

PLAN SYMBOLS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT-OF-WAY LINE
- EXISTING RIGHT-OF-WAY LINE
- CONTROL OF ACCESS LINE
- PROPERTY LINE (Except Land Lines)
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- TRUNK HIGHWAY CENTER LINE
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT-OF-WAY LINE
- DRAINAGE DITCH
- DRAIN TILE
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- WOODEN FENCE
- CATCH BASIN
- FIRE HYDRANT
- BRIDGE
- BUILDING
- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE, OR METAL)
- UTILITY SYMBOLS
- POWER POLE LINE
- TELEPHONE OR TELEGRAPH POLE LINE
- JOINT TELEPHONE AND POWER ON POWER POLES
- JOINT TELEPHONE AND POWER ON TELEPHONE POLES
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (TELEPHONE CABLE TERMINAL)
- GAS MAIN
- WATER MAIN
- CONDUIT
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEVISION CABLE
- BURIED TELEPHONE CABLE
- BURIED ELECTRIC CABLE
- SEWER (STORM)
- SEWER (SANITARY)
- SEWER MANHOLE
- 40 LE
- CH BASIN

MINNESOTA DEPARTMENT OF TRANSPORTATION  
**ANOKA COUNTY HIGHWAY DEPARTMENT**  
**CITY OF LINO LAKES, MINNESOTA**  
 CONSTRUCTION PLAN FOR: GRADING, BITUMINOUS PAVEMENT, DRAINAGE, BRIDGE NO. 02817  
 CURB AND GUTTER, STRIPING, AND TRAFFIC SIGNALS  
 S.P. NO. 0280-55, S.A.P. NO. 02-623-13 & S.A.P. NO. 210-020-04  
 LOCATED IN LINO LAKES ON C.S.A.H. 23 (LAKE DR.)  
 FROM 1000' SOUTH OF TOWN CENTER PARKWAY TO APOLLO DR.

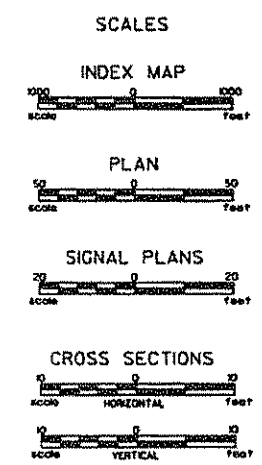
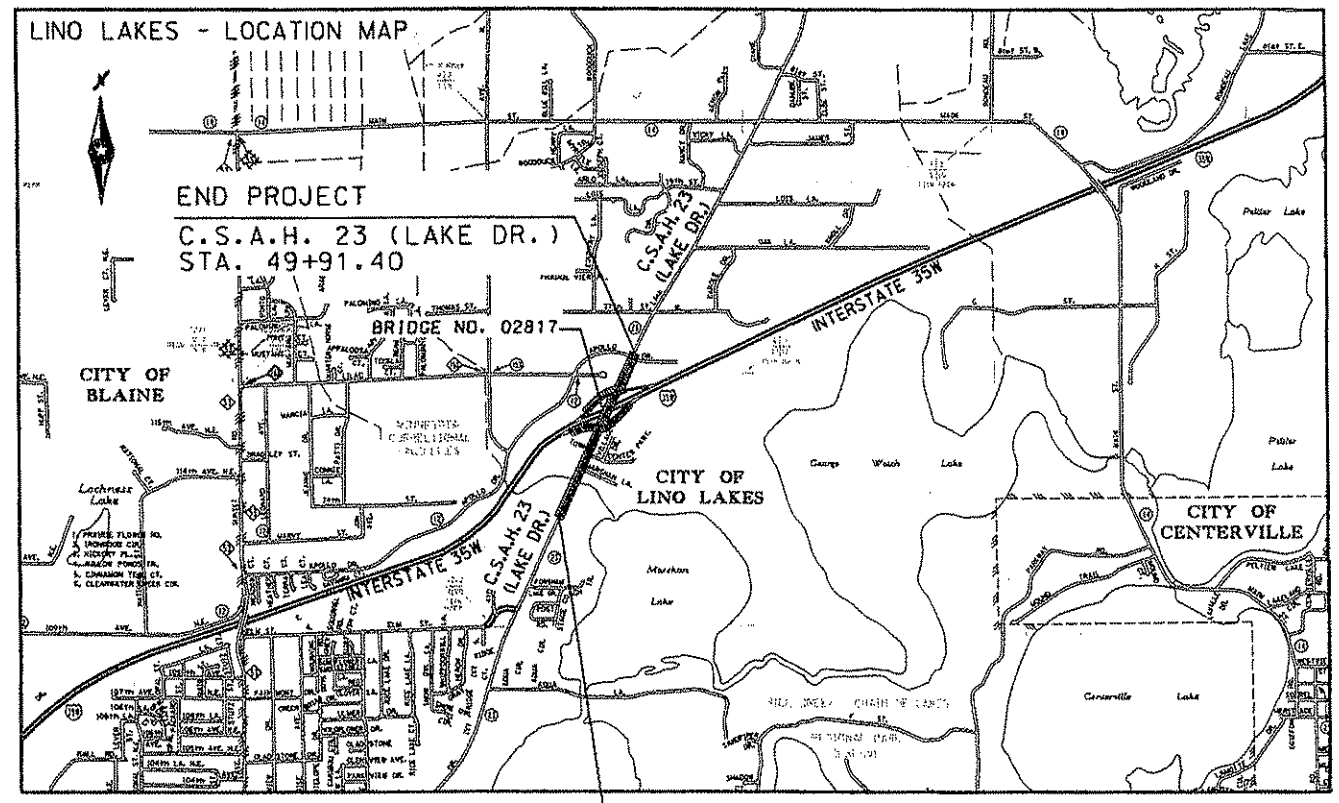
FED. PROJ. NO. \_\_\_\_\_ STATE FUNDS \_\_\_\_\_

GOVERNING SPECIFICATIONS  
 THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

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SHEETS 52, 53 HAVE BEEN DELETED.  
 THIS PLAN CONTAINS 196 SHEETS



NOTES:  
 THE EXACT LOCATION OF UNDERGROUND UTILITIES SUCH AS GAS, TELEPHONE, FIBEROPTIC, ELECTRIC, CABLE TV, AND PIPE LINES ARE UNKNOWN. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL BEFORE COMMENCING EXCAVATION. GOPHER STATE ONE CALL SYSTEM...1-800-252-1166

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PLAN REVISIONS

DATE	SHEET NO.	APPROVED BY

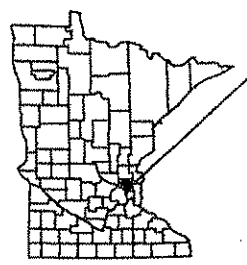
STATE PROJ. NO. \_\_\_\_\_ CHARGE IDENTIFIER \_\_\_\_\_

DESIGN DESIGNATION

BASED ON: STOPPING SIGHT DISTANCE  
 HEIGHT OF EYE: 3.5 FT. HEIGHT OF OBJECT: 2.0 FT.

LAKE DRIVE (C.S.A.H. 23)

GROSS LENGTH	3188 FT.	0.60 MILES
BRIDGE LENGTH	284 FT.	0.05 MILES
EXCEPTION LENGTH	0 FT.	0 MILES
REF. POINT 036+00.265 TO REF. POINT 036+00.683		
FUNCTIONAL CLASSIFICATION	"A" MINOR ARTERIAL	
NO. OF TRAFFIC LANES	4	
NO. OF PARKING LANES	0	
STRUCTURAL DESIGN	10 TON	
R VALUE	15	
ESALS	5,000,000	
EXISTING ADT (2005)	32,712	
YEAR PROJECTED ADT (2030)	55,400	
% HCADT IN PM	7.1	
DESIGN SPEED	C.S.A.H. 23	45 MPH
	RAMPS	40 MPH



PROJECT LOCATION  
 CITY OF LINO LAKES  
 ANOKA COUNTY  
 Mn/DOT TRANSPORTATION DISTRICT - METRO  
 SECTION 17  
 TOWNSHIP 31 NORTH  
 RANGE 22 WEST

AGREEMENT NUMBER 90794  
 CITY OF LINO LAKES  
 S.P. 0280-55 (T.H. 35W - 394)  
 STATE FUNDS  
 METRO DISTRICT

CITY OF LINO LAKES  
 600 TOWN CENTER PARKWAY  
 LINO LAKES, MN 55014  
 PHONE: (651) 982-2400  
 FAX: (651) 982-2499



STATE PROJ. NO. 0280-55 (TH 35W = 394)  
 STATE AID PROJ. NO. 02-623-13  
 STATE AID PROJ. NO. 210-020-04 SHEET NO. 1 OF 198 SHEETS

- APPROVED: *James E. Studahn* DATE 1-23-07  
 CITY OF LINO LAKES ENGINEER
- APPROVED: *Robert E. ...* DATE 1/24/07  
 ANOKA COUNTY ENGINEER
- RECOMMENDED FOR APPROVAL: *Mark R. Dierling* DATE 3-13-07  
 DISTRICT TRANSPORTATION ENGINEER
- RECOMMENDED FOR APPROVAL: \_\_\_\_\_ DATE \_\_\_\_\_
- RECOMMENDED FOR APPROVAL: *Starkewsen* DATE 2/28/07  
 DISTRICT MATERIALS ENGINEER
- RECOMMENDED FOR APPROVAL: *Michael A. ...* DATE 2/28/07  
 DISTRICT WATER RESOURCES/HYDRAULICS ENGINEER
- RECOMMENDED FOR APPROVAL: *Ann Jane* DATE 2/28/07  
 DISTRICT TRAFFIC ENGINEER
- RECOMMENDED FOR APPROVAL: *Tim R. Swann* DATE 3/27/07  
 FOR STATE PRE-LETTING ENGINEER
- OFFICE OF LAND MANAGEMENT APPROVAL: *Mark R. Dierling* DATE 3/27/07  
 DIRECTOR, LAND MANAGEMENT
- APPROVED: *Mark R. Dierling* DATE 3/13/07  
 STATE DESIGN ENGINEER
- DISTRICT STATE AID ENGINEER REVIEWED FOR COMPLIANCE WITH STATE AND FEDERAL AID RULES/POLICY: *Mark R. Dierling* DATE 3-13-07
- APPROVED FOR STATE AND FEDERAL AID FUNDING: STATE AID ENGINEER


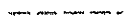




SEH  
 PHONE: (651) 490-2000  
 3535 WADSWORTH CENTER DR.  
 ST. PAUL, MN 55110

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

*Mark R. Dierling* NAME: MARK R. DIERLING  
 DATE 1/2/2007 LIC. NO. 21098



**LEGEND**

-  NEW SIGNALS
-  EXISTING PAVEMENT
-  NEW CONSTRUCTION
-  DRAINAGE AND SUPERELEVATION PLAN SHEET NUMBER
-  CONSTRUCTION PLAN SHEET NUMBER
-  TOPOGRAPHY AND UTILITY PLAN SHEET NUMBER

CITY OF LINO LAKES

BEGIN CONSTRUCTION  
 @ S.W. RAMP  
 STA. 40+55.00  
 MATCH EXISTING

BEGIN CONSTRUCTION  
 @ N.W. RAMP  
 STA. 33+78.76  
 MATCH EXISTING

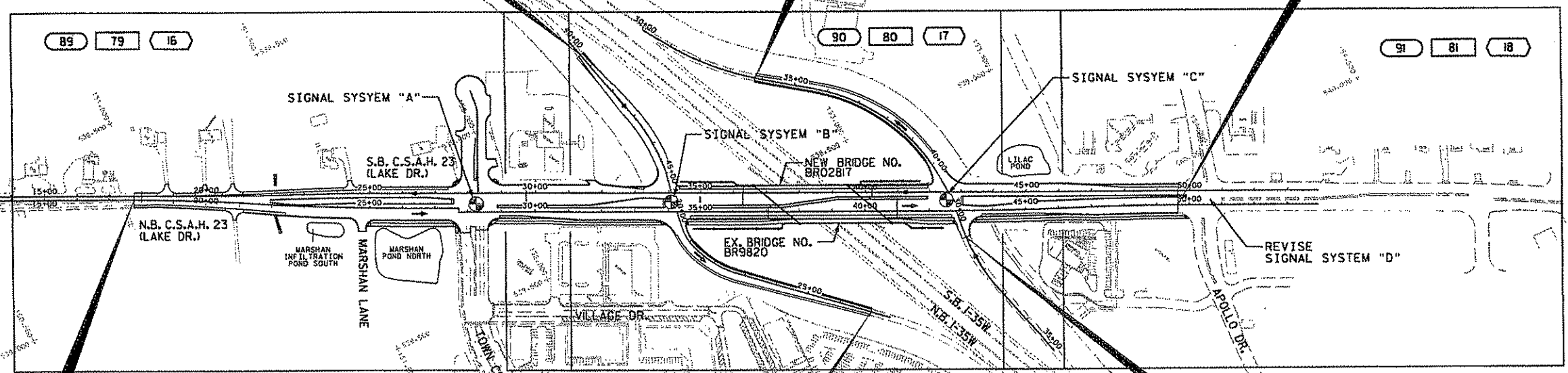
END CONSTRUCTION  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 49+91.40  
 MATCH EXISTING

BEGIN CONSTRUCTION  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 17+76.14  
 MATCH EXISTING

END CONSTRUCTION  
 @ N.E. RAMP  
 STA. 30+86.34  
 MATCH EXISTING

END CONSTRUCTION  
 @ S.E. RAMP  
 STA. 26+98.89  
 MATCH EXISTING

ANOKA COUNTY



3/23/2007

Default

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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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Diebling* Lic. No. 21098  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

GENERAL LAYOUT

FILE NO.	2
ALIN0505.DWG	
GL1 OF GLI	198





STATEMENT OF ESTIMATED QUANTITIES

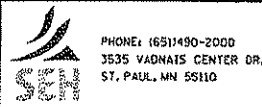
TAB	SHEET NO.	NOTE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	S.P. 0280-55, S.A.P. 210-020-04 ESTIMATED QUANTITY CITY OF LIND LAKES (6)	S.A.P. 02-623-13 ESTIMATED QUANTITY ANOKA COUNTY	STORM SEWER ESTIMATED QUANTITY
A,L	8,12		245I.50I	STRUCTURE EXCAVATION CLASS U	CU YD	685	685		
R	98		250I.5I5	12" RC PIPE APRON	EACH	1			1
R	98		250I.5I5	18" RC PIPE APRON	EACH	3			3
R	98		250I.5I5	24" RC PIPE APRON	EACH	2			2
R	98		250I.5I5	30" RC PIPE APRON	EACH	1			1
R	98		250I.56I	15" RC PIPE CULVERT DES 3006 CL V	LIN FT	120	120		
R	98		250I.56I	18" RC PIPE CULVERT DES 3006 CL V	LIN FT	25			25
R	98		250I.569	15" RC SAFETY APRON	EACH	6			6
EE	12		2502.50I	4" PRECAST CONCRETE HEADWALL	EACH	20	20		
EE	12		2502.52I	4" TP PIPE DRAIN	LIN FT	320	320		
EE	12		2502.54I	4" PERF TP PIPE DRAIN	LIN FT	10740	10740		
R	98		2503.54I	12" RC PIPE SEWER DES 3006 CL V	LIN FT	209			209
R	98		2503.54I	15" RC PIPE SEWER DES 3006 CL V	LIN FT	2930			2930
R	98		2503.54I	18" RC PIPE SEWER DES 3006 CL V	LIN FT	638			638
R	98		2503.54I	21" RC PIPE SEWER DES 3006 CL V	LIN FT	687			687
R	98		2503.54I	24" RC PIPE SEWER DES 3006 CL III	LIN FT	292			292
R	98		2503.54I	30" RC PIPE SEWER DES 3006 CL III	LIN FT	115			115
R	98		2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	1			1
O	30		2503.602	CONNECT TO EXISTING MANHOLES	EACH	1	1		
O	30		2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	1	1		
O	30		2503.602	4" PIPE PLUG	EACH	1	1		
O	30		2503.602	6" PIPE PLUG	EACH	1	1		
O	30		2503.602	SEWER RISER	EACH	2	2		
O	30		2503.603	CONSTRUCT 8" INSIDE DROP	LIN FT	11	11		
O	30		2503.603	4" PVC SANITARY SERVICE PIPE	LIN FT	45	45		
O	30		2503.603	6" PVC SANITARY SERVICE PIPE	LIN FT	14	14		
GG	143		2504.60I	IRRIGATION SYSTEM	LUMP SUM	1	1		
O	30		2504.602	CONNECT TO EXISTING WATER MAIN	EACH	2	2		
O	30		2504.602	HYDRANT	EACH	1	1		
O	30		2504.602	8" PIPE PLUG	EACH	1	1		
O	30		2504.602	1" CORPORATION STOP	EACH	1	1		
O	30		2504.602	2" CORPORATION STOP	EACH	1	1		
O	30		2504.602	10"XB" WET TAP	EACH	1	1		
O	30		2504.602	12" GATE VALVE AND BOX	EACH	2	2		
O	30		2504.602	1" CURB STOP & BOX	EACH	1	1		
O	30		2504.602	2" CURB STOP & BOX	EACH	1	1		
O	30		2504.603	1" TYPE K COPPER PIPE	LIN FT	99	99		
O	30		2504.603	2" TYPE K COPPER PIPE	LIN FT	10	10		
O	30		2504.603	6" WATERMAIN DUCTILE IRON CL 52	LIN FT	5	5		
O	30		2504.603	8" WATERMAIN DUCTILE IRON CL 52	LIN FT	7	7		
O	30		2504.603	12" WATERMAIN DUCTILE IRON CL 52	LIN FT	340	340		
O	30		2504.604	6" POLYSTYRENE INSULATION	SQ YD	14	14		
O	30		2504.608	DUCTILE IRON FITTINGS	POUND	1030	1030		
R	98		2506.50I	CONST DRAINAGE STRUCTURE DESIGN F	LIN FT	41			41
R	98		2506.50I	CONST DRAINAGE STRUCTURE DESIGN G	LIN FT	132			132
R	98		2506.50I	CONST DRAINAGE STRUCTURE DESIGN T2-4020	LIN FT	7			7
R	98		2506.502	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	1			1
R	98		2506.502	CONST DRAINAGE STRUCTURE DESIGN SPEC 2	EACH	1			1
R	98		2506.516	CASTING ASSEMBLY	EACH	45			45
R	98		25II.50I	RANDOM RIPRAP CLASS II	CU YD	15			15
H, L, R	II, 12, 98		25II.50I	RANDOM RIPRAP CLASS III	CU YD	310	229		81
R	98		25II.5I5	GEOTEXTILE FILTER TYPE IV	SQ YD	46			46
F	10	(4)	252I.50I	4" CONCRETE WALK	SO FT	28438	28438		
F	10	(5)	252I.50I	6" CONCRETE WALK	SO FT	602	602		
F	10		253I.50I	CONCRETE CURB & GUTTER DESIGN B418	LIN FT	4270	4270		
F	10		253I.50I	CONCRETE CURB & GUTTER DESIGN B424	LIN FT	5714	5714		
F	10		253I.50I	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	976	976		
F	10		253I.618	TRUNCATED DOMES	SO FT	164	164		
P	54	(8)	2533.507	PORTABLE PRECAST CONCRETE BARRIER DESIGN 8337	LIN FT	1800	1800		
P	54		2533.508	RELOCATE PORTABLE PRECAST CONCRETE BARRIER DES 8337	LIN FT	400	400		
HH	149		2545.523	3 INCH NONMETALLIC CONDUIT	LIN FT	160	160		
HH	149		2545.523	2 INCH NONMETALLIC CONDUIT	LIN FT	100	100		

NOTES:

- (4) INCLUDES QUANTITIES FOR PEDESTRIAN CURB RAMP AND CONCRETE MEDIAN NOSE DESIGN 7113.
- (5) INCLUDES QUANTITIES FOR CONCRETE MEDIAN NOSE DESIGN 7109.
- (6) SEE LUMP SUM AGREEMENT NO. 90794 FOR COOPERATIVE AND LOCAL ROAD IMPROVEMENT AGREEMENT.
- (8) TO REMAIN THE PROPERTY OF THE CONTRACTOR.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Diehl* Lic. No. 21098  
 Printed Name: MARK R. DIEHL, INC Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STATEMENT OF ESTIMATED QUANTITIES

3/23/2007 Default 3/23/2007

STATEMENT OF ESTIMATED QUANTITIES

TAB	SHEET NO.	NOTE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	S.P. 0280-55, S.A.P. 210-020-04 ESTIMATED QUANTITY CITY OF LINO LAKES (6)	S.A.P. 02-623-13 ESTIMATED QUANTITY ANOKA COUNTY	STORM SEWER ESTIMATED QUANTITY
HH	149		2545.531	UNDERGROUND WIRE, 1 CONDUCTOR NO. 3/0	LIN FT	330	330		
HH	149		2545.533	ARMORED CABLE, 4 CONDUCTOR NO. 4	LIN FT	1975	1975		
HH	149		2545.553	HANDHOLE	EACH	1	1		
HH	149		2545.602	SERVICE EQUIPMENT	EACH	1	1		
HH	149		2545.602	ELECTRIC SERVICE	EACH	1	1		
HH	149		2545.602	INSTALL SERVICE CABINET	EACH	1	1		
J	12		2554.501	TRAFFIC BARRIER DESIGN SPECIAL	LIN FT	50	50		
J	12		2554.501	TRAFFIC BARRIER DESIGN BB338	LIN FT	408	408		
J	12	(10)	2554.523	END TREATMENT - TANGENT TERMINAL	EACH	1	1.0		
J	12	(11)	2554.523	END TREATMENT - FLARED TERMINAL	EACH	1	1.0		
P	54		2554.602	IMPACT ATTENUATOR BARRELS	EACH	100	100		
P	54		2554.602	RELOCATE IMPACT ATTENUATOR BARRELS	EACH	24	24		
K	12	(9)	2557.501	WIRE FENCE DESIGN 60-9320	LIN FT	780	780		
P	54		2563.601	TRAFFIC CONTROL	LUMP SUM	1	1		
P	54		2563.602	MEDIAN BARRIER DELINEATOR	EACH	38	38		
P	54		2563.602	RAISED PAVEMENT MARKER TEMPORARY	EACH	700	700		
P	54		2563.610	POLICE OFFICER	HOUR	110	110		
P	54		2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UDAY	25	25		
Z	106		2564.531	SIGN PANELS TYPE C	SQ FT	479	479		
Y	106		2564.531	SIGN PANELS TYPE D	SQ FT	254	254		
CC	106		2564.531	SIGN PANELS TYPE OVERLAY	SQ FT	25	25		
AA	106		2564.537	INSTALL SIGN TYPE C	EACH	5	5		
T	105		2564.537	INSTALL SIGN TYPE SPECIAL	EACH	2	2		
BB	106		2564.550	DELINEATOR TYPE X4-6	EACH	1	1		
BB	106		2564.552	HAZARD MARKER X4-2	EACH	10	10		
BB	106		2564.553	CLEARANCE MARKER X4-4	EACH	2	2		
DD	124		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM A	SIG SYS	1	0.5	0.5	
DD	124		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM B	SIG SYS	1	0.5	0.5	
DD	124		2565.511	TRAFFIC CONTROL SIGNAL SYSTEM C	SIG SYS	1	0.5	0.5	
		(7)	2565.601	COUNTY FURNISHED MATERIAL	LUMP SUM	1	0.5	0.5	
DD	124		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM A	LUMP SUM	1	0.5	0.5	
DD	124		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM B	LUMP SUM	1	0.5	0.5	
DD	124		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM C	LUMP SUM	1	0.5	0.5	
DD	124		2565.601	TRAFFIC CONTROL INTERCONNECTION	LUMP SUM	1	0.5	0.5	
DD	124		2565.616	REVISE SIGNAL SYSTEM D	SYSTEM	1	0.5	0.5	
FF	143		2571.501	CONIFEROUS TREE 5' HT B&B	TREE	12	12		
FF	143		2571.501	CONIFEROUS TREE 6' HT B&B	TREE	7	7		
FF	143		2571.501	CONIFEROUS TREE 7' HT B&B	TREE	25	25		
FF	143		2571.502	DECIDUOUS TREE 1.5' CAL B&B	TREE	25	25		
FF	143		2571.502	DECIDUOUS TREE 2.0' CAL B&B	TREE	8	8		
FF	143		2571.502	DECIDUOUS TREE 2.5' CAL B&B	TREE	12	12		
FF	143		2571.505	DECIDUOUS SHRUB 2' HT CONT	SHRUB	81	81		
FF	143		2571.507	PERENNIALS	PLANT	173	173		
FF	143		2571.507	PERENNIAL PLUGS	PLANT	1447	1447		
			2572.501	TEMPORARY FENCE	LIN FT	250	250		
GG	143		2572.603	AQUATIC PLANT FENCE	LIN FT	883	883		
H	11		2573.502	SILT FENCE, TYPE MACHINE SLICED	LIN FT	9756	9756		
H	11		2573.530	STORM DRAIN INLET PROTECTION	EACH	43	43		
H	11		2573.540	FILTER LOG TYPE ROCK LOG	LIN FT	135	135		
I	11		2575.501	SEEDING	ACRE	5.0	5.0		
I	11		2575.502	SEED MIXTURE 250	POUND	347	347		
I	11		2575.502	SEED MIXTURE 310	POUND	25	25		
I	11		2575.502	SEED MIXTURE 330	POUND	40	40		
I,GG	11		2575.505	SODDING TYPE LAWN	SQ YD	13007	13007		
I	11		2575.511	MULCH MATERIAL TYPE 1	TON	10.0	10.0		
GG	143		2575.511	MULCH MATERIAL TYPE 7	TON	2.0	2.0		
I	11		2575.519	DISK ANCHORING	ACRE	5.0	5.0		
GG	143		2575.523	EROSION CONTROL BLANKETS CATEGORY 2	SQ YD	1495	1495		
H	11		2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	7178	7178		
I	11		2575.532	FERTILIZER TYPE 3	POUND	2111	2111		
GG	143		2575.607	MULCH MATERIAL TYPE SPECIAL	CU YD	40	40		
H	11		2575.607	SELECT TOPSOIL BORROW (SPECIAL) LV	CU YD	81	81		
GG	143		2575.607	SELECT TOPSOIL BORROW LV	CU YD	151	151		
GG	143		2575.608	SEED MIX SPECIAL 1	POUND	4.5	4.5		
GG	143		2575.608	SEED MIX SPECIAL 2	POUND	10.5	10.5		
GG	143		2575.608	SEED MIX SPECIAL 3	POUND	30.0	30.0		

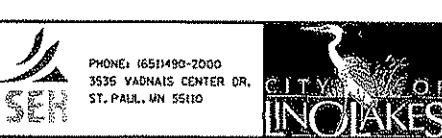
NOTES:

- (6) SEE LUMP SUM AGREEMENT NO. 90794 FOR COOPERATIVE AND LOCAL ROAD IMPROVEMENT AGREEMENT.
- (7) COUNTY FURNISHED CONTROLLERS, CABINETS, AND MASTER CONTROLLER.
- (9) FENCE REQUIRES 60" HIGH FENCE FABRIC.
- (10) SHALL BE EITHER ET-2000 OR SKT-350
- (11) SHALL BE EITHER SRT-350 OR FLEAT-350.

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DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
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 licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Dierling* Lic. No. 21098  
 Printed Name: MARK B. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STATEMENT OF ESTIMATED QUANTITIES	FILE NO. 5
SEQ3 OF SEQ4	198

STATEMENT OF ESTIMATED QUANTITIES

TAB	SHEET NO.	NOTE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	S.P. 0280-55, S.A.P. 210-020-04 ESTIMATED QUANTITY CITY OF LINO LAKES ⑥	S.A.P. 02-623-13 ESTIMATED QUANTITY ANOKA COUNTY	STORM SEWER ESTIMATED QUANTITY
H	II		2577.505	LIVE STAKES	EACH	454	454		
P	54		2582.501	PAVEMENT MESSAGE (LEFT ARROW) PAINT	EACH	7	7		
P	54		2582.501	PAVEMENT MESSAGE (RIGHT ARROW) PAINT	EACH	9	9		
U	105		2582.501	PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORM	EACH	2	2		
U	105		2582.501	PAVEMENT MESSAGE (RIGHT ARROW) POLY PREFORM	EACH	2	2		
U	105		2582.501	PAVEMENT MESSAGE (LEFT-THRU ARROW) POLY PREFORM	EACH	2	2		
U	105		2582.501	PAVEMENT MESSAGE (LT ARROW) PREF THERMOPLASTIC	EACH	17	17		
U	105		2582.501	PAVEMENT MESSAGE (RT ARROW) PREF THERMOPLASTIC	EACH	11	11		
P	54		2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	17300	17300		
P	54		2582.502	12" SOLID LINE WHITE-PAINT	LIN FT	460	460		
P	54		2582.502	4" BROKEN LINE WHITE-PAINT	LIN FT	75	75		
P	54		2582.502	4" SOLID LINE YELLOW-PAINT	LIN FT	6400	6400		
P	54		2582.502	4" DOUBLE SOLID LINE YELLOW-PAINT	LIN FT	8400	8400		
U, P	105, 54		2582.502	4" SOLID LINE WHITE-EPOXY	LIN FT	12200	12200		
P	54		2582.502	24" SOLID LINE WHITE-EPOXY	LIN FT	150	150		
U	105		2582.502	4" BROKEN LINE WHITE-EPOXY	LIN FT	880	880		
U	105		2582.502	8" DOTTED LINE WHITE-EPOXY	LIN FT	70	70		
U	105		2582.502	4" SOLID LINE YELLOW-EPOXY	LIN FT	6810	6810		
U, P	105, 54		2582.502	4" DOUBLE SOLID LINE YELLOW-EPOXY	LIN FT	1550	1550		
U	105		2582.502	24" SOLID LINE YELLOW-EPOXY	LIN FT	70	70		
U	105		2582.502	4" SOLID LINE WHITE-POLY PREFORM	LIN FT	580	580		
U	105		2582.502	4" BROKEN LINE WHITE-POLY PREFORM	LIN FT	125	125		
U	105		2582.502	24" SOLID LINE WHITE-POLY PREFORM	LIN FT	60	60		
U	105		2582.502	24" SOLID LINE WHITE-PREF THERMOPLASTIC	LIN FT	380	380		
U	105		2582.503	CROSSWALK MARKING-POLY PREFORM	SQ FT	310	310		
U	105		2582.503	CROSSWALK MARKING-PREF THERMOPLASTIC	SQ FT	1260	1260		

NOTE:

⑥ SEE LUMP SUM AGREEMENT NO. 90794 FOR COOPERATIVE AND LOCAL ROAD IMPROVEMENT AGREEMENT.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Dierling* Lic. No. 21098  
 Printed Name: MARK B. DIERLING Date: 3/23/2007

PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STATEMENT OF ESTIMATED QUANTITIES

FILE NO.	ALINOL0505.00	6
SEQ4 OF SEQ4		198

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CLEARING & GRUBBING <span style="float:right">D</span>					
STATION TO STATION	LOCATION	CLEARING		GRUBBING	
		ACRE	TREE	ACRE	TREE
N.B. C.S.A.H. 23					
20+07.3 - 20+65.9	40' RT - 5' RT	0.05		0.05	
20+91.1 - 22+06.6	30' RT - 107' RT	0.08		0.08	
22+26.8 - 22+64.4	33' RT - 55' RT		4		4
22+80.4	89' RT		1		1
22+93.1 - 24+53.2	14' RT - 118' RT	0.12		0.12	
23+20.1	78' RT		1		1
25+02.0 - 27+32.6	13' RT - 185' RT	0.48		0.48	
29+56.7	40' RT		1		1
36+59.0 - 36+73.2	18' RT - 28' RT		2		2
38+13.1	35' RT		1		1
41+07.6	38' RT		1		1
41+53.8	61' RT		1		1
42+18.7 - 42+22.4	3' RT - 4' RT		2		2
44+12.2	32' RT		1		1
45+45.9 - 45-48.2	32' RT		2		2
48+23.6 - 49+33.8	35' RT - 50' RT		11		11
S.B. C.S.A.H. 23					
17+39.8 - 18+59.0	30' LT - 46' LT	0.05		0.05	
18+92.0 - 20+20.7	39' LT		5		5
21+55.1 - 22+13.8	37' LT - 204' LT	0.09		0.09	
22+71.4	34' LT		1		1
23+88.9 - 24+87.6	20' LT - 38' LT		5		5
25+26.6 - 25+72.9	29' LT - 43' LT		5		5
26+39.2	34' LT		1		1
27+00.0	33' LT		1		1
27+97.6	48' LT		1		1
34+65.5 - 34+76.8	46' LT - 63' LT		2		2
35+41.0	55' LT		1		1
36+15.5	30' LT		1		1
39+53.4 - 40+94.8	12' LT - 61' LT	0.08		0.08	
40+39.3 - 41+08.6	38' LT - 74' LT		7		7
4+02.3 - 45+60.3	46' LT - 162' LT	0.29		0.29	
S.E. RAMP					
20+97.3	30' RT		1		1
21+04.4 - 21+90.1	7' RT - 60' RT	0.05		0.05	
21+30.4	32' RT		1		1
22+40.6	13' LT		1		1
22+71.1	5' RT		1		1
22+89.0	17' RT		1		1
CULRD					
10+23.4 - 12+78.5	47' RT - 40' RT	0.13	6	0.13	6
12+07.1 - 13+02.4	43' LT - 48' LT	0.05		0.05	
PROJECT TOTALS		1.47	69	1.47	69

BITUMINOUS PAVEMENT <span style="float:right">E</span>										
STATION TO STATION	LOCATION	AREA ① SQ YD	2350 TYPE LV 3	2360 TYPE SP 12.5	2360 TYPE SP 12.5	BIT MATERIAL FOR TACK COAT ①	2350 TYPE LV 3	2360 TYPE SP 12.5	2360 TYPE SP 12.5	BIT MATERIAL FOR TACK COAT ①
			WEARING COURSE DEPTH (LVWE35030B) ① INCHES	WEARING COURSE DEPTH (SPWEB440F) ① INCHES	NON WEAR COURSE DEPTH (SPNWB430C) ① INCHES		WEARING COURSE MIXTURE (LVWE35030B) 110 lb/SY/Inch TON	WEARING COURSE MIXTURE (SPWEB440F) 113 lb/SY/Inch TON	NON WEAR COURSE MIXTURE (SPNWB430C) 113 lb/SY/Inch TON	
N.B. C.S.A.H. 23										
17+76.1 - 21+12.2	12' RT - 28' RT	186		4		2			42	19
17+76.1 - 27+79.5	12' RT - 63' RT	792		4		2			179	79
17+76.1 - 28+86.6	82' LT - 63' RT	7702		4	3	3			1741	1155
21+12.2 - 22+43.8	19' RT - 30' RT	117		4	3	3			26	18
25+00.0 - 27+71.0	46' RT - 76' RT	295	2.5			1	41			15
28+76.0 - 37+67.5	28' RT - 40' RT	813	2.5			1	112			41
28+86.6 - 37+06.1	22' LT - 24' RT	2766		4	3	3		625	469	415
28+95.4 - 37+06.1	12' RT - 20' RT	282		4	3	3		64	48	42
40+98.2 - 49+64.2	37' LT - 20' RT	4451		4	3	3		1006	754	668
40+98.2 - 46+22.2	12' RT - 20' RT	295		4	3	3		67	50	44
40+69.8 - 49+99.3	24' RT - 54' RT	794	2.5			1	109			40
S.B. C.S.A.H. 23										
17+76.7 - 24+17.6	12' LT - 18' LT	423		4		2		96		42
18+47.5 - 24+64.1	0' LT - 40' LT	680		4		2		154		68
24+64.1 - 27+40.4	12' LT - 18' LT	184		4	3	3		42	31	28
28+86.6 - 36+28.8	24' LT - 46' RT	4260		4	3	3		963	722	639
32+23.4 - 36+28.8	12' LT - 20' LT	222		4	3	3		50	38	33
40+21.0 - 49+64.0	26' LT - 14' RT	3234		4	3	3		731	548	485
40+21.0 - 49+64.0	12' LT - 20' LT	348		4	3	3		79	59	52
S.W. RAMP										
40+55.0 - 45+50.8	LT & RT	2045		4	2	3		462	231	307
S.E. RAMP										
20+31.0 - 26+98.9	LT & RT	2797		4	2	3		632	316	420
N.W. RAMP										
33+78.8 - 40+79.3	LT & RT	2892		4	2	3		654	327	434
CULRD										
10+00.0 - 13+17.6	LT & RT	2822		4	3	3		638	478	423
PROJECT TOTALS:							261	8248	5397	5466

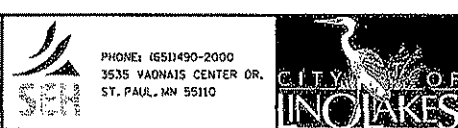
CONCRETE ITEMS <span style="float:right">F</span>										
STATION TO STATION	LOCATION	CONCRETE WALK		CONCRETE CURB & GUTTER			CONCRETE MEDIAN	CONCRETE MEDIAN	PEDESTRIAN	TRUNCATED
		4" SQ FT	6" SQ FT	DESIGN B418	DESIGN B424	DESIGN B618	NOSE DESIGN 7109 ③ EACH	NOSE DESIGN 7113 ③ EACH	CURB RAMP ② EACH	DOMES SQ FT
N.B. C.S.A.H. 23										
17+76.1 - 27+75.5	24' RT - 64' RT	206			990				2	32
21+94.4 - 27+56.5	4' LT - 32' LT	8953	131	552			2			
28+60.4 - 34+21.1	20' RT - 74' RT	293			599			2		32
28+88.3 - 33+88.0	12.5' LT - 42' LT	5988	170	492			1	1		
34+54.9 - 37+81.7	22' RT - 86' RT	70			389			1		16
34+72.3 - 37+36.9	12' LT - 22' LT	1421	30	230			1			
39+87.6 - 41+94.0	38' LT - 46' LT	1057	30	173			1			
40+69.8 - 49+64.2	22' RT - 76' RT	217			923			3		48
43+01.5 - 49+91.4	14' LT - 45' LT	8817	161	683			1	1		
S.B. C.S.A.H. 23										
22+00.0 - 27+51.5	14' RT - 19' RT			552						
24+64.1 - 27+94.4	18' LT - 60' LT	287			349					
28+61.1 - 33+68.0	20' LT - 74' LT				1160					
28+91.6 - 33+83.0	16' RT - 38' RT			493						
34+24.1 - 36+63.6	22' LT - 30' LT				243					
34+75.7 - 37+31.7	36' RT - 38' RT			233						
39+43.4 - 49+64.0	22' LT - 94' LT				1061					
39+85.3 - 41+90.7	14' RT			180						
43+06.2 - 49+84.1	14' RT			682						
CULRD										
10+00.0 - 12+52.7	LT & RT	1129	80			976	2	2		36
PROJECT TOTALS:		28438	602	4270	5714	976	6	4	10	164

CLEARING & GRUBBING  
BITUMINOUS PAVEMENT  
CONCRETE ITEMS

- NOTES:  
 ① FOR INFORMATION ONLY.  
 ② FOR INFORMATION ONLY, PAID FOR AS 4" CONCRETE WALK.  
 ③ FOR INFORMATION ONLY, PAID FOR AS 6" CONCRETE WALK.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLB			
CHECKED BY:	SRH			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	10
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INPLACE PUBLIC UTILITIES					
OWNER: CITY OF LINO LAKES (WATER)					
POINT	ALIGNMENT	STATION	OFFSET	ITEM	REMARKS
6400	NB-LAKE	24+94	8' RT	WATERMAIN	ADJUST
6401	NB-LAKE	28+28	4' LT	WATERMAIN	ADJUST
6402	NB-LAKE	28+28	36' RT	WATERMAIN	ADJUST
6403	NB-LAKE	28+39	36' RT	GATE VALVE	ADJUST
6404	NB-LAKE	28+68	35' RT	HYDRANT	RELOCATE
6405	NB-LAKE	28+29	131' RT	WATERMAIN	LEAVE AS IS
6406	NB-LAKE	50+59	94' RT	WATERMAIN	LEAVE AS IS
6407	NB-LAKE	50+58	67' RT	GATE VALVE	LEAVE AS IS
6408	NB-LAKE	50+56	21' RT	WATERMAIN	LEAVE AS IS
6409	NB-LAKE	51+48	21' RT	GATE VALVE	LEAVE AS IS
6410	NB-LAKE	53+89	22' RT	WATERMAIN	LEAVE AS IS
6411	SB-LAKE	28+26	8' LT	WATERMAIN	ADJUST
6412	SB-LAKE	30+63	140' LT	SERVICE	LEAVE AS IS
6413	SB-LAKE	28+25	13' LT	GATE VALVE	ADJUST
6414	SB-LAKE	28+66	236' LT	WATERMAIN	ADJUST
6415	SB-LAKE	50+48	36' LT	WATERMAIN	LEAVE AS IS
6416	SB-LAKE	50+91	41' LT	HYDRANT	LEAVE AS IS
6417	SB-LAKE	50+47	45' LT	GATE VALVE	LEAVE AS IS
6418	SB-LAKE	50+41	119' LT	WATERMAIN	LEAVE AS IS
6419	SB-LAKE	53+65	29' LT	GATE VALVE	LEAVE AS IS
6420	SB-LAKE	28+07	206' LT	SERVICE	LEAVE AS IS

INPLACE PUBLIC UTILITIES					
OWNER: CITY OF CIRCLE PINES (GAS)					
POINT	ALIGNMENT	STATION	OFFSET	ITEM	REMARKS
6250	NB-LAKE	12+55	23' RT	GAS	RELOCATE
6251	NB-LAKE	27+60	4' LT	GAS	RELOCATE
6252	NB-LAKE	27+60	260' RT	GAS	LEAVE AS IS
6253	NB-LAKE	29+41	16' LT	GAS	RELOCATE
6254	NB-LAKE	29+43	127' RT	GAS	LEAVE AS IS
6255	NB-LAKE	32+52	10' LT	GAS	RELOCATE
6256	NB-LAKE	32+54	133' RT	GAS	RELOCATE
6257	NB-LAKE	33+46	7' LT	GAS	RELOCATE
6258	NB-LAKE	34+32	59' RT	GAS	RELOCATE
6259	NB-LAKE	34+70	117' RT	GAS	RELOCATE
6260	NB-LAKE	35+82	162' RT	GAS	RELOCATE
6261	NB-LAKE	42+74	157' RT	GAS	LEAVE AS IS
6262	NB-LAKE	43+55	139' RT	GAS	LEAVE AS IS
6263	NB-LAKE	45+44	50' RT	GAS	RELOCATE
6264	NB-LAKE	46+28	25' RT	GAS	RELOCATE
6265	NB-LAKE	50+16	26' RT	GAS	RELOCATE
6266	NB-LAKE	53+83	30' RT	GAS	LEAVE AS IS
6267	NB-LAKE	49+89	260' LT	GAS	LEAVE AS IS

INPLACE PUBLIC UTILITIES					
OWNER: ANOKA COUNTY (ELECTRIC/SIGNAL)					
POINT	ALIGNMENT	STATION	OFFSET	ITEM	REMARKS
6300	NB-LAKE	48+78	18' LT	LOOP	ADJUST
6301	NB-LAKE	45+78	5' LT	LOOP	ADJUST
6302	NB-LAKE	45+77	11' RT	P-BUR	ADJUST
6303	NB-LAKE	46+74	17' RT	P-BUR	ADJUST
6304	NB-LAKE	47+01	21' RT	P-BUR	ADJUST
6305	NB-LAKE	47+02	1' LT	LOOP	ADJUST
6306	NB-LAKE	47+02	13' LT	LOOP	ADJUST
6307	NB-LAKE	49+75	31' RT	P-BUR	ADJUST
6308	NB-LAKE	49+78	29' RT	P-BUR	ADJUST
6309	NB-LAKE	49+95	48' RT	P-BUR	ADJUST
6310	NB-LAKE	50+06	62' RT	P-BUR	LEAVE AS IS
6311	NB-LAKE	50+06	59' RT	P-BUR	LEAVE AS IS
6312	NB-LAKE	50+46	59' RT	P-BUR	LEAVE AS IS
6313	NB-LAKE	50+55	49' RT	LOOP	LEAVE AS IS
6314	NB-LAKE	50+56	69' RT	LOOP	LEAVE AS IS
6315	NB-LAKE	50+56	85' RT	LOOP	LEAVE AS IS
6316	NB-LAKE	50+69	39' RT	LOOP	LEAVE AS IS
6317	NB-LAKE	50+69	62' RT	LOOP	LEAVE AS IS
6318	NB-LAKE	50+81	46' RT	LOOP	LEAVE AS IS
6319	NB-LAKE	50+76	191' RT	LOOP	LEAVE AS IS
6320	NB-LAKE	51+00	186' RT	P-BUR	LEAVE AS IS
6321	NB-LAKE	50+90	58' RT	P-BUR	LEAVE AS IS
6322	NB-LAKE	50+94	61' RT	P-BUR	LEAVE AS IS
6323	NB-LAKE	50+97	28' RT	LOOP	LEAVE AS IS
6324	NB-LAKE	51+07	46' RT	P-BUR	LEAVE AS IS
6325	NB-LAKE	51+15	45' RT	P-BUR	LEAVE AS IS
6326	NB-LAKE	51+15	38' RT	P-BUR	LEAVE AS IS
6327	NB-LAKE	51+15	26' RT	P-BUR	LEAVE AS IS
6328	NB-LAKE	53+80	23' RT	P-BUR	LEAVE AS IS
6329	SB-LAKE	49+34	21' RT	LOOP	ADJUST
6330	SB-LAKE	49+75	33' LT	P-BUR	LEAVE AS IS
6331	SB-LAKE	49+78	31' LT	P-BUR	LEAVE AS IS
6332	SB-LAKE	49+85	38' LT	P-BUR	LEAVE AS IS
6333	SB-LAKE	49+86	15' RT	P-OH	LEAVE AS IS
6334	SB-LAKE	50+04	68' LT	P-BUR	LEAVE AS IS
6335	SB-LAKE	50+05	56' LT	P-BUR	LEAVE AS IS
6336	SB-LAKE	49+89	216' LT	P-BUR	LEAVE AS IS
6337	SB-LAKE	50+04	218' LT	LOOP	LEAVE AS IS
6338	SB-LAKE	50+12	58' LT	P-BUR	LEAVE AS IS
6339	SB-LAKE	50+09	26' LT	LOOP	LEAVE AS IS
6340	SB-LAKE	50+24	42' LT	LOOP	LEAVE AS IS
6341	SB-LAKE	50+39	61' LT	LOOP	LEAVE AS IS
6342	SB-LAKE	50+37	78' LT	LOOP	LEAVE AS IS
6343	SB-LAKE	50+41	46' LT	LOOP	LEAVE AS IS
6344	SB-LAKE	50+44	27' LT	LOOP	LEAVE AS IS
6345	SB-LAKE	50+50	35' LT	P-OH	LEAVE AS IS
6346	SB-LAKE	51+01	39' LT	P-OH	LEAVE AS IS
6347	SB-LAKE	51+14	28' LT	P-BUR	LEAVE AS IS
6348	SB-LAKE	51+06	25' RT	P-OH	LEAVE AS IS
6349	SB-LAKE	53+86	28' LT	P-BUR	LEAVE AS IS

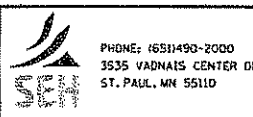
UTILITY WORK WILL BE PERFORMED BY OTHERS UNLESS NOTED OTHERWISE. UTILITY WORK APPLIES TO THE CONSTRUCTION/ EXCAVATION AREA LIMITS ONLY.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

WATER  
GAS  
ELECTRIC

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Diebling* Lic. No. 21098  
 Printed Name: MARK B. DIEBLING Date: 3/23/2007




MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

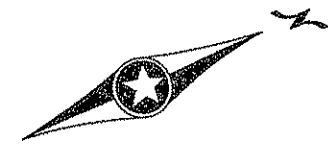
INPLACE UTILITY TABULATIONS	FILE NO. 14
UT2 OF UT3	198



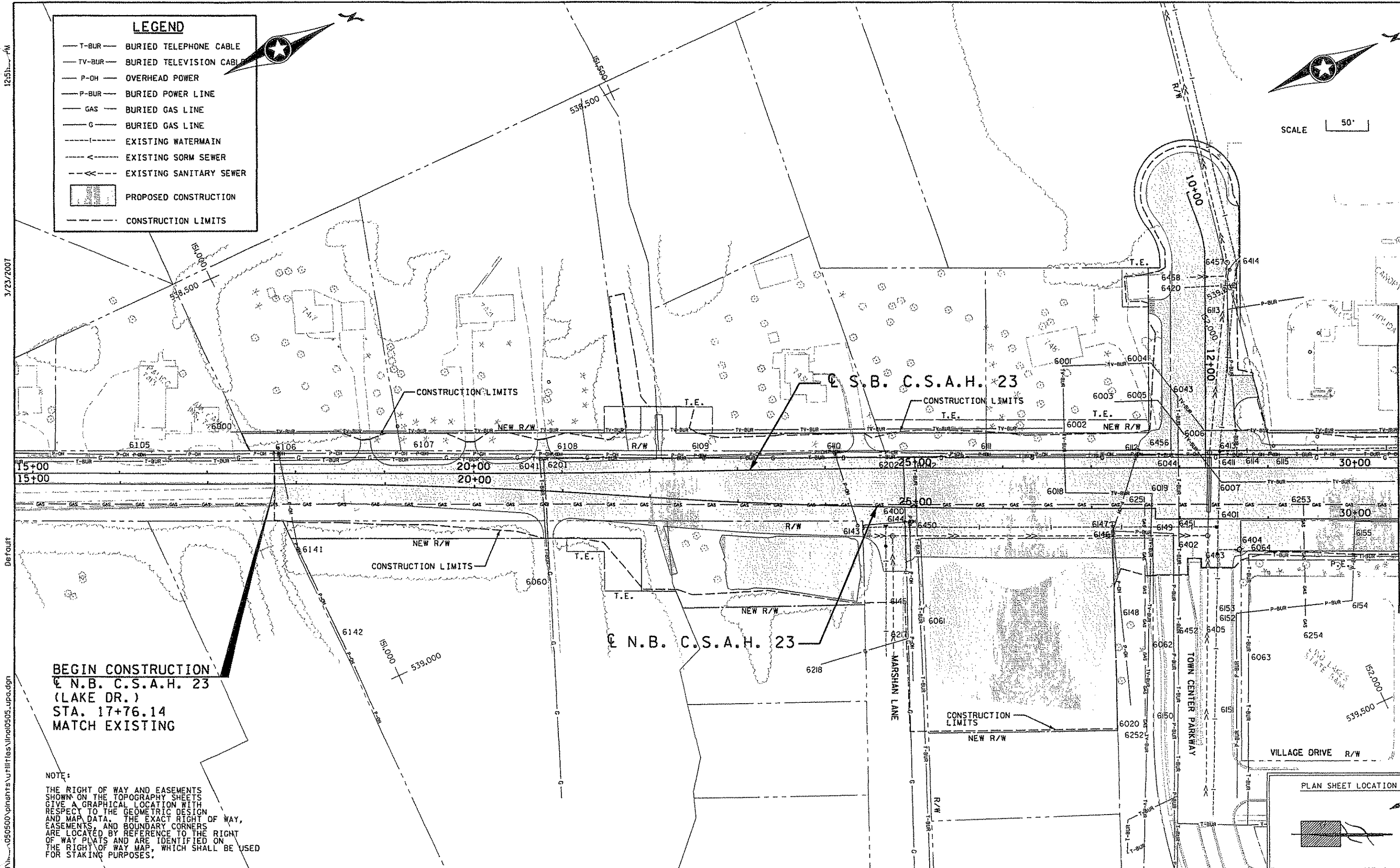


**LEGEND**

- T-BUR — BURIED TELEPHONE CABLE
- TV-BUR — BURIED TELEVISION CABLE
- P-OH — OVERHEAD POWER
- P-BUR — BURIED POWER LINE
- GAS — BURIED GAS LINE
- G — BURIED GAS LINE
- - - - - EXISTING WATERMAIN
- - - - - EXISTING SORM SEWER
- - - - - EXISTING SANITARY SEWER
-  PROPOSED CONSTRUCTION
- - - - - CONSTRUCTION LIMITS



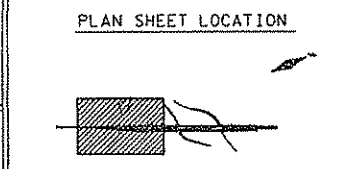
SCALE 50'



**BEGIN CONSTRUCTION**  
 N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 17+76.14  
 MATCH EXISTING

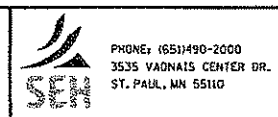
**NOTE:**  
 THE RIGHT OF WAY AND EASEMENTS SHOWN ON THE TOPOGRAPHY SHEETS GIVE A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY, EASEMENTS, AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP, WHICH SHALL BE USED FOR STAKING PURPOSES.

MATCHLINE SEE SHEET UP2



DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
NO.	BY	DATE	REVISIONS	

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 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INPLACE TOPOGRAPHY AND UTILITY PLAN  
 N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50  
 FILE NO. 16  
 ALINOL0505.00  
 UP1 OF UP3  
 198

125L

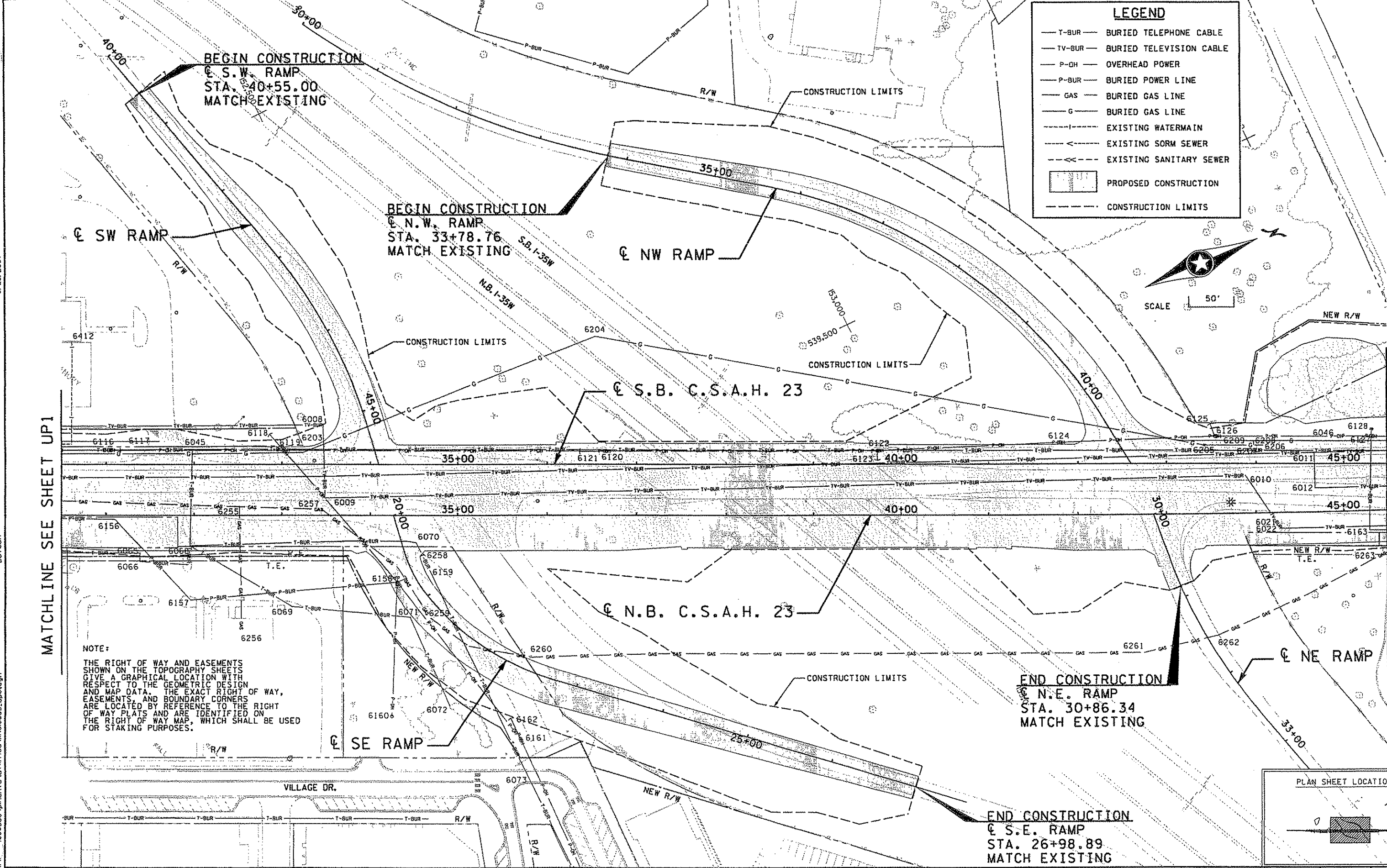
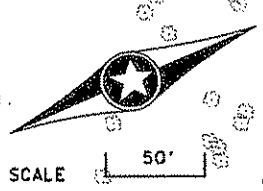
3/23/2007

Default

\\s0500\pmshts\ut\littles\linal0505\_upb.dgn

**LEGEND**

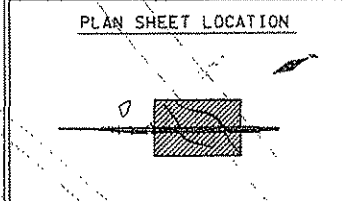
- T-BUR — BURIED TELEPHONE CABLE
- TV-BUR — BURIED TELEVISION CABLE
- P-OH — OVERHEAD POWER
- P-BUR — BURIED POWER LINE
- GAS — BURIED GAS LINE
- G — BURIED GAS LINE
- - - - - EXISTING WATERMAIN
- - - - - EXISTING SORM SEWER
- - - - - EXISTING SANITARY SEWER
- [Hatched Box] PROPOSED CONSTRUCTION
- - - - - CONSTRUCTION LIMITS



MATCHLINE SEE SHEET UP1

MATCHLINE SEE SHEET UP3

**NOTE:**  
 THE RIGHT OF WAY AND EASEMENTS SHOWN ON THE TOPOGRAPHY SHEETS GIVE A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY, EASEMENTS, AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP, WHICH SHALL BE USED FOR STAKING PURPOSES.



DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
	NO.	BY	DATE	REVISIONS

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 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INPLACE TOPOGRAPHY AND UTILITY PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO. 17  
 ALINOL0505.00  
 UP2 OF UP3  
 198

1215

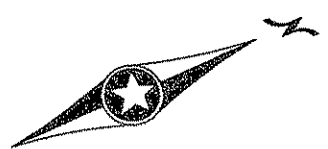
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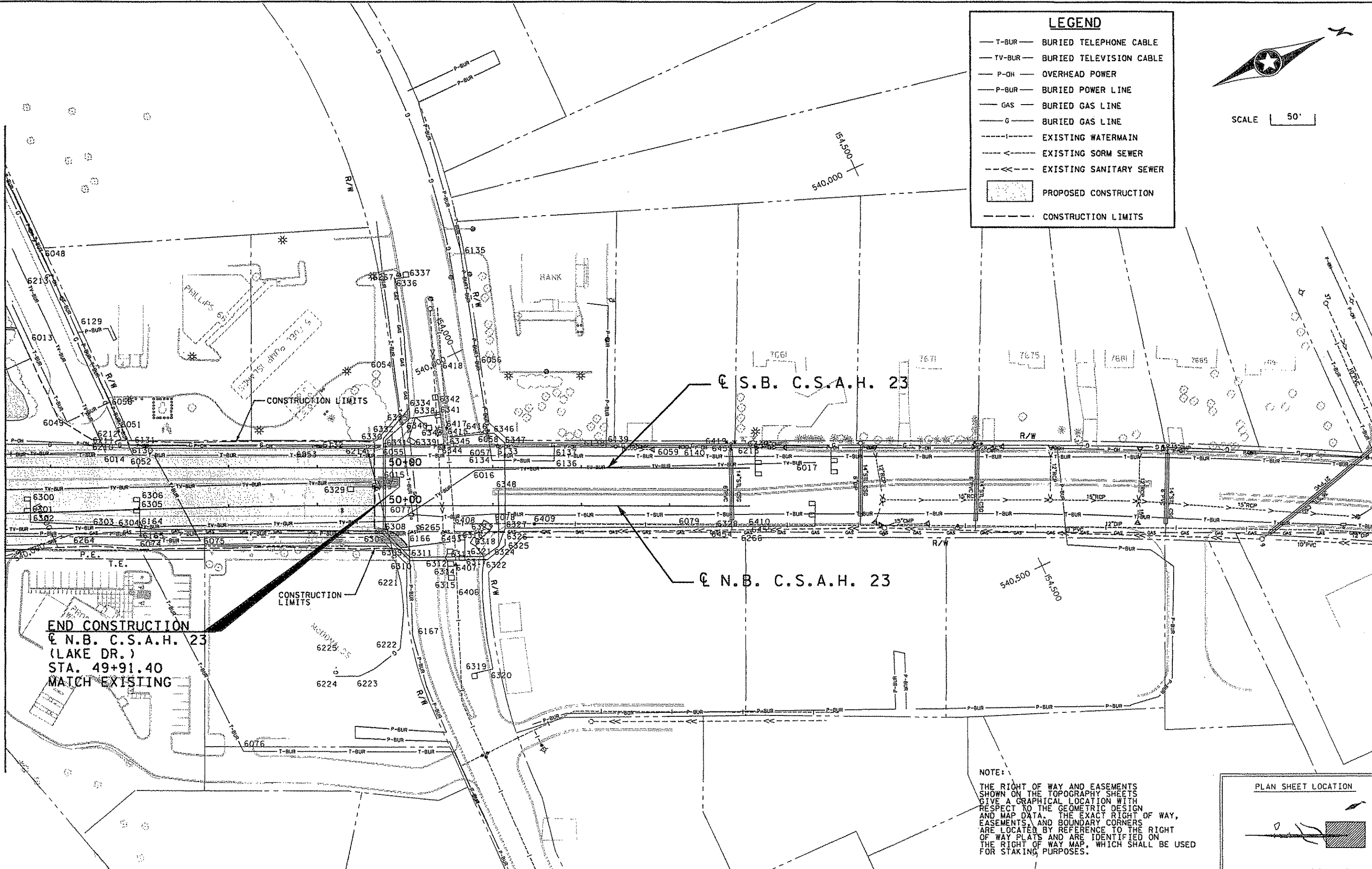
**LEGEND**

- T-BUR — BURIED TELEPHONE CABLE
- TV-BUR — BURIED TELEVISION CABLE
- P-OH — OVERHEAD POWER
- P-BUR — BURIED POWER LINE
- GAS — BURIED GAS LINE
- G — BURIED GAS LINE
- - - - - EXISTING WATERMAIN
- - - - - EXISTING SORM SEWER
- - - - - EXISTING SANITARY SEWER
- [Hatched Box] PROPOSED CONSTRUCTION
- - - - - CONSTRUCTION LIMITS



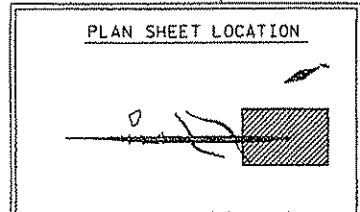
SCALE 50'

MATCHLINE SEE SHEET UP2



**END CONSTRUCTION**  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 49+91.40  
 MATCH EXISTING

**NOTE:**  
 THE RIGHT OF WAY AND EASEMENTS SHOWN ON THE TOPOGRAPHY SHEETS GIVE A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY, EASEMENTS, AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP, WHICH SHALL BE USED FOR STAKING PURPOSES.



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Diebling* Lic. No. 21098  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007

PHONE: 651-950-3000  
 3535 MADONNA CENTER DR.  
 ST. PAUL, MN 55110



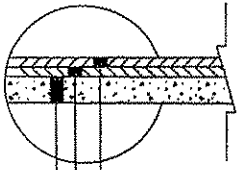
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INPLACE TOPOGRAPHY AND UTILITY PLAN  
 N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

FILE NO.	18
ALINL0505.00	
UP3	
OF UP3	198



INSET B

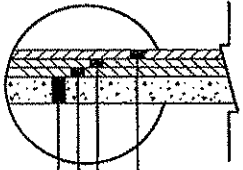


2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360

VAR. DEPTH CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

INSET A



2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360

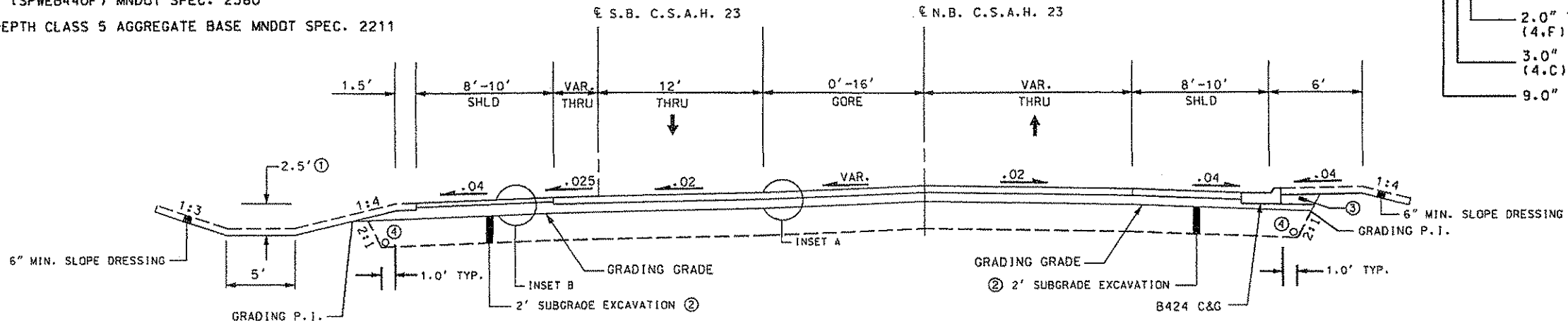
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360

3.0" TYPE SP 12.5 NON-WEARING COURSE MIXTURE (4.C), (SPNWB430C) MNDOT SPEC. 2360 (2 LIFTS)

9.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

TYPICAL SECTION NO. 1 - C.S.A.H. 23 (LAKE DRIVE)

N.B. STA. 17+76 TO STA. 21+94  
S.B. STA. 17+76 TO STA. 21+95



NOTES:

- ① S.B. C.S.A.H. 23, STA. 17+76 TO STA. 21+00 SPECIAL DITCH GRADE. SEE CROSS SECTIONS.
- ② BACKFILL WITH SELECT GRANULAR MATERIAL. MNDOT SPEC. 3149
- ③ BACKFILL WITH SUITABLE GRADING MATERIAL.
- ④ SEE SUBCUT DRAIN DETAIL SHEET 27.

GENERAL NOTES:

ALL CROSS SLOPES ARE IN FT./FT.  
MAXIMUM ROLLOVER 0.07 FT./FT.

UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE.

SEE CROSS SECTIONS FOR VARIABLE SIDE SLOPES AND SPECIFIC LIMITS OF SUBGRADE EXCAVATION.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierling* Lic. No. 21098  
Printed Name: MARK R. DIERLING Date: 3/23/2007



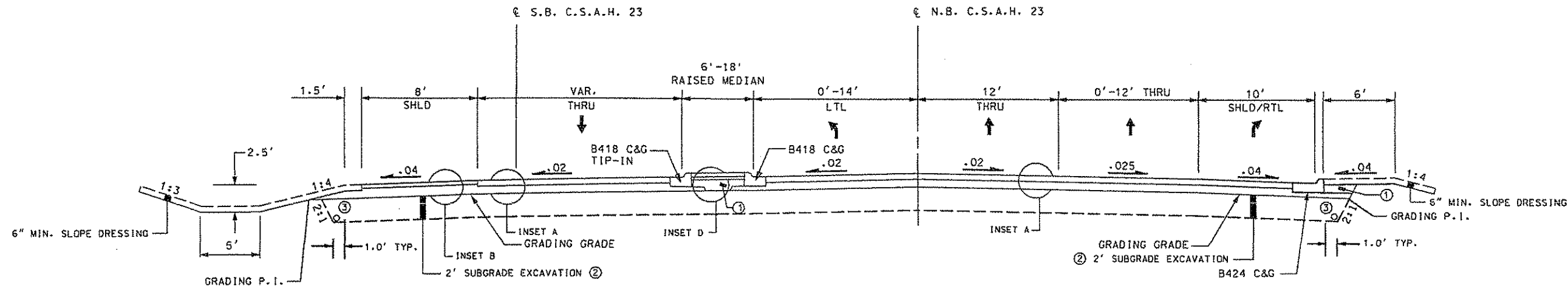
MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

TYPICAL SECTIONS

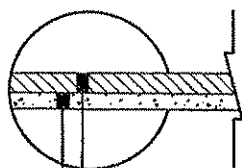
FILE NO.	19
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TS1	
OF TSS	198

TYPICAL SECTION NO. 2 - C.S.A.H. 23 (LAKE DRIVE)

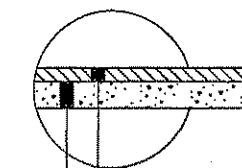
N.B. STA. 21+94 TO STA. 24+63  
S.B. STA. 21+95 TO STA. 24+64



INSET D

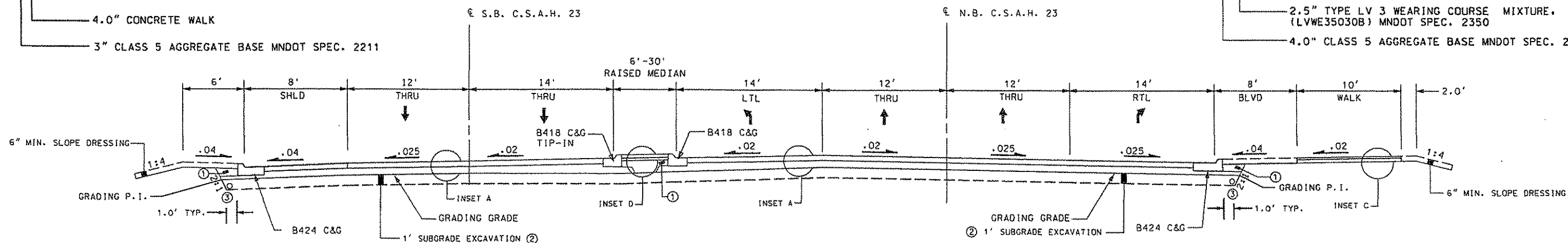


INSET C

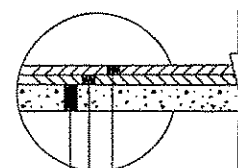


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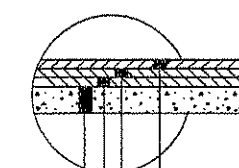
N.B. STA. 24+63 TO STA. 28+87  
S.B. STA. 24+64 TO STA. 28+87



INSET B



INSET A



GENERAL NOTES:

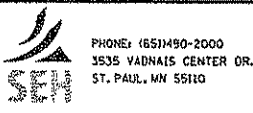
ALL CROSS SLOPES ARE IN FT./FT.  
MAXIMUM ROLLOVER 0.07 FT./FT.  
UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE.  
SEE CROSS SECTIONS FOR VARIABLE SIDE SLOPES AND SPECIFIC LIMITS OF SUBGRADE EXCAVATION.

NOTES:

- ① BACKFILL WITH SUITABLE GRADING MATERIAL.
- ② BACKFILL WITH SELECT GRANULAR MATERIAL. MNDOT SPEC. 3149
- ③ SEE SUBCUT DRAIN DETAIL SHEET 27.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Mark R. Diebel* Lic. No. 21098  
Printed Name: MARK R. DIEBEL INC. Date: 3/23/2007

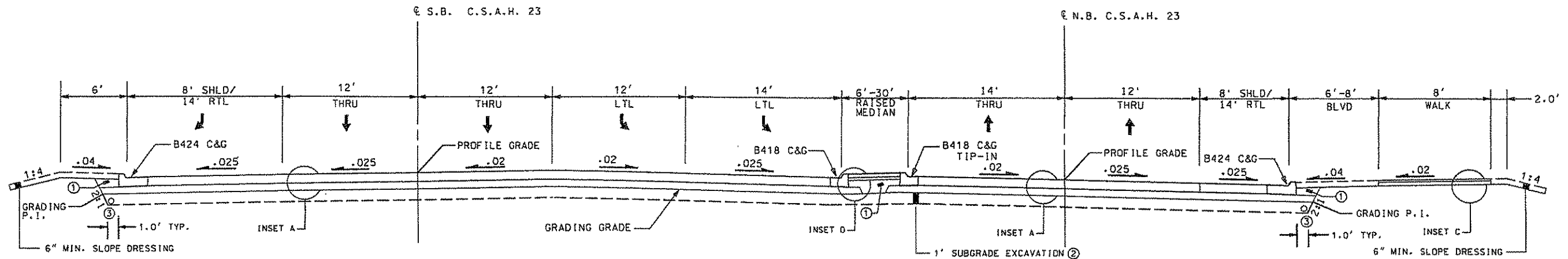


MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

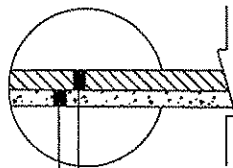
FILE NO.	20
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TS2	198
OF TSS	

TYPICAL SECTION NO. 4 - C.S.A.H. 23 (LAKE DRIVE)

N.B. STA. 28+87 TO STA. 34+27  
S.B. STA. 28+87 TO STA. 34+27



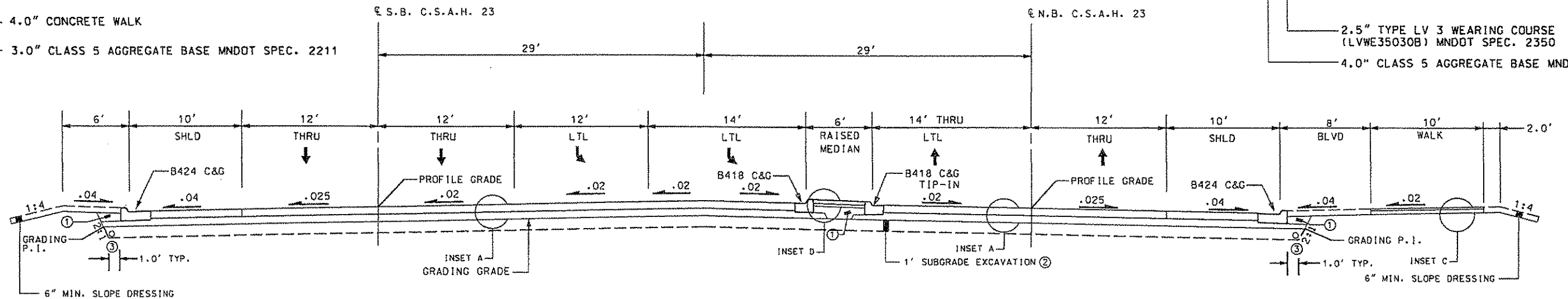
INSET D



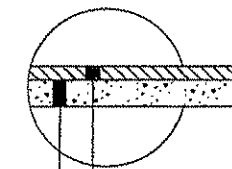
4.0" CONCRETE WALK  
3.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

TYPICAL SECTION NO. 5 - C.S.A.H. 23 (LAKE DRIVE)

N.B. STA. 34+27 TO STA. 38+50  
S.B. STA. 34+27 TO STA. 38+50

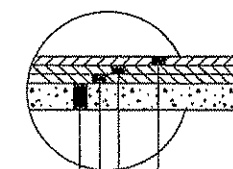


INSET C



2.5" TYPE LV 3 WEARING COURSE MIXTURE.  
(LVWE35030B) MNDOT SPEC. 2350  
4.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

INSET A



2.0" TYPE SP 12.5 WEARING COURSE MIXTURE  
(4.F), (SPWEB440F) MNDOT SPEC. 2360  
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE  
(4.F), (SPWEB440F) MNDOT SPEC. 2360  
3.0" TYPE SP 12.5 NON-WEARING COURSE MIXTURE  
(4.C), (SPNWB430C) MNDOT SPEC. 2360 (2 LIFTS)  
9.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

GENERAL NOTES:

- ALL CROSS SLOPES ARE IN FT./FT.
- MAXIMUM ROLLOVER 0.07 FT./FT.
- UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE.
- SEE CROSS SECTIONS FOR VARIABLE SIDE SLOPES AND SPECIFIC LIMITS OF SUBGRADE EXCAVATION.

NOTES:

- ① BACKFILL WITH SUITABLE GRADING MATERIAL.
- ② BACKFILL WITH SELECT GRANULAR MATERIAL. MNDOT SPEC. 3149
- ③ SEE SUBCUT DRAIN DETAIL SHEET 27.

12/52/07 PM 3/23/2007 Default 050500\plans\shfts\def\linel0505.tso.dgn

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	JLR			
CHECKED BY:	SRH			
NO.	BY	DATE	REVISIONS	

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Certified By: *Mark R. Dierling* Lic. No. 21098  
Printed Name: MARK R. DIERLING Date: 3/23/2007

PHONE: (651)490-2000  
3535 VANDALIS CENTER DR.  
ST. PAUL, MN 55110



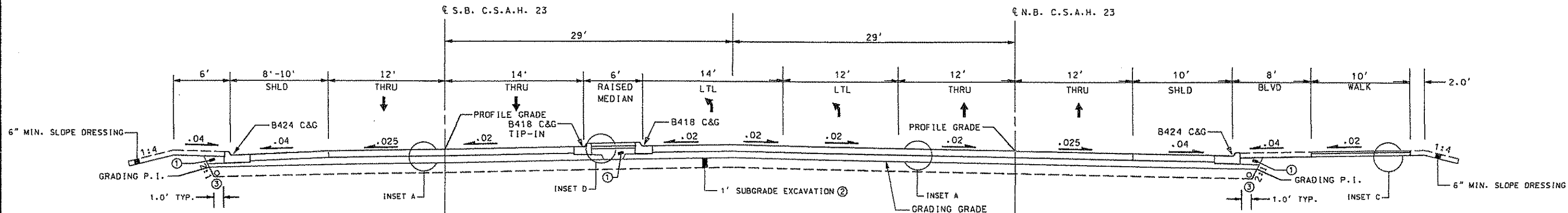
MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

TYPICAL SECTIONS

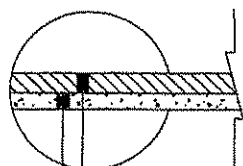
FILE NO.	21
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TS3	198
OF TSS	

TYPICAL SECTION NO. 6 - C.S.A.H. 23 (LAKE DRIVE)

N.B. STA. 38+50 TO STA. 42+85  
S.B. STA. 38+50 TO STA. 42+85



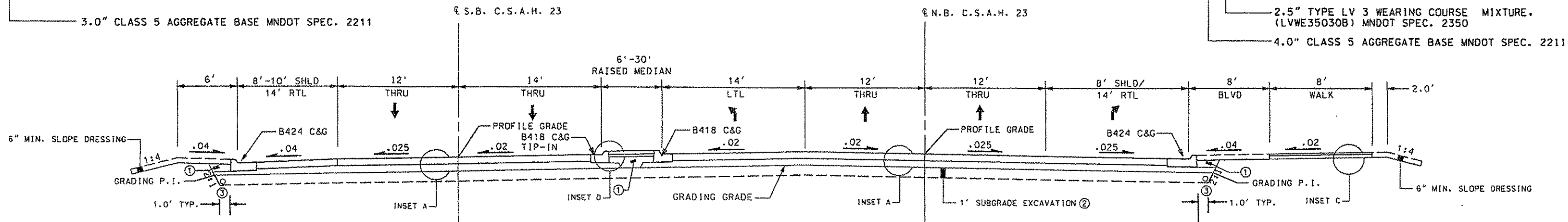
INSET D



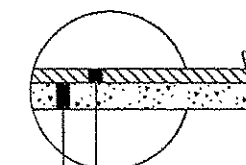
4.0" CONCRETE WALK  
3.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

TYPICAL SECTION NO. 7 - C.S.A.H. 23 (LAKE DRIVE)

N.B. STA. 42+85 TO STA. 49+64  
S.B. STA. 42+85 TO STA. 49+64

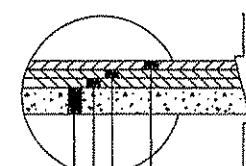


INSET C



2.5" TYPE LV 3 WEARING COURSE MIXTURE. (LVWE35030B) MNDOT SPEC. 2350  
4.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

INSET A



2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360  
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4.F), (SPWEB440F) MNDOT SPEC. 2360  
3.0" TYPE SP 12.5 NON-WEARING COURSE MIXTURE (4.C), (SPNWB430C) MNDOT SPEC. 2360 (2 LIFTS)  
9.0" CLASS 5 AGGREGATE BASE MNDOT SPEC. 2211

GENERAL NOTES:

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MAXIMUM ROLLOVER 0.07 FT./FT.  
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SEE CROSS SECTIONS FOR VARIABLE SIDE SLOPES AND SPECIFIC LIMITS OF SUBGRADE EXCAVATION.

NOTES:

- ① BACKFILL WITH SUITABLE GRADING MATERIAL.
- ② BACKFILL WITH SELECT GRANULAR MATERIAL. MNDOT SPEC. 3149
- ③ SEE SUBCUT DRAIN DETAIL SHEET 27.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLB			
CHECKED BY:	SRH			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Mark B. Diebling* Lic. No. 21098  
Printed Name: MARK B. DIEBLING Date: 3/23/2007

MINNESOTA DEPARTMENT OF TRANSPORTATION  
PHONE: 651-490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

CITY OF INOKAKES

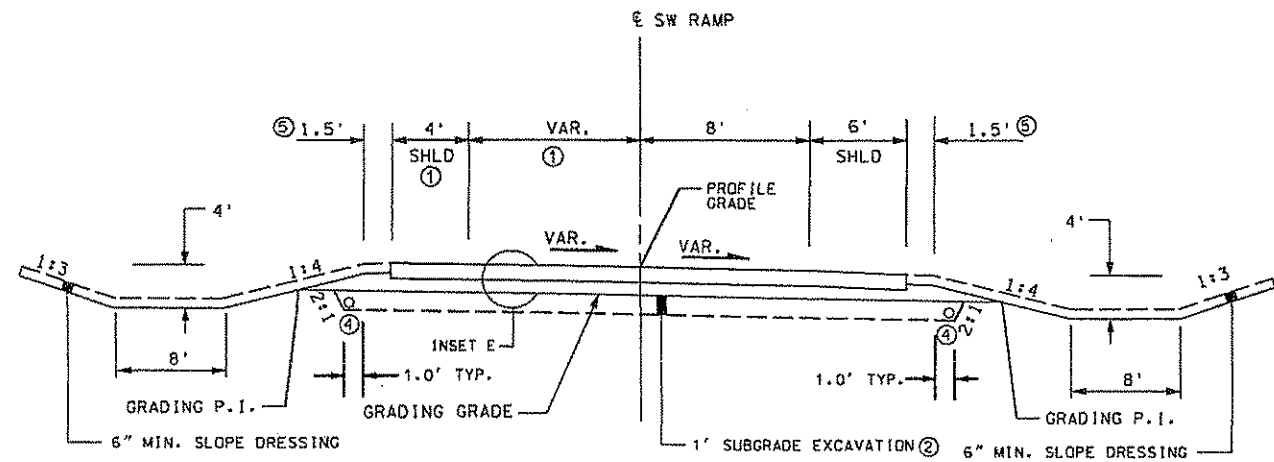
MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	22
ALN0505.00	
TS4	198
OF 155	



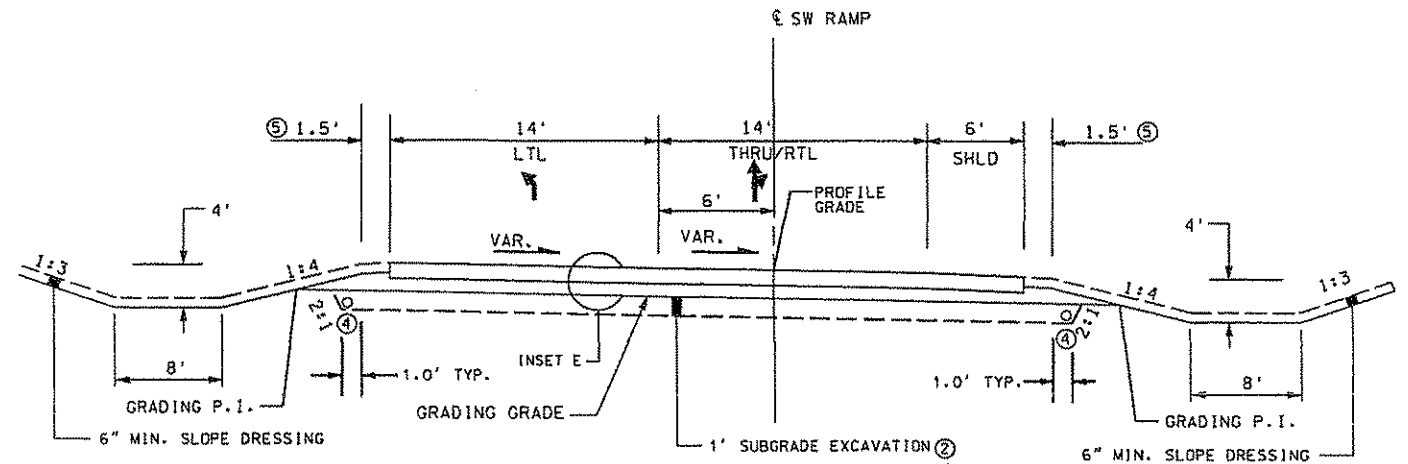
**TYPICAL SECTION NO. 8 - SW RAMP & SE RAMP**

S.W. RAMP STA. 40+55 TO STA. 42+43  
S.E. RAMP STA. 19+87 TO STA. 26+99



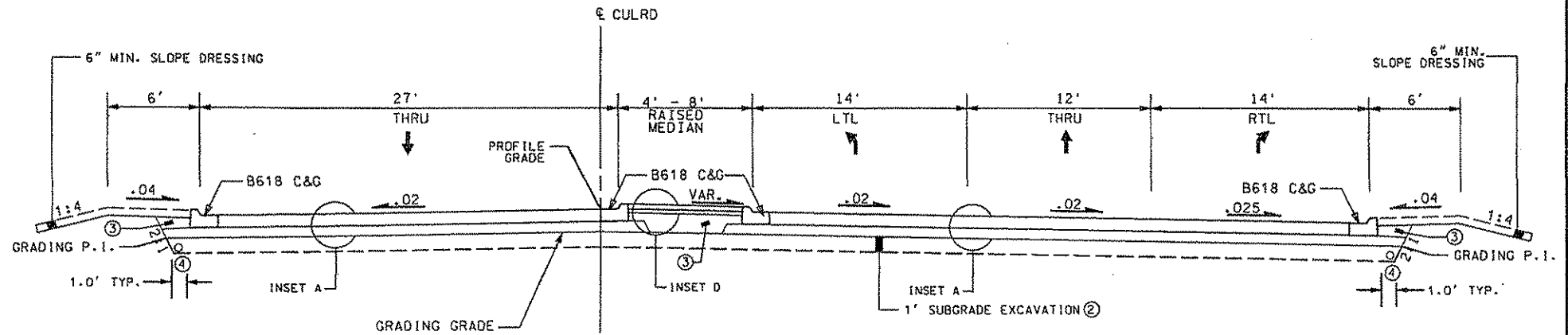
**TYPICAL SECTION NO. 9 - SW RAMP**

STA. 42+43 TO STA. 45+63



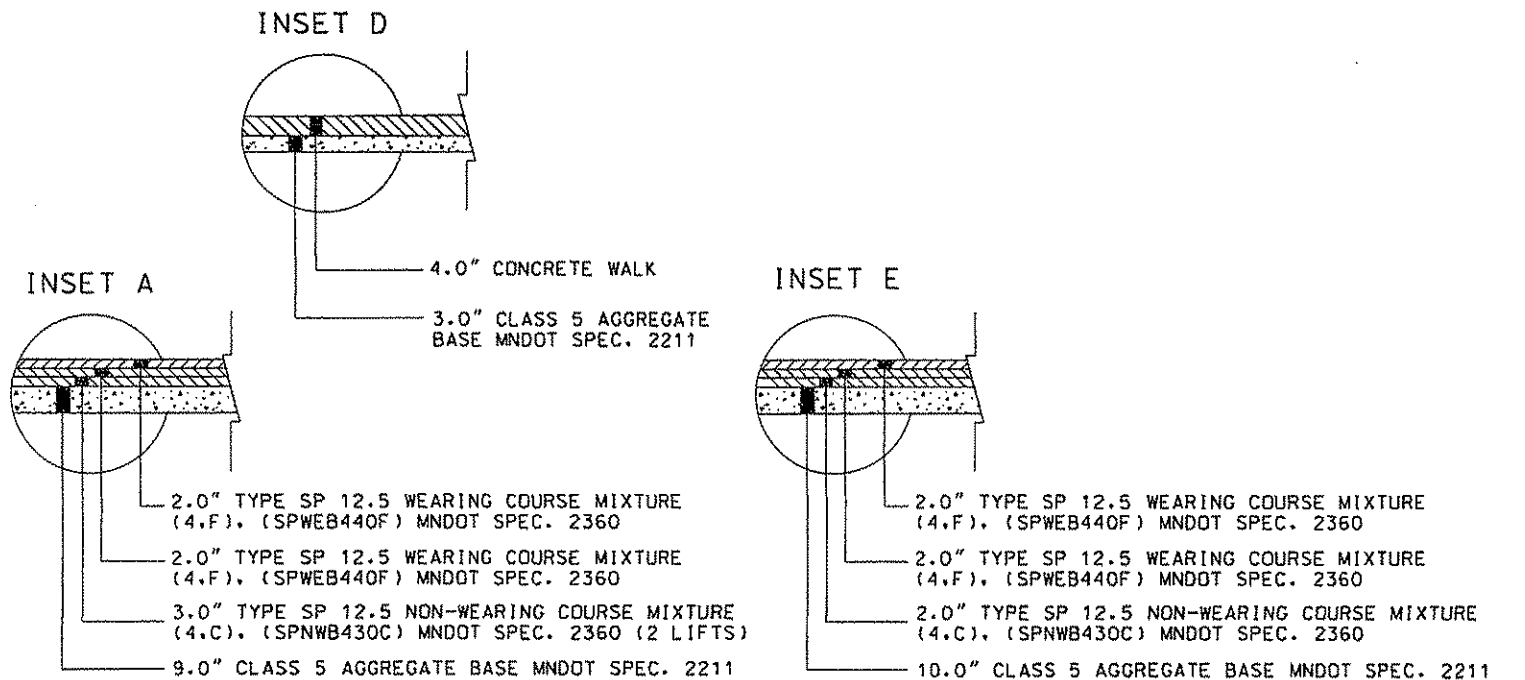
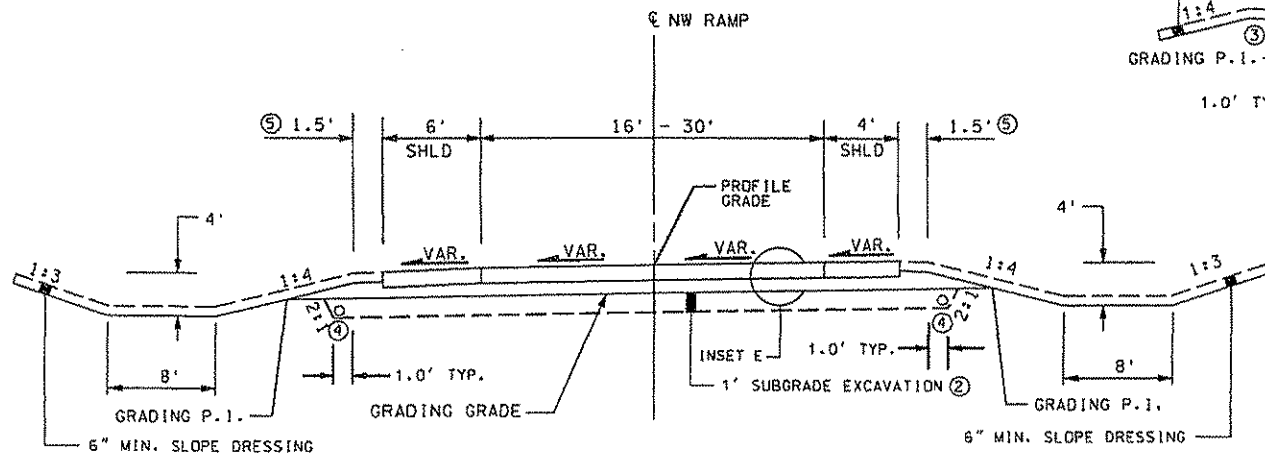
**TYPICAL SECTION NO. 11 - CUL-DE-SAC**

STA. 10+00 TO STA. 12+94



**TYPICAL SECTION NO. 10 - NW RAMP**

STA. 33+79 TO STA. 40+99



**NOTES:**

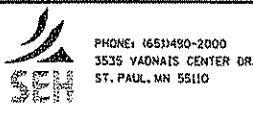
- ① VARIES 0' - 4' SW RAMP STA. 40+55 TO 41+23  
VARIES 8' - 20' SW RAMP STA. 40+55 TO 42+43
- ② BACKFILL WITH SELECT GRANULAR MATERIAL. MNDOT SPEC. 3149
- ③ BACKFILL WITH SELECT GRADING MATERIAL.
- ④ SEE SUBCUT DRAIN DETAIL SHEET 27. CONTINUE DRAINS TO BOTTOM OF NEW RAMP CONSTRUCTION AND PROVIDE TRANSVERSE CUTOFF AND HEADWALL AT THAT LOCATION.
- ⑤ PLACE MINIMUM 4" OF AGGREGATE SHOULDERING, CLASS 5, MNDOT SPEC 2211 BETWEEN EDGE OF RAMP AND P.I.

**GENERAL NOTES:**

ALL CROSS SLOPES ARE IN FT./FT.  
MAXIMUM ROLLOVER 0.07 FT./FT.  
UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE.  
SEE CROSS SECTIONS FOR VARIABLE SIDE SLOPES AND SPECIFIC LIMITS OF SUBGRADE EXCAVATION.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Mark R. Diebling* Lic. No. 21098  
Printed Name: MARK R. DIEBLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

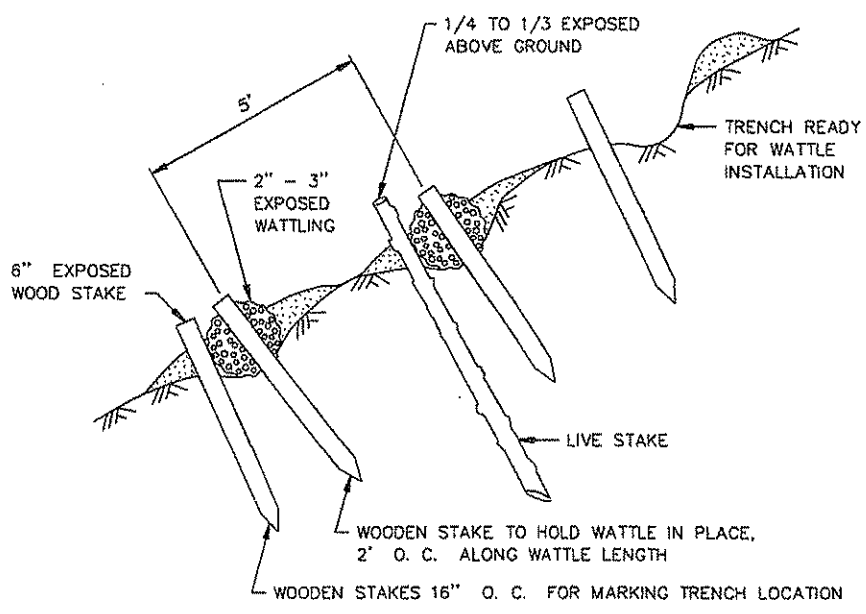
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OF T55	

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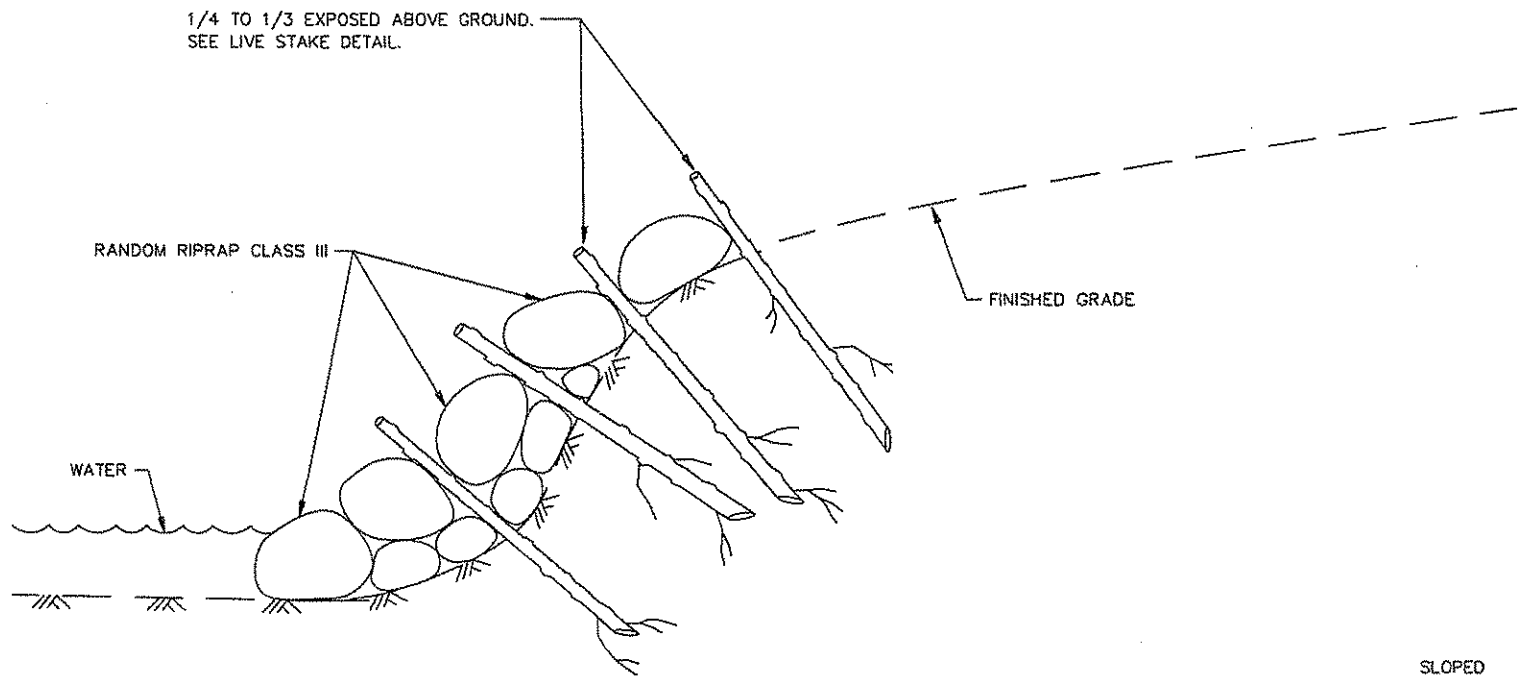
3/23/2007

Layout1

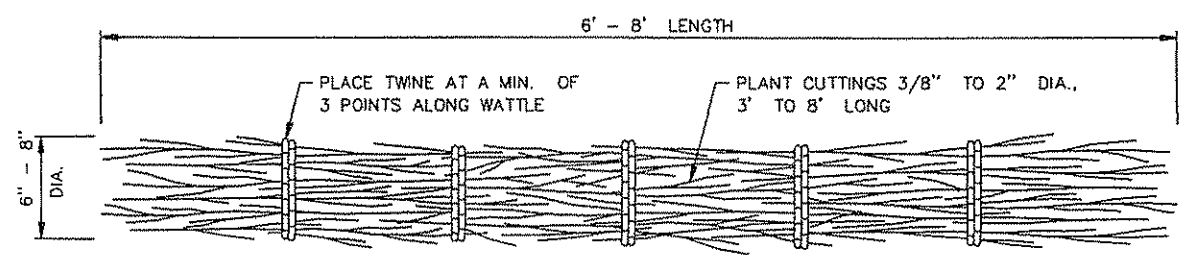
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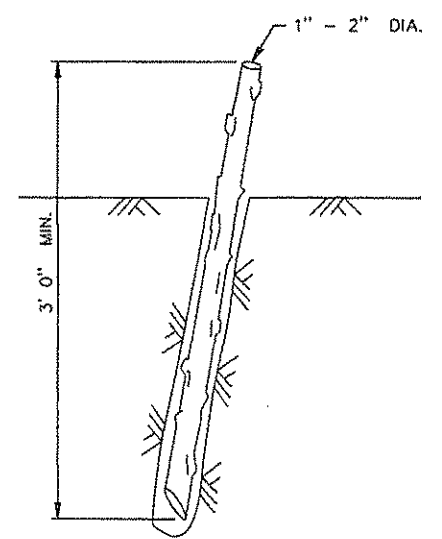
WATTLE INSTALLATION ②③



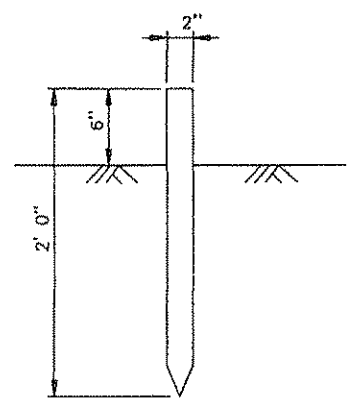
RANDOM RIPRAP CLASS III AND LIVE STAKES



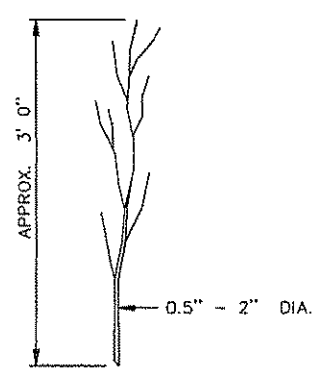
WATTLE ①  
READY FOR INSTALLATION



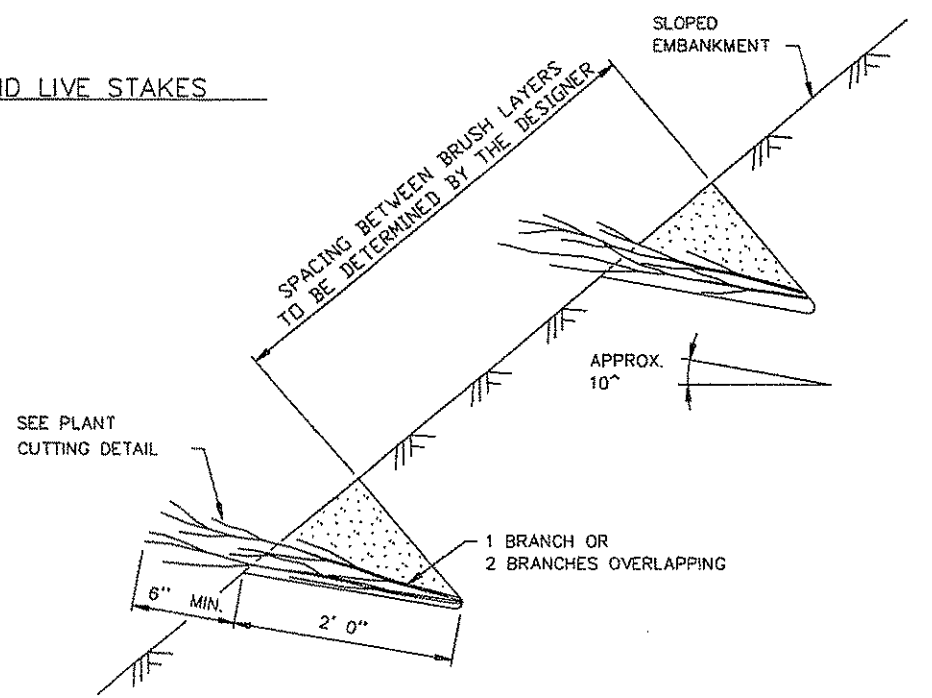
LIVE STAKE ①②



WOODEN STAKE



PLANT CUTTING ①



ELEVATION  
BRUSH LAYERING ③

NOTE:  
SEE BRUSH LAYERING DETAIL FOR PLACEMENT.

- NOTES:  
SEE SPECS. 2577 & 3895.
- ① PLANT CUTTINGS SHOULD BE DORMENT, BEFORE LEAF-OUT OR AFTER LEAF DROP. TRANSPORT AND STORE LIVE STAKES & CUTTINGS IN WATER.
  - ② TO INSTALL LIVE STAKES IN RIPRAP, USE PRY BAR TO MAKE PILOT HOLE. NOT ALWAYS NECESSARY TO HAVE PILOT HOLE WHEN RIPRAP NOT PRESENT.
  - ③ IN PLAN VIEW, THE BRUSH LAYERING AND WATTLE INSTALLATION WILL BE IN CONTINUOUS TRENCHES FOLLOWING A CONTOUR.

PERMANENT EROSION CONTROL  
BIOENGINEERING SOIL STABILIZATION

DESIGN TEAM				
DRAWN BY: TDS/MWR				
DESIGNER: JJJ				
CHECKED BY: SRH				
NO.	BY	DATE	REVISIONS	

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Certified By: *Mark B. Dierling* Lic. No. 21098  
 Printed Name: MARK B. DIERLING Date: 3/23/2007

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 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



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 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	24
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OF MD6	198

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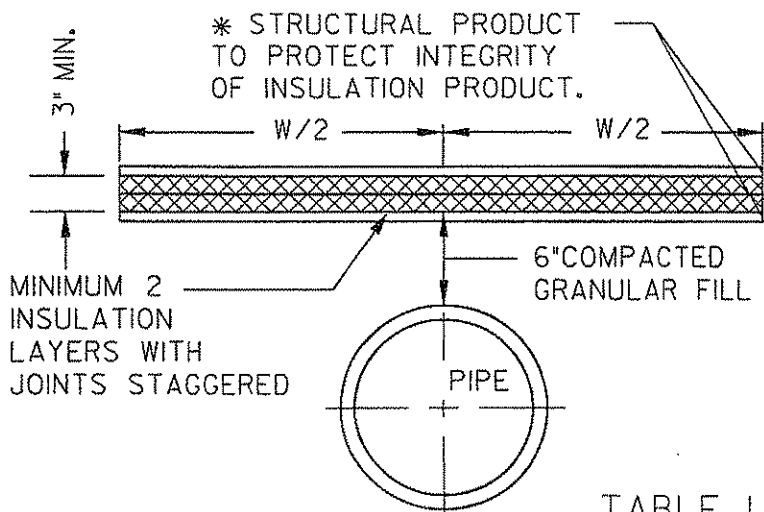


TABLE I

DEPTH OF COVER	WIDTH W
4.0'-4.9'	8'
5.0'-5.9'	6'
6.0'-7.0'	4'
7.0' +	0'

NOTES:

INSULATION SHALL BE EXTRUDED POLYSTYRENE (XEPS) INSULATION BOARD, "CERTIFOAM SE" OR "STYROFOAM SM" OR EQUIVALENT, EXCEPT AS FOLLOWS: WHERE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" APPLY, INSULATION BOARD SHALL BE "CERTIFOAM 40" OR STYROFOAM HI-35 OR HI-40" OR EQUIVALENT.

INSULATION SHALL BE PLACED ON A SMOOTH, LEVEL FOUNDATION WHICH HAS BEEN FIRMLY COMPACTED.

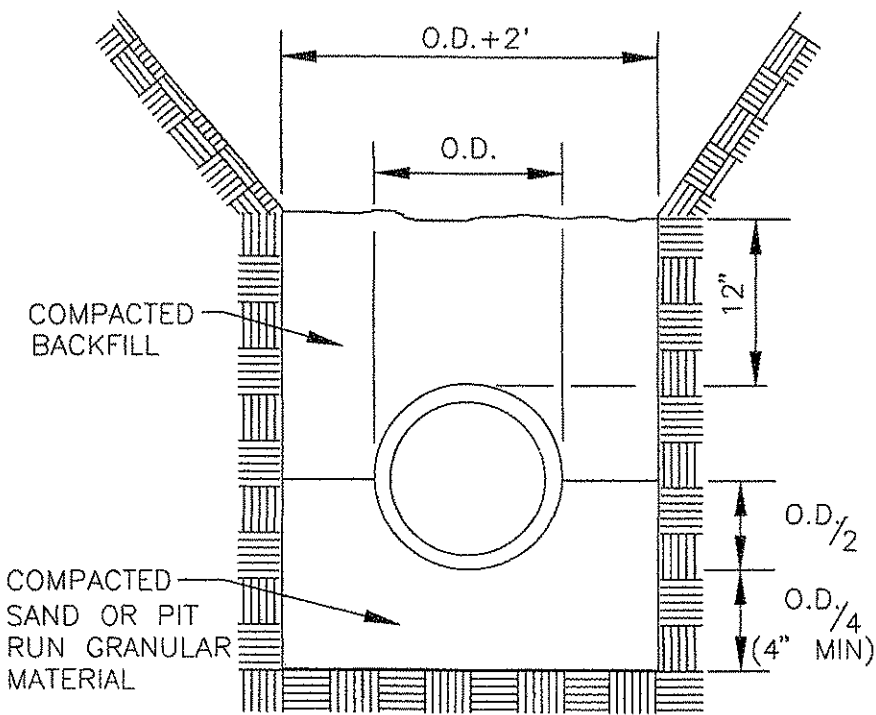
SEPARATE LAYERS OF INSULATION USED TO MAKE UP THE 3" THICKNESS SHALL HAVE STAGGERED JOINTS TO ENSURE THE CONTINUITY OF THE INSULATION.

LENGTH AND WIDTH OF INSULATION SHOWN ON PLANS IS APPROXIMATE. SEE TABLE I FOR ACTUAL WIDTH REQUIRED ONCE THE ACTUAL DEPTH OF WATER MAIN IS KNOWN.

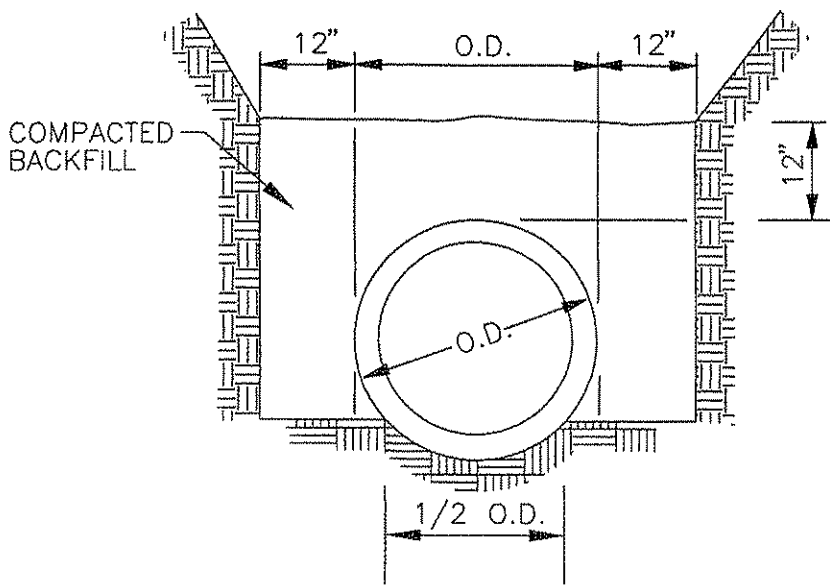
LENGTH AND WIDTH OF INSULATION REQUIRED FOR OTHER PIPING SHOULD BE DETERMINED ON A CASE BY CASE BASIS.

\* TREATED PLYWOOD IS USED WHEN DEPTH IS SHALLOW OR ACTIVITIES ABOVE GROUND WARRANT PROTECTION.

### PIPE INSULATION

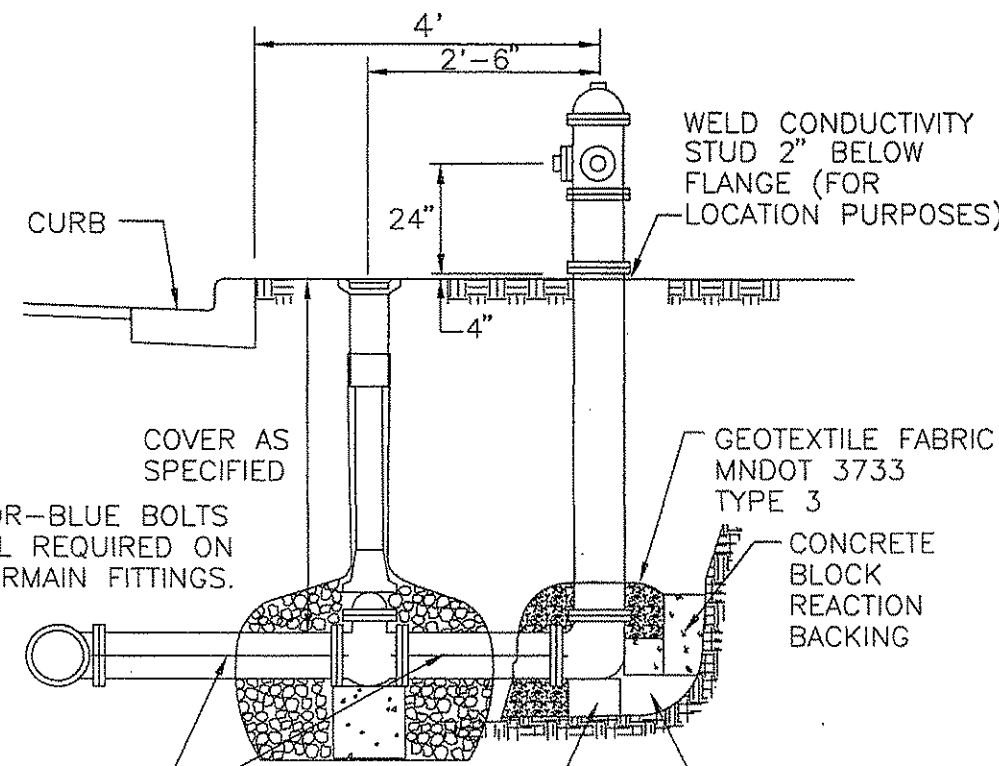
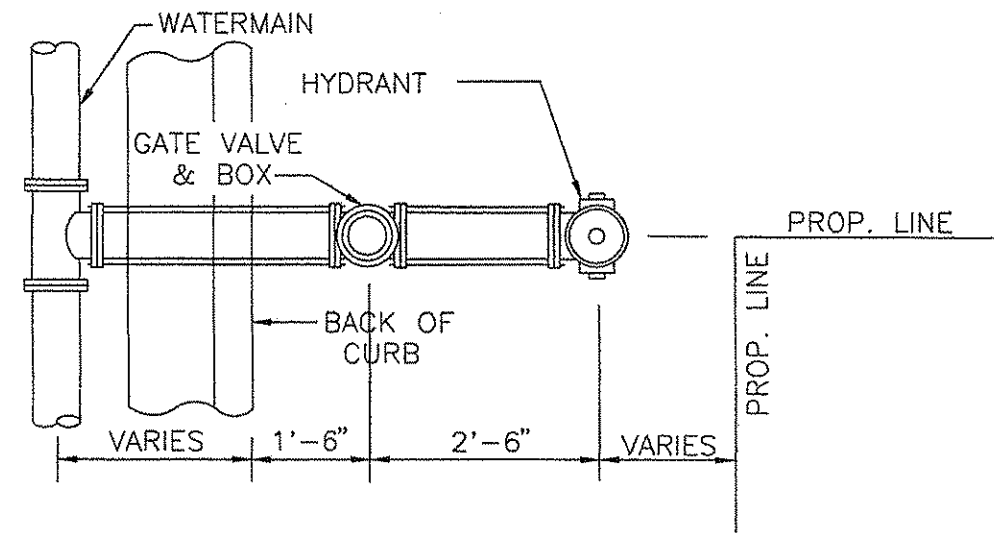


### GRANULAR MATERIAL BEDDING



### EARTH FOUNDATION

### PIPE FOUNDATION DETAILS



NOTE: COR-BLUE BOLTS OR EQUAL REQUIRED ON ALL WATERMAIN FITTINGS.

3/4" GALVANIZED STEEL TIE RODS OR "MEGA LUG" THRUST RETAINER GLANDS (OR EQUIVALENT) AT JOINTS

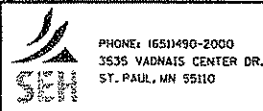
8" X 8" X 16" CONCRETE BLOCK

1 1/2" WASHED ROCK ALL AROUND MIN. 1/3 C.Y. (MIN. 1 C.Y. IN IMPERVIOUS SOILS.)

### TYPICAL HYDRANT LAYOUT (VALVE IN BOULEVARD)

DESIGN TEAM	NO.	BY	DATE	REVISIONS
DRAWN BY: CJF				
DESIGNER: RLM				
CHECKED BY: RLM				

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Diebling* Lic. No. 21098  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	25
MISCELLANEOUS DETAILS	
WATERMAIN INSTALLATION	
MD2 OF MD6	198

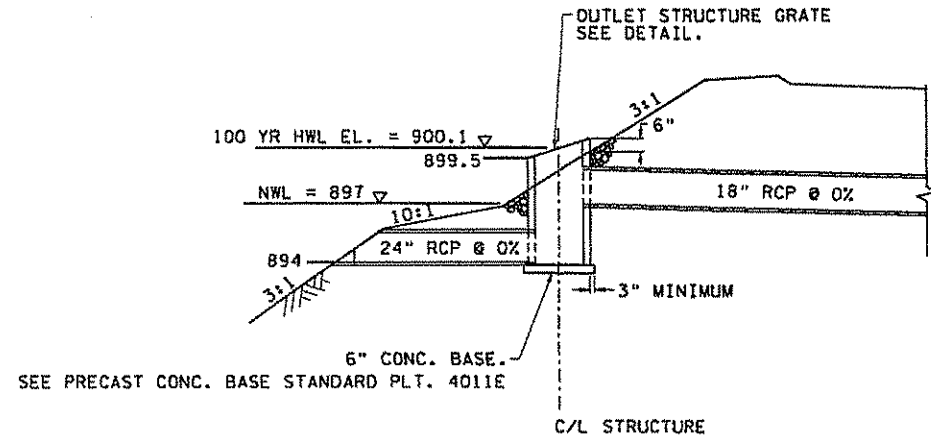
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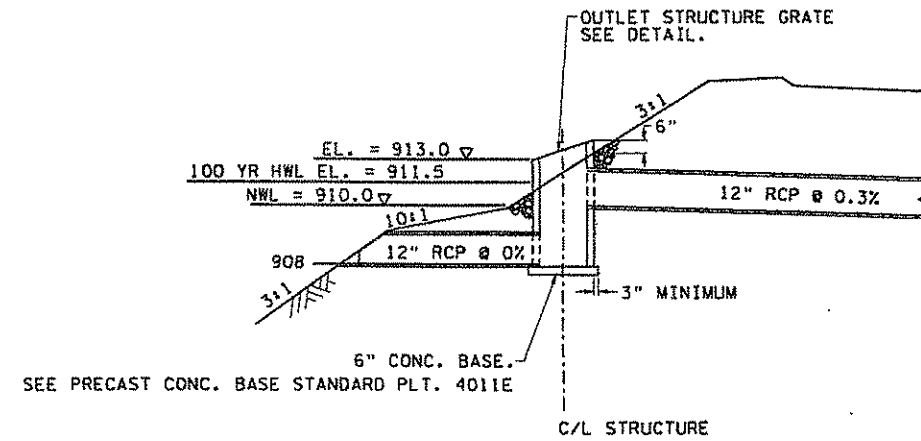
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**DRAINAGE STRUCTURE DESIGN SPECIAL 1**  
**STRUCTURE NO. 98 N.B. LAKE DRIVE STA. 25+41**



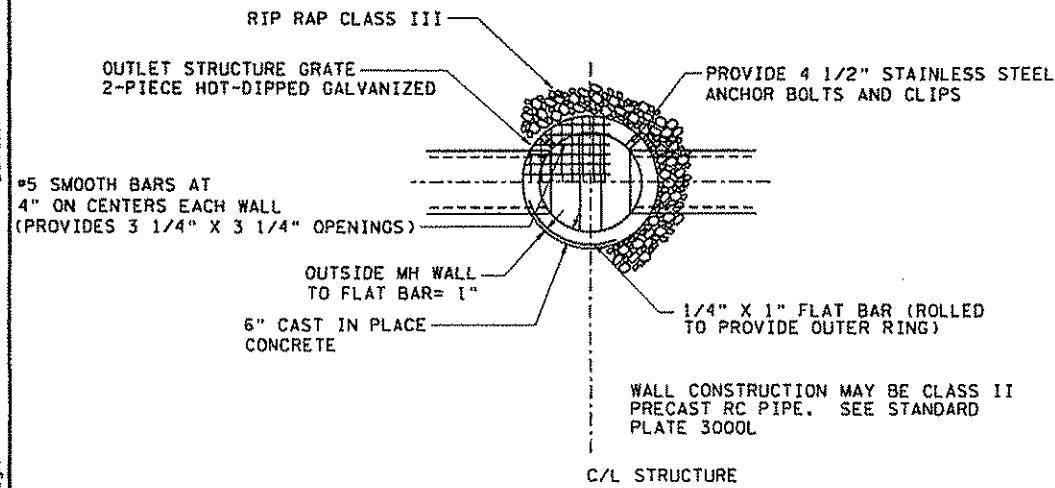
**TYPICAL POND OUTLET STRUCTURE (48" MANHOLE)**  
 NOT TO SCALE

**DRAINAGE STRUCTURE DESIGN SPECIAL 2**  
**STRUCTURE NO. 197 S.B. LAKE DRIVE STA. 45+56**



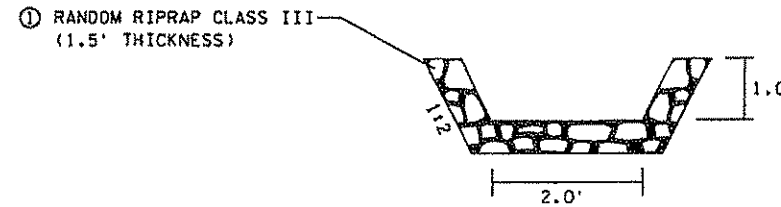
**TYPICAL POND OUTLET STRUCTURE (48" MANHOLE)**  
 NOT TO SCALE

**DRAINAGE STRUCTURE DESIGN SPECIAL 1 AND 2**



**TYPICAL OUTLET STRUCTURE GRATE AND RIPRAP DETAIL**  
 NOT TO SCALE

**DRAINAGE DITCH FROM 95 TO COUNTY DITCH 10**

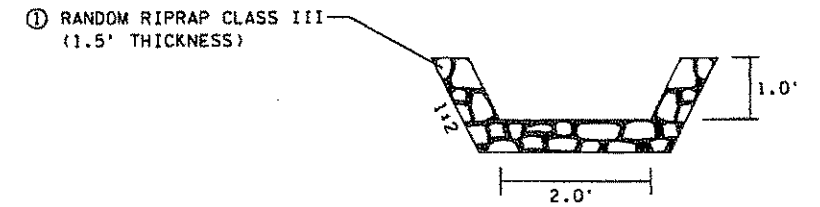


UPSTREAM FLOWLINE = 896.0  
 DOWNSTREAM FLOWLINE = 888.0

**DITCH TYPICAL**  
 NO TO SCALE

- ① AFTER RIPRAP HAS BEEN PLACED, COMPACT TOPSOIL INTO RIPRAP VOIDS, SEED WITH MIXTURE 310, AND COVER WITH MULCH. SEED AND MULCH APPLICATION RATES SHALL CONFORM TO MnDOT SPECIFICATIONS.
- ② USE A 12" DEPTH GRANULAR FILTER (INCIDENTAL) AS SHOWN IN MnDOT STANDARD PLATE NO. 3133C. GEOTEXTILE FABRIC MAY NOT BE USED AS AN ALTERNATE.
- ③ TOPSOIL, SEED, AND MULCH SHALL BE INCIDENTAL TO RANDOM RIPRAP CLASS III.

**DRAINAGE DITCH FROM 302 TO COUNTY DITCH 10**



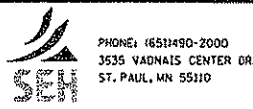
UPSTREAM FLOWLINE = 898.86  
 DOWNSTREAM FLOWLINE = 891.0

**DITCH TYPICAL**  
 NO TO SCALE

- ① AFTER RIPRAP HAS BEEN PLACED, COMPACT TOPSOIL INTO RIPRAP VOIDS, SEED WITH MIXTURE 310, AND COVER WITH MULCH. SEED AND MULCH APPLICATION RATES SHALL CONFORM TO MnDOT SPECIFICATIONS.
- ② USE A 12" DEPTH GRANULAR FILTER (INCIDENTAL) AS SHOWN IN MnDOT STANDARD PLATE NO. 3133C. GEOTEXTILE FABRIC MAY NOT BE USED AS AN ALTERNATE.
- ③ TOPSOIL, SEED, AND MULCH SHALL BE INCIDENTAL TO RANDOM RIPRAP CLASS III.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	26
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MD3	198
OF MD6	

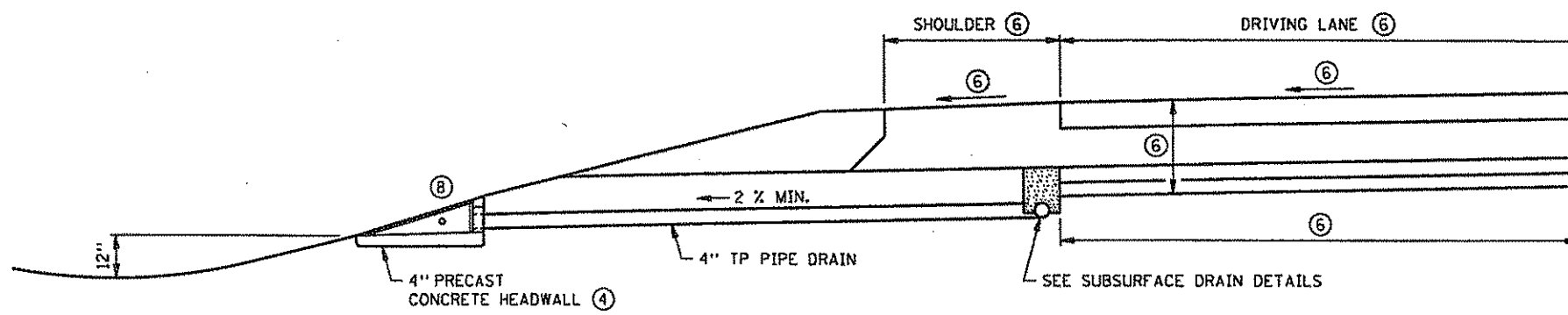


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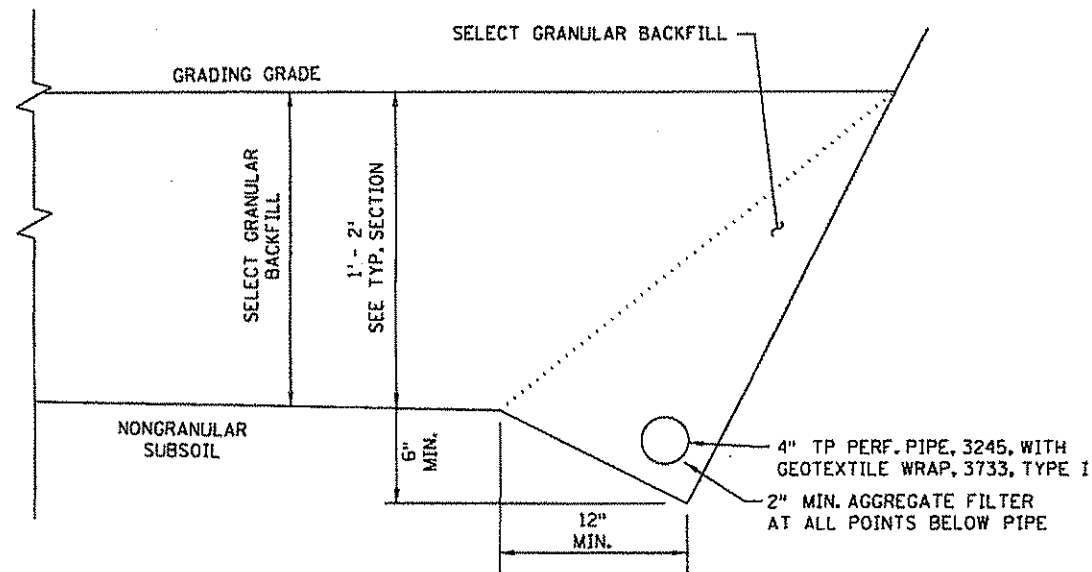
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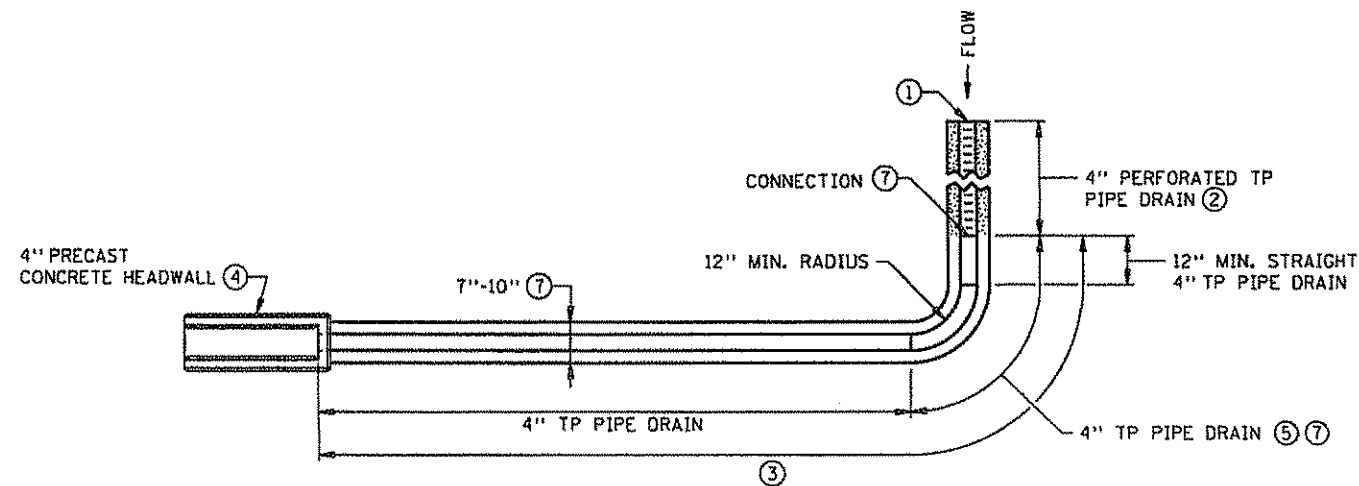
SECTION VIEW  
TYPICAL EDGE DRAIN AND DISCHARGE CROSS SECTION (7)



SUBCUT DRAIN DETAIL (9)

**NOTES:**

- ① THE UPSTREAM ENDS OF THE PERFORATED PIPE SHALL BE CAPPED AS APPROVED BY THE PROJECT ENGINEER, THE CAPS ARE INCIDENTAL TO SPEC. 2502, 4" PERFORATED TP PIPE DRAIN. PLACE PERFORATED PIPE WITH THE PERFORATIONS DOWN.
- ② MAXIMUM LENGTH 500 FT., EXCEPT 300 FT. MAXIMUM FOR GRADES LESS THAN 0.2% . LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, 4" PERFORATED TP PIPE DRAIN.
- ③ LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, 4" TP PIPE DRAIN.
- ④ PRECAST CONCRETE HEADWALL STANDARD PLATE 3131 PAID FOR AS SPEC. 2502 4" PRECAST CONCRETE HEADWALL.
- ⑤ DETAILS OF CONNECTION AND COUPLING TO PIPE SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR "Y" AND EXTRA CONNECTION, 12" TP PIPE AND COUPLING TO BE INCIDENTAL TO SPEC. 2502, 4" TP PIPE DRAIN.
- ⑥ SEE ROADWAY TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.
- ⑦ SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS.
- ⑧ OUTLET TO DITCH EVERY 250 FT.
- ⑨ REVIEW EACH CATCH BASIN CONNECTION FOR ADEQUATE DEPTH PRIOR TO INSTALLING TP DRAIN PIPE. (INSTALLATION IS INCIDENTAL TO PIPE).



