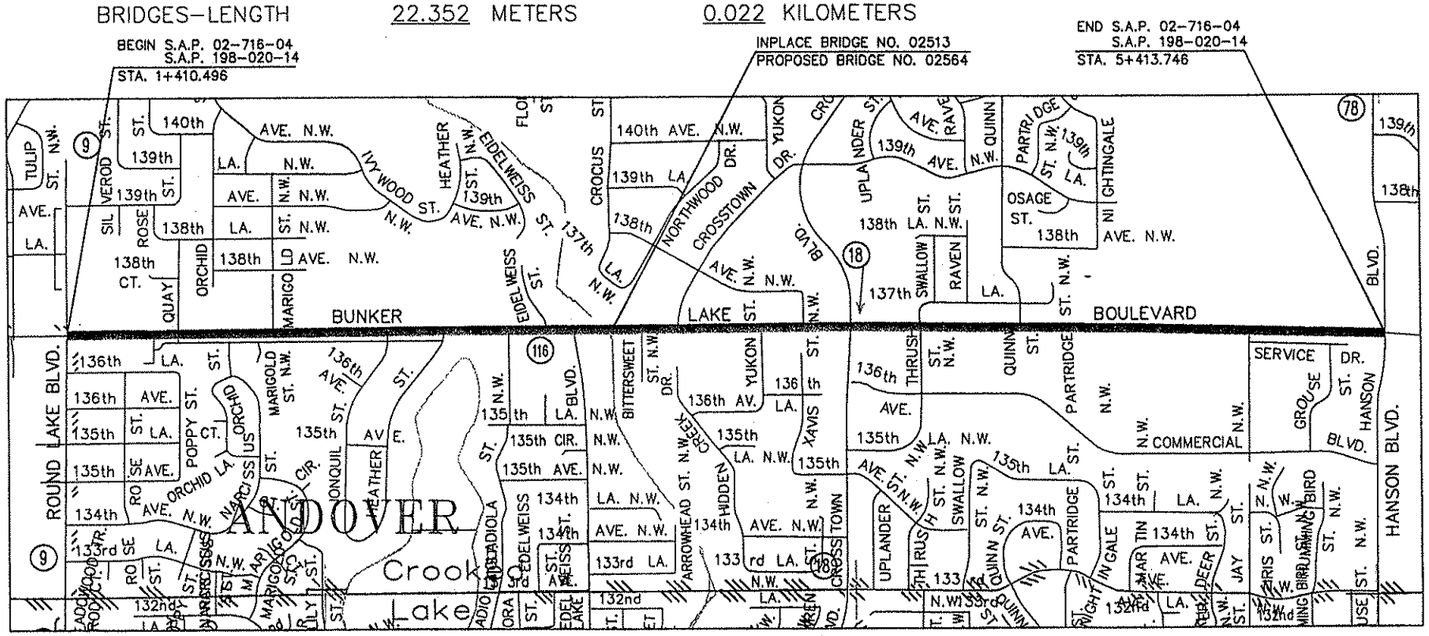
MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

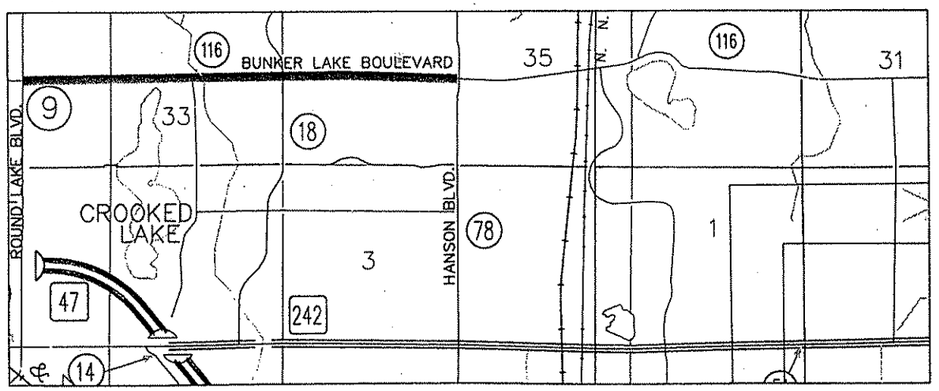
CONSTRUCTION PLAN FOR GRADING, AGG. BASE, BITUMINOUS SURFACING, MILLING, CURB & GUTTER, MEDIANS, SIGNAL SYSTEM, STORM SEWER, DRAINAGE & MISC. CONSTRUCTION, & BRIDGE 02564

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

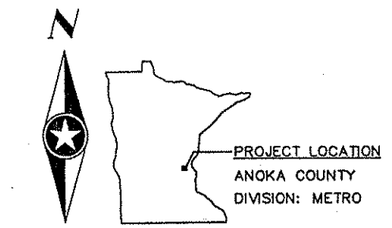


LOCATION MAP



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
4-5-99
Donald J. Flemming
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.

INDEX

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: _____ 3/16 19 99
ANOKA COUNTY ENGINEER — DATE

APPROVED: _____ 3/16 19 99
CITY OF ANDOVER — DATE

APPROVED: _____ 4/5 19 99
METRO-ASSISTANT DIVISION ENGINEER-STATE AID: DATE
REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

APPROVED: _____ 4/19 19 99
For APPROVED FOR STATE AID FUNDING: DATE
STATE AID ENGINEER

LEGEND

STREET BASELINE
SURVEY BASELINE
COUNTY
SECTION
QUARTER
SIXTEENTH
CORPORATE LIMITS

EXISTING

RIGHT OF WAY
PERMANENT EASEMENT
PROPERTY LINE
R.R. RIGHT OF WAY
SANITARY SEWER AND MANHOLE
FORCEMAIN
SANITARY SEWER SERVICE
WATERMAIN, HYDRANT AND VALVE
WATER SERVICE AND CURB STOP BOX
WATER VALVE MANHOLE
STORM SEWER AND MANHOLE
CATCH BASIN
CULVERT
BULKHEAD
UNDERGROUND TELEPHONE CABLE OR CONDUIT
UNDERGROUND ELECTRIC CABLE OR CONDUIT
TELEPHONE MANHOLE
TELEPHONE PEDESTAL
CABLE TV PEDESTAL
ELECTRIC MANHOLE
POWER POLE
DOWN GUY ANCHOR
STEEL LIGHT POLE
TRAFFIC SIGNAL, STANDARD
GAS MAIN
GAS VALVE
SOIL BORING
TRAVERSE POINT
CONCRETE CURB AND GUTTER
EXISTING PAVEMENT OR SIDEWALK
SIGN (HWY, PARK, STOP, ETC.)
STREET SIGN
DITCH
RAILROAD TRACKS
FENCE
TREE (DECIDUOUS)
TREE (CONIFEROUS)
BUSH-SHRUB
WOODED AREA
BUILDING

PROPOSED OR NEW CONSTRUCTION

NEW RIGHT OF WAY
PERMANENT EASEMENT
TEMPORARY EASEMENT
SANITARY SEWER AND MANHOLE
FORCEMAIN
SANITARY SEWER SERVICE
WATERMAIN, HYDRANT AND VALVE
WATER SERVICE AND CURB STOP BOX
WATER VALVE MANHOLE
STORM SEWER WITH MANHOLE
CATCH BASIN
CULVERT
BULKHEAD
DRAIN PIPE
DITCH
CONCRETE CURB AND GUTTER
SILTFENCE
HAYBALES
STEEL LIGHT POLE
TRAFFIC SIGNAL, STANDARD
SIGN (HWY, PARK, STOP, ETC.)
STREET LIGHT FEED POINT
STREET LIGHTING CABLE
REMOVE TREE
INSULATION

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

ESEH

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

TITLE SHEET

SHEET 1 of 230 SHEETS

0:\DWL\CLIENTS\A_THRU_F\ANOKA\98006\DWG\AC80ST1.DWG 03-15-99 4:04 pm cpc90sp

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 [1]	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 [1]	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) [1]	m3	28016		28016							
		2105.505	MUCK EXCAVATION	m3	61702		61702							
	23	2105.507	SUBGRADE EXCAVATION (P) [1]	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 [1]	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	

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	RAB	4/13/99	ADDENDUM NO. 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.
Jason M. Moser
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
2/230

q:\civil\clients\a_thru_l\anoka\9806\spreads\okc806tab15.dgn
15 APR 1999 13:46:29

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
O		2501.602	TRASH GUARD FOR 525 mm RC PIPE APRON	EACH	1								1	
O		2501.602	TRASH GUARD FOR 750 mm RC PIPE APRON	EACH	1								1	
O		2501.602	TRASH GUARD FOR 825 mm RC PIPE APRON	EACH	1								1	
O		2501.602	TRASH GUARD FOR 900 mm RC PIPE APRON	EACH	1								1	
O		2501.602	TRASH GUARD FOR 920 mm SPAN PIPE APRON	EACH	2								2	
O		2501.515	300 mm RC PIPE APRON	EACH	3								3	
O		2501.515	375 mm RC PIPE APRON	EACH	5								5	
O		2501.515	525 mm RC PIPE APRON	EACH	1								1	
O		2501.515	750 mm RC PIPE APRON	EACH	1								1	
O		2501.515	825 mm RC PIPE APRON	EACH	1								1	
O		2501.515	900 mm RC PIPE APRON	EACH	1								1	
O		2501.525	920 mm SPAN RC PIPE-ARCH APRON	EACH	2								2	
O		2503.521	560 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA [1]	m	127.29								127.29	
O		2503.521	725 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA [1]	m	191.78								191.78	
O		2503.521	920 mm SPAN RC PIPE ARCH-SEWER DESIGN CL IIA [1]	m	236.38								236.38	
O		2503.541	300 mm RC PIPE SEWER DESIGN 3006 CL V [1]	m	1074.95								1074.95	
O		2503.541	375 mm RC PIPE SEWER DESIGN 3006 CL V [1]	m	735.86								735.86	
O		2503.541	450 mm RC PIPE SEWER DESIGN 3006 CL V [1]	m	705.84								705.84	
O		2503.541	525 mm RC PIPE SEWER DESIGN 3006 CL III	m	80.77								80.77	
O		2503.541	600 mm RC PIPE SEWER DESIGN 3006 CL III	m	206.43								206.43	
O		2503.541	675 mm RC PIPE SEWER DESIGN 3006 CL III	m	64.37								64.37	
O		2503.541	750 mm RC PIPE SEWER DESIGN 3006 CL III	m	795.55								795.55	
O		2503.541	825 mm RC PIPE SEWER DESIGN 3006 CL III	m	38.45								38.45	
O		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) [1]	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 [1]	m	20						20			
F		2503.603	250 mm PVC PIPE SEWER SDR 35 [1]	m	25						25			
		2503.604	INSULATION 50 mm THICK	m2	330				330					
		2504.601	RELOCATE ALTITUDE VALVE [1]	LUMP SUM	1				1					
		2504.601	IRRIGATION SYSTEM	LUMP SUM	1						1			
G		2504.602	CORPORATION STOP 25 mm [1]	EACH	12						12			
G		2504.602	CORPORATION STOP 38 mm [1]	EACH	7						7			
G		2504.602	CURB STOP & BOX 25 mm [1]	EACH	12						12			
G		2504.602	CURB STOP & BOX 38 mm [1]	EACH	7						7			
G		2504.602	150 mm GATE VALVE & BOX [1]	EACH	3						3			
G		2504.602	200 mm GATE VALVE & BOX [1]	EACH	6						6			
G		2504.602	250 mm GATE VALVE & BOX [1]	EACH	2						2			
G		2504.602	300 mm GATE VALVE & BOX [1]	EACH	5		1				4			
G		2504.602	F & I HYDRANT	EACH	3						3			
G		2504.602	RELOCATE HYDRANT WITH GATE VALVE [1]	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 [1]	m	169.49						169.49			
G		2504.603	38 mm COPPER SERVICE [1]	m	232.43						232.43			
G		2504.603	150 mm DIP WATERMAIN CL 52 [1]	m	162.1						162.1			
G		2504.603	200 mm DIP WATERMAIN CL 52 [1]	m	244.6						244.6			
G		2504.603	250 mm DIP WATERMAIN CL52 [1]	m	43.5						43.5			
G		2504.603	300 mm DIP WATERMAIN CL 52 [1]	m	208.3		64				144.3	194.3		
		2504.603	LOWER WATERMAIN	m	90		90							
		2504.603	INSULATE WATERMAIN	m	100		100							
		2504.608	FITTINGS 300 mm AND SMALLER [1]	kg	1467						1467			
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN A or F	EACH	5								5	
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN C or G	EACH	95								95	
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN 1500 mm 4020	EACH	22								22	

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

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

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
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN 1800 mm 4020	EACH	9									
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN 2100 mm 4020	EACH	1									
O		2506.502	CONST DRAINAGE STRUCTURE DESIGN H	EACH	31									
O		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	HOUR	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							

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

15 APR 1999 13:51:47 q:\civil\clients\a_thru_f\anoka\9806\spreads\oke806tab17.dgn

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							

(P) PLAN QUANTITY

[1] ADDENDUM NO. 1 REVISIONS

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.

INDEX OF TABULATION CHARTS

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

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	RAB	4/13/99	ADDENDUM NO. 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.
Jason M. Moser
Date: MARCH 15, 1999 Reg. No. 18612

SEH

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

15 APR 1999 13:25:12 q:\civil\clients\a_thru_f\anoka\9806\spreads\akc806tab19.dgn

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

15 APR 1999 13:24:01 q:\civil\clients\a..thru..r\anoka\9806\spreads\akc806tab18.dgn

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

Date: MARCH 15, 1999 Reg. No. 18612

SEH

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

DATE MARCH 15,1999

A CLEARING AND GRUBBING

STATION		LOCATION	CLEARING		GRUBBING	
		LT/RT	EACH	ha	EACH	ha
1+488		LT	1		1	
1+519		LT	1		1	
1+568		LT	1		1	
1+629		LT	1		1	
1+785		LT		0.020		0.020
1+855	1+921	LT	44	0.080	44	0.080
1+943	1+978	LT		0.020		0.020
2+039		LT	3		3	
2+061		LT	1		1	
2+156		LT	2		2	
2+181		LT	1		1	
2+191		LT	3		3	
2+191	2+215	LT		0.020		0.020
2+202		LT	1		1	
2+223	2+260	LT		0.060		0.060
2+420	2+533	LT (POND)		3.060		3.060
2+525	2+528	LT	4	0.020	6	0.020
2+527	2+533	RT (FRONTAGE RD)	4		4	
2+585		LT	1	0.020	1	0.020
2+671	2+695	RT	7		7	
2+739	2+834	RT	10		10	
2+759	2+766	LT	4		4	
2+780	2+842	LT		0.060		0.060
2+785	2+799	LT	6		6	
2+805	2+839	LT	11		11	
2+830	2+905	RT		0.060		0.060
2+864	2+889	LT	13		13	
2+864	3+024	LT		1.000		1.000
2+878	2+935	RT	16		16	
2+956	2+993			0.020		0.020
3+001		RT	2		2	
3+009	3+026	RT		0.020		0.020
3+025		LT	1		1	
3+057	3+069	RT (POND)	14	0.020	14	0.020
3+068	3+139	RT	5		5	
3+078	3+108	LT	4	0.020	4	0.020
3+127	3+134	RT		0.020		0.020
3+154	3+239	LT	9		9	
3+421		LT	1		1	
3+528	3+546	LT	4		4	
3+325		RT	1		1	
3+630	3+774	LT	8	0.020	8	0.020
3+638	3+649	RT	7		7	
3+788	3+834	RT (POND)	19		19	
3+815	3+874	RT		0.060		0.060
3+818	3+841	RT	6		6	
3+972	3+986	RT		0.020		0.020
4+061	4+105	RT		0.020		0.020
4+117	4+127	RT		0.020		0.020
4+259	4+322	RT		0.040		0.040
4+343	4+392	LT	11		11	
4+362	4+448	RT		0.100		0.100
4+365	4+386	RT	2		2	
4+941	4+960	RT		0.020		0.020
SCHOOL DRIVE		LT	4		4	
TOTAL			233	4.820	235	4.820

B REMOVE CONCRETE CURB AND GUTTER

STATION		DESCRIPTION		LENGTH m	REMARKS
1+677.36	1+702.81	4.4 - 6.5	LT	7.91	
1+677.36	1+702.82	4.4 - 2.3	RT	7.91	
1+702.81	1+786.33	3.6	RT	83.52	
1+735.10		36.5 - 23.0	LT	13.73	
2+008.86	2+018.18	23.8 - 33.9	LT	8.50	
2+018.18	2+027.82	23.8 - 33.9	LT	10.09	
2+050.00	2+170.00	4.2	RT	120.00	FR. RD
2+373.03	2+375.23	15.4 - 29.5	LT	14.75	
2+383.30	2+384.04	15.4 - 29.4	LT	14.10	
2+488.64	2+545.88	10.8 - 11.5	LT	58.71	
2+496.82	2+546.99	17.9 - 53.1	RT	78.20	
2+555.50	2+576.58	9.6 - 11.3	LT	21.76	
2+581.68	2+610.87	27.2 - 9.8	LT	45.10	
2+620.00	2+734.85	27.0 - 31.2	LT	151.40	
2+738.97	2+840.95	11.1 - 11.5	LT	96.20	
2+788.63	2+935.34	3.5 - 20.0	RT	142.58	
2+863.22	3+023.96	11.5	LT	162.71	
2+935.34	3+032.97	20.0 - 1.0	RT	80.09	
3+059.08	3+238.91	12.6 - 38.9	LT	197.50	
3+068.15	3+139.15	0.5 - 21.0	RT	67.67	
3+139.15	3+238.91	21.0 - 0.3	RT	92.68	
3+238.91	3+246.12	21.3 - 38.9	LT	17.70	
3+298.76	3+299.41	22.0 - 26.4	LT	4.93	
3+309.13	3+309.29	21.1 - 26.4	LT	5.27	
3+619.43	3+700.00	12.0 - 2.5	RT	85.21	
3+624.73	3+629.80	18.8 - 31.2	LT	12.34	
3+629.80	3+634.67	19.5 - 31.2	LT	11.07	
3+700.00	3+774.24	12.0 - 26.0	RT	79.91	
3+774.24	3+800.00	26.0 - 3.8	RT	34.02	
3+980.00	3+993.80	3.0 - 18.0	RT	16.50	
3+993.80	3+998.80	24.3 - 33.7	LT	9.28	
3+993.80	4+005.63	18.0 - 6.0	RT	15.72	
3+998.92	3+993.80	24.7 - 33.7	LT	8.95	
4+301.41	4+305.63	22.6 - 35.6	LT	13.04	
4+305.63	4+311.18	22.0 - 35.6	LT	13.46	
4+740.00	4+754.43	14.0 - 27.5	LT	16.43	
4+749.60	4+759.32	2.3 - 9.1	RT	26.62	ISLAND
4+985.03	5+021.45	24.8 - 8.0	RT	27.82	
TOTAL				1873.38	

D FENCE REMOVAL

STATION		LOCATION	m
1+790	1+802	15.0 LT	12
1+958	2+005	15.0-30.0 LT	62
2+283	2+366	17.0 LT	83
3+461	3+485	9.0-14.0 RT	34
3+540	3+260	9.0 RT	82
TOTAL			273

C PAVEMENT REMOVAL AND SAW CUT

ALIGNMENT	STATION		LOCATION	BITUMINOUS PAVEMENT (2)	CONCRETE WALK	CONCRETE DRIVEWAY (1)	MILL BITUMINOUS	SAW CUT (3) BITUMINOUS
				m2	m2	m2	m2	m
C.S.A.H. 116	1+659	1+730	LT & RT	1711.00				102.00
C.S.A.H. 116	1+730	2+018	LT & RT	4443.00				55.00
C.S.A.H. 116	2+018	2+350	LT & RT	4613.00				22.00
C.S.A.H. 116	2+350	2+560	LT & RT	3148.00				8.00
C.S.A.H. 116	2+560	2+670	LT & RT	1523.00				
C.S.A.H. 116	2+670	2+980	LT & RT	4805.00		14.00		53.00
C.S.A.H. 116	2+980	3+300	LT & RT	4209.00		96.00		35.00
C.S.A.H. 116	3+300	3+629	LT & RT	4580.00				91.00
C.S.A.H. 116	3+629	3+940	LT & RT	6057.70				61.00
C.S.A.H. 116	3+940	4+260	LT & RT	4898.00				22.00
C.S.A.H. 116	4+260	4+580	LT & RT	4586.00				10.00
C.S.A.H. 116	4+580	4+910	LT & RT	4455.00				16.00
C.S.A.H. 116	4+910	5+220	LT & RT	4604.00				59.00
C.S.A.H. 116	5+220	5+264	LT & RT	594.00				6.00
FRONTAGE ROAD	1+659	1+730	LT & RT			18.00		18.00
FRONTAGE ROAD	1+730	2+018	LT	1152.00		60.00		236.00
FRONTAGE ROAD	1+730	2+018	RT	1336.00			928.00	46.00
FRONTAGE ROAD	2+018	2+350	LT	1328.00				332.00
FRONTAGE ROAD	2+018	2+350	RT				824.00	33.00
FRONTAGE ROAD	2+050	2+170	RT	504.00				
FRONTAGE ROAD	2+350	2+496	LT	588.00				151.00
FRONTAGE ROAD	2+350	2+496	RT				588.00	26.00
FRONTAGE ROAD	2+496	2+547	LT & RT	478.00				
HEATHER ST. (S)	2+547		RT	474.00				10.00
HEATHER ST. (N)	2+547		LT	135.00				
SCHOOL DRIVE				2568.50	530.10			51.50
TOTAL				62790.20	530.10	188.00	2340.00	1443.50

E DRIVEWAY REMOVAL / REPLACEMENT

STATION	LOCATION	REMOVAL	SAWCUT (3)	REPLACEMENT BIT.(4)	BIT(4)	CONC.	AGG. (4)
C.S.A.H. 116		m2	m	t	m2	m2	m3
1+709.00	19.50 RT	45.00	9.00	1.88	10.47	23.27	3.28
1+781.00	20.50 RT	45.00	9.00	1.87	10.38	23.15	3.26
1+821.50	20.70 RT	35.00	7.00	1.69	9.39	20.7	2.92
1+846.00	21.00 RT	40.00	8.00	1.80	10.03	20.52	2.96
1+934.30	21.60 LT	90.00	5.00				
2+040.00	18.00 RT	8.00	8.00	1.63	9.07	30.94	3.92
2+214.00	17.50 RT	7.00	7.00	1.37	7.63	19.38	2.63
2+220.60	19.50 LT	76.00	5.00	4.84	26.89	7.07	3.09
2+238.50	18.00 RT	6.00	6.00	1.16	6.47	17.76	2.36
2+272.50	19.00 RT	6.00	6.00	1.11	6.16	17.31	2.29
2+317.50	19.00 RT	6.00	6.00	1.12	6.20	17.51	2.32
2+351.50	19.00 RT	5.00	5.00	0.97	5.39	16.32	2.12
2+444.50	19.00 RT	7.00	7.00	1.28	7.13	18.67	2.52
2+477.00	20.00 RT	8.00	8.00	1.61	8.97	21.56	2.97
2+686.00	9.00 RT	93.00	6.00	9.85	54.73	11.85	6.16
2+785.00	11.00 RT	32.00	4.00				
2+912.00	12.50 RT	42.00	3.00	5.05	28.03	5.66	3.11
3+006.50	12.30 RT	60.00	4.00			54.74	5.47
3+088.00	33.40 LT	105.00	5.00	10.11	56.16	6.98	5.80
3+302.50	11.00 RT	120.00	9.00				
3+304.00	26.80 LT	164.00	11.00				
3+325.00	27.50 LT	80.00	6.00	6.33	35.15	8.64	4.06
3+358.50	26.50 LT	80.00	6.00	6.49	36.04	9.29	4.21
3+398.50	27.80 LT	126.00	9.00	14.40	80.00	11.58	8.43
3+441.00	27.50 LT	108.00	6.00	8.46	46.97	9.25	5.20
3+483.80	28.00 LT	120.00	8.00	10.87	60.39	11.36	6.63
3+494.00	28.00 LT	120.00	9.00	10.61	58.97	9.55	6.32
3+537.00	27.50 LT	56.00	4.00	5.26	29.20	6.33	3.29
3+566.80	27.50 LT	60.00	4.00	4.83	26.82	5.96	3.03
3+594.50	27.50 LT	126.00	7.00	10.62	59.02	23.29	6.43
3+704.00	12.00 RT	90.00	9.00				
3+809.00	5.50 RT	40.00	6.00				
3+834.50	5.50 RT	48.00	6.00				
4+888.80	27.50 LT	135.00	9.00				
5+019.00	27.50 LT	285.00	16.00				
5+078.00	27.50 LT	255.00	17.00	14.44	80.20	17.21	9.01
5+225.00	27.50 LT	135.00	6.00	8.20	45.54	9.87	5.13
TOTAL		2864.00	266.00	147.85	821.38	455.72	118.91

(1) INCLUDES CROSS GUTTER AT GLADIOLA ST. AND BITTERSWEET ST.
(2) INCLUDED IN COMMON EXCAVATION
(3) MILLING MAY BE USED IN LIEU OF SAWCUT AT THE DISCRECTION OF THE ENGINEER IN THE FIELD.
(4) 75mm BITUMINOUS DRIVEWWAY PAID FOR BY THE SQUARE METER INCLUDING 100mm AGGREGATE BASE.

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.
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
7
230

25 MAR 1999 11:15:28 q:\civil\clients\o_thru_r\anoka\9806\spreads\oke806tab14.dgn

F

SANITARY SEWER MODIFICATIONS

STATION	LOCATION	EXISTING ELEVATION	DESCRIPTION	STRUCTURE NUMBER	ADJUST each	RECON. m	REMOVE each	PIPE m	REMOVAL size	⚠ REMARKS	TOP OF CASTING	⚠ DESIGN ④	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						
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						①						
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					②	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	14.750 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	14.750 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					②	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						
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	6.513 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						①						
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						①						
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 Minnesota.
Jason 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
8 / 230

15 APR 1999 13:53:50 q:\civil\clients\a_thru_f\anoka\9806\spreads\vbk=8061ab12.dgn

G WATER MAIN SUMMARY

STATION	LOCATION	TYPE	RELOCATE TO STATION	RELOCATE TO LOCATION	150mm DIP (m)	200mm DIP (m)	FURNISH & INSTALL 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	CONNECT TO EXIST WM	F & I HYDRANT	REMARKS
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																			
1+793.0	7.7 RT	GATE VALVE BOX																			FRONTAGE RD.
2+007.3	14.5 LT	GATE VALVE BOX																			
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				36													1		PLUG, REDUCER
2+181.00	RT	SERVICE											8.81		1		1				⚠
2+211.00	LT	SERVICE											36.5		1		1				
2+246.00	RT	SERVICE											13		1		1				⚠
2+281.50	RT	SERVICE											11.47		1		1				
2+306.25	RT	SERVICE											11.11		1		1				
2+339.00	RT	SERVICE											10.65		1		1				
2+367.70	17.00 RT	HYDRANT & GATE VALVE	2+370.38	19.61 RT	1.80	15.00			1	1									1		SEE UTILITY PLAN
2+370.5	2.5 LT	GATE VALVE BOX																			FRONTAGE RD.
2+410.00	RT	SERVICE											10.44		1		1				
2+434.00	RT	SERVICE											10.33		1		1				
2+468.00	RT	SERVICE											10.4		1		1				
2+495.41	RT	SERVICE											10.48		1		1				
2+516.00	18.00 LT	HYDRANT & GATE VALVE	2+516.00	26.60 LT	9.5														1		⚠ 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				45.0													1		⚠ REDUCER
2+579.00	13.00 LT	HYDRANT & GATE VALVE	2+579.00	26.60 LT	10.0														1		ROTATE TEE, EXTEND LEAD
2+640.0	18.0 LT	GATE VALVE BOX																			
2+741.08	RT & LT	STUB & GATE VALVE BOX				41.6				2									1		⚠ TEE, PLUG
2+747.00	17.00 RT	F & I HYDRANT & GV			5.9				1											1	⚠ TEE
2+749.00	13.50 LT	HYDRANT & GATE VALVE	2+755.00	22.30 LT	11.8														1		SEE UTILITY PLAN
2+753.5	16.4 LT	GATE VALVE BOX																			
2+842.51	LT	STUB					7.5												1		⚠ 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														1		ROTATE TEE, EXTEND LEAD
2+918.00	18.00 LT	CONNECT TO EXISTING																	1		
2+929.00	RT	STUB				53.0				2		1									⚠ 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										1									
3+071.00		GATE VALVE & BOX										1									
3+073.00		CONNECT TO EXISTING																	1		
3+075.00	LT	SERVICE											6.73		1		1				
3+114.50	14.50 LT	HYDRANT & GATE VALVE	3+114.50	25.90 LT	8.3														1		ROTATE TEE, EXTEND LEAD
3+120.00	LT	SERVICE											8								
3+132.30	12.50 RT	HYDRANT & GATE VALVE	3+132.30	17.00 RT	3.0														1		ROTATE TEE, EXTEND LEAD
3+136.0	16.0 LT	GATE VALVE BOX																			
3+149.11	LT	SERVICE											21.57		1		1				
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														1		SEE UTILITY PLAN
3+226.3	18.0 LT	GATE VALVE BOX																			
3+352.00	LT	SERVICE												33.62		1		1			
3+368.00	LT	SERVICE												34.25		1		1			
3+372.00	7.50 RT	STUB			6.0				1										1		LEAVE AS IS
3+434.09	LT	SERVICE												33.62		1		1			
3+449.55	LT	SERVICE												33.64		1		1			
3+515.00	LT	SERVICE												32.48		1		1			
3+535.00	7.00 RT	HYDRANT & GATE VALVE	3+535.00	8.49 RT	3.3														1		EXTEND LEAD
3+538.5	LT	SERVICE												32.59		1		1			
3+584.00	LT	SERVICE												32.23		1		1			
3+606.5	4.5 RT	GATE VALVE BOX																			
3+626.34	LT	STUB				16.0				1									1		⚠ 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														1		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														1	1	EXTEND LEAD
3+796.00	22.00 LT	HYDRANT & GATE VALVE	3+796.00	23.19 LT	6.6														1	1	EXTEND LEAD
3+800.00	17.0 LT	CONNECT TO EXISTING						194.3				1							1		
3+890.00	21.80 LT	HYDRANT & GATE VALVE																			SALVAGE

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
⚠	RAB	3/13/99	MODIFIED 200mm & 300mm GV & BOX COLUMNS.			
			MODIFIED 200mm,250mm & 300mm WM COLUMNS.			
			ADDED 250mm GV & BOX COLUMN.			
⚠	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.
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
9 / 230

q:\civil\clients\a_thru_l\anoka\9806\spreads\ske806tab10.dgn
15 APR 1999 11:25:57

G WATER MAIN SUMMARY CON'T

STATION	LOCATION	TYPE	RELOCATE TO STATION	RELOCATE TO LOCATION	150mm DIP (m)	FURNISH & INSTALL 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	CONNECT TO EXIST WM	F & I HYDRANT	REMARKS
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		⚠
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	

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

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.
Date: MARCH 15, 1999 Reg. No. 18612

SEH

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
10 / 230

15 APR 1999 12:53:18 q:\civil\clients\a_thru_f\anoka\9806\spreads\akc8061tab10a.dgn

H CONCRETE PAVEMENT SUMMARY

STATION		LOCATION	CURB AND GUTTER B412 m	CURB AND GUTTER B418 m	CURB AND GUTTER B612 m	CURB AND GUTTER B618 m	75 mm CONC WALK m2	75 mm CONC WALK SPECIAL m2	100mm CONC⑤ WALK m2	③ NOSE EACH	CONCRETE DRIVE④ 200 mm m2	CONC DRIVE TYPE SPECIAL 200 mm m2
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		MEDIAN								1		
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		MEDIAN								1		
2+018.18	2+547.81	C.S.A.H. 116 LT		541.60								
2+031.42		MEDIAN								1		
2+031.42	2+370.23	MEDIAN	672.30				1000.22					
2+370.23		MEDIAN								1		
2+376.17		MEDIAN								1		
2+376.17	2+528.81	MEDIAN	300.30				242.04					
2+520.00	2+547.81	C.S.A.H. 116 RT							14.50			
2+528.81		MEDIAN								1		
2+540.16	2+552.17	C.S.A.H. 116 RT				37.60						
2+552.17	2+738.97	C.S.A.H. 116 RT		192.70								
2+547.81	2+738.97	C.S.A.H. 116 LT		189.20								
2+565.30		MEDIAN								1		
2+565.30	2+729.49	MEDIAN	324.00				134.62					
2+729.49		MEDIAN								1		
2+737.54		MEDIAN								1		
2+737.54	2+926.75	MEDIAN	375.10				808.29					
2+738.97	2+935.34	C.S.A.H. 116 RT		206.17					254.34			
2+738.97	2+846.27	C.S.A.H. 116 LT		114.50								
2+852.96	3+023.96	C.S.A.H. 116 LT		173.20								
2+926.75		MEDIAN								1		
2+935.34	3+032.97	C.S.A.H. 116 RT		96.20								
2+949.55		MEDIAN								1		
2+949.55	3+029.19	MEDIAN	158.81				65.14					
3+059.08	3+238.91	C.S.A.H. 116①LT		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		MEDIAN								1		
3+229.18		ISLAND								1		
3+229.18	3+240.34	ISLAND	42.60				96.30					
3+236.80		MEDIAN ②								1		
3+236.80	3+758.19	MEDIAN	1019.30				1808.40					
3+240.34		ISLAND								2		
3+238.91	3+629.80	C.S.A.H. 116 LT		393.80								
3+513.86	3+774.24	C.S.A.H. 116 RT		261.60								
3+629.80	3+774.24	C.S.A.H. 116 LT		151.30								
3+758.19		MEDIAN								1		
3+774.24	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+791.33		MEDIAN								1		
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		MEDIAN								1		
4+305.63	4+754.43	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								1		

CONCRETE PAVEMENT SUMMARY (CON'T)

STATION		LOCATION	CURB AND GUTTER B412 m	CURB AND GUTTER B418 m	CURB AND GUTTER B612 m	CURB AND GUTTER B618 m	75 mm CONC WALK m2	75 mm CONC WALK SPECIAL m2	100 mm CONC⑤ WALK m2	③ NOSE EACH	CONCRETE DRIVE④ 200mm m2	CONC DRIVE TYPE SPECIAL 200 mm m2
4+321.57	4+978.62	MEDIAN	1311.10					763.50				
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		MEDIAN								1		
4+985.03	5+261.71	C.S.A.H. 116 LT		257.70							29.28	
5+011.01		MEDIAN								1		
5+011.01	5+261.71	MEDIAN	472.00				637.36					
FRONTAGE RD.												
1+652.20	1+890.44	RT							359.00			
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							98.30			
1+977.63	2+382.44	RT							415.28			
2+050.00	2+170.00	RT				120.00						
2+382.44	2+543.00	RT							337.84			
2+392.00	2+543.01	RT				55.80						
SCHOOL					243.09				299.15			
TOTALS			6676.46	6884.77	243.09	1193.35	7643.65	1338.10	1879.83	22	29.28	

NOTES:

① 50.0 m MOUNTABLE CONCRETE CURB AND GUTTER (SEE STREET DETAILS)

② 62.0 m MOUNTABLE CONCRETE CURB AND GUTTER (SEE STREET DETAILS)

③ PAID FOR AS 2531.602 CONCRETE MEDIAN NOSE DESIGN 7113

④ USE HIGH EARLY STRENGTH CONCRETE

⑤ AGG. BASE CL5 100 mm THICK SHALL NOT BE PAID FOR SEPARATELY

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.

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

11 / 230

q:\civil\clients\a..thru..r\anoka\9806\spreads\dke806tab13.dgn
25 MAR 1999 11:14:31

I BITUMINOUS PAVEMENT SUMMARY

LOCATION		HV WE47540B	MV WE45035B	① MV NW35035B	① HV NM37540B	MV WE45035B	TACK
		WEARING	WEARING	NONWEARING	NONWEARING	TRAIL	COAT
		t	t	t	t	m2	l
WB C.S.A.H. 116							
1+409.50	1+534.27					436.18	
1+571.04	1+639.57					336.88	
1+658.85	1+731.38					231.99	
1+659.41	1+735.10	44.87		67.30	44.87		84.50
1+731.38	2+018.18	418.07		627.11	418.07	955.09	787.37
2+018.18	2+547.81	840.11		1260.17	840.11	1793.08	1582.21
2+547.81	2+854.51	491.38		737.07	491.38	964.72	925.44
2+854.51	3+238.91					1361.94	
2+854.51	3+023.96	294.78		442.17	294.78		555.17
3+059.08	3+238.91	252.09		378.14	252.09		474.78
3+238.91	3+629.80	561.03		841.54	561.03	1320.46	1056.60
3+629.80	3+774.24	225.72		338.58	225.72	441.38	425.11
3+774.24	3+993.80	400.66		600.99	400.66		754.58
3+993.80	4+305.63	442.97		664.45	442.97		834.25
4+305.63	4+985.03	984.60		1476.90	984.60		1854.33
4+985.03	5+261.71	438.24		657.36	438.24		825.35
EB C.S.A.H. 116							
1+660.00	2+018.18	517.13		775.69	517.13		973.93
2+018.18	2+547.81	828.85		1243.28	828.85		1561.01
2+547.81	2+935.34	609.01		913.51	609.01		1146.96
2+935.34	3+032.97	138.45		207.68	138.45		260.75
3+068.15	3+139.15	126.89		190.33	126.89		238.97
3+139.15	3+238.91	196.84		295.26	196.84		370.71
3+238.91	3+774.24	872.60		1308.90	872.60		1643.40
3+774.24	3+993.80	348.95		523.43	348.95	699.42	657.20
3+993.80	4+305.63	510.36		765.55	510.36	1075.25	961.18
4+305.63	4+754.43	603.06		904.59	603.06	1550.08	1135.76
4+754.43	4+985.03	431.23		646.84	431.23	787.95	812.14
4+985.03	5+261.71	364.41		546.61	364.41		686.30
4+985.03	5+311.51					1091.90	
5+320.60	5+412.07					329.77	
FRONTAGE RD.							
1+673.27	1+786.33		113.85	113.85			214.42
1+786.33	2+496.90 N(1/2)		346.61	346.61			652.77
1+786.33	2+496.90 S(1/2)		298.27				687.04
2+050.00	2+170.00 S(1/2)		66.53	66.53			113.9
2+496.90	2+546.99		103.07	103.07			194.12
SCHOOL DRIVE			186.00	186.00			349.00
TOTAL		10942.30	1114.34	17229.51	10942.30	13376.08	22819.25

① QUANTITY BASED ON PLAN THICKNESS PLUS 10%.

② AGGREGATE BASE CLASS 5A 100 mm THICKNESS. SHALL NOT BE PAID FOR SEPARATELY. BUT SHALL BE INCLUDED IN THE COST OF THE BITUMINOUS.

J AGGREGATE BASE SUMMARY

LOCATION		BASE	BASE② (TRAIL)	CONC② WALK
		(M3)	(M3)	(M3)
WB C.S.A.H. 116				
1+409.5	1+534.27		48.5	
1+571.04	1+639.59		35.6	
1+658.85	1+731.38		25.7	
1+659.41	1+735.10	67.1		
1+731.38	2+018.18	619.8	105.8	
2+018.18	2+547.81	1112.6	199.2	
2+547.81	2+854.51	716.0	107.8	
2+854.51	3+238.91		150.0	
2+854.51	3+023.96	425.0		
3+059.08	3+238.91	372.7		
3+238.91	3+629.80	838.1	146.6	
3+629.80	3+774.24	329.3	49.2	
3+774.24	3+993.80	574.3		
3+993.80	4+305.63	659.8		
4+305.63	4+985.03	1462.7		
4+985.03	5+261.71	640.9		
EB C.S.A.H. 116				
1+660.00	2+018.18	763.8		2.7
2+018.18	2+547.81	1229.1		1.5
2+547.81	2+935.34	891.1		25.4
2+935.34	3+032.97	204.3		
3+068.15	3+139.15	183.1		
3+139.15	3+238.91	278.0		7.5
3+238.91	3+774.24	1275.3		
3+774.24	3+993.80	509.7	77.8	
3+993.80	4+305.63	741.1	118.8	
4+305.63	4+754.43	907.8	171.7	
4+754.43	4+985.03	615.8	86.6	
4+985.03	5+261.71	548.9		
4+985.03	5.311.51		121.5	
5+320.66	5+412.07		36.5	
FRONTAGE ROAD				
1+673.27	1+786.33	1204.3		17.0
1+786.33	2+496.90 (N 1/2)	3689.7		79.6
2+050.00	2+170.00 (S1/2)	88.2		
2+496.90	2+546.99	1002.7		24.1
SCHOOL DRIVE		220.7		29.9
TOTAL		22171.9	1481.3	187.7

K TURF ESTABLISHMENT

STATION		LOCATION	SOD		SEED			EROSION	MULCH
			LAWN	SALT RES	SEEDING	MIX 25A	MIX 70A	BLANKET	t
C.S.A.H. 116			m2	m2	ha	kg	kg	m2	
1+735.10	2+018.18	LT	352.52	484.47					
2+018.18	2+547.81	LT	498.40	1158.87					
POND 1 (2+460.00)		LT			0.27	13.35		2669.00	
2+540.55	2+738.97	RT		670.11					
2+547.81	2+738.97	LT	144.43	414.56					
CHURCH / SCHOOL		LT	900.00						
2+738.97	2+854.51	LT	276.86	252.90					
2+738.97	2+935.34	RT	440.16	391.73					
2+854.51	3+023.96	LT	443.35	364.75					
2+935.34	3+032.97	RT	271.70	271.70					
POND 2 (2+985.00)		LT			0.10	5.23		1046	
3+015.00	3+047.00	RT			0.02	1.15		230	
3+017.22	3+028.97	LT			0.01	0.40		80.00	
3+043.89	3.065.02	LT			0.01	0.45		90.00	
3+059.08	3+238.91	LT	1075.00	375.03					
3+064.00	3+076.00	RT			0.01	0.50		100	
3+068.15	3+139.15	RT	476.22	476.22					
POND 3 (3+100.00)		RT			0.19	9.38		1875	
3+139.15	3+513.86	RT		1733.21					
3+238.91	3+629.80	LT	476.14	1109.69					
3+513.86	3+774.24	RT		1271.89					
3+629.80	3+774.24	LT	488.54	289.02					0.73
3+774.24	3+993.80	LT			0.16		8.15		
3+774.24	3+993.80	RT	1012.52	379.57					
POND 4 (3+820.00)		RT			0.17	8.31		1661	
3+993.80	4+305.63	LT		1026.46					
3+993.80	4+305.63	RT	863.11	1518.52					1.04
4+305.63	4+754.43	LT			0.23		11.50		
4+305.63	4+754.43	RT	859.20	1914.10					0.21
4+754.43	4+985.03	LT			0.05		2.32		
4+754.43	4+985.03	RT	633.64	1123.68					
4+985.03	5+261.71	LT	372.52	830.00					
4+985.03	5+261.71	RT	598.76	1324.77					
FRONTAGE RD.									
1+652.20	2+378.58	RT		291.69					
2+378.58	2+543.01	RT		178.47					0.40
MISCELLANEOUS			2036.61	3570.28		7.75	4.39	1550.20	2.37
TOTALS			12219.68	21421.69	1.21	46.52	26.36	9301.20	

L CONSTRUCT MODULAR CONCRETE BLOCK RETAINING WALLS

STATION		DESCRIPTION		m2
3+556.7	3+581.7	8.6	RT	22.32
4+040.0	4+250.0	23.50 - 22.00	LT	840.86

M PERMANENT PAVEMENT MARKING

ITEM	UNIT	QUANTITY
PAVEMENT MESSAGE (LEFT ARROW)-EPOXY	EACH	10
PAVEMENT MESSAGE (RIGHT ARROW)-EPOXY	EACH	10
100 mm SOLID LINE YELLOW-EPOXY	m	6960
100 mm SOLID LINE WHITE-EPOXY	m	10110
100 mm BROKEN LINE YELLOW-EPOXY	m	815
100 mm BROKEN LINE WHITE-EPOXY	m	6980
100 mm DOUBLE SOLID LINE YELLOW-EPOXY	m	100
400 mm SOLID LINE WHITE-EPOXY	m	140
100 mm SOLID LINE WHITE-PAINT TEMPORARY	m	4950
100 mm SOLID LINE YELOW-PAINT TEMPORARY	m	5150
ZEBRA CROSSWALK WHITE-EPOXY	m2	320

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
	RAB	4/13/99	CORRECTED CHART K			
	MAM	4/13/99	NOTE ②			

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

SEH

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

N

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

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 ProfessionalEngineer under the laws of the state of Minnesota.
Date MARCH 15,1999 Reg. No. 18612

SEH

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

13
230

17 MAR 99 16:33:05
a:\civil\clients\so_thru_f\anoka\9806\storm\akc806ss4.dgn

0

DRAINAGE TABULATION

STRUCT NO.	STATION	(1) LOCATION	MH OR CB	STRUCTURE DESIGN	⚠1 (2) PAY HEIGHT m	⚠2 (3) TOP OF CASTING ELEV	⚠2 (6) OUTLET ELEV	DRAINS TO EXIST	DRAINS TO NEW	GRADE IN %	F & I CAST ASSY.	(4) F & I STEPS	⚠2 300mm RCP m	⚠2 375mm RCP m	⚠2 450mm RCP m	525mm RCP m	FURNISH AND INSTALL RC PIPE SEWER DESIGN 3006 600mm RCP m	675mm RCP m	750mm RCP m	825mm RCP m	900mm RCP m	560mm SPAN RCPA ⚠ m	725mm SPAN RCPA m	⚠2 920mm SPAN RCPA m	RIP RAP m3	(5) RCP APRON EACH	CLASS OF PIPE
100	1+704.532	13.653 RT	MH	SPECIAL 2	2.12	266.549	265.136	exist		0.50	A-7D	YES					17.33										III
101	1+720.749	7.543 RT	CB	G	1.36	266.636	265.222		100	0.50	B-1																V
102	1+732.749	5.657 RT	CB	H	1.11	266.700	265.535		103	0.50	B-1		12.00														III
103	1+720.749	5.657 RT	CB	G	1.41	266.691	265.231		101	0.50	B-1						1.89										III
105	1+720.749	3.857 LT	CB	G	1.59	266.925	265.279		103	0.50	B-1	YES					9.51										III
106	1+732.749	8.138 LT	CB	G	1.49	266.907	265.362		107	0.50	B-1	YES					12.00										III
107	1+720.749	8.461 LT	CB	G	1.54	266.898	265.302		105	0.50	B-1	YES					4.60										III
109	1+711.949	5.657 RT	CB	H	1.12	266.696	265.519		103	0.50	B-1		8.80														V
111	1+786.074	7.543 RT	CB	G	1.33	267.057	265.671		101	0.50	B-1				65.33												V
113	1+786.112	5.657 RT	CB	H	1.06	266.911	265.801		111	0.50	B-1		1.89														V
115	1+906.236	8.143 RT	CB	G	1.40	267.782	266.331		111	0.50	B-1			120.00													V
117	1+906.236	5.657 RT	CB	G	1.05	267.512	266.404		115	0.50	B-1		2.49														V
119	1+906.236	7.457 LT	CB	H	1.14	267.664	266.470		117	0.50	B-1		13.11														V
121	1+969.115	8.143 RT	CB	H	0.93	267.691	266.708		115	0.50	B-1		63.18														V
124	1+759.017	21.908 LT	CB	G	0.92	266.686	265.708		125	0.50	B-1			12.00													III
125	1+747.021	22.230 LT	CB	G	1.16	266.676	265.462		106	0.50	B-1						20.06										V
127	1+844.795	20.357 LT	CB	G	1.01	267.199	266.140		124	0.50	B-1			86.20													V
128	1+906.236	18.857 LT	CB	G	0.95	267.512	266.507		127	0.50	B-1		61.46														V
129	1+964.795	18.857 LT	CB	H	0.94	267.790	266.800		128	0.50	B-1		58.56														V
200	2+440.263	32.265 LT	APRON	APRON	n/a	n/a	262.966		pond	n/a	n/a														10.60	1	V
201	2+440.263	19.899 LT	CB	2100-M4020	1.75	264.808	263.002		200	0.30	B-1	YES									11.92						III
202	2+461.632	20.055 LT	CB	1800-M4020	1.60	264.718	263.066		201	0.30	B-1	YES									21.37						III
203	2+473.632	20.050 LT	CB	1800-M4020	1.55	264.705	263.102		202	0.30	B-1	YES									12.00						III
205	2+473.042	9.191 LT	CB	1500-M4020	1.78	265.028	263.197		203	0.30	B-1	YES								11.02							V
206	2+461.632	7.456 LT	CB	G	1.03	264.962	263.880		207	2.25	B-1				12.00												III
207	2+473.042	7.306 LT	CB	1500-M4020	1.70	264.952	263.203		205	0.30	B-1	YES								1.89							III
209	2+473.041	6.821 RT	CB	1500-M4020	1.49	264.790	263.246		207	0.30	B-1	YES								14.43							V
211	2+461.632	6.214 RT	CB	G	1.13	264.788	263.603		209	0.50	B-1				11.43												III
213	2+482.862	9.041 RT	CB	1500-M4020	1.42	264.811	263.338		209	0.50	B-1								10.07								V
215	2+485.632	7.156 RT	CB	G	1.04	264.802	263.712		213	2.00	B-1				3.44												V
217	2+482.030	17.349 RT	CB	EXIST		264.842	263.488		213	0.35	B-1																V
219	2+514.647	18.672 RT	MH	F	1.68	265.530	263.615	217		0.35	A-7D	YES															III
221	2+528.201	33.646 RT	CB	F	2.04	265.775	263.684		219	0.35	B-1	YES					19.76										III
223	2+531.482	46.167 RT	MH	EXIST		265.920	263.730		221	0.35	A-7D						12.94										V
225	2+539.960	46.588 RT	CB	H	1.17	265.920	264.693	223		1.50	B-1		8.49														III
227	2+485.633	20.248 LT	CB	G	1.20	264.718	263.462		203	1.00	B-1						12.00										III
229	2+536.552	18.849 LT	CB	G	1.11	265.072	263.906		227	0.75	B-1					51.32											V
231	2+567.461	20.357 LT	CB	G	1.13	265.409	264.221		229	0.75	B-1				34.05												V
233	2+564.461	5.743 LT	CB	G	1.08	265.598	264.467		234	0.50	B-1		3.11														V
234⚠	2+567.461	5.743 LT	CB	G	1.12	265.630	264.451		231	0.50	B-1		14.61														V
235	2+564.461	3.857 LT	CB	H	1.17	265.703	264.476		233	0.50	B-1		1.89														V
236	2+587.973	36.516 LT	STOOL	G	0.83	265.600	264.579		231	1.00	M-11		23.75														V
237	2+567.461	5.657 RT	CB	H	0.91	265.469	264.508		234	0.50	B-1		11.40														V
238	2+595.833	65.616 LT	APRON	APRON	n/a	n/a	265.899		236	4.38	n/a		30.14													1	V
239	2+663.355	20.357 LT	CB	G	1.17	266.432	265.209		231	1.00	B-1			92.78													V
240	2+674.371	7.457 LT	CB	G	1.25	266.704	265.396		239	0.75	B-1		16.96														V
241	2+674.371	7.157 RT	CB	H	1.02	266.544	265.469		240	0.50	B-1		14.61														III
243	2+367.756	18.856 LT	CB	G	1.57	265.408	263.788		201	0.75	B-1	YES					72.12										V
245	2+367.756	9.343 LT	CB	G	1.63	265.726	264.040		243	0.75	B-1	YES		9.51													V
247	2+367.756	7.457 LT	CB	G	1.47	265.644	264.122		245	1.00	B-1	YES	1.89														V
249	2+367.756	5.657 RT	CB	H	1.19	265.492	264.253		247	1.00	B-1		13.11														V
251	2+272.120	18.856 LT	CB	G	1.53	266.206	264.625		243	2.00	B-1	YES			95.64												V
253	2+272.120	9.343 LT	CB	G	1.53	266.522	264.935		251	2.00	B-1		9.51														V
255	2+272.120	7.457 LT	CB	G	1.41	266.440	264.973		253	2.00	B-1		1.89														V
257	2+272.120	5.657 RT	CB	G	1.00	266.288	265.235		255	2.00	B-1		13.11														V
259	2+272.120	8.143 RT	CB	H	1.22	266.556	265.285		257	2.00	B-1		2.49														V
261	2+208.313	18.857 LT	CB	G	1.39	266.822	265.383		251	1.00	B-1		63.81														V
263	2+208.313	5.657 RT	CB	H	1.20	266.822	265.567		261	0.75	B-1		24.51														V
265	2+130.520	20.357 LT	CB	G	1.44	267.458	265.965		261	0.75	B-1		77.56														V
267	2+130.520	5.657 RT	CB	G	1.32	267.466	266.095		265	0.50	B-1		26.01														V
269	2+130.520	8.143 RT	CB	H	1.13	267.326	266.145		267	2.00	B-1		2.49														V
271	2+564.664	69.735 RT	MH	G	0.77	263.560	262.559	270		n/a	A-7D																V
273	2+540.264	41.508 RT	MH	F	2.98	265.920	262.701		271	0.38	A-7D	YES		37.31													V
274	2+523.938	26.631 LT	SKIM	SPECIAL 1	2.23	265.000	262.442		273	0.38	SPEC			70.12													V
275	2+520.000	38.352 LT	APRON	APRON	n/a	n/a	262.600		274	0.89	n/a			17.82											8.30	1	III
300	2+996.050	32.234 LT	APRON	APRON	n/a	n/a	262.738		pond	n/a	n/a																III
301	2+996.050	18.707 LT	CB	1500-M4020	1.82	264.681	262.804		300	0.50	B-1	YES							13.38								III
303	3+008.050	18.857 LT	CB	G	1.42	264.706	263.228		301	1.50	B-1				12.00												III
305	2+996.050	5.593 LT	CB	1500-M4020	1.93	264.915	262.935		301	1.00	B-1	YES							13.11								V
306	3+008.050	5.743 LT	CB	G	1.32	264.858	263.481		305	2.00	B-1			12.00													III
307	2+996.050	3.707 LT	CB	1500-M4020	1.91	264.915	262.954		305	1.00	B-1	YES							1.89								III
309	2+996.050	5.507 RT	CB	1500-M4020	1.58	264.681	263.049		307	1.00	B-1	YES							9.51								V
311	3+010.050	5.656 RT	CB	G	1.16	264.715	263.502		309	1.00	B-1				14.00												V

NO.	BY	DATE	REVISIONS
⚠	BAR	4/13/99	MODIFIED PAY HEIGHTS COLUMN
⚠	RAB	4/13/99	CHANGES MADE FOR ADDENDUM NO. 1

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.
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

DRAINAGE TABULATION

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

0

DRAINAGE TABULATION

STRUCT NO.	STATION	(1) LOCATION	MH OR CB	STRUCTURE DESIGN	(1)(2) PAY HEIGHT m	(2)(3) TOP OF CASTING ELEV	(2)(6) OUTLET ELEV	DRAINS TO EXIST	DRAINS TO NEW	GRADE IN %	F & I CAST ASSY.	(4) F & I STEPS	(2) 300mm RCP m	(2) 375mm RCP m	(2) 450mm RCP m	525mm RCP m	600mm RCP m	675mm RCP m	750mm RCP m	825mm RCP m	900mm RCP m	560mm SPAN RCPA (2) m	725mm SPAN RCPA m	(2) 920mm SPAN RCPA m	RIP RAP m3	(5) RCP APRON EACH	CLASS OF PIPE
313	2+984.050	5.657 RT	CB	G	1.18	264.706	263.472		309	1.00	B-1				12.00												V
315	2+986.624	18.857 LT	CB	G	1.45	264.697	263.190		301	1.00	B-1				9.43												V
317	2+919.847	20.357 LT	CB	G	1.59	265.563	263.919		315	1.00	B-1	YES			66.79												V
319	2+913.981	9.300 LT	CB	G	1.78	265.906	264.074		317	0.75	B-1	YES		12.52													V
321	2+913.981	3.857 LT	CB	G	1.74	265.906	264.114		319	0.75	B-1	YES		5.44													V
323	2+919.847	7.157 RT	CB	G	1.18	265.563	264.331		321	1.25	B-1		12.48														V
325	2+931.265	18.142 RT	CB	G	1.20	265.786	264.529		323	1.25	B-1		15.84														V
326	2+931.317	19.141 RT	CB	H	1.17	265.786	264.557		325	0.75	B-1		2.00														V
327	2+945.401	17.427 RT	CB	H	1.10	265.786	264.635		325	0.75	B-1		14.15														V
329	2+839.867	18.853 LT	CB	G	1.27	266.758	265.433		317	1.75	B-1		79.59														V
331	2+840.387	7.156 RT	CB	H	1.13	266.745	265.563		329	0.50	B-1		26.01														V
333	2+982.809	56.068 LT	APRON	APRON	n/a	262.205	262.500		334	7.87	n/a			3.75												1	V
334	2+980.344	58.899 LT	SKIM	SPECIAL 1	1.08	263.600	262.205		335	2.10	SPEC			4.38													V
335	2+977.445	62.176 LT	APRON	APRON	n/a	n/a	262.638		creek	n/a	n/a														3.40	1	V
400	3+114.136	18.263 RT	APRON	APRON	n/a	n/a	262.700		pond		n/a														8.30	1	V
401	3+114.156	7.007 RT	CB	1500-M4020	3.13	265.919	262.733		400	0.30	B-1	YES								11.11							III
403	3+114.333	6.428 LT	CB	1500-M4020	1.95	266.080	264.078		401	0.75	B-1	YES							13.74								III
405	3+114.156	18.557 LT	CB	1800-M4020	1.12	265.927	264.750		403	0.75	B-1								12.28								III
407	3+123.341	18.707 LT	CB	1500-M4020	1.22	266.091	264.819		405	0.75	B-1								9.19								III
409	3+155.277	18.707 LT	CB	1500-M4020	1.62	266.735	265.058		407	0.75	B-1	YES							31.94								III
411	3+155.277	9.343 LT	CB	G	1.42	266.968	265.495		409	0.75	B-1		9.51														V
413	3+155.277	7.457 LT	CB	G	1.32	266.886	265.510		411	0.75	B-1		1.89														V
415	3+155.277	5.657 RT	CB	G	1.07	266.734	265.608		413	0.75	B-1		13.11														V
417	3+160.277	5.657 RT	CB	H	1.14	266.834	265.645		415	0.75	B-1		5.00														V
419	3+266.861	20.207 LT	MH	1500-M4020	2.43	268.133	265.646		409	0.50	B-1	YES							111.59								III
421	3+352.828	20.207 LT	CB	1500-M4020	2.17	268.275	266.046		419	0.50	B-1	YES							85.97								III
423	3+352.828	5.657 RT	CB	G	1.17	268.283	267.060		421	2.50	B-1		26.01														V
425	3+387.699	18.857 LT	CB	G	1.72	268.139	266.368		421	0.75	B-1	YES						34.90									III
427	3+391.617	18.707 LT	CB	1500-M4020	1.69	268.138	266.398		425	0.77	B-1	YES						3.92									III
429	3+391.616	9.349 LT	CB	G	1.85	268.372	266.469		427	0.75	B-1	YES						9.51									III
431	3+391.616	3.851 LT	CB	G	1.81	268.372	266.510		429	0.75	B-1	YES						5.50									III
433	3+391.616	6.686 RT	CB	G	1.50	268.142	266.589		431	0.75	B-1	YES						10.54									III
435	3+385.670	6.289 RT	CB	H	1.21	268.204	266.940		433	0.75	B-1		5.96														V
437	3+399.677	7.342 RT	CB	H	1.33	268.297	266.915		433	1.00	B-1			8.09													V
439	3+403.466	18.857 LT	CB	G	1.43	268.153	266.670		427	0.75	B-1				11.85												V
441	3+477.993	18.851 LT	CB	G	1.46	268.554	267.043		437	0.73	B-1				74.53												V
443	3+477.993	7.151 RT	CB	H	1.14	268.556	267.358		441	0.75	B-1		26.00														V
445	3+529.653	18.857 LT	CB	G	1.37	268.846	267.421		441	0.73	B-1				51.66												V
446	3+555.180	28.911 LT	STOOL	G	0.63	268.446	267.626		445	0.30	M-11		27.44														V
447	3+529.660	9.343 LT	CB	G	1.26	268.908	267.592		445	0.50	B-1		9.51														V
449	3+529.660	3.857 LT	CB	G	1.23	268.908	267.620		447	0.50	B-1		5.49														V
451	3+529.660	5.657 RT	CB	H	1.12	268.846	267.669		449	0.50	B-1		9.51														V
453	3+076.712	30.126 RT	APRON	APRON	n/a	n/a	262.500		454	1.31	n/a		8.00													1	V
454	3+071.584	31.335 RT	SKIM	SPECIAL 1	1.48	264.500	262.700		455	1.00	SPEC		5.27														V
455	3+065.331	32.809 RT	APRON	APRON	n/a	n/a	262.250		creek	n/a	n/a														3.40	1	V
500	3+794.797	22.374 RT	APRON	APRON	n/a	n/a	267.614		pond		n/a														4.80	1	V
501	3+784.077	22.243 RT	CB	G	1.06	268.768	267.656		500	0.40	B-1					10.53											III
503	3+765.228	23.931 RT	CB	G	1.17	268.953	267.732		501	0.40	B-1					18.92											III
505	3+748.876	7.151 RT	CB	G	1.17	269.108	267.888		503	0.40	B-1				23.43												V
507	3+756.251	7.457 LT	CB	G	1.17	269.239	268.012		505	0.40	B-1			16.36													V
509	3+756.251	9.343 LT	CB	G	1.25	269.321	268.020		507	0.40	B-1			1.89													V
511	3+751.220	18.857 LT	CB	H	0.99	269.107	268.063		509	0.40	B-1			10.76													V
513	3+841.925	14.652 RT	APRON	APRON	n/a	n/a	267.614		pond	n/a	n/a														8.30	1	V
515	3+841.925	5.357 RT	CB	1800-M4020	1.15	268.847	267.641		513	0.30	B-1													9.00			IIA
517	3+841.925	5.743 LT	CB	G	1.18	268.998	267.768		515	0.30	B-1													11.40			IIA
519	3+841.925	20.207 LT	CB	1500-M4020	0.97	268.838	267.811		517	0.30	B-1												14.61				IIA
521	3+848.630	20.357 LT	CB	G	0.95	268.837	267.831		519	0.20	B-1											6.70					IIA
523	3+860.630	20.357 LT	CB	G	0.93	268.841	267.855		521	0.20	B-1											12.00					IIA
525	3+848.630	5.743 LT	CB	G	1.15	268.997	267.794		517	0.30	B-1				6.70												V
527	3+848.630	3.858 LT	CB	H	1.22	269.079	267.801		525	0.50	B-1			1.89													V
528	3+848.630	5.357 RT	CB	1800-M4020	1.13	268.845	267.662		515	0.30	B-1													6.70			IIA
529	3+860.630	6.015 RT	CB	G	1.03	268.842	267.757		528	0.30	B-1												12.01				IIA
531	3+920.000	7.157 RT	CB	G	1.01	268.997	267.935		529	0.30	B-1												59.38				IIA
533	3+919.759	18.857 LT	CB	H	0.87	269.004	268.076		531	0.30	B-1			26.02													V
535	4+010.770	5.651 RT	CB	G	1.23	269.491	268.207		531	0.30	B-1												90.78				IIA
537	4+010.404	3.851 LT	CB	G	1.37	269.725	268.298		535	0.30	B-1			9.51													V
539	4+010.192	9.349 LT	CB	G	1.36	269.725	268.314		537	0.30	B-1			5.50													V
541	4+009.768	20.351 LT	CB	G	1.01	269.477	268.409		539	0.30	B-1		11.01														V
543	4+084.768	5.651 RT	CB	G	1.26	269.892	268.577		535	0.50	B-1				74.00												V
545	4+198.311	7.151 RT	CB	G	1.30	270.501	269.145		543	0.50	B-1				113.56												V
547	4+198.311	18.851 LT	CB	H	1.06	270.509	269.400		545	0.50	B-1		26.00														V
549	4+322.349	5.657 RT	CB	G	1.37	271.124	269.705		545	0.40	B-1			124.04													V
551	4+323.249	3.857 LT	CB	G	1.51	271.361	269.801		549	0.40	B-1			9.54													V

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	BAR	4/13/99	MODIFIED PAY HEIGHTS COLUMN			
2	BAR	4/13/99	CHANGES MADE FOR ADDENDUM NO. 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.

Date: MARCH 15, 1999 Reg. No. 18612

SEH

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

DRAINAGE TABULATION

FILE NO. ANOKA9806.01

DATE MARCH 15,1999

O

DRAINAGE TABULATION

STRUCT NO.	STATION	LOCATION (1)	MH OR CB	STRUCTURE DESIGN	PAY HEIGHT (2) m	TOP OF CASTING ELEV (3)	OUTLET ELEV (6)	DRAINS TO EXIST	DRAINS TO NEW	GRADE IN %	F & I CAST ASSY.	F & I STEPS (4)	300mm RCP m	375mm RCP m	450mm RCP m	525mm RCP m	600mm RCP m	675mm RCP m	750mm RCP m	825mm RCP m	900mm RCP m	560mm SPAN RCPA m	725mm SPAN RCPA m	920mm SPAN RCPA m	RIP RAP m3	RCP APRON (5) EACH	CLASS OF PIPE
													FURNISH AND INSTALL RC PIPE SEWER DESIGN 3006														
553	4+323.249	5.743 LT	CB	G	1.41	271.279	269.810		551	0.40	B-1			1.89													V
555	4+322.349	20.125 LT	CB	H	1.19	271.116	269.869		553	0.40	B-1		14.64														V
557	3+847.733	48.548 RT	APRON	APRON	n/a	n/a	267.250		558	3.72	n/a			4.33												1	V
558	3+852.064	48.580 RT	SKIM	SPECIAL 1	1.09	268.500	267.089		559	0.50	SPEC			22.70													V
559	3+874.765	48.750 RT	APRON	APRON	n/a	n/a	267.500		out	n/a	n/a														3.40	1	V
561	3+981.326	24.175 LT	MH	EXIST	n/a	269.400	267.320			n/a	n/a																
563	3+960.241	16.257 RT	APRON	APRON	n/a	n/a	267.500		561	0.39	n/a		46.00													1	V
569	4+311.094	35.374 LT	CB	G	1.66	270.530	268.819		573	2.00	B-1		9.16														V
571	4+299.755	35.590 LT	CB	G	1.75	270.480	268.680		573	2.00	B-1		2.18														V
573	4+301.937	35.549 LT	MH	F	1.66	270.530	268.636			n/a	A-7D	YES															
600	4+595.022	27.915 RT	APRON	APRON	n/a	n/a	269.443		pond	n/a	n/a														8.30	1	V
601	4+585.665	5.356 RT	CB	1800-M4020	1.04	270.611	269.513		600	0.30	B-1													24.12			IIA
603	4+585.665	3.857 LT	CB	G	1.18	270.842	269.605		601	0.30	B-1												9.51				IIA
605	4+585.665	9.343 LT	CB	G	1.17	270.842	269.621		603	0.30	B-1												5.49				IIA
607	4+585.665	18.712 LT	CB	1500-M4020	0.85	270.614	269.711		605	0.30	B-1											9.52					IIA
609	4+573.607	18.859 LT	CB	G	0.83	270.613	269.734		607	0.20	B-1											12.00					IIA
611	4+597.607	18.861 LT	CB	G	0.83	270.613	269.734		607	0.20	B-1											12.00					IIA
613	4+578.726	5.656 RT	CB	G	0.89	270.613	269.673		601	0.30	B-1											12.00					IIA
615	4+510.657	5.656 RT	CB	G	0.87	270.790	269.862		613	0.30	B-1											63.07					IIA
617	4+510.653	3.857 LT	CB	G	1.06	271.036	269.919		615	0.30	B-1			9.51													V
619	4+510.651	9.343 LT	CB	G	0.98	271.036	269.998		617	0.30	B-1		5.49														V
621	4+510.647	18.859 LT	CB	H	0.72	270.802	270.027		619	0.30	B-1		9.52														V
623	4+597.727	5.356 RT	CB	1800-M4020	1.01	270.619	269.551		601	0.30	B-1													12.00			IIA
624	4+700.030	6.856 RT	CB	1800-M4020	1.15	271.057	269.858		623	0.30	B-1													102.32			IIA
625	4+770.855	5.356 RT	CB	1800-M4020	1.67	271.797	270.071		624	0.30	B-1													70.84			IIA
627	4+770.855	3.857 LT	CB	G	1.40	272.025	270.575		625	0.30	B-1		9.51														V
629	4+764.134	9.343 LT	CB	G	1.29	271.941	270.601		627	0.30	B-1		5.49														V
631	4+764.134	18.859 LT	CB	H	1.02	271.707	270.630		629	0.30	B-1		9.52														V
633	4+895.855	7.005 RT	CB	1500-M4020	3.12	273.622	270.446		625	0.30	B-1	YES							125.00								III
635	4+895.855	7.457 LT	CB	G	1.67	273.861	272.133		633	0.30	B-1		15.42														V
637	4+895.855	9.343 LT	CB	G	1.67	273.861	272.138		635	0.30	B-1		1.89														V
639	4+896.855	18.857 LT	CB	H	1.42	273.639	272.167		637	0.30	B-1		9.51														V
641	5+016.983	5.507 RT	CB	1500-M4020	3.32	274.185	270.809		633	0.30	B-1	YES							121.14								III
643	5+111.769	5.507 RT	CB	1500-M4020	2.43	273.574	271.094		641	0.30	B-1	YES							94.79								III
645	5+111.769	3.857 LT	CB	G	1.15	273.807	272.602		643	0.30	B-1		9.51														V
647	5+111.769	5.743 LT	CB	G	1.15	273.807	272.608		645	0.30	B-1		1.89														V
649	5+111.769	20.357 LT	CB	H	0.86	273.565	272.652		647	0.30	B-1		14.61														V
651	5+178.717	5.507 RT	CB	1500-M4020	1.69	273.062	271.323		643	0.30	B-1								66.95								III
653	5+253.717	5.767 RT	CB	1500-M4020	1.13	272.733	271.548		651	0.30	B-1								75.00								III
655	5+253.717	3.599 LT	CB	G	1.32	272.967	271.588		653	0.30	B-1						9.52										III
657	5+253.717	8.790 LT	CB	G	1.31	272.967	271.603		655	0.30	B-1						5.19										III
659	5+253.717	18.305 LT	CB	G	1.05	272.733	271.632		657	0.30	B-1						9.51										III
661	5+260.717	18.165 LT	CB	G	0.94	272.736	271.744		659	0.30	B-1				7.00												V
663	5+260.717	6.054 RT	CB	G	1.02	272.736	271.663		653	0.30	B-1				7.00												V
											TOTAL		1074.95	735.86	705.84	80.77	206.43	64.37	795.55	38.45	45.29	127.29	191.78	236.38			

NOTE:

1 ALL OFFSET LOCATIONS ARE TO CENTER OF STRUCTURE.
2 PAY HEIGHT = TOC - INV. OUT - CASTING DEPTH + 0.20 m
3 ALL TOP OF CASTING ELEVATIONS ARE TO OFFSET LOCATION.
4 COST OF F&I STEPS SHALL BE INCIDENTAL TO THE COST OF THE STRUCTURE.
5 TIE LAST 3 JOINTS AT APRON END(COST OF PIPE TIES INCIDENTAL TO PIPE)
6 STRUCTURE DESIGN TYPE SPECIAL 1 OUTLET ELEVATIONS ARE TO BOTTOM OF STRUCTURE.

P

CASTING ASSEMBLY SUMMARY

ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	STANDARD PLATE	QUANTITY	REMARK
A-7D	700-7			M4101	8	MANHOLE
		715		M4110		
B-1	801			M4126		CURB INLET
		810		M4149	161	
			821B	M4161		
M-11	RD. CONC.			M4143		STOOL
		731		M4143	2	
				TOTAL	171	

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	BAR	4/13/99	MODIFIED PAY HEIGHTS COLUMN			
2	RAB	4/13/99	CHANGES MADE FOR ADDENDUM NO. 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.

Date: MARCH 15, 1999 Reg. No. 18612

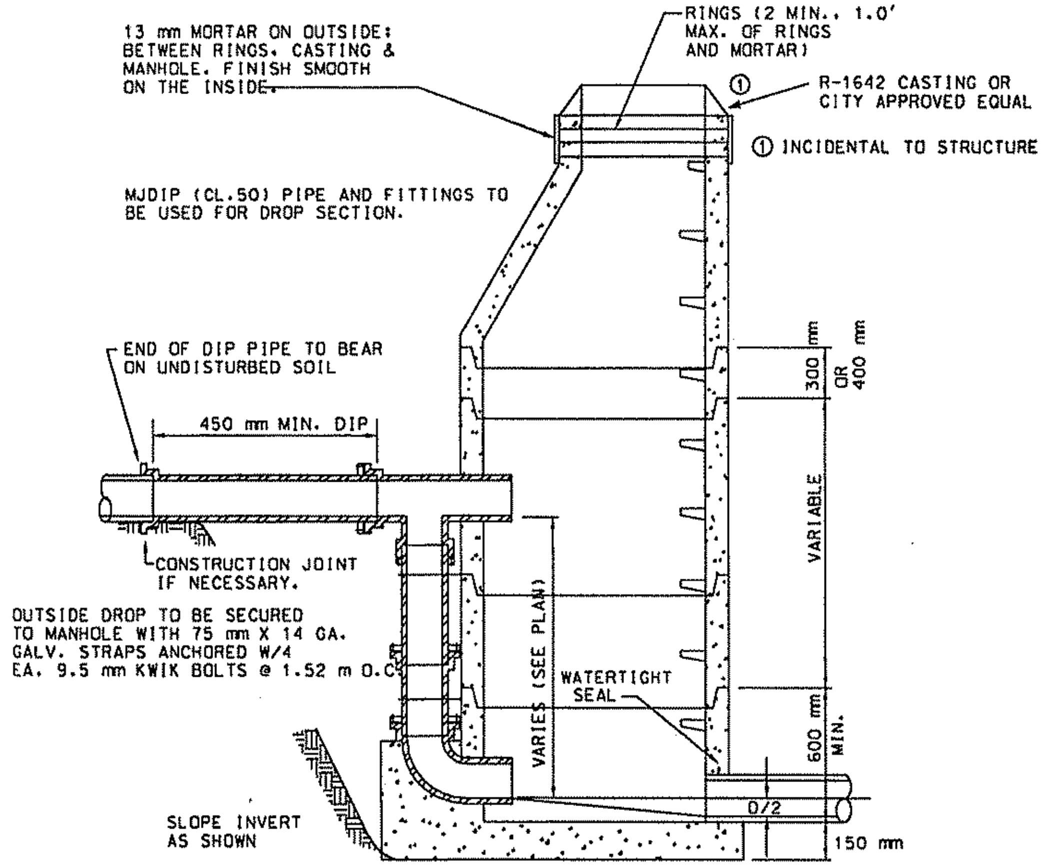
SEH

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

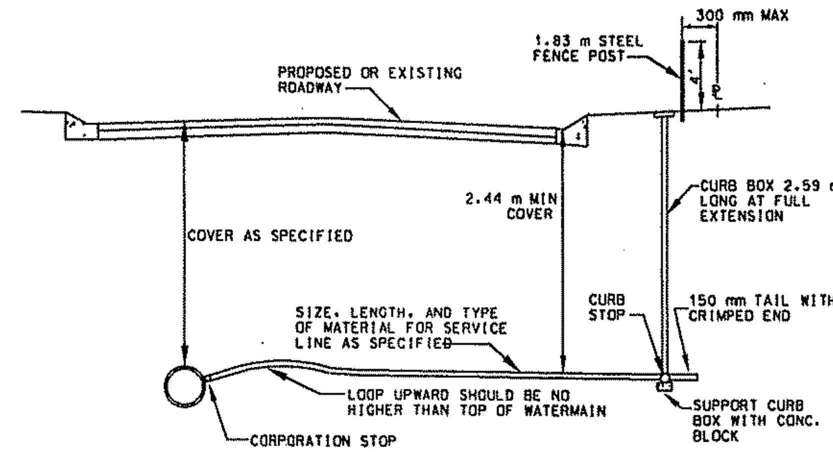
DRAINAGE TABULATION

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

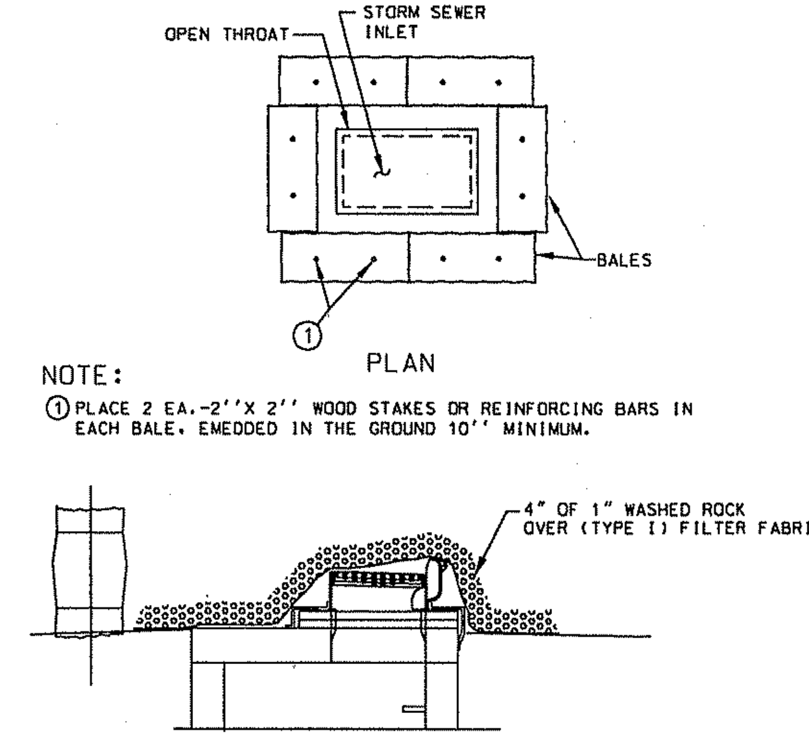
15 APR 1999 13:28:28



OUTSIDE DROP SANITARY SEWER MANHOLE



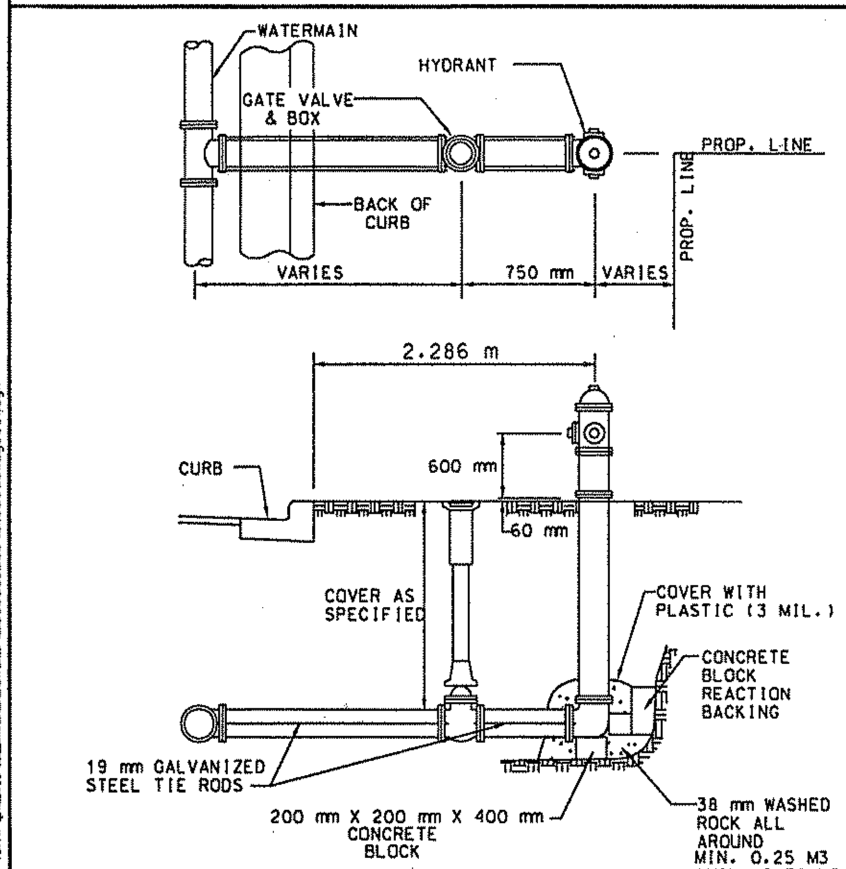
WATER SERVICE DETAIL



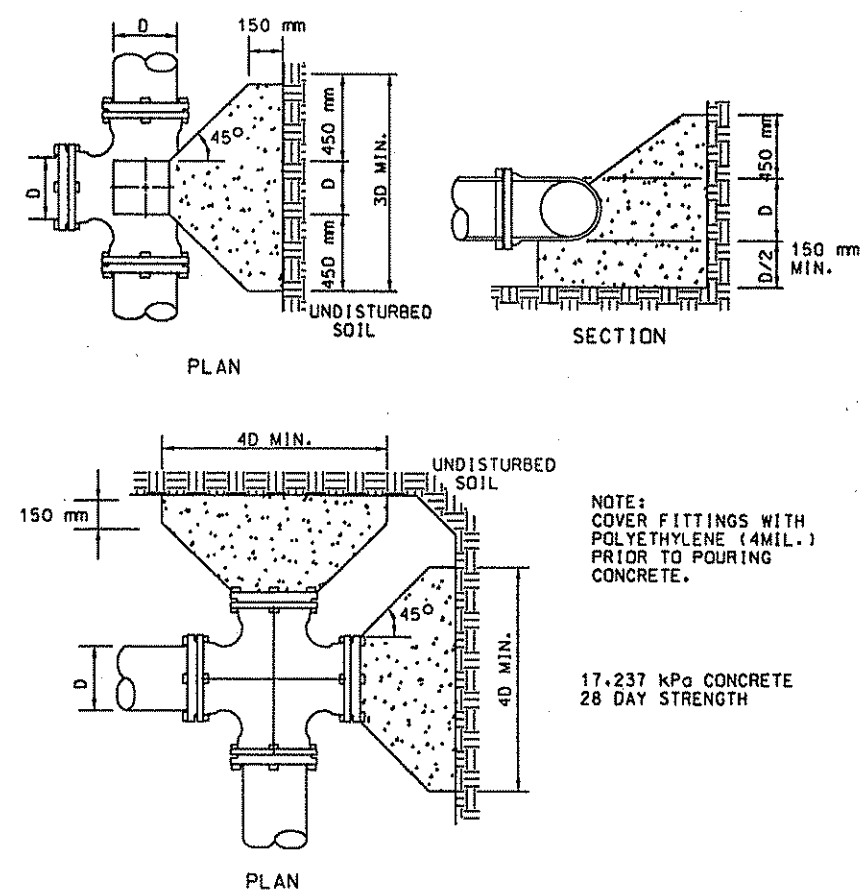
NOTE:
① PLACE 2 EA.-2''X 2'' WOOD STAKES OR REINFORCING BARS IN EACH BALE, EMEDDED IN THE GROUND 10'' MINIMUM.

SECTION

BALE CHECK FOR STORM SEWER INLET



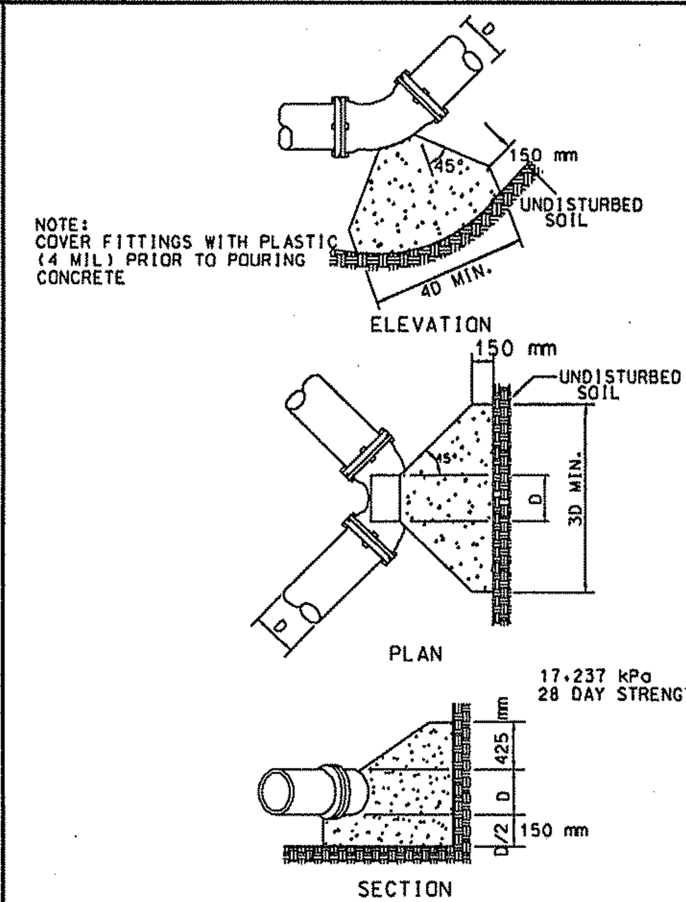
TYPICAL HYDRANT LAYOUT
(VALVE IN BOULEVARD)



NOTE:
COVER FITTINGS WITH POLYETHYLENE (4MIL.) PRIOR TO POURING CONCRETE.

17.237 kPa CONCRETE 28 DAY STRENGTH

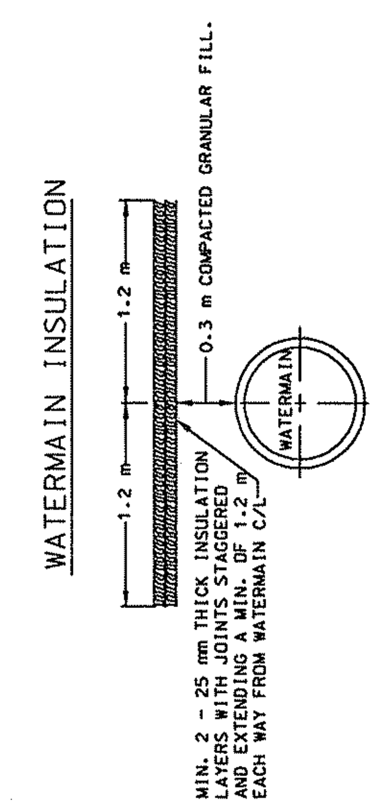
CONCRETE REACTION BACKING
(FOR TEES AND CROSSES)



NOTE:
COVER FITTINGS WITH PLASTIC (4 MIL) PRIOR TO POURING CONCRETE

17.237 kPa 28 DAY STRENGTH

CONCRETE REACTION BACKING
(FOR BENDS)



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.

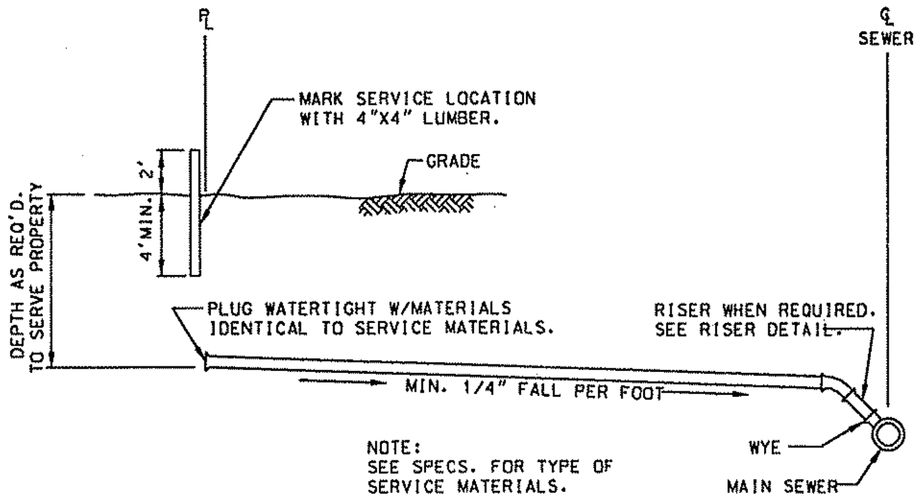
Date: MARCH 15, 1999 Reg. No. 18612

SEH

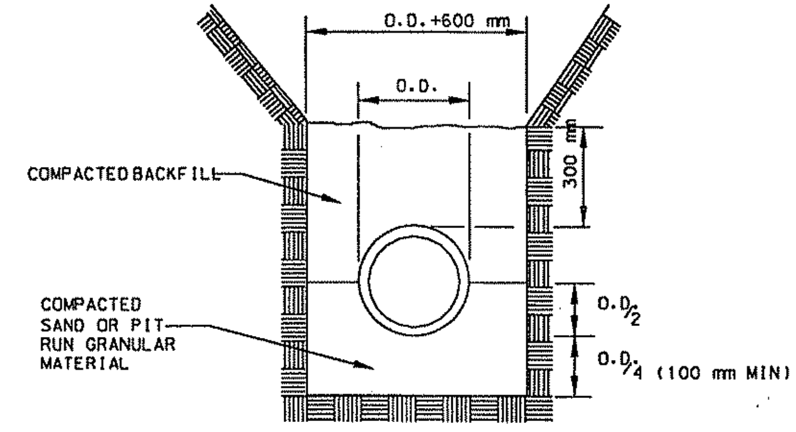
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITY DETAILS

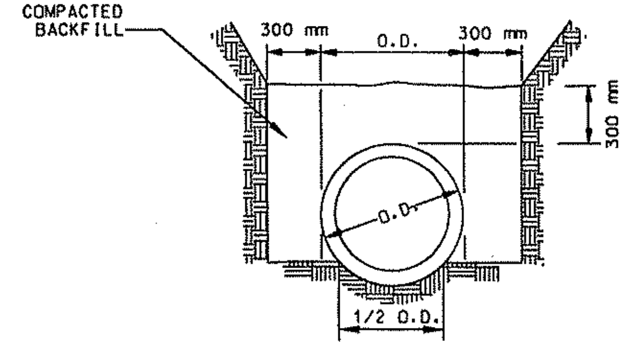
FILE NO. ANOKA9806.01
DATE MARCH 15,1999



SANITARY SEWER SERVICE

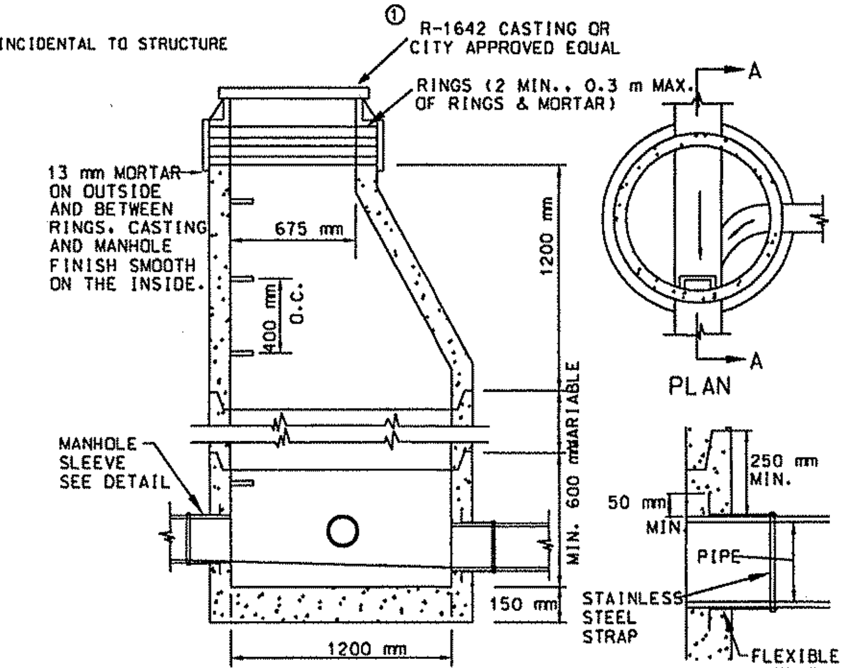


GRANULAR MATERIAL BEDDING



EARTH FOUNDATION

PVC PIPE INSTALLATION



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.

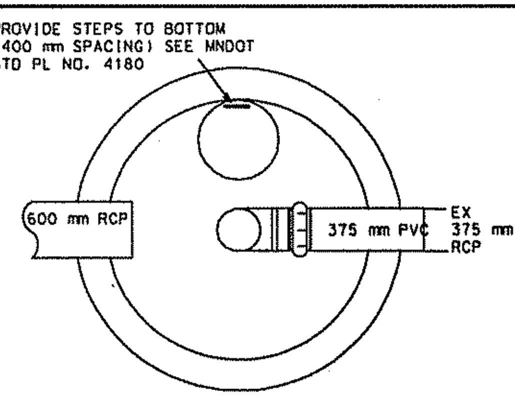
LIFT HOLES NOT PERMITTED IN MANHOLE SECTIONS.

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

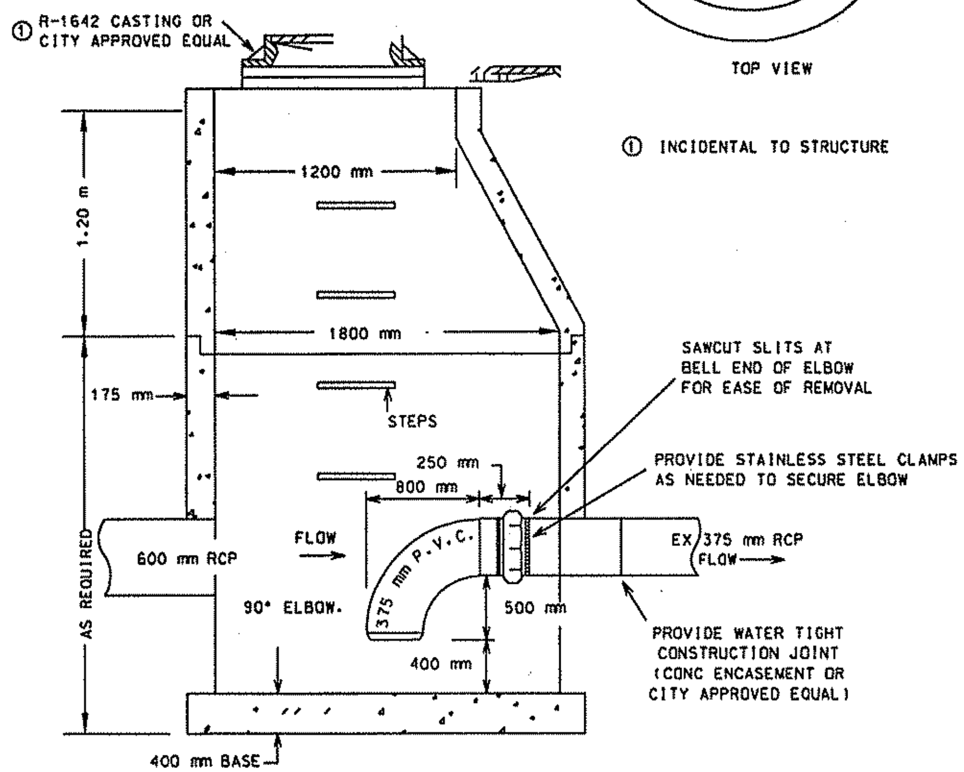
FLEXIBLE EXTERNAL RUBBER SEAL REQUIRED ON JOINTS BELOW GROUND WATER.

STANDARD 1200 mm DIA. SANITARY SEWER MANHOLE

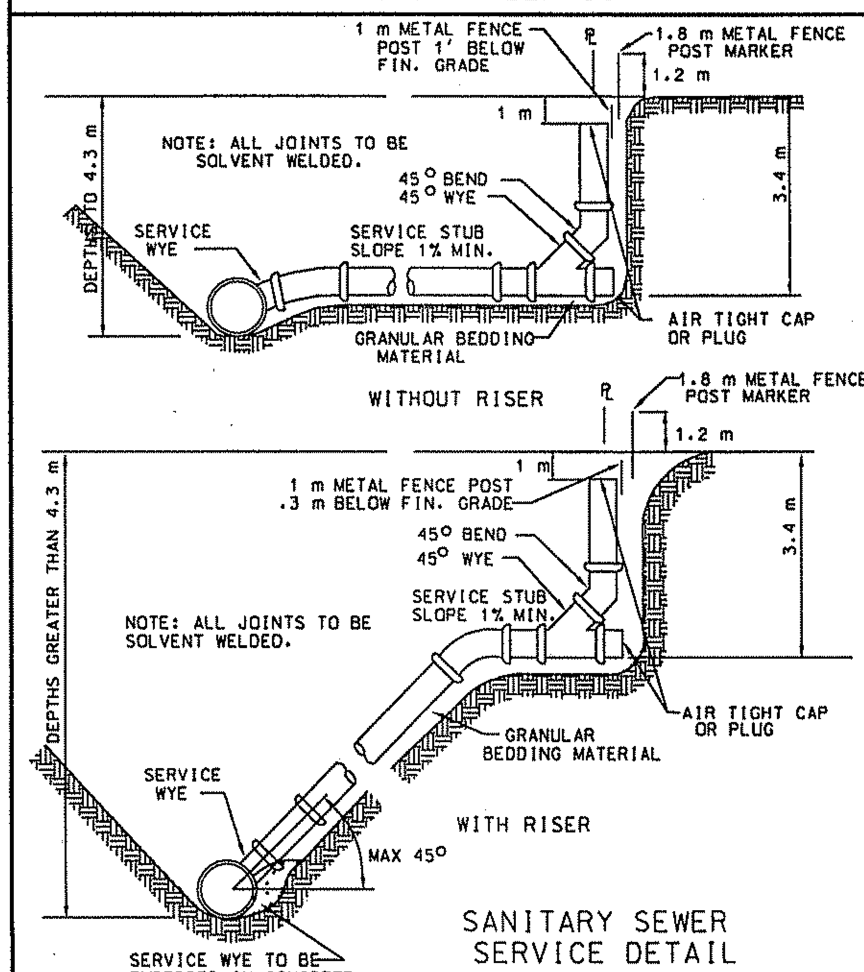
SPECIAL STRUCTURE NO. 2



TOP VIEW

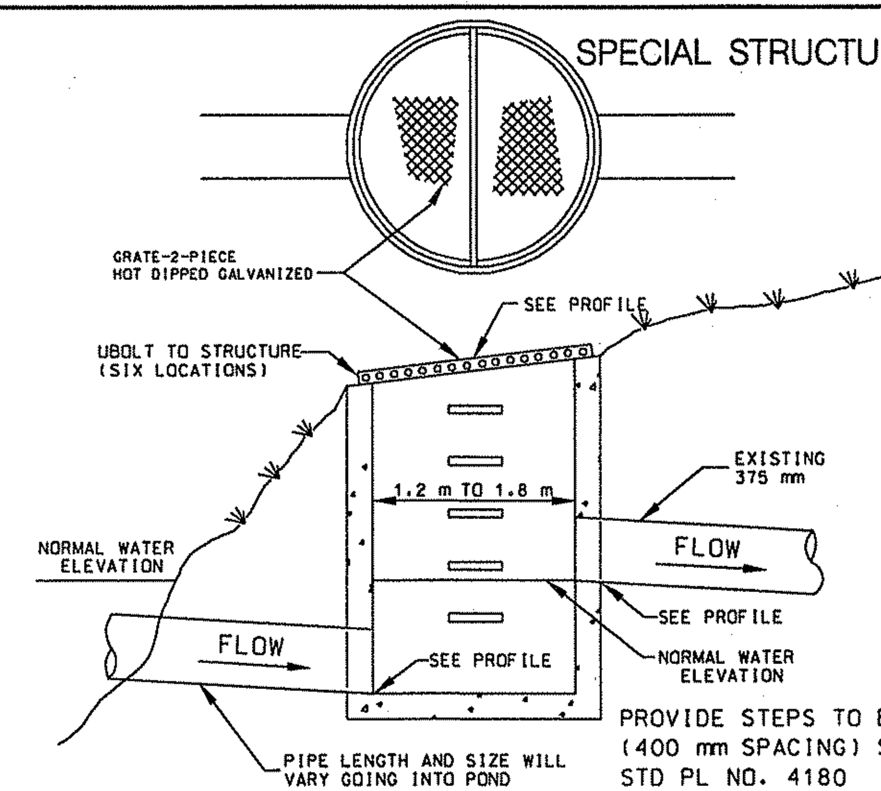


SUMP MANHOLE



SANITARY SEWER SERVICE DETAIL (WITH CLEANOUT)

SPECIAL STRUCTURE NO. 1



PROVIDE STEPS TO BOTTOM (400 mm SPACING) SEE MNDOT STD PL NO. 4180

SKIMMER 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.

Date: MARCH 15, 1999 Reg. No. 18612

SEH

ANOKA COUNTY

C.S.A.H. 116(BUNKER LAKE BLVD)

S.A.P. 02-716-04

S.A.P. 198-020-14

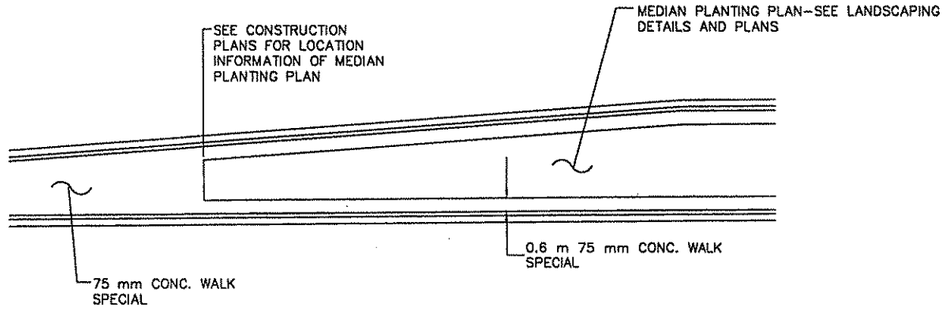
UTILITY DETAILS

FILE NO. ANOKA9806.01

DATE MARCH 15, 1999

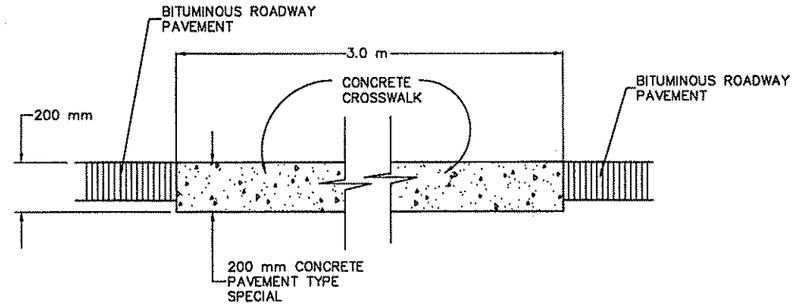
18 / 230

24 MAR 99 15:01:44



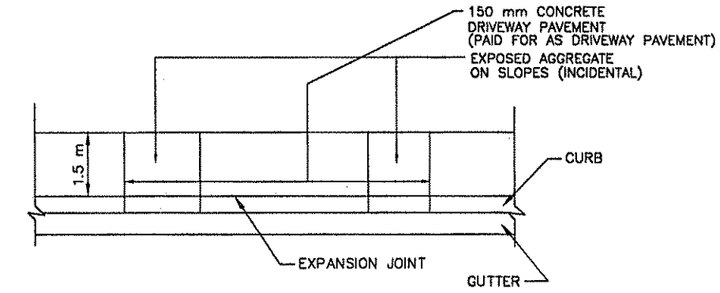
N O T E :
SEE SPECIAL PROVISION FOR DETAIL REGRADING COLORED CONC. WALK OR ALTERNATE COLORED AND STAMPED CONC. WALK

LANDSCAPED MEDIAN DETAIL

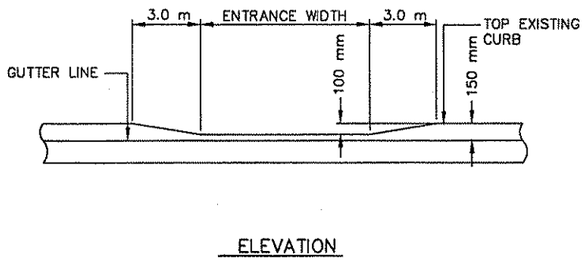


BASE BID – COLORED CONCRETE CROSSWALK
ALTERNATE A – STAMPED AND COLORED CONCRETE CROSSWALK

CROSSWALK SECTION



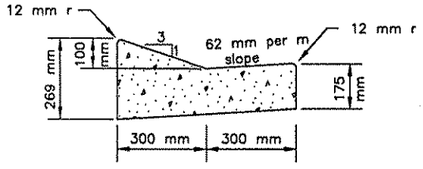
PLAN



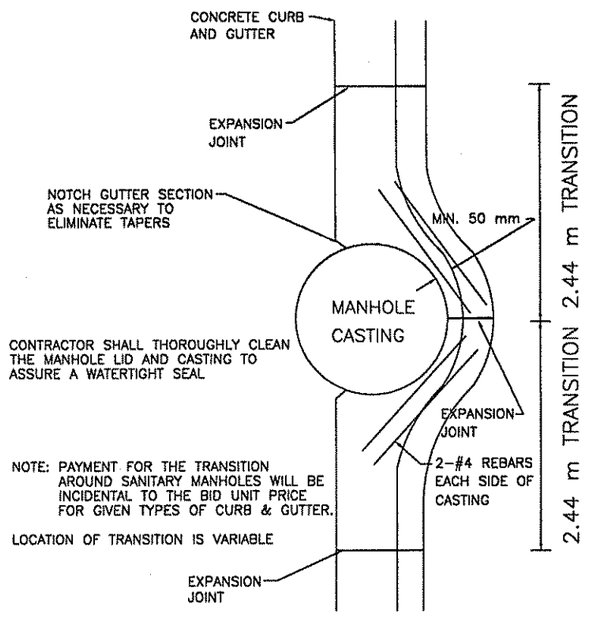
ELEVATION

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



MANHOLE CASTING IN CONCRETE CURB & GUTTER

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

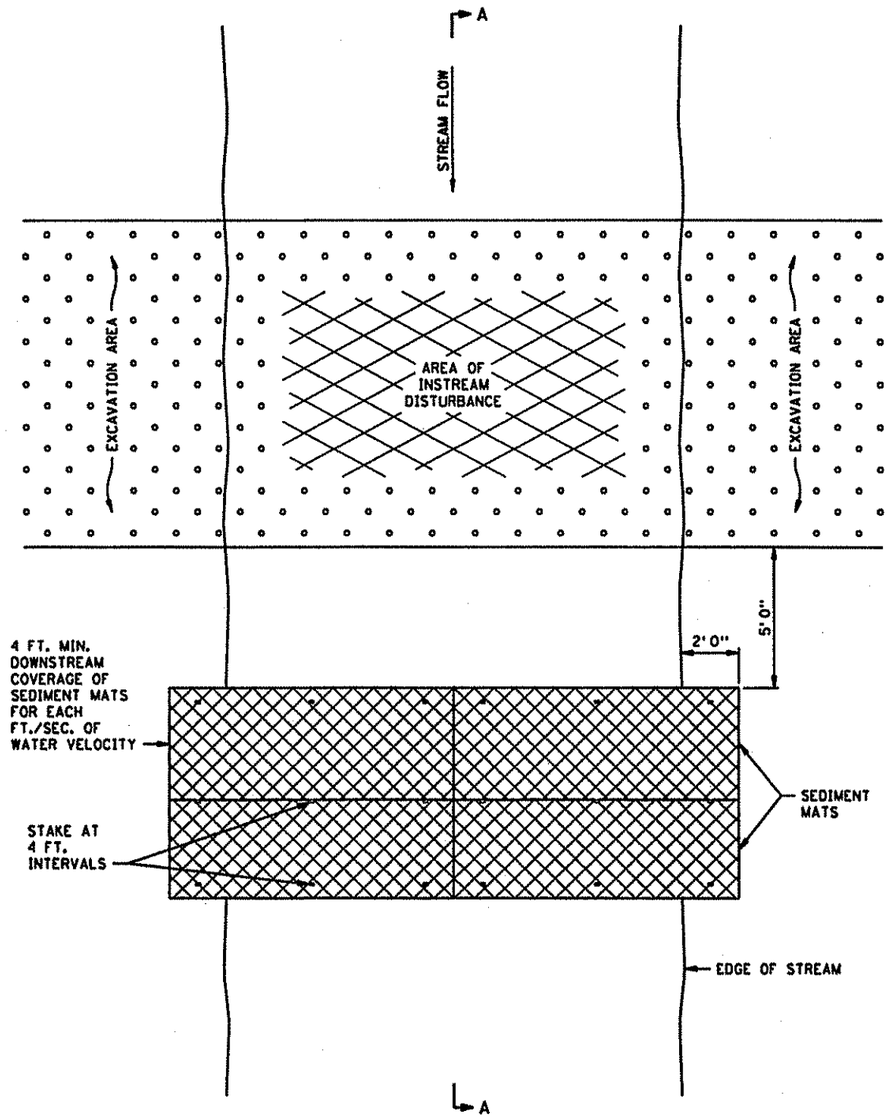
ESEH

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

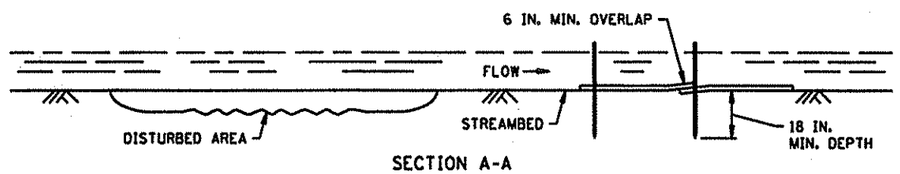
STREET DETAILS

FILE NO. AANOKC9806.00
DATE 03/15/99
19/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806DT1.DWG 03-24-99 1:18 pm



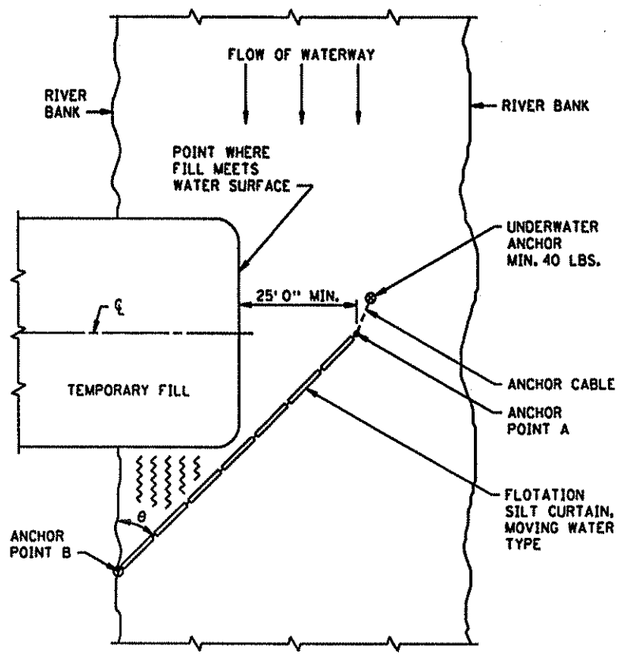
PLAN VIEW



SECTION A-A

SEDIMENT MAT
TYPICAL STREAMBED INSTALLATION

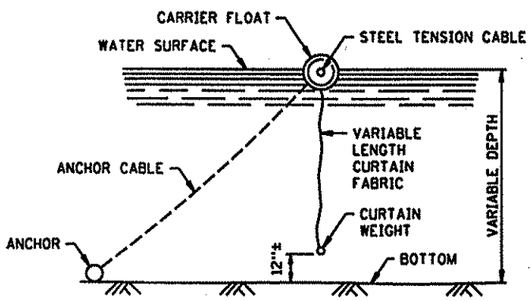
DESIGN CRITERIA:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



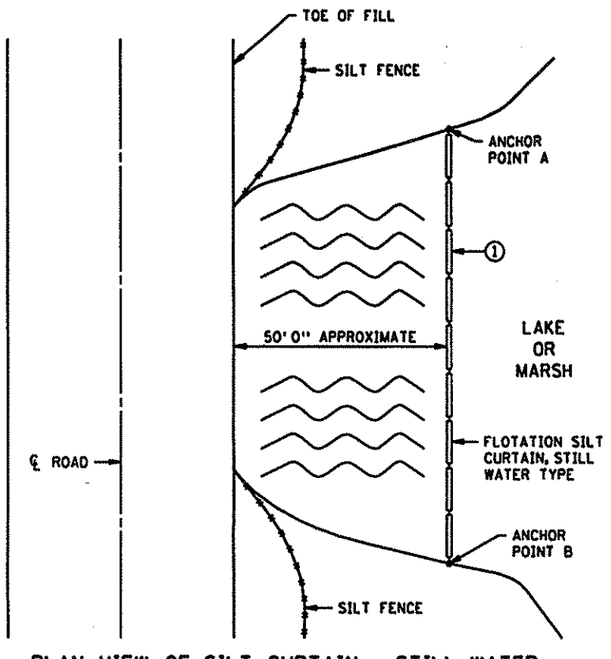
∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 5 FT./SEC.
35°	MODERATE, 5 - 7 FT./SEC.

PLAN VIEW OF SILT CURTAIN - MOVING WATER

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

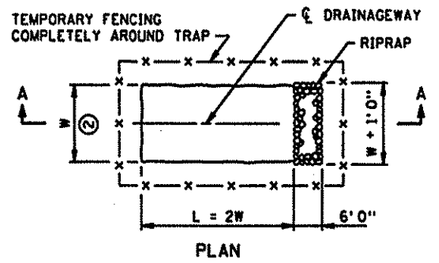


FLOTATION SILT CURTAIN DETAIL
(SEE SPEC. 3887)

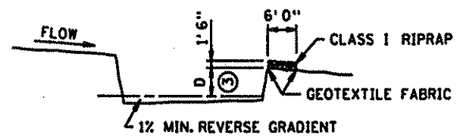


PLAN VIEW OF SILT CURTAIN - STILL WATER

DESIGN CRITERIA:
MAXIMUM WATER DEPTH: 12 FT.



PLAN

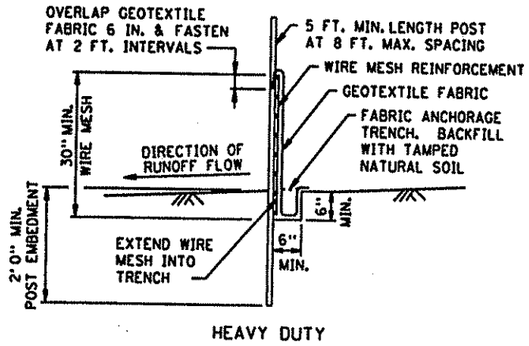


SECTION A-A

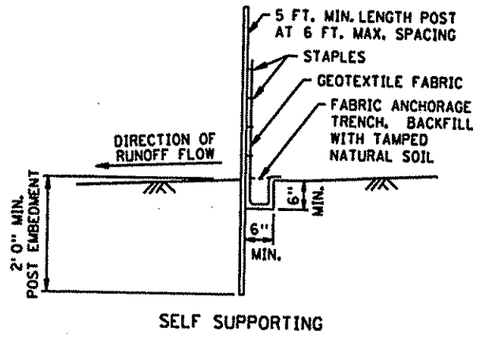
TEMPORARY SEDIMENT TRAP DETAIL

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.	TITLE:
5-297.405 (1 OF 3)	TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	



HEAVY DUTY

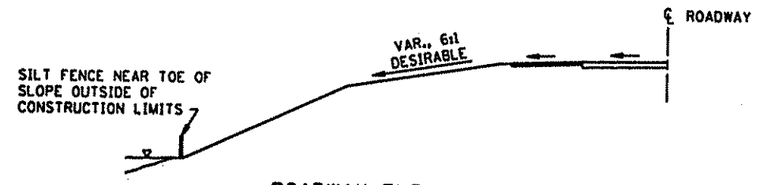


SELF SUPPORTING

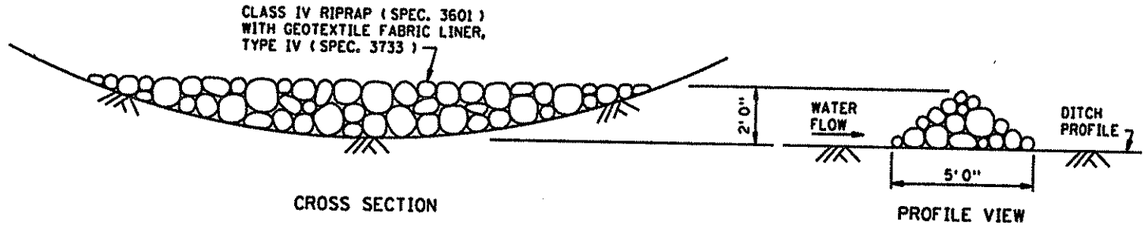
SILT FENCE DETAILS

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

DESIGN CRITERIA:
MAXIMUM CONTRIBUTING AREA: 3 ACRES



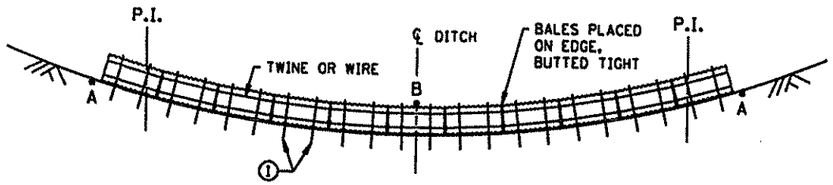
ROADWAY EMBANKMENT



CROSS SECTION

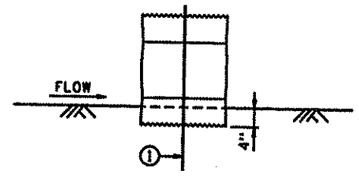
PROFILE VIEW

ROCK DITCH CHECK

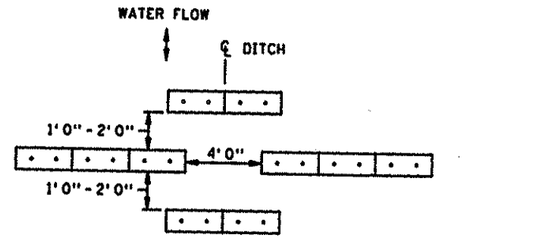


NOTE:
POINT A MUST BE HIGHER THAN POINT B

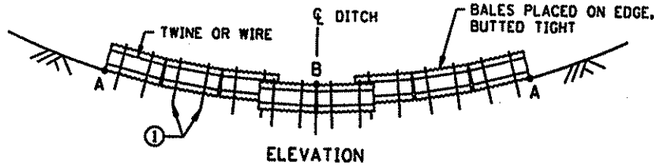
BALE DITCH SEDIMENT CHECK



BALE CHECK DETAIL



PLAN VIEW



ELEVATION

NOTE:
POINT A MUST BE HIGHER THAN POINT B

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

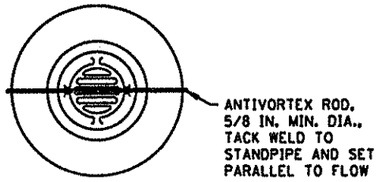
RECOMMENDED SPACING BETWEEN DITCH CHECKS	
DITCH GRADE (%)	SPACING (FT.)
2	100
4	75
6	50
8	40
10	25

DESIGN CRITERIA:

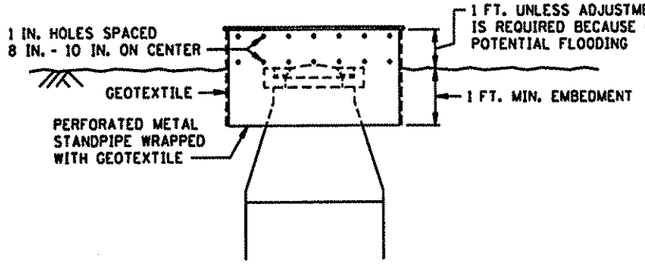
	BALE	ROCK
STORM FREQUENCY:	2 YR. - 24 HR.	10 YR. - 24 HR.
MAX. FLOW VELOCITY:	5 FT./SEC.	12 FT./SEC.
MAX. DITCH GRADE:	5%	—
MAX. DRAINAGE AREA:	2 ACRES	5 ACRES

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.	TITLE:
5-297.405 (2 OF 3)	TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	



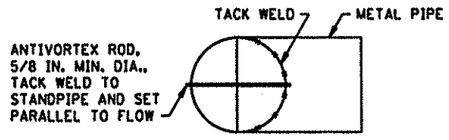
PLAN VIEW



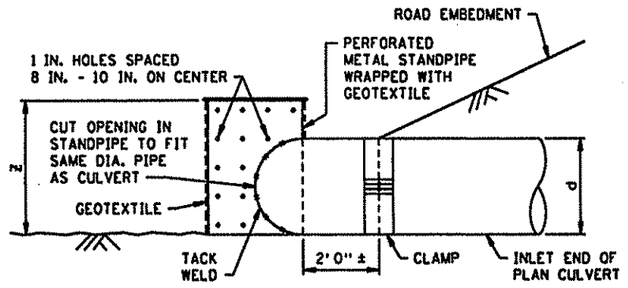
ELEVATION

TEMPORARY STANDPIPE
TO PROTECT DROP INLET

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



PLAN VIEW

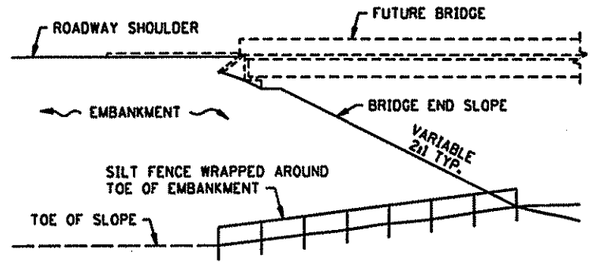


ELEVATION

TEMPORARY STANDPIPE
FOR SEDIMENT CONTROL ON CULVERT INLET

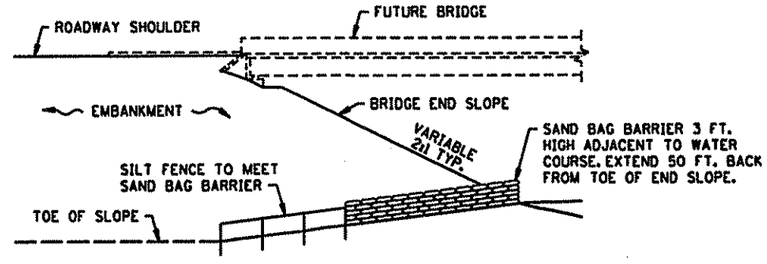
d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT
z = LENGTH OF PERFORATED STANDPIPE (d + 1 FT.)

