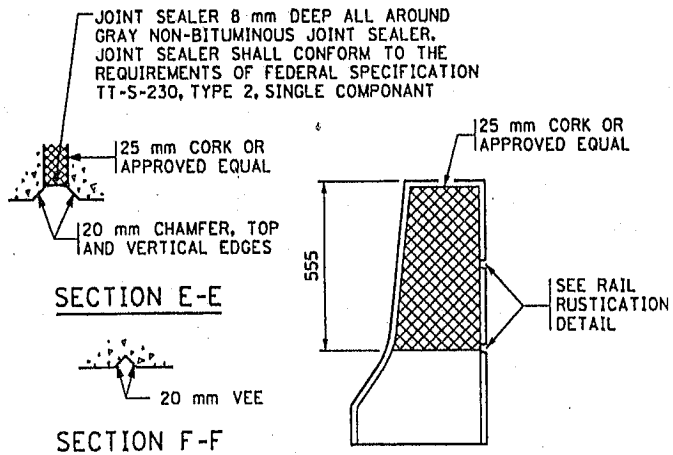
BRIDGE SUPERSTRUCTURE



INSIDE ELEVATION OF RAILING  
(CONCRETE WEARING COURSE NOT SHOWN)



RAIL RUSTICATION



ELEVATION DEFLECTION JOINT DETAILS

GENERAL NOTES:

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED. CONCRETE RAILING = 6.33 KN/m (0.260 m<sup>2</sup>/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.
- SEE SHEET 15 FOR BAR LIST AND QUANTITIES.

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

MODIFIED

FIG. 5-397.122M

APPROVED: \_\_\_\_\_  
STATE BRIDGE ENGINEER



CERTIFIED BY *Nancy Dauterbaugh*  
PROFESSIONAL ENGINEER  
REG. NO. 25151 DATE MARCH 4, 1999

TITLE: CONCRETE RAILING (TYPE F)  
WITH BRIDGE SIDEWALK AND INTEGRAL END POST  
(WITH CONCRETE WEARING COURSE)  
SAP 02-716-04

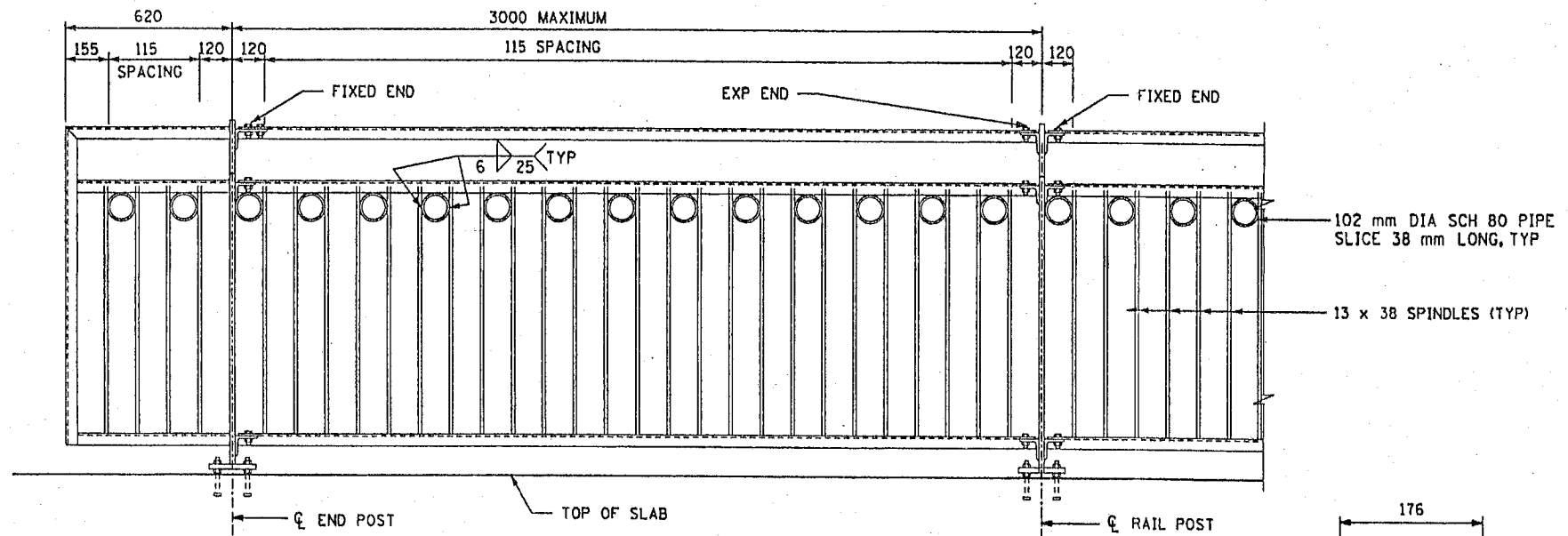
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CHK: NTD	CHK: NTD	

SHEET NO 316 OF 28 SHEETS

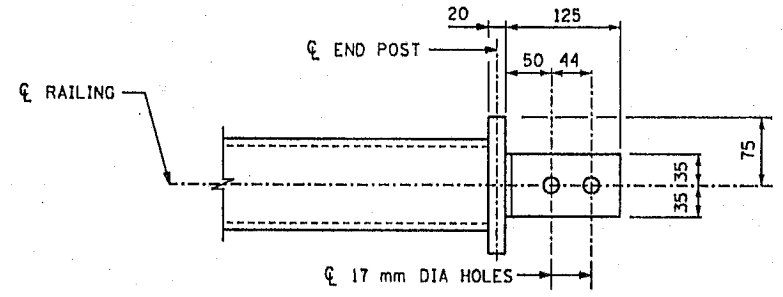
BRIDGE NO 02564

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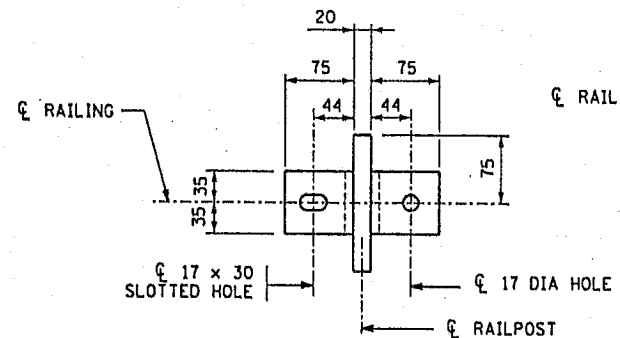




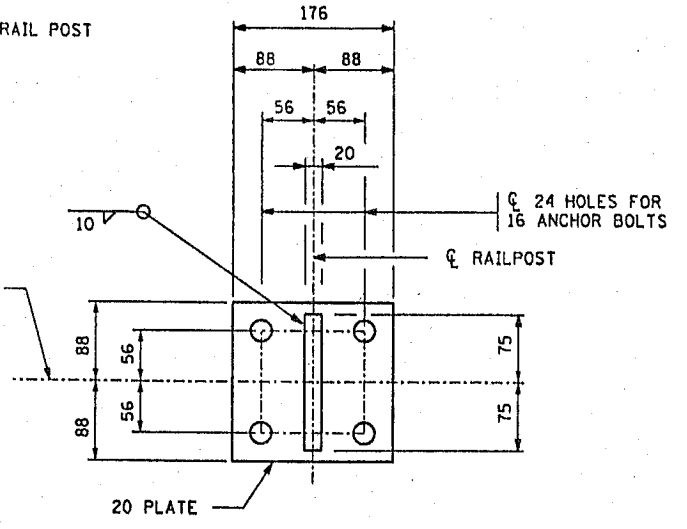
GENERAL RAILING ELEVATION



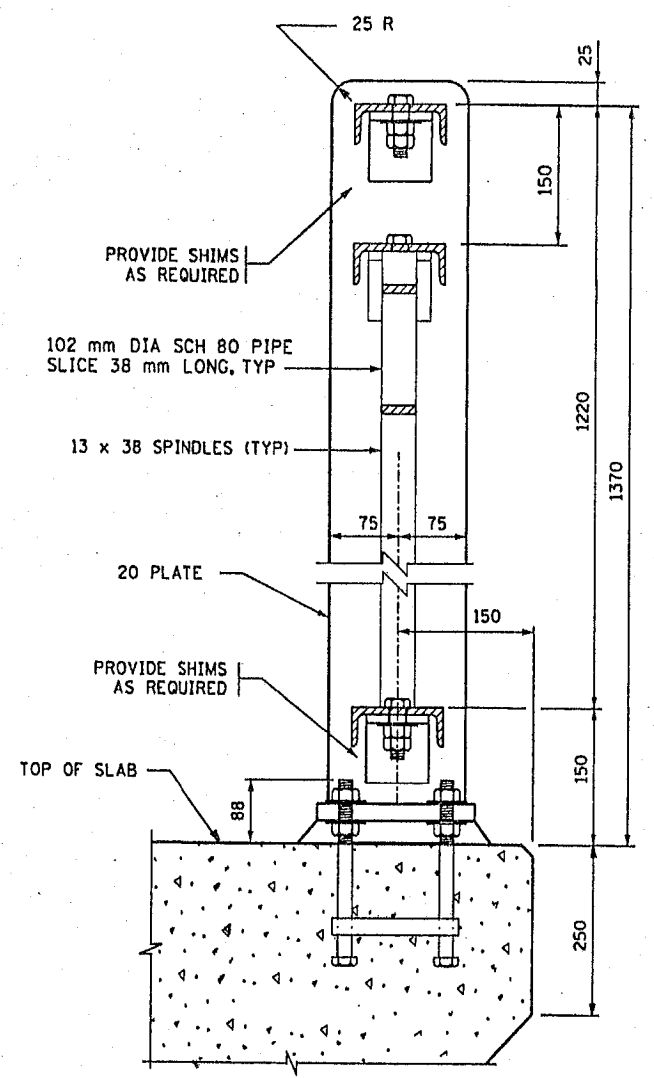
TOP VIEW  
(RAILING NOT SHOWN)



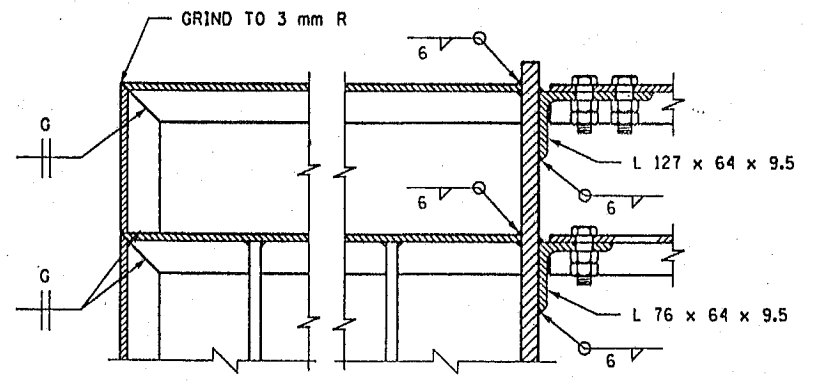
TOP VIEW  
(RAILING NOT SHOWN)



