

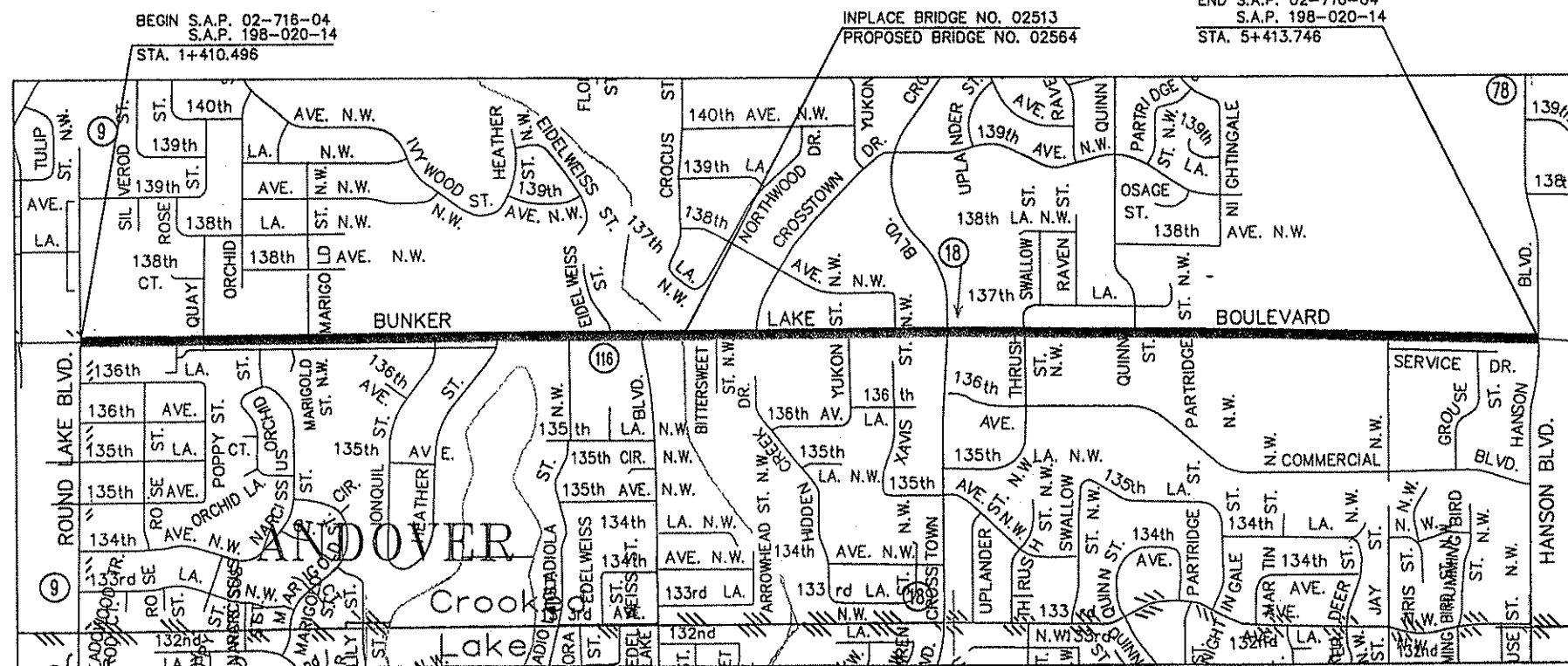
MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

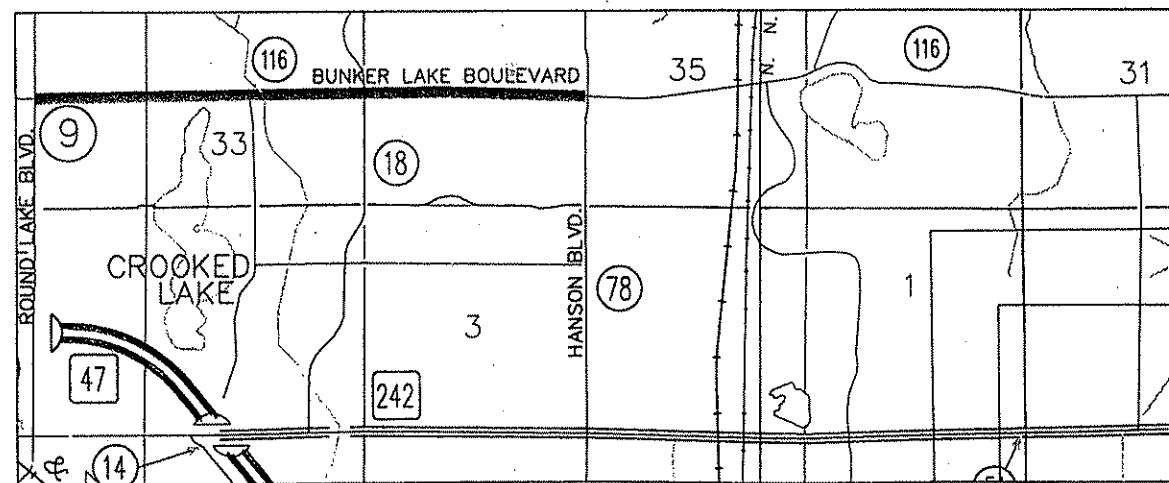
CONSTRUCTION PLAN FOR GRADING, AGG. BASE, BITUMINOUS SURFACING, MILLING, CURB & GUTTER, MEDIANS, SIGNAL SYSTEM, STORM SEWER, DRAINAGE & MISC. CONSTRUCTION, & BRIDGE 02564

LOCATED ON CSAH 116 FROM CSAH 9 EAST TO CSAH 78

GROSS LENGTH 4003.25 METERS 4.003 KILOMETERS
BRIDGES-LENGTH 22.352 METERS 0.022 KILOMETERS



LOCATION MAP



REGIONAL MAP

NOTE:
THE EXACT LOCATION OF UNDERGROUND GAS, TELEPHONE, FIBEROPTIC, ELECTRIC, CABLE TV, AND PIPE LINES ARE UNKNOWN. CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL BEFORE COMMENCING EXCAVATION.



NOT TO SCALE

RECOMMENDED FOR APPROVAL
Donald W. Munn
STATE BRIDGE ENGINEER

GOVERNING SPECIFICATIONS
THE 1995 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT
AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-4	STATEMENT OF ESTIMATED QUANTITIES/ BASIS OF ESTIMATED QUANTITIES
5	BRIDGE STATEMENT OF ESTIMATED QUANTITIES
6	LANDSCAPING STATEMENT OF ESTIMATED QUANTITIES
7-12	TABULATIONS
13	EXISTING DRAINAGE TABULATION
14-16	DRAINAGE TABULATIONS
17-18	UTILITY DETAILS
19	STREET DETAILS
20-26	STANDARD DETAILS PLAN
27	EARTHWORK SUMMARY
28	CONSTRUCTION-SOILS NOTES/ STANDARD PLATES
29-31	TYPICAL SECTIONS
32-33	ALIGNMENT PLAN
34	ALIGNMENT TABULATION
35-41	REMOVAL PLAN
42-54	CONSTRUCTION PLAN AND PROFILE
55-56	FRONTAGE ROAD PROFILE
57-69	UTILITIES PLAN AND PROFILE
70-76	STORM SEWER PROFILE
77-78	RETAINING WALL PLAN / PROFILE
79-82	CONTOUR PLANS
83-126	CROSS-SECTIONS
127-151	TRAFFIC SIGNAL PLANS
152-159	SIGNING PLAN
160-164	PAVEMENT MARKING DETAILS (162-164 NOT USED)
165-171	PAVEMENT MARKING PLAN
172-194	TRAFFIC CONTROL PLAN
195-198	LANDSCAPING DETAILS AND PLAN
199-203	IRRIGATION DETAILS AND PLAN
204-228	BRIDGE PLANS

THIS PLAN CONTAINS 231 SHEETS.

CSAH 116 (BUNKER LAKE BOULEVARD)
S.A.P. 02-716-04 S.A.P. 198-020-14

GROSS LENGTH	4003.250 m	4.003 km
BRIDGE LENGTH	22.352 m	0.022 km
DESIGN		9.1 t
DESIGN SPEED		90 km/h
R VALUE =		65
ESALS =		2,489,000
EXISTING A.D.T. (1999)		11,000
20 YR. PROJECTED A.D.T. (2019)		15,200
% H.C.A.D.T.		7.5
FUNCTIONAL CLASSIFICATION		ARTERIAL
NO. OF TRAFFIC LANES		4
NO. OF PARKING LANES		0
STOPPING SIGHT DISTANCE BASED ON:		
1070 mm HEIGHT OF EYE		150 mm HEIGHT OF OBJECT

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, JANUARY 1998.

APPROVED: *[Signature]* 3/16/99
ANOKA COUNTY ENGINEER DATE

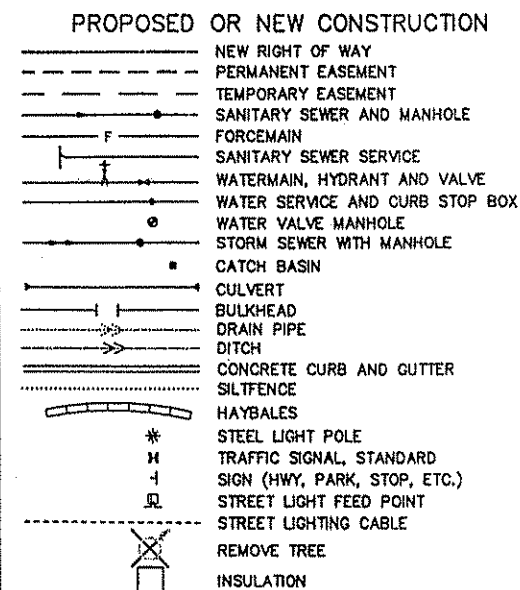
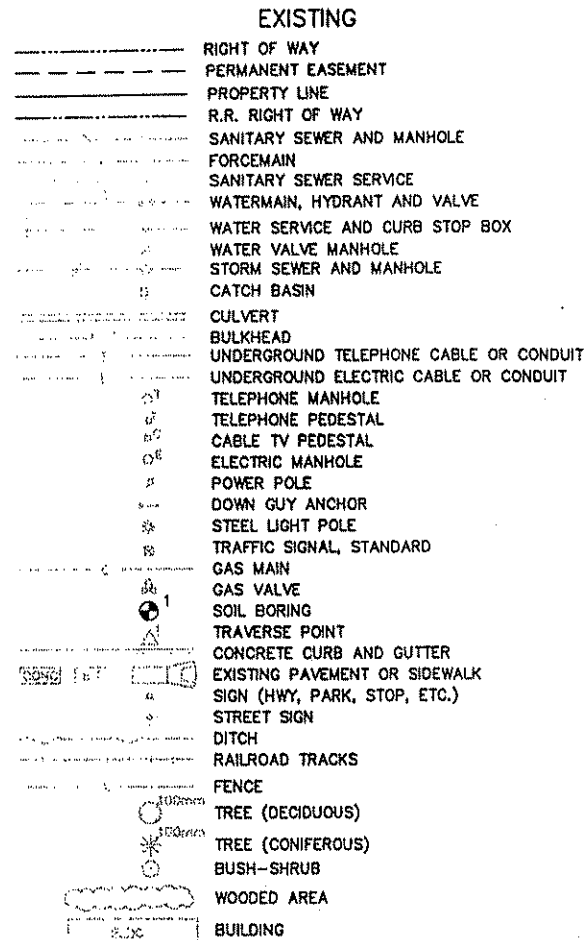
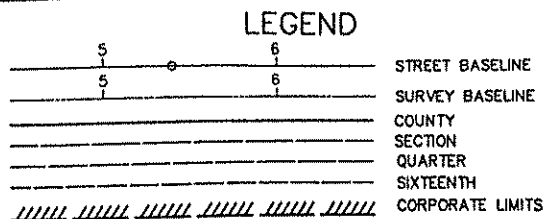
APPROVED: *[Signature]* 3/16/99
CITY OF ANDOVER DATE

APPROVED: *[Signature]* 4/5/99
METRO-ASSISTANT DIVISION ENGINEER-STATE AID; DATE
REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

APPROVED: *[Signature]* 4/19/99
APPROVED FOR STATE AID FUNDING; DATE
STATE AID ENGINEER

TITLE SHEET

SHEET 1 of 230 SHEETS



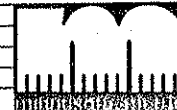
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DESIGN	DRAWING	CHECKED

DESIGN TEAM

NO. BY DATE

REVISIONS



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.
[Signature]
Date: 3/15/99 Reg. No. 18612



S.A.P. 02-716-04
S.A.P. 198-020-14

STATEMENT OF ESTIMATED QUANTITIES

TAB	NOTES	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY		S.A.P. 02-716-04 ANOKA COUNTY ROADWAY		S.A.P. 198-020-14 CITY OF ANDOVER ROADWAY		100% CITY OF ANDOVER NON PARTICIPATING		STORM	
					EST.	FINAL	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY
		2021.501	MOBILIZATION	LUMP SUM	1		1							
		2031.302	FIELD OFFICE TYPE D	EACH	1		1							
		2015.601	COMPUTER EQUIPMENT	LUMP SUM	1		1							
A		2101.501	CLEARING	ha	4.82		4.82							
A		2101.502	CLEARING	TREE	233		233							
A		2101.506	GRUBBING	ha	4.82		4.82							
A		2101.507	GRUBBING	TREE	235		235							
		15 2102.502	PAVEMENT MARKING REMOVAL	m	3000		3000							
		1 2104.501	REMOVE PIPE CULVERTS	m	192.7		192.7							
B		2104.501	REMOVE CONCRETE CURB & GUTTER	m	1873.38		1873.38							
		2104.501	REMOVE GUARDRAIL - PLATEBEAM	m	105		105							
D		2104.501	REMOVE FENCE	m	273		273							
		1 2104.501	REMOVE WATERMAIN PIPE	m	375					375				
		1 2104.501	REMOVE SANITARY SEWER PIPE	m	451		69			382				
		1 2104.501	REMOVE SEWER PIPE (STORM)	m	254.5		254.5							
		2104.503	REMOVE TIMBER RETAINING WALL	m2	16		16							
E		2104.503	REMOVE CONCRETE DRIVEWAY PAVEMENT	m2	188		188							
C		2104.503	REMOVE CONCRETE WALK	m2	530.1		530.1							
C		2 2104.503	REMOVE BITUMINOUS PAVEMENT	m2	65439.8		65439.8							
		2104.509	REMOVE GATE VALVE	EACH	5			5						
		2104.509	REMOVE MANHOLE (SAN.)	EACH	7		4			3				
		2104.509	REMOVE DRAINAGE STRUCTURE	EACH	16		16							
		2104.509	REMOVE CONCRETE APRON	EACH	2		2							
		2104.509	REMOVE PILING ASSEMBLY	EACH	25		25							
24		2104.509	REMOVE SIGN	EACH	1		1							
C		2104.513	SAWING BITUMINOUS PAVEMENT	m	1709.5		1709.5							
		24 2104.523	SALVAGE SIGN	EACH	3		3							
		2104.523	SALVAGE HYDRANT & VALVE	EACH	4		4							
		2104.523	SALVAGE CASTING	EACH	23		22			1				
		2104.523	SALVAGE SIGN TYPE C	EACH	167		167							
		2104.523	SALVAGE STREET NAME SIGNS	EACH	18		18							
		2104.601	HAUL SALVAGED MATERIAL	LUMP SUM	1		1							
		2105.501	COMMON EXCAVATION (P)	m3	28016		28016							
		2105.505	MUCK EXCAVATION	m3	61702		61702							
23		2105.507	SUBGRADE EXCAVATION (P)	m3	24356		24356							
		3 2105.515	SPECIAL EXCAVATION	m3	18215							18215		
		2105.522	SELECT GRANULAR BORROW (CV)	m3	68050		68050							
		2105.525	TOPSOIL BORROW (CV)	m3	3389		3389							
		13 2105.533	SALVAGE EXCESS MATERIAL IN STOCKPILES (SV)	m3	30000		30000							
		20 2105.535	SALVAGED TOPSOIL FROM STOCKPILE	m3	525			525						
		21 2451.601	DEWATERING-AREA A	LUMP SUM	1		1							
		22 2451.601	DEWATERING-AREA B	LUMP SUM	1		1							
		2123.610	STREET SWEEPER WITH PICK UP BROOM	HOUR	60		60							
		2123.610	TRACTOR MOUNTED BACKHOE	HOUR	40		40							
		2130.501	WATER	m3	800		800							
E,J		9 2211.501	AGGREGATE BASE, CLASS 5A (CV) (P)	m3	22171.9		22171.9							
		25 2301.502	200 mm CONCRETE PAVEMENT-HE TYPE SPECIAL	m2	220			220						
		2331.603	SAWED / SEALED JOINT	m	8656		8656							
C		2232.501	MILL BITUMINOUS PAVEMENT (50 mm)	m2	2340		2340							
I		9 2350.609	TYPE HV WE47540B WEARING COURSE MIXTURE	t	9016.14		9016.14							
I		9 2350.609	TYPE MV WE45035B WEARING COURSE MIXTURE	t	1114.34		1114.34							
I		8 2350.609	TYPE MV WE45035B WEARING COURSE MIXTURE-TRAIL	m2	13376.08			13376.08						
E		8 2350.609	TYPE MV WE45035B WEARING COURSE MIXTURE-DRIVEWAY	m2	821.38		821.38							
		8 2350.609	TYPE MV WE45035B WEARING COURSE MIXTURE-TEMP.	m2	2075		2075							
I		9 2350.609	TYPE HV NW37540B NONWEARING COURSE MIXTURE	t	10942.3		10942.3							
I		9 2350.609	TYPE MV NW35035B NONWEARING COURSE MIXTURE	t	17229.51		17229.51							
I		2357.502	BITUMINOUS MATERIAL FOR TACK COAT	L	22819.25		22819.25							
L		2411.604	MODULAR BLOCK RETAINING WALL	m2	863.18		863.18							
		2412.602	RELOCATE MAILBOX	EACH	20		20							
10		2451.511	COARSE FILTER AGGREGATE	m3	3925		1100			2825				
O		2501.602	TRASH GUARD FOR 300 mm RC PIPE APRON	EACH	3							3		
O		2501.602	TRASH GUARD FOR 375 mm RC PIPE APRON	EACH	5							5		

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1	RAB	4/13/99	ADDENDUM NO. 1				
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED	

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.
[Signature]
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STATEMENT OF
 ESTIMATED QUANTITIES

FILE NO. ANOKA9806.01
 DATE MARCH 15, 1999
 2
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STATEMENT OF ESTIMATED QUANTITIES

TAB	NOTES	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY		S.A.P. 02-716-04 ANOKA COUNTY ROADWAY		S.A.P. 198-020-14 CITY OF ANDOVER ROADWAY		100% CITY OF ANDOVER NON PARTICIPATING		STORM	
					EST.	FINAL	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY
0		2501.602	TRASH GUARD FOR 525 mm RC PIPE APRON	EACH	1									1
0		2501.602	TRASH GUARD FOR 750 mm RC PIPE APRON	EACH	1									1
0		2501.602	TRASH GUARD FOR 825 mm RC PIPE APRON	EACH	1									1
0		2501.602	TRASH GUARD FOR 900 mm RC PIPE APRON	EACH	1									1
0		2501.602	TRASH GUARD FOR 920 mm SPAN PIPE APRON	EACH	2									2
0		2501.515	300 mm RC PIPE APRON	EACH	3									3
0		2501.515	375 mm RC PIPE APRON	EACH	5									5
0		2501.515	525 mm RC PIPE APRON	EACH	1									1
0		2501.515	750 mm RC PIPE APRON	EACH	1									1
0		2501.515	825 mm RC PIPE APRON	EACH	1									1
0		2501.515	900 mm RC PIPE APRON	EACH	1									1
0		2501.525	920 mm SPAN RC PIPE-ARCH APRON	EACH	2									2
0		2503.521	560 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA	m	127.29									127.29
0		2503.521	725 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA	m	191.78									191.78
0		2503.521	920 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA	m	236.38									236.38
0		2503.541	300 mm RC PIPE SEWER DESIGN 3006 CL V	m	1074.95									1074.95
0		2503.541	375 mm RC PIPE SEWER DESIGN 3006 CL V	m	735.86									735.86
0		2503.541	450 mm RC PIPE SEWER DESIGN 3006 CL V	m	705.84									705.84
0		2503.541	525 mm RC PIPE SEWER DESIGN 3006 CL III	m	80.77									80.77
0		2503.541	600 mm RC PIPE SEWER DESIGN 3006 CL III	m	206.43									206.43
0		2503.541	675 mm RC PIPE SEWER DESIGN 3006 CL III	m	64.37									64.37
0		2503.541	750 mm RC PIPE SEWER DESIGN 3006 CL III	m	795.55									795.55
0		2503.541	825 mm RC PIPE SEWER DESIGN 3006 CL III	m	38.45									38.45
0		2503.541	900 mm RC PIPE SEWER DESIGN 3006 CL III	m	45.29									45.29
F		2503.602	CONNECT TO EXISTING MANHOLE (SAN)	EACH	3			1				2		
F		2503.602	CONNECT TO EXISTING SEWER (SAN)	EACH	5							5		
F		2503.602	CONNECT TO EXISTING SERVICE	EACH	7			2				5		
F		2503.602	600 x 100 mm WYE	EACH	2							2		
F		2503.602	750 x 100 mm WYE	EACH	7			2				5		
F		2503.603	450 mm RC PIPE SEWER DESIGN 3006 CL V (SAN)	m	135							135		
F		2503.603	750 mm RC PIPE SEWER DESIGN 3006 CL V (SAN)	m	328.13			95.92				232.21		
F	12	2503.603	100 mm PVC PIPE SEWER SDR 35 (SERVICE)	m	175			25				150		
F		2503.603	150 mm PVC PIPE SEWER SDR 35 (SERVICE)	m	20							20		
F		2503.603	200 mm PVC PIPE SEWER SDR 35	m	20							20		
F		2503.603	250 mm PVC PIPE SEWER SDR 35	m	25							25		
		2503.604	INSULATION 50 mm THICK	m2	330					330				
		2504.601	RELOCATE ALTITUDE VALVE	LUMP SUM	1					1				
		2504.601	IRRIGATION SYSTEM	LUMP SUM	1							1		
G		2504.602	CORPORATION STOP 25 mm	EACH	12							12		
G		2504.602	CORPORATION STOP 38 mm	EACH	7							7		
G		2504.602	CURB STOP & BOX 25 mm	EACH	12							12		
G		2504.602	CURB STOP & BOX 38 mm	EACH	7							7		
G		2504.602	150 mm GATE VALVE & BOX	EACH	3							3		
G		2504.602	200 mm GATE VALVE & BOX	EACH	6							6		
G		2504.602	250 mm GATE VALVE & BOX	EACH	2							2		
G		2504.602	300 mm GATE VALVE & BOX	EACH	5			1				4		
G		2504.602	F & I HYDRANT	EACH	3							3		
G		2504.602	RELOCATE HYDRANT WITH GATE VALVE	EACH	22							22		
G		2504.602	ADJUST HYDRANT	EACH	5							5		
G		2504.602	CONNECT TO EXISTING WATERMAIN	EACH	33			2				31		
G		2504.602	ADJUST VALVE BOX	EACH	46							46		
G		2504.602	ADJUST CURB STOP BOX	EACH	15							15		
G		2504.603	25 mm COPPER SERVICE	m	169.49							169.49		
G		2504.603	38 mm COPPER SERVICE	m	232.43							232.43		
G		2504.603	150 mm DIP WATERMAIN CL 52	m	162.1							162.1		
G		2504.603	200 mm DIP WATERMAIN CL 52	m	244.6							244.6		
G		2504.603	250 mm DIP WATERMAIN CL 52	m	43.5							43.5		
G		2504.603	300 mm DIP WATERMAIN CL 52	m	208.3			64				144.3		
		2504.603	LOWER WATERMAIN	m	90									
		2504.603	INSULATE WATERMAIN	m	100			100						
		2504.608	FITTINGS 300 mm AND SMALLER	kg	1467							1467		
0		2506.502	CONST DRAINAGE STRUCTURE DESIGN A or F	EACH	5									5
0		2506.502	CONST DRAINAGE STRUCTURE DESIGN C or G	EACH	95									95
0		2506.502	CONST DRAINAGE STRUCTURE DESIGN 1500 mm 4020	EACH	22									22

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1	RAB	4/13/99	ADDENDUM NO. 1				
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED	

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.
Spencer M. Mason
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STATEMENT OF ESTIMATED QUANTITIES

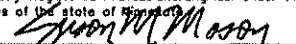
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STATEMENT OF ESTIMATED QUANTITIES

TAB	NOTES	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY		S.A.P. 02-716-04 ANOKA COUNTY ROADWAY		S.A.P. 198-020-14 CITY OF ANDOVER ROADWAY		100% CITY OF ANDOVER NON PARTICIPATING		STORM	
					EST.	FINAL	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY
D		2506.502	CONST DRAINAGE STRUCTURE DESIGN 1800 mm 4020	EACH	9									
D		2506.502	CONST DRAINAGE STRUCTURE DESIGN 2100 mm 4020	EACH	1									
D		2506.502	CONST DRAINAGE STRUCTURE DESIGN H	EACH	31									
D		2506.511	RECONSTRUCT SANITARY MANHOLES [1]	m	8.7					8.7				
P		2506.516	CASTING ASSEMBLY	EACH	171					2				
		2506.522	ADJUST FRAME & RING CASTING	EACH	42					37				
F		2506.602	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	4									
F		2506.602	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 2	EACH	1									
F		2506.602	CONST SANITARY MANHOLE-DESIGN J	EACH	1					1				
F		2506.602	CONST SANITARY MANHOLE-DESIGN STANDARD	EACH	8		4			4				
		2506.602	CONSTRUCT MANHOLE OVER EXISTING SEWER DESIGN F	EACH	1					1				
		2506.603	CONST SANITARY MANHOLE EXCESS DEPTH [1]	m	25.4		20.44			4.96				
		2511.507	HANDPLACED RIPRAP	m3	58.8								0.11	
		2511.515	GEOTEXTILE FILTER TYPE IV	m2	90.6									
H		2521.501	75 mm CONCRETE WALK	m2	7643.65		7643.65							
H		2521.501	75 mm CONCRETE WALK-TYPE SPECIAL [1]	m2	1338.1		1338.1							
H		2521.501	100 mm CONCRETE WALK	m2	1879.83		335.86		1543.97					
H		2531.501	CONC. CURB & GUTTER DESIGN B412	m	6676.46		6676.46							
H		2531.501	CONC. CURB & GUTTER DESIGN B418	m	6884.77		3442.385		3442.385					
H		2531.501	CONC. CURB & GUTTER DESIGN B612	m	243.09		243.09							
H		2531.501	CONC. CURB & GUTTER DESIGN B618	m	1193.35		1193.35							
H		2531.507	150 mm CONCRETE DRIVEWAY PAVEMENT-HIGH EARLY	m2	455.72		297.34		158.38					
H		2531.507	200 mm CONCRETE DRIVEWAY PAVEMENT - HIGH EARLY	m2	29.28		29.28							
		2531.602	PEDESTRIAN CURB RAMP	EACH	21		4			17				
H		2531.602	CONCRETE MEDIAN NOSE DESIGN 7113	EACH	22		22							
		2554.501	TRAFFIC BARRIER DESIGN SPECIAL	m	30.4		30.4							
		2554.511	TRAFFIC BARRIER DESIGN B8307	m	50.4		50.4							
		2554.523	END TREATMENT-ECCENTRIC LOADER BCT	EACH	4		4							
		2563.601	TRAFFIC CONTROL-STAGE ONE	LUMP SUM	1		1							
		2563.601	TRAFFIC CONTROL-STAGE TWO	LUMP SUM	1		1							
		2563.601	TRAFFIC CONTROL-STAGE THREE	LUMP SUM	1		1							
		2563.603	RAISED PAVEMENT MARKERS-TEMPORARY	EACH	680		680							
		2563.605	POLICE OFFICER	HOURLY	20		20							
		2564.531	F&I SIGN PANEL TYPE C	m2	122.7		112.7		10					
		2564.602	INSTALL SIGNS TYPE D	EACH	1		1							
		2564.602	F&I STREET NAME SIGNS	EACH	26		26							
M		2564.602	PAVEMENT MESSAGE (LEFT ARROW) PAINT	EACH	27		27							
M		2564.602	PAVEMENT MESSAGE (RIGHT ARROW) PAINT	EACH	40		40							
M		2564.603	100 mm SOLID LINE WHITE, PAINT	m	10110		10110							
M		2564.603	100 mm SOLID LINE YELLOW, PAINT	m	6960		6960							
M	16	2564.603	100 mm BROKEN LINE WHITE, PAINT	m	6980		6980							
M	16	2564.603	100 mm BROKEN LINE YELLOW, PAINT	m	815		815							
M		2564.603	100 mm DOUBLE SOLID LINE YELLOW, PAINT	m	100		100							
M		2564.603	400 mm SOLID LINE WHITE, PAINT	m	140		140							
		2564.603	100 mm SOLID LINE WHITE-PAINT TEMPORARY	m	4950		4950							
		2564.603	100 mm DOUBLE SOLID LINE YELLOW-PAINT TEMPORARY	m	5150		5150							
M		2564.604	ZEBRA CROSSWALK WHITE, PAINT	m2	320		320							
		2564.604	CONSTRUCTION SIGNS SPECIAL	m2	5.2		5.2							
		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM "B"	SIGS	1		0.25		0.75					
		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM "C"	SIGS	1		0.25		0.75					
		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM "D"	SIGS	1		0.50		0.50					
		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM "E"	SIGS	1				1					
		2565.601	SALVAGE SIGNAL SYSTEM "B"	LUMP SUM	1		1							
		2565.601	SALVAGE SIGNAL SYSTEM "C"	LUMP SUM	1		1							
		2565.601	SALVAGE SIGNAL SYSTEM "D"	LUMP SUM	1		1							
		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "B"	LUMP SUM	1				1					
		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "C"	LUMP SUM	1				1					
		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "D"	LUMP SUM	1				1					
		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "E"	LUMP SUM	1				1					
		2565.601	TRAFFIC CONTROL INTERCONNECTION	LUMP SUM	1		1							
		2565.602	PVC HANDHOLE (METAL FRAME AND COVER)	EACH	26		26							
		2565.603	103 mm RIGID STEEL CONDUIT	m	350		350							

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1	RAB	4/13/99	ADDENDUM NO. 1		
NO.	BY	DATE	REVISIONS	ITEM	DESIGN

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: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STATEMENT OF ESTIMATED QUANTITIES AND BASIS OF ESTIMATED QUANTITIES	FILE NO. ANOKA9806.01	4
	DATE MARCH 15, 1999	230

STATEMENT OF ESTIMATED QUANTITIES

TAB	NOTES	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY		S.A.P. 02-716-04 ANOKA COUNTY ROADWAY		S.A.P. 198-020-14 CITY OF ANDOVER ROADWAY		100% CITY OF ANDOVER NON PARTICIPATING		STORM	
					EST.	FINAL	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY
		2571.501	CONIFEROUS TREE 2 m BASE ROOT	TREE	12									
		2571.502	DECIDUOUS TREE 3.5 m HT. B&B	TREE	8			12						
		2571.502	DECIDUOUS TREE 60 mm CAL. B&B	TREE	80			8						
		2571.505	DECIDUOUS SHRUB 0.6 m BASE ROOT	SHRUB	288			80						
		2571.507	PERENNIAL 2 YEAR BASE ROOT	PLANT	4030			288						
		2571.508	ANNUAL FLOWER JUMBO PACK	FLOWER	2440			4030						
		2571.600	MULCH MATERIAL-TYPE 6 MODIFIED	m3	282			2440						
		2571.603	TREE PROTECTION	m	200		200	282						
		2573.501	BALE CHECK	EACH	50		50							
		2573.502	SILT FENCE, TYPE PREASSEMBLED	m	3038.7		3038.7							
		2573.505	FLOATATION SILT FENCE TYPE MOVING WATER	m	23.8		23.8							
K		2575.501	SEEDING	ha	1.21		1.21							
K		2575.502	SEED MIXTURE 25A	kg	46.52		46.52							
K		2575.502	SEED MIXTURE 70A	kg	26.36		26.4							
K		2575.505	SODDING TYPE LAWN	m2	12219.7		12219.7							
K		2575.505	SODDING TYPE SALT RESISTANT	m2	21421.7		21421.7							
K		2575.511	MULCH MATERIAL, TYPE 1	ton	2.37		2.37							
K 17		2575.523	EROSION CONTROL BLANKETS CATEGORY 2	m2	9301.2		9301.2							
19		2575.532	COMM. FERT. ANALYSIS 10-10-10	kg	683		683							

NOTES:

1. INCLUDES ALL TYPES AND SIZES.
2. QUANTITY INCLUDES 973.1 m2 FOR REMOVAL OF TEMPORARY PAVEMENT AND 2864 m2 FOR REMOVAL OF BITUMINOUS DRIVES.
3. FOR PONDS 1,2,3, AND 4.
4. INCLUDES 2435 m3 FOR SUBGRADE CORRECTION TO BE USED AT THE DIRECTION OF THE ENGINEER IN THE FIELD.
5. FOR DUST CONTROL.
6. MILLING MAY BE USED IN LIEU OF SAWCUT AT THE DISCRETION OF THE ENGINEER IN THE FIELD.
7. FOR TEMPORARY PAVEMENT. INCLUDES 100 mm AGGREGATE BASE CLASS 5A.
8. INCLUDES 100 mm AGGREGATE BASE CLASS 5A.
9. QUANTITY BASED ON PLAN THICKNESS PLUS 10%.
10. TO BE USED AT THE DIRECTION OF THE ENGINEER IN THE FIELD.
11. THIS NOTE NOT USED.
12. INCLUDES 6.5 m 100 mm PVC RISER.
13. HAUL TO ANOKA COUNTY HIGHWAY DEPARTMENT. CONTACT ARVID GUTZWILLER, MAINTENANCE SUPERINTENDANT, AT 612-862-4226 PRIOR TO PROCEEDING.
14. FOR TRENCH RESTORATION.
15. PAVEMENT MARKING REMOVAL DURING TRAFFIC CONTROL.
16. LENGTH INCLUDES GAP.
17. (STRAW 15) INCLUDES MAINTANENCE.
18. THIS NOTE NOT USED.
19. ANALYSIS 10-10-10 OR EQUIVALENT.
20. FOR USE AS PLANTING SOIL. SALVAGE FROM CITY OF ANDOVER.
21. DIVERSION, DEWATERING AND SHORING FOR UTILITY IMPROVEMENTS NEAR COON CREEK.
22. DIVERSION, DEWATERING, AND SHORING FOR SANITARY SEWER INSTALLATION.
23. UNIFORM SUBCUT FOR COMPACTION.
24. COMMERCIAL SIGNS.
25. FOR CONCRETE CROSSWALKS.

(P) PLAN QUANTITY

1 ADDENDUM NO. 1 REVISIONS

INDEX OF TABULATION CHARTS


CHART	SHEET NO.	DESCRIPTION
A	7	CLEARING AND GRUBBING
B	7	REMOVE CONCRETE CURB AND GUTTER
C	7	PAVEMENT REMOVAL AND SAW CUT
D	7	REMOVE FENCE
E	7	DRIVEWAY REMOVAL / REPLACEMENT
F	8	SANITARY SEWER MODIFICATIONS
G	9-10	WATER MAIN SUMMARY
H	11	CONCRETE PAVEMENT SUMMARY
I	12	BITUMINOUS PAVEMENT SUMMARY
J	12	AGGREGATE BASE SUMMARY
K	12	TURF ESTABLISHMENT
L	12	MODULAR CONCRETE BLOCK RETAINING WALLS
M	12	PERMANENT PAVEMENT MARKINGS
N	13	EXISTING DRAINAGE
O	14-16	DRAINAGE
P	16	CASTING ASSEMBLY SUMMARY

BASIS OF ESTIMATED QUANTITIES

- 2331.603 SAWED SEALED JOINT QUANT. BASED ON AVERAGE WIDTH (INCLUDING TURN LANES) EVERY 10 m PLUS 10%
- 2211.501 AGG. BASE CL. 5 - 2.4 kg/m2/mm
- 2350.609 BIT. MIXTURE FOR PATCHING - 2.35 kg/m2/mm
- 2350.609 TYPE HV4 PLANT MIXED WEARING COURSE - 2.35 kg/m2/mm
- 2350.609 TYPE HV3 PLANT MIXED NON-WEARING COURSE - 2.35 kg/m2/mm
- 2350.609 TYPE MV4 PLANT MIXED NON-WEARING COURSE - 2.35 kg/m2/mm
- 2357.502 BIT MATERIAL FOR TACK COAT - 0.226 L/m2
- 2575.502 SEED MIXTURE 25A - 50 kg/ha
- 2575.502 SEED MIXTURE 90A - 50 kg/ha
- 2575.511 MULCH MATERIAL TYPE 1 - 4.5 t/ha
- 2575.532 COMM. FERT. ANALYSIS 10-10-10 - 560 kg/ha ON ALL SEED

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1	RAB	4/13/99	ADDENDUM NO. 1		
NO.	BY	DATE	REVISIONS	ITEM	DESIGN

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: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STATEMENT OF ESTIMATED QUANTITIES AND BASIS OF ESTIMATED QUANTITIES

FILE NO. ANOKA9806.01
 DATE MARCH 15, 1999

5
 230

BRIDGE STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL QUANTITY		S.A.P. 02-716-04 ANOKA COUNTY ROADWAY		S.A.P. 198-020-14 CITY OF ANDOVER ROADWAY		100% CITY OF ANDOVER NON PARTICIPATING		STORM	
			EST.	FINAL	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY	EST.QTY	FINAL QTY
			2301.553	BRIDGE APPROACH PANELS (P)	m2	332		332				
2401.501	STRUCTURE CONCRETE (3Y43) (P)	m3	252		252							
2401.512	BRIDGE SLAB CONCRETE (3Y36) (P)	m2	723		723							
2401.513	TYPE F RAILING CONCRETE (3Y46) (P)	m	45		45							
2401.516	RAISED MEDIAN CONCRETE (3Y46) (P)	m2	42		42							
2401.541	REINFORCEMENT BARS (EPOXY COATED) (P)	kg	55300		55300							
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1		1							
2401.601	SLOPE PREPARATION	LUMP SUM	1		1							
2402.583	ORNAMENTAL METAL RAILING TYPE S (P)	m	45		4.75		40.25					
2404.501	CONCRETE WEARING COURSE (3U17A) (P)	m2	848		848							
2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1							
2452.507	C-I-P CONCRETE PILING DELIVERED 310 mm	m	728		728							
2452.507	C-I-P CONCRETE PILING DELIVERED 406 mm	m	784		784							
2452.508	C-I-P CONCRETE DRIVEN 310 mm	m	728		728							
2452.508	C-I-P CONCRETE DRIVEN 406 mm	m	784		784							
2452.519	C-I-P TEST PILE, 29 m LONG 310 mm	EACH	2		2							
2452.519	C-I-P TEST PILE, 31 m LONG 406 mm	EACH	2		2							
2511.501	RANDOM RIPRAP CLASS V	m3	185		185							
2511.515	GEOTEXTILE FILTER	m2	675		675							
2511.604	ARTICULAR CONCRETE RIPRAP	m2	535		535							
2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1		1							
2545.509	CONDUIT SYSTEM (ELECTRICAL) [1]	LUMP SUM	1		1							

(P) PLAN QUANTITY

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1	RAR	4/13/99	ADDENDUM NO. 1			
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Simon M. Mason
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

BRIDGE STATEMENT OF ESTIMATED QUANTITIES

FILE NO. ANOKA9806.01	6
DATE MARCH 15, 1999	230

STATION	LOCATION	EXISTING ELEVATION	DESCRIPTION	STRUCTURE NUMBER	ADJUST each	RECON. m	REMOVE each	PIPE m	REMOVAL size	REMARKS	TOP OF CASTING	DESIGN	F & I SEWER PIPE			
													750 mm RCP CL V	450 mm RCP CL V	250 mm PVC SDR 35	200 mm PVC SDR 35
1+707.612	10.388 RT	266.646	MH	736	1						266.656					
1+728.985	24.775 LT	267.018	MH	738	1						267.000					
1+729.913	10.681 RT	266.750	MH	734	1						266.790					
1+847.272	26.526 RT	267.564	MH	732												
1+847.423	11.900 RT	267.584	MH	730	1						267.502					
1+970.623	11.376 RT	267.835	MH	726	1						267.653					
1+970.911	20.532 RT	267.648	MH	728												
2+018.274	11.346 RT	267.935	MH	724	1						267.906					
2+078.068	11.102 RT	267.952	MH	722	1						267.941					
2+201.378	11.412 RT	267.510	MH	720	1						267.345					
2+288.209	11.512 RT	266.355	MH	718	1						266.245					
2+378.129	10.918 RT	265.453	MH	716	1						265.282					
2+454.613	12.027 RT	265.081	MH	714	1						264.969					
2+546.836	13.096 RT	265.578	MH	712	1						265.508					
2+547.182	3.238 LT	265.476	MH	710	1						265.510					
2+630.182	3.20 LT	266.301	MH	708	1						266.351					
2+706.761	3.294 LT	266.782	MH	706		0.332					267.114					
2+850.356	25.856 LT	266.984	MH	704	1						266.982					
2+851.721	4.665 LT	266.709	MH	702		0.346					267.055				20	
2+934.358	5.411 LT	265.644	MH	701	1						265.562					
2+934.358 - 3+017.344	5.411 LT - 5.850 LT		PIPE	701-740				83	600 mm				82.99			
3+017.344	5.850 LT	264.823	MH	740			1				264.963	1800 mm				
3+017.344 - 3+025.358	5.850 LT - 9.128 RT		PIPE	740-742				17	600 mm							
3+017.344 - 3+028.365	5.850 LT - 14.75 RT		PIPE	740-743									23.36			
3+025.358	9.128 RT	263.415	MH	742			1									
3+025.358 - 3+060.541	9.128 RT - 9.054 RT		PIPE	742-744				35	600 mm							
3+028.365	14.75 RT		MH	743							263.800	1800 mm				
3+028.365 - 3+077.414	14.75 RT - 14.75 RT		PIPE	743-745									49.05			
3+060.541	9.054 RT	262.887	MH	744			1									
3+068.720	5.896 LT	265.143	MH	746			1									
3+060.541 - 3+068.72	9.054 R - 5.896 LT		PIPE	744-746				17	600 mm							
3+077.414	14.75 RT		MH	745							264.900	1800 mm				
3+077.414 - 3+088.694	14.75 RT - 5.872 RT		PIPE	745-747									23.51			
3+088.694	5.872 LT		MH	747							265.951	1800 mm				
3+068.720 - 3+153.113	5.896 LT - 5.995 LT		PIPE	746-748				84	600 mm							
3+088.694 - 3+153.113	5.872 LT - 5.995 LT		PIPE	747-748									64.41			
3+153.103 - 3+237.930	5.995 LT - 6.308 LT		PIPE	748-750				85	600 mm				84.81			
3+153.113	5.995 LT	267.254	MH	748			1				266.920	M4009H - J				
3+237.930	6.308 LT	268.415	MH	750	1						268.214					
3+238.393	3.891 RT	267.855	MH	752		0.639					268.494					
3+369.109	6.103 LT	268.575	MH	754	1						268.648					
3+507.805	6.190 LT	268.979	MH	756	1						269.179					
3+629.397	6.378 LT	269.432	MH	758		0.308					269.740					
3+706.487	6.026 LT	269.384	MH	760	1						269.516					
3+789.395	6.358 LT	269.071	MH	762	1						269.185					
3+894.395 - 3+930.000	6.358 LT - 6.358 LT		PIPE	766-765										39		
3+804.669	20.514 LT	268.368	MH	764	1											
3+930.00	6.358 LT		MH	765	1						269.450	1200 mm				
3+893.000 - 3+976.000	6.358 LT - 6.358 LT		PIPE	765-767										46		
3+894.236	21.175 LT	268.263	MH	766	1											
3+894.236 - 3+996.677	21.175 LT - 21.272 LT		PIPE	766-768				102	450 mm							
3+976.000	6.358 LT		MH	767							269.761	1200 mm				
3+995.748 - 3+996.677	5.513 RT - 21.272 LT		PIPE	770-768				28	250 mm							
3+976.000 - 3+995.748	6.358 LT - 6.513 RT		PIPE	767-770										25		
3+976.000 - 3+996.677	6.358 LT - 21.272 LT		PIPE	767-768										25		
3+995.748	6.513 RT	269.368	MH	770			1				269.456	1200 mm				
3+996.677	21.272 LT	269.274	MH	768			1				269.456	1200 mm				
4+040.636	20.913 LT	269.841	MH	772	1						269.681					
4+141.870	21.139 LT	270.906	MH	774		0.452					270.454					
4+248.088	21.441 LT	270.589	MH	776		0.442					271.031					
4+357.302	21.310 LT	271.643	MH	778	1						271.447					
4+462.828	20.620 LT	269.695	MH	780		1.582					271.277					
4+557.757	21.660 LT	269.378	MH	782		1.448					270.826					
4+676.822	21.594 LT	269.779	MH	784		1.188					270.967					
4+793.177	9.308 RT	271.594	MH	788		0.552					272.146					
4+795.804	21.287 LT	271.108	MH	786		1.076					272.184					
4+886.856	25.904 LT	273.600	MH	792												
4+887.392	21.214 LT	273.648	MH	790	1						273.458					
4+998.725	21.681 LT	274.258	MH	794	1						274.257					
4+999.641	9.946 RT	274.705	MH	796		0.328					274.377					
5+065.111	23.031 RT	274.580	MH	798												
TOTALS					28	8.693	7	451					328.13	110	25	20

NOTES:
 ① LEAVE AS IS
 ② BREAK INTO MANHOLE
 ③ ADD DROP SECTION
 ④ CASTINGS NEENAH R-1642 OR APPROVED EQUAL (INCIDENTAL TO MANHOLE CONSTRUCTION. SEE UTILITY DETAILS.)

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
BAR	4/13/99		MODIFIED REMARKS, REMOVAL, & 200mm COLUMNS			
MAM	4/13/99		CHANGES FOR ADDENDUM #1.			

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 Oklahoma.
 Signature: [Signature]
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TABULATIONS

FILE NO. ANOKA9806.01	8
DATE MARCH 15, 1999	230

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G WATER MAIN SUMMARY																					
STATION	LOCATION	TYPE	FURNISH & INSTALL																CONNECT TO EXIST WM	F & I HYDRANT	REMARKS
			RELOCATE TO		150mm DIP (m)	200mm DIP (m)	250mm DIP (m)	300mm DIP (m)	150mm GV & BOX	200mm GV & BOX	250mm GV & BOX	300mm GV & BOX	25mm COPPER SERVICE	38mm COPPER SERVICE	25mm CURB STOP & BOX	38mm CURB STOP & BOX	25mm CORP	38mm CORP			
			STATION	LOCATION																	
1+686.0	2.5 RT	GATE VALVE BOX																		FRONTAGE RD.	
1+732.0	2.5 RT	GATE VALVE BOX																		FRONTAGE RD.	
1+747.0	25.6 LT	GATE VALVE BOX																		FRONTAGE RD.	
1+793.0	7.7 RT	GATE VALVE BOX																		FRONTAGE RD.	
2+007.3	14.5 LT	GATE VALVE BOX																		FRONTAGE RD.	
2+032.00	21.00 RT	HYDRANT & GATE VALVE																		LEAVE AS IS	
2+033.5	7.5 RT	GATE VALVE BOX																		FRONTAGE RD.	
2+180.00	LT	STUB																		PLUG, REDUCER	
2+181.00	RT	SERVICE																			
2+211.00	LT	SERVICE																			
2+246.00	RT	SERVICE																			
2+281.50	RT	SERVICE																			
2+306.25	RT	SERVICE																			
2+339.00	RT	SERVICE																			
2+367.70	17.00 RT	HYDRANT & GATE VALVE	2+370.38	19.61 RT	1.80	15.00														SEE UTILITY PLAN	
2+370.5	2.5 LT	GATE VALVE BOX																		FRONTAGE RD.	
2+410.00	RT	SERVICE																			
2+434.00	RT	SERVICE																			
2+468.00	RT	SERVICE																			
2+495.41	RT	SERVICE																			
2+516.00	18.00 LT	HYDRANT & GATE VALVE	2+516.00	26.60 LT	9.5															EXTEND LEAD	
2+534.00	19.50 RT	HYDRANT & GATE VALVE	2+524.75	47.09 RT	5.9															ROTATE TEE, EXTEND LEAD	
2+537.0	10.5 RT	GATE VALVE BOX																			
2+542.70	RT	STUB																		REDUCER	
2+579.00	13.00 LT	HYDRANT & GATE VALVE	2+579.00	26.60 LT	10.0															ROTATE TEE, EXTEND LEAD	
2+640.0	18.0 LT	GATE VALVE BOX																			
2+741.08	RT & LT	STUB & GATE VALVE BOX																		TEE, PLUG	
2+747.00	17.00 RT	F & I HYDRANT & GV																		TEE	
2+749.00	13.50 LT	HYDRANT & GATE VALVE	2+755.00	22.30 LT	11.8															SEE UTILITY PLAN	
2+753.5	16.4 LT	GATE VALVE BOX																			
2+842.51	LT	STUB																		PLUG	
2+843.0	18.4 LT	GATE VALVE BOX																			
2+864.50	15.40 LT	HYDRANT & GATE VALVE	2+864.50	27.20 LT	9.7															ROTATE TEE, EXTEND LEAD	
2+918.00	18.00 LT	CONNECT TO EXISTING																			
2+929.00	RT	STUB																		TEE, PLUG	
2+975.60	17.00 LT	HYDRANT & GATE VALVE	2+975.60	26.56 LT	10.0															ROTATE TEE, EXTEND LEAD	
3+001.50	16.00 LT	GATE VALVE & BOX																			
3+071.00		GATE VALVE & BOX																			
3+073.00		CONNECT TO EXISTING																			
3+075.00	LT	SERVICE																			
3+114.50	14.50 LT	HYDRANT & GATE VALVE	3+114.50	25.90 LT	8.3															ROTATE TEE, EXTEND LEAD	
3+120.00	LT	SERVICE																			
3+132.30	12.50 RT	HYDRANT & GATE VALVE	3+132.30	17.00 RT	3.0															ROTATE TEE, EXTEND LEAD	
3+136.0	16.0 LT	GATE VALVE BOX																			
3+149.11	LT	SERVICE																			
3+198.0	15.5 LT	GATE VALVE BOX																			
3+224.50	25.50 LT	HYDRANT & GATE VALVE	3+212.00	22.60 LT	7.0															SEE UTILITY PLAN	
3+226.3	18.0 LT	GATE VALVE BOX																			
3+352.00	LT	SERVICE																			
3+368.00	LT	SERVICE																			
3+372.00	7.50 RT	STUB																		LEAVE AS IS	
3+434.09	LT	SERVICE																			
3+449.55	LT	SERVICE																			
3+515.00	LT	SERVICE																			
3+535.00	7.00 RT	HYDRANT & GATE VALVE	3+535.00	8.49 RT	3.3															EXTEND LEAD	
3+538.5	LT	SERVICE																			
3+584.00	LT	SERVICE																			
3+606.5	4.5 RT	GATE VALVE BOX																			
3+626.34	LT	STUB																		PLUG, TEE	
3+637.0	15.5 LT	GATE VALVE BOX																			
3+638.30	17.60 LT	HYDRANT & GATE VALVE	3+647.00	27.10 LT	11.4															SEE UTILITY PLAN	
3+653.0	3.5 RT	GATE VALVE BOX																			
3+709.8	4.7 RT	GATE VALVE BOX																			
3+738.00	8.00 RT	HYDRANT & GATE VALVE	3+738.00	10.00 RT	5.1															EXTEND LEAD	
3+796.00	22.00 LT	HYDRANT & GATE VALVE	3+796.00	23.19 LT	6.6															EXTEND LEAD	
3+800.00	17.0 LT	CONNECT TO EXISTING																			
3+890.00	21.80 LT	HYDRANT & GATE VALVE																		SALVAGE	

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NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	RAB	3/13/99	MODIFIED 200mm & 300mm GV & BOX COLUMNS.			
			MODIFIED 200mm, 250mm & 300mm WM COLUMNS.			
			ADDED 250mm GV & BOX COLUMN.			
2	MAM	3/13/99	CHANGES FOR ADDENDUM *1.			

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.
Edward M. Mason
 Date: MARCH 13, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TABULATIONS

FILE NO. ANOKA9806.01
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G WATER MAIN SUMMARY CON'T		FURNISH & INSTALL																CONNECT TO EXIST WM	F & I HYDRANT	REMARKS		
STATION	LOCATION	TYPE	RELOCATE TO		150mm DIP (m)	200mm DIP (m)	250mm DIP (m)	300mm DIP (m)	150mm GV & BOX	200mm GV & BOX	250mm GV & BOX	300mm GV & BOX	25mm COPPER SERVICE	38mm COPPER SERVICE	25mm CURB STOP & BOX	38mm CURB STOP & BOX	25mm CORP				38mm CORP	
			STATION	LOCATION																		
3+987.20	19.34 LT	CONNECT TO EXISTING																		1		
4+000.00	4.0 RT	GATE VALVE BOX																				
4+042.50	20.0 LT	GATE VALVE BOX																				
4+144.50	20.0 LT	GATE VALVE BOX																				
4+251.30	15.70 LT	HYDRANT & GATE VALVE	4+251.30	21.69 LT	6.6															1		EXTEND LEAD
4+308.59	RT & LT	STUB					36.0					1								1		TEE
4+392.00	16.0 LT	GATE VALVE																				
4+466.30	15.80 LT	HYDRANT & GATE VALVE	4+466.30	21.69 LT	8.8															1		EXTEND LEAD
4+562.00	15.70 LT	HYDRANT & GATE VALVE	4+562.00	21.69 LT	7.6															1		EXTEND LEAD
4+680.00	13.60 LT	HYDRANT & GATE VALVE	4+680.00	21.70 LT	5.9															1		ROTATE TEE. EXTEND LEAD
4+757.20	RT	CONNECT TO EXISTING					38.0					1								1		TEE
4+760.80	3.50 RT	HYDRANT & GATE VALVE																				SALVAGE
4+802.00	15.50 LT	HYDRANT & GATE VALVE	4+802.00	25.80 LT	4.5															1		ROTATE TEE. EXTEND LEAD
4+882.3	18.6 LT	GATE VALVE BOX																				
4+906.00	16.20 LT	HYDRANT & GATE VALVE	4+906.00	21.69 LT	3.4															1		ROTATE TEE. EXTEND LEAD
4+995.82	LT	STUB					14.0					1								1		TEE-PLUG
5+000.0	17.5 LT	GATE VALVE BOX																				
5+001.8	17.0 LT	GATE VALVE BOX																				
5+002.5	5.0 RT	GATE VALVE BOX																				
5+003.5	25.5 RT	GATE VALVE BOX																				
5+044.6	15.0 RT	GATE VALVE BOX																				
5+124.40	16.05 LT	HYDRANT & GATE VALVE	5+124.40	22.81 LT	7.0															1		EXTEND LEAD
5+257.82	16.19 LT	HYDRANT & GATE VALVE	5+257.74	21.04 LT	3.2															1		ROTATE TEE. EXTEND LEAD
TOTAL					162.1	244.6	43.5	208.3	3	6	2	5	169.49	232.43	12	7	12	7	33	3		

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Δ	RAB	4/13/99	MODIFIED 200mm & 300mm GV & BOX COLUMNS. MODIFIED 200mm, 250mm & 300mm WM COLUMNS. ADDED 250mm GV & BOX COLUMN.			
Δ	MAM	4/13/99	CHANGES FOR ADDENDUM #1.			
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Edward M. Mason
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TABULATIONS
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H CONCRETE PAVEMENT SUMMARY												
STATION	LOCATION	CURB AND GUTTER				75 mm CONC WALK	75 mm CONC WALK SPECIAL	100mm CONC WALK	NOSE	CONCRETE DRIVE 200 mm	CONC DRIVE TYPE SPECIAL	200 mm
		B412	B418	B612	B618							
1+659.41	1+664.30	C.S.A.H. 116	RT					26.54				
1+659.41	2+538.61	C.S.A.H. 116	RT	900.60								
1+659.41	2+547.81	MEDIAN						1789.05				
1+667.14	2+005.34	MEDIAN		675.90				896.00				
1+735.10	2+018.18	C.S.A.H. 116	LT	294.10								
2+005.34	2+018.18	C.S.A.H. 116	LT	541.60								
2+031.42	2+370.23	MEDIAN		672.30				1000.22				
2+370.23	2+376.17	MEDIAN										
2+376.17	2+528.81	MEDIAN		300.30				242.04				
2+520.00	2+528.81	C.S.A.H. 116	RT					14.50				
2+528.81	2+547.81	C.S.A.H. 116	RT									
2+540.16	2+547.81	C.S.A.H. 116	RT									
2+552.17	2+547.81	C.S.A.H. 116	RT									
2+547.81	2+547.81	C.S.A.H. 116	LT									
2+565.30	2+729.49	MEDIAN		324.00				134.62				
2+729.49	2+737.54	MEDIAN										
2+737.54	2+926.75	MEDIAN		375.10				808.29				
2+738.97	2+935.34	C.S.A.H. 116	RT					254.34				
2+738.97	2+846.27	C.S.A.H. 116	LT									
2+852.96	3+023.96	C.S.A.H. 116	LT									
2+926.75	3+032.97	C.S.A.H. 116	RT									
2+935.34	3+029.19	C.S.A.H. 116	LT									
2+949.55	3+029.19	MEDIAN		158.81				65.14				
3+059.08	3+238.91	C.S.A.H. 116	LT					185.10				
3+064.23	3+223.56	MEDIAN		328.05				166.23				
3+068.15	3+139.15	C.S.A.H. 116	RT					75.20				
3+139.15	3+238.91	C.S.A.H. 116	RT					74.88				
3+139.15	3+513.86	C.S.A.H. 116	RT					382.20				
3+223.56	3+229.18	ISLAND										
3+229.18	3+240.34	ISLAND		42.60				96.30				
3+236.80	3+236.80	MEDIAN										
3+236.80	3+758.19	MEDIAN		1019.30				1808.40				
3+240.34	3+629.80	C.S.A.H. 116	LT					393.80				
3+238.91	3+774.24	C.S.A.H. 116	RT					261.60				
3+513.86	3+774.24	C.S.A.H. 116	RT					151.30				
3+629.80	3+758.19	MEDIAN										
3+758.19	3+993.80	C.S.A.H. 116	LT					227.10				
3+774.24	3+993.80	C.S.A.H. 116	RT					222.70				
3+774.24	3+791.33	MEDIAN										
3+791.33	4+291.32	MEDIAN		997.00				574.60				
3+993.80	4+305.63	C.S.A.H. 116	LT					315.80				
3+993.80	4+305.63	C.S.A.H. 116	RT					312.40				
4+291.32	4+305.63	C.S.A.H. 116	LT					456.40				
4+305.63	4+754.43	C.S.A.H. 116	RT					450.40				
4+321.57	MEDIAN											

CONCRETE PAVEMENT SUMMARY (CON'T)												
STATION	LOCATION	CURB AND GUTTER				75 mm CONC WALK	75 mm CONC WALK SPECIAL	100 mm CONC WALK	NOSE	CONCRETE DRIVE 200mm	CONC DRIVE TYPE SPECIAL	200 mm
		B412	B418	B612	B618							
4+321.57	4+978.62	MEDIAN		1311.10								
4+754.43	4+985.03	C.S.A.H. 116	LT					238.20				
4+754.43	4+985.03	C.S.A.H. 116	RT					246.60				
4+978.62	5+261.71	C.S.A.H. 116	LT					257.70				
4+985.03	5+011.01	MEDIAN										
5+011.01	5+261.71	MEDIAN		472.00				637.36				
FRONTAGE RD.												
1+652.20	1+890.44	RT										
1+677.36	1+792.75	RT						111.25				
1+677.36	2+540.54	LT						868.70				
1+890.44	1+977.63	RT										
1+977.63	2+382.44	RT										
2+050.00	2+170.00	RT						120.00				
2+382.44	2+543.01	RT										
2+392.00								55.80				
SCHOOL												
								243.09				
TOTALS				6676.46	6884.77	243.09	1193.35	7643.65	1338.10	1879.83	22	29.28

- NOTES:
- 50.0 m MOUNTABLE CONCRETE CURB AND GUTTER (SEE STREET DETAILS)
 - 62.0 m MOUNTABLE CONCRETE CURB AND GUTTER (SEE STREET DETAILS)
 - PAID FOR AS 2531.602 CONCRETE MEDIAN NOSE DESIGN 7113
 - USE HIGH EARLY STRENGTH CONCRETE
 - AGG. BASE CL5 100 mm THICK SHALL NOT BE PAID FOR SEPARATELY

25 MAR 1999 14:31 q:\civil\clients\to_thru_f\anoka\9805_spreeds\okc806\cb13.dgn

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.
Spencer M. Mason
 Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TABULATIONS

FILE NO.
 ANOKA9806.01
 DATE
 MARCH 15, 1999

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NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

EXISTING DRAINAGE TABULATION								
STATION	OFFSET	ITEM	REMOVE				ADJUST	NOTES
			DRAINAGE STRUCTURE EACH	PIPE SEWER m	APRON EACH	PIPE CULVERT m		
1+670.548	17.409 RT	CB						1
1+670.558	17.637 RT	CB						1
1+674.682	19.118 RT	CB						1
1+681.303	23.656 RT	CB						1
1+704.605	13.781 RT	CB	CB					
1+705.278	4.728 RT	CB	CB					
1+717.349	24.219 LT	CB						1
1+736.752	4.199 RT	CB	CB					
1+760.390	21.158 LT	375 mm RCP			8.00			5
1+774.245	22.791 LT	CB	CB					
2+389.078	16.279 RT	CB						1
2+466.433	117.969 LT	PVC-PIPE						1
2+482.386	17.285 RT	CB				1		4
2+482.424 - 2+482.424	17.460 LT - 6.373 RT	450 mm CMP		23.70	1			
2+483.115	6.373 RT	BHCB	CB					
2+483.115 - 2+482.862	6.373 RT - 9.191 RT	600 mm RCP	MH	3.40				
2+531.214	45.725 RT	MH	CB					2
2+537.991	19.331 RT	CB	CB					
2+537.991 - 2+531.214	19.331 RT - 45.725 RT	600 mm RCP		27.30				1
2+537.991 - 2+514.647	19.331 RT - 18.672 RT	600 mm RCP		23.00				
2+550.840	15.833 RT	CB	CB					
2+550.840 - 2+537.991	15.833 RT - 19.331 RT	300 mm RCP		13.30				
2+573.556	76.051 RT	APRON						1
2+930.417	13.313 RT	CB	CB					
2+930.417 - 2+930.736	13.313 RT - 15.298	300 mm RCP	MH	14.30				
2+930.417 - 2+944.756	13.313 RT - 12.466 RT	300 mm RCP		11.80				
2+930.736	15.298 RT	CB	CB	31.30				
2+944.042	0.628 RT	MH	MH					1
2+944.042 - 3+011.443	0.628 RT - 1.433 RT	450 mm RCP		67.50				1
2+944.756	12.466 RT	CB	CB					
2+944.756 - 2944.042	12.466 RT - 0.628 RT	450 mm RCP		11.80				
3+011.443	1.433 RT	CB	CB					
3+011.443 - 3+016.160	1.433 RT - 4.162 RT	450 mm RCP		5.70				
3+016.160	4.162 RT	MH	MH					
3+016.160 - 3+037.559	4.162 RT - 4.908 RT	450 mm RCP		21.40	1			
3+037.559	4.908 RT	APRON						1
3+219.831 - 3+250.714	24.212 LT - 19.412 LT	300 mm RCP				31.30		5
3+246	38.145 LT	CB						1
3+294.765 - 3+313.332	17.003 LT - 17.113 LT	375 mm RCP				15.60		5
3+296.317 - 3+311.813	6.139 RT - 6.593 RT	375 mm CMP				15.00		5
3+363.942 - 3+367.451	5.698 RT - 6.168 RT	PVC-PIPE				3.50		5
3+503.923 - 3+524.344	5.924 RT - 6.129 RT	375 mm RCP				20.40		5
3+968.876	37.752 LT	APRON						
3+981.326	24.175 LT	MH					1	4
3+984.250 - 4+001.795	20.100 LT - 20.095 LT	375 mm RCP				15.00		5
3+993.612	24.427 LT	MH					1	4
4+301.535	23.928 LT	CB						3
4+311.218	23.920 LT	CB						3
4+468.548	26.371 LT	MH						1
4+474.897	31.593 LT	CB						1
4+647.086 - 4+647.222	3.525 RT - 18.141 LT	900 mm CMP				23.00		5
4+738.349 - 4+757.068	6.060 RT - 6.132 RT	450 mm CMP				18.60		5
4+743.865 - 4+762.285	18.044 LT - 17.700 LT	375 mm CMP				18.40		5
4+876.637 - 4+900.554	17.340 LT - 16.834 LT	375 mm CMP				23.90		5
5+095.068	17.574 RT	CB						1
5+095.268	27.956 RT	CB						1
TOTALS			16	254.5	2	192.7	3	

- NOTES
1. LEAVE AS IS
 2. BULKHEAD EXISTING 15" RCP TO EAST AND ABANDON INPLACE (COST SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT)
 3. REMOVE EXISTING INLET CASTING AND REPLACE WITH STD MANHOLE FRAME & COVER
 4. INCLUDES ALL ADJUSTMENTS
 5. INCLUDES APRON

17 MAR 99 16:33:45 g:\civil\clients\soa_thru_f\anoka\9806\inform\okc0806ss4.dgn

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

Sylvan M. Olson
 Date: MARCH 15, 1999 Reg. No. 18612

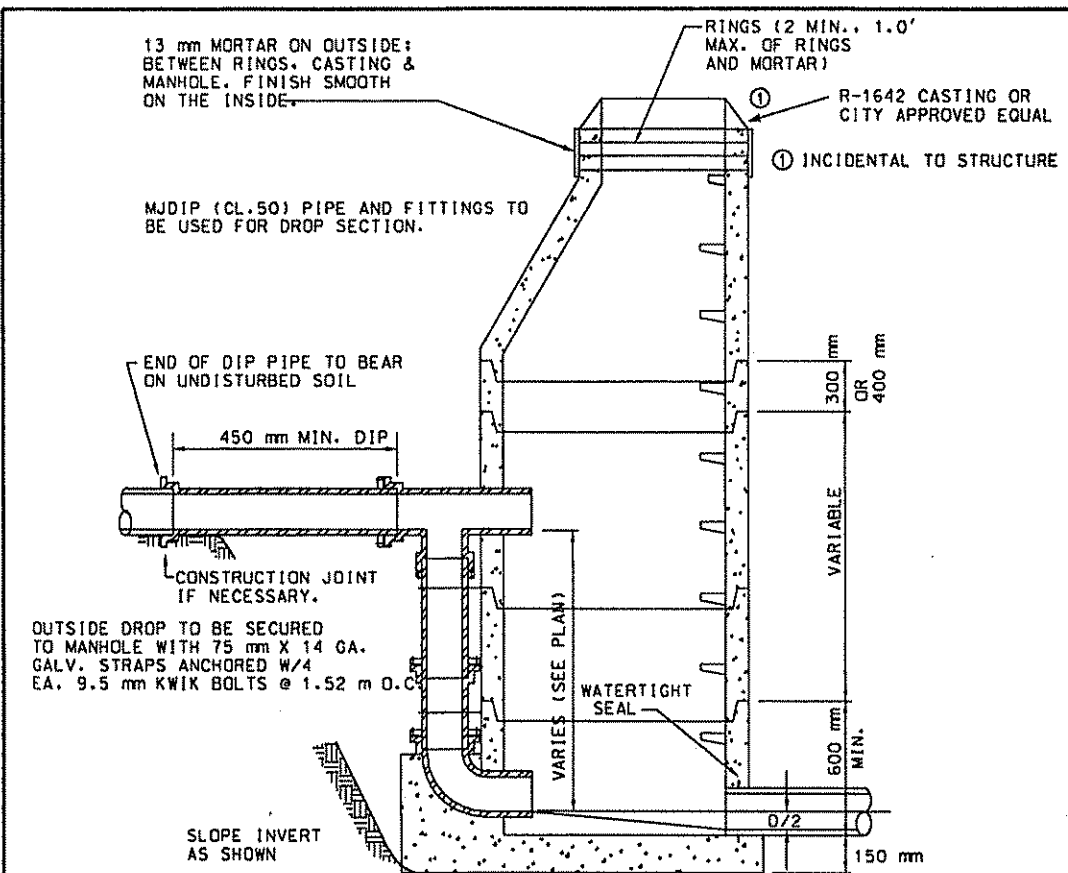


ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

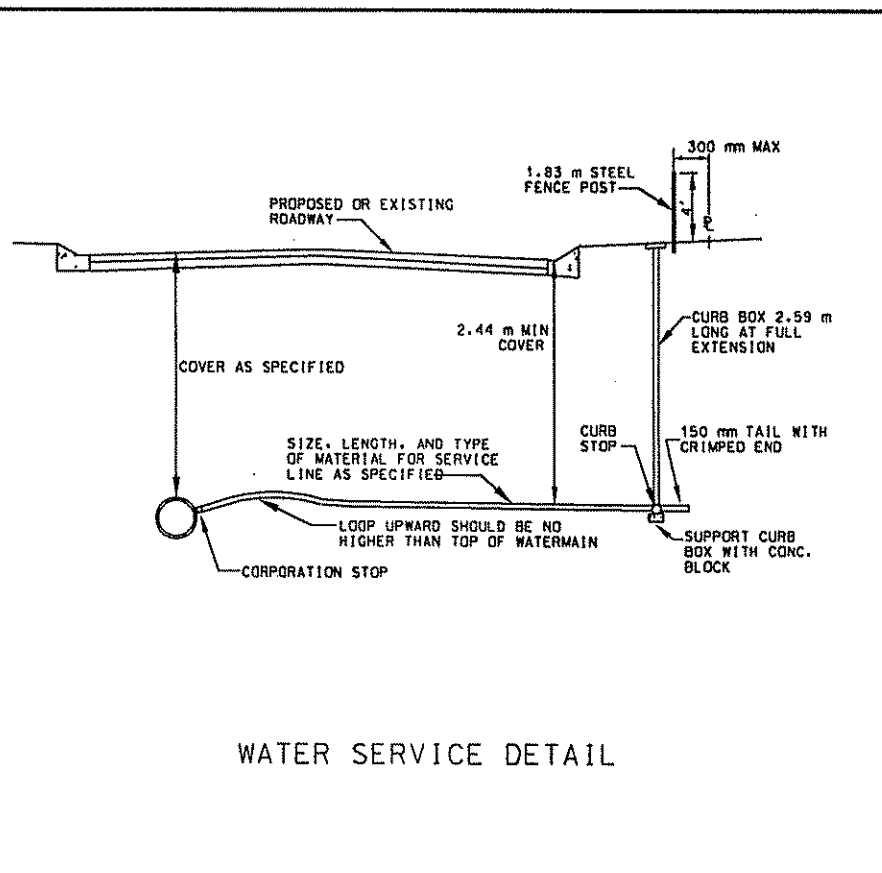
EXISTING DRAINAGE TABULATION

FILE NO.
ANOKA9806.01
 DATE
MARCH 15, 1999

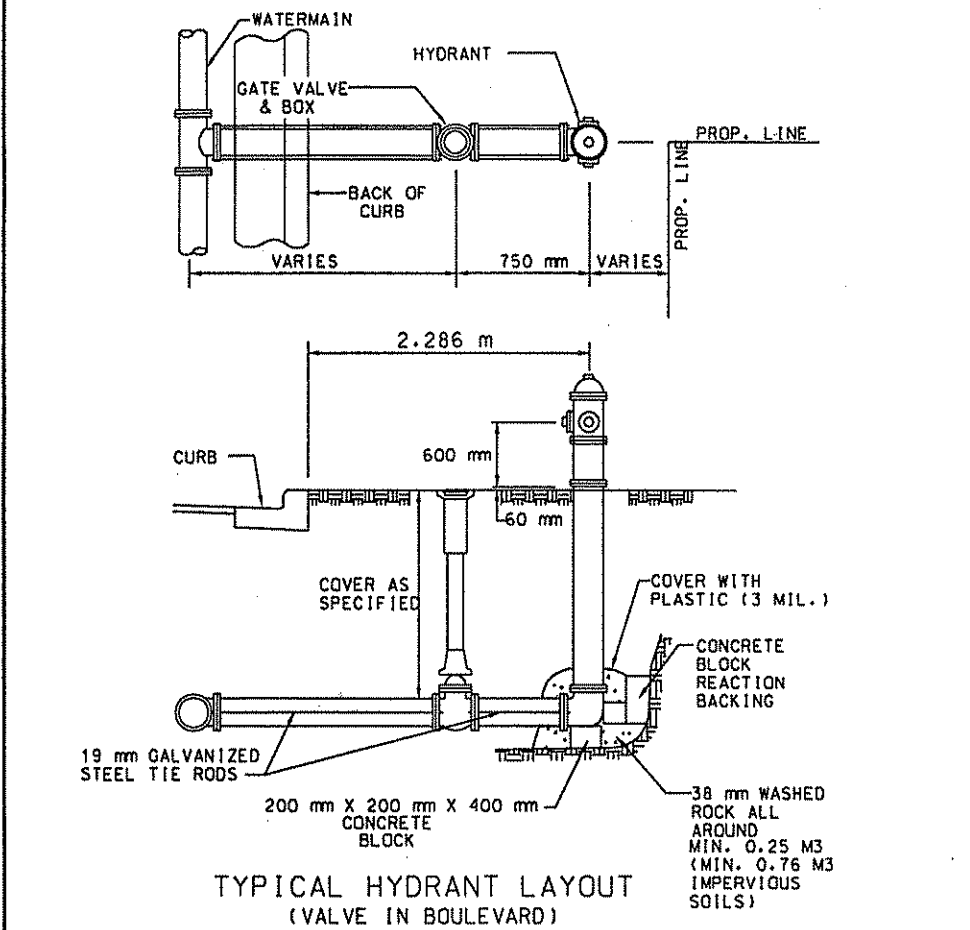
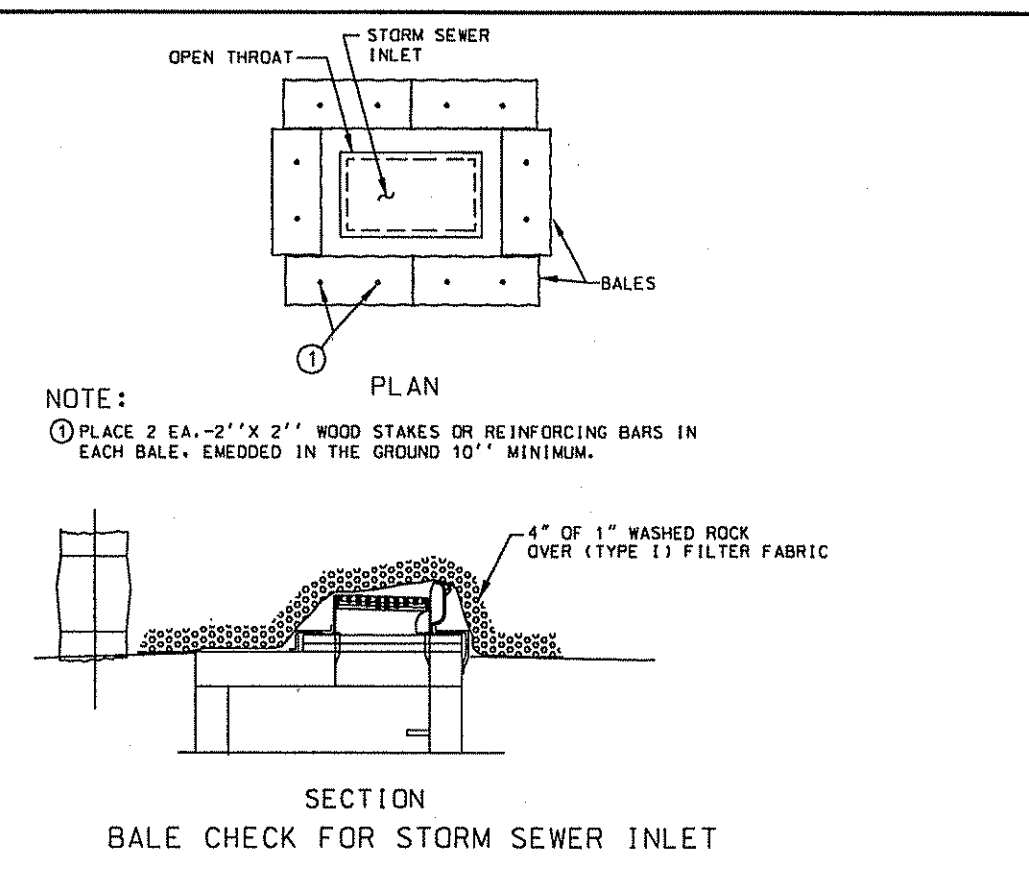
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 230



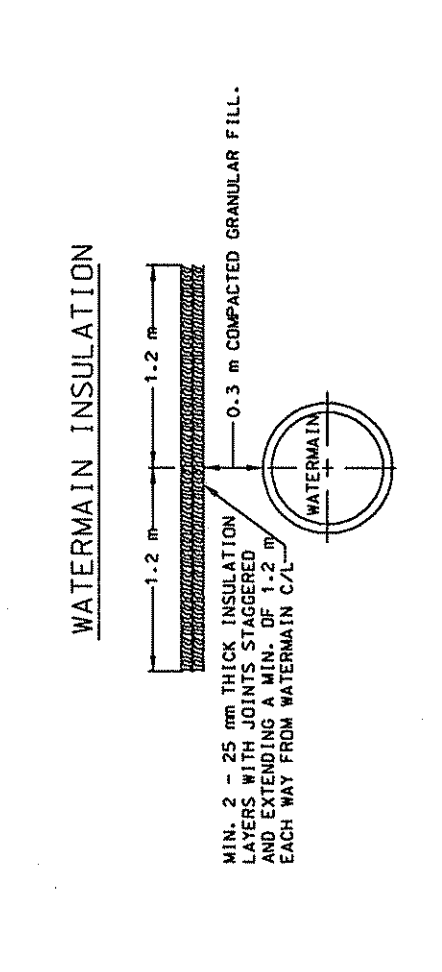
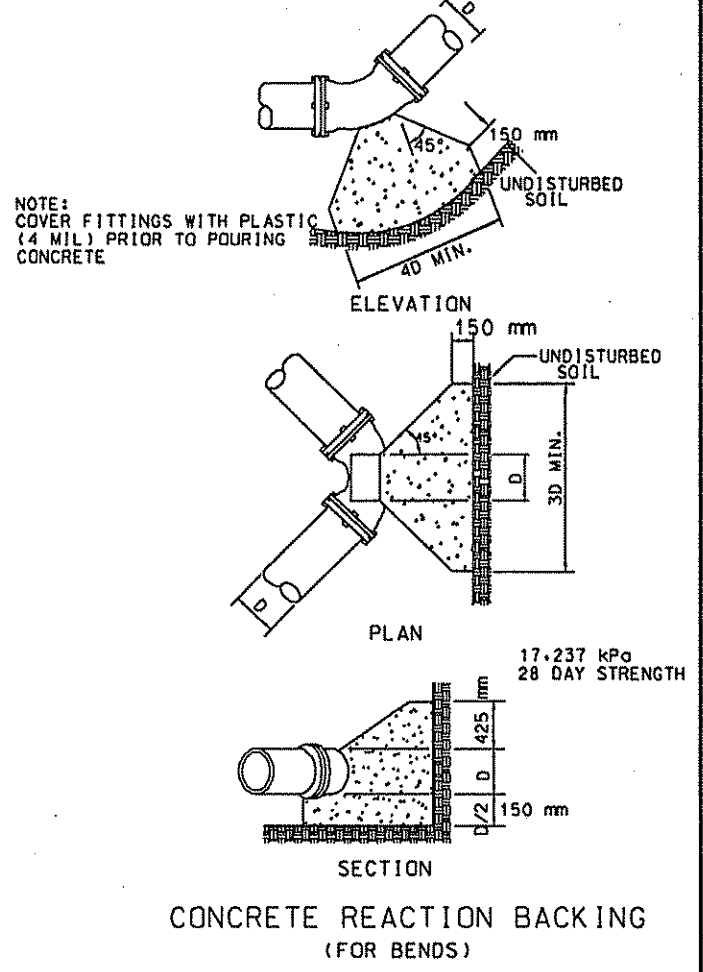
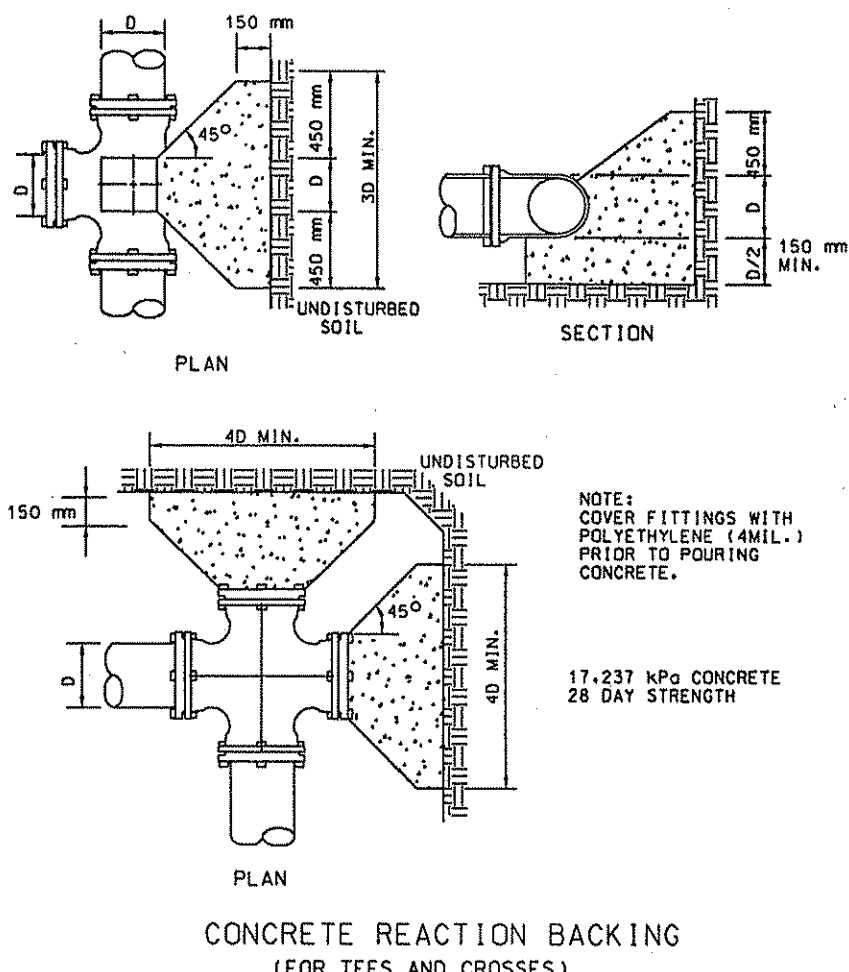
OUTSIDE DROP SANITARY SEWER MANHOLE



WATER SERVICE DETAIL



TYPICAL HYDRANT LAYOUT (VALVE IN BOULEVARD)



24 MAR 99 16:00:14 q:\civil\plan\116\116.dwg

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.

Shawn M. Mason

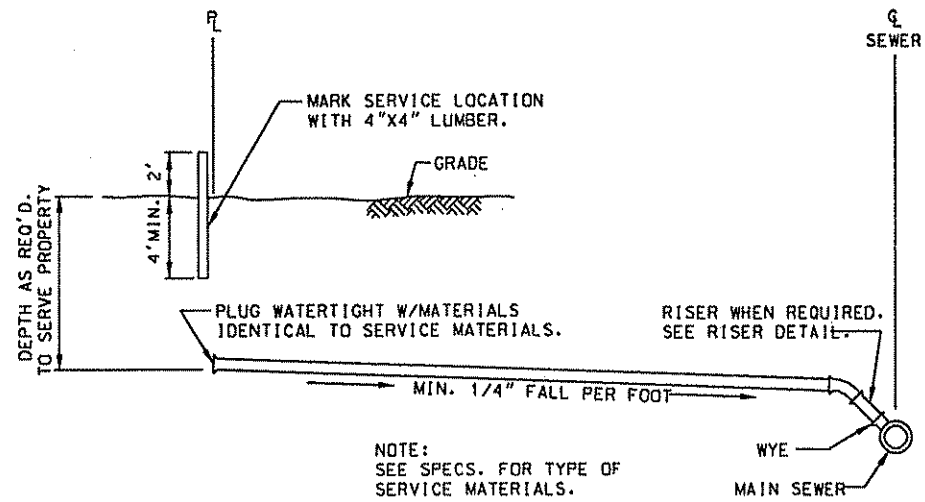
Date: MARCH 15, 1999 Reg. No. 18612



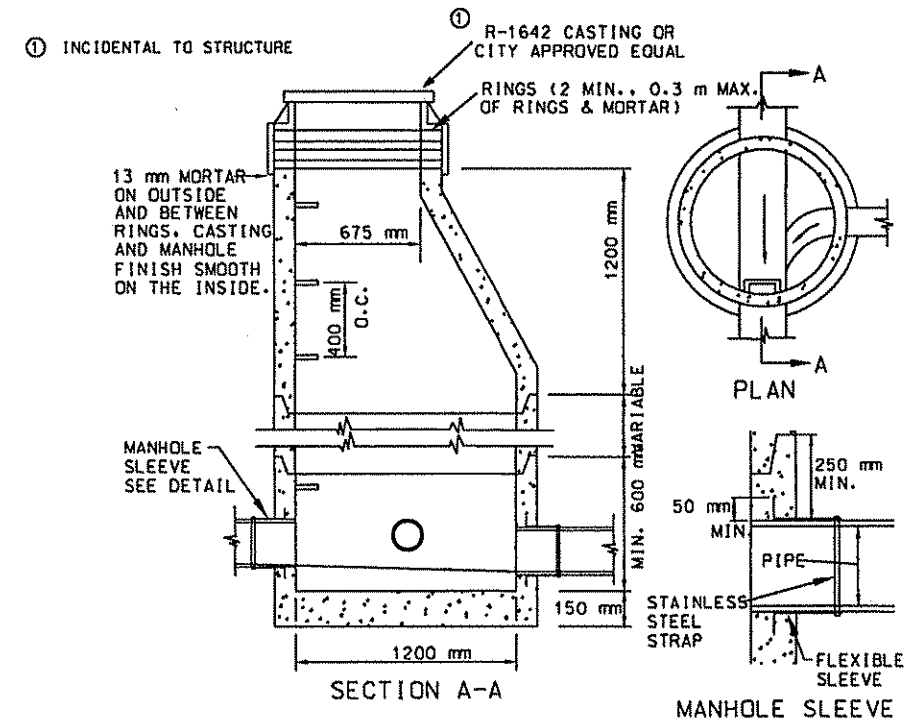
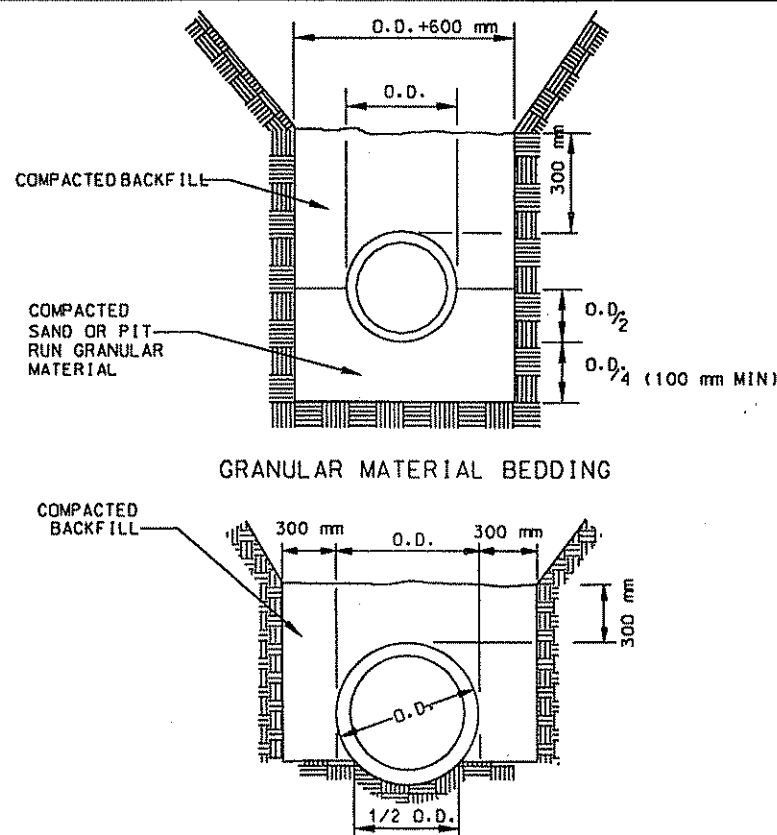
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04.
S.A.P. 198-020-14

UTILITY DETAILS

FILE NO. ANOKA9806.01	17
DATE MARCH 15, 1999	230



SANITARY SEWER SERVICE



NO WOOD SHALL BE USED FOR ADJUSTING CASTING; CEMENT MORTAR ONLY.

A 300 mm OR 400 mm BARREL SECTION SHALL BE INSTALLED UNDER THE CONE WHENEVER POSSIBLE.

CAST IRON MANHOLE FRAME & COVER AS PER SPECIFICATIONS.

PRECAST REINFORCED CONCRETE MANHOLE SECTIONS PER ASTM C478.

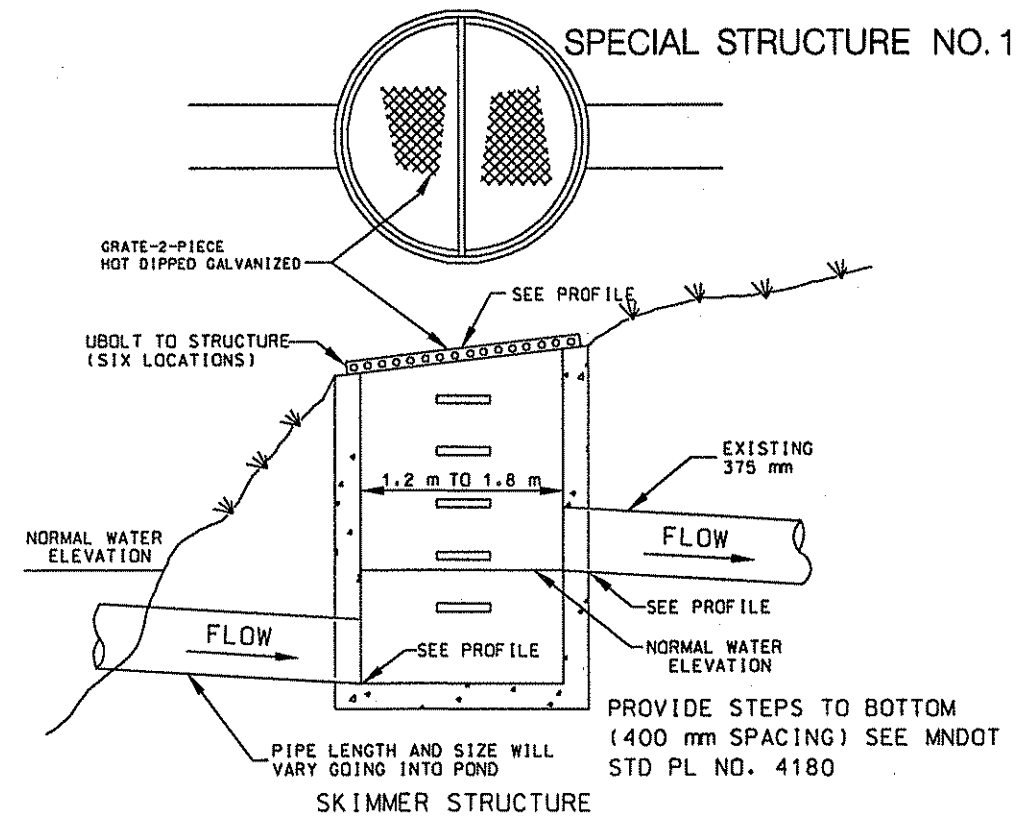
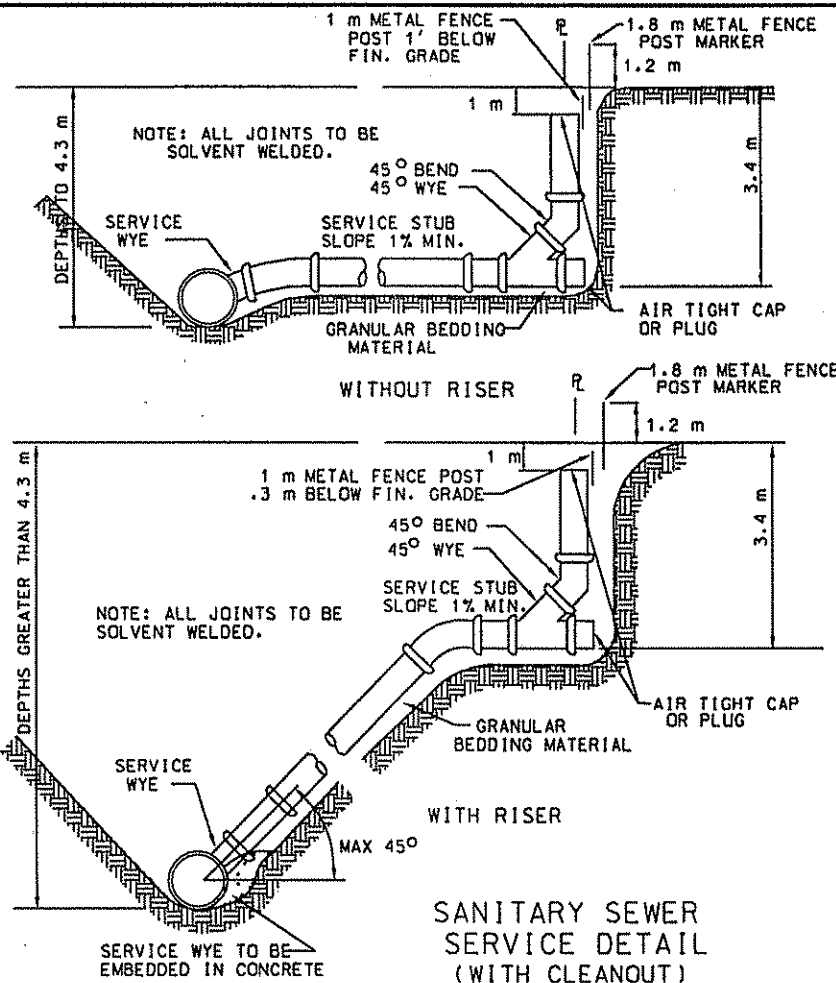
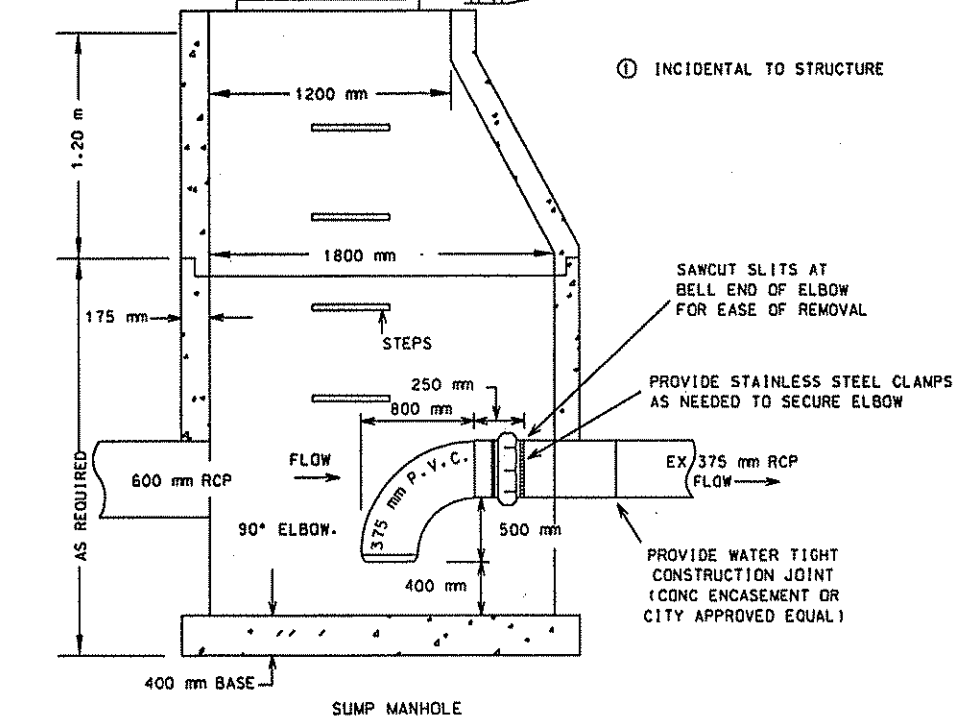
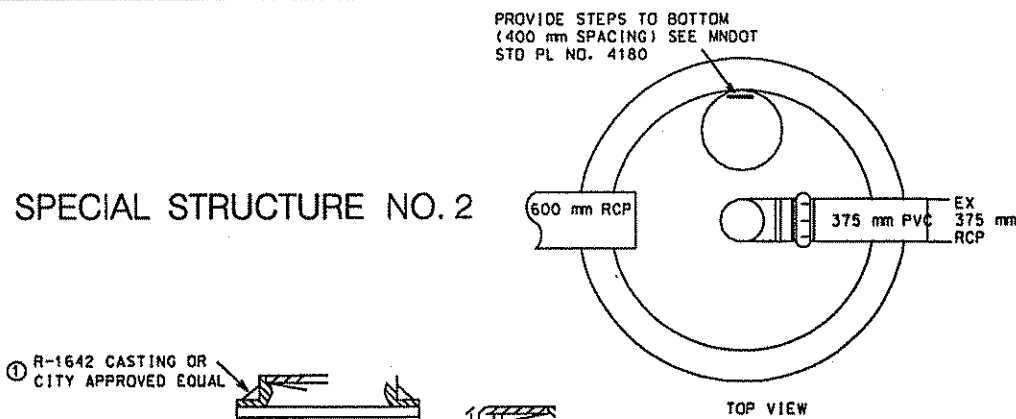
STEPS SHALL BE CAST IRON, ALUMINUM, OR STEEL REINFORCED PLASTIC, LOCATED OVER DOWNSTREAM PIPE.

LIFT HOLES NOT PERMITTED IN MANHOLE SECTIONS.

PIPE CONNECTIONS TO MANHOLE SHALL BE MADE WATER TIGHT BY GIN INPLACE RUBBER SLEEVE & CEMENT MORTAR. INSIDE SURFACE SHALL BE FINISH SMOOTH.

FLEXIBLE EXTERNAL RUBBER SEAL REQUIRED ON JOINTS BELOW GROUND WATER.

STANDARD 1200 mm DIA. SANITARY SEWER MANHOLE



24 MAR 99 15:07:44 q:\civil\gpk\kumh\8\california\3\brm\k\980816\158805\set\0616\dr\cbp\602.dgn

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

Jason M. Moran

MARCH 15, 1999 Reg. No. 18612

ESEH

ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

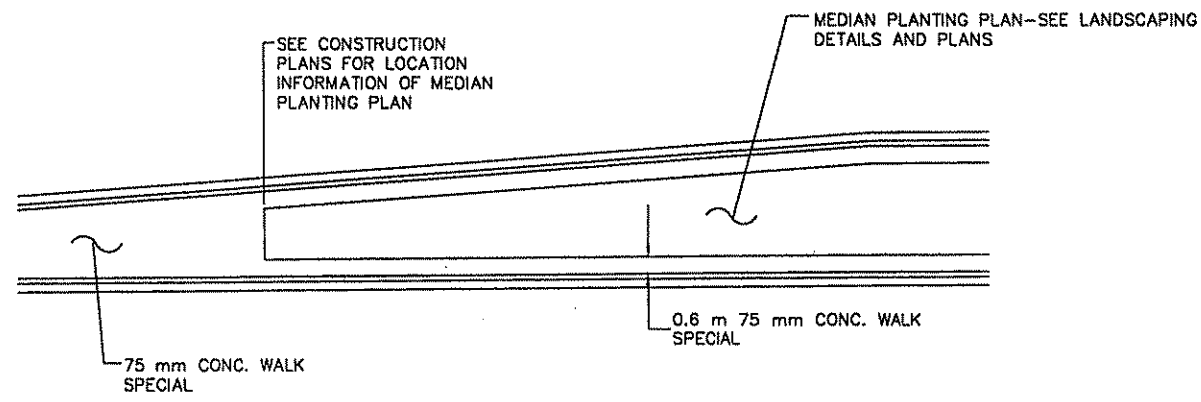
UTILITY DETAILS

FILE NO. ANOKA9806.01

DATE MARCH 15, 1999

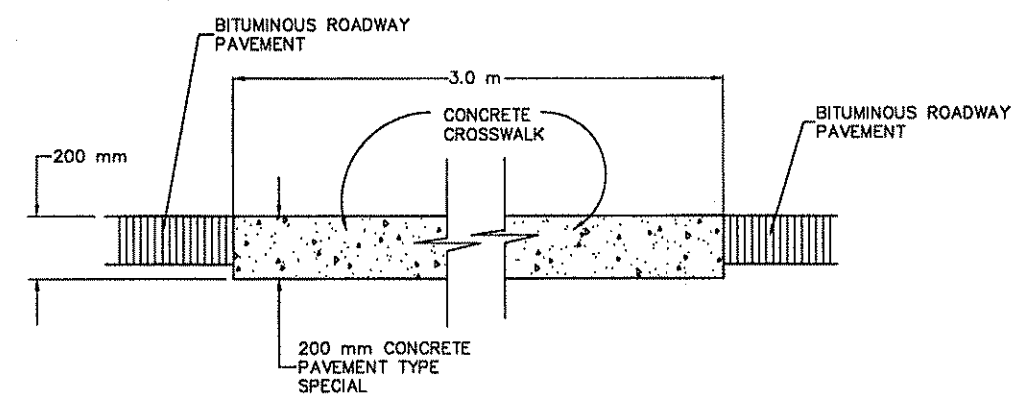
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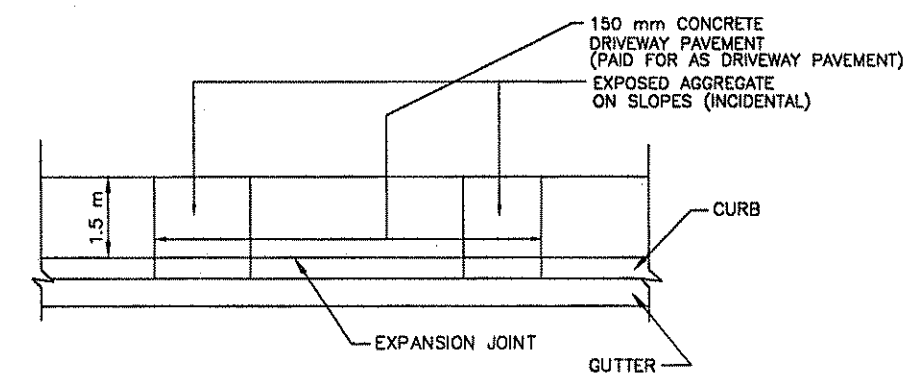
NOTE:
SEE SPECIAL PROVISION FOR DETAIL REGRADING
COLORED CONC. WALK OR ALTERNATE COLORED
AND STAMPED CONC. WALK

LANDSCAPED MEDIAN DETAIL

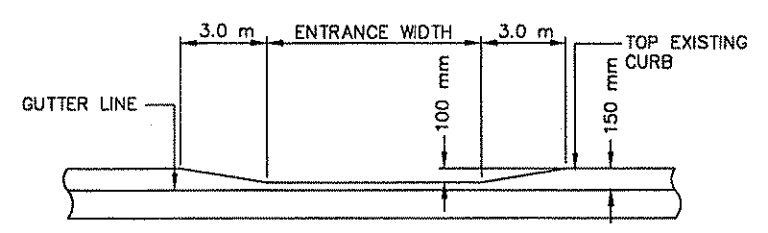


BASE BID - COLORED CONCRETE CROSSWALK
ALTERNATE A - STAMPED AND COLORED CONCRETE CROSSWALK

CROSSWALK SECTION

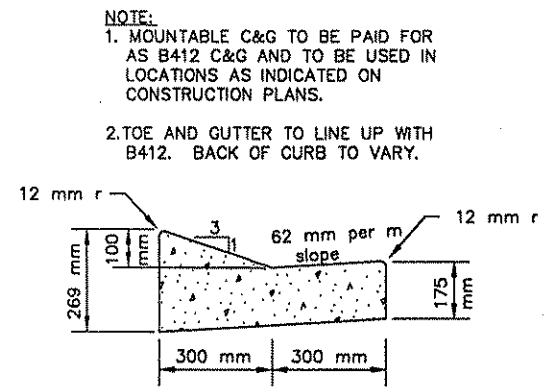


PLAN



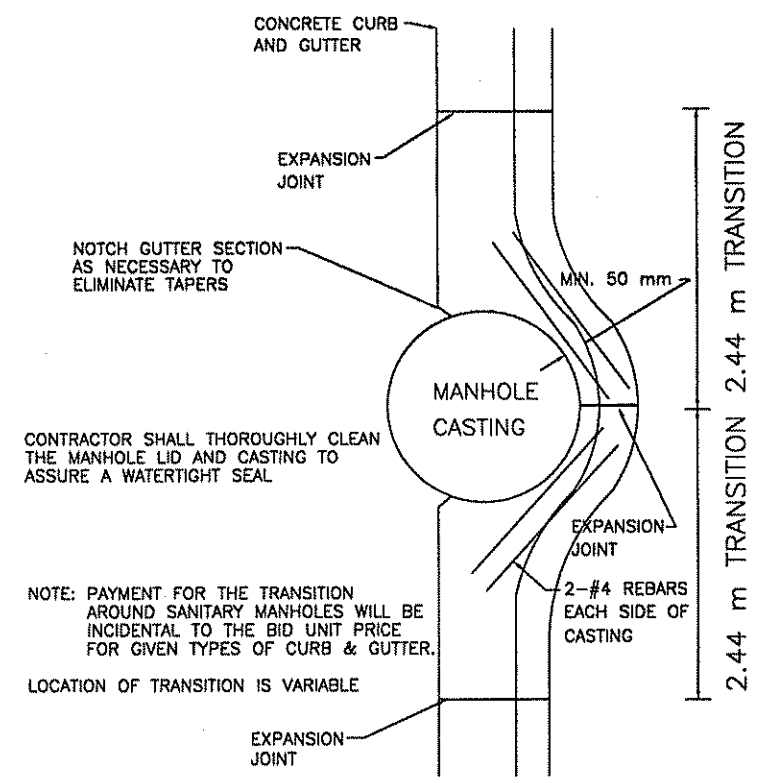
ELEVATION

CURB/SIDEWALK DETAIL AT DRIVEWAYS ON FRONTAGE ROAD



NOTE:
1. MOUNTABLE C&G TO BE PAID FOR AS B412 C&G AND TO BE USED IN LOCATIONS AS INDICATED ON CONSTRUCTION PLANS.
2. TOE AND GUTTER TO LINE UP WITH B412. BACK OF CURB TO VARY.

MOUNTABLE CURB AND GUTTER ON MEDIAN



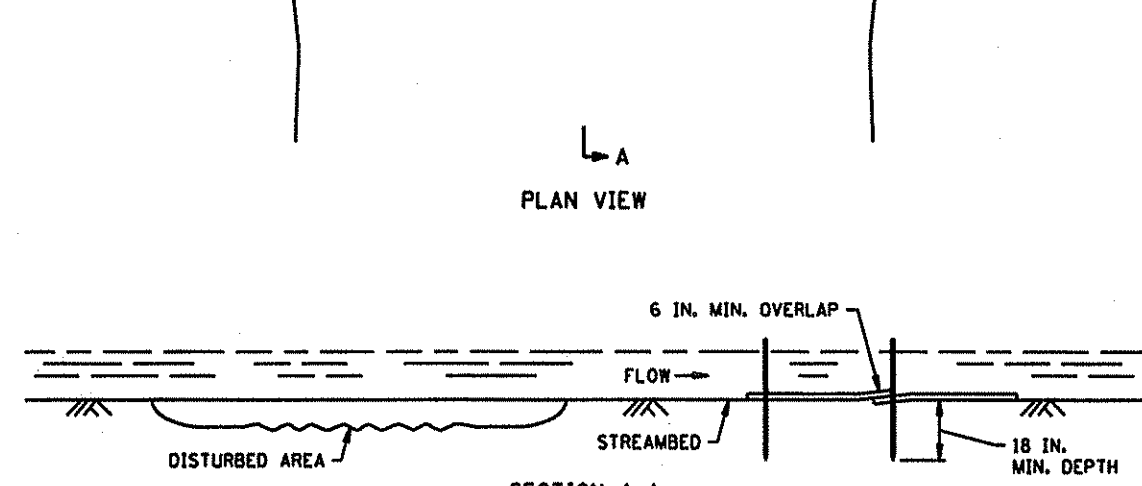
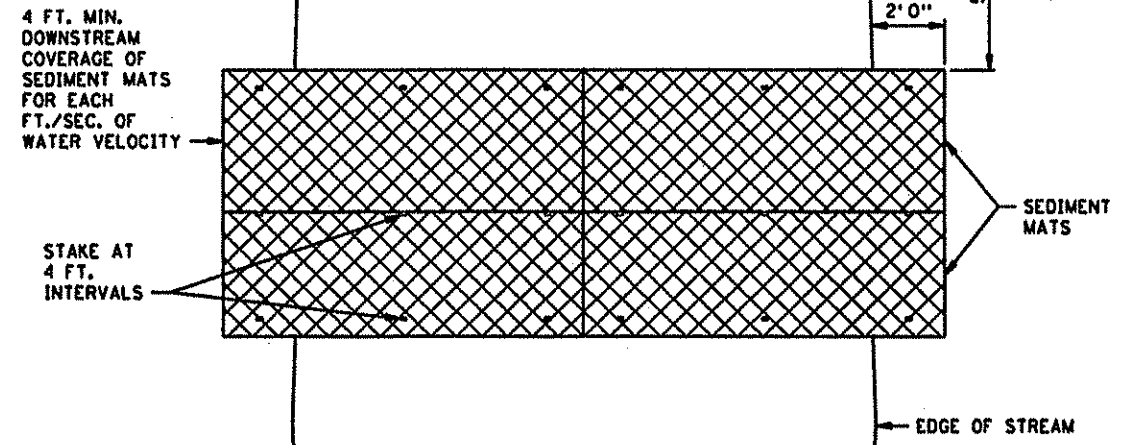
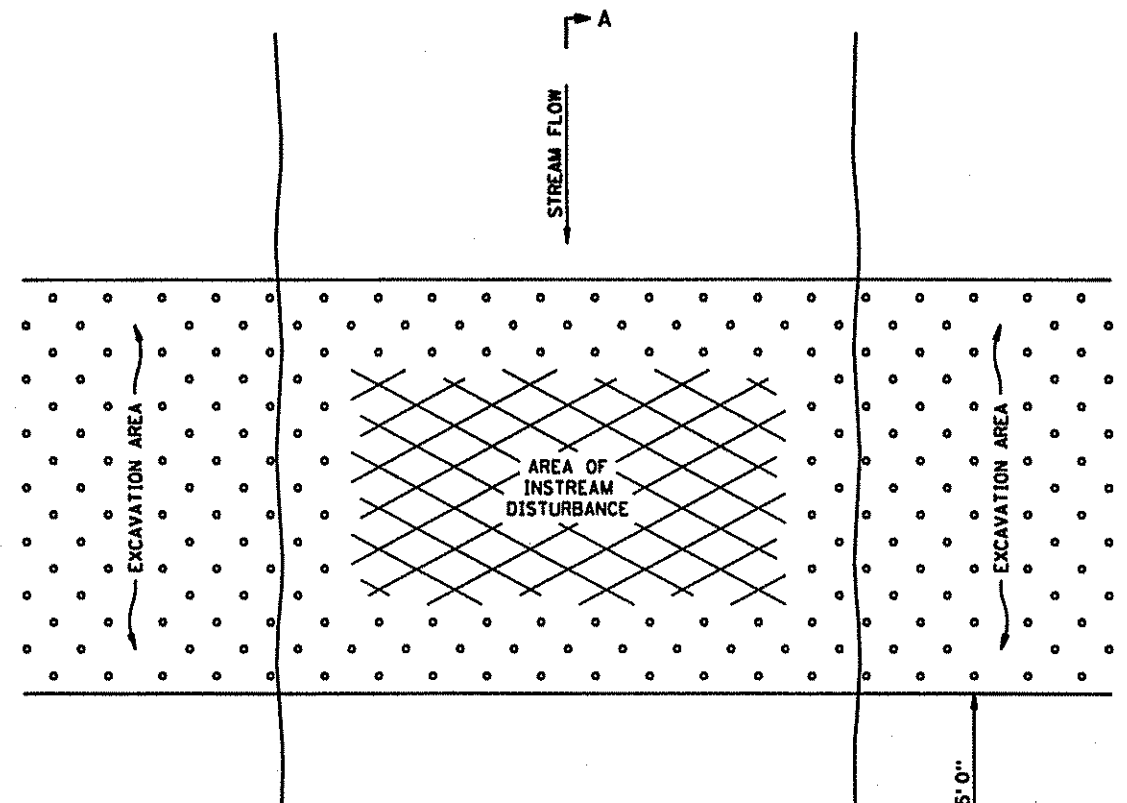
CONTRACTOR SHALL THOROUGHLY CLEAN THE MANHOLE LID AND CASTING TO ASSURE A WATERTIGHT SEAL

NOTE: PAYMENT FOR THE TRANSITION AROUND SANITARY MANHOLES WILL BE INCIDENTAL TO THE BID UNIT PRICE FOR GIVEN TYPES OF CURB & GUTTER.
LOCATION OF TRANSITION IS VARIABLE

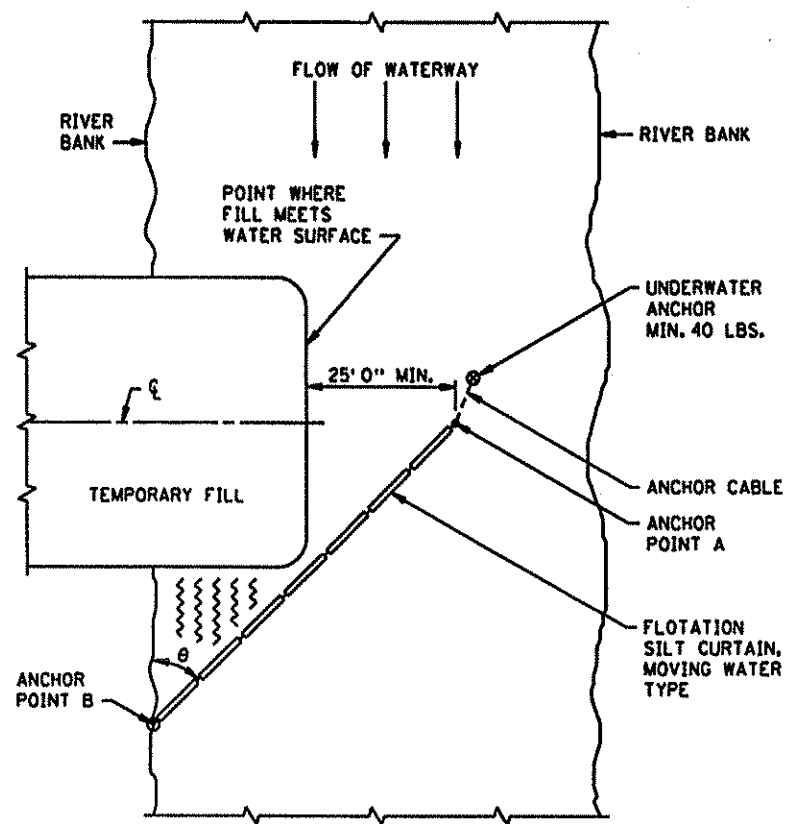
MANHOLE CASTING IN CONCRETE CURB & GUTTER

Q:\CIVIL\CLIENTS\VA_THRU\F\ANOKA\9806\DWG\AC806D11.DWG 03-24-99 1:18 pm

DESIGN						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: 3/15/99 Reg. No. 18812		ANOKA COUNTY CSAH 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	STREET DETAILS	FILE NO.	19
DRAWING					DATE					230	
CHECKED											03/15/99
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM						



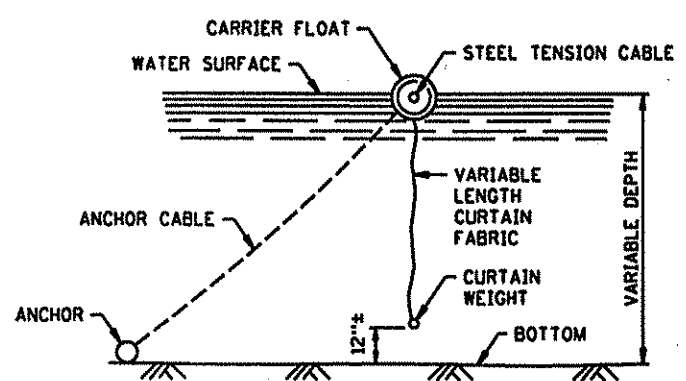
DESIGN CRITERIA:
 MAXIMUM FLOW VELOCITY: 5 FT./SEC.
 MAXIMUM FLOW DEPTH: 2 FT.



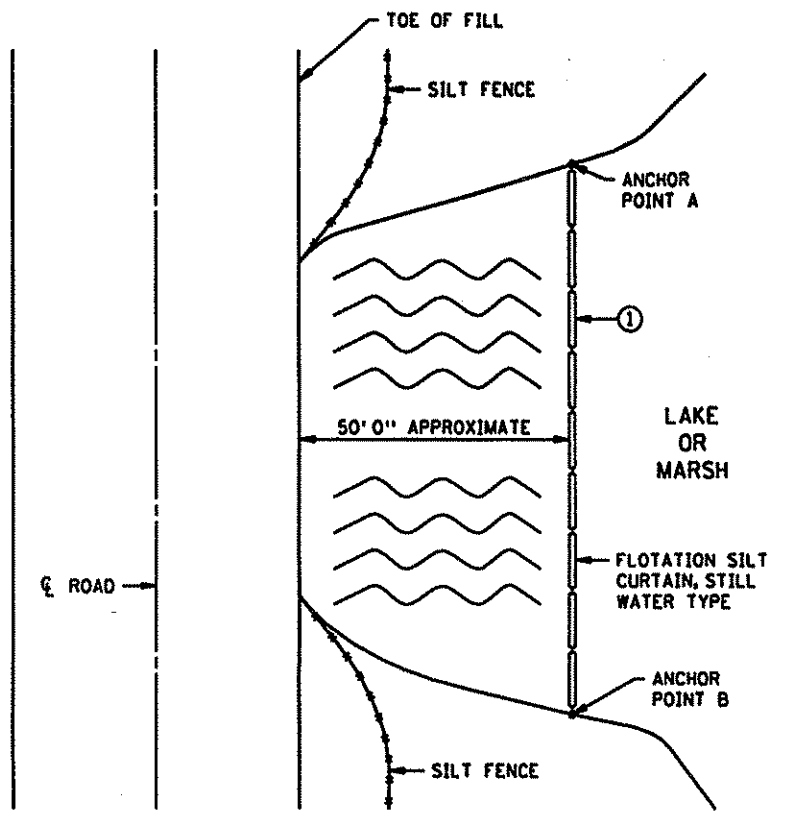
∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 5 FT./SEC.
35°	MODERATE, 5 - 7 FT./SEC.

PLAN VIEW OF SILT CURTAIN - MOVING WATER

DESIGN CRITERIA:
 MAXIMUM WATER DEPTH: 12 FT.
 MAXIMUM WATER VELOCITY: 7 FT./SEC.

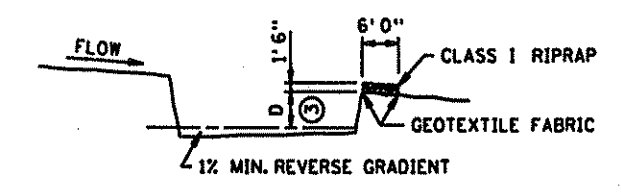
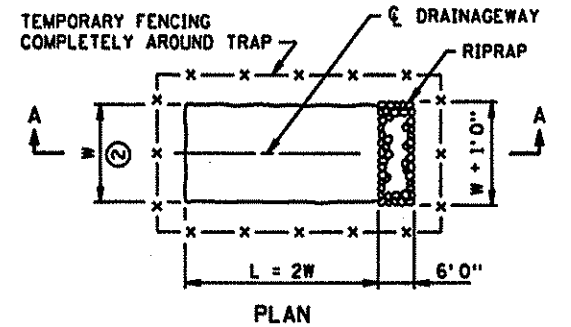


FLOTATION SILT CURTAIN DETAIL (SEE SPEC. 3887)



PLAN VIEW OF SILT CURTAIN - STILL WATER

DESIGN CRITERIA:
 MAXIMUM WATER DEPTH: 12 FT.

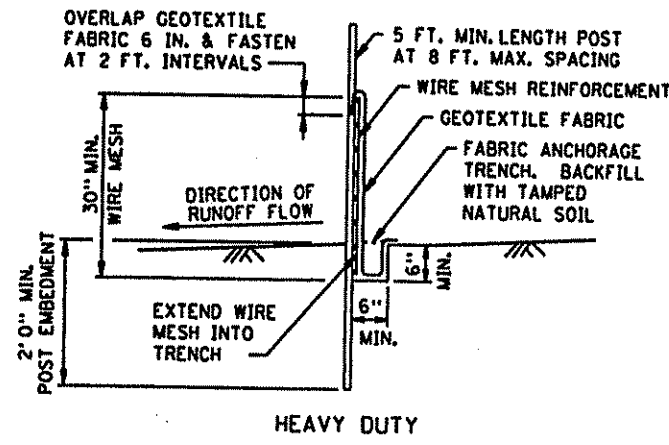


TEMPORARY SEDIMENT TRAP DETAIL

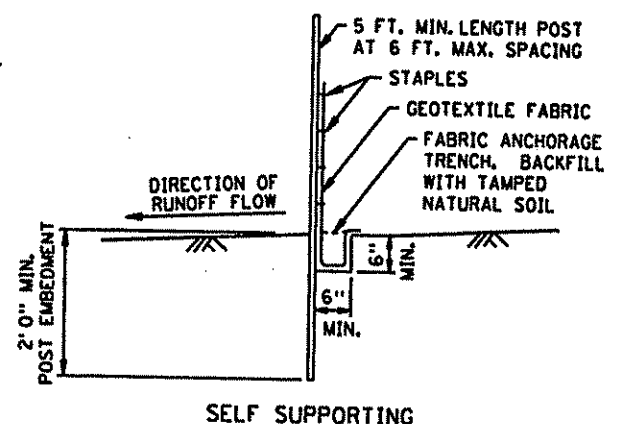
- NOTES:
 ① CURTAIN 1 FT. FROM BOTTOM
 ② W = 10 FT. MIN., 20 FT. MAX.
 ③ D = 3 FT. MIN., 6 FT. MAX.

STANDARD SHEET NO. 5-297.405 (1 OF 3)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 20 OF 230 SHEETS	

17 MAR 1999 13:37:41 q:\civil\clients\va_thru_f\onoka\9806\dgn\okc806d1.dgn



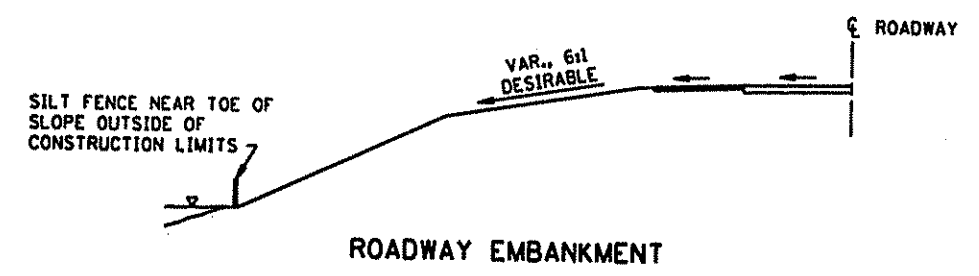
HEAVY DUTY



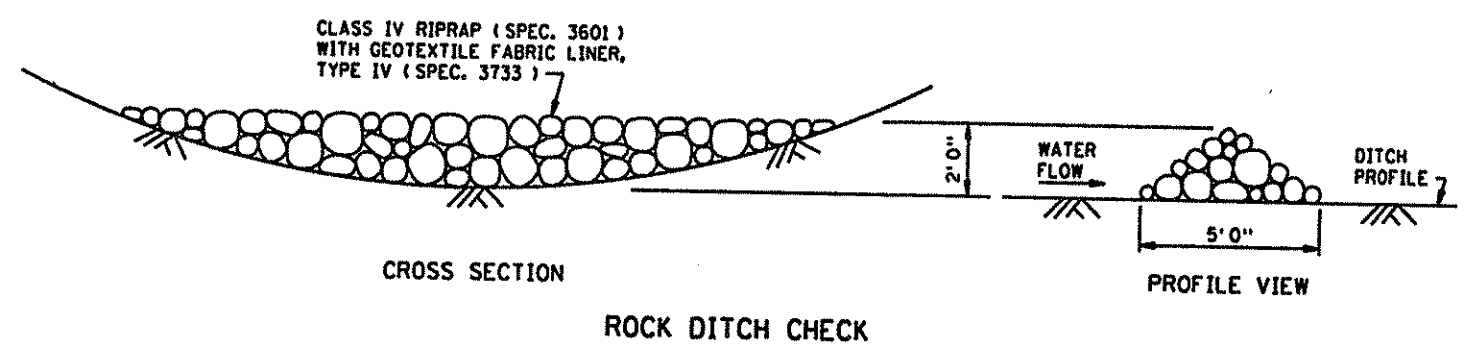
SELF SUPPORTING

SILT FENCE DETAILS
TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)

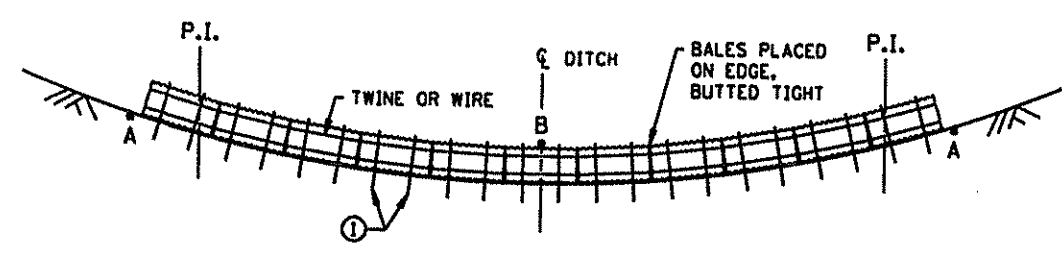
DESIGN CRITERIA:
MAXIMUM CONTRIBUTING AREA: 3 ACRES



ROADWAY EMBANKMENT

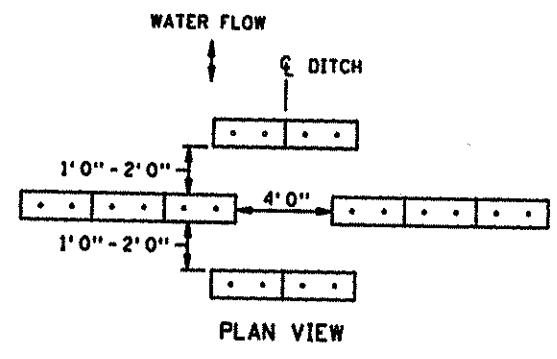
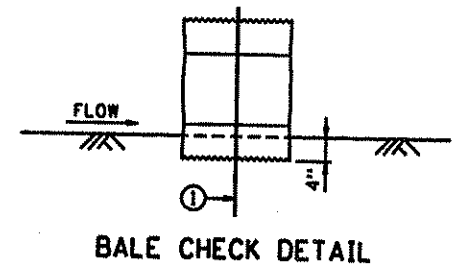


ROCK DITCH CHECK

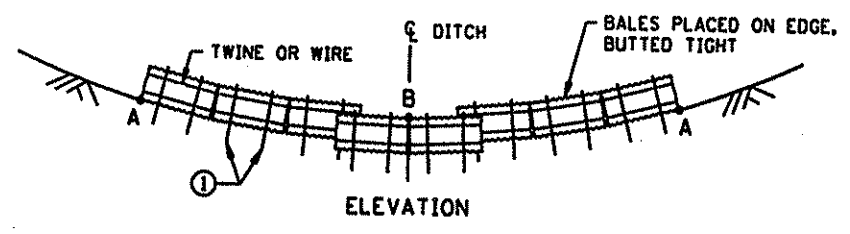


NOTE:
POINT A MUST BE HIGHER THAN POINT B

BALE DITCH SEDIMENT CHECK



PLAN VIEW



ELEVATION

NOTE:
POINT A MUST BE HIGHER THAN POINT B

BALE DITCH VELOCITY CHECKS
(WILL REQUIRE A MINIMUM OF 10 BALES PER SITE)

RECOMMENDED SPACING BETWEEN DITCH CHECKS	
DITCH GRADE (%)	SPACING (FT.)
2	100
4	75
6	50
8	40
10	25

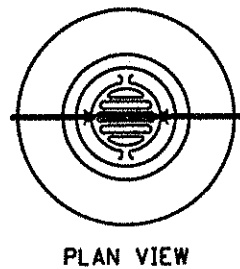
DESIGN CRITERIA:

	BALE	ROCK
STORM FREQUENCY:	2 YR. - 24 HR.	10 YR. - 24 HR.
MAX. FLOW VELOCITY:	5 FT./SEC.	12 FT./SEC.
MAX. DITCH GRADE:	5%	
MAX. DRAINAGE AREA:	2 ACRES	5 ACRES

NOTE:
① TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE AND EMBEDDED IN THE GROUND 10 IN. MINIMUM.

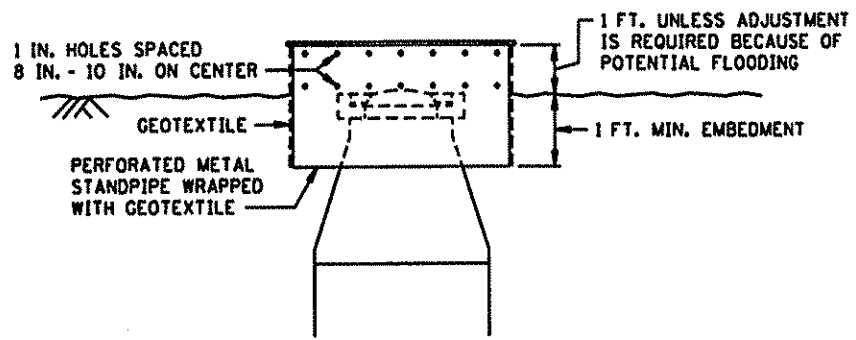
STANDARD SHEET NO. 5-297.405 (2 OF 3)	TITLE
STANDARD APPROVED: MAY 1, 1995	TEMPORARY EROSION CONTROL
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 21 OF 230 SHEETS	

17 MAR 1999 13:37:01 q:\civil\clients\do thru\fanoka\9806\dgn\akc806d2.dgn



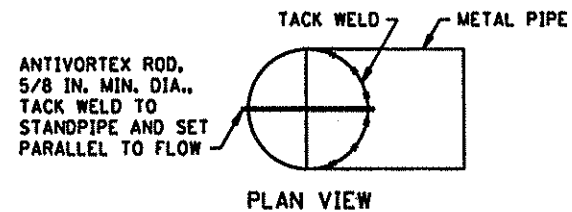
ANTIVORTEX ROD,
5/8 IN. MIN. DIA.,
TACK WELD TO
STANDPIPE AND SET
PARALLEL TO FLOW

PLAN VIEW



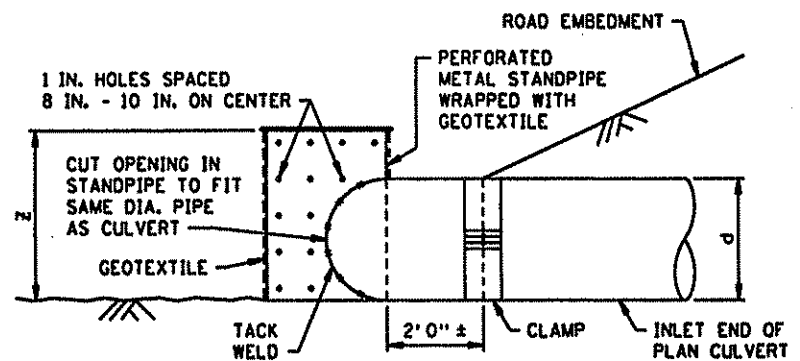
ELEVATION
TEMPORARY STANDPIPE
TO PROTECT DROP INLET

DESIGN CRITERIA:
STORM FREQUENCY: 10 YEAR - 24 HOUR.



ANTIVORTEX ROD,
5/8 IN. MIN. DIA.,
TACK WELD TO
STANDPIPE AND SET
PARALLEL TO FLOW

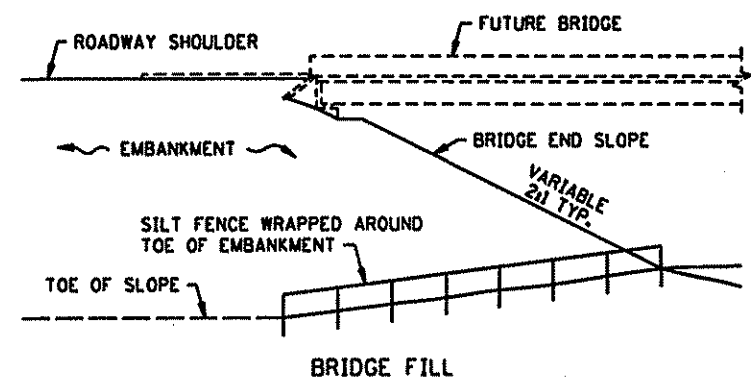
PLAN VIEW



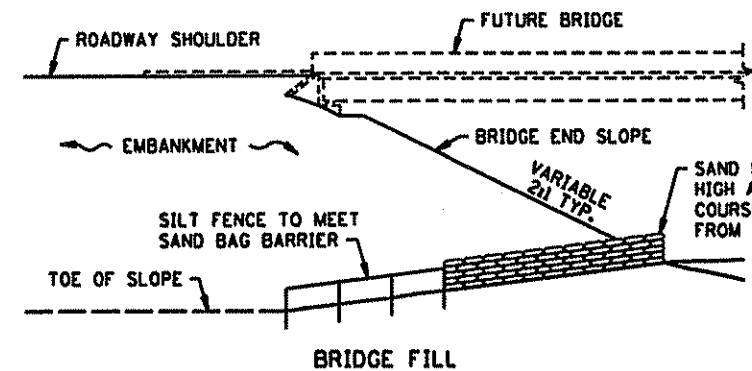
ELEVATION
TEMPORARY STANDPIPE
FOR SEDIMENT CONTROL ON CULVERT INLET

d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT
z = LENGTH OF PERFORATED STANDPIPE (d + 1 FT.)

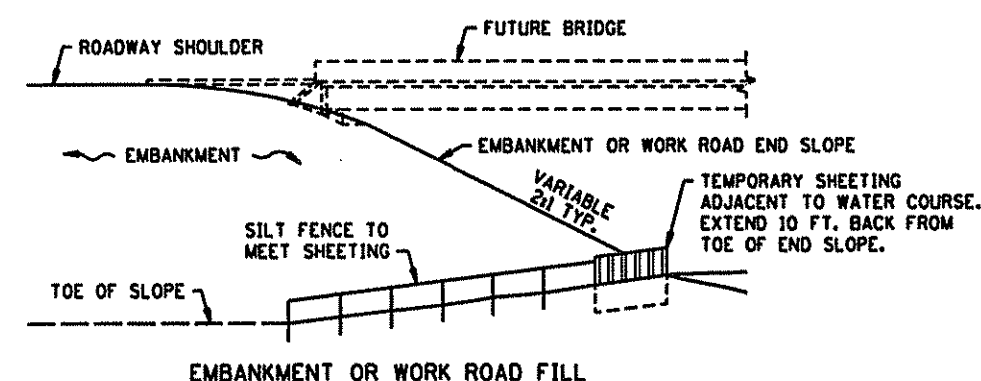
DESIGN CRITERIA:
CULVERT SIZE: 12 - 36 IN.
STORM FREQUENCY: 10 YR. - 24 HR.



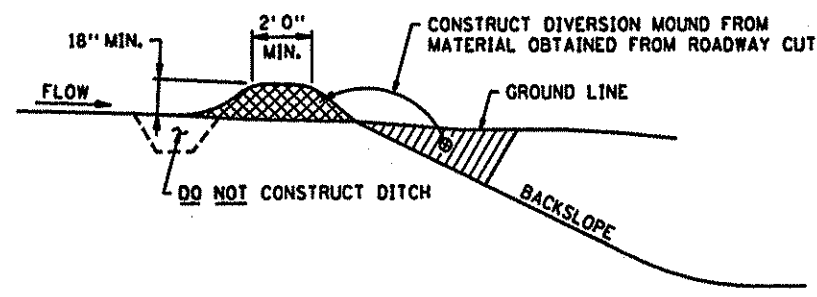
DESIGN CRITERIA:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



DESIGN CRITERIA:
MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE

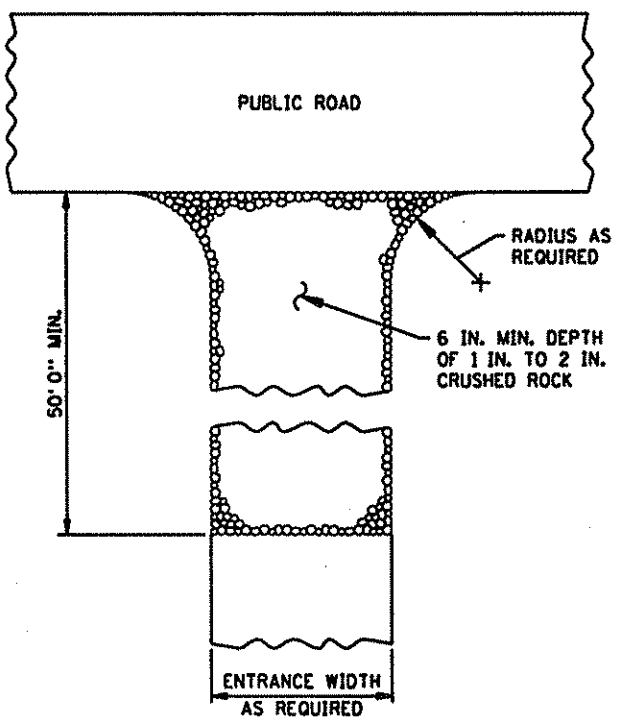


DESIGN CRITERIA:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

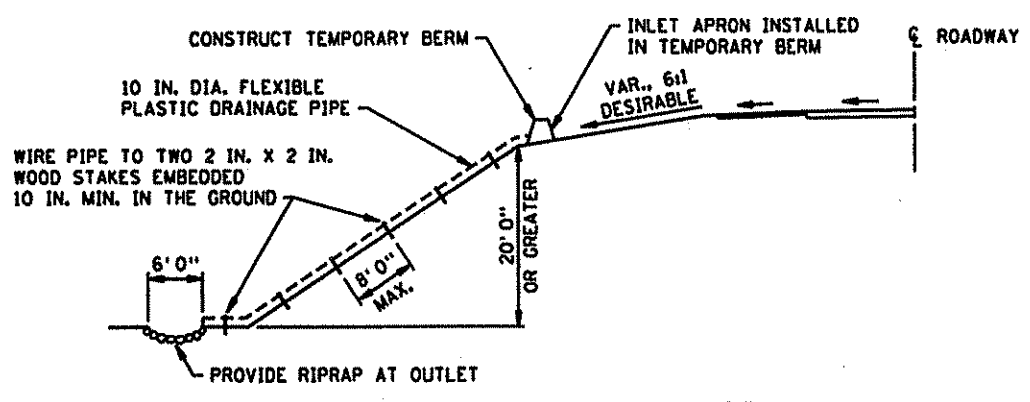


DIVERSION MOUND

DESIGN CRITERIA:
STORM FREQUENCY: 10 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%



ROCK CONSTRUCTION ENTRANCE

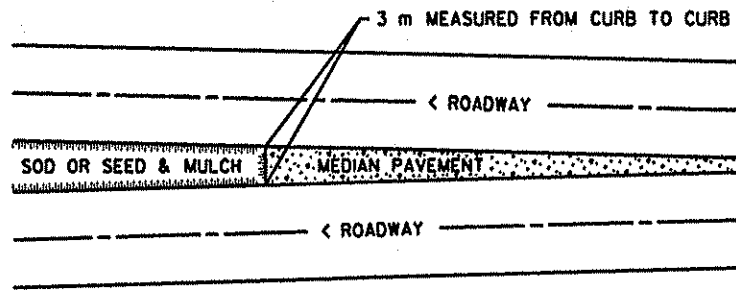


TEMPORARY DRAIN ON FILL SLOPE

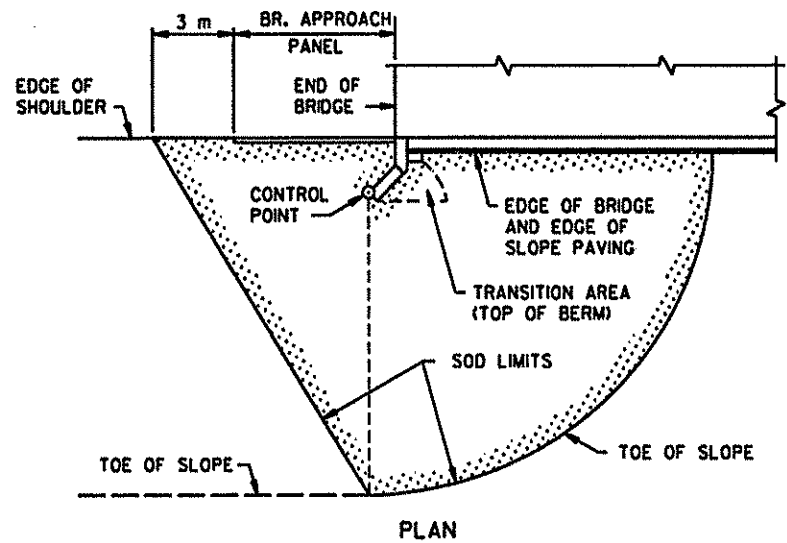
DESIGN CRITERIA:
STORM FREQUENCY: 2 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES

13-41:59 17 MAR 1999 q:\civil\clients\o thru_n\anoka\9806\dgn\okc806d3.dgn

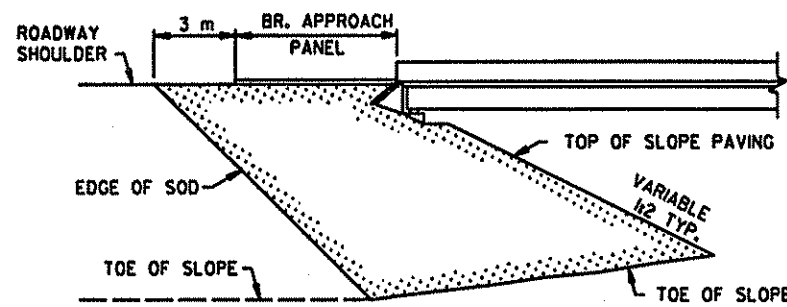
STANDARD SHEET NO. 5-297,405 (3 OF 3)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 22 OF 230 SHEETS	



SODDING LIMITS AT GORE AREA

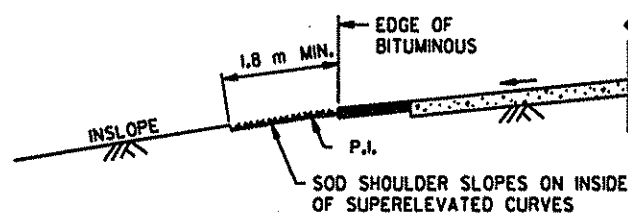


PLAN

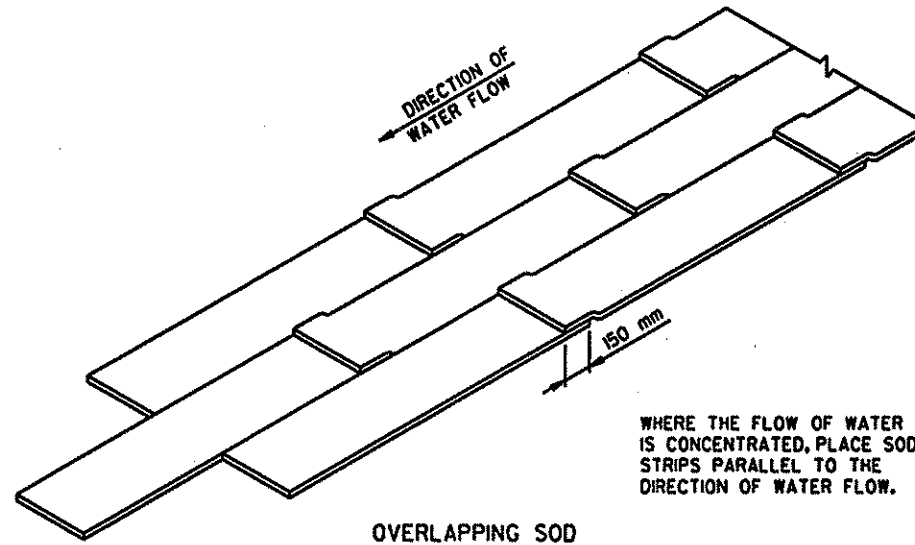


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

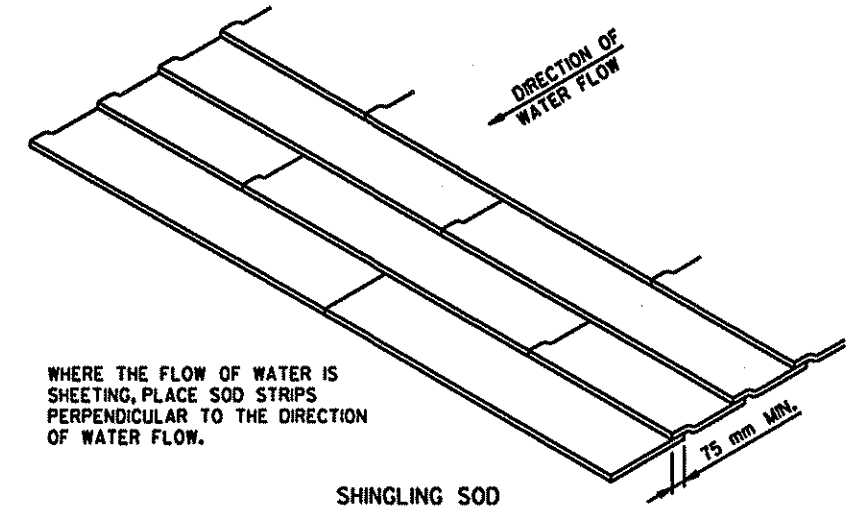


SODDING INSLOPES OF SUPERELEVATED CURVES



OVERLAPPING SOD

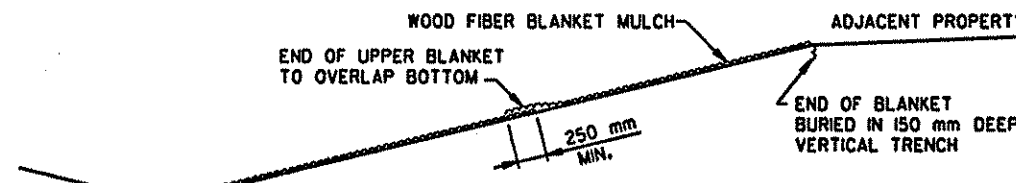
WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.