TYPICAL PLAN VIEW ( SINGLE DISCHARGE ) (7)

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Dierling* Lic. No. 21098  
 Printed Name: MARK B. DIERLING Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VAGNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

MISCELLANEOUS DETAILS

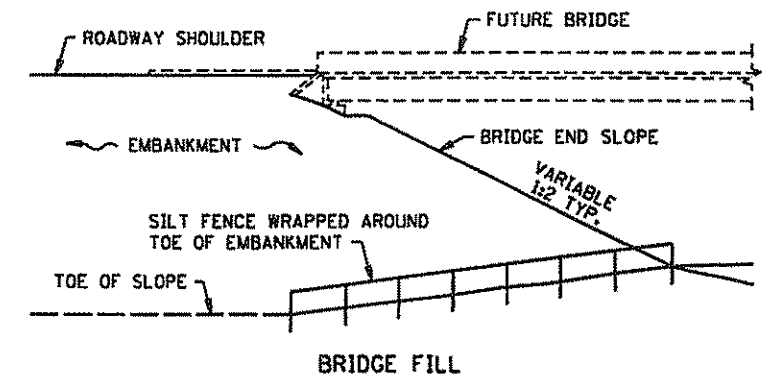
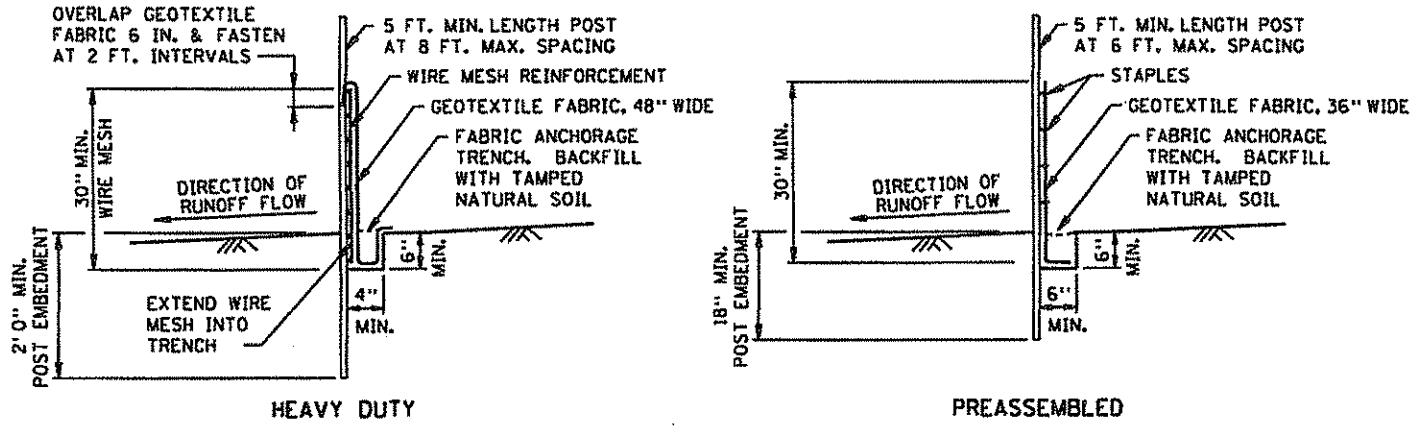
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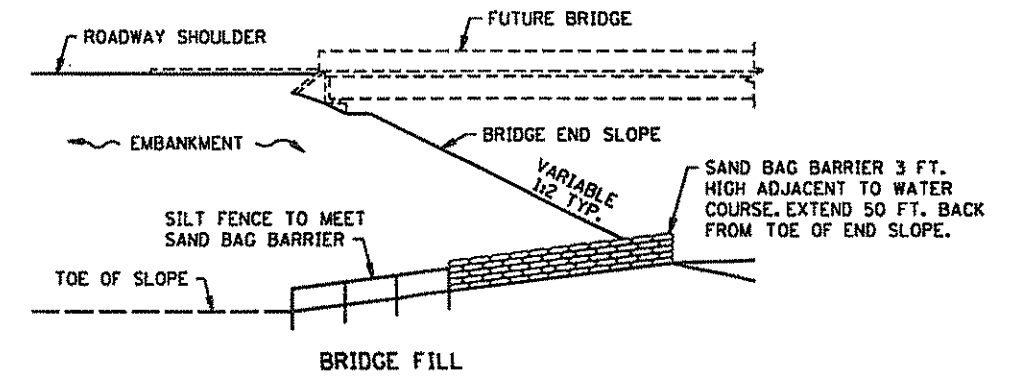
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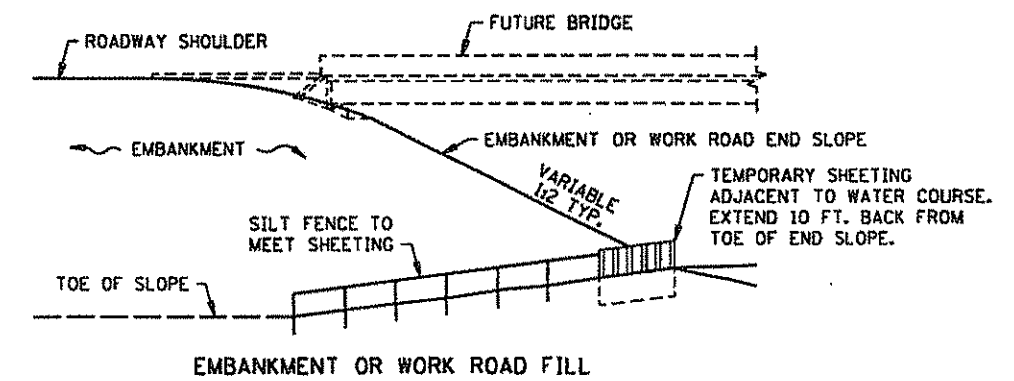
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**DESIGN GUIDELINES:**  
 WATER COURSE FLOW VELOCITY: STAGNANT  
 CONTRIBUTING SLOPE AREA: 1/2 ACRE



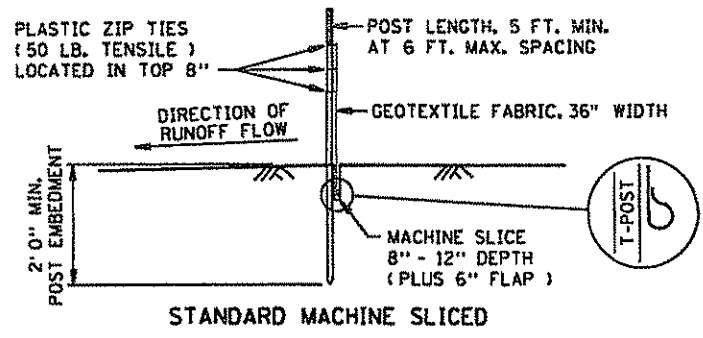
**DESIGN GUIDELINES:**  
 MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.  
 CONTRIBUTING SLOPE AREA: 1 ACRE



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

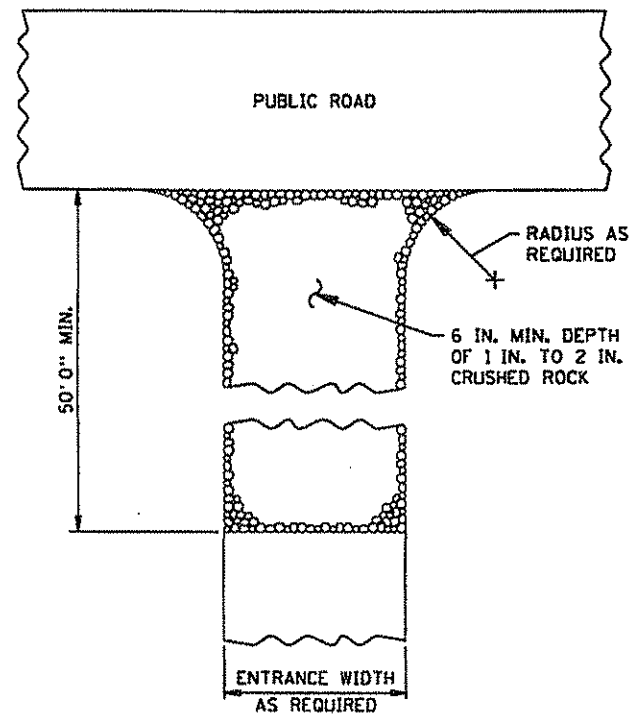
**SILT FENCE AT BRIDGE EMBANKMENT**

- NOTES:**  
 SEE SPECS. 2573 & 3886.  
 ① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE DRIVING ON MAIN ROAD. THIS WILL PREVENT AUTO DAMAGE. WE NEED TO KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.  
 ② POINT A MUST BE 1'0" MIN. HIGHER THAN POINT B TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

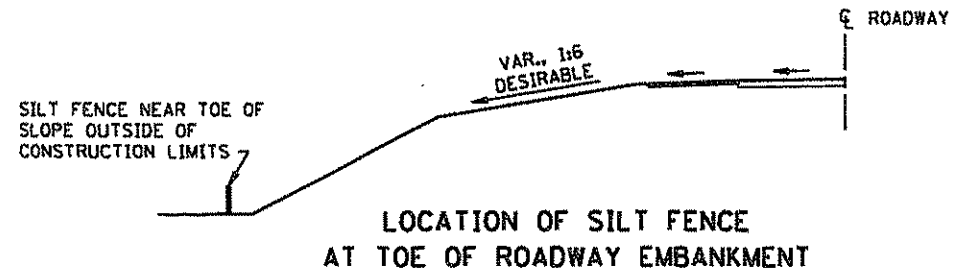


**STANDARD MACHINE SLICED SILT FENCE DETAILS TO PROTECT AREAS FROM SHEET FLOW (SEE SPEC. 3886)**

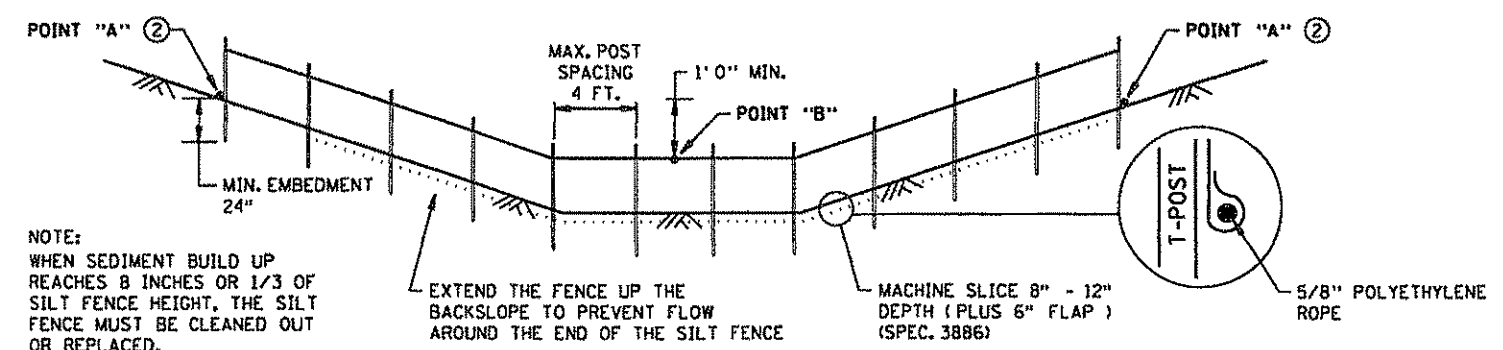
**DESIGN GUIDELINES:**  
 MAXIMUM CONTRIBUTING AREA: 3 ACRES



**ROCK CONSTRUCTION ENTRANCE ①**



**LOCATION OF SILT FENCE AT TOE OF ROADWAY EMBANKMENT**



**MACHINE SLICED SILT FENCE (TYPE I SPEC. 3889)**

**NOTE:**  
 WHEN SEDIMENT BUILD UP REACHES 8 INCHES OR 1/3 OF SILT FENCE HEIGHT, THE SILT FENCE MUST BE CLEANED OUT OR REPLACED.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007

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 3535 VIGNAIS CENTER DR.  
 ST. PAUL, MN 55110



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 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

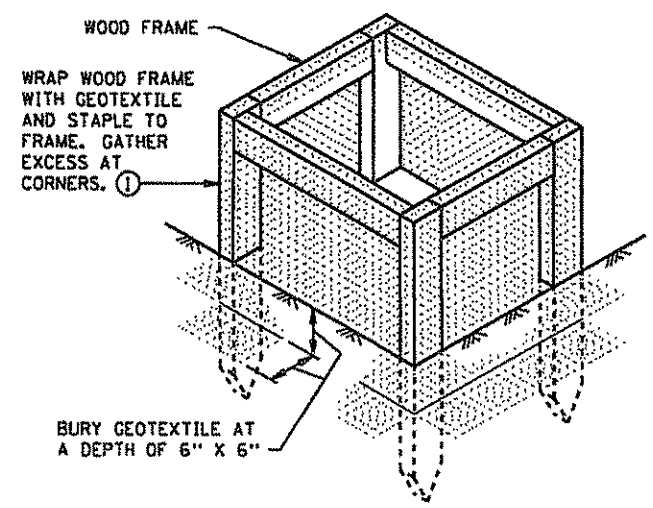
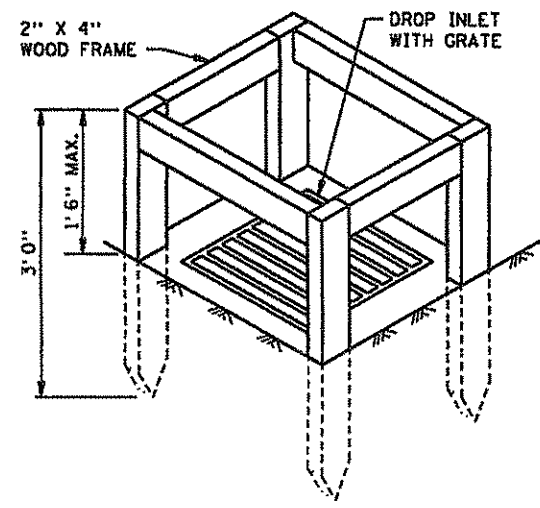
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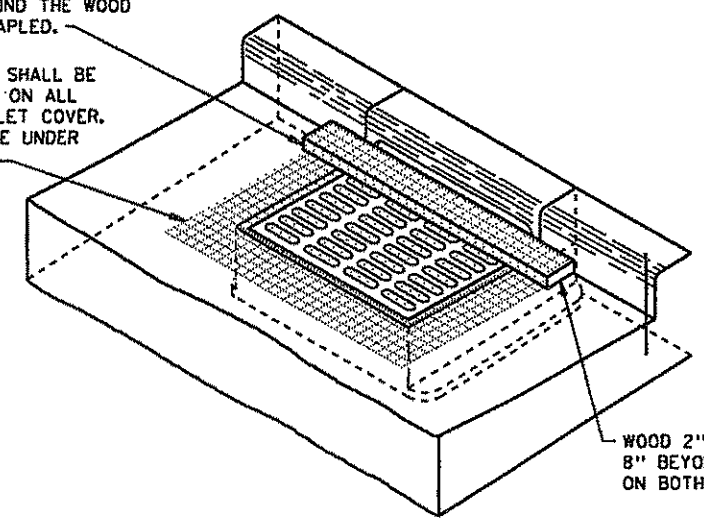
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**SILT FENCE BOX TO PROTECT DROP INLETS**  
 USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 OR LESS

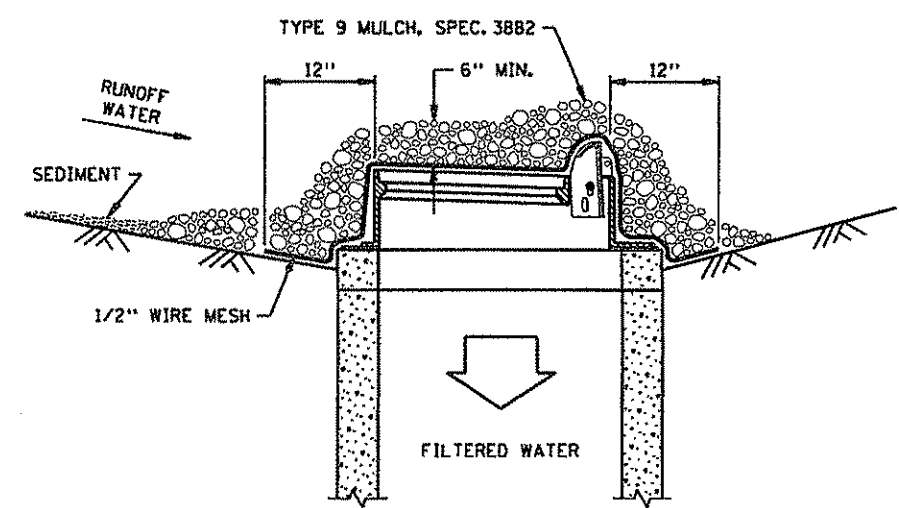
AN ADDITIONAL 18" OF GEOTEXTILE IS WRAPPED AROUND THE WOOD 2" X 4" AND STAPLED.

GEOTEXTILE SIZE SHALL BE 8" MIN. GREATER ON ALL SIDES OF THE INLET COVER. PLACE GEOTEXTILE UNDER INLET COVER. ①



WOOD 2" X 4" EXTENDED 8" BEYOND GRATE WIDTH ON BOTH SIDES.

**GEOTEXTILE FILTER AT STREET INLET WITH CURB BOX**



**AGGREGATE FILTER AT CURB INLET**

**NOTES:**

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
NO.	BY	DATE	REVISIONS	

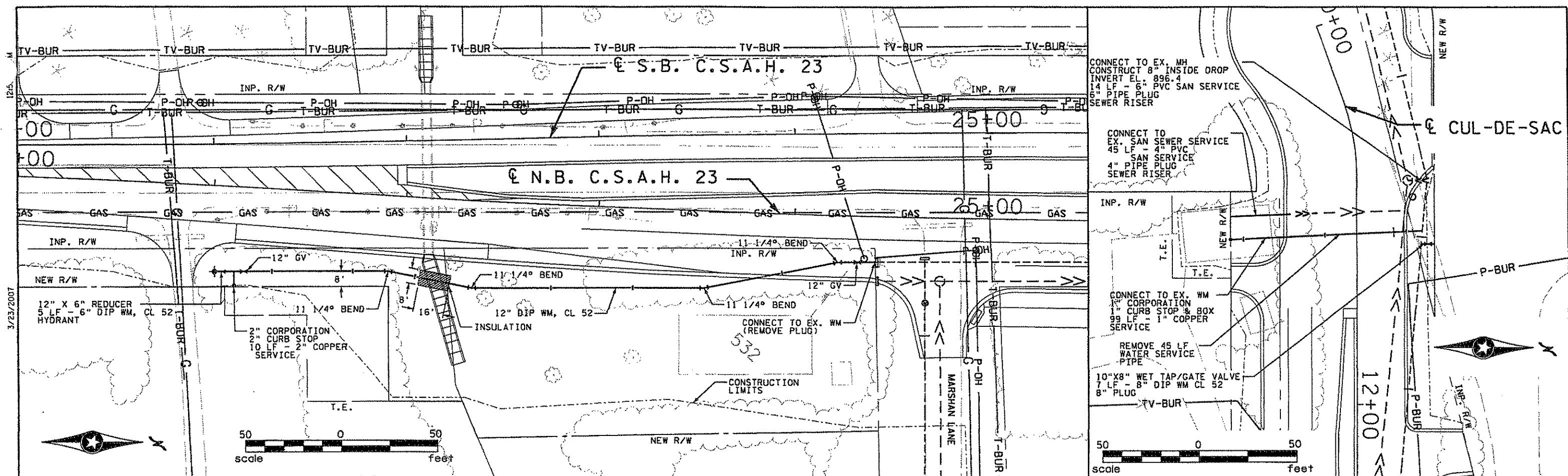
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PHONE: 651-490-2000  
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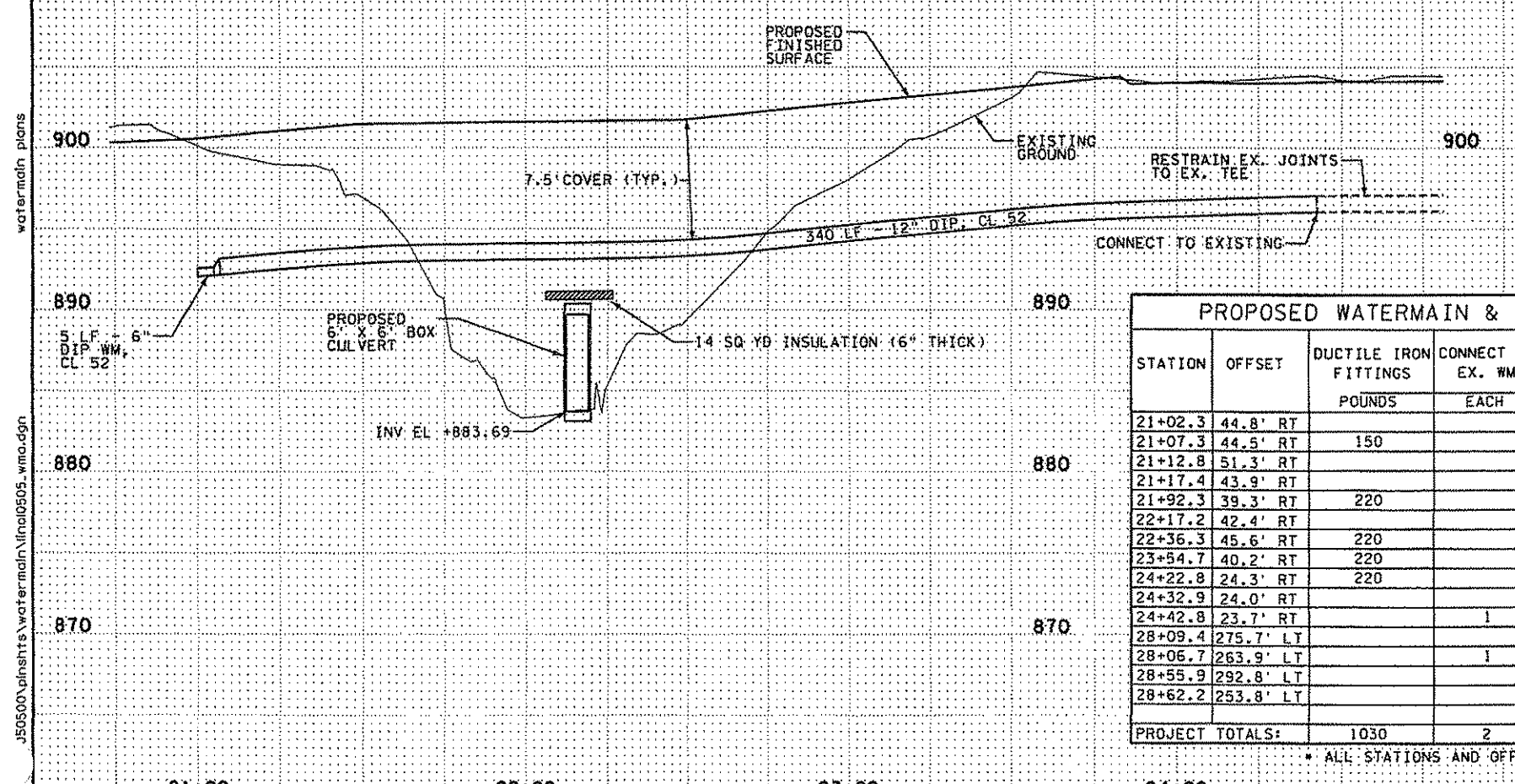
MISCELLANEOUS DETAILS	FILE NO.	29
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	MD6	198
	OF MD6	



**PROPOSED WATERMAIN & SANITARY SCHEDULE**

STATION	OFFSET	REMOVE WATER SERVICE PIPE EACH	CONNECT TO EXISTING MANHOLES	CONNECT TO EXISTING SANITARY SEWER SERVICE	PIPE PLUG		SEWER RISER EACH	CONSTRUCT 8" INSIDE DROP LIN FT	PVC SANITARY SERVICE PIPE	
					4"	6"			4"	6"
28+09.4	275.7' LT			1	1		1		45	
28+06.7	263.9' LT	45								
28+55.9	292.8' LT		1			1	1	11		14
28+62.2	253.8' LT									
<b>PROJECT TOTALS:</b>		45	1	1	1	1	2	11	45	14

NOTES:  
 (1) FOR INSIDE DROP DETAIL SEE CITY OF LINO LAKES STANDARD DRAWING NO. 307.



**PROPOSED WATERMAIN & SANITARY SCHEDULE**

STATION	OFFSET	DUCTILE IRON FITTINGS POUNDS	CONNECT TO EX. WM EACH	HYDRANT EACH	8" PIPE PLUG EACH	CORP STOP		10"X8" WET TAP EACH	12" GV & BOX EACH	CURB STOP & BOX		TYPE K COPPER PIPE			DIP CL 52			6" POLYSTYRENE INSULATION SQ YD	REMARKS
						1"	2"			1"	2"	1"	2"	6"	8"	12"			
21+02.3	44.8' RT			1															
21+07.3	44.5' RT	150																	12" X 6" REDUCER
21+12.8	51.3' RT						1				1			10					
21+17.4	43.9' RT								1										
21+92.3	39.3' RT	220																	11 1/4° BEND
22+17.2	42.4' RT																		11 1/4° BEND
22+36.3	45.6' RT	220																	11 1/4° BEND
23+54.7	40.2' RT	220																	11 1/4° BEND
24+22.8	24.3' RT	220																	11 1/4° BEND
24+32.9	24.0' RT								1										
24+42.8	23.7' RT																		
28+09.4	275.7' LT		1																
28+06.7	263.9' LT						1				1			99					
28+55.9	292.8' LT																		
28+62.2	253.8' LT				1			1											
<b>PROJECT TOTALS:</b>		1030	2	1	1	1	1	1	2	1	1	99	10	5	7	340	14		

\* ALL STATIONS AND OFFSETS ARE MEASURED FROM N.B. C.S.A.H. 23 ALIGNMENT



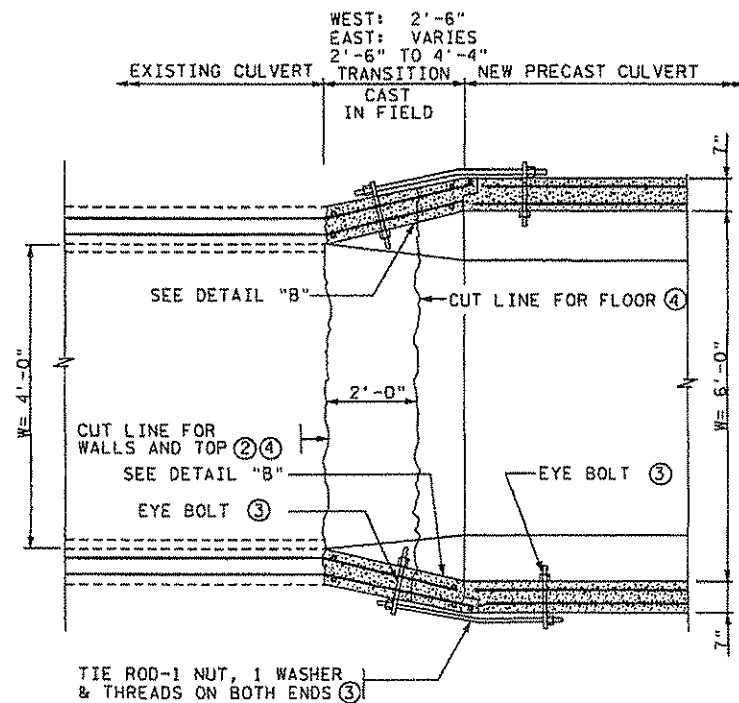


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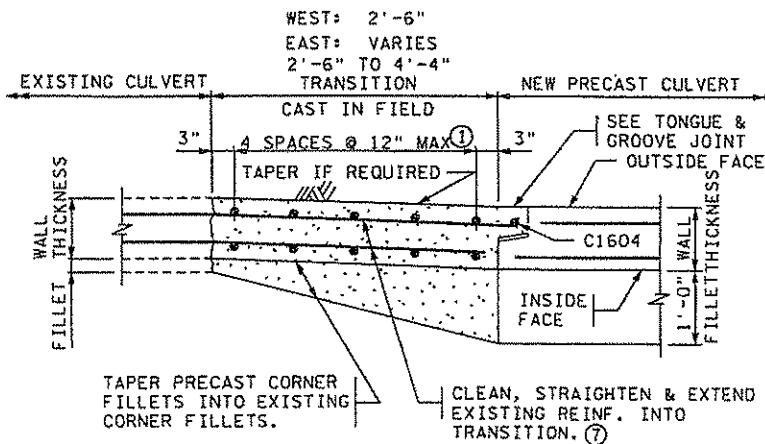
3/23/2007

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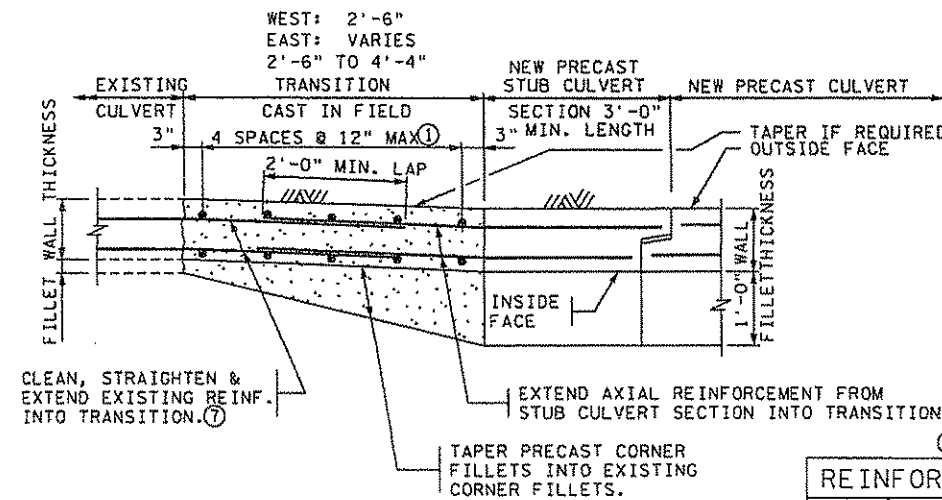
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PLAN SECTION  
(ALTERNATE 1 SHOWN)



DETAIL "B"  
ALTERNATE 1  
(CULVERT TIE NOT SHOWN)



DETAIL "B"  
ALTERNATE 2  
(NO CULVERT TIE REQUIRED)

C.S.A.H. 23 CULVERT

TRANSITION QUANTITIES ⑥	
STRUCTURAL CONC. (3Y46)	3 CU YD
REINFORCEMENT BARS	850 POUND

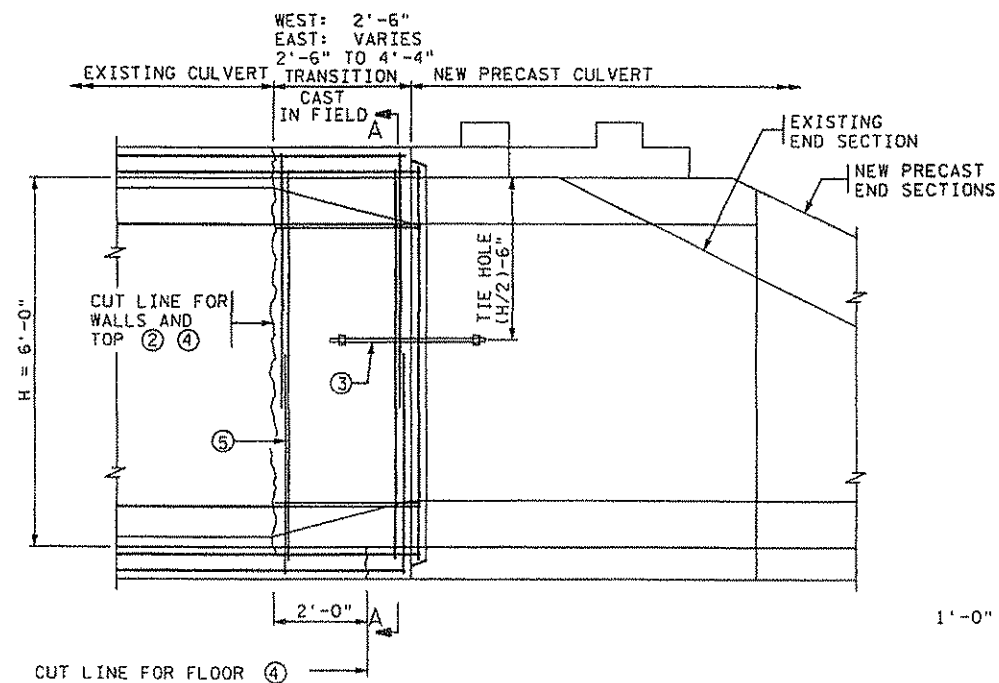
C.S.A.H. 23 CULVERT

REINFORCEMENT FOR TRANSITIONS ⑥ ⑦				
BAR	NO.	LENGTH	SHAPE	LOCATION
C1301	20	6'-6"	STR	INSIDE VERT
C1002	40	1'-6"	STR	INSIDE CORNERS
C2203	24	6'-6"	STR	INSIDE T & B
C1604	40	10'-0"	BNT	OUTSIDE CORNERS

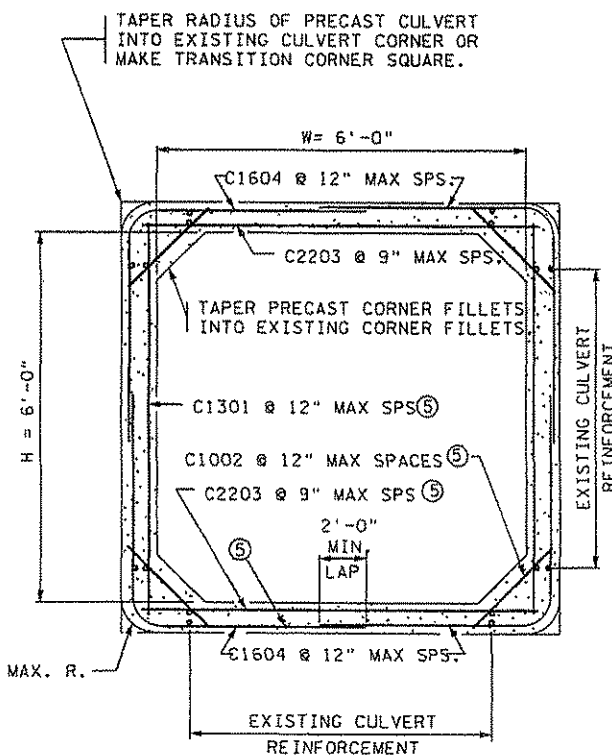
NOTES:

- CONSTRUCTION SHALL START FROM THE EXISTING CULVERT AND PROCEED OUTWARD.
- TOP & BOTTOM SLABS & SIDE WALLS MAY HAVE TO BE TAPERED IN THE 2'-6" TRANSITION AREA TO MATCH PRECAST CULVERT DIMENSIONS.
- ALL JOINTS BETWEEN BARREL LENGTHS TO BE SEALED WITH MASTIC. SEE SPEC 2412.
- NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR & APPROVED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC. 2433, EXCEPT AS NOTED.
- PRECAST CULVERTS TO BE CONSTRUCTED PER SPEC. 2412
- ANY ADDITIONAL REINFORCEMENT SHALL BE PER SPEC. 3301, GRADE 60 OR SPEC. 3303.

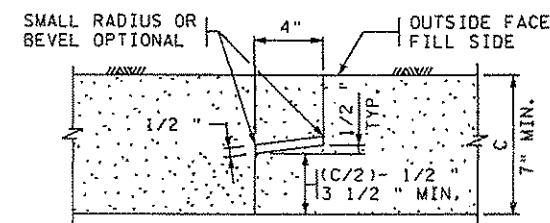
- ① LONGITUDINAL REINFORCEMENT IN 2'-6" TRANSITION PROJECTING FROM PRECAST SECTION SHALL HAVE SAME STEEL AREA AS PRECAST CULVERT FOR ALTERNATE 2.
- ② REMOVE INPLACE CULVERT WINGS AS NECESSARY TO PROVIDE CLEARANCE FOR CONSTRUCTION OF SIDE WALL TRANSITION AS DIRECTED BY THE ENGINEER.
- ③ CULVERT TIES ARE TO BE 1" DIA. RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS. MODIFY AS REQUIRED AT 2'-6" TRANSITION. ALTERNATE CULVERT TIES MAY BE USED IF APPROVED BY THE ENGINEER. ALL HOLES IN THE BARREL ARE TO BE APPROVED BY THE ENGINEER.
- ④ APPLY AN APPROVED EPOXY BONDING AGENT TO ALL SURFACES IN CONTACT WITH NEW CONCRETE.
- ⑤ CUT BARS AS NECESSARY IN FIELD.
- ⑥ QUANTITIES ARE FOR BOTH EAST AND WEST TRANSITION USING ALTERNATE 1 DESIGN.
- ⑦ DOWEL AND / OR EXTEND LONGITUDINAL REINFORCEMENT AS NEEDED TO FIT LENGTH OF TRANSITION. MATCH EXIST BAR SIZE AND LOCATION. INCIDENTAL TO "REINFORCEMENT BARS".



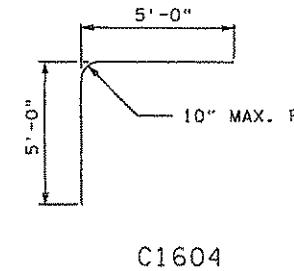
SIDE ELEVATION  
(ALTERNATE 1 SHOWN)



SECTION A-A  
(ALTERNATE 1 SHOWN)



TONGUE AND GROOVE JOINT  
MAKE DIMENSION OF TONGUE OR GROOVE ON ADJACENT PRECAST BARREL SECTIONS SO INSIDE FACES ARE FLUSH.

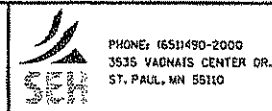


C1604

DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRANSITION FROM EXISTING CAST-IN-PLACE BOX CULVERT TO PRECAST EXTENSION	
FILE NO.	32
ALINDL0505.00	
BC2 OF BC2	198

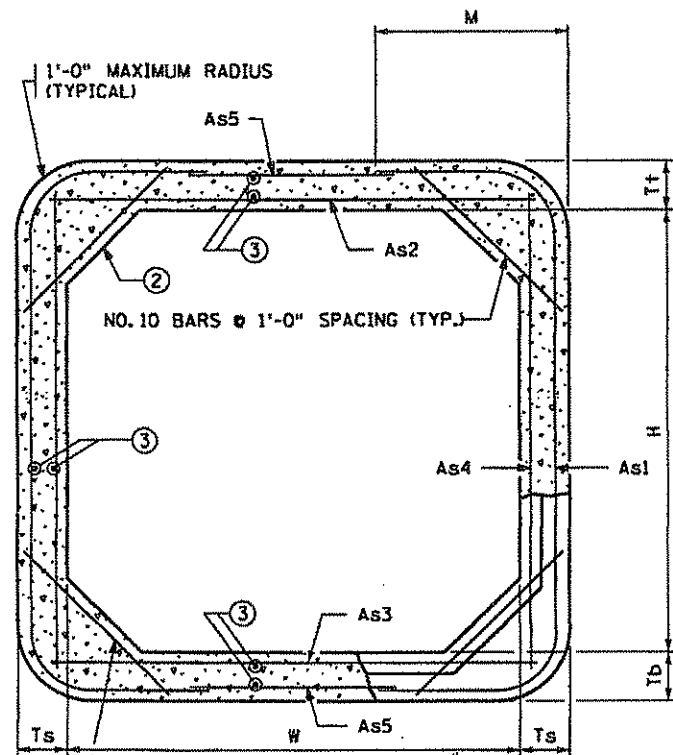
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3/23/2007

Default

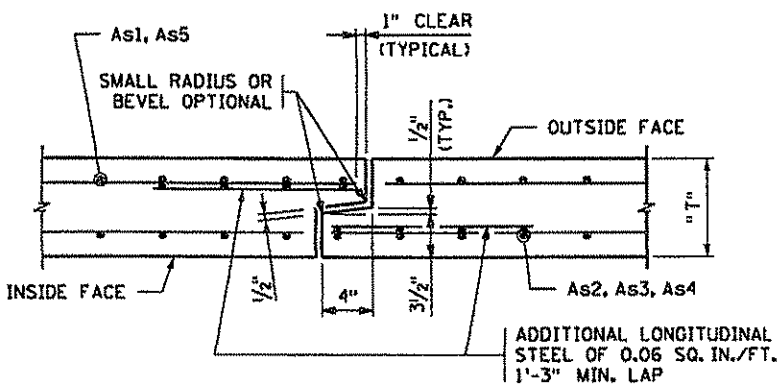
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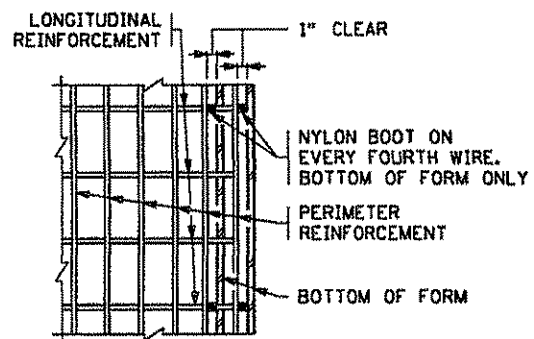


**TRANSVERSE BARREL SECTION**

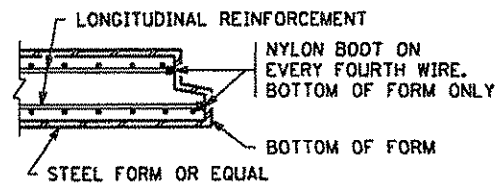
BAR REINFORCEMENT OPTION SHOWN



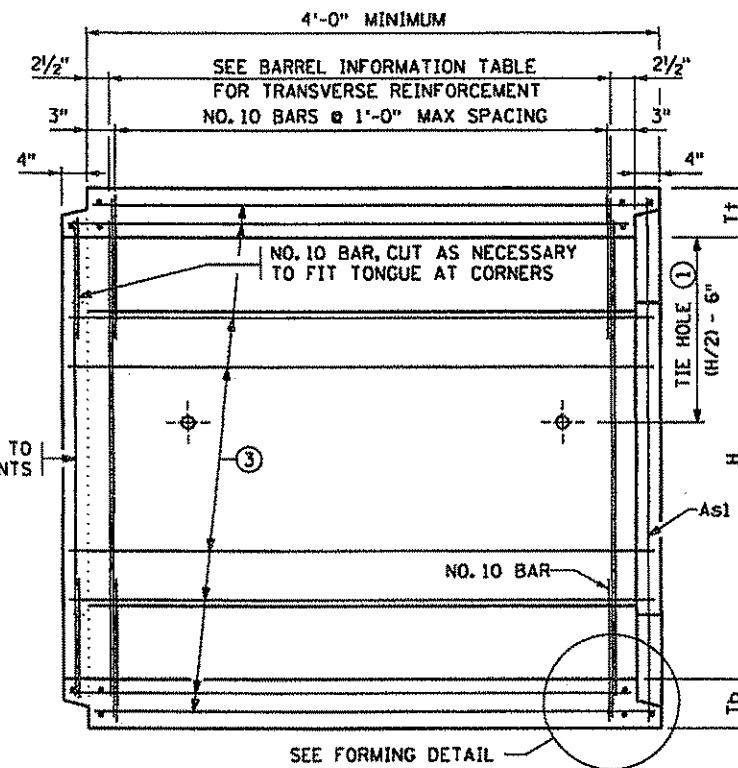
**TONGUE AND GROOVE JOINT DETAIL**



**PLAN**

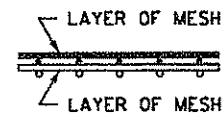


**SECTION FORMING DETAIL**



**LONGITUDINAL BARREL SECTION**

BAR REINFORCEMENT OPTION SHOWN



**FABRIC LAYER DETAIL**

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

**CONSTRUCTION NOTES**

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.

FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. SEE FIG. 5-395.100(A) AND FIG. 5-395.100(B) FOR ADDITIONAL INFORMATION.

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL (Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED IS 6".

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:  
 (a) 1 OR 2 LAYERS OF MESH OR  
 (b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR  
 (c) 1 LAYER OF REINFORCEMENT BARS.

THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2" DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

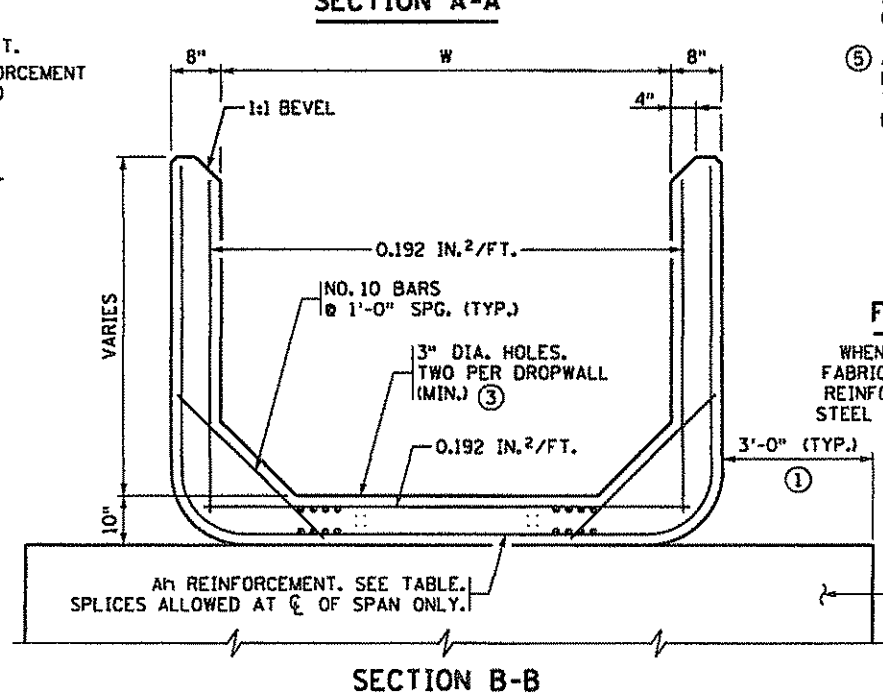
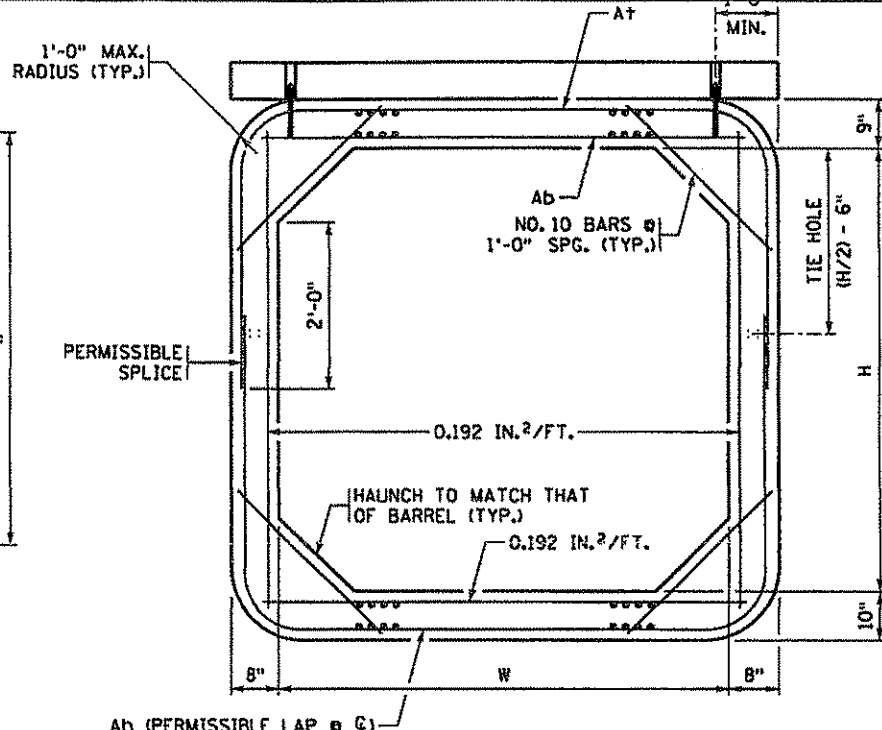
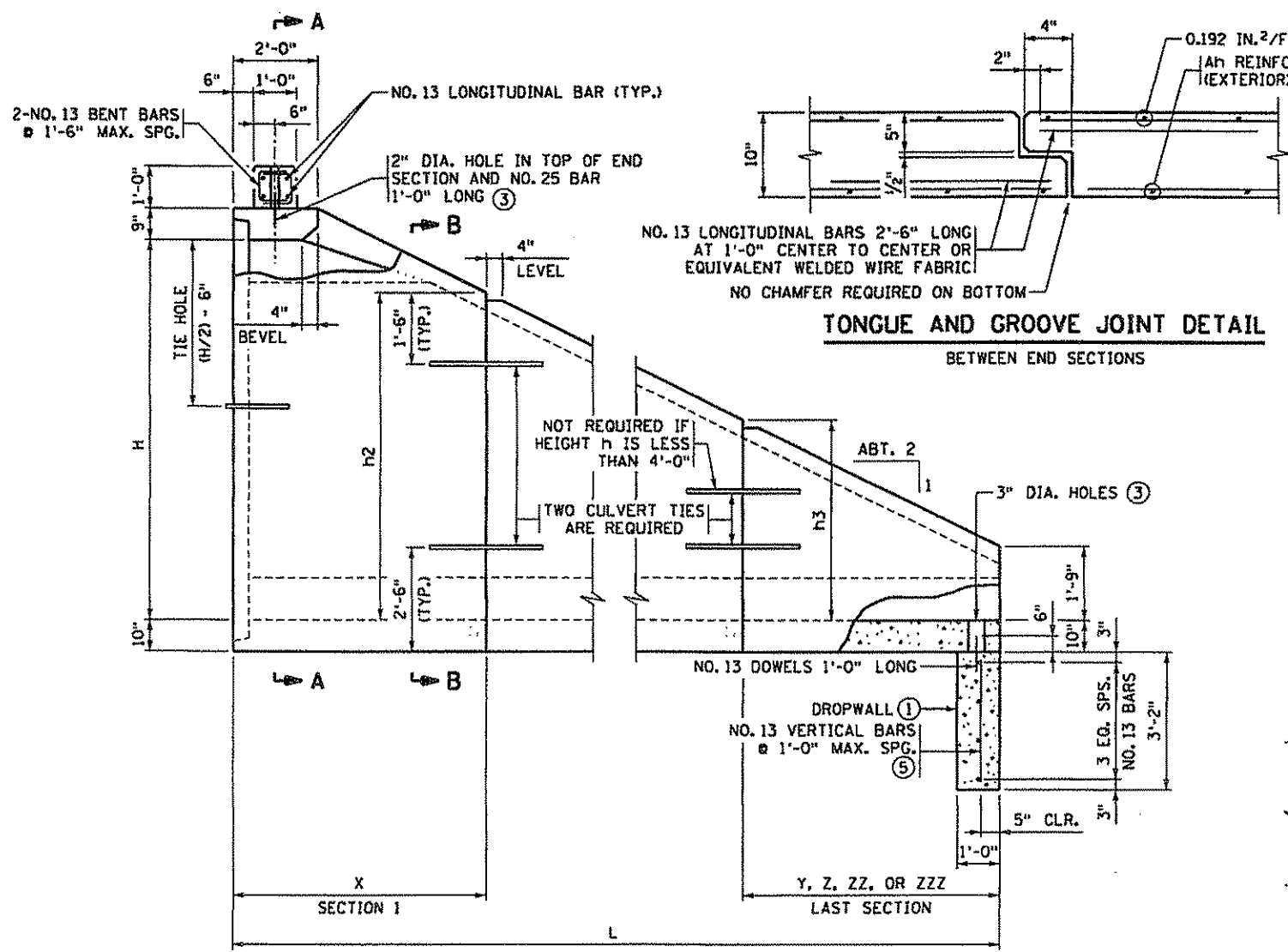
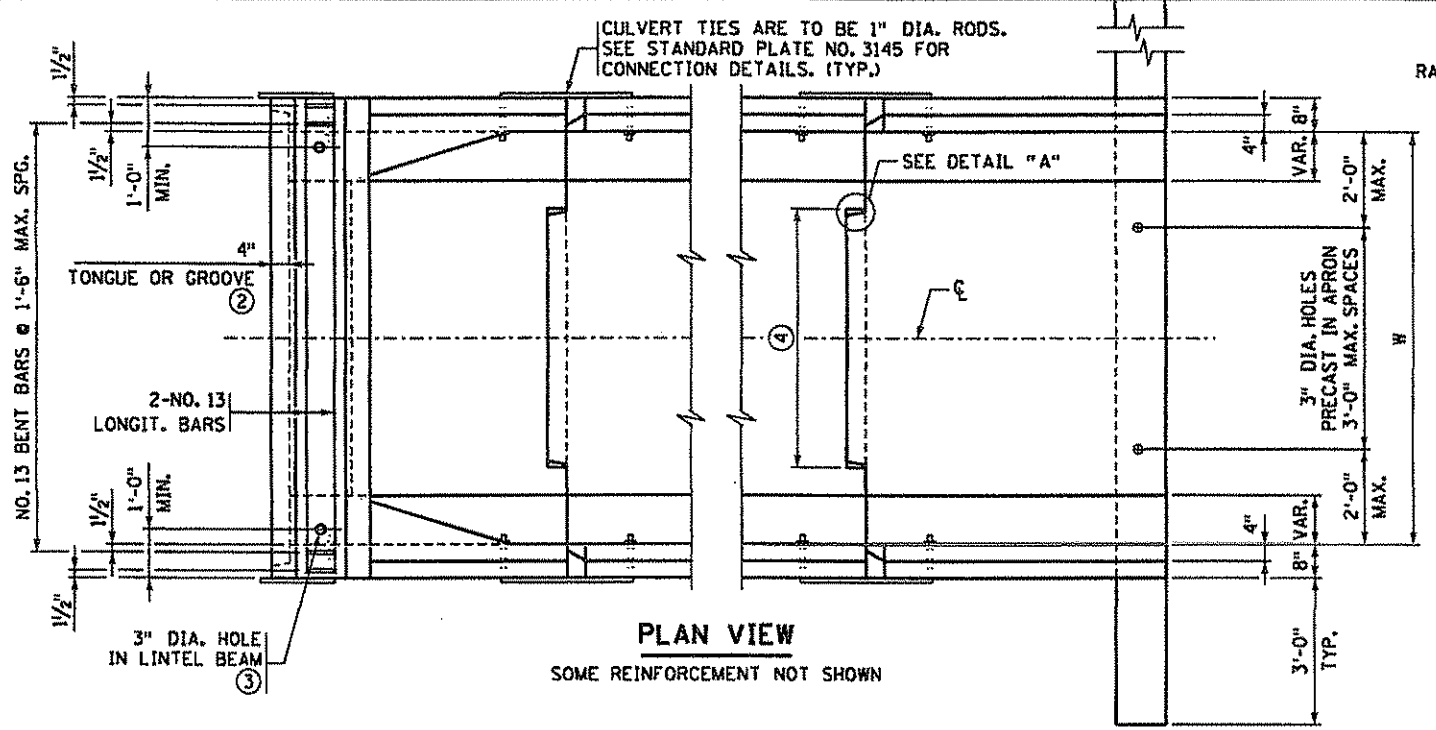
- ① CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.
- ② HAUNCH SIZE AS FOLLOWS:  
 6'-0" AND 8'-0" WIDTHS - 6" TO 12"  
 10'-0" WIDTH - 10" TO 12"  
 12'-0" AND 14'-0" WIDTHS - 12"
- ③ MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN./FT.

BARREL INFORMATION																					
LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT										
					W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As5		
											AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	M (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)
C.S.A.H. 23	6'x6'	2	5000	2'-15'	6	6	8	7	7	2645	0.44	10'-9"	2'-6"	0.57	6'-6"	0.60	6'-6"	0.20	6'-6"	0.06	4'-3"

REVISION:  
 APPROVED: DECEMBER 11, 2000  
*Donald J. Manning*  
 STATE BRIDGE ENGINEER

STATE PROJ. NO 0280-55 (TH 35W) STATE AID PROJ. NO 02-623-13 & 210-020-04 FIG. 5-395.101(A)  
 TITLE: BARREL DETAILS  
 DES: DR: APPROVED: BRIDGE NO.  
 CHK: CHK: SHEET NO. 33 OF 198 SHEETS

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3/23/2007  
Default  
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**CONSTRUCTION NOTES**

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

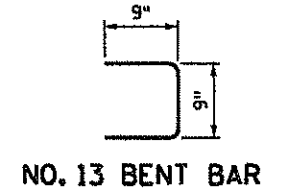
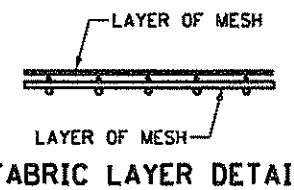
ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE CULVERT SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL, EXCEPT IN THE TONGUE AND GROOVE AREA.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

- WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.
- CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.
- FILL HOLE WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE IA AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".
- 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON C OF EACH APRON JOINT.
- AS AN ALTERNATE TO THE ONE LAYER MESH, PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.



A <sub>t</sub> , A <sub>b</sub> REINFORCEMENT		
WIDTH (FT.)	A <sub>t</sub> (IN.²/FT.)	A <sub>b</sub> (IN.²/FT.)
6	.27	.44
8	.47	.60
10	.62	.74
12	.88	1.06
14	1.20	1.58

APRON DIMENSIONS & A <sub>h</sub> REINFORCEMENT														
H FT.	L FT.	X	SECTION 1 A <sub>h</sub>	h2	SECTION 2 A <sub>h</sub>	h3	SECTION 3 A <sub>h</sub>	h4	SECTION 4 A <sub>h</sub>	h5	SECTION 5 A <sub>h</sub>	h6	ZZZ	ZZZ
4	8	8'	0.192	1'-9"	4'	0.192	1'-9"							
5	10	6'	0.192	3'-9"	6'	0.192	1'-9"							
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"							
7	14	6'	0.192	5'-9"	8'	0.192	1'-9"							
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"				
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"				
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8'	0.192	1'-9"				
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"	
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"	
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'	0.192	1'-9"	
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'

NOTE: A<sub>h</sub> IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN.²/FT.)

REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

*D. M. ...*  
STATE BRIDGE ENGINEER

STATE PROJ. NO 0280-55 (TH 35W) STATE AID PROJ. NO 02-623-13 & 210-020-04 FIG. 5-395.102

PRECAST CONCRETE END SECTION  
TYPE I - SINGLE OR DOUBLE BARREL  
FOR SKEWS UP TO 7 1/2'

DES: \_\_\_\_\_ DR: \_\_\_\_\_ APPROVED: \_\_\_\_\_

CHR: \_\_\_\_\_ CHR: \_\_\_\_\_

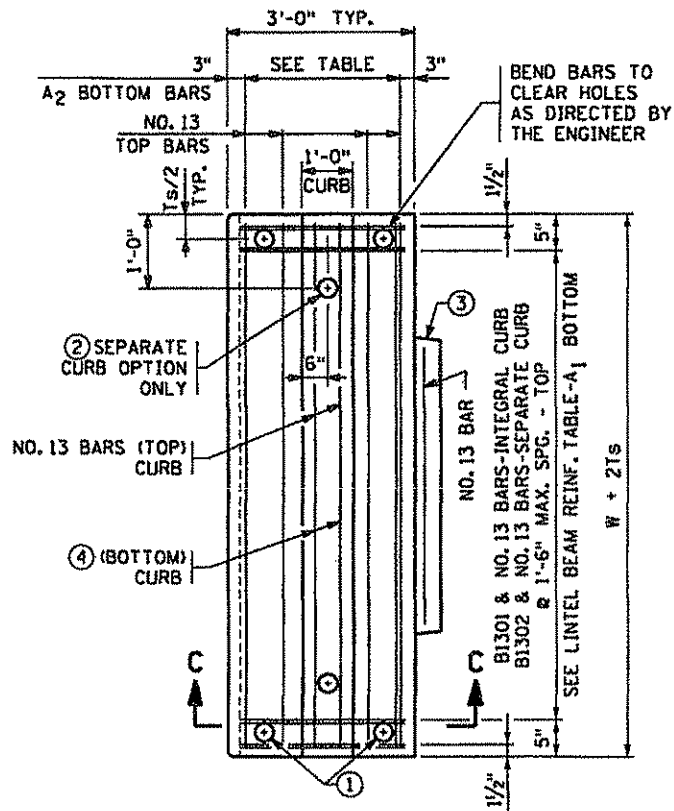
SHEET NO. 34 OF 198 SHEETS

BRIDGE NO. \_\_\_\_\_





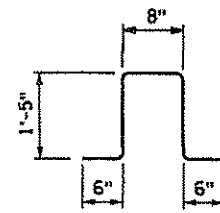
12/52/07 3/23/2007 Default s:\ko\N\p\...50500\p\shst1s\c\ver1\Fig5104b.dgn



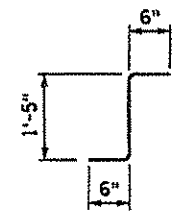
**PLAN OF SQUARE LINTEL BEAM**  
TONGUE OPTION SHOWN

LINTEL BEAM BOTTOM REINFORCEMENT		
WIDTH W (FT.)	A <sub>1</sub>	A <sub>2</sub>
6	NO. 13 @ 1'-2"	NO. 13 @ 9 1/2"
8	NO. 13 @ 8"	NO. 16 @ 8"
10	NO. 16 @ 8"	NO. 19 @ 7 1/2"
12	NO. 16 @ 6"	NO. 19 @ 6"
14	NO. 19 @ 6"	NO. 22 @ 6"

NOTE: MAXIMUM BAR SPACING GIVEN,  
REDUCE AS NECESSARY

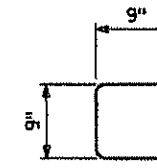


**B1301**

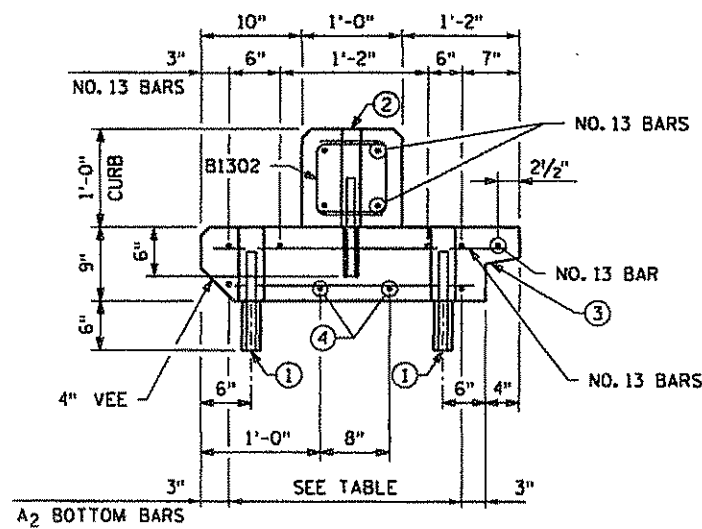


**B1301  
ALTERNATE**

⑤  
2 REQUIRED

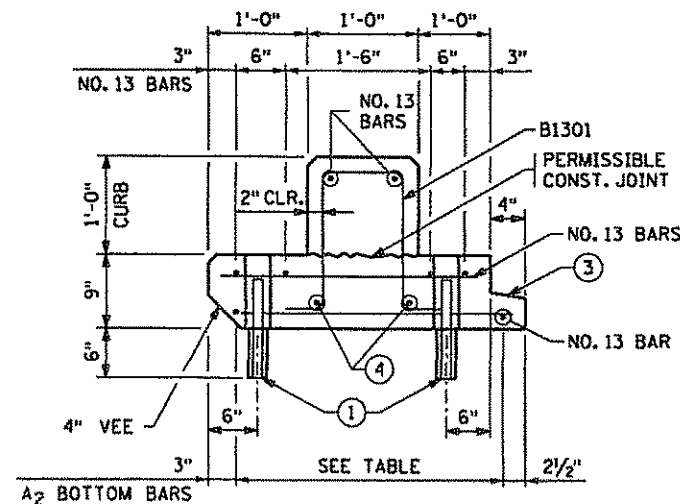


**B1302**



**SECTION C-C**

SEPARATE CURB OPTION WITH GROOVE.  
ADDITIONAL REINFORCEMENT IN GROOVE NOT SHOWN.



**SECTION C-C**

INTEGRAL CURB OPTION WITH TONGUE.  
ADDITIONAL REINFORCEMENT IN TONGUE NOT SHOWN.

**CONSTRUCTION NOTES**

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

- ① 3" DIA. HOLE THROUGH LINTEL BEAM AND 2" DIA. HOLE IN TOP OF WALL SECTION. PLACE NO. 25 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.
- ② 3" DIA. HOLE THROUGH CURB AND 2" DIA. HOLE IN LINTEL BEAM. PLACE NO. 25 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.
- ③ CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH.
- ④ FOR SPANS UNDER 10'-0" USE NO. 25 BARS. FOR SPANS OF 10'-0" TO 12'-0" USE NO. 29 BARS. FOR 14'-0" SPAN, USE NO. 32 BARS.
- ⑤ ALTERNATE BAR BEND MAY BE USED FOR B1301.

REVISION:

APPROVED: DECEMBER 11, 2000

*Donald J. Manning*  
STATE BRIDGE ENGINEER

STATE PROJ. NO 0280-55 (TH 35W) STATE AID PROJ. NO 02-623-13 & 210-020-04 FIG. 5-395.104(B)

PRECAST CONCRETE END SECTION  
TYPE III - SINGLE OR DOUBLE BARREL  
FOR SKEWS UP TO 7 1/2'

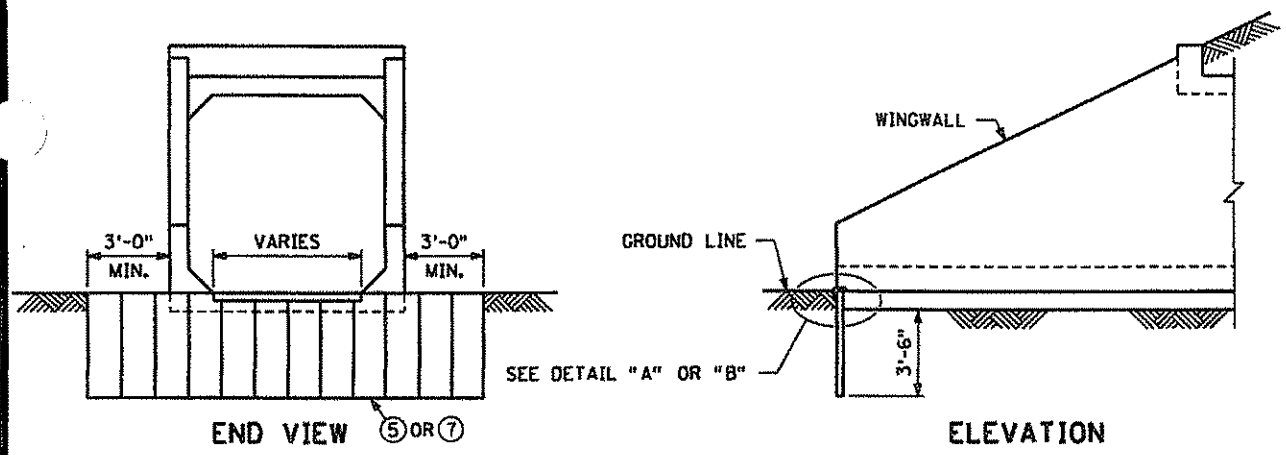
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CHK:	CHK:		
SHEET NO. 36 OF 198 SHEETS			

12/52/00

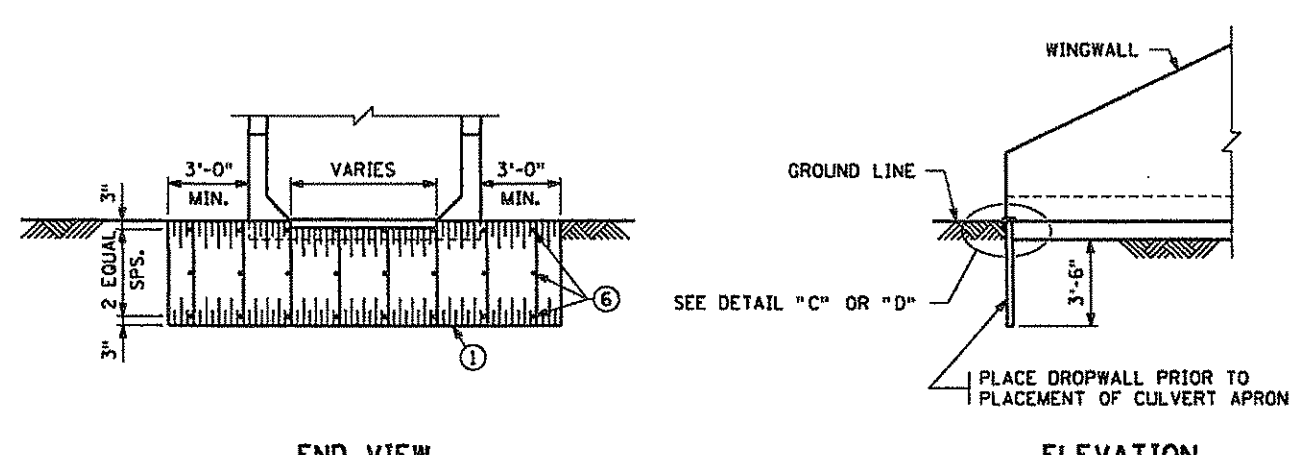
3/23/2007

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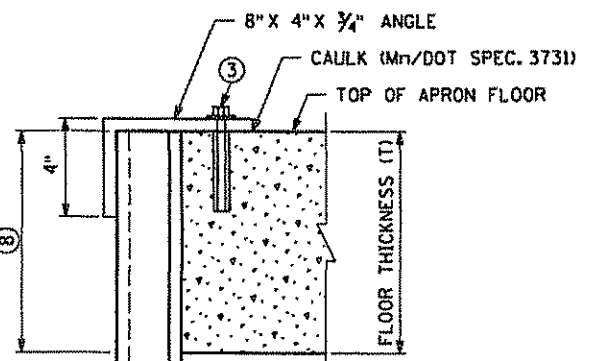
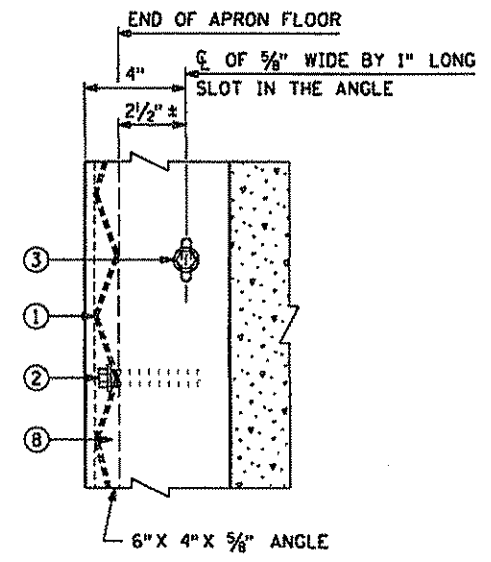
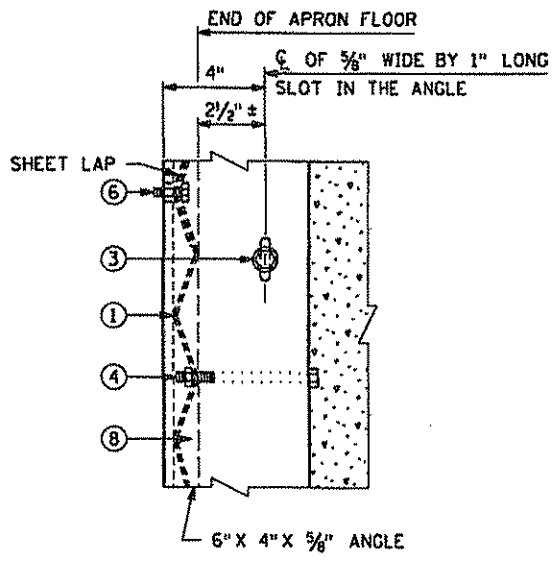
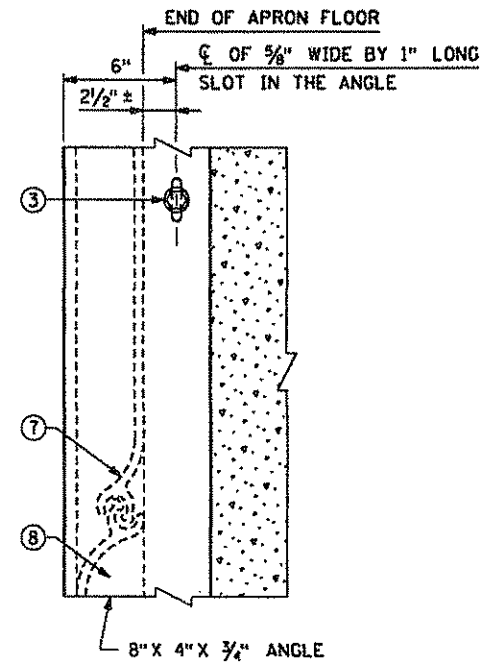
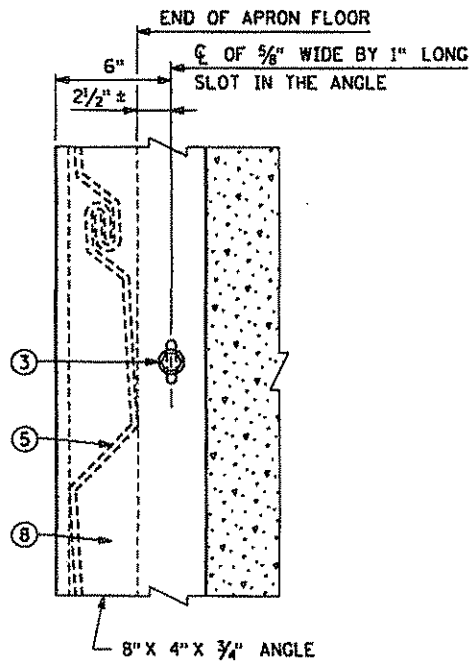
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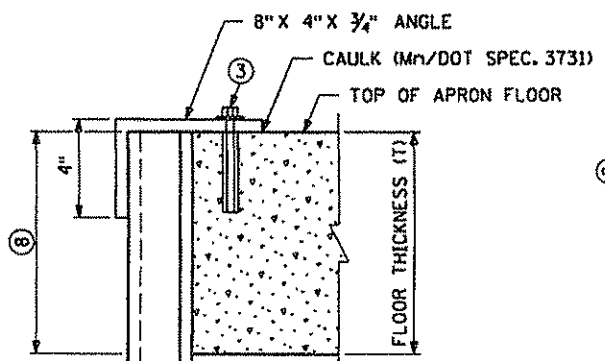
ALTERNATES 1 & 2 (STEEL SHEET PILING)



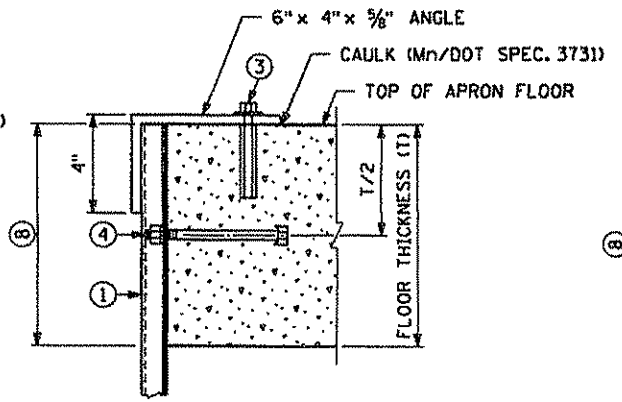
ALTERNATES 3 & 4 (GALVANIZED STEEL SHEETS)



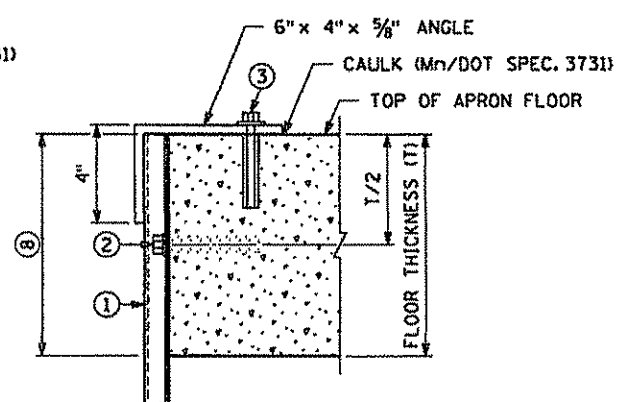
DETAIL "A" - ALTERNATE 1  
STEEL SHEET PILING SHOWN



DETAIL "B" - ALTERNATE 2  
STEEL SHEET PILING SHOWN



DETAIL "C" - ALTERNATE 3  
ON NEW CONSTRUCTION ONLY



DETAIL "D" - ALTERNATE 4  
ON NEW OR OLD CONSTRUCTION

**CONSTRUCTION NOTES**

- GALVANIZE ALL FASTENERS AS PER Mn/DOT SPEC. 3392.
- BEFORE CULVERT PLANS ARE PREPARED, SAMPLES SHALL BE TAKEN FROM THE DRAINAGE AREA FOR PH DETERMINATION. THE SOIL AND WATER SHOULD HAVE A PH OF 6.5 OR MORE IF SHEET STEEL IS USED.
- ① 2 1/2" x 1/2" OR 2 5/8" x 1/2" CORRUGATED (12 GAGE) OR HEAVIER GALVANIZED STEEL SHEETS.
- ② FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH 3/8" DIAMETER BY 4" LONG BOLTS AND APPROVED ANCHORAGES (10" ± CENTER TO CENTER, TO THE NEAREST VALLEY).
- ③ FASTEN THE 8" x 4" x 3/4" OR 6" x 4" x 5/8" ANGLE WITH 3/8" DIAMETER 4" LONG BOLTS, 1" O.D. WASHER AND AN APPROVED ANCHORAGE (2'-0" SPACING).
- ④ FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH 3/8" DIAMETER 5" LONG BOLTS, NUT AND LOCK WASHER (10" ± CENTER TO CENTER, TO THE NEAREST VALLEY).
- ⑤ (12 GAGE) GALVANIZED CORRUGATED STEEL SHEET PILING, INTERLOCKING TYPE A.
- ⑥ 3/8" DIA. x 1" LONG BOLT WITH NUT, TO LAP STEEL SHEETS.
- ⑦ STEEL SHEET PILING, SECTION NO. MP-112 OR EQUAL.
- ⑧ FILL THE VOIDS AS SHOWN, WITH CONCRETE OR CONCRETE GROUT, AS APPROVED BY THE ENGINEER.

REVISIONS:

APPROVED: DECEMBER 11, 2000

*Donald J. Blum*  
STATE BRIDGE ENGINEER

STATE PROJ. NO 0280-55 (TH 35W) STATE AID PROJ. NO 02-623-13 & 210-020-04 FIG. 5-395.111

TITLE: ALTERNATE DROPWALLS FOR BOX CULVERTS

DES:	DR:	APPROVED:
CHK:	CHK:	

SHEET NO. 37 OF 198 SHEETS

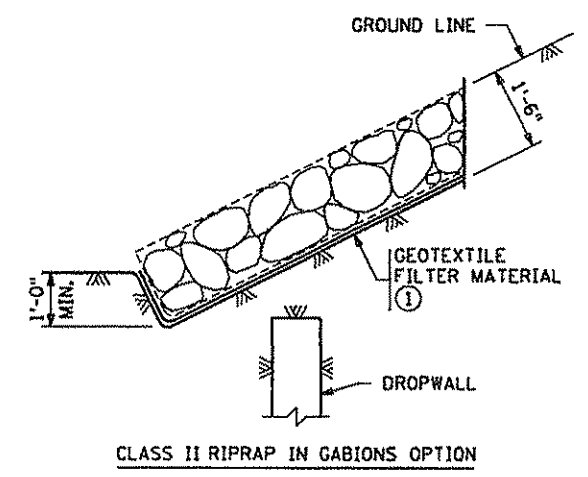
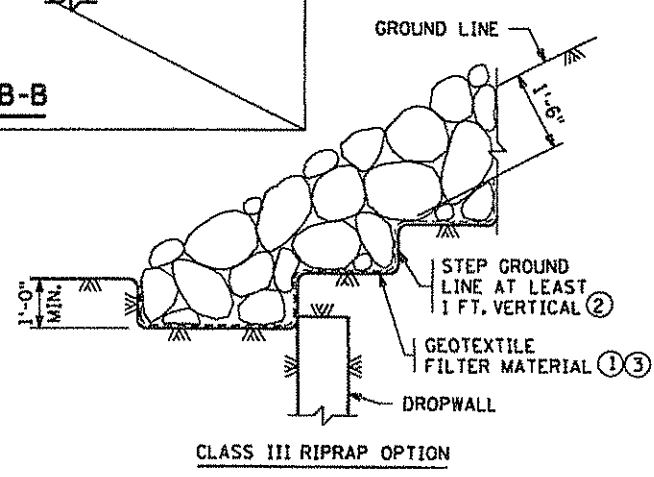
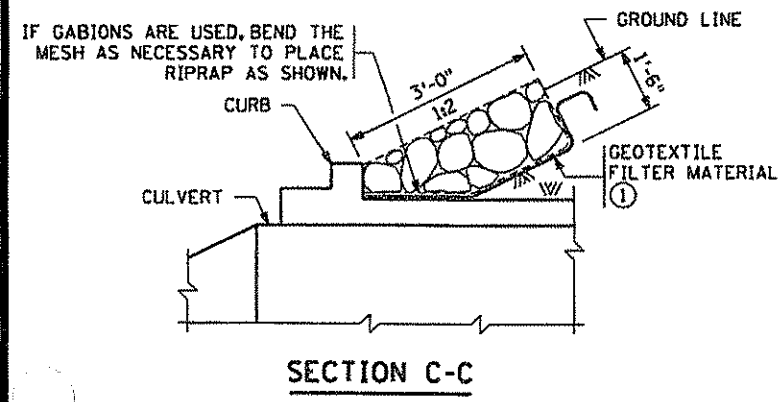
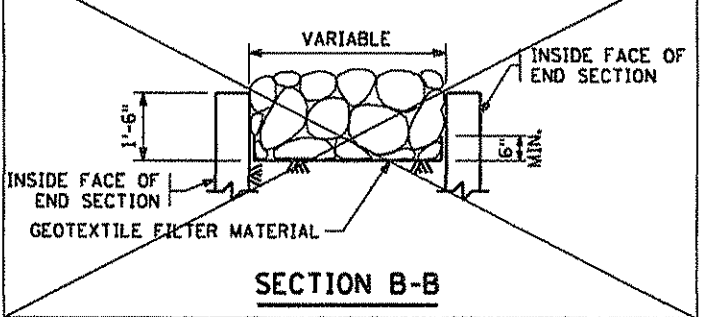
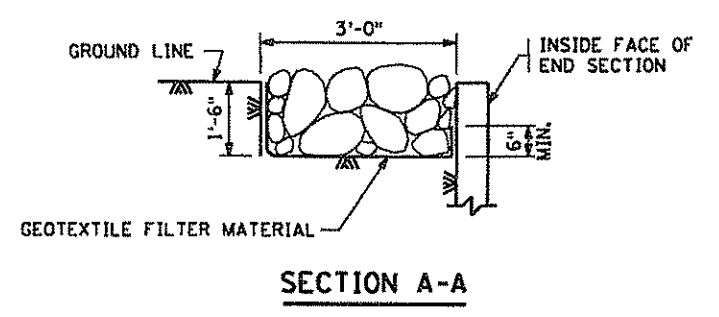
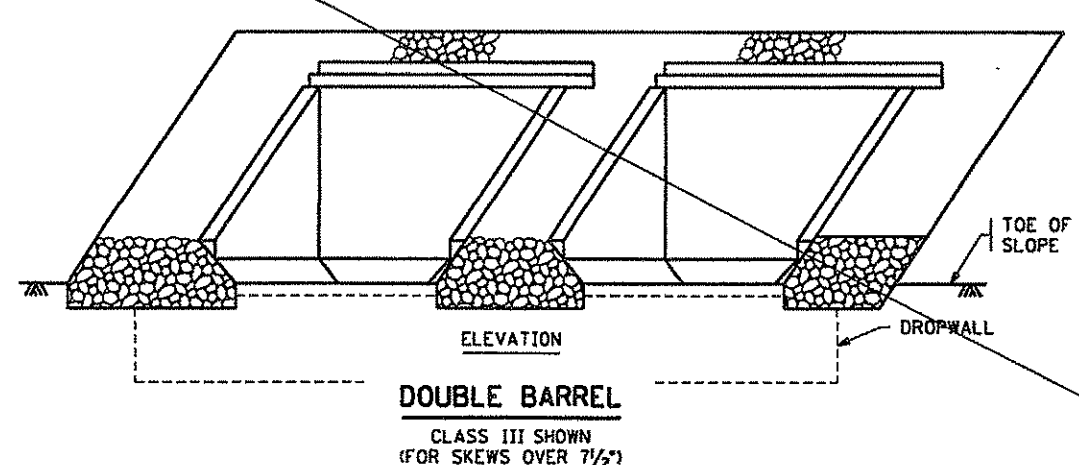
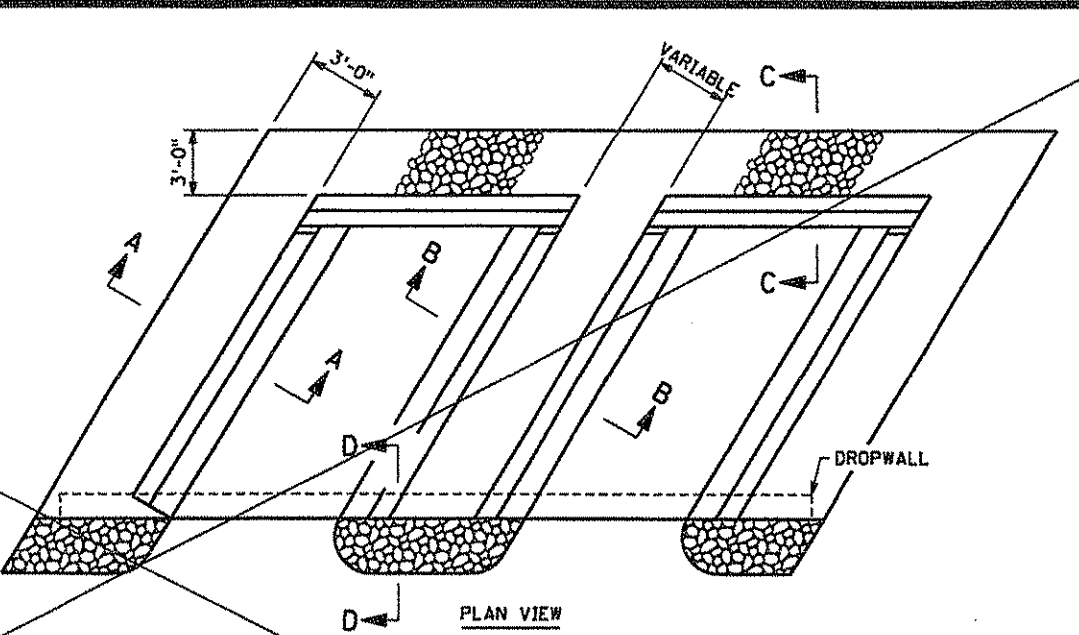
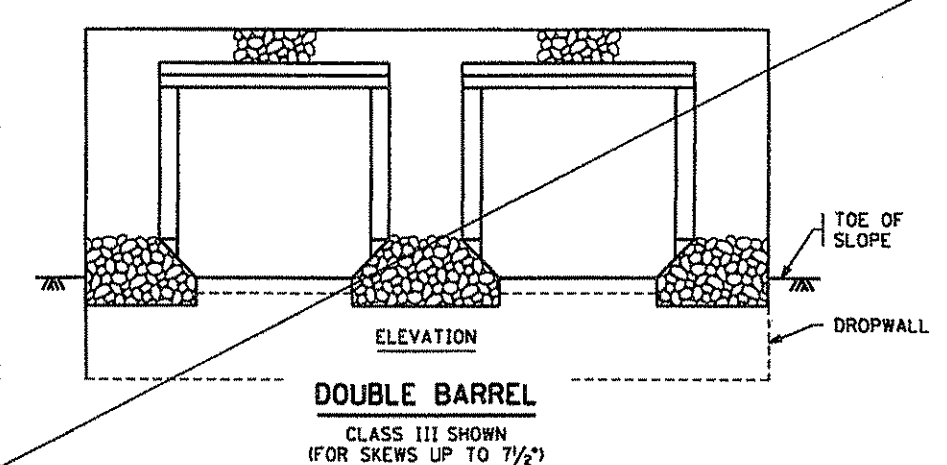
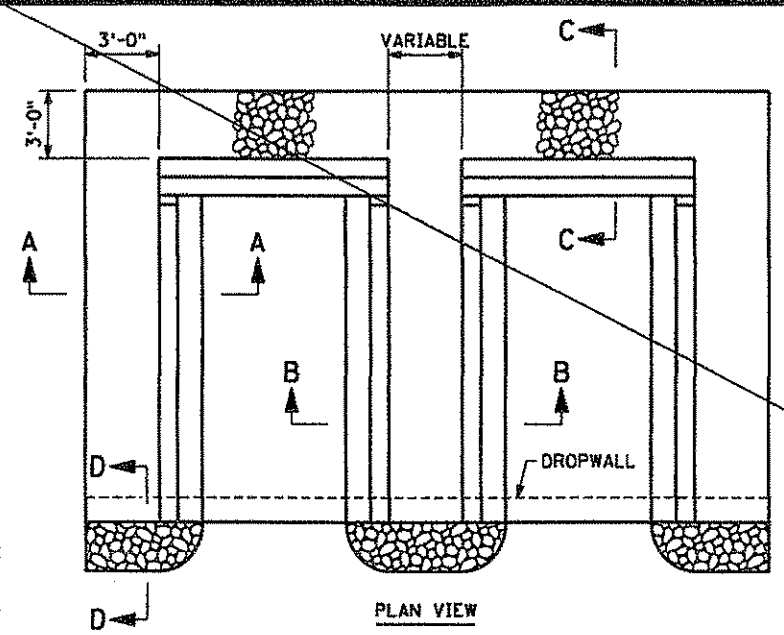
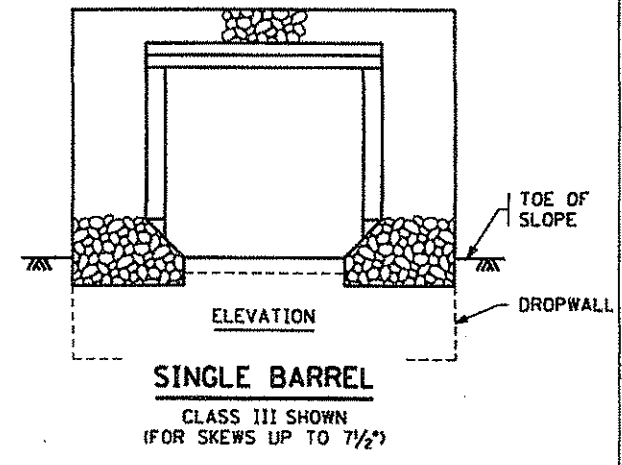
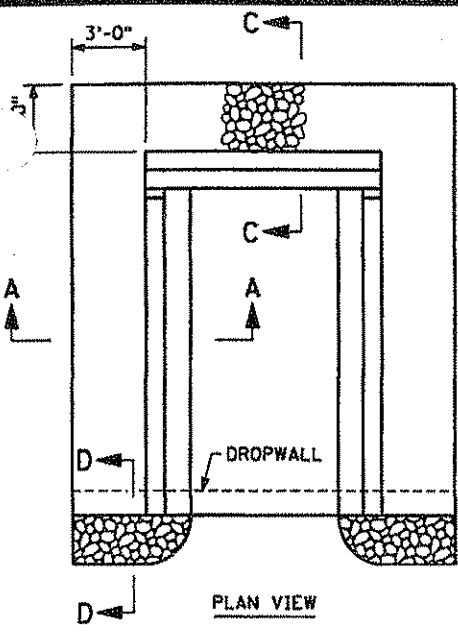
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3/23/2007

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**CONSTRUCTION NOTES**

RIPRAP SHALL COMPLY WITH Mn/DOT SPECS. 2511 AND 3601. THE CONTRACTOR MAY USE EITHER CLASS III, WITH GEOTEXTILE FILTER MATERIAL, OR CLASS II ENCLOSED IN GABIONS, WITH GEOTEXTILE FILTER MATERIAL. 4" TO 8" DIA. ROCK MAY BE USED IN GABIONS, IF THE MESH OPENINGS ARE 4" OR LESS. GABIONS SHALL BE RIVER TYPE, CODE "D", 3 FT. WIDE X 1.5 FT. DEEP.

- ① FOR TYPE OF GEOTEXTILE FILTER MATERIAL REQUIRED, SEE Mn/DOT SPEC. 3733. GEOTEXTILE STRIPS SHOULD BE CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. THE TOP EDGE SHOULD BE BURIED TO PREVENT UNDERMINING (Mn/DOT SPEC. 2511.3B).
- ② SLOPES 1:2 TO 1:3 MUST BE STEPPED TO MINIMIZE SLIDING POTENTIAL.
- ③ IF SLOPES ARE NOT STEPPED, GRANULAR FILTER SHOULD BE USED.

REVISION:

APPROVED: DECEMBER 11, 2000

*Donald L. Manning*  
STATE BRIDGE ENGINEER

STATE PROJ. NO 0280-55 (TH 35W) STATE AID PROJ. NO 02-623-13 & 210-020-04

CERTIFIED BY *Mark R. Dierling* 3/23/2007 DATE  
LICENSED PROFESSIONAL ENGINEER

NAME: MARK R. DIERLING LIC. NO. 21098

EMBAKMENT PROTECTION FOR BOX CULVERTS

FIG. 5-395.115

APPROVED: \_\_\_\_\_

BRIDGE NO. \_\_\_\_\_

SHEET NO. 38 OF 198 SHEETS

1:071

3/23/2007

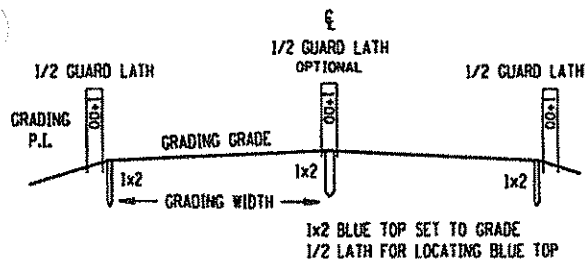
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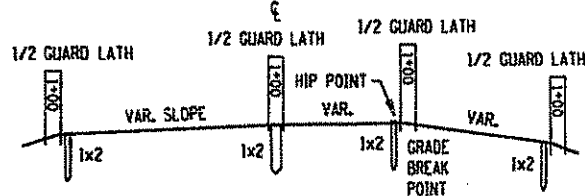
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### BLUE TOPS

#### NORMAL SECTION

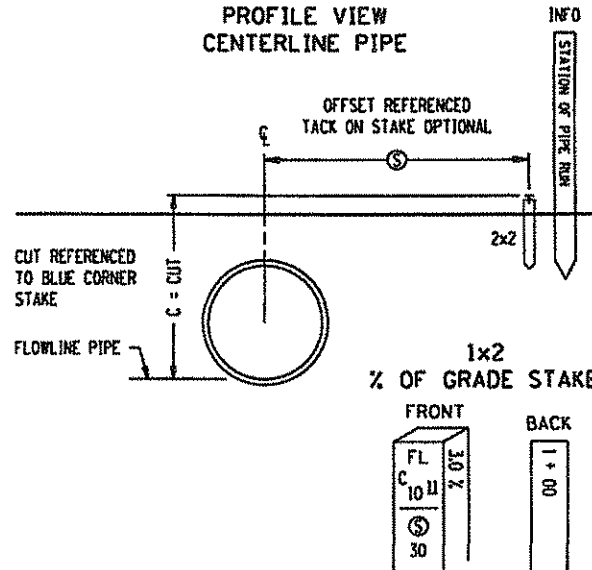


#### TRANSITION SECTION



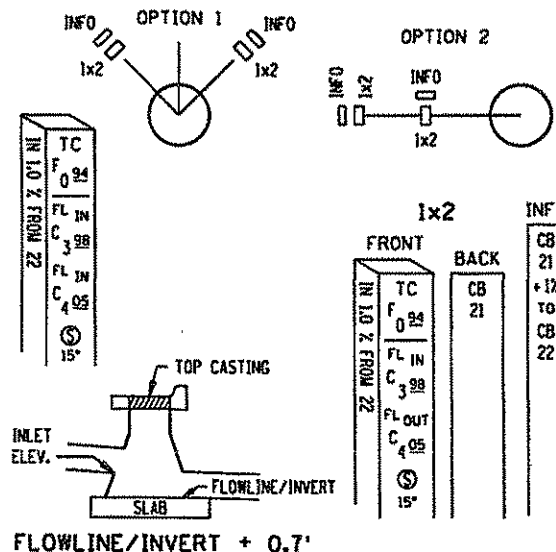
### PIPE STAKING

#### PROFILE VIEW CENTERLINE PIPE



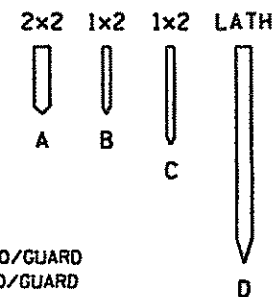
### CATCH BASIN OR MANHOLE (CB/MH)

#### TOP VIEWS



### STANDARD STAKES

TYPES:  
REFERENCE (REF)  
INFORMATIONAL (INFO)  
VISIBILITY (VIS)  
GUARD (GUARD)



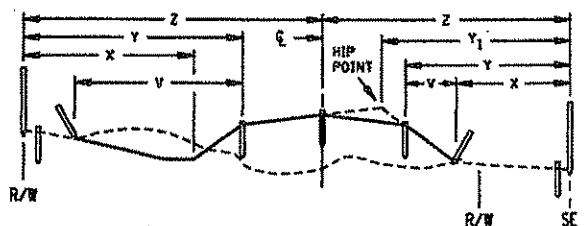
SIZES:  
A = 2" X 2" X VAR. REF/INFO/GUARD  
B = 1" X 2" X VAR. REF/INFO/GUARD  
C = 1" X 2" X VAR. REF  
D = LATH INFO/VIS/GUARD  
1x2 OR LATH = INFO STAKES

### ABBREVIATIONS

BBL = BARREL (PIPE)  
B.C. = BACK CURB  
C & G = CURB & GUTTER  
C = CUT  
CAP = CORR. ALUM. PIPE  
CB = CATCH BASIN  
CL & GR = CLEAR & GRUB  
CMP = CORR. METAL PIPE  
COR = CORNER  
CR = CROWN  
CSP = CORR. STEEL PIPE  
CUT = DITCH CUT  
D.E. = DRAINAGE EASEMENT  
DI = DROP INLET  
EB = EASTBOUND  
E.M. = EDGE BITUMINOUS MAT  
E.S. = EDGE CONCRETE SLAB  
F = FILL  
FF = FRONT FACE  
FL = FLOW LINE  
FL IN = FLOWLINE INLET  
FL OUT = FLOWLINE OUTLET  
GR = GRADE  
GW = GRADING WIDTH  
HH = HANDHOLE  
HP = HIP POINT  
LT = LEFT  
MH = MANHOLE  
NB = NORTHBOUND  
O = OFFSET  
PAR = PARCEL  
% = PERCENT GRADE  
P.E. = PERM. EASEMENT  
RAD = RADIUS POINT  
RCP = REINF. CONC. PIPE  
RP = REFERENCE POINT  
RSC = REINF. SECT. CONC.  
RT = RIGHT  
R/W = RIGHT OF WAY  
SB = SOUTHBOUND  
SCP = SECT. CONC. PIPE  
SH = SHOULDER  
TC = TOP CASTING  
OR TOP CURB  
T.E. = TEMP. EASEMENT  
3:1 = SLOPE (EXAMPLE)  
WB = WESTBOUND  
WP = WORKING POINTS

### SLOPE STAKES

#### SINGLE ROADWAY - EXAMPLE 'A'



#### STAKE 'A'

FULL LATH AND HUB-STATION  
DIST. TO CL WITH CUT/FILL TO CL (Z)  
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y) (V)  
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)  
OFFSET TO SAFETY SLOPE  
OFFSET TO HIP POINT

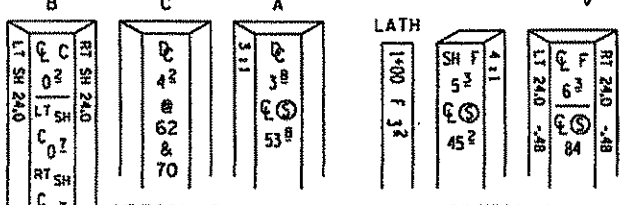
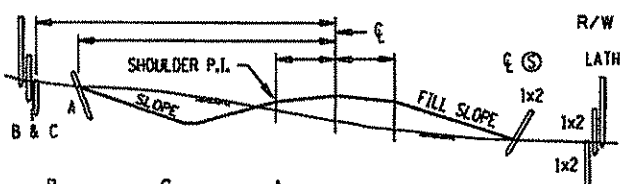
#### STAKE 'B'

FULL LATH  
DITCH CUT/SHLD. FILL  
SLOPE RATED  
DISTANCE TO INSLOPE  
TOE (V) OR SHOULDER  
(AS APPLIES) (V)

NOTE:  
BLUE TOPS REQUIRED ON CL AND BOTH SHOULDERS AT MINIMUM  
ALL CULVERTS TO BE STAKED  
MINIMUM DATA TO BE PROVIDED  
STAKE TO BOTTOM OF TOPSOIL

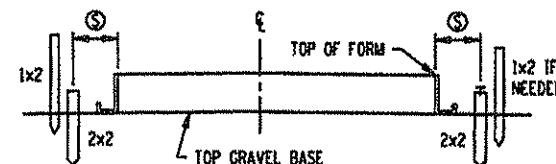
### SLOPE STAKES

#### SINGLE ROADWAY - EXAMPLE 'B'

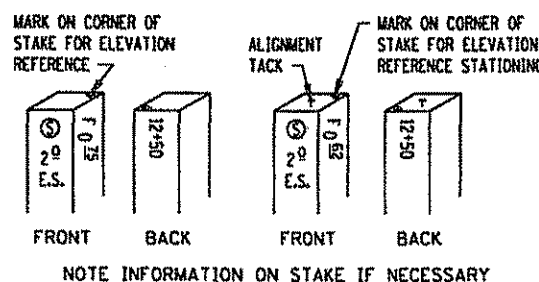


NOTES: ALL SLOPE STAKE REFERENCE DISTANCES GIVEN FROM CL.  
STAKE TO BOTTOM OF TOP SOIL.  
KEY STAKES: BLUE TOP SET AT R/W BOUNDARY LT. & RT.  
MAY BE EXCEPTIONS TO SETTING STAKE ON R/W.

### CONCRETE PAVING STATIONARY FORM



#### OFFSET TO CONTRACTOR'S OPTION



### RECOMMENDED STAKING INTERVALS

#### FIGURE A

	SLOPE STAKES	SUB GRADE B.T.	CLASS MATERIAL B.T.	CONC PAVT	C & G	CL & GR LIMITS	MUCK EXC.	R/W	TEMP. EASE.	CONSTRUCTION LIMITS	
										HORIZONTAL	VERTICAL
TANGENT	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS	± 1.5	± 0.2
HORIZ. CURVE											
0 - 3'	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS		
OVER 3'	100	50	50	25	25	ALL CORNERS	100	ALL CORNERS	ALL CORNERS		
VERT. CURVE											
M' 100'	100	100	100	50	50						
0 - .25	100	50	50	25	25						
M' OVER .25	100	50	50								
TRAK.		50	50								

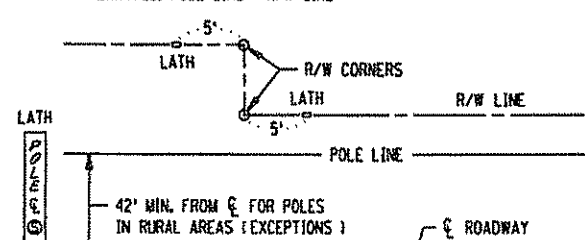
### STAKING TOLERANCES (FEET)

	HORIZONTAL	VERTICAL
CLEARING & GRUBBING	2.0	± 0.2
SLOPE STAKES	2.0	± 0.2
KEY STAKES	0.2	0.03
DRAINAGE STAKES	0.05	0.05
CURB & GUTTER	0.07	0.03
PAVING	0.05	0.03
ALIGNMENT	0.07	
UTILITY	0.10	0.05
STRUCTURAL	0.02	0.02
GUARD RAIL	0.5	
BUILDINGS	0.04	
O.H. SIGNS	0.05	0.05
MUCK EXCAVATION LIMITS	2.0	
R/W B-POINTS	0.10	
NOISE WALLS	1.0	0.5

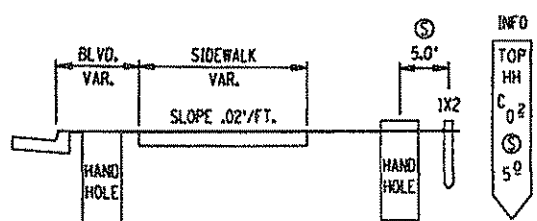
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

### UTILITY (UTIL)

STAKE POLES MINIMUM OF 5 FT. FROM ANY R/W CORNER  
EXAMPLE: POLE LINE = R/W LINE

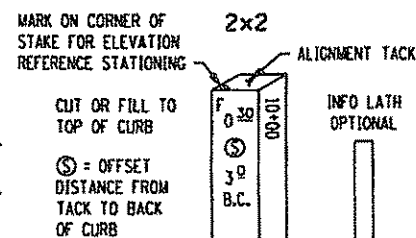
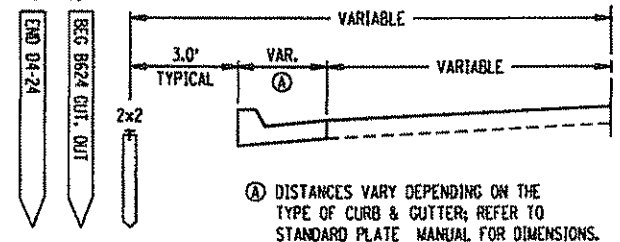


### PULL BOX OR HAND HOLE



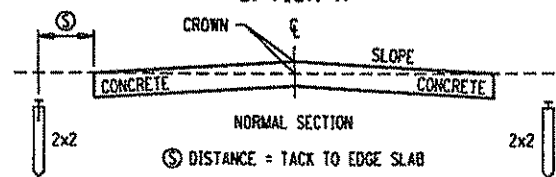
### CURB & GUTTER (CURB)

OPTIONAL LATH WHEN NEEDED TO MARK TYPE OF CURB & GUTTER IF THERE IS A CHANGE

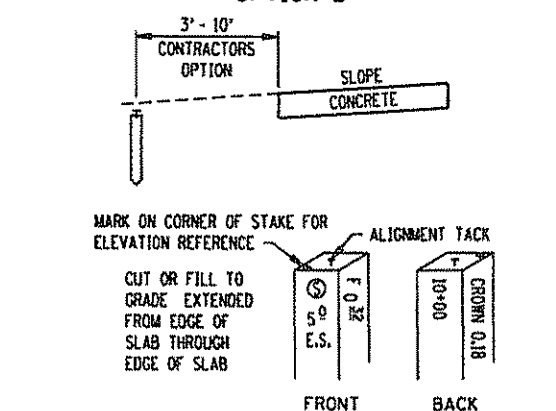


### CONCRETE PAVING - SLIP FORM

#### OPTION A



#### OPTION B



### DISCLAIMER

THESE STAKING INFORMATION SHEETS ARE FOR INFORMATION PURPOSES ONLY. STAKING PROCEDURES VARY AND MAY BE SUBJECT TO CHANGE DURING CONSTRUCTION BY CIRCUMSTANCES AND/OR AGREEMENTS BETWEEN SURVEY CREW AND CONTRACTOR.

STANDARD SHEET NO.  
5-297.115 (1 OF 2)  
STANDARD APPROVED:  
DECEMBER 21, 1994

### STAKING INFORMATION SHEET



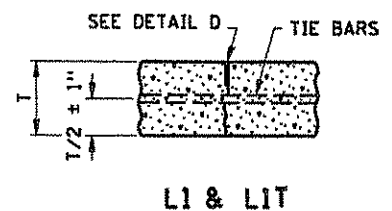


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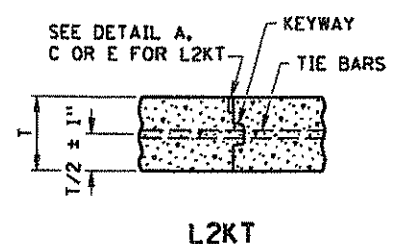
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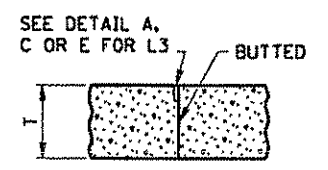
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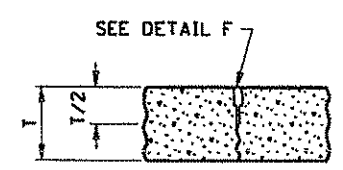
L1 & LIT



L2KT



L3

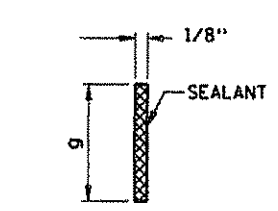


L4

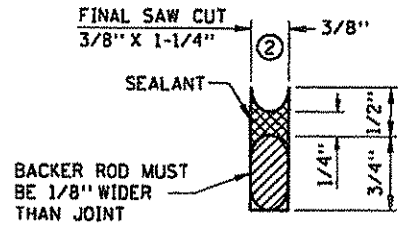
**LONGITUDINAL JOINT CLASS DESIGNATION, DETAIL & SEALER SPECIFICATION TABLE**

CLASS DESIGNATION				JOINT DETAIL	JOINT SEALER SPECIFICATION
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS	BUTTED		
L1H	L1H			B	3723
		L2KTH		D OR E	3723
		L2KTS		C	3722
			L3H	D OR E	3723
			L3S	C	3722
L4S				F	3722

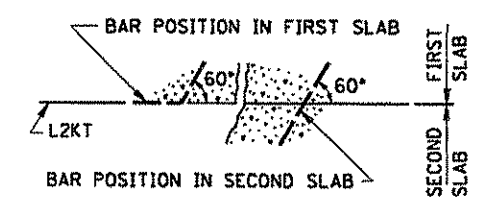
- LEGEND**
- L = LONGITUDINAL JOINT
  - NO. = JOINT REFERENCE
  - K = KEYWAY
  - T = TIE BARS
  - U = UNSEALED
  - H = HOT POUR (SEALANT)
  - S = SILICONE (SEALANT)
- JOINT REFERENCE NUMBERS**
- 1 = SAWED TO A DEPTH OF T/3
  - 2 = KEYED CONSTRUCTION JOINT
  - 3 = BUTTED CONSTRUCTION JOINT
  - 4 = SAWED TO A DEPTH OF T/2



**DETAIL B**  
(SAWED & SEALED WITH SPEC. 3723)



**DETAIL C**  
(SAWED AND SEALED WITH SPEC. 3722)



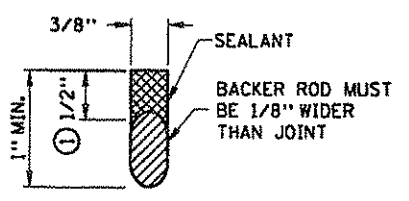
**TIE BAR BENDING DETAIL**

**LONGITUDINAL JOINT NOTES:**

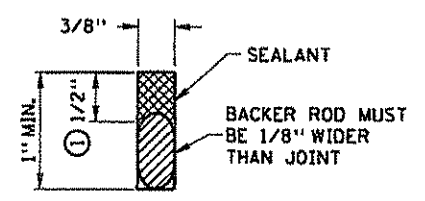
- ALL REBARS ARE IN METRIC DESIGNATIONS
- THE TIE BAR SPACING FOR ALL L2KT JOINTS SHALL BE 2' - 6" CENTER TO CENTER AND BENT 60° AS SHOWN, EXCEPT WHEN NOTED OTHERWISE IN THE PLANS.
- TIE BARS IN THE L2KT JOINTS SHALL BE THE SAME SIZE AND LENGTH AS USED FOR THE LIT JOINTS, WHEN TYING PAVEMENT TO PAVEMENT. TIE BARS IN THE L2KT JOINTS SHALL BE NO. 13 X 2' - 6", WHEN TYING CURB & GUTTER TO PAVEMENT.
- ALL TIE BARS SHALL MEET THE REQUIREMENTS OF GRADE 60 FOR AASHTO M-31 OR M-53.
- NORMALLY, TIED PAVEMENT WIDTHS SHALL NOT EXCEED FOUR LANES, EXCEPT BRIDGE APPROACH PANELS AND PAVEMENT TAPERS.
- JOINT WIDTH TOLERANCE IS + 1/16 IN. TO - 1/32 IN.
- FOR CONCRETE PAVEMENT THE JOINT DEPTH "g" SHALL BE T/3 INCHES.
- SPEC. 3723 SEALER - TOP OF SEALER FLUSH TO - 3/16 IN. 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 400 DEGREES F, WITH A DIAMETER 1/8 IN. LARGER THAN THE JOINT OPENING, MAY BE PLACED 1/2 IN. 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 1/2 IN. DIAMETER CLOSED CELL BACKER ROD SHALL BE PLACED SUCH THAT THE TOP OF THE BACKER ROD IS 1/2 IN. BELOW THE SURFACE OF THE PAVEMENT. NON-SELF-LEVELING SILICONE SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEALANT BEAD THICKNESS OF 1/4 IN.

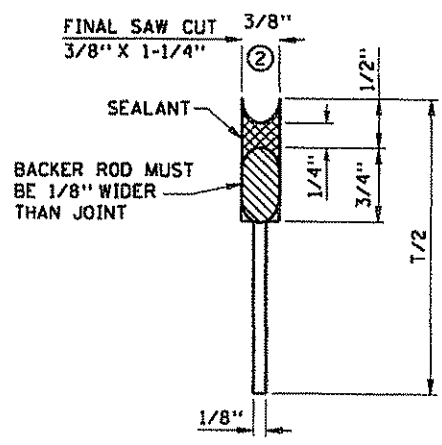
- GENERAL NOTES:**
- SEE STANDARD PLATE 1103, DOWEL BAR ASSEMBLY. SEE STANDARD PLATE 1141, PAVEMENT KEYWAY. SEE STANDARD PLANS 5-297.217 AND 5-297.219 FOR CONCRETE MAINLINE AND RAMP PAVEMENT.
  - SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATIONS TO BE USED & SPECIAL REINFORCEMENT REQUIRED.



**DETAIL D**  
(FORMED & SEALED WITH SPEC. 3723)



**DETAIL E**  
(SAWED & SEALED WITH SPEC. 3723)

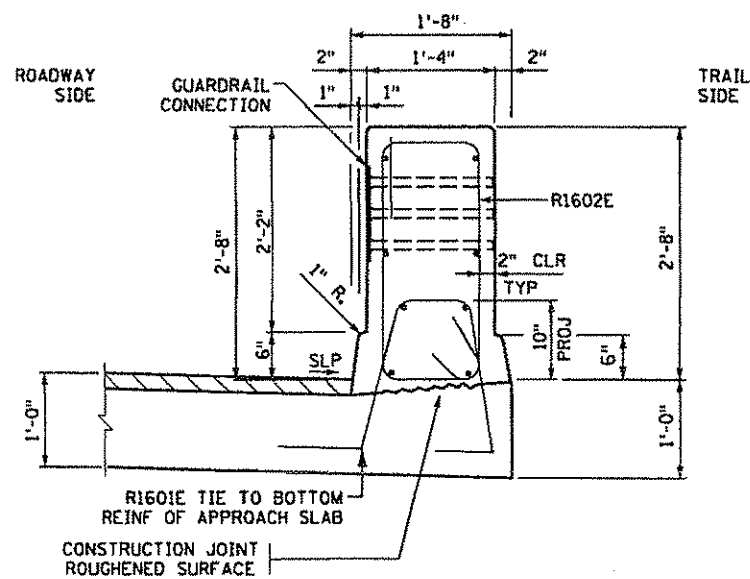


**DETAIL F**  
(SAWED AND SEALED WITH SPEC. 3722)

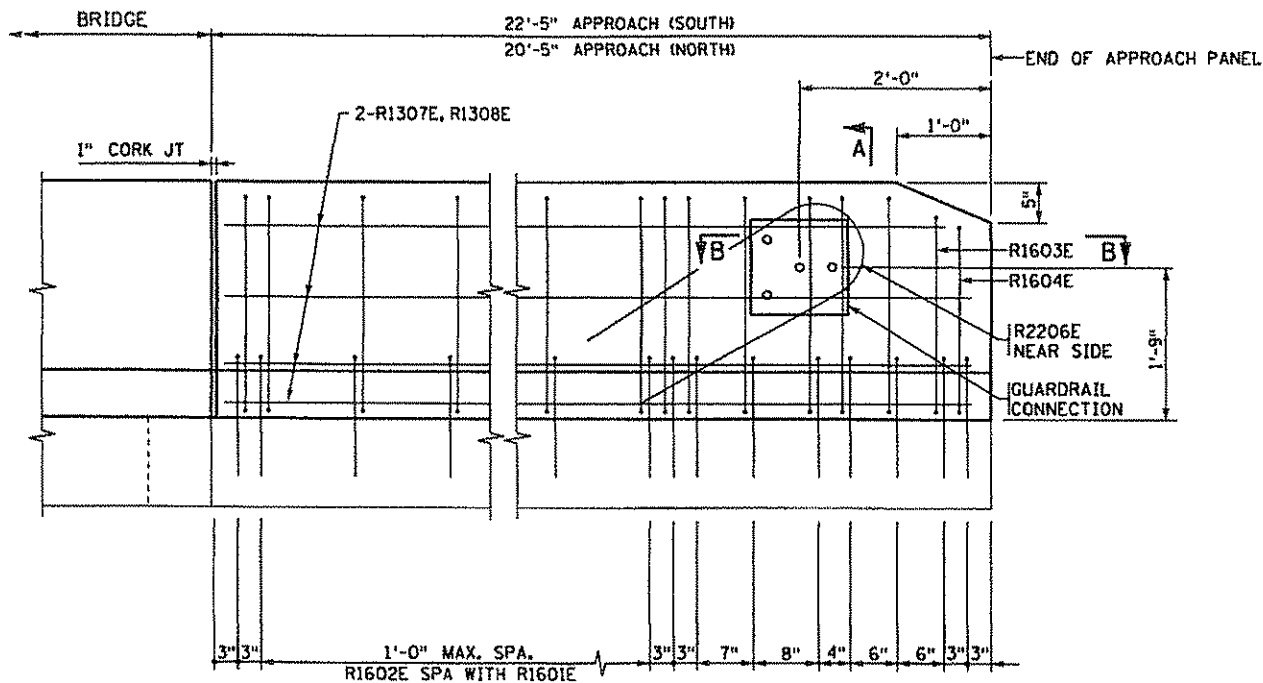
STANDARD SHEET NO. 5-297.221 (2 OF 2)	TITLE: <b>PAVEMENT JOINTS</b> LONGITUDINAL (DESIGN L)
STANDARD APPROVED: JUNE 6, 2005	
STATE PROJ. NO. 0280-55 (TH 35W)	SHEET NO. 42 OF 198 SHEETS



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SECTION A-A



CONCRETE RAILING (TYPE MOD P-4, TL-4)  
(INSIDE ELEVATION)

RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350

**BILL OF REINFORCEMENT**

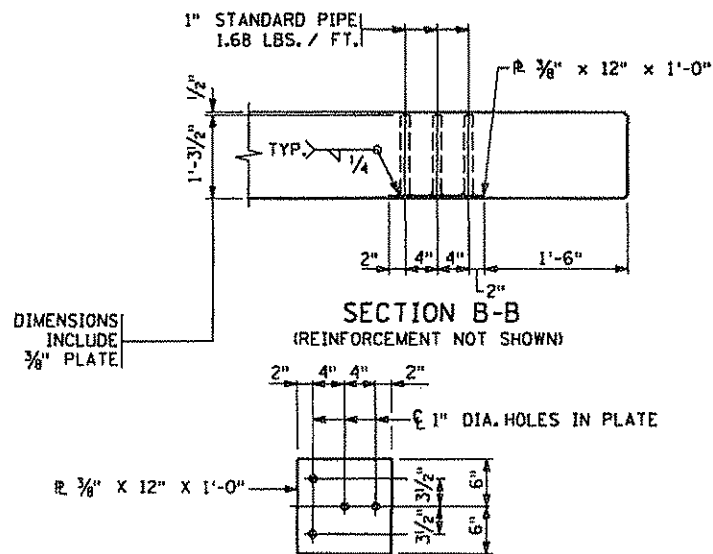
TYPICAL RAILING ON BRIDGE APPROACH PANELS (2)  
(INCLUDES BOTH PANELS)

BAR	NO.	LENGTH	SHAPE	LOCATION	WT.
R1601E	58	5'-6"	BENT	BARRIER VERTICAL	333
R1602E	54	7'-9"	BENT	BARRIER VERTICAL	437
R1603E	2	7'-1"	BENT	BARRIER VERTICAL	15
R1604E	2	6'-11"	BENT	BARRIER VERTICAL	14
R2206E	2	6'-7"	BENT	BARRIER END	27
R1307E	8	22'-0"	STR	BARRIER LONGITUDINAL	118
R1308E	8	20'-0"	STR	BARRIER LONGITUDINAL	107
TYPE MOD P-4 RAIL CONC. (3Y46)					REINF BARS (EPOXY)
① 6.2 CU YD					① 1051 POUND

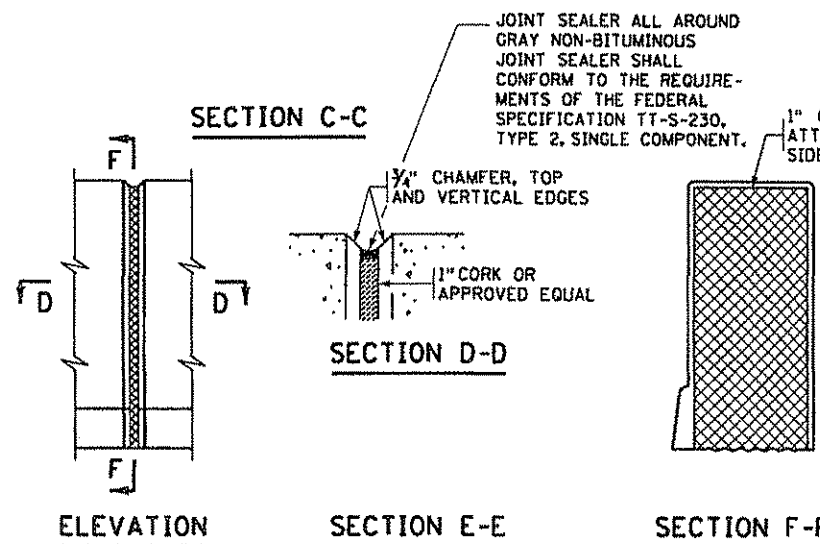
**NOTES**

- CONCRETE RAILING: 588 LBS./FT. (145 CU. YD./FT.)
- \* TYPE MOD P-4, TL-4 BARRIER CONCRETE (3Y46)\* FOR PAYMENT SHALL BE INCLUDED IN APPROACH PANEL.
- THE GUARDRAIL CONNECTION IS INCLUDED IN THE PRICE BID FOR OTHER ITEMS.
- BAR MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.
- FINISH ALL EDGES OF BARRIER W/ 1/2" VEE, EXCEPT WHERE OTHERWISE NOTED.
- GUARDRAIL CONNECTION SHALL BE STRUCTURAL STEEL, SPEC. 3306 AND GALVANIZED AFTER FABRICATION PER SPEC. 3394.

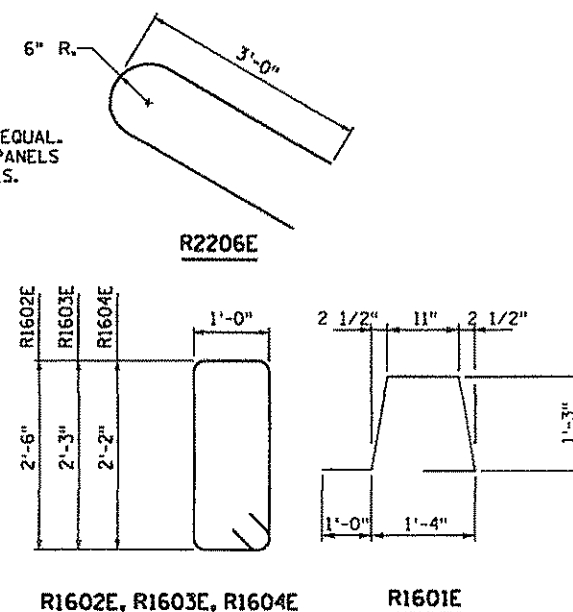
- ① QUANTITY GIVEN FOR FOR INFORMATIONAL PURPOSES ONLY.
- ② REINFORCEMENT FOR RAILING INCLUDED IN THE APPROACH PANEL.



GUARDRAIL CONNECTION DETAIL  
GALVANIZE AFTER FABRICATION PER SPEC. 3394  
ESTIMATED WEIGHT = 24 LBS.



CORK JOINT DETAILS  
ESTIMATED QUANTITY OF CORK PER JOINT = 2.15 SQ. FT.



DESIGN TEAM			
DRAWN BY:	MAW		
DESIGNER:	MAW		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Mark R. Diehl* Lic. No. 21098  
Printed Name: MARK R. DIEHL INC Date: 03/28/2007

PHONE: (651)490-2000  
3535 VAONAS CENTER DR.  
ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

CONCRETE RAILING  
(TYPE MOD P-4, TL-4)  
FOR BRIDGE APPROACH PANEL

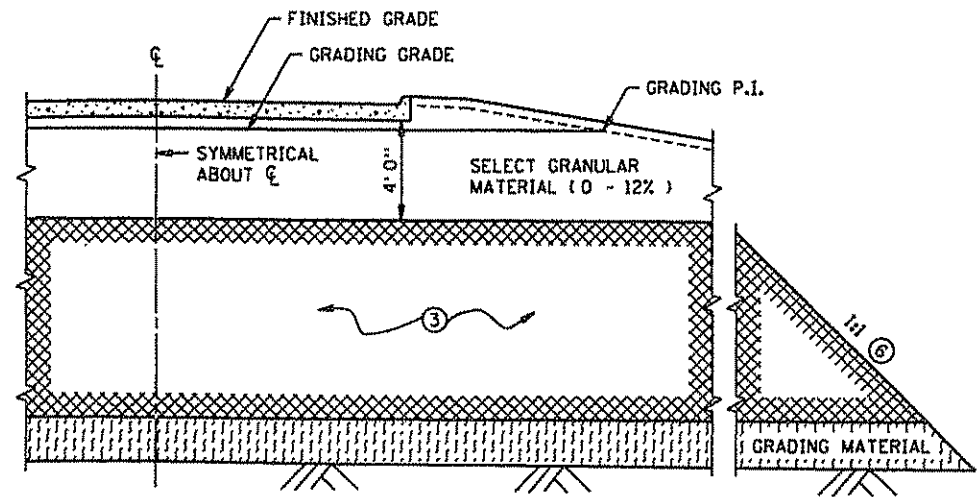
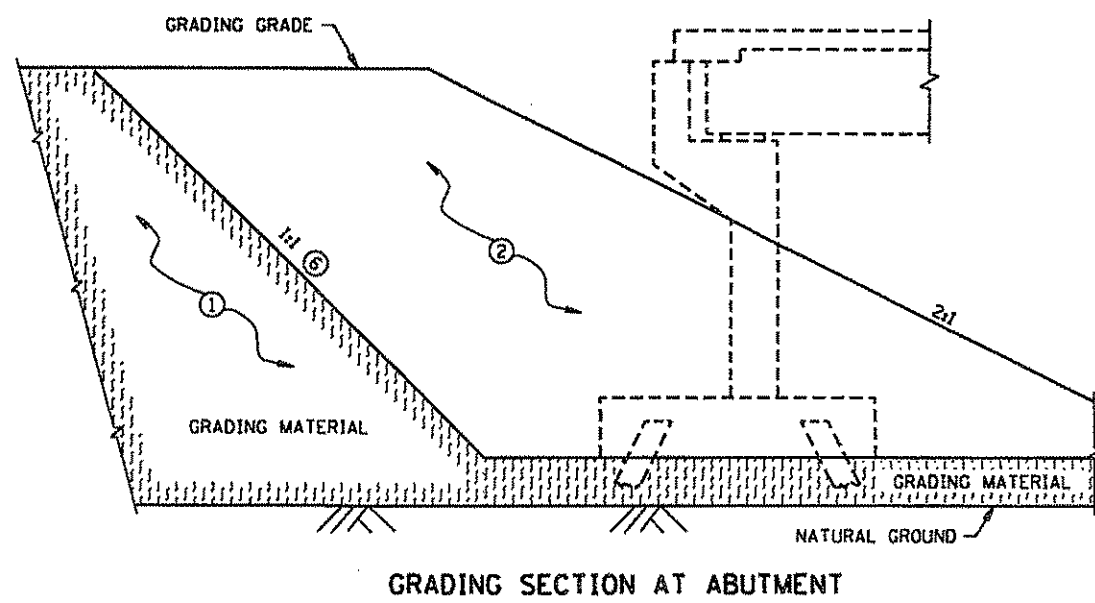
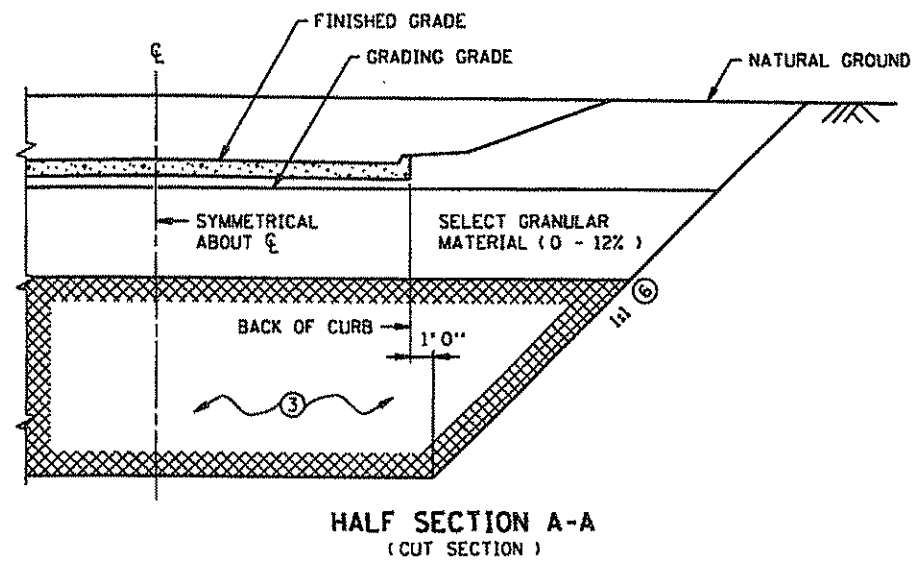
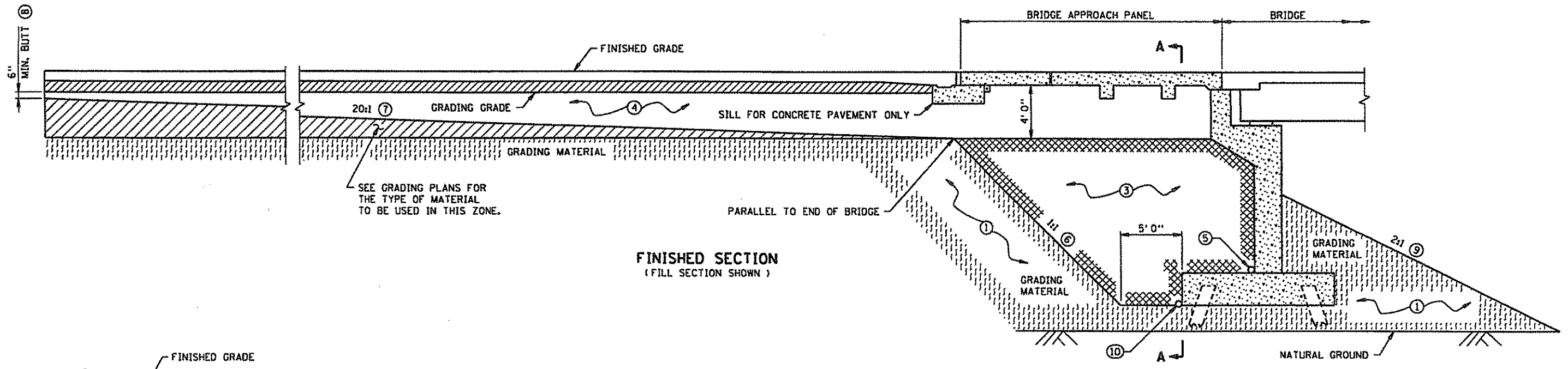
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OF 198

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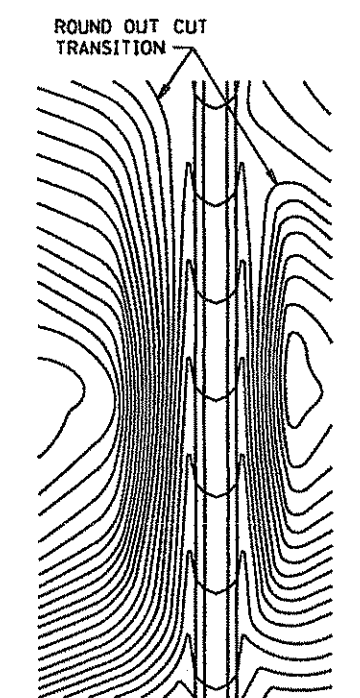


- NOTES:**
- ① GRADING MATERIAL PLACED BY THE CONTRACTOR.
  - ② GRADING MATERIAL CONSTRUCTED BY THE CONTRACTOR PRIOR TO THE BRIDGE CONSTRUCTION. TO BE REMOVED LATER BY THE CONTRACTOR.
  - ③ SELECT GRANULAR MATERIAL MODIFIED SHALL COMPLY WITH SPEC. 3149.2B, MODIFIED TO 10% OR LESS PASSING THE NUMBER 200 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 20:1 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. 4 INCH NOM. DIA. PLASTIC PIPE PER SPEC. 3245 PLACED BY THE CONTRACTOR. PERFORATED PIPE TO BE WRAPPED WITH GEOTEXTILE MEETING THE REQUIREMENTS OF SPEC. 3733 TYPE 1. FOUNDATION SHALL BE SHAPED TO FIT LOWER ONE THIRD CIRCUMFERENCE OF PIPE.

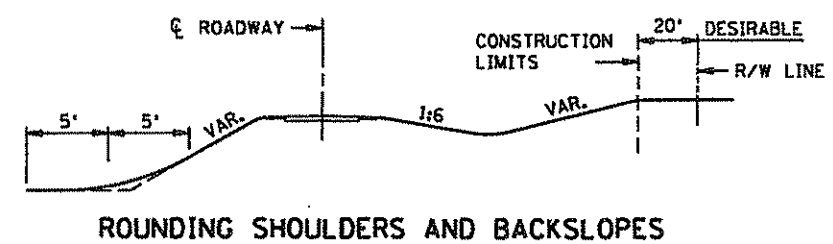
STANDARD SHEET NO. 5-297.233	TITLE <b>BRIDGE APPROACH TREATMENT FOR BOTH HIGH AND LOW ABUTMENTS ON PILING</b>
STANDARD APPROVED: AUGUST 4, 1992	
REVISION DATE 8-20-99	STATE PROJ. NO. 0280-55 (TH 35W) SHEET NO. 45 OF 198 SHEETS



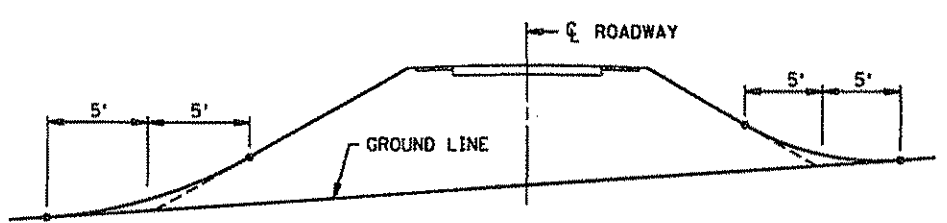
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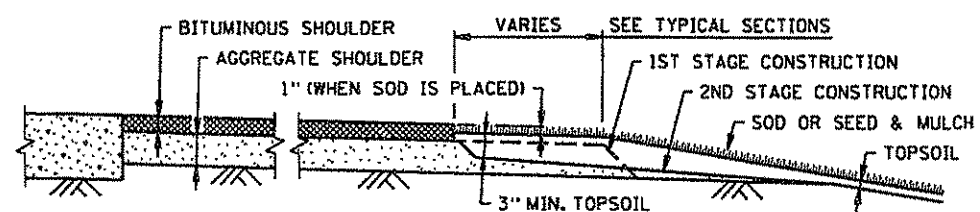
CONTOURING ROAD CUTS



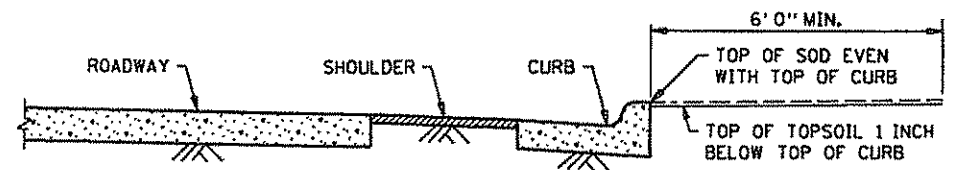
ROUNDING SHOULDERS AND BACKSLOPES



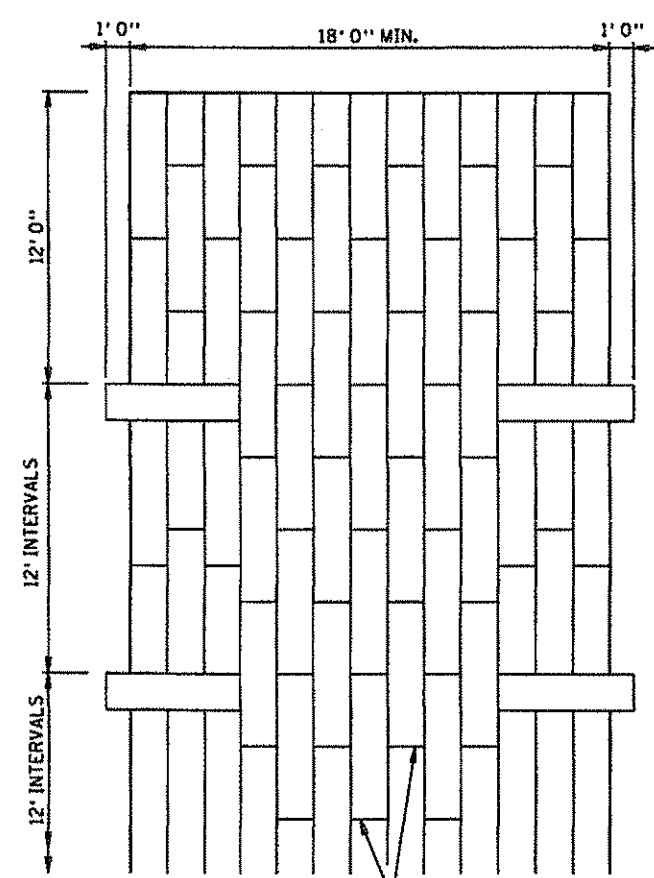
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



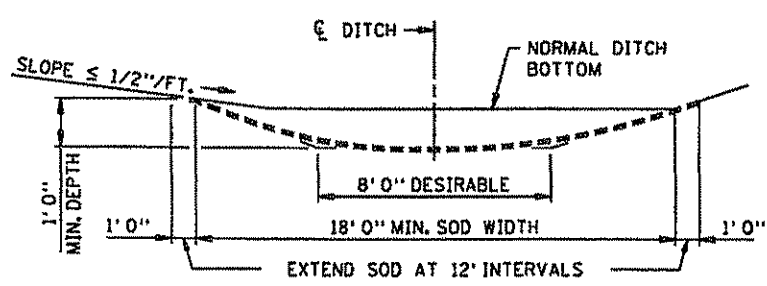
SHAPING AND TOPSOILING INSLOPES



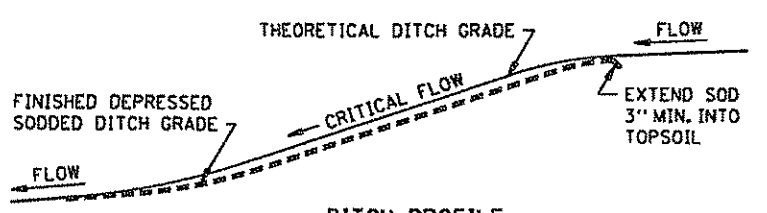
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



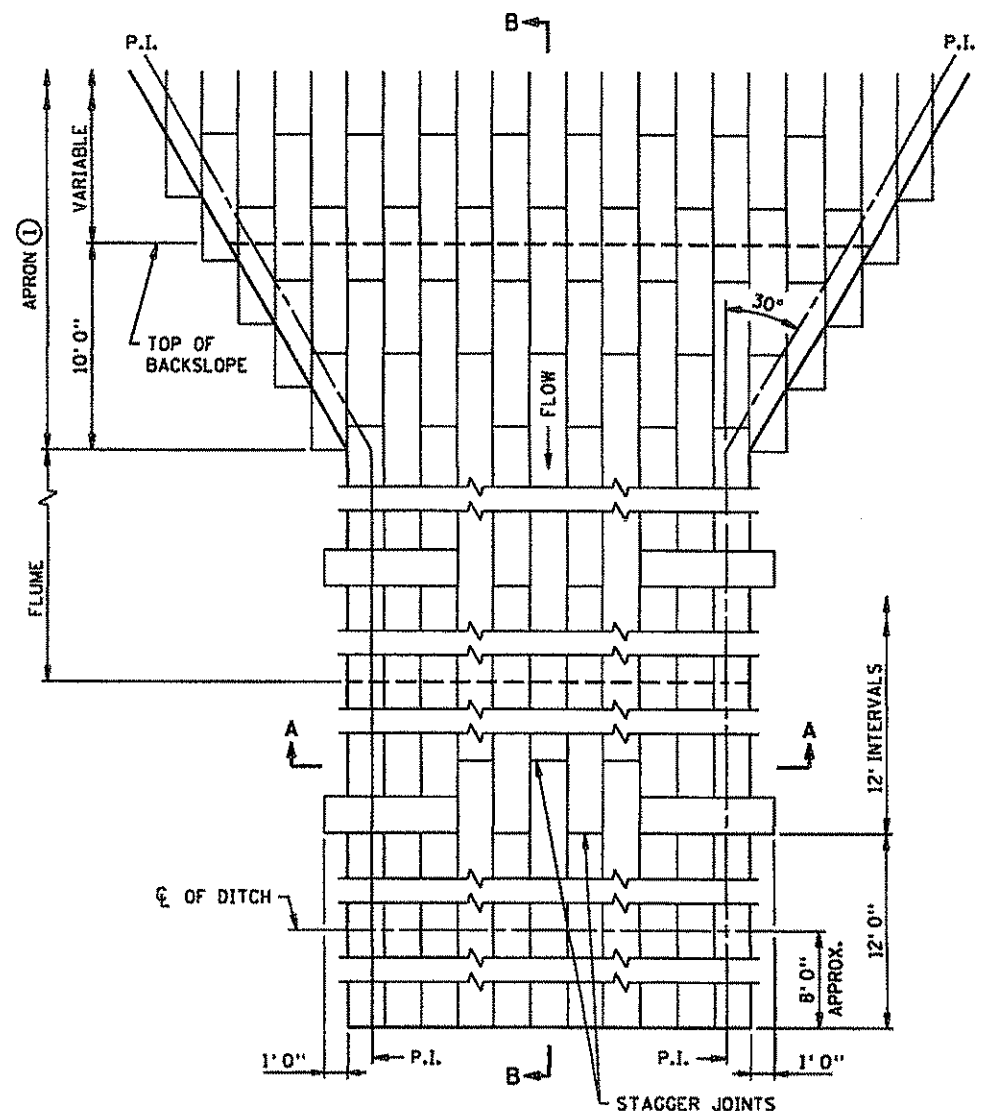
PLAN VIEW



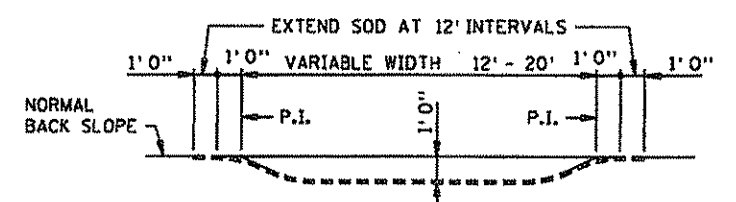
SODDED DITCH CROSS SECTION  
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2" / FT.),  
FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



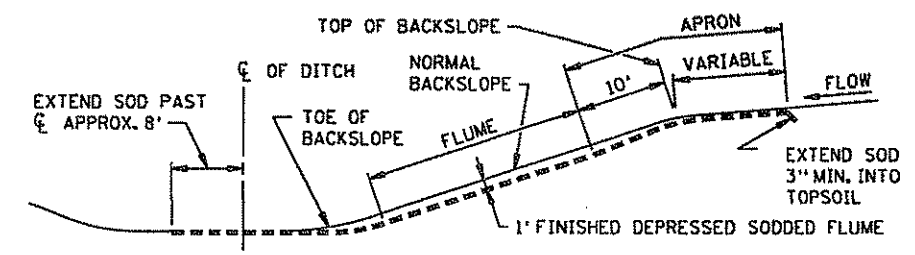
SODDED DITCH DETAILS



PLAN VIEW



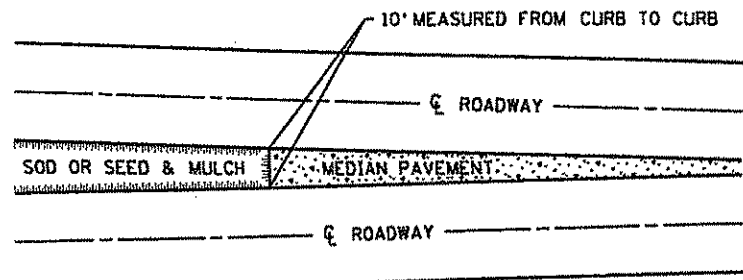
SECTION A-A



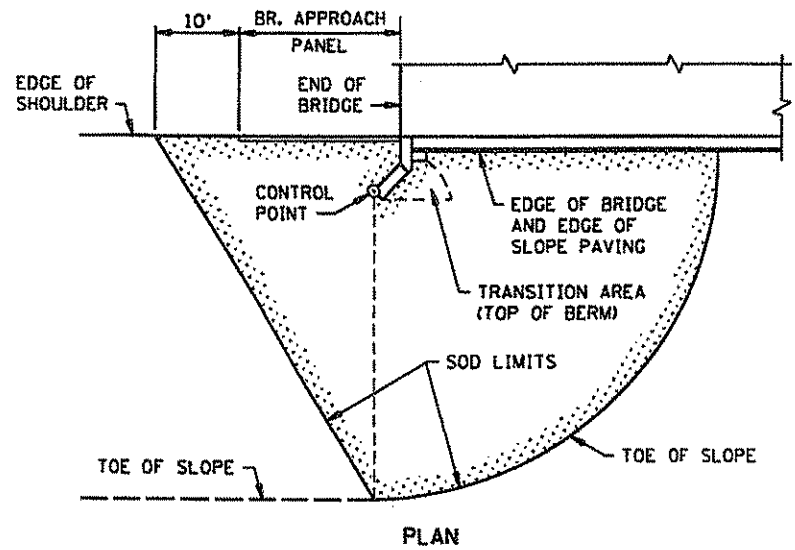
SECTION B-B  
SODDED FLUME DETAILS

NOTES:  
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.  
① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

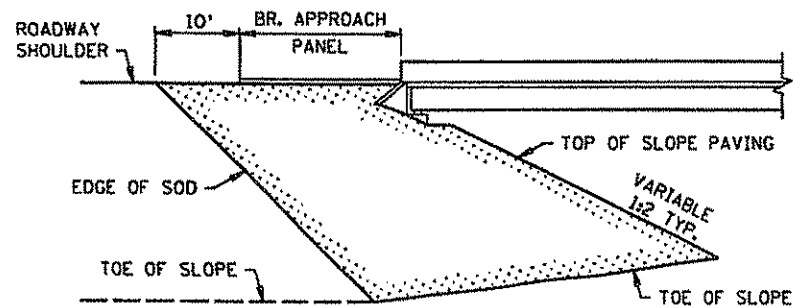
STANDARD SHEET NO. 5-297.404	TITLE PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: NOVEMBER 20, 2002	
STATE PROJ. NO. 0280-55 (TH 35W) SHEET NO. 46 OF 198 SHEETS	



SODDING LIMITS AT GORE AREA

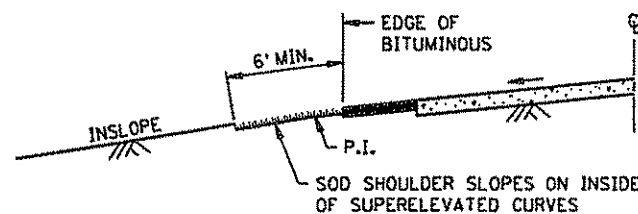


PLAN

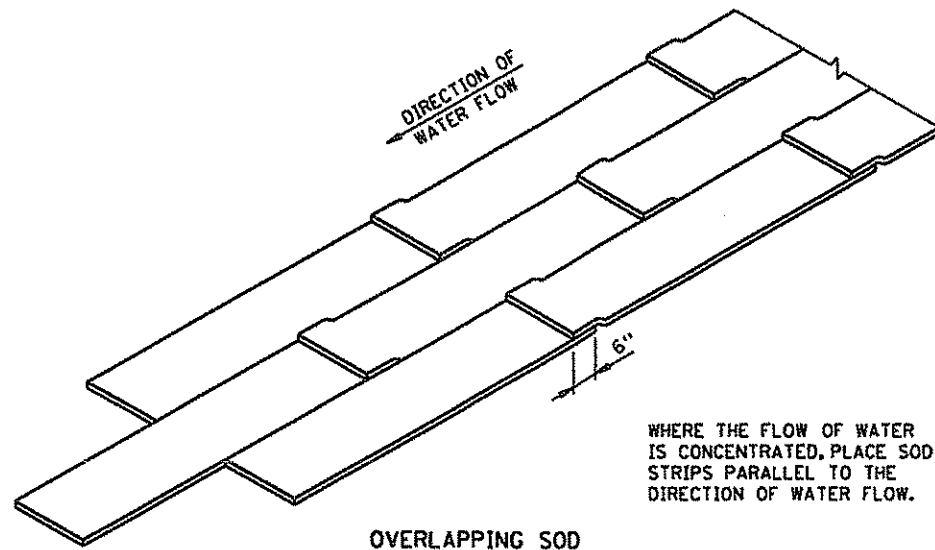


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

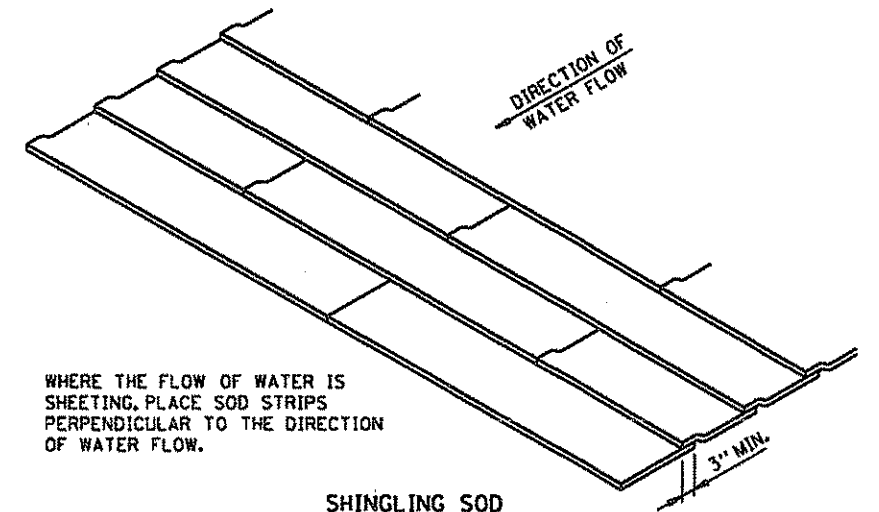


SODDING INSLOPES OF SUPERELEVATED CURVES



OVERLAPPING SOD

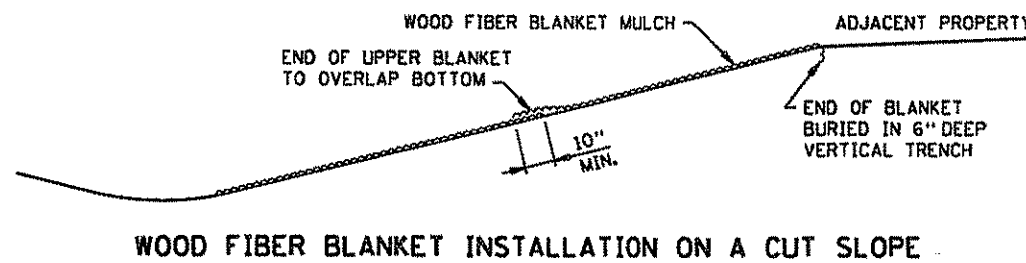
WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.