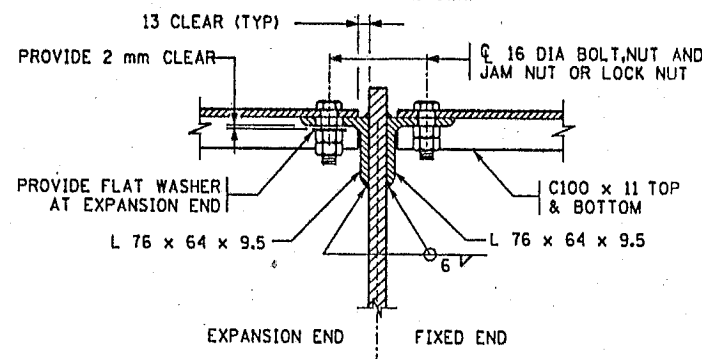
RAILPOST BASE PLATE



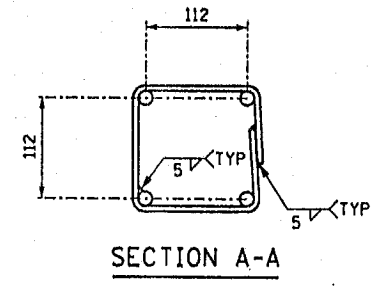
TYPICAL RAILPOST



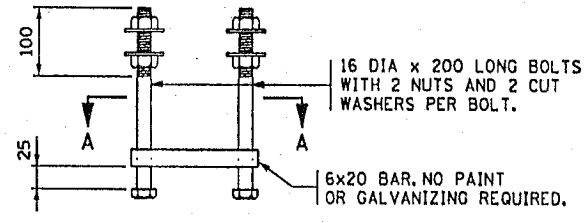
PART ELEVATION  
END POST DETAIL



PART ELEVATION  
INTERMEDIATE POST DETAIL



SECTION A-A



ELEVATION  
RAILPOST ANCHORAGE

GENERAL NOTES

- ALL RAILPOSTS NORMAL TO GRADE.
- ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET NORMAL TO GRADE.
- ALL STRUCTURAL STEEL MATERIAL SHALL COMPLY WITH SPEC. 3306, ASTM A36, A53F (PIPE).
- GALVANIZE BOLTS, NUTS, AND WASHERS PER SPEC. 3392.
- GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC 3394 AFTER FABRICATION.
- PRICE BID FOR ORNAMENTAL RAILING INCLUDES ALL MATERIAL SHOWN ON THIS SHEET.
- LENGTH OF "ORNAMENTAL METAL RAILING" FOR PAYMENT WILL BE MEASURED FROM END TO END OF CHANNEL WITH NO DEDUCTION FOR OPEN JOINT.
- SEE SPECIAL PROVISIONS FOR PAINT REQUIREMENT.

THIS RAILING WILL BE USED ONLY WHEN THERE IS A BARRIER BETWEEN THE SIDEWALK AND THE ROADWAY.

MODIFIED

FIG 5-397.108

04 MAR 99 J:\Struct\Bunker\stds\bunk108.dgn

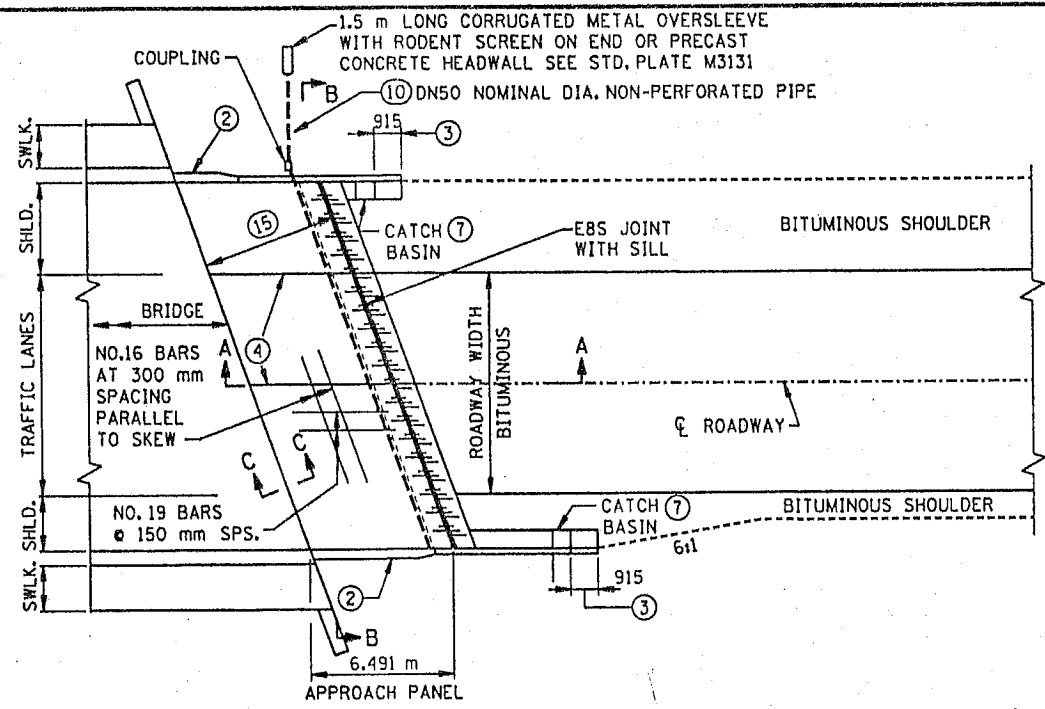
APPROVED: \_\_\_\_\_  
STATE BRIDGE ENGINEER



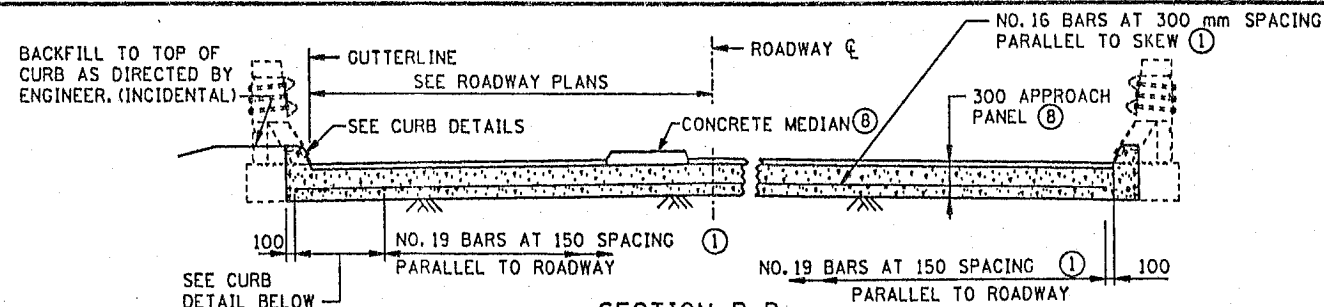
CERTIFIED BY *Nancy Daubenberg*  
PROFESSIONAL ENGINEER  
DATE MARCH 4, 1999

TITLE: ORNAMENTAL METAL RAILING  
(TYPE S)  
SAP 02-716-04

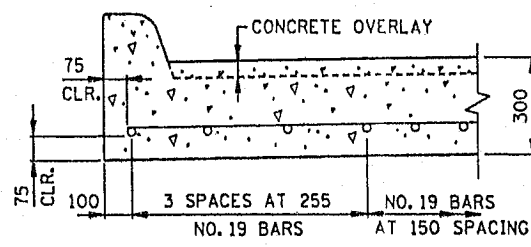
DES: MndOT	DR: MndOT/MAW	APPROVED: 4-5-99	BRIDGE NO 02564
CHK: JDS	CHK: JDS		
SHEET NO 17 OF 28 SHEETS			



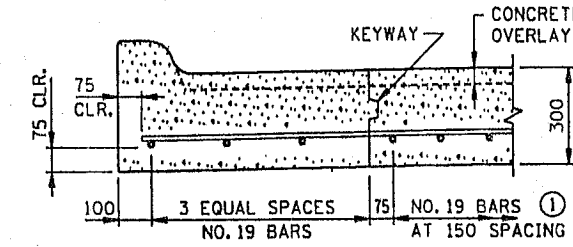
**DIVIDED-URBAN ROADWAY PLAN**  
PARALLEL & NONPARALLEL WINGWALLS



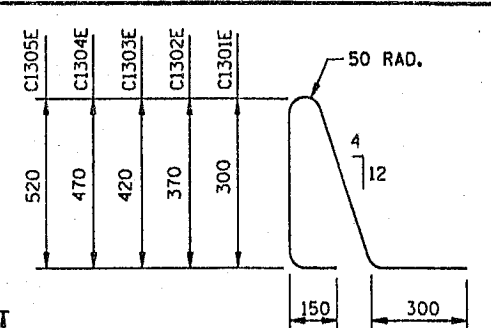
**SECTION B-B**  
(SEE ROADWAY PLAN VIEW)



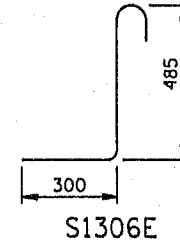
**CURB DETAIL**  
(B4 INTEGRANT CURB)



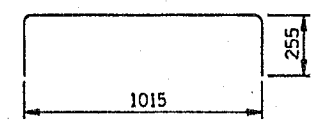
**CURB DETAIL**  
(B424 MODIFIED CURB AND GUTTER)