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



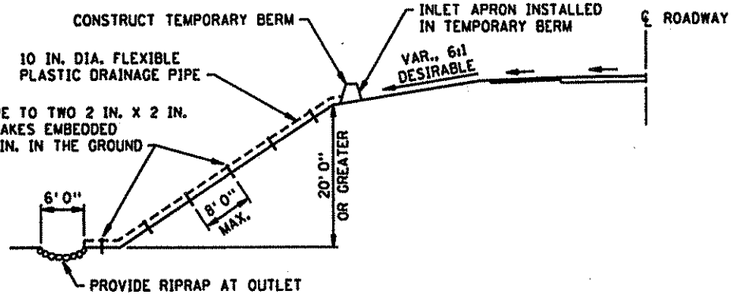
BRIDGE FILL

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



BRIDGE FILL

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

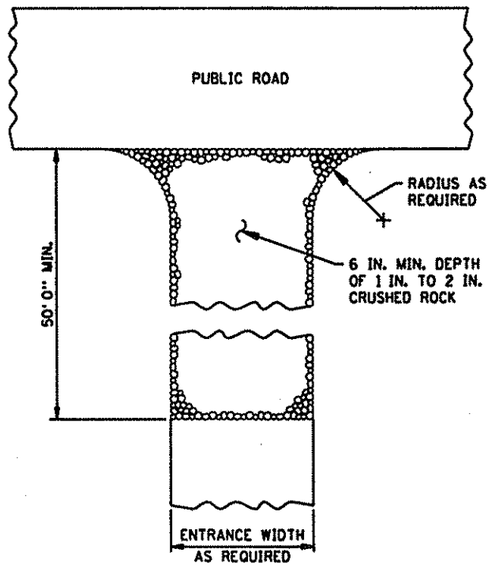


DIVERSION MOUND

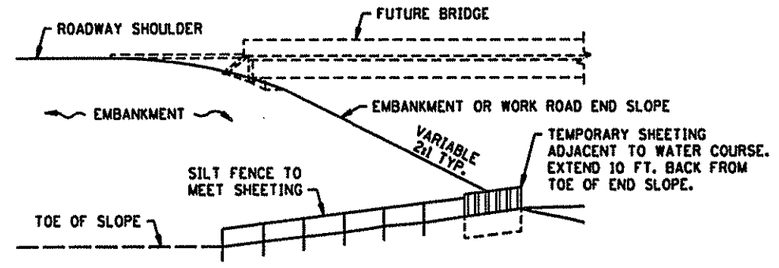
DESIGN CRITERIA:
STORM FREQUENCY: 10 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%

TEMPORARY DRAIN ON FILL SLOPE

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



ROCK CONSTRUCTION ENTRANCE

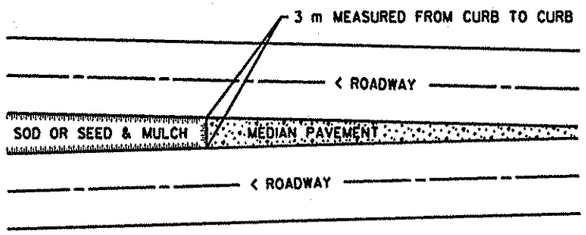


EMBANKMENT OR WORK ROAD FILL

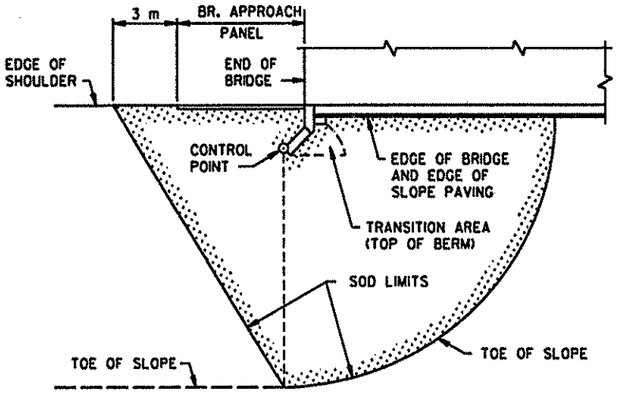
DESIGN CRITERIA:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

STANDARD SHEET NO.	TITLE:
5-297.405 (3 OF 3)	TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	

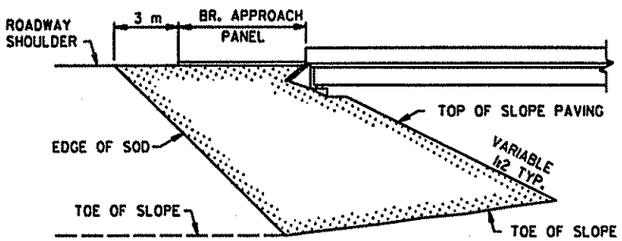
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 22 OF 230 SHEETS



SODDING LIMITS AT GORE AREA

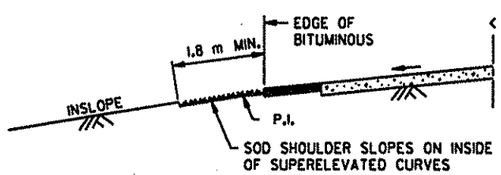


PLAN

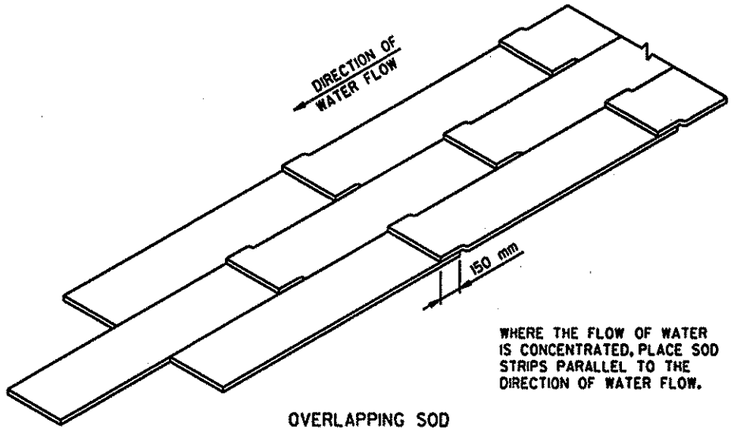


ELEVATION

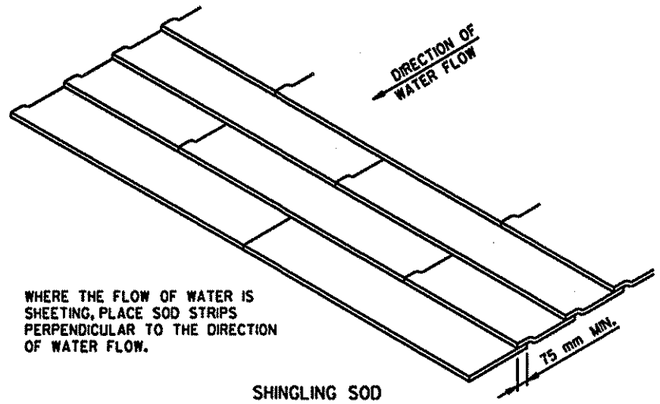
SODDING LIMITS AT BRIDGE APPROACH FILLS



SODDING INSLOPES OF SUPERELEVATED CURVES

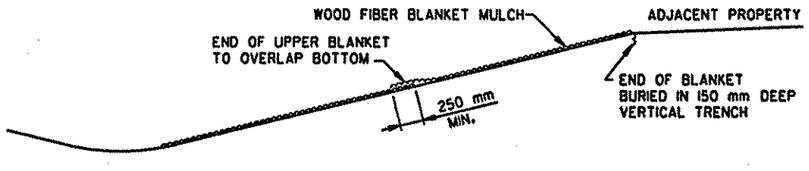


OVERLAPPING SOD

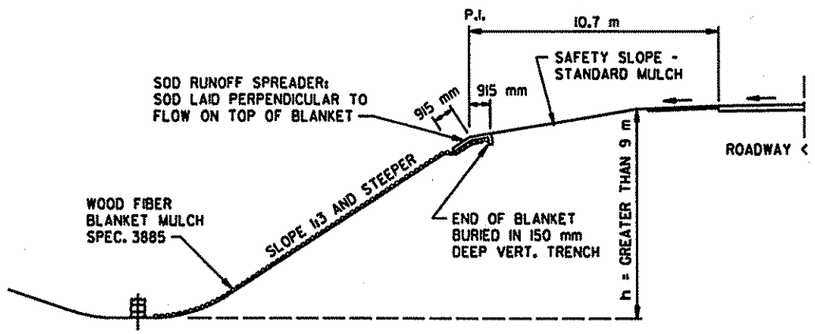


SHINGLING SOD

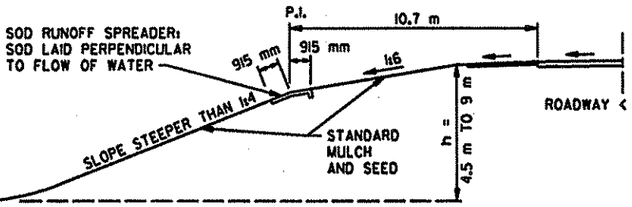
SPECIAL SOD PLACEMENT TECHNIQUES



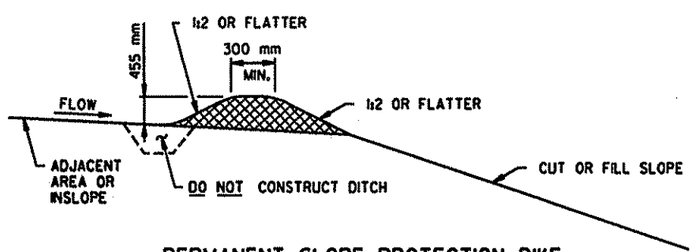
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)



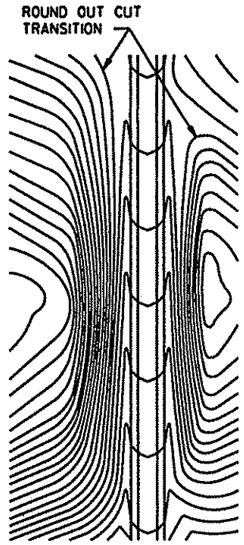
BROKEN-BACK SAFETY FILL SLOPE



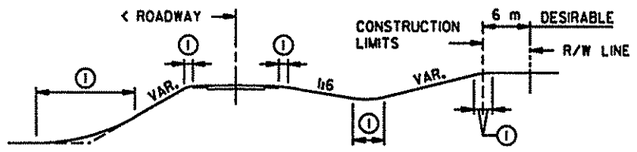
PERMANENT SLOPE PROTECTION DIKE

STANDARD SHEET NO. 5-297.406M	TITLE: PERMANENT EROSION CONTROL
STANDARD APPROVED: JANUARY 31, 1985	ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS

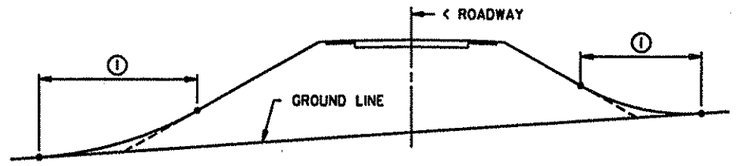
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 23 OF 230 SHEETS



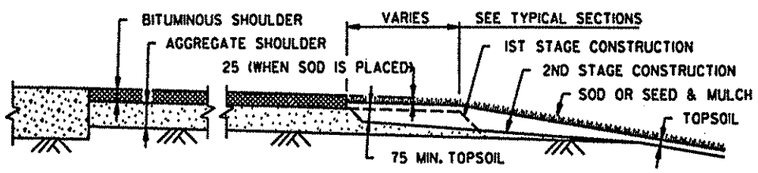
CONTOURING ROAD CUTS



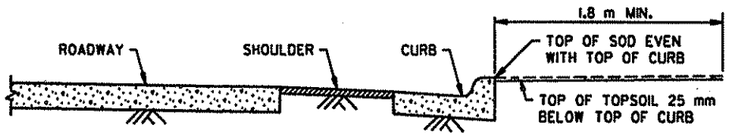
ROUNDING SHOULDERS AND BACKSLOPES



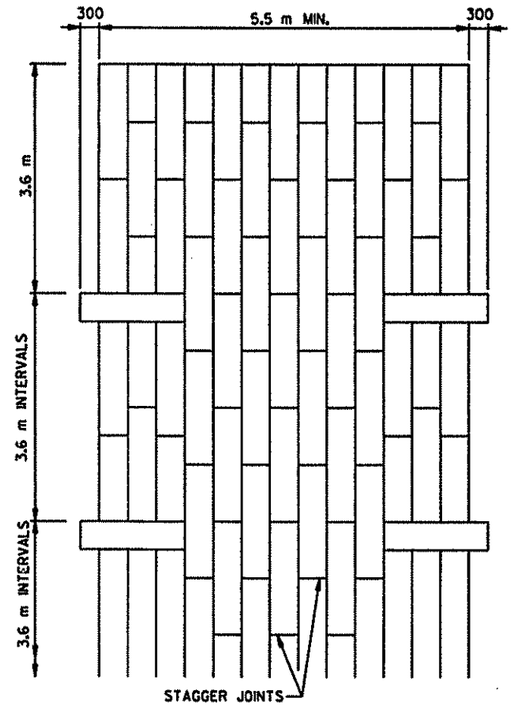
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



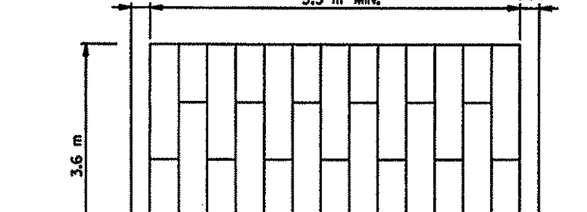
SHAPING AND TOPSOILING INSLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

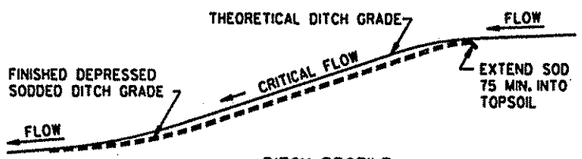


PLAN VIEW



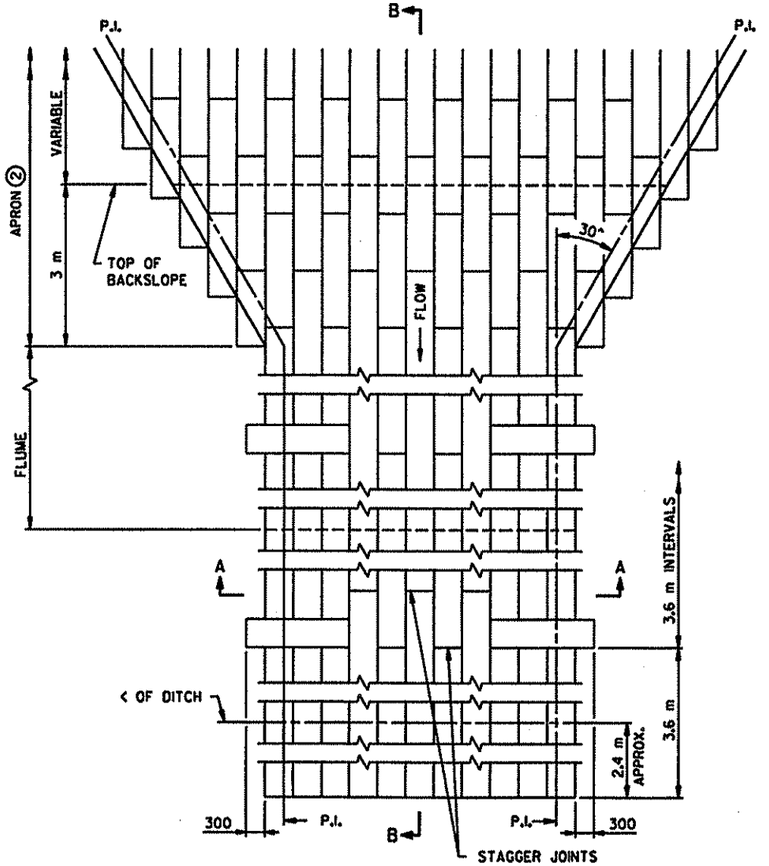
SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 0.04 m/m), FIRST NOTCH DITCH AND THAN PROVIDE ROUNDING.

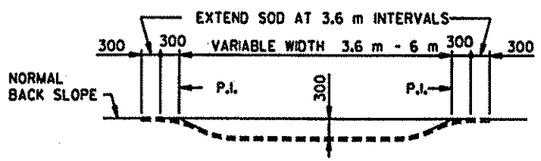


DITCH PROFILE

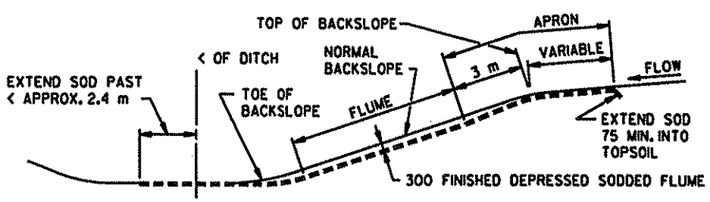
SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

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

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

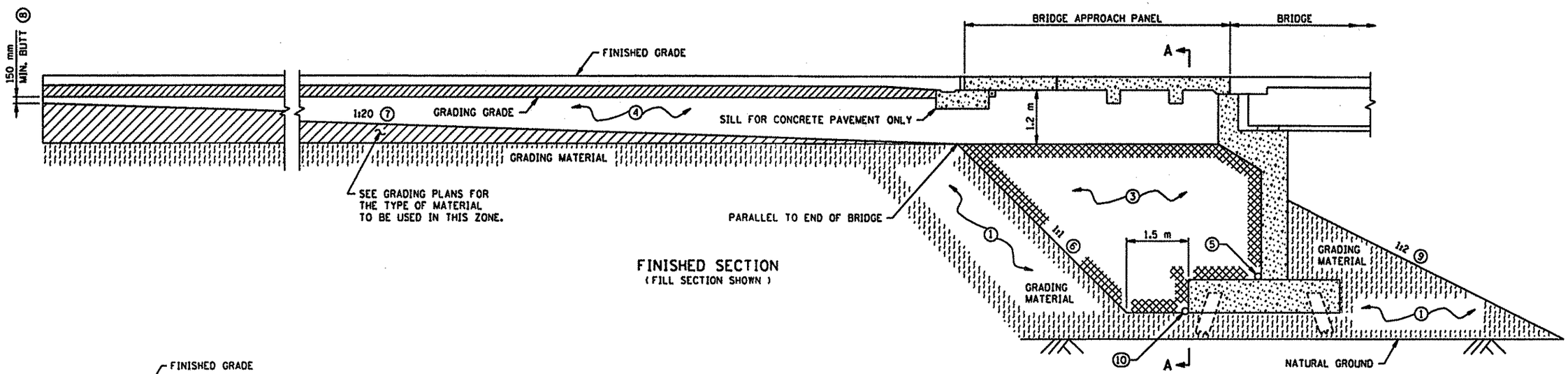
(1) FOR ROUNDING, SEE ROAD DESIGN MANUAL.

(2) CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

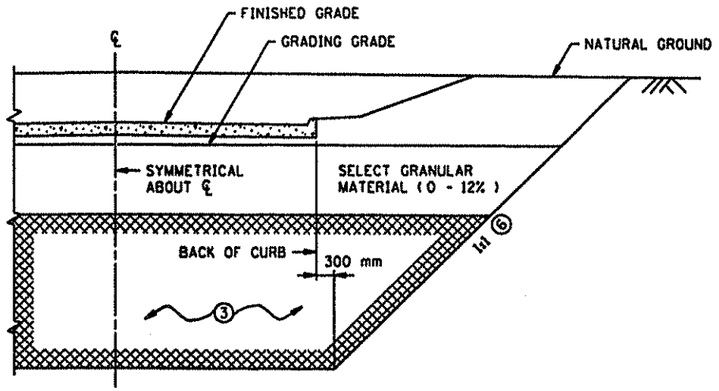
STANDARD SHEET NO. 5-297.404M	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: DECEMBER 19, 1990	

3-6-95

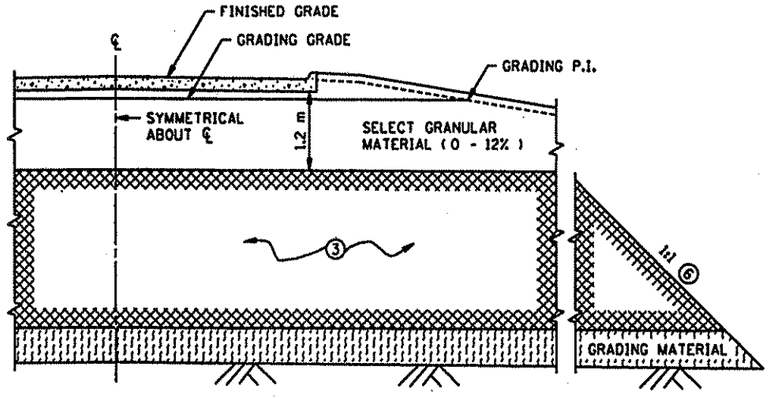
S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 24 OF 230 SHEETS



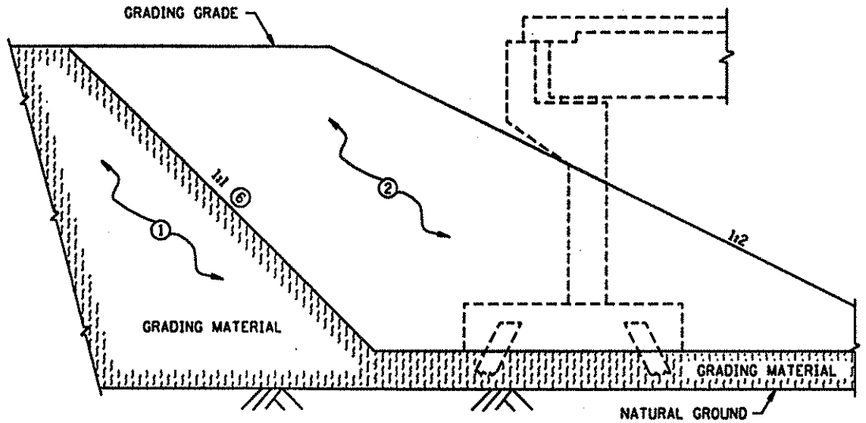
FINISHED SECTION
(FILL SECTION SHOWN)



HALF SECTION A-A
(CUT SECTION)



HALF SECTION A-A
(FILL SECTION)



GRADING SECTION AT ABUTMENT

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 µm 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.

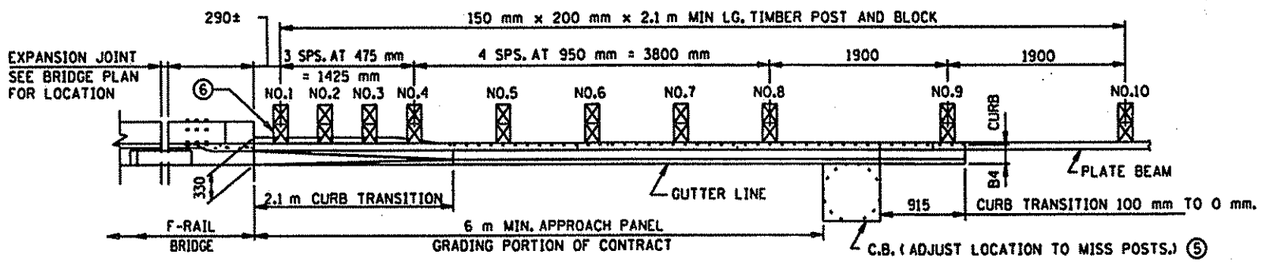
⑧ GRADING TO BE SQUARED OFF ON SKEWED APPROACHES.

⑨ SEE BRIDGE PLANS FOR SLOPE PAVING.

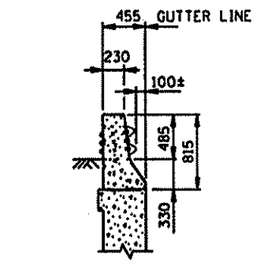
⑩ SUBSURFACE PIPE DRAIN WHEN REQUIRED AS DIRECTED BY THE DISTRICT SOILS ENGINEER. 100 mm NOM. DIA. PLASTIC PIPE PER SPEC. 3245 PLACED BY THE CONTRACTOR. PERFORATED PIPE TO BE WRAPPED WITH GEOTEXTILE MEETING THE REQUIREMENTS OF SPEC. 3733 TYPE 1. FOUNDATION SHALL BE SHAPED TO FIT LOWER ONE THIRD CIRCUMFERENCE OF PIPE.

minnesota metric

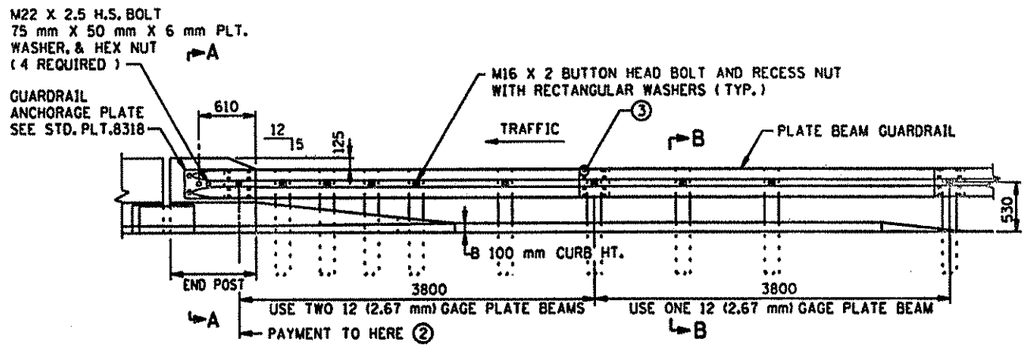
STANDARD SHEET NO. 5-297.225M	TITLE: BRIDGE APPROACH TREATMENT FOR BOTH HIGH AND LOW ABUTMENTS ON PILING
STANDARD APPROVED: AUGUST 4, 1992	
REVISION DATE 3-23-95	S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 25 OF 230 SHEETS



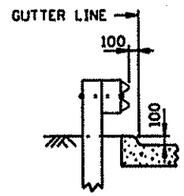
PLAN



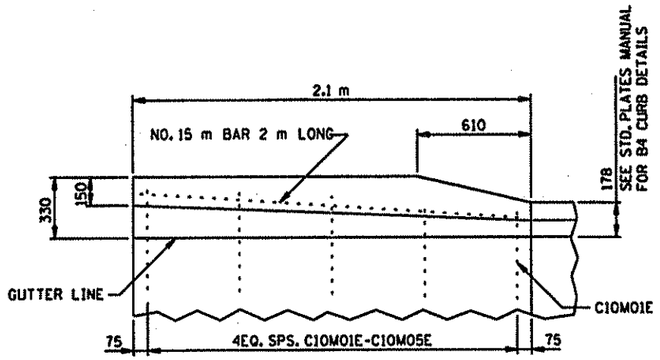
SECTION
A-A
(PARALLEL WINGWALL SHOWN)



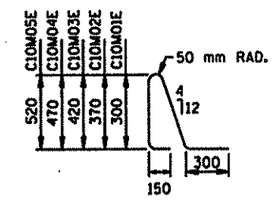
ELEVATION



SECTION B-B



CURB TRANSITION DETAILS



C10M01E-C10M05E ④

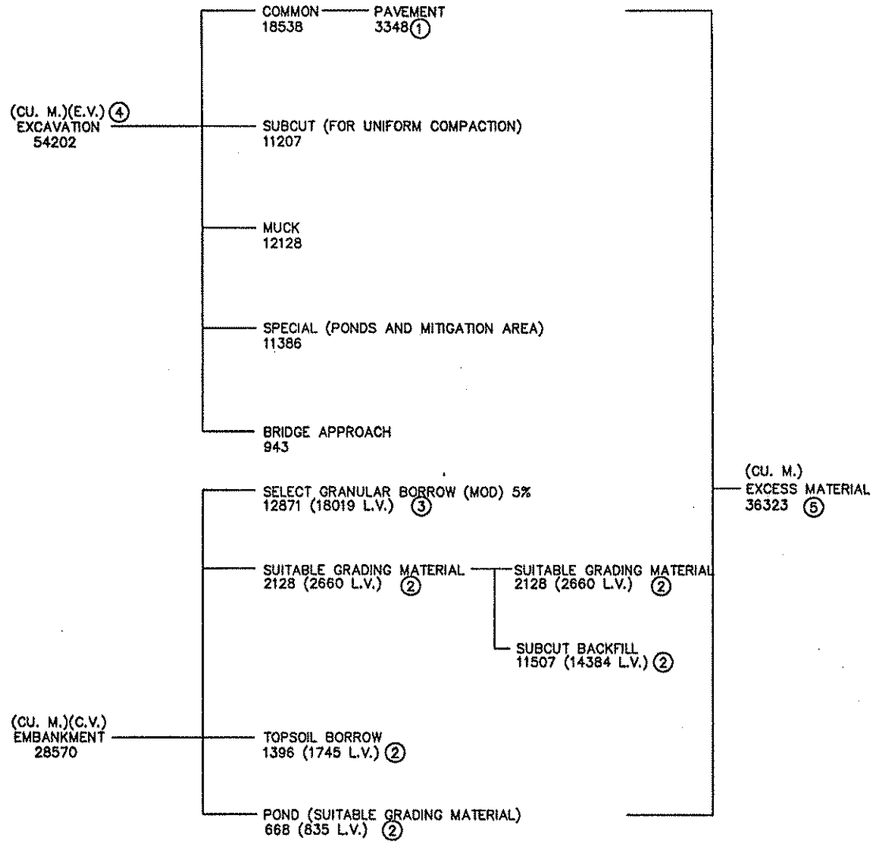
NOTES:

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.

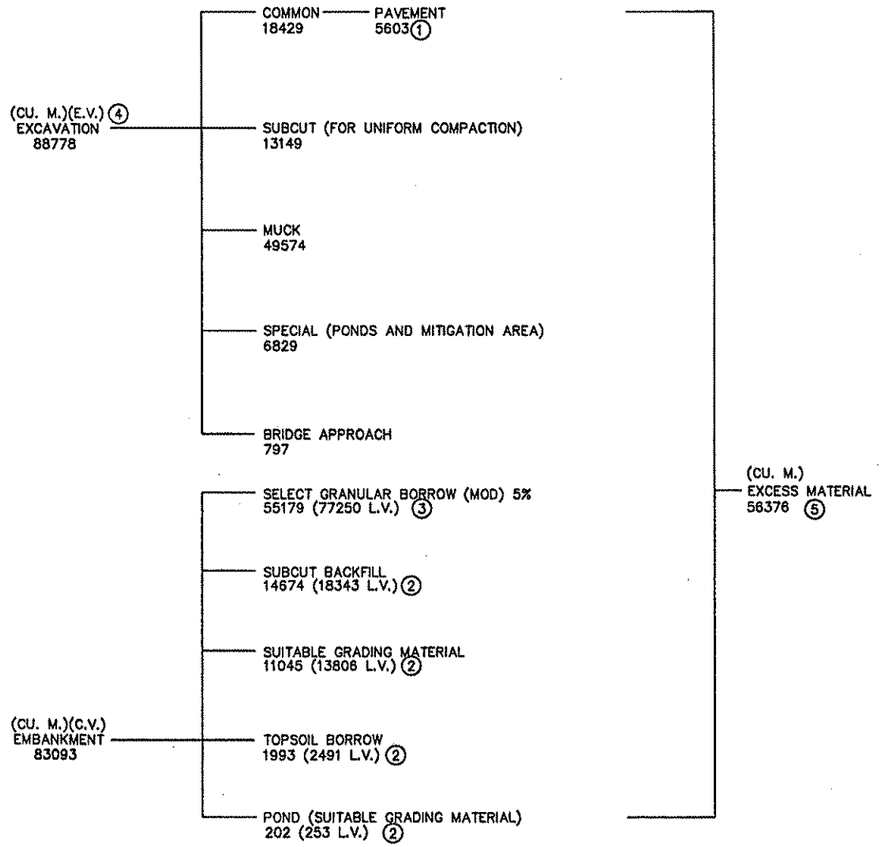
minnesota metric	STANDARD SHEET NO. 5-297.605M	TITLE: GUARDRAIL TRANSITION FOR NEW TYPE F RAILING WITH APPROACH CURB
REVISION DATE 3-30-95	STANDARD APPROVED: JANUARY 23, 1992	S.A.P. 02-716-04 S.A.P. 198-020-14 SHEET NO. 26 OF 230 SHEETS

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.)

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

EARTHWORK SUMMARY

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806EW.DWG 03-17-99 2:46 pm

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 NE 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 BT 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 1 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 DEVISES 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 ((MASONARY, FIELD CONSTRUCTION)
M 4002 F	MANHOLE OR CATCH BASIN ((MASONARY, 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)

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

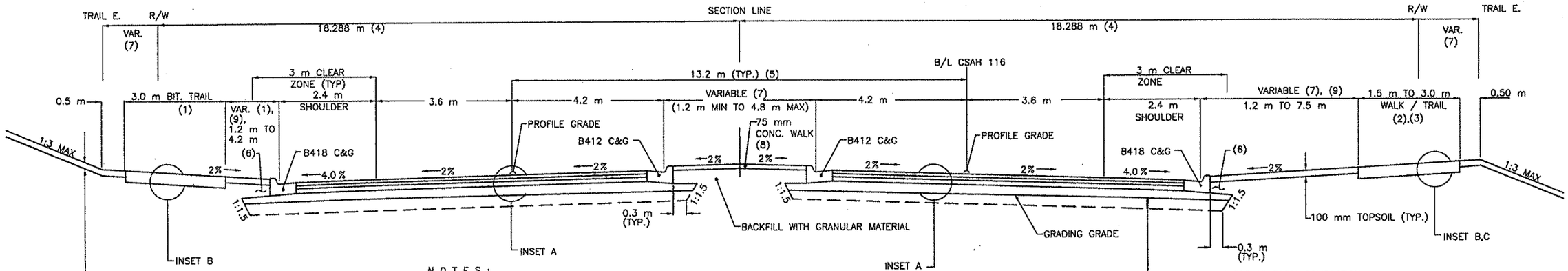
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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

CONSTRUCTION/SOILS NOTES
STANDARD PLATES

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

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.

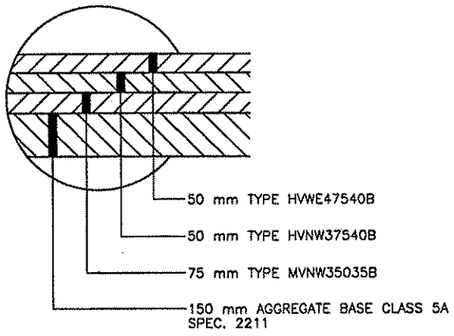
(5) VARIES AT ALIGNMENT TRANSITION STATION 1+680.5 TO STATION 1+840.5.

(6) BACKFILL WITH GRANULAR MATERIAL.

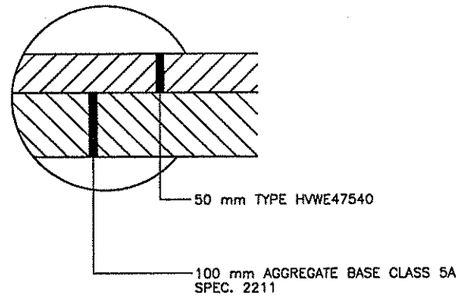
(7) SEE CONSTRUCTION PLANS FOR WIDTH INFORMATION.

(8) OPEN MEDIAN FROM STATION 3+934.990 TO 4+164.852 AND 4+448.531 TO 4+857.822.

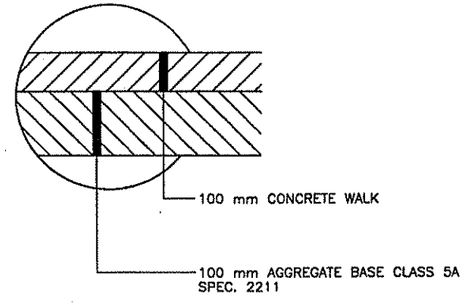
(9) SEE TURF ESTABLISHMENT TABULATION FOR SALT RESISTANT SODDING LOCATIONS AND WIDTHS



INSET A

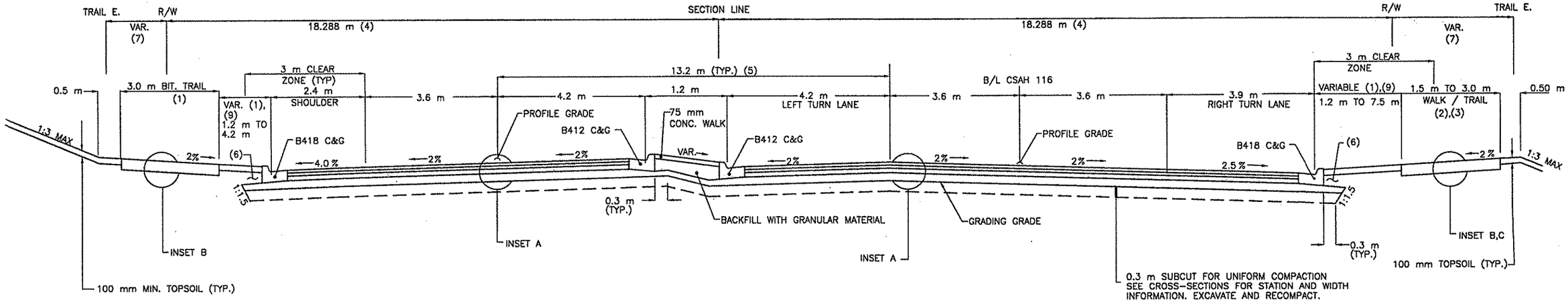


INSET B



INSET C

TYPICAL TURN BAY CONSTRUCTION



DESIGN					
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

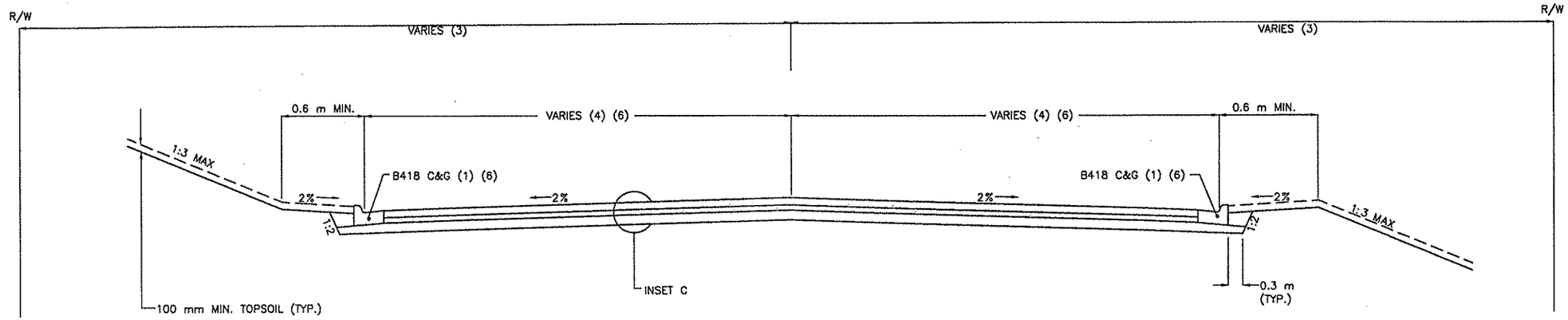
ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

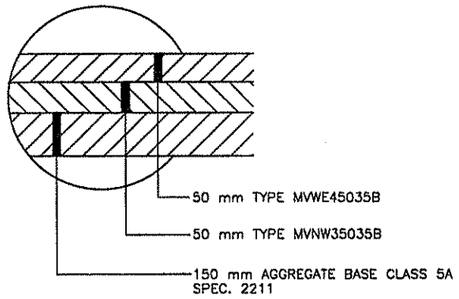
TYPICAL SECTIONS

FILE NO. AANOKC9808.00
DATE 03/15/99
29/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806TY1.DWG 03-18-99 10:57 am

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





INSET C

N O T E S :

(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

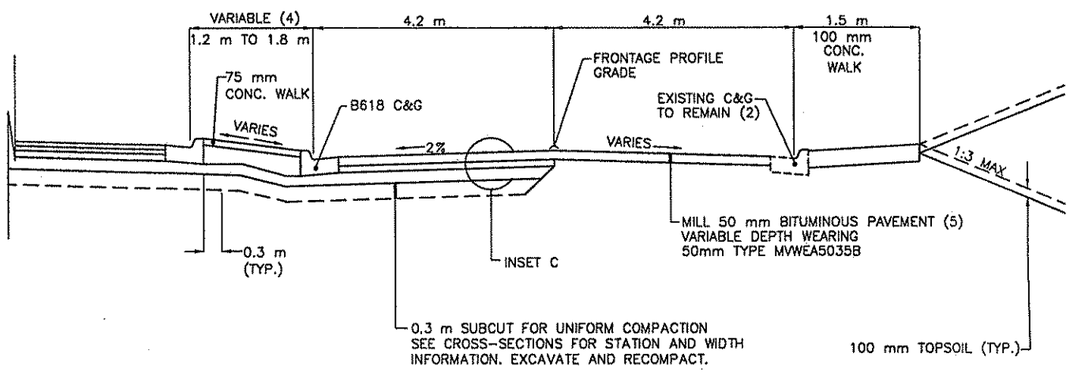
(3) SEE PLAN AND PROFILE FOR VARYING R/W WIDTHS AND LOCATIONS.

(4) SEE CONSTRUCTION PLANS FOR WIDTH INFORMATION.

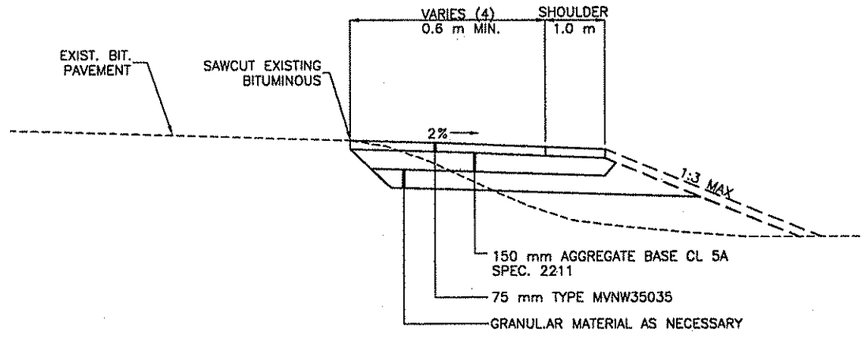
(5) EXCEPT AT FULL WIDTH RECONSTRUCTION SEE CONSTRUCTION PLANS FOR LOCATIONS.

(6) USE B612 C& G AT SCHOOL DRIVE.

FRONTAGE ROAD CONSTRUCTION



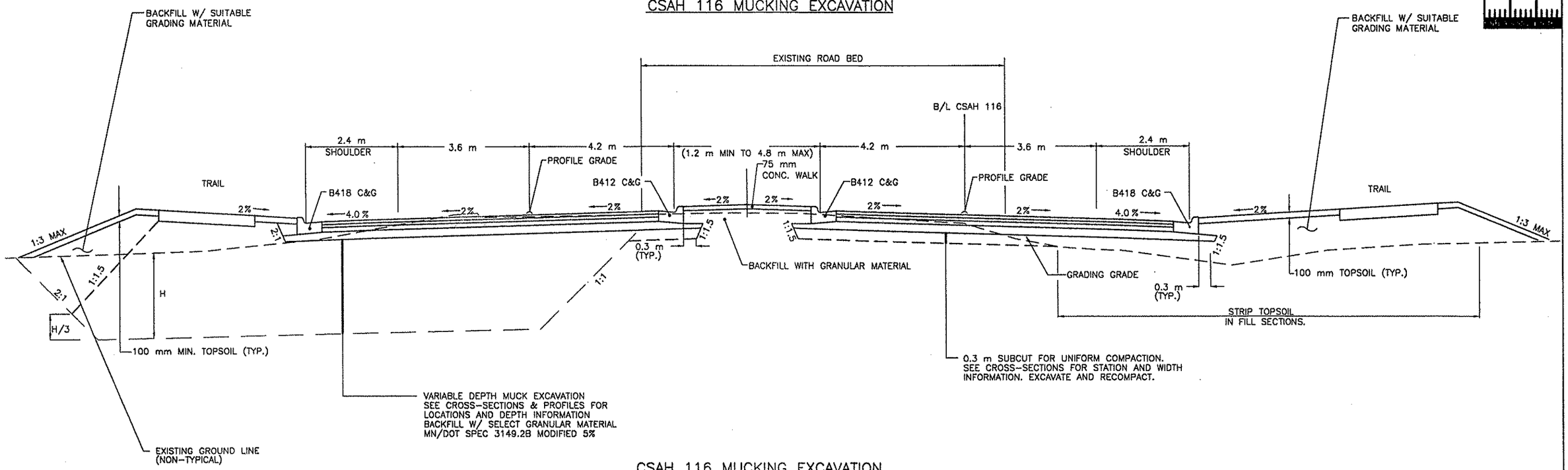
STAGE 1–TEMPORARY WIDENING SECTION



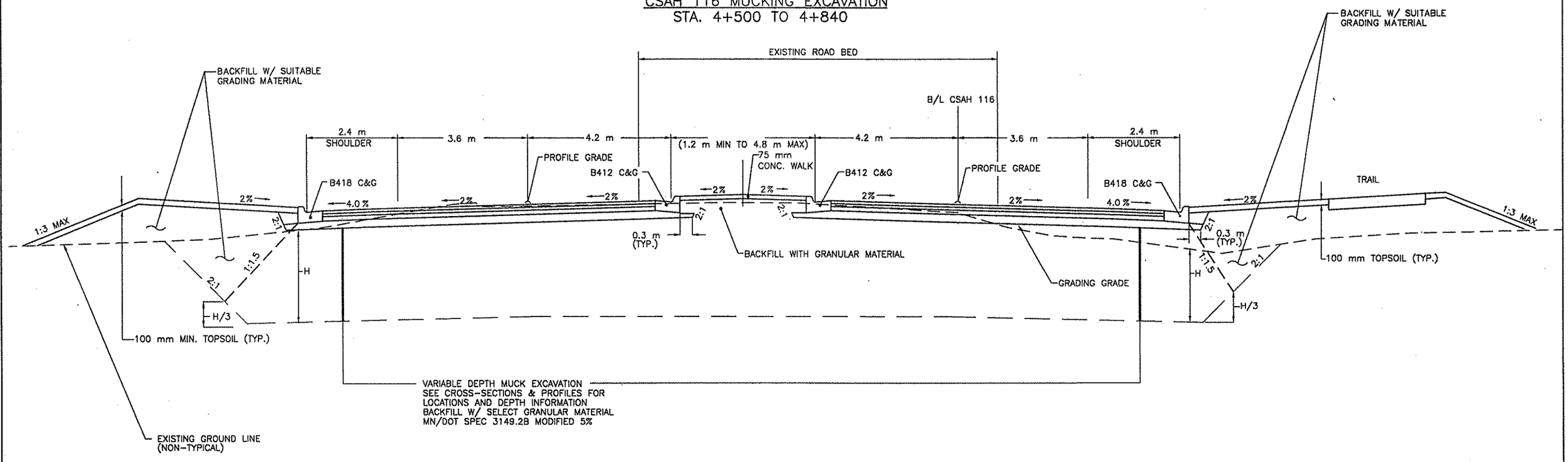
DESIGN						I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.	ANOKA COUNTY	TYPICAL SECTIONS	FILE NO. AANOKC9808.00	30
DRAWING						Date: 3/15/99 Reg. No. 18612	CSAH 116 (BUNKER LAKE BLVD.)		DATE 03/15/99	230
CHECKED							S.A.P. 02-716-04			
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM		S.A.P. 198-020-14			

Q:\CIVIL\CUENTS\A_THRU_F\ANOKA\9806\DWG\AC806TY2.DWG 03-18-99 11:05 am

CSAH 116 MUCKING EXCAVATION



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



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

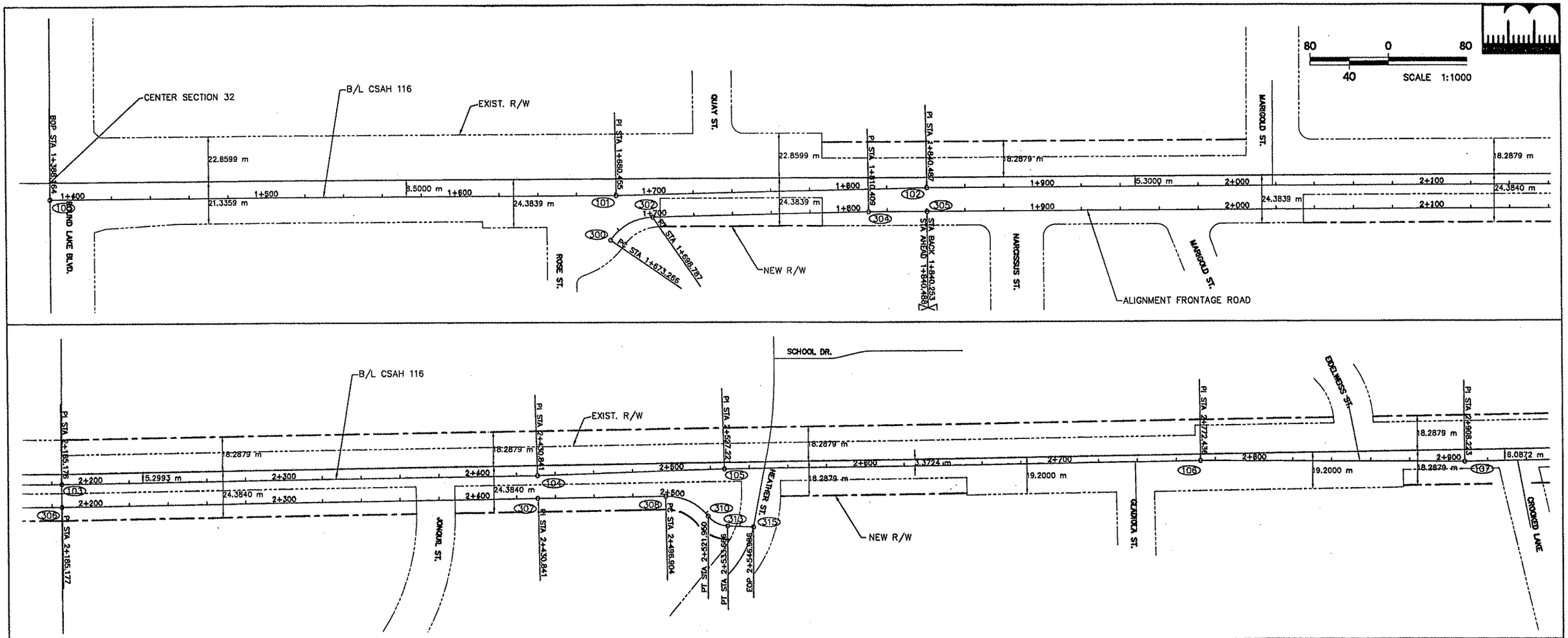
ANOKA COUNTY
CSAH 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TYPICAL SECTIONS

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

31/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806TY3.DWG 03-18-99 11:27 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.

Date: 3/15/99 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

ALIGNMENT PLAN

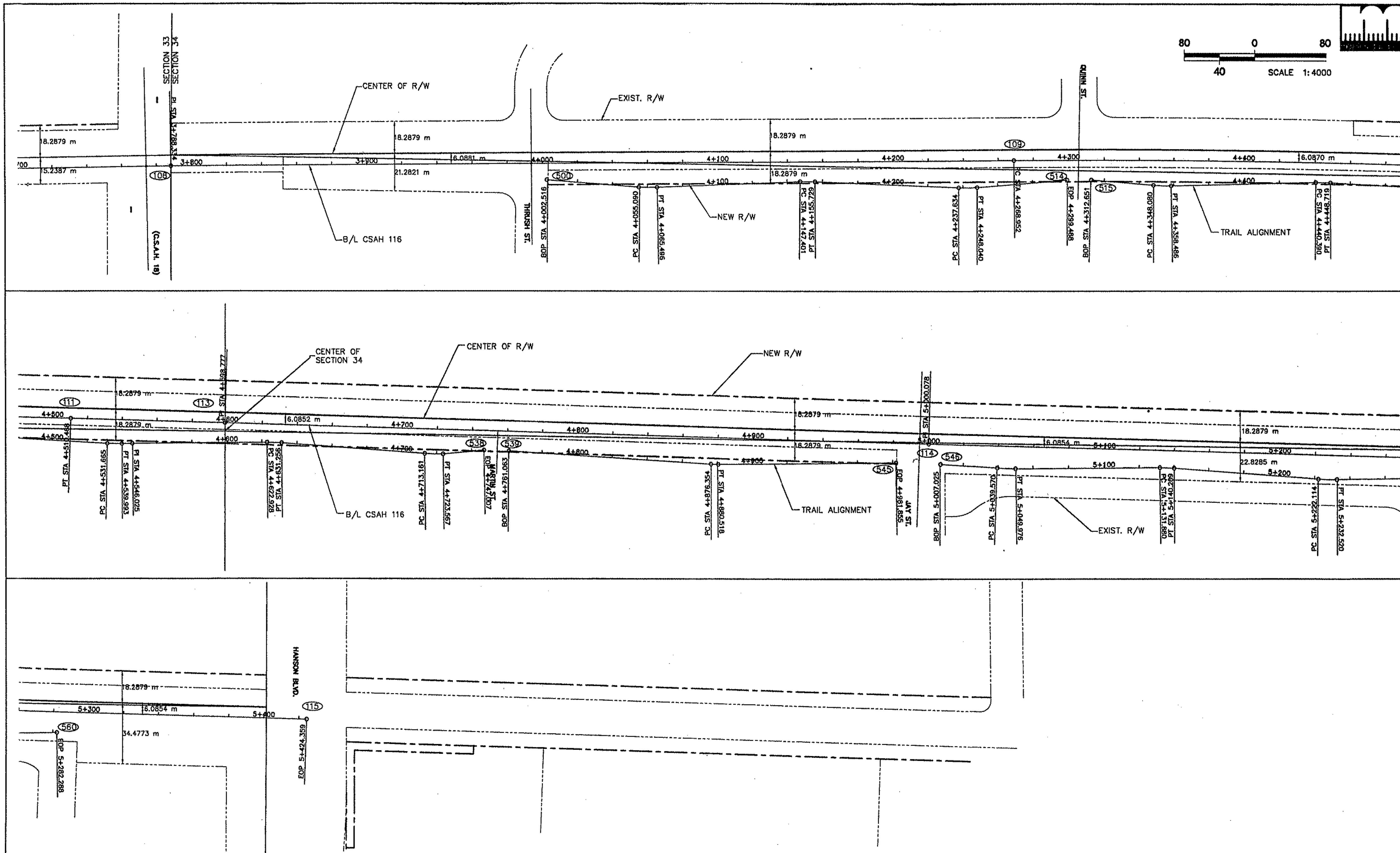
STA. 1+388.164 TO 3+720.000

FILE NO. ANOKC9806.01

DATE 03/15/99

32 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\ACB06AL1.DWG 03-24-99 4:03 pm



SECTION 33
SECTION 34
80 0 80
40
SCALE 1:4000
CENTER OF R/W
EXIST. R/W
NEW R/W
B/L CSAH 116
TRAIL ALIGNMENT
(C.S.A.H. 18)
THRUSH ST.
QUINN ST.
MARTIN ST.
JAY ST.
HANSON BLVD.
CENTER OF SECTION 34
18.2879 m
21.2821 m
15.2387 m
6.0881 m
6.0870 m
6.0852 m
6.0854 m
22.8285 m
34.4773 m
3+800
3+900
4+000
4+100
4+200
4+300
4+400
4+500
4+600
4+700
4+800
4+900
5+000
5+100
5+200
5+300
5+400
BOP STA 4+002.516
PC STA 4+055.090
PT STA 4+065.496
PC STA 4+147.401
PT STA 4+155.729
PC STA 4+237.634
PT STA 4+248.040
PC STA 4+268.952
EOP 4+299.488
BOP STA 4+312.651
PC STA 4+348.080
PT STA 4+358.486
PC STA 4+440.390
PT STA 4+448.719
PC STA 4+531.665
PT STA 4+539.993
PT STA 4+546.025
PC STA 4+622.928
PT STA 4+631.256
PC STA 4+713.161
PT STA 4+723.567
BOP STA 4+761.063
PC STA 4+876.354
PT STA 4+880.518
EOP 4+981.855
BOP STA 5+007.025
PC STA 5+039.570
PT STA 5+049.976
PC STA 5+131.880
PT STA 5+140.209
PC STA 5+222.114
PT STA 5+232.520
EOP 5+282.288
EOP 5+424.359
108
109
111
113
114
115
500
514
515
538
539
545
546
560

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806AL3.DWG 03-18-99 11:34 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.

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

SEH

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

ALIGNMENT TABULATION
BL CURVE DATA

POINT ID	POINT	CURVE	STATION	DELTA	RADIUS	TANGENT	LENGTH	COORDINATES NORTHING	COORDINATES EASTING	BEARING
100	POB		1+388.164					7532.0516	8341.0418	N89° 48'27"E
101	PI		1+680.455					7533.0340	8633.3309	N89° 39'42"E
102	PI		1+840.487					7536.7717	8793.3192	N89°48'27"E
103	PI		2+185.176					7537.9301	9138.0060	N89°05'20"E
104	PI		2+430.841					7541.8363	9383.6408	N87°56'35"E
105	PI		2+527.221					7545.2954	9479.9579	N89° 05'20"E
106	PI		2+772.436					7549.1944	9725.1422	S89°45'55"E
107	PI		2+908.223					7548.6382	9860.9282	N89° 05'20"E
108	PI		3+788.334					7562.6322	10740.9275	N89° 34'21"E
109	PC		4+268.952					7566.2186	11221.5331	
110	PI	C9	4+389.725	21°57"	6292.0952	120.773	241.5159	7567.1198	11342.3025	S88°13'42"E
111	PT		4+510.468					7563.3859	11463.0175	
112	RP							1274.2986	11268.4848	
113	PI		4+598.777					7560.6556	11551.2839	S88°15'02"E
114	PI		5+000.078					7548.4044	11952.3980	S88°19'15"E
115	POE		5+424.359					7535.9718	12376.4966	

ALIGNMENT TABULATION
FRONTAGE ROAD CURVE DATA

POINT ID	POINT	CURVE	STATION	DELTA	RADIUS	TANGENT	LENGTH	COORDINATES NORTHING	COORDINATES EASTING	BEARING
300	POB		1+673.266					7510.3625	8630.3082	N34°28'31"E
301	PI	C1	1+687.071	54°11'11"	26.9850	13.805	25.5205	7521.7428	8638.1225	N88°39'42"E
302	PT		1+698.787					7522.0652	8651.9236	
303	RP							7495.0876	8652.5538	
304	PI		1+810.409					7524.6723	8763.5157	N89°48'33"E
305	PI		1+840.488					7524.7718	8793.3595	N89°48'27"E
306	PI		2+185.177					7525.9302	9138.0464	N89°05'21"E
307	PI		2+430.841					7529.8354	9383.6796	N89°05'20"E
308	PC		2+496.904					7530.8858	9449.7345	
309	PI	C6	2+510.426	53°32'41"	26.8000	13.521	25.0455	7531.1008	9463.2543	S37° 21'59"E
310	PCC		2+521.950					7520.3544	9471.4606	
311	RP							7504.0892	9450.1607	
312	PI	C7	2+528.219	50°28'22"	13.3000	6.269	11.7162	7515.3721	9475.2652	S87°50'21"E
313	PT		2+533.666					7515.1357	9481.5295	
314	RP							7528.4262	9482.0310	
315	POE		2+546.986					7514.6334	9494.8404	

ALIGNMENT TABULATION
SIDE STREET CL CURVE DATA

	POINT	CURVE	STATION	DELTA	RADIUS	TANGENT	LENGTH	COORDINATES NORTHING	COORDINATES EASTING	BEARING
MARIGOLD ST.	POB		0+100.000					7537.3700	8971.0100	N00°12'04"E
	POE		0+153.640					7591.0100	8971.2000	
HEATHER ST.	POB		0+040.225					7490.0094	9481.7667	N44°23'57"E
	PI	C 1	0+055.285	33°59'25"	49.2734	15.060	29.2310	7500.7694	9492.3033	N00°00'00"E
	PT		0+069.456					7515.5813	9495.0242	
	RP							7524.4836	9446.5617	
	PC		0+111.633					7557.0644	9502.6443	
	PI	C 2	0+129.850	10°24'32"	200.0000	18.217	36.3336	7574.9816	9505.9356	N00°00'00"E
	PT		0+147.967					7593.1985	9505.9356	
	RP							7593.1985	9305.9356	
	POE		0+189.549					7634.7805	9505.9356	
SCHOOL DR.	POB		0+200.000					7602.8671	9505.9356	N90°00'00"E
	PC		0+227.989					7602.8671	9533.9242	
	PI	C 1	0+230.929	13°24'53"	25.0000	2.940	5.8533	7602.8671	9536.8643	N00°00'00"E
	PT		0+233.842					7603.5692	9539.7242	
	RP							7627.8671	9533.9242	
	PC		0+245.118					7606.1852	9550.6925	
	PI	C 2	0+248.058	13°24'53"	25.0000	2.940	5.8533	7606.8673	9553.5524	N00°00'00"E
	PT		0+250.971					7606.8673	9556.4925	
	RP							7581.8673	9556.4925	
	POE		0+297.575					7606.8673	9603.0967	
GLADIOLA ST.	POB		0+064.060					7512.7300	9692.2500	N00°54'40"W
	POE		0+100.000					7548.6600	9691.6800	
EIDELWEISS ST.	POB		0+100.000					7548.8600	9807.2100	N10°39'46"W
	POE		0+134.820					7583.0800	9800.7700	
CROOKED LAKE BLVD.	POB		0+100.000					7549.0700	9888.0400	S10°39'47"E
	POE		0+063.820					7513.5100	9894.7300	
BITTERSWEET ST.	POB		0+100.000					7552.3100	10091.8300	S00°54'40"E
	POE		0+064.450					7516.7700	10092.3900	
CROSSTOWN DR.	POB		0+100.000					7553.9100	10192.3000	N00°54'40"W
	POE		0+154.040					7607.9400	10191.4400	
YUKON ST.	POB		0+100.000					7558.2700	10466.4900	S00°10'54"E
	POE		0+065.930					7524.2000	10466.5900	
XAVIS ST.	POB		0+100.000					7560.1100	10582.4100	N00°53'11"W
	POE		0+149.570					7609.6800	10581.6400	
CROSSTOWN BLVD.	POB		0+041.260					7503.6700	10727.8800	N01°01'13"W
	POE		0+155.920					7618.3100	10725.8400	
THRUSH ST.	POB		0+053.953					7518.1200	10946.6400	N00°18'46"W
	POE		0+142.203					7606.3600	10946.1600	
QUINN ST.	POB		0+077.691					7544.0800	11257.7200	N01°09'09"E
	POE		0+150.871					7617.2400	11259.2000	
MARTIN ST.	POB		0+100.000					7555.9000	11706.8600	S01°44'58"W
	POE		0+075.120					7531.0300	11706.1000	
JAY ST.	POB		0+051.978					7500.5700	11945.6000	N02°01'30"E
	POE		0+141.988					7590.5200	11948.7800	

ALIGNMENT TABULATION
TRAIL CURVE DATA

POINT ID	POINT	CURVE	STATION	DELTA	RADIUS	TANGENT	LENGTH	COORDINATES NORTHING	COORDINATES EASTING	BEARING
500	POB		4+002.520					7554.8200	10955.1700	S85°32'52"E
501	PI		4+055.090					7550.7400	11007.5900	S86°25'25"E
502	PI	C2	4+060.300	5°57'44"	100.0000	5.208	10.4061	7550.4200	11012.7900	N87°36'51"E
503	PT		4+065.500					7550.6300	11017.9900	
504	RP							7650.5500	11013.8300	
505	PC		4+147.400					7554.0400	11099.8200	
506	PI	C3	4+151.570	4°46'19"	100.0000	4.167	8.3285	7554.2200	11103.9900	S87°36'51"E
507	PT		4+155.730					7554.0400	11108.1500	
508	RP							7454.1300	11103.9900	
509	PC		4+237.630					7550.6300	11189.9800	
510	PI	C4	4+242.840	5°57'44"	100.0000	5.208	10.4061	7550.4200	11195.1900	N86°25'25"E
511	PCC		4+248.040					7550.7400	11200.3800	
512	RP							7650.5500	11194.1500	
513	PI		4+248.040					7550.7400	11200.3800	N85°19'16"E
514	POE		4+299.490					7554.9400	11251.6600	
515	POB		4+312.650					7555.0300	11265.2400	S85°10'54"E
516	PI		4+348.080					7552.0500	11300.5400	S85°25'25"E
517	PI	C2	4+353.290	5°57'44"	100.0000	5.208	10.4061	7551.6400	11305.7300	N88°36'51"E
518	PT		4+358.490					7551.7600	11310.9400	
519	RP							7651.7300	11308.5200	
520	PC		4+440.390					7553.7400	11392.8200	
521	PI	C3	4+444.560	4°46'19"	100.0000	4.167	8.3285	7553.8400	11396.9800	S86°36'51"E
522	PT		4+448.720					7553.6000	11401.1400	
523	RP							7453.7700	11395.2400	
524	PC		4+531.660					7548.7000	11483.9400	
525	PI	C4	4+535.830	4°46'19"	100.0000	4.167	8.3285	7548.4500	11488.1000	N88°36'51"E
526	PT		4+539.990					7548.5500	11492.2700	
527	RP							7648.5200	11489.8500	
528	PI		4+546.020					7548.7000	11498.3000	N89°35'46"E
529	PI		4+622.930					7549.2400	11575.2000	N89°36'51"E
530	PI	C7	4+627.090	4°46'19"	100.0000	4.167	8.3285	7549.2700	11579.3700	S85°36'51"E
531	PT		4+631.260					7548.9800	11583.5200	
532	RP							7449.2400	11575.8700	
533	PC		4+713.160					7542.6900	11665.1900	
534	PI	C8	4+718.370	5°57'44"	100.0000	5.208	10.4061	7542.2900	11670.3800	N86°25'25"E
535	PCC		4+723.570					7542.4300	11675.5800	
536	RP							7642.3900	11672.8300	
537	PI		4+723.570					7542.4300	11675.5800	N84°44'35"E
538	POE		4+747.010					7544.5800	11698.9300	
539	POB		4+761.060					7544.1300	11713.1400	S86°16'19"E
540	PT		4+876.350					7536.6300	11828.1900	S85°36'51"E
541	PI	C2	4+878.440	4°46'19"	50.0000	2.083	4.1643	7536.4800	11830.2600	N89°36'51"E
542	PCC		4+880.520					7536.4900	11832.3500	
543	RP							7586.4900	11832.0100	
544	PI		4+880.520					7536.4900	11832.3500	N89°28'45"E
545	POE		4+981.850					7537.4100	11933.6800	
546	POB		5+007.020					7536.5300	11959.0000	S86°24'49"E
547	PI		5+039.570					7534.4900	11991.4800	S84°25'25"E
548	PI	C2	5+044.780	5°57'44"	100.0000	5.208	10.4061	7533.9800	11996.6600	N89°36'51"E
549	PT		5+049.980					7534.0200	12001.8700	
550	RP							7634.0200	12001.2000	
551	PC		5+131.880					7534.5700	12083.7700	
552	PI	C3	5+136.050	4°46'19"	100.0000	4.167	8.3285	7534.6000	12087.9400	S85°36'51"E
553	PT		5+140.210					7534.2800	12092.1000	
554	RP							7434.5700	12084.4500	
555	PC		5+222.110					7528.0200	12173.7600	
556	PI	C4	5+227.320	5°57'44"	100.0000	5.208	10.4061	7527.6200	12178.9500	N88°25'25"E
557	PCC		5+232.520					7527.7600	12184.1600	
558	RP							7627.7200	12181.4100	
559	PI		5+232.520					7527.7600	12184.1600	N89°12'41"E
560	POE		5+282.290					7528.4500	12233.9200	

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

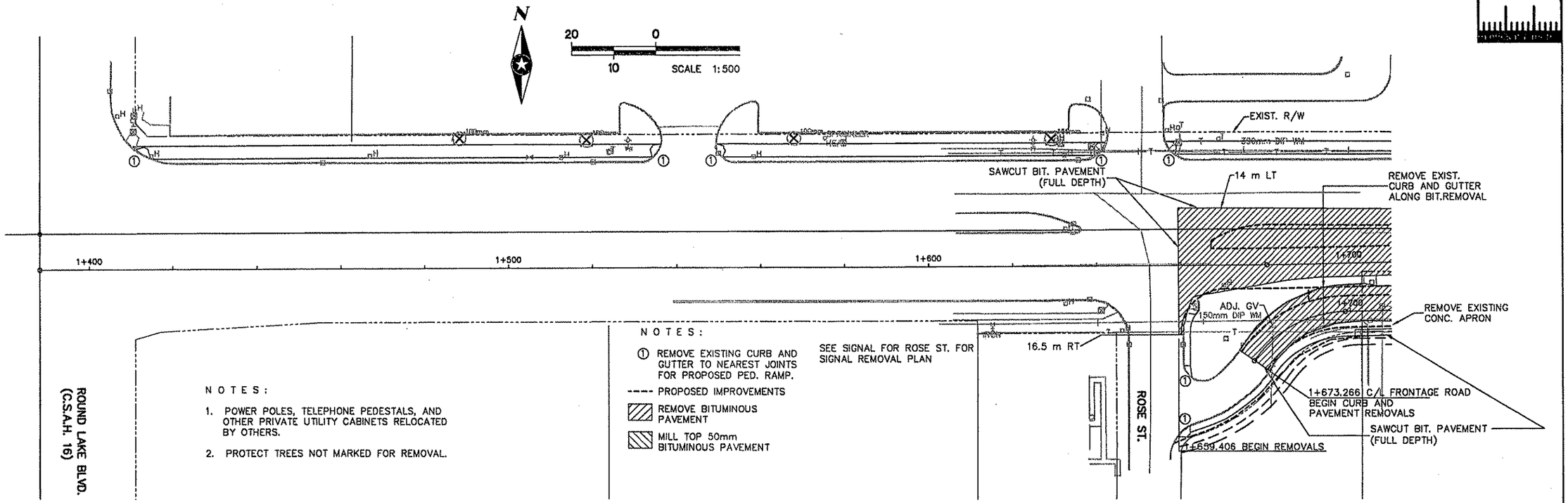
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

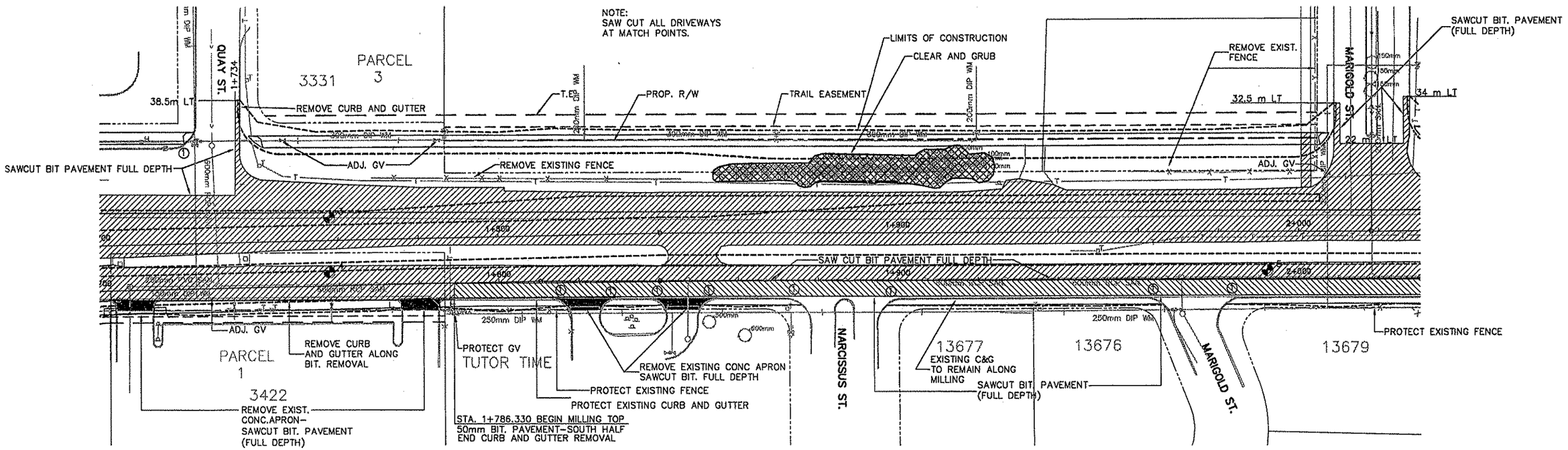
ALIGNMENT TABULATIONS

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

34/230

O:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806AL2.DWG 03-18-99 11:36 am





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	REMOVAL PLAN	FILE NO. ANOKC9806.01	35
DRAWING							C.S.A.H. 116 (BUNKER LAKE BLVD.)	STA. 1+388.164 TO 2+030.000	DATE 3/15/99	230
CHECKED							S.A.P. 02-716-04 S.A.P. 198-020-14			
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM					

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL1.DWG 03-08-99 10:01 cm

N

20 0 20

10 SCALE 1:500

PARCEL 32

PARCEL 33

3155

3037

TRAIL EASEMENT

TEMPORARY EASEMENT

PRO. R/W

REMOVE SIGN

CLEAR AND GRUB

REMOVE EXISTING FENCE

SAW CUT BIT PAVEMENT FULL DEPTH

PROTECT EXISTING CURB AND GUTTER

3210

3160

3148

3136

3124

3112

PARCEL 8

PARCEL 7

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

PARCEL 34

PARCEL 35

REMOVE FENCE

TEMPORARY EASEMENT

PROTECT SIGN

TRAIL EASEMENT

LIMITS OF CONSTRUCTION

EDGE OF WETLAND

RELOCATE HYD.

SALVAGE SIGN

SEE SIGNAL PLAN FOR SIGNAL REMOVAL

ADJ. GV

ADJ. GV'S

SAW CUT BIT PAVEMENT FULL DEPTH

RELOCATE HYD.

REMOVE WALK

PLANTER

RELOCATE HYD.

3112

JONQUIL ST.

3060

PARCEL 9

SAW CUT BIT PAVEMENT FULL DEPTH

3048

PARCEL 10

EXISTING C&G TO REMAIN

STA. 2+496.815 END MILLING TOP 50mm BIT. PAVEMENT-SOUTH HALF BEGIN CURB AND GUTTER REMOVAL

3038 REMOVE FENCE

PARCEL 11

REMOVE CURB AND GUTTER ALONG BIT REMOVAL

SAWCUT BIT PAVEMENT FULL DEPTH

3024

PARCEL 12

HEATHER ST.

REMOVE DECORATIVE WALL

REMOVE S/W TO NEAREST JOINT FOR PRO. PED. RAMP

REMOVE CURB AND GUTTER ALONG WITH BIT REMOVAL

END CONSTRUCTION 0+053.72

HEATHER ST.

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

ESEH

ANOKA COUNTY

C.S.A.H. 116 (BUNKER LAKE BLVD.)

S.A.P. 02-716-04

S.A.P. 198-020-14

REMOVAL PLAN

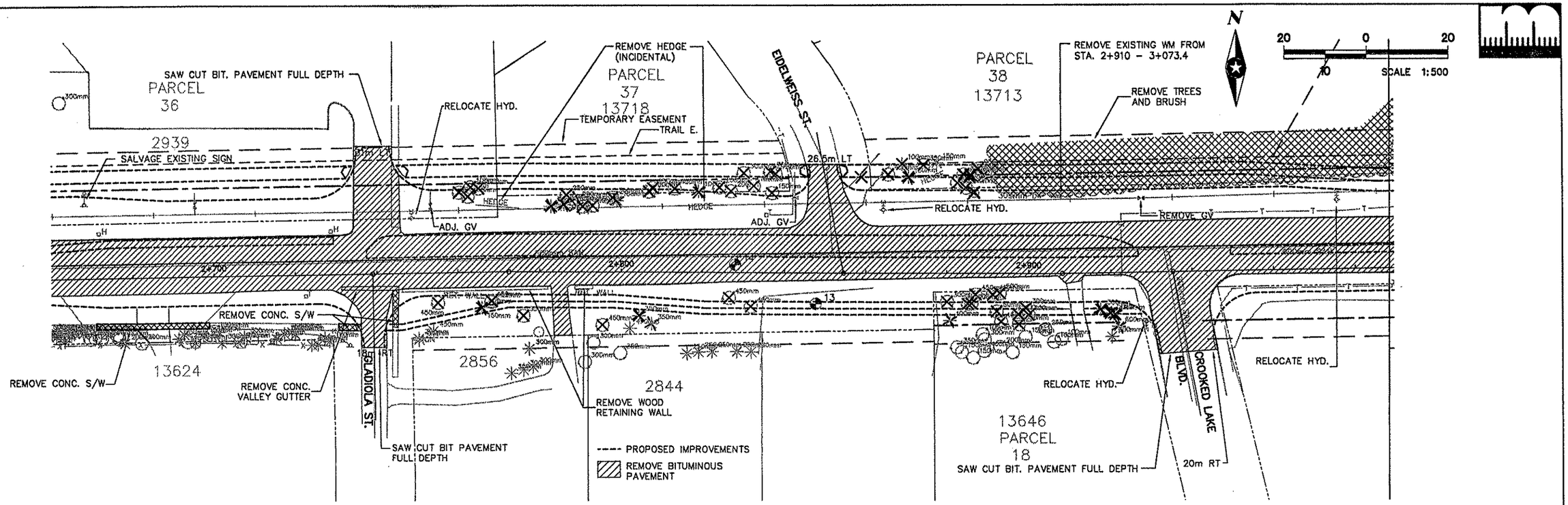
STA. 2+020.000 TO 2+670.000

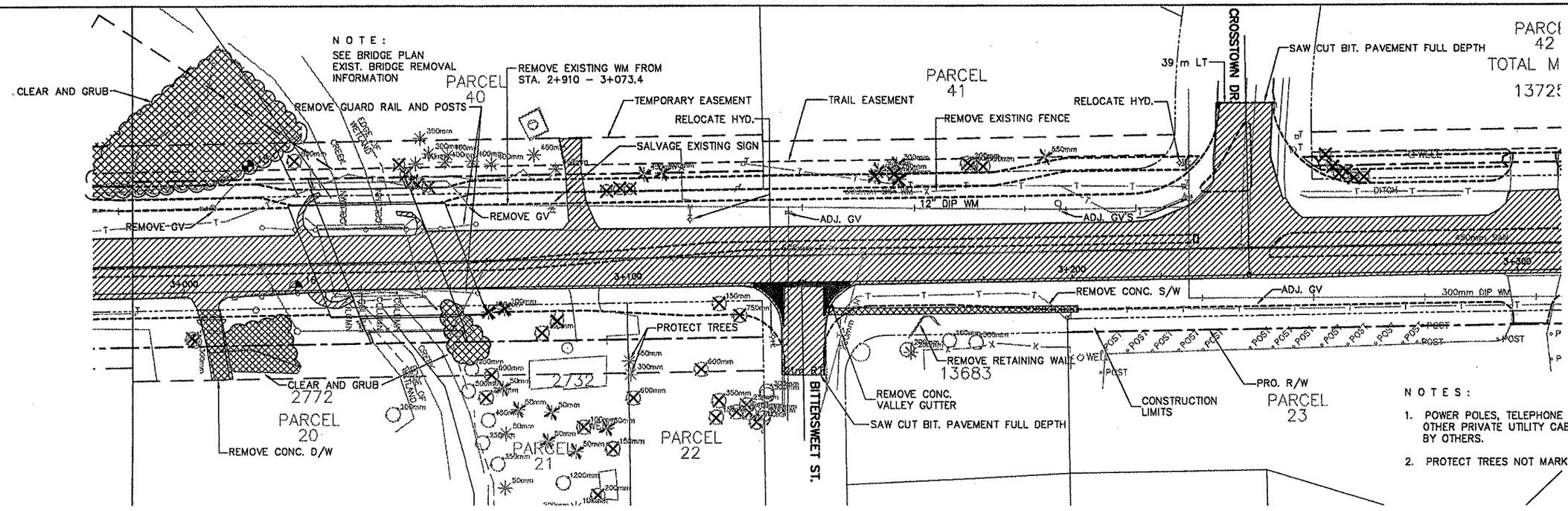
FILE NO. ANOKC9806.01

DATE 3/15/99

36/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL2.DWG 02-22-99 1:47 pm





DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

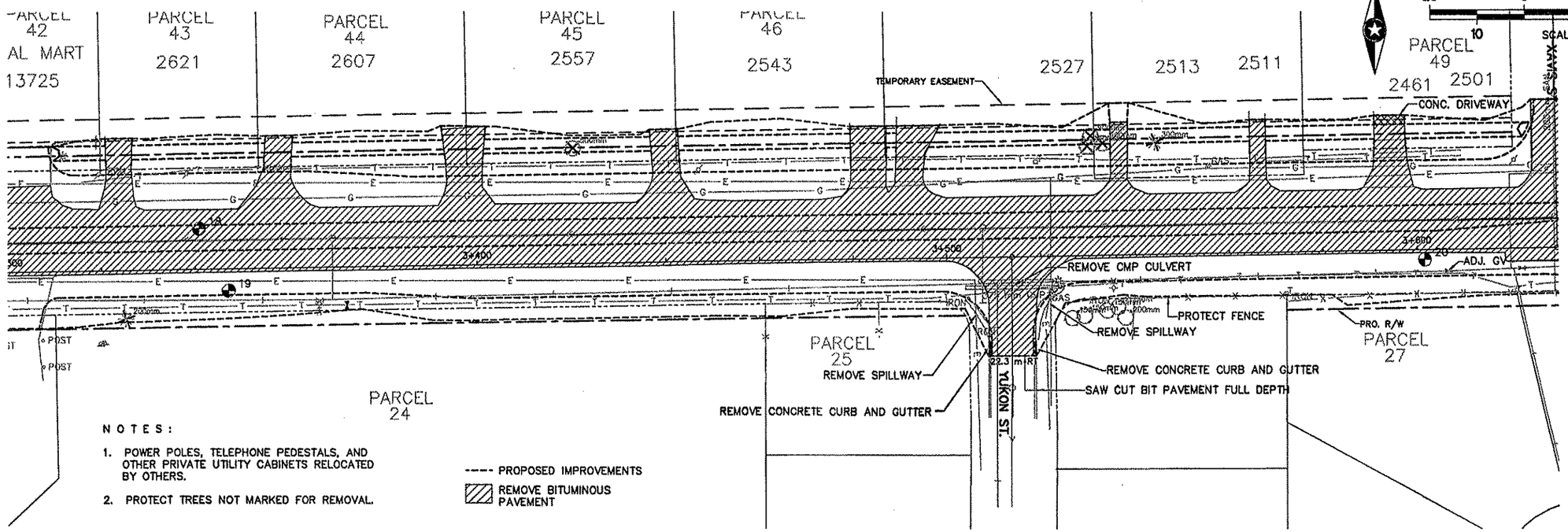
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 03/15/99 Reg. No. 18612

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

REMOVAL PLAN
STA. 2+660.000 TO 3+310.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL3.DWG 03-25-99 8:52 am



NOTES:

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

---- PROPOSED IMPROVEMENTS

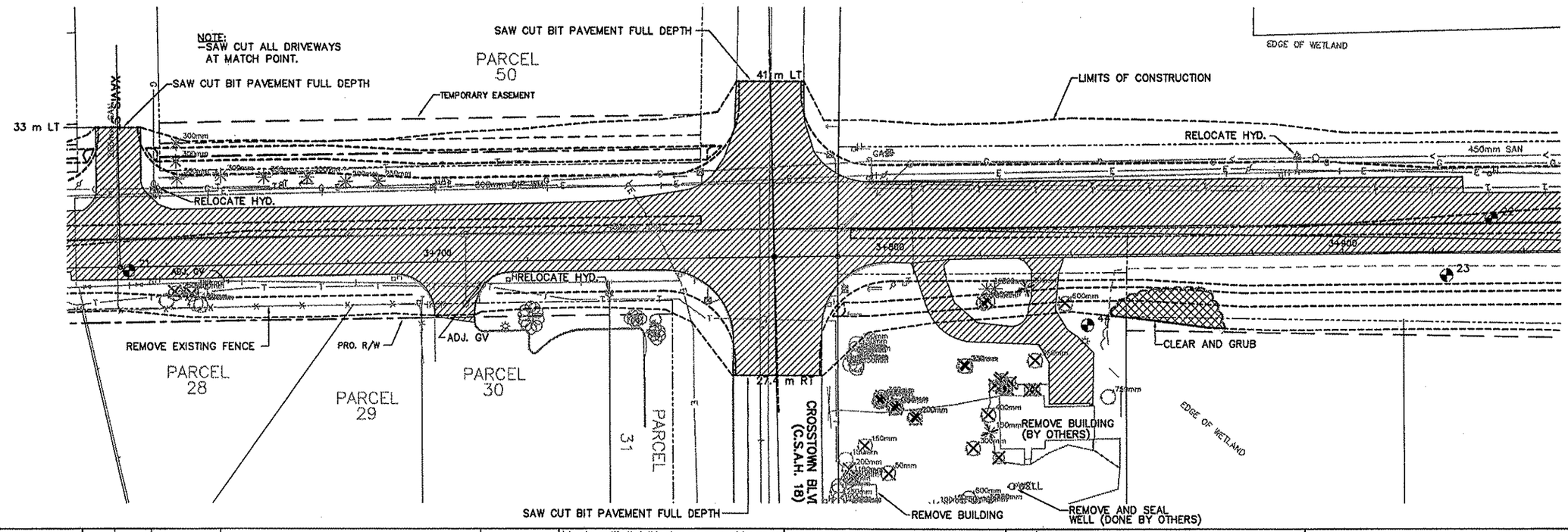
REMOVE BITUMINOUS PAVEMENT

N

20 0 20

10

SCALE 1:500



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

ESH

ANOKA COUNTY

C.S.A.H. 116 (BUNKER LAKE BLVD.)

S.A.P. 02-716-04

S.A.P. 198-020-14

REMOVAL PLAN

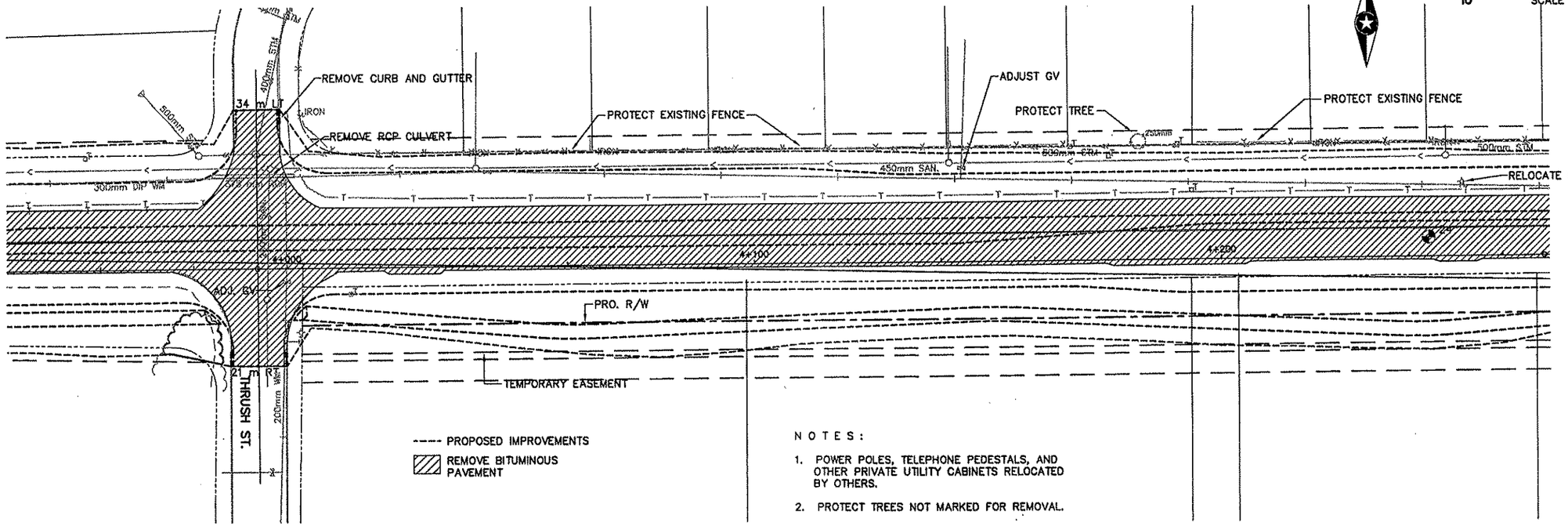
STA. 3+300.00 TO 3+950.000

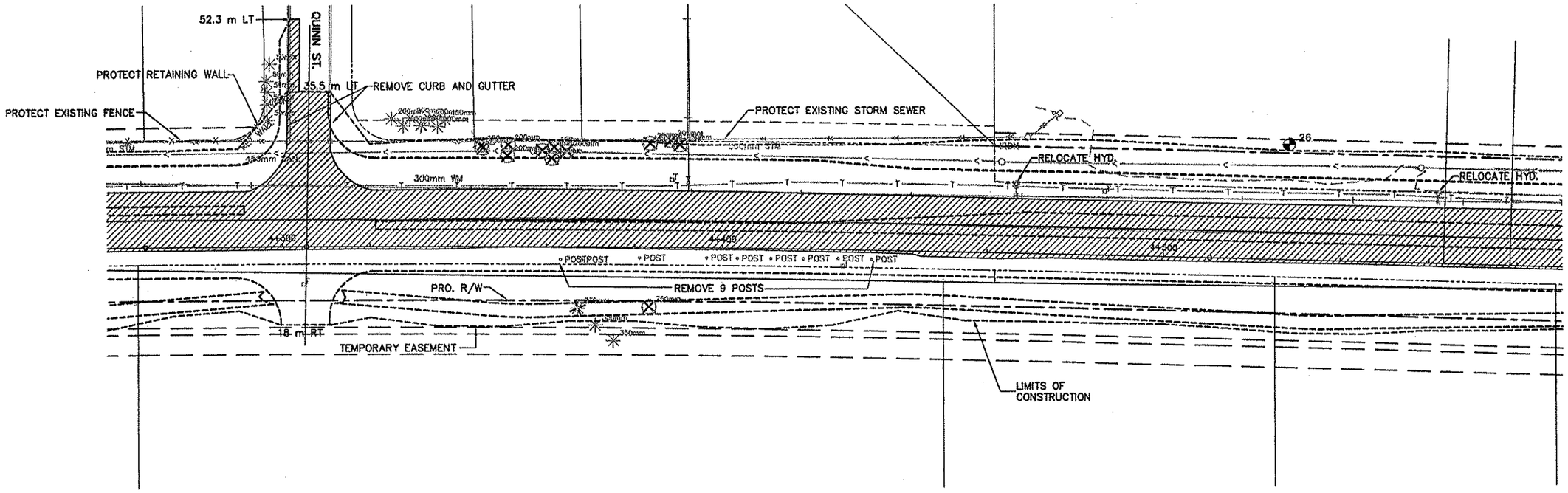
FILE NO. ANOKC9806.01

DATE 3/15/99

38 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL4.DWG 03-08-99 10:05 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.
Date: 3/15/99 Reg. No. 18612

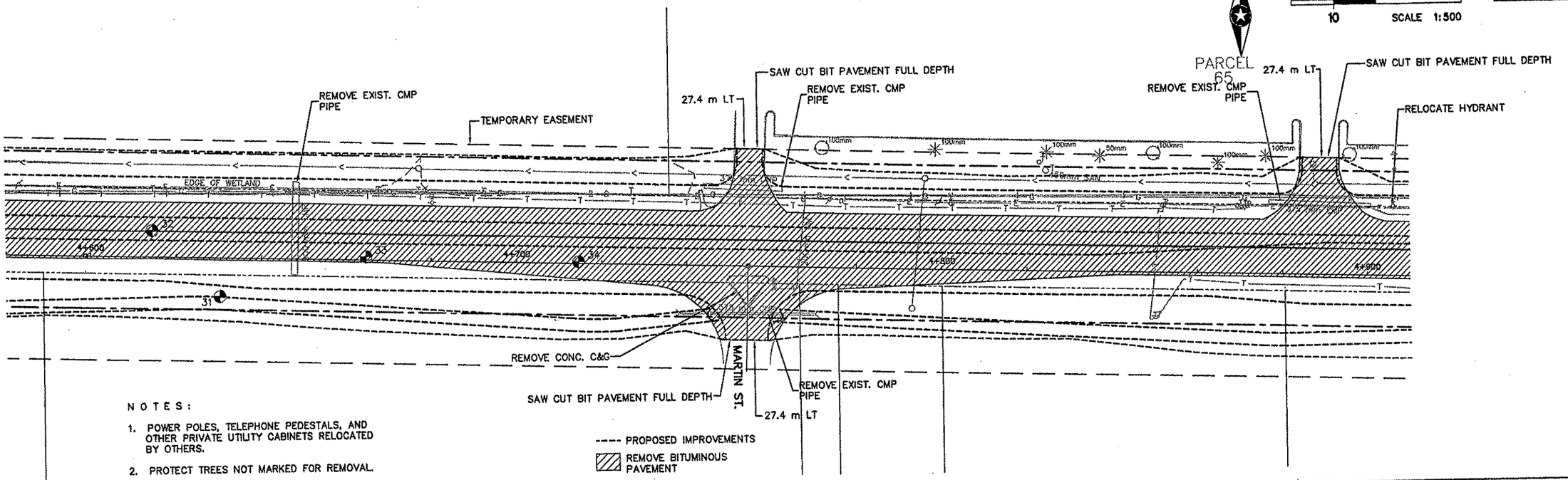
SEH

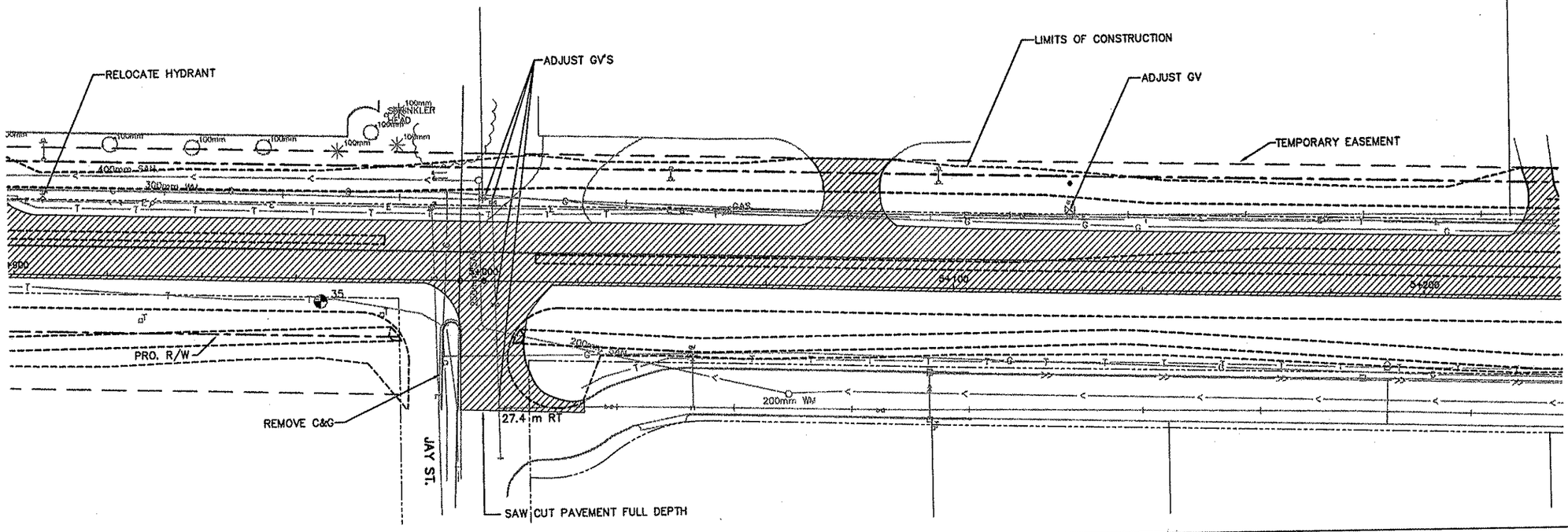
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

REMOVAL PLAN
STA. 3+940.000 TO 4+590.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVALS.DWG 03-08-99 10:06 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.
Date 3/15/99 Reg. No. 18612

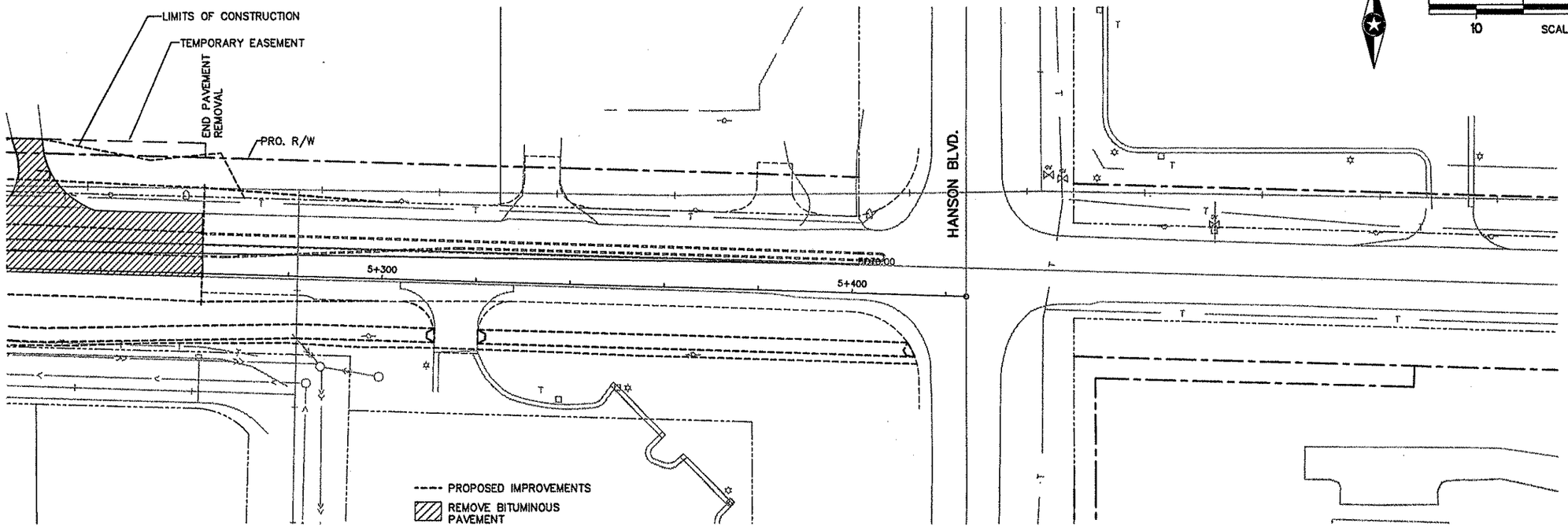
ESEH

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

REMOVAL PLAN
STA. 4+580.000 TO 5+230.000

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

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL6.DWG 03-08-99 10:07 am



N

20 0 20

10 SCALE 1:500

NOTES:

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

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

SEH

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. ANOKC9806.01

DATE 3/15/99

41/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\RCREMOVAL7.DWG 03-08-99 10:08 am

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

N

20 0 20
10 SCALE 1:500

3.0 m BIT. TRAIL

1.2 m F/C TO TRAIL

EXIST. R/W

PI 1+680.456

CENTER SEC. 32

1+400 1+500 1+600

8.5 m

1+667.141
5.419 m LT.

1+698.206
8.700 m. LT

1+680.717
9.250 m LT

0.02

4.2 m

25.0 m R.

B412

4.2 m 1+700

1+690.219 BEGIN 75 mm CONC. MEDIAN

1+675.641
6.000 m RT.

6.0 m

B418

B618

1+700

150mm DIP WM

5.4 m R.

26 m R.

PT 1+698.787

1.524 m TRAIL E.

3.048 m T.E.

1+673.266 C/L FRONTAGE ROAD
BEGIN FULL WIDTH FRONTAGE CONST.
SEE SEPARATE PROFILE SHEETS
FOR VERTICAL INFORMATION.
MATCH EXISTING

1.5 m 100 mm CONC. WALK. MATCH EXIST. B/C

CONSTRUCTION LIMITS

1+659.406 BEGIN ROADWAY CONSTRUCTION
MATCH EXISTING

ROUND LAKE BLVD. (C.S.A.H. 16)

B/L C.S.A.H. 116

ROSE ST.

PAVEMENT CROSS SLOPE TRANSITION

NOTES:

ALL DIMENSIONS ARE TO FACE OF CURB.

REMOVE EXIST. CONC. APRON

① 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

BENCH MARK: 267.916
TOP NUT OF HYDRANT
● 3480 BUNKER LAKE BLVD.
(SOUTH SIDE)

267.089 267.211 267.065 266.970 267.02 266.898 266.94

271 270 269 268 267 266 265 264 263 262 261

V.C. = 100.000m
M = 0.146

EXISTING B/L GRADE

-0.671%

0.33 m

PROPOSED B/L FINISHED GRADE

GRADING GRADE

STA. 1+648.456
BEGIN PROFILE MATCH EXISTING

PVC 1+663.456

PVI STA. = 1+763.456
EL. = 266.730

1+400 1+500 1+600 1+700

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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. 18812

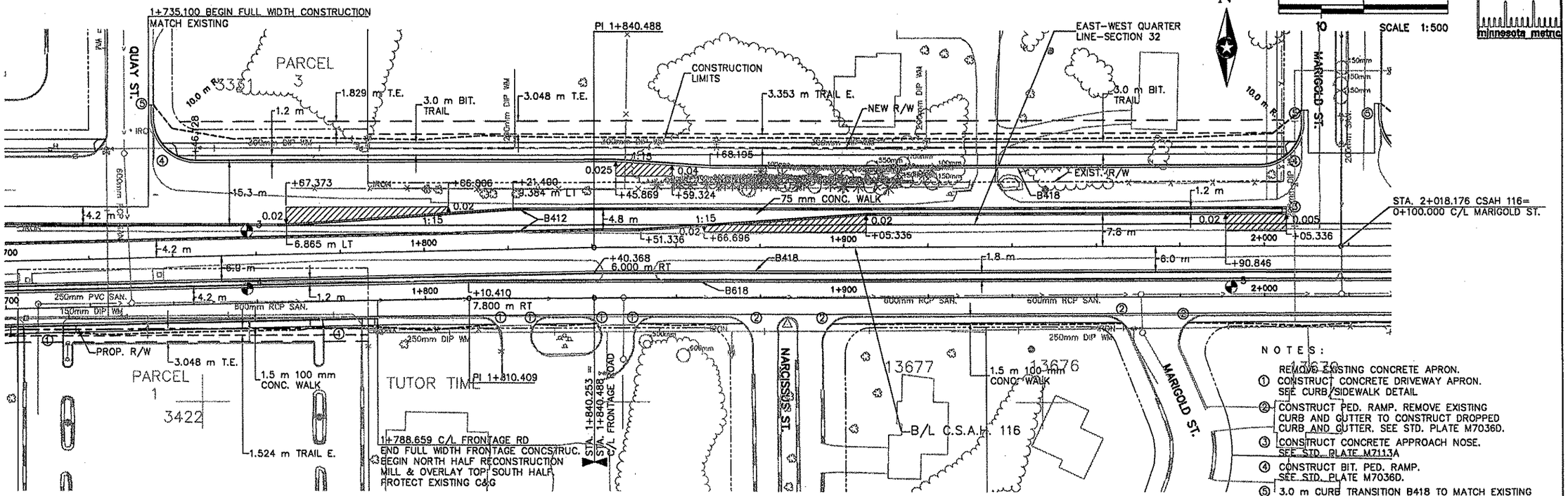
SEH

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
DATE 03/15/99
42/230

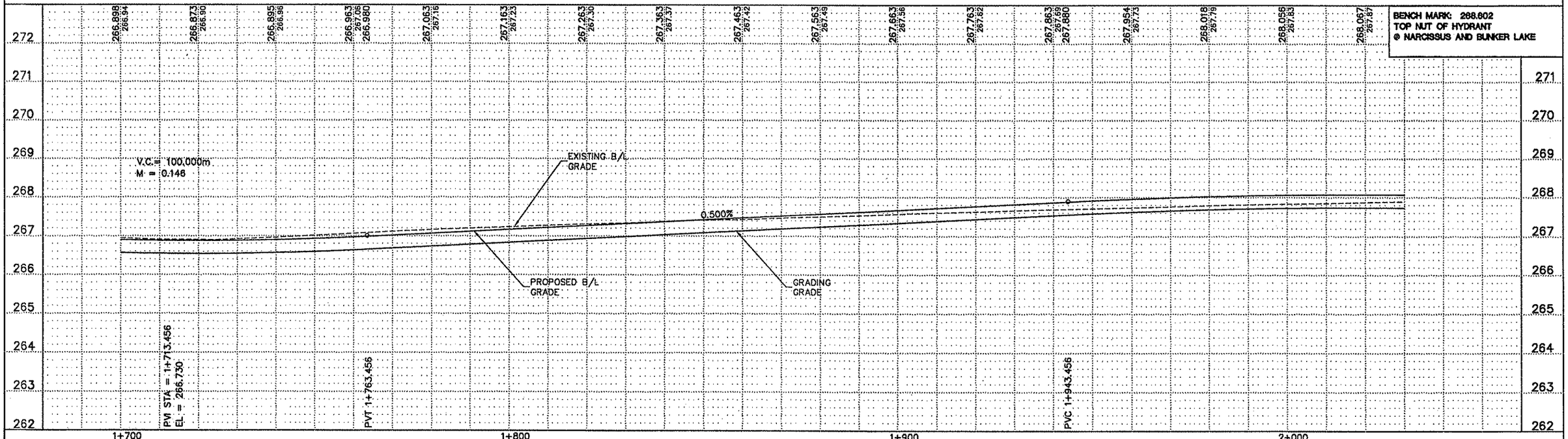
03-24-99 11:44 am
C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET1.DWG



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



BENCH MARK: 288.602
TOP NUT OF HYDRANT
@ NARCISSUS AND BUNKER LAKE

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

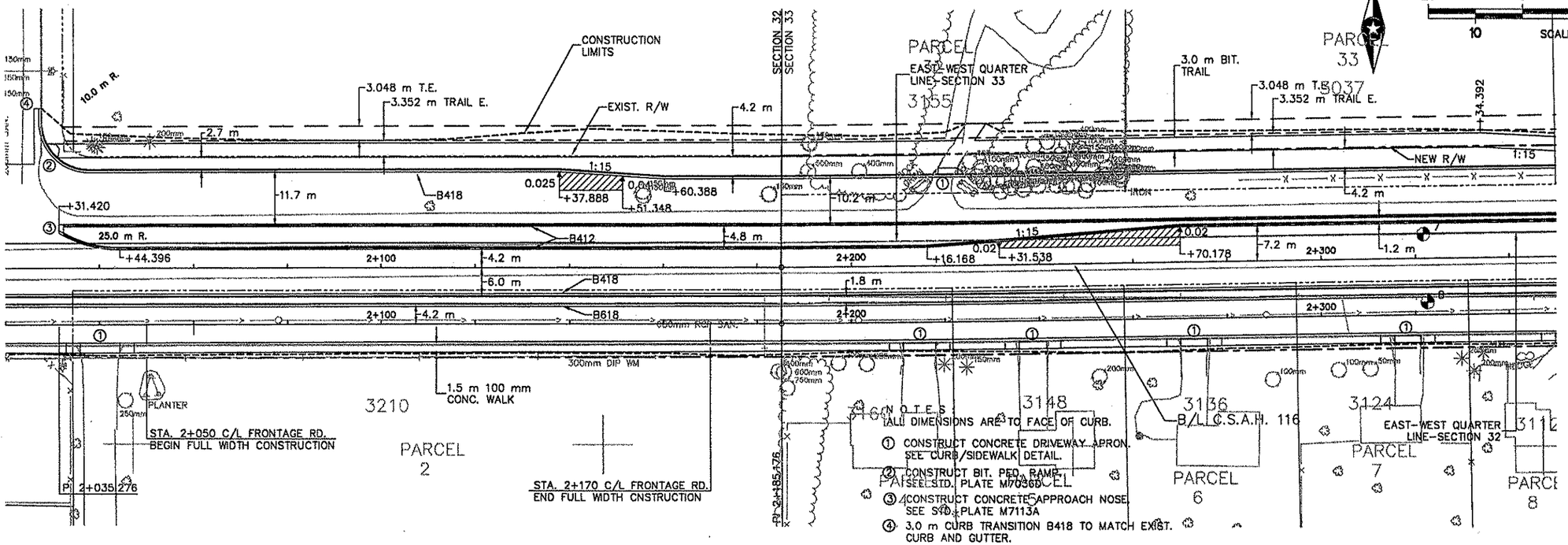
SEH

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

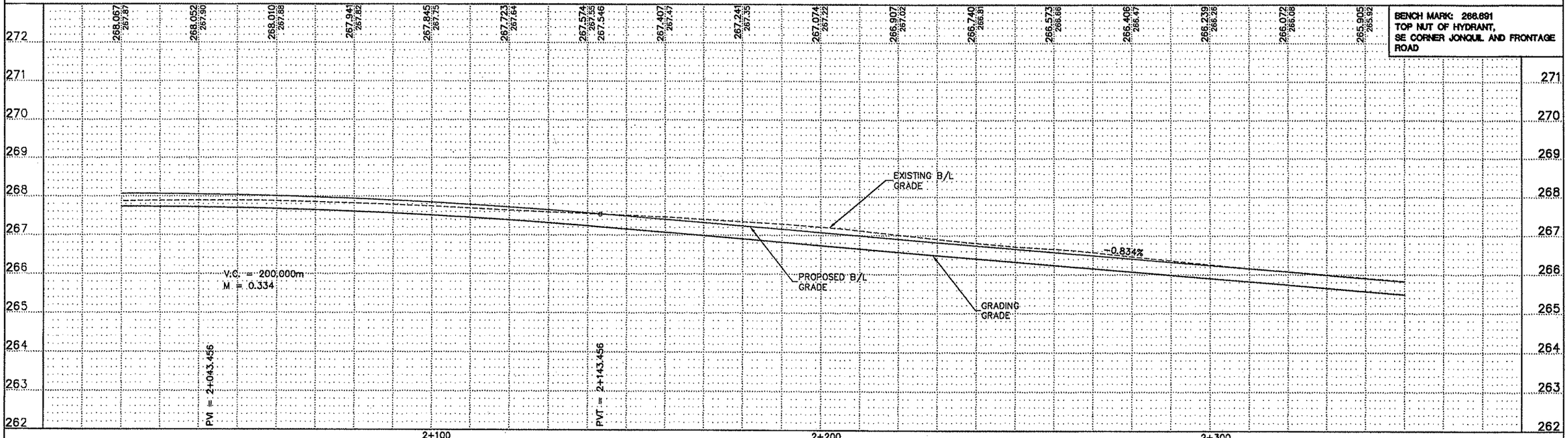
FILE NO. ANOKC9806.01
DATE 03/15/99
43/230

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



NOTES
ALL DIMENSIONS ARE TO FACE OF CURB.
① CONSTRUCT CONCRETE DRIVEWAY APRON. SEE CURB/SIDEWALK DETAIL.
② CONSTRUCT BIT. PED. RAMP. SEE STD. PLATE M/0360
③ CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A
④ 3.0 m CURB TRANSITION B418 TO MATCH EXIST. CURB AND GUTTER.

▨ PAVEMENT CROSS SLOPE TRANSITION



BENCH MARK: 268.691
TOP NUT OF HYDRANT, SE CORNER JONQUIL AND FRONTAGE ROAD

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

SEH

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET3.DWG 03-18-99 1:39 pm

SEE CONTOUR PLAN FOR PROPOSED POND #1

SEE PLAN & PROFILE FOR SCHOOL DRIVE

PARCEL 34

PARCEL 35

CONSTRUCTION LIMITS

PI 2+430.841

PI 2+527.222

STA. 2+547.810 CSAH 116= STA. 0+100.000 C/L HEATHER ST.

N

SCALE 1:500

3.048 m T.E.

3.352 m TRAIL E.

3.096 m TRAIL E.

1.2 m 3.0 m BIT. TRAIL

EDGE OF WETLAND

ROCK GRDN

EXIST. R/W

NEW R/W

B/L C.S.A.H. 116

JONQUIL ST.

HEATHER ST.

PARCEL 9

PARCEL 10

PARCEL 11

PARCEL 12

PARCEL 8

EAST-WEST QUARTER LINE-SECTION 33

0.5 m 100 mm CONC. WALK

600mm STORM

600mm RCP SAN.

PC 2+496.904 C/L FRONTAGE ROAD
BEGIN FULL WIDTH FRONTAGE CONSTRUC.

STA. 2+546.986 FRONTAGE ROAD=
0+053.724 C/L HEATHER ST.

STA. 0+053.725 C/L HEATHER ST.
MATCH EXISTING

0+054.690 HEATHER ST
6.000 m R.
BEGIN TAPER TO EXIST.

PAVEMENT CROSS SLOPE TRANSITION

2+504.8 END 75 mm CONC. WALK

PLANTER

CANOPY

NOTES:

ALL DIMENSIONS ARE TO FACE OF CURB.

1. CONSTRUCT CONCRETE DRIVEWAY APRON. SEE CURB/SIDWALK 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 B618. BEGIN AT END OF RADIUS.
6. CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D
7. REMOVE SIDEWALK TO NEAREST JOINT. CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D
8. 3.0 m CURB TRANSITION B418 TO MATCH B612. BEGIN AT END OF RADIUS.

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

V.C. = 100.000m
M = 0.231

-0.834%

1.013%

PROPOSED B/L GRADE

EXISTING B/L GRADE

GRADING GRADE

LIMITS OF MUCK EXCAVATION SEE CROSS-SECTIONS FOR WIDTH INFORMATION

PVC = 2+428.456

PVI STA. = 2+478.456
EL = 264.750

PVT = 2+528.456

2+400 2+500 2+600

269 268 267 266 265 264 263 262 261 260 259

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

SEH

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

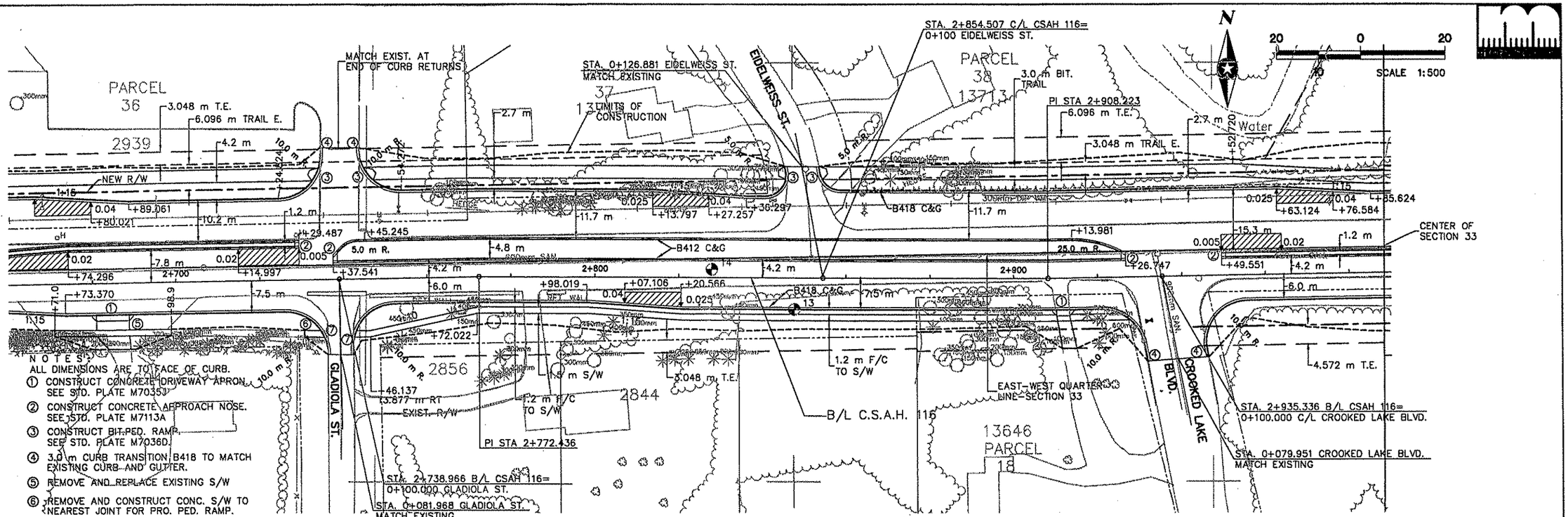
CONSTRUCTION PLAN AND PROFILE
STA. 2+340.000 TO 2+670.000

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

45/230

03-24-99 9:12 am

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET4.DWG



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

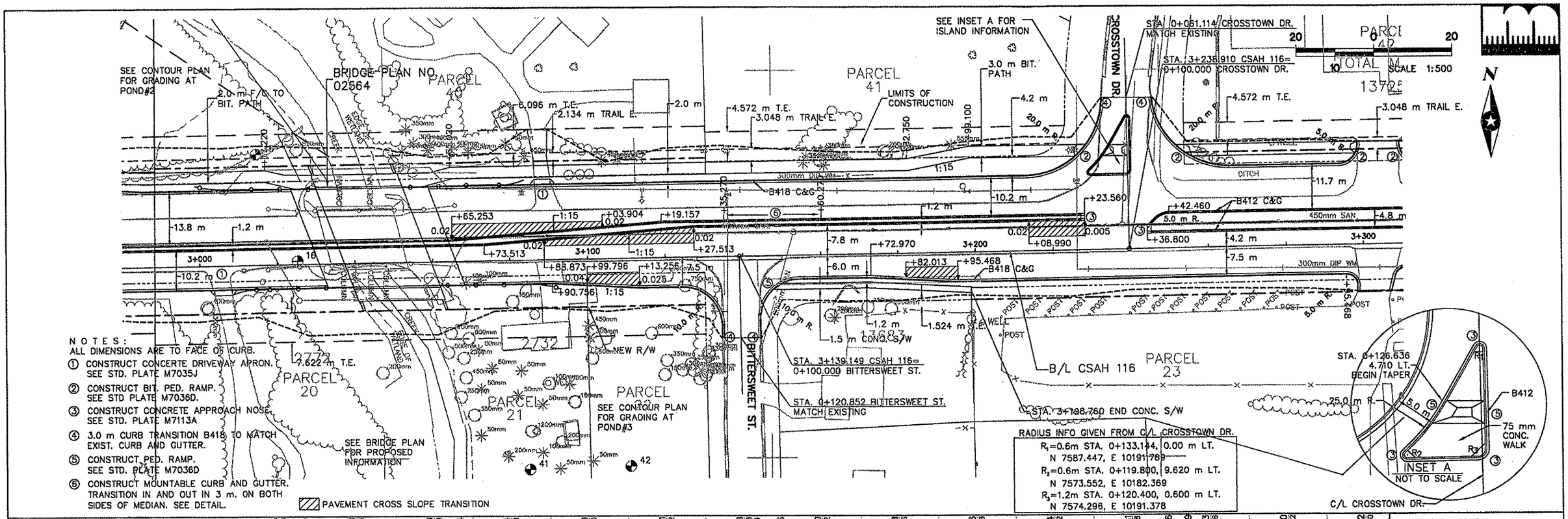
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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

CONSTRUCTION PLAN AND PROFILE
STA. 2+680.000 TO 2+990.000

FILE NO. ANOKC9806.01
DATE 03/15/99
46/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEETS.DWG 03-18-99 1:54 pm



NOTES:
ALL DIMENSIONS ARE TO FACE OF CURB.

① CONSTRUCT CONCERTE DRIVEWAY APRON. SEE STD. PLATE M7035J

② CONSTRUCT BIT. PED. RAMP. SEE STD PLATE M7036D.

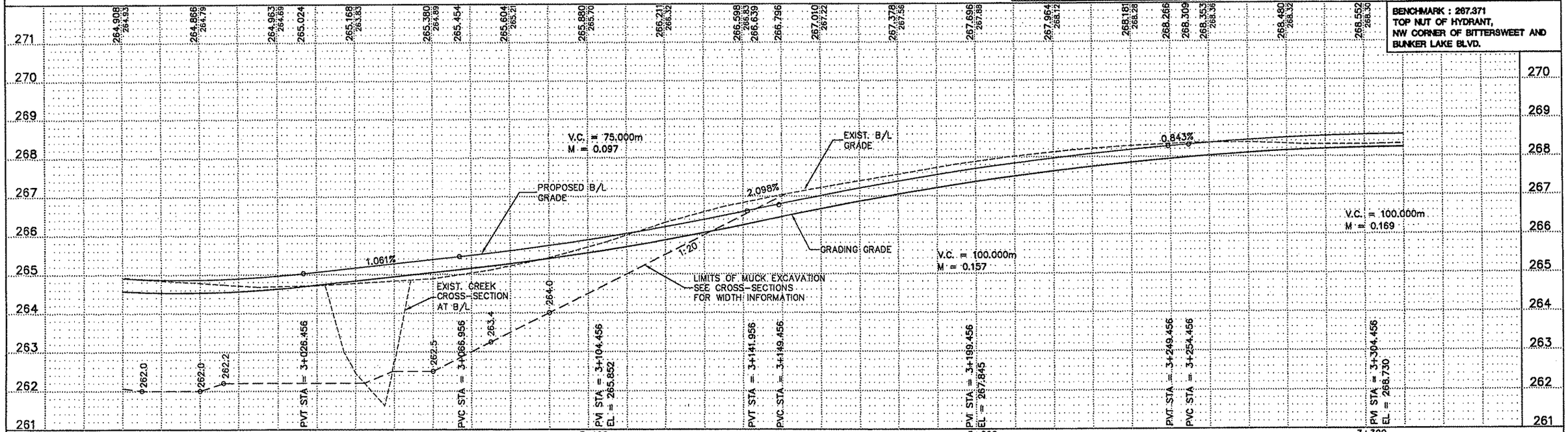
③ CONSTRUCT CONCRETE APPROACH NOSE. SEE STD. PLATE M7113A

④ 3.0 m CURB TRANSITION B418 TO MATCH EXIST. CURB AND GUTTER.

⑤ CONSTRUCT PED. RAMP. SEE STD. PLATE M7036D

⑥ CONSTRUCT MOUNTABLE CURB AND GUTTER. TRANSITION IN AND OUT IN 3 m. ON BOTH SIDES OF MEDIAN. SEE DETAIL.

▨ PAVEMENT CROSS SLOPE TRANSITION



03-18-99 1:56 pm

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EPV\PSHEET6.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.
Date: 3/15/99 Reg. No. 18612

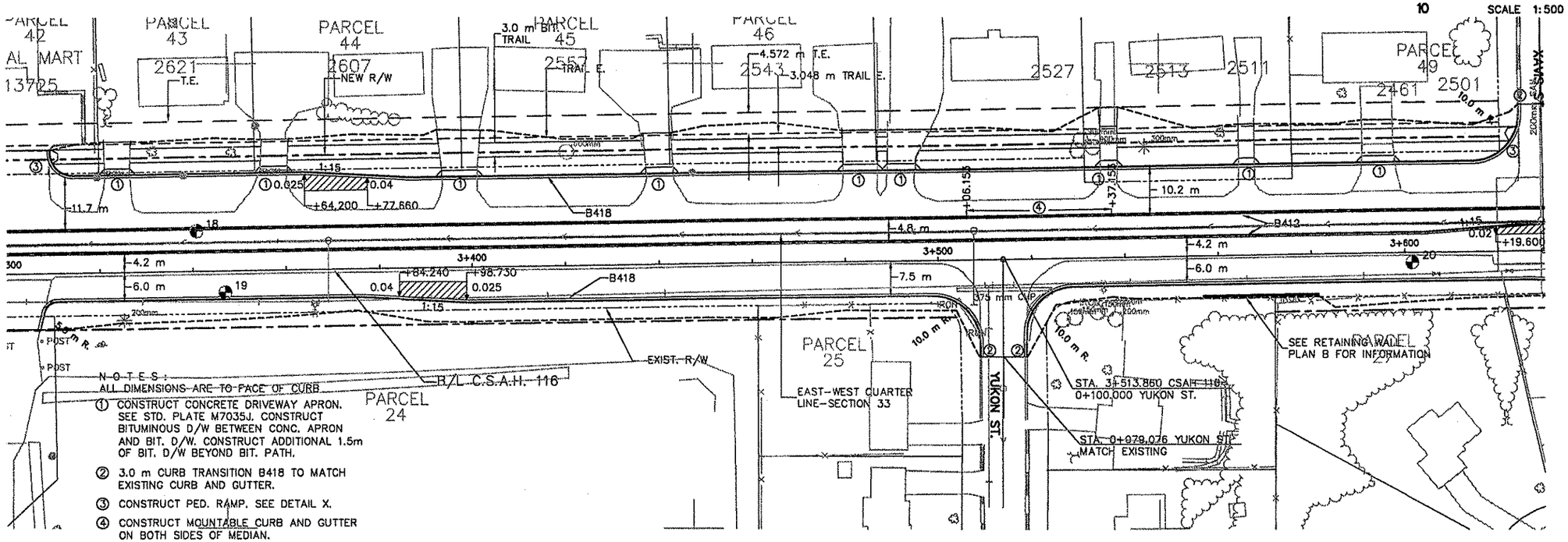
ESEH

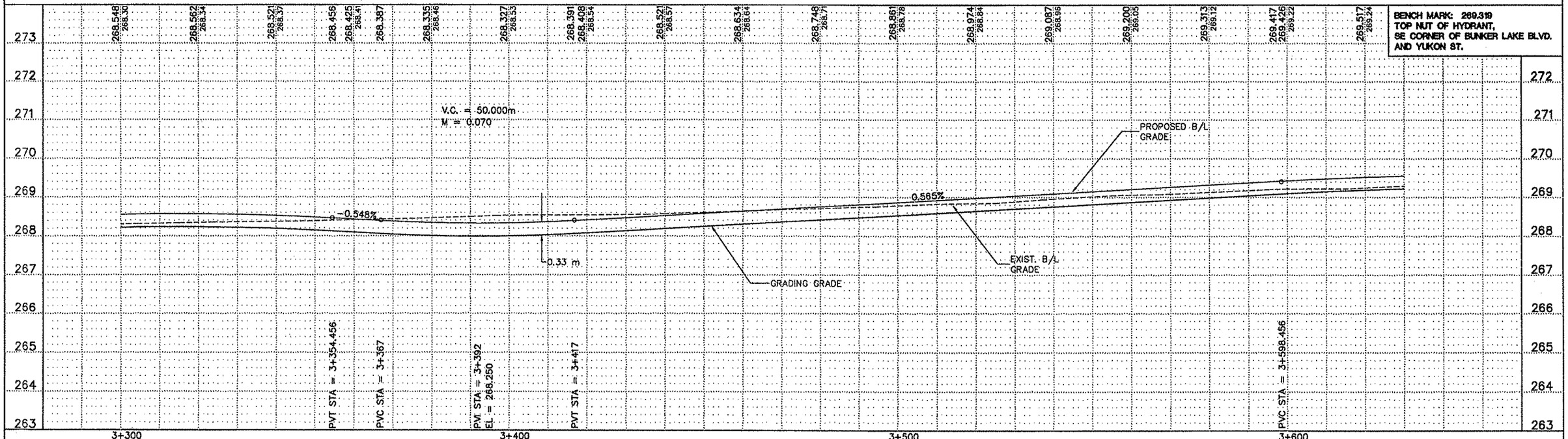
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

CONSTRUCTION PLAN AND PROFILE
STA. 2+980.000 TO 3+310.000

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

47
230





DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

SEH

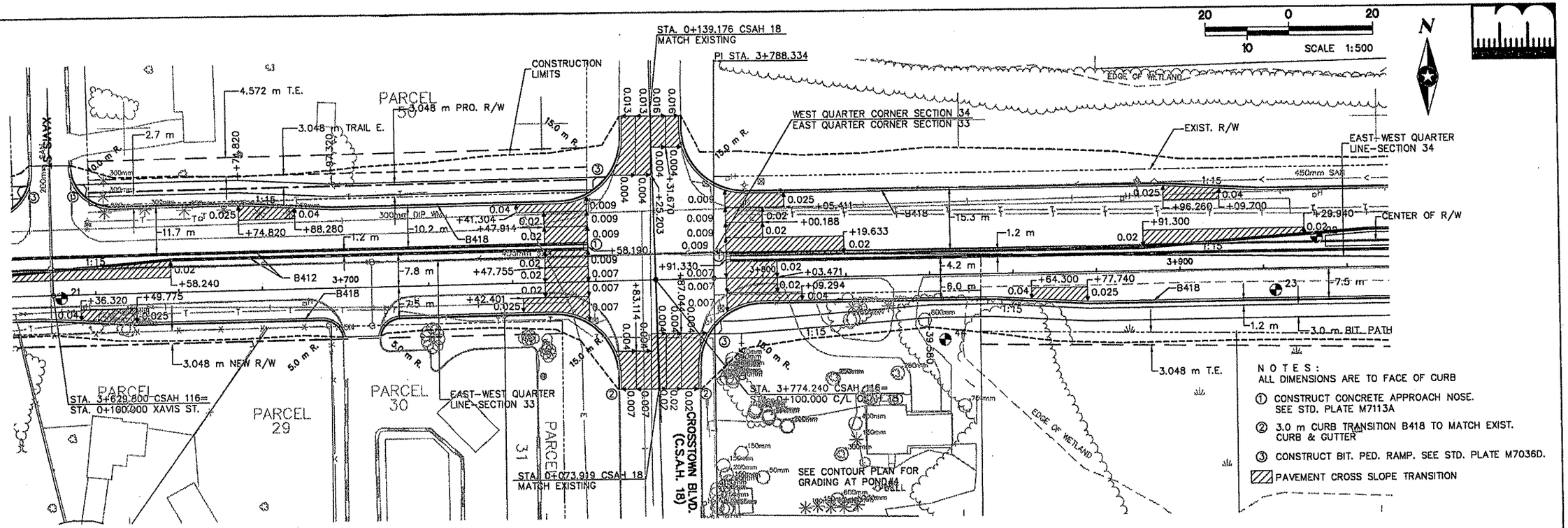
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

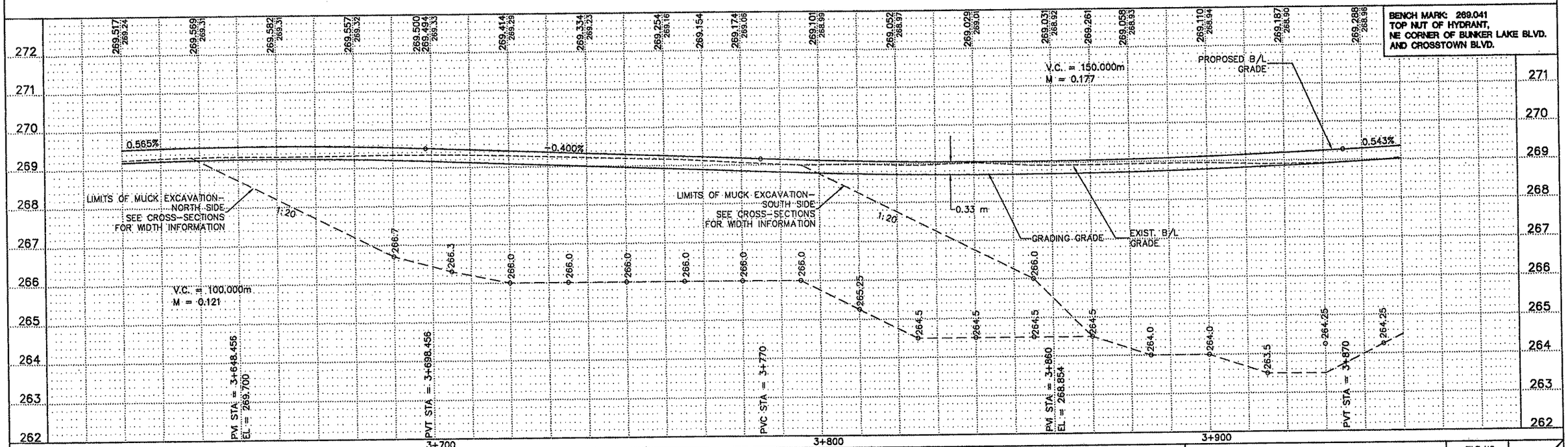
CONSTRUCTION PLAN AND PROFILE
STA. 3+300.000 TO 3+630.000

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

48 / 230

03-18-99 1:59 pm
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EPV\PSHEET7.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.
Date: 3/15/99 Reg. No. 18612

ESEH

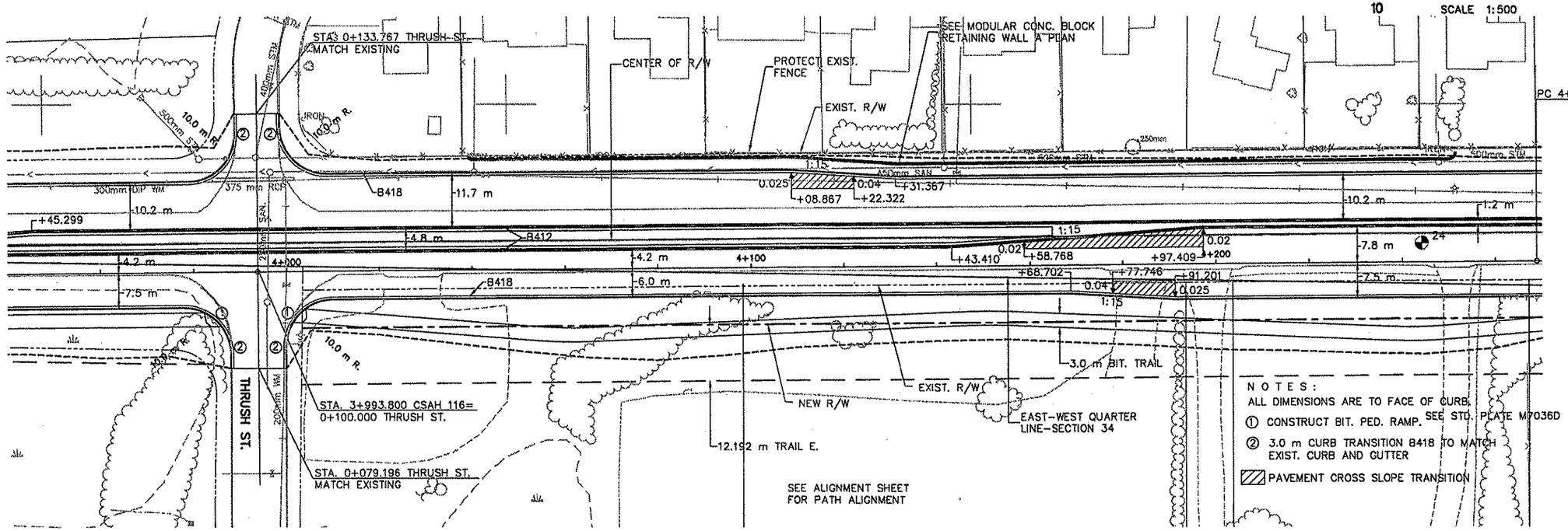
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

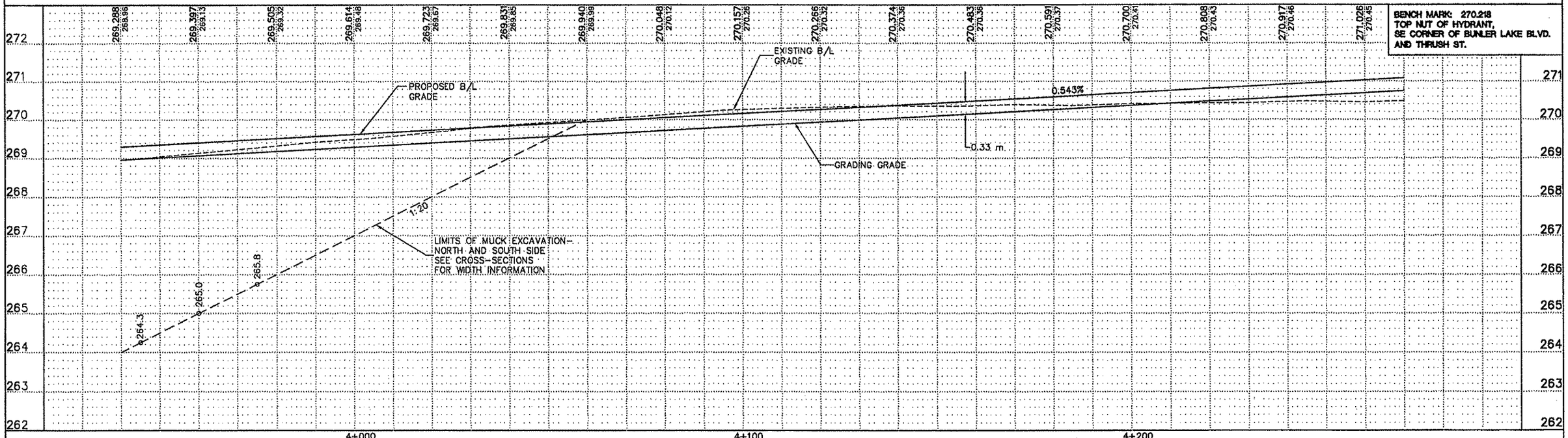
CONSTRUCTION PLAN AND PROFILE
STA. 3+620.000 TO 3+950.000

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

49/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET8.DWG 03-13-99 11:44 am





DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

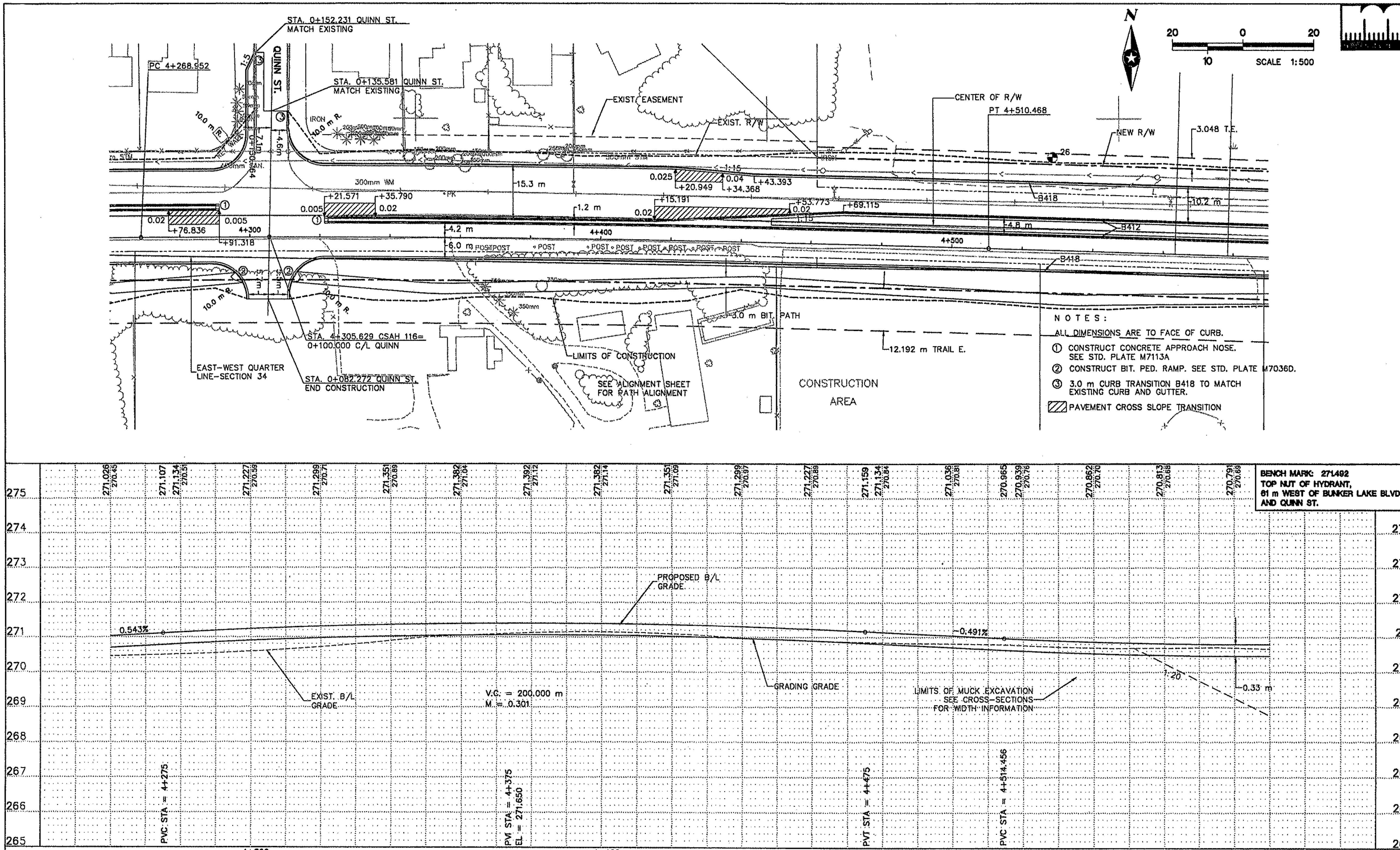
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET9.DWG 03-24-99 9:15 am


STA. 0+152.231 QUINN ST.
MATCH EXISTING
PC 4+268.952
QUINN ST.
STA. 0+135.581 QUINN ST.
MATCH EXISTING
EXIST. EASEMENT
EXIST. R/W
CENTER OF R/W
PT 4+510.468
NEW R/W
3.048 T.E.
300mm WM
15.3 m
1.2 m
4.2 m
6.0 m
4.8 m
10.2 m
B418
B412
+21.571
+35.790
+15.191
+53.773
+69.115
+20.949
+34.368
+43.393
+76.836
+91.318
4+300
4+400
4+500
3.0 m BIT. PATH
STA. 4+305.629 CSAH 116=
0+100.000 C/L QUINN
EAST-WEST QUARTER
LINE-SECTION 34
STA. 0+082.272 QUINN ST.
END CONSTRUCTION
LIMITS OF CONSTRUCTION
SEE ALIGNMENT SHEET
FOR PATH ALIGNMENT
CONSTRUCTION
AREA
12.192 m TRAIL E.
N
20 0 20
10
SCALE 1:500
NOTES:
ALL DIMENSIONS ARE TO FACE OF CURB.
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
BENCH MARK: 271.492
TOP NUT OF HYDRANT,
61 m WEST OF BUNKER LAKE BLVD.
AND QUINN ST.
PROPOSED B/L
GRADE.
0.543%
-0.491%
EXIST. B/L
GRADE
V.C. = 200.000 m
M. = 0.301
GRADING GRADE
LIMITS OF MUCK EXCAVATION
SEE CROSS-SECTIONS
FOR WIDTH INFORMATION
1:20
-0.33 m
PVC STA = 4+275
PVI STA = 4+375
EL = 271.650
PVT STA = 4+475
PVC STA = 4+514.456
275
274
273
272
271
270
269
268
267
266
265

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

SEH

ANOKA COUNTY

C.S.A.H. 116 (BUNKER LAKE BLVD.)