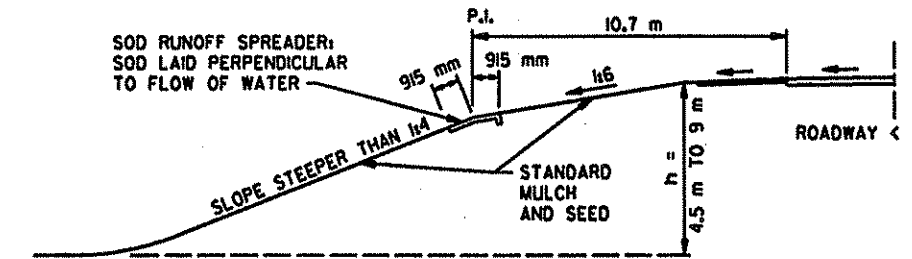
SHINGLING SOD

WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

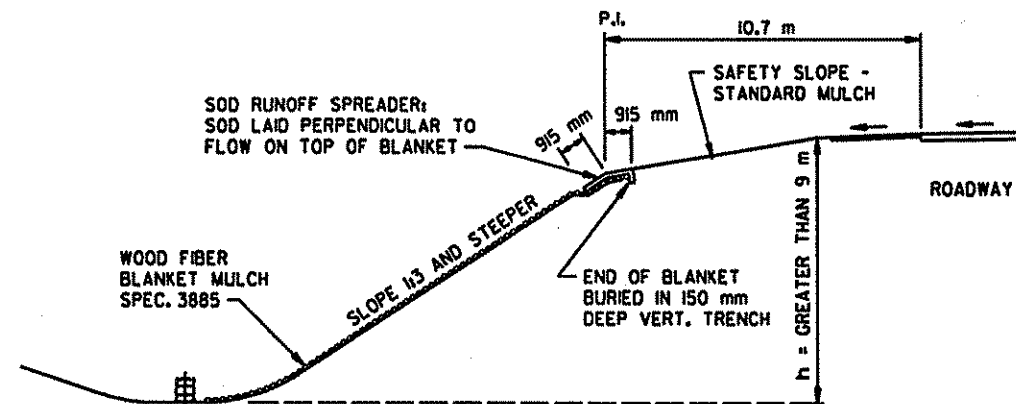
SPECIAL SOD PLACEMENT TECHNIQUES



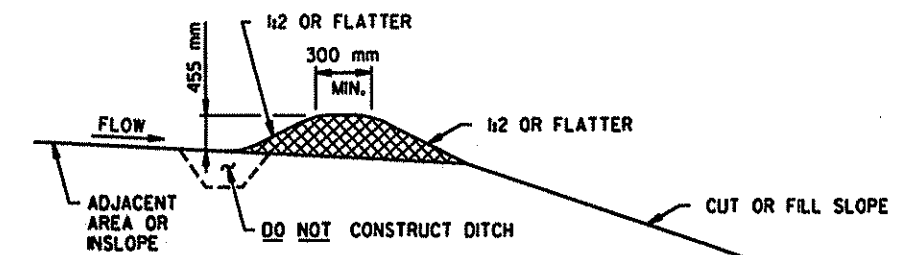
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE (WHEN REQUIRED)



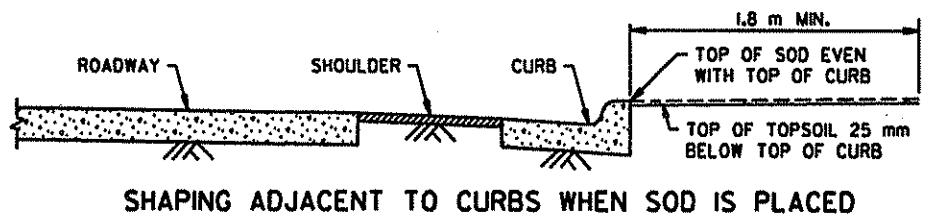
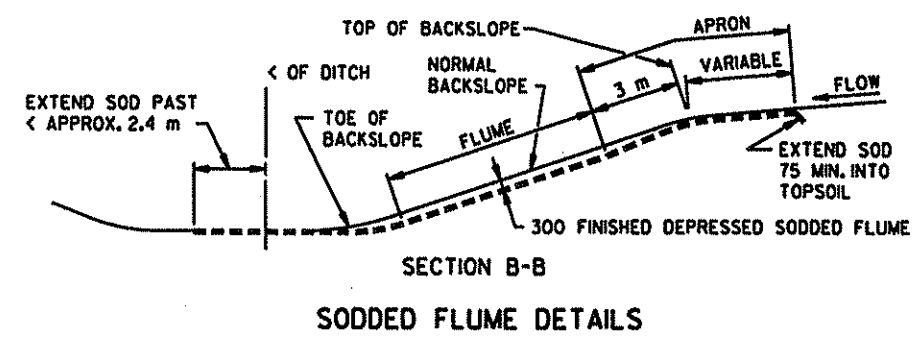
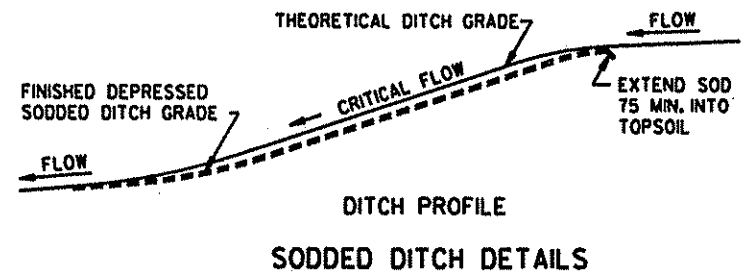
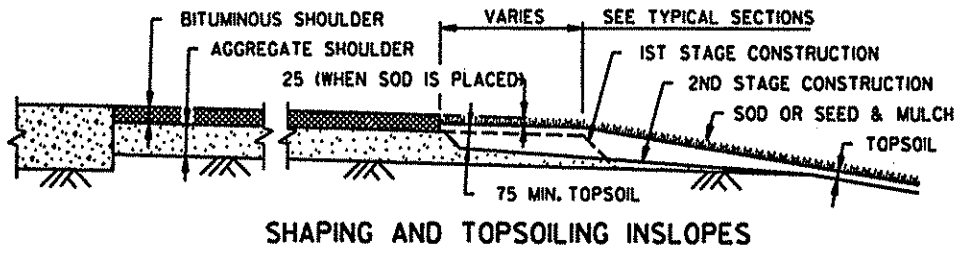
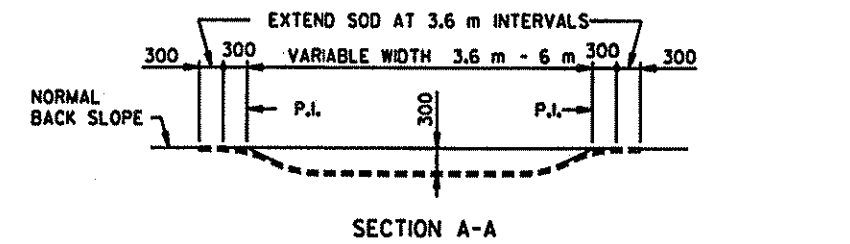
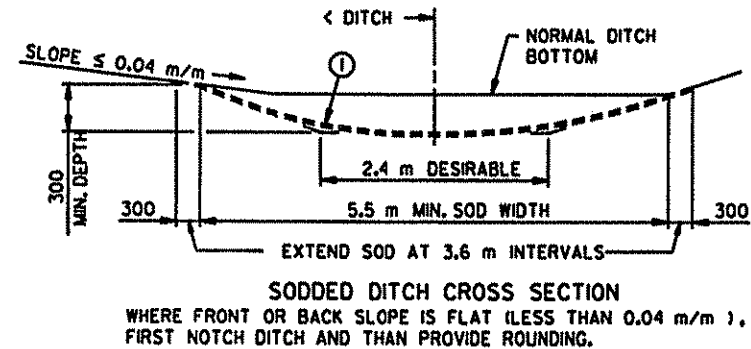
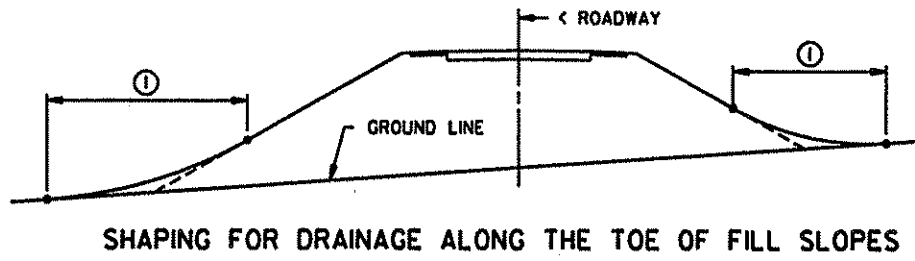
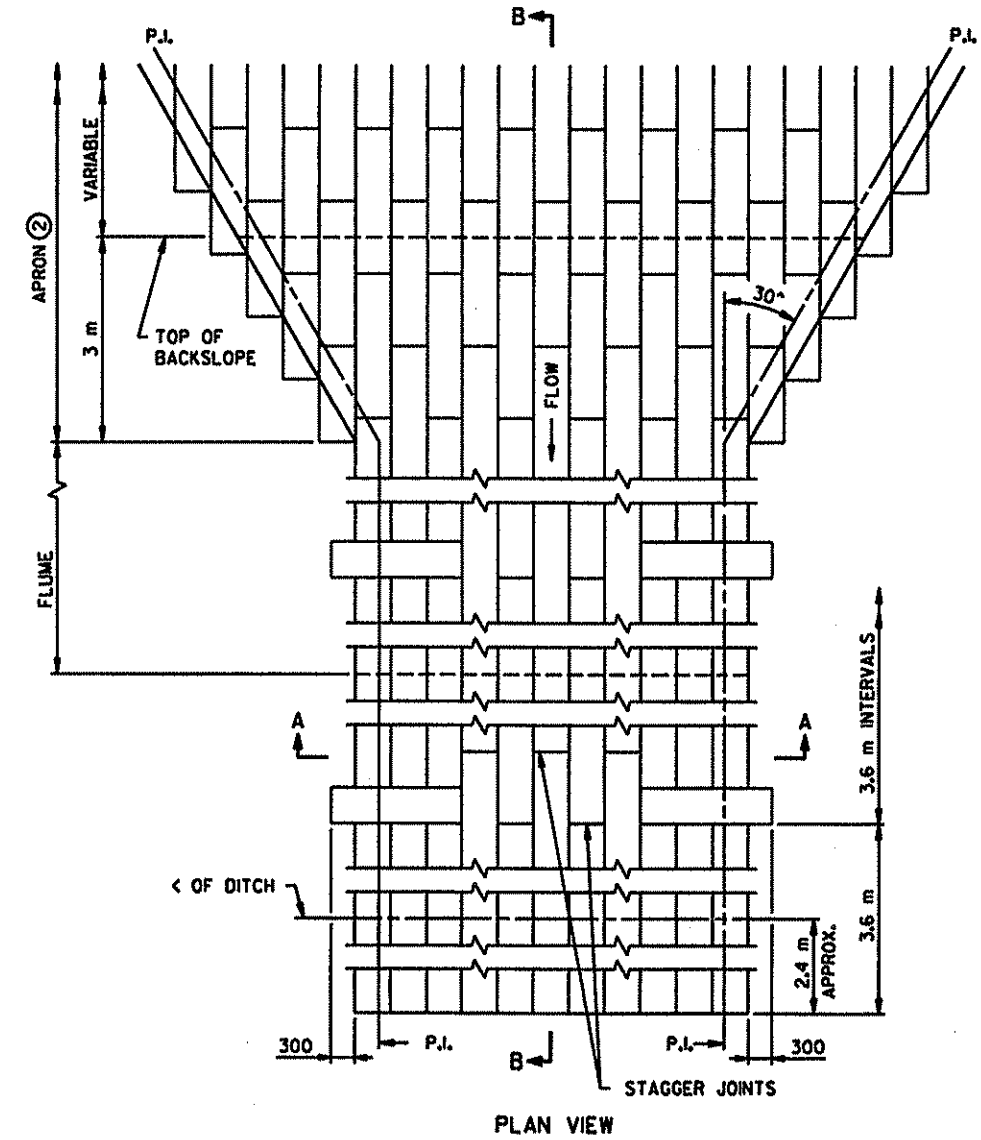
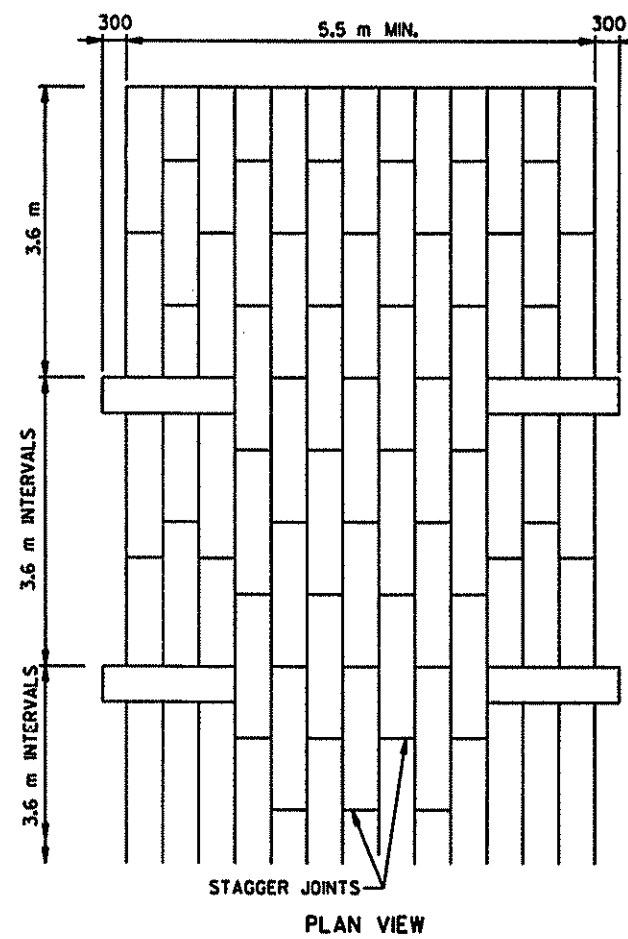
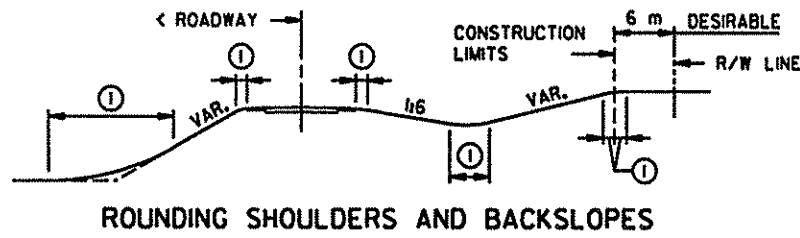
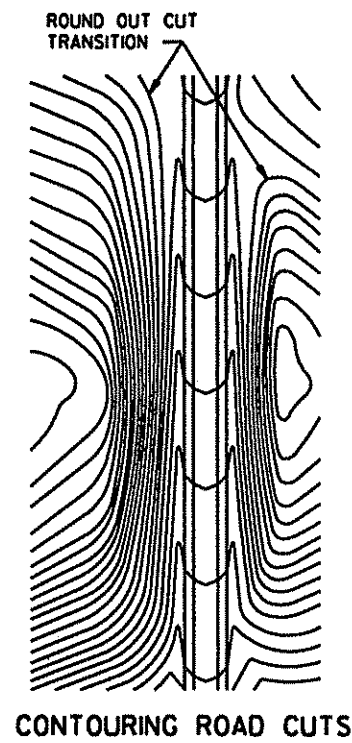
PERMANENT SLOPE PROTECTION DIKE

17 MAR 1999 13:44:13

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STANDARD SHEET NO. 5-297.406M	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 23 OF 230 SHEETS	





NOTES:
 SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.
 ① FOR ROUNDING, SEE ROAD DESIGN MANUAL.
 ② CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

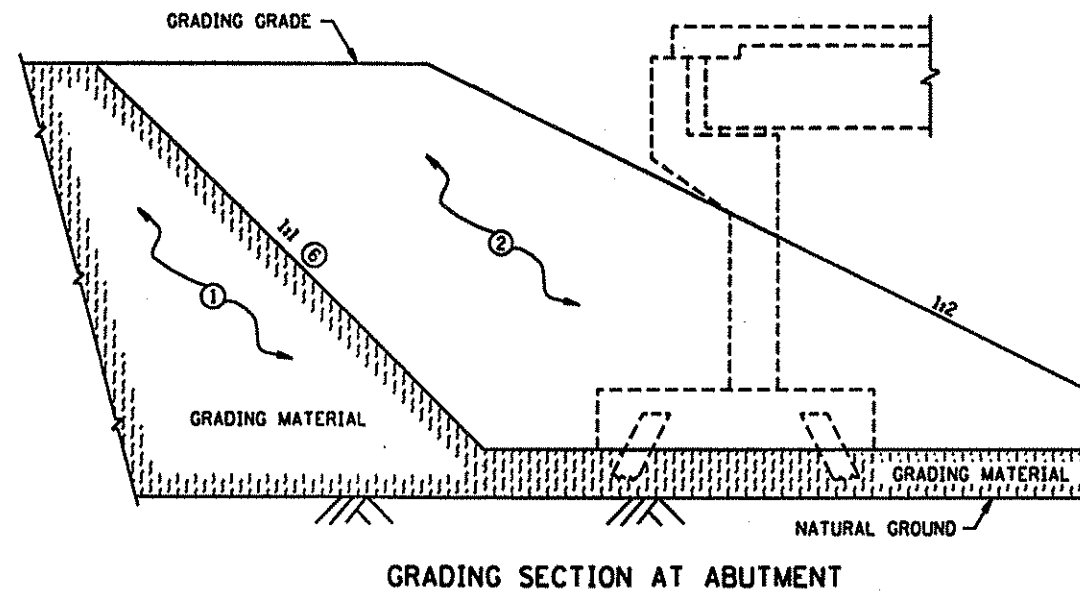
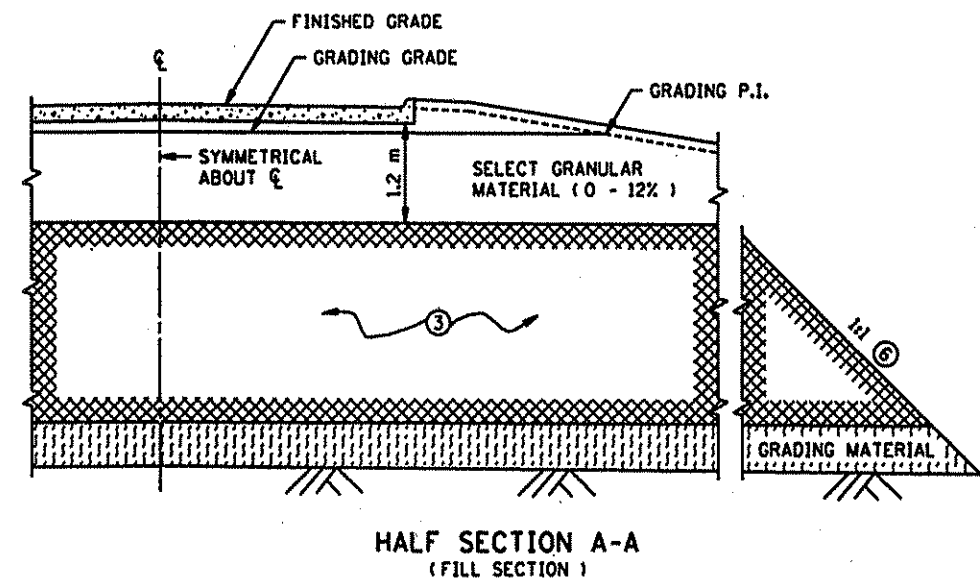
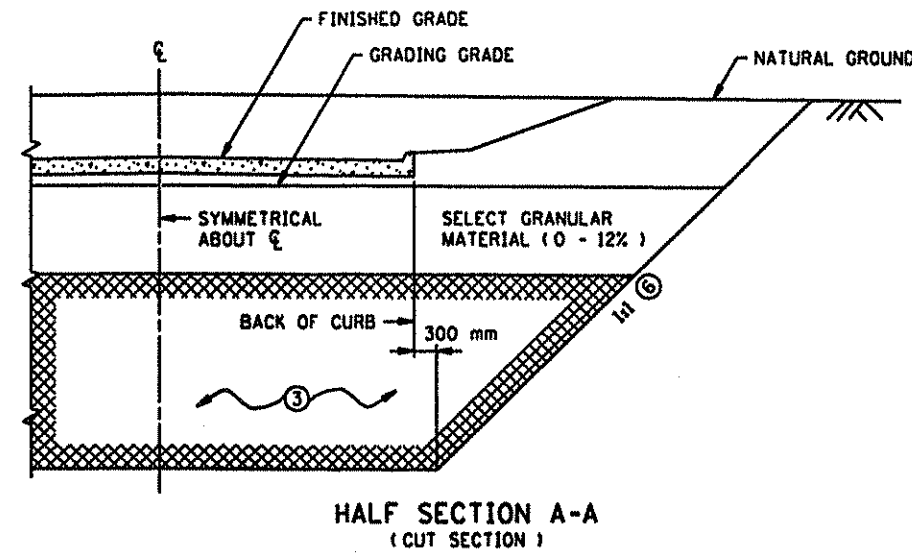
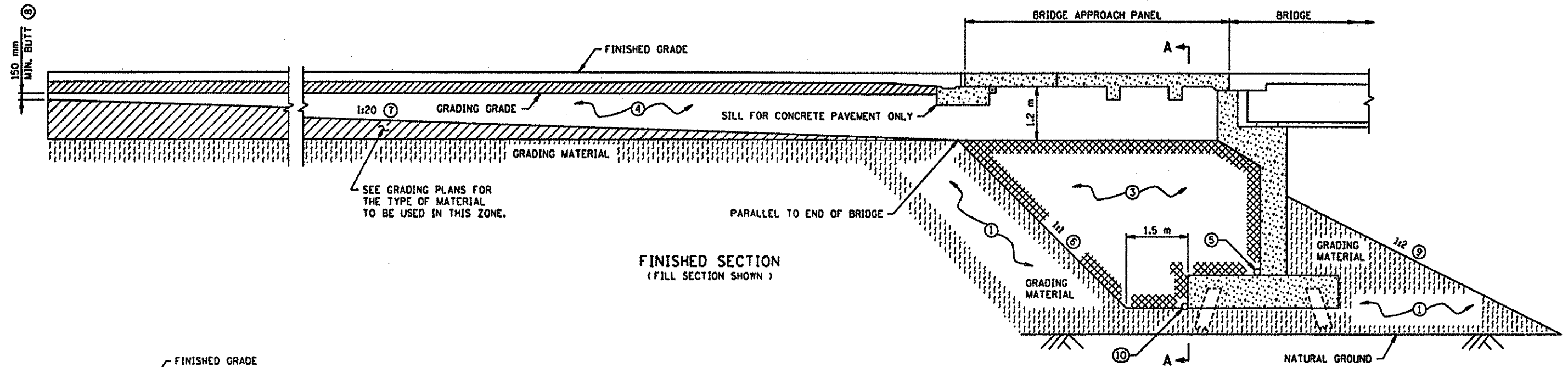
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.

STANDARD SHEET NO. 5-297.404M	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: DECEMBER 19, 1990	
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 24 OF 230 SHEETS	

17 MAR 1999 13:45:02 q:\civil\clients\d...thru...f\anokca\9806\dgn\okc806d7.dgn

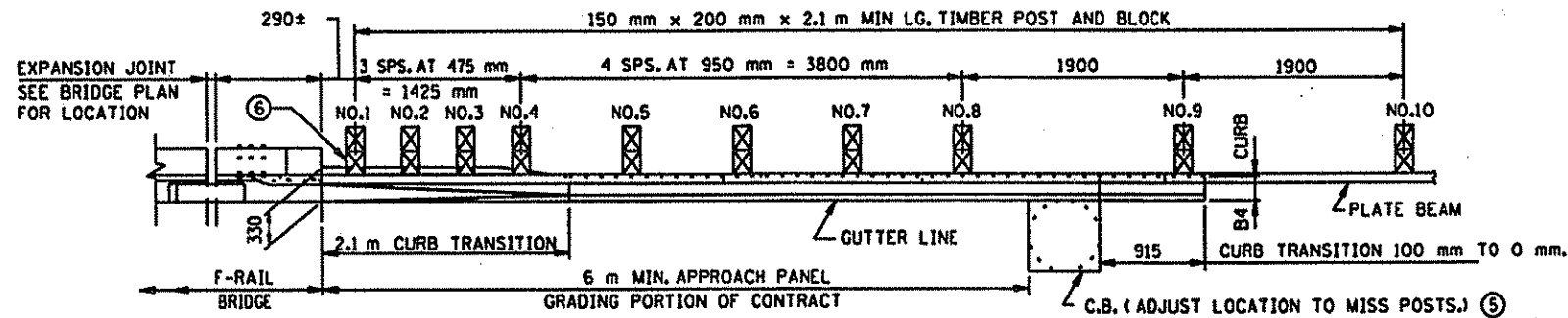
17 MAR 1999 13:43:03

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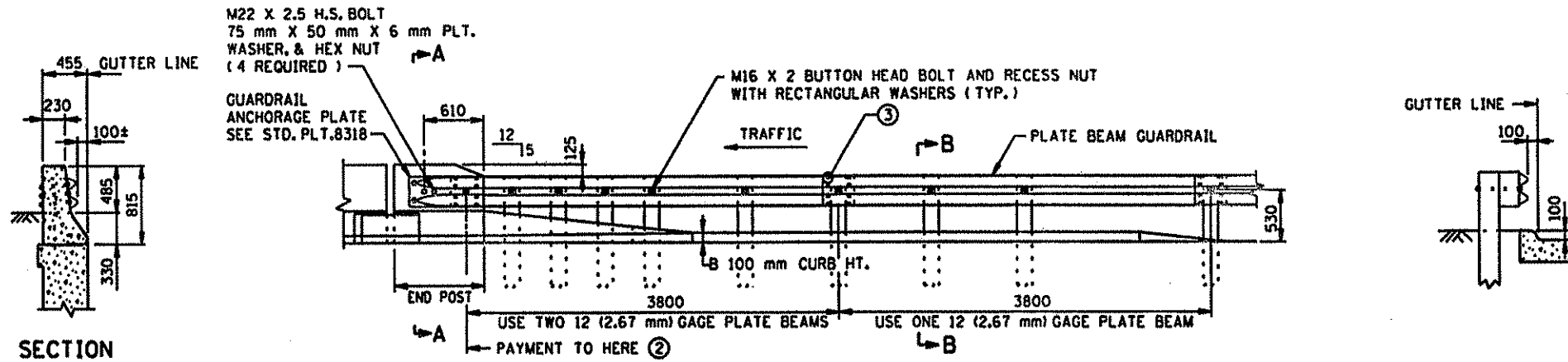


- NOTES:
- ① GRADING MATERIAL PLACED BY THE CONTRACTOR.
 - ② GRADING MATERIAL CONSTRUCTED BY THE CONTRACTOR PRIOR TO THE BRIDGE CONSTRUCTION. TO BE REMOVED LATER BY THE CONTRACTOR.
 - ③ SELECT GRANULAR MATERIAL MODIFIED SHALL COMPLY WITH SPEC. 3149.2B, MODIFIED TO 10% OR LESS PASSING THE NUMBER 75 μ m SIEVE. MATERIAL SHALL BE PLACED BY THE CONTRACTOR AFTER COMPLETION OF THE ABUTMENT.
 - ④ BACKFILL PLACED BY THE CONTRACTOR. MATERIAL SHALL COMPLY WITH SPEC. 3149.2B (SELECT GRANULAR BORROW).
 - ⑤ DRAIN IF REQUIRED. SEE BRIDGE STANDARD DETAIL B910.
 - ⑥ ACTUAL SLOPE TO BE DETERMINED DURING CONSTRUCTION BY THE CONTRACTOR, DEPENDING ON INSITU SOIL PROPERTIES AND/OR SAFETY FACTORS. (USE 1:1 FOR DESIGN)
 - ⑦ START 1:20 TAPER AT END OF APPROACH PANELS ON SKEWED BRIDGES.
 - ⑧ GRADING TO BE SQUARED OFF ON SKEWED APPROACHES.
 - ⑨ SEE BRIDGE PLANS FOR SLOPE PAVING.
 - ⑩ SUBSURFACE PIPE DRAIN WHEN REQUIRED AS DIRECTED BY THE DISTRICT SOILS ENGINEER. 100 mm NOM. DIA. PLASTIC PIPE PER SPEC. 3245 PLACED BY THE CONTRACTOR. PERFORATED PIPE TO BE WRAPPED WITH GEOTEXTILE MEETING THE REQUIREMENTS OF SPEC. 3733 TYPE 1. FOUNDATION SHALL BE SHAPED TO FIT LOWER ONE THIRD CIRCUMFERENCE OF PIPE.

	STANDARD SHEET NO. 5-297.225M	TITLE: BRIDGE APPROACH TREATMENT FOR BOTH HIGH AND LOW ABUTMENTS ON PILING
	STANDARD APPROVED: AUGUST 4, 1992	
REVISION DATE 3-23-95	S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 25 OF 230 SHEETS	



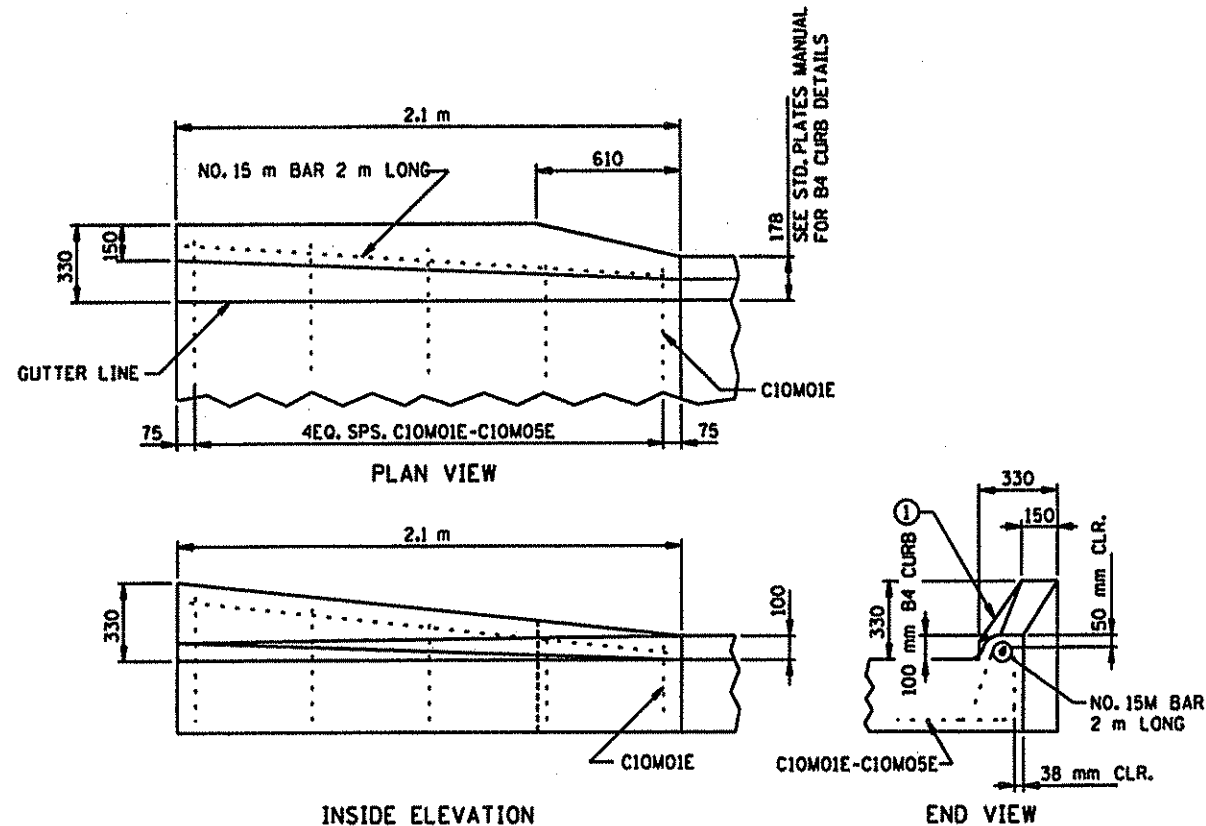
PLAN



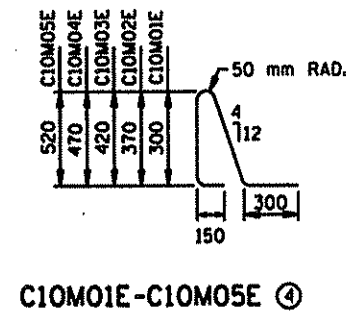
ELEVATION

SECTION A-A
(PARALLEL WINGWALL SHOWN)

SECTION B-B



INSIDE ELEVATION
CURB TRANSITION DETAILS



NOTES:

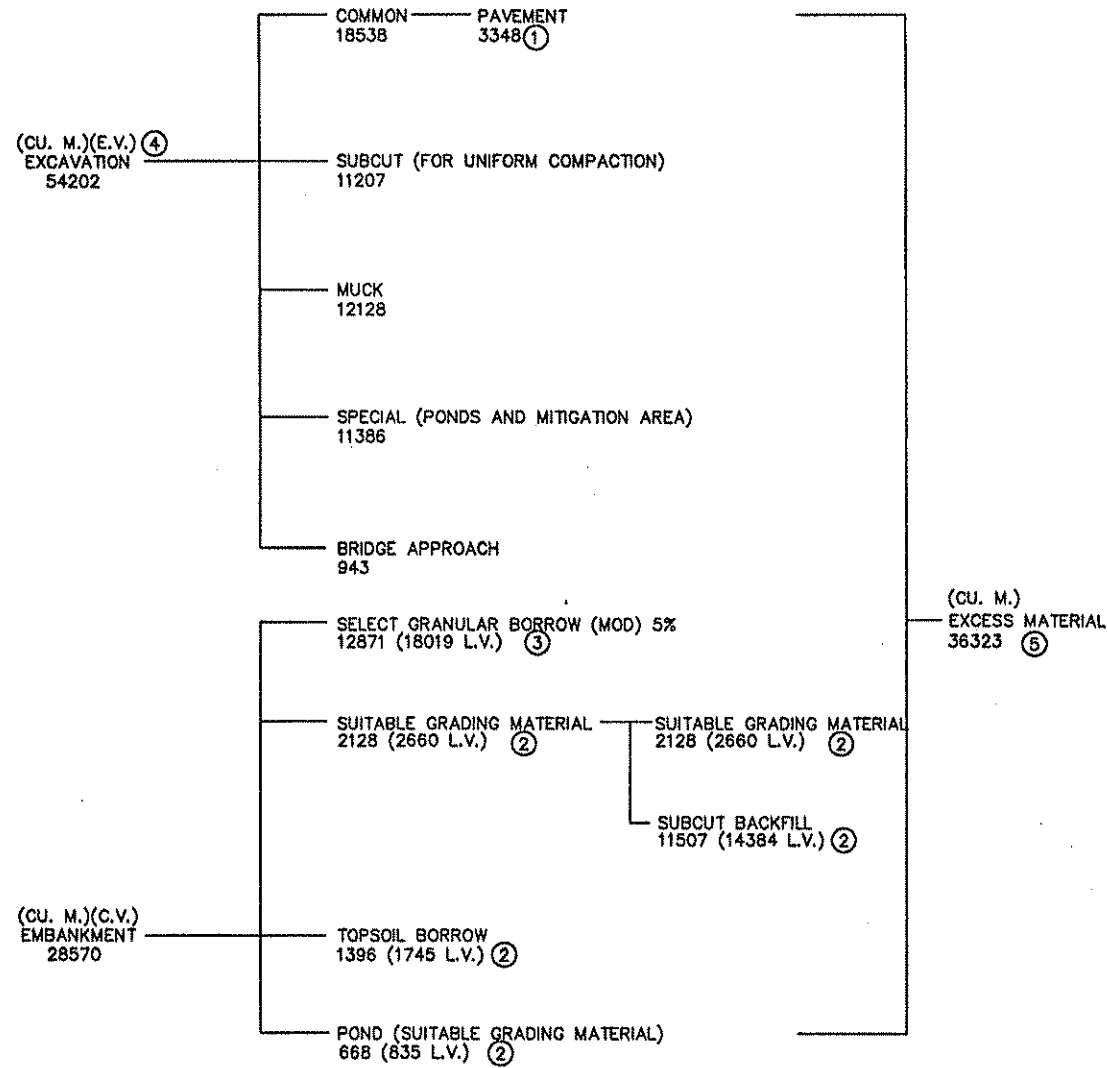
- ① END OF TRANSITION TO MATCH BRIDGE RAIL SURFACE.
- ② PAY LENGTH IS 7.6 METERS.
- ③ M16 X 2 X 32 mm LG. BUTTON HEAD BOLTS AND NUTS TYPICAL AT SPLICES.
- ④ REINFORCEMENT TO BE EPOXY COATED AS PER SPEC. 3301.
- ⑤ SEE ROAD PLANS TO VERIFY ACTUAL DIMENSION AND LOCATION.
- ⑥ ADDITIONAL BLOCKING MAY BE REQUIRED TO CLEAR BRIDGE STRUCTURE. VERIFY IN FIELD.

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

	STANDARD SHEET NO. 5-297.605M	TITLE: GUARDRAIL TRANSITION FOR NEW TYPE F RAILING WITH APPROACH CURB
	STANDARD APPROVED: JANUARY 23, 1992	
REVISION DATE 3-30-95	S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 26 OF 230 SHEETS	

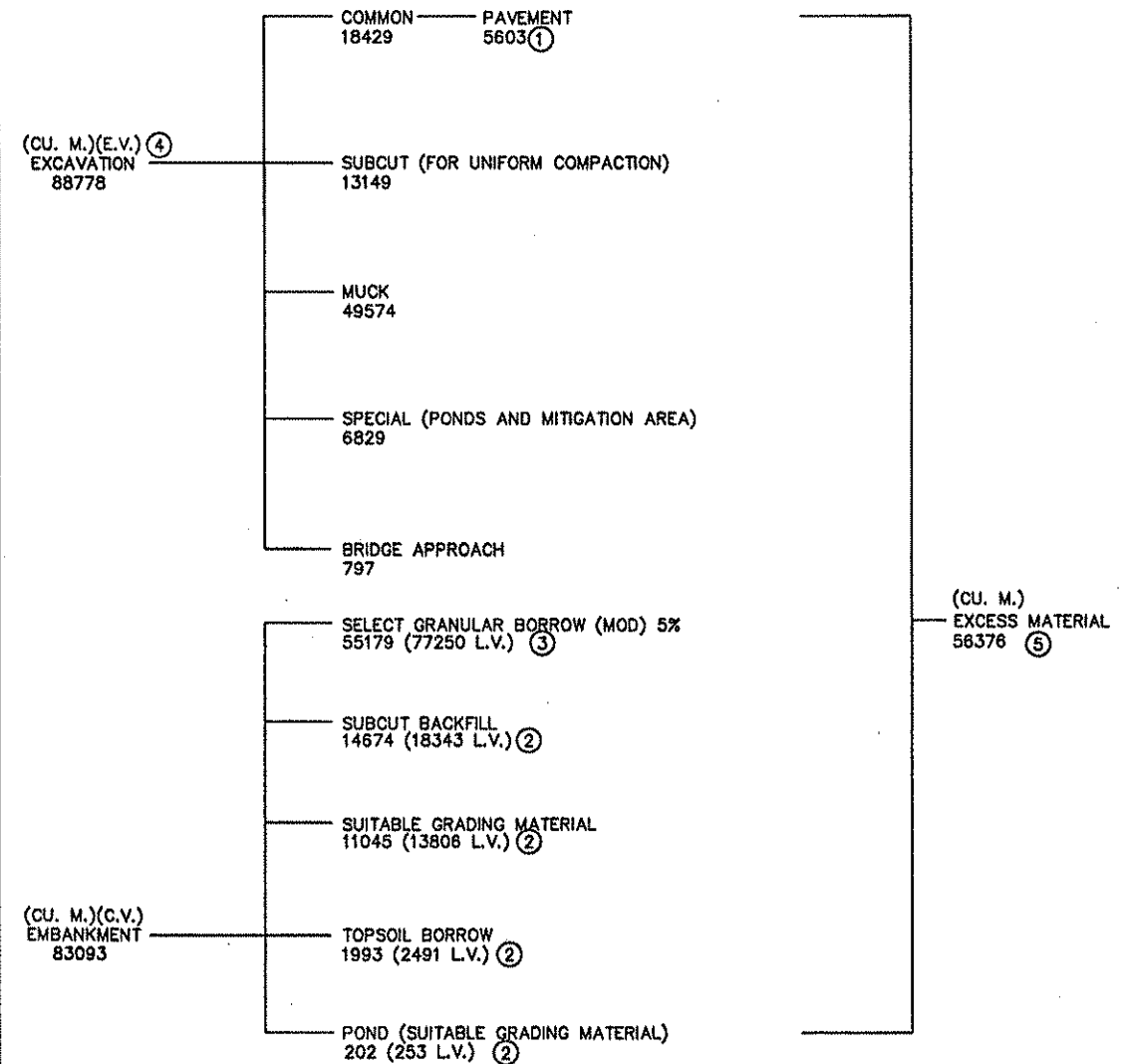


EARTHWORK SUMMARY
STA. 1+410.496 TO STA. 3+060.000



- ① PAID FOR AS PAVEMENT REMOVAL
- ② 125% SHRINKAGE FACTOR USED FROM LOOSE VOLUME (L.V.) TO COMPACTED VOLUME (C.V.)
- ③ 140% SHRINKAGE FACTOR USED FROM LOOSE VOLUME (L.V.) TO COMPACTED VOLUME (C.V.)
- ④ EXCAVATED VOLUME (E.V.)
- ⑤ CALCULATED FROM DIFFERENCE OF EXCAVATION (E.V.) AND EMBANKMENT OF SUITABLE MATERIAL (L.V.)

EARTHWORK SUMMARY
STA. 3+060.000 TO STA. 5+413.746



- ① PAID FOR AS PAVEMENT REMOVAL
- ② 125% SHRINKAGE FACTOR USED FROM LOOSE VOLUME (L.V.) TO COMPACTED VOLUME (C.V.)
- ③ 140% SHRINKAGE FACTOR USED FROM LOOSE VOLUME (L.V.) TO COMPACTED VOLUME (C.V.)
- ④ EXCAVATED VOLUME (E.V.)
- ⑤ CALCULATED FROM DIFFERENCE OF EXCAVATION (E.V.) AND EMBANKMENT OF SUITABLE MATERIAL (L.V.)

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Michael M. Mason
 Date: 3/15/99 Reg. No. 18812



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

EARTHWORK SUMMARY

FILE NO. ANOKC9806.01	27
DATE 03/15/99	230



CONSTRUCTION/SOILS NOTES

1. SUITABLE GRADING MATERIAL ON THIS PROJECT SHALL CONSIST OF ALL SOILS ENCOUNTERED WITH THE EXCEPTION OF SLOPE DRESSING, DEBRIS, ORGANIC MATERIAL, MUCK AND OTHER UNSUITABLE MATERIAL.
2. ITEMS REFERRED TO AS INCIDENTAL ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL WITH NO DIRECT COMPENSATION MADE THEREFORE.
3. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF SPEC. 3149.2B2.
4. BITUMINOUS AND CONCRETE SURFACING REMOVED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL EITHER BE RECYCLED OR DISPOSED OF OFF THE PROJECT, IN ACCORDANCE WITH THE PROVISIONS OF SPEC. 2104 AND 2105.
5. UNSUITABLE MATERIALS SHALL BE PLACED IN EMBANKMENTS OUTSIDE OF A 1V:1-1/2H SLOPE EXTENDING DOWN AND OUTWARD FROM THE GRADING PI OR THE BOULEVARD PI.
6. COMPACTION OF THE GRADING ITEMS OF THIS PROJECT SHALL BE BY THE "SPECIFIED DENSITY METHOD", EXCEPT WHEN WITHIN 1 m OF THE WATER TABLE, THEN BY THE "QUALITY COMPACTION METHOD".
7. COMPACTION OF THE AGGREGATE BASE ITEMS OF THIS PROJECT SHALL BE BY THE "SPECIFIED DENSITY METHOD" EXCEPT WHEN THE CONTRACTOR ELECTS TO USE RECYCLED MATERIALS FOR THE AGGREGATE BASE ITEMS, THEN THE "QUALITY COMPACTION METHOD" SHALL BE UTILIZED.
8. COMPACTION OF THE BITUMINOUS ITEMS OF THIS PROJECT SHALL BE BY THE "MODIFIED SPECIFIED DENSITY METHOD", IN ACCORDANCE WITH THE PROVISIONS OF SPEC. 2340.
9. STABILIZING AGGREGATE SHALL BE INCORPORATED INTO THE SUBGRADE TO ACHIEVE SATISFACTORY SURFACE STABILITY AT LOCATIONS DEEMED NECESSARY BY THE ENGINEER, IN ACCORDANCE WITH THE PROVISIONS OF SPEC. 2105.3G. GRANULAR MATERIAL WHICH IS FURNISHED BY THE CONTRACTOR SHALL BE STABILIZED, IF NECESSARY, AT THE CONTRACTOR'S EXPENSE. WHERE STABILIZING AGGREGATE IS DEEMED NECESSARY, IT SHALL BE APPLIED AT A RATE OF APPROXIMATELY 110 KILOGRAMS PER SQUARE METER.
10. WHERE WIDENING ADJACENT TO EXISTING PAVEMENT, CUT VERTICALLY TO THE BOTTOM OF THE CLASS 5 AGGREGATE BASE AND THEN AT A 1V:1/2H SLOPE TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION (AS SHOWN ON THE TYPICAL SECTIONS AND THE CROSS SECTIONS). BACKFILL PROMPTLY TO AVOID UNDERMINING THE EXISTING PAVEMENT.
11. PROVIDE 1V:20H LONGITUDINAL TAPERS BETWEEN CHANGES IN SUBGRADE AND SUBCUT DEPTHS.
12. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES AND WHERE CONCRETE CURBING ABUTS BITUMINOUS MIXTURES.
13. STRIP AND REFUSE AS SLOPE DRESSING ALL EXISTING TOPSOIL, WHERE PRESENT, IN AREAS TO BE DISTURBED BY CONSTRUCTION. TOPSOIL STRIPING IS CONSIDERED TO BE COMMON EXCAVATION.
14. PLACE A MINIMUM OF SLOPE DRESSING ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT. ALL EXCESS TOPSOIL SHALL BE USED AS SLOPE DRESSING BY PROVIDING A THICKNESS GREATER THAN 100 mm.
15. SEEDING REQUIREMENTS ON THIS PROJECT SHALL BE AS FOLLOWS:
 - a. SEED MIXTURE 90A SHALL BE APPLIED AT A RATE OF 50 KILOGRAMS PER HECTARE.
 - b. MULCH MATERIAL TYPE I SHALL BE APPLIED AT A RATE OF 4.5 METRIC TONS PER HECTARE.
 - c. COMMERCIAL FERTILIZER ANALYSIS 10-10-10 (OR EQUIVALENT) SHALL BE APPLIED AT A RATE OF 560 KILOGRAMS PER HECTARE.
16. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS.
17. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, DATED APRIL 1995.
18. COMMON BORROW MATERIAL SHALL HAVE A MINIMUM R-VALUE OF 55. BORROW MATERIAL PLACED WITHIN THE UPPER 1.2 m OF THE EMBANKMENT BELOW THE GRADING GRADE SHALL BE SELECT GRANULAR MATERIAL.

These standard plates, approved by the FEDERAL HIGHWAY ADMINISTRATION, shall apply on this project.

MN/DOT STANDARD PLATES	
PLATE NO.	DESCRIPTION
M 3000 L	REINFORCED CONCRETE PIPE (5 SHEETS)
M 3006 G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
M 3014 J	REINFORCED CONCRETE PIPE ARCH (2 SHEETS)
M 3100 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
M 3110 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
M 3133 C	RIPRAP AT RCP OUTLETS
M 3139 A	RIPRAP AT PRECAST CONCRETE END SECTIONS
M 3145 E	CONCRETE PIPE TIES
M 4000 J	MANHOLE OR CATCH BASIN ((MASONRY, FIELD CONSTRUCTION))
M 4002 F	MANHOLE OR CATCH BASIN ((MASONRY, FIELD CONSTRUCTION))
M 4005 L	MANHOLE OR CATCH BASIN (TYPE A & B)
M 4006 L	MANHOLE OR CATCH BASIN (DESIGN G OR DESIGN H)
M 4010 H	CONC. SHORT CONE & ADJUSTING RING (SECTIONAL CONCRETE)
M 4011 E	PRECAST CONCRETE BASE
M 4020 G	MANHOLE OR CATCH BASIN COVER
M 4024 A	1200 mm DIA. PRECAST SHALLOW DEPTH CATCH BASIN (MAY BE USED IN PLACE OF C OR G STRUCTURE)
M 4101 D	RING CASTING FOR MANHOLE OR CATCH BASIN
M 4108 F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
M 4110 F	COVER CASTING FOR MANHOLE
M 4126 F	CATCH BASIN FRAME CASTING
M 4143 E	STOOL GRATE AND CONCRETE FRAME (MEDIAN DRAINS)
M 4149 C	GRATE CASTING FOR CATCH BASIN
M 4161 F	CURB BOX CASTING FOR CATCH BASIN
M 4180 J	MANHOLE OR CATCH BASIN STEP
M 7035 K	CONCRETE WALK & CURB RETURNS AT ENTRANCES
M 7036 D	PEDESTRIAN CURB RAMPS (FOR THE HANDICAPPED)
M 7100 G	CONCRETE CURB & GUTTERS (DESIGN BAND DESIGN V)
M 7111 J	INSTALLATION & REINFORCEMENT OF CATCH BASIN CASTINGS
M 7113 A	CONCRETE APPROACH NOSE DETAIL
M 8000 I	STANDARD BARRICADES
M 8114 A	P.V.C. HANDHOLE / PULLBOX (2 SHEETS)
M 8150 B	INSTALLATION OF CULVERT MARKERS
M 8307 P	STEEL PLATE BEAM GUARDRAIL (2 SHEETS)
M 8329 F	ECCENTRIC LOADER BREAKAWAY CABLE TERMINAL (ELT) (4 SHEETS)
M 9102 D	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)

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DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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[Signature]
 Date: 3/15/99 Reg. No. 18612



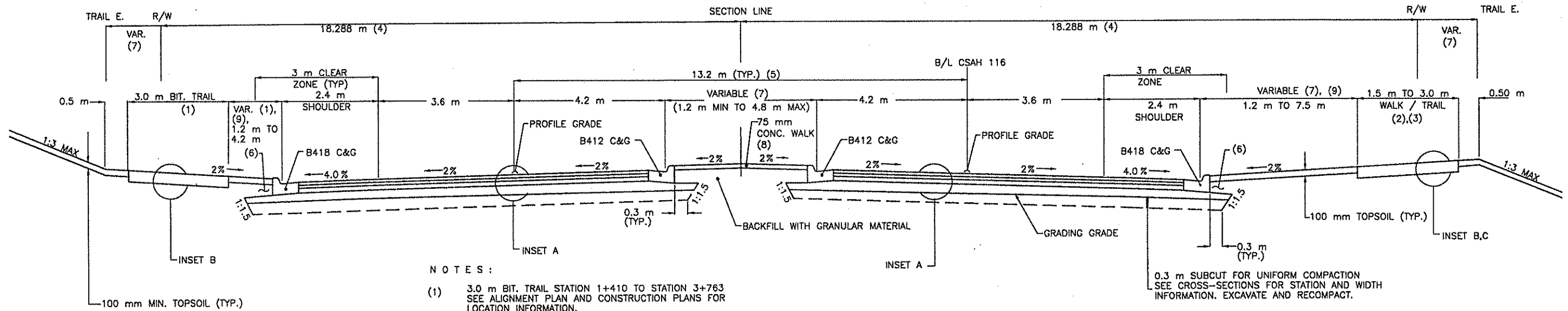
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION/SOILS NOTES
 STANDARD PLATES

FILE NO. ANOKC9808.01	28
DATE 03/15/99	230

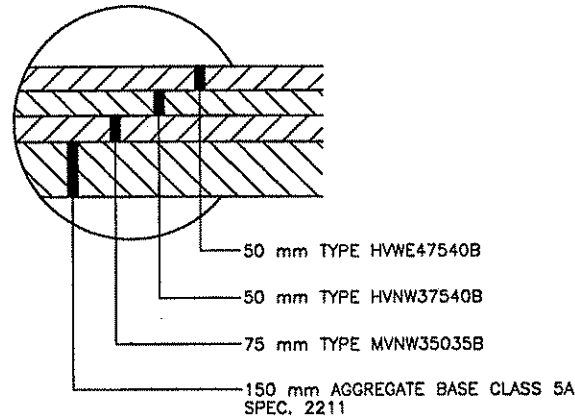


TYPICAL MAINLINE CONSTRUCTION

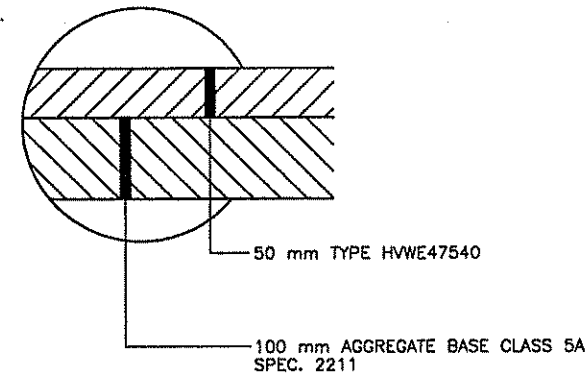


NOTES :

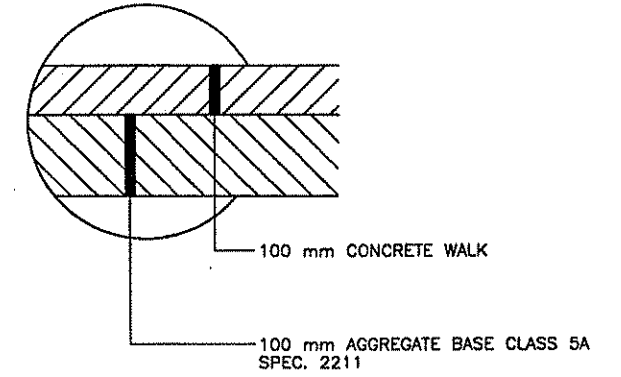
- (1) 3.0 m BIT. TRAIL STATION 1+410 TO STATION 3+763 SEE ALIGNMENT PLAN AND CONSTRUCTION PLANS FOR LOCATION INFORMATION.
- (2) 3.0 m BIT. TRAIL STATION 3+787 TO STATION 5+414 SEE ALIGNMENT PLAN AND CONSTRUCTION PLANS FOR LOCATION INFORMATION.
- (3) 1.5 m 100 mm CONCRETE WALK STATION 2+740.0 TO STATION 2+935.0
- (4) SEE PLAN AND PROFILE FOR VARYING R/W WIDTHS AND LOCATIONS.
- (5) VARIES AT ALIGNMENT TRANSITION STATION 1+680.5 TO STATION 1+840.5.
- (6) BACKFILL WITH GRANULAR MATERIAL.
- (7) SEE CONSTRUCTION PLANS FOR WIDTH INFORMATION.
- (8) OPEN MEDIAN FROM STATION 3+934.990 TO 4+164.852 AND 4+448.531 TO 4+857.822.
- (9) SEE TURF ESTABLISHMENT TABULATION FOR SALT RESISTANT SODDING LOCATIONS AND WIDTHS



INSET A

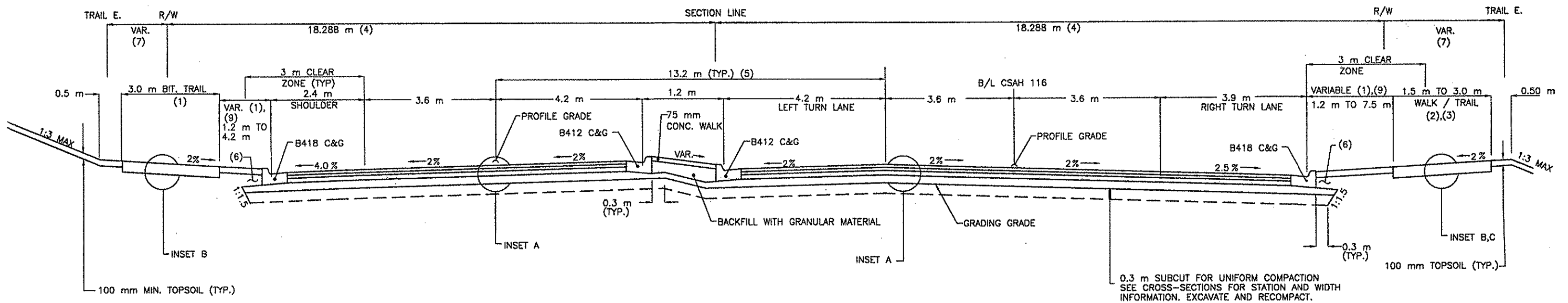


INSET B



INSET C

TYPICAL TURN BAY CONSTRUCTION



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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CSAH 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

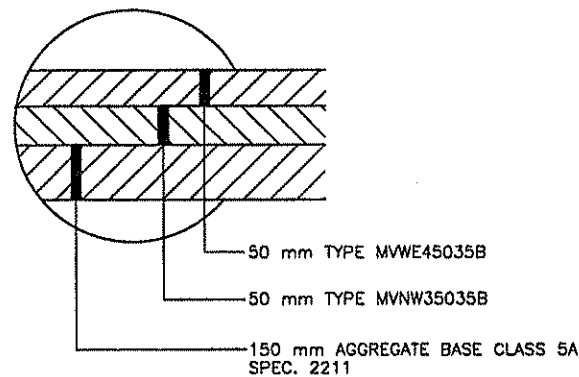
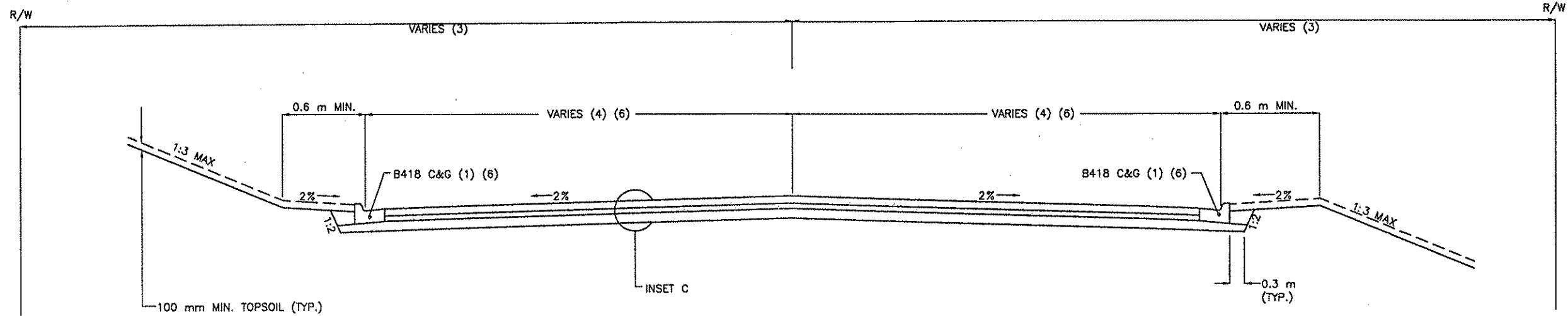
TYPICAL SECTIONS

FILE NO.
 AANOKC9808.00
 DATE
 03/15/99

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230



TYPICAL SIDE STREET CONSTRUCTION FOR
QUINN ST., HEATHER ST., SCHOOL DRIVE

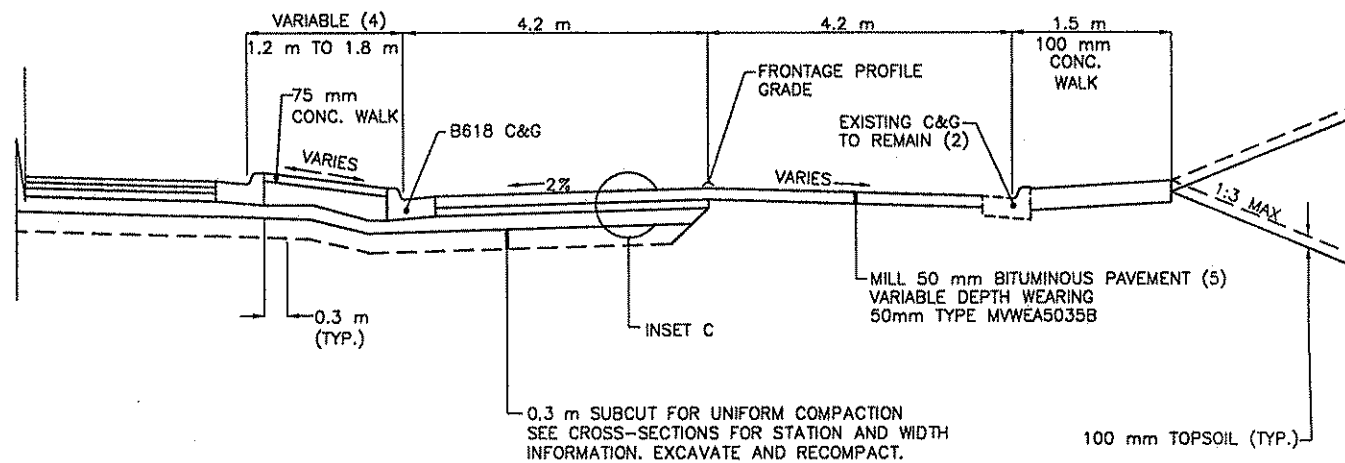


INSET C

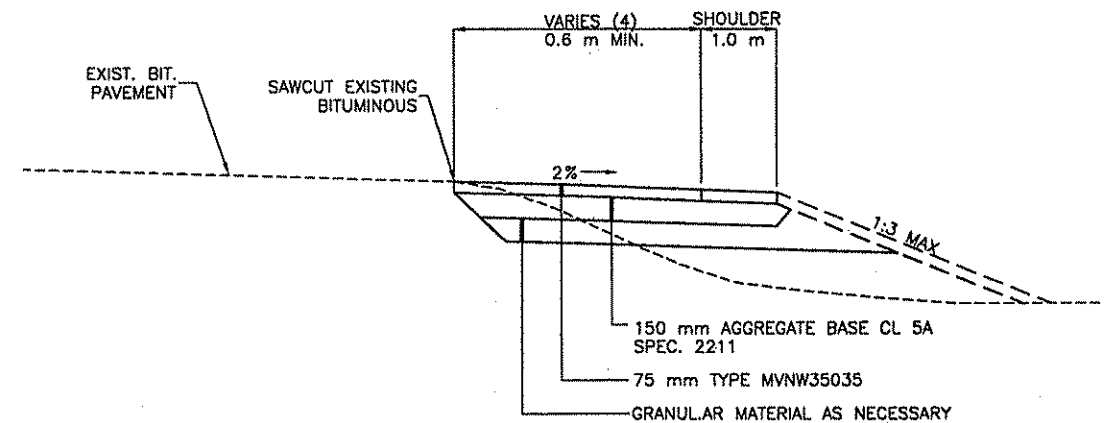
NOTES:

- (1) B418 CURB AND GUTTER TO TRANSITION IN 3 m TO MATCH EXISTING CURB AND GUTTER AS SHOWN ON CONSTRUCTION PLANS.
- (2) REPLACE EXISTING B618 STATION 1+673 TO STATION 1+786 AND STATION 2+498 TO STATION 2+533
- (3) SEE PLAN AND PROFILE FOR VARYING R/W WIDTHS AND LOCATIONS.
- (4) SEE CONSTRUCTION PLANS FOR WIDTH INFORMATION.
- (5) EXCEPT AT FULL WIDTH RECONSTRUCTION SEE CONSTRUCTION PLANS FOR LOCATIONS.
- (6) USE B612 C& G AT SCHOOL DRIVE.

FRONTAGE ROAD CONSTRUCTION



STAGE 1-TEMPORARY WIDENING SECTION



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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Date: 5/15/99 Reg. No. 18612



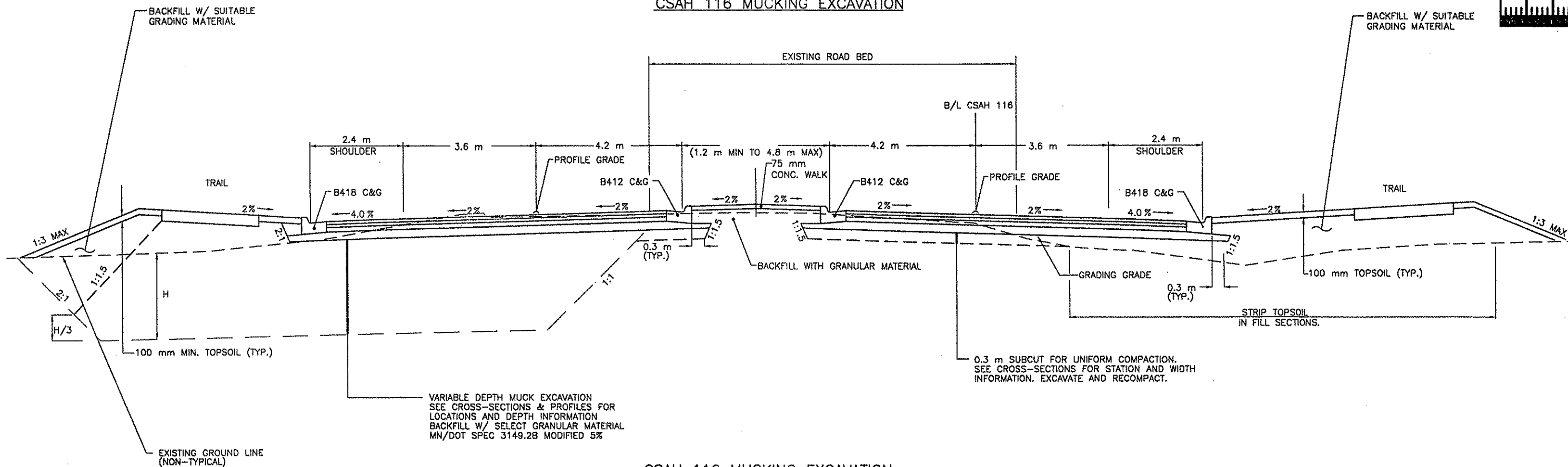
ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TYPICAL SECTIONS

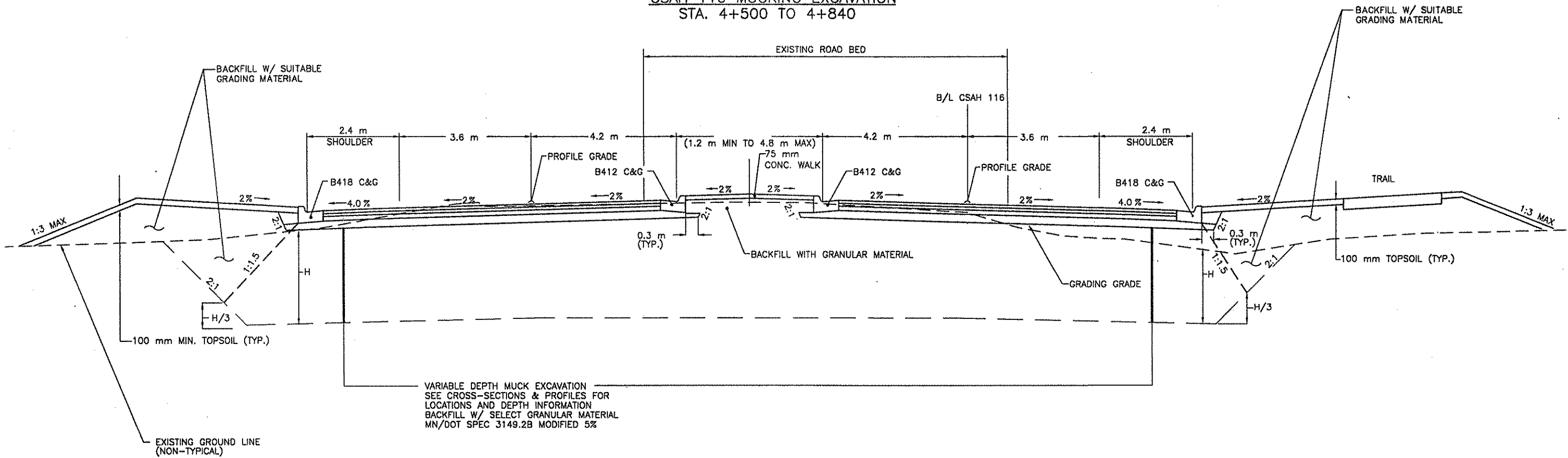
FILE NO.	AANOKC9806.00	30
DATE	03/15/99	230



CSAH 116 MUCKING EXCAVATION



CSAH 116 MUCKING EXCAVATION STA. 4+500 TO 4+840



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Date: 3/15/99 Reg. No. 18612



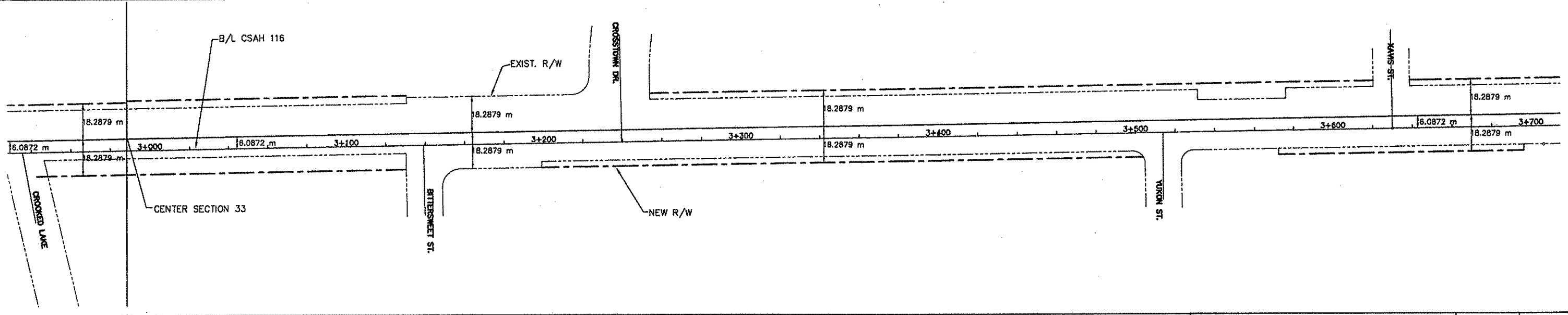
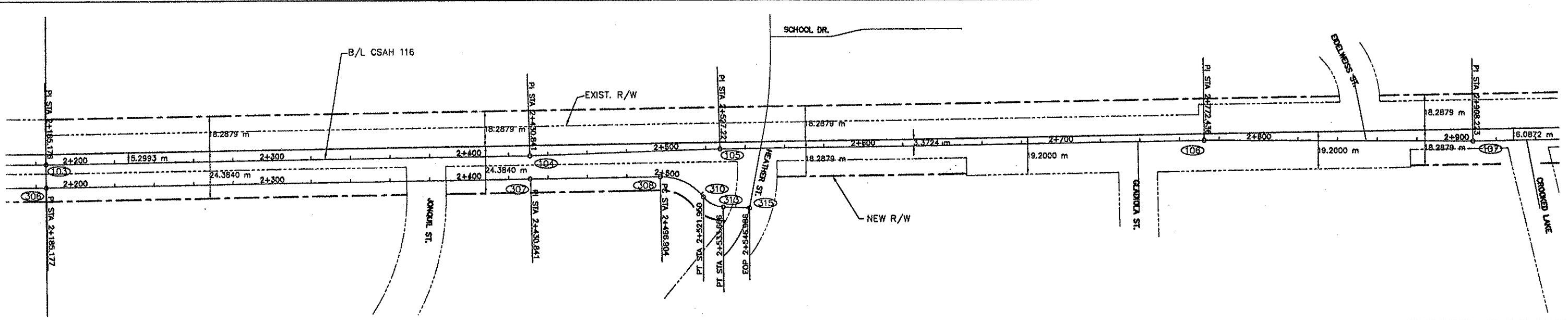
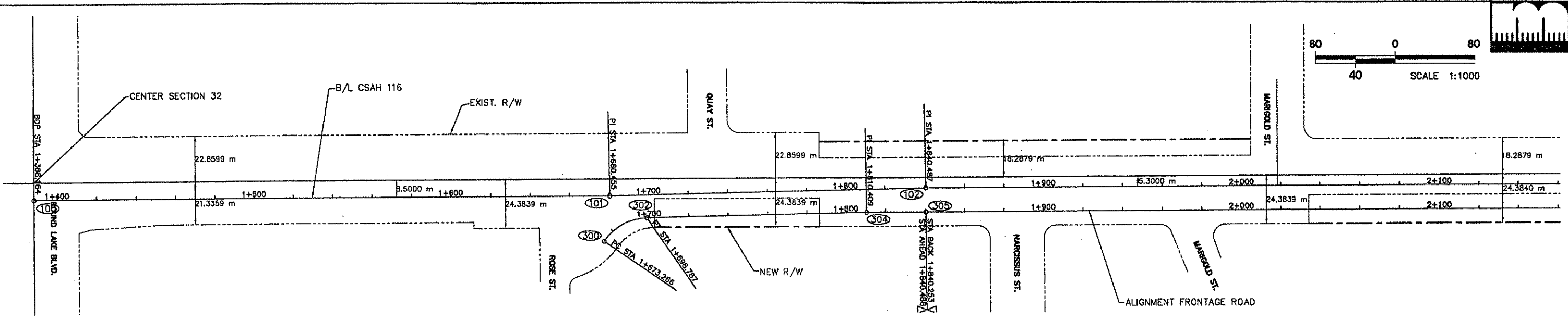
ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TYPICAL SECTIONS

FILE NO.	31
AANOKC9806.00	
DATE	03/15/99
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SCALE 1:1000



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 Date: 3/15/99 Reg. No. 18612

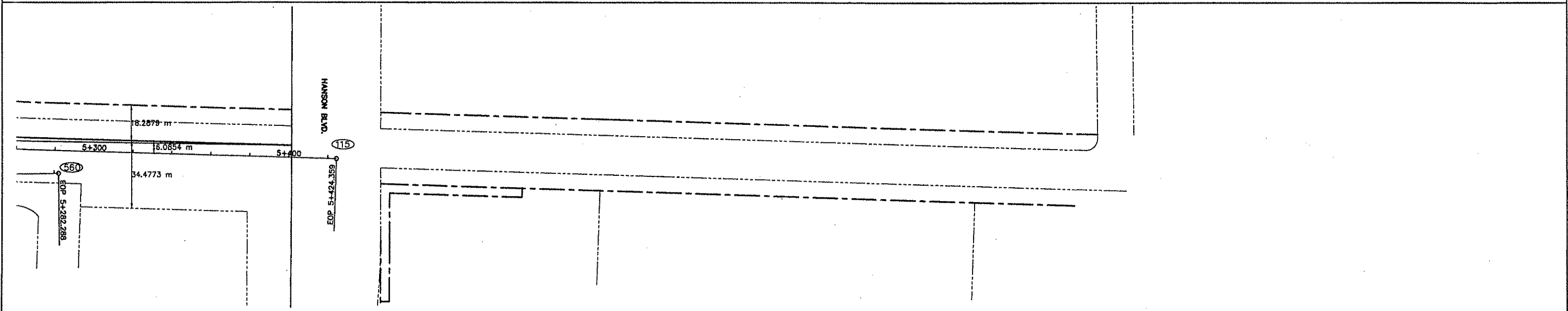
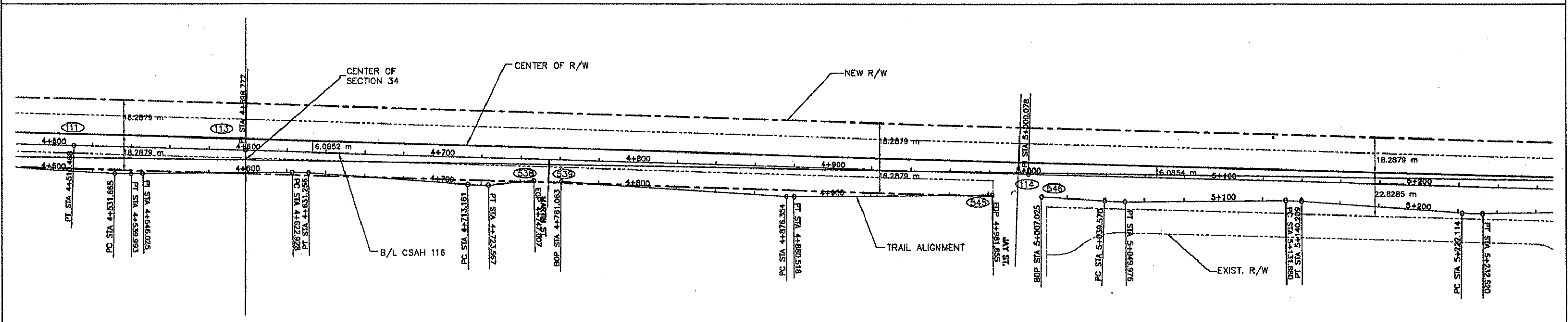
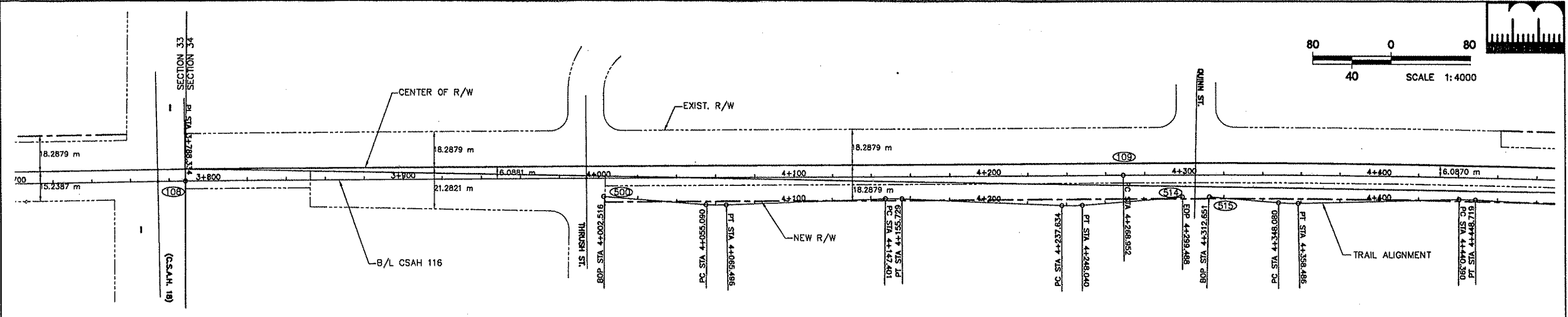


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

ALIGNMENT PLAN
 STA. 1+388.164 TO 3+720.000

FILE NO. ANOKC9806.01	32
DATE 03/15/99	230

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[Signature]
Date: 3/15/99 Reg. No. 18612



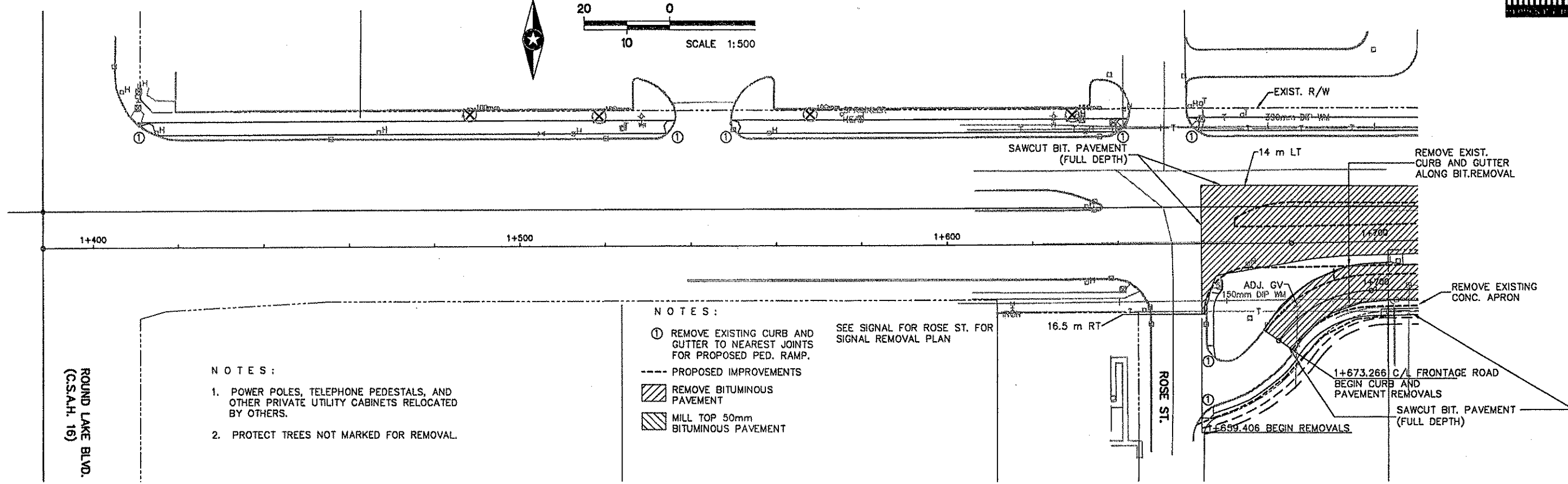
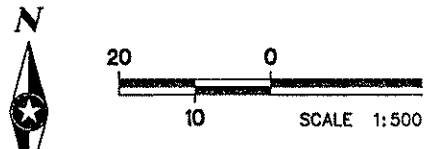
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

ALIGNMENT PLAN
STA. 3+700.000 TO 5+424.359

FILE NO.
ANOKC9806.01
03/15/99
12/28/98

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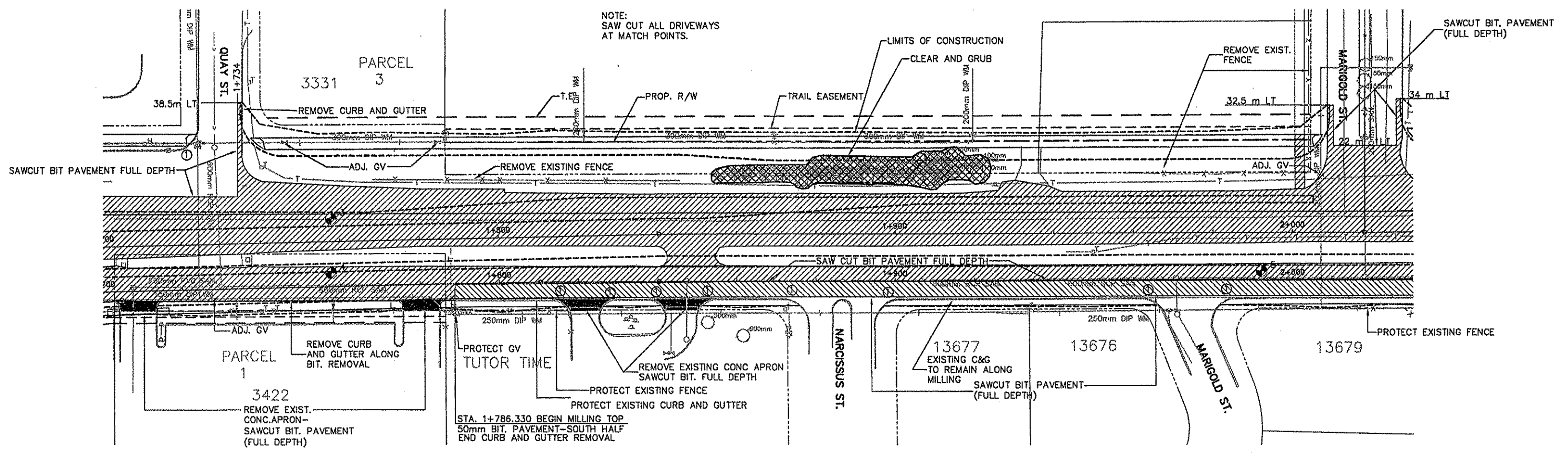
NOTES:

1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
2. PROTECT TREES NOT MARKED FOR REMOVAL.

NOTES:

- ① REMOVE EXISTING CURB AND GUTTER TO NEAREST JOINTS FOR PROPOSED PED. RAMP.
- PROPOSED IMPROVEMENTS
- REMOVE BITUMINOUS PAVEMENT
- MILL TOP 50mm BITUMINOUS PAVEMENT

SEE SIGNAL FOR ROSE ST. FOR SIGNAL REMOVAL PLAN



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[Signature]
Date 3/15/99 Reg. No. 19812



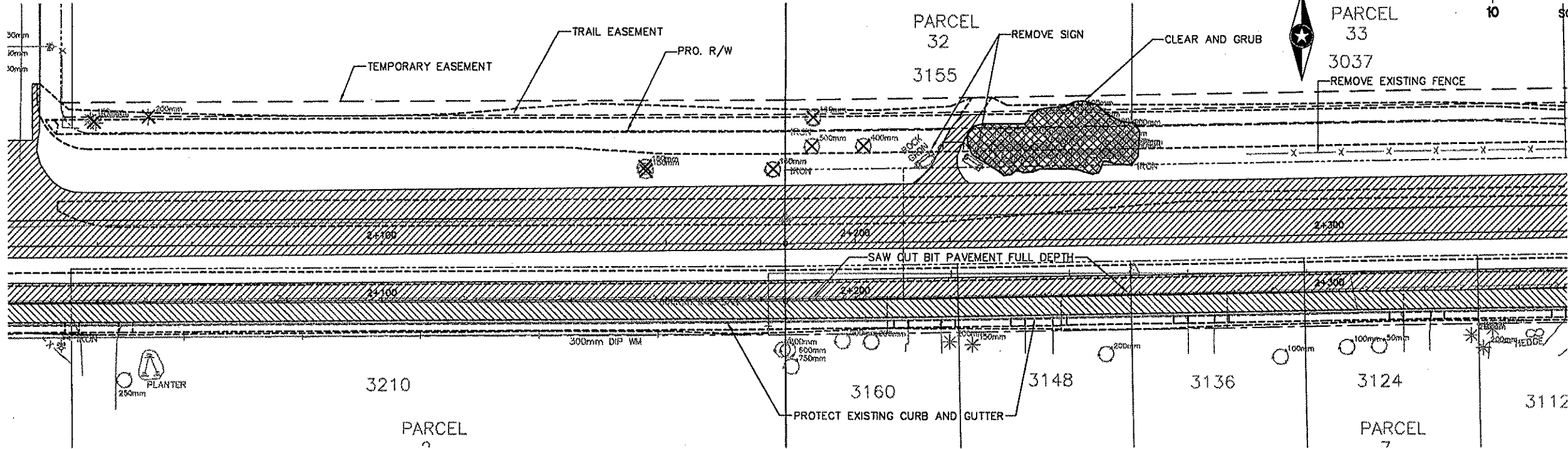
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

REMOVAL PLAN
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC9808.01
DATE 3/15/99

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230

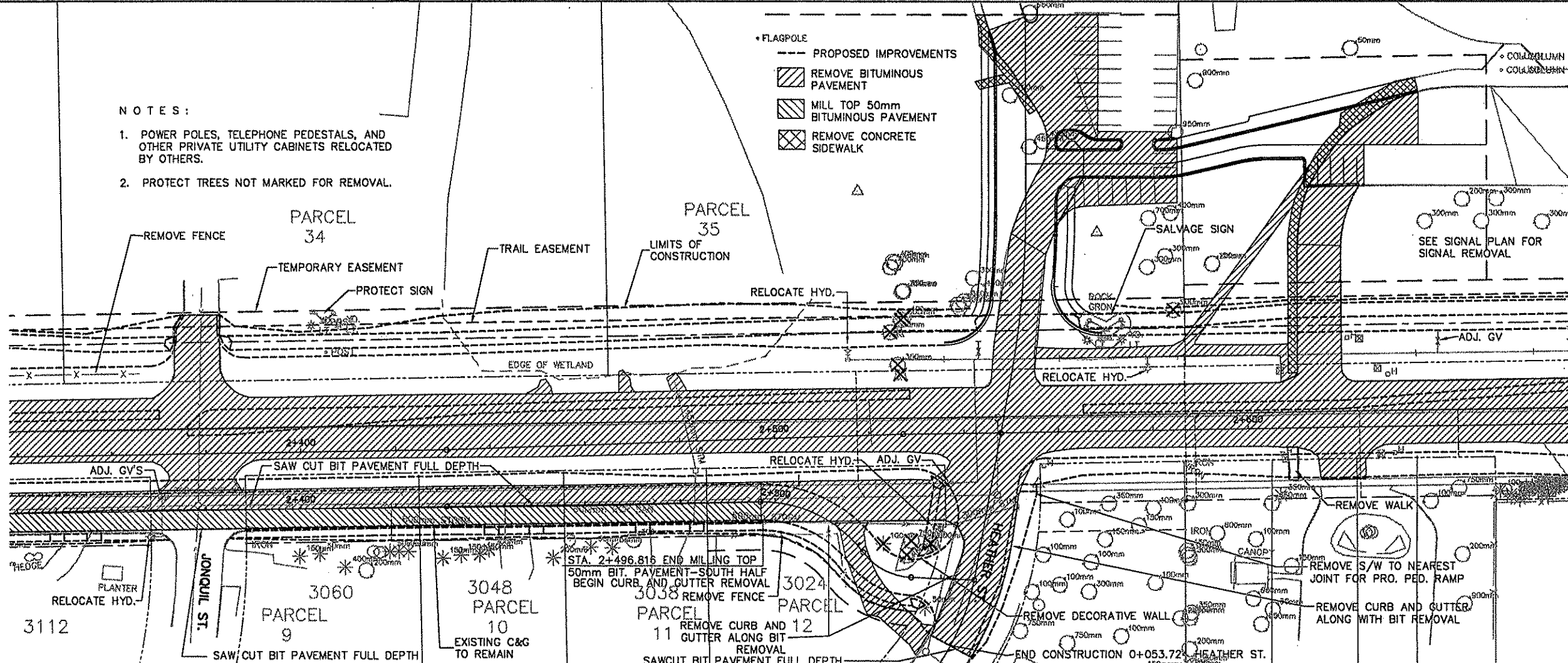
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NOTES :

1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
2. PROTECT TREES NOT MARKED FOR REMOVAL.

- FLAGPOLE
- PROPOSED IMPROVEMENTS
- ▨ REMOVE BITUMINOUS PAVEMENT
- ▧ MILL TOP 50mm BITUMINOUS PAVEMENT
- ⊗ REMOVE CONCRETE SIDEWALK



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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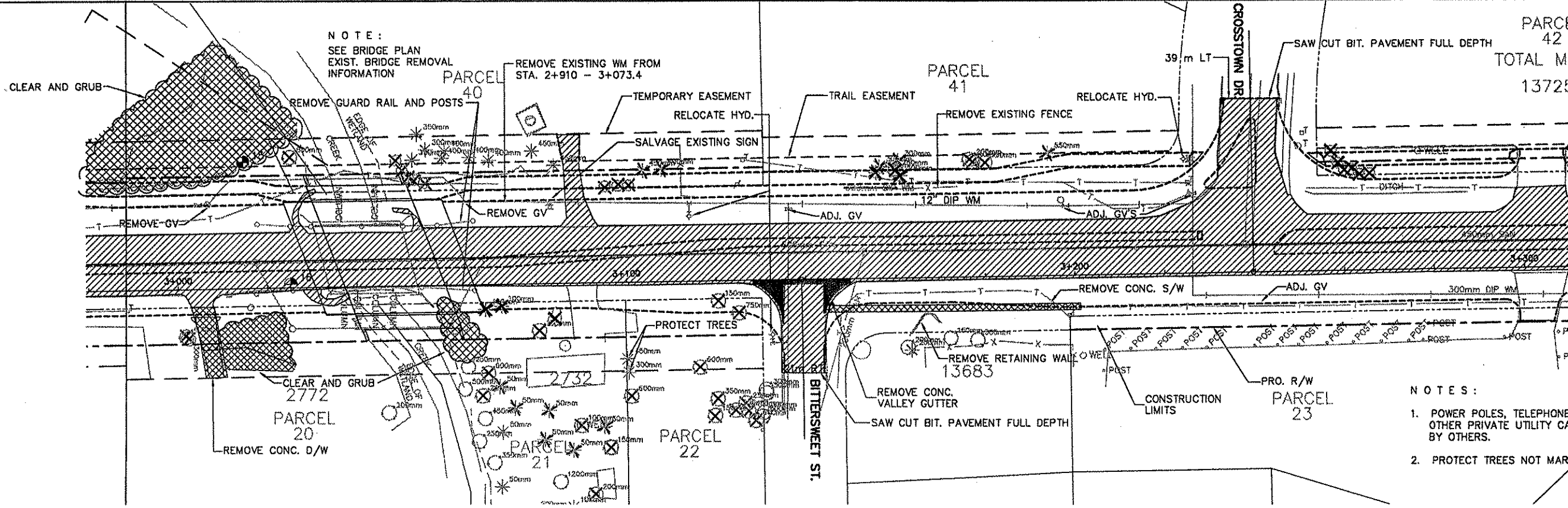
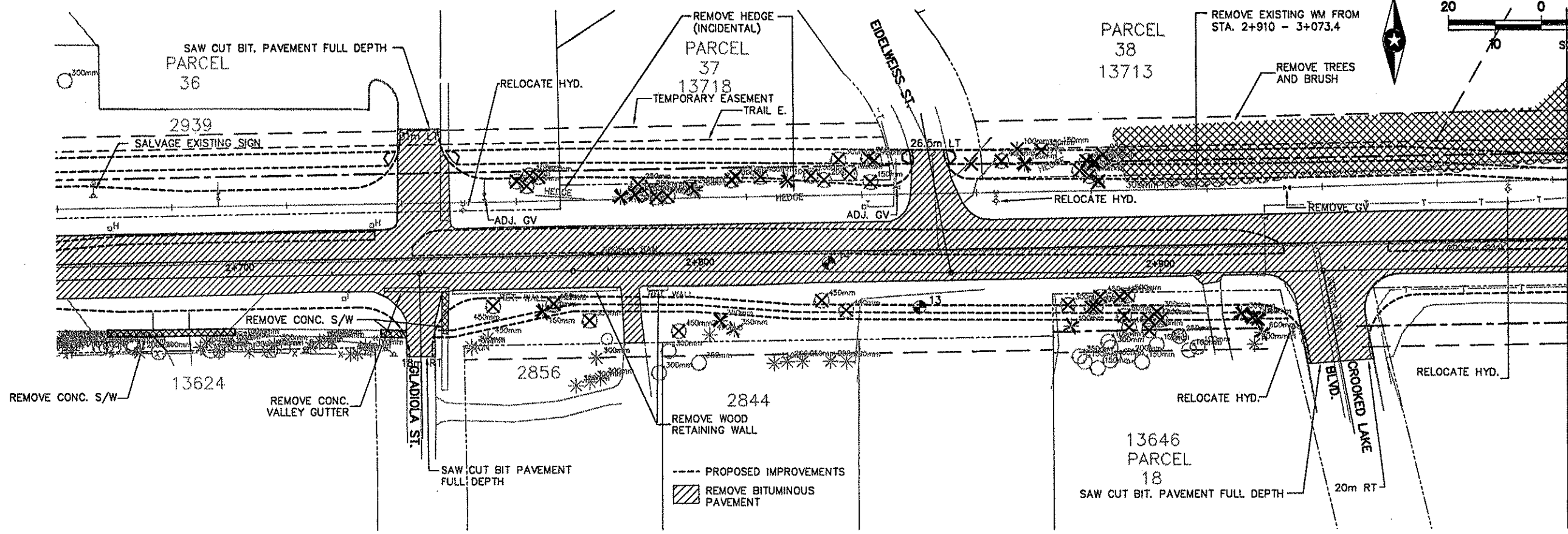
S. M. M.
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

REMOVAL PLAN
 STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01	36
DATE 3/15/99	230



NOTE:
SEE BRIDGE PLAN
EXIST. BRIDGE REMOVAL
INFORMATION

- NOTES:
1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
 2. PROTECT TREES NOT MARKED FOR REMOVAL.

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

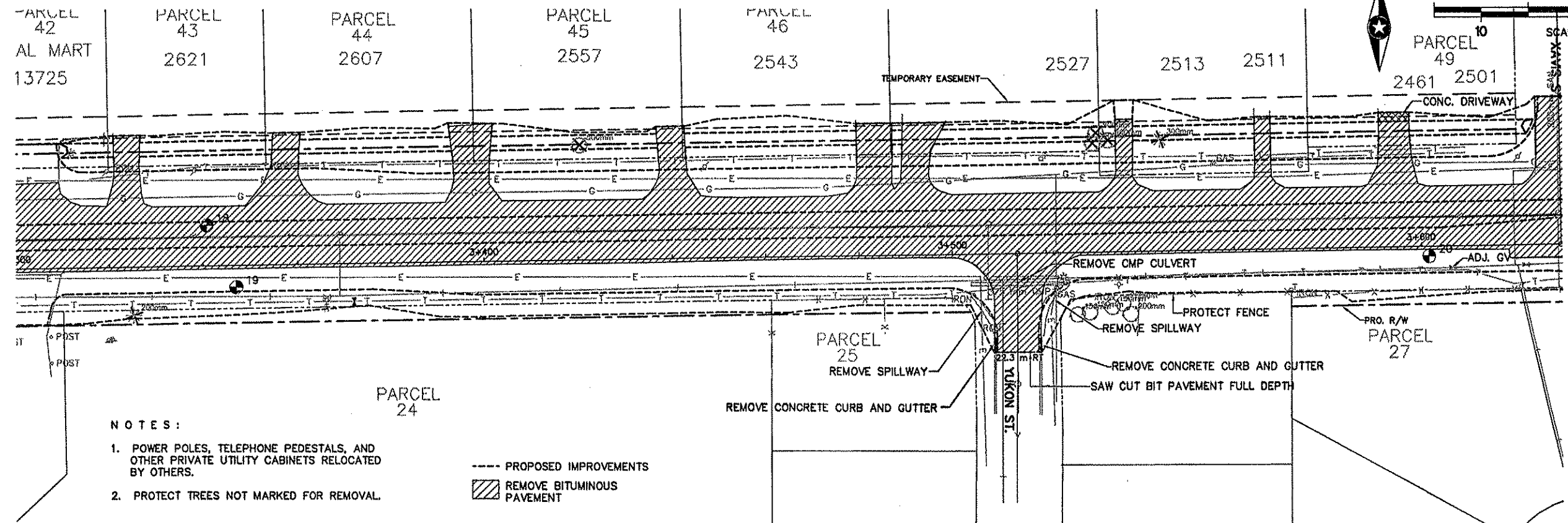
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Jason M. Mason
 Date: 03/15/99 Reg. No. 19612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

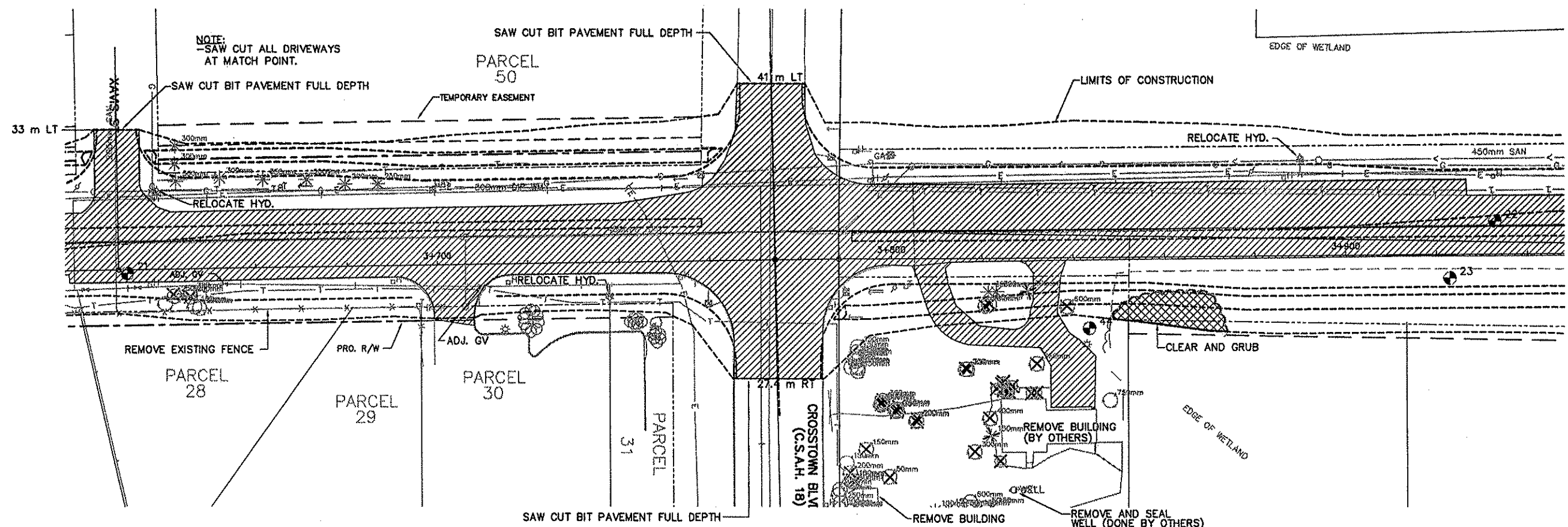
REMOVAL PLAN
 STA. 2+660.000 TO 3+310.000

FILE NO. ANOKC9806.01	37
DATE 3/15/99	230



- NOTES:
1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
 2. PROTECT TREES NOT MARKED FOR REMOVAL.

--- PROPOSED IMPROVEMENTS
 [Hatched Area] REMOVE BITUMINOUS PAVEMENT



NOTE:
 -SAW CUT ALL DRIVEWAYS AT MATCH POINT.

G:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\REMOVAL.DWG 03-08-99 10:05 am

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

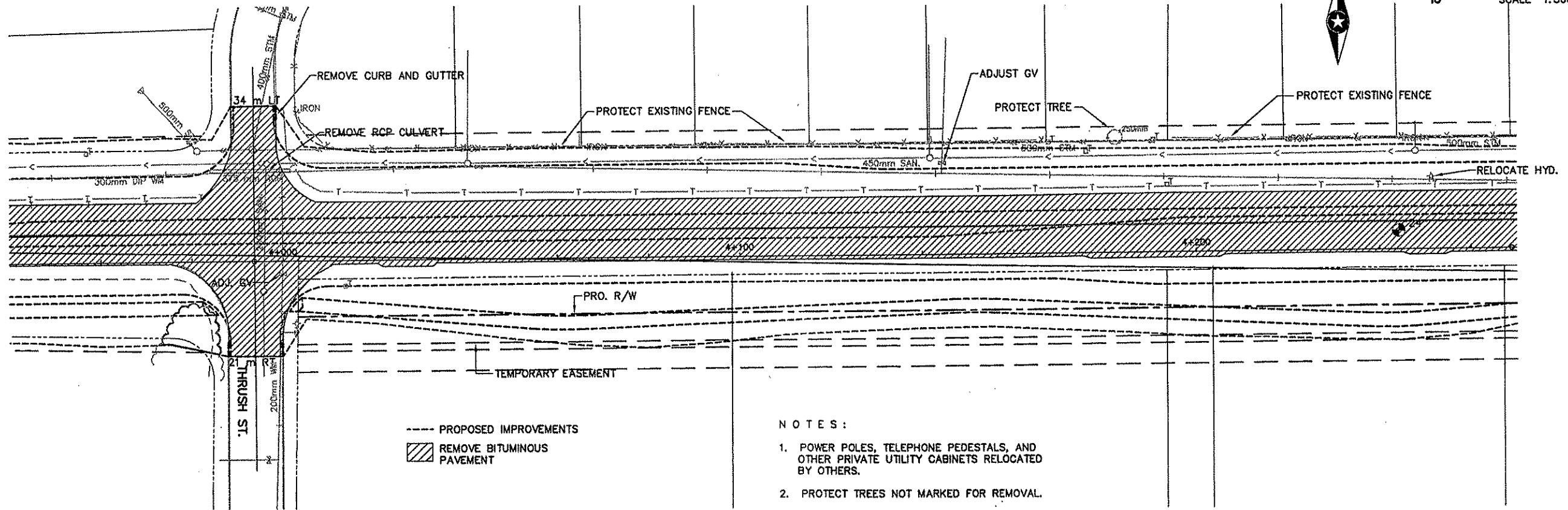
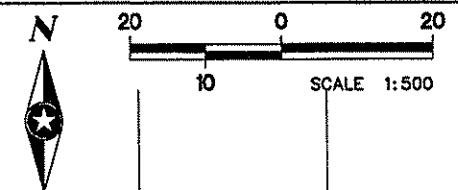
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Suzanne M. Mason
 Date: 3/15/99 Reg. No. 18612



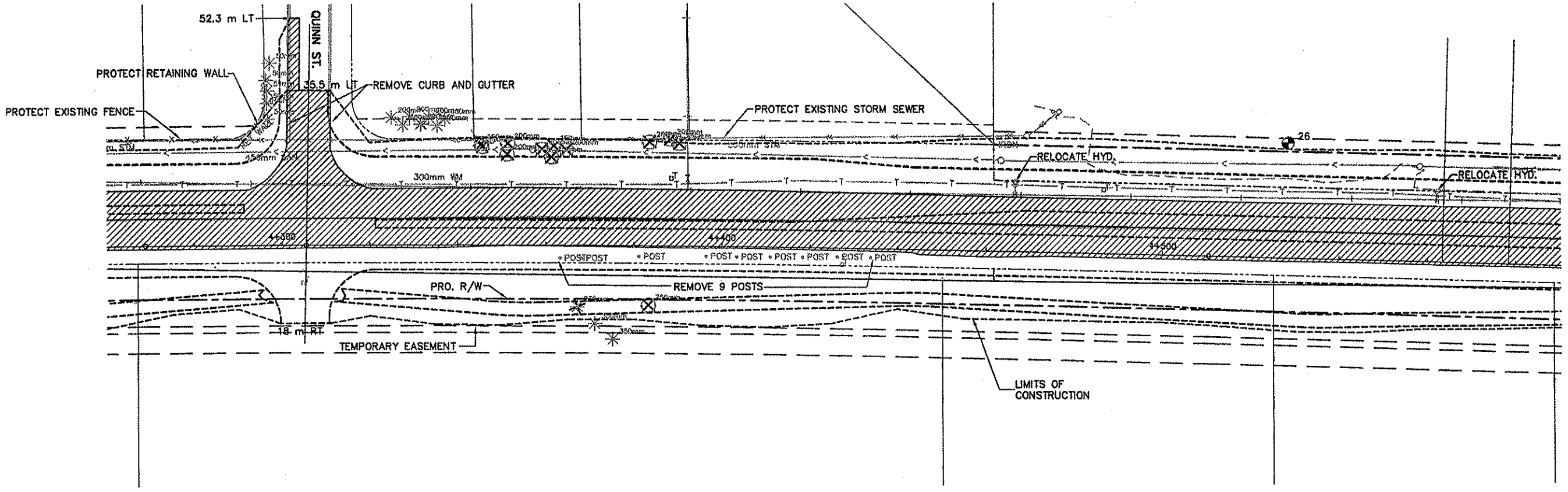
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

REMOVAL PLAN
 STA. 3+300.00 TO 3+950.000

FILE NO. ANOKC9806.01	38
DATE 3/15/99	230



- NOTES:
1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
 2. PROTECT TREES NOT MARKED FOR REMOVAL.



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

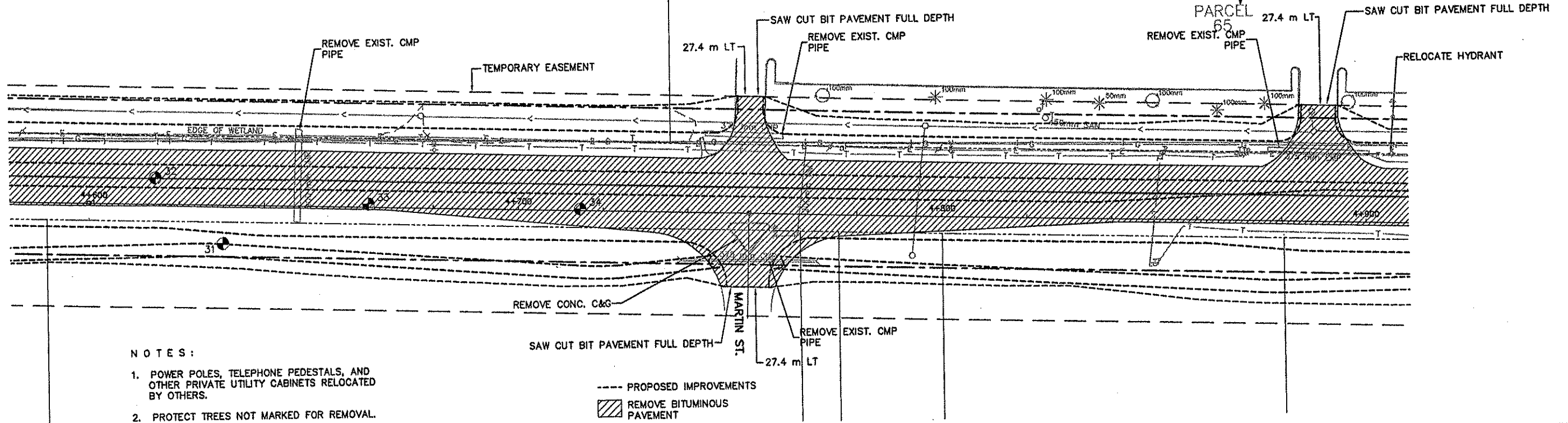
Silvan M. Misa
 Date: 2/15/99 Reg. No. 18612



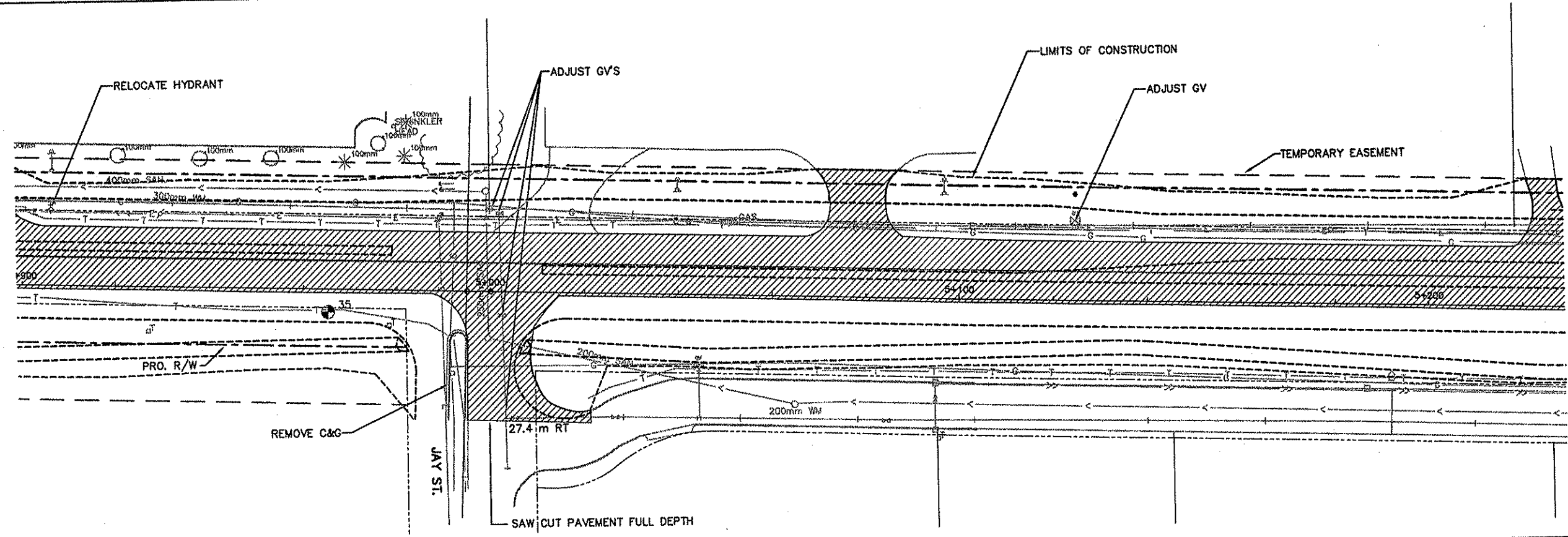
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

REMOVAL PLAN
 STA. 3+940.000 TO 4+590.000

FILE NO. ANOKC9806.01	39
DATE 3/15/99	230



- NOTES:
1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
 2. PROTECT TREES NOT MARKED FOR REMOVAL.



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

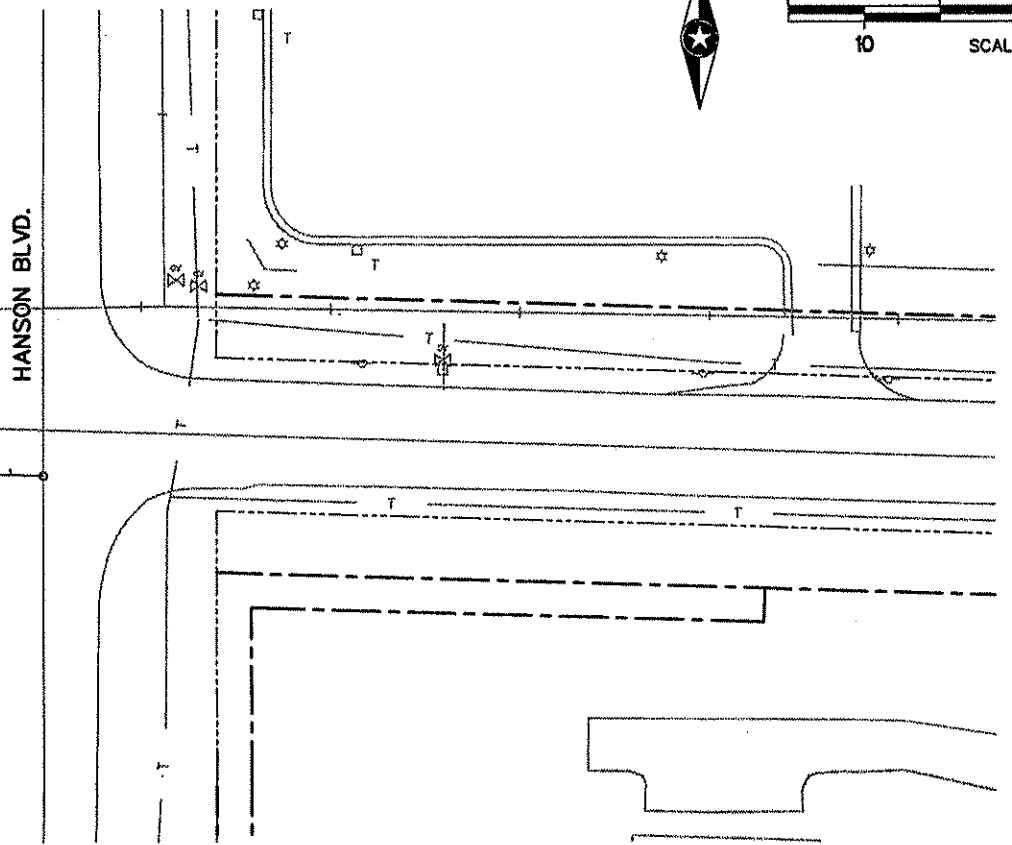
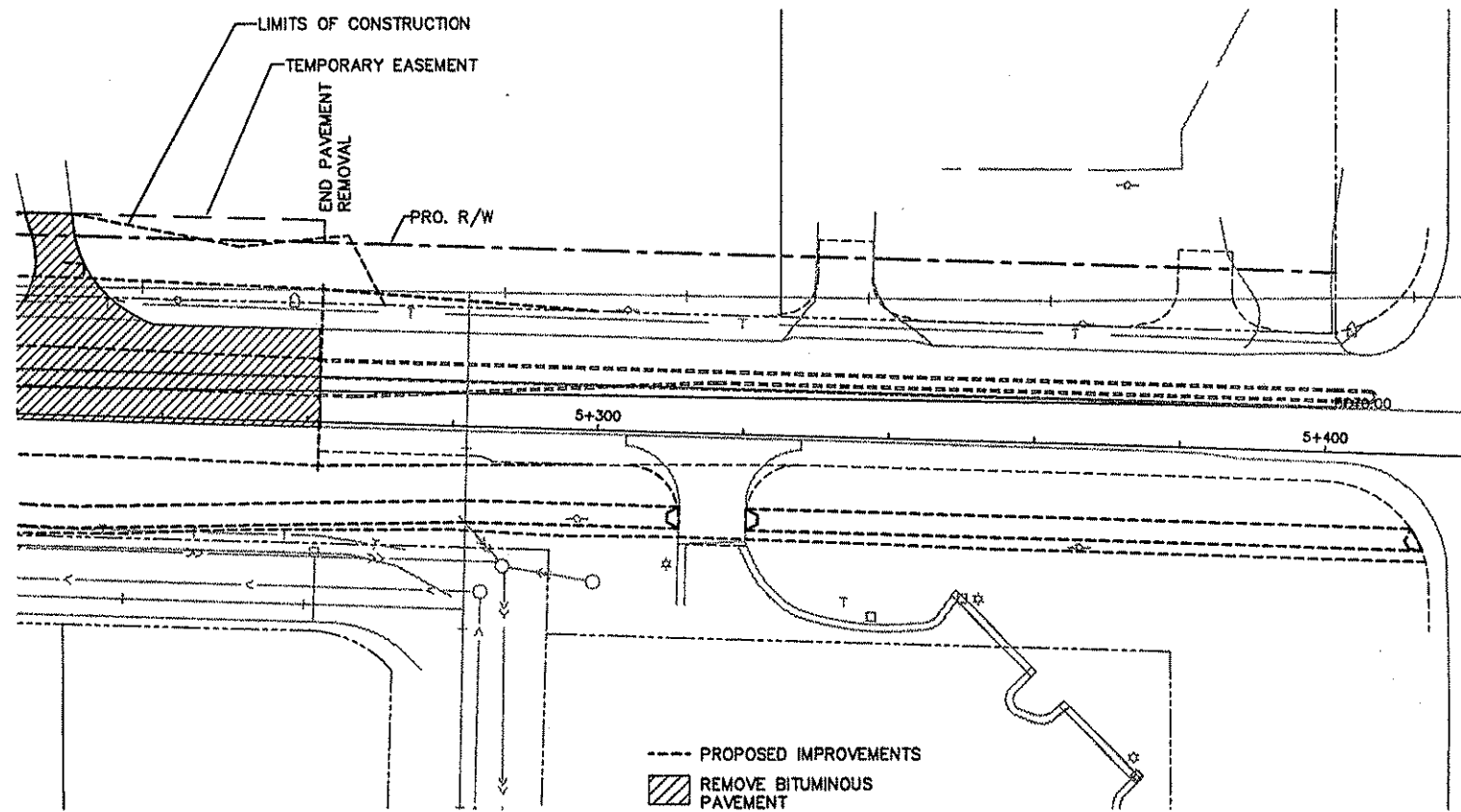
[Signature]
Date: 3/15/99 Reg. No. 18812



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

REMOVAL PLAN
STA. 4+580.000 TO 5+230.000

FILE NO.
ANOKC9806.01
DATE
3/15/99
40
230



- NOTES:
1. POWER POLES, TELEPHONE PEDESTALS, AND OTHER PRIVATE UTILITY CABINETS RELOCATED BY OTHERS.
 2. PROTECT TREES NOT MARKED FOR REMOVAL.

Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\REMOVAL7.DWG 03-08-99 10:08 am

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

[Signature]
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

REMOVAL PLAN
 STA. 5+220.000 TO 5+424.359

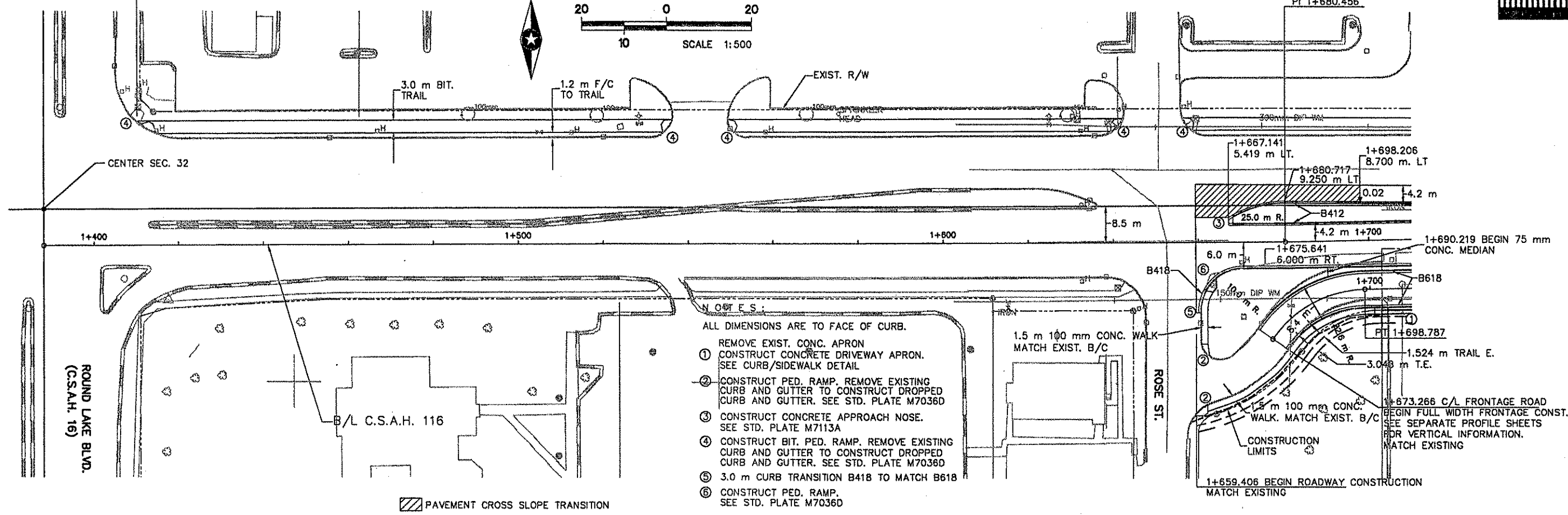
FILE NO. ANOKC9809.01	41 230
DATE 3/15/99	



STA. 1+410.496
 BEGIN BIT. TRAIL
 BEGIN S.A.P. 02-716-04



20 0 20
 10 SCALE 1:500



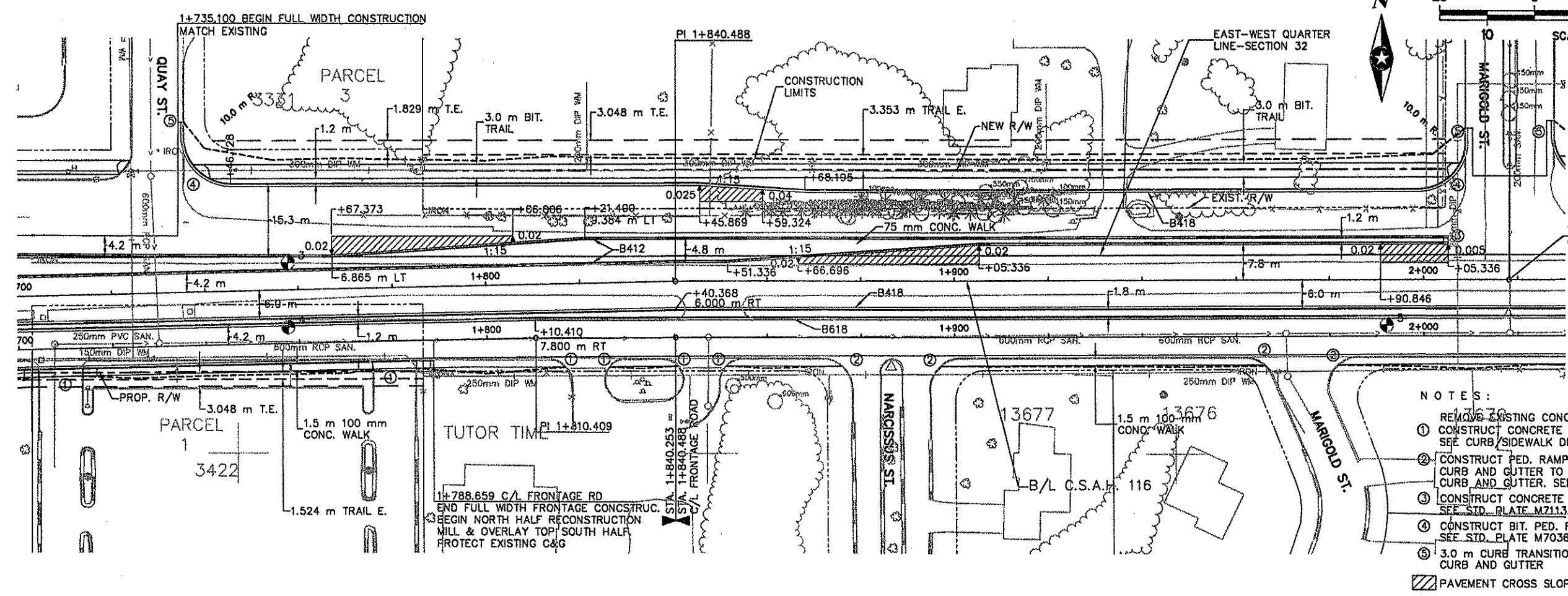
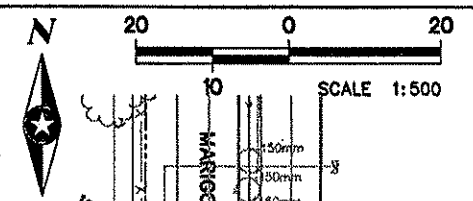
- ALL DIMENSIONS ARE TO FACE OF CURB.
- ① REMOVE EXIST. CONC. APRON CONSTRUCT CONCRETE DRIVEWAY APRON. SEE CURB/SIDEWALK DETAIL
 - ② CONSTRUCT PED. RAMP. REMOVE EXISTING CURB AND GUTTER TO CONSTRUCT DROPPED CURB AND GUTTER. SEE STD. PLATE M7036D
 - ③ CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A
 - ④ CONSTRUCT BIT. PED. RAMP. REMOVE EXISTING CURB AND GUTTER TO CONSTRUCT DROPPED CURB AND GUTTER. SEE STD. PLATE M7036D
 - ⑤ 3.0 m CURB TRANSITION B418 TO MATCH B618
 - ⑥ CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D

PAVEMENT CROSS SLOPE TRANSITION



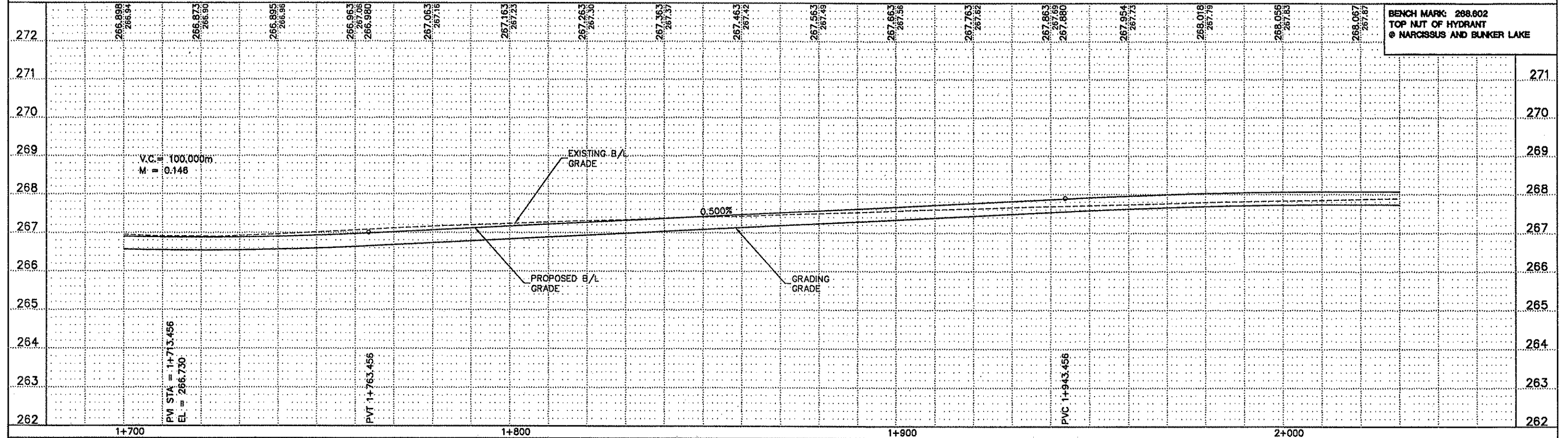
03-24-99 11:44 am
 C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET1.DWG

DESIGN						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. <i>Albert M. Mason</i> Date: 3/15/99 Reg. No. 18812		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	CONSTRUCTION PLAN AND PROFILE STA. 1+659.406 TO 1+710.000	FILE NO. ANOKC9806.01	42
DRAWING					DATE 03/15/99					230	
CHECKED											
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM						



- NOTES:**
- ① REMOVE EXISTING CONCRETE APRON. CONSTRUCT CONCRETE DRIVEWAY APRON. SEE CURB/SIDEWALK DETAIL.
 - ② CONSTRUCT PED. RAMP. REMOVE EXISTING CURB AND GUTTER TO CONSTRUCT DROPPED CURB AND GUTTER. SEE STD. PLATE M7036D.
 - ③ CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A.
 - ④ CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D.
 - ⑤ 3.0 m CURB TRANSITION B418 TO MATCH EXISTING CURB AND GUTTER.
- ▨ PAVEMENT CROSS SLOPE TRANSITION

1+788.659 C/L FRONTAGE RD
 END FULL WIDTH FRONTAGE CONSTRUCTION
 BEGIN NORTH HALF RECONSTRUCTION
 MILL & OVERLAY TOP SOUTH HALF
 PROTECT EXISTING C&G



BENCH MARK: 268.602
 TOP NUT OF HYDRANT
 @ NARCISSUS AND BUNKER LAKE

03-24-99 11:47 am
 G:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET2.DWG

DESIGN	DRAWING	CHECKED
DESIGN TEAM	NO.	BY
	DATE	

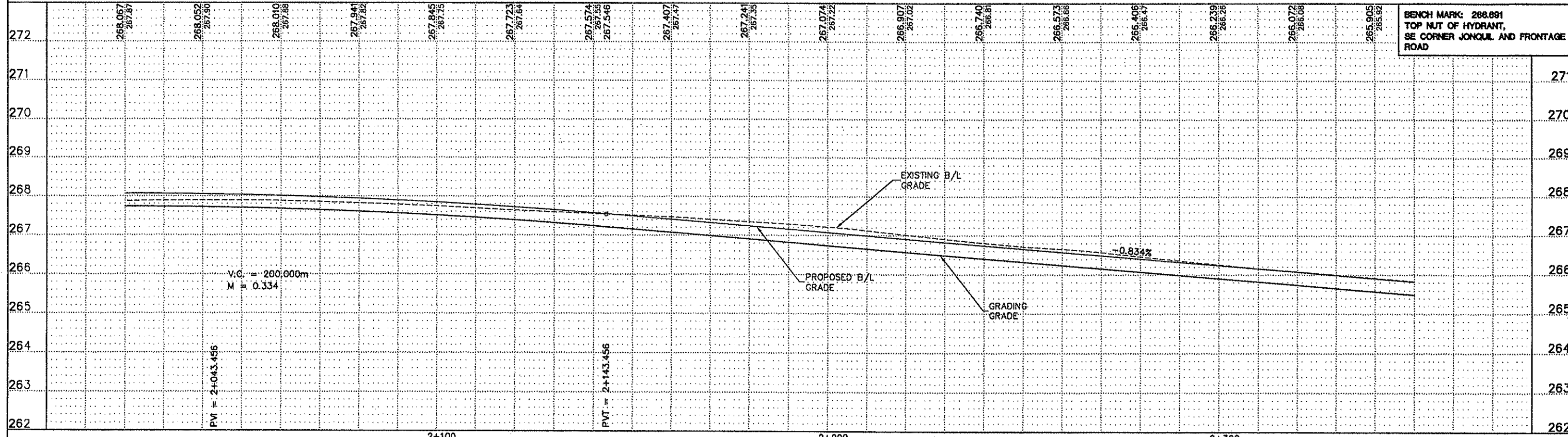
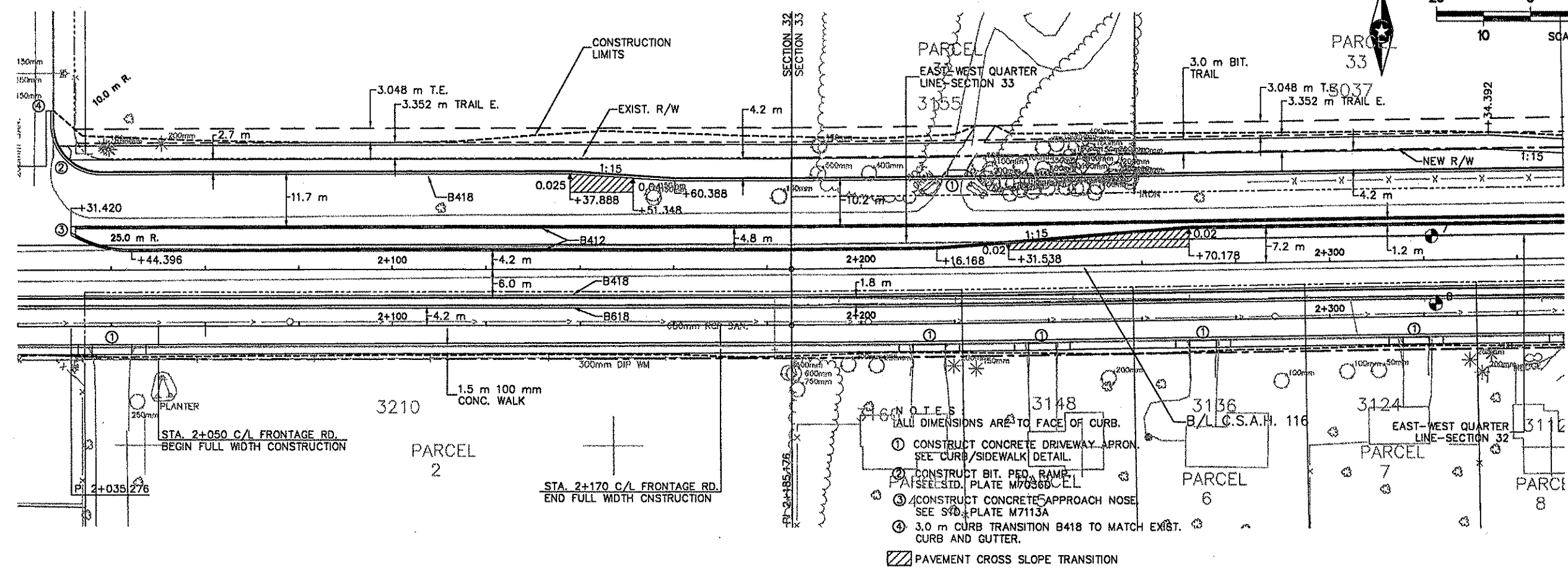
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
[Signature]
 Date: 3/15/99 Reg. No. 18812



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 1+700.000 TO 2+030.000

FILE NO. ANOKC9806.01 **43**
 DATE 03/15/99 **230**



G:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\9806\EP\PSHEETS.DWG 03-18-99 1:39 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

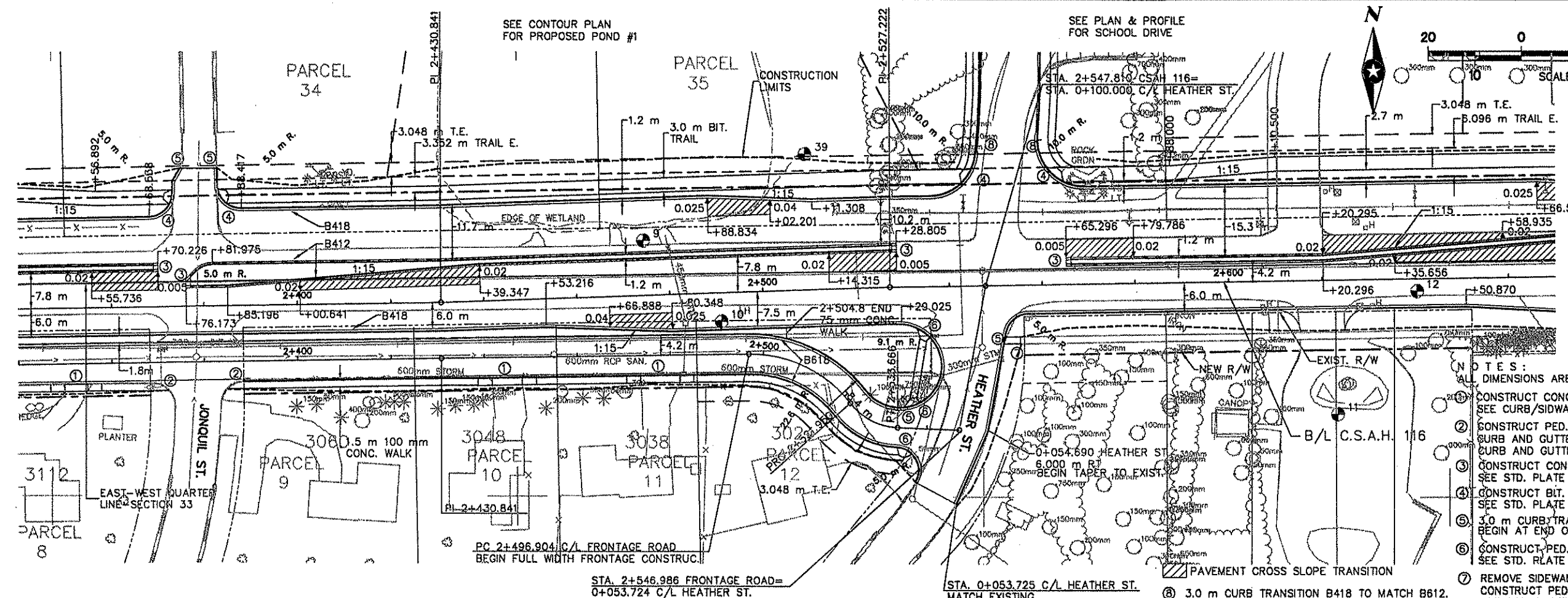
CONSTRUCTION PLAN AND PROFILE
 STA. 2+020.000 TO 2+350.000

FILE NO. ANOKC9806.01
 DATE 03/15/99
44
230

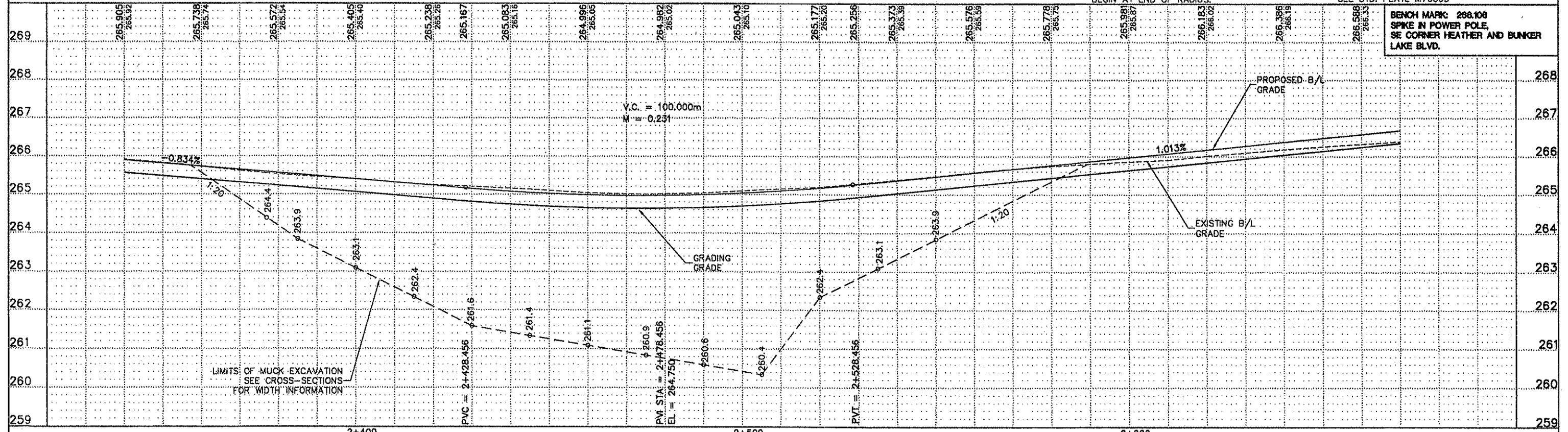


SEE CONTOUR PLAN FOR PROPOSED POND #1

SEE PLAN & PROFILE FOR SCHOOL DRIVE



- NOTES:
- ① ALL DIMENSIONS ARE TO FACE OF CURB.
 - ② CONSTRUCT CONCRETE DRIVEWAY APRON. SEE CURB/SIDWALK DETAIL.
 - ③ CONSTRUCT PED. RAMP. REMOVE EXISTING CURB AND GUTTER TO CONSTRUCT DROPPED CURB AND GUTTER. SEE STD. PLATE M7036D
 - ④ CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A
 - ⑤ CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D.
 - ⑥ 3.0 m CURB TRANSITION B418 TO MATCH B618. BEGIN AT END OF RADIUS.
 - ⑦ CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D
 - ⑧ REMOVE SIDEWALK TO NEAREST JOINT. CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D



BENCH MARK 266.106 SPIKE IN POWER POLE, SE CORNER HEATHER AND BUNKER LAKE BLVD.

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

[Signature]
 Date: 2/15/99 Reg. No. 18612

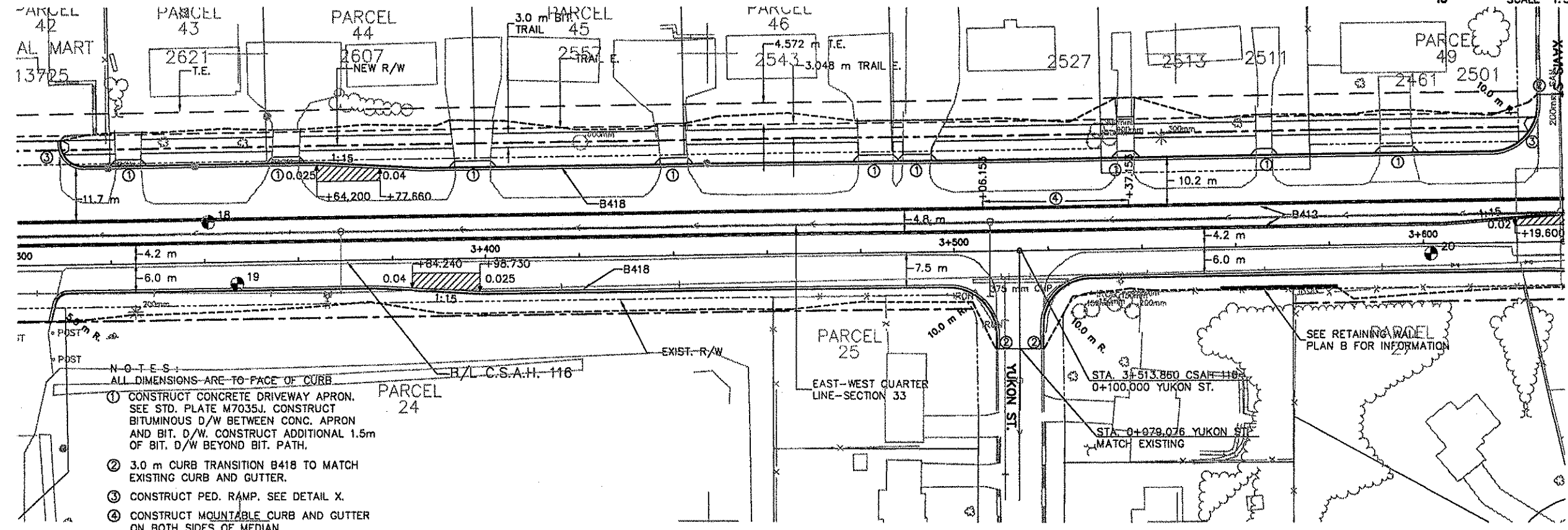
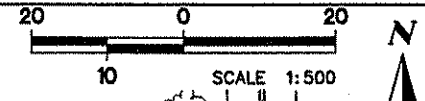


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 2+340.000 TO 2+670.000

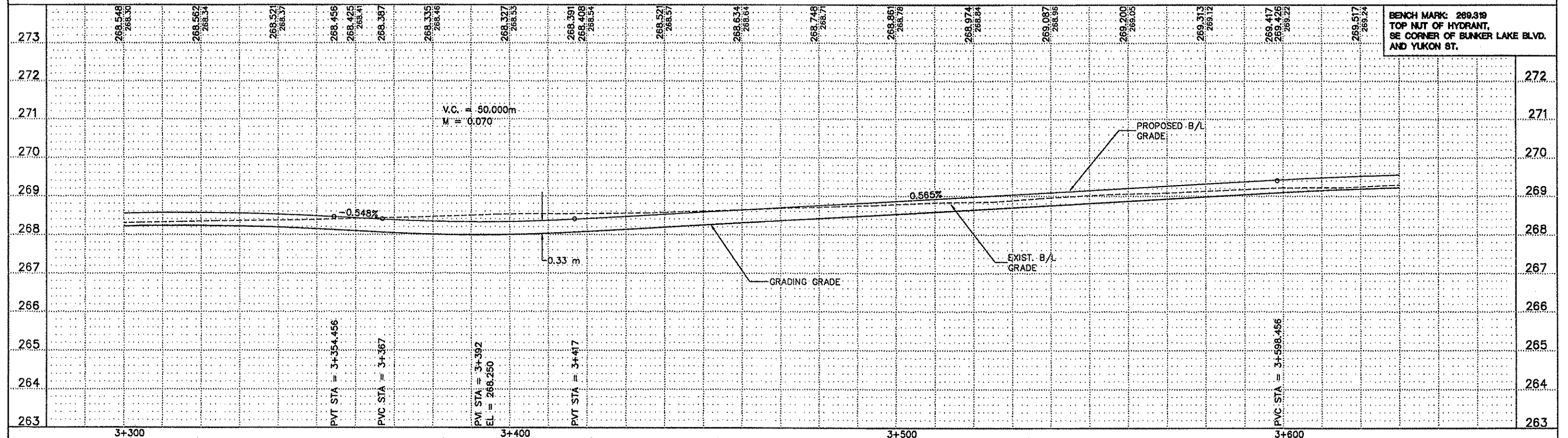
FILE NO. ANOKC9808.01	45
DATE 03/15/99	230

Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9808\EP\PSHEET4.DWG 03-24-99 9:12 am



- NOTES:**
 ALL DIMENSIONS ARE TO FACE OF CURB
- CONSTRUCT CONCRETE DRIVEWAY APRON. SEE STD. PLATE M7035J. CONSTRUCT BITUMINOUS D/W BETWEEN CONC. APRON AND BIT. D/W. CONSTRUCT ADDITIONAL 1.5m OF BIT. D/W BEYOND BIT. PATH.
 - 3.0 m CURB TRANSITION B418 TO MATCH EXISTING CURB AND GUTTER.
 - CONSTRUCT PED. RAMP. SEE DETAIL X.
 - CONSTRUCT MOUNTABLE CURB AND GUTTER ON BOTH SIDES OF MEDIAN. TRANSITION IN AND OUT IN 3 m.

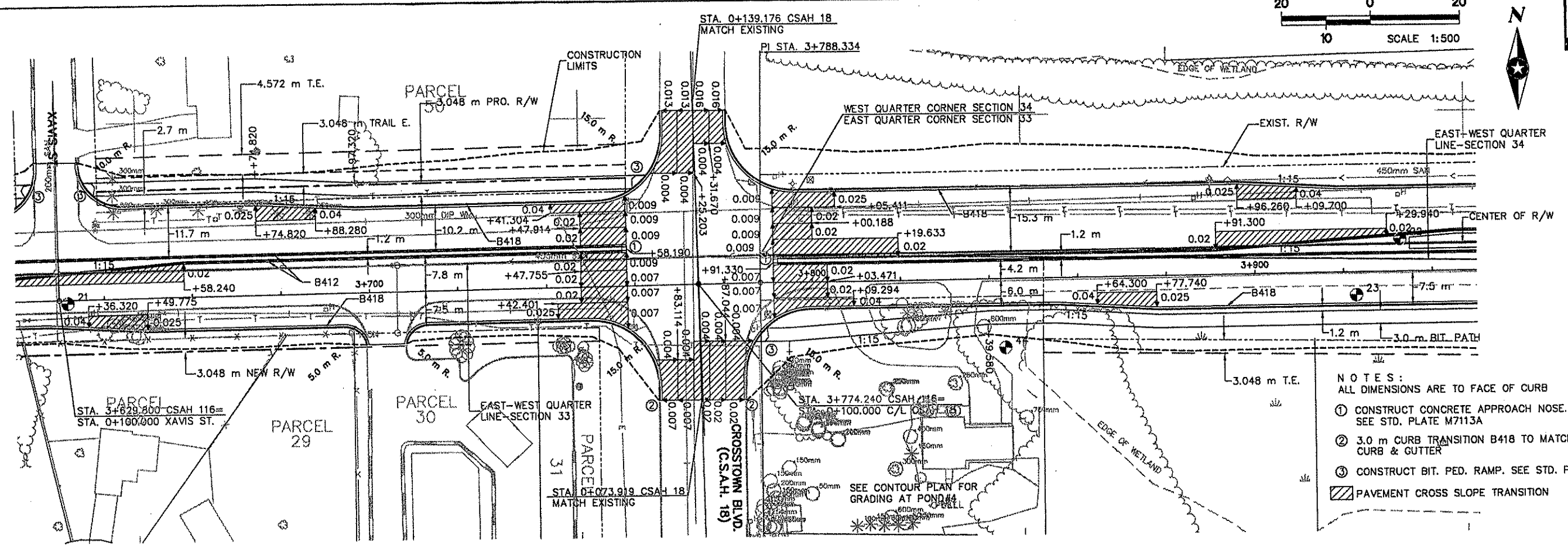
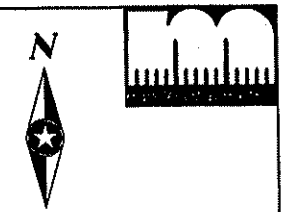
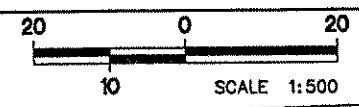
PAVEMENT CROSS SLOPE TRANSITION



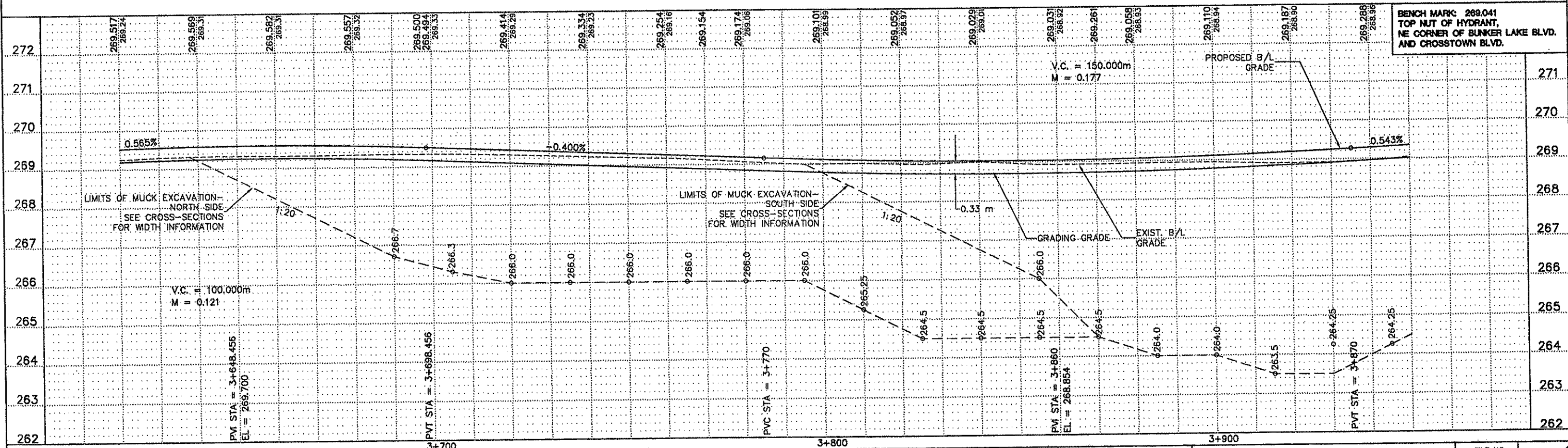
BENCH MARK: 269.319
 TOP NUT OF HYDRANT,
 SE CORNER OF BUNKER LAKE BLVD.
 AND YUKON ST.

Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EPV\PSHEET7.DWG 03-18-99 1:59 pm

DESIGN				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: 3/15/99 Reg. No. 18612			ANOKA COUNTY		FILE NO. ANOKC9806.01 48 DATE 03/15/99 230		
DRAWING							C.S.A.H. 116 (BUNKER LAKE BLVD.)			CONSTRUCTION PLAN AND PROFILE	
CHECKED							S.A.P. 02-716-04			STA. 3+300.000 TO 3+630.000	
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	S.A.P. 198-020-14					



- NOTES:
ALL DIMENSIONS ARE TO FACE OF CURB
- ① CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A
 - ② 3.0 m CURB TRANSITION B418 TO MATCH EXIST. CURB & GUTTER
 - ③ CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D.
- ▨ PAVEMENT CROSS SLOPE TRANSITION



BENCH MARK: 269.041
TOP NUT OF HYDRANT,
NE CORNER OF BUNKER LAKE BLVD.
AND CROSTOWN BLVD.