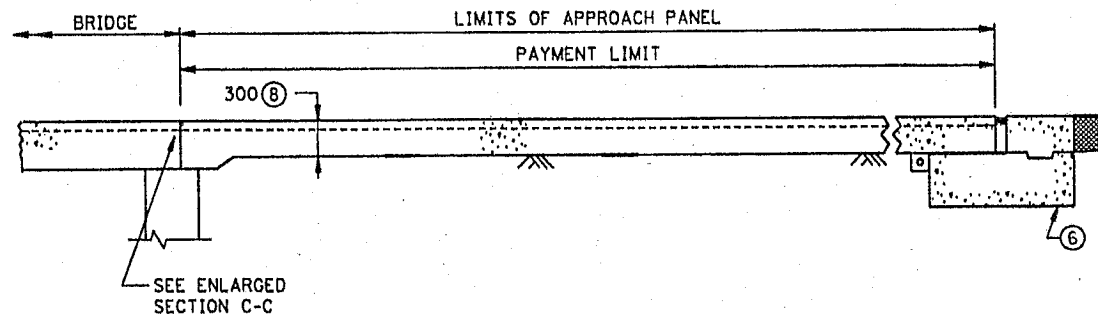
**C1301E - C1305E**



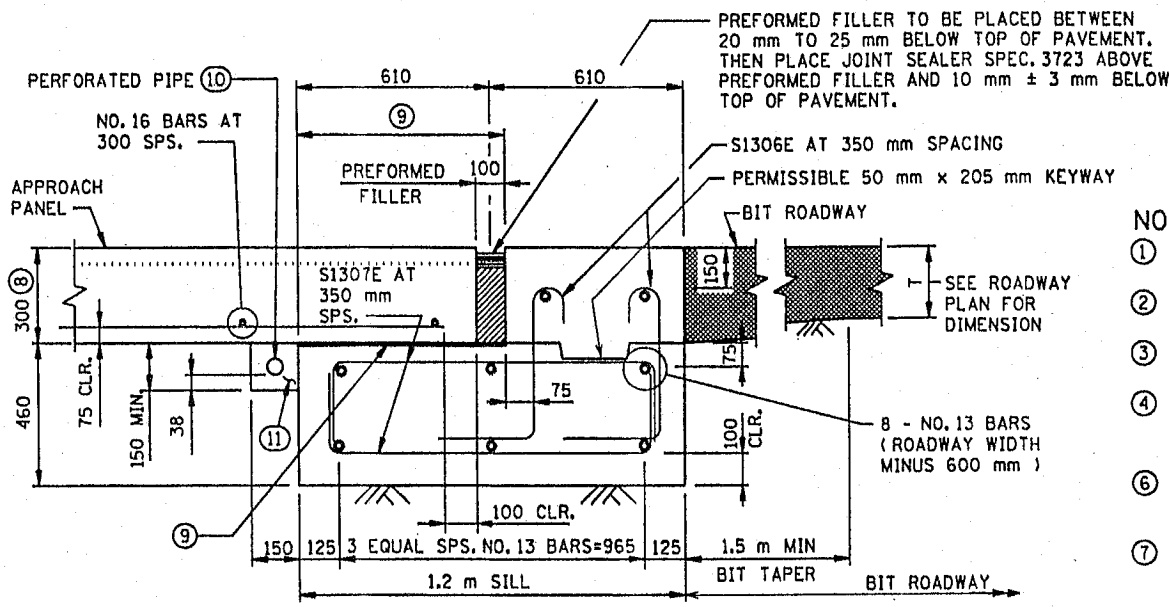
**S1306E**



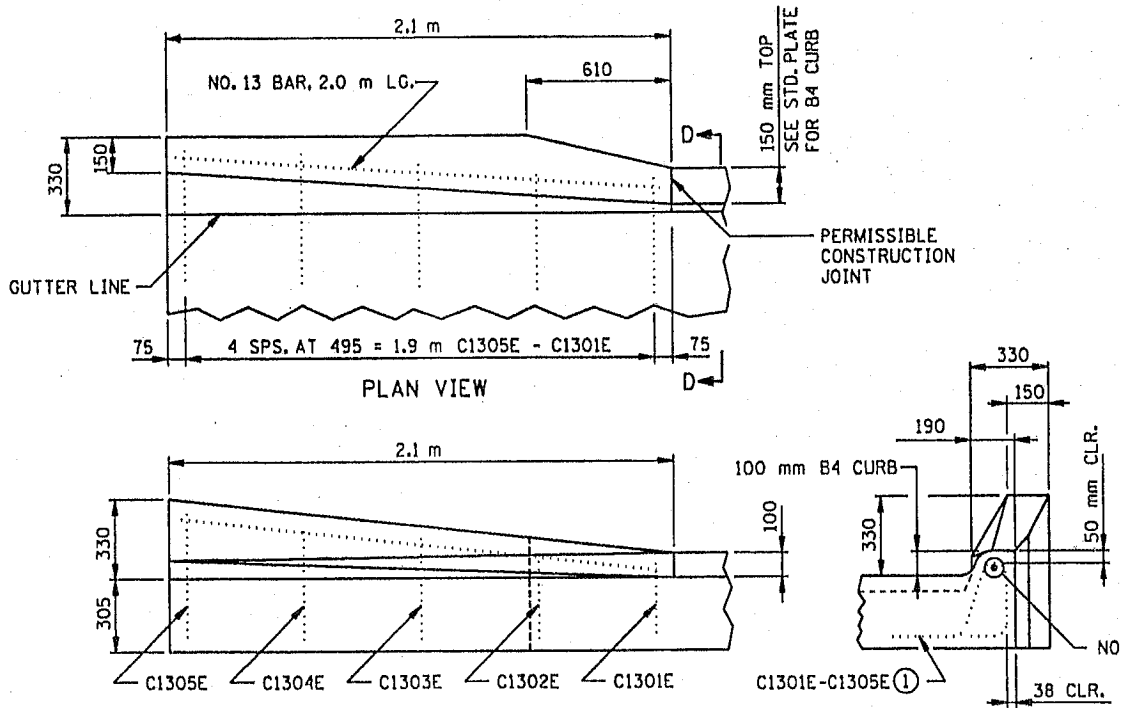
**S1307E**



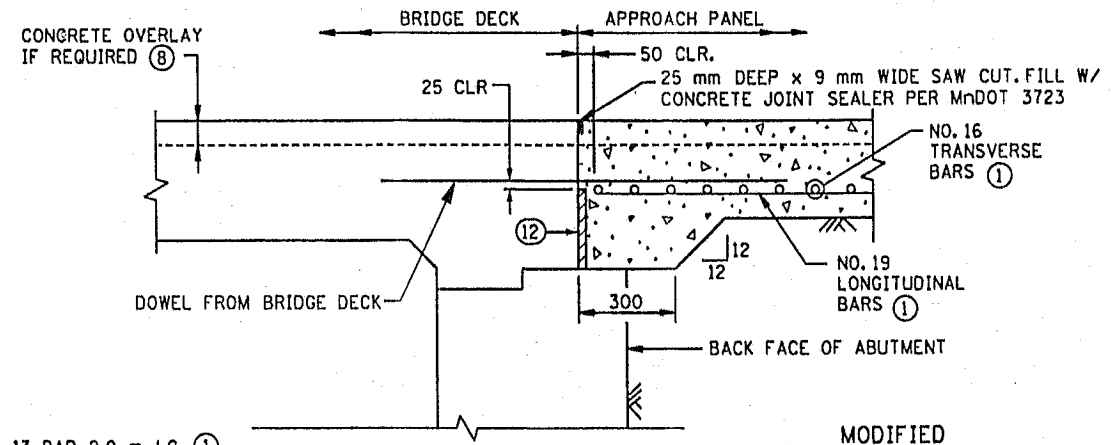
**SECTION A-A**  
(SOME REINFORCEMENT NOT SHOWN)



**EBS JOINT DETAIL**



**CURB TRANSITION DETAILS**



**SECTION C-C**

- NOTES:**
- ① ALL REINFORCEMENT IN APPROACH PANEL, SILL AND CURB SHALL BE GRADE 400 AND EPOXY COATED AS PER SPEC. 3301.
  - ② TRANSITION FACE OF 100 mm CURB INTO PROFILE OF BRIDGE RAILING. SEE CURB TRANSITION DETAILS.
  - ③ TRANSITION APPROACH PANEL CURB HEIGHT 100 mm TO 0 mm WHERE THERE IS NO ROADWAY CURB.
  - ④ L2KT OR L1T LONGITUDINAL JOINTS AS REQUIRED SEE STANDARD PAVEMENT JOINT SHEET FOR DETAILS.
  - ⑥ 460 mm X 1.2 m CONCRETE SILL. CONCRETE SILL AND CURBING IS INCLUDED IN APPROACH PANEL PAY ITEM.
  - ⑦ LOCATION TO BE OFF THE APPROACH PANEL AS DETERMINED BY THE DESIGNER. SEE ROAD DESIGN MANUAL CHAPTER 7 FOR CATCH BASIN INFORMATION.
  - ⑧ APPROACH SLAB THICKNESS SHOWN INCLUDES CONCRETE OVERLAY. CHECK BRIDGE PLANS FOR OVERLAYS & MEDIANS. CONCRETE OVERLAYS AND MEDIANS TO BE INCLUDED IN BRIDGE QUANTITIES AND DONE AT THE SAME TIME BY BRIDGE CONTRACTOR.
  - ⑨ 3 mm THICK PLASTIC SHEETING SPEC. 3756 TO BREAK BOND. COVER AREA SHOWN IN DETAIL.
  - ⑩ 50 mm NOMINAL DIA. THERMOPLASTIC PIPE, AS PER ASTM 1785M, 1120M, OR 2120M, SCHEDULE 80. SLOPE PIPE TO DITCH ON LOW SIDE. FURNISHING AND INSTALLING DRAIN SYSTEM SHALL BE INCIDENTAL, WITH NO DIRECT PAYMENT. WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER SPEC. 3733. 3 mm PER 300 mm MINIMUM SLOPE.
  - ⑪ BACKFILL WITH FINE AGGREGATE, SPEC. 3149, MODIFIED TO 0-3% PASSING A 75 μm SIEVE.
  - ⑫ 19 mm FILLER BACKFACE TO BACKFACE OF CURB.
  - ⑮ 6.1 m TO 40° 4.6 m OVER 40°.

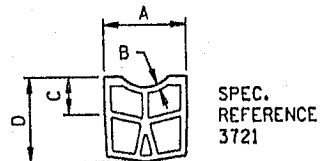
**NOTE: ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.**

CERTIFIED BY <i>Nancy Daubert</i> PROFESSIONAL ENGINEER REG NO. 25151 DATE MARCH 4, 1999		STANDARD SHEET NO. <b>5-297.223M</b> STANDARD APPROVED: FEBRUARY 24, 1994	TITLE: <b>BRIDGE APPROACH PANEL          WITH OR WITHOUT CONCRETE OVERLAY          BITUMINOUS ROADWAY</b>
STATE PROJ. NO. SAP NO 02-716-04		SHEET NO 18 OF 28 SHEETS	

04 MAR 99

**REQUIRED DIMENSIONS**

JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	21 mm
USE IN ALL JOINTS	
A	20 mm +3.6 -1.3
B	2 mm ±0.5
C	15 mm MIN.
D	20 mm MIN.
WEB AND WALL THICKNESS, UNLESS NOTED	0.8 mm MIN.



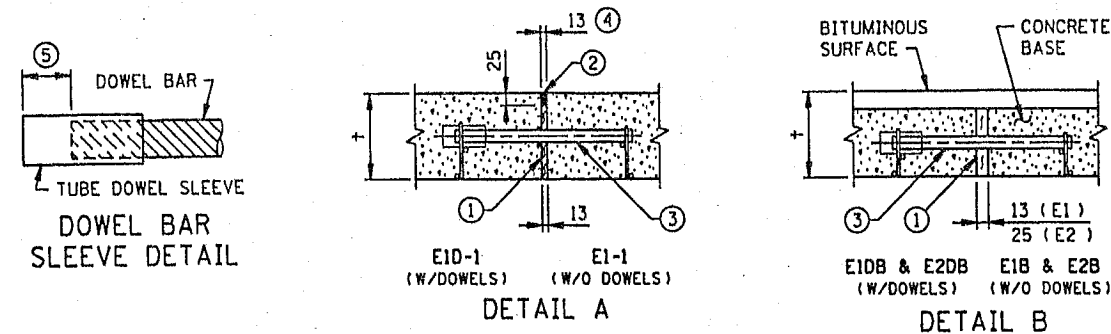
TYPICAL SHAPE FOR SATISFACTORY INSTALLATION IN JOINT (5 CELL MIN.)