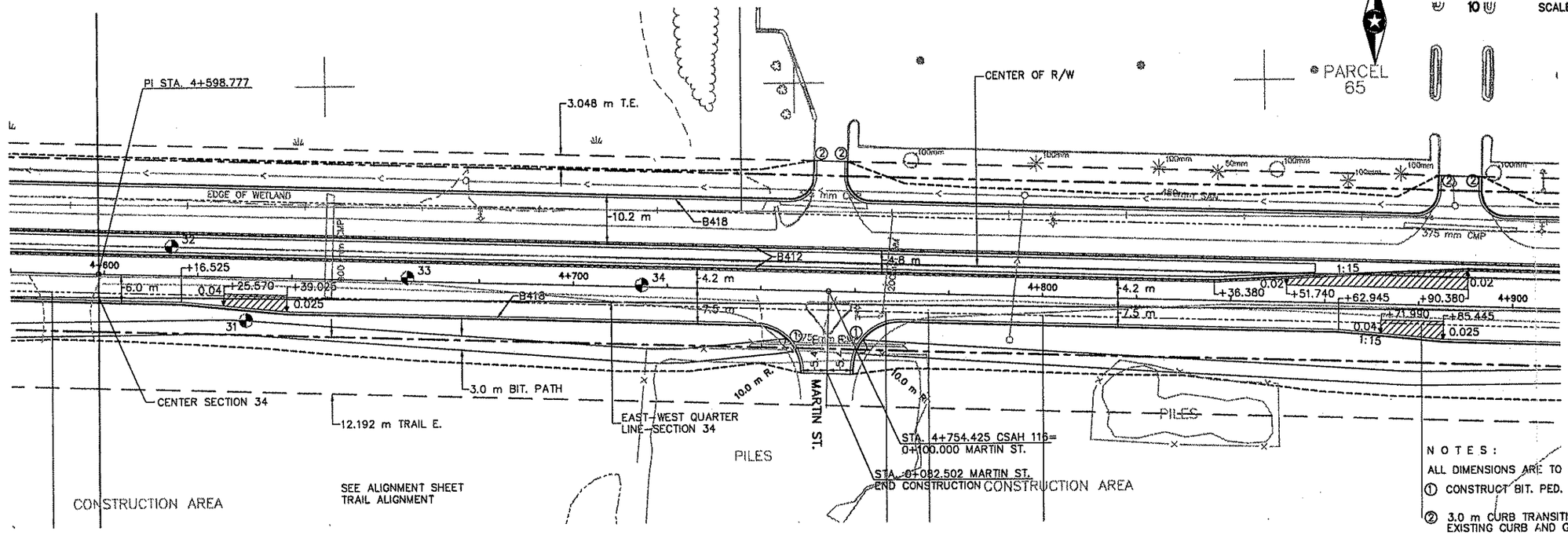
S.A.P. 02-716-04
S.A.P. 198-020-14

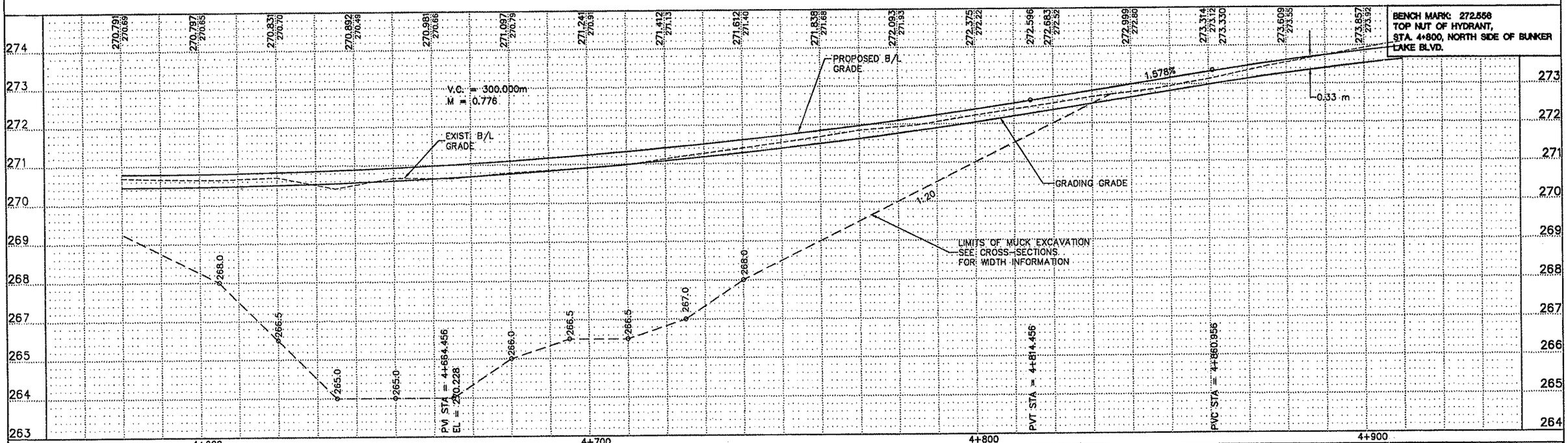
CONSTRUCTION PLAN AND PROFILE

STA. 4+260.000 TO 4+590.000

FILE NO. ANOKC9806.01

DATE 03/15/99





03-24-99 9:40 am

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PSHEET11.DWG

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

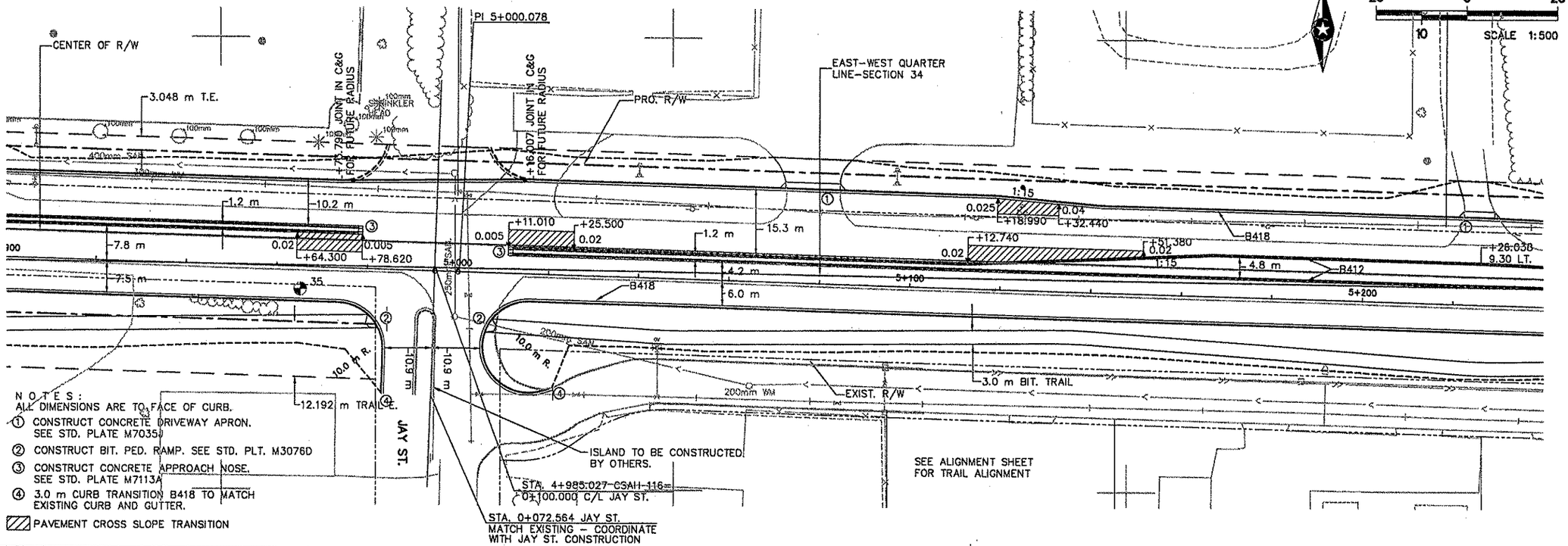
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

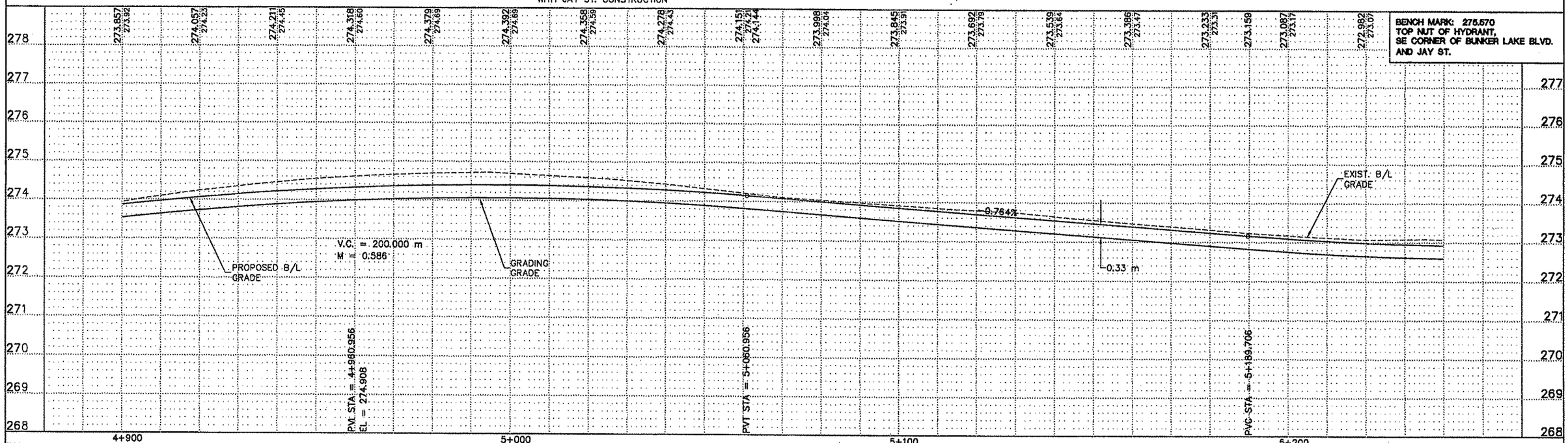
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

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

52/230





DESIGN						
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

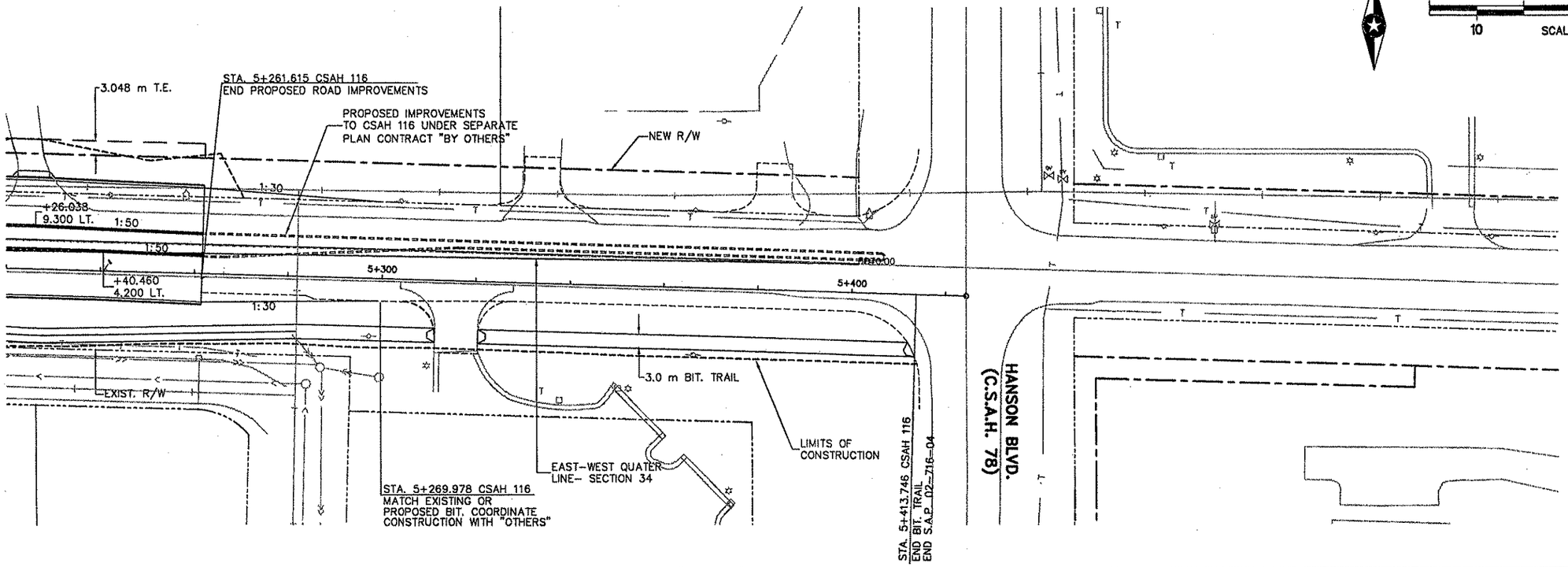
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

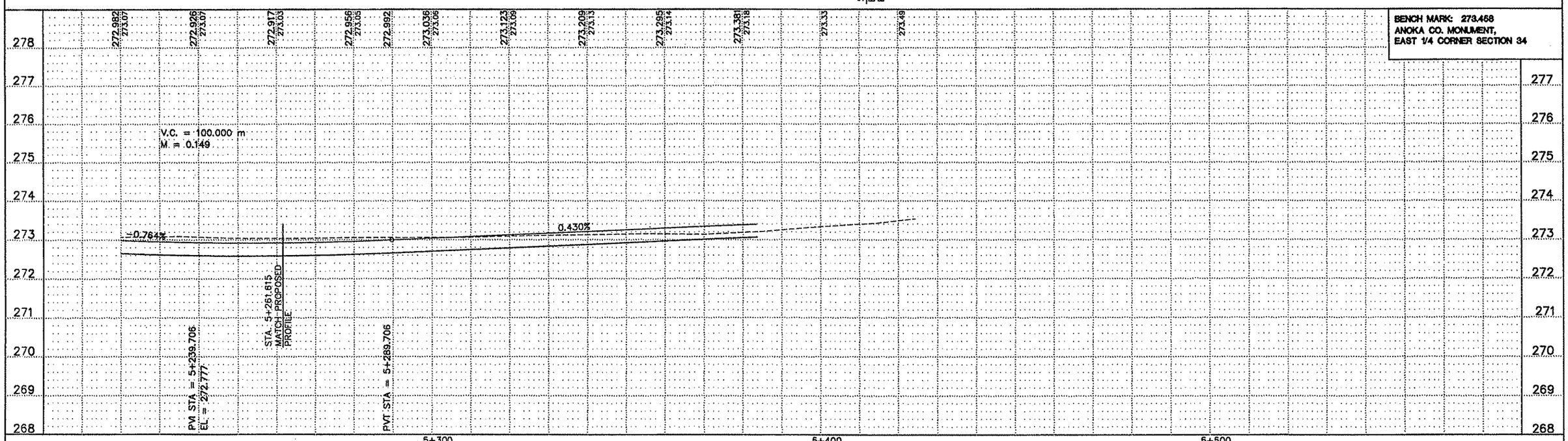
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

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

03-24-99 9:48 am
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EPV\PSHEET12.DWG





DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

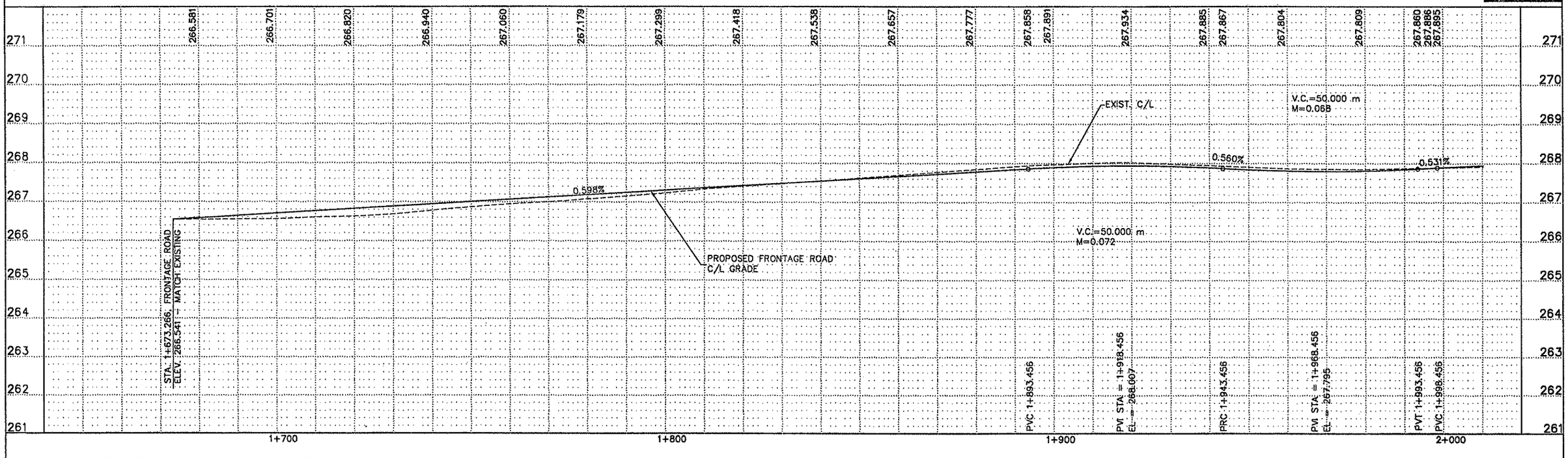
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

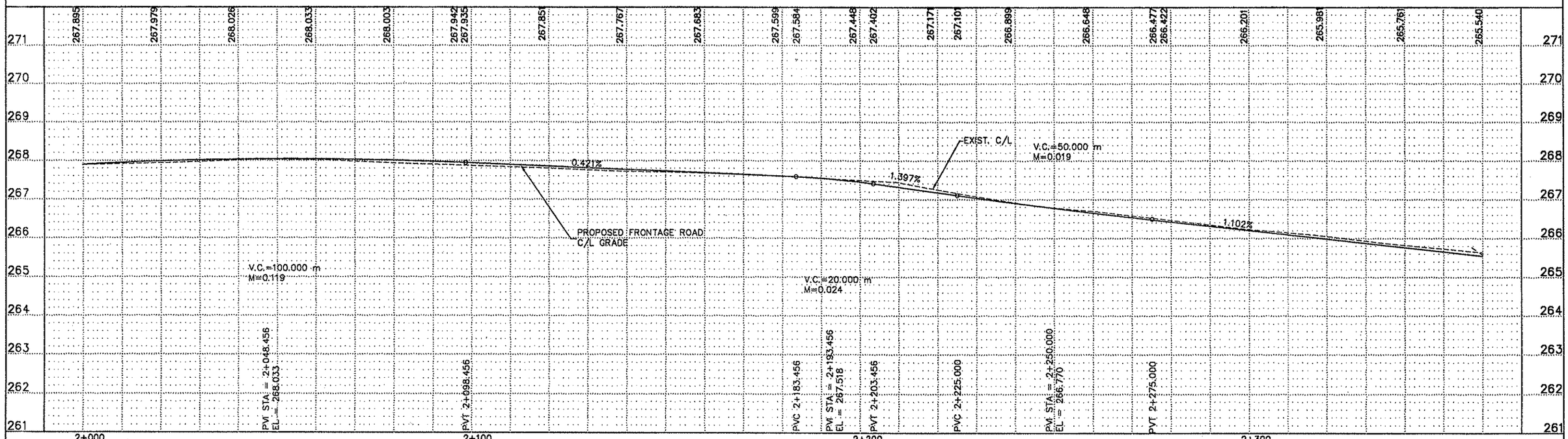
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EPVPSHEET13.DWG 03-18-99 2:21 pm





Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PFRNTPRO1.DWG 03-18-99 2:23 pm

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

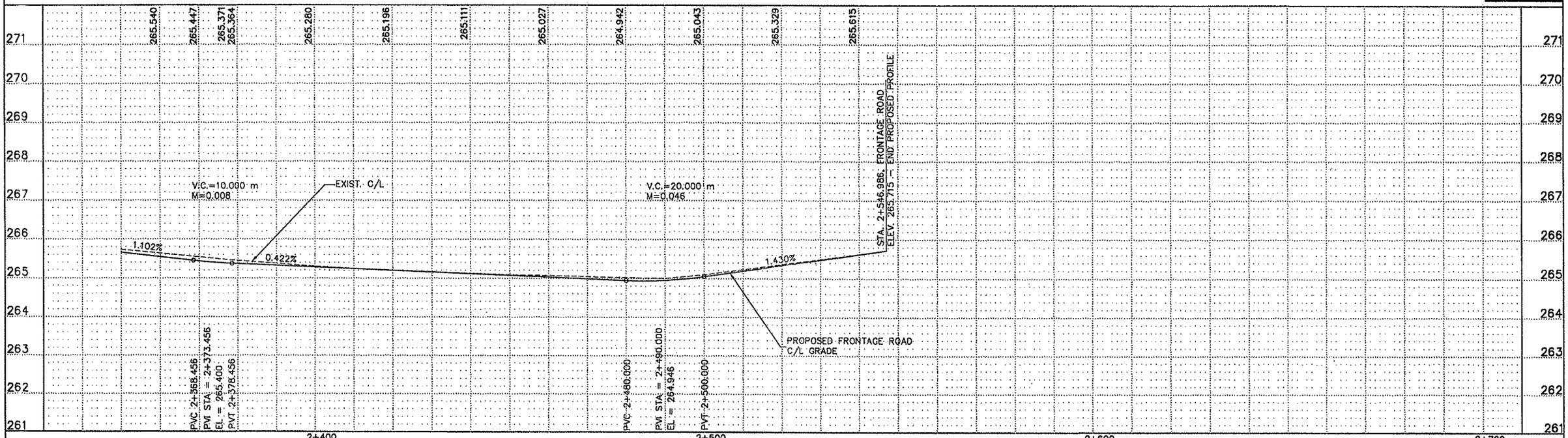
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

SEH

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
DATE 03/15/99
55/230



0:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\PFRNTPRO2.DWG 03-18-99 2:30 pm

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

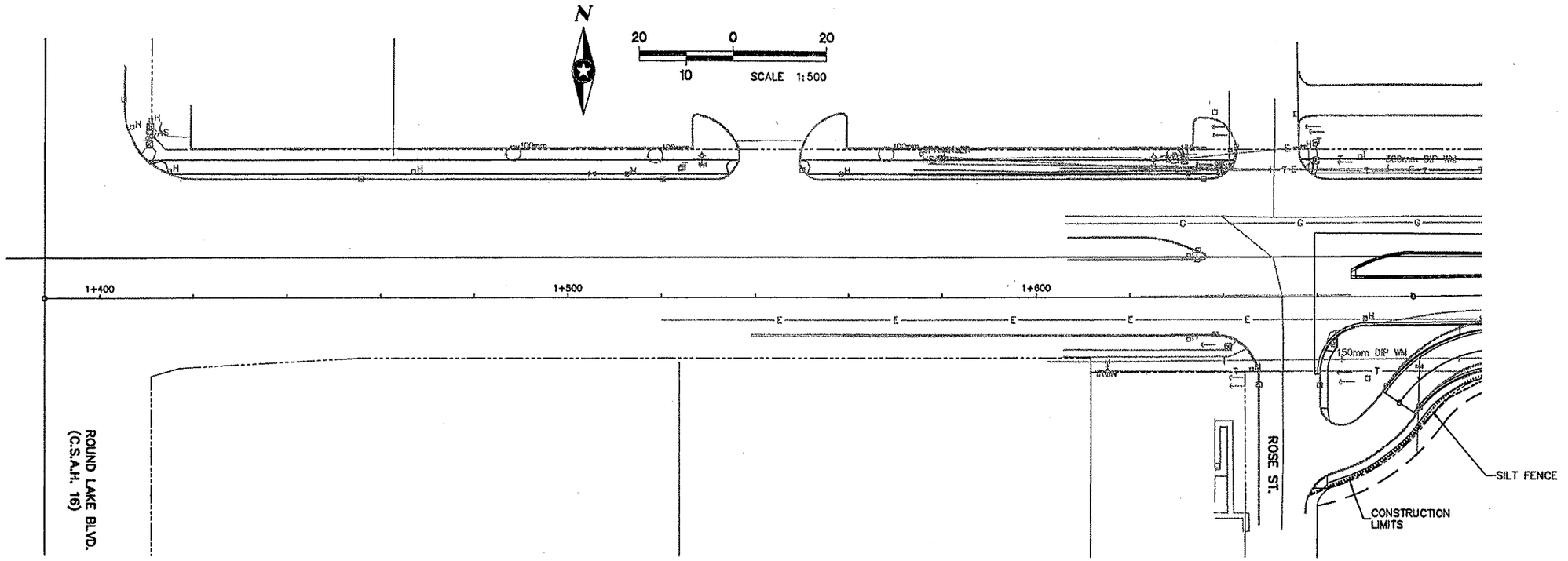
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

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

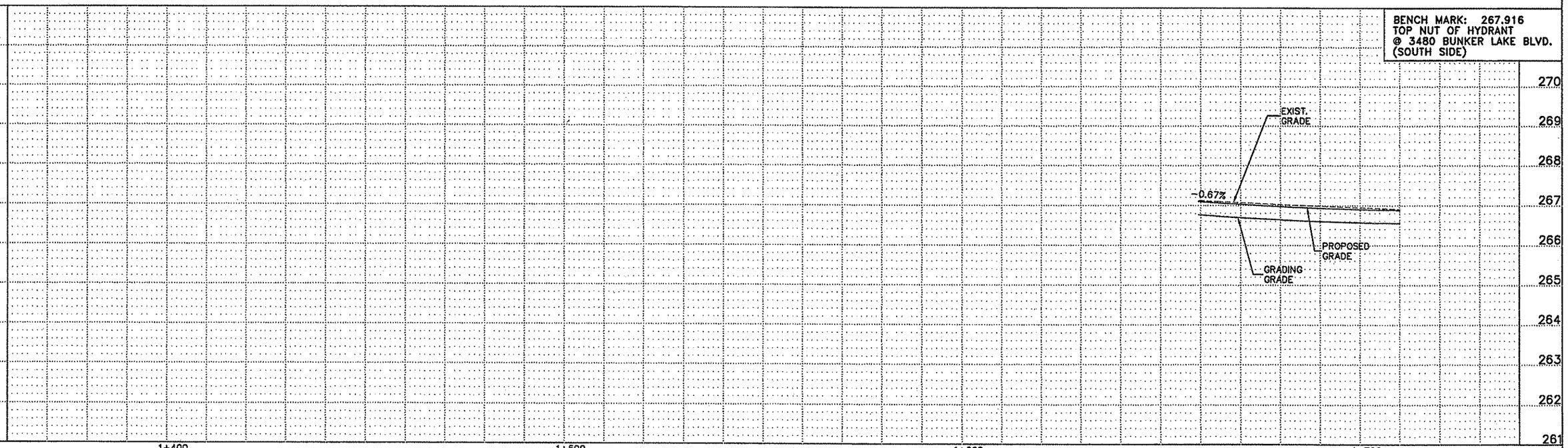
FRONTAGE ROAD PROFILE
STA. 2+350.000 TO 2+546.986

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

56
230



BENCH MARK: 267.916
TOP NUT OF HYDRANT
@ 3480 BUNKER LAKE BLVD.
(SOUTH SIDE)



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

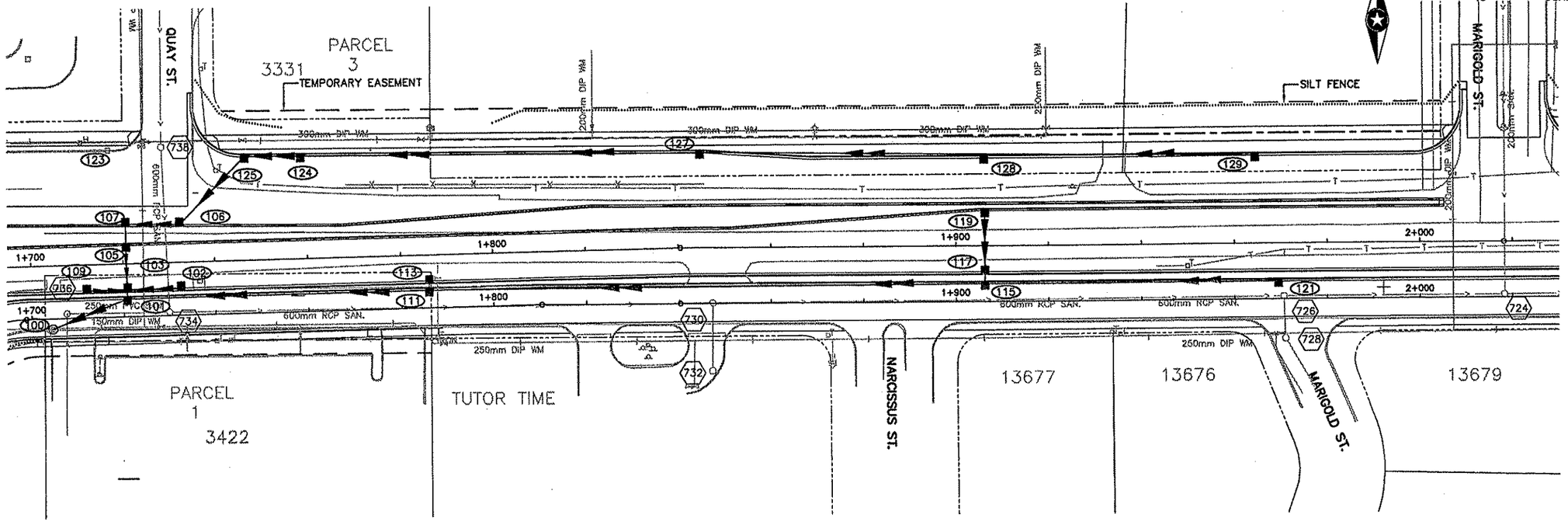
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

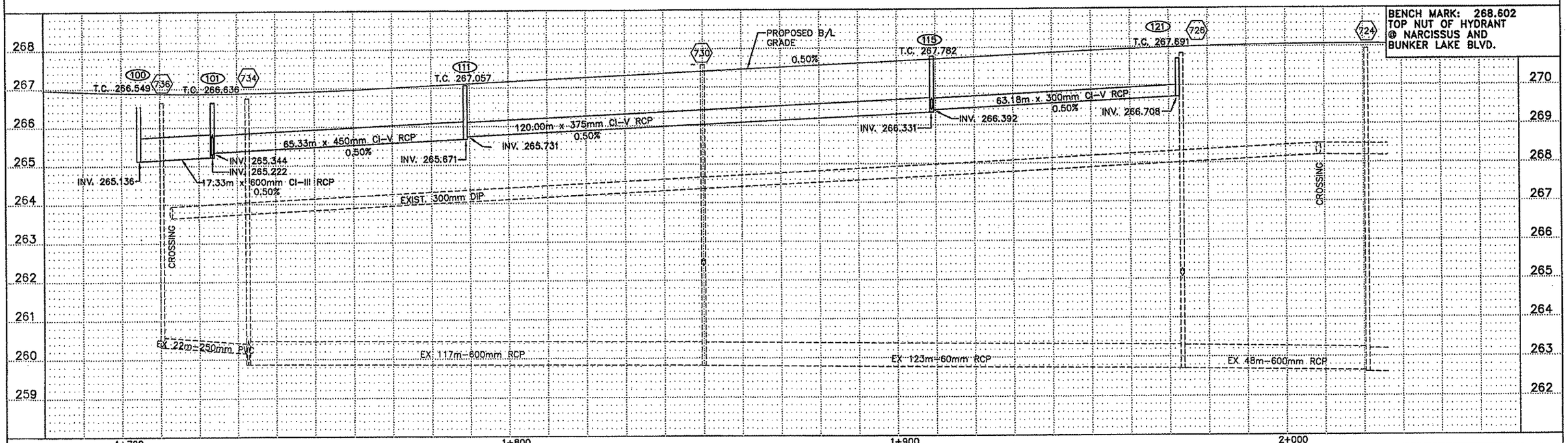
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

UTILITIES PLAN AND PROFILE
STA. 1+659.406 TO 1+695.000

FILE NO. ANOKC9806.01
DATE 3/15/99
57/230

O:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT1.DWG 02-22-99 3:00 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

ESEH

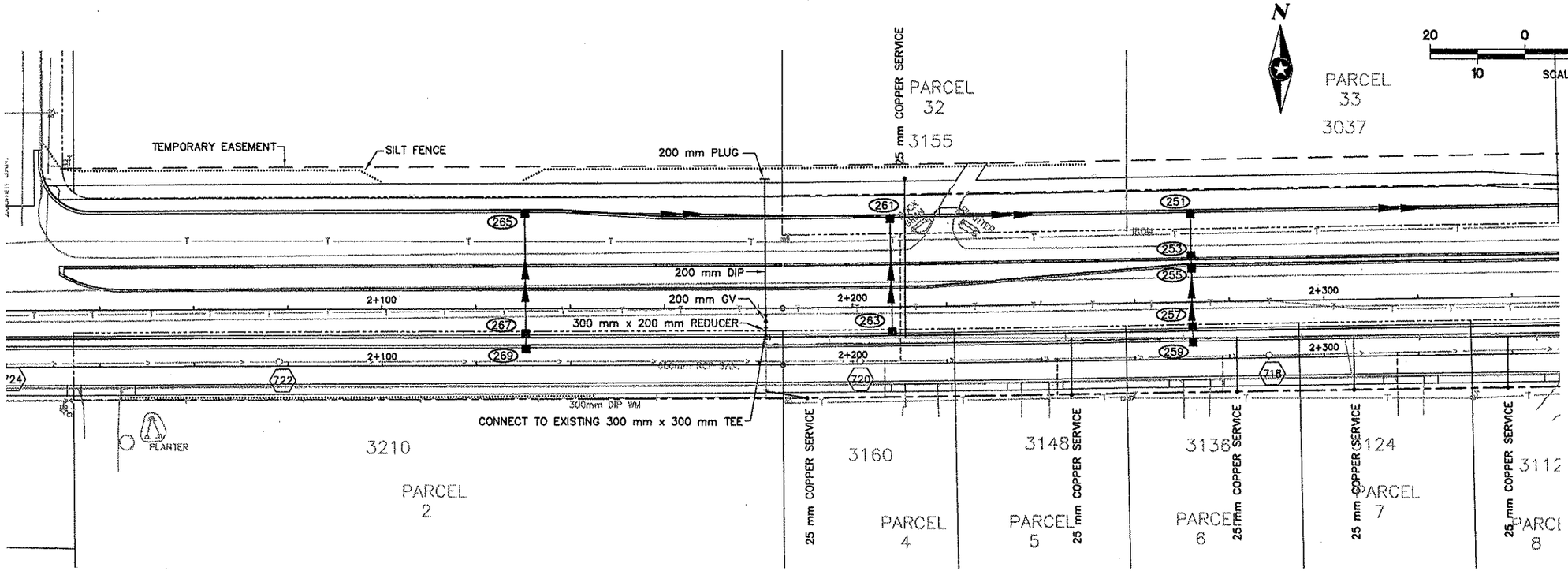
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

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

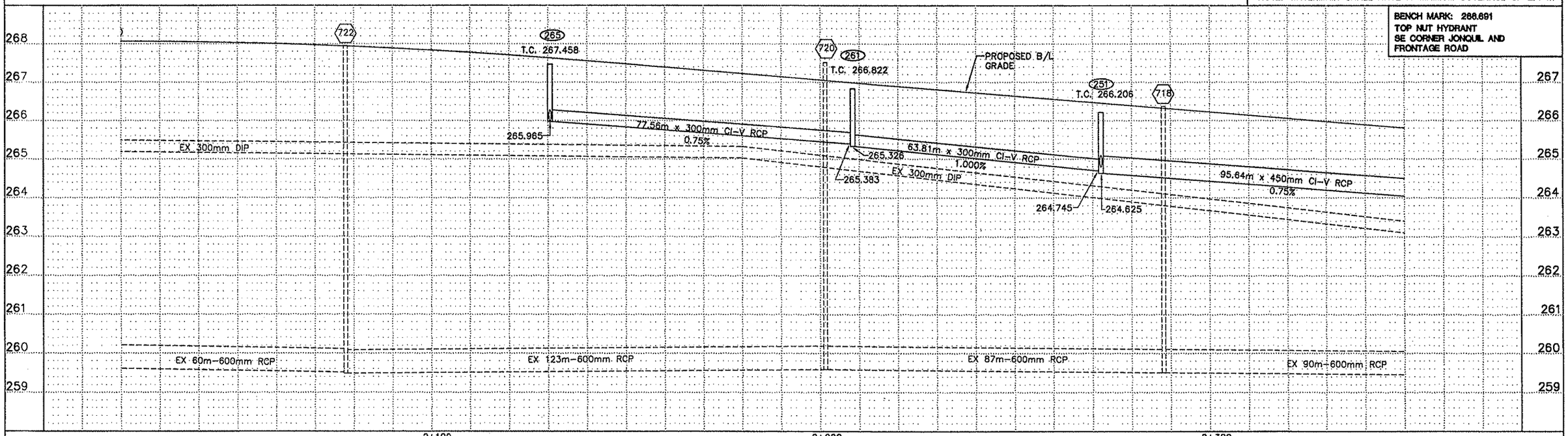
58/230

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



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 288.691
TOP NUT HYDRANT
SE CORNER JONQUIL AND
FRONTAGE ROAD



DESIGN	1	TGT	04/13/99	STORM SEWER INVERT REVISIONS-255,261,251	
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 3/16/99 Reg. No. 18612

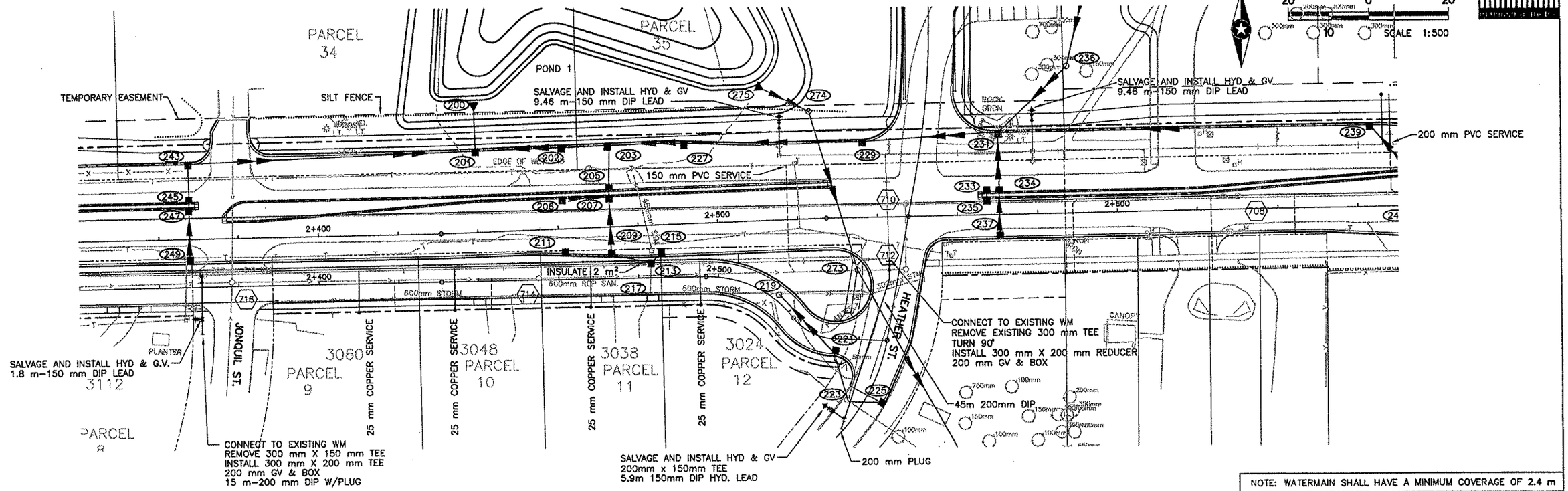
SEH

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. 2+020.000 TO 2+350.000

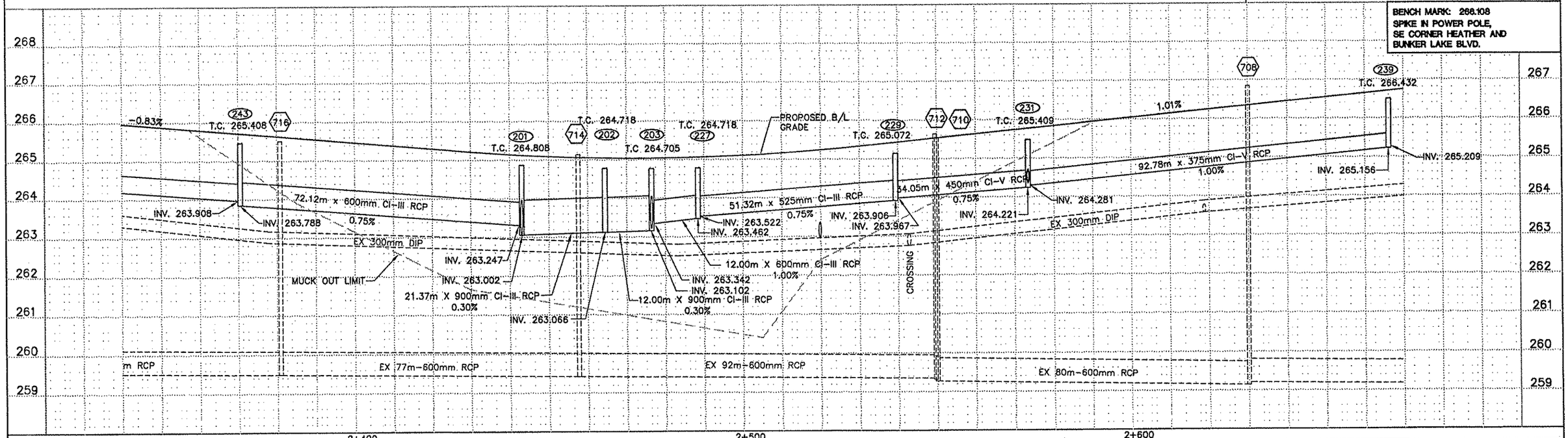
FILE NO. ANOKC9806.01
DATE 3/15/99
59/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKCB06UT3A.DWG 04-13-99 3:04 pm



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 266.108
SPIKE IN POWER POLE,
SE CORNER HEATHER AND
BUNKER LAKE BLVD.



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

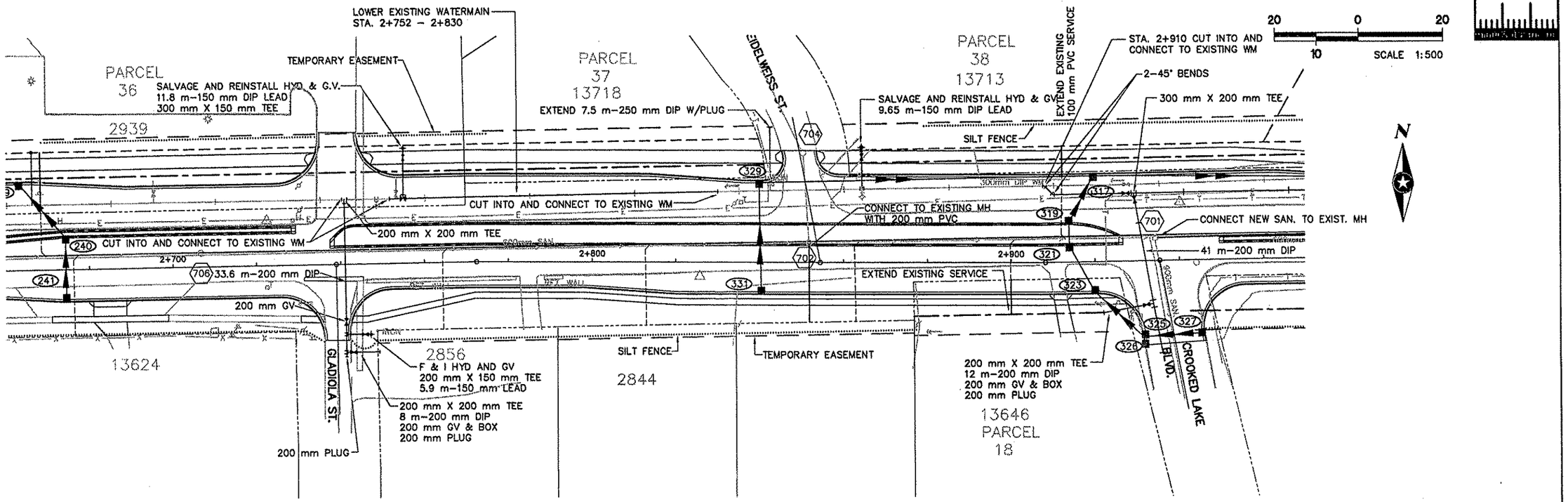
ESEH

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

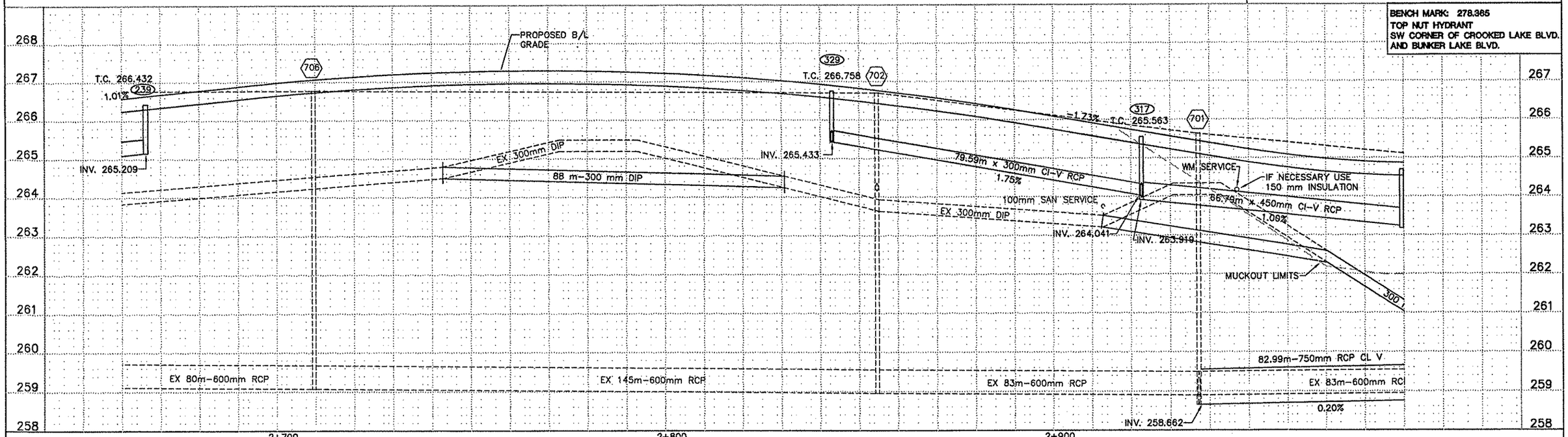
FILE NO. ANOKC9806.01
DATE 3/15/99
60/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT4.DWG 04-13-99 3:09 pm



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.



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

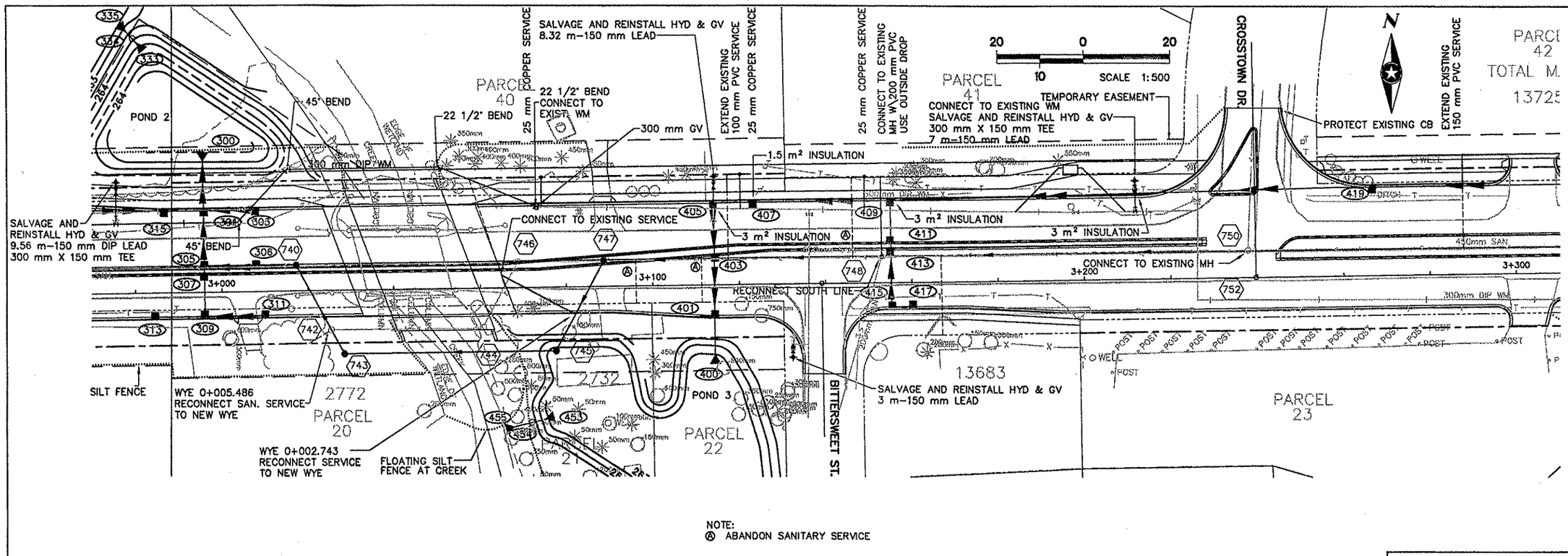
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 03/15/99 Reg. No. 18612

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. 2+680.000 TO 2+970.000

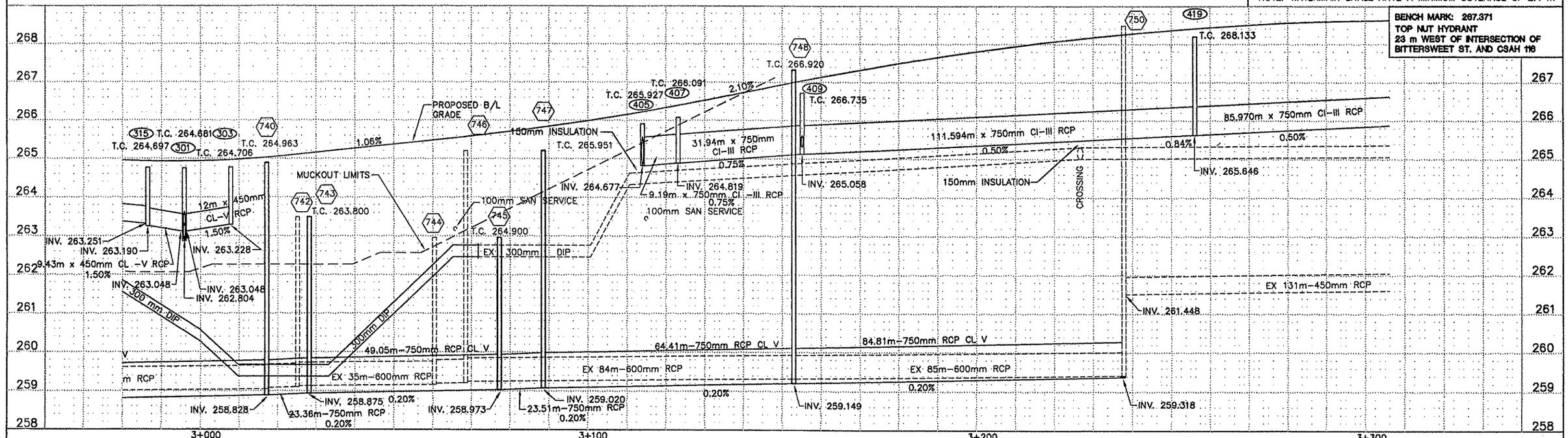
FILE NO. ANOKC9806.01
DATE 3/15/99
61/230

G:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT5.DWG 04-13-99 3:11 pm



NOTE:
Ⓐ ABANDON SANITARY SERVICE

NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m



DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISIONS–405,407,409	
DRAWING				STORM SEWER INVERT REVISION–419	
CHECKED				STORM SEWER PIPE LENGTH REVISIONS–409–419,419–421	
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: 03/15/99 Reg. No. 18612

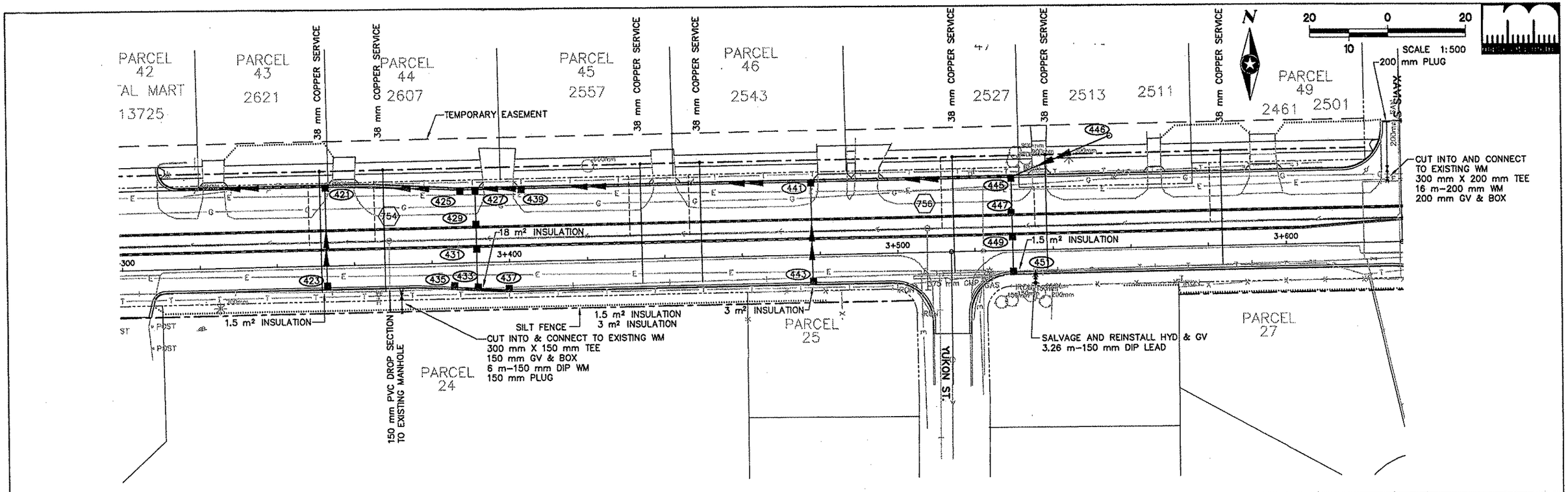
SEH

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. 2+970.000 TO 3+310.000

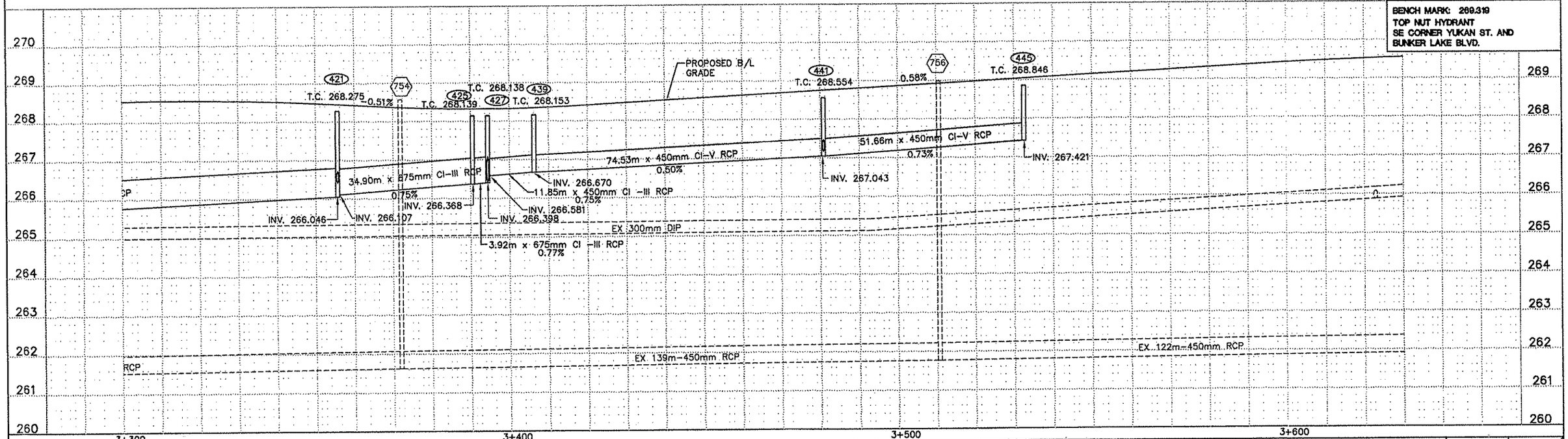
FILE NO. ANOKC9806.01
DATE 3/15/99
62/230

04–13–99 3:29 pm
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806U16.DWG



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

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



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. 18612

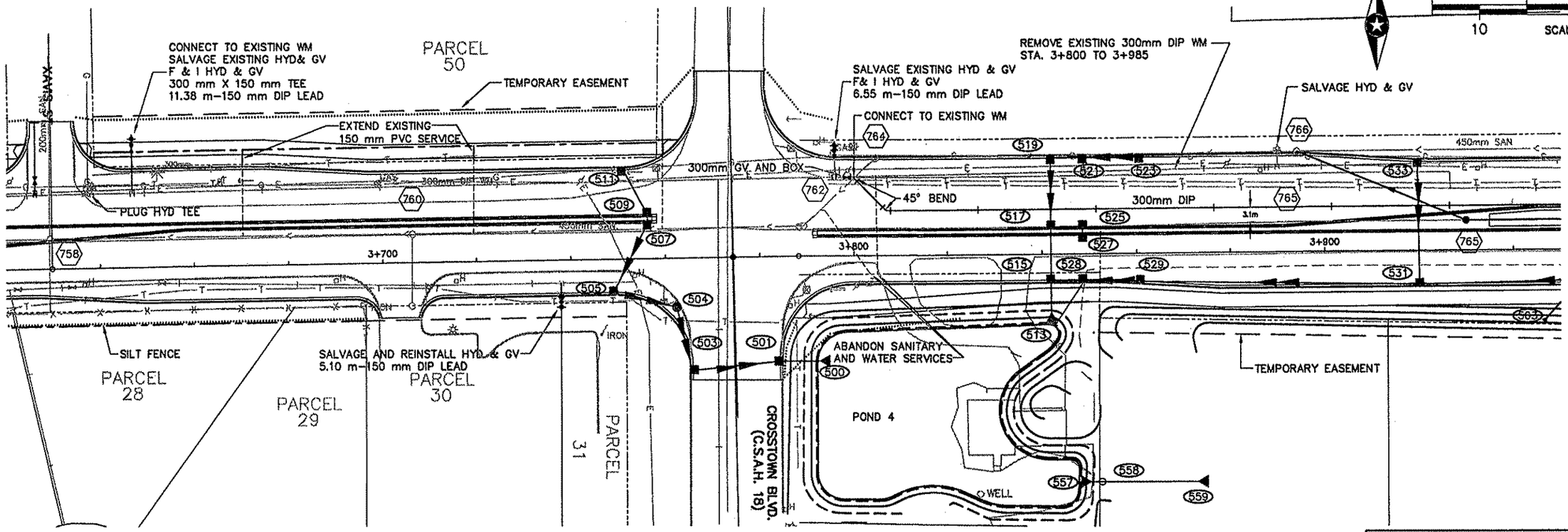
SEH

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. 3+300.000 TO 3+630.000

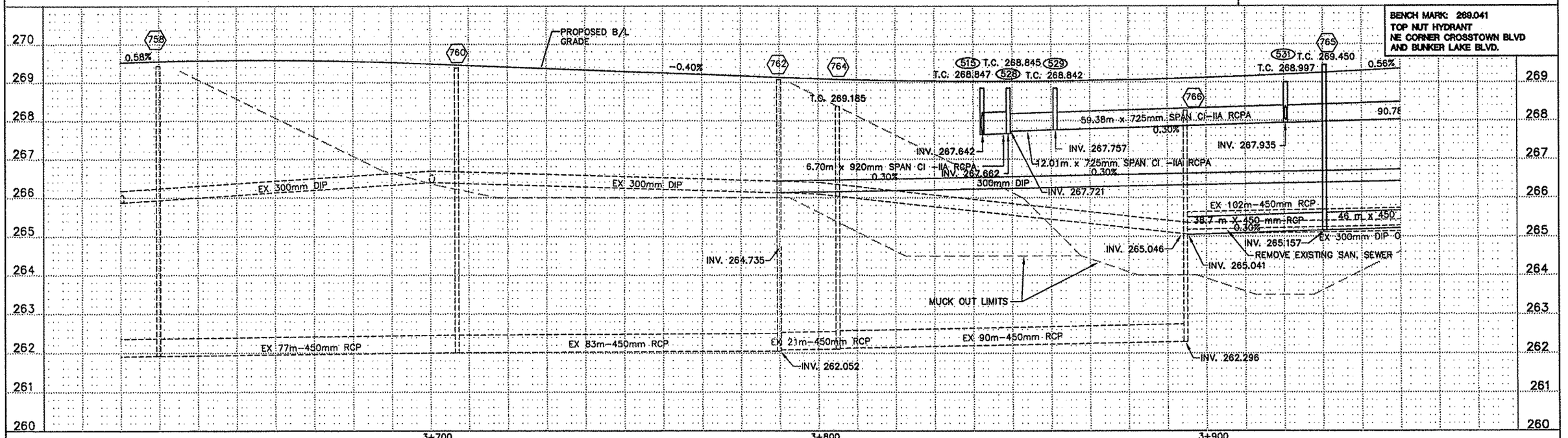
FILE NO. ANOKC9806.01
DATE 3/15/99
63/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT7.DWG 04-13-99 3:40 pm



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4m

BENCH MARK: 269.041
TOP NUT HYDRANT
NE CORNER CROSSTOWN BLVD
AND BUNKER LAKE BLVD.



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

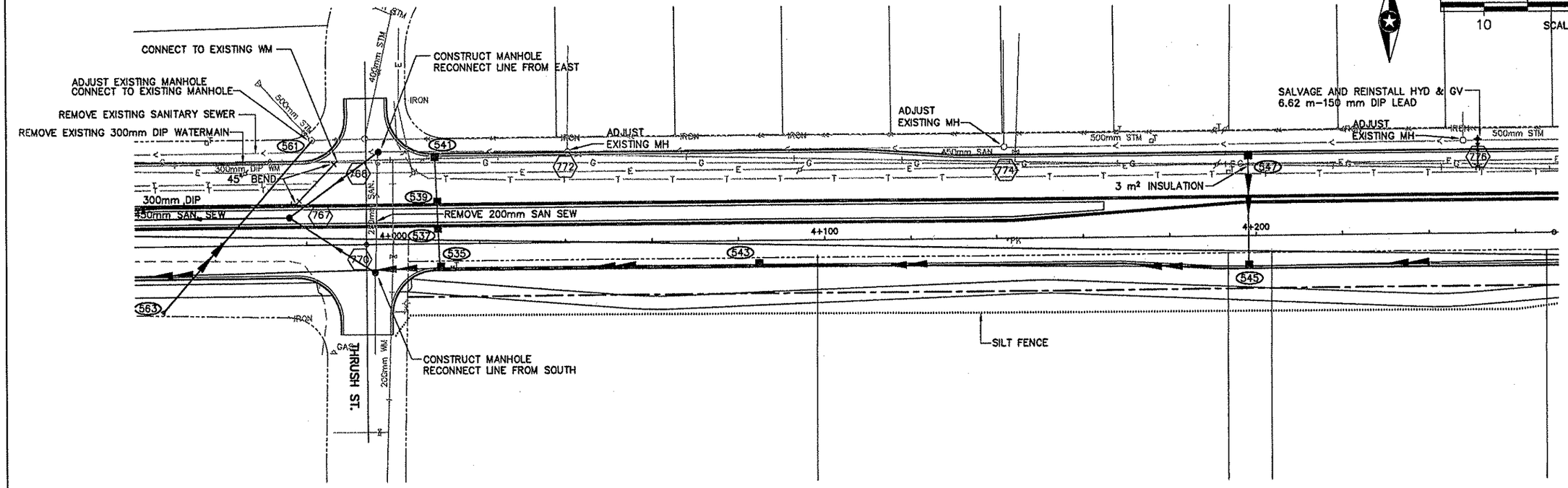
SEH

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. 3+620.000 TO 3+950.000

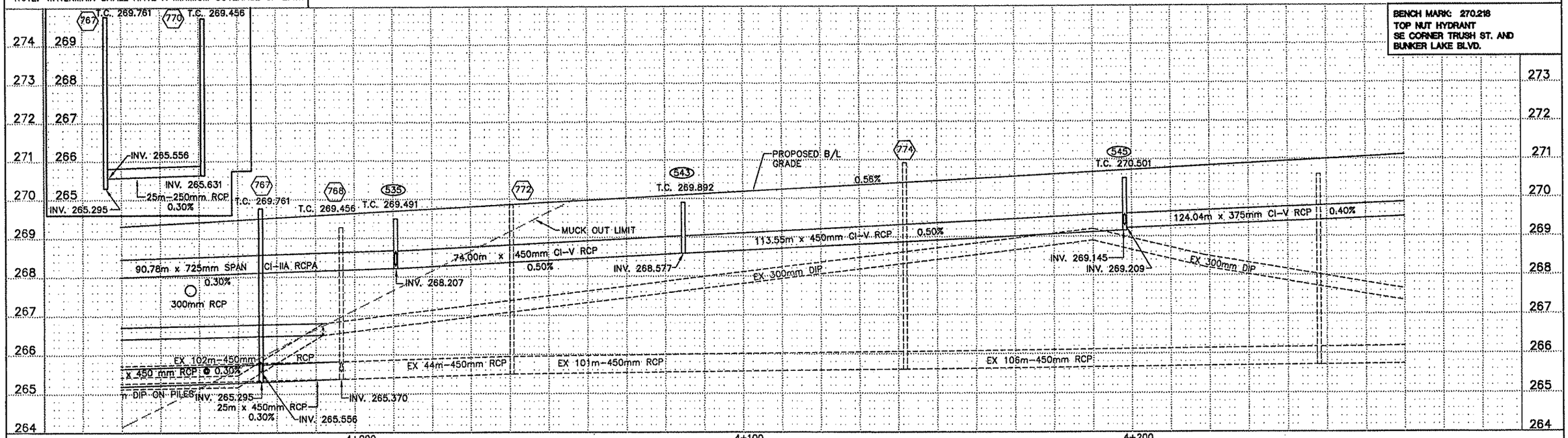
FILE NO. ANOKC9806.01
DATE 3/15/99
64/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UTB.DWG 04-13-99 3:43 pm



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4m

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



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

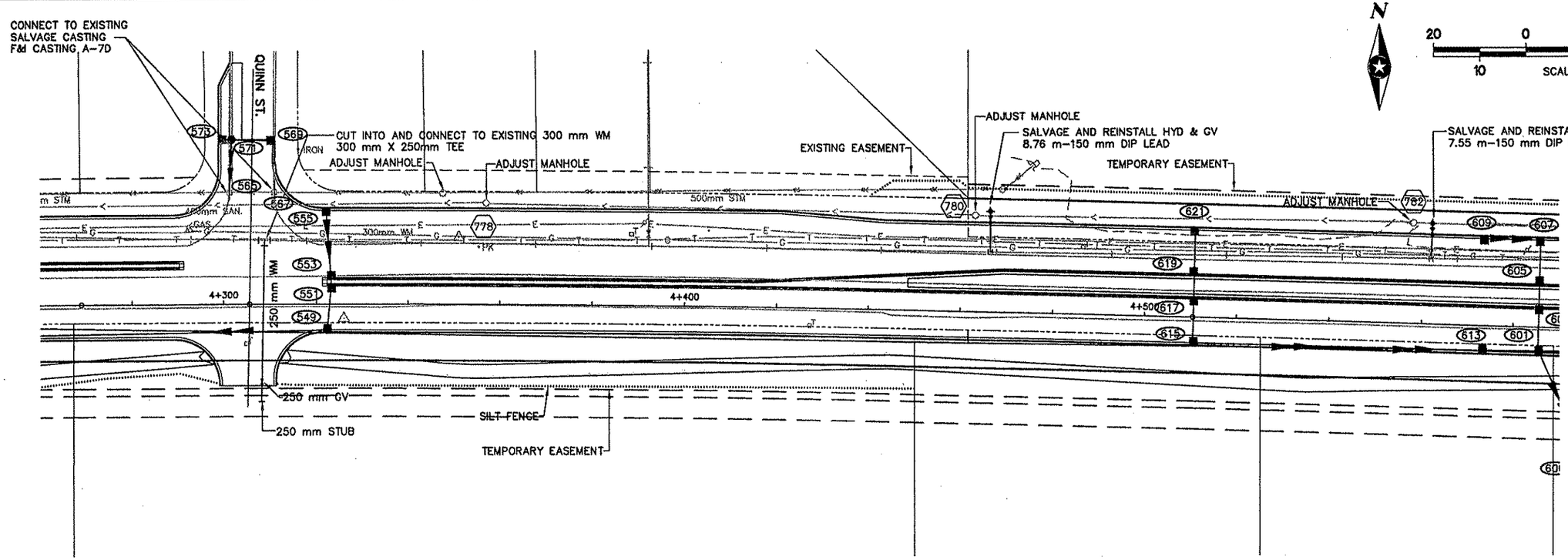
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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. 4+040.000 TO 4+270.000

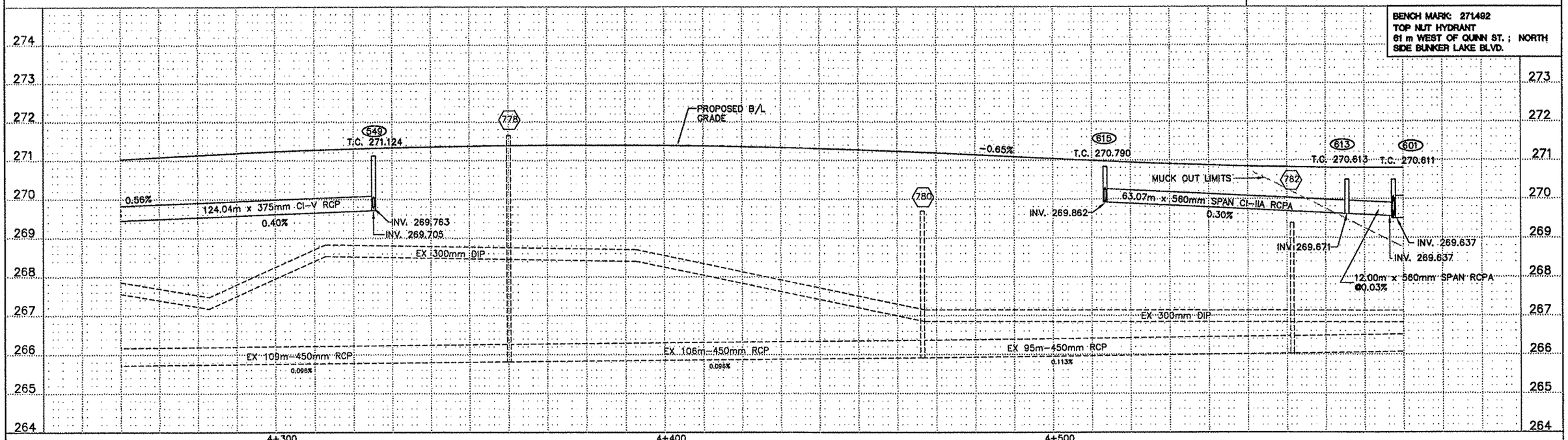
FILE NO. ANOKC9806.01
DATE 3/15/99
65/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT9.DWG 04-15-99 1:25 pm



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.



DESIGN	1	TGT	04/13/99	STORM SEWER CASTING ELEV. REVISIONS-549,615	
DRAWING				STORM SEWER PIPE LENGTH REVISION-615 TO 613	
CHECKED				MH 777 REMOVED -- WATER MAIN SIZE DECREASED	
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

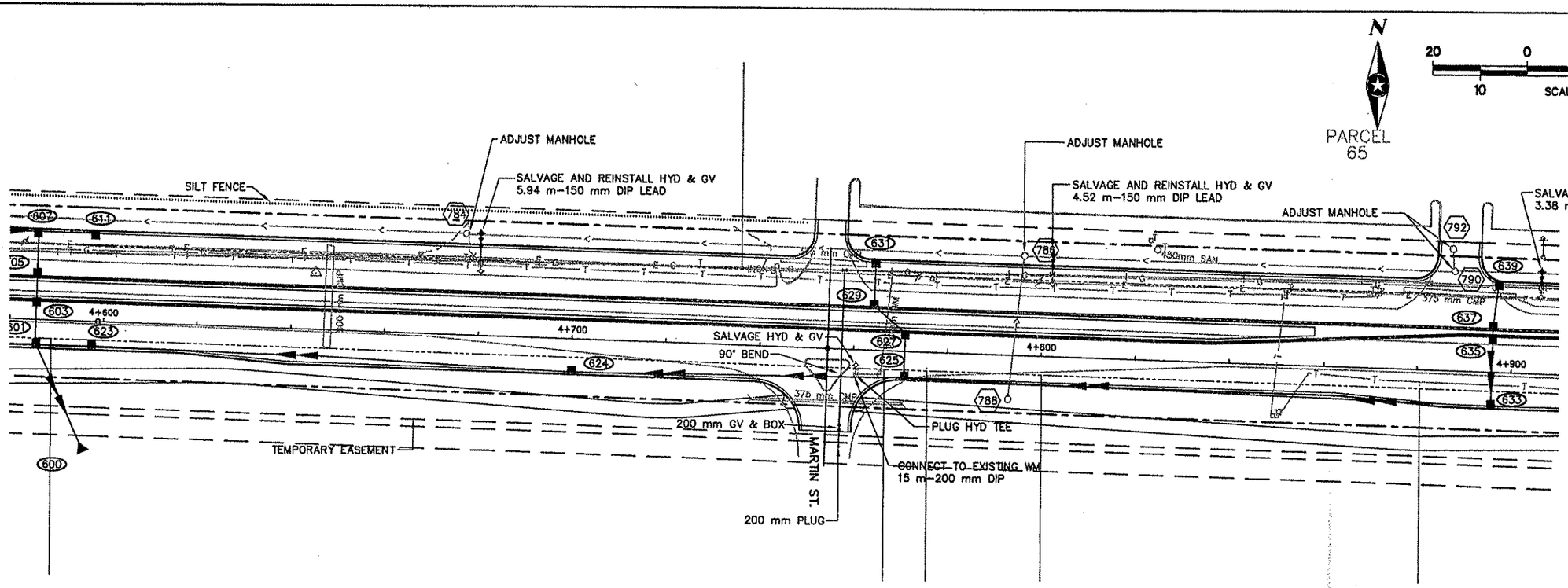
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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. 4+260.000 TO 4+590.000

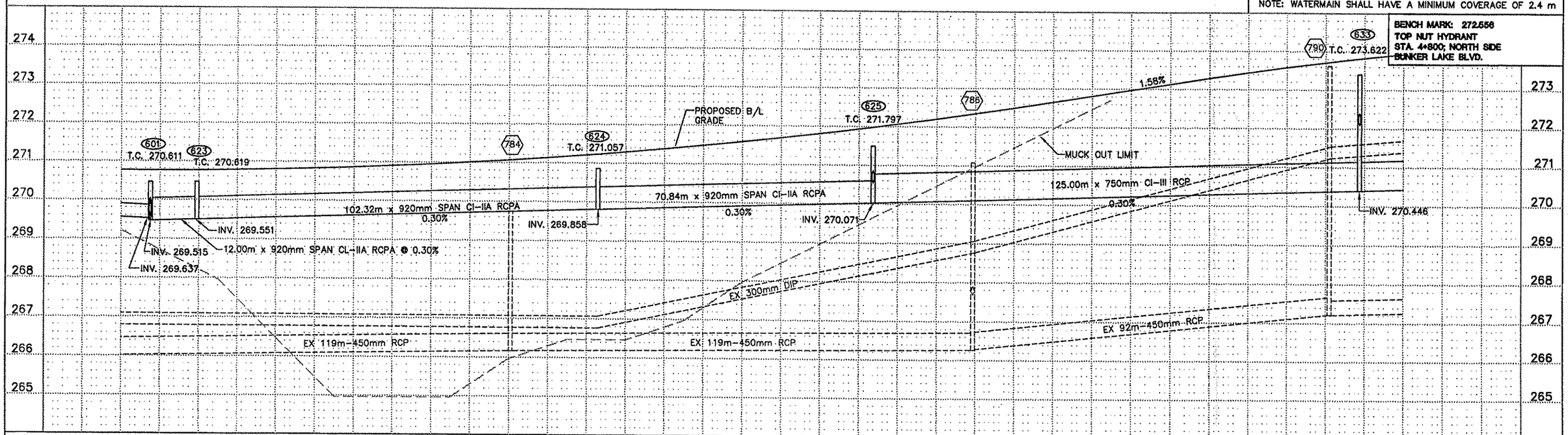
FILE NO. ANOKC9806.01
DATE 3/15/99
66/230

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT10.DWG 04-14-99 4:22 pm



NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 272.656
TOP NUT HYDRANT
STA. 4+800; NORTH SIDE
BUNKER LAKE BLVD.



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					
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

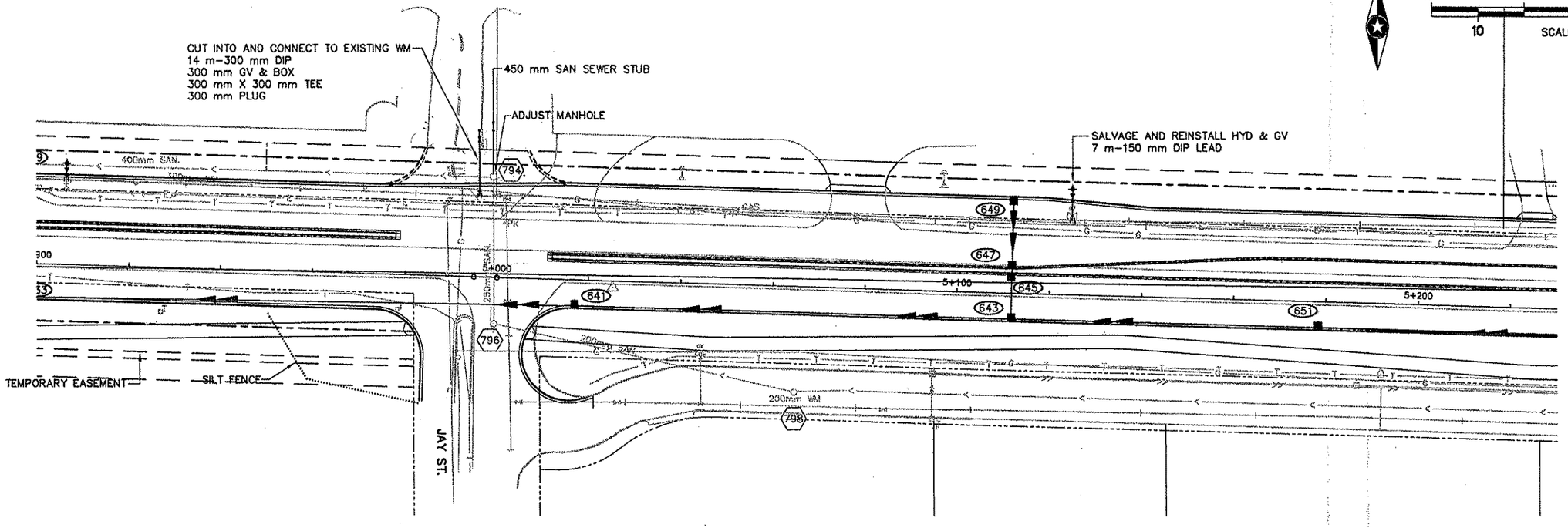
SEH

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. 4+580.000 TO 4+910.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKCB06UT11.DWG 04-14-99 4:12 pm



N

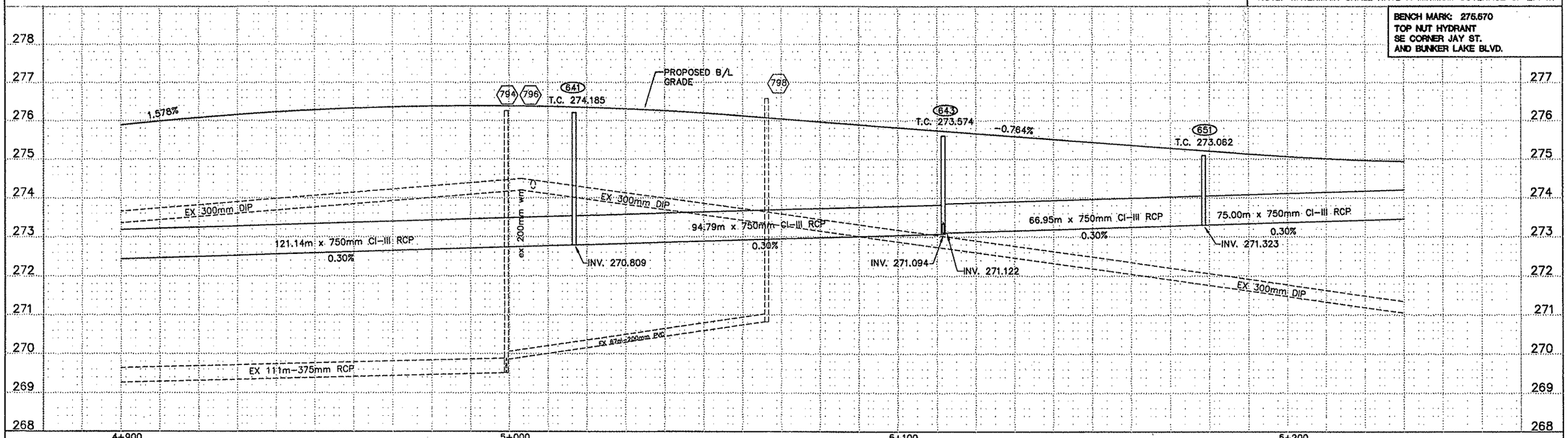
20 0 20

10

SCALE 1:500

NOTE: WATERMAIN SHALL HAVE A MINIMUM COVERAGE OF 2.4 m

BENCH MARK: 276.670
TOP NUT HYDRANT
SE CORNER JAY ST.
AND BUNKER LAKE BLVD.



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

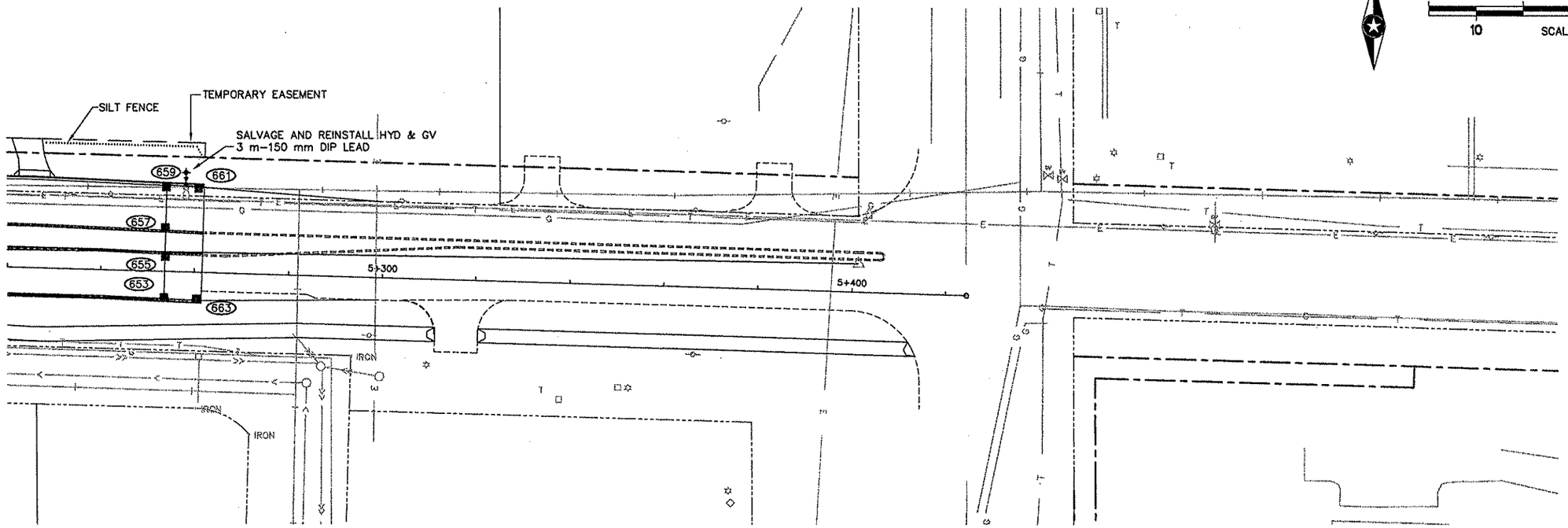
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

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. 4+900.000 TO 5+230.000

FILE NO. ANOKC9806.01
DATE 3/15/99
68/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT12.DWG 04-14-99 9:03 am



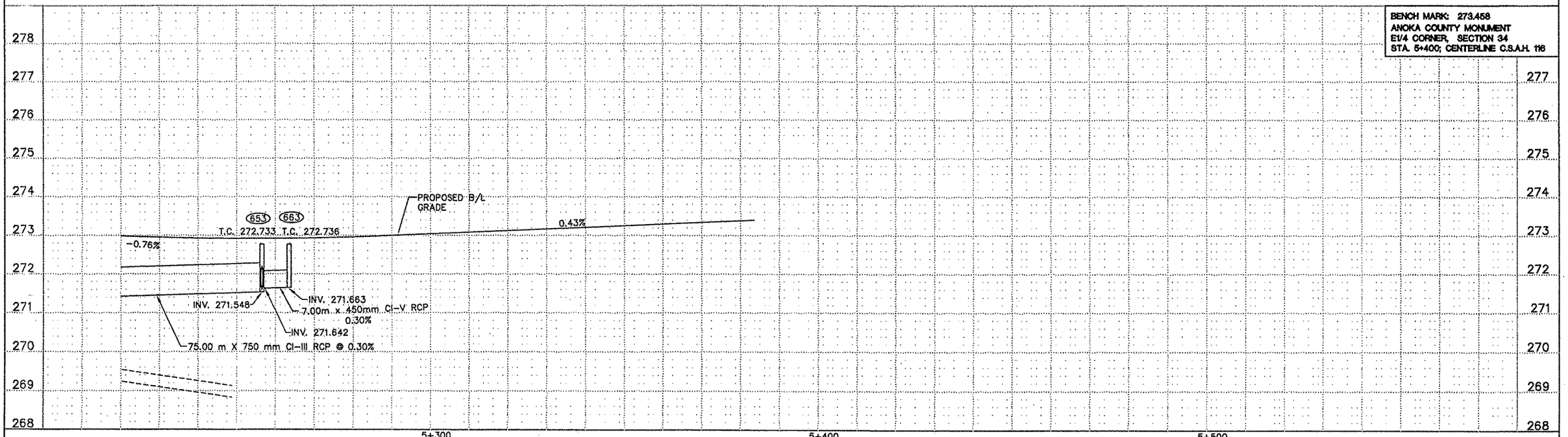
N

20 0 20

10

SCALE 1:500

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



DESIGN	1	TGT	04/13/99	STORM SEWER CASTING AND INVERT REVISIONS-653,663	
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: 5/6/99 Reg. No. 18612

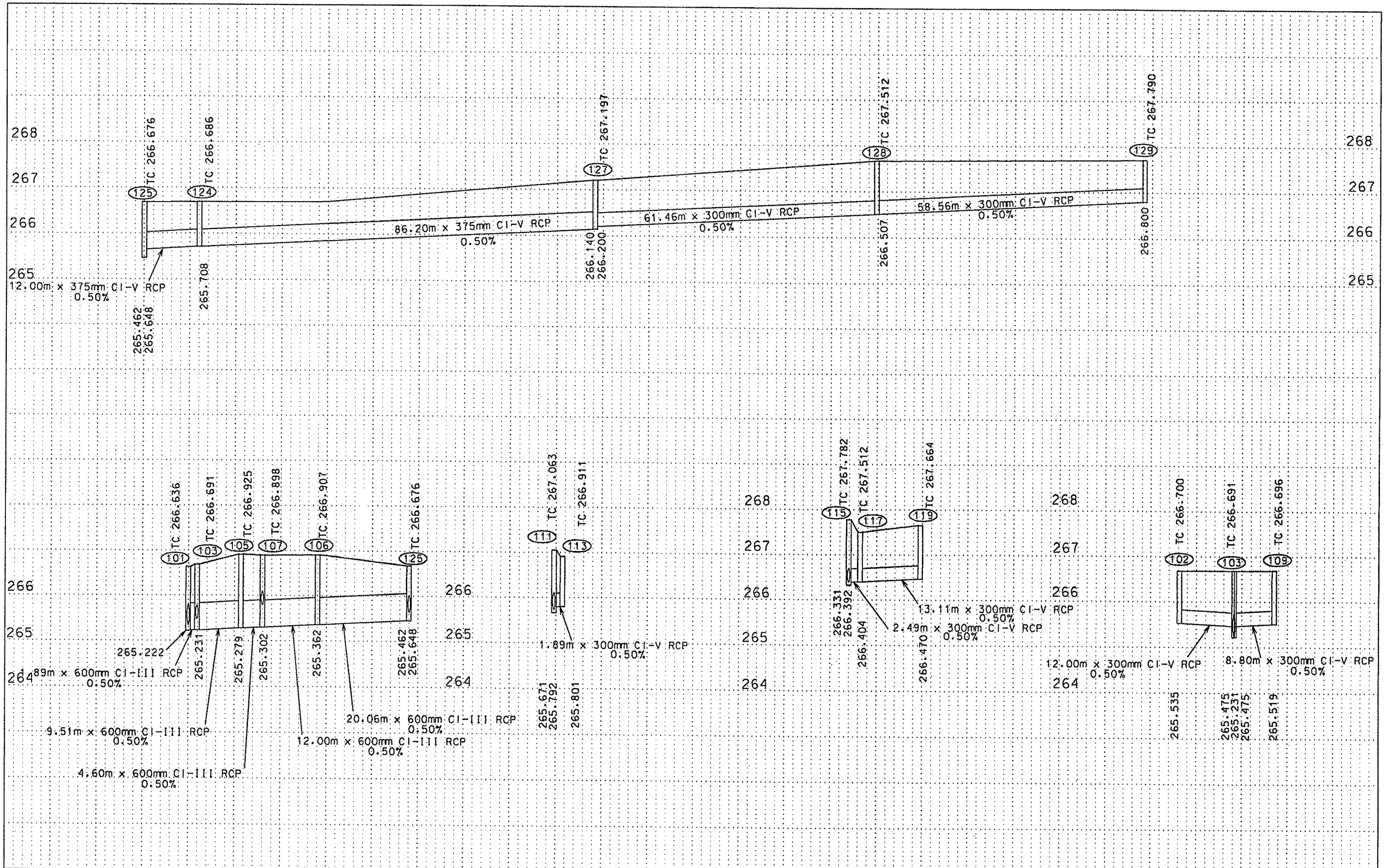
SEH

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. 5+220.000 TO 5+261.615

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806UT13.DWG 04-14-99 9:06 am



q:\civil\clients\ablomtm\lomoka9806\storm\profile\stprs100.dgn 24 MAR 99 14:28:03

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

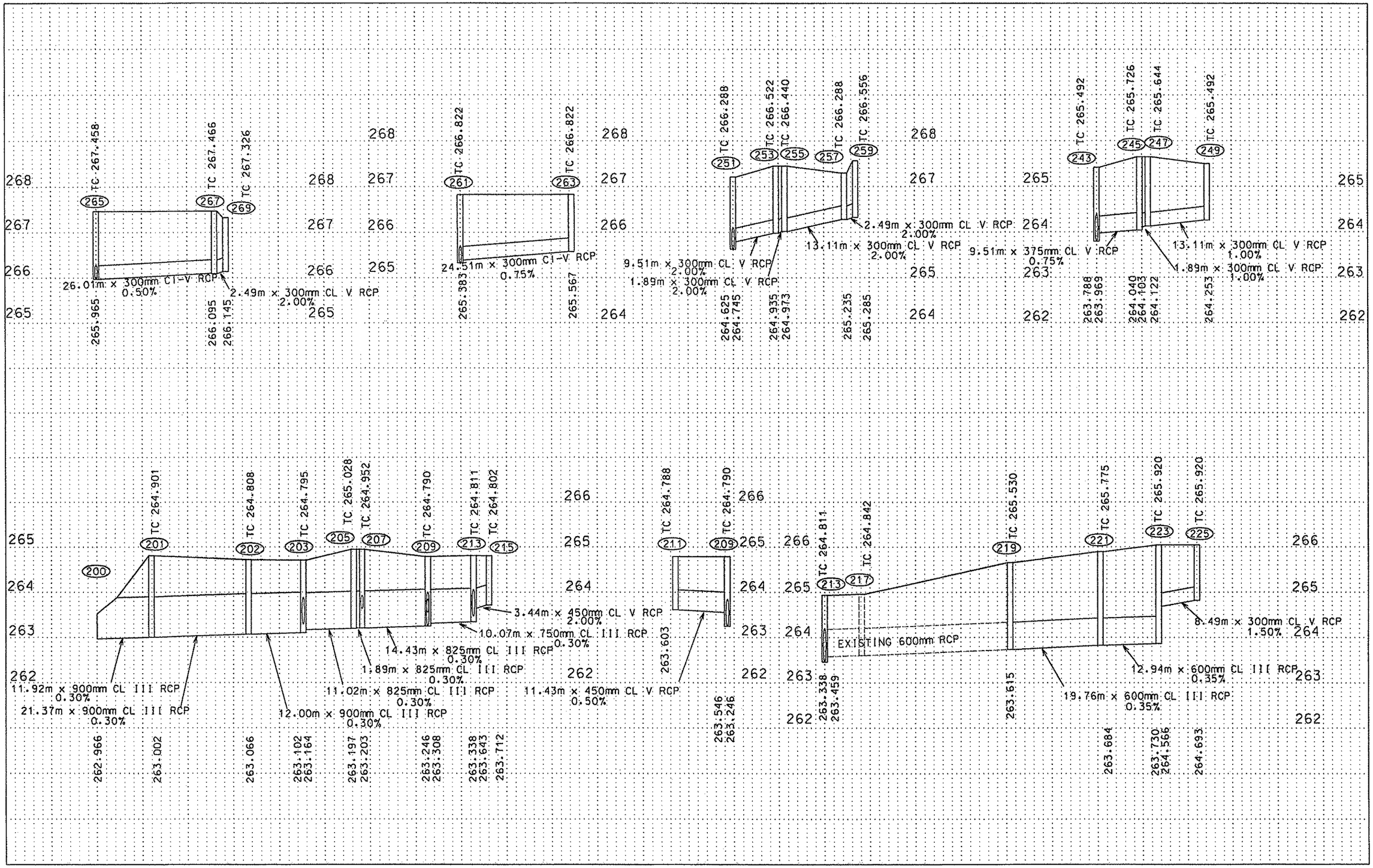
SEH

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



q:\civil\clients\ao_thru_anoka\9806\storm\cross200.dgn
24 MAR 99 14:30:17

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

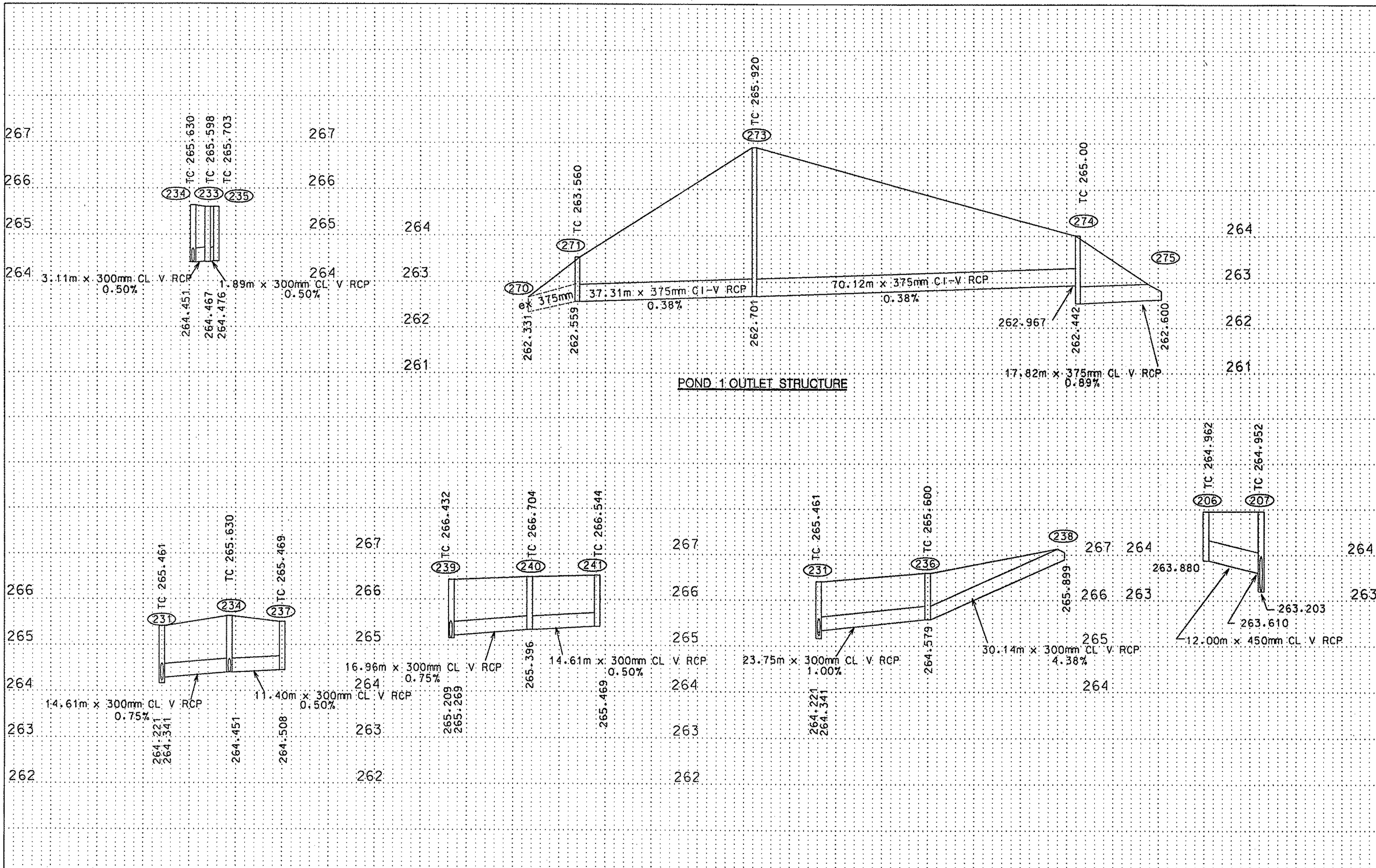
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date MARCH 15, 1999 Reg. No. 18612

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

71
230



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

SEH

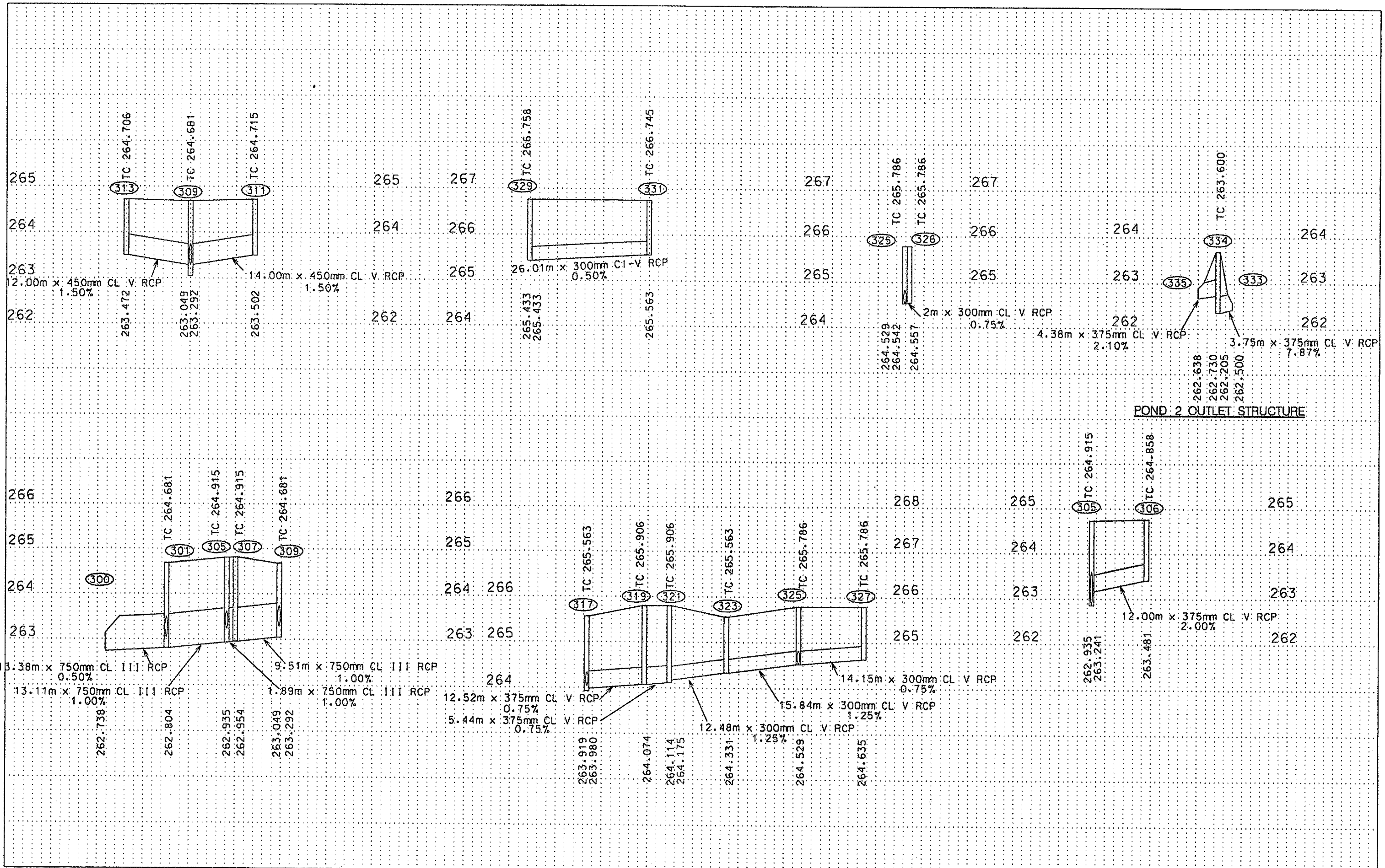
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

STORM SEWER PROFILE

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

72 / 230

24 MAR 99 14:32:25



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.

Date: MARCH 15, 1999 Reg. No. 18612

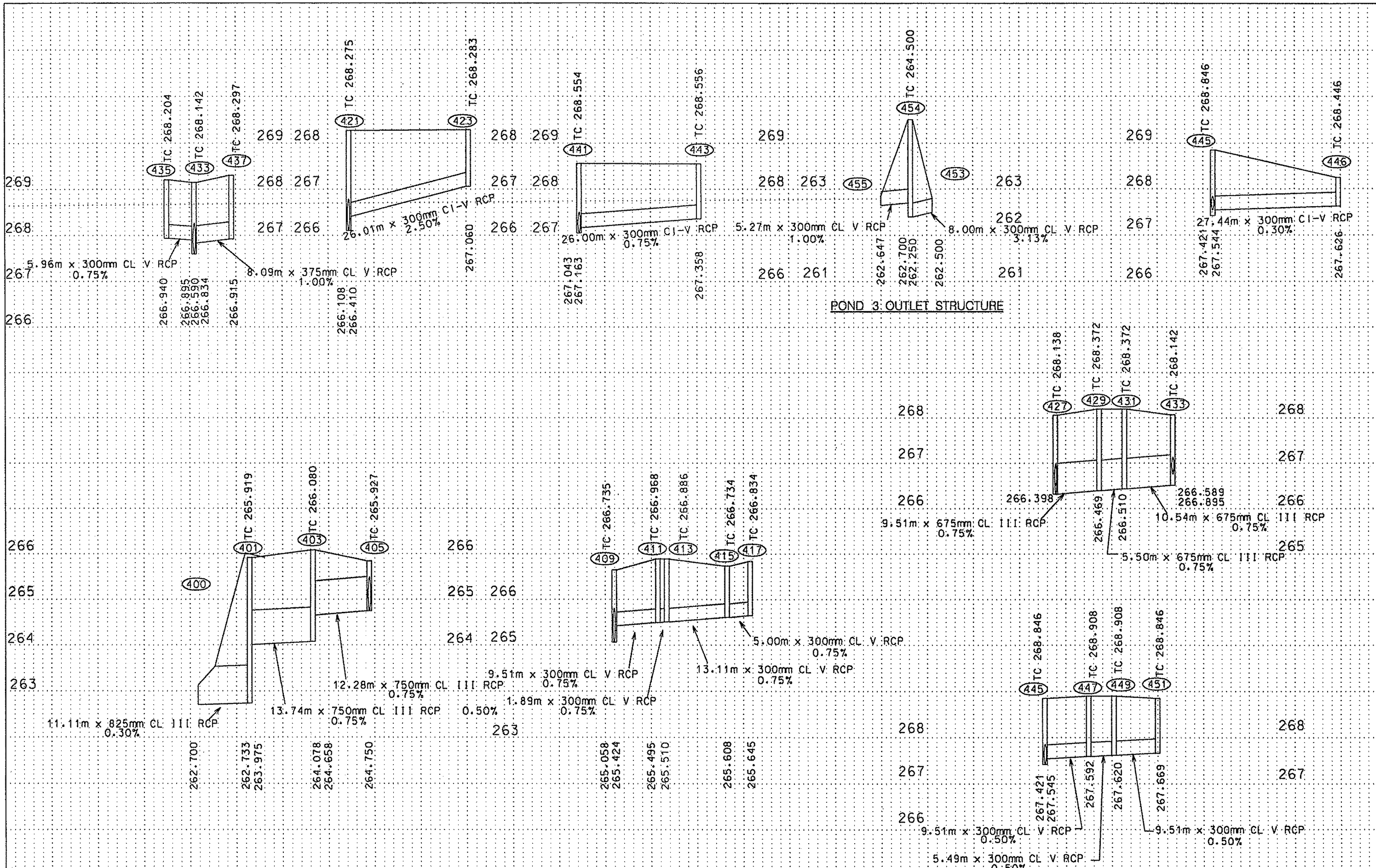
SEH

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

q:\civil\clients\...\cross300.dgn 24 MAR 99 14:34:34



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.

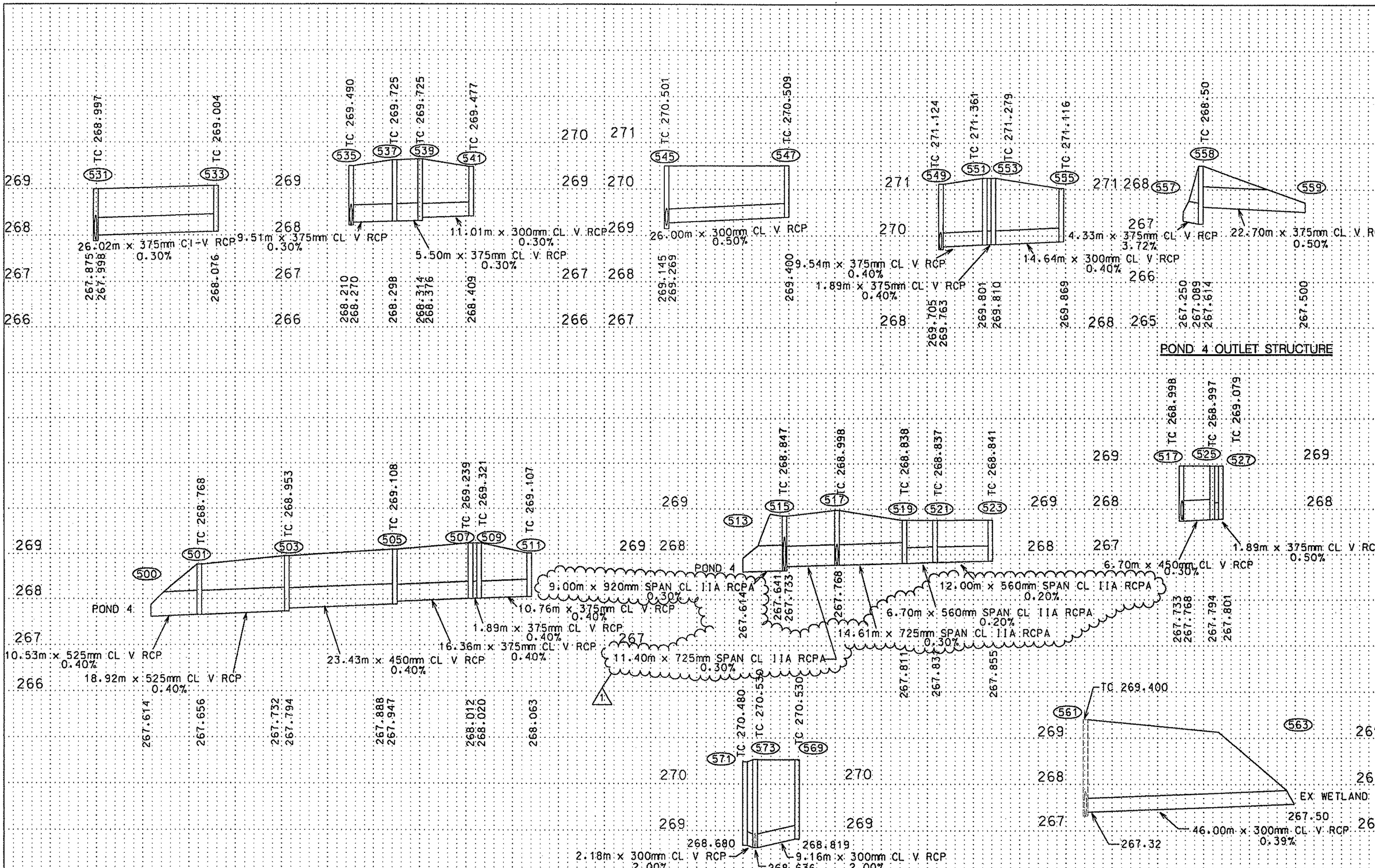
Date: MARCH 15, 1999 Reg. No. 18612

SEH

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



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	BAR	4/13/99	REVISED "ARCH" TO "SPAN" REVISED "RCP" TO "RCPA" REVISED 450mm to 560mm, 600mm to 725mm, 750mm to 920mm			

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

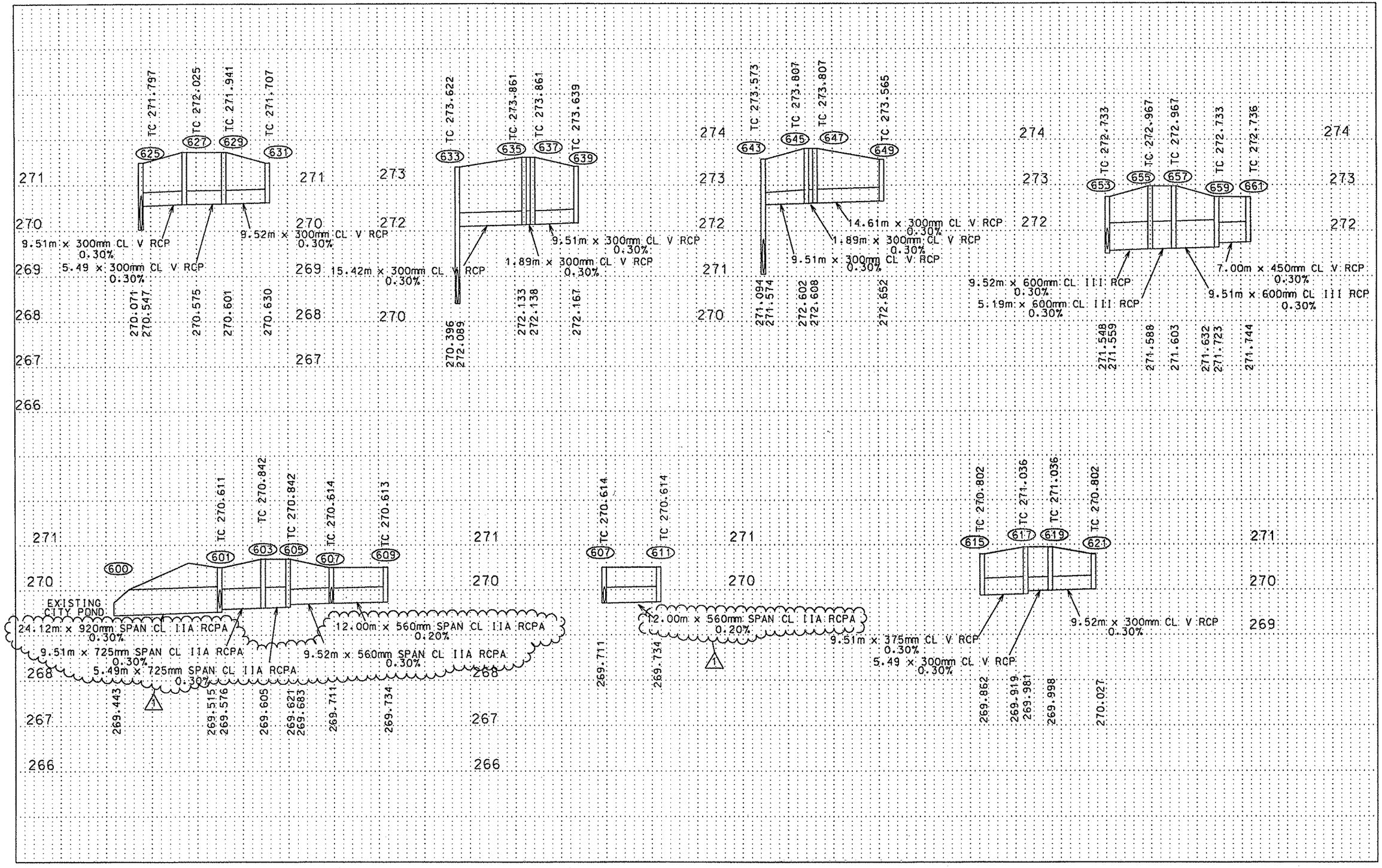
SEH

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



NO.	BY	DATE	REVISIONS
1	BAR	4/13/99	REVISED "ARCH" TO "SPAN" REVISED "RCP" TO "RCPA" REVISED 450mm to 560mm, 600mm to 725mm, 750mm to 920mm

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.
Date: MARCH 15, 1999 Reg. No. 18612

ESH

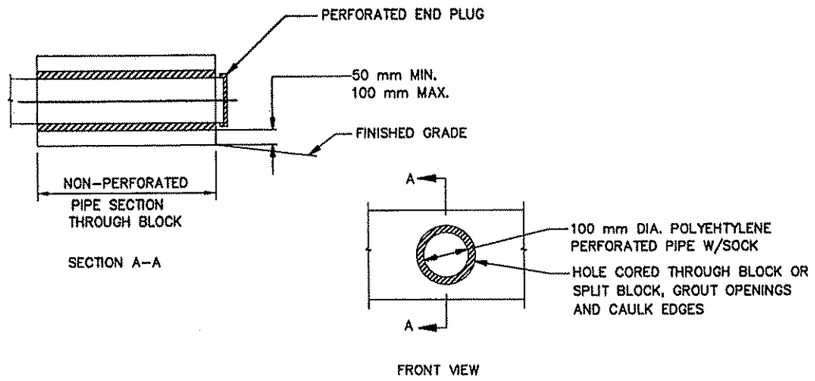
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

STORM SEWER PROFILE

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

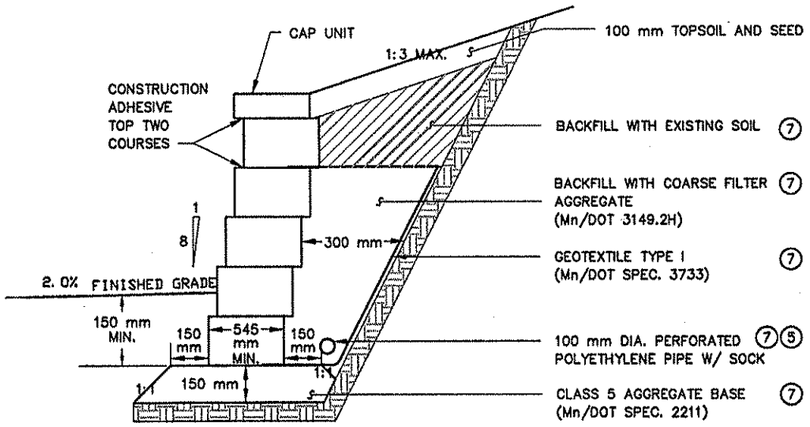
76
230

15 APR 99 09:25:32



PE PIPE OUTLET

EXIT THROUGH MODULAR WALL

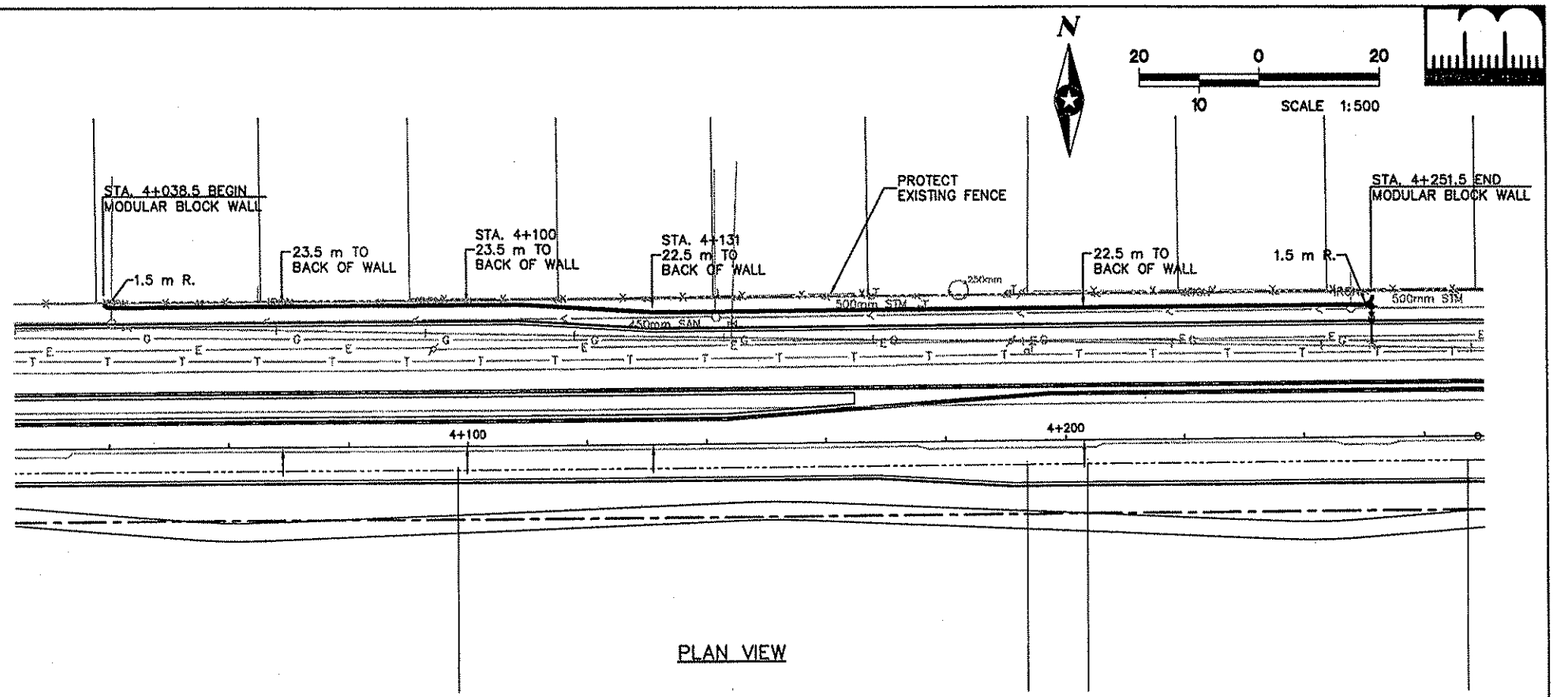


MODULAR BLOCK RETAINING WALL

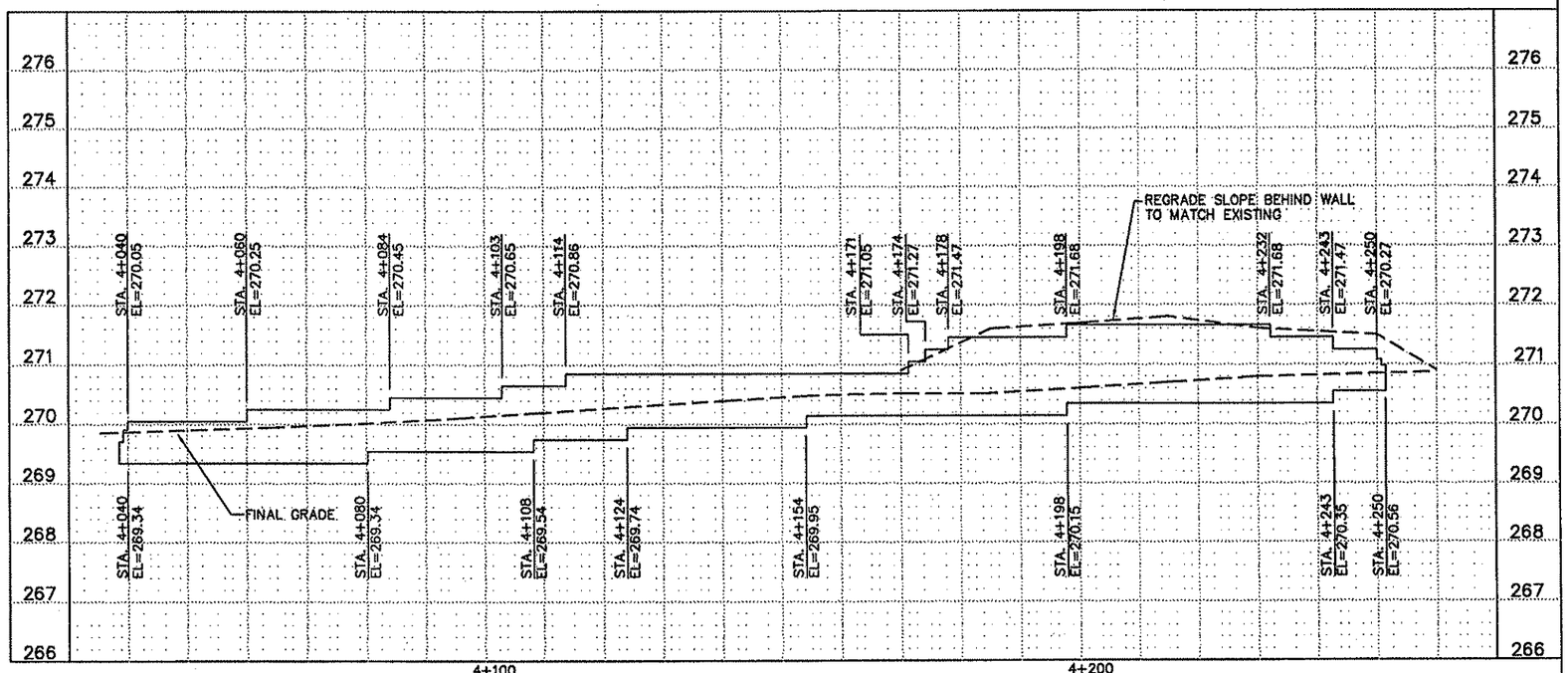
C.S.A.H. 116
STA. 4+038.5 TO 4+251.5

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 m^2 OF CONC. MODULAR BLOCK WALL.