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

[Signature]
Date: 3/15/99 Reg. No. 18612

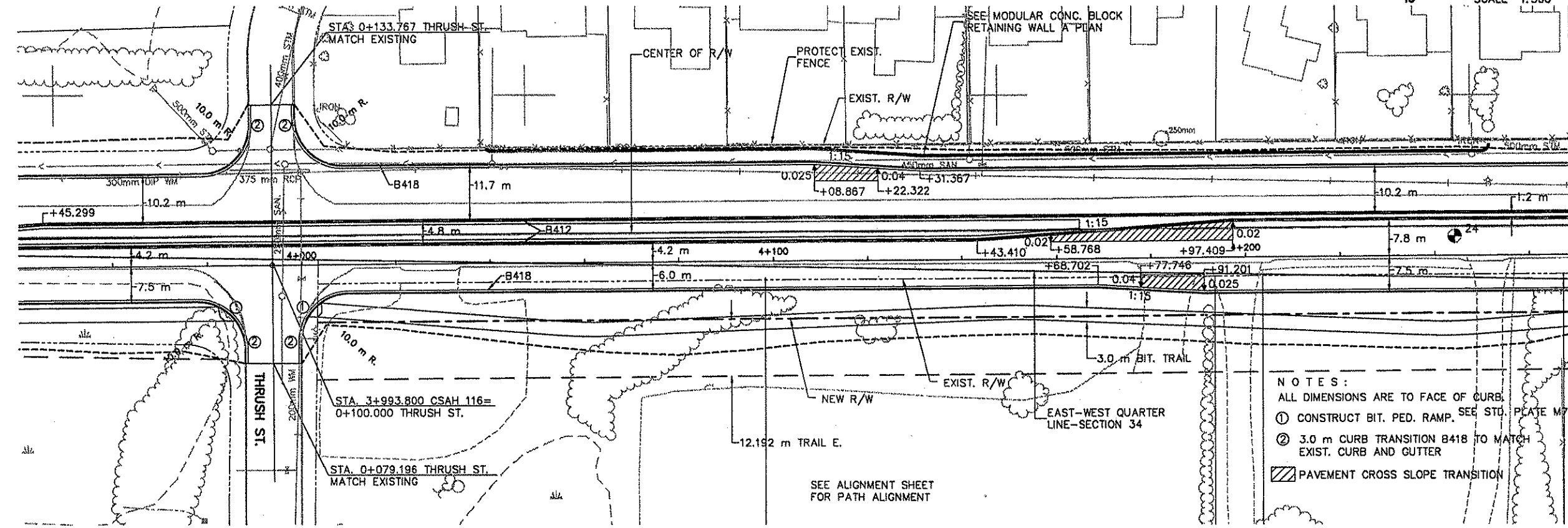


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

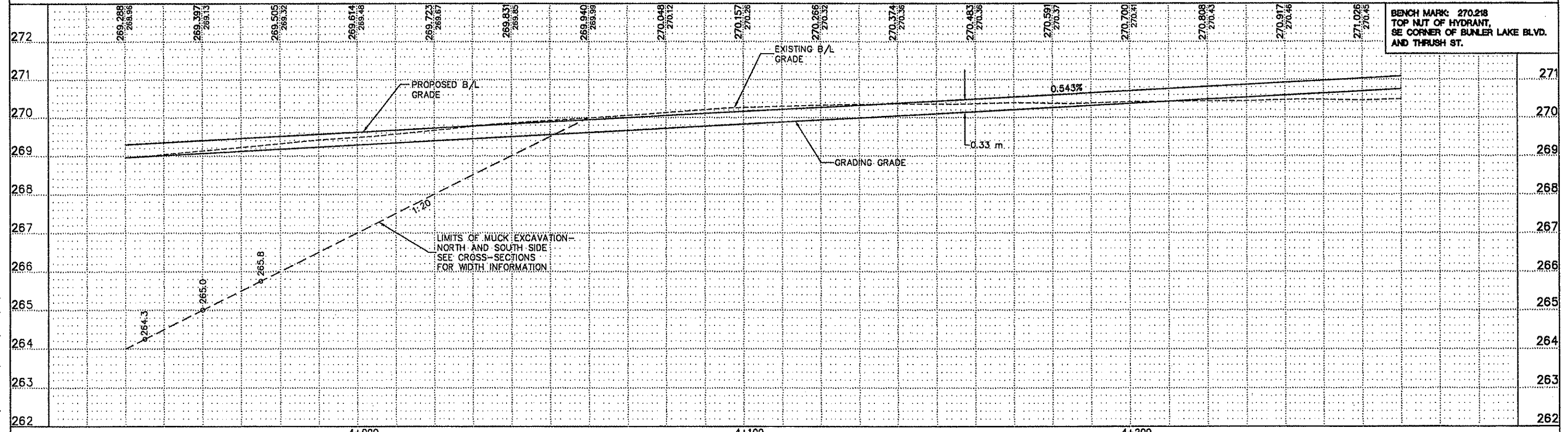
CONSTRUCTION PLAN AND PROFILE
STA. 3+620.000 TO 3+950.000

FILE NO. ANOKC9806.01
DATE 03/15/99
49
230

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEETS.DWG 03-13-99 11:44 am



- NOTES:
 ALL DIMENSIONS ARE TO FACE OF CURB.
 ① CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D
 ② 3.0 m CURB TRANSITION B418 TO MATCH EXIST. CURB AND GUTTER
 PAVEMENT CROSS SLOPE TRANSITION



03-24-99 9:15 am
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DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

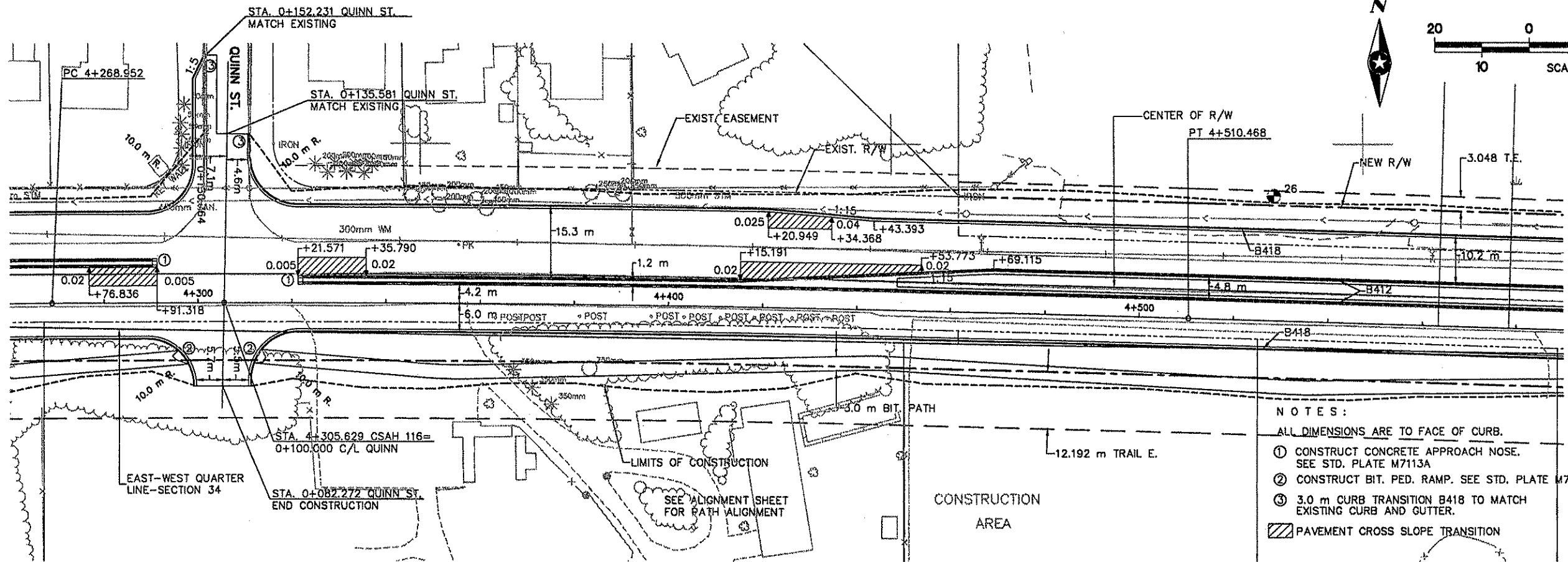
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 18612



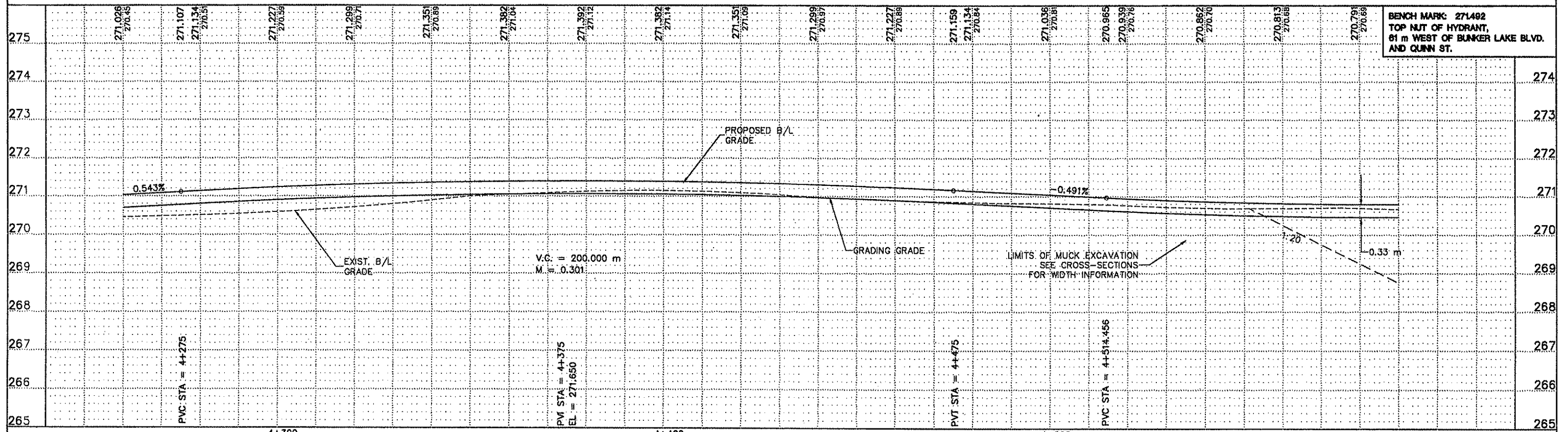
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 3+940.000 TO 4+270.000

FILE NO. ANOKC9806.01
 DATE 03/15/99
50
230



- NOTES:
- ① CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A
 - ② CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D.
 - ③ 3.0 m CURB TRANSITION B418 TO MATCH EXISTING CURB AND GUTTER.
- PAVEMENT CROSS SLOPE TRANSITION



Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET10.DWG 03-24-99 9:20 am

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

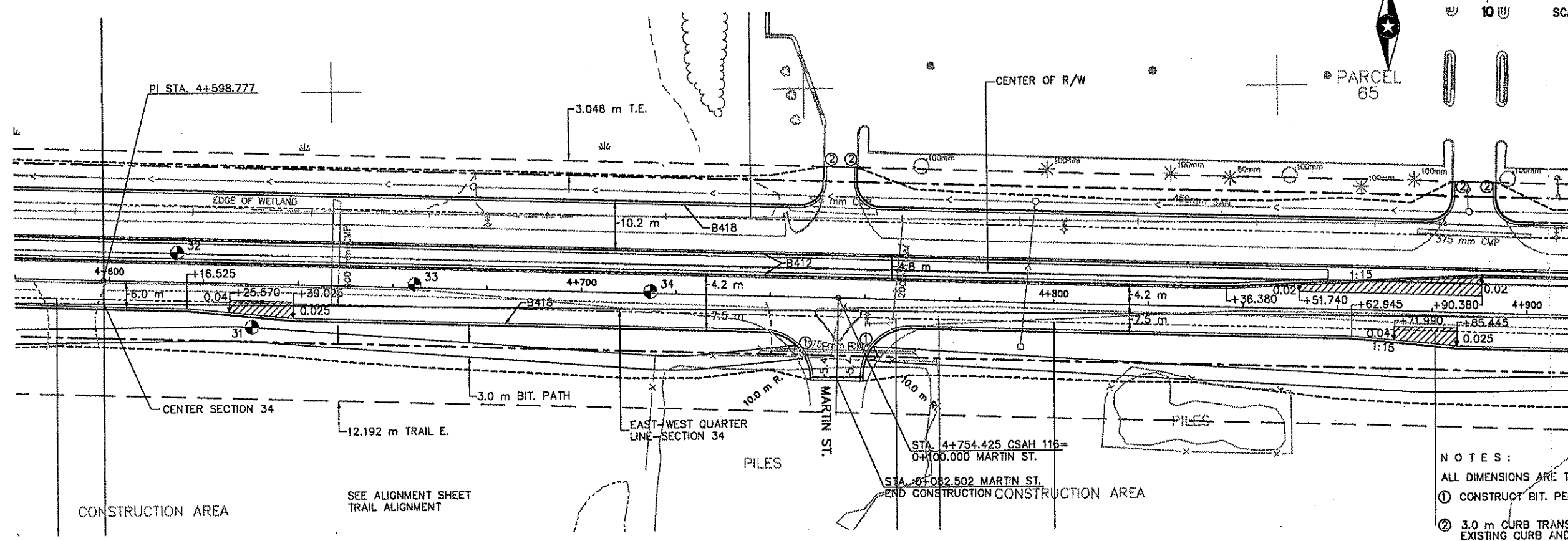
 Date: 3/15/99 Reg. No. 18812



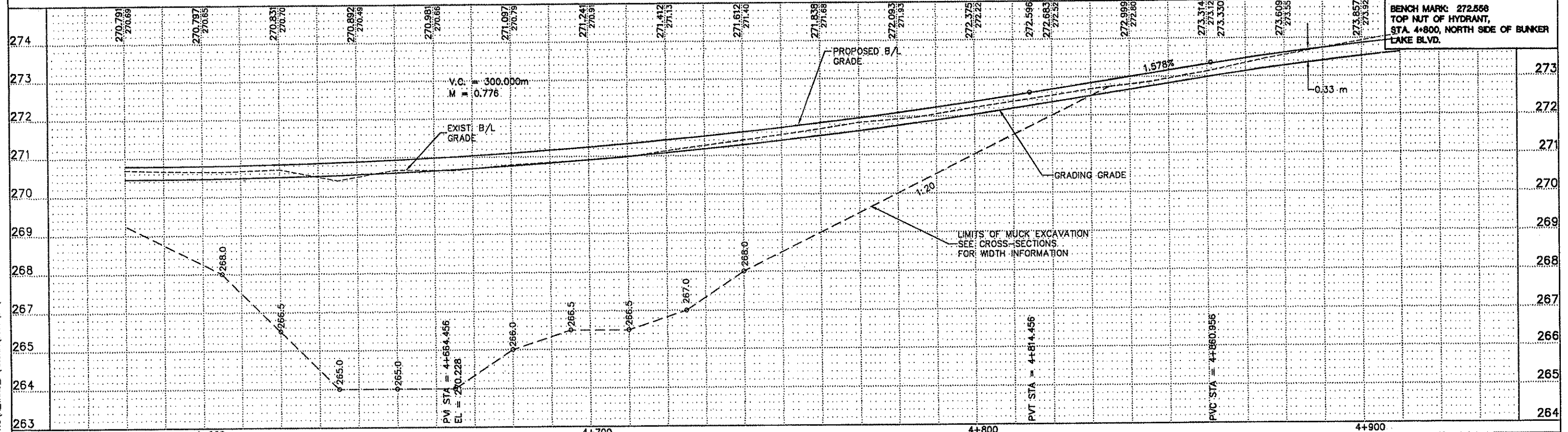
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 4+260.000 TO 4+590.000

FILE NO. ANOKC9806.01	51
DATE 03/15/99	230

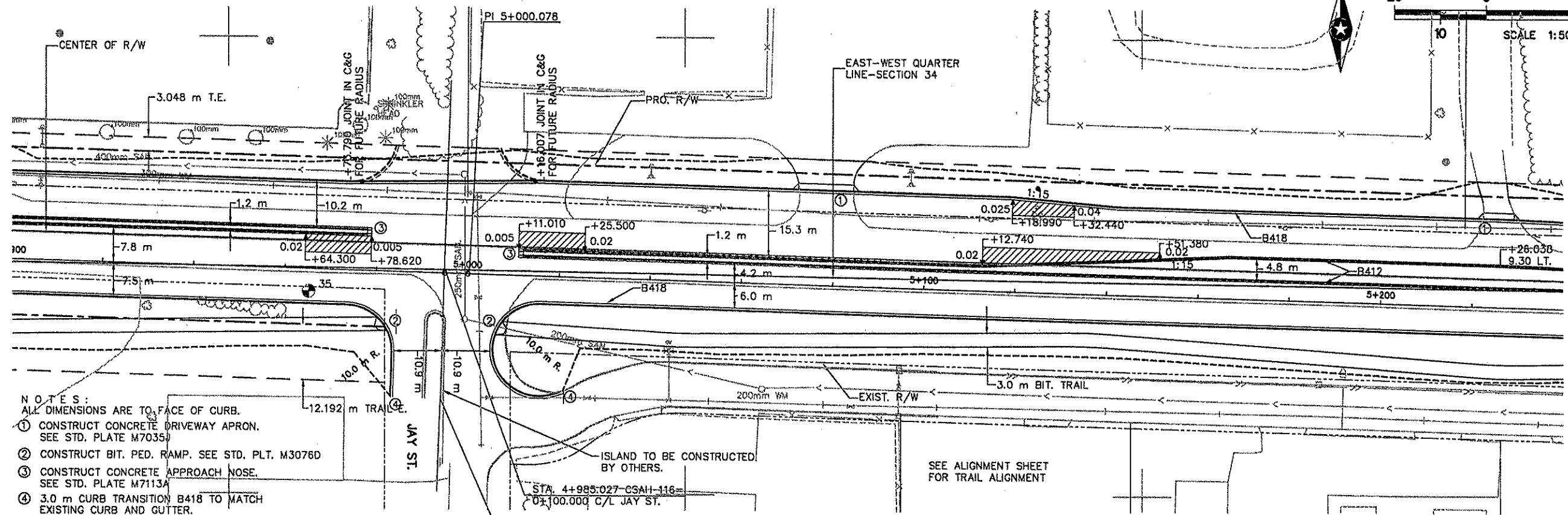


- NOTES:
- ALL DIMENSIONS ARE TO FACE OF CURB.
 - ① CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M7036D.
 - ② 3.0 m CURB TRANSITION B418 TO MATCH EXISTING CURB AND GUTTER.
 - ▨ PAVEMENT CROSS SLOPE TRANSITION



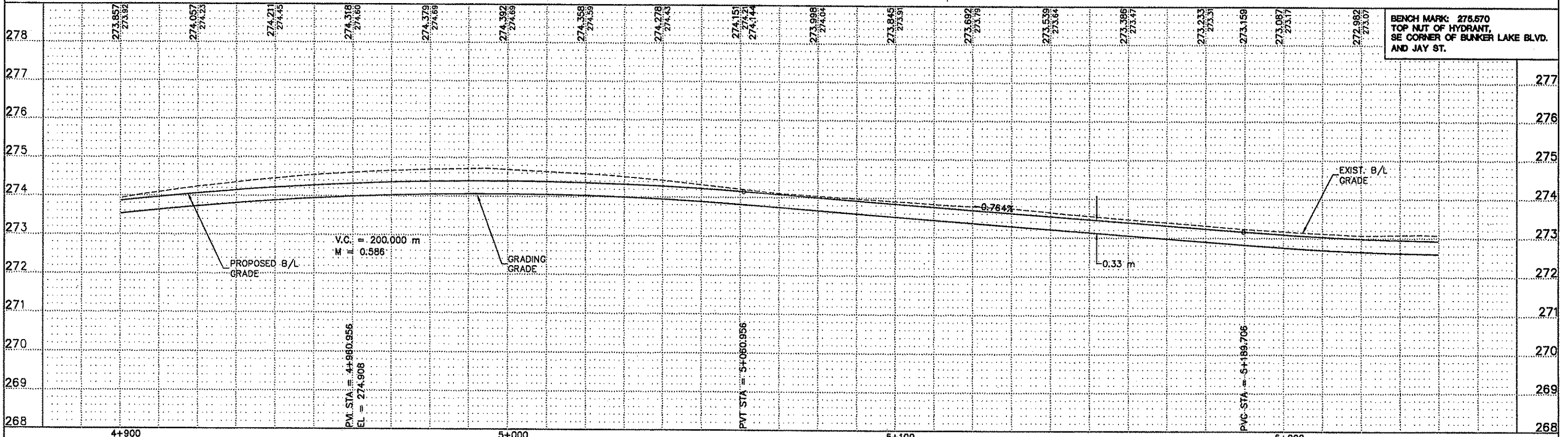
DESIGN DRAWING CHECKED	DESIGN TEAM NO. BY DATE	REVISIONS NO. BY DATE	ITEM I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota. Date: <u>2/15/99</u> Reg. No. 18812		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	CONSTRUCTION PLAN AND PROFILE STA. 4+580.000 TO 4+910.000	FILE NO. ANOKC9806.01 DATE 03/15/99	52 <hr/> 230
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03-24-99 9:40 am
 Q:\CIVIL\CLIENTS\VA_THRU_L\ANOKA\9806\EP\PSHEET11.DWG



- NOTES:
 ALL DIMENSIONS ARE TO FACE OF CURB.
 ① CONSTRUCT CONCRETE DRIVEWAY APRON.
 SEE STD. PLATE M7035.
 ② CONSTRUCT BIT. PED. RAMP. SEE STD. PLT. M3076D
 ③ CONSTRUCT CONCRETE APPROACH NOSE.
 SEE STD. PLATE M7113A
 ④ 3.0 m CURB TRANSITION B418 TO MATCH
 EXISTING CURB AND GUTTER.
 ▨ PAVEMENT CROSS SLOPE TRANSITION

STA. 4+985.027 CSAH-116
 0+100.000 C/L JAY ST.
 STA. 0+072.564 JAY ST.
 MATCH EXISTING - COORDINATE
 WITH JAY ST. CONSTRUCTION



BENCH MARK: 275.570
 TOP NUT OF HYDRANT,
 SE CORNER OF BUNKER LAKE BLVD.
 AND JAY ST.

c:\clients\A_THRU_F\ANOKA\9806\EP\PSHEET12.DWG 03-24-99 9:48 am

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

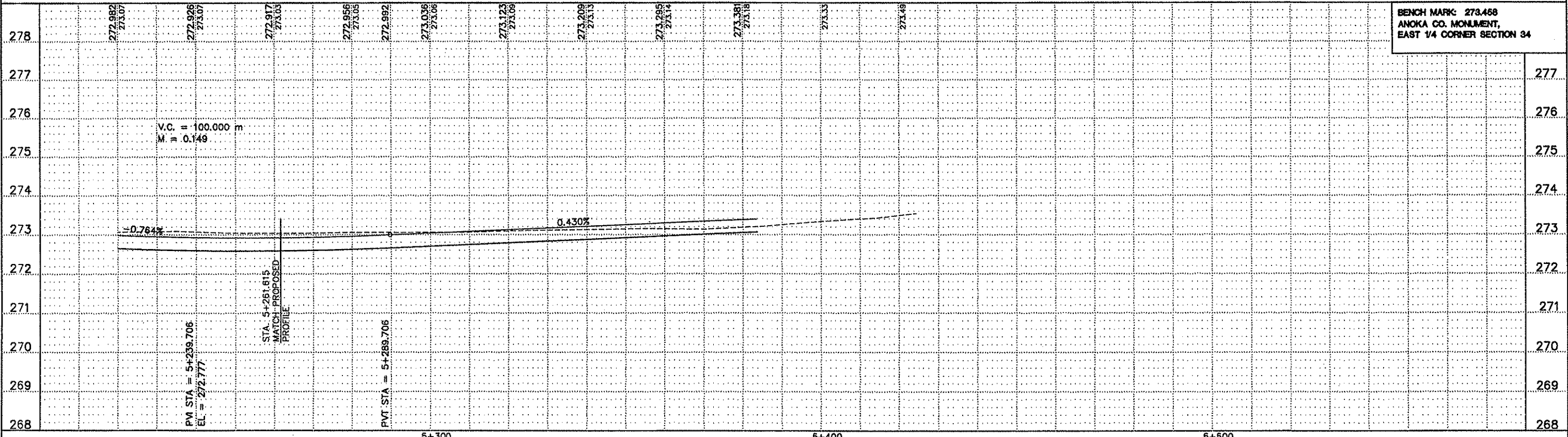
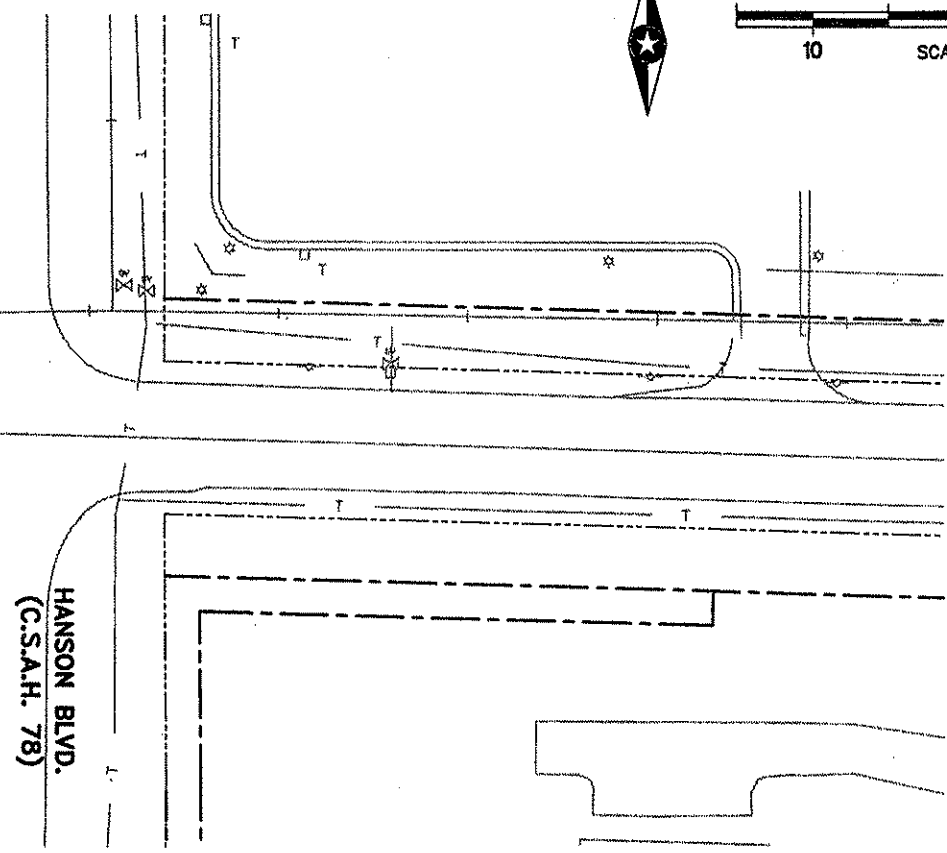
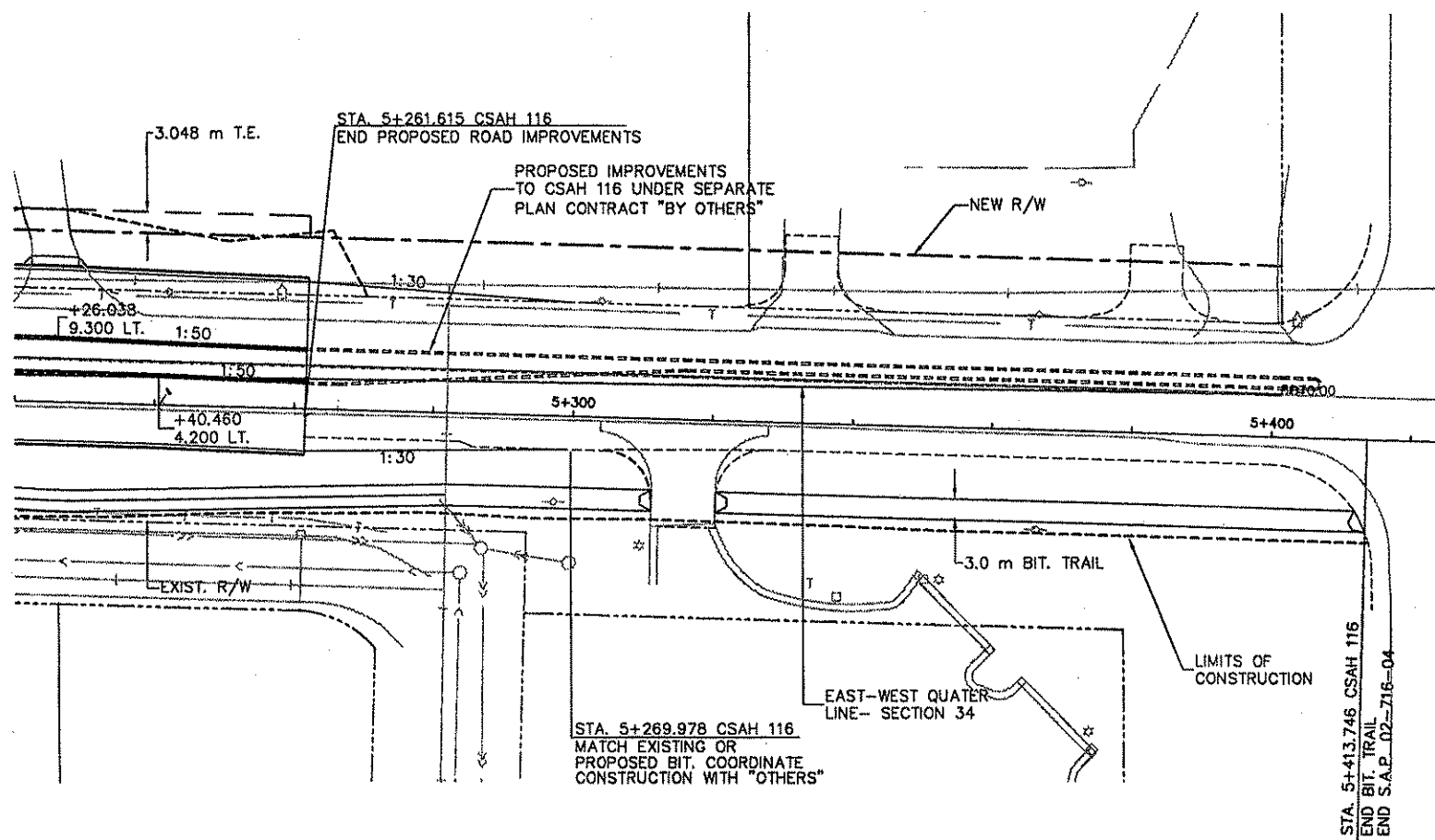
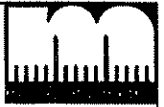
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
[Signature]
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 4+900.000 TO 5+240.000

FILE NO. ANOKC9806.01	53
DATE 03/15/99	230



03-18-99 2:21 pm C:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\PSHEET13.DWG

DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

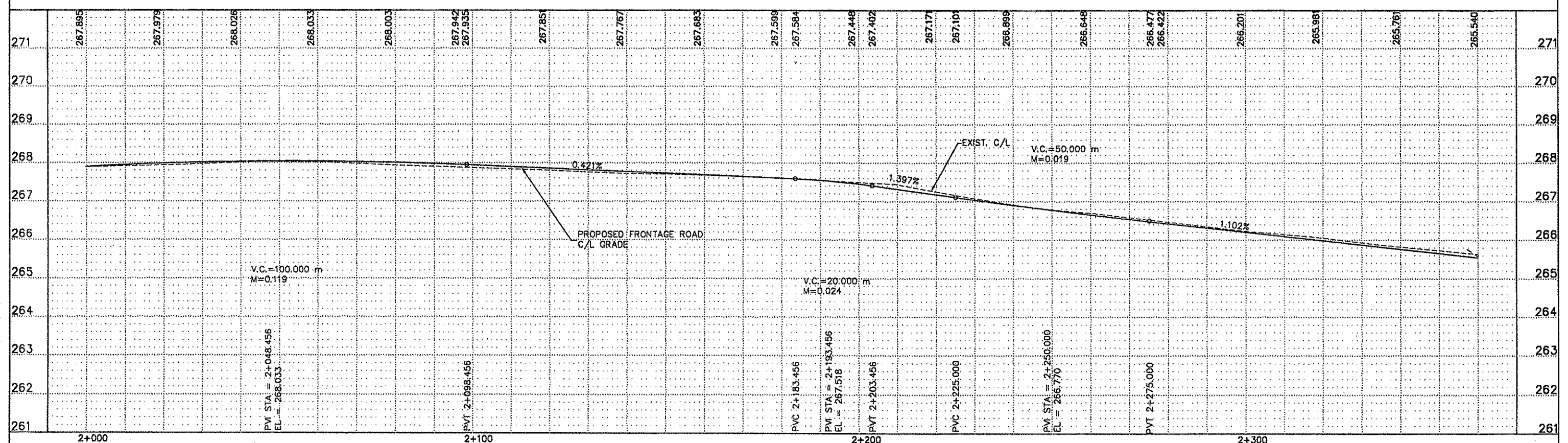
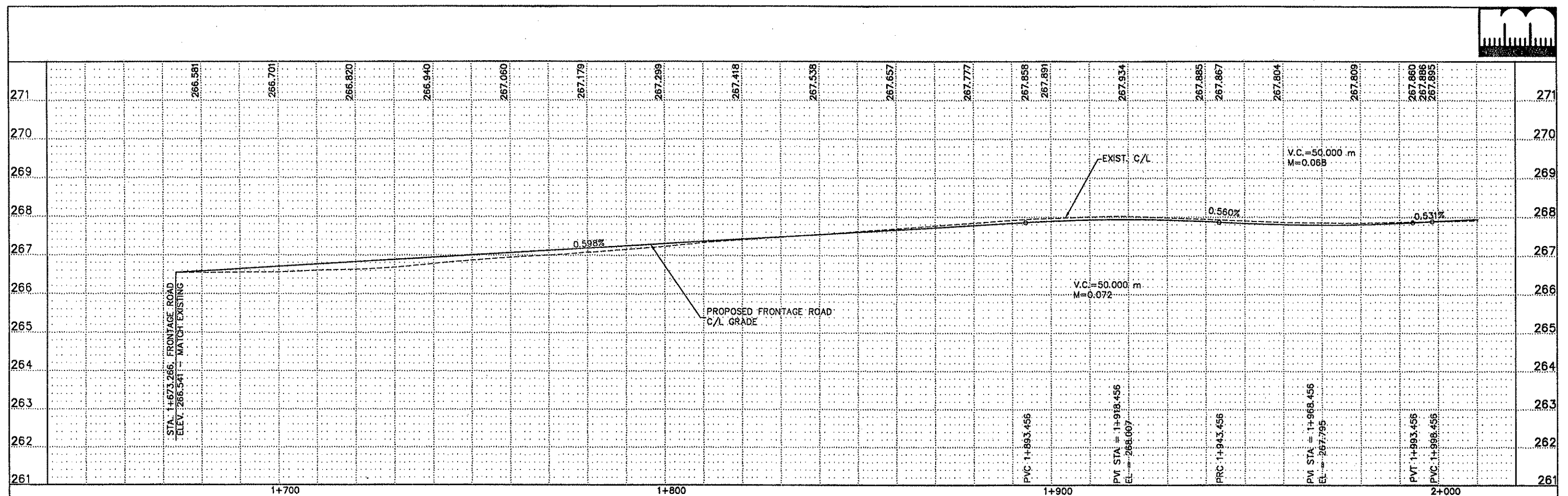
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
[Signature]
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
 STA. 5+220.000 TO 5+424.359

FILE NO. ANOKC9806.01	54
DATE 03/15/99	230



Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\PRINTPROI.DWG 03-18-99 2:23 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

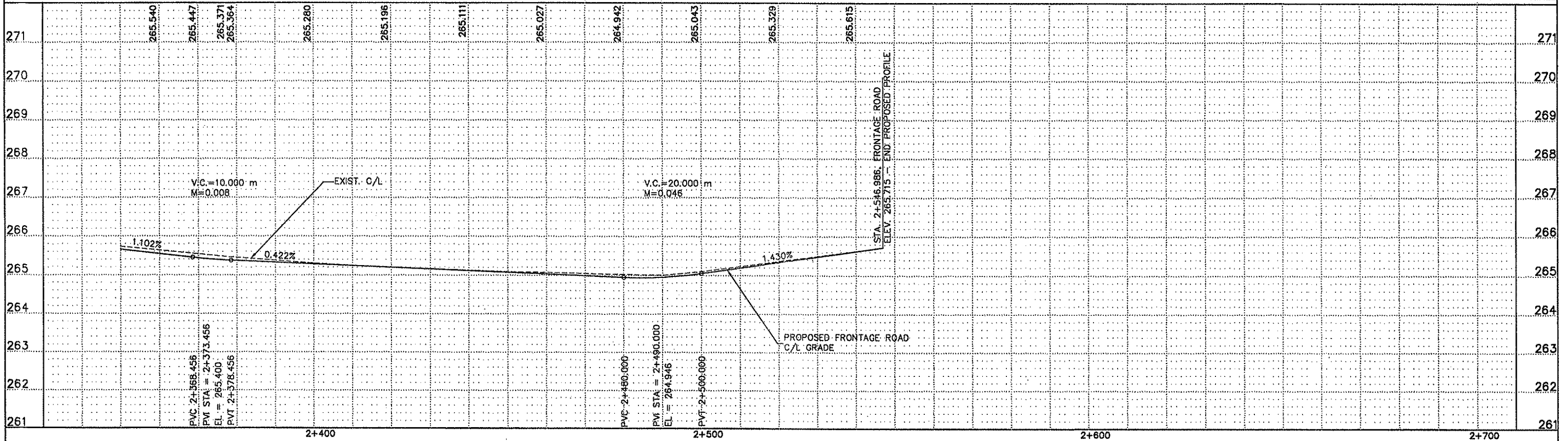
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

FRONTAGE ROAD PROFILE
 STA. 1+673.266 TO 2+360.000

FILE NO. ANOKC9806.01	55
DATE 03/15/99	230



C:\CIVIL\CLIENTS\A_THRU\J\ANOKA\9806\EP\PRINTPRO2.DWG 03-18-99 2:30 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

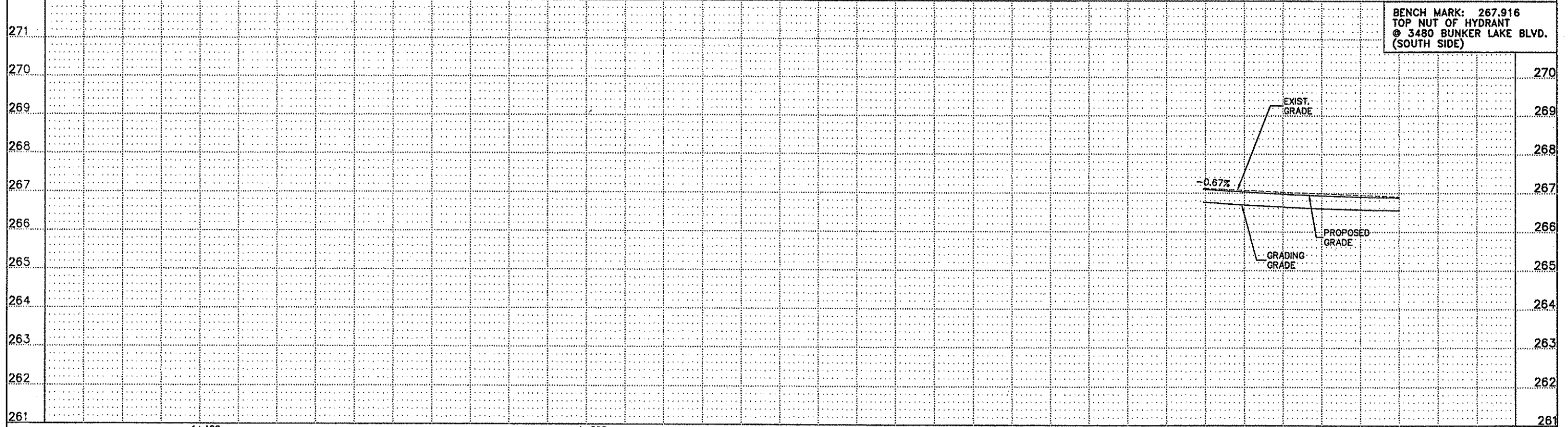
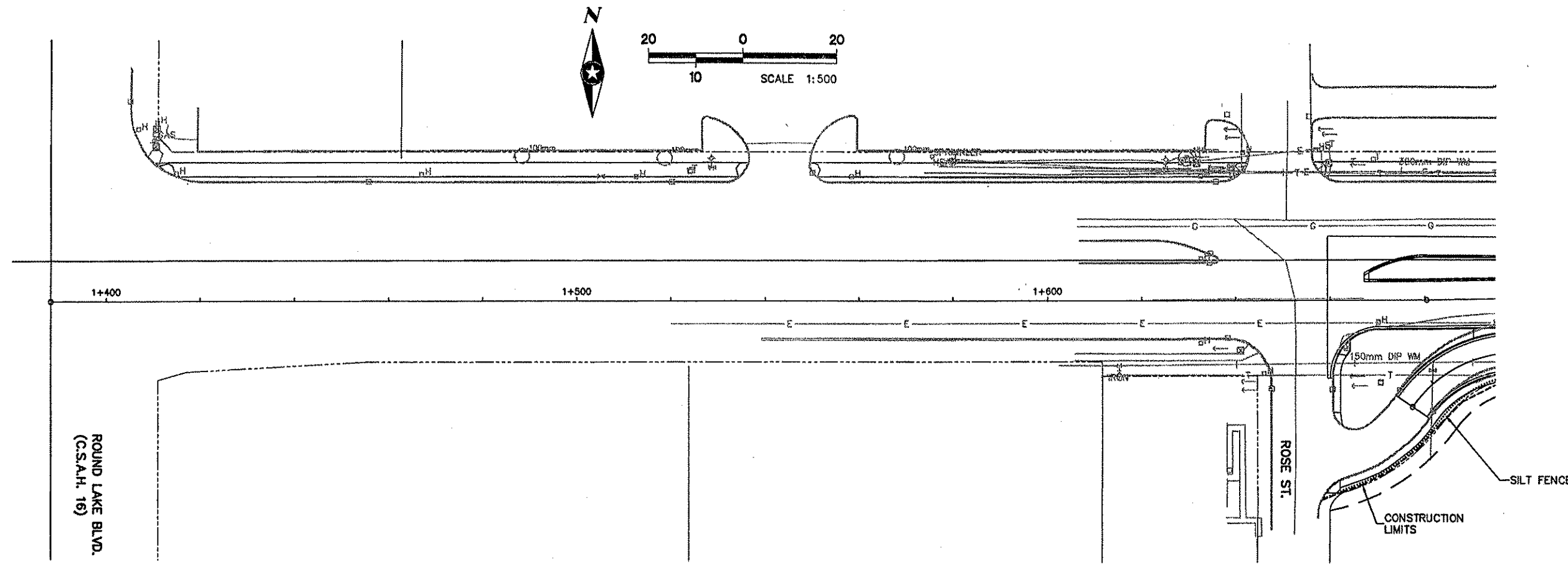
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

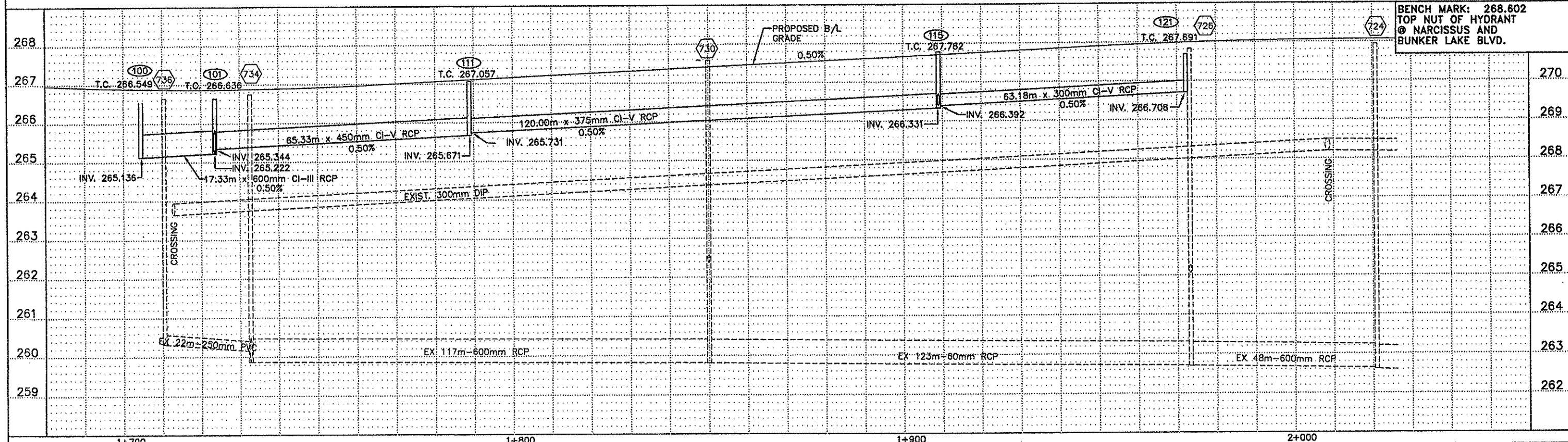
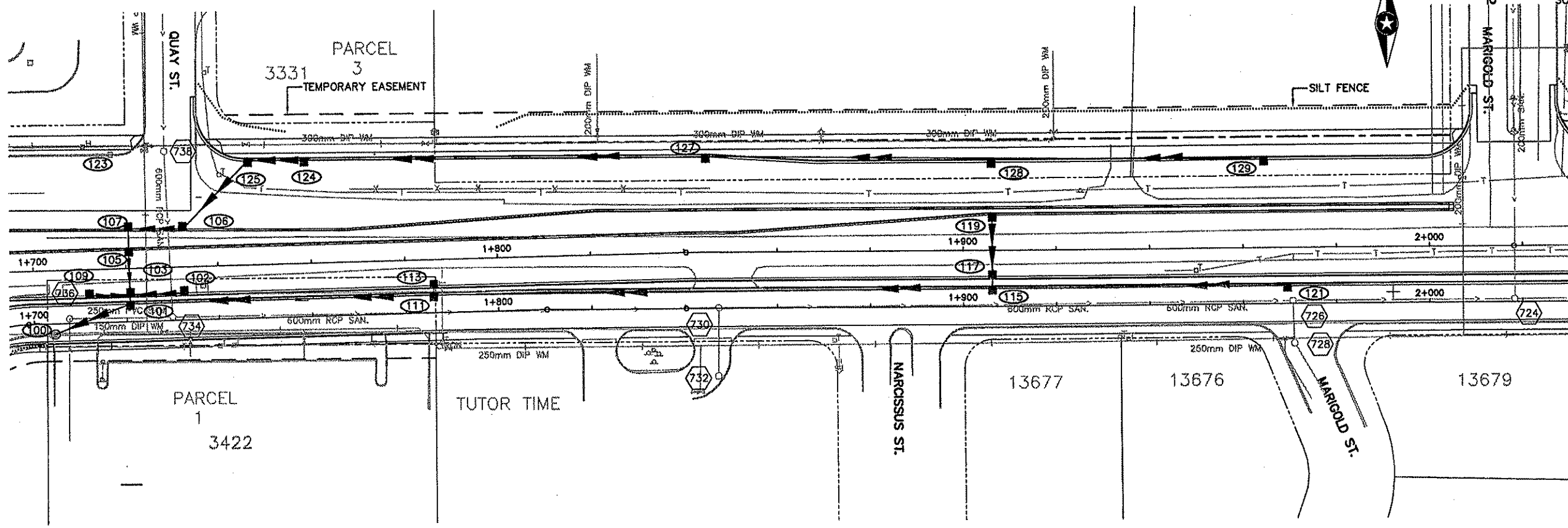
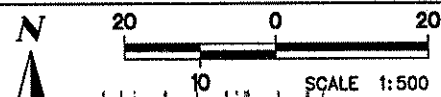
FRONTAGE ROAD PROFILE
 STA. 2+350.000 TO 2+546.986

FILE NO. ANOKC9806.01	56 230
DATE 03/15/99	



02-22-99 3:00 pm
C:\M\CLIENTS\A_THRU\F\ANOKA\19806\EP\AKC0606UT1.DWG

DESIGN				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.				SEH	ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	UTILITIES PLAN AND PROFILE STA. 1+659.406 TO 1+695.000	FILE NO.	57
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	DATE	ANOKC0806.01				3/15/99	



Q:\CIVIL\CLIENTS\A_THRILL\F\ANOKA\9806\EP\AKC806UT2.DWG 02-23-99 10:50 am

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

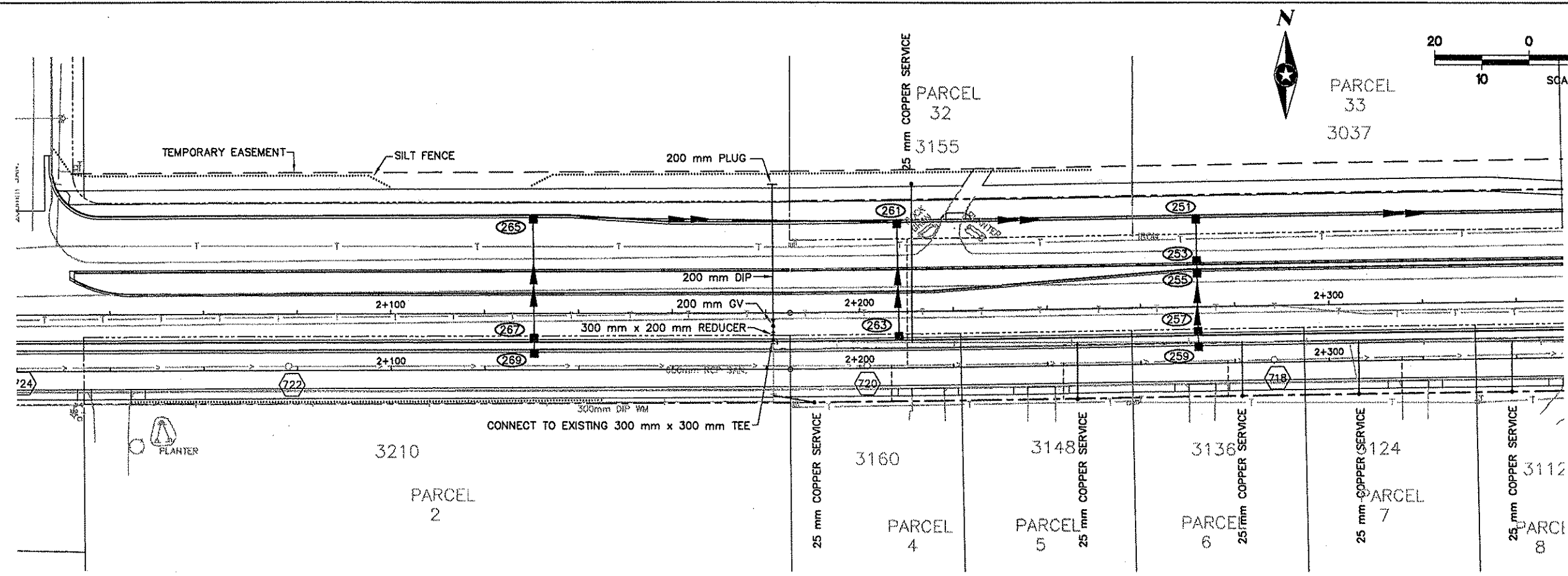
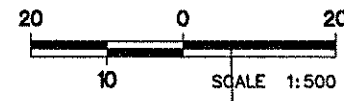
Signature
Date: 3/15/99 Reg. No. 18812



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

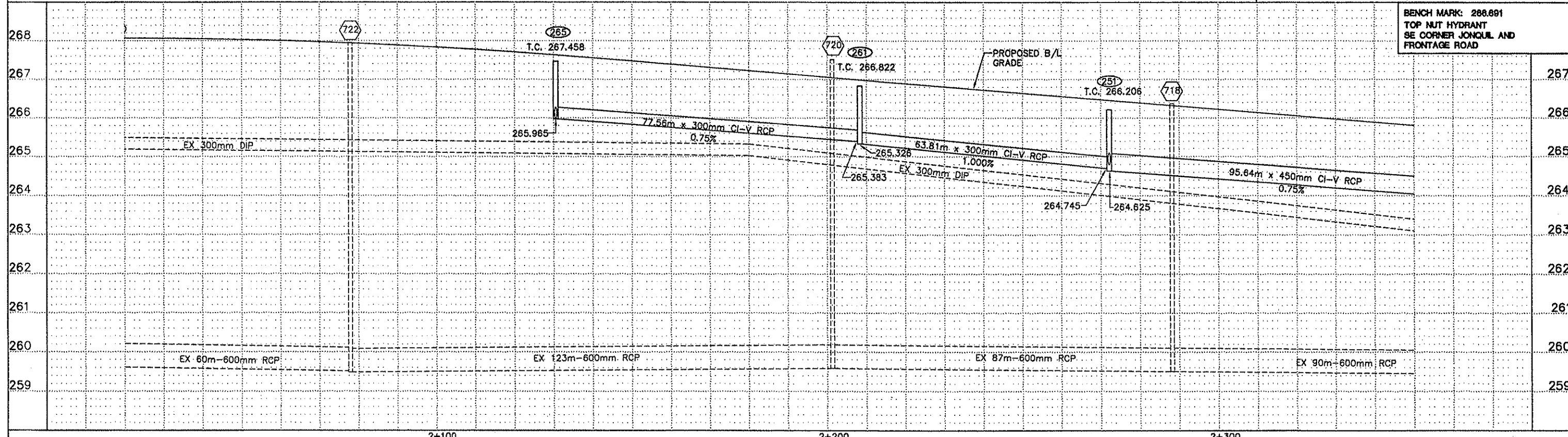
UTILITIES PLAN AND PROFILE
STA. 1+695.000 TO 2+030.000

FILE NO. ANOKC9806.01	58
DATE 3/15/99	
230	



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 288.891
TOP NUT HYDRANT
SE CORNER JONQUIL AND
FRONTAGE ROAD



Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC806UT3A.DWG 04-13-99 3:04 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	TGT	04/13/99	STORM SEWER INVERT REVISIONS-255,261,251	
DRAWING					
CHECKED					

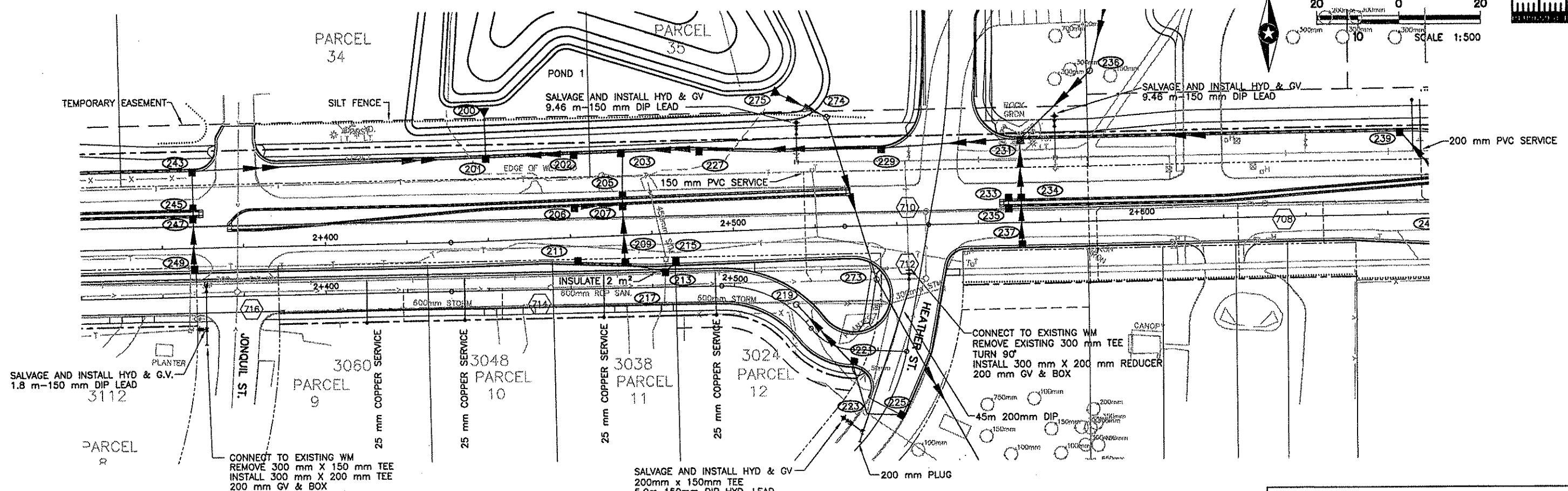
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
[Signature]
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

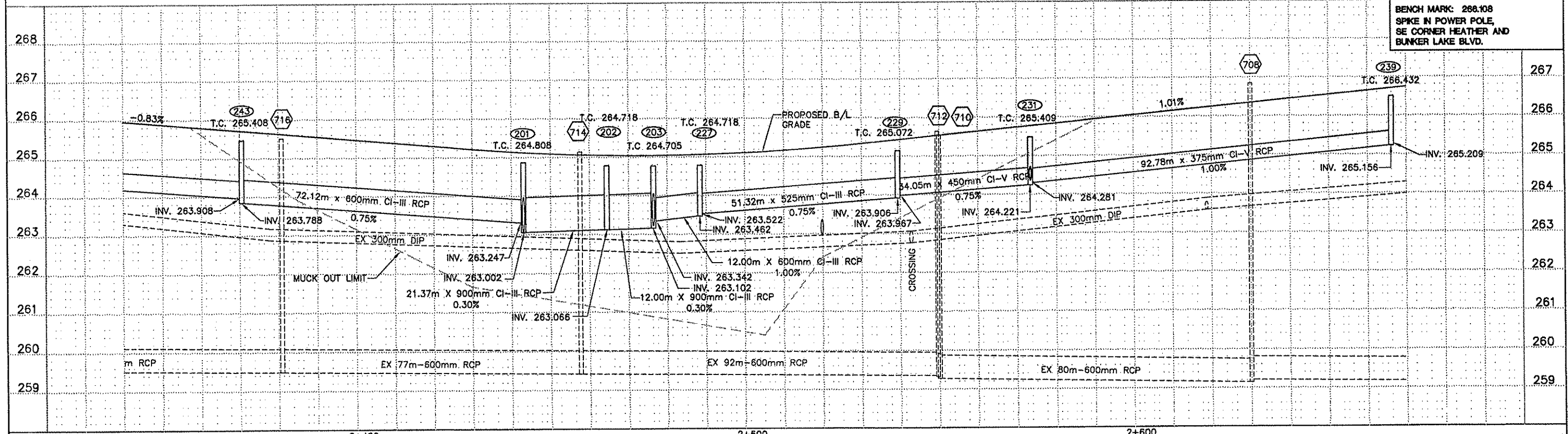
UTILITIES PLAN AND PROFILE
 STA. 2+020.000 TO 2+350.000

FILE NO.	59
ANOKC9806.01	
DATE	3/15/99
	230



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 268.108
SPIKE IN POWER POLE,
SE CORNER HEATER AND
BUNKER LAKE BLVD.



G:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\19806\EP\AKC806UT4.DWG 04-13-99 3:09 pm

DESIGN	1	TGT	04/13/99	STORM SEWER INVERT REVISIONS-203,227,229,231,239
DRAWING				
CHECKED				
DESIGN TEAM	NO.	BY	DATE	REVISIONS
				ITEM

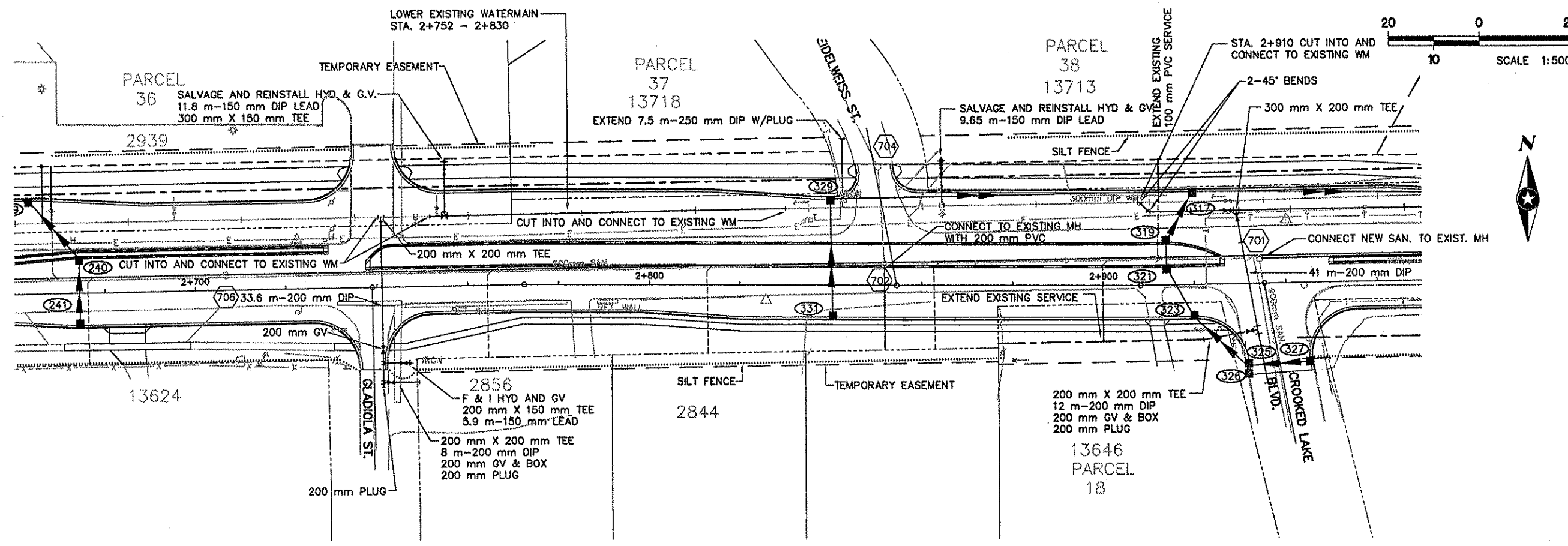
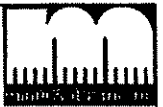
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

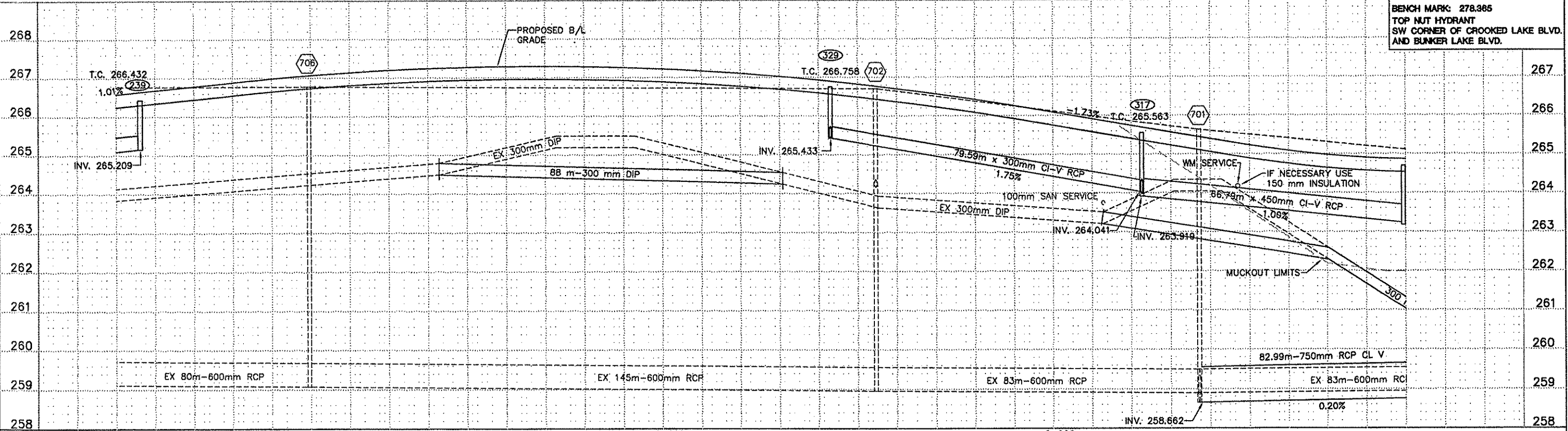
UTILITIES PLAN AND PROFILE
STA. 2+340.000 TO 2+670.000

FILE NO.
ANOKC8806.01
DATE
3/15/99
60
230



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 278.365
TOP NUT HYDRANT
SW CORNER OF CROOKED LAKE BLVD.
AND BUNKER LAKE BLVD.



G:\CLIENTS\VA_THRU_F\ANOKA\9806\EP\AKC806UTS.DWG 04-13-99 3:11 pm

DESIGN	1	TGT	04/13/99	STORM SEWER INVERT REVISION-239
DRAWING				
CHECKED				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

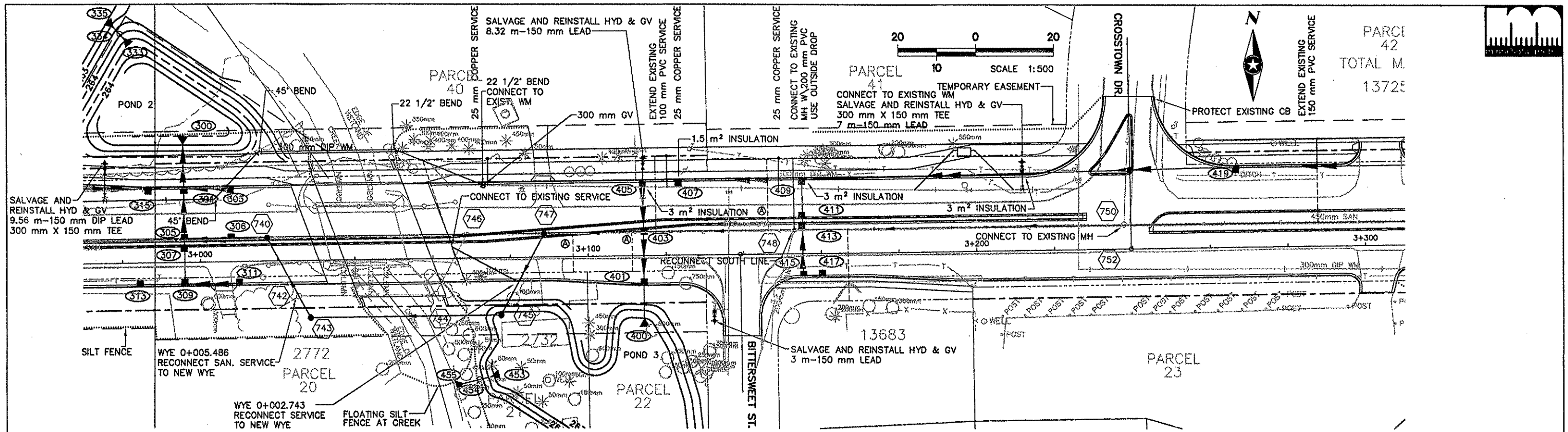
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
John M. Mason
Date: 03/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

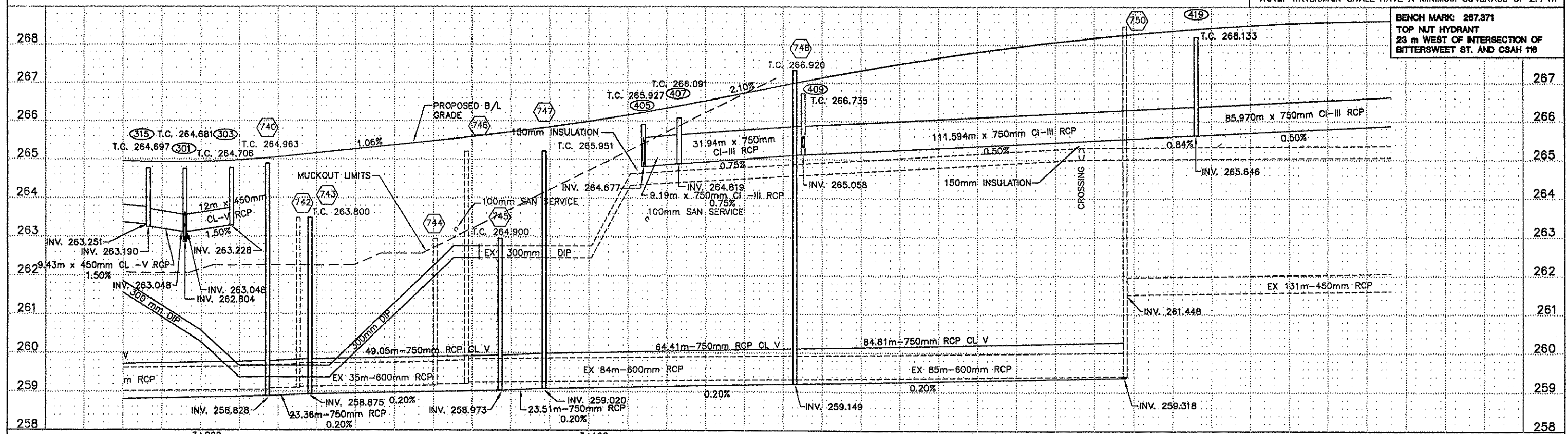
UTILITIES PLAN AND PROFILE
STA. 2+680.000 TO 2+970.000

FILE NO. ANOKC9806.01
DATE 3/15/99
61
230



NOTE:
 Ⓞ ABANDON SANITARY SERVICE

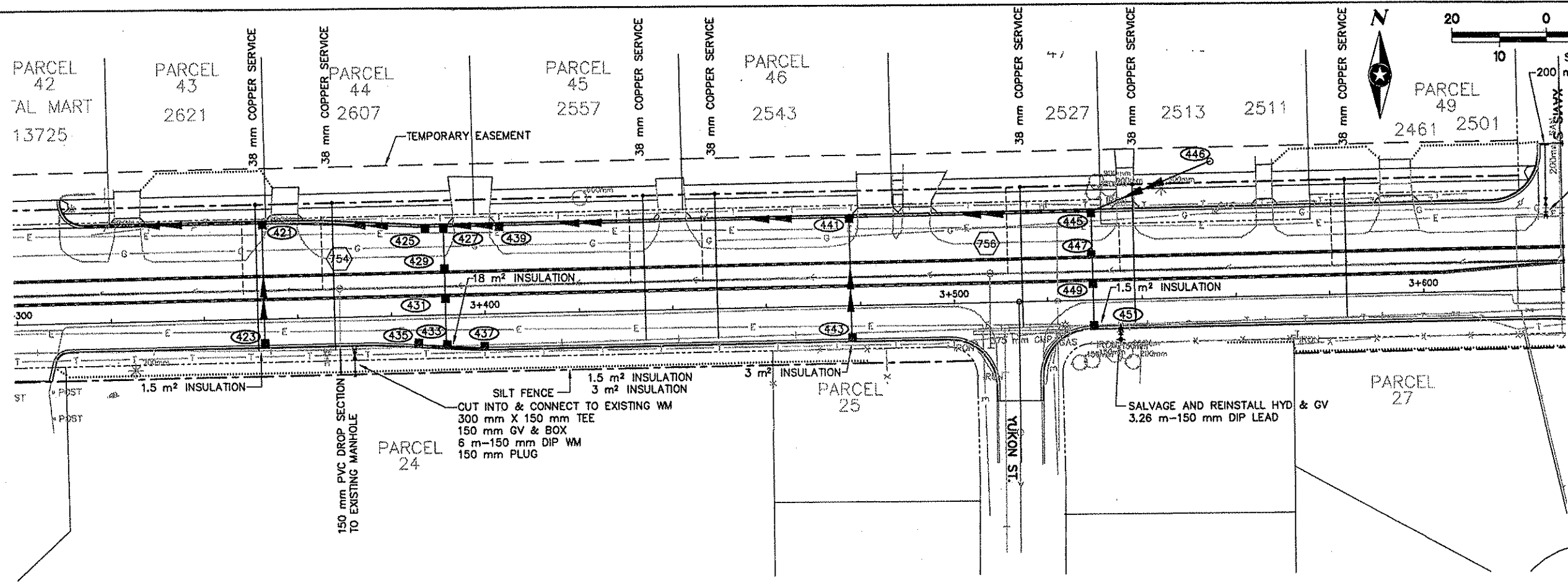
NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m



BENCH MARK: 267.371
 TOP NUT HYDRANT
 23 m WEST OF INTERSECTION OF
 BITTERSWEET ST. AND CSAH 116

Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC806UTS.DWG 04-13-99 3:29 pm

DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISIONS-405,407,409	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. <i>John M. Mason</i> Date: 03/15/99 Reg. No. 18612		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	UTILITIES PLAN AND PROFILE STA. 2+970.000 TO 3+310.000	FILE NO.	62 230
DRAWING			STORM SEWER INVERT REVISION-419	ANOKC9806.01						
CHECKED			STORM SEWER PIPE LENGTH REVISIONS-409-419,419-421	DATE						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM				DATE	

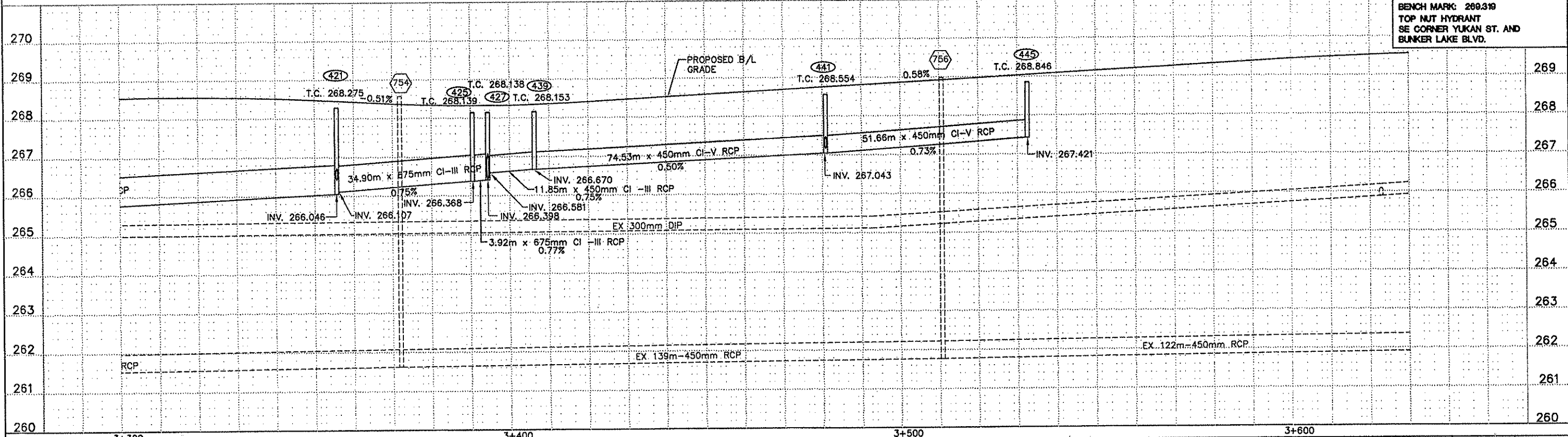


CUT INTO AND CONNECT TO EXISTING WM 300 mm X 200 mm TEE 16 m-200 mm WM 200 mm GV & BOX

150 mm PVC DROP SECTION TO EXISTING MANHOLE
SILT FENCE
CUT INTO & CONNECT TO EXISTING WM 300 mm X 150 mm TEE 150 mm GV & BOX 6 m-150 mm DIP WM 150 mm PLUG

NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 269.319
TOP NUT HYDRANT
SE CORNER YUKON ST. AND
BUNKER LAKE BLVD.



Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9805\EP_AK606UT7.DWG 04-13-99 3:40 pm

DESIGN	1	TGT	04/13/99	STORM SEWER PIPE GRADE-441 TO 445
DRAWING				
CHECKED				
DESIGN TEAM	NO.	BY	DATE	REVISIONS
				ITEM

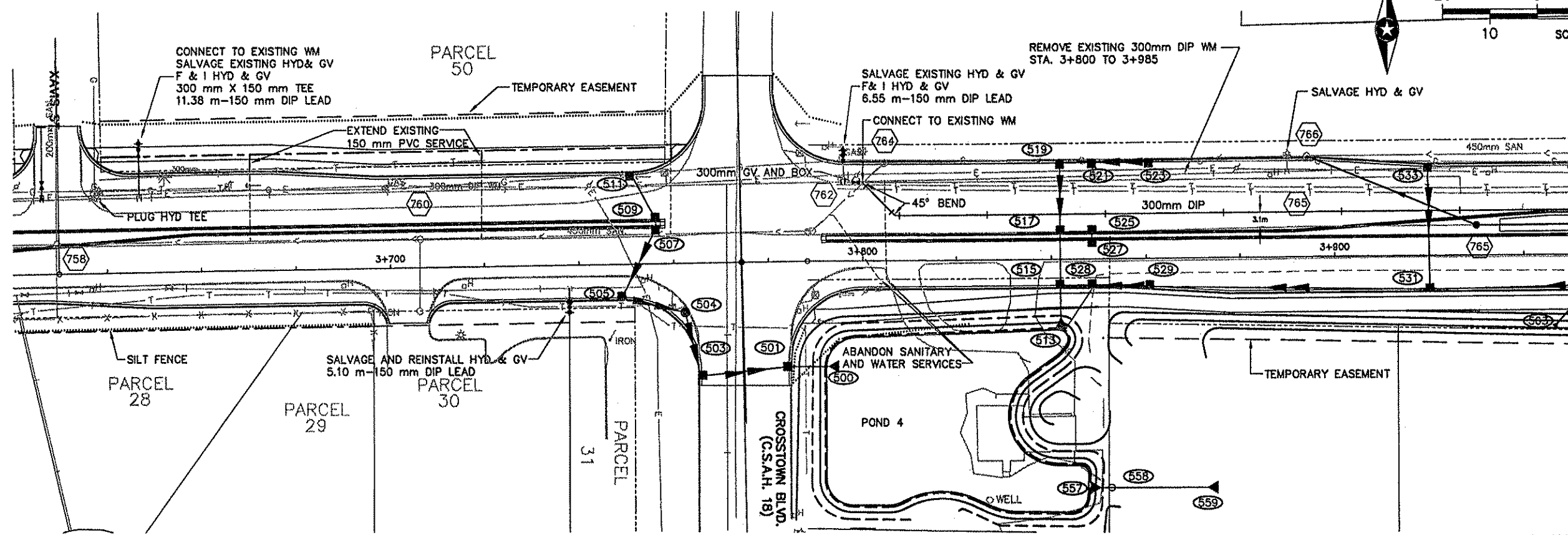
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18812



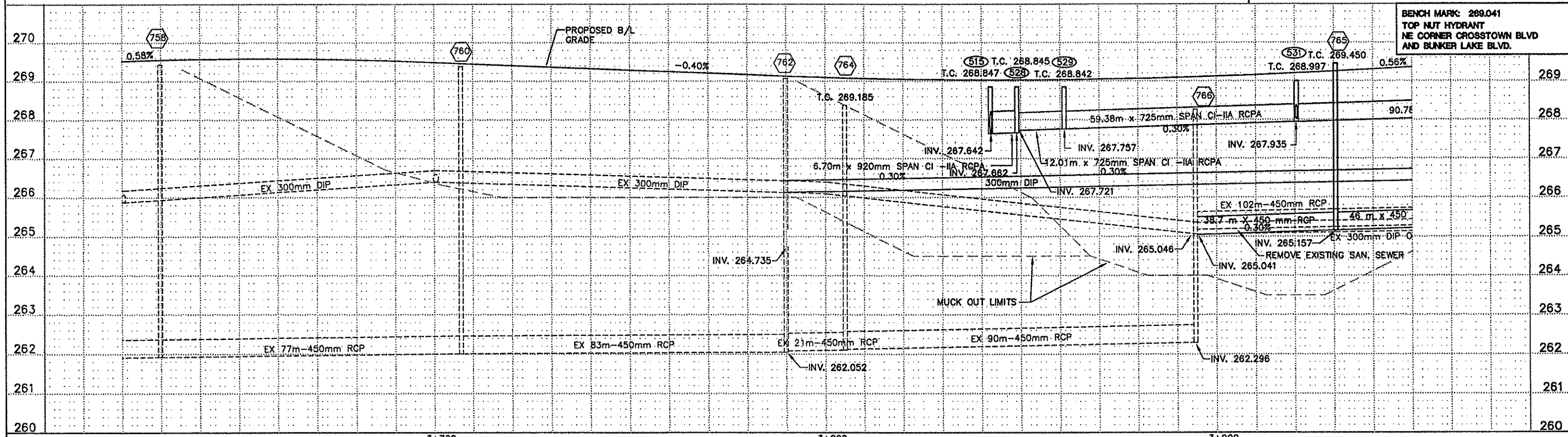
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
STA. 3+300.000 TO 3+630.000

FILE NO. ANOKC9806.01
DATE 3/15/99
63
230



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4m



C:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC806UT8.DWG 04-13-99 3:43 pm

DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISION-515,529,531
DRAWING				
CHECKED				
DESIGN TEAM	NO.	BY	DATE	REVISIONS
				ITEM

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: 4/13/99 Reg. No. 18612

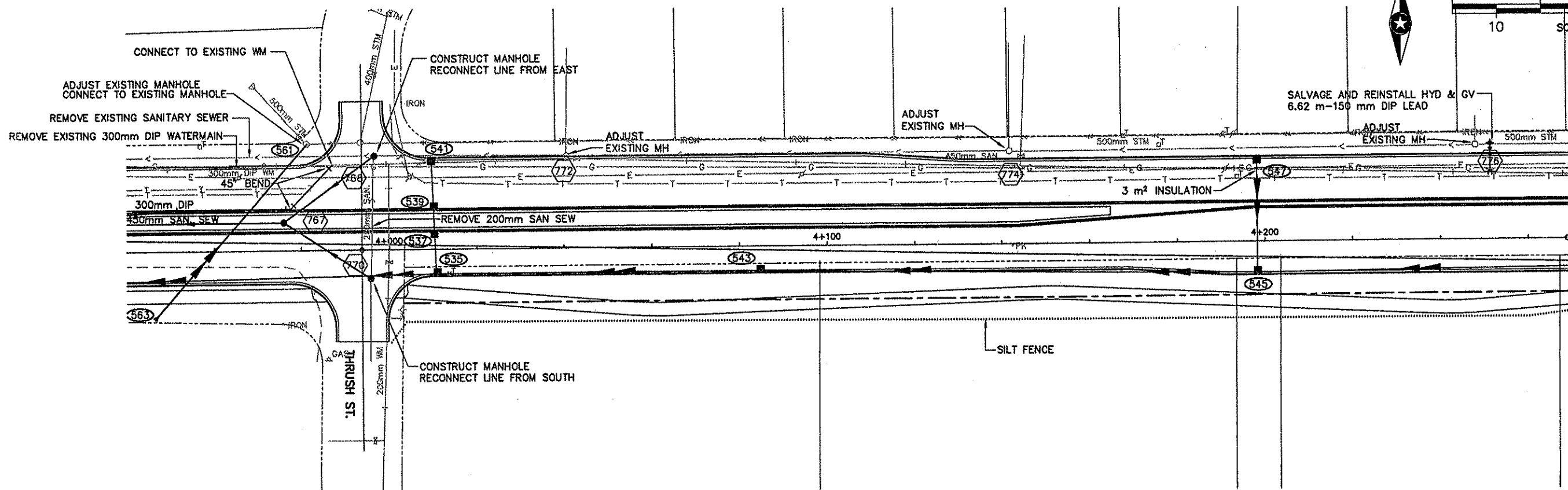


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

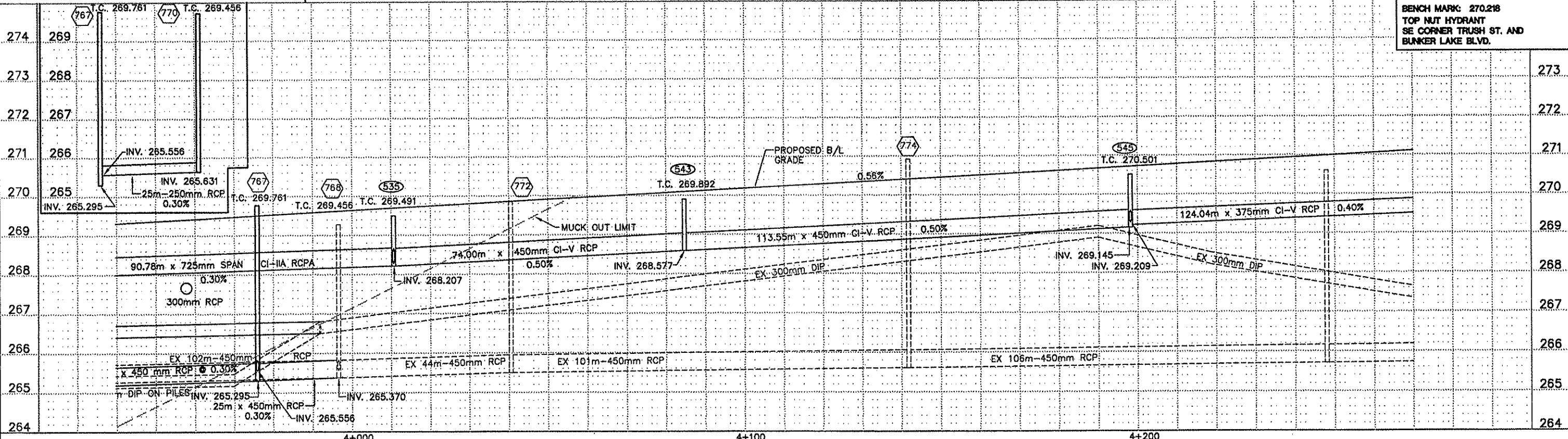
UTILITIES PLAN AND PROFILE
 STA. 3+620.000 TO 3+950.000

FILE NO.
 ANOKC9806.01
 DATE
 3/15/99

64
230



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4m



BENCH MARK: 270.218
TOP NUT HYDRANT
SE CORNER THRUSH ST. AND
BUNKER LAKE BLVD.

04-15-99 1:25 pm Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC06019.DWG

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISION-535,545	
DRAWING	2	MAM	04/13/99	PIPE SIZE 770-767	
CHECKED					

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: 03/15/99 Reg. No. 18612

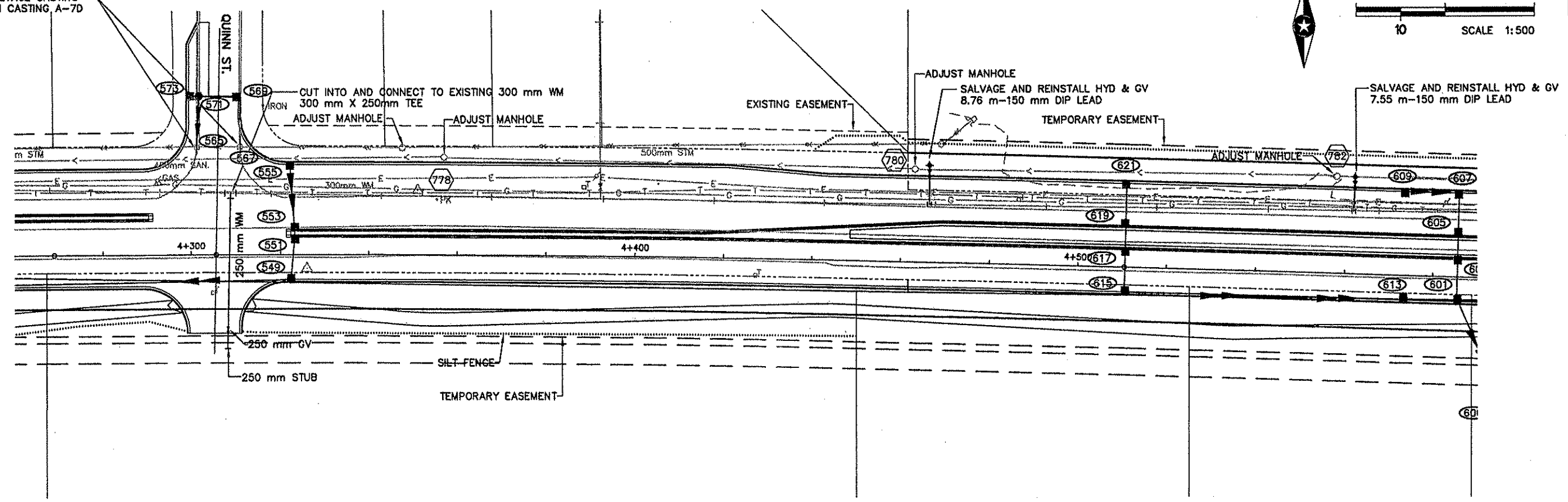
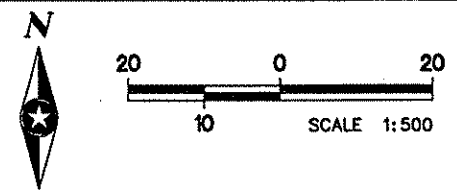


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
STA. 4+040.000 TO 4+270.000

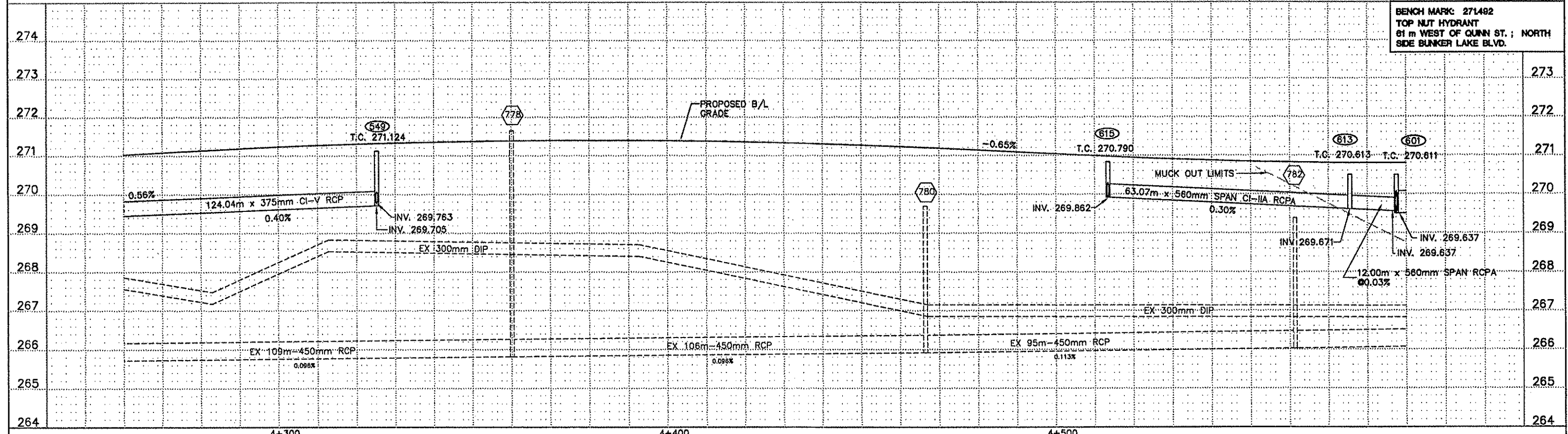
FILE NO. ANOKC9806.01
DATE 3/15/99
65
230

CONNECT TO EXISTING SALVAGE CASTING F&I CASTING A-7D



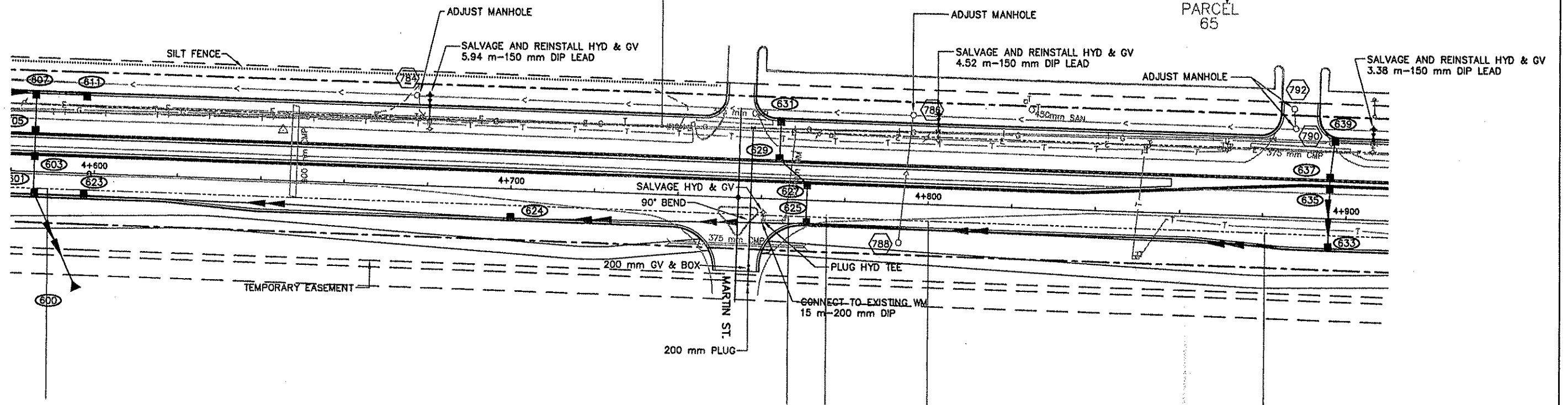
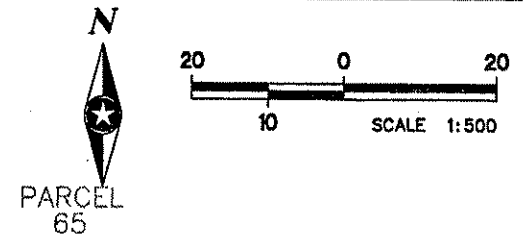
NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 271492
TOP NUT HYDRANT
61 m WEST OF QUINN ST.; NORTH
SIDE BUNKER LAKE BLVD.



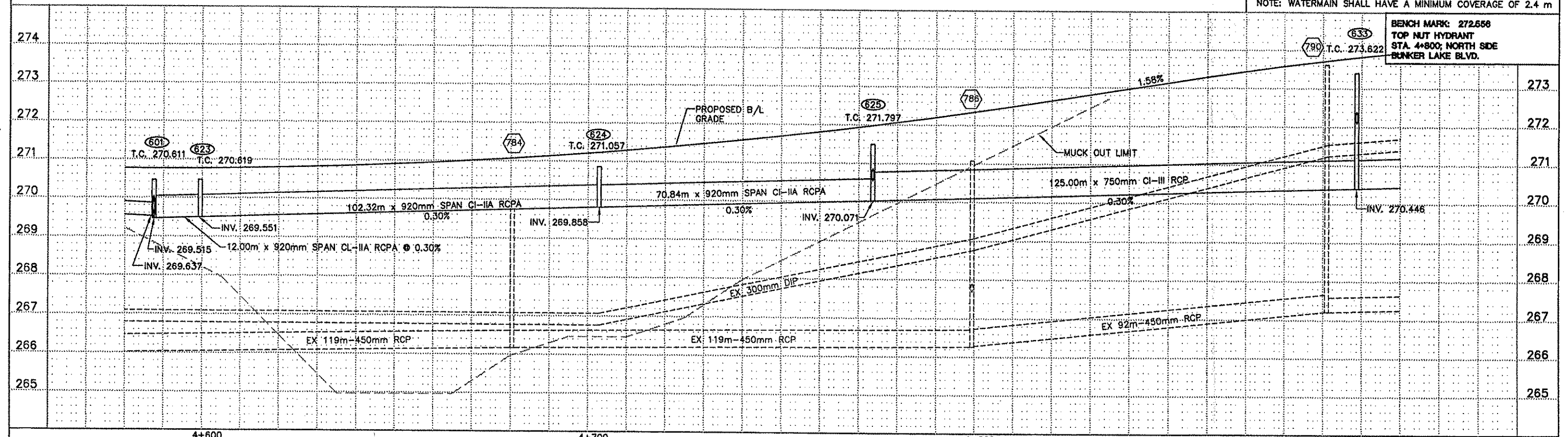
C:\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC808UT0.DWG 04-14-99 4:22 PM

DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISIONS-549,615	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. <i>[Signature]</i> Date: 3/15/99 Reg. No. 18612		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	UTILITIES PLAN AND PROFILE STA. 4+260.000 TO 4+590.000	FILE NO.	66 230
DRAWING			STORM SEWER PIPE LENGTH REVISION-615 TO 613	DATE					3/15/99	
CHECKED			MH 777 REMOVED - WATER MAIN SIZE DECREASED							
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM					



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 272.666
TOP NUT HYDRANT
STA. 4+800; NORTH SIDE
BUNKER LAKE BLVD.



04-14-99 4:12 pm G:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\9806\EP\AKC9806UT11.DWG

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	TGT	04/13/99	STORM SEWER INVERT REVISIONS-611,619,624,625,633	
DRAWING				STORM SEWER PIPE LENGTH REVISION-623 TO 624	
CHECKED					

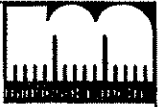
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
STA. 4+580.000 TO 4+910.000

FILE NO. ANOKC9806.01
DATE 3/15/99
67
230



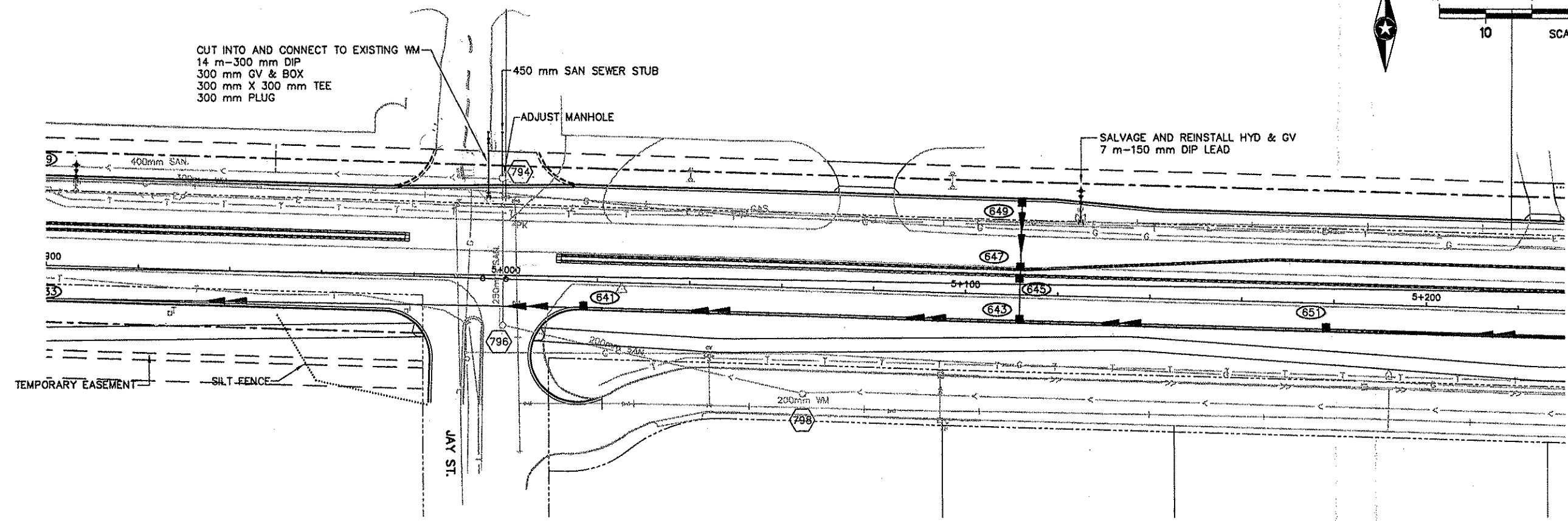
20 0 20
10 SCALE 1:500

CUT INTO AND CONNECT TO EXISTING WM
14 m-300 mm DIP
300 mm GV & BOX
300 mm X 300 mm TEE
300 mm PLUG

450 mm SAN SEWER STUB

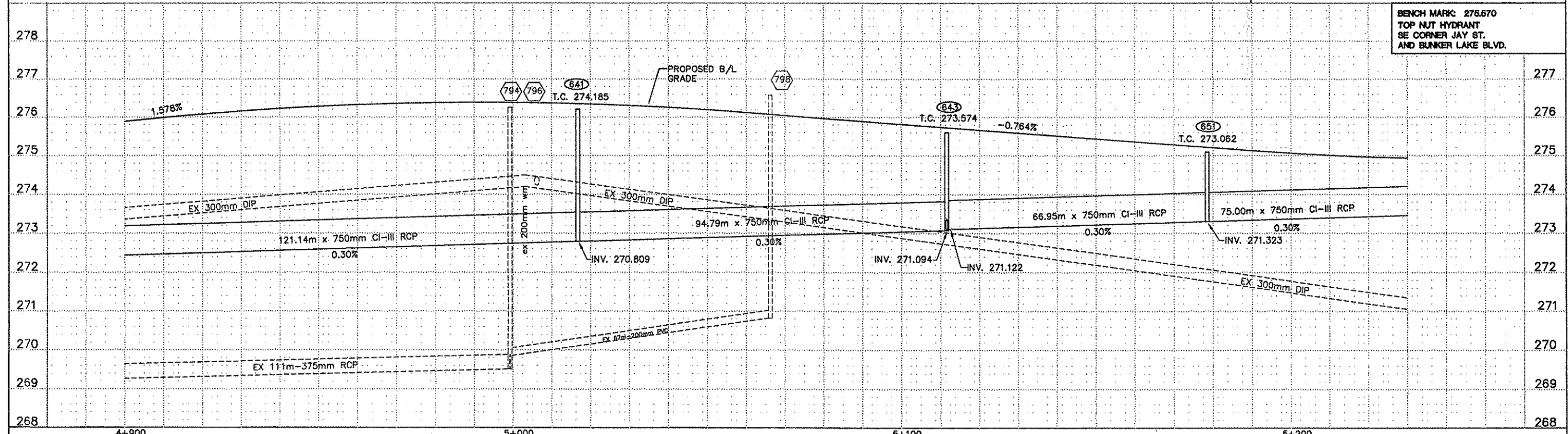
ADJUST MANHOLE

SALVAGE AND REINSTALL HYD & GV
7 m-150 mm DIP LEAD



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 275.670
TOP NUT HYDRANT
SE CORNER JAY ST.
AND BUNKER LAKE BLVD.



04-14-99 9:03 am C:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC808UT12.DWG

DESIGN	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	TGT	04/13/99	STORM SEWER CASTING AND INVERT REVISIONS-641,643,651	
DRAWING					
CHECKED					

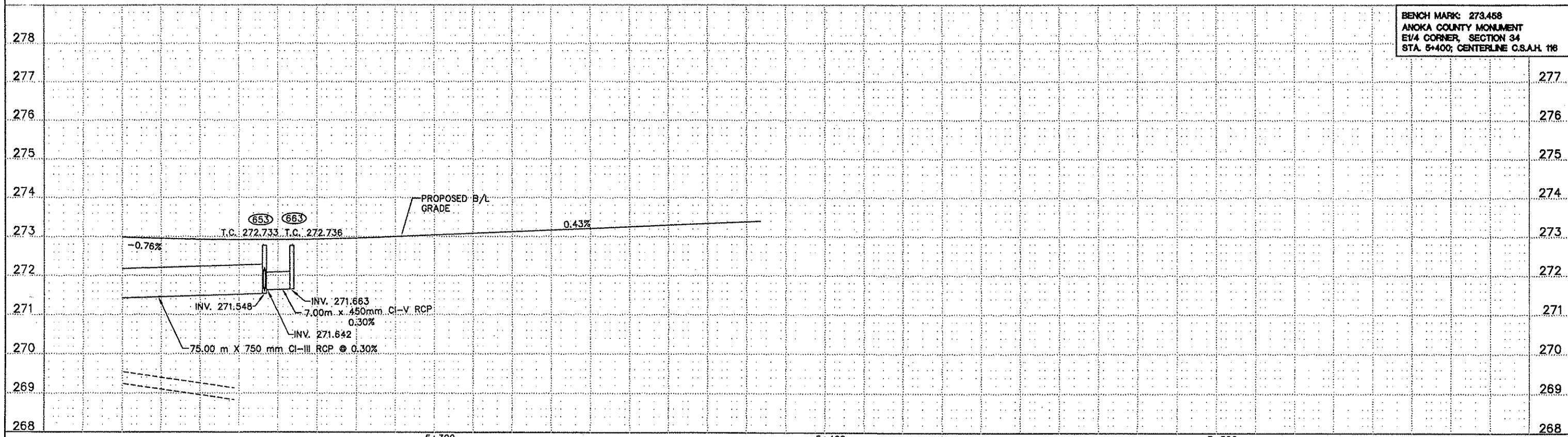
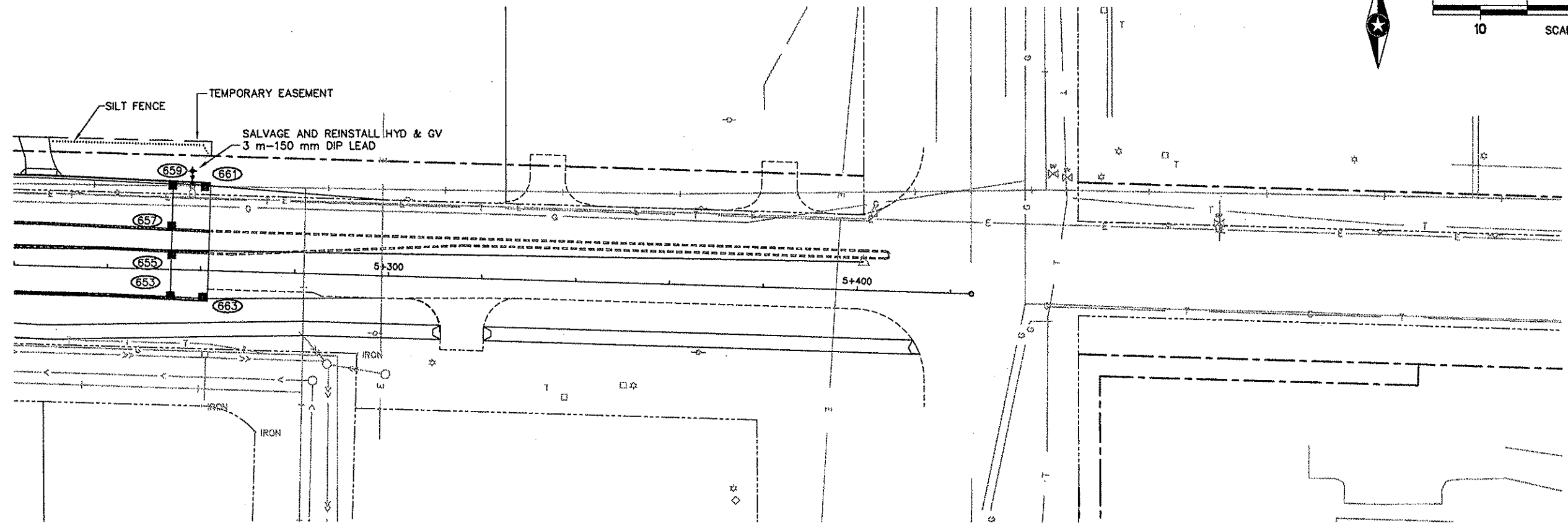
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
STA. 4+900.000 TO 5+230.000

FILE NO. ANOKC9808.01
DATE 3/15/99
68
230



BENCH MARK: 273.458
 ANOKA COUNTY MONUMENT
 E1/4 CORNER, SECTION 34
 STA. 5+400; CENTERLINE C.S.A.H. 116

04-14-99 9:06 am
 C:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKCB06UT13.DWG

DESIGN	1	TGT	04/13/99	STORM SEWER CASTING AND INVERT REVISIONS-653,663
DRAWING				
CHECKED				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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: *3/15/99* Reg. No. 18612

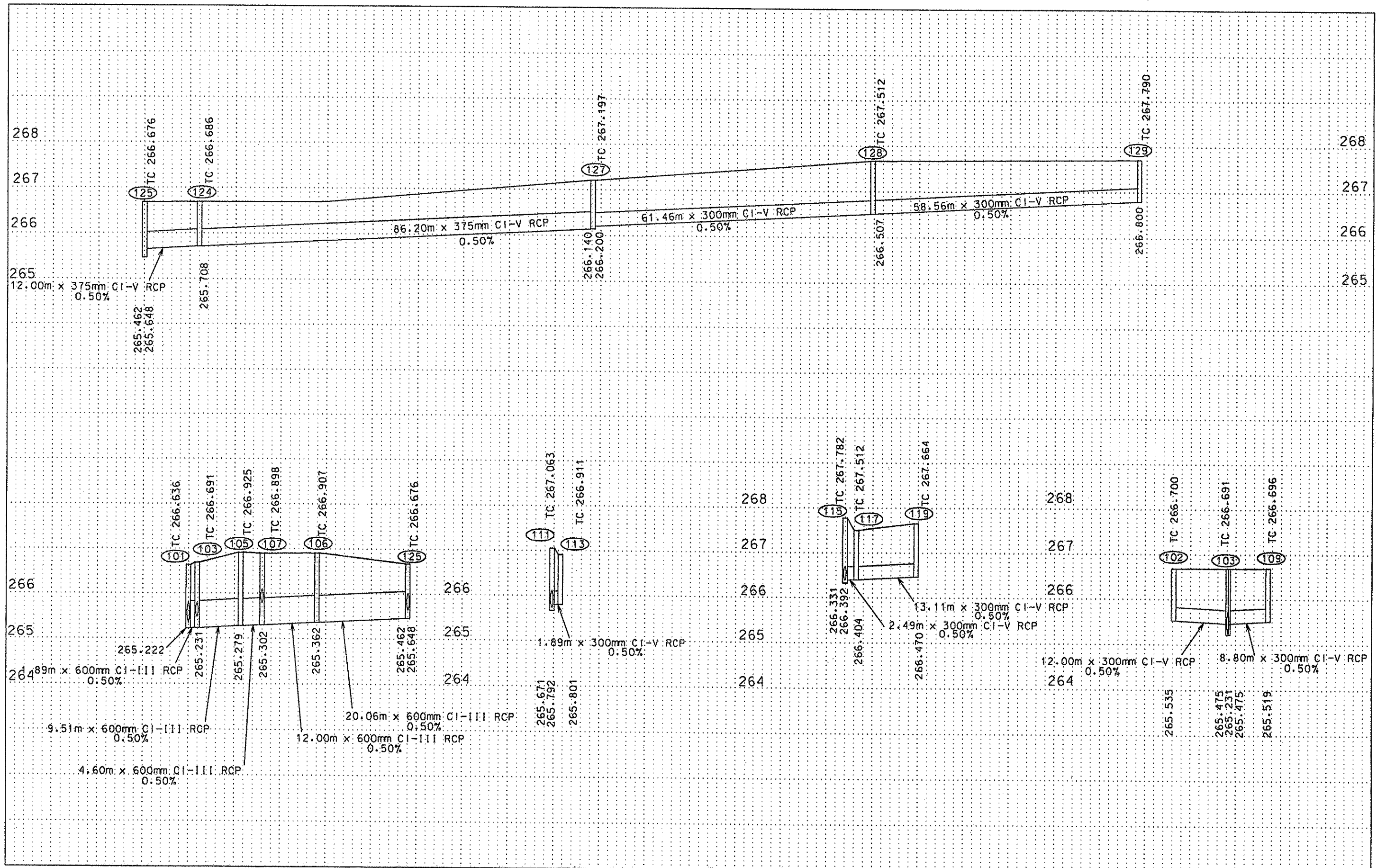


ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
 STA. 5+220.000 TO 5+261.615

FILE NO.
 ANOKC9806.01
 DATE
 3/15/99
 69
 230

24 MAR 99 14:28:03 q:\civil\cbrns\shib.cfm\us\zardara\9806\kate\9806\sewer\90.dwg:100.dgn



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

Sheldon M. Mason
 Date: MARCH 15, 1999 Reg. No. 18612

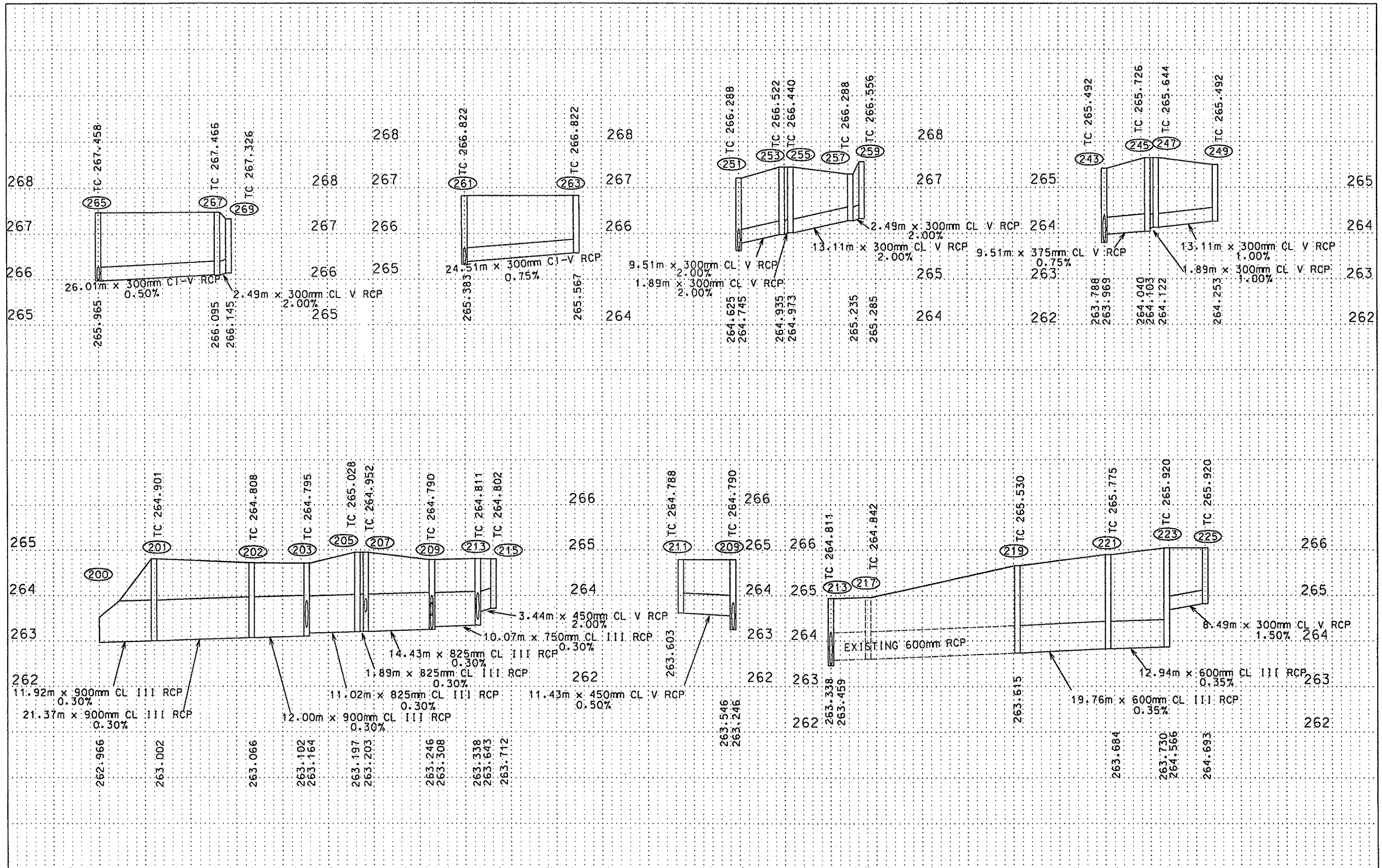


ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STORM SEWER PROFILES

FILE NO. ANOKA9806.01
 DATE MARCH 15, 1999
 70
 230

24 MAR 99 14:30:17 g:\civil\clients\va_ltru_\anoka\9806\storm\cross200.dgn



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

John M. Mason
 Date: MARCH 15, 1999 Reg. No. 18812



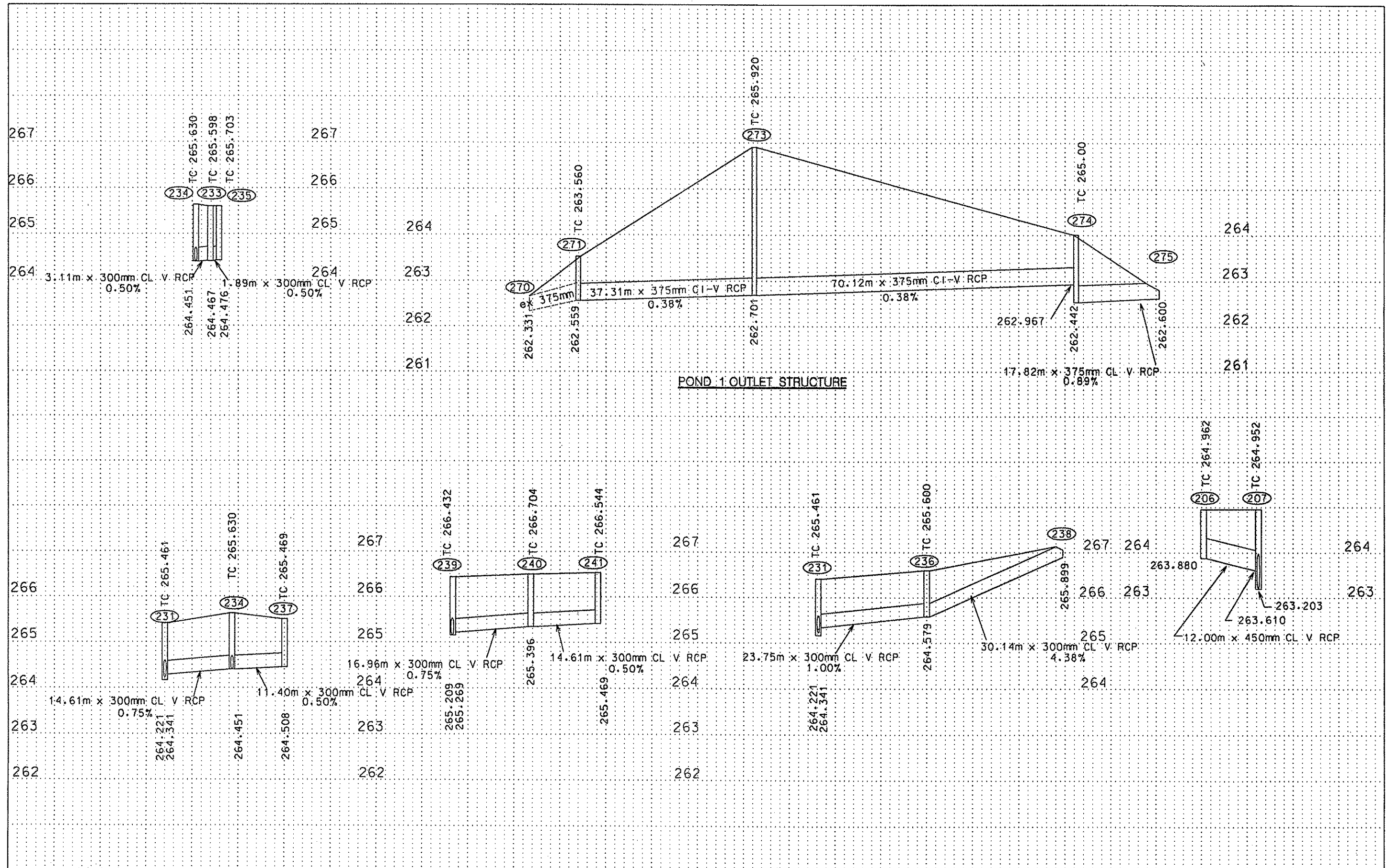
ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STORM SEWER PROFILE

FILE NO. ANOKA9806.01
 DATE MARCH 15, 1999
 71
 230

f:\projects\14-32-25\14-32-25.dwg

24 MAR 99 14:32:25



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

[Signature]

Date: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STORM SEWER PROFILE

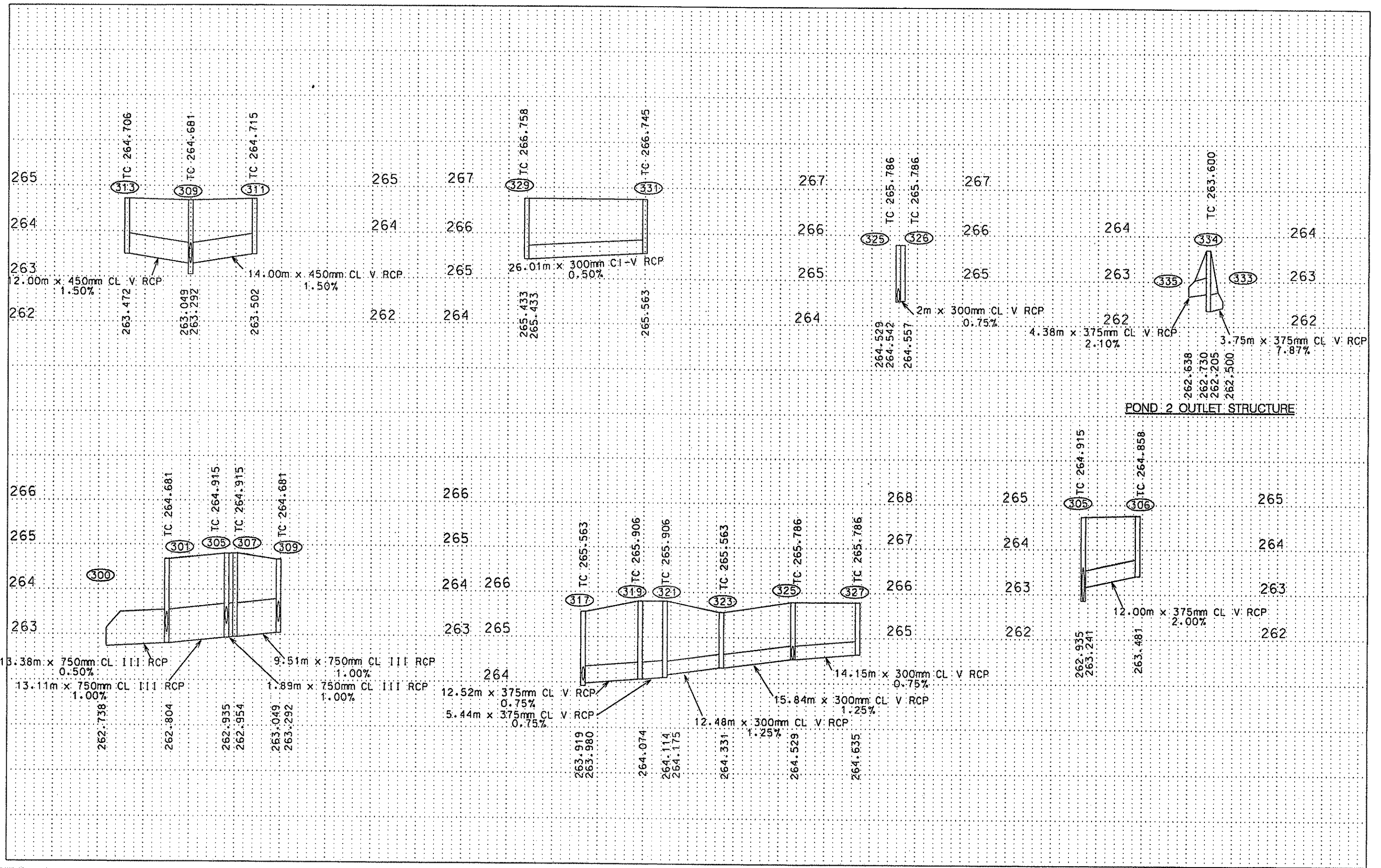
FILE NO.
 ANOKA9806.01

DATE
 MARCH 15, 1999

72

230

24 MAR 99 14:34:34 g:\civil\civnetis\g:\hkh\sherehob\9898\stamob\cross\stg\stg\cross300.dgn



POND 2 OUTLET STRUCTURE

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Alan M. Mason
 Date: MARCH 15, 1999 Reg. No. 18812



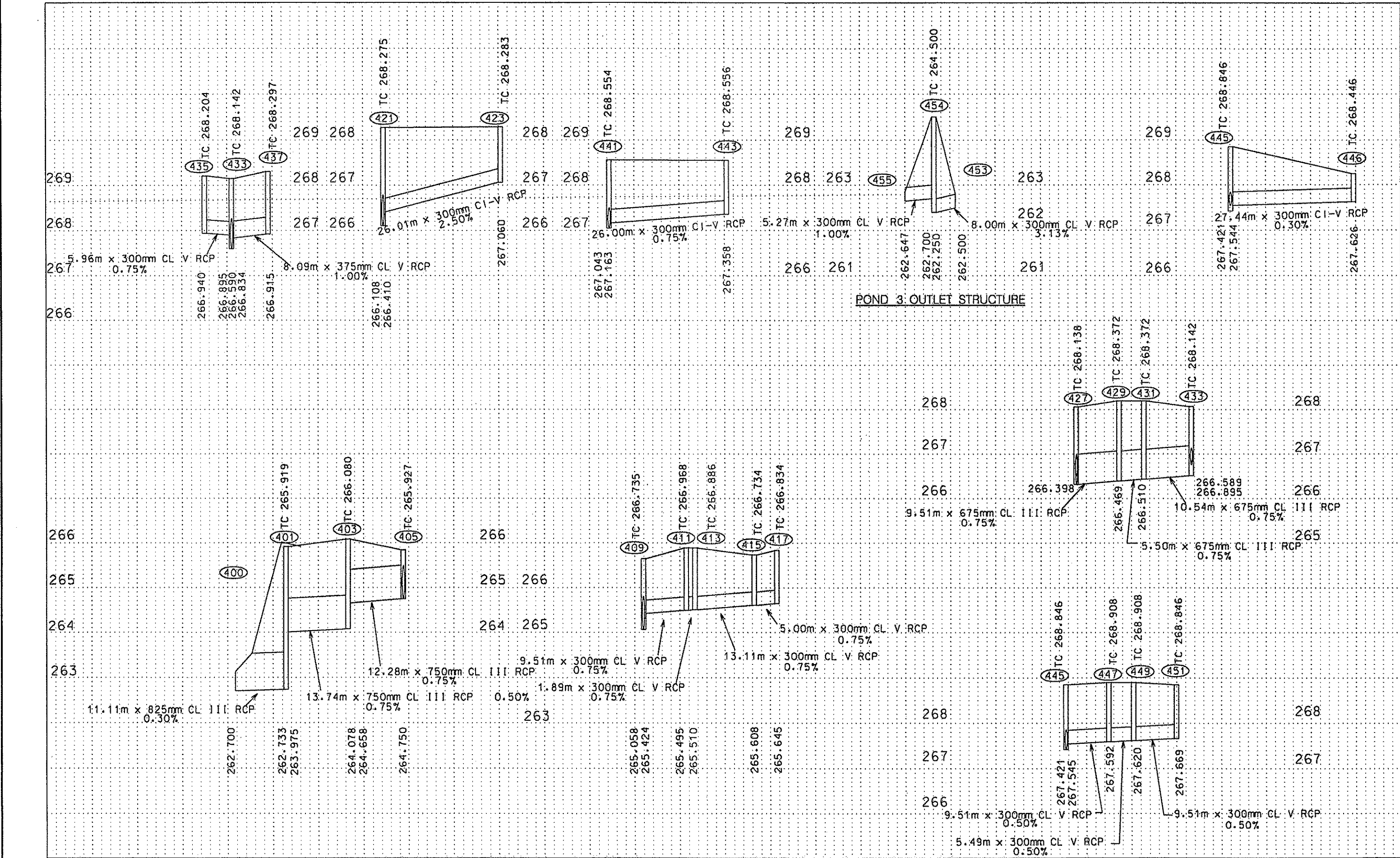
ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STORM SEWER PROFILE

FILE NO. ANOKA9806.01
 DATE MARCH 15, 1999
 73
 230

G:\Civil\116\116_swh\116_swh.dwg

24 MAR 99 14:36:22



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

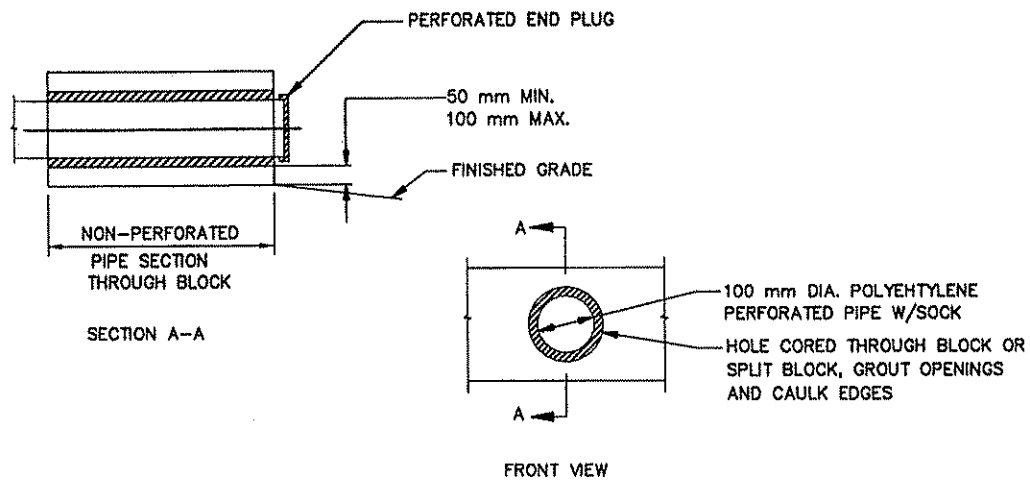
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Superior Mechanical
 Date: MARCH 15, 1999 Reg. No. 18612



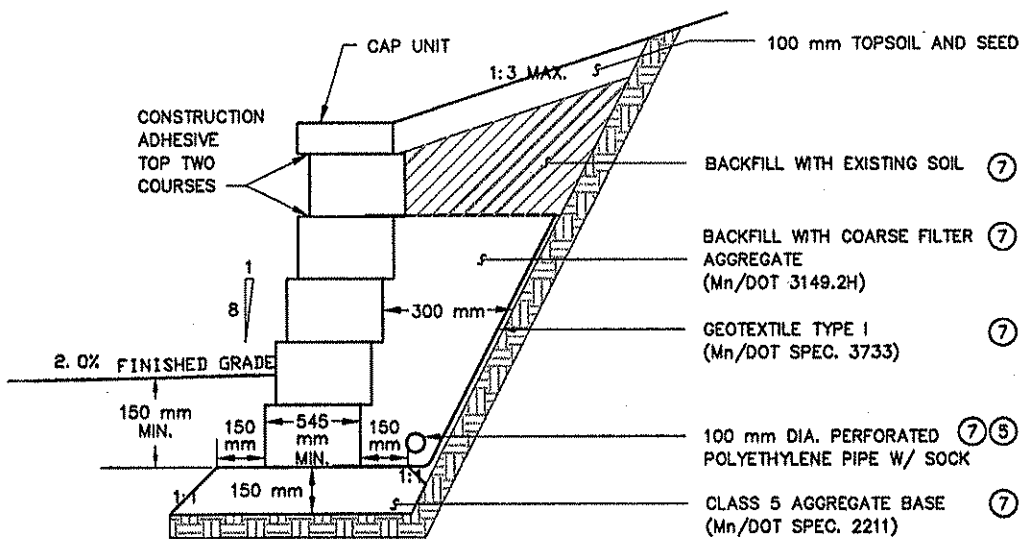
ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

STORM SEWER PROFILE

FILE NO. ANOKA9808.01	74
DATE MARCH 15, 1999	230



PE PIPE OUTLET
EXIT THROUGH MODULAR WALL

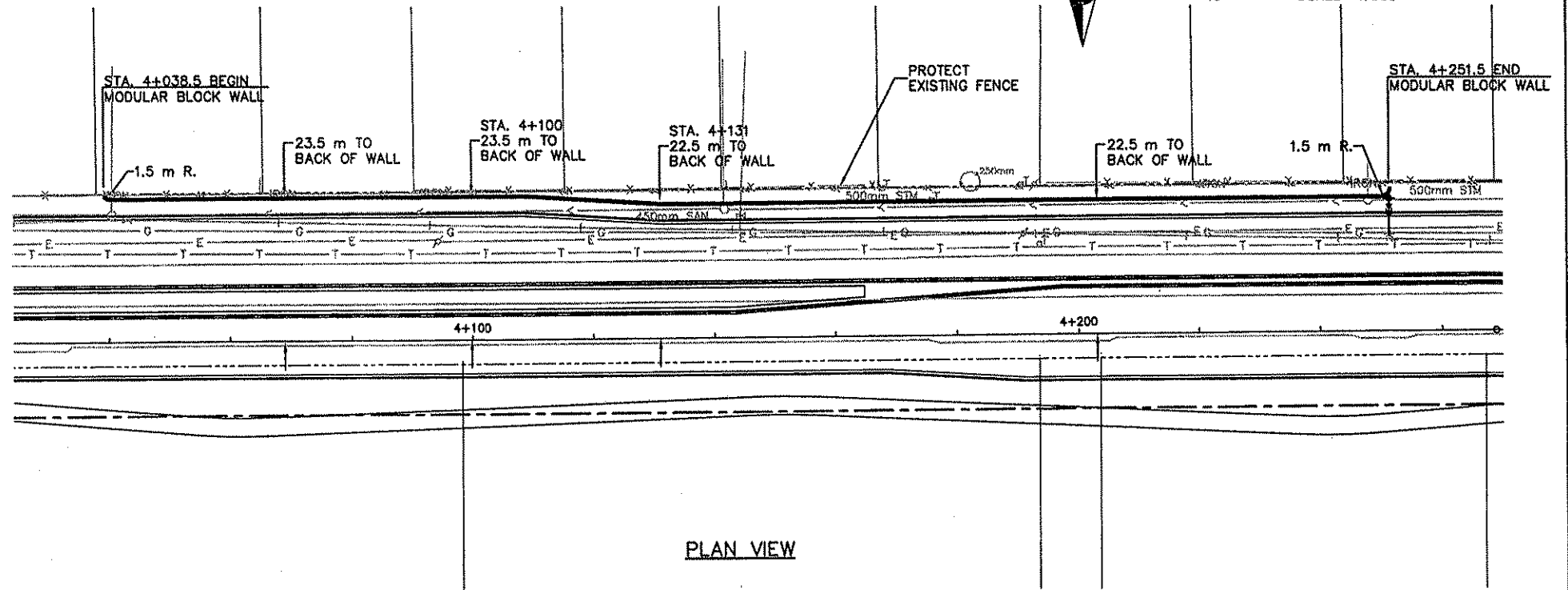


MODULAR BLOCK RETAINING WALL

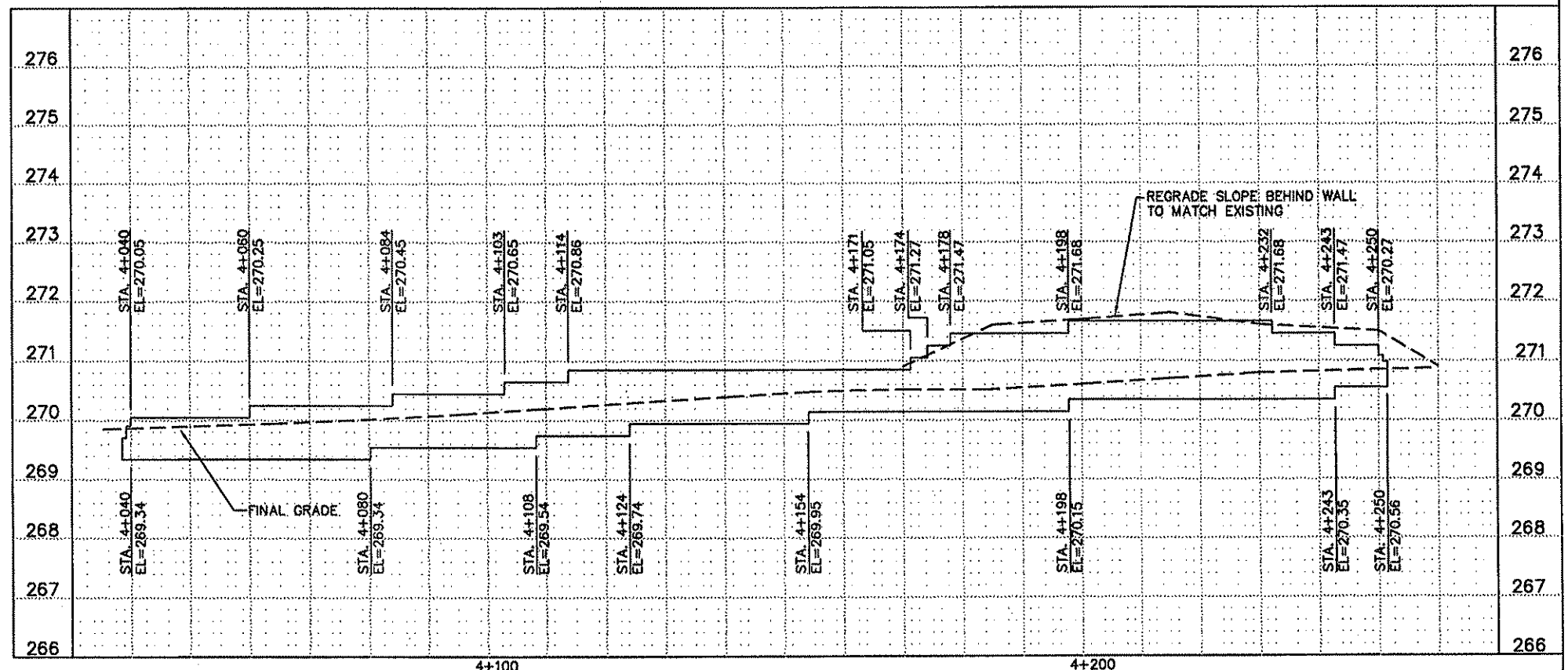
C.S.A.H. 116
STA. 4+038.5 TO 4+251.5

NOTES:

- ① FILL ALL VOID AREAS IN MODULAR BLOCK UNITS WITH COARSE FILTER AGGREGATE (Mn/DOT SPEC. 3149.2H)
- ② MODULAR BLOCK UNITS MUST HAVE INTERLOCKING LIP OR PIN CONNECTIONS.
- ③ RETAINING WALL LOCATION SHOWN ON PLAN VIEW.
- ④ WALL BATTER MUST EXCEED 7 DEGREES.
- ⑤ DISCHARGE DRAIN TILE AT NEAREST CATCH BASIN. USE NON-PERFORATED PIPE FROM WALL TO CATCH BASIN. INCIDENTAL TO WALL.
- ⑥ MAXIMUM EXPOSED HEIGHT NOT TO EXCEED 1 m.
- ⑦ INCIDENTAL TO m² OF CONC. MODULAR BLOCK WALL.



PLAN VIEW



03-18-99 2:54 pm

Q:\CIVIL\CLIENTS\VA_THRU\JF_ANOKA\9806\EP\AKC808RW.DWG

DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Shane M. Mark
 Date: 3/15/99 Reg. No. 18512

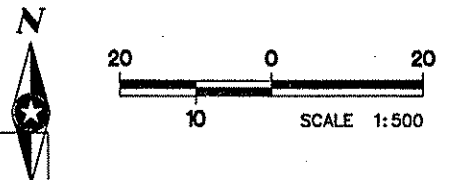
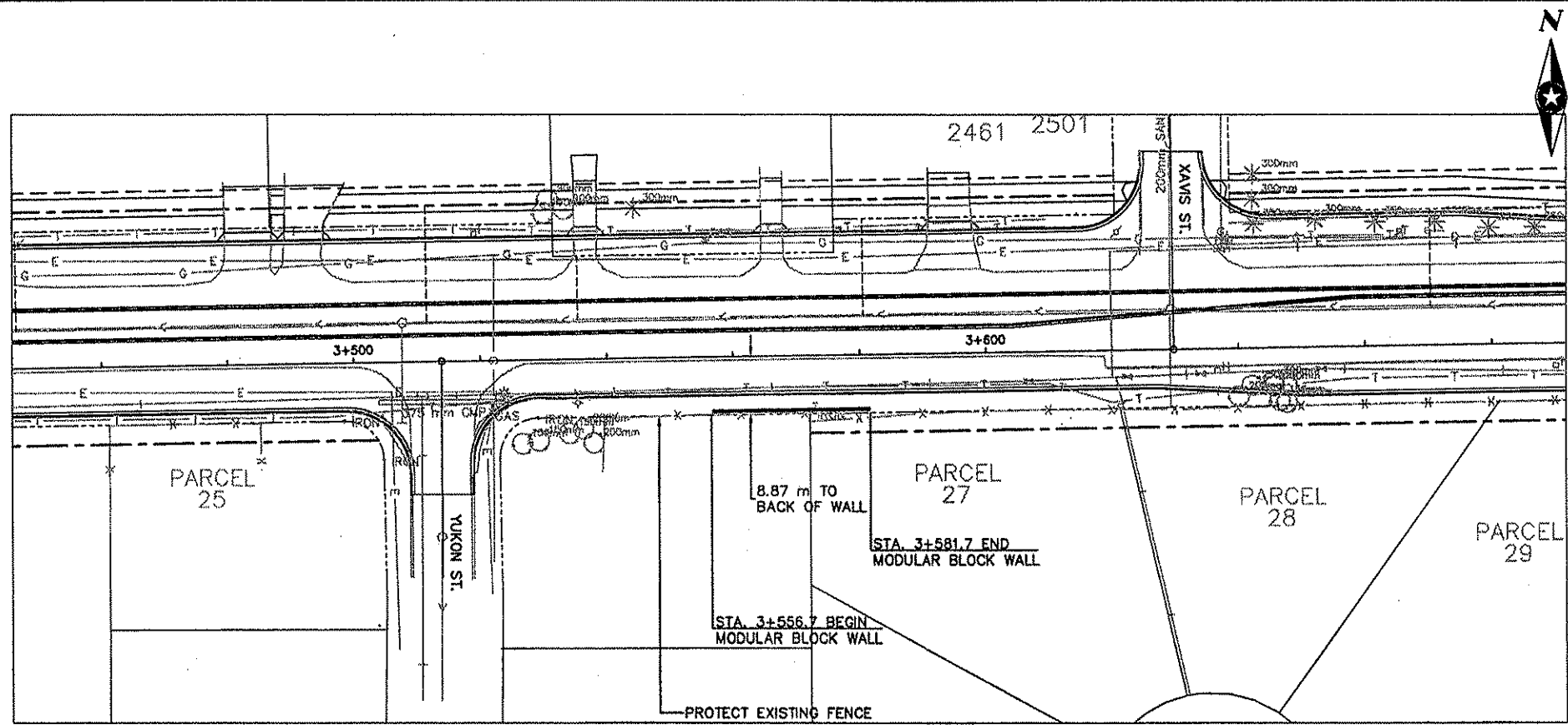


ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

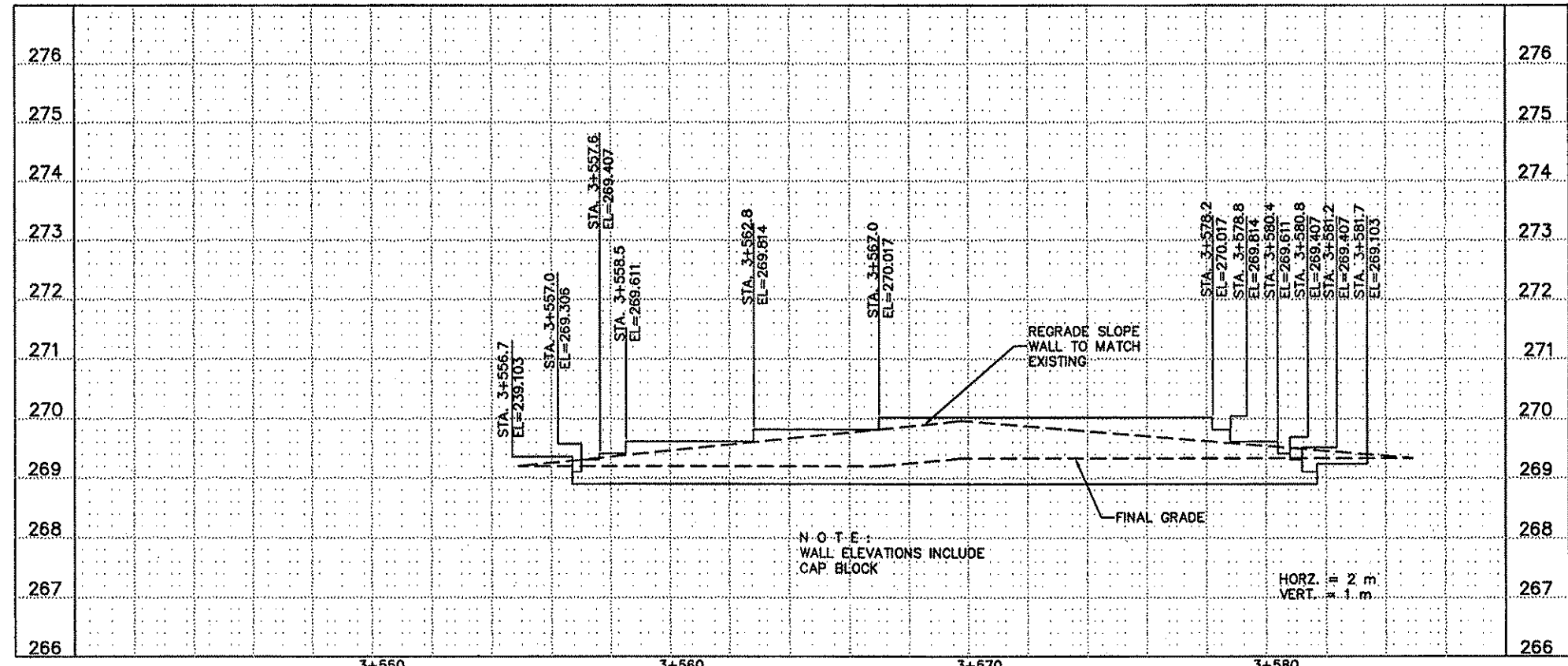
RETAINING WALL PLAN A AND PROFILE

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

77
 230



PLAN VIEW



C:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\EP\AKC06RW2.DWG 03-18-99 3:20 pm

DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

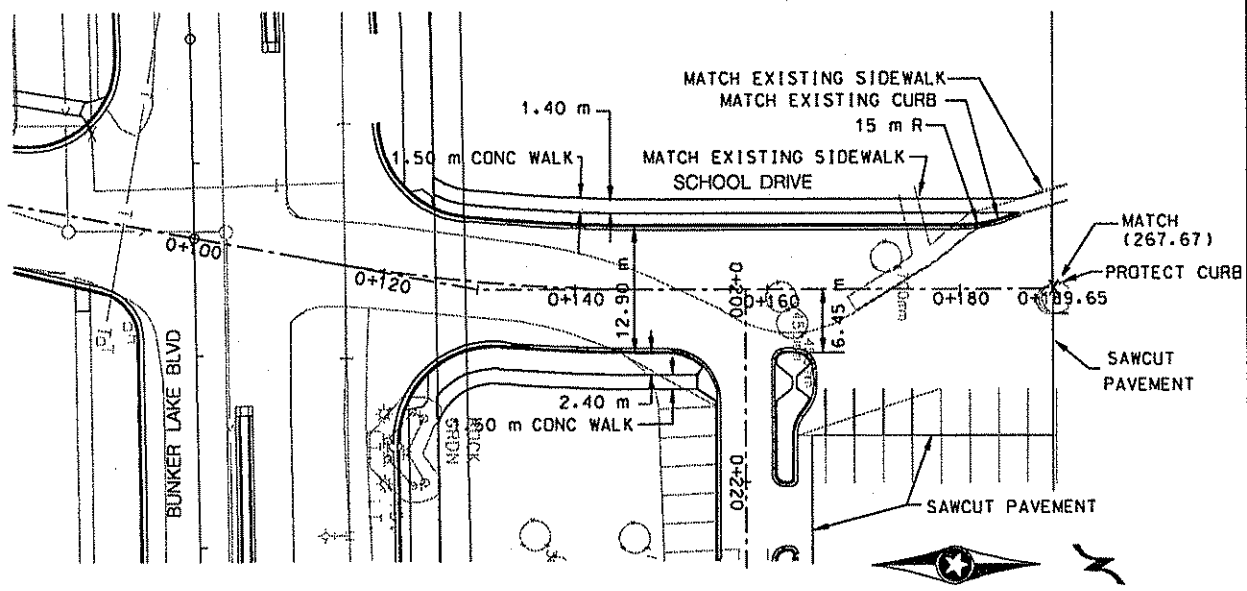
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 18612



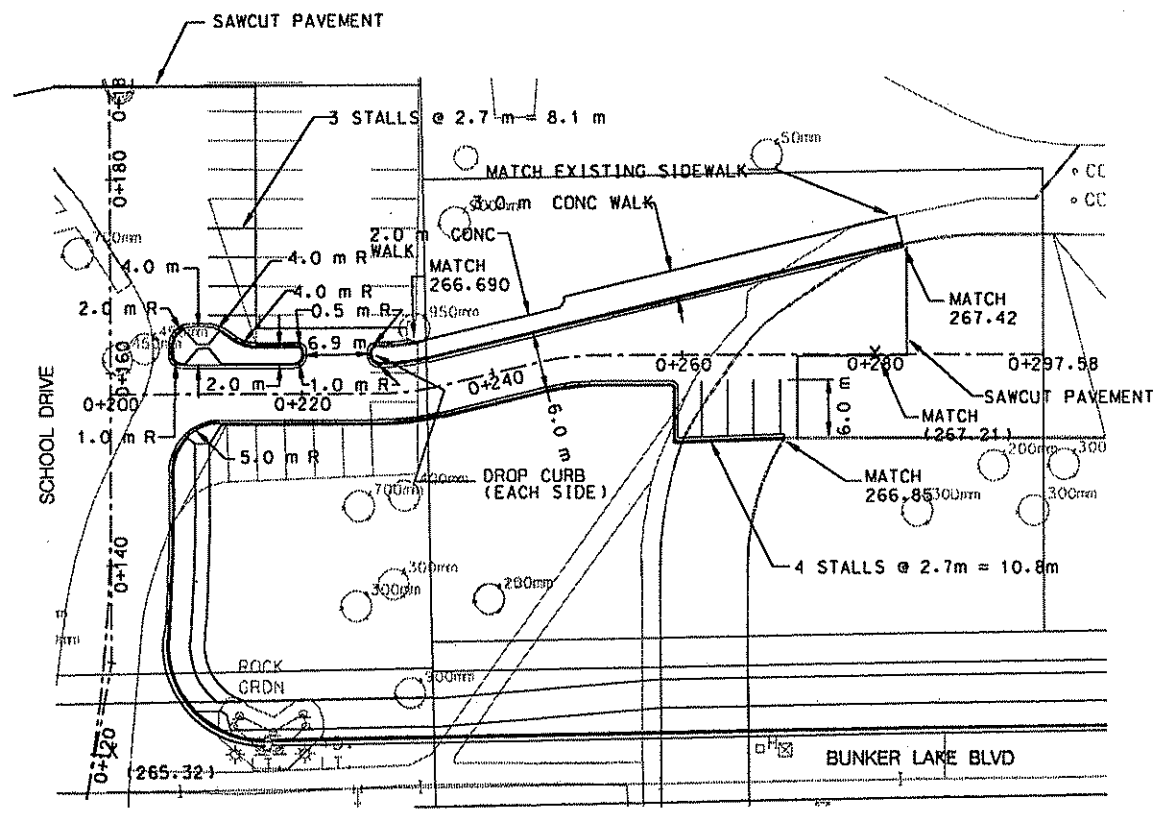
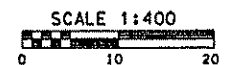
ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

RETAINING WALL PLAN B AND PROFILE

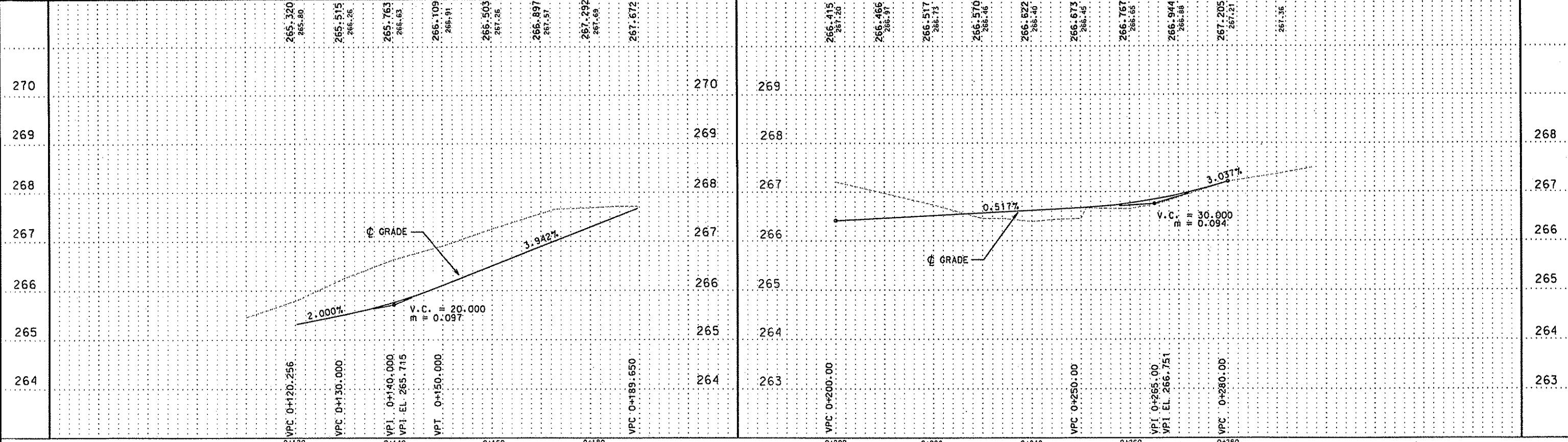
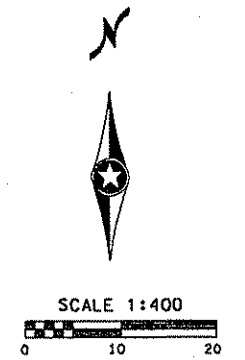
FILE NO. ANOKC9806.01	78
DATE 03/15/99	230



(267.21) DENOTES PAVEMENT ELEVATION.
ALL OTHERS ARE TOP OF CURB.



(267.21) DENOTES PAVEMENT ELEVATION.
ALL OTHERS ARE TOP OF CURB.



24 MAR 99 14:42:42 q:\sv\clients\va_thru\1\anoka\9806\starm\chpork.dgn

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Signature
MARCH 15, 1999 Per No. 19812



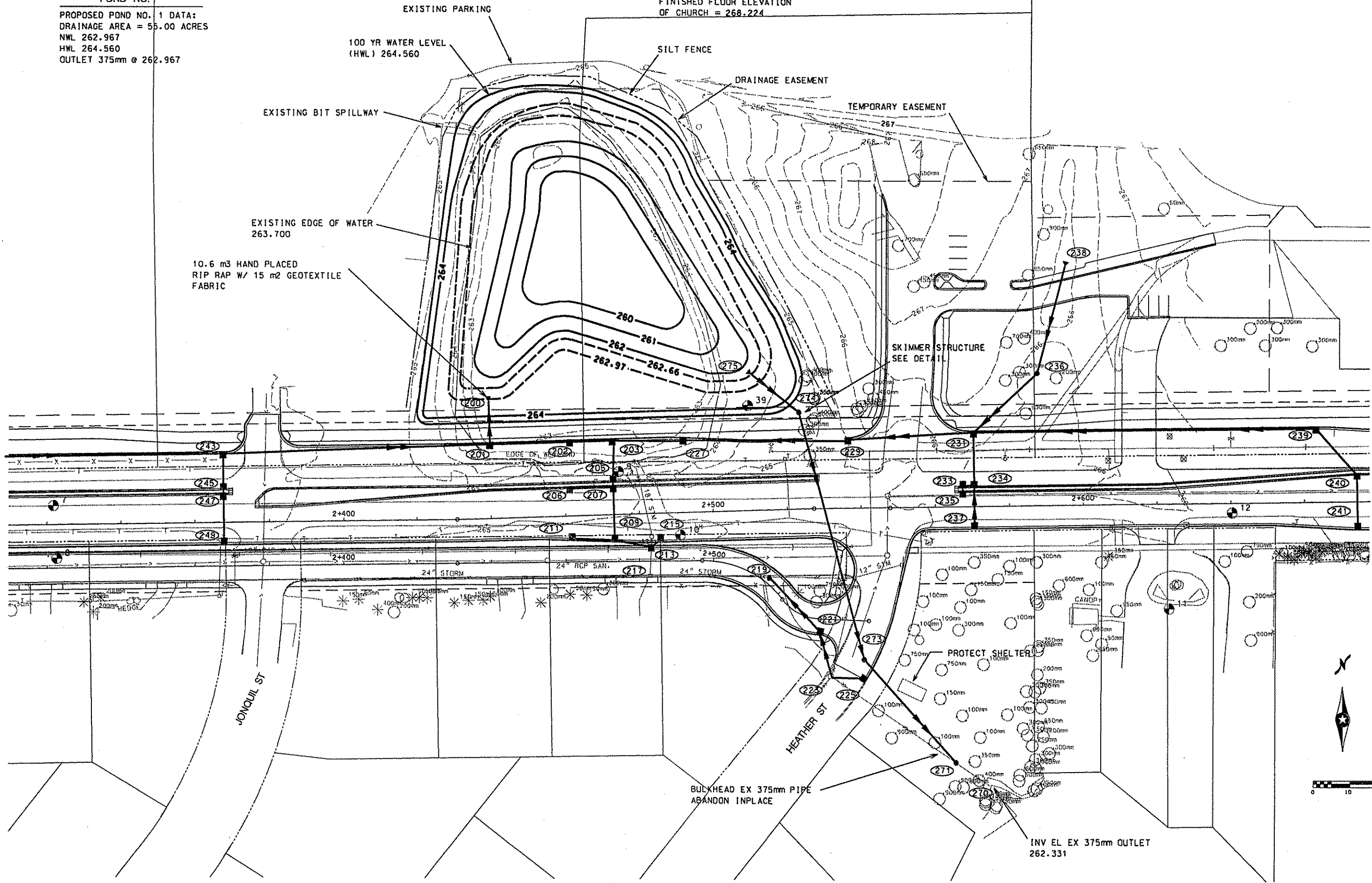
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04

CONTOUR PLAN
SCHOOL DRIVE
PLAN & PROFILE

FILE NO. ANOKA9806.01
DATE MARCH 15, 1999
79
230

POND NO. 1
 PROPOSED POND NO. 1 DATA:
 DRAINAGE AREA = 55.00 ACRES
 NWL 262.967
 HWL 264.560
 OUTLET 375mm @ 262.967

NOTE:
 FINISHED FLOOR ELEVATION
 OF CHURCH = 268.224



24 MAR 99 14:44:17

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Susan M. Mason
 DATE: MARCH 15, 1999 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONTOUR PLAN
 POND NO. 1

FILE NO. ANOKA9806.01	80
DATE MARCH 15, 1999	230

POND NO. 2

PROPOSED POND NO. 2 DATA:
 DRAINAGE AREA = 6.57 ACRES (2.659ha)
 NWL 262.738
 HWL 263.530
 OUTLET 375mm @ 262.73

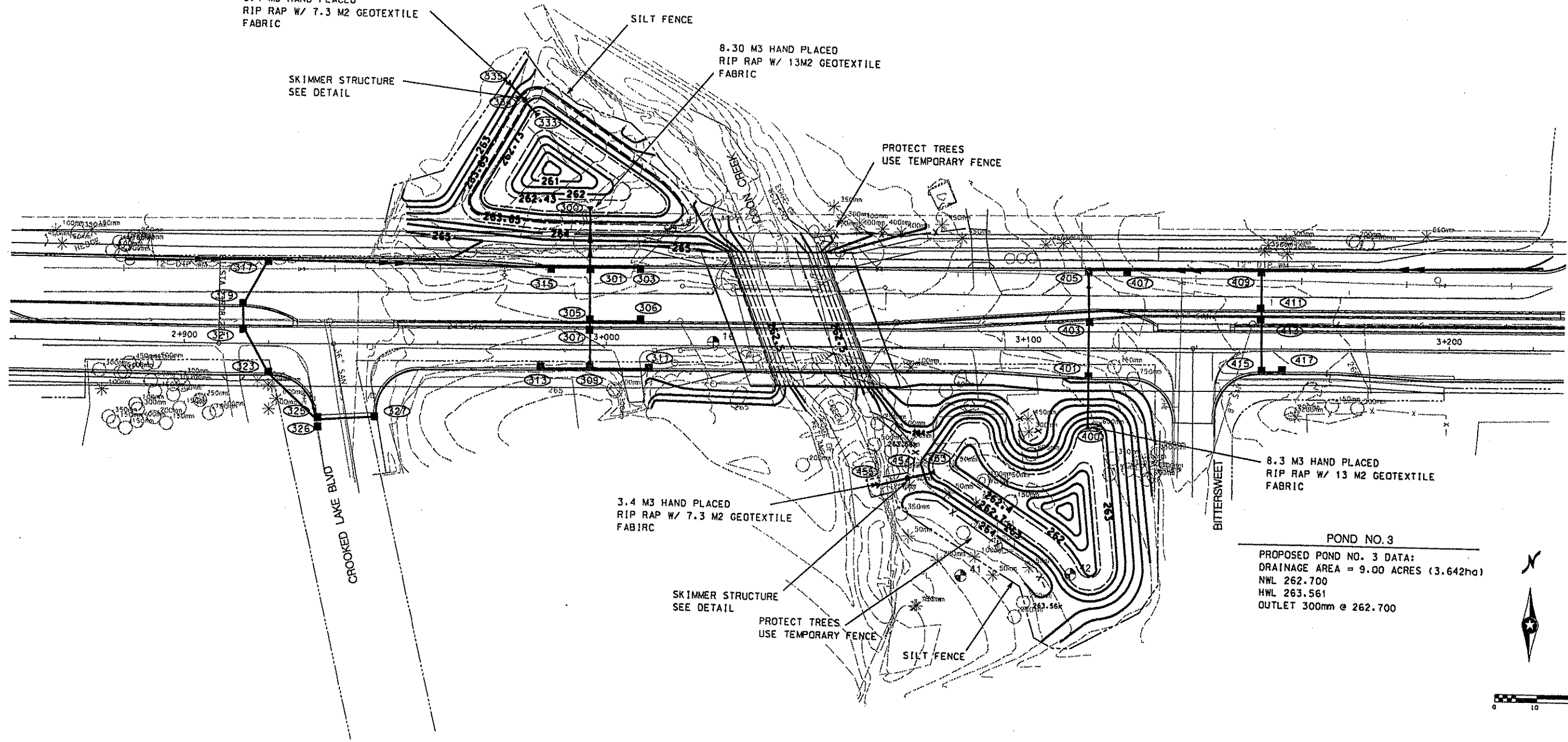
3.4 M3 HAND PLACED
 RIP RAP W/ 7.3 M2 GEOTEXTILE
 FABRIC

SILT FENCE

8.30 M3 HAND PLACED
 RIP RAP W/ 13M2 GEOTEXTILE
 FABRIC

SKIMMER STRUCTURE
 SEE DETAIL

PROTECT TREES
 USE TEMPORARY FENCE



3.4 M3 HAND PLACED
 RIP RAP W/ 7.3 M2 GEOTEXTILE
 FABRIC

SKIMMER STRUCTURE
 SEE DETAIL

PROTECT TREES
 USE TEMPORARY FENCE

SILT FENCE

8.3 M3 HAND PLACED
 RIP RAP W/ 13 M2 GEOTEXTILE
 FABRIC

POND NO. 3

PROPOSED POND NO. 3 DATA:
 DRAINAGE AREA = 9.00 ACRES (3.642ha)
 NWL 262.700
 HWL 263.561
 OUTLET 300mm @ 262.700



24 MAR 99 14:45:07

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
[Signature]
 Date: MARCH 15, 1999 Reg. No. 18612



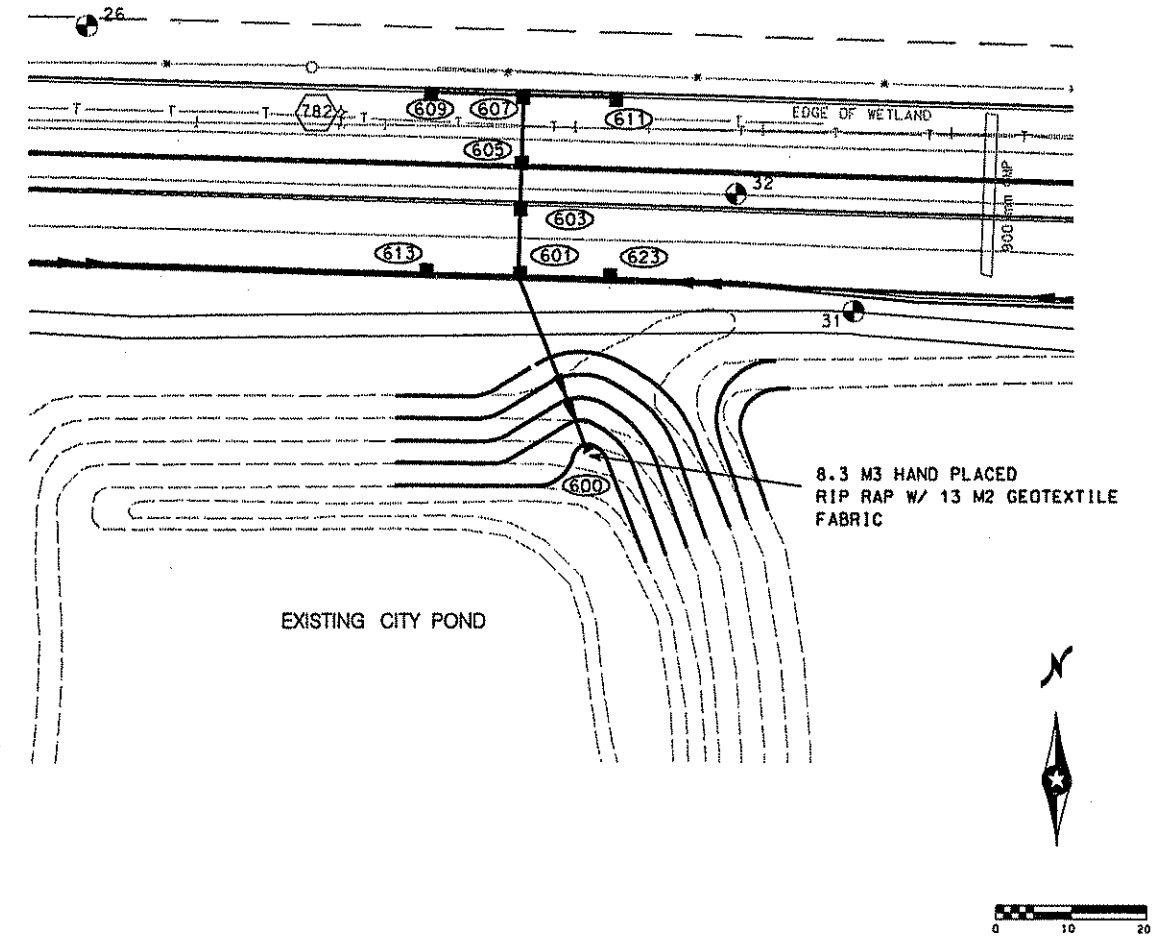
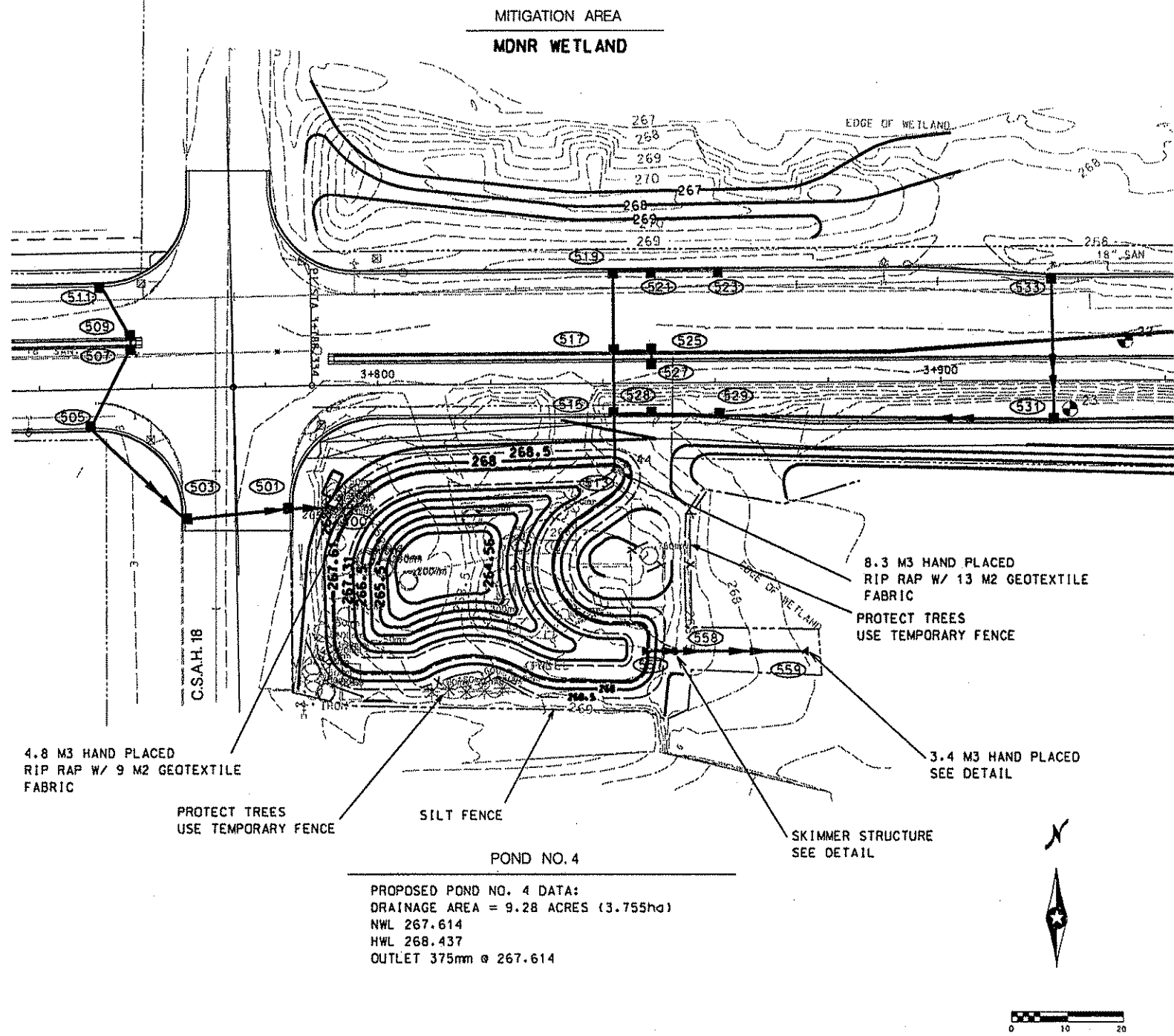
ANOKA COUNTY
 C.S.A.H. 116(BUNKER LAKE BLVD)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

CONTOUR PLAN
 PONDS NO. 2 & 3

FILE NO.
 ANOKA9806.01
 DATE
 MARCH 15, 1999

81
 230

24 MAR 99 14:51:48 of \\g:\projects\1999\19990308\19990308.dwg



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

Steven M. Mason

Reg. No. 18612

DATE: MARCH 15, 1999

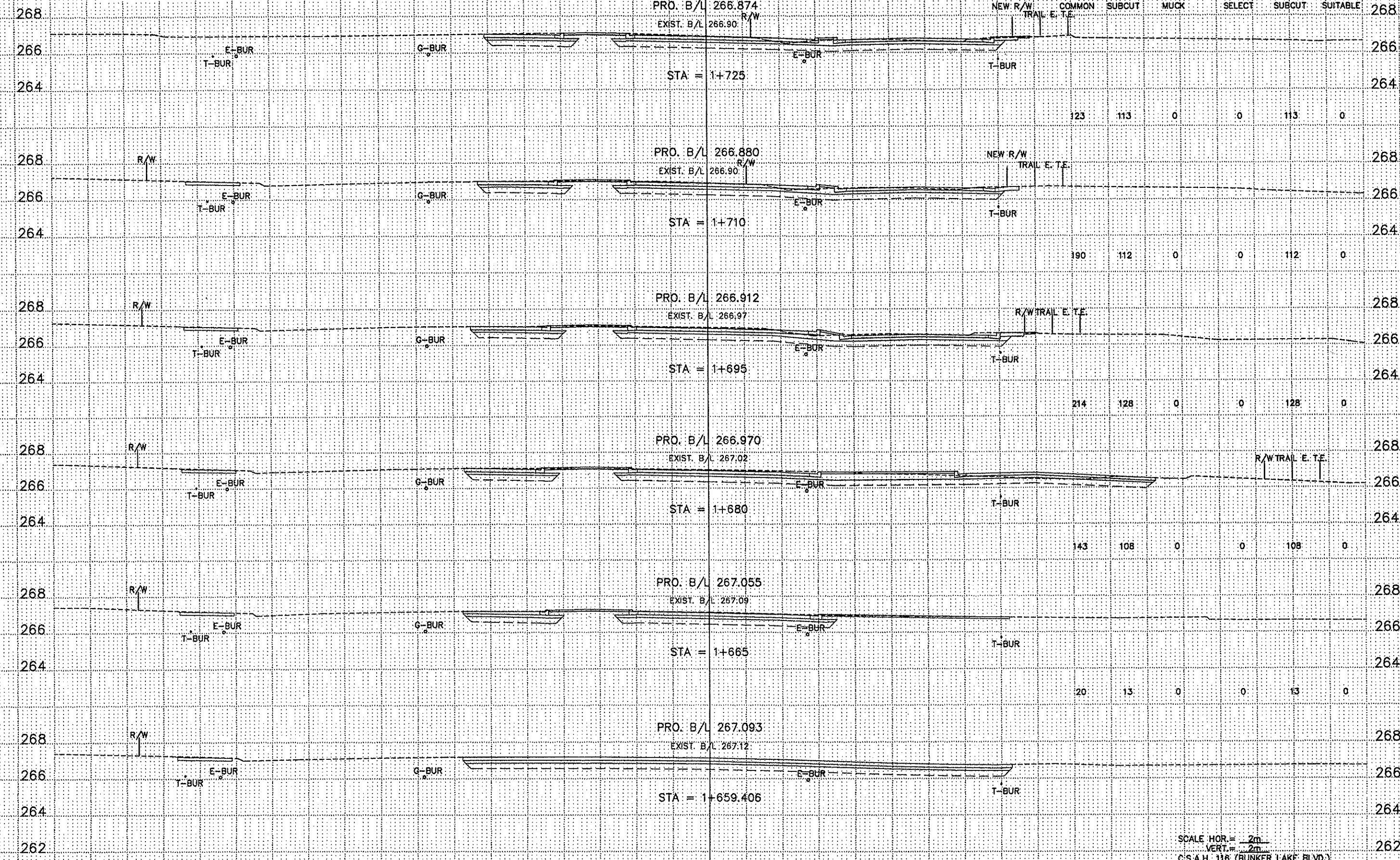


ANDKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

CONTOUR PLANS
POND 4 & EXISTING CITY POND

FILE NO. ANOKA9806.01
DATE MARCH 15, 1999
82
230

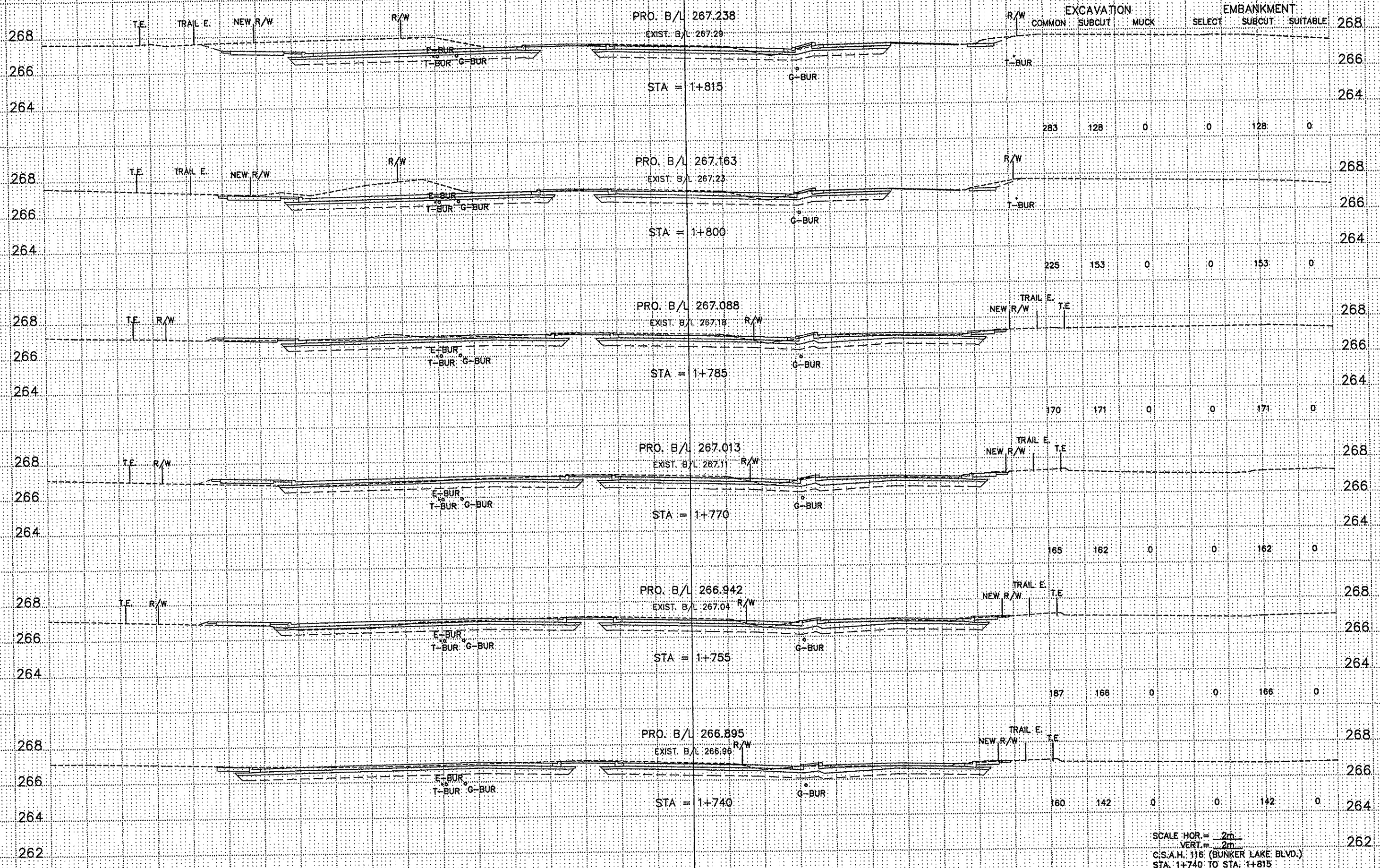
38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 1+659.406 TO STA. 1+725

C:\VDR\CLIENTS\A_THRU_F\VANUCKA\8805\EP\VSHEET1.DWG
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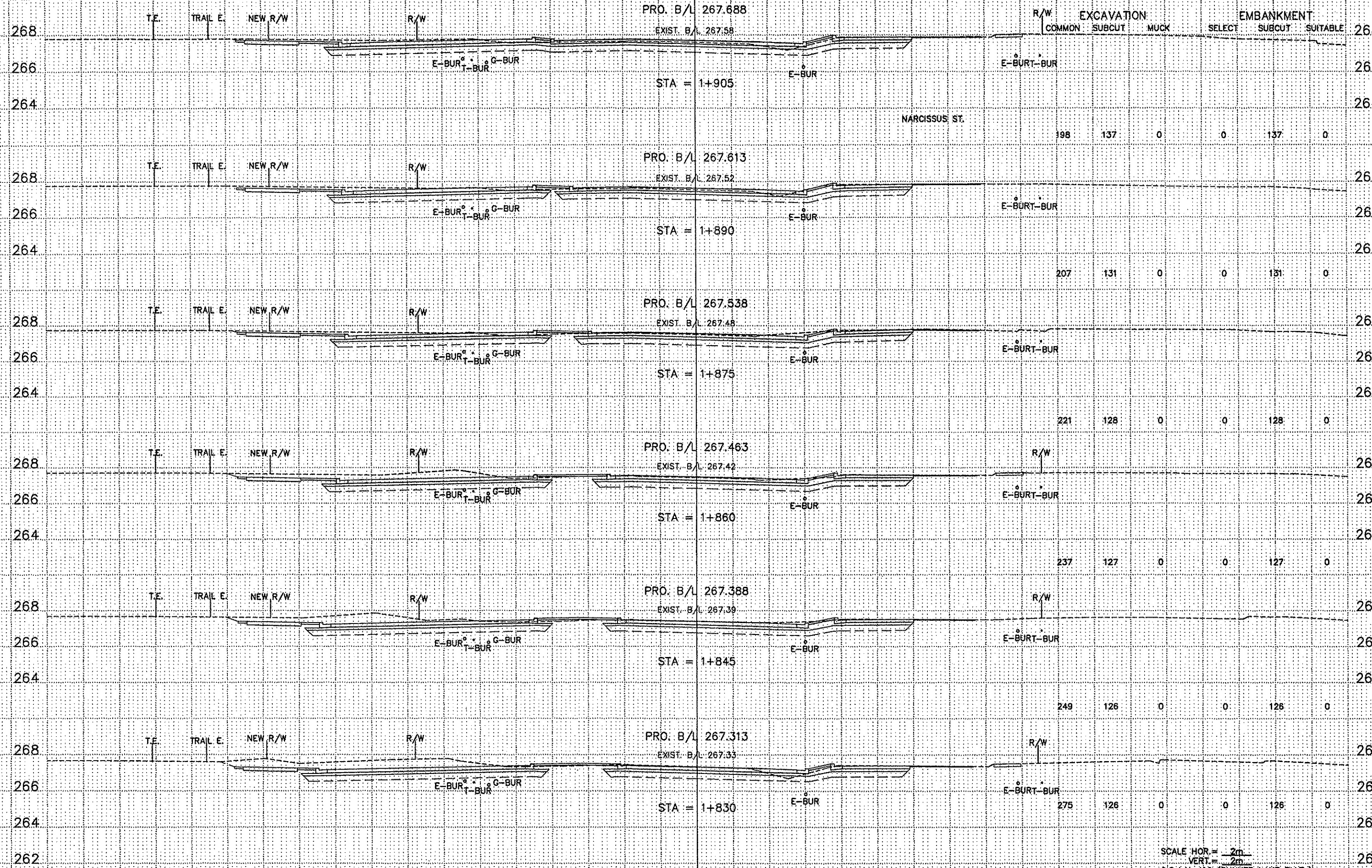
38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 1+740 TO STA. 1+815

03-24-99 10:08 am
 C:\VIA\CLIENTS\VA_THRU_L\AUKA\9806\EP\WSHETZ.DWG

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



PRO. B/L 267.688

EXIST. B/L 267.58

STA = 1+905

PRO. B/L 267.613

EXIST. B/L 267.52

STA = 1+890

PRO. B/L 267.538

EXIST. B/L 267.48

STA = 1+875

PRO. B/L 267.463

EXIST. B/L 267.42

STA = 1+860

PRO. B/L 267.388

EXIST. B/L 267.39

STA = 1+845

PRO. B/L 267.313

EXIST. B/L 267.33

STA = 1+830

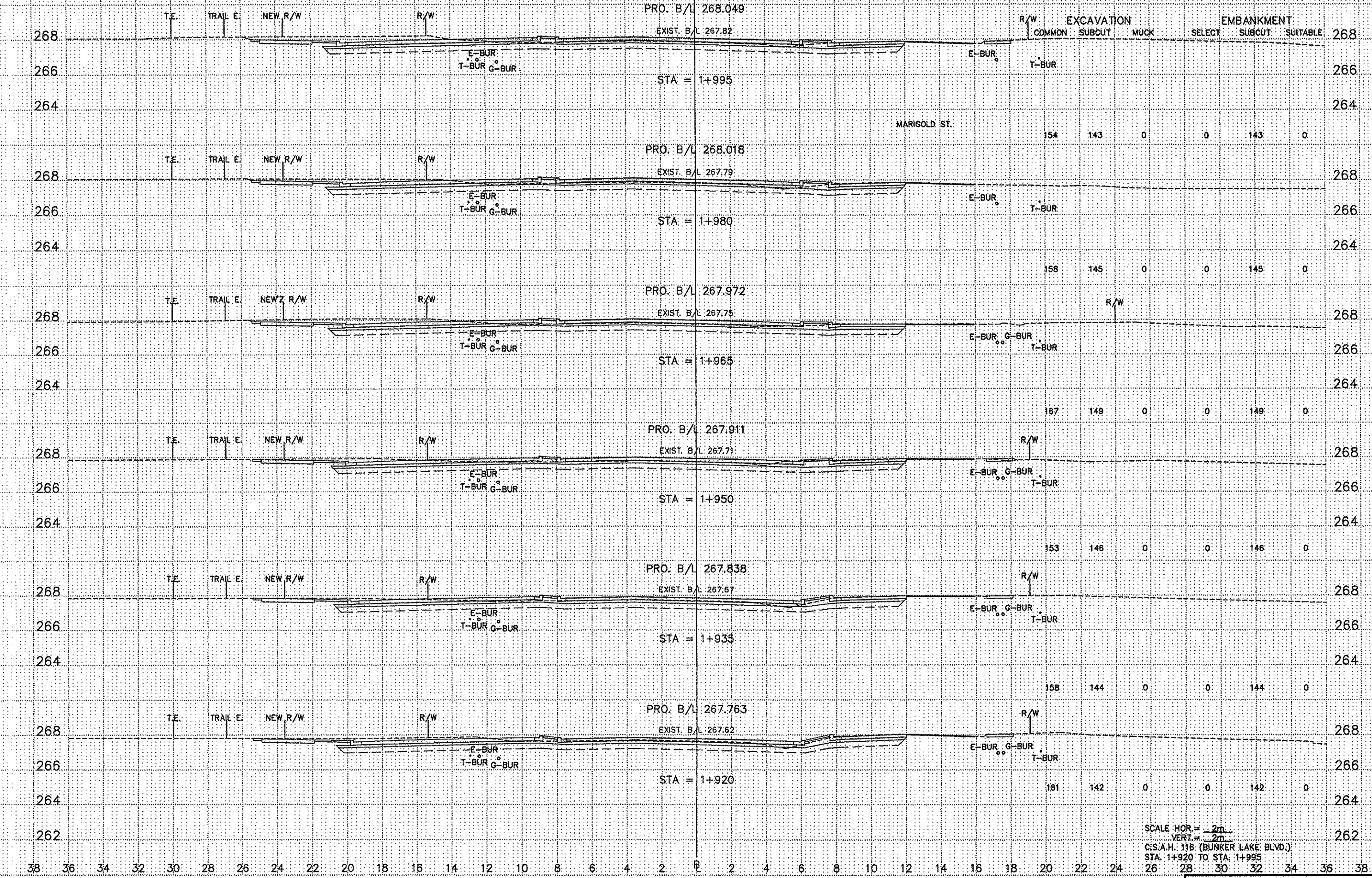
NARCISSUS ST.