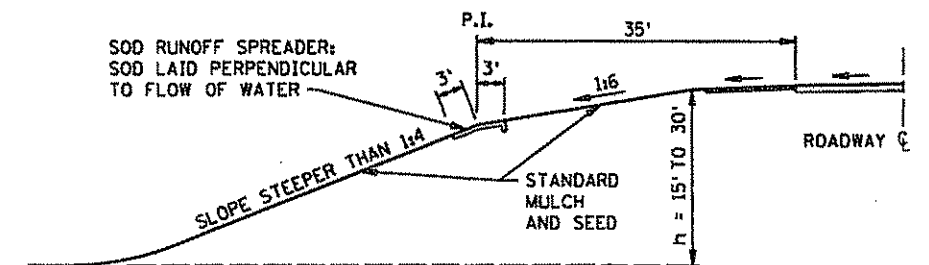
SHINGLING SOD

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

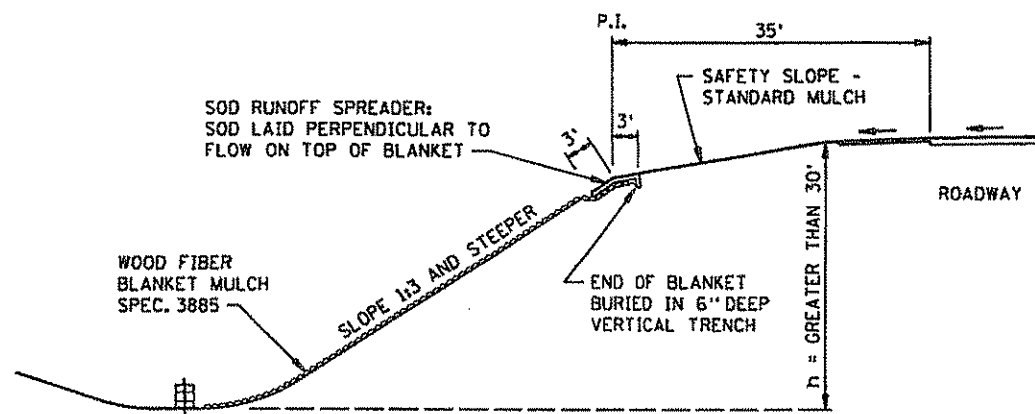
SPECIAL SOD PLACEMENT TECHNIQUES



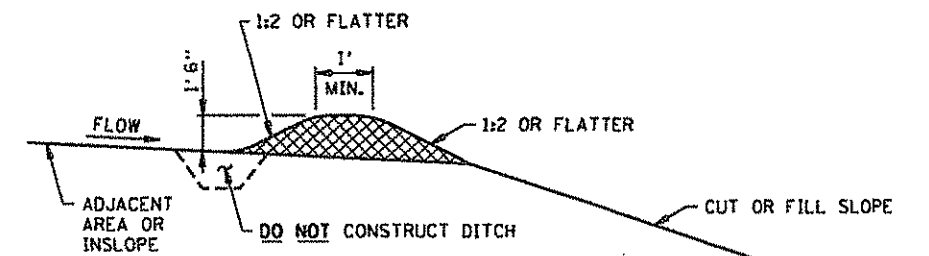
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE (WHEN REQUIRED)



PERMANENT SLOPE PROTECTION DIKE

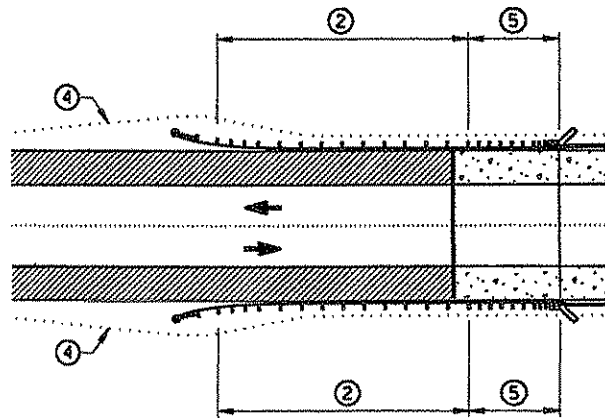
STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
STATE PROJ. NO. 0280-55 (TH 35W)	SHEET NO. 47 OF 198 SHEETS

REVISION DATE  
10-26-2000

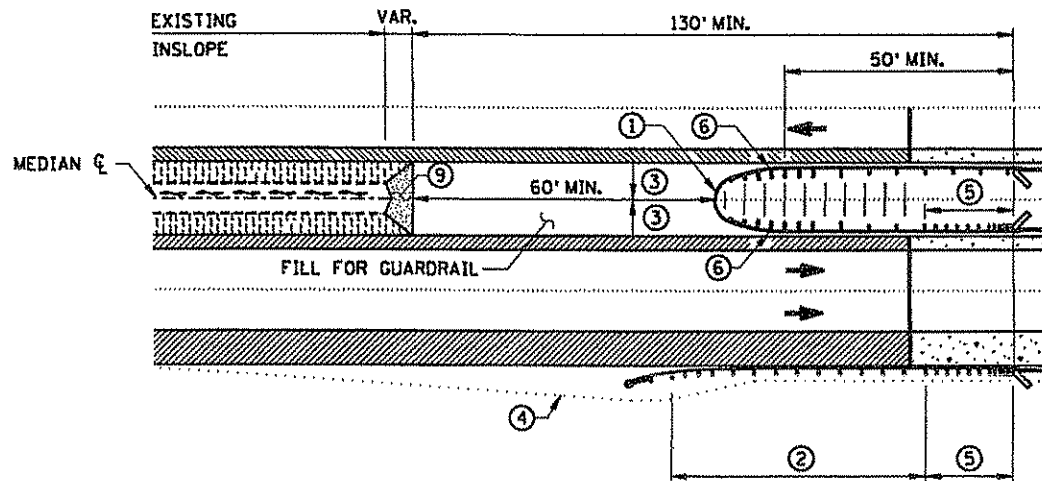
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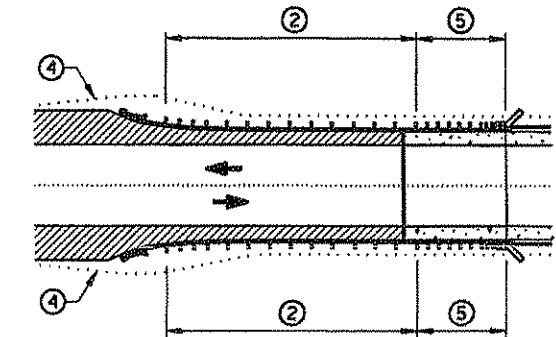
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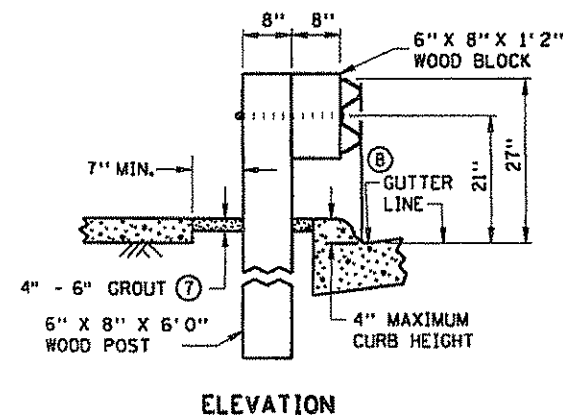
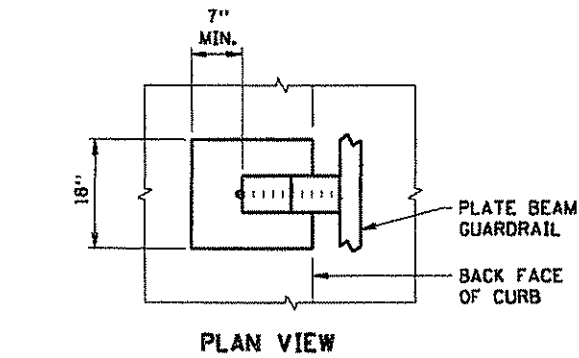
**TWO - WAY BRIDGE  
WITH FULL SHOULDERS**



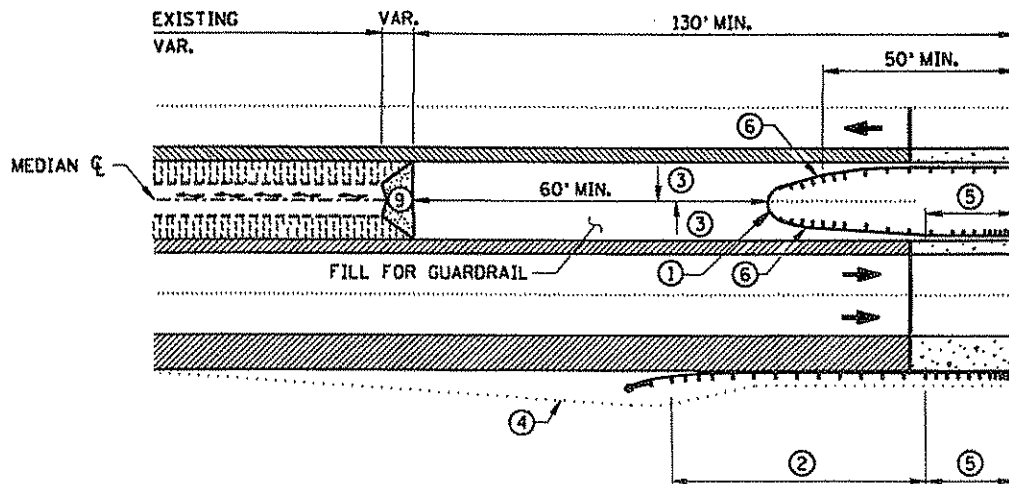
**ONE - WAY BRIDGE  
WITH FULL RIGHT SHOULDER  
(FOR 14' 2-1/2" THRIE BEAM BULLNOSE)**



**TWO - WAY BRIDGE  
WITHOUT FULL SHOULDERS**



**TYPICAL SECTION AT POST  
SET IN CONCRETE**

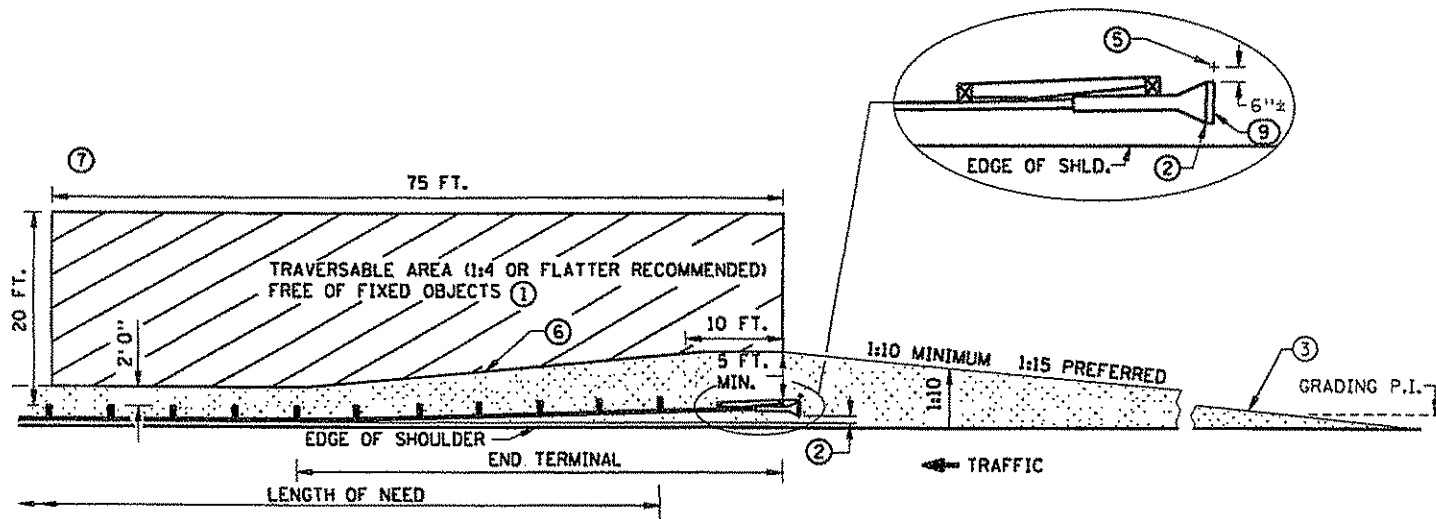


**ONE - WAY BRIDGE  
WITH FULL RIGHT SHOULDER  
(FOR MEDIANS WIDER THAN 14' 2-1/2" THRIE BEAM BULLNOSE)**

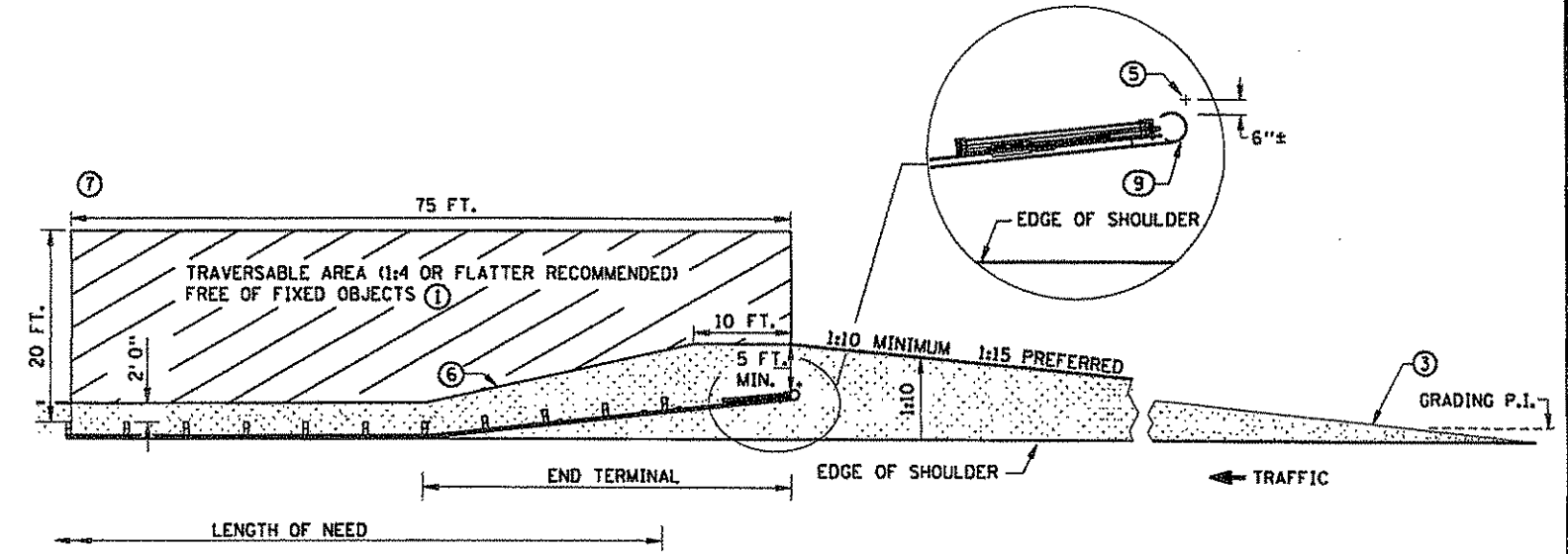
**NOTES:**

- ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED.
- THE LATEST APPROVED VERSION OF STANDARD PLATES SHOWN OR AS INDICATED IN THE PLANS SHALL APPLY.
- ① THRIE BEAM BULLNOSE, SEE SHEET NO. ... FOR DETAILS.
- ② FOR THE REQUIRED LENGTH SEE ROAD DESIGN MANUAL CHAPTER 10.
- ③ 0.04 FT./FT. CROSS SLOPE TYPICAL, 0.10 FT./FT. CROSS SLOPE MAXIMUM.
- ④ 1:10 OR FLATTER SLOPE P.I.. APPROACH GRADING VARIES WITH TERMINAL TYPE.
- ⑤ PLATE BEAM GUARDRAIL ATTACHMENTS TO FIXED OBJECTS REQUIRE AN APPROVED TRANSITION SECTION.
- ⑥ FOR MEDIANS WIDER THAN THE 14 FT. 2-1/2 IN., BEFORE TAPERING THE APPROACH SIDE TAPER THE OPPOSING SIDE AS SHOWN ON THE BULLNOSE DESIGN DETAIL. APPROACH TAPER SHOULD NOT EXCEED 1:25 IF THE BARRIER IS WITHIN THE SHY LINE OR 1:15 IF IT IS OUTSIDE.
- ⑦ TWO-SACK GROUT MIX (BY VOLUME: 1 PART CEMENT, 14 PARTS SAND, 5 PARTS WATER).
- ⑧ PLACE FRONT FACE OF W-BEAM DIRECTLY ABOVE FRONT FACE OF CURB.
- ⑨ 1:10 SLOPE OR FLATTER.

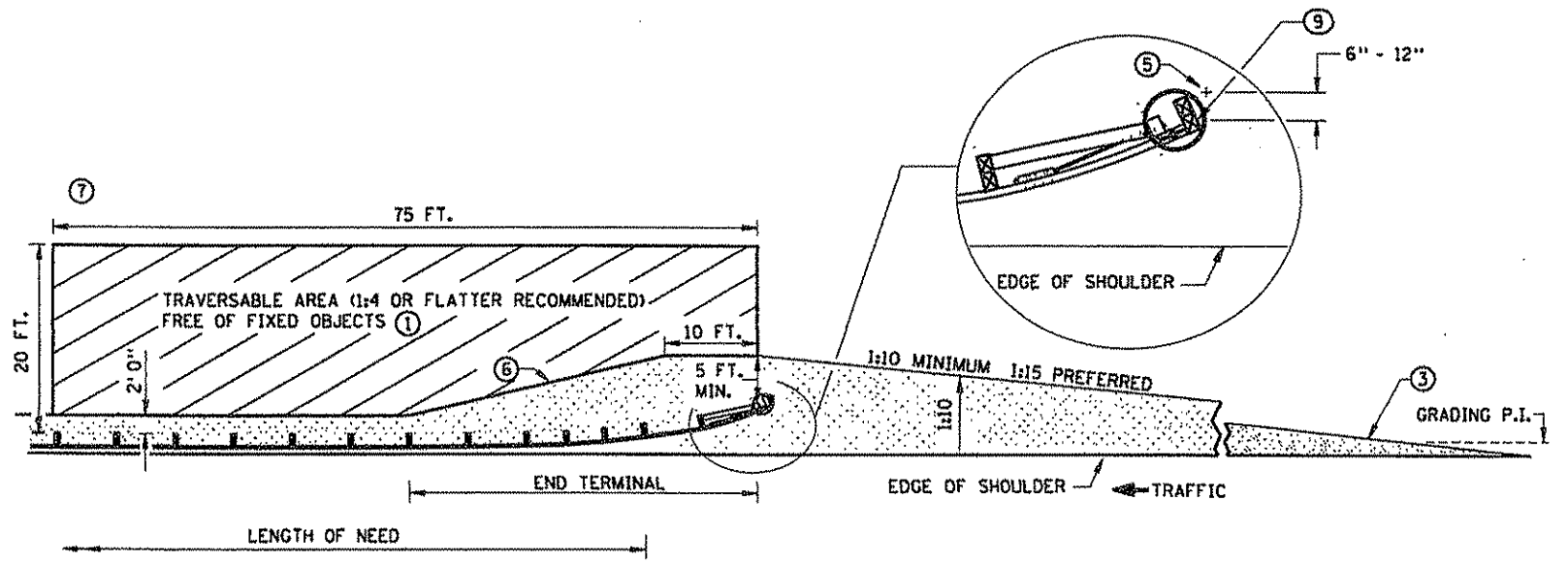
STANDARD SHEET NO. 5-297.601 (2 OF 3)	TITLE: GUARDRAIL INSTALLATIONS AT MEDIANS AND END TREATMENTS
STANDARD APPROVED: AUGUST 17, 2005	
STATE PROJ. NO. 0280-55 (TH 35W)	SHEET NO. 49 OF 198 SHEETS



**PLAN VIEW**  
(PROPRIETARY TANGENT TERMINAL SHOWN AS EXAMPLE)



**PLAN VIEW ⑧**  
(PROPRIETARY FLARED TERMINAL SHOWN AS EXAMPLE)



**PLAN VIEW ④ ⑧**  
(ELT)

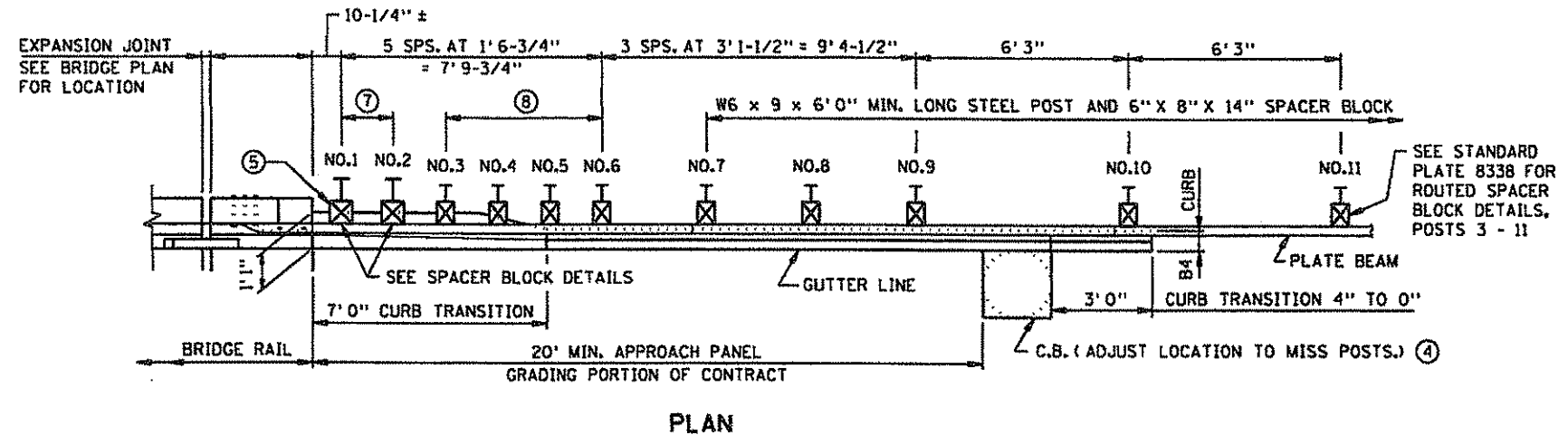
- NOTES:**
- ALL CROSS SLOPES ARE IN FOOT/FOOT UNLESS OTHERWISE NOTED.
  - ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED.
  - CHANGES (TO SUBJECTS COVERED BY THIS SHEET) INDICATED IN THE PLANS OR ON PLATES WITH MORE RECENT APPROVAL DATES SHALL APPLY.
  - GRADING AND DRAINAGE HARDWARE ARE NOT INCIDENTAL TO GUARDRAIL INSTALLATION.
  - ① SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3 THE AREA IMMEDIATELY BEHIND AND BEYOND THE END TERMINAL SHOULD, AT LEAST, BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.
  - ② THE LAST 50 FT. OF TANGENT TERMINALS CAN BE FLARED AT 1:50 TAPER.
  - ③ WHEN GRADING PLATFORMS ARE BUILT, THEY MUST BE SMOOTHLY TRANSITIONED TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE, AS WELL AS THE AREA IMMEDIATELY BEHIND IT.

- ④ SEE STANDARD PLATE 8329.
- ⑤ SNOWPLOW MARKER (X4-5) WITH A 2 LB./FT. DELINEATOR POST 8 FT. LONG (SPEC. 3401) DRIVEN INTO THE GROUND, EXTEND 3 FT. ABOVE TERMINAL. THE MARKER IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE. MARK BOTH THE BEGINNING AND END OF PLATE BEAM GUARDRAIL INSTALLATION.
- ⑥ 1:10 OR FLATTER SLOPE P.I..
- ⑦ GRADUALLY BLEND SLOPE FROM TRAVERSABLE AREA TO STEEP EXISTING SLOPE (WHEN SLOPE IS STEEPER THAN 1:6).
- ⑧ IF THE TERRAIN BEYOND THE TERMINAL END AND IMMEDIATELY BEHIND THE BARRIER IS NOT SAFELY TRAVERSABLE, A TANGENT (ENERGY- ABSORBING) TERMINAL SHALL BE USED.

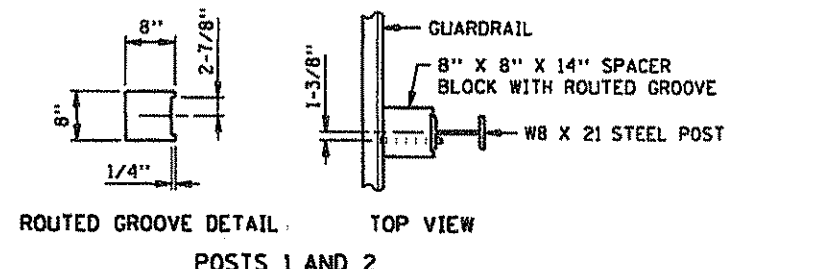
- ⑨ MARK THE APPROACH END OF PLATE BEAM GUARDRAIL INSTALLATIONS WITH A STRIPED OBJECT MARKER SIZED TO FIT THE END TERMINAL, HAVING ALTERNATING BLACK AND REFLECTIVE YELLOW (WIDE ANGLE PRISMATIC RETROREFLECTIVE SHEETING). STRIPES SHALL SLOPE DOWNWARD AT A 45 DEGREE ANGLE TOWARD THE SIDE ON WHICH TRAFFIC PASSES. FOR FLAT END TREATMENTS THE OBJECT MARKER SHALL FIT INSIDE THE RECESSED AREA. FOR ROUNDED END TREATMENTS THE OBJECT MARKER SHALL WRAP AROUND THE CIRCULAR END AND BE MOUNTED SO THE TOP OF THE OBJECT MARKER LINES UP WITH THE TOP OF THE END TREATMENT.

STANDARD SHEET NO. 5-297.601 (3 OF 3)	TITLE: GUARDRAIL INSTALLATIONS AT MEDIANS & END TREATMENTS (FOR NEW CONSTRUCTION AND RETROFITS WITHOUT SITE RESTRICTIONS)
STANDARD APPROVED: AUGUST 17, 2005	
STATE PROJ. NO. 0280-55 (TH 35W)	SHEET NO. 50 OF 198 SHEETS

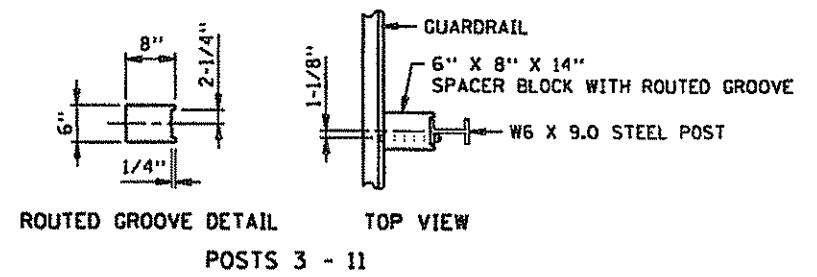




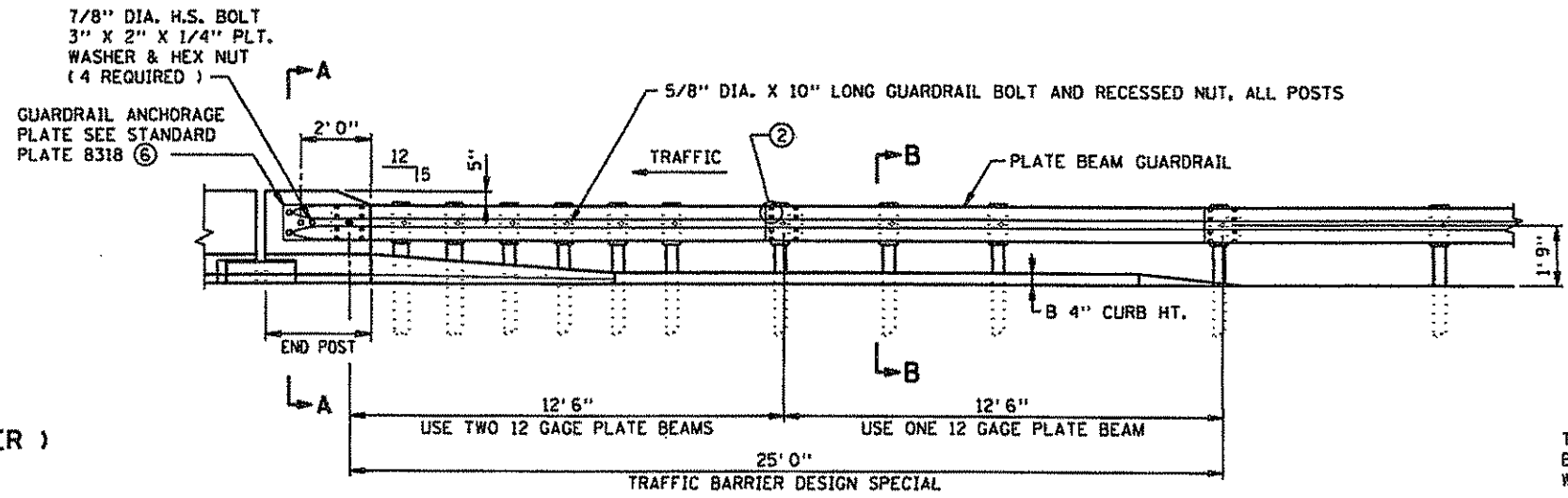
PLAN



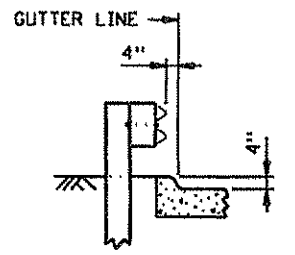
ROUTED GROOVE DETAIL TOP VIEW  
POSTS 1 AND 2



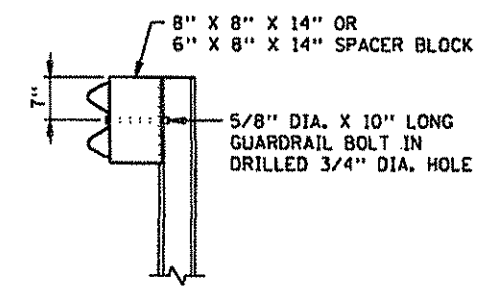
ROUTED GROOVE DETAIL TOP VIEW  
POSTS 3 - 11



ELEVATION

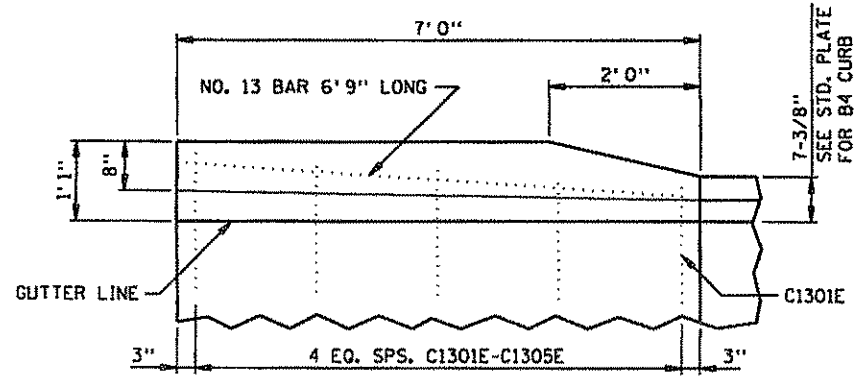


SECTION B-B  
THE TRANSITION SECTION HAS BEEN TESTED AND APPROVED WITH THE CURB PLACED AS SHOWN

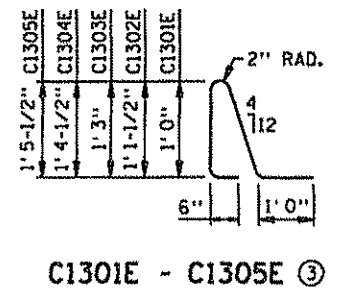


END VIEW  
SPACER BLOCK DETAILS

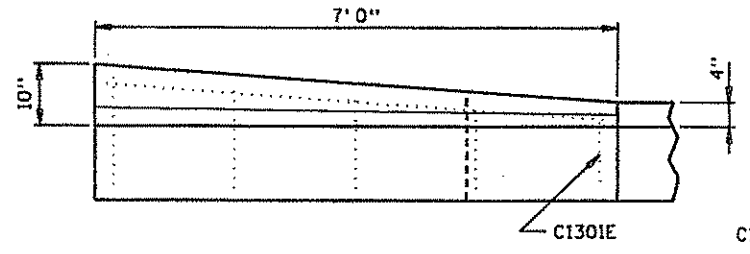
SECTION A - A  
F SHAPE RAIL ( F BARRIER )  
( PARALLEL WINGWALL SHOWN )



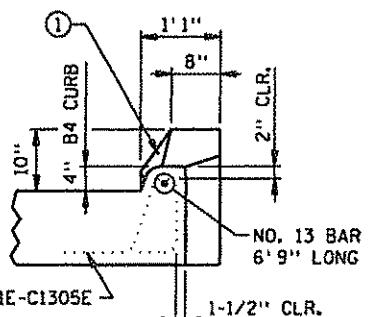
PLAN VIEW



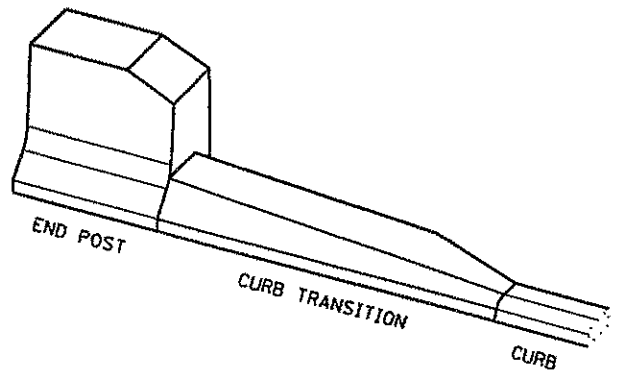
C1301E - C1305E ③



INSIDE ELEVATION



END VIEW



ISOMETRIC VIEW

NOTES:

- ① ALL REBARS ARE IN METRIC DESIGNATIONS
- ① END OF TRANSITION TO MATCH BRIDGE RAIL SURFACE.
- ② 5/8" DIA. X 1-1/4" LONG GUARDRAIL BOLTS AND NUTS TYPICAL AT SPLICES.
- ③ REINFORCEMENT TO BE EPOXY COATED AS PER SPEC. 3301.
- ④ SEE ROAD PLANS TO VERIFY ACTUAL DIMENSION AND LOCATION.
- ⑤ ADDITIONAL BLOCKING MAY BE REQUIRED TO CLEAR BRIDGE STRUCTURE. VERIFY IN FIELD.
- ⑥ SANDWICH ANCHOR PLATE BETWEEN RAIL BEAMS.
- ⑦ POSTS 1 AND 2 TO BE W8 x 21 x 8'0" MINIMUM LONG STEEL POST AND 8" x 8" x 14" SPACER BLOCK.
- ⑧ POSTS 3, 4, 5, AND 6 TO BE W6 x 9 x 6'0" MIN. LONG STEEL POST AND 6" x 8" x 14" SPACER BLOCK.

TRAFFIC BARRIER DESIGN SPECIAL

STANDARD SHEET NO. 5-297.603	TITLE: NEW W-BEAM TRANSITION TO CONCRETE F-SHAPE SAFETY RAIL WITH APPROACH CURB (STEEL POST)
STANDARD APPROVED: DECEMBER 20, 2001	
STATE PROJ. NO. 0280-55 (TH 35W)	SHEET NO. 51 OF 198 SHEETS

REVISION DATE  
01-21-2006

CURB TRANSITION DETAILS



101

3/23/2007

tbl-tbl3

350500\pinshits\traffic contr\0\line\0505.tbl.dgn

sk\

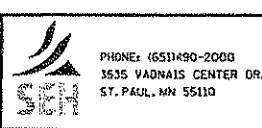
TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE									REMARKS
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE PHASE 1	STAGE PHASE 2	STAGE 2	STAGE 3	I-35W LANE CLOSURE	LAKE DR DETOUR	I-35W BRIDGE-ABUTMENT	I-35W BRIDGE-MEDIAN		
	R1-1	WHITE ON RED	30"x30"	-	3	2	4	-	-	-	-		
	R1-1	WHITE ON RED	48"x48"	-	2	4	4	-	-	-	-	I-35W OFF RAMP SIGNS	
	R2-1A	BLACK ON WHITE	24"x30"	-	1	-	-	-	-	-	-		
	R2-1A	BLACK ON WHITE	24"x30"	-	1	1	-	-	-	-	-		
	R3-2	BLACK & RED ON WHITE	24"x24"	-	1	-	-	-	-	-	-		
	R3-X1	BLACK ON WHITE	30"x30"	-	-	2	-	-	-	-	-	MAY USE SIGN R3-7R	
	R3-X2	BLACK ON WHITE	30"x30"	1	1	-	5	-	-	-	-	MAY USE SIGN R3-7L	
	R3-7L	BLACK ON WHITE	30"x30"	-	-	1	-	-	-	-	-		
	R3-7R	BLACK ON WHITE	30"x30"	-	-	1	-	-	-	-	-		
	R4-7	BLACK ON WHITE	24"x30"	2	3	-	8	-	-	-	-		
	R5-1	BLACK ON WHITE	30"x30"	-	-	2	5	-	-	-	-		
	R5-1A	BLACK ON WHITE	36"x24"	-	-	1	-	-	-	-	-		
	R6-1R	BLACK ON WHITE	36"x12"	-	1	4	1	-	-	-	-		
	R6-1L	BLACK ON WHITE	36"x12"	-	1	5	-	-	-	-	-		
	R5-10D	BLACK ON WHITE	18"x24"	-	-	1	-	-	-	-	-		
	R11-2	BLACK ON WHITE	48"x30"	-	-	2	-	2	3	-	-		
	R16-X4	BLACK ON WHITE	36"x36"	-	-	1	-	-	-	-	-		
	W1-4R	BLACK ON ORANGE	48"x48"	-	-	2	1	-	-	-	-		
	W1-4L	BLACK ON ORANGE	48"x48"	-	1	1	-	-	-	-	-		
	W1-6R	BLACK ON ORANGE	48"x24"	-	-	-	1	-	-	-	-		

TRAFFIC CONTROL SIGNS / DEVICES				ESTIMATED QUANTITY BY STAGE									REMARKS
SIGN OR DEVICE	CODE NO.	COLOR	SIZE	STAGE PHASE 1	STAGE PHASE 2	STAGE 2	STAGE 3	I-35W LANE CLOSURE	LAKE DR DETOUR	I-35W BRIDGE-ABUTMENT	I-35W BRIDGE-MEDIAN		
	W1-7	BLACK ON ORANGE	48"x24"	-	1	-	-	-	-	-	-		
	W4-2L	BLACK ON ORANGE	48"x48"	-	-	-	-	2	-	-	-		
	W14-X2	BLACK ON YELLOW	48"x48"	-	-	-	-	4	-	-	-		
	W20-1	BLACK ON ORANGE	48"x48"	4	8	8	7	4	-	4	-		
	W20-2	BLACK ON ORANGE	48"x48"	-	-	-	-	-	1	-	-		
	W20-3	BLACK ON ORANGE	48"x48"	-	-	-	-	-	3	-	-		
	W20-100p	BLACK ON ORANGE	42"x24"	-	-	-	-	-	2	-	-		
	W20-X3R	BLACK ON ORANGE	48"x48"	-	-	-	-	2	-	-	-		
	W21-X1	BLACK ON YELLOW	48"x48"	-	-	-	-	-	-	2	2		
	W21-X5L	BLACK ON ORANGE	48"x48"	-	-	-	-	4	-	-	-		
	M1-1	WHITE ON RED & BLUE	30"x24"	-	1	-	-	-	-	-	-		
	M1-6	WHITE & YELLOW ON BLUE	24"x24"	-	2	-	-	-	-	-	-		
	M1-6	WHITE & YELLOW ON BLUE	24"x24"	-	1	2	1	-	32	-	-		
	M1-6	WHITE & YELLOW ON BLUE	24"x24"	-	1	-	-	-	-	-	-		
	M1-6	WHITE & YELLOW ON BLUE	36"x36"	-	-	-	-	-	4	-	-	O.S. ON I-35W	
	M2-1a	WHITE ON BLUE	21"x15"	-	2	-	-	-	-	-	-		
	M3-1a	WHITE ON BLUE	24"x12"	-	-	-	-	-	16	-	-		
	M3-3a	WHITE ON BLUE	24"x12"	-	-	2	1	-	13	-	-		
	M4-5a	WHITE ON BLUE	24"x12"	-	-	-	-	-	3	-	-		
	M4-5a	WHITE ON BLUE	30"x15"	-	-	-	-	-	4	-	-	O.S. ON I-35W	
	M3-4a	WHITE ON BLUE	24"x12"	-	2	-	-	-	-	-	-		

DESIGN TEAM				
DRAWN BY:	MTJ			
DESIGNER:	LJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

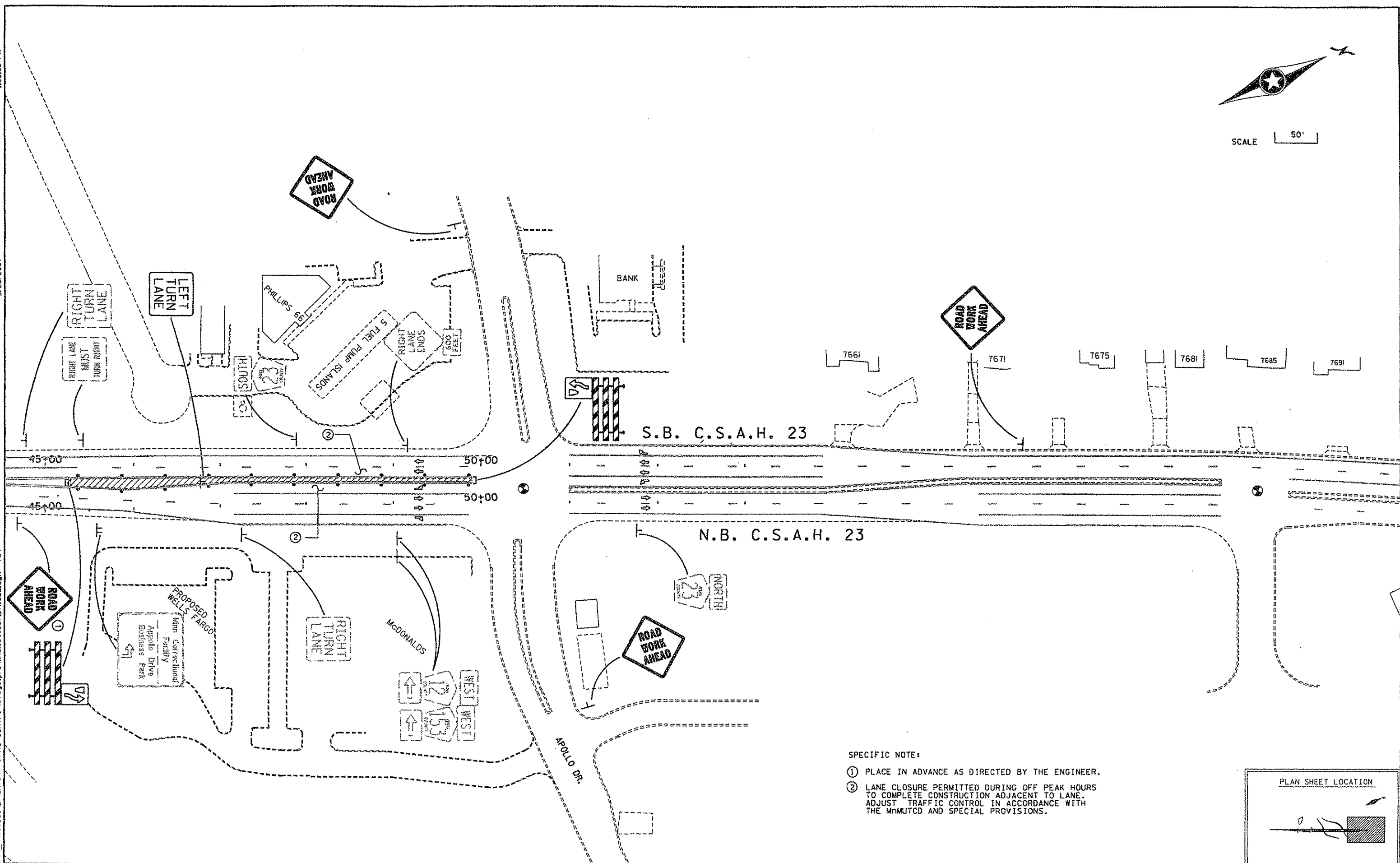
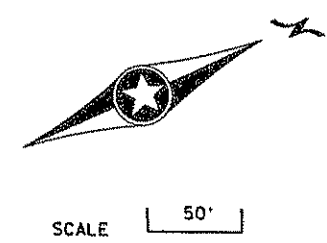


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	55
ALINDL0505.00	
TRAFFIC CONTROL TABULATIONS	
TC20	198

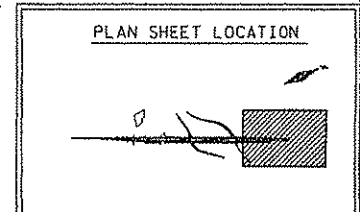


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3/23/2007  
s:\ko\N...050500\pinshsta\traffic control\stage1\pinh0505.st\phicsa.dgn tc4



**SPECIFIC NOTE:**

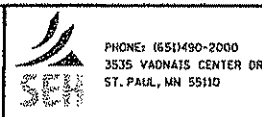
- ① PLACE IN ADVANCE AS DIRECTED BY THE ENGINEER.
- ② LANE CLOSURE PERMITTED DURING OFF PEAK HOURS TO COMPLETE CONSTRUCTION ADJACENT TO LANE. ADJUST TRAFFIC CONTROL IN ACCORDANCE WITH THE MnMUTCD AND SPECIAL PROVISIONS.



DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**STAGE 1 PHASE 1  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN**

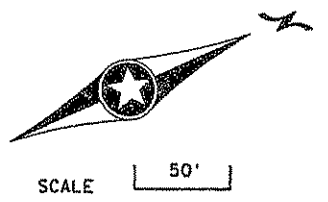
N.B. C.S.A.H. 23 STA. 45+00 TO END OF PROJECT

FILE NO.	57
ALINLO505.00	
TC4	198
OF TC20	



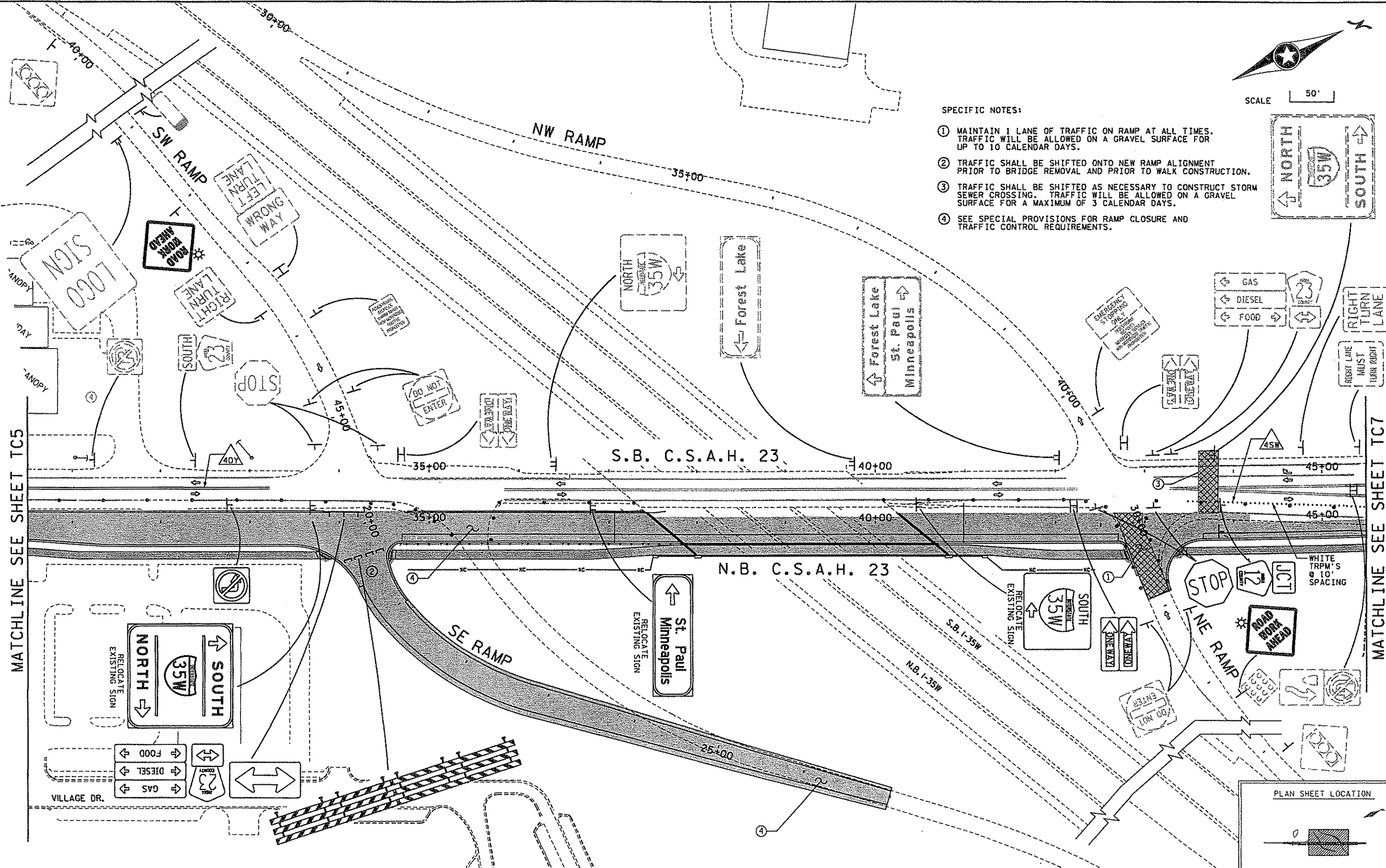
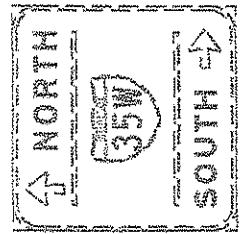


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3/23/2007  
s:\ko\l\hwa\050500\pinshf\traffic\_control\stg01\ph2\lino0505.st\ph2\sb.dgn TC6



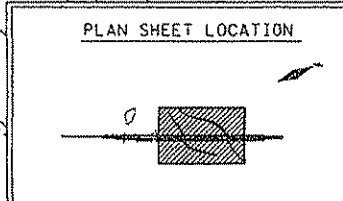
**SPECIFIC NOTES:**

- ① MAINTAIN 1 LANE OF TRAFFIC ON RAMP AT ALL TIMES. TRAFFIC WILL BE ALLOWED ON A GRAVEL SURFACE FOR UP TO 10 CALENDAR DAYS.
- ② TRAFFIC SHALL BE SHIFTED ONTO NEW RAMP ALIGNMENT PRIOR TO BRIDGE REMOVAL AND PRIOR TO WALK CONSTRUCTION.
- ③ TRAFFIC SHALL BE SHIFTED AS NECESSARY TO CONSTRUCT STORM SEWER CROSSING. TRAFFIC WILL BE ALLOWED ON A GRAVEL SURFACE FOR A MAXIMUM OF 3 CALENDAR DAYS.
- ④ SEE SPECIAL PROVISIONS FOR RAMP CLOSURE AND TRAFFIC CONTROL REQUIREMENTS.



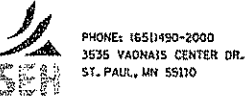
MATCHLINE SEE SHEET TC5

MATCHLINE SEE SHEET TC7



DESIGN TEAM				
DRAWN BY:	MIT			
DESIGNER:	IJD			
CHECKED BY:	GCP			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

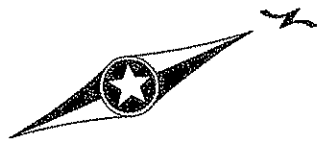
**STAGE 1 PHASE 2  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN**  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO.	59
ALINOL0505.00	
TC6	198
OF TC20	

140811...4

3/23/2007

S:\ko\va\050500\plans\traffic control\stf0505.st1\ph2csc.dgn TC7

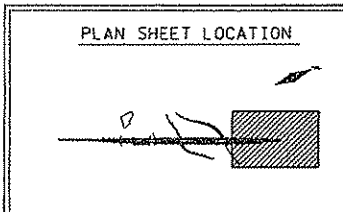
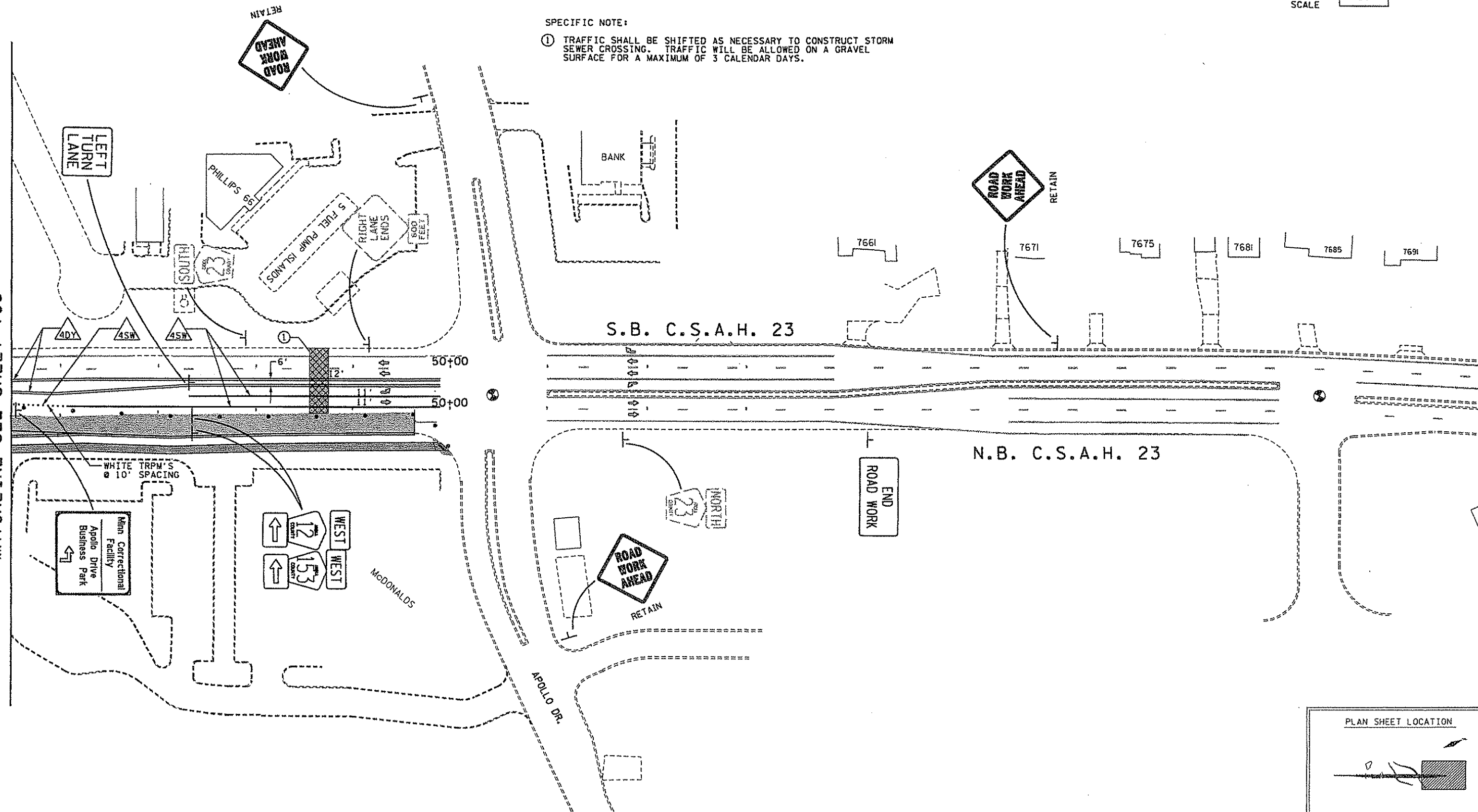


SCALE 50'

SPECIFIC NOTE:

① TRAFFIC SHALL BE SHIFTED AS NECESSARY TO CONSTRUCT STORM SEWER CROSSING. TRAFFIC WILL BE ALLOWED ON A GRAVEL SURFACE FOR A MAXIMUM OF 3 CALENDAR DAYS.

MATCHLINE SEE SHEET TC6



DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STAGE 1 PHASE 2  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 45+50 TO END OF PROJECT

FILE NO.	60
ALINOL0505.00	
TC7	198
OF TC20	

1081

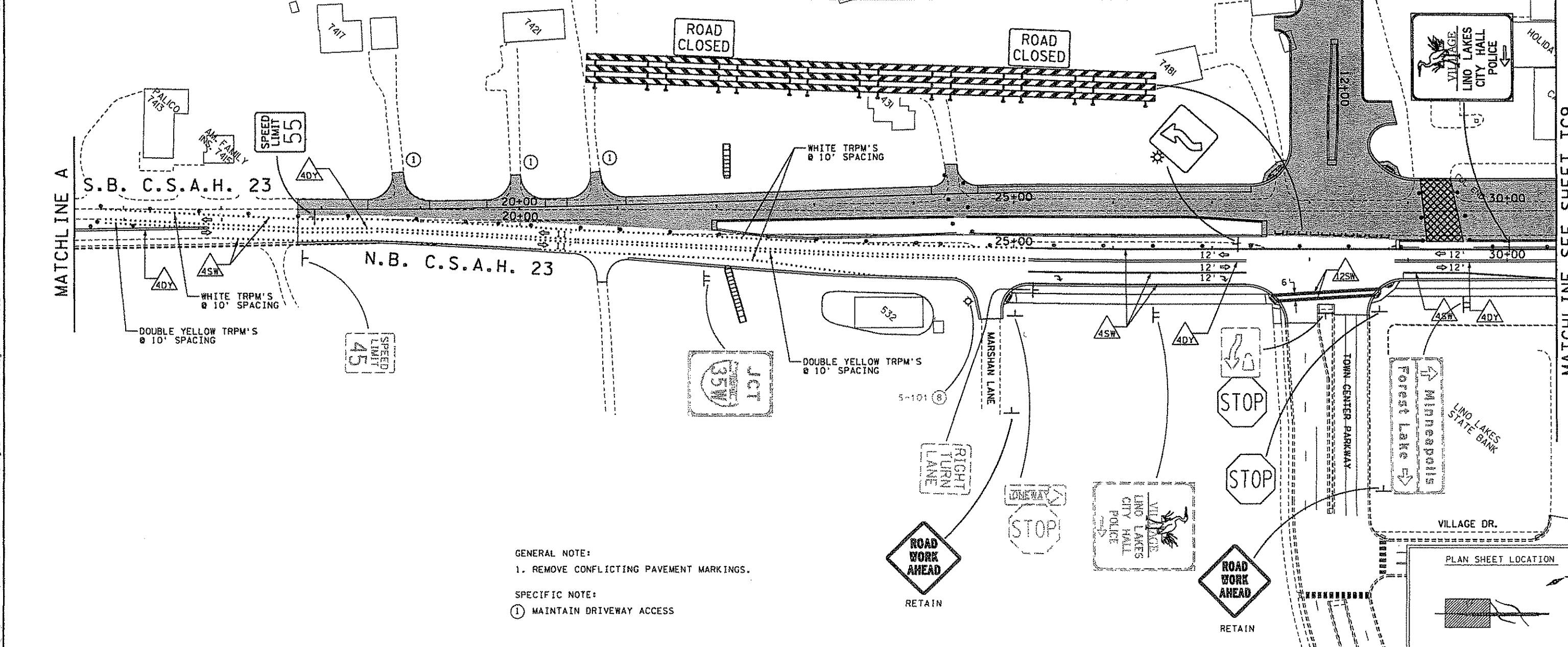
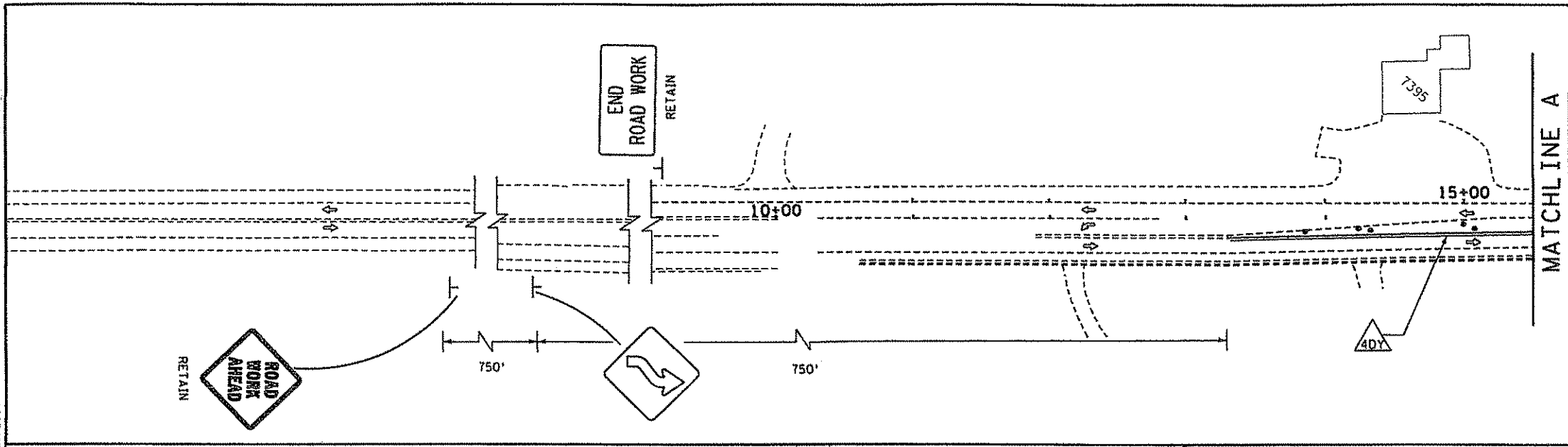
3/23/2007

TC8

..50500\pinshits\traffic control\stage2\lino\0505\_st2cso.dgn

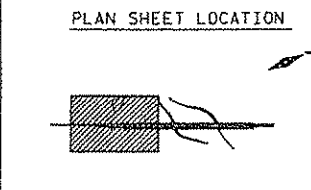


SCALE 50'



GENERAL NOTE:  
 1. REMOVE CONFLICTING PAVEMENT MARKINGS.

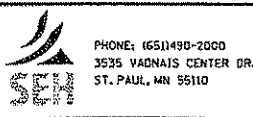
SPECIFIC NOTE:  
 ① MAINTAIN DRIVEWAY ACCESS



DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



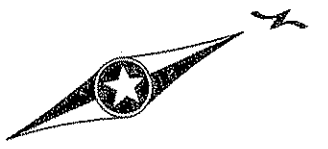
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STAGE 2  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50

FILE NO. 61  
 ALINOL0505.00  
 TC8  
 OF TC20  
 198

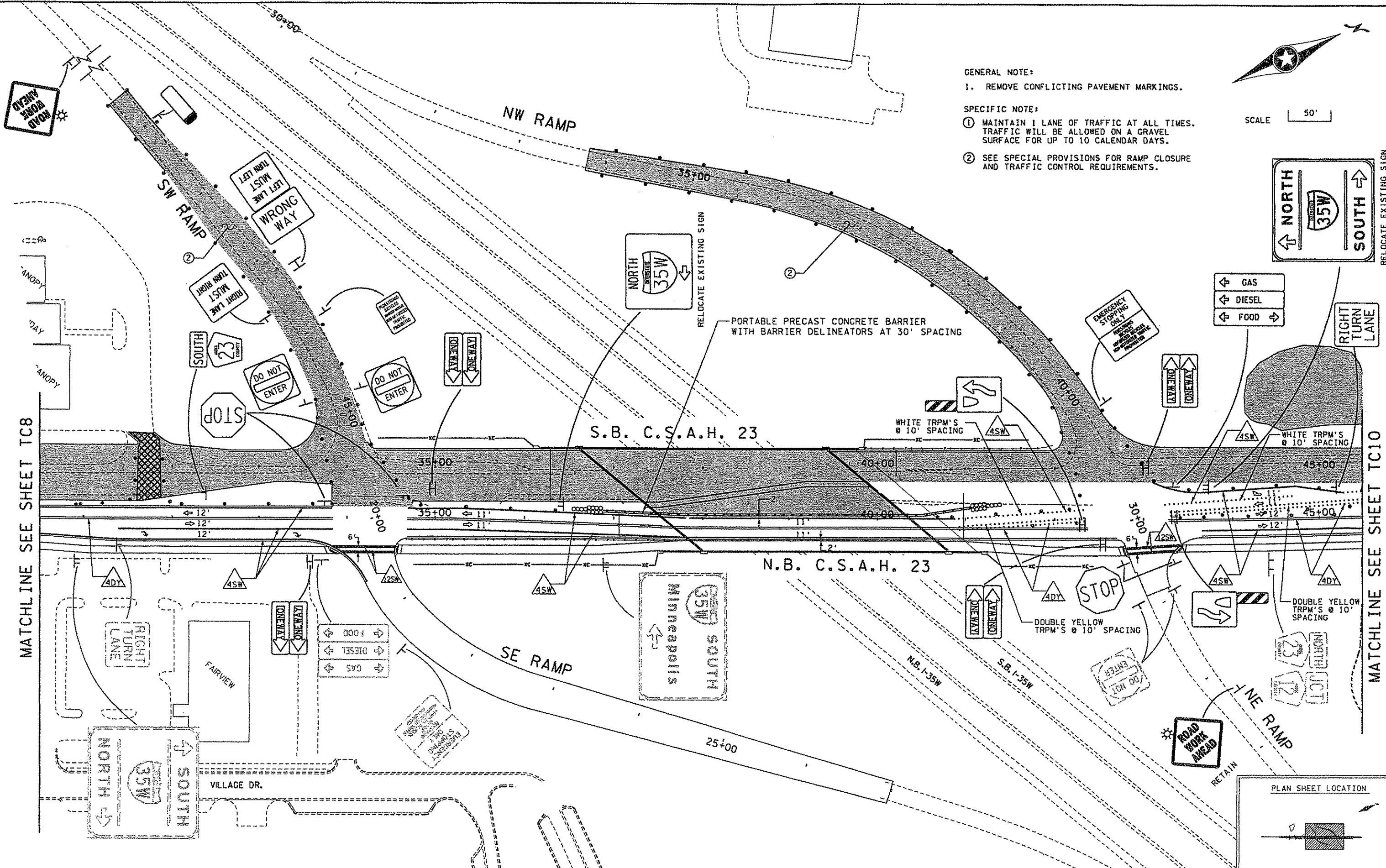


11081...M  
3/23/2007  
TC9  
S:\ko\11\050500\pinshits\traffic\control\stage2\final\0505\_s12csb.dgn



SCALE 50'

- GENERAL NOTE:  
1. REMOVE CONFLICTING PAVEMENT MARKINGS.
- SPECIFIC NOTE:  
① MAINTAIN 1 LANE OF TRAFFIC AT ALL TIMES. TRAFFIC WILL BE ALLOWED ON A GRAVEL SURFACE FOR UP TO 10 CALENDAR DAYS.  
② SEE SPECIAL PROVISIONS FOR RAMP CLOSURE AND TRAFFIC CONTROL REQUIREMENTS.

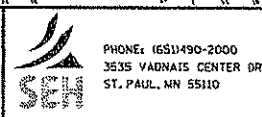


MATCHLINE SEE SHEET TC8

MATCHLINE SEE SHEET TC10

DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
NO.	BY	DATE	REVISIONS

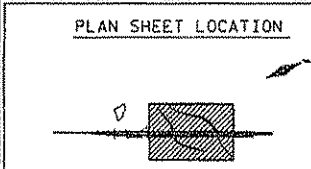
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Tiffany J. Dagon* Lic. No. 40535  
Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

STAGE 2 CONSTRUCTION STAGING AND TRAFFIC CONTROL PLAN	
FILE NO.	62
ALINL0505.00	
TC9	198
OF TC20	

N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50





108a

3/23/2007

TC10

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SCALE 50'

SPECIFIC NOTE:

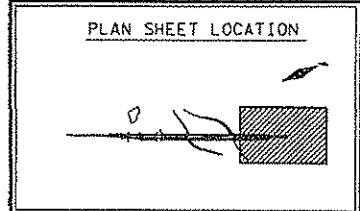
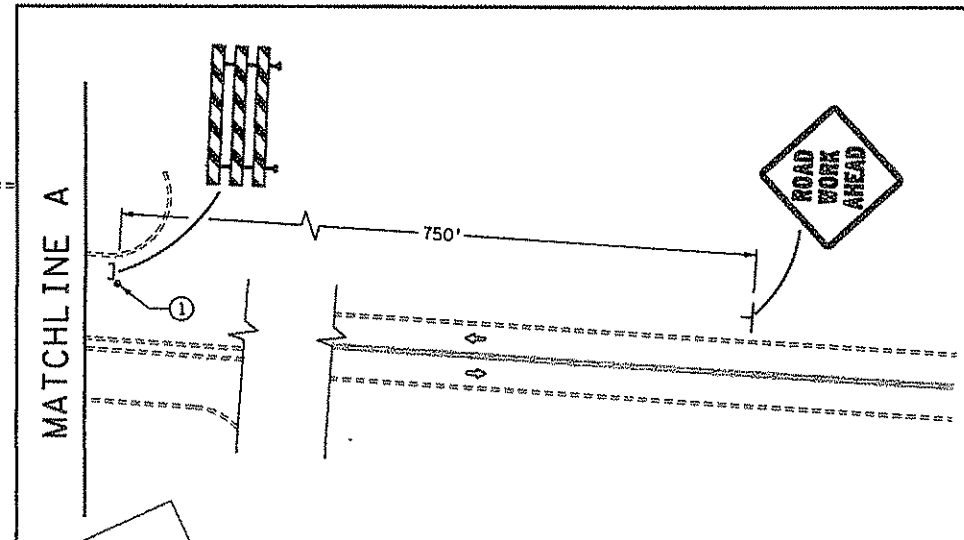
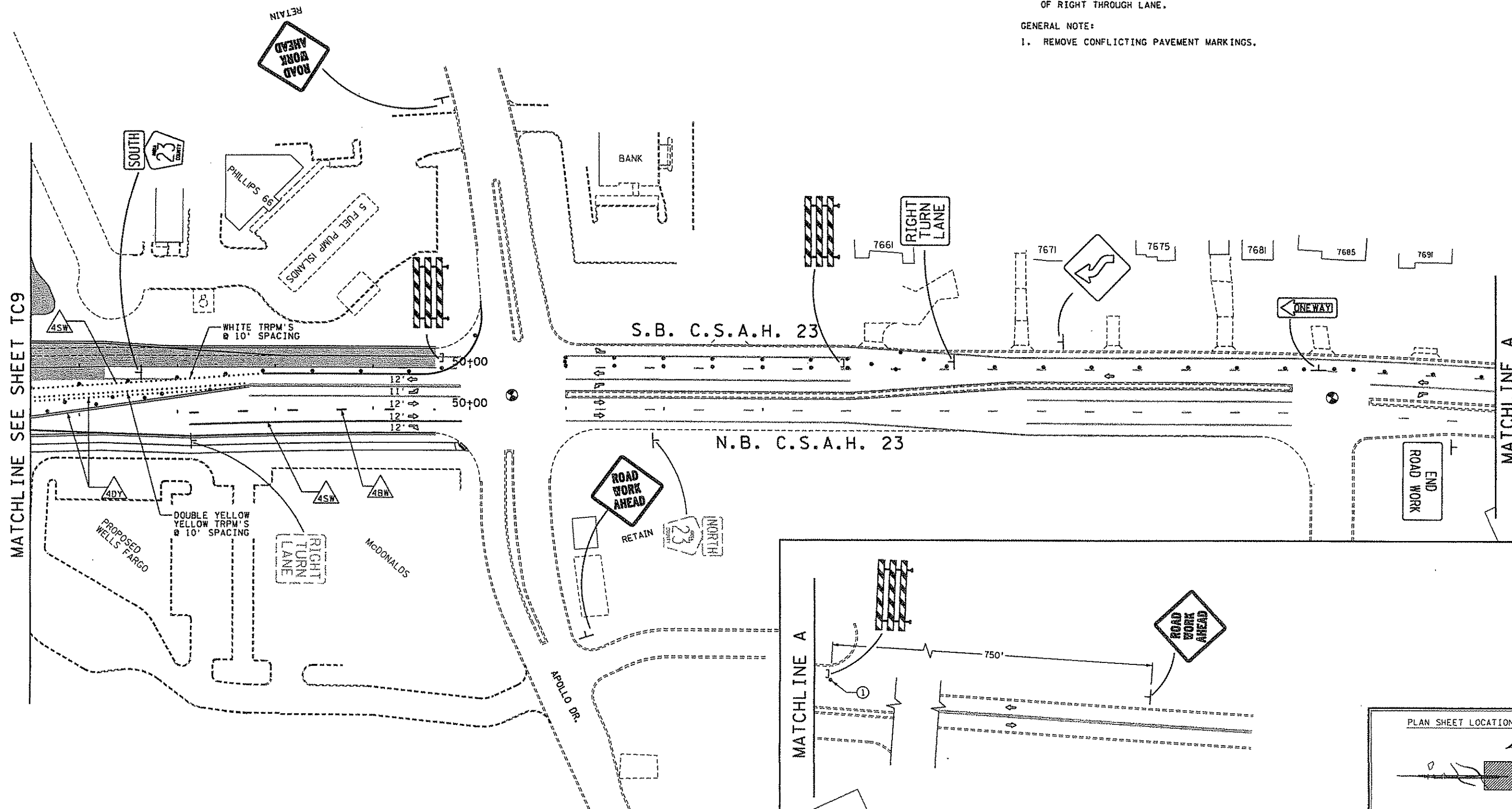
- ① PLACE BARRELS AT 50' SPACING NORTH TO 2-LANE ROADWAY SECTION. BARREL OFF DEVELOPMENT OF RIGHT THROUGH LANE.

GENERAL NOTE:

- 1. REMOVE CONFLICTING PAVEMENT MARKINGS.

MATCHLINE SEE SHEET TC9

MATCHLINE A



DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

PHONE: (651)490-2000  
 3539 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STAGE 2  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

FILE NO. 63  
 ALN010505.00  
 TC10  
 OF TC20  
 198

140833.P4

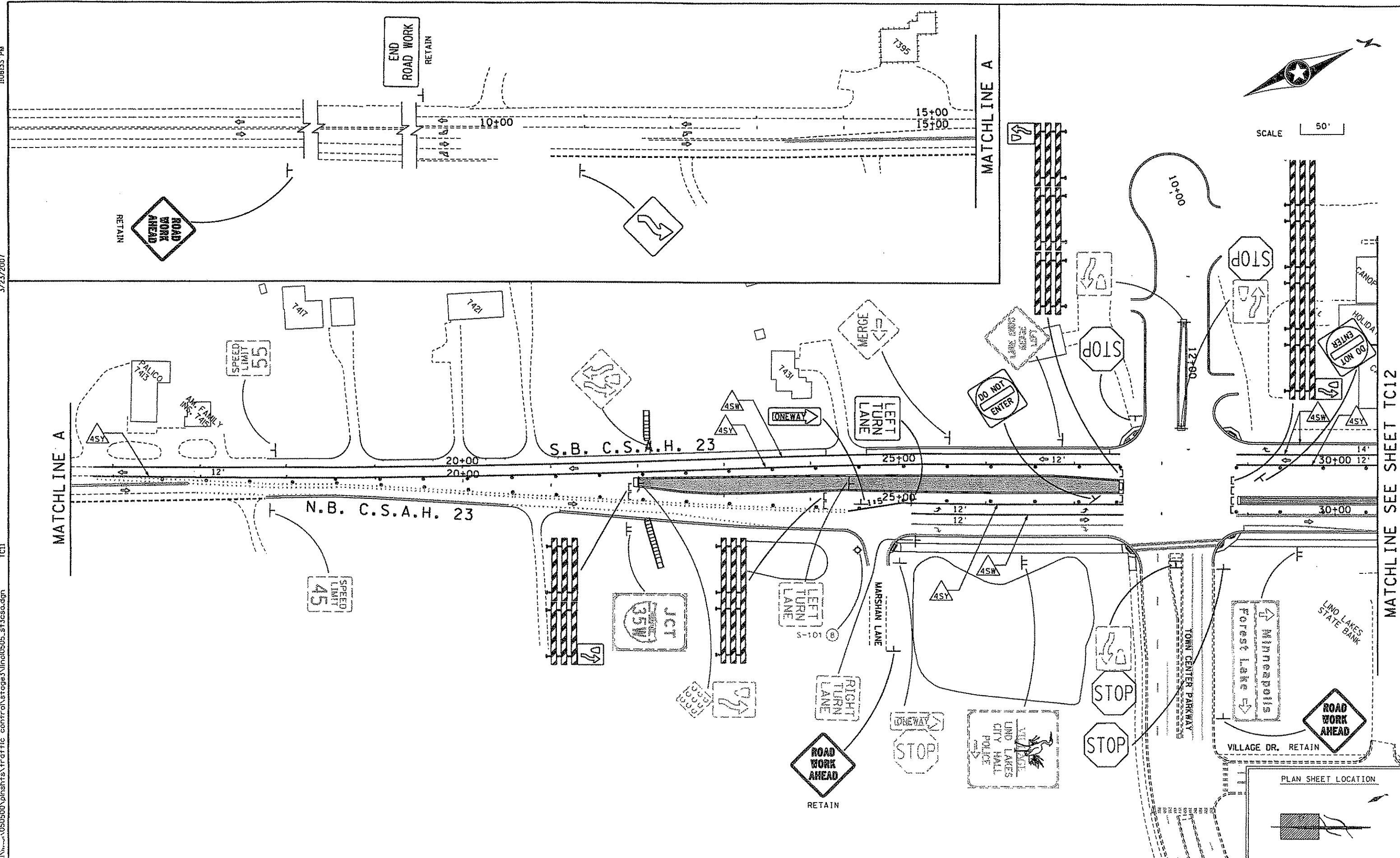
3/23/2007

TC11

s:\ko\11\050500\pinshrs\traffic\_control\stage3\inlet0505\_sf3case.dgn



SCALE 50'



DESIGN TEAM				
DRAWN BY:	MTI			
DESIGNER:	TJD			
CHECKED BY:	GCP			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

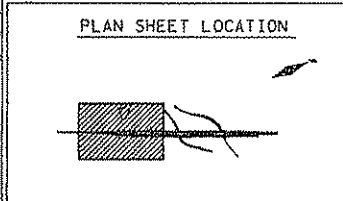
Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

PHONE: (651)490-2000  
 3535 WADSWORTH CENTER DR.  
 ST. PAUL, MN 55110



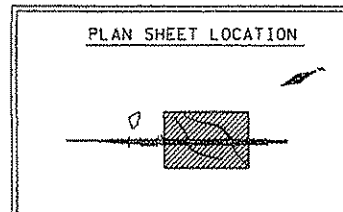
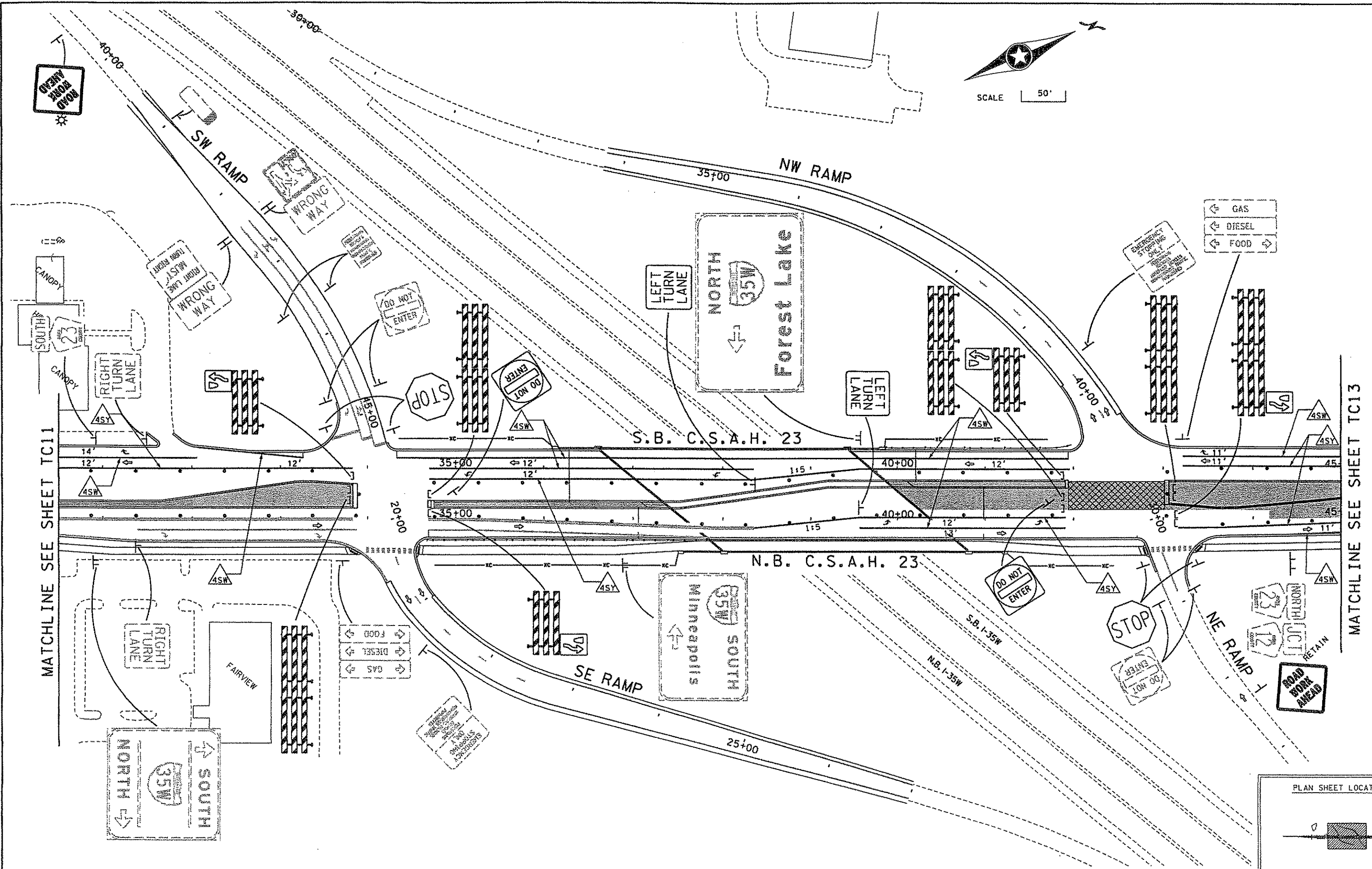
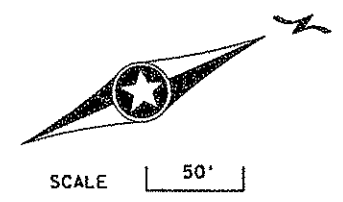
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STAGE 3 CONSTRUCTION STAGING AND TRAFFIC CONTROL PLAN	
FILE NO.	64
ALNOL0505.00	
TC11	198
OF TC20	



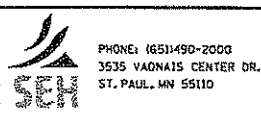
MATCHLINE SEE SHEET TC12

10837PH  
3/23/2007  
TC12  
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DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

STAGE 3  
 CONSTRUCTION STAGING AND  
 TRAFFIC CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+00

FILE NO.	65
ALINOL0505.00	
TC12	
OF TC20	198



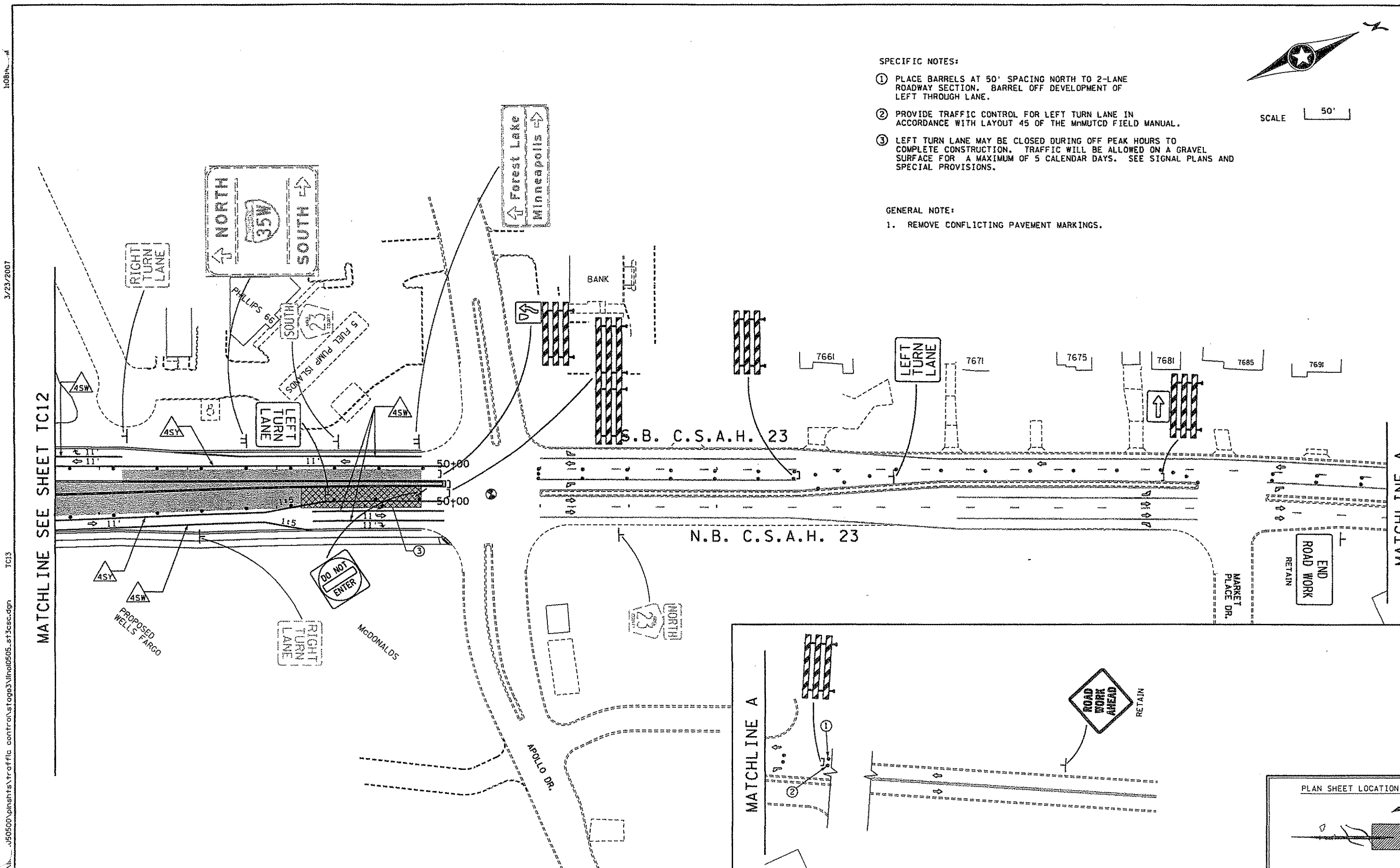
SCALE 50'

**SPECIFIC NOTES:**

- ① PLACE BARRELS AT 50' SPACING NORTH TO 2-LANE ROADWAY SECTION. BARREL OFF DEVELOPMENT OF LEFT THROUGH LANE.
- ② PROVIDE TRAFFIC CONTROL FOR LEFT TURN LANE IN ACCORDANCE WITH LAYOUT 45 OF THE MnMUTCD FIELD MANUAL.
- ③ LEFT TURN LANE MAY BE CLOSED DURING OFF PEAK HOURS TO COMPLETE CONSTRUCTION. TRAFFIC WILL BE ALLOWED ON A GRAVEL SURFACE FOR A MAXIMUM OF 5 CALENDAR DAYS. SEE SIGNAL PLANS AND SPECIAL PROVISIONS.

**GENERAL NOTE:**

1. REMOVE CONFLICTING PAVEMENT MARKINGS.



1:08:00  
 3/23/2007  
 TC13  
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DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Jeffery J. Bacon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: JEFFERY J. BACON Date: 3/23/2007

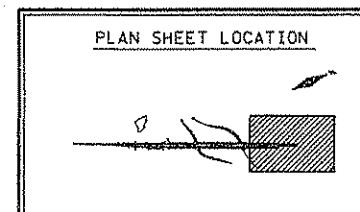
PHONE: 651-490-2000  
 3535 VAONALS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**STAGE 3**  
**CONSTRUCTION STAGING AND**  
**TRAFFIC CONTROL PLAN**  
 N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

FILE NO. 66  
 ALINOL0505.00  
 TC13 OF TC20  
 198

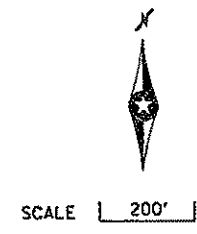








105. 3/23/2007 TC15 050500.plnshhst\traffic\control\lino\0505\_0vd.tc.dgn



PCMS  
WILL BE  
CLOSED  
CR 23  
FRI 9 PM  
TO  
MON 5 AM  
PLACE 5 DAYS  
IN ADVANCE OF  
CLOSURE

STATION POLICE OFFICER  
AT INTERSECTION DURING  
S.B. T.H. 35W DETOUR  
IF NECESSARY.

CR 23  
WILL BE  
CLOSED  
PCMS  
PLACE 5 DAYS  
IN ADVANCE OF  
CLOSURE  
FRI 9 PM  
TO  
MON 5 AM

STATION POLICE OFFICER  
AT INTERSECTION DURING  
N.B. T.H. 35W DETOUR,  
IF NECESSARY.

**SPECIFIC NOTES:**

② PROVIDE BYPASS AND LANE REDUCTION TO SHIFT TRAFFIC TO EXIT RAMP USING THE MMJTC D FIELD MANUAL LAYOUTS, MODIFIED AS REQUIRED. SEE SHEETS TC14-TC15 FOR LAYOUT OF ADVANCED WARNING SIGNS FOR BRIDGE REMOVAL. ADVANCED WARNING SIGNS TO BE PLACED BEGINNING 1200' IN ADVANCE OF THE START OF THE LANE CLOSURE, THENCE EXTENDING AT 1200' INTERVALS IN ADVANCE OF THE PREVIOUS SIGN.

**GENERAL NOTE:**

1. COVER CONFLICTING SIGNS ON RAMPS FOR T.H. 35W TRAFFIC.

DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
Printed Name: TIFFANY J. DAGON Date: 3/23/2007

PHONE: (651)490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

I-35W ADVANCE SIGNING AND  
DETOUR PLAN - WEEKEND CLOSURE  
FOR BRIDGE REMOVAL

FILE NO. 68  
ALINGL0505.00  
TC15  
OF TC20 198

11081a-1-M

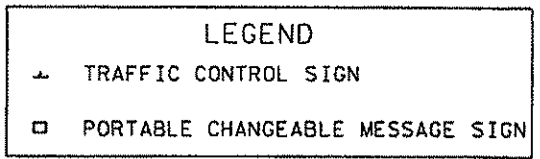
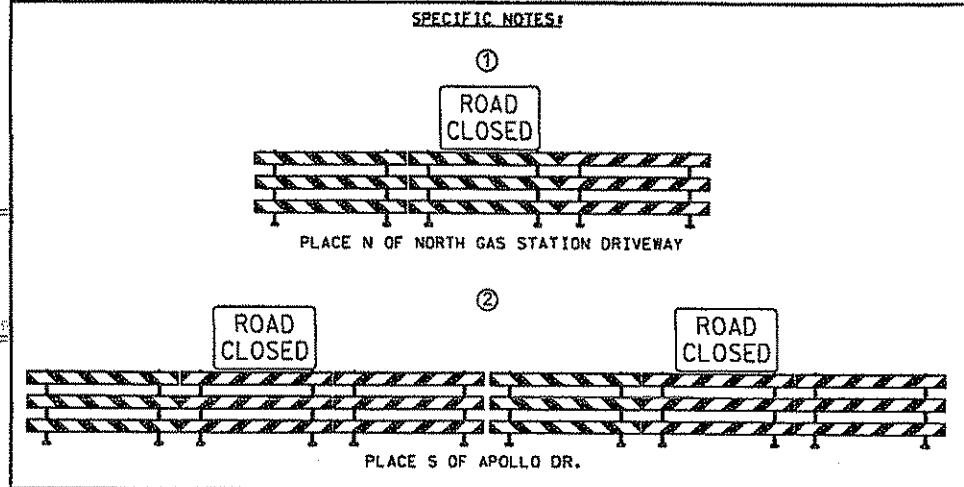
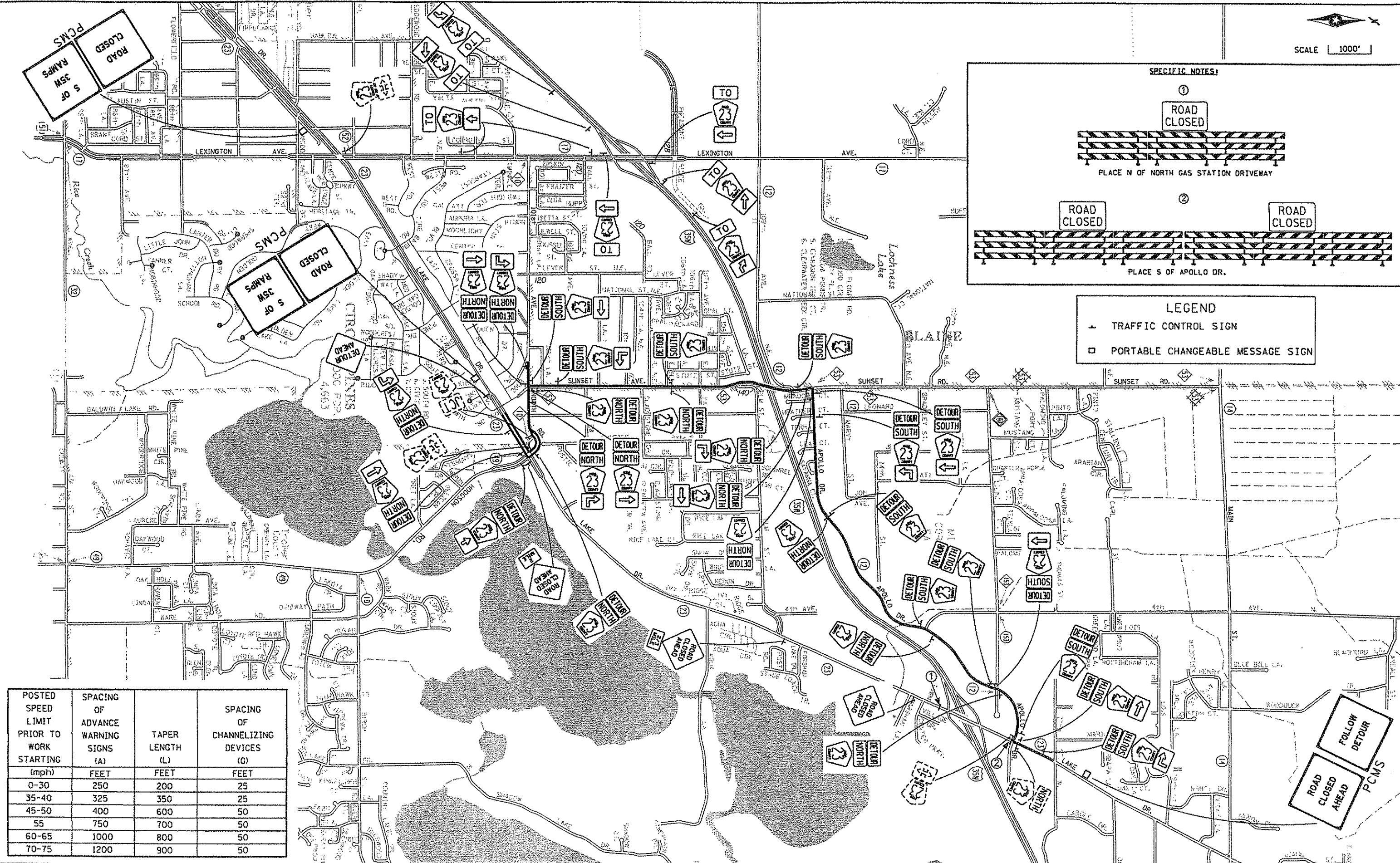
3/23/2007

TC16

s:\ko\11\_050500\pinarts\traffic control\110505.lake.tc.dgn



SCALE 1000'



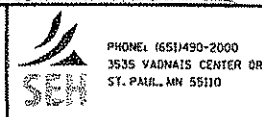
POSTED SPEED LIMIT PRIOR TO WORK STARTING	SPACING OF ADVANCE WARNING SIGNS (A)	TAPER LENGTH (L)	SPACING OF CHANNELIZING DEVICES (G)
(mph)	FEET	FEET	FEET
0-30	250	200	25
35-40	325	350	25
45-50	400	600	50
55	750	700	50
60-65	1000	800	50
70-75	1200	900	50

DESIGN TEAM

DRAWN BY: MTT			
DESIGNER: TJD			
CHECKED BY: GCP			
NO.	BY	DATE	REVISIONS

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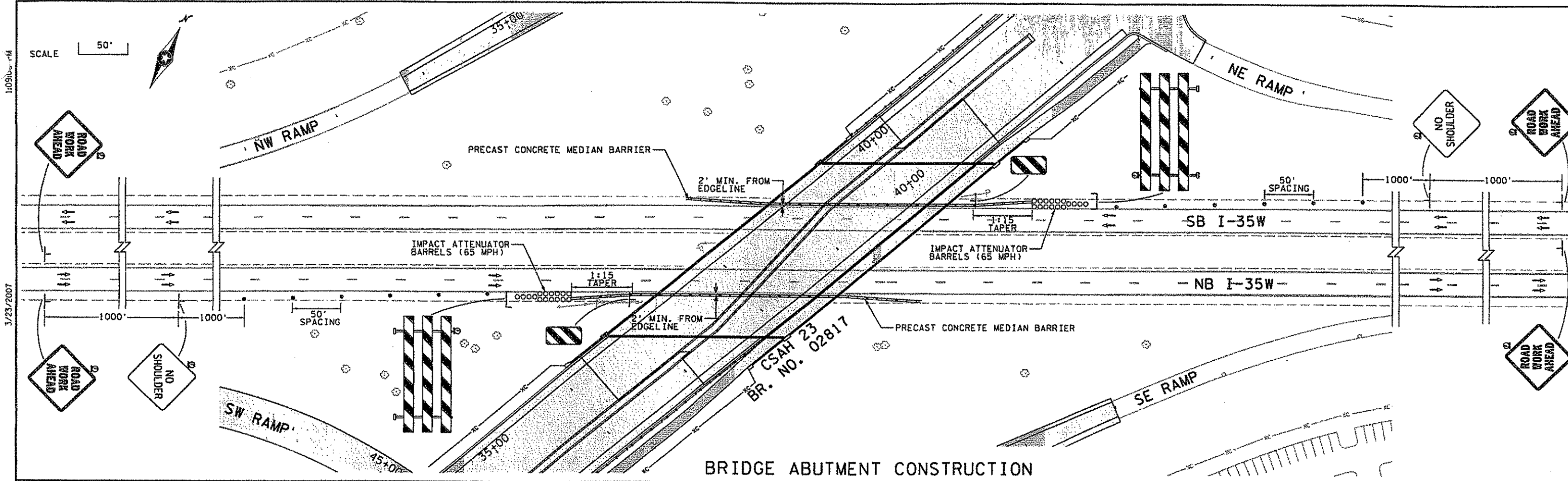
Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



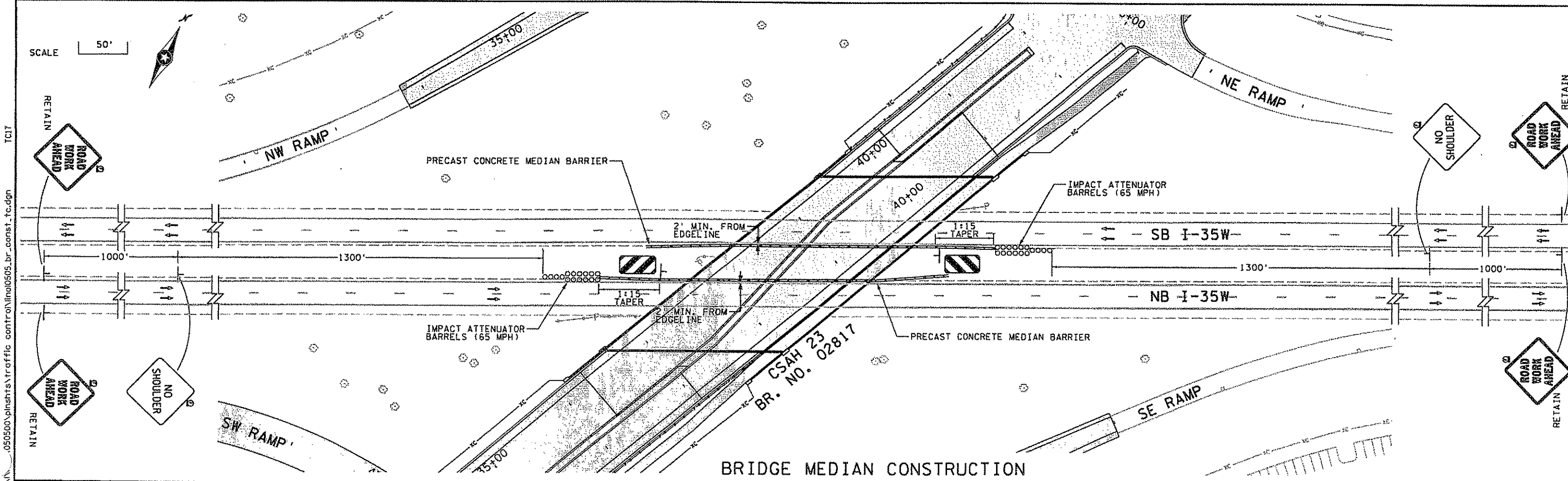
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

LAKE DRIVE DETOUR PLAN  
 FOR BRIDGE REMOVAL

FILE NO. 69  
 ALIN0505.00  
 TC16  
 OF TC20  
 198



BRIDGE ABUTMENT CONSTRUCTION

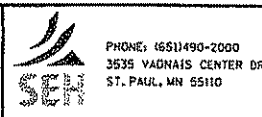


BRIDGE MEDIAN CONSTRUCTION

DESIGN TEAM			
DRAWN BY:	MIT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

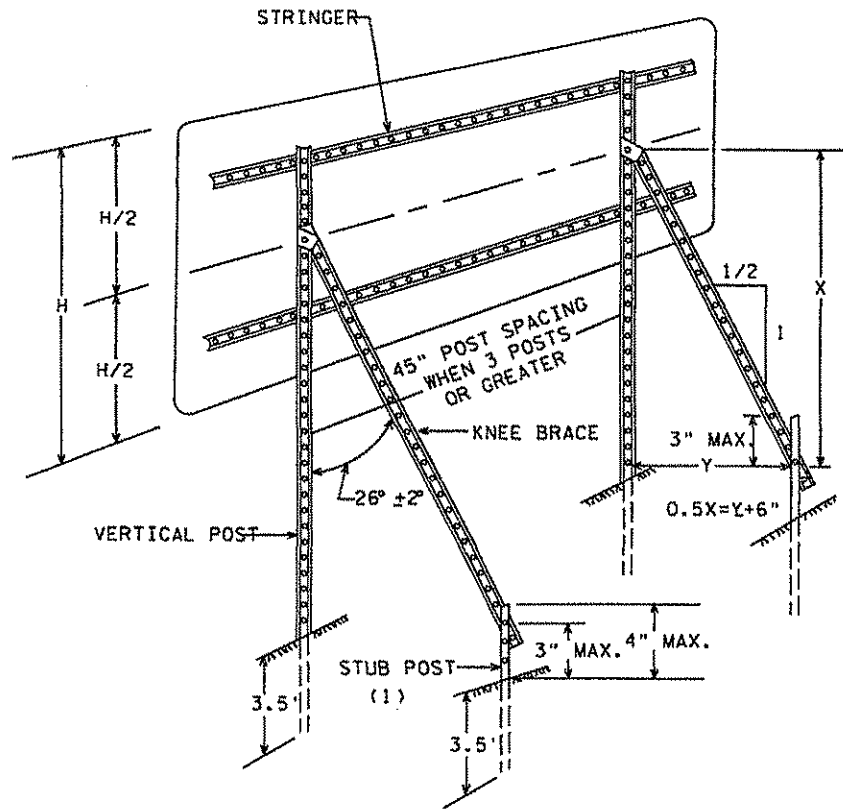
I-35W TRAFFIC CONTROL		FILE NO. 70
BRIDGE CONSTRUCTION		ALINDL0505.00
TC17		198
OF TC20		

1:09a...-M

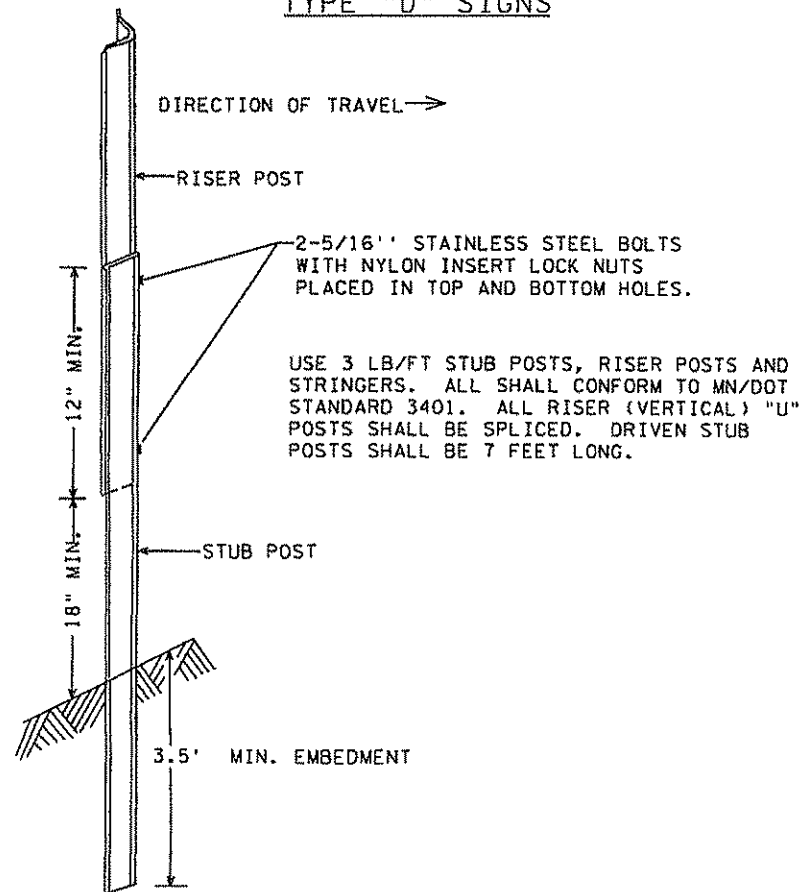
3/23/2007

TC18

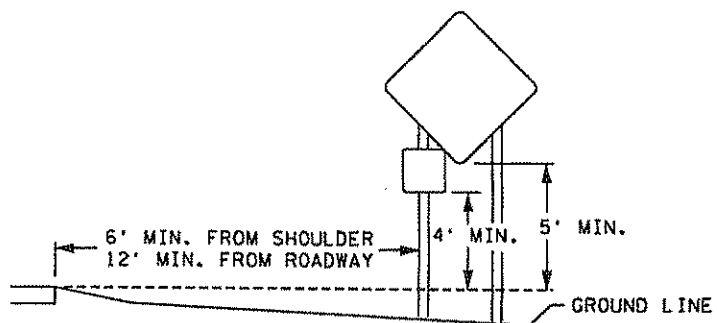
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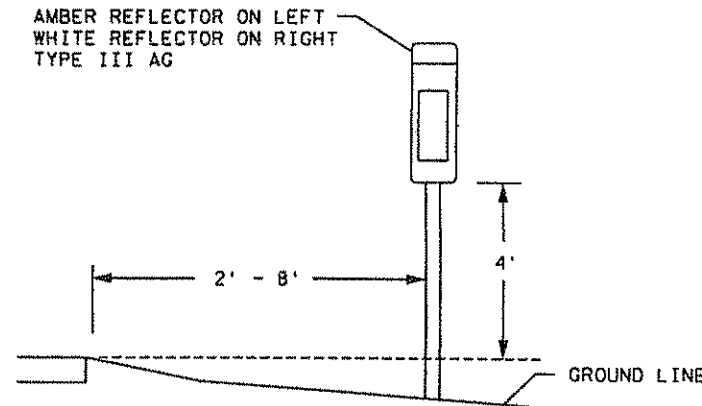
TYPICAL "A-FRAME" INSTALLATION  
TYPE "D" SIGNS



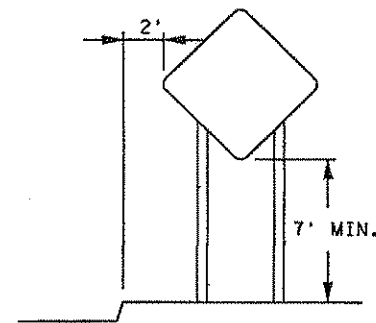
"U" POST SPLICE



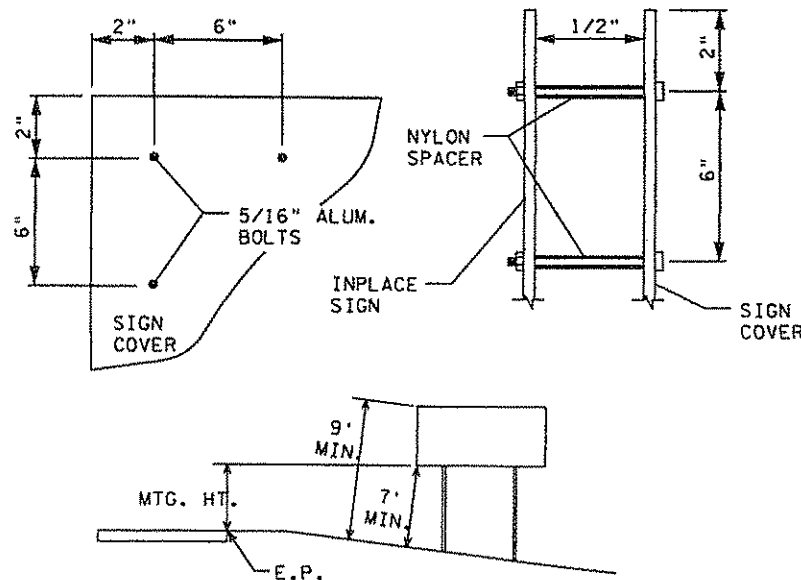
TYPICAL RURAL DESIGN



DELINEATION MOUNTING



TYPICAL URBAN DESIGN



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY  
RELATIVE TO VERTICAL POST.

TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS

SIGN DATA

SIGNS TO BE INSTALLED ON DRIVEN U-POSTS SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1 OR TABEL 2 BELOW. SIGN PANELS SHALL BE INSTALLED ON SIGN STRUCTURES TO MEET THE MINIMUM 5 FEET DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7 FEET DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, OR MINIMUM 7 AND 9 FEET DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

TABLE 1

STANDARD CONSTRUCTION SIGNS IN MN/DOT STANDARD SIGNS MANUAL

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18	0	13
30 x 24	2-U	18	0	13
36 x 30	2-U	24	0	13
36 x 36	2-U	18	0	14
42 x 36	2-U	30	0	14
48 x 48	2-U	30	0	15
60 x 60	2-U	42	1	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	16
168 x 132	4-U	48	4	20

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE STANDARD SIGNS MANUAL FOR PUNCHING HOLES.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

PANEL SIZE		POSTS			
LENGTH (IN.)	HEIGHT (IN.)	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
54 - 96	78	2-U	42	2	20
102 - 138	78	3-U	45	3	20
144 - 180	78	4-U	45	4	20

DESIGNER NOTE:

INCLUDE SPECIAL SIGN DETAILS IN THE TRAFFIC CONTROL PLAN IN TABLE TWO.

NOTES:

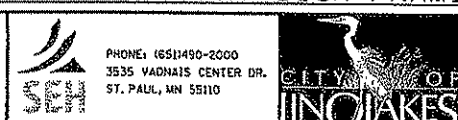
FOR TEMPORARY CONSTRUCTION SIGN FRAMING, THE CONTRACTOR MAY USE GRADE 5 ZINC PLATED BOLTS FOR ALL BOLTED CONNECTIONS, EXCEPT FOR THE KNEE BRACE CONNECTION TO THE REAR STUB POST, WHICH SHALL UTILIZE A 5/16 INCH STAINLESS STEEL BOLT AND NYLON INSERT LOCK NUT. ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN THE TRAFFIC ENGINEERING MANUAL PART 6.

IF THE CONTRACTOR ELECTS TO USE SOME OTHER TYPE OF SIGN SUPPORT (OTHER THAN U-CHANNEL SIGN POSTS) FOR MOUNTING CONSTRUCTION SIGNS, DETAILS OF THE PROPOSED SIGN STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE SIGN STRUCTURE COMPONENTS. ANY SIGN STRUCTURE TO BE SUBMITTED TO THE ENGINEER SHALL BE AN FHWA ACCEPTED BREAKAWAY SIGN SUPPORT. SIGN STRUCTURE SHALL ALSO BE APPROVED FOR 90 MPH WIND LOAD.

SIGNS SHOWN TO BE COVERED SHALL BE COVERED WITH THE SAME COLOR AS THE SIGN BACKGROUND. THE CONTRACTOR SHALL INSTALL COVERS OR ADDITIONAL SIGNS USING A MINIMUM 1/2" NYLON SPACER BETWEEN THE INPLACE SIGN AND THE COVERING MATERIAL. HOLES WILL BE DRILLED IN THE COVER AND THE INPLACE SIGN AND SHALL BE INSTALLED IN ACCORDANCE TO THE SIGN PANEL DETAIL. SPACERS ARE REQUIRED. MID-PANEL SPACING SHALL BE NO GREATER THAN 24".

DESIGN TEAM			
DRAWN BY:	MIT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *Tiffany J. Dagon* Lic. No. 40535  
Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	71
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TC18	198
OF TC20	

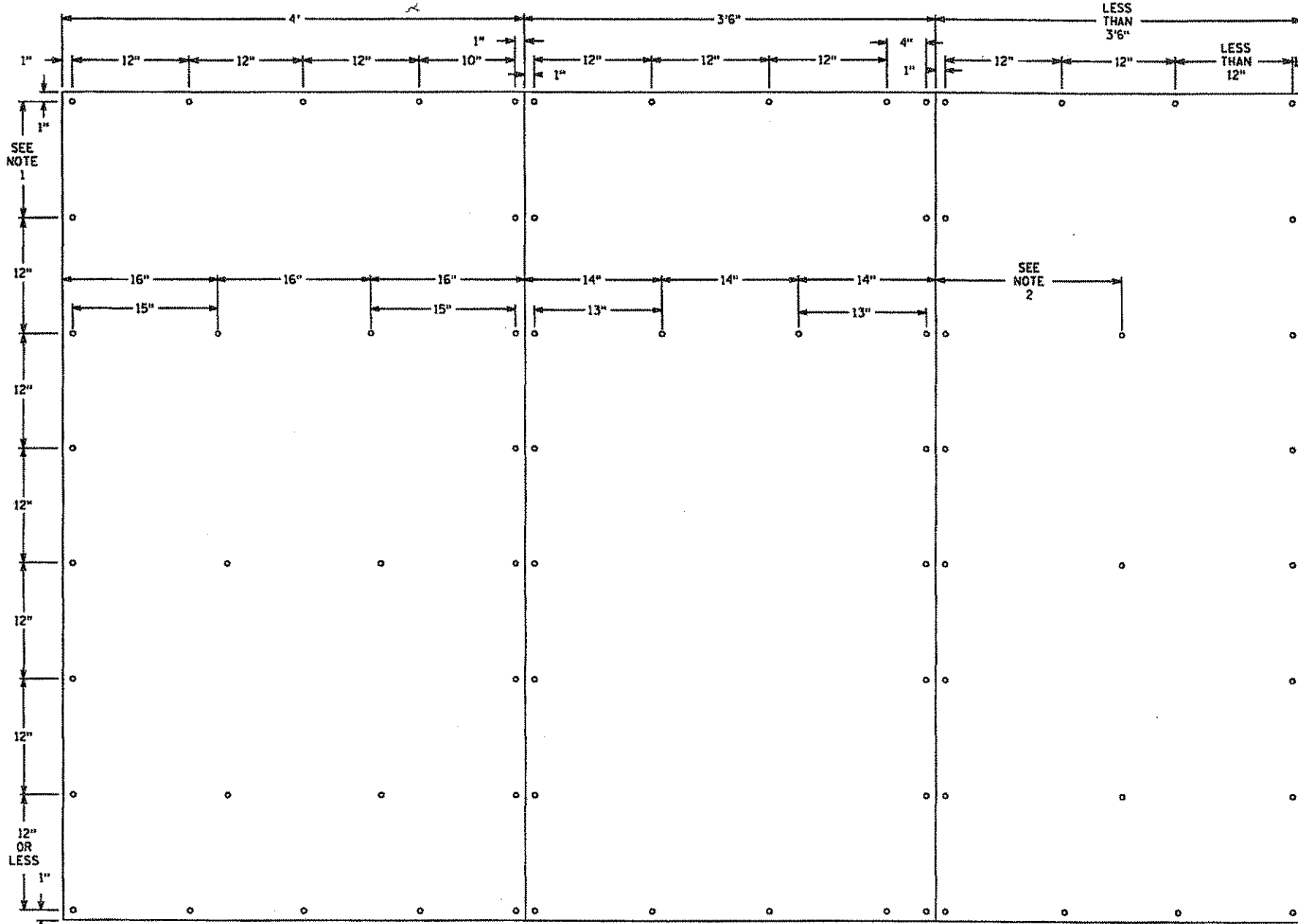


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3/23/2007

TC19

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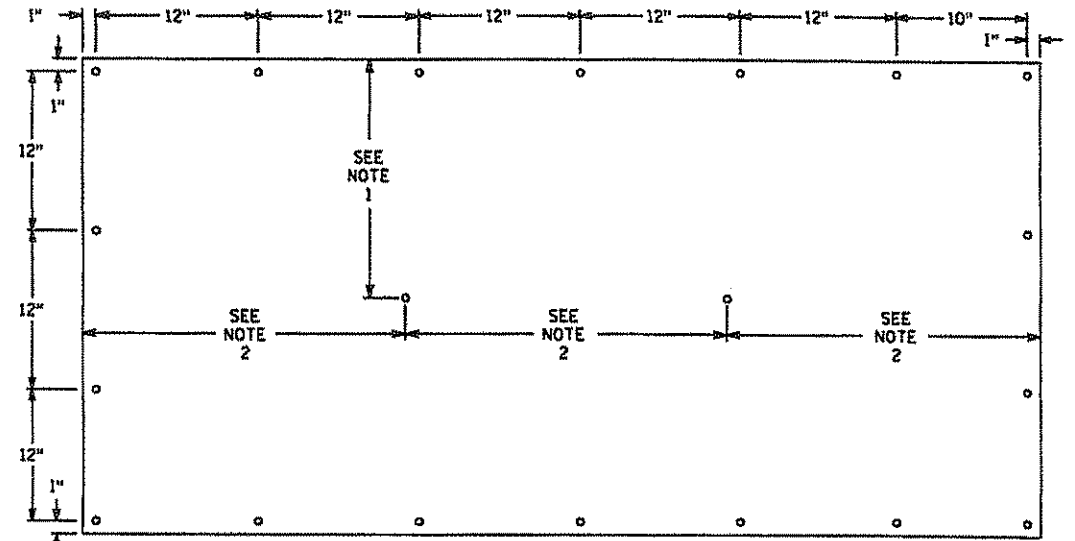
**TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A COMPLETE SIGN PANEL**

**OVERLAY ASSEMBLY STEPS:**

1. DRILL 13/64" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH HOLE SPACING ON DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 12" APART.
2. ATTACH ONE PLASTIC WASHER (1/8" THICK, 3/8" I.D. AND 7/8" O.D.), WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE FAR LEFT SHEET ALUMINUM OVERLAY PANEL WITH THE BOTTOM FLUSH WITH THE INPLACE SIGN PANEL AND THE LOWER LEFT EDGE OF THE OVERLAY PANEL LINED UP WITH THE LOWER LEFT EDGE OF THE BOTTOM INPLACE PANEL SECTION.
4. DRILL ALL OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH OVERLAY PANEL WITH 3/16" POP RIVETS MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a
5. DRILL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH RIVETS AS SPECIFIED IN STEP 4.
6. ABUT THE NEXT OVERLAY PANEL TO THE FIRST ATTACHED OVERLAY PANEL AND PERFORM THE SAME WORK AS SPECIFIED IN STEPS 4 AND 5.
7. INSTALL EACH ADDITIONAL OVERLAY PANEL AS SPECIFIED IN STEP 6.

**NOTES:**

1. IF TOP PANEL IS 6" HIGH, THIS VERTICAL SPACE IS 6"; IF TOP PANEL IS 12" HIGH, THIS VERTICAL SPACE IS 12".
2. SHEET ALUMINUM PANEL RIVET SPACING SHALL BE 1/2 THE PANEL'S WIDTH.



**TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A PORTION OF A SIGN PANEL**

**OVERLAY ASSEMBLY STEPS:**

1. DRILL 13/64" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH HOLE SPACING ON DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 12" APART.
2. ATTACH ONE PLASTIC WASHER (1/8" THICK, 3/8" I.D. AND 7/8" O.D.), WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE OVERLAY PANEL, ON THE INPLACE SIGN PANEL, MAKING SURE THE MOUNTING HOLES ON THE OVERLAY PANEL DO NOT LINE UP WITH ANY HORIZONTAL ALUMINUM PANEL JOINTS.
4. DRILL ALL OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH OVERLAY PANEL WITH 3/16" POP RIVETS MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a.
5. DRILL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH THE SAME RIVETS AS SPECIFIED IN STEP 4.

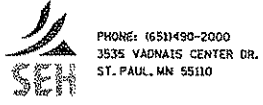
**NOTES:**

1. VERTICAL SPACING FOR INNER MOUNTING HOLES IS 1/2 THE PANEL HEIGHT. IF THE PANEL IS LESS THAN 24" HIGH, THERE SHALL BE NO INNER HOLES.
2. HORIZONTAL SPACING FOR INNER MOUNTING HOLES SHALL NOT BE LESS THAN 15", NOR MORE THAN 24".

DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40536  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



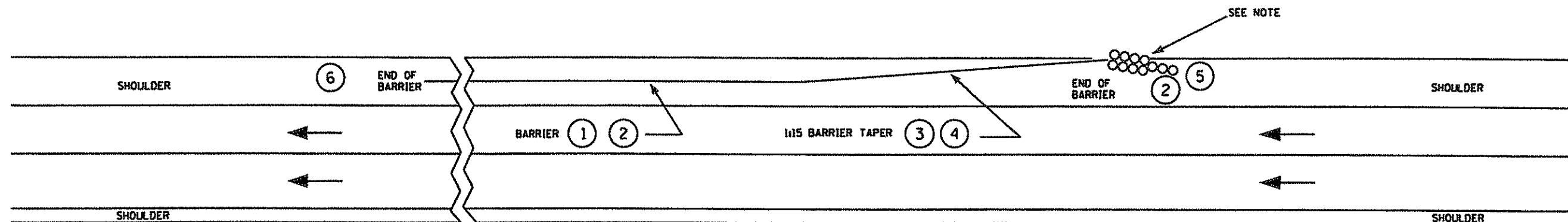
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TEMPORARY CONSTRUCTION SIGN  
 PANEL OVERLAY COVERING  
 OF A SIGN PANEL TYPICAL

FILE NO.	72
ALINOL0505.00	
TC19	
OF TC20	198



**PORTABLE CONCRETE BARRIER PLACEMENT**



- ① IT IS DESIRABLE TO MAINTAIN FULL SHOULDER WIDTH WHENEVER POSSIBLE. IF NOT POSSIBLE, MINIMUM DESIRABLE LATERAL OFFSETS ARE BASED ON THE FOLLOWING POSTED SPEEDS:
- 70 MPH - 12.0 FEET
  - 60 MPH - 8.0 FEET
  - 50 MPH - 6.5 FEET
  - 40 MPH - 5.0 FEET

FOR RESTRICTED CONDITIONS, LESSER OFFSETS MAY BE USED. THE OFFSETS SHOULD BE A MINIMUM OF 2 FEET UNLESS THE CONDITIONS ARE EXTREME. LATERAL OFFSETS ARE MEASURED TO THE BOTTOM OF THE BARRIER. BARRIER OFFSET FROM EDGE OF THRU LANE SHOULD NOT EXCEED 15 FEET.

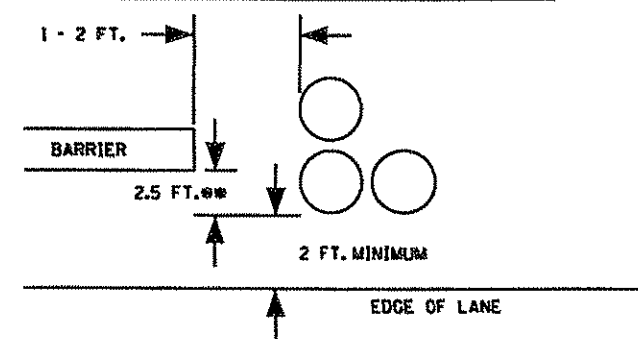
- ② DESIRABLE TREATMENTS FOR EXPOSED BARRIER ENDS ARE; A CONNECTION TO EXISTING BARRIER; IMPACT ATTENUATOR; TAPER AWAY TO THE EDGE OF THE CLEAR ZONE; AND EXTENDING THROUGH A PLATE BEAM GUARDRAIL BY REMOVING A PANEL.
- FOR POSTED SPEEDS 30 MPH OR LESS, THE TAPERING AWAY FROM THE TRAFFIC IS DESIRABLE AND USE OF IMPACT ATTENUATOR ARE OPTIONAL
- ③ A 1:10 TAPER MAY BE USED WHEN POSTED SPEED LIMIT IS 35 MPH OR LESS.
- ④ IF THE BARRIER IS TO BE EXTENDED BEYOND THE SHOULDER, ADDITIONAL FILL WILL BE NEEDED IN ORDER TO PROVIDE A FLAT (1:10) APPROACH AREA TO THE BARRIER. FILL WILL BE INCIDENTAL TO BARRIER AND/OR IMPACT ATTENUATOR. (SEE SHOULDER FILL DETAIL BELOW)

- ⑤ THE IMPACT ATTENUATOR SHOULD BE OFFSET A MINIMUM OF 2 FT. FROM THE EDGE OF THE THRU LANE (SEE SAND BARREL OFFSET DETAIL). THE IMPACT ATTENUATOR SHOULD BE ORIENTED TO ACCOMMODATE THE PROBABLE IMPACT ANGLE OF AN ENCROACHING VEHICLE. FOR MOST ROADSIDE CONDITIONS, AN ANGLE APPROXIMATELY 10 DEGREES, AS MEASURED BETWEEN THE HIGHWAY AND THE IMPACT ATTENUATOR LONGITUDINAL CENTERLINE, IS CONSIDERED APPROPRIATE (SEE SHOULDER FILL DETAIL). FOR SAND BARREL ARRANGEMENT SEE DETAIL BELOW.
- ⑥ FOR TWO-LANE TWO-WAY TRAFFIC BOTH ENDS OF THE BARRIER SHOULD BE TREATED IN THE SAME MANNER AS DESCRIBED IN ②

**NOTE:**

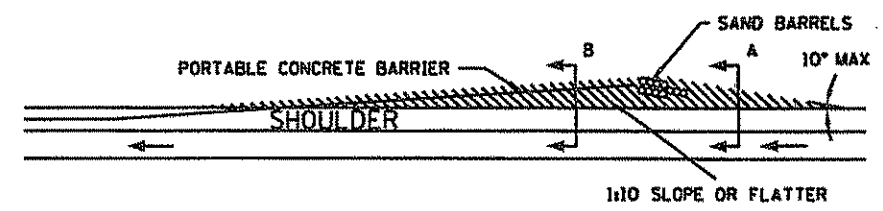
AT THE DIRECTION OF THE ENGINEER, OTHER APPROVED IMPACT ATTENUATORS CAN BE SUBSTITUTED IN LIEU OF THE SAND BARRELS ESPECIALLY WHERE REDIRECTION IS DESIRED OR AT WIDTH RESTRICTED AREAS.

**SAND FILLED BARREL OFFSET**

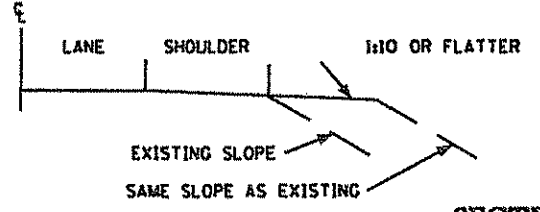


\*\* DISTANCE MAY BE REDUCED TO MINIMUM OF 15 IN. (1.25 FT.). THIS IS ACCEPTABLE ONLY WHERE A GREATER OFFSET WOULD CAUSE UNACCEPTABLE INTERFERENCE WITH TRAFFIC.

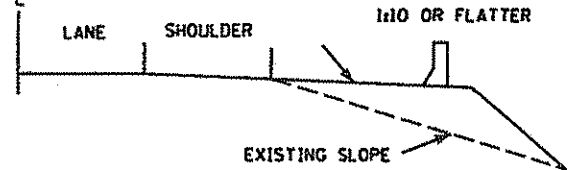
**SHOULDER FILL**



**SECTION A**



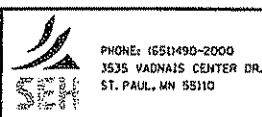
**SECTION B**



DESIGN TEAM				
DRAWN BY: MIT				
DESIGNER: TJD				
CHECKED BY: CCP				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

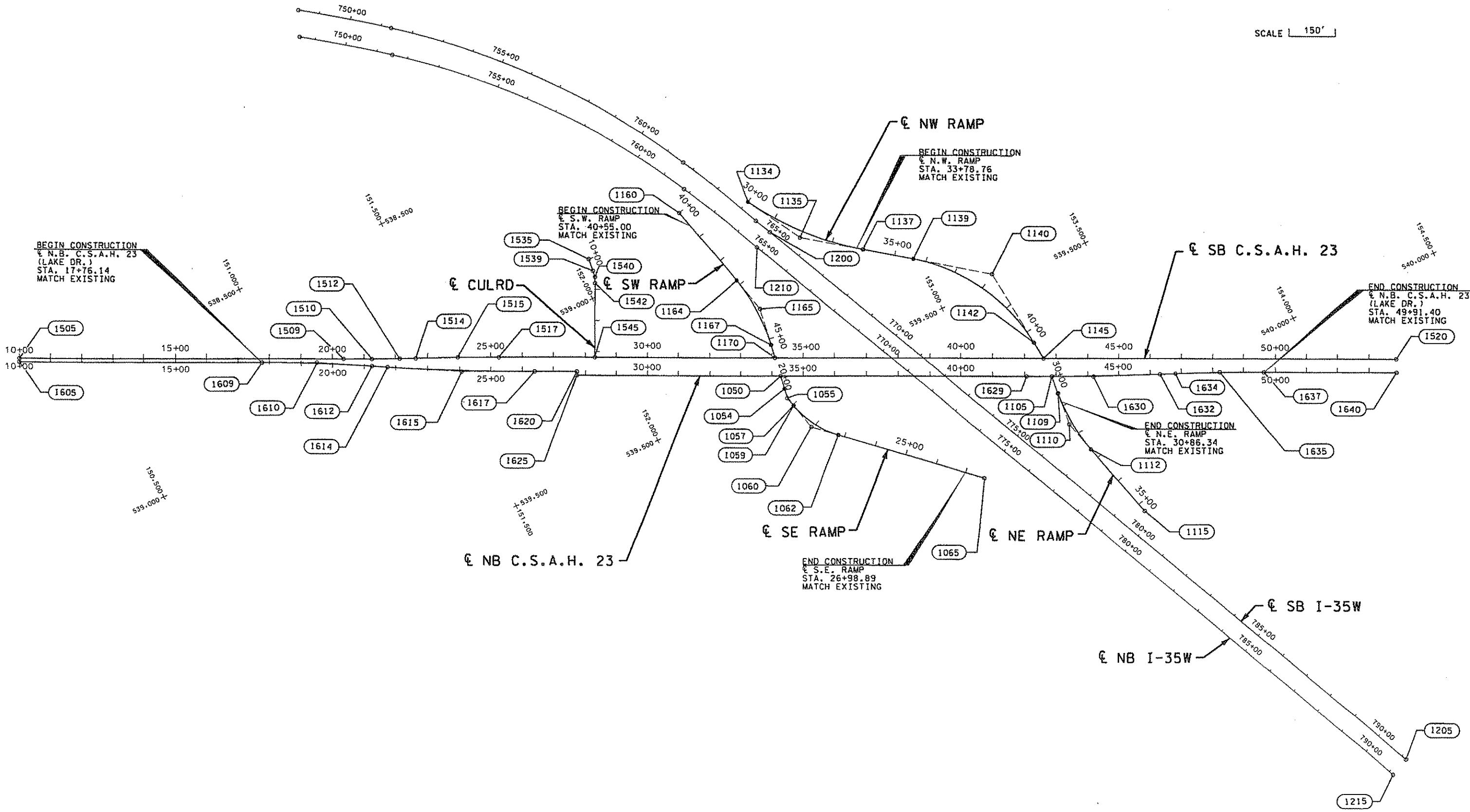
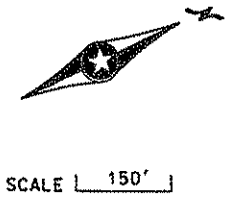


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	73
ALINOL0505.00	
TC20	198
OF TC20	

109A  
3/23/2007  
TC20  
J:\05000\plans\ts\traffic control\linok0505.tc detail.dgn

**HORIZONTAL CONTROL:** THE HORIZONTAL CONTROL SHOWN ON THIS PLAN IS BASED ON ANOKA COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 83 ADJUSTMENT SOUTH ZONE.