**CONTRACTION JOINT SEALER**  
PREFORMED ELASTIC TYPE

**NOTES:**

"A" DIMENSION SHALL APPLY AT ANY POINT THROUGHOUT "C" DEPTH. IN ITS FINAL POSITION, THE TOP CORNERS OF THE PREFORMED JOINT SEALER SHALL BE PLACED NOT LESS THAN 3 mm, NOR MORE THAN 7 mm BELOW THE PAVEMENT SURFACE.

SHARP INTERNAL CORNERS WILL NOT BE PERMITTED. ALL CORNERS SHALL BE PROVIDED WITH SUITABLE FILLET. CURRENTLY APPROVED CONFIGURATIONS ARE ON FILE IN THE MATERIALS ENGINEERING SECTION, MINNESOTA DEPARTMENT OF TRANSPORTATION.



DOWEL BAR SLEEVE DETAIL

DETAIL A  
E1D-1 (W/DOWELS) E1-1 (W/O DOWELS)

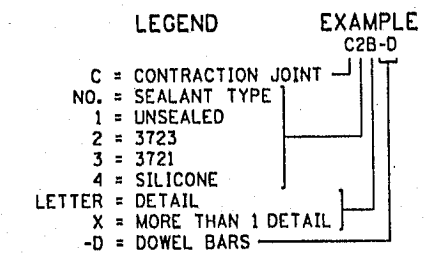
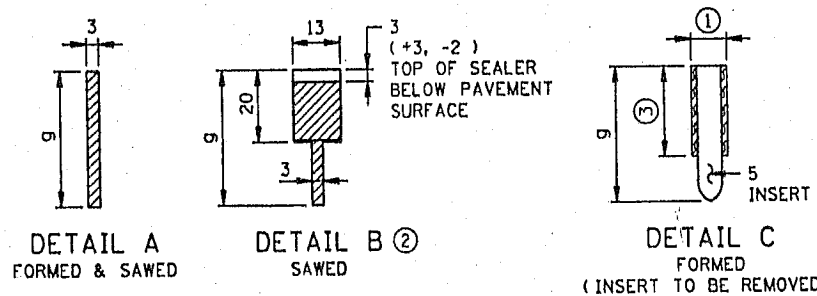
DETAIL B  
E1DB & E2DB (W/DOWELS) E1B & E2B (W/O DOWELS)

**CONTRACTION JOINT CLASS DESIGNATION, DETAIL & SEALER SPEC. TABLE**

CLASS DESIGNATION		JOINT DETAIL	JOINT SEALER SPEC.
WITHOUT DOWELS	WITH DOWELS		
C1A	C1A-D	A	UNSEALED
C2B	C2B-D	B	3723
C2X	C2X-D	B OR C	3723
C3D	C3D-D	D	3721
C3X	C3X-D	C OR D	3721
C4E	C4E-D	E	SILICONE

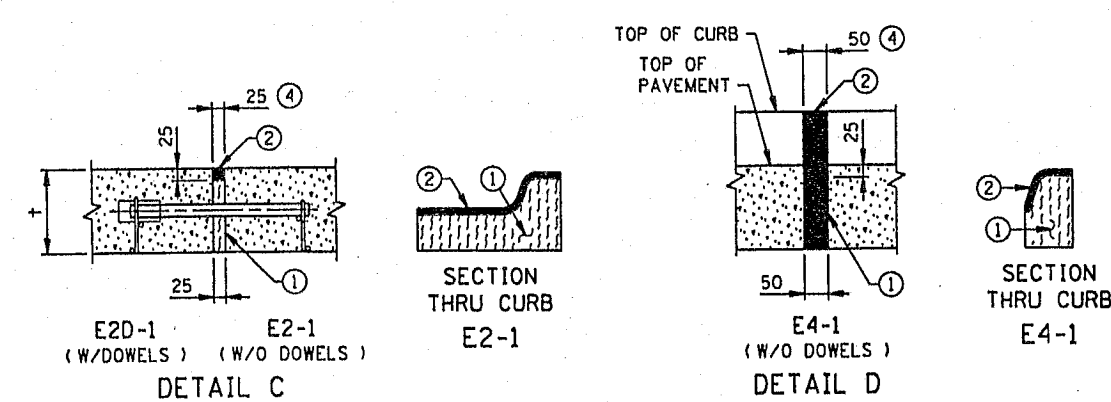
**CONTRACTION JOINT DEPTH & DOWEL BAR TABLE**

PAVEMENT THICKNESS +	CONCRETE PAVEMENT JOINT DEPTH 9 ⑤	CONCRETE BASE JOINT DEPTH 9	DOWEL BAR DIAMETER
150-170	45	35	20
180-210	50	40	25
220-270	65	50	35
280-320	80	—	40
330-360	90	—	45



**CONTRACTION JOINT NOTES:**  
IN CONCRETE BASE CONSTRUCTION THE CONTRACTION JOINTS SHALL BE SPACED AT 9 m INTERVALS AND AT RIGHT ANGLES TO THE LONGITUDINAL JOINTS, EXCEPT AS NOTED BELOW. WHERE THE CONCRETE BASE IS CONSTRUCTED ADJACENT TO EXISTING PAVEMENT OR BASE, THE CONTRACTION JOINTS IN THE NEW BASE SHALL MATCH THOSE IN THE EXISTING PAVEMENT OR BASE, EXCEPT THAT THE SPACING SHALL NOT BE LESS THAN 4.6 m, NOR MORE THAN 9 m. JOINT WIDTH TOLERANCES: + 2 mm AND - 1 mm.

**GENERAL NOTES:**  
SEE THE FOLLOWING STANDARD PLATES AND STANDARD PLAN SHEET FOR ADDITIONAL DETAILS: DOWEL BAR ASSEMBLY, M1103; CONSTRUCTION OF HEADER JOINTS, M1150; AND CONCRETE PAVEMENT WITH SKEWED JOINTS, 5-297.215M - .219M. SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATION TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.

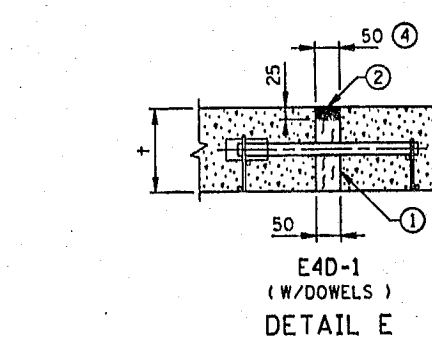


DETAIL C  
E2D-1 (W/DOWELS) E2-1 (W/O DOWELS)

SECTION THRU CURB E2-1

DETAIL D  
E4-1 (W/O DOWELS)

SECTION THRU CURB E4-1

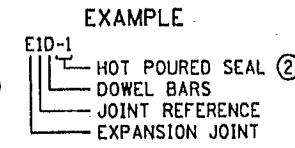


DETAIL E  
E4D-1 (W/DOWELS)

**EXPANSION JOINTS**

CLASS DESIGNATION	WITH DOWELS	WITHOUT DOWELS	JOINT DETAIL	JOINT SEALER SPEC.
E1D-1	E1-1	A	②	
E1DB	E1B	B	UNSEALED	
E2D-1	E2-1	C	②	
E2DB	E2B	B	UNSEALED	
E4D-1	E4-1	D	②	
		E	②	

**LEGEND**  
= EXPANSION JOINT  
E = JOINT REFERENCE  
= HOT POURED SEAL ②  
NO. = DOWEL BARS  
-1 = CONCRETE BASE  
D = CONCRETE SILL  
B  
S



**NOTES:**  
① PREFORMED JOINT FILLER MATERIAL, SPEC. 3702.  
② JOINT SEALER SPEC. 3723. TOP OF SEALER, FLUSH TO 3 mm BELOW TOP OF PAVEMENT SURFACE. MAKE TOP OF SEALER FOR CURB SECTION E JOINTS FLUSH WITH SURFACE (0 IN.) ± 3 mm.  
③ DOWEL BAR ASSEMBLY, SEE STANDARD PLATE M1103.  
④ JOINT WIDTH IS EQUAL TO HALF OF THE JOINT NUMBER IN 13 mm. INTERVALS (i.e. E1 = 13 mm, E2 = 25 mm, E3 = 38 mm, E4 = 50 mm, E8 = 100 mm ).  
⑤ SPACE FROM END OF DOWEL BAR TO END OF SLEEVE TO BE EQUAL TO EXPANSION JOINT WIDTH.

**EXPANSION JOINTS DESIGN E**

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.

04 MAR 99

**CONTRACTION JOINTS DESIGN C**



CERTIFIED BY *Nancy Daubinger*  
PROFESSIONAL ENGINEER  
REG NO. 25151 DATE MARCH 4, 1999

TITLE: PAVEMENT JOINTS  
SAP 02-716-04

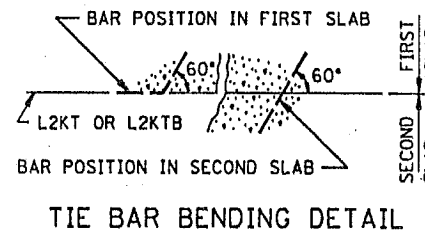
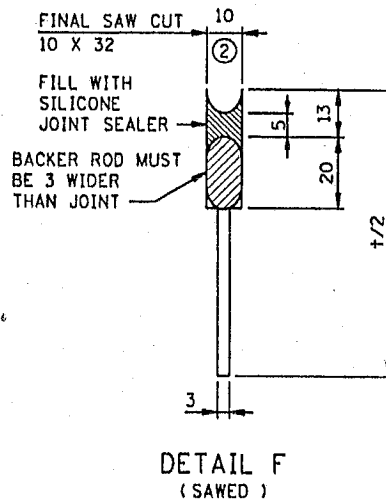
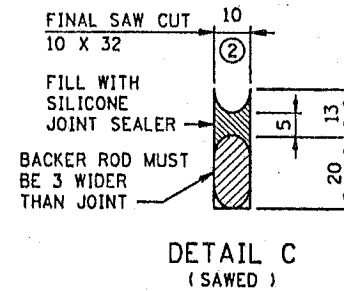
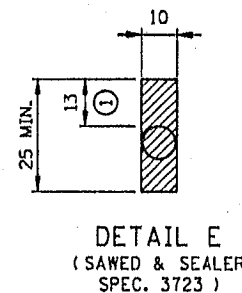
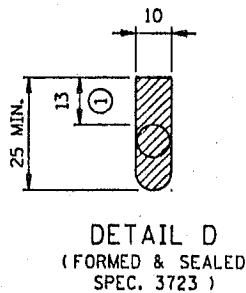
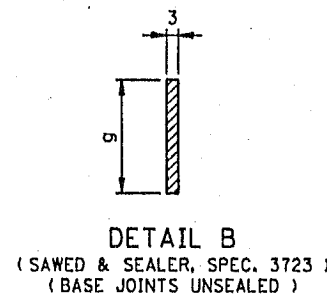
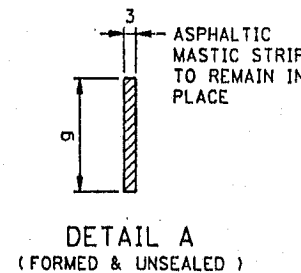
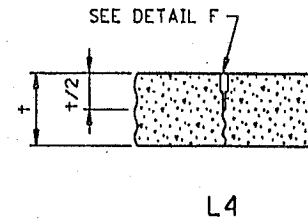
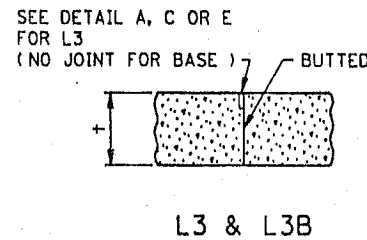
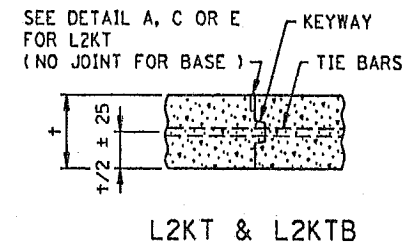
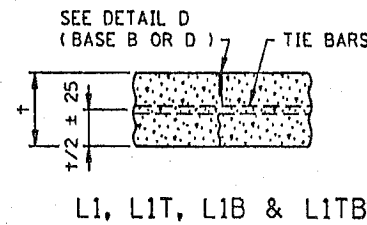
DESIGNER: MrDOT  
CHECKER: JDS  
APPROVED: 4-5-99  
SHEET NO 119 OF 28 SHEETS