PLAN VIEW



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

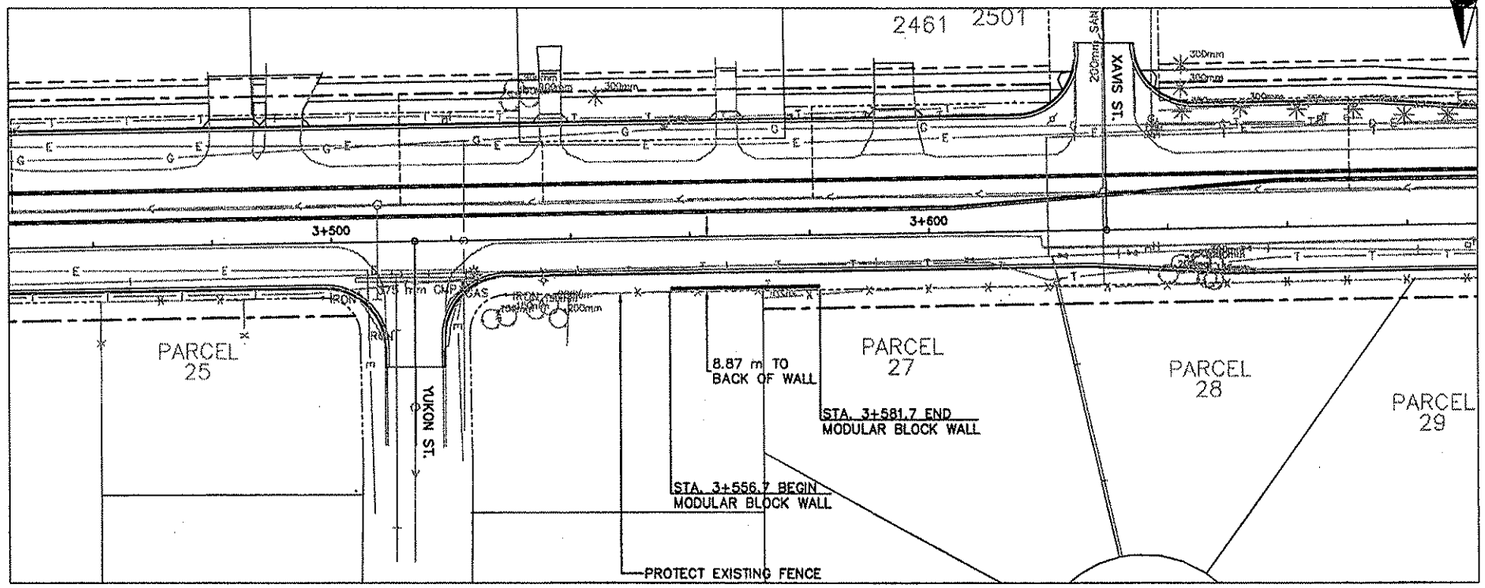
SEH

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

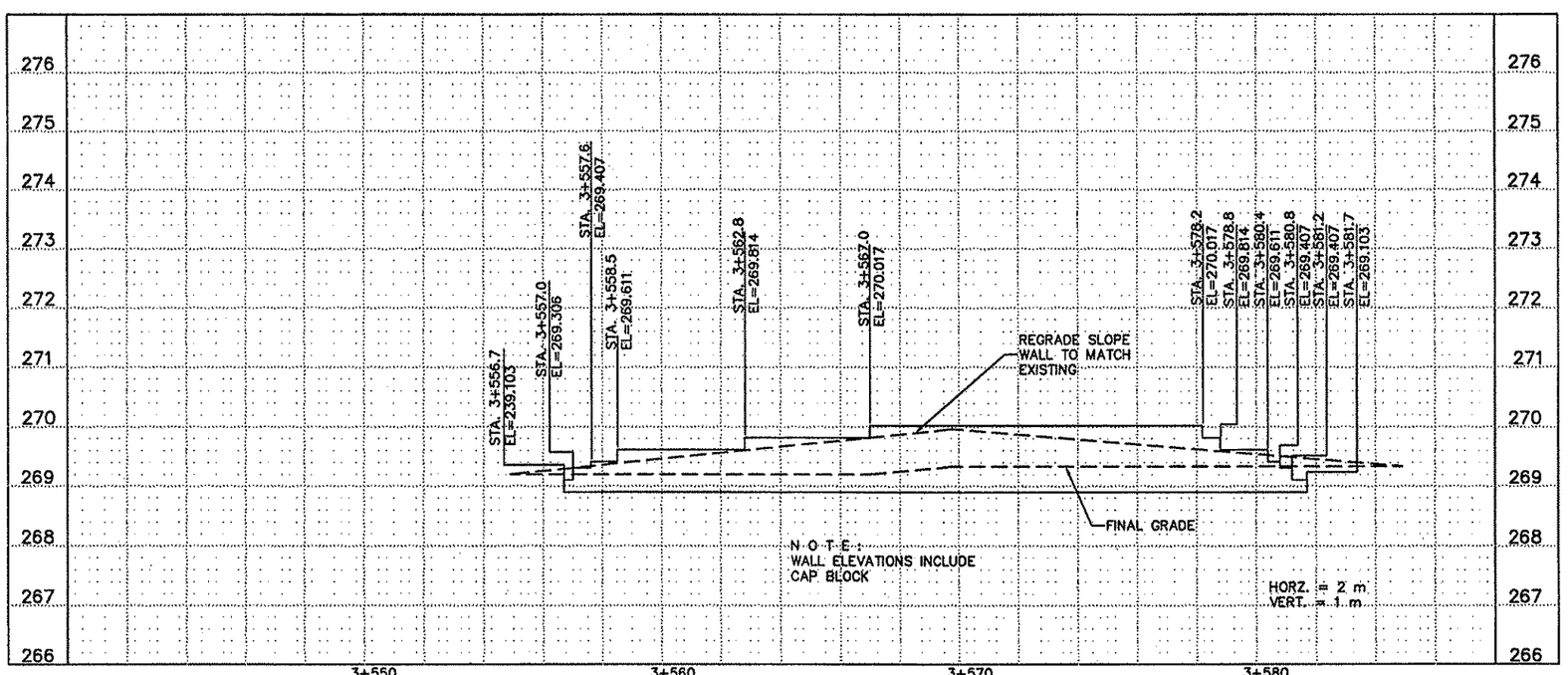
RETAINING WALL PLAN A AND PROFILE

FILE NO. ANOKC9806.01
DATE 03/15/99
77 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806RW.DWG 03-16-99 2:54 pm



PLAN VIEW



DESIGN						
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

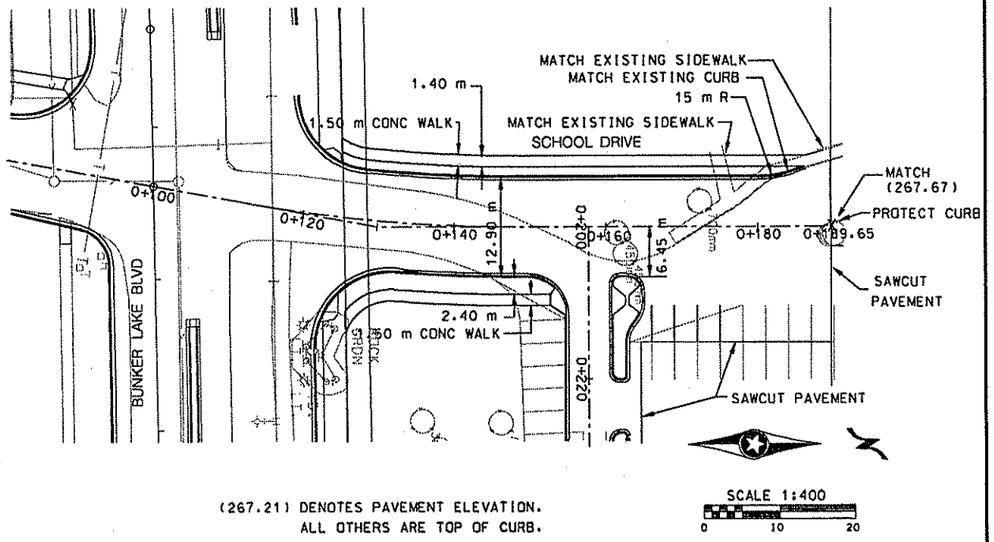
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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

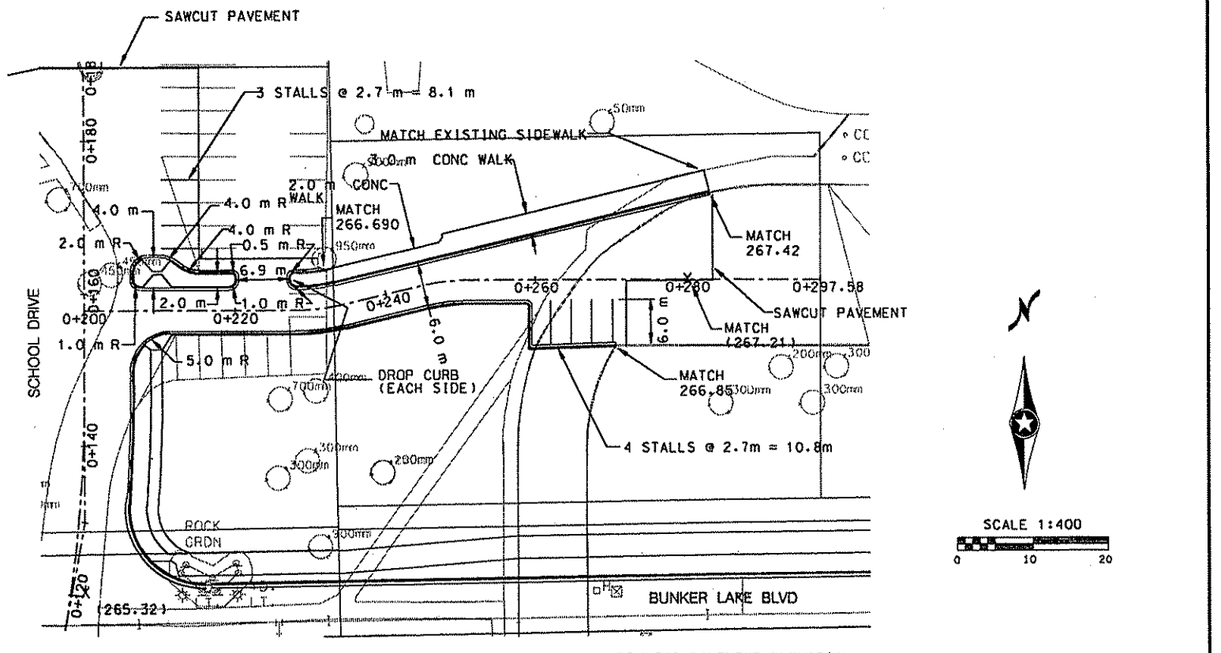
RETAINING WALL PLAN B AND PROFILE

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

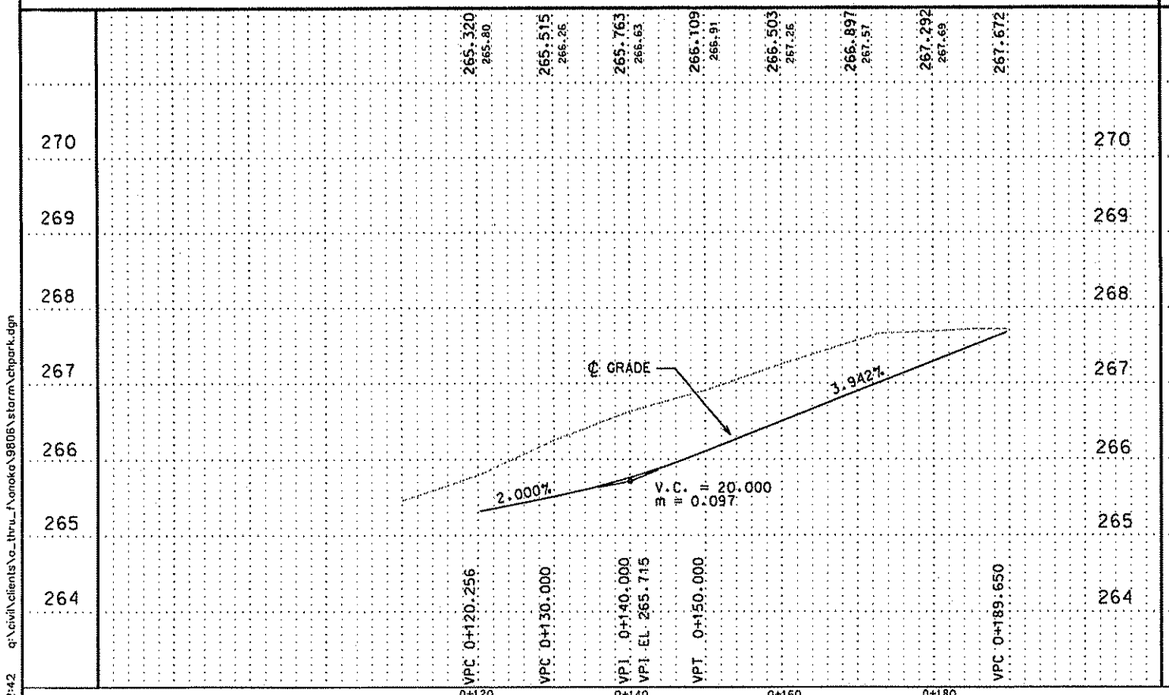
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AKC806RW2.DWG 03-18-99 3:20 pm

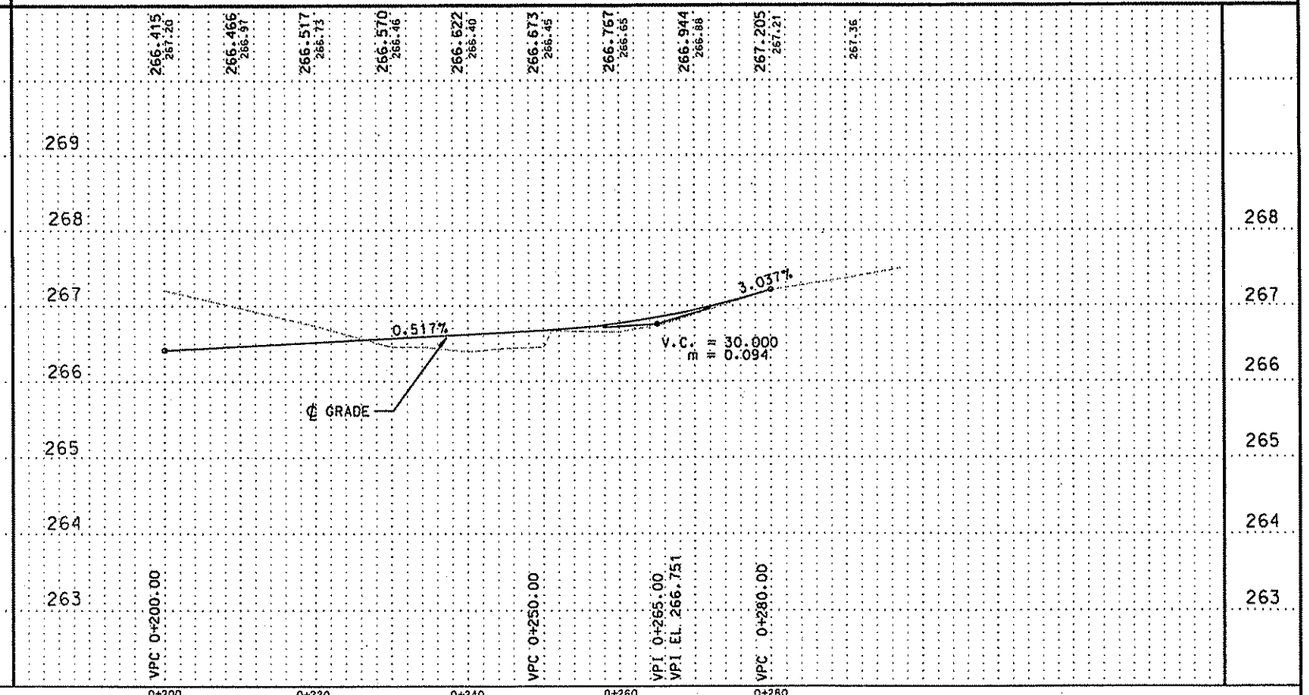


(267.21) DENOTES PAVEMENT ELEVATION.
ALL OTHERS ARE TOP OF CURB.



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





24 MAR 99 14:42:42 q:\civil\clients\a_thru_l\anoka\9806\storm\chpark.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.
Date MARCH 15, 1999 Reg No. 18612

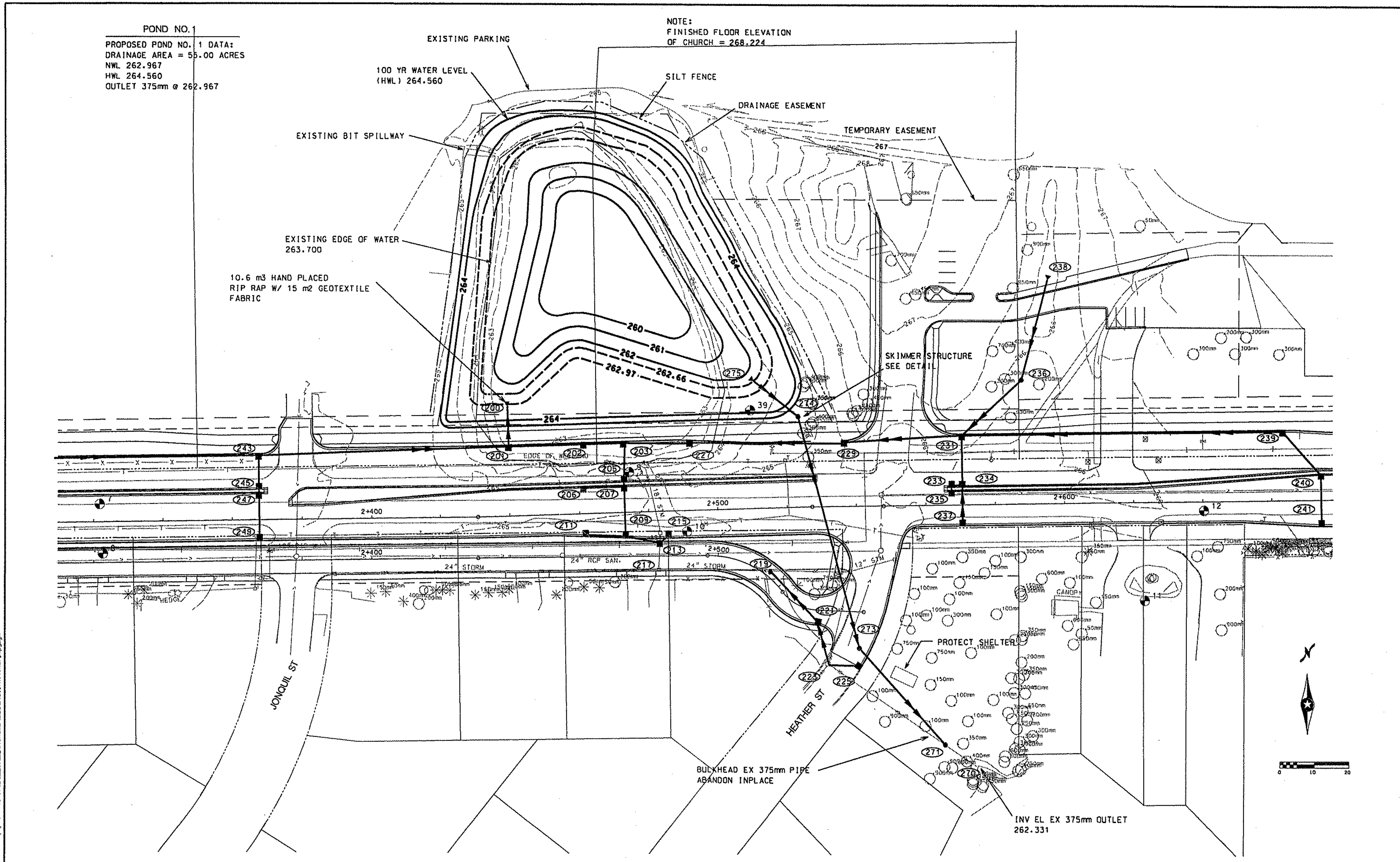
SEH

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
EXISTING PARKING
NOTE:
FINISHED FLOOR ELEVATION
OF CHURCH = 268.224
100 YR WATER LEVEL
(HWL) 264.560
SILT FENCE
DRAINAGE EASEMENT
EXISTING BIT SPILLWAY
TEMPORARY EASEMENT
EXISTING EDGE OF WATER
263.700
10.6 m3 HAND PLACED
RIP RAP W/ 15 m2 GEOTEXTILE
FABRIC
SKIMMER STRUCTURE
SEE DETAIL
PROTECT SHELTER
BULKHEAD EX 375mm PIPE
ABANDON INPLACE
INV EL EX 375mm OUTLET
262.331
JONQUIL ST
HEATHER ST
24" STORM
24" RCP SAN.
2+400
2+500
2+600
CANOPY

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.
Date MARCH 15, 1999 Reg. No. 18612

SEH

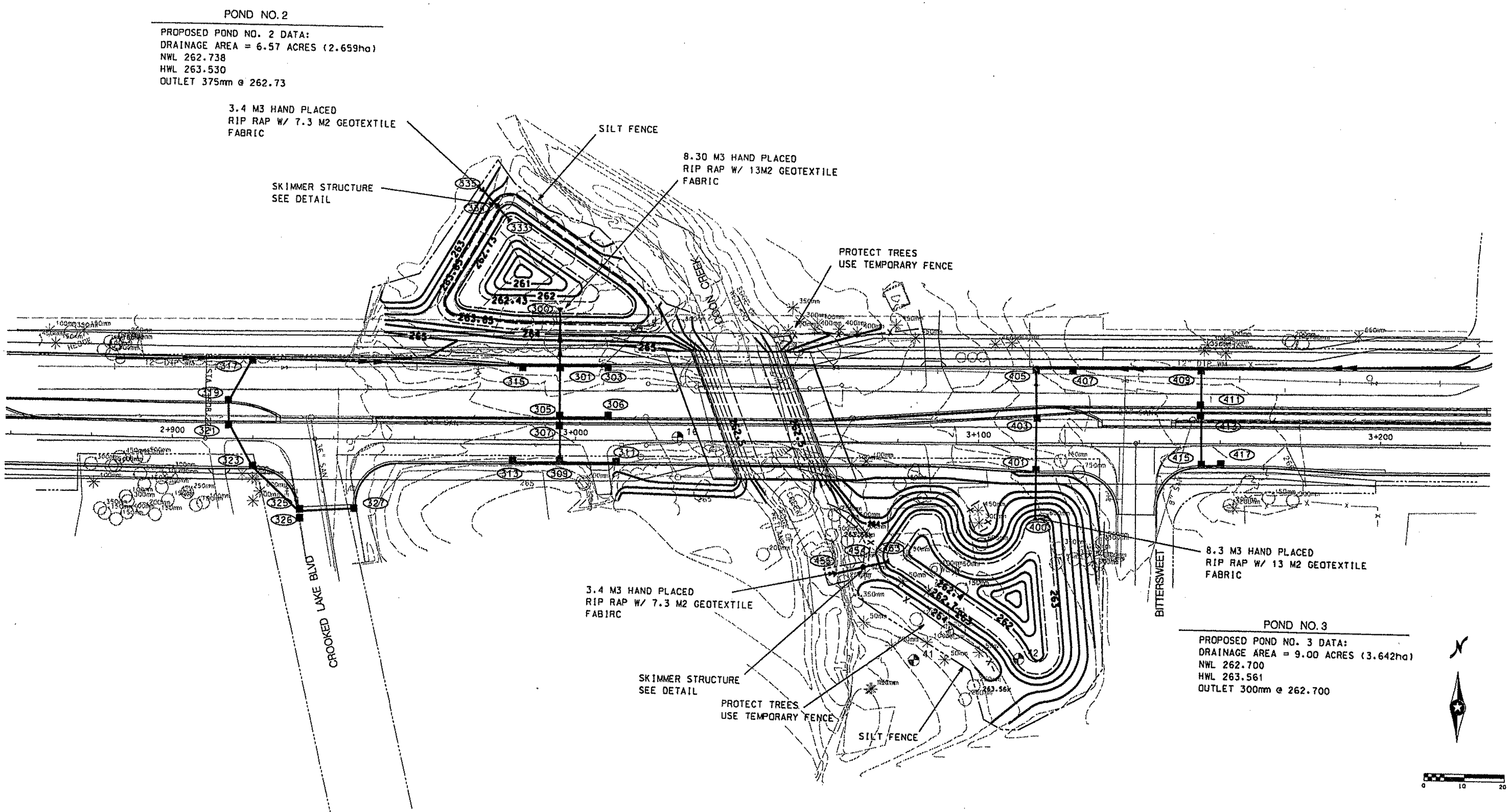
ANOKA COUNTY
C.S.A.H. 116(BUNKER LAKE BLVD)
S.A.P. 02-716-04
S.A.P. 198-020-14

CONTOUR PLAN
POND NO.1

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

80
230

24 MAR 99 14:44:17



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
CROOKED LAKE BLVD
COON CREEK
BITTERSWEET
2+900
3+000
3+100
3+200
3.4 M3 HAND PLACED
RIP RAP W/ 7.3 M2 GEOTEXTILE
FABIRC
8.3 M3 HAND PLACED
RIP RAP W/ 13 M2 GEOTEXTILE
FABRIC
SKIMMER STRUCTURE
SEE DETAIL
PROTECT TREES
USE TEMPORARY FENCE
SILT FENCE
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
N
0 10 20

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.

Date MARCH 15, 1999 Reg. No. 18612

SEH

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

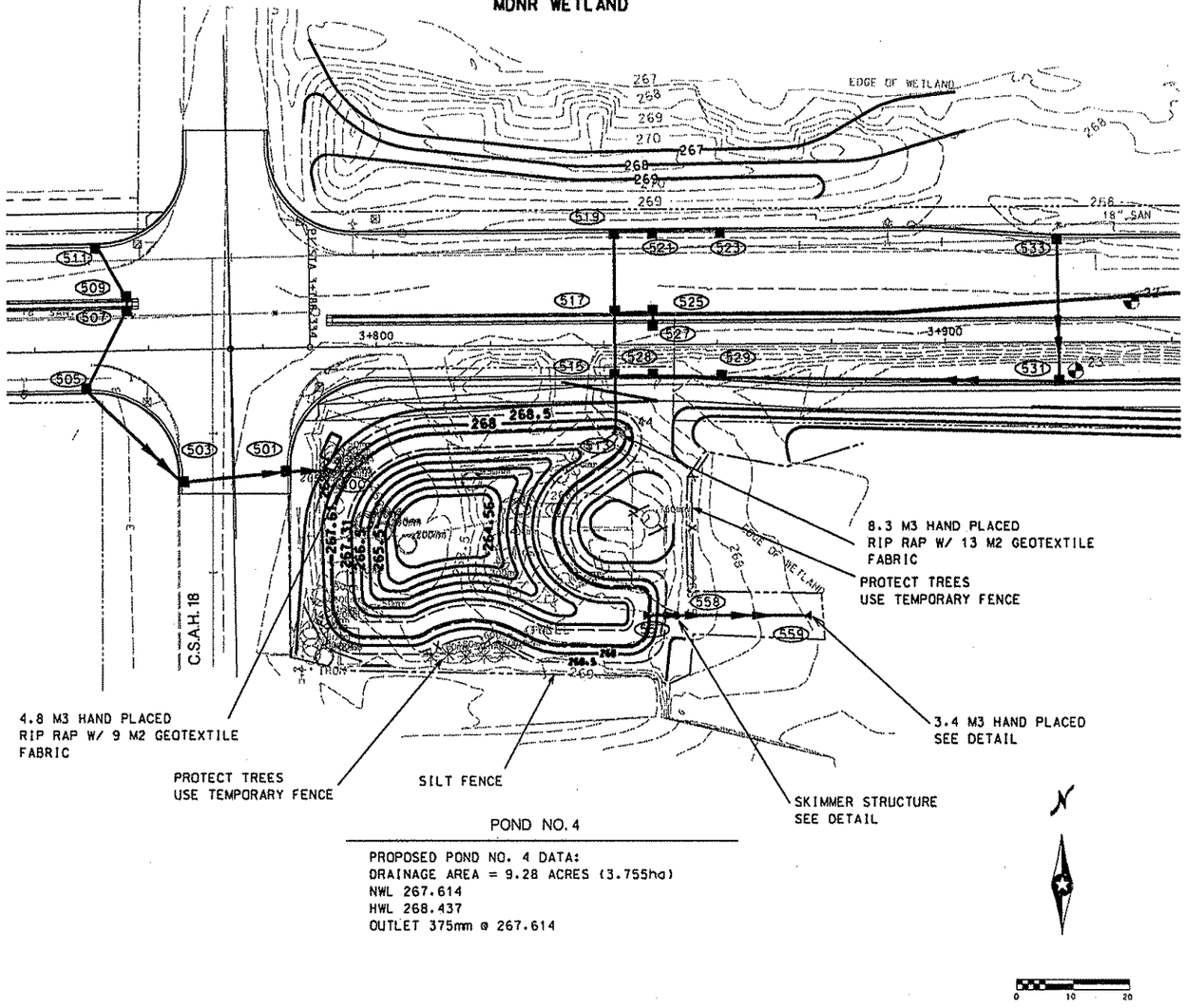
CONTOUR PLAN
PONDS NO. 2 & 3

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

24 MAR 99 14:45:07

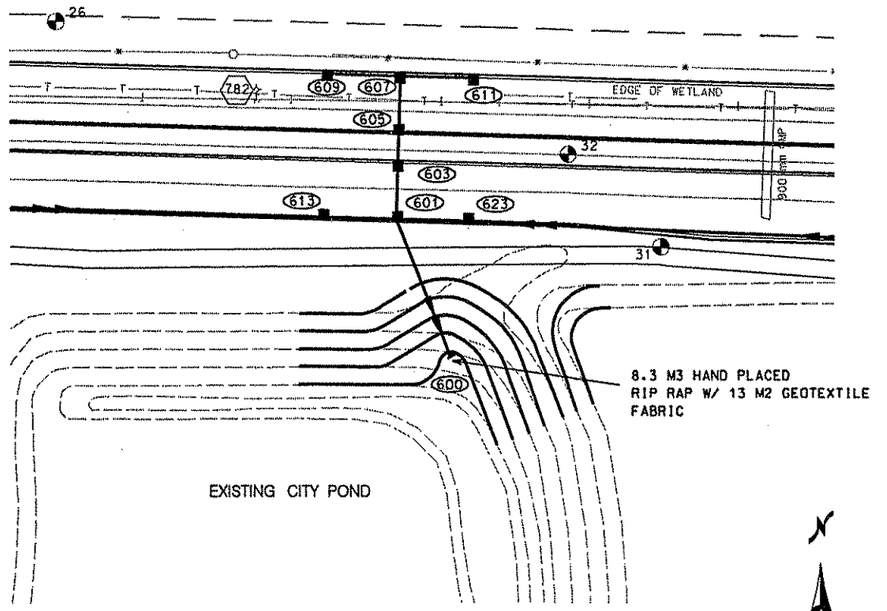
MITIGATION AREA

MDNR WETLAND



POND NO. 4

PROPOSED POND NO. 4 DATA:
DRAINAGE AREA = 9.28 ACRES (3.755ha)
NWL 267.614
HWL 268.437
OUTLET 375mm @ 267.614



q:\civil\clients\va_thru_\anoka\9806\storm\thrush.dgn
q:\civil\clients\va_thru_\anoka\9806\storm\thrush.dgn
24 MAR 99 14:51:48

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.
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 PLANS
POND 4 & EXISTING CITY POND

FILE NO. ANOKA9806.01
DATE MARCH 15,1999

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

EXCAVATION | EMBANKMENT

PRO. B/L 266.874
EXIST. B/L 266.90
STA = 1+725

NEW R/W TRAIL E. T.E. COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
123	113	0	0	113	0

PRO. B/L 266.880
EXIST. B/L 266.90
STA = 1+710

NEW R/W TRAIL E. T.E.					
190	112	0	0	112	0

PRO. B/L 266.912
EXIST. B/L 266.97
STA = 1+695

R/W TRAIL E. T.E.					
214	128	0	0	128	0

PRO. B/L 266.970
EXIST. B/L 267.02
STA = 1+680

R/W TRAIL E. T.E.					
143	108	0	0	108	0

PRO. B/L 267.055
EXIST. B/L 267.09
STA = 1+665

20	13	0	0	13	0

PRO. B/L 267.093
EXIST. B/L 267.12
STA = 1+659.406

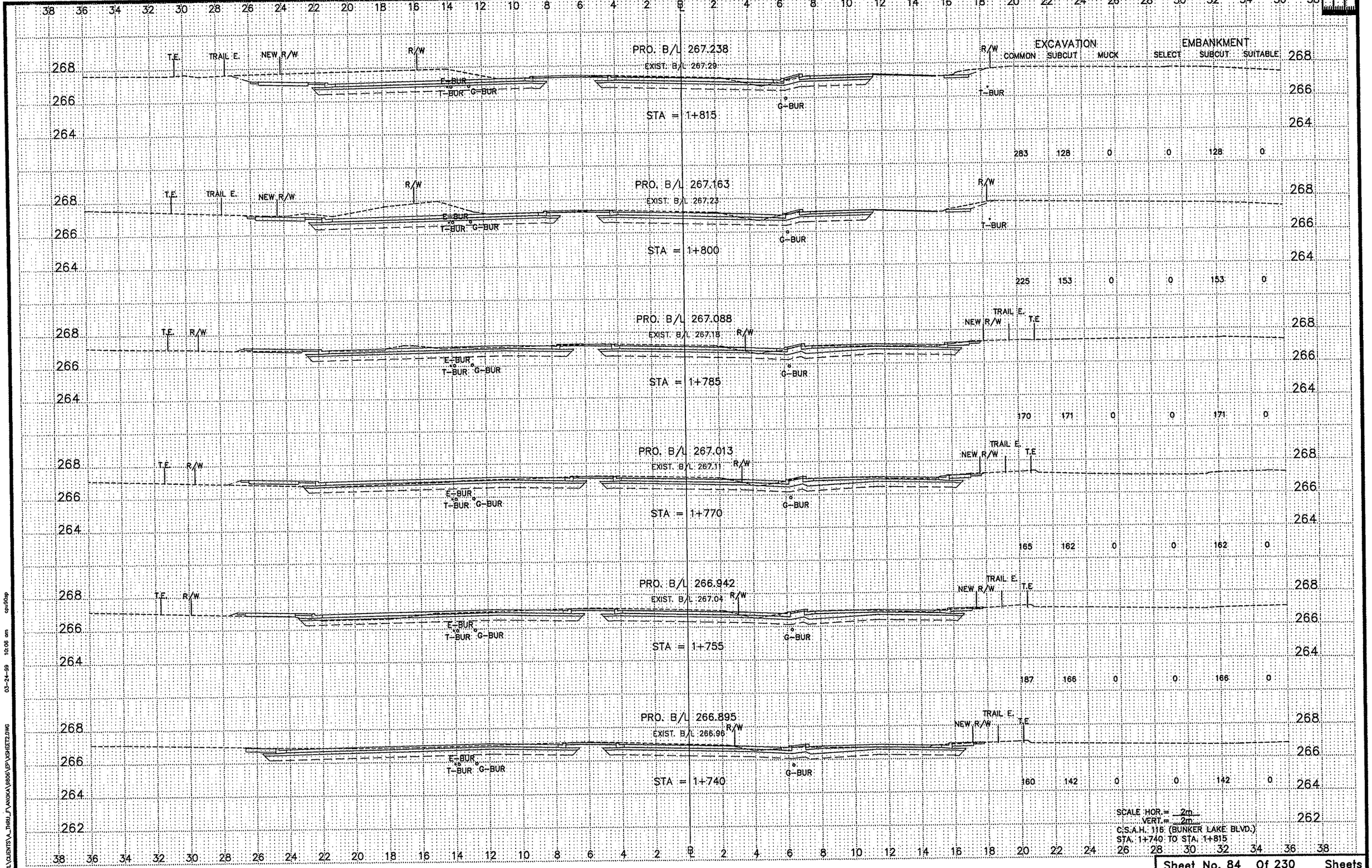
268 266 264 262

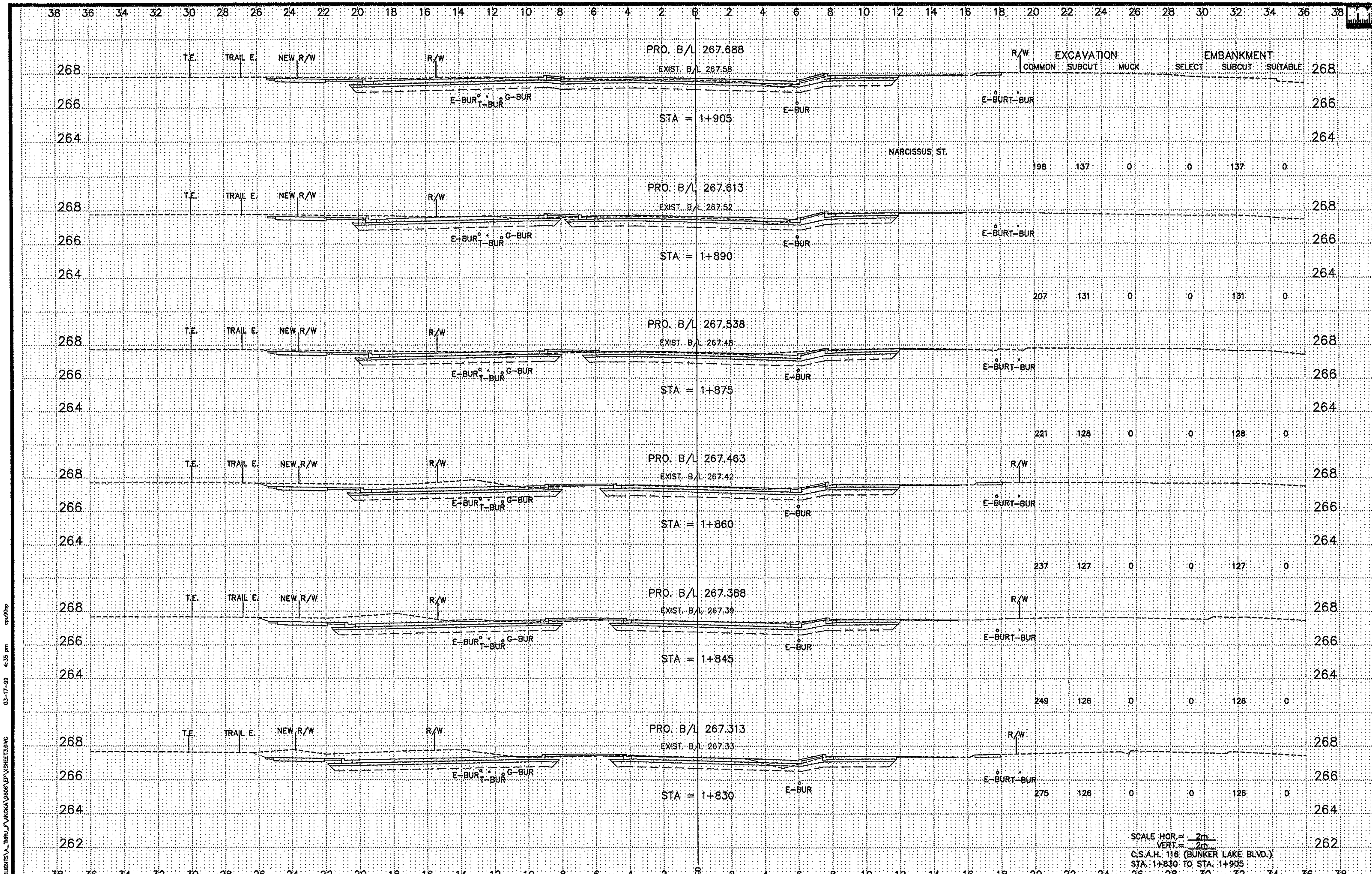
R/W E-BUR T-BUR G-BUR E-BUR T-BUR

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

Sheet No. 83 Of 230 Sheets

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9808\EP\XSHEET1.DWG 03-24-99 10:04 cm cpu90sp





EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE
PRO. B/L 267.688
EXIST. B/L 267.58
STA = 1+905
NARCISSUS ST.
198 137 0 0 137 0
PRO. B/L 267.613
EXIST. B/L 267.52
STA = 1+890
207 131 0 0 131 0
PRO. B/L 267.538
EXIST. B/L 267.48
STA = 1+875
221 128 0 0 128 0
PRO. B/L 267.463
EXIST. B/L 267.42
STA = 1+860
237 127 0 0 127 0
PRO. B/L 267.388
EXIST. B/L 267.39
STA = 1+845
249 126 0 0 126 0
PRO. B/L 267.313
EXIST. B/L 267.33
STA = 1+830
275 126 0 0 126 0
T.E.
TRAIL E.
NEW R/W
R/W
E-BUR
T-BUR
G-BUR
E-BURT-BUR
SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 1+830 TO STA. 1+905

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

PRO. B/L 268.049
EXIST. B/L 267.82
STA = 1+995
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR R/W E-BUR T-BUR
268 266 264

MARIGOLD ST.

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
154	143	0	0	143	0

PRO. B/L 268.018
EXIST. B/L 267.79
STA = 1+980
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR E-BUR T-BUR
268 266 264

158	145	0	0	145	0

PRO. B/L 267.972
EXIST. B/L 267.75
STA = 1+965
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR R/W E-BUR G-BUR T-BUR
268 266 264

167	149	0	0	149	0

PRO. B/L 267.911
EXIST. B/L 267.71
STA = 1+950
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR R/W E-BUR G-BUR T-BUR
268 266 264

153	146	0	0	146	0

PRO. B/L 267.838
EXIST. B/L 267.67
STA = 1+935
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR R/W E-BUR G-BUR T-BUR
268 266 264

158	144	0	0	144	0

PRO. B/L 267.763
EXIST. B/L 267.62
STA = 1+920
T.E. TRAIL E. NEW R/W R/W E-BUR T-BUR G-BUR R/W E-BUR G-BUR T-BUR
268 266 264 262

181	142	0	0	142	0

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

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

PRO. B/L 267.919
EXIST. B/L 267.81
T.E. TRAIL E. R/W R/W NEW R/W
E-BUR T-BUR G-BUR T-BUR
STA = 2+085

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
160	129	0	0	129	0

PRO. B/L 267.978
EXIST. B/L 267.85
T.E. TRAIL E. R/W R/W NEW R/W
E-BUR T-BUR G-BUR T-BUR
STA = 2+070

132	129	0	0	129	0

PRO. B/L 268.023
EXIST. B/L 267.89
T.E. TRAIL E. R/W R/W NEW R/W
E-BUR T-BUR G-BUR T-BUR
STA = 2+055

113	127	0	0	127	0

PRO. B/L 268.052
EXIST. B/L 267.90
T.E. TRAIL E. R/W R/W NEW R/W
E-BUR T-BUR G-BUR T-BUR
STA = 2+040

106	136	0	0	136	0

PRO. B/L 268.066
EXIST. B/L 267.89
R/W
E-BUR E-BUR T-BUR
T-BUR G-BUR
STA = 2+025

MARIGOLD ST.

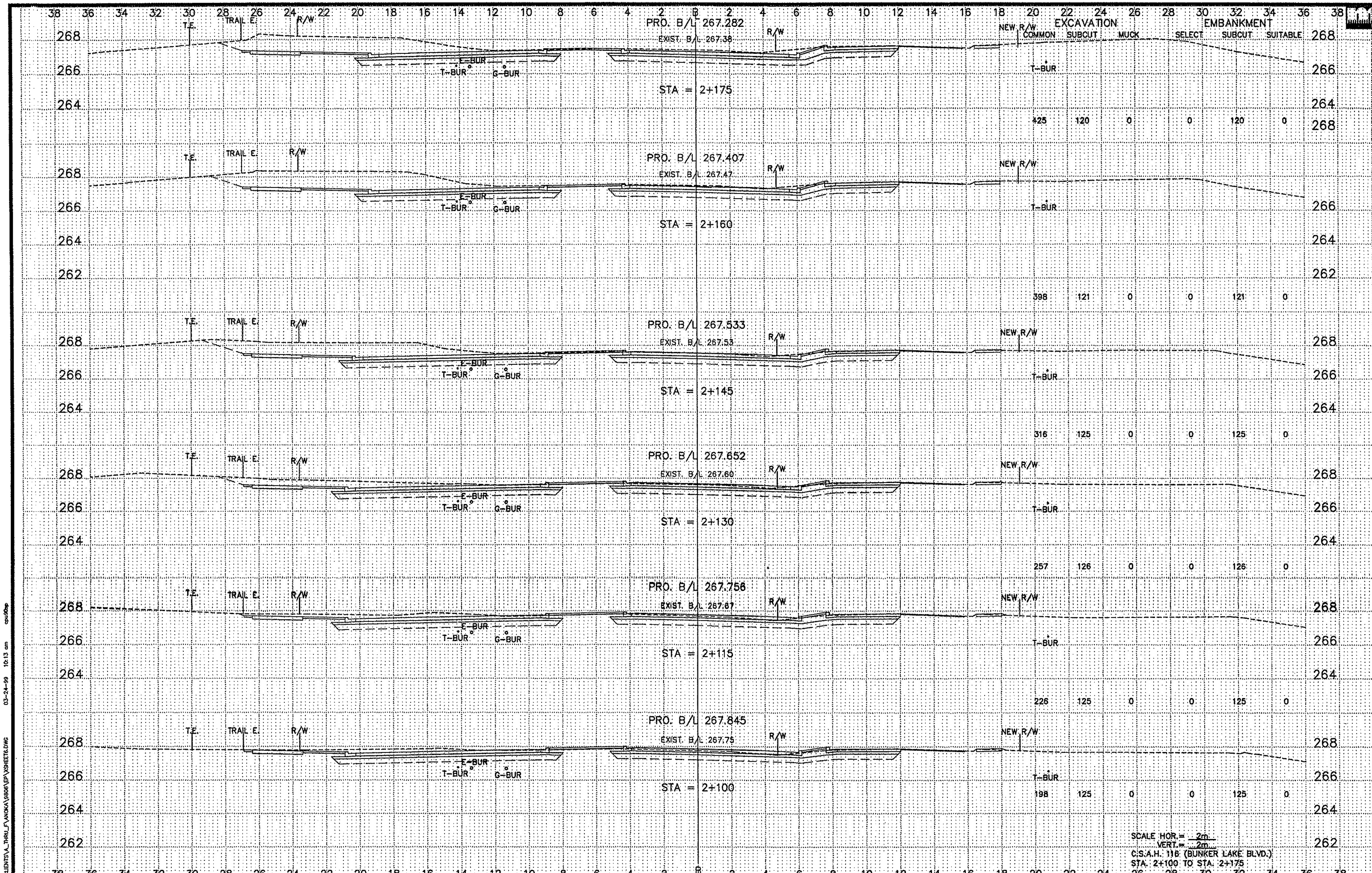
119	198	0	0	198	0

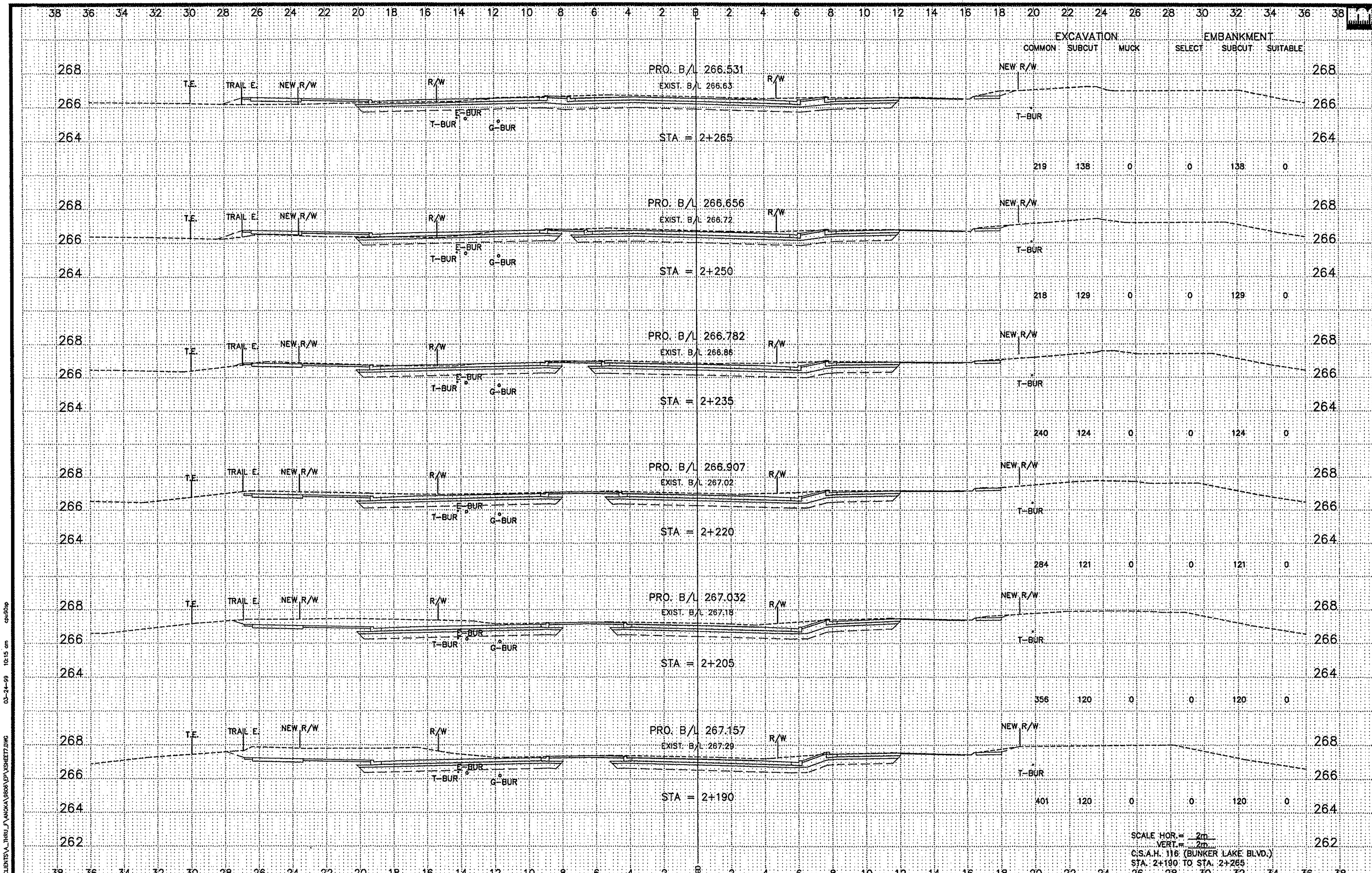
PRO. B/L 268.065
EXIST. B/L 267.85
R/W
E-BUR E-BUR T-BUR
T-BUR G-BUR
STA = 2+010

150	199	0	0	199	0

268 266 264 262

SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+010 TO STA. 2+065


EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE
PRO. B/L 267.282
EXIST. B/L 267.38
STA = 2+175
425 120 0 0 120 0
PRO. B/L 267.407
EXIST. B/L 267.47
STA = 2+160
398 121 0 0 121 0
PRO. B/L 267.533
EXIST. B/L 267.53
STA = 2+145
316 125 0 0 125 0
PRO. B/L 267.652
EXIST. B/L 267.60
STA = 2+130
257 126 0 0 126 0
PRO. B/L 267.756
EXIST. B/L 267.67
STA = 2+115
226 125 0 0 125 0
PRO. B/L 267.845
EXIST. B/L 267.75
STA = 2+100
198 125 0 0 125 0
T.E.
TRAIL E.
R/W
NEW R/W
E-BUR
T-BUR
G-BUR
SCALE HOR. = 2m
VERT. = 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+100 TO STA. 2+175

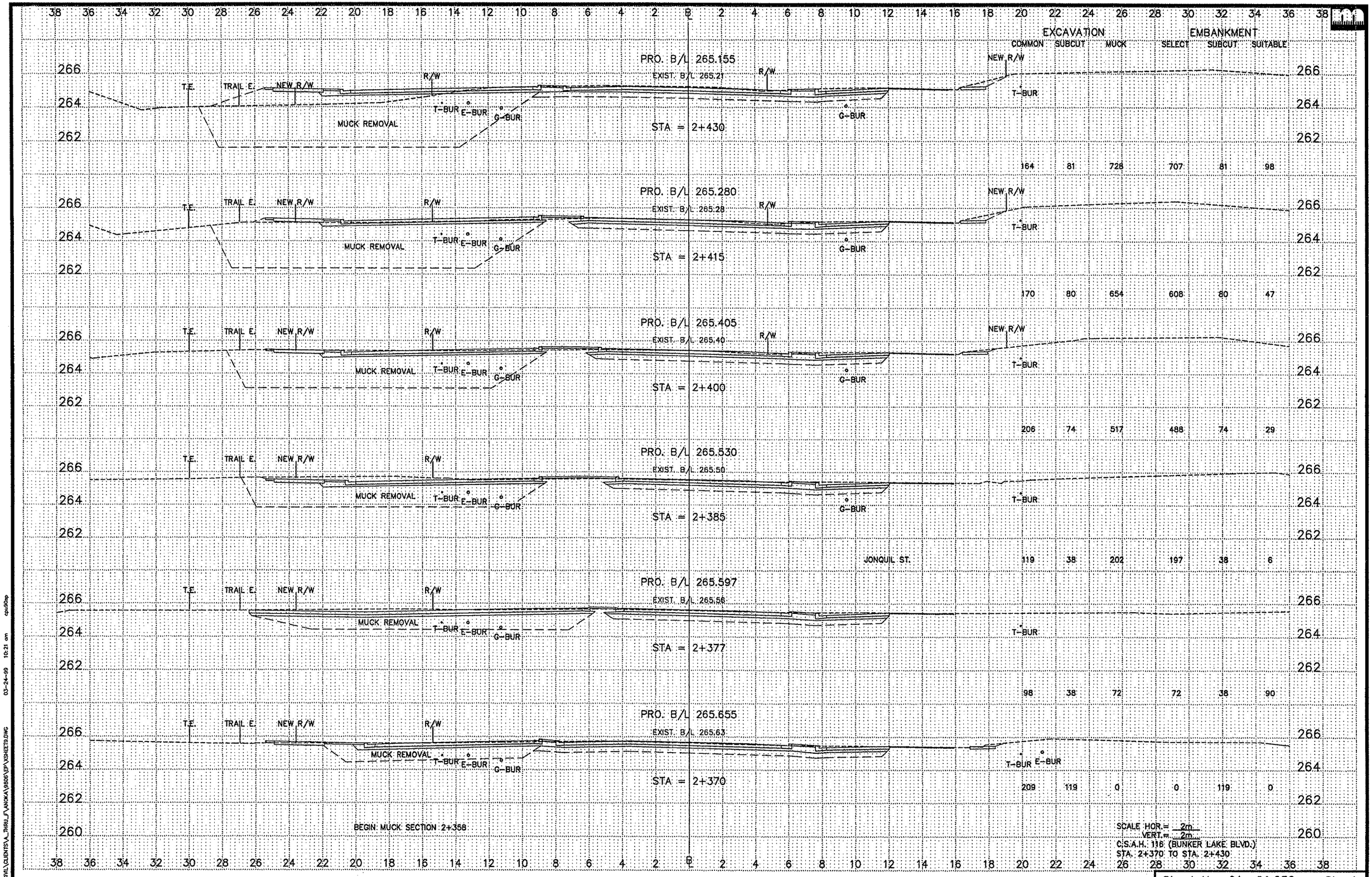


c:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\XSHEET7.DWG 03-24-99 10:15 am cpu90ap

EXCAVATION | EMBANKMENT

	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA. = 2+355	208	144	0	0	144	0
STA. = 2+340	209	140	0	0	140	0
STA. = 2+325	221	148	0	0	148	0
STA. = 2+310	218	149	0	0	149	0
STA. = 2+295	204	141	0	0	141	0
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

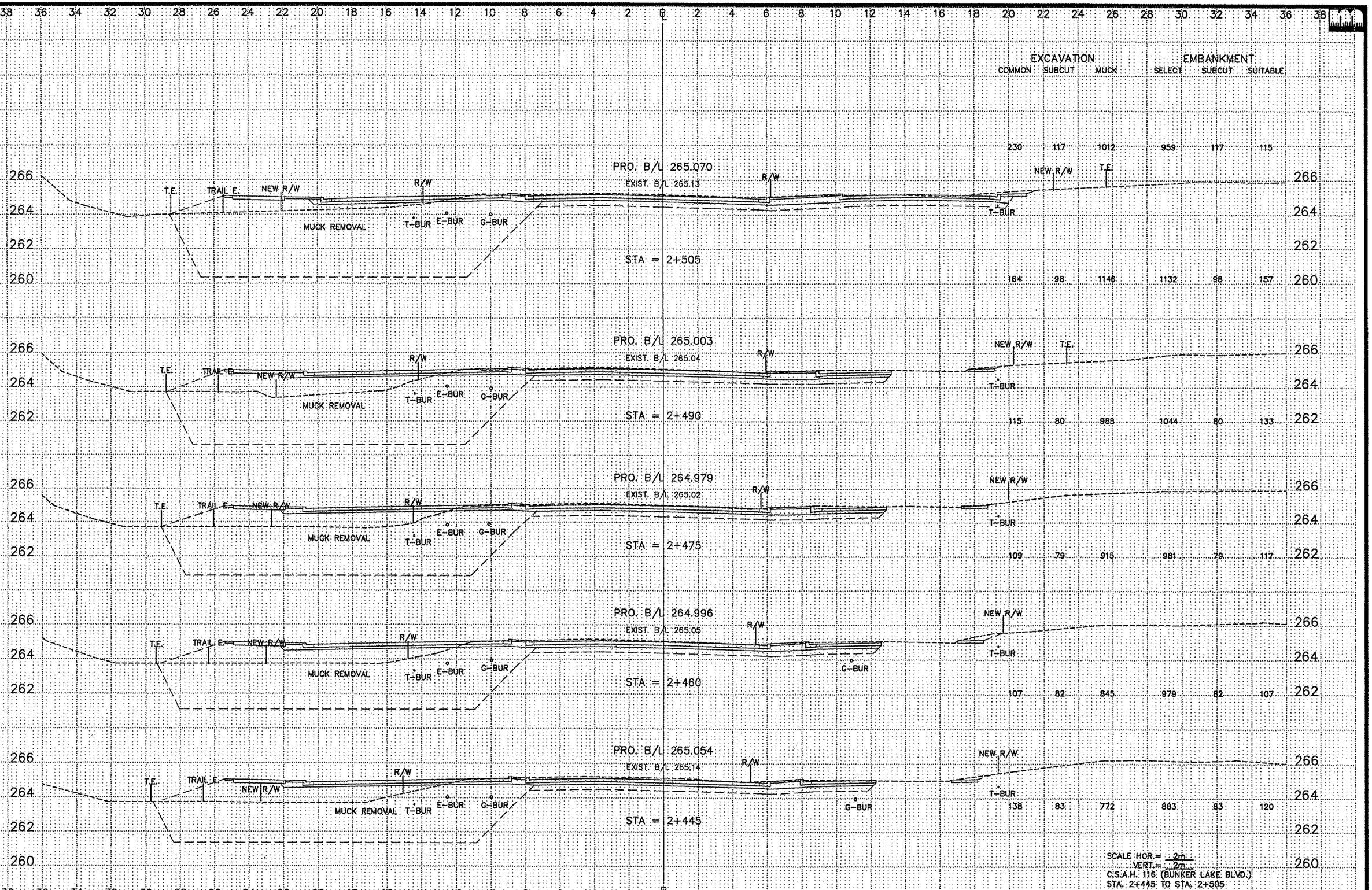


SCALE HOR.= 2m
VERT.= 2m

C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+370 TO STA. 2+430

Sheet No. 91 Of 230 Sheets

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 2+505	230	117	1012	959	117	115
STA = 2+490	164	98	1146	1132	98	157
STA = 2+475	115	80	988	1044	80	133
STA = 2+460	109	79	915	981	79	117
STA = 2+445	107	82	845	979	82	107
	138	83	772	883	83	120



SCALE HOR.= 2m
VERT.= 2m

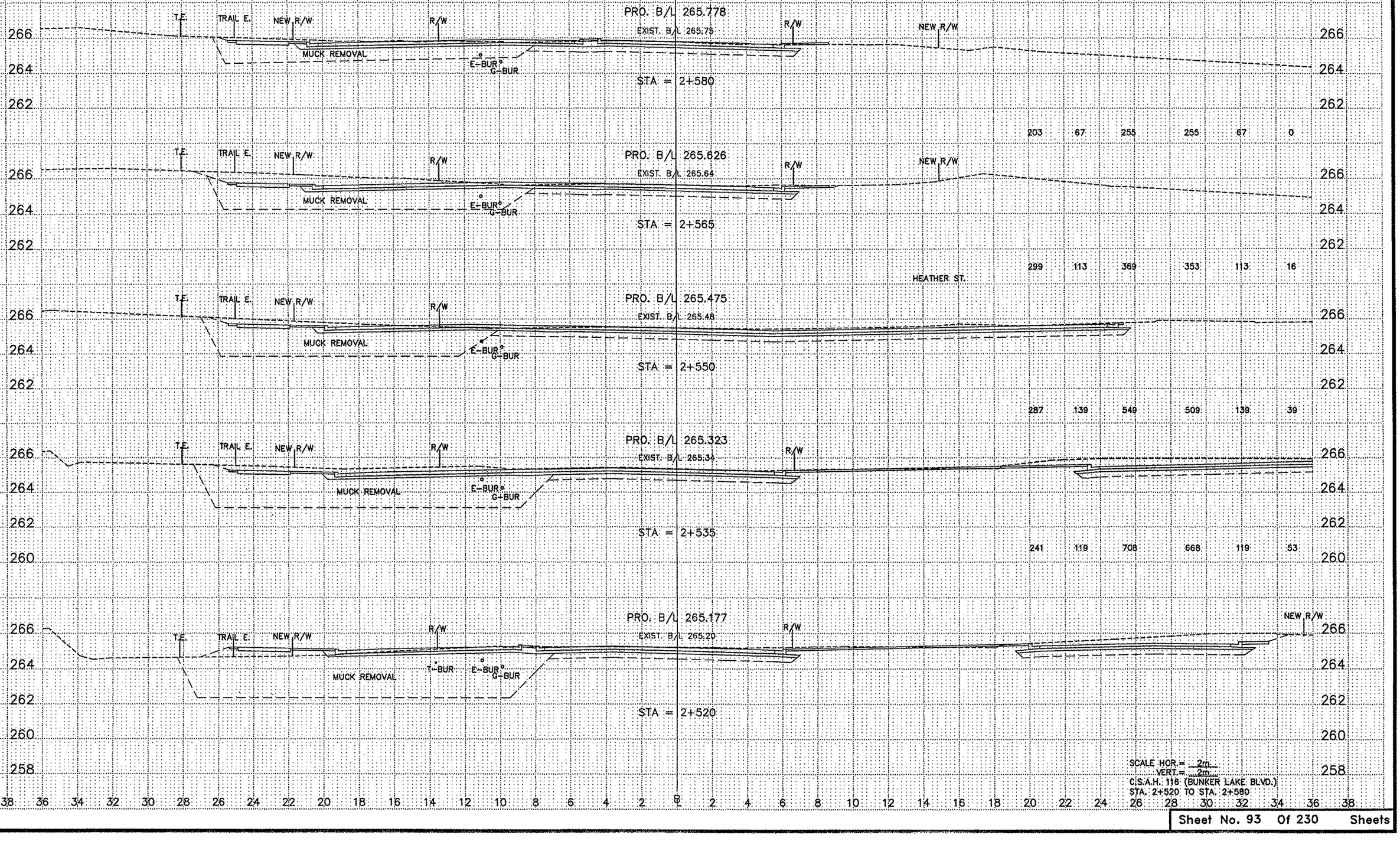
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+445 TO STA. 2+505

Sheet No. 92 Of 230 Sheets

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\SP\XSHEET9A.DWG 03-24-99 10:29 am cpu90sp

END MUCK SECTION 2+589

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE



SCALE HOR.= 2m.
VERT.= 2m.
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 2+520 TO STA. 2+580

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

T.E. TRAIL E. NEW R/W R/W E-BUR G-BUR R/W NEW R/W

266 264 262

PRO. B/L 266.538
EXIST. B/L 266.30
STA = 2+655

PRO. B/L 266.386
EXIST. B/L 266.19
STA = 2+640

PRO. B/L 266.234
EXIST. B/L 266.06
STA = 2+625

PRO. B/L 266.183
EXIST. B/L 266.02
STA = 2+620

PRO. B/L 266.082
EXIST. B/L 265.92
STA = 2+610

PRO. B/L 265.930
EXIST. B/L 265.85
STA = 2+595

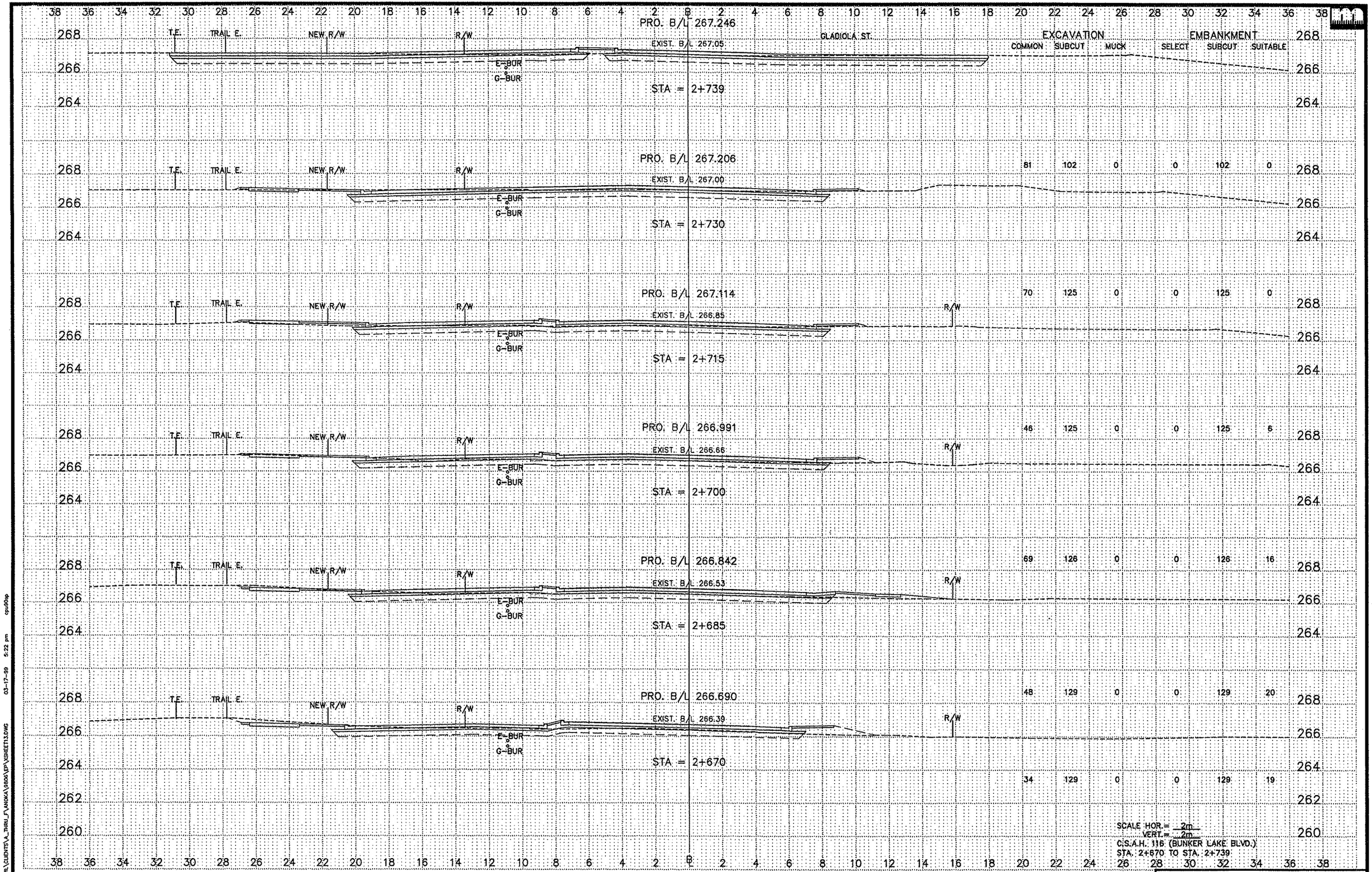
	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 2+655	64	127	0	0	127	17
STA = 2+640	93	127	0	0	127	19
STA = 2+625	39	42	0	0	42	7
STA = 2+620	76	84	0	0	84	13
STA = 2+610	107	127	0	0	127	13
STA = 2+595	125	96	103	103	96	3

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

Sheet No. 94 Of 230 Sheets

03-17-99 5:19 pm cpu90sp

Q:\DWG\CLIENTS\A_THRU_Z\ANOKA\9606\EP\XSHEETSC.DWG



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

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.111
EXIST. B/L 267.10
E-BUR
G-BUR
STA = 2+820

R/W

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
457	117	0	0	117	0

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.204
EXIST. B/L 267.27
E-BUR
G-BUR
STA = 2+805

R/W

485	115	0	0	115	0

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.266
EXIST. B/L 267.37
E-BUR
G-BUR
STA = 2+790

R/W

430	111	0	0	111	0

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.297
EXIST. B/L 267.33
E-BUR
G-BUR
STA = 2+775

R/W

391	111	0	0	111	0

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.298
EXIST. B/L 267.24
E-BUR
G-BUR
STA = 2+760

R/W

310	135	0	0	135	0

T.E. TRAIL E. NEW R/W R/W

PRO. B/L 267.267
EXIST. B/L 267.10
E-BUR
G-BUR
STA = 2+745

81	74	0	0	74	0

268 266 264 262

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

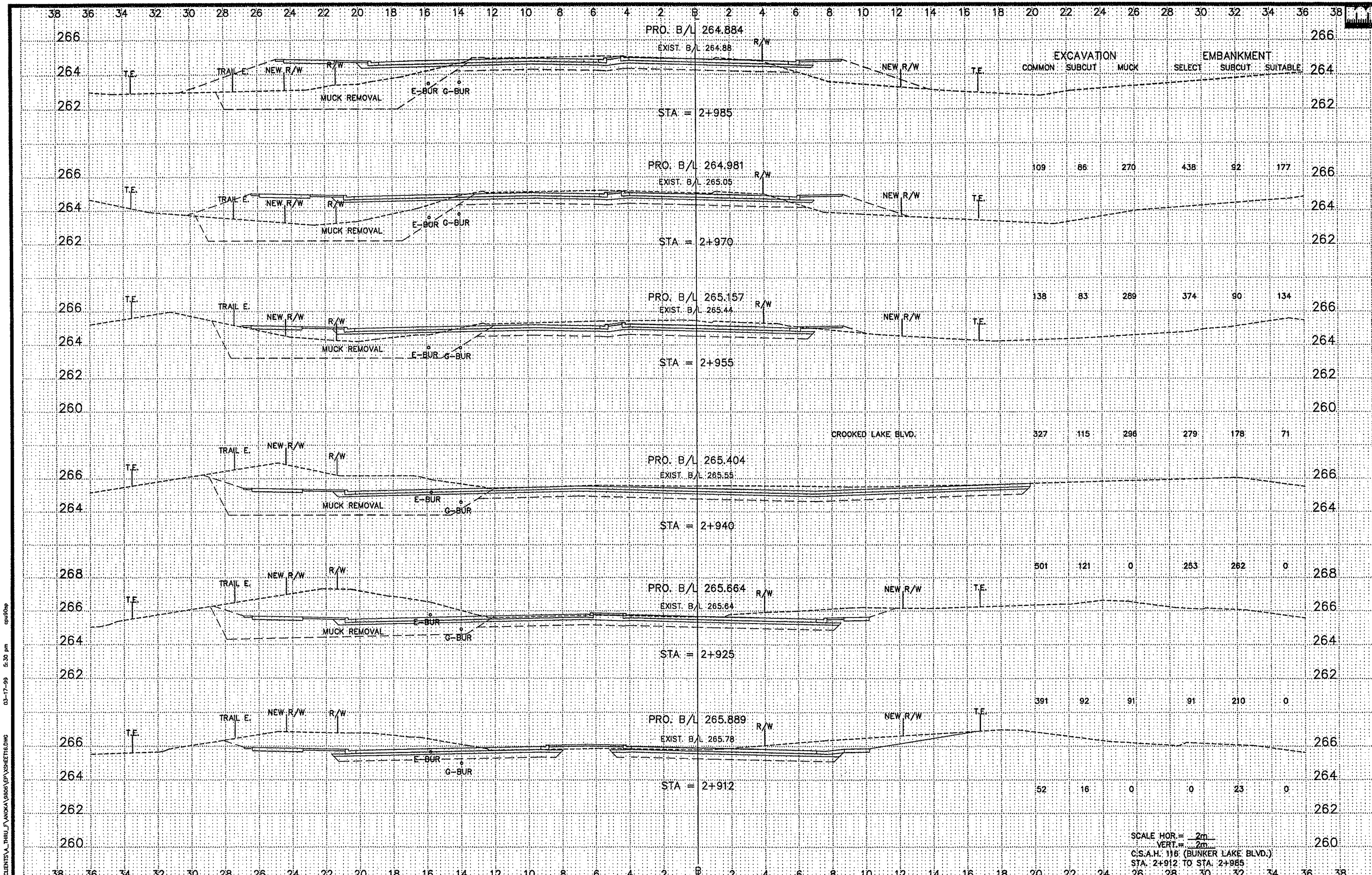
	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 2+910	270	118	0	0	118	0
STA = 2+895	125	105	0	12	118	14
STA = 2+880	105	105	0	12	118	25
STA = 2+865	118	128	0	0	128	15
STA = 2+850	197	125	0	0	125	13
STA = 2+835	346	114	0	0	114	10

PRO. B/L 265.923
EXIST. B/L 265.81
PRO. B/L 266.183
EXIST. B/L 266.00
PRO. B/L 266.430
EXIST. B/L 266.16
PRO. B/L 266.646
EXIST. B/L 266.44
PRO. B/L 266.832
EXIST. B/L 266.68
PRO. B/L 266.987
EXIST. B/L 266.90

T.E. TRAIL E. NEW R/W R/W E-BUR G-BUR

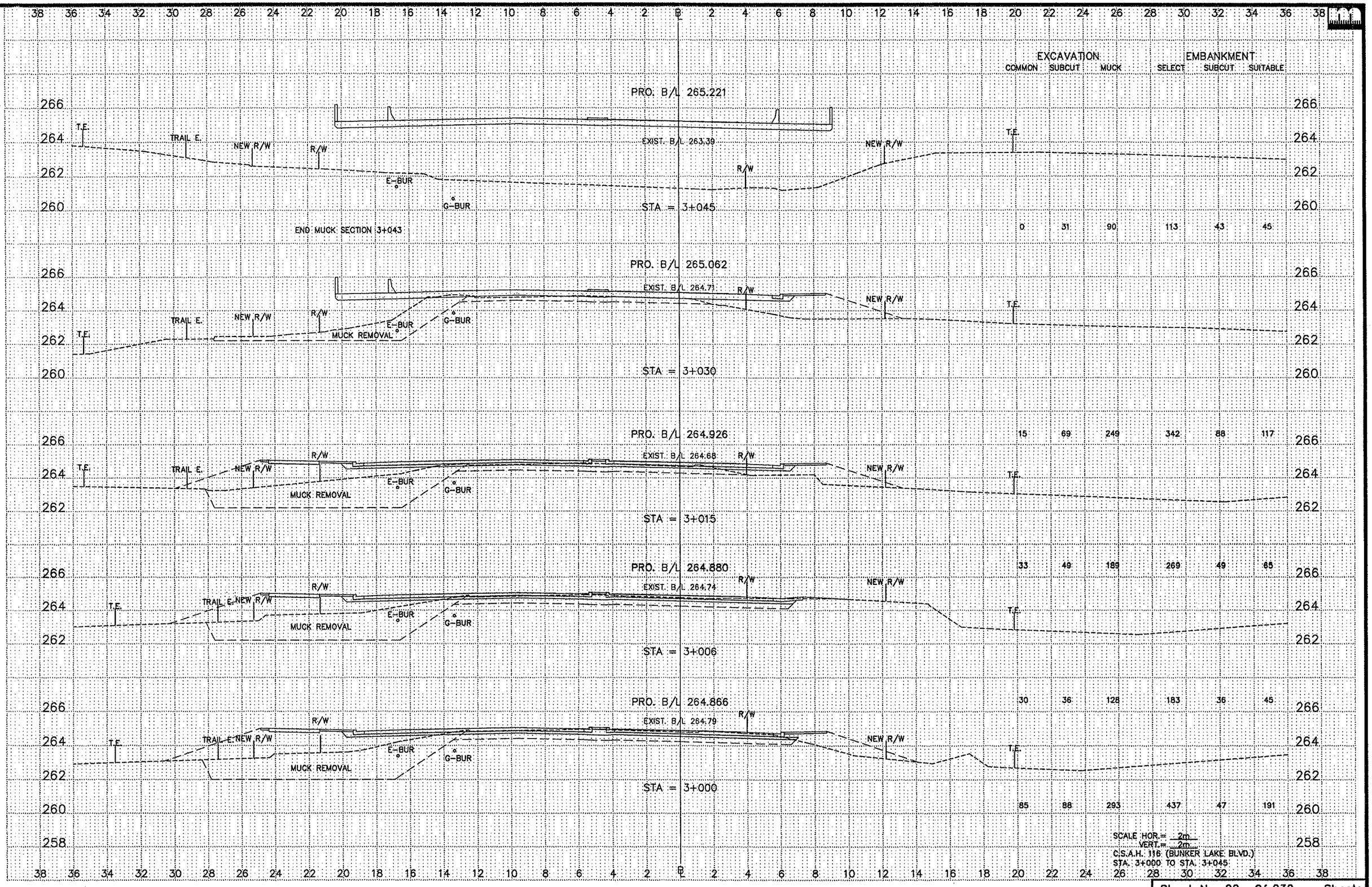
EIDELWEISS ST.

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

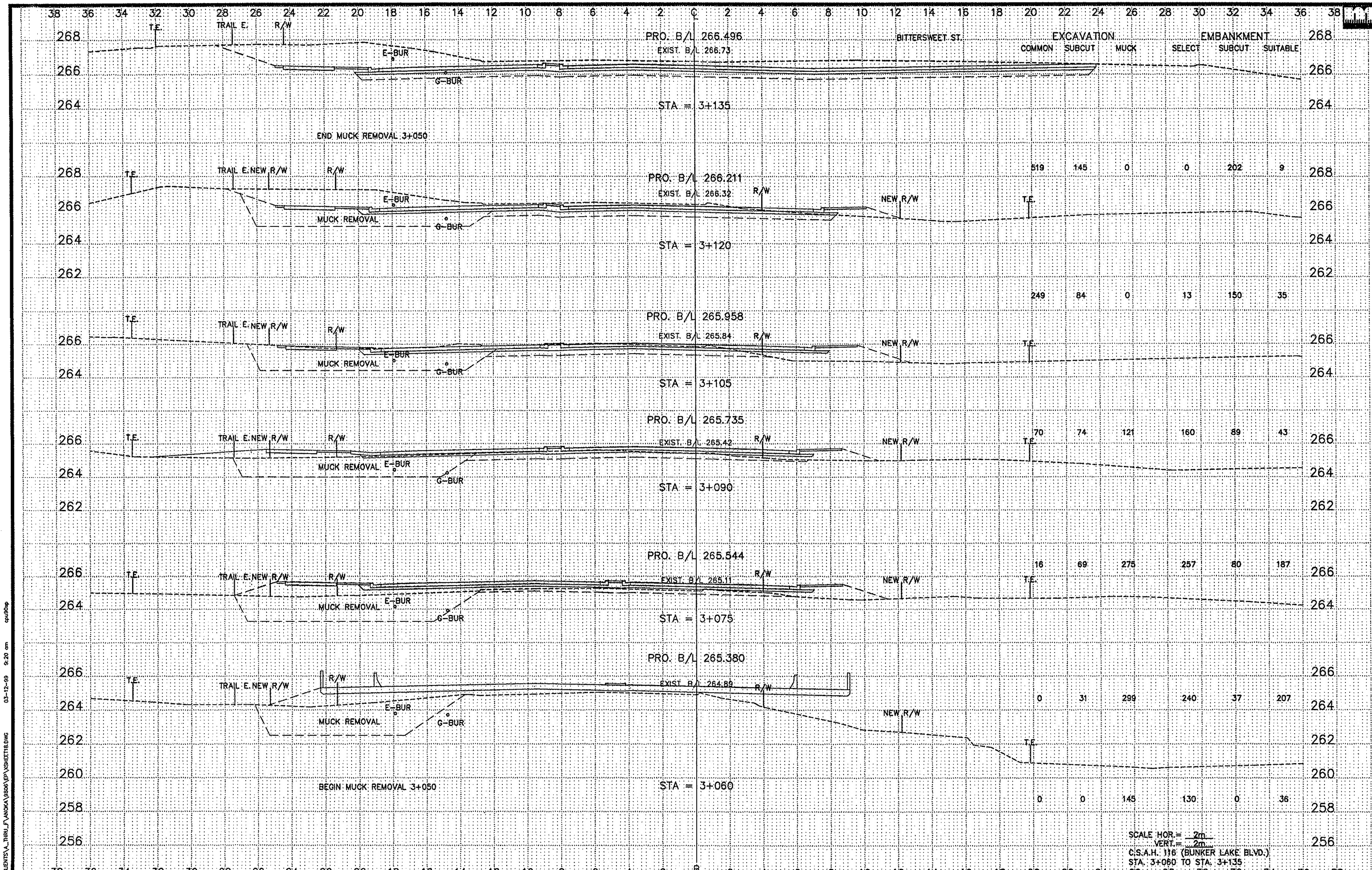


EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
109	86	270	438	92	177
138	83	289	374	90	134
327	115	296	279	178	71
501	121	0	253	262	0
391	92	91	91	210	0
52	16	0	0	23	0

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 3+045	0	31	90	113	43	45
STA = 3+030	15	69	249	342	88	117
STA = 3+015	33	49	189	269	49	65
STA = 3+006	30	36	128	183	36	45
STA = 3+000	85	88	293	437	47	191



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


PRO. B/L 266.496
EXIST. B/L 266.73
BITTERSWEET ST.
EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE
STA = 3+135
END MUCK REMOVAL 3+050
519 145 0 0 202 9
PRO. B/L 266.211
EXIST. B/L 266.32
STA = 3+120
249 84 0 13 150 35
PRO. B/L 265.958
EXIST. B/L 265.84
STA = 3+105
PRO. B/L 265.735
70 74 121 160 89 43
EXIST. B/L 265.42
STA = 3+090
PRO. B/L 265.544
16 69 275 257 80 187
EXIST. B/L 265.11
STA = 3+075
PRO. B/L 265.380
EXIST. B/L 264.89
0 31 299 240 37 207
STA = 3+060
BEGIN MUCK REMOVAL 3+050
0 0 145 130 0 36
T.E.
TRAIL E.
NEW R/W
R/W
E-BUR
G-BUR
MUCK REMOVAL
SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 3+060 TO STA. 3+135

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

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 3+210	345	124	0	0	124	8
STA = 3+195	399	128	0	0	128	0
STA = 3+180	417	124	0	0	124	0
STA = 3+165	469	122	0	0	122	0
STA = 3+150	569	162	0	0	162	0

268 266 264 262 260

T.E. TRAIL E. R/W E-BUR G-BUR NEW R/W

PRO. B/L 267.836
EXIST. B/L 268.02

PRO. B/L 267.621
EXIST. B/L 267.81

PRO. B/L 267.378
EXIST. B/L 267.56

PRO. B/L 267.107
EXIST. B/L 267.31

PRO. B/L 266.807
EXIST. B/L 267.03

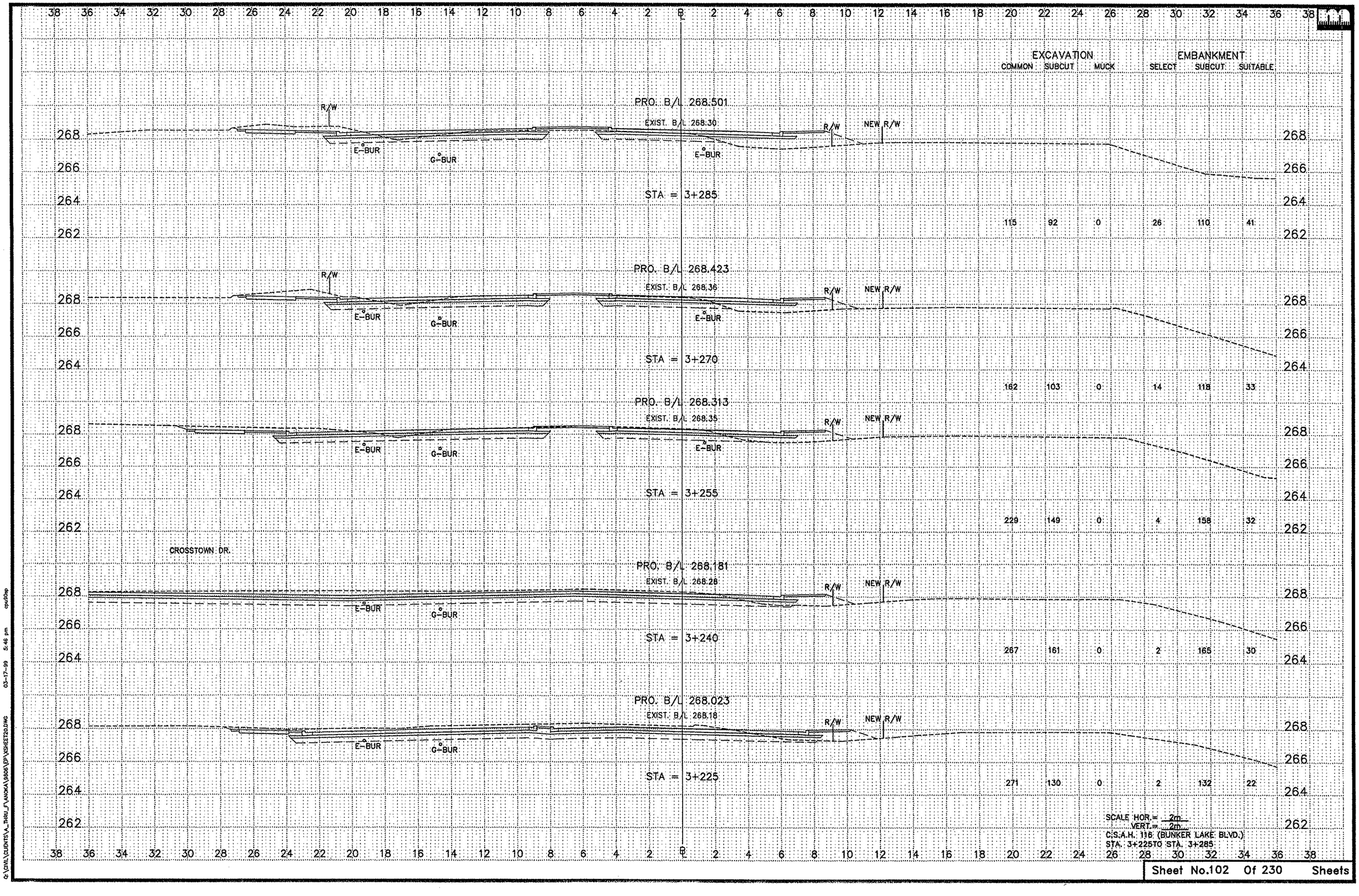
SCALE HOR.= 2m
VERT.= 2m

C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 3+150 TO STA. 3+210

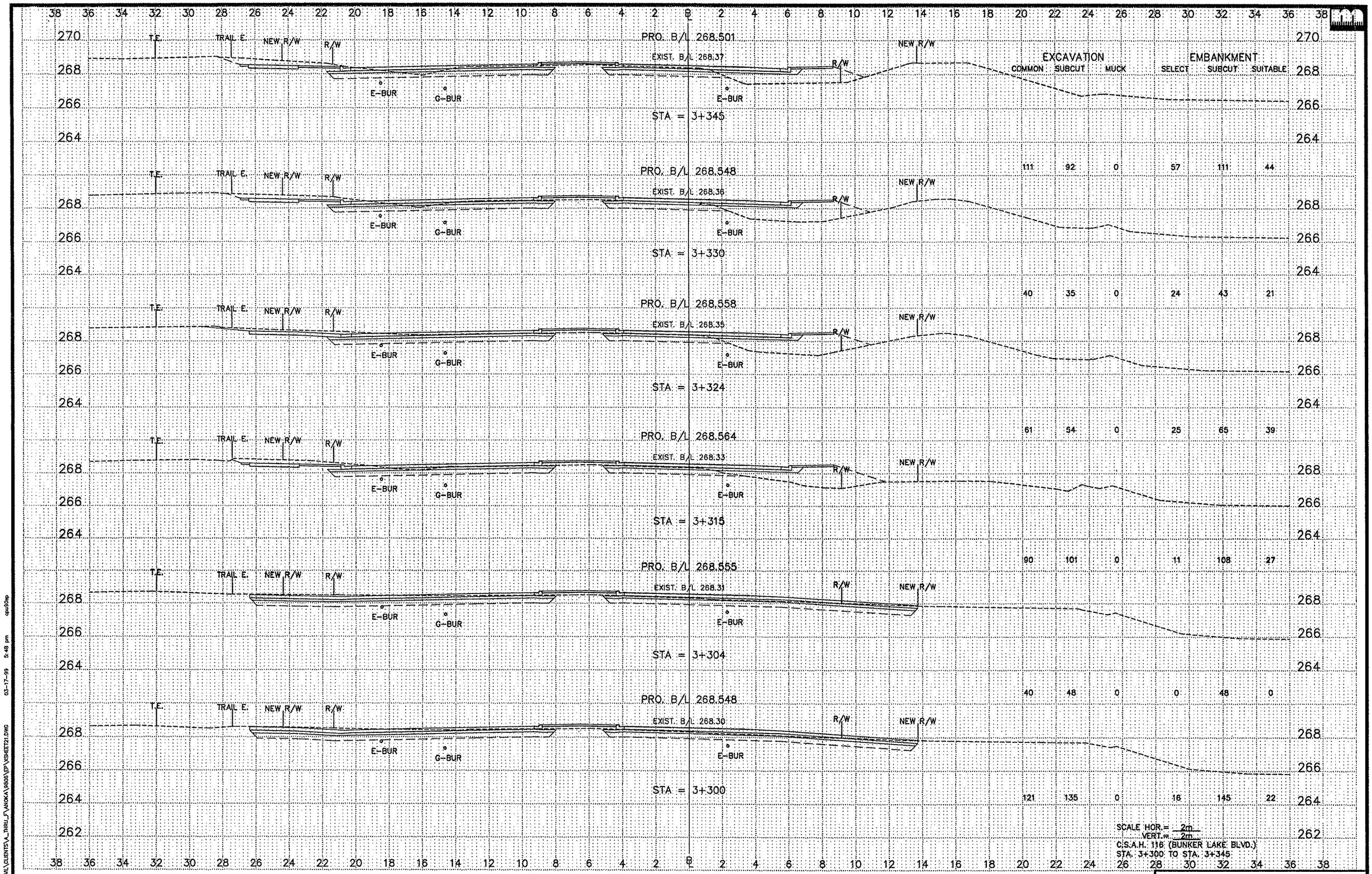
Sheet No.101 Of 230 Sheets

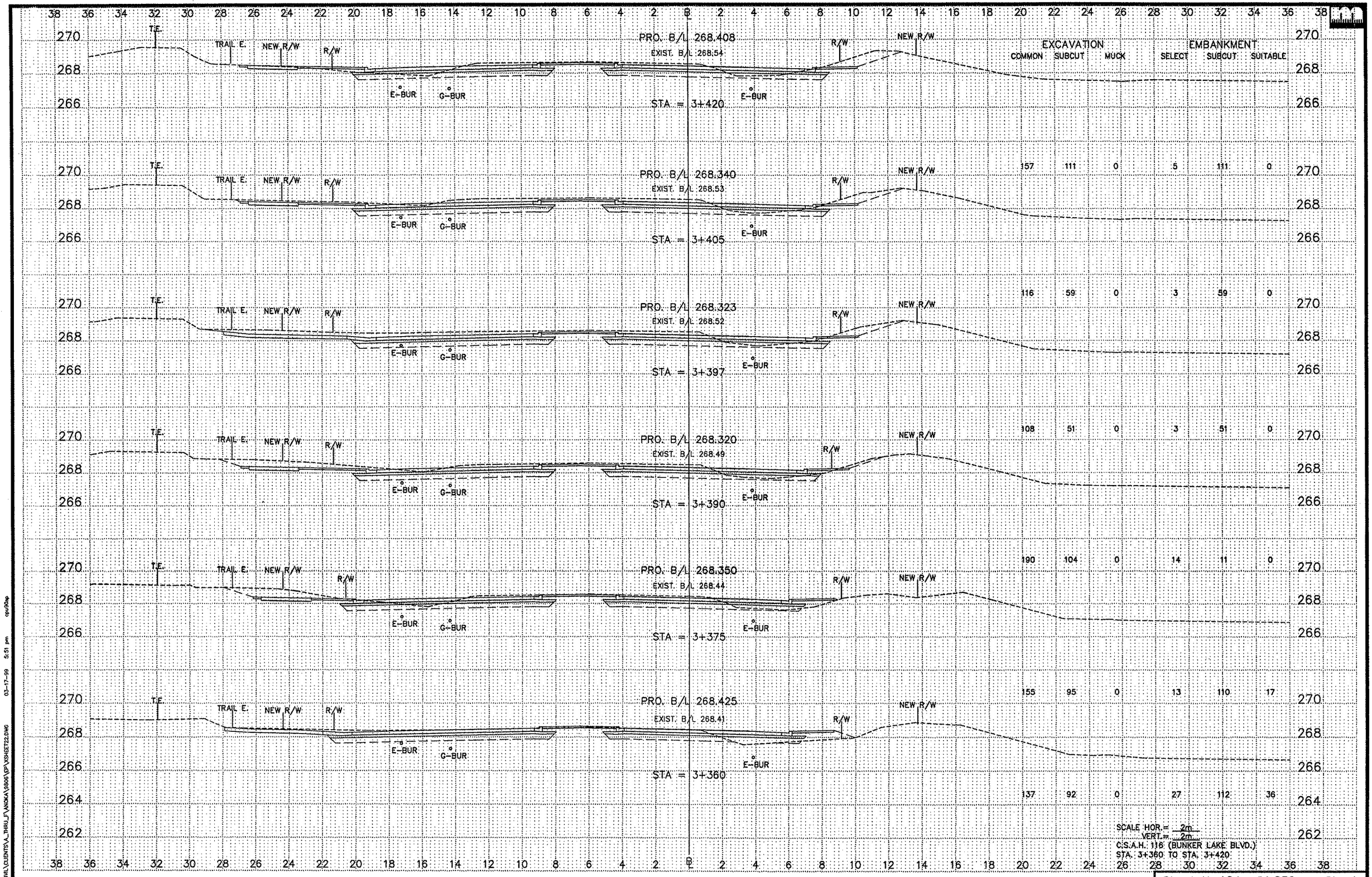
C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EPS\XSHEET19.DWG 03-17-99 5:43 pm cpu90sp

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 3+285	115	92	0	26	110	41
STA = 3+270	162	103	0	14	118	33
STA = 3+255	229	149	0	4	158	32
STA = 3+240	267	161	0	2	165	30
STA = 3+225	271	130	0	2	132	22



SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 3+225TO STA. 3+285



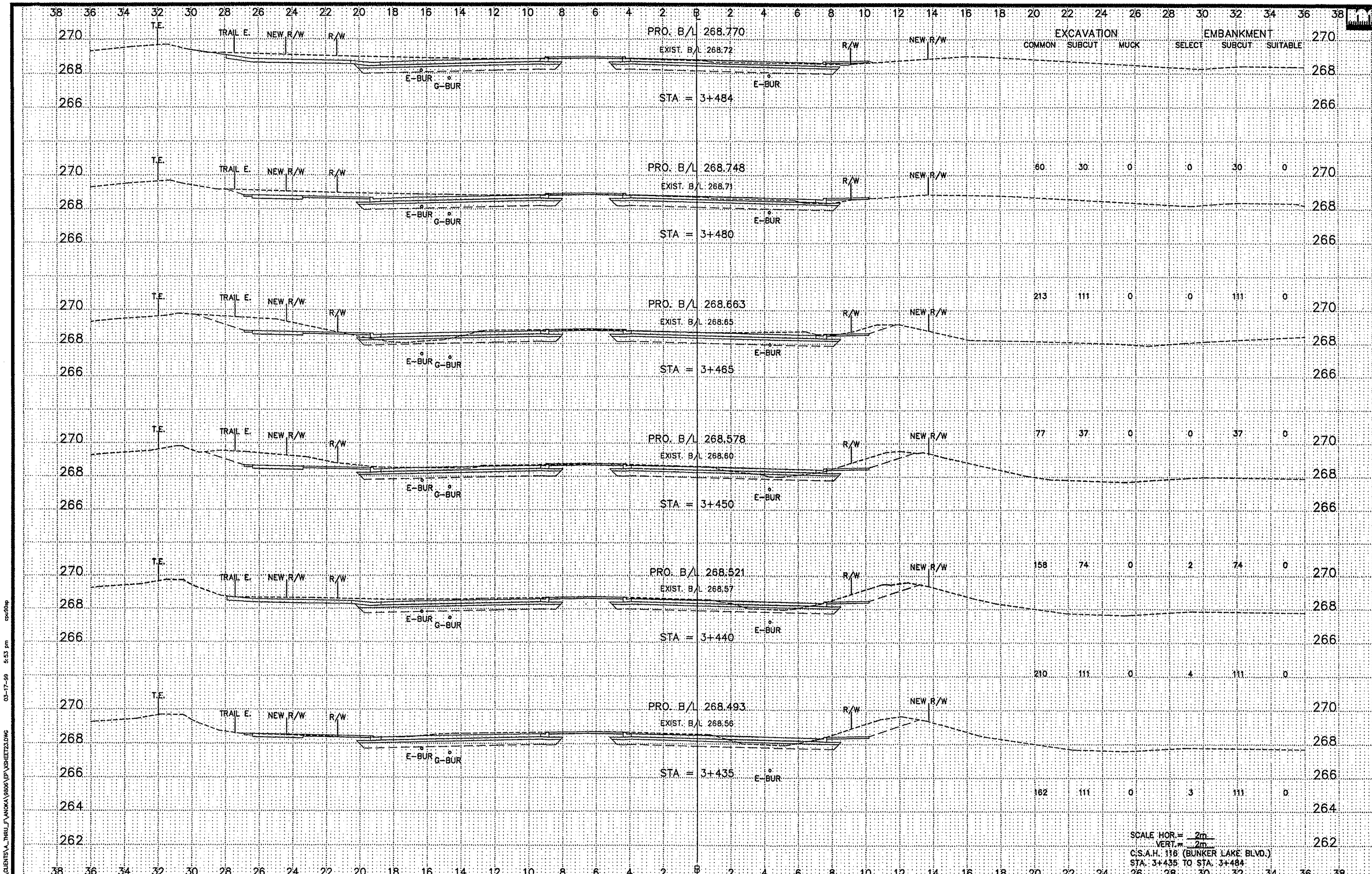


SCALE HOR.= 2m
VERT.= 2m

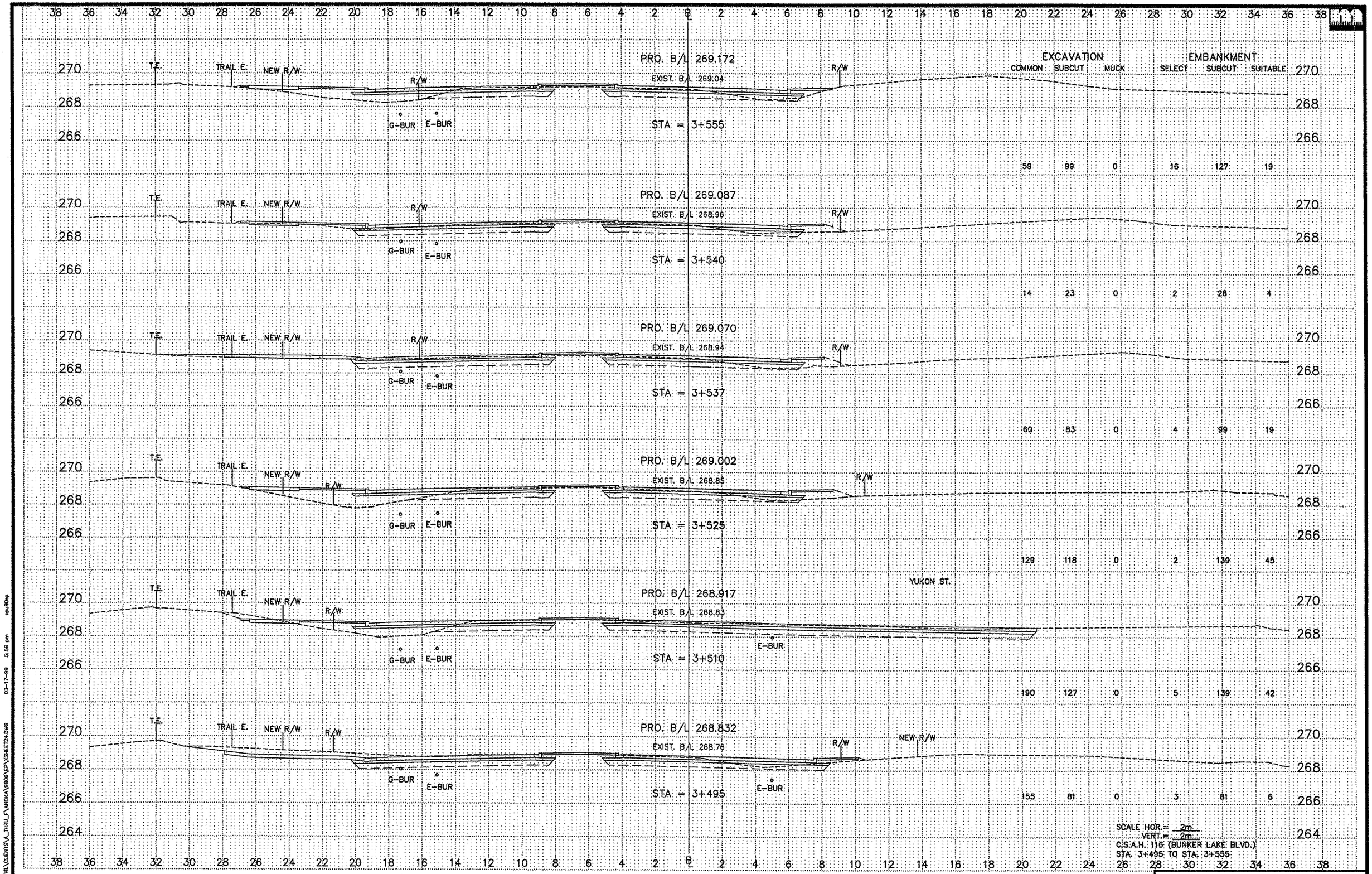
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 3+360 TO STA. 3+420

Sheet No.104 Of 230 Sheets

Q:\CML\CLIENTS\A_THRU_F\ANOKA\9866\GP\XSHEET22.DWG 03-17-99 5:51 pm cpv90sp



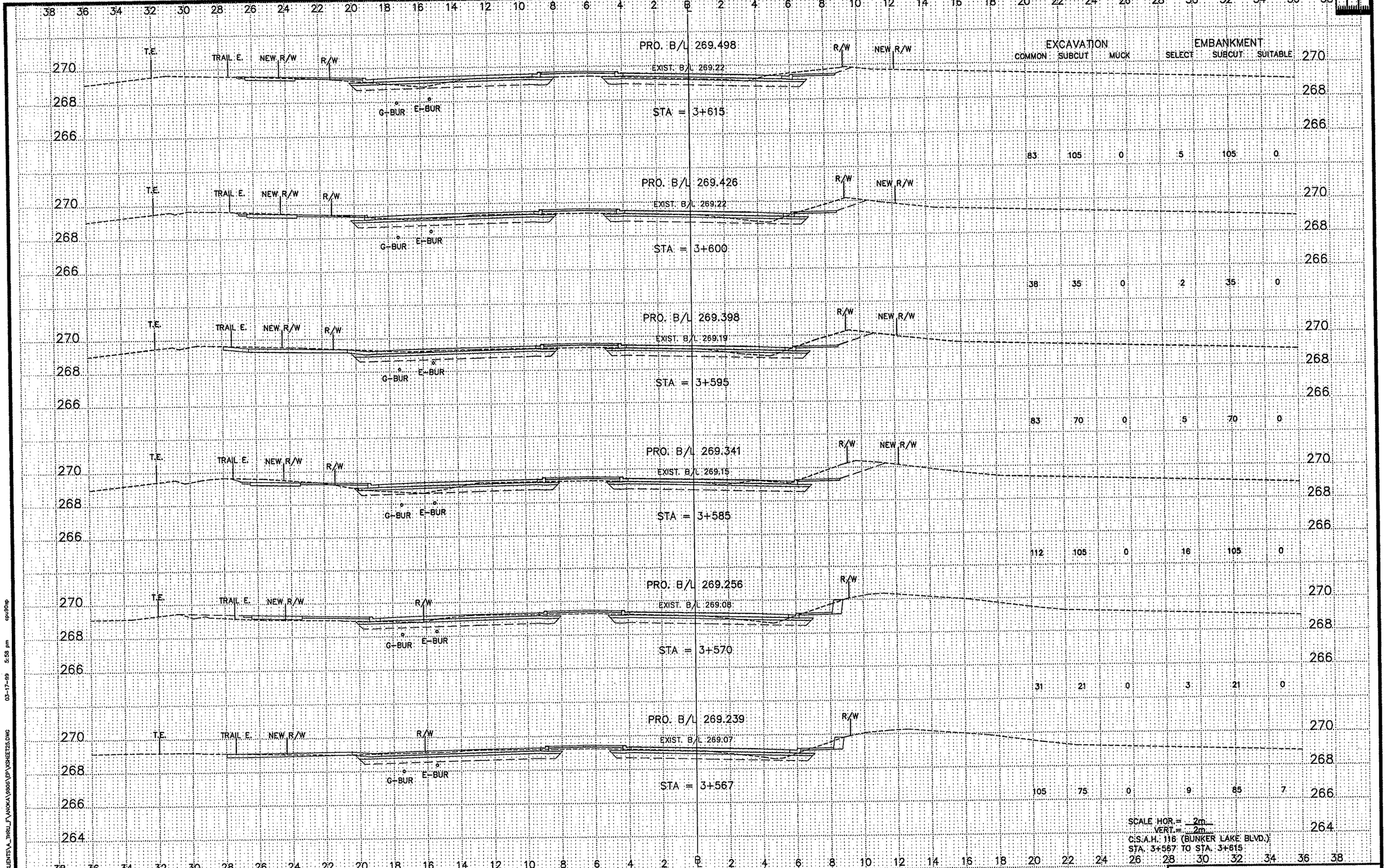
EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
60	30	0	0	30	0
213	111	0	0	111	0
77	37	0	0	37	0
158	74	0	2	74	0
210	111	0	4	111	0
162	111	0	3	111	0



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

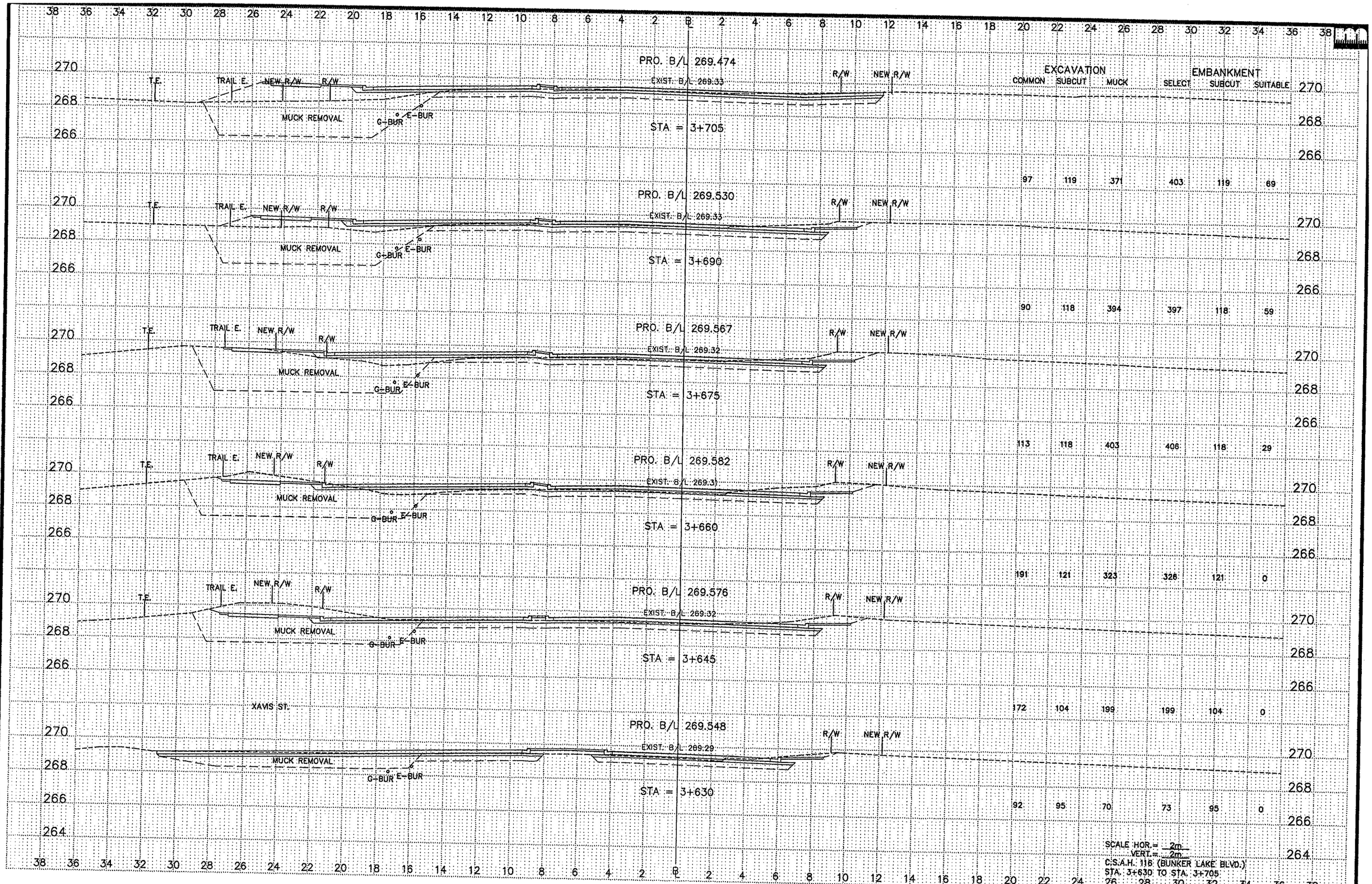
Sheet No.106 Of 230 Sheets

Q:\OWL\CLIENTS\A_THRU_F\ANOKA\9906\EP\VSHEET24.DWG 03-17-99 5:56 pm cpw90sp



Sheet No.107 Of 230 Sheets

G:\DWL\CLIENTS\A_THRU_F\ANOKA\98016\EP\XSHEET25.DWG 03-17-99 5:58 pm cpa90sp



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

272 270 268 266

PRO. B/L 269.117
EXIST. B/L 268.98
R/W
R/W
MUCK REMOVAL
G-BUR
E-BUR
STA = 3+795
CROSSTOWN BLVD.
CROSSTOWN BLVD.