110511.dwg 3/23/2007 Default s:\k01\050500\p1nshrs\align\110505.dwg

DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007

PHONE: 651-490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

ALIGNMENT PLAN		FILE NO. 74
AL1		198
OF AL2		

10911

3/23/2007

Default

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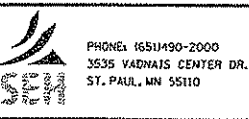
ALIGNMENTS										Q
POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
N.B. C.S.A.H. 23 (CHAIN: NB-LAKE)										
1605	POT	9+99.450						538,413.5823	150,263.4363	
1609	PC	17+76.141						538,743.2247	150,966.7037	N 25° 06' 49.99" E
1610	PI	19+50.044	3° 28' 37.16" RT	1° 00' 00.00"	5,729.578'	173.903'	347.699'	538,817.0324	151,124.1668	PI
1611	CC							543,931.1625	148,534.9625	
1612	PT	21+23.840						538,900.2539	151,276.8637	N 28° 35' 27.15" E
1614	PC	21+73.840						538,924.1815	151,320.7667	N 28° 35' 27.15" E
1615	PI	24+06.881	3° 29' 40.35" LT	0° 45' 00.00"	7,639.437'	233.042'	465.939'	539,035.7041	151,525.3910	PI
1616	CC							532,216.3034	154,976.6350	
1617	PT	26+39.778						539,134.5467	151,736.4326	N 25° 05' 46.81" E
1620	POT	27+72.337						539,190.7705	151,856.4776	
1625	POT	27+72.337						539,201.6377	151,851.3879	
1629	PC	42+05.583						539,809.5366	153,149.3293	N 25° 05' 46.81" E
1630	PI	44+18.199	2° 07' 33.29" LT	0° 30' 00.00"	11,459.156'	212.616'	425.183'	539,899.7158	153,341.8733	PI
1631	CC							529,432.1717	158,009.6329	
1632	PT	46+30.766						539,982.6904	153,537.6300	N 22° 58' 13.52" E
1634	PC	46+80.766						540,002.2032	153,583.6654	N 22° 58' 13.52" E
1635	PI	48+22.510	2° 07' 33.29" RT	0° 45' 00.00"	7,639.437'	141.744'	283.455'	540,057.5196	153,714.1699	PI
1636	CC							547,035.8823	150,602.3301	
1637	PT	49+64.221						540,117.6390	153,842.5325	N 25° 05' 46.81" E
1640	POT	53+90.400						540,298.3990	154,228.4779	
S.B. C.S.A.H. 23 (CHAIN: SB-LAKE)										
1505	POT	10+00.004						538,402.7184	150,268.5329	
1509	PC	20+35.751						538,842.3092	151,206.3669	N 25° 06' 49.99" E
1510	PI	21+24.567	1° 19' 55.82" LT	0° 45' 00.00"	7,639.437'	88.815'	177.623'	538,880.0042	151,286.7863	PI
1511	CC							531,925.0588	154,448.6885	
1512	PT	22+13.374						538,915.8193	151,368.0604	N 23° 46' 54.17" E
1514	PC	22+63.374						538,935.9820	151,413.8148	N 23° 46' 54.17" E
1515	PI	23+94.842	1° 18' 52.63" RT	0° 30' 00.00"	11,459.156'	131.468'	262.924'	538,988.9968	151,534.1195	PI
1516	CC							549,422.1227	146,792.8726	
1517	PT	25+26.299						539,044.7578	151,653.1762	N 25° 05' 46.81" E
1520	POT	53+90.203						540,259.4583	154,246.7160	
S.W. RAMP (CHAIN: SWRAMP)										
1160	POT	40+00.000						538,868.4785	152,373.2315	
1164	PC	42+82.998						539,141.7916	152,446.6346	N 74° 58' 01.00" E
1165	PI	44+02.975	23° 39' 12.89" RT	10° 00' 00.00"	572.958'	119.977'	236.536'	539,257.6623	152,477.7537	PI
1166	CC							539,290.4033	151,893.2855	
1167	PT	45+19.534						539,376.2837	152,459.7704	S 81° 22' 46.11" E
1170	POT	45+63.209						539,419.4652	152,453.2240	
N.E. RAMP (CHAIN: NERAMP)										
1105	POT	30+00.000						539,842.9847	153,221.7195	
1109	PC	30+57.617						539,900.3743	153,216.6014	S 84° 54' 13.19" E
1110	PI	31+63.368	20° 54' 52.81" LT	10° 00' 00.00"	572.958'	105.750'	209.147'	540,005.7064	153,207.2075	PI
1111	CC							539,951.2704	153,787.2941	
1112	PT	32+66.764						540,107.4519	153,236.0338	N 74° 10' 54.00" E
1115	POT	35+27.952						540,358.7490	153,307.2305	

ALIGNMENTS										Q	
POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH	
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y		
S.E. RAMP (CHAIN: SERAMP)											
1050	POT	20+00.000								539,479.2654	152,444.1582
1054	PC	20+42.381								539,521.1671	152,437.8058
1055	PI	20+73.710	23° 35' 39.85" LT	38° 11' 49.87"	150.000'	31.329'	61.770'	539,552.1422	152,433.1099	PI	
1056	CC									539,543.6506	152,586.1112
1057	PCC	21+04.151								539,582.4074	152,441.2046
1059	PCC	21+04.151								539,582.4074	152,441.2046
1060	PI	21+94.079	33° 22' 24.05" LT	19° 05' 54.94"	300.000'	89.928'	174.742'	539,669.2820	152,464.4402	PI	
1061	CC									539,504.8938	152,731.0178
1062	PT	22+78.893								539,729.0497	152,531.6333
1065	POT	27+60.489								540,049.1252	152,891.4749
N.W. RAMP (CHAIN: NWRAMP)											
1134	PC	30+00.000								538,928.9408	152,588.8101
1135	PI	32+02.083	23° 53' 50.67" LT	6° 00' 00.00"	954.930'	202.083'	398.290'	539,103.7378	152,690.2183	PI	
1136	CC									538,449.7436	153,414.8009
1137	PT	33+98.290								539,222.4694	152,853.7433
1139	PC	35+58.761								539,316.7523	152,983.5960
1140	PI	38+14.668	48° 08' 06.12" RT	10° 00' 00.00"	572.958'	255.907'	481.350'	539,467.1072	153,190.6748	PI	
1141	CC									539,780.3877	152,646.9615
1142	PT	40+40.112								539,721.6664	153,216.9022
1145	POT	40+98.705								539,779.9512	153,222.9073
CUL-DE-SAC (CHAIN: CULRD)											
1535	POT	10+00.000								538,880.0791	152,043.0179
	PC	10+39.891								538,919.8010	152,039.3444
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI	
	CC									538,908.9807	151,922.3437
	PT	10+80.558								538,958.8499	152,028.7360
1545	POT	13+17.647								539,173.5253	151,928.1112
1535	POT	10+00.000								538,880.0791	152,043.0179
	PC	10+39.891								538,919.8010	152,039.3444
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI	
	CC									538,908.9807	151,922.3437
	PT	10+80.558								538,958.8499	152,028.7360
1545	POT	13+17.647								539,173.5253	151,928.1112
N.B. I-35W (CHAIN: EXNB35W)											
1210	POT	764+80.772								539,073.9430	152,552.1540
1215	POT	791+16.337								541,460.5279	153,670.3740
S.B. I-35W (CHAIN: EXSB35W)											
1200	POT	764+80.772								539,046.7890	152,610.1080
1205	POT	791+16.337								541,433.3740	153,728.3280

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierl* Lic. No. 21098  
 Printed Name: MARK R. DIERL INC. Date: 3/23/2007

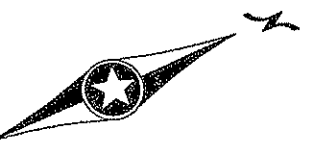


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	75
ALNOL0505.00	
ALIGNMENT TABULATIONS	
AL2 OF AL2	198

**LEGEND**

- |  |                              |  |                                       |
|--|------------------------------|--|---------------------------------------|
|  | REMOVE BITUMINOUS PAVEMENT ② |  | REMOVE BITUMINOUS DRIVEWAY PAVEMENT ① |
|  | REMOVE BITUMINOUS SHOULDER ① |  | REMOVE CONCRETE WALK                  |
|  | REMOVE PAVEMENT ③            |  | REMOVE GRAVEL DRIVEWAY ①              |
|  | BUILDING REMOVAL             |  |                                       |
|  | CLEARING AND GRUBBING - TREE |  | SAWCUT                                |
|  | CLEARING AND GRUBBING - ACRE |  | REMOVE CURB AND GUTTER                |
|  | REMOVE BITUMINOUS CURB       |  | REMOVE INTEGRANT CURB                 |



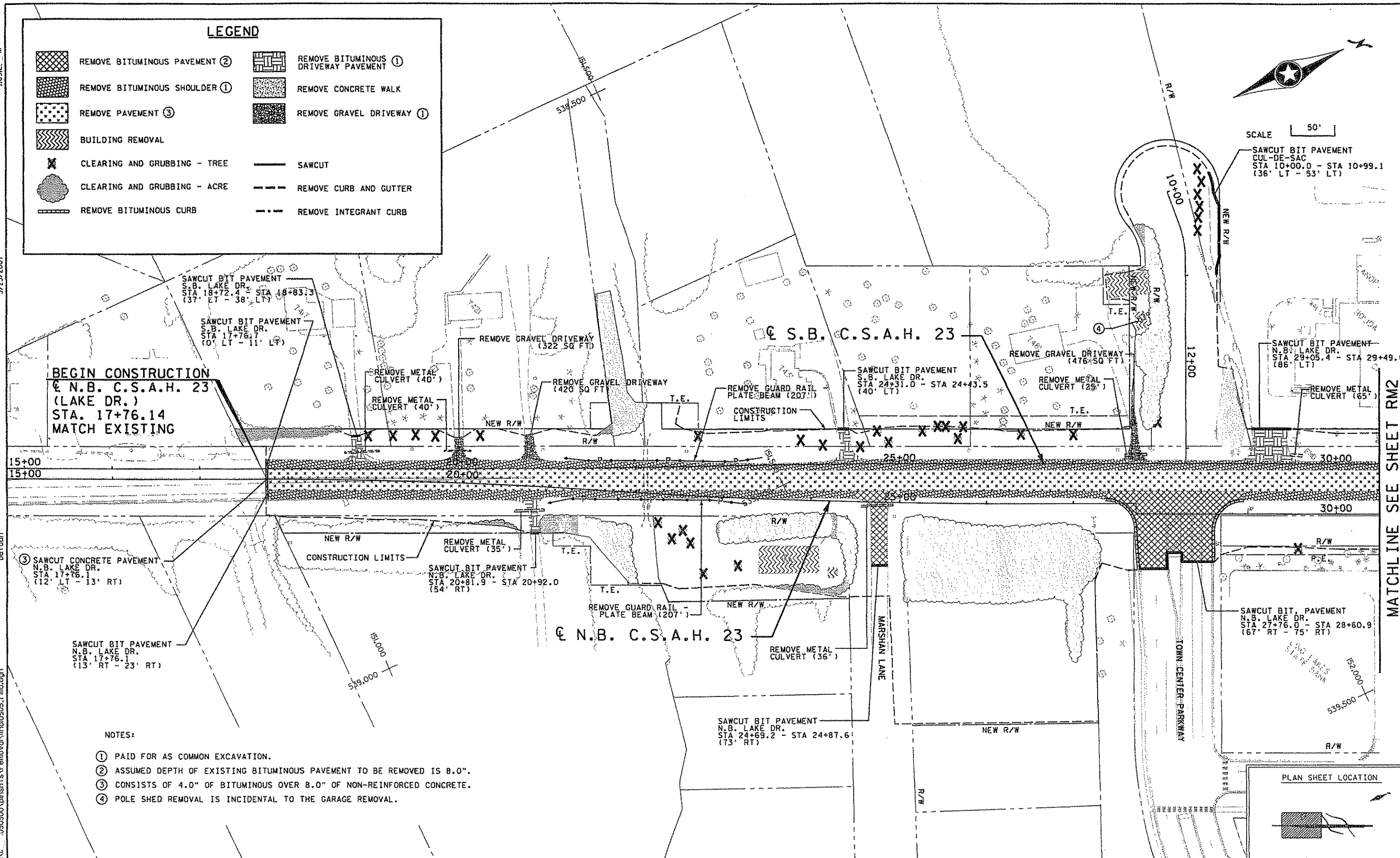
SCALE 50'

SAWCUT BIT PAVEMENT  
CUL-DE-SAC  
STA 10+00.0 - STA 10+99.1  
(36' LT - 53' LT)

SAWCUT BIT PAVEMENT  
N.B. LAKE DR.  
STA 29+05.4 - STA 29+49.6  
(86' LT)

SAWCUT BIT PAVEMENT  
N.B. LAKE DR.  
STA 27+76.0 - STA 28+60.9  
(67' RT - 75' RT)

**BEGIN CONSTRUCTION**  
N.B. C.S.A.H. 23  
(LAKE DR.)  
STA. 17+76.14  
MATCH EXISTING



- NOTES:**
- ① PAID FOR AS COMMON EXCAVATION.
  - ② ASSUMED DEPTH OF EXISTING BITUMINOUS PAVEMENT TO BE REMOVED IS 8.0".
  - ③ CONSISTS OF 4.0" OF BITUMINOUS OVER 8.0" OF NON-REINFORCED CONCRETE.
  - ④ POLE SHED REMOVAL IS INCIDENTAL TO THE GARAGE REMOVAL.

DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Diebling* Lic. No. 21098  
Printed Name: MARK R. DIEBLING Date: 3/23/2007

PHONE: (651)490-2000  
3535 VADMAIS CENTER DR.  
ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

REMOVAL PLAN		FILE NO. 76
N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50		ALNOL0505.00
RM1 OF RM3		198

10924 PM

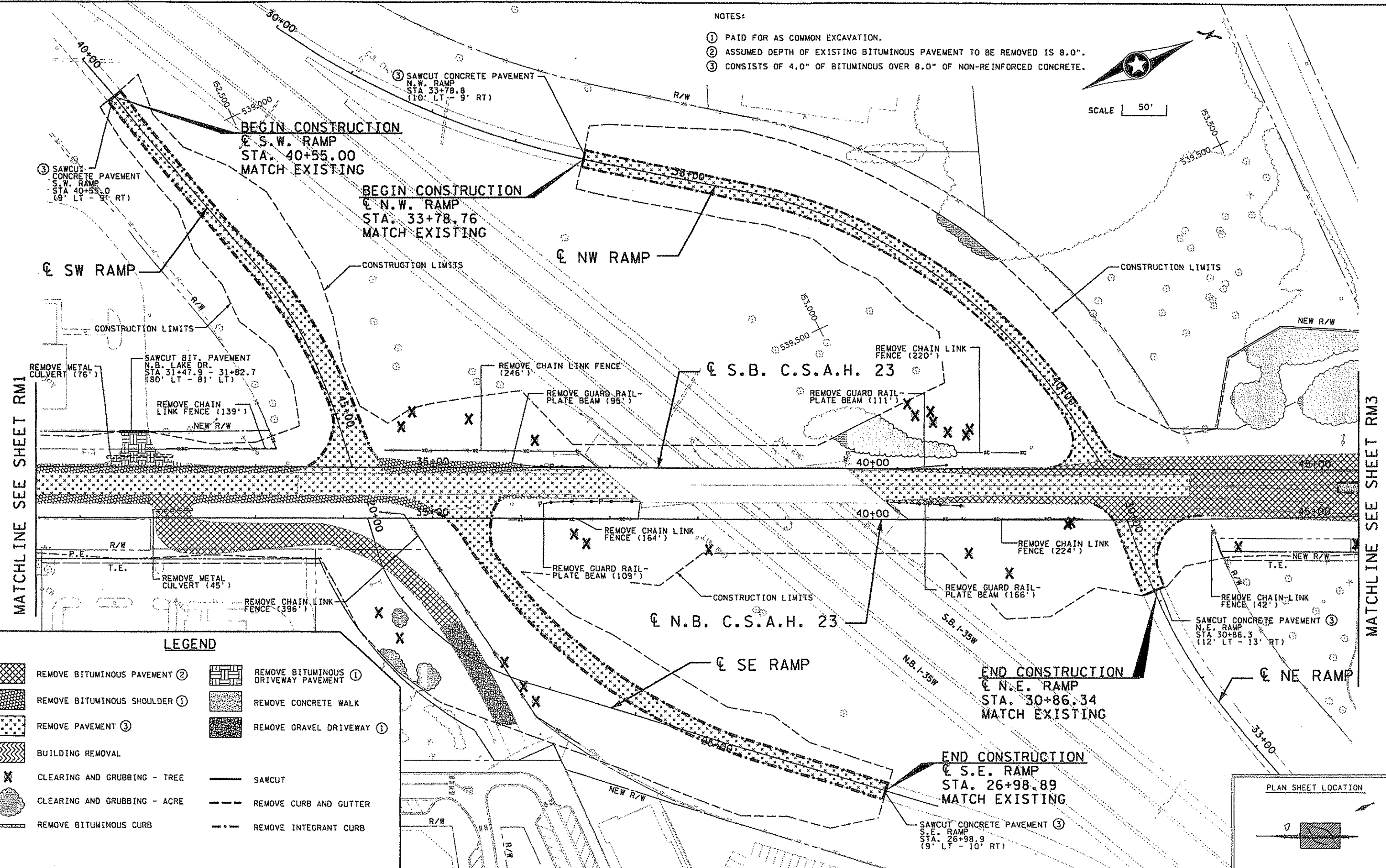
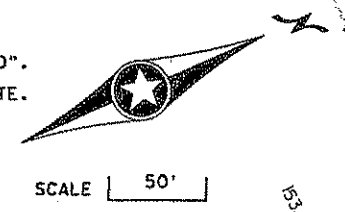
3/23/2007

DeFault

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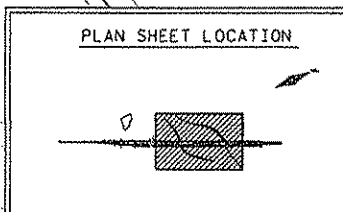
NOTES:

- ① PAID FOR AS COMMON EXCAVATION.
- ② ASSUMED DEPTH OF EXISTING BITUMINOUS PAVEMENT TO BE REMOVED IS 8.0".
- ③ CONSISTS OF 4.0" OF BITUMINOUS OVER 8.0" OF NON-REINFORCED CONCRETE.



LEGEND

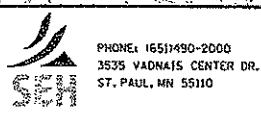
- |  |                              |  |                                       |
|--|------------------------------|--|---------------------------------------|
|  | REMOVE BITUMINOUS PAVEMENT ② |  | REMOVE BITUMINOUS DRIVEWAY PAVEMENT ① |
|  | REMOVE BITUMINOUS SHOULDER ① |  | REMOVE CONCRETE WALK                  |
|  | REMOVE PAVEMENT ③            |  | REMOVE GRAVEL DRIVEWAY ①              |
|  | BUILDING REMOVAL             |  |                                       |
|  | CLEARING AND GRUBBING - TREE |  | SAWCUT                                |
|  | CLEARING AND GRUBBING - ACRE |  | REMOVE CURB AND GUTTER                |
|  | REMOVE BITUMINOUS CURB       |  | REMOVE INTEGRANT CURB                 |



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLB		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007
















MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

REMOVAL PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50  
 FILE NO. 77  
 ALINOL0505.00  
 RM2 OF RM3  
 198



109.  
3/23/2007  
Default  
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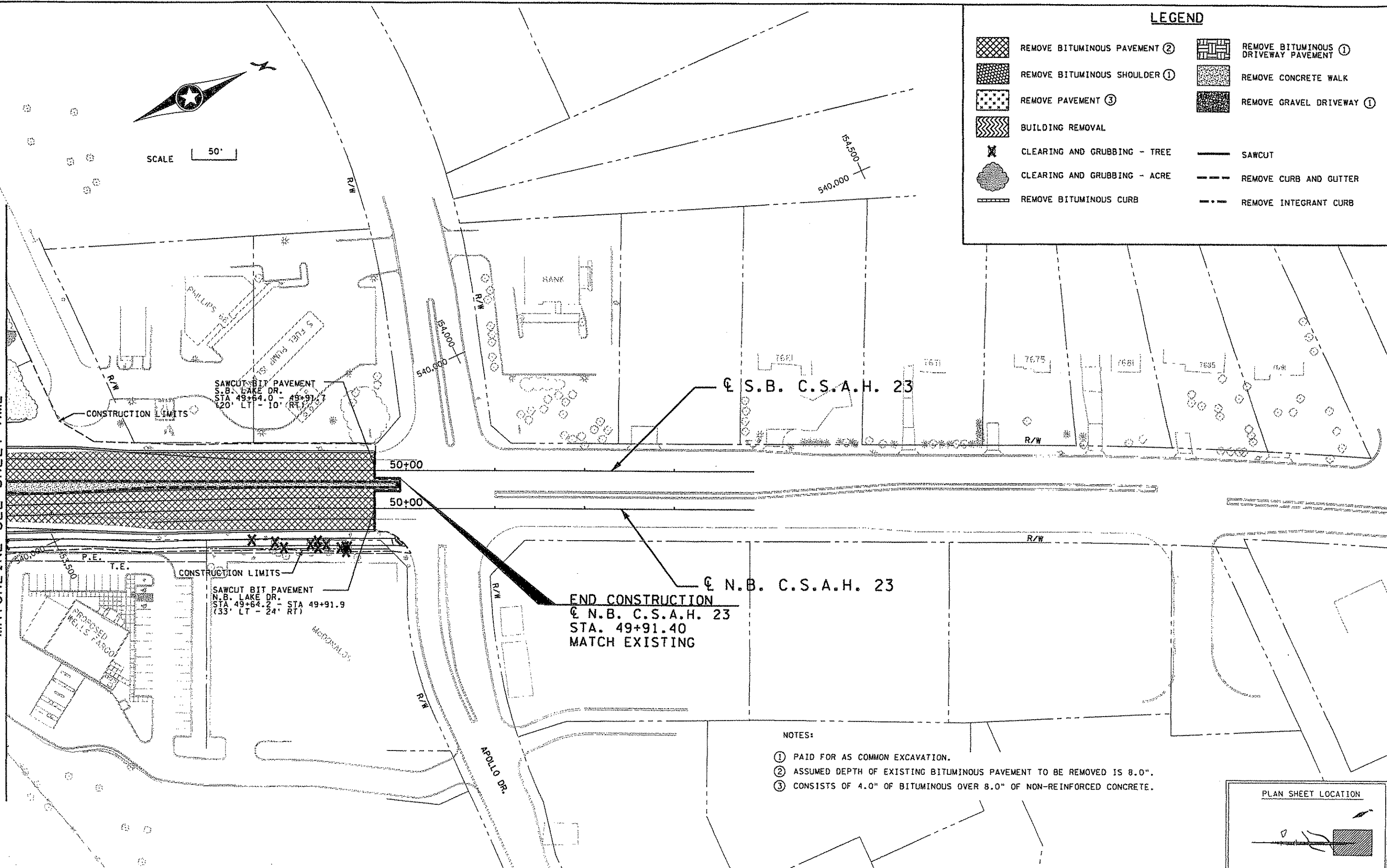
**LEGEND**

-  REMOVE BITUMINOUS PAVEMENT ②
-  REMOVE BITUMINOUS SHOULDER ①
-  REMOVE PAVEMENT ③
-  BUILDING REMOVAL
-  CLEARING AND GRUBBING - TREE
-  CLEARING AND GRUBBING - ACRE
-  REMOVE BITUMINOUS CURB
-  REMOVE BITUMINOUS DRIVEWAY PAVEMENT ①
-  REMOVE CONCRETE WALK
-  REMOVE GRAVEL DRIVEWAY ①
-  SAWCUT
-  REMOVE CURB AND GUTTER
-  REMOVE INTEGRANT CURB



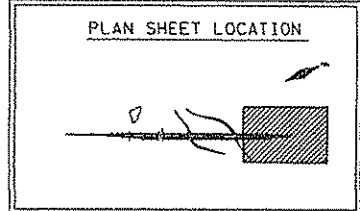
SCALE 50'

MATCHLINE SEE SHEET RM2



**END CONSTRUCTION**  
 @ N.B. C.S.A.H. 23  
 STA. 49+91.40  
 MATCH EXISTING

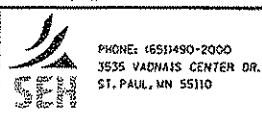
- NOTES:**
- ① PAID FOR AS COMMON EXCAVATION.
  - ② ASSUMED DEPTH OF EXISTING BITUMINOUS PAVEMENT TO BE REMOVED IS 8.0".
  - ③ CONSISTS OF 4.0" OF BITUMINOUS OVER 8.0" OF NON-REINFORCED CONCRETE.



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark B. Dierl* Lic. No. 21098  
 Printed Name: MARK B. DIERL INC Date: 3/23/2007



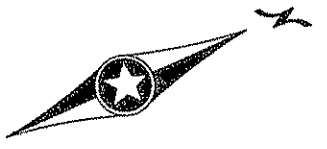
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

REMOVAL PLAN  
 N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

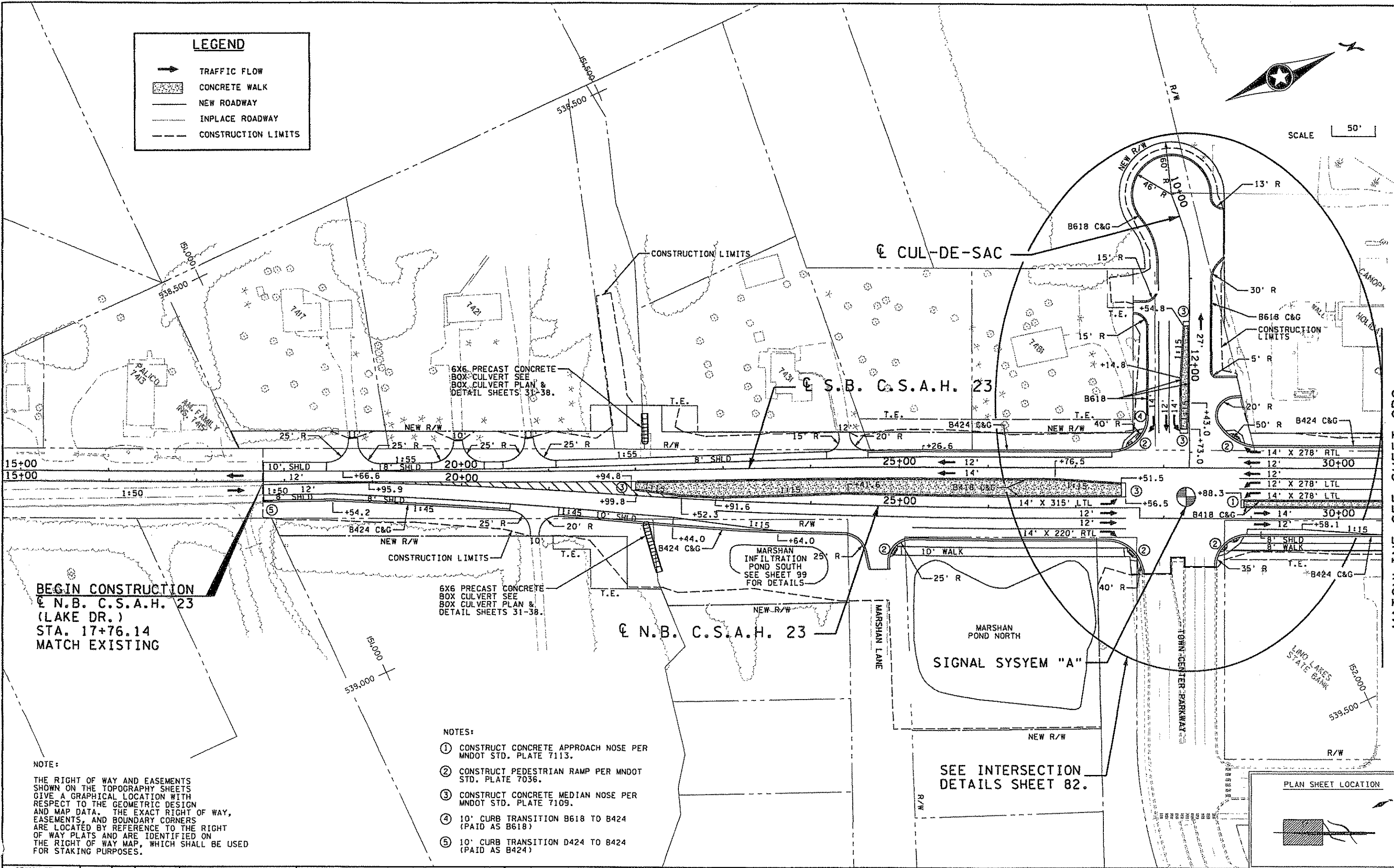
FILE NO.	78
ALINOL0505.00	
RM3 OF RM3	198

**LEGEND**

- TRAFFIC FLOW
- CONCRETE WALK
- NEW ROADWAY
- INPLACE ROADWAY
- CONSTRUCTION LIMITS



SCALE 50'



**BEGIN CONSTRUCTION**  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 17+76.14  
 MATCH EXISTING

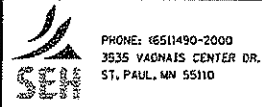
- NOTES:**
- ① CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - ② CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.
  - ③ CONSTRUCT CONCRETE MEDIAN NOSE PER MNDOT STD. PLATE 7109.
  - ④ 10' CURB TRANSITION B618 TO B424 (PAID AS B618)
  - ⑤ 10' CURB TRANSITION D424 TO B424 (PAID AS B424)

**NOTE:**  
 THE RIGHT OF WAY AND EASEMENTS SHOWN ON THE TOPOGRAPHY SHEETS GIVE A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY, EASEMENTS, AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP, WHICH SHALL BE USED FOR STAKING PURPOSES.

MATCHLINE SEE SHEET CP2

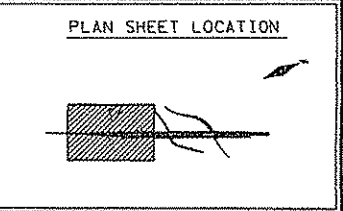
DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

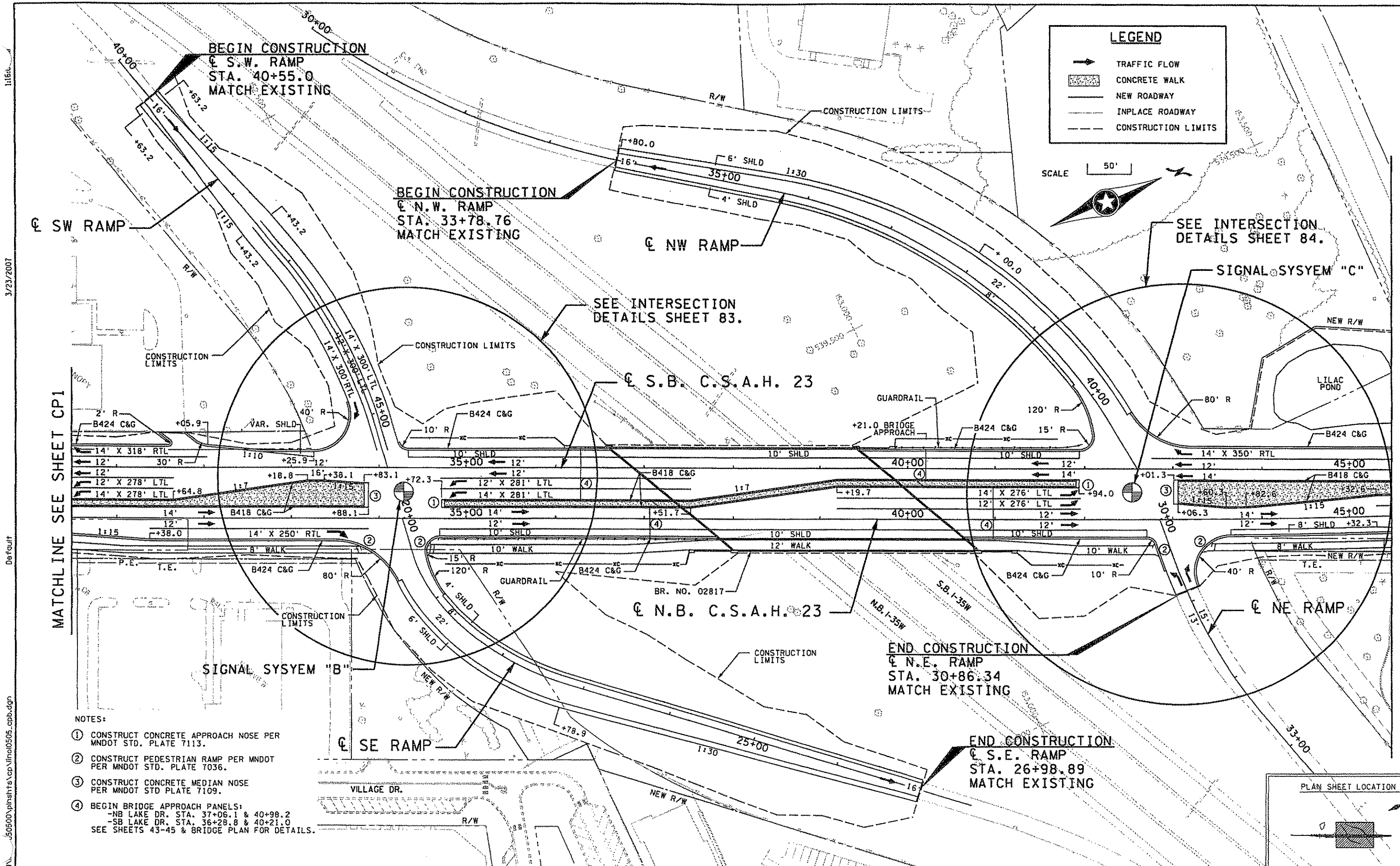
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Diebling* Lic. No. 21098  
 Printed Name: MARK B. DIEBLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

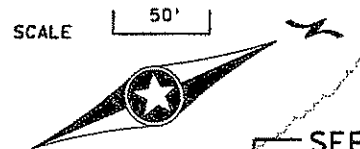
CONSTRUCTION PLAN  
 N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50  
 FILE NO. 79  
 ALINOL0505.00  
 CP1 OF CP3  
 198



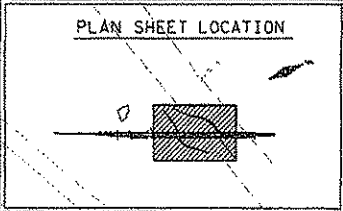


**LEGEND**

- TRAFFIC FLOW
- ▨ CONCRETE WALK
- NEW ROADWAY
- - - INPLACE ROADWAY
- - - CONSTRUCTION LIMITS



- NOTES:
- ① CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - ② CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.
  - ③ CONSTRUCT CONCRETE MEDIAN NOSE PER MNDOT STD PLATE 7109.
  - ④ BEGIN BRIDGE APPROACH PANELS:
    - NB LAKE DR. STA. 37+06.1 & 40+98.2
    - SB LAKE DR. STA. 36+28.8 & 40+21.0
    - SEE SHEETS 43-45 & BRIDGE PLAN FOR DETAILS.



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Printed Name: MARK B. DIERLING Date: 3/23/2007

PHONE: (651)90-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

CONSTRUCTION PLAN

N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO. 80  
ALINDLOS05.00  
CP2 OF CP3  
198

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3/23/2007  
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MATCHLINE SEE SHEET CP1

MATCHLINE SEE SHEET CP3

116ft.

3/23/2007

Default

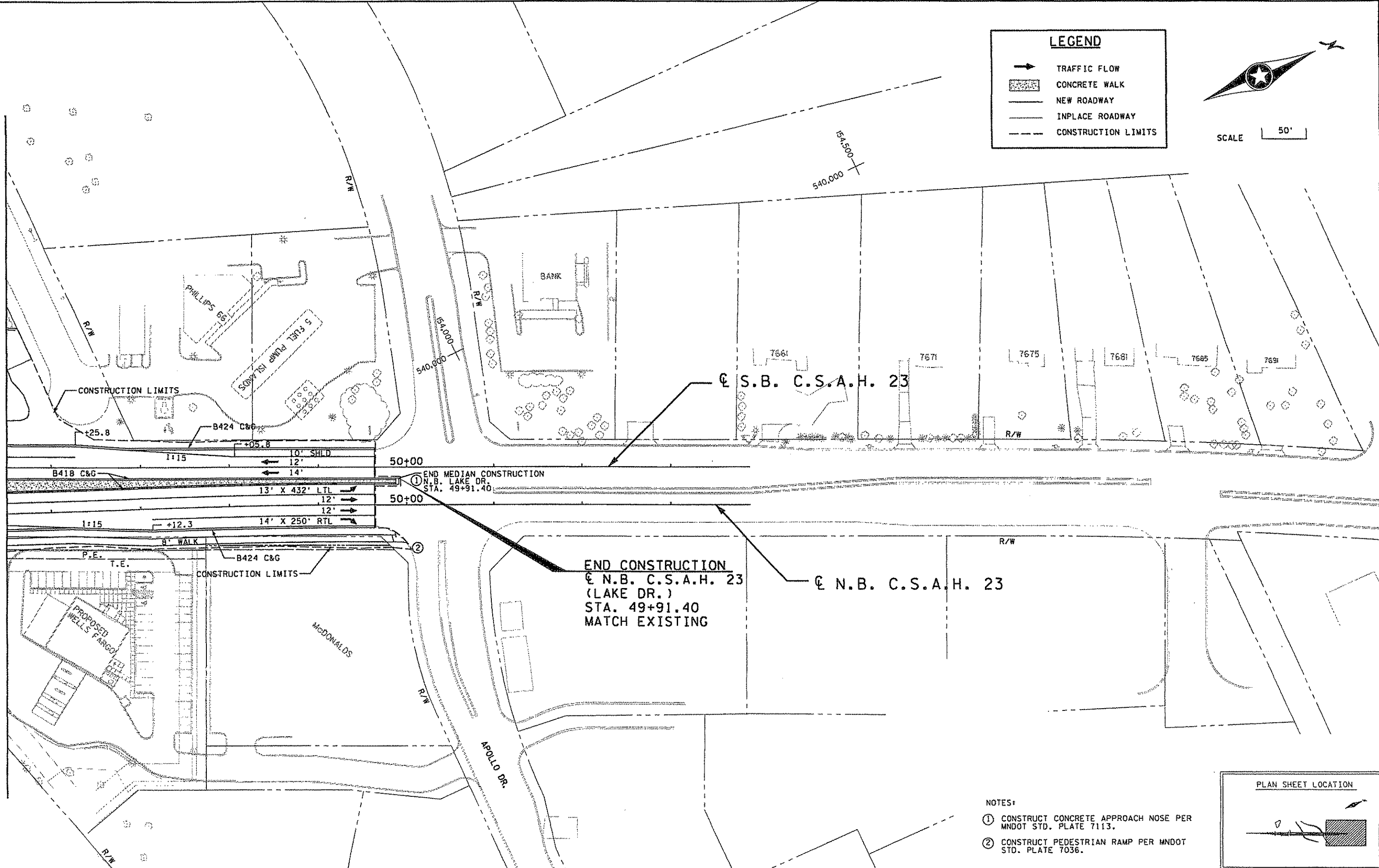
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MATCHLINE SEE SHEET CP2

**LEGEND**

- TRAFFIC FLOW
- ▨ CONCRETE WALK
- NEW ROADWAY
- INPLACE ROADWAY
- - - CONSTRUCTION LIMITS

SCALE 50'



END MEDIAN CONSTRUCTION  
 N.B. LAKE DR.  
 STA. 49+91.40

END CONSTRUCTION  
 N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 49+91.40  
 MATCH EXISTING

- NOTES:
- ① CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - ② CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.

PLAN SHEET LOCATION

DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLB		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Diebling* Lic. No. 2109B  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007

PHONE: 651-490-2000  
 3535 VAONAI CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

CONSTRUCTION PLAN

N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

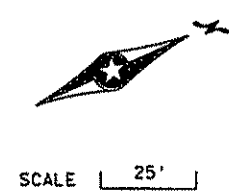
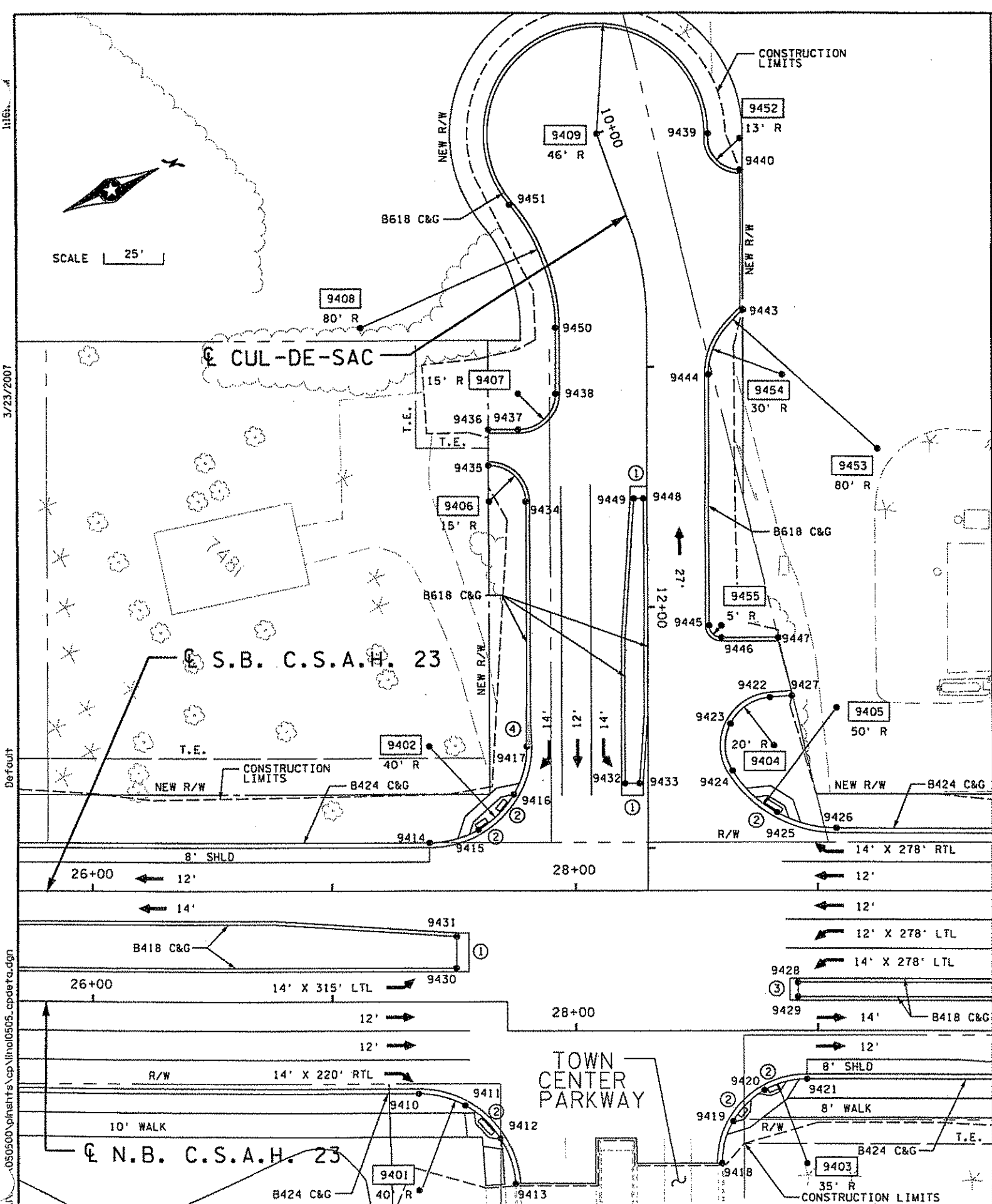
FILE NO.	81
ALINOL0505.00	
CP3	
OF CP3	198



3/23/2007

Default

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GUTTER PROFILE POINTS						
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES		ELEVATION
				X	Y	
9410	N.B. C.S.A.H. 23	27+35.58	38.00' RT	539209.591	151807.069	905.53
9411	N.B. C.S.A.H. 23	27+54.80	42.92' RT	539222.204	151822.392	905.90
9412	N.B. C.S.A.H. 23	27+69.29	56.48' RT	539240.629	151829.766	906.27
9413	N.B. C.S.A.H. 23	27+75.49	63.34' RT	539260.331	151827.377	906.64
9414	S.B. C.S.A.H. 23	27+40.41	20.00' LT	539117.461	151855.560	906.31
9415	S.B. C.S.A.H. 23	27+60.41	25.36' LT	539121.091	151875.941	906.76
9416	CUL-DE-SAC	12+77.67	54.86' RT	539114.046	151895.407	907.22
9417	CUL-DE-SAC	12+57.67	49.50' RT	539098.213	151908.744	907.67
9418	N.B. C.S.A.H. 23	28+60.36	54.99' RT	539288.769	151907.776	906.63
9419	N.B. C.S.A.H. 23	28+65.05	37.49' RT	539274.915	151919.446	906.74
9420	N.B. C.S.A.H. 23	28+77.86	24.69' RT	539268.751	151936.479	906.85
9421	N.B. C.S.A.H. 23	28+95.36	20.00' RT	539271.927	151954.312	906.96
9422	CUL-DE-SAC	12+37.43	50.28' LT	539122.228	152007.686	907.19
9423	CUL-DE-SAC	12+48.34	34.09' LT	539125.240	151988.398	907.25
9424	CUL-DE-SAC	12+67.84	34.92' LT	539143.251	151980.865	907.31
9425	S.B. C.S.A.H. 23	28+83.02	32.35' LT	539166.761	151989.943	907.37
9426	S.B. C.S.A.H. 23	29+07.41	26.00' LT	539182.857	152009.335	907.43
9427	CUL-DE-SAC	12+36.68	59.21' LT	539125.343	152016.089	907.13
9428	S.B. C.S.A.H. 23	28+91.59	38.00' RT	539234.104	151967.862	907.65
9429	N.B. C.S.A.H. 23	28+91.59	14.00' LT	539239.540	151965.322	907.66
9430	N.B. C.S.A.H. 23	27+51.52	14.00' LT	539169.261	151843.561	906.25
9431	S.B. C.S.A.H. 23	27+51.52	19.00' RT	539157.490	151849.078	907.24
9432	CUL-DE-SAC	12+73.05	9.50' RT	539129.112	151938.437	908.60
9433	CUL-DE-SAC	12+73.05	3.50' RT	539131.658	151943.868	908.72
9434	CUL-DE-SAC	11+56.12	49.50' RT	539006.256	151951.847	907.52
9435	CUL-DE-SAC	11+41.12	64.76' RT	538986.196	151944.394	907.91
9436	CUL-DE-SAC	11+26.12	64.76' RT	538972.613	151950.758	907.73
9437	CUL-DE-SAC	11+26.11	52.49' RT	538977.815	151961.877	907.62
9438	CUL-DE-SAC	11+11.11	37.50' RT	538970.595	151981.816	907.56
9439	CUL-DE-SAC	10+15.60	43.27' LT	538899.602	152084.669	907.16
9440	CUL-DE-SAC	10+34.12	50.38' LT	538918.690	152090.045	907.42
9443	CUL-DE-SAC	10+77.36	39.60' LT	538971.758	152066.358	907.92
9444	CUL-DE-SAC	11+03.22	25.50' LT	538990.188	152042.209	907.78
9445	CUL-DE-SAC	12+07.64	25.50' LT	539084.738	151997.891	908.09
9446	CUL-DE-SAC	12+12.64	30.50' LT	539091.388	152000.297	907.84
9447	CUL-DE-SAC	12+12.63	53.69' LT	539101.226	152021.300	907.11
9448	CUL-DE-SAC	11+54.90	1.50' RT	539025.522	151995.828	908.53
9449	CUL-DE-SAC	11+54.90	5.50' RT	539023.824	151992.206	908.45
9450	CUL-DE-SAC	10+83.59	37.50' RT	538945.679	151993.494	907.33
9451	CUL-DE-SAC	10+15.60	43.27' RT	538891.633	151998.493	907.28

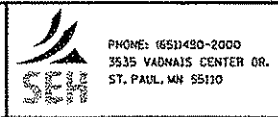
RADIUS POINTS						
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES		
				X	Y	
9401	N.B. C.S.A.H. 23	27+35.58	78.00' RT	539245.815	151790.104	
9402	S.B. C.S.A.H. 23	27+40.41	60.00' LT	539081.237	151872.526	
9403	N.B. C.S.A.H. 23	28+95.36	55.00' RT	539303.623	151939.467	
9404	S.B. C.S.A.H. 23	28+81.86	60.28' LT	539140.981	152000.736	
9405	S.B. C.S.A.H. 23	29+07.41	76.00' LT	539137.577	152030.542	
9406	CUL-DE-SAC	11+56.12	64.50' RT	538999.890	151938.265	
9407	CUL-DE-SAC	11+11.11	52.50' RT	538964.229	151968.234	
9408	CUL-DE-SAC	10+83.59	117.50' RT	538911.726	151921.057	
9409	CUL-DE-SAC	10+00.00	0.00' RT	538880.079	152043.018	
9452	CUL-DE-SAC	10+21.89	54.79' LT	538906.919	152095.561	
9453	CUL-DE-SAC	11+34.14	94.80' LT	539047.594	152091.830	
9454	CUL-DE-SAC	11+03.22	55.50' LT	539002.921	152069.373	
9455	CUL-DE-SAC	12+07.64	30.50' LT	539086.860	152002.418	

- NOTES:
- CONSTRUCT CONCRETE MEDIAN NOSE PER MNDOT STD. PLATE 7109.
  - CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.
  - CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - 10' CURB TRANSITION B618 TO B424 (PAID AS B618)

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007

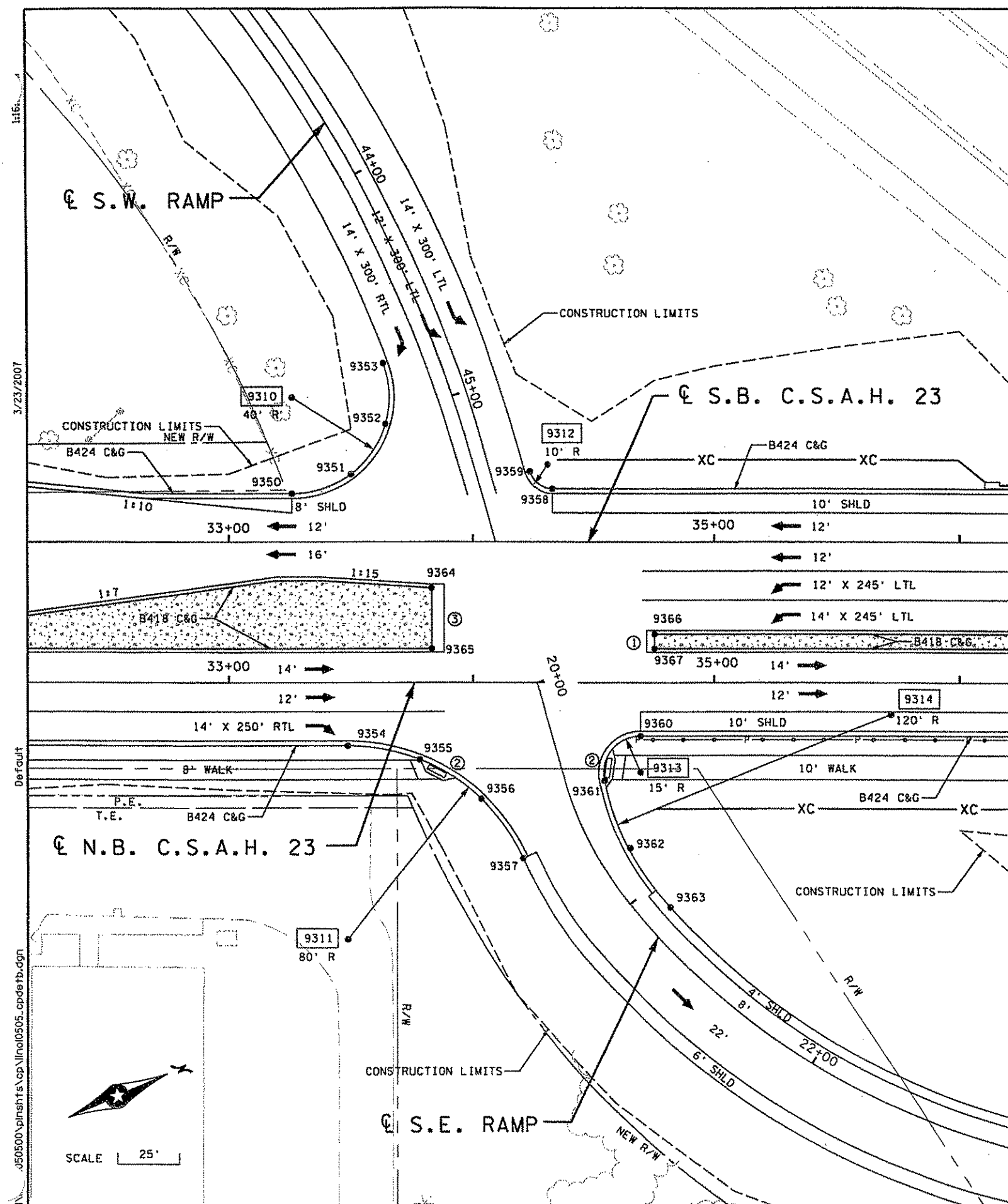


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INTERSECTION DETAILS  
 C.S.A.H. 23 AND TOWN CENTER PKWY

FILE NO. 82  
 ALINOL0505.00  
 ID1  
 OF 03  
 198





GUTTER PROFILE POINTS						
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES		ELEVATION
				X	Y	
9350	S.B. C.S.A.H. 23	33+25.90	20.00' LT	539365.790	152385.775	911.95
9351	S.B. C.S.A.H. 23	33+49.92	28.01' LT	539368.720	152410.923	912.41
9352	S.W. RAMP	45+02.61	29.48' RT	539355.964	152432.793	912.96
9353	S.W. RAMP	44+77.29	22.00' RT	539332.632	152442.623	912.88
9354	N.B. C.S.A.H. 23	33+48.41	26.00' RT	539469.519	152382.048	912.30
9355	N.B. C.S.A.H. 23	33+78.07	31.70' RT	539487.259	152386.487	912.92
9356	S.E. RAMP	20+39.38	36.05' RT	539512.796	152402.609	913.58
9357	S.E. RAMP	20+63.97	28.00' RT	539542.489	152408.115	913.49
9358	S.B. C.S.A.H. 23	34+33.65	22.00' LT	539409.682	152484.204	914.25
9359	S.W. RAMP	45+39.30	22.00' LT	539399.127	152478.559	913.09
9360	N.B. C.S.A.H. 23	34+69.69	22.00' RT	539517.337	152473.578	915.15
9361	S.E. RAMP	20+46.34	15.59' LT	539527.019	152452.732	913.55
9362	S.E. RAMP	20+75.44	12.84' LT	539553.235	152449.289	913.44
9363	S.E. RAMP	21+04.15	12.00' LT	539579.307	152452.797	913.35
9364	S.B. C.S.A.H. 23	33+83.00	19.00' RT	539425.325	152420.944	913.63
9365	N.B. C.S.A.H. 23	33+83.06	14.00' LT	539447.9915	152410.3924	913.03
9366	S.B. C.S.A.H. 23	34+75.68	38.00' RT	539481.843	152496.815	915.31
9367	N.B. C.S.A.H. 23	34+75.68	14.00' LT	539487.2754	152494.2686	915.31

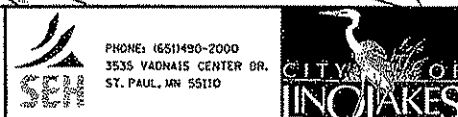
RADIUS POINTS					
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES	
				X	Y
9310	S.B. C.S.A.H. 23	33+25.90	60.00' LT	539329.566	152402.740
9311	N.B. C.S.A.H. 23	33+48.41	106.00' RT	539541.967	152328.117
9312	S.B. C.S.A.H. 23	34+33.65	32.00' LT	539400.626	152488.446
9313	N.B. C.S.A.H. 23	34+69.69	37.00' RT	539530.921	152467.215
9314	N.B. C.S.A.H. 23	35+53.40	22.22' RT	539553.036	152549.288

- NOTES:
- CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.
  - CONSTRUCT CONCRETE MEDIAN NOSE PER MNDOT STD. PLATE 7109.

DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

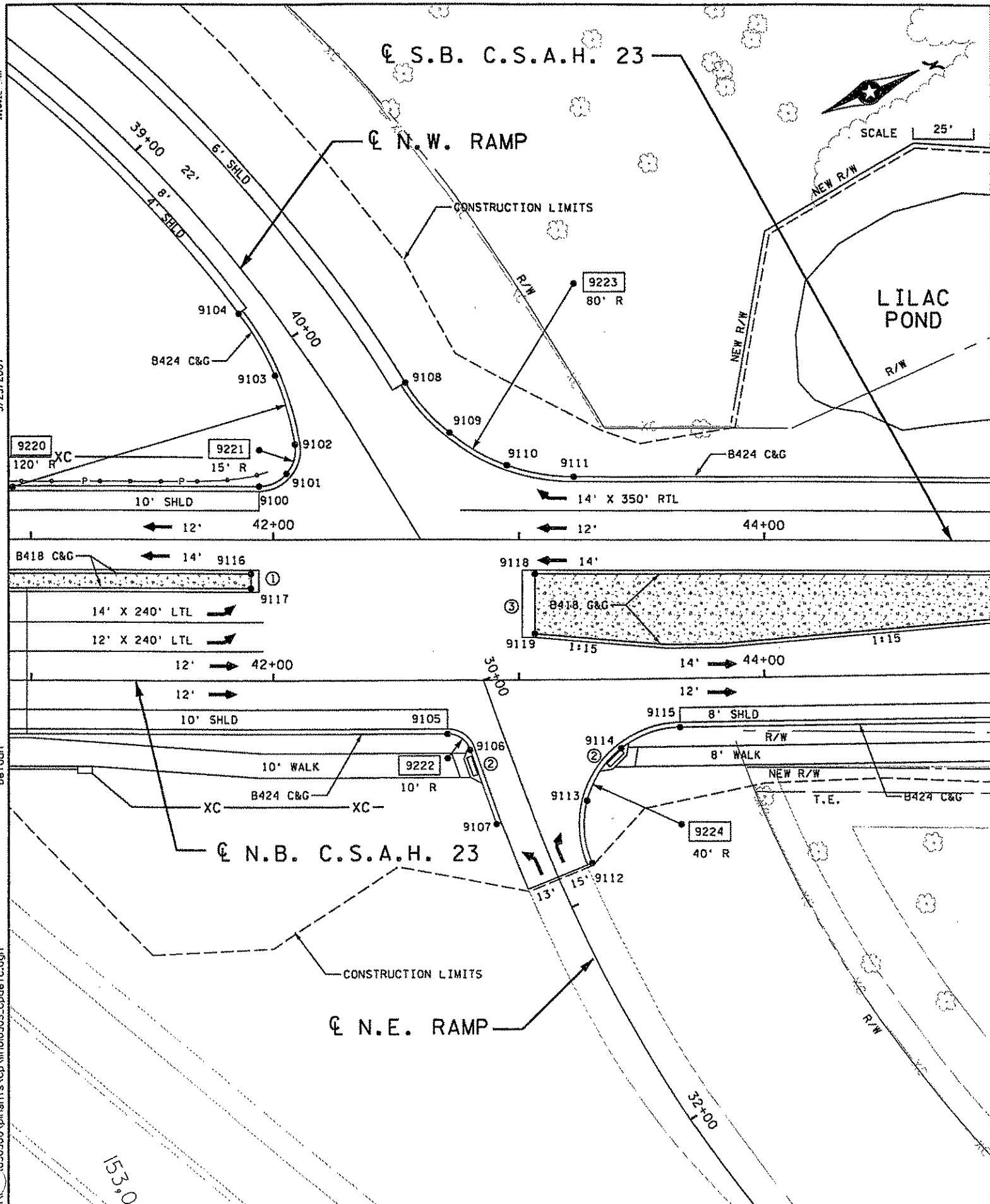
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierl* Lic. No. 21098  
 Printed Name: MARK R. DIERL INC Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INTERSECTION DETAILS  
 C.S.A.H. 23, S.W. RAMP AND S.E. RAMP



GUTTER PROFILE POINTS						
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES		ELEVATION
				X	Y	
9100	S.B. C.S.A.H. 23	41+94.14	22.00' LT	539732.237	153172.901	917.59
9101	S.B. C.S.A.H. 23	42+05.54	27.25' LT	539732.318	153185.449	917.31
9102	N.W. RAMP	40+38.84	23.23' RT	539722.837	153193.668	916.64
9103	N.W. RAMP	40+09.38	14.76' RT	539693.496	153198.359	916.37
9104	N.W. RAMP	39+79.09	12.00' RT	539663.902	153195.698	916.12
9105	N.B. C.S.A.H. 23	42+70.27	22.00' RT	539856.784	153198.770	916.65
9106	N.B. C.S.A.H. 23	42+79.66	28.64' RT	539866.752	153204.540	916.71
9107	N.B. C.S.A.H. 23	42+90.50	59.18' RT	539899.042	153201.661	916.88
9108	N.W. RAMP	40+39.94	28.00' LT	539718.618	153244.736	916.71
9109	N.W. RAMP	40+66.86	32.68' LT	539744.921	153252.146	916.36
9110	S.B. C.S.A.H. 23	42+95.07	30.67' LT	539767.196	153267.977	916.17
9111	S.B. C.S.A.H. 23	43+22.00	26.00' LT	539782.843	153290.381	916.02
9112	N.B. C.S.A.H. 23	43+28.58	75.45' RT	539929.768	153229.727	916.14
9113	N.B. C.S.A.H. 23	43+26.77	49.77' RT	539905.647	153238.719	916.02
9114	N.B. C.S.A.H. 23	43+40.95	28.31' RT	539892.001	153260.546	915.90
9115	N.B. C.S.A.H. 23	43+65.26	20.00' RT	539894.481	153286.169	915.79
9116	S.B. C.S.A.H. 23	41+90.68	14.00' RT	539763.371	153154.498	918.42
9117	N.B. C.S.A.H. 23	41+90.71	38.00' LT	539768.815	153151.977	918.60
9118	S.B. C.S.A.H. 23	43+06.21	14.00' RT	539812.371	153259.119	917.05
9119	N.B. C.S.A.H. 23	43+06.37	19.00' LT	539834.607	153248.697	917.15

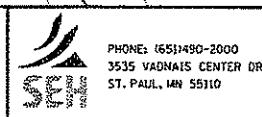
RADIUS POINTS						
POINT	ALIGNMENT NAME	STATION	OFFSET	POINT COORDINATES		
				X	Y	
9220	S.B. C.S.A.H. 23	40+90.41	20.76' LT	539689.366	153078.431	
9221	S.B. C.S.A.H. 23	41+94.14	37.00' LT	539718.653	153179.263	
9222	N.B. C.S.A.H. 23	42+70.27	32.00' RT	539865.864	153194.580	
9223	S.B. C.S.A.H. 23	43+22.00	106.00' LT	539710.395	153324.313	
9224	N.B. C.S.A.H. 23	43+65.26	60.00' RT	539930.937	153269.710	

- NOTES:
- ① CONSTRUCT CONCRETE APPROACH NOSE PER MNDOT STD. PLATE 7113.
  - ② CONSTRUCT PEDESTRIAN RAMP PER MNDOT STD. PLATE 7036.
  - ③ CONSTRUCT CONCRETE MEDIAN NOSE PER MNDOT STD. PLATE 7109.

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLB			
CHECKED BY:	SRH			
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Dierling* Lic. No. 21038  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

INTERSECTION DETAILS  
 C.S.A.H. 23, N.W. RAMP AND N.E. RAMP

FILE NO. 84  
 ALINOL0505.00  
 ID3 OF ID3 198

11612  
3/23/2007  
Default  
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**VERTICAL CONTROL:**

THE VERTICAL CONTROL SHOWN ON THIS PLAN IS ENGLISH IN NAVD 1988 DATUM

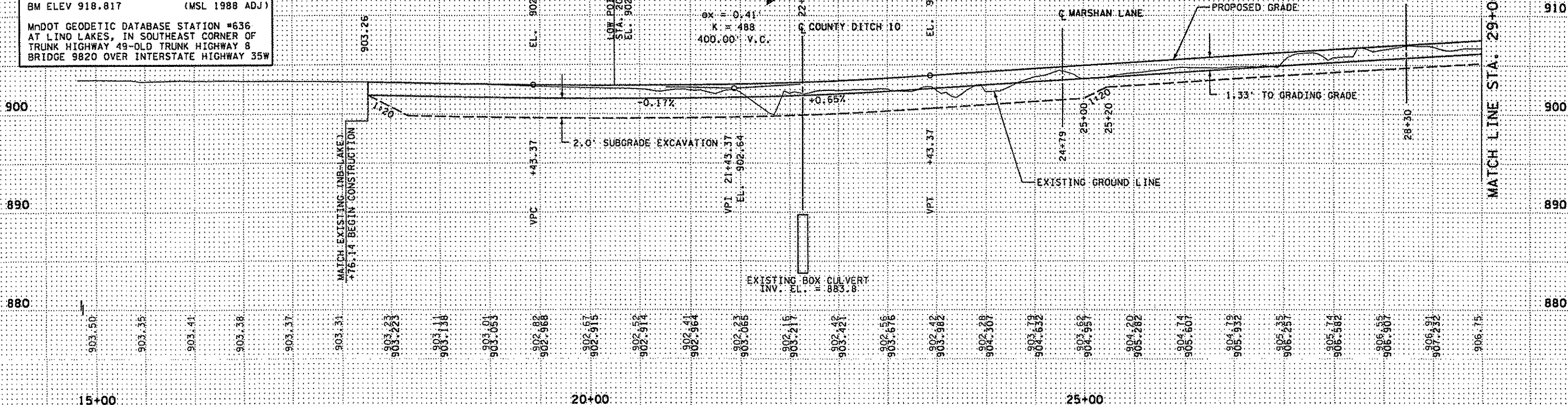
BM ELEV 918.817 (MSL 1988 ADJ)

MNDOT GEODETIC DATABASE STATION #636 AT LIND LAKES, IN SOUTHEAST CORNER OF TRUNK HIGHWAY 49-OLD TRUNK HIGHWAY 8 BRIDGE 9820 OVER INTERSTATE HIGHWAY 35W

**N.B. C.S.A.H. 23 (LAKE DRIVE)**  
STA. 17+76 TO STA. 29+00  
DESIGN SPEED: 45 MPH

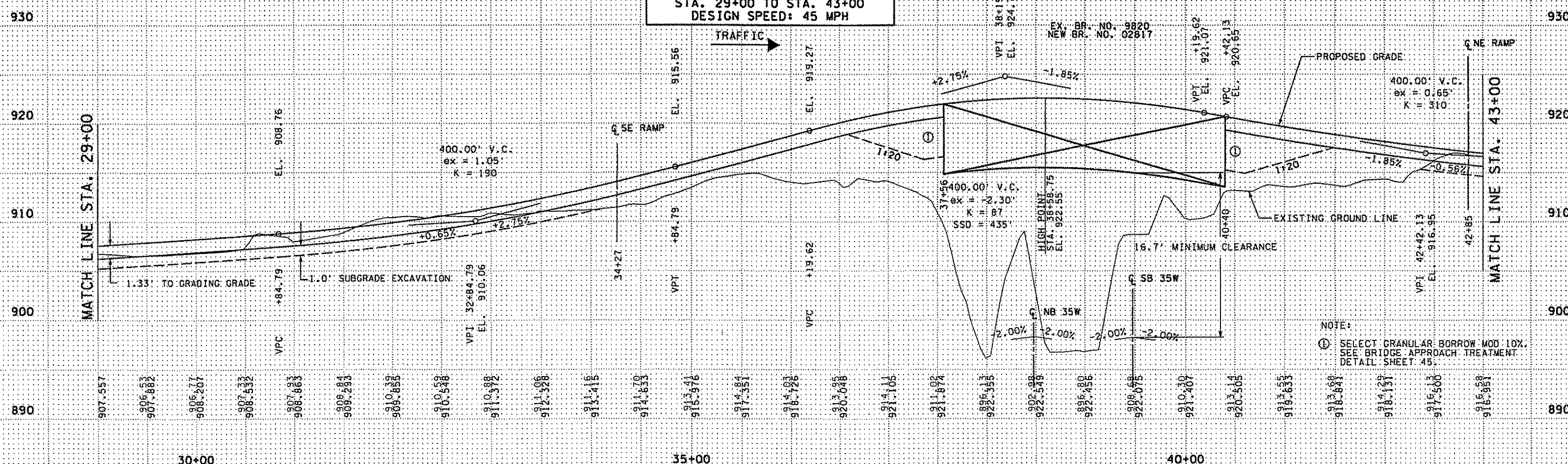
TRAFFIC →

ex = 0.41  
K = 488  
400.00' V.C.



**N.B. C.S.A.H. 23 (LAKE DRIVE)**  
STA. 29+00 TO STA. 43+00  
DESIGN SPEED: 45 MPH

TRAFFIC →



NOTE:  
⊕ SELECT GRANULAR BORROW MOD 10%.  
SEE BRIDGE APPROACH TREATMENT  
DETAIL SHEET 45.

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified by: *Mark R. Dierling* Lic. No. 21098  
Printed Name: MARK R. DIERLING Date: 3/23/2007

PHONE: (651)490-2000  
3535 WADSWORTH CENTER DR.  
ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

PROFILES  
FILE NO. 85  
ALN010505.00  
PR1 OF PR4  
198



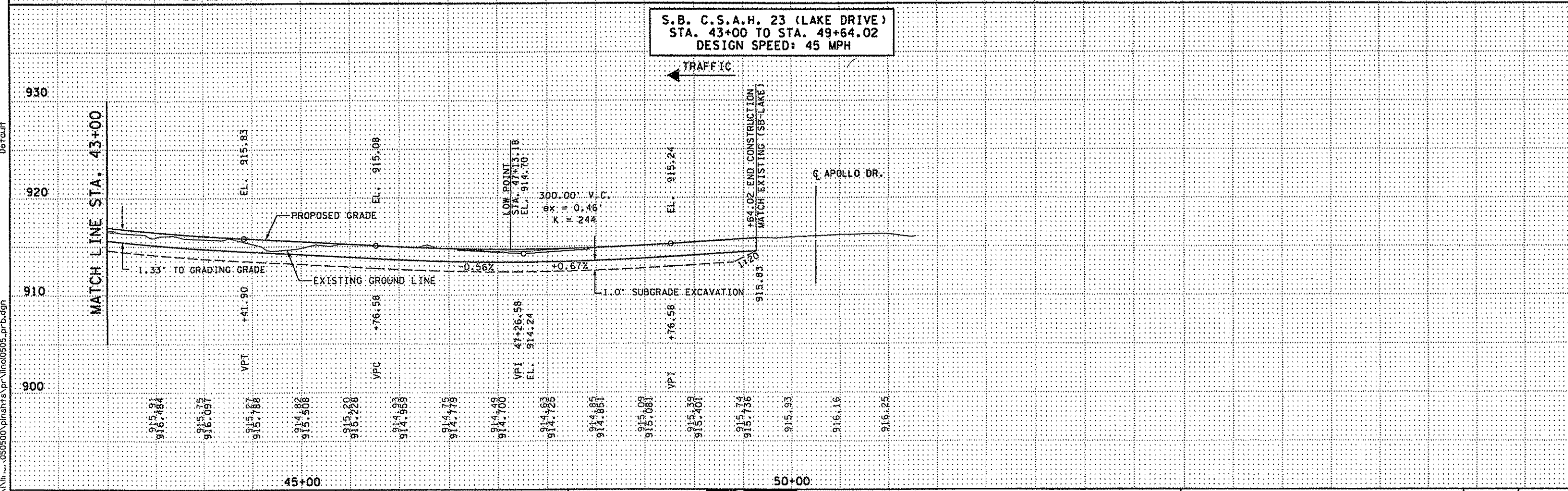
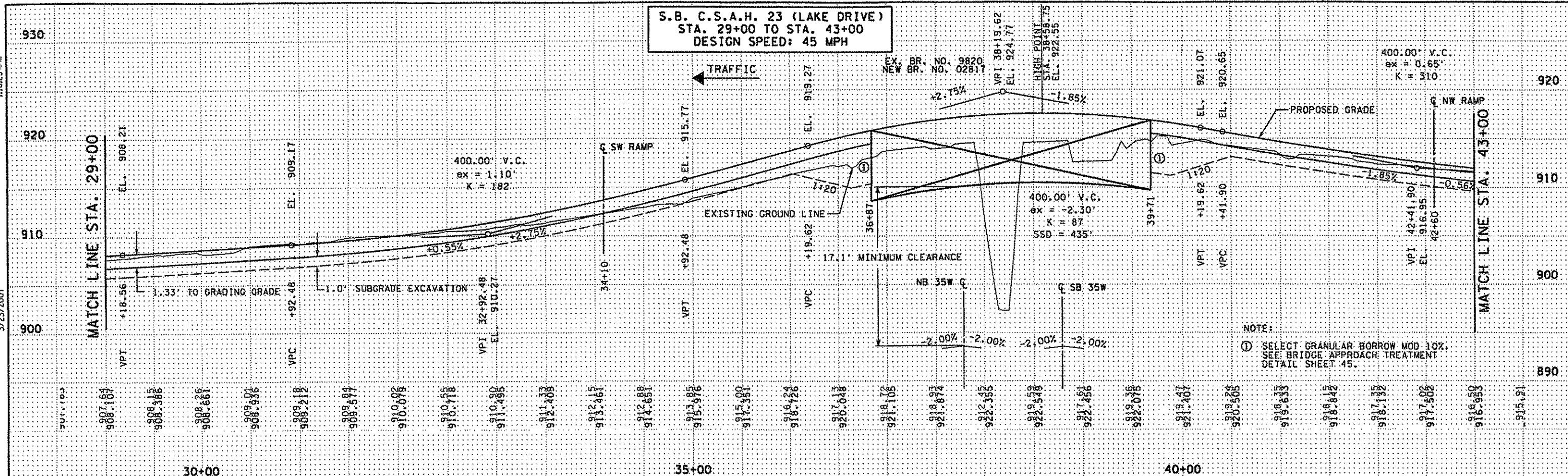


116122.dgn

3/23/2007

Default

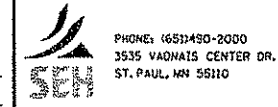
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DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

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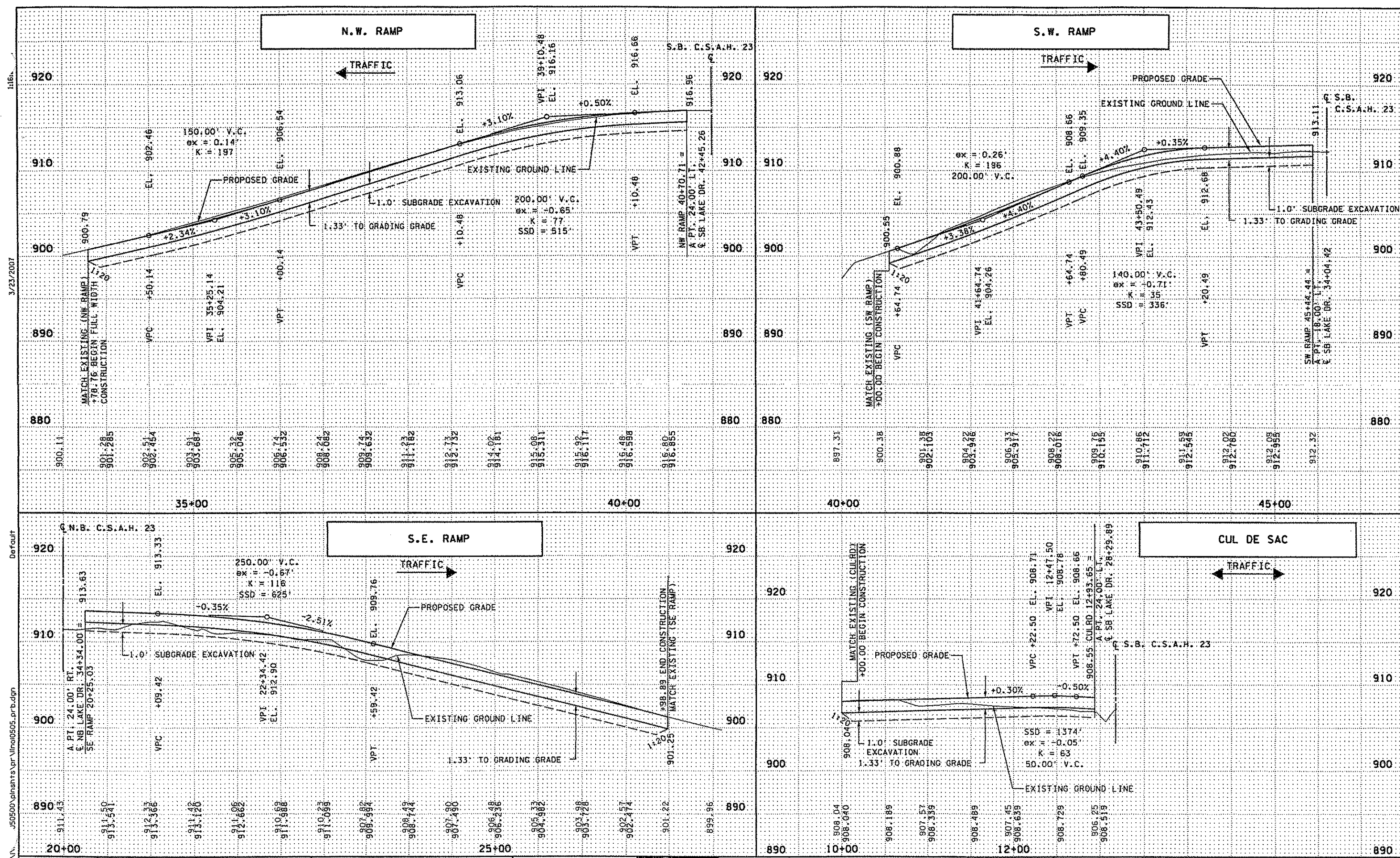
Certified By: *Mark R. Diebling* Lic. No. 21058  
Printed Name: MARK R. DIEBLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	87
ALNOL0505.00	
PR3	
OF PR4	198





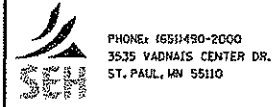
DESIGN TEAM

DRAWN BY:	JMT
DESIGNER:	HLR
CHECKED BY:	SBH

NO.	BY	DATE	REVISIONS

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 Printed Name: MARK R. DIERLING Date: 3/23/2007



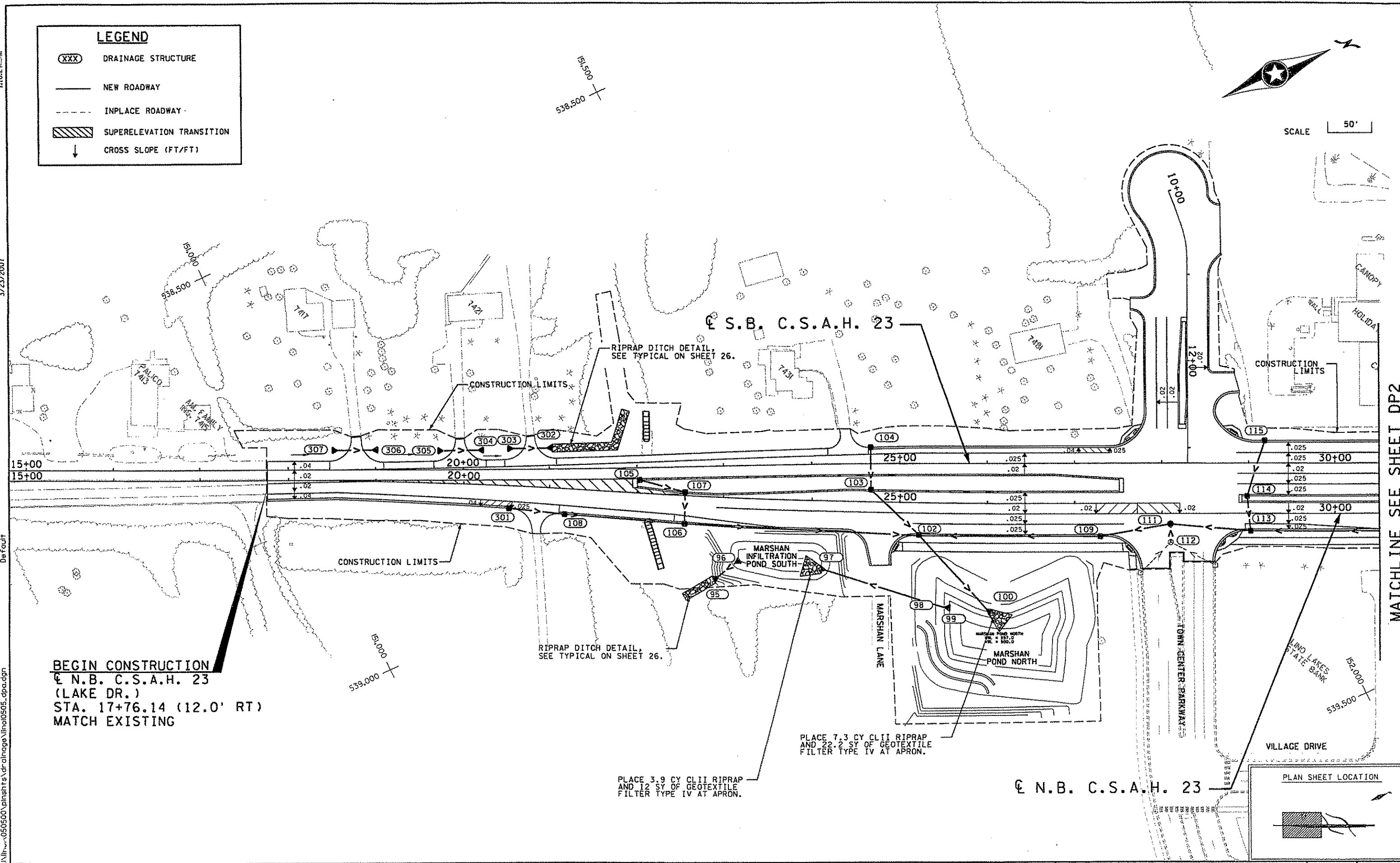
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**LEGEND**

- (XXX) DRAINAGE STRUCTURE
- NEW ROADWAY
- - - INPLACE ROADWAY
- ▨ SUPERELEVATION TRANSITION
- ↓ CROSS SLOPE (FT/FT)



SCALE 50'



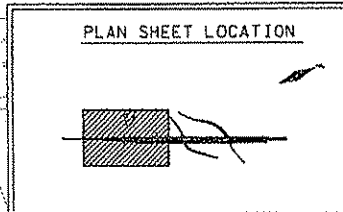
**BEGIN CONSTRUCTION**  
 E N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 17+76.14 (12.0' RT)  
 MATCH EXISTING

RIPRAP DITCH DETAIL,  
 SEE TYPICAL ON SHEET 26.

RIPRAP DITCH DETAIL,  
 SEE TYPICAL ON SHEET 26.

PLACE 7.3 CY CLII RIPRAP  
 AND 22.2 SY OF GEOTEXTILE  
 FILTER TYPE IV AT APRON.

PLACE 3.9 CY CLII RIPRAP  
 AND 12 SY OF GEOTEXTILE  
 FILTER TYPE IV AT APRON.



11662  
 3/23/2007  
 Default  
 s:\no\11662\050500\p1sh1ts\drainage\116620505.dgn

MATCHLINE SEE SHEET DP2

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Mark B. Dierling* Lic. No. 21098  
 Printed Name: MARK B. DIERLING Date: 3/23/2007

PHONE: (651)480-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE AND  
 SUPERELEVATION PLAN  
 N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50

FILE NO. 89  
 ALINOL0505.00  
 DP1  
 OF DP3  
 198

1163...m

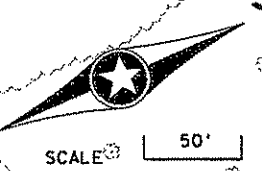
3/23/2007

Default

sa:\ko\1163...050500\plansh\drainage\lino\0505.dbb.dgn

**LEGEND**

- (XXX) DRAINAGE STRUCTURE
- NEW ROADWAY
- - - INPLACE ROADWAY
- [Hatched Box] SUPERELEVATION TRANSITION
- ↓ CROSS SLOPE (FT/FT)



PLACE 5.5 CY CLII RIPRAP AND 16.8 SY OF GEOTEXTILE FILTER TYPE IV AT APRON.

LILAC POND

MATCHLINE SEE SHEET DP1

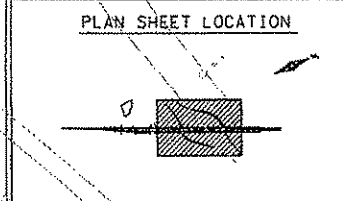
MATCHLINE SEE SHEET DP3

**BEGIN CONSTRUCTION**  
 @ S.W. RAMP  
 STA. 41+53.15 (14.0' RT)  
 MATCH EXISTING

**BEGIN CONSTRUCTION**  
 @ N.W. RAMP  
 STA. 33+78.76  
 MATCH EXISTING

**END CONSTRUCTION**  
 @ N.E. RAMP  
 STA. 30+86.34  
 MATCH EXISTING

**END CONSTRUCTION**  
 @ S.E. RAMP  
 STA. 26+98.89 (14.0' RT)  
 MATCH EXISTING



DESIGN TEAM					
DRAWN BY:	JMT				
DESIGNER:	HLR				
CHECKED BY:	SRH				
	NO.	BY	DATE	REVISIONS	

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MINNESOTA DEPARTMENT OF TRANSPORTATION  
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 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE AND SUPERELEVATION PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+25

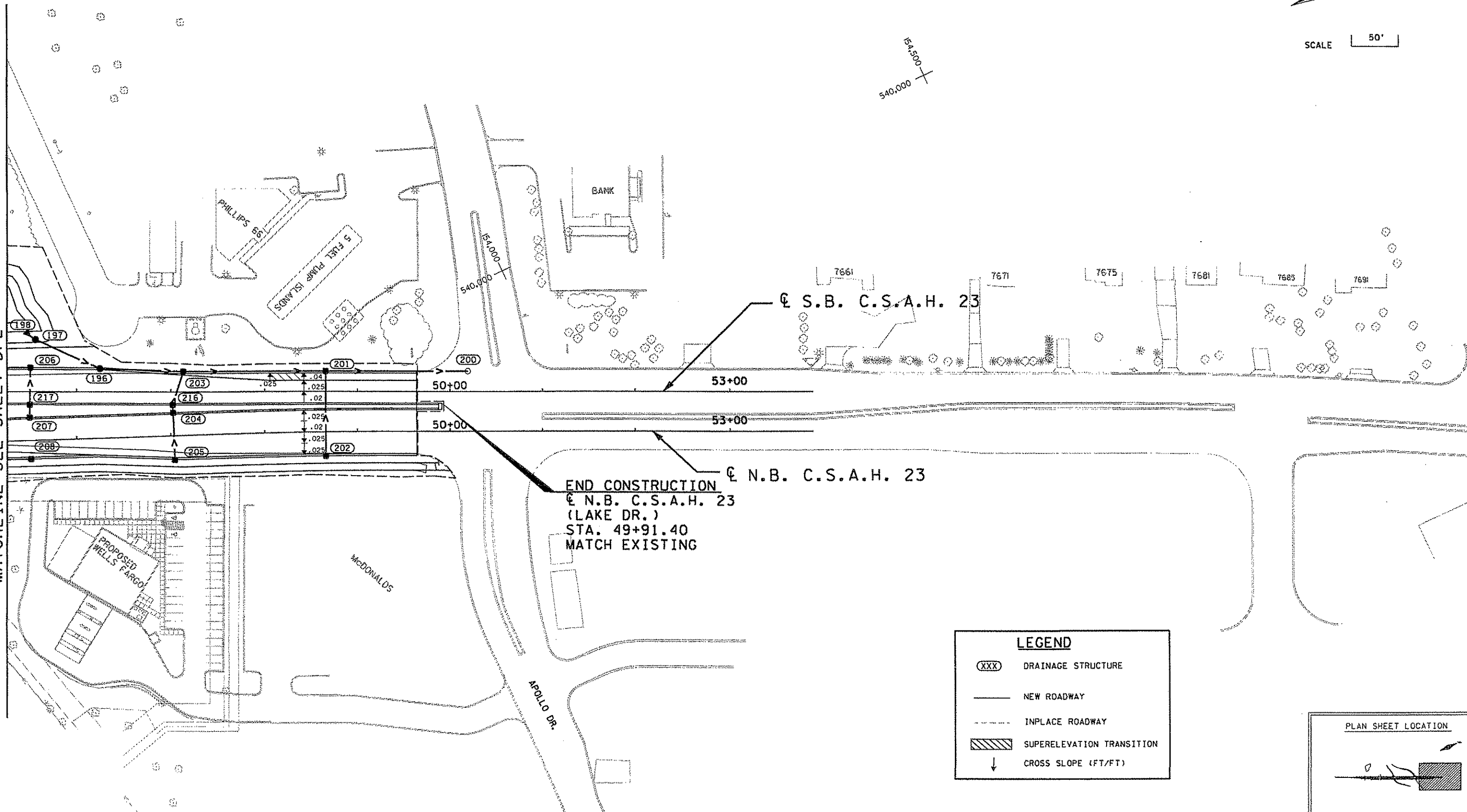
FILE NO. 90  
 ALINOL0505.00  
 DP2 OF DP3  
 198



SCALE 50'

3/23/2007  
Default  
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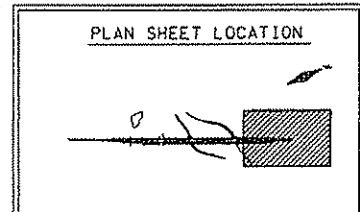
MATCHLINE SEE SHEET DP2



END CONSTRUCTION  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 49+91.40  
 MATCH EXISTING

**LEGEND**

- (XXX) DRAINAGE STRUCTURE
- NEW ROADWAY
- - - INPLACE ROADWAY
- ▨ SUPERELEVATION TRANSITION
- ↓ CROSS SLOPE (FT/FT)



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

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PHONE: 651-490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

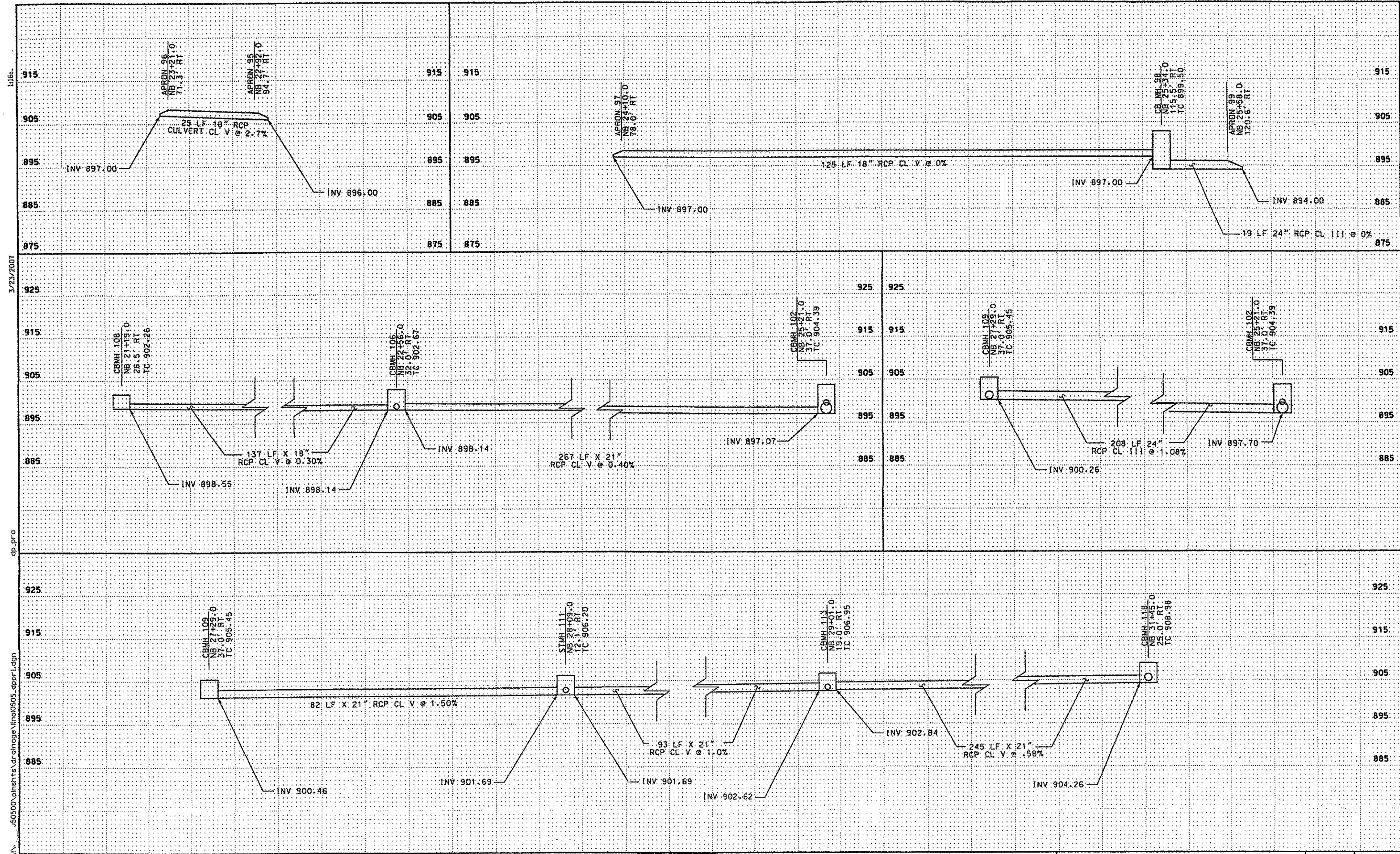


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE AND SUPERELEVATION PLAN  
 N.B. C.S.A.H. 23 STA. 45+25 TO STA. 49+65

FILE NO.	91
ALINL0505.00	
DP3 OF DP3	198





3/23/2007  
 GP-PT-0  
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DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

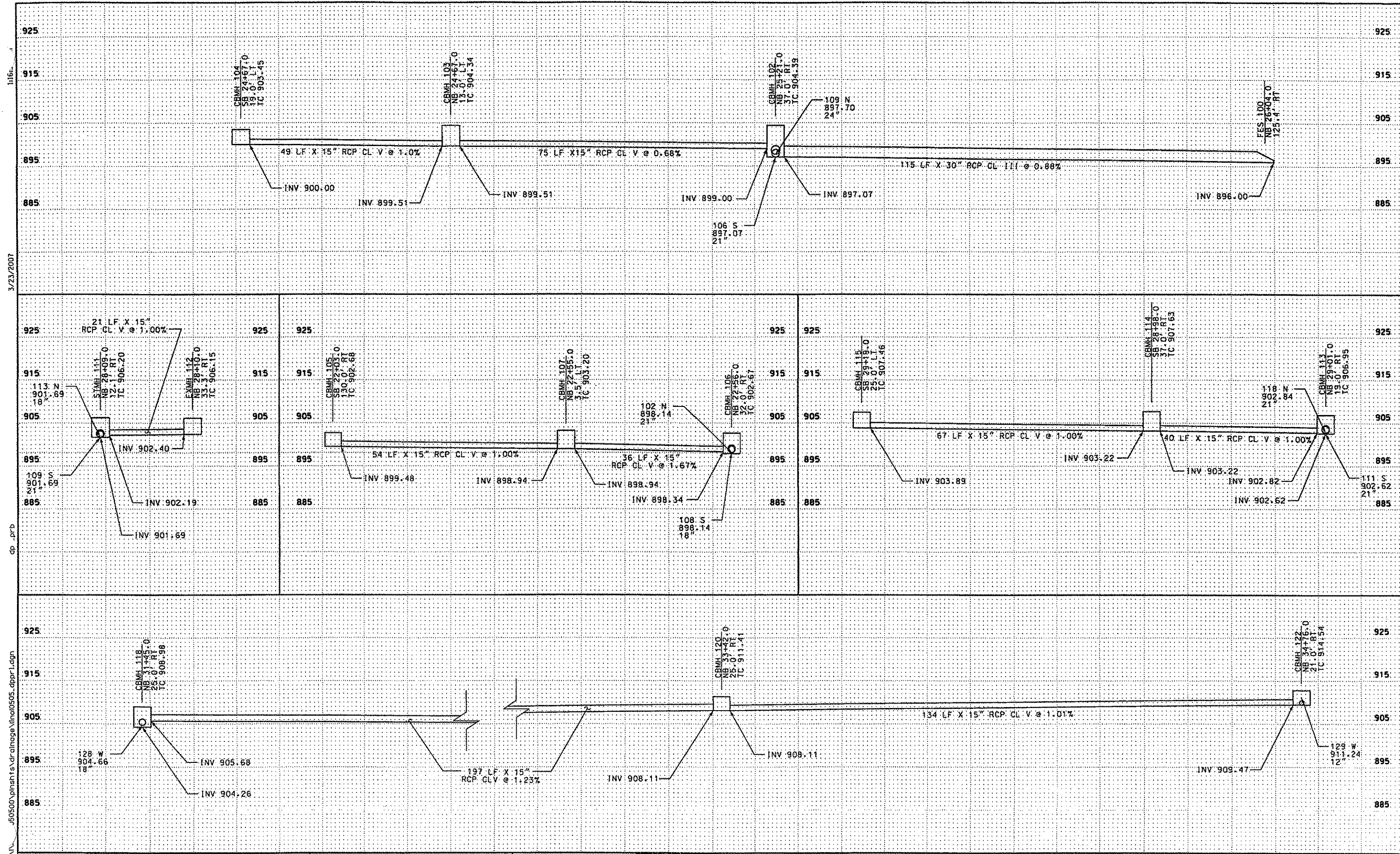
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
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 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE PROFILES	
FILE NO.	92
ALINDL0505.00	
DPR1	198
OF DPR7	

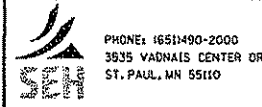




DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	JLR		
CHECKED BY:	SRH		
NO.	BY	DATE	REVISIONS

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MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

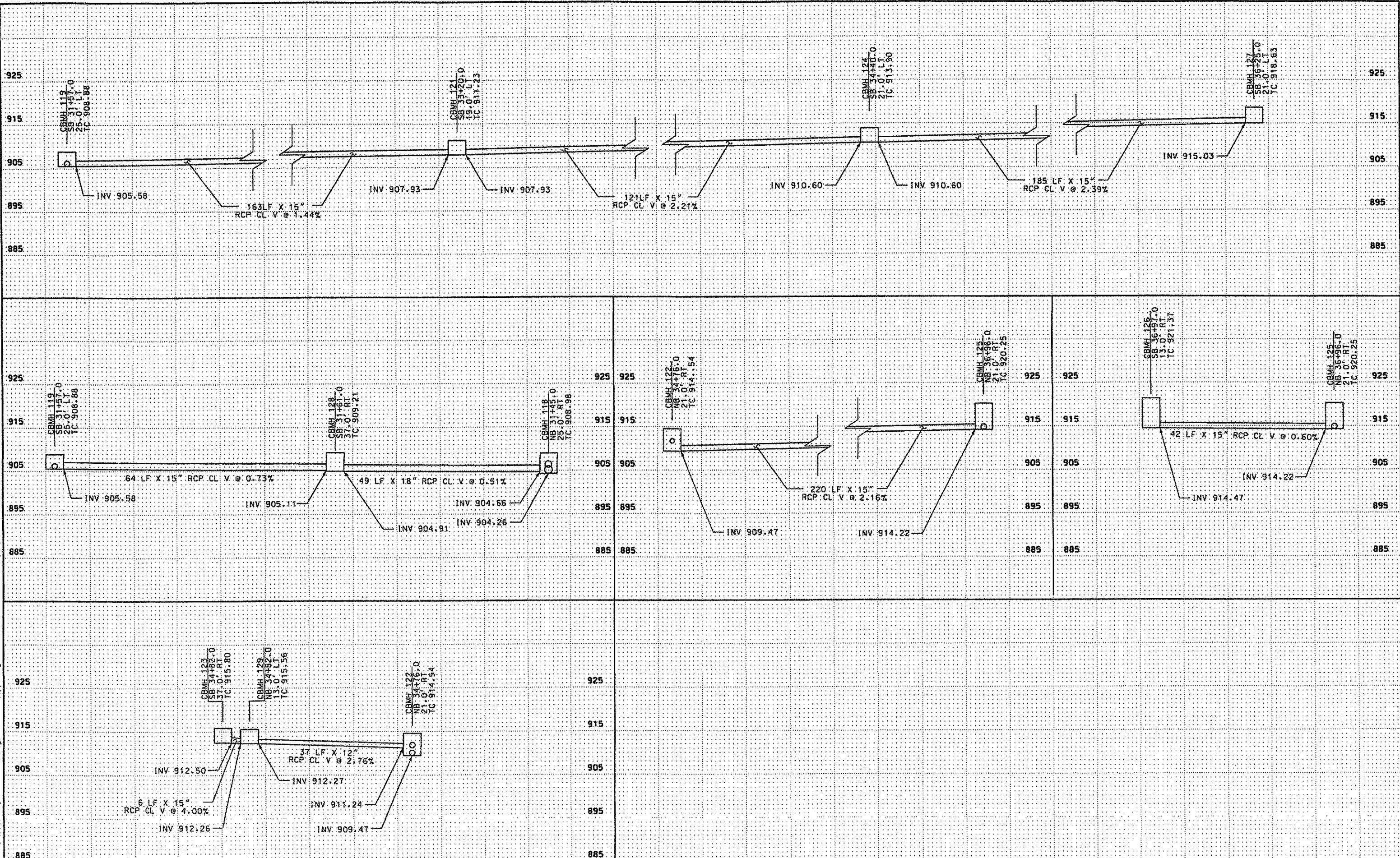
DRAINAGE PROFILES		FILE NO. 93
		ALNOL0505.00
DPR2		198
OF DPR7		

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dp\_prc

3/23/2007

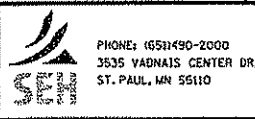
H16.3



DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
NO.	BY	DATE	REVISIONS	

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 Licensed Professional Engineer  
 Printed Name: MARK R. DIERLING Date: 3/23/2007

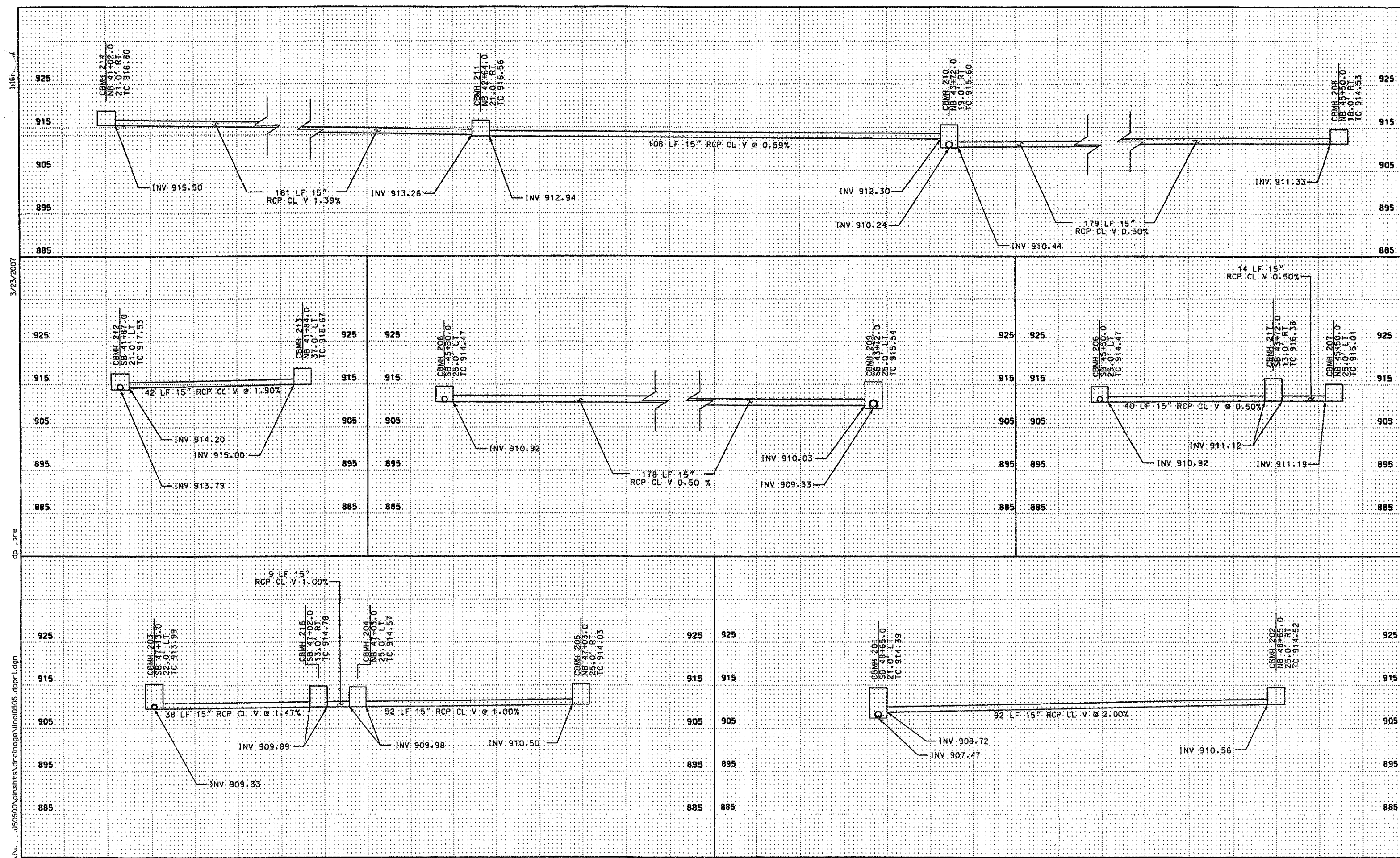


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE PROFILES		FILE NO. 94
		ALINDLOS05.00
		DPR3
		OF DPR7
		198



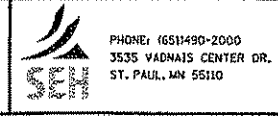




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 3/23/2007  
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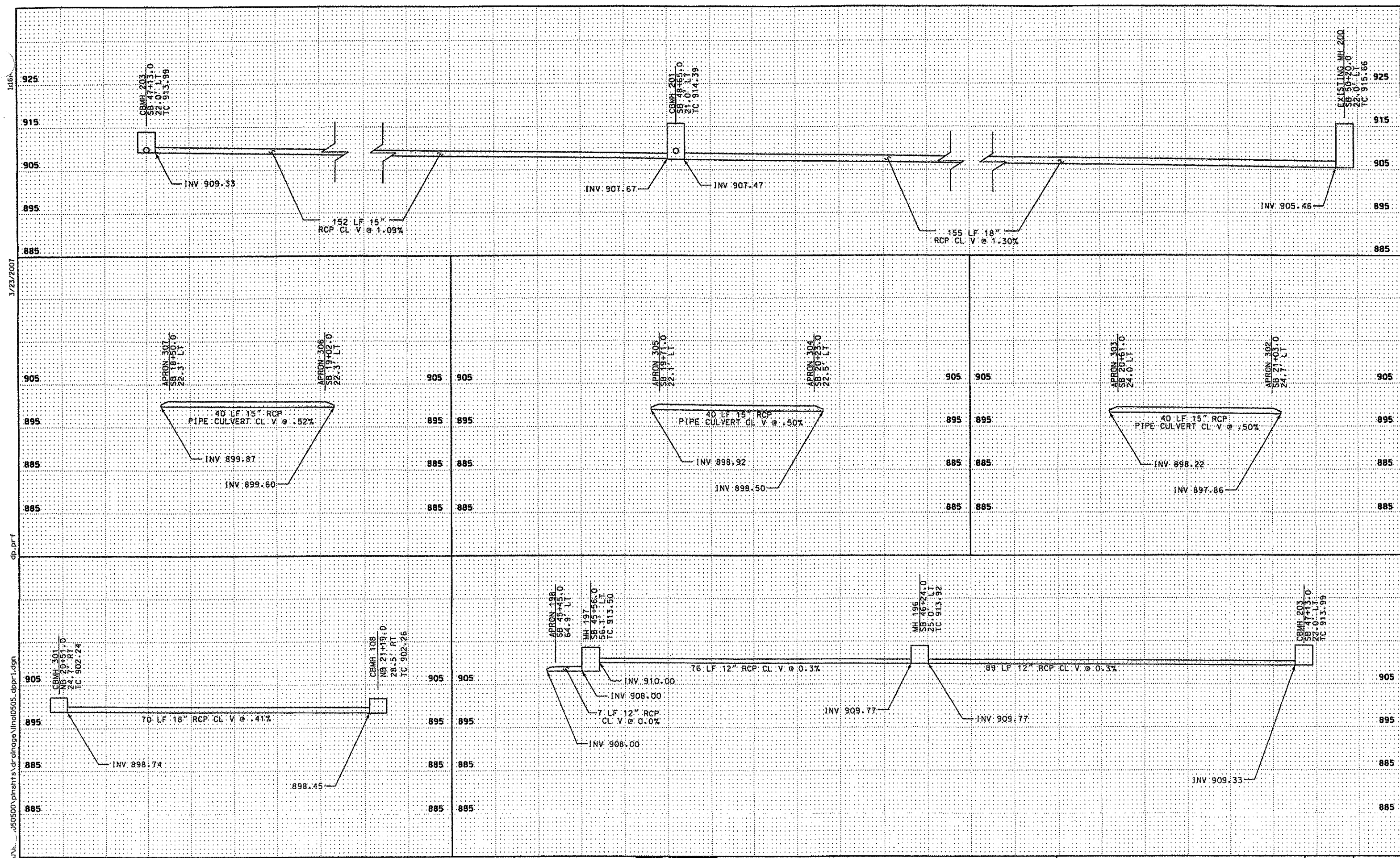
DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
NO.	BY	DATE	REVISIONS	

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 Certified By: *Mark R. Dierling* Lic. No. 21098  
 Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	96
ALNOL0505.00	
DPR5	198
OF DPR7	



3/23/2007

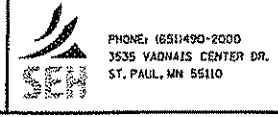
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DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRH			
NO.	BY	DATE	REVISIONS	

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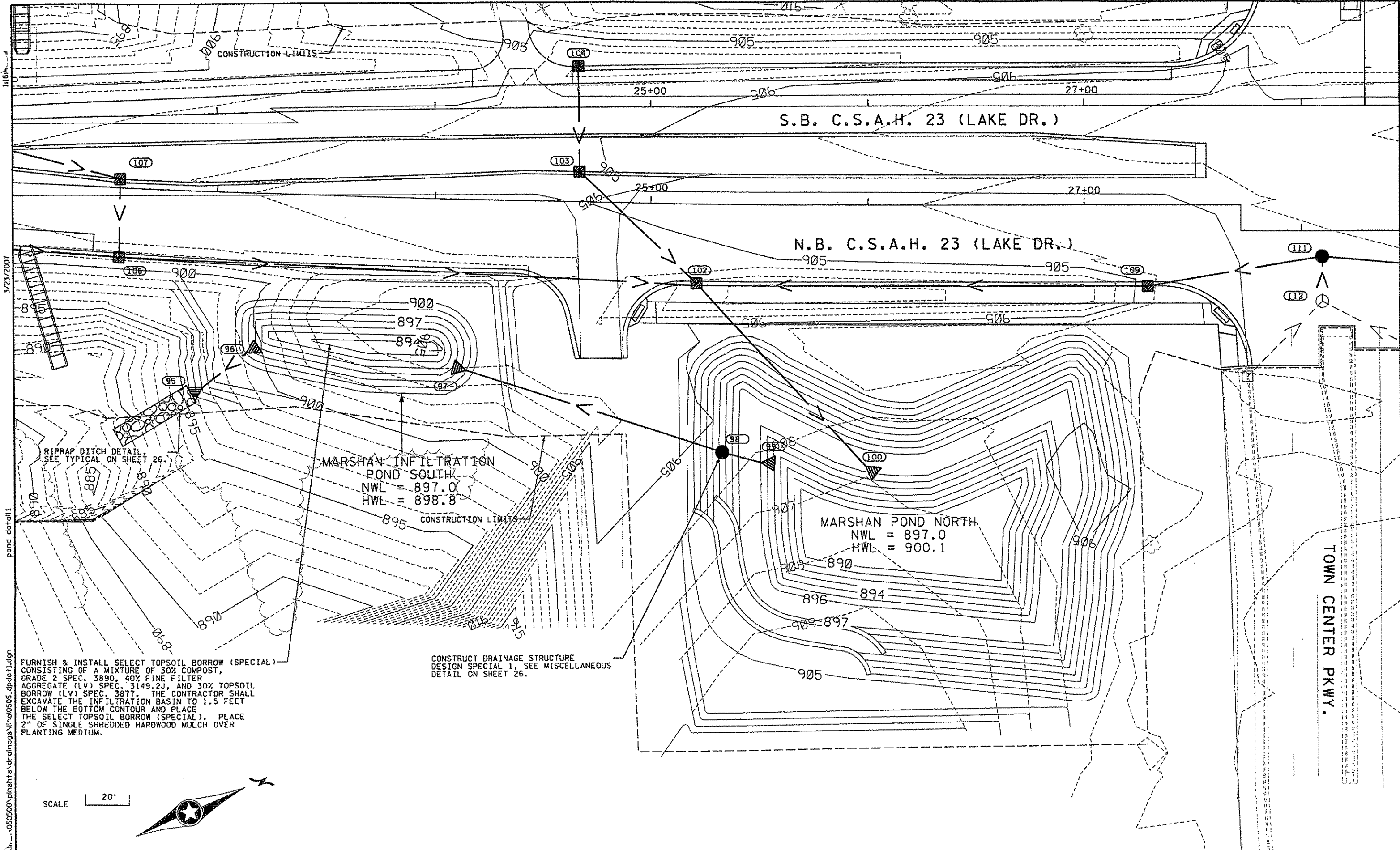
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

DRAINAGE PROFILES

FILE NO.	97
ALNOL0505.00	
DPR6	198
OF DPR7	







RIPRAP DITCH DETAIL  
SEE TYPICAL ON SHEET 26.

MARSHAN INFILTRATION  
POND SOUTH  
NWL = 897.0  
HWL = 898.8

MARSHAN POND NORTH  
NWL = 897.0  
HWL = 900.1

CONSTRUCT DRAINAGE STRUCTURE  
DESIGN SPECIAL 1, SEE MISCELLANEOUS  
DETAIL ON SHEET 26.

FURNISH & INSTALL SELECT TOPSOIL BORROW (SPECIAL)  
CONSISTING OF A MIXTURE OF 30% COMPOST,  
GRADE 2 SPEC. 3890, 40% FINE FILTER  
AGGREGATE (LV) SPEC. 3149.2J, AND 30% TOPSOIL  
BORROW (LV) SPEC. 3877. THE CONTRACTOR SHALL  
EXCAVATE THE INFILTRATION BASIN TO 1.5 FEET  
BELOW THE BOTTOM CONTOUR AND PLACE  
THE SELECT TOPSOIL BORROW (SPECIAL). PLACE  
2" OF SINGLE SHREDDED HARDWOOD MULCH OVER  
PLANTING MEDIUM.

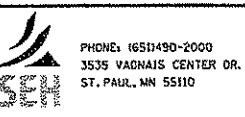
SCALE 20'



3/23/2007 pond detail1 s:\ka\11-050500\pshstts\drainage\lino0505.dpdet1.dgn

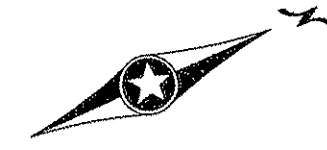
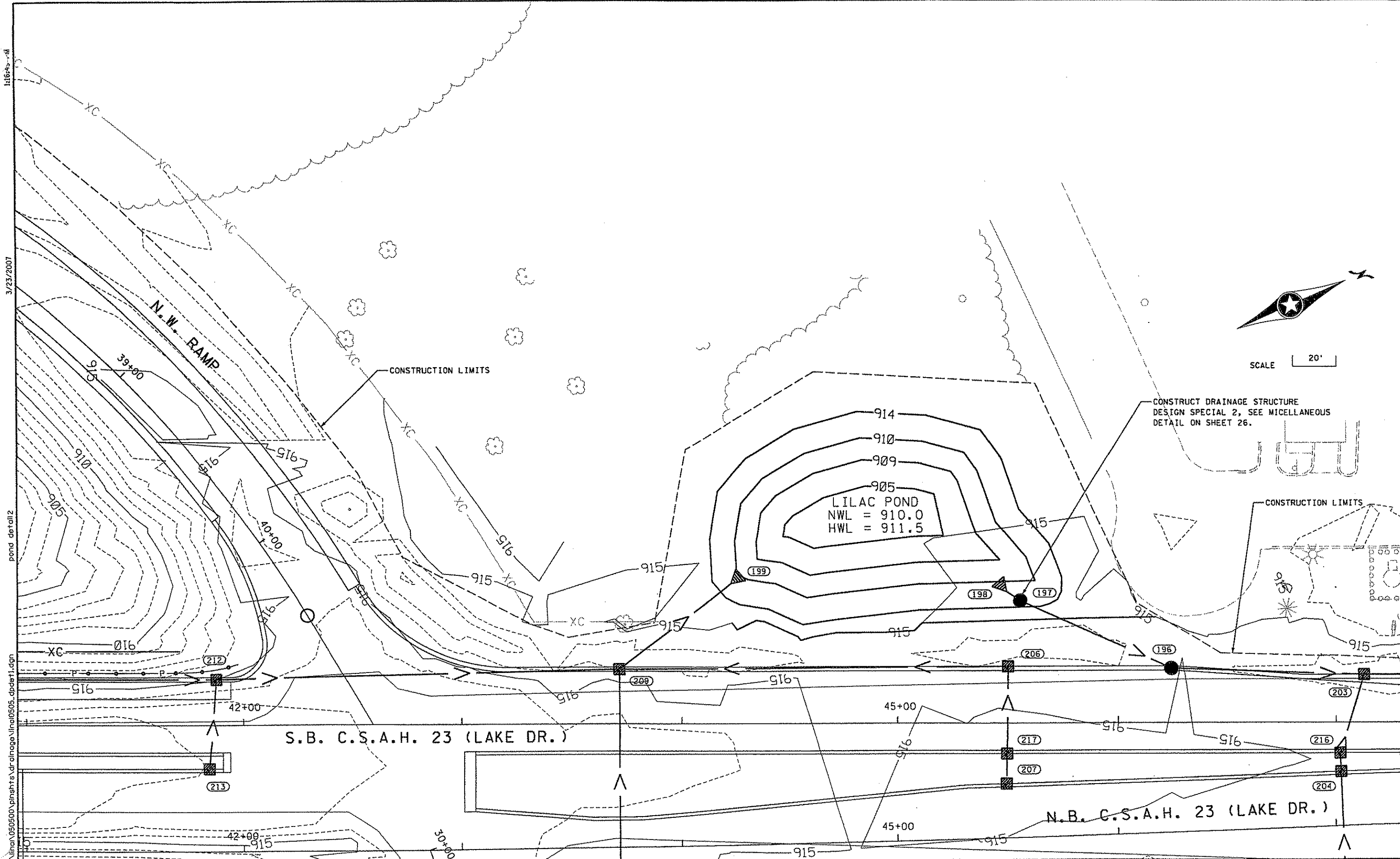
DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
	NO.	BY	DATE	REVISIONS

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Licensed Professional Engineer under the laws of  
the State of Minnesota.  
Certified By: *Mark R. Dierling* Lic. No. 21098  
Printed Name: MARK R. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	99
ALINOL0505.00	
CN1	198
OF CN2	



SCALE 20'

CONSTRUCT DRAINAGE STRUCTURE  
DESIGN SPECIAL 2, SEE MICELLANEOUS  
DETAIL ON SHEET 26.

CONSTRUCTION LIMITS

LILAC POND  
NWL = 910.0  
HWL = 911.5

S.B. C.S.A.H. 23 (LAKE DR.)

N.B. C.S.A.H. 23 (LAKE DR.)

11645-11  
 3/23/2007  
 pond detail2  
 sr:\ko\lilac\050500\p\shs\dr\inage\lilac\0505\_01.dgn

DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				
	NO.	BY	DATE	REVISIONS

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 Printed Name: MARK R. DIERLING Date: 3/23/2007

PHONE: (651) 490-2000  
 3535 VAGNAIS CENTER DR.  
 ST. PAUL, MN 55110

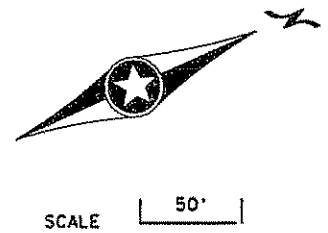
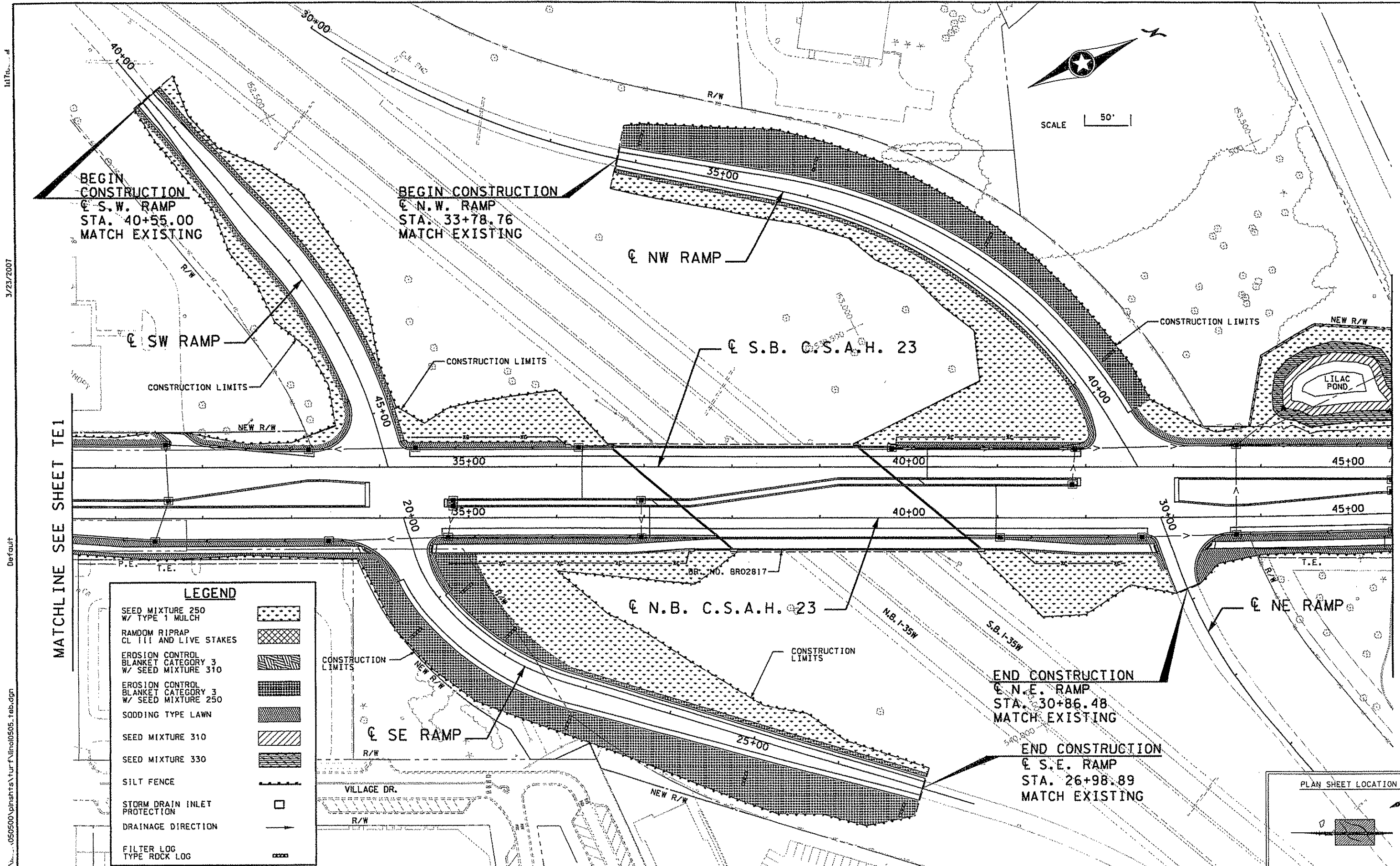


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	100
ALINOL0505.00	
CN2	
OF CN2	198







BEGIN CONSTRUCTION  
 @ S.W. RAMP  
 STA. 40+55.00  
 MATCH EXISTING

BEGIN CONSTRUCTION  
 @ N.W. RAMP  
 STA. 33+78.76  
 MATCH EXISTING

END CONSTRUCTION  
 @ N.E. RAMP  
 STA. 30+86.48  
 MATCH EXISTING

END CONSTRUCTION  
 @ S.E. RAMP  
 STA. 26+98.89  
 MATCH EXISTING

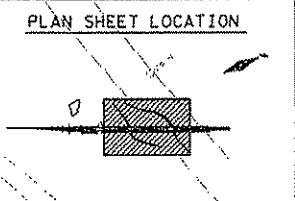
LEGEND	
SEED MIXTURE 250 W/ TYPE 1 MULCH	
RANDOM RIPRAP CL III AND LIVE STAKES	
EROSION CONTROL BLANKET CATEGORY 3 W/ SEED MIXTURE 310	
EROSION CONTROL BLANKET CATEGORY 3 W/ SEED MIXTURE 250	
SODDING TYPE LAWN	
SEED MIXTURE 310	
SEED MIXTURE 330	
SILT FENCE	
STORM DRAIN INLET PROTECTION	
DRAINAGE DIRECTION	
FILTER LOG TYPE ROCK LOG	

CONSTRUCTION LIMITS

CONSTRUCTION LIMITS

CONSTRUCTION LIMITS

VILLAGE DR.  
R/W



MATCHLINE SEE SHEET TE1

MATCHLINE SEE SHEET TE3

3/23/2007  
Default  
s:\ko\11...050500\plansheets\turf\lilac0505.tbl.dgn

DESIGN TEAM				
DRAWN BY:	JMT			
DESIGNER:	HLR			
CHECKED BY:	SRB			
	NO.	BY	DATE	REVISIONS

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SEH  
 PHONE: (651)490-2000  
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 ST. PAUL, MN 55110



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 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TURF ESTABLISHMENT AND  
 EROSION CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO. 102  
 ALIN0505.00  
 TE2 OF TE3  
 198



1477

3/23/2007

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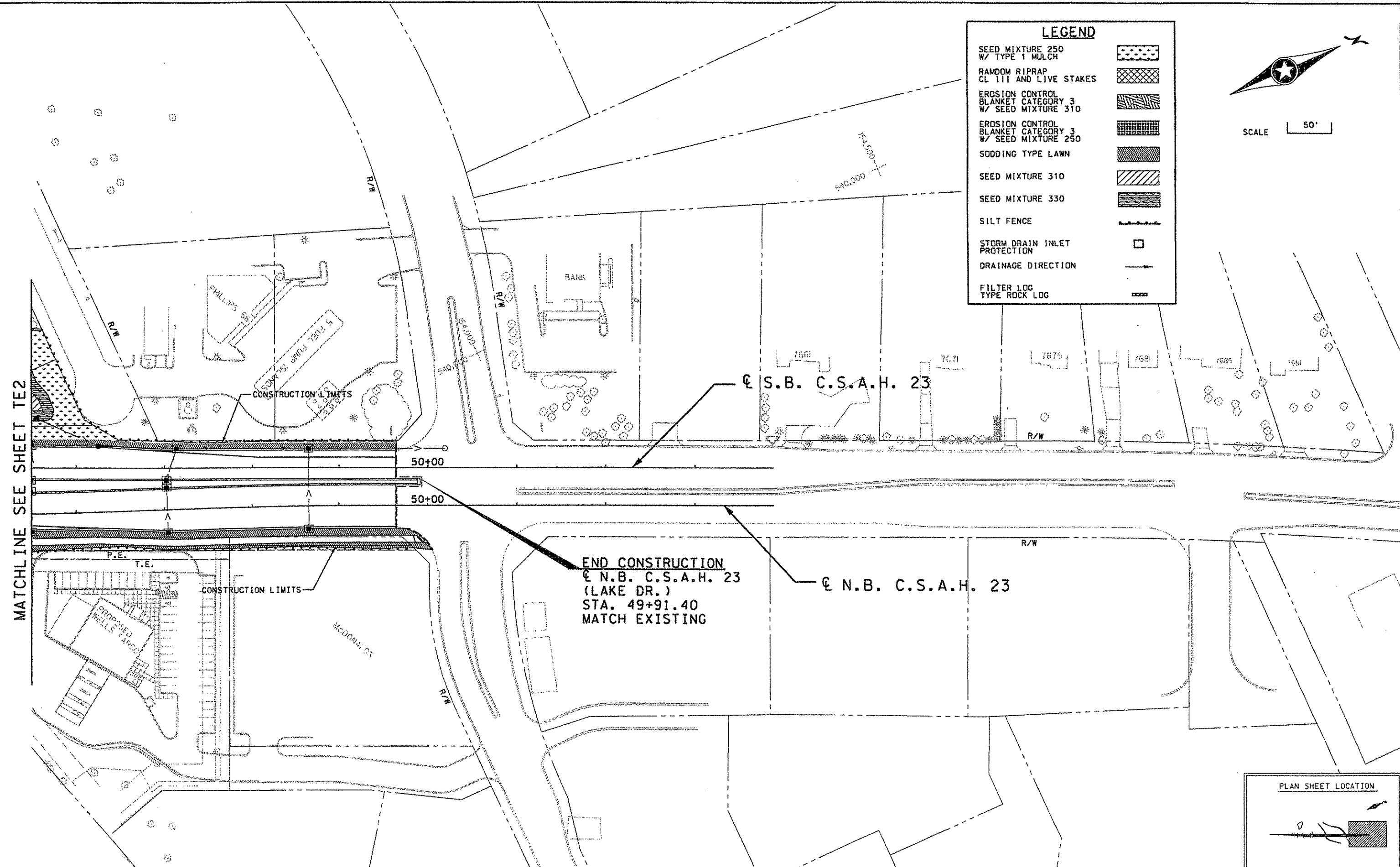
MATCHLINE SEE SHEET TE2

**LEGEND**

- SEED MIXTURE 250  
W/ TYPE 1 MULCH
- RANDOM RIPRAP  
CL 111 AND LIVE STAKES
- EROSION CONTROL  
BLANKET CATEGORY 3  
W/ SEED MIXTURE 310
- EROSION CONTROL  
BLANKET CATEGORY 3  
W/ SEED MIXTURE 250
- SODDING TYPE LAWN
- SEED MIXTURE 310
- SEED MIXTURE 330
- SILT FENCE
- STORM DRAIN INLET  
PROTECTION
- DRAINAGE DIRECTION
- FILTER LOG  
TYPE ROCK LOG

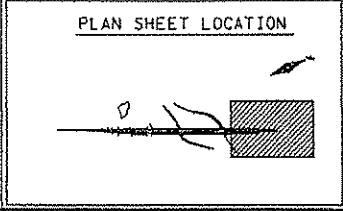


SCALE 50'



**END CONSTRUCTION**  
 @ N.B. C.S.A.H. 23  
 (LAKE DR.)  
 STA. 49+91.40  
 MATCH EXISTING

@ N.B. C.S.A.H. 23



DESIGN TEAM			
DRAWN BY:	JMT		
DESIGNER:	HLR		
CHECKED BY:	SRH		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark R. Diebling* Lic. No. 21098  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TURF ESTABLISHMENT AND  
 EROSION CONTROL PLAN  
 N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65

FILE NO. 103  
 ALINOL0505.00  
 TE3  
 OF TE3 198

June 30, 2006

Project: Reconstruction of CSAH 23 (Lake Drive) at I-35W Lino Lakes, MN SEH No. A-LIN0505.00

Owner: City of Lino Lakes 600 Town Center Parkway Lino Lakes, MN 55014 Contact: Mike Grochala, Community Development Director

SWPPP SUMMARY/OVERVIEW

This Storm Water Pollution Prevention Plan (SWPPP) has been developed by the City to address the requirements of NPDES Permit MN R100001, Part III, Subpart A. This SWPPP includes a combination of narrative and attached figures and plan sheets that describe the temporary and permanent and storm water management plan for the project.

Nature of construction activity: The proposed project consists of widening of Lake Drive and reconstruction of Bridge No. BR02817 and the on and off ramps for I-35W.

Soil disturbing activities: Removals; grading; bituminous pavement; curb and gutter and storm sewer; striping, traffic signals, construction of 2 storm water ponds and an infiltration basin, and preparation for final restoration.

1. Person knowledgeable in erosion prevention and sediment control and who will oversee implementation of the SWPPP: Community Development Director, Mike Grochala

Responsible for long-term operation and maintenance: Community Development Director, Mike Grochala

2. Narrative describing timing of installation of BMPs in Parts III, IV, Appendix A: The design storm that erosion and sediment control (ESC) BMPs are designed to handle is the 2-year, 24-hour storm event (2.8 inch event). Larger storm events may not be effectively handled by ESC BMPs.

3. SWPPP Requirements:

a. Erosion Prevention and Sediment Control BMPs

Temporary Inlet protection will be installed at all storm sewer inlets. Silt fence will be installed as shown on Turf Establishment plan sheets and as needed to protect Waters of the State and prevent sediment transport.

See attached plan sheets 101 - 103, 89 - 91, and detail plan sheets. See specification sections 2511, 2573, 2575 and related Special Provisions.

Permanent Disturbed portions of the site will be seeded with Mn/DOT seed mixture 250. Type 1 mulch will be applied. Mn/DOT seed mixture 325 will be applied along the County Ditch 10-22-32 embankment.

See attached plan sheets 101 - 103. See specification section 02575 and related Special Provisions.

Site map with existing and final grades and drainage areas, soil types and impervious surfaces: See drainage plan sheets for the existing and final grades and drainage system.

According to the Anoka County Soil Survey, soils at the site consist of sandy loams and fine sand. These soils are classified as Hydrologic Soil Group A soils.

c. Locations of areas not to be disturbed:

NA

d. Locations where construction will be phased to minimized exposed soil areas:

NA

e. Surface waters and wetlands within a mile that will receive storm water:

County Ditch 10 and Marshaan Lake will receive storm water from the South Drainage Area.

Methods for final stabilization of exposed soils:

Disturbed portions of the site will be seeded with Mn/DOT seed mixture 250. Type 1 mulch will be applied. Mn/DOT seed mixture 325 will be applied along the County Ditch 10-22-32 embankment.

4. Amendments to the SWPPP:

The SWPPP will be amended as needed and/or as required by provisions of the Permit.

5. Mitigation measures required from previous reviews (EAW, EIS, local, etc):

NA

6. Karst and drinking water supply management area measures:

NA

7. Discharges to waters with an APPROVED TMDL:

NA

Temporary Sediment Basins

Where ten acres of disturbed soil drain to a common location, a temporary sediment basin is required.

Permanent storm water basins will be excavated and used as temporary settling basins during construction. Other temporary basins will be excavated as necessary and as possible to control sediment transport.

Permanent Storm Water Management System

Where the project has replaced vegetation and/or other pervious surfaces with one or more acres of cumulative impervious surface, a water quality volume of 1/2 inch of runoff from the new impervious surfaces created by the project must be treated by one of the methods outlined in Part III.C.1 through Part III.C.5 (Wet Sedimentation Basin, Infiltration/Filtration, Regional Ponds, Combination of Practices, Alternative Method) prior to the runoff leaving the site or entering surface waters.

The proposed storm water management system consists of curb and gutter, storm sewer, two storm water treatment ponds and an infiltration basin. The project is divided into two drainage areas, the north drainage area and the south drainage area. These two drainage areas are divided at the high point of the project, which is the bridge over I-35W.

The surface water runoff from the north drainage area will be conveyed by curb and gutter and storm sewer to the north storm water pond. The storm water pond is designed to provide rate control and water quality treatment consistent with the Rice Creek Watershed District storm water management standards.

See attached Plan sheets 101 - 103, 89 - 91, and 99 - 100. See specification sections 2412, 2501, and 2506.

Part IV. Construction Activity Requirements Storm Water Pollution Prevention Plan

The SWPPP and BMPs identified will be installed and implemented in an appropriate and functional manner.

Erosion Prevention Practices See Part III.A.3.a for erosion prevention and sediment control BMPs.

Sediment Control Practices See Part III.A.3.a for erosion prevention and sediment control BMPs.

Dewatering and Basin Draining Any required dewatering and basin draining shall be accomplished utilizing BMPs which minimize to the extent practicable sediment from leaving the construction site.

Inspections and Maintenance The construction site will be observed once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

When sediment is observed up to approximately one-third of the height of silt fence, sediment will be removed. Silt fence will be repaired, replaced, or supplemented if it becomes nonfunctional.

A summary maintenance/construction observation report will be recorded after each site visit/observation. Temporary and permanent seeding will be observed for growth and washouts.

Inspection and maintenance requirements shall be completed as outlined in the NPDES Phase II Construction Permit.

Pollution Prevention Management Measures

The disposal and/or storage of hazardous waste and materials will comply with MPCA regulations.

Final Stabilization

See Part III.A.3.a. for permanent erosion and sediment control.

The permittee will submit a Notice of Termination (NOT) within 30 days after final stabilization is complete.

Appendix A.

General Requirements

All requirements in this Appendix are in addition to BMPs already specified. The provisions in this Appendix take precedence.