BRIDGE NO 02564

STANDARD APPROVED: JANUARY 25, 1993

SP NO 74-619-13  
STANDARD SHEET NO. 5-297.221M (1 OF 2)

TITLE: PAVEMENT JOINTS  
CONTRACTION (DESIGN C) AND EXPANSION (DESIGN E)



LONGITUDINAL JOINT CLASS DESIGNATION,  
DETAIL & SEALER SPECIFICATION TABLE

CLASS DESIGNATION				JOINT DETAIL	JOINT SEALER SPECIFICATION
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS	BUTTED		
L1H	L1TH	L2KTH L2KTS		B	3723
L1BU	L1TBU			A OR B D OR E C	UNSEALED 3723 SILICONE
L4S			L3H L3S	D OR E	3723
				C	SILICONE
				F	SILICONE

LEGEND  
 L = LONGITUDINAL JOINT  
 NO. = JOINT REFERENCE  
 K = KEYWAY  
 T = TIE BARS  
 B = CONCRETE BASE  
 U = UNSEALED  
 H = HOT POUR  
 S = SILICONE

JOINT REFERENCE NUMBERS  
 1 = SAWED TO A DEPTH OF 1/3  
 2 = KEYED CONSTRUCTION JOINT  
 3 = BUTTED CONSTRUCTION JOINT  
 4 = SAWED TO A DEPTH OF 1/2

LONGITUDINAL JOINT  
DEPTH TABLE

PAVEMENT THICKNESS +	CONCRETE PAVEMENT JOINT DEPTH 9	CONCRETE BASE JOINT DEPTH 9
150	50	50
165	55	50
180	57	57
190	65	57
205	68	65
215	73	65
230	75	70
240	83	75
255	86	
265	90	
280	93	
290	98	
300	100	
315	105	
330	113	
345	115	
355	118	

LONGITUDINAL JOINT NOTES:

TIE BARS FOR L1TB JOINTS SHALL BE THE SAME SIZE AND SPACING AS SHOWN ON STANDARD PLAN SHEETS 5-297.216M - .219M.

EXCEPT WHEN NOTED OTHERWISE IN THE PLANS, THE TIE BAR SPACING FOR ALL L2KT AND L2KTb JOINTS SHALL BE 0.8 m C. TO C. AND BENT 60° AS SHOWN.

TIE BARS IN THE L2KT AND L2KTb JOINTS SHALL BE THE SAME SIZE AND LENGTH AS USED FOR THE L1T OR L1TB JOINTS, WHEN TYING PAVEMENT TO PAVEMENT OR BASE TO BASE. TIE BARS IN THE L2KT OR L2KTb JOINTS SHALL BE NO. 4 X 0.8 m, WHEN TYING CURB & GUTTER TO PAVEMENT OR BASE.

ALL TIE BARS SHALL MEET THE REQUIREMENTS OF GRADE 60 FOR AASHTO M-31 OR M-53.

NORMALLY, TIED PAVEMENT WIDTHS SHALL NOT EXCEED 8 METERS, EXCEPT BRIDGE APPROACH PANELS AND PAVEMENT TAPERS.

JOINT WIDTH TOLERANCE IS + 2 mm TO - 1 mm.

SPEC. 3723 SEALER - TOP OF SEALER FLUSH TO - 4 mm BELOW TOP OF PAVEMENT SURFACE.

- THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. PRIOR TO SEALING THE JOINT, A CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 205 DEGREES C, WITH A DIAMETER 3 mm LARGER THAN THE JOINT OPENING, MAY BE PLACED 13 mm BELOW THE TOP OF THE PAVEMENT.
- THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. PRIOR TO SEALING THE JOINT, A 13 mm DIAMETER CLOSED CELL BACKER ROD SHALL BE PLACED SUCH THAT THE TOP OF THE BACKER ROD IS 13 mm BELOW THE SURFACE OF THE PAVEMENT. SILICONE SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEALANT BEAD THICKNESS OF 5 mm.

GENERAL NOTES:

SEE THE FOLLOWING STANDARD PLATES AND STANDARD PLAN SHEETS FOR ADDITIONAL DETAILS: DOWEL BAR ASSEMBLY M1103, PAVEMENT KEYWAY M1141 AND CONCRETE PAVEMENT WITH SKEWED JOINTS 5-297.216M - .219M.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATIONS TO BE USED & SPECIAL REINFORCEMENT REQUIRED.

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.

STANDARD SHEET NO.  
5-297.221M ( 2 OF 2 )  
STANDARD APPROVED:  
JANUARY 25, 1993

TITLE:  
PAVEMENT JOINTS  
LONGITUDINAL ( DESIGN L )

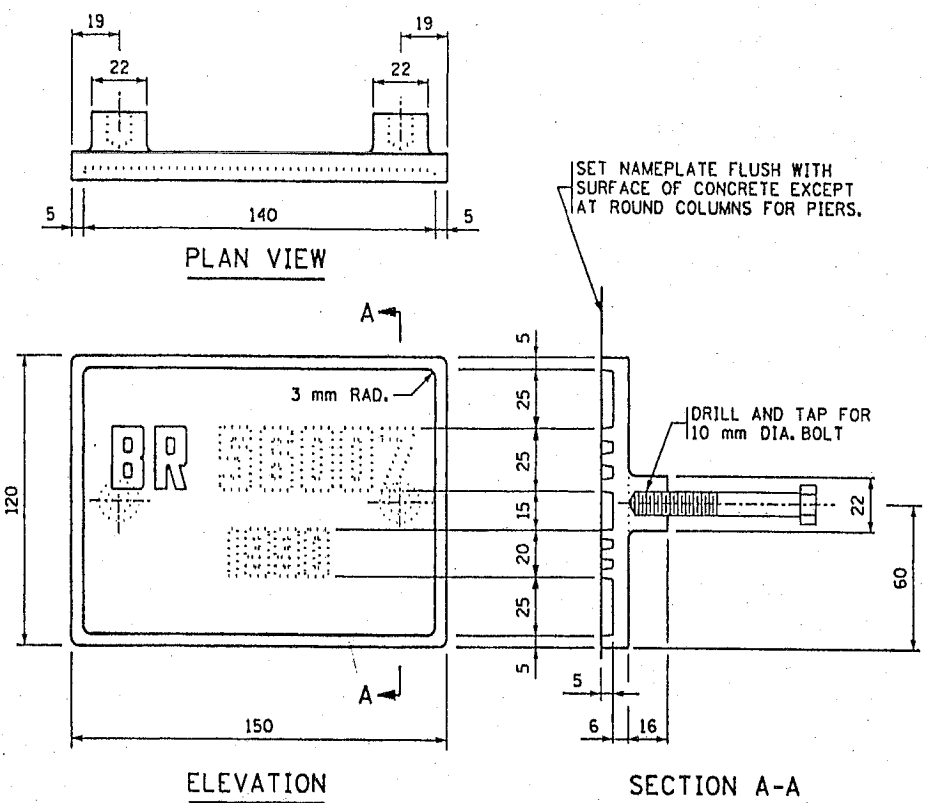


CERTIFIED BY  
Nancy Daubenberger  
PROFESSIONAL ENGINEER  
REC NO. 25151 DATE MARCH 4, 1999

TITLE:  
PAVEMENT JOINTS  
SAP 02-716-04

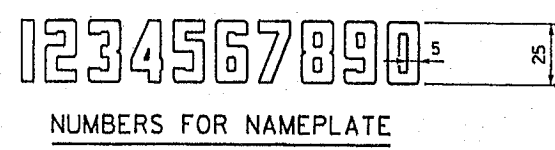
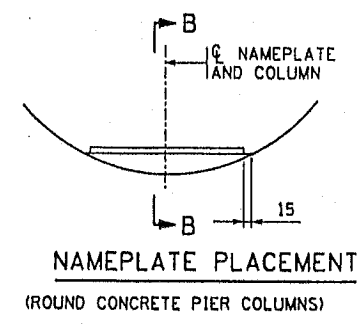
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CHK: JDS CHK: JDS  
SHEET NO 20 OF 28 SHEETS

BRIDGE NO  
02564



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

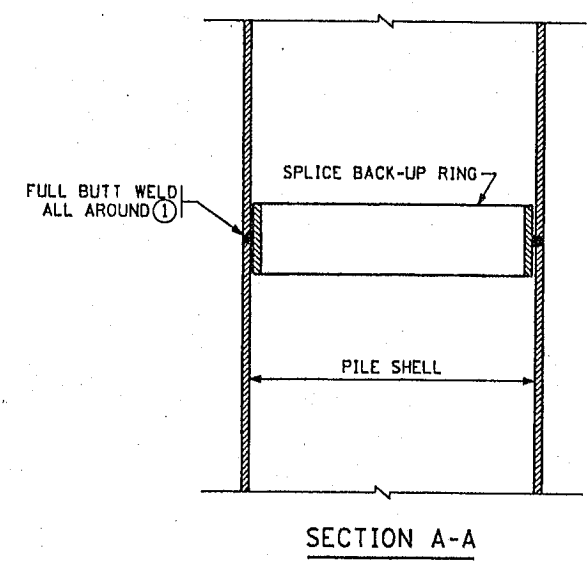
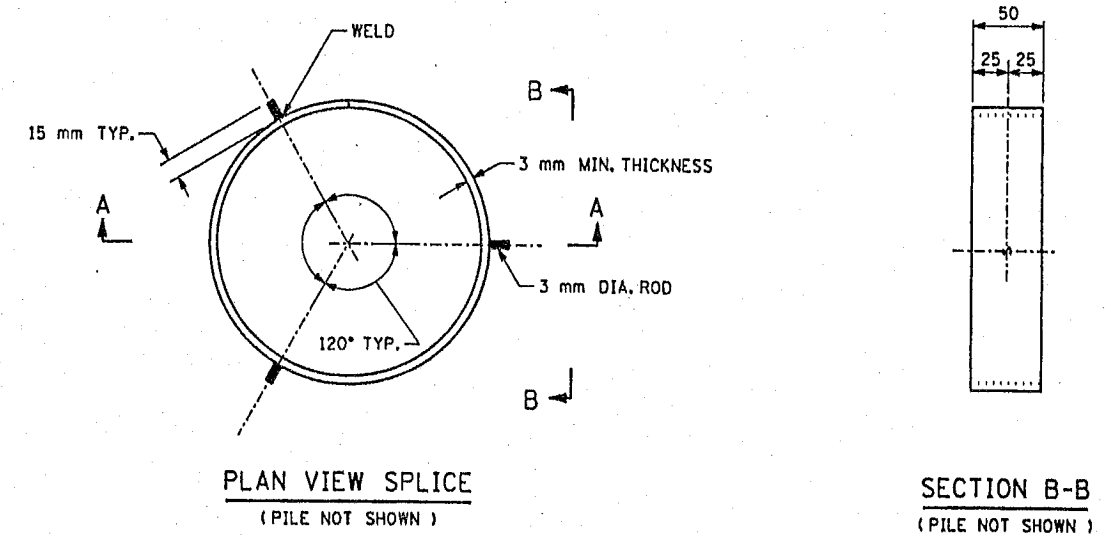
BRIDGE 02564  
YEAR 1999



- 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.