PRO. B/L 269.174
EXIST. B/L 269.06
MUCK REMOVAL
G-BUR
E-BUR
T-BUR
STA = 3+780

PRO. B/L 269.234
EXIST. B/L 269.15
MUCK REMOVAL
G-BUR
E-BUR
T-BUR
STA = 3+765

PRO. B/L 269.294
EXIST. B/L 269.20
T.E.
TRAIL E.
NEW R/W
R/W
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR
STA = 3+750

PRO. B/L 269.354
EXIST. B/L 269.24
T.E.
TRAIL E.
NEW R/W
R/W
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR
STA = 3+735

PRO. B/L 269.414
EXIST. B/L 269.29
T.E.
TRAIL E.
NEW R/W
R/W
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR
STA = 3+720

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
	119	141	555	513	141	94
	193	172	644	615	172	28
	155	139	502	525	139	70
	114	101	410	525	101	85
	102	100	420	518	100	89
	96	110	410	472	110	84

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

PRO. B/L 269.068
EXIST. B/L 268.94
STA = 3+885
MUCK REMOVAL
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

PRO. B/L 269.041
EXIST. B/L 268.92
STA = 3+870
MUCK REMOVAL
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

PRO. B/L 269.028
EXIST. B/L 268.93
STA = 3+855
MUCK REMOVAL
R/W
T.E.
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

PRO. B/L 269.029
EXIST. B/L 269.01
STA = 3+840
MUCK REMOVAL
R/W
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

PRO. B/L 269.044
EXIST. B/L 268.95
STA = 3+825
MUCK REMOVAL
R/W
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

PRO. B/L 269.074
EXIST. B/L 269.00
STA = 3+810
MUCK REMOVAL
R/W
R/W
MUCK REMOVAL
G-BUR
E-BUR
T-BUR

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
	46	82	1413	1267	82	533
	50	80	1142	969	80	395
	52	79	876	709	79	328
	53	80	715	555	80	297
	57	88	605	460	88	260
	49	105	472	364	105	206

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

Sheet No.110 Of 230 Sheets

C:\CIVIL\CLIENTS\A_THRILL\ANOKA\9606\EP\XSHEET28.DWG 03-17-99 6:06 pm cpu90sp

PRO. B/L 269.478

EXIST. B/L 269.27

STA = 3+975

PRO. B/L 269.397

EXIST. B/L 269.13

STA = 3+960

PRO. B/L 269.315

EXIST. B/L 268.99

STA = 3+945

PRO. B/L 269.235

EXIST. B/L 268.91

STA = 3+930

PRO. B/L 269.165

EXIST. B/L 268.90

STA = 3+915

PRO. B/L 269.110

EXIST. B/L 268.94

STA = 3+900

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
18	53	1000	1107	53	286
7	53	1258	1289	53	384
0	52	1525	1432	52	498
9	59	1667	1498	59	545
21	68	1603	1440	68	511
34	76	1534	1395	76	560

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

Sheet No.111 Of 230 Sheets

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\XSHEET29.DWG 03-17-99 6:30 pm cpc90sp

STA = 4+065

PRO. B/L 269.967
EXIST. B/L 270.02
R/W
NEW R/W
TRAIL E.
G-BUR
E-BUR
T-BUR

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
147	101	0	134	113	0

STA = 4+050

PRO. B/L 269.886
EXIST. B/L 269.92
END MUCK SECTION 4+050

132	71	0	66	77	0

STA = 4+035

PRO. B/L 269.804
EXIST. B/L 269.82
MUCK REMOVAL

105	41	278	263	41	32

STA = 4+020

PRO. B/L 269.723
EXIST. B/L 269.67

84	39	688	603	39	100

STA = 4+005

PRO. B/L 269.641
EXIST. B/L 269.52

92	42	888	853	42	67

STA = 3+990

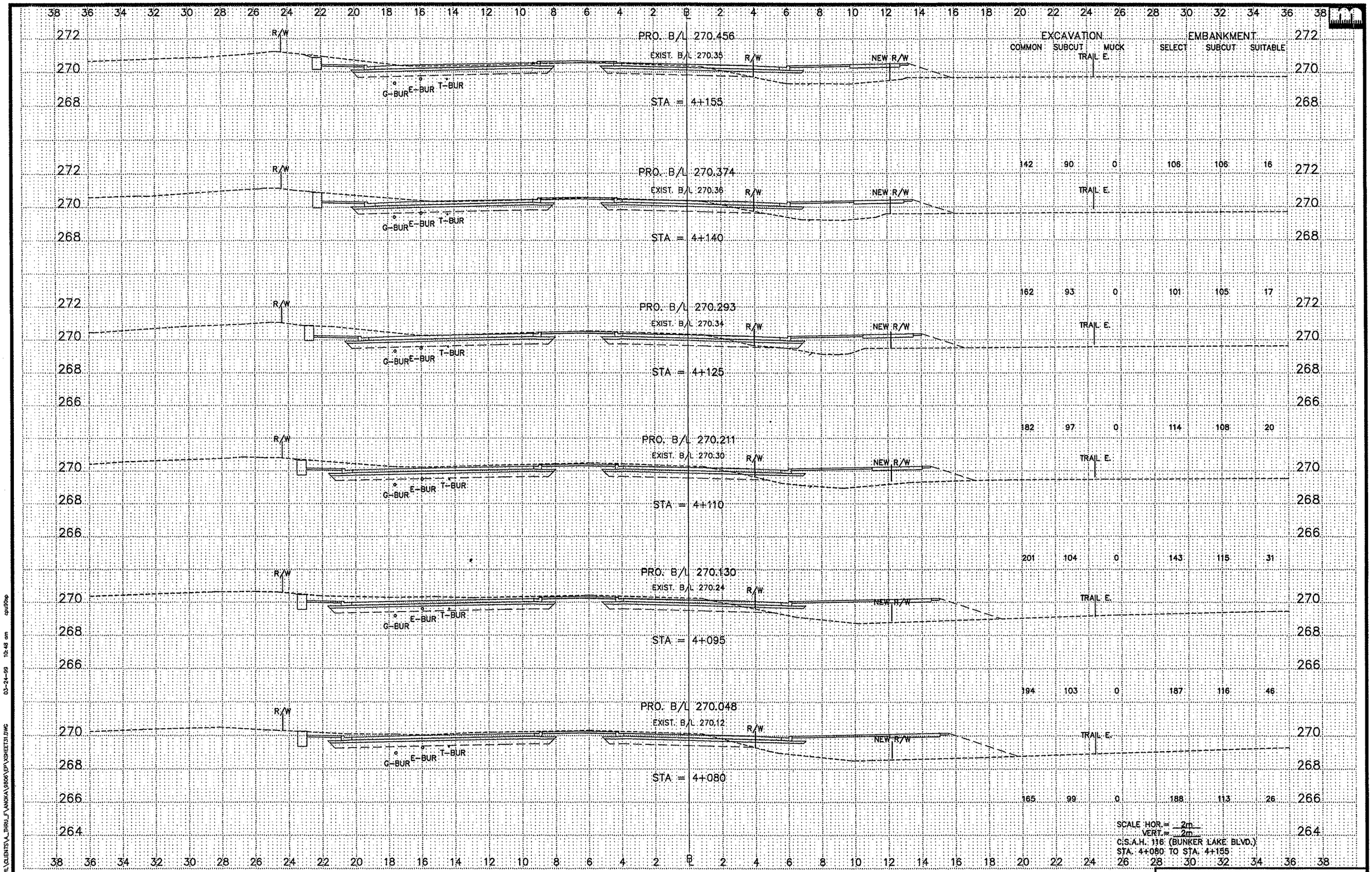
PRO. B/L 269.560
EXIST. B/L 269.41
THRUSH ST.
375 mm RCP

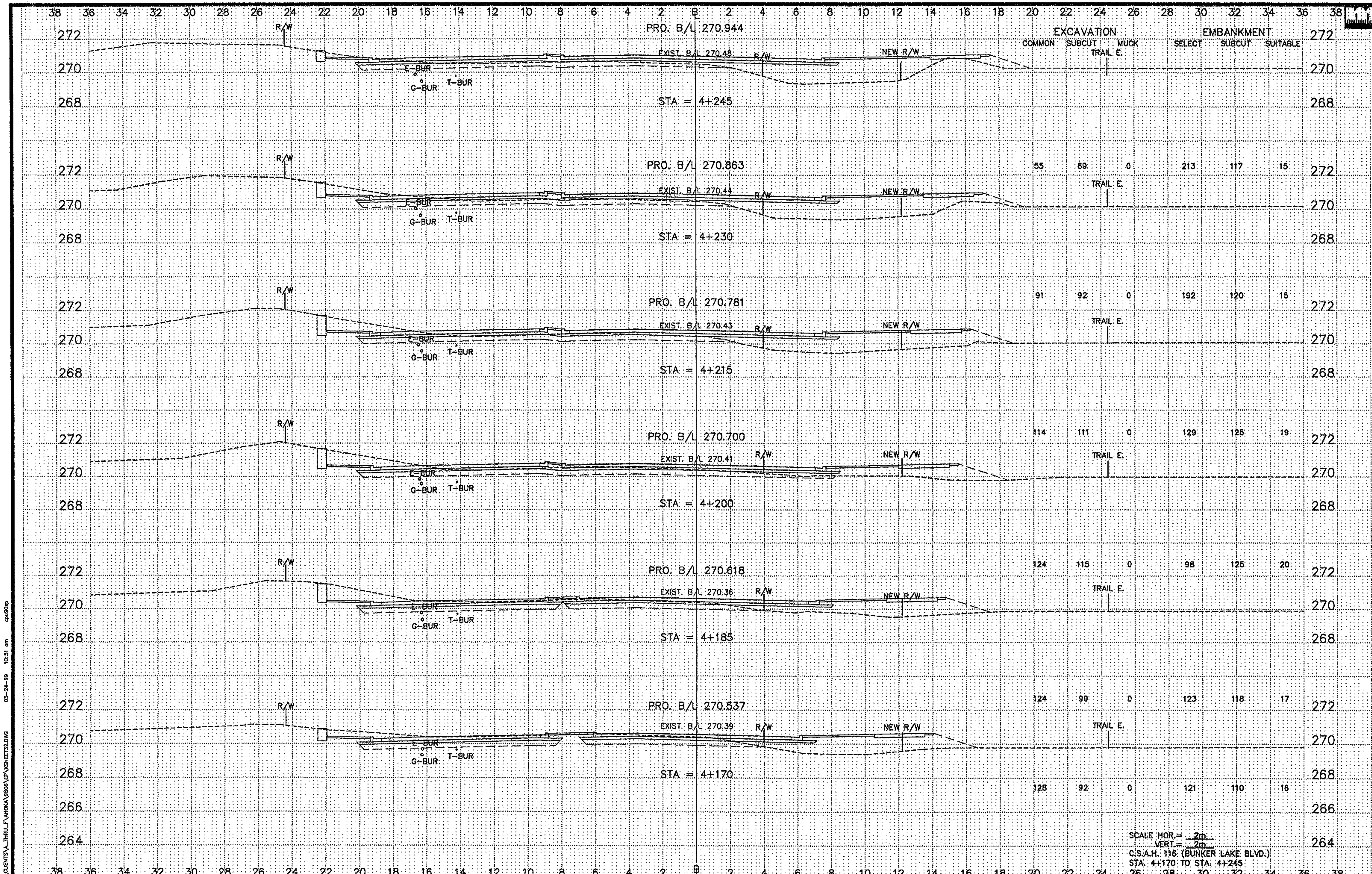
60	48	933	1000	48	125

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

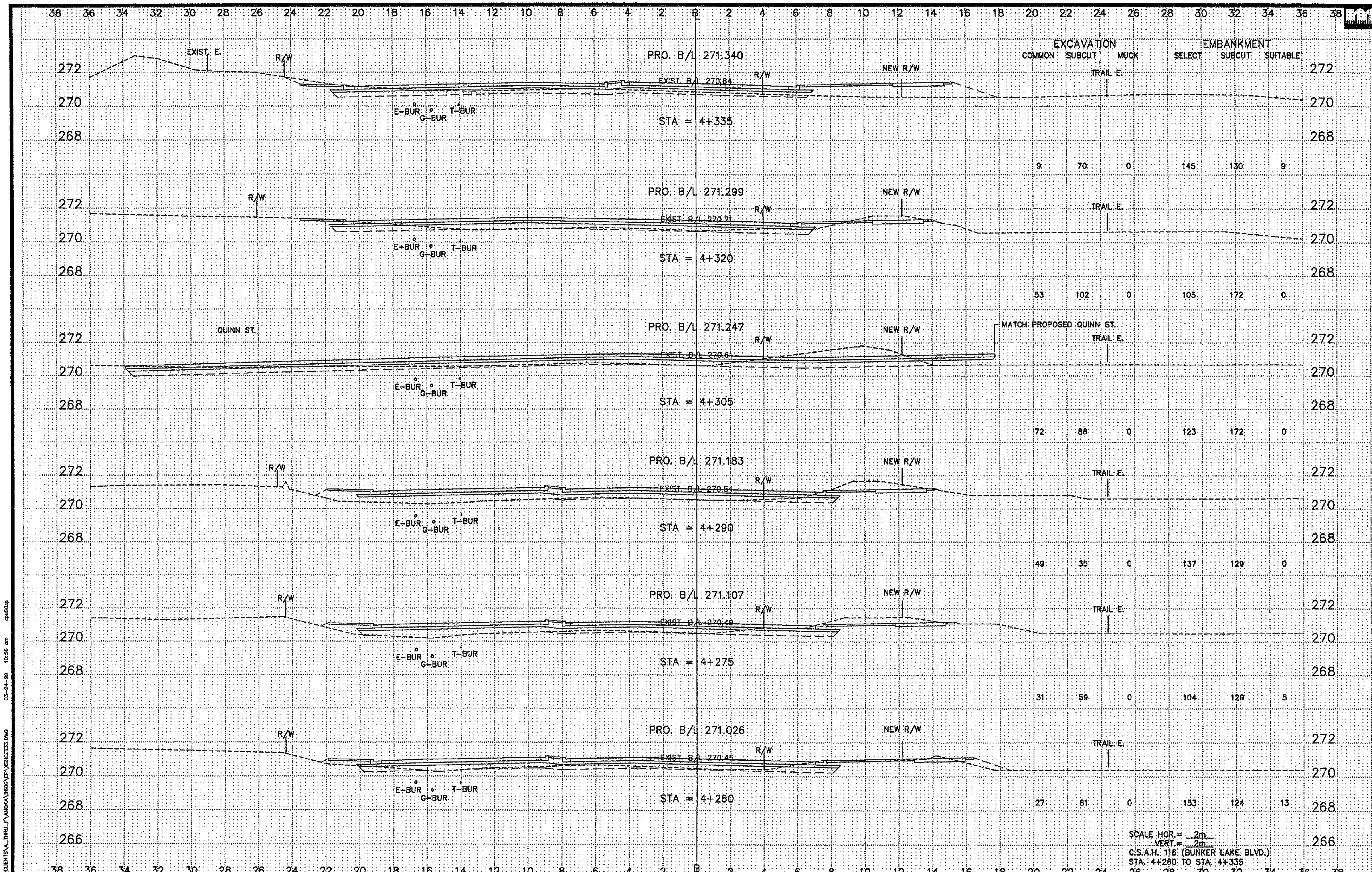
Sheet No.112 Of 230 Sheets

O:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\SP\XSHEET30.DWG 03-24-99 10:46 am cpc90sp




EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE
PRO. B/L 270.944
EXIST. B/L 270.48
STA = 4+245
55 89 0 213 117 15
PRO. B/L 270.863
EXIST. B/L 270.44
STA = 4+230
91 92 0 192 120 15
PRO. B/L 270.781
EXIST. B/L 270.43
STA = 4+215
114 111 0 129 125 19
PRO. B/L 270.700
EXIST. B/L 270.41
STA = 4+200
124 115 0 98 125 20
PRO. B/L 270.618
EXIST. B/L 270.36
STA = 4+185
124 99 0 123 118 17
PRO. B/L 270.537
EXIST. B/L 270.39
STA = 4+170
128 92 0 121 110 16
R/W
NEW R/W
TRAIL E.
E-BUR
G-BUR
T-BUR
SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+170 TO STA. 4+245

Sheet No.114 Of 230 Sheets


EXCAVATION
COMMON SUBCUT MUCK
EMBANKMENT
SELECT SUBCUT SUITABLE
PRO. B/L 271.340
EXIST. B/L 270.84
STA = 4+335
9 70 0 145 130 9
PRO. B/L 271.299
EXIST. B/L 270.71
STA = 4+320
53 102 0 105 172 0
PRO. B/L 271.247
QUINN ST.
MATCH PROPOSED QUINN ST.
EXIST. B/L 270.61
STA = 4+305
72 88 0 123 172 0
PRO. B/L 271.183
EXIST. B/L 270.61
STA = 4+290
49 35 0 137 129 0
PRO. B/L 271.107
EXIST. B/L 270.49
STA = 4+275
31 59 0 104 129 5
PRO. B/L 271.026
EXIST. B/L 270.45
STA = 4+260
27 81 0 153 124 13
EXIST. E.
R/W
NEW R/W
TRAIL E.
E-BUR
G-BUR
T-BUR
SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+260 TO STA. 4+335
q:\Civil\CLIENTS\A_THRU_F\ANOKA\9800\EP\XSHEET33.DWG 03-24-99 10:56 am cpu90sp

EXCAVATION | EMBANKMENT

STA	EXCAVATION COMMON	EXCAVATION SUBCUT	EXCAVATION MUCK	EMBANKMENT SELECT	EMBANKMENT SUBCUT	EMBANKMENT SUITABLE
4+410	215	129	0	48	129	0
4+395	143	130	0	27	130	0
4+380	50	129	0	24	129	0
4+365	4	129	0	33	129	8
4+350	0	109	0	110	131	16

STA = 4+410
PRO. B/L 271.369
EXIST. B/L 271.13

STA = 4+395
PRO. B/L 271.386
EXIST. B/L 271.15

STA = 4+380
PRO. B/L 271.392
EXIST. B/L 271.12

STA = 4+365
PRO. B/L 271.386
EXIST. B/L 271.06

STA = 4+350
PRO. B/L 271.369
EXIST. B/L 271.00

EXIST. E. | R/W | NEW R/W | TRAIL E. | E-BUR | G-BUR | T-BUR

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

Sheet No.116 Of 230 Sheets

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9805\SP\SHEET34.DWG 03-24-99 10:58 am cpc90sp

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA. = 4+500	0	76	0	139	107	99
STA. = 4+485	0	70	0	168	107	98
STA. = 4+470	0	63	0	175	107	93
STA. = 4+455	0	62	0	124	107	64
STA. = 4+440	69	73	0	80	119	23
STA. = 4+425	188	107	0	72	131	6

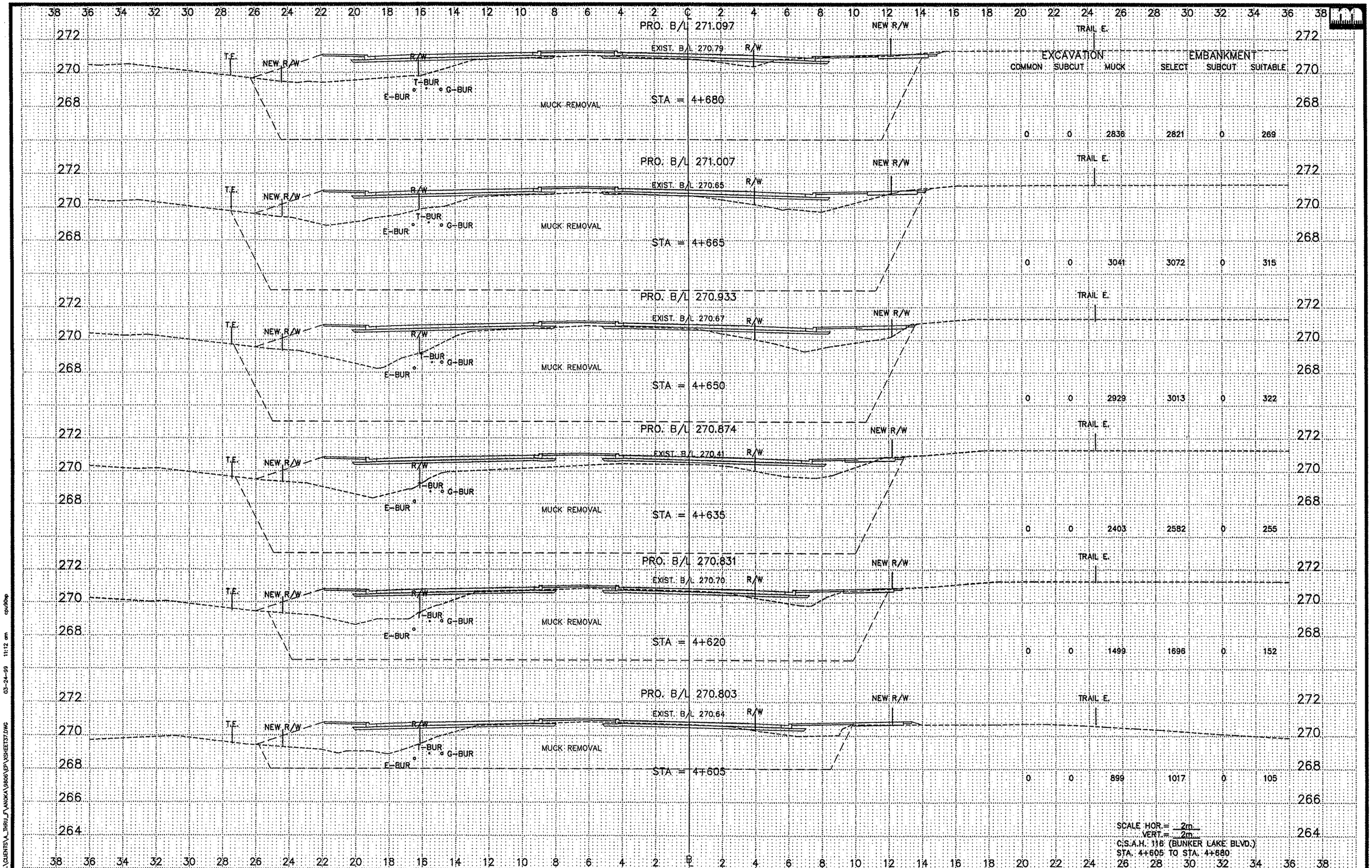
SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+425 TO STA. 4+500

		EXCAVATION			EMBANKMENT		
		COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
PRO. B/L 270.791	STA = 4+590			TRAIL E.			
PRO. B/L 270.794	STA = 4+575	0	0	532	681	0	96
PRO. B/L 270.813	STA = 4+560	25	0	223	387	0	101
PRO. B/L 270.847	STA = 4+545	43	37	49	199	53	96
PRO. B/L 270.897	STA = 4+530	37	73	0	159	107	84
PRO. B/L 270.962	STA = 4+515	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

Sheet No.118 Of 230 Sheets

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\98065\EP\SHEETS6.DWG 03-24-99 11:07 cm cp=90sp



PRO. B/L 271.962
EXIST. B/L 271.84
STA = 4+770

PRO. B/L 271.779
EXIST. B/L 271.61
STA = 4+755

PRO. B/L 271.612
EXIST. B/L 271.40
STA = 4+740

PRO. B/L 271.460
EXIST. B/L 271.20
STA = 4+725

PRO. B/L 271.323
EXIST. B/L 270.98
STA = 4+710

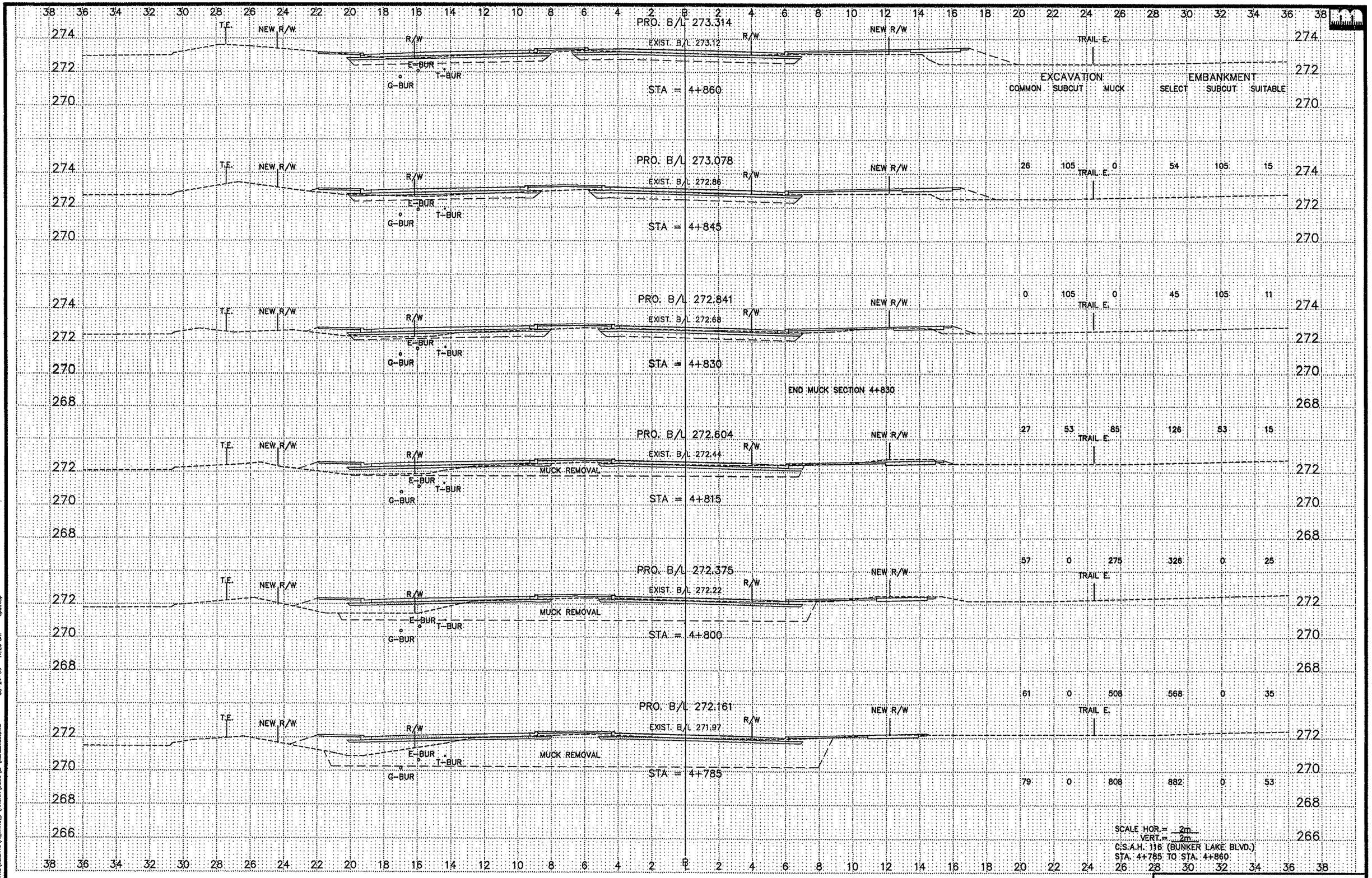
PRO. B/L 271.202
EXIST. B/L 270.87
STA = 4+695

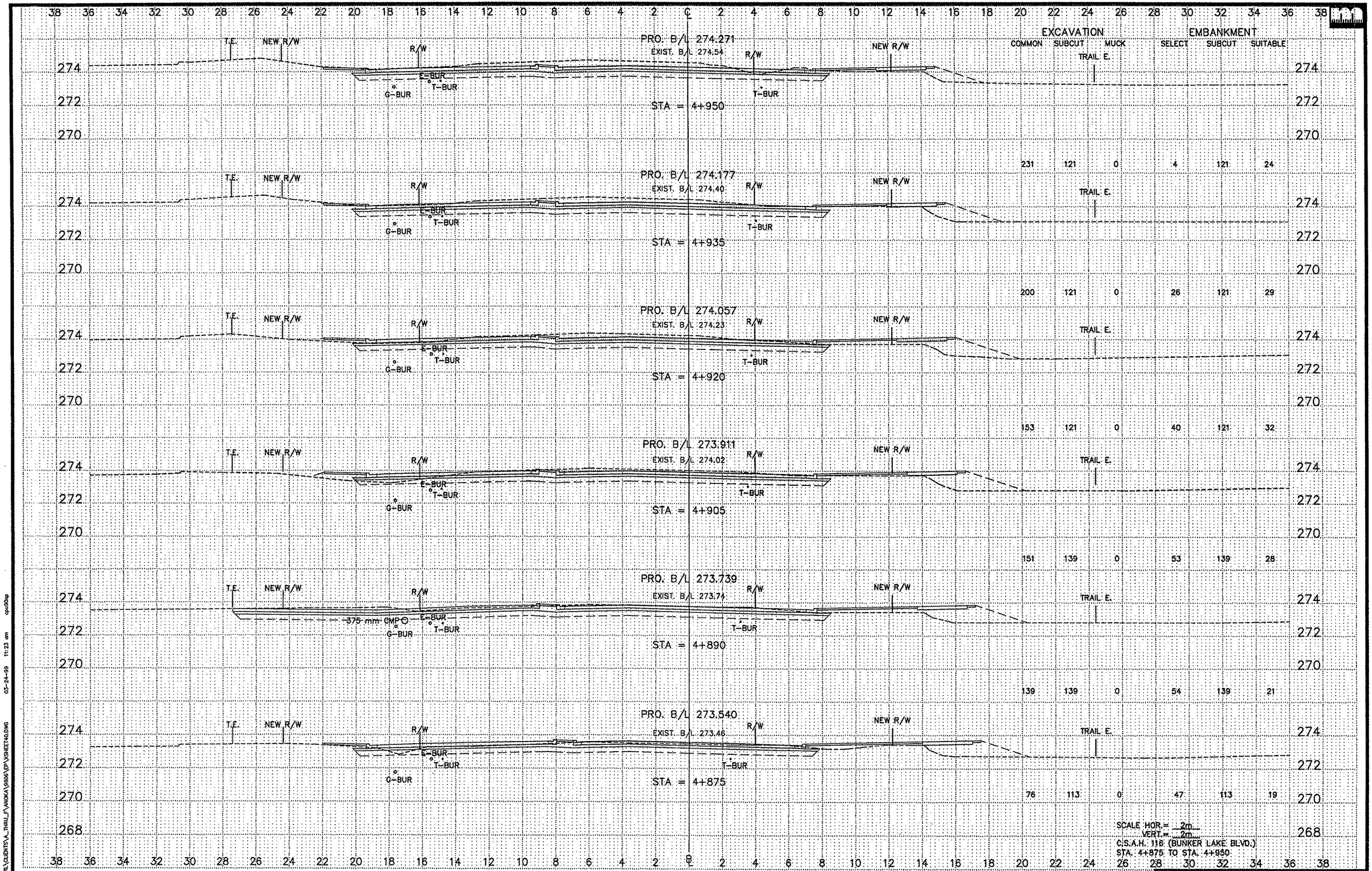
EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
131	0	1207	1250	0	34
84	0	1520	1567	0	70
0	0	1860	1935	0	167
0	0	2219	2261	0	203
0	0	2295	2326	0	203
0	0	2413	2424	0	207

SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+695 TO STA. 4+770

Sheet No.120 Of 230 Sheets

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\98096\EP\XSHEET38.DWG 03-17-99 7:12 pm cpu90sp





SCALE HOR.= 2m
VERT.= 2m
C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+875 TO STA. 4+950

C:\DWL\CLIENTS\VA_THRU_FVANOKA\9868\DP\XSHEET40.DWG 03-24-99 11:23 am cpq30sp

PRO. B/L 274.278
EXIST. B/L 274.43
STA = 5+040

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
163	124	0	28	124	34

PRO. B/L 274.343
EXIST. B/L 274.56
STA = 5+025

253	157	0	15	157	30

PRO. B/L 274.381
EXIST. B/L 274.64
STA = 5+010

387	208	0	0	208	13

PRO. B/L 274.393
EXIST. B/L 274.72
STA = 4+995

384	184	0	0	184	0

PRO. B/L 274.379
EXIST. B/L 274.69
STA = 4+980

317	132	0	0	132	4

PRO. B/L 274.338
EXIST. B/L 274.63
STA = 4+965

286	123	0	0	123	14

T.E. NEW R/W R/W E-BUR G-BUR T-BUR JAY ST. TRAIL E.

SCALE HOR.= 2m.
VERT.= 2m.

C.S.A.H. 116 (BUNKER LAKE BLVD.)
STA. 4+965 TO STA. 5+040

PRO. B/L 273.616
EXIST. B/L 273.74
STA = 5+130

PRO. B/L 273.730
EXIST. B/L 273.81
STA = 5+115

PRO. B/L 273.845
EXIST. B/L 273.91
STA = 5+100

PRO. B/L 273.960
EXIST. B/L 274.00
STA = 5+085

PRO. B/L 274.074
EXIST. B/L 274.10
STA = 5+070

PRO. B/L 274.187
EXIST. B/L 274.27
STA = 5+055

EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
182	96	0	56	128	37
152	109	0	53	128	38
133	122	0	32	128	36
135	125	0	25	128	32
140	115	0	45	128	34
140	116	0	41	126	35

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

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

	EXCAVATION			EMBANKMENT		
	COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
STA = 5+220	213	105	0	0	105	22
STA = 5+205	209	105	0	0	105	19
STA = 5+190	202	104	0	0	105	16
STA = 5+175	199	98	0	13	105	20
STA = 5+160	196	88	0	26	105	20
STA = 5+145	188	87	0	40	116	29

274 272 270 268

PRO. B/L 272.982
EXIST. B/L 273.07
STA = 5+220

PRO. B/L 273.056
EXIST. B/L 273.14
STA = 5+205

PRO. B/L 273.157
EXIST. B/L 273.23
STA = 5+190

PRO. B/L 273.272
EXIST. B/L 273.35
STA = 5+175

PRO. B/L 273.386
EXIST. B/L 273.47
STA = 5+160

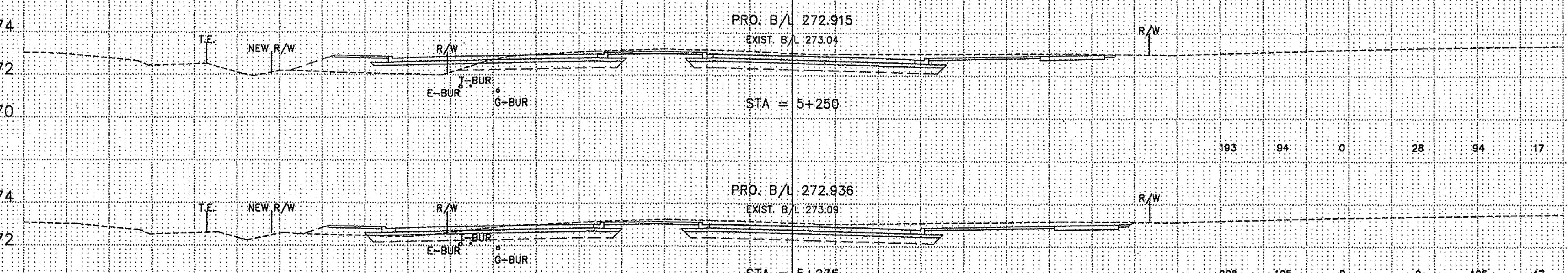
PRO. B/L 273.501
EXIST. B/L 273.59
STA = 5+145

T.E. NEW R/W R/W T-BUR E-BUR G-BUR R/W T-BUR G-BUR

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

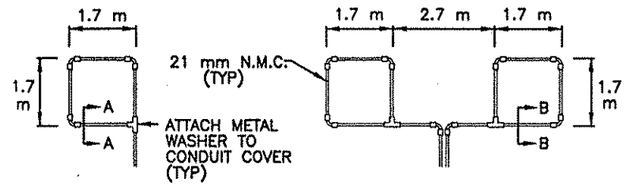
Sheet No.125 Of 230 Sheets

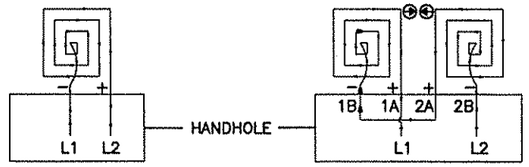
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\XSHEET43.DWG 03-16-99 7:44 am cpu90sp



EXCAVATION			EMBANKMENT		
COMMON	SUBCUT	MUCK	SELECT	SUBCUT	SUITABLE
72	33	0	22	33	8
193	94	0	28	94	17
208	105	0	0	105	17

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



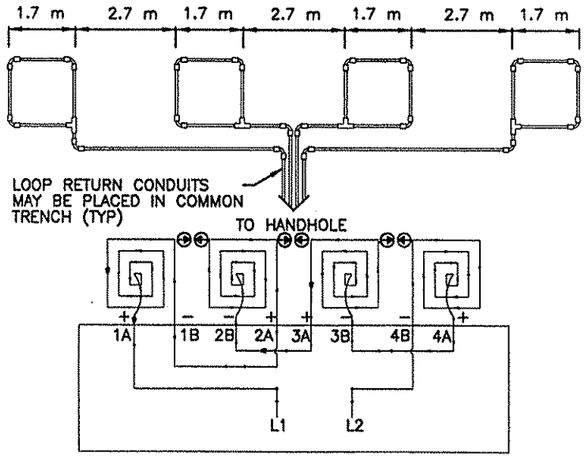


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'A'
(LOOP PHASING FOR SINGLE CONNECTION)

LOOP DETECTOR DETAIL 'B'
(LOOP PHASING FOR SERIES CONNECTION)

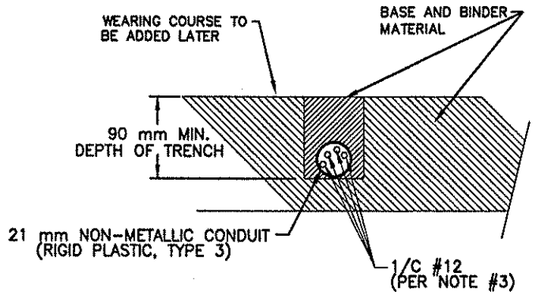


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

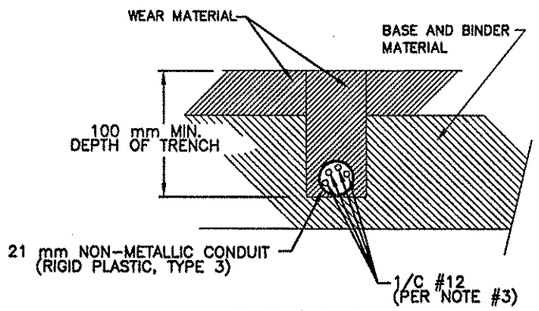
L1 TO 1A
1B TO 2A
2B TO 3A
3B TO 4A
4B TO L2

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

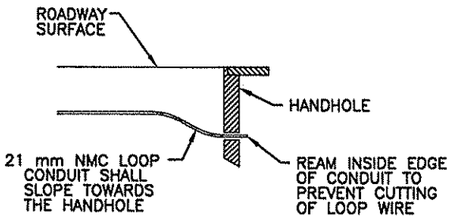
LOOP DETECTOR DETAIL 'C'
(LOOP PHASING FOR SERIES CONNECTION)



SECTION A–A
DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B–B
DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

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.

STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
* M8110 D	TRAFFIC SIGNAL BRACKETING – POLE MOUNTED
M8111 C	TRAFFIC SIGNAL BRACKETING – PEDESTAL MOUNTED
M8112 C	PEDESTAL FOUNDATION
* M8114 A	PVC HANDHOLE/PULLBOX
M8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
* M8118 C	SERVICE EQUIPMENT AND POLE–TRAFFIC CONTROL SIGNALS
* M8119 C	GROUND MOUNTED CABINET FOUNDATION
* M8120 K	PA85 POLE FOUNDATION
* M8121 D	TRANSFORMER BASE AND POLE BASE PLATE
M8122 C	PEDESTAL AND PEDESTAL BASE
* M8123 D	POLE AND MAST ARM
* M8124 E	MAST ARM SIGNAL HEAD MOUNTS
* M8126 F	PA90 AND PA100 POLE FOUNDATION

* – APPLIES TO THIS PROJECT

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 – INPLACE
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 – INPLACE
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

3–1(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"	PED	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

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

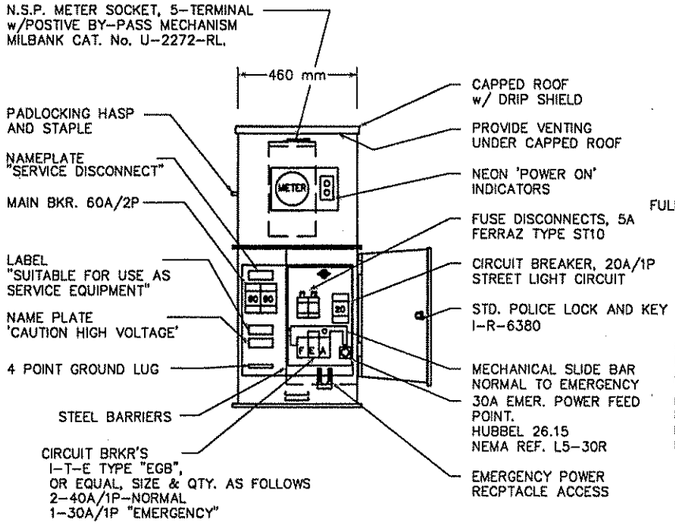
SEH

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

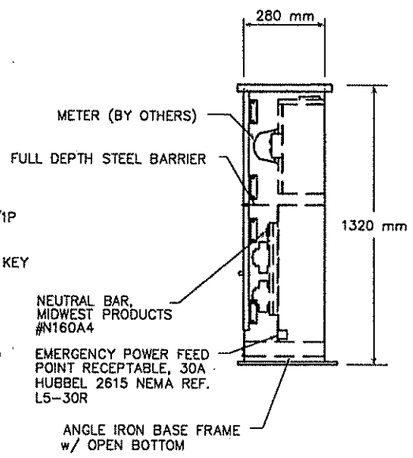
TRAFFIC SIGNAL SYSTEMS "A–F"
SIGNAL DETAILS

FILE NO. ANOKC9805.01
DATE 3/15/99

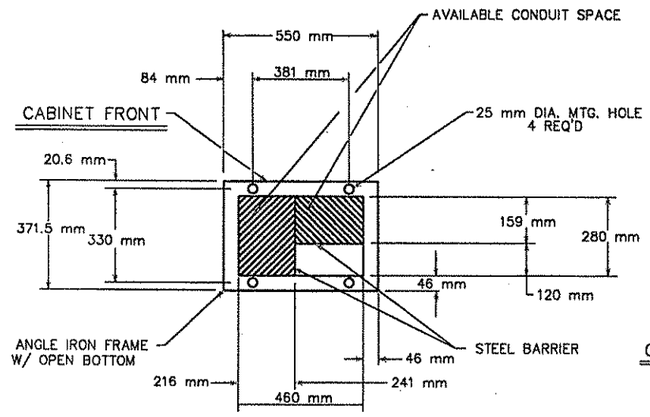
SIGNAL SERVICE CABINET



FRONT ELEV.

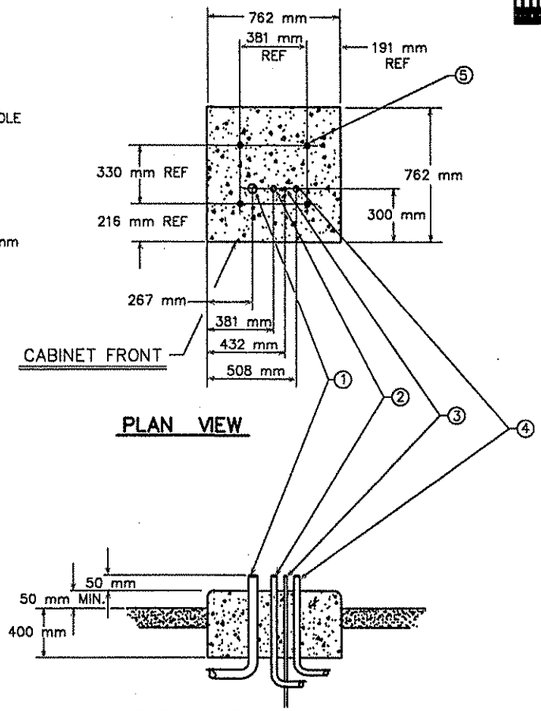


RIGHT SIDE ELEV.



BASE VIEW

SERVICE CABINET FOUNDATION



PLAN VIEW

ELEV. VIEW

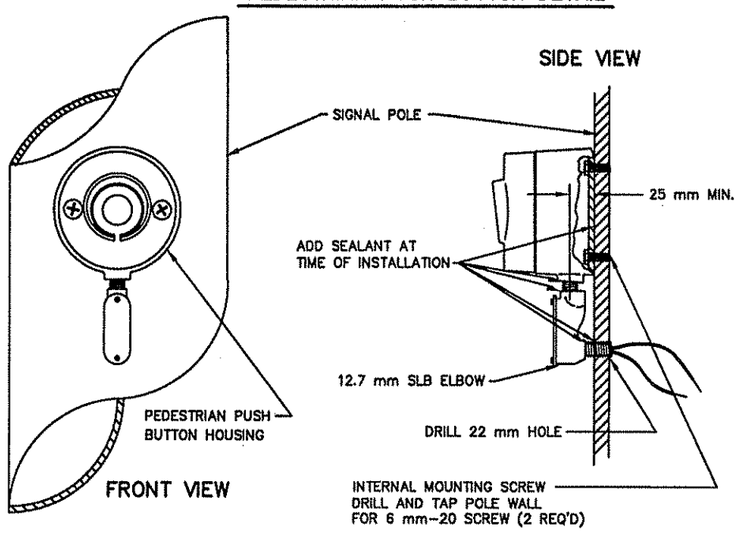
CONSTRUCTION NOTES

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.

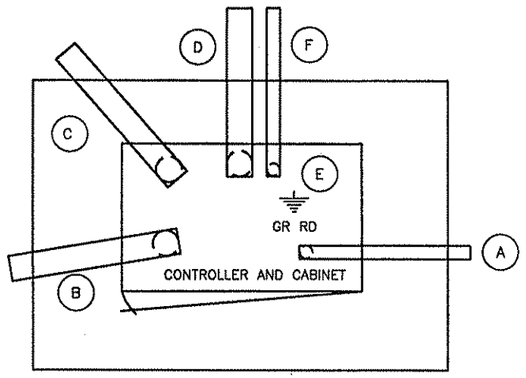
ENCLOSURE SHALL BE 'UL' APPROVED

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).



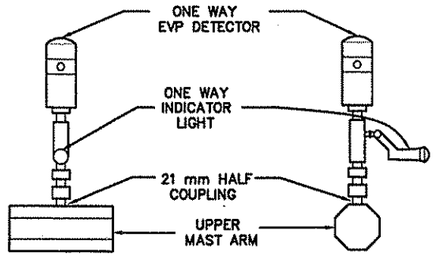
CONCRETE FOUNDATION
SEE MN/DOT STANDARD PLATE NO. M8119C FOR DIMENSIONS.

SEE INTERSECTION LAYOUTS FOR CONDUIT & CABLE INFORMATION

TYPICAL CONTROLLER CABINET PAD LAYOUT

NO SCALE

EVP DETECTOR AND LIGHT MOUNTING DETAIL ON MAST ARM



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

SEH

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

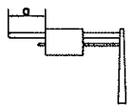
TRAFFIC SIGNAL SYSTEMS "B-E"
SIGNAL DETAILS

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

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

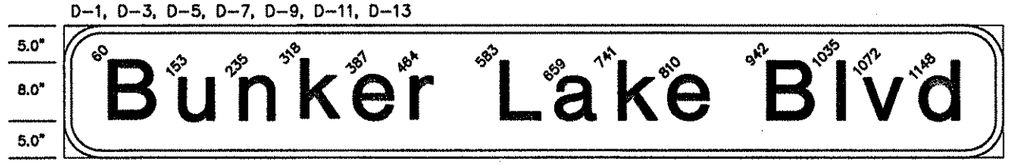
NOTES:

1) COLOR FOR TYPE "D" SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
3) FOR STRUCTURAL DETAILS, TYPE "D" SIGNS, SEE DETAILS AND STANDARD SIGNS MANUAL.
4) FOR TYPE "D" STRINGER AND PANEL–JOINT DETAIL, SEE DETAILS AND STANDARD SIGNS MANUAL.
5) 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.
6) SEE STANDARD SIGNS MANUAL FOR ARROW DETAILS.
7) ① = SIGN PANEL TO BE MOUNTED ON MAST ARM POLE AS DIRECTED IN SPECIAL PROVISIONS.



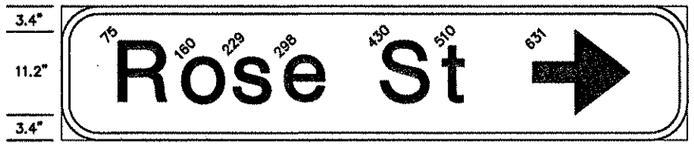
NOTE: ALL DIMENSIONS OF DETAILED SIGN PANELS ARE IN INCHES.

D–1, D–3, D–5, D–7, D–9, D–11, D–13



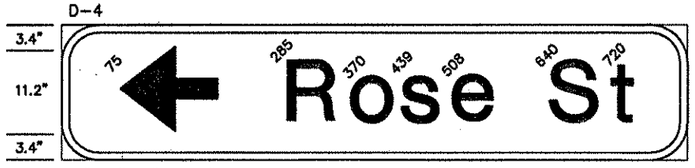
126"x18", 3"R, 1.0"B.
Line 1 114.3: 8"–6" E MOD.

D–2



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

D–4



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

D–6

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

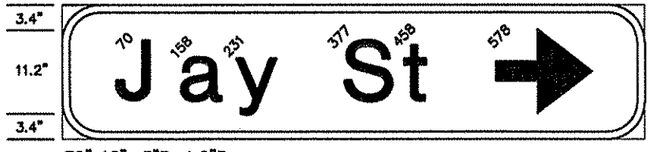
D–8

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

D–10, D–12

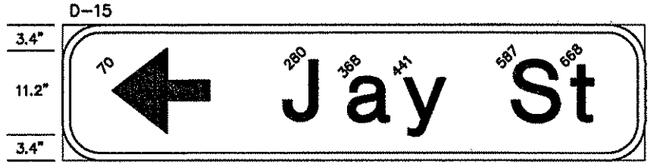
108"x18", 3"R, 1.0"B.
Line 1 96.6: 8"–6" E MOD.

D–14



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

D–15



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

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

SEH

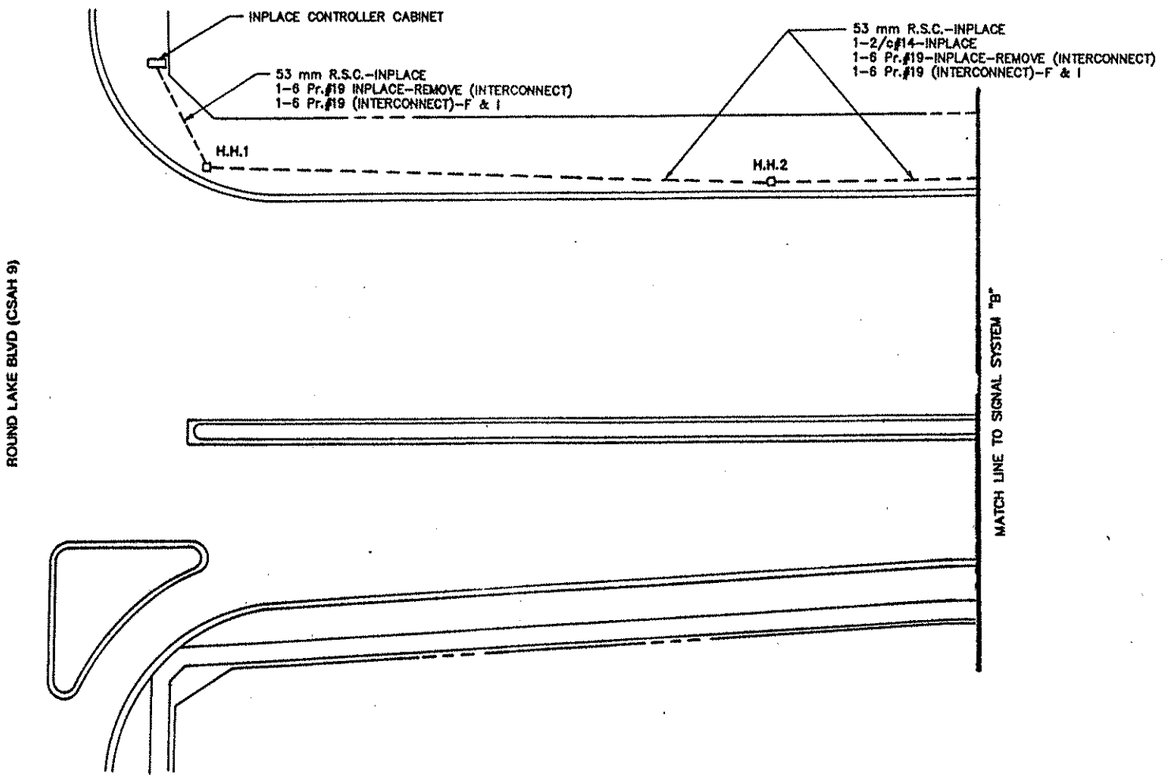
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

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

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

0 10 20
5 15 25 m

N



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).

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

SEH

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. ANOKC9806.01
DATE 3/15/99

130/230

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.

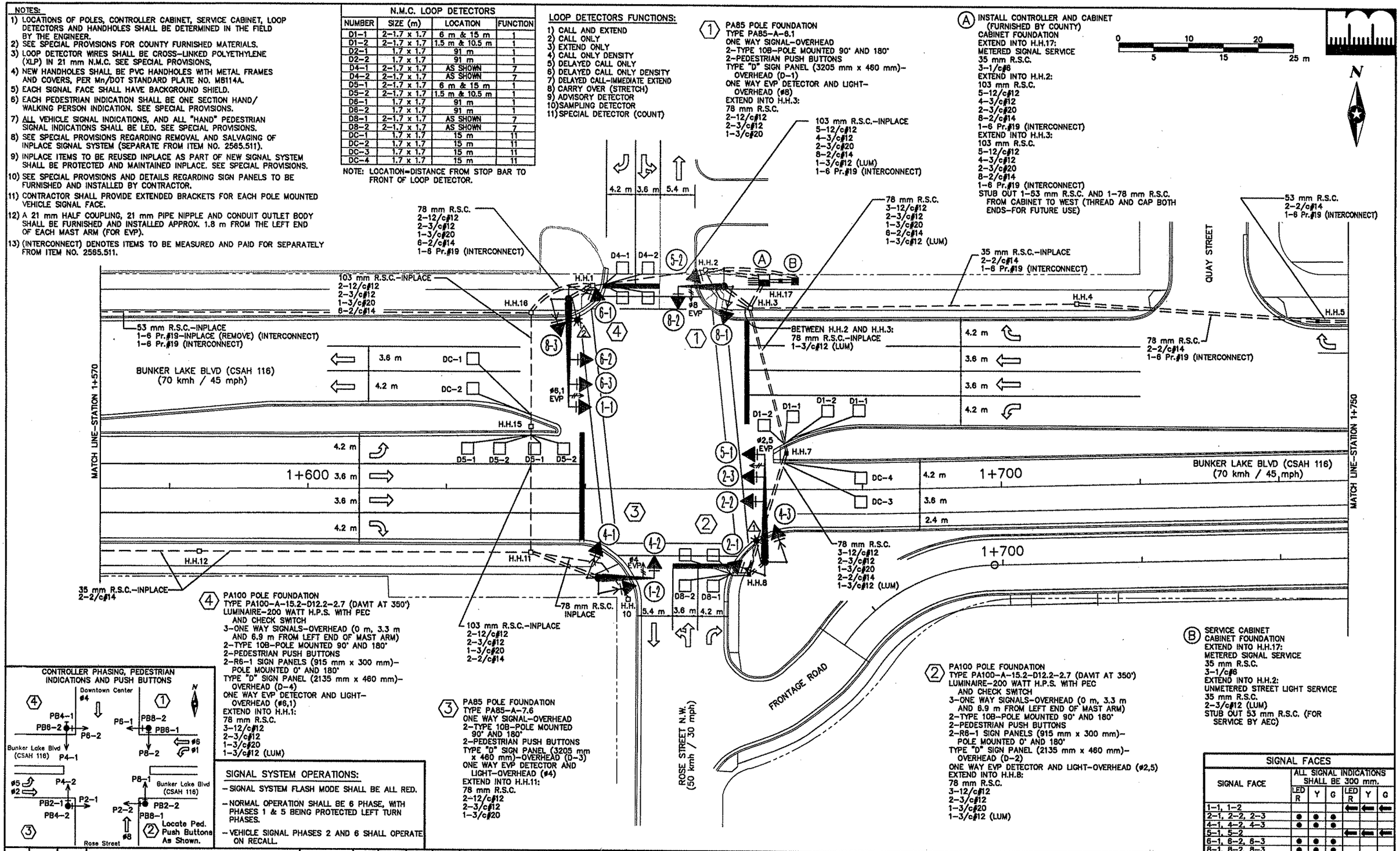
N.M.C. LOOP DETECTORS

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
D6-1	1.7 x 1.7	91 m	1
D6-2	1.7 x 1.7	91 m	1
D8-1	2-1.7 x 1.7	AS SHOWN	7
D8-2	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)



(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)
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)

(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

(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)
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-2)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#2,5)
EXTEND INTO H.H.8:
78 mm R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(B) SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.17:
METERED SIGNAL SERVICE
35 mm R.S.C.
3-1/c#6
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)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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.

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	●	●	●			
4-1, 4-2, 4-3	●	●	●			
5-1, 5-2				←	←	←
6-1, 6-2, 6-3	●	●	●			
8-1, 8-2, 8-3	●	●	●			

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

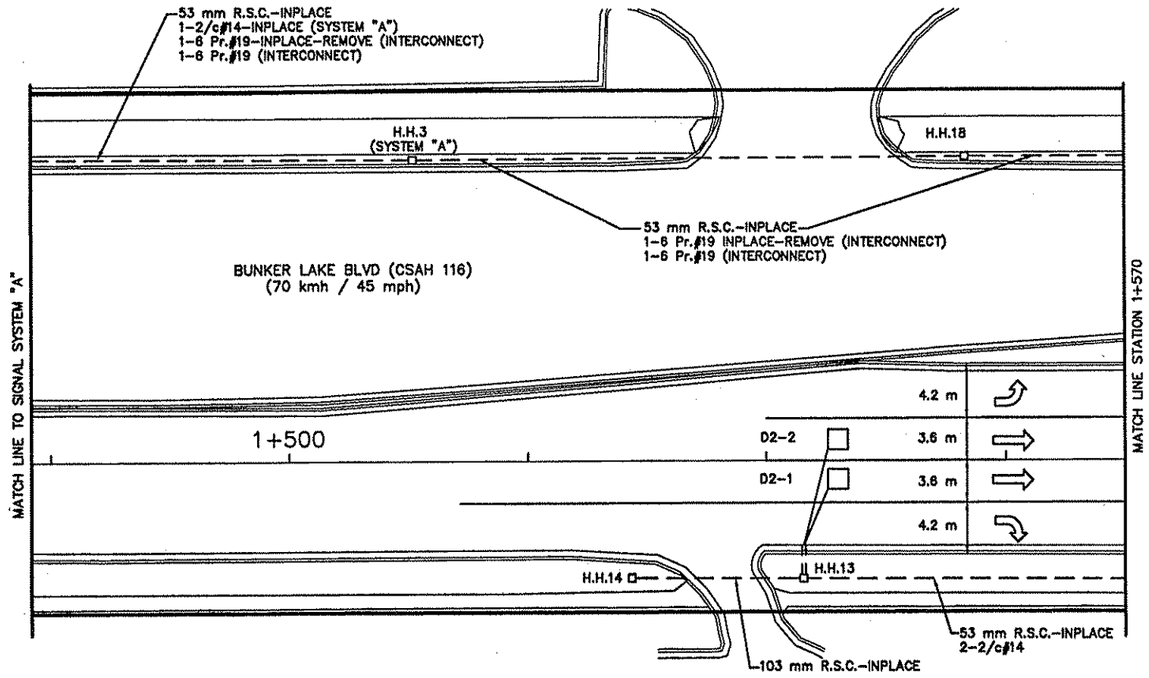
SEH

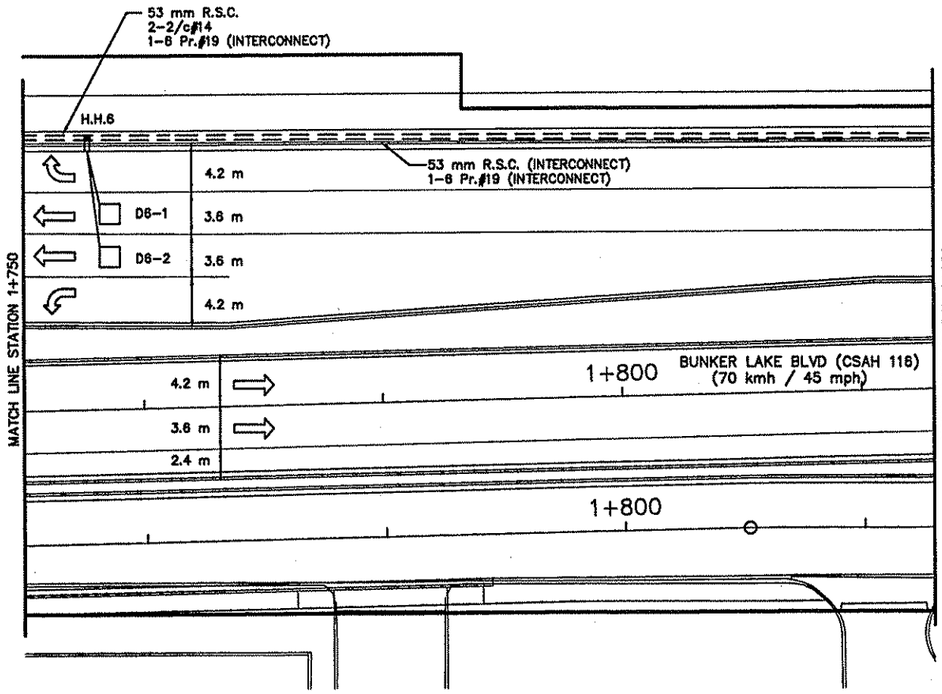
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

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

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC1.DWG 03-15-99 10:45PM CPU180SP





0 10 20
5 15 25 m

N

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC7.DWG 03-15-99 11:00AM CPU180SP

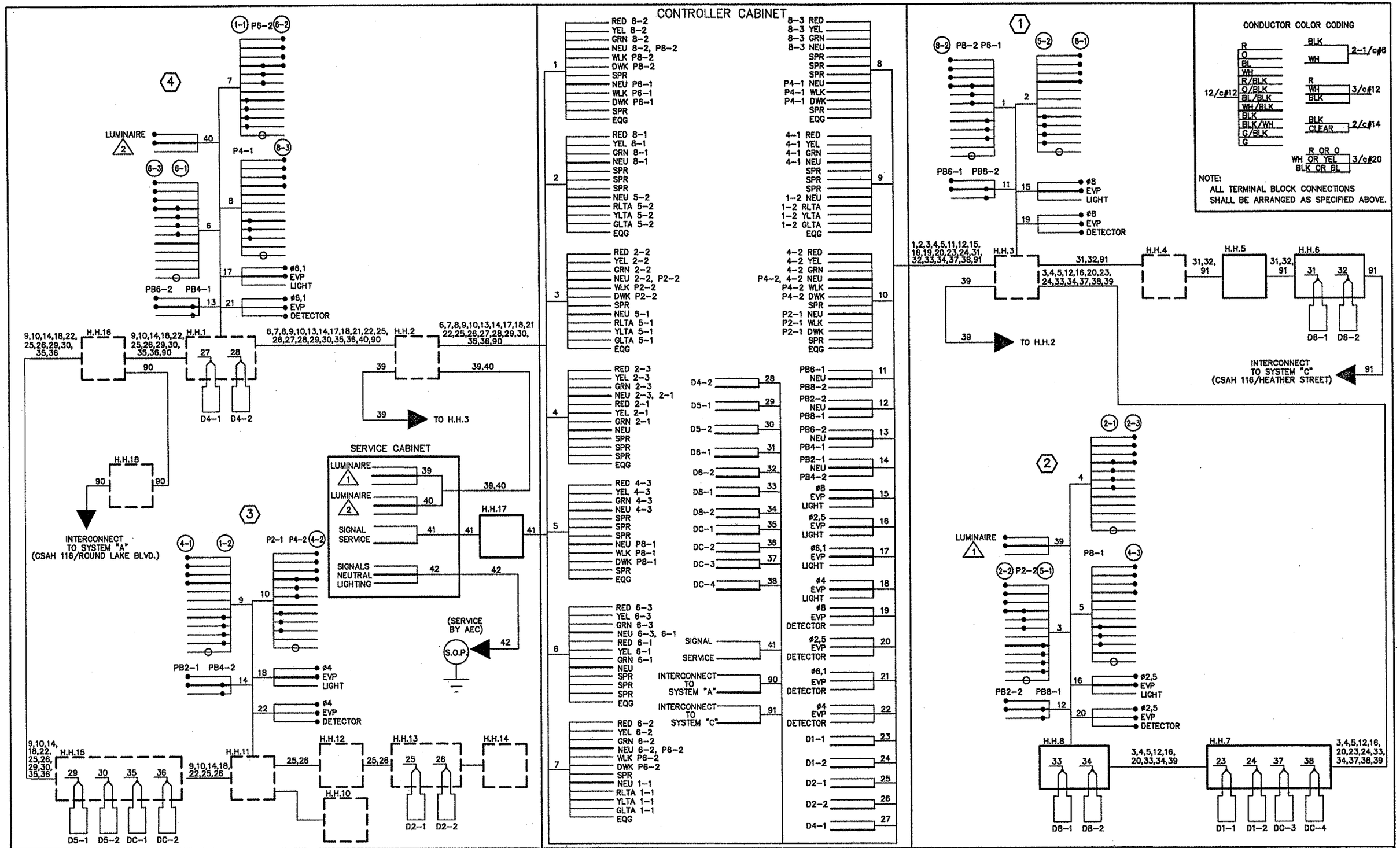
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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

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

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



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

SEH

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

NOTES:

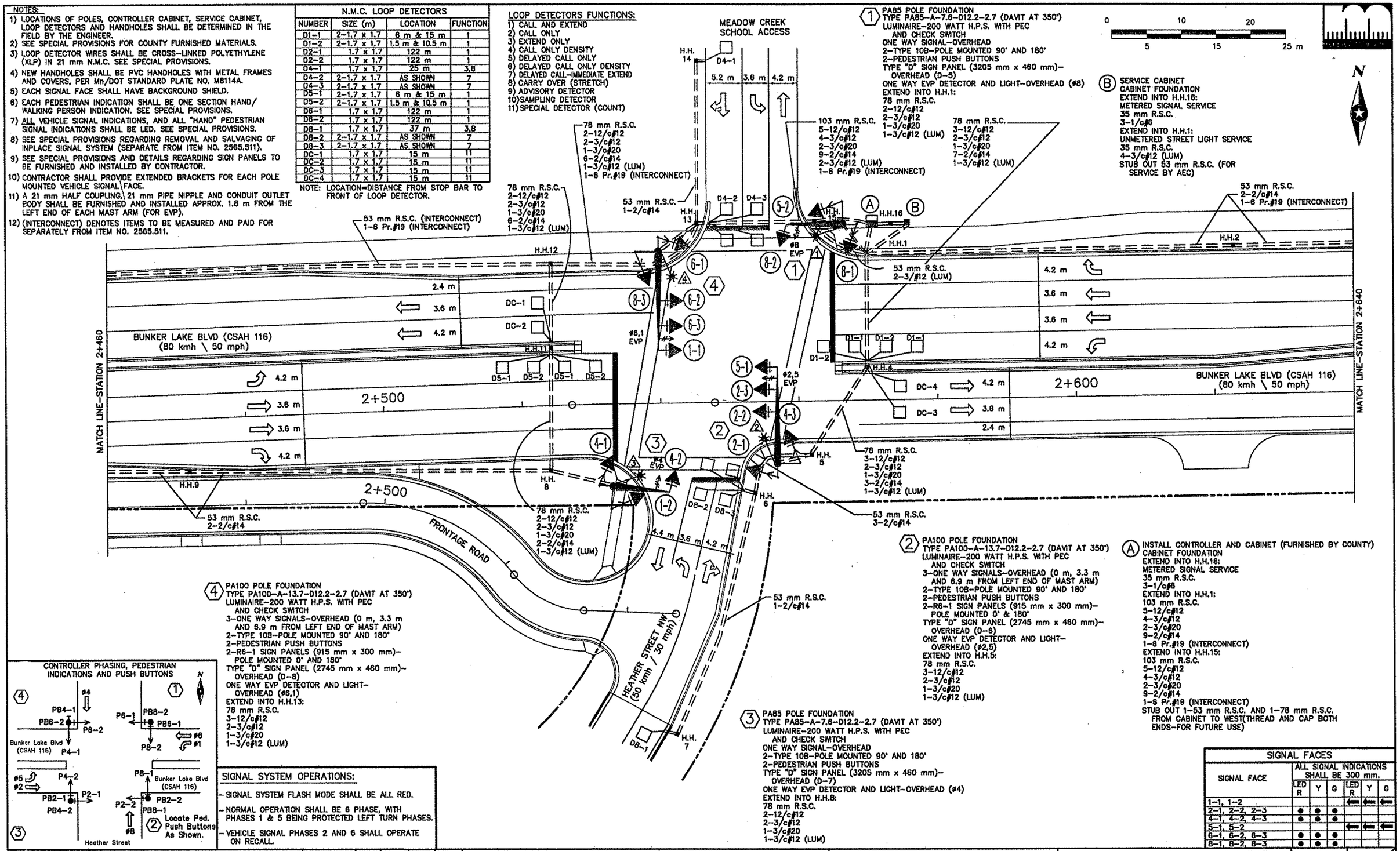
1) LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
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	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
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
D8-2	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)



1 PA85 POLE FOUNDATION
TYPE PA85-A-7.6-D12.2-2.7 (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
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-5)
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
1-3/c#20
1-3/c#12 (LUM)

B SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.16:
METERED SIGNAL SERVICE
35 mm R.S.C.
3-1/c#6
EXTEND INTO H.H.1:
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)

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 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 (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)

2 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 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° & 180°
TYPE "D" SIGN PANEL (2745 mm x 460 mm)-OVERHEAD (D-6)
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
1-3/c#12 (LUM)

3 PA85 POLE FOUNDATION
TYPE PA85-A-7.6-D12.2-2.7 (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
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-7)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#4)
EXTEND INTO H.H.8:
78 mm R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

A INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
CABINET FOUNDATION
EXTEND INTO H.H.16:
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
4-3/c#12
2-3/c#20
9-2/c#14
1-6 Pr.#19 (INTERCONNECT)
EXTEND INTO H.H.15:
103 mm R.S.C.
5-12/c#12
4-3/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)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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.

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	●	●	●			
4-1, 4-2, 4-3	●	●	●			
5-1, 5-2				⟸	⟸	⟸
6-1, 6-2, 8-3	●	●	●			
8-1, 8-2, 8-3	●	●	●			

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

SEH

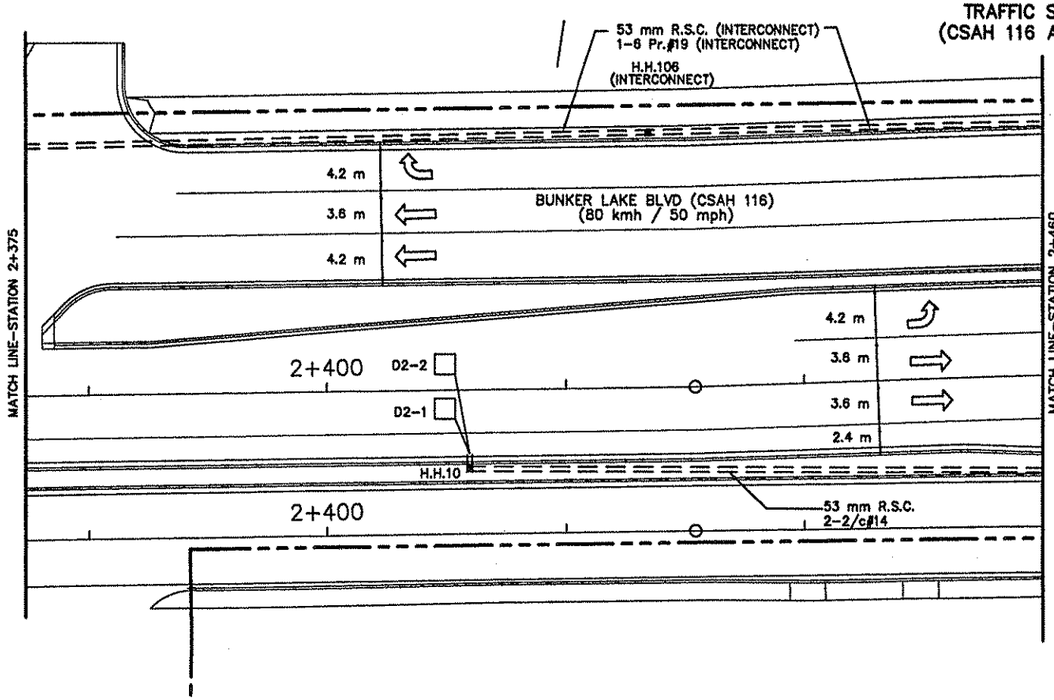
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

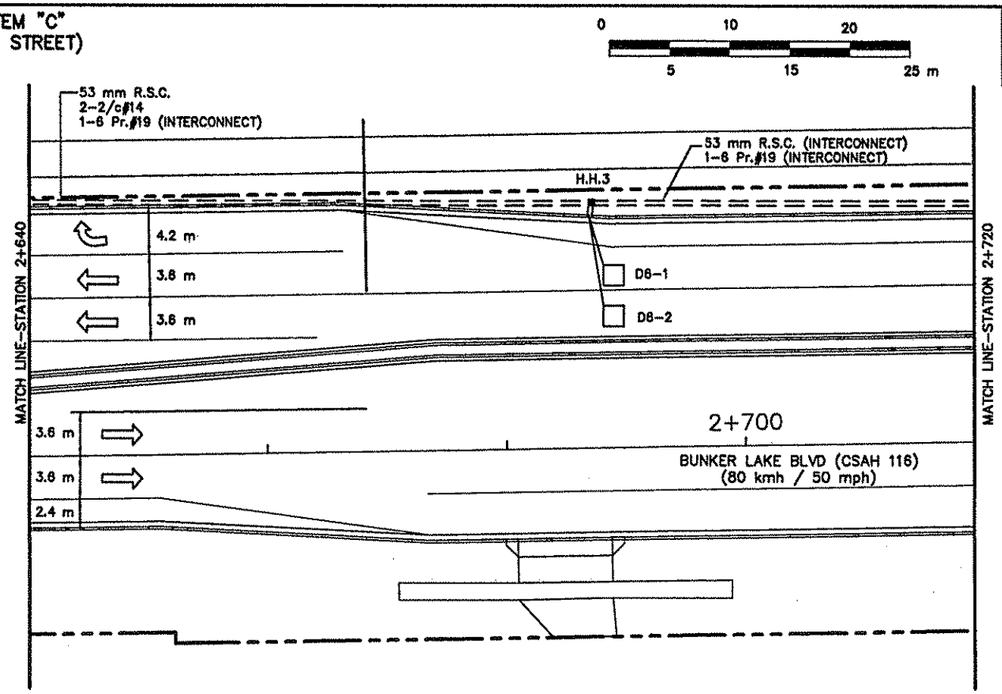
TRAFFIC SIGNAL SYSTEM "C"
INTERSECTION LAYOUT
BUNKER LAKE BLVD. (CSAH 116) AT HEATHER STREET

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

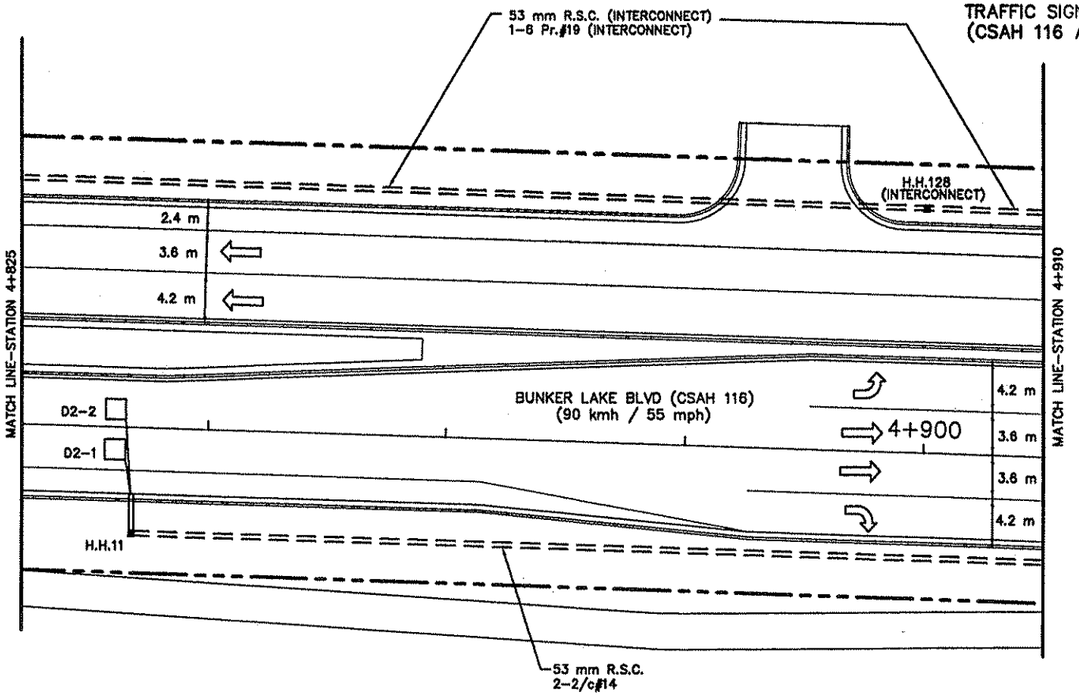
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC2.DWG 03-15-99 08:25AM CPU180SP

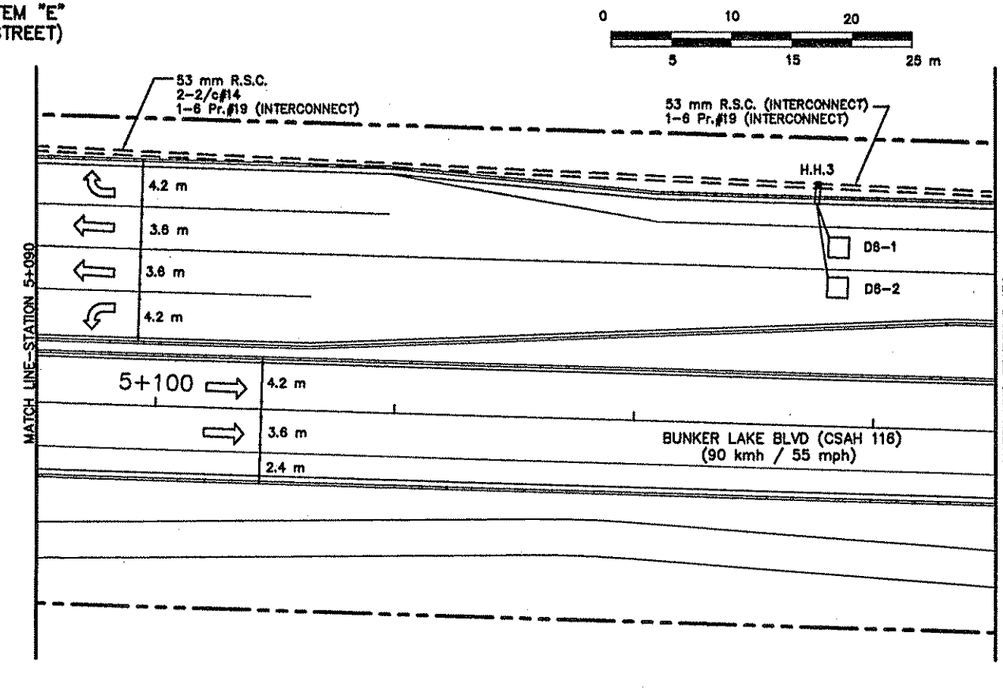
TRAFFIC SIGNAL SYSTEM "C"
(CSAH 116 AT HEATHER STREET)





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





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

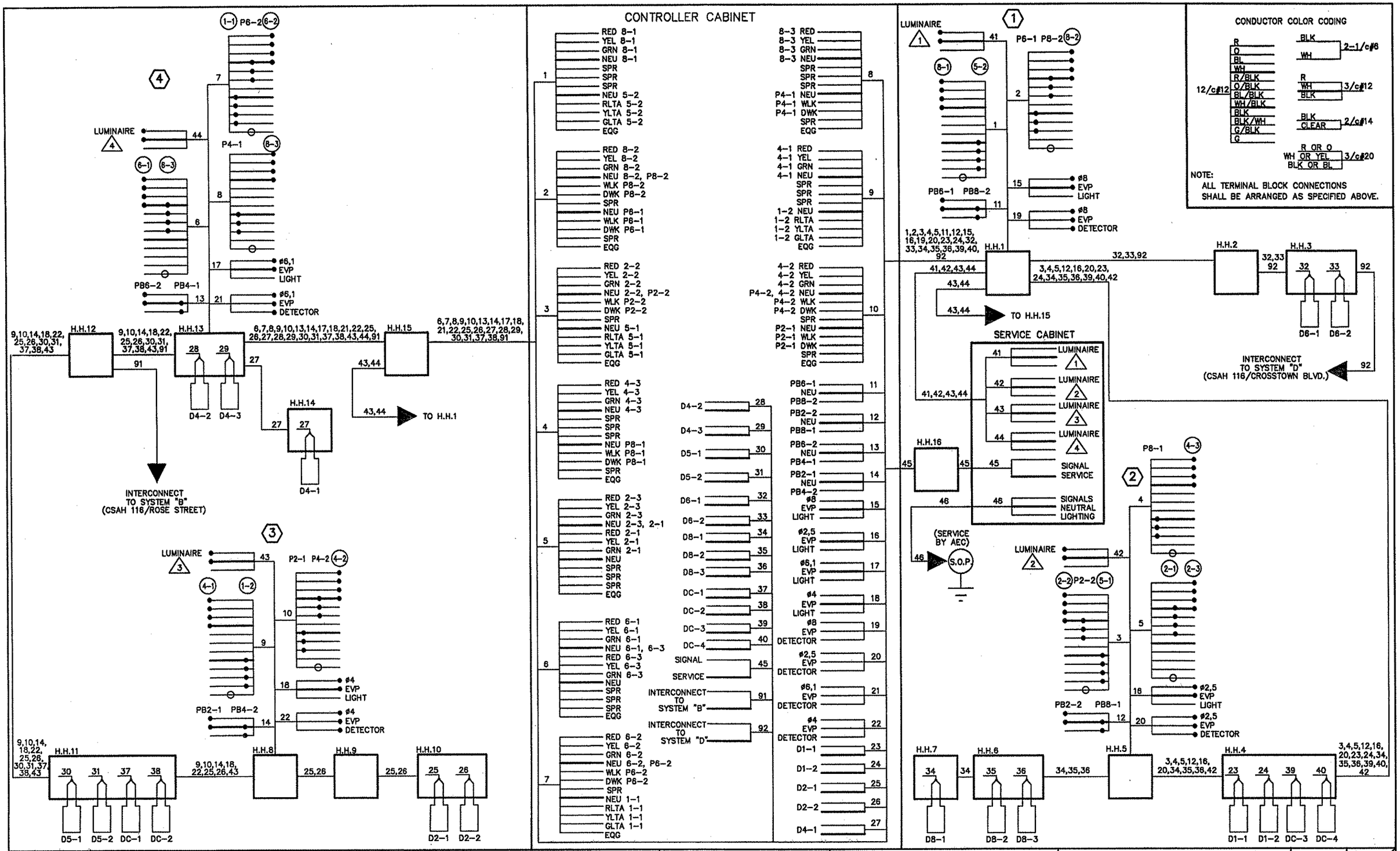
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

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

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

135/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC5.DWG 03-15-99 11:20AM CPU180SP



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

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

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

136/230

NOTES:

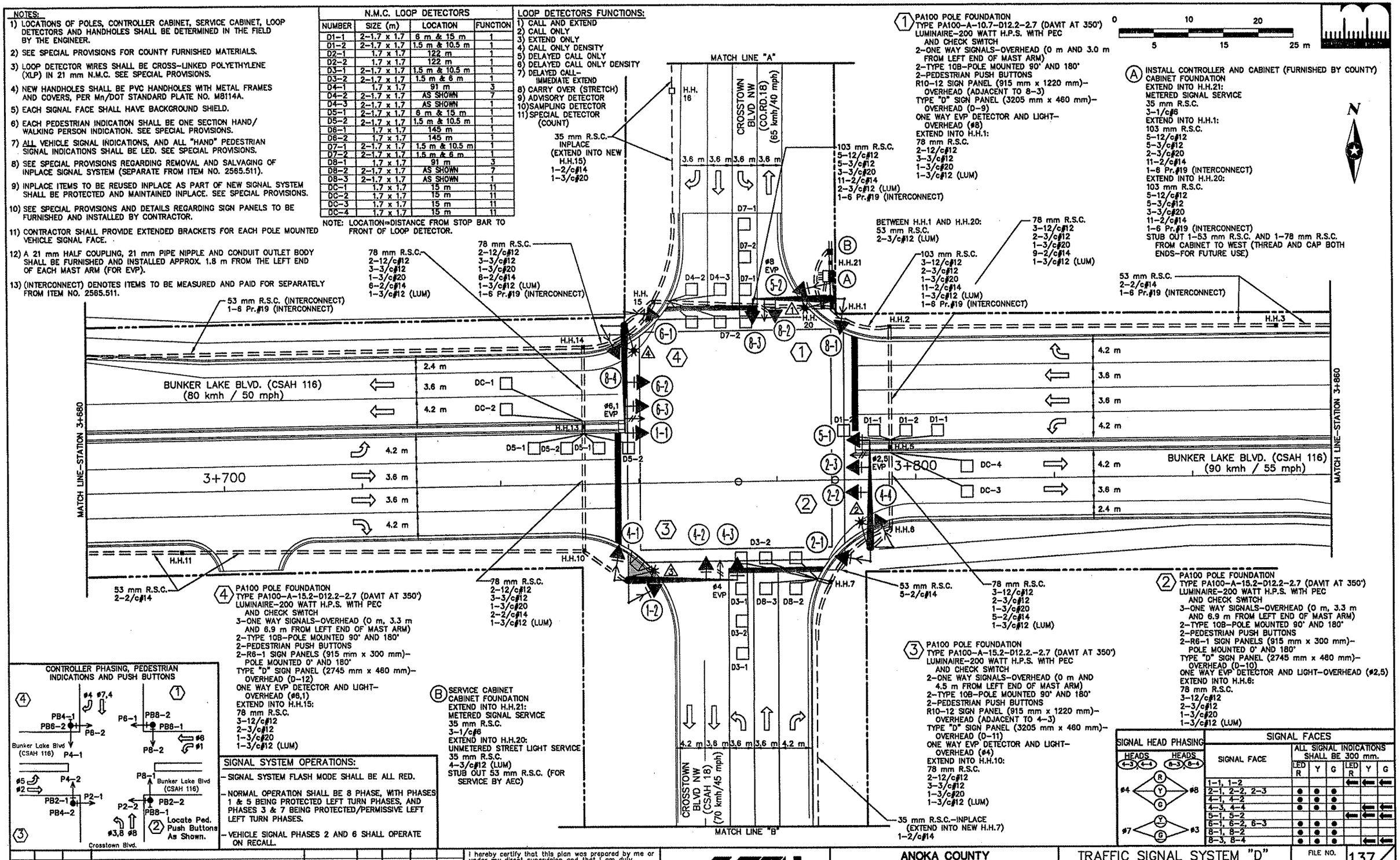
1) LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
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	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
D6-1	1.7 x 1.7	145 m	1
D6-2	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

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) PA100 POLE FOUNDATION
TYPE PA100-A-10.7-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 3.0 m FROM LEFT END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
R10-12 SIGN PANEL (915 mm x 1220 mm)-OVERHEAD (ADJACENT TO 8-3)
TYPE "D" SIGN PANEL (3205 mm x 460 mm)-OVERHEAD (D-9)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8)
EXTEND INTO H.H.1:
78 mm R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
CABINET FOUNDATION
EXTEND INTO H.H.21:
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.20:
103 mm R.S.C.
5-12/c#12
5-3/c#12
3-3/c#20
11-2/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)

(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)
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 480 mm)-OVERHEAD (D-12)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#6,1)
EXTEND INTO H.H.15:
78 mm R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(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)

(3) 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
2-ONE WAY SIGNALS-OVERHEAD (0 m AND 4.5 m FROM LEFT END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
R10-12 SIGN PANEL (915 mm x 1220 mm)-OVERHEAD (ADJACENT TO 4-3)
TYPE "D" SIGN PANEL (3205 mm x 480 mm)-OVERHEAD (D-11)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#4)
EXTEND INTO H.H.10:
78 mm R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)
35 mm R.S.C.-INPLACE (EXTEND INTO NEW H.H.7)
1-2/c#14

(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)
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 480 mm)-OVERHEAD (D-10)
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#2,5)
EXTEND INTO H.H.6:
78 mm R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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.

SIGNAL HEAD PHASING

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	●	●	●			
4-1, 4-2	●	●	●			
4-3, 4-4	●	●	●	←	←	←
5-1, 5-2				←	←	←
6-1, 6-2, 6-3	●	●	●			
8-1, 8-2	●	●	●			
8-3, 8-4	●	●	●	←	←	←

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

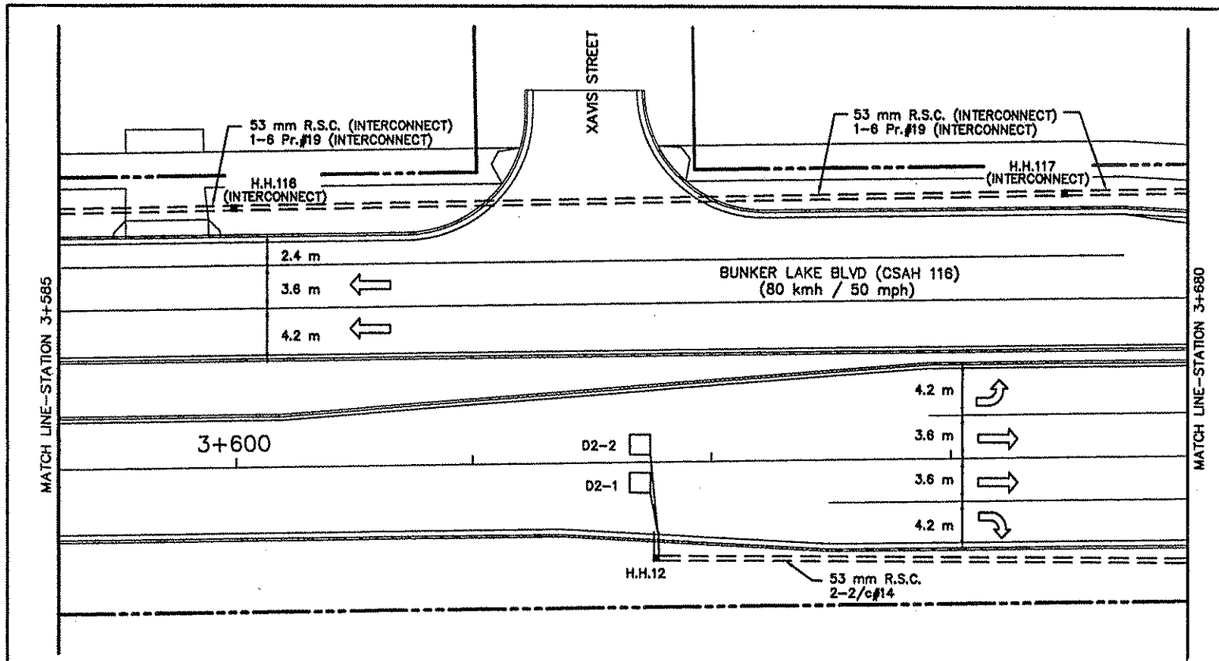
ESEH

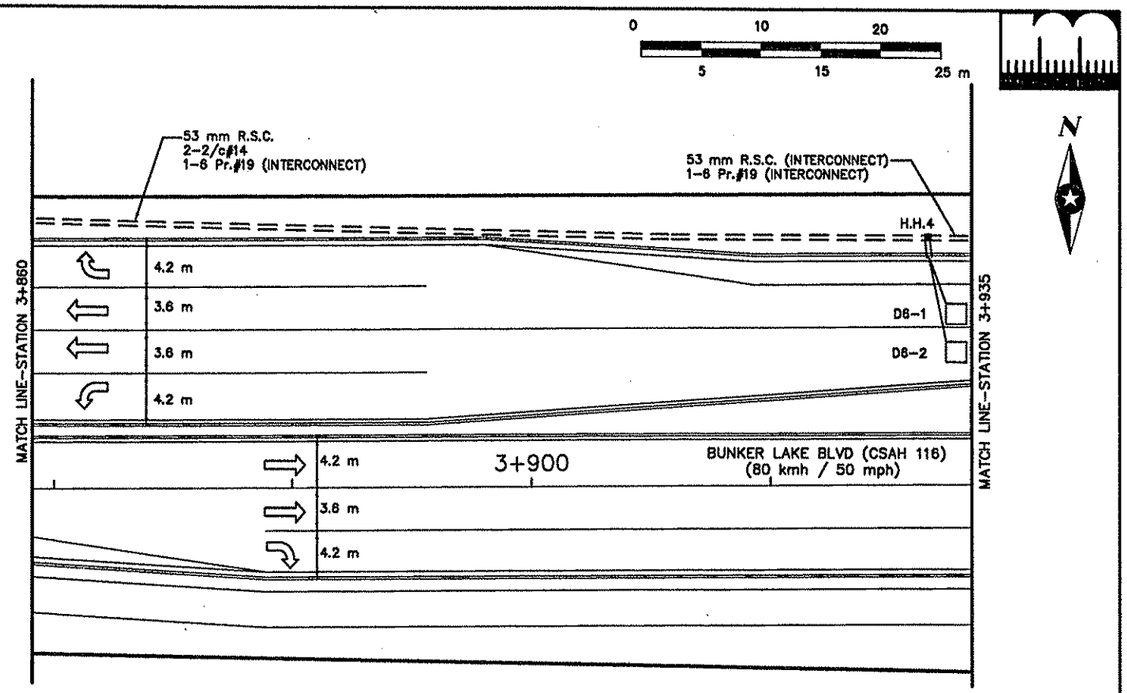
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

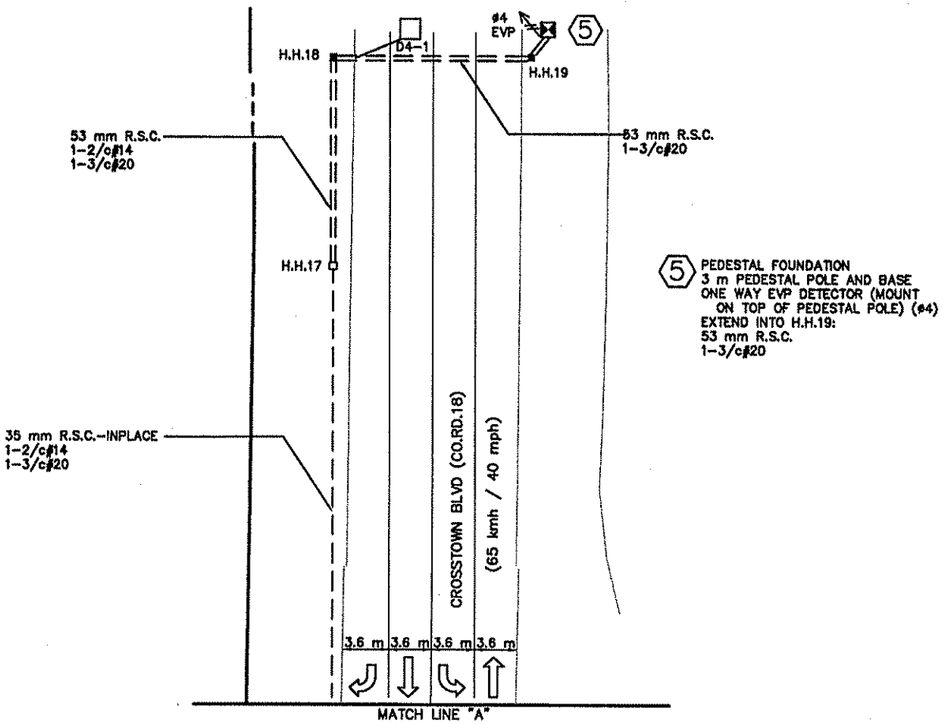
TRAFFIC SIGNAL SYSTEM "D"
INTERSECTION LAYOUT
BUNKER LAKE BLVD. (CSAH 116) AT CROSSTOWN BLVD. (CSAH 18/CO.RD.18)

FILE NO. ANOKC9806.01
DATE 3/15/99
137/230

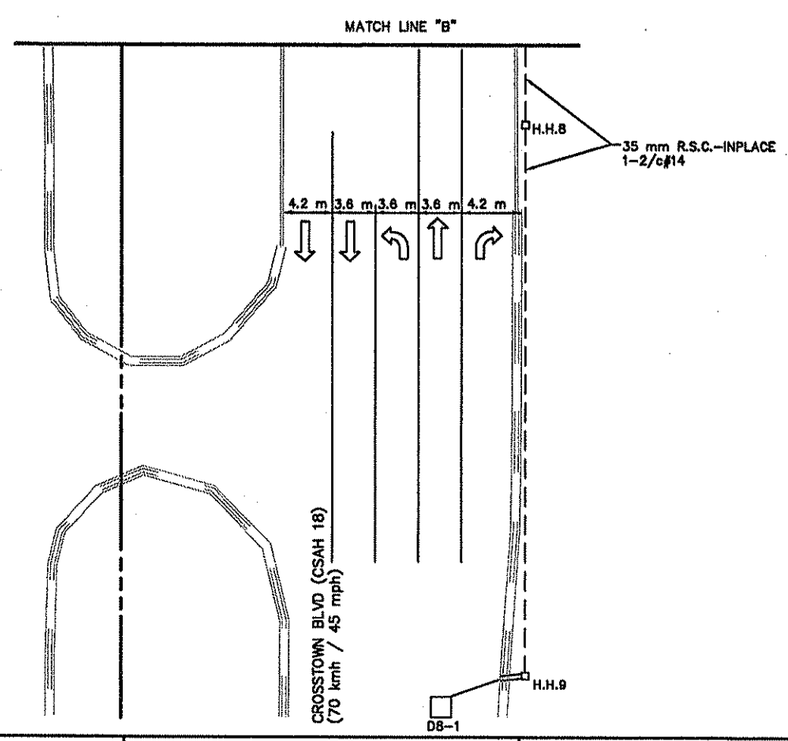
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC3.DWG 03-15-99 12:45PM CPU180SP







5 PEDESTAL FOUNDATION
3 m PEDESTAL POLE AND BASE
ONE WAY EVP DETECTOR (MOUNT ON TOP OF PEDESTAL POLE) (#4)
EXTEND INTO H.H.19:
53 mm R.S.C.
1-3/c#20



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

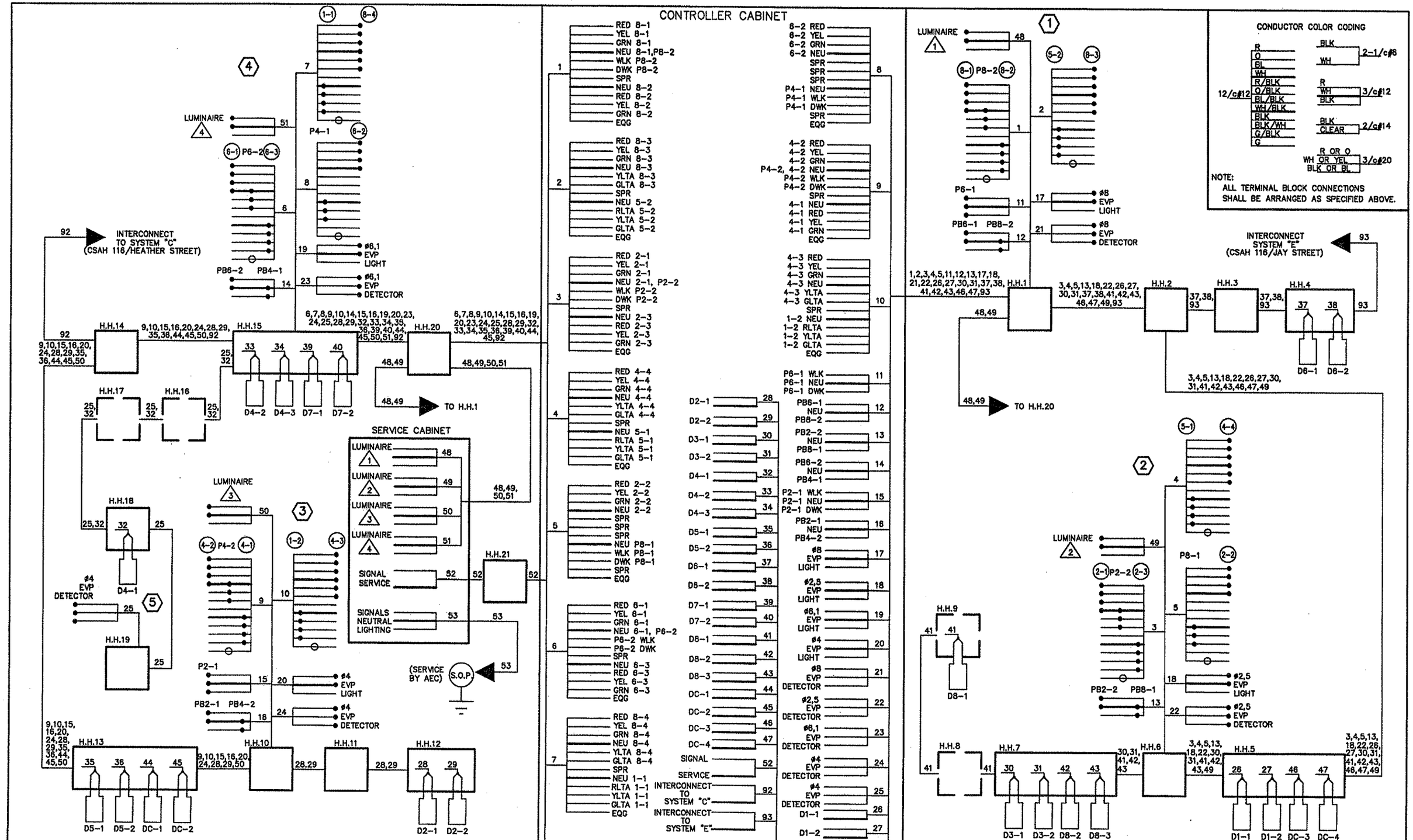
SEH

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
DATE 3/15/99
138/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC6.DWG 03-15-99 12:50PM CPU180SP



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

SEH

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

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 AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
9) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
10) 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).
11) (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	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
D6-1	1.7 x 1.7	145 m	1
D6-2	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.

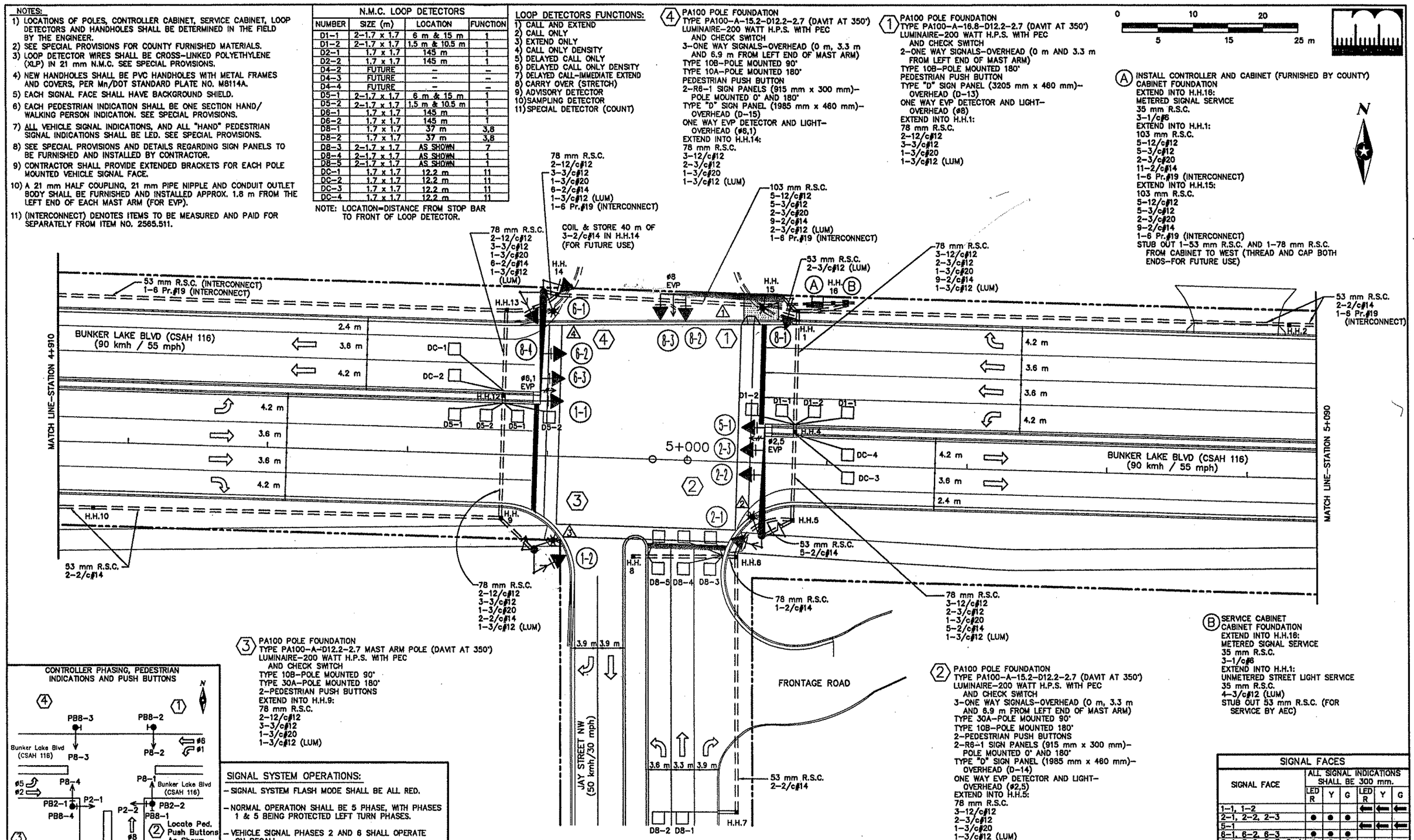
LOOP DETECTORS FUNCTIONS:
1) CALL AND EXTEND
2) CALL ONLY
3) EXTEND ONLY
4) CALL ONLY DENSITY
5) DELAYED CALL ONLY
6) DELAYED CALL ONLY DENSITY
7) DELAYED CALL-IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
9) ADVISORY DETECTOR
10) SAMPLING DETECTOR
11) SPECIAL DETECTOR (COUNT)

(4) PA100 POLE FOUNDATION
TYPE PA100-A-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-R8-1 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.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(1) PA100 POLE FOUNDATION
TYPE PA100-A-16.8-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
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

0 5 10 15 20 25 m

(A) 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)

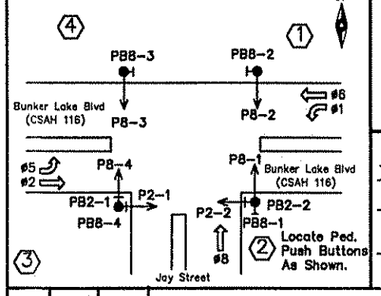


(3) PA100 POLE FOUNDATION
TYPE PA100-A-D12.2-2.7 MAST ARM POLE (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
TYPE 10B-POLE MOUNTED 90°
TYPE 30A-POLE MOUNTED 180°
2-PEDESTRIAN PUSH BUTTONS
EXTEND INTO H.H.9:
78 mm R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(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 30A-POLE MOUNTED 90°
TYPE 10B-POLE MOUNTED 180°
2-PEDESTRIAN PUSH BUTTONS
2-R8-1 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
1-3/c#12 (LUM)

(B) SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.16:
METERED SIGNAL SERVICE
35 mm R.S.C.
3-1/c#6
EXTEND INTO H.H.1:
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)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



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	●	●	●			

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

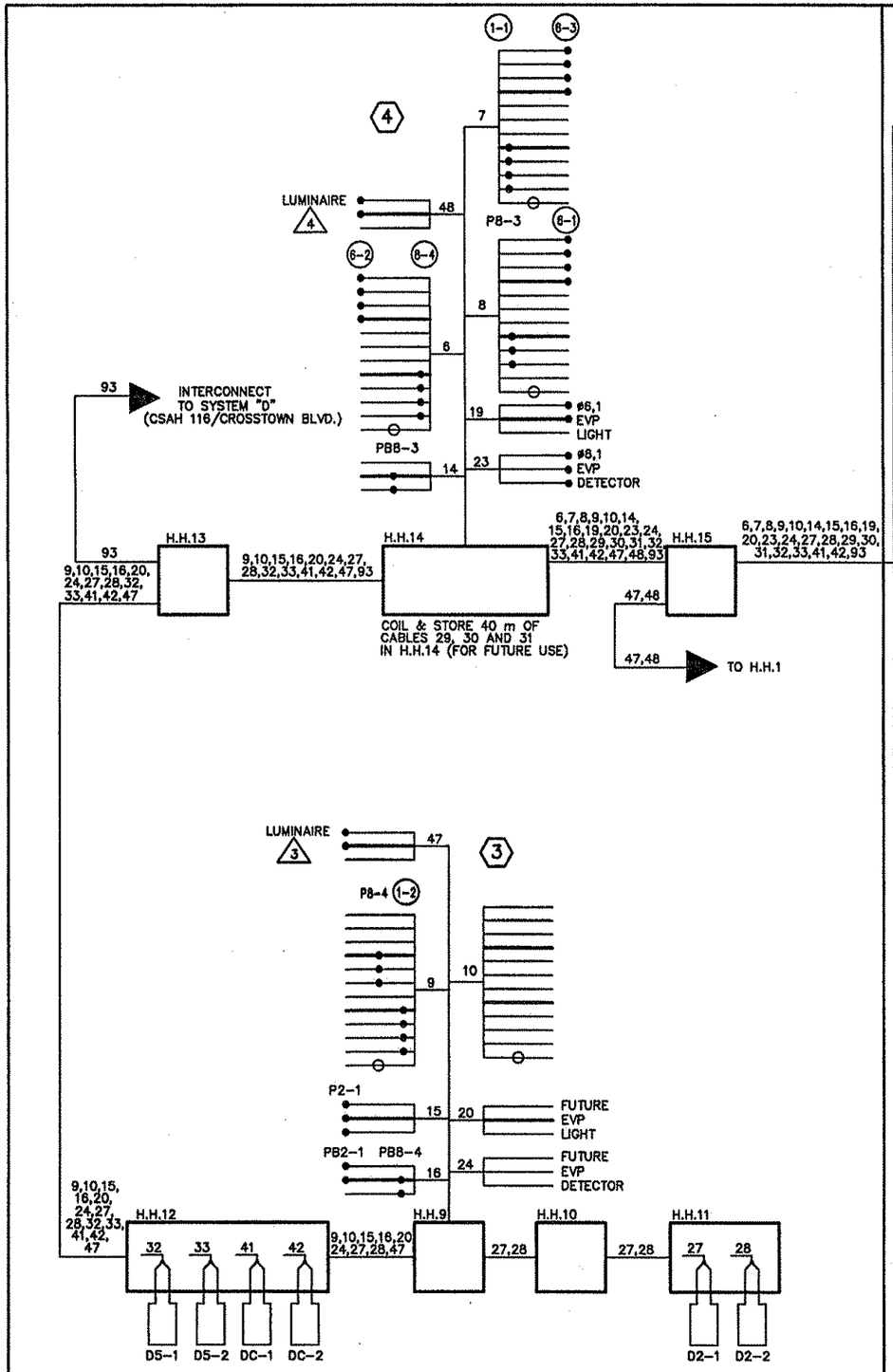
SEH

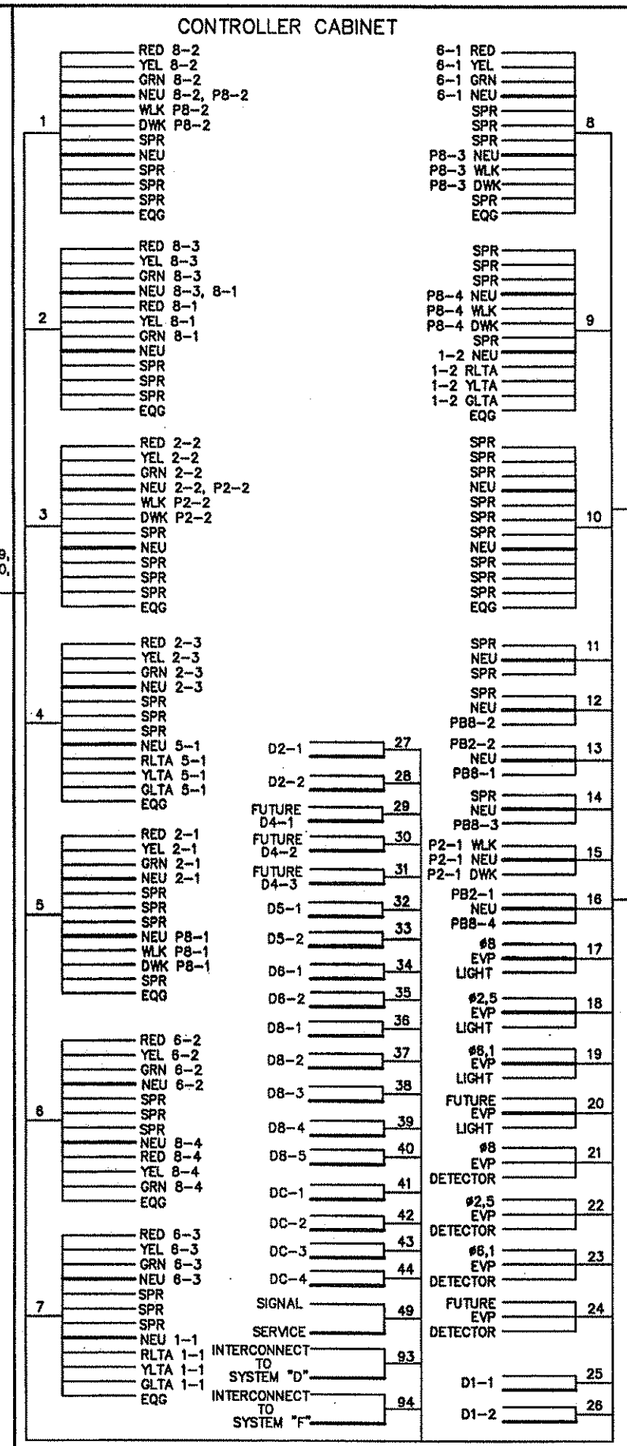
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

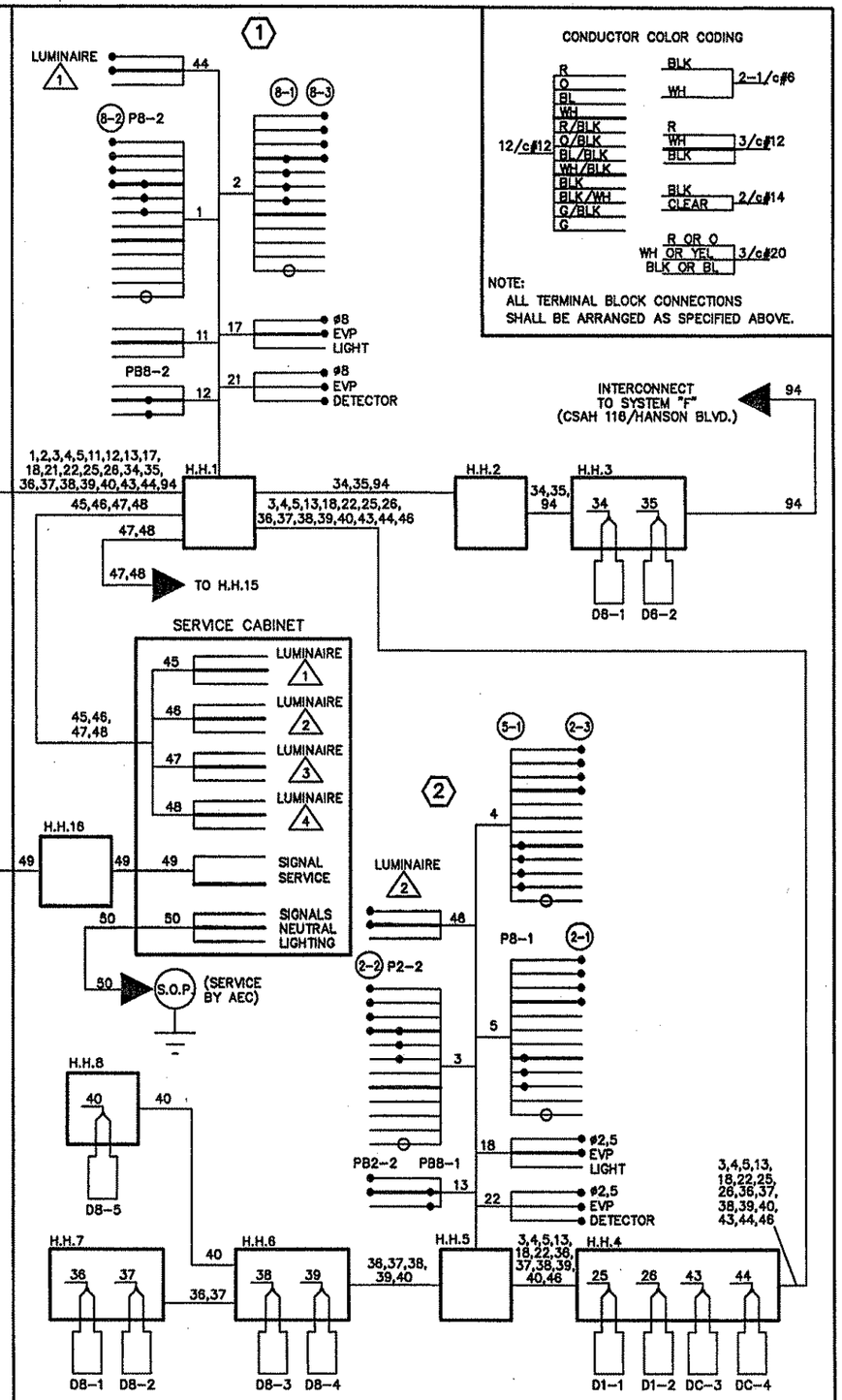
TRAFFIC SIGNAL SYSTEM "E"
INTERSECTION LAYOUT
BUNKER LAKE BLVD. (CSAH 116) AT JAY STREET

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TC4.DWG 03-15-99 1:10PM CPU180SP







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

SEH

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

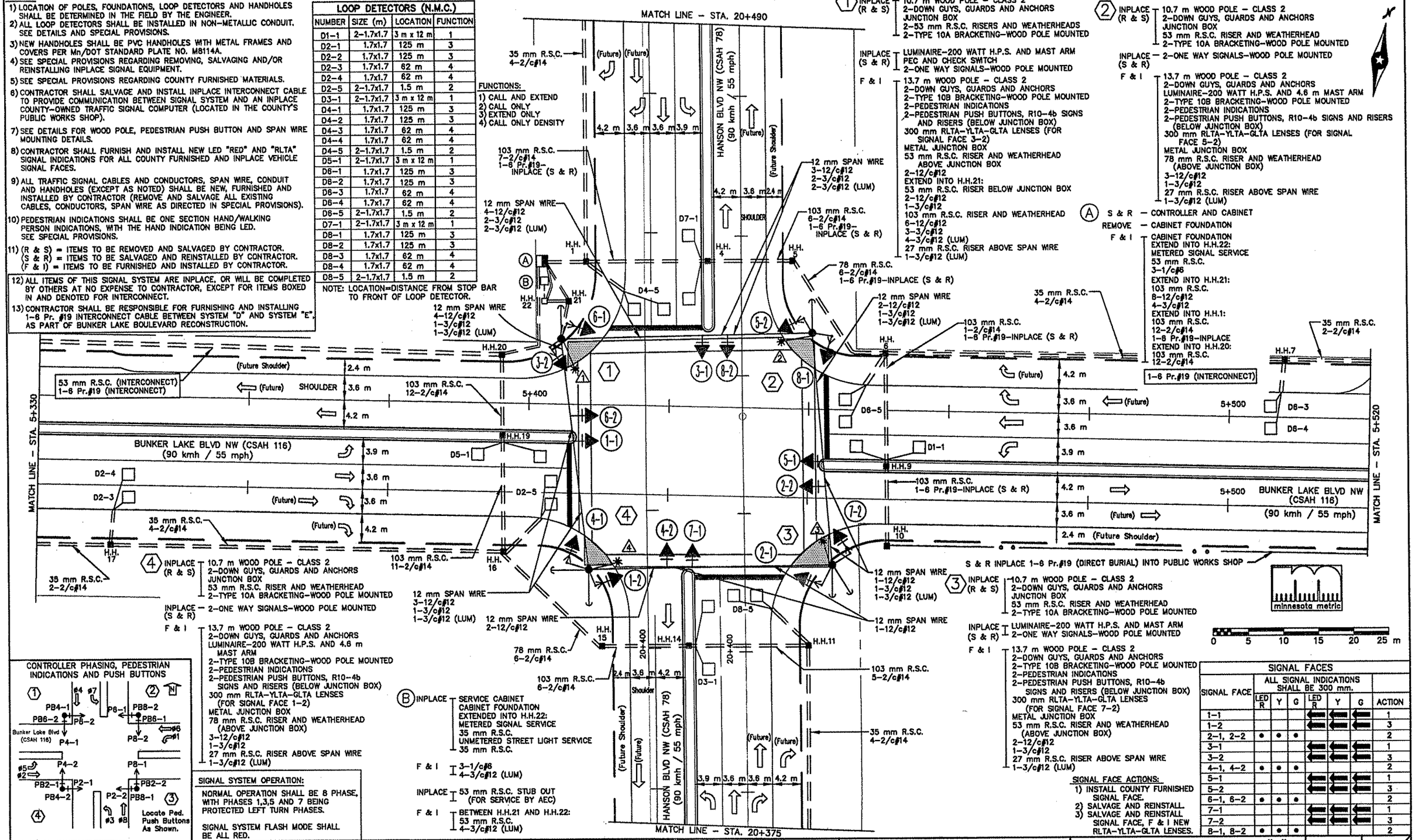
NOTES:

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. M8114A.
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	62 m	4
D2-4	1.7x1.7	62 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	62 m	4
D4-4	1.7x1.7	62 m	4
D4-5	2-1.7x1.7	1.5 m	2
D5-1	2-1.7x1.7	3 m x 12 m	1
D6-1	1.7x1.7	125 m	3
D6-2	1.7x1.7	125 m	3
D6-3	1.7x1.7	62 m	4
D6-4	1.7x1.7	62 m	4
D6-5	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

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



1 INPLACE (R & S)
- 10.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- JUNCTION BOX
- 2-53 mm R.S.C. RISERS AND WEATHERHEADS
- 2-TYPE 10A BRACKETING-WOOD POLE MOUNTED

INPLACE (S & R)
- LUMINAIRE-200 WATT H.P.S. AND MAST ARM
- PEC AND CHECK SWITCH
- 2-ONE WAY SIGNALS-WOOD POLE MOUNTED

F & I
- 13.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- 2-TYPE 10B BRACKETING-WOOD POLE MOUNTED
- 2-PEDESTRIAN INDICATIONS
- 2-PEDESTRIAN PUSH BUTTONS, R10-4b SIGNS AND RISERS (BELOW JUNCTION BOX)
- 300 mm RLTA-YLTA-GLTA LENSES (FOR SIGNAL FACE 3-2)
- METAL JUNCTION BOX
- 53 mm R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX
- 2-12/c#12
- EXTEND INTO H.H.21:
- 53 mm R.S.C. RISER BELOW JUNCTION BOX
- 2-12/c#12
- 1-3/c#12
- 103 mm R.S.C. RISER AND WEATHERHEAD
- 6-12/c#12
- 3-3/c#12
- 4-3/c#12 (LUM)
- 27 mm R.S.C. RISER ABOVE SPAN WIRE
- 1-3/c#12 (LUM)

2 INPLACE (R & S)
- 10.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- JUNCTION BOX
- 53 mm R.S.C. RISER AND WEATHERHEAD
- 2-TYPE 10A BRACKETING-WOOD POLE MOUNTED

INPLACE (S & R)
- 2-ONE WAY SIGNALS-WOOD POLE MOUNTED

F & I
- 13.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- LUMINAIRE-200 WATT H.P.S. AND 4.6 m MAST ARM
- 2-TYPE 10B BRACKETING-WOOD POLE MOUNTED
- 2-PEDESTRIAN INDICATIONS
- 2-PEDESTRIAN PUSH BUTTONS, R10-4b SIGNS AND RISERS (BELOW JUNCTION BOX)
- 300 mm RLTA-YLTA-GLTA LENSES (FOR SIGNAL FACE 5-2)
- METAL JUNCTION BOX
- 78 mm R.S.C. RISER AND WEATHERHEAD (ABOVE JUNCTION BOX)
- 3-12/c#12
- 1-3/c#12
- 27 mm R.S.C. RISER ABOVE SPAN WIRE
- 1-3/c#12 (LUM)

A
- S & R - CONTROLLER AND CABINET
- REMOVE - CABINET FOUNDATION

F & I
- CABINET FOUNDATION
- EXTEND INTO H.H.22:
- METERED SIGNAL SERVICE
- 53 mm R.S.C.
- 3-1/c#6
- EXTEND INTO H.H.21:
- 103 mm R.S.C.
- 8-12/c#12
- 4-3/c#12
- EXTEND INTO H.H.1:
- 103 mm R.S.C.
- 12-2/c#14
- 1-#8 Pr.#19-INPLACE
- EXTEND INTO H.H.20:
- 103 mm R.S.C.
- 12-2/c#14

4 INPLACE (R & S)
- 10.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- JUNCTION BOX
- 53 mm R.S.C. RISER AND WEATHERHEAD
- 2-TYPE 10A BRACKETING-WOOD POLE MOUNTED

INPLACE (S & R)
- 2-ONE WAY SIGNALS-WOOD POLE MOUNTED

F & I
- 13.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- LUMINAIRE-200 WATT H.P.S. AND MAST ARM
- 2-TYPE 10B BRACKETING-WOOD POLE MOUNTED
- 2-PEDESTRIAN INDICATIONS
- 2-PEDESTRIAN PUSH BUTTONS, R10-4b SIGNS AND RISERS (BELOW JUNCTION BOX)
- 300 mm RLTA-YLTA-GLTA LENSES (FOR SIGNAL FACE 1-2)
- METAL JUNCTION BOX
- 78 mm R.S.C. RISER AND WEATHERHEAD (ABOVE JUNCTION BOX)
- 3-12/c#12
- 1-3/c#12
- 27 mm R.S.C. RISER ABOVE SPAN WIRE
- 1-3/c#12 (LUM)

B INPLACE
- SERVICE CABINET
- CABINET FOUNDATION
- EXTENDED INTO H.H.22:
- METERED SIGNAL SERVICE
- 35 mm R.S.C.
- UNMETERED STREET LIGHT SERVICE
- 35 mm R.S.C.

F & I
- 3-1/c#6
- 4-3/c#12 (LUM)

INPLACE
- 53 mm R.S.C. STUB OUT (FOR SERVICE BY AEC)

F & I
- BETWEEN H.H.21 AND H.H.22:
- 53 mm R.S.C.
- 4-3/c#12 (LUM)

3 INPLACE (R & S)
- 10.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- JUNCTION BOX
- 53 mm R.S.C. RISER AND WEATHERHEAD
- 2-TYPE 10A BRACKETING-WOOD POLE MOUNTED

INPLACE (S & R)
- LUMINAIRE-200 WATT H.P.S. AND MAST ARM
- 2-ONE WAY SIGNALS-WOOD POLE MOUNTED

F & I
- 13.7 m WOOD POLE - CLASS 2
- 2-DOWN GUYS, GUARDS AND ANCHORS
- 2-TYPE 10B BRACKETING-WOOD POLE MOUNTED
- 2-PEDESTRIAN INDICATIONS
- 2-PEDESTRIAN PUSH BUTTONS, R10-4b SIGNS AND RISERS (BELOW JUNCTION BOX)
- 300 mm RLTA-YLTA-GLTA LENSES (FOR SIGNAL FACE 7-2)
- METAL JUNCTION BOX
- 53 mm R.S.C. RISER AND WEATHERHEAD (ABOVE JUNCTION BOX)
- 2-12/c#12
- 1-3/c#12
- 27 mm R.S.C. RISER ABOVE SPAN WIRE
- 1-3/c#12 (LUM)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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

SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 300 mm. 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

SIGNAL FACE ACTIONS:
1) INSTALL COUNTY FURNISHED SIGNAL FACE.
2) SALVAGE AND REINSTALL.
3) SALVAGE AND REINSTALL SIGNAL FACE, F & I NEW RLTA-YLTA-GLTA LENSES.

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
DATE 3/15/99
142 / 230

CONTROLLER AND CABINET

1
RED 6-1
YEL 6-1
GRN 6-1
NEU 6-1, P8-2
WLK P6-2
DWK P8-2
SPR
NEU 6-2
RED 6-2
YEL 6-2
GRN 6-2
EQG

2
RLTA 3-2
YLTA 3-2
GLTA 3-2
NEU 3-2, 3-1
RLTA 3-1
YLTA 3-1
GLTA 3-1
NEU P4-1
WLK P4-1
DWK P4-1
SPR
EQG

3
RLTA 1-2
YLTA 1-2
GLTA 1-2
NEU 1-2, 1-1
RLTA 1-1
YLTA 1-1
GLTA 1-1
NEU P2-1
WLK P2-1
DWK P2-1
SPR
EQG

4
RED 4-1
YEL 4-1
GRN 4-1
NEU 4-1, P4-2
WLK P4-2
DWK P4-2
SPR
NEU 4-2
RED 4-2
YEL 4-2
GRN 4-2
EQG

5
RLTA 7-2
YLTA 7-2
GLTA 7-2
NEU 7-2, 7-1
RLTA 7-1
YLTA 7-1
GLTA 7-1
NEU P8-1
WLK P8-1
DWK P8-1
SPR
EQG

6
RED 8-1
YEL 8-1
GRN 8-1
NEU 8-1, P8-2
WLK P8-2
DWK P8-2
SPR
NEU 8-2
RED 8-2
YEL 8-2
GRN 8-2
EQG

7
RLTA 5-2
YLTA 5-2
GLTA 5-2
NEU 5-2, 5-1
RLTA 5-1
YLTA 5-1
GLTA 5-1
NEU P8-1
WLK P8-1
DWK P8-1
SPR
EQG

2-1 RED
2-1 YEL
2-1 GRN
P2-2, 2-1 NEU
P2-2 WLK
P2-2 DWK
SPR
2-2 NEU
2-2 RED
2-2 YEL
2-2 GRN
EQG
8

PB6-2
NEU
PB4-1
9

PB2-1
NEU
PB4-2
10

PB6-1
NEU
PB8-2
11

PB2-2
NEU
PB8-1
12

D1-1 13
D2-1 14
D2-2 15
D2-3 16
D2-4 17
D2-5 20
D3-1 21
D4-1 22
D4-2 23
D4-3 24
D4-4 25
D4-5 26
D5-1 27
D6-1 28
D6-2 29
D6-3 30
D6-4 31
D6-5 32
D7-1 33
D8-1 34
D8-2 35
D8-3 36
D8-4 37
D8-5 38
SIGNAL SERVICE 18
INTERCONNECT TO PUBLIC WORKS SHOP 43
INTERCONNECT TO JAY STREET (SYSTEM "E") 94▲

13,22,23,24,25, 26,28,29,30, 31,32,33,43 → H.H.1 (28) → D4-5
13,28,29,30, 31,32,33,43 → H.H.4 (33) → D7-1
22,23,24,25 → H.H.2 (24, 25) → D4-3, D4-4
22,23 → H.H.3 (22, 23) → D4-1, D4-2
13,28,29,30, 31,32,43 → H.H.5
13,28,29,30, 31,32,43 → H.H.6 (32) → D6-5
13,43 → 28,29,30,31 → H.H.7 (30, 31) → D8-3, D8-4
28,29 → H.H.8 (28, 29) → D8-1, D8-2
28,28,30,31 → H.H.9 (13) → D1-1
43 → H.H.10
43 → INTERCONNECT TO PUBLIC WORKS SHOP
H.H.13 (34, 35) → D8-1, D8-2

14,15,16,17, 20,21,27,34, 35,36,37,38, 94▲ → H.H.20
94▲
94▲ → INTERCONNECT TO JAY STREET (SYSTEM "E")
14,15,16,17, 20,21,27,34, 35,36,37,38 → H.H.19 (27) → D5-1
14,15,16,17,20, 21,34,35,36,37,38 → H.H.16 (20) → D2-5
14,15,16,17 → H.H.17 (16, 17) → D2-3, D2-4
14,15, 16,17 → H.H.18 (14, 15) → D2-1, D2-2
21,34,35, 36,37,38 → H.H.15
21,34,35, 36,37,38 → H.H.14 (21) → D3-1
34,35,36,37,38 → H.H.11 (38) → D8-5
34,35,36,37 → H.H.12 (36, 37) → D8-3, D8-4
34,35

SERVICE CABINET

H.H.22
18 → 18,39, 40,41, 42
39 LUMINAIRE 1
40 LUMINAIRE 2
41 LUMINAIRE 3
42 LUMINAIRE 4
18 SIGNAL SERVICE
19 (INPLACE) SIGNALS NEUTRAL LIGHTING → S.O.P.
(FOR SERVICE BY AEC)

H.H.21
39,40, 41,42 → 1,2,3,4,5,6,7, 8,9,10,11,12,18

LUMINAIRE 1
39
PB6-2 PB4-1 9
6-1 P8-2
1,2,9 → W.P.1
P4-1 3-2
1,3,4,5,10,42 → 2,6,7,8,11,12,40,41
3-1 2 → 6,7,8,11, 12,40,41
8-2 6 → 6

LUMINAIRE 2
40
8-1 P8-2 6
PB6-1 PB8-2 11
6,7,8,11, 12,40,41 → W.P.2
P6-1 5-2 7
7,8,12,41
5-1 7 → 8,12,41
2-2 8 → 8

LUMINAIRE 3
41
2-1 P2-2 8
PB2-2 PB8-1 12
8,12,41 → W.P.3
P8-1 7-2 5 → 5

LUMINAIRE 4
42
P4-2 4-1 4
3,4,5,10,42 → W.P.4
1-2 P2-1 3
PB2-1 PB4-2 10
3,4,5,10,42
1-1 3 → 3
6-2 1 → 1,3,4,5,10,42
4-2 4 → 4,5
7-1 5 → 5

CONDUCTOR COLOR CODING

12/c#12: R, O, BL, WH, R/BLK, O/BLK, BL/BLK, WH/BLK, BLK, BLK/WH, G/BLK, G

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

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.