Requirements for Discharge to Special Water

NA

Additional BMPs for Special Waters

NA

Requirements for Discharging to Wetlands

NA

Discharges Requiring Environmental Review

NA

Discharges Affecting Endangered or Threatened Species

NA

Discharges Affecting Historic Places or Archeological Sites

NA

11/11

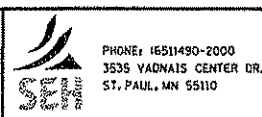
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Table with columns: DESIGN TEAM, DRAWN BY, DESIGNER, CHECKED BY, NO., BY, DATE, REVISIONS

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Certified By: [Signature] Lic. No. 21098 Printed Name: MARK B. DIERLING Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION STATE PROJ. NO. 0280-55 (TH 35W) STATE AID PROJ. NO. 02-623-13 & 210-020-04 C.S.A.H. 23 (LAKE DRIVE)

STORM WATER POLLUTION PREVENTION PLAN FILE NO. 104 ALIN0505.00 SWP1 OF SWP1 198

S SALVAGE SIGN TYPE C		
SIGN NO.	S.P. 0280-55 QUANTITY	PANEL LEGEND
C-100	7	STOP (5)
C-101	1	SPEED LIMIT 55 (4)
C-102	1	SPEED LIMIT 50 (4)
C-103	1	NO PASSING ZONE (4)
C-104	3	NO PARKING (4)
C-105	1	ANKA COUNTY 23 (4)
		SOUTH
C-106	5	DO NOT ENTER (5)
C-107	2	STOP AHEAD (5)
C-108	1	NO LEFT TURN (4)
		NO PARKING
C-109	4	ONE WAY (4)
C-110	1	DIVIDED HIGHWAY (4)
C-111	1	ANKA COUNTY 23 (4)
		DOUBLE ARROW
C-112	1	ANKA COUNTY 12 (4)
		JCT
C-113	1	NO U TURN (4)
		KEEP RIGHT
		OBJECT MARKER
C-114	1	RIGHT LANE MUST TURN RIGHT (4)
C-115	1	WEST (4)
		ANKA COUNTY 12
		LT ARROW
C-116	1	WEST (4)
		ANKA COUNTY 153
		LT ARROW
C-117	1	RIGHT LANE ENDS (4)
		600 FEET MARKER
C-118	1	ANKA COUNTY 23 (4)
		HORIZONTAL DOUBLE ARROW
C-119	1	DOUBLE ARROW (4)
C-120	1	KEEP RIGHT (4)
TOTAL	37	

T SALVAGE AND INSTALL SIGN TYPE SPECIAL (STREET NAME SIGN)			
SIGN NO.	QTY.	POST.	STREET NAME
S-101	1	1-0	MARSHAN LN
			LAKE DR
S-102	1	1-0	TOWN CENTER PKWY
			LAKE DR
TOTAL	2		

U PAVEMENT MARKING TABULATION		
ITEM	UNIT	S.P. 0280-55 TOTAL QUANTITY
PAVEMENT MESSAGE (LT ARROW) POLY PREFORM	EACH	2
PAVEMENT MESSAGE (RT ARROW) POLY PREFORM	EACH	2
PAVEMENT MESSAGE (LEFT-THRU ARROW) POLY PREFORM	EACH	2
PAVEMENT MESSAGE (LT ARROW) PREFORMED THERMOPLASTIC	EACH	17
PAVEMENT MESSAGE (RT ARROW) PREFORMED THERMOPLASTIC	EACH	11
4" SOLID LINE WHITE-EPOXY	LF	11,800
4" BROKEN LINE WHITE-EPOXY	LF	880
8" DOTTED LINE WHITE-EPOXY	LF	70
4" SOLID LINE YELLOW-EPOXY	LF	6,810
4" DOUBLE SOLID LINE YELLOW-EPOXY	LF	900
24" SOLID LINE YELLOW-EPOXY	LF	70
4" SOLID LINE WHITE-POLY PREFORM	LF	580
4" BROKEN LINE WHITE-POLY PREFORM	LF	125
24" SOLID LINE WHITE-POLY PREFORM	LF	60
24" SOLID LINE WHITE-PREFORMED THERMOPLASTIC	LF	380
ZEBRA CROSSWALK WHITE-POLY PREFORM	SF	310
ZEBRA CROSSWALK WHITE-PREFORMED THERMOPLASTIC	SF	1260

V REMOVE DELINEATORS AND MARKERS		
TYPE	S.P. 0280-55 QUANTITY	LOCATION
X4-6	1	S.W. RAMP
D10-2	1	C.S.A.H. 23 (LAKE DRIVE)

W REMOVE SIGN TYPE D					
SIGN NO.	S.P. 0280-55 QUANTITY	POSTS		PANEL SIZE (IN.)	LEGEND
		NO. & TYPE	KNEE BRACES QUANT.		
D-100	1	2-U	2	114 x 54 18 x 18	St. Paul Minneapolis Forest Lake
D-101	1	2-U	2	78 x 78	SOUTH 35W NORTH
D-102	1	2-U	2	108 x 42	St. Paul Minneapolis
D-103	1	2-U	1	54 x 66	SOUTH 35W
D-104	1	2-U	1	54 x 66	NORTH 35W
D-105	1	2-U	2	108 x 24	Forest Lake
D-106	1	3-U	3	150 x 72	Forest Lake St. Paul Minneapolis
D-107	1	2-U	2	78 x 78	NORTH 35W SOUTH
TOTAL	8				

**PAVEMENT MARKING NOTES & GUIDELINES**

**GENERAL INFORMATION:**

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

**PAINT:**

AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICATION IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE. EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

**EPOXY:**

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE. ON LOW SPEED (SPEED LIMIT 35 OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS, SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

AN EPOXY RESIN LINE 4" WIDE AND 15 MILL THICKNESS (WET), REQUIRES AN APPLICATION RATE OF ONE (1) GALLON OF COMPONENTS FOR 320 FEET OF LINE. GLASS BEADS SHALL BE APPLIED AT A POUND PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES F° OR GREATER.

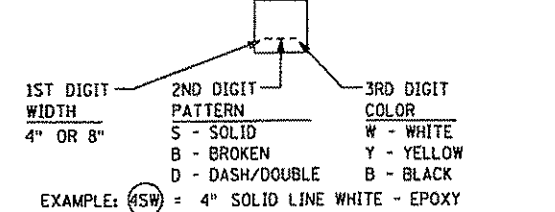
PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

**SYMBOLS & MATERIALS LEGEND**

- CROSSWALK BLOCK WHITE-EPOXY
- PAVEMENT MESSAGE (LEFT ARROW) EPOXY

**STRIPING KEY**

- CIRCLE - EPOXY
- SQUARE - POLY PREFORM
- TRIANGLE - PAINT
- PENTAGON - PREFORMED THERMOPLASTIC

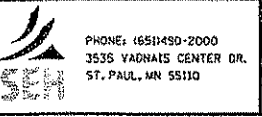


X REMOVE SIGN TYPE C		
SIGN NO.	S.P. 0280-55 QUANTITY	LEGEND
C-200	1	JCT
		INTERSTATE 35W
C-201	1	NO CROSSING - MNDOT
		NO CROSSING - MNDOT
C-202	3	RIGHT TURN LANE
C-203	1	LEFT TURN LANE
		WRONG WAY
C-204	2	EMERGENCY STOPPING ONLY
C-205	1	PEDS. BIKES... PROHIBITED
C-206	1	LEFT TURN LANE
TOTAL	10	

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DESIGN TEAM				
DRAWN BY: CJD				
DESIGNER: TJD				
CHECKED BY: TJD				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**SIGNING & PAVEMENT MARKING PLAN**  
 NOTES AND TABULATIONS

FILE NO. 105  
 ALN0505.00  
 SS1 OF 519  
 198

120  
3/23/2007  
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SIGN PANELS TYPE D										
SIGN NO.	S.P. 0280-55 QUANTITY	POSTS				MTG. HT. (FT.) (1)	PANEL			PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.	LENGTH (FT.)	SPACING (IN.)		SIZE (IN.)	UNIT AREA (SQ.FT.)	S.P. 0280-55 TOTAL AREA (SQ.FT.)	
D-1	1	2-U	1	15.0	30	7	48 x 54	18.00	18.00	
D-2	1	2-U	2	14.0	66	7	108 x 42	31.50	31.50	
D-3	1	2-U	2	17.0	54	7	78 x 78	42.25	42.25	
D-4	1	2-U	2	16.0	54	7	96 x 66	44.00	44.00	
D-5	1	2-U	2	16.0	54	7	96 x 66	44.00	44.00	
D-6	1	2-U	2	17.0	54	7	78 x 78	42.25	42.25	
D-7	1	2-U	2	14.0	66	7	108 x 42	31.50	31.50	
TOTAL								253.50		

SIGN PANELS TYPE C											
SIGN NO.	S.P. 0280-55 QUANTITY	POSTS				MTG. HT. (FT.) (1)	PANEL			CODE NO.	PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.	LENGTH (FT.)	SPACING (IN.)		SIZE (IN.)	UNIT AREA (SQ.FT.)	S.P. 0280-55 TOTAL AREA (SQ.FT.)		
C-1	1	1-U	-	13	7	24 x 30	5.00	5.00	R2-1	SPEED LIMIT 45	
C-2	1	1-U	-	13	7	24 x 30	5.00	5.00	R2-1	SPEED LIMIT 55	
C-3	5	1-U	-	13	7	30 x 30	6.25	31.25	R3-X1	RIGHT TURN LANE	
C-4	5	1-U	-	13	7	36 x 30	7.50	37.50	R3-30AB	LANE DESIGNATION (LEFT, LEFT)	
C-5	1	2-U	1	15	7	48 x 30	10.00	10.00	R3-30AELA	LANE DESIGNATION (LEFT, LEFT/THRU, RIGHT)	
C-6	7	1-U	-	13	7	24 x 30	5.00	35.00	R4-7	KEEP RIGHT	
C-7	4	2-U	1	15	7	48 x 48	16.00	64.00	X4-2	HAZARD MARKER	
C-8	2	1-U	-	13	7	18 x 24	3.00	6.00	R5-1	DO NOT ENTER	
C-9	1	1-U	-	12	7	36 x 12	3.00	3.00	R5-10d	PEDESTRIANS, BICYCLES..... PROHIBITED	
C-10	1	1-U	-	12	7	36 x 12	3.00	3.00	R6-1	ONE WAY (RIGHT)	
C-11	2	2-U	1	14	7	30 x 30	6.25	6.25	R6-1	ONE WAY (RIGHT)	
C-12	2	2-U	1	15	7	36 x 36	9.00	18.00	R1-1	STOP	
C-13	2	2-U	-	14	7	36 x 36	9.00	18.00	R16-X4	EMERGENCY STOPPING ONLY..... PROHIBITED	
C-15	1	2-U	-	14	7	36 x 36	9.00	9.00	W3-3	SIGNAL AHEAD	
C-16	1	2-U	-	15	7	36 x 36	9.00	9.00	W6-1	DIVIDED HIGHWAY	
C-17	1	1-U	-	14	7	21 x 15	2.19	2.19	W9-1	RIGHT LANE ENDS	
C-18	1	1-U	-	14	7	24 x 12	2.00	2.00	W20-100pm	700 FEET	
C-19	2	1-U	-	14	7	24 x 12	2.00	4.00	W9-2	LANE ENDS MERGE LEFT	
C-20	1	1-U	-	15	7	24 x 12	2.00	2.00	M2-1a	JCT (WHITE ON BLUE)	
C-21	1	1-U	-	15	7	24 x 12	2.00	2.00	M1-5	ANKA COUNTY 12	
C-22	3	1-U	-	13	7	24 x 30	5.00	15.00	M3-1a	NORTH (WHITE ON BLUE)	
C-23	2	1-U	-	13	7	30 x 30	6.25	12.50	M1-6	ANKA COUNTY 23	
C-25	6	1-U	-	13	7	30 x 30	6.25	37.50	M3-3a	SOUTH (WHITE ON BLUE)	
C-26	1	2-U	-	14	7	36 x 36	9.00	9.00	M1-6	ANKA COUNTY 23	
C-27	1	2-U	1	7	7	30 x 30	6.25	6.25	M3-4a	WEST (WHITE ON BLUE)	
C-28	1	2-U	1	7	7	30 x 30	6.25	6.25	M1-6	ANKA COUNTY 12	
C-29	1	1-U	-	13	7	36 x 30	7.50	7.50	M6-1a	HORIZONTAL ARROW (LEFT)(WHITE ON BLUE)	
C-30	1	2-U	-	-	-	36 x 36	9.00	9.00	M3-4a	WEST (WHITE ON BLUE)	
C-31	1	2-U	-	-	-	36 x 36	9.00	9.00	M1-6	ANKA COUNTY 153	
TOTAL								479.07			

SALVAGE AND INSTALL SIGN TYPE C							
SIGN NO.	S.P. 0280-55 QUANTITY	POSTS			MTG. HT. (FT.) (1)	PANEL SIZE (IN.)	PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.	LENGTH (FT.)			
C-300	1	2-U	1	16.0	7	60 x 60	VILLAGE/LIND LAKES C.H. POLICE/R. ARROW
C-301	1	2-U	1	16.0	7	60 x 60	VILLAGE/LIND LAKES C.H. POLICE/L. ARROW
C-302	1	2-U	-	14.0	7	48 x 12	GAS/(LEFT ARROW)
C-303	1	2-U	1	15.0	7	54 x 54	MN. CRTL. FACILITY/APOLLO DR. BUSINESS PK.
C-304	1	2-U	-	14.0	7	48 x 12	GAS/(LEFT AND RIGHT ARROWS)
TOTAL	5						

SIGN PANELS TYPE OVERLAY					
CODE NO.	S.P. 0280-55 QUANTITY	SIZE (IN.)	AREA (SQ. FT.)	TOTAL AREA (SQ. FT.)	LEGEND
M1-1	5	30 x 24	5.00	25.00	INTERSTATE 35W
TOTAL				25.00	

DELINEATORS AND MARKERS		
TYPE	S.P. 0280-55 QUANTITY	LOCATION
X4-2	7	BELOW SIGN C-6
X4-2	3	BELOW SIGN C-22
X4-4L	2	C.S.A.H. 23 (LAKE DR.)
X4-6	1	S.W. RAMP

GENERAL NOTES:

- Posts lengths are approximate and include embedment, but do not include additional length required for splice.
- See Sheets 117 - 119 for structural details.
- See Standard Signs Manual for punching code and detailed drawings of Type C sign panels.

SPECIFIC NOTES:

- Mounting height is minimum, see Sheet 114 for typical mounting.
- Mount in concrete, according to detail. See sheet 121.
- Mount back to back.
- Sign panels will not be re-used under this contract and shall be salvaged, and Anoka County shall be contacted to arrange for the County to pick up the signs from the job site.
- Sign panels will not be re-used under this contract and shall be salvaged, and the City of Lino Lakes shall be contacted to arrange for the City to pick up the signs from the job site.
- Paid for as 2564.551 Reference Post Marker.
- Mount on Bridge Median Island, according to detail.



1203.5

3/23/2007

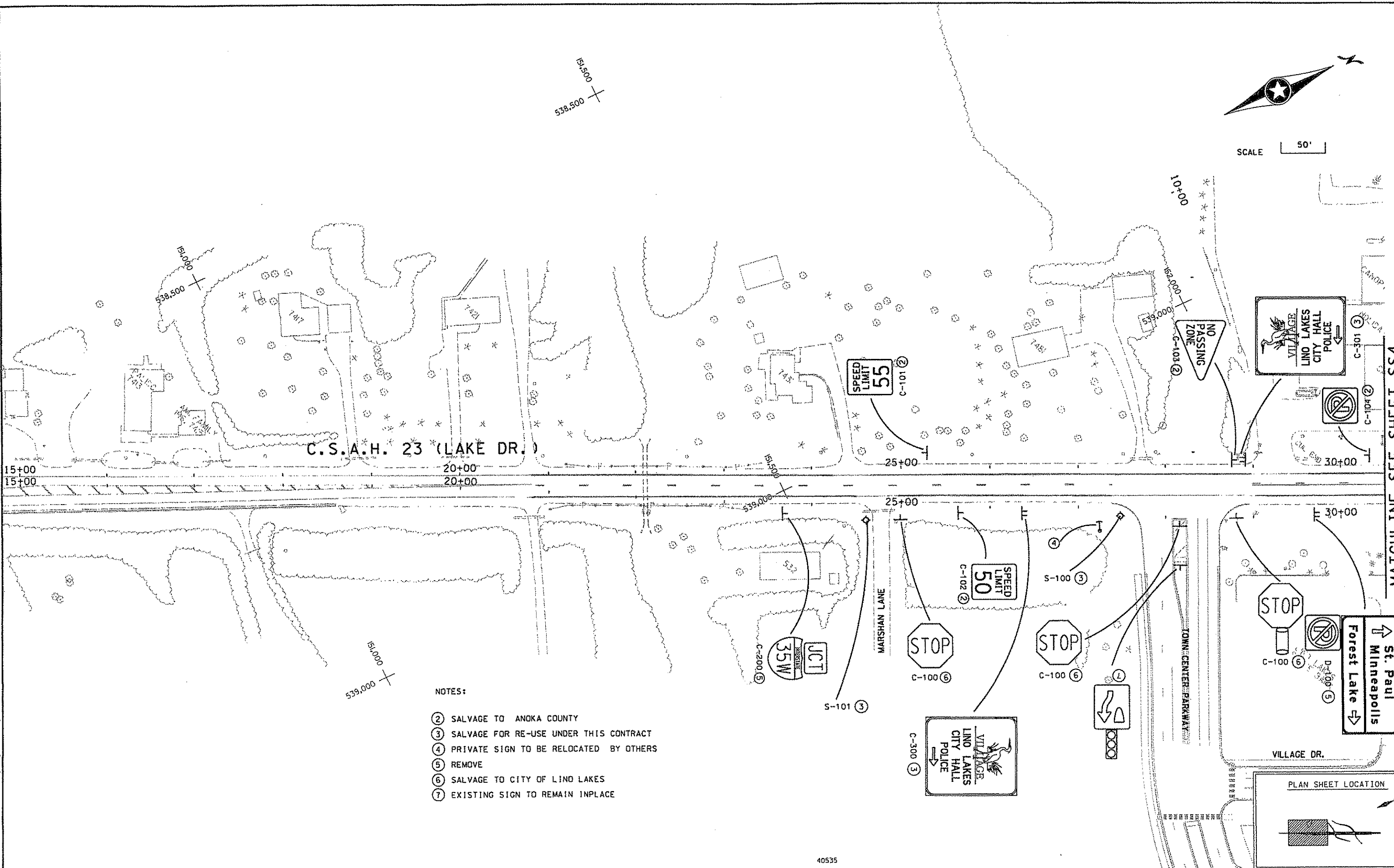
Default

sa:\work\linlakes\050500\plans\signing\_stripping\existing\linlakes0505\_eso.dgn

538,500  
151,000



SCALE 50'



C.S.A.H. 23 (LAKE DR.)

- NOTES:
- ② SALVAGE TO ANOKA COUNTY
  - ③ SALVAGE FOR RE-USE UNDER THIS CONTRACT
  - ④ PRIVATE SIGN TO BE RELOCATED BY OTHERS
  - ⑤ REMOVE
  - ⑥ SALVAGE TO CITY OF LIND LAKES
  - ⑦ EXISTING SIGN TO REMAIN INPLACE

MATCHLINE SEE SHEET SS4

DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *TIFFANY J. DAGON* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

SEH  
 PHONE: 16501490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

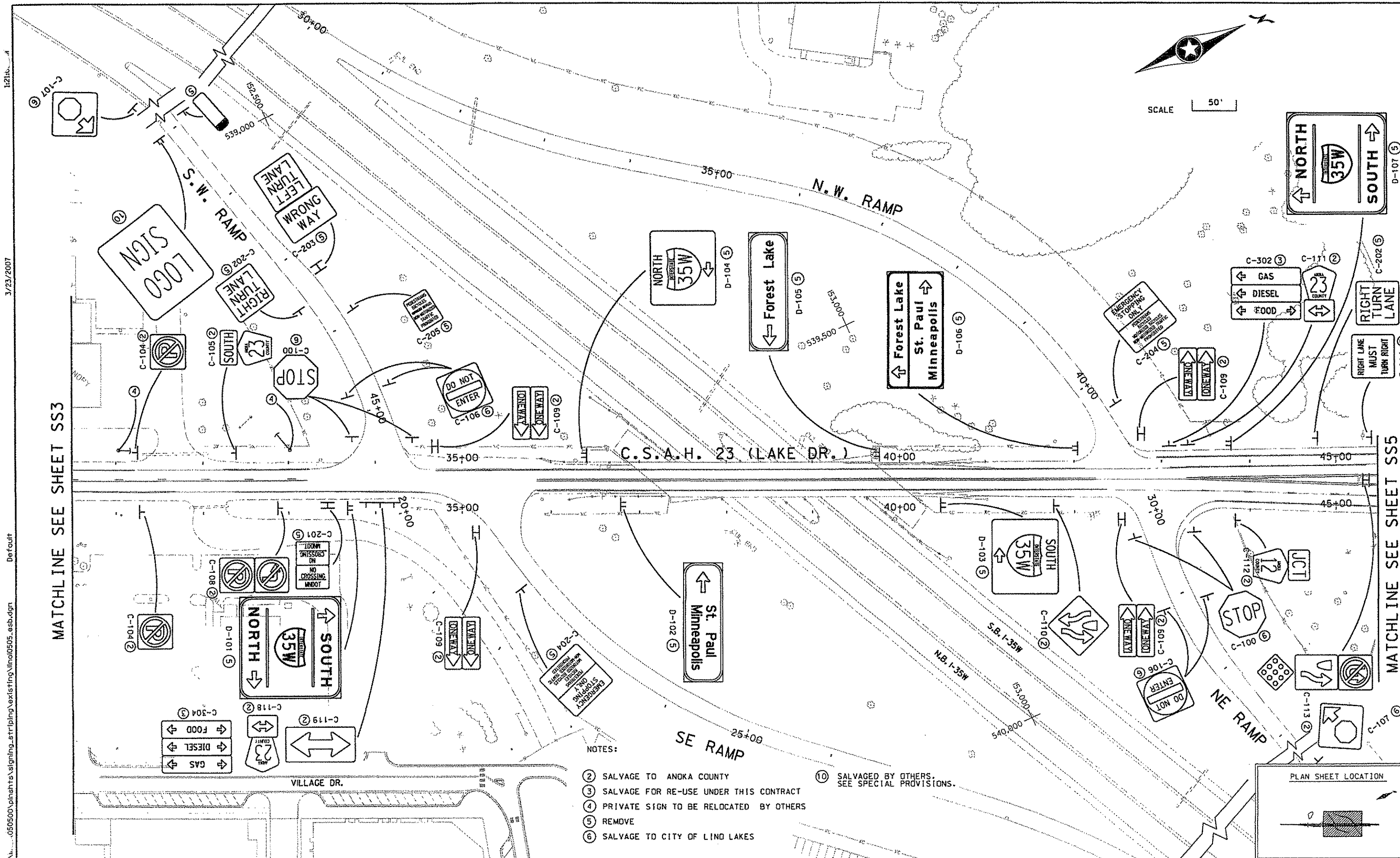


TIFFANY J. DAGON  
 MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

EXISTING SIGNING  
 AND PAVEMENT MARKING PLAN

FILE NO. 107  
 ALINOL0505.00  
 SS3  
 OF SS19 198



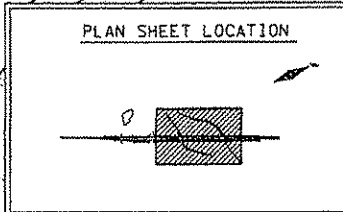


MATCHLINE SEE SHEET SS3

MATCHLINE SEE SHEET SS5

**NOTES:**

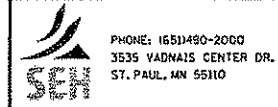
- ② SALVAGE TO ANOKA COUNTY
- ③ SALVAGE FOR RE-USE UNDER THIS CONTRACT
- ④ PRIVATE SIGN TO BE RELOCATED BY OTHERS
- ⑤ REMOVE
- ⑥ SALVAGE TO CITY OF LIND LAKES
- ⑩ SALVAGED BY OTHERS. SEE SPECIAL PROVISIONS.



3/23/2007 1:21:16  
Default  
s:\ko\l\...050500\plans\signing\_stripping\existing\lino0505.esb.dgn

DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Oagon* Lic. No. 40535  
 Printed Name: TIFFANY J. OAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

EXISTING SIGNING AND PAVEMENT MARKING PLAN  
 FILE NO. 108  
 ALIN0505.00  
 SS4 OF 5519  
 198

1/21/10

3/23/2007

Default

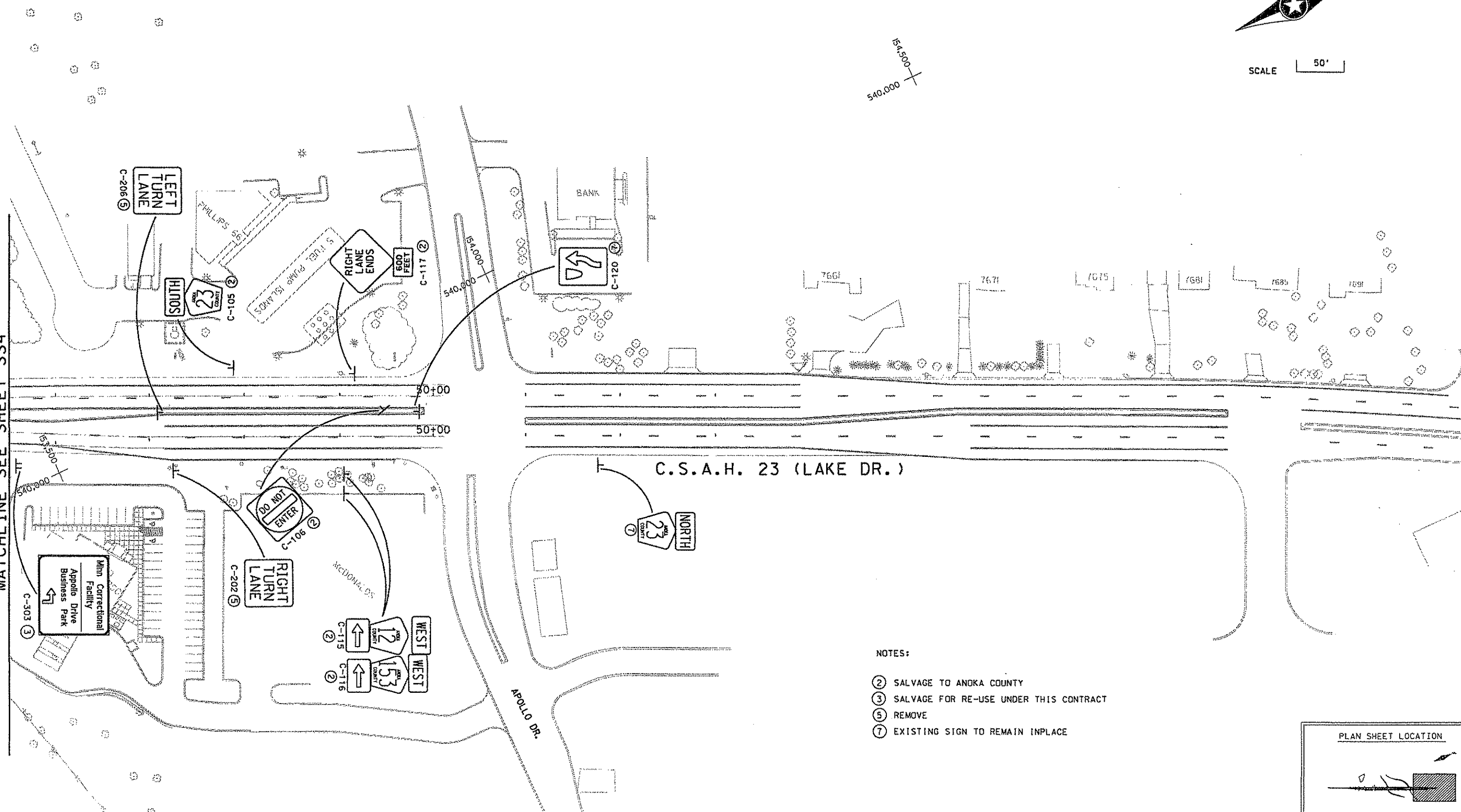
u:\50500\pinshirts\signing\_stripping\existing\linol0505\_esc.dgn

sa\kovi

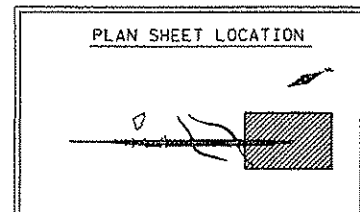


SCALE 50'

MATCHLINE SEE SHEET SS4



- NOTES:
- ② SALVAGE TO ANOKA COUNTY
  - ③ SALVAGE FOR RE-USE UNDER THIS CONTRACT
  - ⑤ REMOVE
  - ⑦ EXISTING SIGN TO REMAIN INPLACE



DESIGN TEAM			
DRAWN BY:	MTJ		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

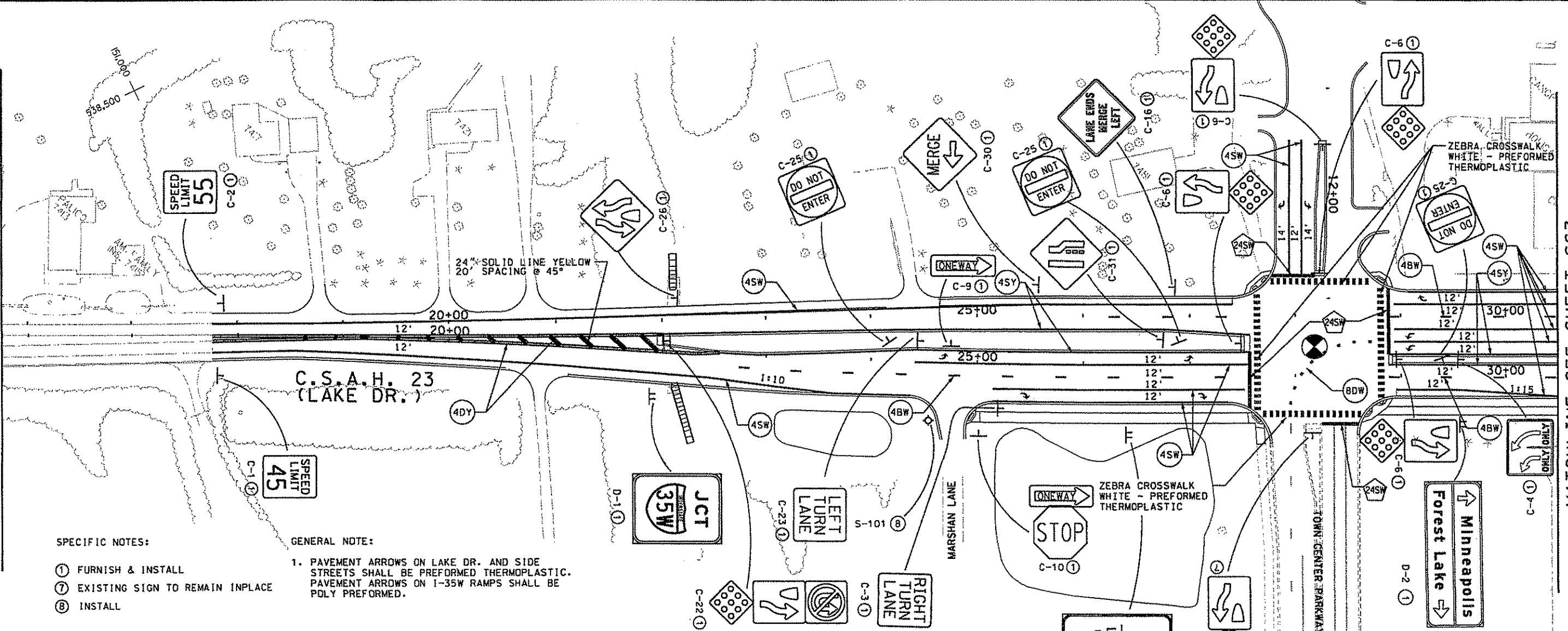
PHONE: (651) 490-2000  
 3535 VANDANIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

EXISTING SIGNING AND PAVEMENT MARKING PLAN		FILE NO. 109
		ALINOL0505.00
		SS5
		OF SS19 198

MATCHLINE A

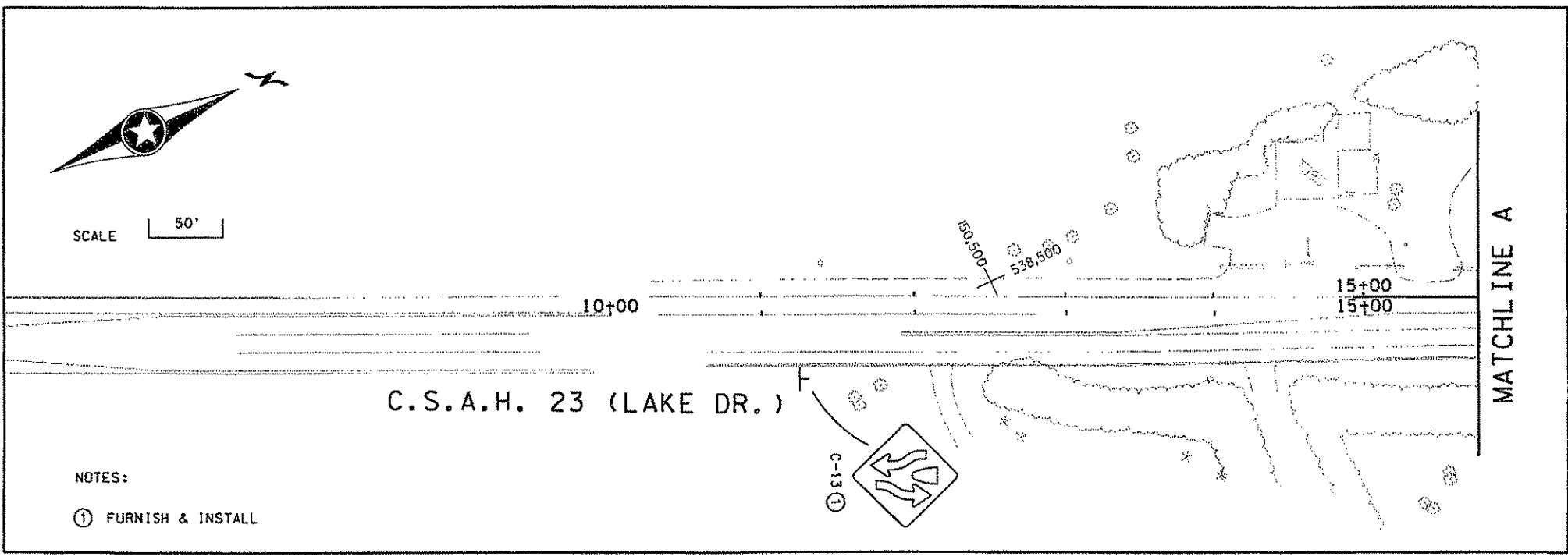


SPECIFIC NOTES:

- ① FURNISH & INSTALL
- ⑦ EXISTING SIGN TO REMAIN INPLACE
- ⑧ INSTALL

GENERAL NOTE:

1. PAVEMENT ARROWS ON LAKE DR. AND SIDE STREETS SHALL BE PREFORMED THERMOPLASTIC. PAVEMENT ARROWS ON I-35W RAMPS SHALL BE POLY PREFORMED.



NOTES:

- ① FURNISH & INSTALL

MATCHLINE SEE SHEET SS7

MATCHLINE A

DESIGN TEAM			
DRAWN BY:	MTJ		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Jeffery J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: JEFFERY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

SIGNING AND PAVEMENT MARKING PLAN  
 N.B. C.S.A.H. 23 STA. 17+76 TO STA. 30+50

FILE NO.	110
ALINOL0505.00	
SS6	198
OF 5519	

GENERAL NOTE:

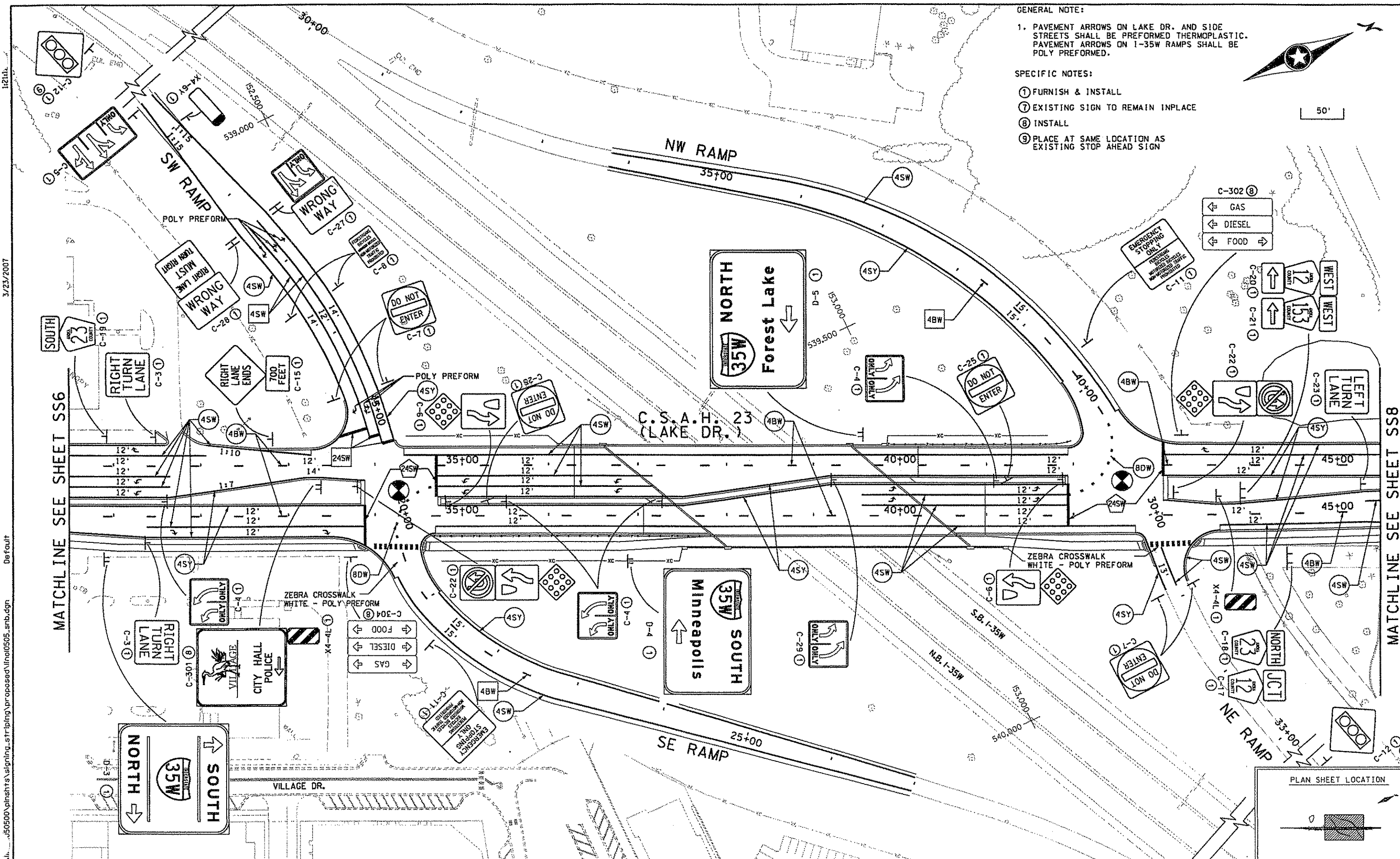
1. PAVEMENT ARROWS ON LAKE DR. AND SIDE STREETS SHALL BE PERFORMED THERMOPLASTIC. PAVEMENT ARROWS ON I-35W RAMPS SHALL BE POLY PREFORMED.

SPECIFIC NOTES:

- ① FURNISH & INSTALL
- ⑦ EXISTING SIGN TO REMAIN IN PLACE
- ⑧ INSTALL
- ⑨ PLACE AT SAME LOCATION AS EXISTING STOP AHEAD SIGN

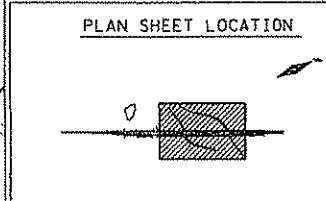


50'



MATCHLINE SEE SHEET SS6

MATCHLINE SEE SHEET SS8



DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJD			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



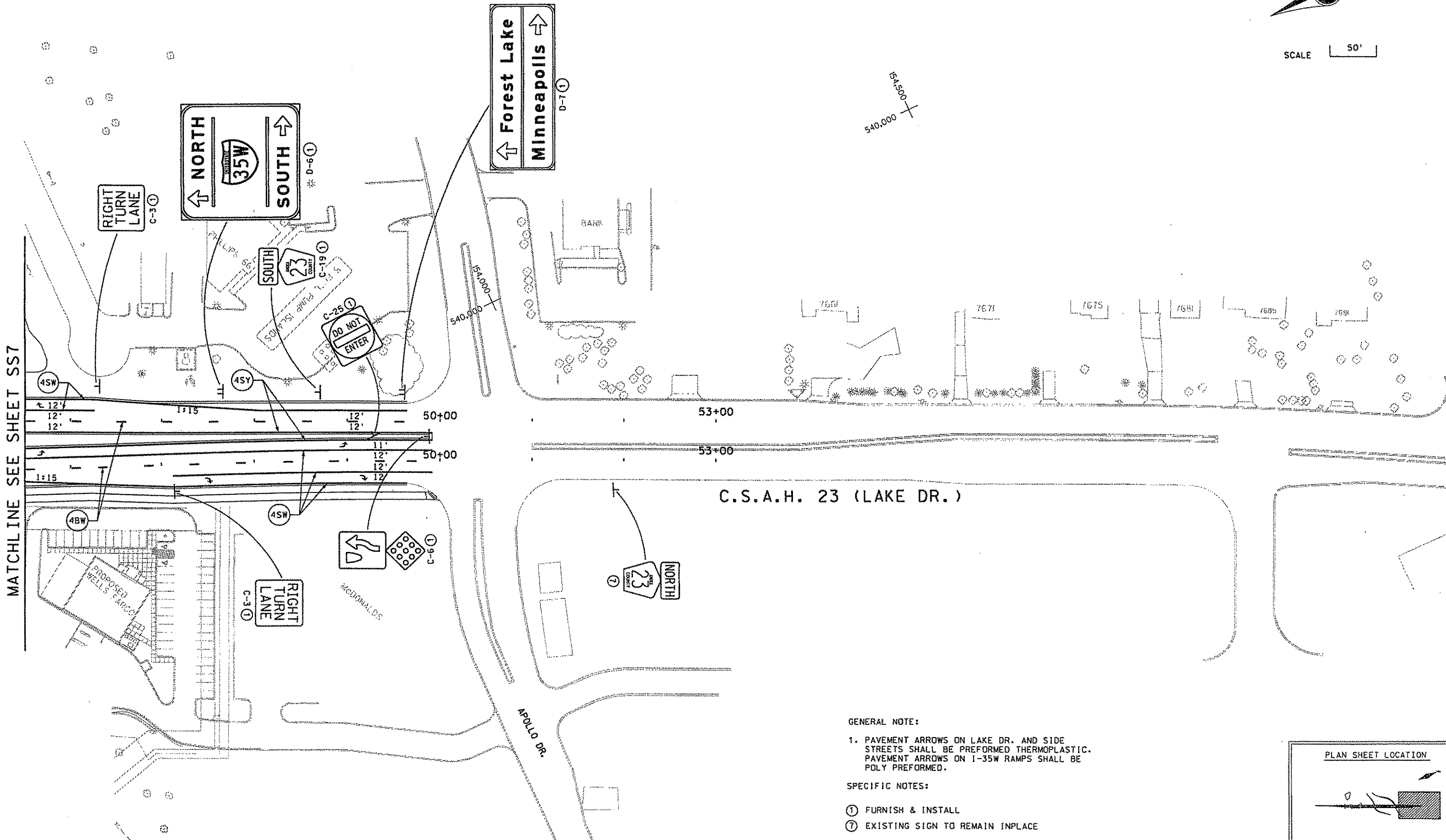
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**SIGNING AND PAVEMENT MARKING PLAN**  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO. 111  
 ALINOL0505.DWG  
 SS7  
 OF 5519  
 198



SCALE 50'



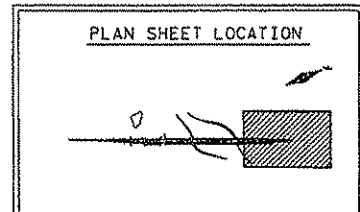
MATCHLINE SEE SHEET SS7

GENERAL NOTE:

1. PAVEMENT ARROWS ON LAKE DR. AND SIDE STREETS SHALL BE PERFORMED THERMOPLASTIC. PAVEMENT ARROWS ON I-35W RAMP SHALL BE POLY PERFORMED.

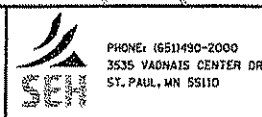
SPECIFIC NOTES:

- ① FURNISH & INSTALL
- ⑦ EXISTING SIGN TO REMAIN INPLACE



DESIGN TEAM				
DRAWN BY:	MTT			
DESIGNER:	TJR			
CHECKED BY:	GCP			
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



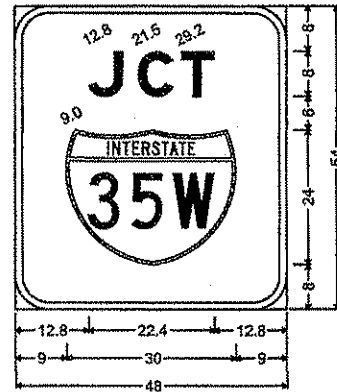
PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

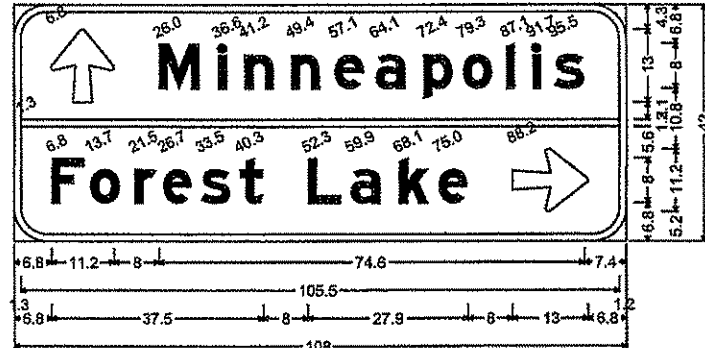
SIGNING AND PAVEMENT MARKING PLAN		FILE NO. 112
N.B. C.S.A.H. 23 STA. 45+50 TO STA. 49+65		ALINDL0505.00
		SS8 OF 5519
		198

3/23/2007 1121b Default s:\ko\1121b\050500\plans\signing\attrib\proposed\1121b0505.snc.dgn

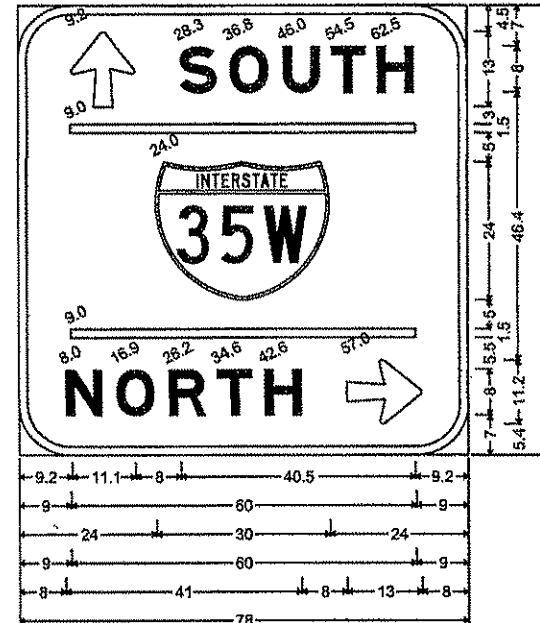




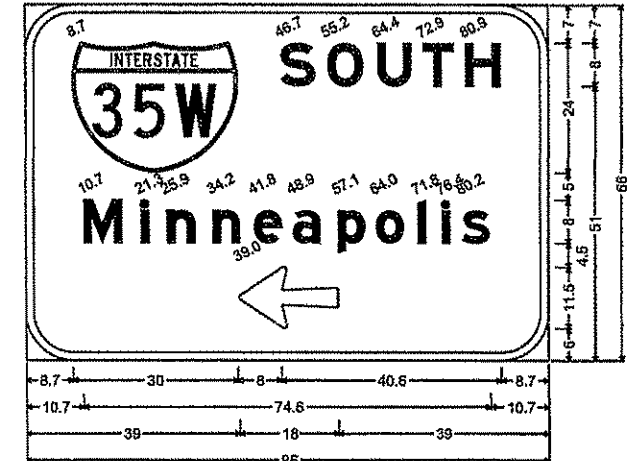
D-1; 6.0" Radius, 1.3" Border, White on Green; [JCT] E Mod;



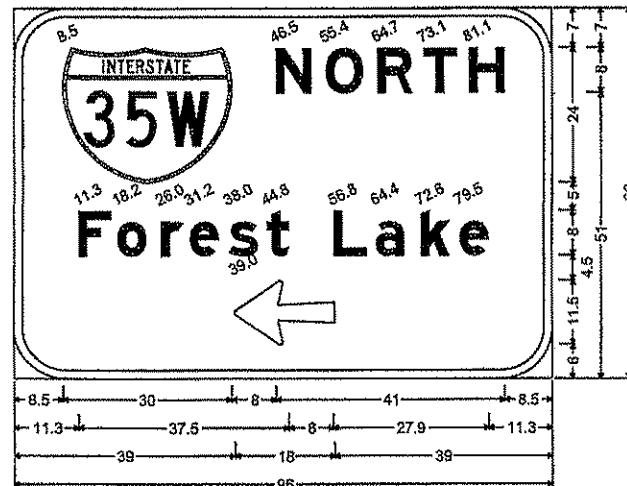
D-2; 6.0" Radius, 1.3" Border, White on Green; Arrow 5 - 13.0° 90°; [Minneapolis] E Mod; [Forest Lake] E Mod; Arrow 5 - 13.0° 0°;



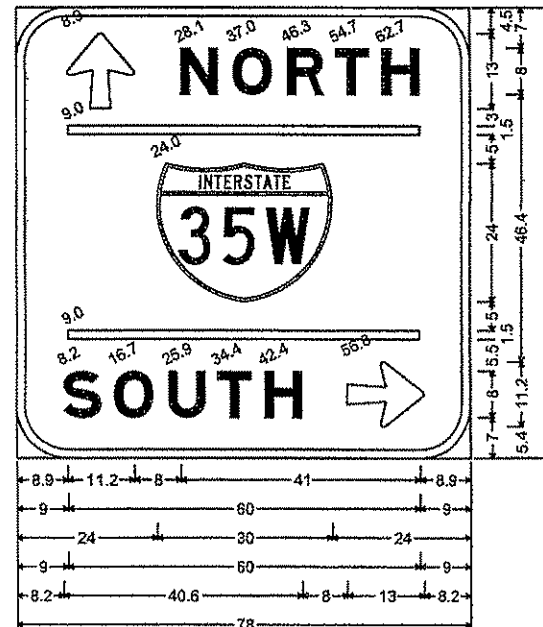
D-3; 9.0" Radius, 1.5" Border, White on Green; Arrow 5 - 13.0° 90°; [SOUTH] E Mod; [NORTH] E Mod; Arrow 5 - 13.0° 0°;



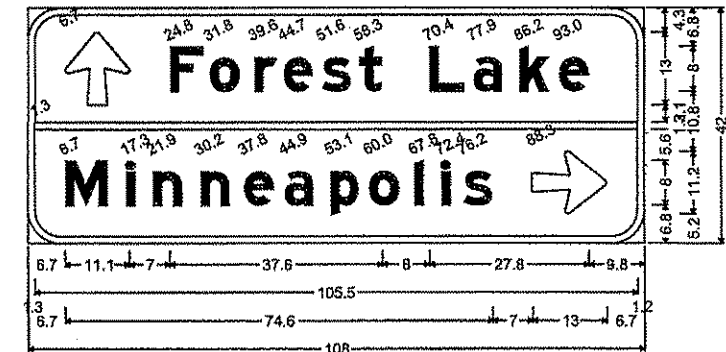
D-4; 9.0" Radius, 1.5" Border, White on Green; [SOUTH] E Mod; [Minneapolis] E Mod; Arrow 14 - 18.0° 180°;



D-6; 9.0" Radius, 1.5" Border, White on Green; [NORTH] E Mod; [Forest Lake] E Mod; Arrow 14 - 18.0° 180°;



D-7; 9.0" Radius, 1.5" Border, White on Green; Arrow 5 - 13.0° 90°; [NORTH] E Mod; [SOUTH] E Mod; Arrow 5 - 13.0° 0°;



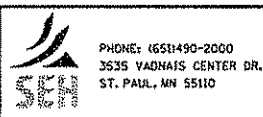
D-8; 6.0" Radius, 1.3" Border, White on Green; Arrow 5 - 13.0° 90°; [Forest Lake] E Mod; [Minneapolis] E Mod; Arrow 5 - 13.0° 0°;

NOTES:

- CORNERS OF THE SIGN PANELS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- SEE STANDARD SIGNS MANUAL FOR ARROW, FRACTION, AND OVERLAY DETAILS.

DESIGN TEAM			
DRAWN BY:	MIT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
NO.	BY	DATE	REVISIONS

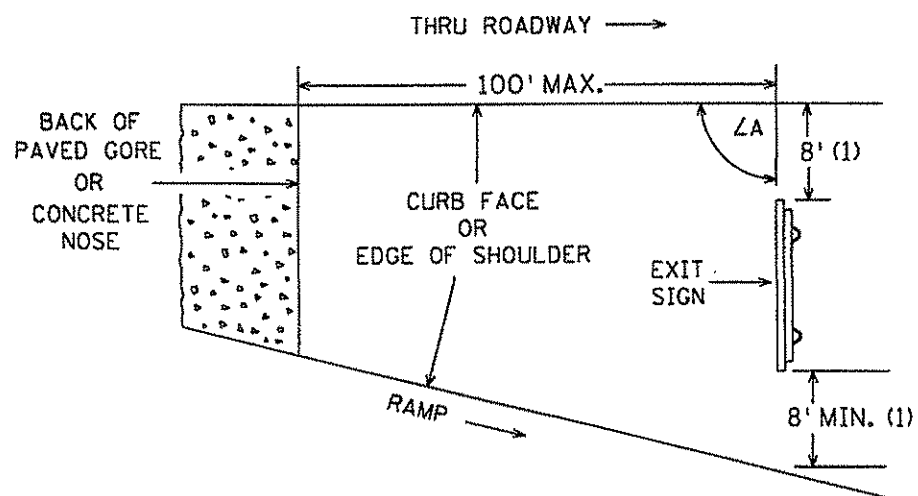
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Licensed Professional Engineer  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



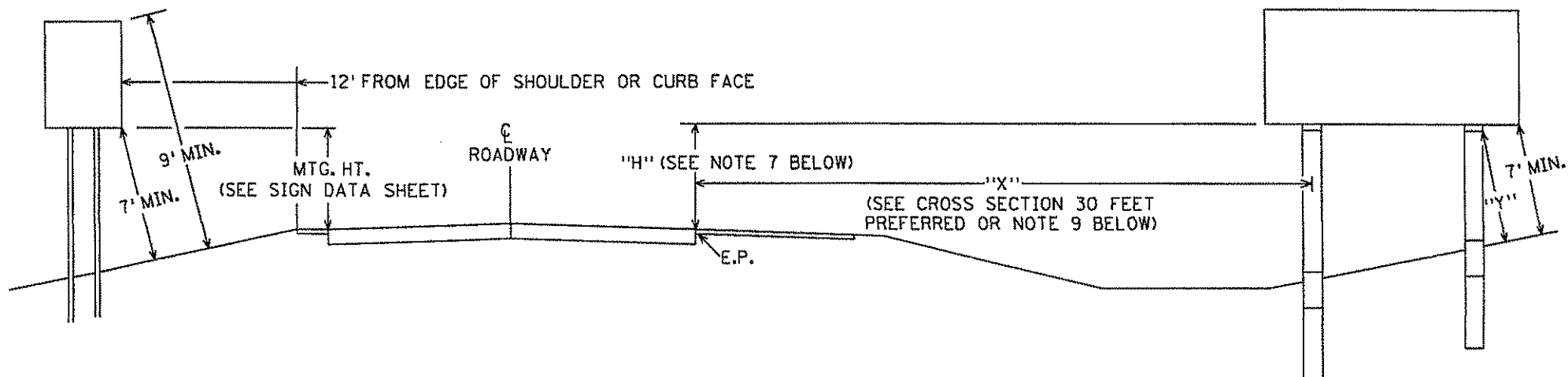
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

SIGN PANELS		FILE NO. 113
		ALINOL0505.00
		SS9
		OF SS19
		198

GORE PLACEMENT

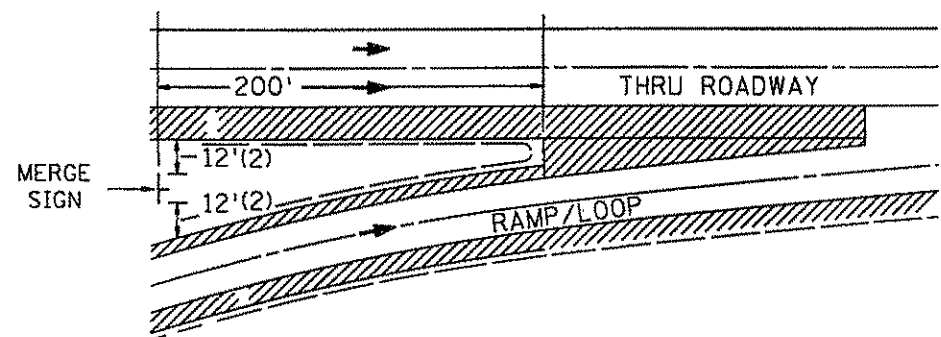


ROADSIDE PLACEMENT



ROUTE MARKER, REGULATORY & WARNING SIGNS - TYPE C  
MINOR GUIDE SIGNS - TYPE D

MAJOR GUIDE SIGN - TYPE A



SPECIFIC NOTES:

(1) EXIT SIGNS

IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE OTSO SIGNING UNIT.

(2) MERGE SIGNS

IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, CONTACT THE OTSO SIGNING UNIT.

NOTES:

1. IF A SECONDARY SIGN IS MOUNTED BELOW A MAJOR SIGN, THE MAJOR SIGN SHALL BE AT LEAST 8' ABOVE THE PAVEMENT EDGE AND THE SECONDARY SIGN AT LEAST 5'.
2. ALL ROUTE MARKERS, WARNING AND REGULATORY SIGNS SHALL BE AT LEAST 7' ABOVE PAVEMENT EDGE.
3. SIGN FACES SHALL BE VERTICAL.
4. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
5. TO AVOID SPECULAR GLARE, ΔA SHALL BE APPROXIMATELY 93° FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF PAVEMENT AND APPROXIMATELY 92° FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF PAVEMENT. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
6. "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
7. WHERE "X" IS LESS THAN 30', "H" SHALL BE 7' ± 6". WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
8. LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
9. WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 4 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

SIGN PLACEMENT

SS10 OF SS19

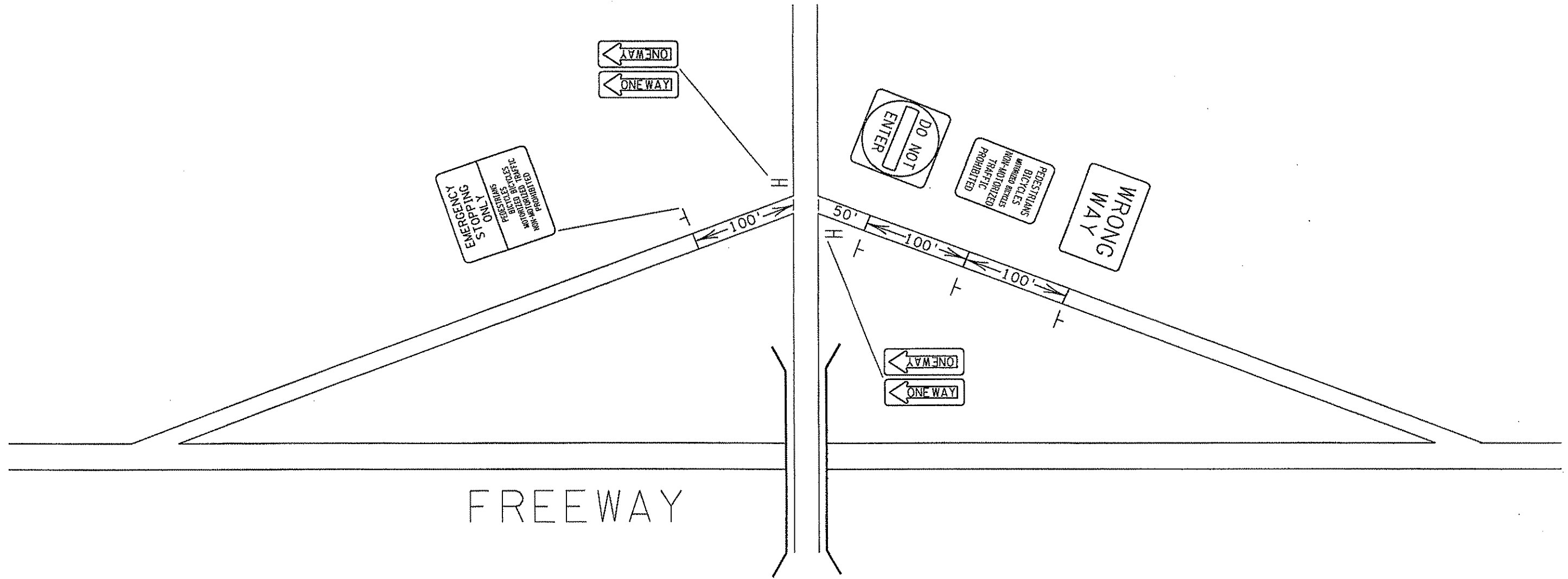
REVISED 3-14-05

12/1/20 PM

3/23/2007

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SIGN PLACEMENT (SRT.387) 11-01-01



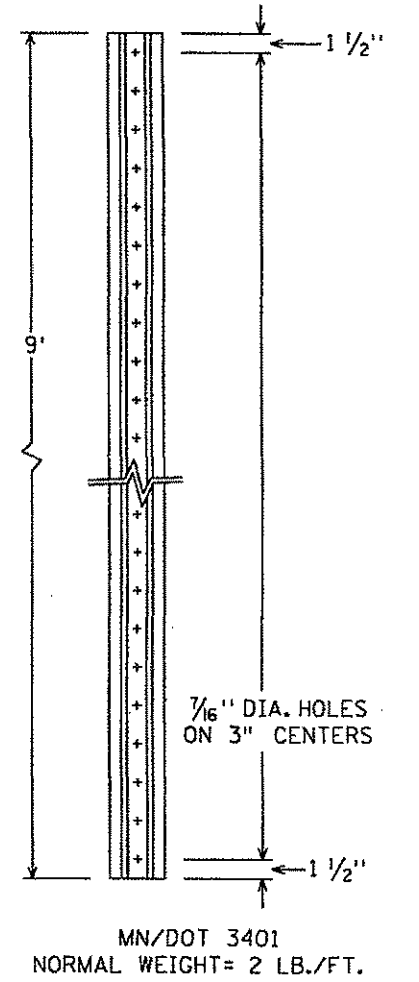
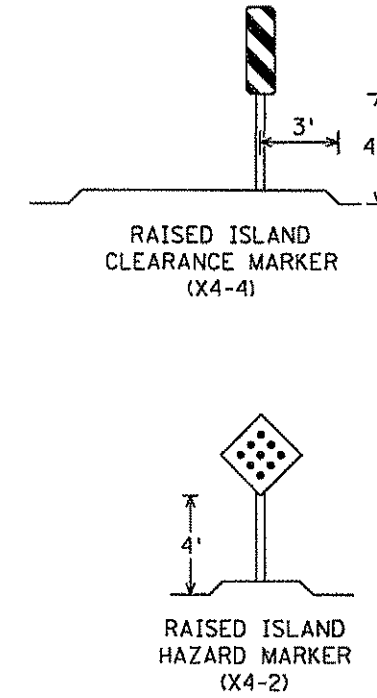
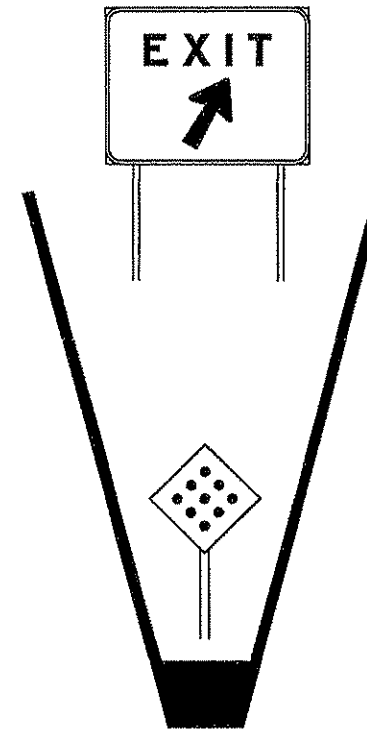
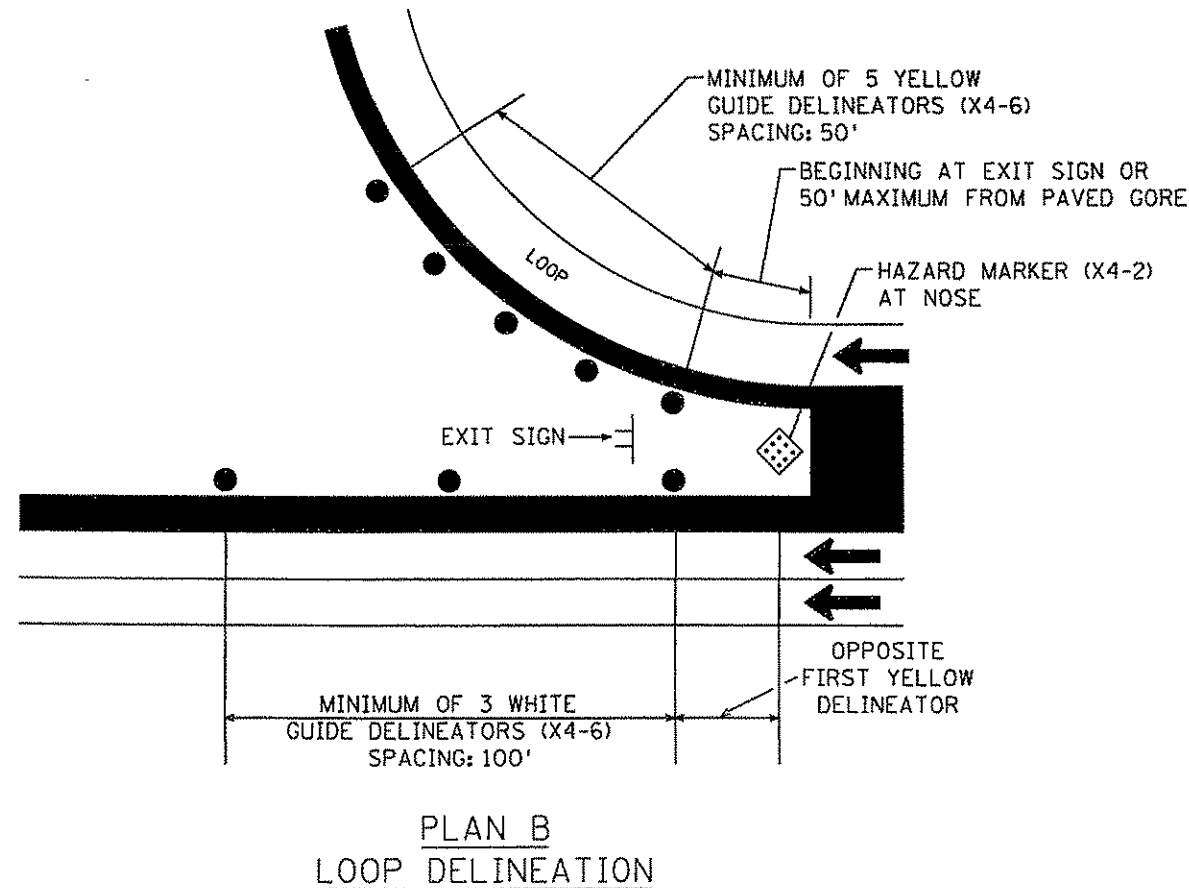
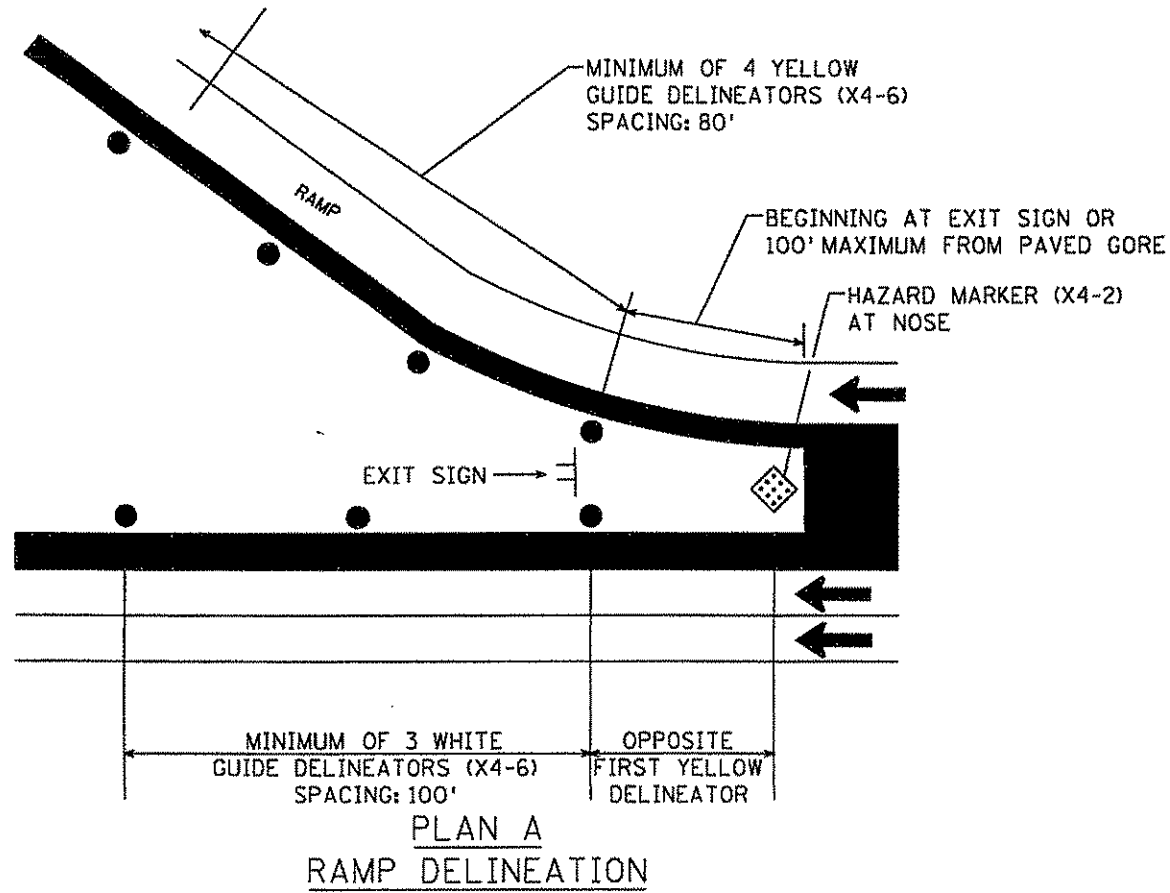
FREEWAY

STANDARD SIGN PLACEMENT  
 REGULATORY, WRONG WAY, AND EXCLUSION SIGNS  
 ON FREEWAY DIAMOND INTERCHANGE RAMPS

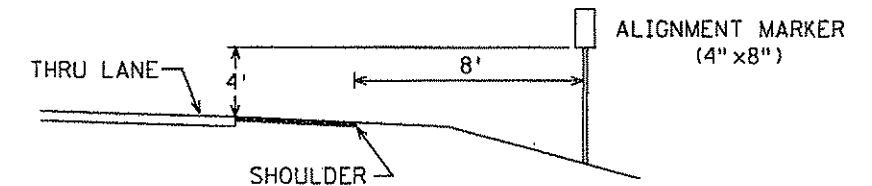
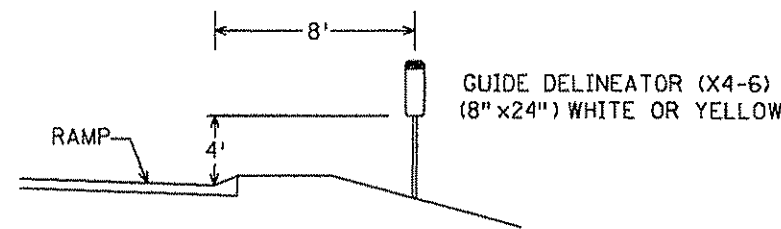
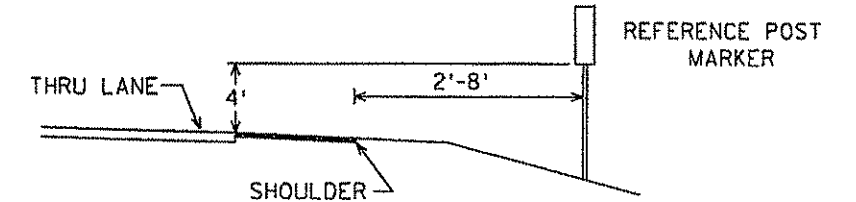
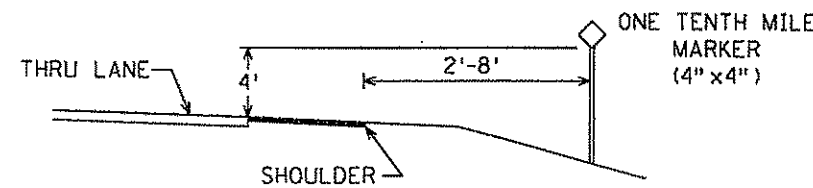
1:21:21 PM

3/23/2007

sa:\ko\lin\00\dishits\signing\_stripping\trnel0505\_sdb.dgn  
SIGN PLACEMENT (SRT.60) 11-01-01



**DELINEATOR POST**



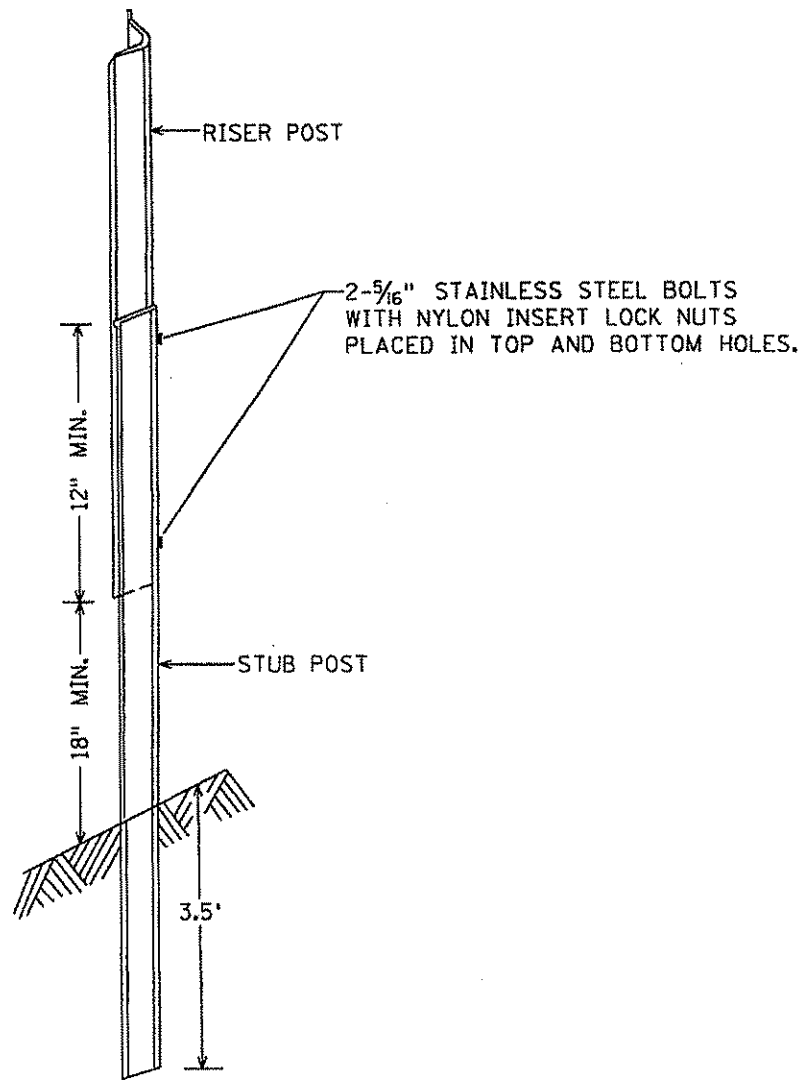
**TYPICAL PLACEMENT**

**DELINEATORS AND MARKERS**

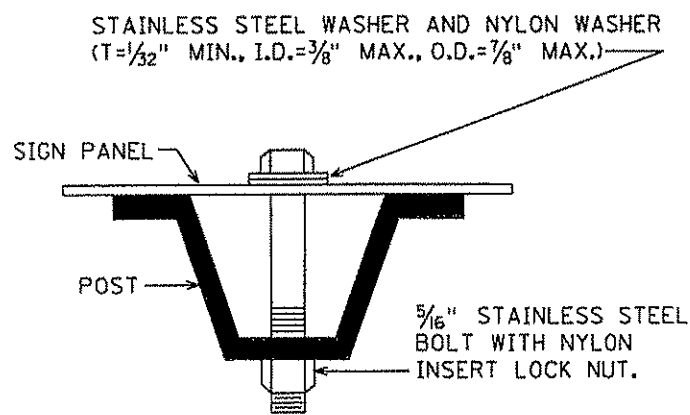
SS12 OF SS19

REVISED 4-14-04

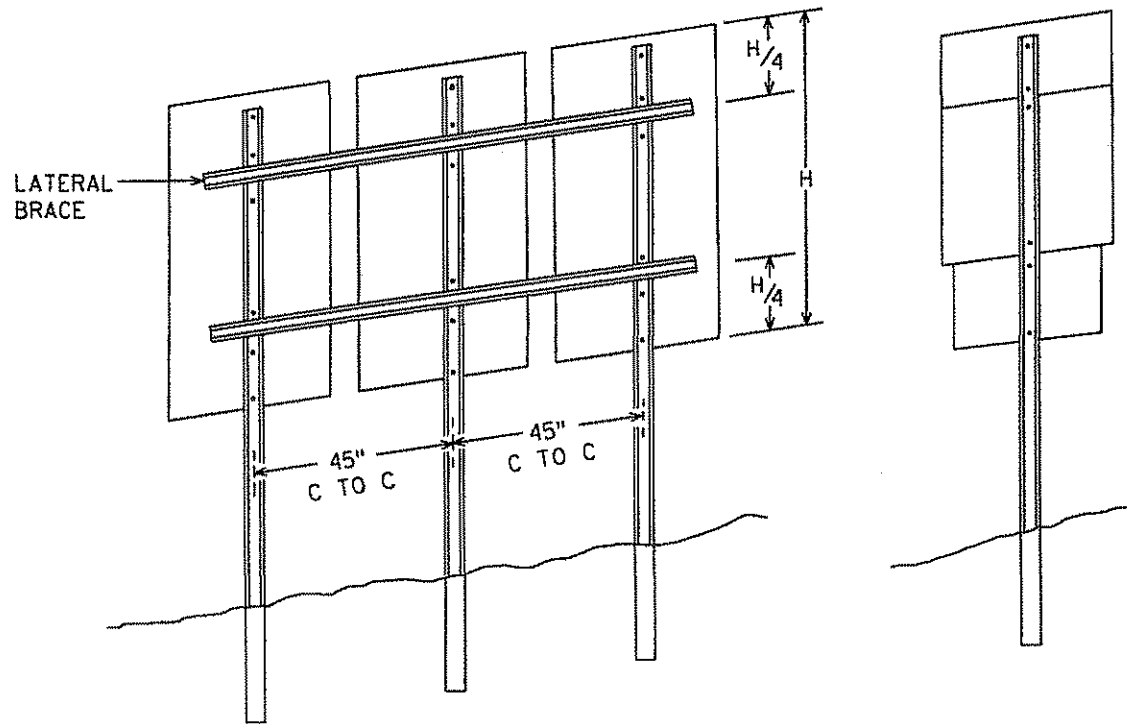
TYPE "C" & "D" POST



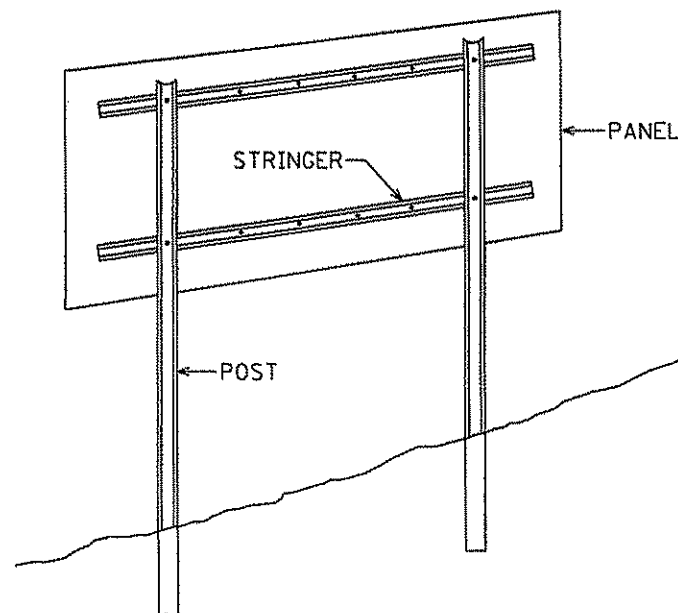
"U POST" SPLICE



"U POST" MOUNTING  
TYPE "C" SIGNS



TYPICAL TYPE "C" INSTALLATIONS



TYPICAL TYPE "D" INSTALLATION

NOTES:

1. USE 3# STUB POSTS, RISER POSTS, STRINGERS, KNEE BRACES, LATERAL BRACES AND KNEE BRACE STUB POSTS. ALL SHALL CONFORM TO MN/DOT 3401.
2. FOR TYPE "D" SIGN POSTS LENGTHS AND SPACINGS, SEE SIGN DATA SHEET.
3. TYPE "D" SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH TYPE "D" STRINGER AND PANEL-JOINT DETAIL (SEE STANDARD SIGNS MANUAL).
4. MOUNTING (PUNCHING CODE) FOR TYPE "C" SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
5. ALL RISER (VERTICAL) "U POSTS" SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
6. USE STAINLESS STEEL 5/16" BOLTS, WASHERS, AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
7. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
8. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 3 1/2'.
9. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394.
10. COLLARS SHALL BE USED TO SHIM OVERLAYS AND DEMOUNTABLE LEGEND AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MN/DOT 3352.2A5.
11. 2 AND 3 POST TYPE "C" SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
12. WHERE 2 OR MORE SINGLE POST SIGNS (TYPE "C") ARE MOUNTED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 POST SECTIONS, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN SKETCH.

TYPE C & D SIGN  
STRUCTURAL DETAILS

Sheet 1 of 3

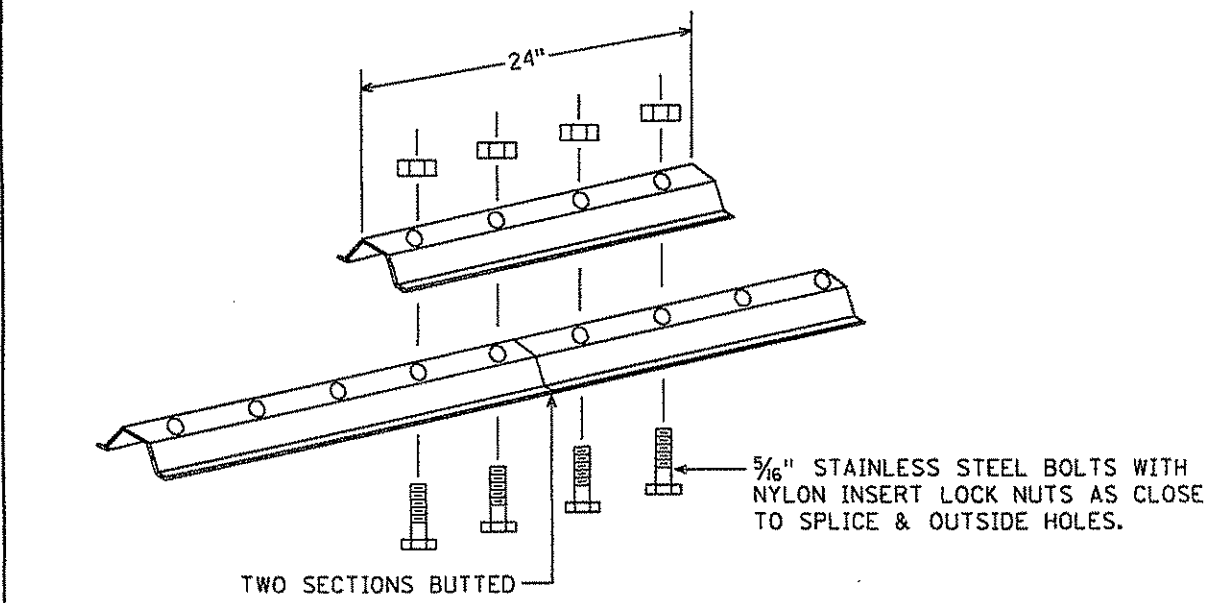
SS13 OF SS19



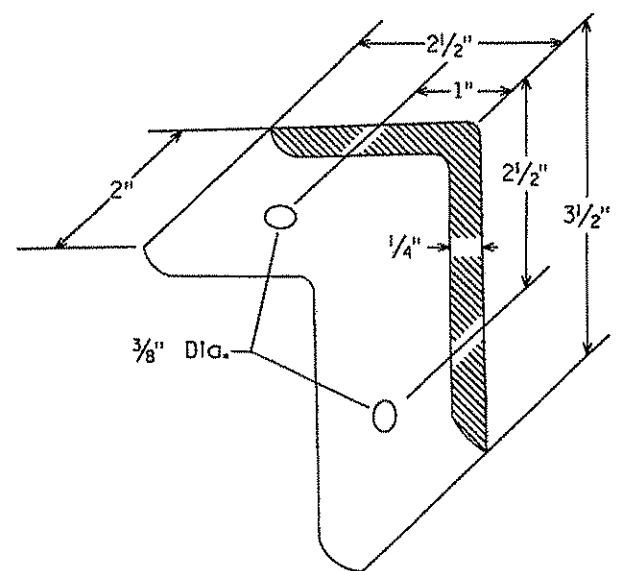
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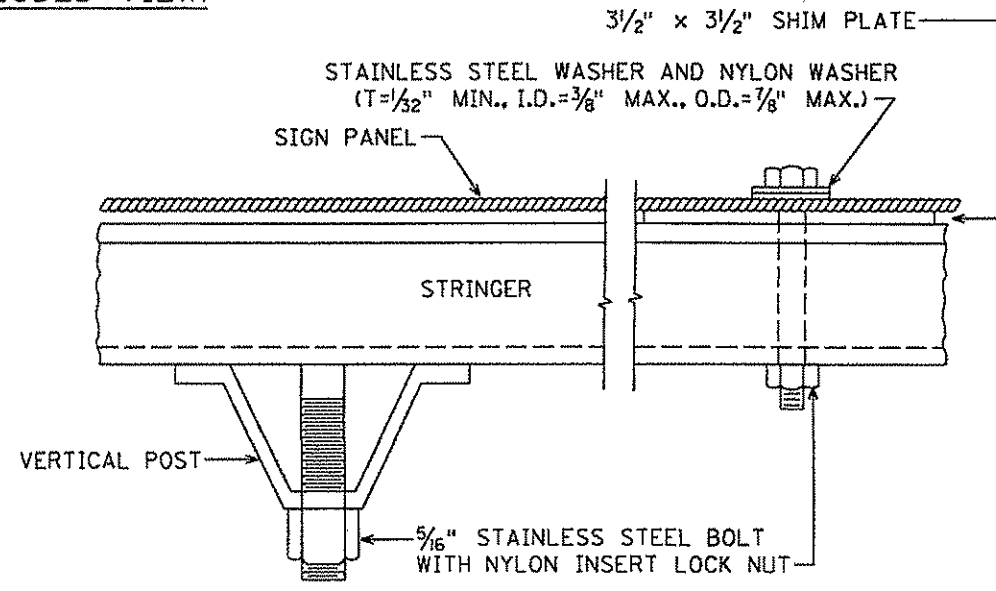


LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)

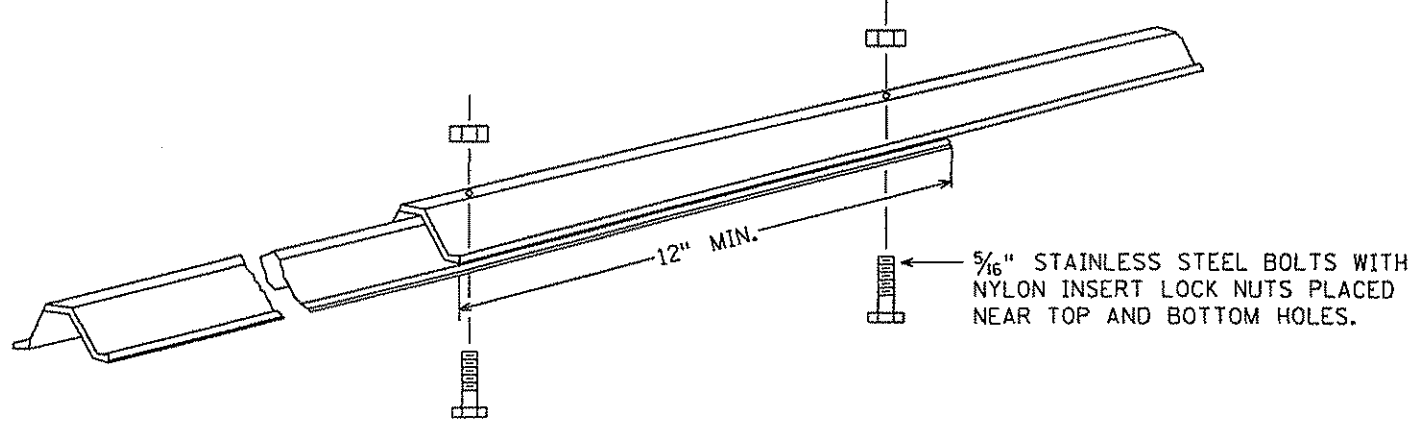


A-FRAME BRACKET

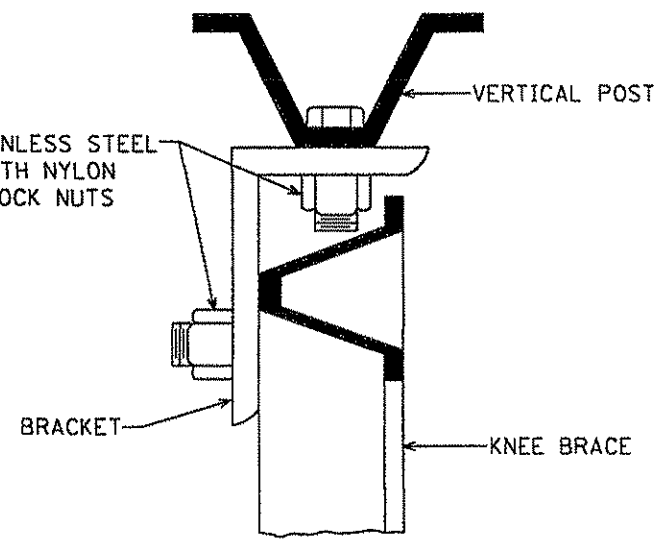
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



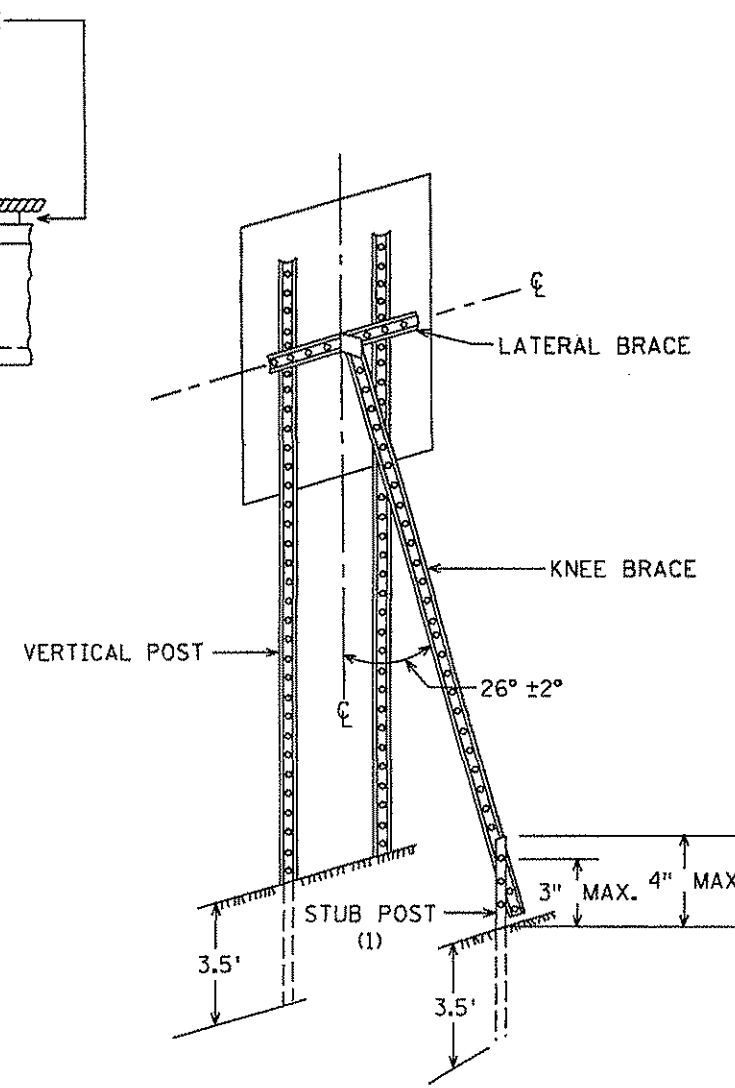
SECTION B-B



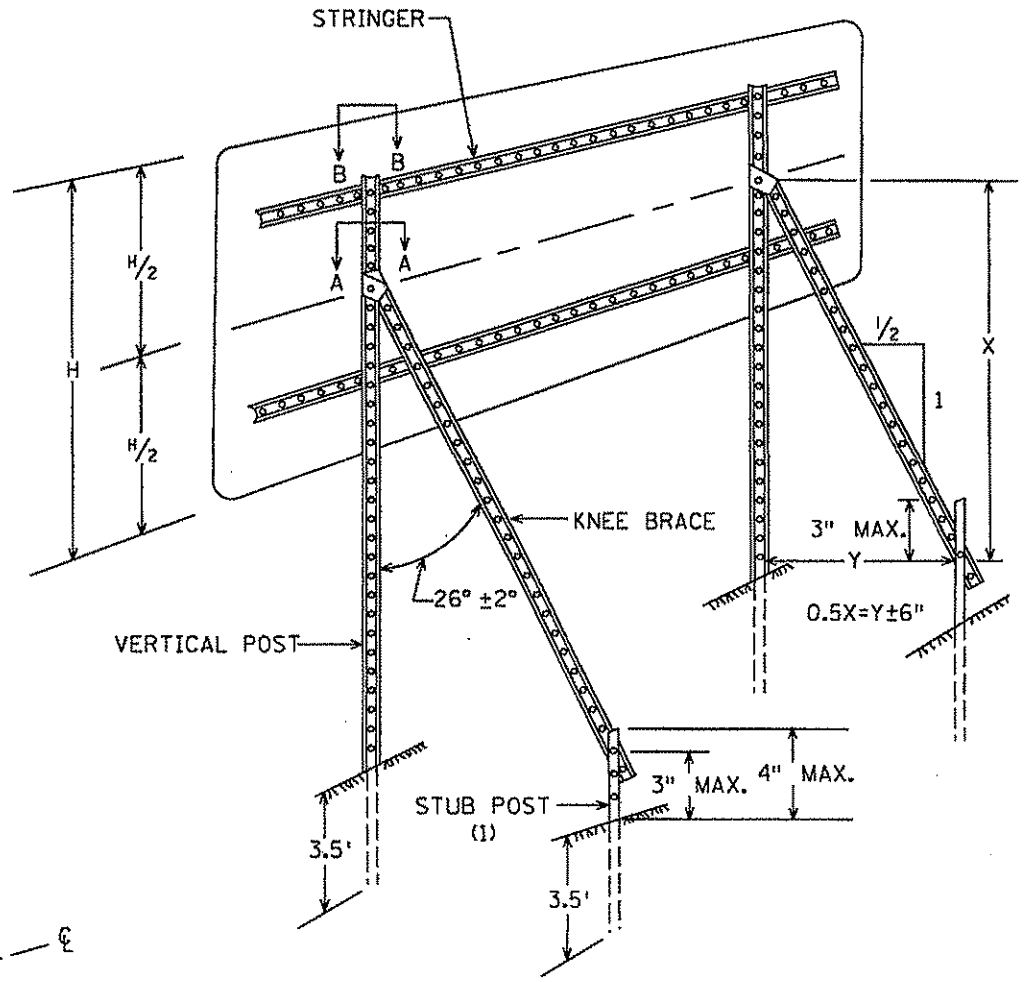
KNEE BRACE SPLICE



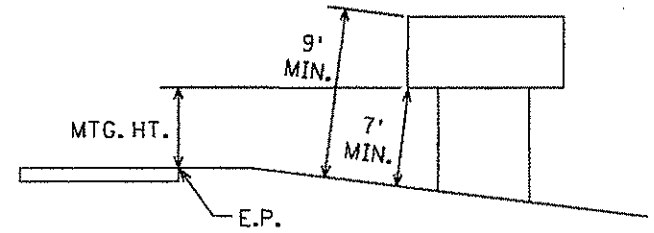
SECTION A-A



TYPICAL "A-FRAME" INSTALLATION TYPE "C" SIGNS



TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS



TYPICAL MOUNTING

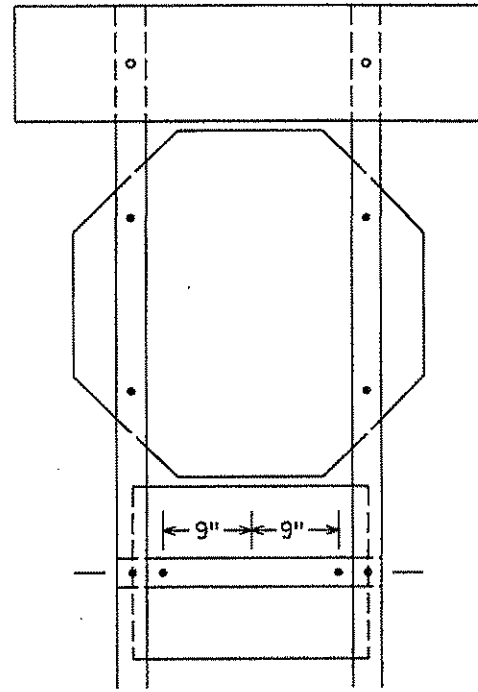
(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.

TYPE C & D SIGN STRUCTURAL DETAILS

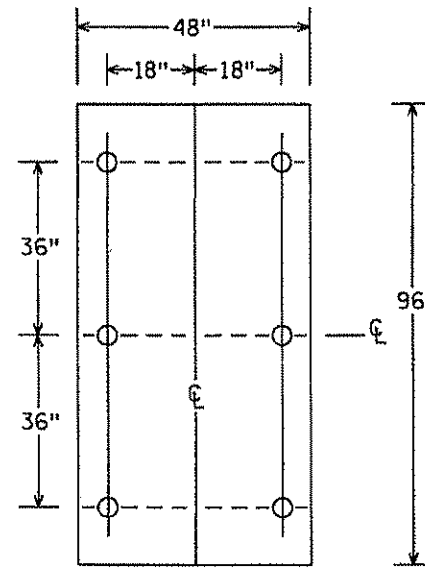
Sheet 2 of 3

SS14 OF SS19

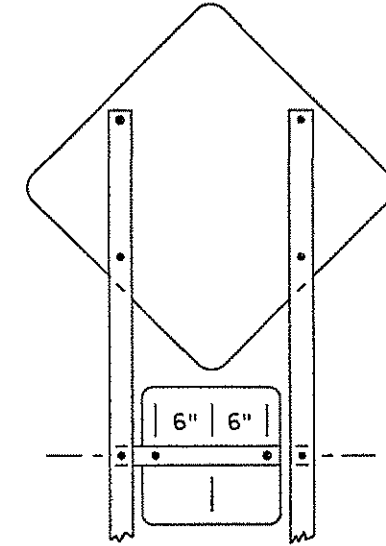
Revised 6-18-99



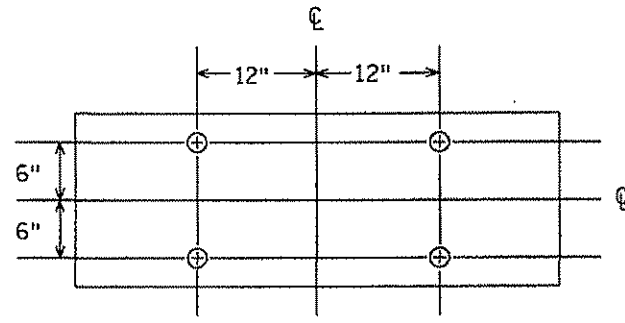
R6-1, R1-1 & (R6-3 OR R6-3a)  
MOUNTING



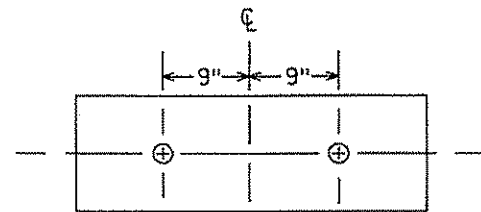
PUNCHING FOR R2-4b  
SPEED LIMIT



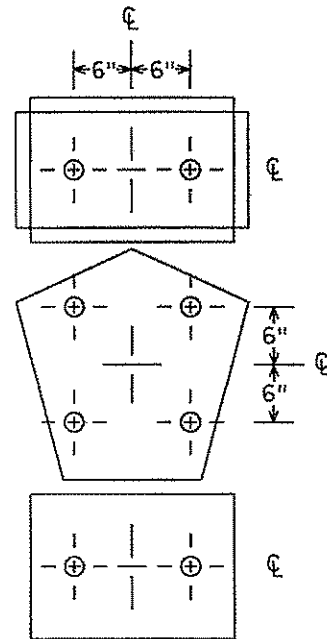
(W1-1, W1-2, W1-3, W1-4 OR W1-5) & W13-1  
MOUNTING



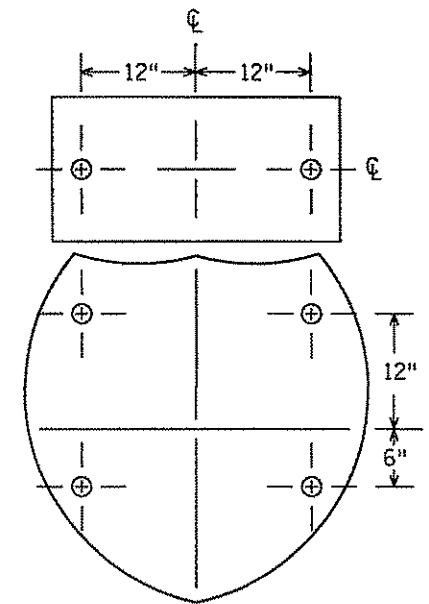
PUNCHING FOR R6-1(48" x 18")



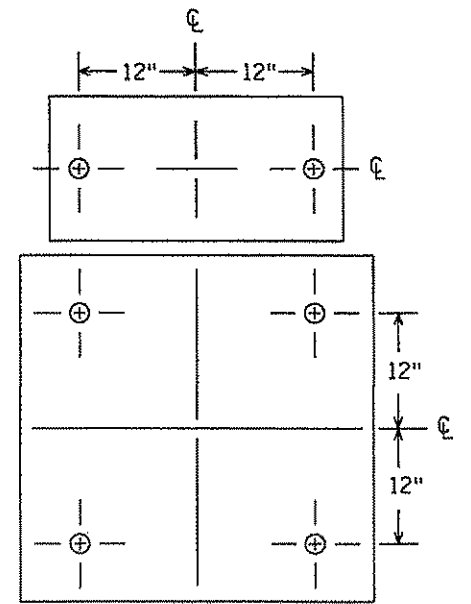
PUNCHING FOR R6-1(36" x 12")



M2-1A [21" x 15"] OR  
(M3-1A, M3-2A, M3-3A OR M3-4A) [24" x 12"] AND  
M1-6 [24" x 24"] AND  
(M5-1A, M5-2A, M6-1A, M6-2A, M6-3A M6-4A, M6-5A OR M6-6A) [21" x 15"]  
PUNCHING



(M3-1A, M3-2A, M3-3A OR M3-4A) [30" x 15"] AND  
M1-1 [45" x 36" OR 36" x 36"]  
PUNCHING



(M3-1, M3-1A, M3-2, M3-2A, M3-3, M3-3A M3-4 OR  
M3-4A) [30" x 15"] AND (M1-4 OR M1-5A) [36" x 36"]  
PUNCHING

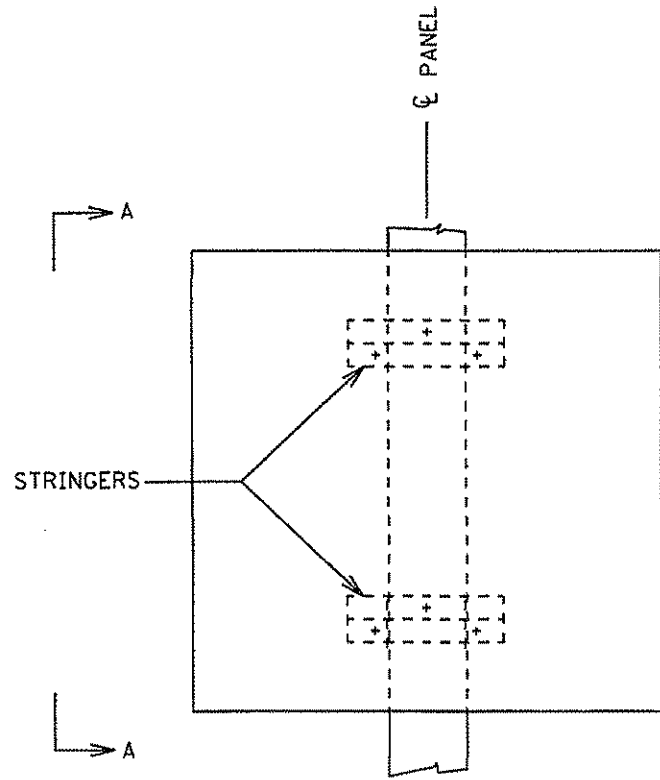
TYPE C & D SIGN  
STRUCTURAL DETAILS

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3/23/2007

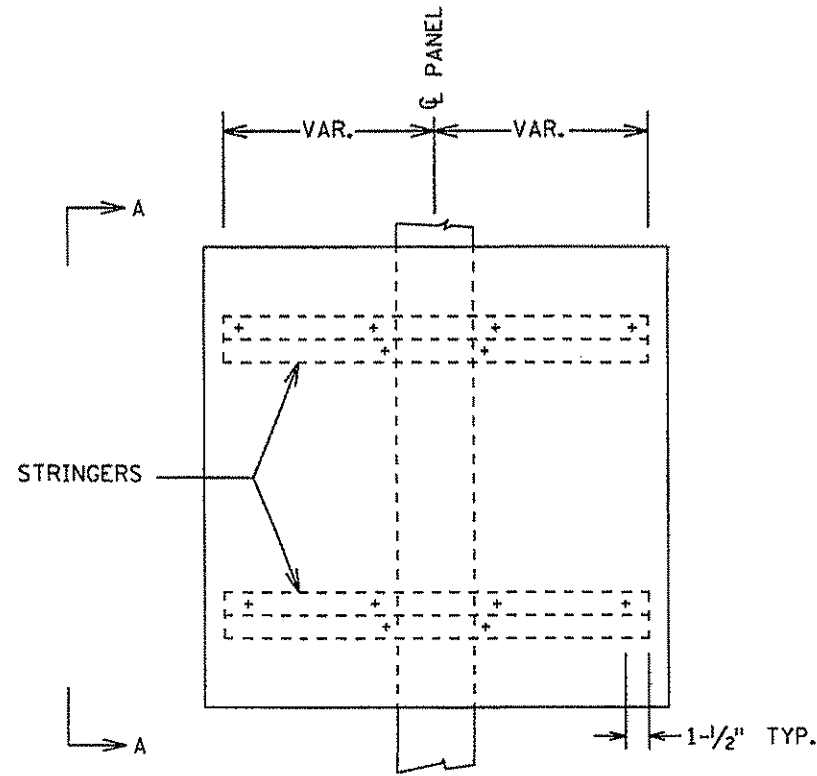
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EC SIGN (SRT-66) 11-01-01



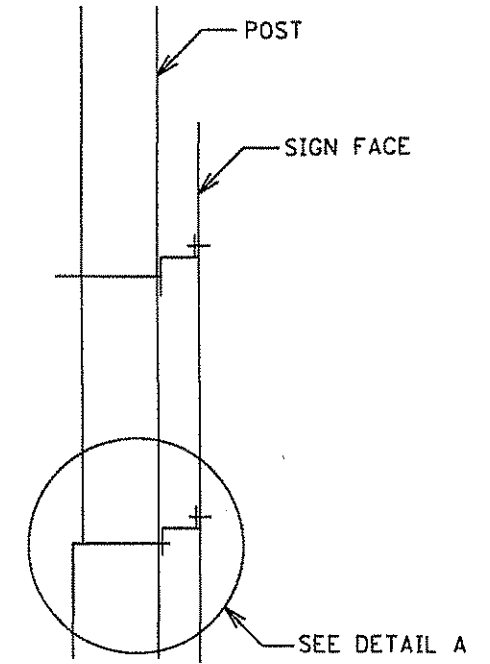
TYPE "C" SIGNS WITH SINGLE POST PUNCHING

ELEVATION

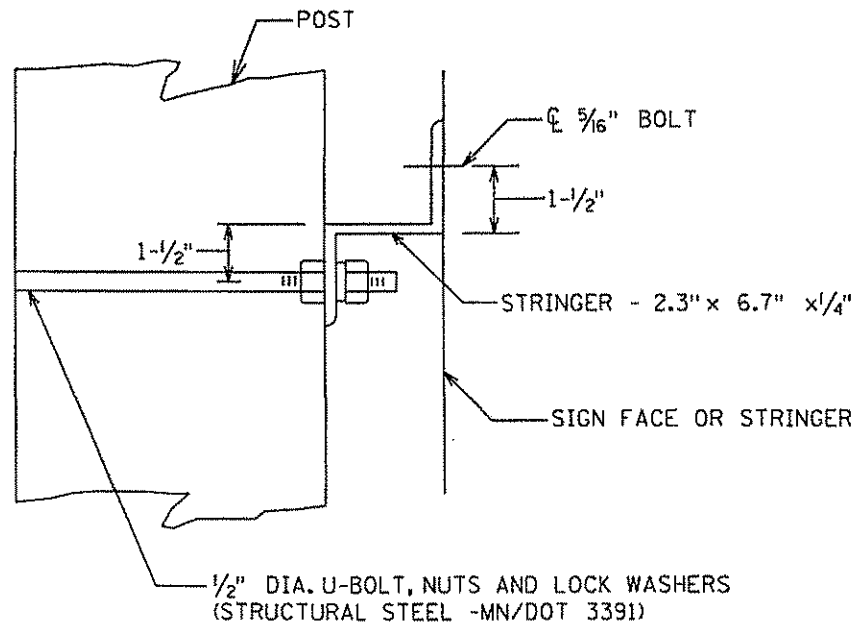


TYPE "C" SIGNS WITH 2-POST PUNCHING

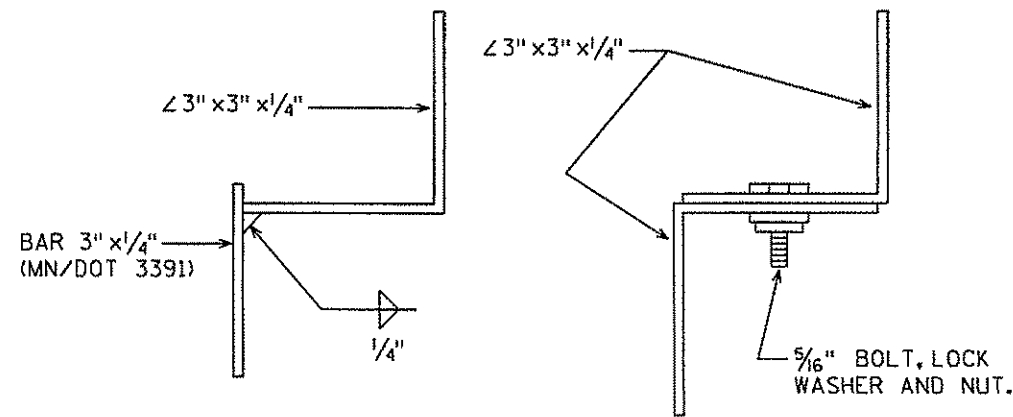
ELEVATION



VIEW A-A



DETAIL A



DETAIL A STRINGER ALTERNATES

NOTES:

1. FOR DETAILS AND NOTES NOT SHOWN SEE "C" & "D" SIGN DETAILS.
2. FOR BACK TO BACK MOUNTINGS, ROTATE STRINGERS FOR ONE PANEL 180° FROM WHAT IS SHOWN SUCH THAT PANELS CAN BE MOUNTED AT SAME ELEVATION.
3. DETAIL A STRINGER MAY BE ONE OF THE THREE DESIGNS DETAILED OR AN APPROVED EQUAL. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394. FASTENERS SHALL BE IN ACCORDANCE WITH MN/DOT 3391.2B AND SHALL BE GALVANIZED EITHER BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A153, OR BY THE MECHANICAL PROCESS IN ACCORDANCE WITH ASTM B695, CLASS 50 OR GREATER.

TYPE C SIGNS MOUNTED ON O-POSTS,  
OH SIGN POSTS OR SIGNAL STANDARDS

Revised 3-13-00

SS16 OF SS19

12:20 PM

3/23/2007

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POST SKATING (SRL.69) 11-01-01

SEE TYPE C SIGNS  
(SHEET SS16).

VIEW A-A

2" I D GALV. SEAMLESS  
STRUCTURAL STEEL  
PIPE (MN/DOT 3362)

MEDIAN ISLAND  
ON BRIDGE

PIPE SLEEVE  
SEE BRIDGE PLAN

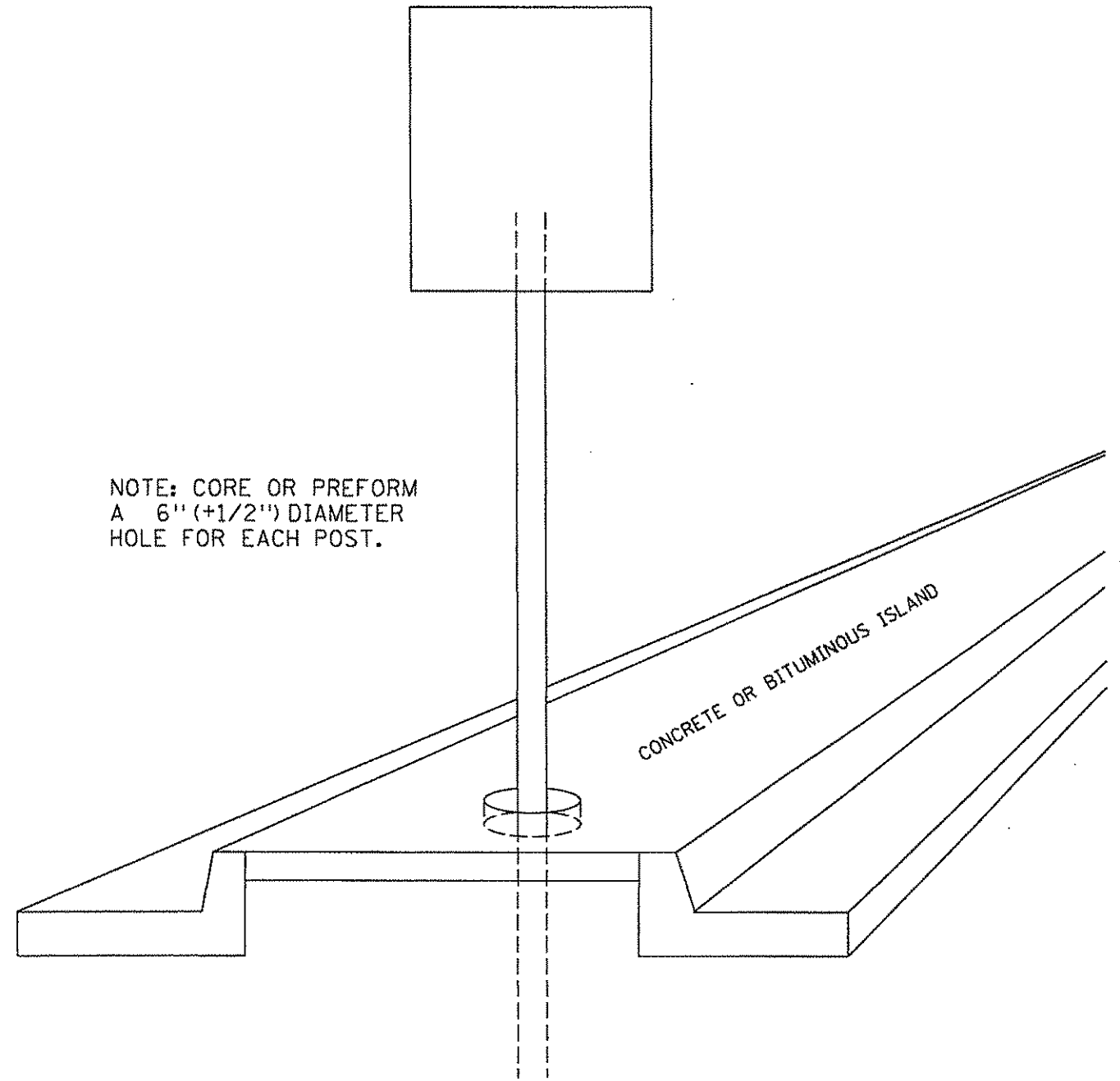
PIPE STOP

ELEVATION

NOTES:  
FOR NOTES AND DETAILS NOT SHOWN, SEE  
TYPE C & D SIGN DETAILS - SHEETS SS11-SS13

TYPE C SIGNS MOUNTED ON  
BRIDGE MEDIAN ISLAND

Revised 9-20-00



NOTE: CORE OR PREFORM  
A 6" (+1/2") DIAMETER  
HOLE FOR EACH POST.

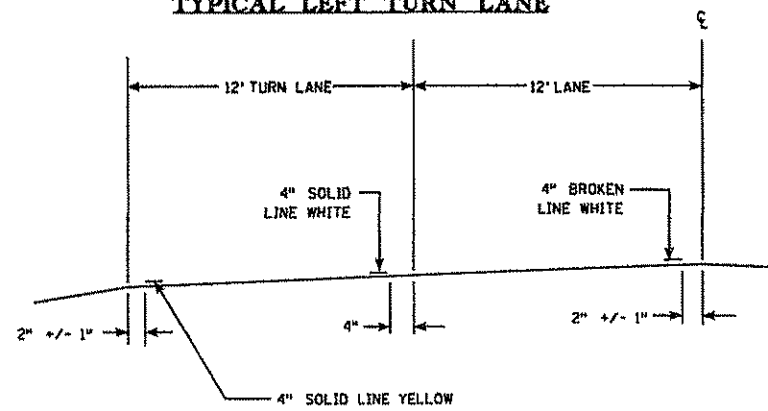
CONCRETE OR BITUMINOUS ISLAND

FLANGED CHANNEL POST MOUNTED THROUGH SURFACED  
MEDIAN OR SIDEWALK

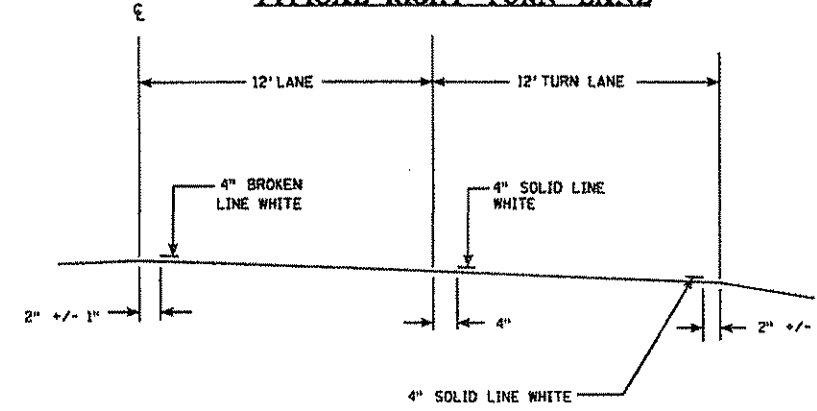
Revised 12-23-97

SS17 OF SS19

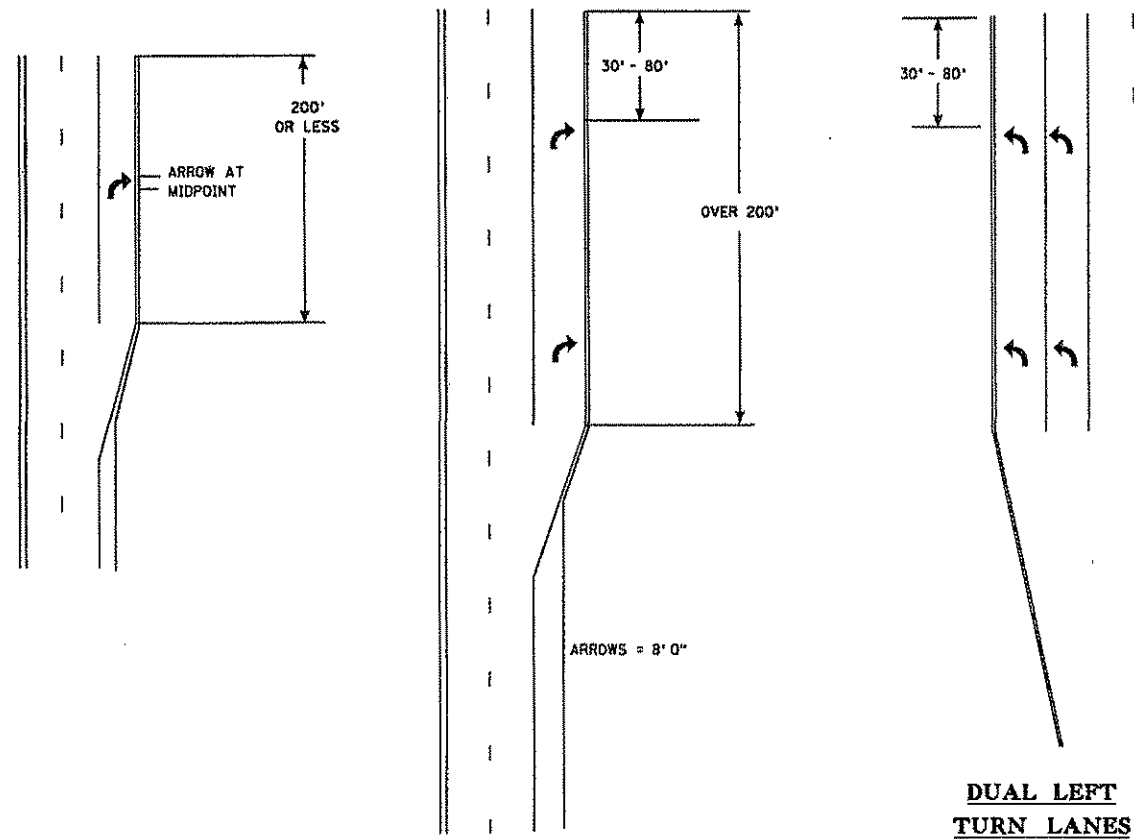
TYPICAL LEFT TURN LANE



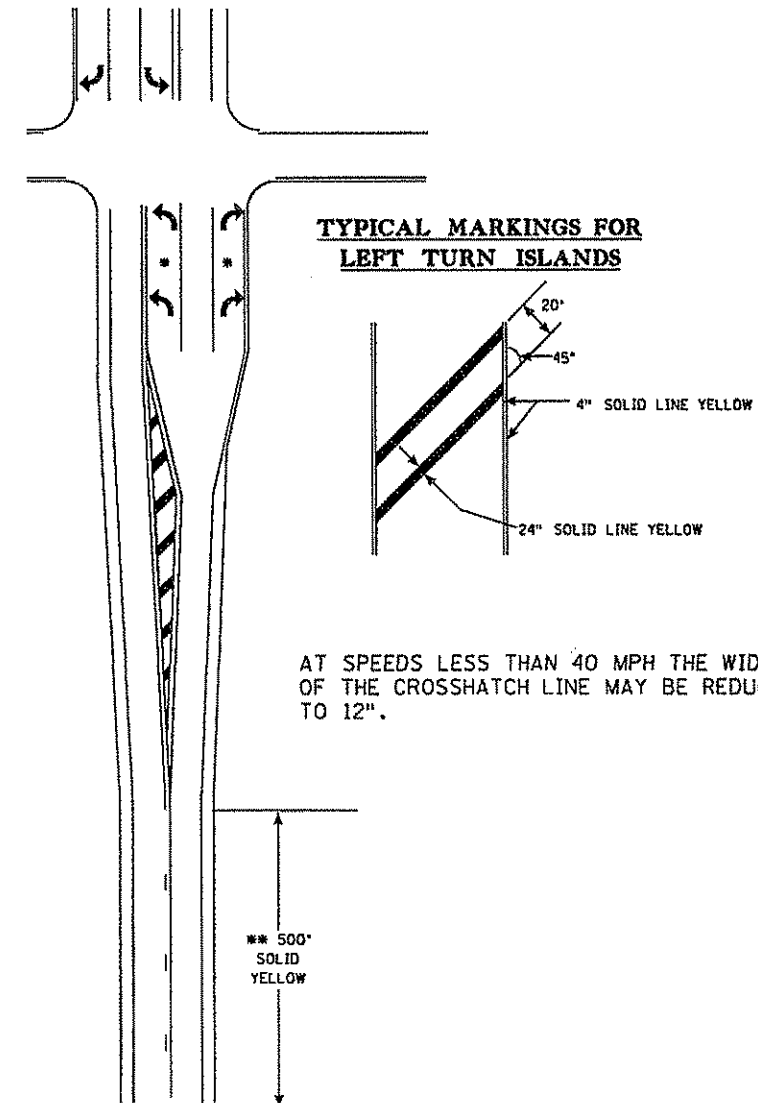
TYPICAL RIGHT TURN LANE



TYPICAL MESSAGE PLACEMENT FOR TURN LANES

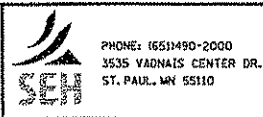


TYPICAL MARKINGS FOR LEFT TURN ISLANDS



DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	122
ALNOL0505.00	
SS18	198
OF 559	



11211...

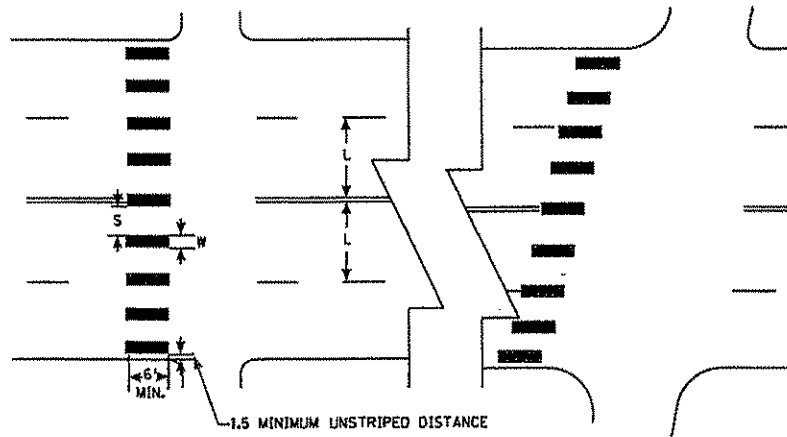
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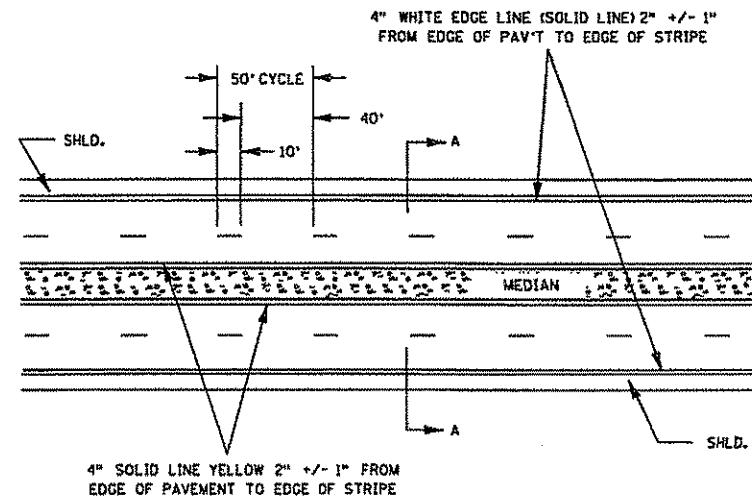
### MARKINGS FOR PEDESTRIAN CROSSWALKS

(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

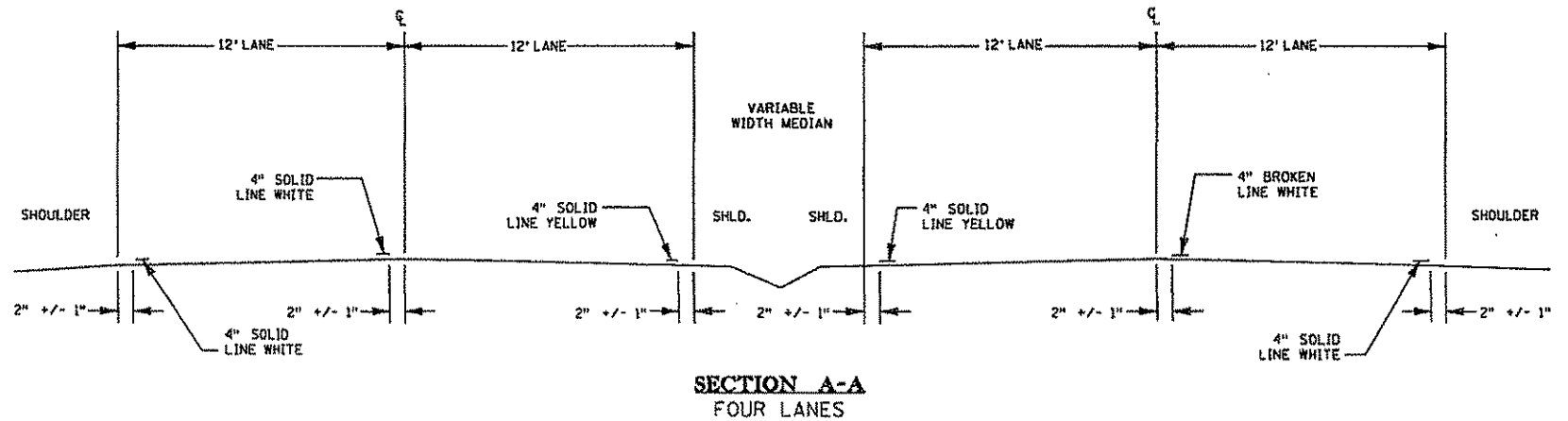


#### NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FT. 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 11 FT. 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.



TYPICAL 4-LANE DIVIDED LANE MARKINGS



DESIGN TEAM			
DRAWN BY:	MTT		
DESIGNER:	TJD		
CHECKED BY:	GCP		
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 Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *Tiffany J. Dagon* Lic. No. 40535  
 Printed Name: TIFFANY J. DAGON Date: 3/23/2007

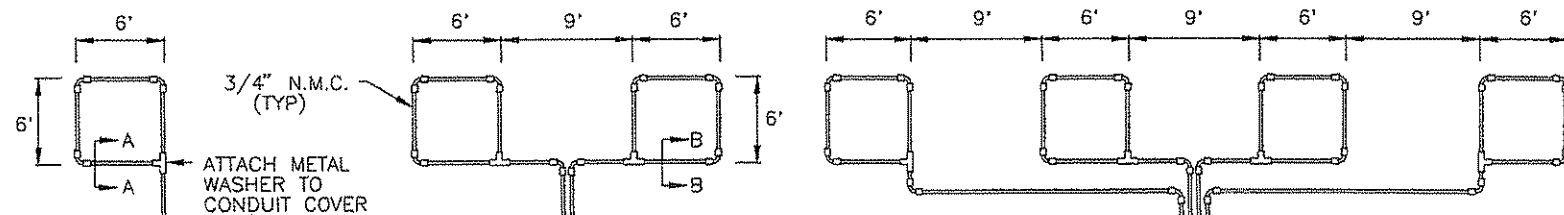
PHONE: 651-490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

PAVEMENT MARKING DETAILS

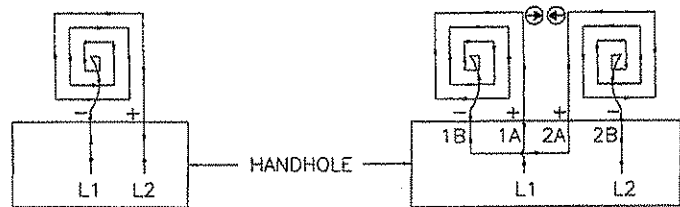
FILE NO.	123
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SS19	
OF 5519	198



3/4" N.M.C. (TYP)

ATTACH METAL WASHER TO CONDUIT COVER (TYP)

LOOP RETURN CONDUITS MAY BE PLACED IN COMMON TRENCH (TYP)

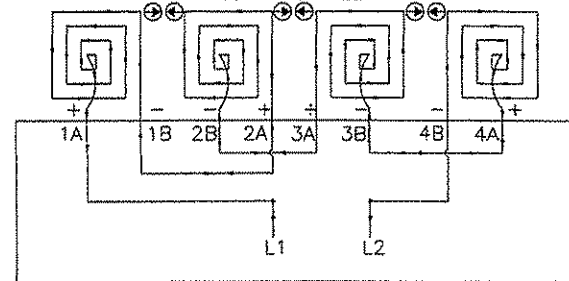


LOOP DETECTOR DETAIL 'A' (LOOP PHASING FOR SINGLE CONNECTION)

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

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

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

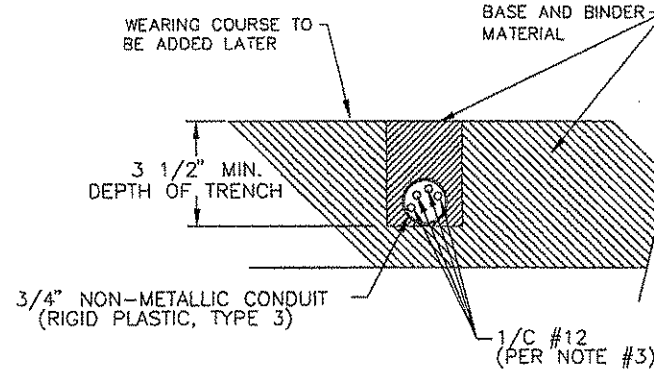


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

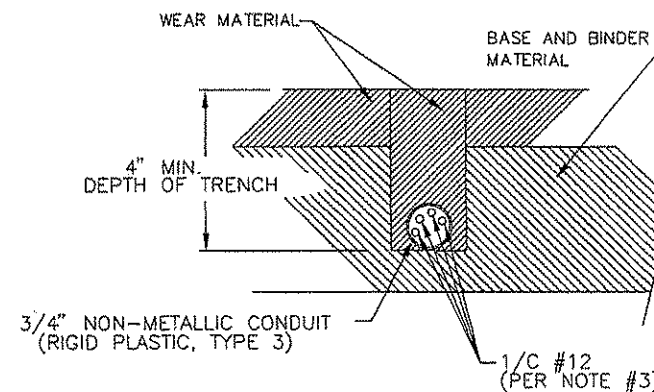
L1 TO 1A      3B TO 4A  
1B TO 2A      4B TO L2  
2B TO 3A

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)



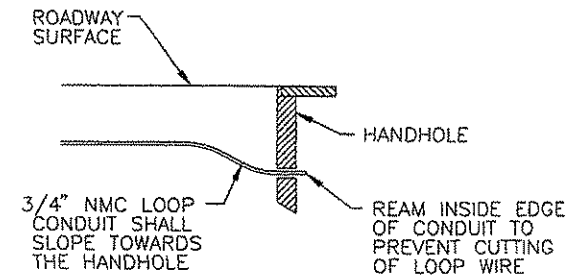
SECTION A-A  
DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B-B  
DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY

NOTE FOR LOOP DETECTORS IN BRIDGE DECK:

CONTRACTOR SHALL FURNISH AND INSTALL NMC LOOP DETECTORS ON BRIDGE DECK FOR CSAH 23 (OVER INTERSTATE 35W) USING 1/2" N.M.C. CONDUIT (INSTEAD OF 3/4" N.M.C.), WITH 1/C#14 AWG CROSS-LINKED POLYETHYLENE (XLP) LOOP DETECTOR WIRES IN THE 1/2" N.M.C. (4 TURNS). THE NMC CONDUIT FOR THE BRIDGE DECK MOUNTED LOOP DETECTORS SHALL BE TIED TO THE BRIDGE REBAR, TO THE SATISFACTION OF THE ENGINEER.