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997 <i>Donald J. Fleming</i> STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION BRIDGE NAMEPLATE (FOR NEW BRIDGES)	REVISION	DETAIL NO. B101M
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- 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-U40 WELD CONFIGURATION.

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997 <i>Donald J. Fleming</i> STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PILE SPLICE (CAST IN PLACE CONCRETE PILES)	REVISION	DETAIL NO. B201M
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CERTIFIED BY  
*Nancy Dauberberg*  
PROFESSIONAL ENGINEER  
REC NO. 25151 DATE MARCH 4, 1999

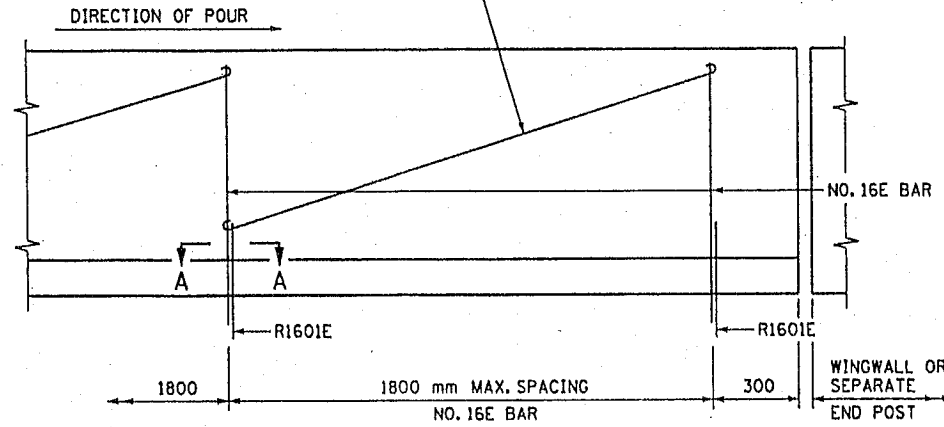
TITLE:  
B101M-B201M  
SAP 02-716-04

DES: MnDOT OR: MnDOT  
CHK: JDS CHK: JDS  
APPROVED: 4-5-99  
BRIDGE NO 02564  
SHEET NO 321 OF 28 SHEETS

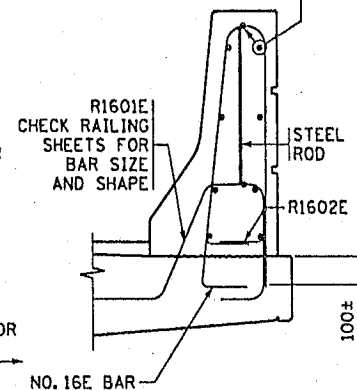
04 MAR 99 I:\Struct\Bunker\stds\Bunbrk101.dgn

5 mm TO 6 mm SOFT STEEL ROD, 3.5 mm WIRE OR APPROVED EQUAL ATTACHED TO INSIDE AND OUTSIDE FACE OF RAILING, EPOXY COAT AS PER SPEC. 3301.

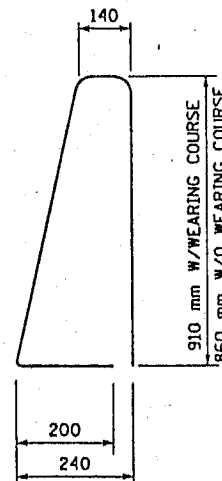
MOVE NO. 13E STRAIGHT BAR FROM SIDE TO TOP FOR SLIPFORMING.



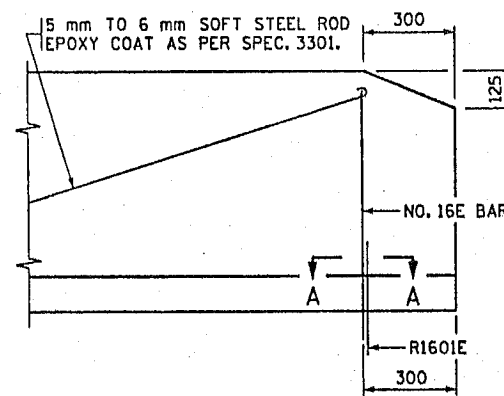
INSIDE ELEVATION OF RAILING



RAILING SECTION



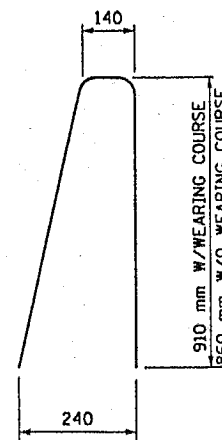
NO. 16E BAR



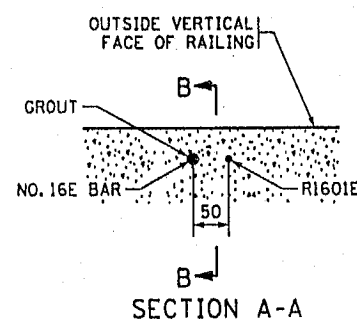
INSIDE ELEVATION OF RAILING  
AT END OF WINGWALL

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.

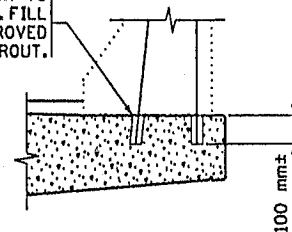


NO. 16E BAR  
DRILLED IN ALTERNATE



SECTION A-A

VERIFY BAR DIA. PRIOR TO DRILLING HOLES. FILL HOLES WITH AN APPROVED RAPID SETTING NON-SHRINK GROUT.



SECTION B-B

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

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997

*Donald J. Blumling*  
STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
CONCRETE RAILING (TYPE F)  
(SLIPFORM ALTERNATE)

REVISION  
LJH 07-13-98  
LJH 08-04-98

DETAIL NO.  
B830M



CERTIFIED BY  
*Nancy Daubenberg*  
PROFESSIONAL ENGINEER  
REC NO. 25151 DATE MARCH 4, 1999

TITLE:

B830M  
SAP 02-716-04

DES: MnDOT	DR: MnDOT	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO B22 OF 28 SHEETS