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

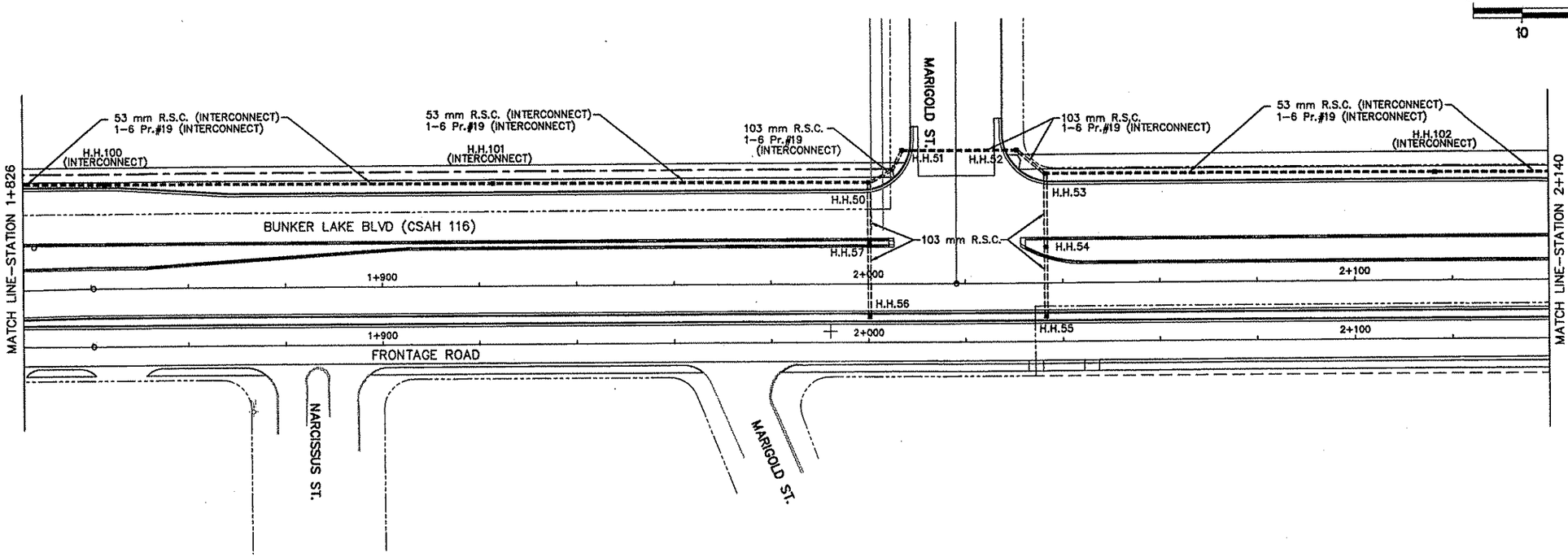
ESEH

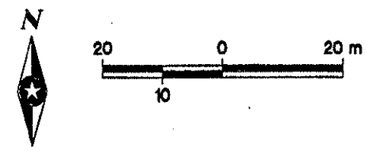
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

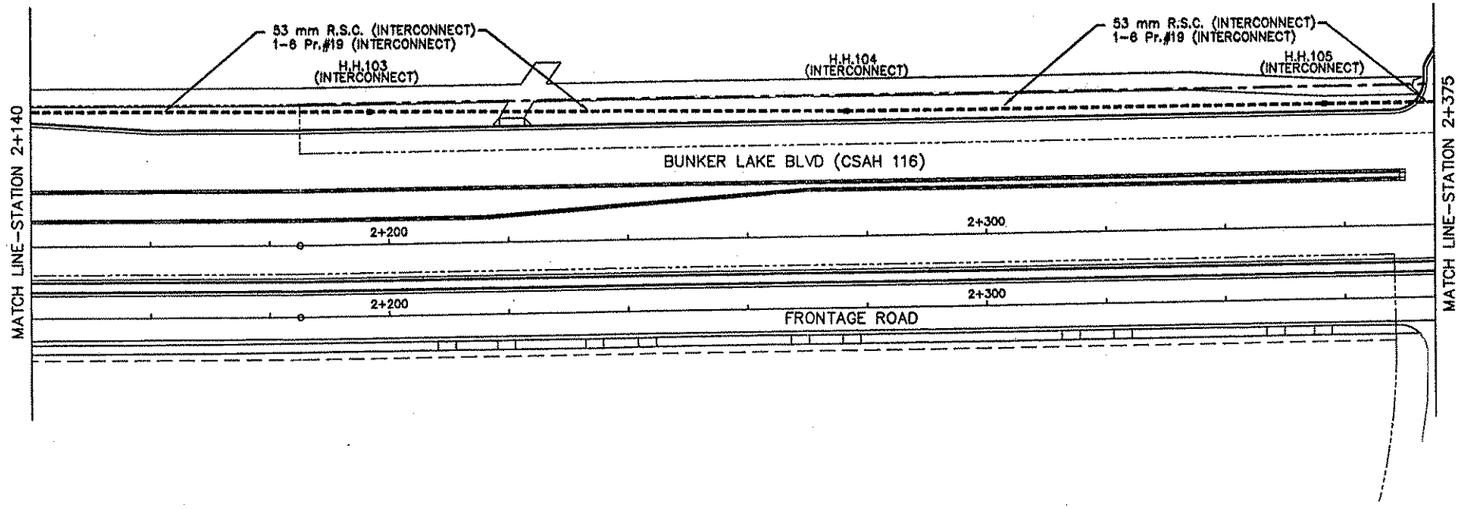
INPLACE SIGNAL SYSTEM "F"
TRAFFIC SIGNAL INTERCONNECT
BUNKER LAKE BLVD. (CSAH 116) AT HANSON BLVD (CSAH 78)

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

143/230







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

SEH

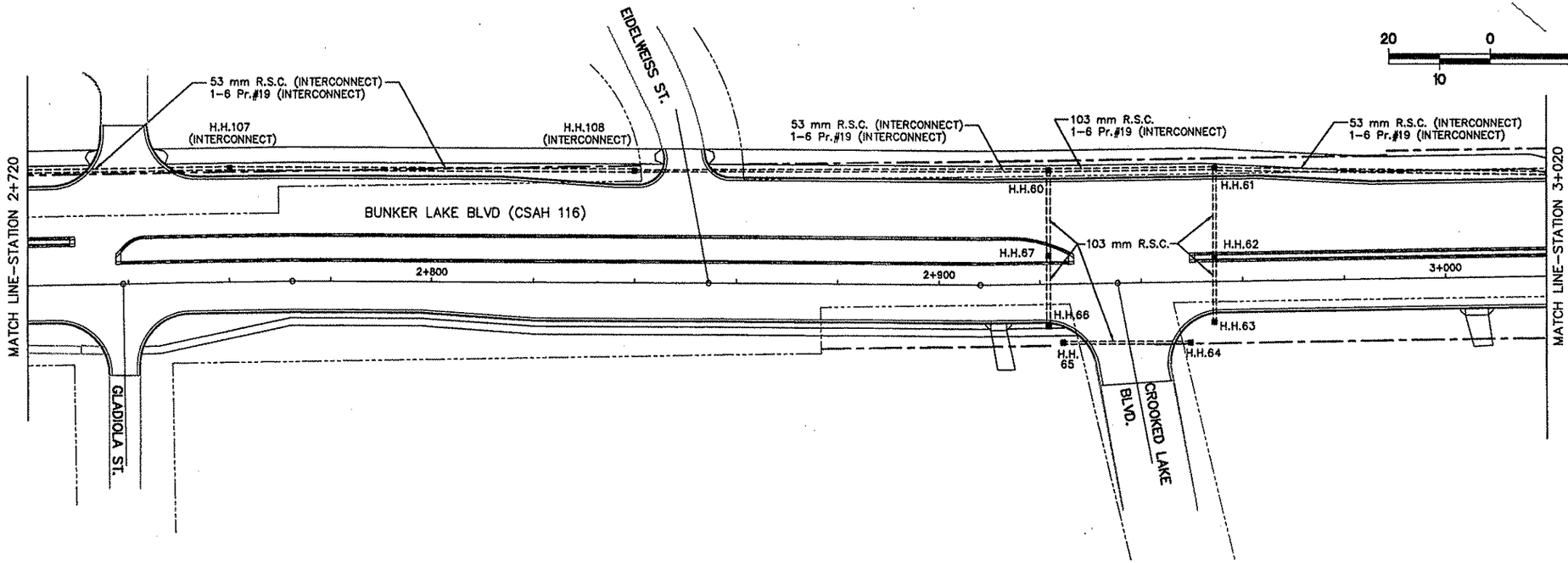
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

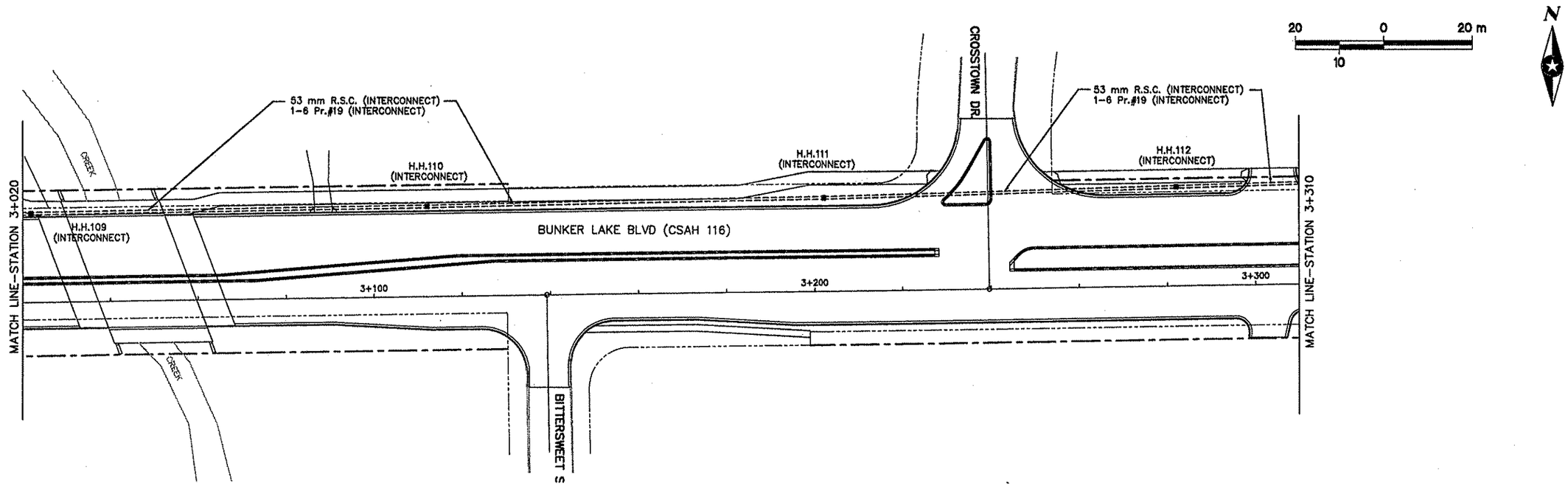
TRAFFIC SIGNAL INTERCONNECT
STA. 1+826 TO 2+375

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

144/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TR1.DWG 03-15-99 2:10PM





NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

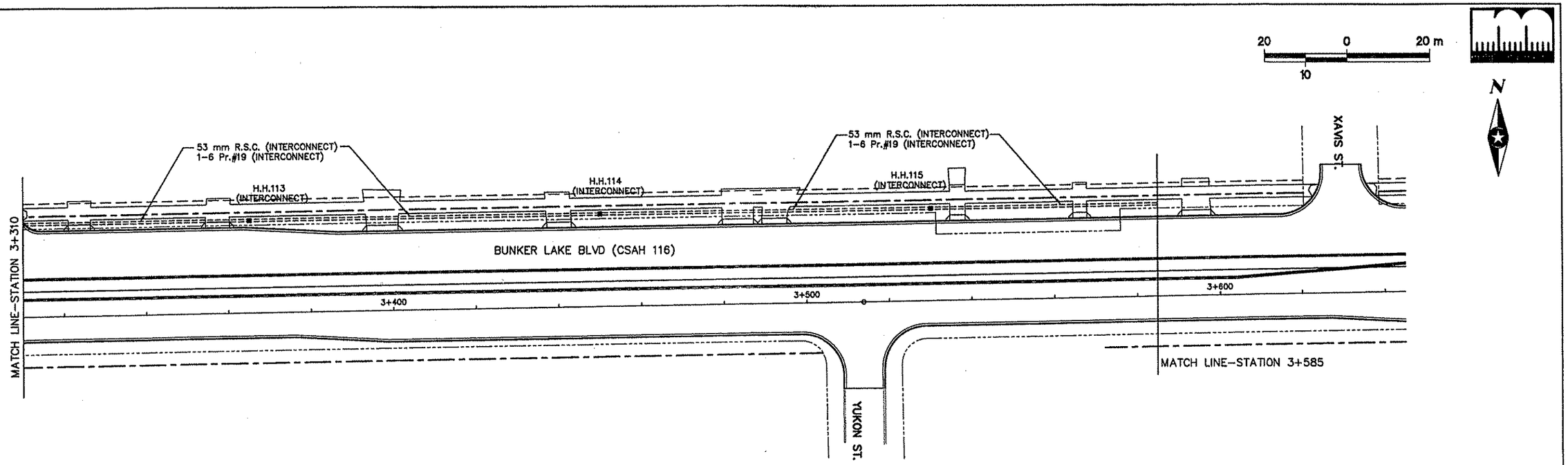
I hereby certify that this plan was prepared by me or under my direct supervision and that I am duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 22457

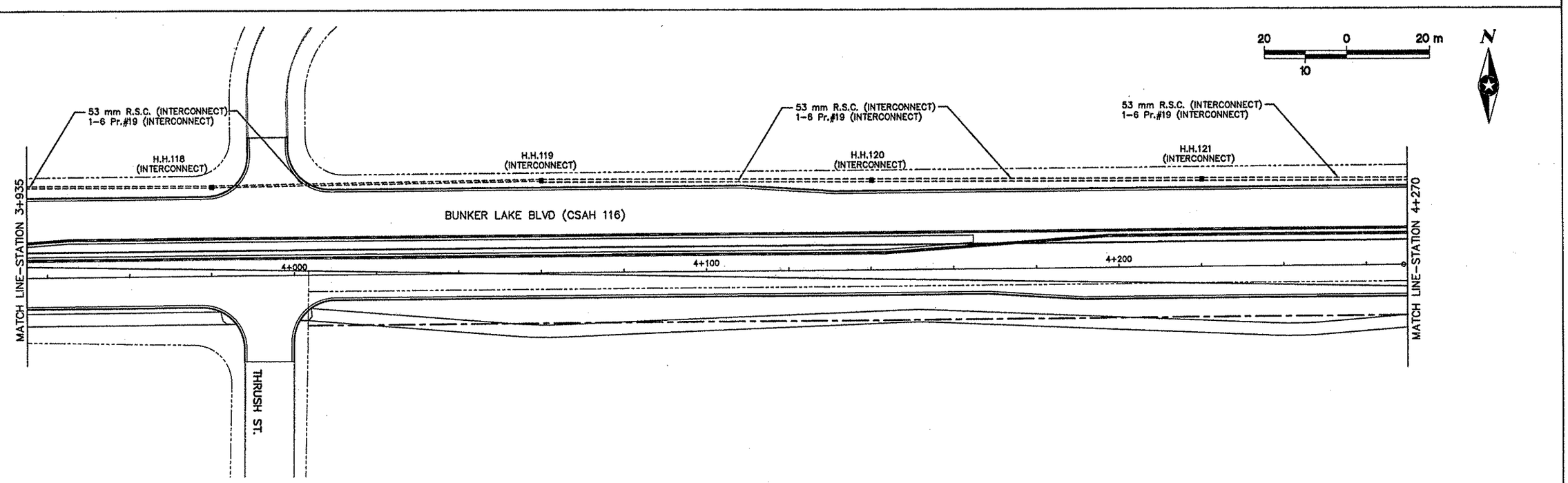
SEH

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
DATE 3/15/99
145 / 230





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

SEH

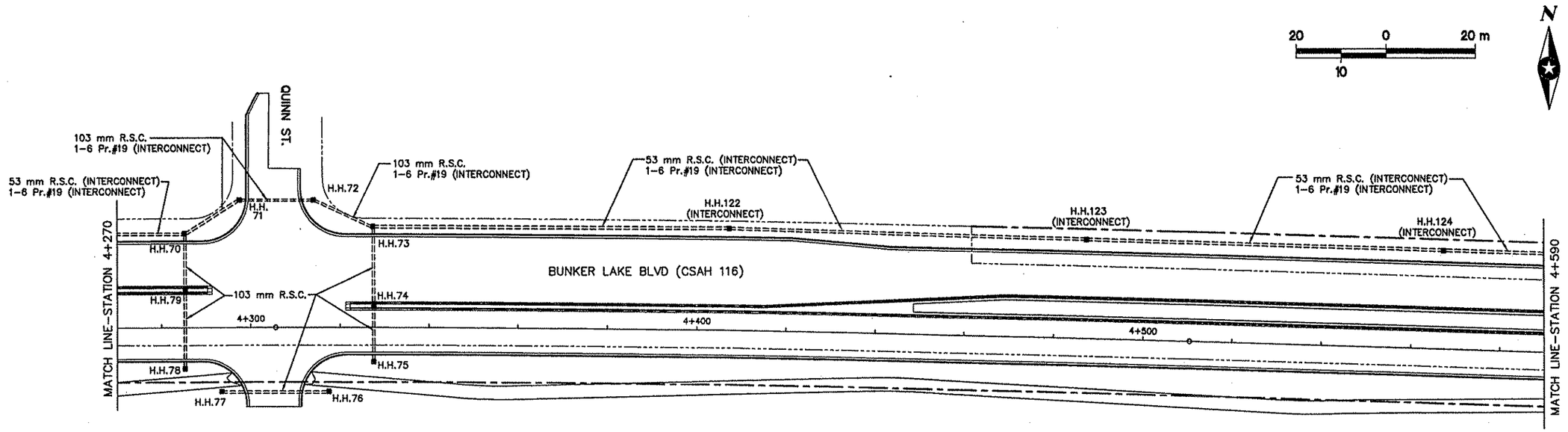
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04 & 198-020-14

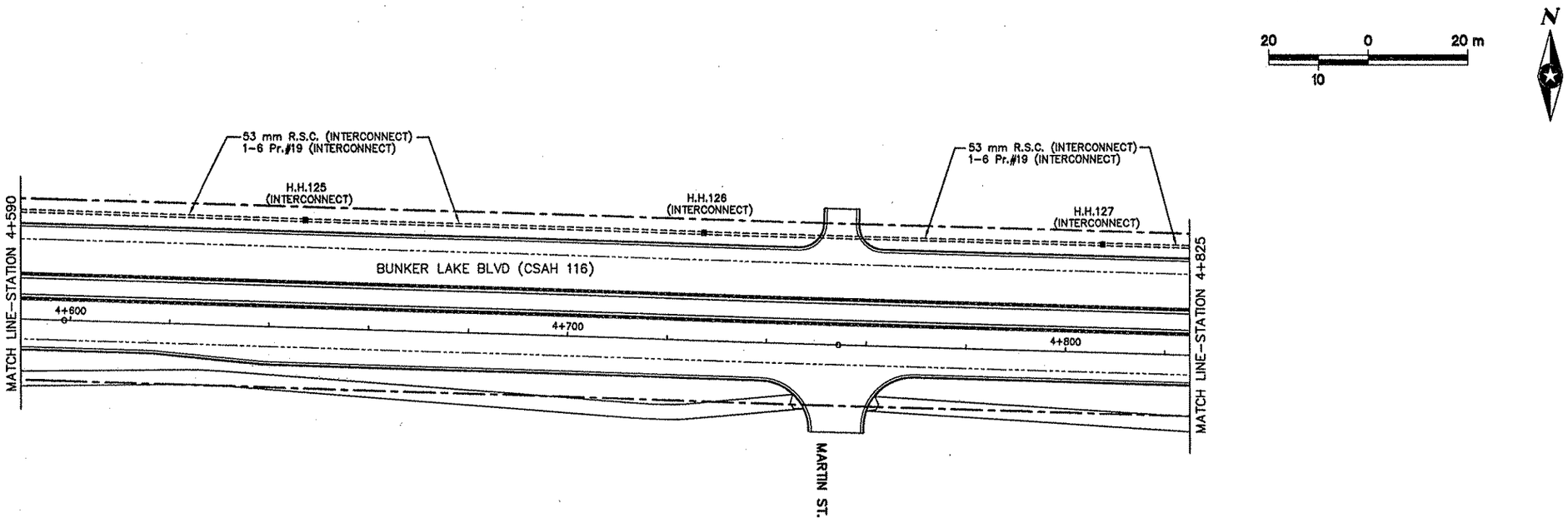
TRAFFIC SIGNAL INTERCONNECT
STA. 3+310 TO 3+585
STA. 3+935 TO 4+270

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

146
230

C: \CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TR3.DWG 03-15-99 2:25PM





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

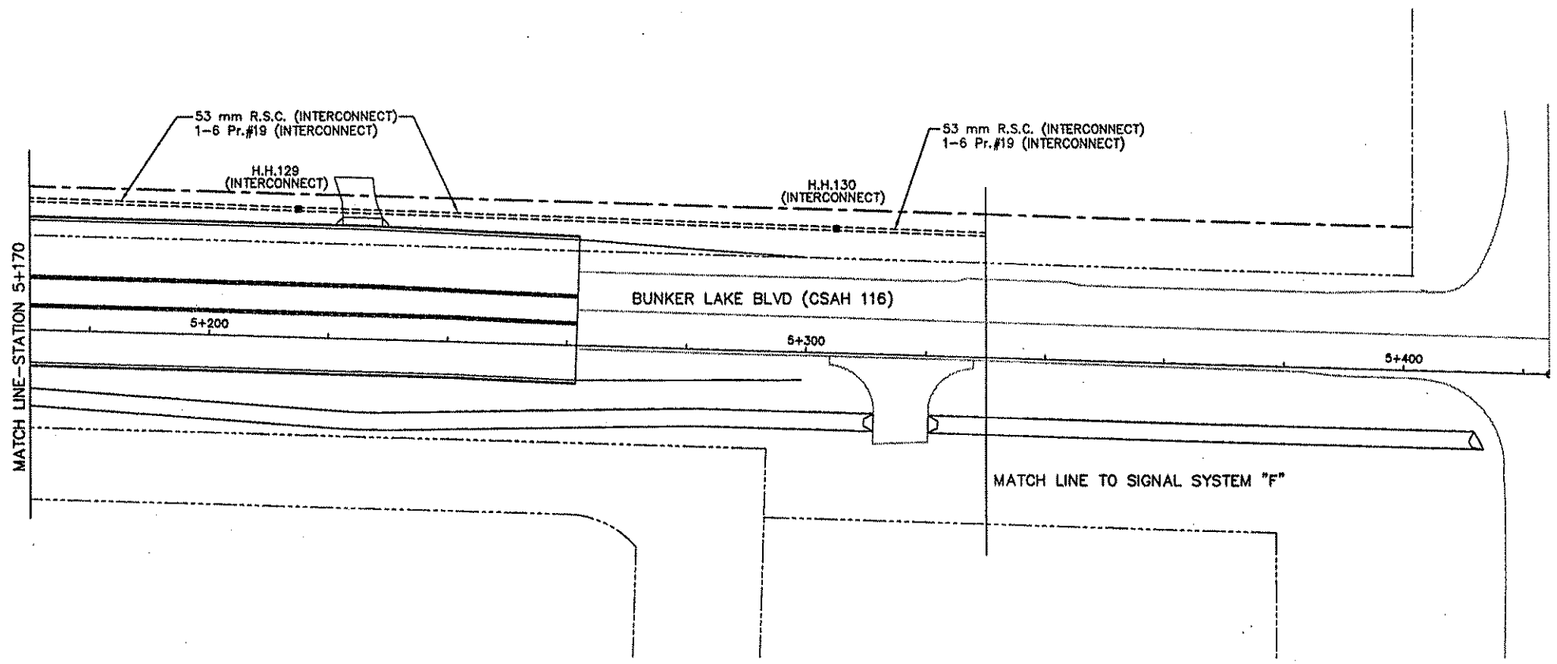
TRAFFIC SIGNAL INTERCONNECT
STA. 4+270 TO 4+825

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

147/230

20 0 20 m
10

N



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

ESEH

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
DATE 3/15/99

148/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\EP\AK806TR5.DWG 03-15-99 2:30PM

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 10B–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–X5L SIGN PANEL (30"x36")–ADJACENT TO (1–1)

INSTALL – 2"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX (INPLACE ON WOOD POLE)

F & I – 1–12/c#12

INSTALL — 2"R.S.C. RISER BELOW JUNCTION BOX (INPLACE ON WOOD POLE) AND EXTEND INTO H.H.16:

F & I — 2–12/c#12; 1–3/c#12

INSTALL — 3"R.S.C. RISER AND WEATHERHEAD (INPLACE ON WOOD POLE) AND EXTEND INTO H.H.1:

F & I — 4–12/c#12; 3–3/c#12

INSTALL — 3"R.S.C. RISER AND WEATHERHEAD (INPLACE ON WOOD POLE) AND EXTEND INTO H.H.16:

F & I — 2–12/c#12; 2–3/c#12; 4–1/c#10

② INSTALL (FURNISHED BY COUNTY) — 45' WOOD POLE – CLASS 2; 2–TYPE 10B–WOOD POLE MOUNTED; 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

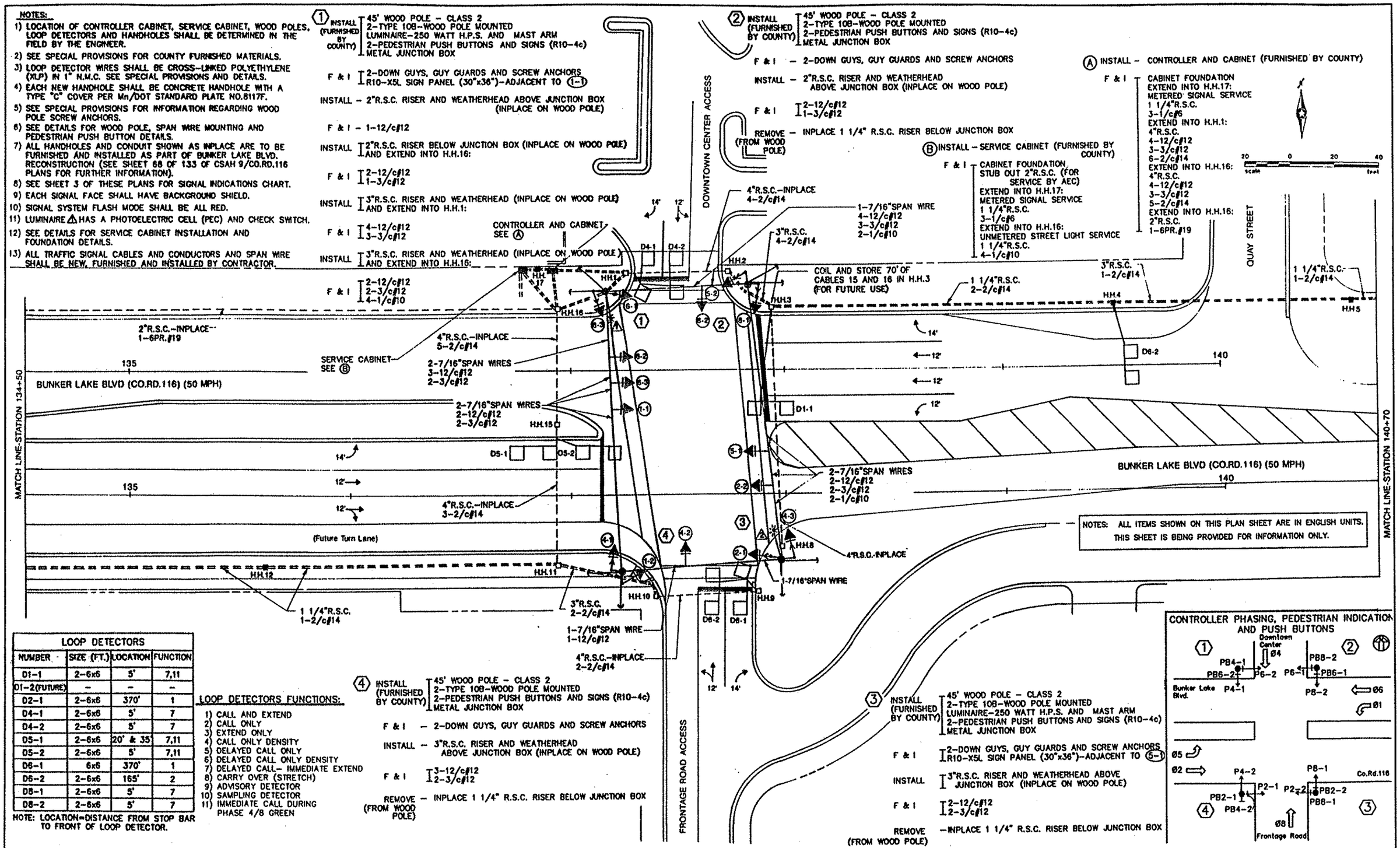
REMOVE – INPLACE 1 1/4" R.S.C. RISER BELOW JUNCTION BOX (FROM WOOD POLE)

Ⓐ 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

Ⓑ 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



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

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) IMMEDIATE CALL DURING PHASE 4/8 GREEN

④ INSTALL (FURNISHED BY COUNTY) — 45' WOOD POLE – CLASS 2; 2–TYPE 10B–WOOD POLE MOUNTED; 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 10B–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–X5L 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

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

CONTROLLER PHASING, PEDESTRIAN INDICATION AND PUSH BUTTONS

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.

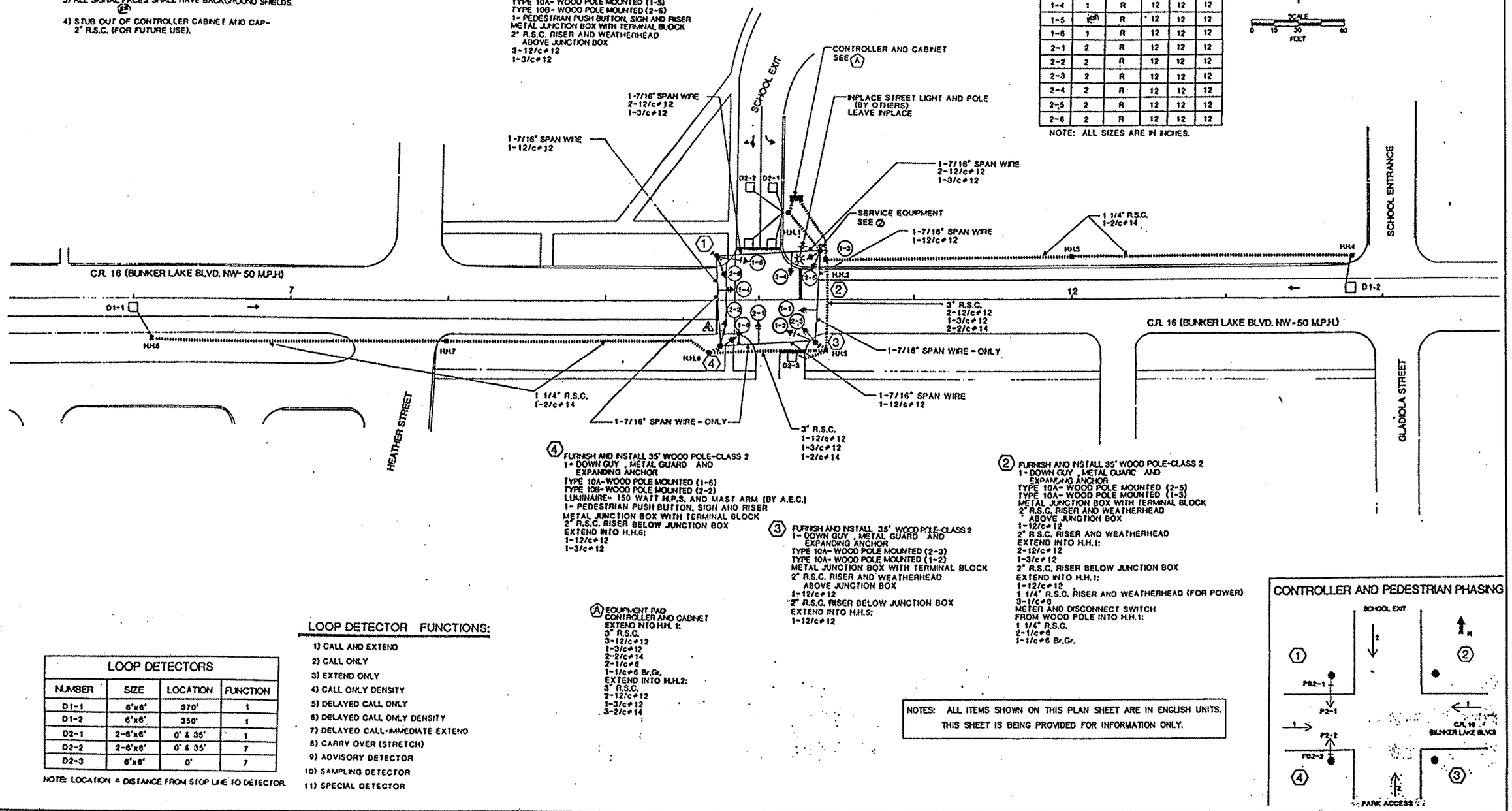
3) ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.

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.

SCALE
0 15 30 60
FEET



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.

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

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

CONTROLLER AND PEDESTRIAN PHASING

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 "C"
FOR INFORMATION ONLY
BUNKER LAKE BLVD. (CSAH 116)
AT CROOKED LAKE SCHOOL ENTRANCE

FILE NO. ANOKC9806.01
DATE 3/15/99
150/230

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'

LOCATION-DISTANCE FROM STOP LINE TO DETECTOR

FUNCTIONS:
1 - CALL AND EXTEND
2 - CALL ONLY
3 - EXTEND ONLY
4 - CALL ONLY DENS
5 - DLY CALL ONLY
6 - DLY CALL ONLY DENSITY
7 - DLY CALL IMMED EXTEND
8 - CARRY OVER
9 - ADVISORY
10 - CALL DURING O 2 YELLOW
11 - CALL DURING O 6 YELLOW

NOTES:
1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
3) EACH LUMINAIRE SHALL HAVE A PEC AND CHECK SWITCH.
4) SEE SHEET NO. 5 AND SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
6) SEE SPECIAL PROVISIONS FOR HANDHOLE TYPE.
7) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
8) ALL PEDESTRIAN INDICATIONS SHALL BE 12" X 12".
9) 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.
10) ALL VEHICLE SIGNAL INDICATIONS SHALL USE GLASS LENSES.
11) PED RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN ALL QUADRENTS, AS SHOWN ON THE PLAN, AND SHALL BE CONSIDERED INCIDENTAL TO THE SIGNAL SYSTEM CONSTRUCTION.

(4) 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
3-12/C #12
5-3/C #12
1-3/C #12 (LUM)
3" RSC RISER AND WEATHER HEAD
ABOVE JUNCTION BOX
2-12/C #12
2-3/C #12
1-3/C #12 (LUM)

(1) 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)

(B) 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)

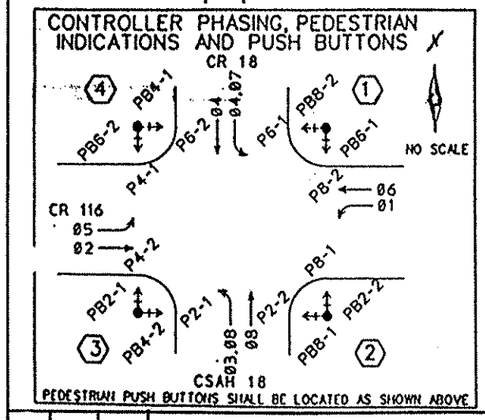
(A) CONTROLLER AND CABINET
CONTROLLER CABINET TO HH 1
4" RSC
8-12/C #12
10-3/C #12
18-2/C #14
CONTROLLER CABINET TO HH 18
1 1/4" RSC
3-1/C #6
STUBOUT 3" RSC FOR FUTURE USE

(3) 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)

(2) INSTALL 45' WOOD POLE
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 0° AND 270°
2-PEDETRIAN PUSH BUTTONS AND SIGNS
METAL JUNCTION BOX
3" RSC RISER BELOW JUNCTION BOX TO HH 6
9-2/C #14
3" RSC RISER AND WEATHER HEAD
ABOVE JUNCTION BOX
1-12/C #12
3-3/C #12
9-2/C #14

S.O.P. INPLACE WOOD POLE
2" RSC RISER AND WEATHERHEAD
3-1/C #6
POLE TO HH 19
2" RSC
3-1/C #6

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

LEGEND
- LIGHT POLE
- FOC FIBER OPTIC CABLE
- PROPOSED HANDHOLE
- EXISTING CONDUIT
- INPLACE WIRES
- INPLACE SIGN
- 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.

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

ESEH

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

INPLACE SIGNAL SYSTEM "D"
FOR INFORMATION ONLY
BUNKER LAKE BLVD. (CSAH 116)
AT CROSSTOWN BLVD. (CSAH 18/CO.RD.18)

FILE NO. ANOKC9806.01
DATE 3/15/99
151/230

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 ②	30 X 30	1-U	STOP
C-102	8 ①	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 ①	12 X 18	1-U	NO PARKING BOAT TRAILERS
C-140	1 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			

① SALVAGE SIGNS TO CITY OF ANDOVER PUBLIC WORKS.
② 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	SIZE (INCHES)	AREA (SQ. FT.)	AREA (TOTAL SQ. FT.)	AREA (TOTAL SQ. M.)	NO. OF POSTS & TYPE	PANEL LEGEND
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		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		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		SCHOOL
	S4-2	2	36 X 15	3.75	7.50	0.70		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		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		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		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		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		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		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		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		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		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		HAZARD MARKER
	R3-4	5	24 X 24	4.00	20.00	1.85		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		ONE WAY (R)
	R6-1L	2	36 X 12	3.00	6.00	0.56		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		STOP
	R3-2	1	24 X 24	4.00	4.00	0.37		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		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		
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS		ITEM

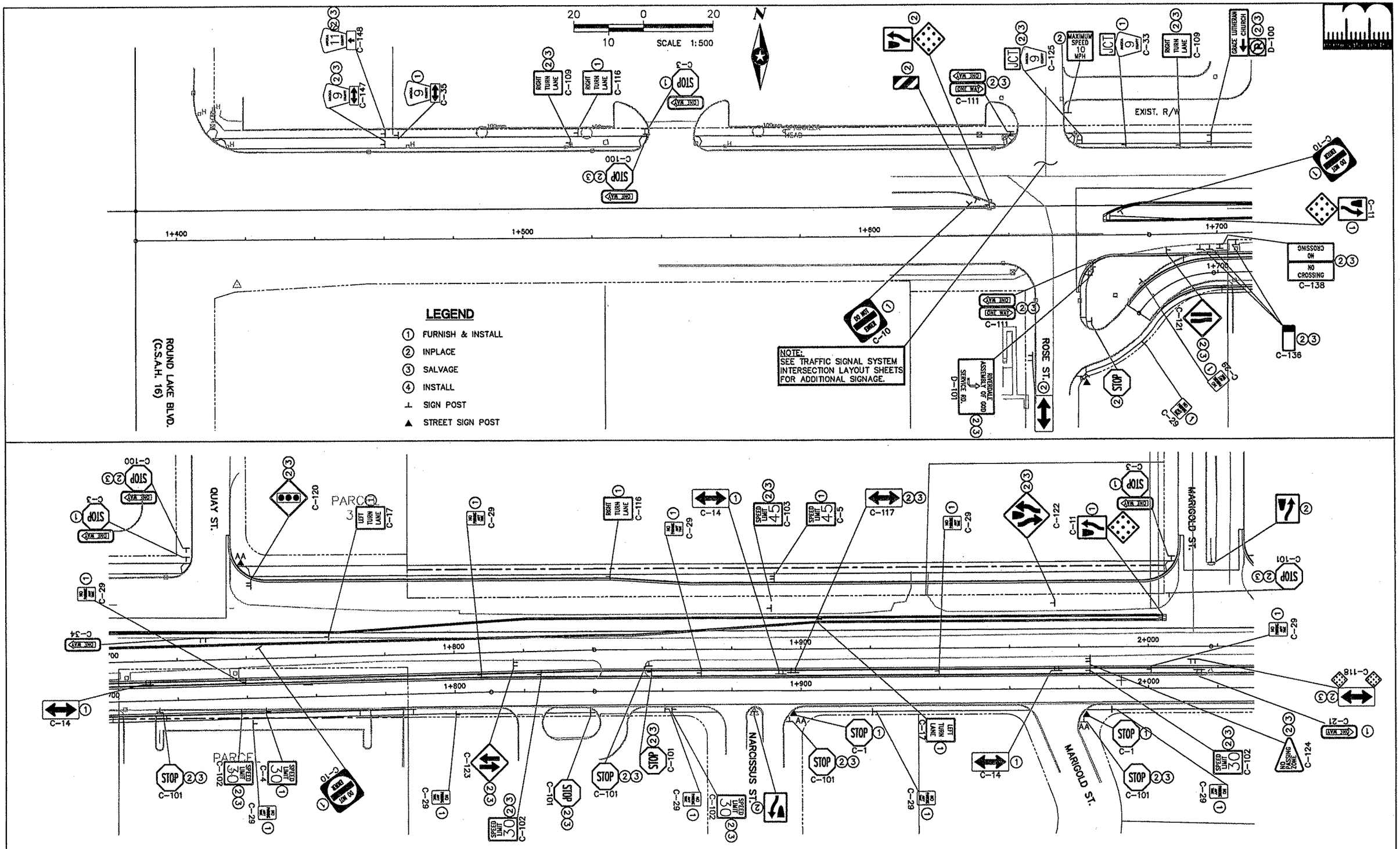
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Pamela Mack
Date: 4/27/99 Reg. No. 25772

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

PERMANENT SIGNING

FILE NO. ANOKC9808.01
DATE 03/15/99
152/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9808\TRANS\AKC9808TB.DWG 03-24-99 4:29 pm cpu90sp



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

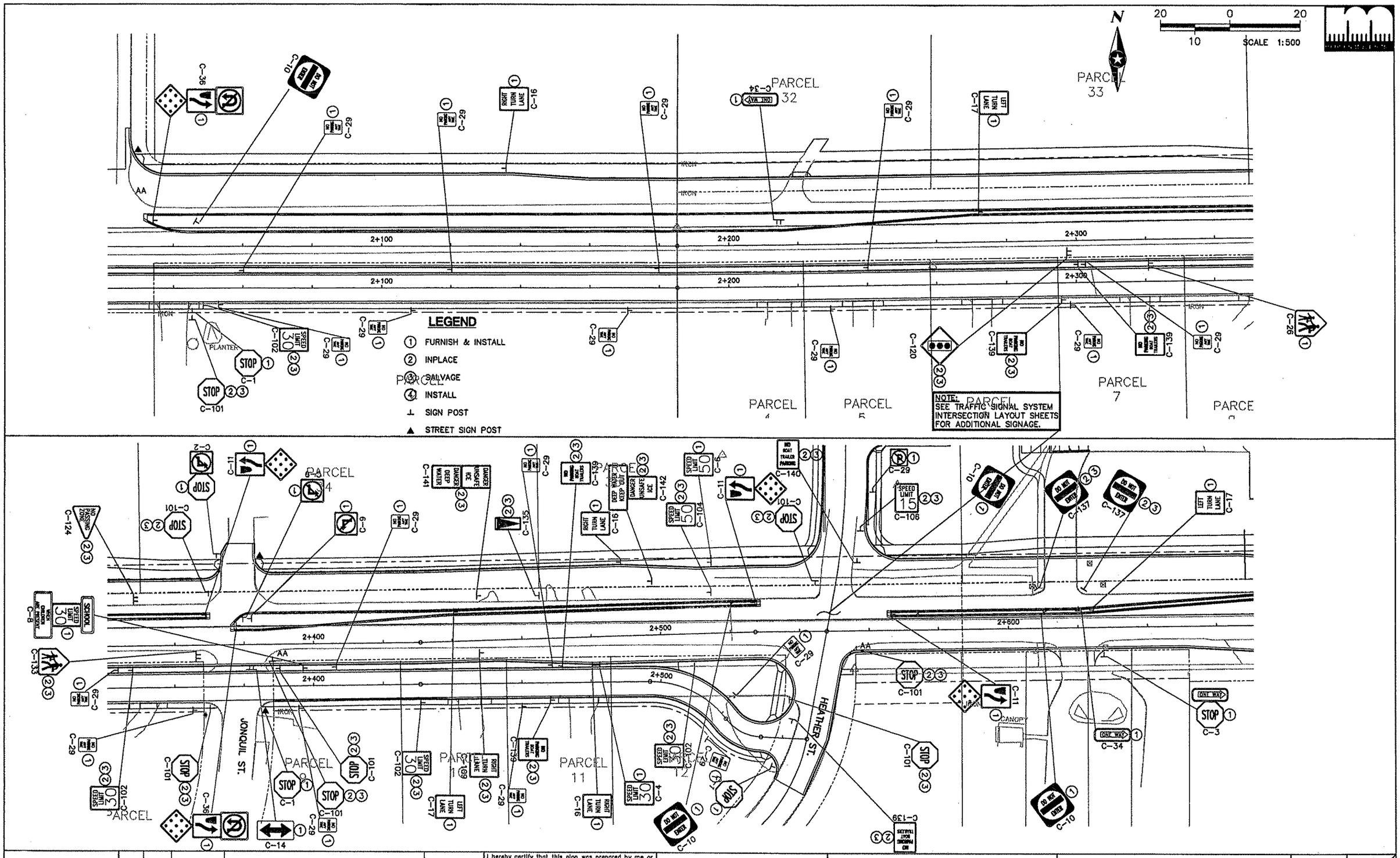
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 4/23/99 Reg. No. 25772

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

PERMANENT SIGNING
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC9806.01
DATE 03/15/99
153 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS1.DWG 03-24-99 4:57 pm



DESIGN	1	PJM	4/12	ADD NO PARKING SIGNS		
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: 4/27/99 Reg. No. 25772

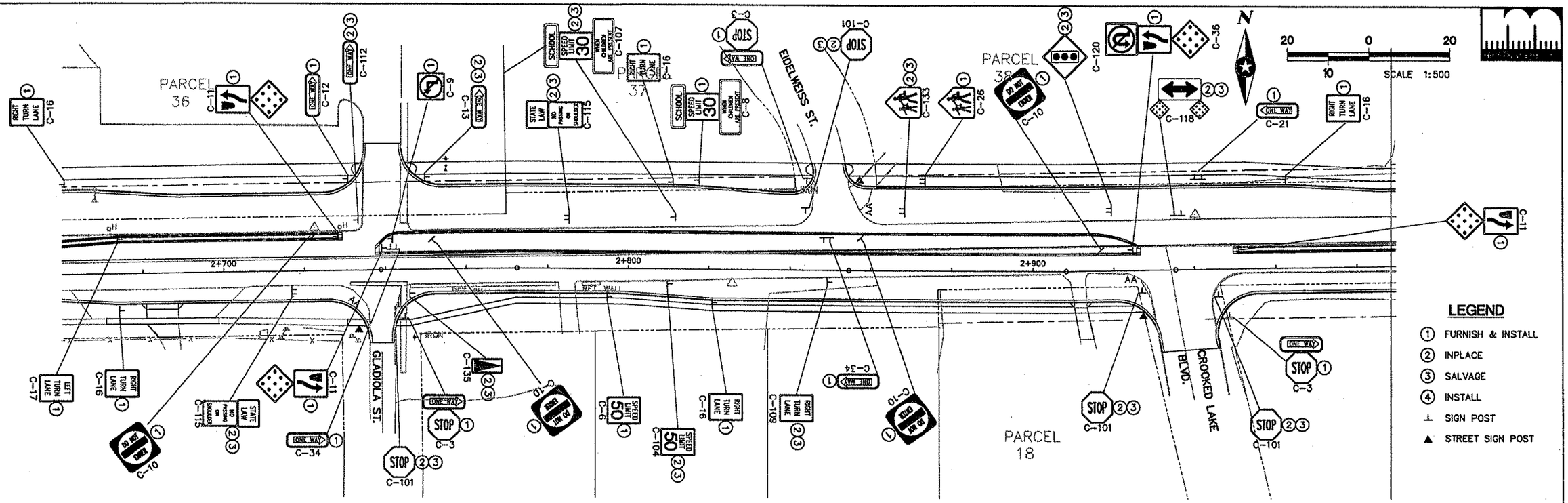
SEH

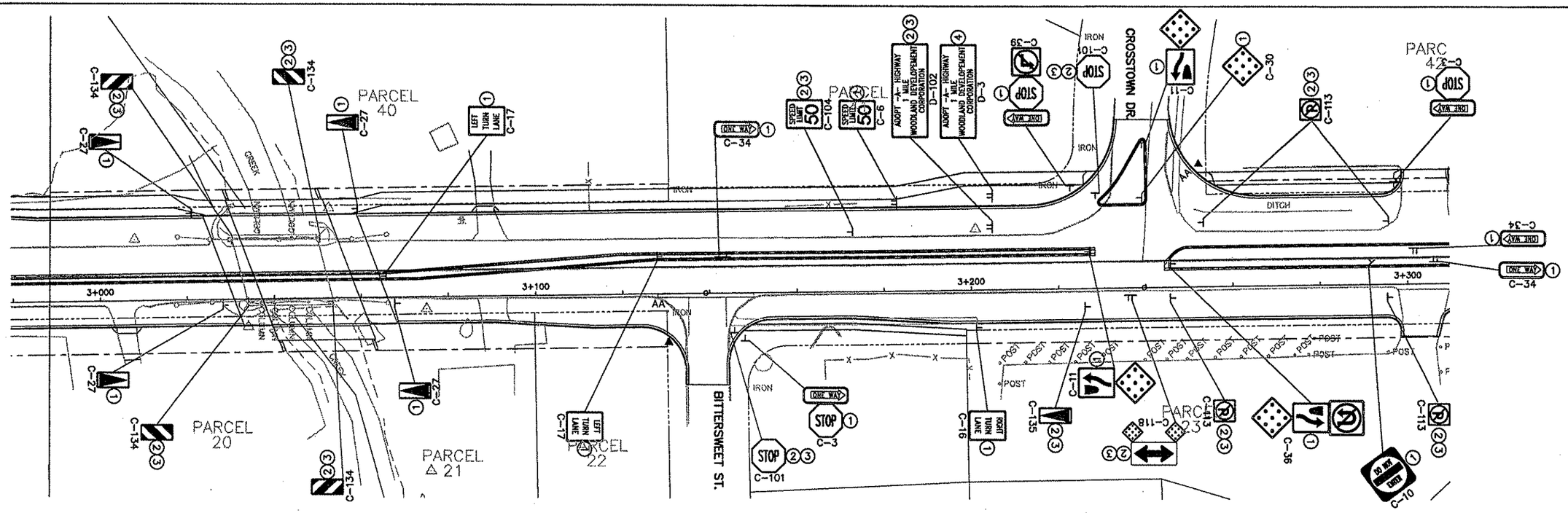
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PERMANENT SIGNING
STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01
DATE 03/15/99
154/230

G:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKCB06PS2.DWG 03-25-99 7:47 am





DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

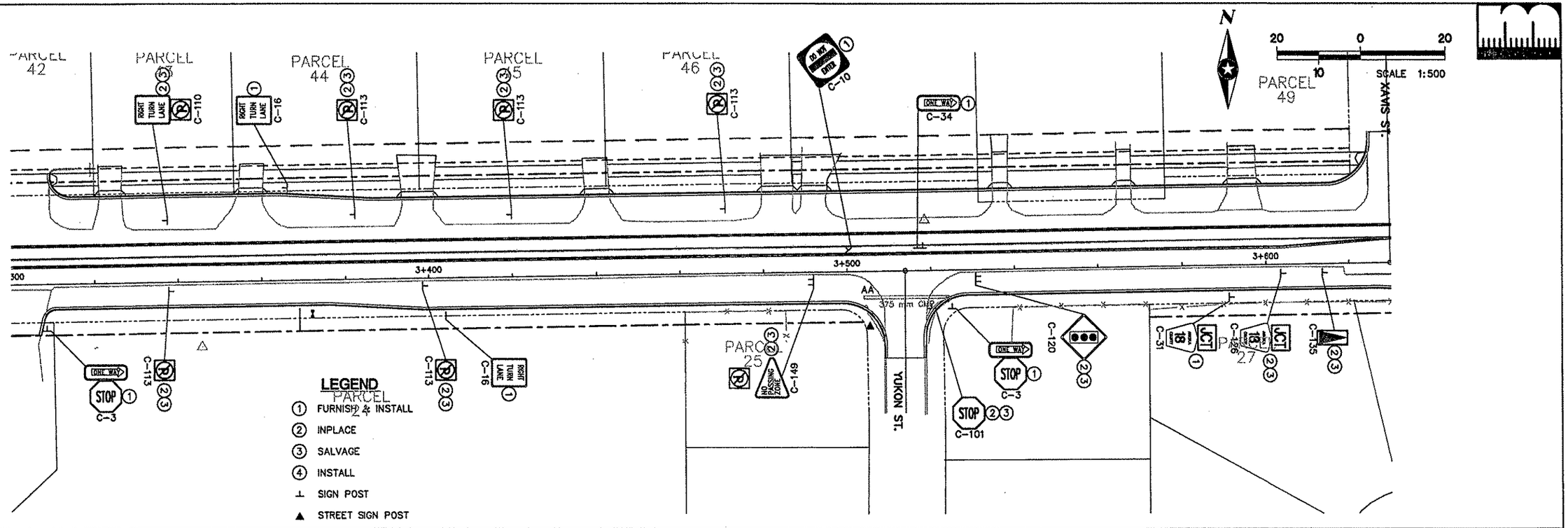
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Pamela Mak
Date: 3/15/99 Reg. No. 25772

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
DATE 03/15/99
155 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS3.DWG 03-25-99 8:00 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.
Pamela Wahl
Date: 3/25/99 Reg. No. 25772

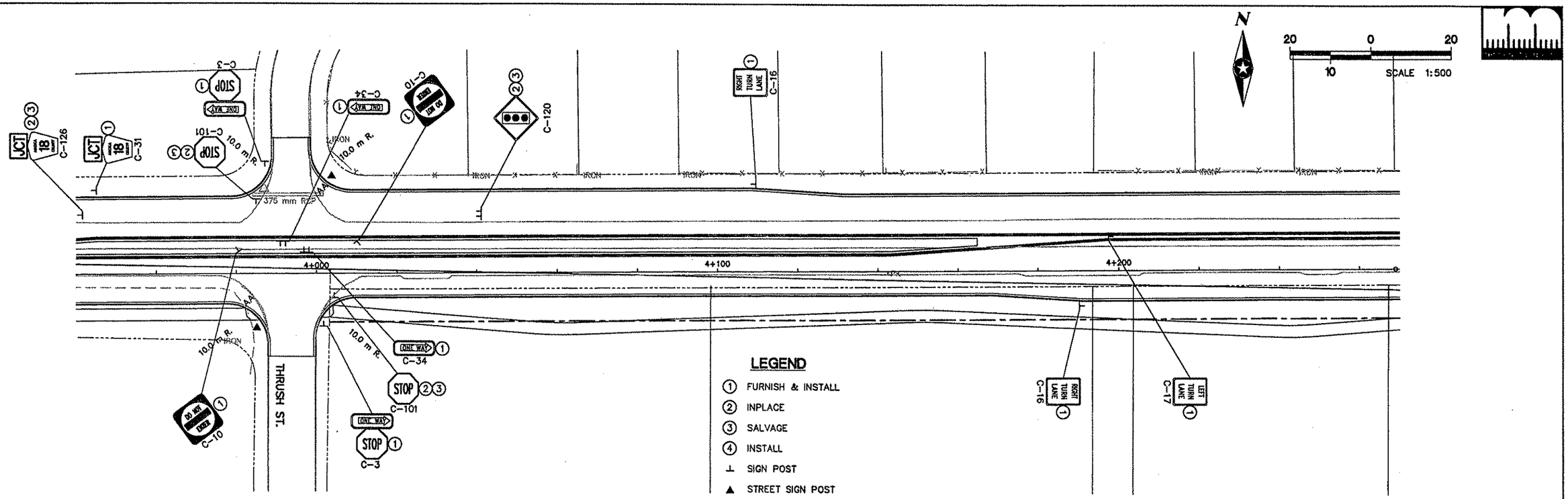
SEH

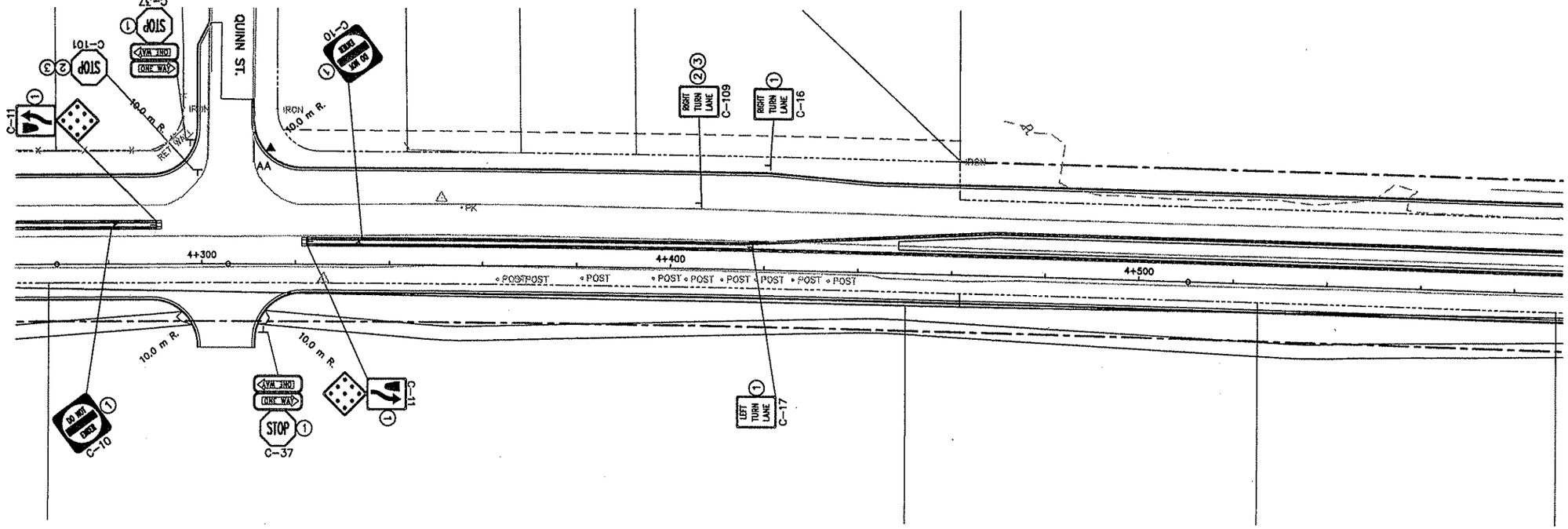
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PERMANENT SIGNING
STA. 3+300.00 TO 3+950.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS4.DWG 03-25-99 8:10 am





DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

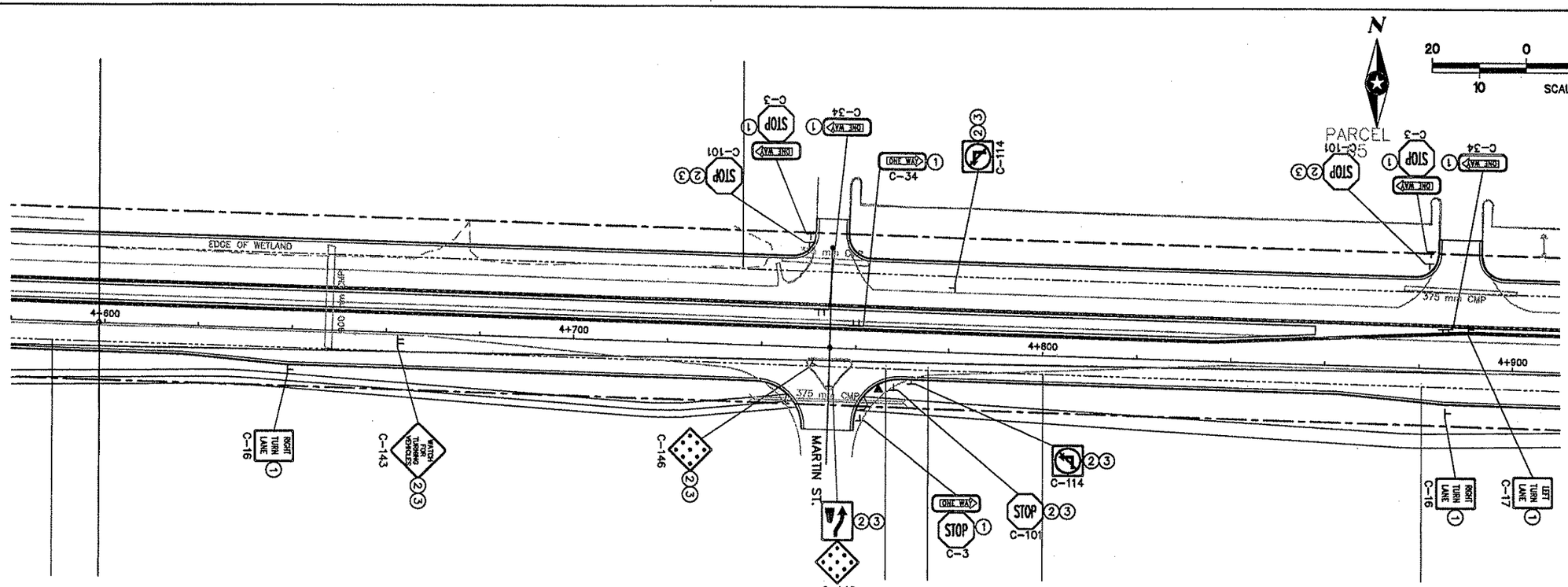
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/25/99 Reg. No. 25772

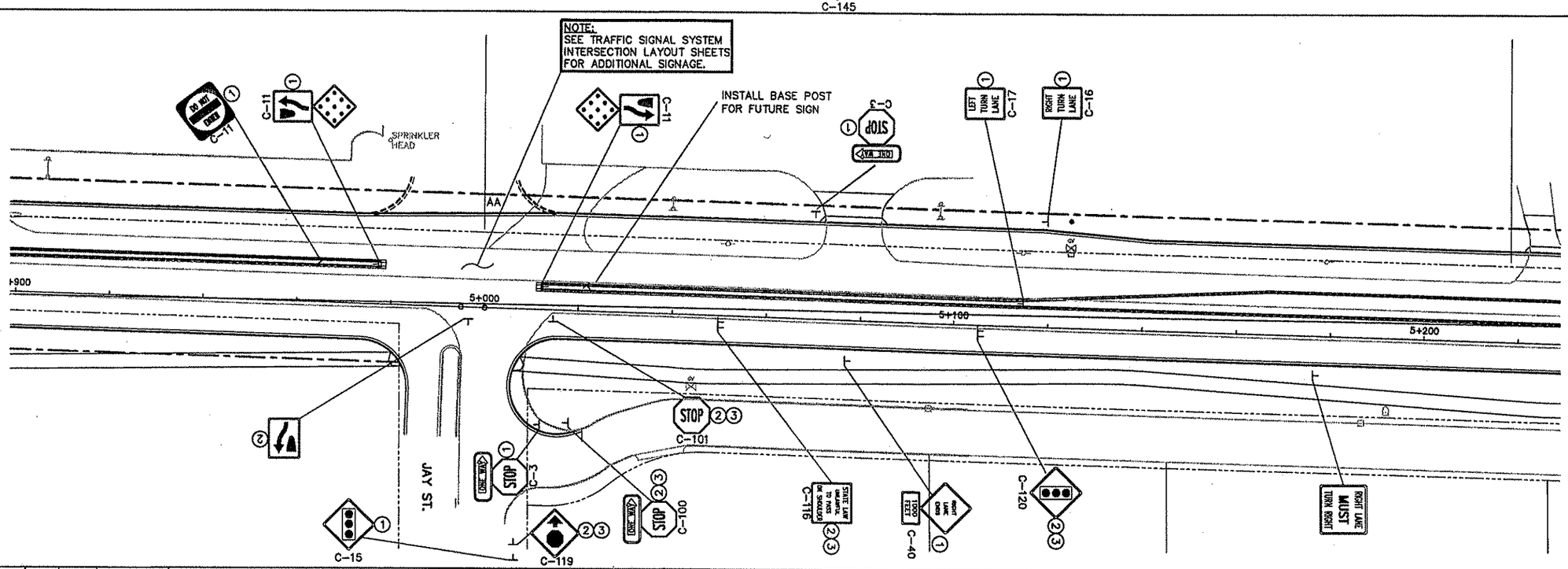
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PERMANENT SIGNING
STA. 3+940.000 TO 4+590.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKCB06PS5.DWG 03-25-99 8:14 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.
Date: 3/25/99 Reg. No. 25772

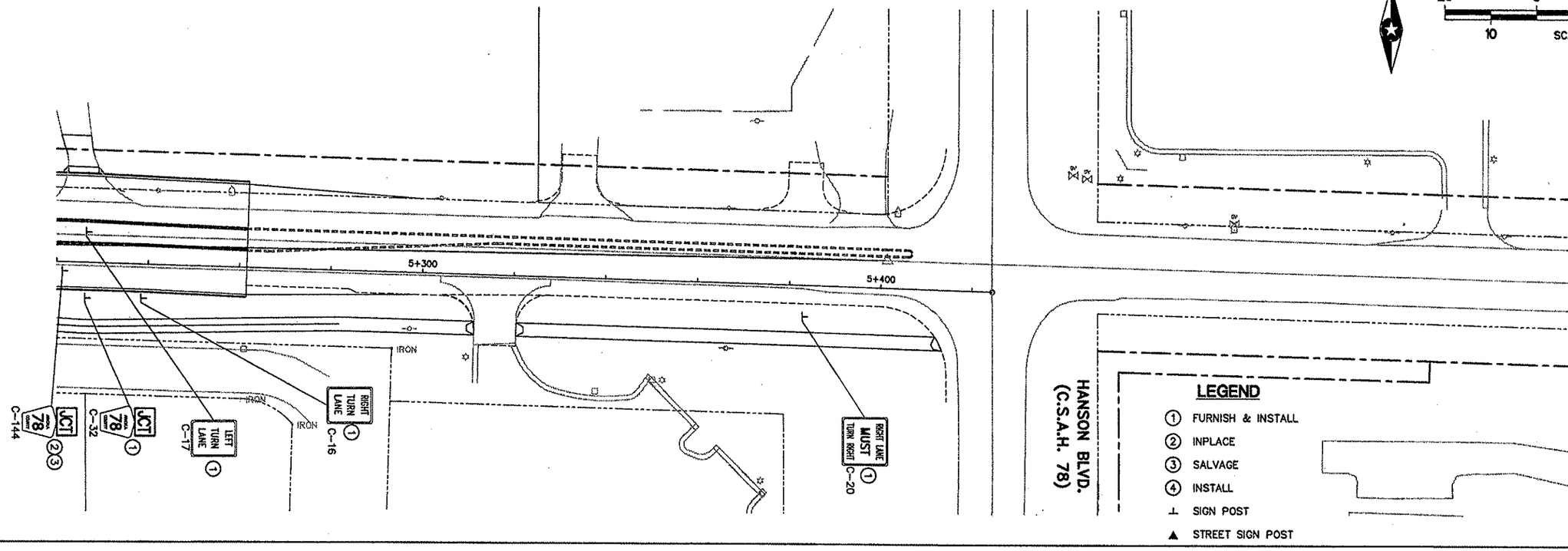
SEH

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+580.000 TO 5+230.000

FILE NO. ANOKC9806.01
DATE 03/15/99
158/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS6.DWG 03-25-99 8:21 am



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.
DRAWING						Pamela Jonah
CHECKED						Date: 3/25/99 Reg. No. 25772
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

SEH

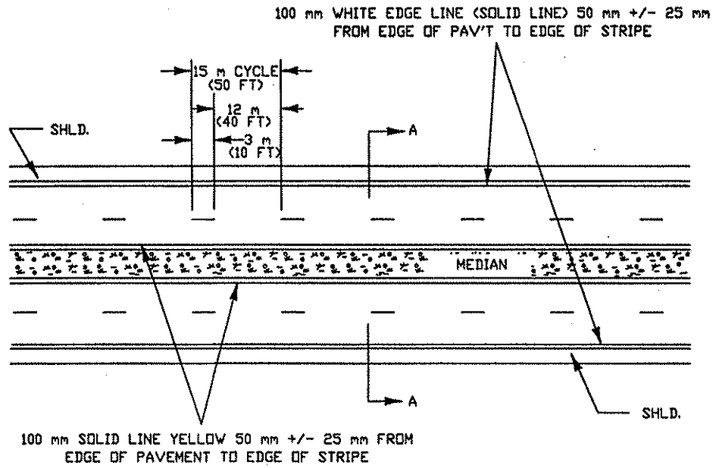
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PERMANENT SIGNING
STA. 5+220.000 TO 5+424.359

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

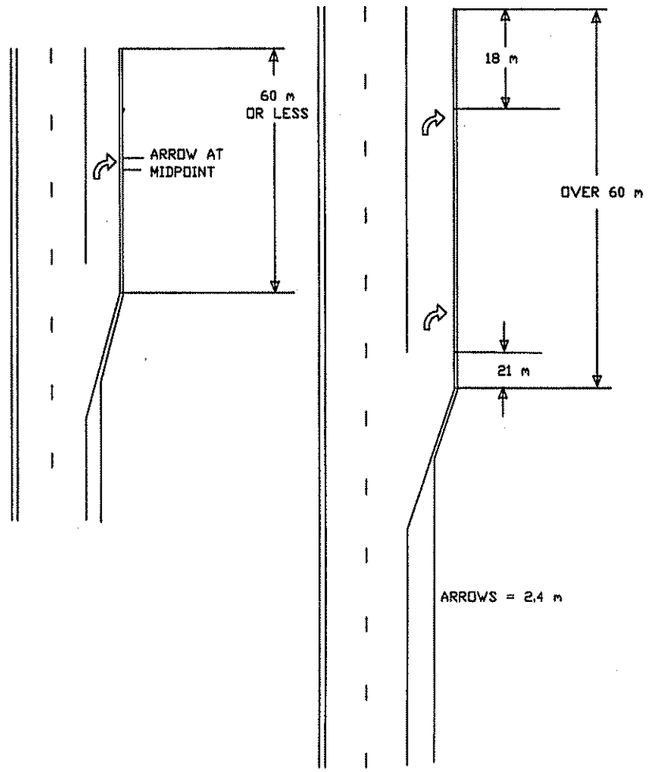
159/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS7.DWG 03-25-99 8:32 am

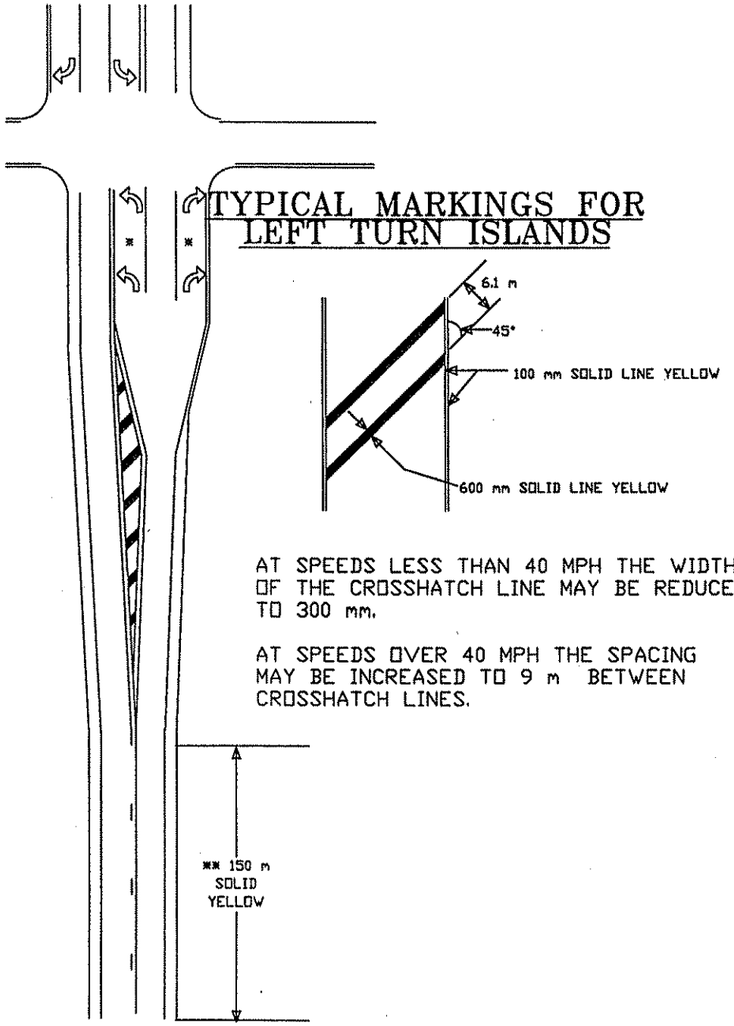


TYPICAL 4-LANE DIVIDED LANE MARKINGS

TYPICAL MESSAGE PLACEMENT FOR TURN LANES



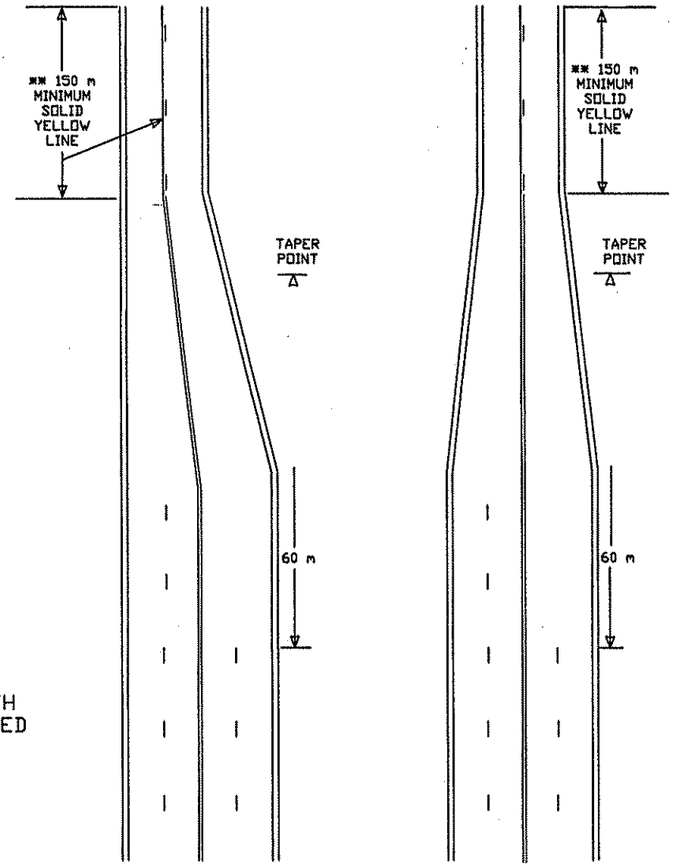
TYPICAL MARKINGS FOR LEFT TURN ISLANDS



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

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: 3/25/99 Reg. No. 25772

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

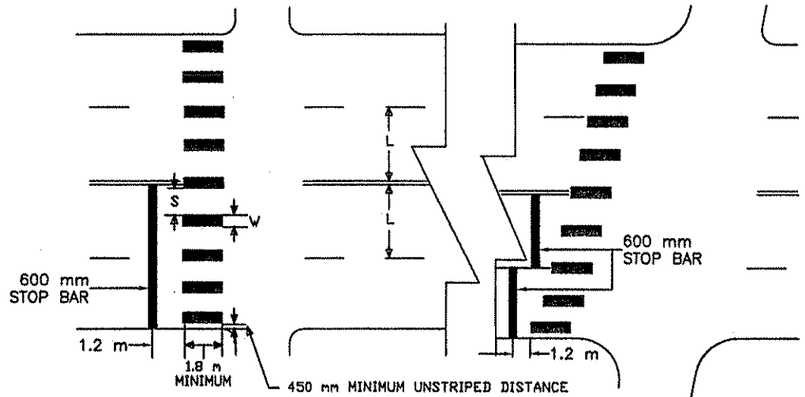
PAVEMENT MARKING DETAILS

FILE NO. AANOKC9806.00
DATE 03/15/99
160/230

Q:\CIVIL\CLIENTS\VA_THRU_FVANOKA\9806\DWG\AC806PM2.DVG 03-24-99 5:39 pm

MARKINGS FOR PEDESTRIAN CROSSWALKS AND STOP BARS

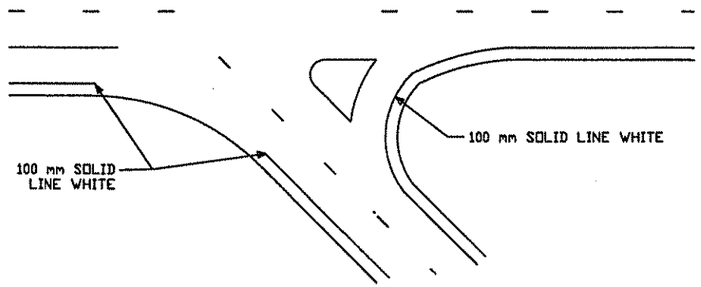
(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
2.7 m	600 mm	750 mm
3 m	750 mm	750 mm
3.4 m	750 mm	900 mm
3.6 m	900 mm	900 mm
4 m	900 mm	1100 mm



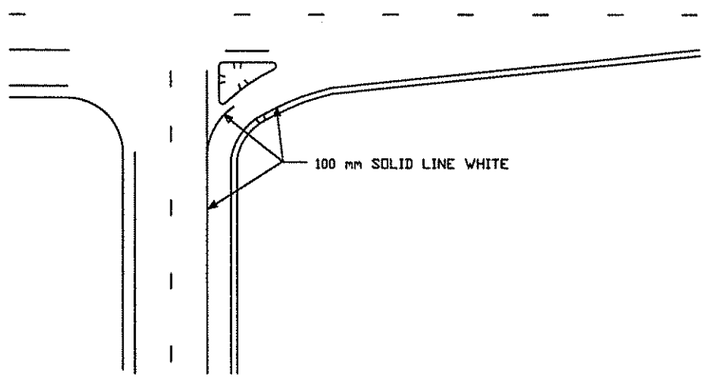
NOTES:

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.

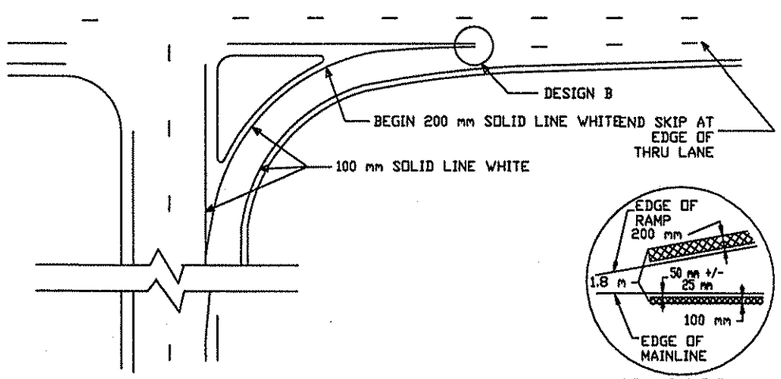
FREE RIGHT STOP CONDITION



FREE RIGHT YIELD CONDITION



FREE RIGHT MERGE CONDITION



DESIGN B

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

ESEH

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

D:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806PM1.DWG 03-24-99 5:39 pm

20 0 20
10 SCALE 1:500

N

100 mm BROKEN WHITE
100 mm SOLID WHITE
100 mm BROKEN WHITE
100 mm SOLID WHITE
100 mm SOLID YELLOW
100 mm SOLID WHITE
100 mm SOLID YELLOW
100 mm SOLID WHITE
100 mm SOLID DOUBLE YELLOW

4.2 m
3.6 m
3.9 m
3.6 m
3.6 m
4.2 m
4.2 m
3.6 m
3.6 m
3.9 m
3.9 m
3.6 m
3.6 m
2.4 m

1+400
1+500
1+600
1+700
1+700

ROUND LAKE BLVD. (C.S.A.H. 16)

ROSE ST.

100 mm SOLID WHITE
100 mm SOLID WHITE
QUAY ST.
PARCEL 3
3331
100 mm SOLID WHITE
100 mm BROKEN WHITE (2:8 SPACING TYPICAL)
100 mm SOLID YELLOW
MARIGOLD ST.

4.2 m
3.6 m
3.6 m
3.9 m
3.45 m
2.4 m
3.6 m
3.9 m
3.9 m
3.6 m
3.6 m
2.4 m

1+800
1+900
2+000
1+800
1+900
2+000

PARCEL
3422
100 mm BROKEN WHITE (2:8 SPACING TYPICAL)
TUTOR TIME
100 mm SOLID WHITE
NARCISSUS ST.
13677
13676
100 mm SOLID WHITE
MARIGOLD ST.
13679
100 mm BROKEN YELLOW

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: 3/25/99 Reg. No. 25772

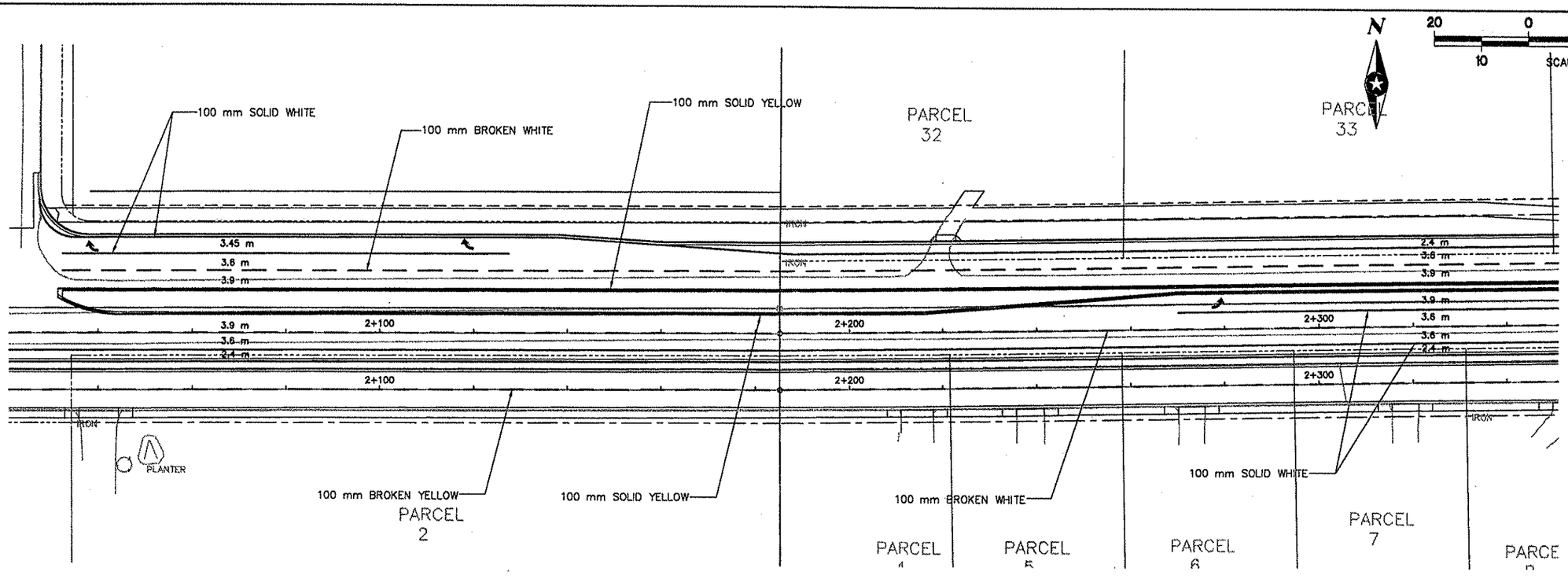
ESEH

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. ANOKC9806.01
DATE 03/15/99
165 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PSB.DWG 03-24-99 6:37 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: 3/25/99 Reg. No. 25772

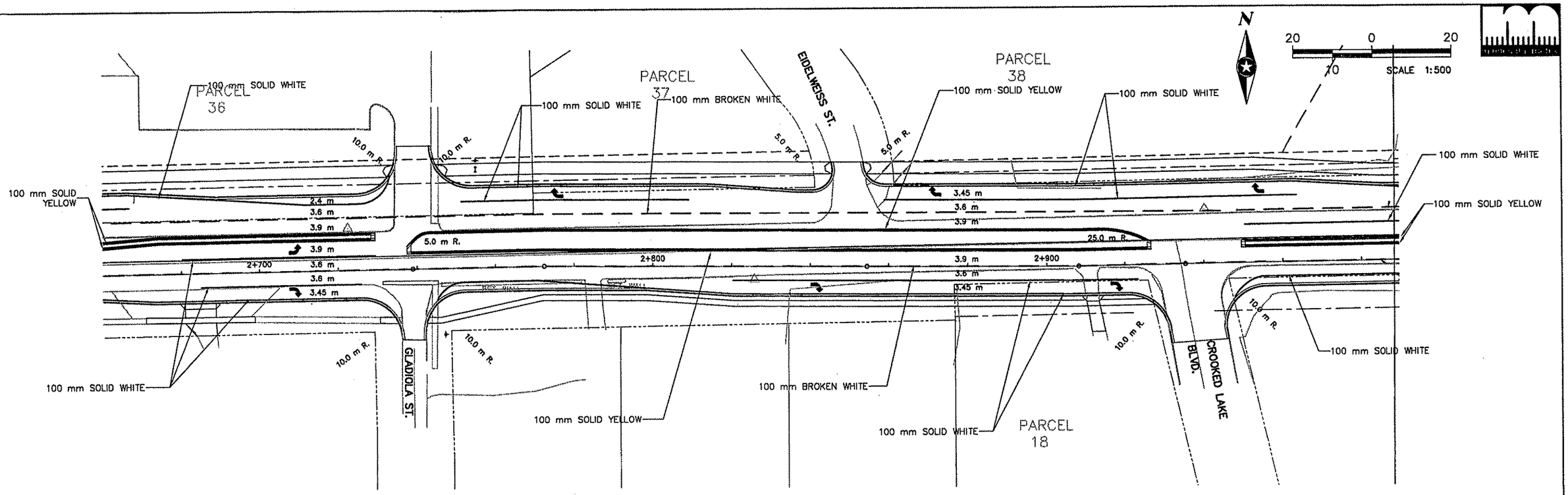
SEH

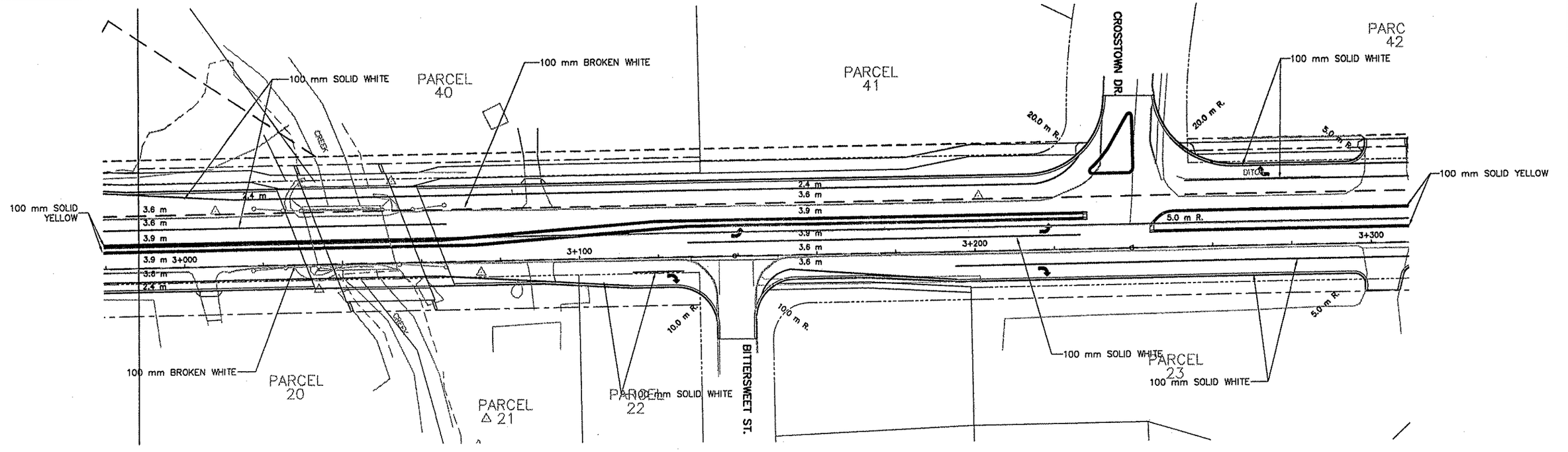
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKINGS
STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01
DATE 03/15/99
166 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC806PS9.DWG 03-24-99 6:44 pm





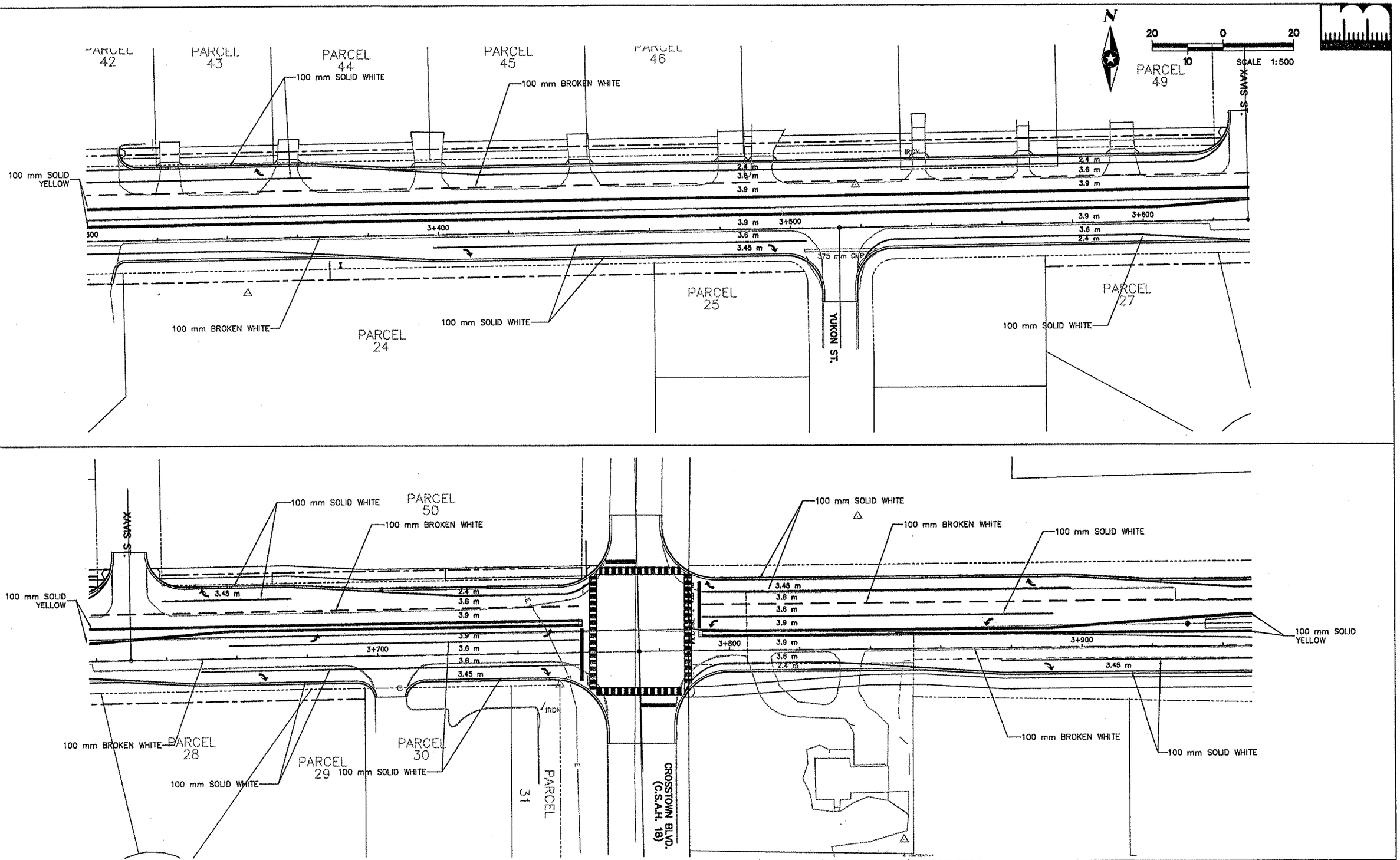
DESIGN	1	PJM	4/12	ADD TURN ARROWS	
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

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: 4-7-99 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
DATE 03/15/99
167/230



DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

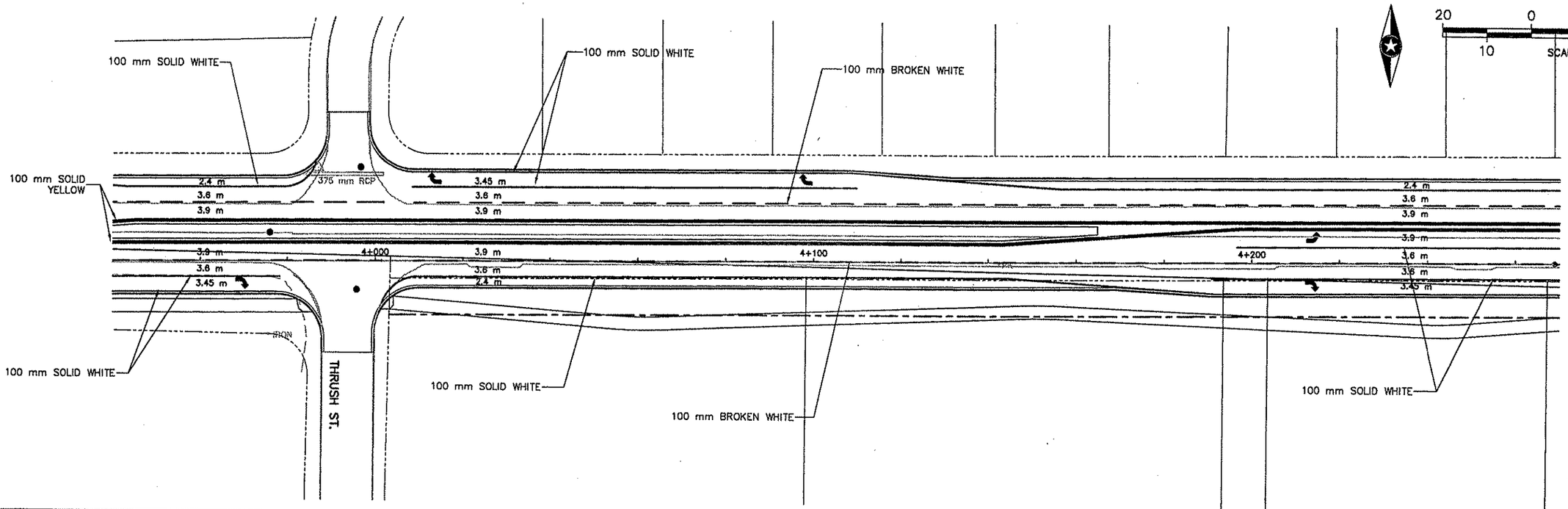
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Pamela Mahl
Date: 3/25/99 Reg. No. 25772

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AC806PS11.DWG 03-24-99 6:50 pm



DESIGN	1	PJM	4/12	ADD TURN ARROWS		
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: 4/29/99 Reg. No. 25772

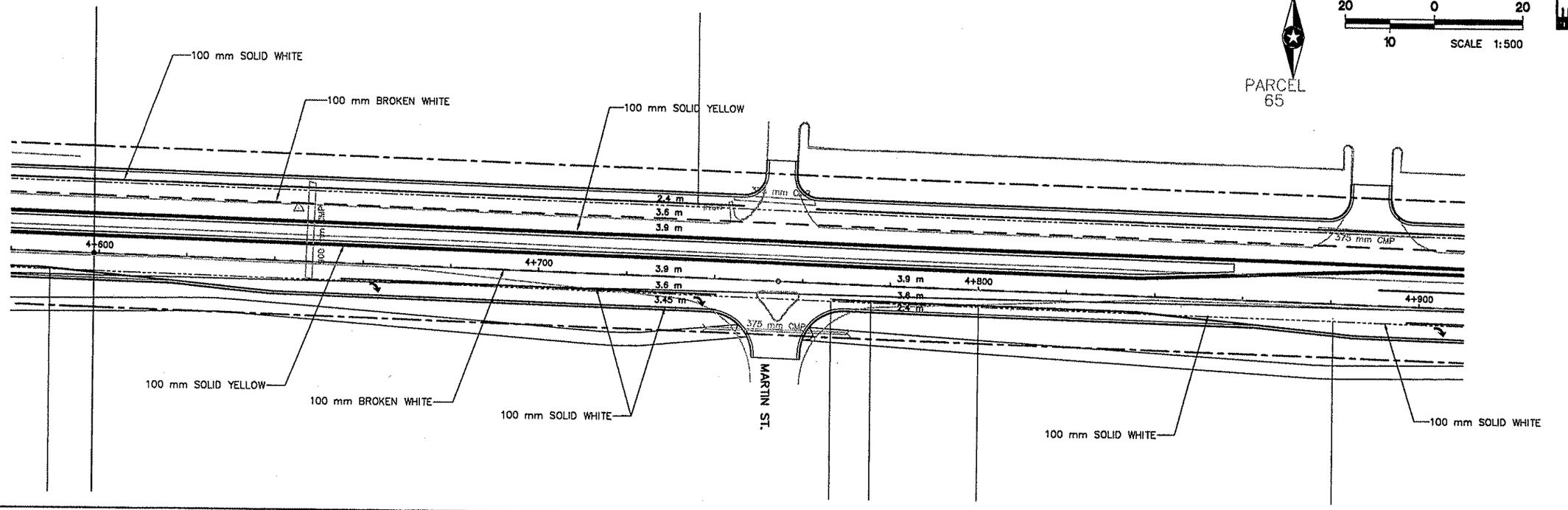
SEH

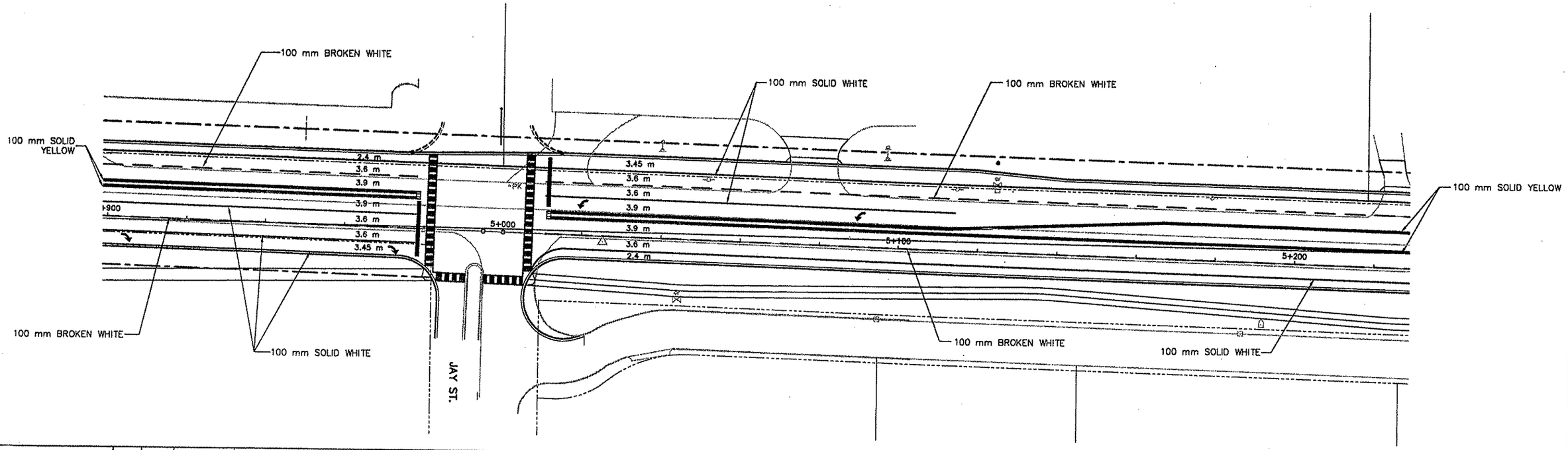
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

PAVEMENT MARKINGS
STA. 3+940.000 TO 4+590.000

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

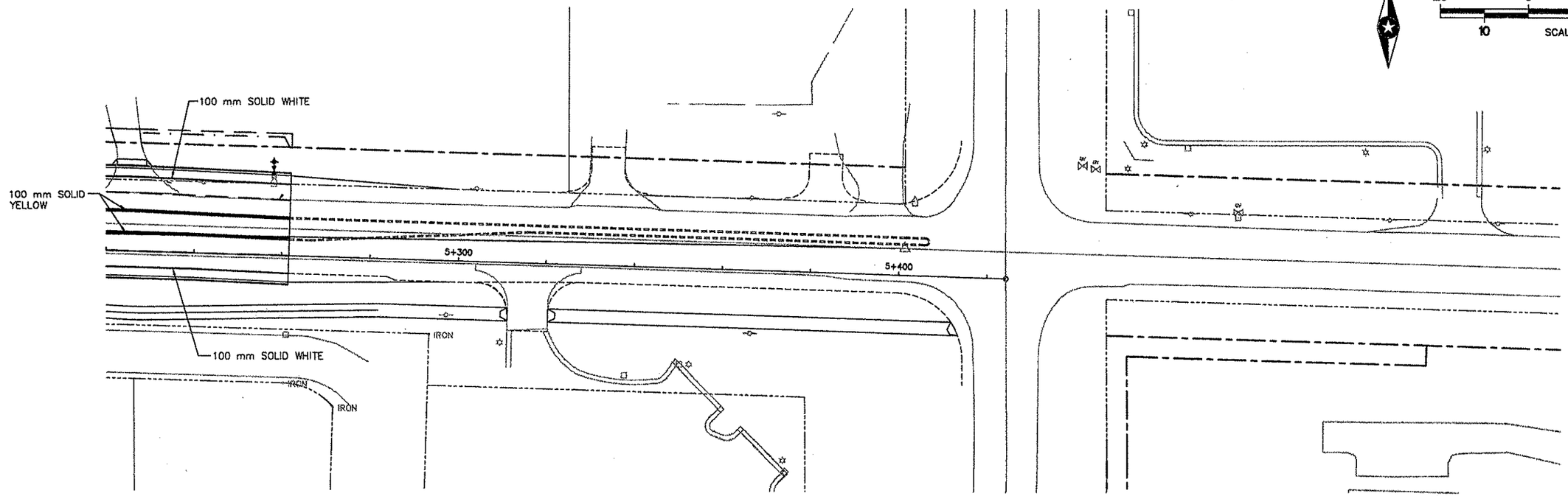
C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AC806PS12.DWG 03-24-99 6:53 pm





Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AC806PS13.DWG 03-24-99 6:56 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. Pamela Mahl Date: 3/25/99 Reg. No. 25772	SEH	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
DRAWING										DATE 03/15/99	230
CHECKED											
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM						



N

20 0 20

10

SCALE 1:500

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. Pamela Mahr Date: 3/25/99 Reg. No. 25772
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

SEH

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AC805PS14.DWG 03-24-99 6:57 pm

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)
(F)	TYPE A FLASHING WARNING LIGHT
(hatched)	PERMANENT CONSTRUCTION
———	PORTABLE BARRIER WITH BARRIER DELINEATORS AT 15 m SPACES
⇨	DIRECTIONAL ARROWS
(crosshatched)	TEMPORARY PAVEMENT PLACEMENT (SEE TYPICAL SECTIONS)

(S) 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	m2	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

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

SEH

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

(S) TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE		
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE 1	STAGE 2	STAGE 3
STOP	R1-1	WHITE ON RED	30 X 30	16	10	6
SPEED LIMIT XX	R2-1 ①	BLACK ON WHITE	24 X 30	5	5	5
WORK ZONE	R2-X6P ①	BLACK ON ORANGE	24 X 18	5	5	5
REDUCED SPEED AHEAD	R2-5a ①	BLACK ON WHITE	24 X 30	2	2	2
END WORK SPEED ZONE	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
ONLY ONLY ONLY	R3-8H	BLACK ON WHITE	54 X 30	1	1	
RIGHT TURN LANE	R3-X1	BLACK ON WHITE	30 X 30	1	5	15
LEFT TURN LANE	R3-X2	BLACK ON WHITE	30 X 30	3	1	9
DO NOT PASS	R4-1	BLACK ON WHITE	24 X 30	5	5	
	R4-7	BLACK ON WHITE	24 X 30	5	3	13
ONEWAY	R6-1R	BLACK ON WHITE	36 X 12			1
ROAD CLOSED	R11-2	BLACK ON WHITE	48 X 30	21	12	4
ROAD CLOSED TO THRU TRAFFIC	R11-4	BLACK ON WHITE	60 X 30	1	1	1
BRIDGE CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	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
ROAD WORK AHEAD	W20-1	BLACK ON ORANGE	48 X 48	11	10	7
DETOUR AHEAD	W20-2	BLACK ON ORANGE	48 X 48	1	1	
ROAD CLOSED AHEAD	W20-3	BLACK ON ORANGE	48 X 48	4	4	2
MERGE	W20-X3L	BLACK ON ORANGE	48 X 48			1
MERGE	W21-X3R	BLACK ON ORANGE	48 X 48	1	1	
LEFT LANE CLOSED	W21-X5L	BLACK ON ORANGE	48 X 48	1	1	2
RIGHT LANE CLOSED	W21-X5R	BLACK ON ORANGE	48 X 48	1	1	
END ROAD WORK	G20-2A	BLACK ON ORANGE	48 X 24	2	2	2
DETOUR	M4-10L	BLACK ON ORANGE	30 X 24	2	1	
DETOUR	M4-10L	BLACK ON ORANGE	30 X 24	1	1	1
250 FEET	X3-4	BLACK ON ORANGE	12 X 18		1	
500 FEET	X3-4	BLACK ON ORANGE	12 X 18	2	2	1
1000 FEET	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.

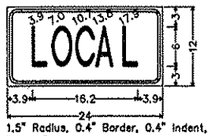
DESIGN						
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

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

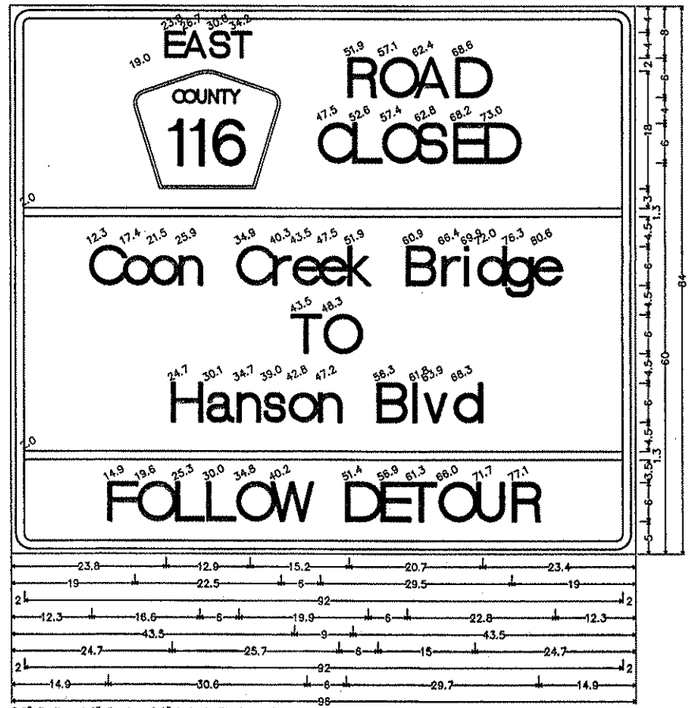
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TRAFFIC CONTROL TABULATIONS

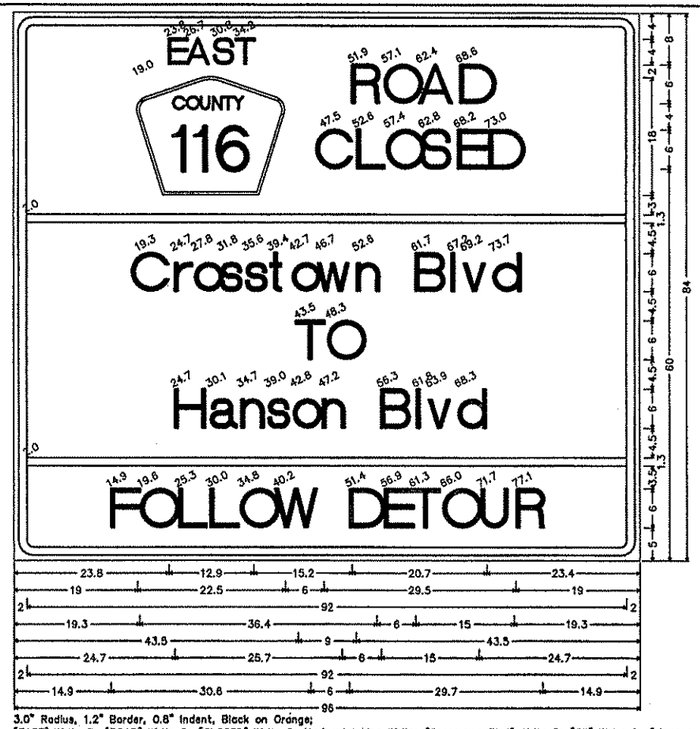
FILE NO. ANOKC9806.01
DATE 03/15/99
173/230



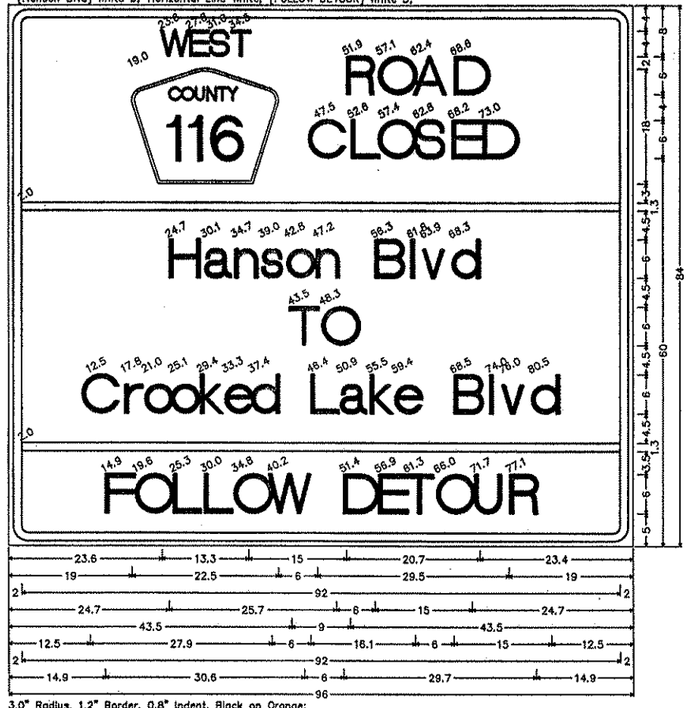
1.5" Radius, 0.4" Border, 0.4" Indent, Black on Orange;
[LOCAL] B;



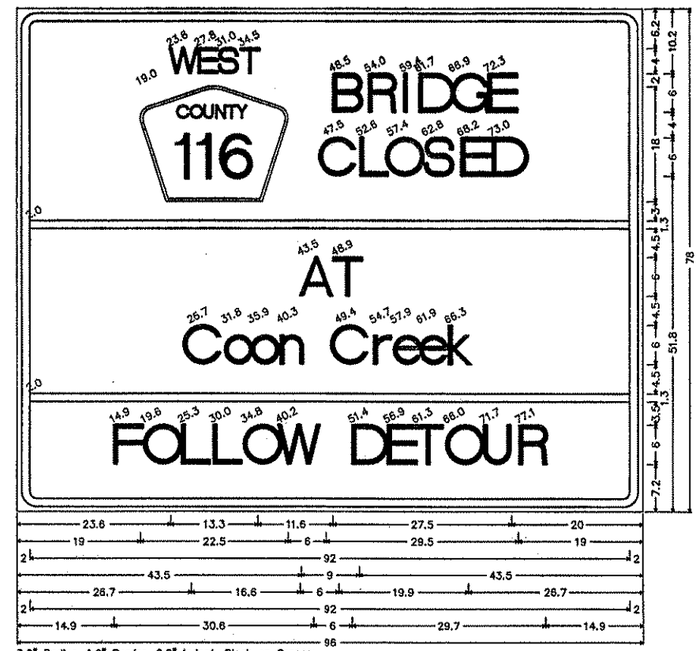
3.0" Radius, 1.2" Border, 0.8" Indent, Black on Orange;
[EAST] White D; [ROAD] White D; [CLOSED] White D; Horizontal Line White; [Coon Creek Bridge] White D; [TO] White D;
[Hanson Blvd] White D; Horizontal Line White; [FOLLOW DETOUR] White D;



3.0" Radius, 1.2" Border, 0.8" Indent, Black on Orange;
[EAST] White D; [ROAD] White D; [CLOSED] White D; Horizontal Line White; [Crosstown Blvd] White D; [TO] White D; [Hanson Blvd] White D;
Horizontal Line White; [FOLLOW DETOUR] White D;



3.0" Radius, 1.2" Border, 0.8" Indent, Black on Orange;
[WEST] White D; [ROAD] White D; [CLOSED] White D; Horizontal Line White; [Hanson Blvd] White D; [TO] White D;
[Crooked Lake Blvd] White D; Horizontal Line White; [FOLLOW DETOUR] White D;



3.0" Radius, 1.2" Border, 0.8" Indent, Black on Orange;
[WEST] White D; [BRIDGE] White D; [CLOSED] White D; Horizontal Line White; [AT] White D; [Coon Creek] White D; Horizontal Line White;
[FOLLOW DETOUR] White D;

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

SIGN DETAILS

FILE NO. ANOKC9806.01
DATE 03/15/99
174 / 230

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\TRANS\AKC9806SD.DWG 03-22-99 4:03 pm cpu90sp

ANOKA

ANDOVER

COON RAPIDS

Crooked Lake

Burlington

NOT TO SCALE

NOTES:

CONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES SHOWN UNLESS OTHERWISE NOTED

LEGEND
⊥ POST MOUNTED SIGN
— DETOUR ROUTE

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

SEH

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

PRIMARY DETOUR PLAN

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806DP.DWG 03-22-99 9:13 am

NOTES:

CONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES SHOWN UNLESS OTHERWISE NOTED

LEGEND
⊥ POST MOUNTED SIGN
— DETOUR ROUTE

N

NOT TO SCALE

ROAD CLOSED
Crosstown Blvd
TO
Hanson Blvd
FOLLOW DETOUR

BRIDGE CLOSED
AT
Coon Creek
FOLLOW DETOUR

ROAD CLOSED
Crosstown Blvd
TO
Hanson Blvd
FOLLOW DETOUR

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

LOCAL DETOUR PLAN

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806DP2.DWG 03-22-99 9:28 am

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	ROAD WORK AHEAD	5
W21–X5L	48" X 48"	1219 X 1219	16.00	1.486	RIGHT LANE CLOSED	1
W20–3	48" X 48"	1219 X 1219	16.00	1.486	ROAD CLOSED AHEAD	1
G20–X2	96" X 84"	2438 X 2134	56.00	5.203	EAST 116 ROAD CLOSED / Crosstown Blvd TO Hanson Blvd / FOLLOW DETOUR	2
G20–X2	96" X 84"	2438 X 2134	56.00	5.203	WEST 116 ROAD CLOSED / Hanson Blvd TO Crooked Lake Blvd / FOLLOW DETOUR	1
G20–X2	96" X 84"	2438 X 2134	56.00	5.203	116 ROAD CLOSED / Coon Creek Bridge TO Hanson Blvd / FOLLOW DETOUR	3
G20–X2	96" X 78"	2438 X 1981	52.00	4.831	WEST 116 BRIDGE CLOSED / AT Coon Creek / FOLLOW DETOUR	3
M4–8	24" X 12"	610 X 305	2.00	0.186	DETOUR	
M3–4A	24" X 12"	610 X 305	2.00	0.186	EAST	
M1–6	24" X 24"	610 X 610	4.00	0.372	ANOKA 116 COUNTY	27
M5–1AR	21" X 15"	530 X 380	2.18	0.200		3
M6–1A	21" X 15"	530 X 380	2.18	0.200		3
M5–1AL	21" X 15"	530 X 380	2.18	0.200		4
M6–1A	21" X 15"	530 X 380	2.18	0.200		4
M6–3A	21" X 15"	530 X 380	2.18	0.200		13

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	DETOUR	
M3–A	24" X 12"	610 X 305	2.00	0.186	EAST	
M1–6	24" X 24"	610 X 610	4.00	0.372	ANOKA 116 COUNTY	28
M5–1AR	21" X 15"	530 X 380	2.18	0.200		4
M6–1A	21" X 15"	530 X 380	2.18	0.200		4
M5–1AL	21" X 15"	530 X 380	2.18	0.200		3
M6–1A	21" X 15"	530 X 380	2.18	0.200		3
M6–3A	21" X 15"	530 X 380	2.18	0.200		14
M4–8	24" X 12"	610 X 305	2.00	0.186	DETOUR	X
	24" X 12"	610 X 305	2.00	0.186	LOCAL	X
M1–6	24" X 24"	610 X 610	4.00	0.372	ANOKA 116 COUNTY	9
M5–1AR	21" X 15"	530 X 380	2.18	0.200		2
M6–1A	21" X 15"	530 X 380	2.18	0.200		2
M5–1AL	21" X 15"	530 X 380	2.18	0.200		2
M6–1A	21" X 15"	530 X 380	2.18	0.200		1
M6–3A	21" X 15"	530 X 380	2.18	0.200		2
M4–6	24" X 12"	610 X 305	2.00	0.186	END	
M4–8	24" X 12"	610 X 305	2.00	0.186	DETOUR	
M1–6	24" X 24"	610 X 610	4.00	0.372	ANOKA 116 COUNTY	2
M6–4A	21" X 15"	530 X 380	2.18	0.200		2

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806DP3.DWG 03-22-99 9:43 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.
Date: 3/15/99 Reg. No. 18612

SEH

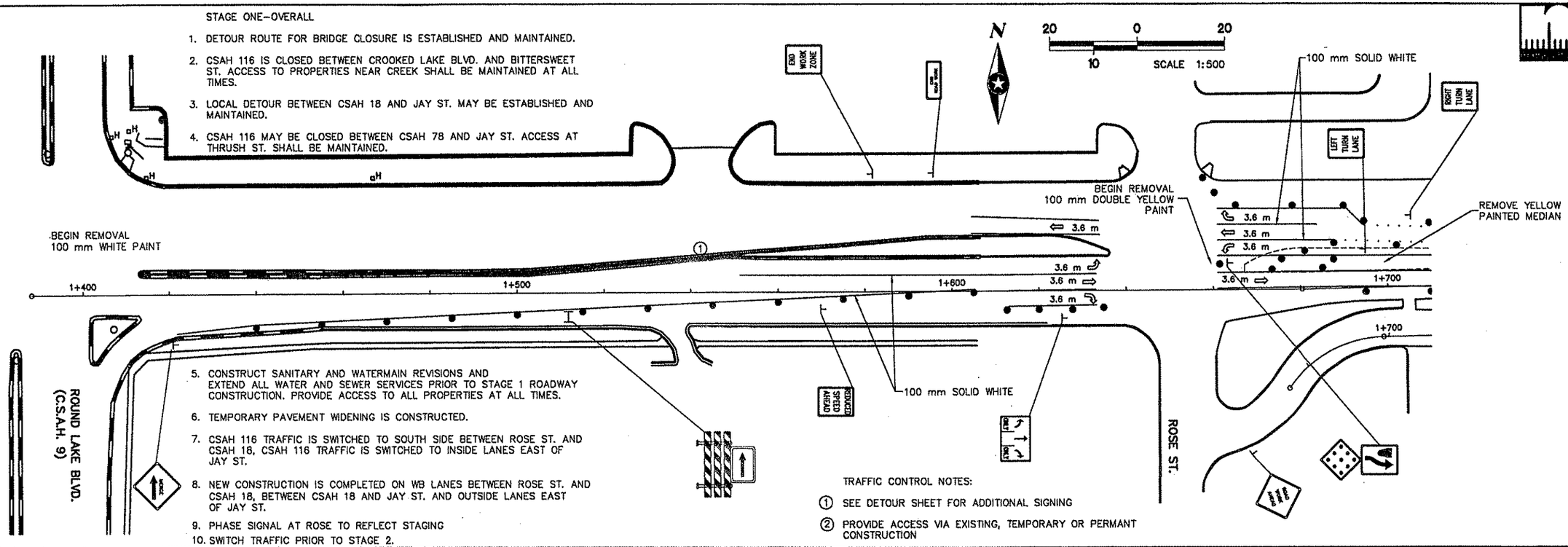
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

SIGN QUANTITIES

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

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 THRUSH ST. SHALL BE MAINTAINED.

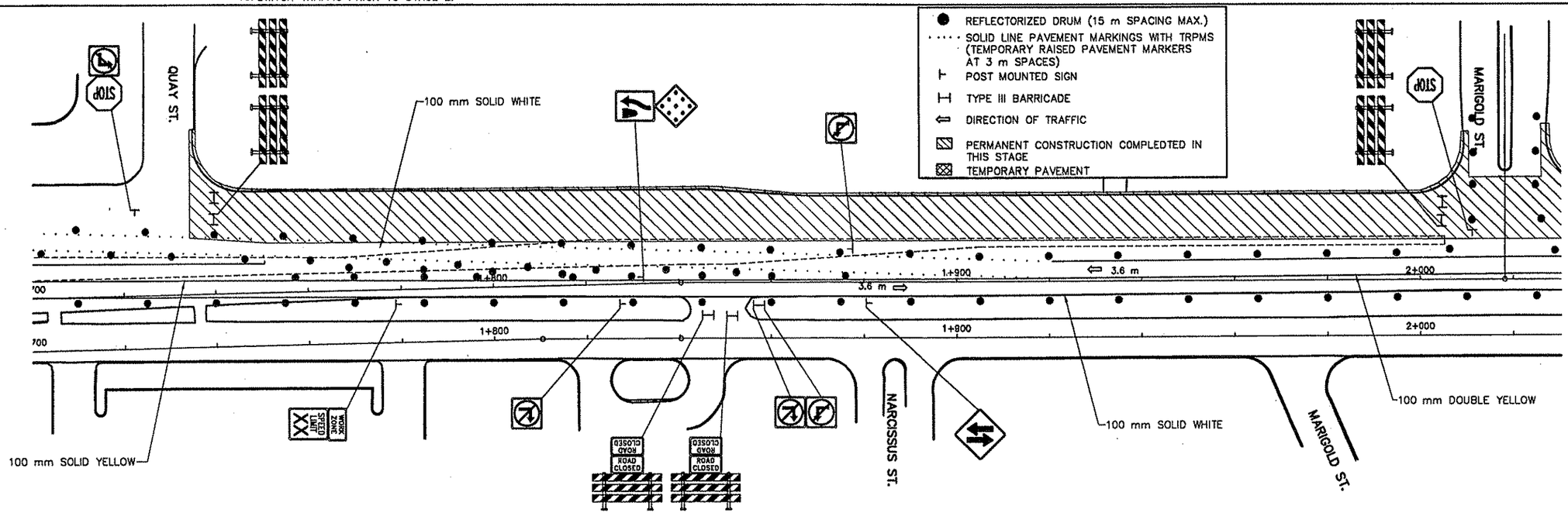


5. CONSTRUCT SANITARY AND WATERMAIN REVISIONS AND EXTEND ALL WATER AND SEWER SERVICES PRIOR TO STAGE 1 ROADWAY CONSTRUCTION. PROVIDE ACCESS TO ALL PROPERTIES AT ALL TIMES.
6. TEMPORARY PAVEMENT WIDENING IS CONSTRUCTED.
7. CSAH 116 TRAFFIC IS SWITCHED TO SOUTH SIDE BETWEEN ROSE ST. AND CSAH 18, CSAH 116 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.

TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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: 3/16/99 Reg. No. 18612

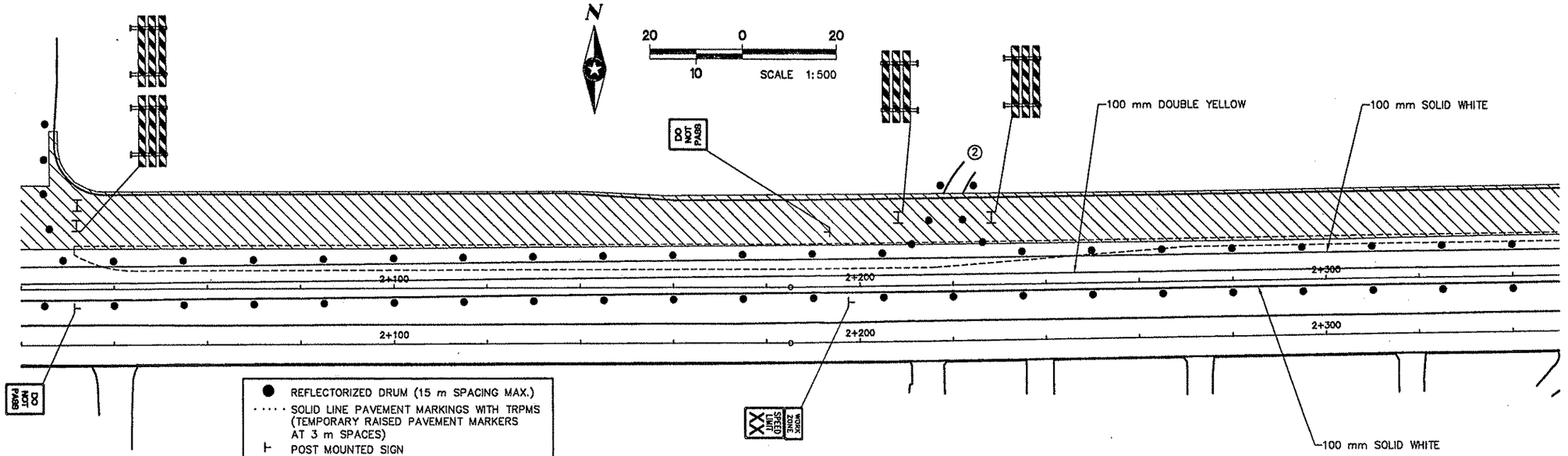
SEH

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. ANOKC9808.01
DATE 03/15/99
177/230

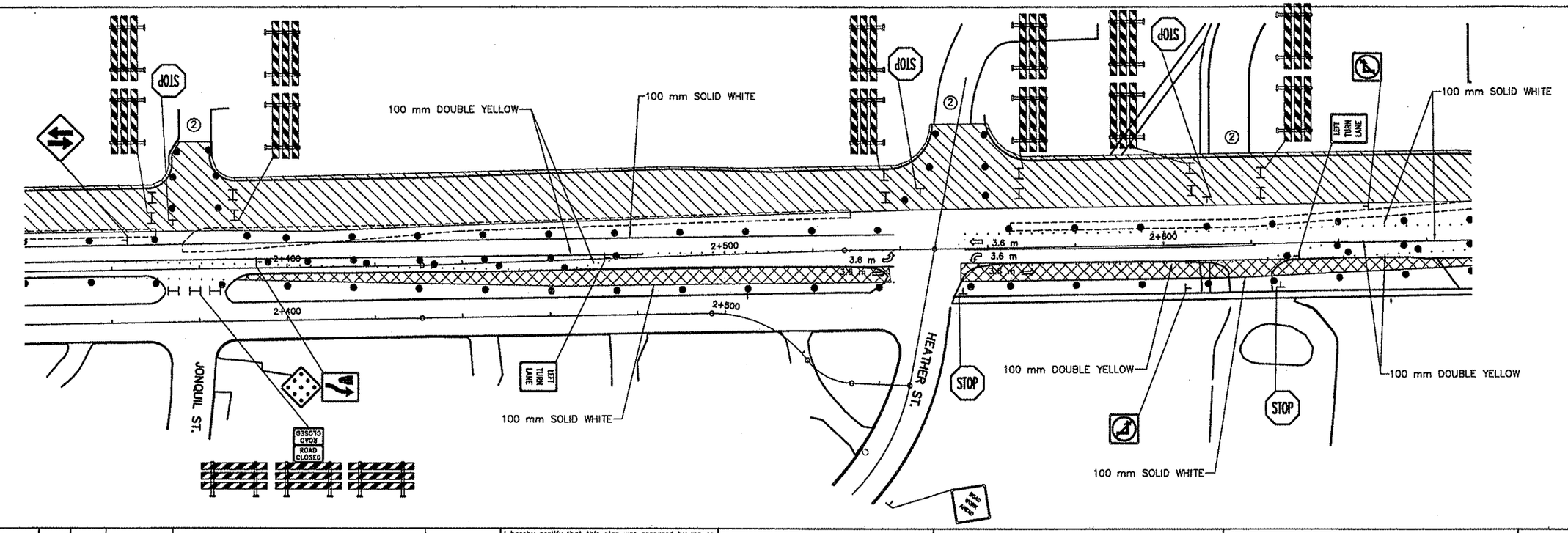
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9805S1_1.DWG 03-24-99 2:13 pm



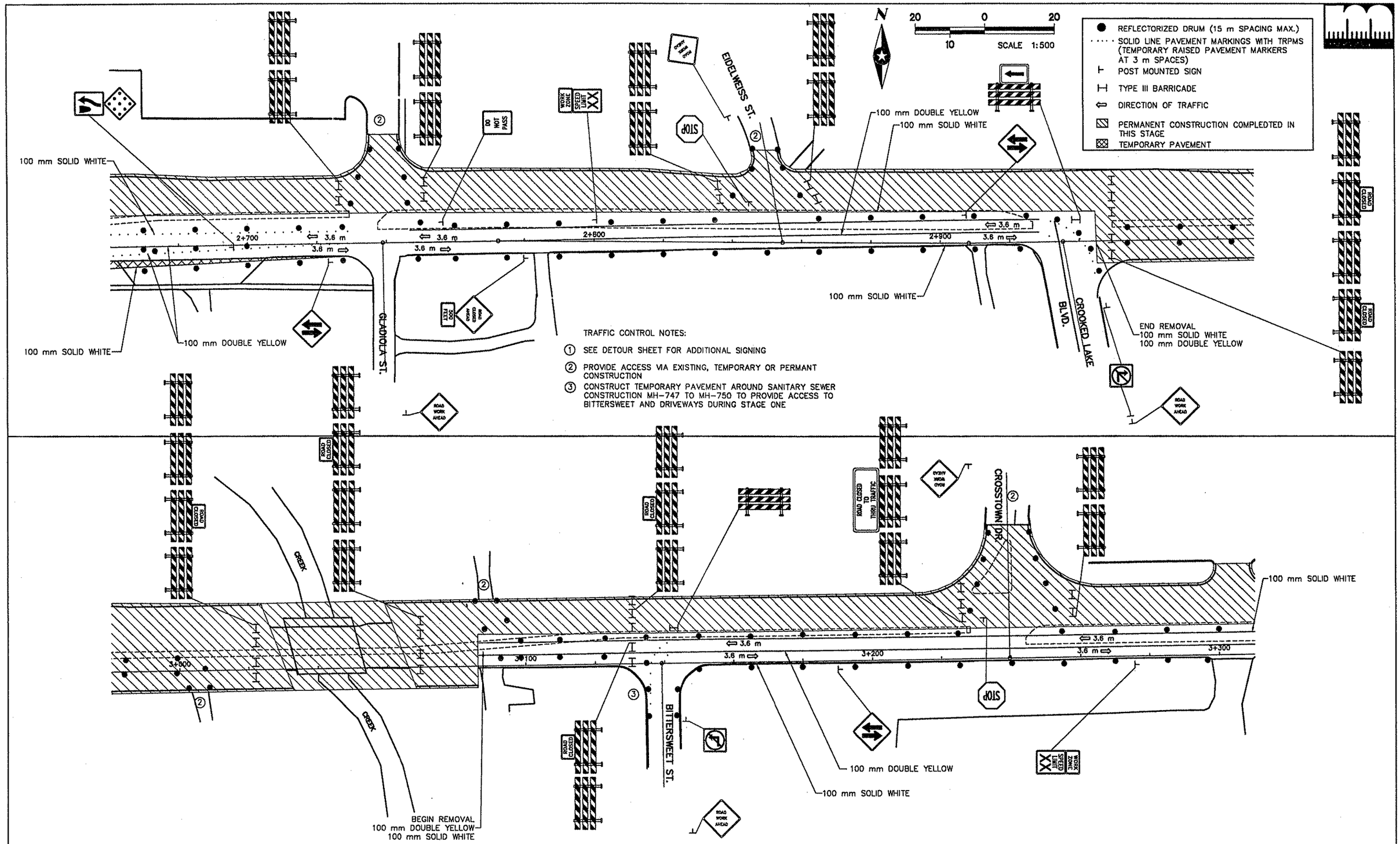
TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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.	ANOKA COUNTY	TRAFFIC CONTROL–STAGE ONE	FILE NO. ANOKC9806.01	178
DRAWING						Joseph M. Mason	C.S.A.H. 116 (BUNKER LAKE BLVD.)	STA. 2+020.000 TO 2+670.000	DATE 03/15/99	230
CHECKED						Date: 3/15/99 Reg. No. 18612	S.A.P. 02-716-04			
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM		S.A.P. 198-020-14			



Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S1_3.DWG 03-24-99 2:40 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 3/16/99 Reg. No. 18612

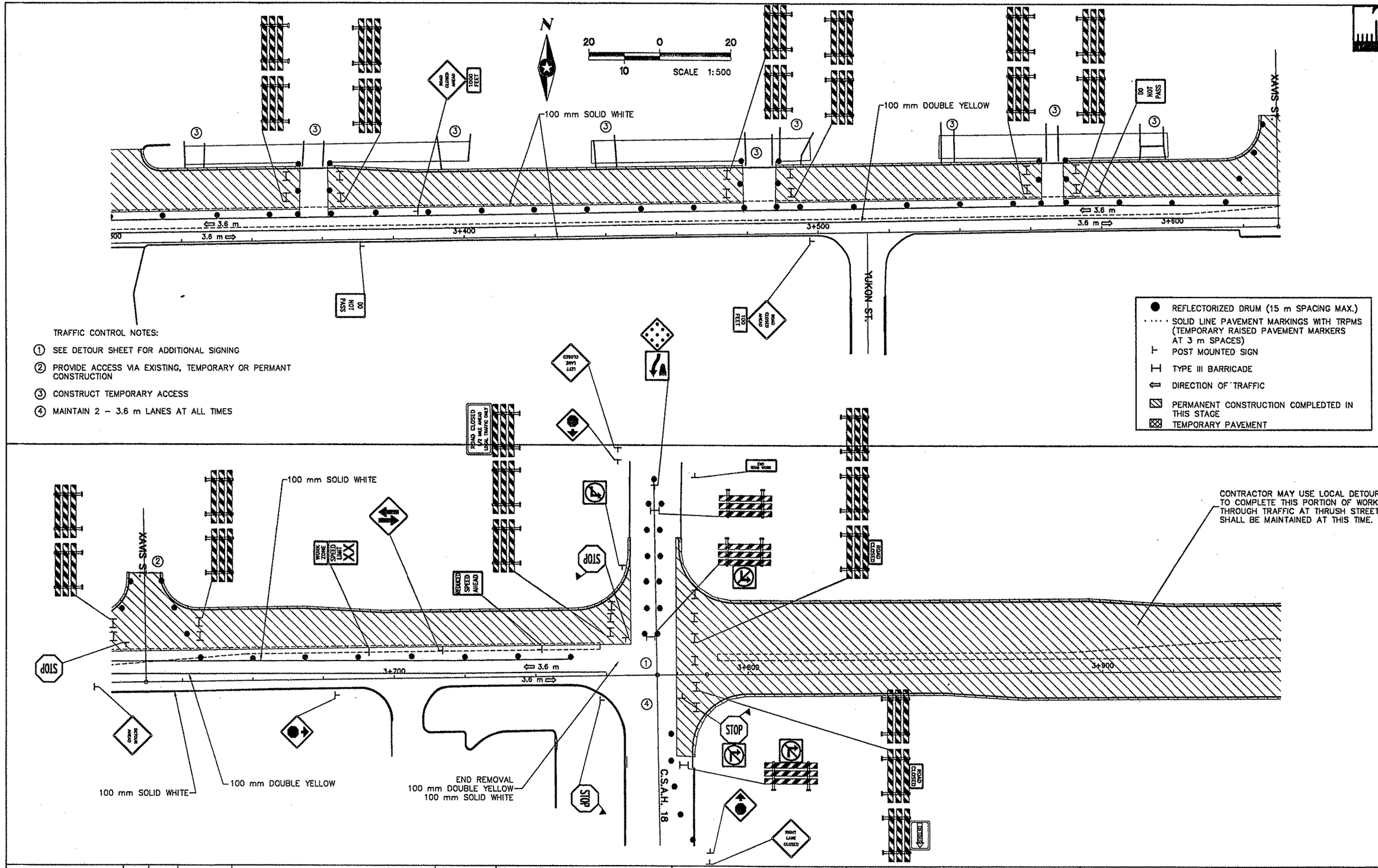
SEH

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

179
230



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)
- POST MOUNTED SIGN
- TYPE III BARRICADE
- DIRECTION OF TRAFFIC
- PERMANENT CONSTRUCTION COMPLEDTED IN THIS STAGE
- TEMPORARY PAVEMENT

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

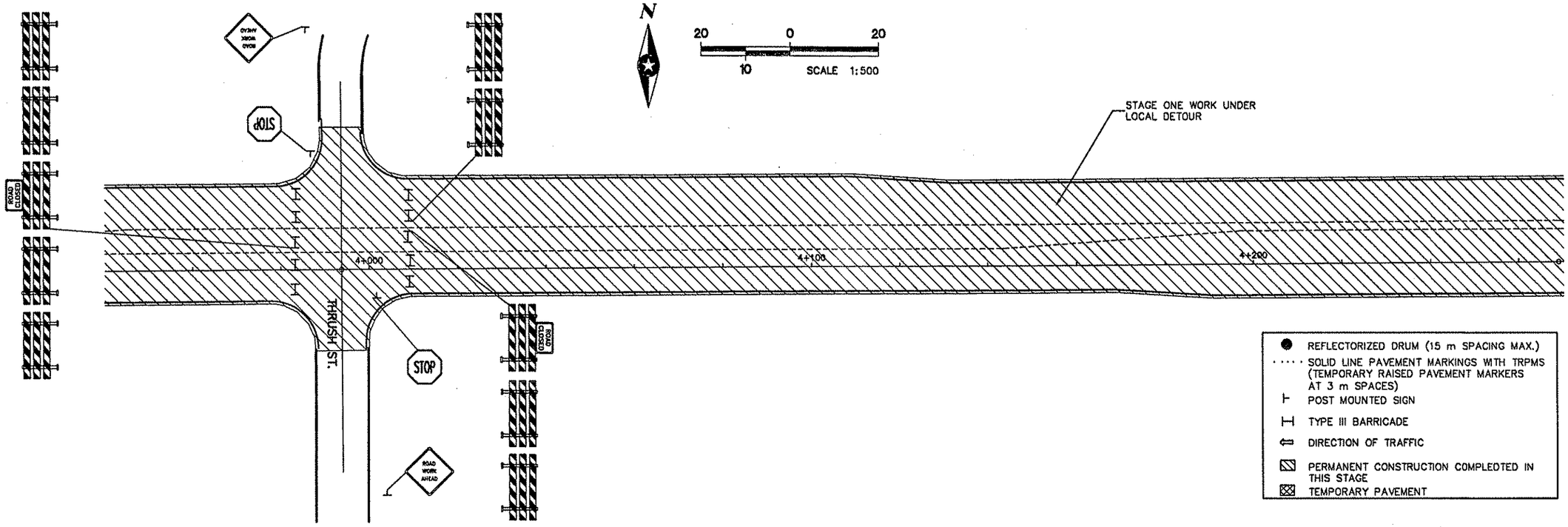
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

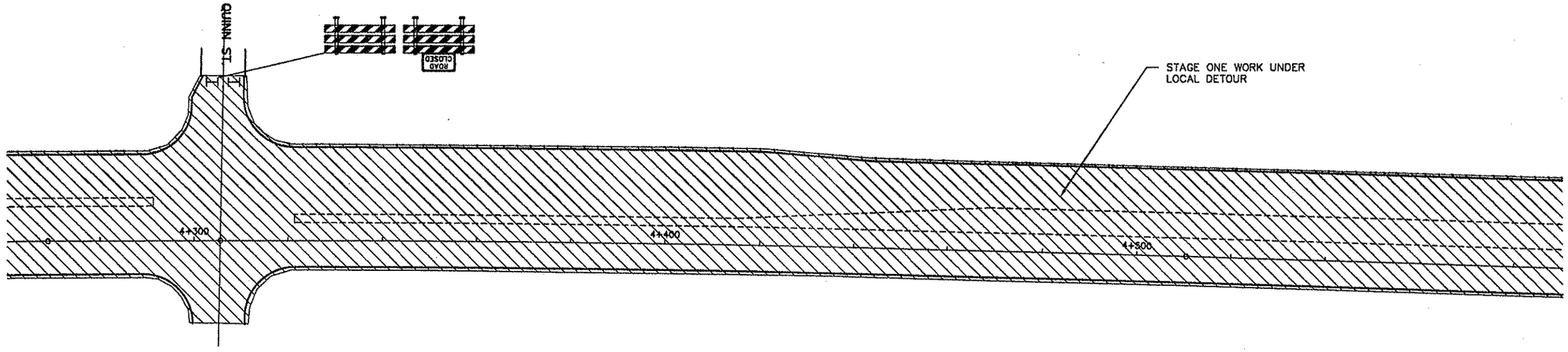
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TRAFFIC CONTROL–STAGE ONE
STA. 3+300.000 TO 3+950.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806S1_4.DWG 03-24-99 3:03 pm





DESIGN						
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

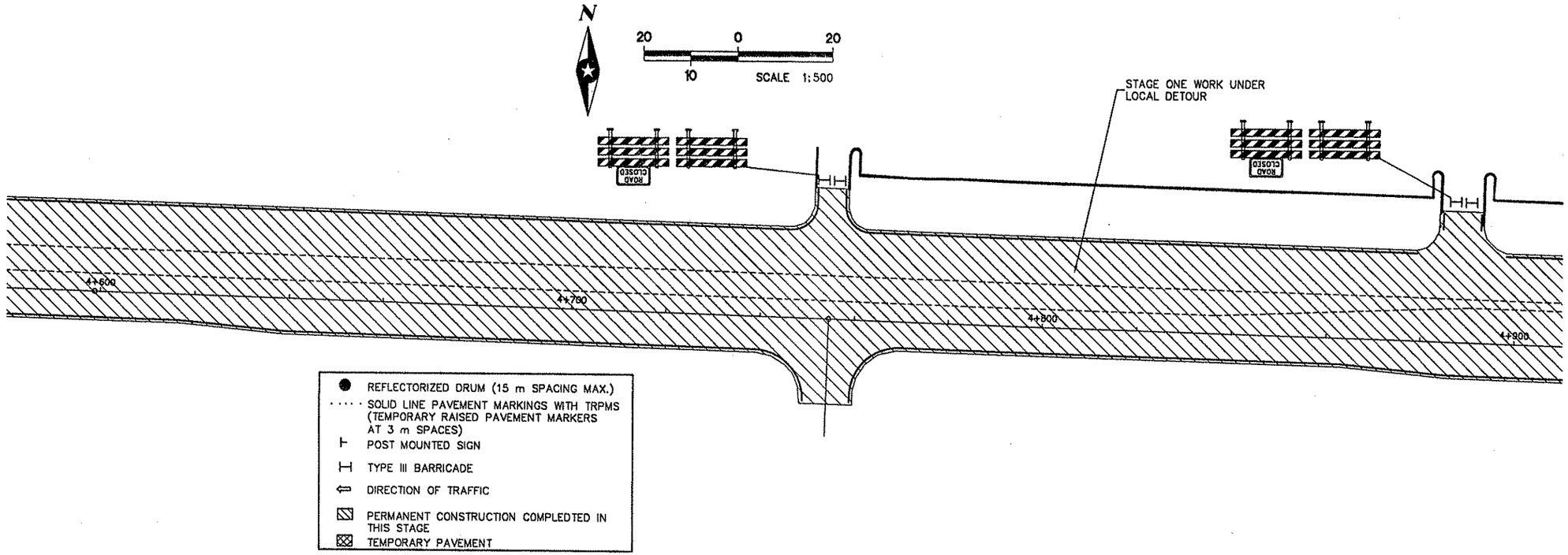
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

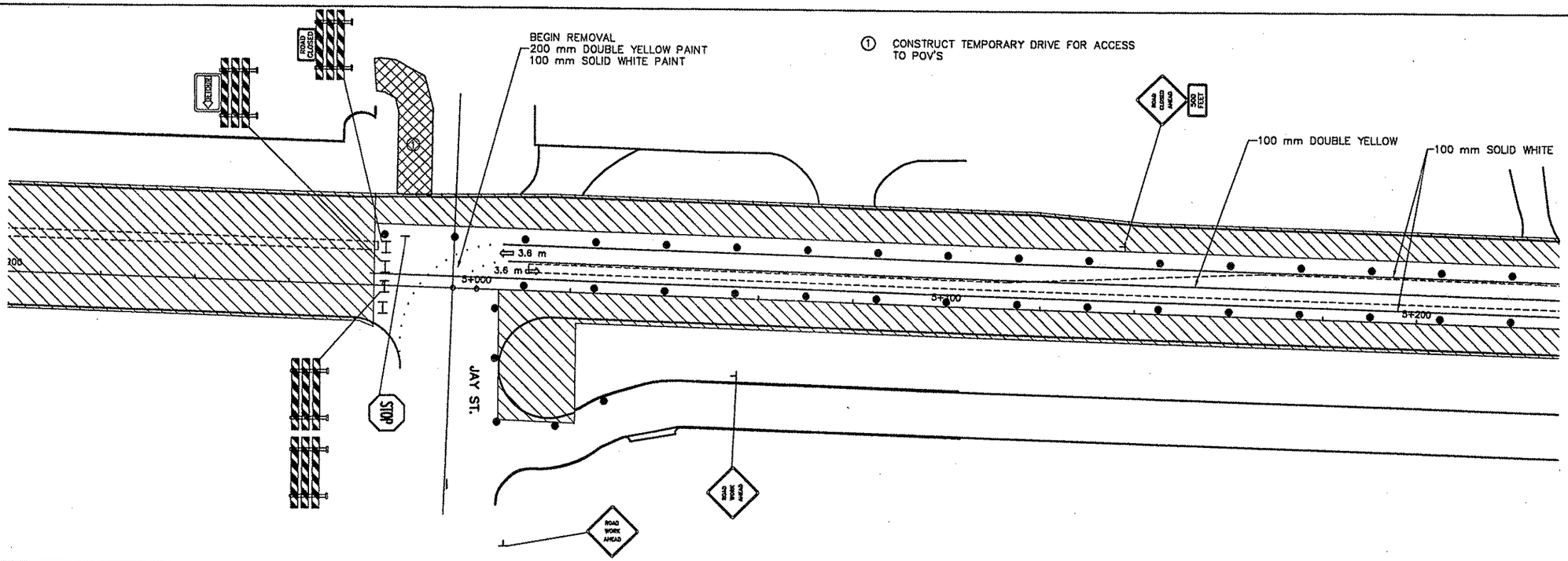
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

FILE NO. ANOKC9806.01
DATE 03/15/99
181 / 230

O:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\ACSB0651_5.DWG 03-24-99 3:07 pm





DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

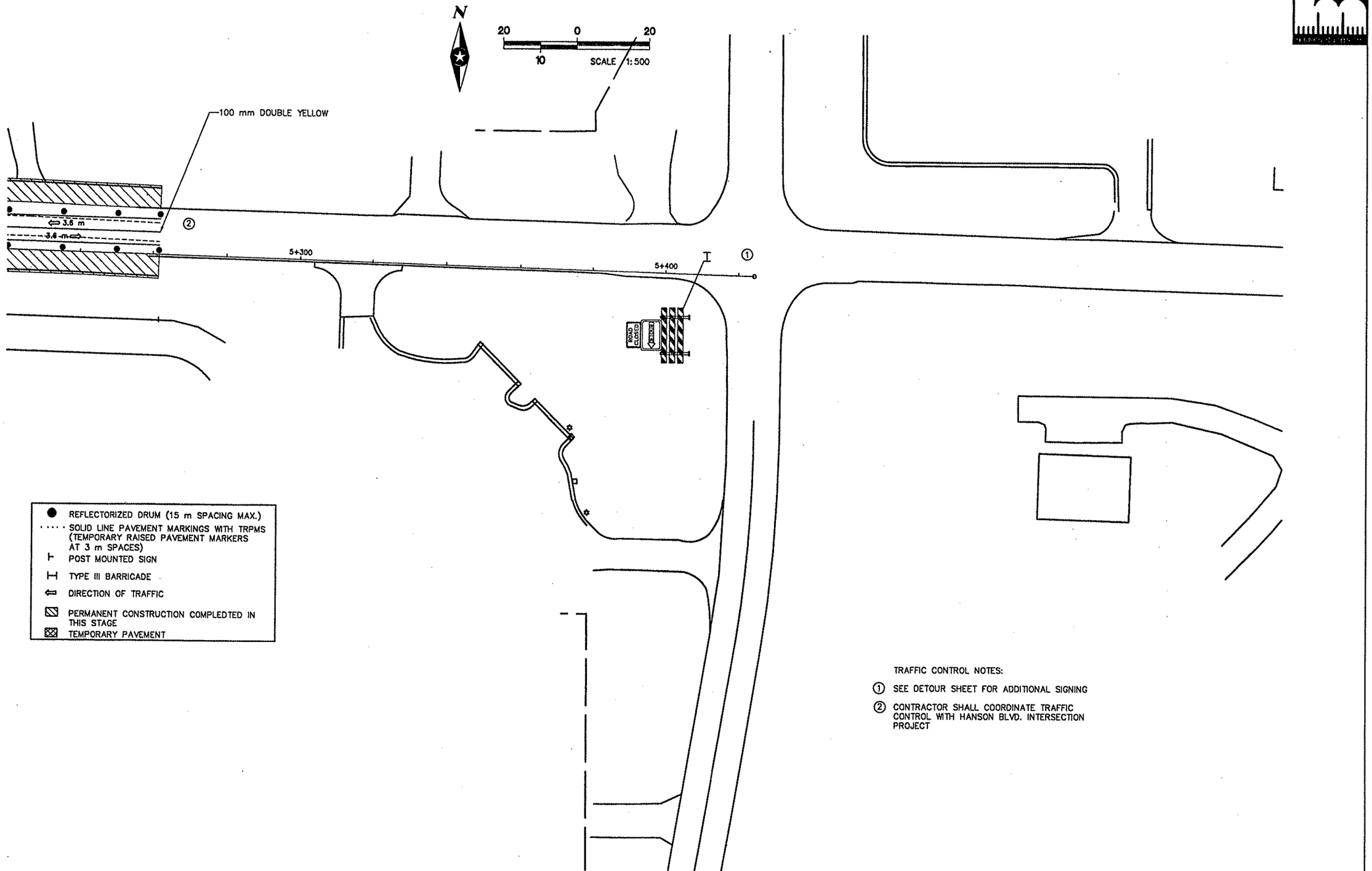
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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. 4+580.000 TO 5+230.000

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

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S1_6.DWG 03-24-99 3:13 pm



TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

② CONTRACTOR SHALL COORDINATE TRAFFIC CONTROL WITH HANSON BLVD. INTERSECTION PROJECT

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: 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. ANOKC9806.01
DATE 03/15/99
183/230

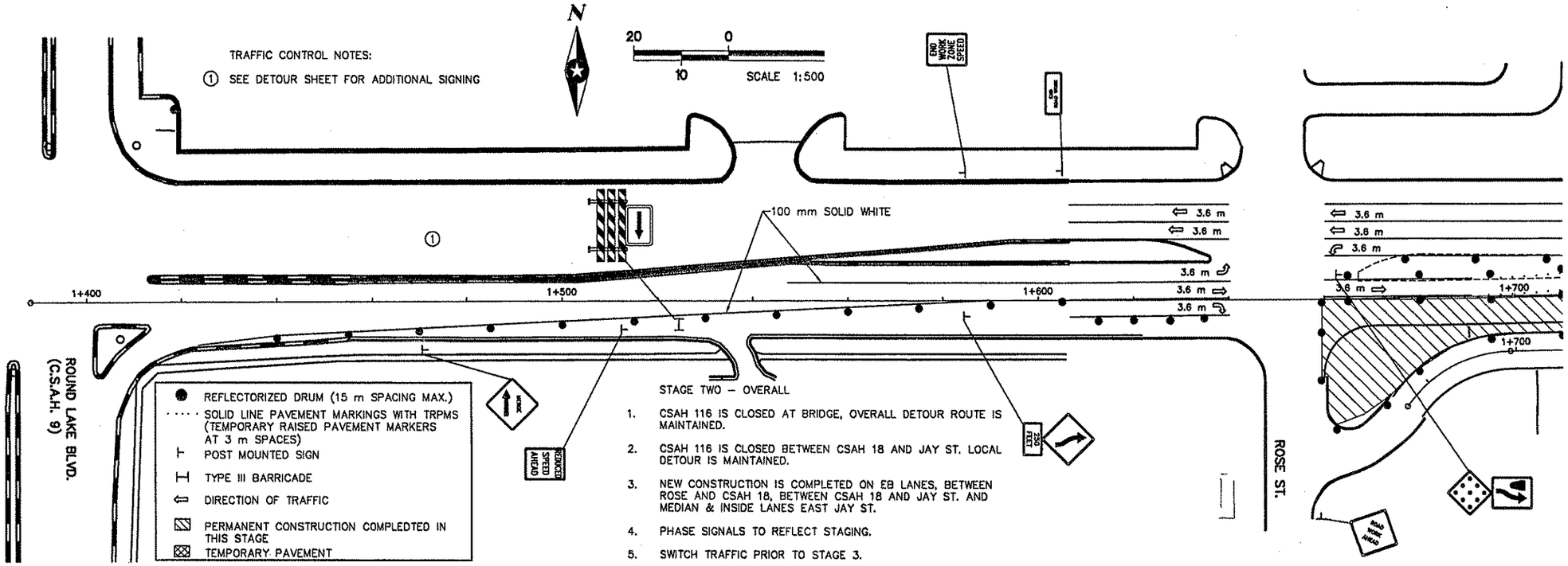
C: \CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S1_7.DWG 03-22-99 3:47 pm

TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

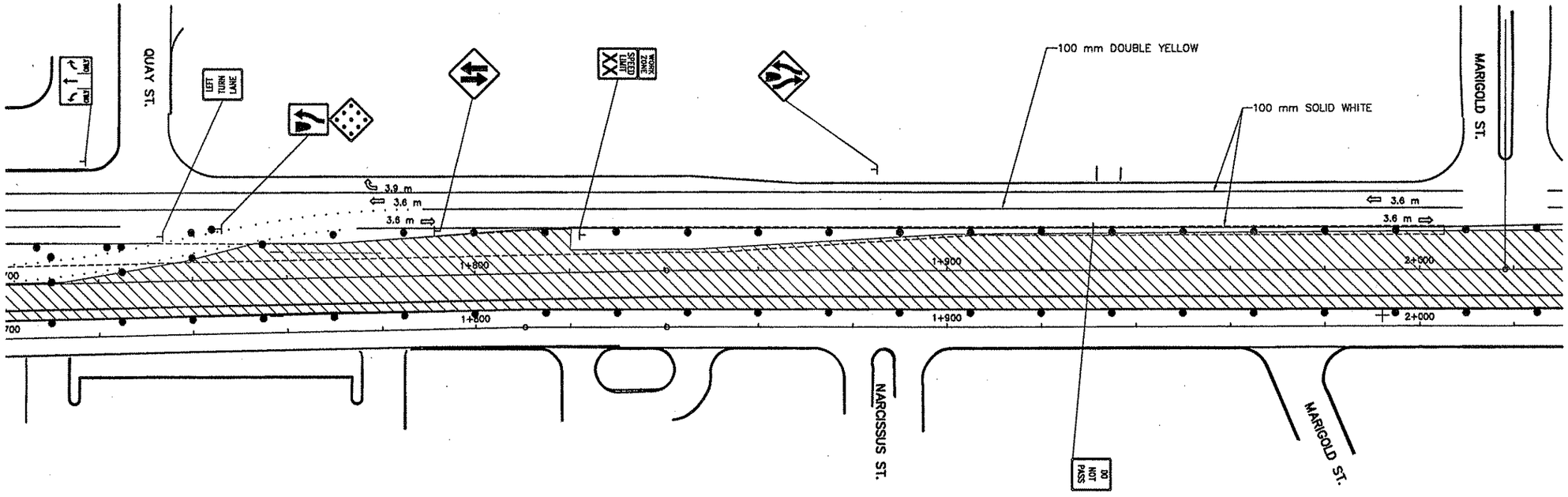
N

20 0 10 SCALE 1:500



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.



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

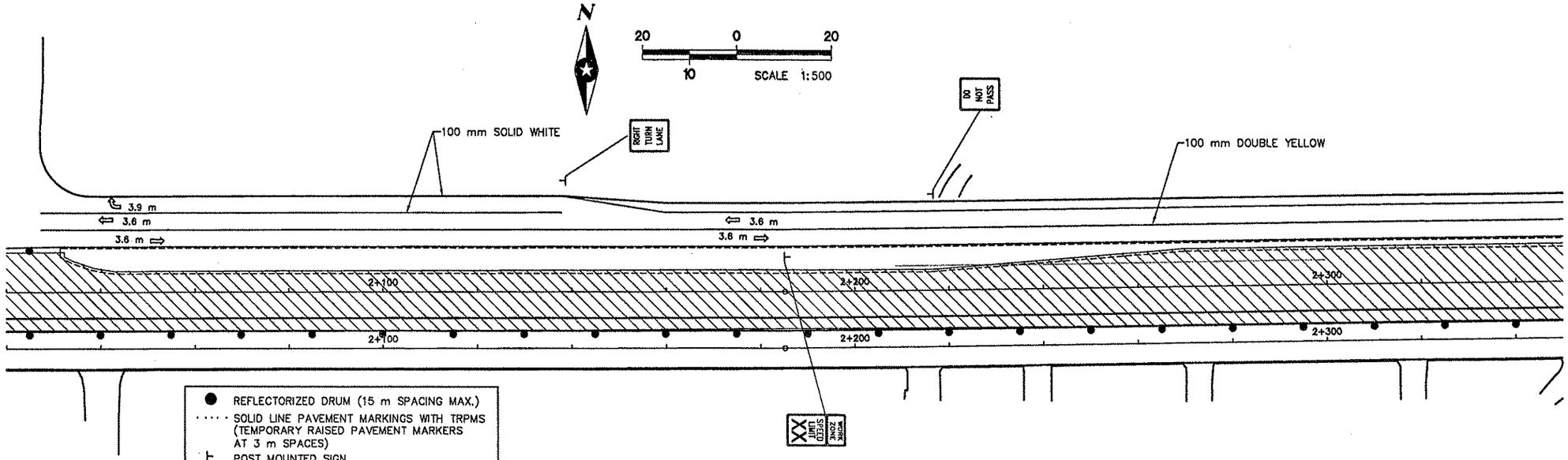
SEH

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. ANOKC9806.01
DATE 03/15/99
184 / 230

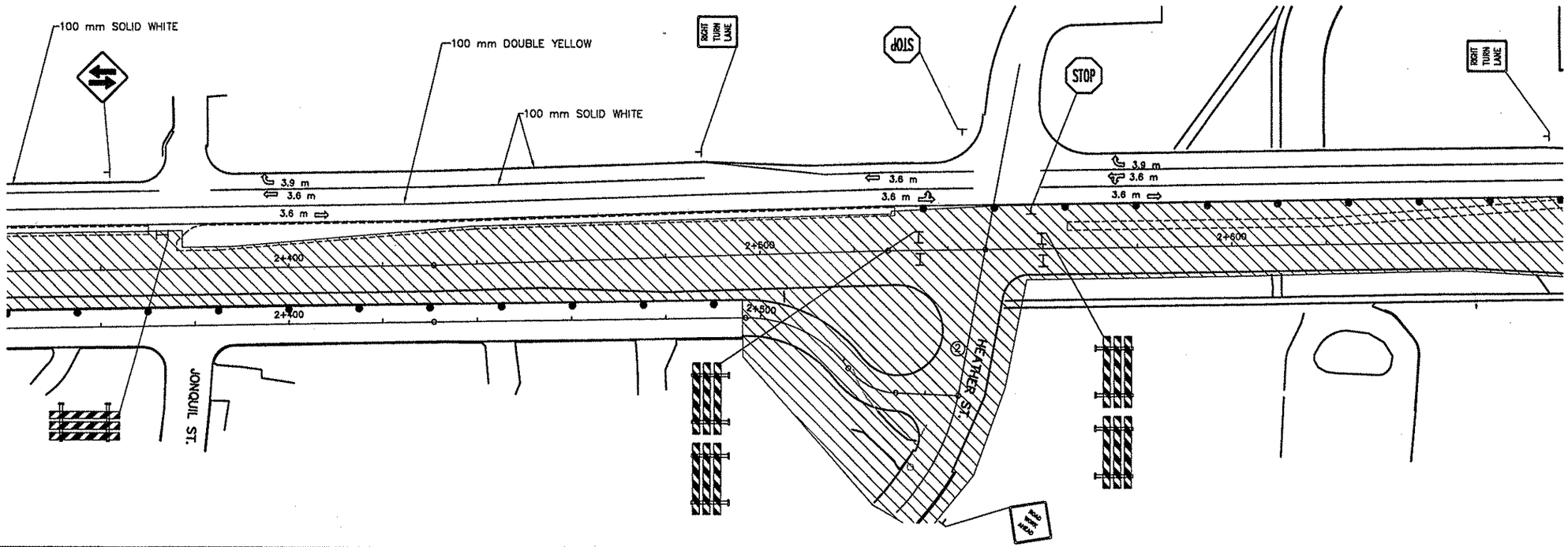
Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\VAC806S2_1.DWG 03-24-99 3:27 pm



TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

② PROVIDE ACCESS VIA EXISTING, TEMPORARY OR PERMANT CONSTRUCTION



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

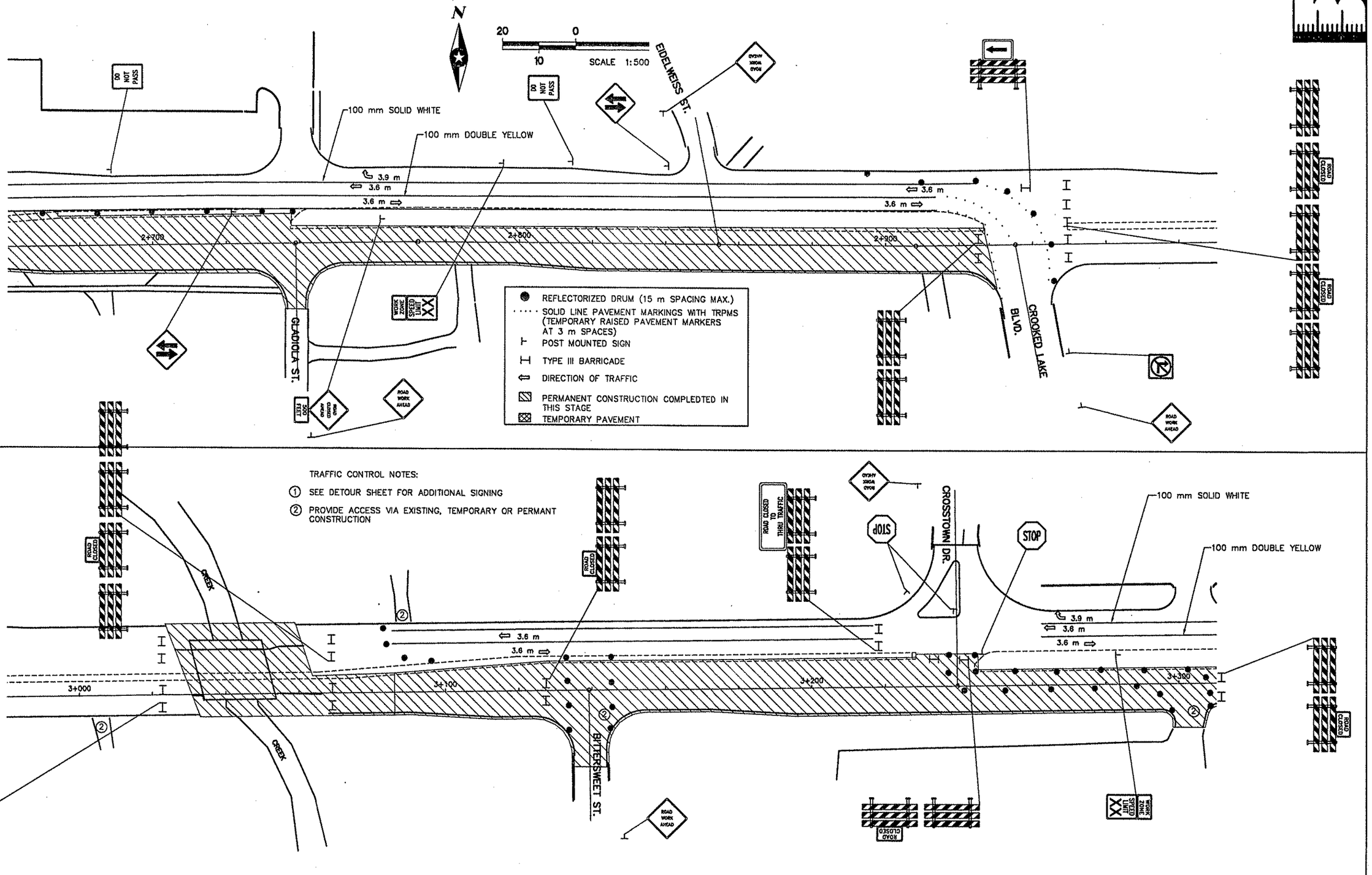
SEH

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. ANOKC9806.01
DATE 03/15/99
185/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S2_2.DWG 03-24-99 3:32 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

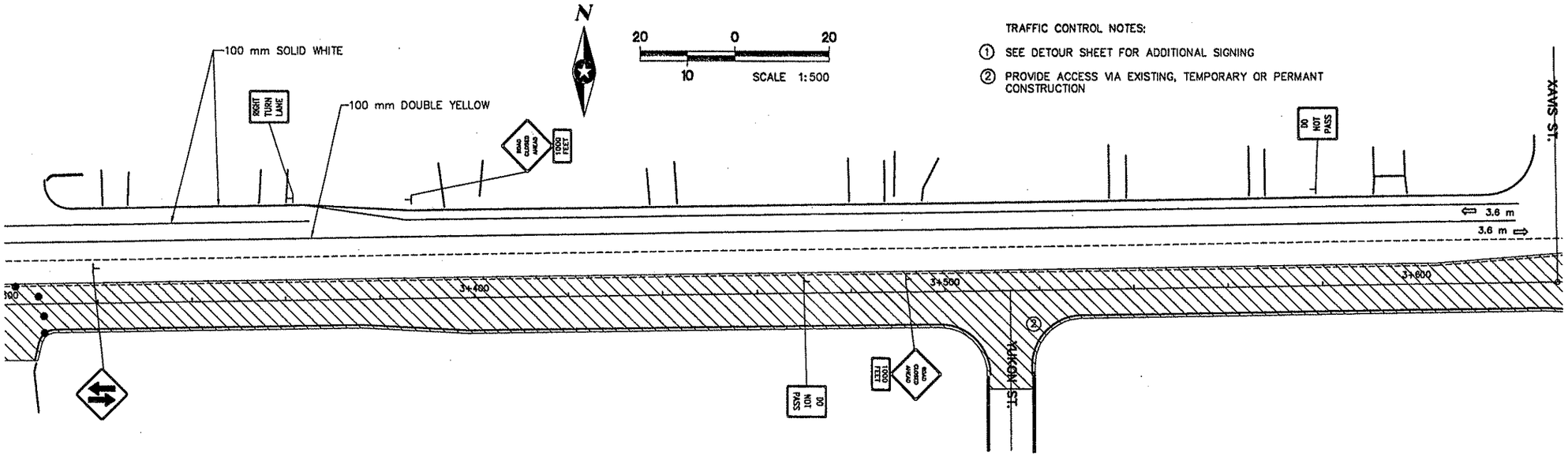
SEH

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

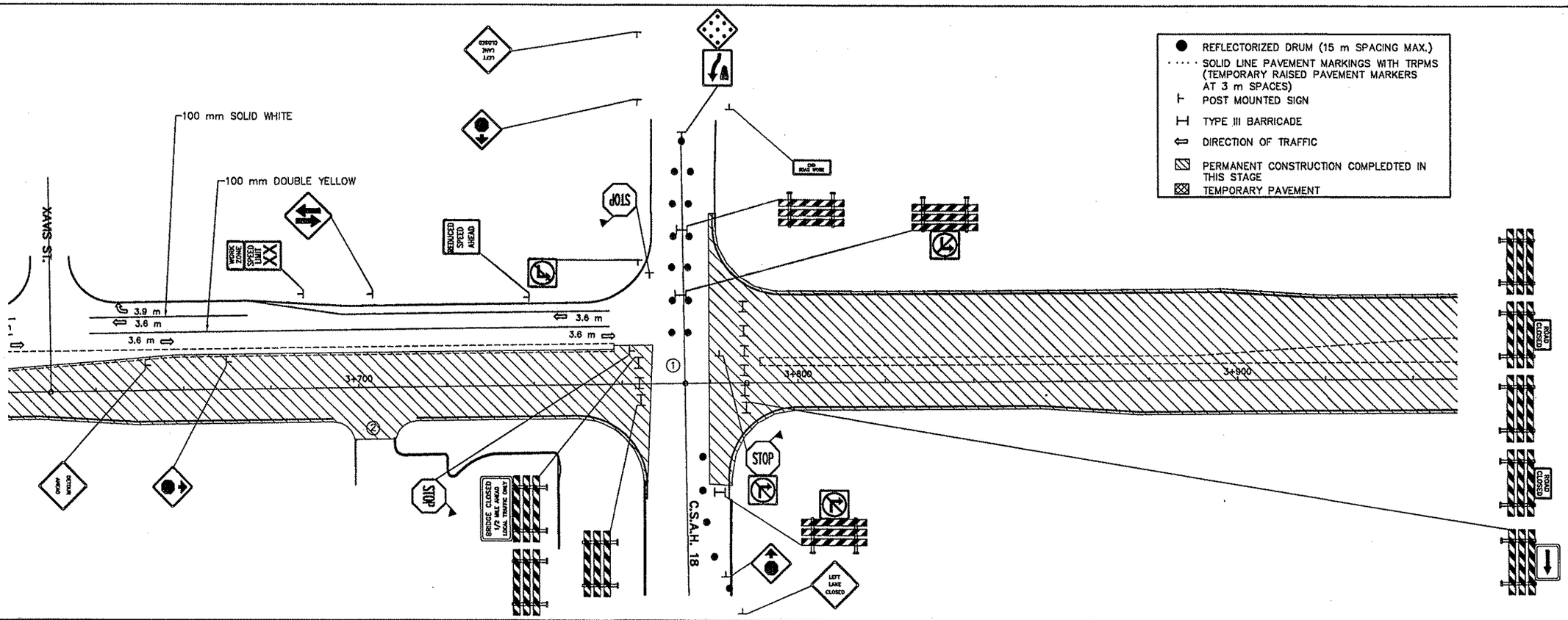
FILE NO. ANOKC9806.01
DATE 03/15/99
186/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC8065S2_3.DWG 03-24-99 3:43 pm



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 COMPLEDTED IN THIS STAGE
- TEMPORARY PAVEMENT

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

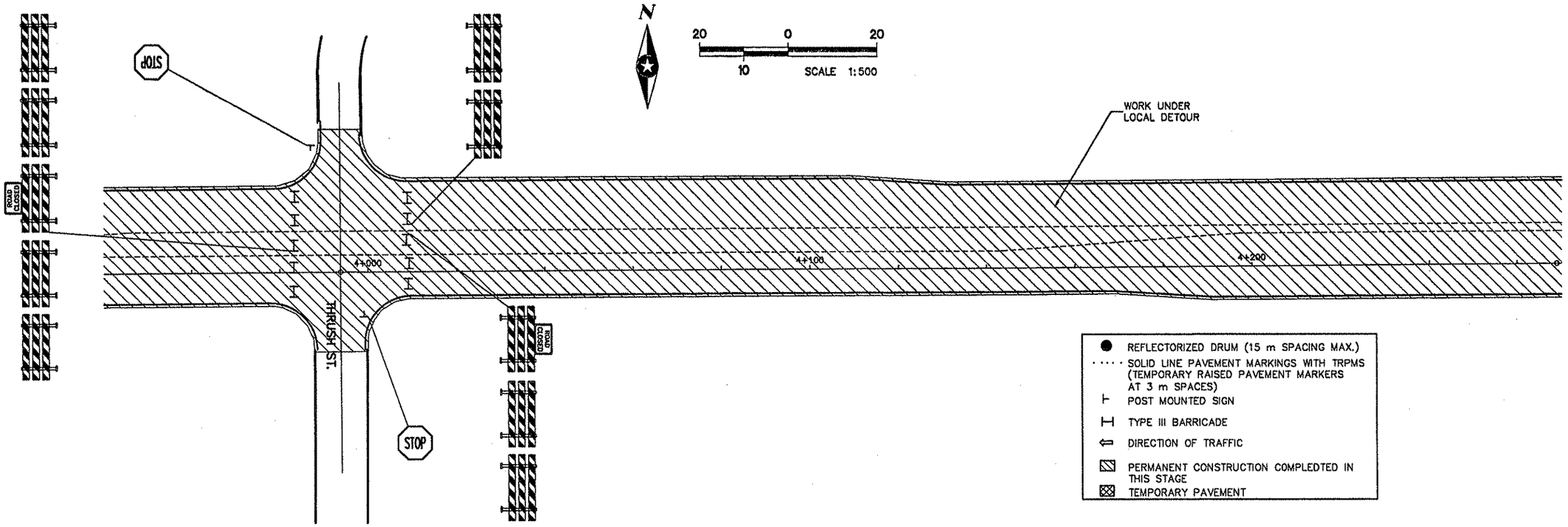
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

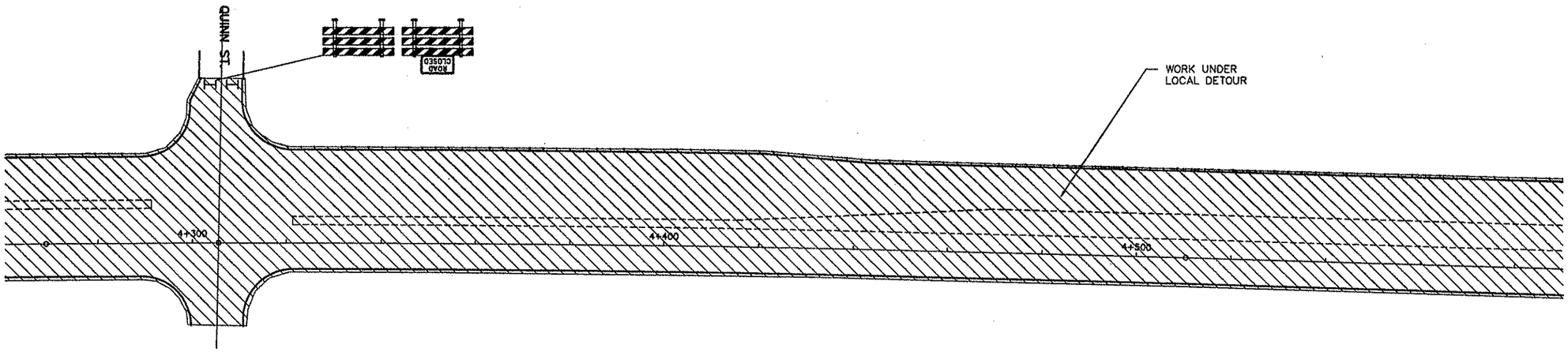
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

TRAFFIC CONTROL-STAGE TWO
STA. 3+300.000 TO 3+950.000

FILE NO. ANOKC9806.01
DATE 03/15/99
187/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S2_4.DWG 03-24-99 3:55 pm





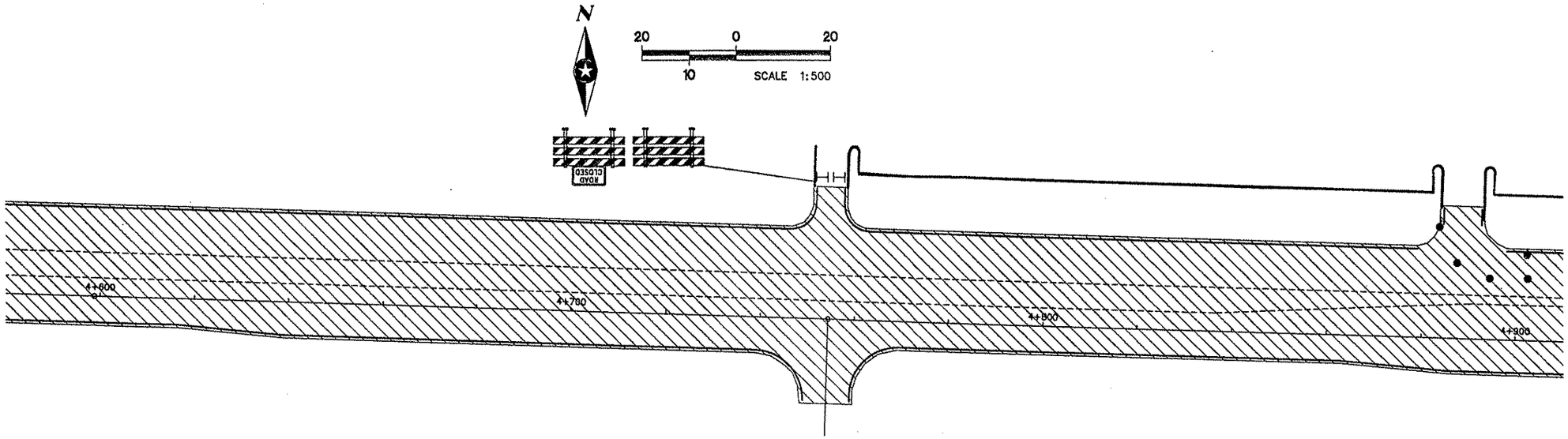
DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

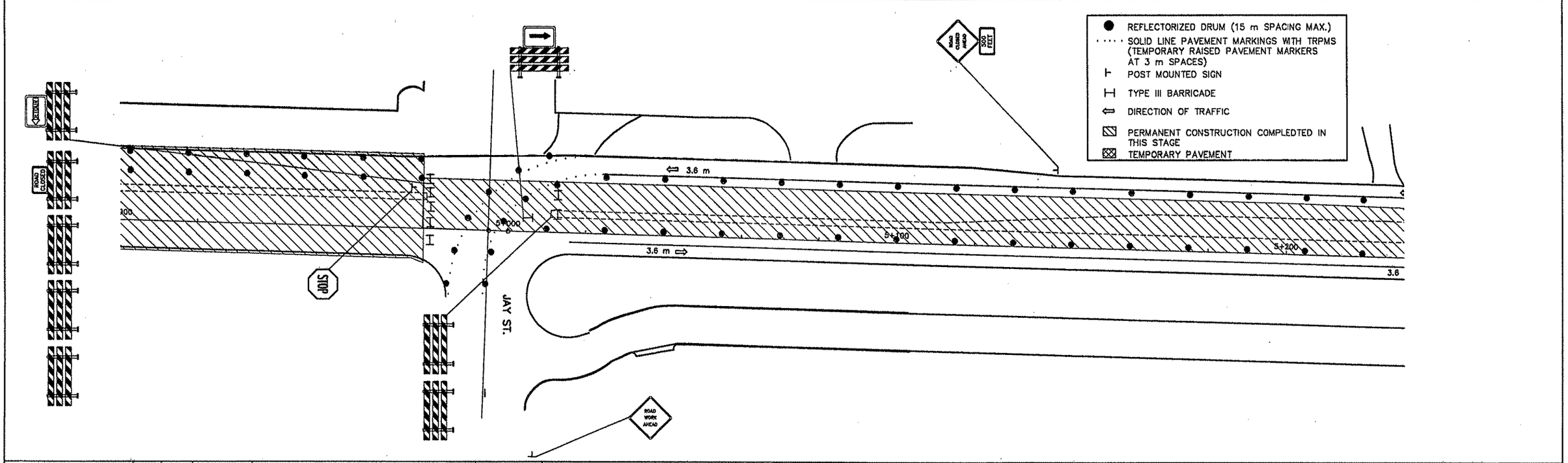
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

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

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

FILE NO. ANOKC9806.01
DATE 03/15/99
188/230





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

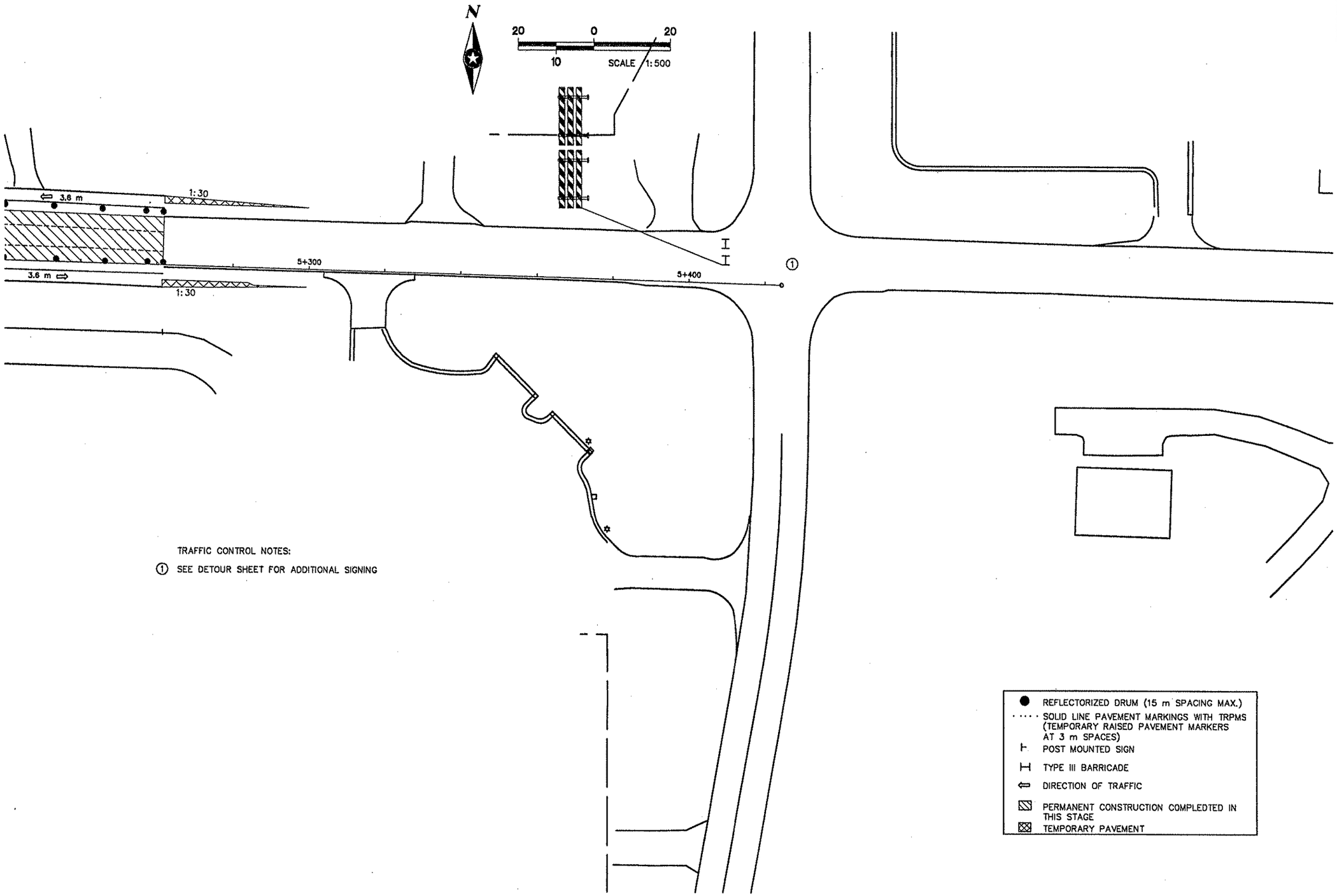
SEH

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+580.000 TO 5+230.000

FILE NO. ANOKC9806.01
DATE 03/15/99
189/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S2_6.DWG 03-23-99 9:52 am



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 COMPLEDTED IN THIS STAGE
- ▩ TEMPORARY PAVEMENT

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

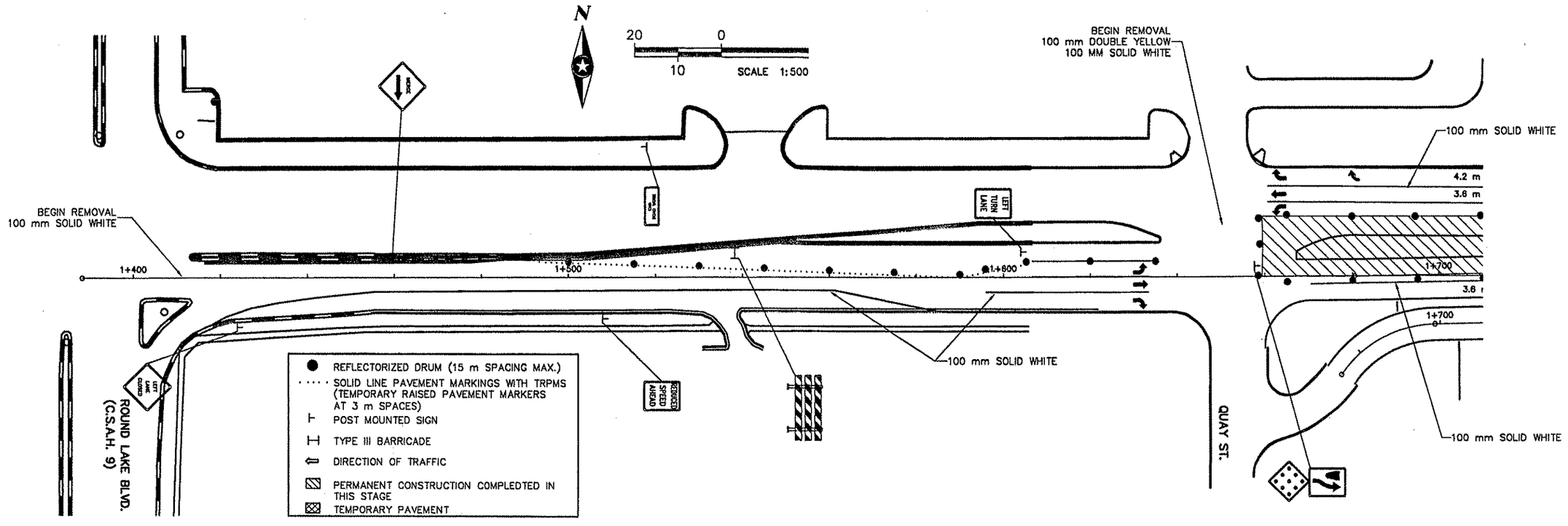
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

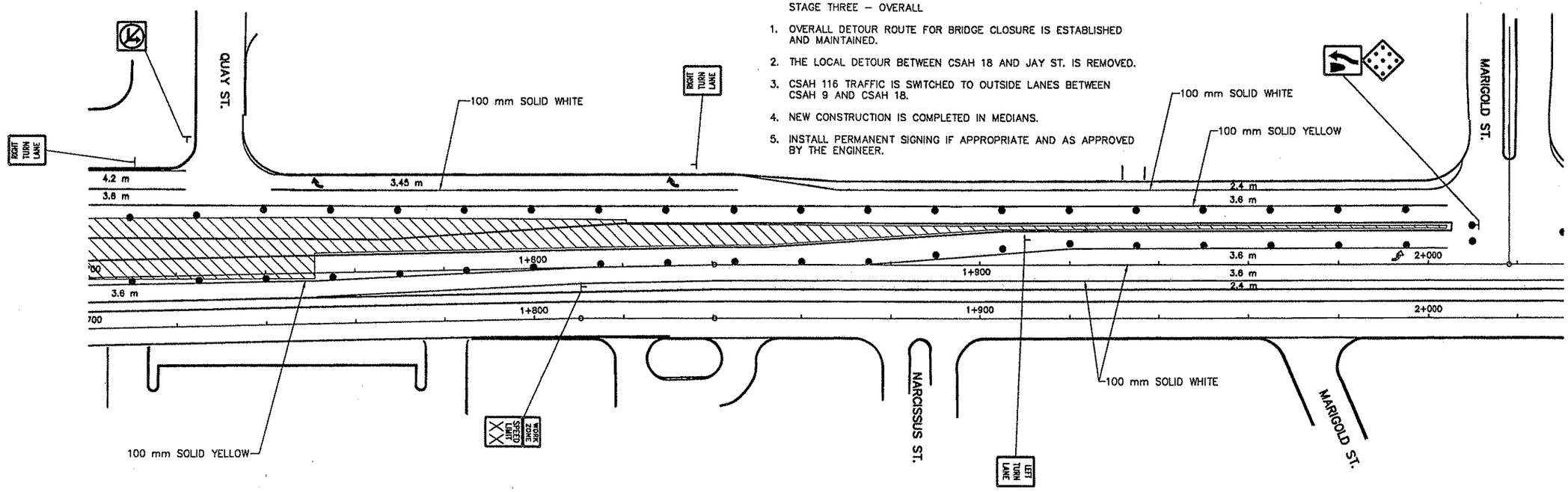
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

FILE NO. ANOKC9806.01
DATE 03/15/99
190/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC9806S2_7.DWG 03-23-99 9:55 am





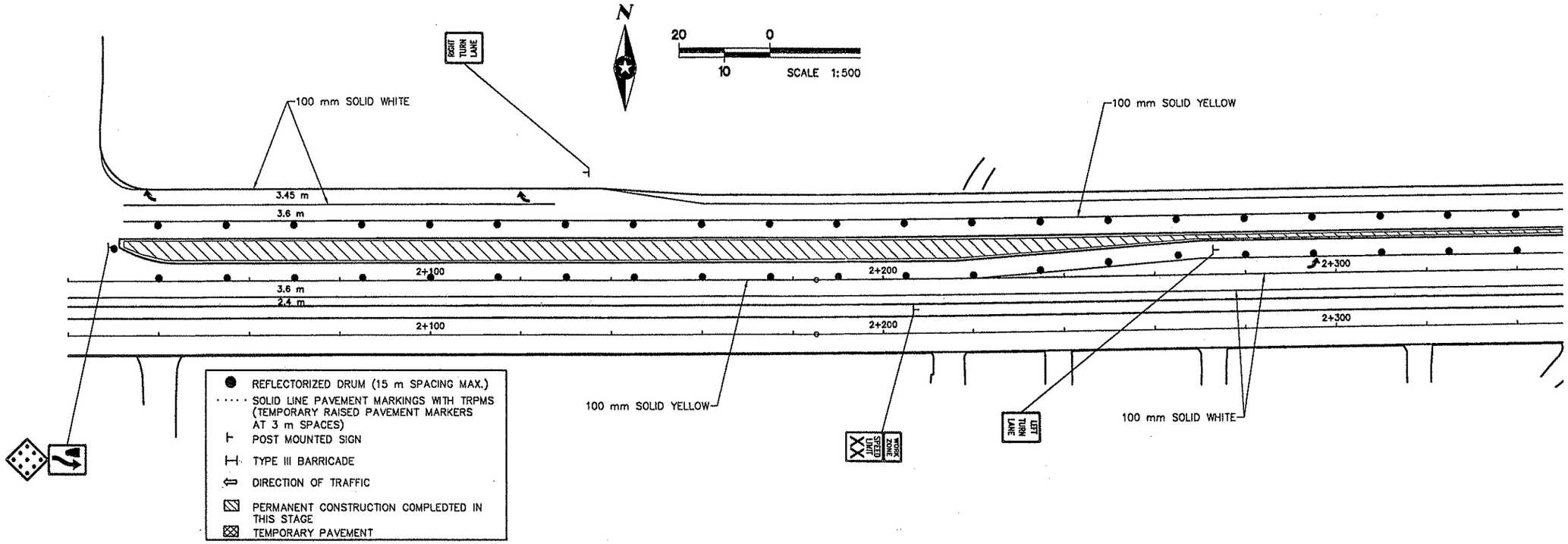
DESIGN	1	PJM	4/12	NOTE 2 CHANGED, NOTE 5 ADDED	
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

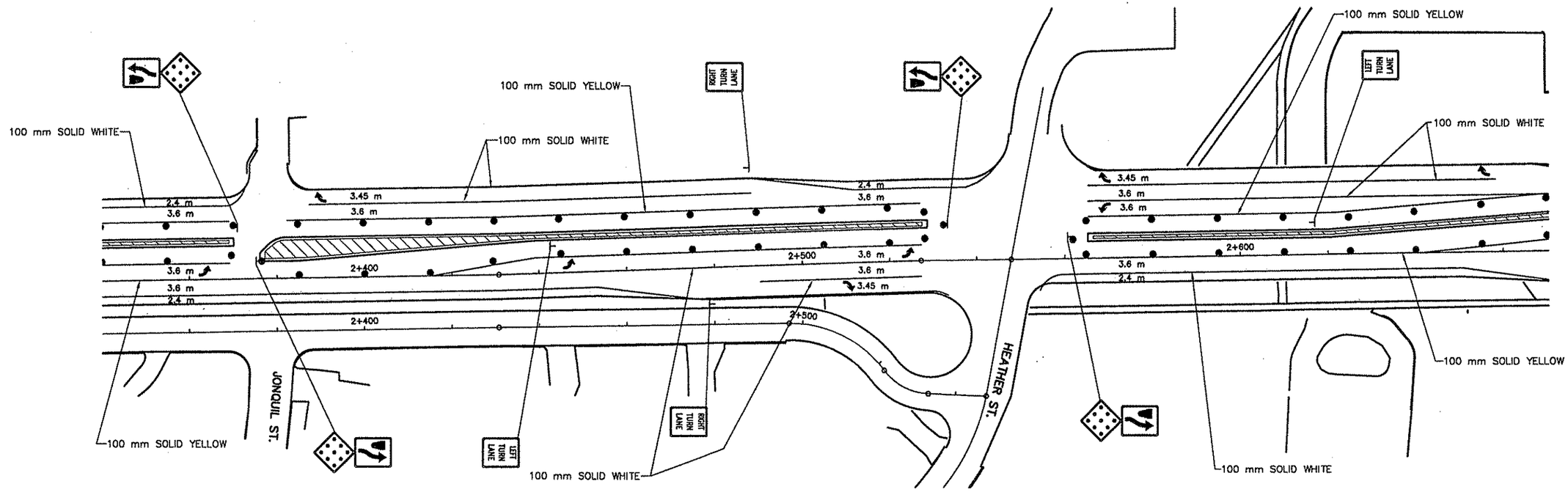
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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 THREE
STA. 1+388.164 TO 2+030.000

FILE NO. ANOKC9806.01
DATE 03/15/99
191/230





DESIGN						
DRAWING						
CHECKED						
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM	

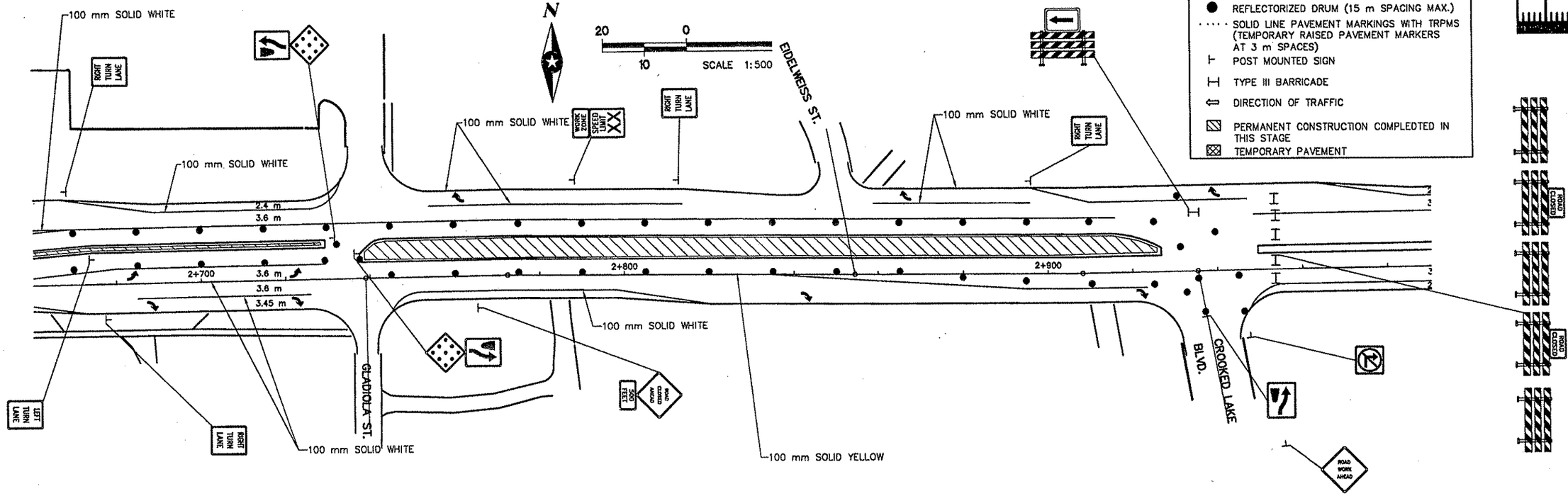
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 18612

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 THREE
STA. 2+020.000 TO 2+670.000

FILE NO. ANOKC9806.01
DATE 03/15/99
192 / 230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\ACB06S3_2.DWG 03-23-99 11:46 am



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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

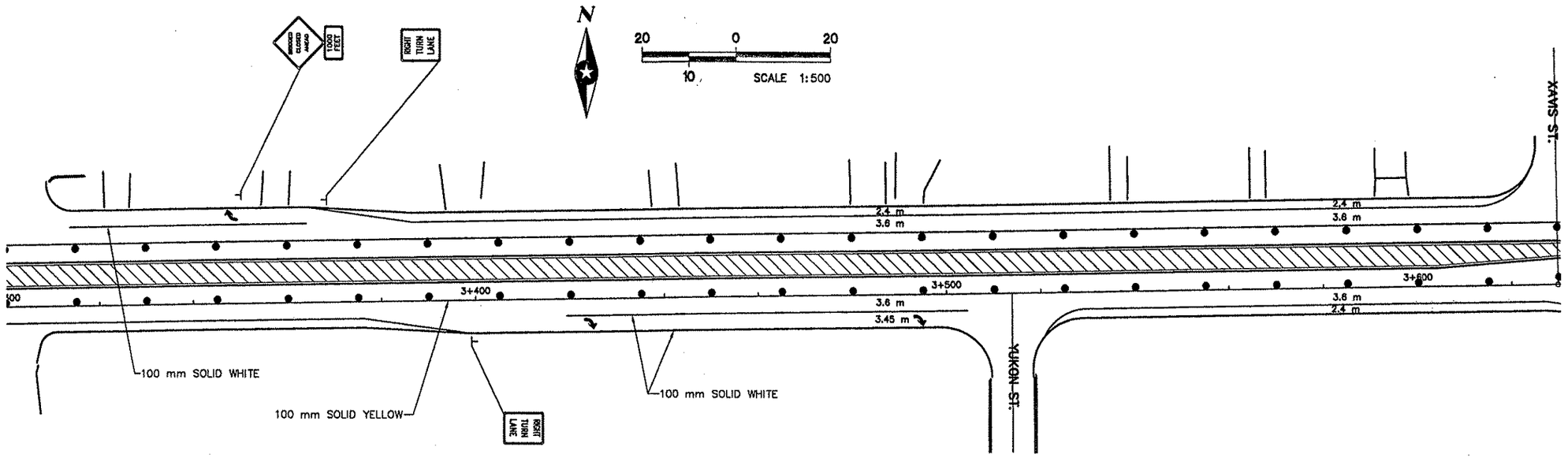
SEH

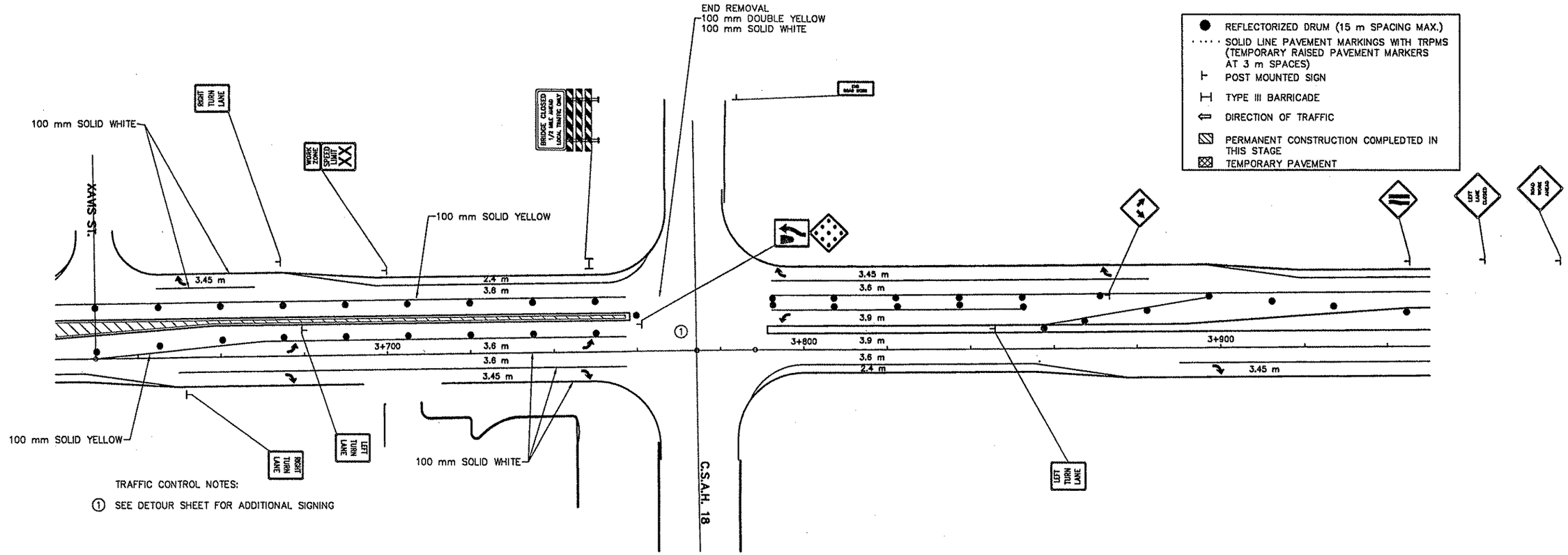
ANOKA COUNTY
C.S.A.H. 116 (BUNKER LAKE BLVD.)
S.A.P. 02-716-04
S.A.P. 198-020-14

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

FILE NO. ANOKC9806.01
DATE 03/15/99
193 / 230

Q:\CIVIL\CLIENTS\A_THRU_S\ANOKA\98061\DWG\ACB0SS3_3.DWG 03-23-99 1:38 pm





TRAFFIC CONTROL NOTES:

① SEE DETOUR SHEET FOR ADDITIONAL SIGNING

DESIGN					
DRAWING					
CHECKED					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM

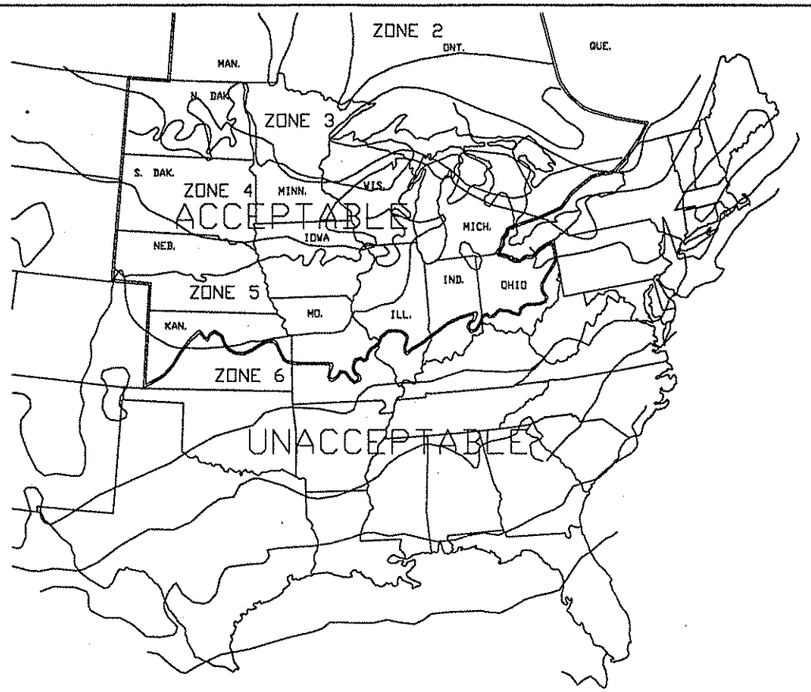
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.
Date 3/15/99 Reg. No. 18612

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 THREE
STA. 3+300.000 TO 3+950.000

FILE NO. ANOKC9806.01
DATE 03/15/99
194/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806S3_4.DWG 03-23-99 1:35 pm



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.

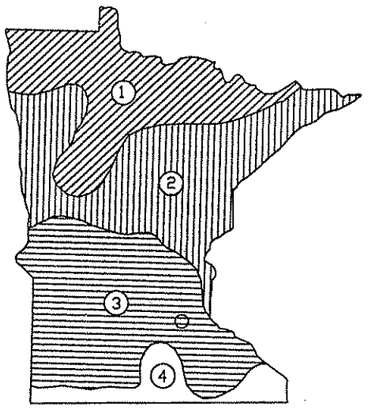
ZONE 5 ▭ −30° to −25° C

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 ACCEPETABLE 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.

ACCEPTABLE GROWING RANGE FOR MIDWEST AND NORTHERN GROWN PLANT STOCK

SOURCE: U.S.D.A. PLANT HARDINESS ZONE MAP

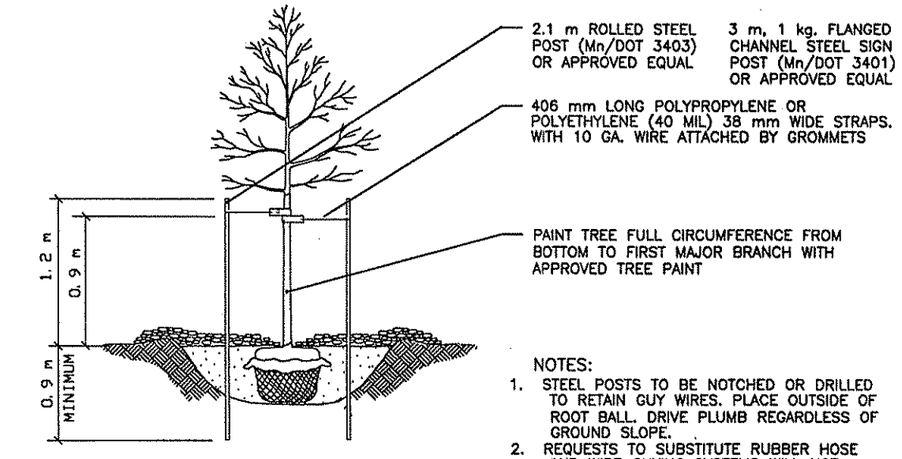


○ – INDICATES PROJECT LOCATION

	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

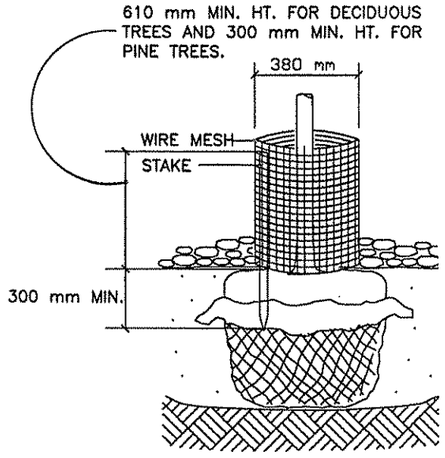
NOTES:
1. SEEDLING INCLUDES DECIDUOUS AND EVERGREEN STOCK.
2. ACTUAL DATES MAY CHANGE DEPENDING UPON SEASONAL CONDITIONS AS DETERMINED BY THE ENGINEER.
3. FALL PLANTING MAY NOT BE RECOMMENDED OR ALLOWED. SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS. THE FOLLOWING PLANTS ARE NOT RECOMMENDED FOR FALL INSTALLATION. HAWTHORNE, RUSSIAN OLIVE, DOGWOOD, POPLAR, HACKBERRY, LINDEN, IRONWOOD, HONEYLOCUST, BIRCH, MOUNTAIN ASH, MAPLE, WILLOW, CRABAPPLE, PLUM/CHERRY, OAKS,SUMAC.

OPTIMUM PLANTING DATE ZONES IN MINNESOTA



NOTES:
1. STEEL POSTS TO BE NOTCHED OR DRILLED TO RETAIN GUY WIRES. PLACE OUTSIDE OF ROOT BALL. DRIVE PLUMB REGARDLESS OF GROUND SLOPE.
2. REQUESTS TO SUBSTITUTE RUBBER HOSE AND WIRE GUYING SYSTEMS WILL NOT BE APPROVED.
3. USE WIRE WITH POLYPROPYLENE STRAPS.

STANDARD TREE STAKING / GUYING AND PAINTING DETAIL



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

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

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

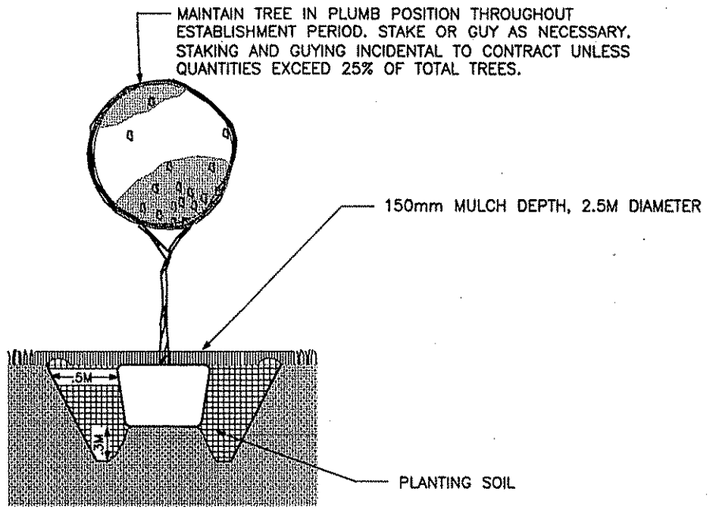
ESEH

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
DATE 03/15/99
195/230

minnesota metro



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 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 ENDOF 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.

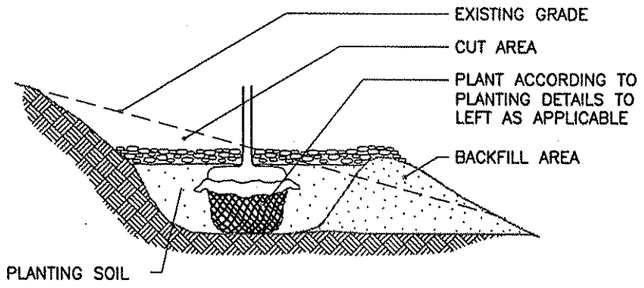
RODENT PROTECTION: PROVIDE ON ALL DECIDUOUS TREES AND PINE TREES UNLESS OTHERWISE SPECIFIED.

WATERING GUIDELINES:

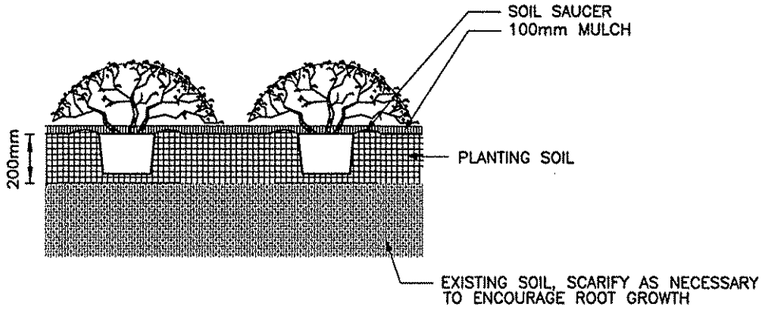
PLANT TYPE	AVERAGE AMOUNT OF WATER PER APPLICATION (LITERS)
MACHINE TRANSPLANTED TREES (75 mm CALIPER+)	190–380
BALLED & BURLAPPED TREES	75±
BARE ROOT TREES	55±
BALLED & BURLAPPED SHRUBS	40±
BARE ROOT OR CONTAINER SHRUBS	25±
WOODY SEEDLINGS	15±
HERBACEOUS GROUNDCOVERS AND VINES	10±

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.

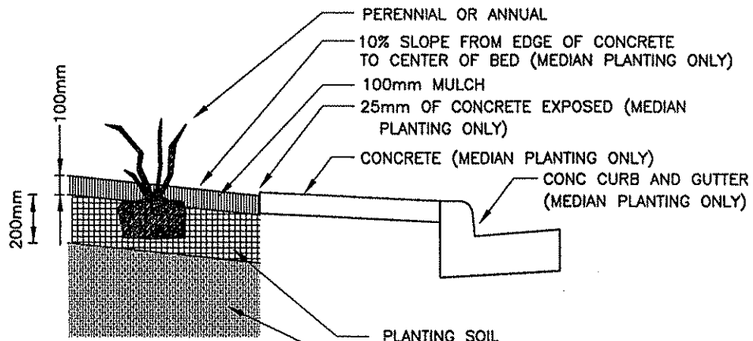
2) THE CONTRACTOR IS ADVISED THAT THE WATERING GUIDELINES ARE NOT REQUIREMENTS OF THE CONTRACT ALTHOUGH FAILURE TO CORRECT WATER DEFICITS BY SUPPLEMENTAL WATERING OR FAILURE TO COMPENSATE FOR EXCESSIVE SOIL MOISTURE AND DRAINAGE PROBLEMS MAY RESULT IN UNACCEPTABLE PLANTS LEADING TO REDUCED OR NO PAYMENT.



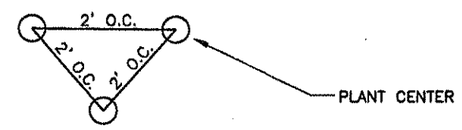
PLANTING DETAIL FOR STEEP SLOPES



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.

minnesota metric

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\LANDSCAPE\AN8606TZ.DWG 03-23-99 3:41 pm cpa90sp

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

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: 3/15/99 Reg. No. 17998

ESEH

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
DATE 03/15/99
196/230

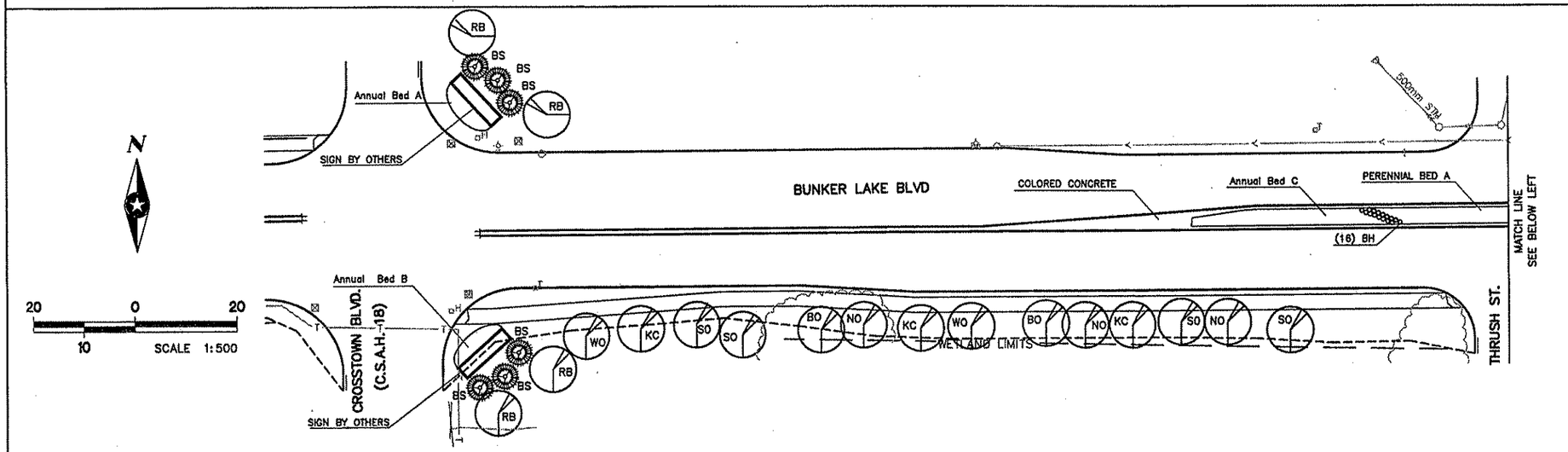
PLANTING SCHEDULE– PERENNIALS

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		PERENNIAL BED B
PERENNIAL BED C												250			PERENNIAL BED C
PERENNIAL BED D						125		125							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	85				PERENNIAL BED H
PERENNIAL BED I													250		PERENNIAL BED I
PERENNIAL BED J					85		85		85						PERENNIAL BED J
PERENNIAL BED K			125	125											PERENNIAL BED K
PERENNIAL BED L					85				85	85					PERENNIAL BED L
PERENNIAL BED M													250		PERENNIAL BED M
PERENNIAL BED N					85		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

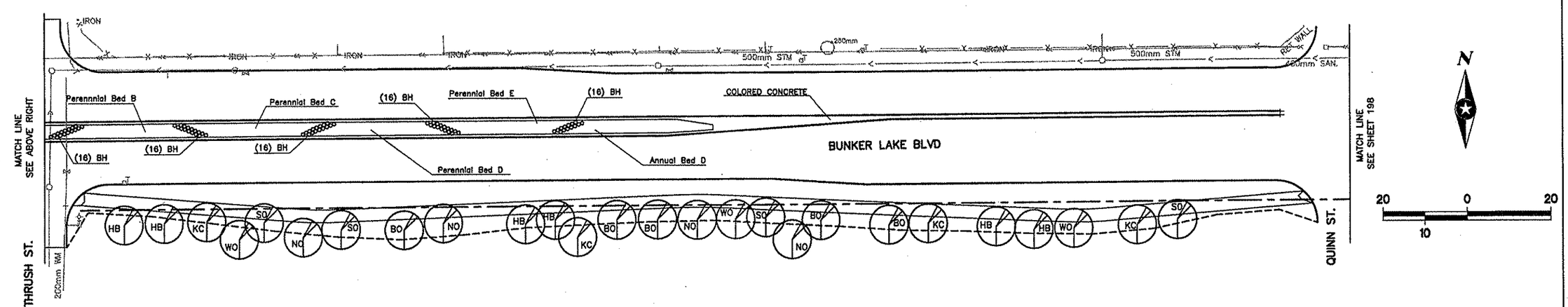
SYMBOL	QUANT	COMMON NAME	SCIENTIFIC NAME	SIZE	ROOT TYPE
○ BH	288	DWARF BUSH HONEYSUCKLE	DIERVILLA LONICERA	0.6M	BR
BS	12	BLACK HILLS SPRUCE	PICEA GLAUCA DENSATA	2M	B/B
RB	8	CLUMP RIVER BIRCH	BETULA NIGRA	3.5M	B/B
KC	12	KENTUCKY COFFEE TREE	GYMNOCLADUS DIOICUS	60mm	B/B
HB	14	HACKBERRY	CELTIS OCCIDENTALIS	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 MARIGOLD	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.



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
DRAWING					
CHECKED					

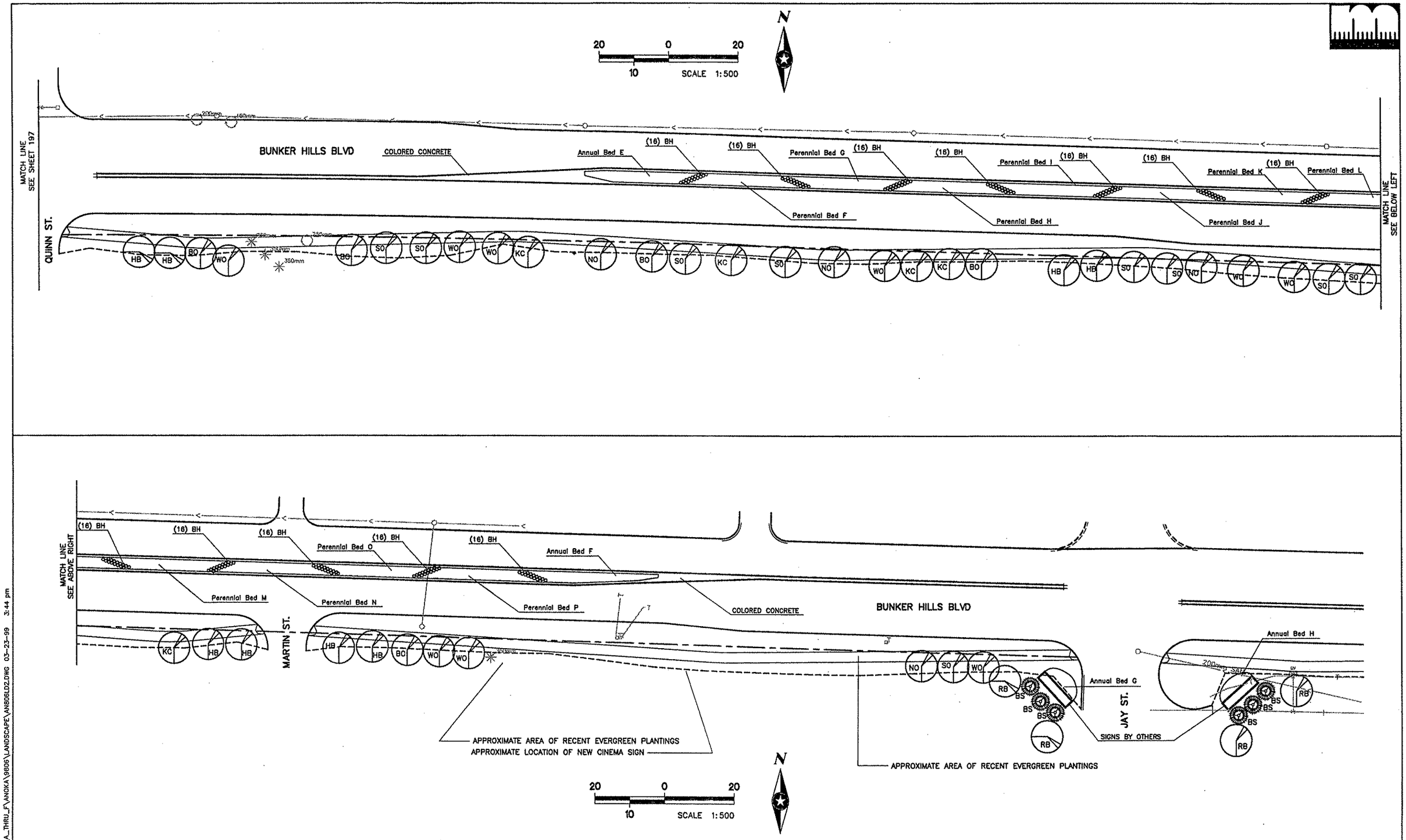
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Landscape Architect under the laws of the state of Minnesota.
Date: 3/22/99 Reg. No. 17998

SEH

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
DATE 03/15/99
197/203



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 Landscape Architect under the laws of the state of Minnesota.
Date: 3/15/99 Reg. No. 17998

ESH

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

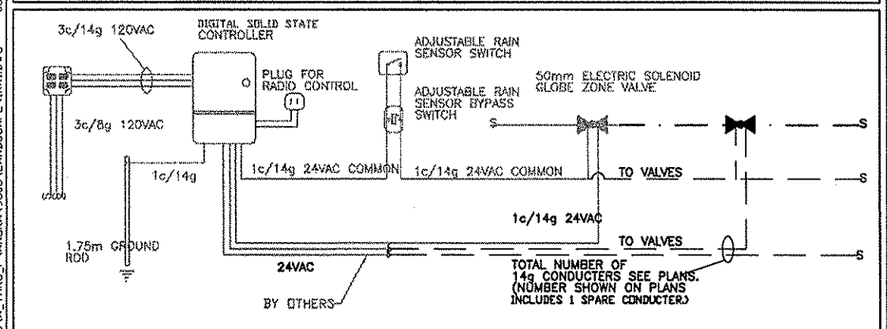
FILE NO. ANOKC9806.01
DATE 03/15/99
198/230

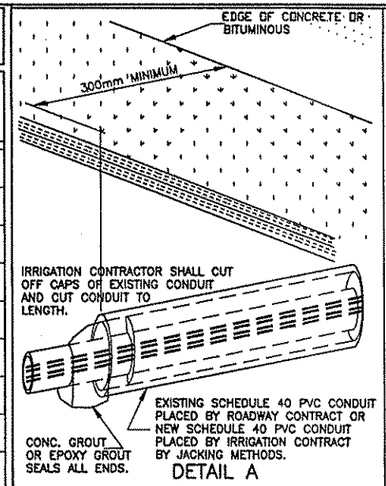
O:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\LANDSCAPE\AN806LD2.DWG 03-23-99 3:44 pm

LEGEND

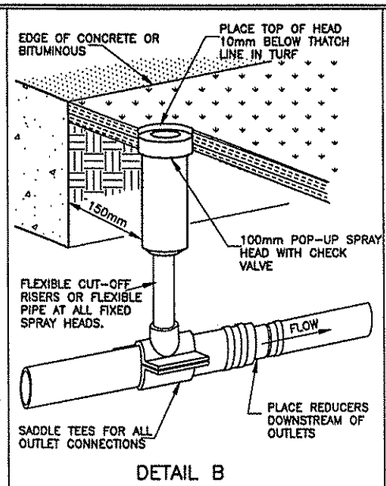
SYMBOL	DESCRIPTION
QS4	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 4m QUARTER CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
HS4	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 4m HALF CIRCLE PRESSURE COMPENSATING NOZZLE - SEE DET. B
QS3	100mm POP-UP SPRAY HEAD WITH CHECK VALVE, 3m QUARTER CIRCLE PRESSURE 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 CONDUCTERS 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

WIRING SCHEMATIC

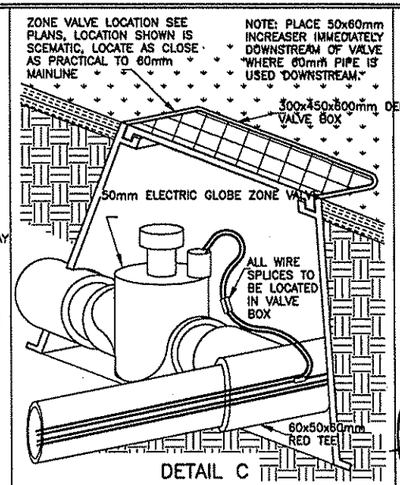




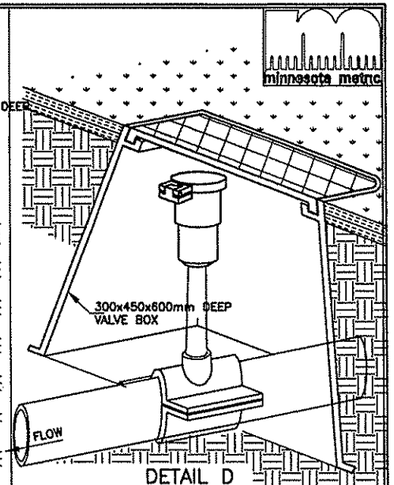
DETAIL A



DETAIL B

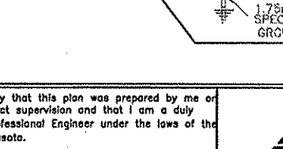


DETAIL C



DETAIL D

PVC BARREL TYPE CONNECTOR W/ CRIMPED COPPER LEADS AND EPOXY OR SILICONE BASED SEALANT.

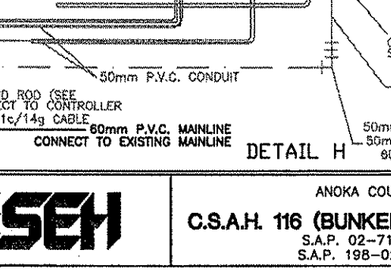


TYPICAL BURIED SPLICE DETAIL

14 GAGE SINGLE STRAND CONTROL WIRE BUNDLE SEE PLAN FOR NUMBER OF CONDUCTERS PER BUNDLE

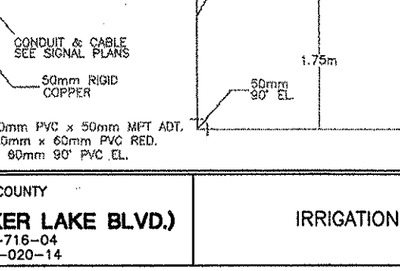
DETAIL E

PVC 1100 kPa (160 psi) SERVICE PIPE SIZE AS INDICATED ON PLANS. (SIZES NOTED SHALL GOVERN FROM LOCATION INDICATED UPSTREAM TO THE NEXT LARGER SIZE INDICATED ON THE PLANS.)

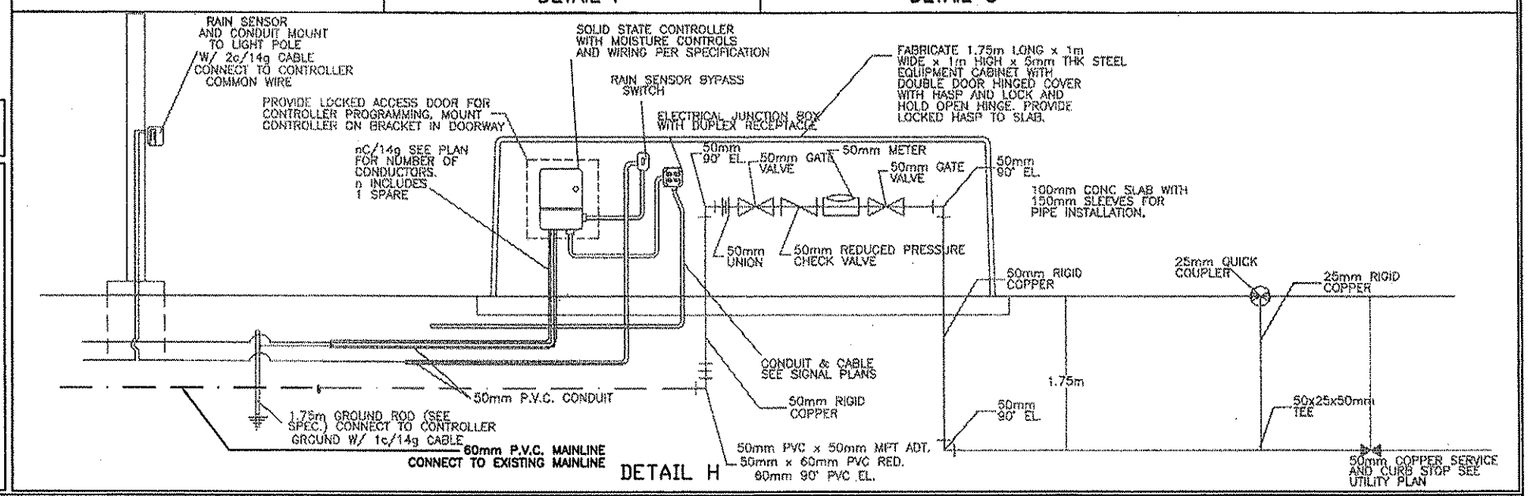


DETAIL F

POLYETHYLENE 550 kPa (80 psi) NSF PIPE 25mm PIPE UNLESS NOTED AS 30mm POLY. (30mm PIPE SHALL BE USED FROM WHERE INDICATED ON PLANS UPSTREAM TO PVC LATERAL PIPING.)



DETAIL G



DETAIL H

DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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: _____ Reg. No. 18612

SEH

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

199/230

N

12 0 12

6 SCALE 1:300

(COON CREEK BLVD.)

C.S.A.H. 18

3+800

3+900

QS2 HS3 HS3 HS3

THRUSH ST.

4+000

4+100

30mm POLY

60mm PVC LATERAL

60mm PVC MAIN

150mm CONDUIT

ZONE VALVE 1

ZONE VALVE 2

ZONE VALVE 3

3c/14g CONTROL WIRE

4c/14g CONTROL WIRE

IRON

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

SEH

ANOKA COUNTY

C.S.A.H. 116 (BUNKER LAKE BLVD.)

S.A.P. 02-716-04

S.A.P. 198-020-14

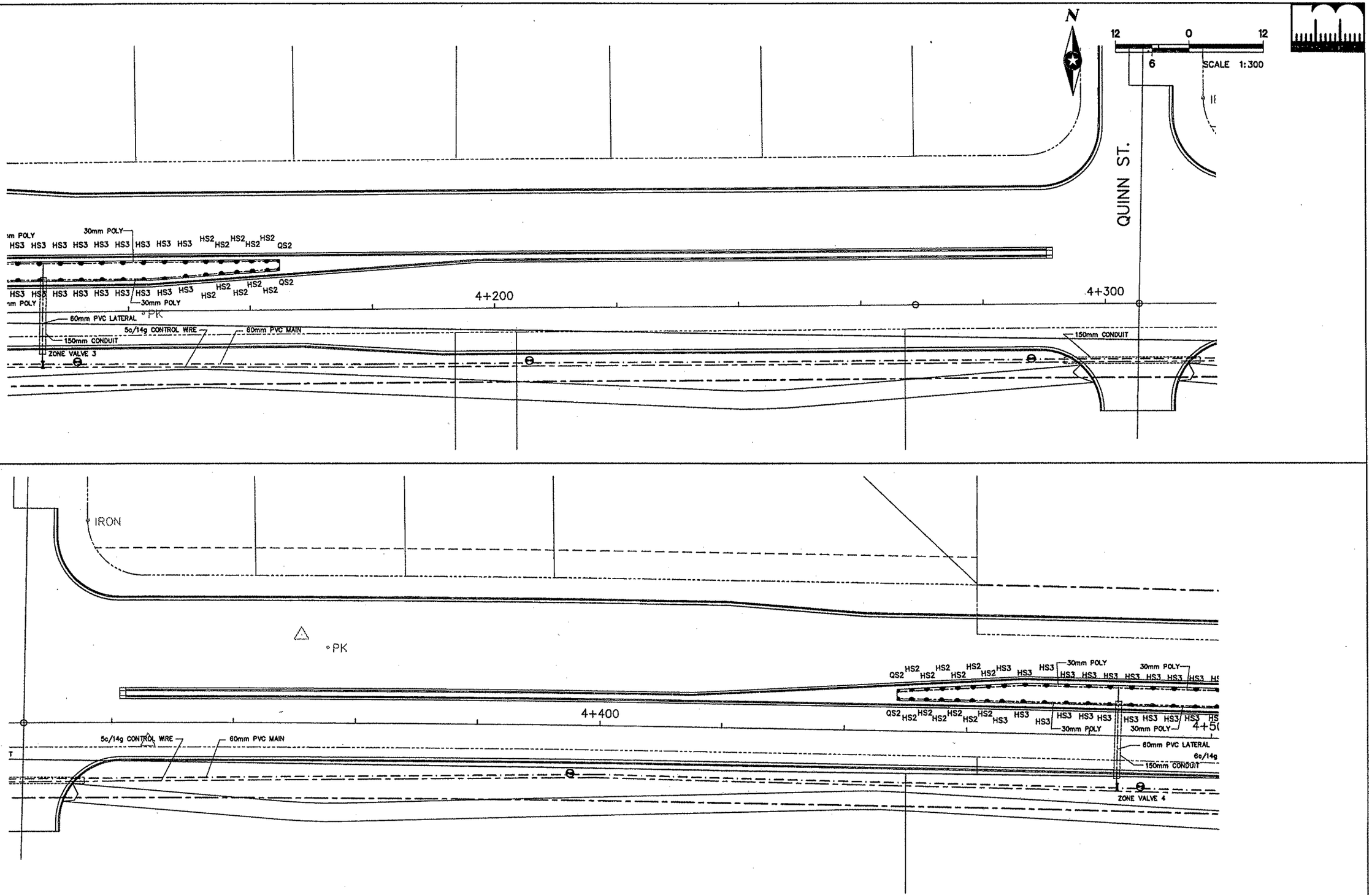
IRRIGATION PLAN

FILE NO. ANOKC9806.01

DATE 03/15/99

200/230

C:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806IR1.DWG 03-18-99 4:01 pm

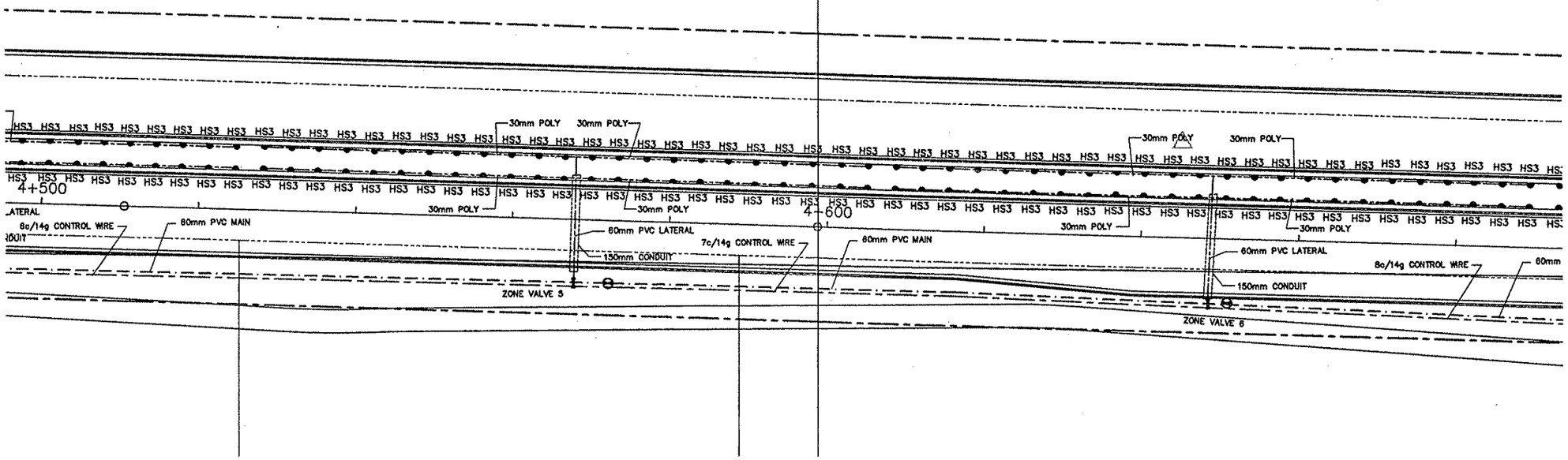


DESIGN						I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.	ANOKA COUNTY	IRRIGATION PLAN	FILE NO. ANOKC9806.01	201
DRAWING							C.S.A.H. 116 (BUNKER LAKE BLVD.)		DATE 03/15/99	230
CHECKED						Date: _____ Reg. No. 18612	S.A.P. 02-716-04			
DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM		S.A.P. 198-020-14			

N

12 0 12

6 SCALE 1:300



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.
DRAWING						Date: _____ Reg. No. 18612
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

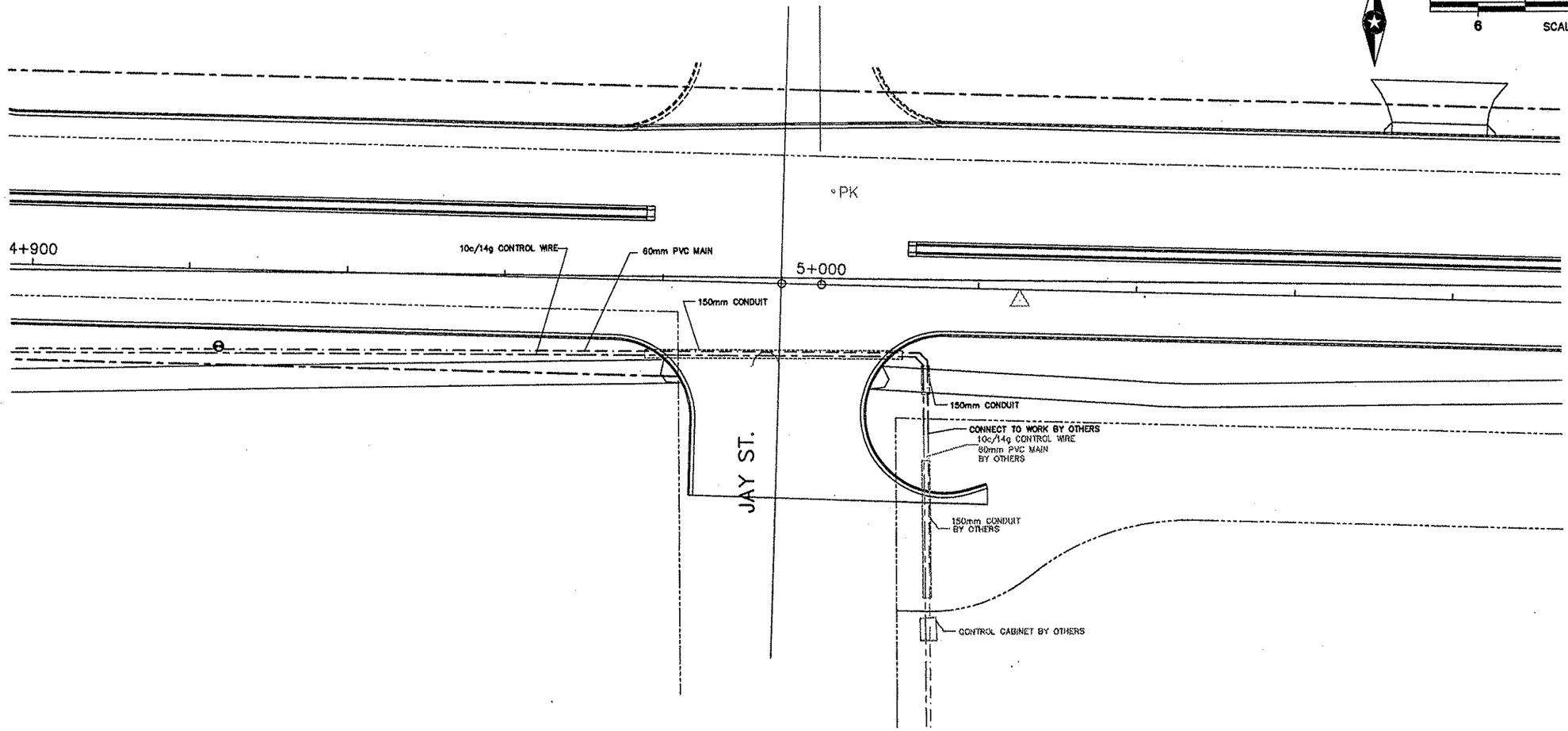
IRRIGATION PLAN

FILE NO. ANOKC9806.01

DATE 03/15/99

202/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\AC806IR3.DWG 03-18-99 4:06 pm



DESIGN TEAM	NO.	BY	DATE	REVISIONS	ITEM
DESIGN					
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: _____ Reg. No. 18612

SEH

ANOKA COUNTY

C.S.A.H. 116 (BUNKER LAKE BLVD.)

S.A.P. 02-716-04

S.A.P. 198-020-14

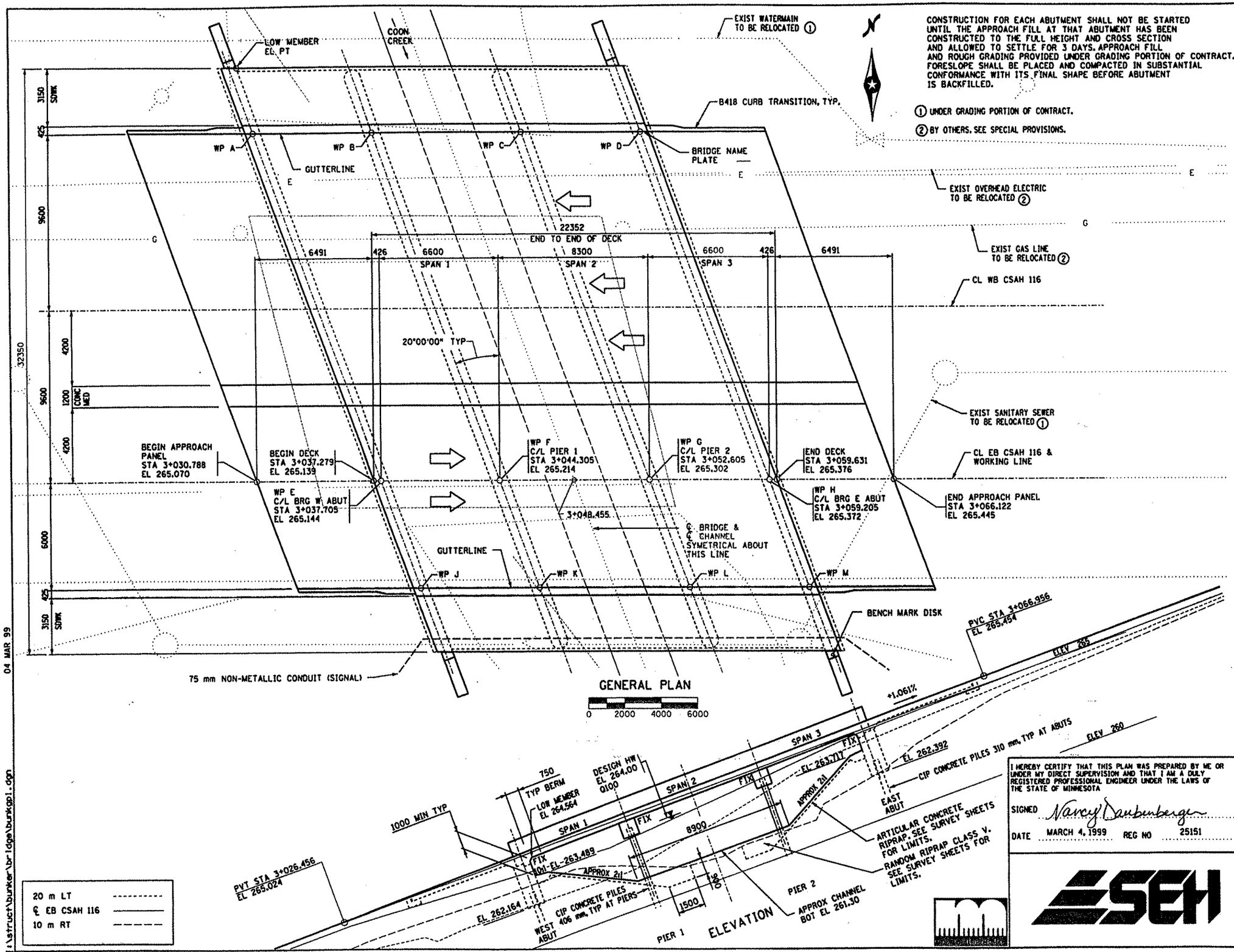
IRRIGATION PLANS

FILE NO. ANOKC9806.01

DATE 03/15/99

203/230

Q:\CIVIL\CLIENTS\A_THRU_F\ANOKA\9806\DWG\ACB06IR4.DWG 03-18-99 4:22 pm



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 MPa, n=8
fy = 420 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

CONSTRUCTION NOTES

THE 1995 EDITION OF THE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATE THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS.

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

DRAWINGS ARE NOT TO BE SCALED.

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

BM ELEV 266.551 (MSL 1929 ADJ)

TOP OF HYDRANT SW CORNER CROOKED LAKE BLVD AND CR 116

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 Daubenberger

DATE MARCH 4, 1999 REG NO 25151

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
(3)3.6 m LANES, (1)4.2 m LANE, 1.2 m MEDIAN, 4.2 m TURN LANE, 3.0 m SDWKS EA SIDE
20°00'00" SKEW

IDENTIFICATION NO 209

SEC 33 TWP 32 N R 24 W

CITY OF ANDOVER ANOKA CO

GENERAL PLAN AND ELEVATION

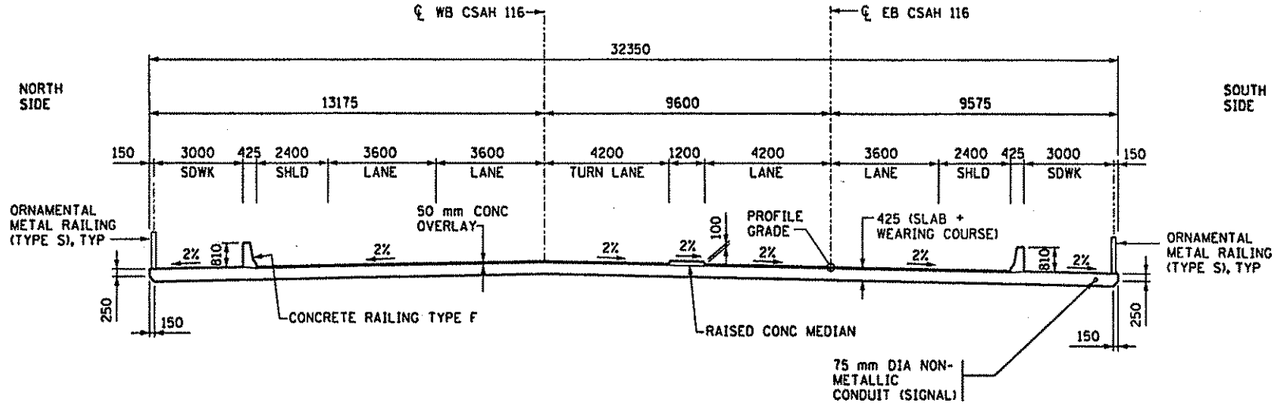
APPROVED: Donald J. Flemming 4-5-99
STATE BRIDGE ENGINEER

DES: MAW	DR: MAW	02564
CHK: JDS	CHK: JDS	

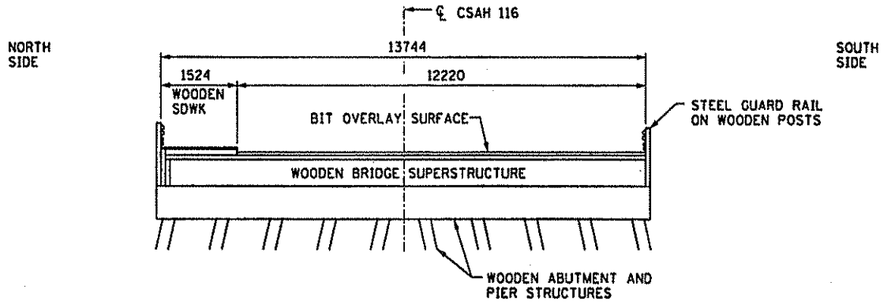
04 MAR 99

I:\structr\bunker\bridge\bunkgpl.dgn

JOB NUMBER DESIGN GROUP: STATE PROJ STATE AID PROJ 02-716-04 STATE PROJ NO



PROPOSED BRIDGE SECTION



EXISTING BRIDGE SECTION
(TO BE REMOVED)

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	UNIT	QUANTITY
2021.501	MOBILIZATION	LS	1
2301.553	BRIDGE APPROACH PANELS	m2	332 (P)
2401.501	STRUCTURE CONCRETE (3Y43)	m3	252 (P)
2401.512	BRIDGE SLAB CONCRETE (3Y36)	m2	723 (P)
2401.513	TYPE F RAILING CONCRETE (3Y46)	m	45 (P)
2401.516	RAISED MEDIAN CONCRETE (3Y46)	m2	42 (P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	kg	50480 (P)
2401.601	STRUCTURE EXCAVATION	LS	1
2401.601	SLOPE PREPARATION	LS	1
2402.583	ORNAMENTAL METAL RAILING TYPE S	m	45 (P)
2404.501	CONCRETE WEARING COURSE (3U17A)	m2	848 (P)
2442.501	REMOVE OLD BRIDGE	LS	1
2452.507	C-I-P CONCRETE PILING DELIVERED 310 mm	m	784
2452.507	C-I-P CONCRETE PILING DELIVERED 406 mm	m	820
2452.508	C-I-P CONCRETE DRIVEN 310 mm	m	784
2452.508	C-I-P CONCRETE DRIVEN 406 mm	m	820
2452.519	C-I-P TEST PILE, 31 m LONG 310 mm	EACH	2
2452.519	C-I-P TEST PILE, 33 m LONG 406 mm	EACH	2
2511.501	RANDOM RIPRAP CLASS V	m3	252
2511.515	GEOTEXTILE FILTER	m2	735
2511.604	ARTICULAR CONCRETE RIPRAP	m2	535 (P)
2545.509	CONDUIT SYSTEM (SIGNALS)	LS	1

04 MAR 99

j:\struct\bunker\bridge\bunksq2.dgn

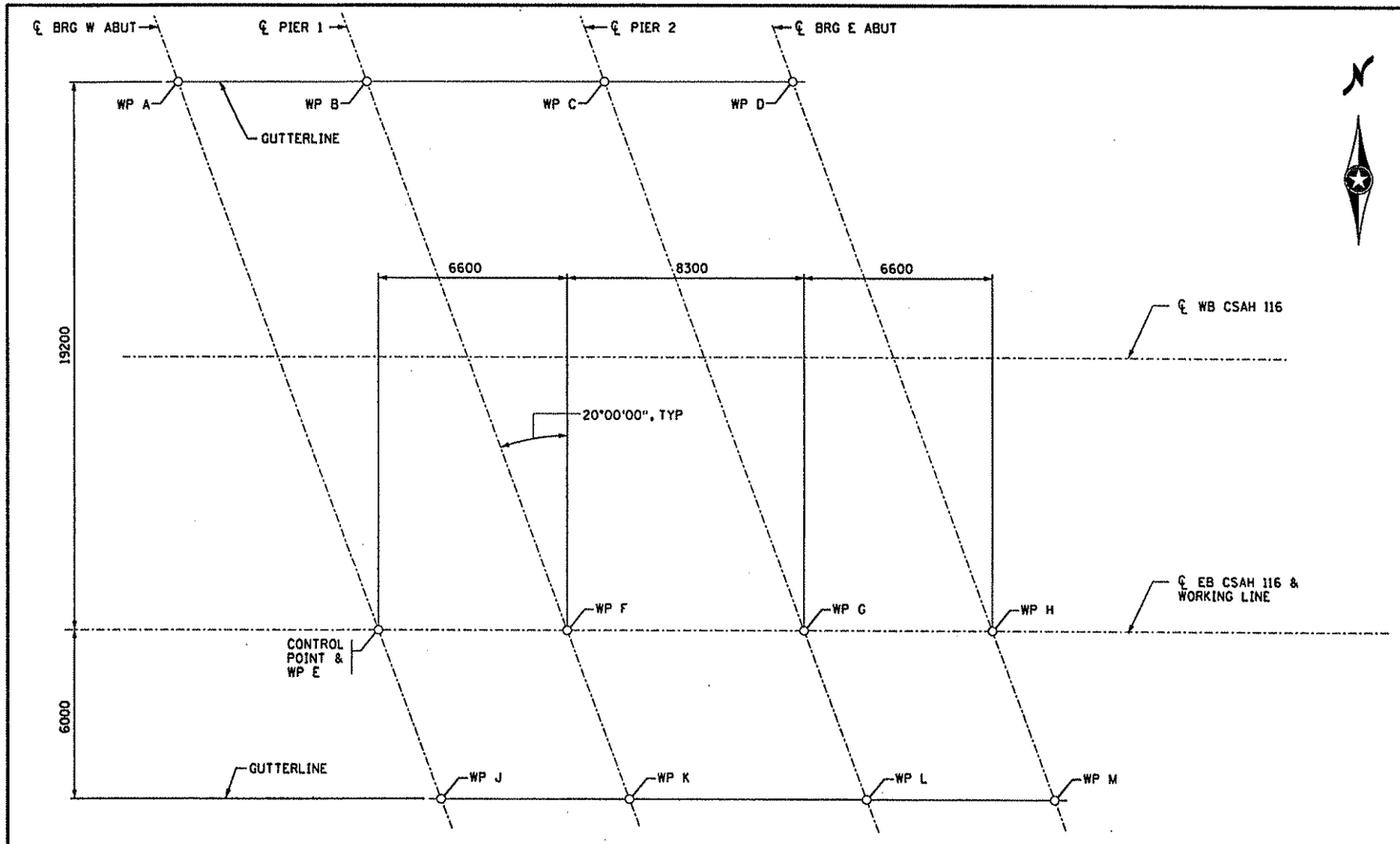
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: BRIDGE QUANTITIES & BRIDGE SECTIONS
SAP 02-716-04

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

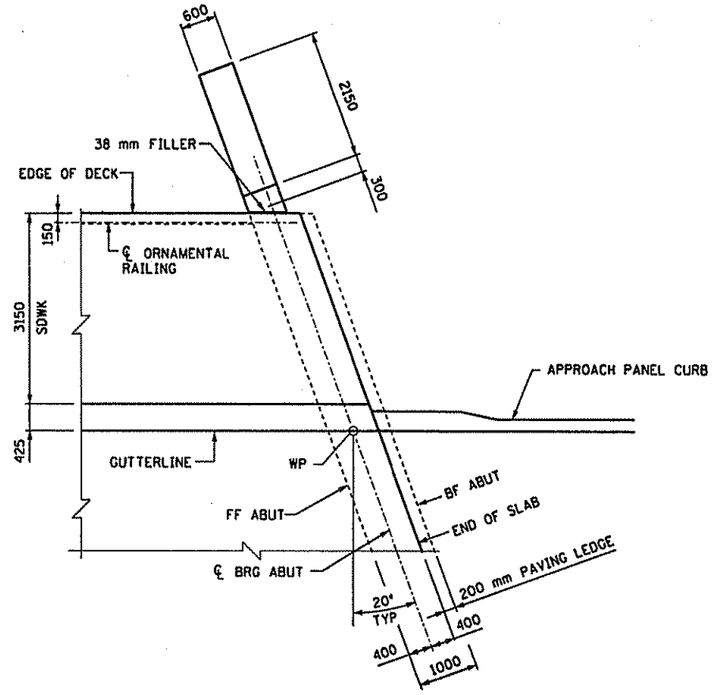
SHEET NO B2 OF 28 SHEETS

BRIDGE NO 02564



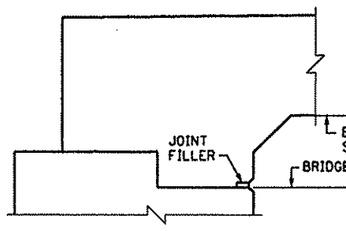
WORKING POINT LAYOUT

0 2000 4000 6000

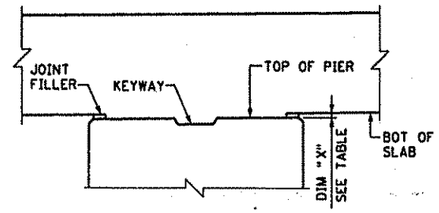


TYPICAL CORNER LAYOUT

POINT NUMBER	POINT	STATION	X COORDINATE	Y COORDINATE	DIMENSIONS BETWEEN WORKING POINTS A	B	C	D	E	F	G	H	J	K	L	M	ELEVATIONS TOP OF SLAB	TOP OF SLAB TO BR SEAT	BRIDGE SEAT	POINT
	A	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

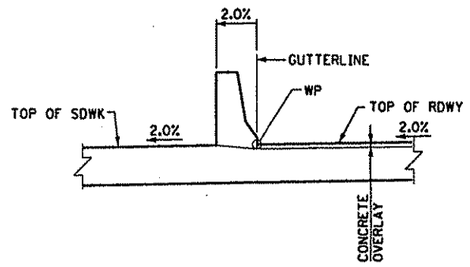


DIMENSION "X" AT ABUTMENTS



DIMENSION "X" AT PIERS

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



WORKING POINT SCHEMATIC

04 MAR 99

i:\structure\bunker\bridge\bunkwp1.dgn

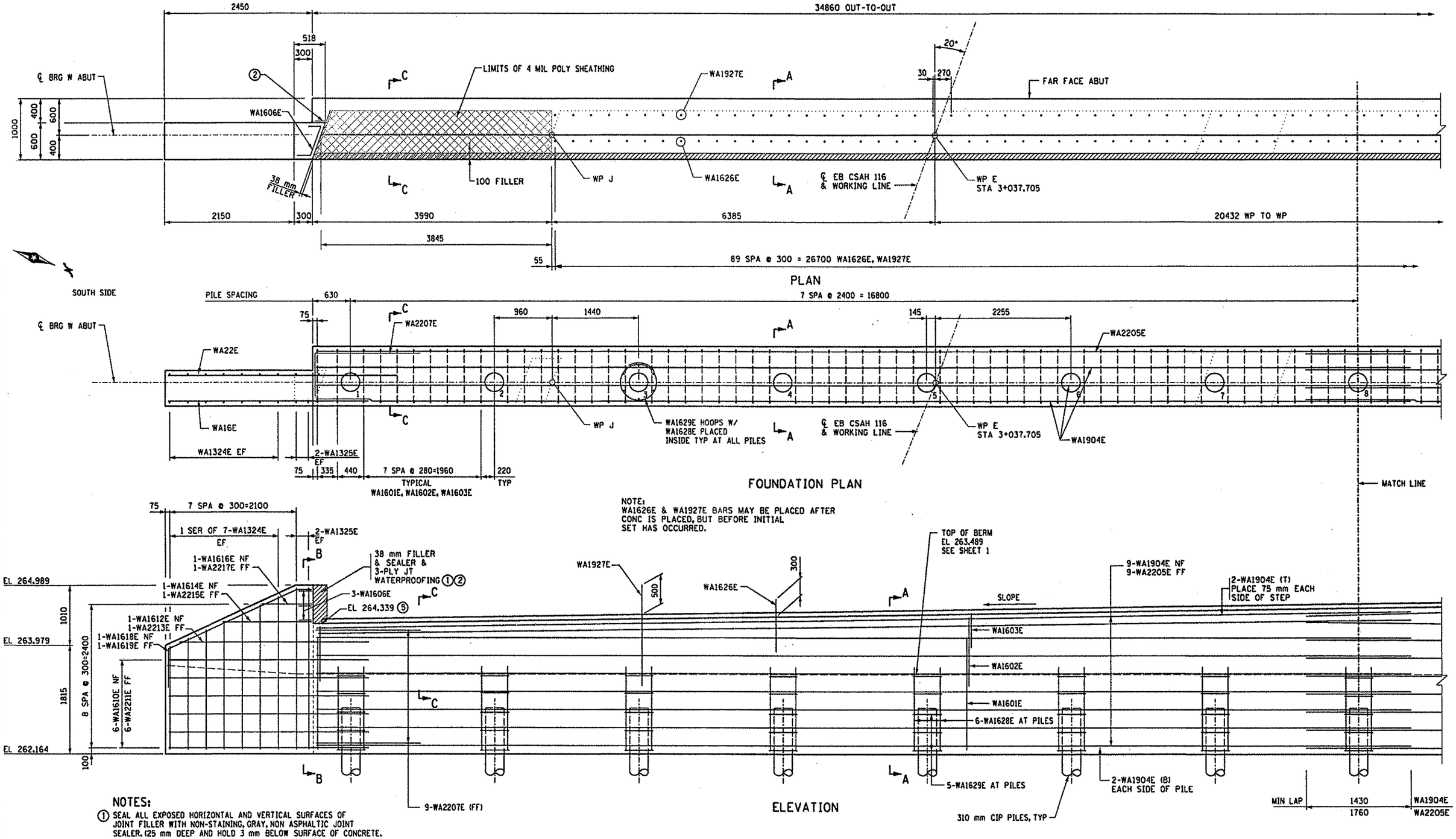
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: BRIDGE LAYOUT
SAP 02-716-04

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

SHEET NO 03 OF 28 SHEETS

BRIDGE NO 02564



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=FAR FACE
EF=EACH FACE
BF=BACK FACE

⑤ ELEVATION TAKEN ALONG ℄ OF BEARING.