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 FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
- 5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
- 6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
- 7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

STANDARD PLATES - SIGNAL SYSTEMS

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT

PLATE NO.	DESCRIPTION	PLATE NO.	DESCRIPTION
▶ 7036 F	PEDESTRIAN CURB RAMP FOR THE HANDICAPPED	▶ 8120 L	POLE FOUNDATION (PA-85)
▶ 8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED	▶ 8121 E	TRANSFORMER BASE AND POLE BASE PLATE
▶ 8111 D	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED	▶ 8122 D	PEDESTAL AND PEDESTAL BASE
▶ 8112 D	PEDESTAL FOUNDATION	▶ 8123 E	POLE AND MAST ARM
▶ 8114 A	PVC HANDHOLE/PULLBOX	▶ 8124 E	MAST ARM SIGNAL HEAD MOUNTS
▶ 8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION	▶ 8126 G	POLE FOUNDATION (PA90 AND PA100)
▶ 8118 C	SERVICE EQUIPMENT AND POLE-TRAFFIC SIGNALS	▶ 8130 D	SAW CUT LOOP DETECTORS
▶ 8119 C	GROUND MOUNTED CABINET FOUNDATION		
		▶ STANDARD PLATES APPLICABLE TO THIS PROJECT	

ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE "3" - NO. "1"	P2-1(EG)	PED 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	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

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	Ⓜ
SOURCE OF POWER - IN PLACE	Ⓜ
RAILROAD SIGNAL - IN PLACE	Ⓜ
RIGHT OF WAY LINE	Ⓜ
CENTERLINE	Ⓜ
EDGE OF ROADWAY	Ⓜ
SHOULDERLINE	Ⓜ
CURB LINE	Ⓜ
STOP BAR	Ⓜ
EMERGENCY VEHICLE PREEMPTION DETECTOR	Ⓜ

TRAFFIC SIGNAL TABULATION

ITEM NO	ITEM	UNIT	TOTAL ESTIMATED QUANTITY
2565	FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM "A"	SIGNAL SYSTEM	1
2565	FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM "B"	SIGNAL SYSTEM	1
2565	FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM "C"	SIGNAL SYSTEM	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM "A"	LUMP SUM	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM "B"	LUMP SUM	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM "C"	LUMP SUM	1
2565	TRAFFIC CONTROL INTERCONNECTION	LUMP SUM	1
2565	REVISE SIGNAL SYSTEM "D"	SYSTEM	1

CONDUCTOR COLOR CODE

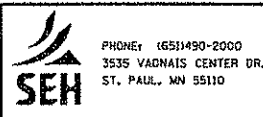
R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

S:\KOL\050500\PLNS\SHS\SIGNALS\_Voccd\_23sigdet\aliscOUNTYREV.DWG

DESIGN TEAM	1	JMG	7/24/06	REVISED TO COUNTY STD.	
DRAWN BY:	JMG	2	JMG	2/06/07	PER COUNTY COMMENTS
DESIGNER:	JMG				
CHECKED BY:	JMG				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

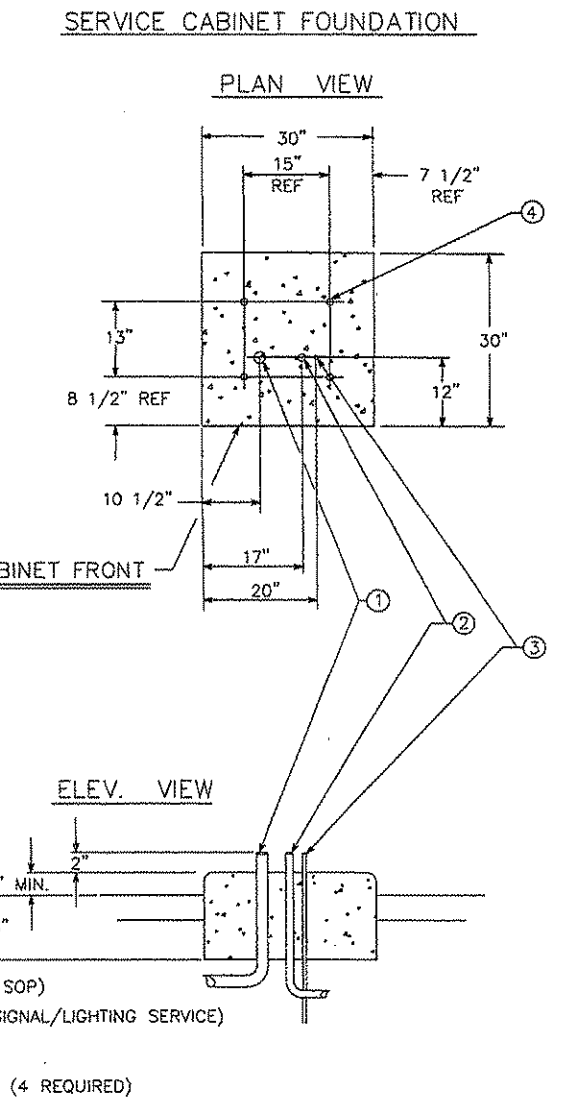
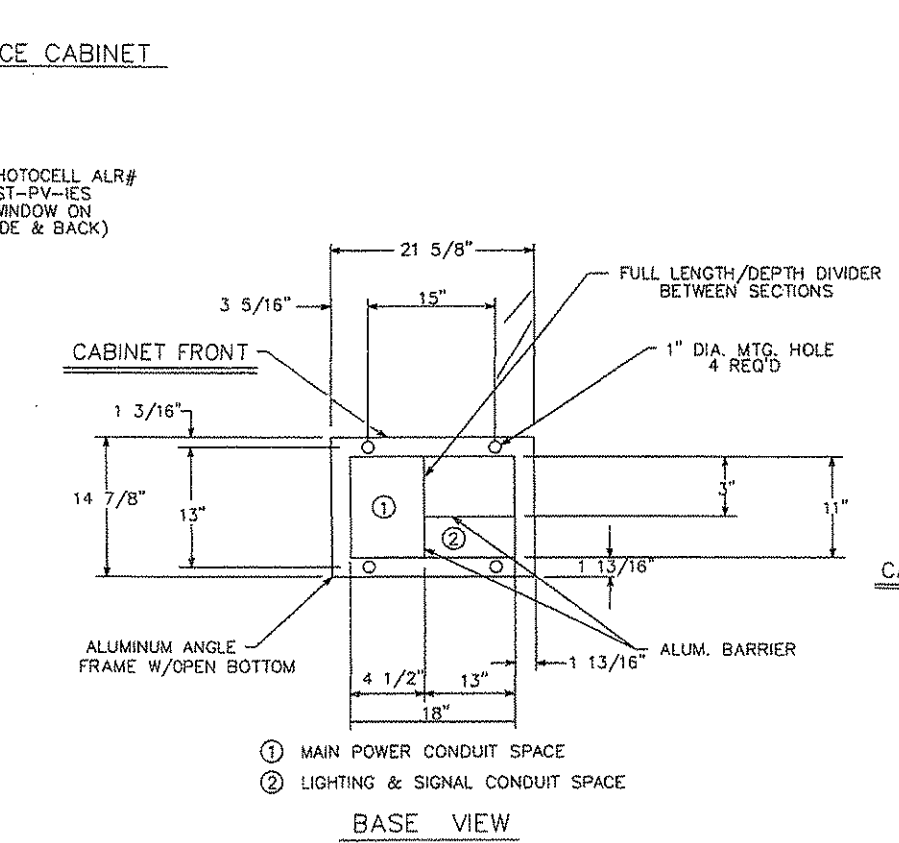
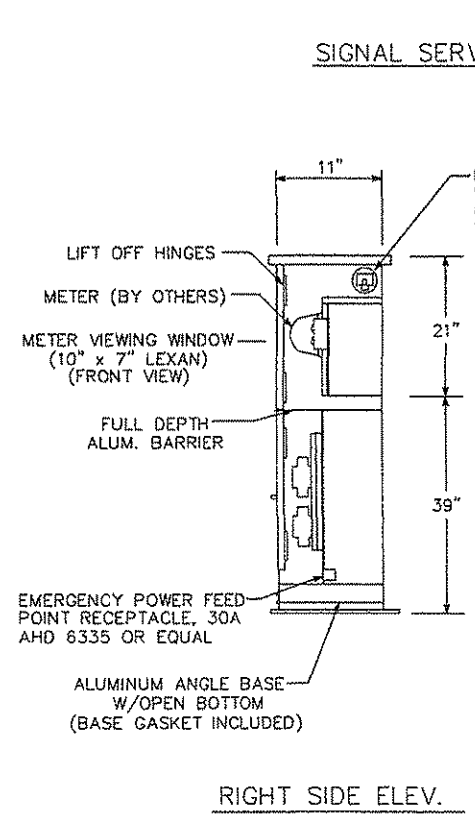
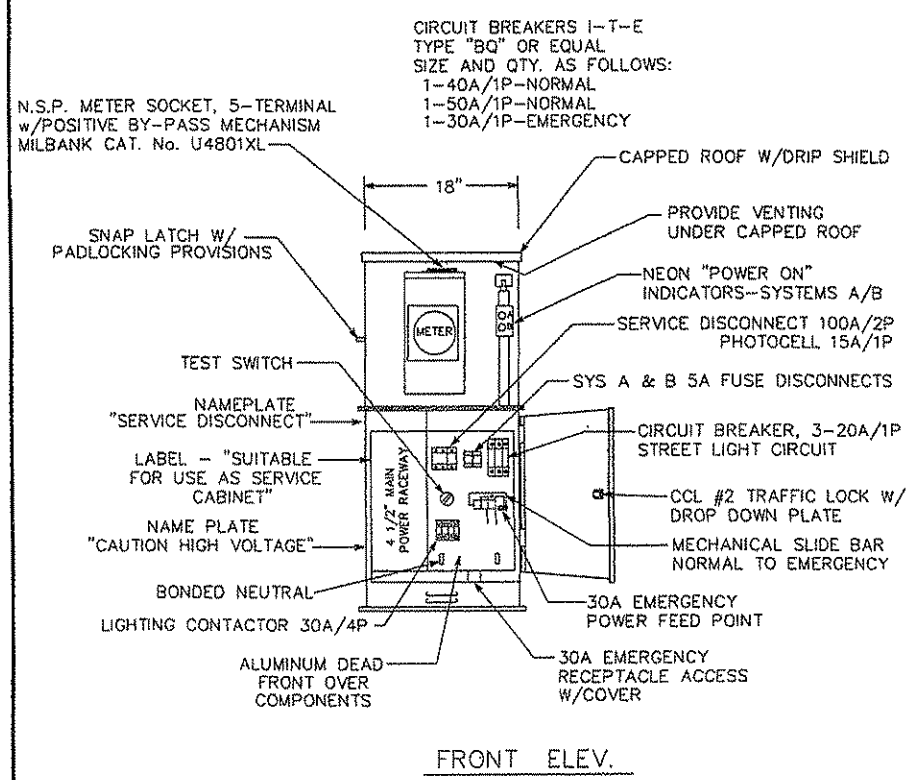
Certified By: *John M. Gray* Lic. No. 22457  
Printed Name: JOHN M. GRAY Date: 3/26/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEMS "A-D"  
DETAILS AND STANDARD PLATES  
LAKE DRIVE (CSAH 23) SIGNAL SYSTEMS  
(NORTH JUNCTION WITH I-35W)

FILE NO. 124  
ALR050500  
SG1  
OF 508  
198



**CONSTRUCTION NOTES**

EACH ENCLOSURE SHALL BE FABRICATED FROM 1/8" ALUMINUM FOR OUTDOOR WEATHERPROOF SERVICE.

DOORS TO BE NEOPRENE GASKETED. ALL HINGES, PINS AND LOCKS TO BE OF NON-CORRODING CONSTRUCTION.

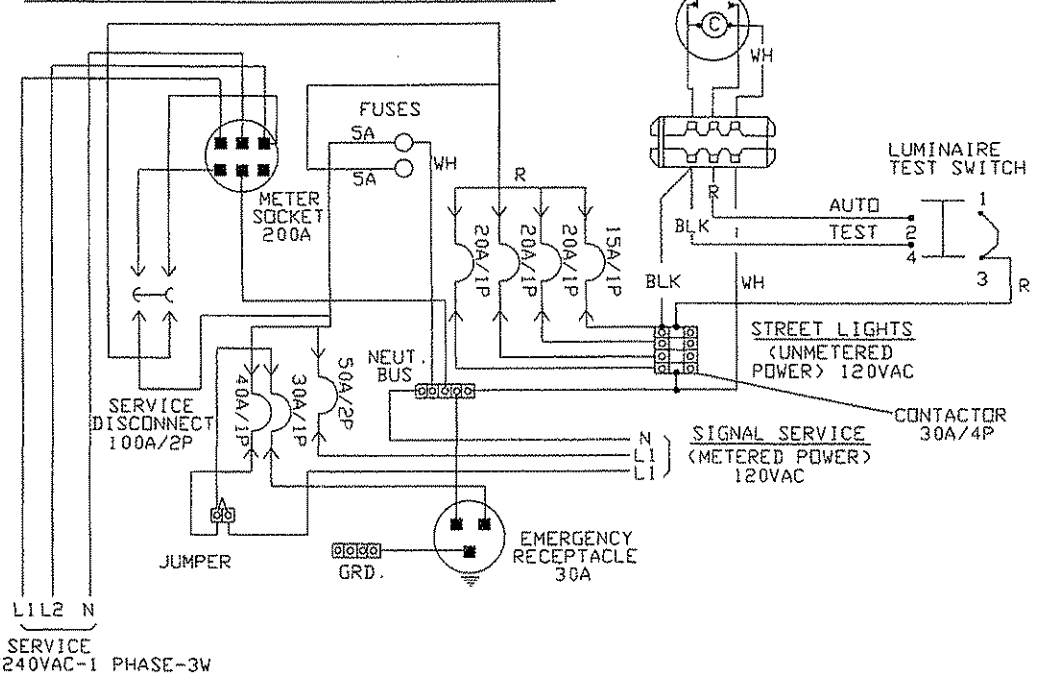
CABINETS SHALL HAVE ANODIC COATING FOR ALL ALUMINUM SURFACES. SEE SPECIAL PROVISIONS.

NEMA 3R ENCLOSURES SHALL BE "UL" APPROVED.

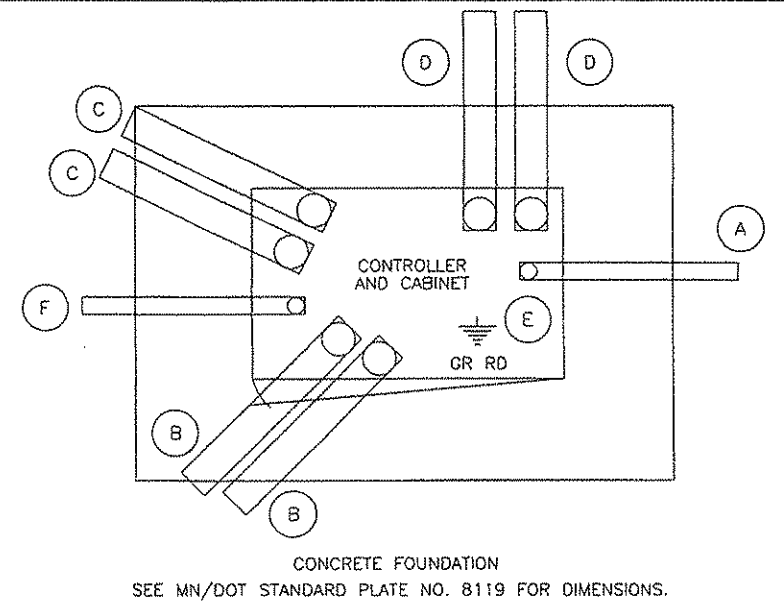
CABINETS SHALL HAVE BASE GASKETS INCLUDED.

NOTE: SERVICE CABINET DETAIL APPLIES TO TRAFFIC SIGNAL SYSTEMS "A", "B", AND "C".

**FEED POINT WIRING DIAGRAM**



- Ⓐ 2" R.S.C. FOR SERVICE CONNECTION (VIA HH)
- Ⓑ 4" R.S.C. TO HH
- Ⓒ 4" R.S.C. TO HH
- Ⓓ 3" R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).
- Ⓔ 5/8" DIA X 15' GROUND ROD
- Ⓕ 1" N.M.C. STUBOUT FOR FUTURE PHONE LINE (PHONE LINE INSTALLATION AT SYSTEM "A" SHALL BE COORDINATED BY CONTRACTOR ON BEHALF OF CITY OF LINO LAKES--INCIDENTAL TO PAY ITEM FOR SIGNAL SYSTEM "A")



SEE INTERSECTION LAYOUTS FOR CONDUIT & CABLE INFORMATION

TYPICAL CONTROLLER CABINET PAD LAYOUT TRAFFIC SIGNAL SYSTEMS "A" AND "C"

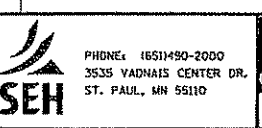
SEE NEXT SHEET (SG2A) FOR CABINET PAD LAYOUT FOR TRAFFIC SIGNAL SYSTEM "B"

S:\NOV\00505005\PLNS\TRAFFIC SIGNALS\23SIGDETAIL\SCOUNTYREV.DWG

DESIGN TEAM	1	JMG	7/24/06	REVISED TO COUNTY STD.
DRAWN BY:	2	JMG	12/11/06	REVISED SYSTEM "B" LAYOUT
DESIGNER:	3	JMG	2/06/07	PER COUNTY COMMENTS
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

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Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 3/26/2007

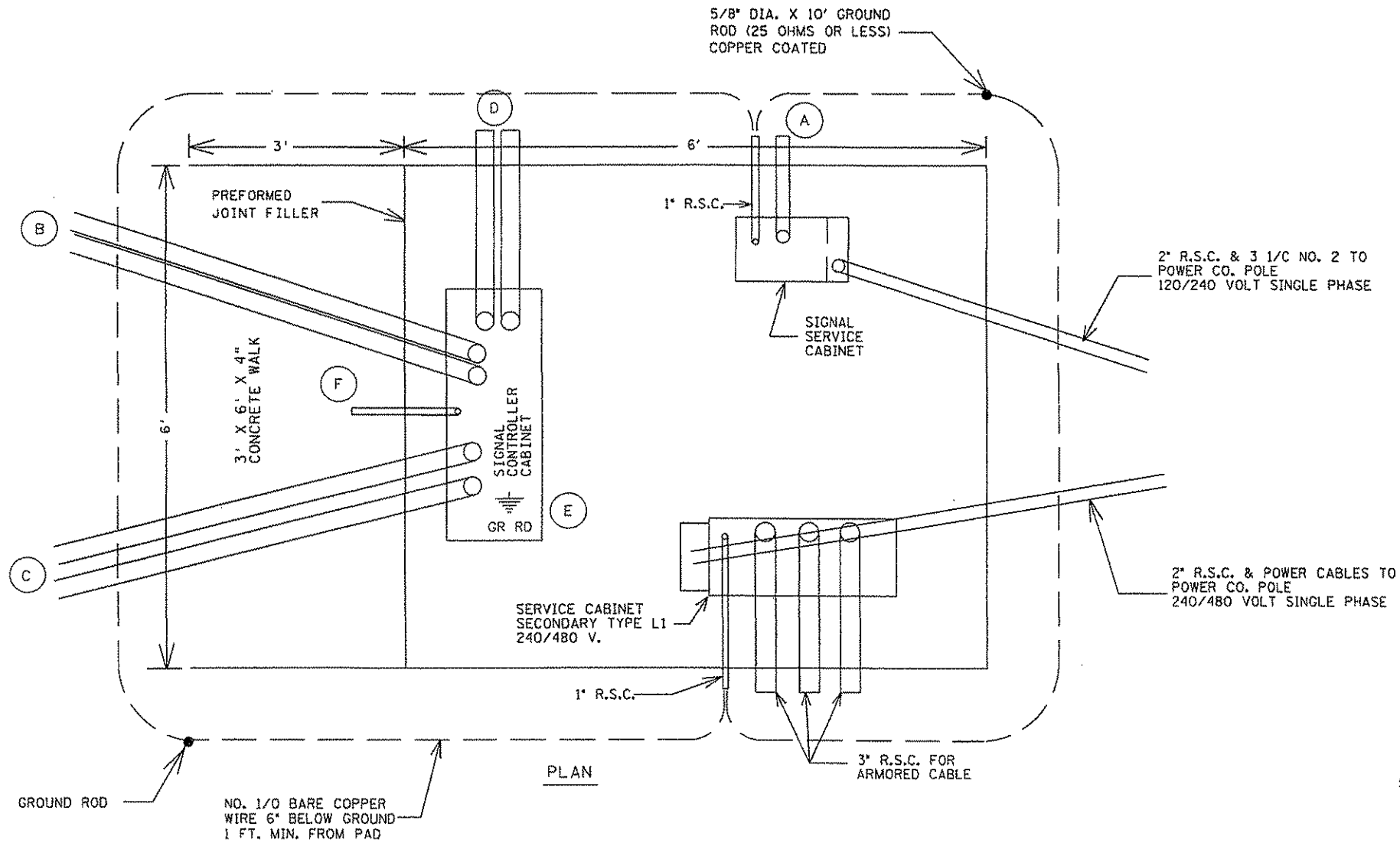


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEMS "A-C"  
 CABINET DETAILS  
 LAKE DRIVE (CSAH 23) SIGNAL SYSTEMS  
 (NORTH JUNCTION WITH I-35W)

FILE NO. 125  
 ALIN0505.00  
 SG2 OF 508  
 198

TYPICAL CONTROLLER CABINET PAD LAYOUT  
FOR TRAFFIC SIGNAL SYSTEM "B"  
NO SCALE



- (A) 2" R.S.C. FOR SERVICE CONNECTION (VIA HH)
- (B) 4" R.S.C. TO HH
- (C) 4" R.S.C. TO HH
- (D) 3" R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).
- (E) 5/8" DIA X 15' GROUND ROD
- (F) 1" N.M.C. STUBOUT FOR FUTURE PHONE LINE (BY OTHERS)

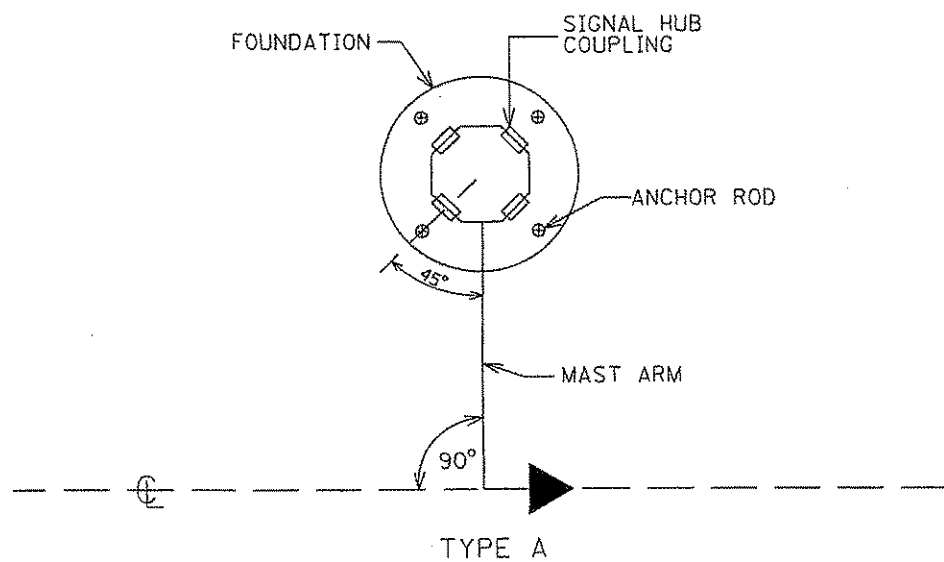
SEE INTERSECTION LAYOUT AND LIGHTING PLANS FOR CONDUIT & CABLE INFORMATION

CONCRETE FOUNDATION  
SEE MN/DOT STANDARD PLATE NO. 8119 FOR FURTHER DETAILS.

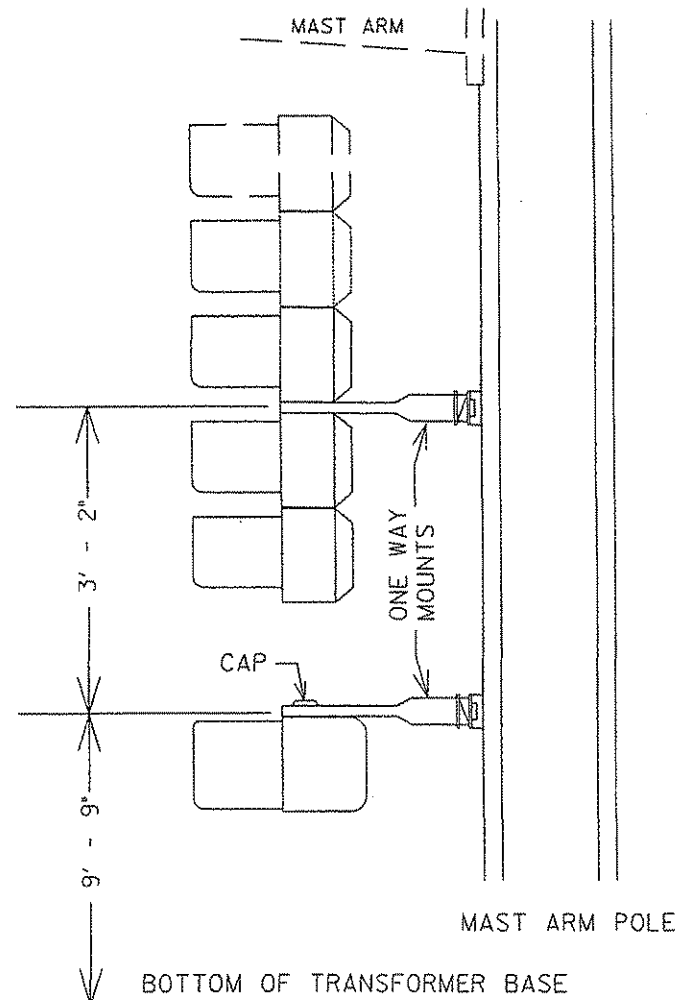
NOTE THAT THIS DETAIL DRAWING IS NOT DRAWN TO SCALE OR SHOWS EXACT LOCATION OF ALL CONDUITS ON PAD.

S:\XON\1050500\PLNSHTS\SIGNALS\2351GDETAILS\COUNTYREV.DWG

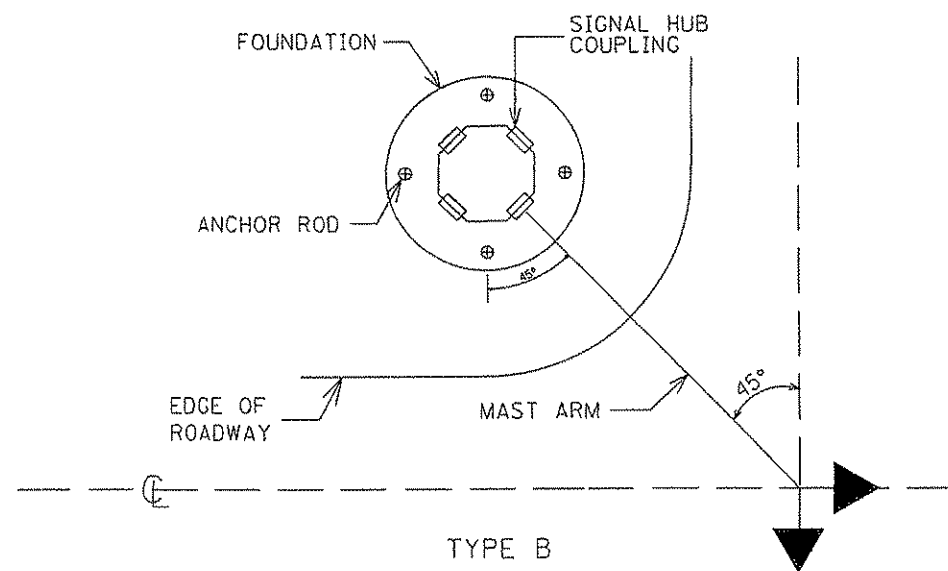
DESIGN TEAM	I	JMG	12/11/06	ADDED DETAIL FOR SYSTEM "B"	I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Certified By: <i>John M. Gray</i> Lic. No. 22457 Printed Name: JOHN M. GRAY Date: 3/26/2007	PHONE: (651)490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110	MINNESOTA DEPARTMENT OF TRANSPORTATION STATE PROJ. NO. 0280-55 (TH 35W) STATE AID PROJ. NO. 02-623-13 & 210-020-04 C.S.A.H. 23 (LAKE DRIVE)	TRAFFIC SIGNAL SYSTEM "B" EQUIPMENT PAD DETAILS LAKE DRIVE (CSAH 23) AT I-35W SOUTH RAMPS (NORTH JCT WITH I-35W)	FILE NO.	126			
DRAWN BY:	JMG			ALNDL0505.DWG									
DESIGNER:	JMG												
CHECKED BY:	JMG												
	NO.	BY	DATE	REVISIONS					SG3	198			



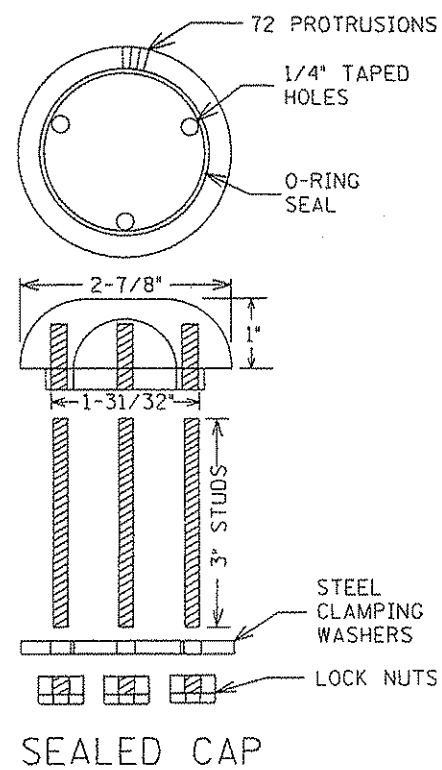
TYPE A  
ANCHOR ROD PLACEMENT,  
MAST ARM ORIENTATION  
AND SIGNAL HUB LOCATIONS



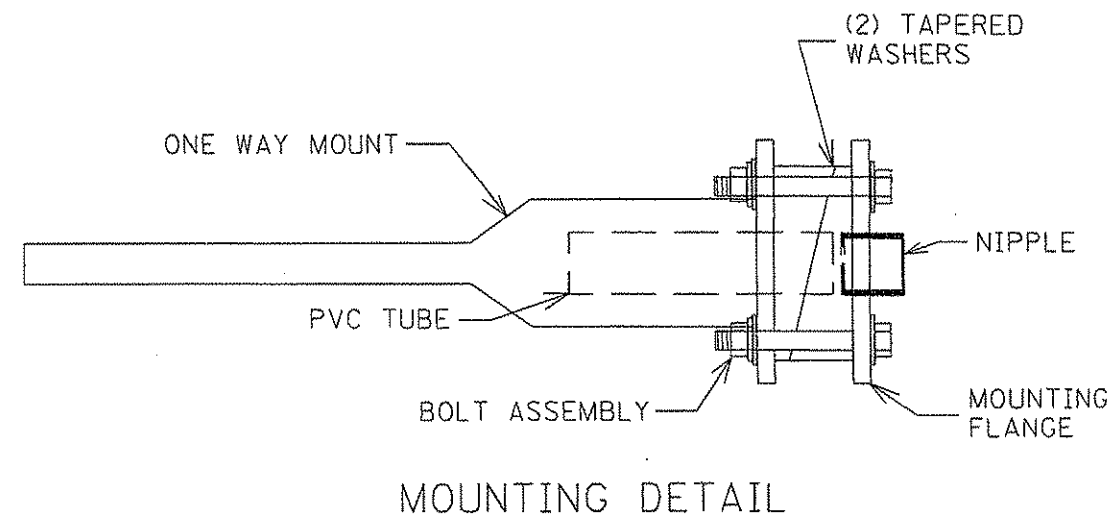
BOTTOM OF TRANSFORMER BASE



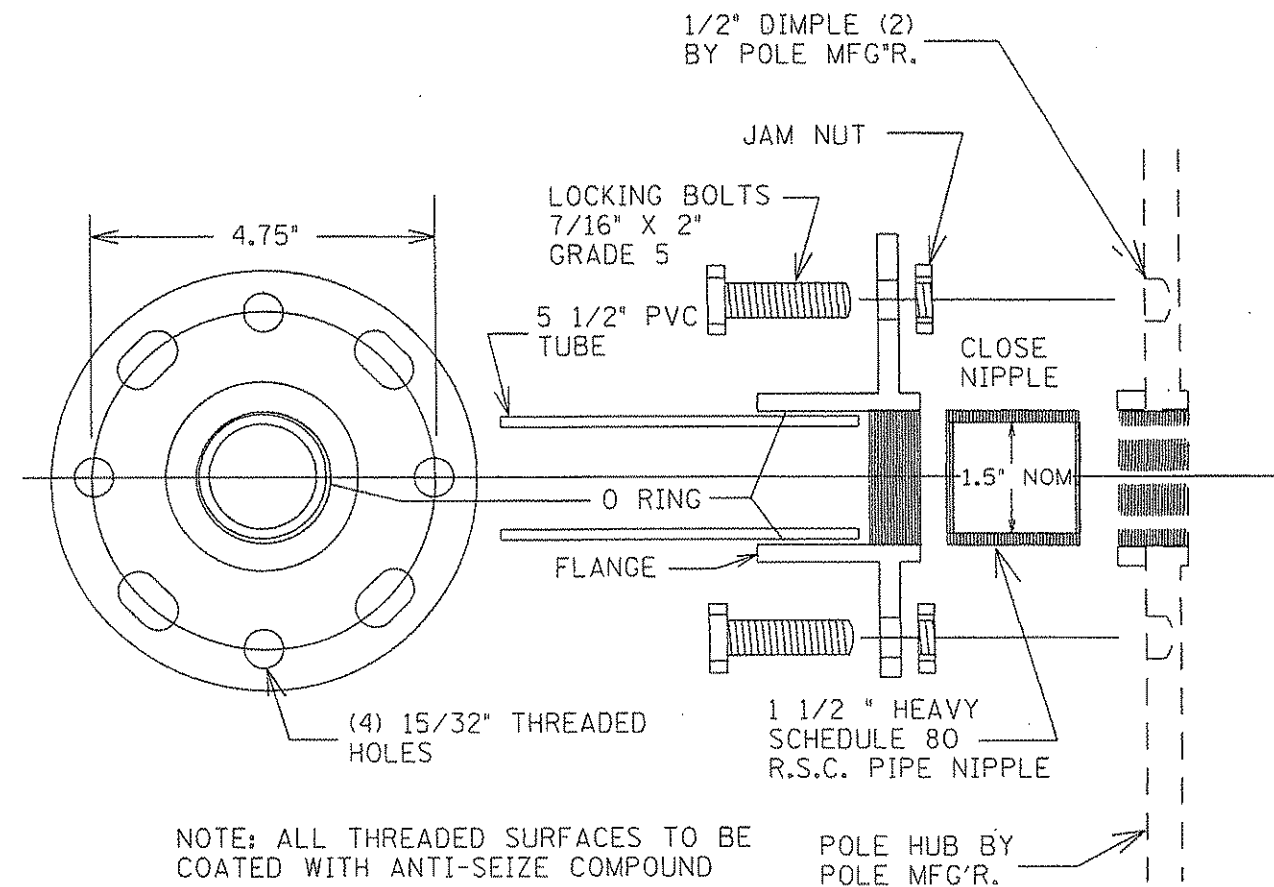
TYPE B  
ANCHOR ROD PLACEMENT,  
MAST ARM ORIENTATION  
AND SIGNAL HUB LOCATIONS



SEALED CAP



MOUNTING DETAIL



NOTE: ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND

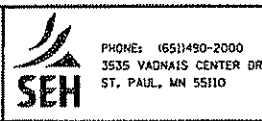
POLE HUB BY POLE MFG'R.

MACHINE HUB & NIPPLE

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DESIGN TEAM	I	JMG	11/21/06	STATE COMMENTS
DRAWN BY:	JMG			
DESIGNER:	JMG			
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

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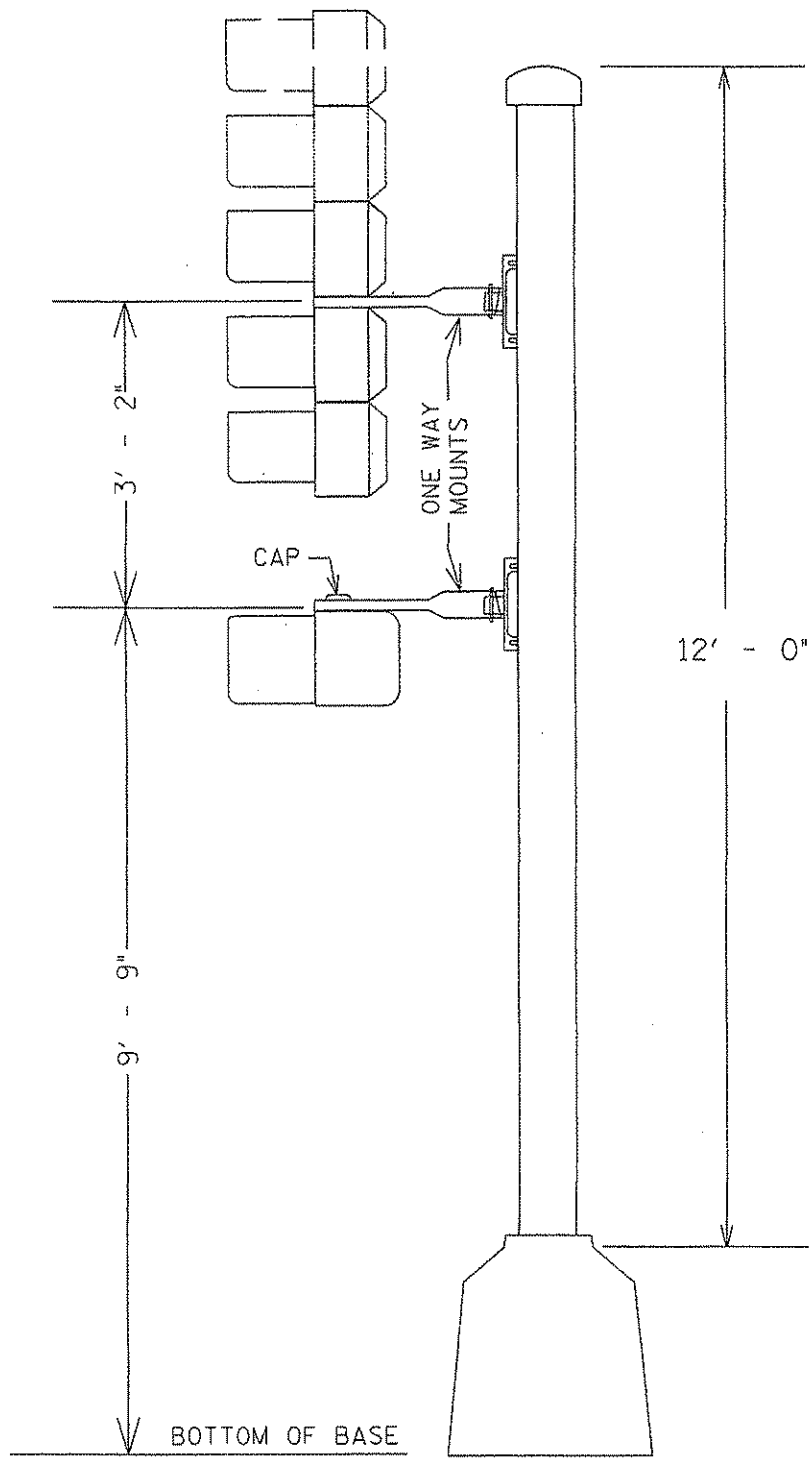


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

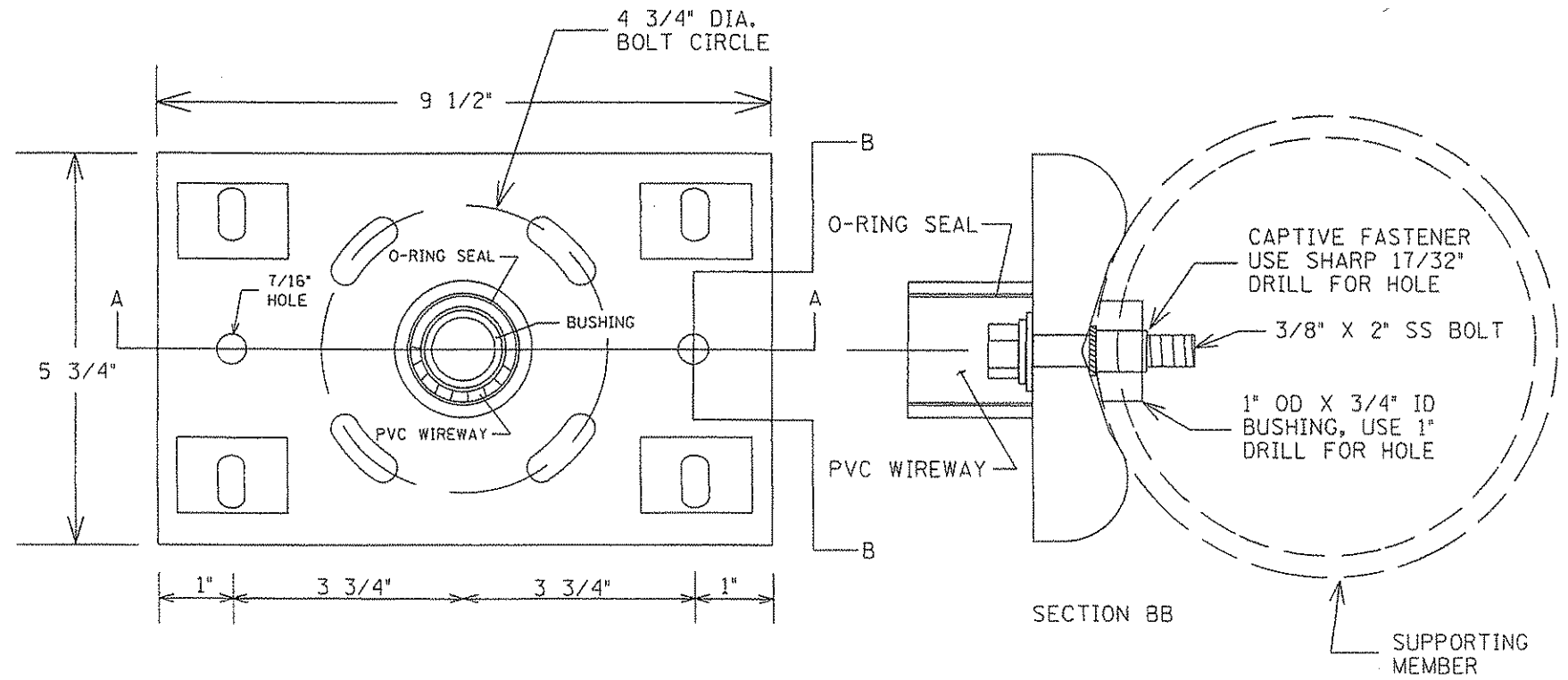
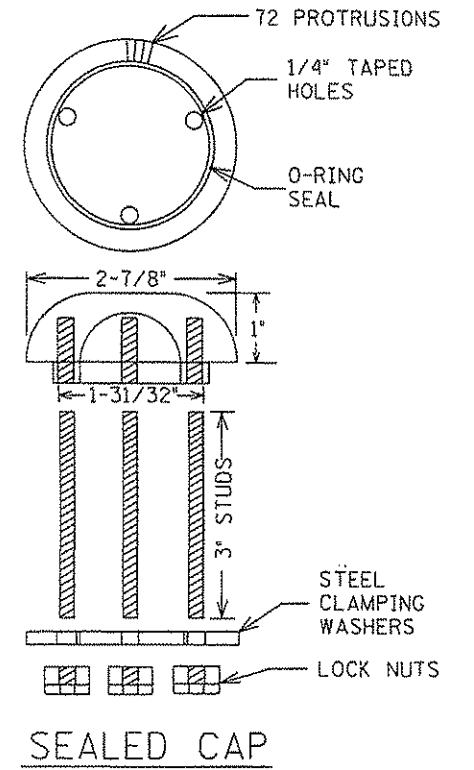
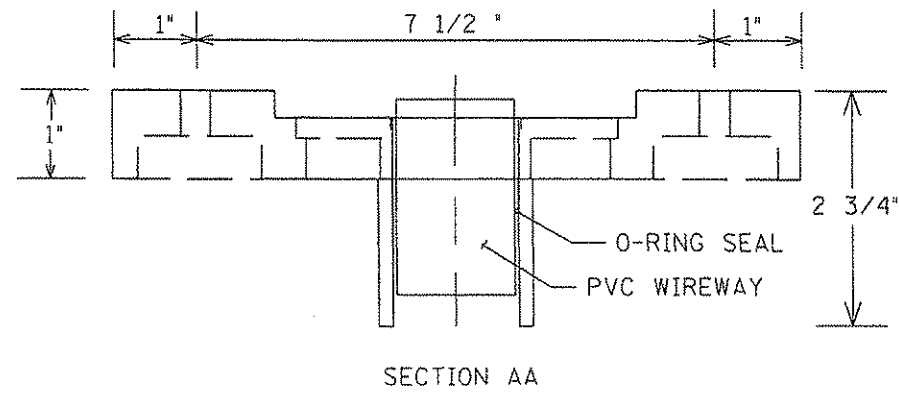
TRAFFIC SIGNAL SYSTEMS "A-C"  
 ONE-WAY HEAD MOUNT DETAILS  
 LAKE DRIVE (CSAH 23) SIGNAL SYSTEMS  
 (NORTH JUNCTION WITH I-35W)

FILE NO.	127
ALNOL0505.00	
SG4 OF SG8	198





TYPICAL MOUNTING ELEVATION



UNIVERSAL HUB - BOLTED

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DESIGN TEAM	I	JMG	11/21/06	STATE COMMENTS
DRAWN BY:	JMG			
DESIGNER:	JMG			
CHECKED BY:	JMG			
NO.	BY	DATE	REVISIONS	

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Certified By: *John M. Gray* Lic. No. 22457

Printed Name: JOHN M. GRAY Date: 3/26/2007



PHONE: (651)490-2000  
3535 VADNATS CENTER DR.  
ST. PAUL, MN 55110

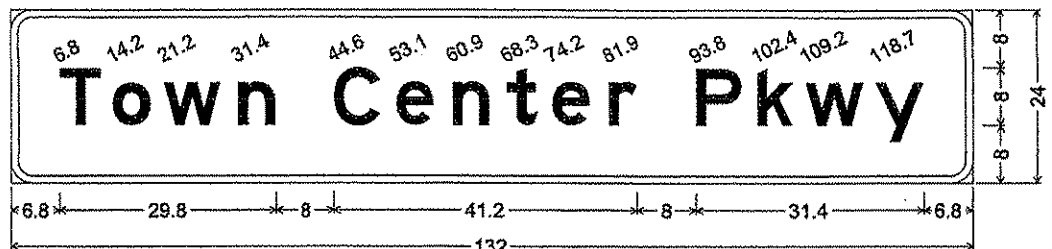


MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

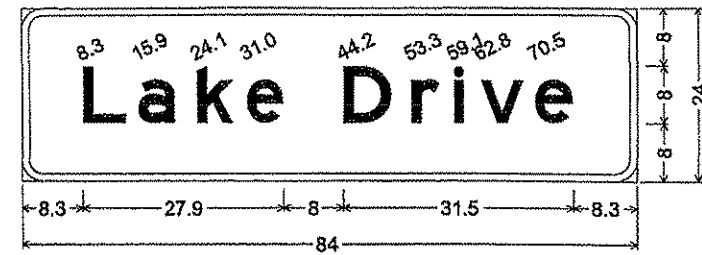
TRAFFIC SIGNAL SYSTEMS "A-C"  
ONE-WAY HEAD MOUNT DETAILS  
LAKE DRIVE (CSAH 23) SIGNAL SYSTEMS  
(NORTH JUNCTION WITH I-35W)

FILE NO.	128
ALNOL0505.00	
SG5	
OF SCH	198

MAST ARM MOUNTED SIGNS									
SIGN PANELS - TYPE D									
SIGNAL SYSTEM	SIGN PANEL	POLE NO.	a	b	SIZE (in.)	MOUNTING BRACKET NO.	SPACING (in.)	AREA/SIGN (SQ.FT.)	NO. REQ.
A	D-1	1	35'	-	132x24	5	-	22.00	1
A	D-2	2	-	20'	84x24	3	-	14.00	1
A	D-3	3	30'	-	132x24	5	-	22.00	1
A	D-4	4	-	20'	84x24	3	-	14.00	1
B	D-5	1	2'	-	54x66	3	-	24.75	1
B	D-6	3	4'	-	54x66	3	-	24.75	1
B	D-7	3	-	15'	54x66	3	-	24.75	1
B	D-8	4	10'	-	84x24	3	-	14.00	1
C	D-9	1	10'	-	84x24	3	-	14.00	1
C	D-10	3	2'	-	54x66	3	-	24.75	1
C	D-11	6	4'	-	54x66	3	-	24.75	1
C	D-12	6	-	15'	54x66	3	-	24.75	1
TOTAL QUANTITIES									12

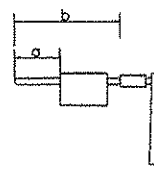


D-1, D-3; 3.0" Radius, 1.0" Border, White on Green; [Town Center Pkwy] E Mod;



D-2, D-4, D-8, D-9; 3.0" Radius, 1.0" Border, White on Green; [Lake Drive] E Mod;

OVERLAYS				
CODE NO.	QUANTITY	SIZE (in.)	LEGEND	SQ.FT. PER OVERLAY
M1-1	6	30x24	INTERSTATE 35W	5.00

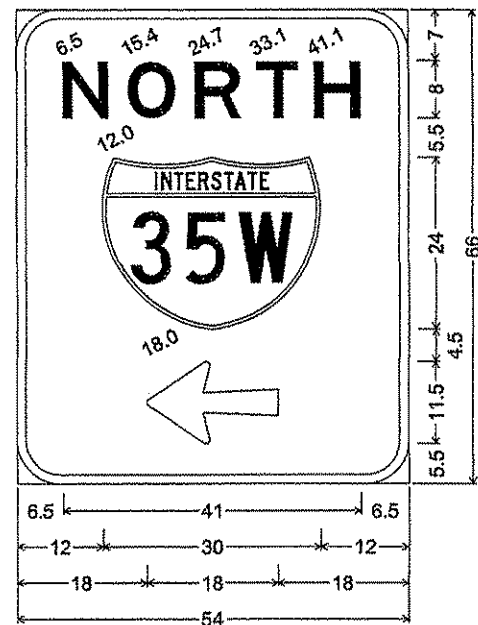


SIGNS FOR TRAFFIC SIGNAL SYSTEM										
SIGN PANELS - TYPE C										
SIGNAL SYSTEM	MMUTCD CODE	POLE NO.	a	b	SIZE (in.)	MOUNTING BRACKET NO.	SPACING (in.)	AREA/SIGN (SQ.FT.)	NO. REQ.	TOTAL AREA (SQ.FT.)
A	R6-1L	1,2,3,4	-	-	36x12	1	-	3.00	4	12.00
B	R6-1L	2,3,4	-	-	36x12	1	-	3.00	3	9.00
C	R6-1L	1,4,6	-	-	36x12	1	-	3.00	3	9.00
A	R6-1R	1,2,3,4	-	-	36x12	1	-	3.00	4	12.00
B	R6-1R	1,2,4	-	-	36x12	1	-	3.00	3	9.00
C	R6-1R	1,3,4	-	-	36x12	1	-	3.00	3	9.00
A	R9-3a	2,3	-	-	18x18	1	-	2.25	2	4.50
B	R9-3a	1,2,3,4,5	-	-	18x18	1	-	2.25	8	18.00
C	R9-3a	1,2,3,5,6	-	-	18x18	1	-	2.25	8	18.00
A	R10-12	2,4	1'	-	36x48	2	-	12.00	2	24.00
TOTAL QUANTITIES									40	124.50

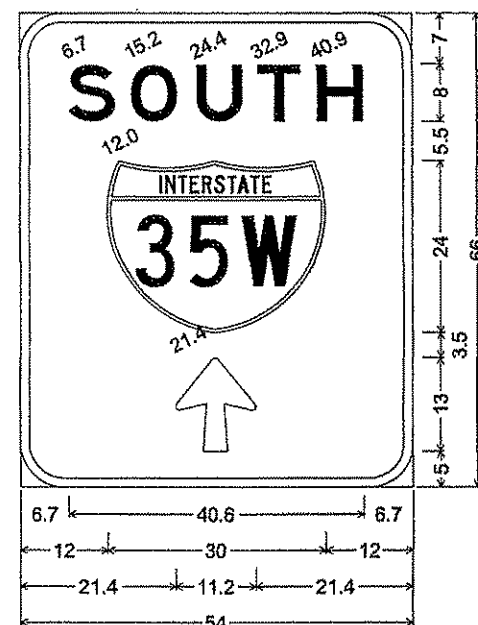
(\*\*)= SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE SPECIAL PROVISIONS AND STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE: 1/1/03) FOR BRACKET SPACING REQUIREMENTS.

NOTES:

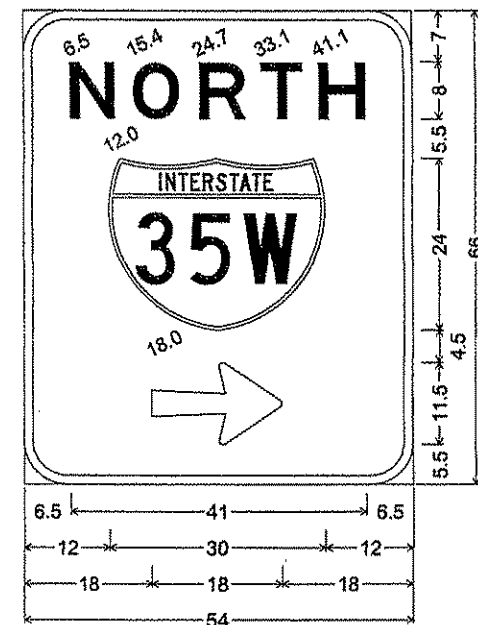
- CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS, SEE STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE: 1/1/03), AND SPECIAL PROVISIONS.
- SEE STANDARD SIGNS MANUAL FOR ARROW AND OVERLAY DETAILS.
- SEE STANDARD SIGNS MANUAL FOR DETAILED DRAWINGS OF TYPE C SIGN PANELS.
- FURNISHING AND INSTALLING TYPE C AND TYPE D SIGNS SHALL BE CONSIDERED INCIDENTAL.
- ① = MOUNT TYPE C SIGN PANEL ON TRAFFIC SIGNAL MAST ARM POLE OR PEDESTAL POLE.



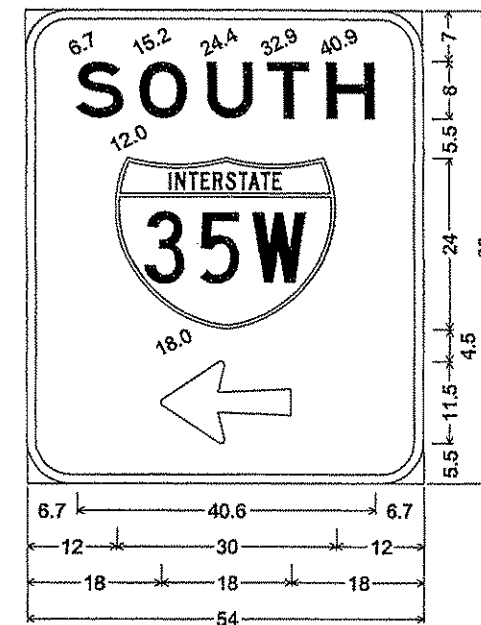
D-5; 6.0" Radius, 1.3" Border, White on Green; [NORTH] E Mod; Arrow 14 - 18.0° 180°;



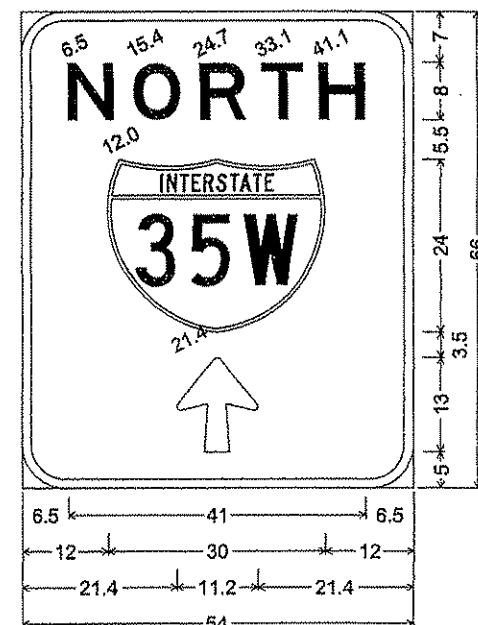
D-6; 6.0" Radius, 1.3" Border, White on Green; [SOUTH] E Mod; Arrow 5 - 13.0° 90°;



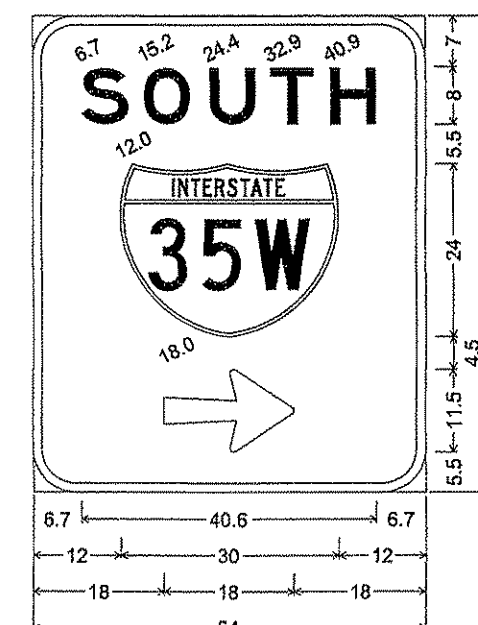
D-7; 6.0" Radius, 1.3" Border, White on Green; [NORTH] E Mod; Arrow 14 - 18.0° 0°;



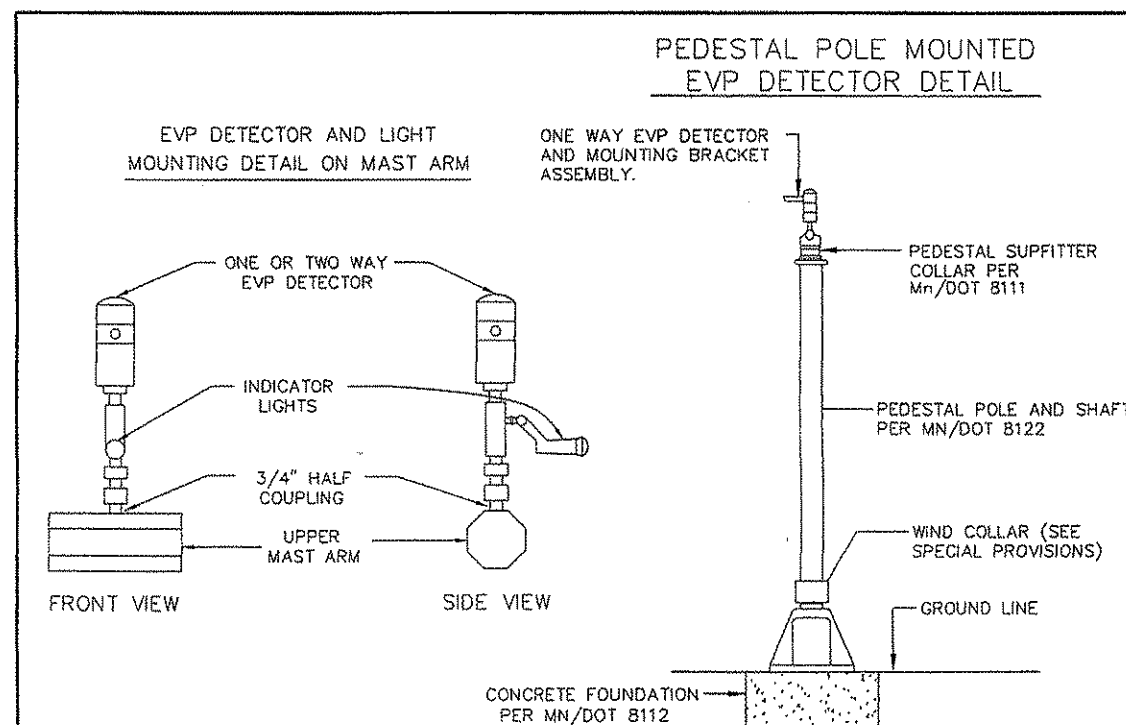
D-10; 6.0" Radius, 1.3" Border, White on Green; [SOUTH] E Mod; Arrow 14 - 18.0° 180°;



D-11; 6.0" Radius, 1.3" Border, White on Green; [NORTH] E Mod; Arrow 5 - 13.0° 90°;



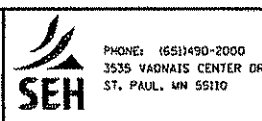
D-12; 6.0" Radius, 1.3" Border, White on Green; [SOUTH] E Mod; Arrow 14 - 18.0° 0°;



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DESIGN TEAM	1	JMG	7/24/06	REVISED TO COUNTY STD.
DRAWN BY:	JMG		1/9/07	COUNTY COMMENTS
DESIGNER:	JMG			
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

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 Certified By: *John M. Gray* Lic. No. 22457  
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MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55(TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEMS "A-C"  
 SIGNAL SIGNING & EVP DETAILS  
 LAKE DRIVE (CSAH 23) SIGNAL SYSTEMS  
 (NORTH JUNCTION WITH I-35W)

FILE NO. 129  
 ALN0505.00  
 SG6 OF SCIB  
 198

- NOTES:**
- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY ENGINEER.
  - 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
  - 3) PEDESTRIAN INDICATIONS SHALL BE ONE SECTION HAND/WALKING PERSON FILLED LED INDICATIONS.
  - 4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING COUNTY FURNISHED MATERIALS.
  - 5) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
  - 6) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE SPECIAL PROVISIONS.
  - 7) A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED 6' FROM THE END OF EACH MAST ARM (FOR EVP).
  - 8) ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
  - 9) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED & PAID FOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 10) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
  - 11) CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION WORK TO BE COMPLETED BY OTHERS AS PART OF THIS PROJECT.

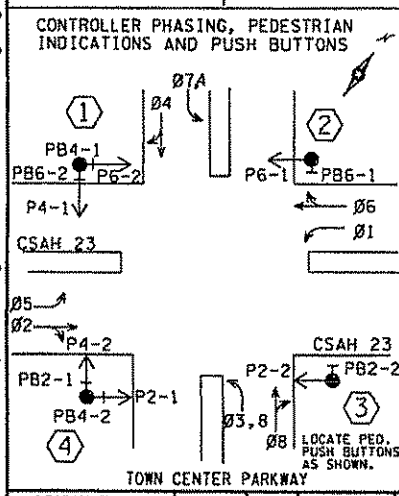
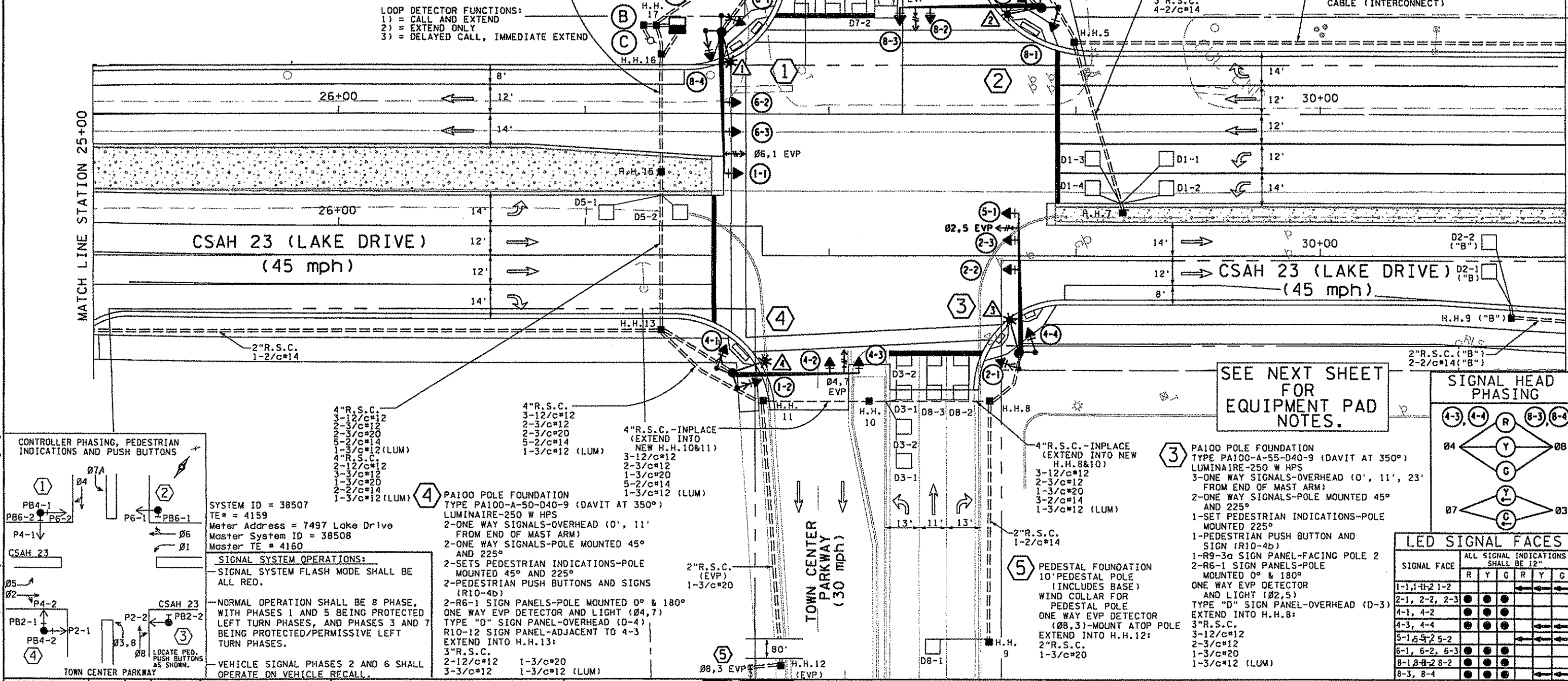
**NMC LOOP DETECTORS**

NUMBER	SIZE (FEET)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	40'	1
D1-3	6x6	10'	1
D1-4	6x6	10'	1
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D3-1	2-6x6	15' & 45'	1
D3-2	2-6x6	0' & 30'	1
D4-1	6x6	120'	2
D4-2	2-6x6	0' & 15'	3
D4-3	2-6x6	0' & 15'	1
D5-1	6x6	40'	1
D5-2	6x6	10'	1
D6-1	6x6	300'	1
D6-2	6x6	300'	1
D7-1	2-6x6	15' & 45'	1
D7-2	2-6x6	0' & 30'	1
D8-1	6x6	120'	2
D8-2	2-6x6	0' & 15'	3
D8-3	2-6x6	0' & 15'	1

**NOTE:**  
LOCATION-DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF DETECTOR.

**(C)** WOOD POLE (SOP)-TO BE F & I BY XCEL ENERGY  
2" R.S.C. RISER AND WEATHERHEAD  
3-1/c\*2  
EXTEND TO SERVICE CABINET:  
2" R.S.C.  
3-1/c\*2

**LOOP DETECTOR FUNCTIONS:**  
1) = CALL AND EXTEND  
2) = EXTEND ONLY  
3) = DELAYED CALL, IMMEDIATE EXTEND



SYSTEM ID = 38507  
TE# = 4159  
Meter Address = 7497 Lake Drive  
Master System ID = 38508  
Master TE# = 4160

**SIGNAL SYSTEM OPERATIONS:**  
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.

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

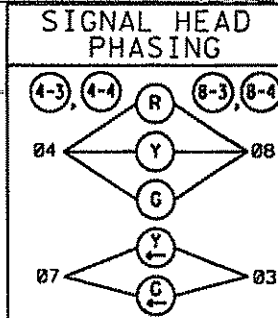
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

**(4)** PA100 POLE FOUNDATION  
TYPE PA100-A-50-040-9 (DAVIT AT 350°)  
LUMINAIRE-250 W HPS  
2-ONE WAY SIGNALS-OVERHEAD (0', 11' FROM END OF MAST ARM)  
2-ONE WAY SIGNALS-POLE MOUNTED 45° AND 225°  
2-SETS PEDESTRIAN INDICATIONS-POLE MOUNTED 45° AND 225°  
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°  
ONE WAY EVP DETECTOR AND LIGHT (Ø4,7)  
TYPE "D" SIGN PANEL-OVERHEAD (D-4)  
R10-12 SIGN PANEL-ADJACENT TO 4-3  
EXTEND INTO H.H.13:  
3" R.S.C.  
2-12/c\*12 1-3/c\*20  
3-3/c\*12 1-3/c\*12 (LUM)

**(5)** PEDESTAL FOUNDATION  
10' PEDESTAL POLE (INCLUDES BASE)  
WIND COLLAR FOR PEDESTAL POLE  
ONE WAY EVP DETECTOR (Ø8,3)-MOUNT ATOP POLE  
EXTEND INTO H.H.12:  
2" R.S.C.  
1-3/c\*20

**(3)** PA100 POLE FOUNDATION  
TYPE PA100-A-55-040-9 (DAVIT AT 350°)  
LUMINAIRE-250 W HPS  
3-ONE WAY SIGNALS-OVERHEAD (0', 11', 23' FROM END OF MAST ARM)  
2-ONE WAY SIGNALS-POLE MOUNTED 45° AND 225°  
1-SET PEDESTRIAN INDICATIONS-POLE MOUNTED 225°  
1-PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
1-R9-3a SIGN PANEL-FACING POLE 2  
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°  
ONE WAY EVP DETECTOR AND LIGHT (Ø2,5)  
TYPE "D" SIGN PANEL-OVERHEAD (D-3)  
EXTEND INTO H.H.8:  
3" R.S.C.  
3-12/c\*12 2-3/c\*12  
2" R.S.C.  
1-3/c\*20 1-3/c\*20 (LUM)

SEE NEXT SHEET FOR EQUIPMENT PAD NOTES.



**LED SIGNAL FACES**

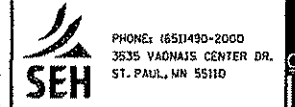
SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"					
	R	Y	G	R	Y	G
1-1, 1-2, 1-2	●	●	●	●	●	●
2-1, 2-2, 2-3	●	●	●	●	●	●
4-1, 4-2	●	●	●	●	●	●
4-3, 4-4	●	●	●	●	●	●
5-1, 5-2, 5-2	●	●	●	●	●	●
6-1, 6-2, 6-3	●	●	●	●	●	●
8-1, 8-2, 8-2	●	●	●	●	●	●
8-3, 8-4	●	●	●	●	●	●

**DESIGN TEAM**

NO.	BY	DATE	REVISIONS
1	JMG	6/30/06	ADDED EB R7 LANE
2	JMG	7/24/06	REVISED TO COUNTY STDS
3	JMG	11/21/06	STATE COMMENTS
4	JMG	1/9/07	COUNTY COMMENTS

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

Certified By: *John M. Gray* Ltc. No. 22457  
Printed Name: JOHN M. GRAY Date: 1/9/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

**TRAFFIC SIGNAL SYSTEM "A"**  
INTERSECTION LAYOUT  
LAKE DRIVE (CSAH 23) at TOWN CENTER PARKWAY

FILE NO. 130  
ALINOL0505.00  
SG7  
OF 5018  
198

1/24/07

3/23/2007

Default

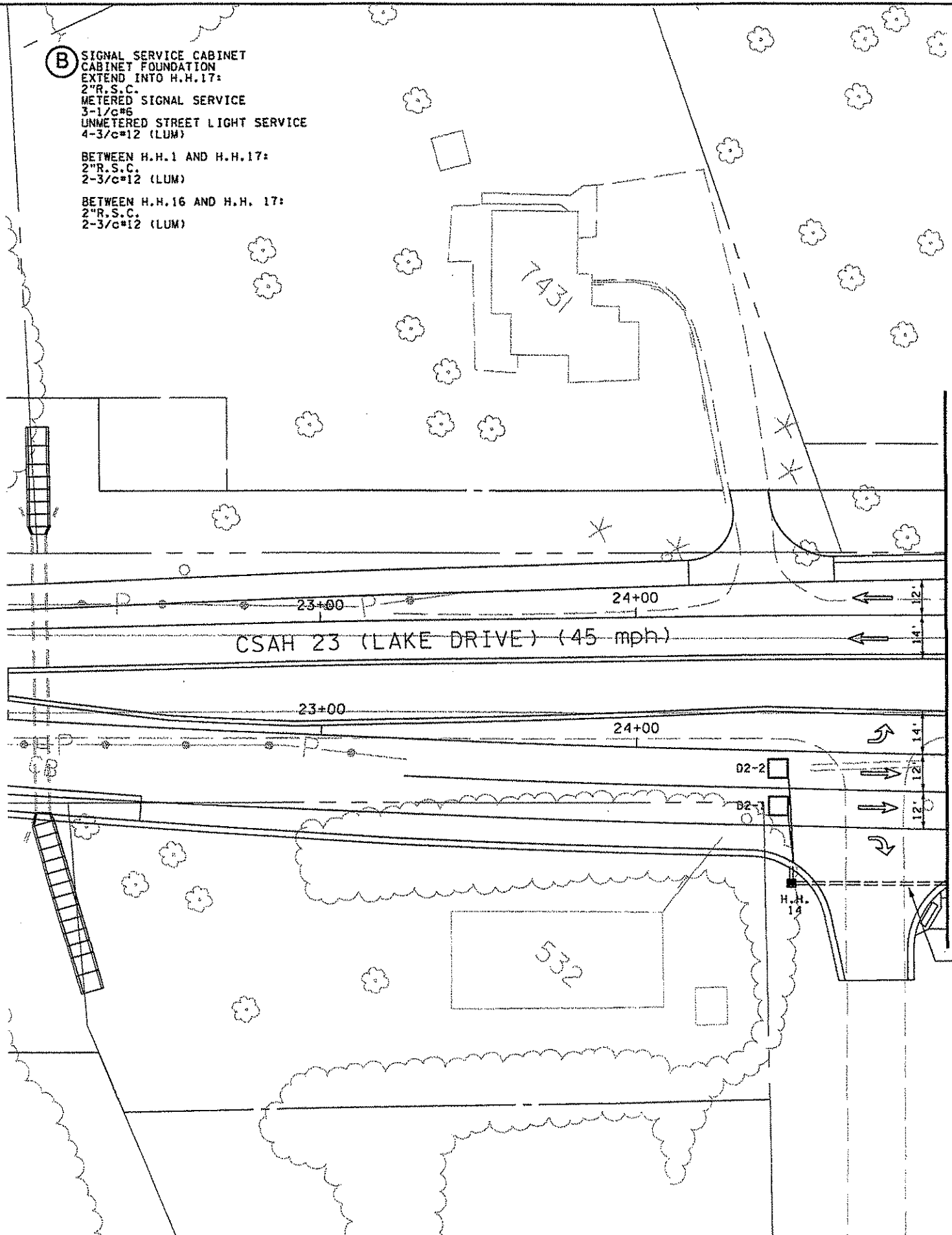
s:\work\050500\plans\signals\lino\0505 Co. Rev. sigb.dgn

- (A) INSTALL CONTROLLER AND CABINET**  
 (FURNISHED BY COUNTY)  
 INSTALL MASTER CONTROLLER  
 (FURNISHED BY COUNTY)  
 CABINET FOUNDATION  
 EXTEND INTO H.H.17:  
 METERED SIGNAL SERVICE  
 2"R.S.C.  
 3-1/c#6  
 4"R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#20  
 8-2/c#14  
 1-6/c FIBER-OPTIC  
 CABLE (INTERCONNECT)  
 EXTEND INTO H.H.16:  
 4"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 2-3/c#20  
 5-2/c#14

STUB OUT 2-3"R.S.C. FROM CABINET  
 TO NORTH (THREAD AND CAP BOTH  
 ENDS-FOR FUTURE USE)

STUB OUT 1-1"N.M.C. FROM CABINET  
 (CONTRACTOR SHALL COORDINATE  
 INSTALLATION OF PHONE LINE WITH  
 LOCAL TELEPHONE COMPANY ON  
 BEHALF OF CITY OF LINO LAKES - INCIDENTAL)

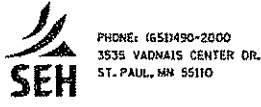
- (B) SIGNAL SERVICE CABINET**  
 CABINET FOUNDATION  
 EXTEND INTO H.H.17:  
 2"R.S.C.  
 METERED SIGNAL SERVICE  
 3-1/c#6  
 UNMETERED STREET LIGHT SERVICE  
 4-3/c#12 (LUM)  
 BETWEEN H.H.1 AND H.H.17:  
 2"R.S.C.  
 2-3/c#12 (LUM)  
 BETWEEN H.H.16 AND H.H. 17:  
 2"R.S.C.  
 2-3/c#12 (LUM)



SCALE 20'

DESIGN TEAM	NO.	BY	DATE	REVISIONS
1	JMG	6/30/06	ADDED EB RT LANE	
2	JMG	7/25/06	REVISED TO COUNTY STDS	
3	JMG	11/21/06	STATE COMMENTS	
4	JMG	1/9/07	COUNTY COMMENTS	

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 1/9/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEM "A"  
 INTERSECTION LAYOUT  
 CSAH 23 (LAKE DRIVE) AT TOWN CENTER PARKWAY

FILE NO.	131
ALINOL0505.00	
SC8	
OF SC8	198





**NOTES:**

- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY ENGINEER.
- 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 3) PEDESTRIAN INDICATIONS SHALL BE ONE SECTION HAND/WALKING PERSON FILLED LED INDICATIONS.
- 4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING COUNTY FURNISHED MATERIALS.
- 5) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE SPECIAL PROVISIONS.
- 6) A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED 6' FROM THE END OF EACH MAST ARM (FOR EVP).
- 7) ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
- 8) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED & PAID FOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 9) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
- 10) CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD AND BRIDGE CONSTRUCTION WORK TO BE COMPLETED BY OTHERS AS PART OF THIS PROJECT.
- 11) LOOP DETECTOR WIRES FOR NMC LOOP DETECTORS SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1/2" OR 3/4" N.M.C. SEE DETAILS AND SPECIAL PROVISIONS.

**NMC LOOP DETECTORS**

NUMBER	SIZE (FEET)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	40'	1
D1-3	6x6	10'	1
D1-4	6x6	10'	1
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D4-1	6x6	120'	2
D4-2	6x6	120'	2
D4-3	6x6	120'	2
D4-4	6x12 & 6x6	5' & 20'	3
D4-5	2-6x6	5' & 20'	1
D4-6	2-6x6	5' & 20'	1
D6-1	6x6	300'	1
D6-2	6x6	300'	1

**NOTE:**

LOCATION=DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF DETECTOR.

① PA90 POLE FOUNDATION

- TYPE PA90-A-35-D40-9 (DAVIT AT 350°)  
 LUMINAIRE-250 W HPS  
 2-ONE WAY SIGNALS-OVERHEAD (0' AND 11' FROM END OF MAST ARM)  
 1-ONE WAY SIGNAL-POLE MOUNTED 225°  
 2-R9-3a SIGN PANELS-FACING POLES 2 AND 5  
 1-R6-1R SIGN PANEL-POLE MOUNTED 180°  
 ONE WAY EVP DETECTOR AND LIGHT (Ø6, 1)  
 TYPE "D" SIGN PANEL-OVERHEAD (D-5)  
 EXTEND INTO H.H.11:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

③ PA90 POLE FOUNDATION

- TYPE PA90-A-35-D40-9 (DAVIT AT 350°)  
 LUMINAIRE-250 W HPS  
 2-ONE WAY SIGNALS-OVERHEAD (0' AND 11' FROM END OF MAST ARM)  
 2-ONE WAY SIGNALS-POLE MOUNTED 45° AND 225°  
 1-SET PEDESTRIAN INDICATIONS-POLE MOUNTED 225°  
 1-PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 1-R9-3a SIGN PANEL-FACING POLE 2  
 1-R6-1L SIGN PANEL-POLE MOUNTED 0°  
 ONE WAY EVP DETECTOR AND LIGHT (Ø2)  
 2-TYPE "D" SIGN PANELS-OVERHEAD (D-6, 7)  
 EXTEND INTO H.H.7:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

④ PA100 POLE FOUNDATION

- TYPE PA100-A-45-D40-9 (DAVIT AT 350°)  
 LUMINAIRE-250 W HPS  
 1-ONE WAY SIGNAL-OVERHEAD  
 2-ONE WAY SIGNALS-POLE MOUNTED 45° AND 225°  
 1-SET PEDESTRIAN INDICATIONS-POLE MOUNTED 45°  
 1-PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 1-R9-3a SIGN PANEL-FACING POLE 5  
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°  
 ONE WAY EVP DETECTOR AND LIGHT (Ø4)  
 TYPE "D" SIGN PANEL-OVERHEAD (D-8)  
 EXTEND INTO H.H.8:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

**LOOP DETECTOR FUNCTIONS:**  
 1) CALL AND EXTEND  
 2) EXTEND ONLY  
 3) DELAYED CALL, IMMEDIATE EXTEND

① WOOD POLE (SOP)-TO BE F & I BY XCEL ENERGY  
 2"R.S.C. RISER AND WEATHERHEAD  
 3-1/c#2  
 EXTEND INTO SERVICE CABINET:  
 2"R.S.C.  
 3-1/c#2

2"R.S.C. (INTERCONNECT)  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

4"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

4"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

4"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

4"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

2"R.S.C.  
 2-2/c#14  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

4"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

2"R.S.C. (SEE BRIDGE PLAN)  
 2-2/c#14  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

MATCH LINE - STATION 31+00

MATCH LINE - STATION 37+00

CSAH 23 (LAKE DRIVE)  
 (45 mph)

CSAH 23 (LAKE DRIVE)  
 (45 mph)

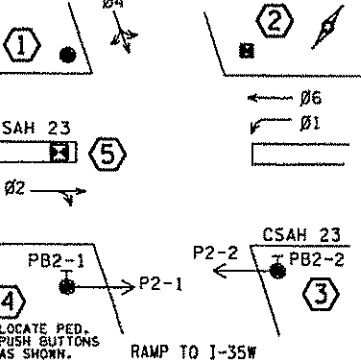
**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 4 PHASE, WITH PHASE 1 BEING A PROTECTED LEFT TURN PHASE.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

⑤ PEDESTAL FOUNDATION

- 14' PEDESTAL POLE (INCLUDES BASE)  
 WIND COLLAR FOR PEDESTAL POLE  
 2-ONE WAY SIGNALS-POLE MOUNTED  
 2-R9-3a SIGN PANELS-FACING POLES 1 AND 4  
 EXTEND INTO H.H.10:  
 3"R.S.C.  
 1-12/c#12

**CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS**



SEE NEXT SHEET FOR EQUIPMENT PAD NOTES.

**LED SIGNAL FACES**

SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"					
	R	Y	G	R	Y	G
1-1, 1-2	●	●	●	●	●	●
2-1, 2-2, 2-3	●	●	●	●	●	●
4-1, 4-2	●	●	●	●	●	●
4-3	●	●	●	●	●	●
4-4	●	●	●	●	●	●
6-1, 6-2, 6-3, 6-4	●	●	●	●	●	●

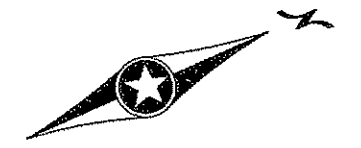
134

3/23/2007

Default

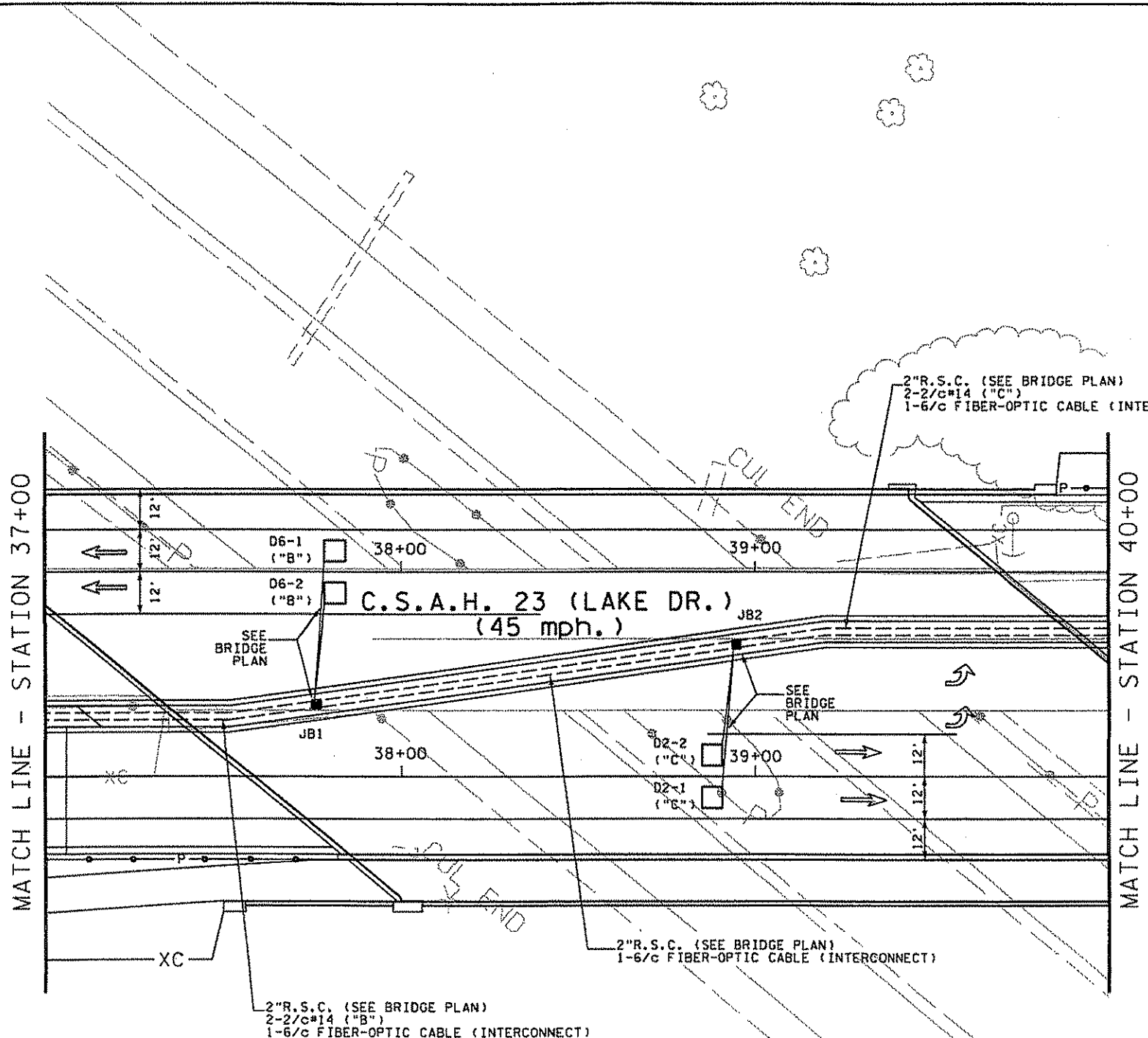
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SCALE 20'

- (A)** SIGNAL/LIGHTING CABINET FOUNDATION (SEE DETAILS)  
INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)  
SIGNAL SERVICE CABINET
- (SYSTEM "B")
- CONTROLLER CABINET TO H.H.12:  
METERED SIGNAL SERVICE  
2"R.S.C.  
3-1/c#6
- CONTROLLER CABINET TO H.H.11:  
4"R.S.C.                      4"R.S.C.  
3-12/c#12                    2-12/c#12 (FOR FUTURE USE)  
2-3/c#12  
1-3/c#20  
12-2/c#14  
1-6/c FIBER-OPTIC CABLE (INTERCONNECT)
- CONTROLLER CABINET TO H.H.11:  
4"R.S.C.                      4"R.S.C.  
3-12/c#12                    2-12/c#12  
2-3/c#12                      2-3/c#12  
1-3/c#20                      1-3/c#20  
2-2/c#14                      1-6/c FIBER-OPTIC CABLE (INTERCONNECT)
- STUB OUT 2-3"R.S.C. FROM CONTROLLER CABINET TO NORTH (THREAD AND CAP BOTH ENDS-FOR FUTURE USE)
- STUB OUT 1-1" N.M.C. FROM CONTROLLER CABINET (CAP BOTH ENDS-FOR FUTURE PHONE LINE)
- SERVICE CABINET TO H.H.12:  
2"R.S.C.  
METERED SIGNAL SERVICE  
3-1/c#6  
UNMETERED STREET LIGHT SERVICE  
3-3/c#12 (LUM)
- BETWEEN H.H.1 AND H.H.12:  
2"R.S.C.  
1-3/c#12 (LUM)
- BETWEEN H.H.11 AND H.H.12:  
2"R.S.C.  
2-3/c#12 (LUM)



**NOTES:**  
 LOOP DETECTORS IN BRIDGE DECK (D2-1, D2-2 OF SYSTEM "C" AND D6-1, D6-2 OF SYSTEM "B") SHALL BE TIED TO BRIDGE REBAR AND SHALL BE INSTALLED IN 1/2" N.M.C. (USING #14 AWG CROSS-LINKED POLYETHYLENE LOOP DETECTOR WIRE). SEE DETAILS AND SPECIAL PROVISIONS.

CONDUIT ACROSS BRIDGE, LOOP DETECTORS (D2-1, D2-2, D6-1, D6-2), #14 AWG WIRE IN THESE LOOP DETECTORS, AND JUNCTION BOXES JB1 AND JB2 SHALL BE MEASURED AND PAID FOR AS PART OF BRIDGE WORK (SEE BRIDGE PLANS).

LOOP DETECTOR LEAD-IN CABLE, LOOP DETECTOR SPLICE KITS, AND TESTING FOR LOOP DETECTORS D2-1, D2-2, D6-1 AND D6-2 SHALL BE CONSIDERED PART OF THE TRAFFIC SIGNAL SYSTEM "B-C" PAY ITEMS (ITEM NO. 2565).

DESIGN TEAM	1	JMG	7/25/06	REVISED TO COUNTY STDS
DRAWN BY: BDF	2	JMG	11/21/06	STATE COMMENTS
DESIGNER: JMG	3	JMG	12/11/06	REVISED EQUIP. PAD
CHECKED BY: JMG	4	JMG	1/9/07	COUNTY COMMENTS
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

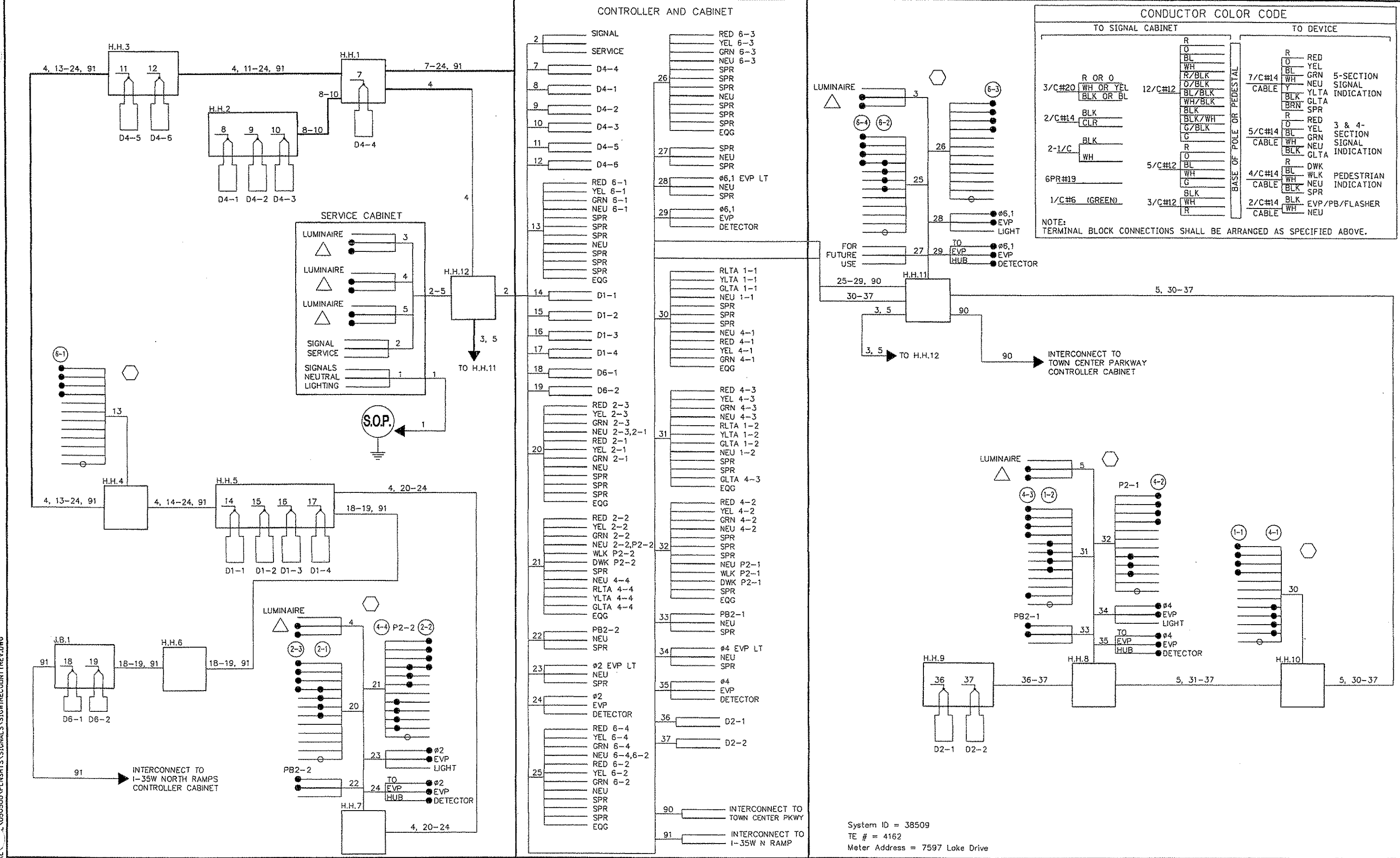
Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 1/9/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEMS "B-C"  
 INTERSECTION LAYOUT  
 CSAH 23 (LAKE DRIVE) @ I-35W NORTH & SOUTH RAMPS  
 (NORTH JUNCTION WITH I-35W)

FILE NO.	134
ALNOL0505.00	
SG11	198
OF SGIB	



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DESIGN TEAM	1	JMG	7/24/06	REVISED TO COUNTY STD.
DRAWN BY:	2	JMG	11/21/06	STATE COMMENTS
DESIGNER:	3	JMG	1/09/07	COUNTY COMMENTS
CHECKED BY:				
	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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 3/26/2007

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEM "B"  
 FIELD WIRING DIAGRAM  
 LAKE DRIVE (CSAH 23) AT I-35W SOUTH RAMPS  
 (NORTH JUNCTION WITH I-35W)

FILE NO. 135  
 ALNDL0505.00  
 SG12  
 OF 508  
 198

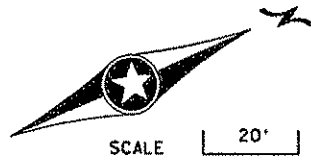
System ID = 38509  
 TE # = 4162  
 Meter Address = 7597 Lake Drive

**NOTES:**

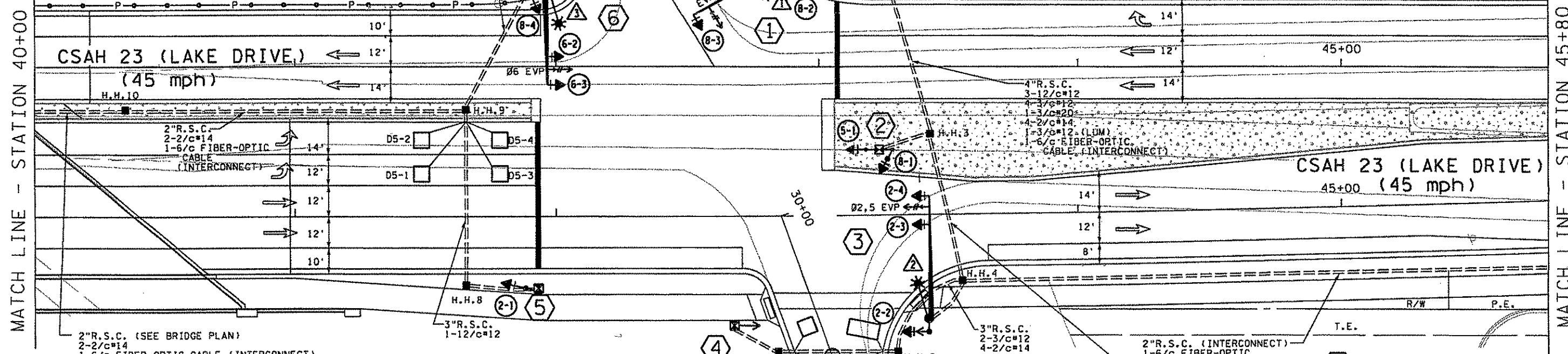
- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY ENGINEER.
- 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 3) PEDESTRIAN INDICATIONS SHALL BE ONE SECTION HAND/WALKING PERSON FILLED LED INDICATIONS.
- 4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING COUNTY FURNISHED MATERIALS.
- 5) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE SPECIAL PROVISIONS.
- 6) A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED 6' FROM THE END OF EACH MAST ARM (FOR EVP).
- 7) ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.

NMC LOOP DETECTORS			
NUMBER	SIZE (FEET)	LOCATION	LOCATION
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D5-1	6x6	40'	1
D5-2	6x6	40'	1
D5-3	6x6	10'	1
D5-4	6x6	10'	1
D6-1	6x6	300'	1
D6-2	6x6	300'	1
D8-1	6x6	120'	2
D8-2	6x6	120'	2
D8-3	6x12/6x6	5' & 20'	3
D8-4	6x6	5' & 20'	1

- NOTE:**  
LOCATION=DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF DETECTOR.
- 1** PA100 POLE FOUNDATION  
TYPE PA100-A-40-D40-9 (DAVIT AT 350°)  
LUMINAIRE-250 W HPS  
1-ONE WAY SIGNALS-OVERHEAD  
2-R9-3a SIGN PANELS-FACING POLES 2 AND 6  
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°  
ONE WAY EVP DETECTOR AND LIGHT (Ø8)  
TYPE "D" SIGN PANEL-OVERHEAD (D-9)  
EXTEND INTO H.H.12:  
3"R.S.C.  
2-12/c#12  
2-3/c#20  
1-3/c#20  
1-3/c#12 (LUM)
- 2** PEDESTAL FOUNDATION  
14' PEDESTAL POLE (INCLUDES BASE)  
WIND COLLAR FOR PEDESTAL POLE  
2-ONE WAY SIGNALS-POLE MOUNTED  
2-R9-3a SIGN PANELS-FACING POLES 1 AND 3  
EXTEND INTO H.H.3:  
3"R.S.C.  
1-12/c#12
- 3** PA100 POLE FOUNDATION  
TYPE PA100-A-45-D40-9 (DAVIT AT 350°)  
LUMINAIRE-250 W HPS  
2-ONE WAY SIGNALS-OVERHEAD (0', 11' FROM END OF MAST ARM)  
1-ONE WAY SIGNAL-POLE MOUNTED 225°  
1-SET PEDESTRIAN INDICATIONS-POLE MOUNTED 225°  
1-PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
1-R9-3a SIGN PANEL-FACING POLE 2  
1-R6-1R SIGN PANEL-POLE MOUNTED 180°  
ONE WAY EVP DETECTOR AND LIGHT (Ø2,5)  
TYPE "D" SIGN PANEL-OVERHEAD (D-10)  
EXTEND INTO H.H.4:  
3"R.S.C.  
2-12/c#12  
2-3/c#12  
1-3/c#20  
1-3/c#12 (LUM)
- 4** PEDESTAL FOUNDATION  
10' PEDESTAL POLE (INCLUDES BASE)  
WIND COLLAR FOR PEDESTAL POLE  
1-SET PEDESTRIAN INDICATIONS-POLE MOUNTED  
1-PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
2-R6-1 SIGN PANELS (NORTH AND SOUTH SIDES OF POLE)  
EXTEND INTO H.H.7:  
3"R.S.C.  
2-3/c#12



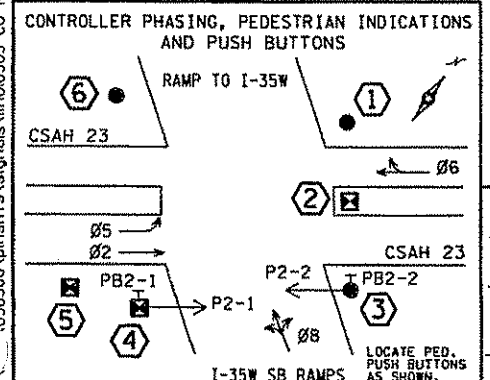
- LOOP DETECTOR FUNCTIONS:**
- 1) CALL AND EXTEND
  - 2) EXTEND ONLY
  - 3) DELAYED CALL; IMMEDIATE EXTEND



- 8) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED & PAID FOR UNDER ITEM NO.2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 9) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
- 10) CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION WORK TO BE COMPLETED BY OTHERS AS PART OF THIS PROJECT.
- 11) LOOP DETECTOR WIRES FOR NMC LOOP DETECTORS SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1/2" OR 3/4" N.M.C. SEE DETAILS AND SPECIAL PROVISIONS.

- 6** PA90 POLE FOUNDATION  
TYPE PA90-A-35-D40-9 (DAVIT AT 350°)  
LUMINAIRE-250 W HPS  
2-ONE WAY SIGNALS-OVERHEAD (0' AND 11' FROM END OF MAST ARM)  
2-ONE WAY SIGNALS-POLE MOUNTED 45° AND 225°  
2-R9-3a SIGN PANELS-FACING POLES 1 AND 5  
1-R6-1L SIGN PANEL-POLE MOUNTED 0°  
ONE WAY EVP DETECTOR AND LIGHT (Ø6)  
2-TYPE "D" SIGN PANELS-OVERHEAD (D-11,12)  
EXTEND INTO H.H.11:  
3"R.S.C.  
2-12/c#12  
2-3/c#12  
1-3/c#20  
1-3/c#12 (LUM)

- 5** PEDESTAL FOUNDATION  
14' PEDESTAL POLE (INCLUDES BASE)  
WIND COLLAR FOR PEDESTAL POLE  
1-ONE WAY SIGNAL-POLE MOUNTED  
1-R9-3a SIGN PANEL-FACING POLE 6  
EXTEND INTO H.H.8:  
3"R.S.C.  
1-12/c#12



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 4 PHASE, WITH PHASE 5 BEING A PROTECTED LEFT TURN PHASE.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

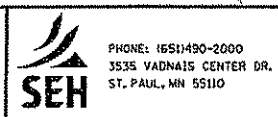
SYSTEM ID = 38510  
TE# = 4163  
Meter Address = 7603 Lake Drive

**SEE NEXT SHEET FOR EQUIPMENT PAD NOTES**

LED SIGNAL FACES						
SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"					
	R	Y	G	R	Y	G
2-1, 2-2, 2-3, 2-4	●	●	●	●	●	●
5-1, 5-2	●	●	●	●	●	●
6-1, 6-2, 6-3	●	●	●	●	●	●
8-1, 8-2	●	●	●	●	●	●
8-3	●	●	●	●	●	●
8-4	●	●	●	●	●	●

DESIGN TEAM	NO.	BY	DATE	REVISIONS
DRAWN BY: GEN	1	JMG	7/24/06	REVISED TO COUNTY STDS
DESIGNER: JMG	2	JMG	11/21/06	STATE COMMENTS
CHECKED BY: JMG	3	JMG	1/9/07	COUNTY COMMENTS

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Certified By: *John M. Gray* Lic. No. 22457  
Printed Name: JOHN M. GRAY Date: 1/9/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
STATE PROJ. NO. 0280-55 (TH 35W)  
STATE AID PROJ. NO. 02-623-13 & 210-020-04  
C.S.A.H. 23 (LAKE DRIVE)

**TRAFFIC SIGNAL SYSTEM "C"**  
**INTERSECTION LAYOUT**  
CSAH 23 (LAKE DRIVE) AT I-35W NORTH RAMPS  
(NORTH JUNCTION WITH I-35W)

FILE NO. 136  
ALNDL0505.00  
SG13  
OF SCIB 198



**SYSTEM "C"**

- (A)** INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)  
 CABINET FOUNDATION  
 EXTEND INTO H.H.13:  
 METERED SIGNAL SERVICE  
 2"R.S.C.  
 3-1/c#6  
 CONTROLLER CABINET TO H.H.1:  
 4"R.S.C. 4"R.S.C.  
 3-12/c#12 4"R.S.C. (FOR FUTURE USE)  
 4-3/c#12  
 1-3/c#20  
 6-2/c#14  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

- CONTROLLER CABINET TO H.H.12:  
 4"R.S.C. 4"R.S.C.  
 3-12/c#12 2-12/c#12  
 2-3/c#12 2-3/c#12  
 1-3/c#20 1-3/c#12  
 6-2/c#14 1-3/c#20  
 1-6/c FIBER-OPTIC CABLE (INTERCONNECT)

STUB OUT 2-3"R.S.C. FROM CONTROLLER CABINET TO SOUTH (THREAD ANDCAP BOTH ENDS-FOR FUTURE USE)

STUB OUT 1-1"N.M.C. FROM CONTROLLER CABINET (CAP BOTH ENDS FOR FUTURE PHONE LINE)

**SYSTEM "C"**

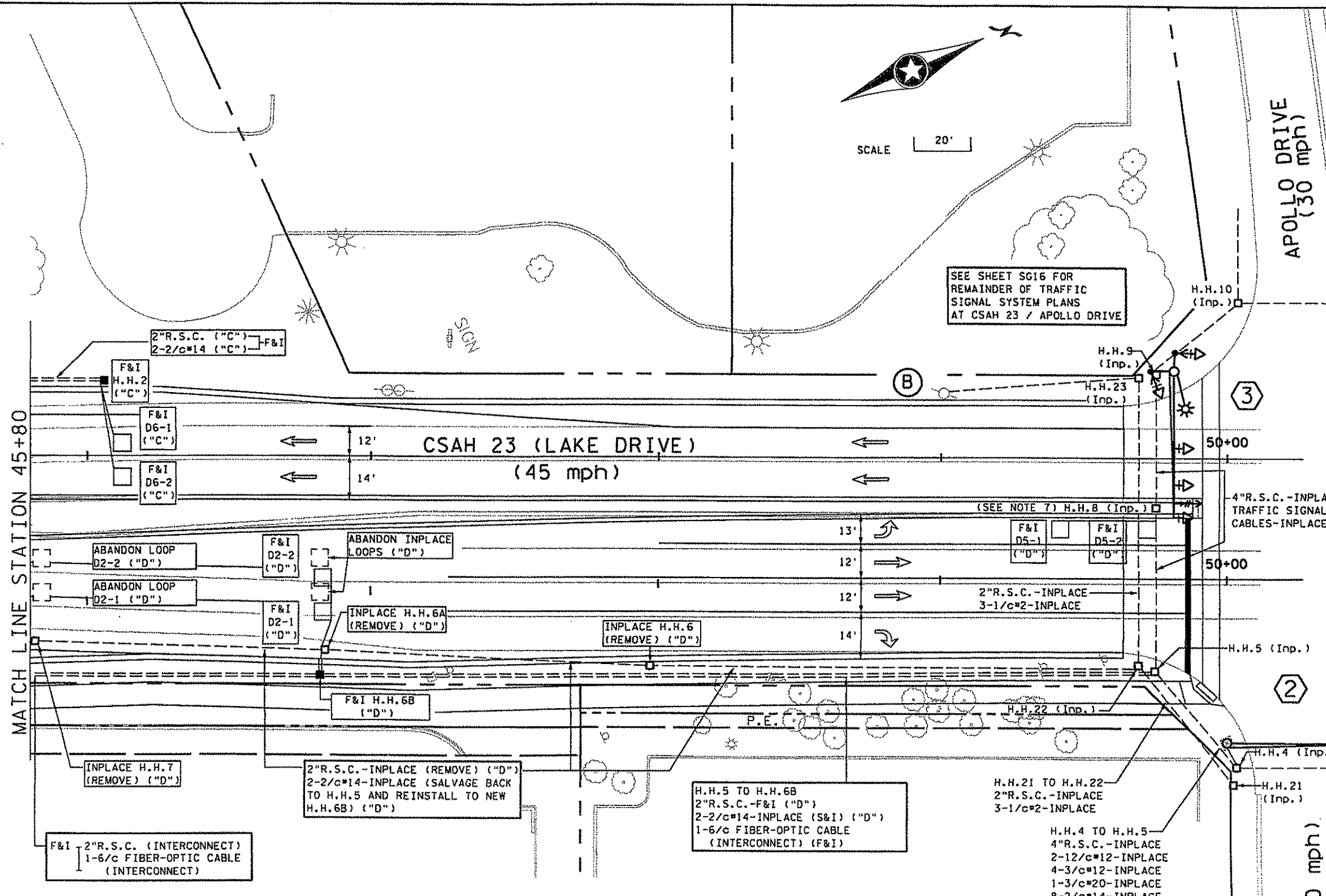
- (B)** SIGNAL SERVICE CABINET  
 CABINET FOUNDATION  
 EXTEND INTO H.H.13:  
 2"R.S.C.  
 METERED SIGNAL SERVICE  
 3-1/c#6  
 UNMETERED STREET LIGHT SERVICE  
 3-3/c#12 (LUM)  
 BETWEEN H.H.1 AND H.H.13:  
 2"R.S.C.  
 1-3/c#12 (LUM)  
 BETWEEN H.H.12 AND H.H.13:  
 2"R.S.C.  
 2-3/c#12 (LUM)

**SYSTEM "D" NOTES:**

- LOCATION OF LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4"N.M.C. SEE SPECIAL PROVISIONS.
- (INTERCONNECT) DENOTES ITEMS TO BE MEASURED & PAID FOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION WORK TO BE COMPLETED BY OTHERS AS PART OF THIS PROJECT.
- ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND OTHERWISE NOTED.
- F&I = ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.  
 S&I = ITEMS TO BE SALVAGED AND INSTALLED BY CONTRACTOR.
- CONTRACTOR SHALL MAINTAIN HANDHOLE B INPLACE DURING ALL CONSTRUCTION (CUT DOWN HANDHOLE TO ROADWAY GRADE AND F & I HD COVER ON HANDHOLE WHEN MEDIAN IS REMOVED, THEN RAISE HANDHOLE TO FINISHED MEDIAN GRADE AFTER CONSTRUCTION IS COMPLETED) (INCIDENTAL TO REVISE SIGNAL SYSTEM "D" PAY ITEM).



SCALE 20'



**SYSTEM "D"**

**F&I NMC LOOP DETECTORS**

NUMBER	SIZE (FEET)	LOCATION	FUNCTION
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D5-1	6x6	40'	1
D5-2	6x6	10'	1

NOTE: LOCATION = DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.  
 1) = CALL AND EXTEND

12/4/05... 3/23/2007... Default... 050500\pnshts\signals\lino\0505 Co Rev\_sigs.dgn

DESIGN TEAM	NO.	BY	DATE	REVISIONS
DESIGNED BY:	1	JMG	7/24/06	REVISED TO COUNTY STDS
DESIGNER:	2	JMG	11/21/06	STATE COMMENTS
CHECKED BY:	3	JMG	1/9/07	COUNTY COMMENTS

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 1/9/2007

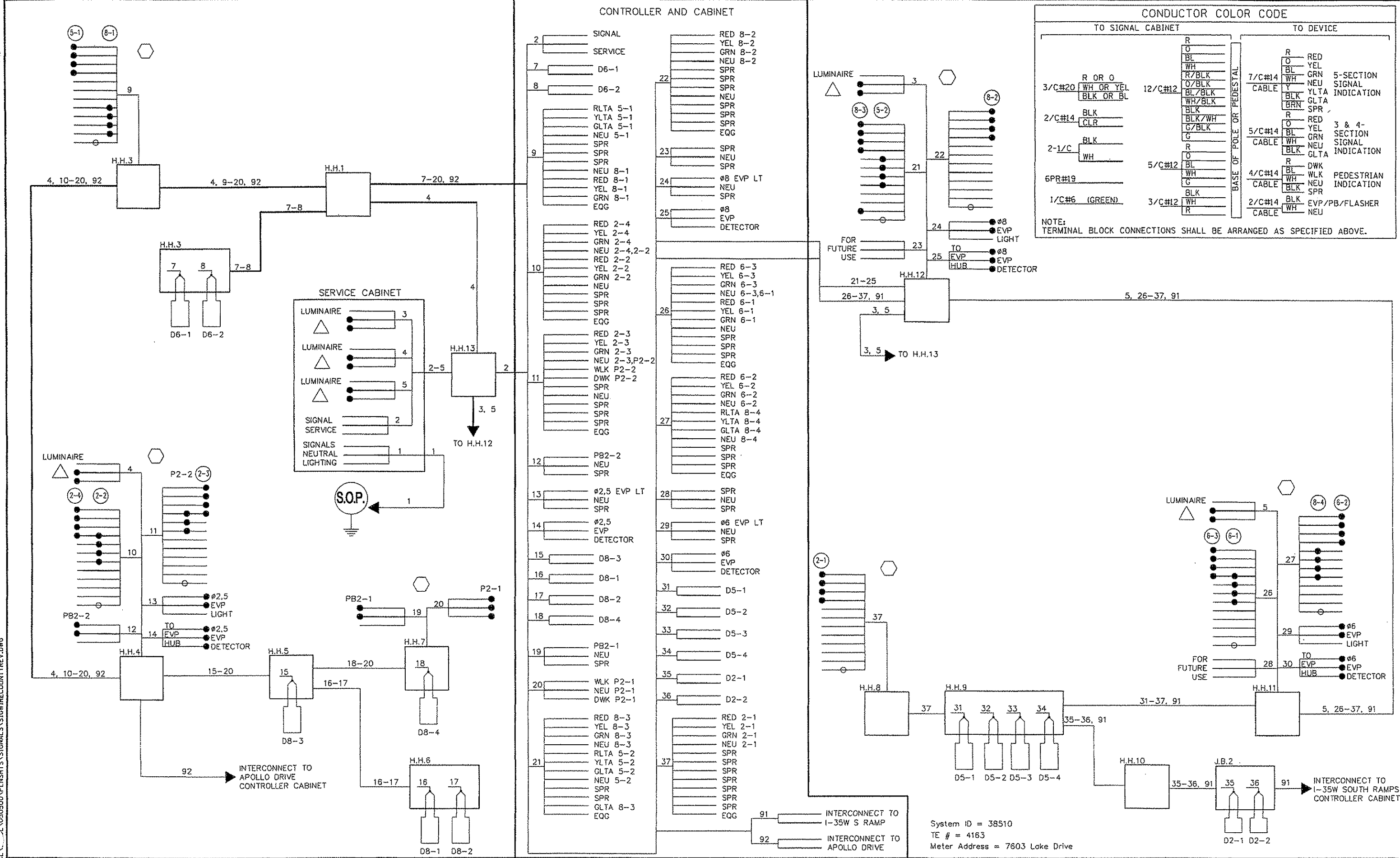


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

**TRAFFIC SIGNAL SYSTEMS "C-D"**  
**INTERSECTION LAYOUT**  
 CSAH 23 (LAKE DR.) - I-35W N RAMPS TO APOLLO DR.

FILE NO. 137  
 ALINL0505.00  
 SG14  
 OF 508  
 198





DESIGN TEAM	1	JMG	7/24/06	REVISED TO COUNTY STD.
DRAWN BY:	2	JMG	11/21/06	STATE COMMENTS
DESIGNER:	3	JMG	1/09/07	COUNTY COMMENTS
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

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Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 3/26/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

TRAFFIC SIGNAL SYSTEM "C"  
 FIELD WIRING DIAGRAM  
 LAKE DRIVE (CSAH 23) AT I-35W NORTH RAMPS  
 (NORTH JUNCTION WITH I-35W)

FILE NO.	138
ALNDLOS05.00	
SG15	198
OF 5018	

LOOP DETECTORS			
NUMBER	SIZE (FT.)	FUNCTION	LOCATION
D1-1	6x6	1	40
D1-2	6x6	1	10
D2-1	6x6	1	300
D2-2	6x6	1	300
D3-1	2-6x6	1	4 & 34
D3-2	2-6x6	1	-5 & 19
D4-1	6x6	3,8	180
D4-2	6x6, 6x10	7	AS SHOWN
D5-1	6x6	1	40
D5-2	6x6	1	10
D6-1	6x6	1	400
D6-2	6x6	1	400
D7-1	2-6x6	1	4 & 34
D7-2	2-6x6	1	-5 & 19
D8-1	6x6	3,8	120
D8-2	6x6, 6x10	7	AS SHOWN
D8-3	2-6x6	1	5

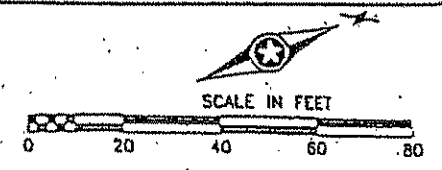
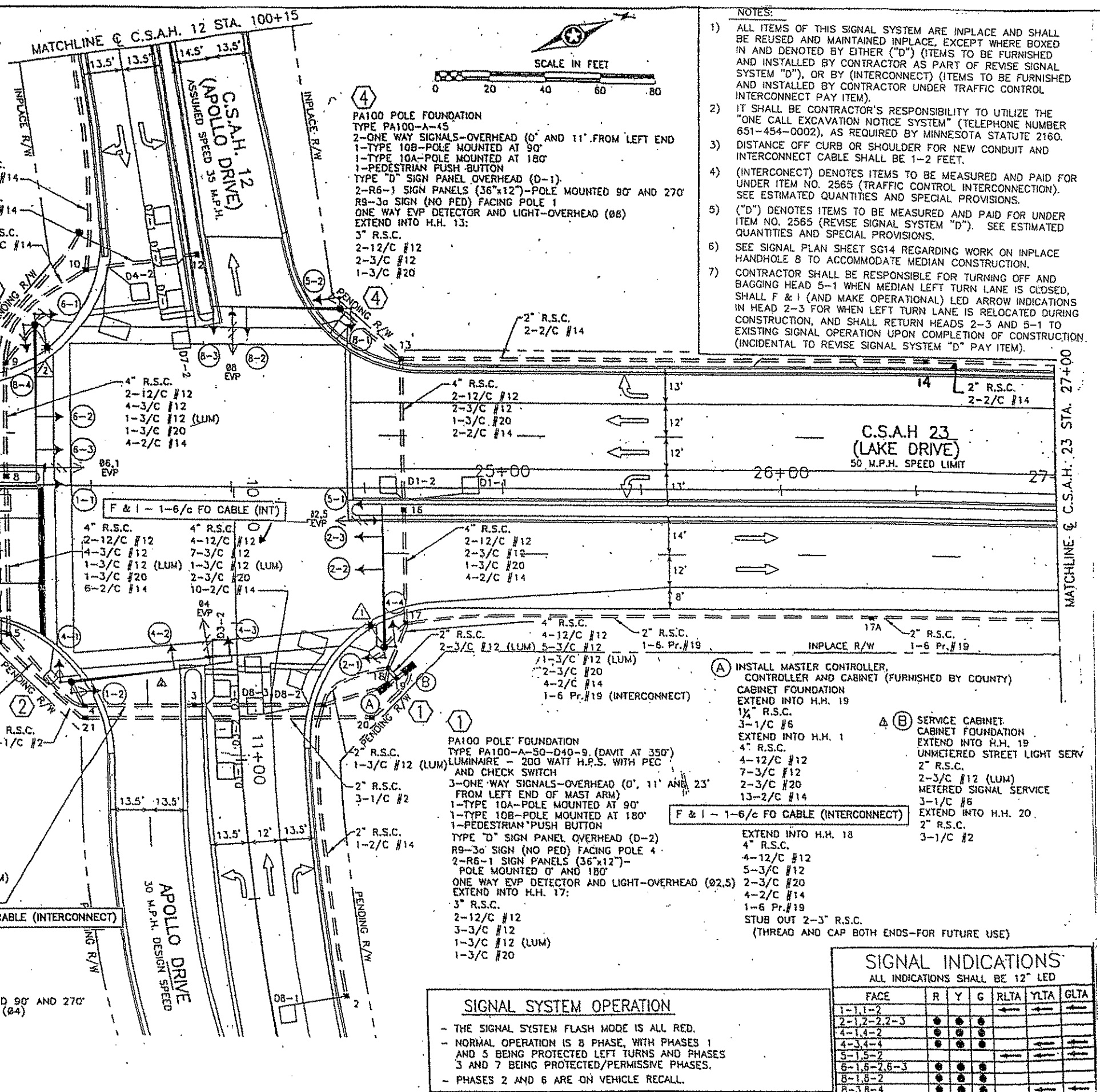
- LOOP DETECTOR FUNCTIONS**
- 1) CALL AND EXTEND
  - 3) EXTEND ONLY
  - 7) DELAY CALL/IMMEDIATE EXTEND
  - 8) CARRY OVER (STRETCH)
- LOCATION = DISTANCE FROM STOP LINE TO DETECTOR IN FEET

\*\* = NEW NMC LOOP DETECTOR TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT (REVISE SIGNAL SYSTEM "D").

③

**PA100 POLE FOUNDATION**  
 TYPE PA100-A-55-D40-9 (DAVT AT 350°)  
 LUMINAIRE - 200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 3-ONE WAY SIGNALS OVERHEAD (0°, 11° AND 23° FROM LEFT END OF MAST ARM)  
 2-TYPE 10B-POLE MOUNTED AT 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS  
 TYPE "D" SIGN PANEL OVERHEAD (D-2)  
 2-R6-1 SIGN PANELS (36"x12")-POLE MOUNTED 0° AND 180°  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (06.1)  
 EXTEND INTO H.H. 9:  
 3" R.S.C.  
 2-12/C #12  
 4-3/C #12  
 1-3/C #12 (LUM)  
 1-3/C #20

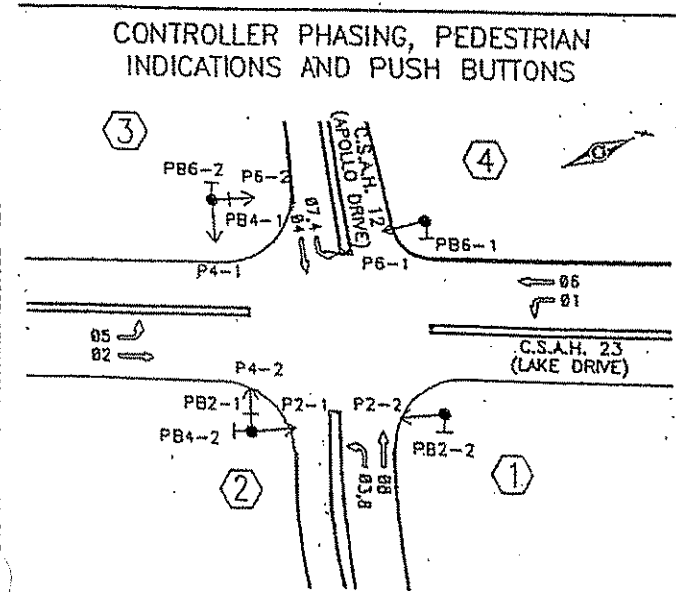
SOP  
 INPLACE: POLE MOUNTED TRANSFORMER  
 F&I: 2" R.S.C. RISER WITH WEATHERHEAD  
 UP INPLACE UTILITY POLE  
 EXTEND INTO H.H. 23  
 2" R.S.C.  
 3-1/C #2



- NOTES:**
- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED BY EITHER ("D") (ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF REVISE SIGNAL SYSTEM "D"), OR BY (INTERCONNECT) (ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER TRAFFIC CONTROL INTERCONNECT PAY ITEM).
  - 2) IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002), AS REQUIRED BY MINNESOTA STATUTE 2160.
  - 3) DISTANCE OFF CURB OR SHOULDER FOR NEW CONDUIT AND INTERCONNECT CABLE SHALL BE 1-2 FEET.
  - 4) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 5) ("D") DENOTES ITEMS TO BE MEASURED AND PAID FOR UNDER ITEM NO. 2565 (REVISE SIGNAL SYSTEM "D"). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 6) SEE SIGNAL PLAN SHEET SG14 REGARDING WORK ON INPLACE HANDHOLE 8 TO ACCOMMODATE MEDIAN CONSTRUCTION.
  - 7) CONTRACTOR SHALL BE RESPONSIBLE FOR TURNING OFF AND BAGGING HEAD 5-1 WHEN MEDIAN LEFT TURN LANE IS CLOSED, SHALL F & I (AND MAKE OPERATIONAL) LED ARROW INDICATIONS IN HEAD 2-3 FOR WHEN LEFT TURN LANE IS RELOCATED DURING CONSTRUCTION, AND SHALL RETURN HEADS 2-3 AND 5-1 TO EXISTING SIGNAL OPERATION UPON COMPLETION OF CONSTRUCTION. (INCIDENTAL TO REVISE SIGNAL SYSTEM "D" PAY ITEM).

INPLACE LOOPS D5-1/D5-2-ABANDON INPLACE ("D")  
 F & I NEW LOOPS D5-1/D5-2 ("D")

H.H.5 TO H.H.6B:  
 F & I - 2" R.S.C. ("D")  
 2-2/c#14-INPLACE (SALVAGE AND INSTALL) ("D")  
 F & I - 1-6/c FO CABLE (INTERCONNECT)



H.H.5 TO H.H.6:  
 2" R.S.C.-INPLACE (REMOVE) ("D")  
 2-2/c#14-INPLACE (SALVAGE BACK TO H.H.5, AND REINSTALL TO NEW H.H.6B) ("D")

**PA100 POLE FOUNDATION**  
 TYPE PA100-A-55  
 2-ONE WAY SIGNALS-OVERHEAD (0° AND 20° FROM LEFT END OF MAST ARM)  
 2-TYPE 10B-POLE MOUNTED AT 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS  
 TYPE "D" SIGN PANEL OVERHEAD (D-1)  
 2-R6-1 SIGN PANELS (36"x12")-POLE MOUNTED 90° AND 270°  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (04)  
 EXTEND INTO H.H. 4:  
 3" R.S.C.  
 2-12/C #12  
 3-3/C #12  
 1-3/C #20

**SIGNAL SYSTEM OPERATION**

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 1 AND 5 BEING PROTECTED LEFT TURNS AND PHASES 3 AND 7 BEING PROTECTED/PERMISSIVE PHASES.
- PHASES 2 AND 6 ARE ON VEHICLE RECALL.

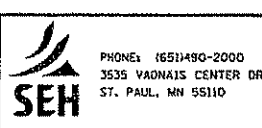
- A** INSTALL MASTER CONTROLLER, CONTROLLER AND CABINET (FURNISHED BY COUNTY)  
 CABINET FOUNDATION  
 EXTEND INTO H.H. 19  
 1 1/2" R.S.C.  
 3-1/C #6
- B** SERVICE CABINET  
 CABINET FOUNDATION  
 EXTEND INTO H.H. 19  
 UNMEASURED STREET LIGHT SERV  
 2" R.S.C.  
 2-3/C #12 (LUM)  
 METERED SIGNAL SERVICE  
 3-1/C #6  
 EXTEND INTO H.H. 20.  
 2" R.S.C.  
 3-1/C #2

**SIGNAL INDICATIONS**  
 ALL INDICATIONS SHALL BE 12" LED

FACE	R	Y	G	RLTA	YLTA	GLTA
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	●	●	●			

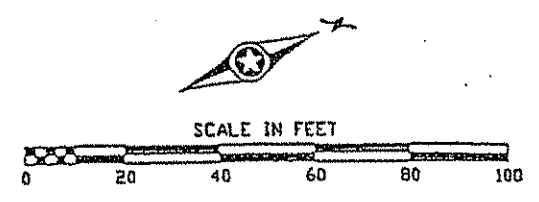
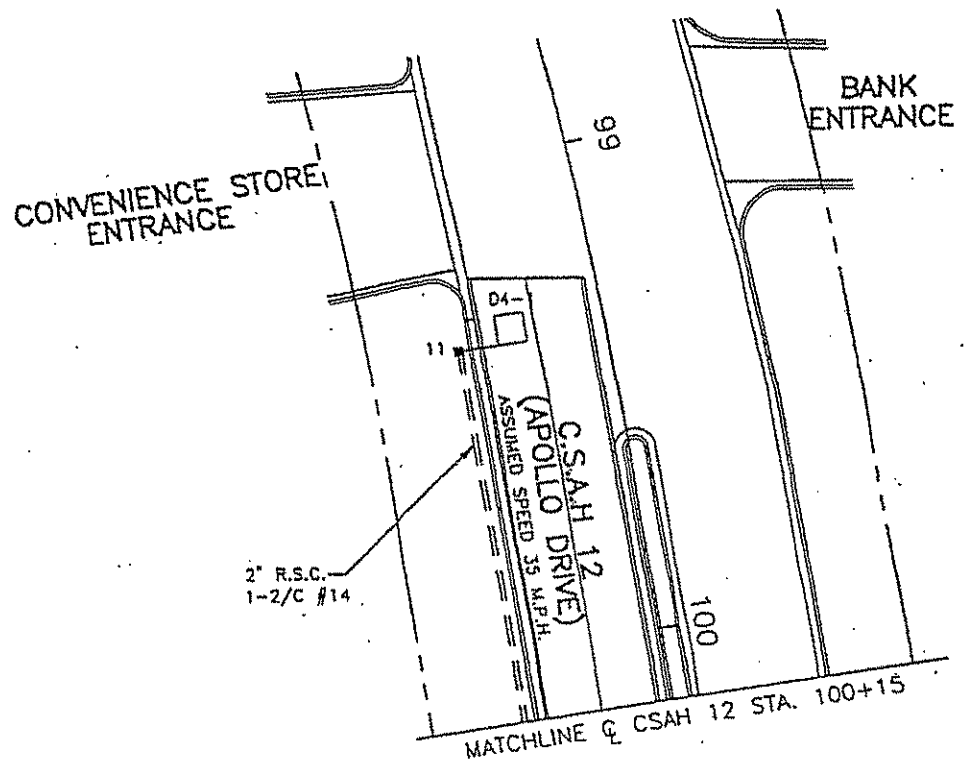
DESIGN TEAM	NO.	BY	DATE	REVISIONS	COUNTY COMMENTS
DRAWN BY: JMG	1	JMG	1/09/07		
DESIGNER: JMG					
CHECKED BY: JMG					

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 Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 3/26/2007



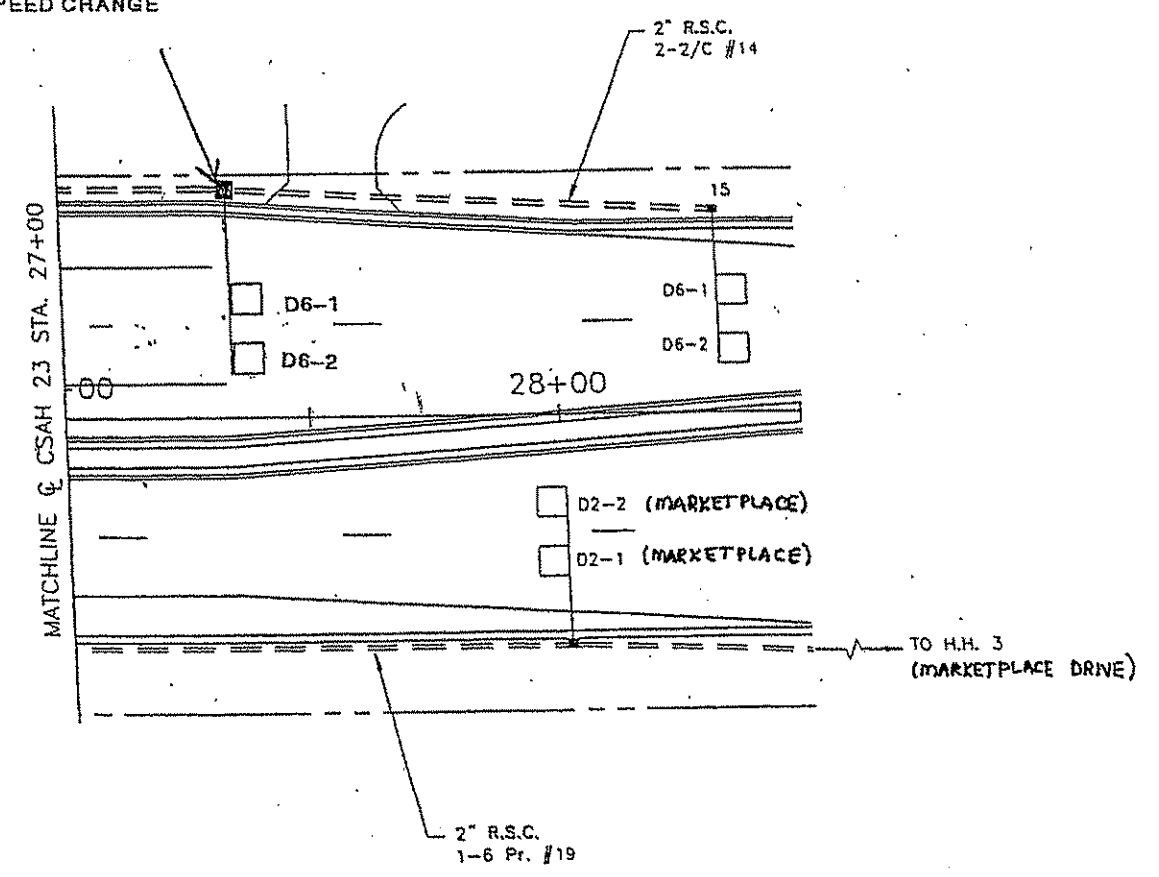
MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

REVISE SYSTEM "D"/INTERCONNECT  
 INTERSECTION LAYOUT  
 LAKE DRIVE (CSAH 23) AT APOLLO DRIVE  
 FILE NO. 139  
 ALR0505.00  
 SG16  
 OF SG18  
 198



**NOTES:**  
 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE ON THIS PLAN SHEET (PLAN SHEET IS BEING PROVIDED FOR INFORMATION ONLY).

**NEW LOOPS FOR SPEED CHANGE**



J:\050500\PLANS\HTS\SIGNALS\23\SIGDETAIL\SCOUNTYREV.DWG

DESIGN TEAM			
DRAWN BY:	JMG		
DESIGNER:	JMG		
CHECKED BY:	JMG		
NO.	BY	DATE	REVISIONS

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 Certified By: *John M. Gray* Lic. No. 22457  
 Printed Name: JOHN M. GRAY Date: 3/26/2007

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

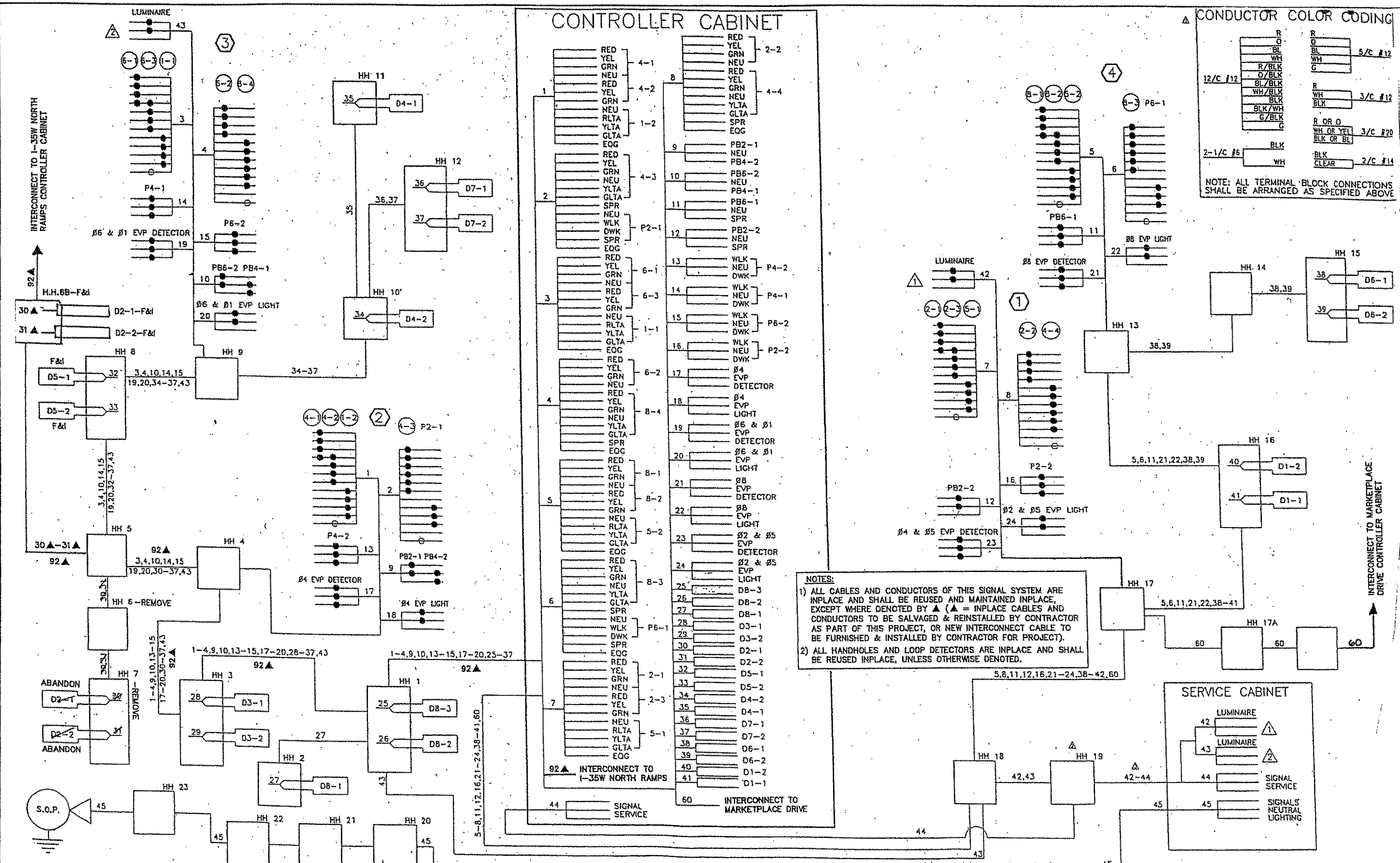


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

SIGNAL SYSTEM "D" MATCH LINES  
 "FOR INFORMATION ONLY"  
 LAKE DRIVE (CSAH 23) AT APOLLO DRIVE

F.I.E. NO.	140
ALNOL0505.00	
SG17	198
OF 5018	

SAKOV...OL 050500PLNHSYS\SIGNALS\23516DETAIL\SCOUNTYREV.DWG



**CONDUCTOR COLOR CODING**

12/C #12	R	R
	O	O
	BL	BL
	WH	WH
	R/BLK	5/C #12
	O/BLK	WH
	BL/BLK	G
	WH/BLK	R
	BLK	3/C #12
	BLK/WH	R OR O
	G/BLK	WH OR YEL
	G	3/C #20
		BLK OR BL
2-1/C #6	BLK	BLK CLEAR
	WH	2/C #14

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

**NOTES:**

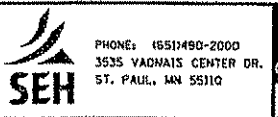
- 1) ALL CABLES AND CONDUCTORS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE DENOTED BY ▲ (▲ = INPLACE CABLES AND CONDUCTORS TO BE SALVAGED & REINSTALLED BY CONTRACTOR AS PART OF THIS PROJECT, OR NEW INTERCONNECT CABLE TO BE FURNISHED & INSTALLED BY CONTRACTOR FOR PROJECT).
- 2) ALL HANDHOLES AND LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED INPLACE, UNLESS OTHERWISE DENOTED.