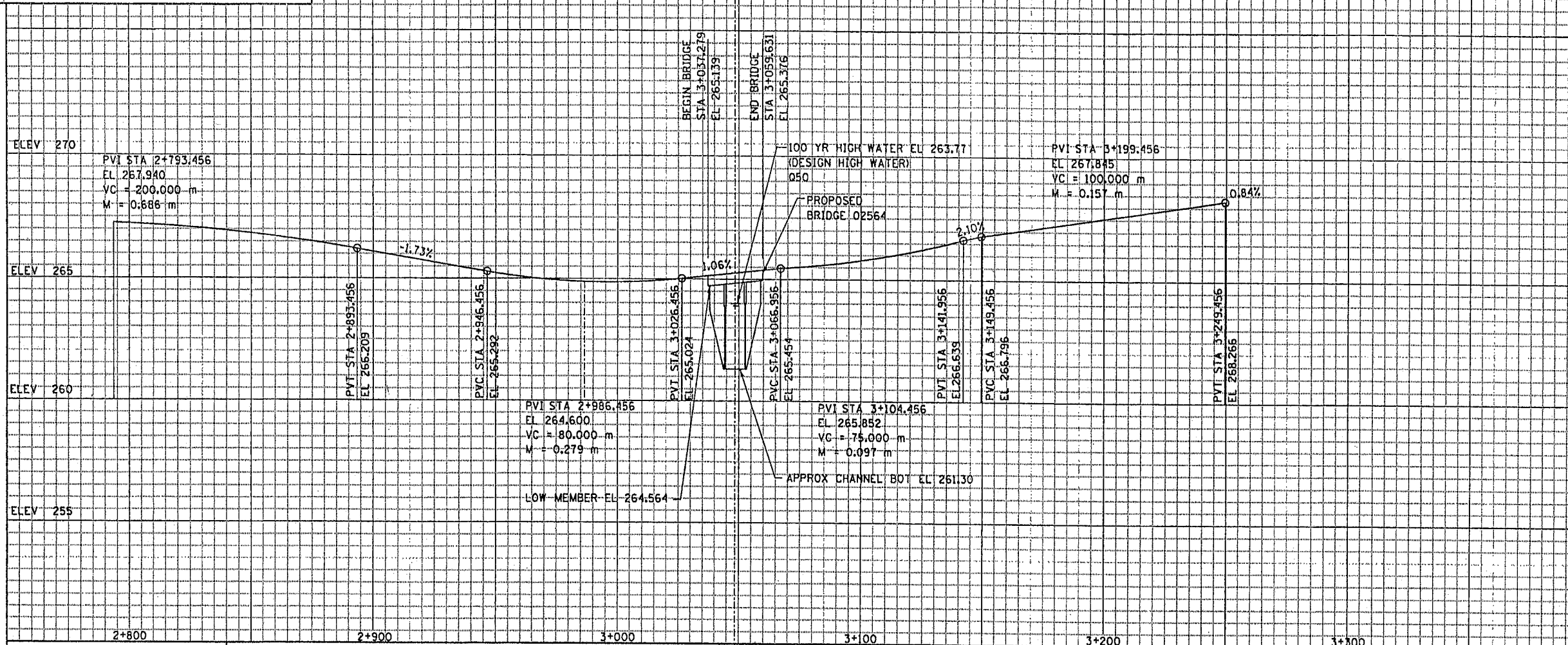
BRIDGE NO  
02564

04 MAR 99

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CONTRACTED PROFILE

SCALE: HOR. 0 20 VER. 0 2



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

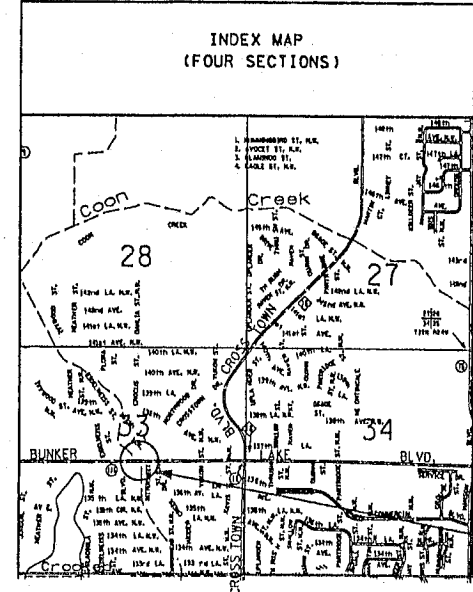
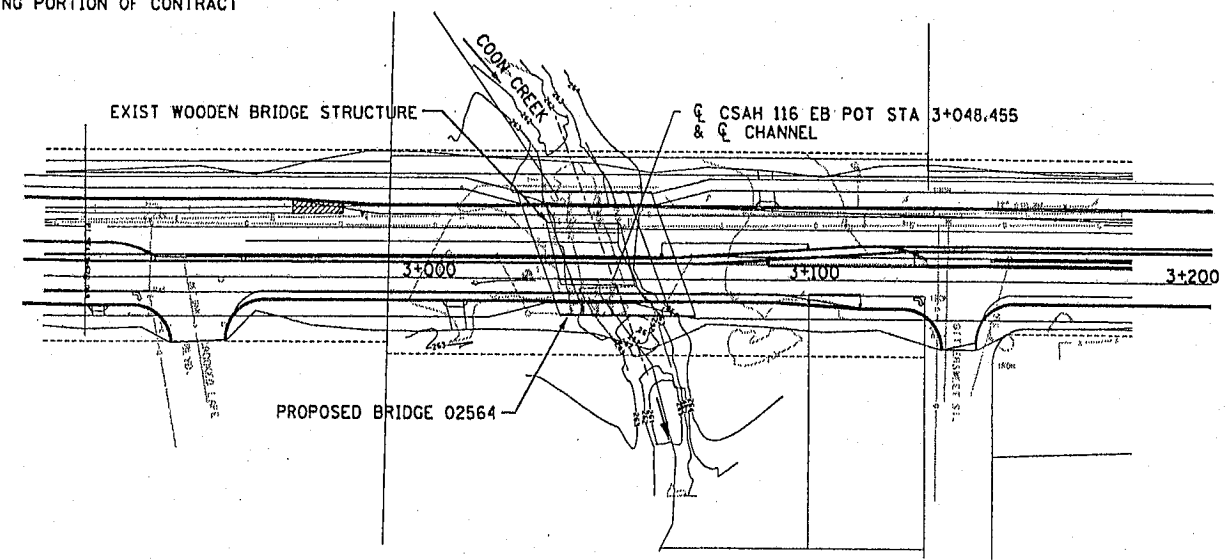
- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC RECOMMENDATIONS DATED 10-29-98

STREAM	COON CREEK	UNIT
FLOOD OF RECORD (UNKNOWN)		m <sup>3</sup> /s
MAXIMUM OBSERVED HIGHWATER ELEV. (UNKNOWN)		
DESIGN FLOOD (50 YEAR FREQUENCY)	39.6	m <sup>3</sup> /s
DESIGN STAGE	263.77	m
TOTAL STAGE INCREASE	.03	m
DESIGN MEAN VELOCITY THROUGH STRUCTURE	1.40	m/s
LOW MEMBER AT OR ABOVE ELEVATION	264.26	
MIN. WATERWAY AREA REQUIRED BELOW	263.77	
ELEV. AT RIGHT ANGLE TO CHANNEL	28.3	m <sup>2</sup>
BASIC FLOOD (100 YEAR FREQUENCY)	46.7	m <sup>3</sup> /s
STAGE	264.00	m
TOTAL STAGE INCREASE	.06	m
MEAN VELOCITY THROUGH STRUCTURE	1.46	m/s
APPROX. FLOWLINE ELEV. (100 YR FREQUENCY)	261.3	
SKW ANGLE	20	DEG.
ESTIMATED PIER SCOUR ELEV. (100 YR FREQUENCY)	260.5	

PLAT  
SCALE: 0 20

EXISTING UTILITIES TO BE RELOCATED UNDER GRADING PORTION OF CONTRACT



DESIGN STAGE AND STAGE ARE HEADWATER ELEVATIONS AT BRIDGE

BRIDGE SURVEY SHEETS MADE FROM SEH SURVEY ELECTRONIC FIELD NOTES DATED

BENCH MARK ELEVATION 266.551 (MSL 1929 ADJ)  
LOCATION: TOP HYD SW COR CROOKED LAKE BLVD & CR 116

BRIDGE SURVEY

PROPOSED BRIDGE LOCATED ON CSAH 116, 2.3 Km EAST OF THE JUNCTION OF CSAH 116 AND CSAH 9

SEC 33 TWP 32 N R 24 W  
CITY OF ANDOVER COUNTY ANOKA

BRIDGE NO 02564

EXISTING BRIDGE 02513 DATA:  
LENGTH = 3 SPANS 5.8 m, 7.9 m, 5.8 m  
TYPE = WOODEN SUPERSTRUCTURE WITH BIT ROADWAY SURFACE  
WOODEN ABUTMENTS AND PIERS  
ROADWAY WIDTH = 12.3 m WITH 1.5 m SDWK



CERTIFIED BY Nancy Nauberger PROFESSIONAL ENGINEER  
REG NO 25151 DATE MARCH 4, 1999

TITLE: BRIDGE SURVEY  
SAP 02-716-04

DES: MAW	DR: MAW	APPROVED: 4-5-99	BRIDGE NO 02564
CHK: JDS	CHK: JDS		

SHEET NO B23 OF 28 SHEETS

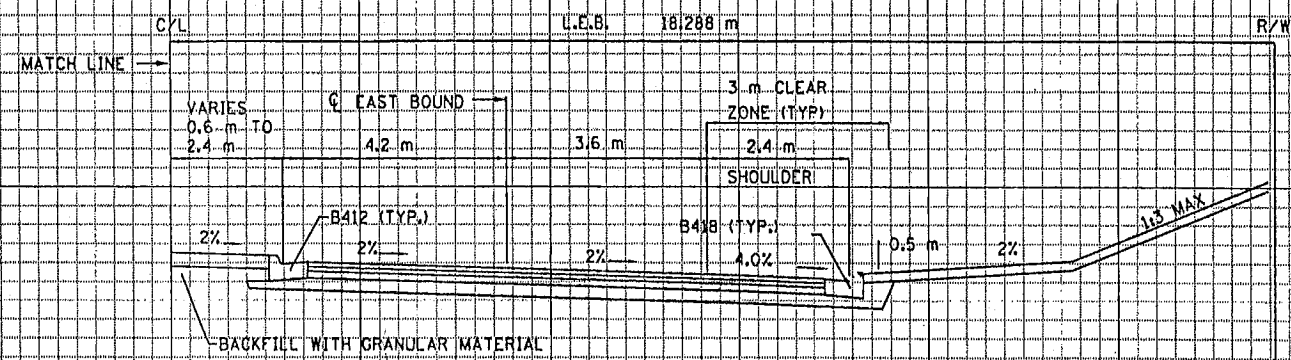
04 MAR 99 J:\struct\bunker\br\lodge\bunkbs1.dgn

TYPICAL SECTIONS

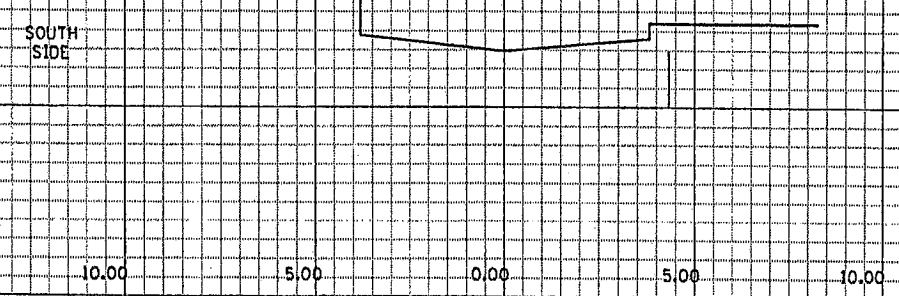
SCALE: HOR. 0 20 VER. 0 2

CROSS SECTIONS

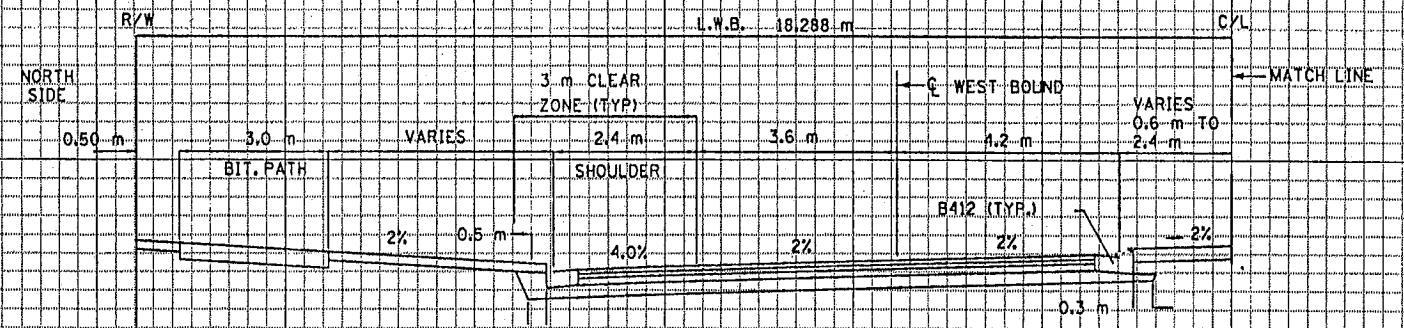
SCALES AS SHOWN



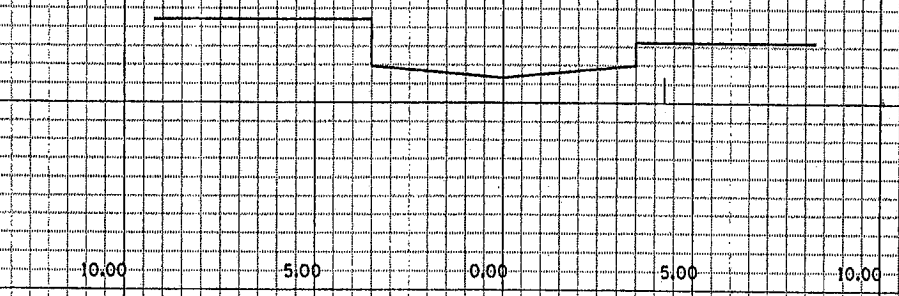
TYPICAL ROADWAY SECTION



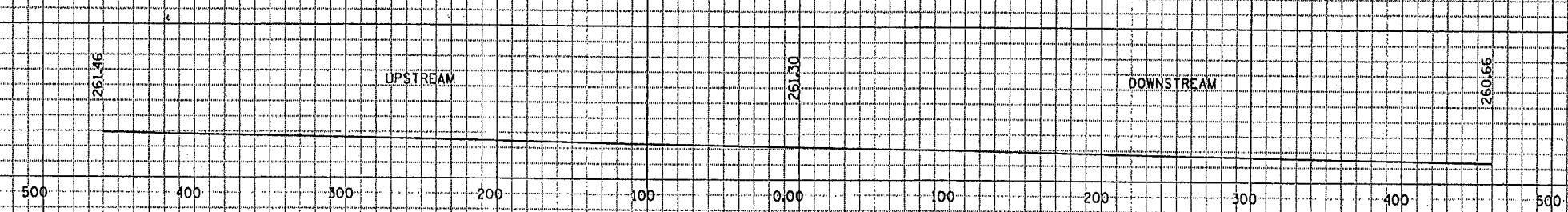
CHANNEL X-SECTION 460 m UPSTREAM



TYPICAL ROADWAY SECTION



CHANNEL X-SECTION 460 m DOWNSTREAM



PROFILE COON CREEK

04 MAR 99 J:\struct\Bunker\br1dga\Bunkbs1.dgn



CERTIFIED BY *Nancy Daubenberg*  
 PROFESSIONAL ENGINEER  
 REG NO. 25151 DATE MARCH 4, 1999