R/W EXCAVATION EMBANKMENT
COMMON SUBCUT MUCK SELECT SUBCUT SUITABLE

SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 118 (BUNKER LAKE BLVD.)
STA. 1+830 TO STA. 1+905

C:\CIVIL\CLIENTS\1_Thru\1_AKKA\1960\19_VISHEED.DWG 03-17-99 4:35 pm cpj/bjp

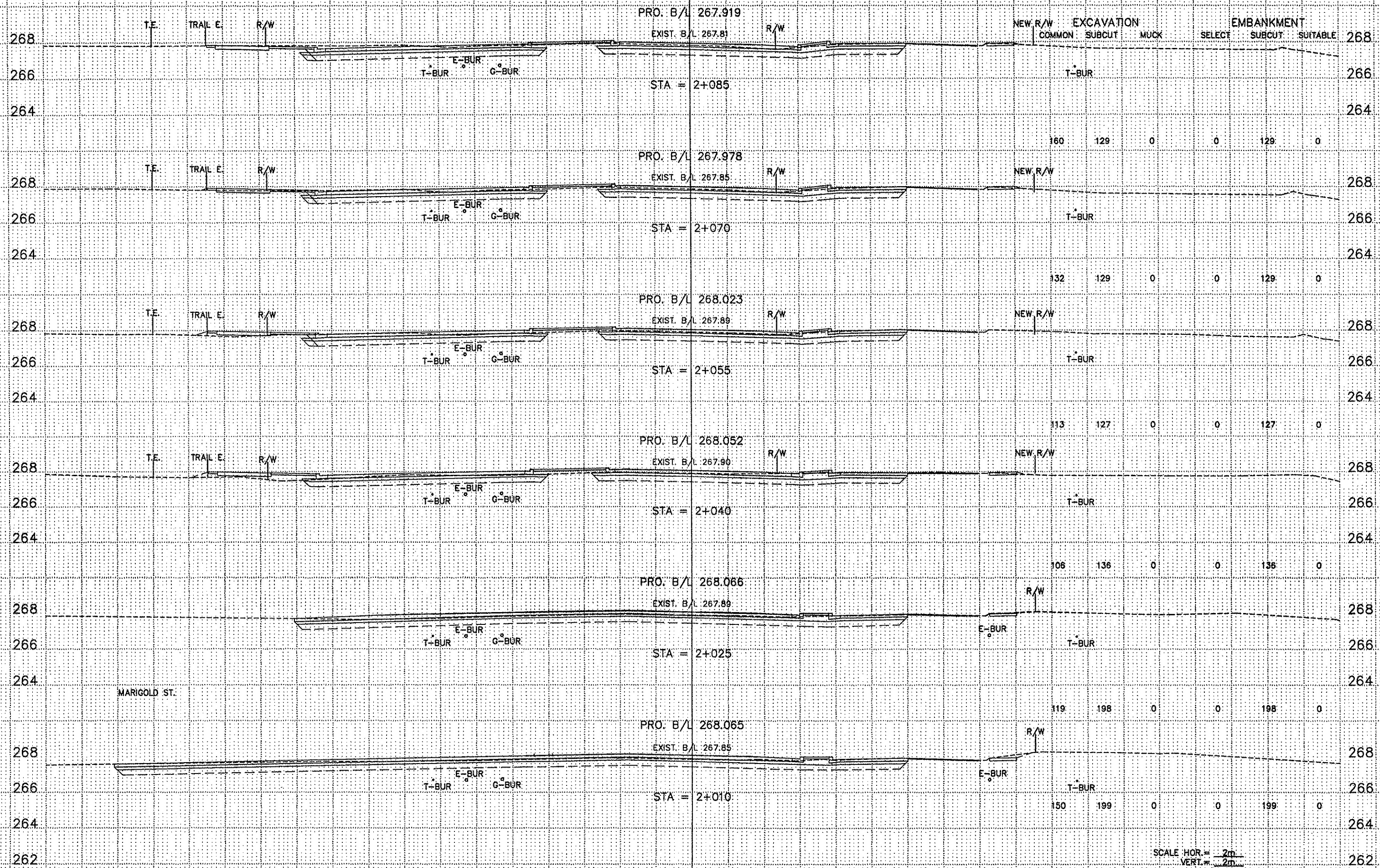
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Q:\CH\CLIENTS\VA_THRU_L\AKKA\9888\EP\VIS\SET4.DWG 03-17-99 4:38 pm cpj/bup

SCALE: HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 1+920 TO STA. 1+995

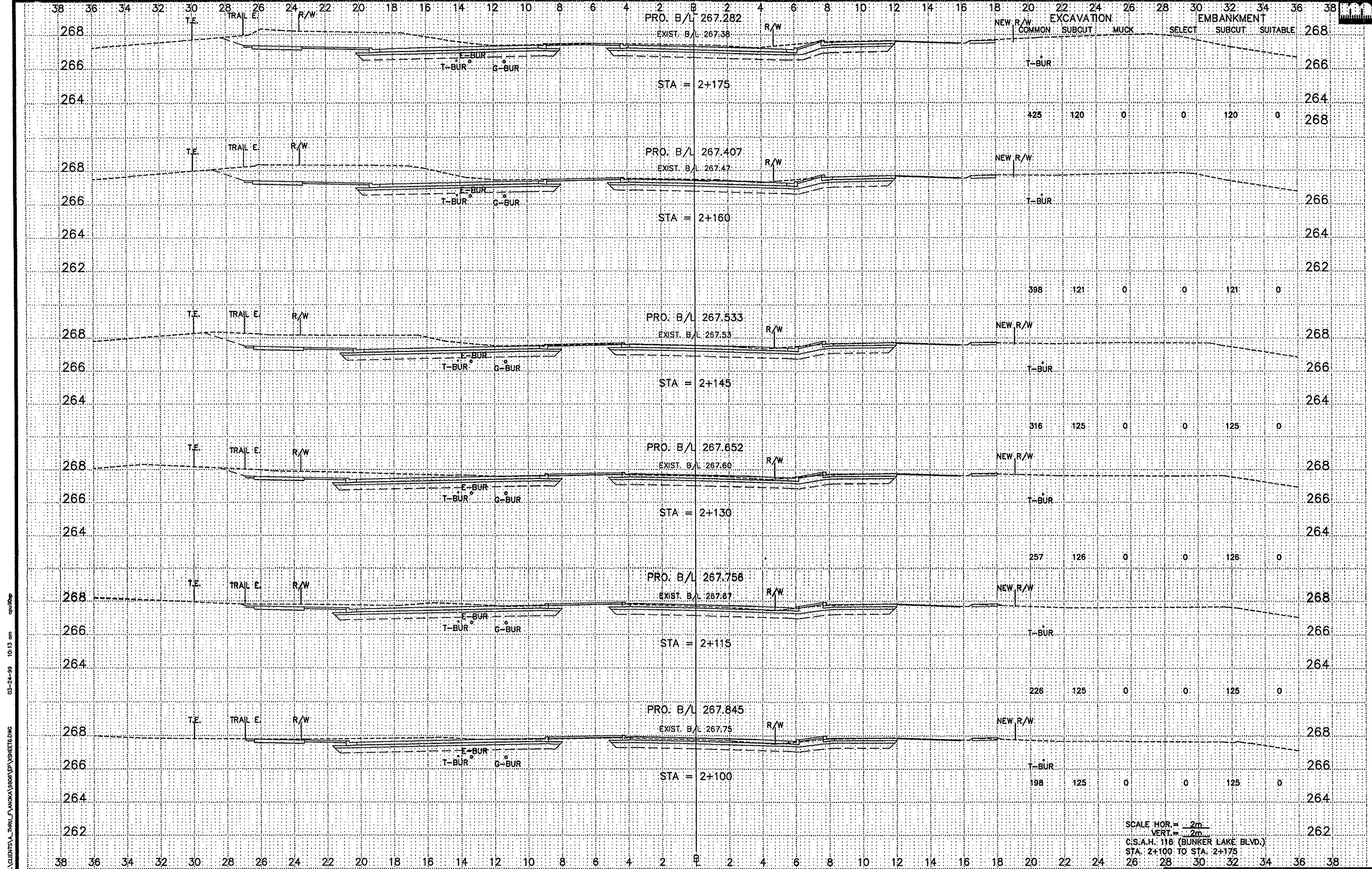
38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



MARIGOLD ST.

SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 2+010 TO STA. 2+085

05-24-99 10:11 am c:\civil\civeng\va_thru\l_f\mucka\p0807\p0807.sdw

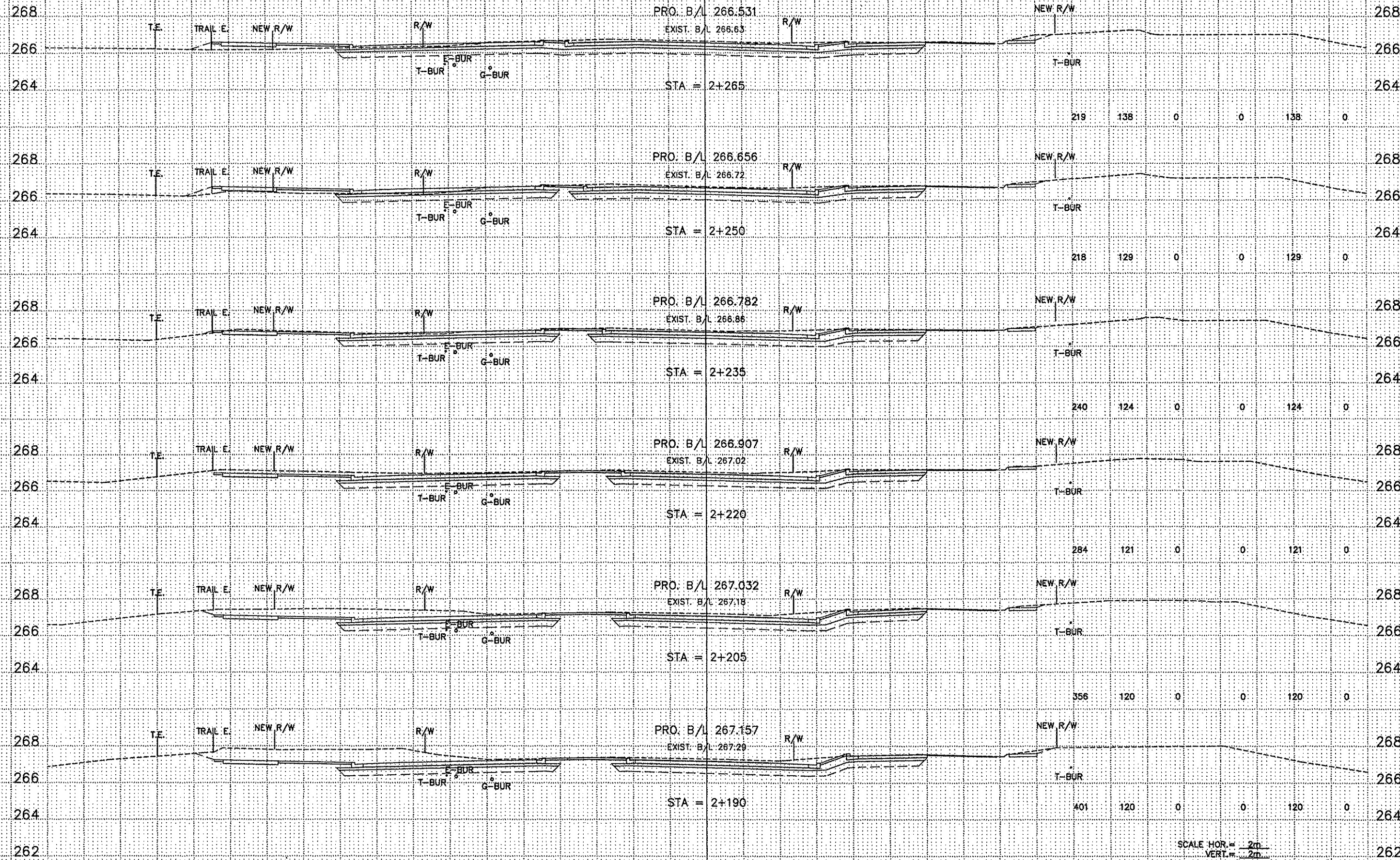


03-24-99 10:13 am
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SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 118 (BUNKER LAKE BLVD.)
 STA. 2+100 TO STA. 2+175

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE



03-24-99 10:15 am cp100p c:\vill\clients\va_thru_f\mick\0868\p\sheet77.dwg

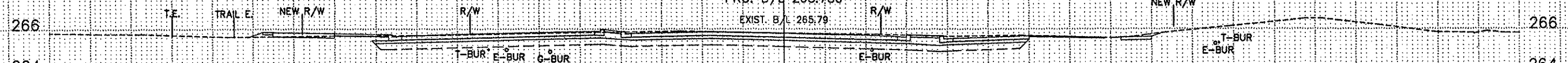
SCALE: HOR. = 2m
VERT. = 2m
C/S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+190 TO STA. 2+265

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

EXCAVATION COMMON SUBCUT MUCK SELECT EMBANKMENT SUBCUT SUITABLE

PRO. B/L 265.780
EXIST. B/L 265.79

NEW R/W

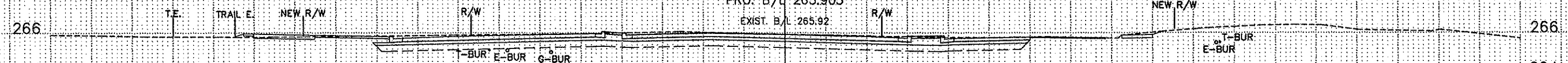


STA = 2+355

208 144 0 0 144 0

PRO. B/L 265.905
EXIST. B/L 265.92

NEW R/W

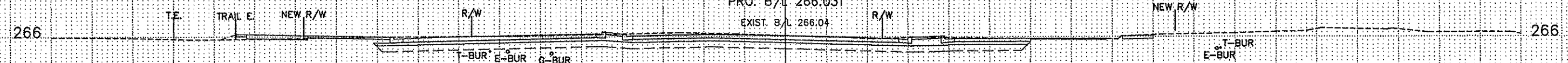


STA = 2+340

209 140 0 0 140 0

PRO. B/L 266.031
EXIST. B/L 266.04

NEW R/W

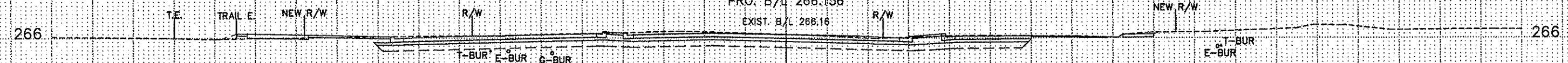


STA = 2+325

221 148 0 0 148 0

PRO. B/L 266.156
EXIST. B/L 266.16

NEW R/W

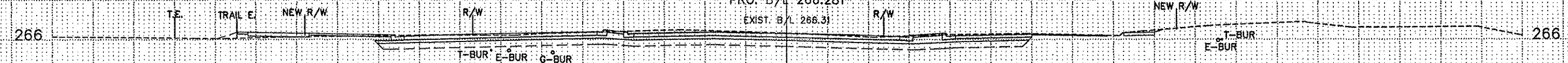


STA = 2+310

218 149 0 0 149 0

PRO. B/L 266.281
EXIST. B/L 266.31

NEW R/W

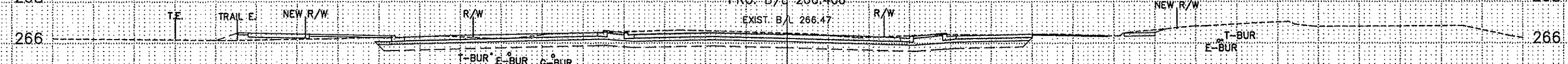


STA = 2+295

204 141 0 0 141 0

PRO. B/L 266.406
EXIST. B/L 266.47

NEW R/W



STA = 2+280

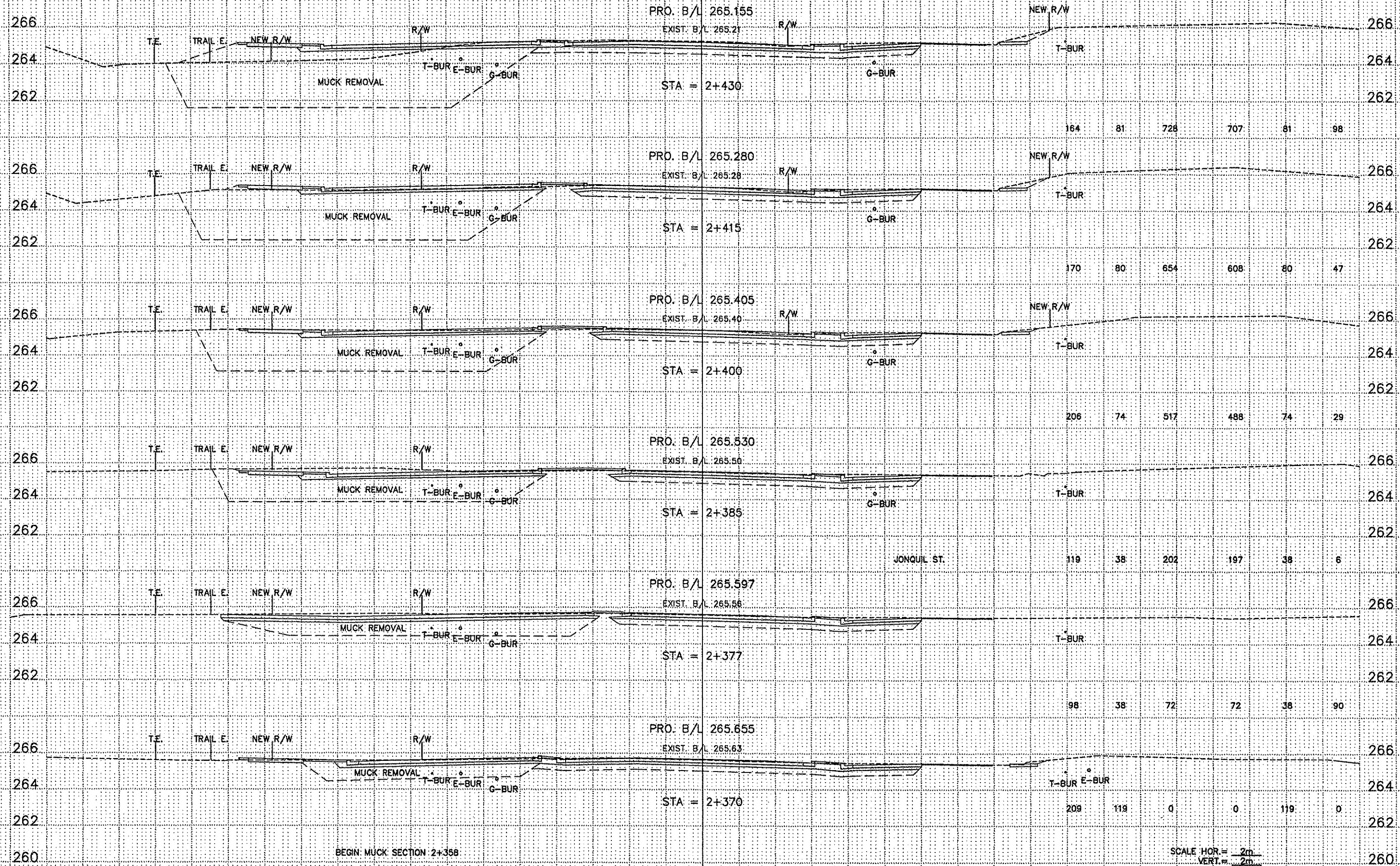
215 143 0 0 143 0

SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+280 TO STA. 2+355

Q:\CIVIL\CLIENTS\116\116_17_99\116_17_99.dwg

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

EXCAVATION COMMON SUBCUT MUCK EMBANKMENT SELECT SUBCUT SUITABLE



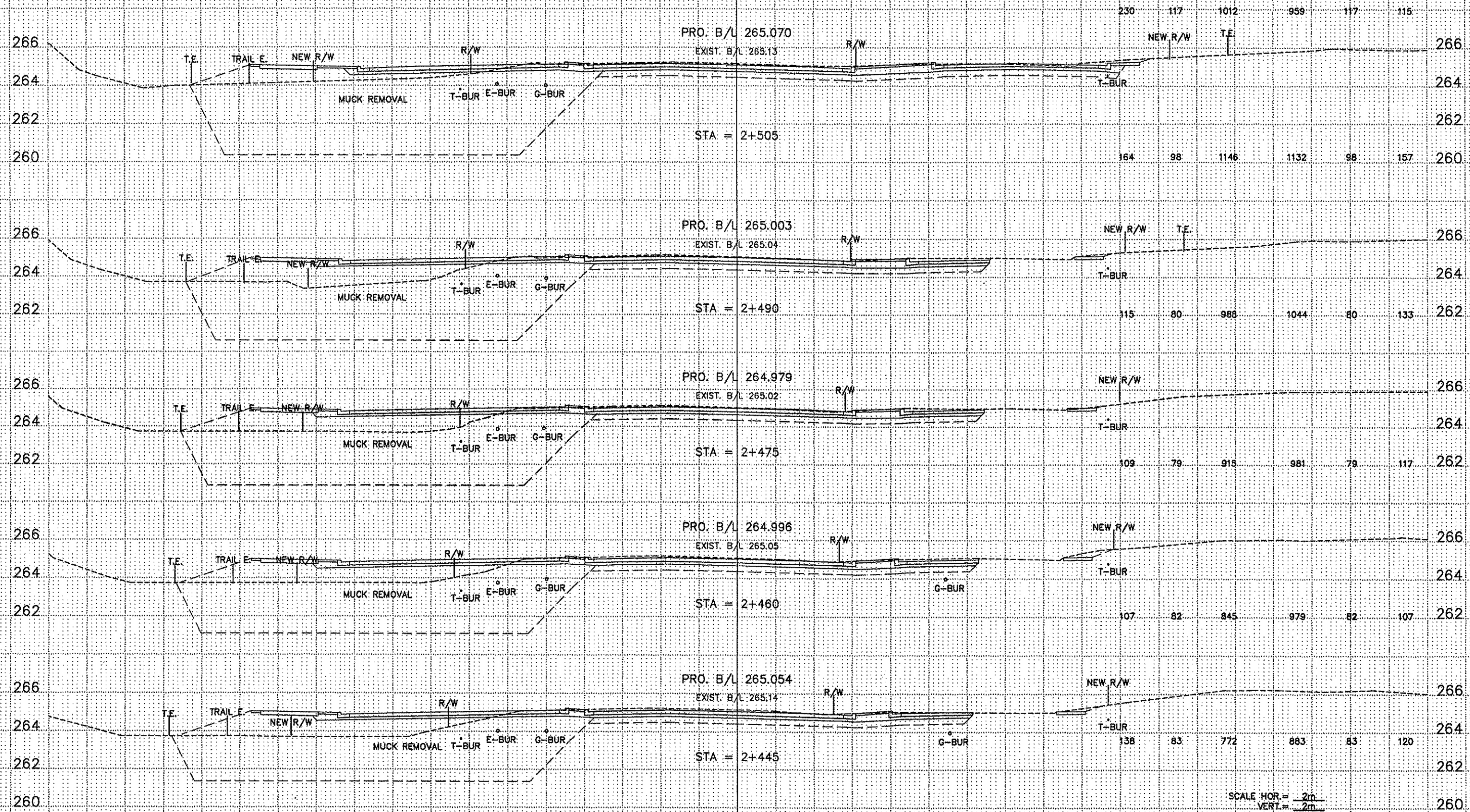
BEGIN MUCK SECTION 2+358

SCALE HOR = 2m
VERT = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+370 TO STA. 2+430

05-24-99 10:21 am C:\CIVIL\SCHEMATA\THRU_L\ANCKA\B000\EP\USHE120.DWG

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EXCAVATION COMMON SUBCUT MUCK EMBANKMENT SELECT SUBCUT SUITABLE



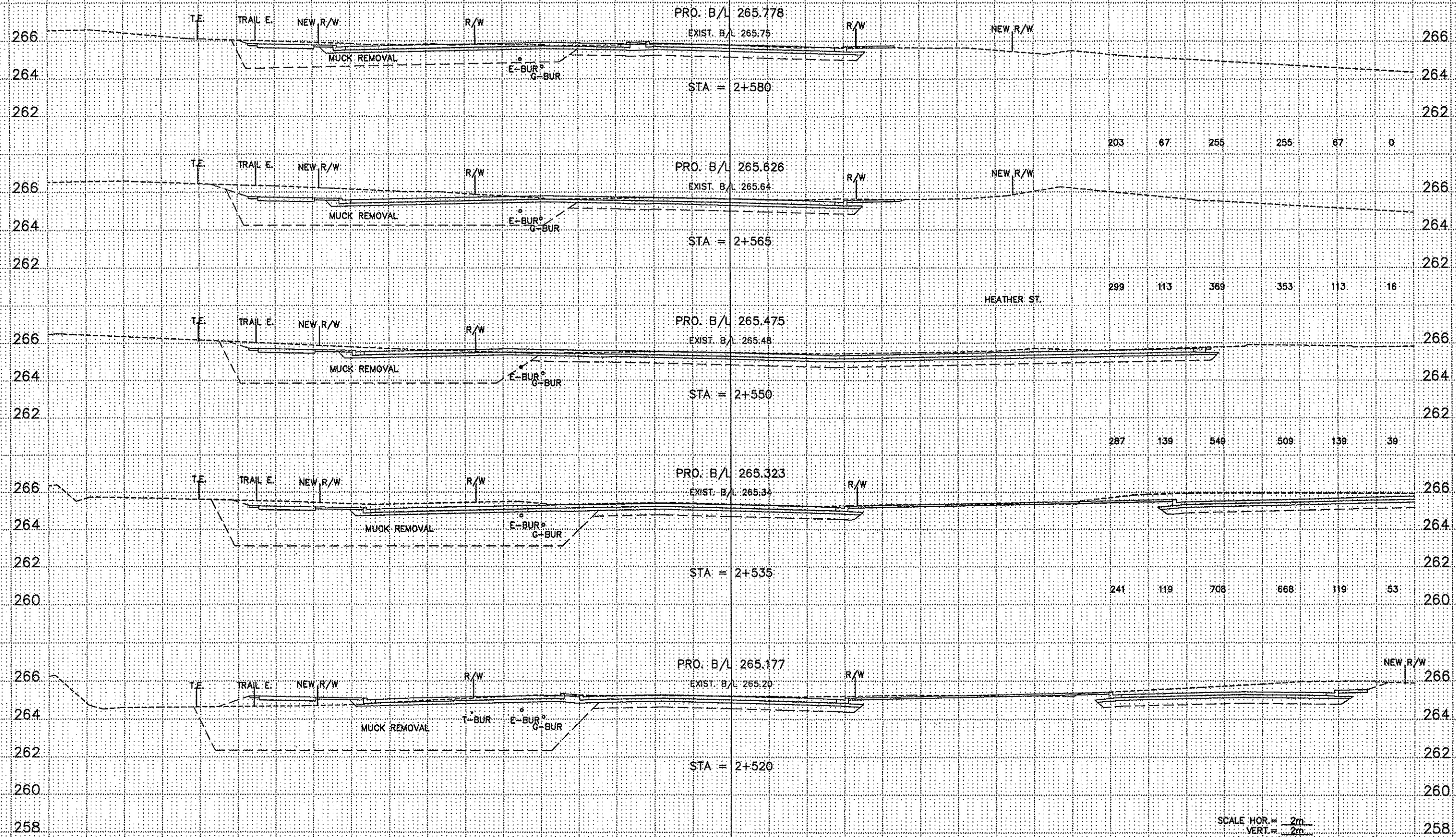
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VERT = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+445 TO STA. 2+505

03-24-99 10:29 am gpl90ap
Q:\CIVIL\GENSETS\A_THRU_F\MUCKA\9806\EPV\SHEET92.DWG

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

END MUCK SECTION 2+589

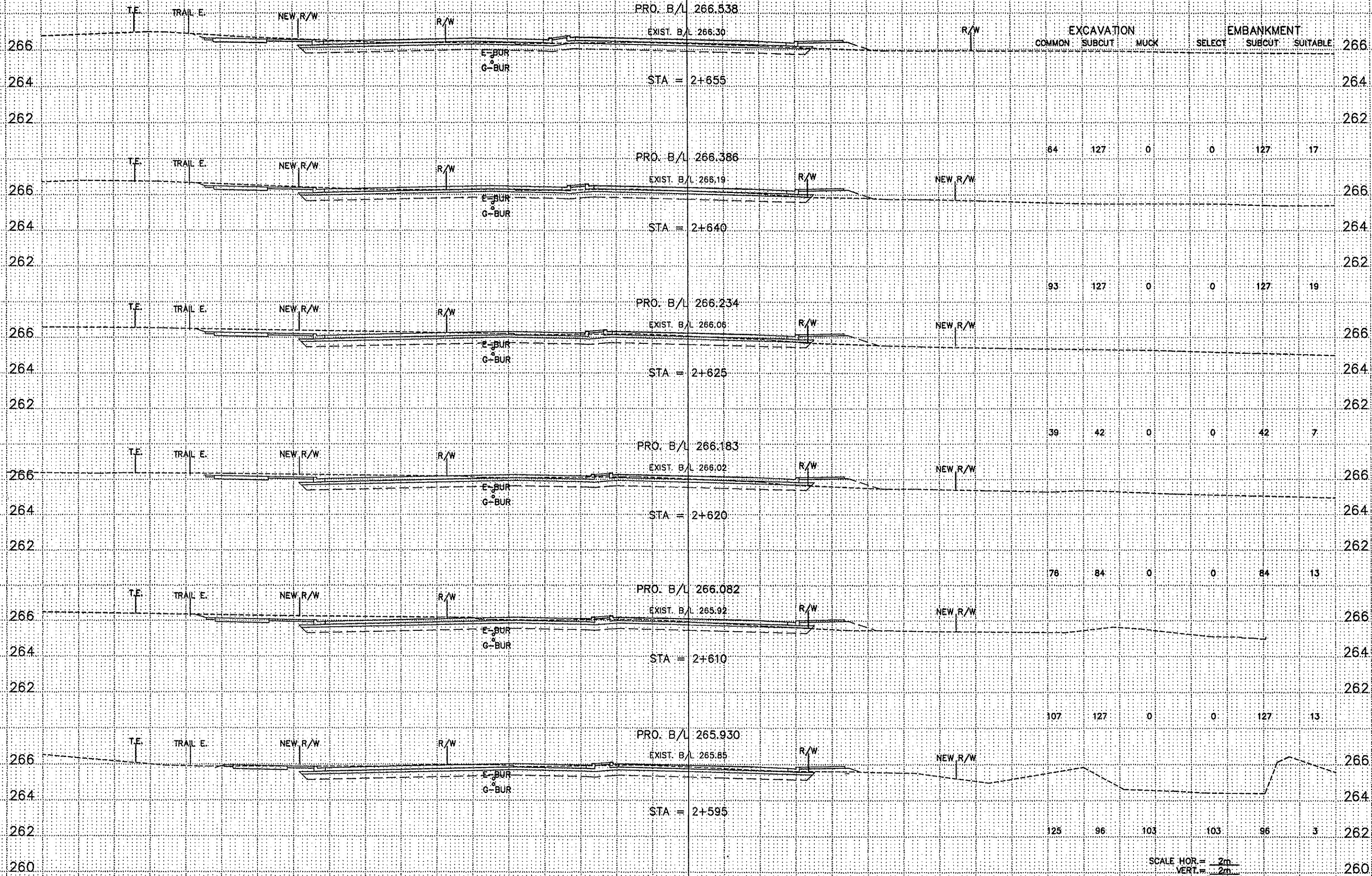
EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
203	67	255	255	67	0
299	113	369	353	113	16
287	139	549	509	139	39
241	119	708	668	119	53



SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 118 (BUNKER LAKE BLVD.)
 STA. 2+520 TO STA. 2+580

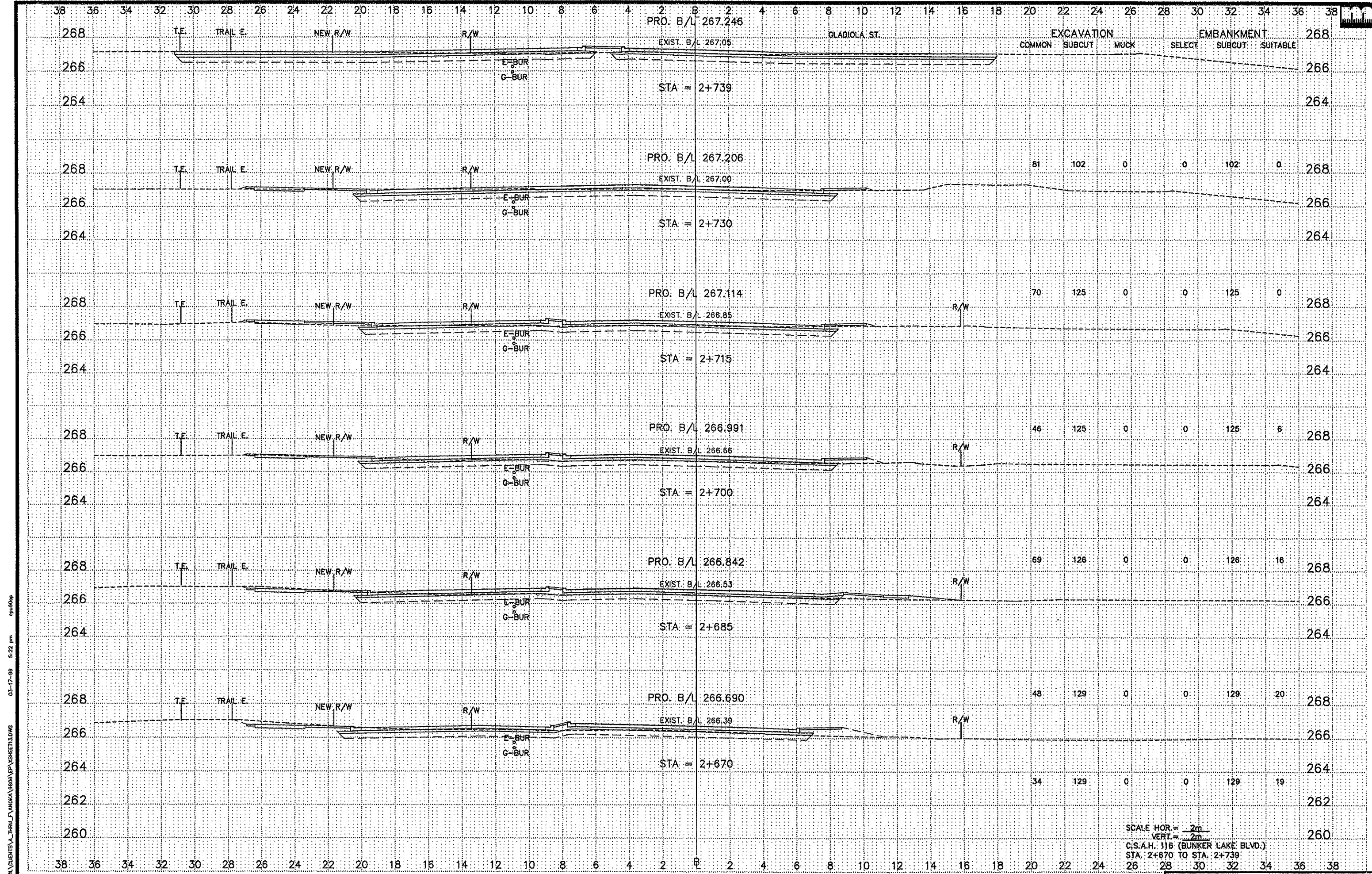
03-24-89 10:31 am cp:00pp
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38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



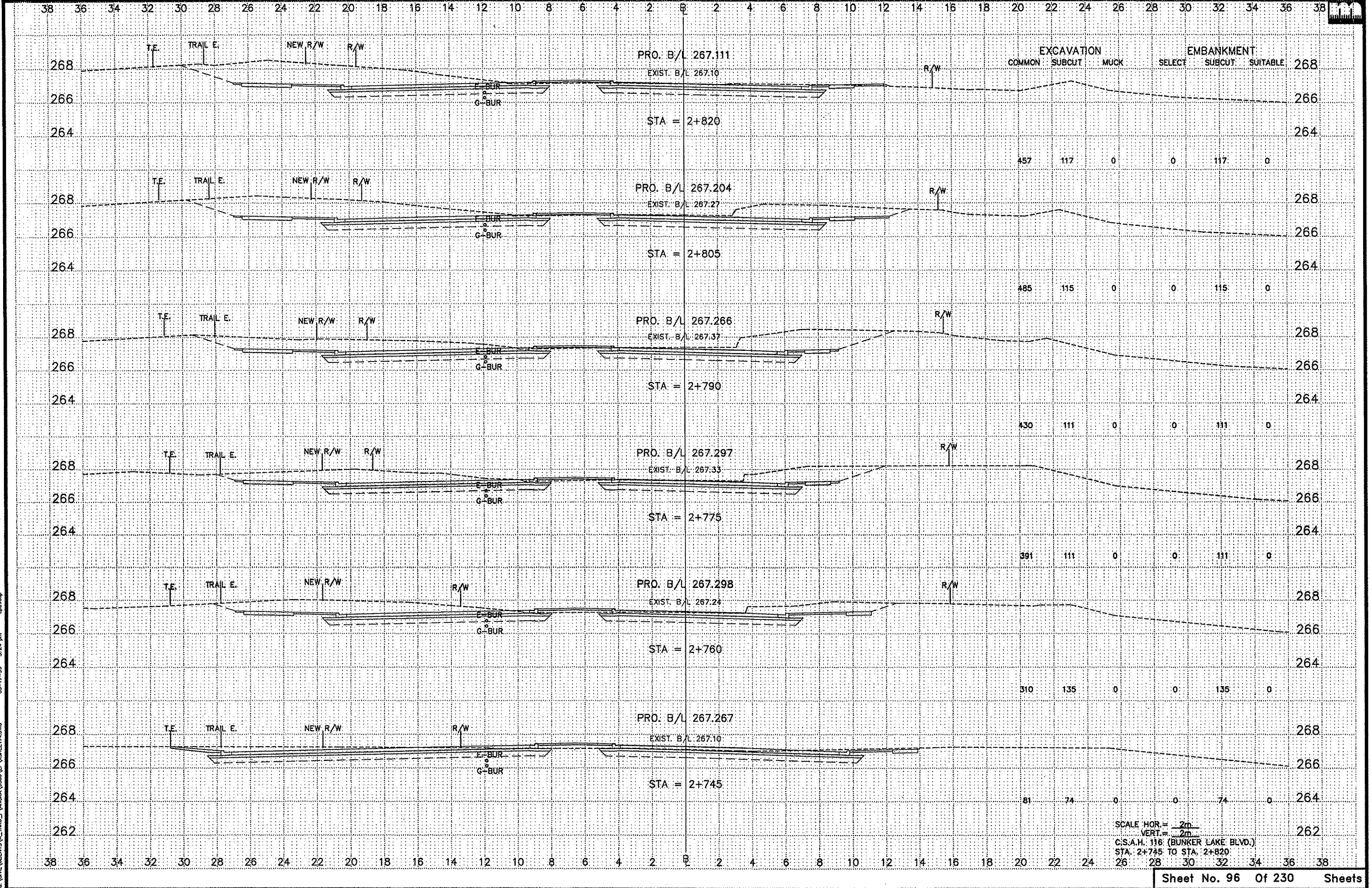
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SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+595 TO STA. 2+655



c:\viva\clients\va_thru\l_f_nokka\1000a\p\visheet13.dwg
 03-17-99 5:22 pm
 cpn00p

SCALE HOR. = 2" = 20'
 VERT. = 1" = 2'
 C.S.A.H. 11B (BUNKER LAKE BLVD.)
 STA. 2+670 TO STA. 2+739

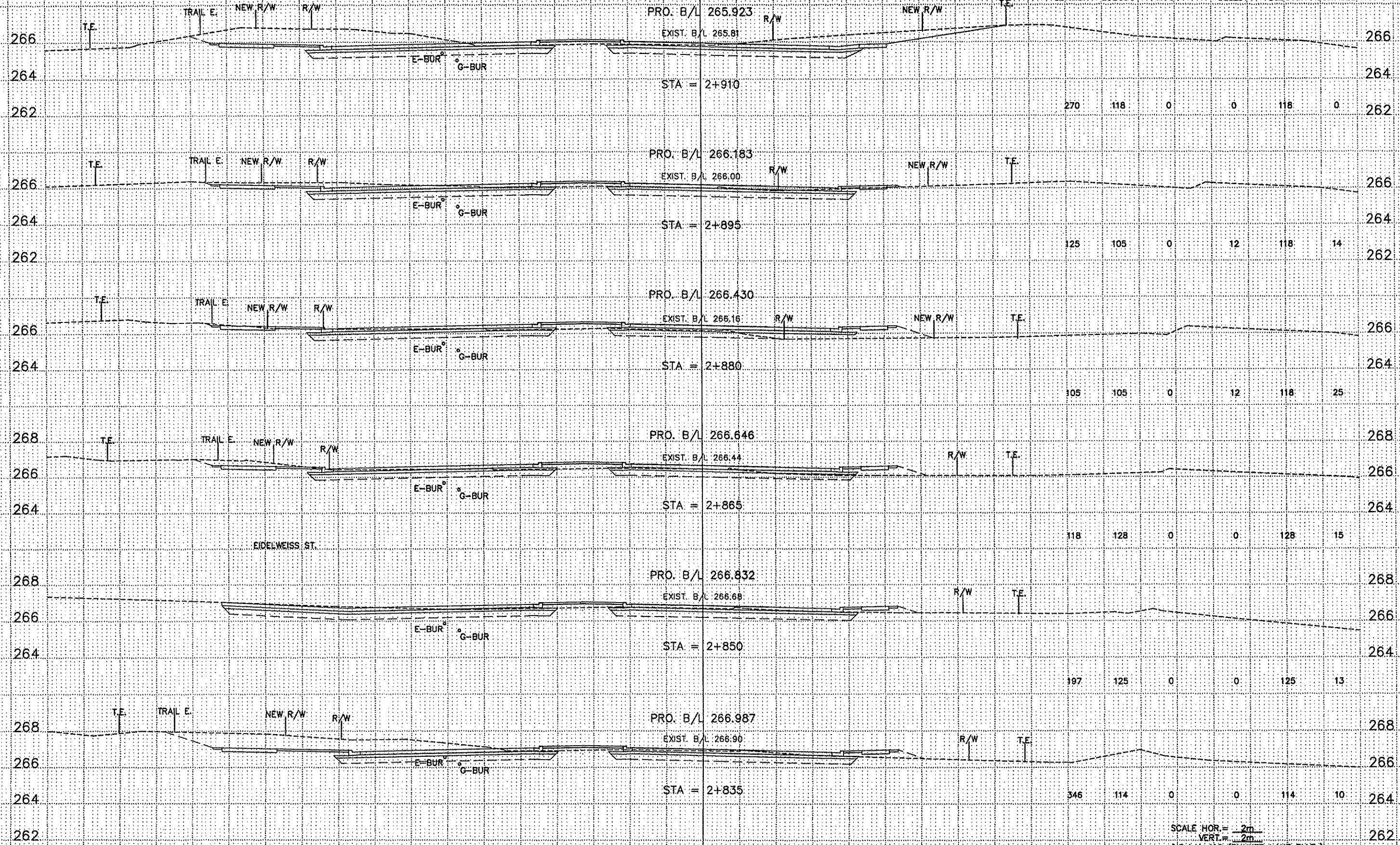


SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 2+745 TO STA. 2+820

G:\CIVIL\CLIENTS\VA...THRU_F\ANOKA\9905\VA\99\14.DWG
 03-17-99 5:24 pm
 cp909p

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

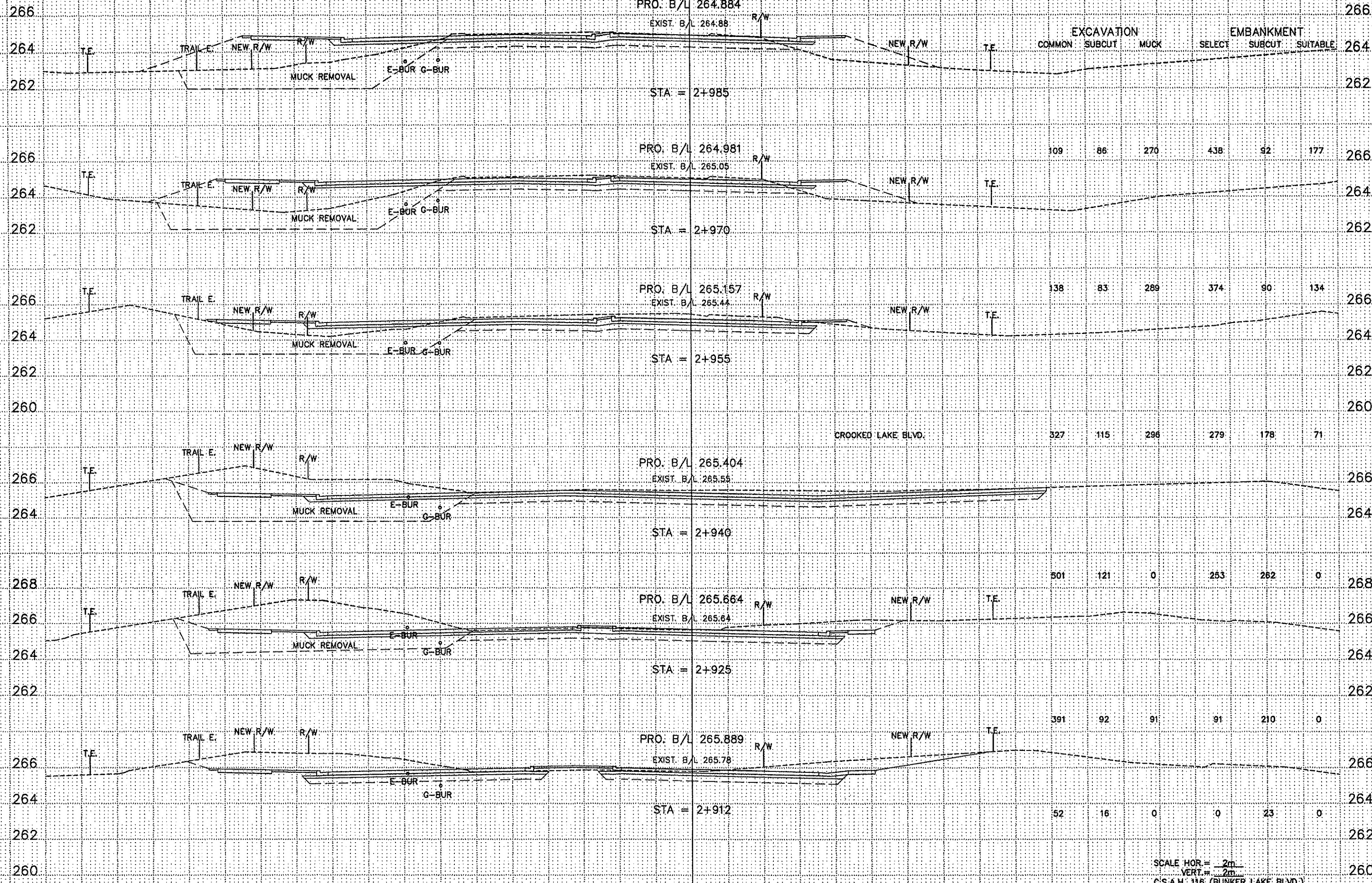
EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE



SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+835 TO STA. 2+910

03-17-98 5:27 pm C:\P\CLIENTS\A. THRU\1\ANOKA\1996\EP\1996\116.DWG

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

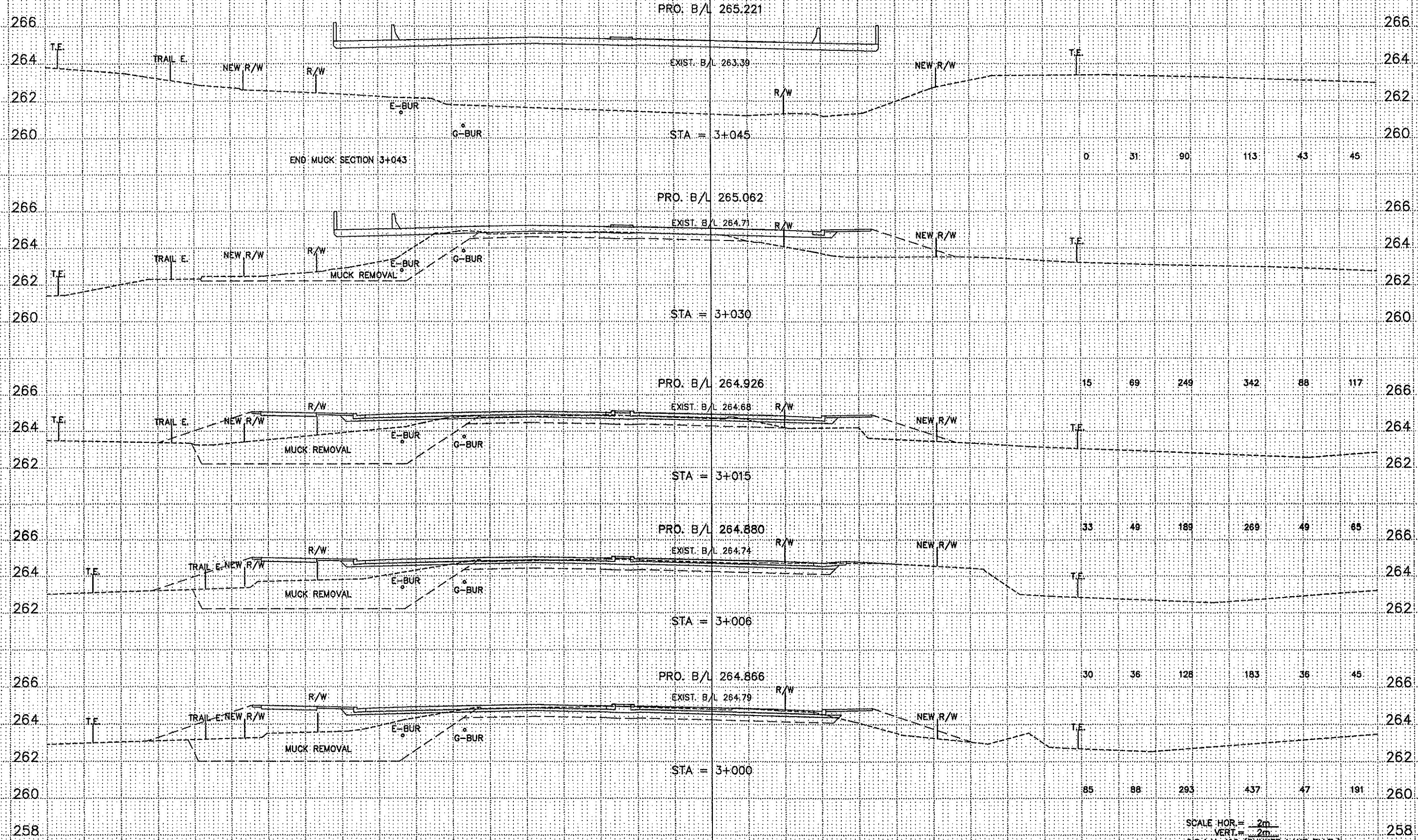


SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 2+912 TO STA. 2+985

03-17-99 8:30 pm 03-17-99 8:30 pm

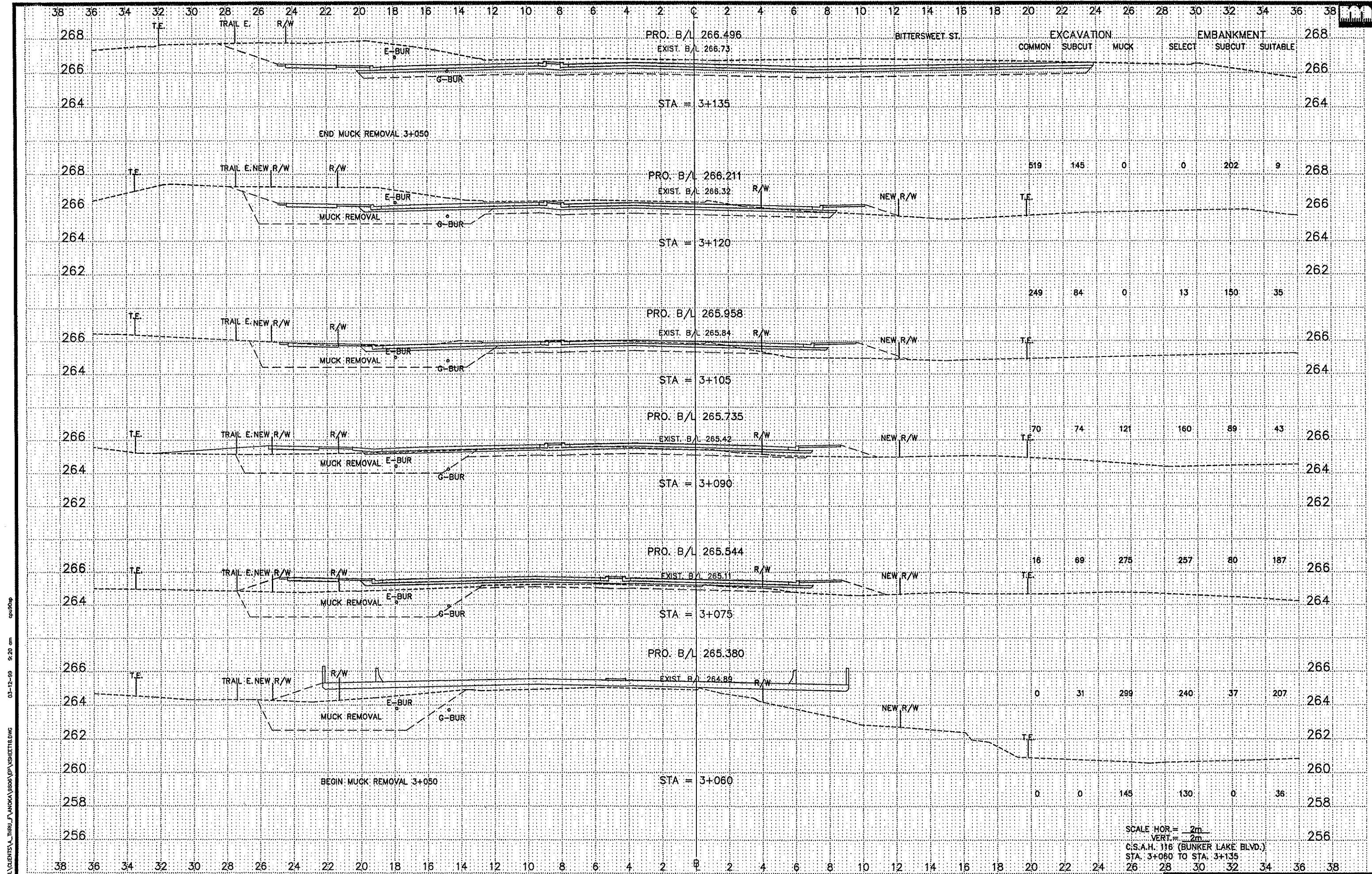
38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

EXCAVATION COMMON SUBCUT MUCK EMBANKMENT SELECT SUBCUT SUITABLE



SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 3+000 TO STA. 3+045

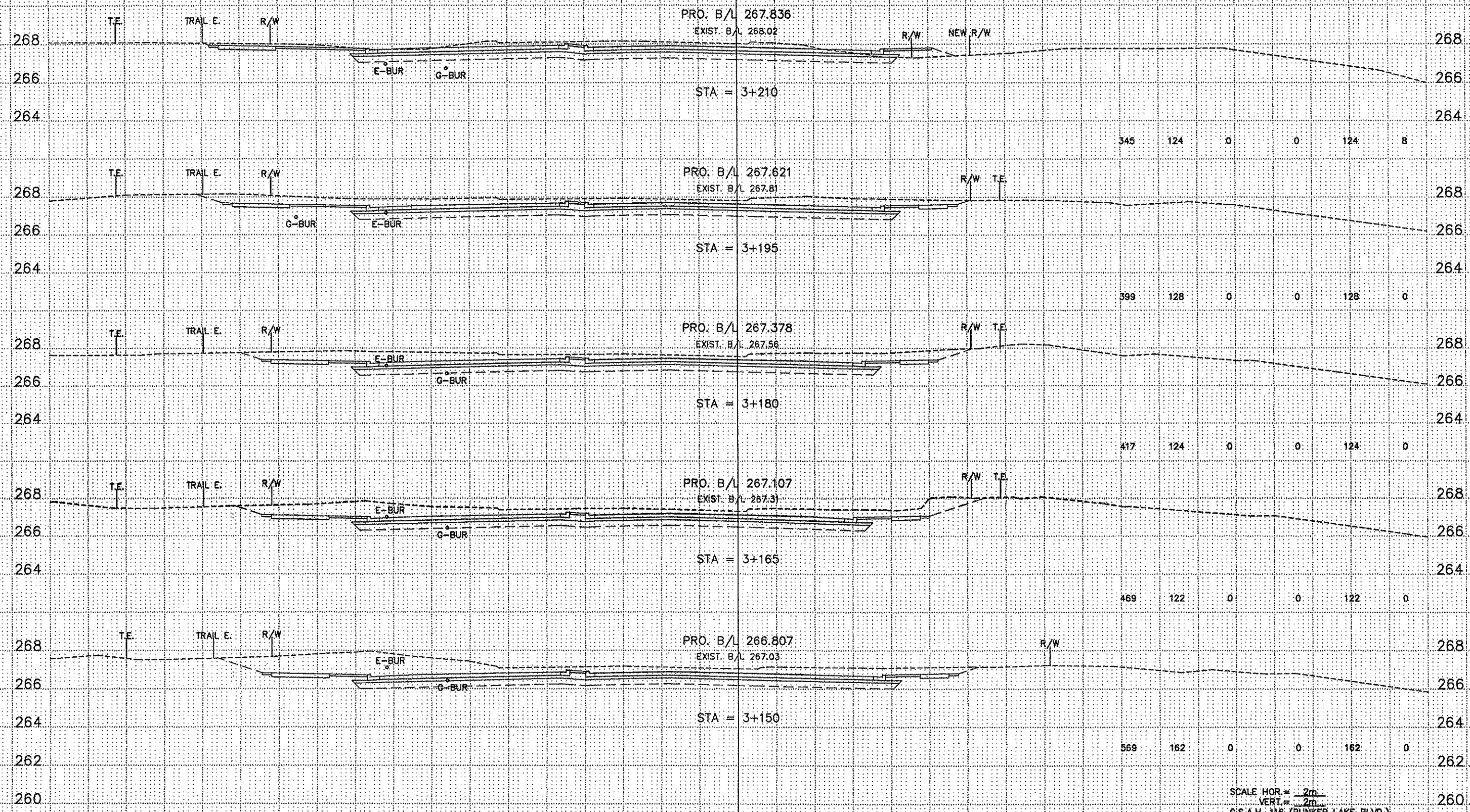
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03-12-99 9:20 am
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38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE

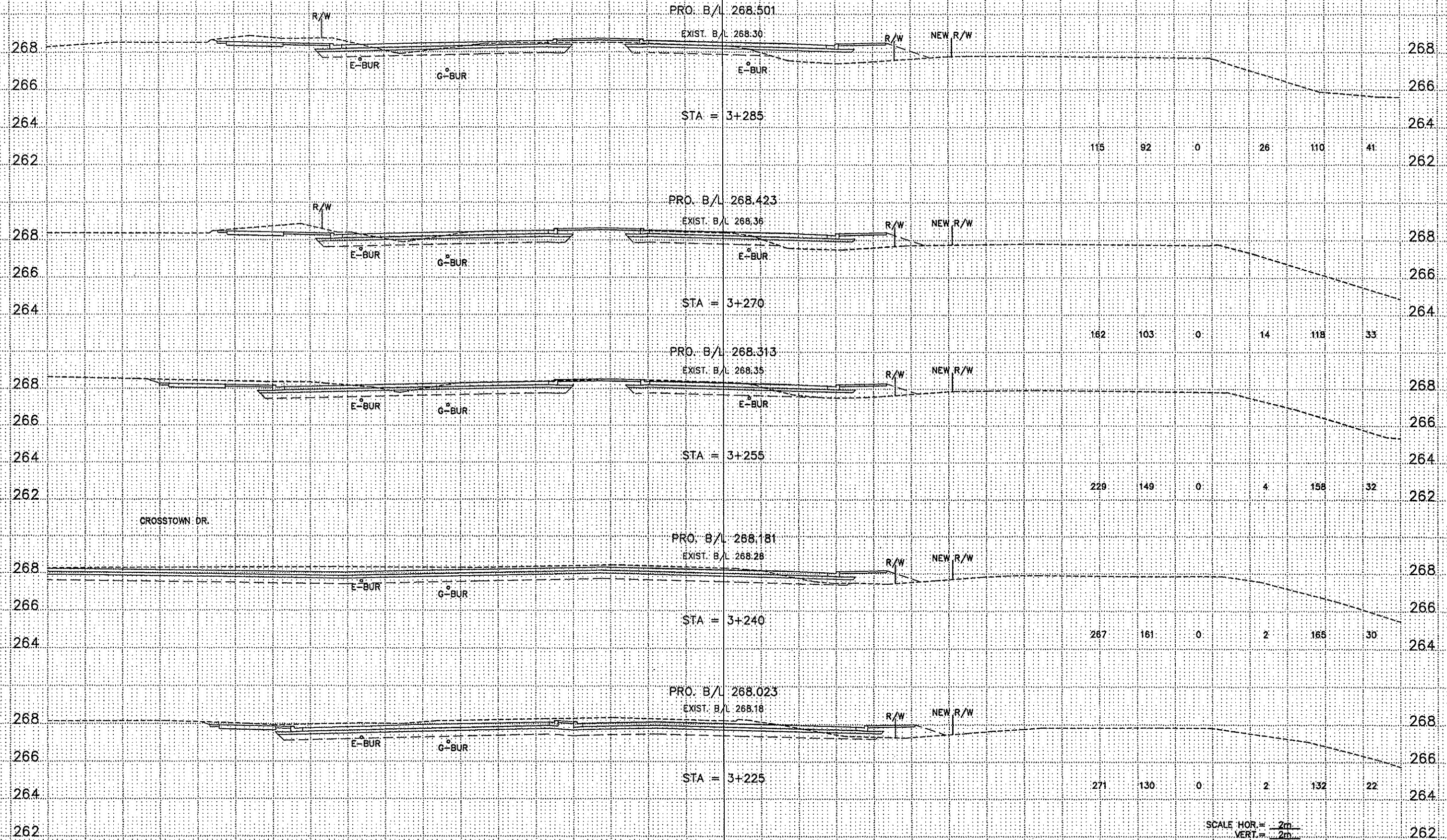


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SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 118 (BUNKER LAKE BLVD.)
STA. 3+150 TO STA. 3+210

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

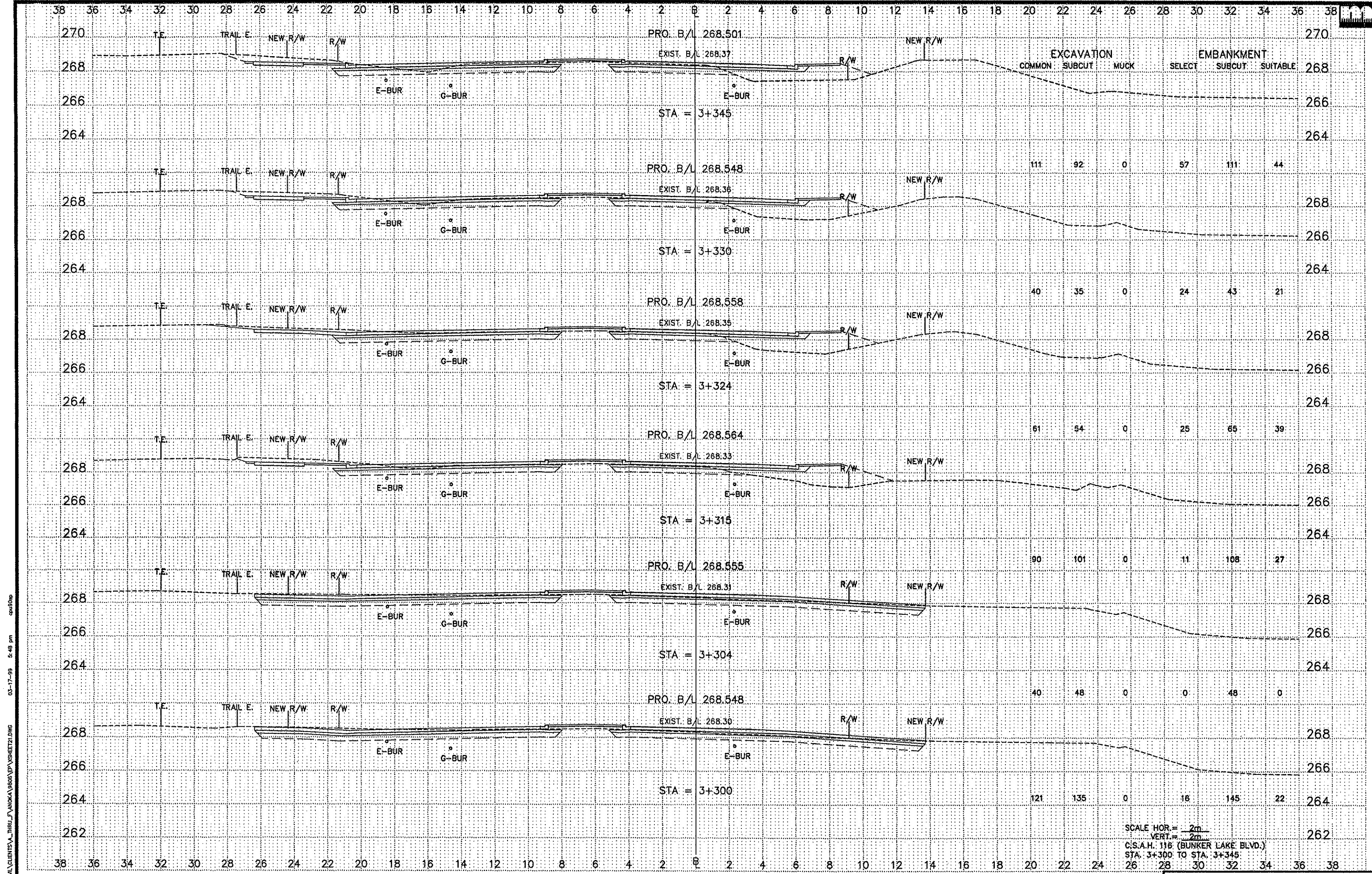
EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE



CROSSTOWN DR.

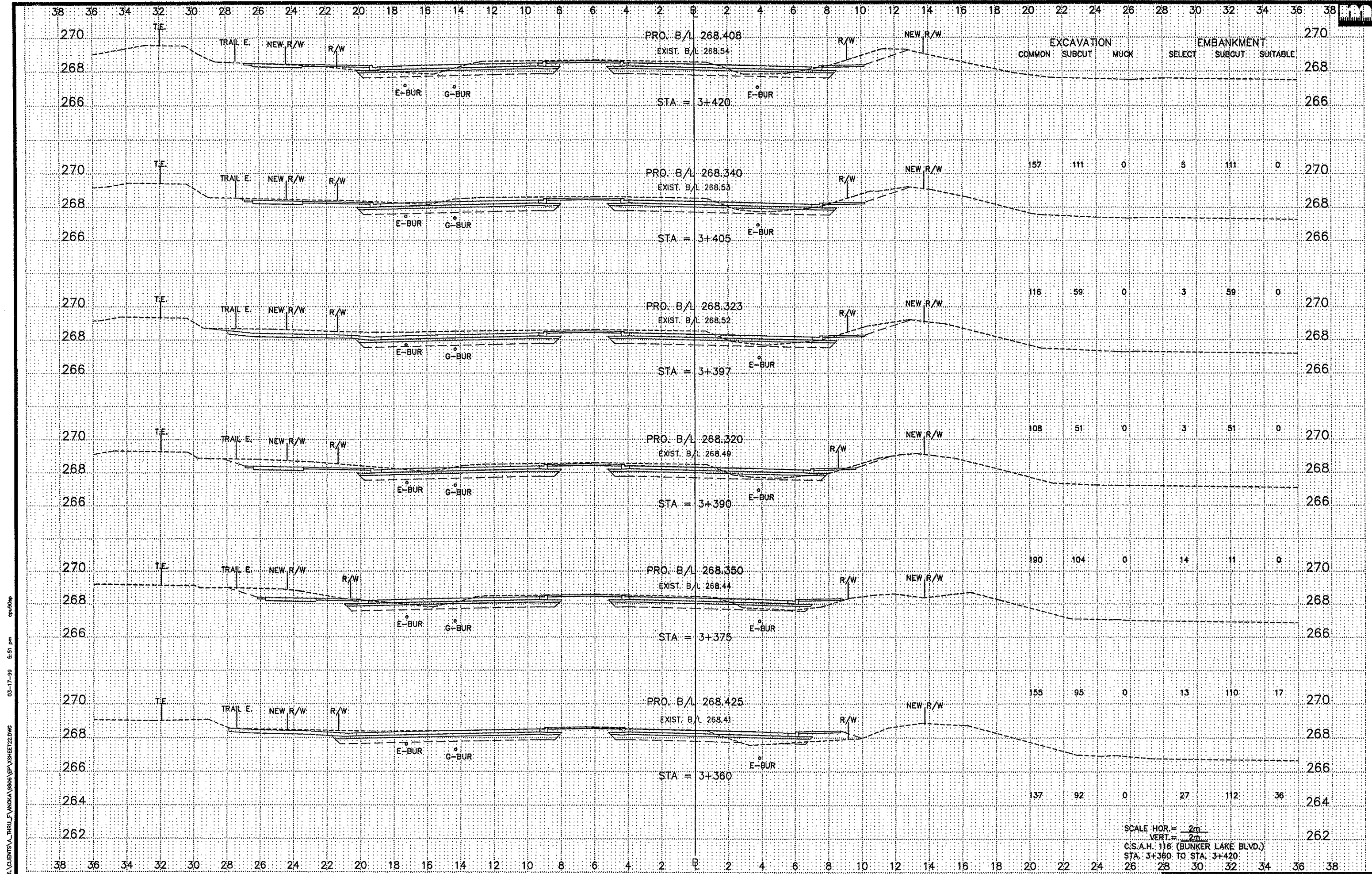
SCALE HOR. = 2" = 20'
VERT. = 1" = 2'
C.S.A.H. 118 (BUNKER LAKE BLVD.)
STA. 3+225 TO STA. 3+285

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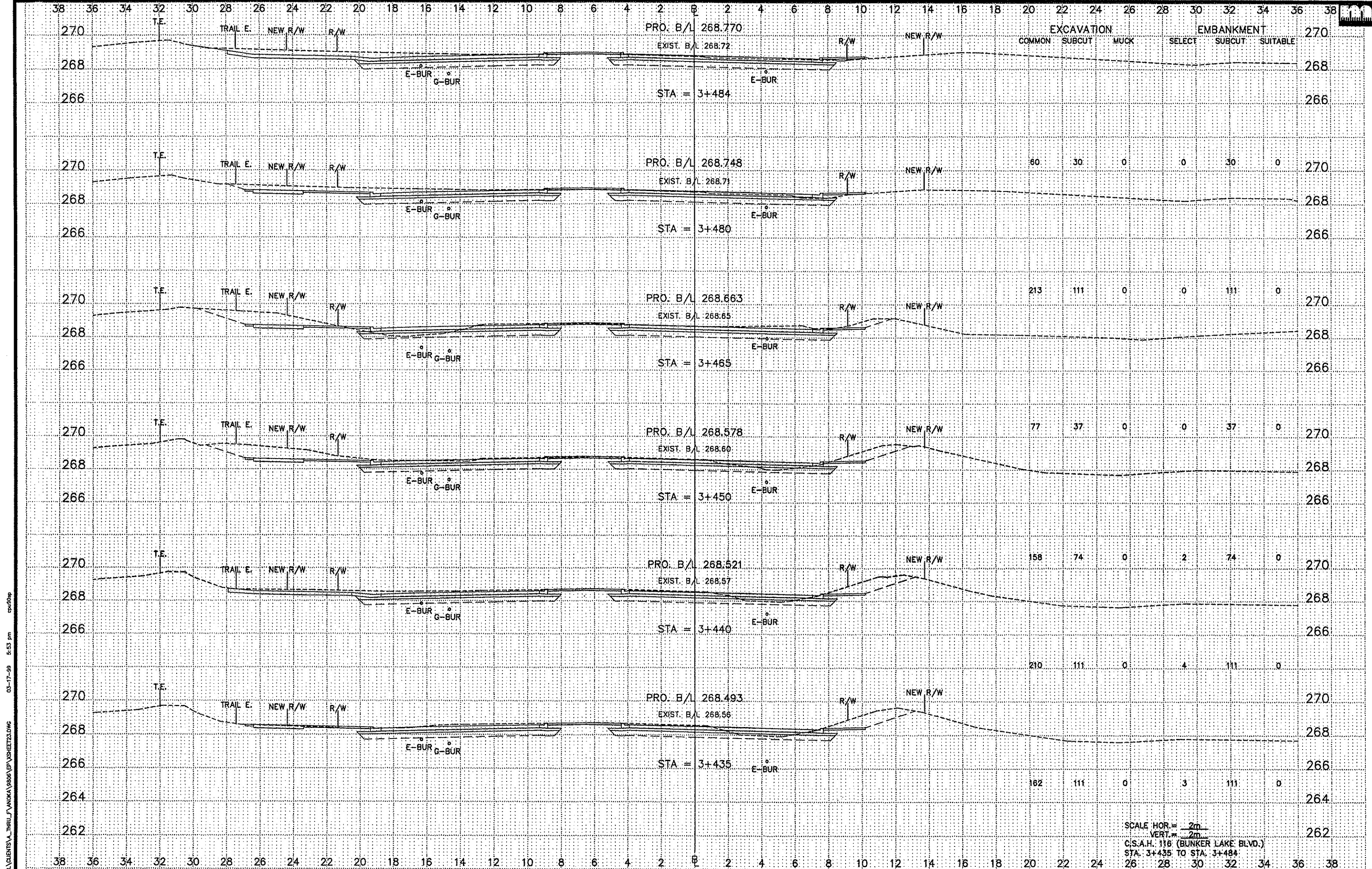
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SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+300 TO STA. 3+345



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 03-17-99 5:51 pm
 dpl006p

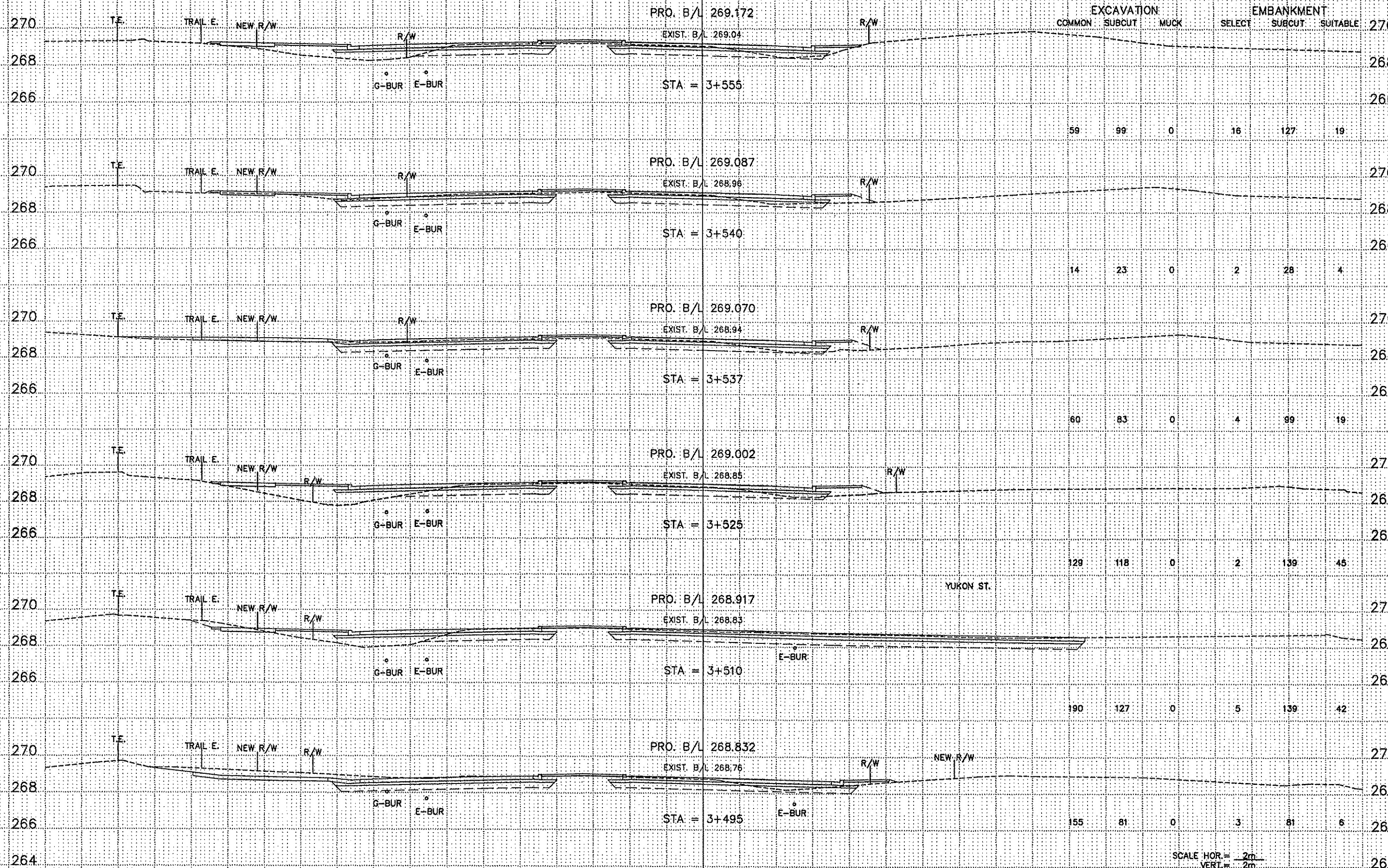
SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+360 TO STA. 3+420



05-17-98 5:53 pm
 C:\CIVIL\CLIENTS\VA_THRILL_F\ANICKA\9806\EP\VSHEET23.DWG

SCALE HOR = 2m
 VERT = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+435 TO STA. 3+484

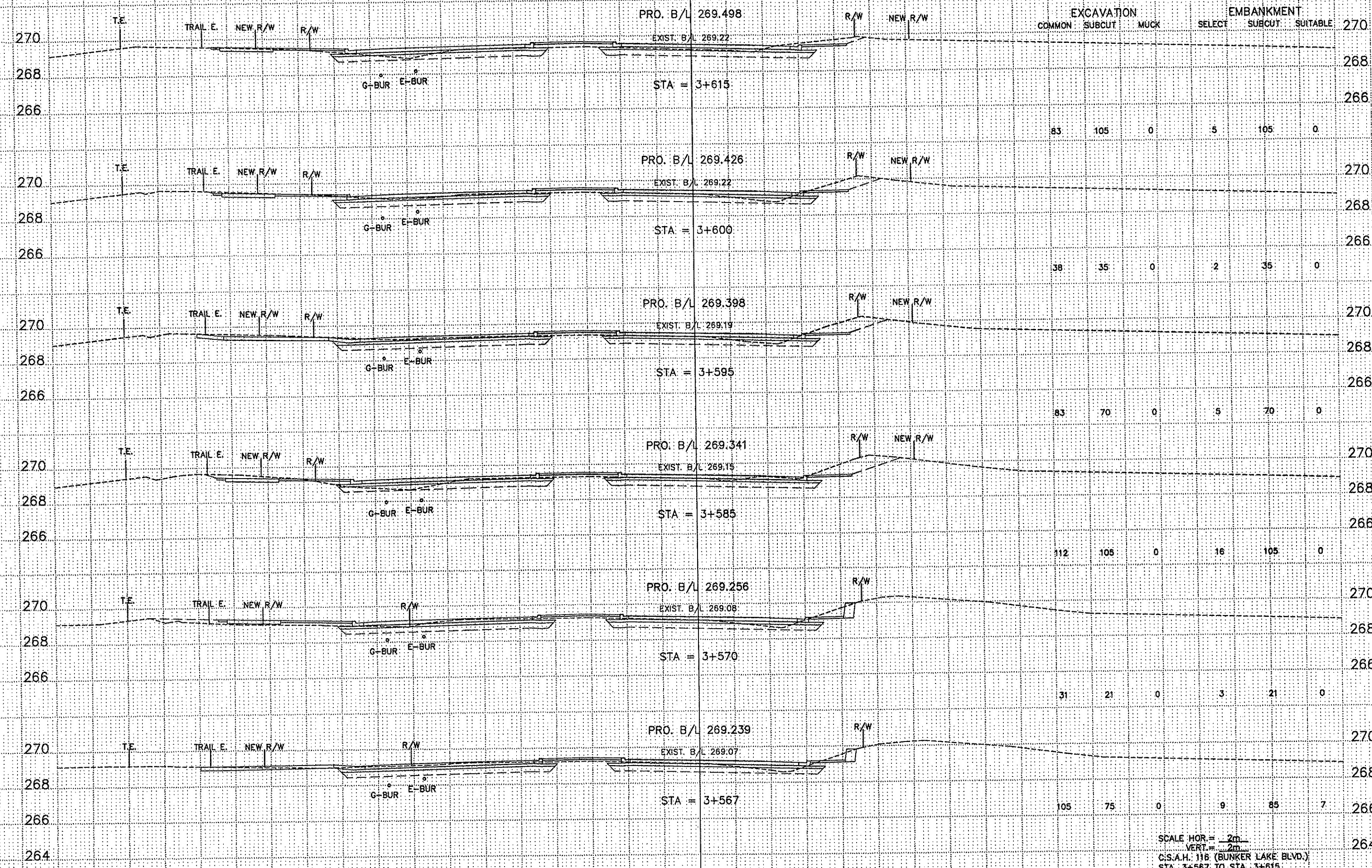
38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



C:\VIA\CLIENTS\A_THRU\F\NOKA\9806\EP\VSHEET24.DWG 03-17-99 5:56 pm cpl/bdp

SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+495 TO STA. 3+555

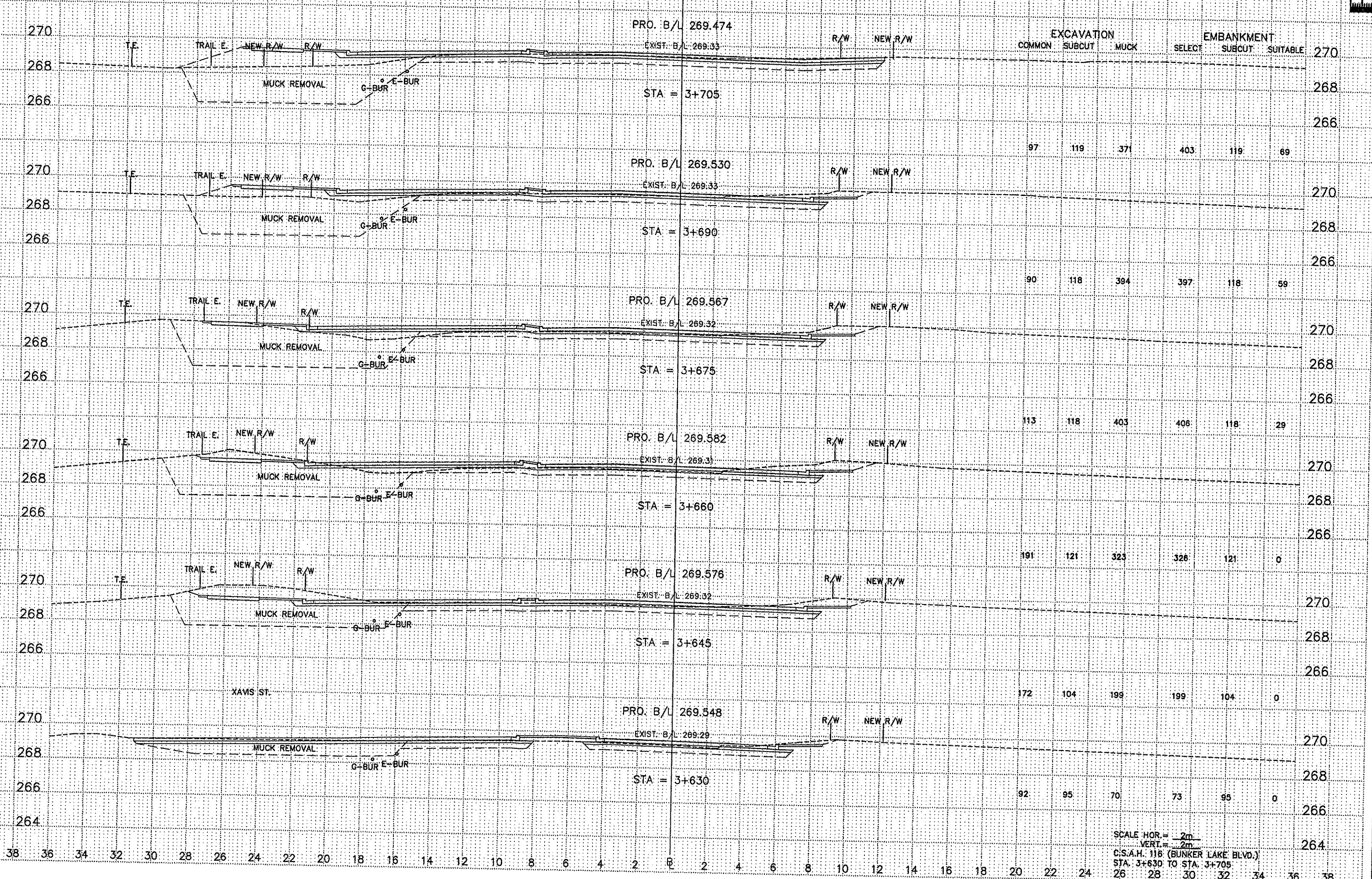
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SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+567 TO STA. 3+615

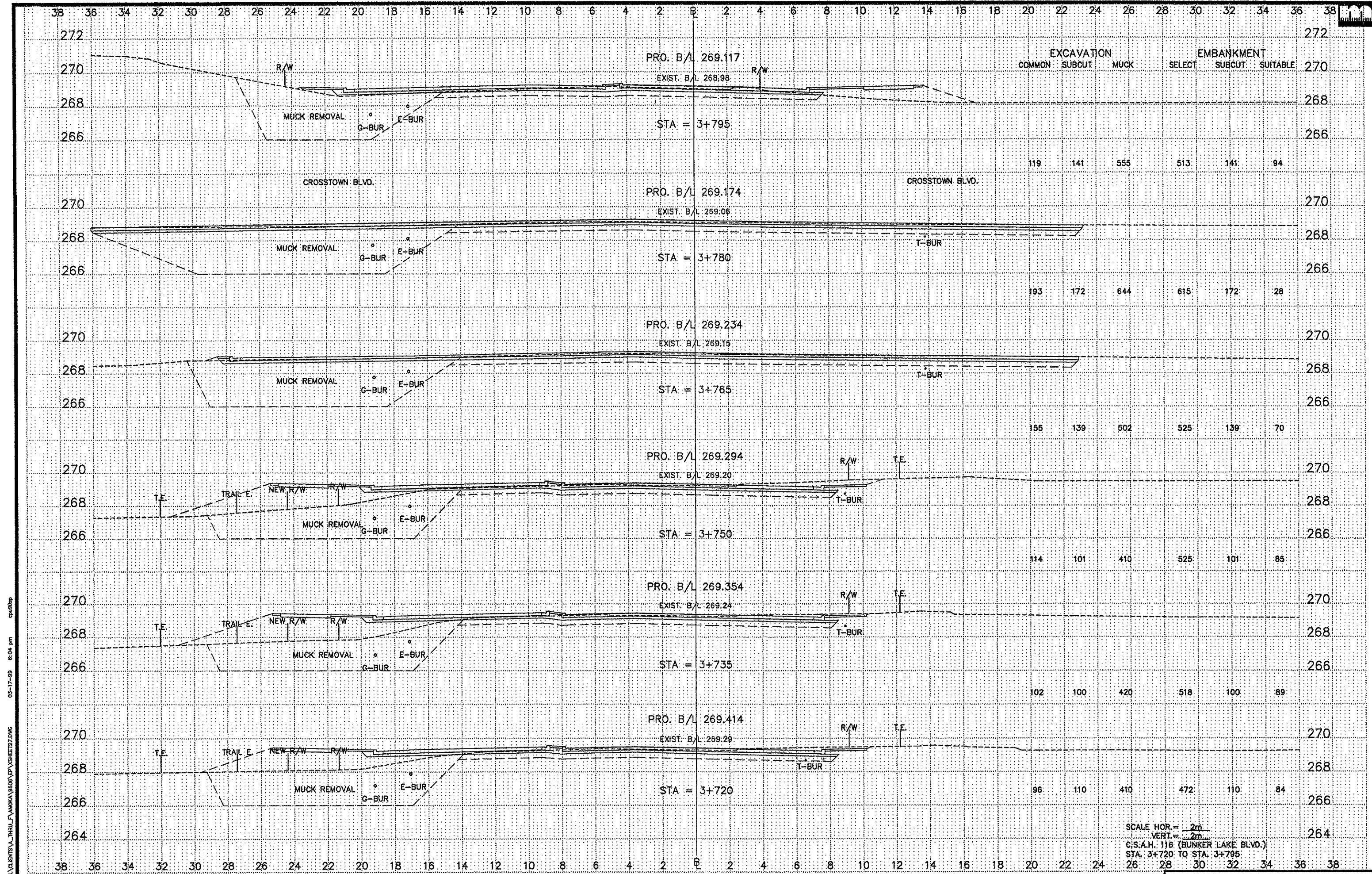
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38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



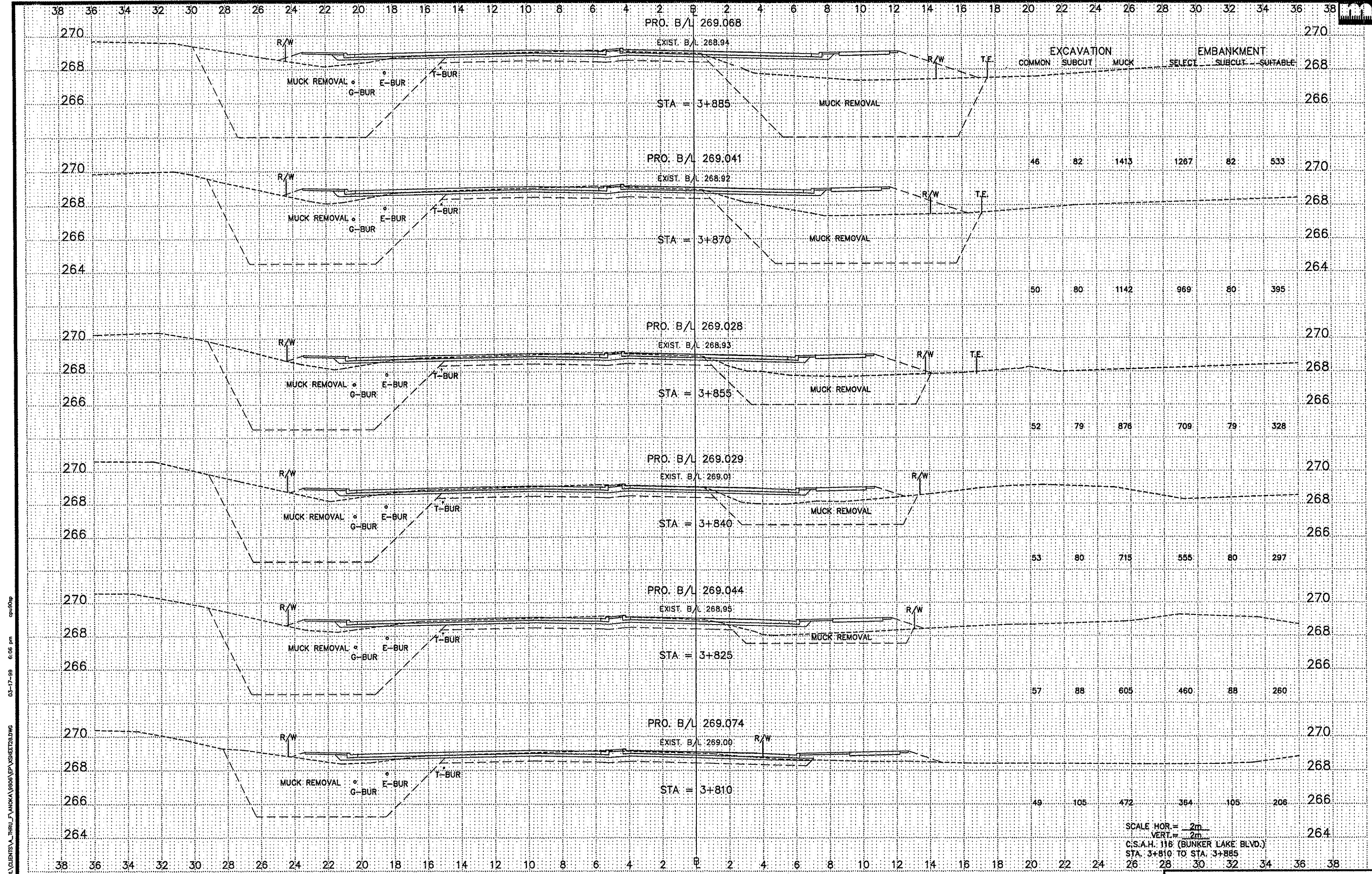
SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+630 TO STA. 3+705

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 03-17-09 6:01 pm
 chs09p



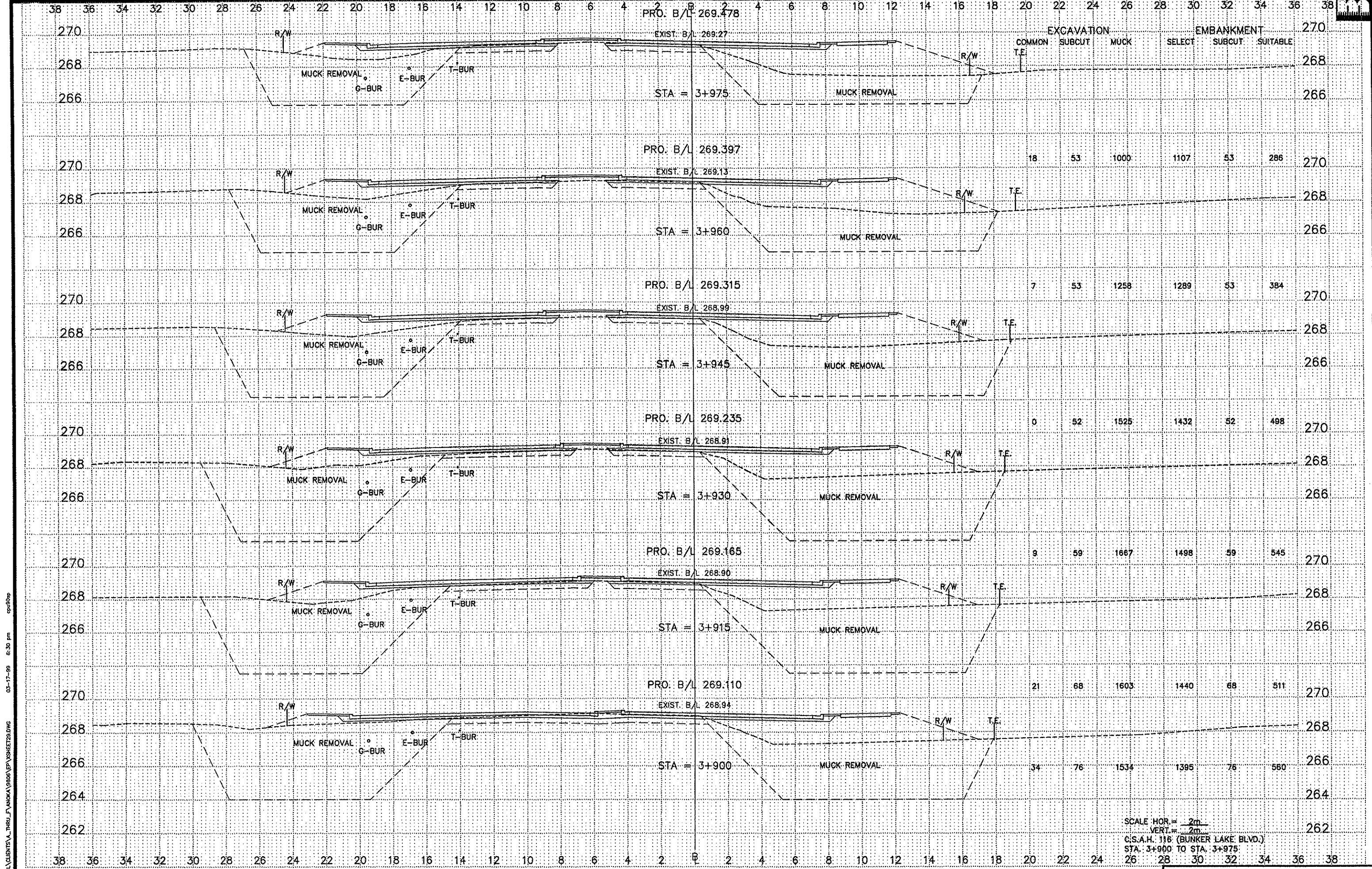
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 03-17-99 8:04 pm
 cpd/bsp

SCALE HOR. = 2" = 20'
 VERT. = 2" = 20'
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+720 TO STA. 3+795



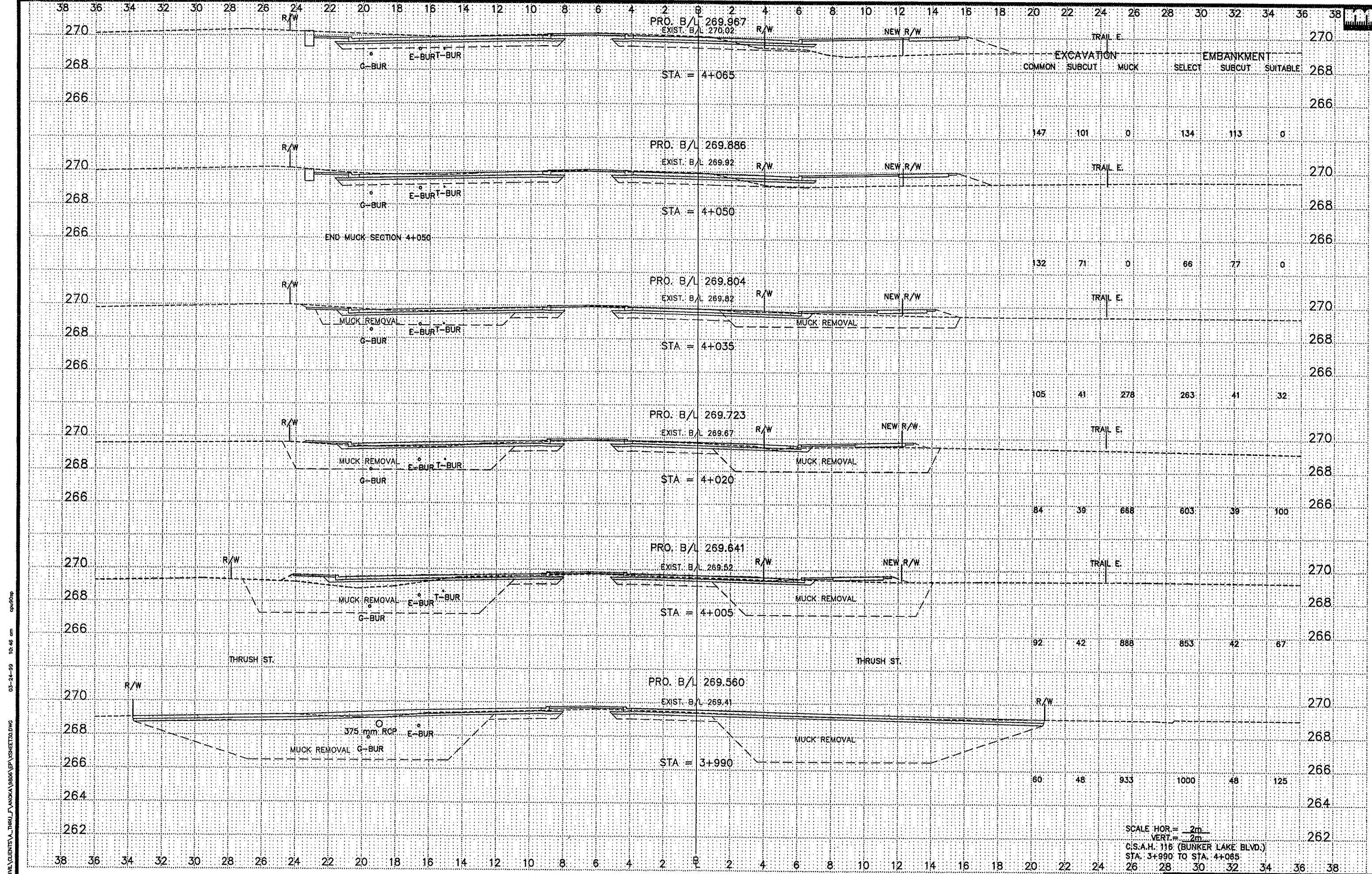
C:\DWG\CLIENTS\VA_THRU_L\WORK\9806\EP\VISHEETS.DWG
 03-17-98 8:08 pm
 cpj00ap

SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+810 TO STA. 3+885



SCALE HOR = 2m
 VERT = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+900 TO STA. 3+975

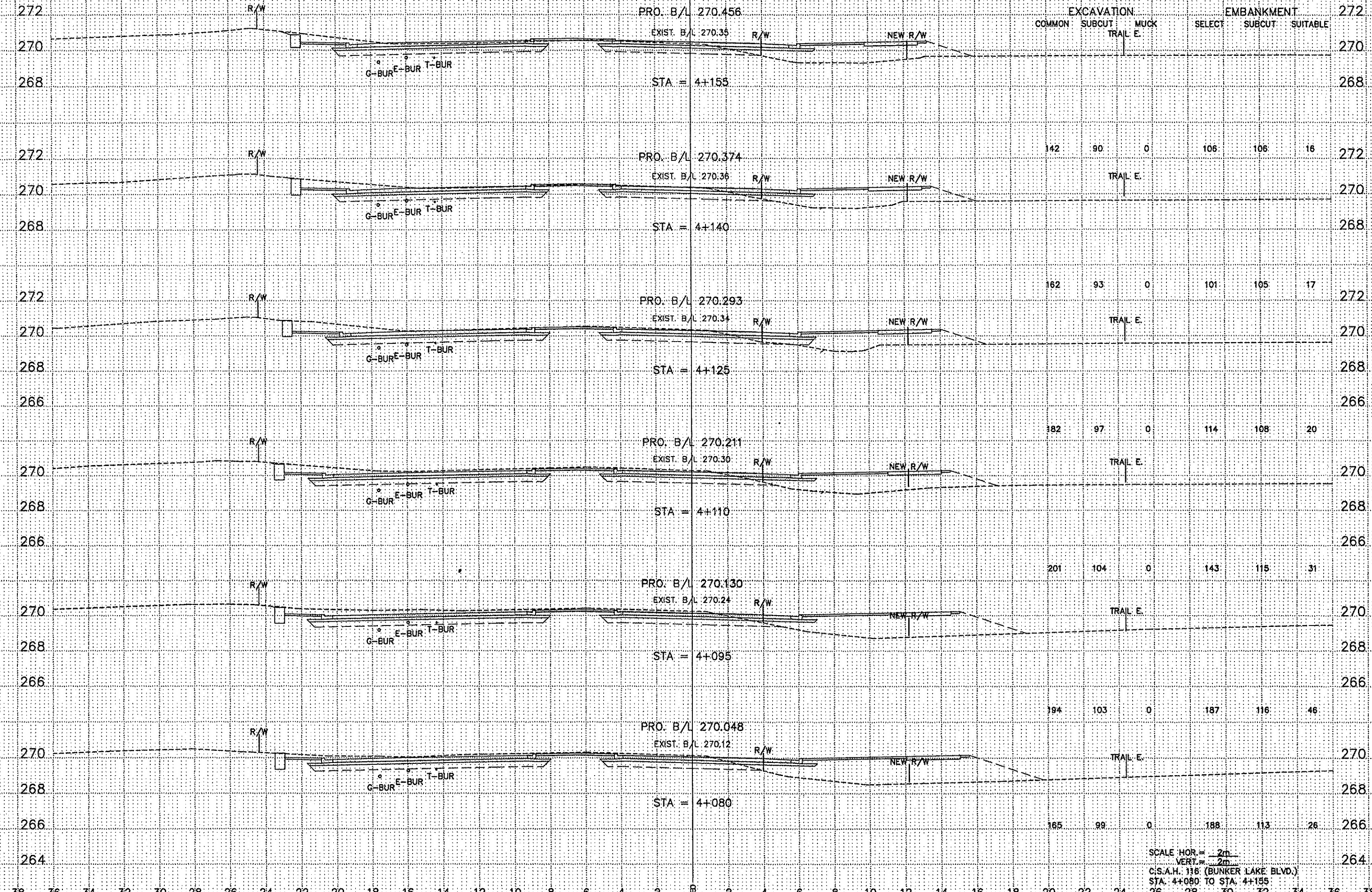
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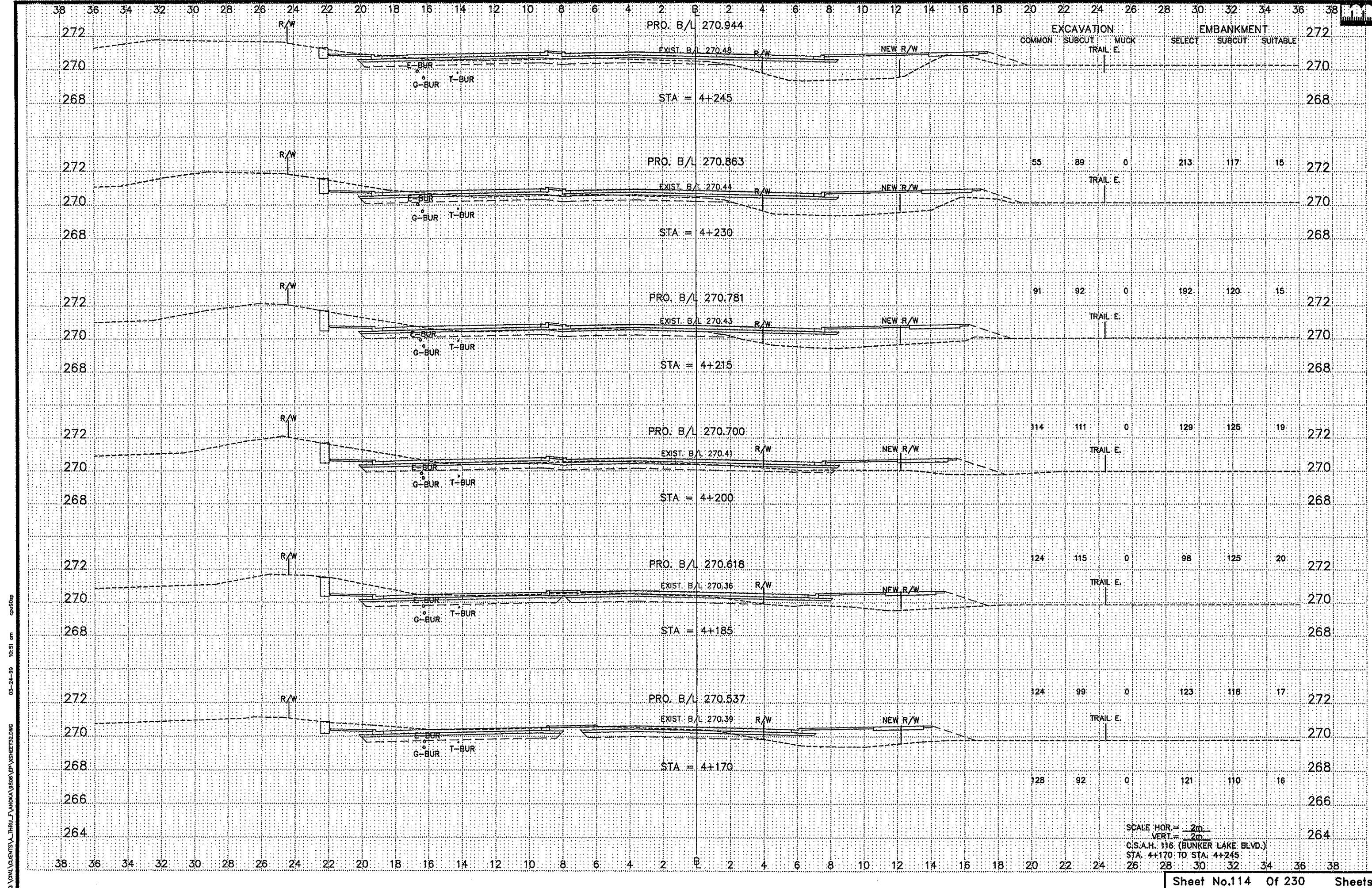
SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 3+990 TO STA. 4+065

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



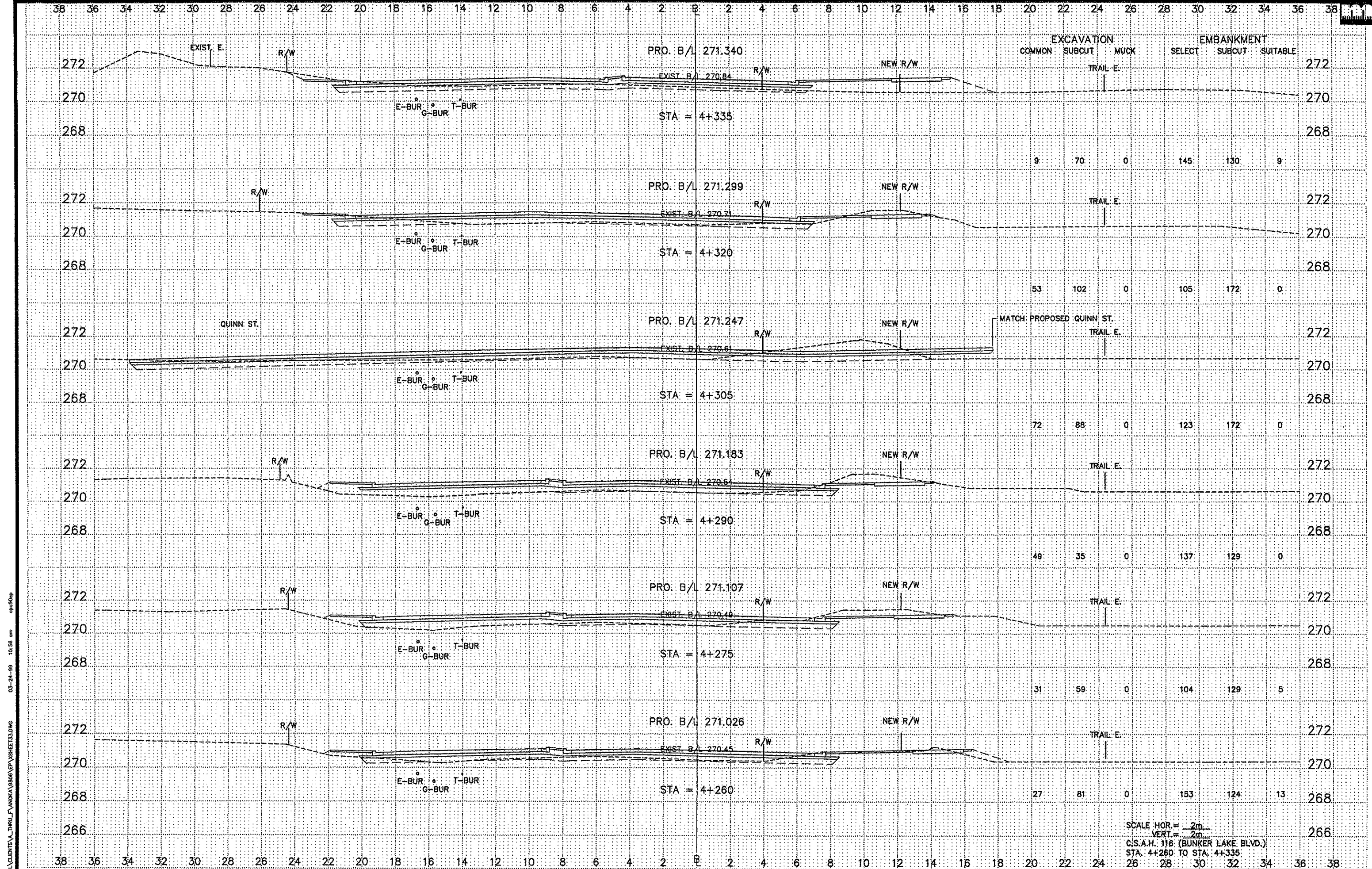
SCALE: HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+080 TO STA. 4+155

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SCALE HOR. = 2" = 20'
 VERT. = 1" = 2'
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+170 TO STA. 4+245

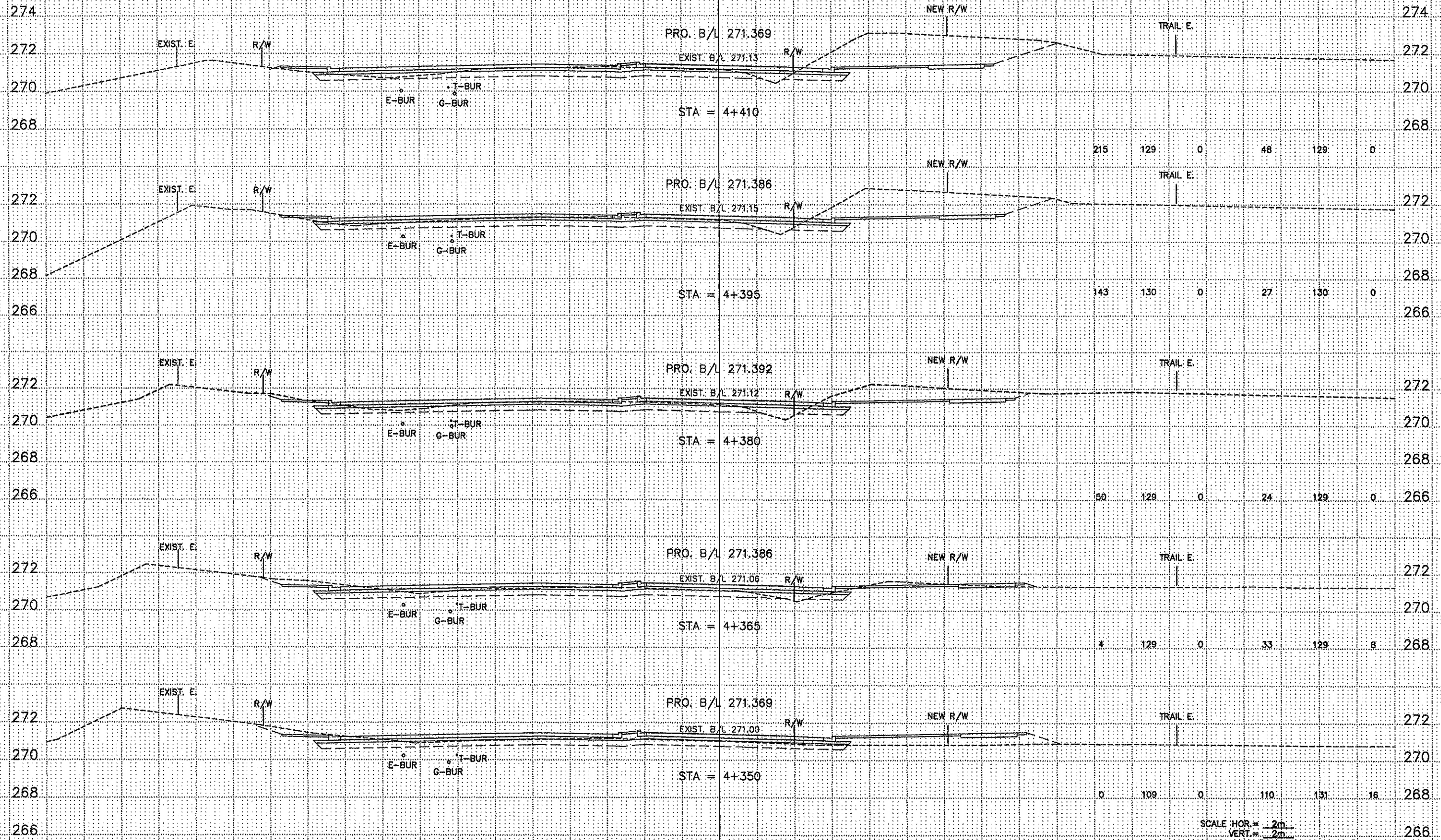


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 05-24-99 10:56 am cpj/dhp

SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+260 TO STA. 4+335

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38

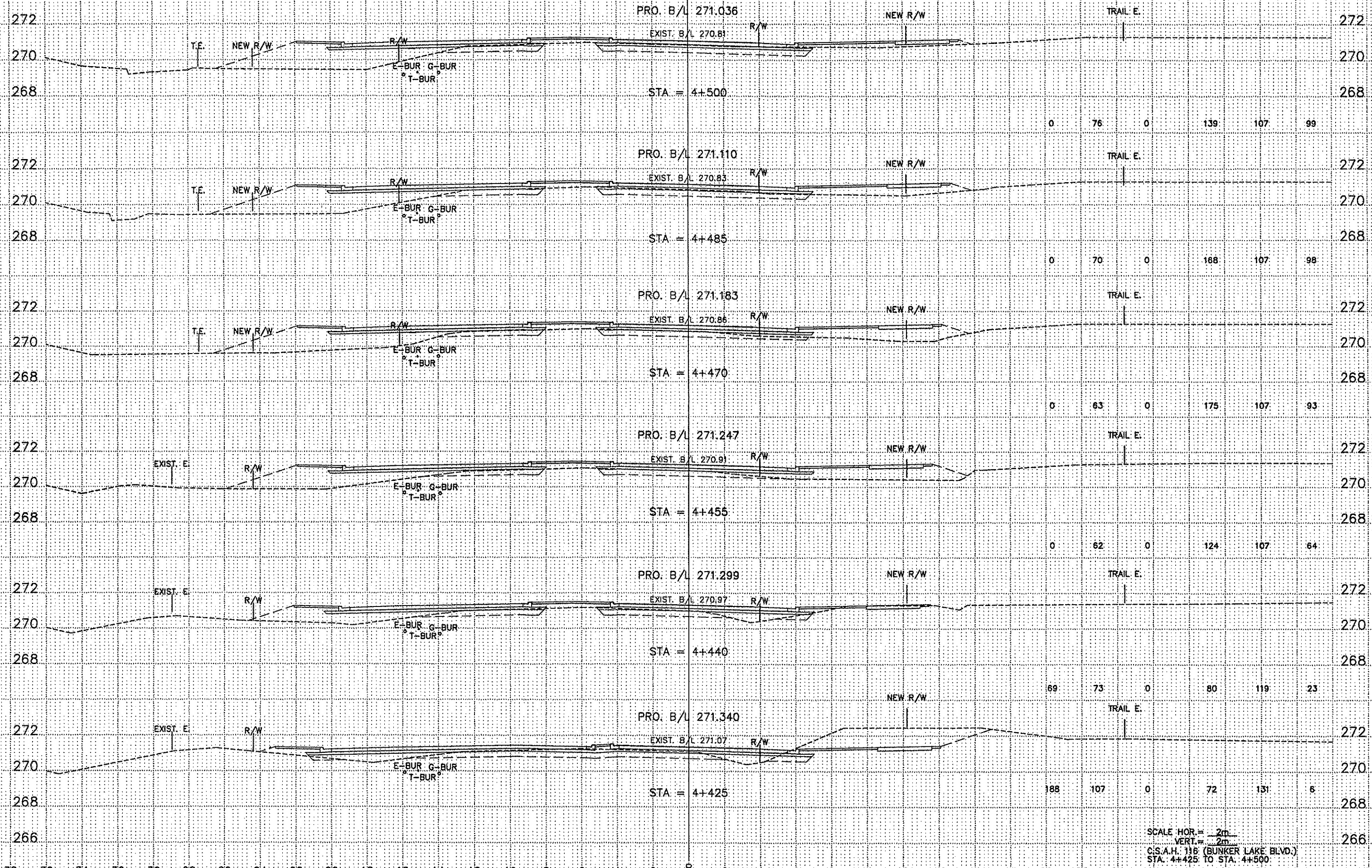
EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE



C:\VIA\PROJECTS\THRU_LAND\1998\EP\1998\116.DWG 03-24-99 10:58 am gpr09p

SCALE HOR. = 2"
VERT. = 2"
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+350 TO STA. 4+410

EXCAVATION COMMON SUBCUT MUCK EMBANKMENT SELECT SUBCUT SUITABLE



SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+425 TO STA. 4+500

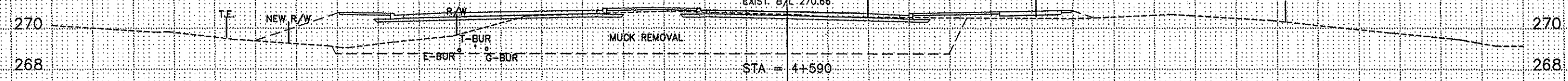
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PRO. B/L 270.791

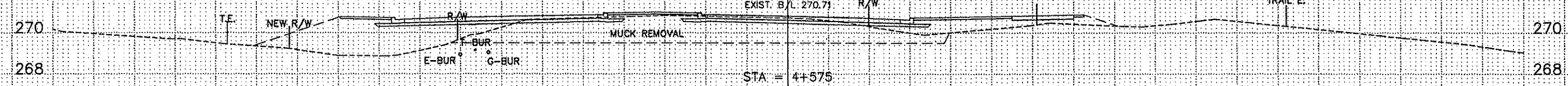
EXCAVATION COMMON SUBCUT MUCK SELECT EMBANKMENT SUBCUT SUITABLE TRAIL E.

EXIST. B/L 270.66



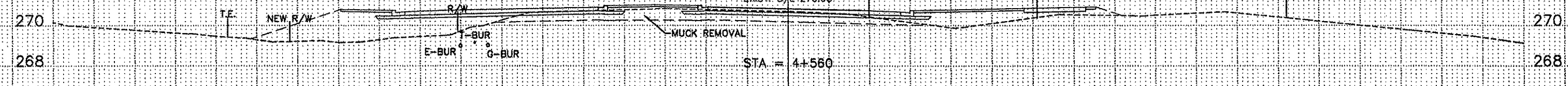
PRO. B/L 270.794

EXIST. B/L 270.71



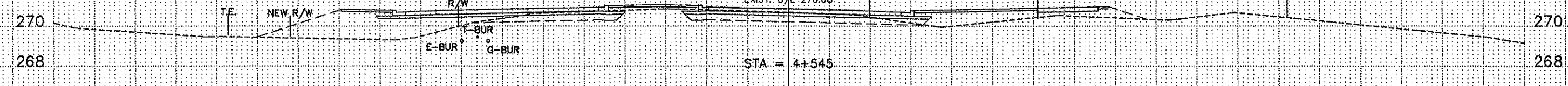
PRO. B/L 270.813

EXIST. B/L 270.68



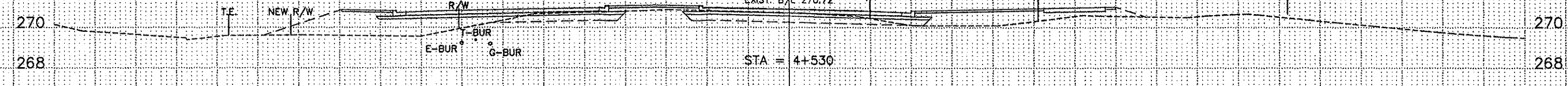
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EXIST. B/L 270.68



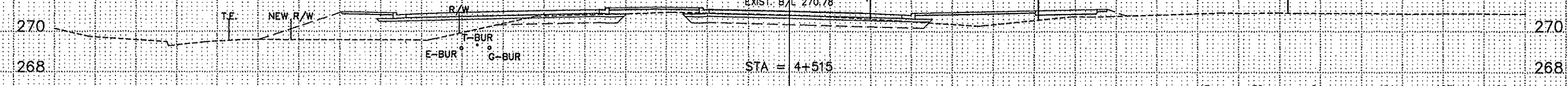
PRO. B/L 270.897

EXIST. B/L 270.72



PRO. B/L 270.962

EXIST. B/L 270.78



0 0 532 681 0 96

25 0 223 387 0 101

43 37 49 199 53 96

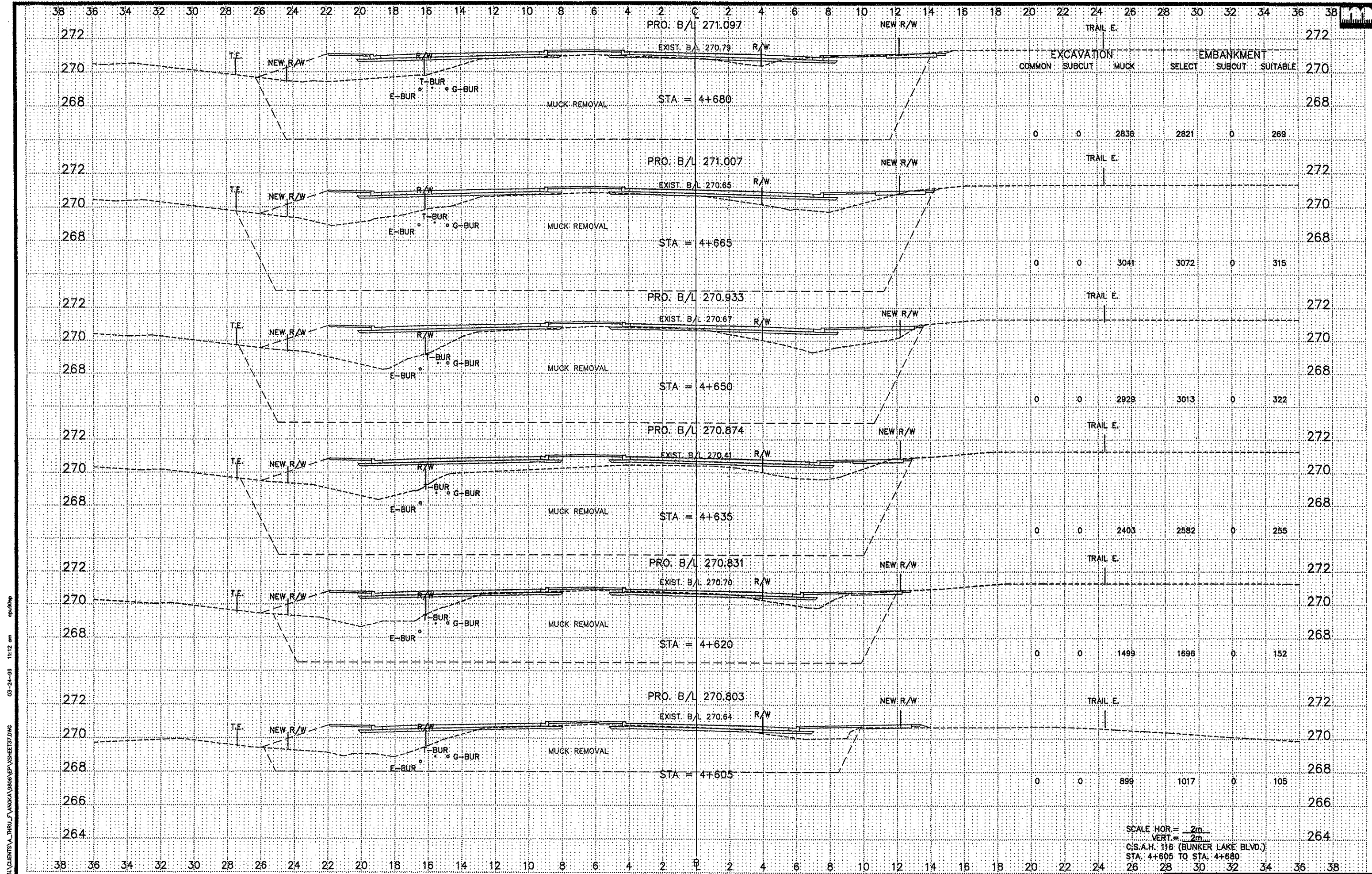
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36 74 0 151 107 76

17 76 0 134 107 87

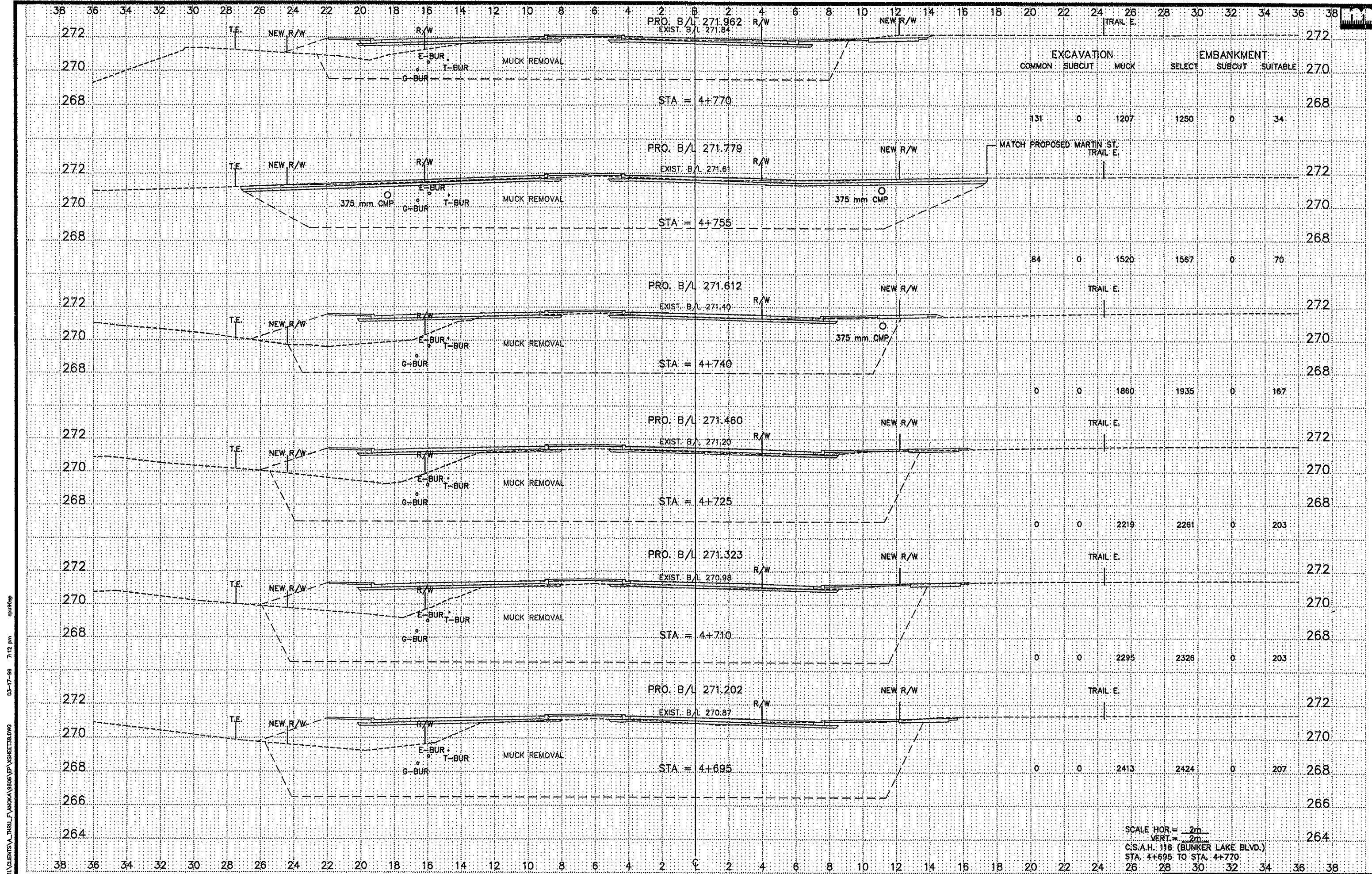
SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+515 TO STA. 4+590

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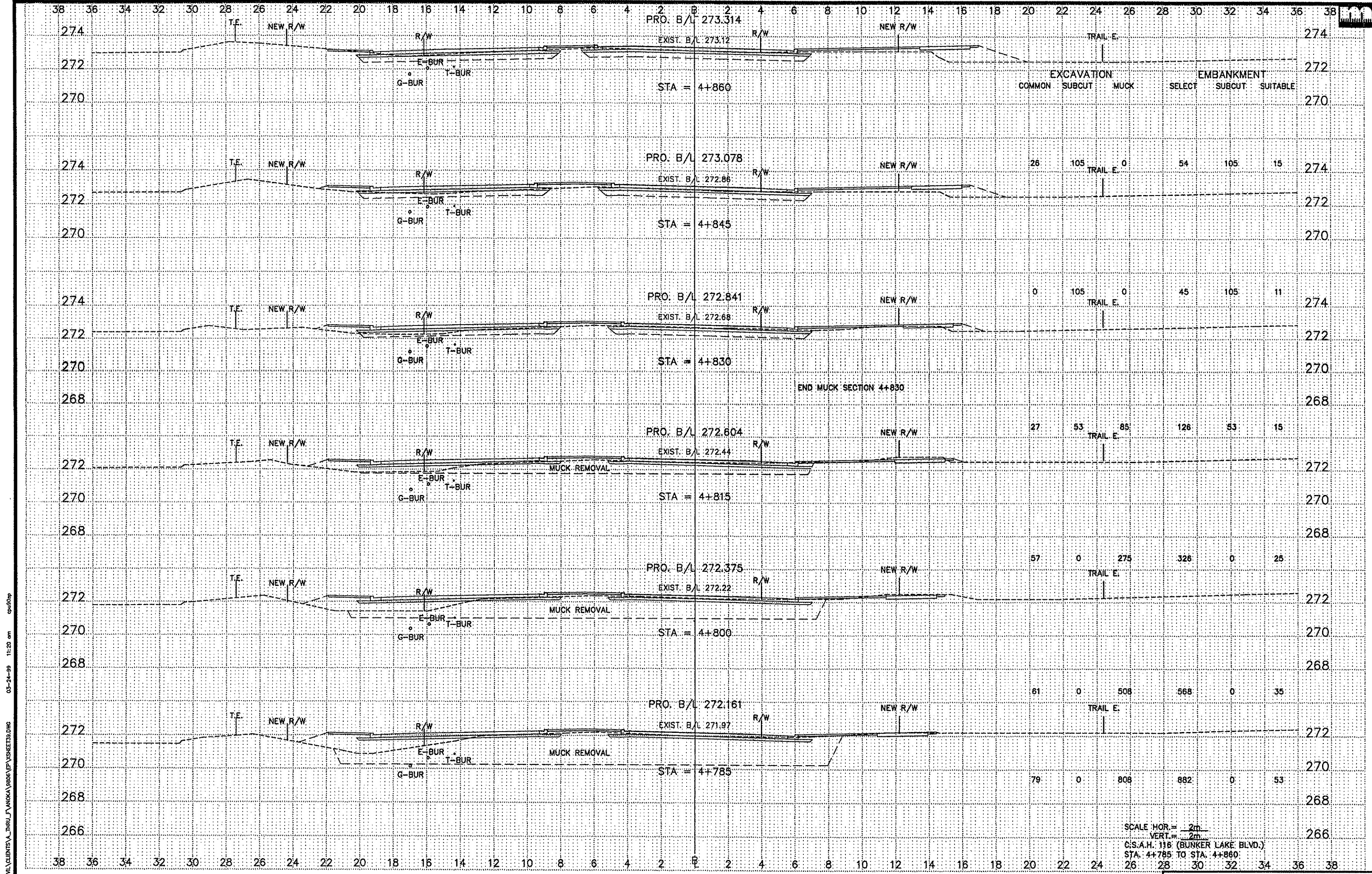
05-24-99 11:12 am
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SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 118 (BUNKER LAKE BLVD.)
 STA. 4+605 TO STA. 4+680



03-17-99 7:12 pm c:\p09p
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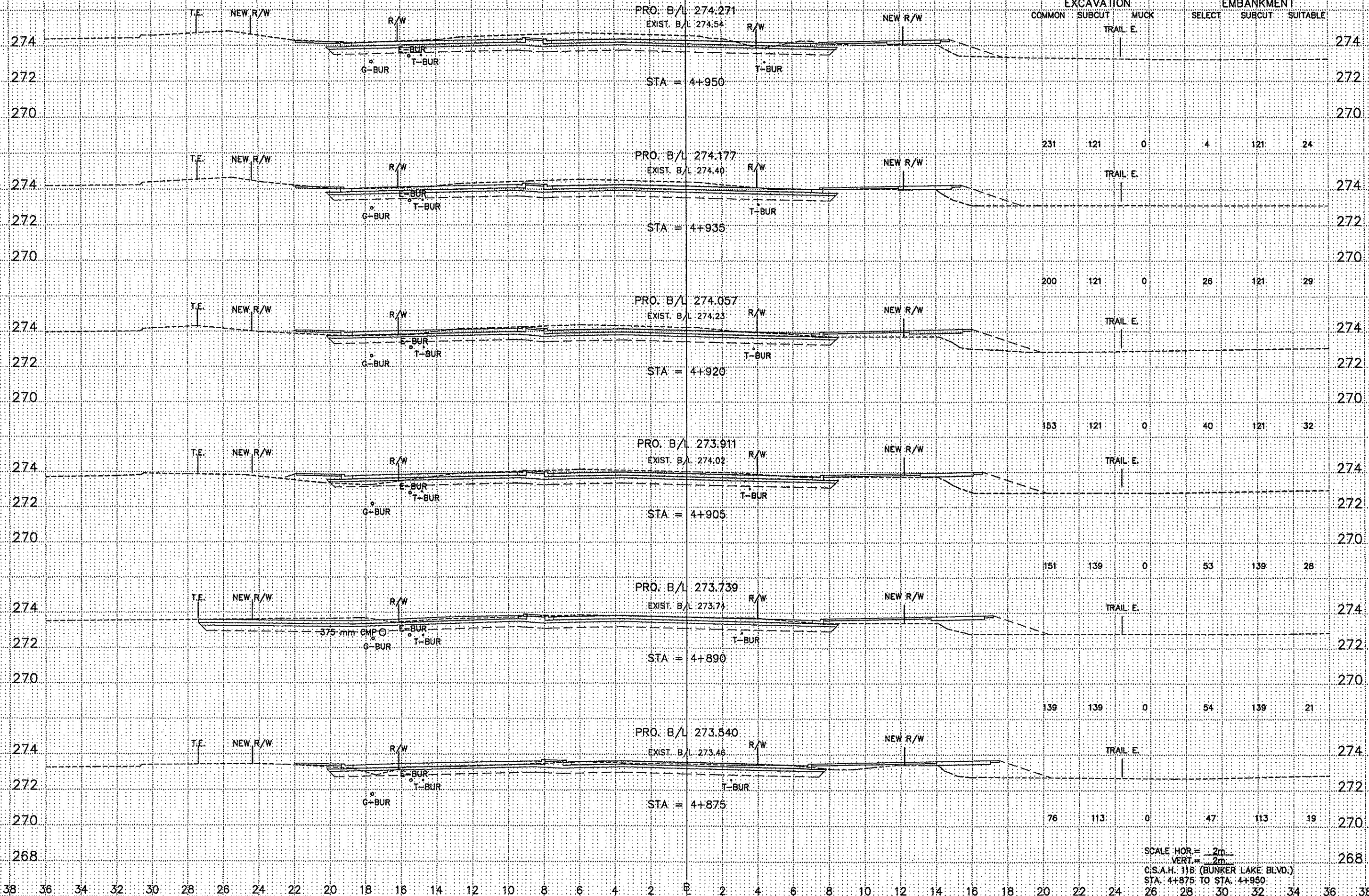
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 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+695 TO STA. 4+770



SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+785 TO STA. 4+860

C:\CIVIL\CLIENTS\A_THRU\F\ANGKA\1986\EP\1986SET13.DWG
 03-24-98 11:20 am cp6009

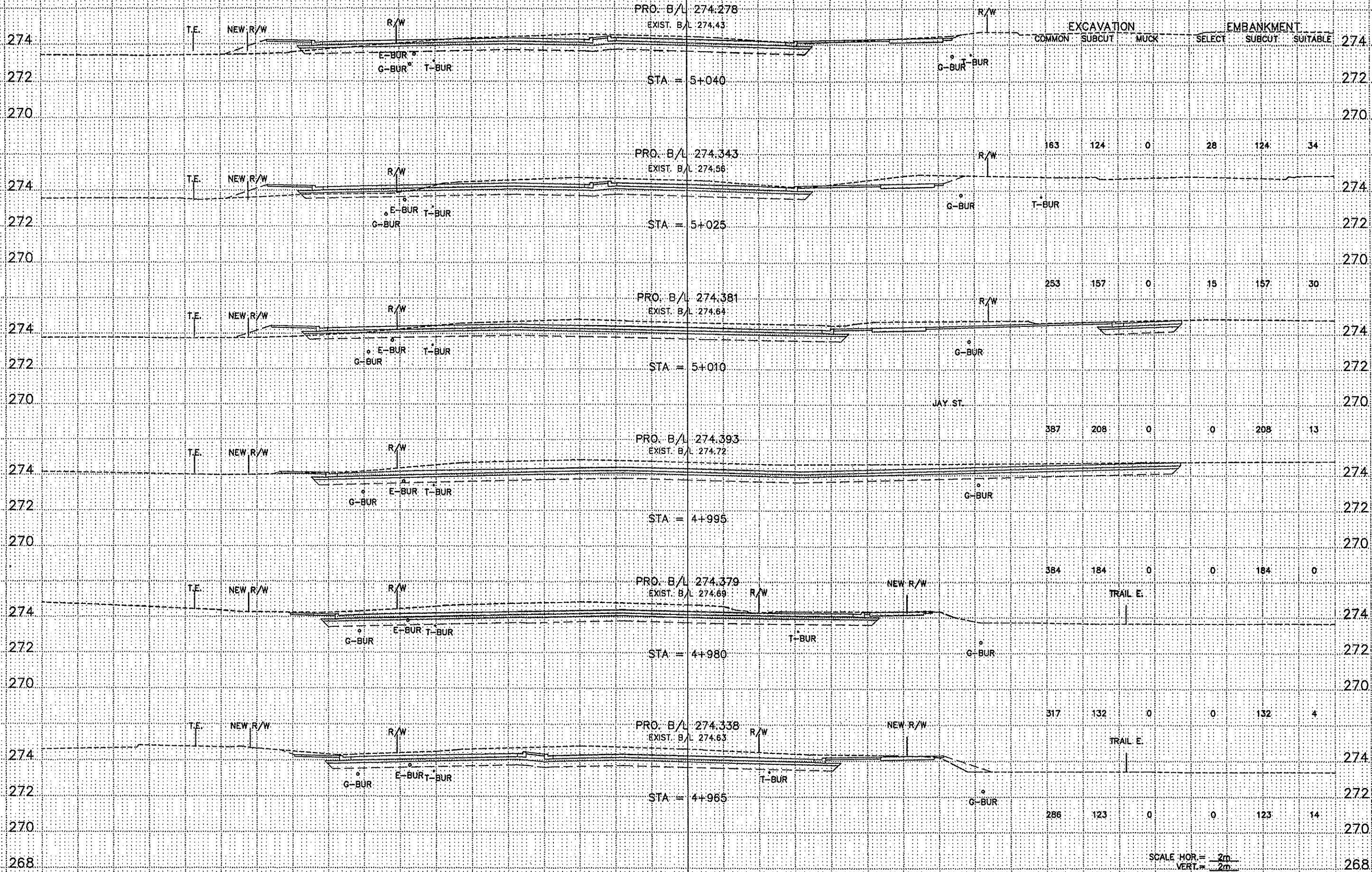
EXCAVATION COMMON SUBCUT MUCK TRAIL E. EMBANKMENT SELECT SUBCUT SUITABLE



SCALE HOR = 2m
VERT = 2m
C.S.A.H. 118 (BUNKER LAKE BLVD.)
STA. 4+875 TO STA. 4+950

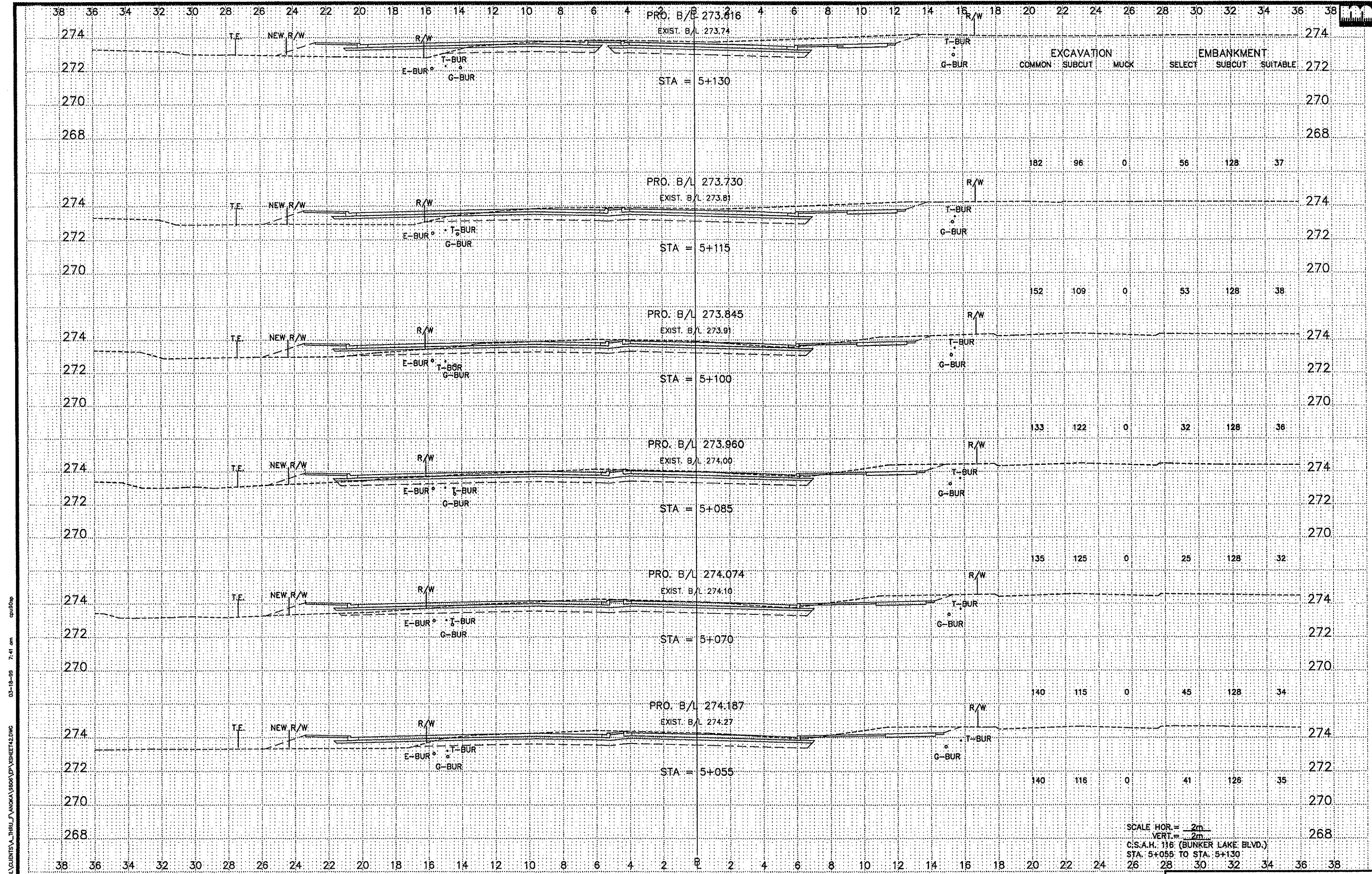
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38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



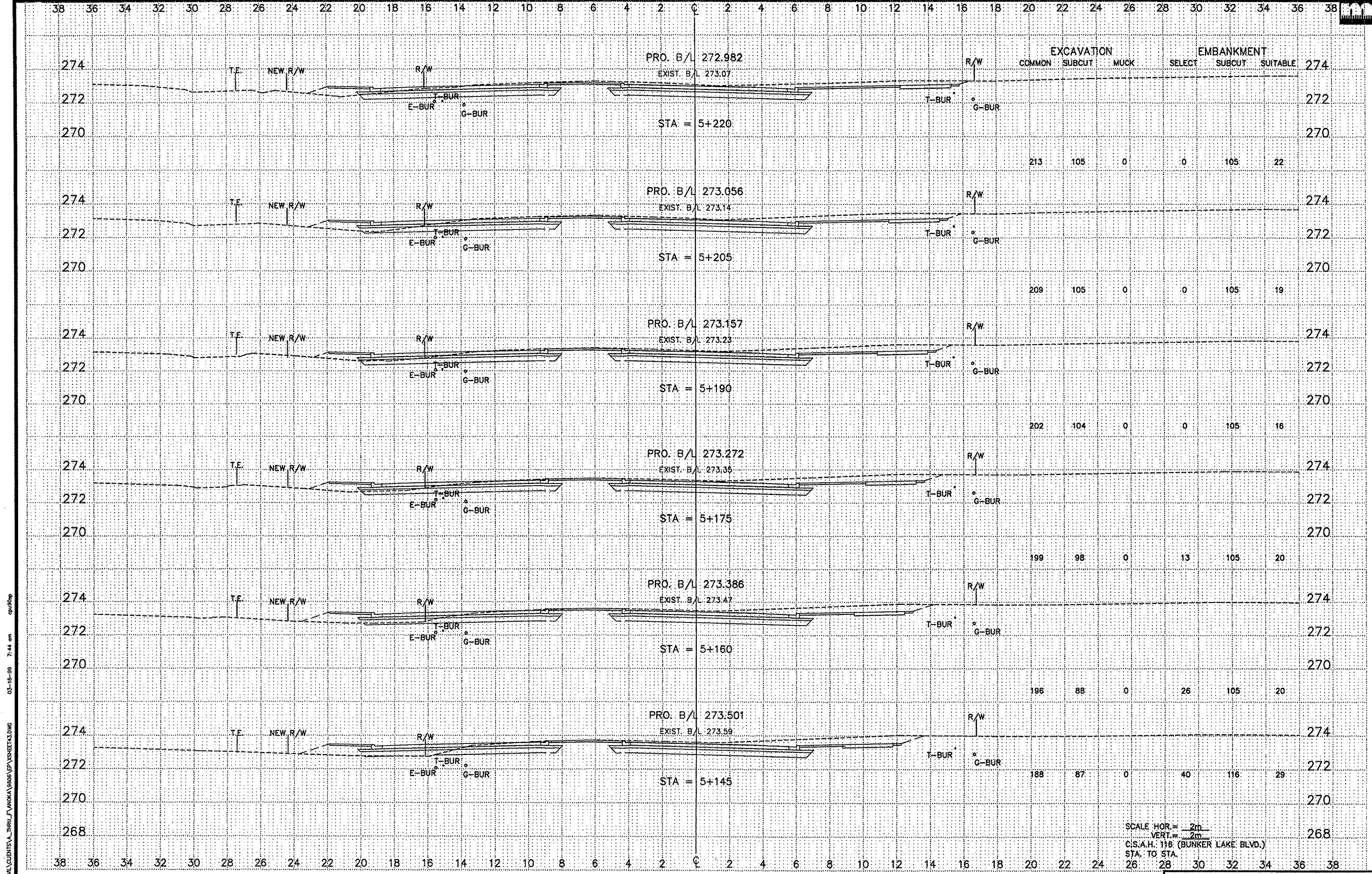
SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 4+965 TO STA. 5+040

05-24-98 11:24 am c:\p000\clients\A_THRU\F\NICKA\9805\A\VSHEET1.DWG



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 03-18-99 7:41 am
 cep:bjp

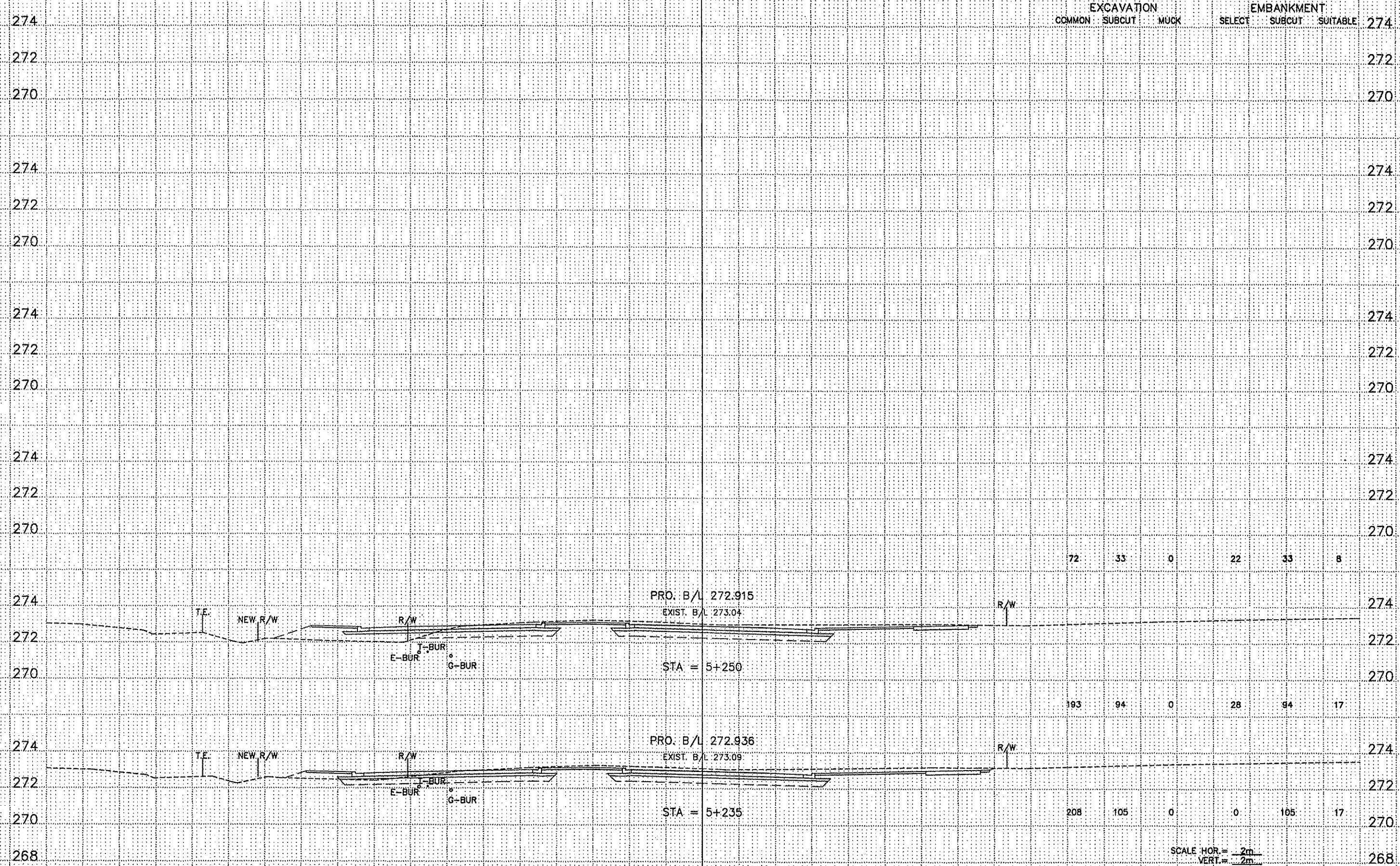
SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 STA. 5+055 TO STA. 5+130



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 03-18-98 7:44 am gpa09op

SCALE HOR. = 2m
 VERT. = 2m
 C.S.A.H. 115 (BUNKER LAKE BLVD.)
 STA. TO STA.