DESIGN TEAM			
DRAWN BY:	JMG		
DESIGNER:	JMG		
CHECKED BY:	JMG		
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *[Signature]* Lic. No. 22457

Printed Name: JOHN M. GRAY Date: 3/26/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

REVISE SYSTEM "D"/INTERCONNECT  
 FIELD WIRING DIAGRAM  
 LAKE DRIVE (CSAH 23) AT APOLLO DRIVE

FILE NO.	141
ALNOL0505.00	
SG18	198
OF 508	

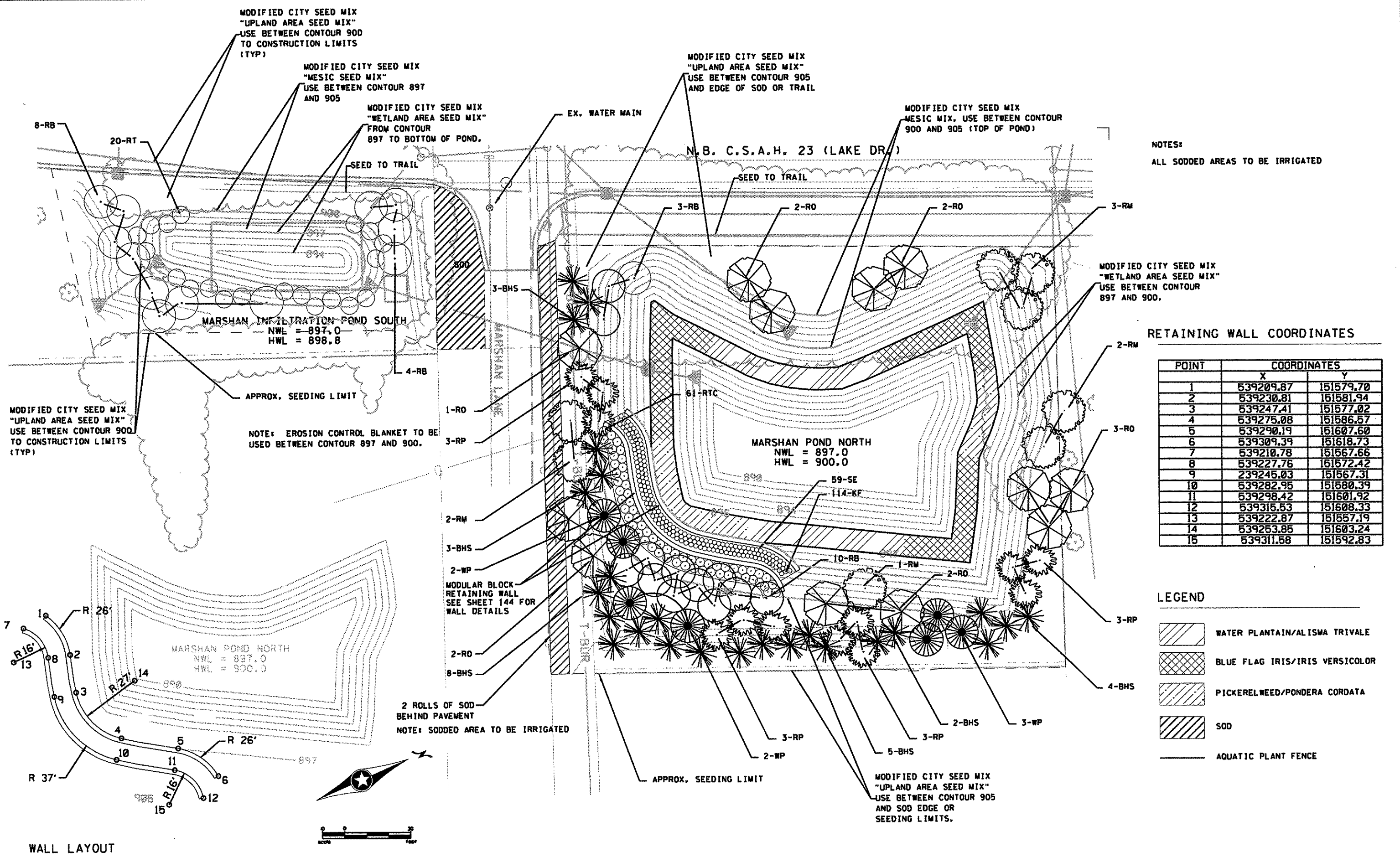


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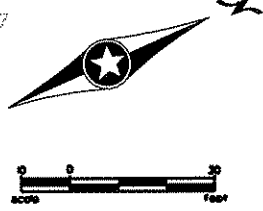
3/30/2007

landscape plan 1

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WALL LAYOUT



DESIGN TEAM				
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SBH				
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Mark B. Dierling* Lic. No. 21098

Printed Name: MARK B. DIERLING Date: 3/30/2007



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

FILE NO.	142
ALINOL0505.00	
LANDSCAPING PLAN	
LS1 OF LS7	198



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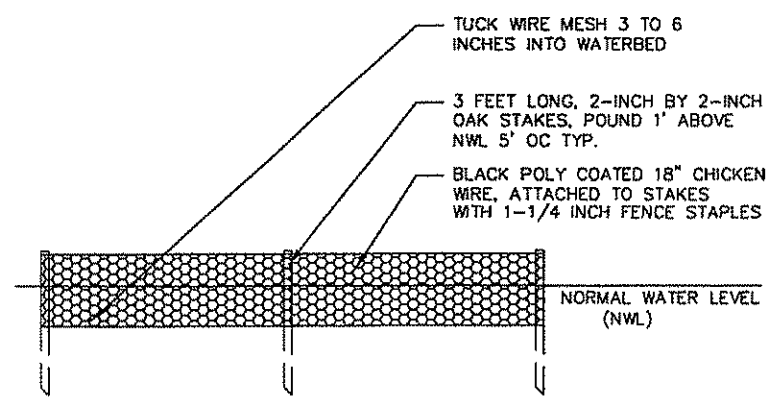
3/23/2007

landscape details

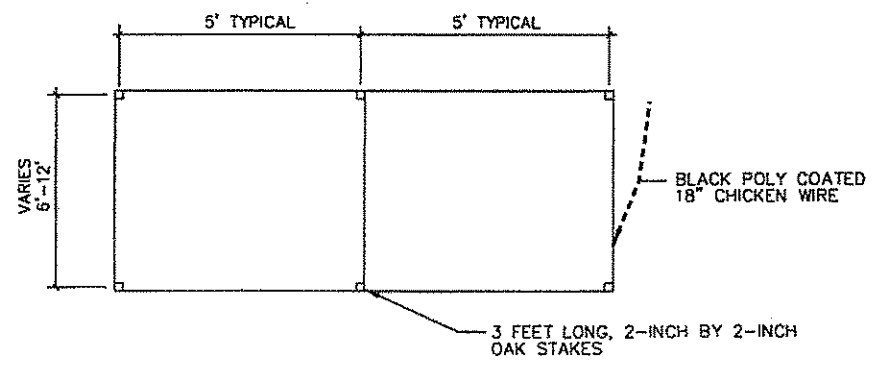
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PLANTING								FF
KEY	COMMON NAME	UNIT	QTY	SIZE	ROOT	SPACING	NOTES	
DECIDUOUS TREE								
RD	RED OAK	EACH	12	2.5" CAL	B&B	PER PLAN	①	
RM	RED MAPLE	EACH	8	2.0" CAL	B&B	PER PLAN	②	
RB	RIVER BIRCH	EACH	25	1.5" CAL	B&B	PER PLAN	③	
CONIFEROUS TREE								
BHS	BLACK HILLS SPRUCE	EACH	25	7' HT	B&B	PER PLAN	④	
BHS	WHITE PINE	EACH	7	6' HT	B&B	PER PLAN	⑤	
AP	RED PINE	EACH	12	5' HT	B&B	PER PLAN	⑥	
DECIDUOUS SHRUB								
RTC	RED TWIGGED DOGWOOD 'ALLEMAN'S COMPACT'	EACH	61	24"	CONT.	4' OC	⑦	
RT	CARDINAL RED TWIGGED DOGWOOD	EACH	20	24"	CONT.	8' OC	⑦	
PERENNIALS / GRASSES								
KF	KARL FORDERSTER FEATHER REED GRASS	EACH	114	12"	CONT.	2' OC	⑧	
SE	AUTUMN FIRE SEDUM	EACH	59	12"	CONT.	2' OC	⑧	
EMERGENTS								
BF	BLUE FLAG IRIS	EACH	698	PLUG	CONT.	2' OC	⑨	
PW	PICKERELWEED	EACH	310	PLUG	CONT.	2' OC	⑨	
WP	WATER PLANTAIN	EACH	439	PLUG	CONT.	2' OC	⑨	

MISCELLANEOUS LANDSCAPING					GG
ITEM DESCRIPTION	UNIT	QTY	LOCATION	NOTES	
Lino Lake Custom Native Mix "Wetland Area Seed Mix"	ACRE	0.15	PER PLAN	⑩	
Lino Lakes Custom Native Mix "Mesic Seed Mix"	ACRE	0.35	PER PLAN	⑪	
Lino Lakes Custom Native Mix "Upland Area Seed Mix"	ACRE	1	PER PLAN	⑫	
Sodding Type Lawn	SQ YD	163	PER PLAN		
Irrigation System	LUMP SUM	1	PER PLAN		
Select Topsoil Borrow (LV)	CU YD	151	PER PLAN		
Mulch, MnDOT 3882, Type 7A	TON	2	PER PLAN		
Shredded Hardwood Mulch	CU YD	40	PER PLAN	⑬	
Erosion Control Blankets Category 2	SQ YD	1495	PER PLAN		
Aquatic Plant Fence	LIN FT	883	PER PLAN		
Modular Block Retaining Wall	SQ FT	1134	PER PLAN		



① AQUATIC FENCE DETAIL - ELEVATION



② AQUATIC FENCE DETAIL - PLAN

NOTES

- ① PAID FOR AS 2571. DECIDUOUS TREE 2.5" CAL B&B.
- ② PAID FOR AS 2571. DECIDUOUS TREE 2.0" CAL B&B.
- ③ PAID FOR AS 2571. DECIDUOUS TREE 1.5" CAL B&B.
- ④ PAID FOR AS 2571. CONIFEROUS TREE 7' HT B&B.
- ⑤ PAID FOR AS 2571. CONIFEROUS TREE 6' HT B&B.
- ⑥ PAID FOR AS 2571. CONIFEROUS TREE 5' HT B&B.
- ⑦ PAID FOR AS 2571. DECIDUOUS SHRUB 2' HT CONT.
- ⑧ PAID FOR AS 2571. PERENNIALS.
- ⑨ PAID FOR AS 2571. PERENNIAL PLUGS.
- ⑩ PAID FOR AS 2575. SEED MIX SPECIAL 1. APPLIED AT A RATE OF 30 LBS/ACRE.
- ⑪ PAID FOR AS 2575. SEED MIX SPECIAL 2. APPLIED AT A RATE OF 30 LBS/ACRE.
- ⑫ PAID FOR AS 2575. SEED MIX SPECIAL 3. APPLIED AT A RATE OF 30 LBS/ACRE.
- ⑬ PAID FOR AS MULCH MATERIAL TYPE SPECIAL.

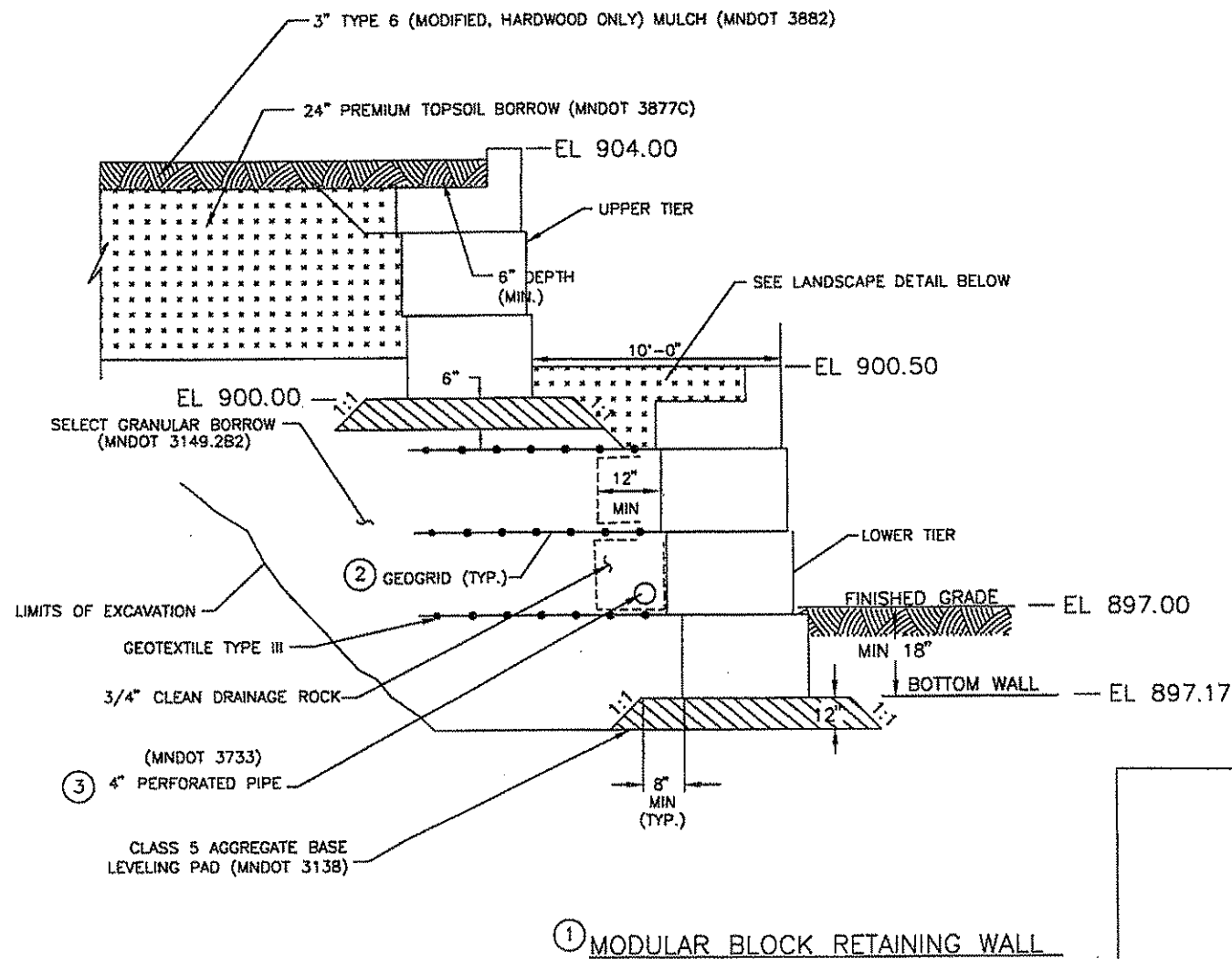
DESIGN TEAM DRAWN BY: JMT DESIGNER: HLR CHECKED BY: SBH	I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Certified By: <i>Mark B. Diebling</i> Lic. No. 21098 Printed Name: MARK B. DIEBLING Date: 3/23/2007	PHONE: (651)490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110	MINNESOTA DEPARTMENT OF TRANSPORTATION STATE PROJ. NO. 0280-55 (TH 35W) STATE AID PROJ. NO. 02-623-13 & 210-020-04 C.S.A.H. 23 (LAKE DRIVE)	LANDSCAPING SCHEDULE AND DETAILS	FILE NO. 143 ALNOL0505.00 LS2 OF LS7 198
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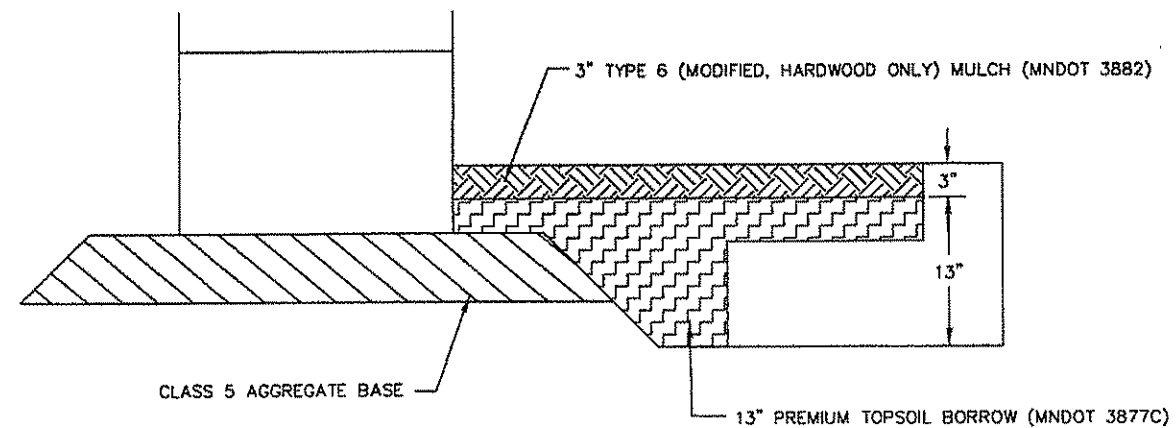
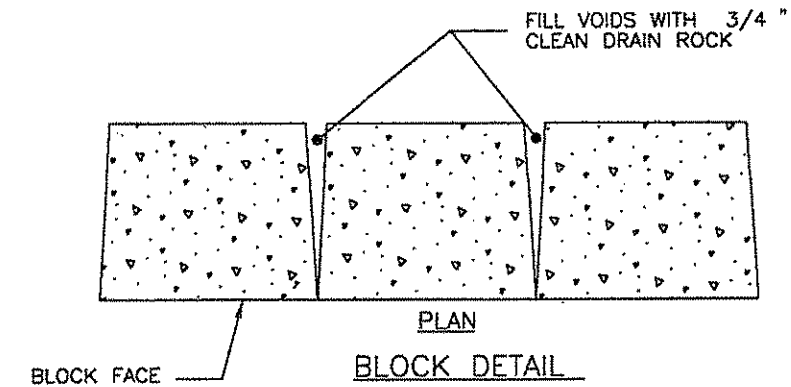
3/23/2007

landscape details \*1

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- ① BLOCK DIMENSIONS: FRONT FACE - 16" H x 48" W MIN.  
BLOCK DEPTH - 24" MIN.
- ② GEOGRID PROPERTIES: LENGTH - 8' (MEASURED FROM FRONT OF BLOCK)  
ALLOWABLE TENSILE STRENGTH 900 LBS/FT
- ③ 4" DIAMETER PERFORATED POLYETHYLENE PIPE (MNDOT 3278)  
WRAPPED IN TYPE I GEOTEXTILE SOCK (MNDOT 3733).  
PROVIDE OUTLETS W/PERFORATED END CAP.
- ④ SCARIFY SOILS BELOW AGGREGATE BASE LEVELING PAD  
TO A DEPTH OF 12" AND RECOMPACT TO 100% OF STANDARD PROCTOR  
MAXIMUM DRY UNIT WEIGHT.
- ⑤ CONCRETE STAIN, SEALANT, AND ANTI-GRAFFITI COATING TO  
BE APPLIED TO WALL FACE. (SEE PROJECT MANUAL)



DESIGN TEAM	NO.	BY	DATE	REVISIONS
DRAWN BY: JMT				
DESIGNER: HLR				
CHECKED BY: SRH				

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

Certified By: *Mark R. Diebling* Lic. No. 21098  
 Printed Name: MARK R. DIEBLING Date: 3/23/2007

SEH  
 PHONE: (651)490-2000  
 3535 MADRAIS CENTER DR.  
 ST. PAUL, MN 55110



MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

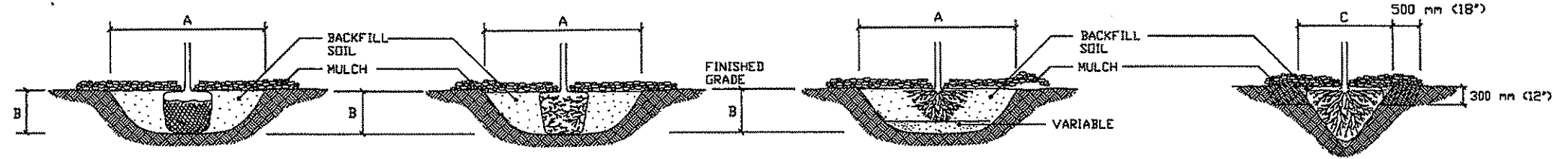
LANDSCAPING DETAILS

FILE NO. 144  
 ALIN0505.00  
 LS3 OF LS7  
 198

3/23/2007  
 landscape details #2  
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**PLANTING HOLE DIMENSIONS**  
 (MINIMUM WIDTH DOES NOT APPLY IN MASS PLANTING BEDS)  
 ALL VALUES ARE AS FOLLOWS: ENGLISH

PLANT TYPE	PLANT SIZE UP TO AND INCLUDING	(A) MINIMUM HOLE WIDTH	(B) APPROXIMATE HOLE DEPTH
CONIFEROUS TREES	(6") SEEDLING	(15")	(14")
	(9") SEEDLING	(18")	(14")
	(12") SEEDLING	(23")	(16")
	(2") B.B.	(36")	(18")
	(3") B.B.	(42")	(11")
	(4") B.B.	(51")	(13")
	(5") B.B.	(60")	(13")
	(6") B.B.	(66")	(15")
	(7") B.B.	(72")	(16")
	(8") B.B.	(81")	(18")
(9") B.B.	(90")	(20")	
(10") B.B.	(102")	(21")	
DECIDUOUS & ORNAMENTAL TREES	(6") SEEDLING	(15")	(14")
	(12") SEEDLING	(23")	(16")
	(18") SEEDLING	(30")	(16")
	(2") SEEDLING	(36")	(18")
	(2.5") SEEDLING	(40")	(18")
	(3") B.R.	(46")	(13")
	(4") B.R.	(46")	(14")
	(5") B.R.	(48")	(14")
	(6") B.R.	(54")	(15")
	(7") B.R.	(60")	(16")
	(8") B.R.	(66")	(19")
	(0.75") B.R.	(48")	(12")
	(1") B.R.	(54")	(14")
	(1.25") B.R.	(60")	(14")
	(1.5") B.R.	(66")	(15")
	(1.75") B.R.	(72")	(16")
	(2") B.R.	(84")	(19")
	(2") B.B.	(72")	(16")
	(2.5") B.B.	(84")	(19")
	(3") B.B.	(96")	(20")
(3.5") B.B.	(114")	(23")	
(4") B.B.	(126")	(25")	
CONIFEROUS SHRUBS (UPRIGHT)	(2") B.B.	(36")	(9")
	(3") B.B.	(48")	(12")
	(4") B.B.	(63")	(14")
CONIFEROUS SHRUBS (SPREADING)	(18") SPR. B.B.	(30")	(8")
	(2") SPR. B.B.	(36")	(9")
	(2.5") SPR. B.B.	(42")	(11")
(3") SPR. B.B.	(48")	(12")	
DECIDUOUS SHRUBS	(18") B.R.	(30")	(8")
	(2") B.R.	(33")	(9")
	(3") B.R.	(42")	(11")
	(4") B.R.	(48")	(12")
	(5") B.R.	(54")	(14")
	(6") B.R.	(60")	(14")
	(18") B.B.	(27")	(7")
	(2") B.B.	(30")	(8")
	(3") B.B.	(36")	(9")
	(4") B.B.	(42")	(11")
(5") B.B.	(48")	(12")	
(6") B.B.	(54")	(14")	
CONTAINER GROWN PLANTS	CELLPACKS	(6")	(2.5")
	(2.25") CONT.	(7")	(3")
	(3.5") CONT.	(10")	(3")
	(4") CONT.	(11")	(4")
	(4.5") CONT.	(13")	(4")
	(1 QT.) CONT.	(15")	(5.5")
	(#1) CONT.	(18")	(6")
	(#2) CONT.	(23")	(7.5")
	(#3) CONT.	(29")	(8.5")
	(#5) CONT.	(30")	(11")
(#7) CONT.	(37")	(11")	
(#10) CONT.	(44")	(14")	
(#15) CONT.	(45")	(15")	
(#20) CONT.	(60")	(17")	
(#25) CONT.	(72")	(16")	
VINES	1 YR. MED. B.R.	(15")	(11")
	1 YR. NO. 1 B.R.	(17")	(14")
	2 YR. MED. B.R.	(33")	(12")
	2 YR. NO. 1 B.R.	(42")	(15")
	(#1) CONT.	(18")	(6")
(#2) CONT.	(23")	(7.5")	

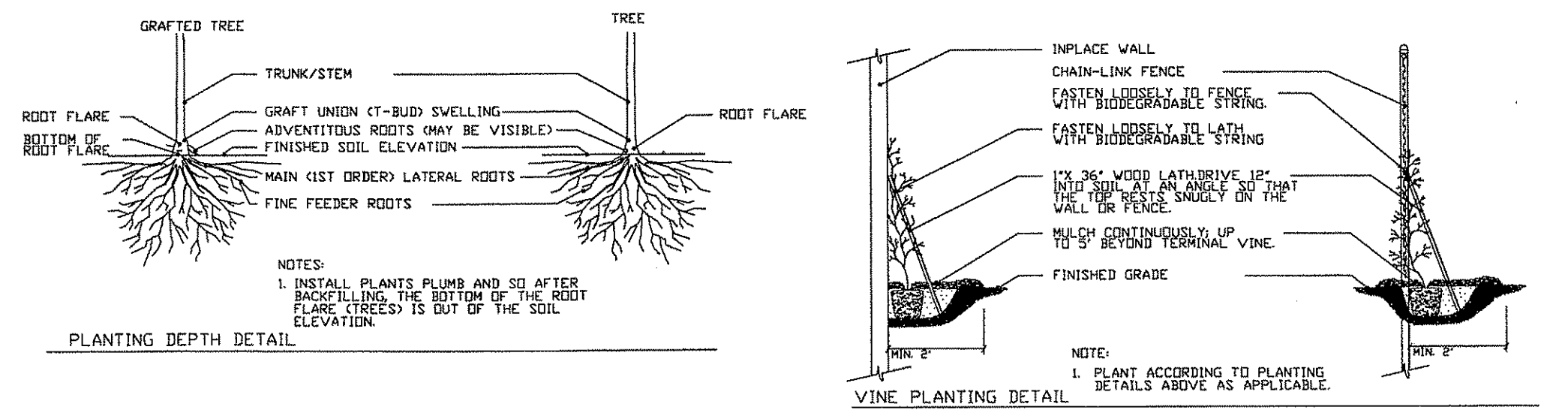


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|---|---|--|--|
| <p><b>BALLED &amp; BURLAPPED STOCK</b></p> <ol style="list-style-type: none"> <li>1. SCARIFY SIDES AND BOTTOM OF HOLE.</li> <li>2. PROCEED WITH CORRECTIVE PRUNING AS DIRECTED BY ENGINEER.</li> <li>3. SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED BACKFILL SOIL. INSTALL PLANT SO THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE.</li> <li>4. PLACE PLANT IN PLANTING HOLE WITH BURLAP AND WIRE BASKET (IF USED) INTACT. BACKFILL TO WITHIN APPROXIMATELY 12" OF THE TOP OF THE ROOTBALL, THEN WATER PLANT. REMOVE THE TOP 1/3 OF THE BASKET OR THE TOP TWO HORIZONTAL RINGS, WHICHEVER IS GREATER. ALSO REMOVE ALL BURLAP AND NAILS FROM THE TOP 1/3 OF THE BALL. REMOVE ALL TWINE.</li> <li>5. PLUMB AND BACKFILL WITH THE BACKFILL SOIL.</li> <li>6. WATER TO SETTLE PLANTS AND FILL VOIDS.</li> <li>7. WATER THOROUGHLY WITHIN 2 HOURS.</li> <li>8. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.</li> <li>9. STAKE AND GUY TO PROVIDE ADDITIONAL SUPPORT BETWEEN THE STEM AND ROOT BALL AS NECESSARY.</li> </ol> | <p><b>CONTAINER STOCK</b></p> <ol style="list-style-type: none"> <li>1. SCARIFY SIDES AND BOTTOM OF HOLE.</li> <li>2. PROCEED WITH CORRECTIVE PRUNING AS DIRECTED BY THE ENGINEER.</li> <li>3. REMOVE CONTAINER AND SCORE OUTSIDE OF SOIL MASS TO REDIRECT AND PREVENT CIRCLING FIBROUS ROOTS, AS NECESSARY.</li> <li>4. SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED BACKFILL SOIL. INSTALL PLANT SO THE TOP OF THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE.</li> <li>5. PLANTS ARE UNACCEPTABLE WHEN THEY ARE COVERED BY MORE THAN 4" OF SOIL.</li> <li>6. WATER TO SETTLE PLANTS AND FILL VOIDS.</li> <li>7. WATER THOROUGHLY WITHIN 2 HOURS.</li> <li>8. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.</li> </ol> | <p><b>BARE ROOT STOCK</b></p> <ol style="list-style-type: none"> <li>1. SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR PRIOR TO PLANTING BUT NOT MORE THAN 24 HOURS.</li> <li>2. SCARIFY SIDES AND BOTTOM OF HOLE.</li> <li>3. PROCEED WITH CORRECTIVE PRUNING AS DIRECTED BY ENGINEER.</li> <li>4. TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS APPROXIMATELY AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH THE BACKFILL SOIL.</li> <li>5. WATER TO SETTLE PLANTS AND FILL VOIDS.</li> <li>6. WATER THOROUGHLY WITHIN 2 HOURS.</li> <li>7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.</li> </ol> | <p><b>MACHINE-TRANSPLANT STOCK (TREE SPADE)</b></p> <ol style="list-style-type: none"> <li>1. SCARIFY SIDES AND BOTTOM OF HOLE.</li> <li>2. SET PLANT ON UNDISTURBED NATIVE SOIL AT SAME DEPTH AS IT WAS PREVIOUSLY GROWN.</li> <li>3. PLUMB AND BACKFILL WITH THE BACKFILL SOIL. WATER TO SETTLE PLANTS AND FILL VOIDS.</li> <li>4. AFTER PLANTING, LOOSEN THE SOIL IMMEDIATELY ADJACENT TO THE SPADE-MOVED SOIL TO A MINIMUM DISTANCE OF 18" AND A MINIMUM DEPTH OF 12".</li> <li>5. WATER THOROUGHLY WITHIN 2 HOURS.</li> <li>6. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.</li> </ol> |
|---|---|--|--|

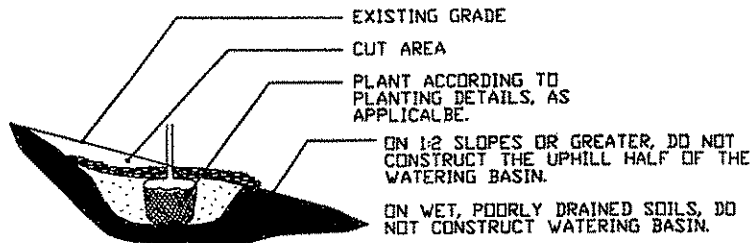
**MINIMUM TREE SPADE SIZE REQUIREMENTS**

SPADE DIAMETER SIZE 'C'	OAK TREES, CALIPER	DECIDUOUS/DRANAMENTAL TREES, CALIPER	CONIFEROUS TREES, HEIGHT
42"	1' to 1.5'	2' to 3'	5' to 7'
60"	1.5' to 2.5'	3' to 4'	7' to 9'
78"	2.5' to 3.5'	4' to 6'	9' to 14'
85"	3.5' to 5'	6' to 8'	14' to 18'

**PLANTING DETAILS FOR ISOLATED PLANTING LOCATIONS**



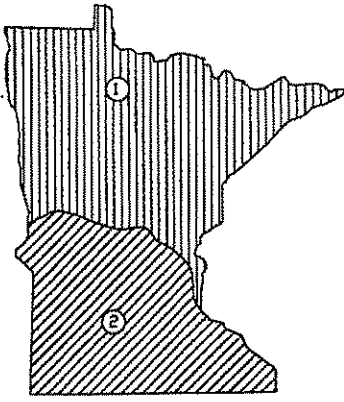
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PLANTING DETAIL FOR STEEP SLOPES

NOTES:

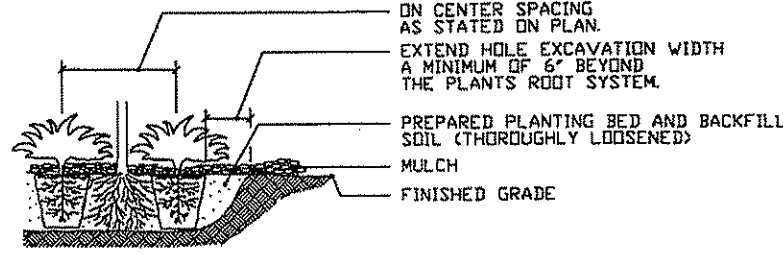
1. BARE ROOT PERENNIALS MUST BE INSTALLED IN THE SPRING BY JUNE 1ST. IF PLANTING IN FALL, FOLLOW FALL DECIDUOUS PLANTING DATES.
2. ACTUAL DATES MAY CHANGE DEPENDING UPON SEASONAL CONDITIONS AS DETERMINED BY THE ENGINEER
3. FALL PLANTING MAY NOT BE RECOMMENDED OR ALLOWED. SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS. THE FOLLOWING BARE ROOT PLANTS ARE NOT RECOMMENDED FOR FALL INSTALLATION: HAWTHORN, RUSSIAN OLIVE, DOGWOOD, POPLAR, HACKBERRY, LINDEN, IRONWOOD, HONEYLOCUST, BIRCH, MOUNTAIN ASH, MAPLE, WILLOW, CRABAPPLE, PLUM/CHERRY, OAKS, AND SUMAC.



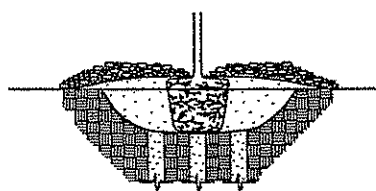
● - INDICATES PROJECT LOCATION

	SPRING				FALL	
	PERENNIALS	CONIFEROUS	DECIDUOUS	SEEDLINGS	DECIDUOUS	CONIFEROUS
1	MAY 1 TO JUNE 15	APRIL 21 TO JUNE 1	APRIL 21 TO JUNE 1	APRIL 21 TO JUNE 1	OCT. 1 TO NOV. 1	AUG. 25 TO SEPT. 15
2	MAY 1 TO JUNE 15	APRIL 7 TO MAY 17	APRIL 7 TO JUNE 1	APRIL 7 TO MAY 17	OCT. 10 TO NOV. 15	AUG. 25 TO SEPT. 15

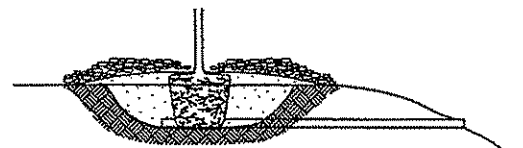
OPTIMUM PLANTING DATE ZONES IN MINNESOTA



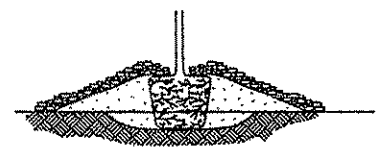
PLANTING DETAIL FOR MASS PLANTING BEDS



- INSTALL GRANULAR FILTER
1. EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF ROOT MASS 1'-3" HIGHER THAN FINISHED GRADE.
  2. AUGER 8" DIAMETER HOLES ENTIRELY THROUGH IMPERVIOUS OR POORLY DRAINED HARD PAN SOIL LAYER TO ADEQUATELY DRAINING SUBSOIL.
  3. THOROUGHLY BACKFILL AUGER HOLES WITH A UNIFORM INCORPORATED MIXTURE OF 50% SAND AND 50% INPLACE SOIL.
  4. COMPLETE PLANTING ACCORDING TO PLANTING DETAILS (SHEET A).



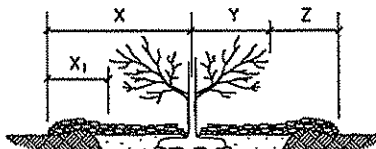
- INSTALL TILE DRAINAGE
1. EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF THE ROOT MASS 1'-3" HIGHER THAN FINISHED GRADE.
  2. INSTALL 4" MINIMUM DIAMETER DRAIN TILE, DAYLIGHTING AT A LOWER GRADE, AS APPROVED BY THE ENGINEER.
  3. COMPLETE PLANTING ACCORDING TO PLANTING DETAILS (SHEET A).



- INSTALL MINI-BERM
1. EXCAVATE HOLE OR BED 1/4 THE DEPTH OF THE ROOT MASS.
  2. SET ROOT MASS IN HOLE.
  3. CONSTRUCT BERM WITH SANDY LOAM TOPSOIL. EXTEND THE BERM BASE TO A WIDTH OF 3 TIMES THE BERM HEIGHT.
  4. COMPLETE PLANTING ACCORDING TO PLANTING DETAILS (SHEET A).

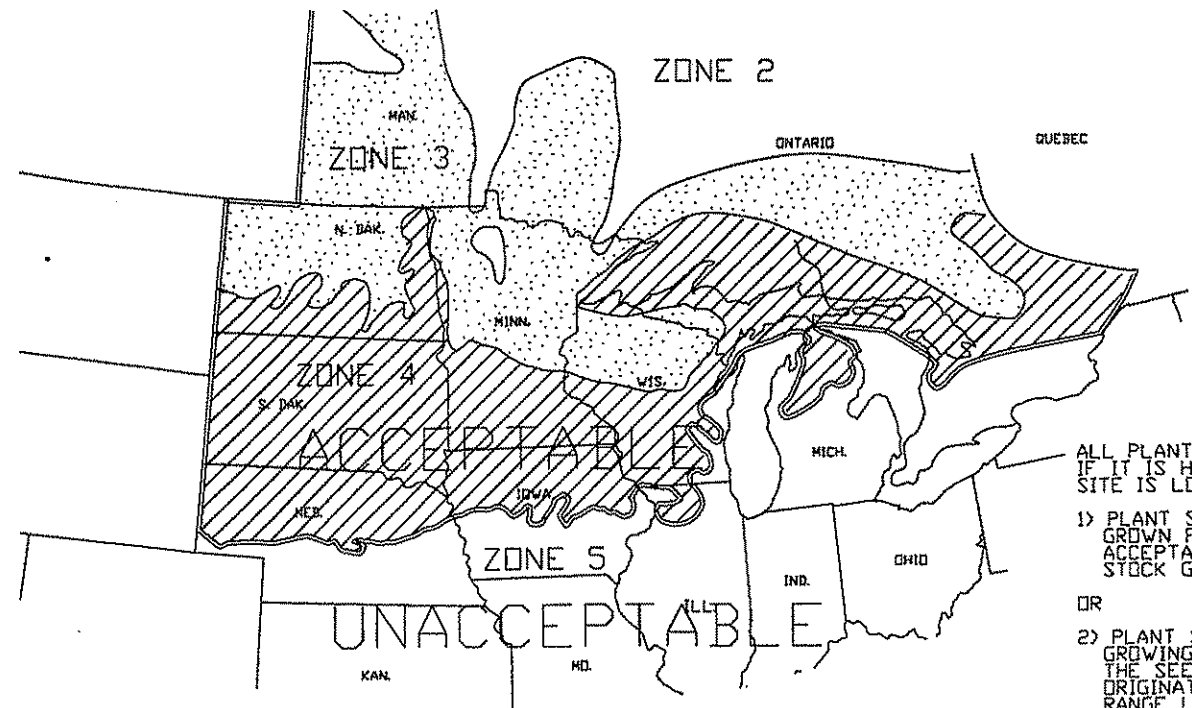
ALTERNATIVE PLANTING DETAILS FOR POORLY DRAINED SOIL

(NEED AND ALTERNATIVE SELECTION SHALL BE DETERMINED BY CONTRACTOR, SUBJECT TO APPROVAL BY THE ENGINEER.)



SUBSIDING OR DETERIORATING MULCH IS ACCEPTABLE THROUGHOUT THE CONTRACT HOWEVER, THE MULCH DEPTH MUST BE MAINTAINED AT A MINIMUM 3" DEPTH AT ALL TIMES AND UPON FINAL ACCEPTANCE. REPLACEMENT MULCH SHALL BE REQUIRED TO PROVIDE THE MINIMUM DEPTH SPECIFIED WHEN SUBSIDENCE OR LOSS IS EXCESSIVE OR WHEN THE CONTRACTOR'S OPERATIONS HAVE CONTAMINATED THE MULCH WITH SOIL.

- NOTE:
1. REMOVE MULCH PLACED TO A DEPTH GREATER THAN THAT SPECIFIED WHEN DIRECTED BY THE ENGINEER.
  2. PULL MULCH BACK NO LESS THEN 3" AND NO MORE THAN 6" FROM THE TRUNK



- ZONE 1: BELOW -50 F
- ZONE 2: -50 to -40
- ZONE 3: -40 to -30
- ZONE 4: -30 to -20

ALL PLANT STOCK SHALL BE DEEMED ACCEPTABLE FOR HARDINESS IF IT IS HARDY TO THE MINNESOTA ZONE WHERE THE PROJECT SITE IS LOCATED AND:

- 1) PLANT STOCK CAN BE DOCUMENTED AS CONTINUOUSLY GROWN FOR AT LEAST THE LAST TWO YEARS WITHIN THE ACCEPTABLE LIMITS SHOWN ON THE ACCEPTABLE PLANT STOCK GROWING RANGE LIMITS.
- OR
- 2) PLANT STOCK, IF GROWN OUTSIDE THE ACCEPTABLE GROWING RANGE LIMITS, CAN BE DOCUMENTED AS HAVING THE SEED SOURCE AND ROOT AND GRAFT STOCK ORIGINATING FROM WITHIN THE ACCEPTABLE GROWING RANGE LIMITS.

TYPE OF PLANT	X CENTER OF PLANT TO MULCH LINE	X1 EDGE OF BRANCHING TO MULCH LINE	Y DEPTH OF MULCH	Z DEPTH OF MULCH
CONIFEROUS TREES	VARIABLES	3' MIN.	4"-6"	4"-6"
DECIDUOUS TREES	3' MIN.	N/A	4"-6"	4"-6"
CONIFEROUS SHRUBS	VARIABLES	3' MIN.	3"-4"	4"-6"
DECIDUOUS SHRUBS	3' MIN.	N/A	4"-6"	4"-6"
VINES	2' MIN.	N/A	4"-6"	4"-6"
PERENNIALS	VARIABLES	2' MIN.	2"-4"	2"-4"
MACHINE-TRANSPLANTED TREES	12" BEYOND EDGE OF HOLE		4"-6"	4"-6"

MULCH PLACEMENT DETAIL

ACCEPTABLE PLANT STOCK GROWING RANGE LIMITS

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

LS5 OF LS7

3/23/2007

landscape details #2

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FILE NAME CCCC XXXXX	DATE 03-06-2000	PROJECT MANAGER T. CARROLL	DRAWN BY T. CARROLL	CHECKED BY L. WALTON B. SLATER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION OFFICE OF ENVIRONMENTAL SERVICES LANDSCAPE UNIT TRANSPORTATION BUILDING ST. PAUL, MINNESOTA 55155-1899
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STANDARD PLANTING DETAILS (B)	
S.P. NO. 0280-55 (TH 35W), S.A.P. NO. 02-623-13 & 210-020-04	SHEET 146 OF 198 SHEETS

FORM A DOUBLE-LAYERED CYLINDER USING 0.25" GRID GALVANIZED AND WELDED WIRE MESH AND (HARDWARE CLOTH). OVERLAP THE CUT END 2".

DRIVE TWO 1"x1" OPPOSING WHITE OAK STAKES INTO THE GROUND 7" FROM THE CENTER OF THE TREE STEM.

SECURE THE MESH CYLINDER TO THE OUTSIDE OF THE STAKES USING EITHER SCREWS AND WASHERS OR RATCHET-LOCKING TIES ALONG THE OVERLAP. SPACE APPROXIMATELY 4" ON CENTER ALONG THE OVERLAP.

- SCREWS SHALL BE ROUND HEAD GALVANIZED 1/8" DIA. x 3/4" LONG WITH WASHERS.  
OR  
- RATCHET-LOCK TIES SHALL BE NYLON AND AT LEAST 8" LONG.

IMBED THE LOWER EDGE OF THE MESH CYLINDER 12" MIN. BELOW THE SOIL SURFACE WITHOUT DISTURBING THE TREE ROOTS.

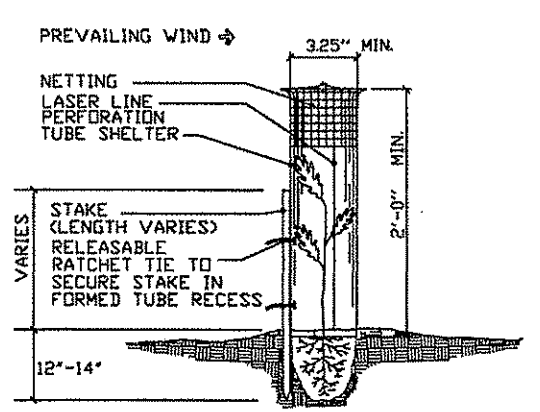
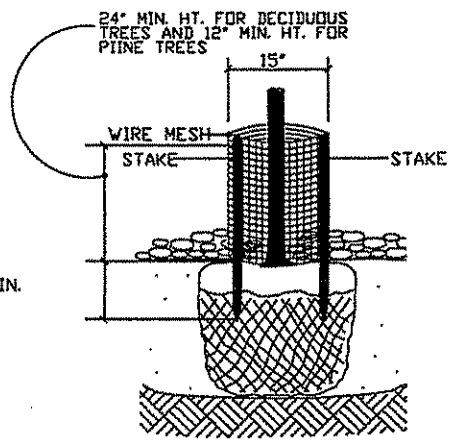
CUT EDGES WILL NOT BE PERMITTED AT THE TOP OF THE CYLINDER. CUT THE STAKE FLUSH WITH THE TOP OF THE CYLINDER.

MULCH WITHIN THE CYLINDER SHALL NOT EXCEED 3" DEPTH AND SHALL BE PULLED BACK FROM THE TRUNK AS SPECIFIED IN MULCH PLACEMENT DETAIL.

THE BOTTOM WHORL OF PINE BRANCHES MAY HAVE TO BE REMOVED TO PERMIT INSTALLATION OF 12" MIN. HEIGHT RODENT GUARDS.

INSTALL ON ALL DECIDUOUS AND PINE TREES, DO NOT INSTALL ON SPRUCE TREES.

**RODENT PROTECTION DETAIL**

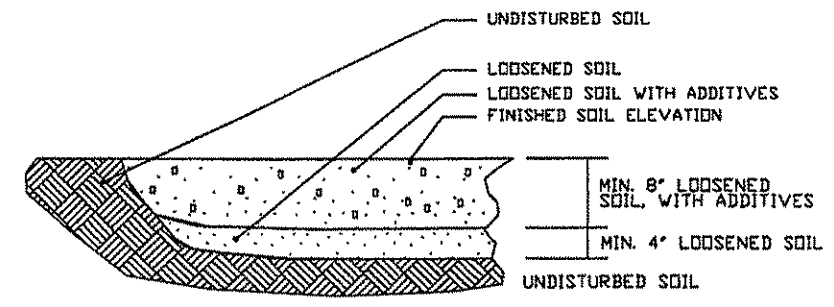


**SEEDLING TREE SHELTER DETAIL**

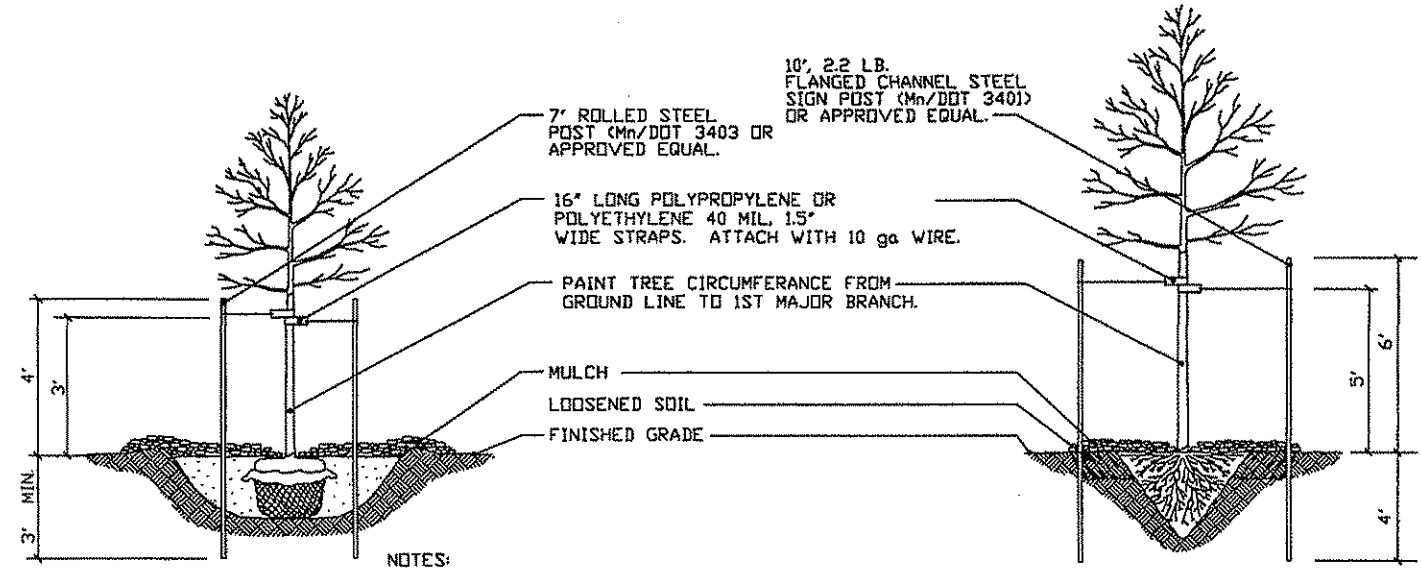
USE SEAMLESS, EXTRUDED, TWIN-WALL, RIGID AND SEMI-TRANSLUCENT POLYPROPYLENE TUBES WITH A LASER LINE PERFORATION AND AN OUTWARD-FLARED TOP RIM.

SECURE THE SHELTER WITH NYLON RATCHET-LOCKING TIES ATTACHED TO A 1" x 1" WHITE OAK STAKE TO PREVENT DISLODGING OR TWISTING. IMBED THE BOTTOM OF THE TUBE A MINIMUM OF 1" BELOW THE SOIL SURFACE WITHOUT DISTURBING THE TREE ROOTS.

INSTALL A PLASTIC PHOTO-DEGRADABLE NETTING COVER AND SLEEVE OVER THE TOP OF THE TUBE TO PREVENT ENTRAPMENT OF BIRDS. PULL NETTING DOWN AS SHOWN.



**PLANTING SOIL**



**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. TREE STAKING IS NOT REQUIRED UNLESS SPECIFIED OR NECESSARY TO MAINTAIN TREES IN A PLUMB CONDITION WHERE VANDALISM, SOIL, OR WIND CONDITIONS ARE A PROBLEM, OR AS REQUESTED BY THE ENGINEER.
4. REMOVE AFTER ONE YEAR.

APPLICABLE TO DECIDUOUS TREES OVER 100 mm (4") CALIPER AND EVERGREEN TREES OVER 3.0 m (10') HT.

**STANDARD TREE STAKING / GUYING DETAIL**

**LARGE MACHINE - TRANSPLANT TREE STAKING / GUYING DETAIL**

**GENERAL NOTES**

SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS.

**PLANTING HOLE AND BED CULTIVATION:** THE PLANTING DETAILS REPRESENT ADEQUATELY DRAINED SOIL CONDITIONS. THE CONTRACTOR SHOULD EXERCISE DISCRETION IN SETTING PLANTS 1'-3" HIGHER IN POORLY DRAINED SOILS OR USING ALTERNATIVE PLANTING DETAILS ON SHEET B.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE DRAINAGE IN HEAVY POORLY DRAINED OR IMPERVIOUS SOILS.

LOOSEN ALL ISOLATED TREE PLANTING LOCATIONS AND PLANTING BEDS TO A MINIMUM DEPTH OF 8". SOIL AMENDMENTS SHALL BE APPLIED DURING CULTIVATION.

**BACKFILL SOIL:** USE CULTIVATED AND AMENDED SOIL EXCAVATED FROM PLANTING HOLES. REMOVE ALL DEBRIS INCLUDING ROCKS LARGER THAN 3" DIA.

**FERTILIZER:** —NONE  
—Mn/DOT 3881

**COMPOST:** —NONE  
—Mn/DOT 3890

**MULCH MATERIAL:** Mn/DOT 3882 TYPE 6 UNLESS OTHERWISE SPECIFIED.

**MASS PLANTING:** MASS PREPARE PLANT SPACING OF OR LESS. PLANT IN STAGGERED ROWS ON THE PERIMETER FIRST, THEN UNIFORMLY FILL IN WITH REMAINING QUANTITY. USE TRIANGULAR SPACING, UNLESS SPECIFIED OTHERWISE. PROVIDE 5' RADIUS CLEAR OF SHRUBS AROUND EACH DECIDUOUS TREE AND 8' RADIUS AROUND EACH EVERGREEN TREE. THIS RADIUS (CLEARANCE) SHALL BE MEASURED FROM THE CENTER OF THE TREE TO THE CENTER OF THE SHRUB. NOTIFY ENGINEER OF GROSS PLANT QUANTITY SURPLUS OR DEFICIENCY IMMEDIATELY. MASS MULCH PLANT SPACINGS OF OR LESS.

**TREE PAINTING:** PAINT OAKS, LINDENS, LOCUSTS, MAPLES, CRABAPPLES AND MOUNTAIN ASH. ONLY UNDILUTED EXTERIOR WHITE LATEX PAINT IS ACCEPTABLE. PAINT TREE CIRCUMFERENCE FROM GROUND LINE TO FIRST MAJOR BRANCH.

**PLANTING PLAN:** RESPECT STATED DIMENSIONS BEFORE SCALING FROM PLAN.

**WATERING GUIDELINES:**

PLANT TYPE	AVERAGE AMOUNT OF WATER PER APPLICATION GALLONS
MACHINE TRANSPLANTED TREES 42" AND UP	50-100
BALLED & BURLAPPED TREES	20
BARE ROOT TREES	15
BALLED & BURLAPPED SHRUBS	10
BARE ROOT OR CONTAINER SHRUBS	7
WOODY SEEDLINGS	4
PERENNIALS AND VINES	3

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR AND MAINTAIN SOIL MOISTURE AT ADEQUATE BUT NOT EXCESSIVE LEVELS. THE ABOVE LISTED APPLICATION AMOUNTS ARE GUIDELINES, NOT REQUIREMENTS.

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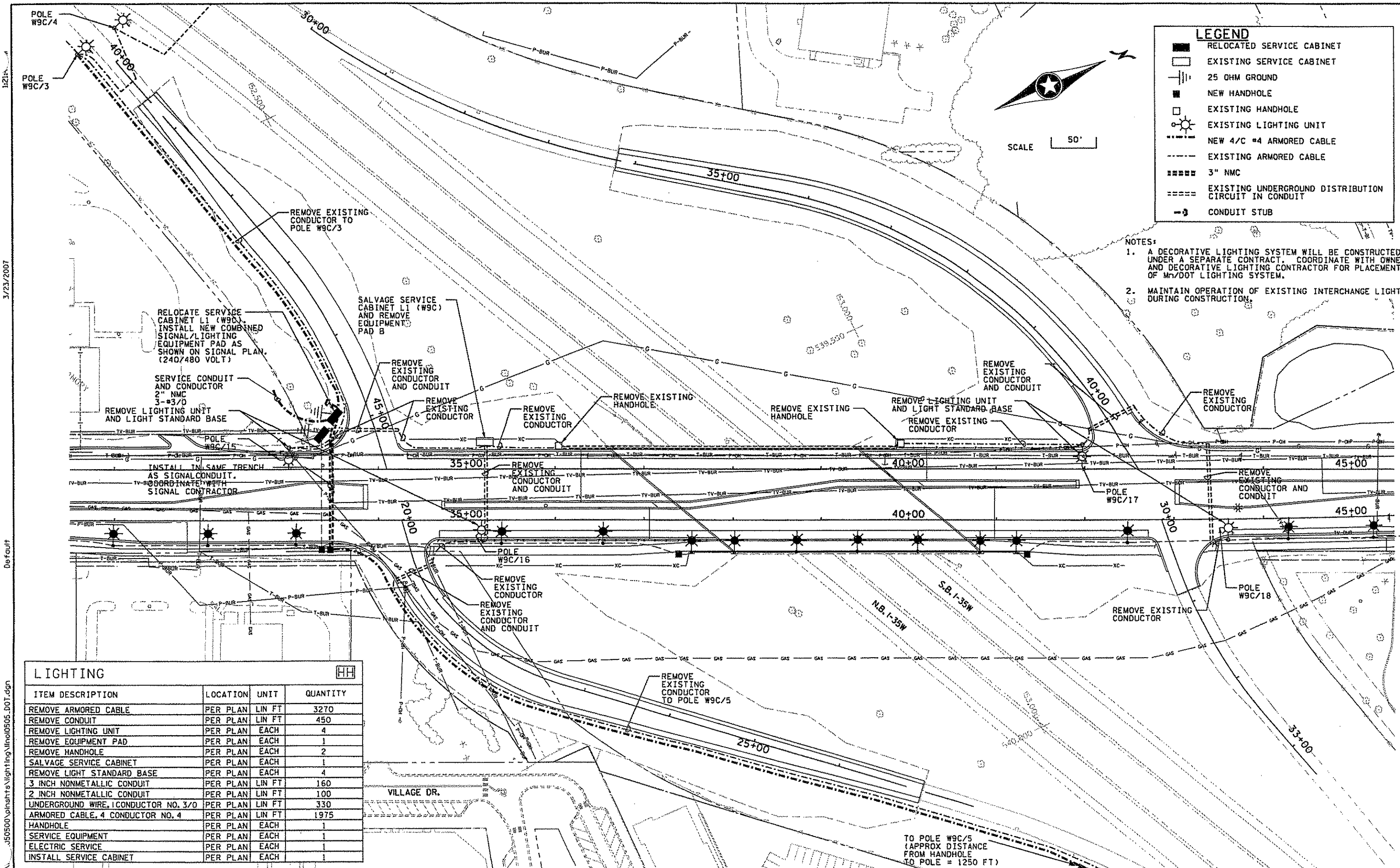
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FILE NAME CCCC XXXXX	DATE 03-06-2000	PROJECT MANAGER T. CARROLL	DRAWN BY T. CARROLL	CHECKED BY L. WALTON B. SLATER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION OFFICE OF ENVIRONMENTAL SERVICES LANDSCAPE UNIT TRANSPORTATION BUILDING ST. PAUL, MINNESOTA 55155-1899	STANDARD PLANTING DETAILS (C)	S.P. NO. 0280-55 (TH 35W), S.A.P. NO. 02-623-13 & 210-020-04 SHEET 147 OF 198 SHEETS
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**LEGEND**

- RELOCATED SERVICE CABINET
- EXISTING SERVICE CABINET
- 25 OHM GROUND
- NEW HANDHOLE
- EXISTING HANDHOLE
- EXISTING LIGHTING UNIT
- NEW 4/C #4 ARMORED CABLE
- EXISTING ARMORED CABLE
- 3" NMC
- EXISTING UNDERGROUND DISTRIBUTION CIRCUIT IN CONDUIT
- CONDUIT STUB

- NOTES:**
1. A DECORATIVE LIGHTING SYSTEM WILL BE CONSTRUCTED UNDER A SEPARATE CONTRACT. COORDINATE WITH OWNER AND DECORATIVE LIGHTING CONTRACTOR FOR PLACEMENT OF Mr/DOT LIGHTING SYSTEM.
  2. MAINTAIN OPERATION OF EXISTING INTERCHANGE LIGHTING DURING CONSTRUCTION.

LIGHTING			
ITEM DESCRIPTION	LOCATION	UNIT	QUANTITY
REMOVE ARMORED CABLE	PER PLAN	LIN FT	3270
REMOVE CONDUIT	PER PLAN	LIN FT	450
REMOVE LIGHTING UNIT	PER PLAN	EACH	4
REMOVE EQUIPMENT PAD	PER PLAN	EACH	1
REMOVE HANDHOLE	PER PLAN	EACH	2
SALVAGE SERVICE CABINET	PER PLAN	EACH	1
REMOVE LIGHT STANDARD BASE	PER PLAN	EACH	4
3 INCH NONMETALLIC CONDUIT	PER PLAN	LIN FT	160
2 INCH NONMETALLIC CONDUIT	PER PLAN	LIN FT	100
UNDERGROUND WIRE, 1 CONDUCTOR NO. 3/0	PER PLAN	LIN FT	330
ARMORED CABLE, 4 CONDUCTOR NO. 4	PER PLAN	LIN FT	1975
HANDHOLE	PER PLAN	EACH	1
SERVICE EQUIPMENT	PER PLAN	EACH	1
ELECTRIC SERVICE	PER PLAN	EACH	1
INSTALL SERVICE CABINET	PER PLAN	EACH	1

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DESIGN TEAM				
DRAWN BY: ALGE				
DESIGNER: KST				
CHECKED BY: MEK				
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 Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer

Printed Name: MICHAEL E. KOTILA Date: 3/23/2007

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

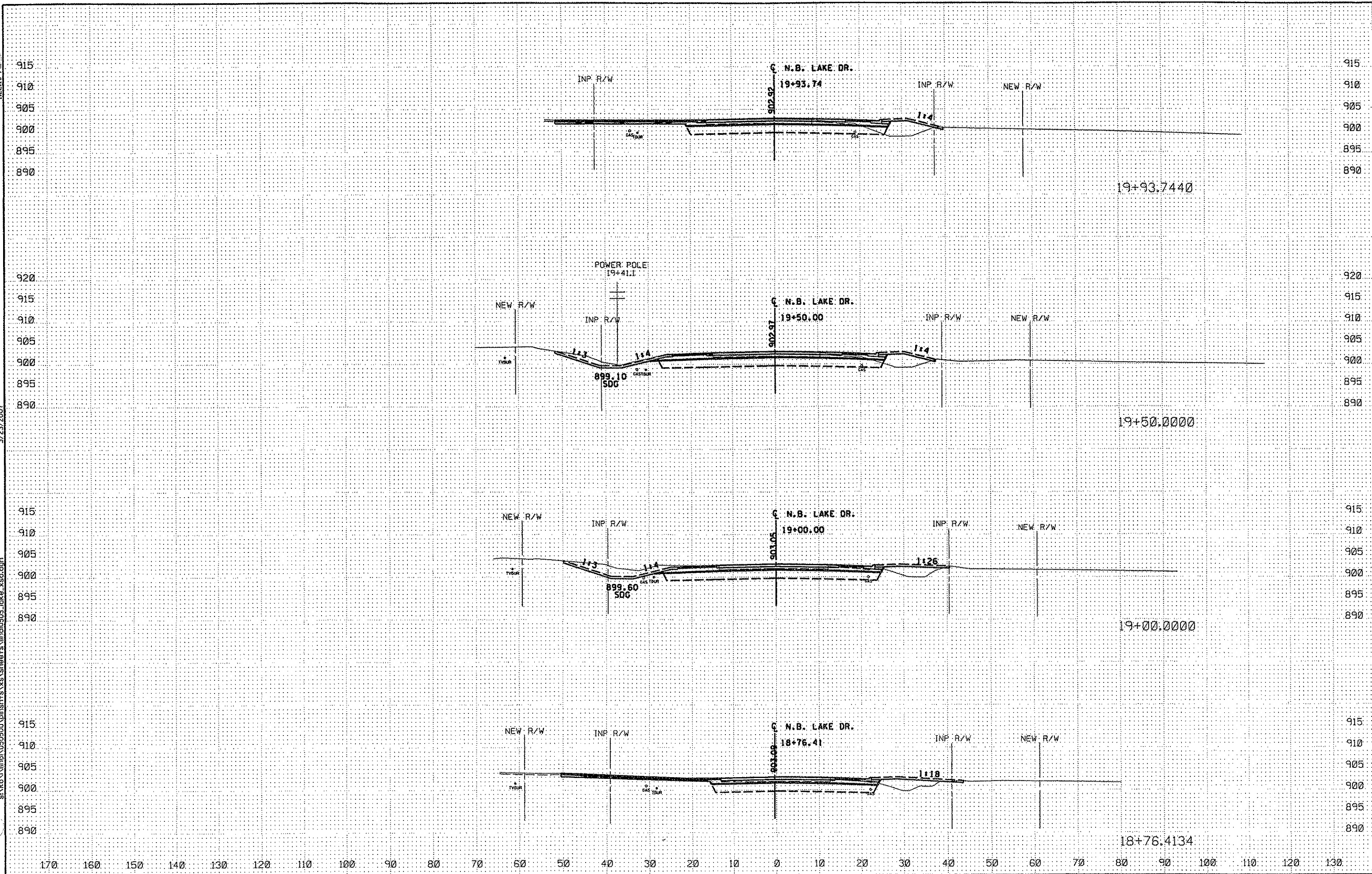


MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STATE PROJ. NO. 0280-55 (TH 35W)  
 STATE AID PROJ. NO. 02-623-13 & 210-020-04  
 C.S.A.H. 23 (LAKE DRIVE)

LIGHTING PLAN  
 N.B. C.S.A.H. 23 STA. 30+50 TO STA. 45+50

FILE NO. 149  
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 OF LTJ 198





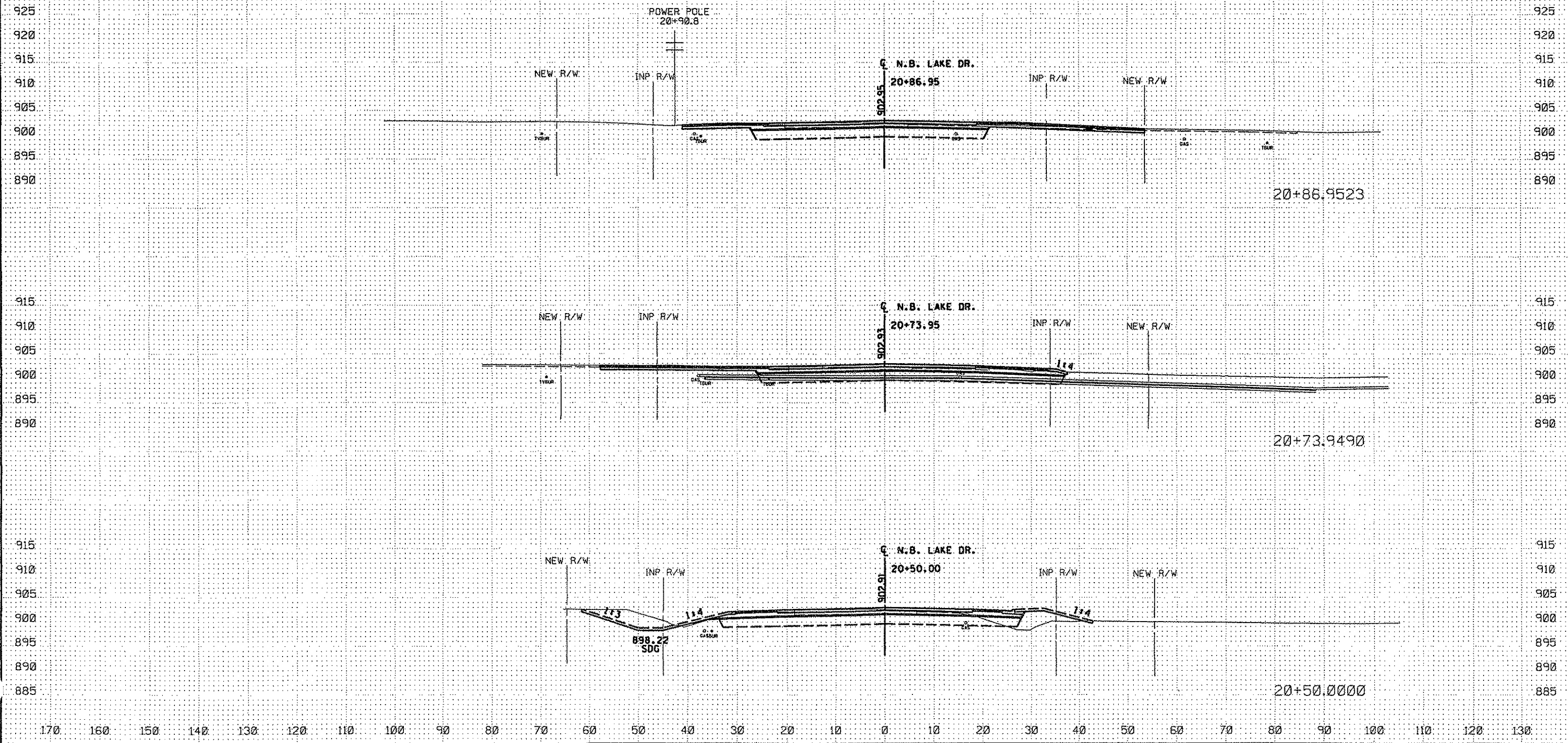


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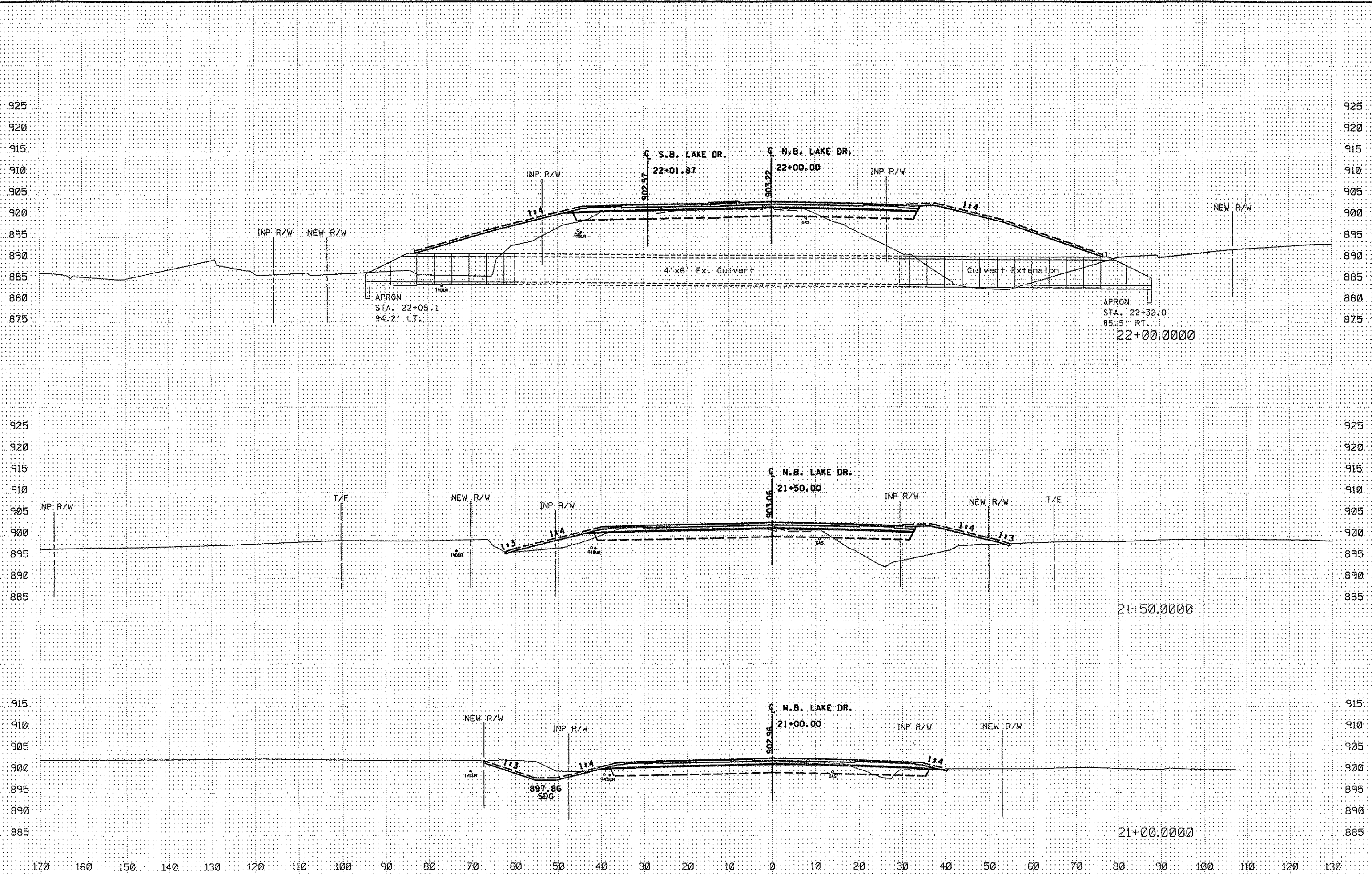


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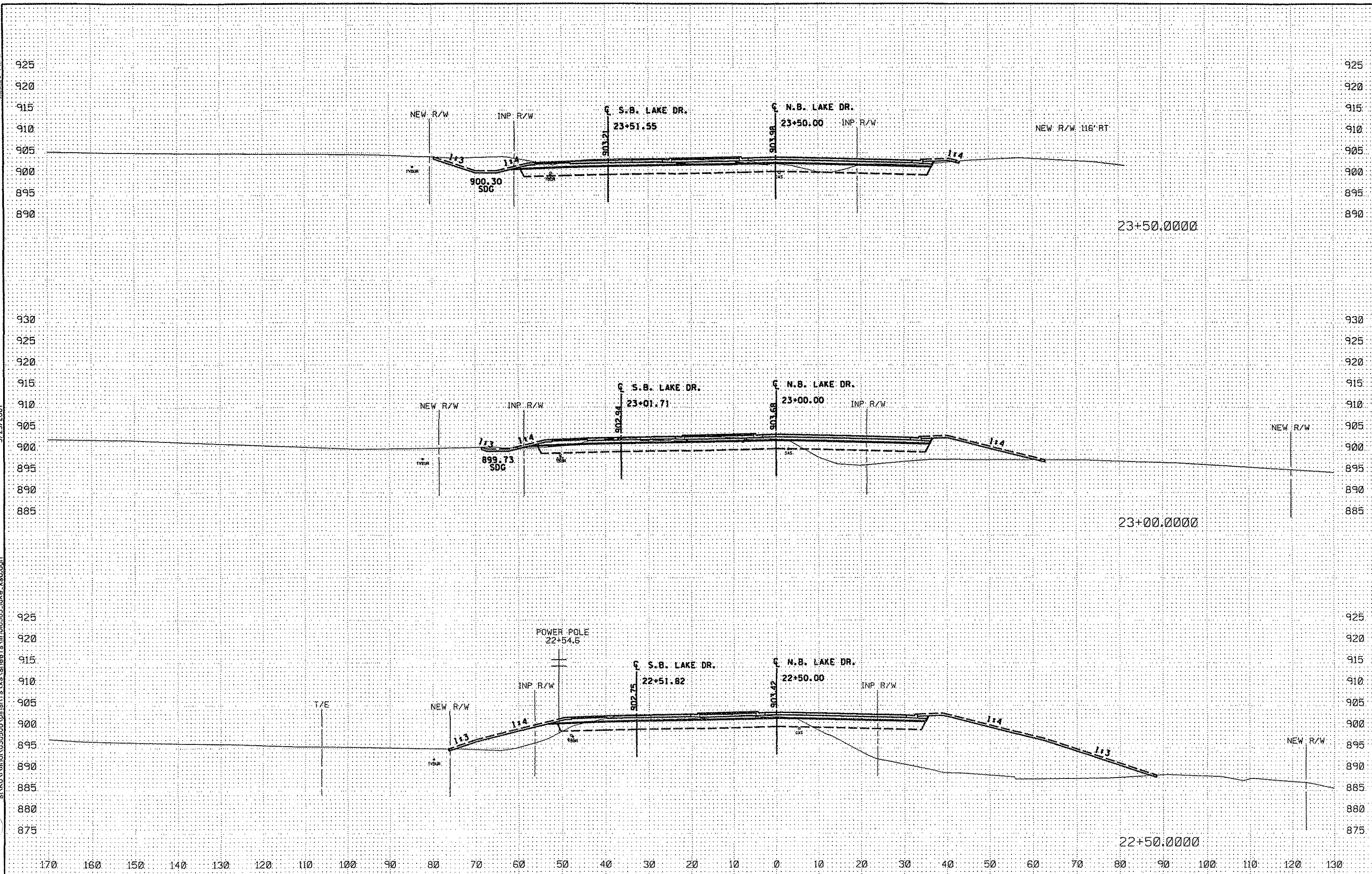


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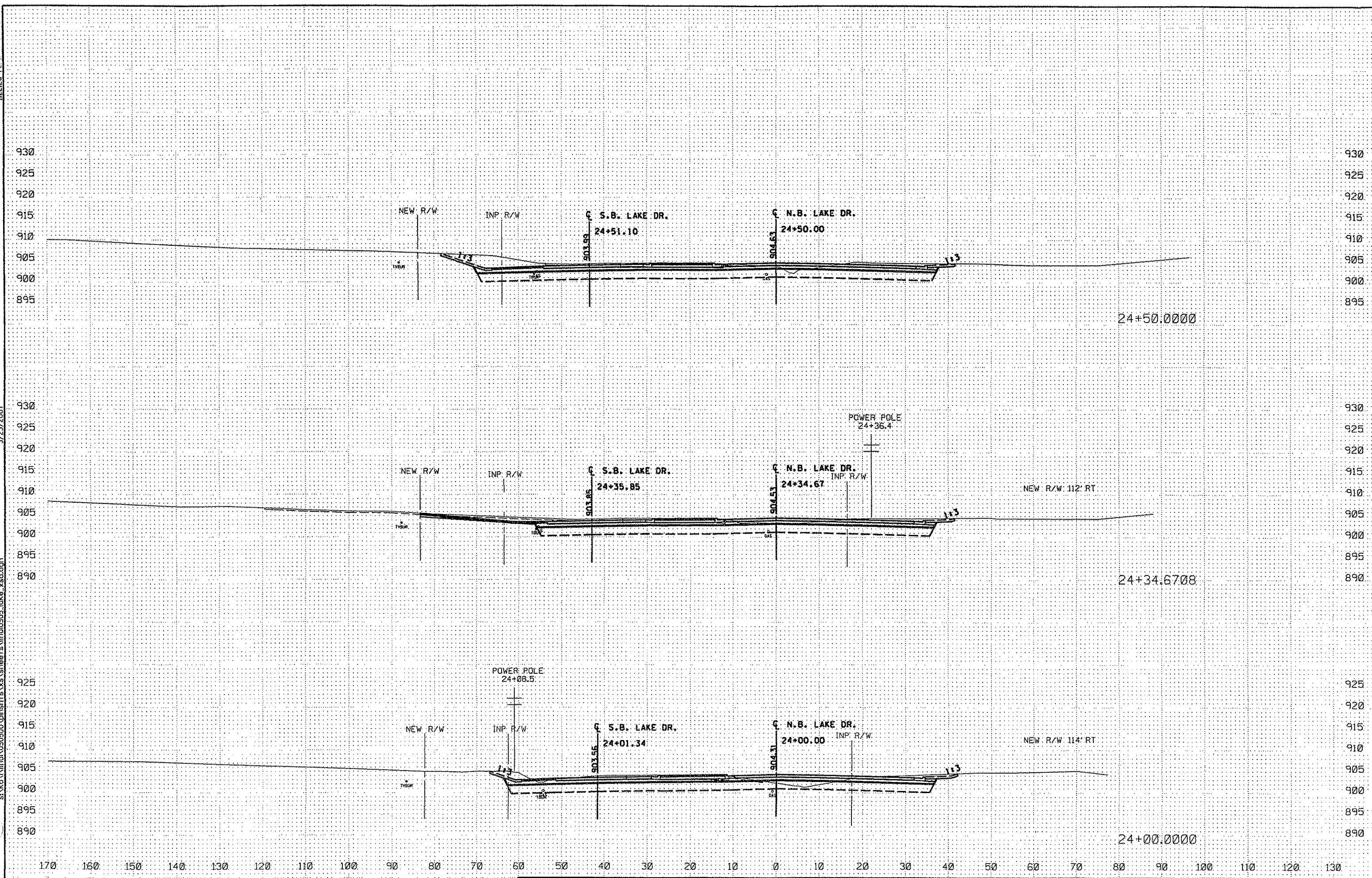




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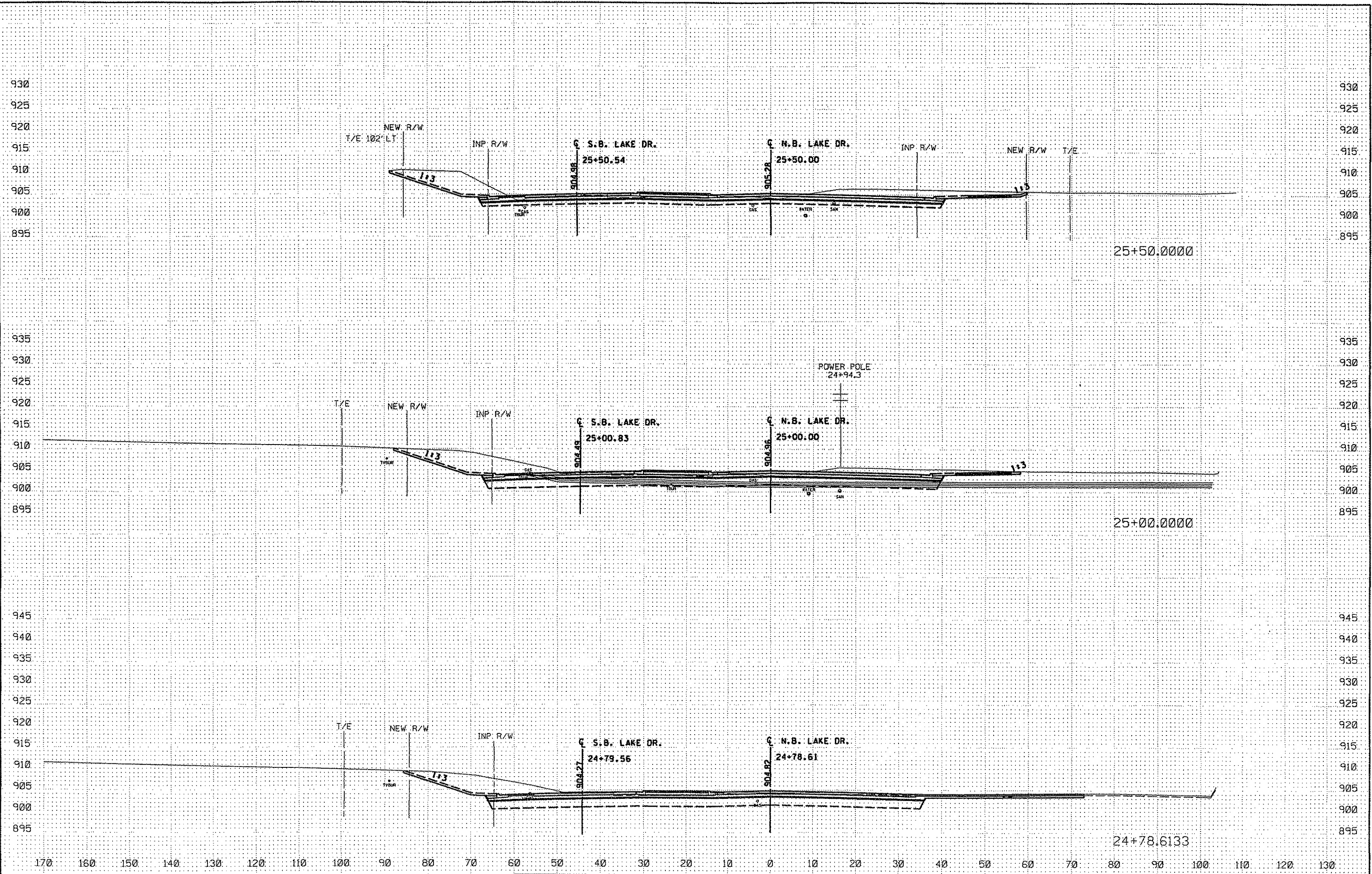
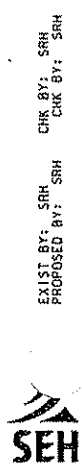
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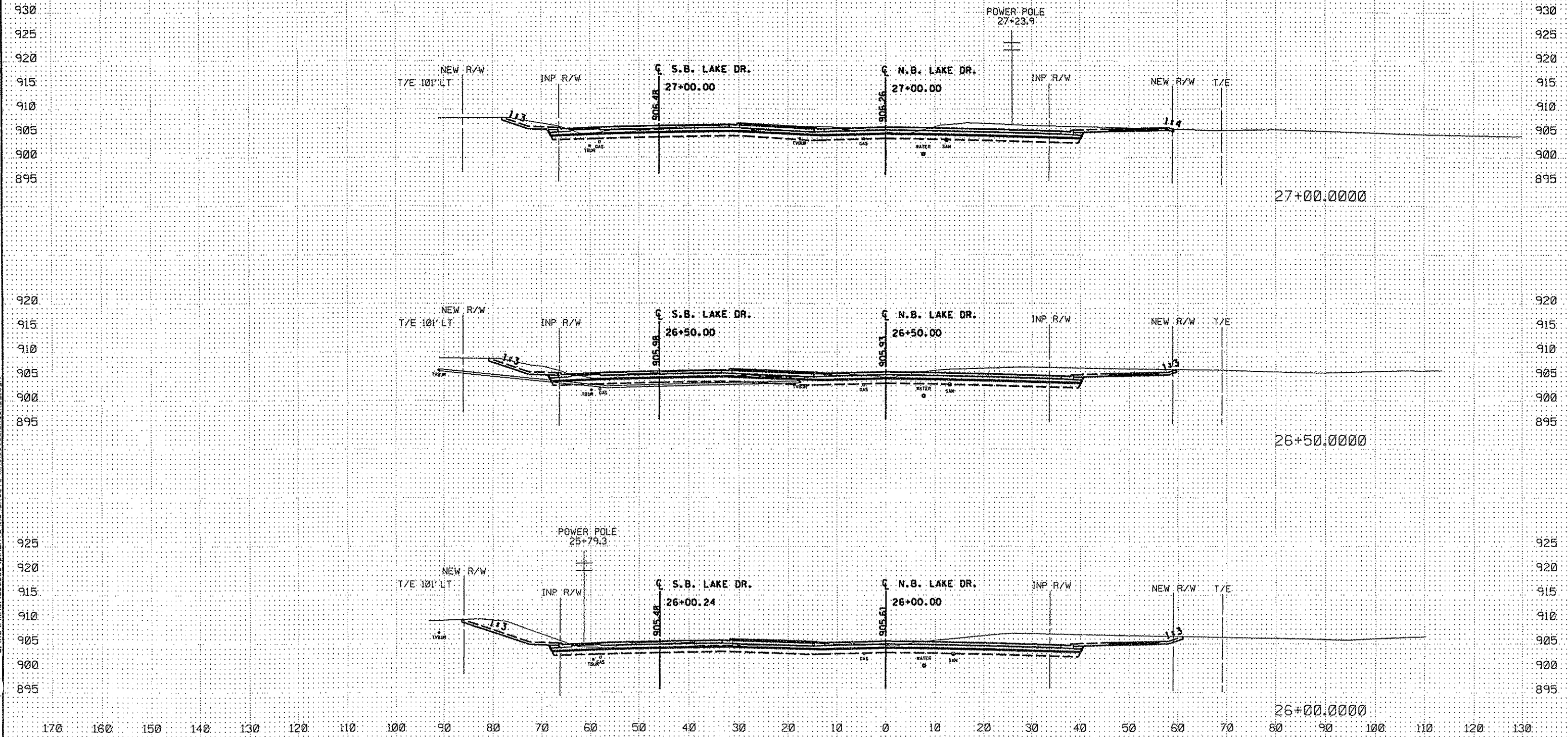




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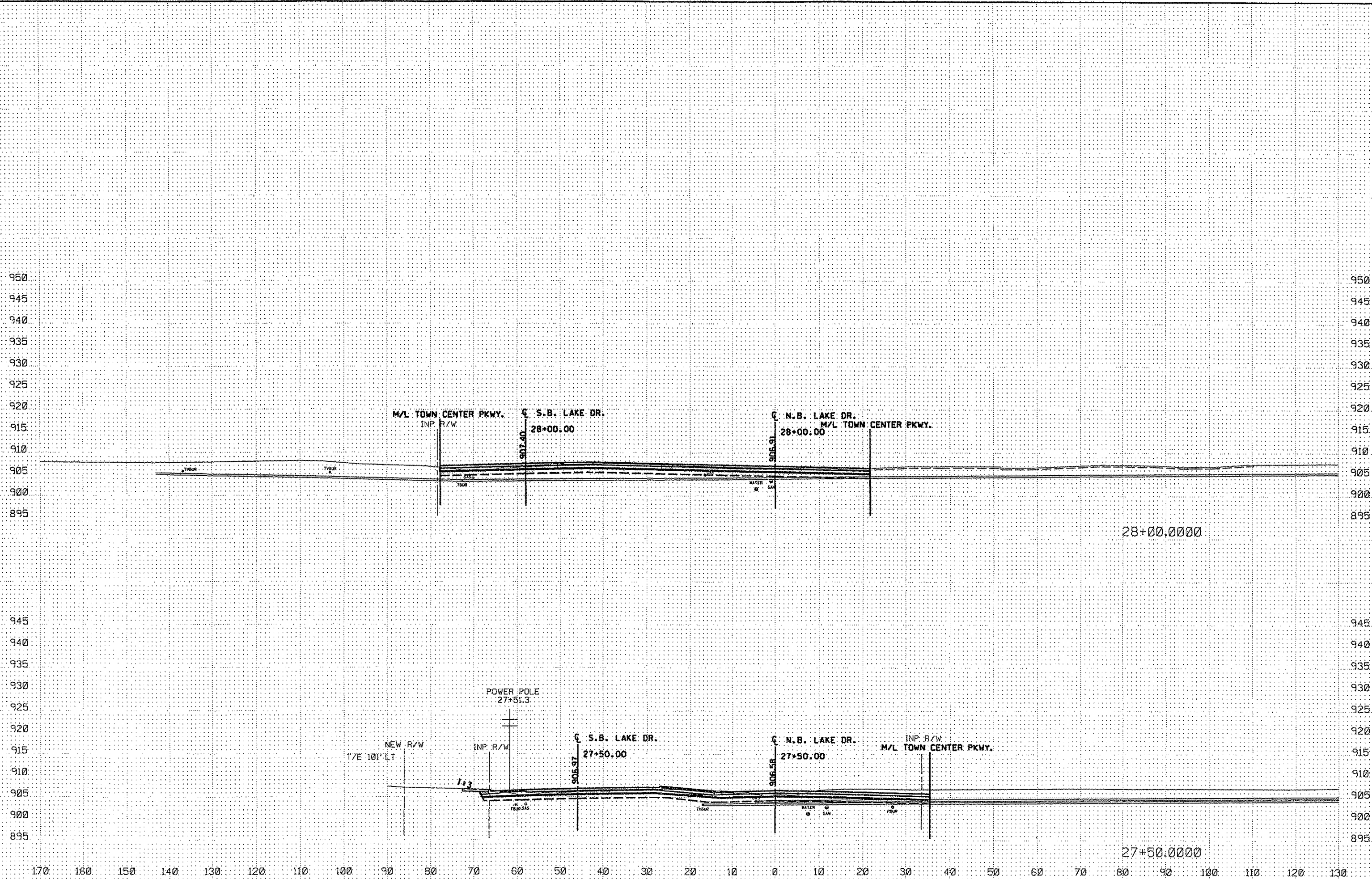




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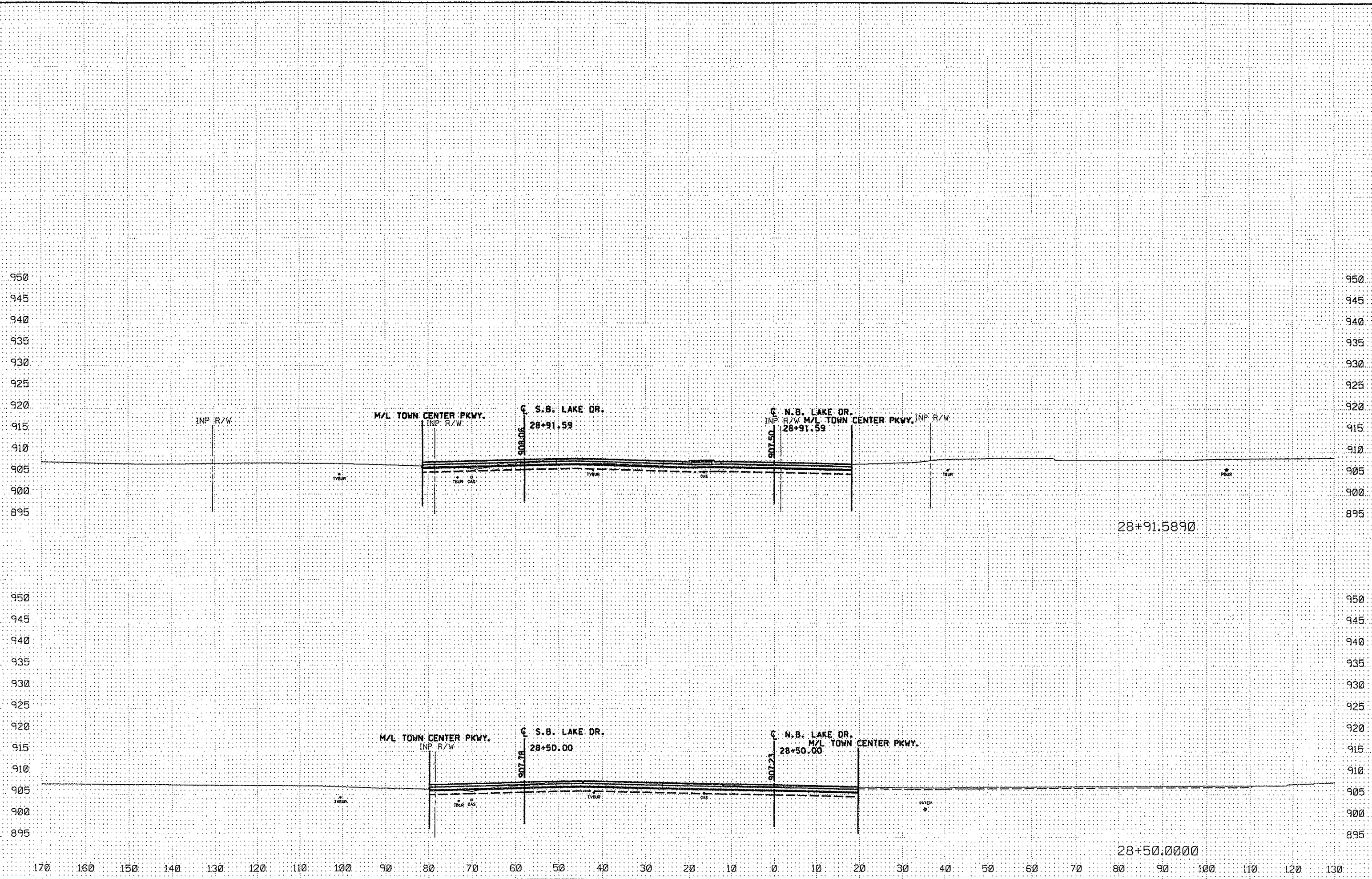


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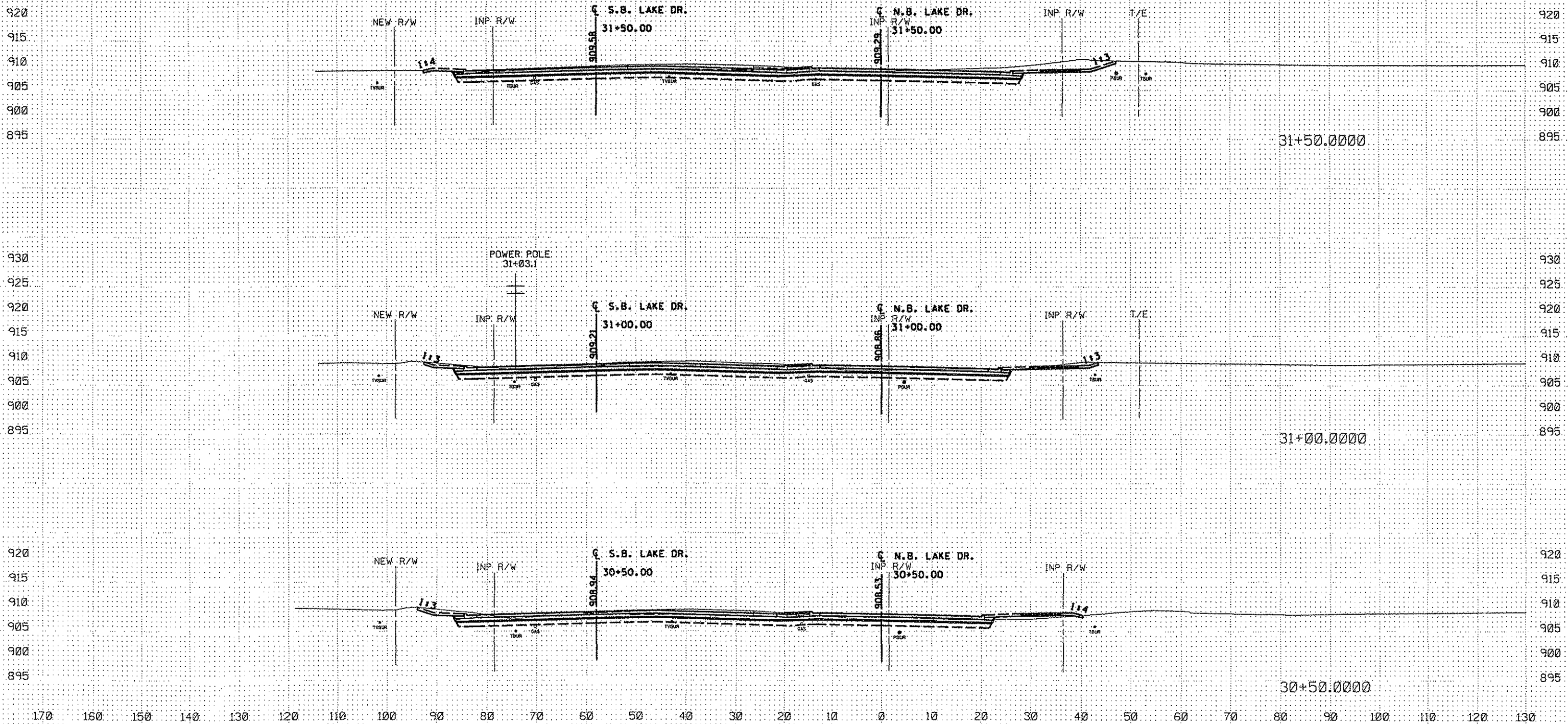


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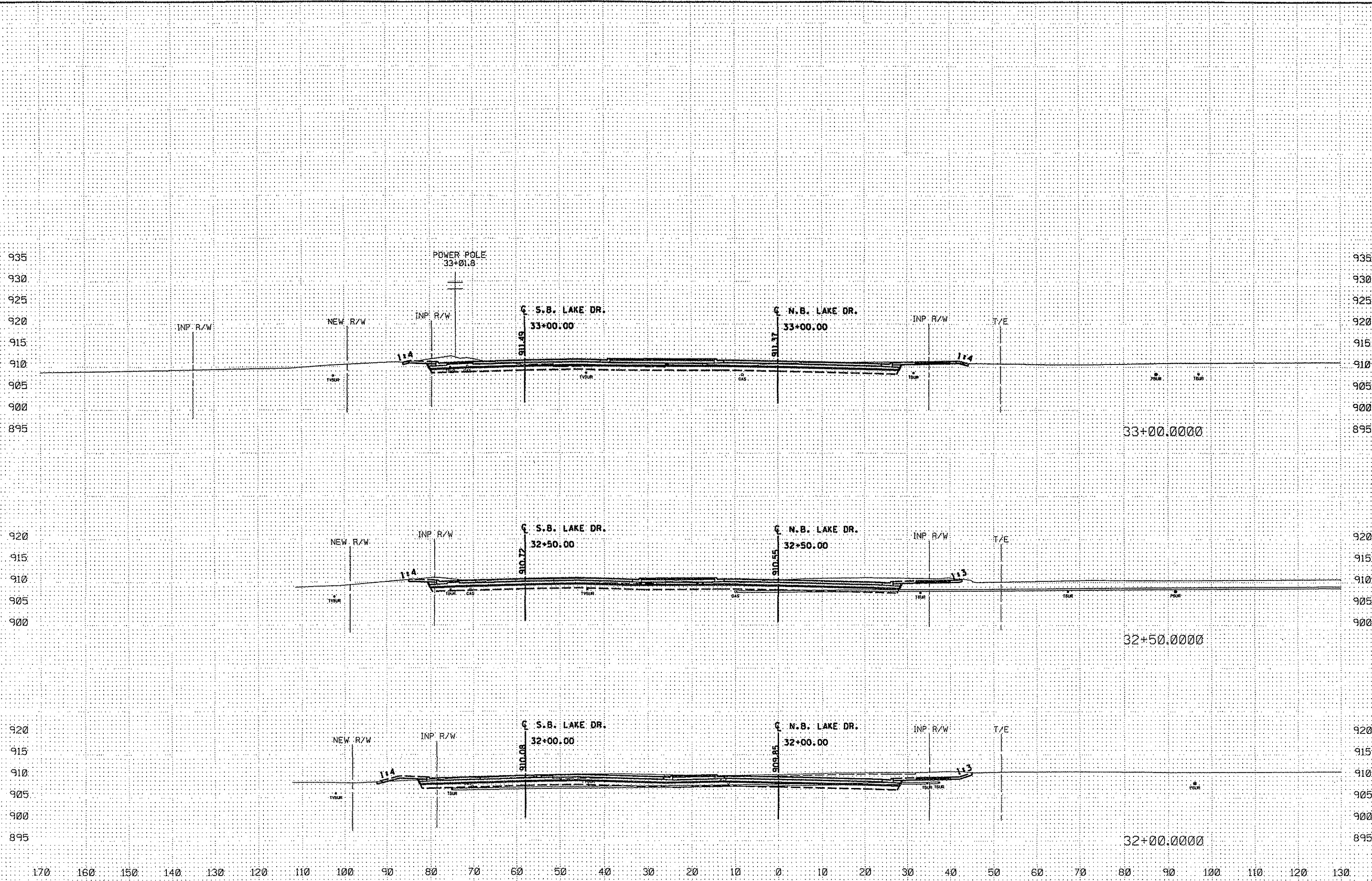


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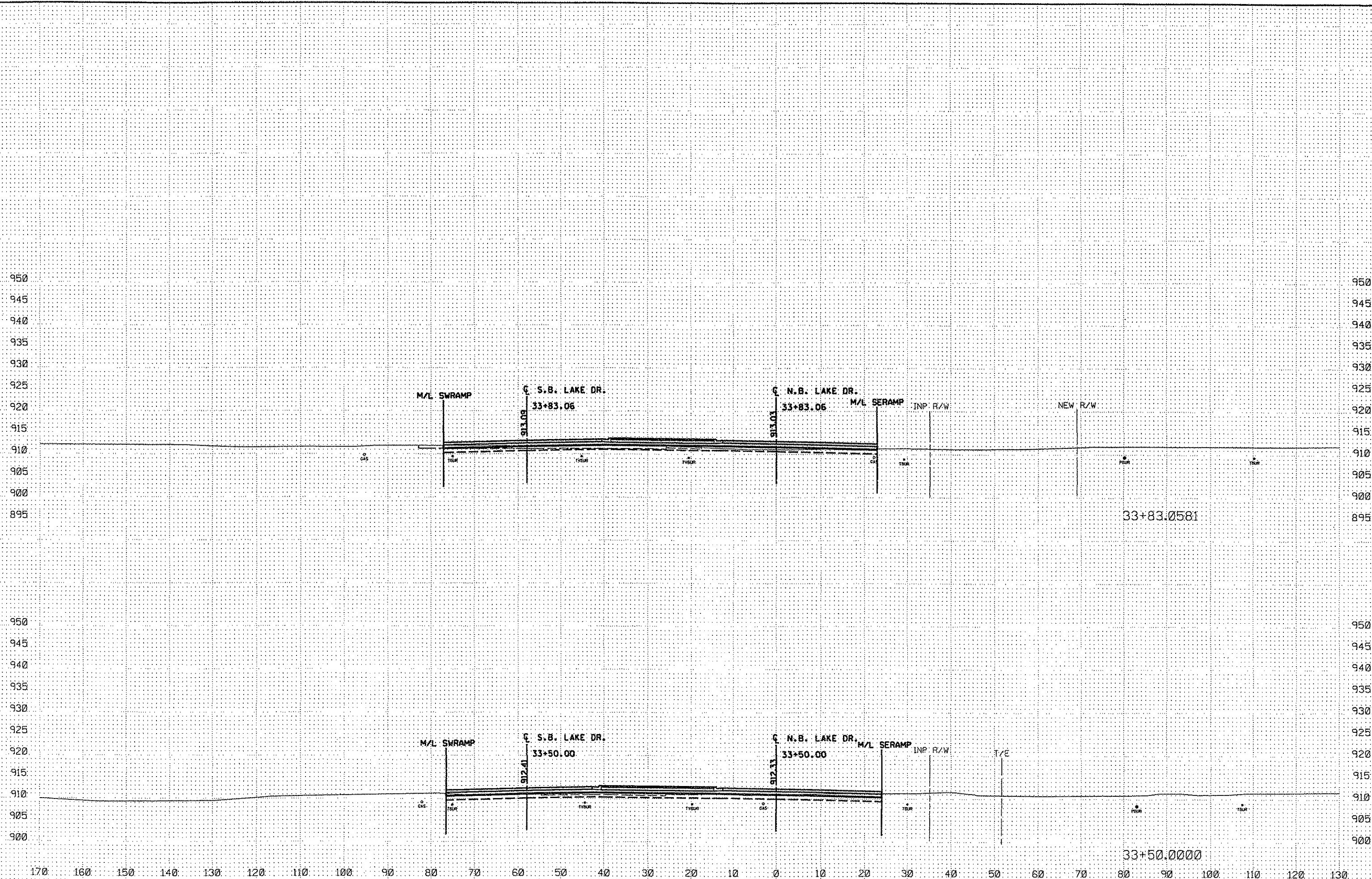




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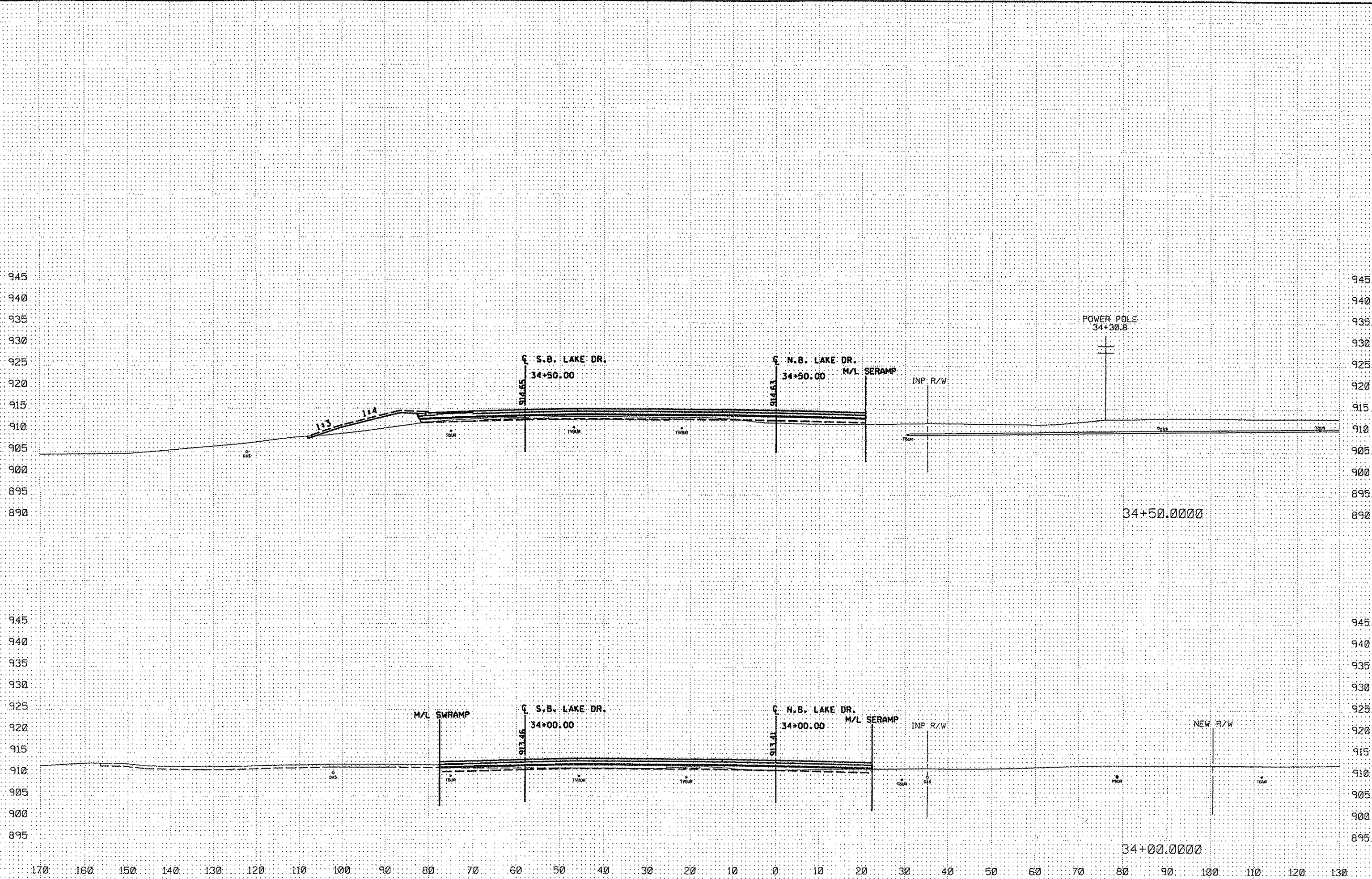
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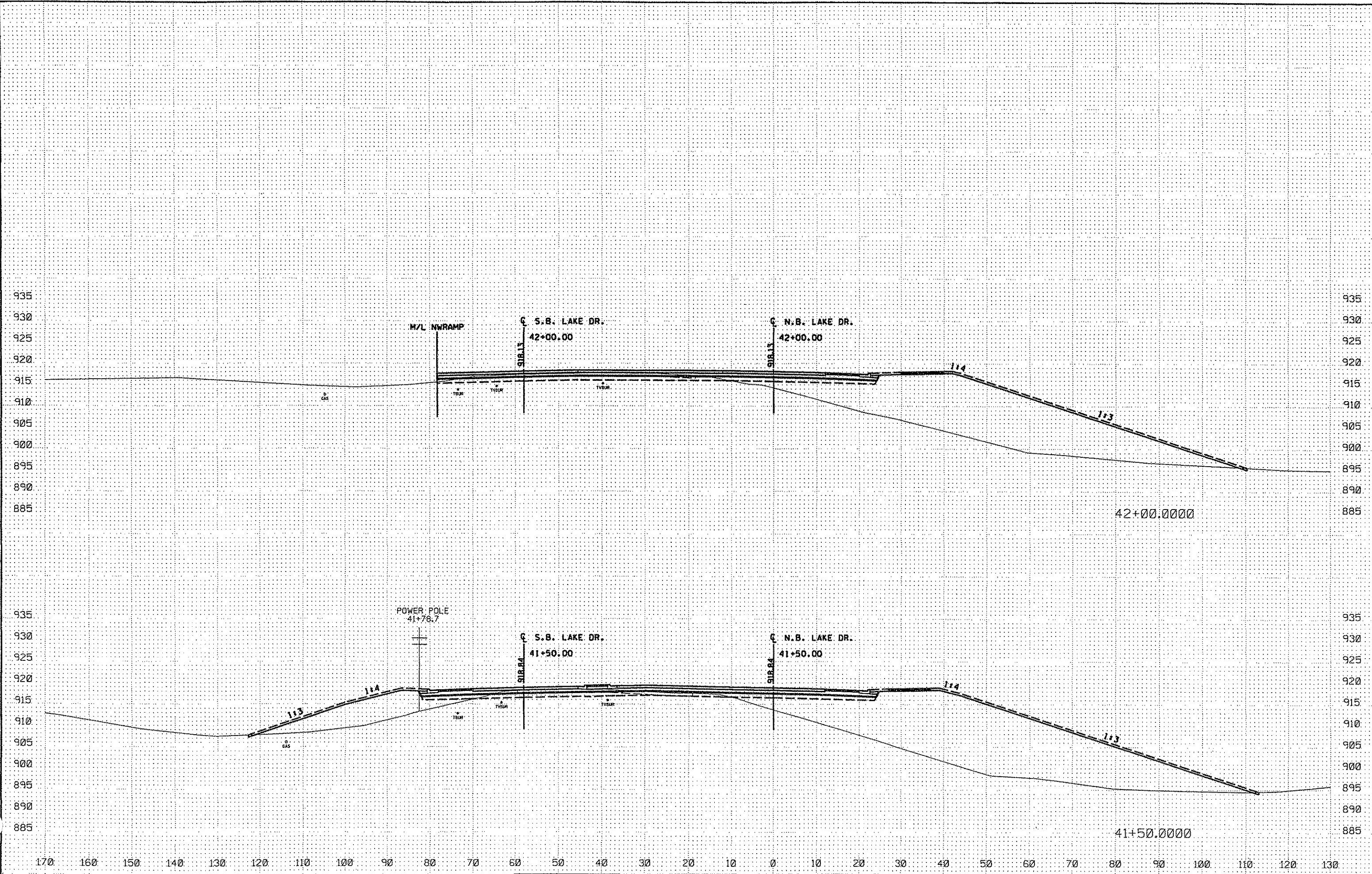
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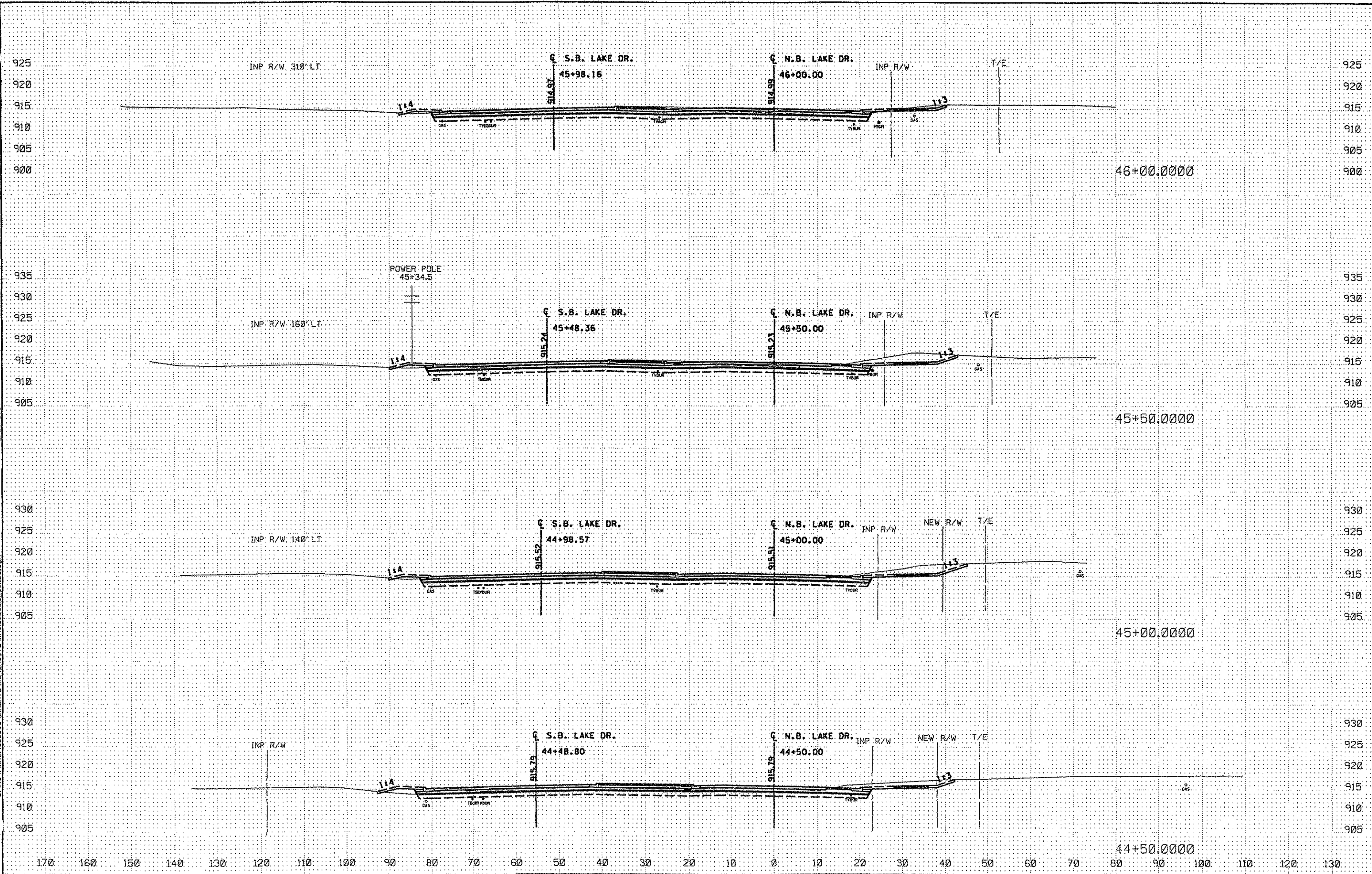




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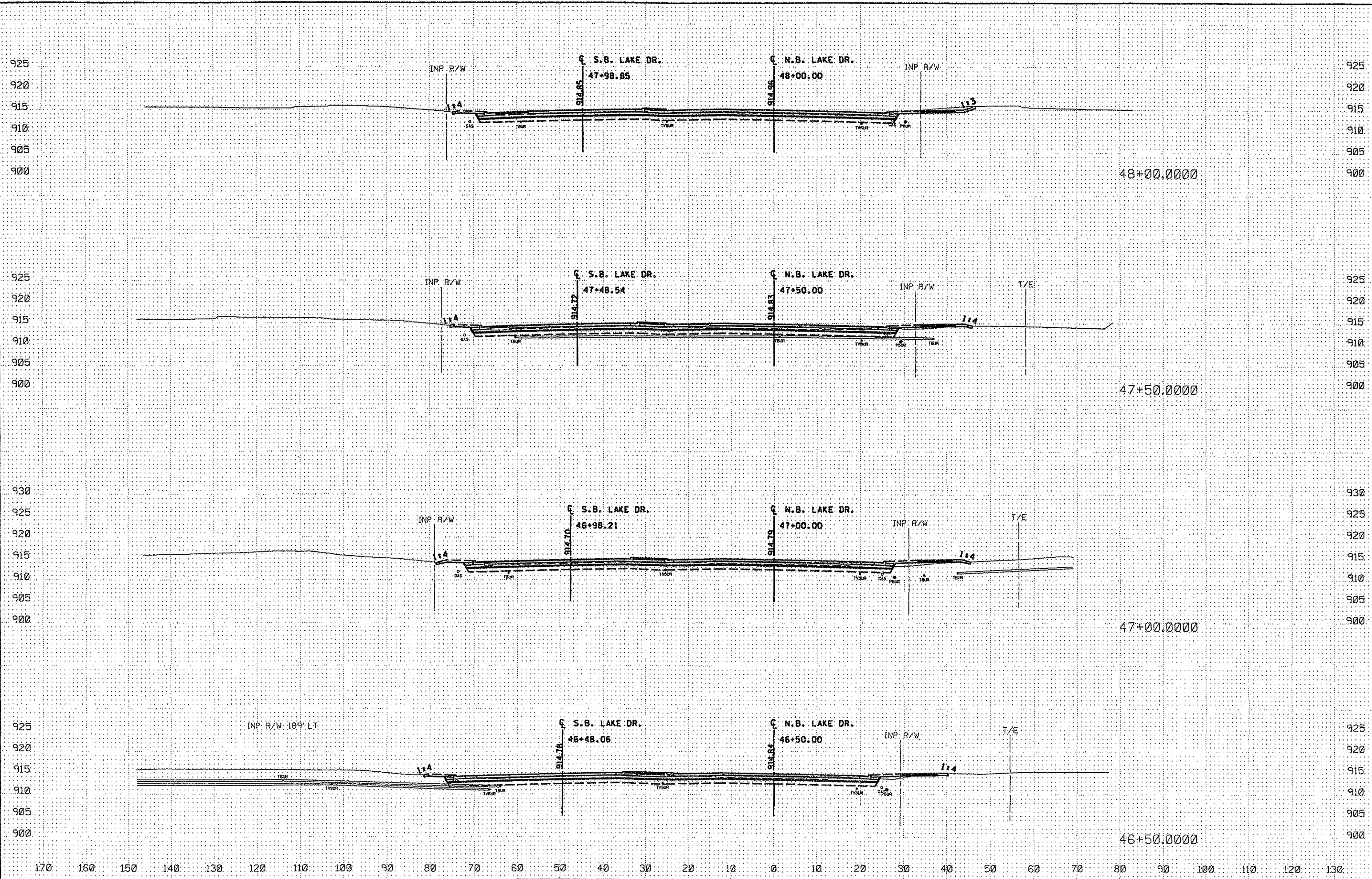


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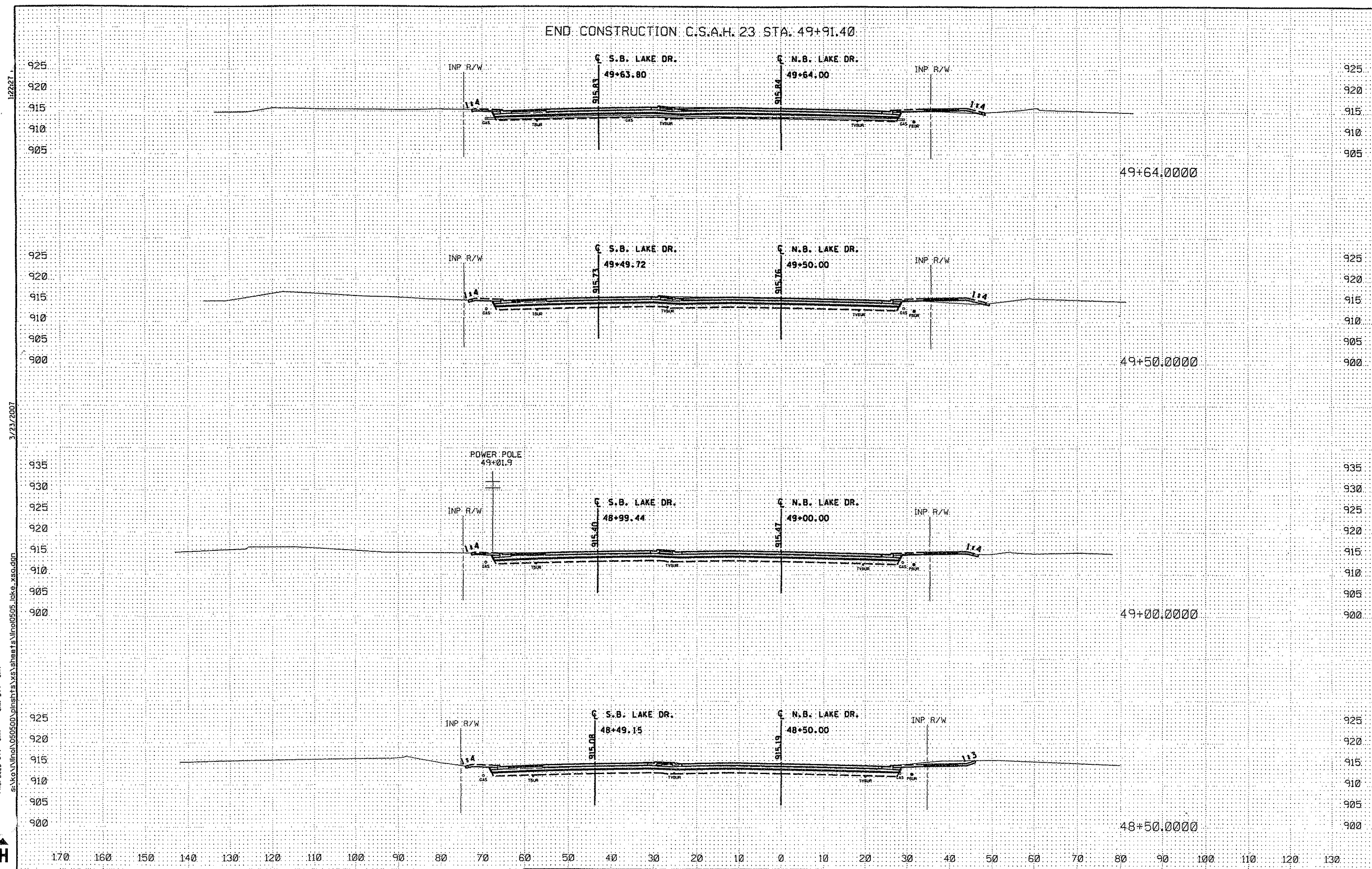
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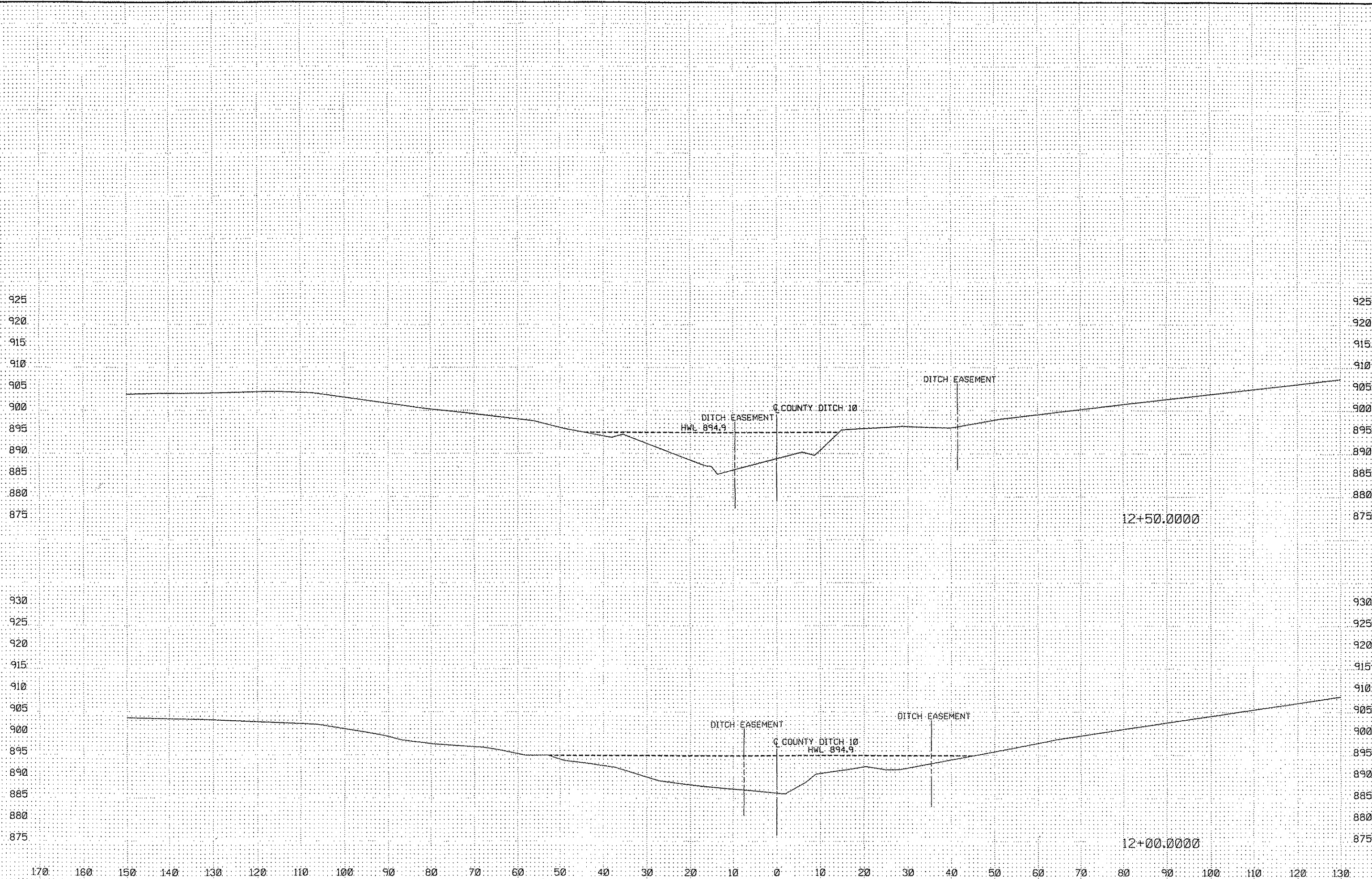


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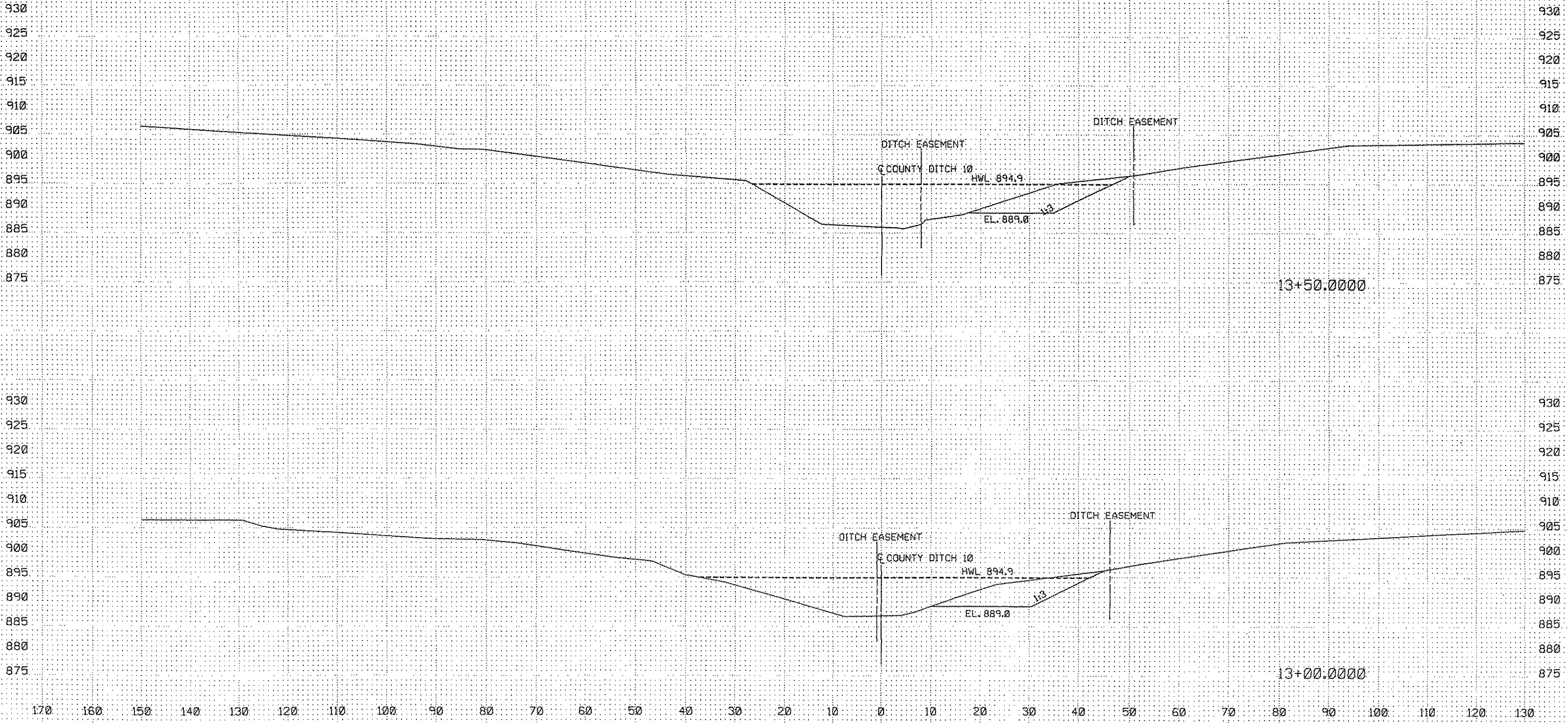
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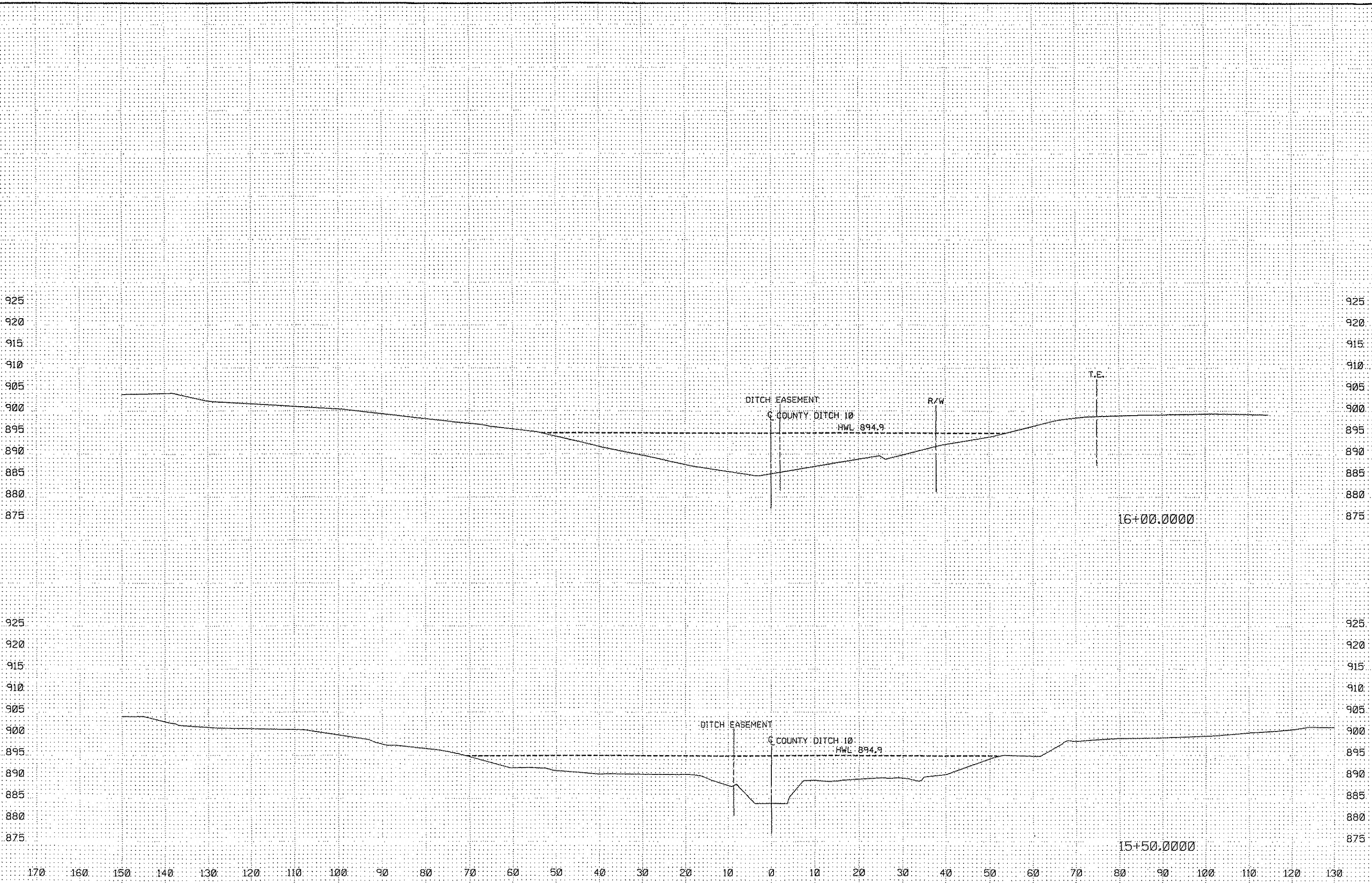




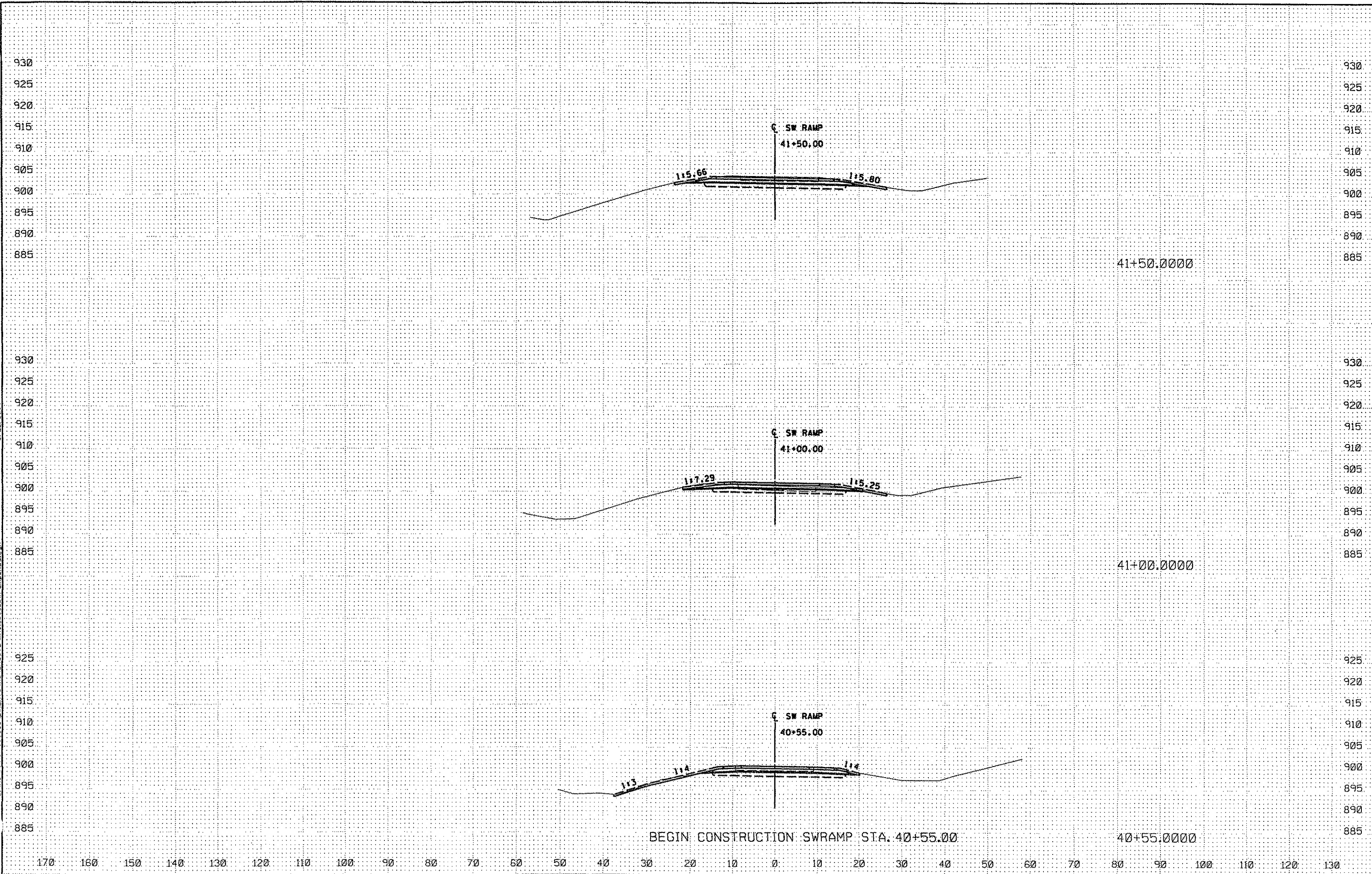
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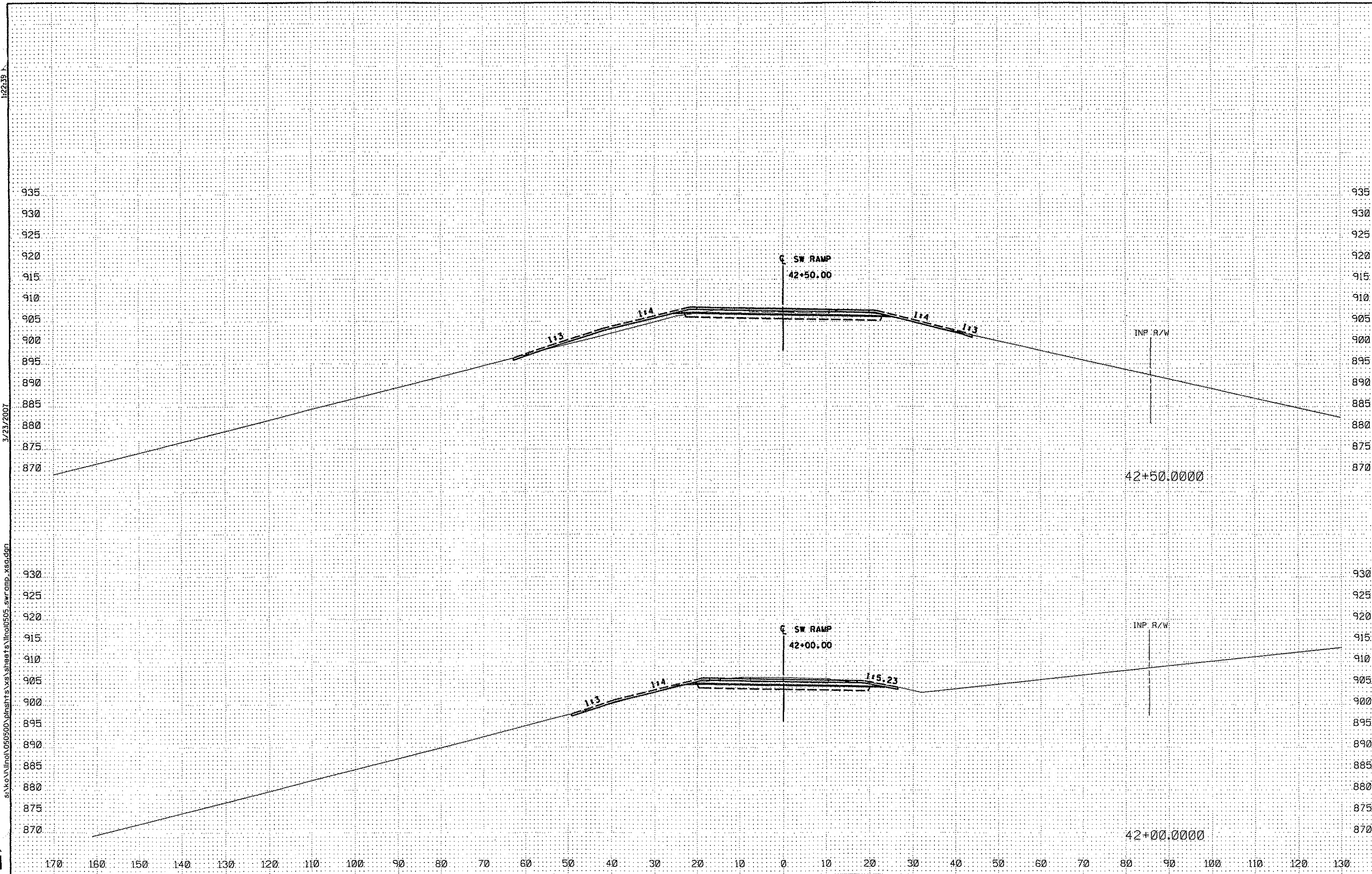