TITLE: BRIDGE SURVEY TYPICAL SECTIONS  
 SAP 02-716-04

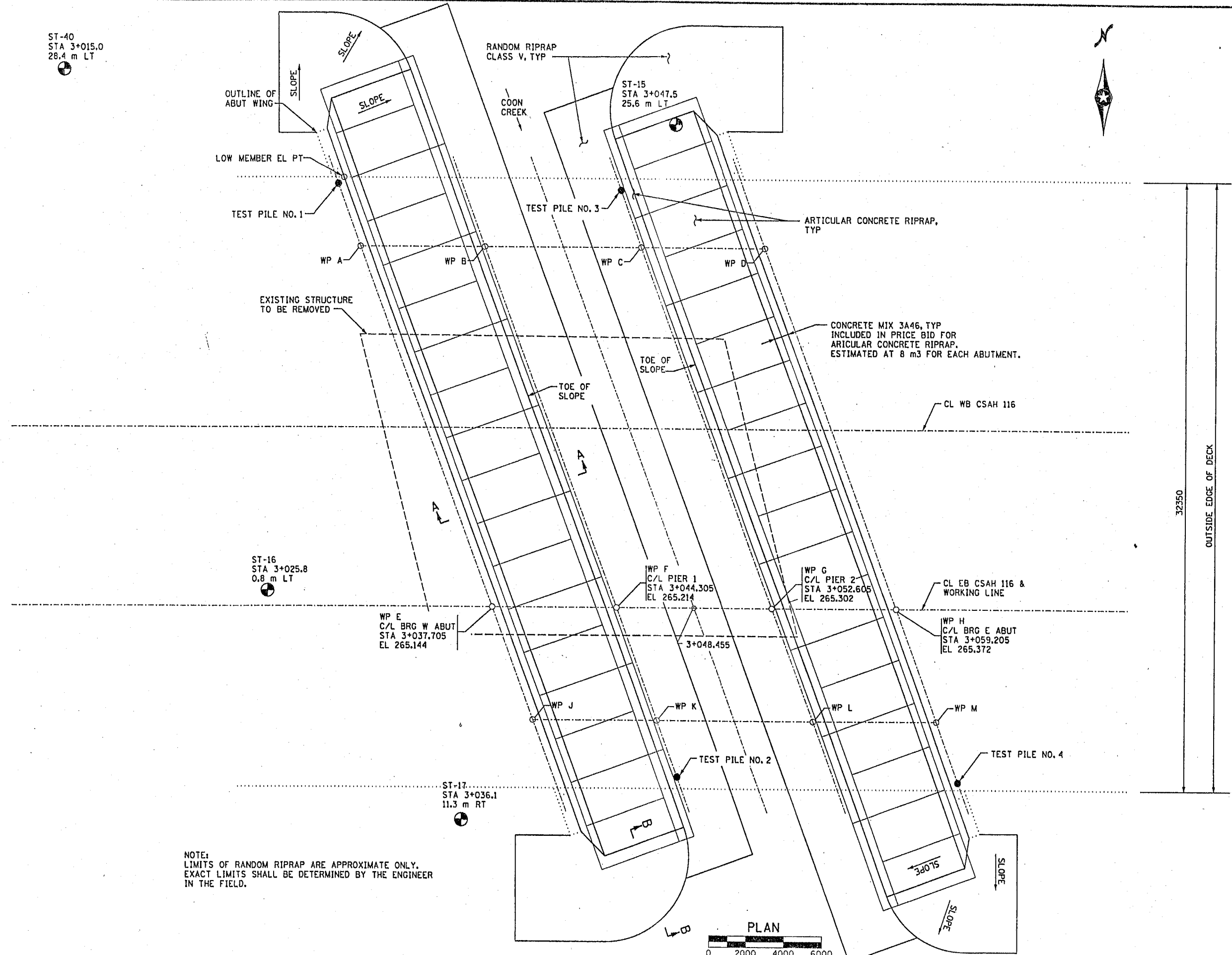
DES: MAW	DR: MAW	APPROVED: 4-5-99
CHK: JOS	CHK: JOS	

SHEET NO 1324 OF 28 SHEETS

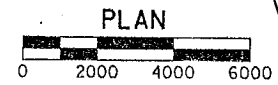
BRIDGE NO 02564



ST-40  
STA 3+015.0  
28.4 m LT



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



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CERTIFIED BY  
*Nancy Daubert*  
PROFESSIONAL ENGINEER  
REG NO. 25151 DATE MARCH 4, 1999

TITLE:  
BRIDGE SURVEY PLAN  
AND PROFILE  
SAP 02-716-04

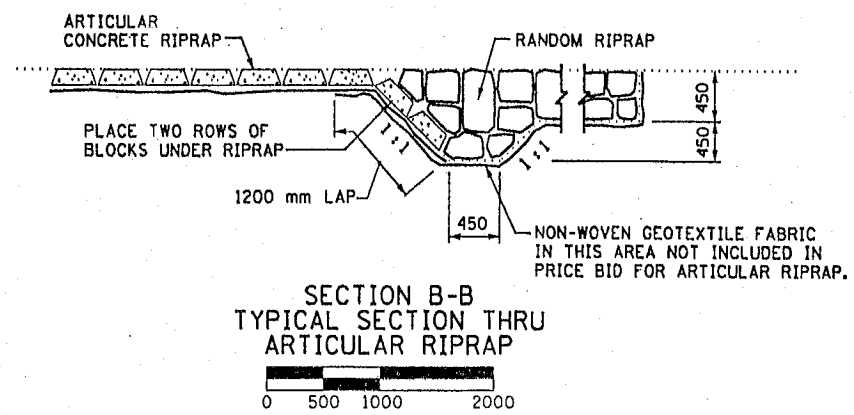
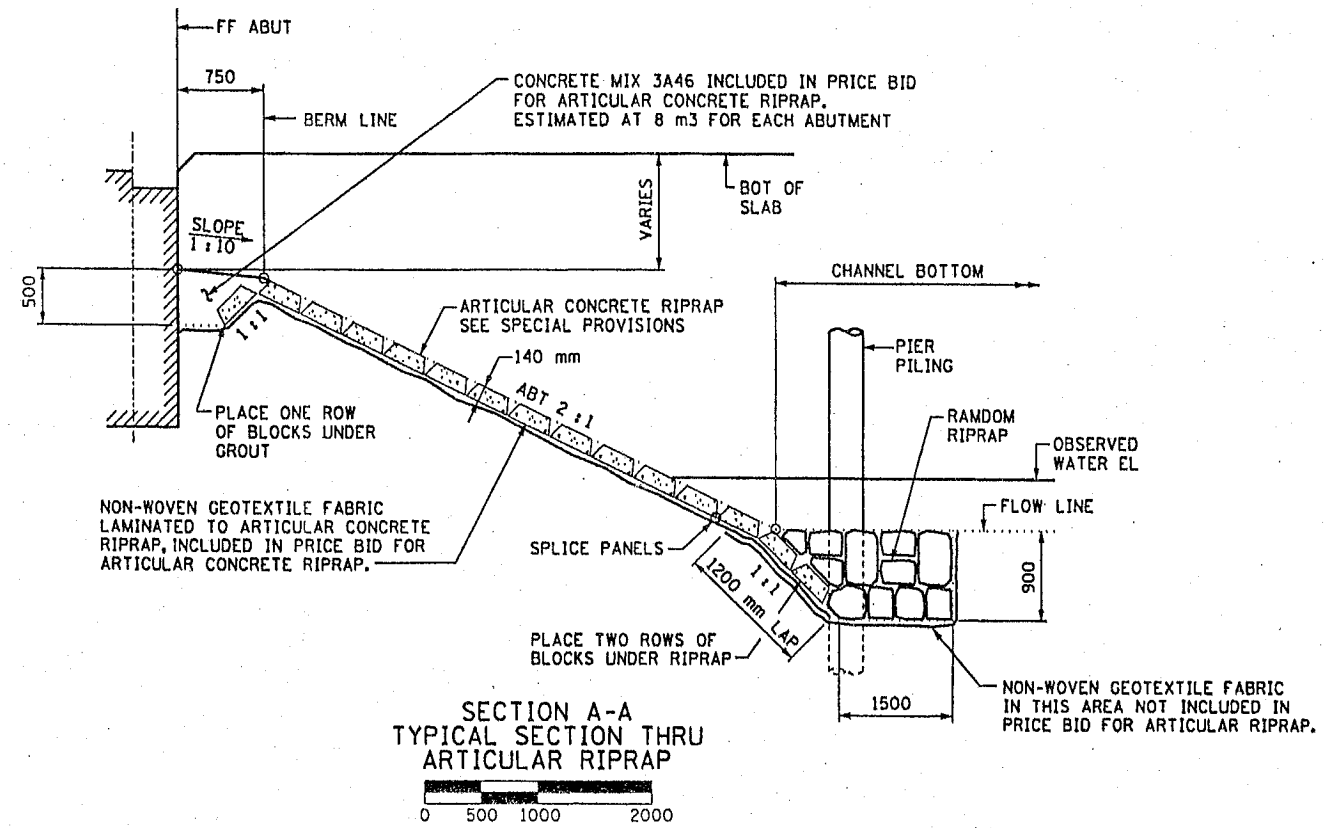
DES: MAW	DR: MAW	APPROVED:
CHK: JDS	CHK: JDS	4.5.99
SHEET NO 25 OF 28 SHEETS		

BRIDGE NO  
02564



04 MAR 99

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NOTES  
 1 FOR PLAN VIEW OF PLACEMENT LIMITS, SEE SHEET 25.



CERTIFIED BY *Nancy Daubner*  
 PROFESSIONAL ENGINEER  
 REG. NO. 25151 DATE MARCH 4, 1999

TITLE:  
 RIPRAP DETAILS  
 SAP 02-716-04

DES: MAW	DR: MAW	APPROVED: 4.5.99
CHK: JDS	CHK: JDS	

SHEET NO 327 OF 28 SHEETS

BRIDGE NO  
 02564