38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38



PRO. B/L 272.915
EXIST. B/L 273.04

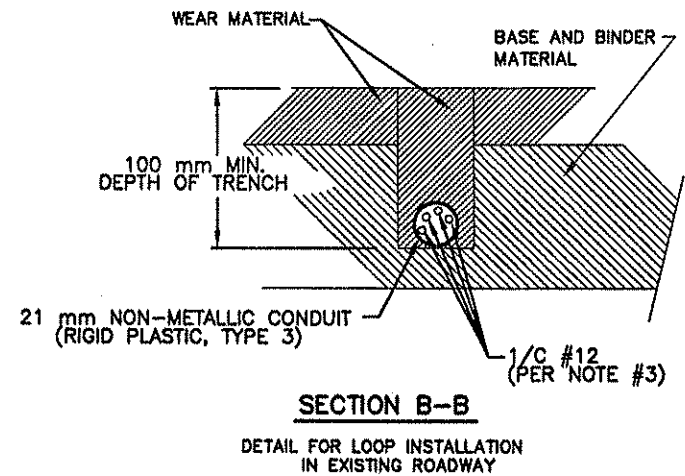
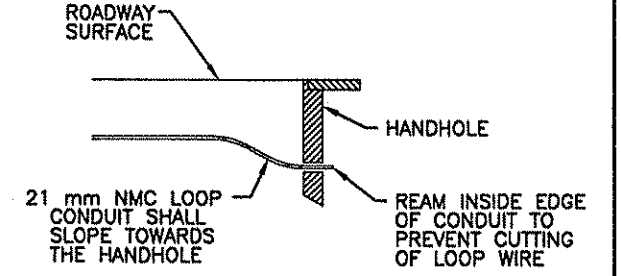
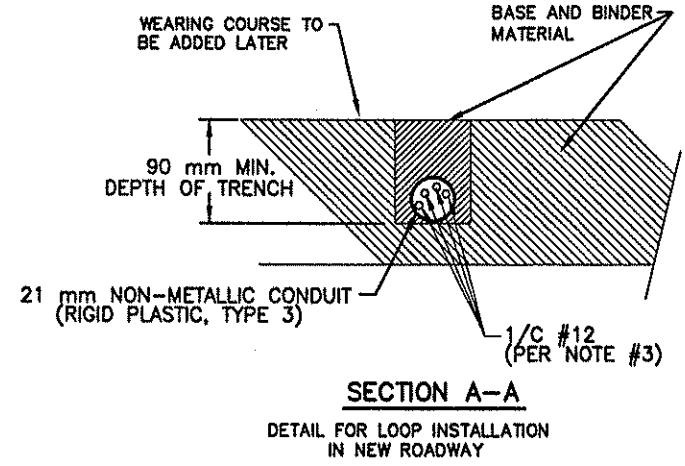
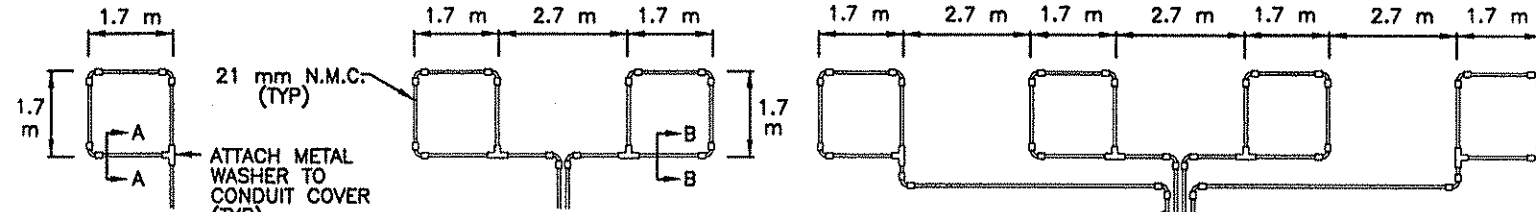
PRO. B/L 272.936
EXIST. B/L 273.09

STA = 5+250

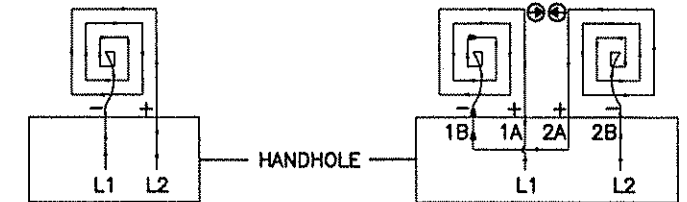
STA = 5+235

SCALE HOR = 2m
VERT = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 5+235 TO STA. 5+250

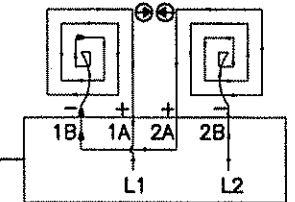
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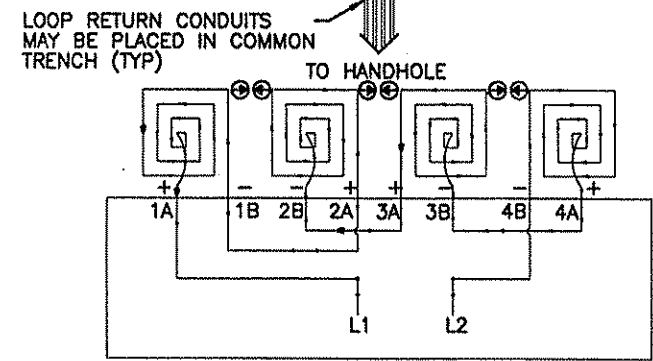
- ### LOOP DETECTOR WIRING
- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
 - 2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
 - 3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
 - 4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER 0.3 METER (1 FOOT) THROUGH THE CONDUIT TO THE HANDHOLE.
 - 5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
 - 6) LOOPS 1.7 m x 1.7 m THRU 1.7 m x 4.3 m SHALL HAVE (4) TURNS.
 - 7) LOOPS 1.7 m x 4.6 m AND LARGER SHALL HAVE (2) TURNS.



LOOP DETECTOR DETAIL A
(LOOP PHASING FOR SINGLE CONNECTION)



LOOP DETECTOR DETAIL B
(LOOP PHASING FOR SERIES CONNECTION)



LOOP DETECTOR DETAIL C
(LOOP PHASING FOR SERIES CONNECTION)

LEGEND OF SYMBOLS

CONTROLLER AND SERVICE EQUIP. NO's	⊙
SIGNAL BASE NO.	⊙
SIGNAL FACE NO.	⊙
LUMINAIRE NO.	⊙
CONTROLLER AND CABINET	⊙
CONTROLLER AND CABINET - IN PLACE	⊙
HANDHOLE	⊙
HANDHOLE - IN PLACE	⊙
RIGID STEEL CONDUIT (RSC)	—
RIGID STEEL CONDUIT (RSC) - IN PLACE	—
SIGNAL FACE WITH BACKGROUND SHIELD	→
SIGNAL FACE W/O BACKGROUND SHIELD	→
SIGNAL FACE - IN PLACE	→
PEDESTRIAN INDICATORS	→
PEDESTRIAN INDICATORS - IN PLACE	→
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	→
PEDESTRIAN PUSH BUTTON STATION	→
TRAFFIC SIGNAL PEDESTAL	→
TRAFFIC SIGNAL PEDESTAL - IN PLACE	→
TRAFFIC SIGNAL POLE AND MAST ARM	→
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	→
STREET LIGHT POLE AND LUMINAIRE	→
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	→
MAST ARM AND LUMINAIRE	→
MAST ARM AND LUMINAIRE - IN PLACE	→
WOOD POLE	→
WOOD POLE - IN PLACE	→
SOURCE OF POWER	→
RAILROAD SIGNAL - IN PLACE	→
RIGHT OF WAY LINE	→
CENTERLINE	→
EDGE OF ROADWAY	→
SHOULDERLINE	→
CURB LINE	→
STOP BAR	→

ABBREVIATIONS

J-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"	P2-1(EG)	PEDESTRIAN INDICATION PHASE "2" - NO. "1"
BR. GR.	BARE GROUND	PB	PUSH BUTTON
CH. SW.	CHECK SWITCH	PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
CLR	CLEAR	PEC	PHOTOELECTRIC CELL
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"	PEP	PEDESTRIAN
DWK	DON'T WALK	R	RED
EQG	EQUIPMENT GROUND	R&S	REMOVE AND SALVAGE
EVP	EMERGENCY VEHICLE PRE-EMPTION	RLTA	RED LEFT TURN ARROW
F&I	FURNISH AND INSTALL	RRTA	RED RIGHT TURN ARROW
FL	FLASH/FLASHING	RSC	RIGID STEEL CONDUIT
G	GREEN	SOP	SOURCE OF POWER
GLTA	GREEN LEFT TURN ARROW	SPR	SPARE
GRN	GREEN	ST. LHT	STREET LIGHT
GR. R	GROUND ROD	STA	STATION
GRTA	GREEN RIGHT TURN ARROW	SW	SWITCH
GTHA	GREEN THRU ARROW	SWD	SWITCHED
HH	HANDHOLE	TDW	TELEPHONE DROP WIRE
HPS	HIGH PRESSURE SODIUM	WLK	WALK
JB	JUNCTION BOX	YEL	YELLOW
LUM	LUMINAIRE	YLTA	YELLOW LEFT TURN ARROW
NEU	NEUTRAL	YRTA	YELLOW RIGHT TURN ARROW
NMC	NONMETALLIC CONDUIT	YTHA	YELLOW THRU ARROW

CONDUCTOR COLOR CODE

R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
* MB110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
MB111 C	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
MB112 C	PEDESTAL FOUNDATION
* MB114 A	PVC HANDHOLE/PULLBOX
MB115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
* MB118 C	SERVICE EQUIPMENT AND POLE-TRAFFIC CONTROL SIGNALS
* MB119 C	GROUND MOUNTED CABINET FOUNDATION
* MB120 K	PA85 POLE FOUNDATION
* MB121 D	TRANSFORMER BASE AND POLE BASE PLATE
MB122 C	PEDESTAL AND PEDESTAL BASE
* MB123 D	POLE AND MAST ARM
* MB124 E	MAST ARM SIGNAL HEAD MOUNTS
* MB126 F	PA90 AND PA100 POLE FOUNDATION

* - APPLIES TO THIS PROJECT

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

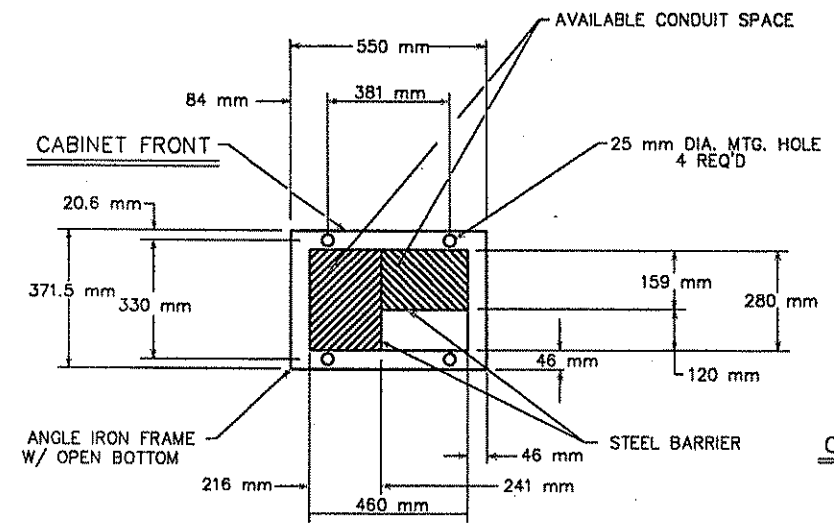
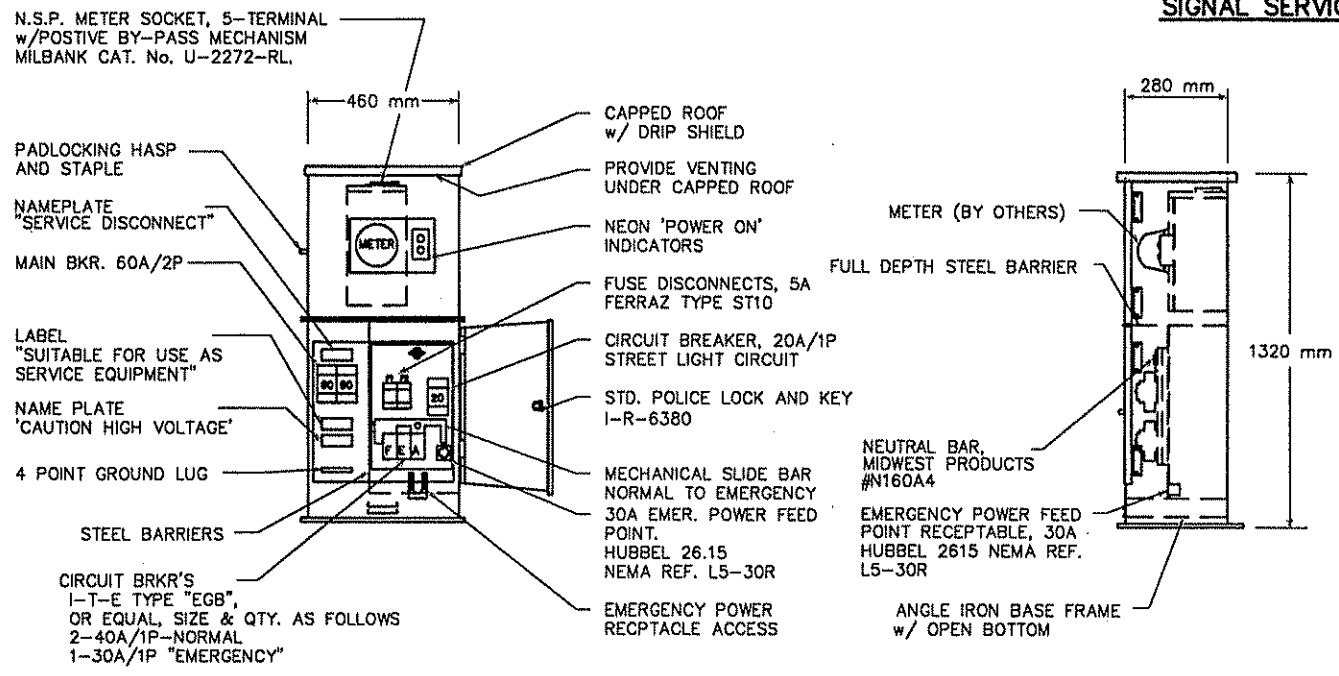
TRAFFIC SIGNAL SYSTEMS "A-F"
 SIGNAL DETAILS

FILE NO.	127
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DATE	3/15/99
	230

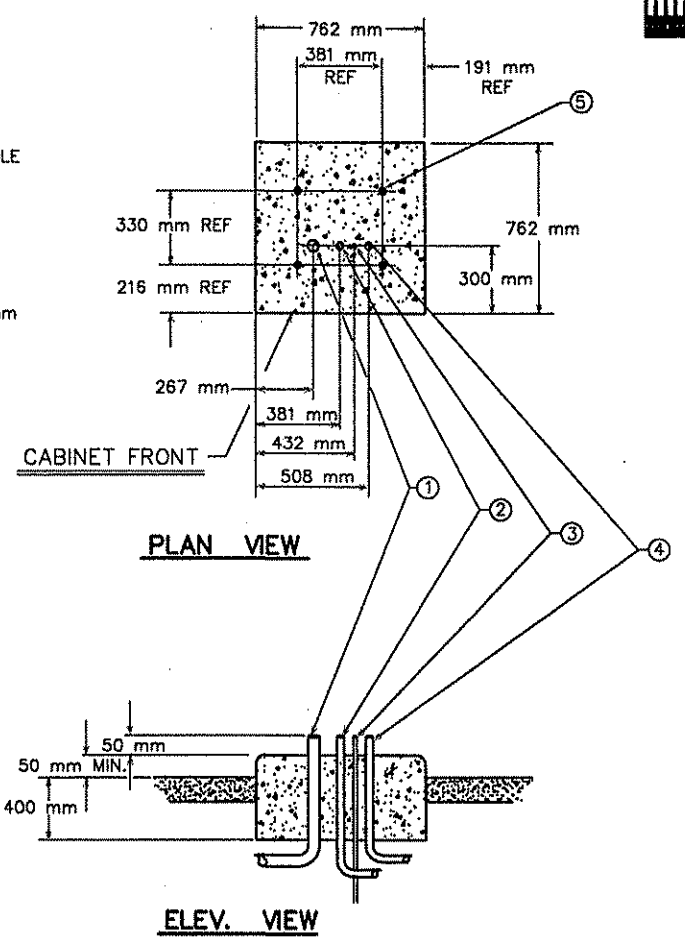
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED



SIGNAL SERVICE CABINET



SERVICE CABINET FOUNDATION



FRONT ELEV.

RIGHT SIDE ELEV.

BASE VIEW

PLAN VIEW

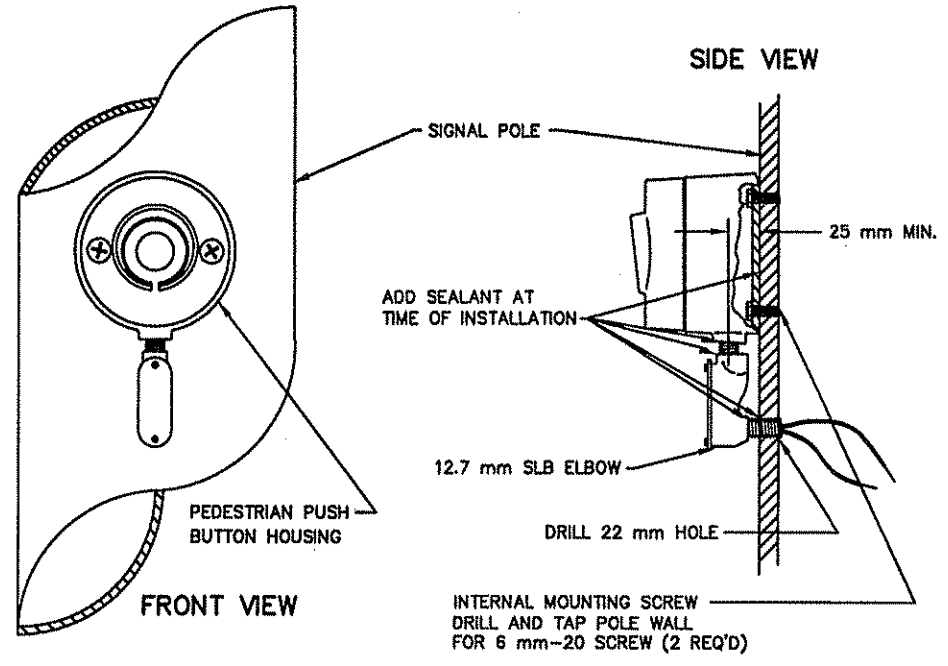
ELEV. VIEW

CONSTRUCTION NOTES

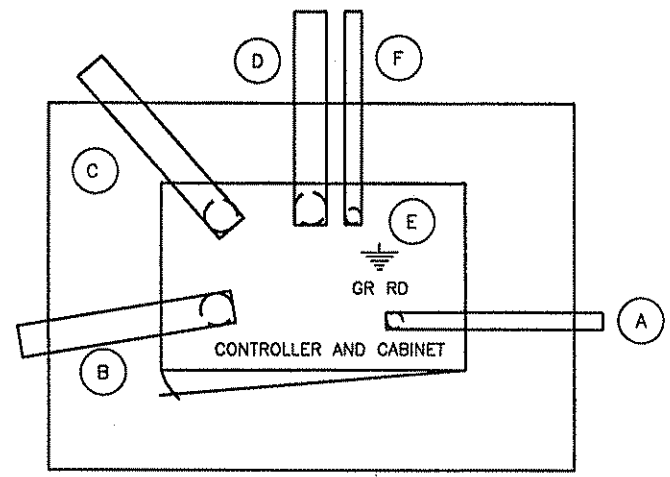
ENCLOSURE SHALL BE FABRICATED FROM #12 GA. ALL WELDED COLD ROLLED STEEL FOR OUTDOOR WEATHER PROOF SERVICE. DOORS TO BE GASKETED, ALL HINGES, PINS AND LOCKS TO BE OF NON CORRODING CONSTRUCTION. CABINET TO BE PRIMED INSIDE AND OUT WITH RUST INHIBITING PRIMER. FINISH PER MN/DOT #3527. ENCLOSURE SHALL BE 'UL' APPROVED

- ① 53 mm RSC STUB OUT (FOR POWER CABLES)
- ② 35 mm RSC TO CONTROLLER CABINET
- ③ GROUNDING ROD
- ④ 35 mm RSC TO HANDHOLE (FOR STREET LIGHTING)
- ⑤ ANCHOR BOLT LOCATIONS (4 REQUIRED)

MAST ARM POLE PEDESTRIAN PUSH BUTTON DETAIL



- (A) 35 mm R.S.C. FOR SERVICE CONNECTION
- (B) 103 mm R.S.C. TO HANDHOLE
- (C) 103 mm R.S.C. TO HANDHOLE
- (D) 78 mm R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).
- (E) 15.8 mm DIA X 4.6 m GROUND ROD
- (F) 53 mm R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).

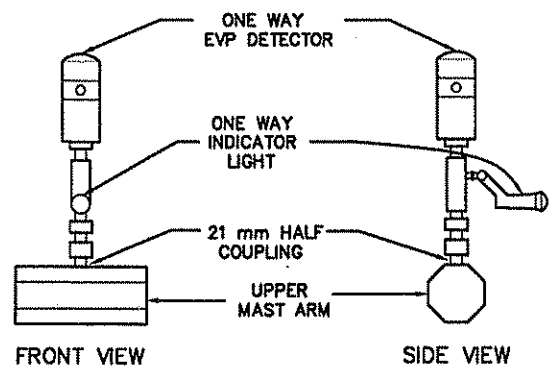


CONCRETE FOUNDATION
SEE MN/DOT STANDARD PLATE NO. M8119C FOR DIMENSIONS.

TYPICAL CONTROLLER CABINET PAD LAYOUT

NO SCALE

EVP DETECTOR AND LIGHT MOUNTING DETAIL ON MAST ARM



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ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEMS "B-E"
SIGNAL DETAILS

FILE NO. ANOKC9806.01
DATE 3/15/99
128
230

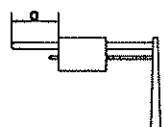


TYPE "D" SIGNS - F & I									
SIGNAL SYSTEM	SIGN PANEL	SIZE (Inches)	SIZE (meters)	NO. REQ.	NO. POSTS PER SIGN	POST SPACING (mm)	AREA (sq.meters) PER SIGN	POLE NO.	a
B	D-1	126x18	3.20x0.46	1	3	1145	1.46	1	2 m
B	D-2	84x18	2.13x0.46	1	2	1375	0.98	2	8 m
B	D-3	126x18	3.20x0.46	1	3	1145	1.46	3	2 m
B	D-4	84x18	2.13x0.46	1	2	1375	0.98	4	8 m
C	D-5	126x18	3.20x0.46	1	3	1145	1.46	1	2 m
C	D-6	108x18	2.74x0.46	1	3	1145	1.25	2	8 m
C	D-7	126x18	3.20x0.46	1	3	1145	1.46	3	2 m
C	D-8	108x18	2.74x0.46	1	3	1145	1.25	4	8 m
D	D-9	126x18	3.20x0.46	1	3	1145	1.46	1	6 m
D	D-10	108x18	2.74x0.46	1	3	1145	1.25	2	8 m
D	D-11	126x18	3.20x0.46	1	3	1145	1.46	3	6 m
D	D-12	108x18	2.74x0.46	1	3	1145	1.25	4	8 m
E	D-13	126x18	3.20x0.46	1	3	1145	1.46	1	6 m
E	D-14	78x18	1.98x0.46	1	2	1375	0.91	2	8 m
E	D-15	78x18	1.98x0.46	1	2	1375	0.91	4	8 m

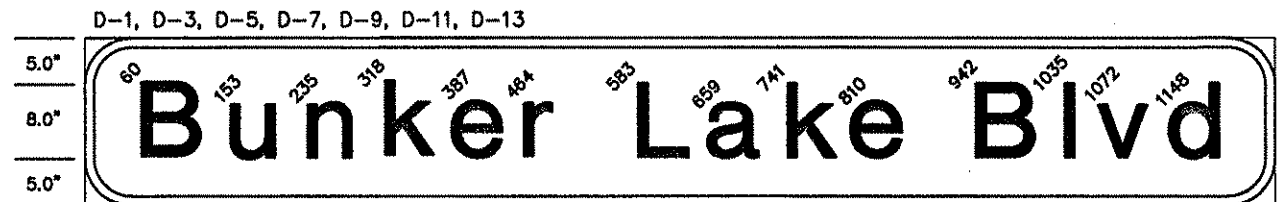
TYPE "C" SIGNS - F & I									
B	R6-1L	36x12	0.91x0.30	2	①	-	0.28	2,4	-
B	R6-1R	36x12	0.91x0.30	2	①	-	0.28	2,4	-
C	R6-1L	36x12	0.91x0.30	2	①	-	0.28	2,4	-
C	R6-1R	36x12	0.91x0.30	2	①	-	0.28	2,4	-
D	R6-1L	36x12	0.91x0.30	2	①	-	0.28	2,4	-
D	R6-1R	36x12	0.91x0.30	2	①	-	0.28	2,4	-
E	R6-1L	36x12	0.91x0.30	2	①	-	0.28	2,4	-
E	R6-1R	36x12	0.91x0.30	2	①	-	0.28	2,4	-
D	R10-12	36x48	0.91x1.22	2	2	300	1.11	1,3	0.5 m

NOTES:

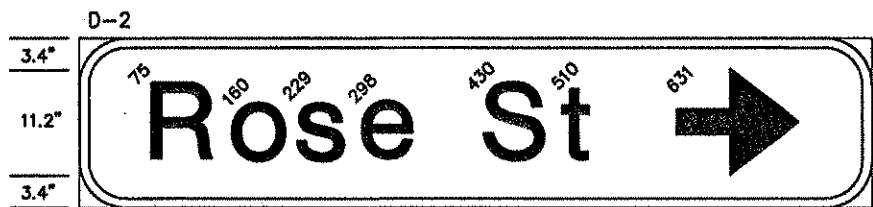
- COLOR FOR TYPE "D" SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
- CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- FOR STRUCTURAL DETAILS, TYPE "D" SIGNS, SEE DETAILS AND STANDARD SIGNS MANUAL.
- FOR TYPE "D" STRINGER AND PANEL-JOINT DETAIL, SEE DETAILS AND STANDARD SIGNS MANUAL.
- TYPE "C" AND "D" SIGN PANELS SHALL BE FURNISHED AND INSTALLED BY SIGNAL CONTRACTOR INCIDENTAL TO ITEM NO. 2565.511 FOR EACH SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.
- SEE STANDARD SIGNS MANUAL FOR ARROW DETAILS.
- ① = SIGN PANEL TO BE MOUNTED ON MAST ARM POLE AS DIRECTED IN SPECIAL PROVISIONS.



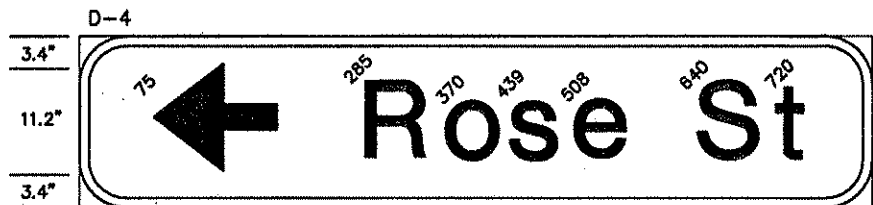
NOTE: ALL DIMENSIONS OF DETAILED SIGN PANELS ARE IN INCHES.



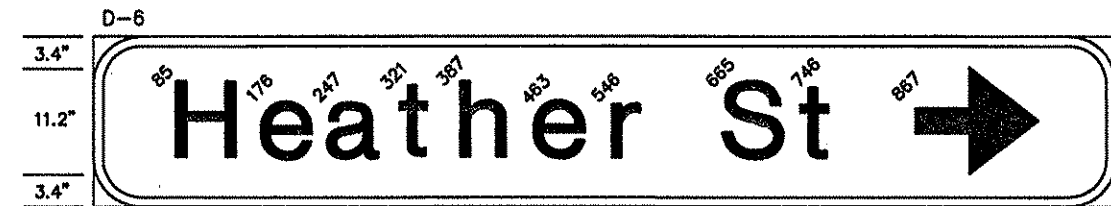
126"x18", 3"R, 1.0"B.
Line 1 114.3: 8"-6" E MOD.



84"x18", 3"R, 1.0"B.
Line 1 68.6: 8"-6" E MOD., 5-13 ARROW 0



84"x18", 3"R, 1.0"B.
Line 1 68.6: 5-13 ARROW 180, 8"-6" E MOD.



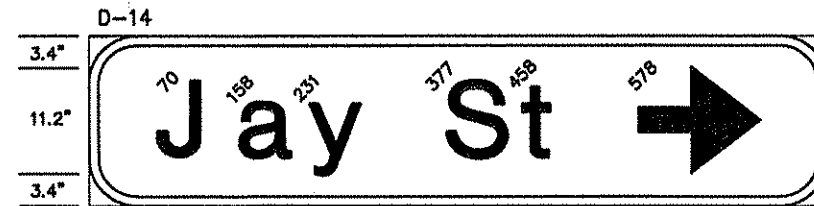
108"x18", 3"R, 1.0"B.
Line 1 91.2: 8"-6" E MOD., 5-13 ARROW 0



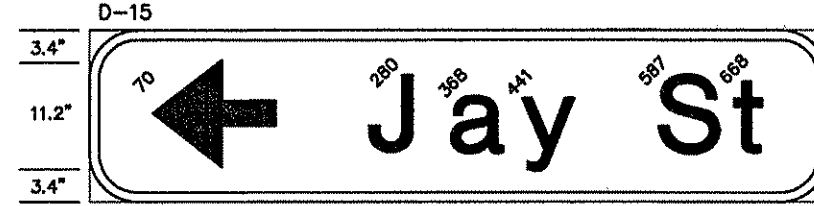
108"x18", 3"R, 1.0"B.
Line 1 91.2: 5-13 ARROW 180, 8"-6" E MOD.



108"x18", 3"R, 1.0"B.
Line 1 96.6: 8"-6" E MOD.



78"x18", 3"R, 1.0"B.
Line 1 63.8: 8"-6" E MOD., 5-13 ARROW 0



78"x18", 3"R, 1.0"B.
Line 1 63.8: 5-13 ARROW 180, 8"-6" E MOD.

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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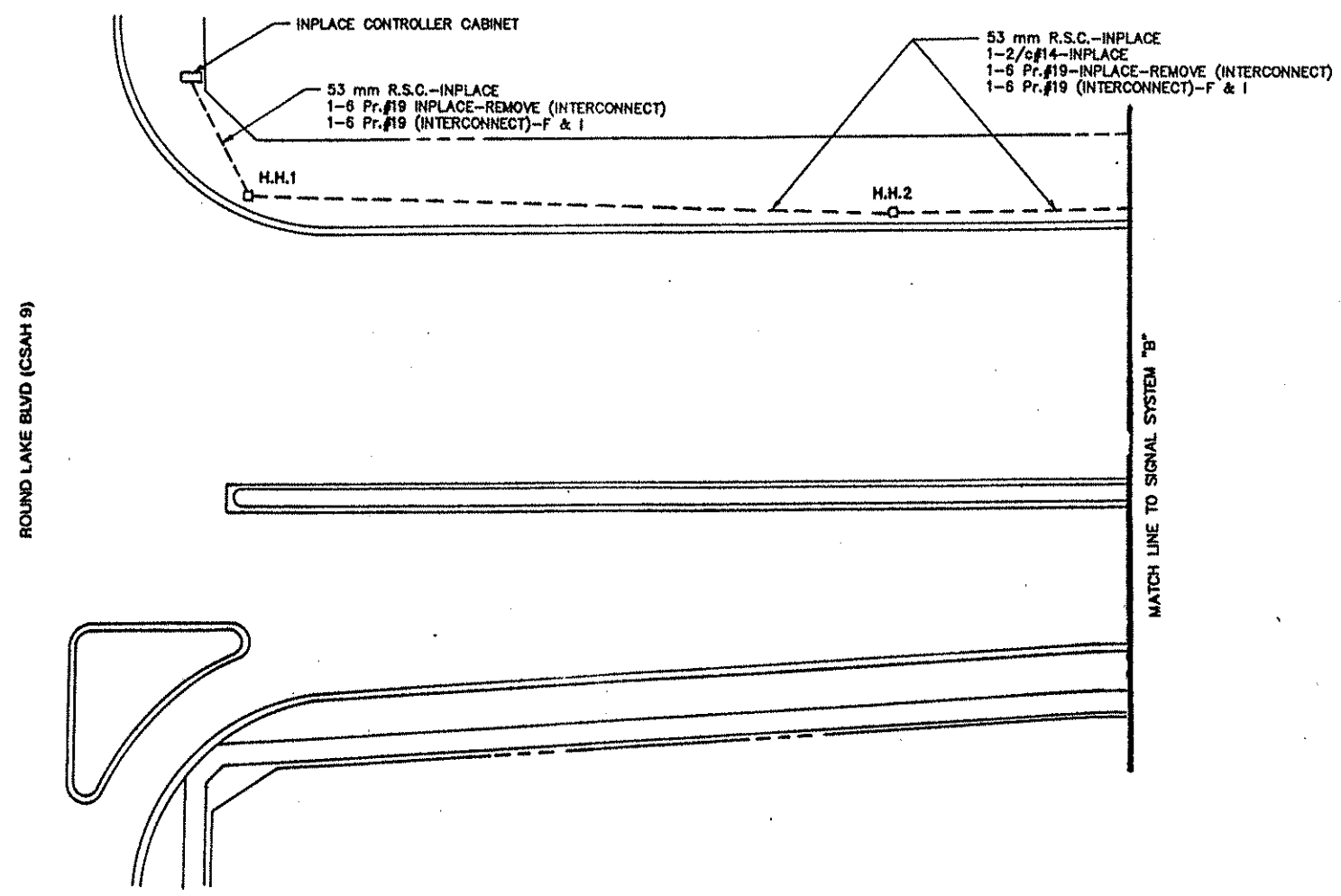
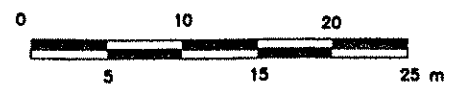
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEMS "B-E"
 TRAFFIC SIGNAL SIGNING DETAILS

FILE NO. ANOKC9808.01	129
DATE 3/15/99	230



NOTE: ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE NOTED BY EITHER REMOVE, OR BY F & I (INTERCONNECT WORK TO BE COMPLETED BY CONTRACTOR).

				I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.					ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 & 198-020-14	INPLACE SIGNAL SYSTEM "A" TRAFFIC SIGNAL INTERCONNECT BUNKER LAKE BLVD. (CSAH 116) AT ROUND LAKE BLVD (CSAH 9)	FILE NO.	130
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED	Date: 3/15/99				Reg. No. 22457	DATE

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- NOTES:**
- 1) LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. M8114A.
 - 5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - 6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - 7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL "HAND" PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
 - 8) SEE SPECIAL PROVISIONS REGARDING REMOVAL AND SALVAGING OF INPLACE SIGNAL SYSTEM (SEPARATE FROM ITEM NO. 2565.511).
 - 9) INPLACE ITEMS TO BE REUSED INPLACE AS PART OF NEW SIGNAL SYSTEM SHALL BE PROTECTED AND MAINTAINED INPLACE. SEE SPECIAL PROVISIONS.
 - 10) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - 11) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
 - 12) A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 1.8 m FROM THE LEFT END OF EACH MAST ARM (FOR EVP).
 - 13) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511.

N.M.C. LOOP DETECTORS				
NUMBER	SIZE (m)	LOCATION	FUNCTION	
D1-1	2-1.7 x 1.7	6 m & 15 m	1	
D1-2	2-1.7 x 1.7	1.5 m & 10.5 m	1	
D2-1	1.7 x 1.7	91 m	1	
D2-2	1.7 x 1.7	91 m	1	
D4-1	2-1.7 x 1.7	AS SHOWN	7	
D4-2	2-1.7 x 1.7	AS SHOWN	7	
D5-1	2-1.7 x 1.7	6 m & 15 m	1	
D5-2	2-1.7 x 1.7	1.5 m & 10.5 m	1	
D8-1	1.7 x 1.7	91 m	1	
D8-2	1.7 x 1.7	91 m	1	
DB-1	2-1.7 x 1.7	AS SHOWN	7	
DB-2	2-1.7 x 1.7	AS SHOWN	7	
DC-1	1.7 x 1.7	15 m	11	
DC-2	1.7 x 1.7	15 m	11	
DC-3	1.7 x 1.7	15 m	11	
DC-4	1.7 x 1.7	15 m	11	

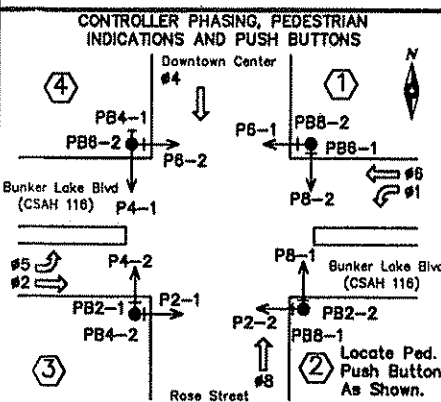
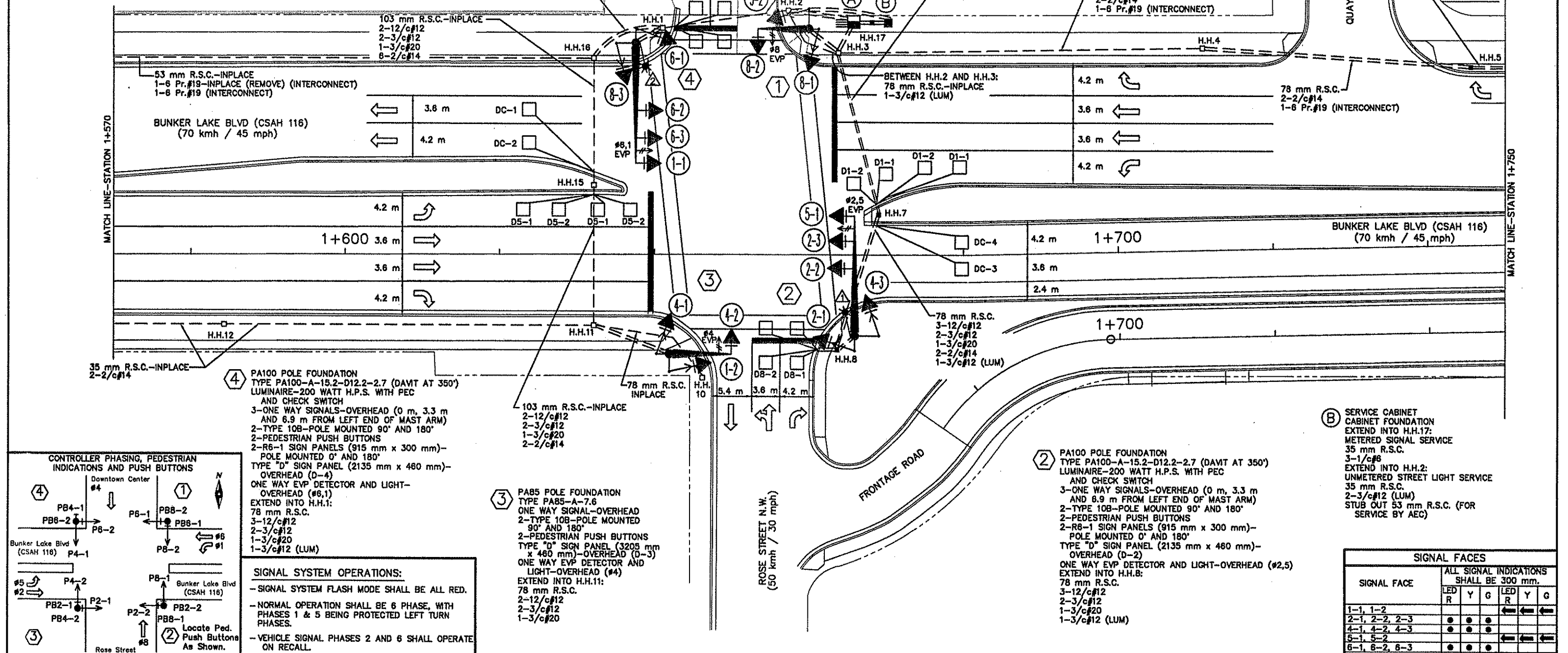
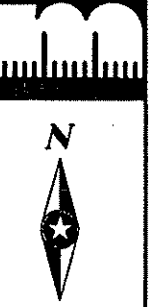
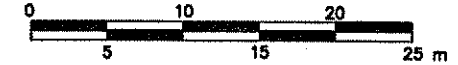
NOTE: LOCATION-DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

LOOP DETECTORS FUNCTIONS:

- 1) CALL AND EXTEND
- 2) CALL ONLY
- 3) EXTEND ONLY
- 4) CALL ONLY DENSITY
- 5) DELAYED CALL ONLY
- 6) DELAYED CALL ONLY DENSITY
- 7) DELAYED CALL-IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)
- 9) ADVISORY DETECTOR
- 10) SAMPLING DETECTOR
- 11) SPECIAL DETECTOR (COUNT)

- ① PA85 POLE FOUNDATION
 TYPE PA85-A-6.1
 ONE WAY SIGNAL-OVERHEAD
 2-TYPE 10B-POLE MOUNTED 90° AND 180°
 2-PEDESTRIAN PUSH BUTTONS
 TYPE "D" SIGN PANEL (3205 mm x 460 mm)-
 OVERHEAD (D-1)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8)
 EXTEND INTO H.H.3:
 78 mm R.S.C.
 2-12/c#12
 2-3/c#12
 1-3/c#20

- Ⓐ INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
 CABINET FOUNDATION
 EXTEND INTO H.H.17:
 METERED SIGNAL SERVICE
 35 mm R.S.C.
 3-1/c#8
 EXTEND INTO H.H.2:
 103 mm R.S.C.
 5-12/c#12
 4-3/c#12
 2-3/c#20
 8-2/c#14
 1-6 Pr.#19 (INTERCONNECT)
 EXTEND INTO H.H.3:
 103 mm R.S.C.
 5-12/c#12
 4-3/c#12
 2-3/c#20
 8-2/c#14
 1-6 Pr.#19 (INTERCONNECT)
 STUB OUT 1-53 mm R.S.C. AND 1-78 mm R.S.C. FROM CABINET TO WEST (THREAD AND CAP BOTH ENDS-FOR FUTURE USE)



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

- ③ PA85 POLE FOUNDATION
 TYPE PA85-A-7.6
 ONE WAY SIGNAL-OVERHEAD
 2-TYPE 10B-POLE MOUNTED 90° AND 180°
 2-PEDESTRIAN PUSH BUTTONS
 TYPE "D" SIGN PANEL (3205 mm x 460 mm)-OVERHEAD (D-3)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#4)
 EXTEND INTO H.H.11:
 78 mm R.S.C.
 2-12/c#12
 2-3/c#12
 1-3/c#20

- Ⓐ PA100 POLE FOUNDATION
 TYPE PA100-A-15.2-D12.2-2.7 (DAVIT AT 350')
 LUMINAIRE-200 WATT H.P.S. WITH PEC
 AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD (0 m, 3.3 m AND 6.9 m FROM LEFT END OF MAST ARM)
 2-TYPE 10B-POLE MOUNTED 90° AND 180°
 2-PEDESTRIAN PUSH BUTTONS
 2-R6-1 SIGN PANELS (915 mm x 300 mm)-POLE MOUNTED 0° AND 180°
 TYPE "D" SIGN PANEL (2135 mm x 460 mm)-OVERHEAD (D-4)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#6,1)
 EXTEND INTO H.H.1:
 78 mm R.S.C.
 3-12/c#12
 2-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)

- Ⓑ SERVICE CABINET CABINET FOUNDATION
 EXTEND INTO H.H.17:
 METERED SIGNAL SERVICE
 35 mm R.S.C.
 3-1/c#8
 EXTEND INTO H.H.2:
 UNMETERED STREET LIGHT SERVICE
 35 mm R.S.C.
 2-3/c#12 (LUM)
 STUB OUT 53 mm R.S.C. (FOR SERVICE BY AEC)

SIGNAL FACES						
SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 300 mm.					
	LED R	LED Y	LED G	LED R	LED Y	LED G
1-1, 1-2	•	•	•	•	•	•
2-1, 2-2, 2-3	•	•	•	•	•	•
4-1, 4-2, 4-3	•	•	•	•	•	•
5-1, 5-2	•	•	•	•	•	•
6-1, 6-2, 6-3	•	•	•	•	•	•
8-1, 8-2, 8-3	•	•	•	•	•	•

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

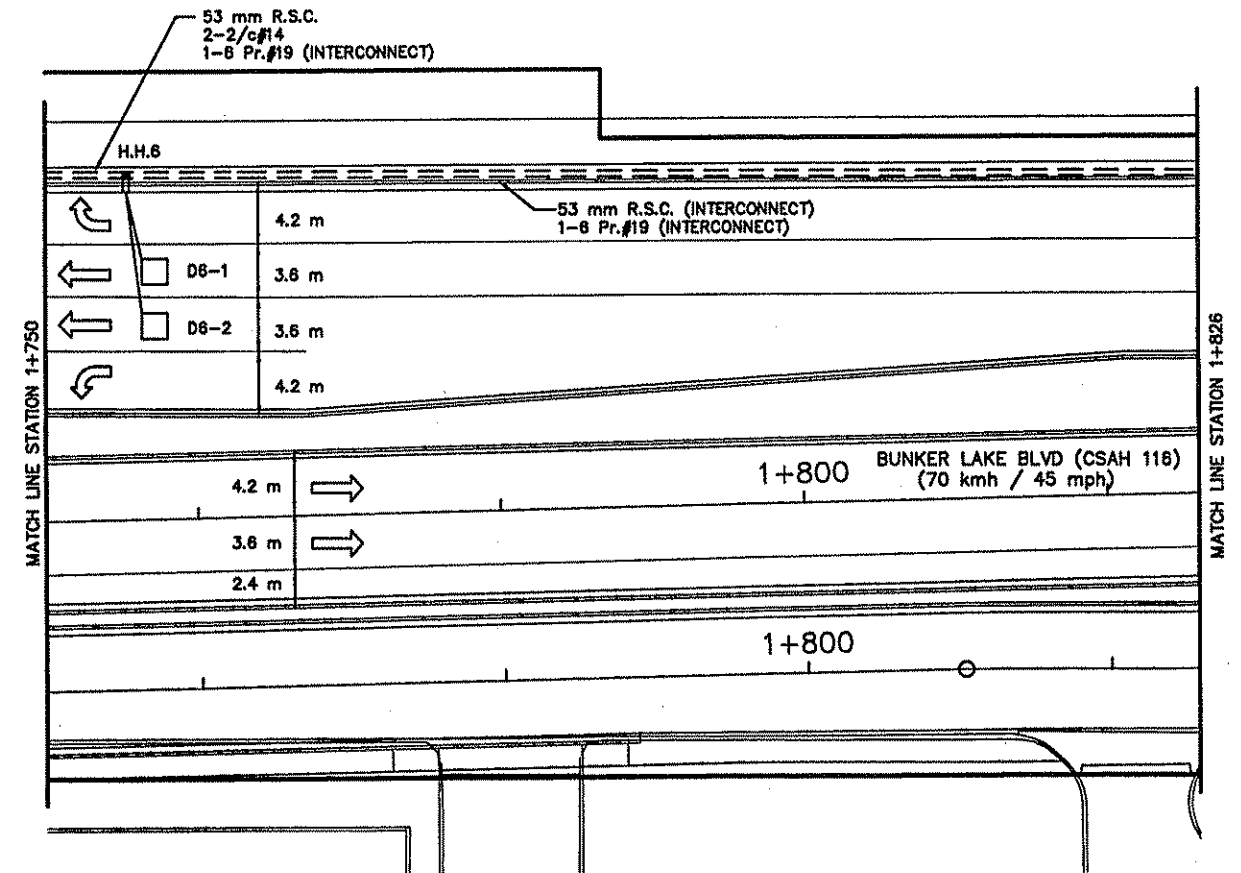
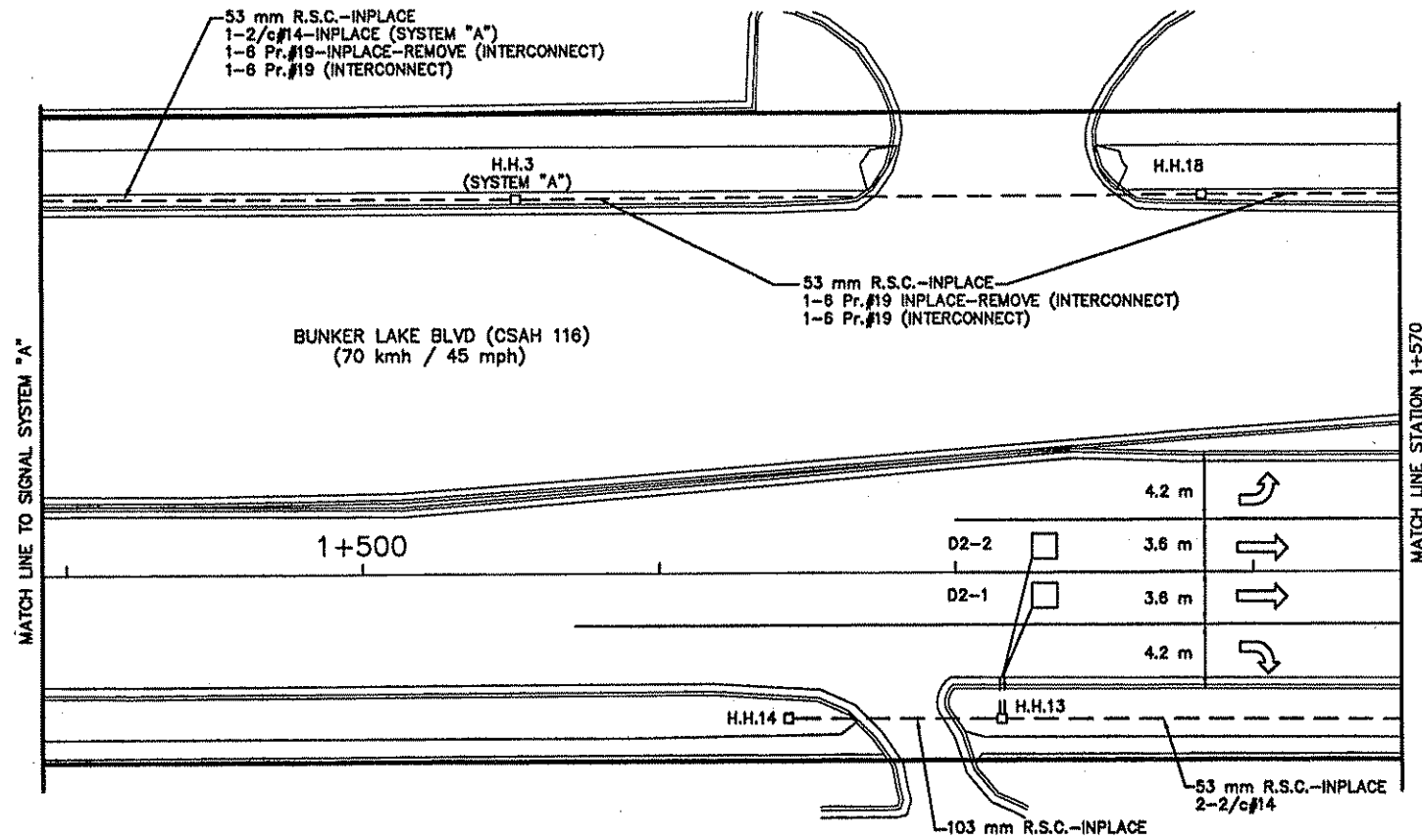
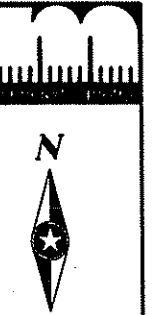
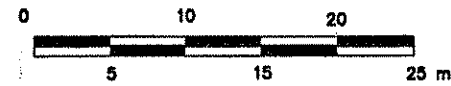
TRAFFIC SIGNAL SYSTEM "B"
 INTERSECTION LAYOUT
 BUNKER LAKE BLVD. (CSAH 116)
 AT DOWNTOWN CENTER ACCESS/ROSE STREET

FILE NO. ANOKC9806.01	131
DATE 3/15/99	230

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NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
John M. Jorg
 Date: 3/15/99 Reg. No. 22457

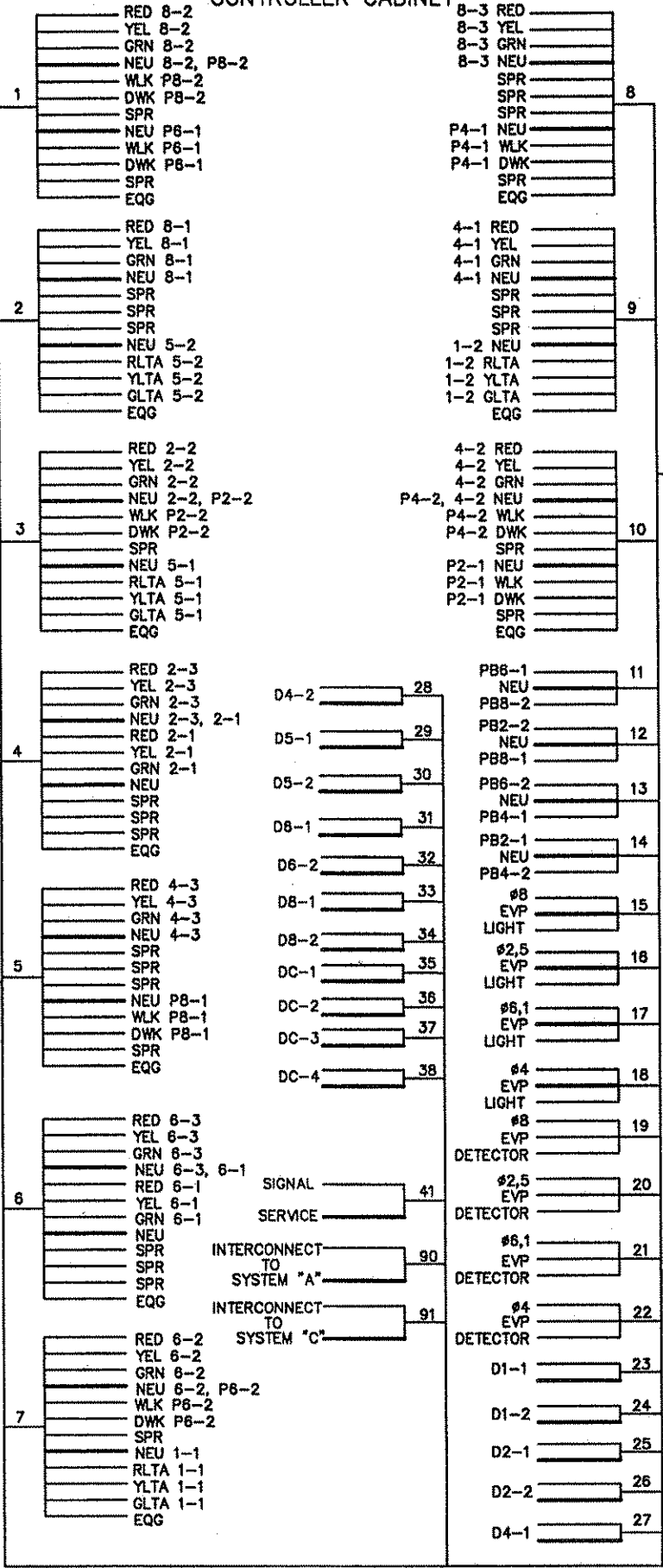


ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "B"
 MATCH LINES
 BUNKER LAKE BLVD. (CSAH 116) AT
 DOWNTOWN CENTER ACCESS/ROSE STREET

FILE NO. ANOKC9806.01	132
DATE 3/15/99	230

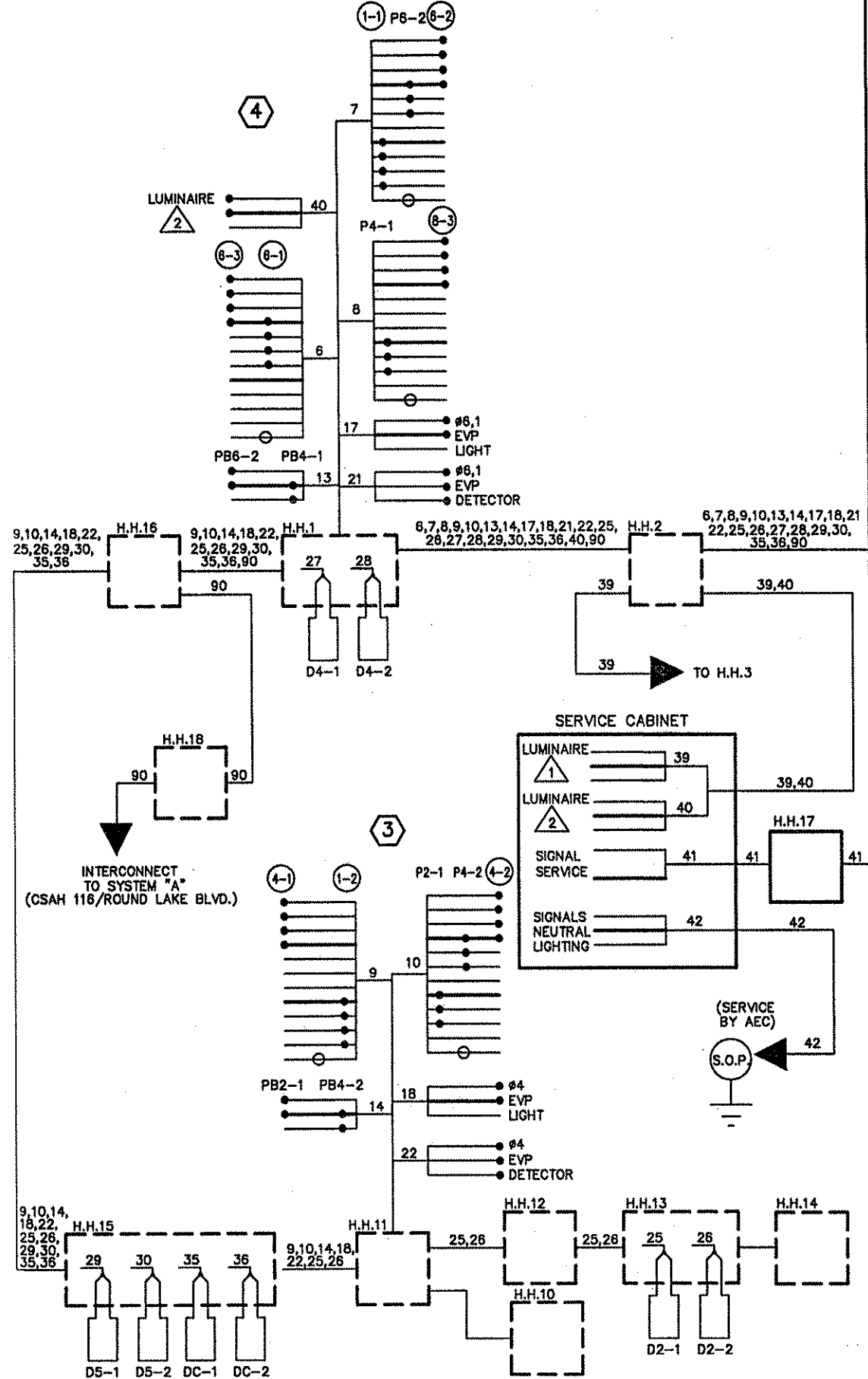
CONTROLLER CABINET



CONDUCTOR COLOR CODING

R	BLK	2-1/c#6
O	WH	
BL	WH	3/c#12
WH	R	
R/BLK	WH	
O/BLK	BLK	
BL/BLK	BLK	2/c#14
WH/BLK	BLK	
BLK/WH	CLEAR	
G/BLK	R OR O	
G	WH OR YEL	3/c#20
	BLK OR BL	

NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "B"
FIELD WIRING DIAGRAM
BUNKER LAKE BLVD. (CSAH 116) AT
DOWNTOWN CENTER ACCESS/ROSE STREET

FILE NO. ANOKC9806.01
DATE 3/15/99
133
230

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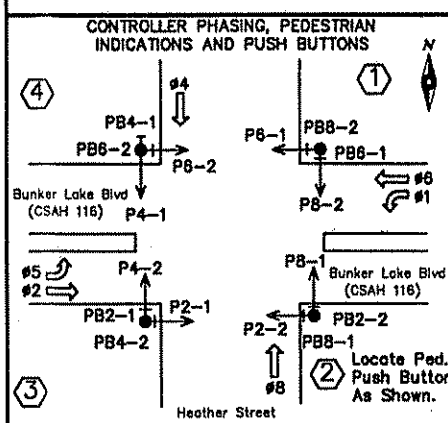
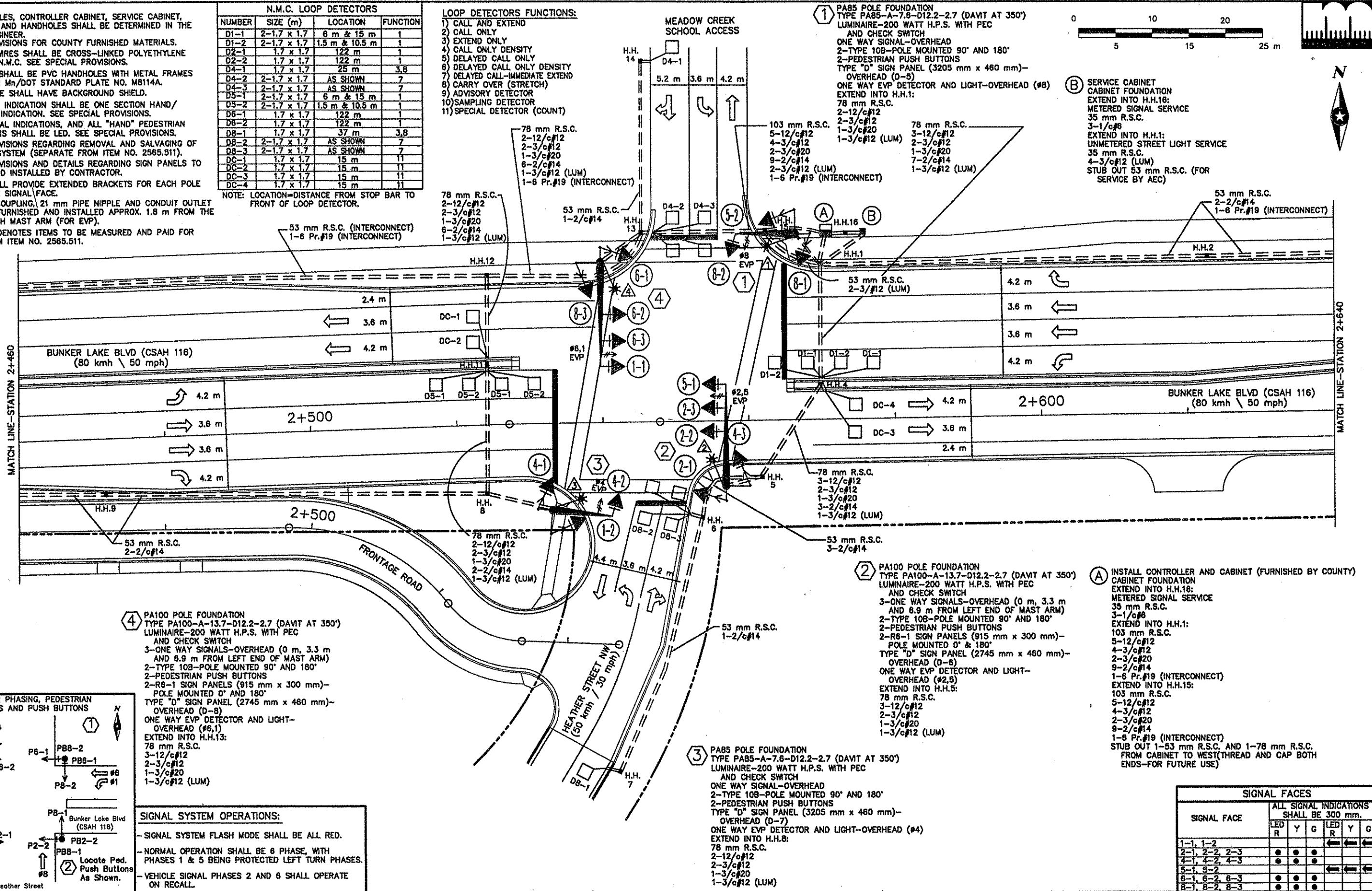
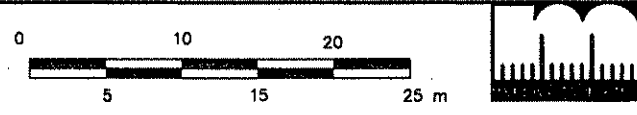
- NOTES:**
- 1) LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. M8114A.
 - 5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - 6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - 7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL "HAND" PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
 - 8) SEE SPECIAL PROVISIONS REGARDING REMOVAL AND SALVAGING OF INPLACE SIGNAL SYSTEM (SEPARATE FROM ITEM NO. 2565.511).
 - 9) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - 10) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
 - 11) A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 1.8 m FROM THE LEFT END OF EACH MAST ARM (FOR EVP).
 - 12) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511.

N.M.C. LOOP DETECTORS

NUMBER	SIZE (m)	LOCATION	FUNCTION
D1-1	2-1.7 x 1.7	8 m & 15 m	1
D1-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D2-1	1.7 x 1.7	122 m	1
D2-2	1.7 x 1.7	122 m	1
D4-1	1.7 x 1.7	25 m	3,8
D4-2	2-1.7 x 1.7	AS SHOWN	7
D4-3	2-1.7 x 1.7	AS SHOWN	7
D5-1	2-1.7 x 1.7	6 m & 15 m	1
D5-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D6-1	1.7 x 1.7	122 m	1
D6-2	1.7 x 1.7	122 m	1
D8-1	1.7 x 1.7	37 m	3,8
D8-2	2-1.7 x 1.7	AS SHOWN	7
D8-3	2-1.7 x 1.7	AS SHOWN	7
DC-1	1.7 x 1.7	15 m	11
DC-2	1.7 x 1.7	15 m	11
DC-3	1.7 x 1.7	15 m	11
DC-4	1.7 x 1.7	15 m	11

NOTE: LOCATION-DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

- LOOP DETECTORS FUNCTIONS:**
- 1) CALL AND EXTEND
 - 2) CALL ONLY
 - 3) EXTEND ONLY
 - 4) CALL ONLY DENSITY
 - 5) DELAYED CALL ONLY
 - 6) DELAYED CALL ONLY DENSITY
 - 7) DELAYED CALL-IMMEDIATE EXTEND
 - 8) CARRY OVER (STRETCH)
 - 9) ADVISORY DETECTOR
 - 10) SAMPLING DETECTOR
 - 11) SPECIAL DETECTOR (COUNT)



- 4 PA100 POLE FOUNDATION**
 TYPE PA100-A-13.7-D12.2-2.7 (DAVIT AT 350°)
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD (0 m, 3.3 m AND 8.9 m FROM LEFT END OF MAST ARM)
 2-TYPE 10B-POLE MOUNTED 90° AND 180°
 2-PEDESTRIAN PUSH BUTTONS
 2-R6-1 SIGN PANELS (915 mm x 300 mm)-POLE MOUNTED 0° AND 180°
 TYPE "D" SIGN PANEL (2745 mm x 460 mm)-OVERHEAD (D-8)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#6.1)
 EXTEND INTO H.H.13:
 78 mm R.S.C.
 3-12/c#12
 2-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)
- SIGNAL SYSTEM OPERATIONS:**
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
 - NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
 - VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.

[Signature]
 Date: 3/15/99 / Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "C"
 INTERSECTION LAYOUT
 BUNKER LAKE BLVD. (CSAH 116) AT HEATHER STREET

SIGNAL FACES

SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 300 mm.					
	LED	Y	G	LED	Y	G
1-1, 1-2						
2-1, 2-2, 2-3	•	•	•	•	•	•
4-1, 4-2, 4-3	•	•	•	•	•	•
5-1, 5-2						
6-1, 6-2, 6-3	•	•	•	•	•	•
8-1, 8-2, 8-3	•	•	•	•	•	•

FILE NO. ANOKC9806.01
 DATE 3/15/99
 134
 230

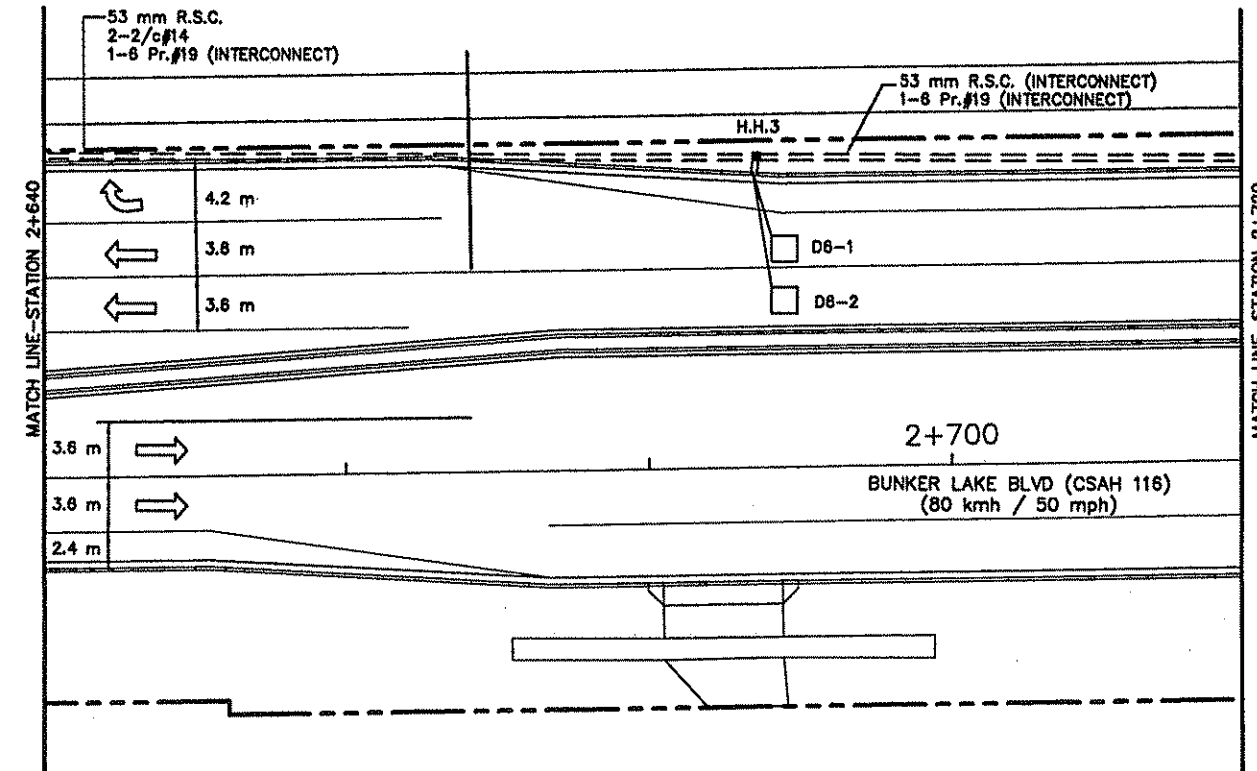
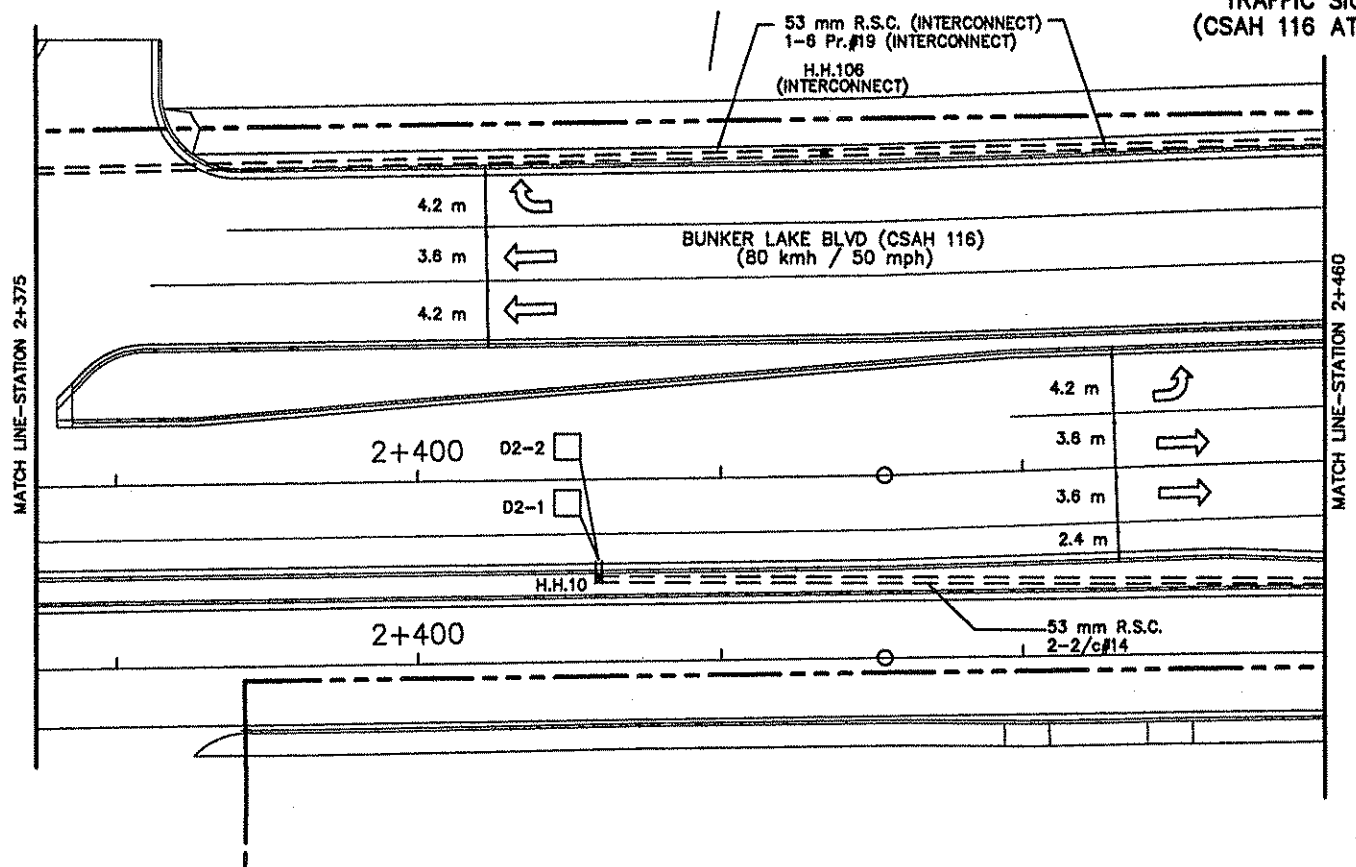
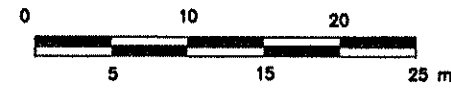
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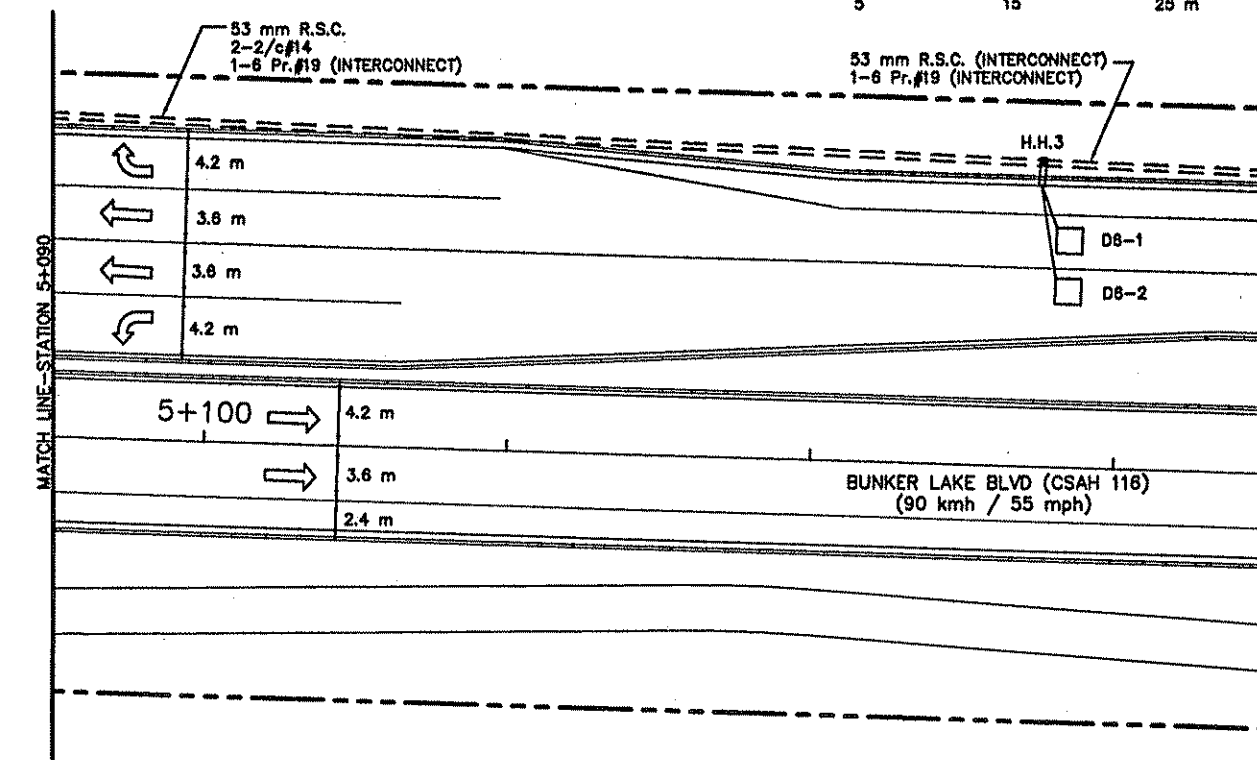
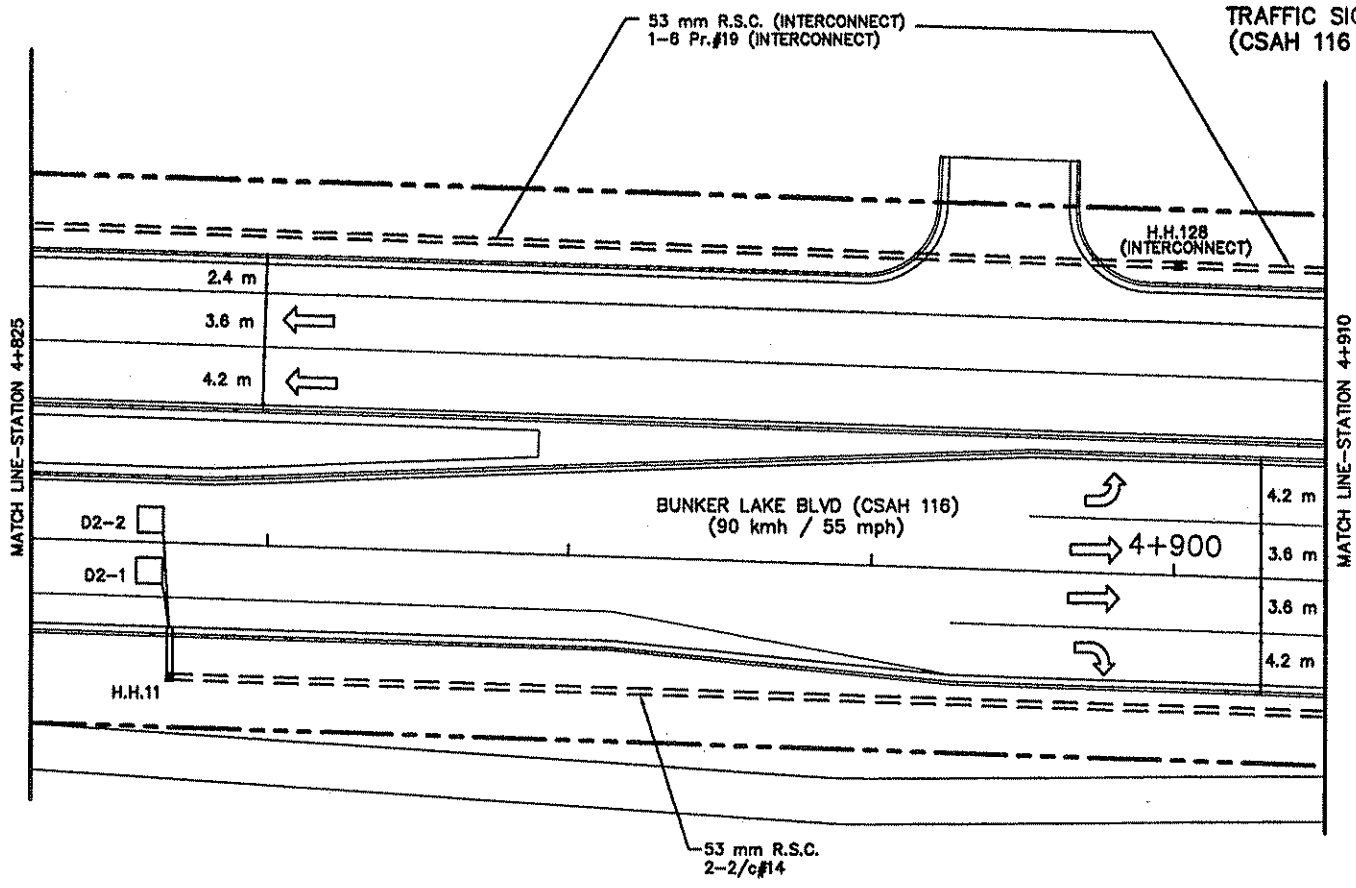
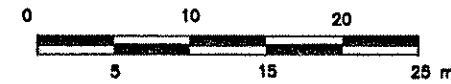
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TRAFFIC SIGNAL SYSTEM "C" (CSAH 116 AT HEATHER STREET)



TRAFFIC SIGNAL SYSTEM "E" (CSAH 116 AT JAY STREET)



I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.

[Signature]
Date: 3/15/99 Reg. No. 22457



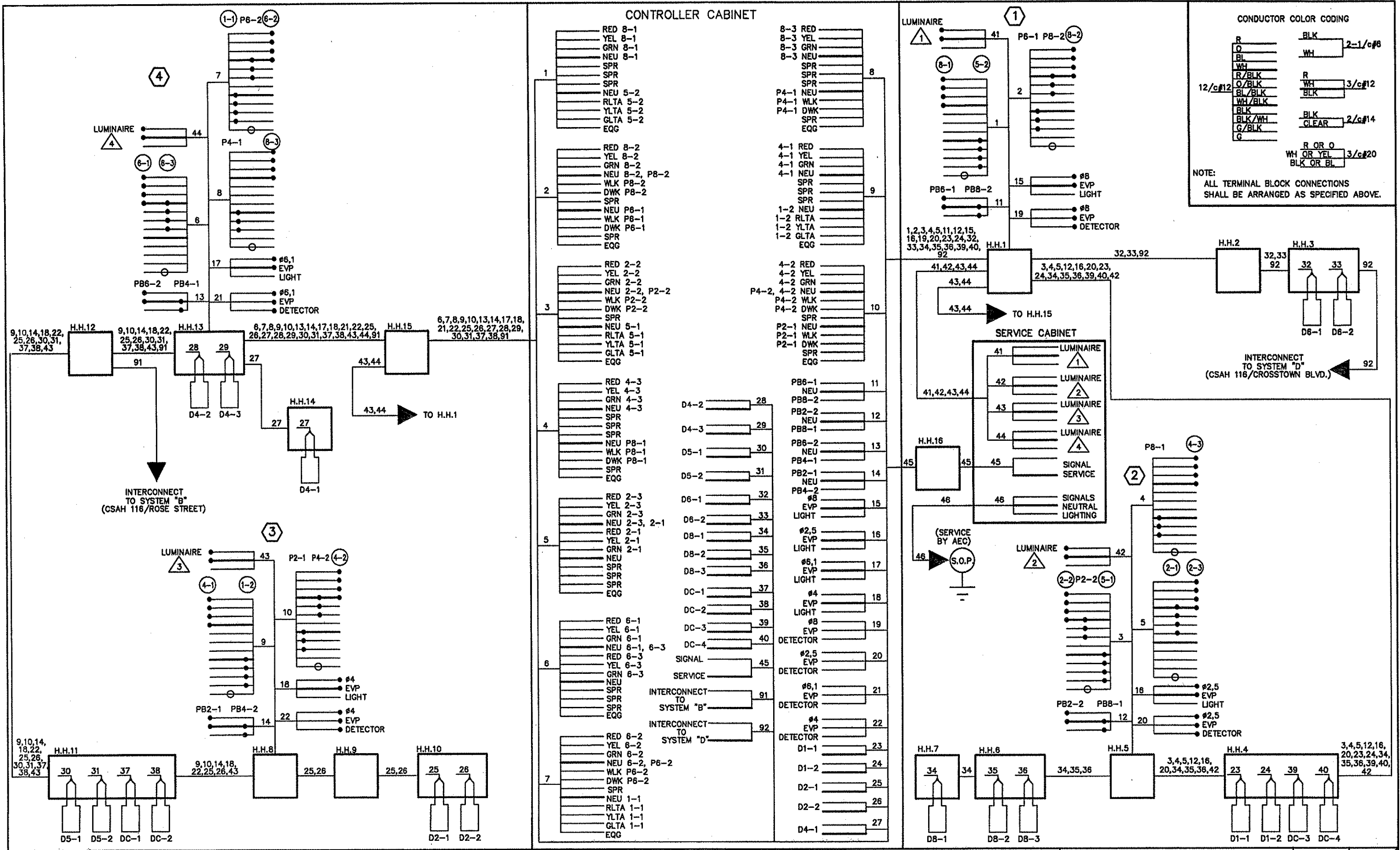
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

SIGNAL SYSTEM MATCH LINES
SIGNAL SYSTEMS "C" AND "E"

FILE NO.
ANOKC9806.01
DATE
3/15/99

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230

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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S. M. [Signature]
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "C"
FIELD WIRING DIAGRAM
BUNKER LAKE BLVD. (CSAH 116) AT HEATHER STREET

FILE NO. ANOKC9806.01 **136**
 DATE 3/15/99 **230**

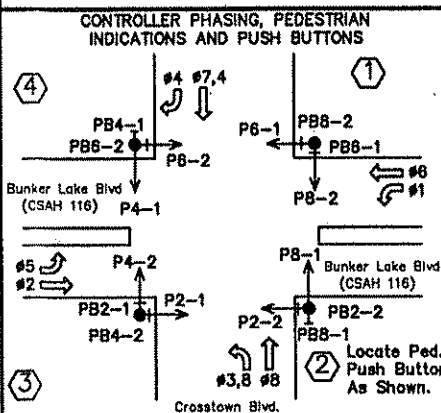
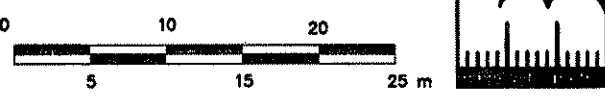
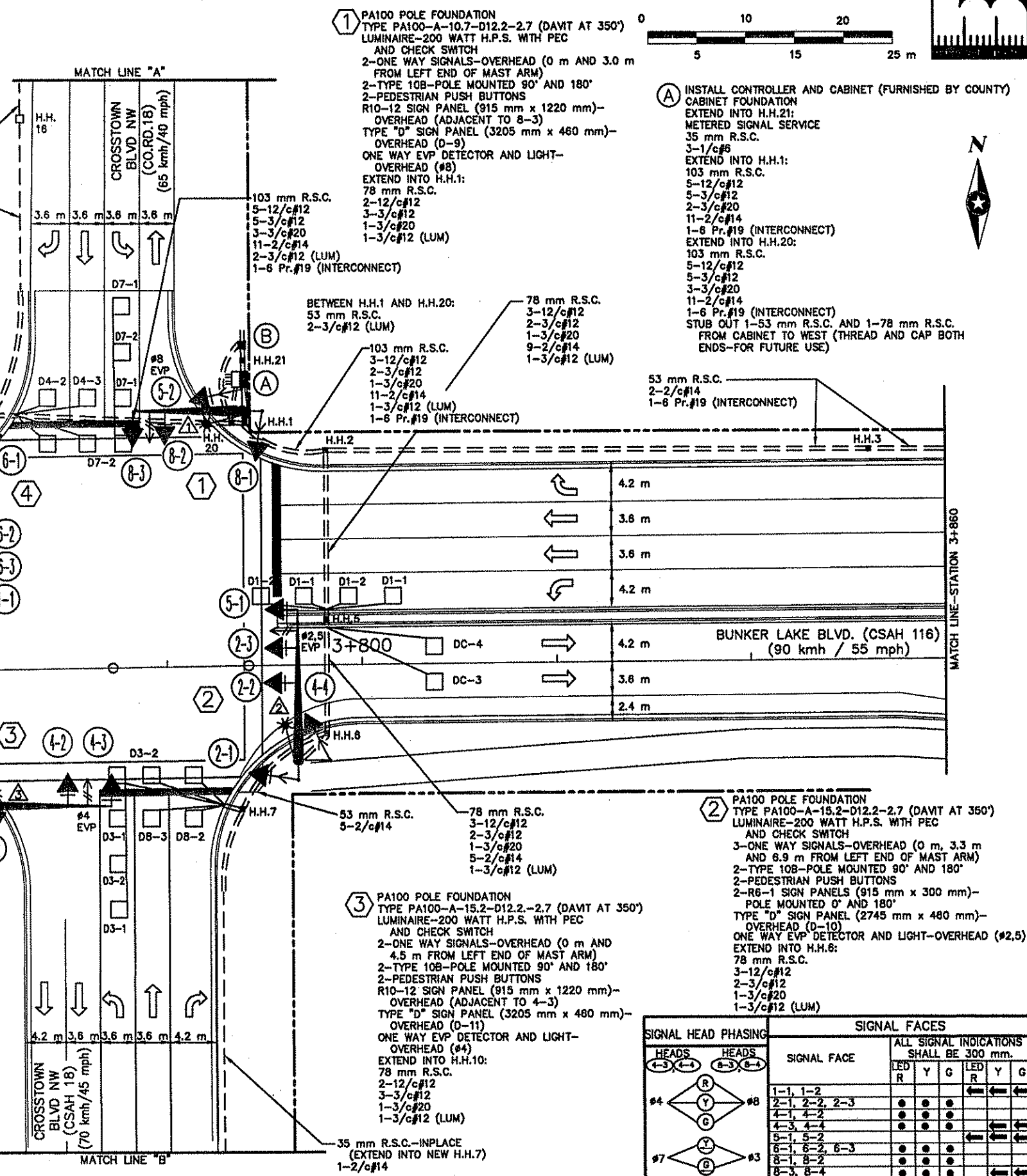
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- NOTES:**
- LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
 - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. M8114A.
 - EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - ALL VEHICLE SIGNAL INDICATIONS, AND ALL "HAND" PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
 - SEE SPECIAL PROVISIONS REGARDING REMOVAL AND SALVAGING OF INPLACE SIGNAL SYSTEM (SEPARATE FROM ITEM NO. 2565.511).
 - INPLACE ITEMS TO BE REUSED INPLACE AS PART OF NEW SIGNAL SYSTEM SHALL BE PROTECTED AND MAINTAINED INPLACE. SEE SPECIAL PROVISIONS.
 - SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
 - A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 1.8 m FROM THE LEFT END OF EACH MAST ARM (FOR EVP).
 - (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511.

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (m)	LOCATION	FUNCTION
D1-1	2-1.7 x 1.7	6 m & 15 m	1
D1-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D2-1	1.7 x 1.7	122 m	1
D2-2	1.7 x 1.7	122 m	1
D3-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
D3-2	2-1.7 x 1.7	1.5 m & 6 m	1
D4-1	1.7 x 1.7	91 m	3
D4-2	2-1.7 x 1.7	AS SHOWN	7
D4-3	2-1.7 x 1.7	AS SHOWN	1
D5-1	2-1.7 x 1.7	6 m & 15 m	1
D5-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D8-1	1.7 x 1.7	145 m	1
D8-2	1.7 x 1.7	145 m	1
D7-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
D7-2	2-1.7 x 1.7	1.5 m & 6 m	1
D8-1	1.7 x 1.7	91 m	3
D8-2	2-1.7 x 1.7	AS SHOWN	7
D8-3	2-1.7 x 1.7	AS SHOWN	1
DC-1	1.7 x 1.7	15 m	11
DC-2	1.7 x 1.7	15 m	11
DC-3	1.7 x 1.7	15 m	11
DC-4	1.7 x 1.7	15 m	11

- LOOP DETECTORS FUNCTIONS:**
- CALL AND EXTEND
 - CALL ONLY
 - EXTEND ONLY
 - CALL ONLY DENSITY
 - DELAYED CALL ONLY
 - DELAYED CALL ONLY DENSITY
 - DELAYED CALL-IMMEDIATE EXTEND
 - CARRY OVER (STRETCH)
 - ADVISORY DETECTOR
 - SAMPLING DETECTOR
 - SPECIAL DETECTOR (COUNT)

NOTE: LOCATION-DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 & 7 BEING PROTECTED/PERMISSIVE LEFT LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

(B) SERVICE CABINET
 CABINET FOUNDATION
 EXTEND INTO H.H.21:
 METERED SIGNAL SERVICE
 35 mm R.S.C.
 3-1/c#6
 EXTEND INTO H.H.20:
 UNMETERED STREET LIGHT SERVICE
 35 mm R.S.C.
 4-3/c#12 (LUM)
 STUB OUT 53 mm R.S.C. (FOR SERVICE BY AEC)

SIGNAL HEAD PHASING		SIGNAL FACES					
HEADS	HEADS	ALL SIGNAL INDICATIONS SHALL BE 300 mm.					
4-3	4-1	LED	Y	G	LED	Y	G
4-3	4-1						
4-3	4-1						
4-3	4-1						
4-3	4-1						
4-3	4-1						
4-3	4-1						

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
Sgt. M. J. [Signature]
 Date: 3/15/99 Reg. No. 22457

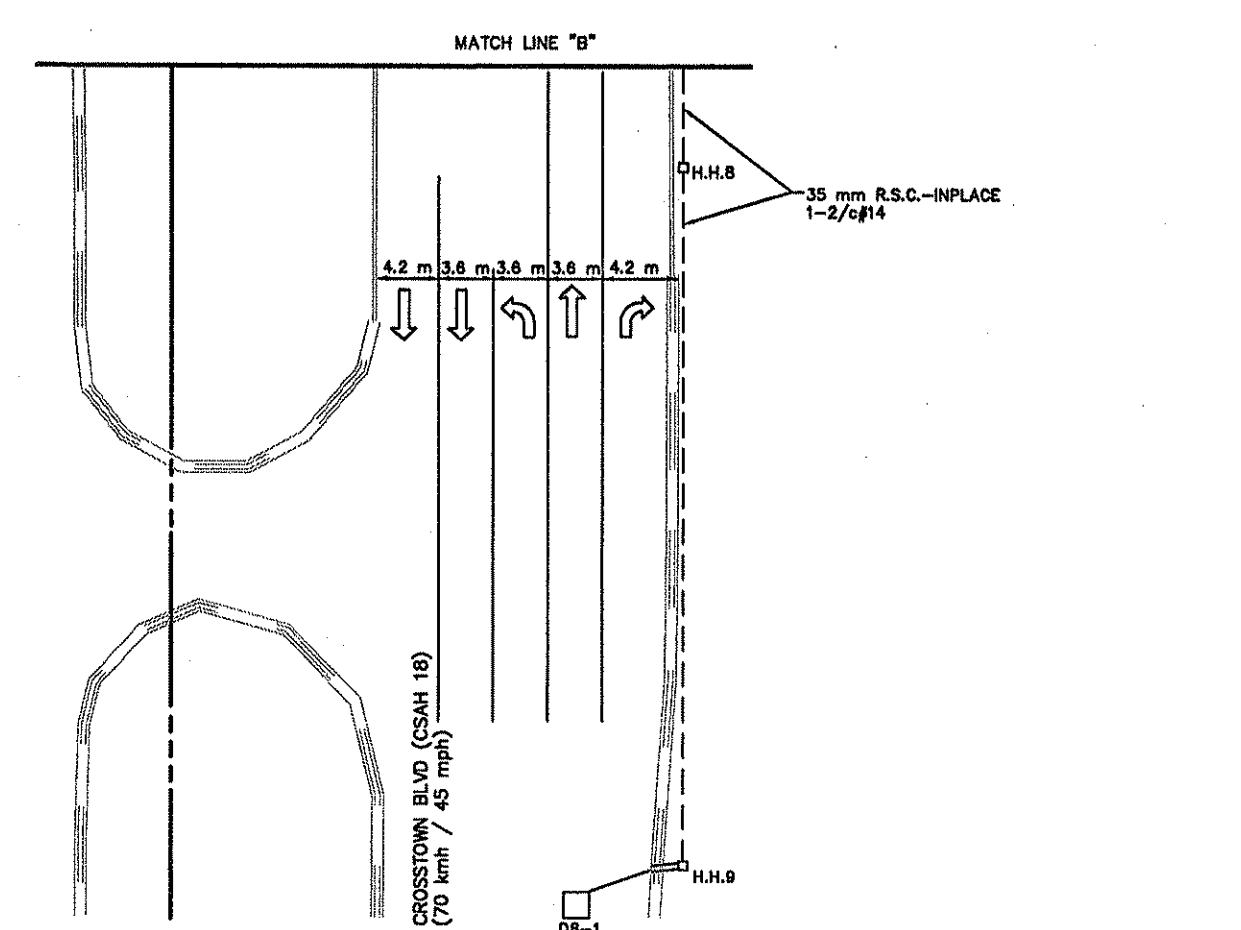
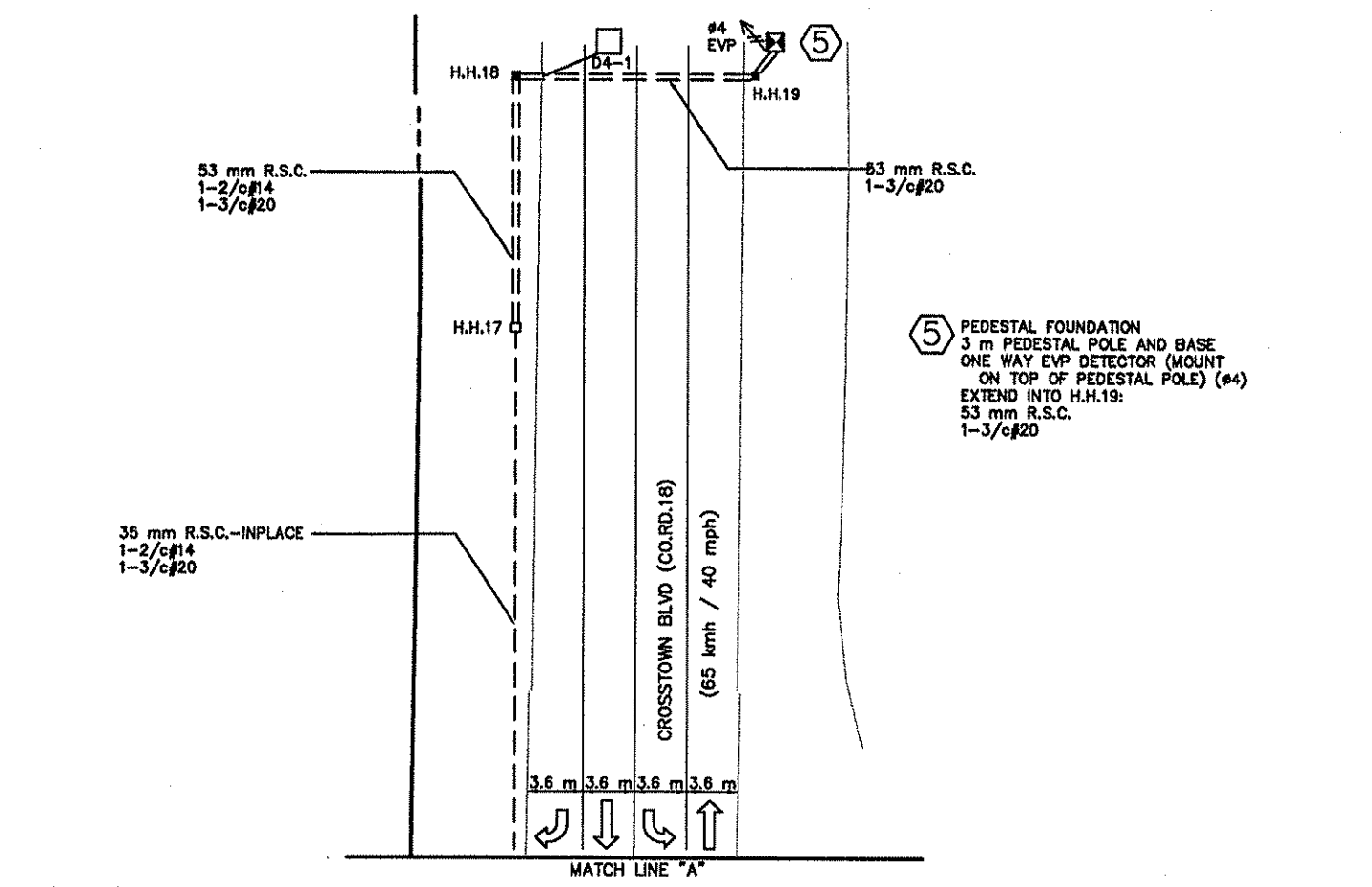
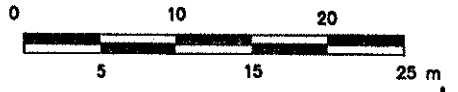
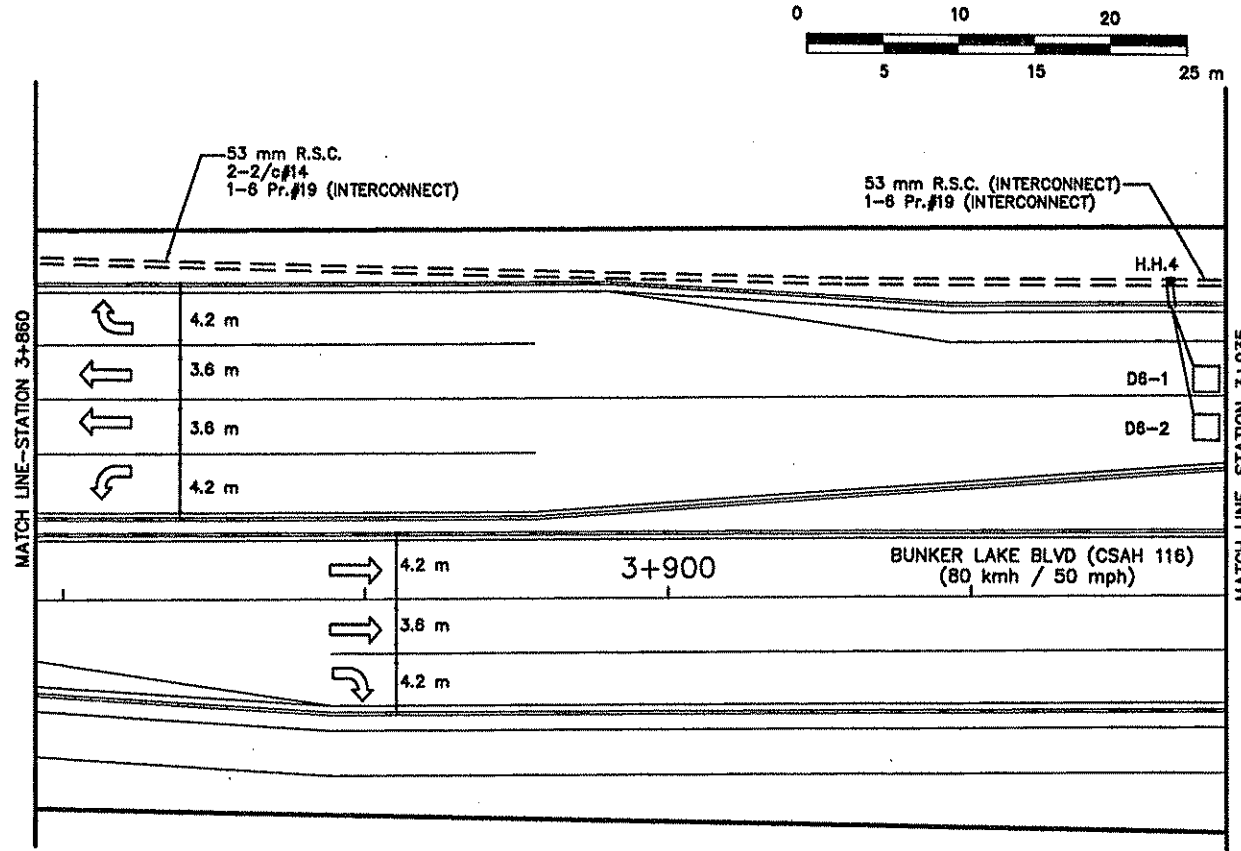
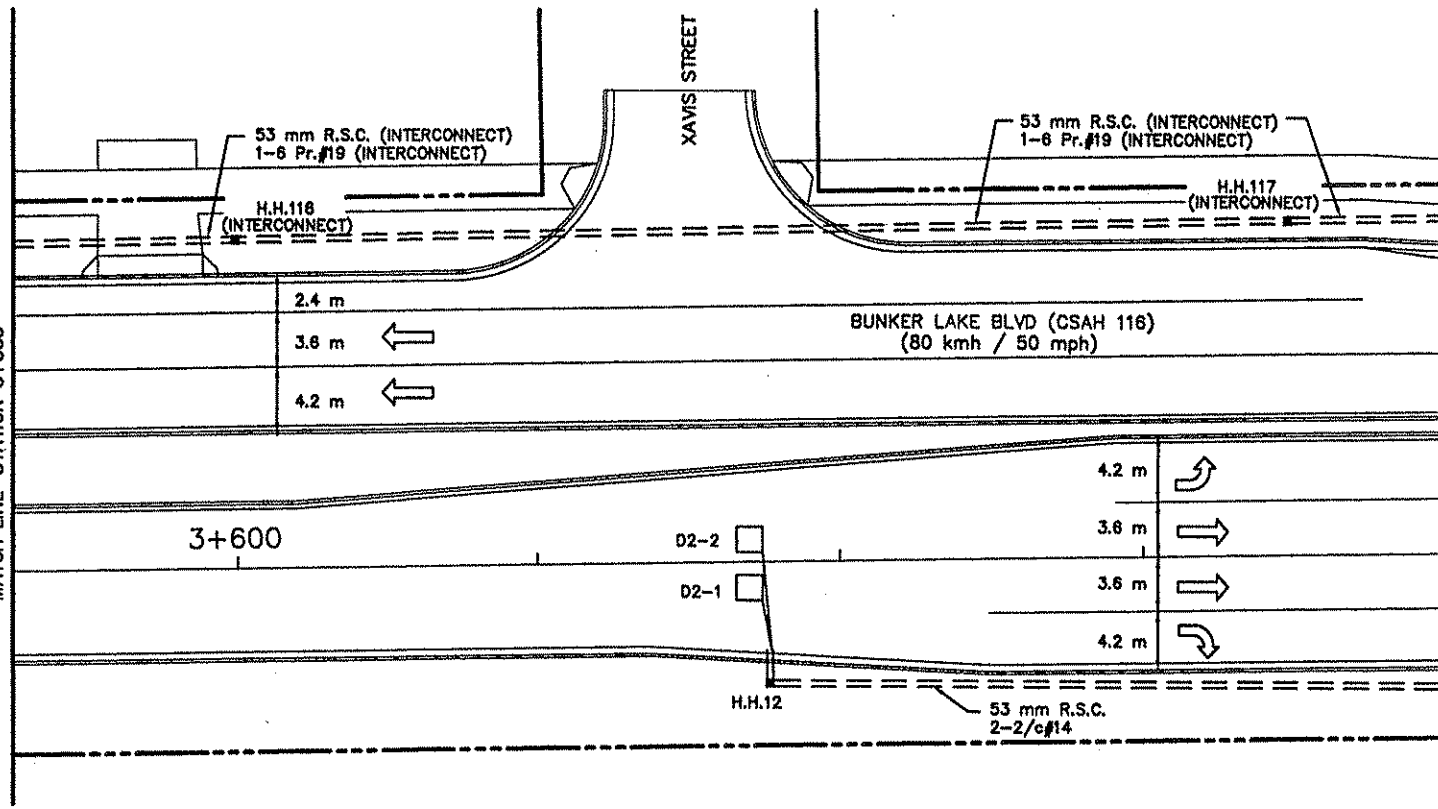


ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "D"
 INTERSECTION LAYOUT
 BUNKER LAKE BLVD. (CSAH 116) AT
 CROSTOWN BLVD. (CSAH 18/CO.RD.18)

FILE NO. ANOKC9806.01
 DATE 3/15/99
 137
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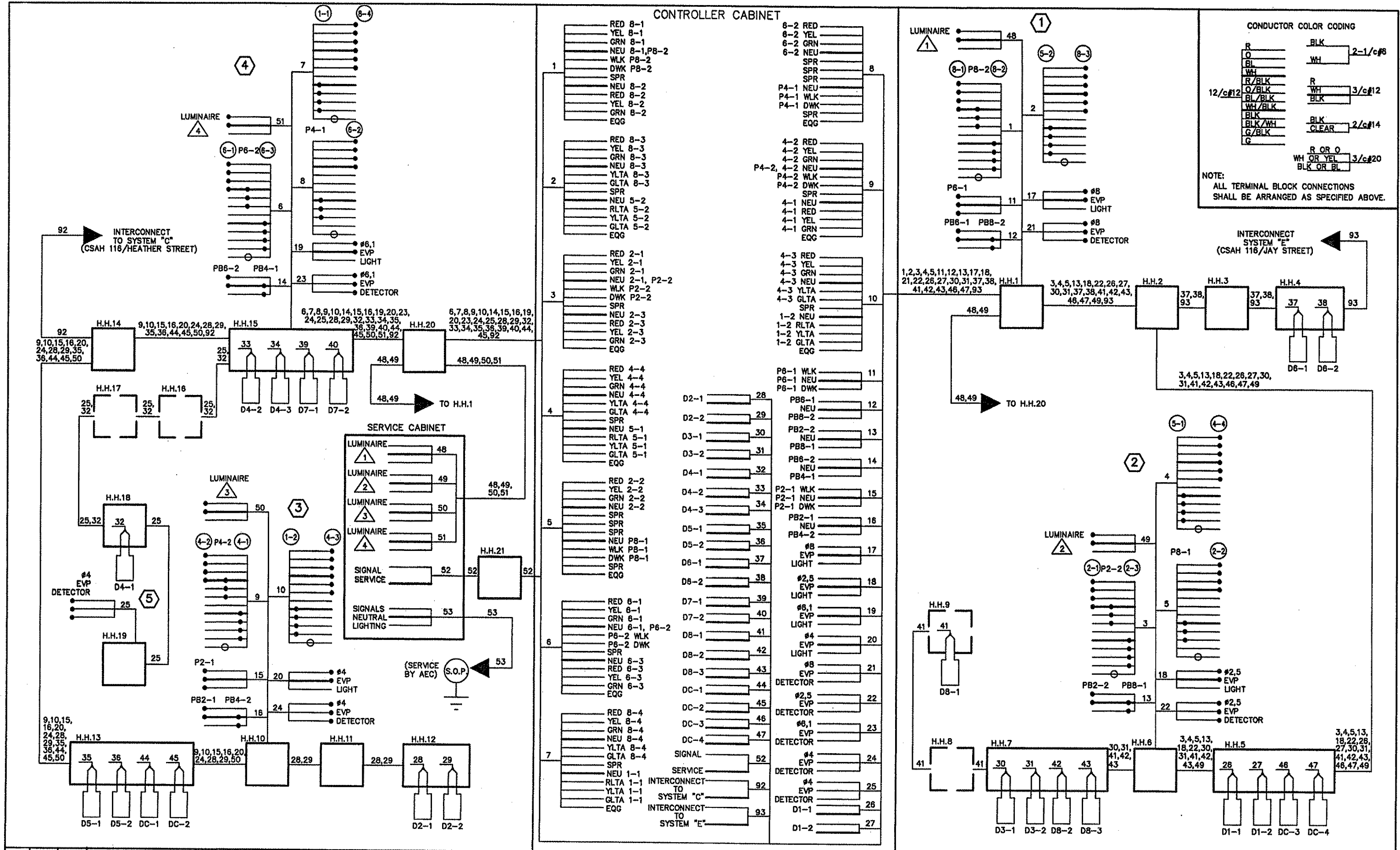
I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
John M. [Signature]
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "D"
 MATCH LINES
 BUNKER LAKE BLVD. (CSAH 116) AT
 CROSSTOWN BLVD. (CSAH 18/CO.RD.18)

FILE NO. ANOKC9806.01	138
DATE 3/15/99	230



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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[Signature]
Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "D"
FIELD WIRING DIAGRAM
BUNKER LAKE BLVD. (CSAH 116) AT
CROSSTOWN BLVD. (CSAH 18/CO. RD. 18)

FILE NO. ANOKC9806.01
DATE 3/15/99
139
230

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- NOTES:
- LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
 - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. M8114A.
 - EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - ALL VEHICLE SIGNAL INDICATIONS, AND ALL "HAND" PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
 - SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
 - A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 1.8 m FROM THE LEFT END OF EACH MAST ARM (FOR EVP).
 - (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2585.511.

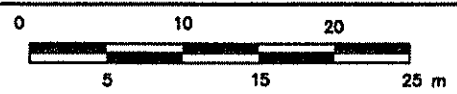
N.M.C. LOOP DETECTORS			
NUMBER	SIZE (m)	LOCATION	FUNCTION
D1-1	2-1.7 x 1.7	6 m & 15 m	1
D1-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D2-1	1.7 x 1.7	145 m	1
D2-2	1.7 x 1.7	145 m	1
D4-2	FUTURE	-	-
D4-3	FUTURE	-	-
D4-4	FUTURE	-	-
D5-1	2-1.7 x 1.7	6 m & 15 m	1
D5-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D8-1	1.7 x 1.7	145 m	1
D8-2	1.7 x 1.7	145 m	1
D8-1	1.7 x 1.7	37 m	3,8
D8-2	1.7 x 1.7	37 m	3,8
D8-3	2-1.7 x 1.7	AS SHOWN	7
D8-4	2-1.7 x 1.7	AS SHOWN	1
D8-5	2-1.7 x 1.7	AS SHOWN	1
DC-1	1.7 x 1.7	12.2 m	11
DC-2	1.7 x 1.7	12.2 m	11
DC-3	1.7 x 1.7	12.2 m	11
DC-4	1.7 x 1.7	12.2 m	11

NOTE: LOCATION-DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

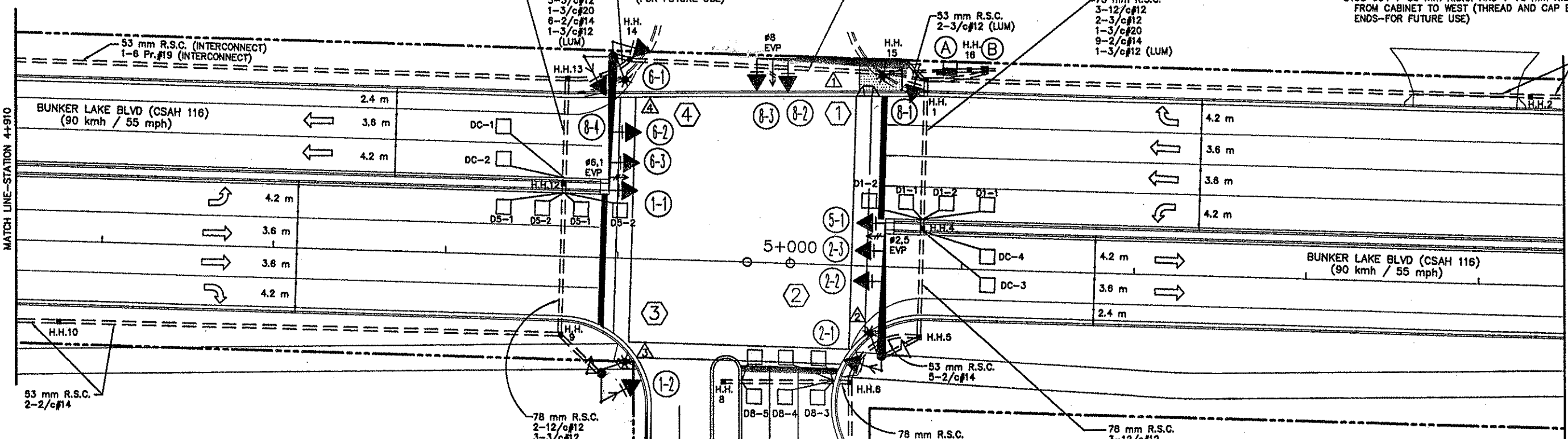
- LOOP DETECTORS FUNCTIONS:
- CALL AND EXTEND
 - CALL ONLY
 - EXTEND ONLY
 - CALL ONLY DENSITY
 - DELAYED CALL ONLY
 - DELAYED CALL ONLY DENSITY
 - DELAYED CALL-IMMEDIATE EXTEND
 - CARRY OVER (STRETCH)
 - ADVISORY DETECTOR
 - SAMPLING DETECTOR
 - SPECIAL DETECTOR (COUNT)

④ PA100 POLE FOUNDATION
 TYPE PA100-A-15.2-D12.2-2.7 (DAVIT AT 350°)
 LUMINAIRE-200 WATT H.P.S. WITH PEC
 AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD (0 m, 3.3 m AND 6.9 m FROM LEFT END OF MAST ARM)
 TYPE 10B-POLE MOUNTED 90°
 TYPE 10A-POLE MOUNTED 180°
 PEDESTRIAN PUSH BUTTON
 2-R6-1 SIGN PANELS (915 mm x 300 mm)-POLE MOUNTED 0° AND 180°
 TYPE "D" SIGN PANEL (1985 mm x 460 mm)-OVERHEAD (D-15)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8,1)
 EXTEND INTO H.H.14:
 78 mm R.S.C.
 2-12/c#12
 3-3/c#12
 1-3/c#20
 6-2/c#14
 1-3/c#12 (LUM)
 1-6 Pr.#19 (INTERCONNECT)

① PA100 POLE FOUNDATION
 TYPE PA100-A-18.8-D12.2-2.7 (DAVIT AT 350°)
 LUMINAIRE-200 WATT H.P.S. WITH PEC
 AND CHECK SWITCH
 2-ONE WAY SIGNALS-OVERHEAD (0 m AND 3.3 m FROM LEFT END OF MAST ARM)
 TYPE 10B-POLE MOUNTED 180°
 PEDESTRIAN PUSH BUTTON
 TYPE "D" SIGN PANEL (3205 mm x 460 mm)-OVERHEAD (D-13)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8)
 EXTEND INTO H.H.1:
 78 mm R.S.C.
 2-12/c#12
 2-3/c#12
 3-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)

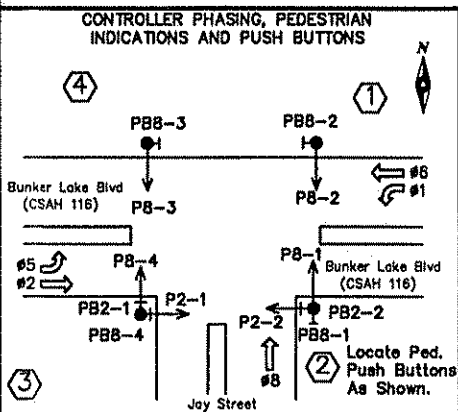


- ① INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
 CABINET FOUNDATION
 EXTEND INTO H.H.18:
 METERED SIGNAL SERVICE
 35 mm R.S.C.
 3-1/c#6
 EXTEND INTO H.H.1:
 103 mm R.S.C.
 5-12/c#12
 5-3/c#12
 2-3/c#20
 11-2/c#14
 1-6 Pr.#19 (INTERCONNECT)
 EXTEND INTO H.H.15:
 103 mm R.S.C.
 5-12/c#12
 5-3/c#12
 2-3/c#20
 9-2/c#14
 1-6 Pr.#19 (INTERCONNECT)
 STUB OUT 1-53 mm R.S.C. AND 1-78 mm R.S.C. FROM CABINET TO WEST (THREAD AND CAP BOTH ENDS-FOR FUTURE USE)



③ PA100 POLE FOUNDATION
 TYPE PA100-A-D12.2-2.7 MAST ARM POLE (DAVIT AT 350°)
 LUMINAIRE-200 WATT H.P.S. WITH PEC
 AND CHECK SWITCH
 TYPE 10B-POLE MOUNTED 90°
 TYPE 30A-POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS
 EXTEND INTO H.H.9:
 78 mm R.S.C.
 2-12/c#12
 3-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)

② PA100 POLE FOUNDATION
 TYPE PA100-A-15.2-D12.2-2.7 (DAVIT AT 350°)
 LUMINAIRE-200 WATT H.P.S. WITH PEC
 AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD (0 m, 3.3 m AND 6.9 m FROM LEFT END OF MAST ARM)
 TYPE 10B-POLE MOUNTED 90°
 TYPE 30A-POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS
 2-R6-1 SIGN PANELS (915 mm x 300 mm)-POLE MOUNTED 0° AND 180°
 TYPE "D" SIGN PANEL (1985 mm x 460 mm)-OVERHEAD (D-14)
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#2,5)
 EXTEND INTO H.H.5:
 78 mm R.S.C.
 3-12/c#12
 2-3/c#12
 1-3/c#20
 5-2/c#14
 1-3/c#12 (LUM)



SIGNAL SYSTEM OPERATIONS:
 - SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
 - NORMAL OPERATION SHALL BE 5 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
 - VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

SIGNAL FACES						
SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 300 mm.					
	LED R	Y	G	LED R	Y	G
1-1, 1-2				←	←	←
2-1, 2-2, 2-3	●	●	●	←	←	←
5-1				←	←	←
6-1, 6-2, 6-3	●	●	●			
8-1, 8-2, 8-3, 8-4	●	●	●			

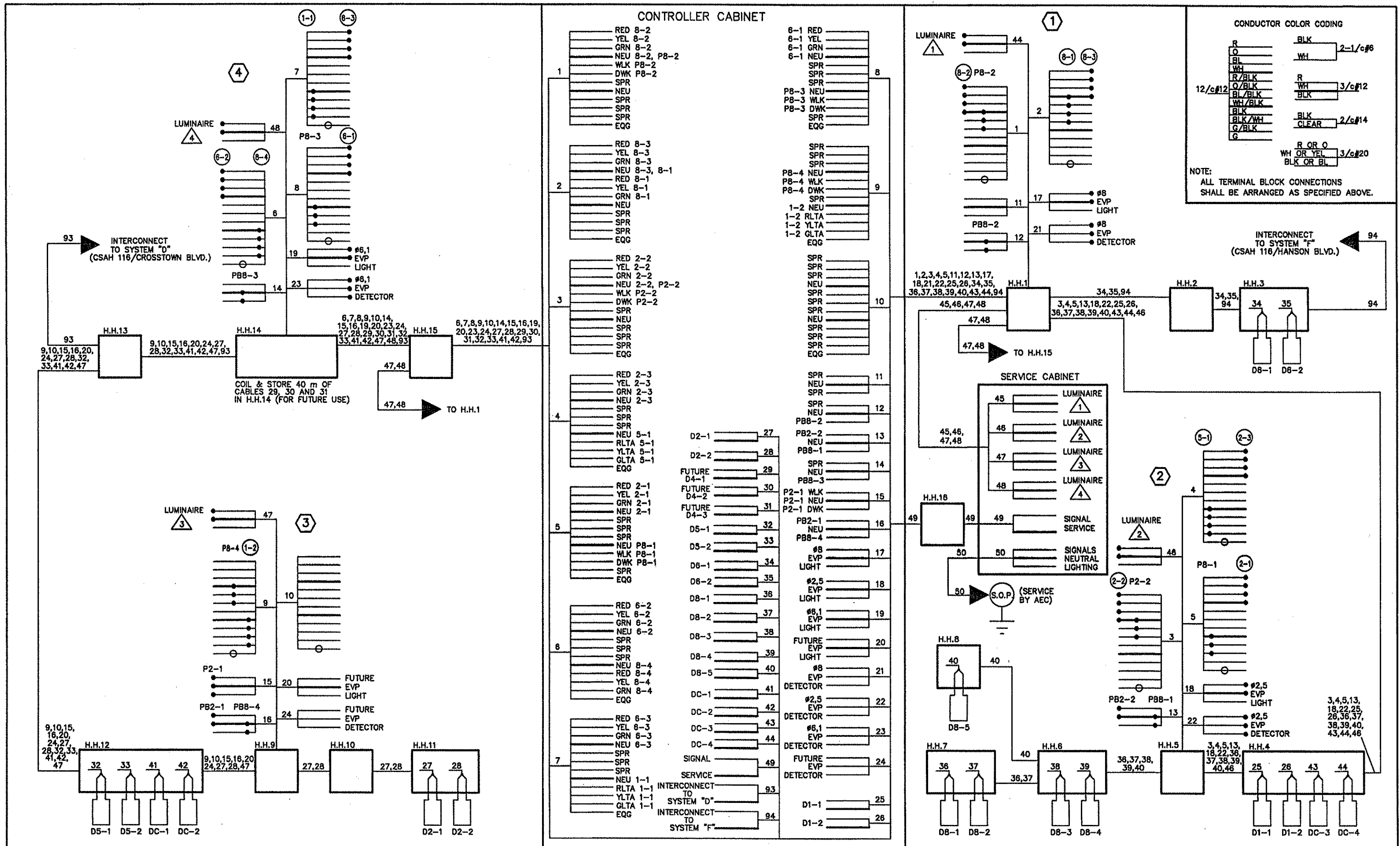
I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "E"
 INTERSECTION LAYOUT
 BUNKER LAKE BLVD. (CSAH 116) AT JAY STREET

FILE NO. ANOKC9806.01
 DATE 3/15/99
 140
 230



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I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.

John M. [Signature]
Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL SYSTEM "E"
FIELD WIRING DIAGRAM
BUNKER LAKE BLVD. (CSAH 116) AT JAY STREET

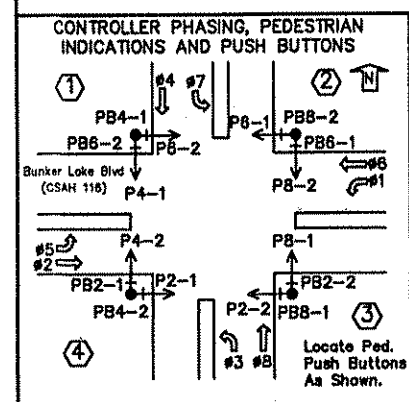
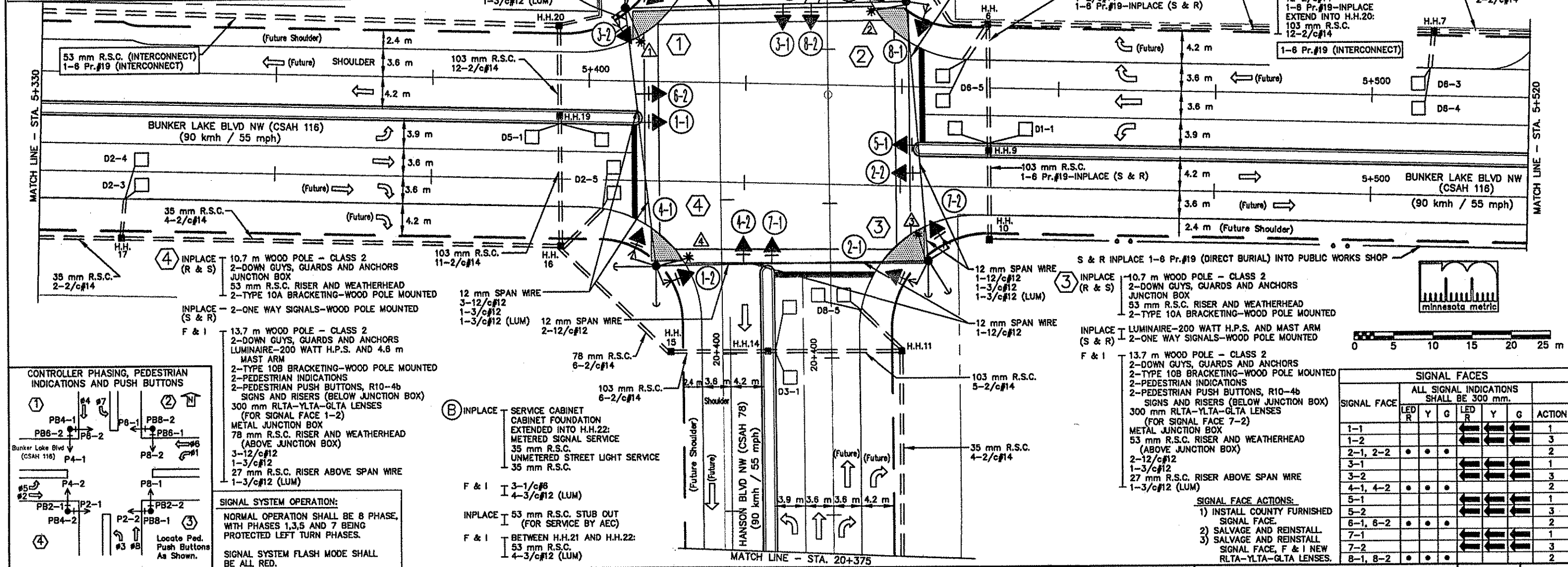
FILE NO. ANOKC9806.01
DATE 3/15/99
141
230

- NOTES:**
- 1) LOCATION OF POLES, FOUNDATIONS, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) ALL LOOP DETECTORS SHALL BE INSTALLED IN NON-METALLIC CONDUIT. SEE DETAILS AND SPECIAL PROVISIONS.
 - 3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER Mn/DOT STANDARD PLATE NO. MB114A.
 - 4) SEE SPECIAL PROVISIONS REGARDING REMOVING, SALVAGING AND/OR REINSTALLING INPLACE SIGNAL EQUIPMENT.
 - 5) SEE SPECIAL PROVISIONS REGARDING COUNTY FURNISHED MATERIALS.
 - 6) CONTRACTOR SHALL SALVAGE AND INSTALL INPLACE INTERCONNECT CABLE TO PROVIDE COMMUNICATION BETWEEN SIGNAL SYSTEM AND AN INPLACE COUNTY-OWNED TRAFFIC SIGNAL COMPUTER (LOCATED IN THE COUNTY'S PUBLIC WORKS SHOP).
 - 7) SEE DETAILS FOR WOOD POLE, PEDESTRIAN PUSH BUTTON AND SPAN WIRE MOUNTING DETAILS.
 - 8) CONTRACTOR SHALL FURNISH AND INSTALL NEW LED "RED" AND "RLTA" SIGNAL INDICATIONS FOR ALL COUNTY FURNISHED AND INPLACE VEHICLE SIGNAL FACES.
 - 9) ALL TRAFFIC SIGNAL CABLES AND CONDUCTORS, SPAN WIRE, CONDUIT AND HANDHOLES (EXCEPT AS NOTED) SHALL BE NEW, FURNISHED AND INSTALLED BY CONTRACTOR (REMOVE AND SALVAGE ALL EXISTING CABLES, CONDUCTORS, SPAN WIRE AS DIRECTED IN SPECIAL PROVISIONS).
 - 10) PEDESTRIAN INDICATIONS SHALL BE ONE SECTION HAND/WALKING PERSON INDICATIONS, WITH THE HAND INDICATION BEING LED. SEE SPECIAL PROVISIONS.
 - 11) (R & S) = ITEMS TO BE REMOVED AND SALVAGED BY CONTRACTOR.
(S & R) = ITEMS TO BE SALVAGED AND REINSTALLED BY CONTRACTOR.
(F & I) = ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
 - 12) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE, OR WILL BE COMPLETED BY OTHERS AT NO EXPENSE TO CONTRACTOR, EXCEPT FOR ITEMS BOXED IN AND DENOTED FOR INTERCONNECT.
 - 13) CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING 1-8 Pr. #19 INTERCONNECT CABLE BETWEEN SYSTEM "D" AND SYSTEM "E", AS PART OF BUNKER LAKE BOULEVARD RECONSTRUCTION.

LOOP DETECTORS (N.M.C.)			
NUMBER	SIZE (m)	LOCATION	FUNCTION
D1-1	2-1.7x1.7	3 m x 12 m	1
D2-1	1.7x1.7	125 m	3
D2-2	1.7x1.7	125 m	3
D2-3	1.7x1.7	82 m	4
D2-4	1.7x1.7	82 m	4
D2-5	2-1.7x1.7	1.5 m	2
D3-1	2-1.7x1.7	3 m x 12 m	1
D4-1	1.7x1.7	125 m	3
D4-2	1.7x1.7	125 m	3
D4-3	1.7x1.7	82 m	4
D4-4	1.7x1.7	82 m	4
D4-5	2-1.7x1.7	1.5 m	2
D5-1	2-1.7x1.7	3 m x 12 m	1
D8-1	1.7x1.7	125 m	3
D8-2	1.7x1.7	125 m	3
D8-3	1.7x1.7	62 m	4
D8-4	1.7x1.7	62 m	4
D8-5	2-1.7x1.7	1.5 m	2
D7-1	2-1.7x1.7	3 m x 12 m	1
D8-1	1.7x1.7	125 m	3
D8-2	1.7x1.7	125 m	3
D8-3	1.7x1.7	62 m	4
D8-4	1.7x1.7	62 m	4
D8-5	2-1.7x1.7	1.5 m	2

- FUNCTIONS:**
- 1) CALL AND EXTEND
 - 2) CALL ONLY
 - 3) EXTEND ONLY
 - 4) CALL ONLY DENSITY

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.



SIGNAL SYSTEM OPERATION:

NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1,3,5 AND 7 BEING PROTECTED LEFT TURN PHASES.

SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.

SIGNAL FACES							
ALL SIGNAL INDICATIONS SHALL BE 300 mm.							
SIGNAL FACE	LED R	Y	G	LED R	Y	G	ACTION
1-1				←	←	←	1
1-2				←	←	←	3
2-1, 2-2	•	•	•	←	←	←	2
3-1				←	←	←	1
3-2				←	←	←	3
4-1, 4-2	•	•	•	←	←	←	2
5-1				←	←	←	1
5-2				←	←	←	3
6-1, 6-2	•	•	•	←	←	←	2
7-1				←	←	←	1
7-2				←	←	←	3
8-1, 8-2	•	•	•	←	←	←	2

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.

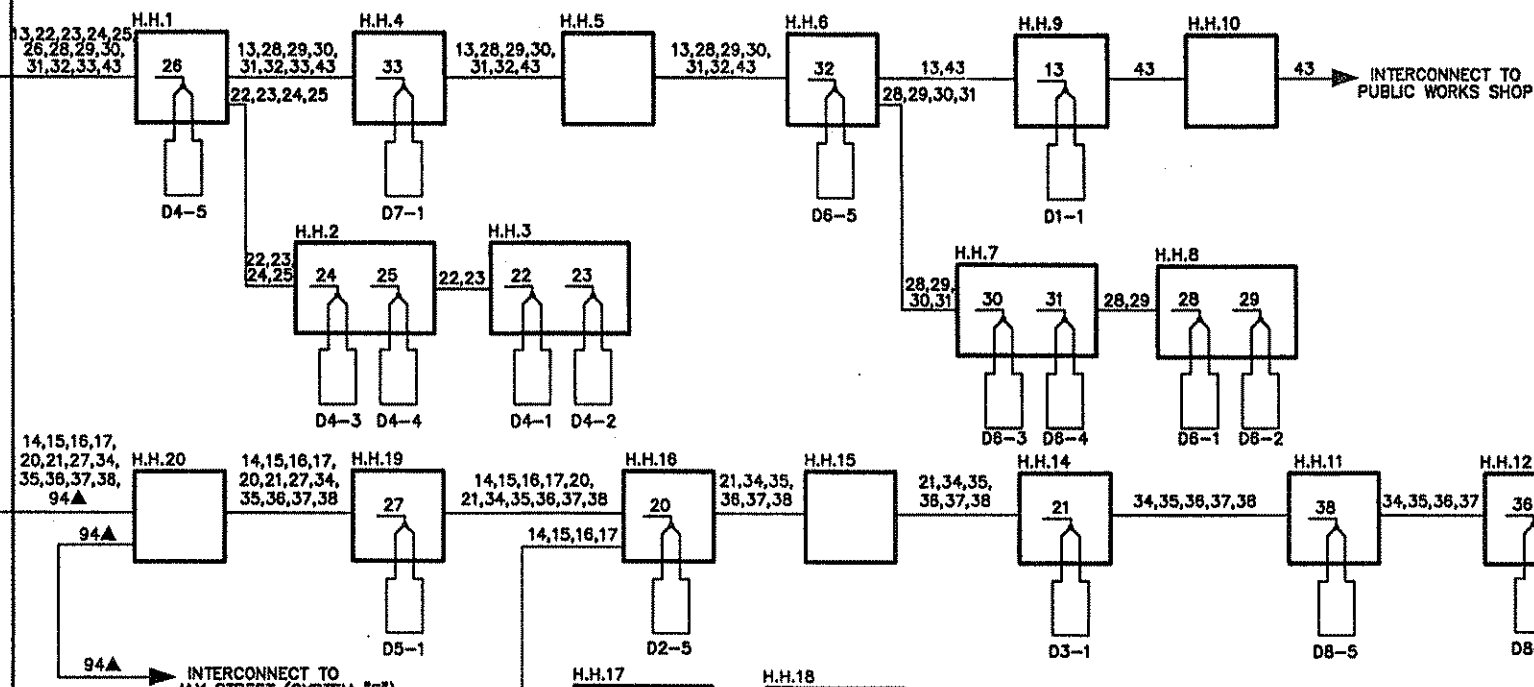
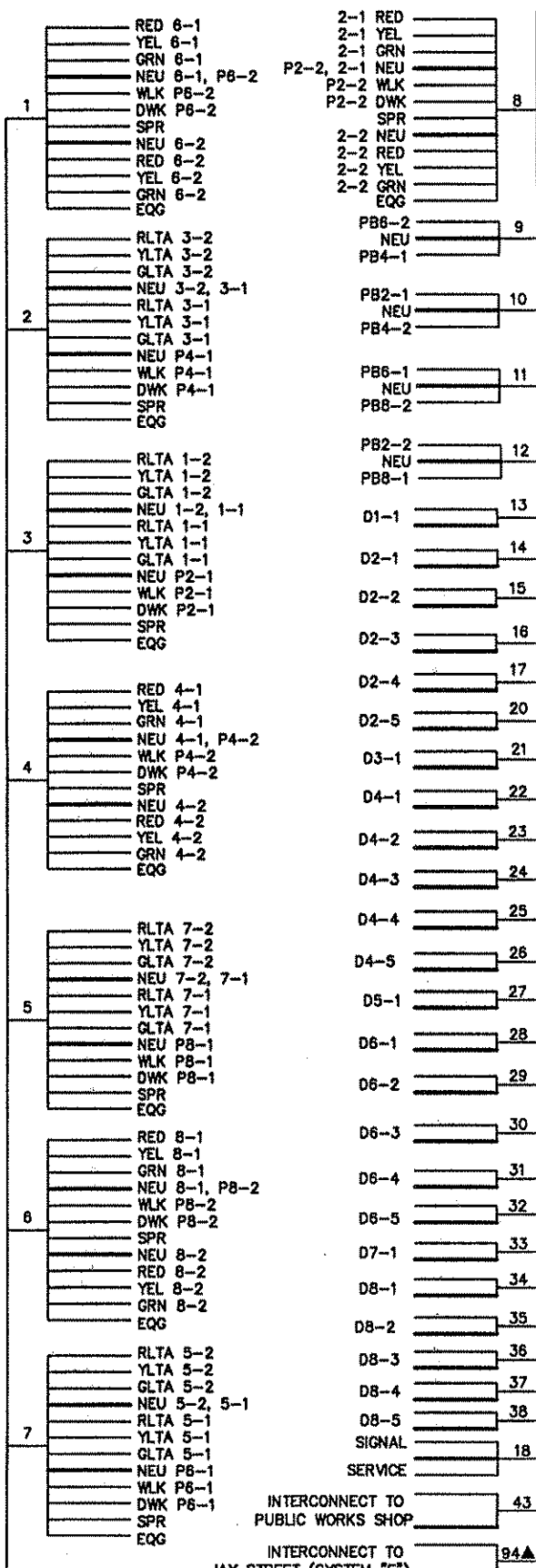
Date: 3/15/99 Reg. No. 22457

ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

INPLACE SIGNAL SYSTEM "F"
TRAFFIC SIGNAL INTERCONNECT
BUNKER LAKE BLVD. (CSAH 116)
AT HANSON BLVD (CSAH 78)

FILE NO. ANOKC9806.01 **142**
DATE 3/15/99 **230**

CONTROLLER AND CABINET



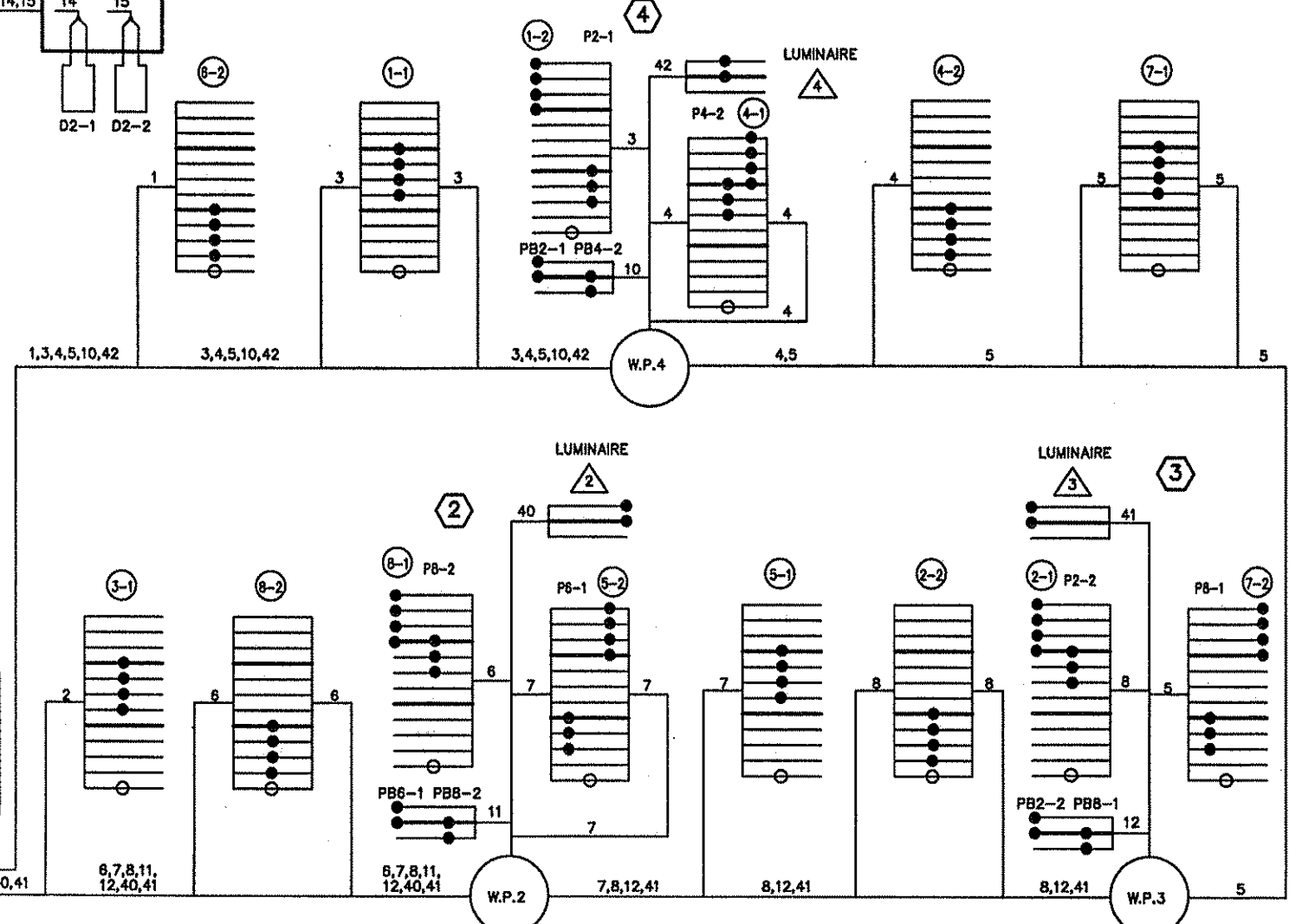
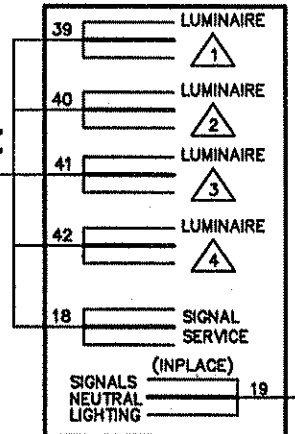
CONDUCTOR COLOR CODING

R	BLK	2-1/c#10
O	WH	
BL		
WH		
R/BLK	R	3/c#12
O/BLK	WH	
BL/BLK	BLK	
WH/BLK		
BLK	BLK	2/c#14
BLK/WH	CLEAR	
G/BLK		
G		
R OR O		3/c#20
WH OR YEL		
BLK OR BL		

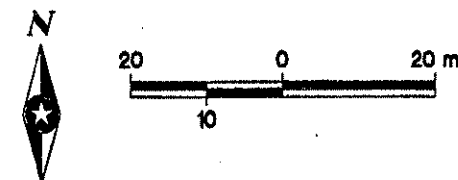
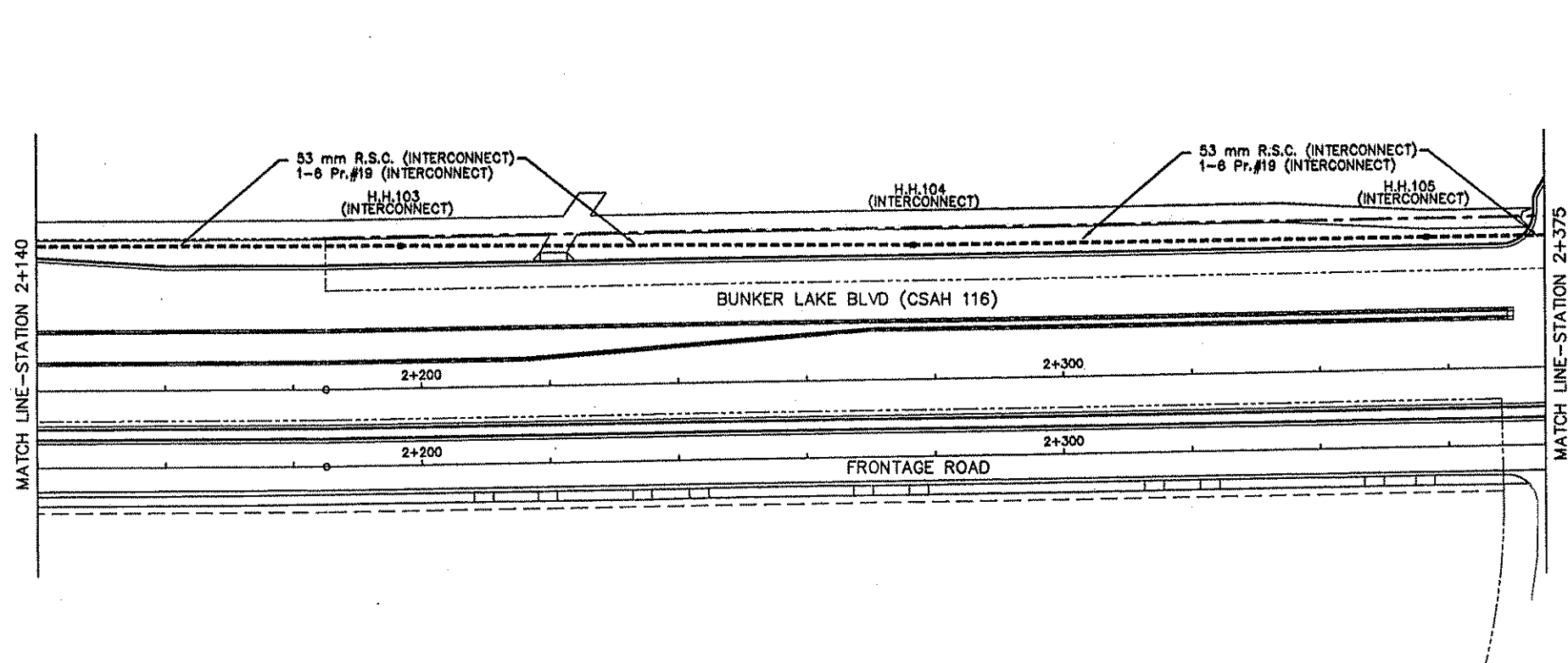
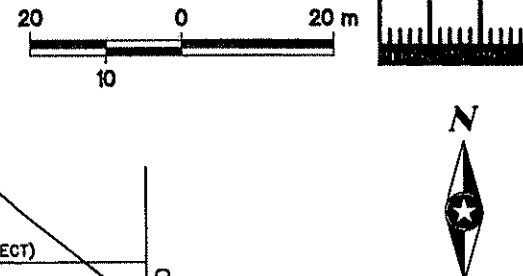
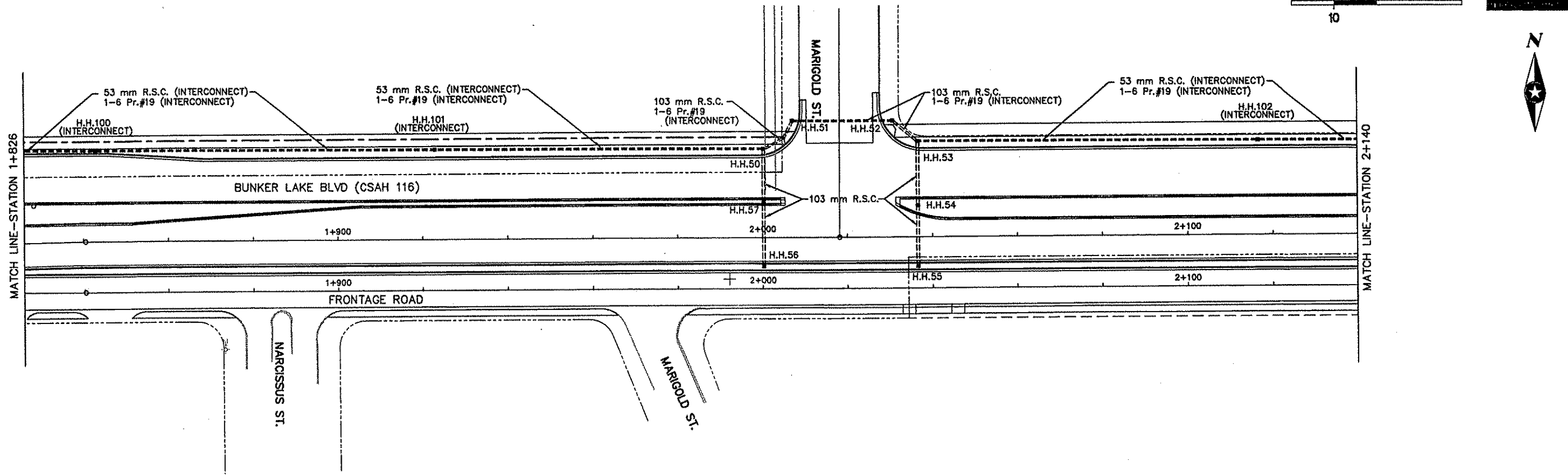
NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

NOTE: ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE DENOTED BY ▲ (▲ = INTERCONNECT CABLE TO BE FURNISHED AND INSTALLED BY CONTRACTOR).