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

TITLE: WEST ABUTMENT DETAILS
SAP 02-716-04

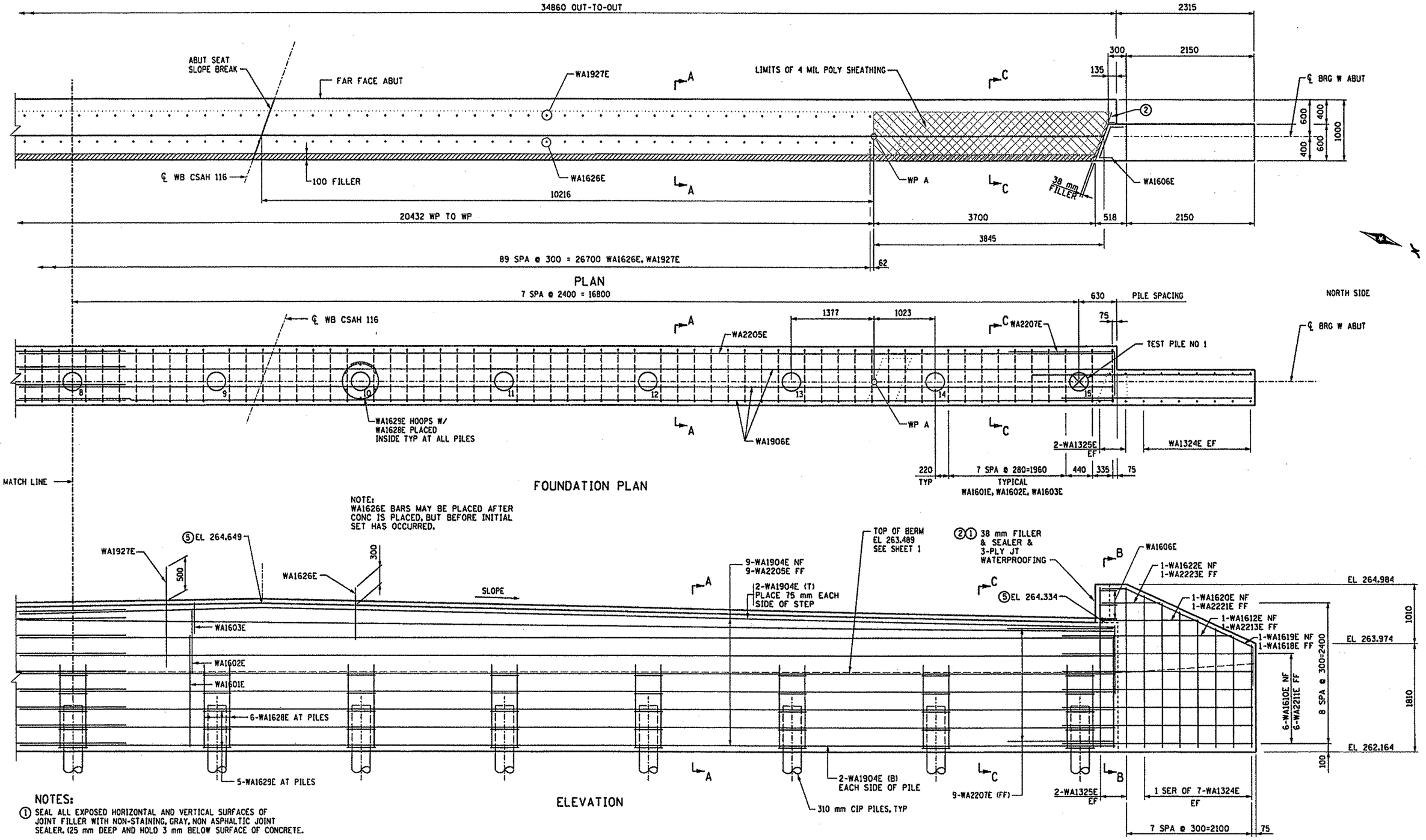
DES: NTD	DR: MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO 04 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99

I:\structure\bunker\bridge\bunkwo1.dgn



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=FAR FACE
EF=EACH FACE
BF=BACK FACE

⑤ ELEVATION TAKEN ALONG ℄ OF BEARING.

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

TITLE: WEST ABUTMENT DETAILS
SAP 02-716-04

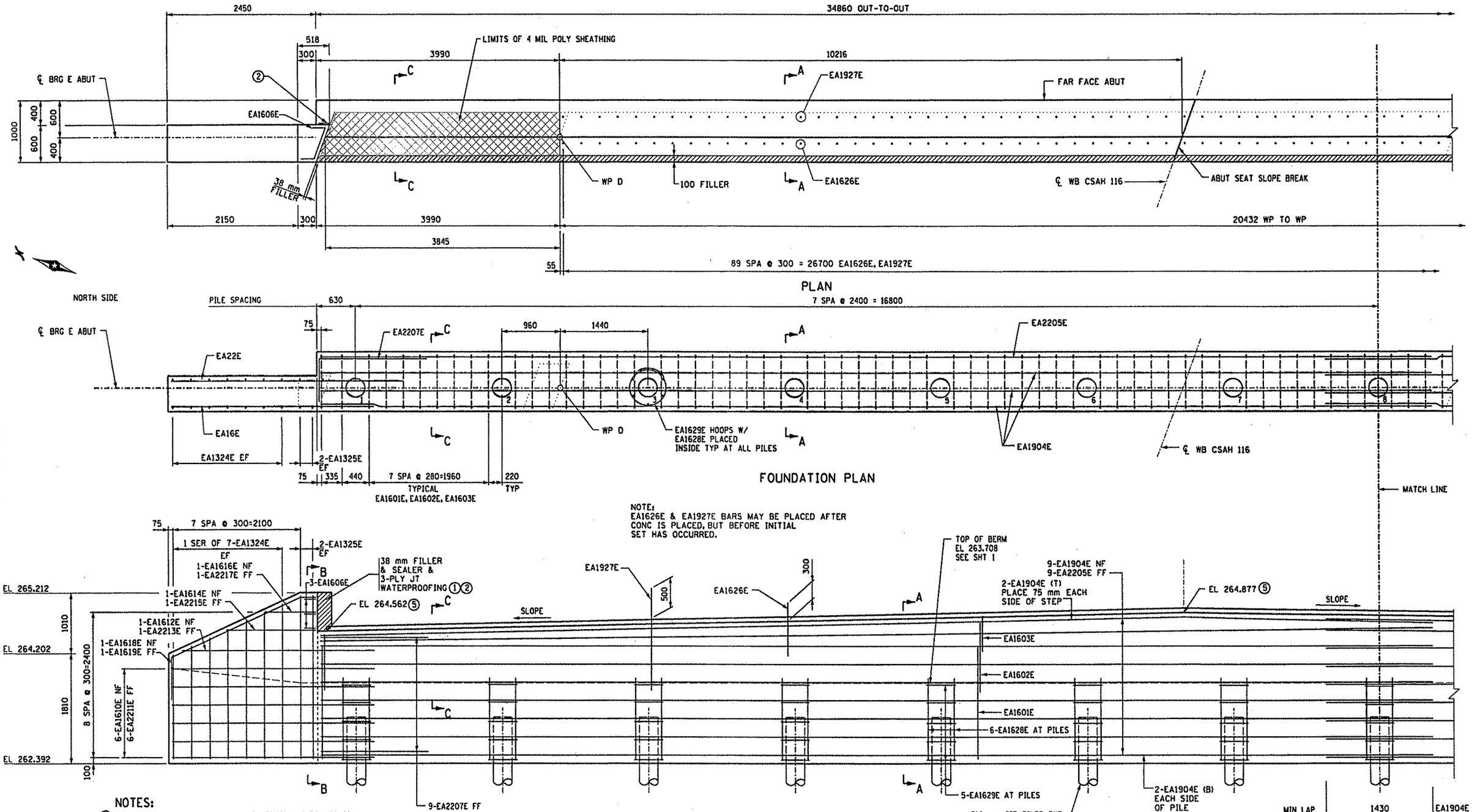
DES: NTD	DR: MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO 35 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99

I:\structv\bunker\bridge\bunkwa1.dgn



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=FAR FACE
EF=EACH FACE
BF=BACK FACE

⑤ ELEVATION TAKEN ALONG ℄ OF BEARING.

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

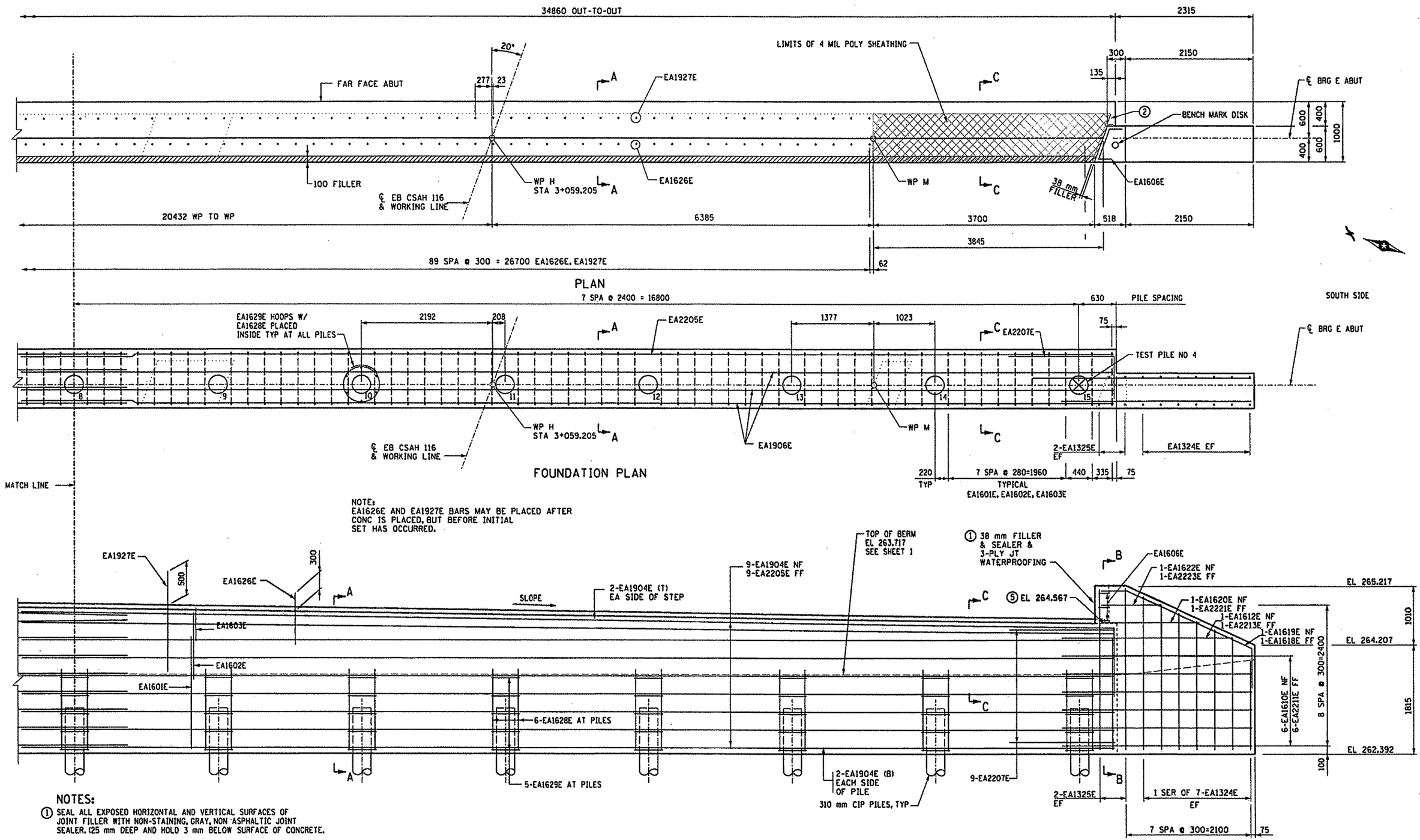
TITLE: EAST ABUTMENT DETAILS
SAP 02-716-04

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

SHEET NO 86 OF 28 SHEETS

BRIDGE NO 02564

04 MAR 99
I:\struct\bunker\bridge\bunkwol.dgn



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=FAR FACE
EF=EACH FACE
BF=BACK FACE

⑤ ELEVATION TAKEN ALONG ℄ OF BEARING.

04 MAR 99

I:\struct\bunker\bridge\bunkwol.dgn

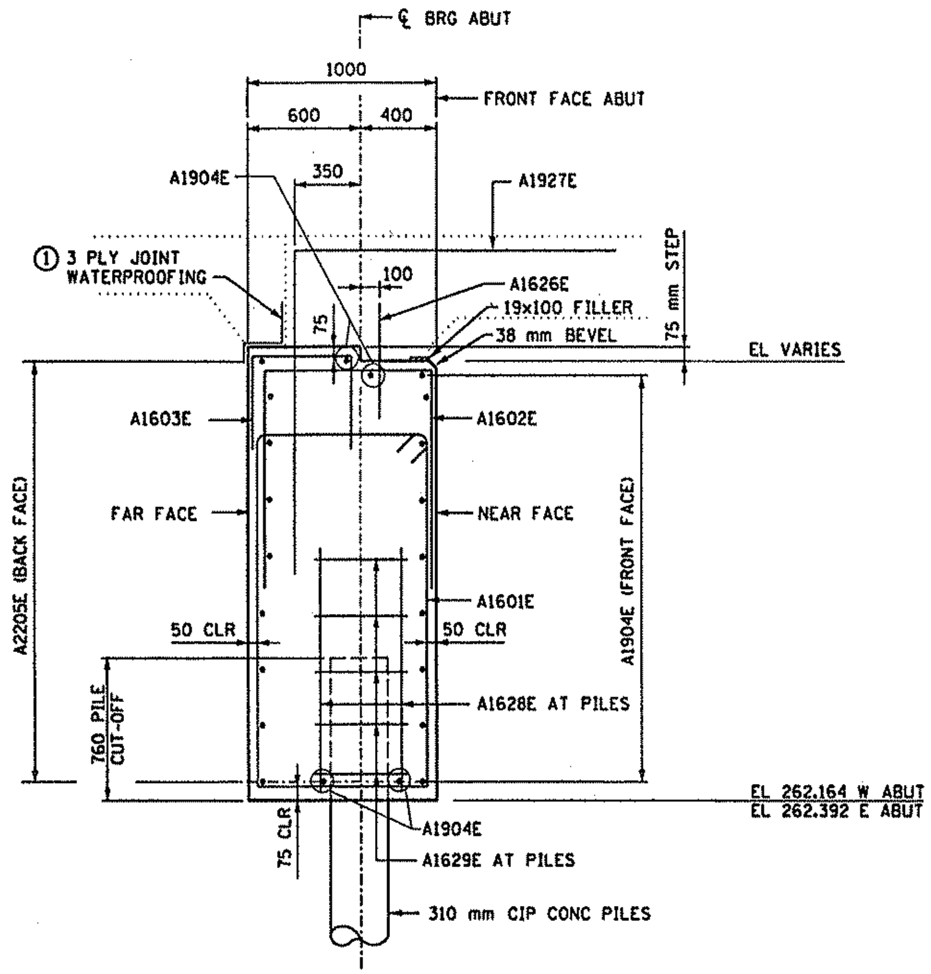
CERTIFIED BY Nancy Dauenberger
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: EAST ABUTMENT DETAILS
SAP 02-716-04

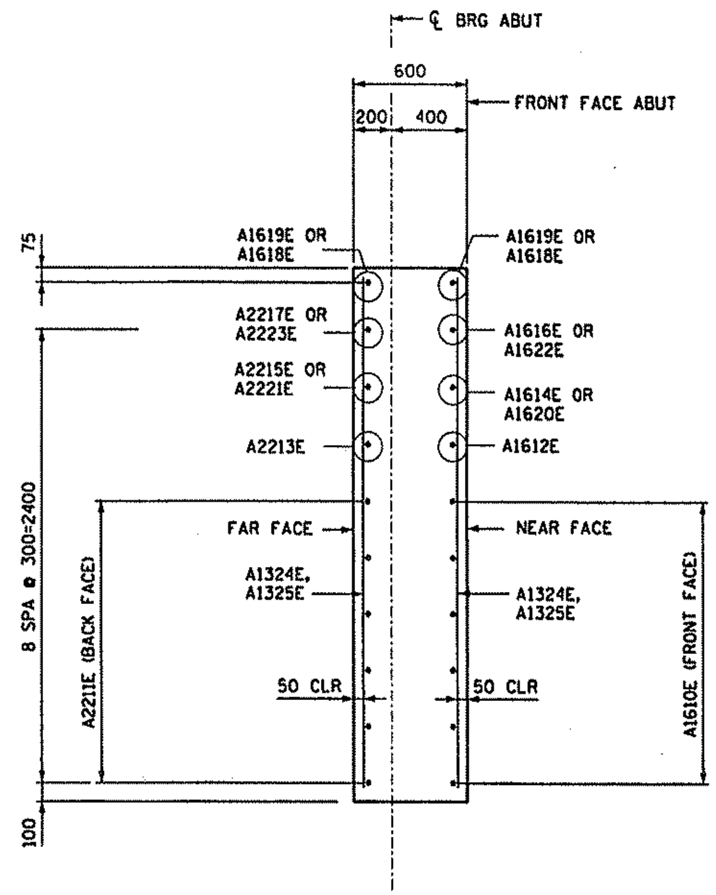
DES: NTO	DR: MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO 87 OF 28 SHEETS

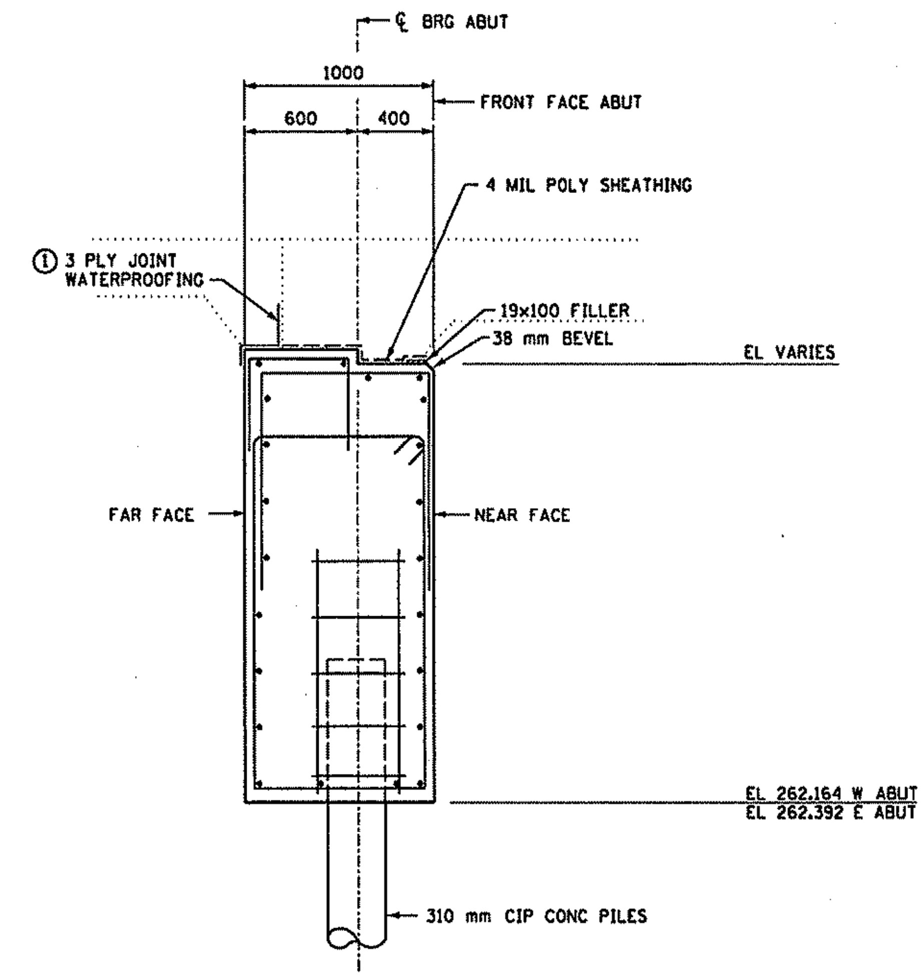
BRIDGE NO 02564



SECTION A-A



SECTION B-B



SECTION C-C

SEE SECTION A-A FOR ADDITIONAL DETAIL

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

PILE NOTES:

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

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

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

NOTES:

① 3 PLY JOINT WATERPROOFING TO EXTEND FROM BRIDGE SEAT TO TOP OF WING. SPLICE AT JUNCTION WITH HORIZ WATERPROOFING.

2 SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.

04 MAR 99

j:\struct\bunker\bridge\bunkwa2.dgn

SEH

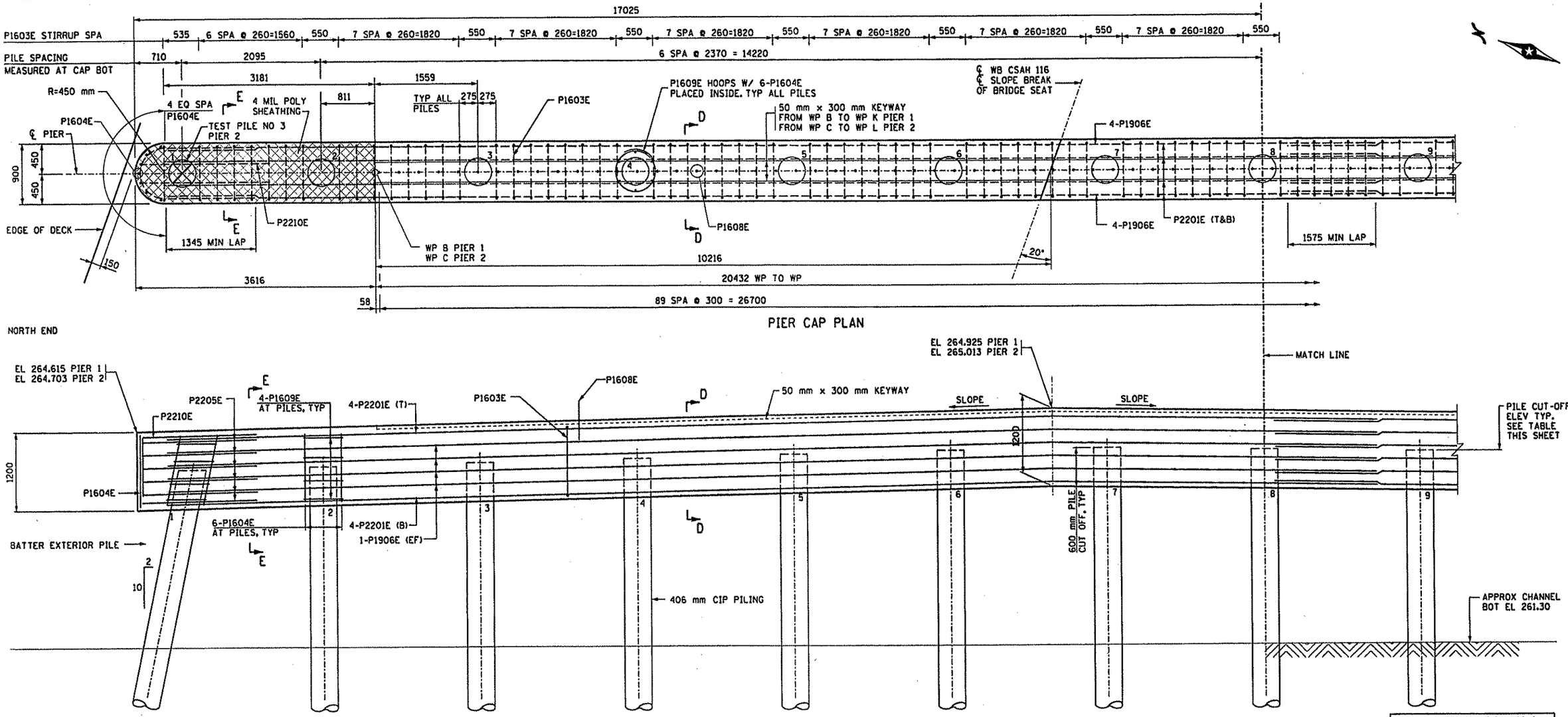
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: ABUTMENT DETAILS
SAP 02-716-04

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

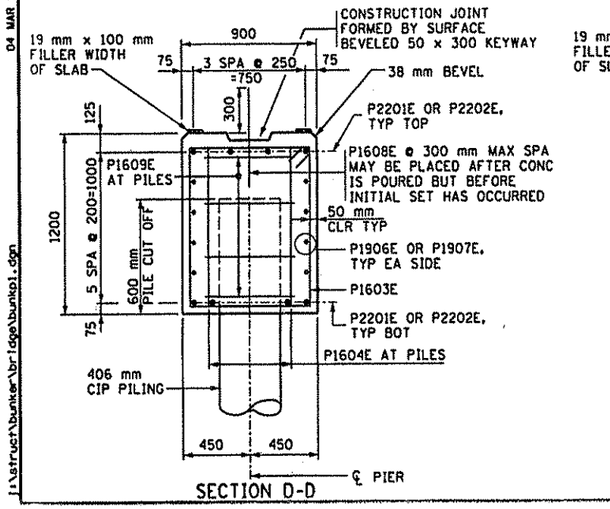
SHEET NO 8 OF 28 SHEETS

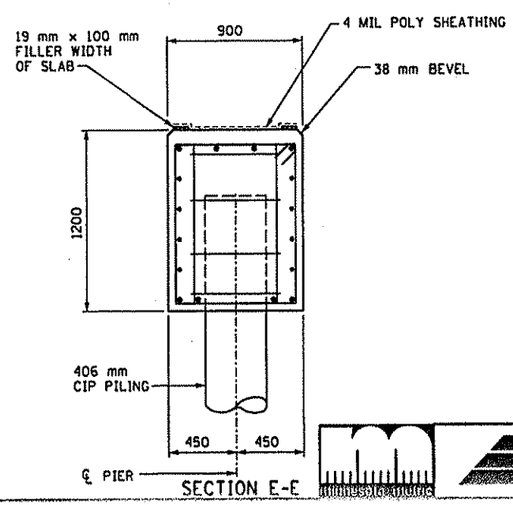
BRIDGE NO 02564

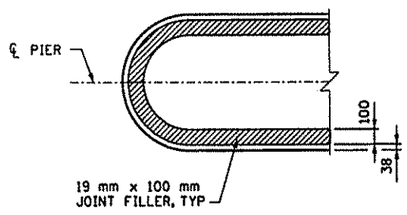


PIER CAP PLAN

PIER ELEVATION







JOINT FILLER DETAIL

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

PILE NOTES:

1 CIP TEST PILES 33 m LONG 406 mm.
14 CIP PILING EST LENGTH 30 m LONG 406 mm.
15 CIP PILING 406 mm REQUIRED FOR EACH PIER.

PILE SPACING SHOWN IS AT BOTTOM OF CAP.
PILES TO HAVE A NOMINAL DIAMETER OF 406 mm.

ALL PILING TO BE DRIVEN TO A MINIMUM LENGTH OF 30 m. HAMMER SIZE IS TO BE BASED ON ABILITY TO DRIVE THE PILES 535 kn.

NOTES:

1 ALL REINFORCING TO BE PLACED 50 mm CLR UNLESS OTHERWISE SHOWN OR NOTED.

2 SEE SHEET 11 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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

04 MAR 99

J:\structr\bunker\br!dge\bunkp1.dgn

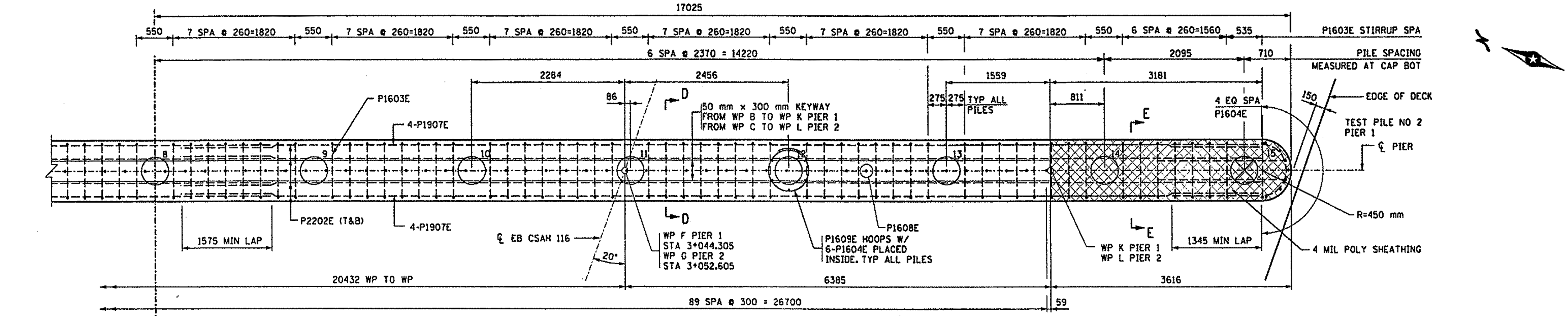
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: PIER DETAILS
SAP 02-716-04

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

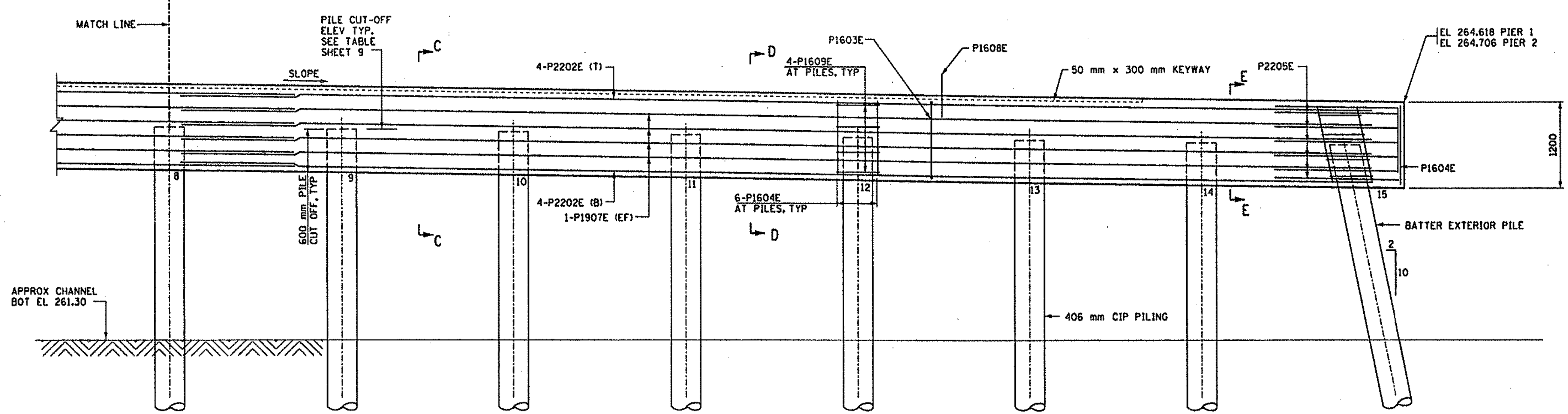
SHEET NO 139 OF 28 SHEETS

BRIDGE NO 02564



PIER CAP PLAN

SOUTH END



PIER ELEVATION

04 MAR 99

l:\struct\bunker\bridge\bunk01.dgn

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.

minnesota metro | SEH

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

TITLE: PIER DETAILS
SAP 02-716-04

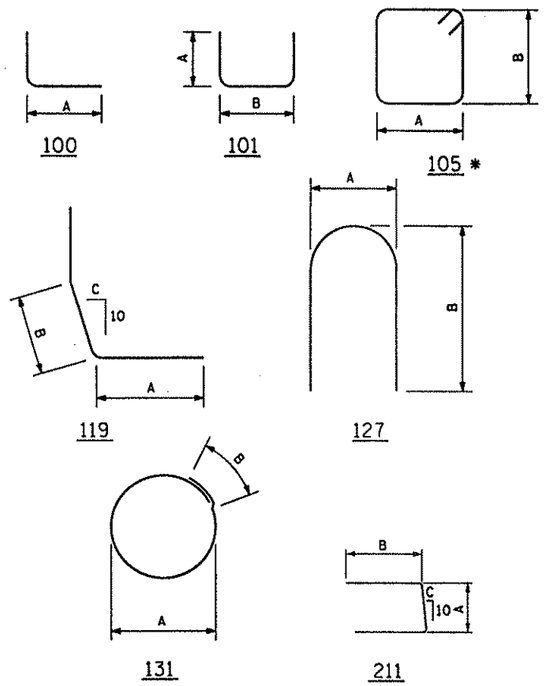
DES: NTO | DR: MAW | CHK: JDS | CHK: JDS | APPROVED: 4-5-99

SHEET NO 10 OF 28 SHEETS

BRIDGE NO 02564

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
WEST ABUTMENT									
EPOXY COATED BARS									
WA1601E		116	5820	105	900	1870			STIRRUP
WA1602E		116	3500	101	1300	900			TOP TIE
WA1603E		116	1460	101	480	500			TOP TIE
WA1904E		26	18100	STR					HORIZ
WA2205E		18	18300	STR					HORIZ
WA1606E		6	900	211	470	200	4		WING HORIZ
WA2207E		18	2560	100	1760				HORIZ
WA1610E		12	3810	STR					WING HORIZ FF
WA2211E		12	4210	STR					WING HORIZ BF
WA1612E		2	3620	STR					WING HORIZ FF
WA2213E		2	4020	STR					WING HORIZ BF
WA1614E		1	1560	STR					WING HORIZ FF
WA2215E		1	1710	STR					WING HORIZ BF
WA1616E		1	930	STR					WING HORIZ FF
WA2217E		1	1070	STR					WING HORIZ BF
WA1618E		2	3510	119	400	2320	5		DIAG WING
WA1619E		2	3650	119	400	2320	5		DIAG WING
WA1620E		1	1700	STR					WING HORIZ FF
WA2221E		1	1550	STR					WING HORIZ BF
WA1622E		1	1060	STR					WING HORIZ FF
WA2223E		1	840	STR					WING HORIZ BF
WA1324E	4	7	1720	STR					WING VERT
			2570						
WA1325E		8	2700	STR					WING VERT
WA1626E		90	600	STR					DWL ABUT
WA1927E		90	3400	100	1700				DWL ABUT
WA1628E		90	1300	STR					AT PILES
WA1629E		75	2760	131	600	875			AT PILES
EAST ABUTMENT									
EPOXY COATED BARS									
EA1601E		116	5820	105	900	1870			STIRRUP
EA1602E		116	3500	101	1300	900			TOP TIE
EA1603E		116	1460	101	480	500			TOP TIE
EA1904E		26	18100	STR					HORIZ
EA2205E		18	18300	STR					HORIZ
EA1606E		6	900	211	470	200	4		WING HORIZ
EA2207E		18	2560	100	1760				HORIZ
EA1610E		12	3810	STR					WING HORIZ FF
EA2211E		12	4210	STR					WING HORIZ BF
EA1612E		2	3620	STR					WING HORIZ FF
EA2213E		2	4020	STR					WING HORIZ BF
EA1614E		1	1560	STR					WING HORIZ FF
EA2215E		1	1710	STR					WING HORIZ BF
EA1616E		1	930	STR					WING HORIZ FF
EA2217E		1	1070	STR					WING HORIZ BF
EA1618E		2	3510	119	400	2320	5		DIAG WING
EA1619E		2	3650	119	400	2320	5		DIAG WING
EA1620E		1	1700	STR					WING HORIZ FF
EA2221E		1	1550	STR					WING HORIZ BF
EA1622E		1	1060	STR					WING HORIZ FF
EA2223E		1	840	STR					WING HORIZ BF
EA1324E	4	7	1720	STR					WING VERT
			2570						
EA1325E		8	2700	STR					WING VERT
EA1626E		90	600	STR					DWL ABUT
EA1927E		90	3400	100	1700				DWL ABUT
EA1628E		90	1300	STR					AT PILES
EA1629E		75	2760	131	600	875			AT PILES

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

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

SUMMARY OF QUANTITIES ABUTMENTS AND PIERS

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

04 MAR 99

I:\structure\bunker\bridge\bunkweb.dgn

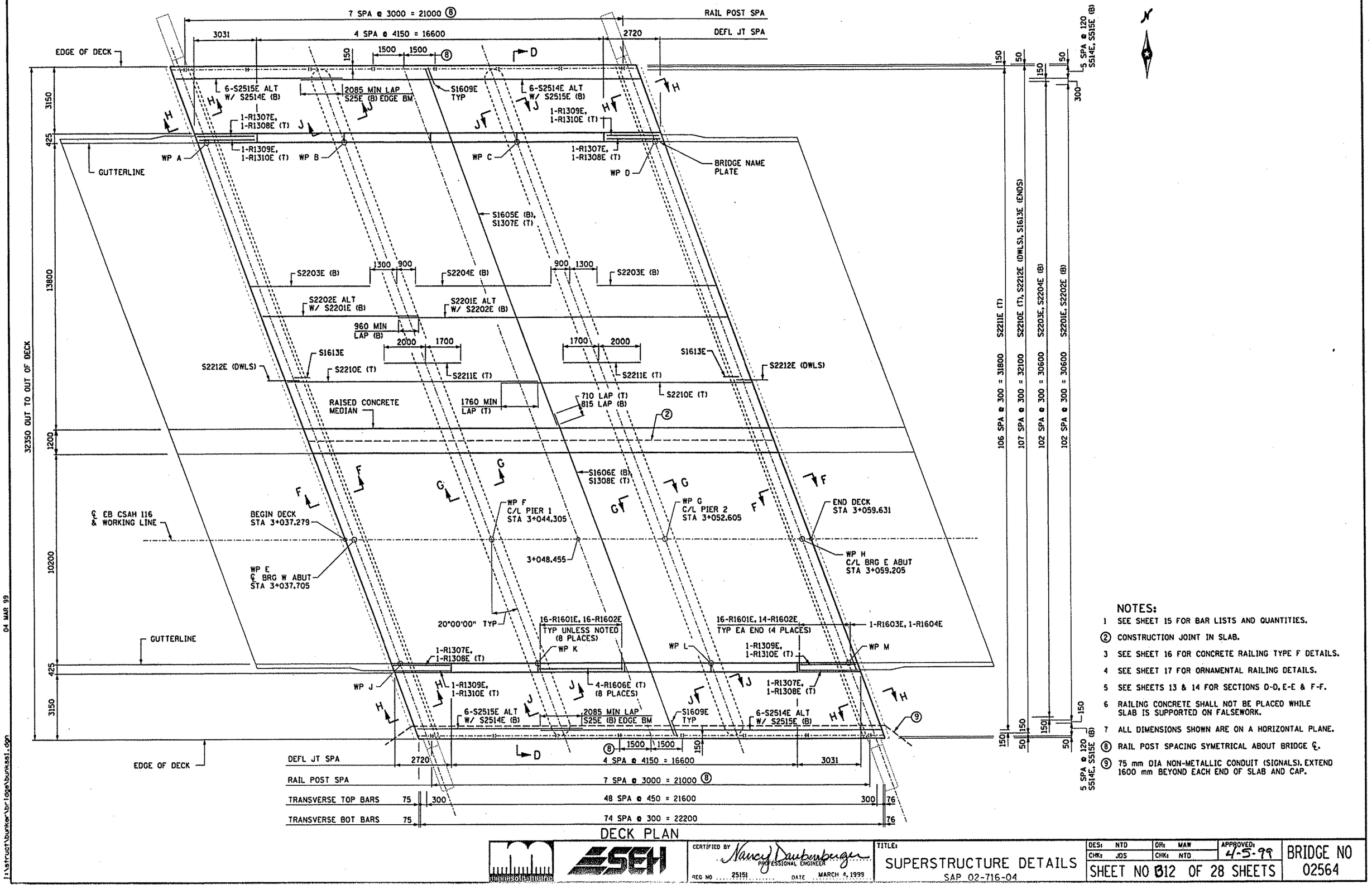
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

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

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

SHEET NO 11 OF 28 SHEETS

BRIDGE NO 02564



DECK PLAN

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 SYMETRICAL ABOUT BRIDGE ℄.
9. 75 mm DIA NON-METALLIC CONDUIT (SIGNALS). EXTEND 1600 mm BEYOND EACH END OF SLAB AND CAP.

04 MAR 99

J:\structl\bunker\bridge\bunkss1.dgn

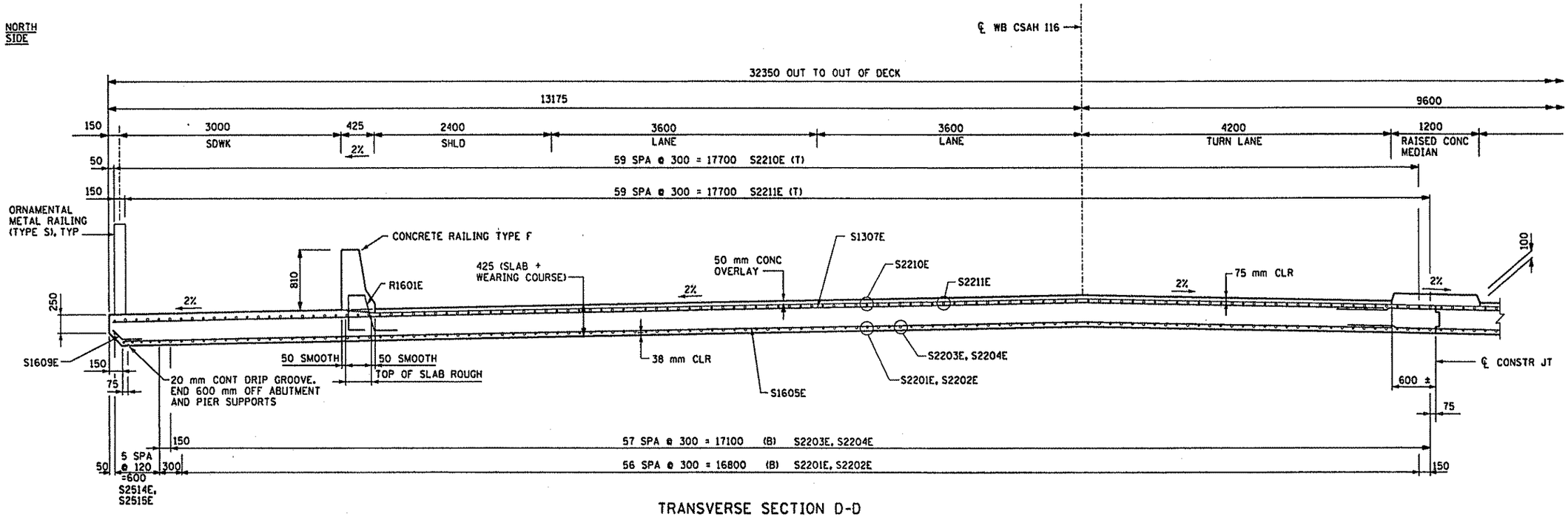
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE DETAILS
SAP 02-716-04

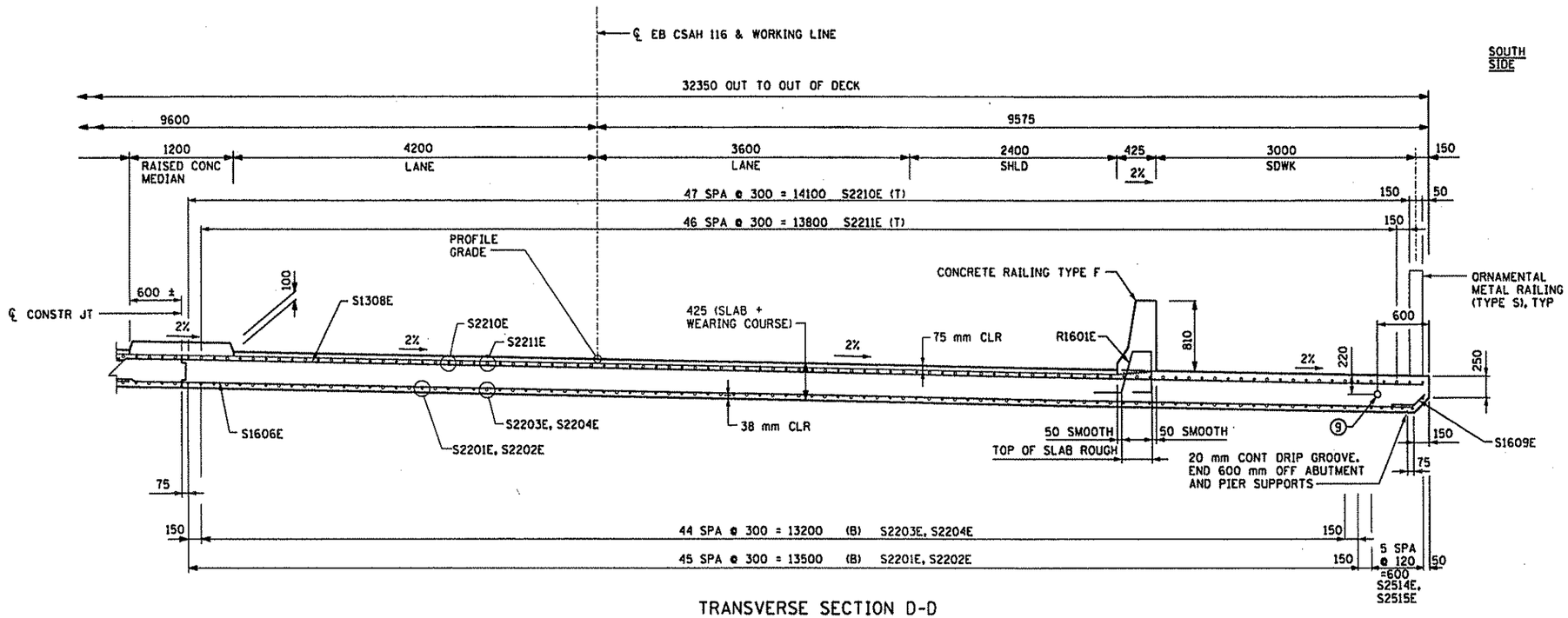
DES: NTD DR: MAW CHK: JDS CHK: NTD
APPROVED: 4-5-99

SHEET NO 12 OF 28 SHEETS

BRIDGE NO 02564



TRANSVERSE SECTION D-D



TRANSVERSE SECTION D-D

NOTES:

1 SEE SHEET 15 FOR BAR LISTS AND QUANTITIES.

2 NOT USED.

3 SEE SHEET 16 FOR CONCRETE RAILING TYPE F DETAILS.

4 SEE SHEET 17 FOR ORNAMENTAL RAILING DETAILS.

5 SEE SHEETS 13 & 14 FOR SECTIONS E-E & F-F.

6 RAILING CONCRETE SHALL NOT BE PLACED WHILE SLAB IS SUPPORTED ON FALSEWORK.

7 ALL DIMENSIONS SHOWN ARE ON A HORIZONTAL PLANE.

8 THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

⑨ 75 mm DIA NON-METALLIC CONDUIT (SIGNALS).

04 MAR 99

J:\struct\bunker\bridge\bunkss2.dgn

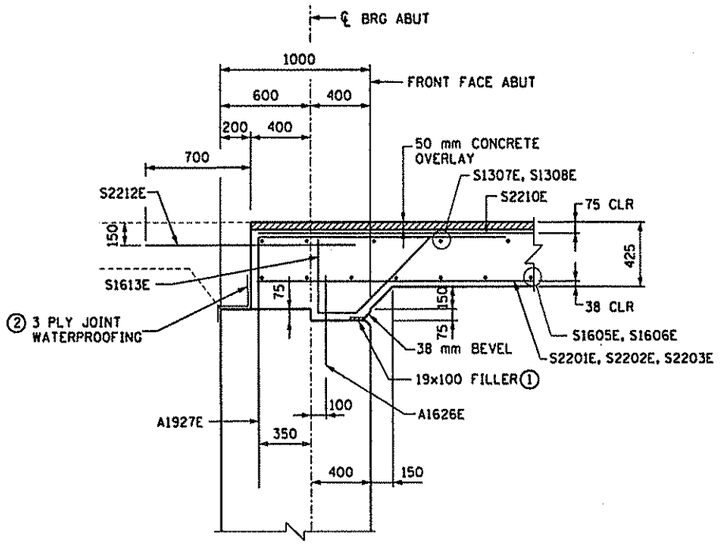
minnesota | marie

ESEH

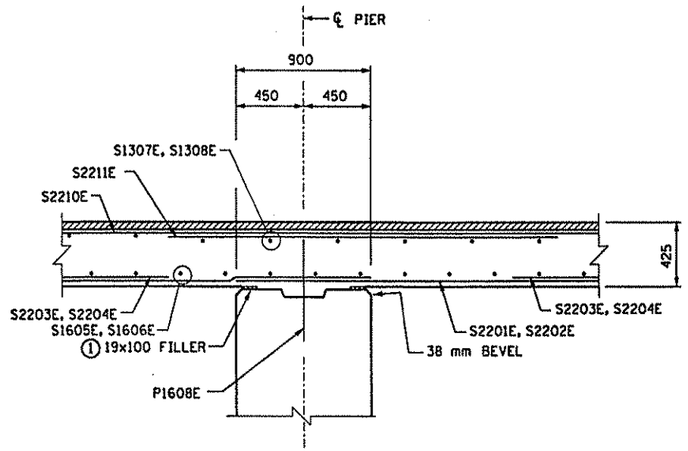
CERTIFIED BY Nancy J. Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE DETAILS
SAP 02-716-04

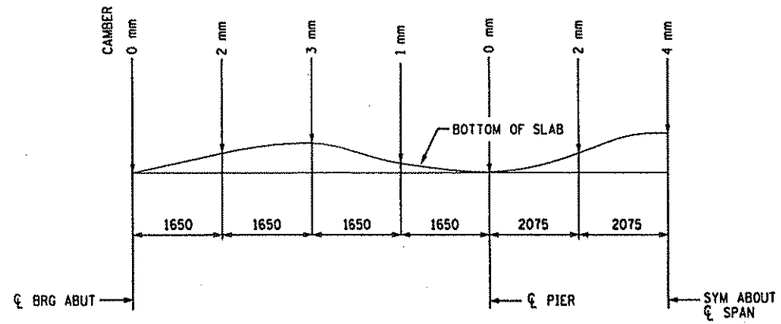
DES: NTD	DR: MAW	APPROVED: 4-5-99	SHEET NO 13 OF 28 SHEETS	BRIDGE NO 02564
CHK: JDS	CHK: NTD			



SECTION F-F

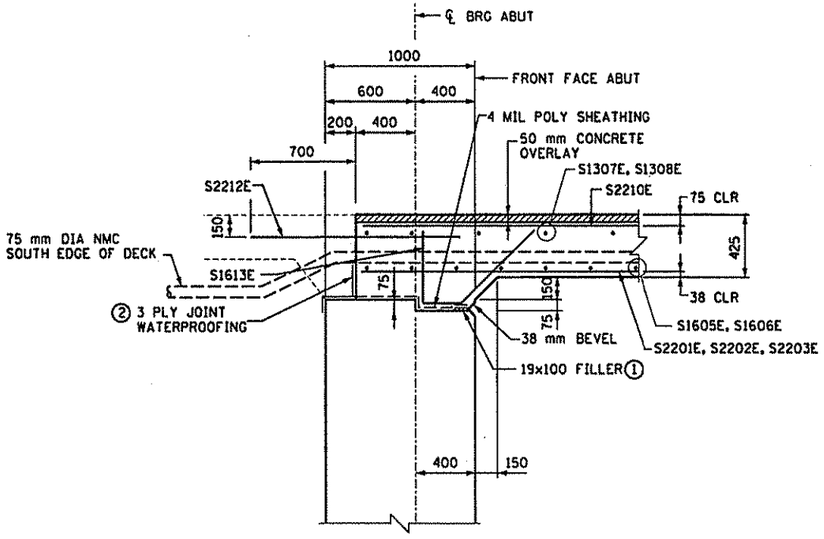


SECTION G-G

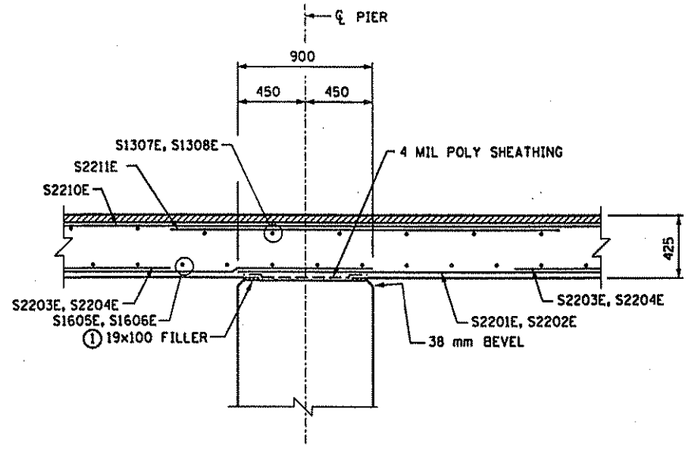


CAMBER DIAGRAM

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

I:\struct\bunker\bridge\bunkss3.dgn

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

TITLE: SUPERSTRUCTURE DETAILS
SAP 02-716-04

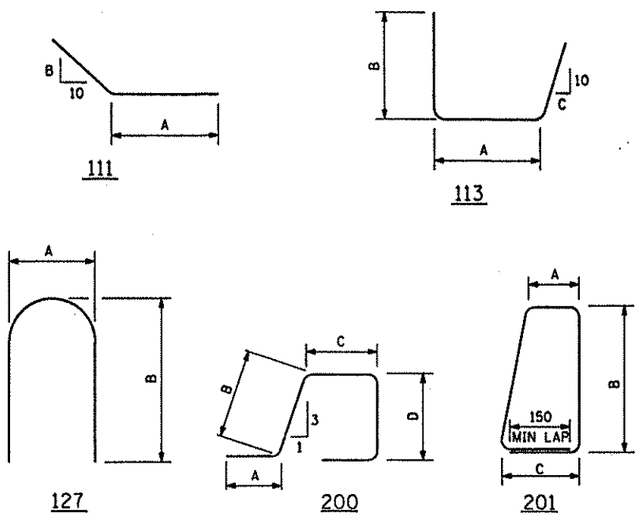
DES: NTD DR: MAW APPROVED: 4.5.99
CHK: JDS CHK: NTD

SHEET NO B14 OF 28 SHEETS

BRIDGE NO 02564

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
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)
S1605E		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	111	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	113	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
	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

04 MAR 99

j:\struct\bunker\bridge\bunkssb.dgn

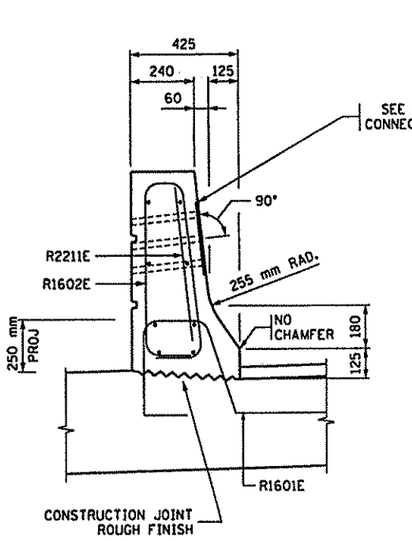
CERTIFIED BY Nancy J. Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: SUPERSTRUCTURE BAR LIST & QUANTITIES
SAP 02-716-04

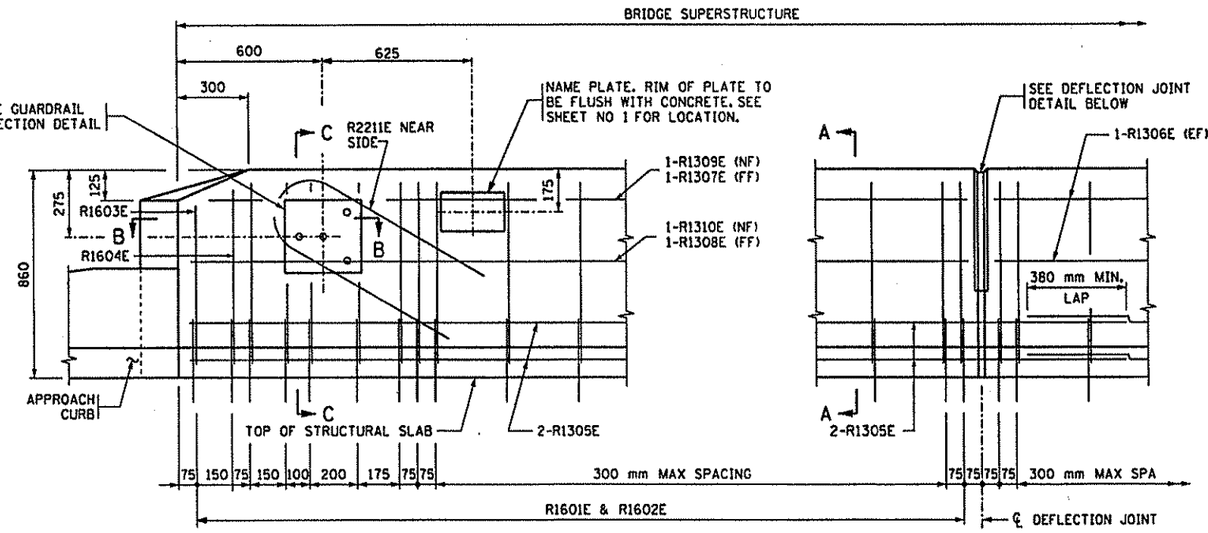
DES: MAW DR: MAW APPROVED: 4-5-99
CHK: NTD CHK: NTD

SHEET NO 15 OF 28 SHEETS

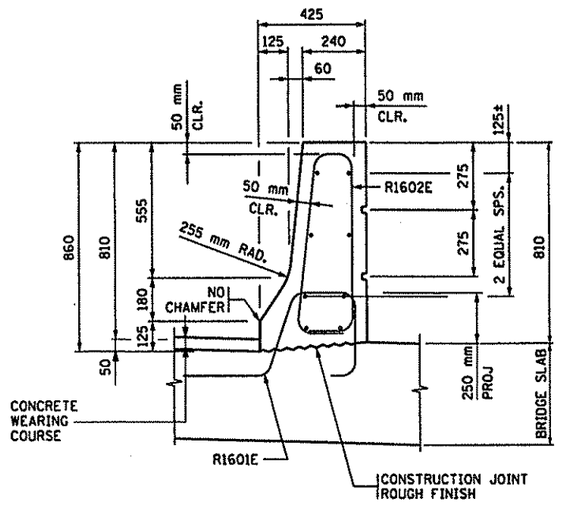
BRIDGE NO 02564



SECTION C-C



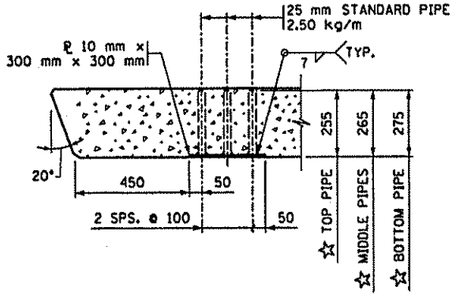
DEFLECTION JOINT



SECTION A-A

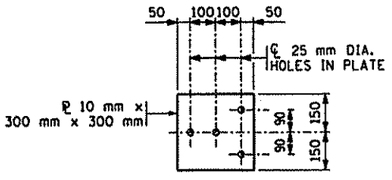
INSIDE ELEVATION OF RAILING

(CONCRETE WEARING COURSE NOT SHOWN)



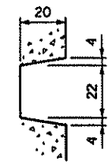
SECTION B-B

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

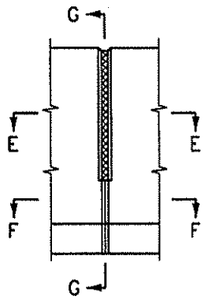


GUARDRAIL CONNECTION DETAIL

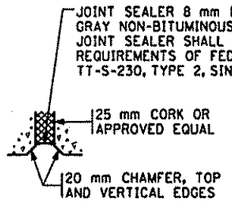
GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 9.9 kg



RAIL RUSTICATION

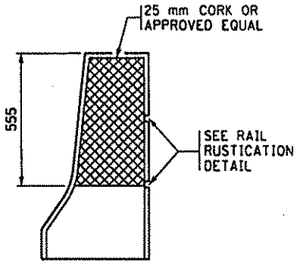


ELEVATION



SECTION E-E

SECTION F-F



SECTION G-G

DEFLECTION JOINT DETAILS

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.

MODIFIED

FIG. 5-397.122M

APPROVED: _____

STATE BRIDGE ENGINEER

CERTIFIED BY Nancy Daubenberger 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

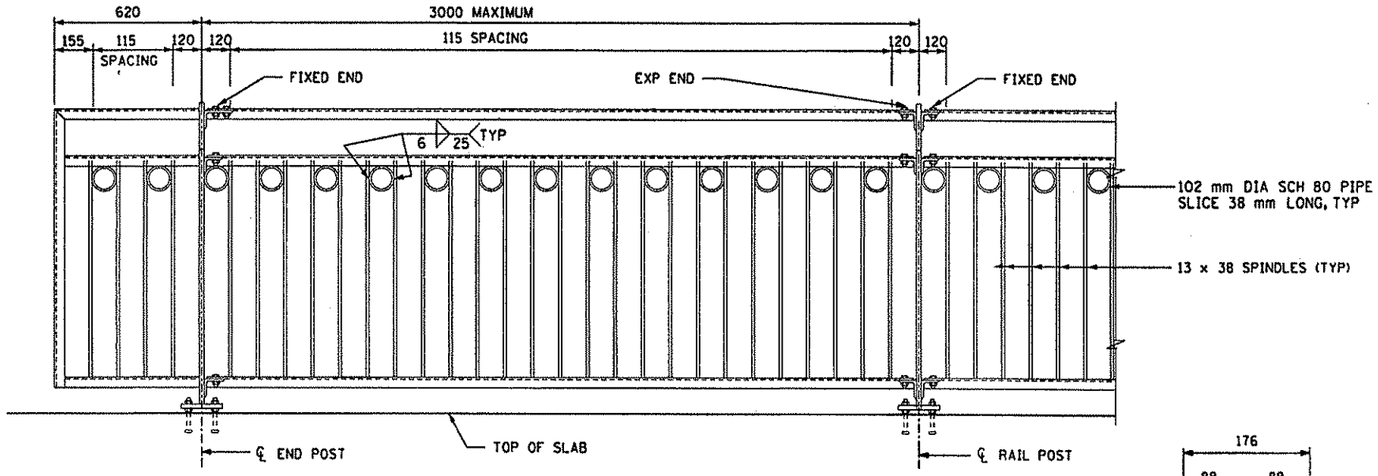
DES: MnDOT/MAW DR: MnDOT/MAW APPROVED: 4-5-99
CHK: NTO CHK: NTO

SHEET NO 16 OF 28 SHEETS

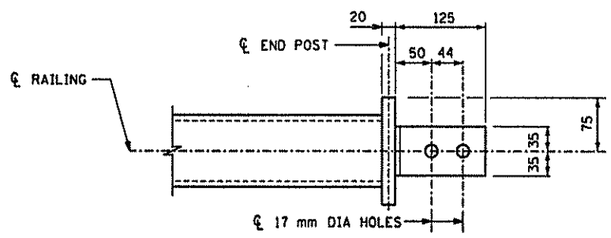
BRIDGE NO 02564

04 MAR 99

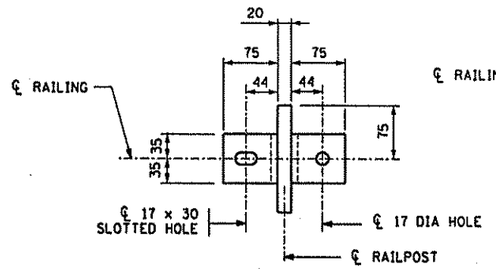
j:\structr\bunker\stds\bunk7117.dgn



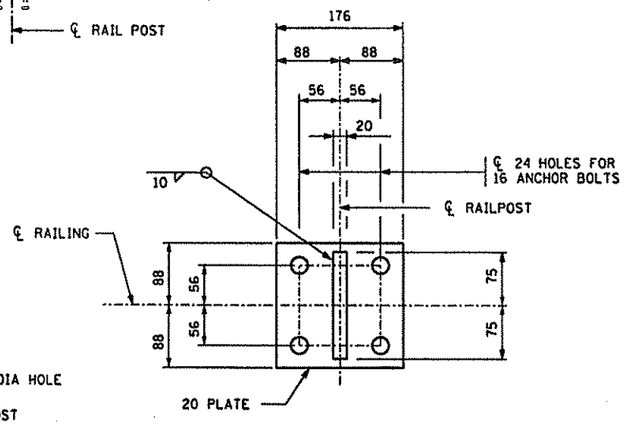
GENERAL RAILING ELEVATION



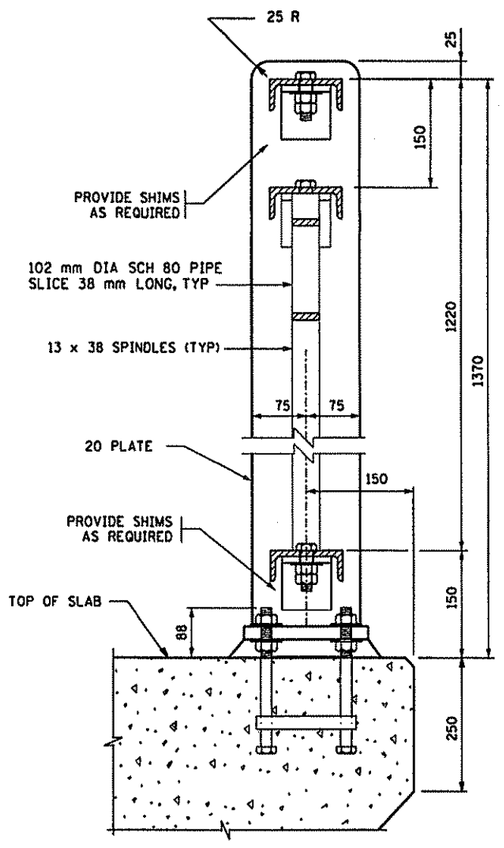
TOP VIEW



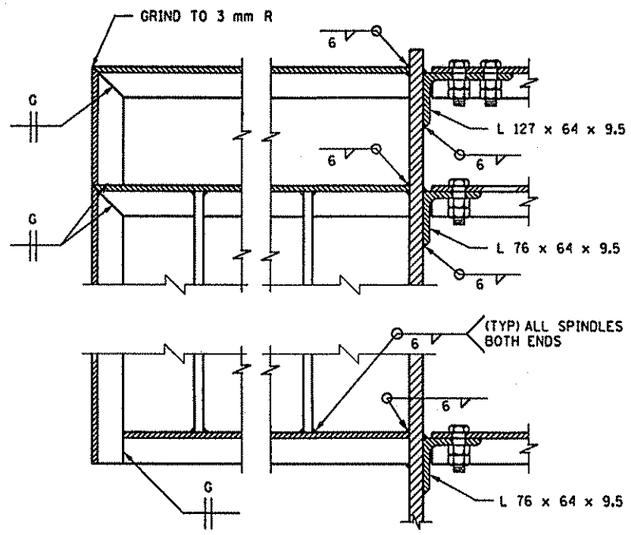
TOP VIEW



RAILPOST BASE PLATE

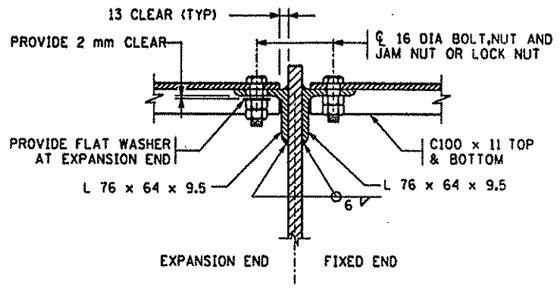


TYPICAL RAILPOST



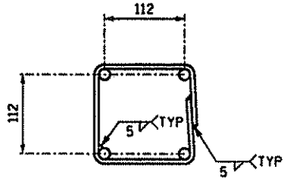
PART ELEVATION

END POST DETAIL

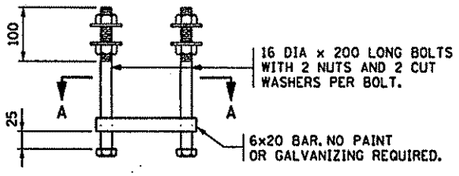


PART ELEVATION

INTERMEDIATE POST DETAIL



SECTION A-A



ELEVATION

RAILPOST ANCHORAGE

GENERAL NOTES

ALL RAILPOSTS NORMAL TO GRADE.

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

ALL STRUCTURAL STEEL MATERIAL SHALL COMPLY WITH SPEC. 3306, ASTM A36, A53F (PIPE).

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

GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC 3394 AFTER FABRICATION.

PRICE BID FOR ORNAMENTAL RAILING INCLUDES ALL MATERIAL SHOWN ON THIS SHEET.

LENGTH OF "ORNAMENTAL METAL RAILING" FOR PAYMENT WILL BE MEASURED FROM END TO END OF CHANNEL WITH NO DEDUCTION FOR OPEN JOINT.

SEE SPECIAL PROVISIONS FOR PAINT REQUIREMENT.

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

04 MAR 99

I:\struct\bunker\stds\bunk108.dgn

MODIFIED

FIG 5-397.108

APPROVED: _____

STATE BRIDGE ENGINEER

CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER

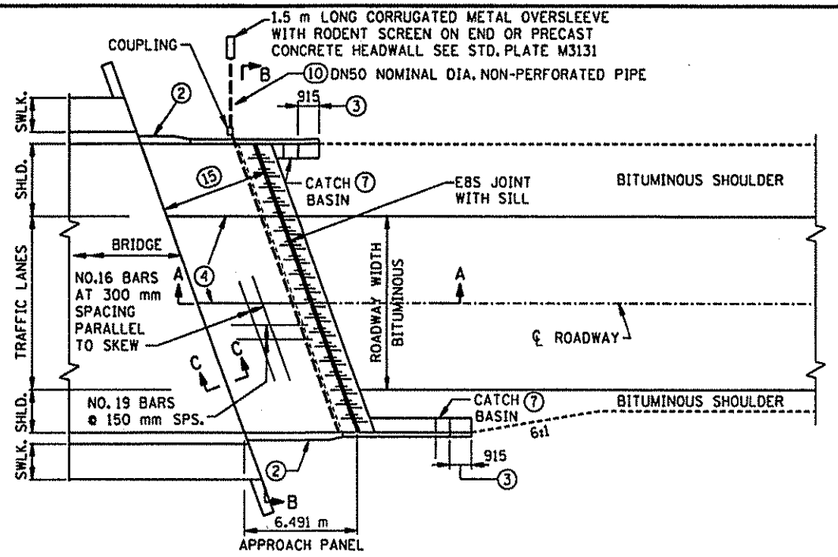
REG NO 25151 DATE MARCH 4, 1999

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

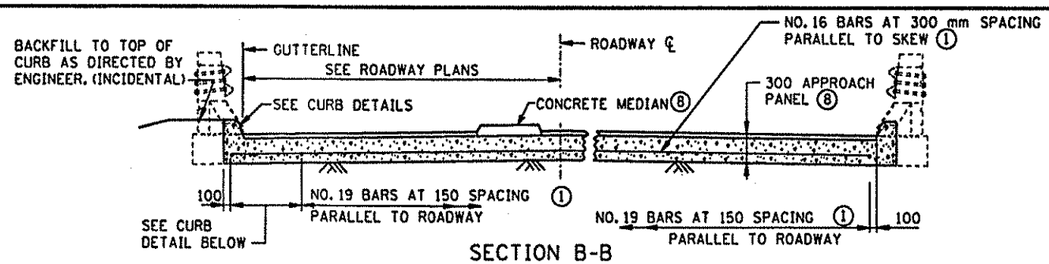
DES: MnDOT	DR: MnDOT/MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO 17 OF 28 SHEETS

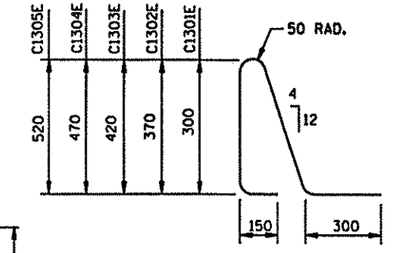
BRIDGE NO 02564



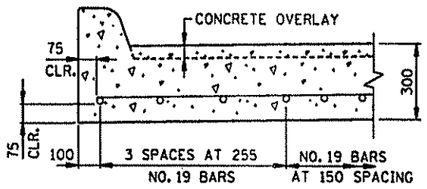
DIVIDED-URBAN ROADWAY PLAN
PARALLEL & NONPARALLEL WINGWALLS



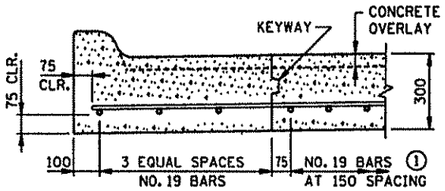
SECTION B-B
(SEE ROADWAY PLAN VIEW)



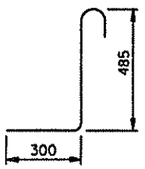
C1301E- C1305E ①



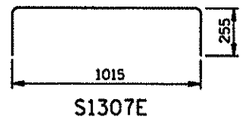
CURB DETAIL
(B4 INTEGRANT CURB)



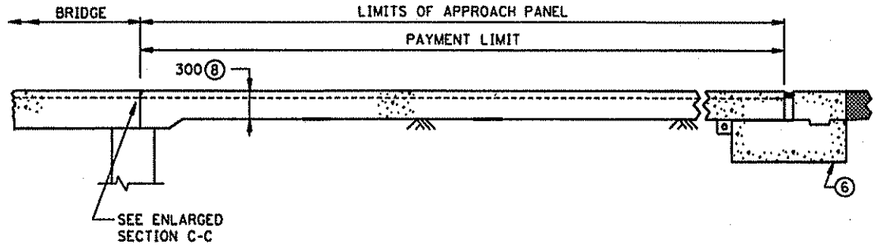
CURB DETAIL
(B424 MODIFIED CURB AND GUTTER)



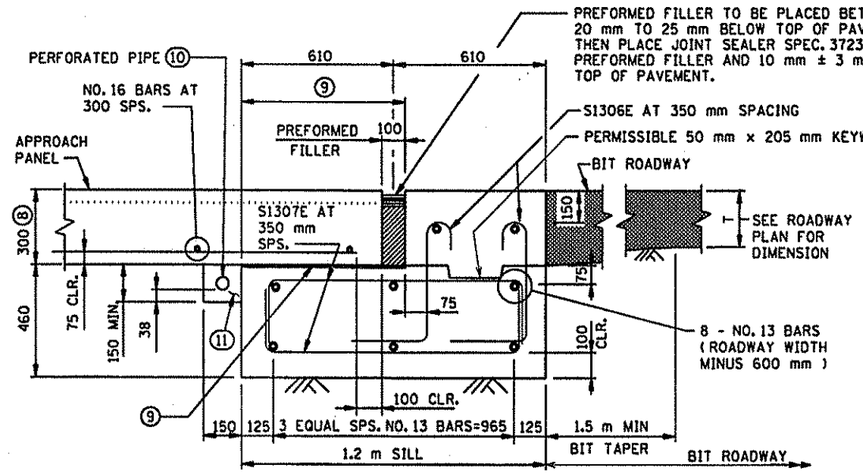
S1306E



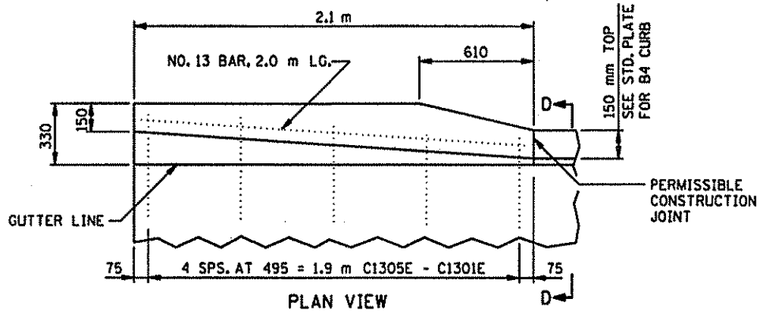
S1307E



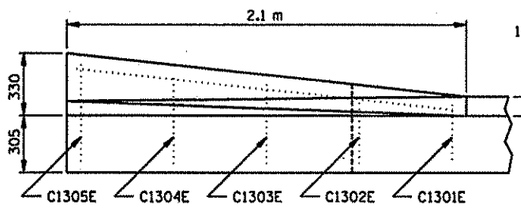
SECTION A-A
(SOME REINFORCEMENT NOT SHOWN)



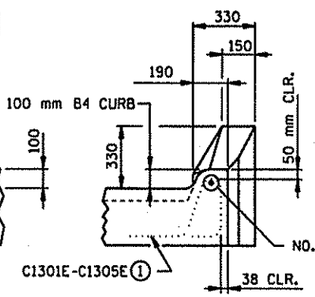
E8S JOINT DETAIL ⑥



PLAN VIEW

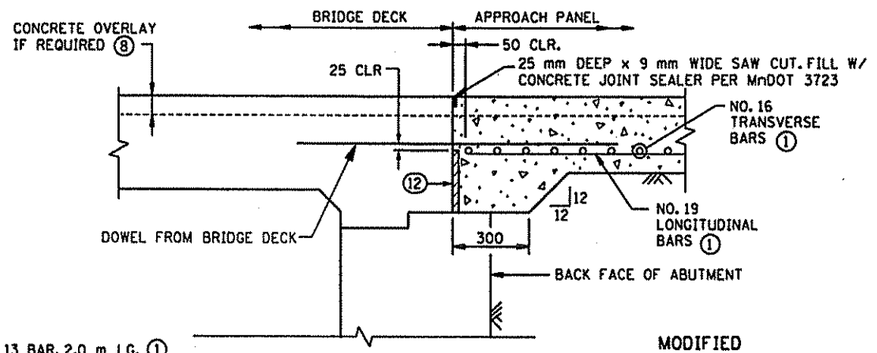


INSIDE ELEVATION



SECTION D-D

CURB TRANSITION DETAILS



SECTION C-C
MODIFIED

NOTES:

① ALL REINFORCEMENT IN APPROACH PANEL, SILL AND CURB SHALL BE GRADE 400 AND EPOXY COATED AS PER SPEC. 3301.

② TRANSITION FACE OF 100 mm CURB INTO PROFILE OF BRIDGE RAILING. SEE CURB TRANSITION DETAILS.

③ TRANSITION APPROACH PANEL CURB HEIGHT 100 mm TO 0 mm WHERE THERE IS NO ROADWAY CURB.

④ L2KT OR L1T LONGITUDINAL JOINTS AS REQUIRED SEE STANDARD PAVEMENT JOINT SHEET FOR DETAILS.

⑥ 460 mm X 1.2 m CONCRETE SILL. CONCRETE SILL AND CURBING IS INCLUDED IN APPROACH PANEL PAY ITEM.

⑦ LOCATION TO BE OFF THE APPROACH PANEL AS DETERMINED BY THE DESIGNER. SEE ROAD DESIGN MANUAL CHAPTER 7 FOR CATCH BASIN INFORMATION.

⑧ APPROACH SLAB THICKNESS SHOWN INCLUDES CONCRETE OVERLAY. CHECK BRIDGE PLANS FOR OVERLAYS & MEDIANS. CONCRETE OVERLAYS AND MEDIANS TO BE INCLUDED IN BRIDGE QUANTITIES AND DONE AT THE SAME TIME BY BRIDGE CONTRACTOR.

⑨ 3 mm THICK PLASTIC SHEETING SPEC. 3756 TO BREAK BOND. COVER AREA SHOWN IN DETAIL.

⑩ 50 mm NOMINAL DIA. THERMOPLASTIC PIPE, AS PER ASTM 1785M, 1120M, OR 2120M, SCHEDULE 80. SLOPE PIPE TO DITCH ON LOW SIDE. FURNISHING AND INSTALLING DRAIN SYSTEM SHALL BE INCIDENTAL, WITH NO DIRECT PAYMENT. WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER SPEC.3733. 3 mm PER 300 mm MINIMUM SLOPE.

⑪ BACKFILL WITH FINE AGGREGATE, SPEC. 3149, MODIFIED TO 0-3% PASSING A 75 µm SIEVE.

⑫ 19 mm FILLER BACKFACE TO BACKFACE OF CURB.

⑮ 6.1 m TO 40° 4.6 m OVER 40°.

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

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

STANDARD SHEET NO. 5-297.223M
STANDARD APPROVED: FEBRUARY 24, 1994
4-5-99

TITLE: BRIDGE APPROACH PANEL WITH OR WITHOUT CONCRETE OVERLAY BITUMINOUS ROADWAY

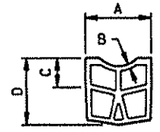
STATE PROJ. NO. SAP NO 02-716-04 SHEET NO 18 OF 28 SHEETS

04 MAR 99

j:\dstruct\bunker\dstds\bunkapi.dgn

REQUIRED DIMENSIONS

JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	21 mm USE IN ALL 10 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.



SPEC. REFERENCE 3721

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

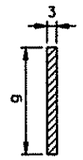
NOTES:

"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.

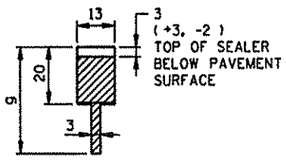
SHARP INTERNAL CORNERS WILL NOT BE PERMITTED. ALL CORNERS SHALL BE PROVIDED WITH SUITABLE FILLET. CURRENTLY APPROVED CONFIGURATIONS ARE ON FILE IN THE MATERIALS ENGINEERING SECTION, MINNESOTA DEPARTMENT OF TRANSPORTATION.

CONTRACTION JOINT SEALER

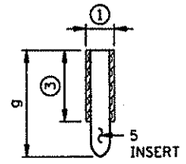
PREFORMED ELASTIC TYPE



DETAIL A
FORMED & SAWED



DETAIL B ②
SAWED



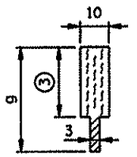
DETAIL C
FORMED
(INSERT TO BE REMOVED)

CONTRACTION JOINT CLASS DESIGNATION, DETAIL & SEALER SPEC. TABLE

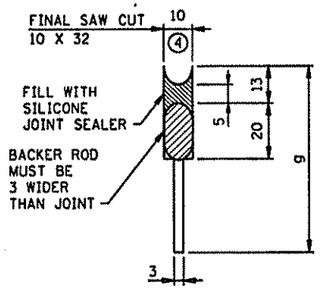
CLASS DESIGNATION		JOINT DETAIL	JOINT SEALER SPEC.
WITHOUT DOWELS	WITH DOWELS		
C1A	C1A-D	A	UNSEALED
C2B	C2B-D	B	3723
C2X	C2X-D	B OR C	3723
C3D	C3D-D	D	3721
C3X	C3X-D	C OR D	3721
C4E	C4E-D	E	SILICONE

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



DETAIL D
SAWED



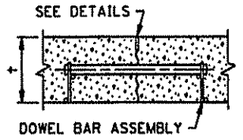
DETAIL E
SAWED

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



SECTION AT JOINT

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.

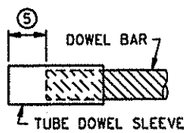
DESIGN C2X OR C2X-D - PRIOR TO SEALING FORMED JOINT (DETAIL C), WITH HOT POUR SEALER, THE JOINT SHALL BE WIDENED TO A NOMINAL WIDTH WIDTH OF 13 mm FOR A DEPTH OF 20 mm, + 3 mm, 2 mm, BY SAWING ALONG THE FULL LENGTH OF THE FORMED JOINT. THE SEALER SHALL BE FILLED TO THE SAME DEPTH AS SHOWN IN DETAIL B.

② DESIGN C2B OR C2B-D - PRIOR TO SEALING JOINT (DETAIL B) WITH HOT POUR JOINT SEALER, A STRIP OF PAPER 13 mm WIDE SHALL BE PLACED ON THE BOTTOM OF THE 13 mm WIDE JOINT.

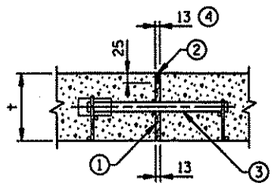
③ WHEN USING PREFORMED JOINT SEALER, THE DEPTH SHALL BE 5 mm MORE THAN THE PREFORMED SEALER, WHEN COMPRESSED, TO FIT THE JOINT DESIGN WIDTH.

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.

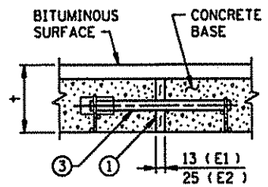


DOWEL BAR SLEEVE DETAIL



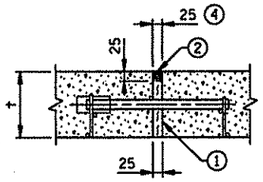
E1D-1 (W/DOWELS) E1-1 (W/O DOWELS)

DETAIL A



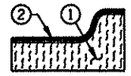
E1DB & E2DB (W/DOWELS) E1B & E2B (W/O DOWELS)

DETAIL B

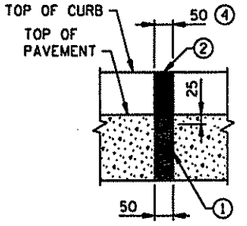


E2D-1 (W/DOWELS) E2-1 (W/O DOWELS)

DETAIL C



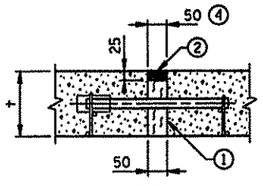
SECTION THRU CURB E2-1



E4-1 (W/O DOWELS)

DETAIL D

SECTION THRU CURB E4-1



E4D-1 (W/DOWELS)

DETAIL E

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
	E4-1	D	②
E4D-1		E	②

LEGEND

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

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.

CONTRACTION JOINTS

DESIGN C

STANDARD APPROVED: JANUARY 25, 1993

SP NO 74-619-13

STANDARD SHEET NO. 5-297.221M (1 OF 2)

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

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

TITLE: PAVEMENT JOINTS
SAP 02-716-04

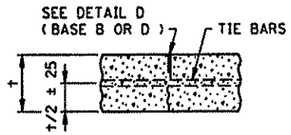
DES: MnDOT DR: MnDOT APPROVED: 4-5-99
CHK: JDS CHK: JDS

SHEET NO B19 OF 28 SHEETS

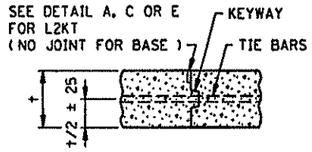
BRIDGE NO 02564

04 MAR 99

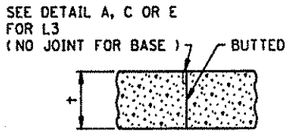
I:\struct\bunker\stds\bunkap2.dgn



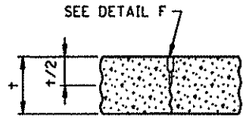
L1, L1T, L1B & L1TB



L2KT & L2KTB



L3 & L3B



L4

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			B	3723
L1BU	L1TBU			A OR B	UNSEALED
		L2KTH		D OR E	3723
		L2KTS		C	SILICONE
			L3H	D OR E	3723
			L3S	C	SILICONE
L4S				F	SILICONE

LEGEND

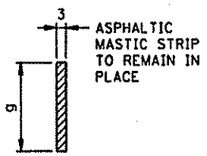
L = LONGITUDINAL JOINT
NO. = JOINT REFERENCE
K = KEYWAY
T = TIE BARS
B = CONCRETE BASE
U = UNSEALED
H = HOT POUR
S = SILICONE

JOINT REFERENCE NUMBERS

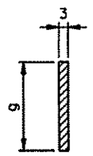
1 = SAWED TO A DEPTH OF t/3
2 = KEYED CONSTRUCTION JOINT
3 = BUTTED CONSTRUCTION JOINT
4 = SAWED TO A DEPTH OF t/2

LONGITUDINAL JOINT DEPTH TABLE

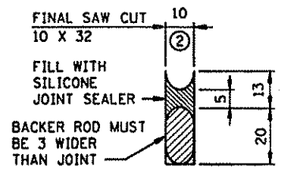
PAVEMENT THICKNESS t	CONCRETE PAVEMENT JOINT DEPTH g	CONCRETE BASE JOINT DEPTH g
150	50	50
165	55	50
180	57	57
190	65	57
205	68	65
215	73	65
230	75	70
240	83	75
255	86	
265	90	
280	93	
290	98	
300	100	
315	105	
330	113	
345	115	
355	118	



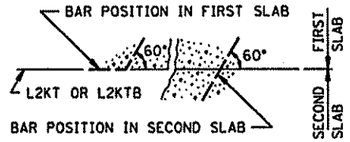
DETAIL A
(FORMED & UNSEALED)



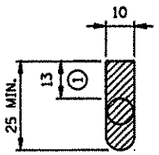
DETAIL B
(SAWED & SEALER, SPEC. 3723)
(BASE JOINTS UNSEALED)



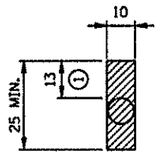
DETAIL C
(SAWED)



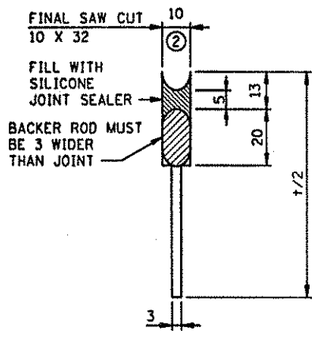
TIE BAR BENDING DETAIL



DETAIL D
(FORMED & SEALED SPEC. 3723)



DETAIL E
(SAWED & SEALER SPEC. 3723)



DETAIL F
(SAWED)

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.

① 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.

② THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. PRIOR TO SEALING THE JOINT, A 13 mm DIAMETER CLOSED CELL BACKER ROD SHALL BE PLACED SUCH THAT THE TOP OF THE BACKER ROD IS 13 mm BELOW THE SURFACE OF THE PAVEMENT. SILICONE SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEALANT BEAD THICKNESS OF 5 mm.

GENERAL NOTES:

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

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

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

STANDARD SHEET NO. 5-297.221M (2 OF 2)
STANDARD APPROVED: JANUARY 25, 1993
TITLE: PAVEMENT JOINTS
LONGITUDINAL (DESIGN L)

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

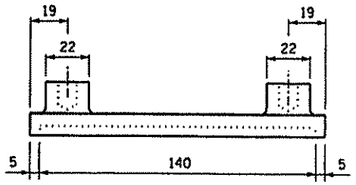
TITLE: PAVEMENT JOINTS
SAP 02-716-04

DES: MnDOT DR: MnDOT APPROVED: 4-5-99
CHK: JDS CHK: JDS
SHEET NO 20 OF 28 SHEETS

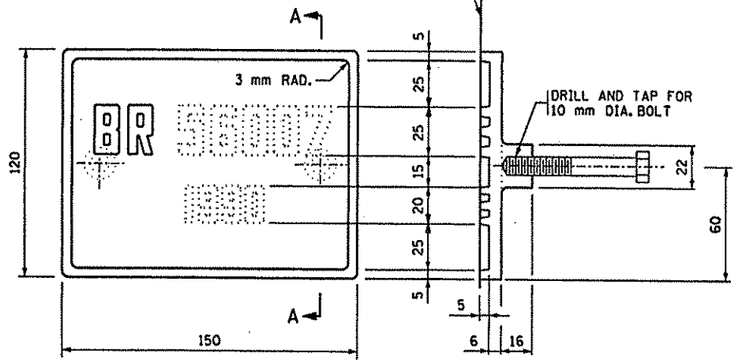
BRIDGE NO 02564

04 MAR 99

J:\struct\bunker\stds\bunkcp3.dgn



PLAN VIEW



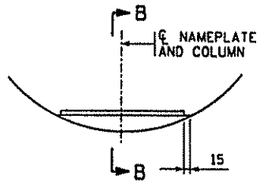
ELEVATION

SECTION A-A

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

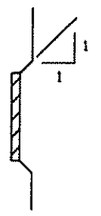
BRIDGE 02564

YEAR 1999

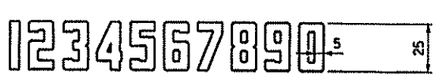


NAMEPLATE PLACEMENT

(ROUND CONCRETE PIER COLUMNS)



SECTION B-B



NUMBERS FOR NAMEPLATE

NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 75 mm IN 300 mm.

HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

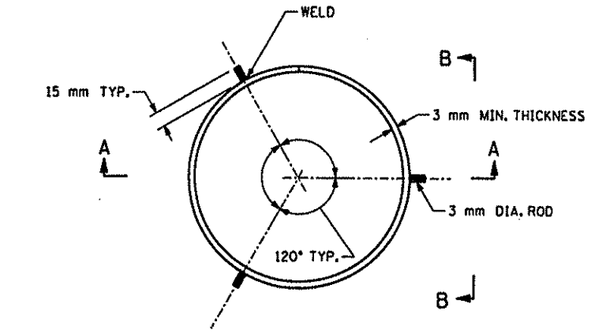
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 10 mm DIA. x 75 mm LONG WITH EACH PLATE.

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

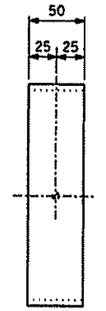
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

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



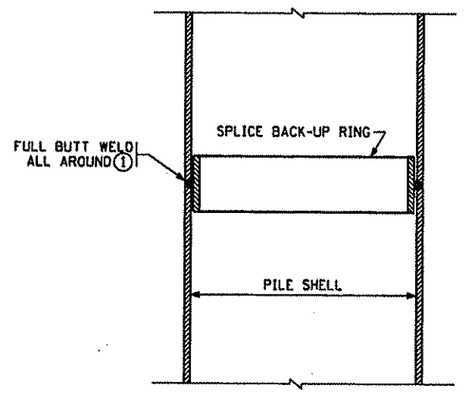
PLAN VIEW SPLICE

(PILE NOT SHOWN)



SECTION B-B

(PILE NOT SHOWN)



SECTION A-A

NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED. BACK-UP RING SHALL HAVE A TIGHT FIT.

WELDING ELECTRODE SHALL BE A.W.S. TYPE E7016 OR E7018 (LOW-HYDROGEN).

LOW-HYDROGEN ELECTRODES SHALL BE SUPPLIED IN HERMETICALLY (AIR-TIGHT) SEALED CONTAINERS.

LOW-HYDROGEN ELECTRODES SHALL BE STORED IN HOLDING OVENS AT A TEMPERATURE OF NOT LESS THAN 121° C.

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

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

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

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

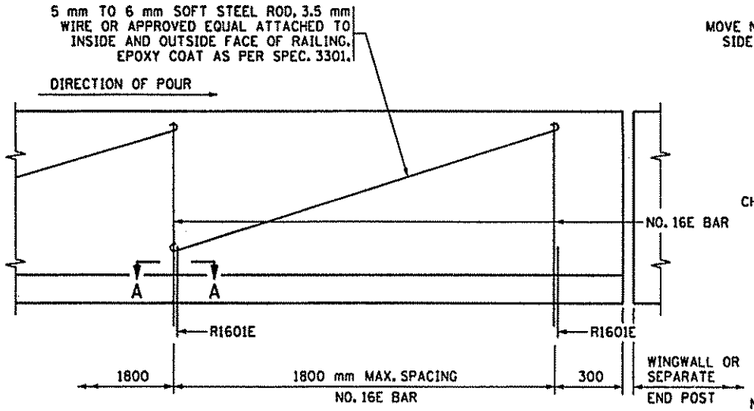
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

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

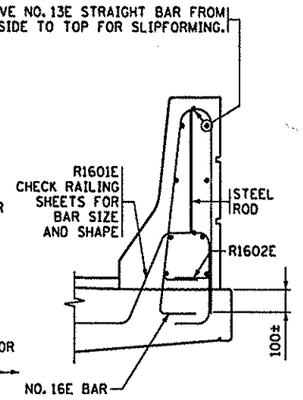
CERTIFIED BY Nancy Dauenberger PROFESSIONAL ENGINEER REG NO 25151 DATE MARCH 4, 1999	TITLE: B101M-B201M SAP 02-716-04	DES: MnDOT DR: MnDOT CHK: JDS CHK: JDS	APPROVED: 4-5-99	BRIDGE NO 02564
		SHEET NO B21 OF 28 SHEETS		

04 MAR 99

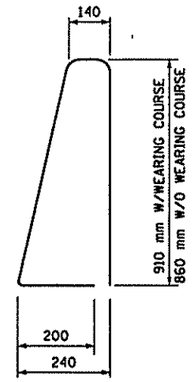
I:\struct\bunker\stds\bunkb101.dgn



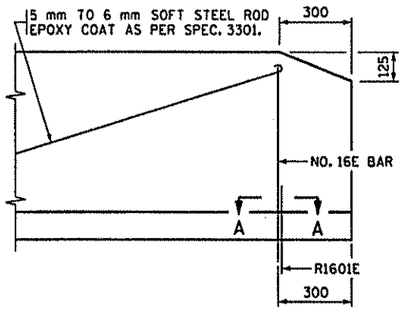
INSIDE ELEVATION OF RAILING



RAILING SECTION



NO. 16E BAR



INSIDE ELEVATION OF RAILING

AT END OF WINGWALL

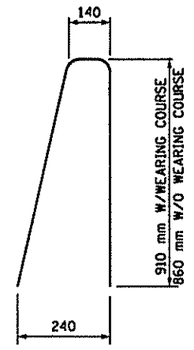
NOTES:

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

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

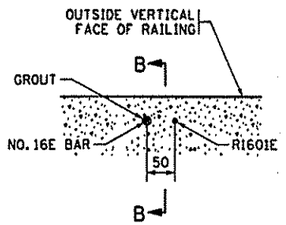
FORM RAIL FOR A MINIMUM OF 1200 mm ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

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

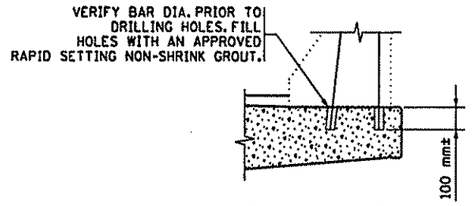


NO. 16E BAR

DRILLED IN ALTERNATE



SECTION A-A



SECTION B-B

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

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997

Donald J. Flemming

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 J. Daubenberger
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

TITLE: B830M
SAP 02-716-04

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

SHEET NO B22 OF 28 SHEETS

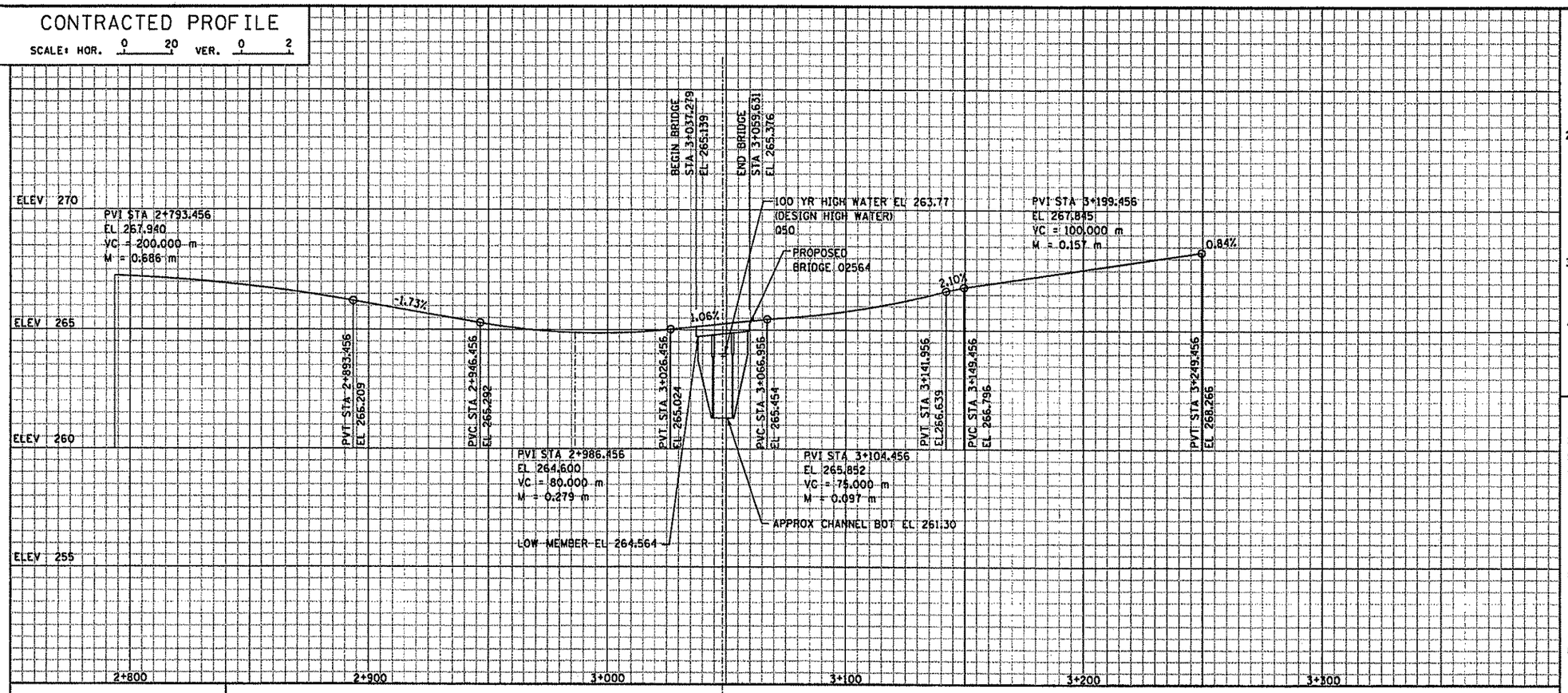
BRIDGE NO 02564

04 MAR 99

J:\structr\bunker\stds\bunkb830.dgn

CONTRACTED PROFILE

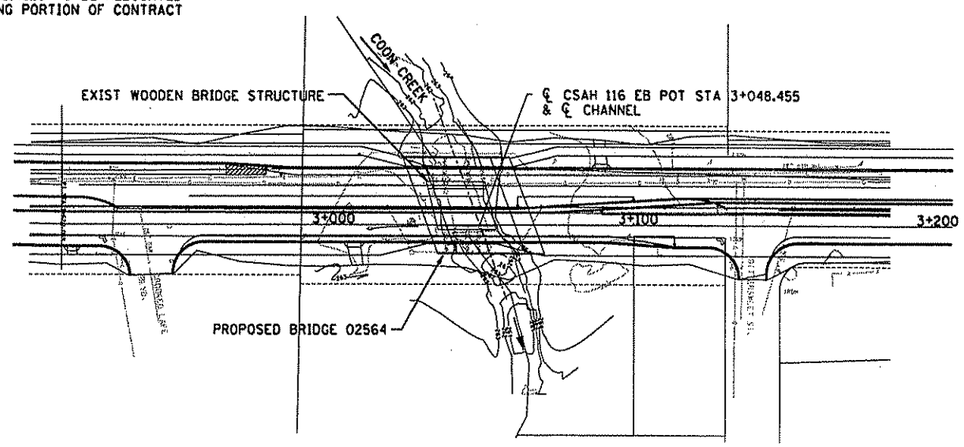
SCALE: HOR. 0 20 VER. 0 2



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 SDWK

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.

2. OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.

3. APPARENT HIGHWATER ELEVATION OBTAINED FROM:

4. OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC 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	263.77 / 28.3	m^2
BASIC FLOOD (100 YEAR FREQUENCY)	46.7	m3/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.

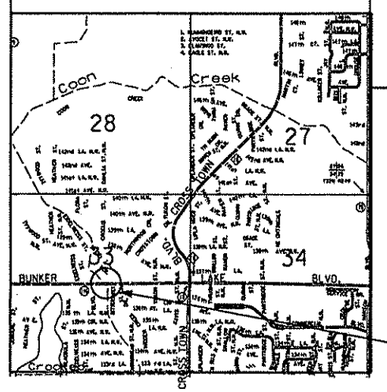
ESTIMATED PIER SCOUR ELEV. (100 YR FREQUENCY) 260.5

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 Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 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

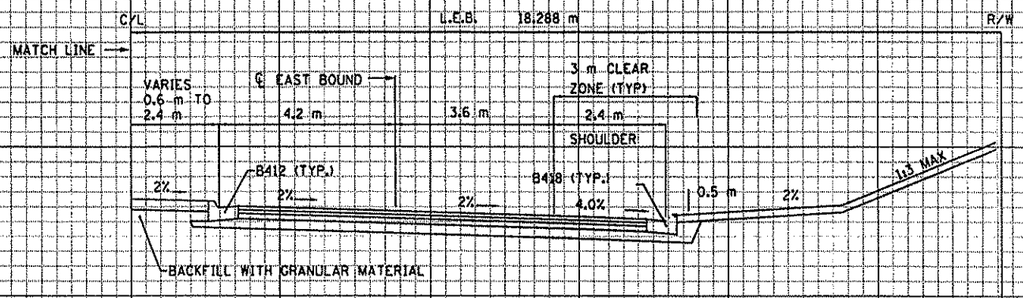
BRIDGE NO 02564

04 MAR 99

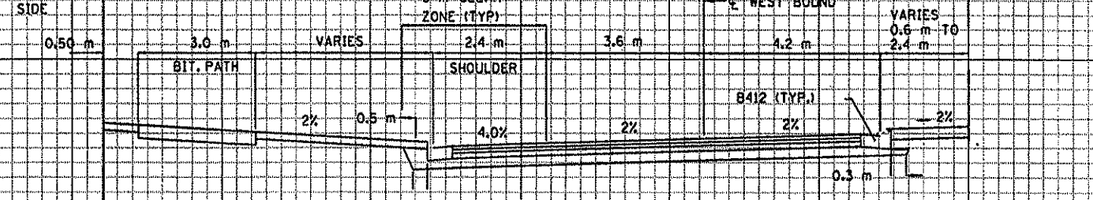
I:\Structr\bunker\bridge\bunkbs1.dgn

TYPICAL SECTIONS

SCALE: HOR. 0 20 VER. 0 2



TYPICAL ROADWAY SECTION

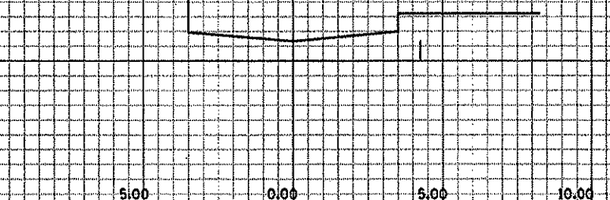


TYPICAL ROADWAY SECTION

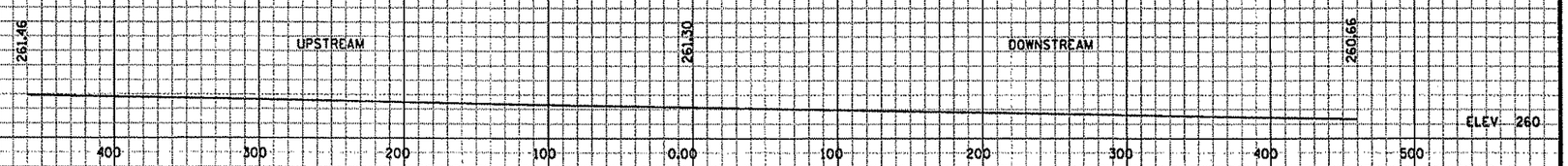
CROSS SECTIONS

SCALES AS SHOWN

CHANNEL X-SECTION 460 m UPSTREAM



CHANNEL X-SECTION 460 m DOWNSTREAM



℄ PROFILE COON CREEK

04 MAR 99

J:\structure\bunker\bridge\bunkbs1.dgn

Minnesota Historic

SEH

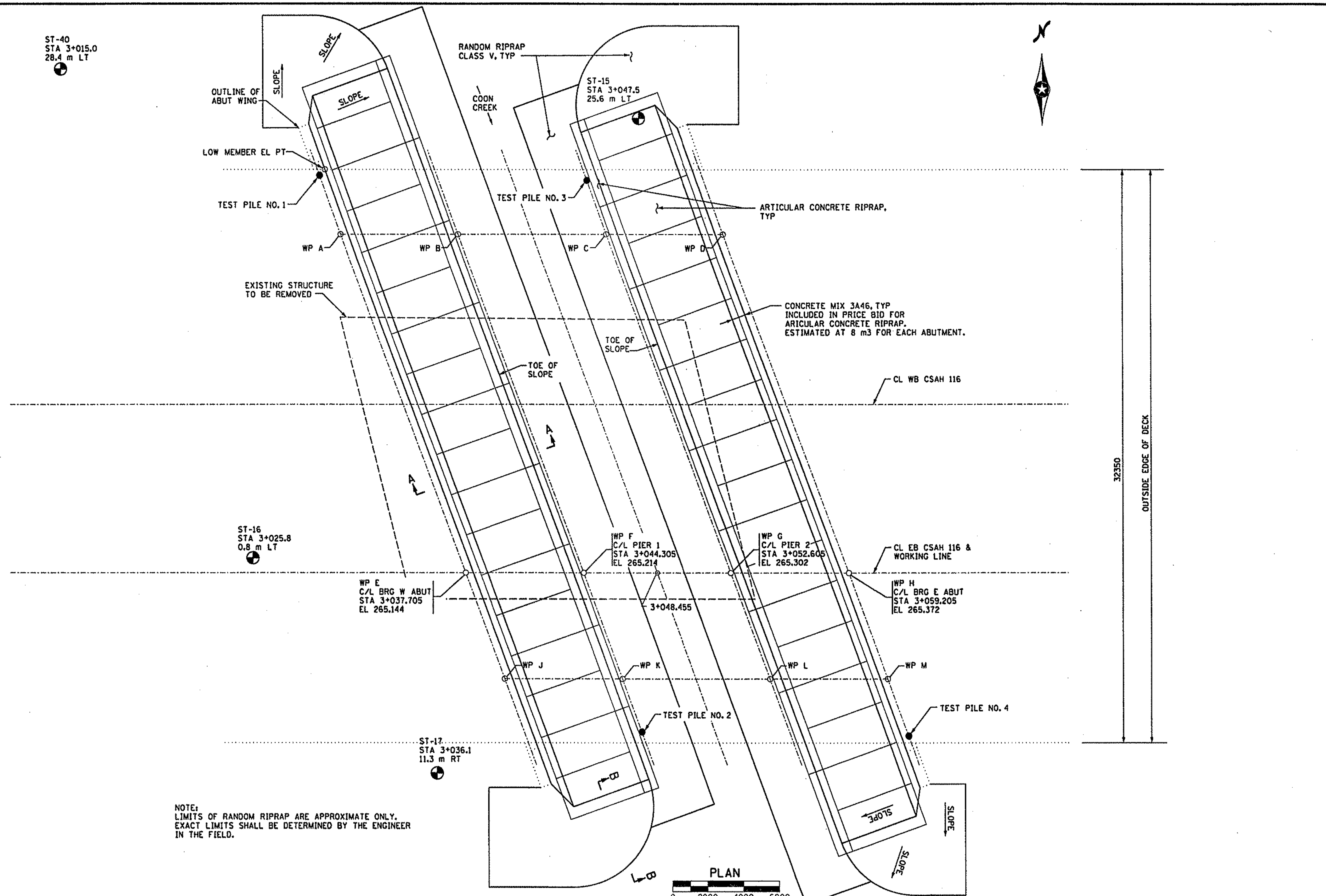
CERTIFIED BY Nancy Daubenberger PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

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

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

SHEET NO B24 OF 28 SHEETS

BRIDGE NO 02564

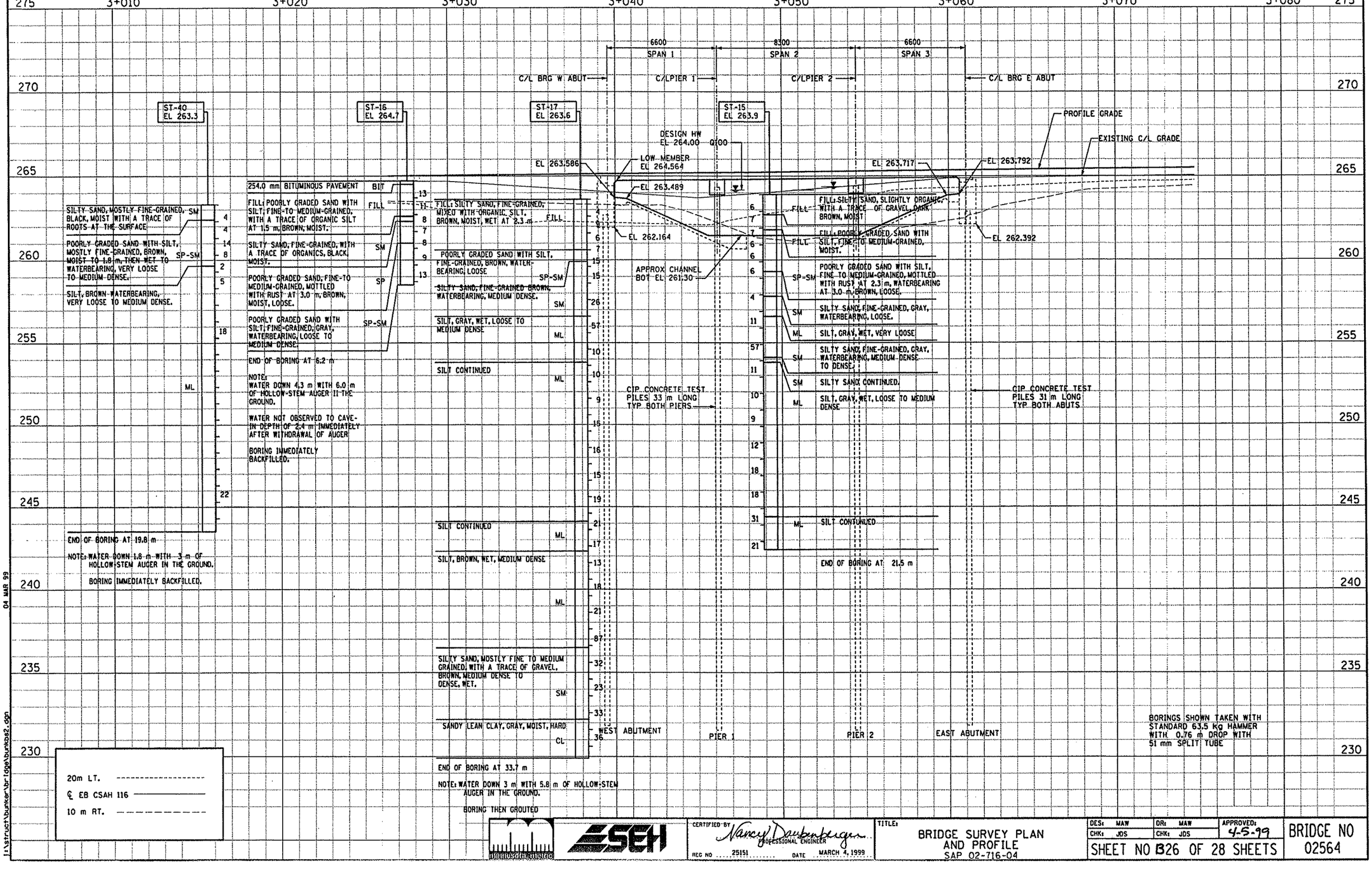

ST-40
STA 3+015.0
28.4 m LT
SLOPE
SLOPE
SLOPE
OUTLINE OF ABUT WING
LOW MEMBER EL PT
TEST PILE NO. 1
RANDOM RIPRAP CLASS V, TYP
COON CREEK
ST-15
STA 3+047.5
25.6 m LT
TEST PILE NO. 3
ARTICULAR CONCRETE RIPRAP, TYP
WP A
WP B
WP C
WP D
EXISTING STRUCTURE TO BE REMOVED
CONCRETE MIX 3A46, TYP INCLUDED IN PRICE BID FOR ARICULAR CONCRETE RIPRAP. ESTIMATED AT 8 m3 FOR EACH ABUTMENT.
TOE OF SLOPE
TOE OF SLOPE
CL WB CSAH 116
32350
OUTSIDE EDGE OF DECK
A
A
ST-16
STA 3+025.8
0.8 m LT
WP F
C/L PIER 1
STA 3+044.305
EL 265.214
WP G
C/L PIER 2
STA 3+052.605
EL 265.302
CL EB CSAH 116 & WORKING LINE
WP E
C/L BRG W ABUT
STA 3+037.705
EL 265.144
3+048.455
WP H
C/L BRG E ABUT
STA 3+059.205
EL 265.372
WP J
WP K
WP L
WP M
TEST PILE NO. 2
TEST PILE NO. 4
ST-17
STA 3+036.1
11.3 m RT
B
B
SLOPE
SLOPE
SLOPE
PLAN
0 2000 4000 6000

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\bridge\bunkbs2.dgn

minnesota metric	SEH	CERTIFIED BY Nancy Daubenberger 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 B25 OF 28 SHEETS	BRIDGE NO 02564



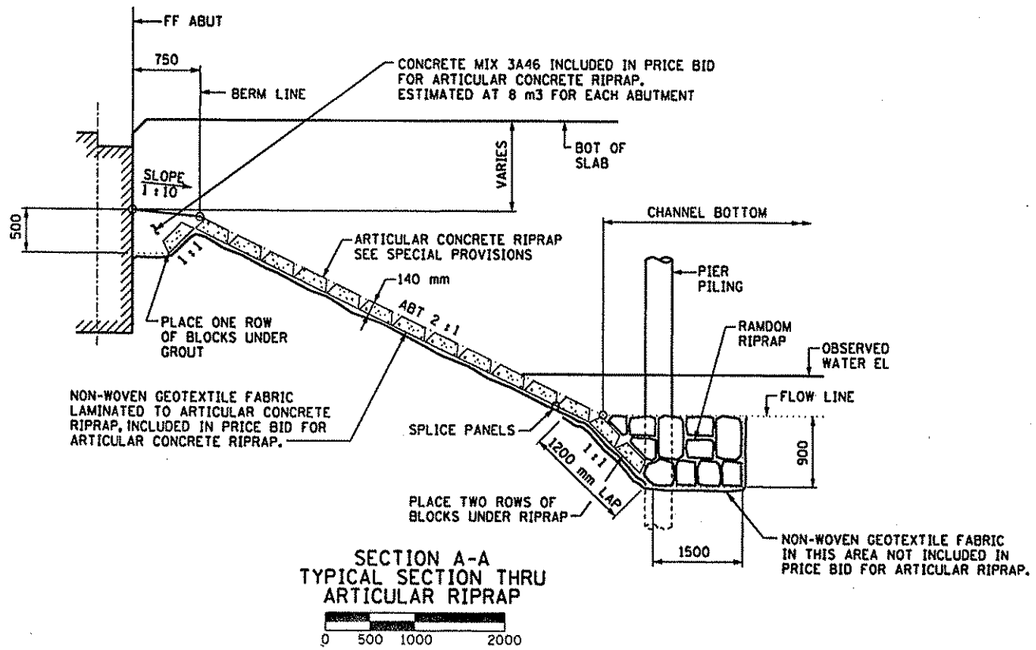
CERTIFIED BY Nancy Daubenberger
PROFESSIONAL ENGINEER
REG NO 25151 DATE MARCH 4, 1999

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

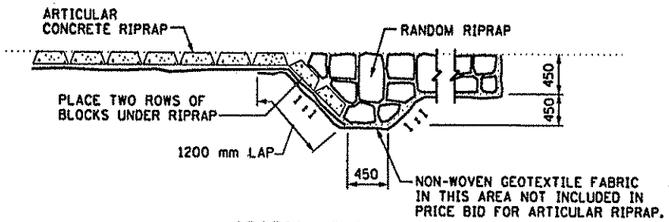
DES: MAW	DR: MAW	APPROVED: 4-5-99
CHK: JDS	CHK: JDS	

SHEET NO B26 OF 28 SHEETS

BRIDGE NO 02564



SECTION A-A
TYPICAL SECTION THRU
ARTICULAR RIPRAP



SECTION B-B
TYPICAL SECTION THRU
ARTICULAR RIPRAP

NOTES

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

04 MAR 99

I:\struct\bunker\bridge\bunkbs2.dgn

CERTIFIED BY Nancy Daubenberger 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

WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER _____
NAME & ADDRESS (CITY, STATE)

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER _____
NAME & ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

BEARING PADS

NEOPRENE PAD MANUFACTURER _____
NAME & ADDRESS (CITY, STATE)

SPECIAL SURFACE TREATMENT

TYPE: _____ COLOR: _____

PAINT SYSTEM

MN/DOT CONSTRUCTION SPECIFICATION NUMBER _____
2476 OR 2478

MANUFACTURER _____
NAME & ADDRESS (CITY, STATE)

PRIME COAT _____ _____
(1) MN/DOT MATERIAL SPECIFICATION NUMBER — COLOR

INTERMEDIATE COAT _____ _____
(1) MN/DOT MATERIAL SPECIFICATION NUMBER — COLOR

FINISH COAT _____ _____
(1) MN/DOT MATERIAL SPECIFICATION NUMBER — COLOR

(1) INCLUDE MANUFACTURER'S NAME AND ADDRESS IF DIFFERENT FROM MANUFACTURER NAMED ON SECOND LINE ABOVE.

OTHER ITEMS (2)

(2) UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

1. FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES? _____ YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY :

INSPECTOR(S) _____ DATE _____

CHECKED BY: _____ DATE _____
PROJECT ENGINEER/SUPERVISOR

FIG. - . M

APPROVED: _____
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

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

TITLE: AS-BUILT BRIDGE DATA
SAP 02-716-04

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

BRIDGE NO 02564

04 MAR 99
I:\struct\bunker\srds\bunkcab1.dgn