SERVICE CABINET



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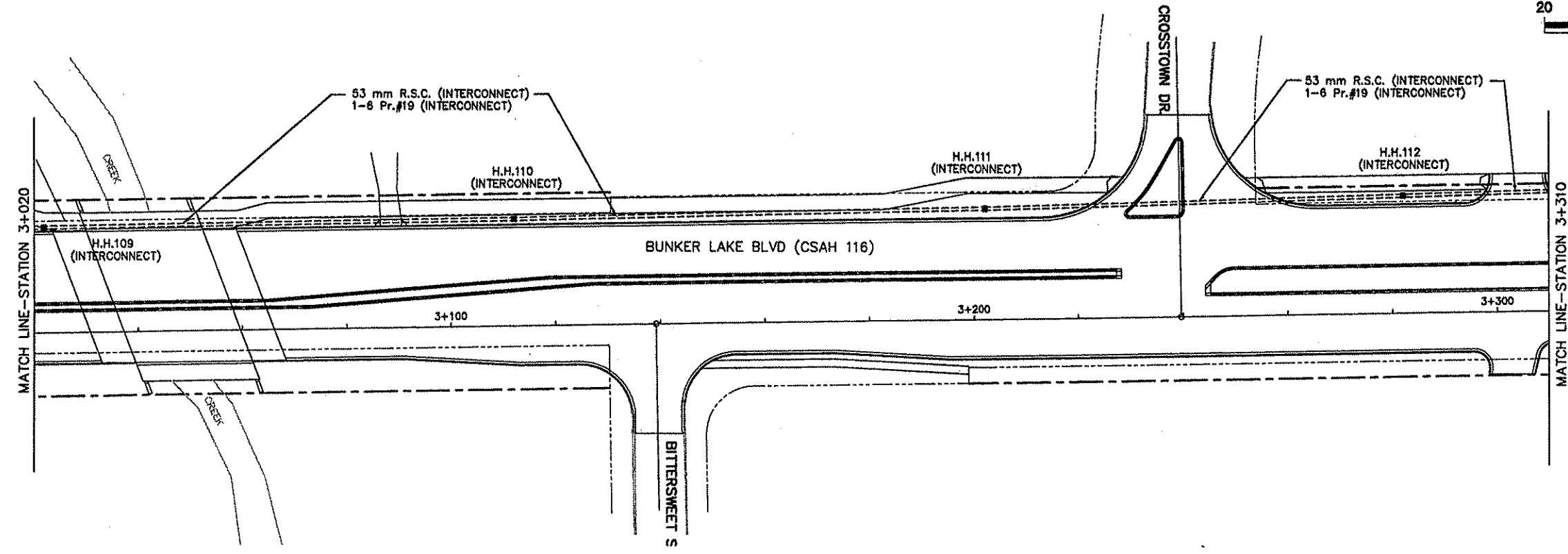
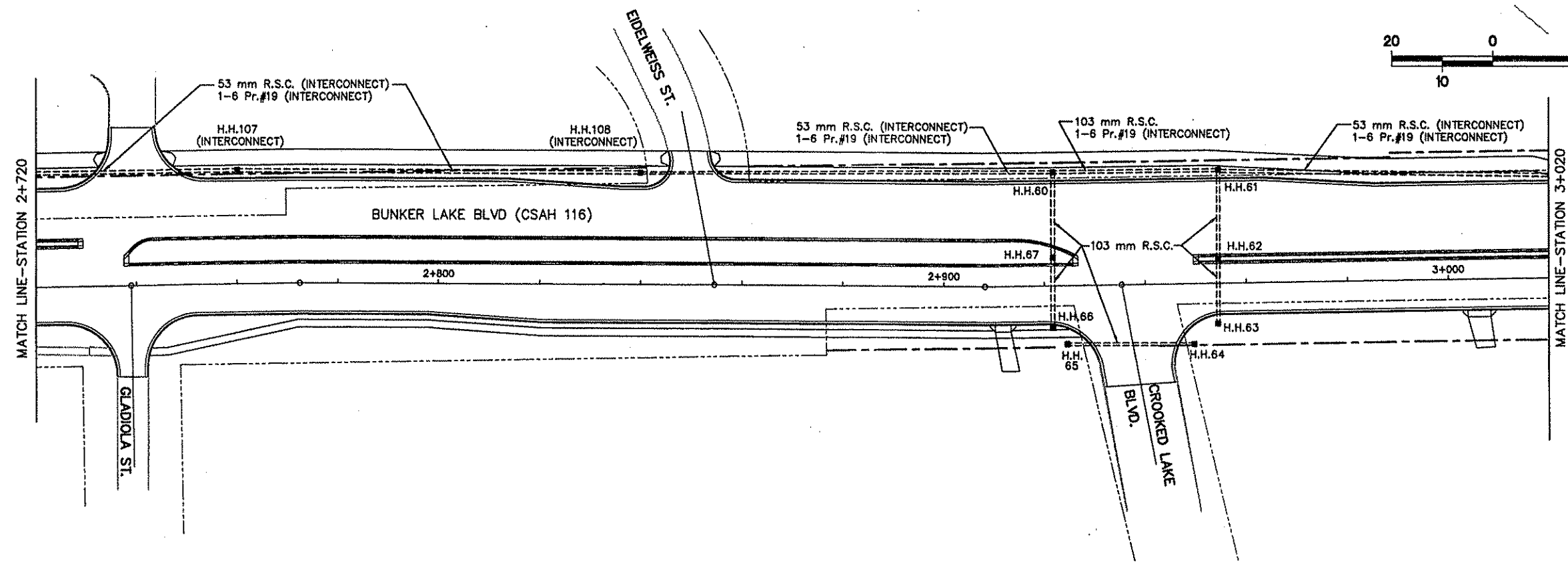
I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
John M. Gray
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL INTERCONNECT
 STA. 1+826 TO 2+375

FILE NO. ANOKC9806.01	144
DATE 3/15/99	230



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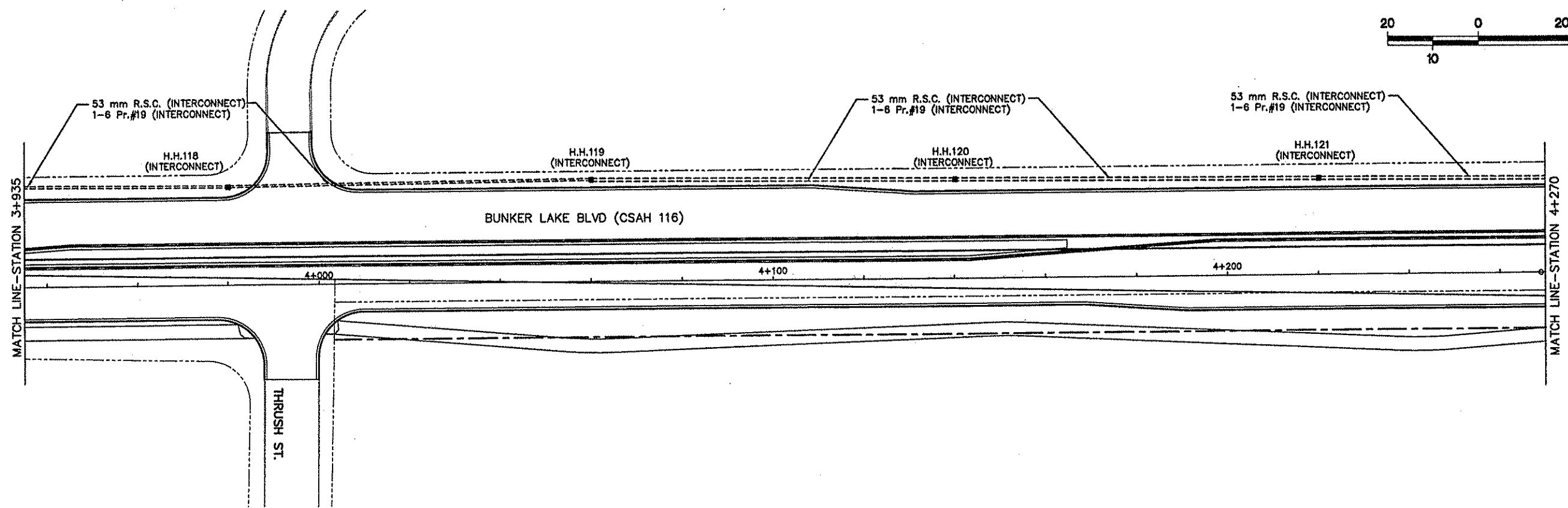
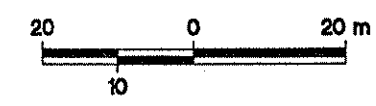
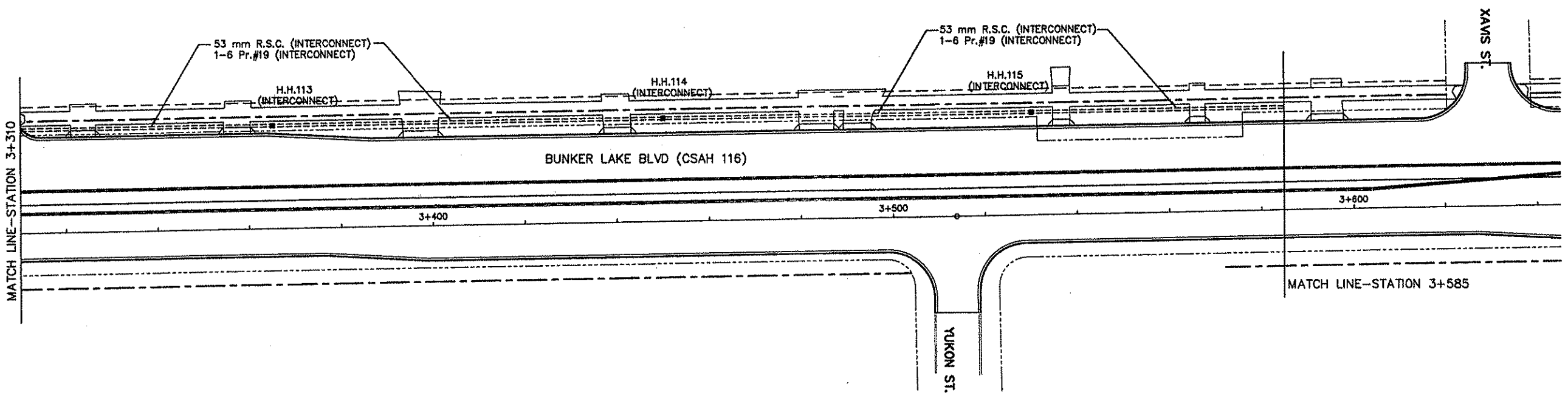
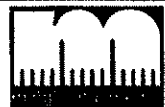
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[Signature]
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL INTERCONNECT
STA. 2+720 TO 3+310

FILE NO. ANOKC9806.01	145
DATE 3/15/99	230



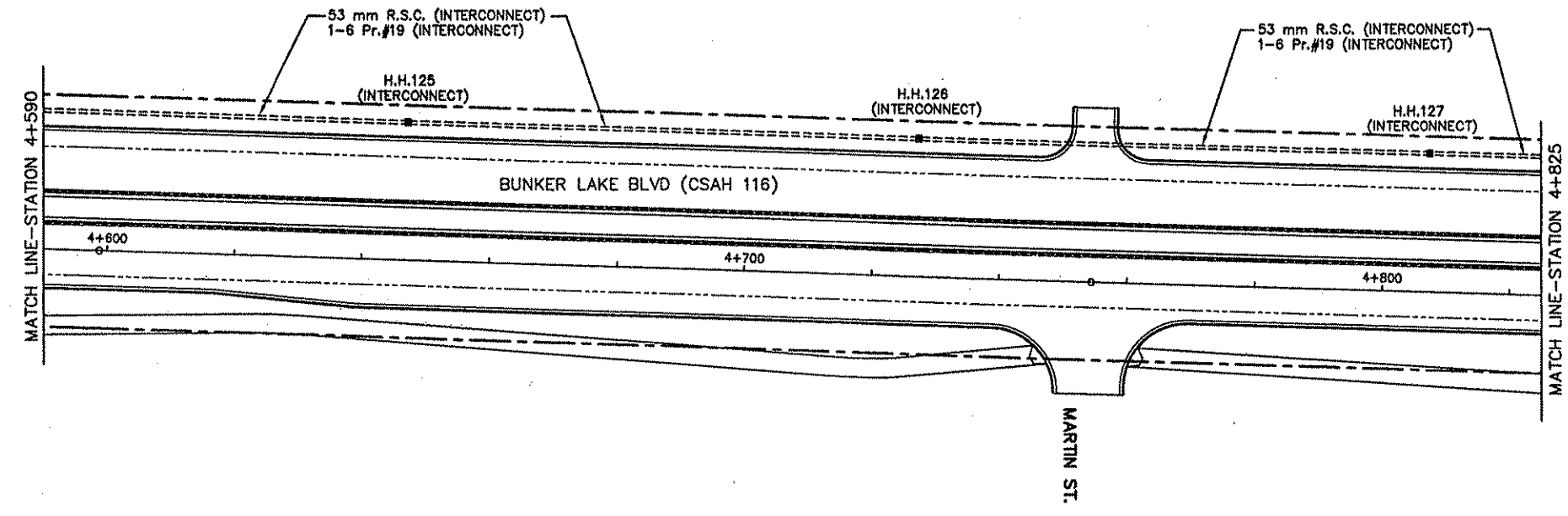
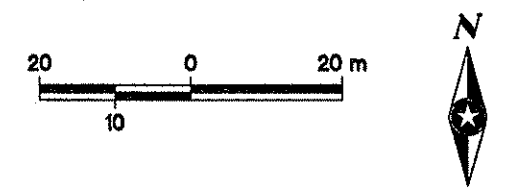
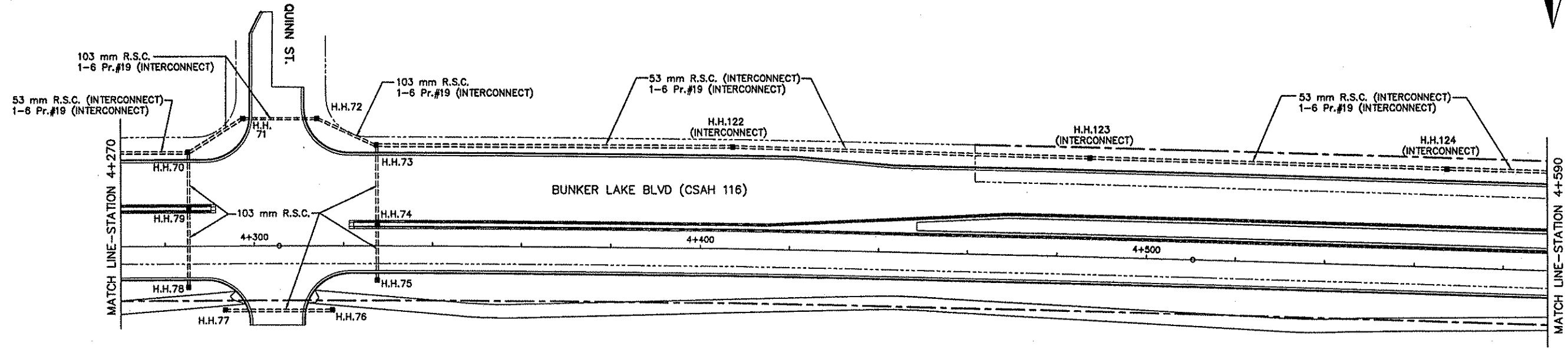
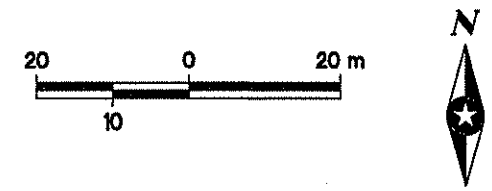
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL INTERCONNECT
STA. 3+310 TO 3+585
STA. 3+935 TO 4+270

FILE NO. ANOKC9806.01	146
DATE 3/15/99	230

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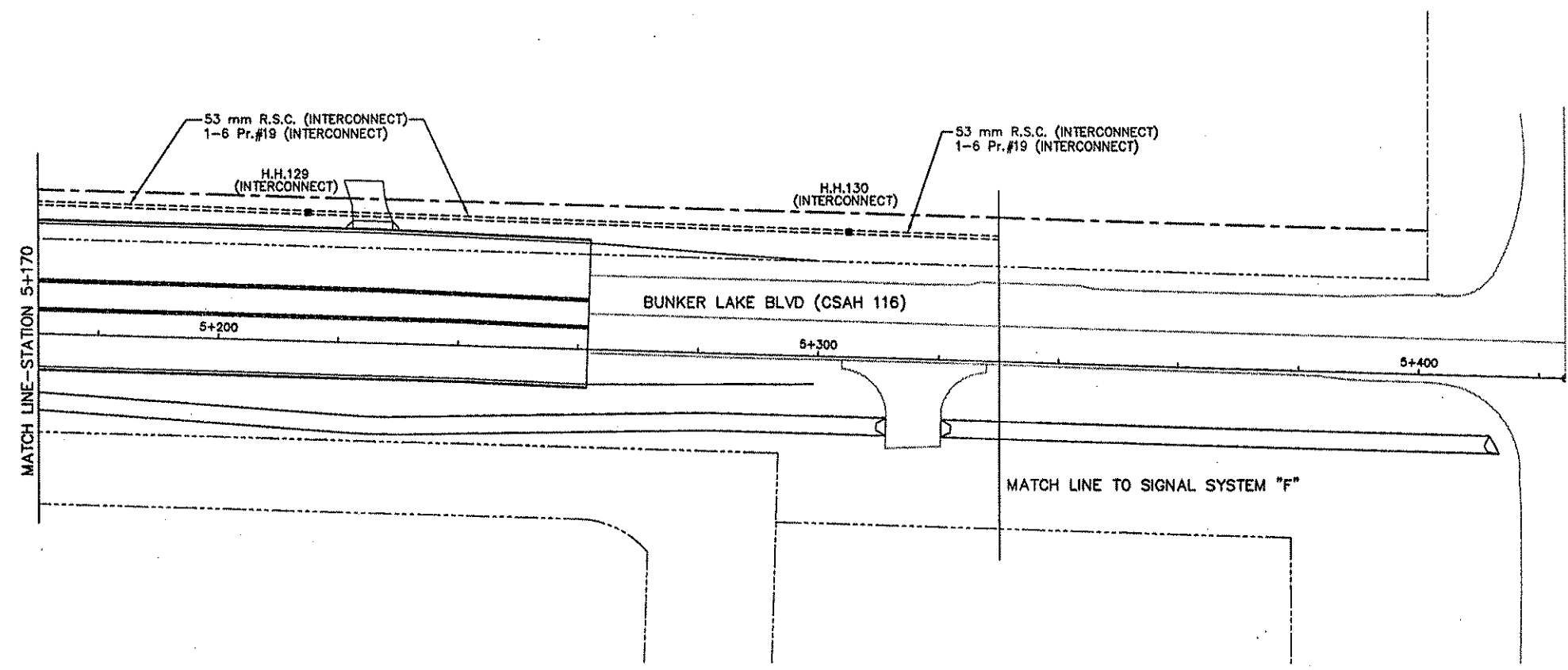
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 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL INTERCONNECT
 STA. 4+270 TO 4+825

FILE NO. ANOKC9806.01 **147**
 DATE 3/15/99 **230**



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ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

TRAFFIC SIGNAL INTERCONNECT
STA. 5+170 TO HANSON BLVD.

FILE NO. ANOKC9806.01	148
DATE 3/15/99	230

NOTES:

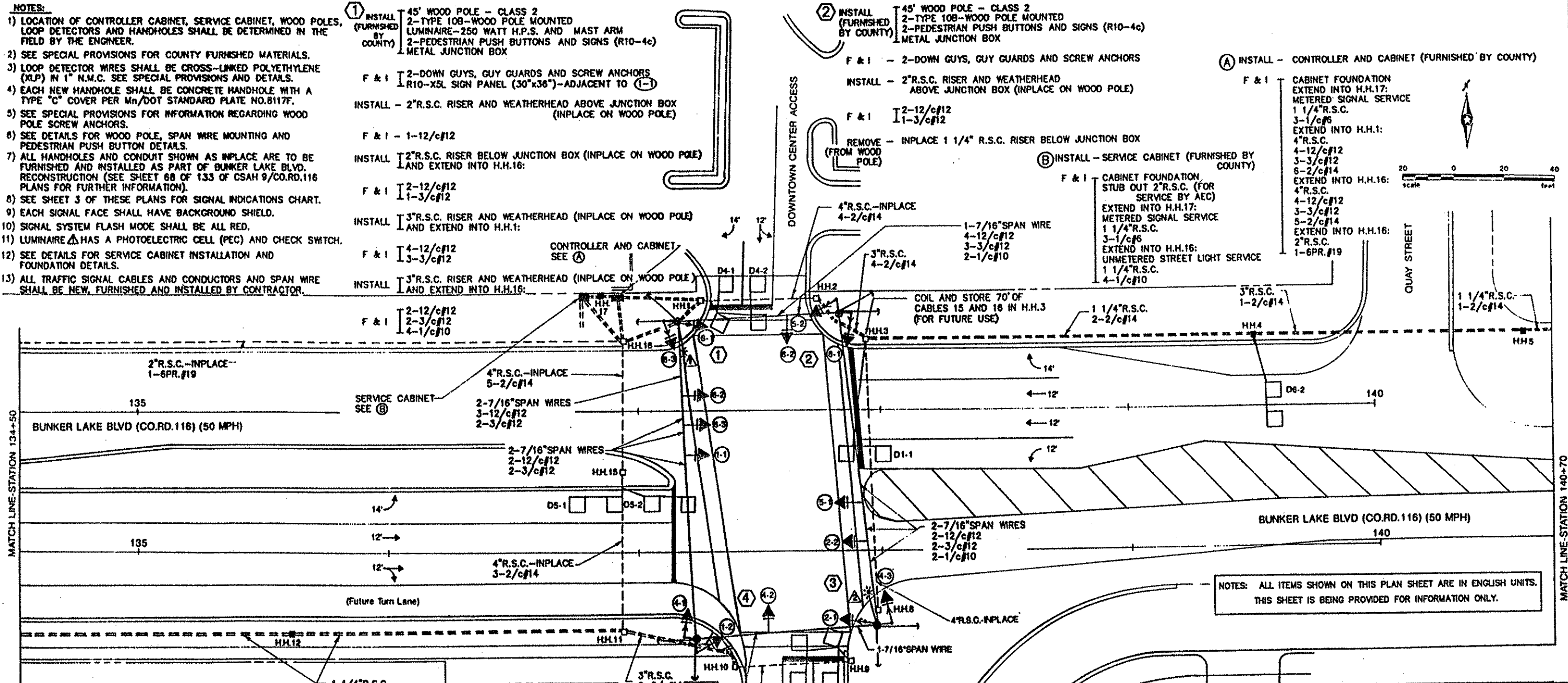
- 1) LOCATION OF CONTROLLER CABINET, SERVICE CABINET, WOOD POLES, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1" N.M.C. SEE SPECIAL PROVISIONS AND DETAILS.
- 4) EACH NEW HANDHOLE SHALL BE CONCRETE HANDHOLE WITH A TYPE "C" COVER PER Mn/DOT STANDARD PLATE NO.8117F.
- 5) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING WOOD POLE SCREW ANCHORS.
- 6) SEE DETAILS FOR WOOD POLE, SPAN WIRE MOUNTING AND PEDESTRIAN PUSH BUTTON DETAILS.
- 7) ALL HANDHOLES AND CONDUIT SHOWN AS INPLACE ARE TO BE FURNISHED AND INSTALLED AS PART OF BUNKER LAKE BLVD. RECONSTRUCTION (SEE SHEET 68 OF 133 OF CSAH 9/CO.RD.116 PLANS FOR FURTHER INFORMATION).
- 8) SEE SHEET 3 OF THESE PLANS FOR SIGNAL INDICATIONS CHART.
- 9) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 10) SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- 11) LUMINAIRE HAS A PHOTOELECTRIC CELL (PEC) AND CHECK SWITCH.
- 12) SEE DETAILS FOR SERVICE CABINET INSTALLATION AND FOUNDATION DETAILS.
- 13) ALL TRAFFIC SIGNAL CABLES AND CONDUCTORS AND SPAN WIRE SHALL BE NEW, FURNISHED AND INSTALLED BY CONTRACTOR.

① INSTALL (FURNISHED BY COUNTY) 45' WOOD POLE - CLASS 2
 2-TYPE 108-WOOD POLE MOUNTED LUMINAIRE-250 WATT H.P.S. AND MAST ARM
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
 METAL JUNCTION BOX
 F & I - 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS
 INSTALL - 2"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX (INPLACE ON WOOD POLE)
 F & I - 1-12/c#12

② INSTALL (FURNISHED BY COUNTY) 45' WOOD POLE - CLASS 2
 2-TYPE 108-WOOD POLE MOUNTED LUMINAIRE-250 WATT H.P.S. AND MAST ARM
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
 METAL JUNCTION BOX
 F & I - 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS
 INSTALL - 2"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX (INPLACE ON WOOD POLE)
 F & I - 2-12/c#12
 1-3/c#12
 REMOVE (FROM WOOD POLE) - INPLACE 1 1/4" R.S.C. RISER BELOW JUNCTION BOX

③ INSTALL - CONTROLLER AND CABINET (FURNISHED BY COUNTY)
 F & I CABINET FOUNDATION EXTEND INTO H.H.17: METERED SIGNAL SERVICE
 1 1/4"R.S.C.
 3-1/c#6
 EXTEND INTO H.H.1:
 4"R.S.C.
 4-12/c#12
 3-3/c#12
 6-2/c#14
 EXTEND INTO H.H.16:
 4"R.S.C.
 4-12/c#12
 3-3/c#12
 5-2/c#14
 EXTEND INTO H.H.16:
 2"R.S.C.
 1-6PR.#19

④ INSTALL - SERVICE CABINET (FURNISHED BY COUNTY)
 F & I CABINET FOUNDATION, STUB OUT 2"R.S.C. (FOR SERVICE BY AEC)
 EXTEND INTO H.H.17: METERED SIGNAL SERVICE
 1 1/4"R.S.C.
 3-1/c#6
 EXTEND INTO H.H.16: UNMETERED STREET LIGHT SERVICE
 1 1/4"R.S.C.
 4-1/c#10



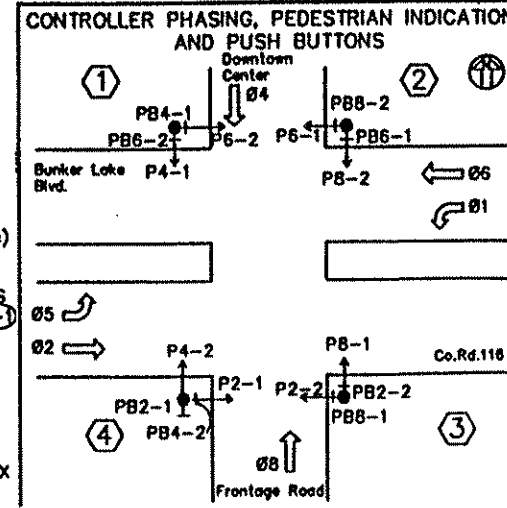
NOTES: ALL ITEMS SHOWN ON THIS PLAN SHEET ARE IN ENGLISH UNITS. THIS SHEET IS BEING PROVIDED FOR INFORMATION ONLY.

LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	5'	7,11
D1-2(FUTURE)	-	-	-
D2-1	2-6x6	370'	1
D4-1	2-6x6	5'	7
D4-2	2-6x6	5'	7
D5-1	2-6x6	20' & 35'	7,11
D5-2	2-6x6	5'	7,11
D6-1	6x6	370'	1
D6-2	2-6x6	165'	2
D8-1	2-6x6	5'	7
D8-2	2-6x6	5'	7

- LOOP DETECTORS FUNCTIONS:**
- 1) CALL AND EXTEND
 - 2) CALL ONLY
 - 3) EXTEND ONLY
 - 4) CALL ONLY DENSITY
 - 5) DELAYED CALL ONLY
 - 6) DELAYED CALL ONLY DENSITY
 - 7) DELAYED CALL- IMMEDIATE EXTEND
 - 8) CARRY OVER (STRETCH)
 - 9) ADVISORY DETECTOR
 - 10) SAMPLING DETECTOR
 - 11) IMMEDIATE CALL DURING PHASE 4/8 GREEN

④ INSTALL (FURNISHED BY COUNTY) 45' WOOD POLE - CLASS 2
 2-TYPE 108-WOOD POLE MOUNTED LUMINAIRE-250 WATT H.P.S. AND MAST ARM
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
 METAL JUNCTION BOX
 F & I - 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS
 INSTALL - 3"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX (INPLACE ON WOOD POLE)
 F & I - 3-12/c#12
 2-3/c#12
 REMOVE (FROM WOOD POLE) - INPLACE 1 1/4" R.S.C. RISER BELOW JUNCTION BOX

③ INSTALL (FURNISHED BY COUNTY) 45' WOOD POLE - CLASS 2
 2-TYPE 108-WOOD POLE MOUNTED LUMINAIRE-250 WATT H.P.S. AND MAST ARM
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
 METAL JUNCTION BOX
 F & I - 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS
 R10-XSL SIGN PANEL (30"x36")-ADJACENT TO (5-1)
 INSTALL - 3"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX (INPLACE ON WOOD POLE)
 F & I - 2-12/c#12
 2-3/c#12
 REMOVE (FROM WOOD POLE) - INPLACE 1 1/4" R.S.C. RISER BELOW JUNCTION BOX



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 22457



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04 & 198-020-14

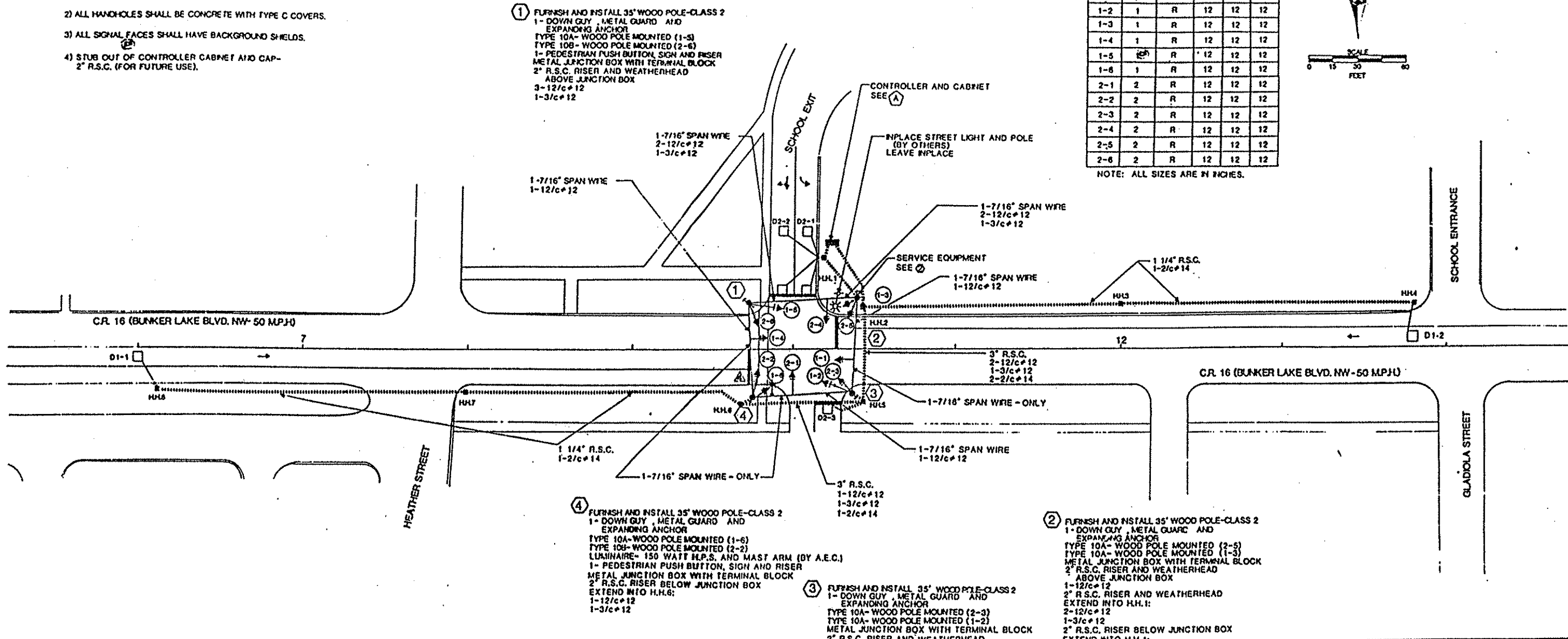
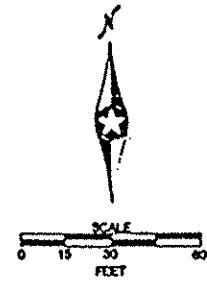
INPLACE SIGNAL SYSTEM "B"
 FOR INFORMATION ONLY
 BUNKER LAKE BLVD. (CSAH 116)
 AT DOWNTOWN CENTER ACCESS/ROSE STREET
 FILE NO. ANOKC9806.01
 DATE 3/15/99
 149
 230

NOTES:

- 1) ALL PEDESTRIAN INDICATIONS SHALL BE 12" X 12".
- 2) ALL HANDHOLES SHALL BE CONCRETE WITH TYPE C COVERS.
- 3) ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.
- 4) STUB OUT OF CONTROLLER CABINET AND CAP- 2" R.S.C. (FOR FUTURE USE).

SIGNAL INDICATIONS					
FACE	PHASE	FLASH	R	Y	G
1-1	1	R	12	12	12
1-2	1	R	12	12	12
1-3	1	R	12	12	12
1-4	1	R	12	12	12
1-5	1	R	12	12	12
1-6	1	R	12	12	12
2-1	2	R	12	12	12
2-2	2	R	12	12	12
2-3	2	R	12	12	12
2-4	2	R	12	12	12
2-5	2	R	12	12	12
2-6	2	R	12	12	12

NOTE: ALL SIZES ARE IN INCHES.



① FURNISH AND INSTALL 35' WOOD POLE-CLASS 2
 1- DOWN GUY, METAL GUARD AND EXPANDING ANCHOR
 TYPE 10A- WOOD POLE MOUNTED (1-3)
 TYPE 10B- WOOD POLE MOUNTED (2-6)
 1- PEDESTRIAN PUSH BUTTON, SIGN AND RISER
 METAL JUNCTION BOX WITH TERMINAL BLOCK
 2" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX
 3-12/c#12
 1-3/c#12

④ FURNISH AND INSTALL 35' WOOD POLE-CLASS 2
 1- DOWN GUY, METAL GUARD AND EXPANDING ANCHOR
 TYPE 10A- WOOD POLE MOUNTED (1-6)
 TYPE 10B- WOOD POLE MOUNTED (2-2)
 LUMINAIRE- 150 WATT H.P.S. AND MAST ARM (BY A.E.C.)
 1- PEDESTRIAN PUSH BUTTON, SIGN AND RISER
 METAL JUNCTION BOX WITH TERMINAL BLOCK
 2" R.S.C. RISER BELOW JUNCTION BOX
 EXTEND INTO H.H.8:
 1-12/c#12
 1-3/c#12

③ FURNISH AND INSTALL 35' WOOD POLE-CLASS 2
 1- DOWN GUY, METAL GUARD AND EXPANDING ANCHOR
 TYPE 10A- WOOD POLE MOUNTED (2-3)
 TYPE 10B- WOOD POLE MOUNTED (1-2)
 METAL JUNCTION BOX WITH TERMINAL BLOCK
 2" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX
 1-12/c#12
 2" R.S.C. RISER BELOW JUNCTION BOX
 EXTEND INTO H.H.5:
 1-12/c#12

② FURNISH AND INSTALL 35' WOOD POLE-CLASS 2
 1- DOWN GUY, METAL GUARD AND EXPANDING ANCHOR
 TYPE 10A- WOOD POLE MOUNTED (2-5)
 TYPE 10B- WOOD POLE MOUNTED (1-3)
 METAL JUNCTION BOX WITH TERMINAL BLOCK
 2" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX
 1-12/c#12
 2" R.S.C. RISER AND WEATHERHEAD EXTEND INTO H.H.1:
 2-12/c#12
 1-3/c#12
 2" R.S.C. RISER BELOW JUNCTION BOX EXTEND INTO H.H.1:
 1-12/c#12
 1 1/4" R.S.C. RISER AND WEATHERHEAD (FOR POWER)
 3-1/c#6
 METER AND DISCONNECT SWITCH FROM WOOD POLE INTO H.H.1:
 1 1/4" R.S.C.
 2-1/c#6
 1-1/c#6 Br.Gr.

Ⓐ EQUIPMENT PAD CONTROLLER AND CABINET
 EXTEND INTO H.H.1:
 3" R.S.C.
 3-12/c#12
 1-3/c#12
 2-2/c#14
 2-1/c#6
 1-1/c#6 Br.Gr.
 EXTEND INTO H.H.2:
 3" R.S.C.
 2-12/c#12
 1-3/c#12
 3-2/c#14

LOOP DETECTOR FUNCTIONS:

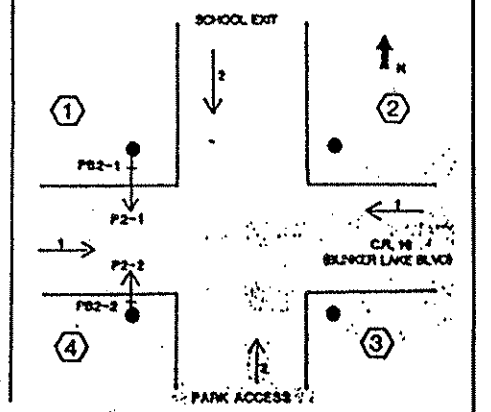
- 1) CALL AND EXTEND
- 2) CALL ONLY
- 3) EXTEND ONLY
- 4) CALL ONLY DENSITY
- 5) DELAYED CALL ONLY
- 6) DELAYED CALL ONLY DENSITY
- 7) DELAYED CALL-IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)
- 9) ADVISORY DETECTOR
- 10) SAMPLING DETECTOR
- 11) SPECIAL DETECTOR

LOOP DETECTORS			
NUMBER	SIZE	LOCATION	FUNCTION
D1-1	6'x6'	370'	1
D1-2	6'x6'	350'	1
D2-1	2-6'x6'	0' & 35'	1
D2-2	2-6'x6'	0' & 35'	7
D2-3	6'x6'	0'	7

NOTE: LOCATION = DISTANCE FROM STOP LINE TO DETECTOR.

NOTES: ALL ITEMS SHOWN ON THIS PLAN SHEET ARE IN ENGLISH UNITS. THIS SHEET IS BEING PROVIDED FOR INFORMATION ONLY.

CONTROLLER AND PEDESTRIAN PHASING



LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2-6' X 6'	1	20' 50'
D1-2	2-6' X 6'	1	5' 35'
D2-1	6' X 6'	1	400'
D2-2	6' X 6'	1	400'
D3-1	2-6' X 6'	1	20' 50'
D3-2	2-6' X 6'	1	5' 35'
D4-1	6' X 6'	3/8	250'
D4-2	2-6' X 6'	1	5'
D4-3	2-6' X 6'	7	5'
D5-1	2-6' X 6'	1	20' 50'
D5-2	2-6' X 6'	1	5' 35'
D6-1	6' X 6'	1	475'
D6-2	6' X 6'	1	475'
D7-1	2-6' X 6'	1	20' 50'
D7-2	2-6' X 6'	1	5' 35'
D8-1	6' X 6'	3/8	300'
D8-2	2-6' X 6'	1	5'
D8-3	2-6' X 6'	7	5'

NOTES:

- SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- EACH SIGNAL FACE SHALL HAVE A BACKGROUND SIGNAL.
- EACH LUMINAIRE SHALL HAVE A PEC AND CHECK SWITCH.
- SEE SHEET NO. 5 AND SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
- SEE SPECIAL PROVISIONS FOR HANDHOLE TYPE.
- SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
- ALL PEDESTRIAN INDICATIONS SHALL BE 12" X 12".
- ALL SIGNAL FACES SHALL BE 12 INCH 3 SECTION R-Y-G, EXCEPT FACES (1-1) (1-2) (5-1) (5-2) WHICH SHALL BE 12 INCH 3 SECTION RLTA-YLTA-GLTA AND FACES (4-3) (4-4) (8-3) (8-4) WHICH SHALL BE 12 INCH 5 SECTION R-Y-G-YLTA-GLTA.
- ALL VEHICLE SIGNAL INDICATIONS SHALL USE GLASS LENSES.
- PED RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN ALL QUADRANTS, AS SHOWN ON THE PLAN, AND SHALL BE CONSIDERED INCIDENTAL TO THE SIGNAL SYSTEM CONSTRUCTION.

LOCATION-DISTANCE FROM STOP LINE TO DETECTOR

FUNCTIONS:

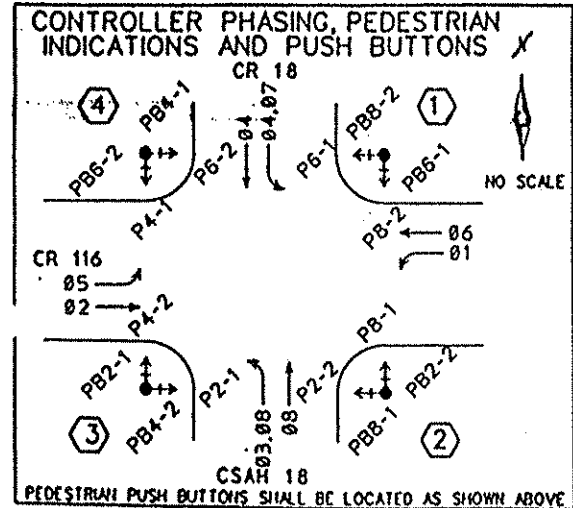
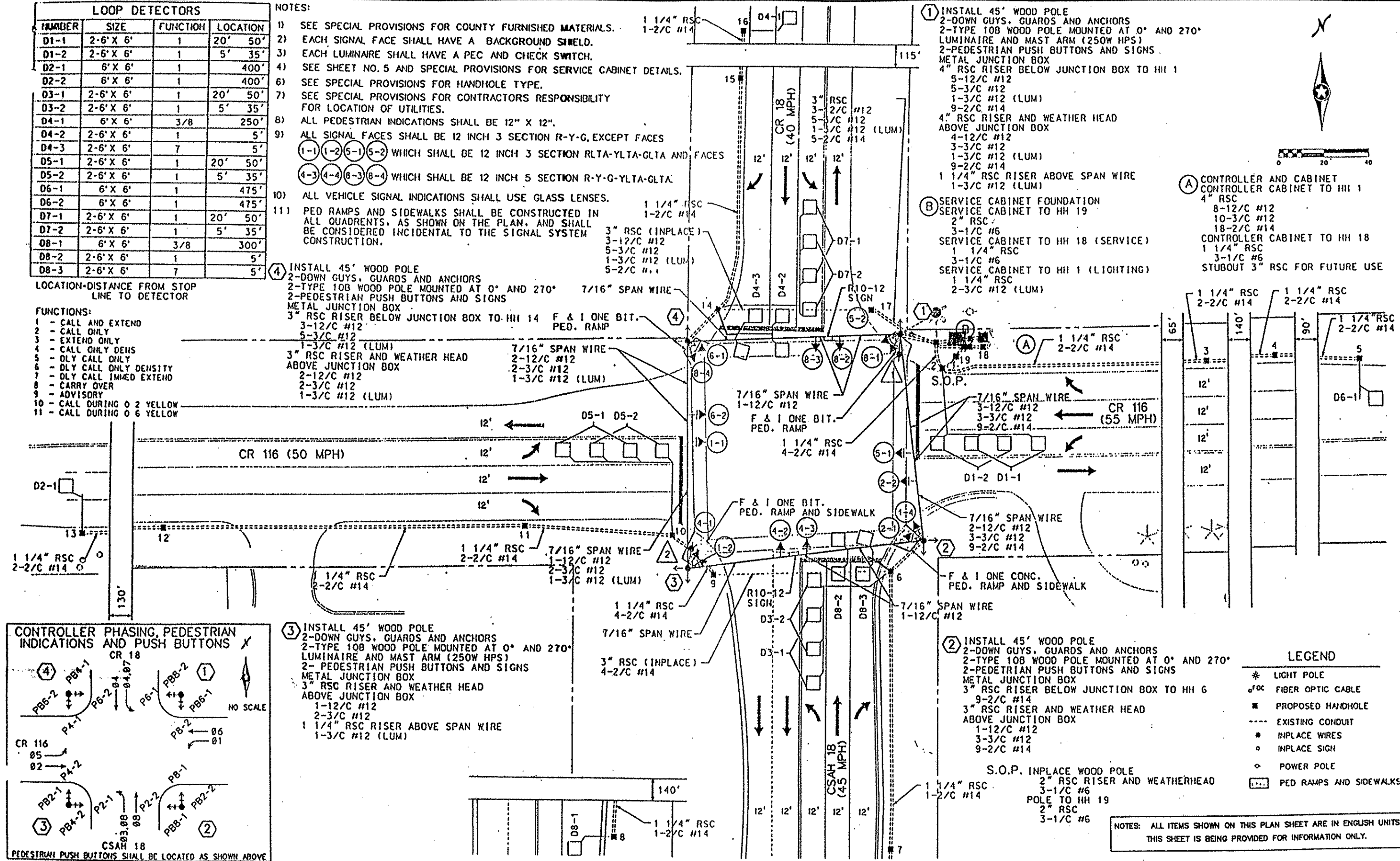
- CALL AND EXTEND
- CALL ONLY
- EXTEND ONLY
- CALL ONLY DENS
- DLY CALL ONLY
- DLY CALL ONLY DENSITY
- DLY CALL IMMEDIATE EXTEND
- CARRY OVER
- ADVISORY
- CALL DURING 0 2 YELLOW
- CALL DURING 0 6 YELLOW

- INSTALL 45' WOOD POLE
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 0° AND 270°
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
METAL JUNCTION BOX
3" RSC RISER BELOW JUNCTION BOX TO HH 14
1-3/C #12
5-3/C #12
3" RSC RISER AND WEATHER HEAD ABOVE JUNCTION BOX
2-12/C #12
2-3/C #12
1-3/C #12 (LUM)

- INSTALL 45' WOOD POLE
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 0° AND 270°
LUMINAIRE AND MAST ARM (250W HPS)
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
METAL JUNCTION BOX
3" RSC RISER AND WEATHER HEAD ABOVE JUNCTION BOX
1-12/C #12
2-3/C #12
1 1/4" RSC RISER ABOVE SPAN WIRE
1-3/C #12 (LUM)

- INSTALL 45' WOOD POLE
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 0° AND 270°
LUMINAIRE AND MAST ARM (250W HPS)
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
METAL JUNCTION BOX
4" RSC RISER BELOW JUNCTION BOX TO HH 1
5-12/C #12
5-3/C #12
1-3/C #12 (LUM)
9-2/C #14
4" RSC RISER AND WEATHER HEAD ABOVE JUNCTION BOX
4-12/C #12
3-3/C #12
1-3/C #12 (LUM)
9-2/C #14
1 1/4" RSC RISER ABOVE SPAN WIRE
1-3/C #12 (LUM)
- SERVICE CABINET FOUNDATION
SERVICE CABINET TO HH 19
2" RSC
3-1/C #6
SERVICE CABINET TO HH 18 (SERVICE)
1 1/4" RSC
3-1/C #6
SERVICE CABINET TO HH 1 (LIGHTING)
1 1/4" RSC
2-3/C #12 (LUM)

- CONTROLLER AND CABINET
CONTROLLER CABINET TO HH 1
4" RSC
8-12/C #12
10-3/C #12
18-2/C #14
CONTROLLER CABINET TO HH 18
1 1/4" RSC
3-1/C #6
STUBOUT 3" RSC FOR FUTURE USE



LEGEND	
*	LIGHT POLE
o	FIBER OPTIC CABLE
■	PROPOSED HANDHOLE
---	EXISTING CONDUIT
■	INPLACE WIRES
o	INPLACE SIGN
o	POWER POLE
□	PED RAMPS AND SIDEWALKS

NOTES: ALL ITEMS SHOWN ON THIS PLAN SHEET ARE IN ENGLISH UNITS. THIS SHEET IS BEING PROVIDED FOR INFORMATION ONLY.

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TYPE "C" SIGNS (SALVAGE)

SIGN NO.	QUANTITY	SIGN PANEL SIZE (INCHES)	NO. OF POSTS & TYPE	PANEL LEGEND
C-100	3	30 X 30	1-U	STOP
	3	36 X 12		ONE WAY (R)
C-101	31	30 X 30	1-U	STOP
C-102	8	24 X 30	1-U	SPEED LIMIT 30
C-103	1	24 X 30	1-U	SPEED LIMIT 45
C-104	3	24 X 30	1-U	SPEED LIMIT 50
C-105	1	24 X 30	1-U	SPEED LIMIT 55
C-106	1	24 X 30	1-U	SPEED LIMIT 15
C-107	1	24 X 8	1-U	SCHOOL
	1	24 X 30		SPEED LIMIT 30
	1	36 X 15		WHEN CHILDREN PRESENT
C-108	2	54 X 30	2-U	LANE USAGE (LT/TH/RT)
C-109	5	30 X 30	1-U	RIGHT TURN LANE
C-110	1	30 X 30	1-U	RIGHT TURN LANE
	1	24 X 24		NO PARKING
C-111	2	36 X 12	1-U	ONE WAY
	2	36 X 12		ONE WAY
C-112	1	36 X 12	1-U	ONE WAY
C-113	9	24 X 24	1-U	NO PARKING
C-114	2	24 X 24	1-U	NO LEFT TURN
C-115	2	30 X 36	1-U	NO PASSING ON SHOULDER
	2	30 X 24		STATE LAW
C-116	1	60 X 48	2-U	STATE LAW UNLAWFUL TO PASS ON SHOULDER
C-117	1	48 X 24	2-U	DOUBLE ARROW
C-118	3	48 X 24	2-U	DOUBLE ARROW
	3	18 X 18		HAZARD MARKER
	3	18 X 18		HAZARD MARKER
C-119	1	36 X 36	1-U	STOP AHEAD
C-120	6	36 X 36	2-U	SIGNAL AHEAD
C-121	1	36 X 36	2-U	LANE REDUCTION
C-122	1	36 X 36	1-U	DIVIDED HWY
C-123	1	36 X 36	2-U	TWO WAY TRAFFIC
C-124	2	48 X 60 X 60	2-U	NO PASSING ZONE
C-125	1	21 X 15	1-U	JCT
	1	24 X 24		ANOKA COUNTY 9
C-126	2	21 X 15	1-U	JCT
	2	24 X 24		ANOKA COUNTY 18
C-127	2	24 X 24	1-U	ANOKA COUNTY 18
	2	21 X 15		DOUBLE ARROW
C-128	1	24 X 12	1-U	SOUTH
	1	24 X 24		ANOKA COUNTY 18
C-129	1	24 X 12	1-U	NORTH
	1	24 X 24		ANOKA COUNTY 18
C-130	2	30 X 24	1-U	ANOKA COUNTY 116
	2	21 X 15		DOUBLE ARROW
C-131	1	24 X 12	1-U	EAST
	1	30 X 24		ANOKA COUNTY 116
C-132	1	24 X 12	1-U	WEST
	1	30 X 24		ANOKA COUNTY 116
C-133	2	30P	2-U	ADVANCE SCHOOL CROSSING
C-134	4	12 X 36	1-U	CLEARANCE MARKER
C-135	3	6 X 12	1-U	SNOW PLOW MARKER
C-136	4	6 X 12	1-U	GUIDE MARKER
C-137	2	30 X 30	1-U	DO NOT ENTER
C-138	1	24 X 18	1-U	NO CROSSING
	1	24 X 18		NO CROSSING
C-139	5	12 X 18	1-U	NO PARKING BOAT TRAILERS
C-140	1	12 X 18	1-U	NO BOAT TRAILER PARKING
C-141	1	12 X 18	1-U	DANGER UNSAFE ICE
	1	12 X 18		DANGER DEEP WATER
C-142	1	30 X 24	1-U	DEEP WATER KEEP OUT
	1	12 X 18		DANGER UNSAFE ICE
C-143	1	36 X 36	2-U	WATCH FOR TURNING VEHICLES
C-144	1	21 X 15	1-U	JCT
	1	24 X 24		ANOKA COUNTY 78
C-145	1	24 X 30	1-U	KEEP RIGHT
	1	18 X 18		HAZARD MARKER
C-146	1	18 X 18	1-U	HAZARD MARKER
C-147	1	24 X 24	1-U	ANOKA COUNTY 9
	1	21 X 15		DOUBLE ARROW
C-148	1	30 X 24	1-U	ANOKA COUNTY 116
	1	21 X 15		STRAIGHT ARROW
C-149	1	48 X 60 X 60	2-U	NO PASSING ZONE
	1	24 X 24		NO PARKING
TOTAL	167			

⊙ SALVAGE SIGNS TO CITY OF ANDOVER PUBLIC WORKS.
 ⊙ SALVAGE STOP SIGNS ALONG FRONTAGE ROAD TO CITY OF ANDOVER PUBLIC WORKS.

TYPE "D" SIGNS (SALVAGE)

SIGN NO.	QUANTITY	SIGN PANEL SIZE (INCHES)	NO. OF POSTS & TYPE	PANEL LEGEND
D-100	1	48 X 24	2-U	GRACE LUTHERAN CHURCH
D-101	1	30 X 30	1-U	RIVERDALE ASSEMBLY OF GOD SERVICE ROAD
D-102	1	60 X 36	2-U	ADOPT-A-HIGHWAY 1 MILE WOODLAND DEVELOPMENT CORPORATION
TOTAL	3			

TYPE "C" SIGNS (F & I)

SIGN NO.	MMUTCD CODE	QUANTITY	AREA			NO. OF POSTS & TYPE	PANEL LEGEND
			SIZE (INCHES)	(SQ. FT.)	(TOTAL SQ. FT.)		
C-1	R1-1	5	30 X 30	6.25	31.25	2.90	1-U STOP
C-2	R1-1	2	30 X 30	3.25	6.50	0.60	1-U STOP
	R3-2	2	24 X 24	4.00	8.00	0.74	1-U NO LEFT TURN
C-3	R1-1	20	30 X 30	6.25	125.00	11.61	1-U STOP
	R6-1R	20	36 X 12	3.00	60.00	5.57	1-U ONE WAY (R)
C-4	R2-1	2	24 X 30	5.00	10.00	0.93	1-U SPEED LIMIT 30
C-5	R2-1	1	36 X 48	12.00	12.00	1.11	2-U SPEED LIMIT 45
C-6	R2-1	4	36 X 48	12.00	48.00	4.46	2-U SPEED LIMIT 50
C-7	R2-1	1	36 X 48	12.00	12.00	1.11	2-U SPEED LIMIT 55
C-8	R2-1	2	36 X 48	12.00	24.00	2.23	2-U SPEED LIMIT 30
	S4-3	2	36 X 12	3.00	6.00	.56	1-U SCHOOL
	S4-2	2	36 X 15	3.75	7.50	0.70	1-U WHEN CHILDREN ARE PRESENT
C-9	R3-2	3	24 X 24	4.00	12.00	1.11	1-U NO LEFT TURN
C-10	R5-1	22	30 X 30	6.30	137.5	12.77	1-U DO NOT ENTER
C-11	R4-7	15	24 X 30	5.00	75.00	6.97	1-U KEEP RIGHT
	X4-2	15	18 X 18	2.25	33.75	3.13	1-U HAZARD MARKER
C-12	R6-1R	1	36 X 12	3.00	3.00	0.28	1-U ONE WAY (R)
C-13	R6-1L	1	36 X 12	3.00	3.00	0.28	1-U ONE WAY (L)
C-14	W1-7	3	48 X 24	8.00	24.00	2.23	2-U DOUBLE ARROW
C-15	W3-3	1	36 X 36	9.00	9.00	.84	2-U SIGNAL AHEAD
C-16	R3-X1	23	30 X 30	6.25	143.75	13.35	1-U RIGHT TURN LANE
C-17	R3-X2	14	30 X 30	6.25	87.50	8.13	1-U LEFT TURN LANE
C-18	W4-2	1	36 X 36	9.00	9.00	0.84	2-U LANE REDUCTION (R)
C-20	R3-7R	2	30 X 30	6.25	12.50	1.16	2-U RIGHT LANE MUST TURN RIGHT
C-21	R6-1L	2	48 X 18	6.00	12.00	1.11	1-U ONE WAY LEFT
C-22	M3-1A	1	24 X 12	2.00	2.00	0.19	1-U NORTH
	M6-1A	1	24 X 24	4.00	4.00	0.37	1-U ANOKA COUNTY 18
C-23	M3-3A	1	24 X 12	2.00	2.00	0.19	1-U SOUTH
	M6-1A	1	24 X 24	4.00	4.00	0.37	1-U ANOKA COUNTY 18
C-24	M3-2A	1	24 X 12	2.00	2.00	0.19	1-U EAST
	M6-1A	1	30 X 24	5.00	5.00	0.46	1-U ANOKA COUNTY 116
C-25	M3-4A	1	24 X 12	2.00	2.00	0.19	1-U WEST
	M6-1A	1	30 X 24	5.00	5.00	0.46	1-U ANOKA COUNTY 116
C-26	S1-1	2	30P	6.25	12.50	1.16	1-U ADVANCE SCHOOL CROSSING
C-27	X4-5	4	6 X 12	.50	2.00	.18	1-U SNOW PLOW MARKER
C-29	R7-1x	30	12 X 18	1.50	45.00	4.20	1-U NO PARKING ANYTIME
C-30	X4-2	1	18 X 18	2.25	2.25	0.21	1-U HAZARD MARKER
C-31	M2-1A	2	21 X 15	2.20	4.40	0.41	1-U JCT
	M6-1A	2	24 X 24	4.00	8.00	0.74	1-U ANOKA COUNTY 18
C-32	M2-1A	1	21 X 15	2.20	2.20	0.20	1-U JCT
	M6-1A	1	24 X 24	4.00	4.00	0.37	1-U ANOKA COUNTY 78
C-33	M2-1A	1	21 X 15	2.20	2.20	0.20	1-U JCT
	M6-1A	1	24 X 24	4.00	4.00	0.37	1-U ANOKA COUNTY 9
C-34	R6-1R	16	48 X 18	6.00	96.00	8.90	2-U ONE WAY (R)
C-35	M6-1A	1	24 X 24	4.00	4.00	0.37	1-U ANOKA COUNTY 9
	M6-4A	1	21 X 15	2.20	2.20	0.20	1-U DOUBLE ARROW
C-36	C4-7	5	24 X 30	5.00	25.00	2.32	1-U KEEP RIGHT
	X4-2	5	18 X 18	2.25	11.25	1.05	1-U HAZARD MARKER
	R3-4	5	24 X 24	4.00	20.00	1.85	1-U NO U-TURN
C-37	R1-1	2	30 X 30	6.25	12.50	1.16	1-U STOP
	R6-1R	2	36 X 12	3.00	6.00	0.56	1-U ONE WAY (R)
	R6-1L	2	36 X 12	3.00	6.00	0.56	1-U ONE WAY (L)
C-38							
C-39	R6-1R	1	36 X 12	3.00	3.00	0.28	1-U ONE WAY LEFT
	R1-1	1	30 X 30	6.25	6.25	0.58	1-U STOP
	R3-2	1	24 X 24	4.00	4.00	0.37	1-U NO LEFT TURN
C-40	W9-1R	1	36 X 36	9.00	9.00	0.84	2-U RIGHT LANE ENDS
	W20-100P	1	24 X 18	3.00	3.00	0.28	2-U 1000 FEET
TOTAL					1214.20	112.70	


TYPE "D" SIGNS (INSTALL)

SIGN NO.	QUANTITY	SIGN PANEL SIZE (INCHES)	NO. OF POSTS & TYPE	PANEL LEGEND
D-3	1	60 X 36	2-U	ADOPT-A-HIGHWAY 1 MILE WOODLAND DEVELOPMENT CORPORATION
TOTAL	3			

MISCELLANEOUS SIGNS

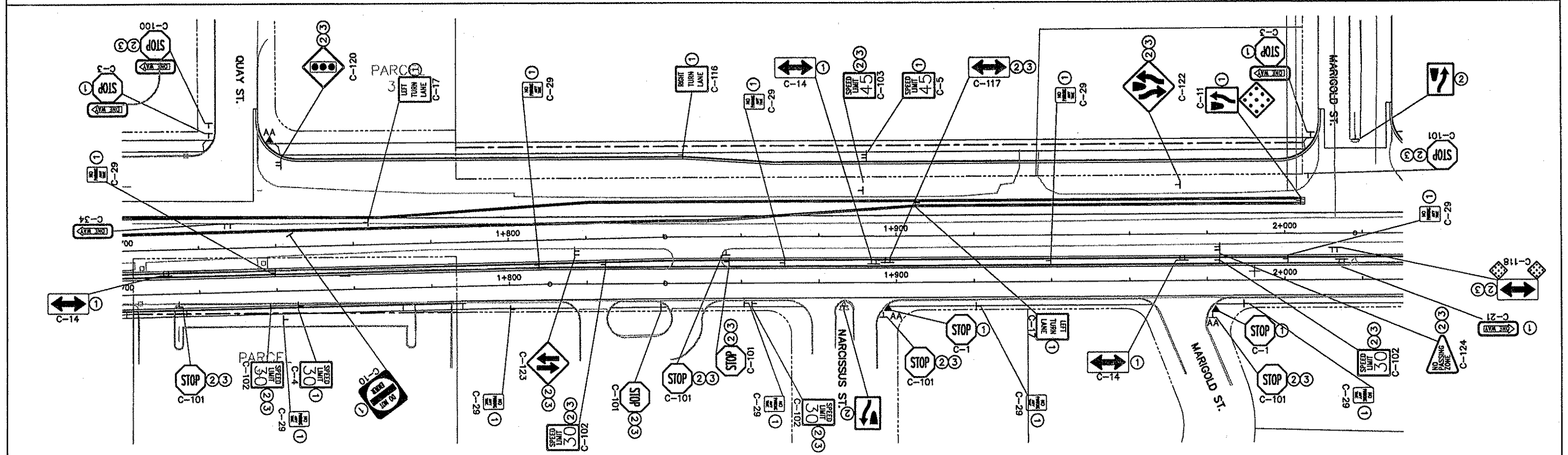
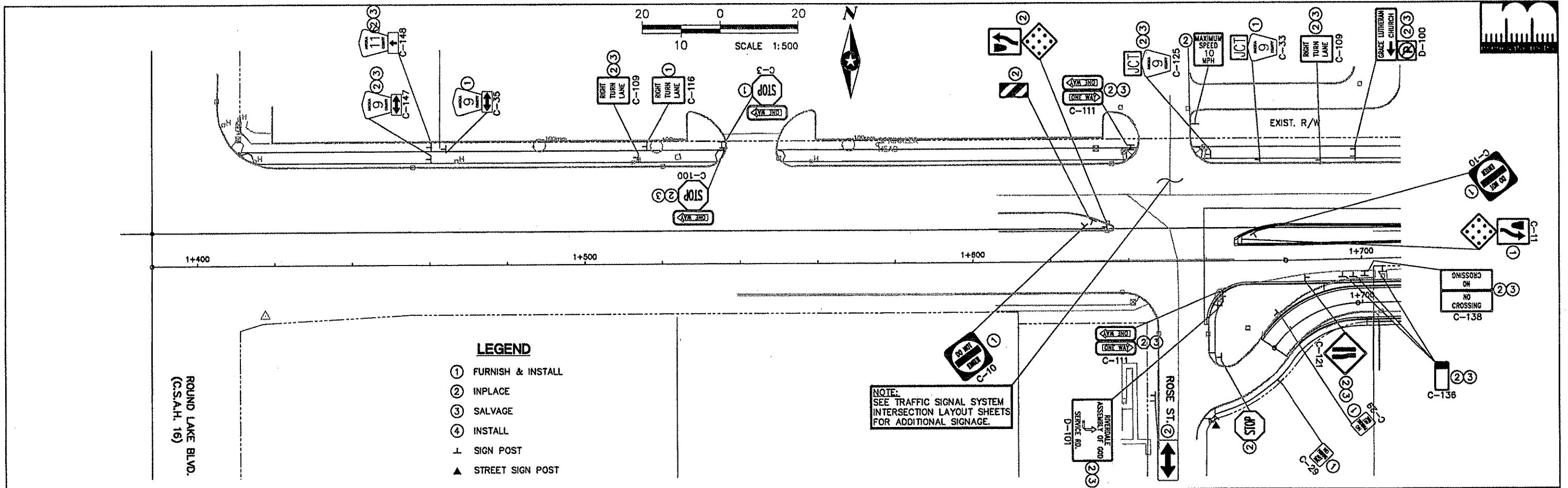
PLAN CODE	QUANTITY	NO. OF POSTS & TYPE	PANEL LEGEND
AA	18	1-ROUND	SALVAGE STREET NAME SIGNS / POSTS
▲	18	1-ROUND	F & I NEW STREET NAME SIGNS / POSTS
TOTAL	36		

DESIGN	1	PJM	4/12	C-29 QUANTITY				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. <u>Pamela Math</u> Date: <u>4/12/99</u> Reg. No. <u>25772</u>
DRAWING								
CHECKED								
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM			

	ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	PERMANENT SIGNING
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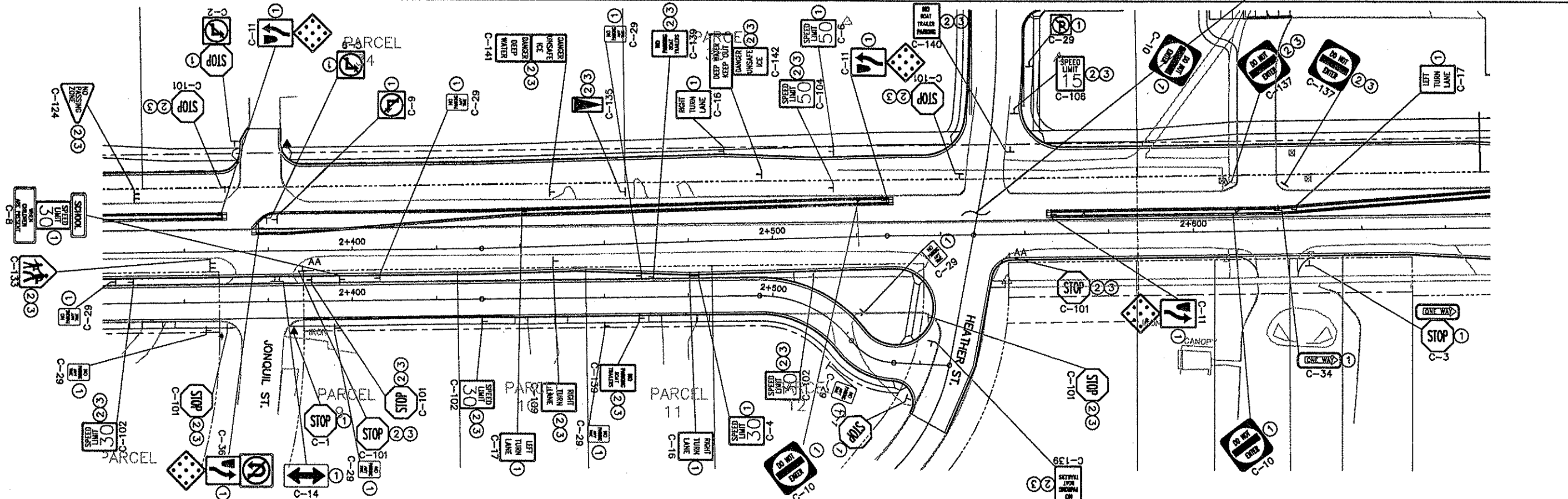
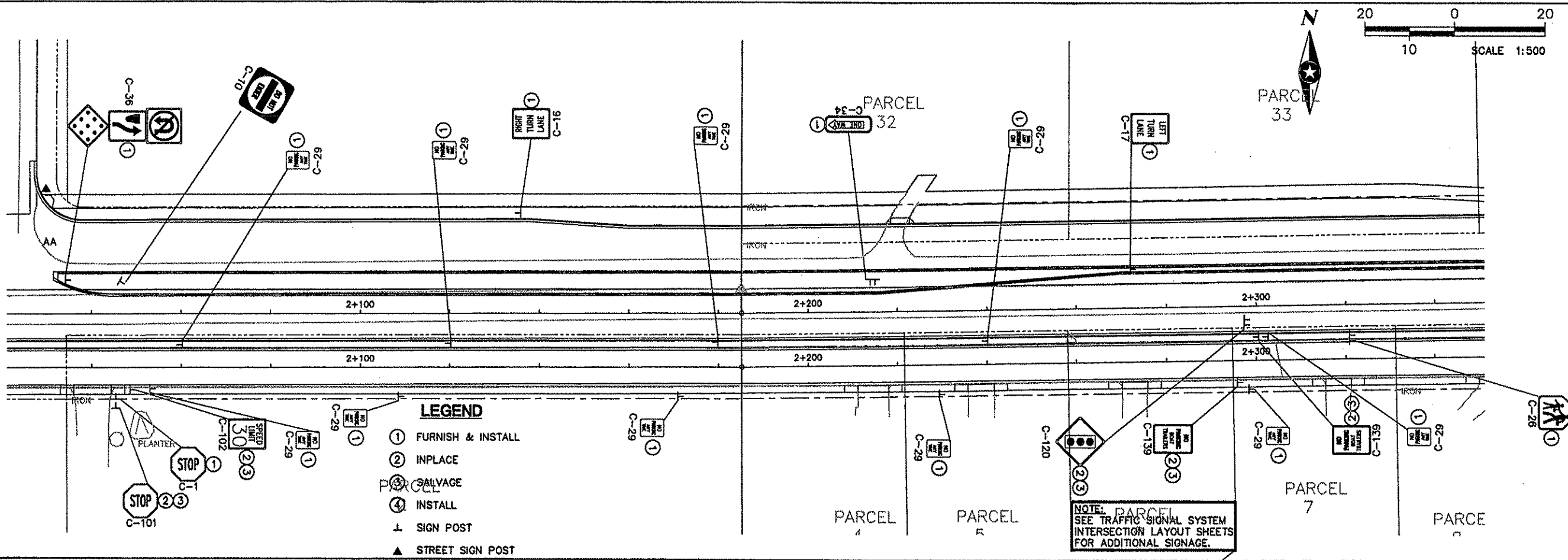
FILE NO. ANOKC9808.01	152
DATE 03/15/99	230

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DESIGN	1	PJM	4/12	ADD NO PARKING SIGNS		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. <i>Jamela Mark</i> Date: 4/12/99 Reg. No. 25772		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	PERMANENT SIGNING STA. 1+388.164 TO 2+030.000	FILE NO.	153
DRAWING					DATE					03/15/99	230
CHECKED											
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM						

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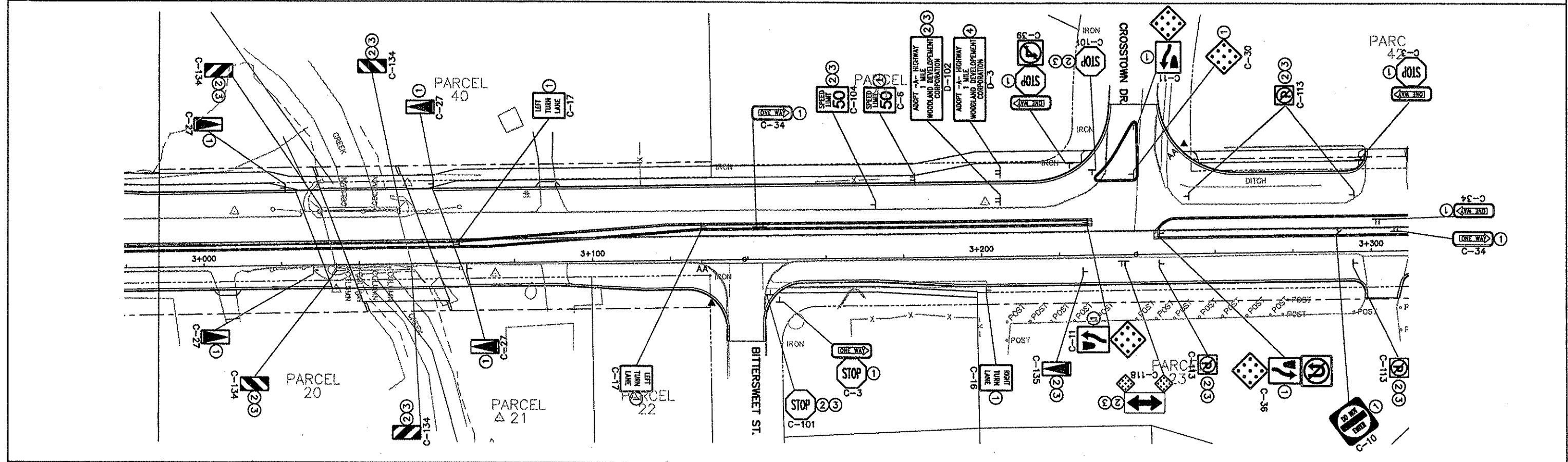
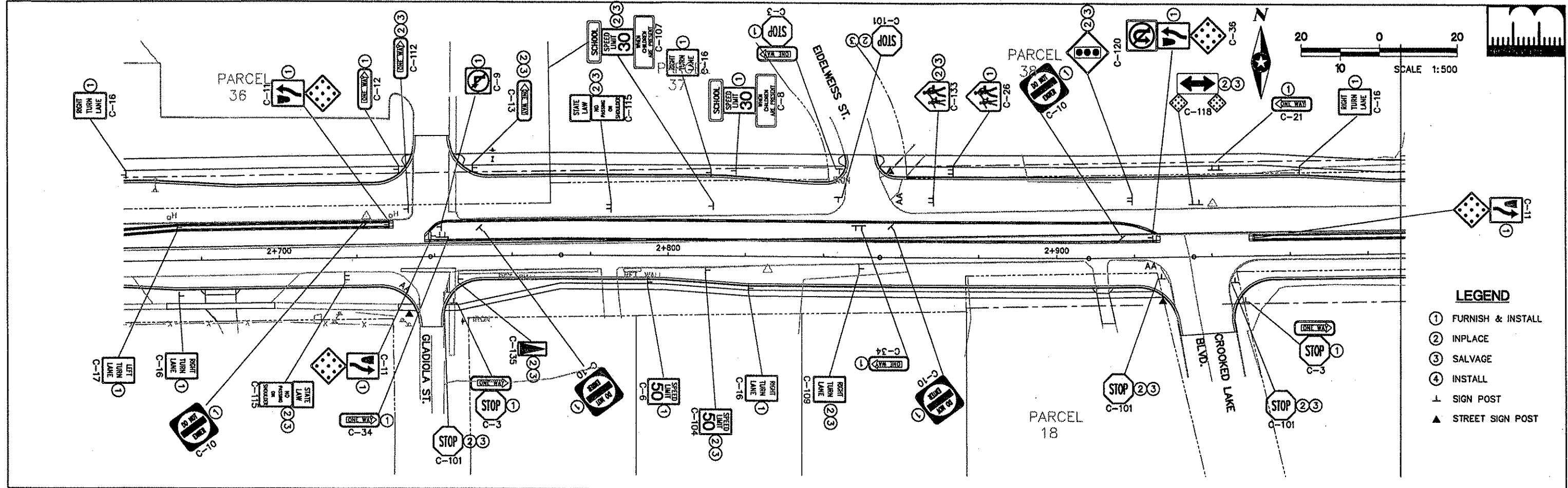


DESIGN	1	PJM	4/12	ADD NO PARKING SIGNS	I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota. <i>Dorinda Maki</i> Date: 4/27/99 Reg. No. 25772		ANOKA COUNTY C.S.A.H. 116 (BUNKER LAKE BLVD.) S.A.P. 02-716-04 S.A.P. 198-020-14	PERMANENT SIGNING STA. 2+020.000 TO 2+670.000	FILE NO.	154
DRAWING				ANCKC9806.01						
CHECKED				DATE					03/15/99	
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM					230



LEGEND

- ① FURNISH & INSTALL
- ② INPLACE
- ③ SALVAGE
- ④ INSTALL
- ⊥ SIGN POST
- ▲ STREET SIGN POST



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

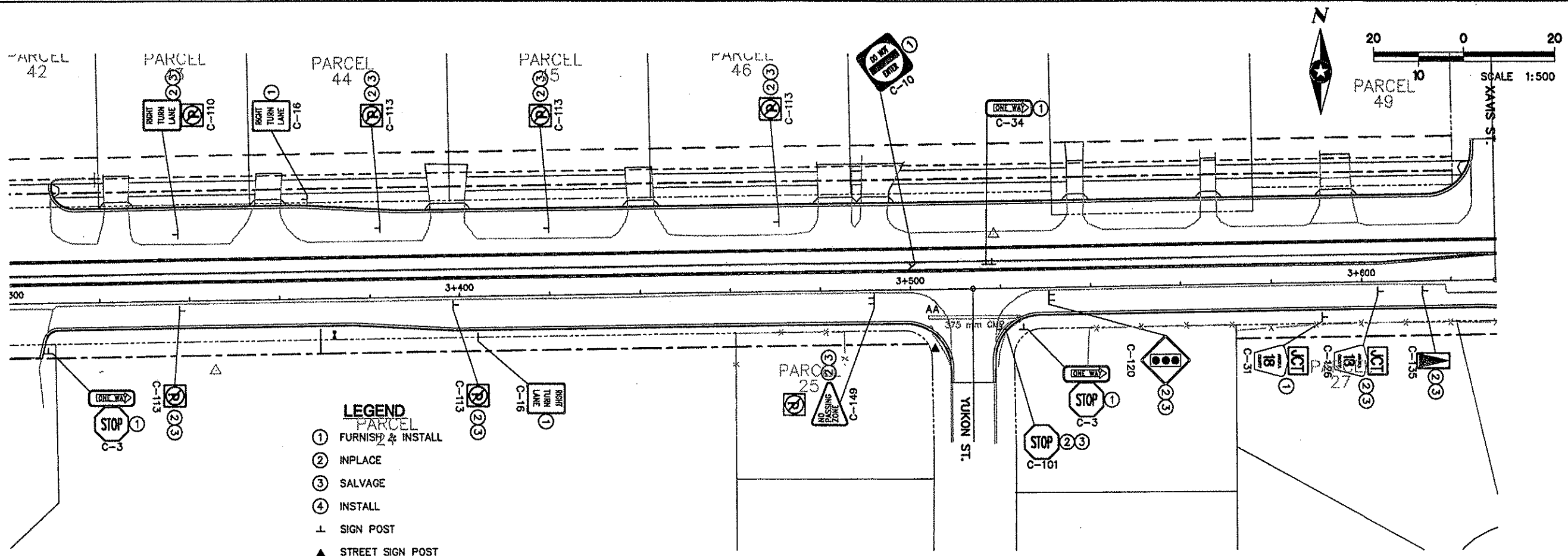
Samuel Marx
 Date: 3/28/99 Reg. No. 25772



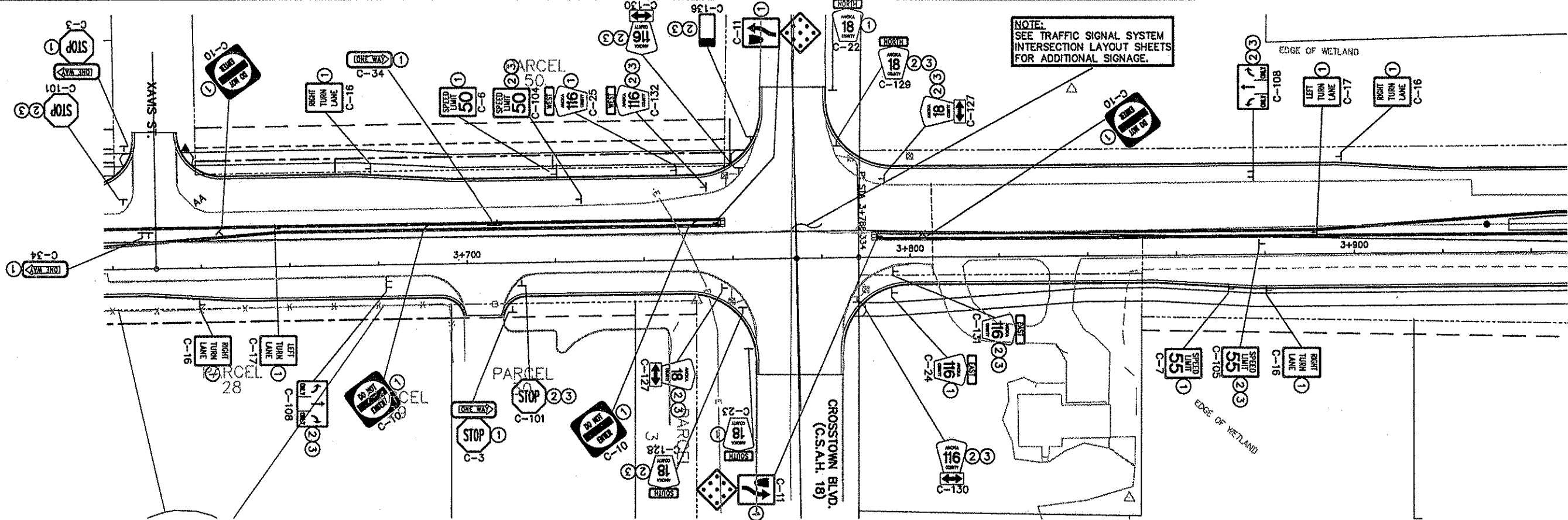
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PERMANENT SIGNING
 STA. 2+660.000 TO 3+310.000

FILE NO. ANOKC9806.01	155
DATE 03/15/99	230



- LEGEND**
- ① FURNISH & INSTALL
 - ② INPLACE
 - ③ SALVAGE
 - ④ INSTALL
 - ▲ SIGN POST
 - ▲ STREET SIGN POST



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

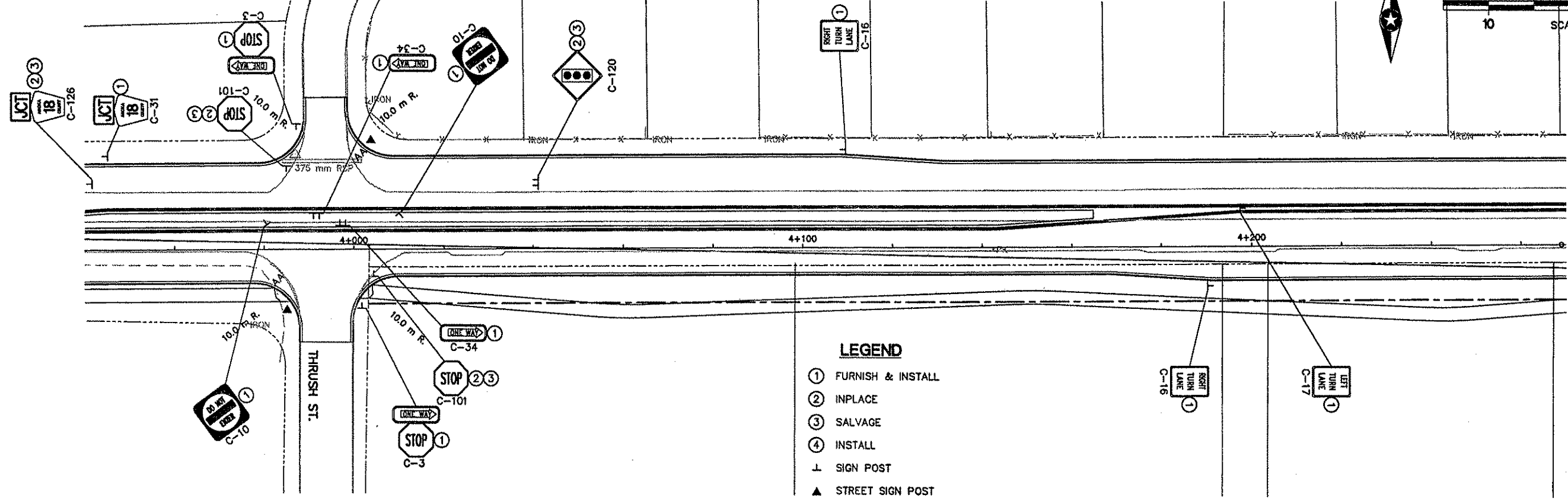
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Samela Mph
 Date: 3/25/99 Reg. No. 25772



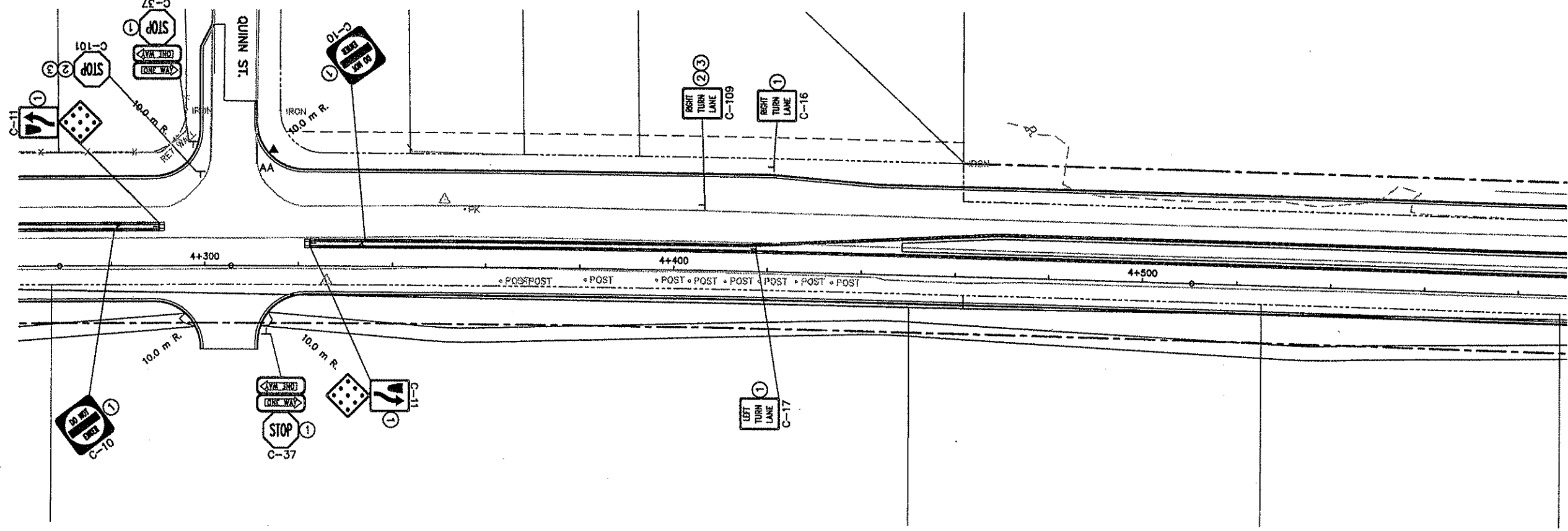
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PERMANENT SIGNING
 STA. 3+300.00 TO 3+950.000

FILE NO. ANOKC9806.01 **156**
 DATE 03/15/99 **230**



- LEGEND**
- ① FURNISH & INSTALL
 - ② INPLACE
 - ③ SALVAGE
 - ④ INSTALL
 - ⊥ SIGN POST
 - ▲ STREET SIGN POST



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

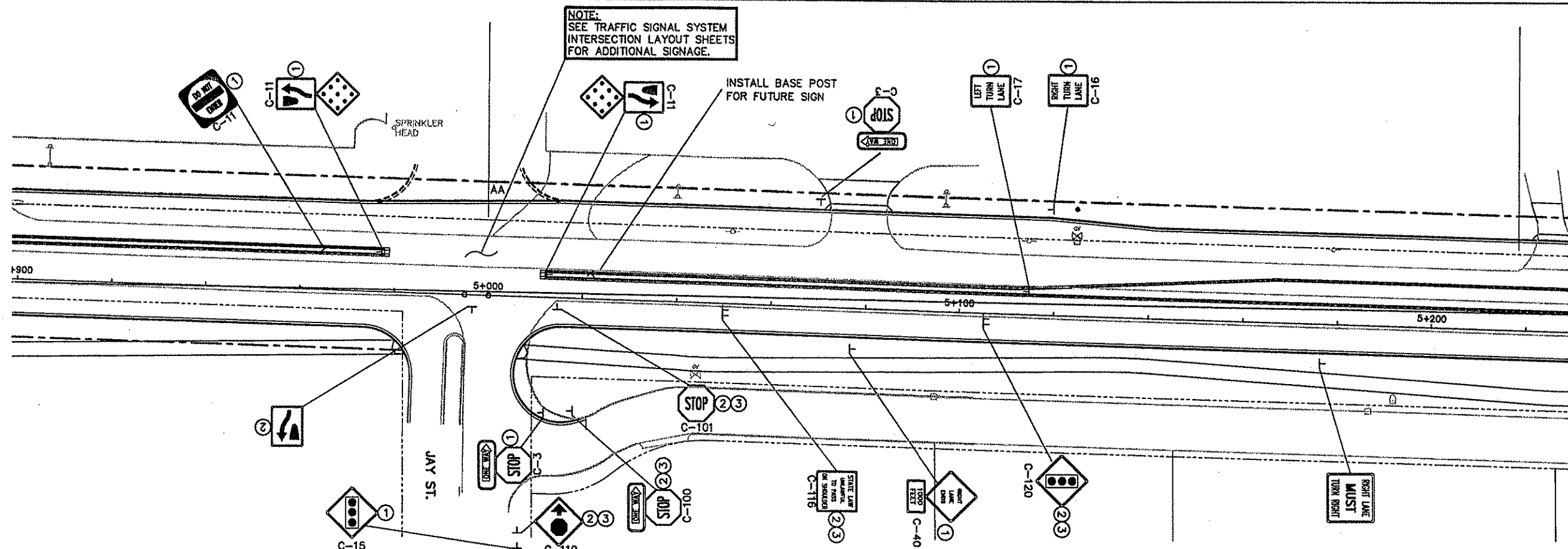
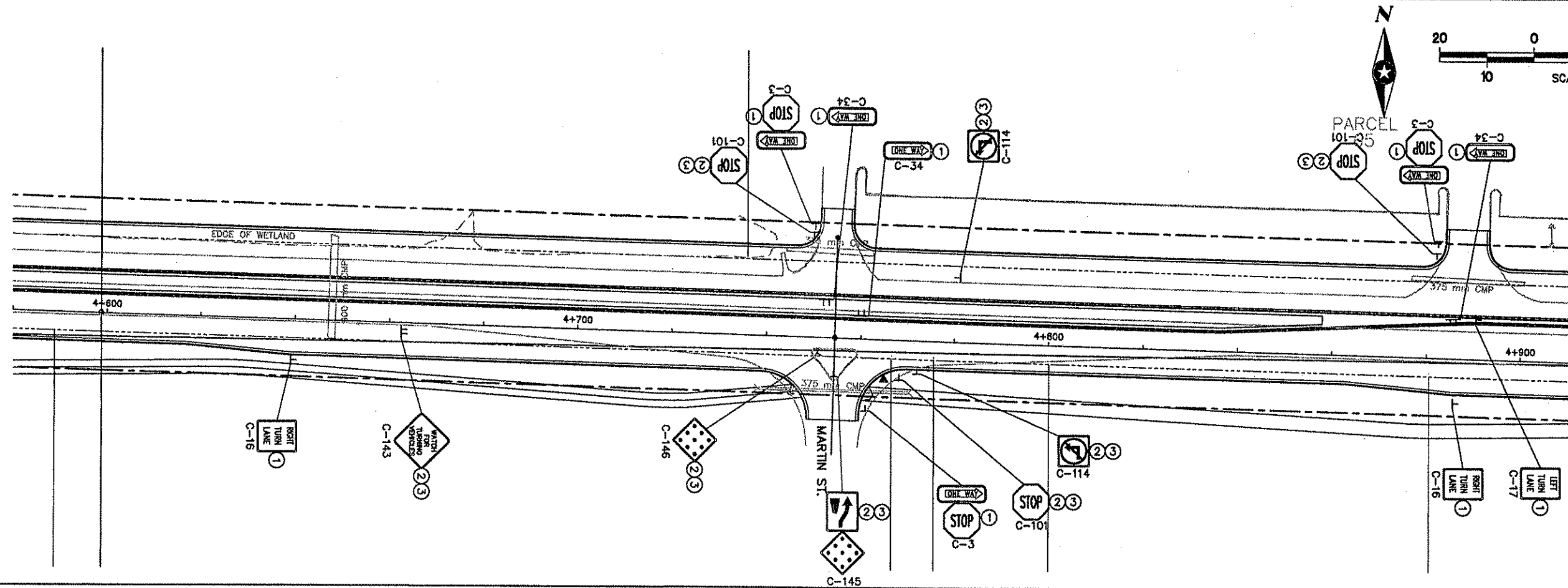
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Samuel Mohr
 Date: 3/25/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PERMANENT SIGNING
 STA. 3+940.000 TO 4+590.000

FILE NO. ANOKC9806.01	157
DATE 03/15/99	230



NOTE:
SEE TRAFFIC SIGNAL SYSTEM
INTERSECTION LAYOUT SHEETS
FOR ADDITIONAL SIGNAGE.

INSTALL BASE POST
FOR FUTURE SIGN

LEGEND

- ① FURNISH & INSTALL
- ② INPLACE
- ③ SALVAGE
- ④ INSTALL
- ⊥ SIGN POST
- ▲ STREET SIGN POST

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
James J. ...
 Date: 3/25/99 Reg. No. 25772



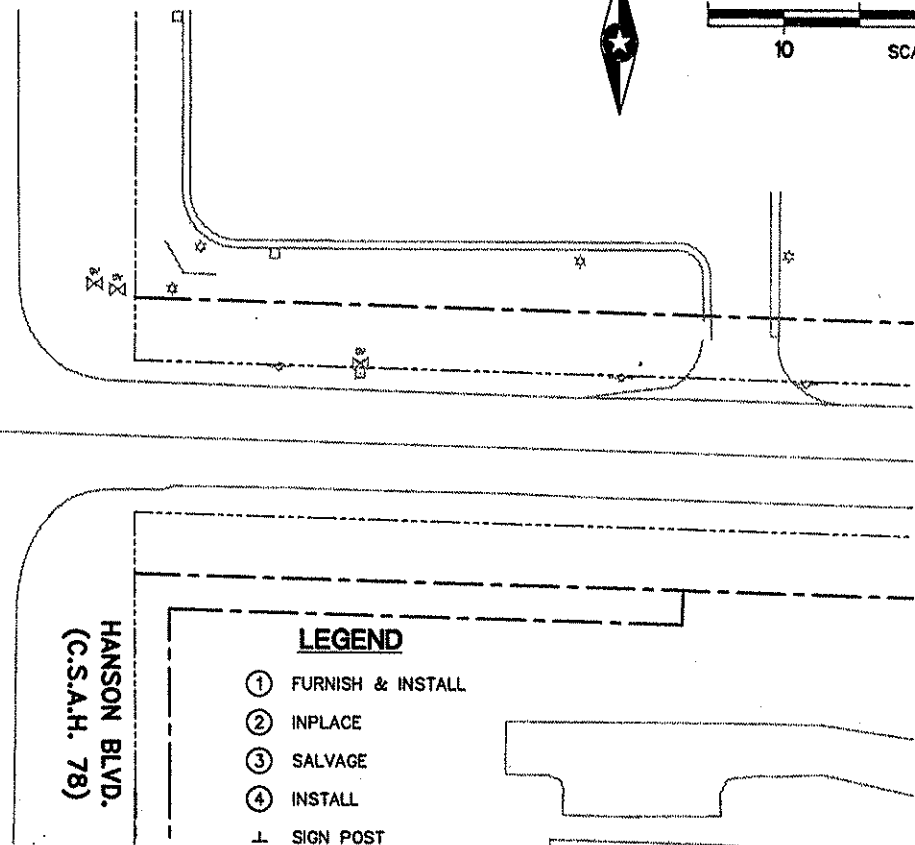
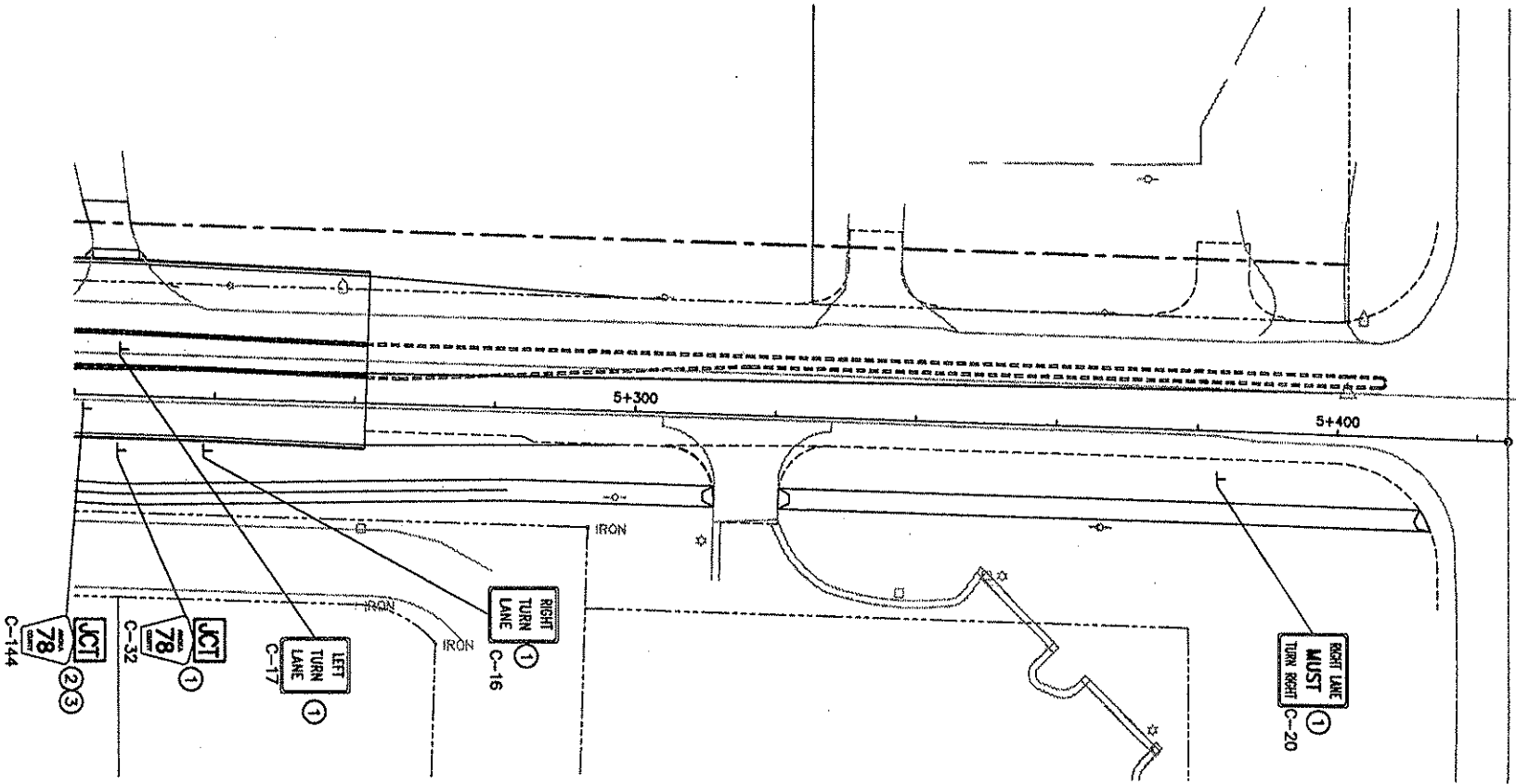
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PERMANENT SIGNING
 STA. 4+580.00 TO 5+230.00

FILE NO. ANOKC8806.01	158
DATE 03/15/99	230



SCALE 1:500



LEGEND

- ① FURNISH & INSTALL
- ② INPLACE
- ③ SALVAGE
- ④ INSTALL
- ⊥ SIGN POST
- ▲ STREET SIGN POST

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

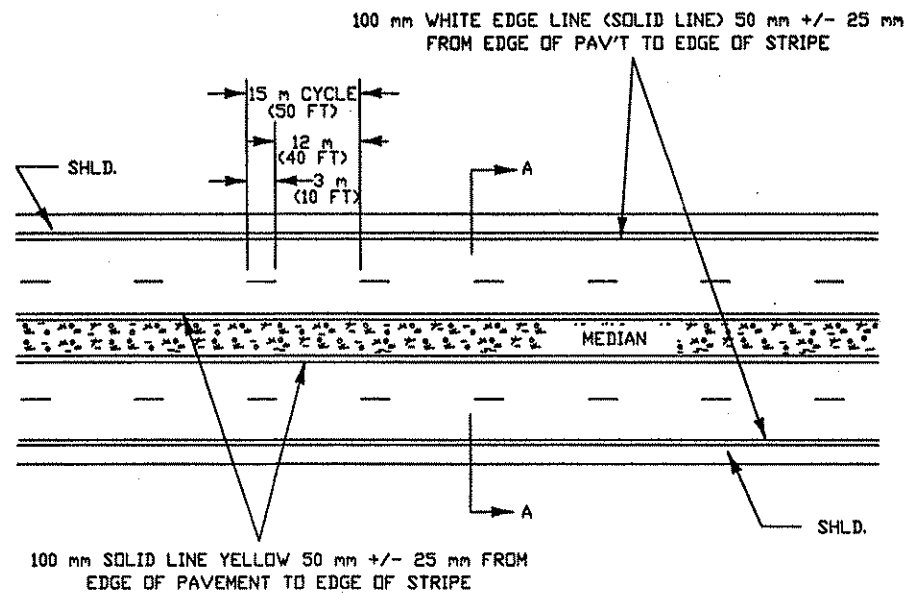
Samuel Mah
Date: 3/25/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

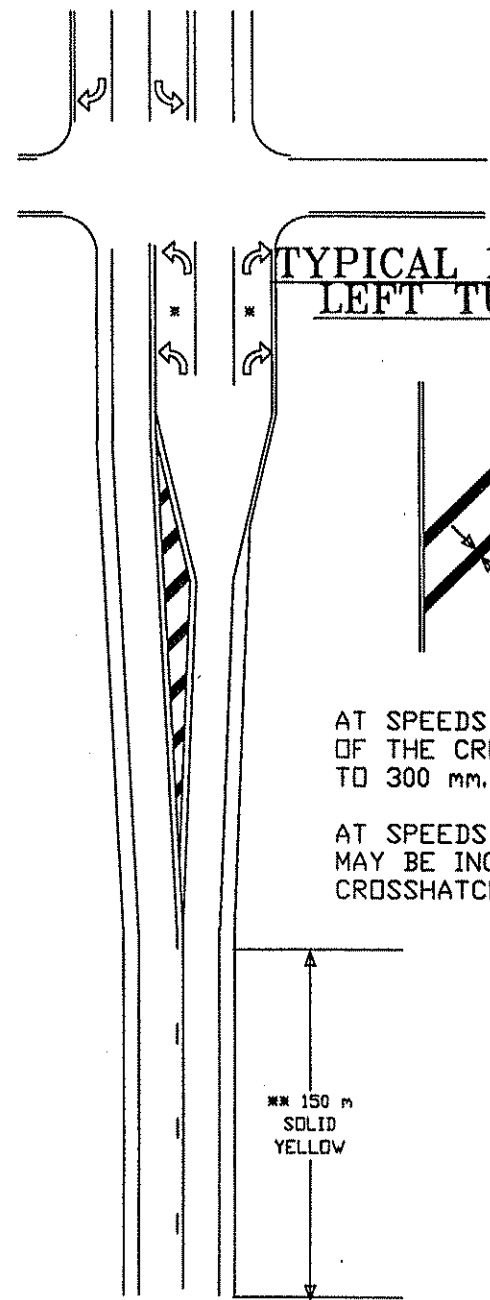
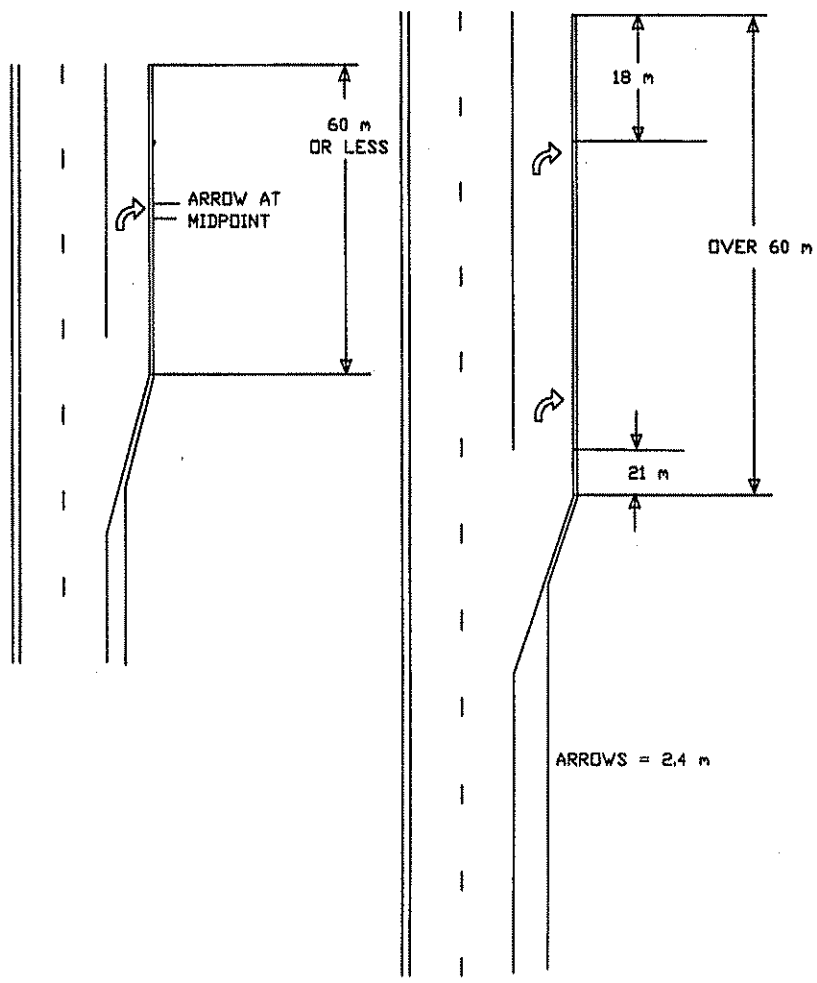
PERMANENT SIGNING
 STA. 5+220.000 TO 5+424.359

FILE NO. ANOKC9806.01	159
DATE 03/15/99	230



TYPICAL 4-LANE DIVIDED LANE MARKINGS

TYPICAL MESSAGE PLACEMENT FOR TURN LANES

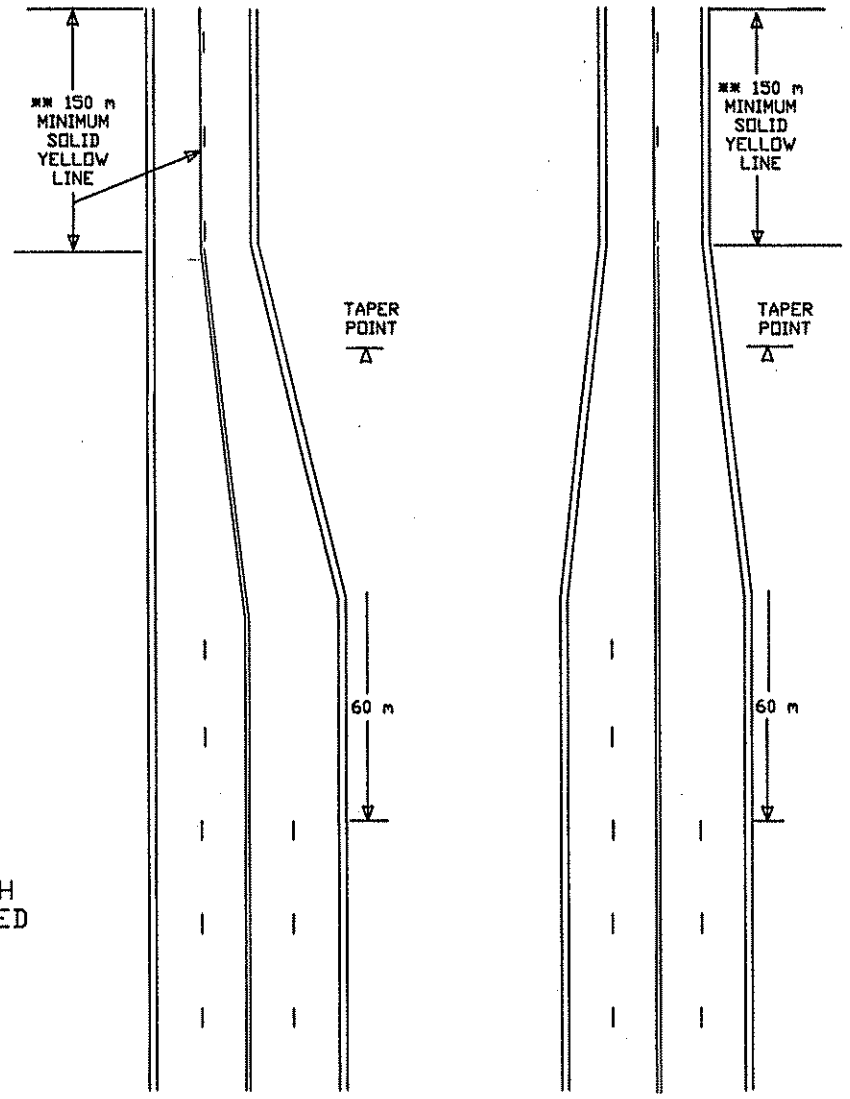


TYPICAL MARKINGS FOR LEFT TURN ISLANDS

AT SPEEDS LESS THAN 40 MPH THE WIDTH OF THE CROSSHATCH LINE MAY BE REDUCED TO 300 mm.

AT SPEEDS OVER 40 MPH THE SPACING MAY BE INCREASED TO 9 m BETWEEN CROSSHATCH LINES.

TYPICAL LANE REDUCTION TRANSITION



* SEE 'TYPICAL MESSAGE PLACEMENT FOR TURN LANES' FOR NUMBER OF ARROWS.

** IF THE DISTANCE BETWEEN THE BEGINNING OF THE SOLID LINE YELLOW IS LESS THAN THE DISTANCES IN THE CHART BELOW FROM THE END OF A PRECEDING SOLID LINE YELLOW IN THE SAME LANE, THE SOLID LINE SHALL BE EXTENDED BETWEEN THEM.

35 MPH SPEED LIMIT OR LESS . . . 150 m
 40-50 MPH SPEED LIMIT 200 m
 55 MPH SPEED LIMIT 245 m

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

James Mah
 Date: 5/25/99 Reg. No. 25772



ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

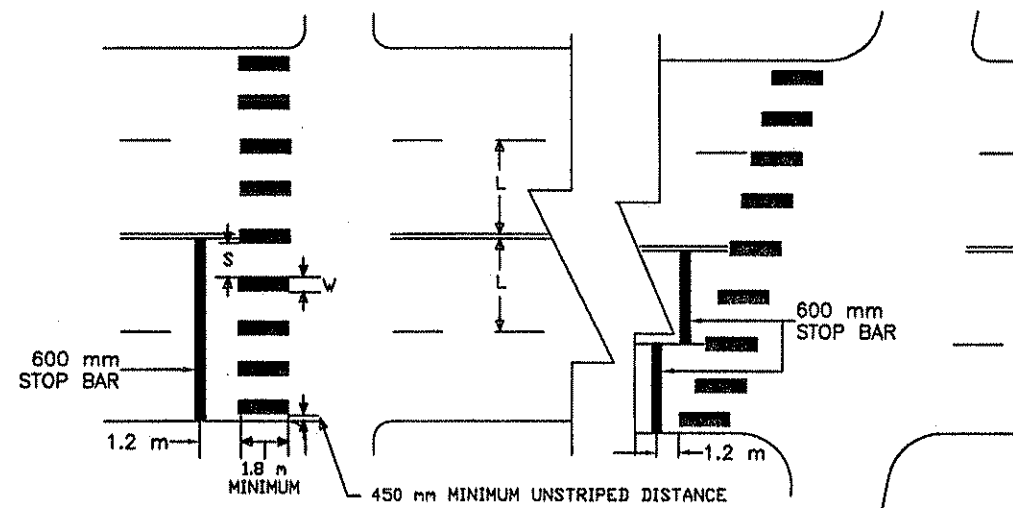
PAVEMENT MARKING DETAILS

FILE NO. AANDKC9806.00	160
DATE 03/15/99	230



MARKINGS FOR PEDESTRIAN CROSSWALKS AND STOP BARS

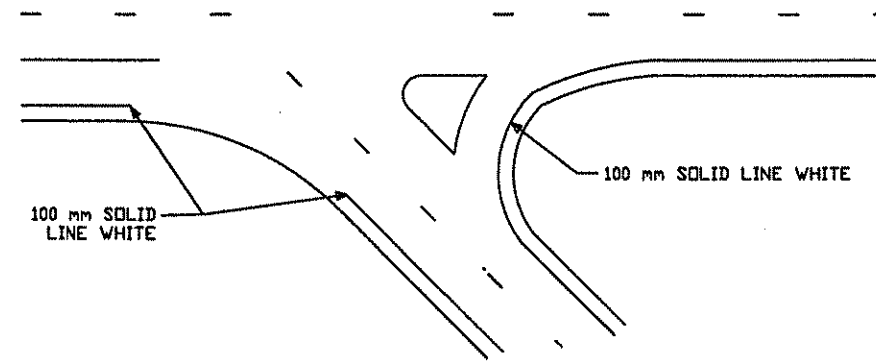
(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
2.7 m	600 mm	750 mm
3 m	750 mm	750 mm
3.4 m	750 mm	900 mm
3.6 m	900 mm	900 mm
4 m	900 mm	1100 mm



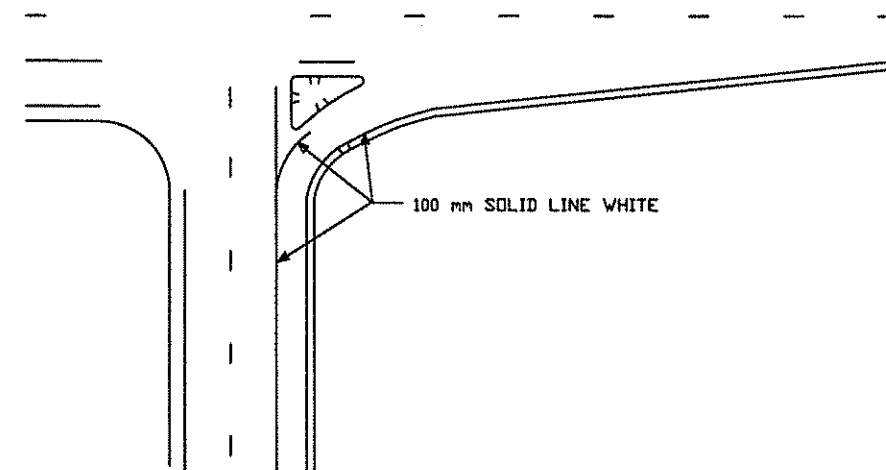
NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 450 mm CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 3.3 m INSIDE LANE.
4. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.
6. STOP BARS SHOULD ORDINARILY BE PLACED 1.2 m IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK LINE. IN THE ABSENCE OF A MARKED CROSSWALK, THE STOP LINE SHOULD BE PLACED AT THE DESIRED STOPPING POINT, AND IN NO CASE NO MORE THAN 9 m OR NO LESS THAN 1 m FROM THE NEAREST EDGE OF THE INTERSECTING CURB LINE OR NEAR EDGE OR SHOULDER.

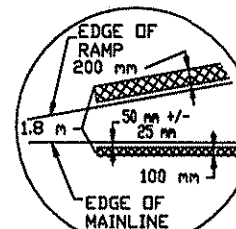
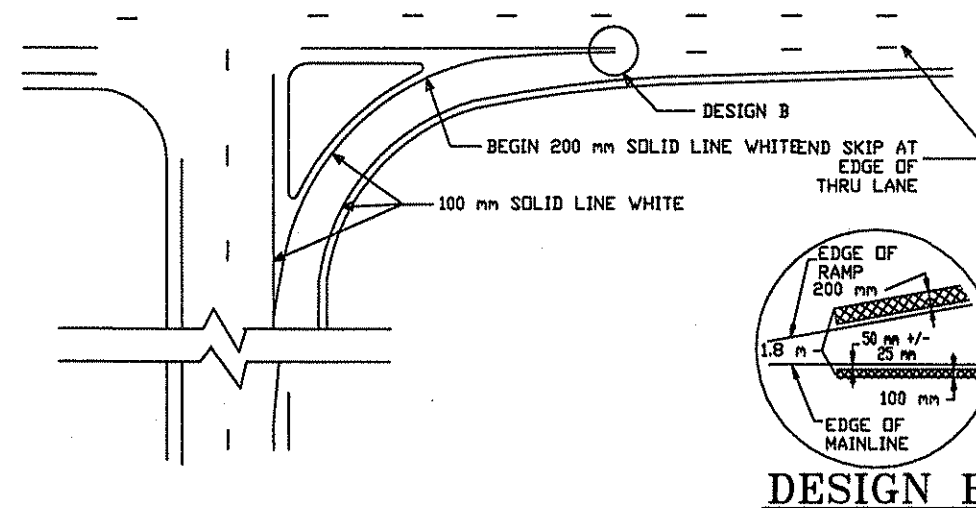
FREE RIGHT STOP CONDITION



FREE RIGHT YIELD CONDITION



FREE RIGHT MERGE CONDITION



DESIGN B

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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Camela Mohr
 Date: 3/25/99 Reg. No. 25772

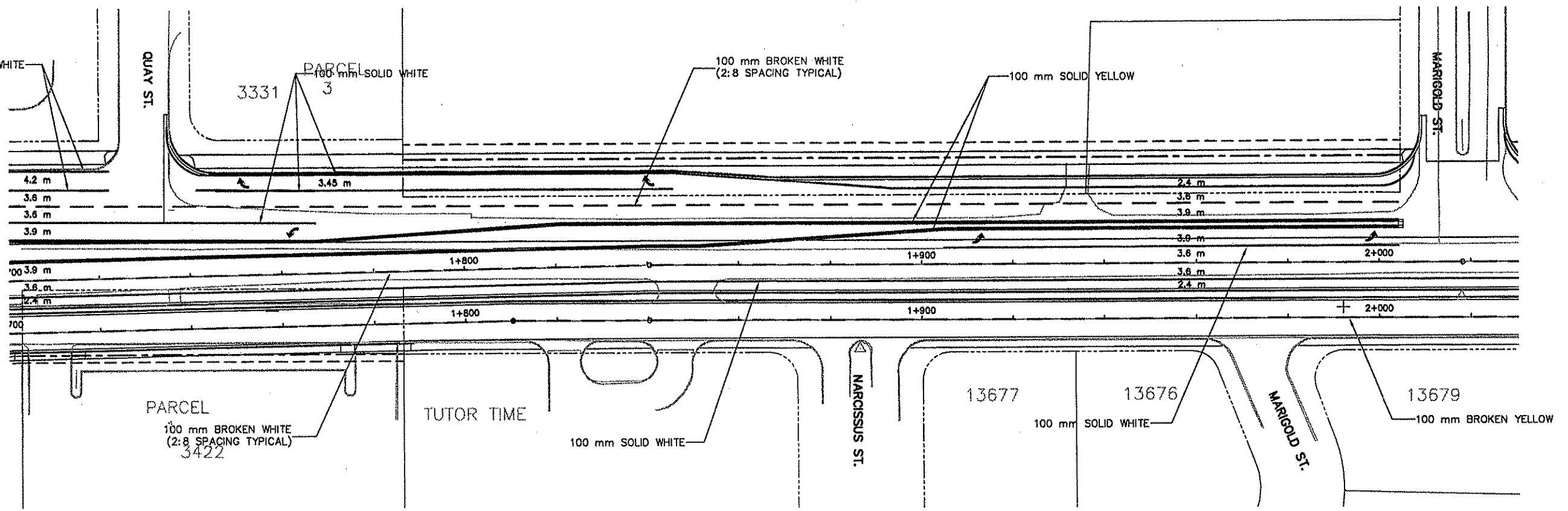
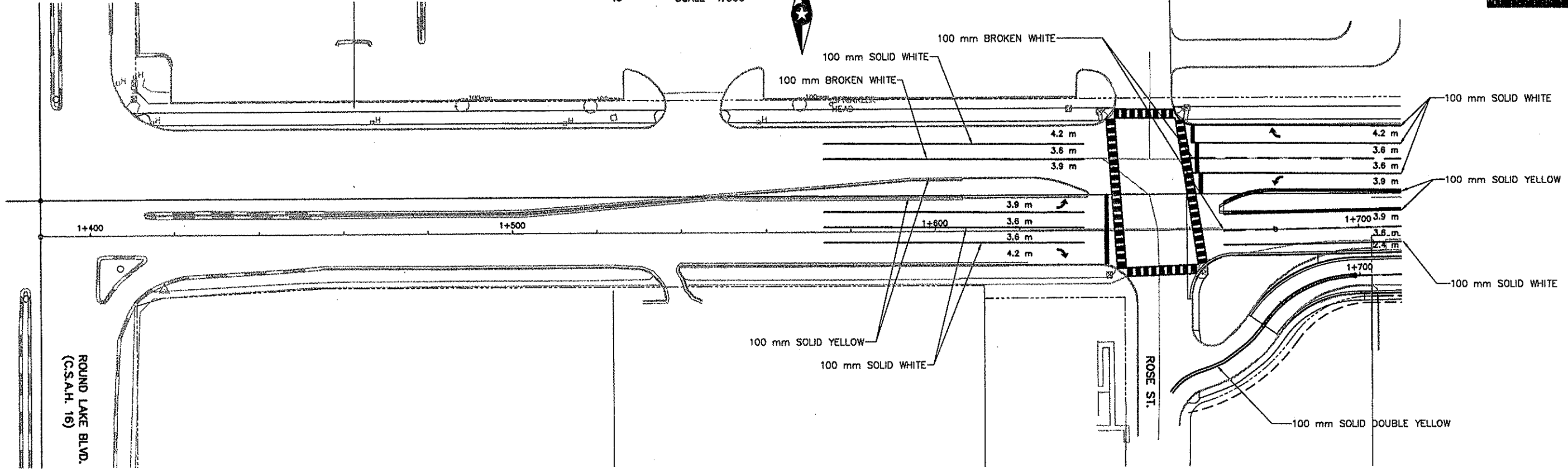
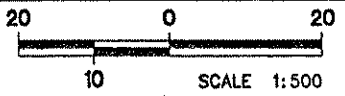


ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PAVEMENT MARKING DETAILS

FILE NO.
 AANOKC9806.00
 DATE
 03/15/99

161
 230



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

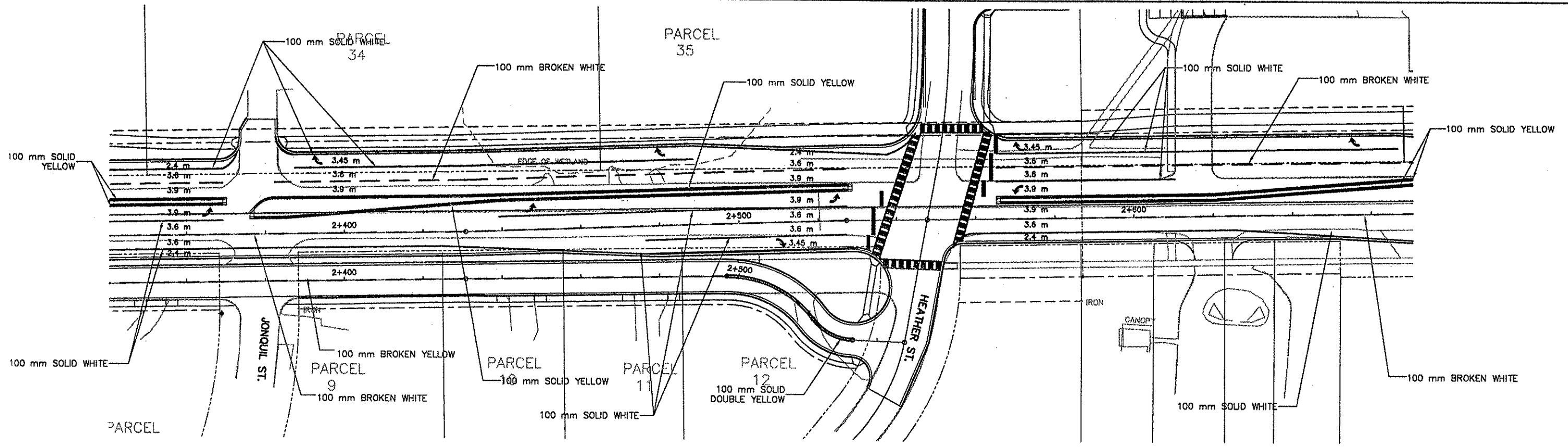
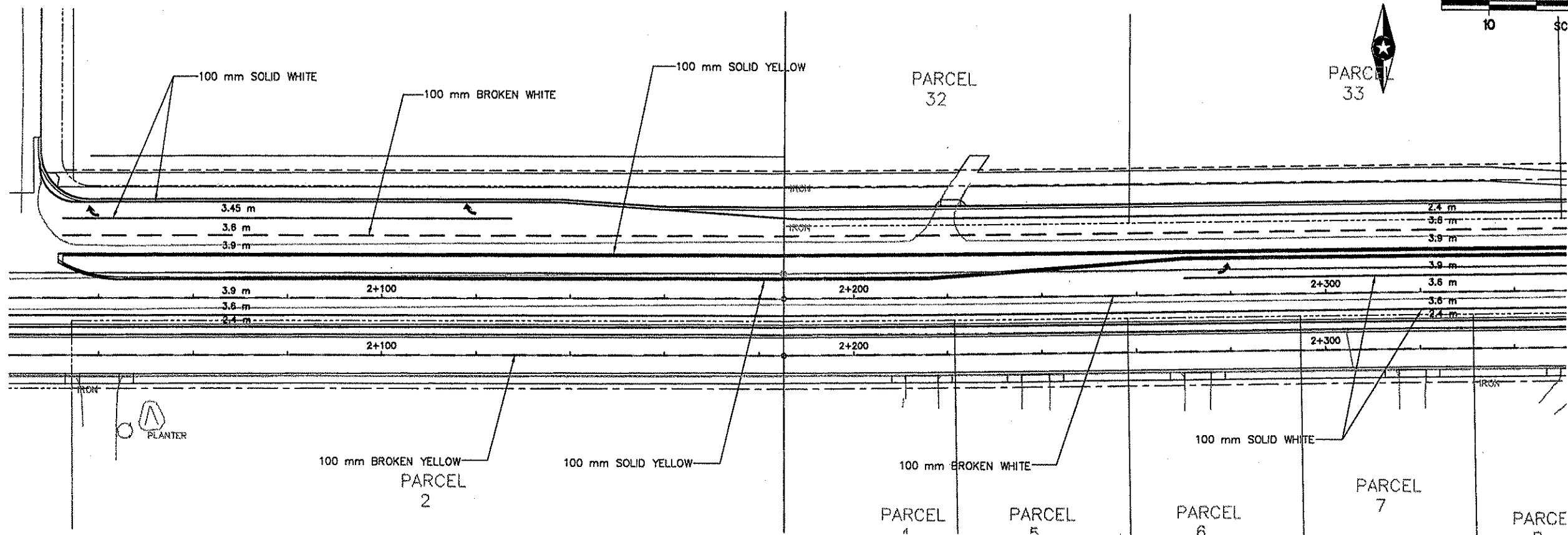
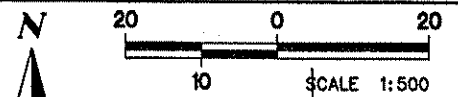
James Maki
Date: 3/25/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKING PLAN
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC9808.01	165 230
DATE 03/15/99	



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

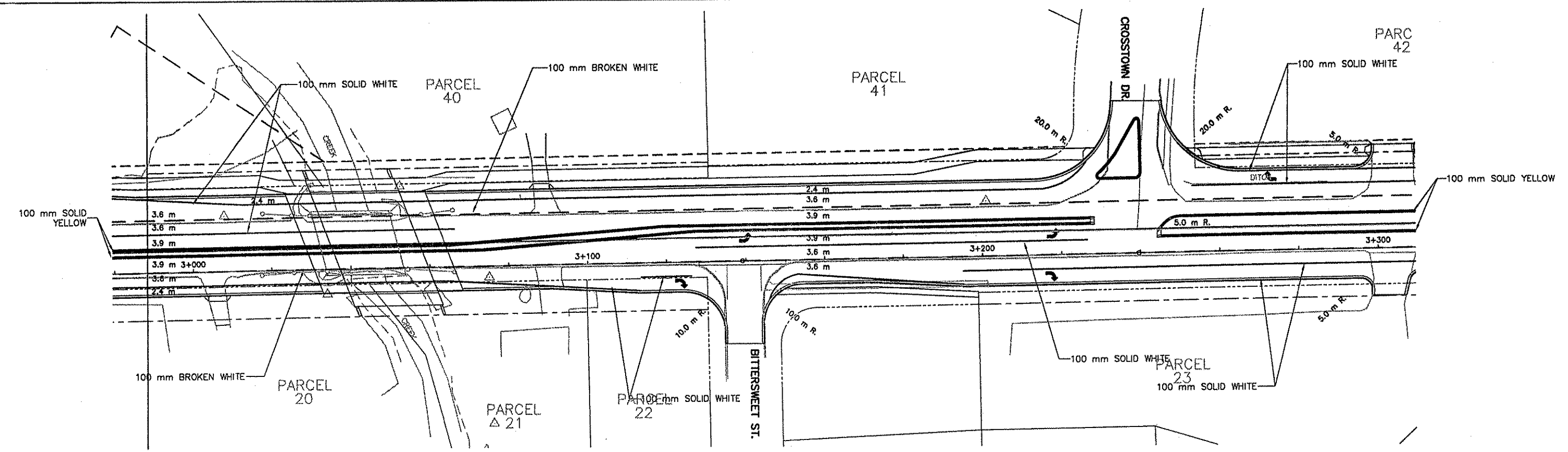
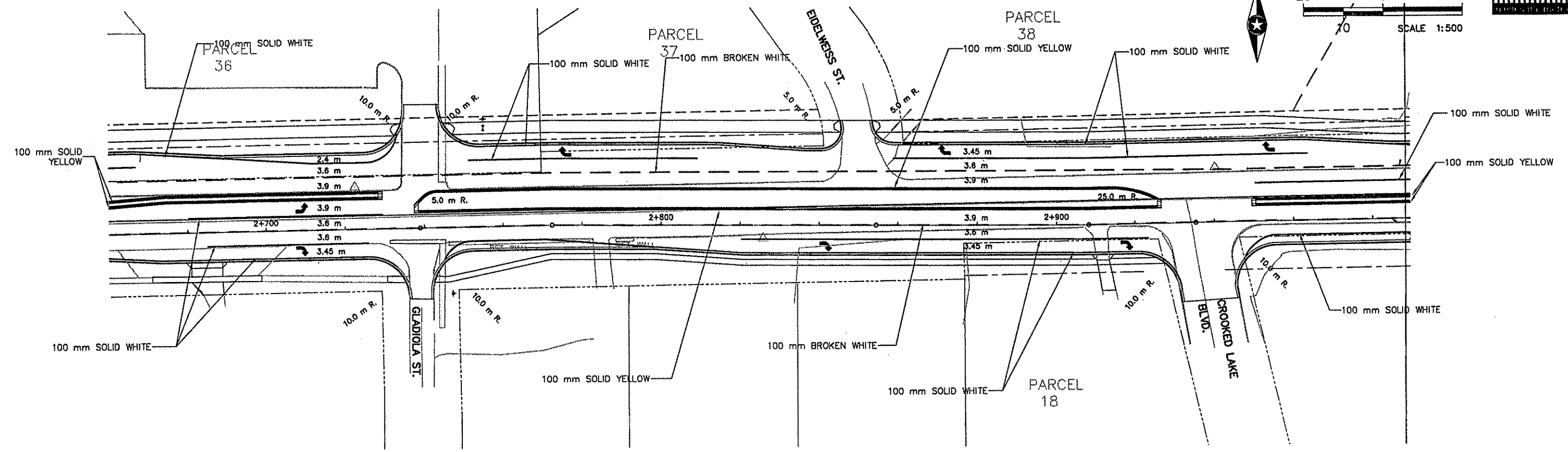
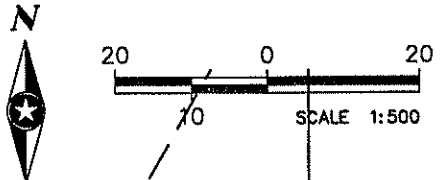
Pamela Mok
Date: 3/23/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKINGS
STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC8806.01	166
DATE 03/15/99	230



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	PJM	4/12	ADD TURN ARROWS	
DRAWING					
CHECKED					

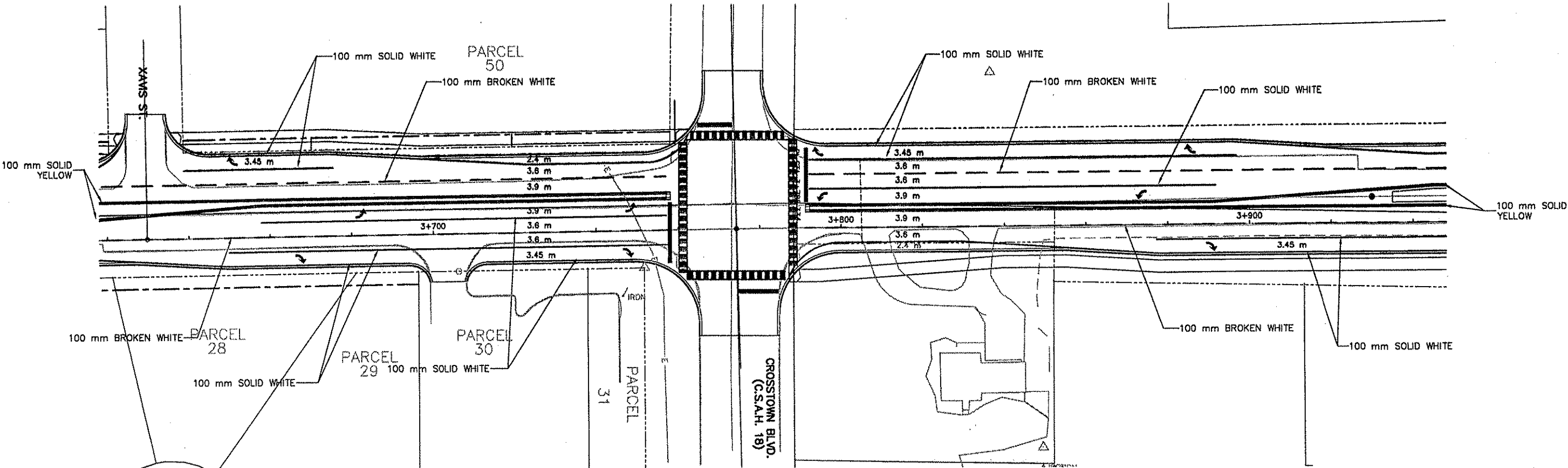
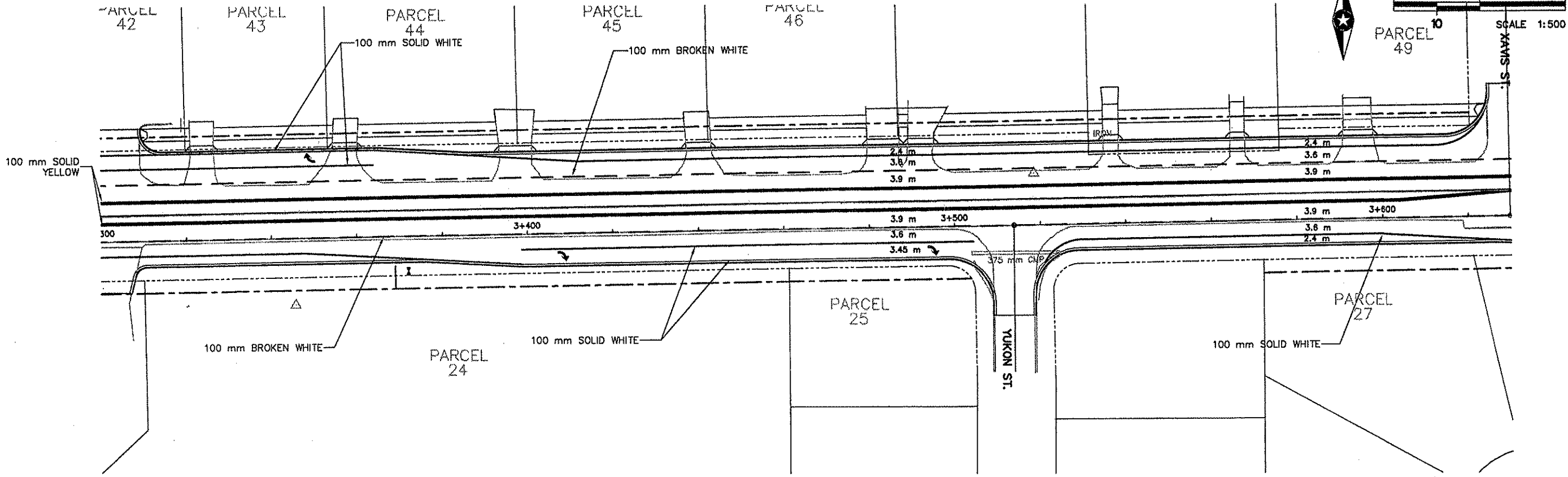
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Dorinda Macki
 Date: 4/27/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PAVEMENT MARKINGS
 STA. 2+660.000 TO 3+310.000

FILE NO. ANOKC9806.01	167 230
DATE 03/15/99	



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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.
Sumeta Inaki
 Date: 3/25/99 Reg. No. 25772

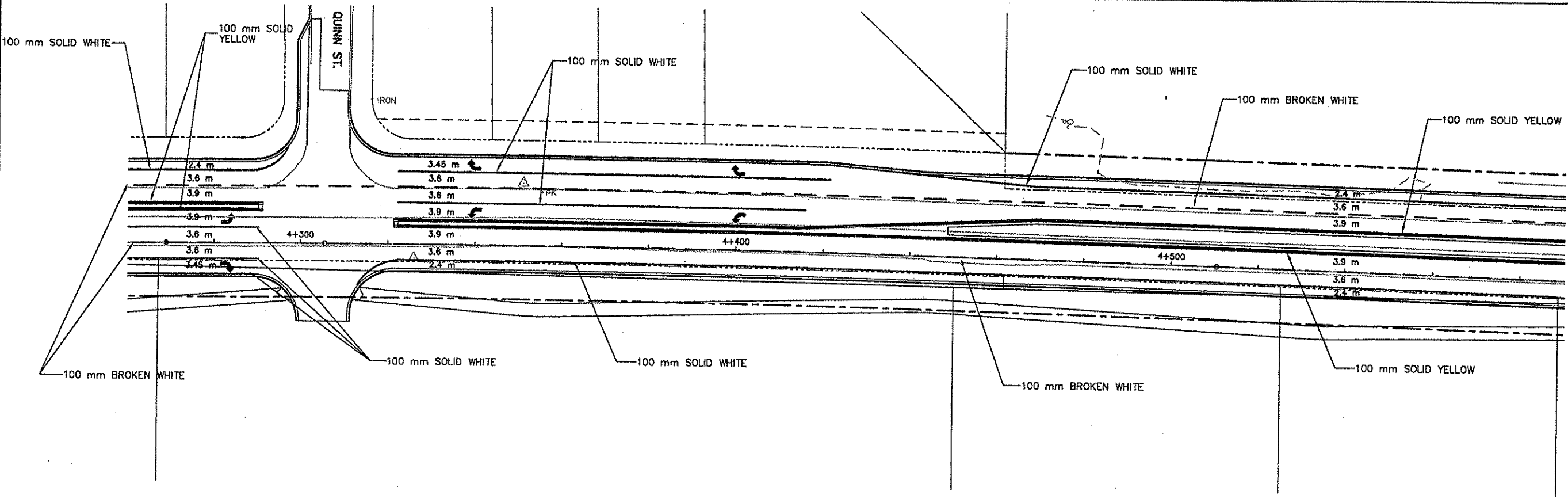
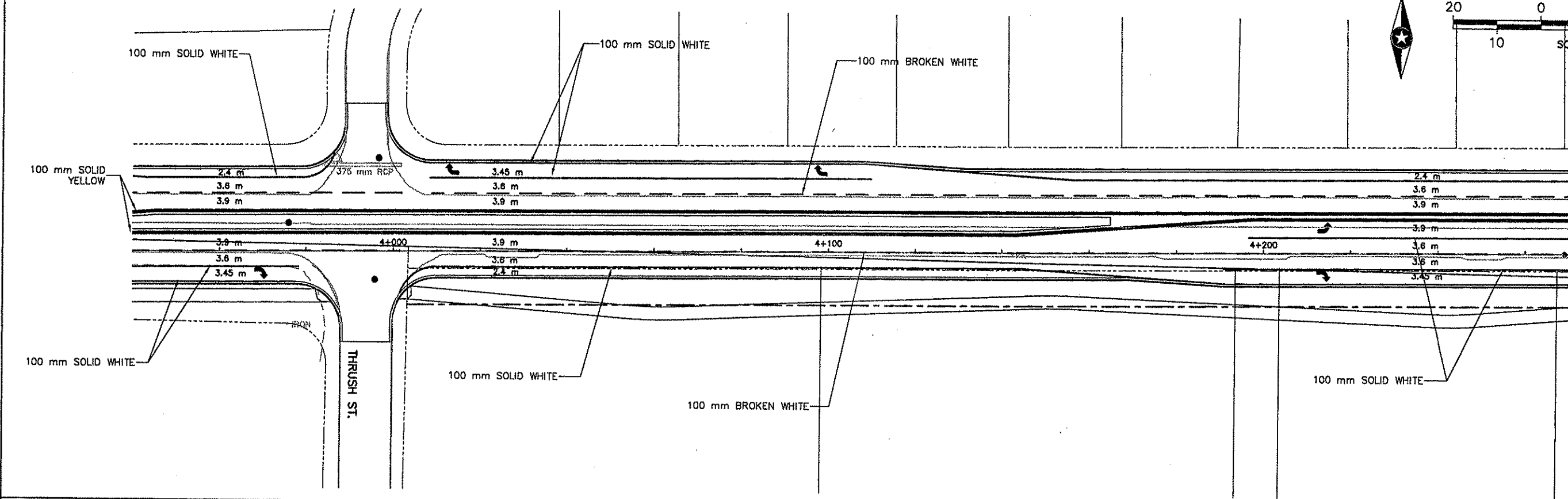


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PAVEMENT MARKINGS
 STA. 3+300.00 TO 3+950.000

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

168
230



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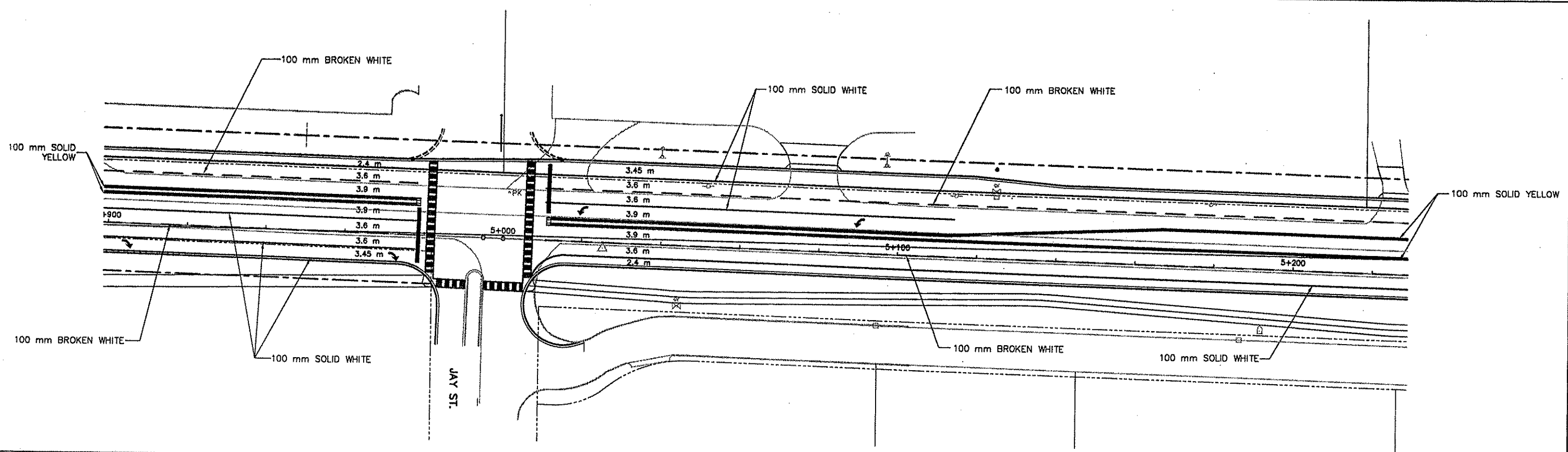
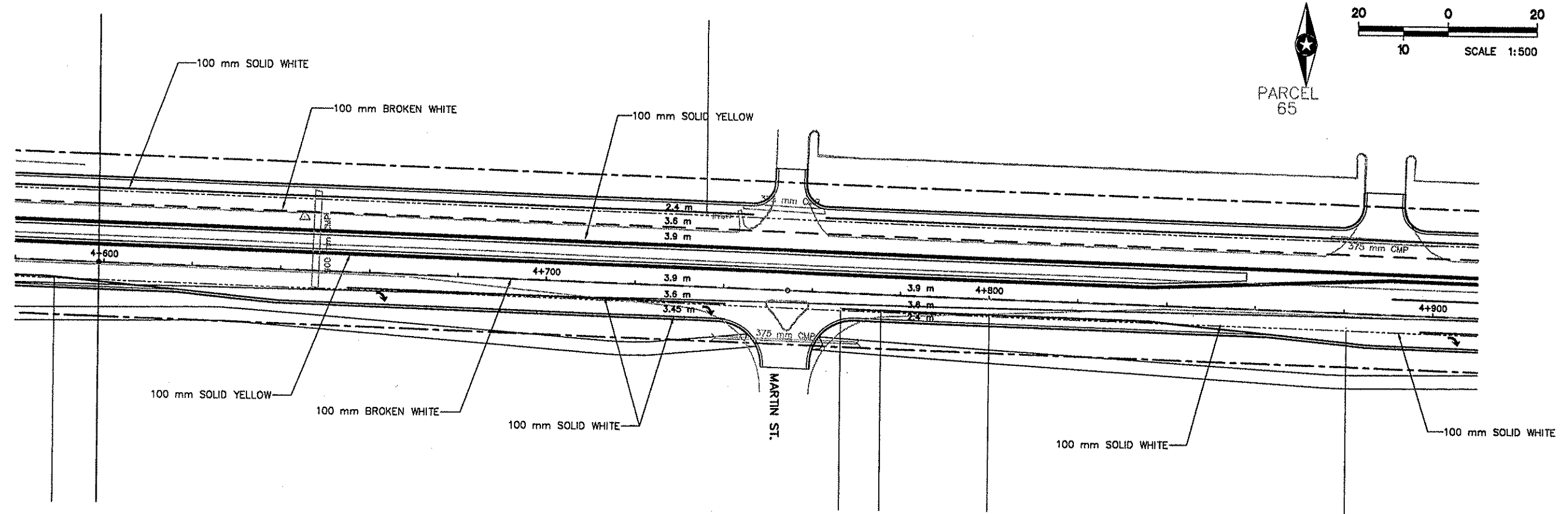
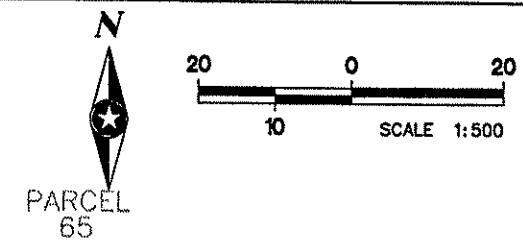
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Pamela Mali
 Date: 4/27/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

PAVEMENT MARKINGS
 STA. 3+940.000 TO 4+590.000

FILE NO. ANOKC9806.01	169
DATE 03/15/99	230



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Ramela Mah
Date: 3/25/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKINGS
STA. 4+580.000 TO 5+230.000

FILE NO. ANOKC9806.01	170
DATE 03/15/99	230



SCALE 1:500

100 mm SOLID WHITE
100 mm SOLID YELLOW

5+300

5+400

100 mm SOLID WHITE

IRON

IRON

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Samuel Mak
Date: 3/25/99 Reg. No. 25772



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKINGS
STA. 5+220.000 TO 5+424.359

FILE NO.
ANOKC9806.01
DATE
03/15/99

171
230

TRAFFIC CONTROL NOTES & GUIDELINES

GENERAL INFORMATION:

1. THE DEVICES IN THIS TRAFFIC CONTROL PLAN WILL BE FURNISHED, INSTALLED, AND MAINTAINED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
2. ALL DISTANCES ARE APPROXIMATE.
3. ALL WORK AREAS NEAR TRAFFIC WILL BE PROTECTED IN ACCORDANCE WITH THE MMUTCD AND FIELD MANUAL DATED JANUARY 1998.
4. AN ANNUAL FALL REVIEW OF ALL TRAFFIC CONTROLS WILL BE MADE TO PREPARE FOR WINTER MAINTENANCE OF THE PROJECT. THIS MAY INCLUDE ADJUSTMENTS OR EXCHANGE OF ONE TRAFFIC CONTROL DEVICE FOR ANOTHER, READJUSTMENTS MAY AGAIN BE REQUIRED IN THE SPRING.
5. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THEN SHOWN IN THIS TRAFFIC CONTROL PLAN, A REVISED TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
6. CONTRACTOR SHALL PROVIDE CHANNELIZING DEVICES (AND SIGNING IF NECESSARY) AT ALL PRIVATE ENTRANCE LOCATIONS WHERE NEEDED TO SAFELY GUIDE TRAFFIC TO AND FROM THE TRAVEL CORRIDOR TO THE SATISFACTION OF THE ENGINEER.
7. ALL CUTS ADJACENT TO TRAVELED ROADWAY WHICH RESULT IN A DROP-OFF OF 150 mm OR MORE SHALL BE BACKFILLED AS SOON AS PRACTICABLE AND IN NO EVENT LATER THAN THE END OF THE DAY.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, JANUARY 1998.

SIGNING:

1. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED.
2. WHEN SIGNS ARE INSTALLED, THEY SHALL BE MOUNTED AT THE PROPER HEIGHT AND LATERAL OFFSET AS DETAILED IN THE MMUTCD.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONS TRAFFIC FROM ONE STAGE TO ANOTHER.
4. ALL ORANGE SIGNS SHALL BE MADE OF DIAMOND GRADE ORANGE REFLECTIVE SHEETING OR AN APPROVED SUBSTITUTE.
5. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN ON PAGES 6K-102 AND 6K-103 OF THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
6. THE REMOVAL OF THE TEMPORARY SIGNS WILL BE COORDINATED TO ASSURE THAT THE FINAL SIGNS ARE INSTALLED AS NEEDED, OR TEMPORARY SIGNING WILL BE PROVIDED UNTIL THE FINAL SIGNING IS INSTALLED.
7. PERMANENT SIGNING IN ACCORDANCE WITH THE SIGNING PLANS SHALL BE INSTALLED IN THOSE AREAS WHERE CONSTRUCTION IS SUBSTANTIALLY COMPLETED AT THE DIRECTION OF THE ENGINEER AS THE SIGNS ARE NEEDED TO REGULATE, GUIDE, OR WARN TRAFFIC IN THE PROJECT AREA.

PAVEMENT MARKING:

1. OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS.
2. PAINTS, POLYMER LANE TAPE AND/OR TRPM'S ARE ACCEPTABLE TEMPORARY STRIPING ALTERNATIVES ACCORDING TO ACTUAL CONDITIONS ENCOUNTERED AS DIRECTED BY THE ENGINEER. GENERALLY, ONLY PAINT WILL BE USED BEFORE MAY 1ST OR WHEN THE OTHER MANUFACTURER'S SPECIFICATIONS CAN NOT BE MET.

BARRIER & DELINEATION:

1. BARRIER DELINEATORS WILL HAVE A MINIMUM OF 0.0155 SQ. METER OF REFLECTIVE SURFACE AREA AND BE PLACED AT 15 METER INTERVALS ON TOP OF BARRIER WHEN THE BARRIER IS WITHIN 3 METER OF TRAFFIC UNLESS OTHERWISE NOTED.
2. REFLECTORIZED DRUM CHANNELIZERS SHALL BE INSTALLED AS SHOWN ON THIS PLAN. DRUM LOCATIONS AND SPACINGS SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE SUBJECT TO REVISION BY THE ENGINEER IN THE FIELD.

TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND

NOTES:

CONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES SHOWN UNLESS NOTED OTHERWISE. EXACT LOCATION OF TRAFFIC CONTROL DEVICES TO BE DETERMINED BY THE ENGINEER.

SYMBOL	DESCRIPTION
	TRAFFIC CONTROL SIGN
	TYPE III BARRICADE
	DRUM-LIKE CHANNELIZER
	SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACING)
	TYPE A FLASHING WARNING LIGHT
	PERMANENT CONSTRUCTION
	PORTABLE BARRIER WITH BARRIER DELINEATORS AT 15 m SPACES
	DIRECTIONAL ARROWS
	TEMPORARY PAVEMENT PLACEMENT (SEE TYPICAL SECTIONS)

TRAFFIC CONTROL - ESTIMATED QUANTITIES					
ITEM	UNIT	STAGE 1	STAGE 2	STAGE 3	TOTAL
100 mm SOLID LINE WHITE - PAINT	m	4530	2550	5200	12280
100 mm SOLID LINE YELLOW - PAINT	m	4620	3830	4115	12565
PAVEMENT MARKING REMOVAL	m	6750	1000	6580	14330
TEMPORARY PAVEMENT	m ²	1075	1000		2075
SOLID LINE PAVEMENT MARKINGS WITH TRPMS (WHITE)	EACH	250	75		325
SOLID LINE PAVEMENT MARKINGS WITH TRPMS (YELLOW)	EACH	260	95		355

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 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL
 TABULATIONS

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

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S TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE		
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE 1	STAGE 2	STAGE 3
	R1-1	WHITE ON RED	30 X 30	16	10	6
	R2-1 ①	BLACK ON WHITE	24 X 30	5	5	5
	R2-X6P ①	BLACK ON ORANGE	24 X 18	5	5	5
	R2-5a ①	BLACK ON WHITE	24 X 30	2	2	2
	R2-6A ①	BLACK ON WHITE	24 X 30	1	1	1
	R3-1	BLACK AND RED ON WHITE	24 X 24	6	3	1
	R3-2	BLACK AND RED ON WHITE	24 X 24	7	2	1
	R3-8H	BLACK ON WHITE	54 X 30	1	1	
	R3-X1	BLACK ON WHITE	30 X 30	1	5	15
	R3-X2	BLACK ON WHITE	30 X 30	3	1	9
	R4-1	BLACK ON WHITE	24 X 30	5	5	
	R4-7	BLACK ON WHITE	24 X 30	5	3	13
	R6-1R	BLACK ON WHITE	36 X 12			1
	R11-2	BLACK ON WHITE	48 X 30	21	12	4
	R11-4	BLACK ON WHITE	60 X 30	1	1	1
	R11-3A	BLACK ON WHITE	72 X 30	1	1	1
	W1-4R	BLACK ON ORANGE	30 X 30		1	
	W1-6	BLACK ON ORANGE	48 X 24	2	3	2
	W3-1a	BLACK ON ORANGE	36 X 36	3	3	4
	W4-2L	BLACK ON ORANGE	36 X 36			1

S TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE		
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE 1	STAGE 2	STAGE 3
	W6-1	BLACK ON ORANGE	48 X 48		1	
	W6-3	BLACK ON ORANGE	48 X 48	6	6	
	W12-1	BLACK ON ORANGE	24 X 24			1
	W20-1	BLACK ON ORANGE	48 X 48	11	10	7
	W20-2	BLACK ON ORANGE	48 X 48	1	1	
	W20-3	BLACK ON ORANGE	48 X 48	4	4	2
	W20-X3L	BLACK ON ORANGE	48 X 48			1
	W21-X3R	BLACK ON ORANGE	48 X 48	1	1	
	W21-X5L	BLACK ON ORANGE	48 X 48	1	1	2
	W21-X5R	BLACK ON ORANGE	48 X 48	1	1	
	G20-2A	BLACK ON ORANGE	48 X 24	2	2	2
	M4-10L	BLACK ON ORANGE	30 X 24	2	1	
	M4-10R	BLACK ON ORANGE	30 X 24	1	1	1
	X3-4	BLACK ON ORANGE	12 X 18		1	
	X3-4	BLACK ON ORANGE	12 X 18	2	2	1
	X3-4	BLACK ON ORANGE	12 X 18	2	2	1
	X4-2	YELLOW ON YELLOW	18 X 18	4	3	13
	FLAGS	ORANGE	24 X 24	3	3	4
	TYPE III	WHITE ON ORANGE	8'	107	62	16
	PLASTIC DRUM	WHITE ON ORANGE	18 X 36 MIN.	410	250	310

S TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE		
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE 1	STAGE 2	STAGE 3
F	TYPE "A" FLASHER	--	--	126	80	28

NOTE: SIGN PANELS ARE IN ENGLISH UNITS.
 ① WORK ZONE SPEED LIMIT SIGNS WILL BE COMPENSATED FOR ONLY IF USED.

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DESIGN					
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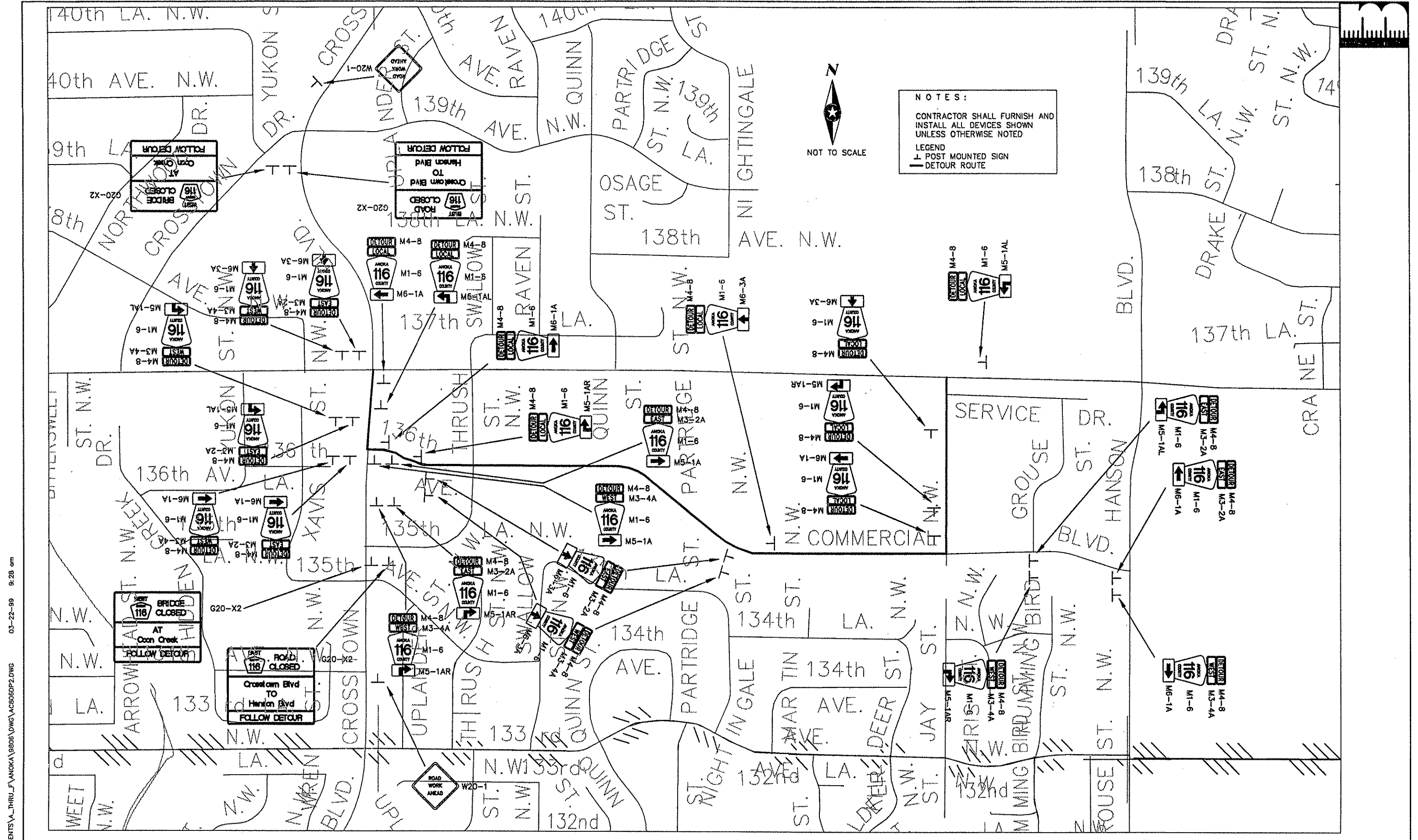
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: 3/15/99 Reg. No. 18512



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL
 TABULATIONS


FILE NO.	173
ANOKC9806.01	
DATE	03/15/99
	230



NOTES:
 CONTRACTOR SHALL FURNISH AND
 INSTALL ALL DEVICES SHOWN
 UNLESS OTHERWISE NOTED
 LEGEND
 POST MOUNTED SIGN
 DETOUR ROUTE



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DESIGN						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: 2/15/99 Reg. No. 18612
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CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

LOCAL DETOUR PLAN

FILE NO. ANOKC9806.01	175B
DATE 03/15/99	230



MUTCD CODE	SIZE- INCHES	SIZE- mm	PANEL SQ FT	AREA SQ m	INSERT	QTY
W20-1	48" X 48"	1219 X 1219	16.00	1.486		5
W21-X5L	48" X 48"	1219 X 1219	16.00	1.486		1
W20-3	48" X 48"	1219 X 1219	16.00	1.486		1
G20-X2	96" X 84"	2438 X 2134	56.00	5.203		2
G20-X2	96" X 84"	2438 X 2134	56.00	5.203		1
G20-X2	96" X 84"	2438 X 2134	56.00	5.203		3
G20-X2	96" X 78"	2438 X 1981	52.00	4.831		3
M4-8	24" X 12"	610 X 305	2.00	0.186		27
M3-4A	24" X 12"	610 X 305	2.00	0.186		
M1-6	24" X 24"	610 X 610	4.00	0.372		
M5-1AR	21" X 15"	530 X 380	2.18	0.200		
M6-1A	21" X 15"	530 X 380	2.18	0.200		
M5-1AL	21" X 15"	530 X 380	2.18	0.200		
M6-1A	21" X 15"	530 X 380	2.18	0.200		
M6-3A	21" X 15"	530 X 380	2.18	0.200		

MUTCD CODE	SIZE- INCHES	SIZE- mm	PANEL SQ FT	AREA SQ m	INSERT	QTY
M4-8	24" X 12"	610 X 305	2.00	0.186		28
M3-A	24" X 12"	610 X 305	2.00	0.186		
M1-6	24" X 24"	610 X 610	4.00	0.372		
M5-1AR	21" X 15"	530 X 380	2.18	0.200		
M6-1A	21" X 15"	530 X 380	2.18	0.200		X
M5-1AL	21" X 15"	530 X 380	2.18	0.200		
M6-1A	21" X 15"	530 X 380	2.18	0.200		
M6-3A	21" X 15"	530 X 380	2.18	0.200		
M4-8	24" X 12"	610 X 305	2.00	0.186		X
M1-6	24" X 24"	610 X 610	4.00	0.372		
M5-1AR	21" X 15"	530 X 380	2.18	0.200		
M6-1A	21" X 15"	530 X 380	2.18	0.200		
M4-6	24" X 12"	610 X 305	2.00	0.186		2
M4-8	24" X 12"	610 X 305	2.00	0.186		
M1-6	24" X 24"	610 X 610	4.00	0.372		
M6-4A	21" X 15"	530 X 380	2.18	0.200		

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Andrew J. M...
 Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

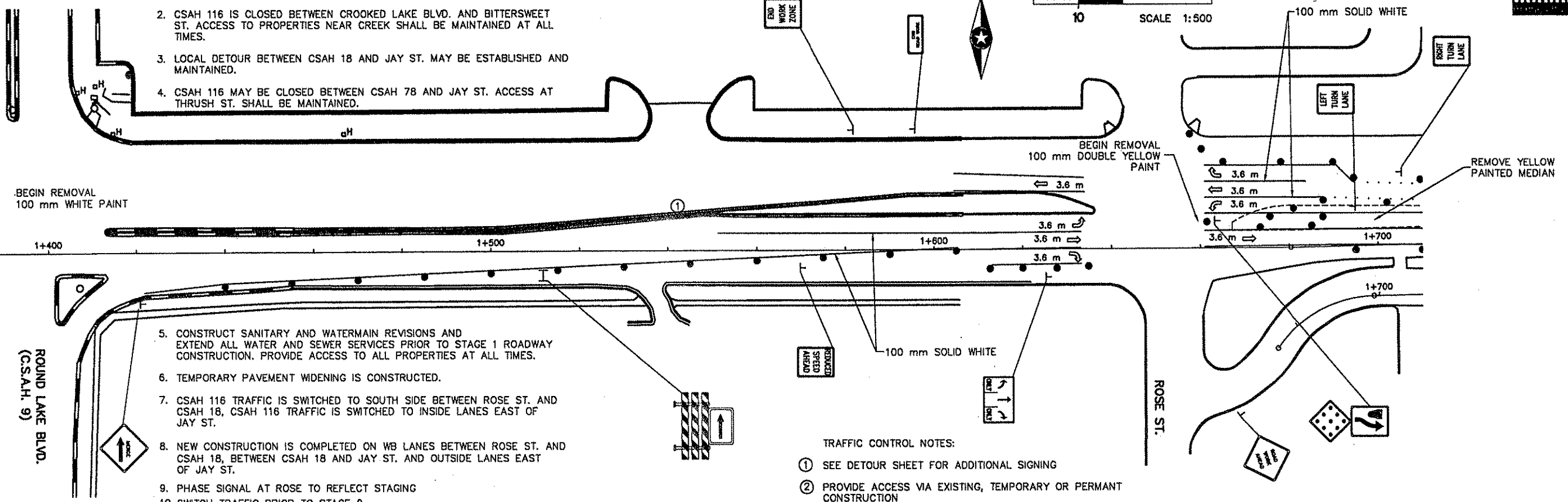
SIGN QUANTITIES

FILE NO. ANOKC9808.01	176
DATE 03/15/99	230



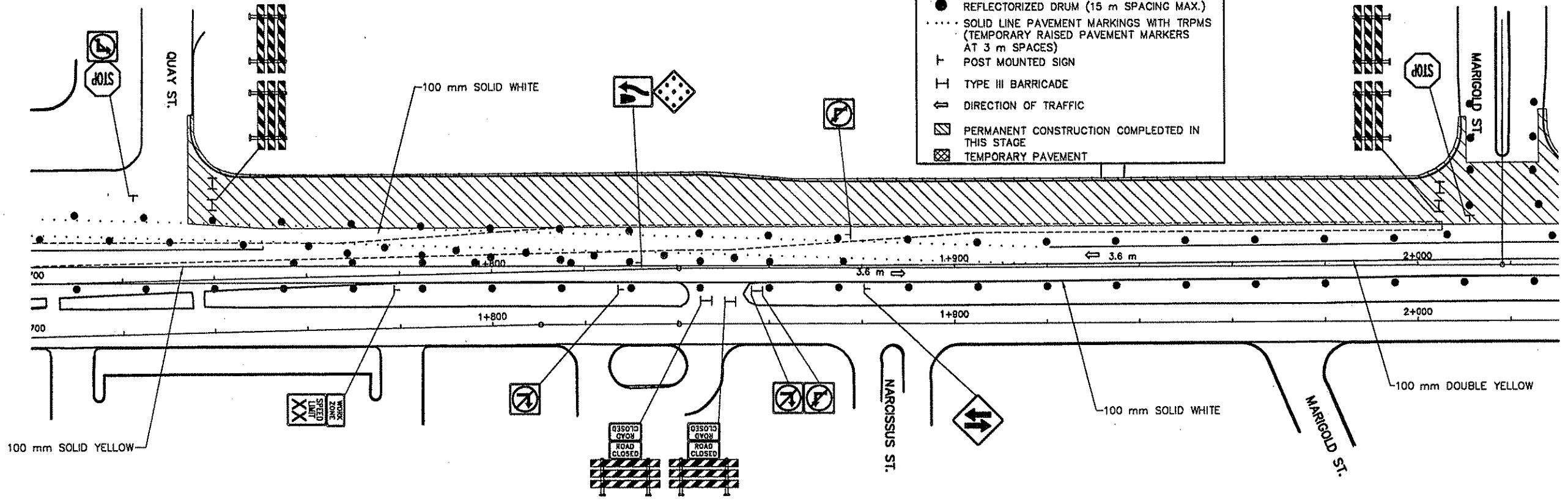
STAGE ONE-OVERALL

1. DETOUR ROUTE FOR BRIDGE CLOSURE IS ESTABLISHED AND MAINTAINED.
2. CSAH 116 IS CLOSED BETWEEN CROOKED LAKE BLVD. AND BITTERSWEET ST. ACCESS TO PROPERTIES NEAR CREEK SHALL BE MAINTAINED AT ALL TIMES.
3. LOCAL DETOUR BETWEEN CSAH 18 AND JAY ST. MAY BE ESTABLISHED AND MAINTAINED.
4. CSAH 116 MAY BE CLOSED BETWEEN CSAH 78 AND JAY ST. ACCESS AT THRUSS ST. SHALL BE MAINTAINED.



5. CONSTRUCT SANITARY AND WATERMAIN REVISIONS AND EXTEND ALL WATER AND SEWER SERVICES PRIOR TO STAGE 1 ROADWAY CONSTRUCTION. PROVIDE ACCESS TO ALL PROPERTIES AT ALL TIMES.
6. TEMPORARY PAVEMENT WIDENING IS CONSTRUCTED.
7. CSAH 116 TRAFFIC IS SWITCHED TO SOUTH SIDE BETWEEN ROSE ST. AND CSAH 18, CSAH 116 TRAFFIC IS SWITCHED TO INSIDE LANES EAST OF JAY ST.
8. NEW CONSTRUCTION IS COMPLETED ON WB LANES BETWEEN ROSE ST. AND CSAH 18, BETWEEN CSAH 18 AND JAY ST. AND OUTSIDE LANES EAST OF JAY ST.
9. PHASE SIGNAL AT ROSE TO REFLECT STAGING
10. SWITCH TRAFFIC PRIOR TO STAGE 2.

- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ↑ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



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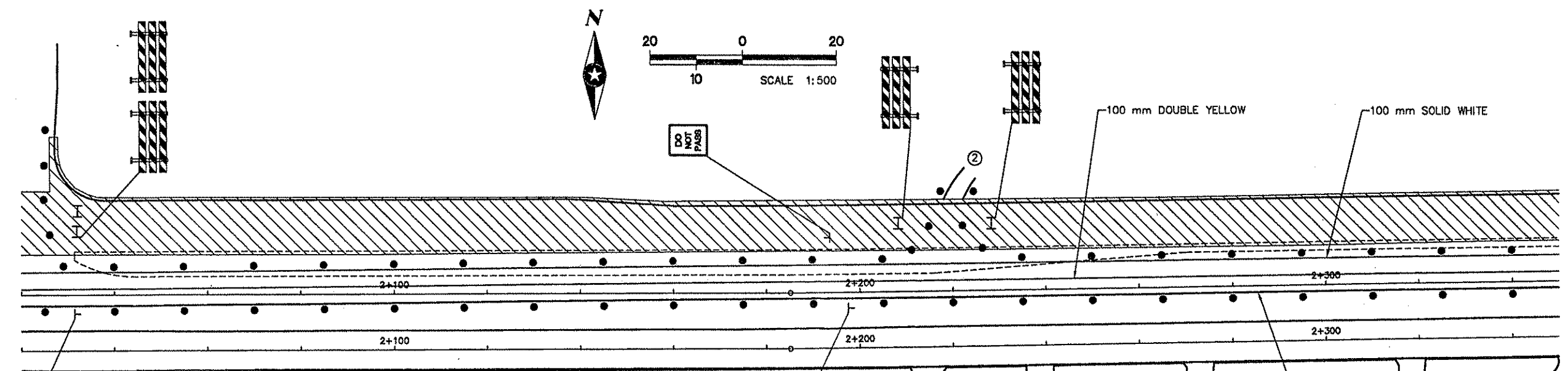
Susan M. Mason
Date: 3/16/99 Reg. No. 18512



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

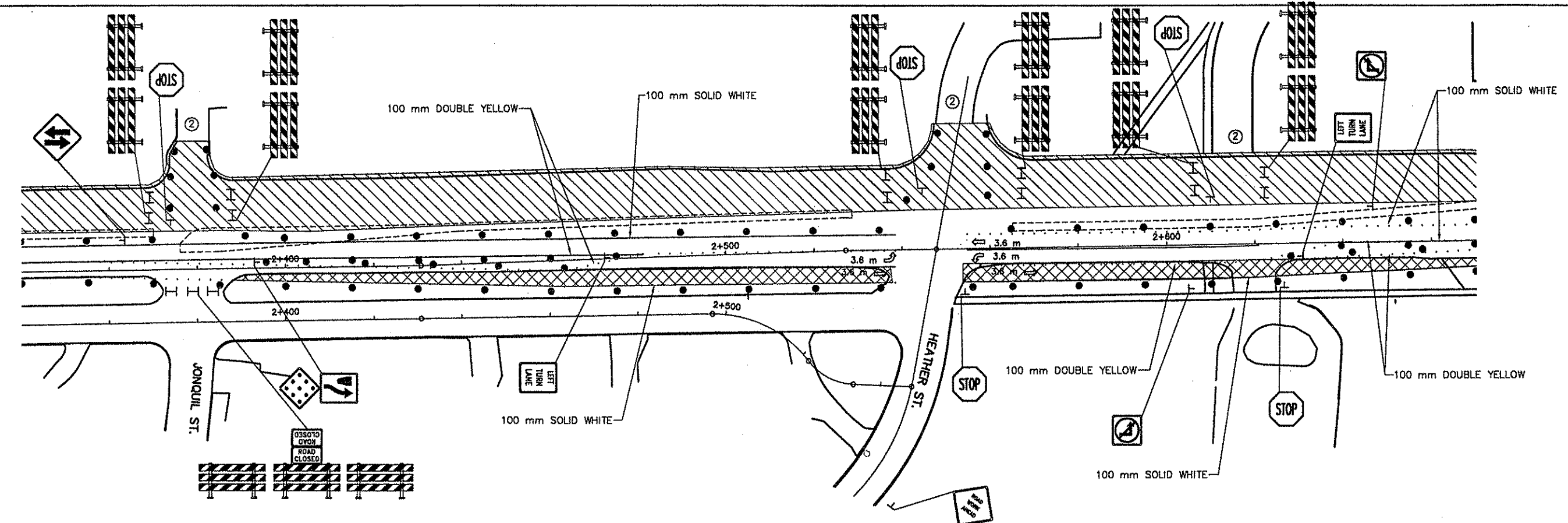
TRAFFIC CONTROL-STAGE ONE
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC8808.01
DATE 03/15/99
177
230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- ┆ POST MOUNTED SIGN
- ┆ TYPE III BARRICADE
- ⇐ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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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.
Supriya Mason
 Reg. No. 18812

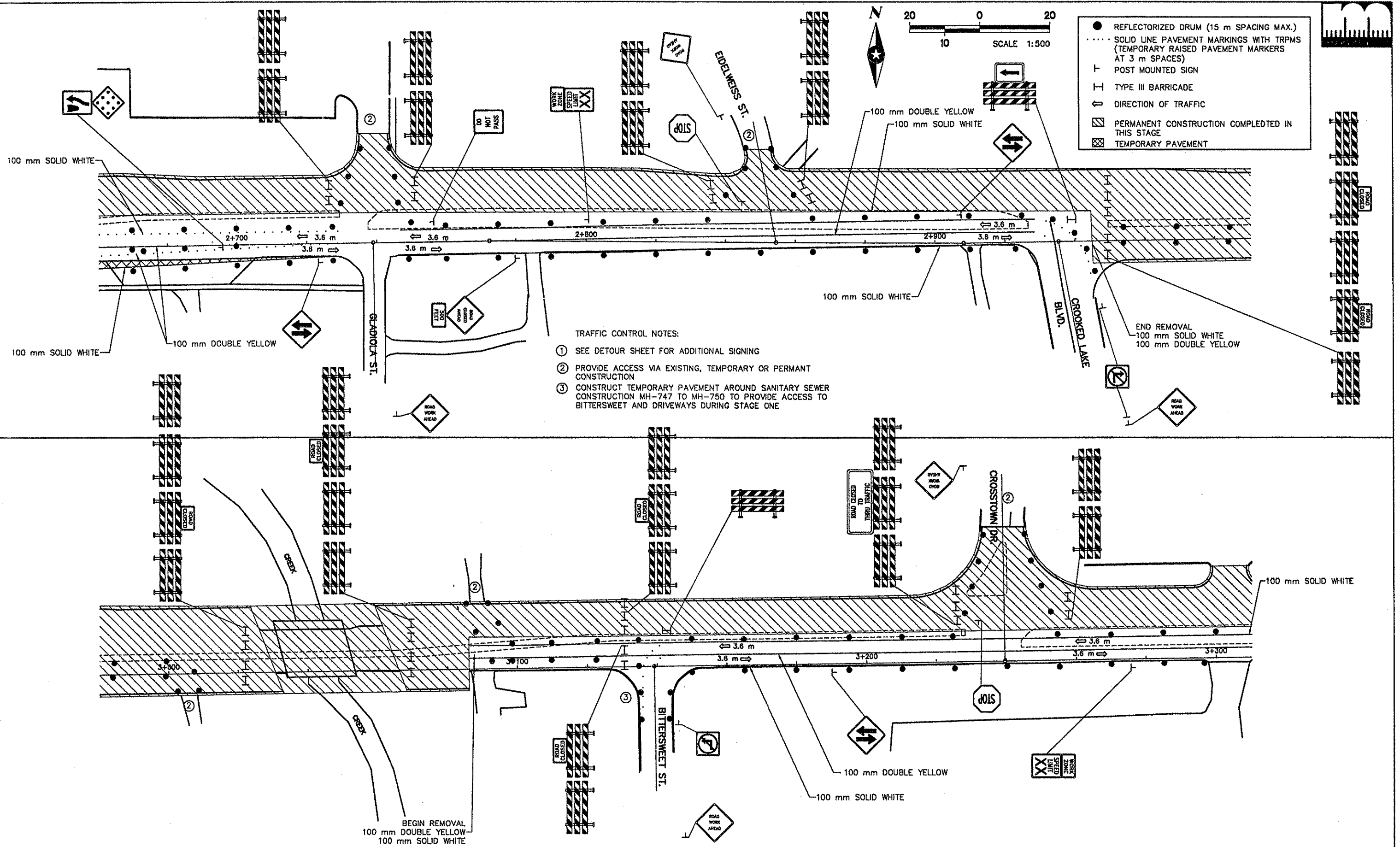


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE ONE
 STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01
 DATE 03/15/99
178
230

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TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION
 ③ CONSTRUCT TEMPORARY PAVEMENT AROUND SANITARY SEWER CONSTRUCTION MH-747 TO MH-750 TO PROVIDE ACCESS TO BITTERSWEET AND DRIVEWAYS DURING STAGE ONE

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

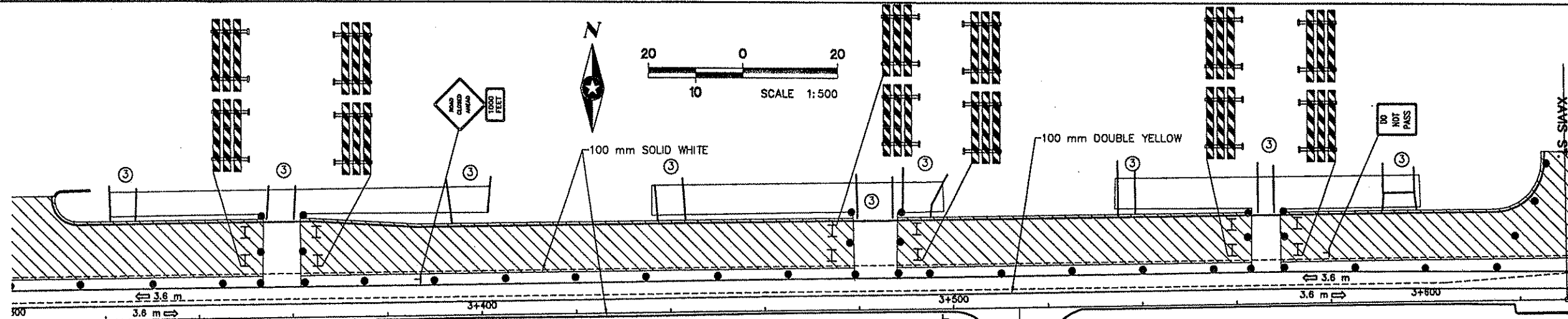
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: *3/24/99* Reg. No. 18612



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE ONE
 STA. 2+660.000 TO 3+310.000

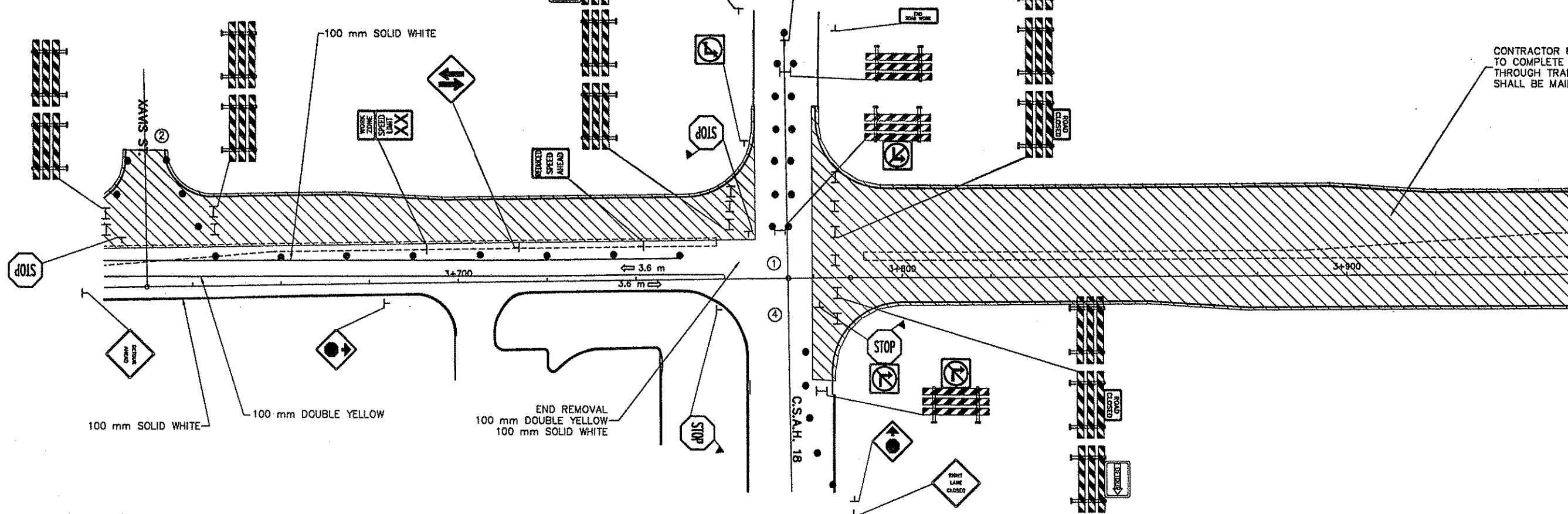
FILE NO. ANOKC9806.01
 DATE 03/15/99
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TRAFFIC CONTROL NOTES:

- ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
- ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION
- ③ CONSTRUCT TEMPORARY ACCESS
- ④ MAINTAIN 2 - 3.6 m LANES AT ALL TIMES

- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ← DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



CONTRACTOR MAY USE LOCAL DETOUR TO COMPLETE THIS PORTION OF WORK. THROUGH TRAFFIC AT THRUSH STREET SHALL BE MAINTAINED AT THIS TIME.

G:\CIVIL\CLIENTS\A_THRU\ANOKA\9806\DWG\ACB06S1_4.DWG 03-24-99 3:03 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

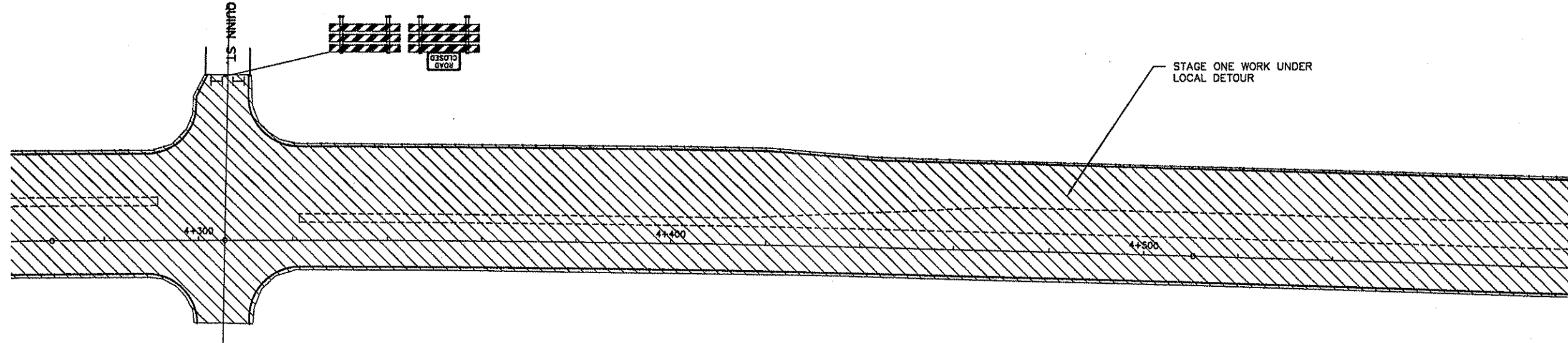
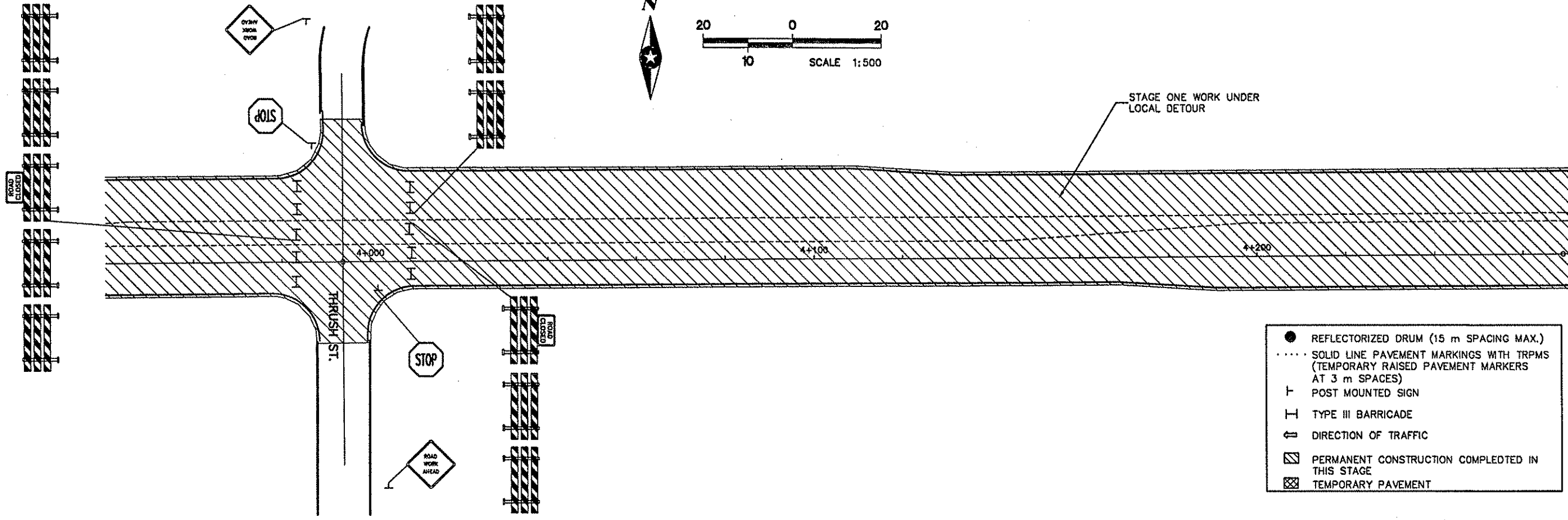
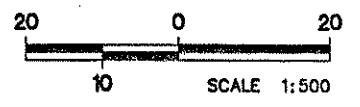
[Signature]
 Date: 3/25/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE ONE
 STA. 3+300.00 TO 3+950.00

FILE NO. ANOKC9806.01
 DATE 03/15/99
180
230



Q:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\9806\DWG\ACB06S1_5.DWG 03-24-99 3:07 pm

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Sharon Mason
 Date: 3/15/99 Reg. No. 18612

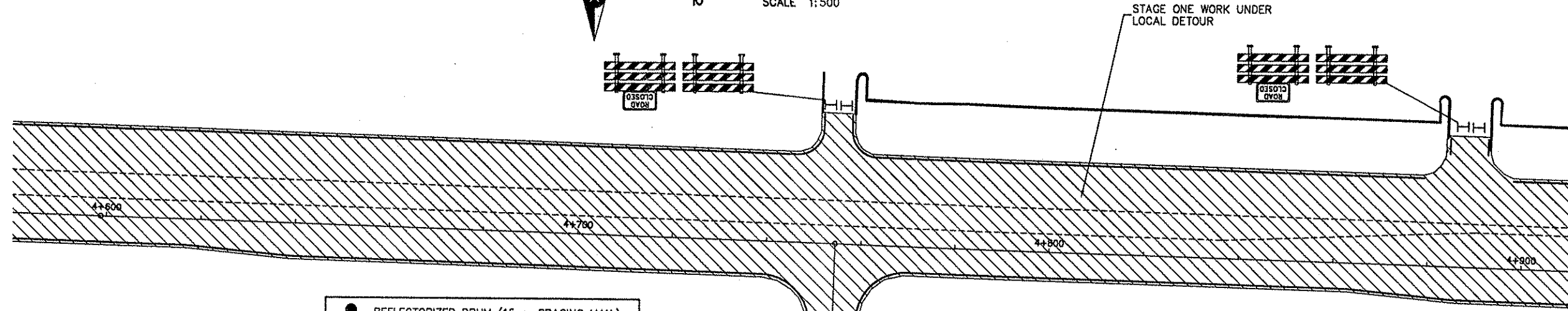
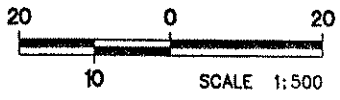


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

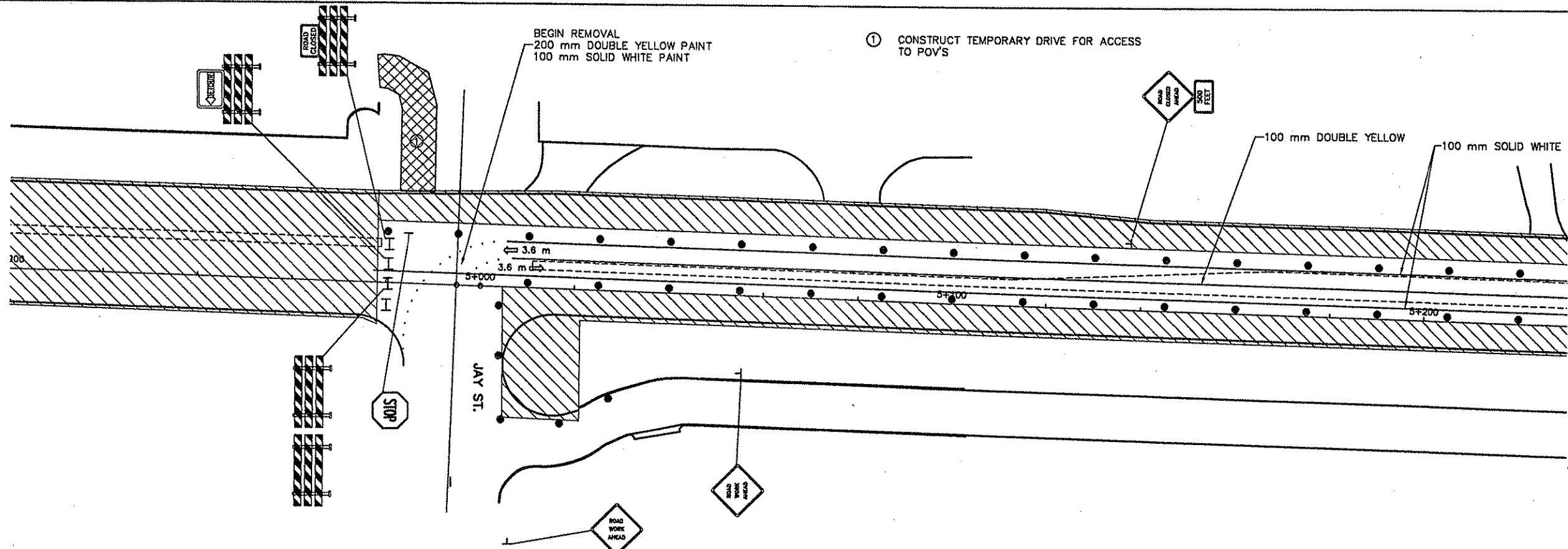
TRAFFIC CONTROL-STAGE ONE
 STA. 3+940.000 TO 4+590.000

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

181
230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ↑ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

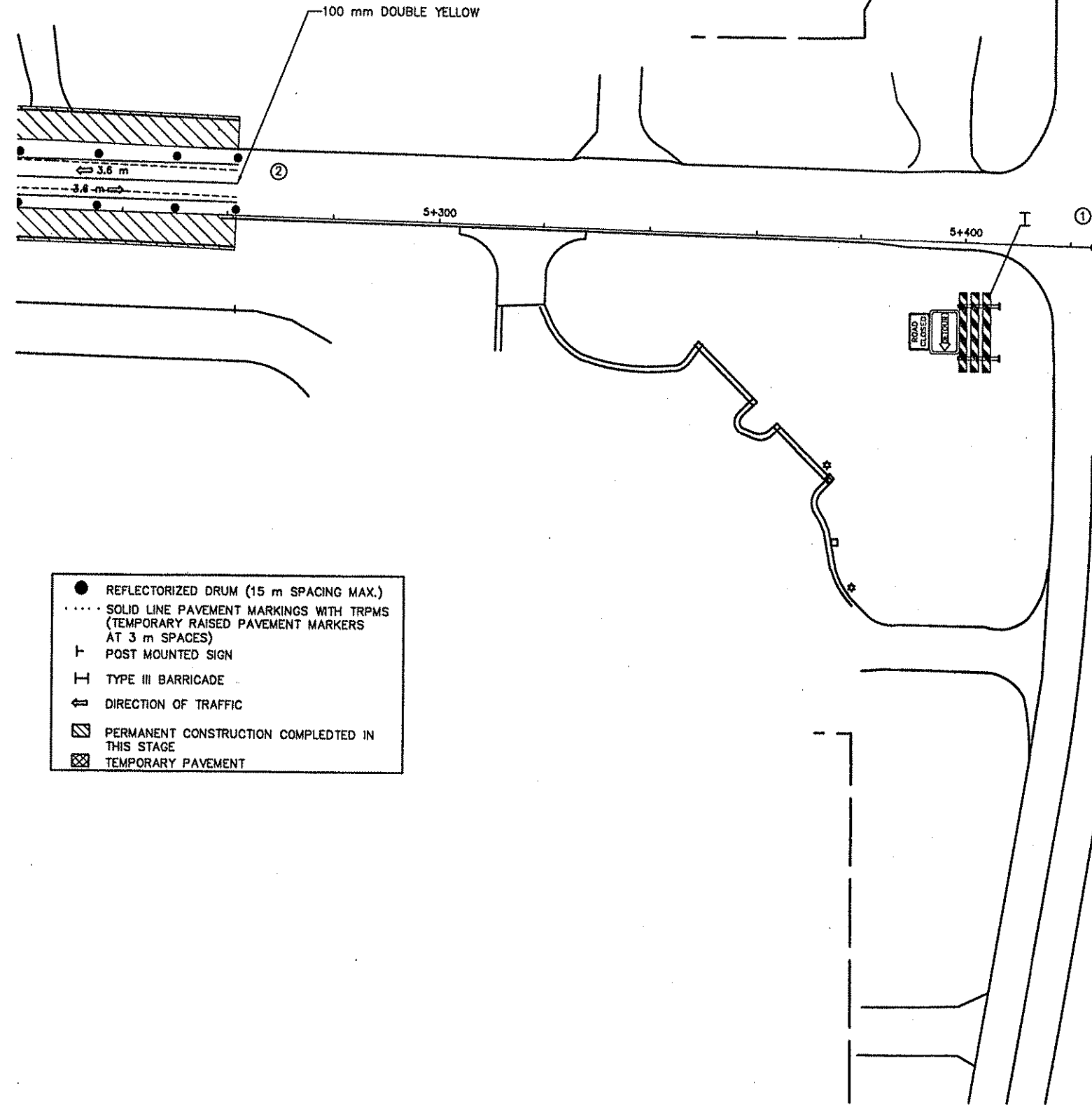
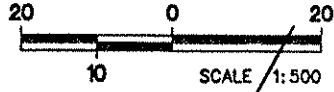
Signature
Date: 3/15/99 Reg. No. 18812



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-718-04
S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE ONE
STA. 4+580.000 TO 5+230.000

FILE NO. ANOKC9806.01	182
DATE 03/15/99	230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ↑ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

- TRAFFIC CONTROL NOTES:
- ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 - ② CONTRACTOR SHALL COORDINATE TRAFFIC CONTROL WITH HANSON BLVD. INTERSECTION PROJECT

G:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\9806\DWG\ACB06S1_7.DWG 03-22-99 3:47 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

[Signature]
 Date: 2/15/99 Reg. No. 18612



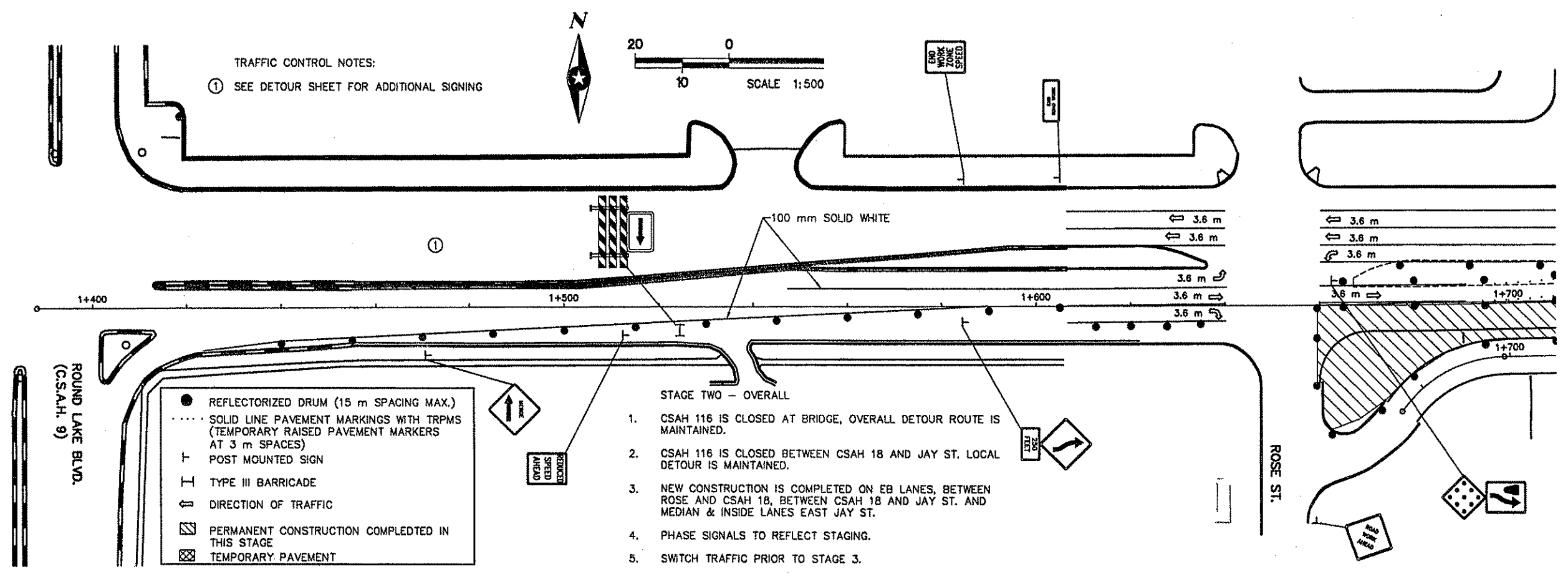
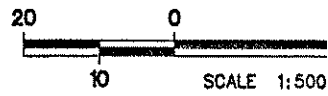
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE ONE
 STA. 5+220.000 TO 5+424.359

FILE NO. ANOKC8806.01	183
DATE 03/15/99	230

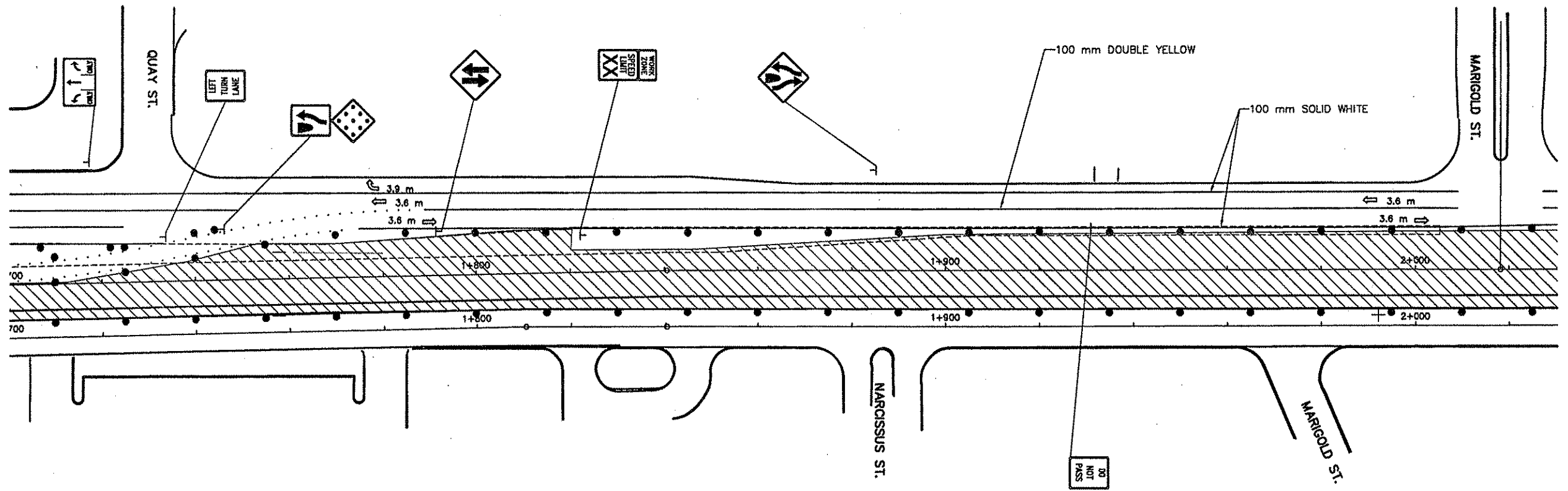


TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- ⊥ POST MOUNTED SIGN
- ⊥ TYPE III BARRICADE
- ↑ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

- STAGE TWO - OVERALL
1. CSAH 116 IS CLOSED AT BRIDGE, OVERALL DETOUR ROUTE IS MAINTAINED.
 2. CSAH 116 IS CLOSED BETWEEN CSAH 18 AND JAY ST. LOCAL DETOUR IS MAINTAINED.
 3. NEW CONSTRUCTION IS COMPLETED ON EB LANES, BETWEEN ROSE AND CSAH 18, BETWEEN CSAH 18 AND JAY ST. AND MEDIAN & INSIDE LANES EAST JAY ST.
 4. PHASE SIGNALS TO REFLECT STAGING.
 5. SWITCH TRAFFIC PRIOR TO STAGE 3.



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DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

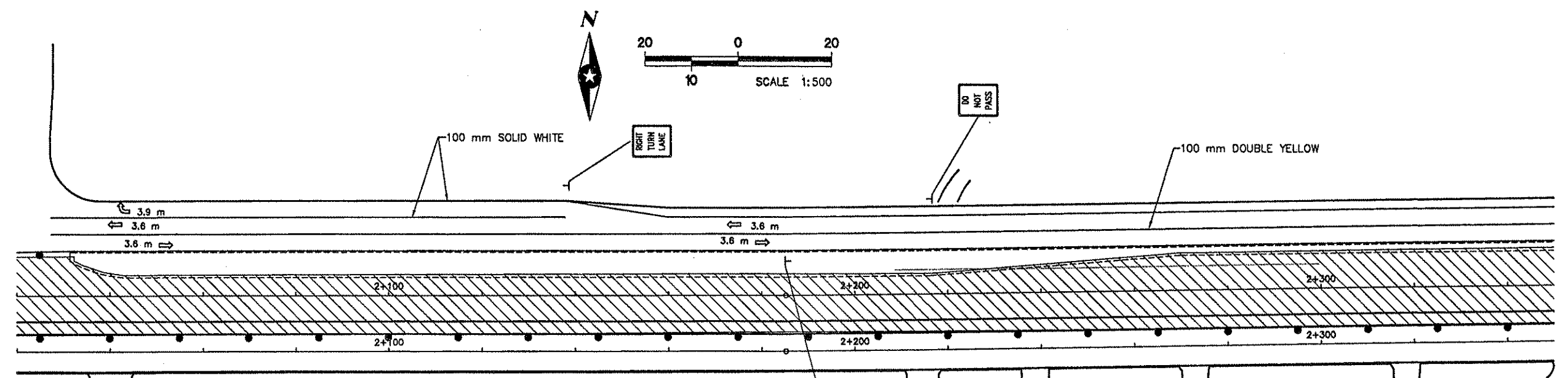
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
John M. Mason
 Date: 3/14/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

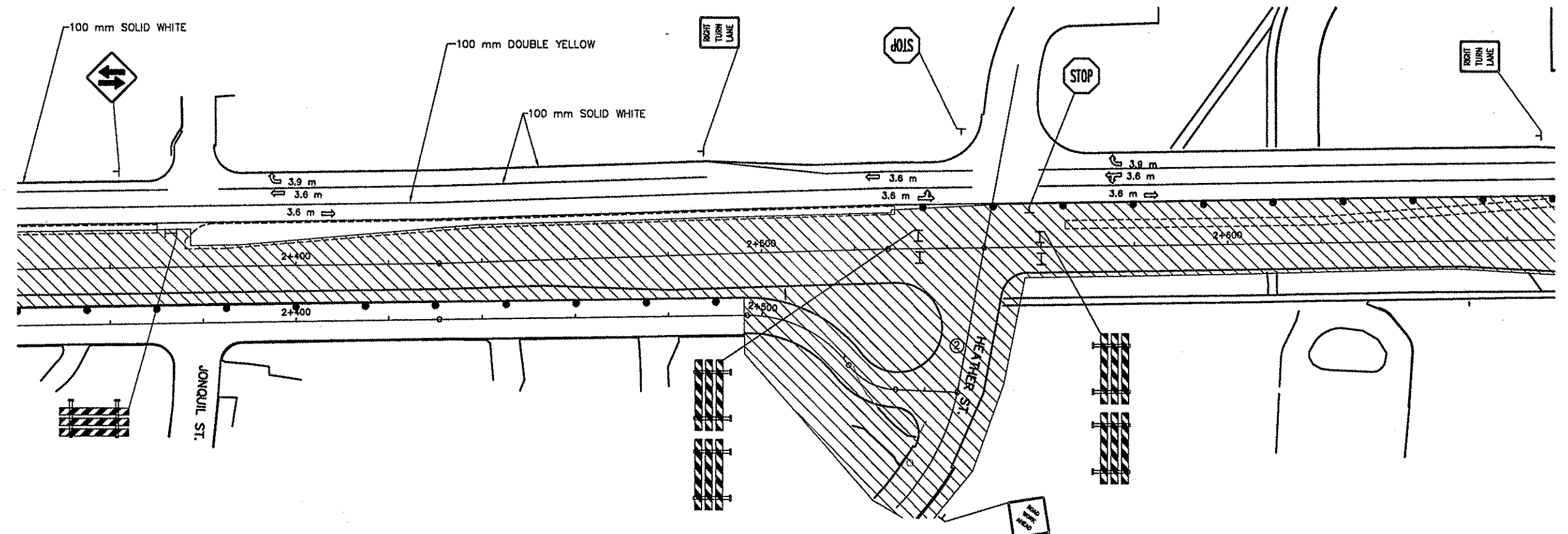
TRAFFIC CONTROL-STAGE TWO
 STA. 1+388.164 TO 2+030.000

FILE NO. ANDKC9806.01
184
 DATE 03/15/99
230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ⇄ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

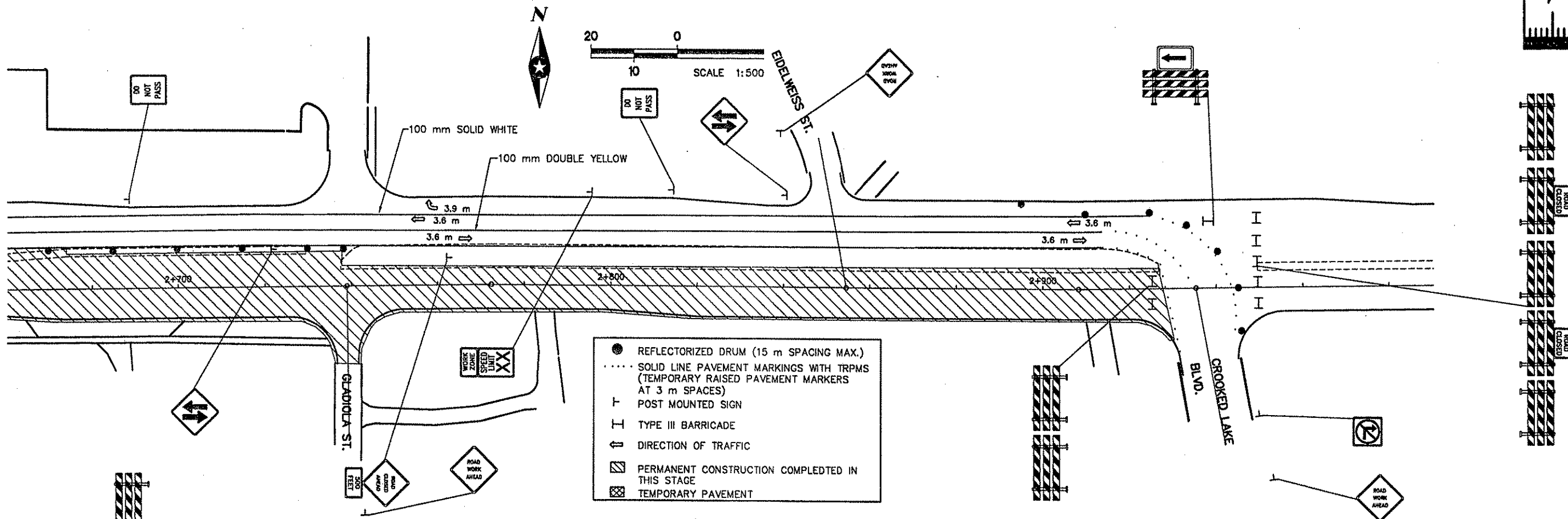
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
John W. M...
 Date: 3/17/99 Reg. No. 16612



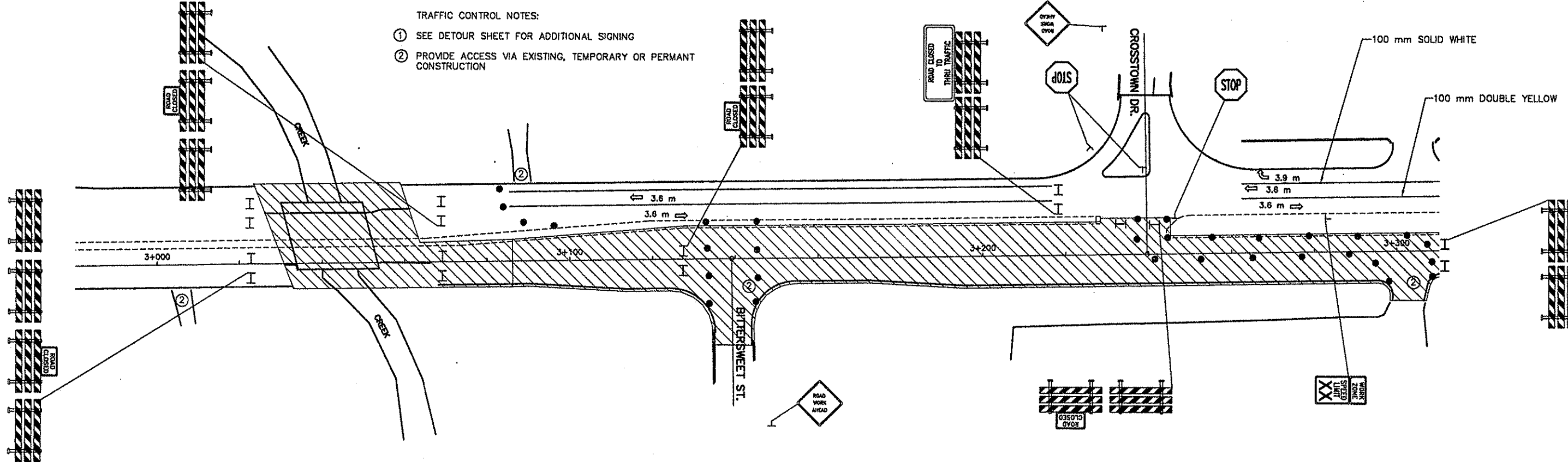
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE TWO
 STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC8806.01	185 230
DATE 03/15/99	



TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

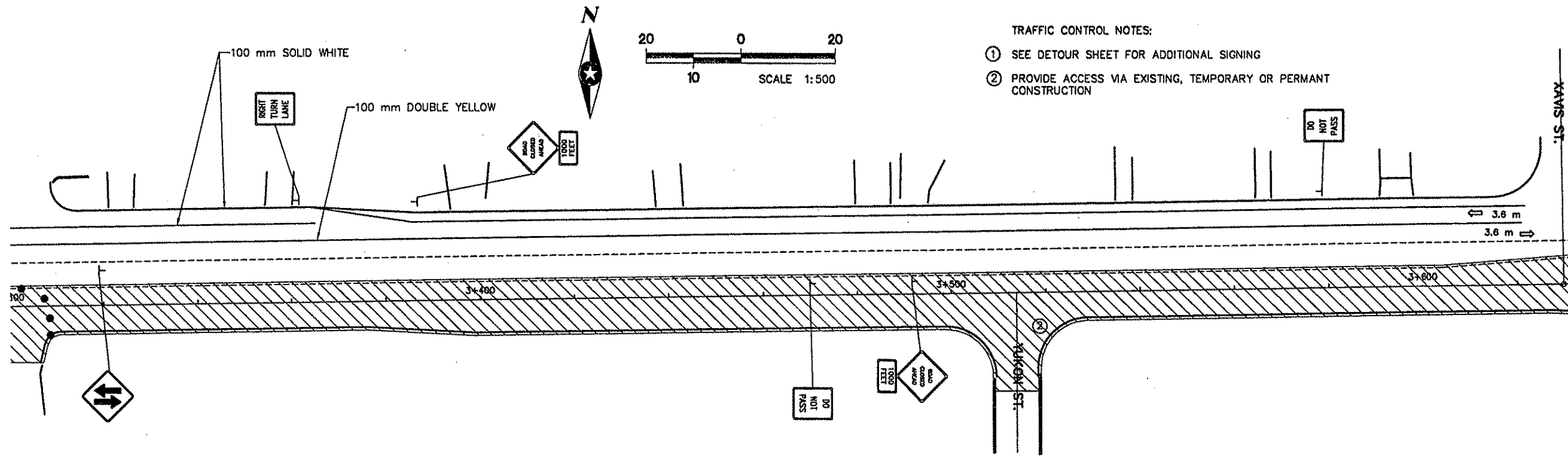
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
John W. Moore
 Date: 3/15/99 Reg. No. 18812



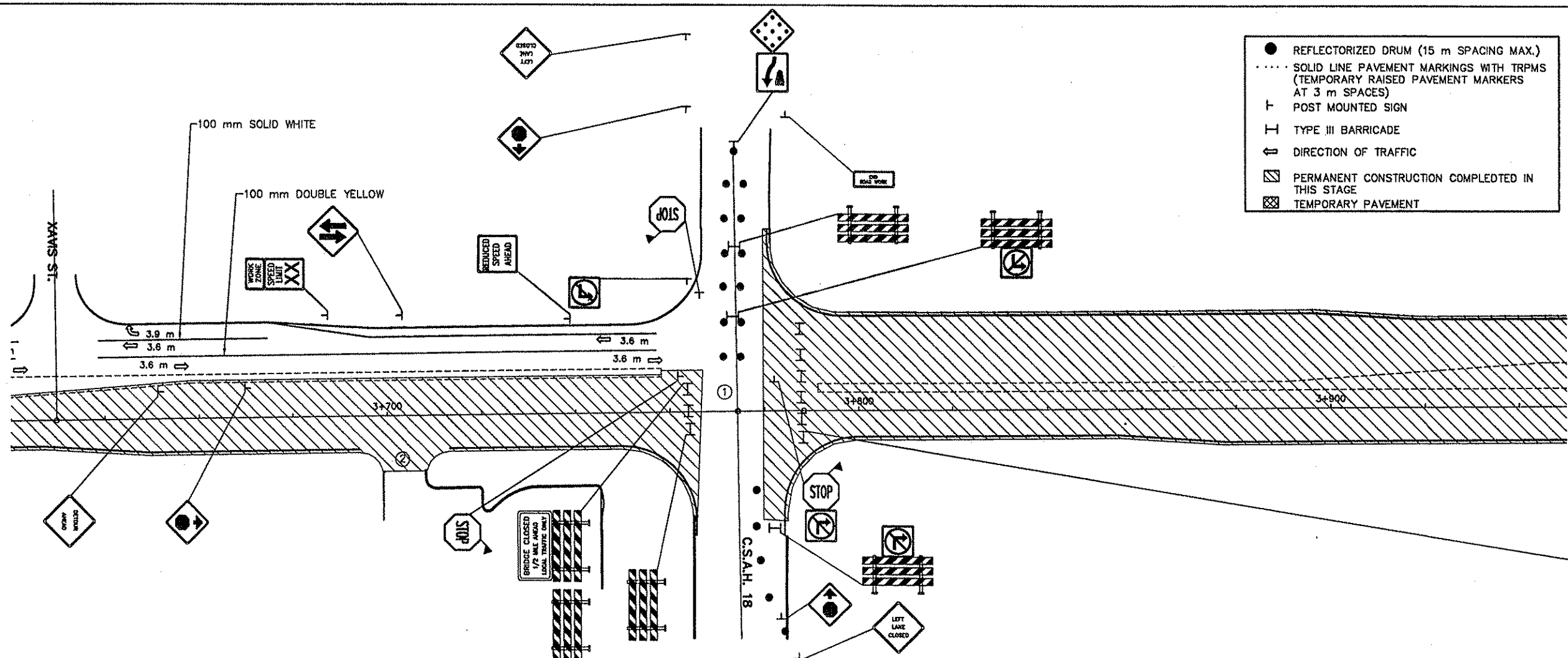
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE TWO
 STA. 2+660.000 TO 3+310.000

FILE NO. ANOKC9806.01	186
DATE 03/15/99	230



TRAFFIC CONTROL NOTES:
 ① SEE DETOUR SHEET FOR ADDITIONAL SIGNING
 ② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



● REFLECTORIZED DRUM (15 m SPACING MAX.)
 SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
 † POST MOUNTED SIGN
 † TYPE III BARRICADE
 ⇨ DIRECTION OF TRAFFIC
 ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
 ▩ TEMPORARY PAVEMENT

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DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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: 3/15/99 Reg. No. 18612

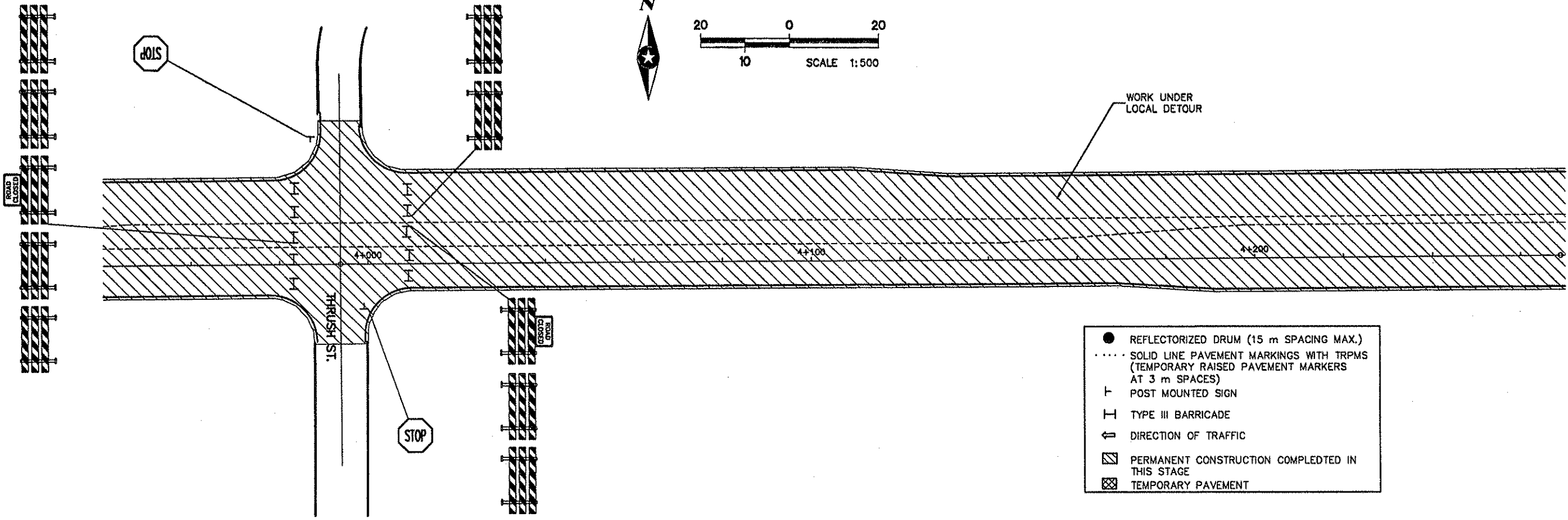
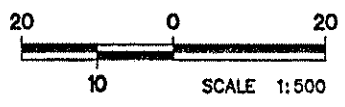


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

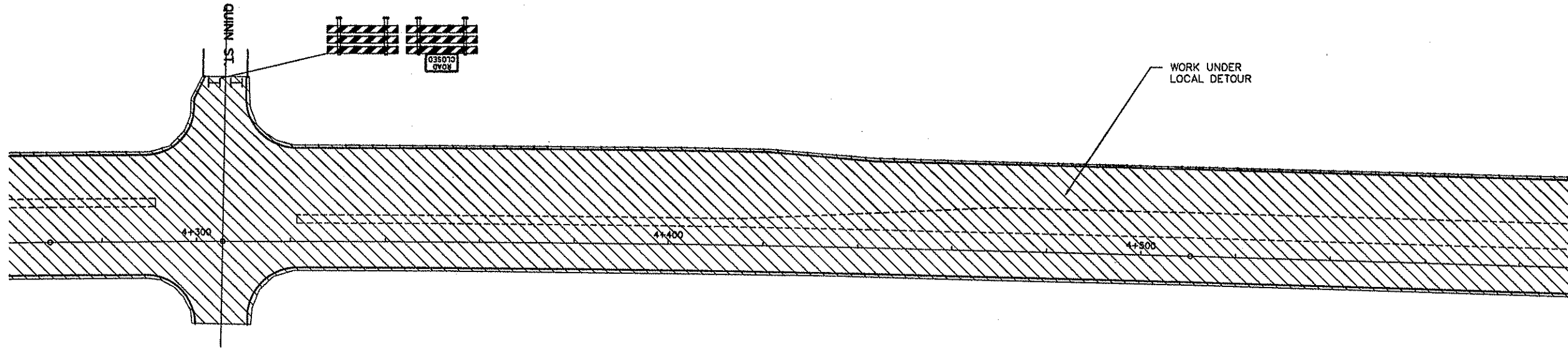
TRAFFIC CONTROL-STAGE TWO
 STA. 3+300.000 TO 3+950.000

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

187
230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- ┆ POST MOUNTED SIGN
- ┆ TYPE III BARRICADE
- ⇐ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Susan M. Mason
 Date: 3/15/99 Reg. No. 18612

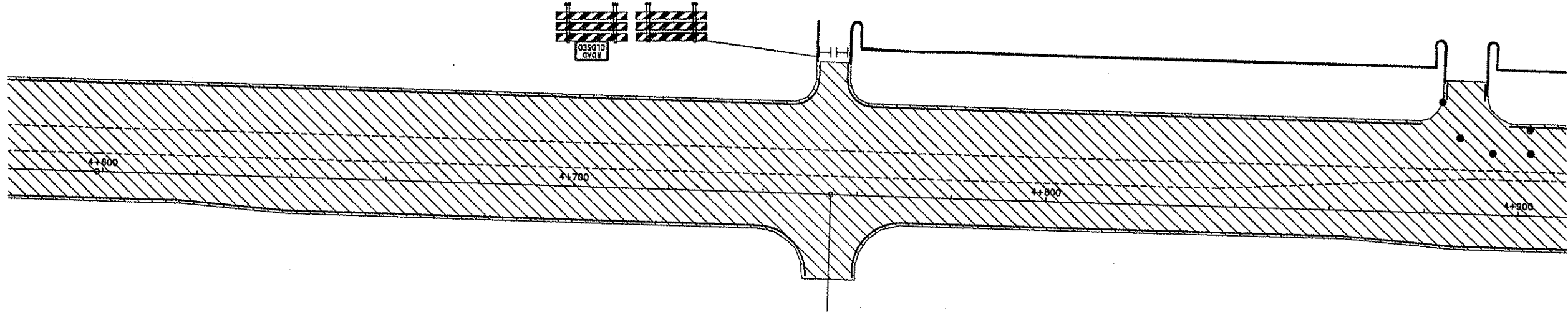
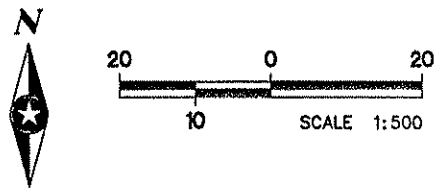


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

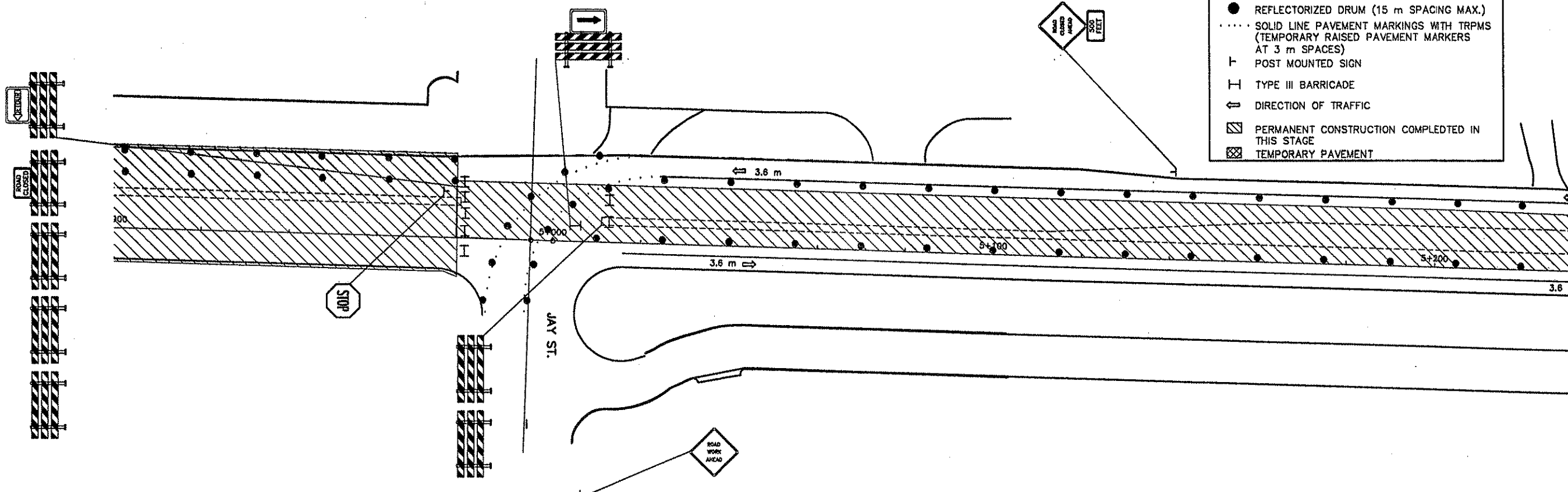
TRAFFIC CONTROL-STAGE TWO
 STA. 3+940.000 TO 4+590.000

FILE NO.
 ANOKC9806.01
 DATE
 03/15/99

188
230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- ┌ POST MOUNTED SIGN
- ┌ TYPE III BARRICADE
- ⇌ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

John W. Johnson
 Date: 3/15/99 Reg. No. 18612

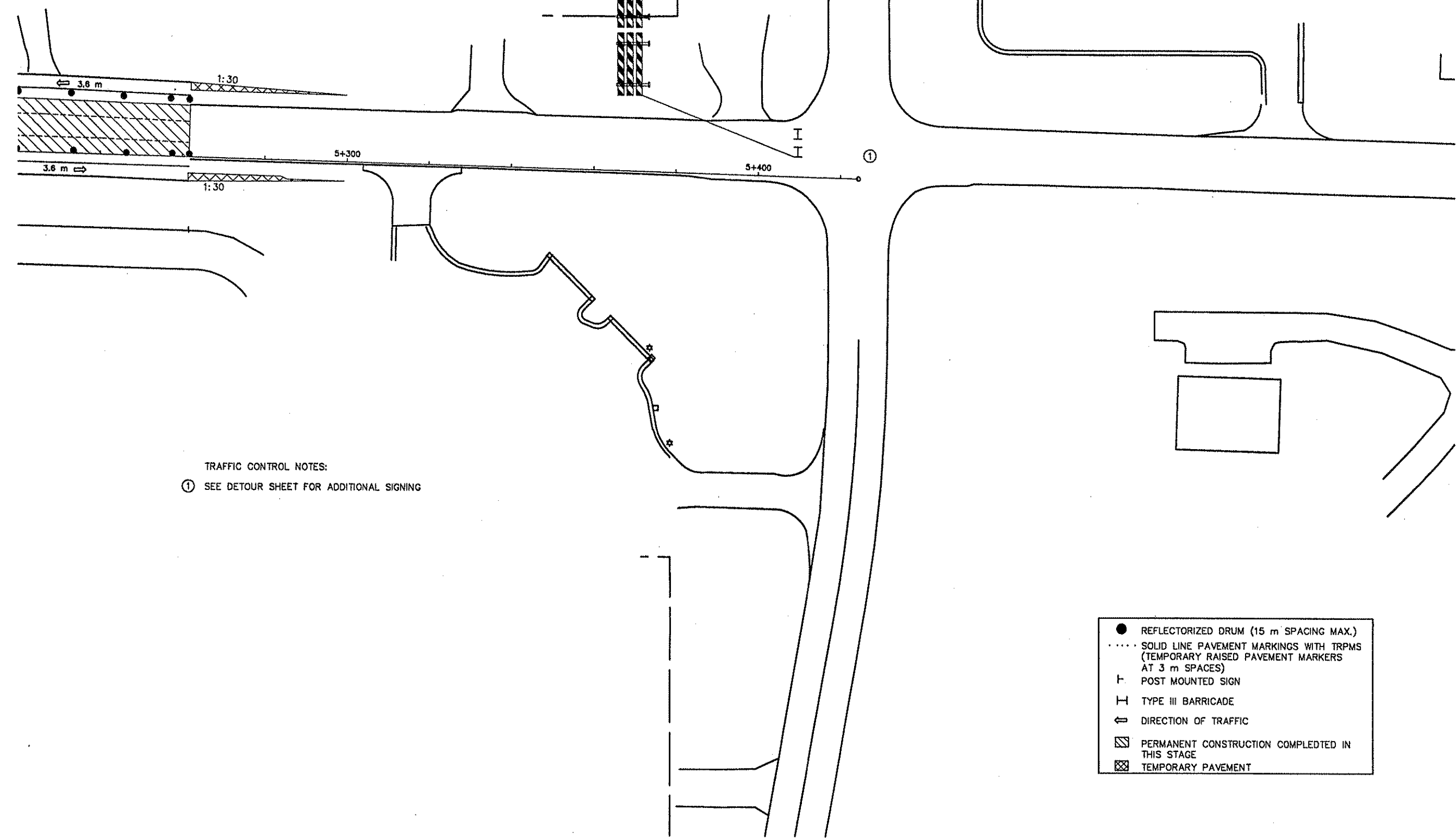
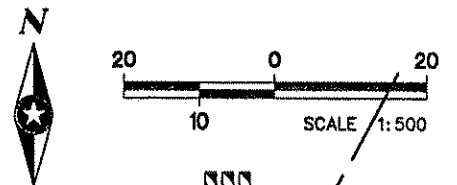


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE TWO
 STA. 4+580.00 TO 5+230.000

FILE NO.
 ANOKC9808.01
 DATE
 03/15/99

189
230



TRAFFIC CONTROL NOTES:
① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- T POST MOUNTED SIGN
- I TYPE III BARRICADE
- ⇨ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

G:\CIVIL\CLIENTS\VA_THRU_F\ANOKA\9806\DWG\AC806S2_7.DWG 03-23-99 9:55 am

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

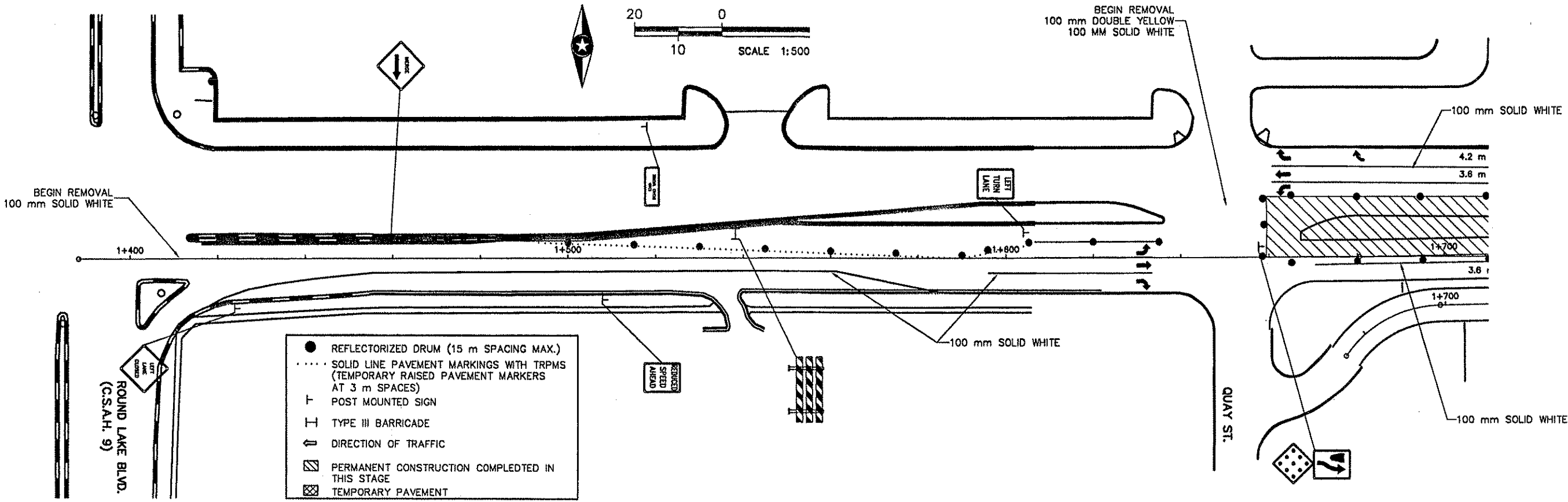
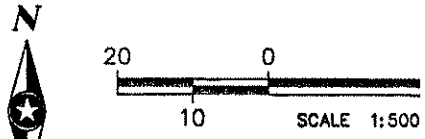
Sultan M. M...
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

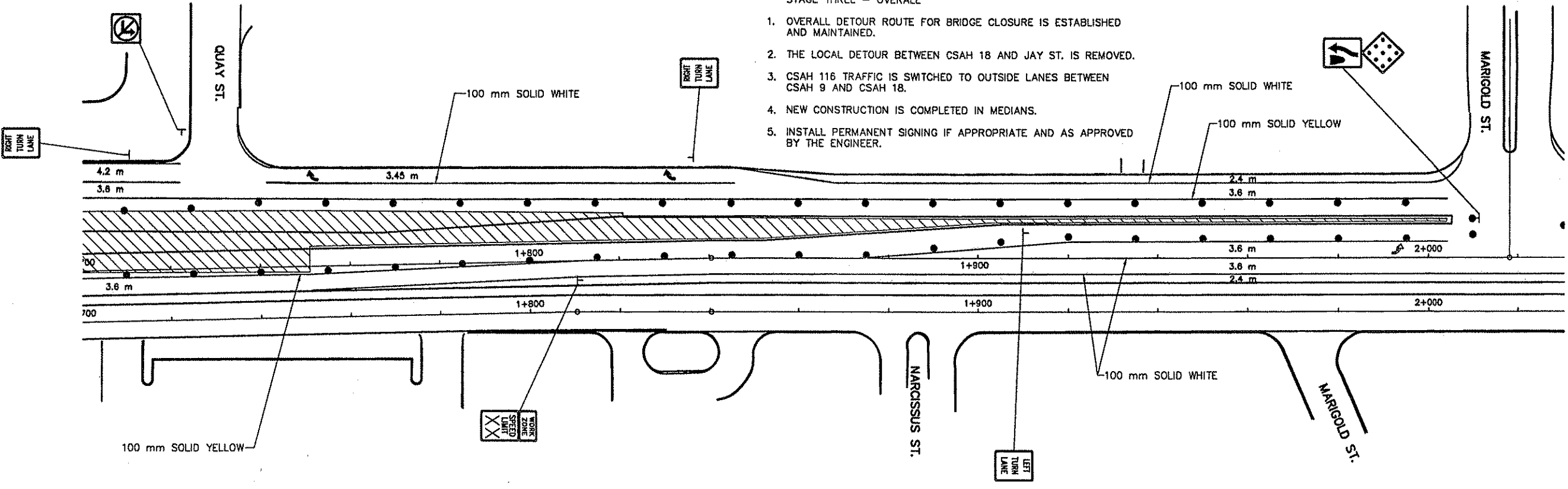
TRAFFIC CONTROL-STAGE TWO
STA. 5+220.000 TO 5+424.359

FILE NO. ANOKC9806.01	190
DATE 03/15/99	230



STAGE THREE - OVERALL

1. OVERALL DETOUR ROUTE FOR BRIDGE CLOSURE IS ESTABLISHED AND MAINTAINED.
2. THE LOCAL DETOUR BETWEEN CSAH 18 AND JAY ST. IS REMOVED.
3. CSAH 116 TRAFFIC IS SWITCHED TO OUTSIDE LANES BETWEEN CSAH 9 AND CSAH 18.
4. NEW CONSTRUCTION IS COMPLETED IN MEDIANS.
5. INSTALL PERMANENT SIGNING IF APPROPRIATE AND AS APPROVED BY THE ENGINEER.



C:\CIVIL\CLIENTS\VA_THRU\F\ANOKA\9806\DWG\AC806S3_1.DWG 04-13-99 2:15 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN	1	PJM	4/12	NOTE 2 CHANGED, NOTE 5 ADDED	
DRAWING					
CHECKED					

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.

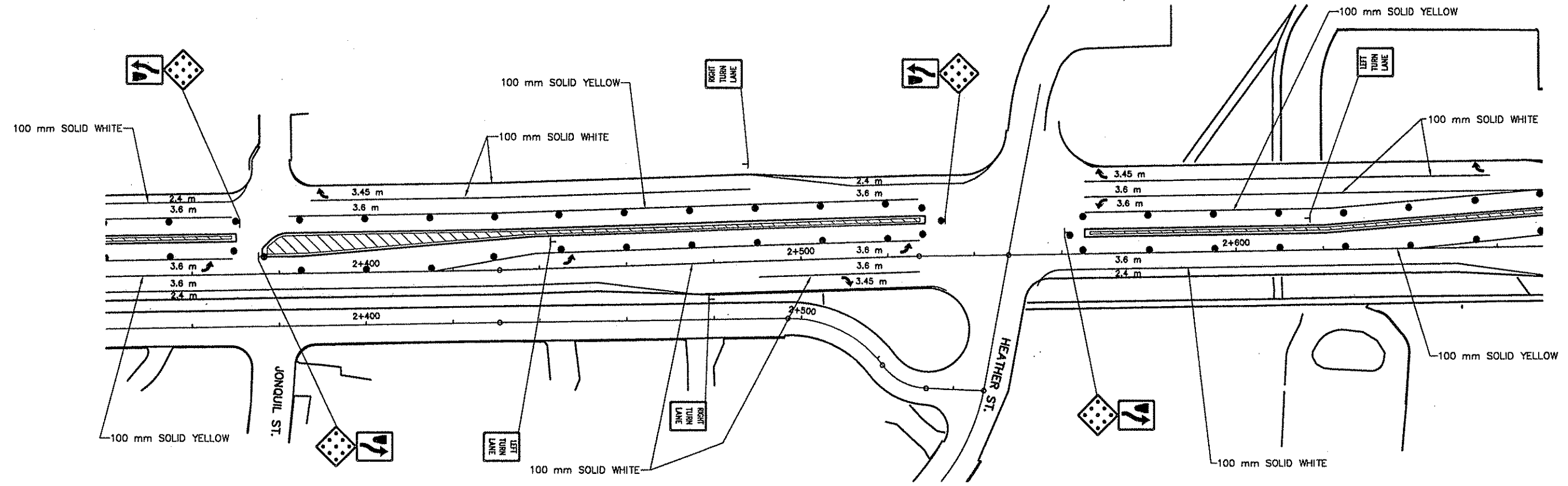
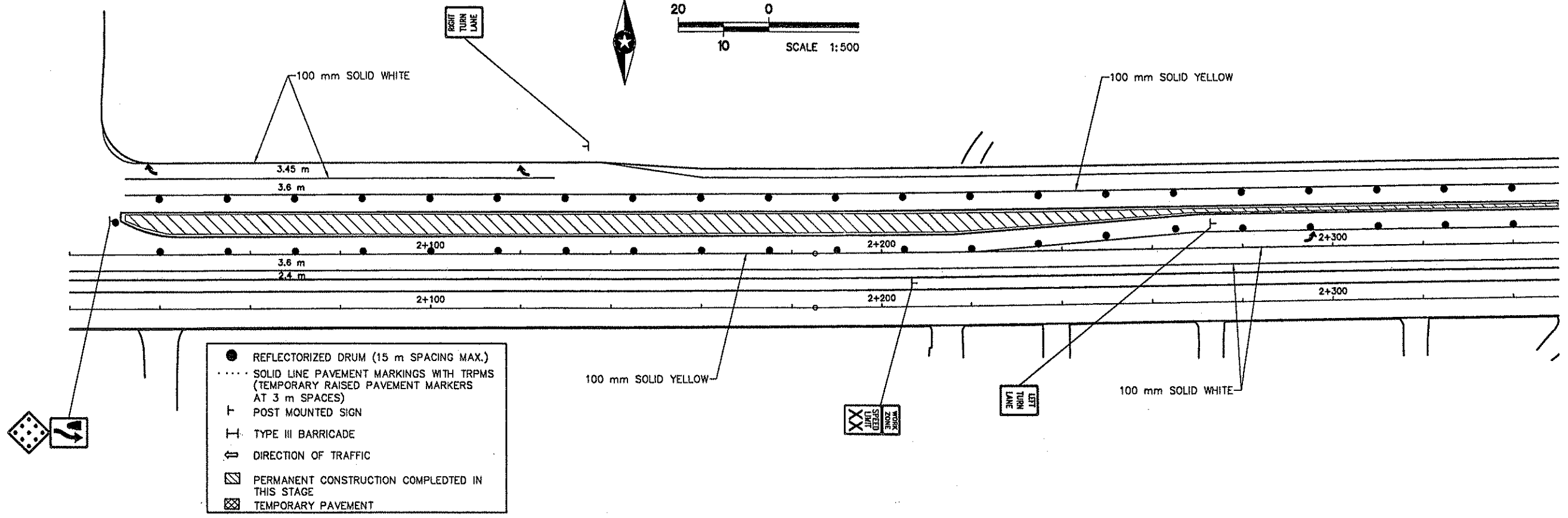
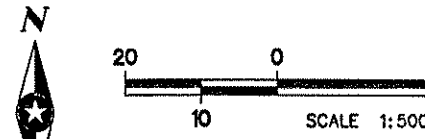
[Signature]
Date: 3/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE THREE
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC9806.01	191
DATE 03/15/99	230



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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.
Steven M. Moran
 Date: 3/15/99 Reg. No. 18612



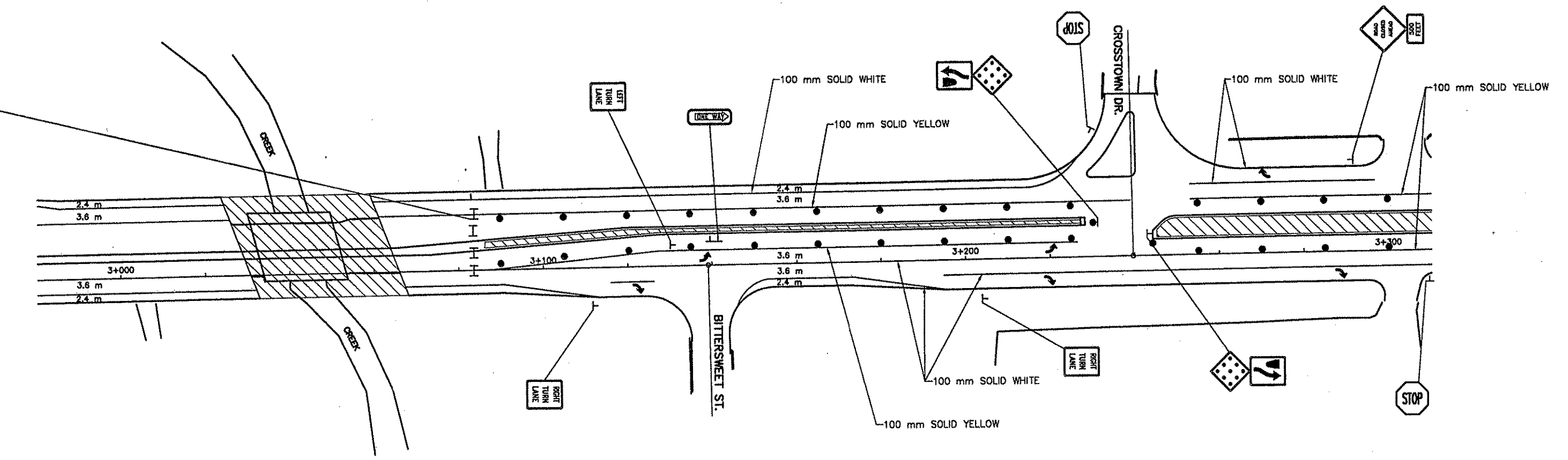
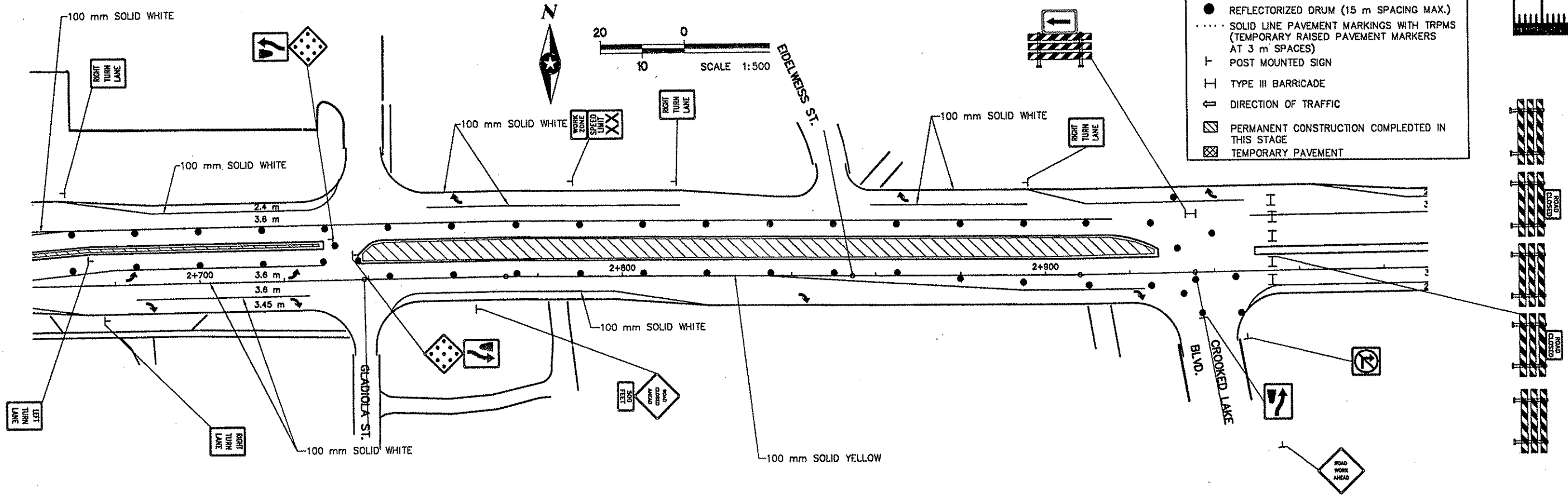
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE THREE
 STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01	192
DATE 03/15/99	230



- REFLECTORIZED DRUM (15 m SPACING MAX.)
- SOLID LINE PAVEMENT MARKINGS WITH TRPMS (TEMPORARY RAISED PAVEMENT MARKERS AT 3 m SPACES)
- ┆ POST MOUNTED SIGN
- ┆ TYPE III BARRICADE
- ↑ DIRECTION OF TRAFFIC
- ▨ PERMANENT CONSTRUCTION COMPLETED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT



Q:\CIVIL\CLIENTS\A_THRU\F\ANOKA\9806\DWG\AC9806S3_3.DWG 03-23-99 1:38 pm

DESIGN	DRAWING	CHECKED	DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

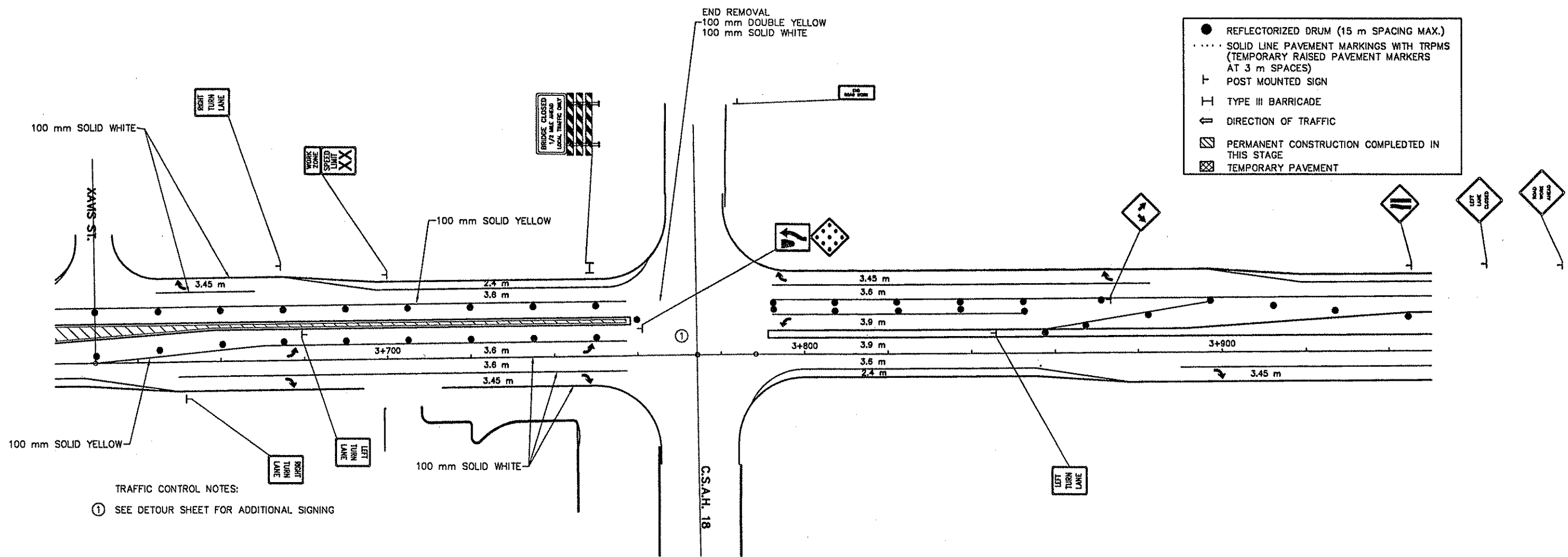
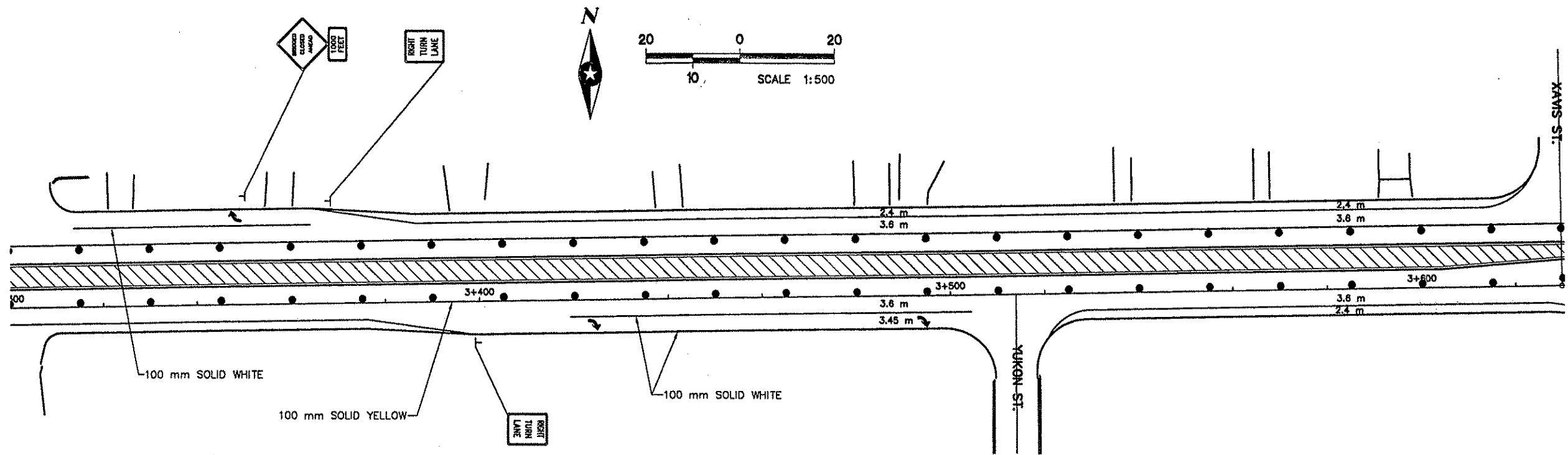
Susan W. Nelson
 Date: 2/15/99 Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE THREE
 STA. 2+660.000 TO 3+310.000

FILE NO. ANOKC9806.01	193
DATE 03/15/99	230



G:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S3_4.DWG 03-23-99 1:35 PM

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

Signature
Date 3/15/99 Reg. No. 18612

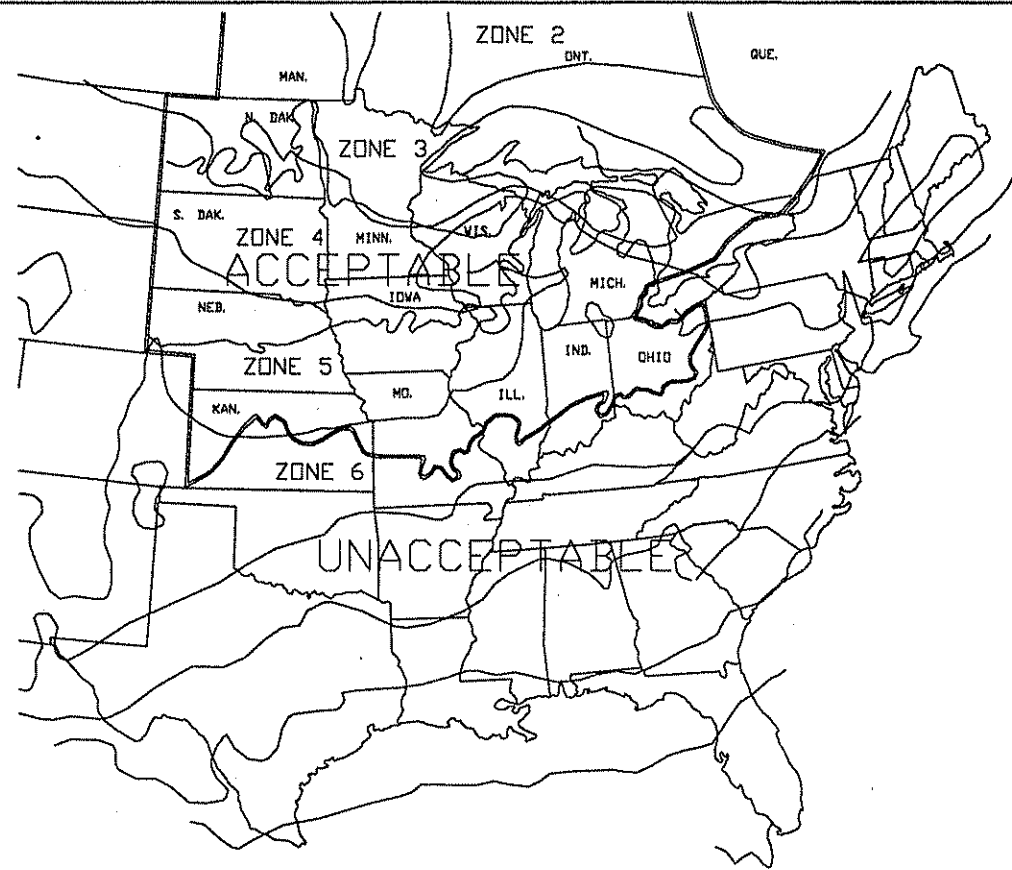


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE THREE
STA. 3+300.000 TO 3+950.000

FILE NO.
ANOKC9806.01
DATE
03/15/99

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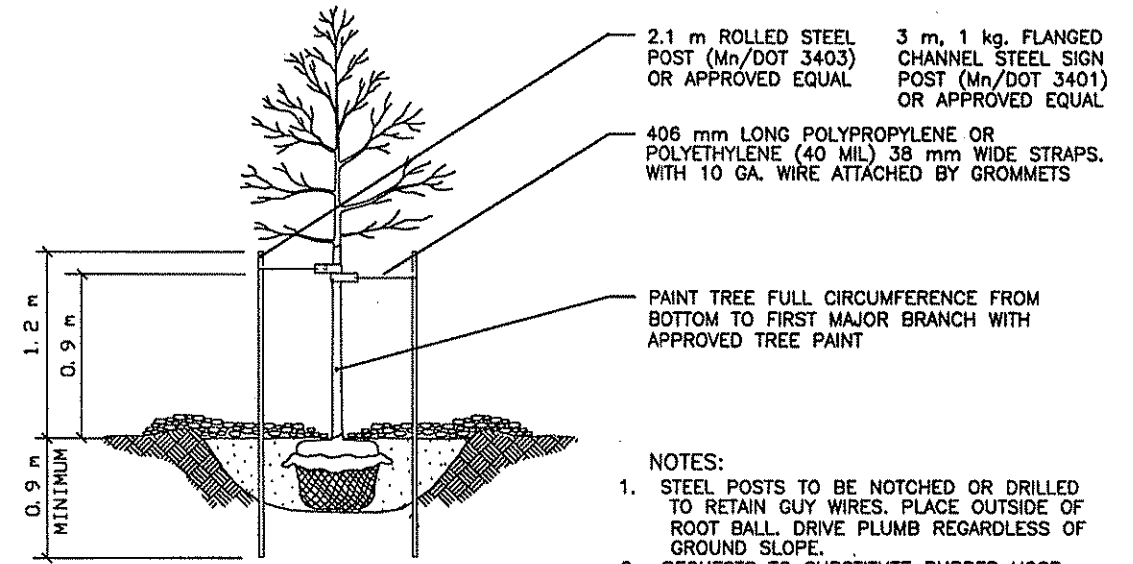
ZONE 1 BELOW -45°C
 ZONE 2 -45° to -40°
 ZONE 3 -40° to -35°
 ZONE 4 -35° to -30°

STATE INSPECTED PLANTS GROWN WITHIN ZONES 1-4 AND THE ACCEPTABLE GROWING RANGE FOR A MINIMUM OF 2 YEARS MAY BE USED ON ALL PROJECTS UNLESS OTHERWISE SPECIFIED.

ZONE 5 -30° to -25°C

STATE INSPECTED PLANTS GROWN WITHIN ZONE 5 AND THE ACCEPTABLE GROWING RANGE FOR A MINIMUM OF 2 YEARS ARE ALLOWED ONLY ON PROJECTS WITHIN ZONE 4 IN MINNESOTA. UNLESS CERTIFIED AS MINNESOTA ZONE HARDY IN ZONES 3 AND 2.

PLANT STOCK NOT GROWN WITHIN THE THE ACCEPTEABLE ZONES AND GROWING RANGE FOR A MINIMUM OF 2 YEARS MAY BE ACCEPTED IF THE SEED SOURCE OR ROOT AND GRAFT STOCK IS CERTIFIED AND DOCUMENTED AS MIDWEST AND NORTHERN GROWN AND MINNESOTA ZONE HARDY.

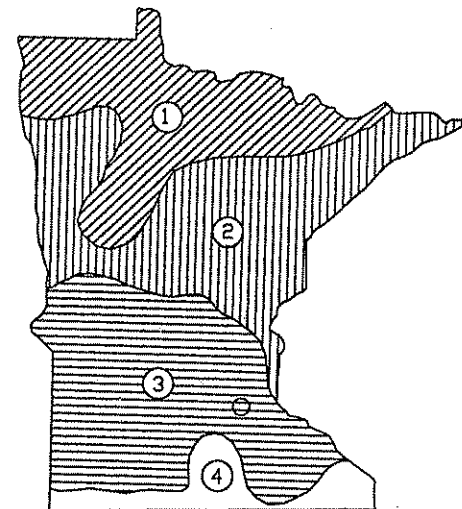


- NOTES:
- STEEL POSTS TO BE NOTCHED OR DRILLED TO RETAIN GUY WIRES. PLACE OUTSIDE OF ROOT BALL. DRIVE PLUMB REGARDLESS OF GROUND SLOPE.
 - REQUESTS TO SUBSTITUTE RUBBER HOSE AND WIRE GUYING SYSTEMS WILL NOT BE APPROVED.
 - USE WIRE WITH POLYPROPYLENE STRAPS.

STANDARD TREE STAKING / GUYING AND PAINTING DETAIL

ACCEPTABLE GROWING RANGE FOR MIDWEST AND NORTHERN GROWN PLANT STOCK

SOURCE: U.S.D.A. PLANT HARDINESS ZONE MAP

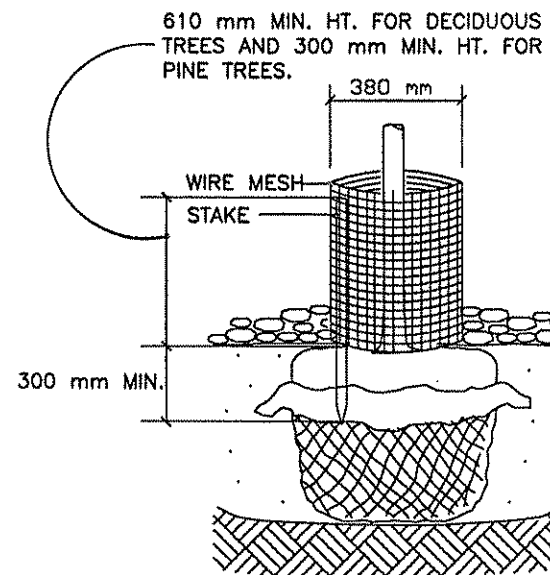


	SPRING			FALL	
	SEEDLING	DECIDUOUS	EVERGREEN	DECIDUOUS	EVERGREEN
1	APRIL 15 TO MAY 15	APRIL 21 TO JUNE 1	APRIL 21 TO JUNE 1	OCT. 1 TO NOV. 1	AUG. 25 TO SEPT. 15
2	APRIL 7 TO MAY 15	APRIL 14 TO JUNE 1	APRIL 14 TO MAY 24	OCT. 1 TO NOV. 6	AUG. 25 TO SEPT. 15
3	APRIL 1 TO MAY 15	APRIL 7 TO JUNE 1	APRIL 7 TO MAY 17	OCT. 10 TO NOV. 15	AUG. 25 TO SEPT. 15
4	APRIL 1 TO MAY 15	APRIL 1 TO MAY 25	APRIL 1 TO MAY 15	OCT. 15 TO NOV. 20	SEPT. 5 TO OCT. 1

- NOTES:
- SEEDLING INCLUDES DECIDUOUS AND EVERGREEN STOCK.
 - ACTUAL DATES MAY CHANGE DEPENDING UPON SEASONAL CONDITIONS AS DETERMINED BY THE ENGINEER.
 - FALL PLANTING MAY NOT BE RECOMMENDED OR ALLOWED. SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS. THE FOLLOWING PLANTS ARE NOT RECOMMENDED FOR FALL INSTALLATION. HAWTHORNE, RUSSIAN OLIVE, DOGWOOD, POPLAR, HACKBERRY, LINDEN, IRONWOOD, HONEYLOCUST, BIRCH, MOUNTAIN ASH, MAPLE, WILLOW, CRABAPPLE, PLUM/CHERRY, OAKS, SUMAC.

○ - INDICATES PROJECT LOCATION

OPTIMUM PLANTING DATE ZONES IN MINNESOTA



USE 6 mm GRID GALVANIZED AND WELDED WIRE MESH (HARDWARE CLOTH) TO FORM A DOUBLE LAYERED CYLINDER WITH A 50 mm OVERLAP OF THE CUT ENDS. IMBED A 25 mm x 25 mm WHITE OAK STAKE INTO THE GROUND AT A RADIUS POINT OF 180mm FROM THE CENTER OF THE TREE STEM. SECURE THE MESH CYLINDER TO THE OUTSIDE OF THE STAKE USING GALVANIZED 3 mm DIAM. X 20 mm LONG ROUND HEAD SCREWS WITH WASHERS SPACED APPROXIMATELY 100 mm ON CENTER ALONG THE OVERLAP. THE LOWER EDGE OF THE MESH CYLINDER SHALL BE IMBEDDED 25 mm BELOW THE SURFACE OF THE SOIL WITHOUT DISTURBING THE TREE ROOTS. CUT EDGES WILL NOT BE PERMITTED AT THE TOP OF THE CYLINDER. THE STAKE SHALL BE CUT OFF FLUSH WITH THE TOP OF THE CYLINDER. MULCH WITHIN THE CYLINDER SHALL NOT EXCEED 75 mm DEPTH.

NOTE:
THE BOTTOM WHORL OF BRANCHES MAY HAVE TO BE REMOVED TO PERMIT INSTALLATION OF 300 mm MIN. HT. RODENT GUARDS ON PINE TREES.

RODENT PROTECTION DETAIL

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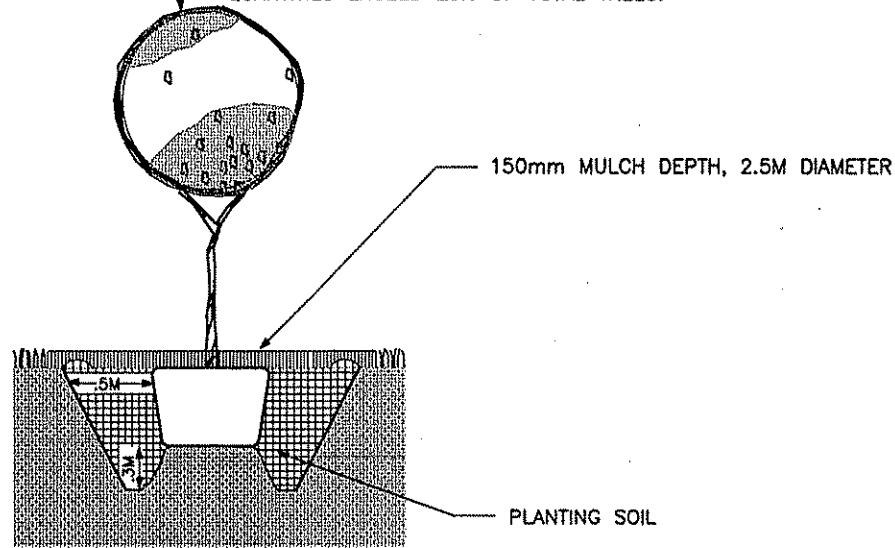


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

LANDSCAPE DETAILS

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MAINTAIN TREE IN PLUMB POSITION THROUGHOUT ESTABLISHMENT PERIOD. STAKE OR GUY AS NECESSARY. STAKING AND GUYING INCIDENTAL TO CONTRACT UNLESS QUANTITIES EXCEED 25% OF TOTAL TREES.



BALLED AND BURLAPPED STOCK

1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING AS DIRECTED BY ENGINEER.
3. SET PLANT ON COMPACTED SOIL AT THE SAME DEPTH (IF PROPER) AS IT WAS GROWN IN THE NURSERY.
4. PLANT SHALL BE PLACED IN PLANTING HOLE WITH BURLAP AND WIRE BASKET, IF USED, INTACT. ONCE IN PLACE, THE PLANT SHALL BE BACKFILLED TO WITHIN 300mm OF THE TOP OF THE ROOTBALL AND WATERED. THE TOP LOOPS OF THE WIRE BASKETS SHALL BE REMOVED A MINIMUM OF 12" FROM THE TOP OF THE ROOT BALL. BURLAP SHALL BE FOLDED BACK TO EXPOSE THE ENTIRE TOP OF THE ROOT BALL.
5. PLUMB AND BACKFILL WITH TOPSOIL
6. APPLY WATER TO SETTLE PLANTS AND FILL VOIDS THEN CONSTRUCT 75 mm DEPTH WATERING BASIN.
7. WATER THOROUGHLY WITHIN 2 HOURS.
8. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.
9. BIODEGRADABLE TWINE MAY BE LEFT ON AS SUPPORT BETWEEN THE ROOT BALL AND ROOT COLLAR UNTIL THE END OF THE PLANT ESTABLISHMENT PERIOD AT WHICH TIME IT MUST BE CUT AND TOTALLY REMOVED FROM THE ROOT COLLAR, THE TWINE MUST BE TIED OR RETIED TO MID-LEVEL LOOPS OR POINTS ON THE BASKET. USE OF NONBIODEGRADABLE TWINE SHALL NOT BE PERMITTED.

PLANTING DETAILS FOR ISOLATED PLANTING LOCATIONS

GENERAL NOTES - SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS

MULCH MATERIAL: Mn/DOT 3882 TYPE 6 MODIFIED, SEE SPECIAL CONDITIONS

PLANTING SOIL: MIX 50MM GRADE 2 COMPOST WITH 200MM EXISTING SOILS OR 1:4 BY VOLUME

TREE PAINTING: PAINT OAKS, LINDENS, LOCUSTS, MAPLES, CRABAPPLES, AND MOUNTAIN ASHES. ONLY UNDILUTED EXTERIOR WHITE LATEX BASE PAINT IS ACCEPTABLE.

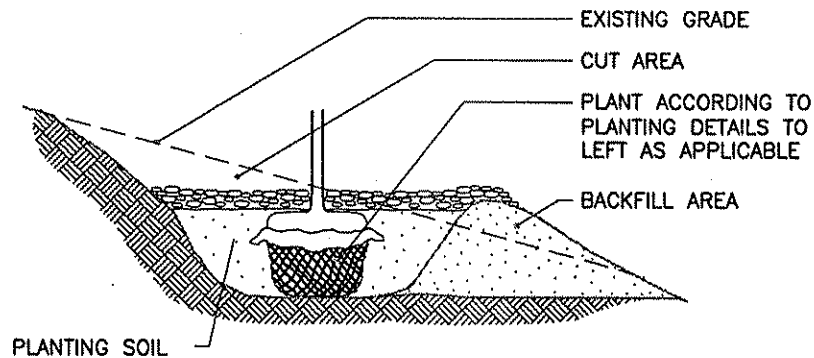
RODENT PROTECTION: PROVIDE ON ALL DECIDUOUS TREES AND PINE TREES UNLESS OTHERWISE SPECIFIED.

WATERING GUIDELINES:

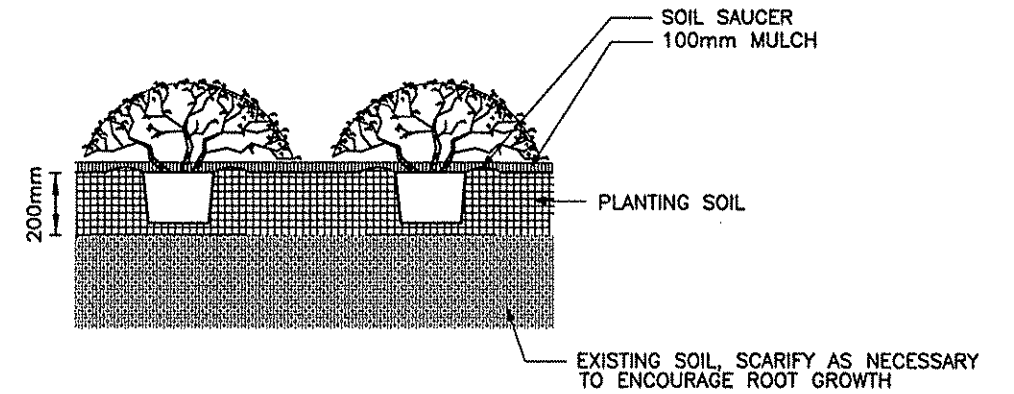
PLANT TYPE	AVERAGE AMOUNT OF WATER PER APPLICATION (LITERS)
MACHINE TRANSPLANTED TREES (75 mm CALIPER+)	190-380
BALLED & BURLAPPED TREES	75±
BARE ROOT TREES	55±
BALLED & BURLAPPED SHRUBS	40±
BARE ROOT OR CONTAINER SHRUBS	25±
WOODY SEEDLINGS	15±
HERBACEOUS GROUNDCOVERS AND VINES	10±

1) THE WATERING GUIDELINES ASSUME A SOIL CONDITION WITH ADEQUATE BUT NOT EXCESSIVE OR POOR DRAINAGE. WATERING INTERVALS AND AMOUNT OF APPLICATION MUST BE VARIED CONSIDERING PREVAILING SOIL MOISTURE AND WEATHER CONDITIONS THROUGHOUT THE GROWING SEASON. ADEQUATE BUT NOT EXCESSIVE SOIL MOISTURE IN THE ROOT ZONE OF NEW PLANTINGS MUST BE MAINTAINED AT ALL TIMES THROUGHOUT THE GROWING SEASON FOR THE FIRST TWO YEARS FOLLOWING PLANTING. WATERING MAY BE REQUIRED WEEKLY OR INFREQUENTLY. THIS DETERMINATION SHALL BE MADE BY THE CONTRACTOR.

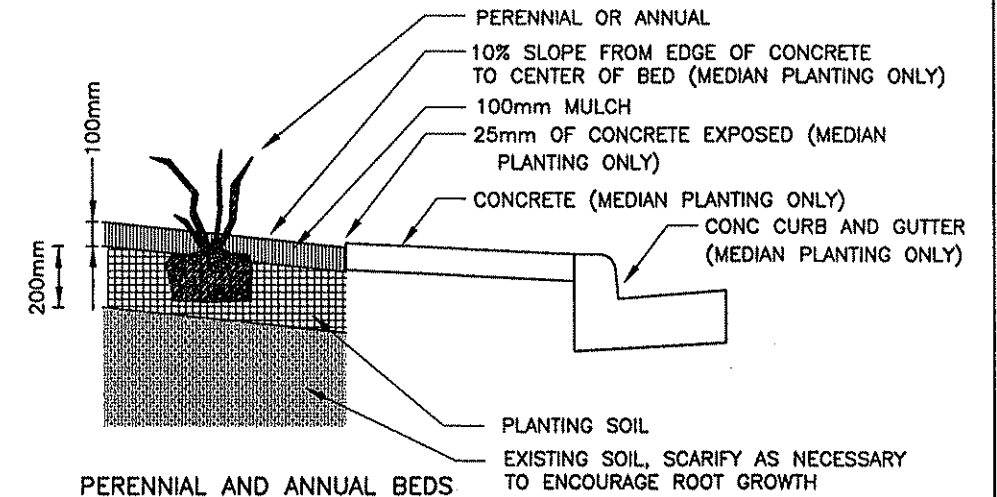
2) THE CONTRACTOR IS ADVISED THAT THE WATERING GUIDELINES ARE NOT REQUIREMENTS OF THE CONTRACT ALTHOUGH FAILURE TO CORRECT WATER DEFICITS BY SUPPLEMENTAL WATERING OR FAILURE TO COMPENSATE FOR EXCESSIVE SOIL MOISTURE AND DRAINAGE PROBLEMS MAY RESULT IN UNACCEPTABLE PLANTS LEADING TO REDUCED OR NO PAYMENT.



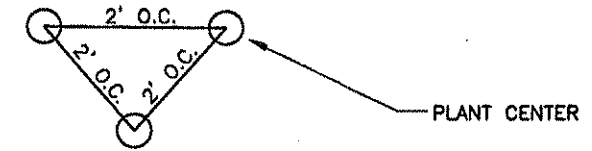
PLANTING DETAIL FOR STEEP SLOPES



SHRUB PLANTING



PERENNIAL AND ANNUAL BEDS



PERENNIAL PLANT SPACING

NOTES:

1. THE PLANTING DETAILS REPRESENT ADEQUATELY DRAINED SOIL CONDITIONS SHOULD EXERCISE DISCRETION IN SETTING PLANTS 25 mm-75 mm HIGHER IN POORLY DRAINED SOILS.
2. ON 1:2 SLOPES OR GREATER, DO NOT CONSTRUCT THE UPHILL HALF
3. ON WET, POORLY DRAINED SOILS, DO NOT CONSTRUCT WATERING BASIN.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE DRAINAGE IN HEAVY POORLY DRAINED OR IMPERVIOUS SOILS.
5. PLANTS SHOULD BE SET AT THE PROPER DEPTH WHEREBY THE BEGINNING TAPER OF THE ROOT FLARE IS AT THE SAME ELEVATION AS THE FINISHED SOIL GRADE. THIS SHOULD BE THE SAME DEPTH AS THE PLANTS WERE GROWN AT IN THE NURSERY. NOTE THAT THE ROOTS OF BALLED AND BURLAPPED PLANTS ARE UNACCEPTABLE WHEN THEY ARE COVERED BY MORE THAN 100mm OF SOIL IN THE TOP OF THE BALL.
6. DELAY MULCH PLACEMENT IF NECESSARY TO ALLOW MORE TIME FOR EXCESS SOIL MOISTURE TO EVAPORATE FROM PLANTING AREAS BEFORE PLACING MULCH.



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I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly registered Landscape Architect under the laws of the state of Minnesota.
 Date: 3/23/99 Reg. No. 17998



ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

LANDSCAPE DETAILS

FILE NO. ANOKC9806.01	196
DATE 03/15/99	230

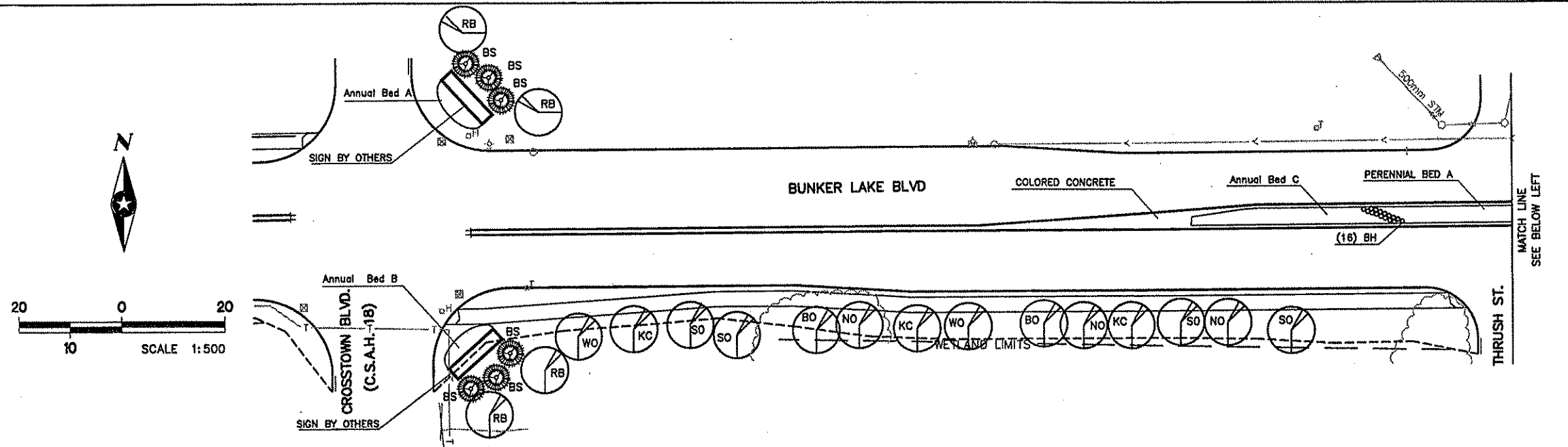
PLANTING SCHEDULE- PERENNIALS

SCIENTIFIC NAME	ECHINACEA PURPUREA	ECHINACEA PURPUREA 'ALBA'	ECHINACEA PURPUREA 'WHITE SWAN'	HEMEROCALLIS 'BUTTERCURLS'	HEMEROCALLIS 'GENTLE SHEPARD'	HEMEROCALLIS 'HAPPY RETURNS'	HEMEROCALLIS 'ICE CARNIVAL'	HEMEROCALLIS 'MARY TODD'	HEMEROCALLIS 'STELLA DE ORO'	IRIS SIBERICA 'BUTTER & SUGAR'	LIATRIS SPICATA 'KOBOLD'	LIATRIS		
COMMON NAME	PURPLE CONEFLOWER	WHITE CONEFLOWER	WHITE SWAN CONEFLOWER (WHITE)	BUTTERCURLS DAYLILY (YELLOW)	GENTLE SHEPARD DAYLILY (WHITE)	HAPPY RETURNS DAYLILY (YELLOW)	ICE CARNIVAL DAYLILY (WHITE)	MARY TODD DAYLILY (YELLOW)	STELLA DE ORO DAYLILY (YELLOW)	BUTTER & SUGAR IRIS (YELLOW)	KOBOLD GAYFEATHER (PURPLE)	WHITE GAYFEATHER		
PLANTING BED	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY		PLANTING BED
PERENNIAL BED A	250													PERENNIAL BED A
PERENNIAL BED B												250	250	PERENNIAL BED B
PERENNIAL BED C						125				125				PERENNIAL BED C
PERENNIAL BED D														PERENNIAL BED D
PERENNIAL BED E	250													PERENNIAL BED E
PERENNIAL BED F				85		85				85				PERENNIAL BED F
PERENNIAL BED G		125	125											PERENNIAL BED G
PERENNIAL BED H									85	85				PERENNIAL BED H
PERENNIAL BED I												250		PERENNIAL BED I
PERENNIAL BED J				85		85								PERENNIAL BED J
PERENNIAL BED K		125	125											PERENNIAL BED K
PERENNIAL BED L				85					85					PERENNIAL BED L
PERENNIAL BED M												250		PERENNIAL BED M
PERENNIAL BED N				85		85								PERENNIAL BED N
PERENNIAL BED O		125	125											PERENNIAL BED O
PERENNIAL BED P				85					85	85				PERENNIAL BED P
TOTALS	500	375	375	425	125	255	125	425	255	170	250	750		TOTAL (4030)

PLANTING SCHEDULE- TREES AND SHRUBS

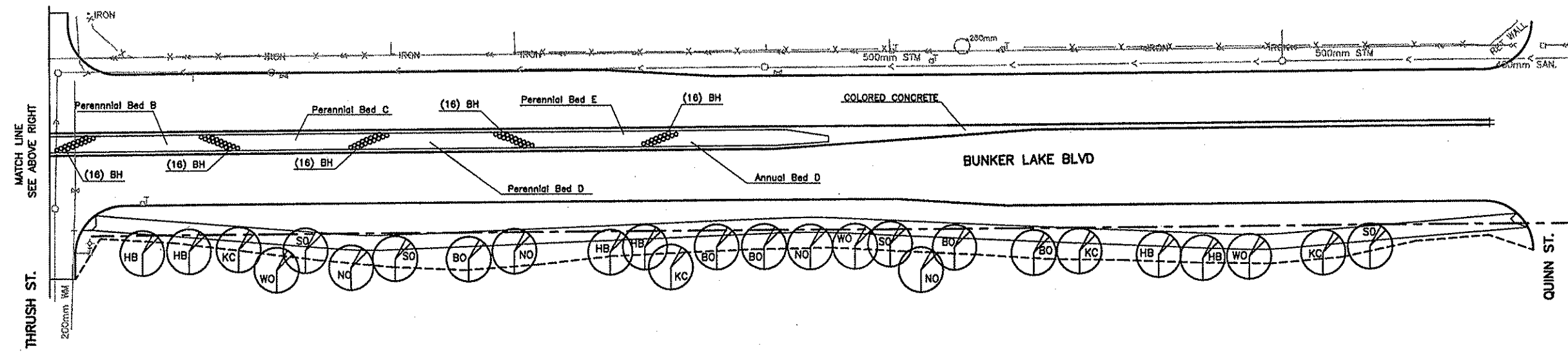
SYMBOL	QUANT	COMMON NAME	SCIENTIFIC NAME	SIZE	ROOT TYPE
o BH	288	DWARF BUSH HONEYSUCKLE	DIERVILLA LONICERA	0.6M	BR
BS	12	BLACK HILLS SPRUCE	PICEA GLAUCA DENSATA	2M	B/B
RB	8	CLUMP RIVER BIRCH	BETULA NIGRA	3.5M	B/B
KC	12	KENTUCKY COFFEE TREE	GYMNOCLADUS DIOICUS	60mm	B/B
HB	14	HACKBERRY	CELTIS OCCIDENTALIS	60mm	B/B
WO	14	WHITE OAK	QUERCUS ALBA	60mm	B/B
BO	12	BUR OAK	QUERCUS MACROCARPA	60mm	B/B
SO	17	SWAMP WHITE OAK	QUERCUS BICOLOR	60mm	B/B
NO	11	NORTHERN PIN OAK	QUERCUS ELLIPSOIDALIS	60mm	B/B

NOTES:
 PERENNIAL BEDS WITH MORE THAN ONE PLANT TYPE SHALL HAVE TYPES EVENLY INTERMIXED THROUGHOUT THE BED.
 CONTRACTOR SHALL HAVE ALL PLANT SUBSTITUTIONS APPROVED BY LANDSCAPE ARCHITECT
 ALL PERENNIALS SHALL BE PLANTED 2.0' O.C. IN STAGGERED ROWS, SEE DETAIL.



COMMON NAME	YELLOW MARGOLD	PURPLE SALVIA	ORANGE ZINNIA
SIZE AT MATURITY	.5M	.5M	.5M
PLANTING BED	QUANTITY	QUANTITY	QUANTITY
ANNUAL BED A			160
ANNUAL BED B			160
ANNUAL BED C		450	
ANNUAL BED D		450	
ANNUAL BED E	450		
ANNUAL BED F	450		
ANNUAL BED G			160
ANNUAL BED H			160
TOTAL (2440)	900	900	640

NOTE:
 ALL ANNUALS SHALL BE POTTED IN JUMBO PACK, 6 PLANTS TO A PACK, INDIVIDUAL POT SIZE APPROXIMATELY 50mmx75mm. EACH BED SHALL CONTAIN A SINGLE VARIETY ONLY.



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ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

LANDSCAPE PLAN
 WESTERN PORTION

FILE NO. ANOKC9806.01	197
DATE 03/15/99	203

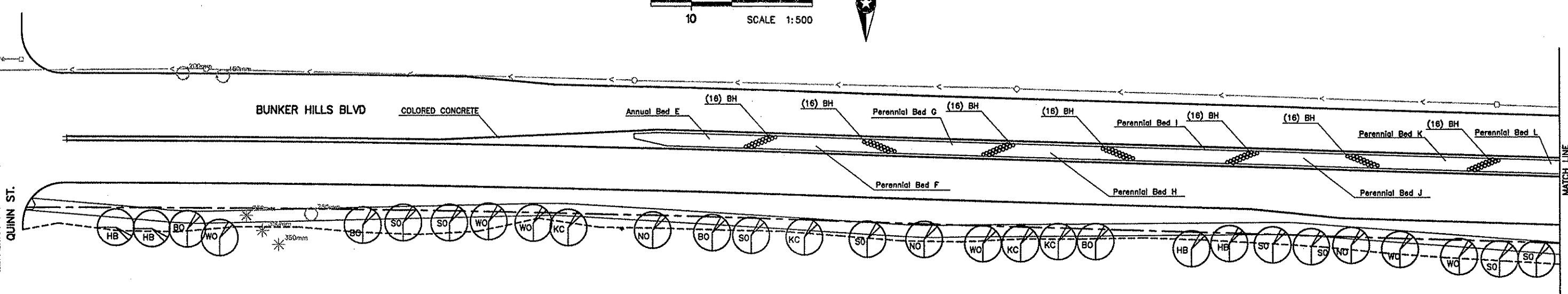


20 0 20
10 SCALE 1:500

MATCH LINE
SEE SHEET 197

MATCH LINE
SEE BELOW LEFT

QUINN ST.

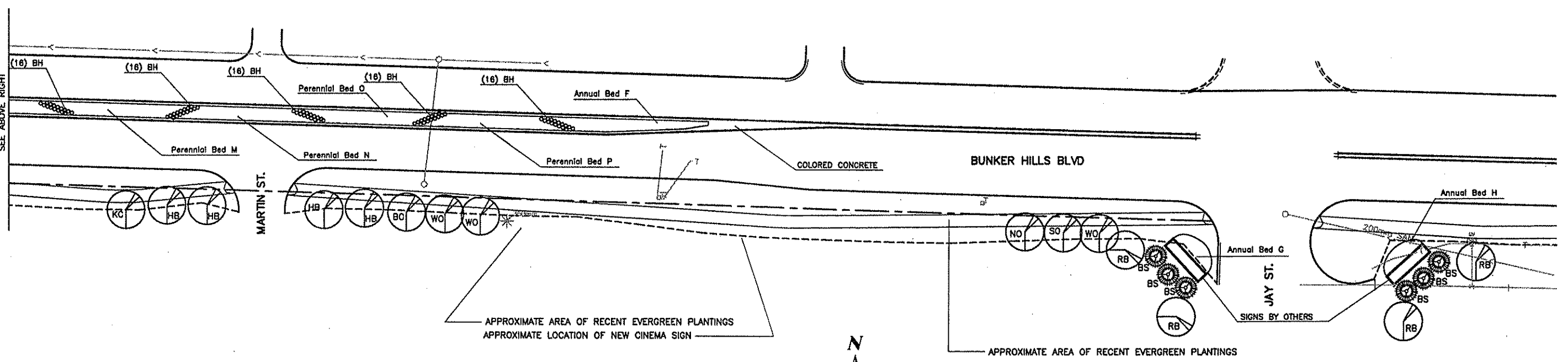


MATCH LINE
SEE ABOVE RIGHT

MARTIN ST.

JAY ST.

20 0 20
10 SCALE 1:500



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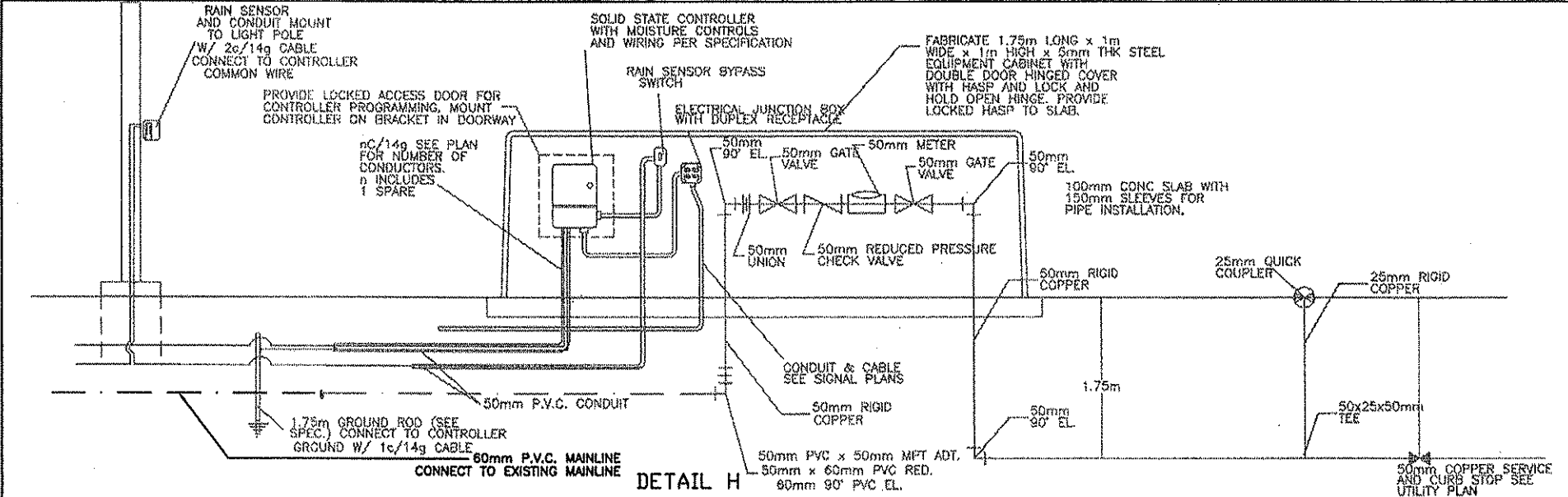
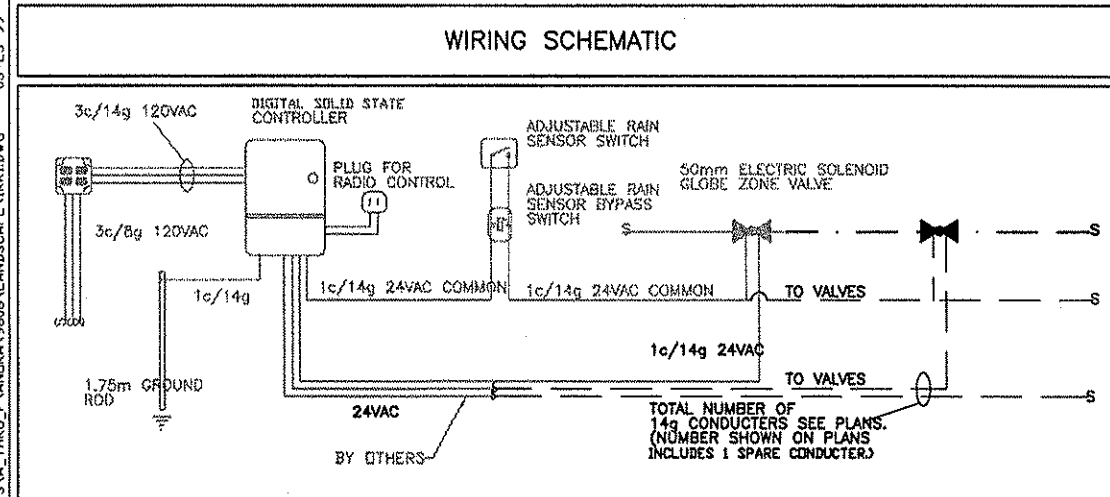
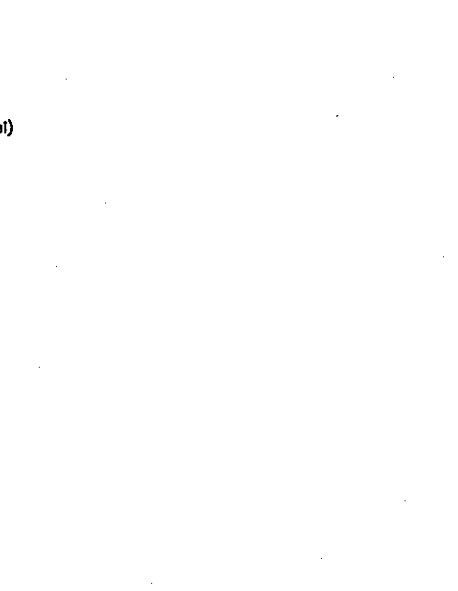
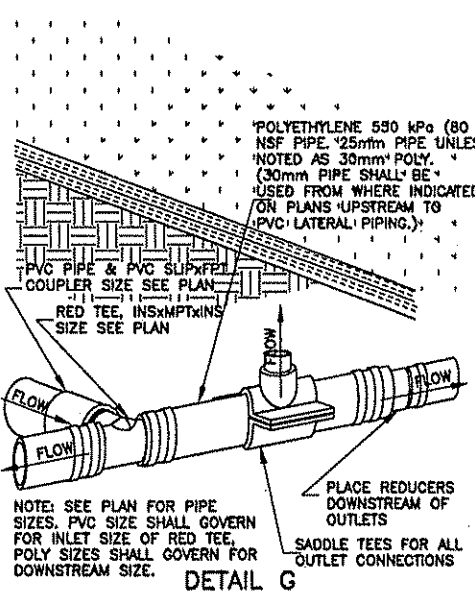
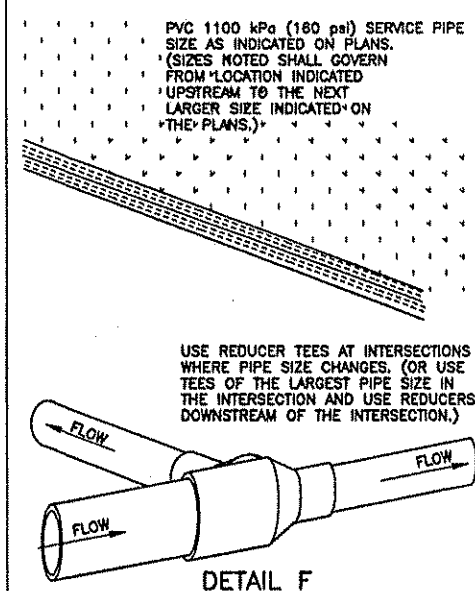
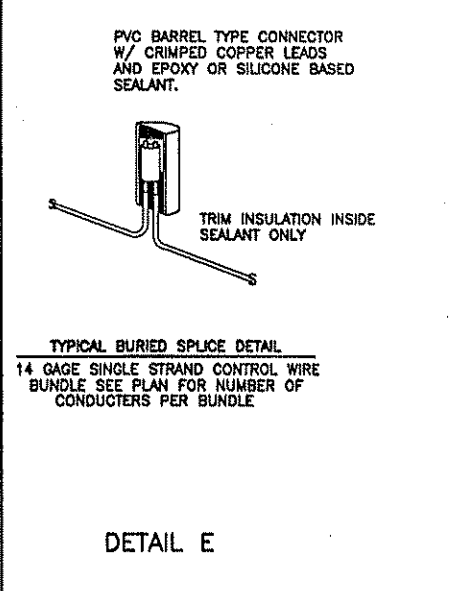
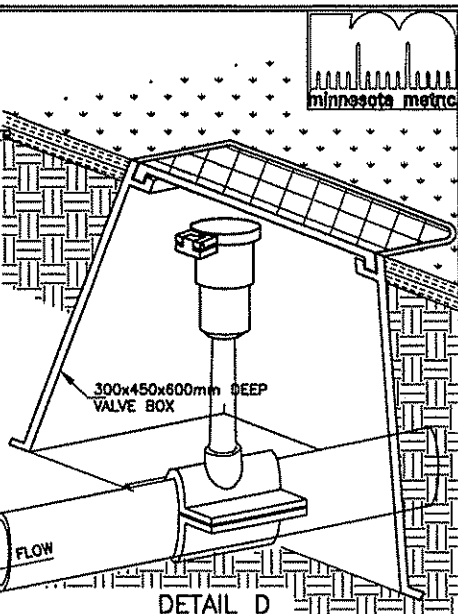
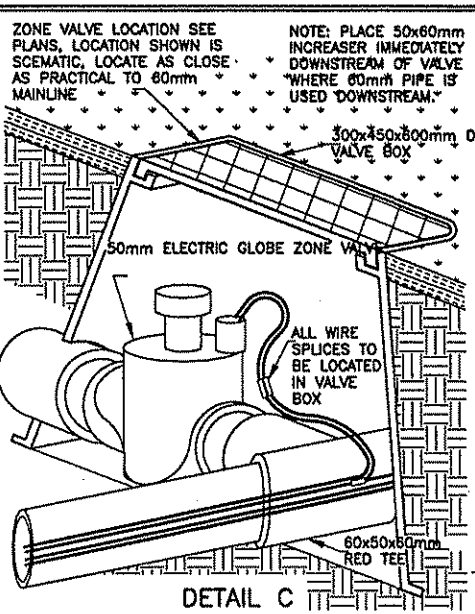
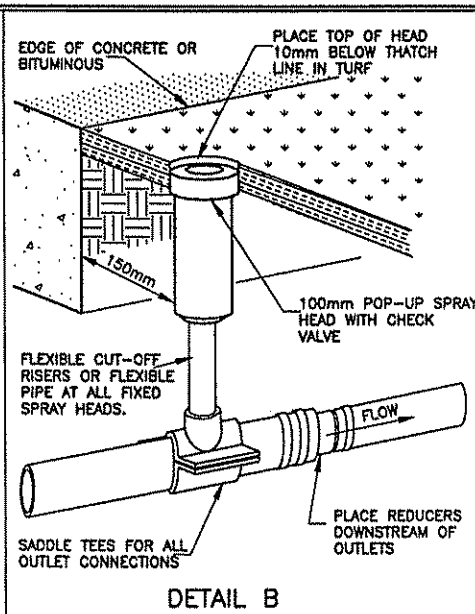
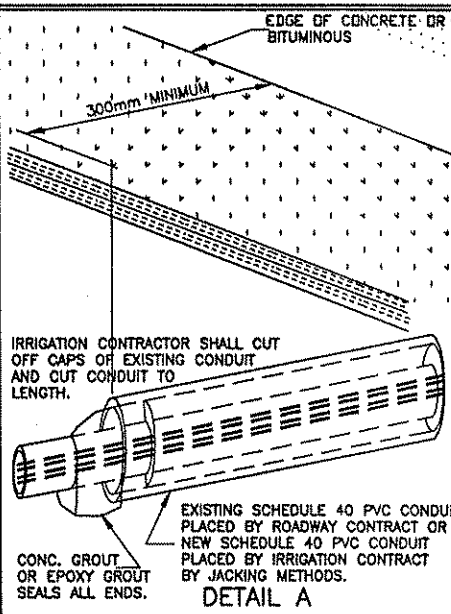


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

LANDSCAPE PLAN
EAST PORTION

FILE NO.
ANOKC9806.01
DATE
03/15/99
198
230

LEGEND	
SYMBOL	DESCRIPTION
QS4	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 4m QUARTER CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
HS4	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 4m HALF CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
QS3	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 3m QUARTER CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
HS3	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 3m HALF CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
	50mm ELECTRIC GLOBE ZONE VALVE SEE DET. C
	25mm QUICK COUPLER VALVE IN VALVE BOX SEE DET. D
	60 mm PVC 1100 kPa (160 PSI) SERVICE PIPE SEE DET. F
	25mm OR 30mm POLYETHYLENE 550 kPa (80 psi) NSF PIPE SEE DET. G
	150mm SCHEDULE 40 PVC CONDUIT SEE DET. A
	14 GAGE SINGLE STRAND CONTROL WIRE BUNDLE, SEE PLAN FOR NUMBER OF CONDUCTORS SEE DET. E
	EXISTING DIGITAL SOLID STATE CONTROLLER IN PEDESTAL MOUNT WITH MOISTURE CONTROLS AND WIRING PER SPECIFICATION SEE DET. H
	EXISTING RP BACKFLOW DEVICE AND METER IN STEEL CABINET WITH GATE VALVES AND SYSTEM POWER CONNECTION SEE DET. H



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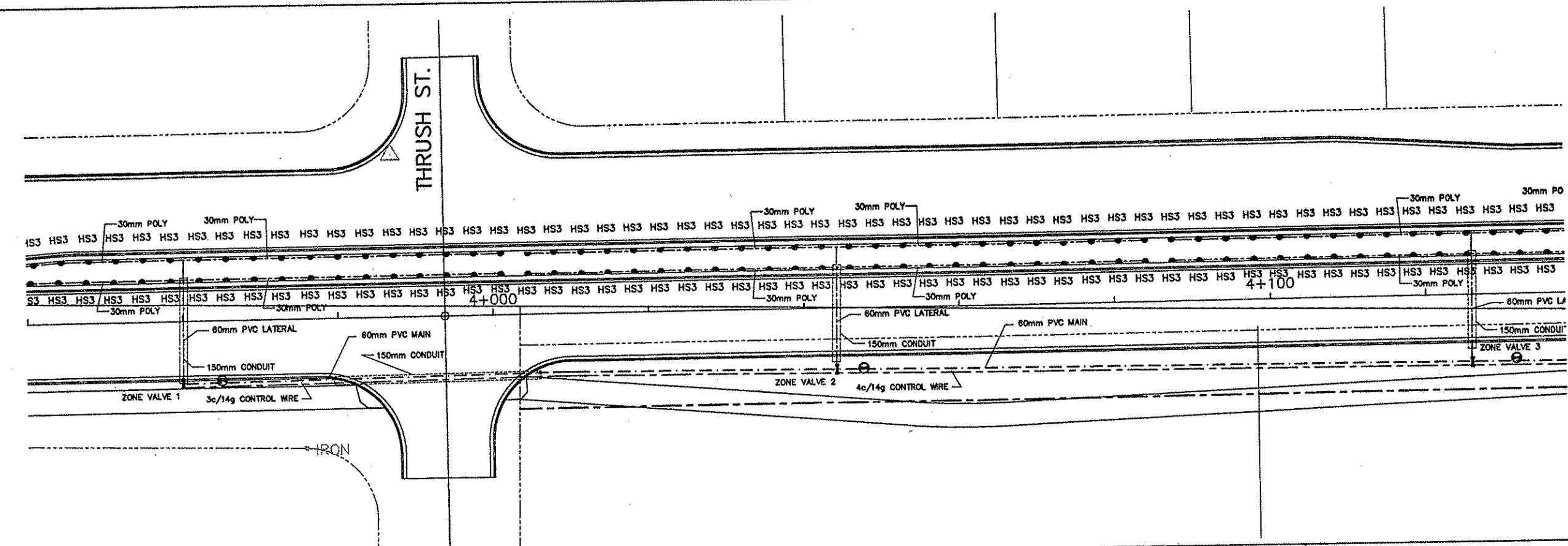
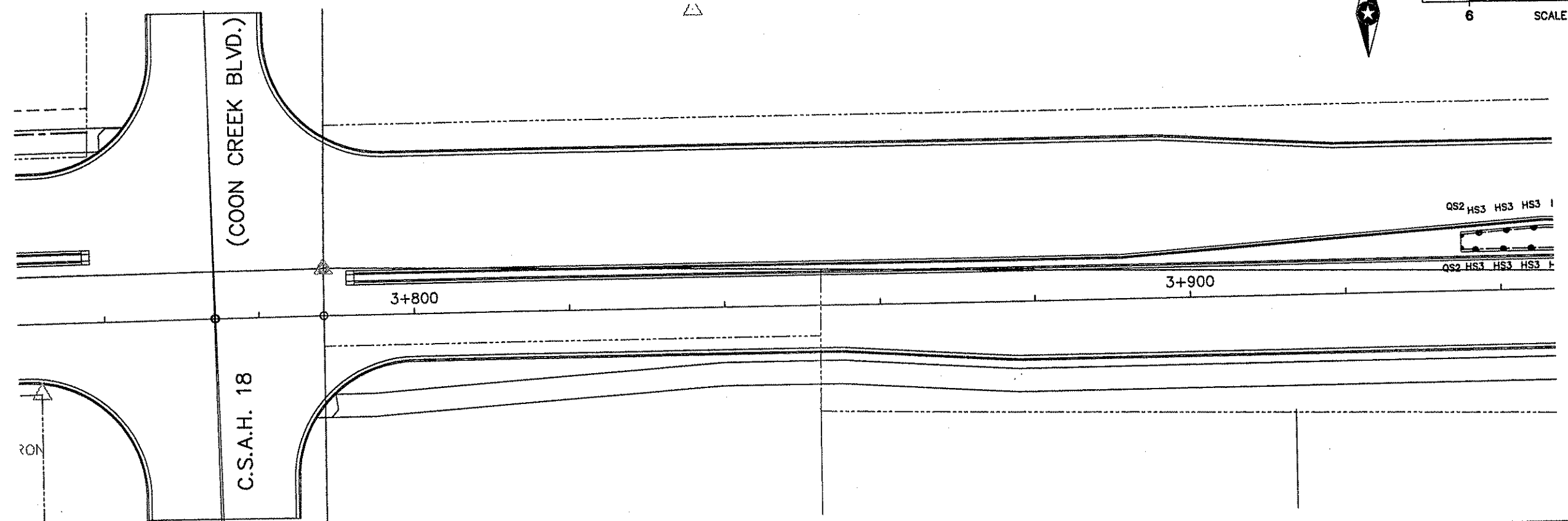


ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

IRRIGATION DETAILS

FILE NO. ANOKC9806.01
DATE 03/15/99
199
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 S.A.P. 198-020-14

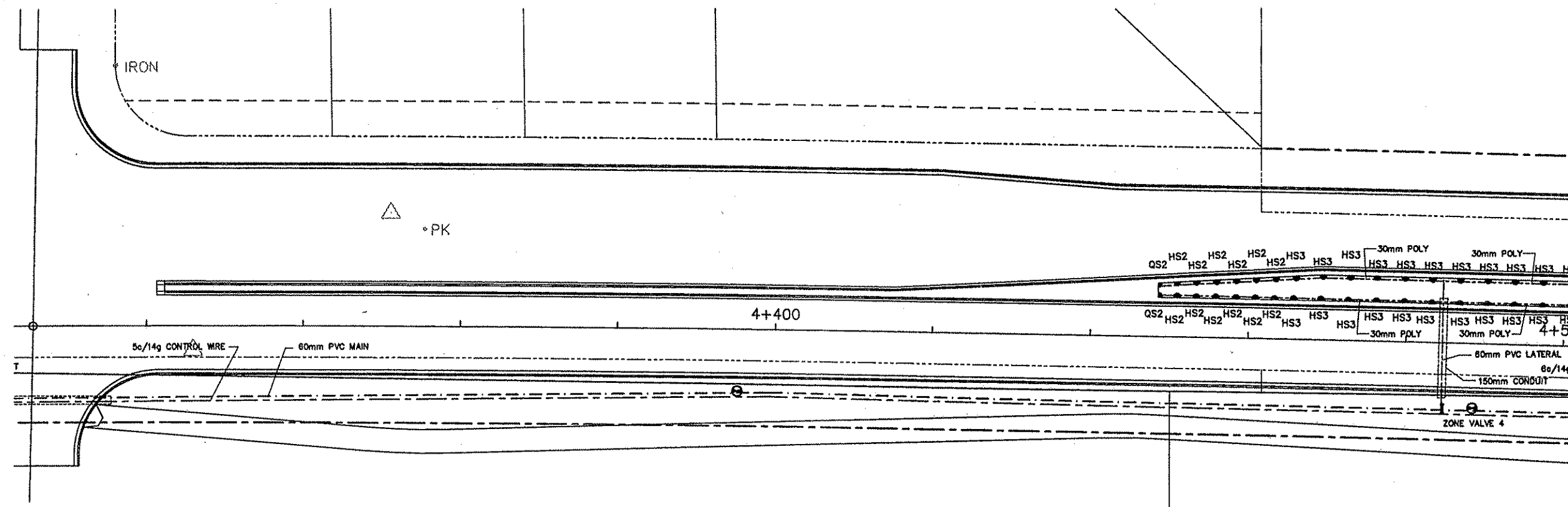
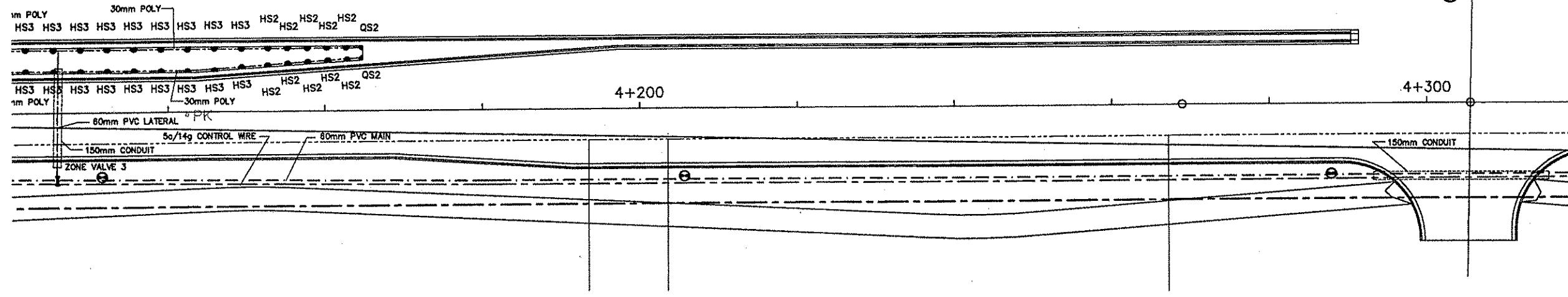
IRRIGATION PLAN

FILE NO. ANOKC9806.01	200
DATE 03/15/99	230



SCALE 1:300

QUINN ST.



C:\CIVIL\CLIENTS\VA_THRU\F\ANOKA\9806\DWG\ACR08IR2.DWG 03-18-99 4:04 pm

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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.

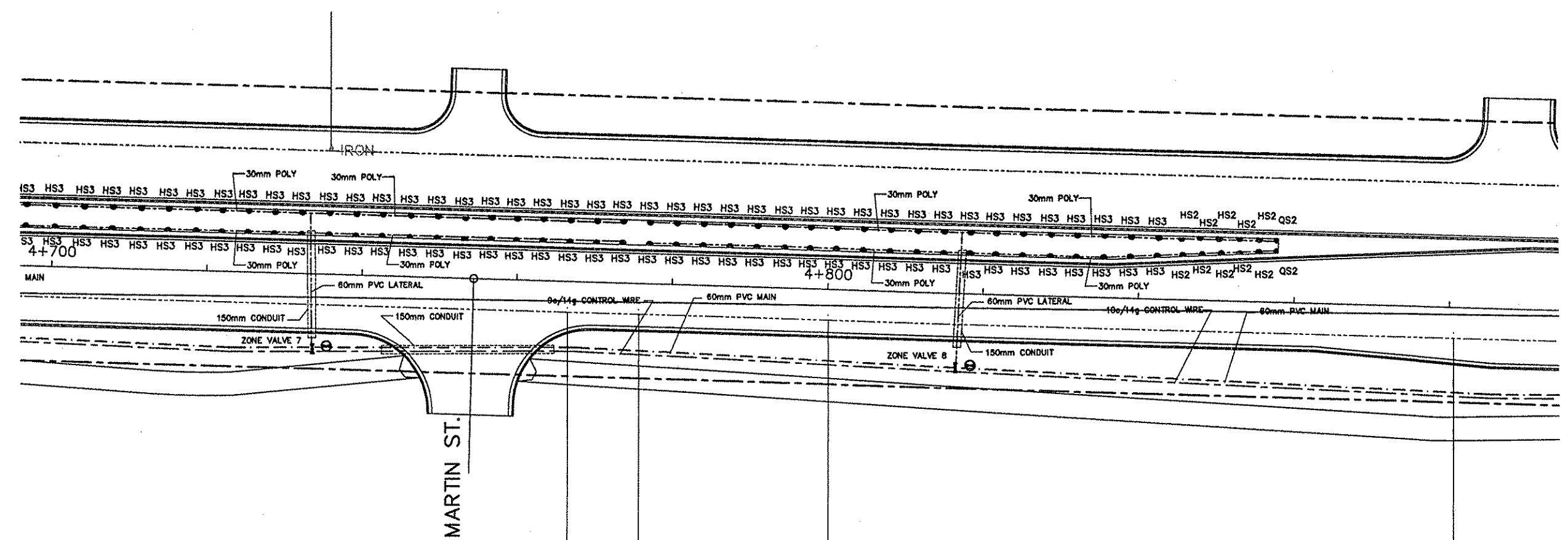
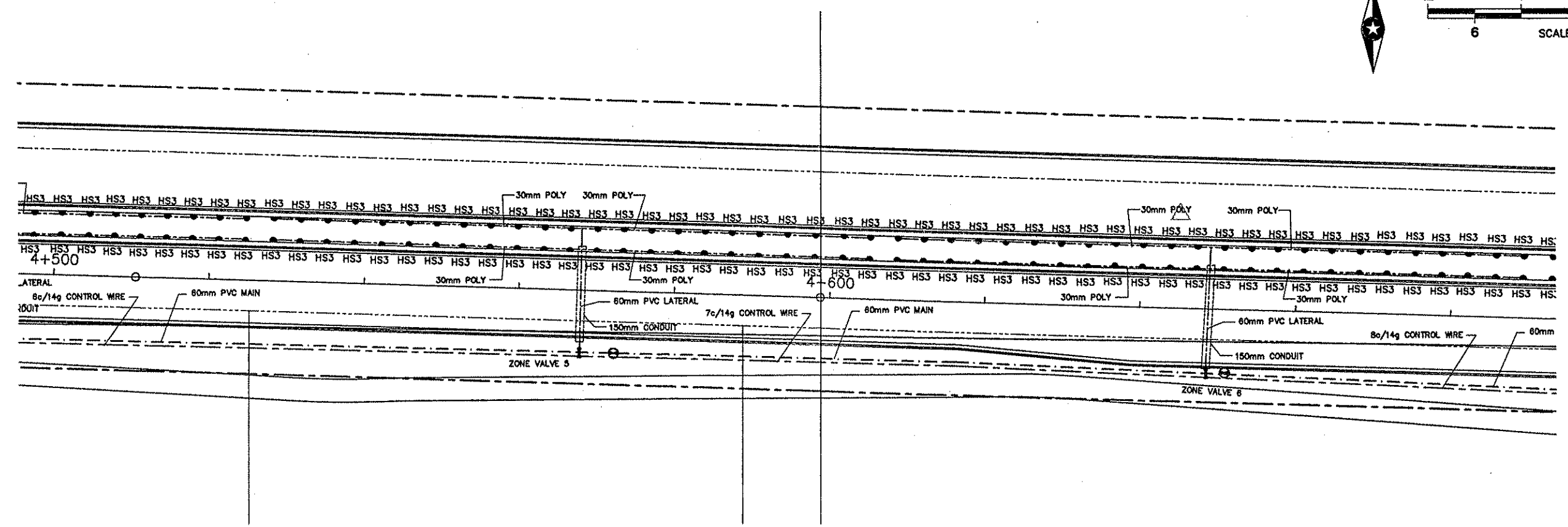
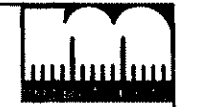
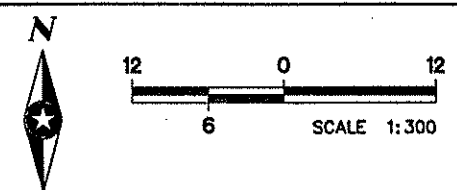
Date: _____ Reg. No. 18512



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

IRRIGATION PLAN

FILE NO. ANOKC9806.01	201 230
DATE 03/15/99	



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DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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: _____ Reg. No. 18612



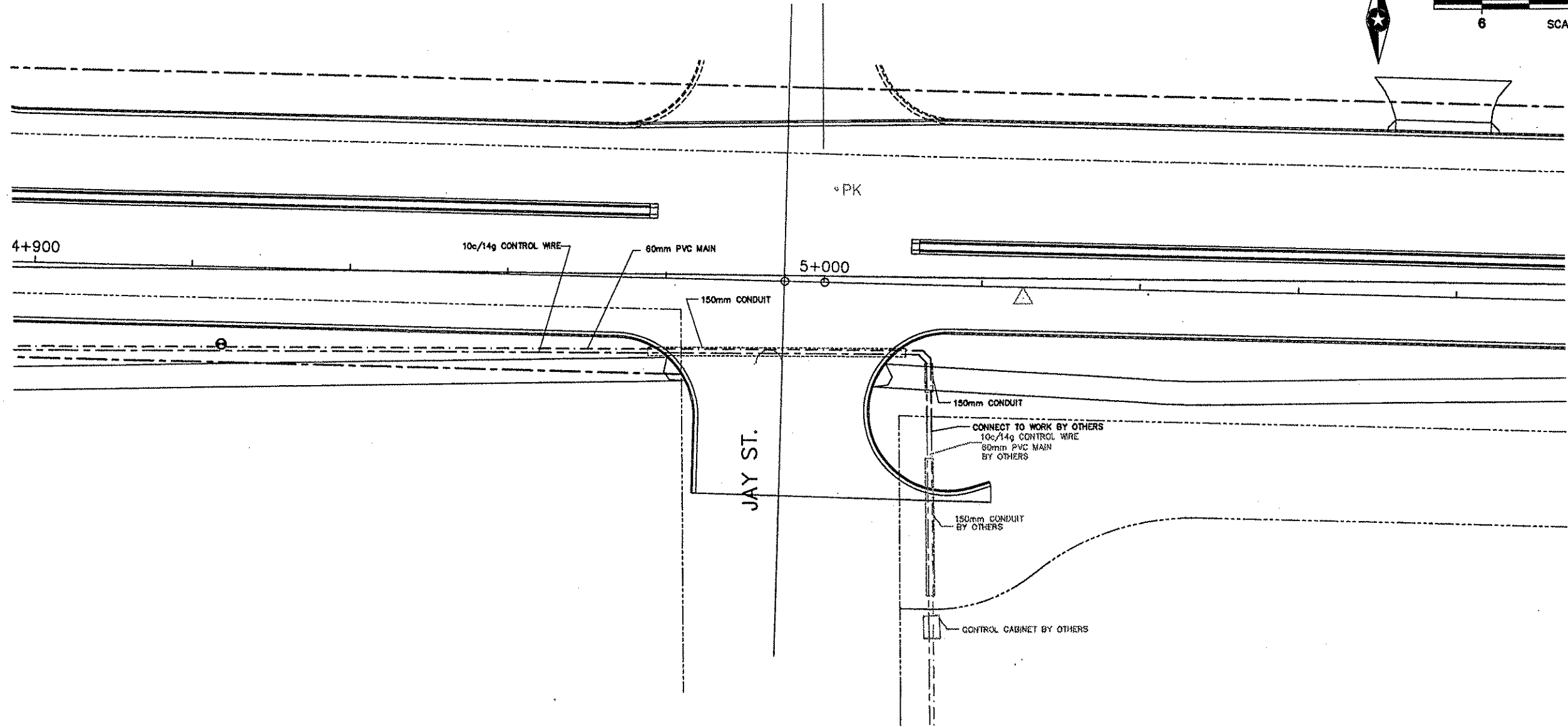
ANOKA COUNTY
 C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

IRRIGATION PLAN

FILE NO.	202
ANOKC9806.01	
DATE	03/15/99
	230



12 0 12
6 SCALE 1:300



03-18-99 4:22 pm
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DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

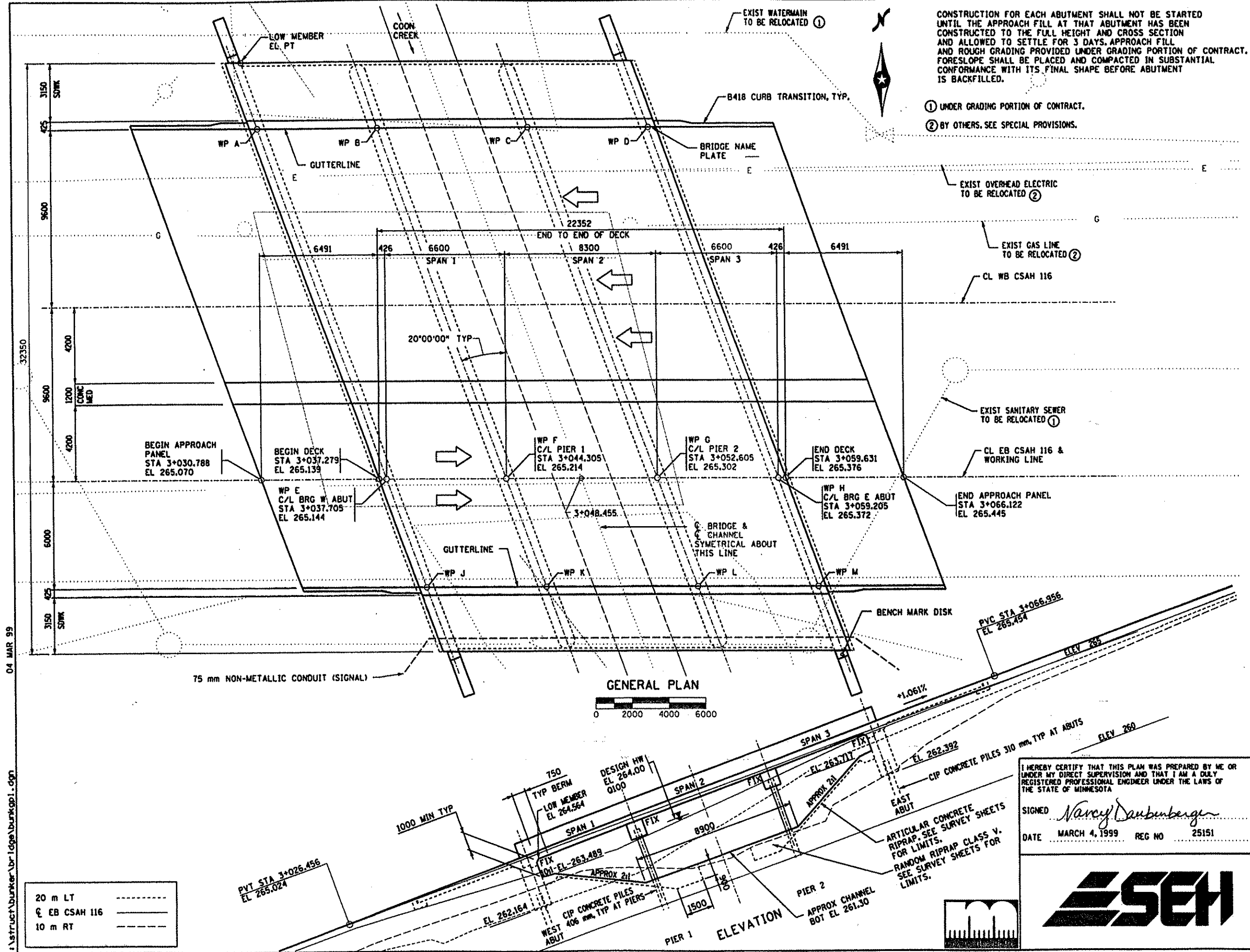
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
 Date: _____ Reg. No. 18612



ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
 S.A.P. 02-716-04
 S.A.P. 198-020-14

IRRIGATION PLANS

FILE NO. ANOKC9808.01	203
DATE 03/15/99	230



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/m² ALLOWANCE FOR FUTURE OVERLAY MODIFICATIONS.
 MAXIMUM ALLOWABLE DESIGN STRESSES:
 REINFORCED CONCRETE:
 $f'_c = 28 \text{ MPa}$, $n=8$
 $f_y = 420 \text{ MPa}$ FOR REINFORCEMENT, GRADE 420
 TOTAL DECK AREA = 723 m²
 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 (NSL 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

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

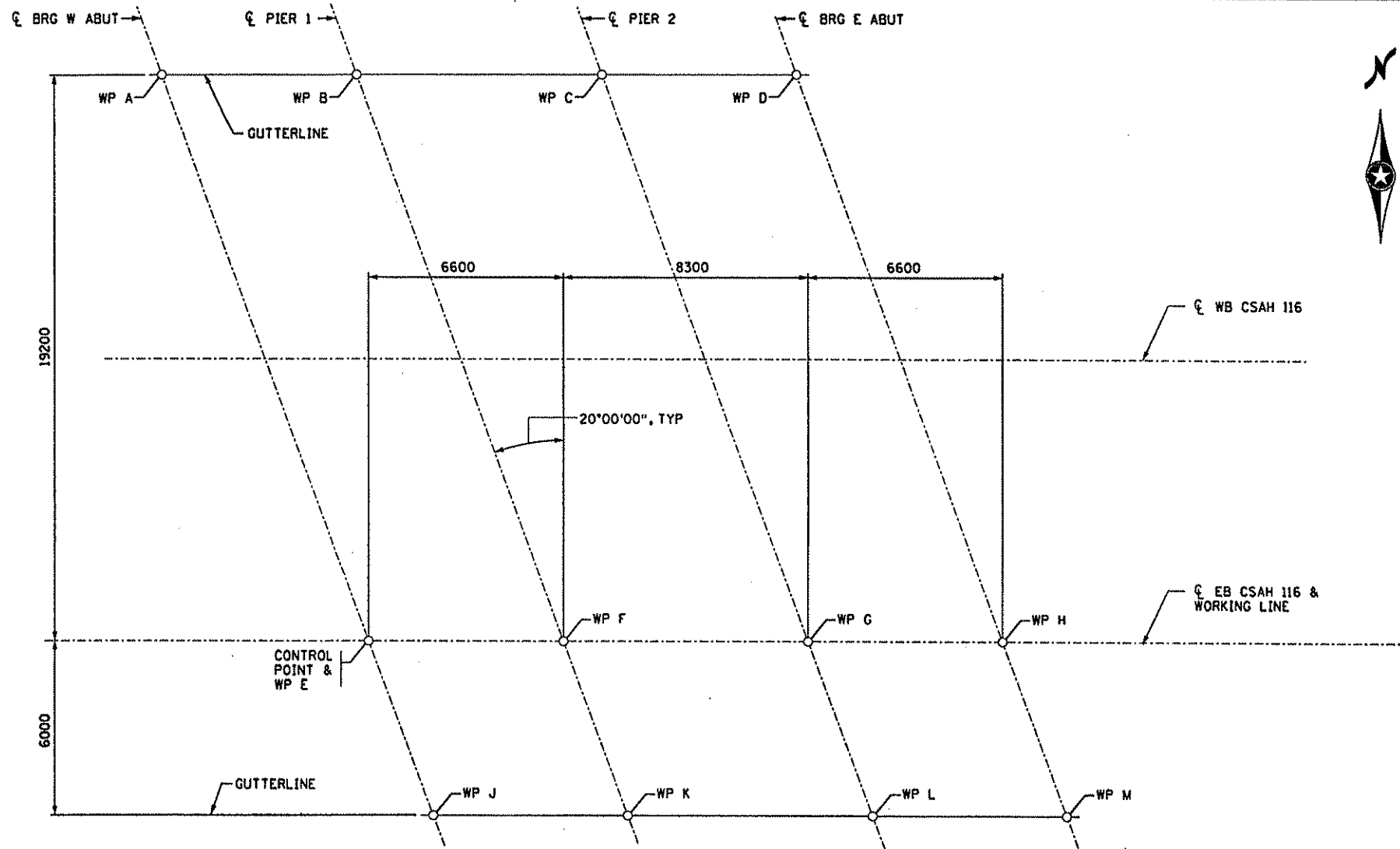


APPROVED: *Donald J. Plummer*
 STATE BRIDGE ENGINEER

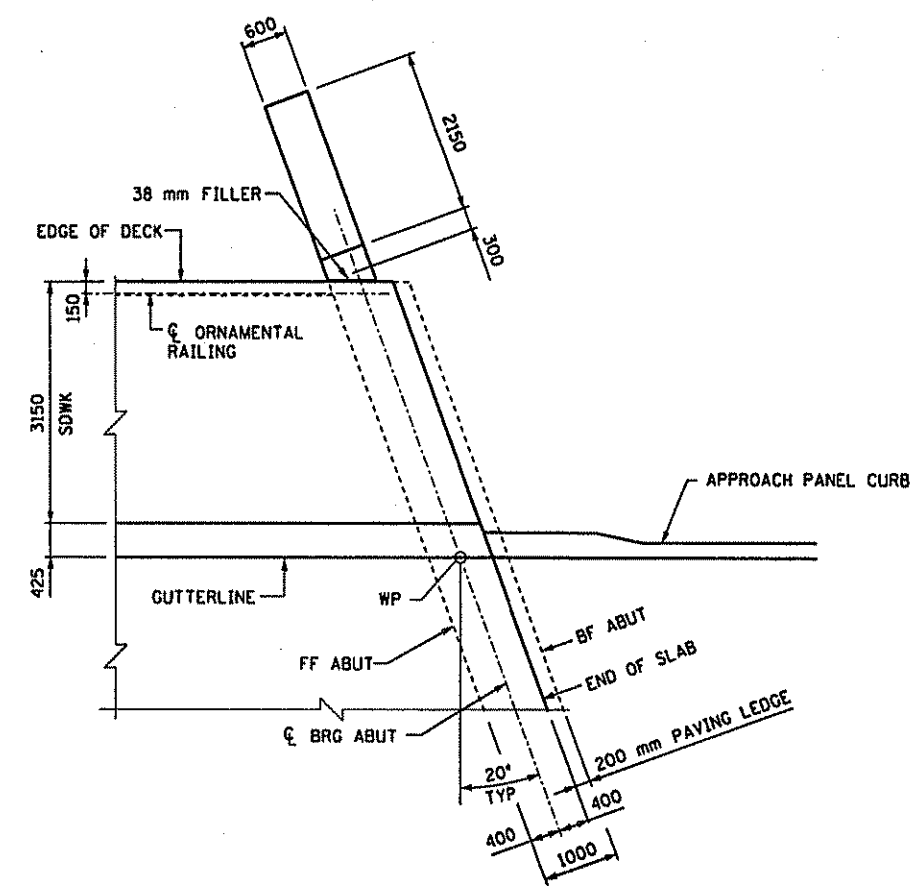
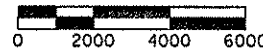
DES: MAW	DR: MAW	02564
CHK: JOS	CHK: JOS	

04 MAR 99

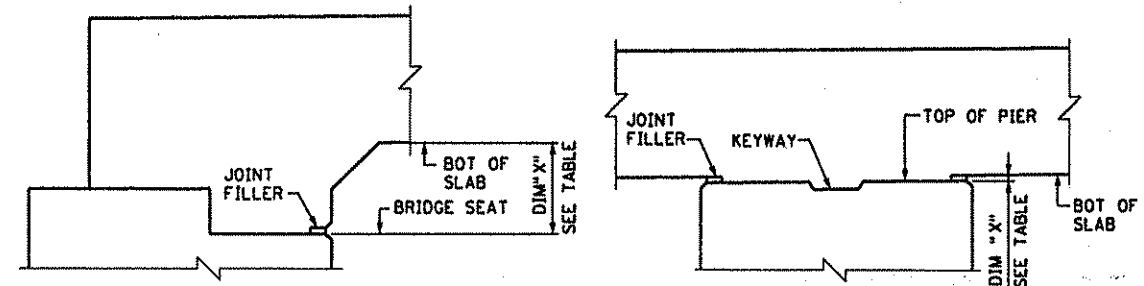
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WORKING POINT LAYOUT

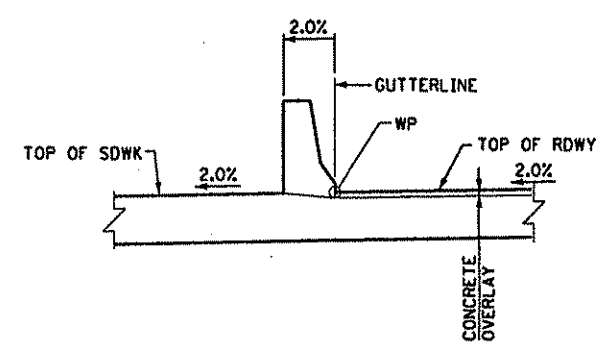


TYPICAL CORNER LAYOUT



DIMENSION "X" AT ABUTMENTS

DIMENSION "X" AT PIERS



WORKING POINT SCHEMATIC

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

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

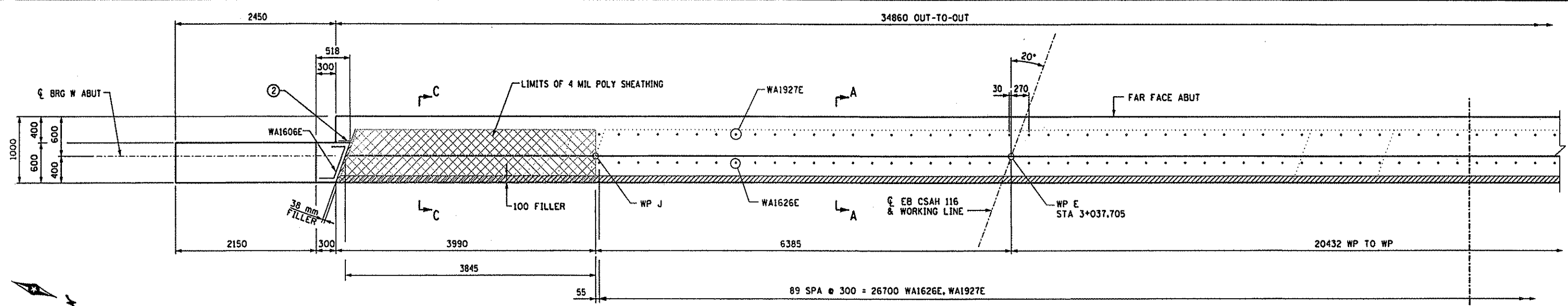


CERTIFIED BY *Nancy Dubenberger*
 PROFESSIONAL ENGINEER
 REG NO. 29151 DATE MARCH 4, 1999

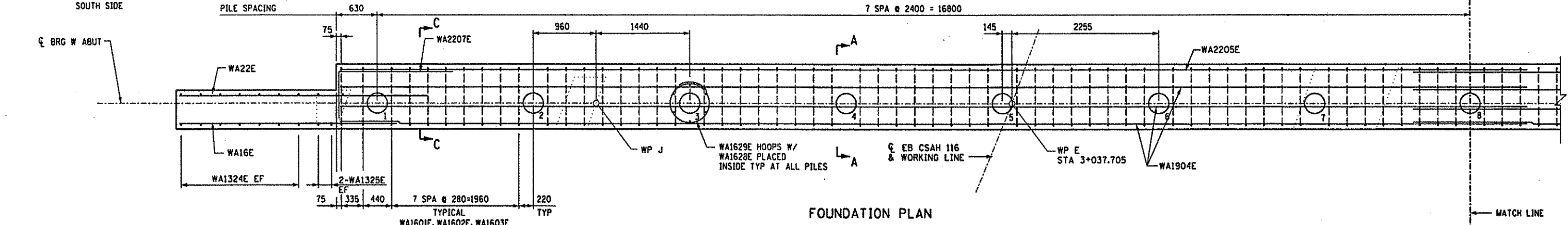
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 SAP 02-716-04

DES: MAW DR: MAW APPROVED: 4-5-99
 CHK: JOS CHK: JOS
 SHEET NO B3 OF 28 SHEETS BRIDGE NO 02564

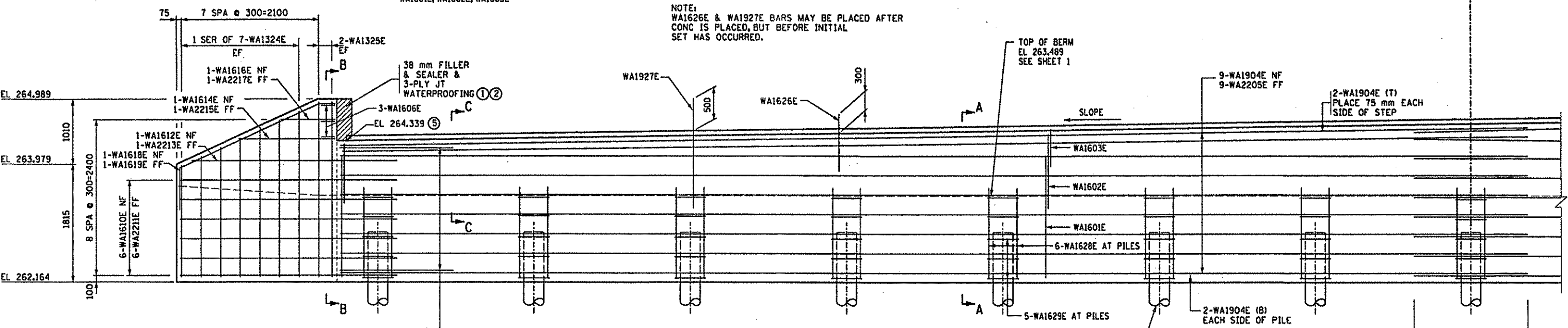
04 MAR 99 J:\STRUCT\Bunker\br_idga\Bunker1.dgn



PLAN



FOUNDATION PLAN



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 II FOR BAR LIST AND SUMMARY OF QUANTITIES.
 - NF=NEAR FACE
FF=FAIR FACE
EF=EACH FACE
BF=BACK FACE
 - ELEVATION TAKEN ALONG ϕ OF BEARING.

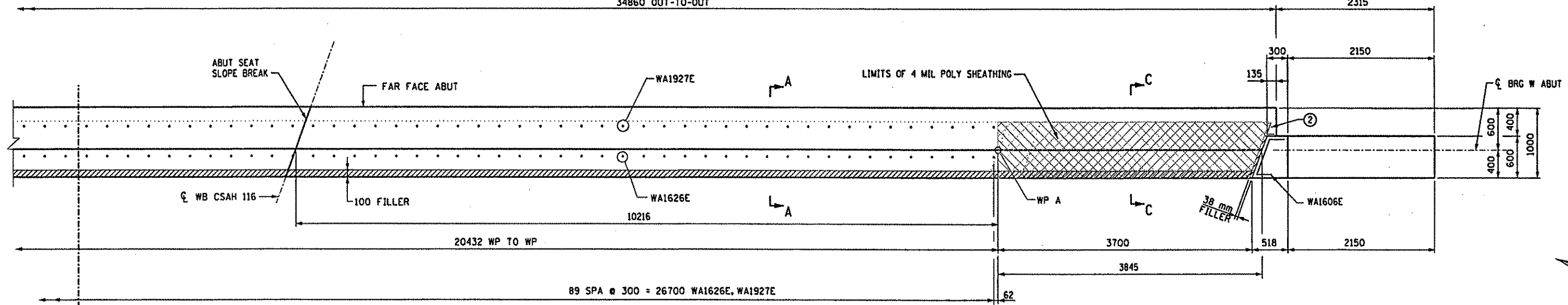
NOTE:
WA1626E & WA1927E BARS MAY BE PLACED AFTER CONC IS PLACED, BUT BEFORE INITIAL SET HAS OCCURRED.

04 MAR 99

	CERTIFIED BY	<i>Nancy Daubinger</i>	TITLE:	DES: NTD	DR: MAW	APPROVED:	BRIDGE NO
	PROFESSIONAL ENGINEER		WEST ABUTMENT DETAILS	CHK: JDS	CHK: JDS	4-5-99	
	REG NO	25151	DATE	MARCH 4, 1999	SHEET NO 84 OF 28 SHEETS		

34860 OUT-TO-OUT

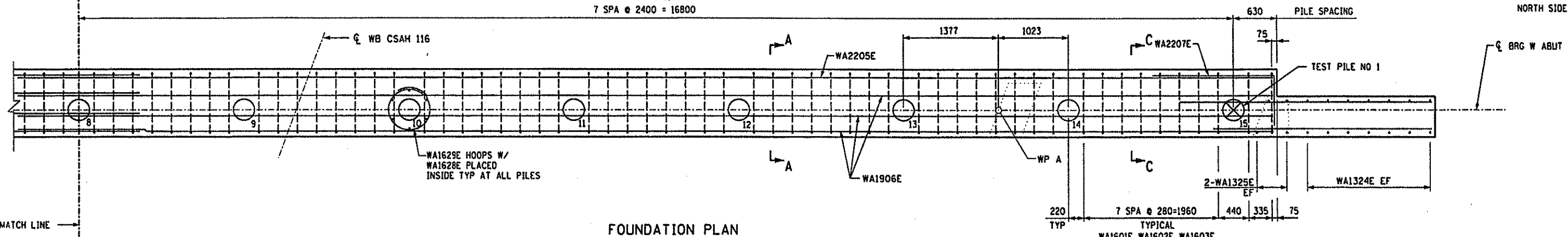
2315



PLAN

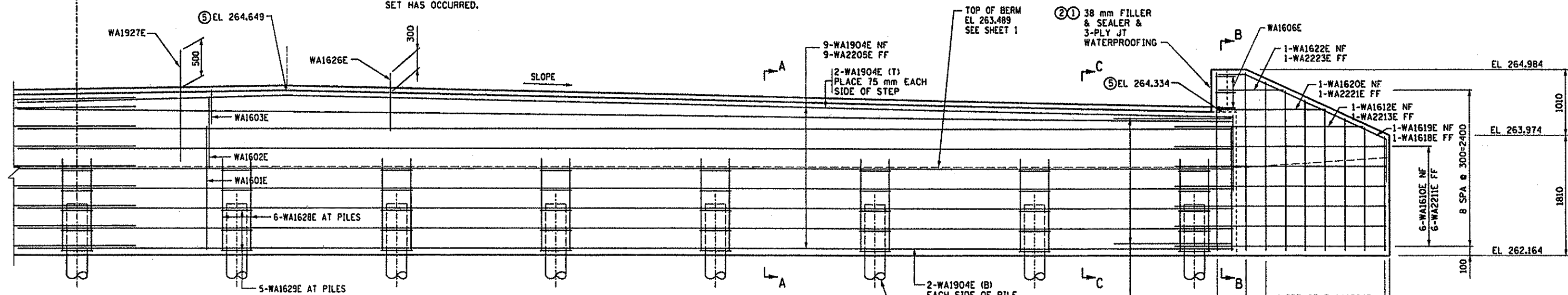
7 SPA @ 2400 = 16800

89 SPA @ 300 = 26700 WA1626E, WA1927E



FOUNDATION PLAN

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



ELEVATION

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.
- 3 SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- 4 NF=NEAR FACE
FF=FAIR FACE
EF=EACH FACE
BF=BACK FACE
- 5 ELEVATION TAKEN ALONG Q OF BEARING.



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

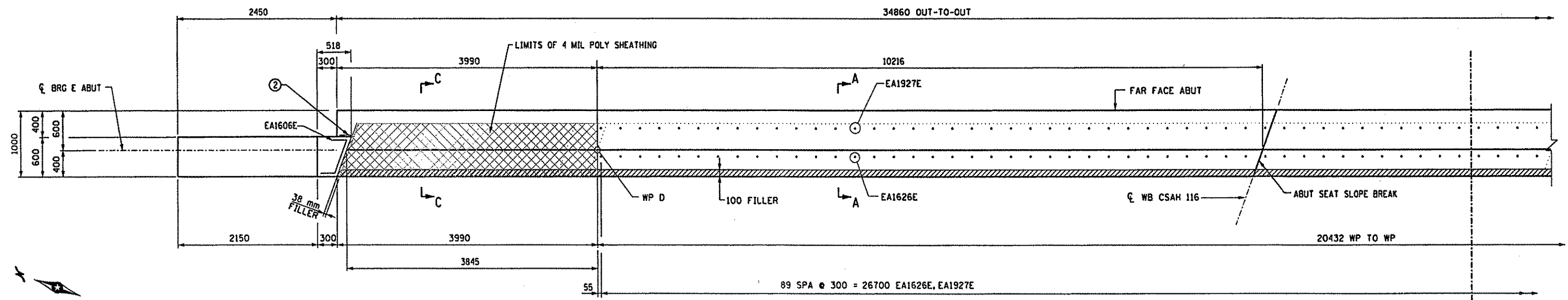
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 WEST ABUTMENT DETAILS
 SAP 02-716-04

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

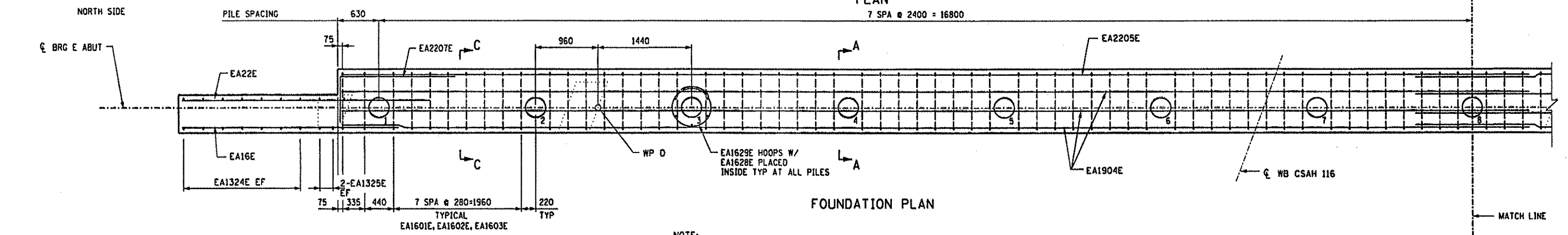
SHEET NO 85 OF 28 SHEETS

BRIDGE NO
 02564

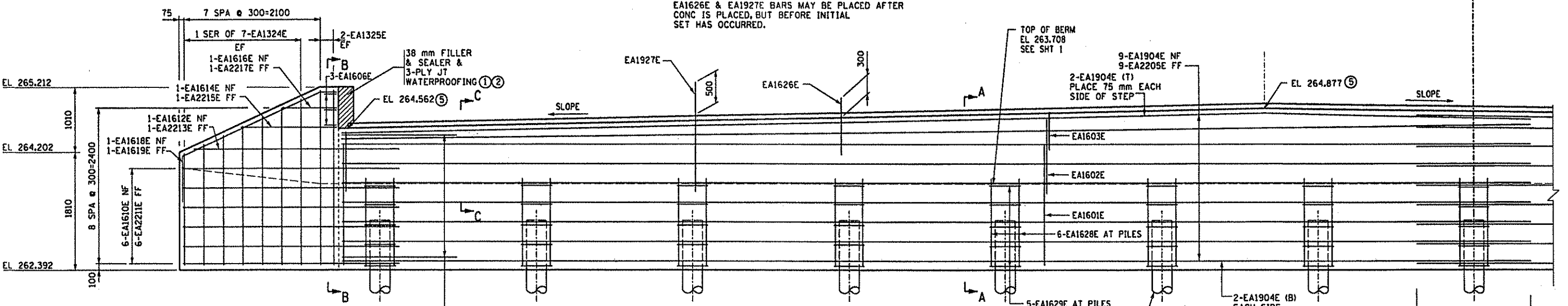
04 MAR 99



PLAN
7 SPA @ 2400 = 16800



FOUNDATION PLAN



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 ϕ OF BEARING.

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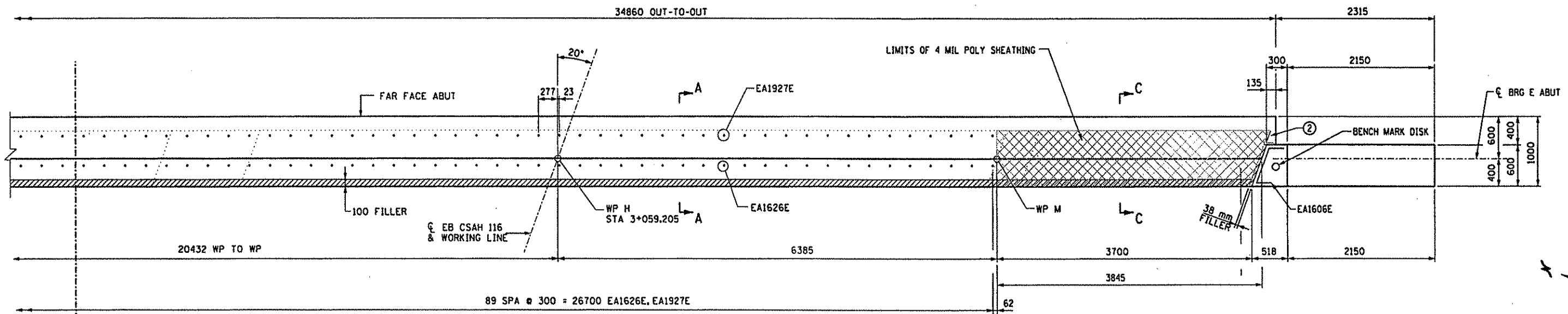
CERTIFIED BY *Nancy Dumbberger*
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: EAST ABUTMENT DETAILS
SAP 02-716-04

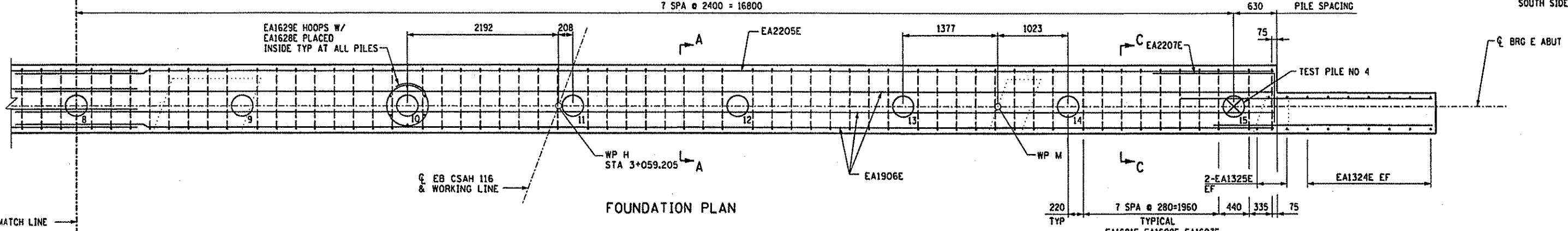
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CHK:	CHK:	

SHEET NO 86 OF 28 SHEETS

BRIDGE NO 02564

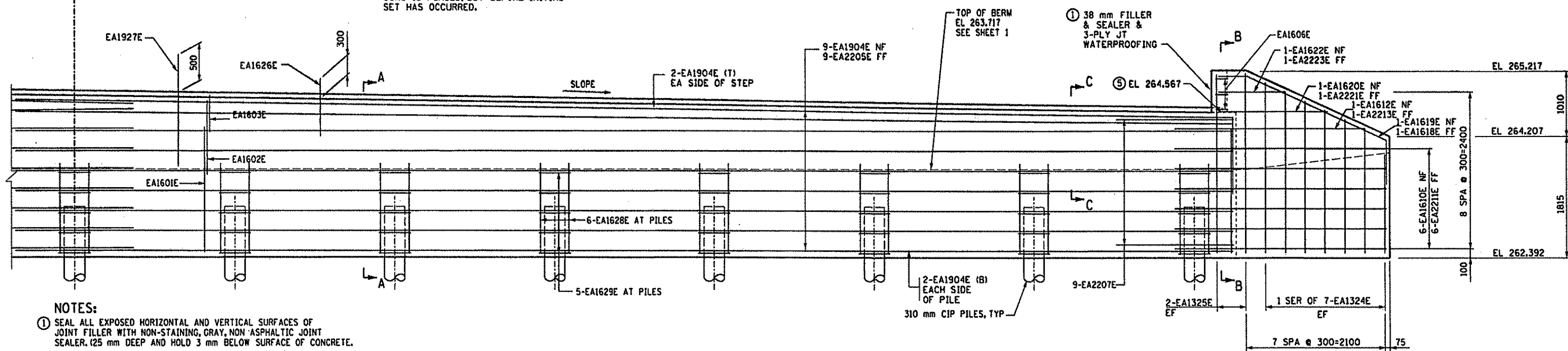


PLAN
7 SPA @ 2400 = 16800



FOUNDATION PLAN

NOTE:
EA1626E AND 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=FAIR FACE
EF=EACH FACE
BF=BACK FACE
 - ELEVATION TAKEN ALONG ϕ OF BEARING.



CERTIFIED BY
Nancy Dauberger
PROFESSIONAL ENGINEER
REG NO. 29151 DATE MARCH 4, 1999

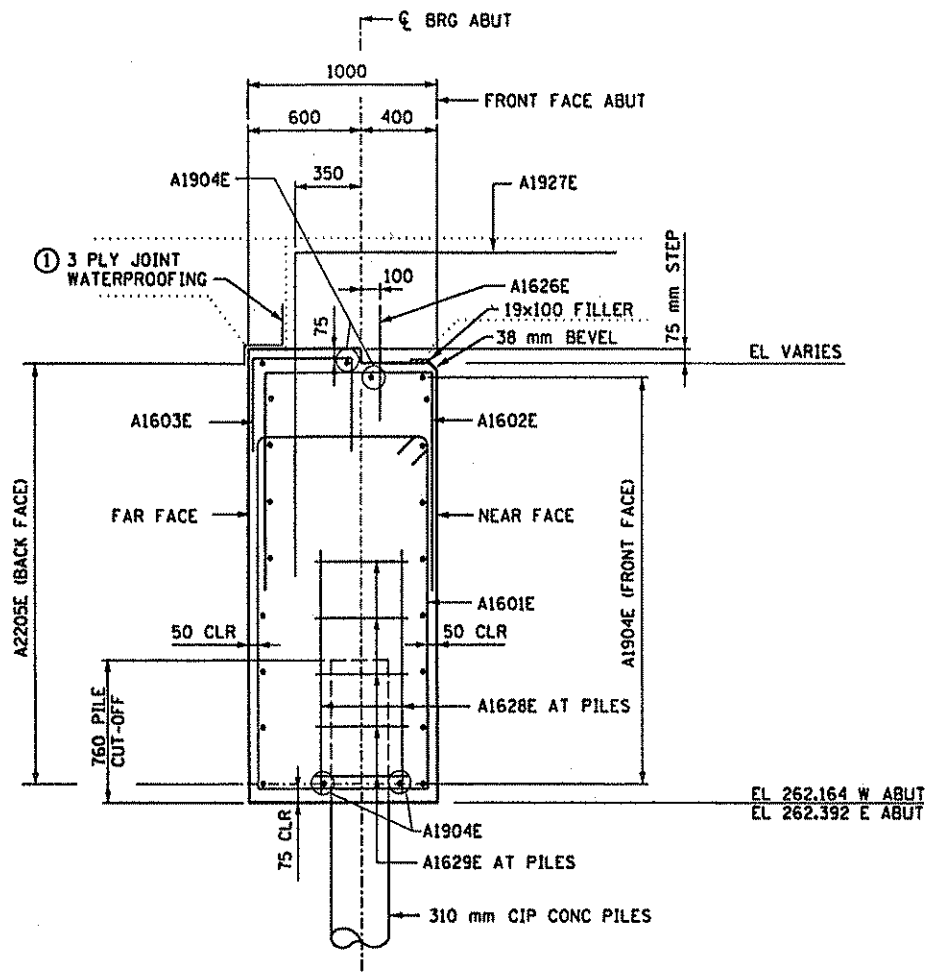
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EAST ABUTMENT DETAILS
SAP 02-716-04

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

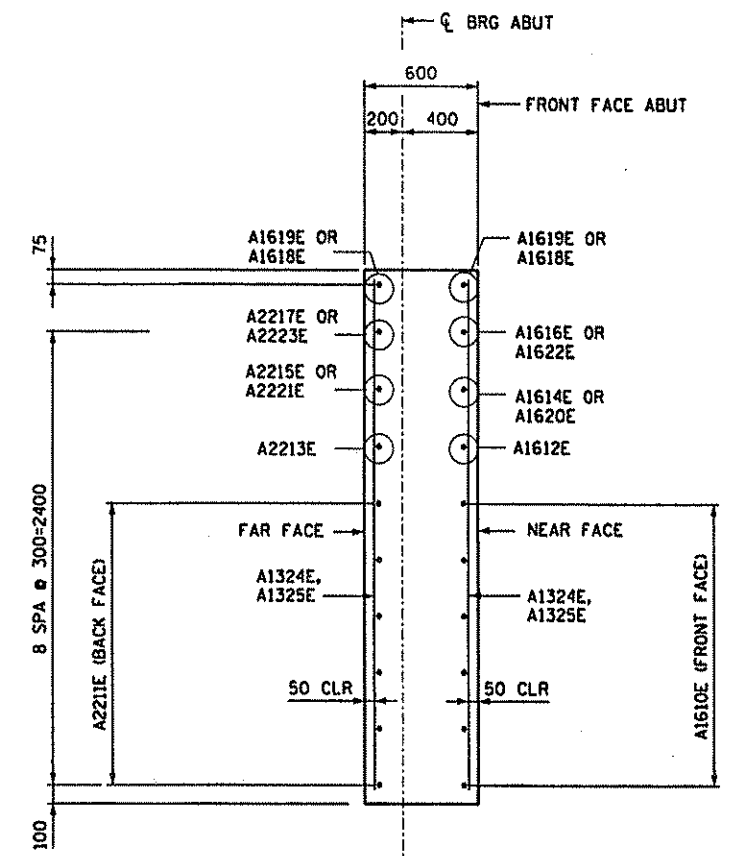
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SHEET NO 87 OF 28 SHEETS

04 MAR 99

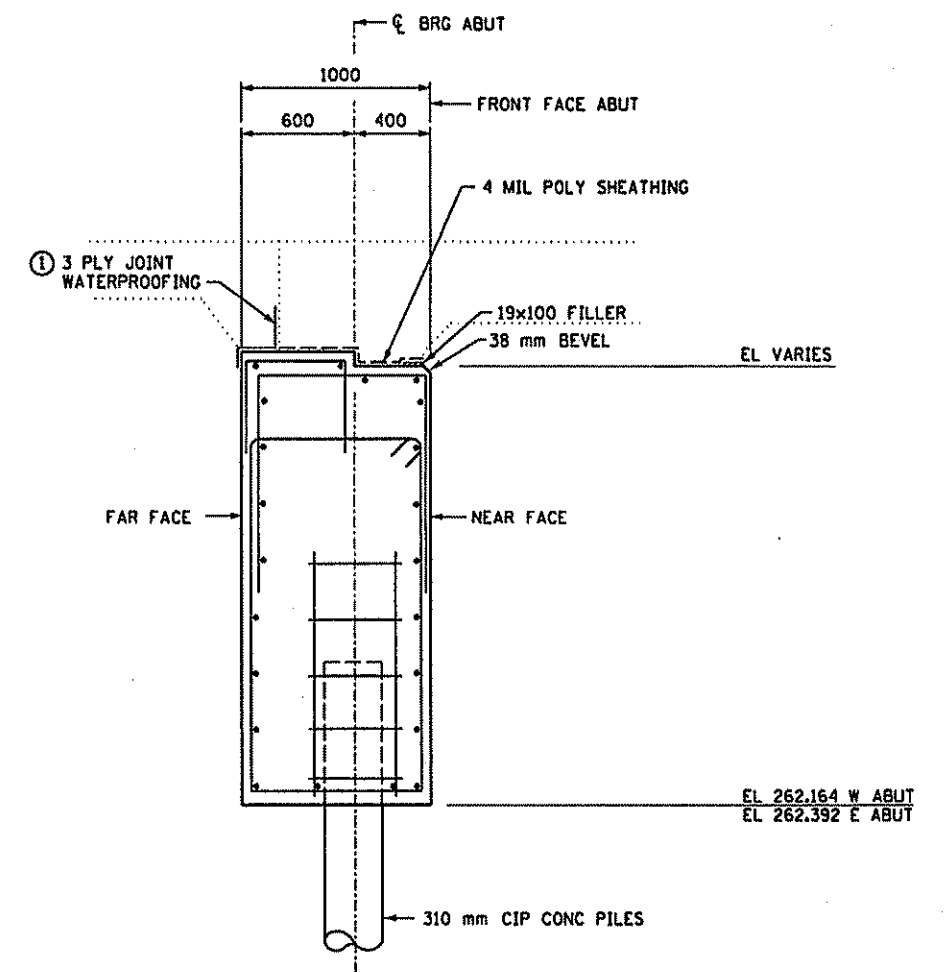
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SECTION A-A



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.

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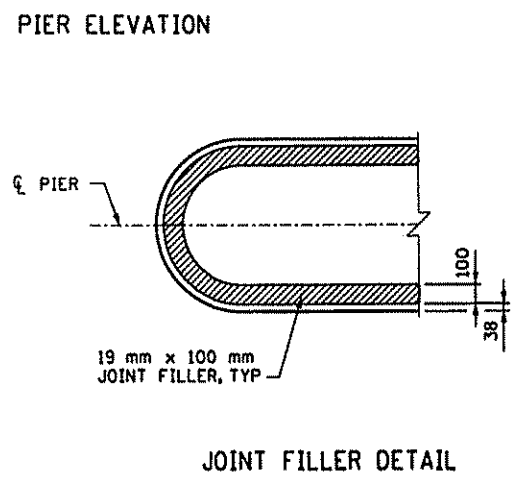
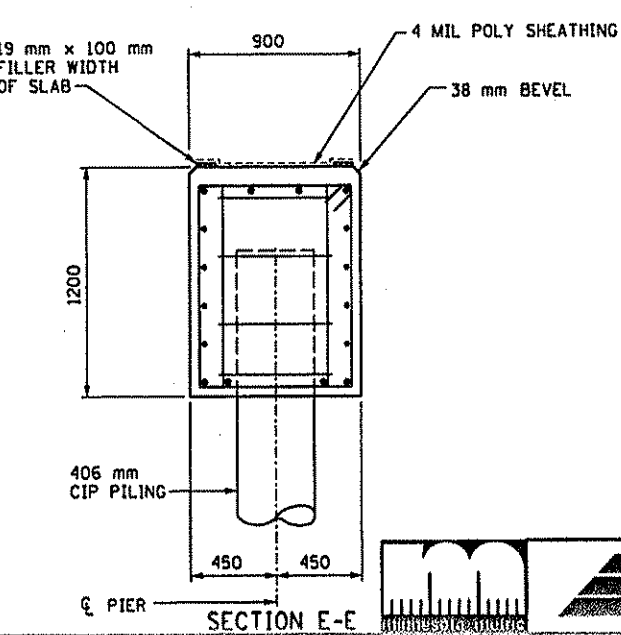
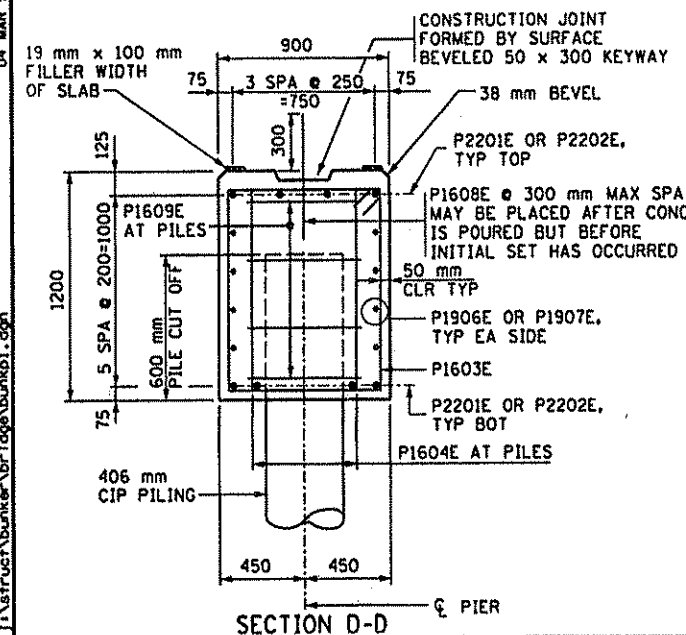
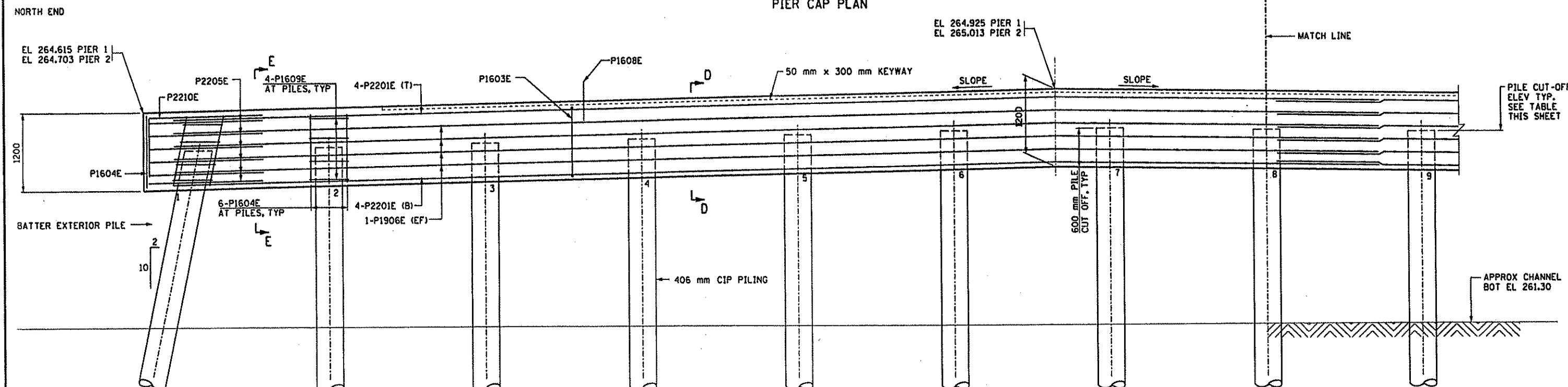
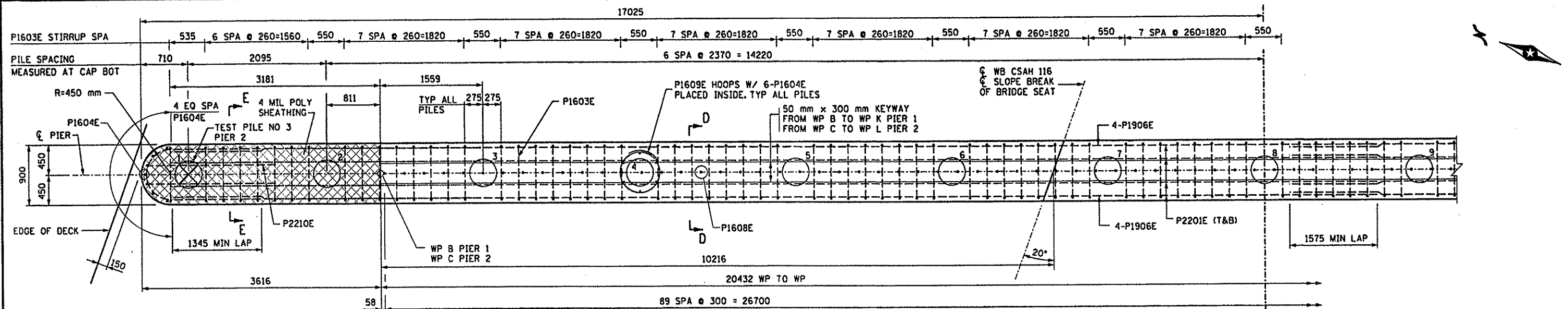
CERTIFIED BY
Nancy Daubinger
 PROFESSIONAL ENGINEER
 REG NO 25151 DATE MARCH 4, 1999

TITLE:
ABUTMENT DETAILS
 SAP 02-716-04

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

SHEET NO 08 OF 28 SHEETS

BRIDGE NO
 02564



DEAD LOAD	259.6
LIVE LOAD	122.9
DESIGN LOAD	382.5

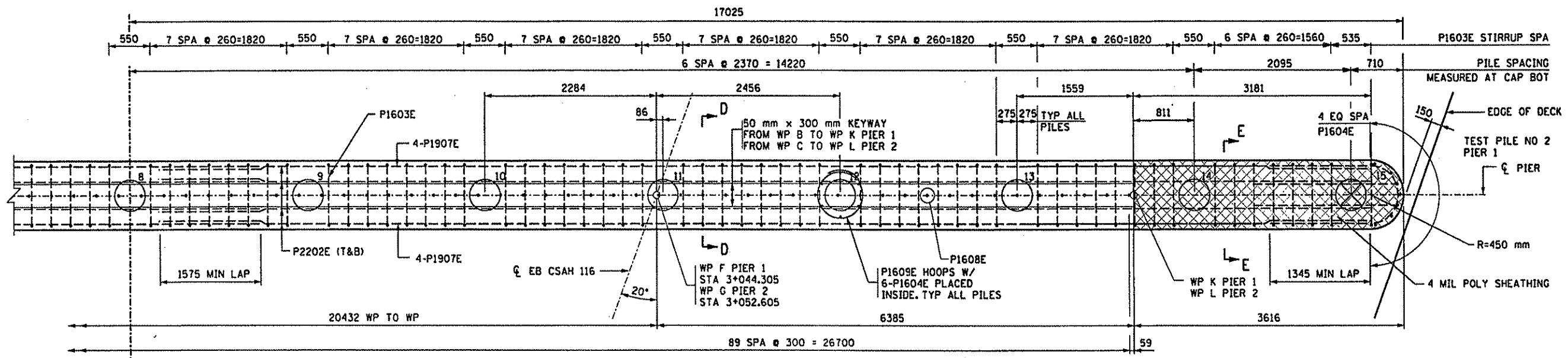
PILE NOTES:
 1 CIP TEST PILES 33 m LONG 406 mm.
 14 CIP PILING EST LENGTH 30 m LONG 406 mm.
 15 CIP PILING 406 mm REQUIRED FOR EACH PIER.
 PILE SPACING SHOWN IS AT BOTTOM OF CAP.
 PILES TO HAVE A NOMINAL DIAMETER OF 406 mm.
 ALL PILING TO BE DRIVEN TO A MINIMUM LENGTH OF 30 m. HAMMER SIZE IS TO BE BASED 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 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.

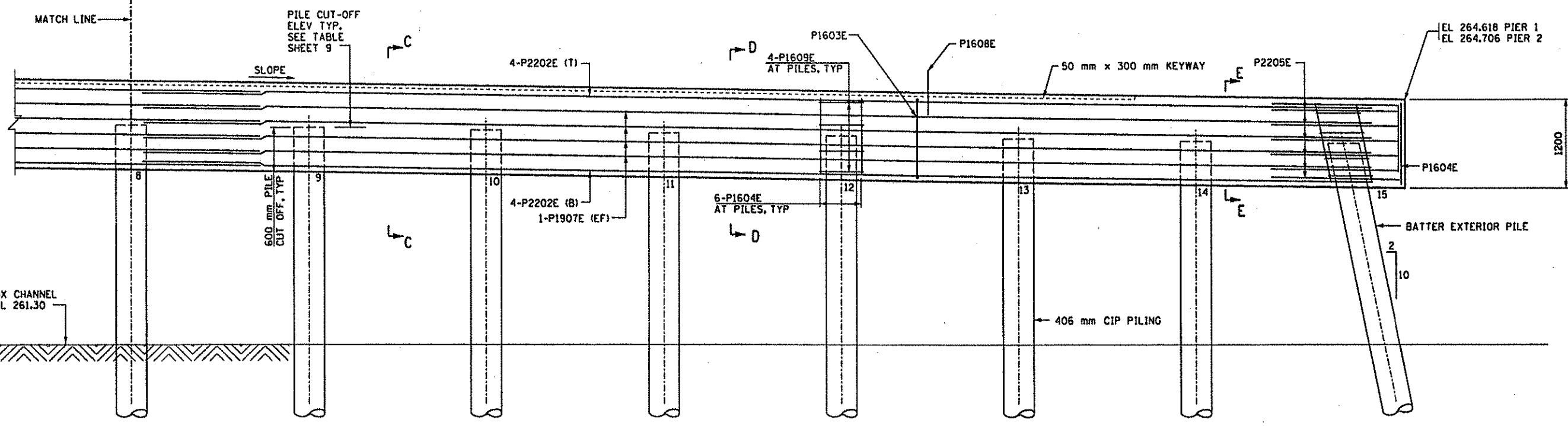
PILE NO	PIER 1	PIER 2
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2	264.078	264.166
3	264.131	264.219
4	264.184	264.272
5	264.237	264.325
6	264.290	264.378
7	264.313	264.401
8	264.277	264.365
9	264.241	264.329
10	264.205	264.293
11	264.169	264.257
12	264.133	264.221
13	264.097	264.185
14	264.061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

04 MAR 99
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	CERTIFIED BY <i>Nancy Daubenberger</i> PROFESSIONAL ENGINEER	TITLE:	DES: NTD	DR: MAN	APPROVED: 4.5.99	BRIDGE NO 02564
	REG NO 25151 DATE MARCH 4, 1999	PIER DETAILS SAP 02-716-04	CHK: JDS SHEET NO 139 OF 28 SHEETS	CHK: JDS		



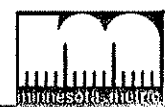
PIER CAP PLAN



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 J:\Structure\Bunker-Vr-1.dgn\Bunker1.dgn



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

TITLE: PIER DETAILS
 SAP 02-716-04

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

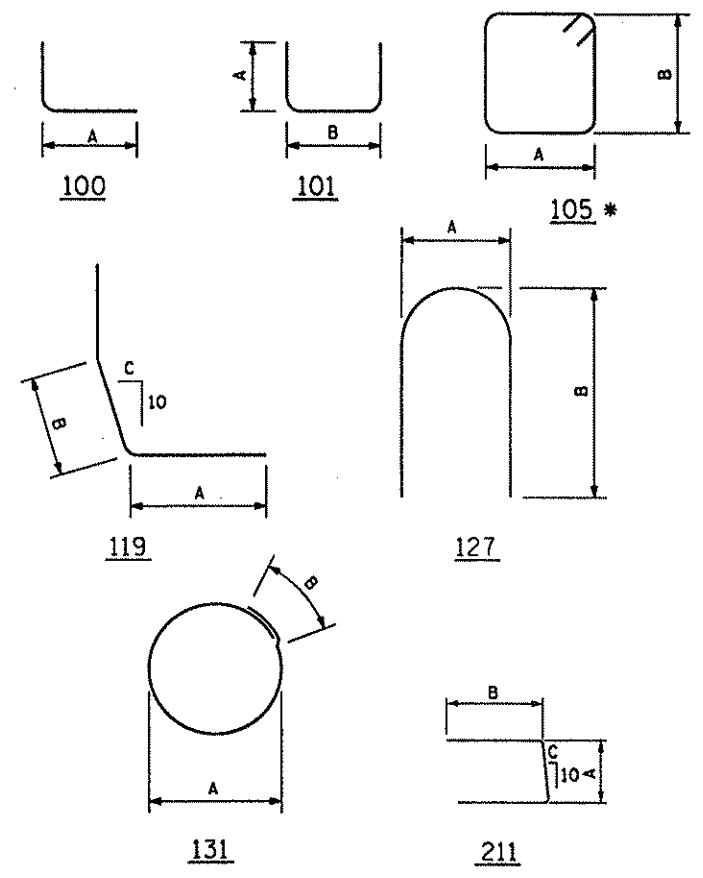
SHEET NO 810 OF 28 SHEETS

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
STRUCTURE EXCAVATION	LUMP SUM					1
⑤ ① 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

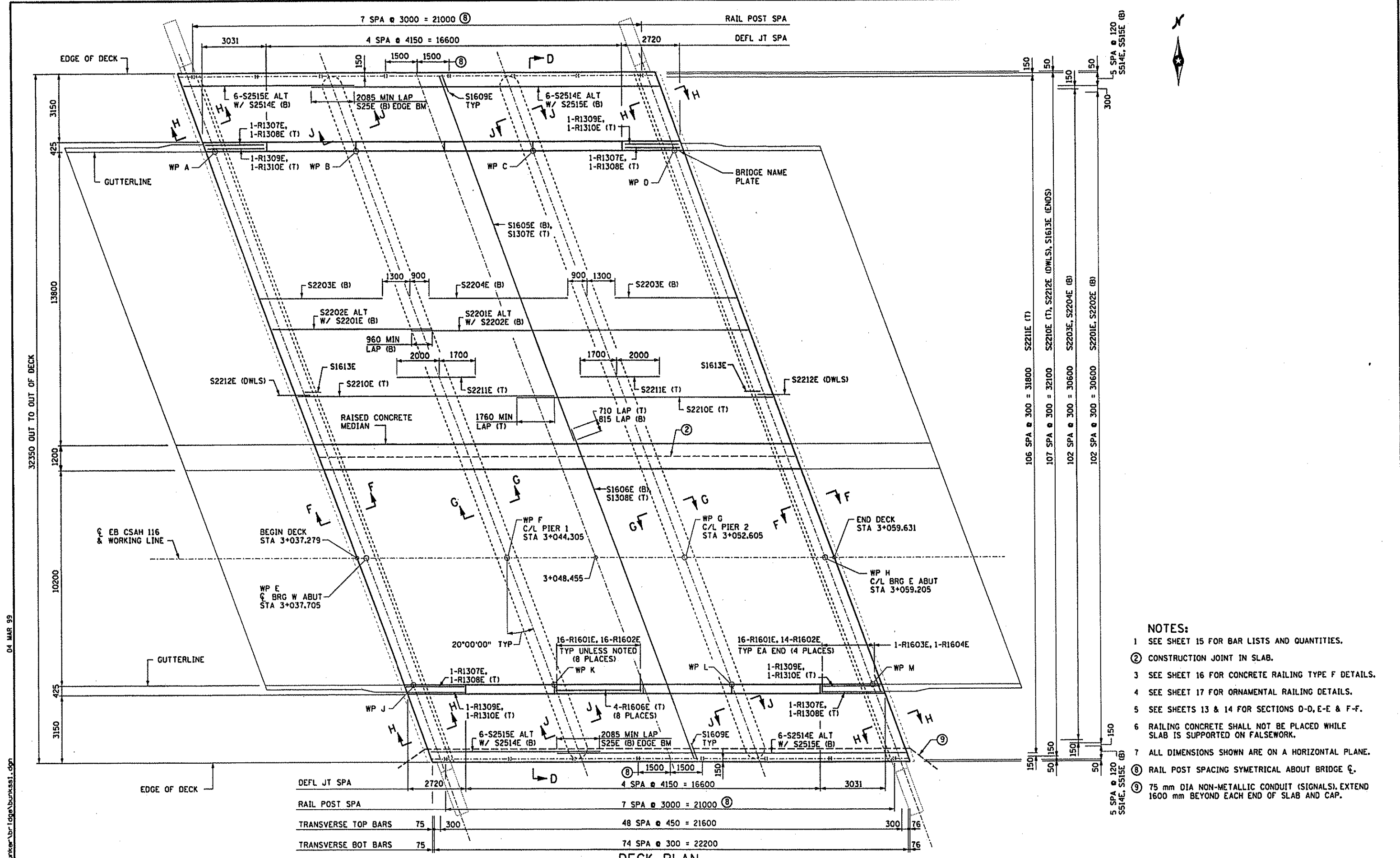
1. Structure Dunder by Edge Dunder. 04 MAR 99



CERTIFIED BY *Nancy Daubner*
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
BRIDGE NO 02564
SHEET NO 111 OF 28 SHEETS



- NOTES:**
- 1 SEE SHEET 15 FOR BAR LISTS AND QUANTITIES.
 - 2 CONSTRUCTION JOINT IN SLAB.
 - 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 D-D, 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 RAIL POST SPACING SYMMETRICAL ABOUT BRIDGE C/L.
 - 9 75 mm DIA NON-METALLIC CONDUIT (SIGNALS). EXTEND 1600 mm BEYOND EACH END OF SLAB AND CAP.

EDGE OF DECK	3150	3031	4 SPA @ 4150 = 16600	2720	3031	3150
DEFL JT SPA	2720		7 SPA @ 3000 = 21000			
RAIL POST SPA			4 SPA @ 4150 = 16600			
TRANSVERSE TOP BARS	75	300	48 SPA @ 450 = 21600	300	76	
TRANSVERSE BOT BARS	75		74 SPA @ 300 = 22200		76	

DECK PLAN



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

TITLE: SUPERSTRUCTURE DETAILS
 SAP 02-716-04

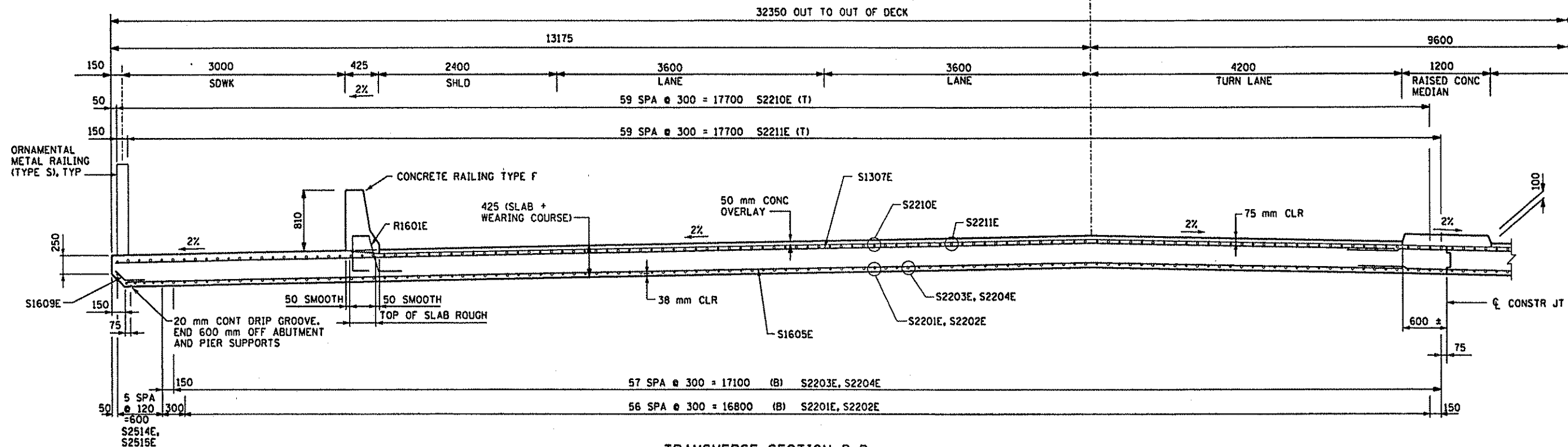
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CHK: JDS	CHK: NTD	SHEET NO 012 OF 28 SHEETS	

04 MAR 99

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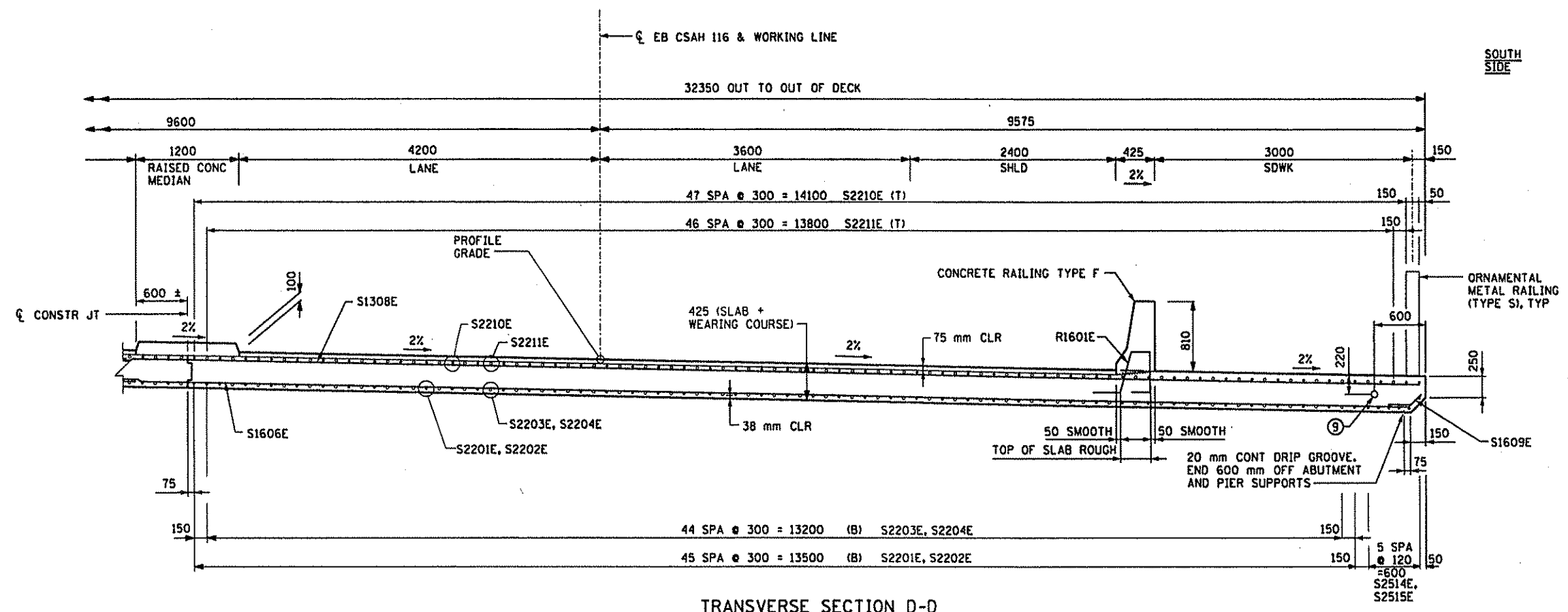
NORTH SIDE

WB CSAH 116



TRANSVERSE SECTION D-D

SOUTH SIDE



TRANSVERSE SECTION D-D

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

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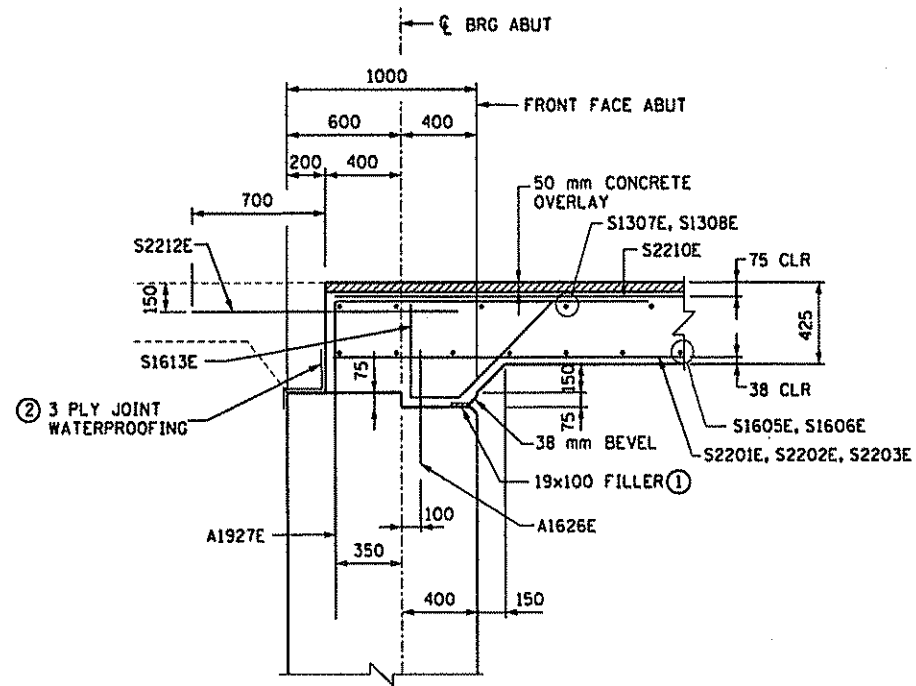
CERTIFIED BY *Nancy Daubinger*
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE:
SUPERSTRUCTURE DETAILS
SAP 02-716-04

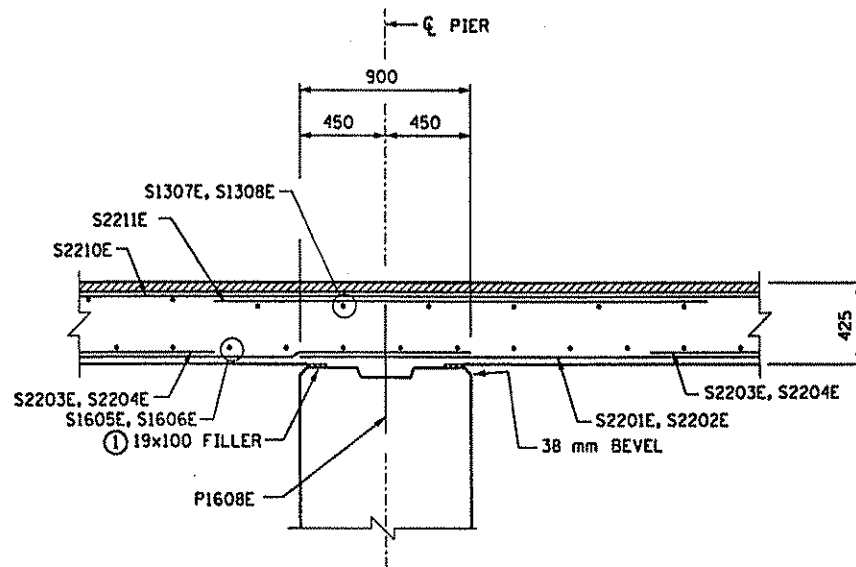
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CHK: JDS	CHK: NTD	

SHEET NO B13 OF 28 SHEETS

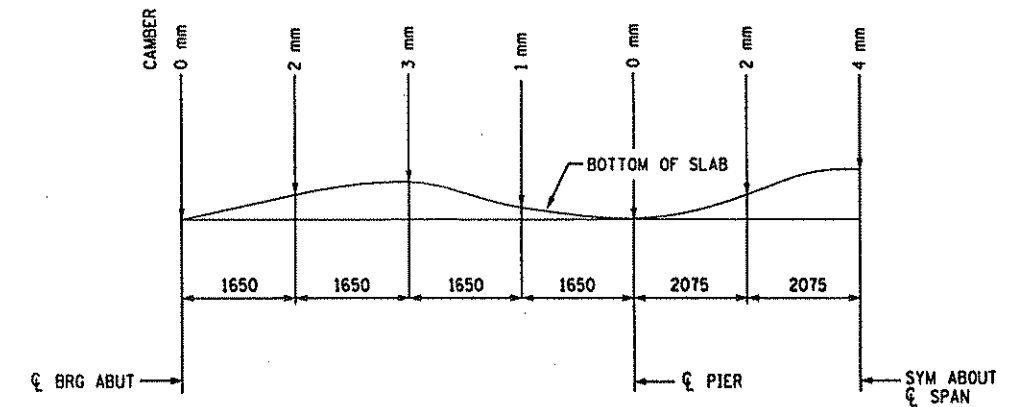
BRIDGE NO
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SECTION F-F

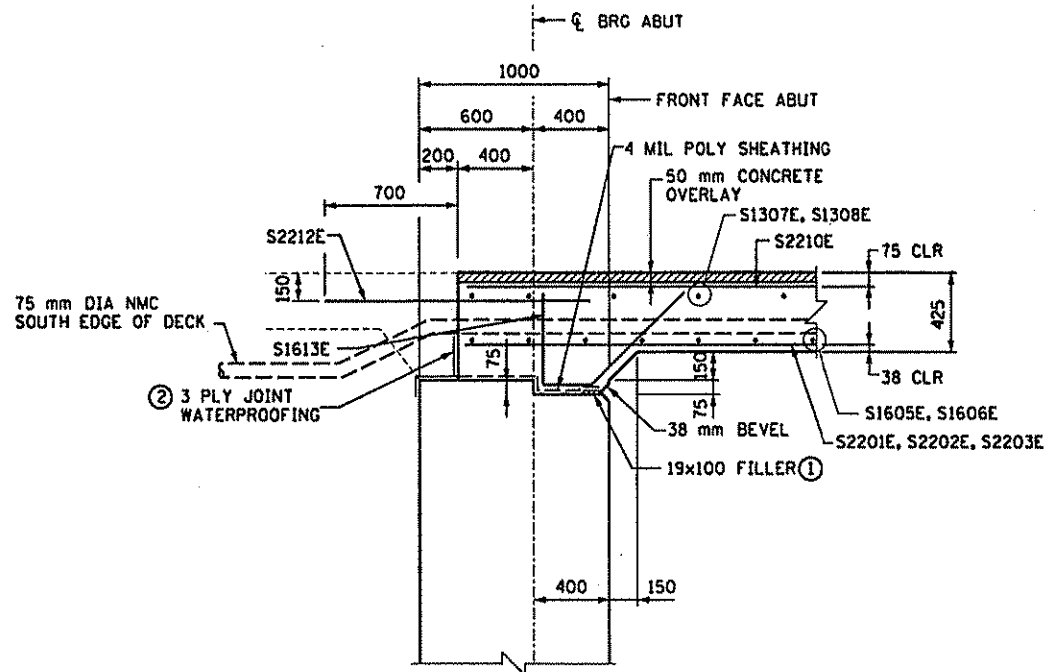


SECTION G-G

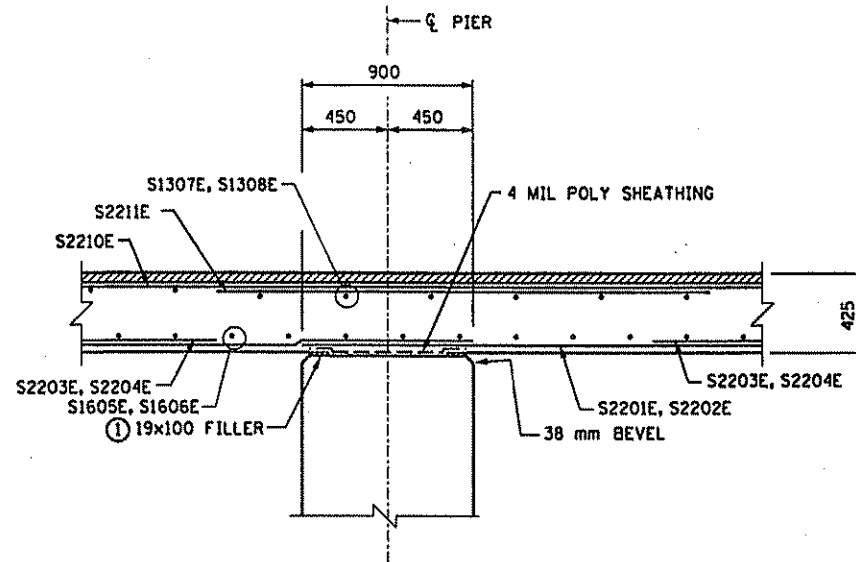


CAMBER DIAGRAM

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.

04 MAR 99

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PROFESSIONAL ENGINEER
REG NO. 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE DETAILS
SAP 02-716-04

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

SHEET NO 814 OF 28 SHEETS

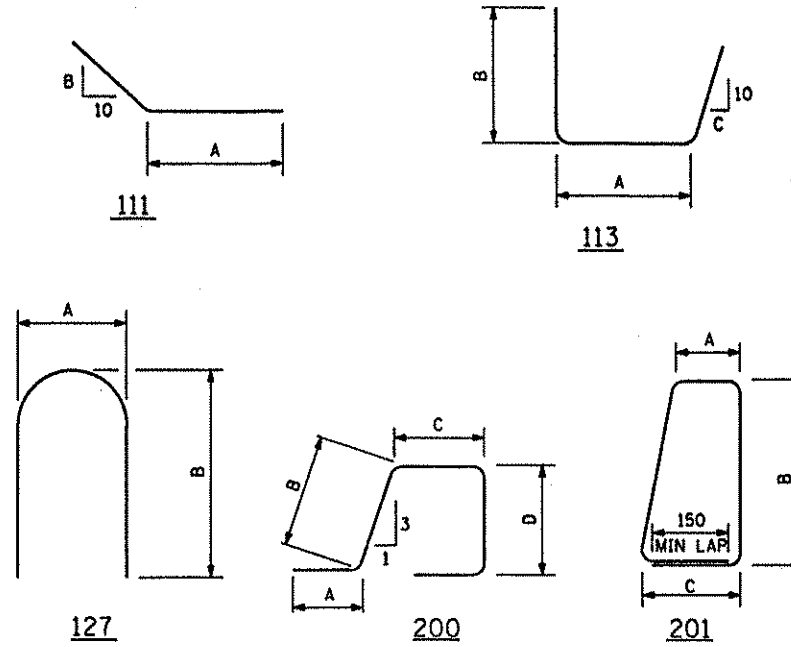
BRIDGE NO 02564

04 MAR 99

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BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
DECK									
EPOXY COATED BARS									
S2201E		103	15750	STR					LONGIT (B)
S2202E		103	7460	STR					LONGIT (B)
S2203E		206	5670	STR					LONGIT (B)
S2204E		103	6500	STR					LONGIT (B)
S1606E		75	18300	STR					TRANSV (B)
S1606E		75	16850	STR					TRANSV (B)
S1307E		51	18300	STR					TRANSV (T)
S1308E		51	16740	STR					TRANSV (T)
S1609E		150	600	I11	300	10			TRANSV(B) EDGE
S2210E		218	12000	STR					LONGIT (T)
S2211E		214	3700	STR					LONGIT (T)
S2212E		218	1400	STR					SLAB ENDS
S1613E		218	1450	I13	250	500	10		SLAB ENDS
S2514E		12	16320	STR					LONGIT (B)
S2515E		12	8020	STR					LONGIT (B)
CONCRETE RAILING TYPE F									
EPOXY COATED BARS									
R1601E		192	1565	200	450	380	200	360	RAIL DOWEL
R1602E		184	2030	201	140	760	215		RAIL VERT
R1603E		4	1840	201	145	690	215		RAIL VERT
R1604E		4	1890	201	150	660	215		RAIL VERT
R1305E		16	11320	STR					HORIZ BOT
R1306E		32	4050	STR					HORIZ TOP
R1307E		4	2660	STR					HORIZ LONG
R1308E		4	2740	STR					HORIZ LONG
R1309E		4	2550	STR					HORIZ SHORT
R1310E		4	2630	STR					HORIZ SHORT
R2211E		4	1970	127	900				GUARDRAIL CONN

BAR BENDING DIAGRAMS



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 FOR SUPERSTRUCTURE		
ITEM	UNIT	QUANTITY
⑤ BRIDGE SLAB CONCRETE (3Y36)	m2	723
⑥ CONCRETE RAILING TYPE F (3Y46)	m	45
⑪⑤ RAISED MEDIAN CONCRETE (3Y46)	m2	42
⑨ REINFORCEMENT BARS (EPOXY COATED)	kg	33260
⑤⑧ CONCRETE OVERLAY TYPE (3U17A)	m2	848
① BRIDGE NAME PLATE	EACH	1
②① PREFORMED JOINT FILLER		
① 3 PLY JOINT WATERPROOFING	m	72
① ORNAMENTAL METAL RAILING TYPE S	m	45
⑫ CONDUIT SYSTEM (SIGNALS)	LS	1

- ① INCLUDED IN PRICE BID FOR OTHER ITEMS.
- ② SEE JOINT FILLER TABLE.
- ③ NOT USED.
- ④ NOT USED.
- ⑤ THE APPROXIMATE CONCRETE QUANTITIES ARE:
BRIDGE SLAB CONCRETE BASED ON AVERAGE STOOL HEIGHT OF 50 mm
289 m3
CONCRETE OVERLAY 42 m3
RAISED CONCRETE MEDIAN 6 m3
- ⑥ CONCRETE RAILING TYPE F (3Y46) APPROX VOLUMN = 12 m3.
- ⑦ TABLE IS FOR CONTRACTORS CONVENIENCE ONLY. CUT TO FIT.
- ⑧ INCLUDES 312 m2 FOR BRIDGE APPROACH PANELS.
- ⑨ INCLUDES RAILING AND DECK REINFORCEMENT.
- ⑩ SEE SPECIAL PROVISIONS.
- ⑪ INCLUDES 16 m2 FOR BRIDGE APPROACH PANELS.
- ⑫ INCLUDES 26 m 75 mm NON-METALLIC CONDUIT AND 2 END CAPS.

⑦① PREFORMED JOINT FILLER LIST			
TYPE	NO	SIZE	LOCATION
CORK	10	25 x 325 x 555	TYPE F RAIL DEFL JOINTS
FILLER	2	19 x 100 x 34450	ABUT SEATS
FILLER	4	19 x 100 x 34450	PIER SEATS
FILLER	4	38 x 640 x 650	DECK / WING JOINTS



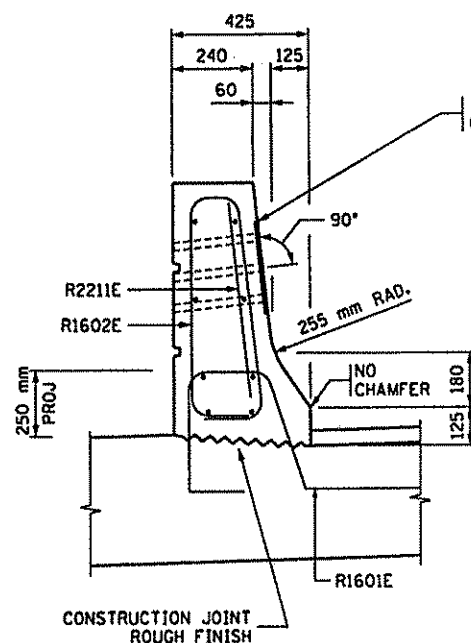
CERTIFIED BY
Nancy Daubenberg
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE:
SUPERSTRUCTURE BAR LIST
& QUANTITIES
SAP 02-716-04

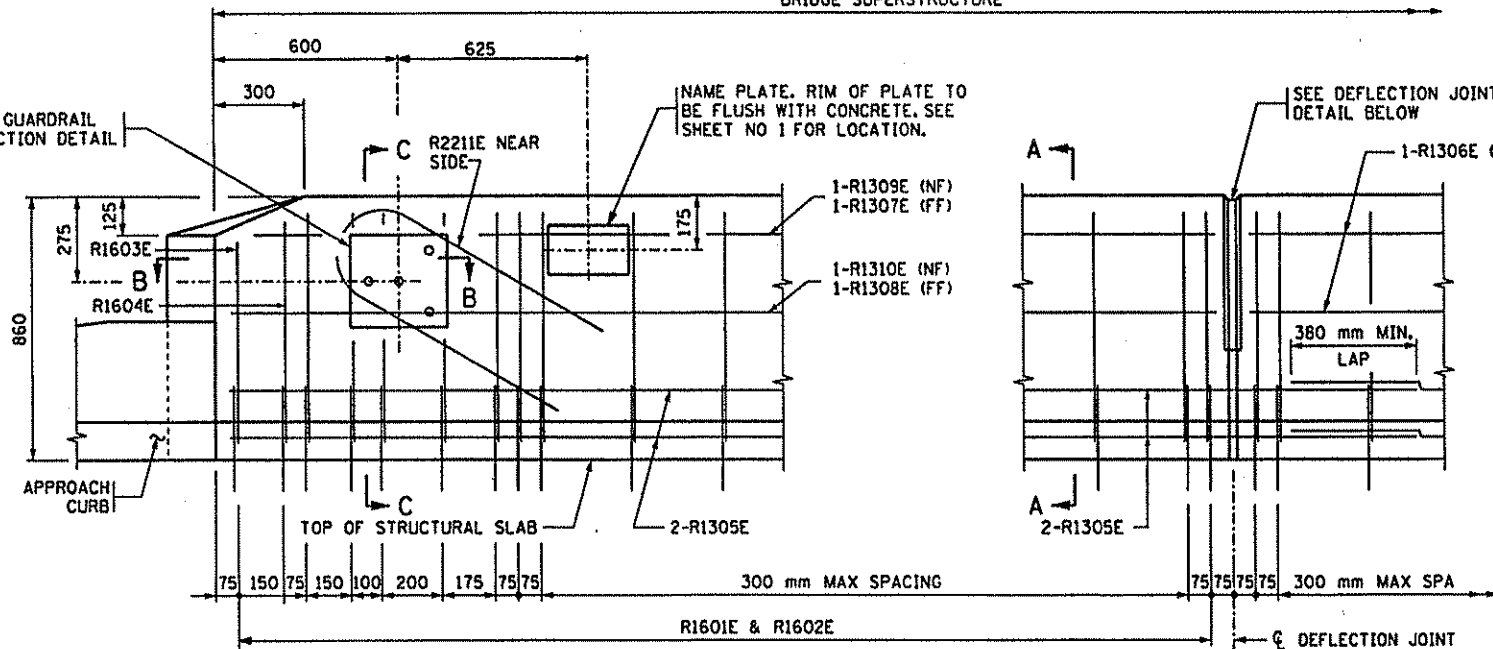
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CHK: NTD
DR: MAW
CHK: NTD
APPROVED:
4-5-99
SHEET NO B15 OF 28 SHEETS

BRIDGE NO
02564

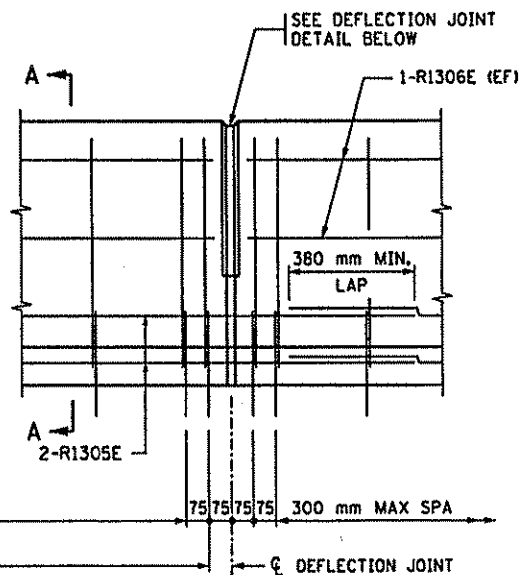
BRIDGE SUPERSTRUCTURE



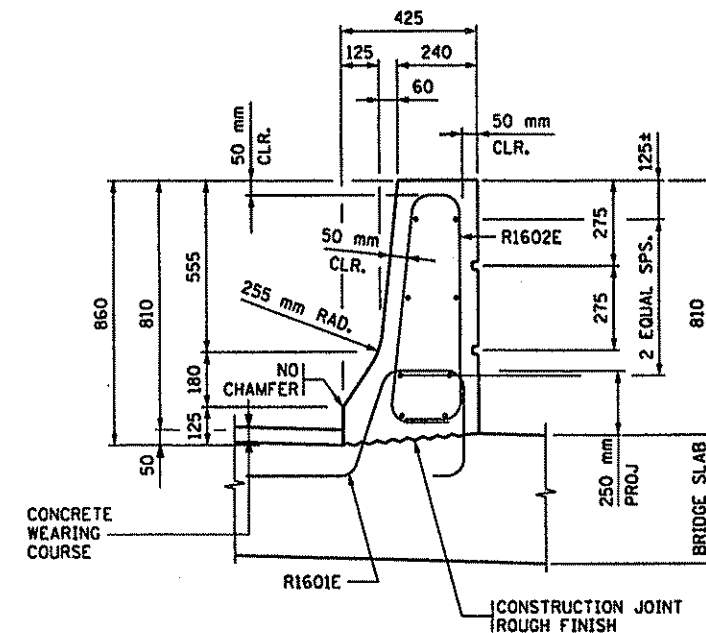
SECTION C-C



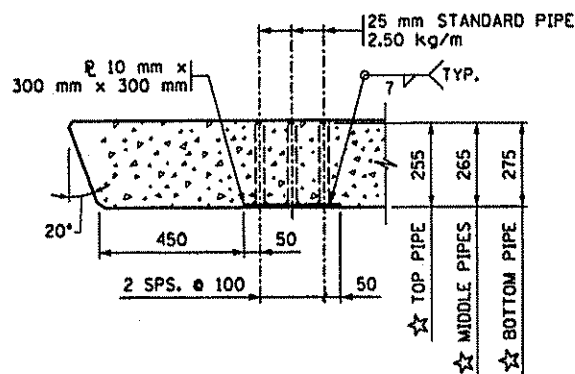
INSIDE ELEVATION OF RAILING
(CONCRETE WEARING COURSE NOT SHOWN)



DEFLECTION JOINT



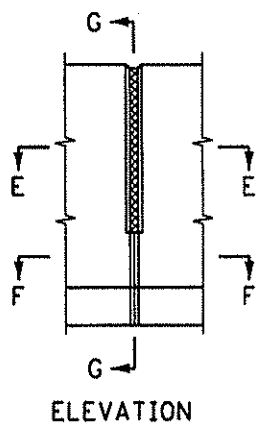
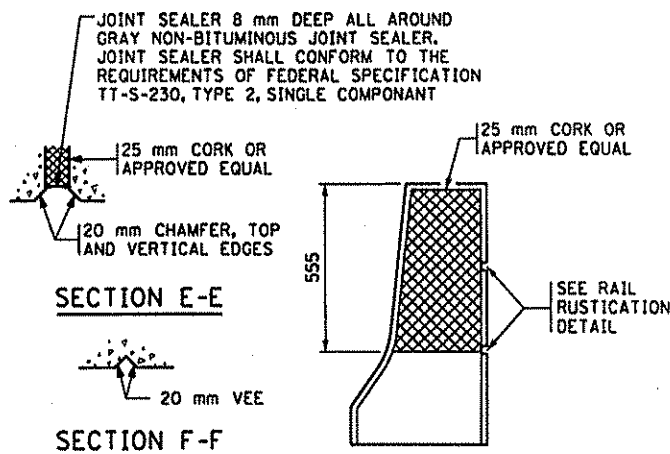
SECTION A-A



SECTION B-B

(REINFORCEMENT NOT SHOWN.)
★ DIMENSIONS INCLUDE 10 mm PLATE.

RAIL RUSTICATION



ELEVATION

DEFLECTION JOINT DETAILS

SECTION G-G

GENERAL NOTES:

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED.
- CONCRETE RAILING = 6.33 kN/m (0.260 m²/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

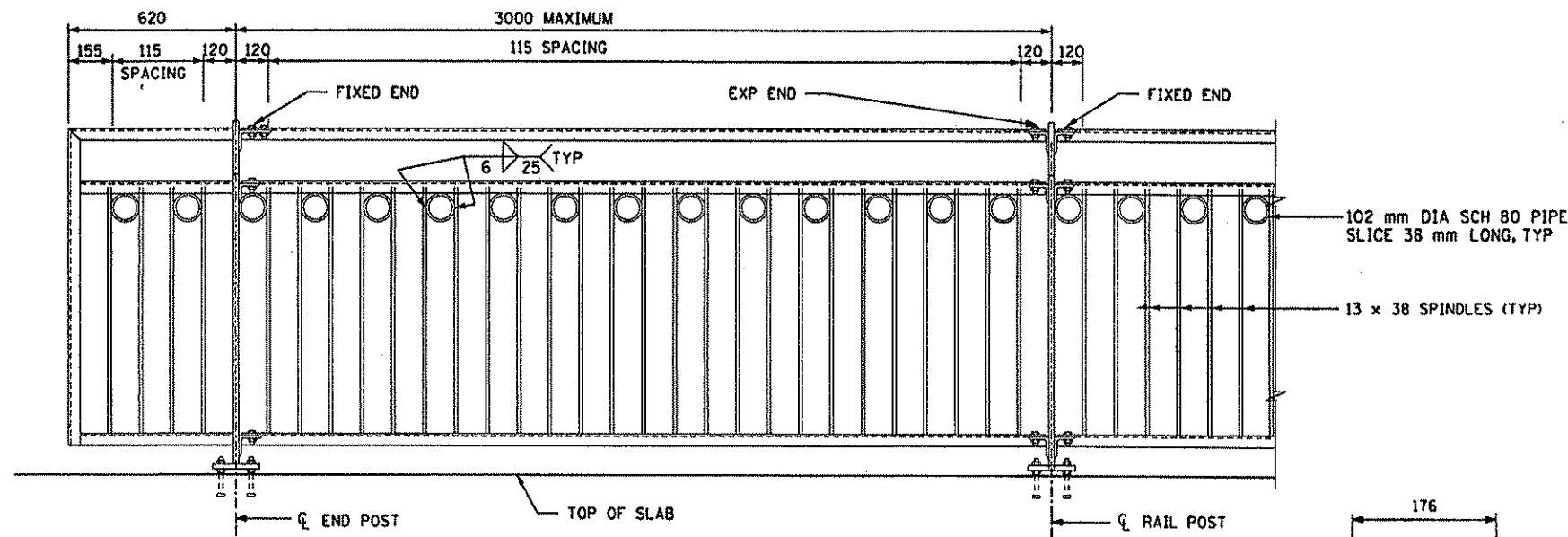


CERTIFIED BY *Nancy Daubert*
PROFESSIONAL ENGINEER
REG NO. 25151 DATE MARCH 4, 1999

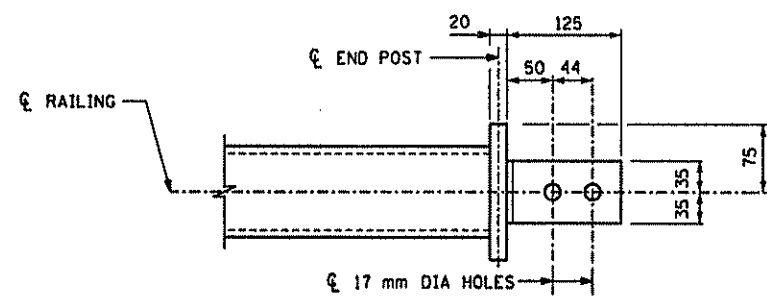
TITLE: CONCRETE RAILING (TYPE F)
WITH BRIDGE SIDEWALK AND INTEGRAL END POST
(WITH CONCRETE WEARING COURSE)
SAP 02-716-04

DES: MnDOT/MAW
CHK: NTO
DR: MnDOT/MAW
CHK: NTO
APPROVED: 4-5-99
SHEET NO 16 OF 28 SHEETS

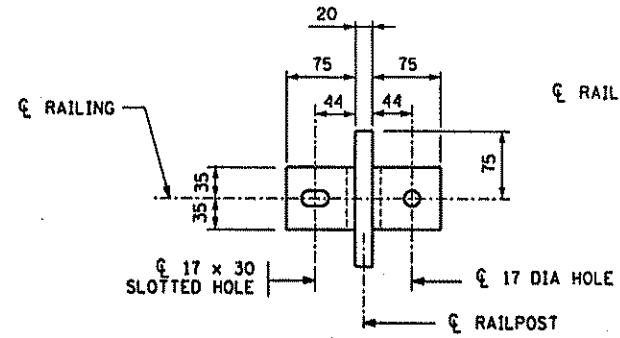
BRIDGE NO 02564



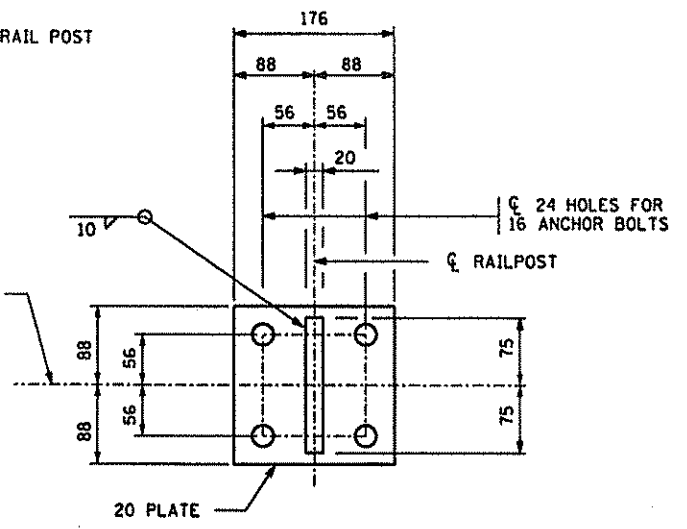
GENERAL RAILING ELEVATION



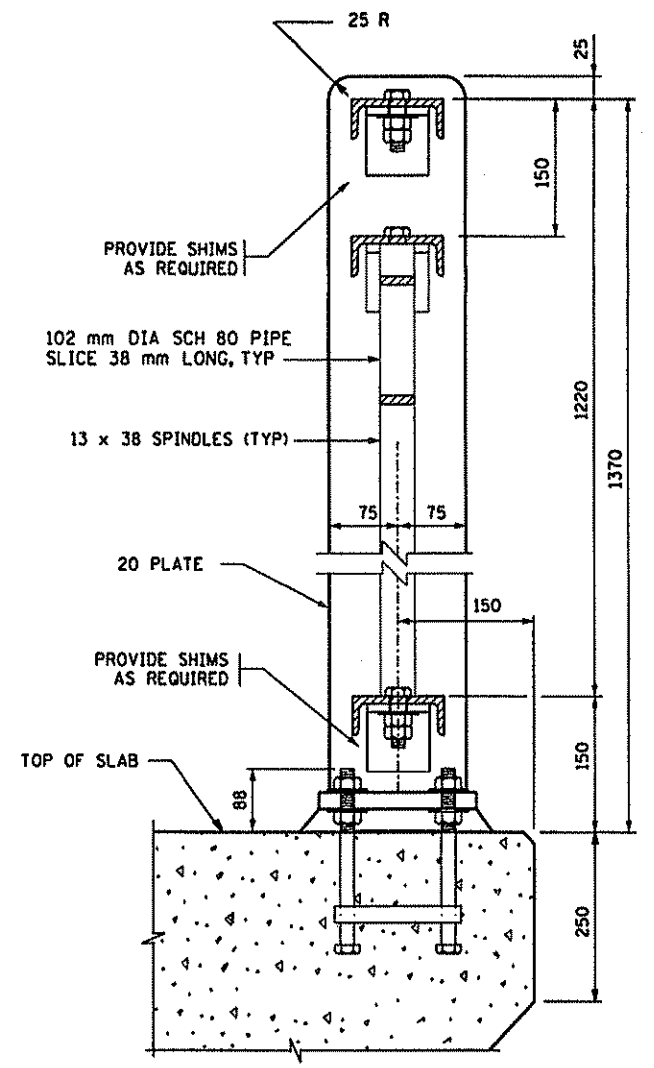
TOP VIEW (RAILING NOT SHOWN)



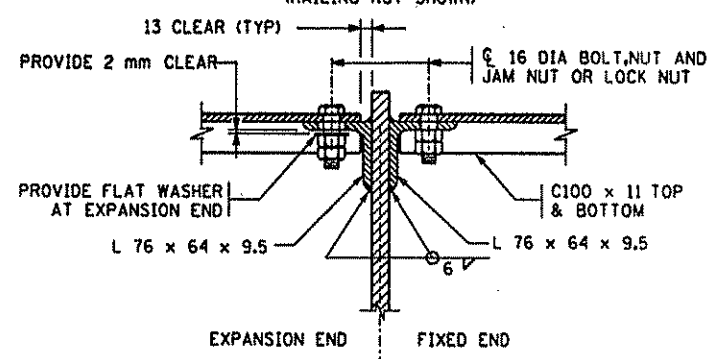
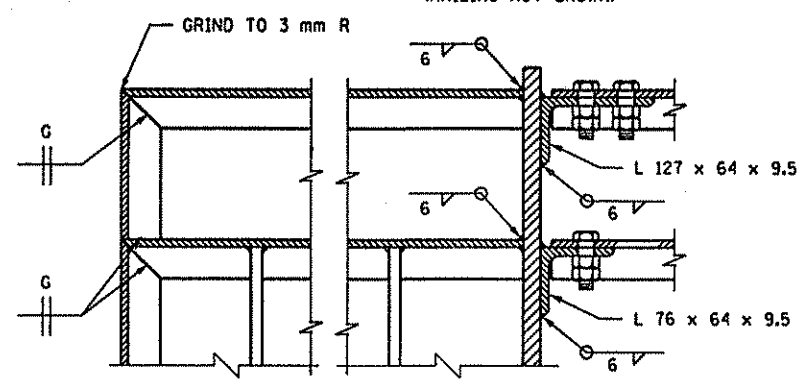
TOP VIEW (RAILING NOT SHOWN)



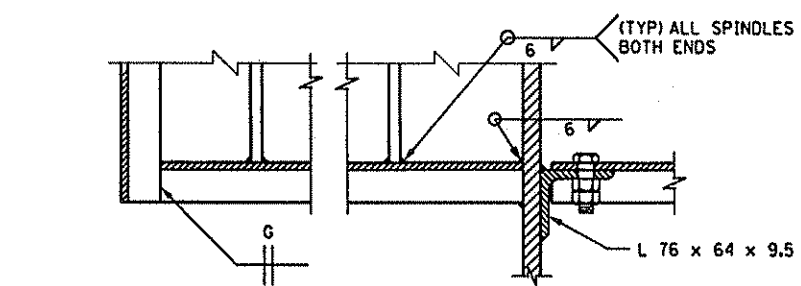
RAILPOST BASE PLATE



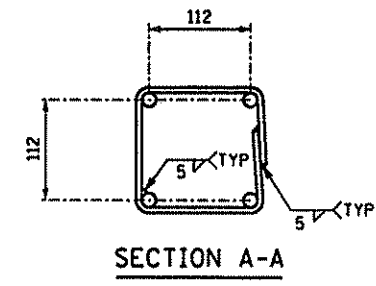
TYPICAL RAILPOST



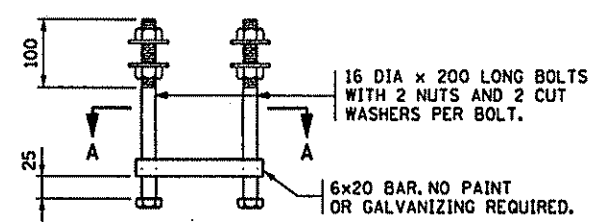
PART ELEVATION INTERMEDIATE POST DETAIL



PART ELEVATION END 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

APPROVED: _____
STATE BRIDGE ENGINEER



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

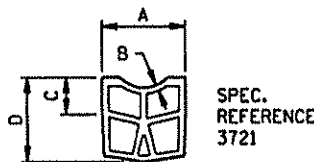
TITLE: ORNAMENTAL METAL RAILING (TYPE S)
SAP 02-716-04

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

SHEET NO B17 OF 28 SHEETS

REQUIRED DIMENSIONS

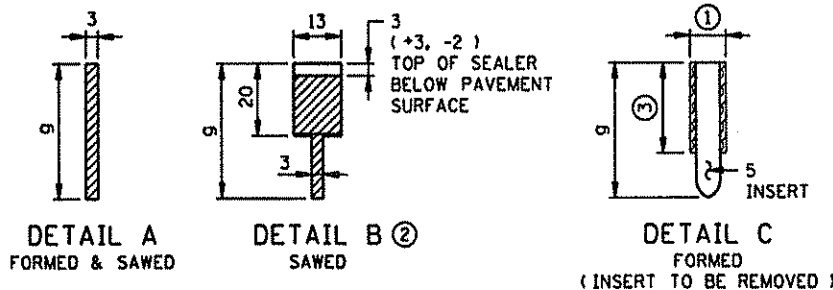
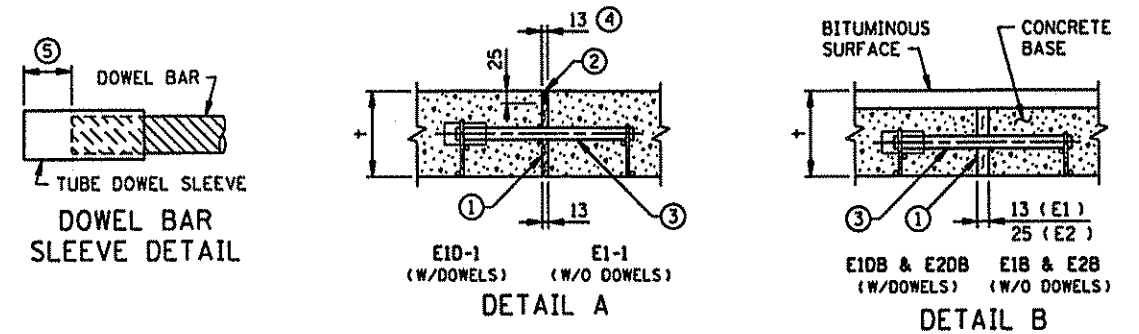
JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	21 mm
USE IN ALL JOINTS	
A	20 mm +3.6 -1.3
B	2 mm ±0.5
C	15 mm MIN.
D	20 mm MIN.
WEB AND WALL THICKNESS, UNLESS NOTED	0.8 mm MIN.



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.

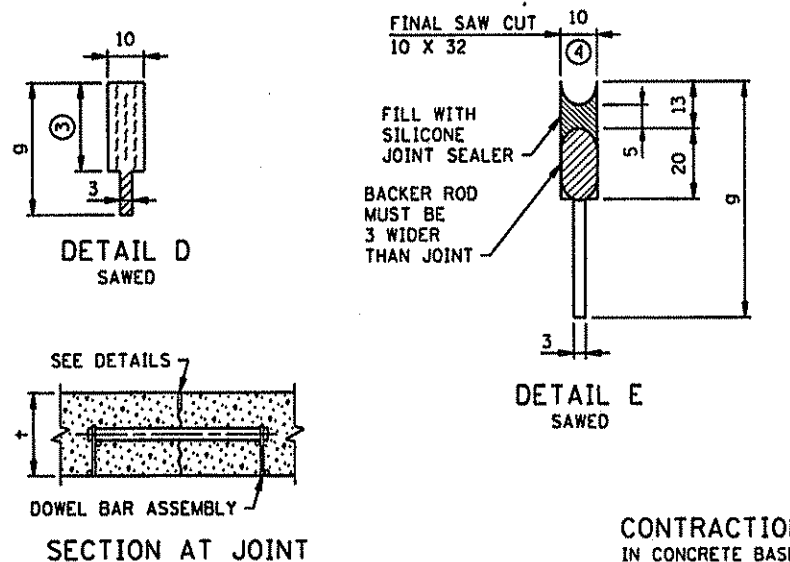
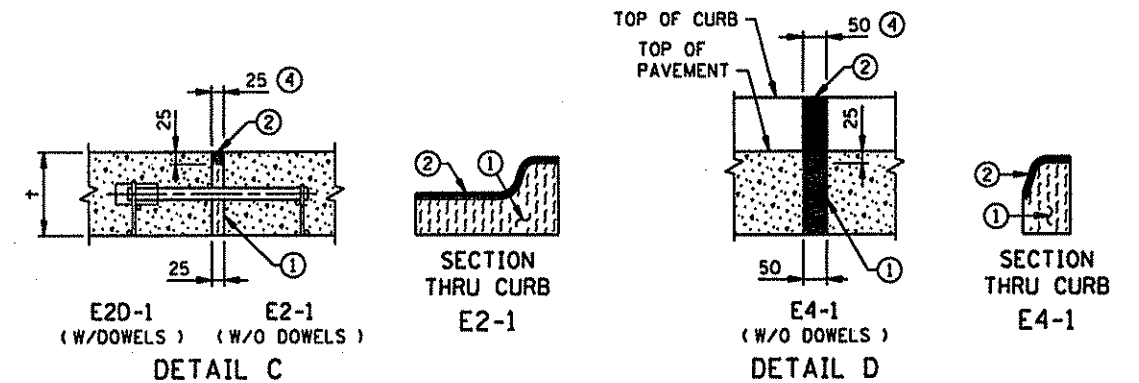


CONTRACTION JOINT CLASS DESIGNATION, DETAIL & SEALER SPEC. TABLE

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 g ⑤	CONCRETE BASE JOINT DEPTH g	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



LEGEND
C = CONTRACTION JOINT
NO. = SEALANT TYPE
1 = UNSEALED
2 = 3723
3 = 3721
4 = SILICONE
LETTER = DETAIL
X = MORE THAN 1 DETAIL
-D = DOWEL BARS

EXAMPLE
C2B-D

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.

NOTES:
① DESIGN C3X OR C3X-D - PRIOR TO INSTALLING PREFORMED JOINT SEALER IN THE FORMED JOINT (DETAIL C), THE JOINT SHALL BE WIDENED TO A NOMINAL WIDTH OF 10 mm BY SAWING ALONG THE FULL LENGTH OF THE FORMED JOINT.
② DESIGN C2B OR C2B-D - PRIOR TO SEALING FORMED JOINT (DETAIL C), WITH HOT POUR SEALER, THE JOINT SHALL BE WIDENED TO A NOMINAL WIDTH OF 13 mm FOR A DEPTH OF 20 mm, + 3 mm, 2 mm, BY SAWING ALONG THE FULL LENGTH OF THE FORMED JOINT. THE SEALER SHALL BE FILLED TO THE SAME DEPTH AS SHOWN IN DETAIL B.
③ WHEN USING PREFORMED JOINT SEALER, THE DEPTH SHALL BE 5 mm MORE THAN THE PREFORMED SEALER, WHEN COMPRESSED, TO FIT THE JOINT DESIGN WIDTH.
④ THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. PRIOR TO SEALING THE JOINT, A 13 mm DIA. 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.
⑤ FOR UNBONDED OVERLAYS, THE JOINT DEPTH "G" SHALL BE T/3.

EXPANSION JOINTS

CLASS DESIGNATION		JOINT DETAIL	JOINT SEALER SPEC.
WITH DOWELS	WITHOUT DOWELS		
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
E = EXPANSION JOINT
E = JOINT REFERENCE
E = HOT Poured SEAL
NO. = DOWEL BARS
-1 = CONCRETE BASE
D = CONCRETE SILL
S

EXAMPLE
E1D-1
HOT Poured SEAL ②
DOWEL BARS
JOINT REFERENCE
EXPANSION JOINT

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

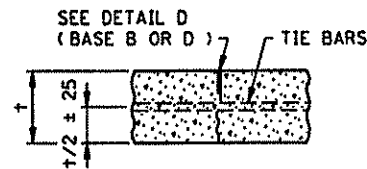
CONTRACTION JOINTS
DESIGN C



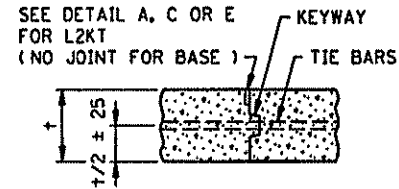
CERTIFIED BY
Nancy Daubert
PROFESSIONAL ENGINEER
REG NO. 25151 DATE MARCH 4, 1999

TITLE:
PAVEMENT JOINTS
SAP 02-716-04

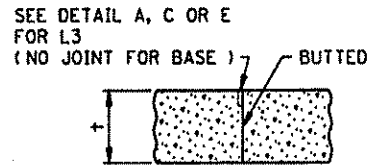
STANDARD SHEET NO. 5-297.221M (1 OF 2)
DESIGNER: MNDOT, DR: MNDOT, APPROVED: 4-5-99
CHECKER: JDS, CHECKER: JDS
SHEET NO B19 OF 28 SHEETS
BRIDGE NO 02564



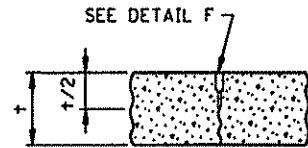
L1, L1T, L1B & L1TB



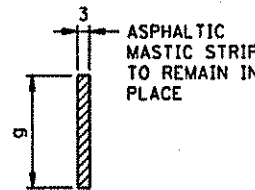
L2KT & L2KTb



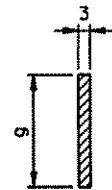
L3 & L3B



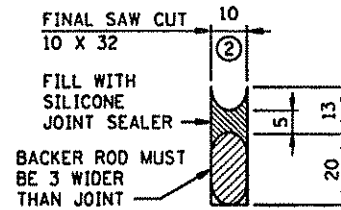
L4



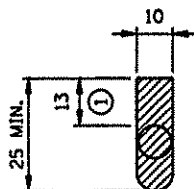
DETAIL A
(FORMED & UNSEALED)



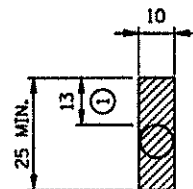
DETAIL B
(SAWED & SEALER, SPEC. 3723)
(BASE JOINTS UNSEALED)



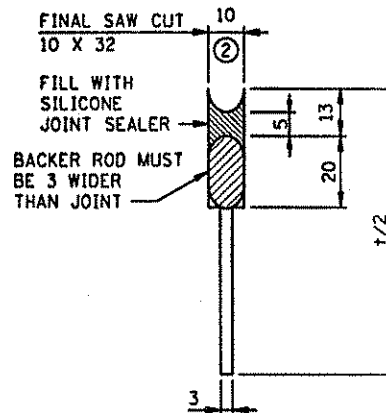
DETAIL C
(SAWED)



DETAIL D
(FORMED & SEALED
SPEC. 3723)



DETAIL E
(SAWED & SEALER
SPEC. 3723)



DETAIL F
(SAWED)

LONGITUDINAL JOINT CLASS DESIGNATION,
DETAIL & SEALER SPECIFICATION TABLE

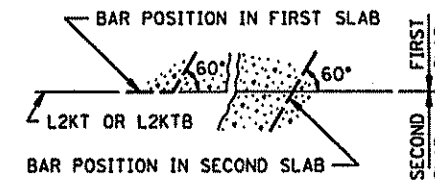
CLASS DESIGNATION				JOINT DETAIL	JOINT SEALER SPECIFICATION
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS	BUTTED		
L1H	L1TH	L2KTH L2KTS	L3H L3S	B	3723
L1BU	L1TBU			A OR B D OR E C D OR E C	UNSEALED 3723 SILICONE 3723 SILICONE
L4S				F	SILICONE

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 ‡	CONCRETE BASE JOINT DEPTH ‡
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	



TIE BAR BENDING DETAIL

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 M103, 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)



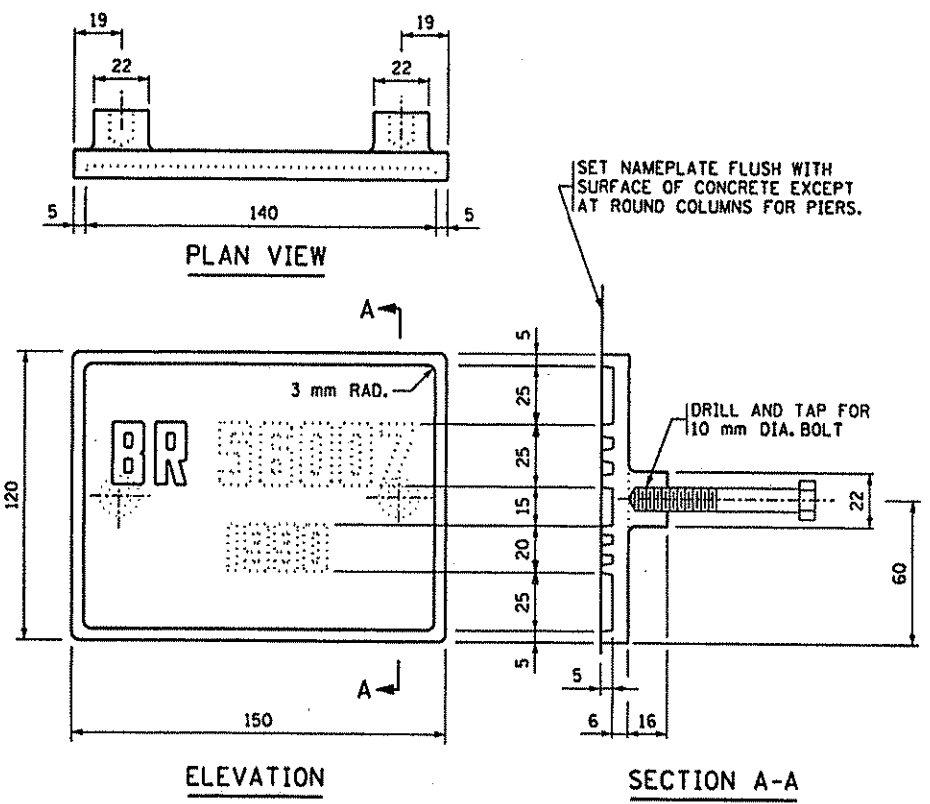
CERTIFIED BY
Nancy Daubenberger
PROFESSIONAL ENGINEER
REG NO. 25151 DATE MARCH 4, 1999

TITLE:

PAVEMENT JOINTS
SAP 02-716-04

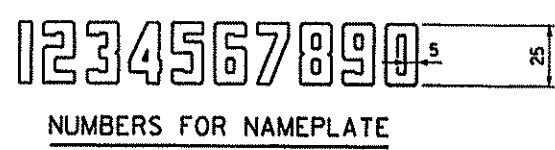
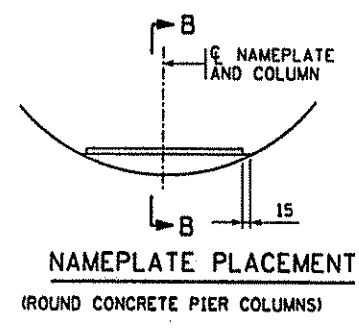
DES: MndOT DR: MndOT APPROVED: 4-5-99
CHK: JDS CHK: JDS
SHEET NO 620 OF 28 SHEETS

BRIDGE NO
02564



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

BRIDGE 02564
YEAR 1999

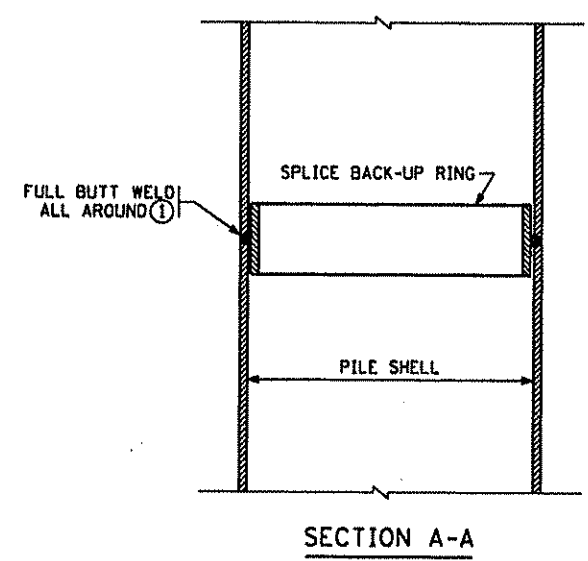
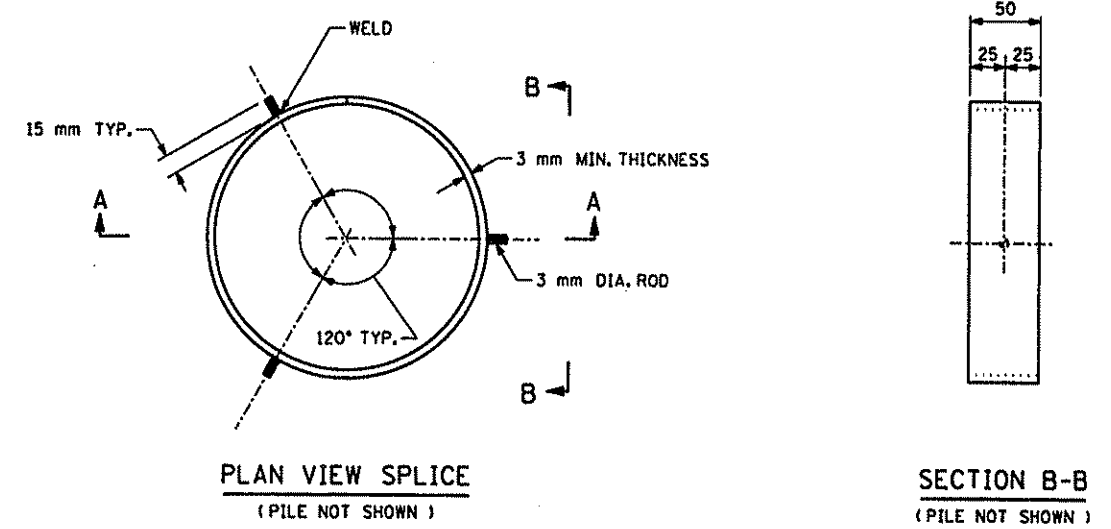


NOTES:

- 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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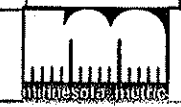
NOTES:

- 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-U4c 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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04 MAR 99 I:\struct\brkcr\states\brub101.dgn



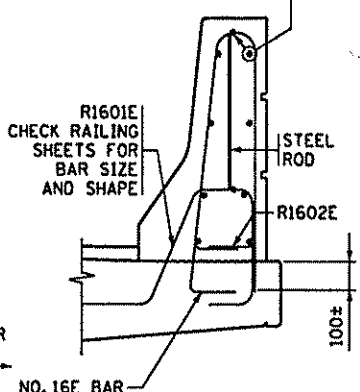
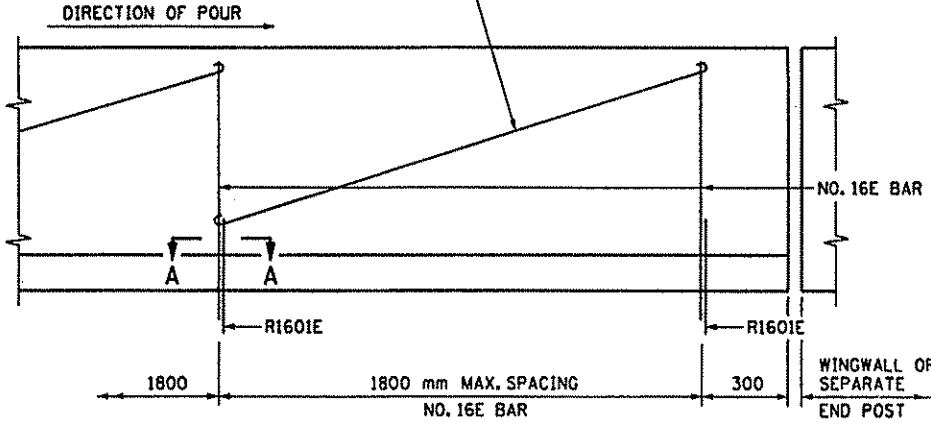
CERTIFIED BY
Nancy D. Duberberg
PROFESSIONAL ENGINEER
REG NO. 25151 DATE MARCH 4, 1999

TITLE:
B101M-B201M
SAP 02-716-04

DES: MNDOT	DR: MNDOT	APPROVED: 4-5-99	BRIDGE NO 02564
CHK: JDS	CHK: JDS	SHEET NO B21 OF 28 SHEETS	

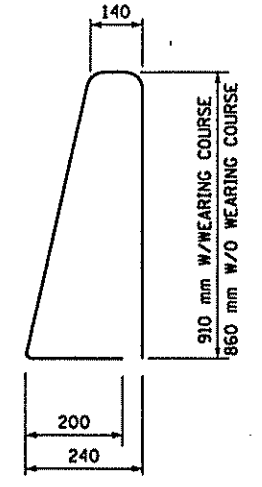
5 mm TO 6 mm SOFT STEEL ROD, 3.5 mm WIRE OR APPROVED EQUAL ATTACHED TO INSIDE AND OUTSIDE FACE OF RAILING, EPOXY COAT AS PER SPEC. 3301.

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

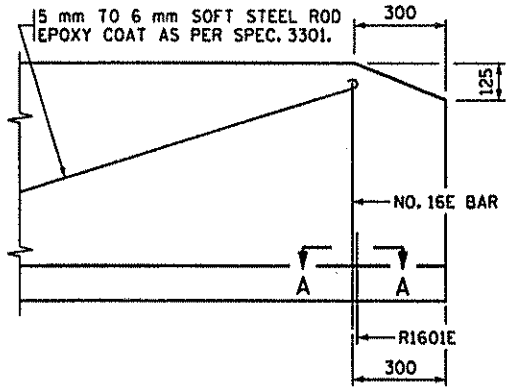


INSIDE ELEVATION OF RAILING

RAILING SECTION



NO. 16E BAR



INSIDE ELEVATION OF RAILING AT END OF WINGWALL

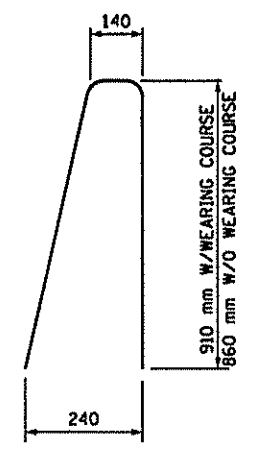
NOTES:

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

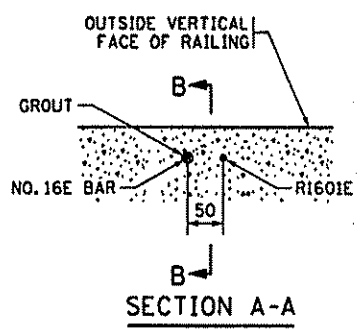
FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.

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

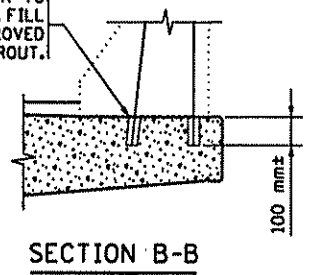
PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.



NO. 16E BAR DRILLED IN ALTERNATE



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



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

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997

Donald J. Fleming
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	

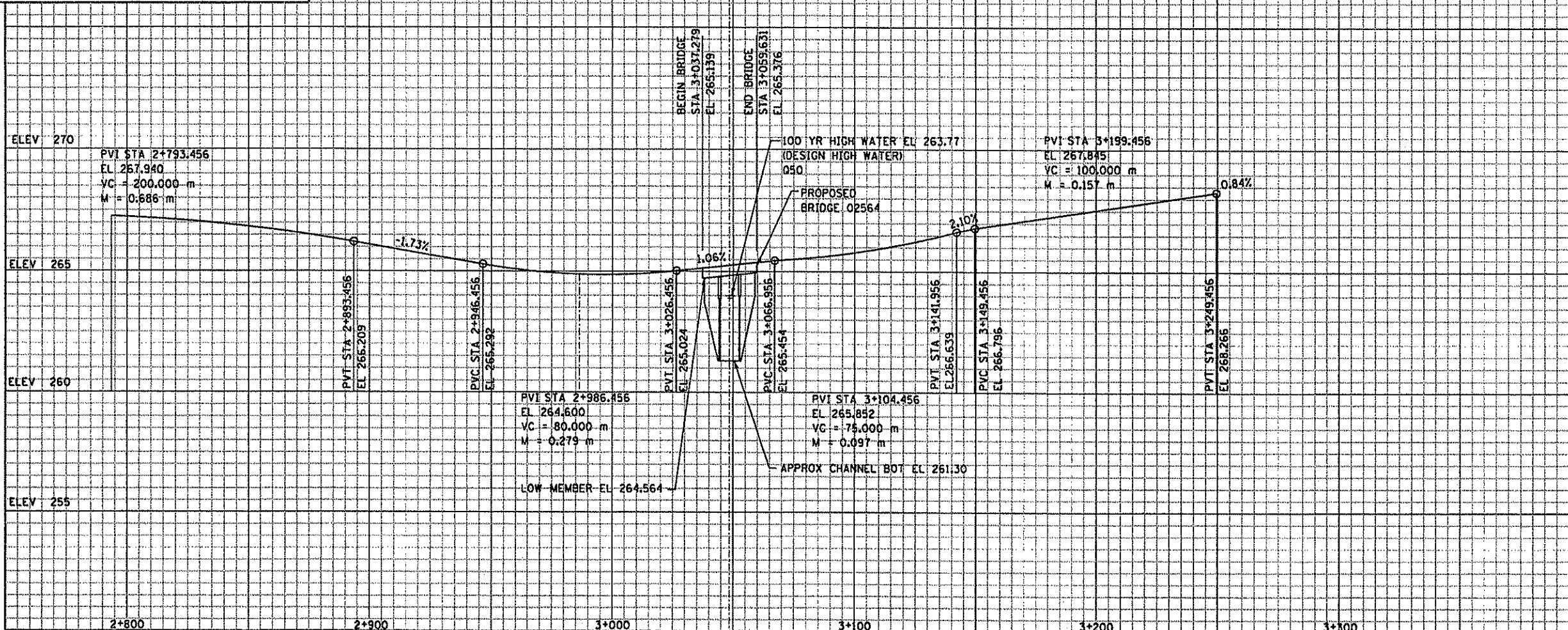
SHEET NO 822 OF 28 SHEETS

BRIDGE NO
02564

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CONTRACTED PROFILE

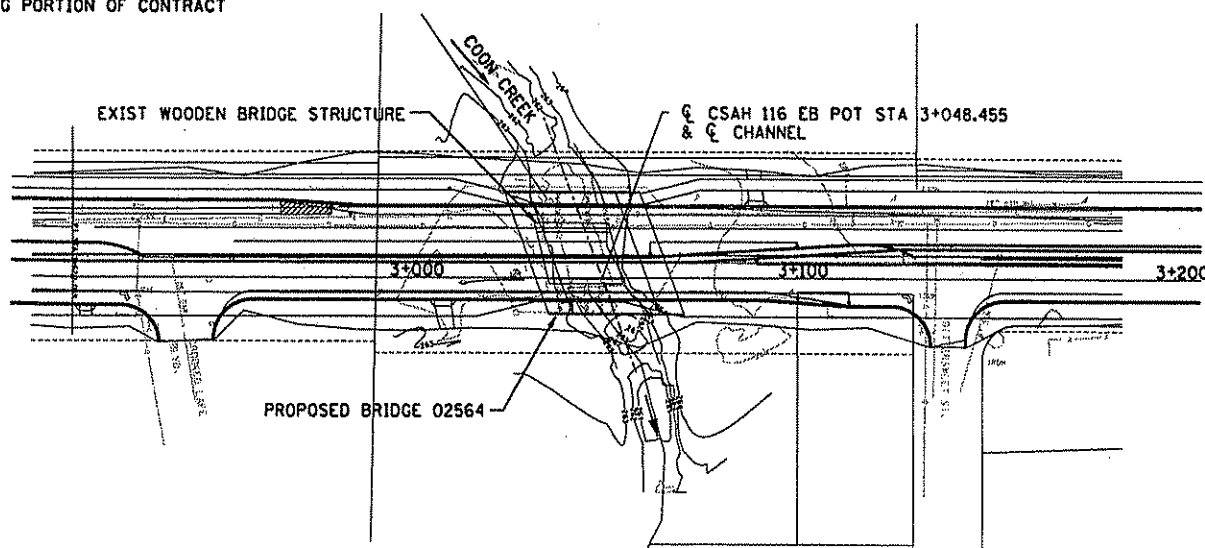
SCALE: HOR. 0 20 VER. 0 2



PLAT

SCALE: 0 20

EXISTING UTILITIES TO BE RELOCATED UNDER GRADING PORTION OF CONTRACT



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 SOWK

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

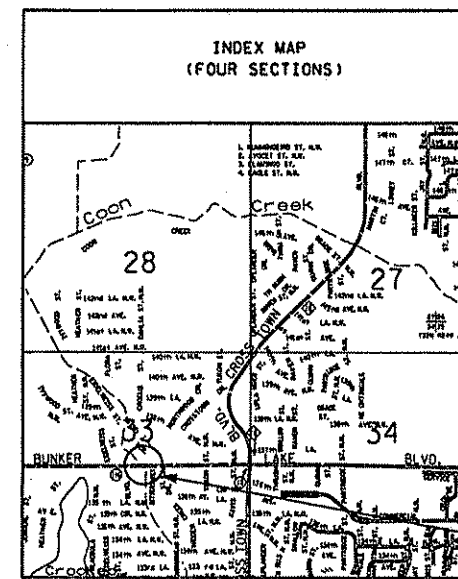
STREAM COON CREEK	
FLOOD OF RECORD (UNKNOWN)	_____ m ³ /s
MAXIMUM OBSERVED HIGHWATER ELEV. (UNKNOWN)	_____
DESIGN FLOOD (50 YEAR FREQUENCY)	39.6 m ³ /s
DESIGN STAGE	263.77
TOTAL STAGE INCREASE	.03 m
DESIGN MEAN VELOCITY THROUGH STRUCTURE	1.40 m/s
LOW MEMBER AT OR ABOVE ELEVATION	264.26
MIN. WATERWAY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

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

INDEX MAP (FOUR SECTIONS)



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



CERTIFIED BY *Nancy Daubert*
 PROFESSIONAL ENGINEER
 REG NO 25191 DATE MARCH 4, 1999

TITLE: BRIDGE SURVEY
 SAP 02-716-04

DES: MAW DR: MAW APPROVED: 4-5-99
 CHK: JDS CHK: JDS
 SHEET NO B23 OF 28 SHEETS BRIDGE NO 02564

04 MAR 99

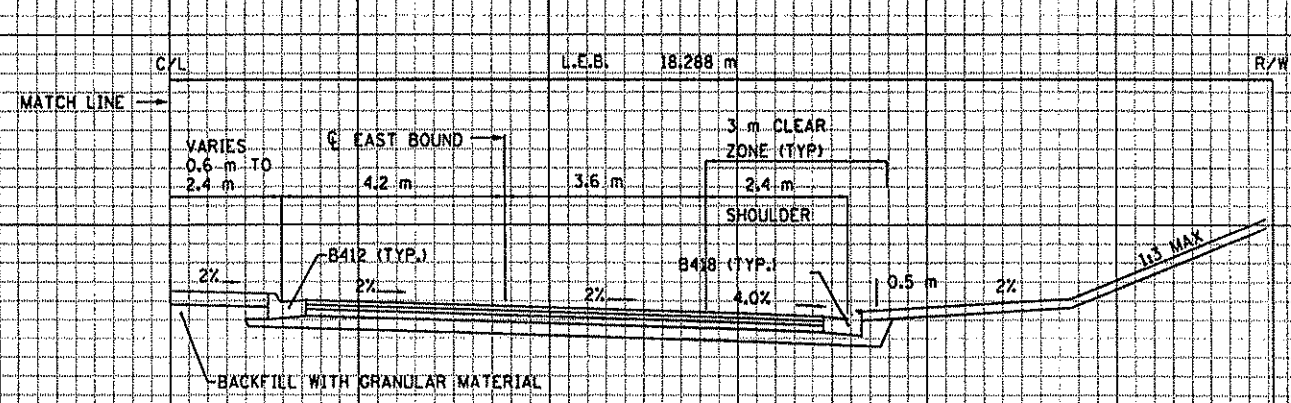
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TYPICAL SECTIONS

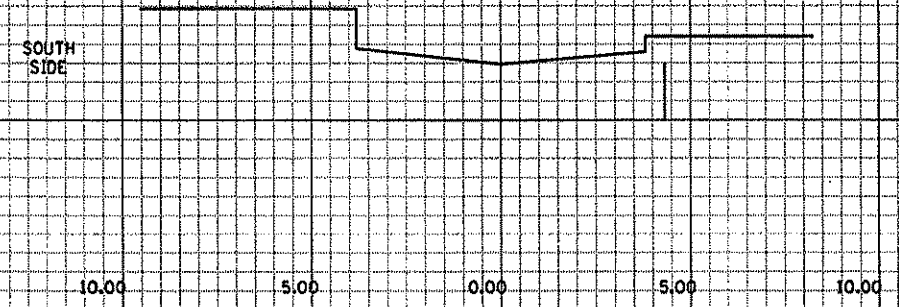
SCALE: HOR. 0 20 VER. 0 2

CROSS SECTIONS

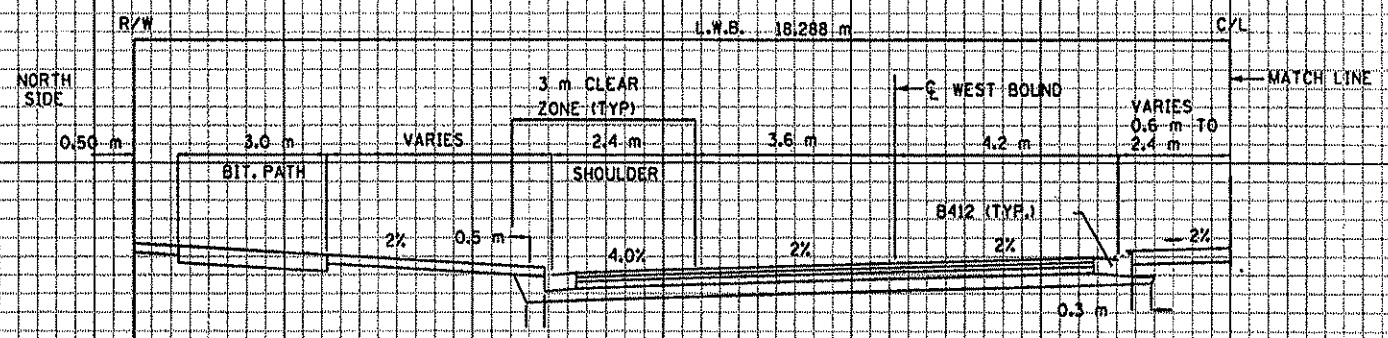
SCALES AS SHOWN



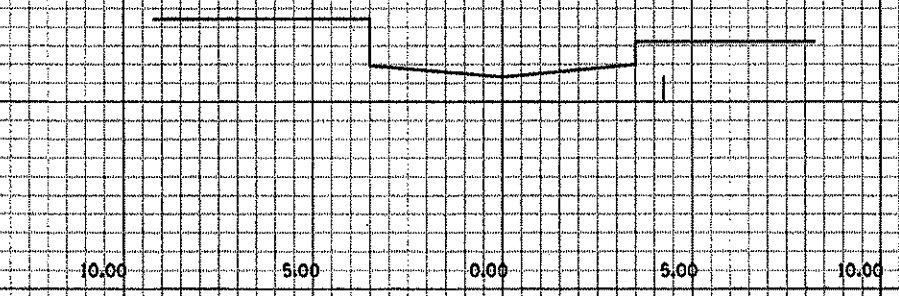
TYPICAL ROADWAY SECTION



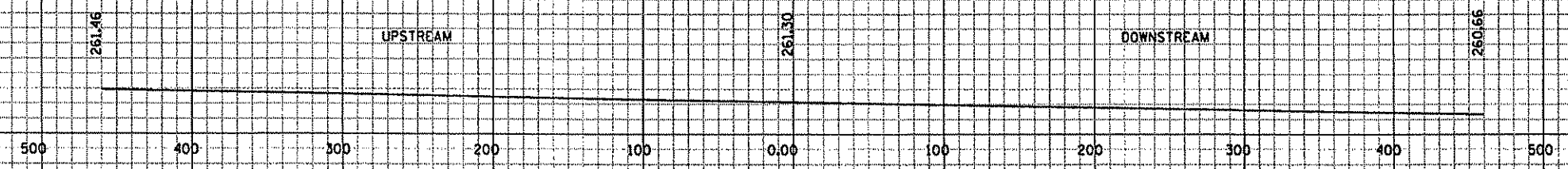
CHANNEL X-SECTION 460 m UPSTREAM



TYPICAL ROADWAY SECTION



CHANNEL X-SECTION 460 m DOWNSTREAM



PROFILE COON CREEK

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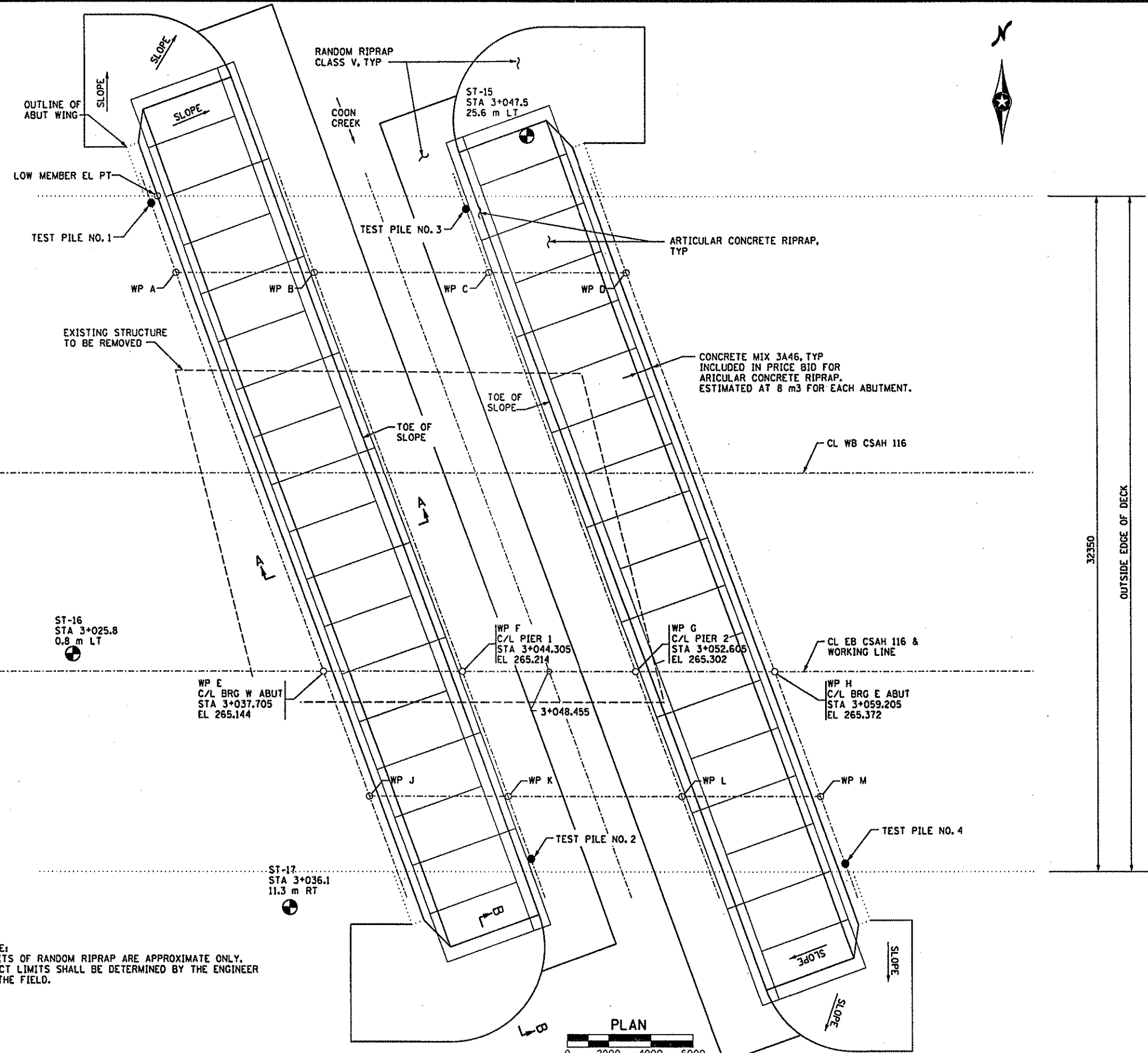
CERTIFIED BY *Nancy Daubenberg*
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

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

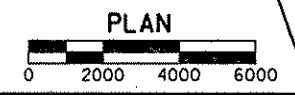
DES: MAW DR: MAW APPROVED: 4-5-99
CHK: JDS CHK: JDS
SHEET NO 324 OF 28 SHEETS

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.



04 MAR 99 J:\struct\bunker\br1dgg\bkbs2.dgn



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	OR: MAW	APPROVED:
CHK: JDS	CHK: JDS	4-5-99
SHEET NO 25 OF 28 SHEETS		

BRIDGE NO
02564

275 3+010 3+020 3+030 3+040 3+050 3+060 3+070 3+080 275

270 C/L BRG W ABUT C/L PIER 1 C/L PIER 2 C/L BRG E ABUT 270

265 DESIGN HW EL 264.00 0+00 LOW MEMBER EL 264.564 EL 263.586 EL 263.489 EL 263.717 EL 263.792 265

260 EL 262.164 APPROX CHANNEL BOT EL 261.30 EL 262.392 260

255 18 57 11 10 9 12 18 18 31 21 255

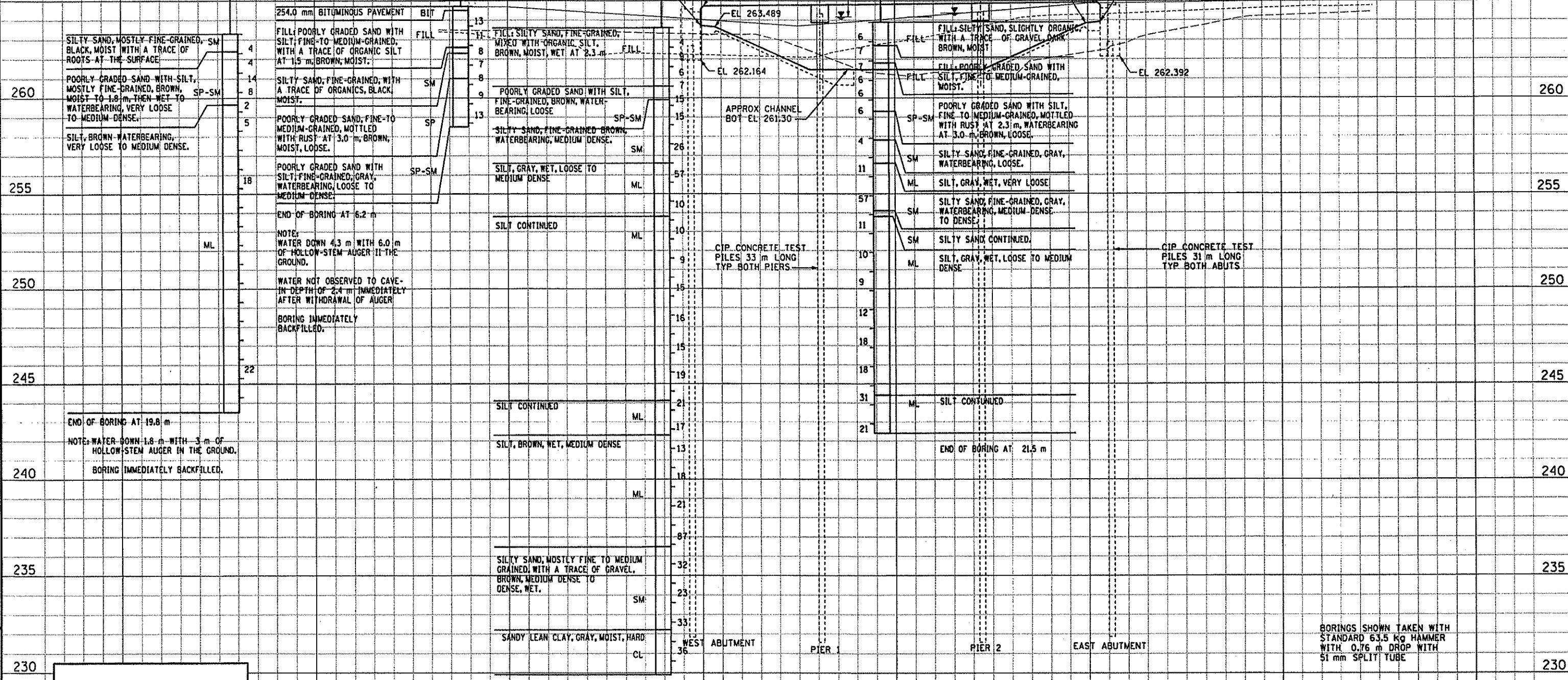
250 9 10 9 12 18 18 31 21 250

245 22 21 17 13 18 21 87 32 23 33 36 245

240 22 21 17 13 18 21 87 32 23 33 36 240

235 22 21 17 13 18 21 87 32 23 33 36 235

230 22 21 17 13 18 21 87 32 23 33 36 230



20m LT. -----
 ☉ EB CSAH 116 -----
 10 m RT. -----

END OF BORING AT 33.7 m
 NOTE: WATER DOWN 3 m WITH 5.8 m OF HOLLOW-STEM AUGER IN THE GROUND.
 BORING THEN GROUTED

BORINGS SHOWN TAKEN WITH STANDARD 63.5 kg HAMMER WITH 0.76 m DROP WITH 51 mm SPLIT TUBE

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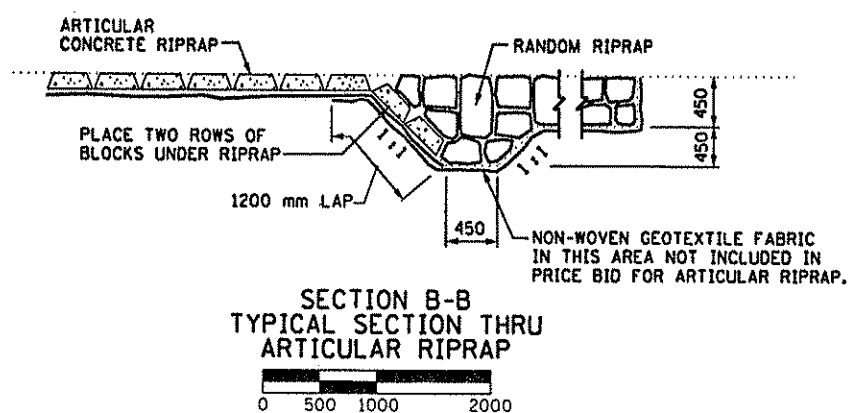
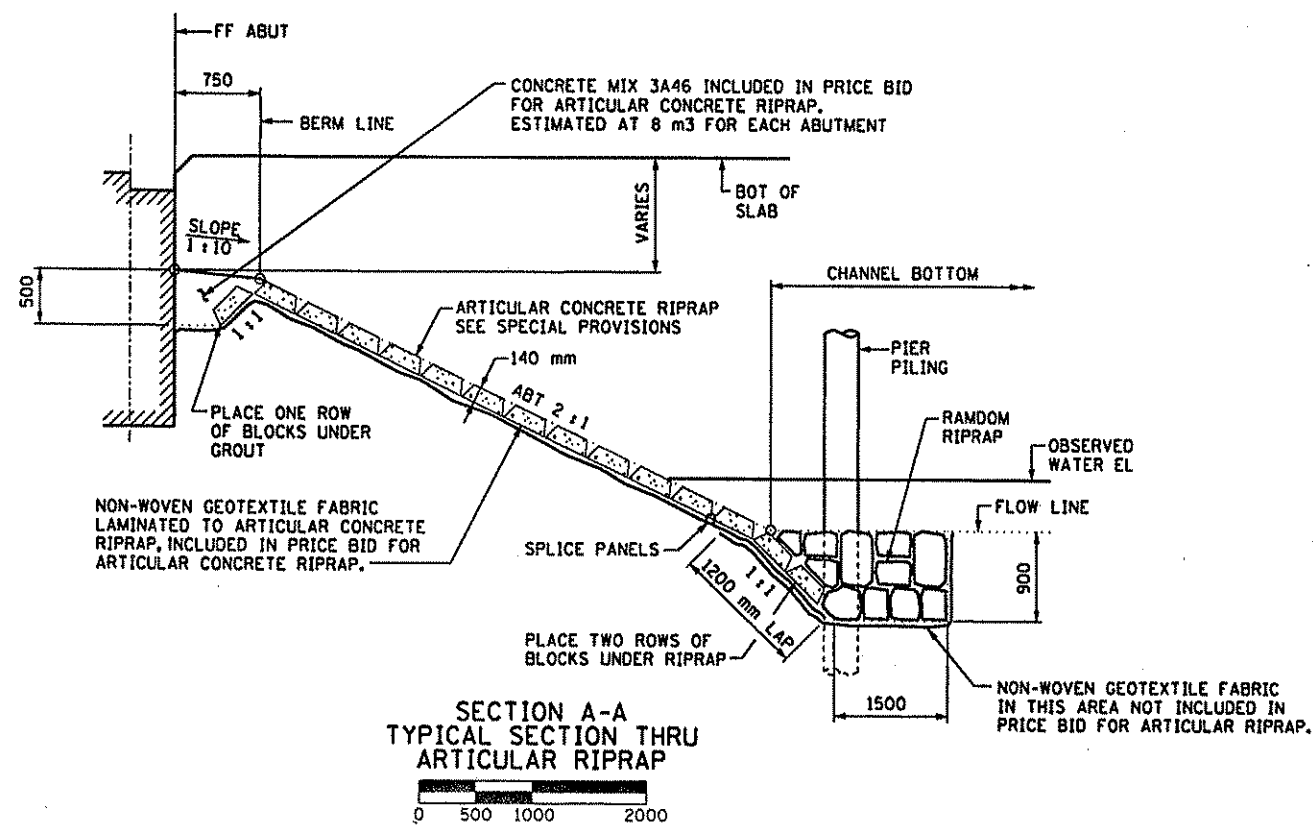
CERTIFIED BY *Nancy Daubenberg* PROFESSIONAL ENGINEER
 REG NO 25151 DATE MARCH 4, 1999

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

DES: MAW DR: MAW APPROVED: 4-5-99
 CHK: JDS CHK: JDS SHEET NO B26 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 Daubinger*
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 B27 OF 28 SHEETS

BRIDGE NO 02564