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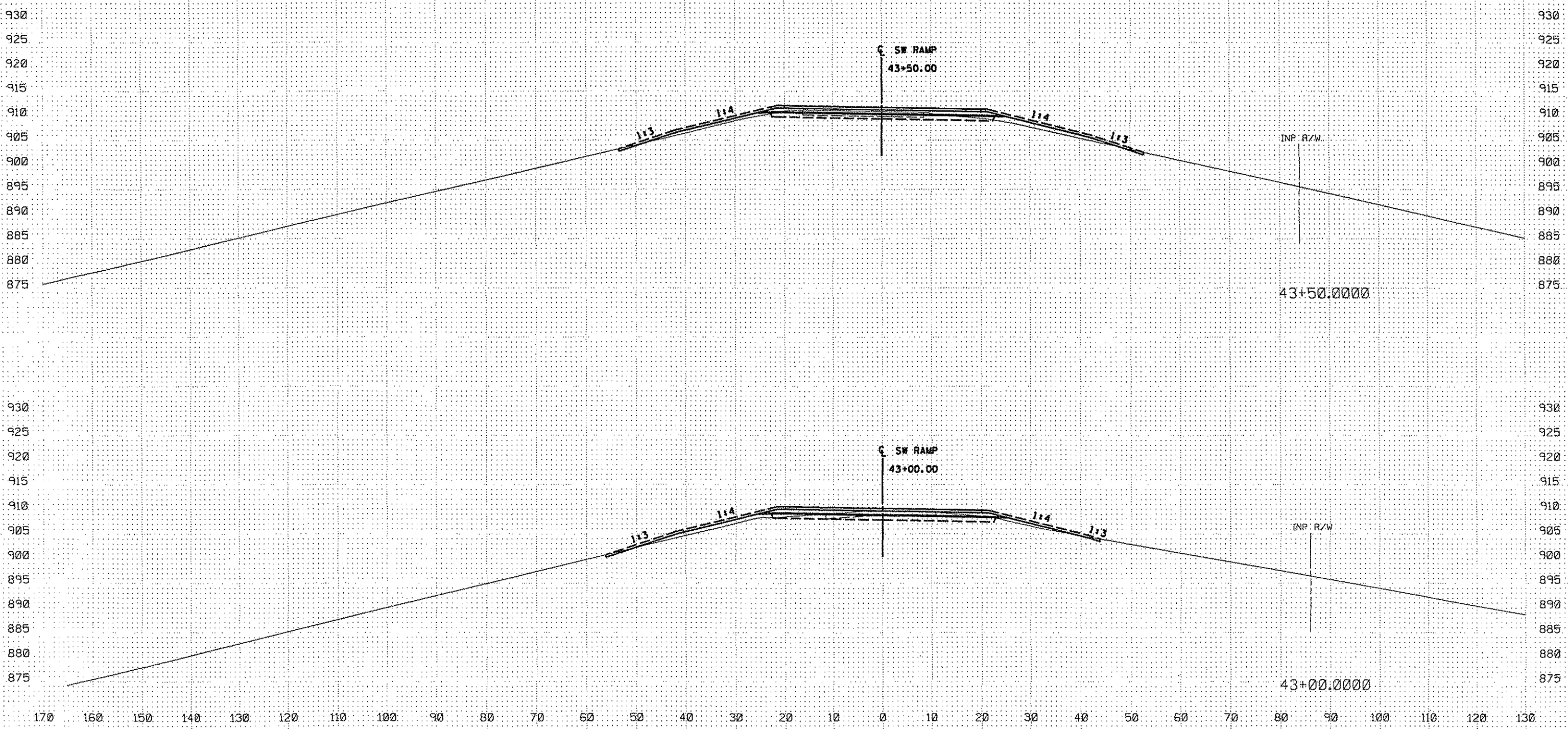


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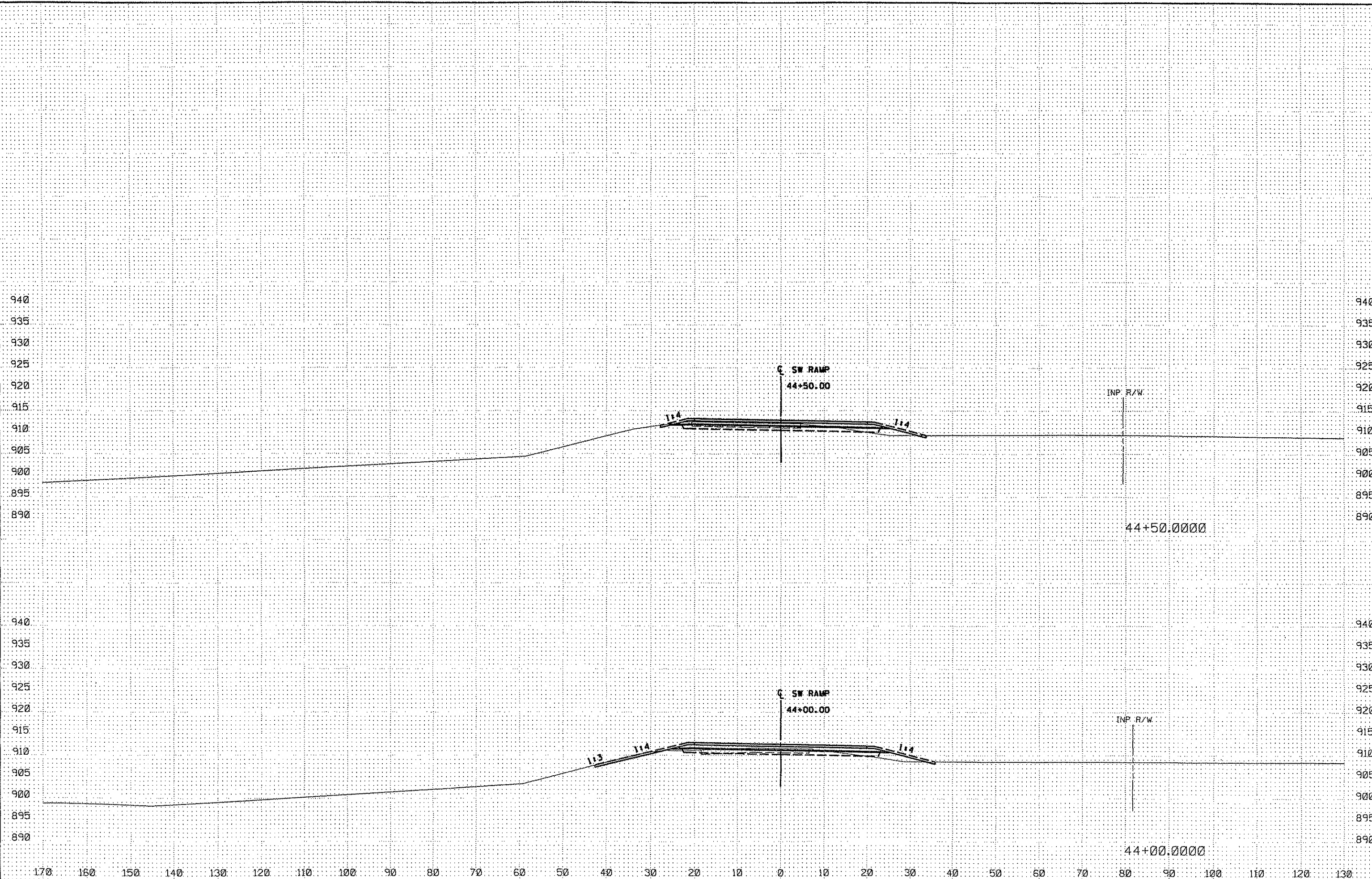


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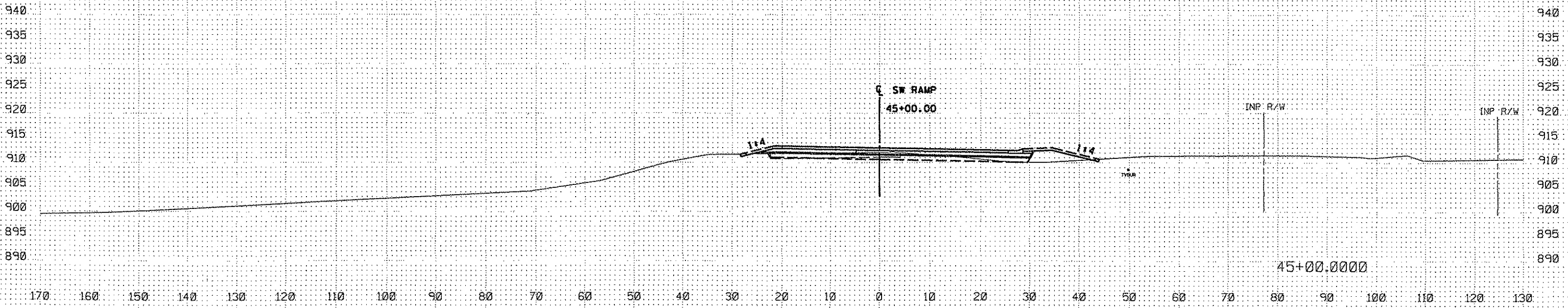


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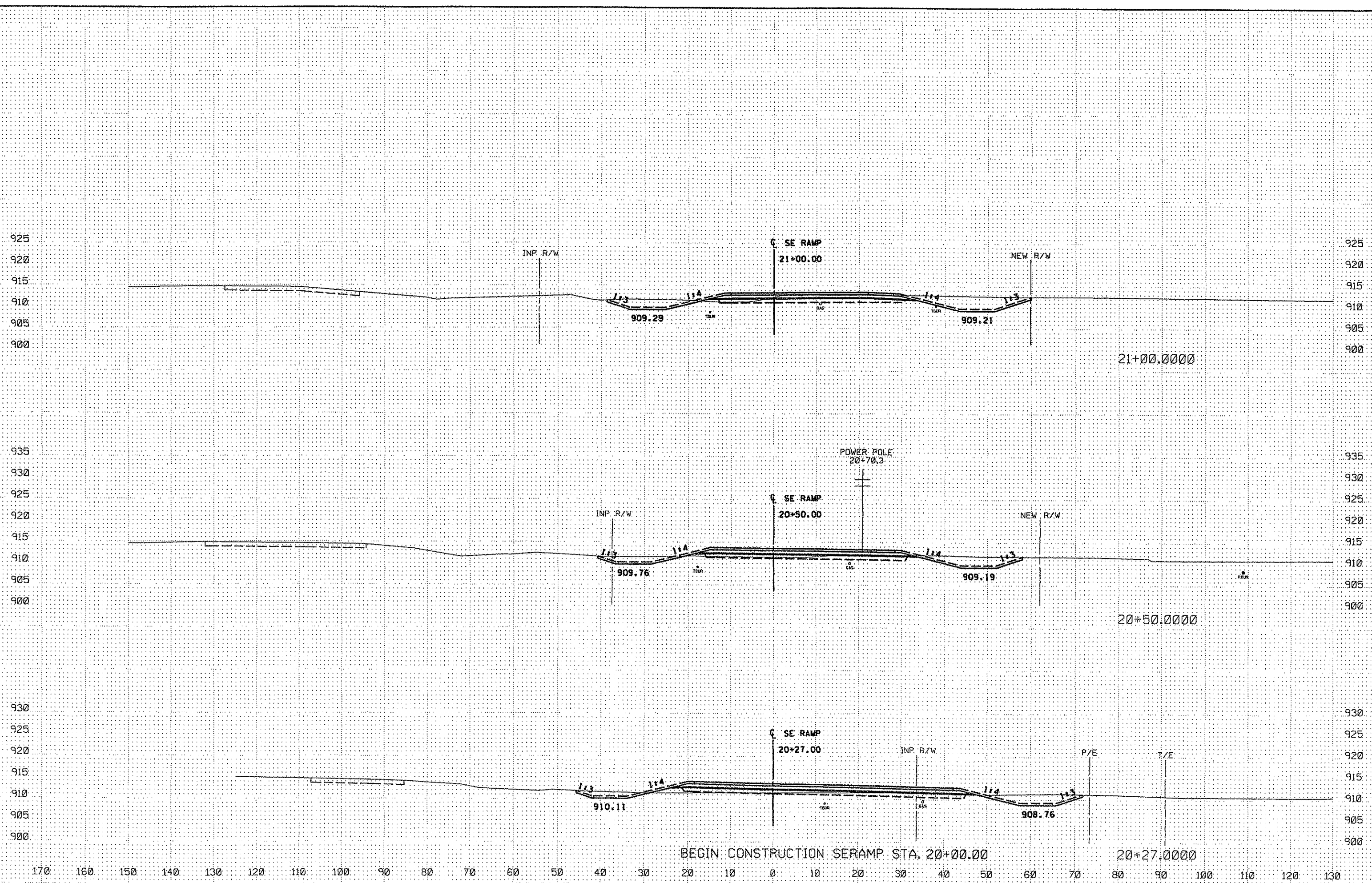
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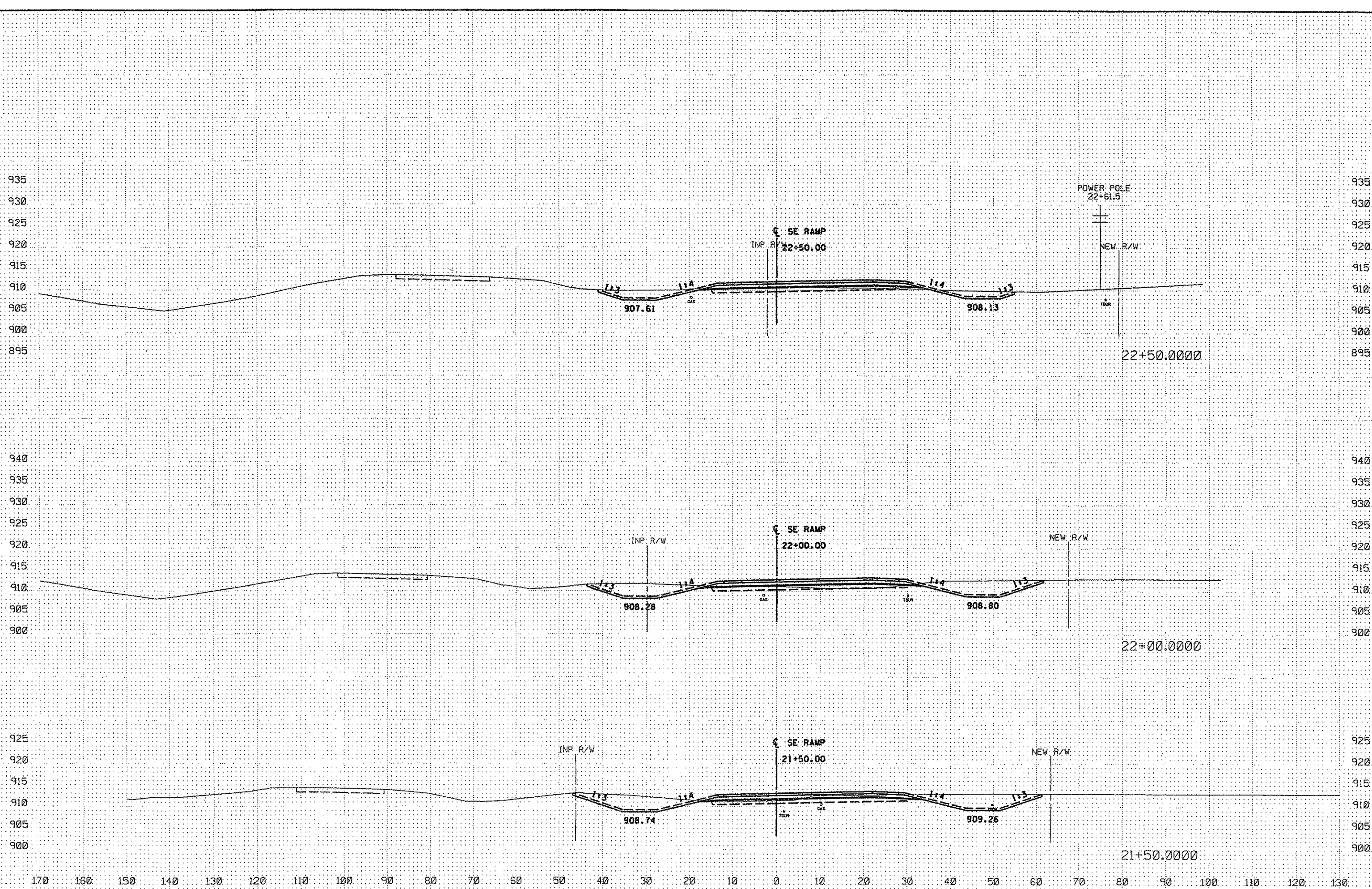


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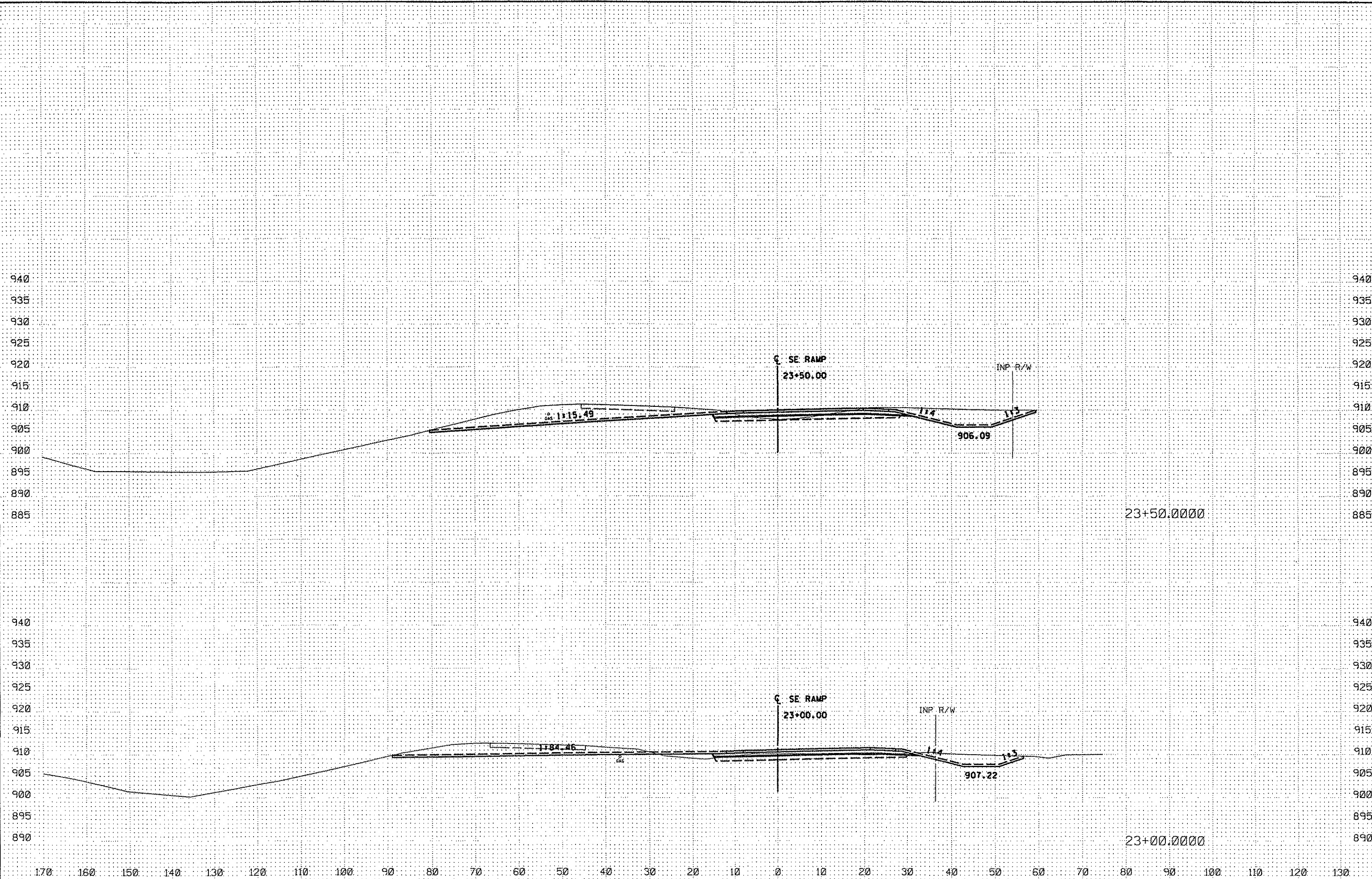


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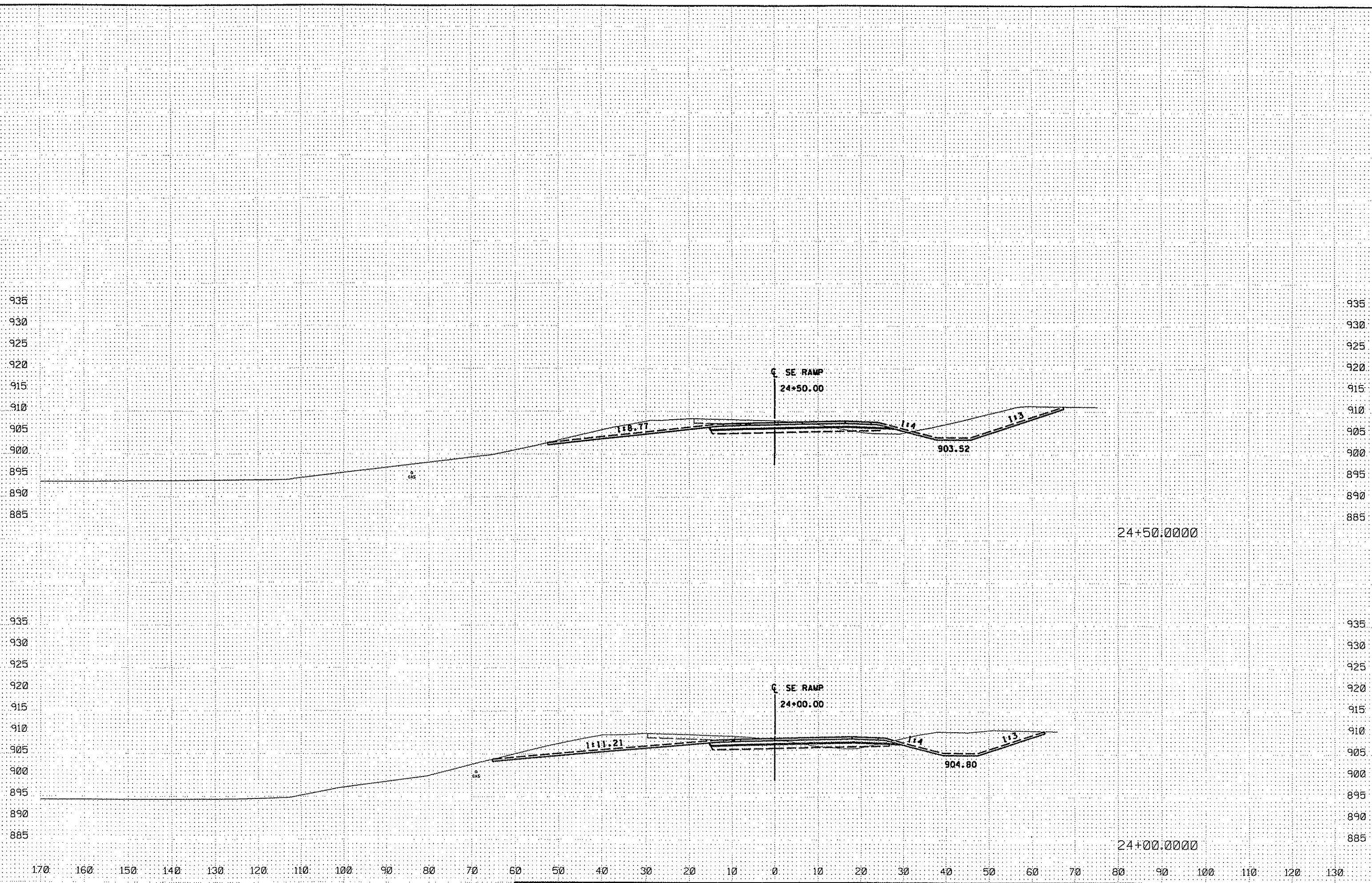
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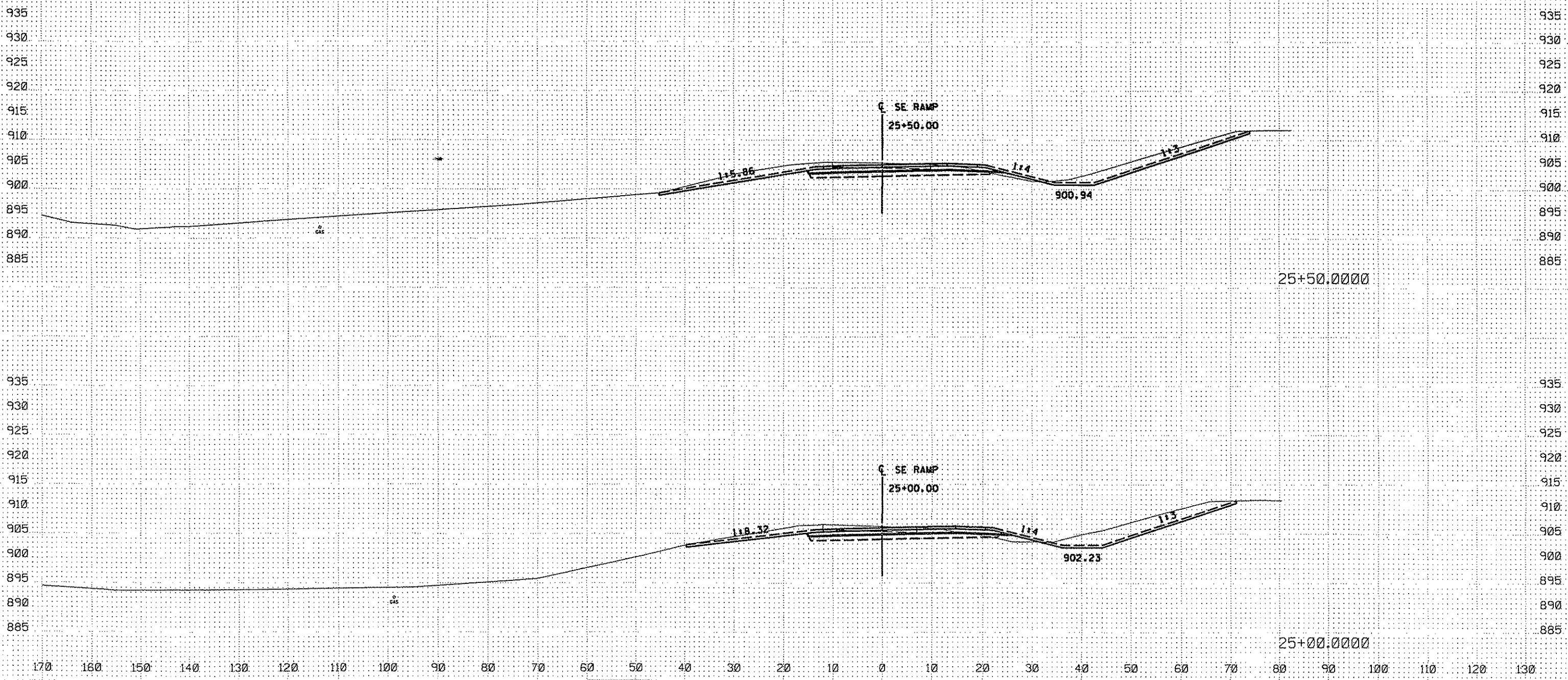


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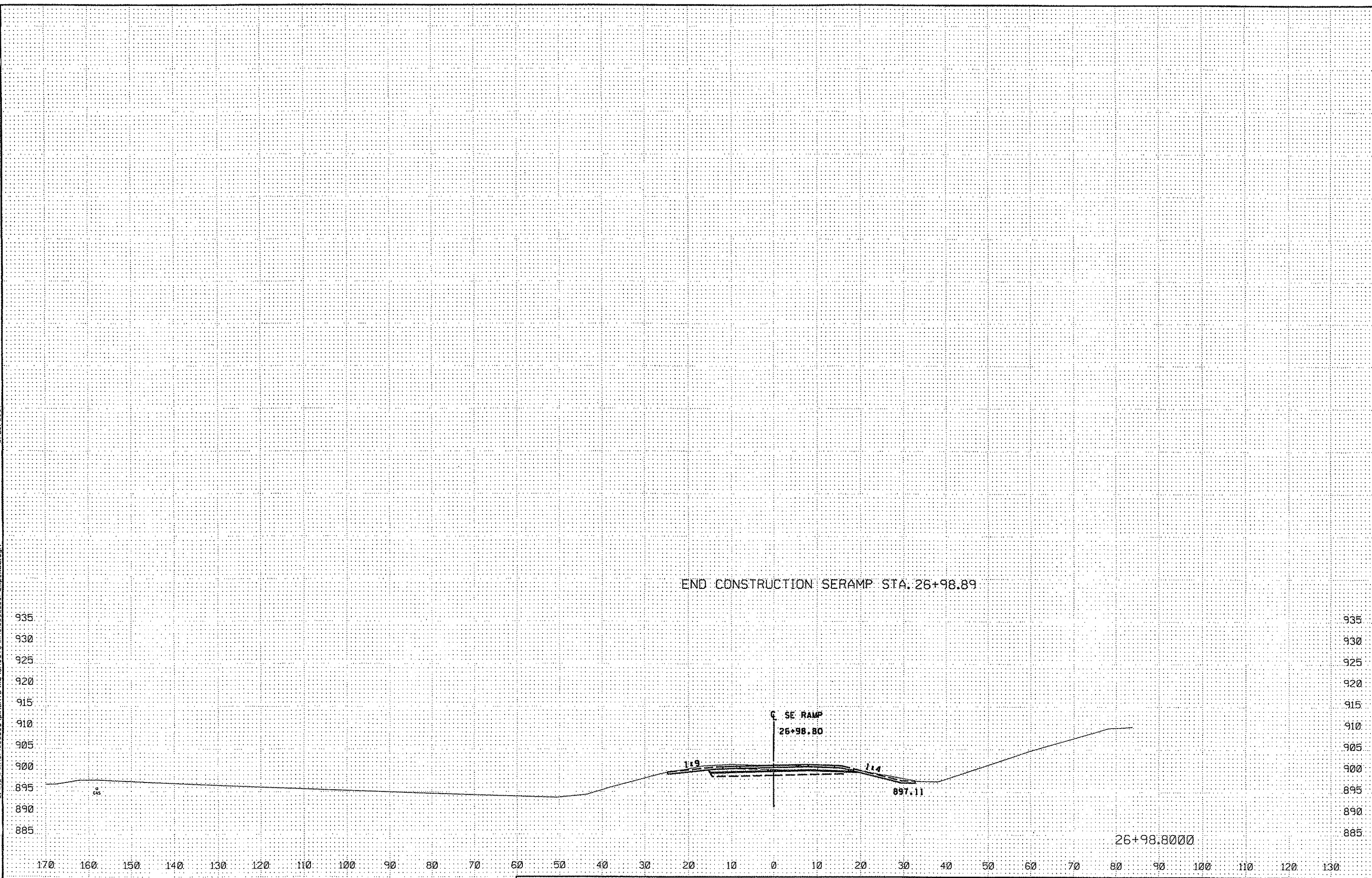




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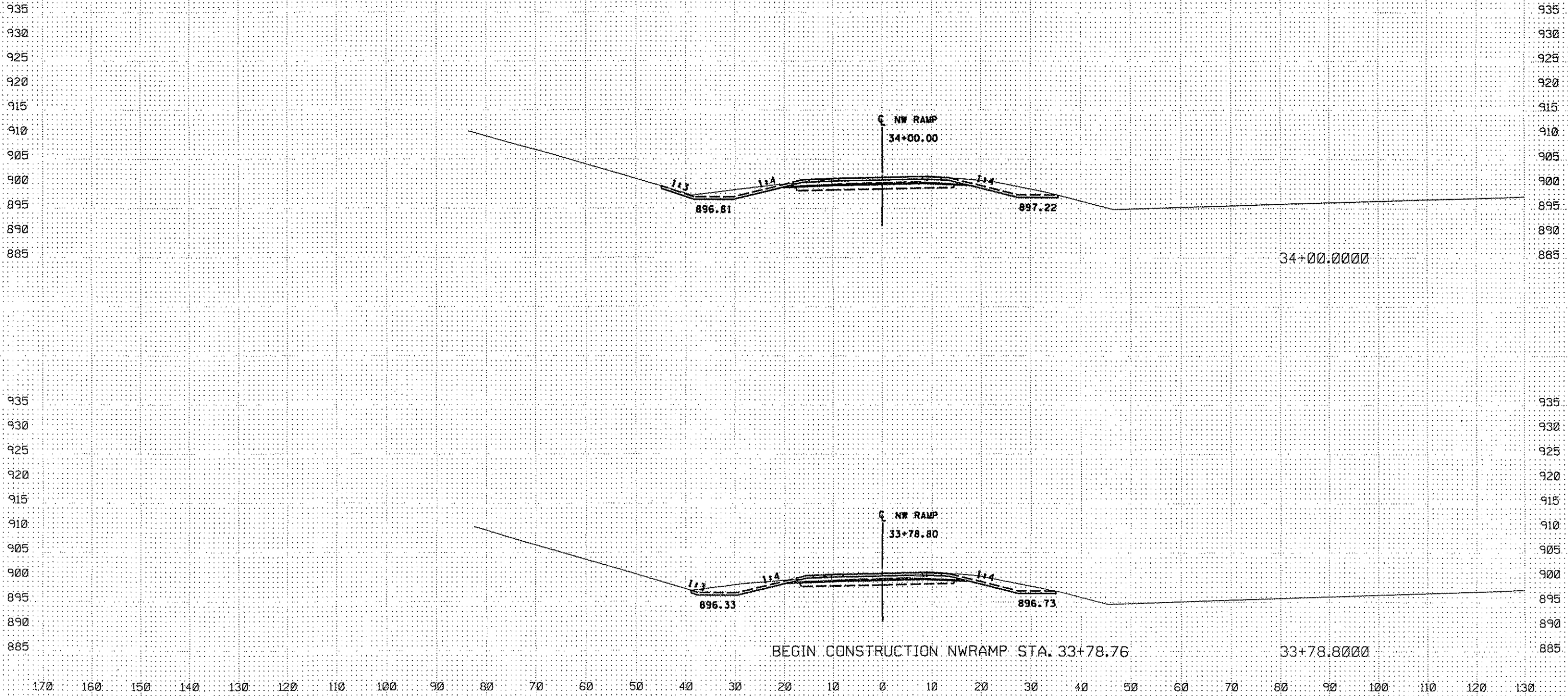
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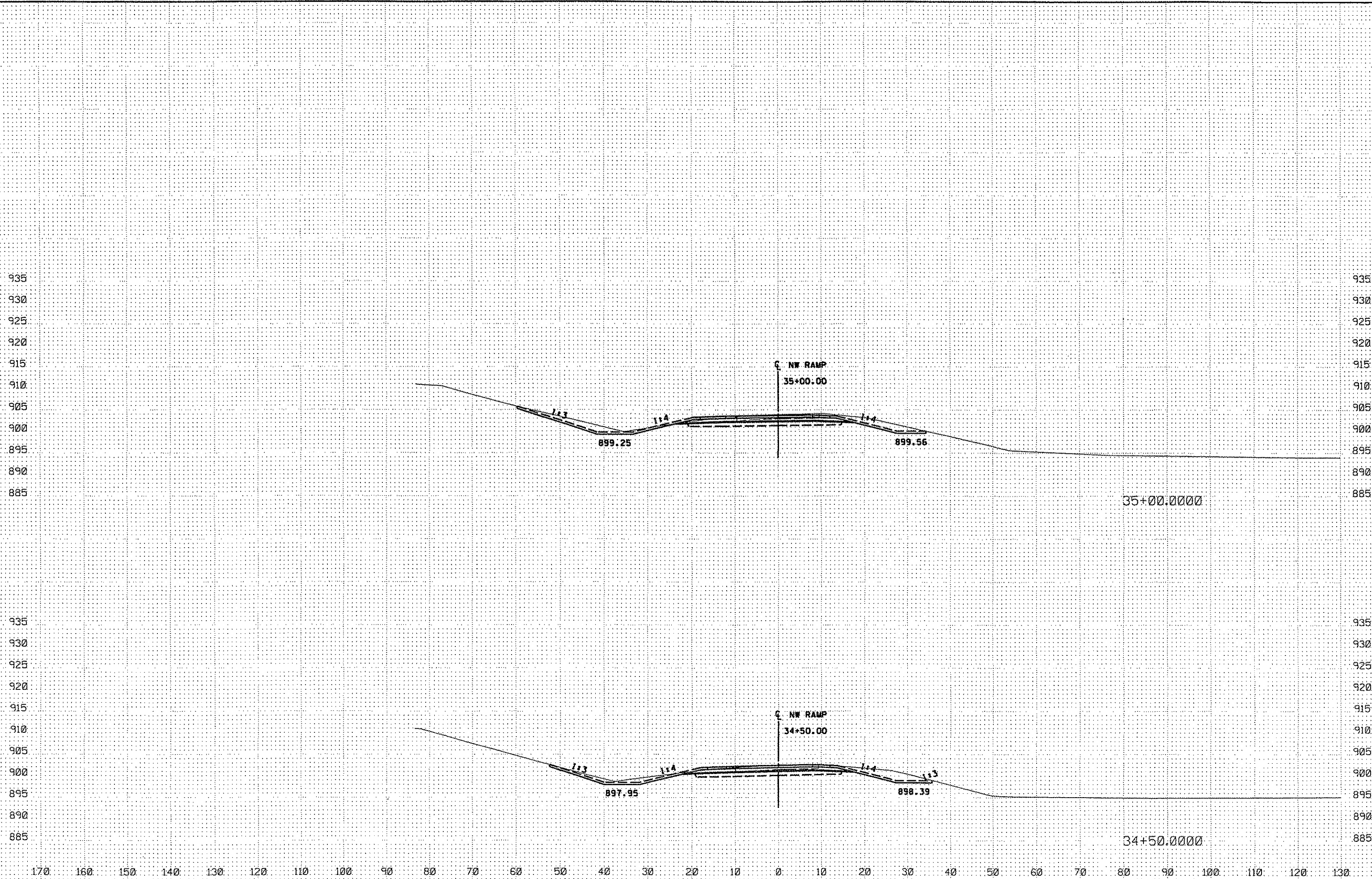


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3/23/2007

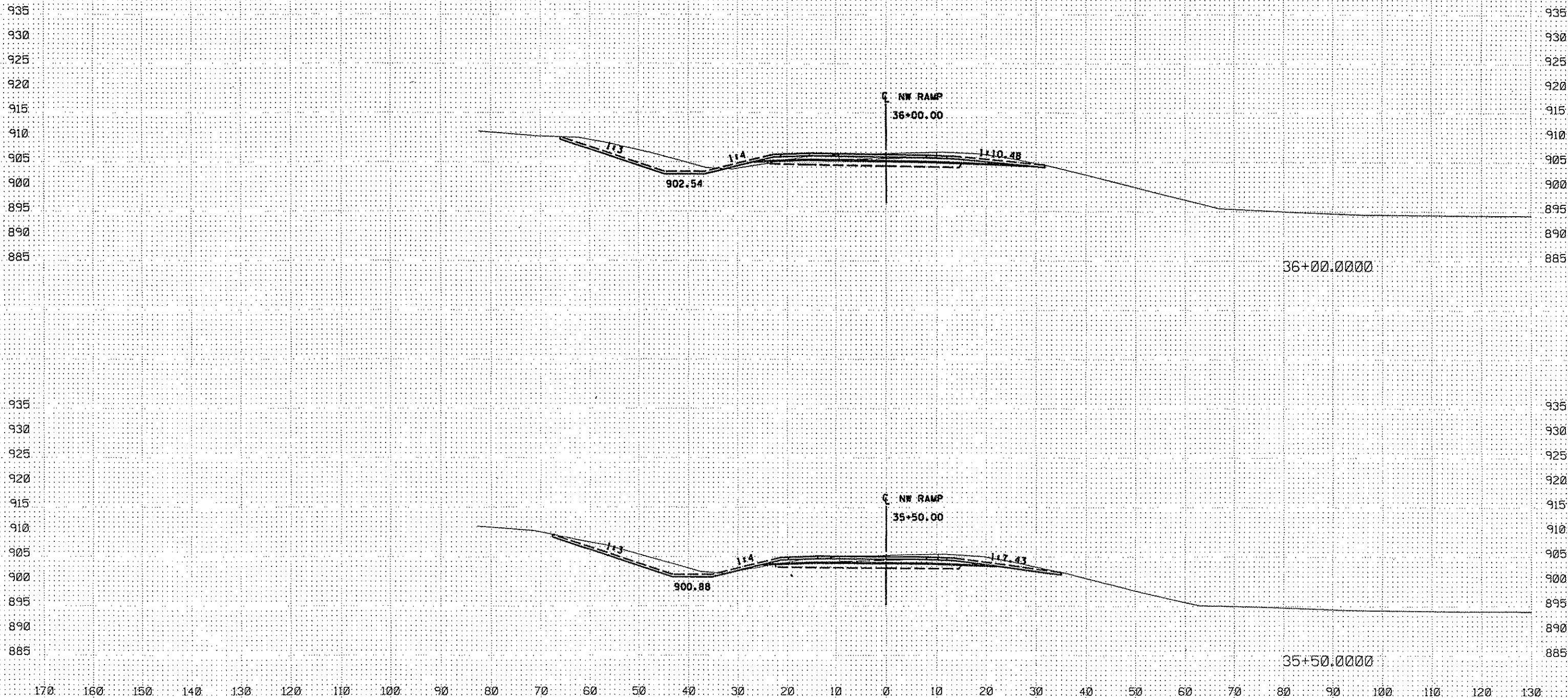
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3/23/2007

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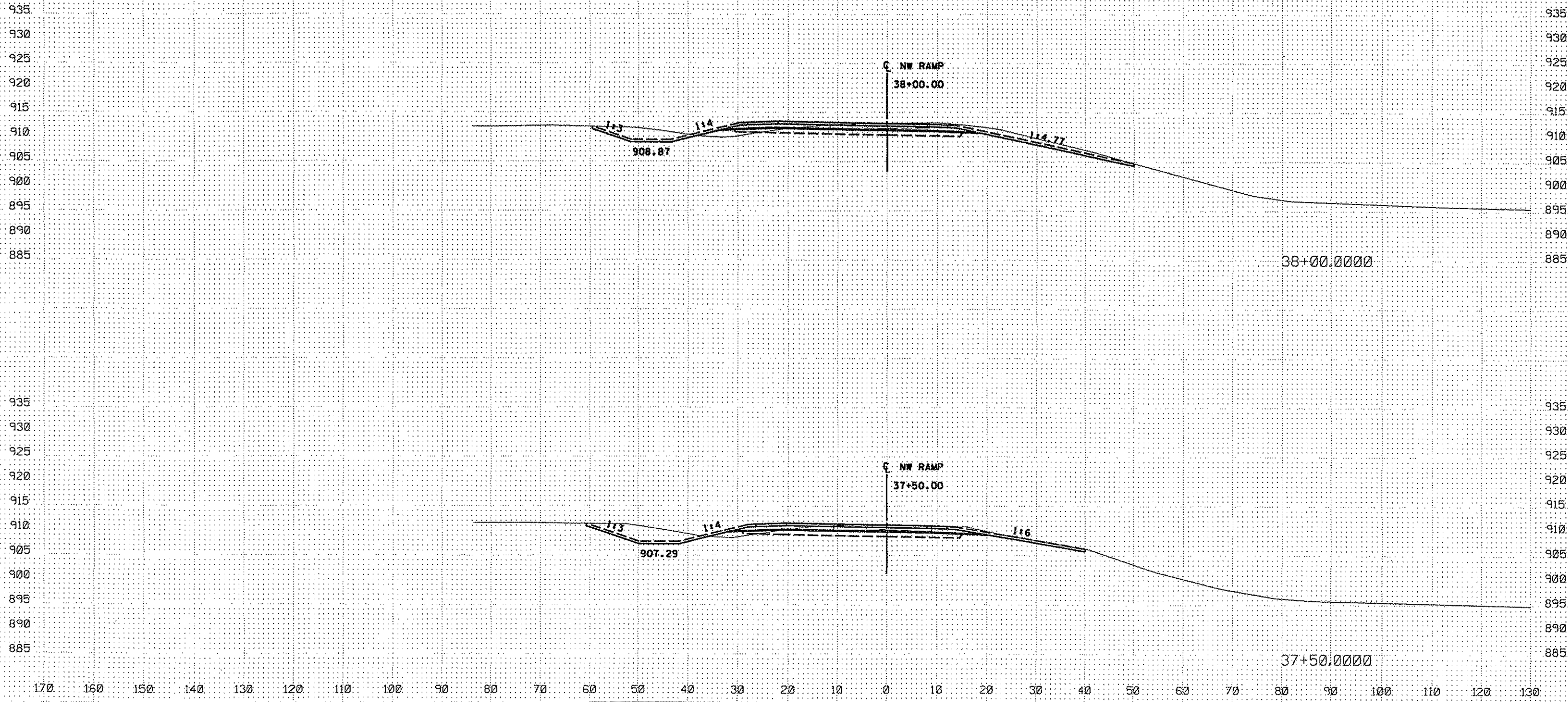




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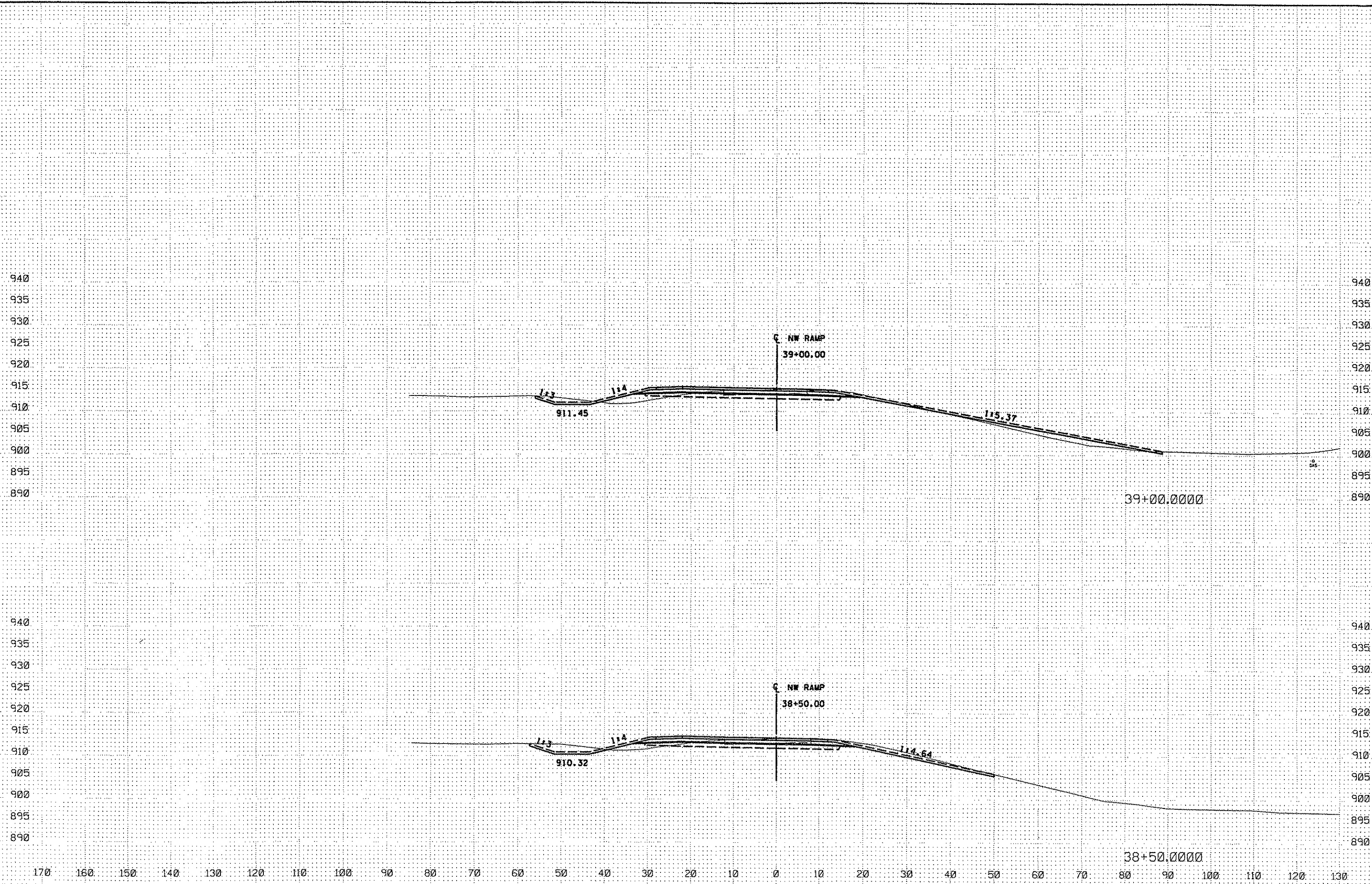


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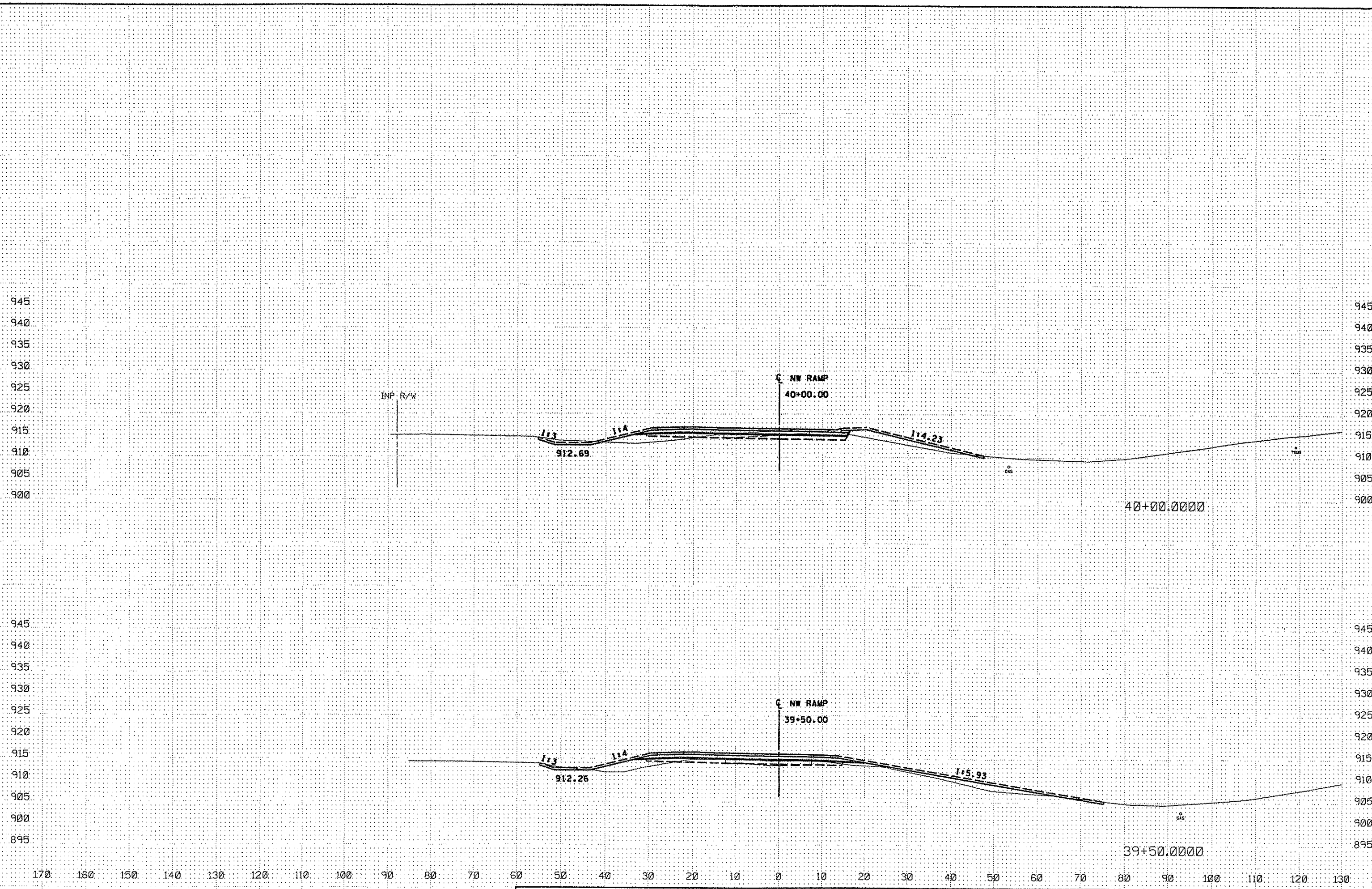


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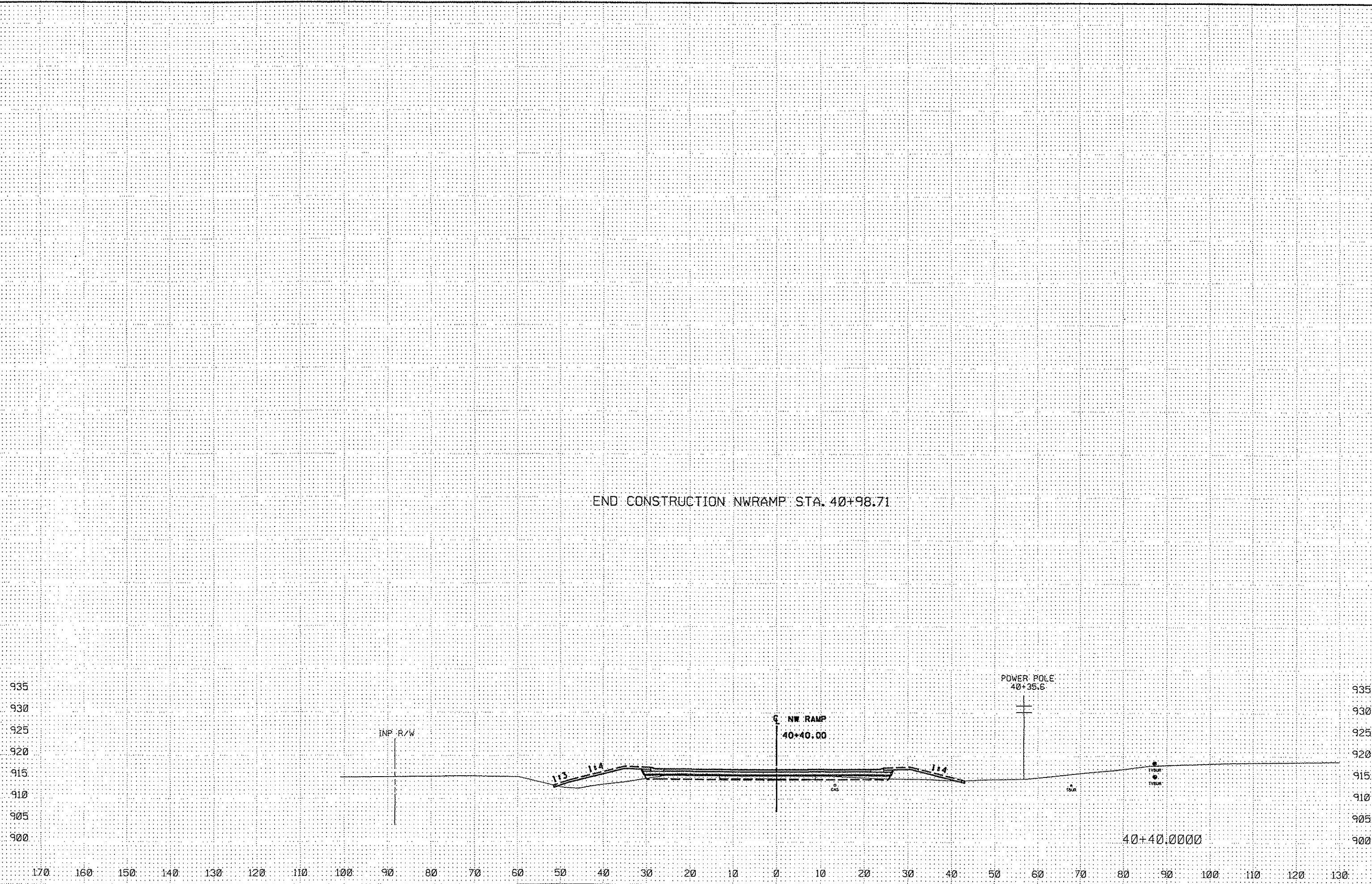
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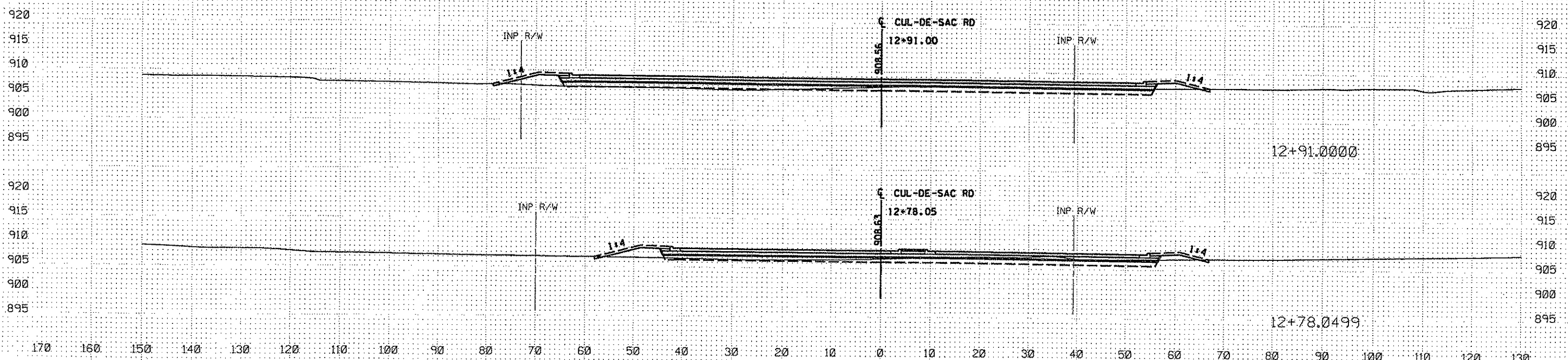
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CU. YD.

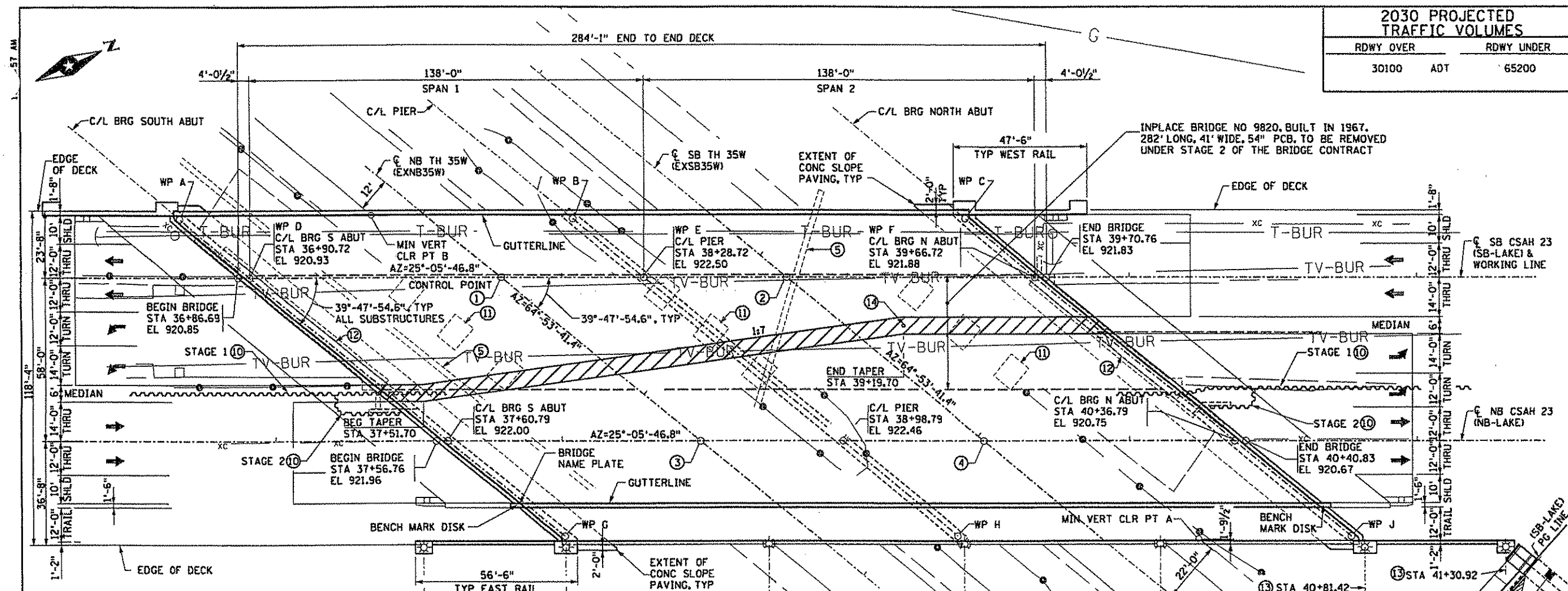
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123104

3/23/2007

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2030 PROJECTED TRAFFIC VOLUMES		
RDWY OVER	ADT	RDWY UNDER
30100		65200

**FEDERAL PROJ NO STATE FUNDS**

**DESIGN DATA**

2004 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL 93 LIVE LOAD  
DEAD LOAD INCLUDES 20 psf ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:  
REINFORCED CONCRETE:  
f'c = 4 ksi n = 8  
Fy = 60 ksi FOR REINFORCEMENT  
PRESTRESSED CONCRETE:  
f'c = 9 ksi FOR 1/2" AND 0.6" DIA LOW RELAXATION STRAND  
fpu = 270 ksi FOR INITIAL PRESTRESS

0.75 fpu FOR INITIAL PRESTRESS

DECK AREA = 33630 SQ FT  
DESIGN SPEED OVER = 50 MPH  
DESIGN SPEED UNDER = 70 MPH  
BRIDGE OPERATING RATING HS 64.2

**LIST OF SHEETS**

NO.	DESCRIPTION
B1	GENERAL PLAN AND ELEVATION
B2	TYPICAL SECTION AND QUANTITIES
B3	CONSTRUCTION STAGING
B4	BRIDGE LAYOUT
B5-24	SOUTH ABUTMENT DETAILS
B25-44	NORTH ABUTMENT DETAILS
B45-55	TEMPORARY SHEETING DETAILS
B56-64	PIER DETAILS
B65	FRAMING PLAN
B66	MN63 BEAM DETAILS
B67-72	SUPERSTRUCTURE DETAILS
B73-78	CONCRETE BARRIER & RAIL DETAILS
B79	CONCRETE SLOPE PAVING
B80-81	WATERPROOF EXPANSION DEVICE
B82-87	B-DETAILS
B88	CONDUIT SYSTEMS
B89	AS-BUILT BRIDGE DATA
B90	ALIGNMENT PLAN
B91	ALIGNMENT TABULATIONS
B92	TYPICAL ROADWAY SECTIONS
B93	BRIDGE SURVEY
B94	BRIDGE SURVEY PLAN AND PROFILE
B95	BRIDGE SURVEY PLAN AND PROFILE

- NOTES**
- CONTROL POINT (SB-LAKE) POT 37+78.732= (EXNB35W) POT 770+35.169 X=539575.966 Y=152787.374
  - (SB-LAKE) POT 38+78.718 (EXSB35W) POT 771+11.988 X=539618.375 Y=152877.921
  - (NB-LAKE) POT 38+48.800= (EXNB35W) POT 771+25.781 X=539658.019 Y=152825.819
  - (NB-LAKE) POT 39+48.786 (EXSB35W) POT 772+02.600 X=539700.427 Y=152916.366

- EXISTING 24" RC PIPE TO BE REMOVED AND REPLACED AS REQUIRED UNDER GRADING PORTION OF CONTRACT.
  - NOTE 6 NOT USED.
  - NOTE 7 NOT USED.
  - 12'-3" EXPOSURE
  - 10'-0" EXPOSURE
  - TEMPORARY SHEETING (SEE SPECIAL PROVISIONS).
  - INPLACE PIER FOUNDATION, TYP.
  - INPLACE ABUTMENT FOUNDATION.
  - C/L LIGHT STANDARD.
  - MEDIAN SIGN POST ANCHORAGE AT STATION 39+19.7.
- SEE SHEET B3 FOR STAGE CONSTRUCTION DETAILS.

**CONSTRUCTION NOTES**

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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

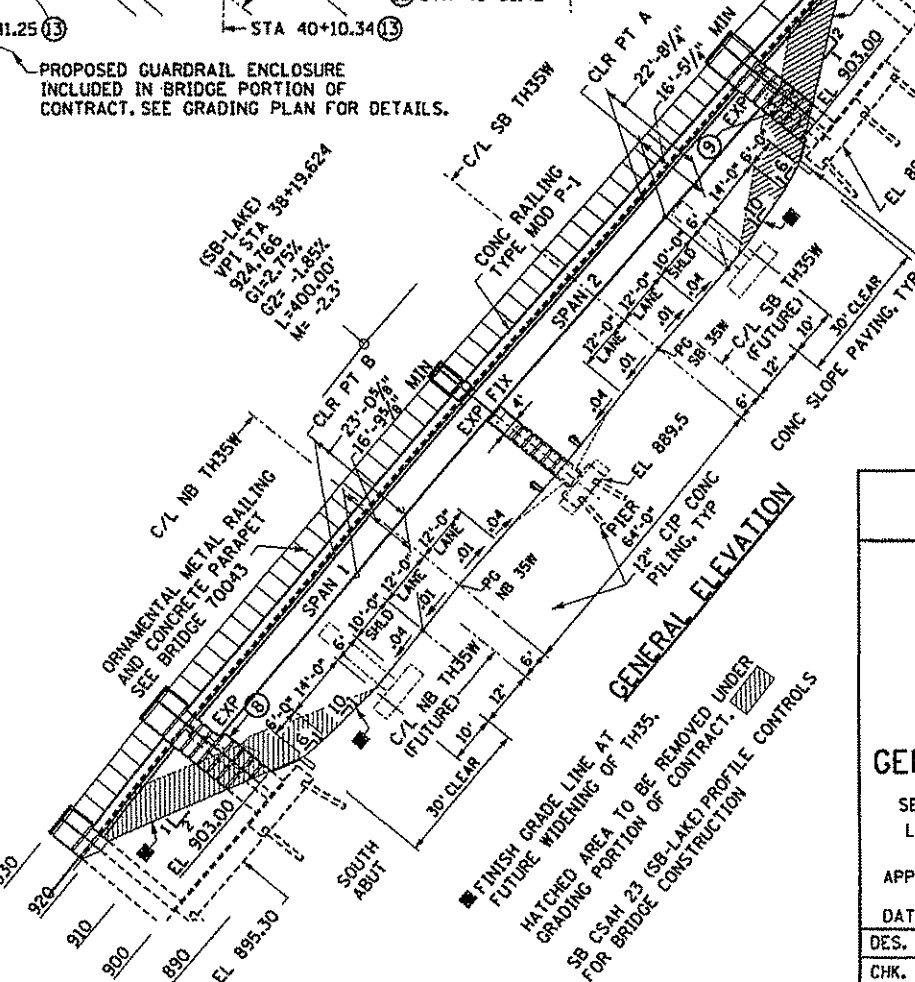
THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

BAR MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (Rn) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

**GENERAL PLAN**



**GENERAL ELEVATION**

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

SIGNED: *John D. Steenberg* 12/11/2006  
LICENSED PROFESSIONAL ENGINEER  
NAME: JOHN D. STEENBERG LIC NO: 13865

B.M. ELEV. EL 913.965 (NAVD 88 DATUM)  
SE CORNER EXIST BR 9820

CSAH NO. 23  
MINNESOTA  
DEPARTMENT OF TRANSPORTATION

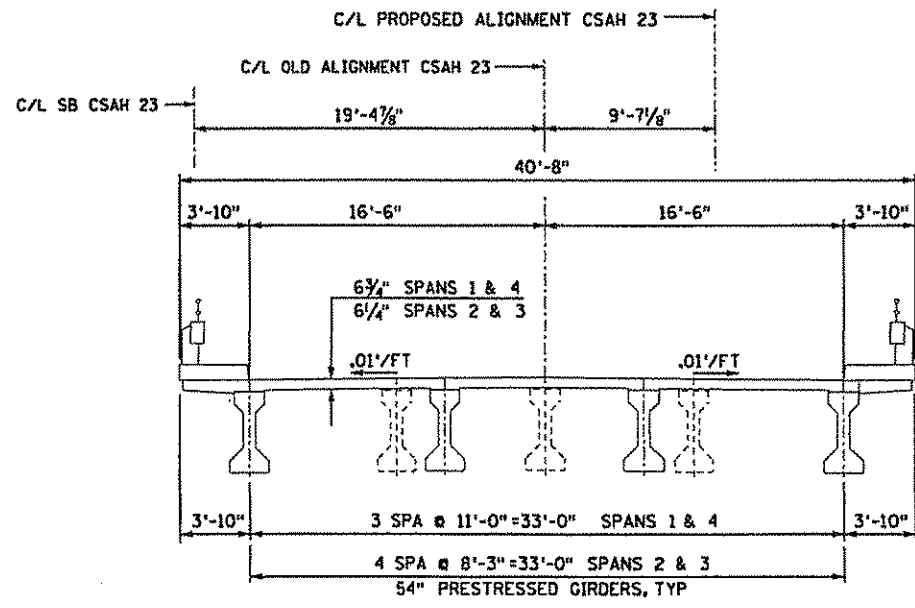
**BRIDGE NO 02817**  
TH 35W UNDER CSAH 23 (LAKE DRIVE)  
IN LINO LAKES  
1.7 MI SW OF JCT  
CSAH 14 AND TH 35W  
(2) 138' PRESTRESSED BEAM SPANS  
118'-4" WIDE (INCLUDES THRU LANES,  
RAISED MEDIAN AND 12' TRAIL)  
IDENTIFICATION NO 501

**GENERAL PLAN AND ELEVATION**

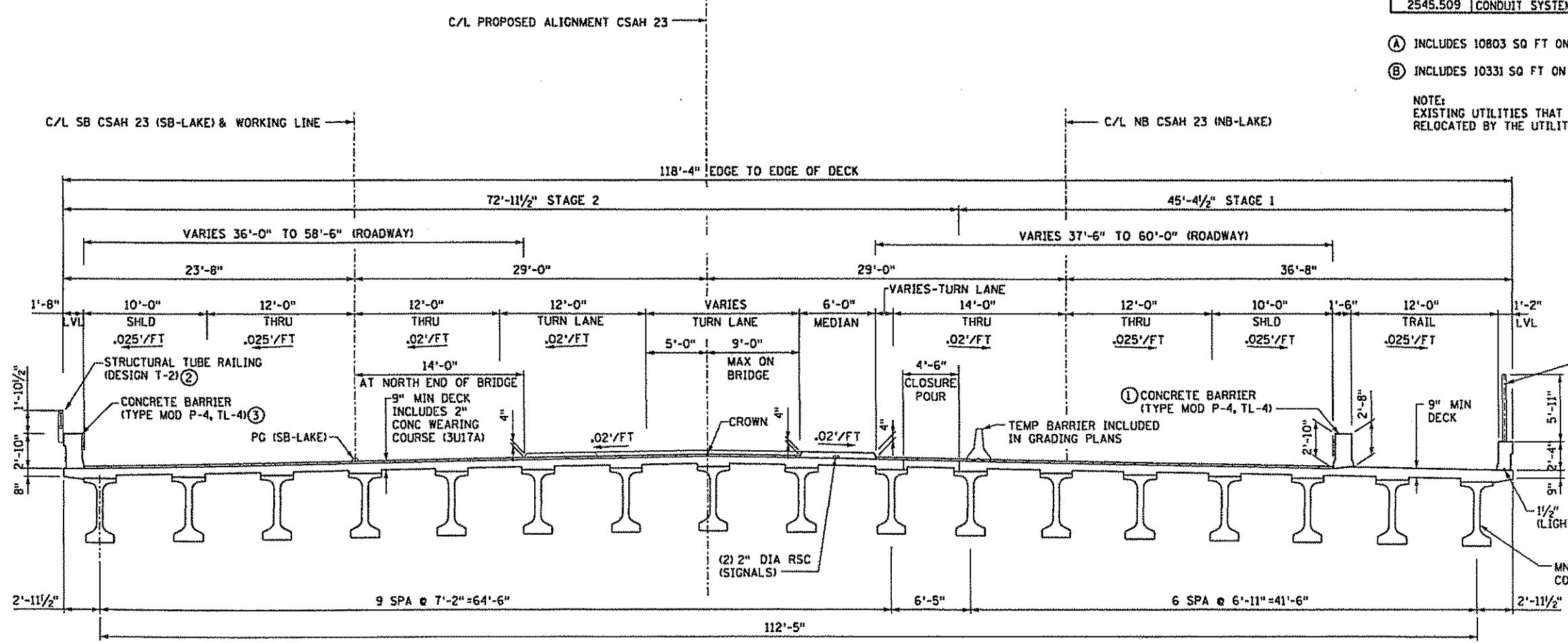
SEC. 17 T 81 N R 22 W  
LINO LAKES TOWNSHIP ANOKA COUNTY

APPROVED: *Karin Western*  
DATE: 1/10/07 STATE BRIDGE ENGINEER FOR

DES. MAW	DR. MAW	02817
CHK. JDS	CHK. JDS	



EXISTING TRANSVERSE SECTION  
INPLACE BRIDGE 9820



TYPICAL TRANSVERSE SECTION

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO	ITEM	UNIT	QUANTITY
2401.501	STRUCTURAL CONCRETE (1A43)	CU YD	1053 (P)
2401.501	STRUCTURAL CONCRETE (3Y43)	CU YD	1954 (P)
2401.512	BRIDGE SLAB CONCRETE (3Y36)	SQ FT	33630 (P)
2401.513	TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)	LIN FT	386 (P)
2401.513	TYPE MOD P-4 (TL-4) RAILING CONCRETE (3Y46)	LIN FT	656 (P)
2401.516	RAISED MEDIAN CONCRETE (3Y46)	SQ FT	1547 (P)
2401.541	REINFORCEMENT BARS	POUND	82300 (P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	348690 (P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
(B) 2401.618	BRIDGE DECK PLANING	SQ FT	35950 (P)
2402.583	ORNAMENTAL METAL RAILING	LIN FT	339 (P)
2402.584	STRUCTURAL TUBE RAILING DESIGN T-2	LIN FT	355 (P)
2402.591	EXPANSION JOINT DEVICES TYPE 5	LIN FT	359 (P)
2402.595	BEARING ASSEMBLY	EACH	68
(A) 2404.501	CONCRETE WEARING COURSE (3U17A)	SQ FT	38231 (P)
2405.502	PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	4709 (P)
2405.511	DIAPHRAGMS FOR TYPE MN63 PREST BEAMS	LIN FT	703 (P)
2411.618	ANTI-GRAFFITI COATING	SQ FT	5069 (P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (FRACTURED GRANITE)	SQ FT	5069 (P)
2411.618	ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	SQ FT	5069 (P)
2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1
2452.507	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	17440
2452.508	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	17440
2452.519	C-I-P CONC TEST PILE 60 FT LONG 12"	EACH	4
2452.519	C-I-P CONC TEST PILE 65 FT LONG 12"	EACH	8
2452.601	STEEL SHEET PILING (TEMPORARY)	LS	1
2452.602	PILE POINTS 12"	EACH	337
2452.602	PILE ANALYSIS	EACH	6
2502.502	DRAINAGE SYSTEM TYPE (B91D)	LUMP SUM	1
2514.501	CONCRETE SLOPE PAVING	SQ YD	312 (P)
2545.509	CONDUIT SYSTEM (LIGHTING)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1

- (A) INCLUDES 10803 SQ FT ON BRIDGE APPROACH PANEL.
- (B) INCLUDES 10331 SQ FT ON BRIDGE APPROACH PANEL.

NOTE:  
EXISTING UTILITIES THAT ARE WITHIN THE FOOTPRINT OF THE PROPOSED BRIDGE STRUCTURE ARE TO BE RELOCATED BY THE UTILITY PRIOR TO CONSTRUCTION OF THE BRIDGE. SEE SHEETS B94 & B95.

NOTES

- ① STD FIG 5-397.173 MODIFIED.
- ② STD FIG 5-397.158 MODIFIED.
- ③ STD FIG 5-397.173 MODIFIED.

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3535 VAONAS CENTER DRIVE  
ST PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

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

Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

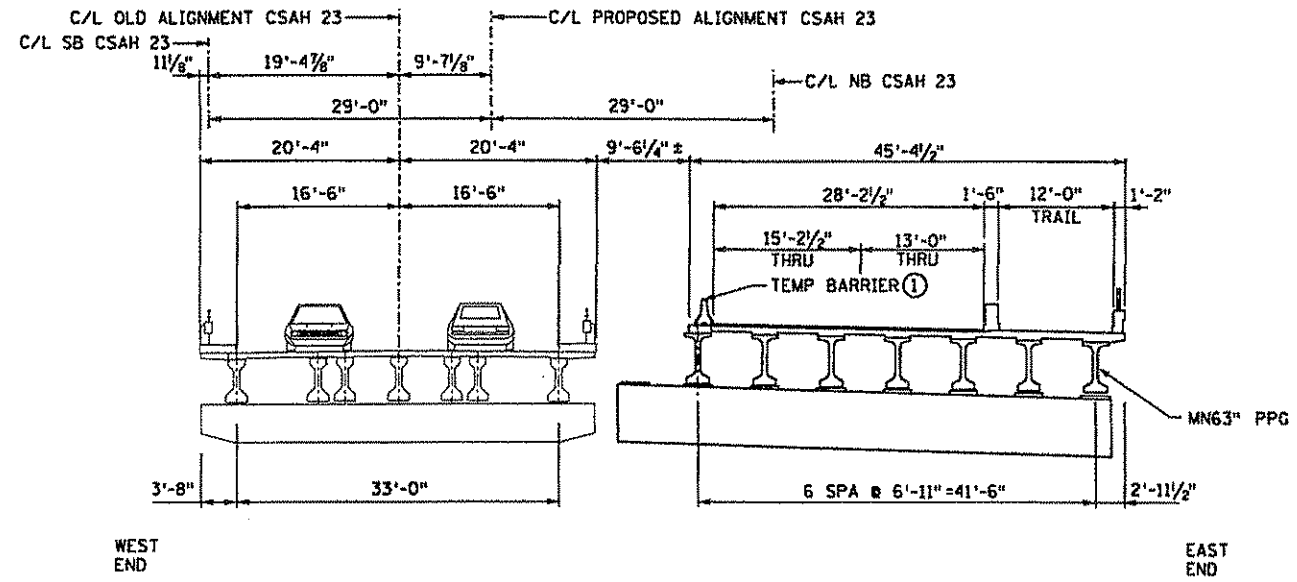
TITLE:  
TYPICAL SECTION &  
SUMMARY OF QUANTITIES

SP 0280-55 SAP 02-623-13 0 4 8 12

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

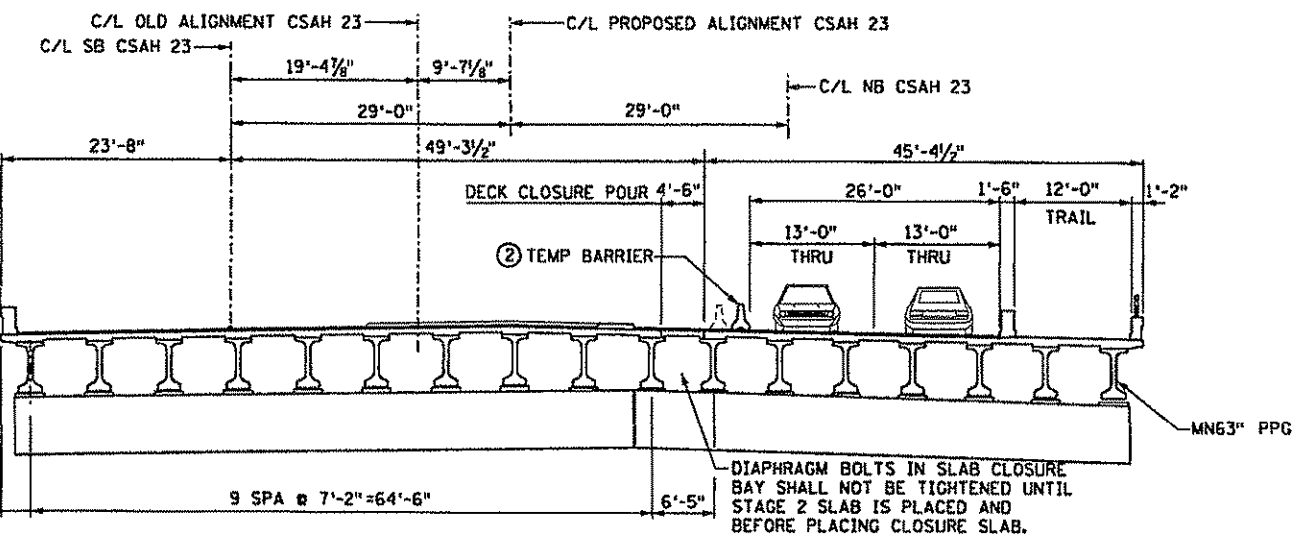
SHEET NO B2 OF 95 SHEETS BRIDGE NO 02817

11/21/2006 11:21:20 AM



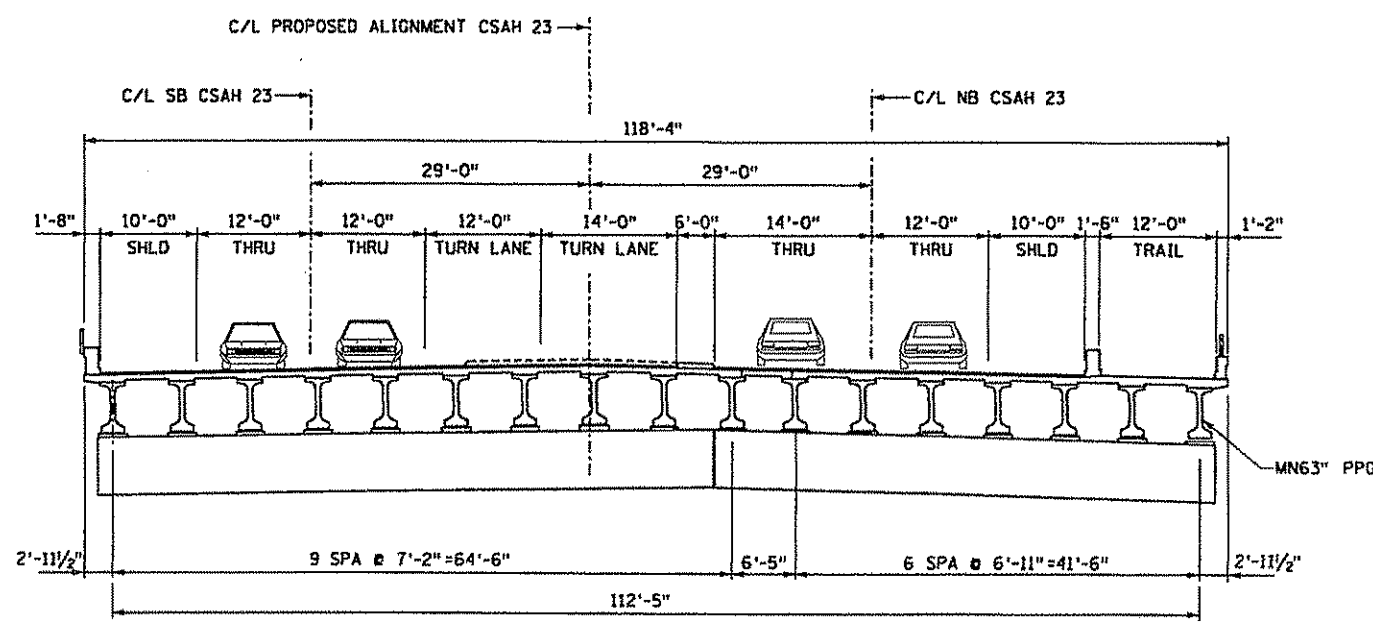
- TRAFFIC ON EXISTING BRIDGE
- DRIVE SHEET PILING TO PERMIT ABUTMENT CONSTRUCTION
- CONSTRUCT EAST PORTION OF ROADWAY AND BRIDGE WITH WEARING COURSE
- INSTALL TEMPORARY BARRIER, BOTH SIDES OF BARRIER ON BRIDGE DECK TO BE ANCHORED.

STAGE 1



- MOVE TRAFFIC TO THE EAST PORTION OF BRIDGE
- REMOVE EXISTING BRIDGE
- CONSTRUCT WEST PORTION OF ROADWAY AND BRIDGE
- PLACE DECK CLOSURE
- PLACE MEDIAN IN CENTER PORTION
- RELOCATE PORTABLE MEDIAN BARRIER FOR PLACEMENT OF CONCRETE OVERLAY. DO NOT ANCHOR TO DECK.
- PLACE WEARING COURSE ON WEST PORTION OF BRIDGE

STAGE 2

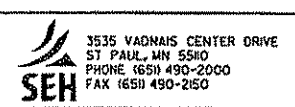


- OPEN COMPLETED ROADWAY AND BRIDGE TO TRAFFIC

STAGE 3

NOTES

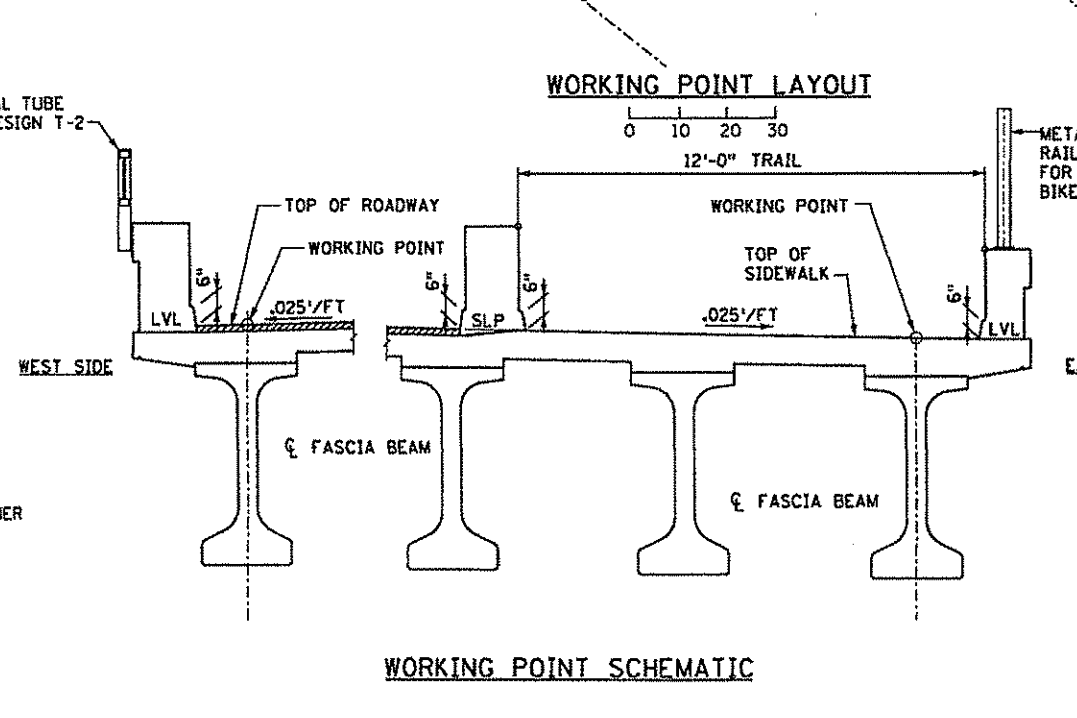
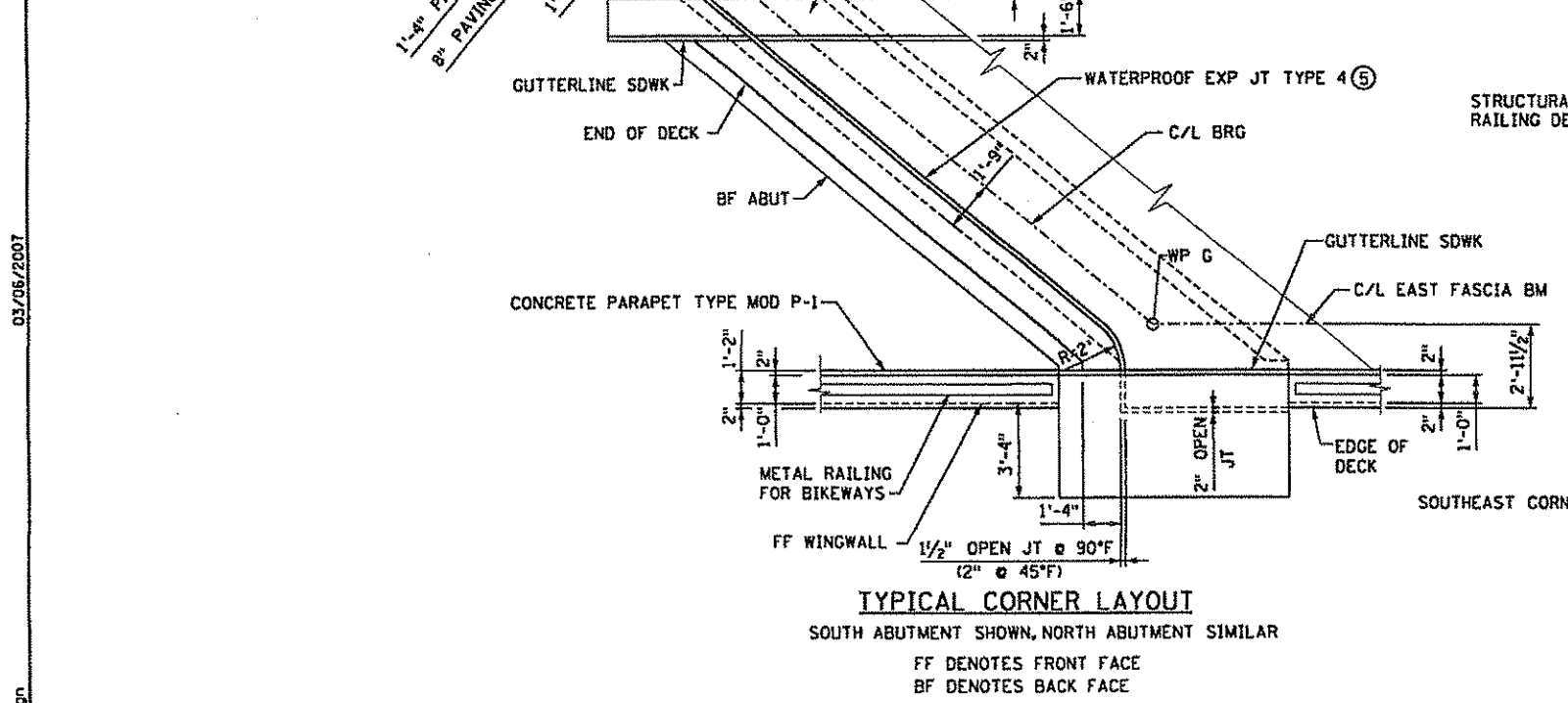
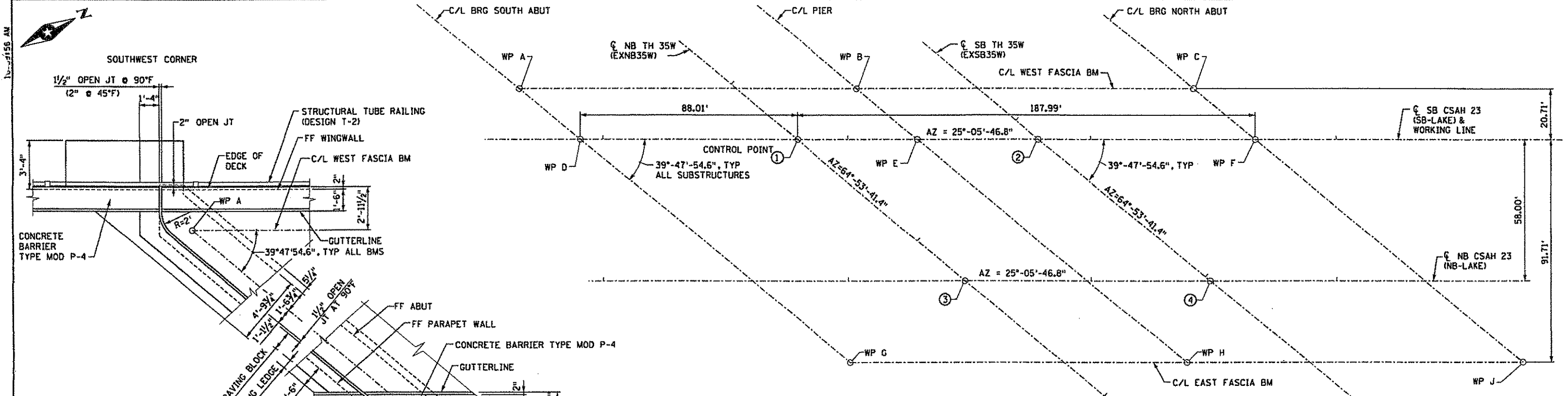
- SUPPLYING, PLACING AND ANCHORING PORTABLE MEDIAN BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. BOTH SIDES OF BARRIER ON BRIDGE DECK SHALL BE ANCHORED. SEE DTL B920, SHEET 109 FOR ANCHORAGE DETAILS.
- RELOCATED PORTABLE MEDIAN BARRIER, FOR PLACEMENT OF CONCRETE WEARING COURSES IN STAGE 2 ONLY. INCLUDED IN GRADING PORTION OF CONTRACT. DO NOT ANCHOR TO DECK.



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: CONSTRUCTION STAGING

SP 0280-55	SAP 02-623-13	DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: JDS				
SHEET NO B3 OF 95 SHEETS					



- NOTES**
- ① CONTROL POINT (SB-LAKE) POT 37+78.732= (EXNB35W) POT 770+35.169 X=539575.966 Y=152787.374
  - ② (SB-LAKE) POT 38+78.718 (EXSB35W) POT 771+11.988 X=539618.375 Y=152877.921
  - ③ (NB-LAKE) POT 38+48.800= (EXNB35W) POT 771+25.781 X=539658.019 Y=152825.819
  - ④ (NB-LAKE) POT 39+48.786 (EXSB35W) POT 772+02.600 X=539700.427 Y=152916.366
  - ⑤ 1/2" OPEN JT @ 90° F  
1 1/2" OPEN JT @ 45° F

**TYPICAL CORNER LAYOUT**  
SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR  
FF DENOTES FRONT FACE  
BF DENOTES BACK FACE

**WORKING POINT SCHEMATIC**

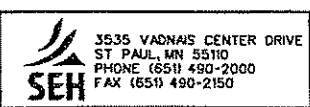
POINT NUMBER	DIMENSIONS BETWEEN WORKING POINTS													ELEVATIONS			POINT
	POINT	STATION ①	X	Y	A	B	C	D	E	F	G	H	J	TOP OF SLAB	TOP OF SLAB TO BR SEAT	BRIDGE SEAT	
A	A	36+65.87	539509.343	152693.949										919.90	6.688	913.21	A
B	B	38+03.87	539567.875	152818.921	138.00									921.86	6.521	915.34	B
C	C	39+41.87	539626.406	152943.893	276.00	138.00								921.64	6.688	914.95	C
D	D	36+90.72	539538.639	152707.675	32.35	115.02	252.00							920.93			D
E	E	38+28.72	539597.171	152832.648	164.17	32.35	115.02	138.00						922.50			E
F	F	39+66.72	539655.702	152957.620	301.57	164.17	32.35	276.00	138.00					921.88			F
G	G	38+00.80	539668.378	152768.464	175.63	112.46	180.38	143.27	95.86	189.58				921.52	6.688	914.83	G
H	H	39+38.80	539726.910	152893.436	295.18	175.63	112.46	264.49	143.27	95.86	138.00			921.34	6.521	914.82	H
J	J	40+76.80	539785.441	153018.408	426.03	295.18	175.63	396.82	264.49	143.27	276.00	138.00		919.18	6.688	912.50	J

TOP OF ROADWAY TO BRIDGE SEAT			
	S ABUT	PIER	N ABUT
SLAB THICKNESS	9"	9"	9"
STOOL HEIGHT	3"	3"	3"
BEAM HEIGHT	63"	63"	63"
BEARING HEIGHT	5 1/4"	3 1/4"	5 1/4"
TOTAL (IN)	80.25"	78.25"	80.25"
TOTAL (FT)	6.688'	6.521'	6.688'

ALL DISTANCES ARE ALONG STRAIGHT LINES BETWEEN WORKING POINTS AND ARE GIVEN IN DECIMALS OF A FOOT.

COORDINATES BASED ON ANOKA COUNTY COORDINATE SYSTEM.

① STATIONS TAKEN ALONG  $\bar{C}$  CSAH 23 (SB-LAKE) AND WORKING LINE.



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

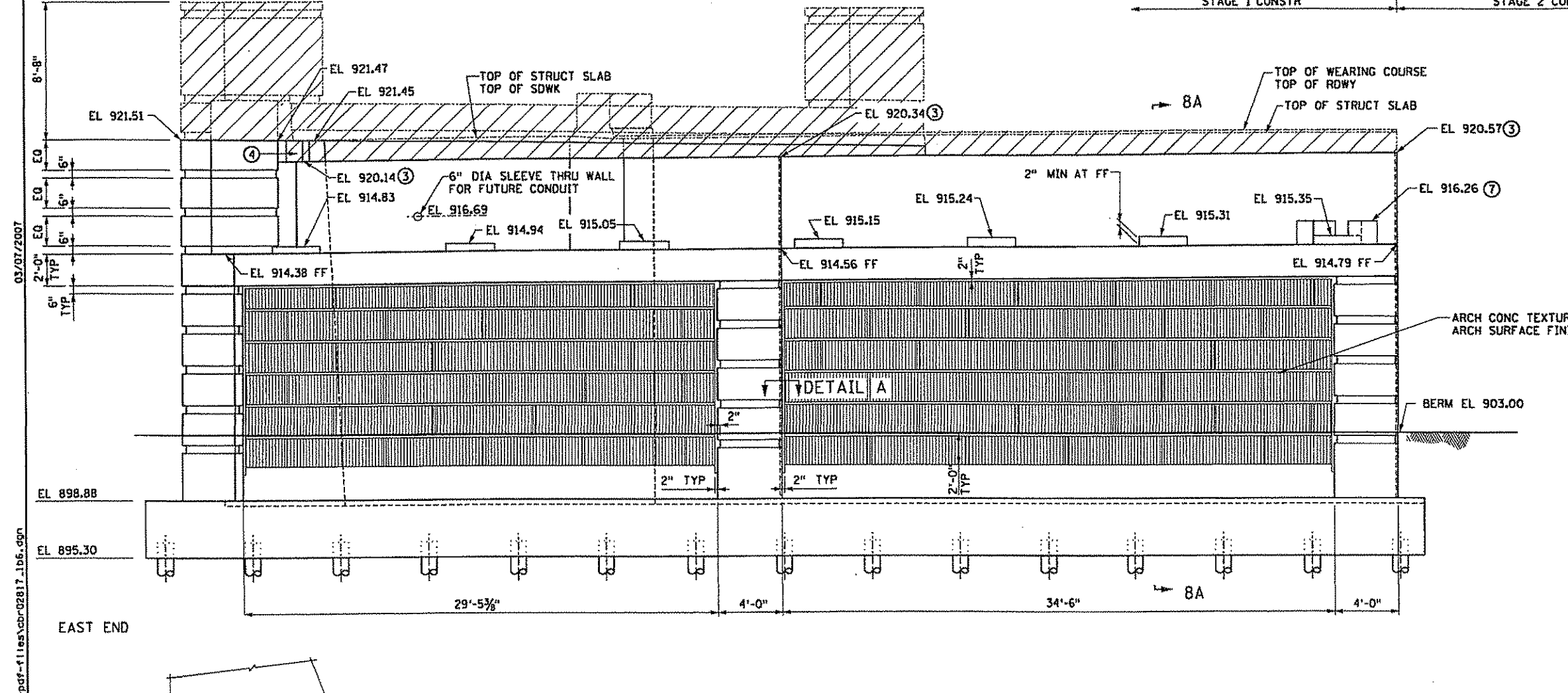
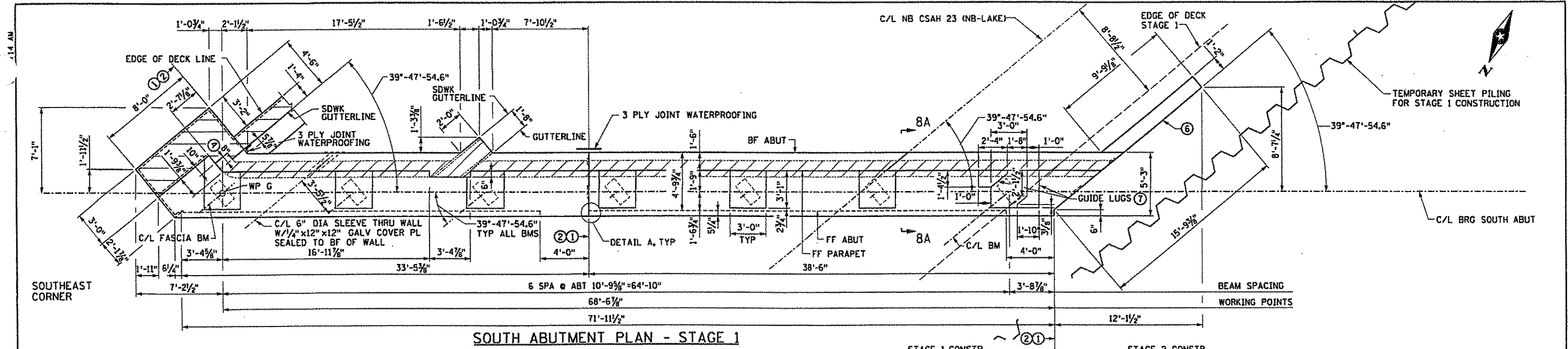
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DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: JDS		
SHEET NO B4 OF 95 SHEETS			

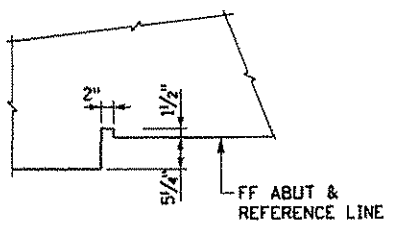
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- NOTES**
- SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.
  - ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.
  - ① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
  - ② 2" x 8" KEY IN PARAPET AND 2" x 12" KEY IN STEM.
  - ③ ELEVATION IS AT PARAPET FF.
  - ④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.
  - ⑥ STUB WALL FOR TEMP SHEETING SUPPORT FOR STAGE 2 CONSTR.
  - ⑦ GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.



DETAIL A

SOUTH ABUTMENT ELEVATION - STAGE 1

FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

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3535 VAONAS CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plot, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 11280

TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55		SAP 02-623-13	
DES: CAW	DR: MAW	APPROVED:	
CHK: JDS	CHK: CAW		
SHEET NO B6 OF 95 SHEETS			BRIDGE NO 02817



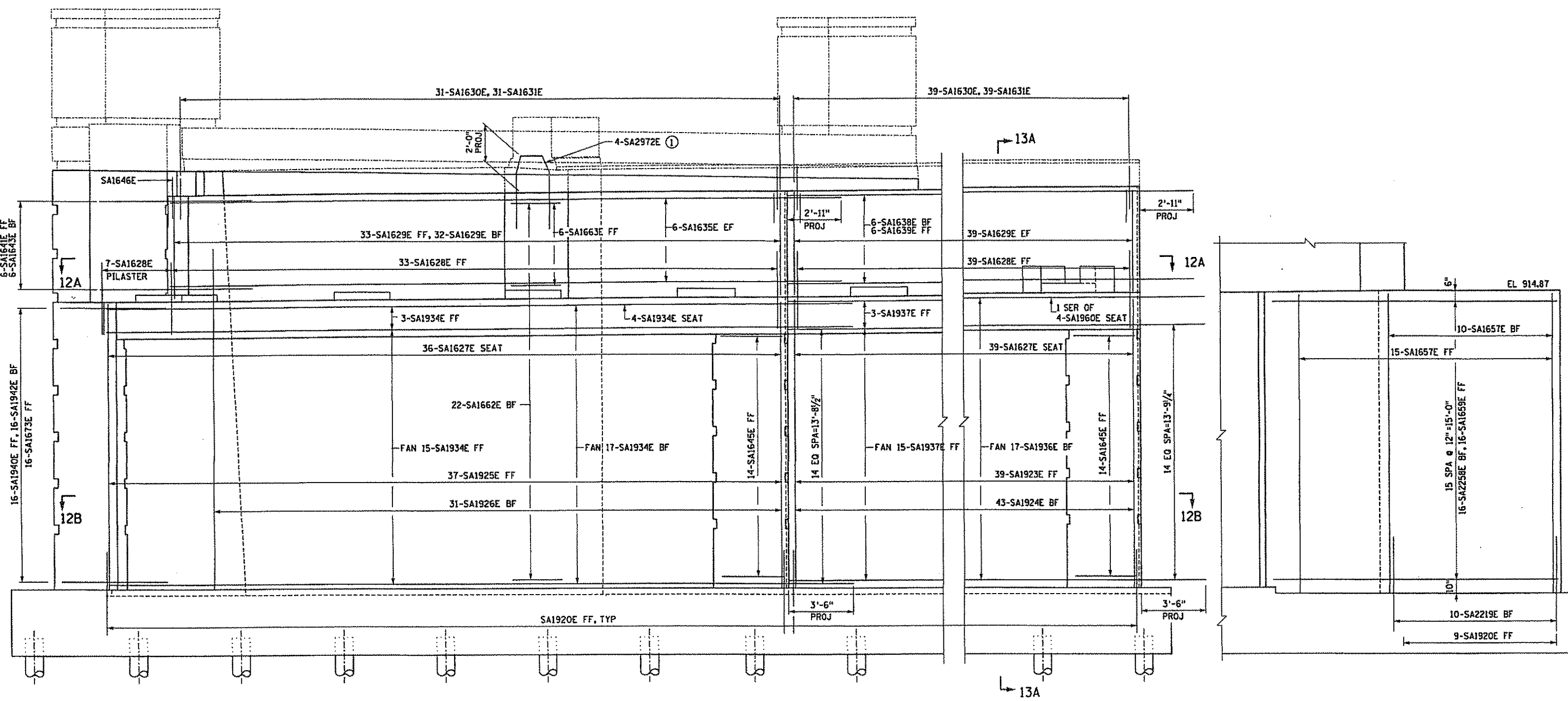






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SOUTHEAST CORNER



**SOUTH ABUTMENT ELEVATION**

**STUB WALL ELEVATION**

**NOTES**  
 SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.  
 ① SEE SIDEWALK MEDIAN BARRIER (TYPE MOD P-4) FOR PLACEMENT.

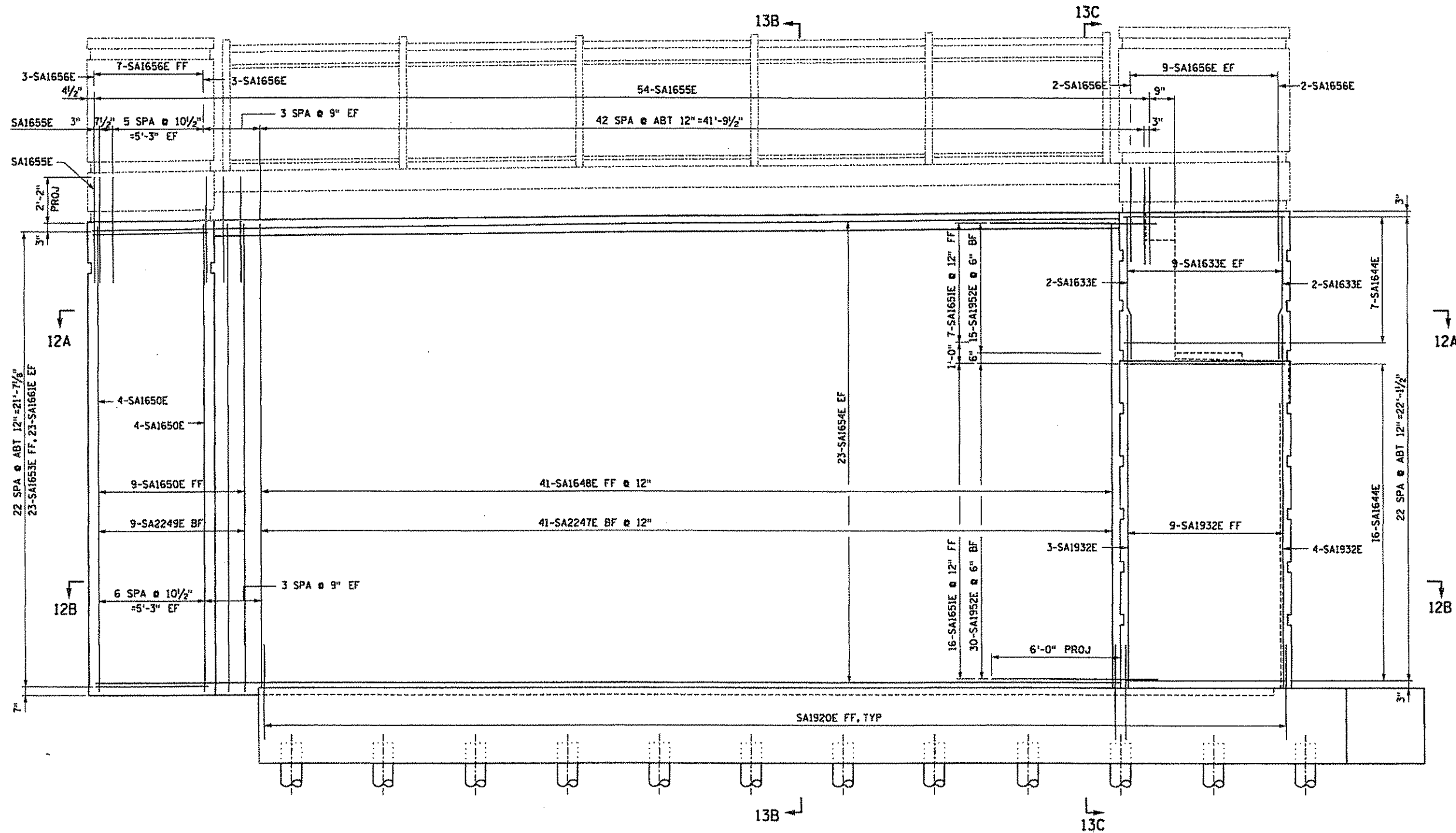
FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

3535 VADNAS CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE:  
**SOUTH ABUTMENT DETAILS  
 STAGE 1**

SP 0280-55	SAP 02-623-13	DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW				
SHEET NO B10 OF 95 SHEETS					

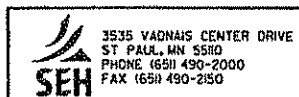


SOUTHEAST WINGWALL ELEVATION

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE  
BF=BACK FACE  
EF=EACH FACE



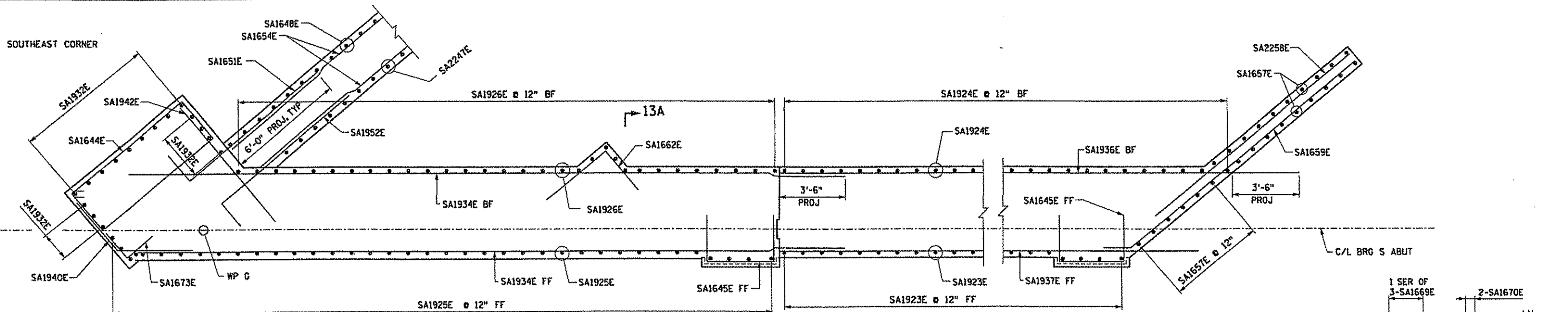
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

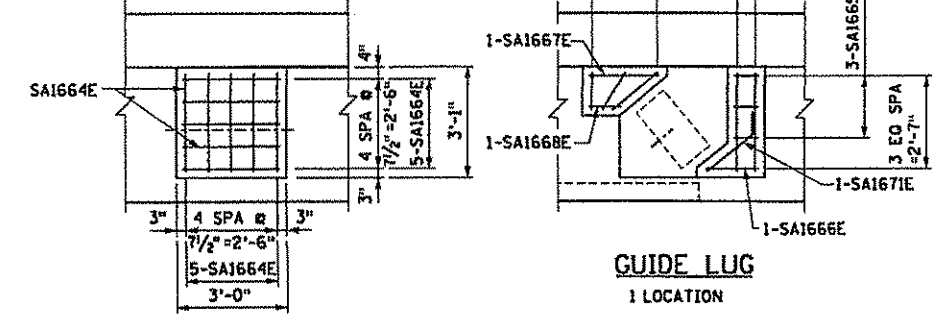
TITLE: SOUTH ABUTMENT DETAILS  
 STAGE 1

SP 0280-55		SAP 02-623-13	
DES: CAW	DR: MAW	APPROVED:	
CHK: JDS	CHK: CAW		
SHEET NO B11 OF 95 SHEETS			BRIDGE NO 02817

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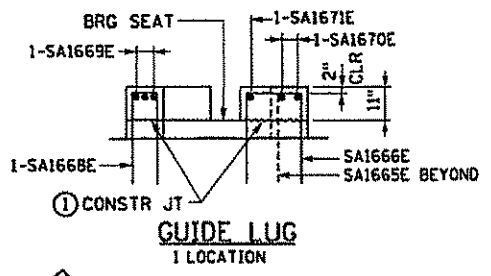


LOWER SECTION 12A-12A

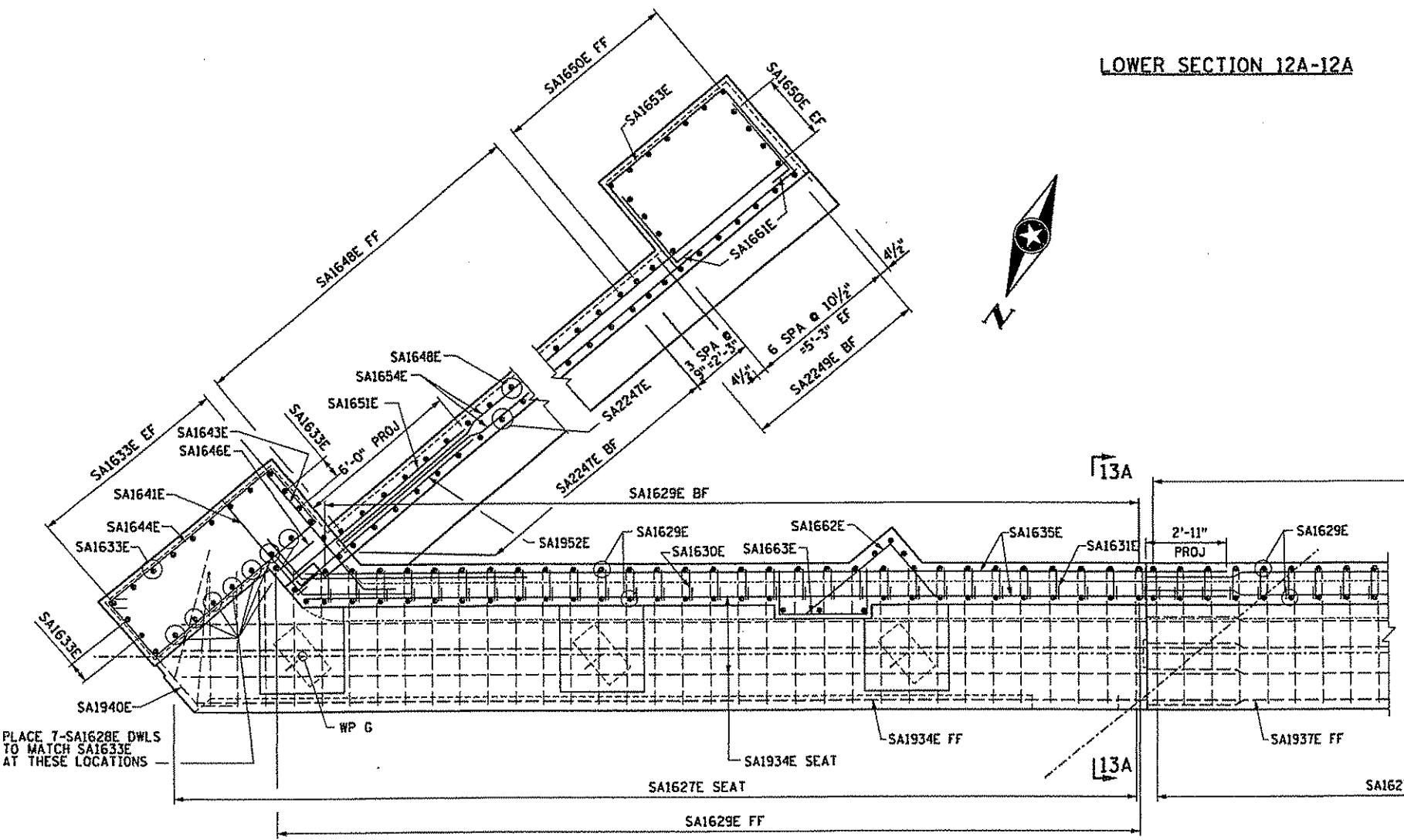


TYP BEARING SEAT  
6 LOCATIONS

GUIDE LUG  
1 LOCATION



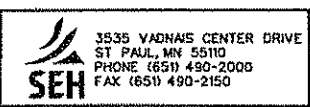
GUIDE LUG  
1 LOCATION



UPPER SECTION 12B-12B

FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

**NOTES**  
 SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.  
 ① GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS  
 STAGE 1

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B12 OF 95 SHEETS			



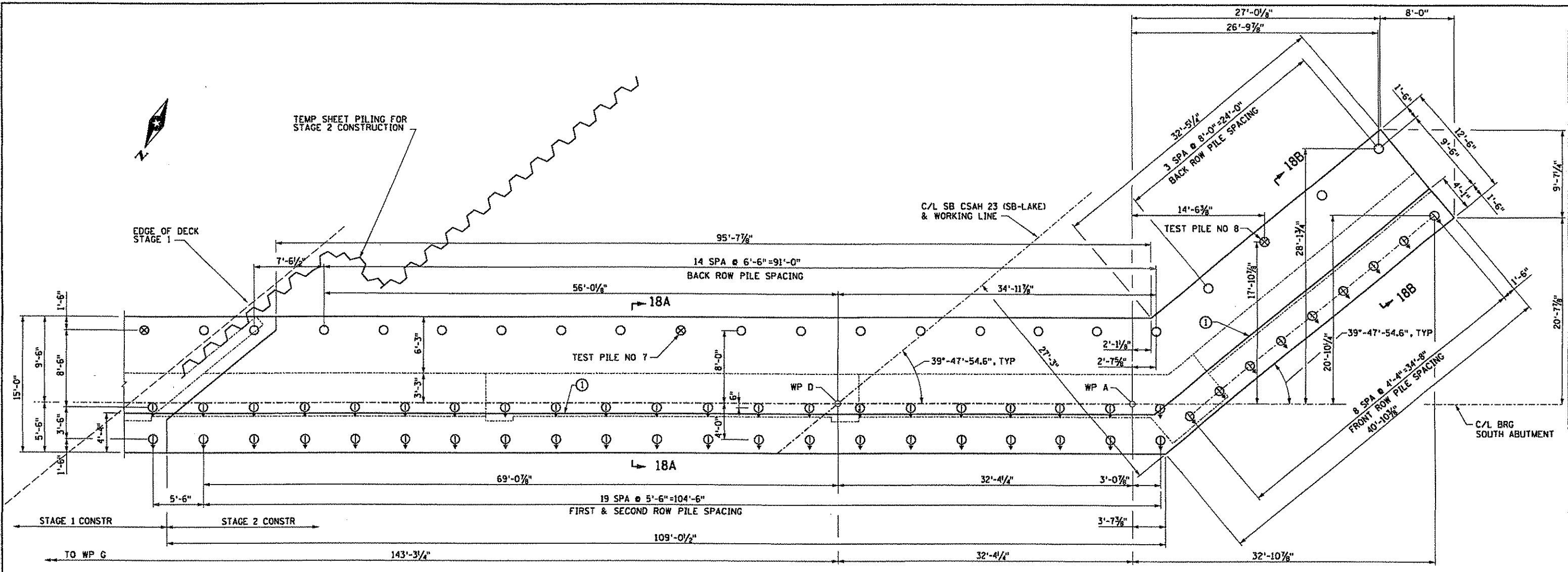




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**FOOTING PLAN-STAGE 2**

WEST END

SOUTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
*FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

\*BASED ON STRENGTH I LOAD COMBINATION.

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R <sub>n</sub> - Tons / Pile		
FIELD CONTROL METHOD	φ <sub>dyn</sub>	*R <sub>n</sub>
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

\*R<sub>n</sub> = (FACTORED DESIGN LOAD) / φ<sub>dyn</sub>

**PILE NOTES**

- 2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG
- 66 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT
- 68 CAST-IN-PLACE CONC. PILES REQ'D FOR SOUTH ABUT, STAGE 2.
- PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
- PILES MARKED THIS ⊙ TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.
- PILES TO HAVE A NOMINAL DIAMETER OF 12".
- FOR PILE SPLICE DETAILS SEE DETAIL B201.
- CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.

⊗ DENOTES TEST PILE

**NOTES**

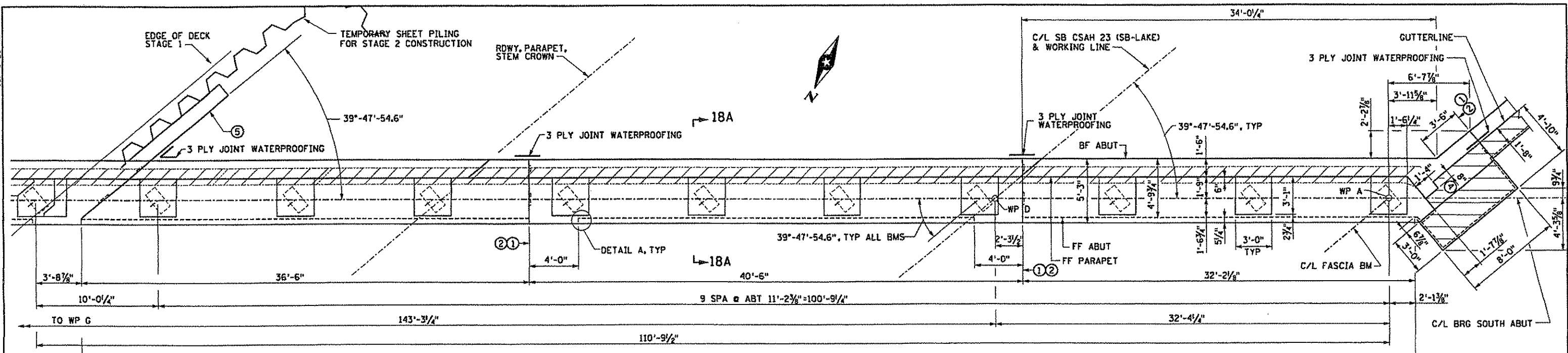
- ① EDGE OF 4" VERT FTG KEY.
- SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

3535 VAONAS CENTER DRIVE  
ST PAUL, MN 5510  
PHONE 651 490-2000  
FAX 651 490-2150

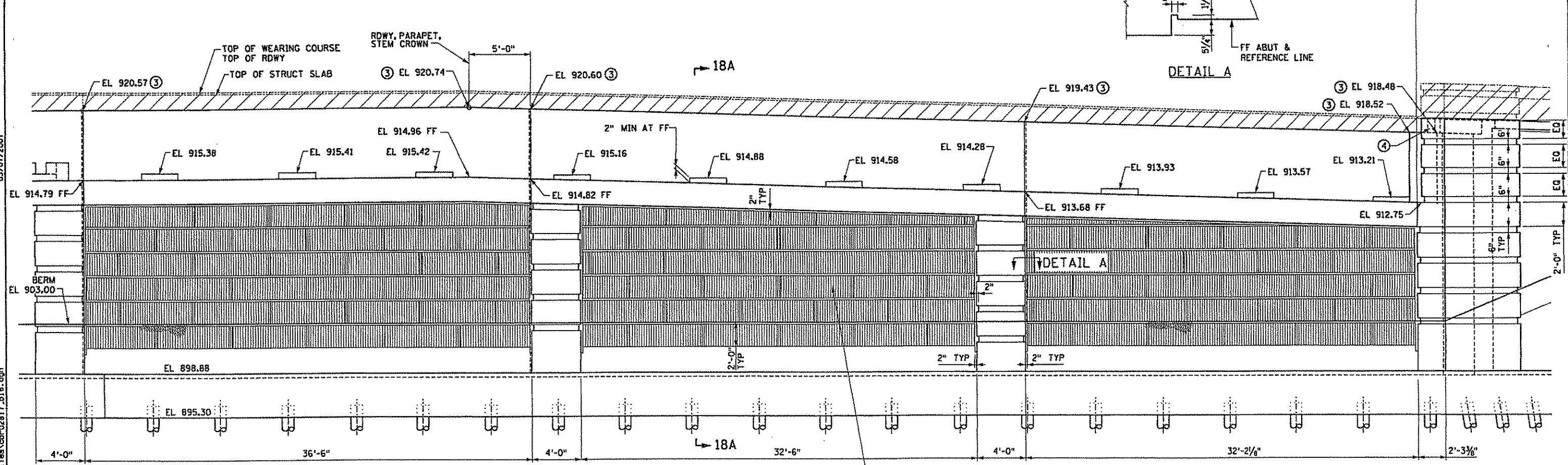
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *Christopher A. Nurnsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. NURNSCH Reg. No. 42058

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B15 OF 95 SHEETS			



**SOUTH ABUTMENT PLAN - STAGE 2**



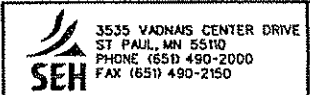
**SOUTH ABUTMENT ELEVATION - STAGE 2**

**NOTES**

- SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.
- ① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
- ② 2"x8" KEY IN PARAPET AND 2"x12" KEY IN STEM.
- ③ ELEVATION IS AT PARAPET FF.
- ④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.
- ⑤ STUB WALL FOR TEMP SHEETING SUPPORT FOR STAGE 2 CONSTRUCTION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR)



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: **SOUTH ABUTMENT DETAILS STAGE 2**

SP 0280-55	SAP 02-623-13	APPROVED:	BRIDGE NO 02817
DES: CAW	DR: MAW	CHK: JDS	
SHEET NO B16 OF 95 SHEETS			





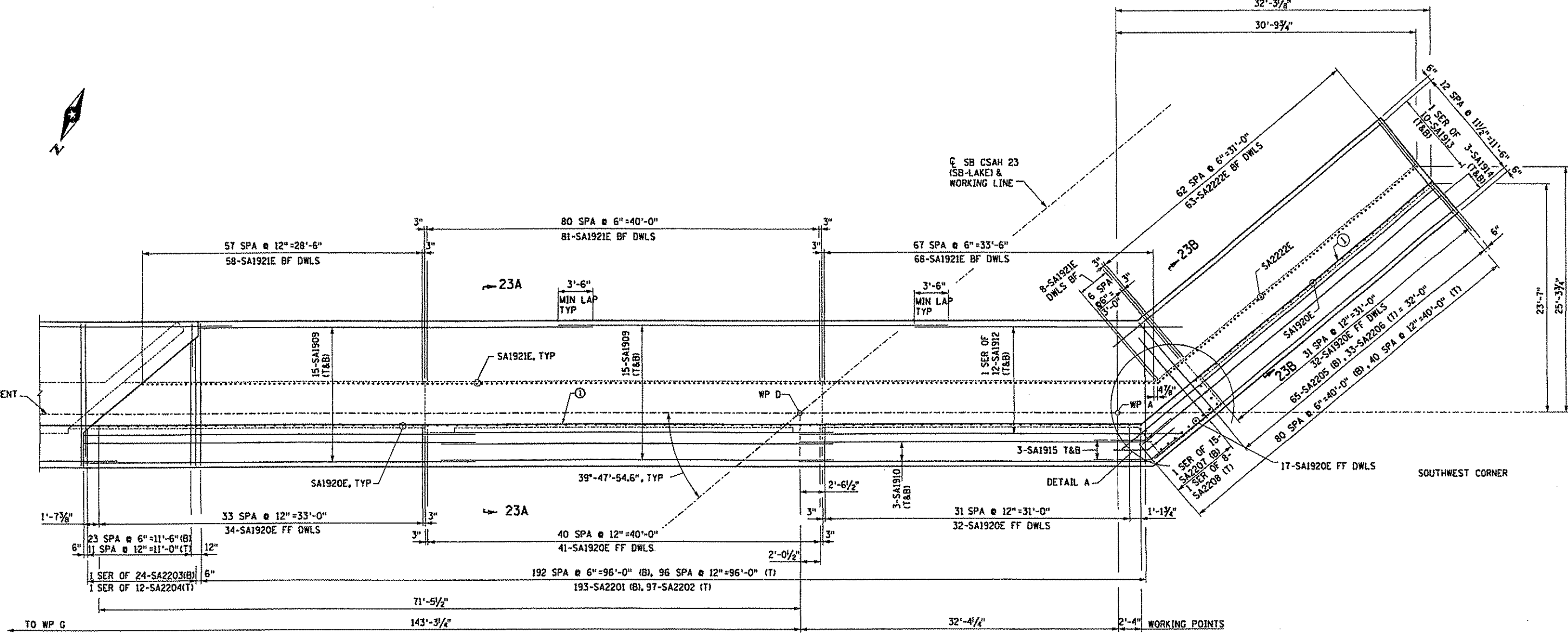
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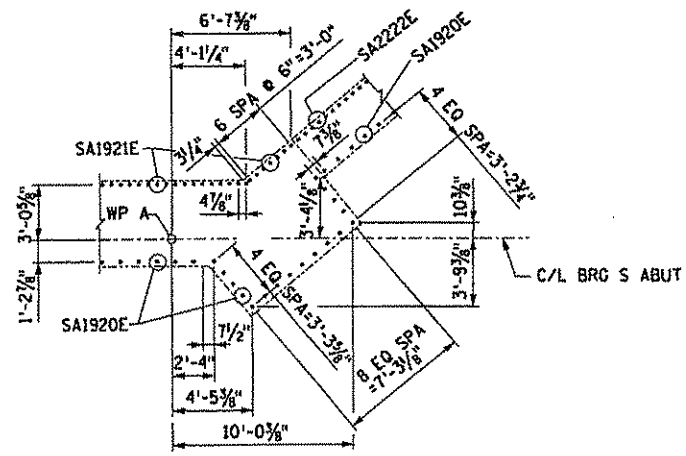
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C/L BRG SOUTH ABUTMENT



### FOOTING REINFORCEMENT PLAN - STAGE 2



DETAIL A

- NOTES**
- ① EDGE OF 4" VERT FTG KEY.
  - SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55110  
PHONE (651) 480-2000  
FAX (651) 450-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *Christopher A. Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**SOUTH ABUTMENT DETAILS  
STAGE 2**

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B19 OF 95 SHEETS			

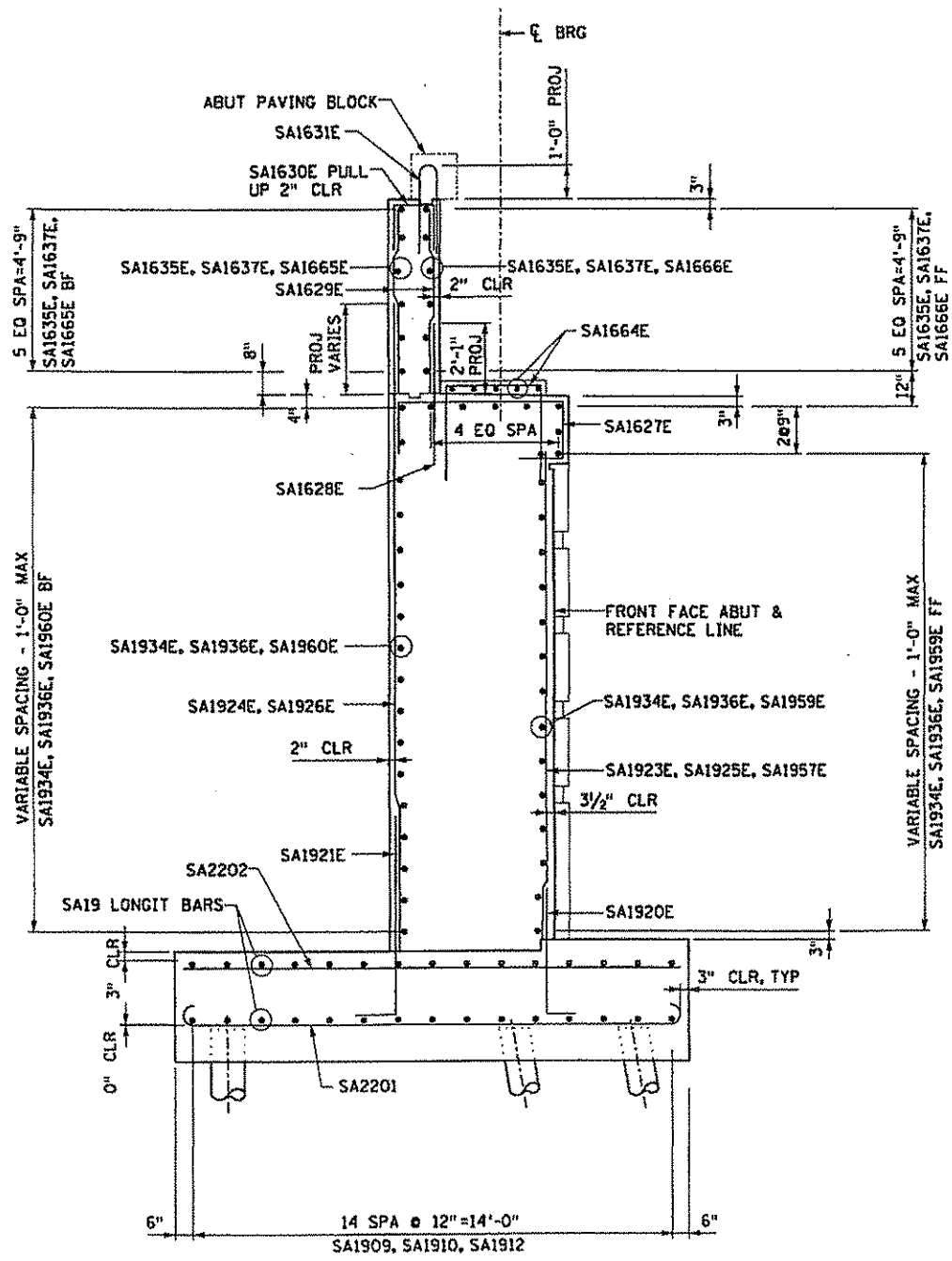
SP 0280-55 SAP 02-623-13



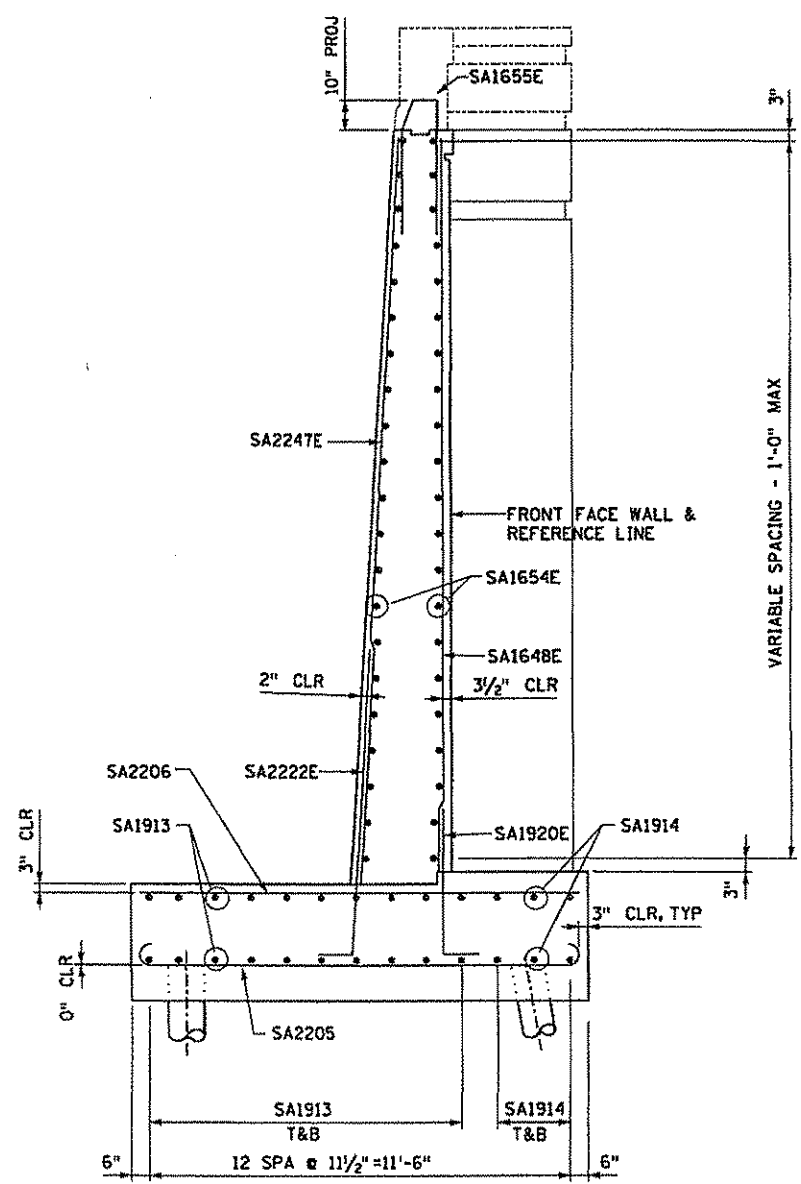




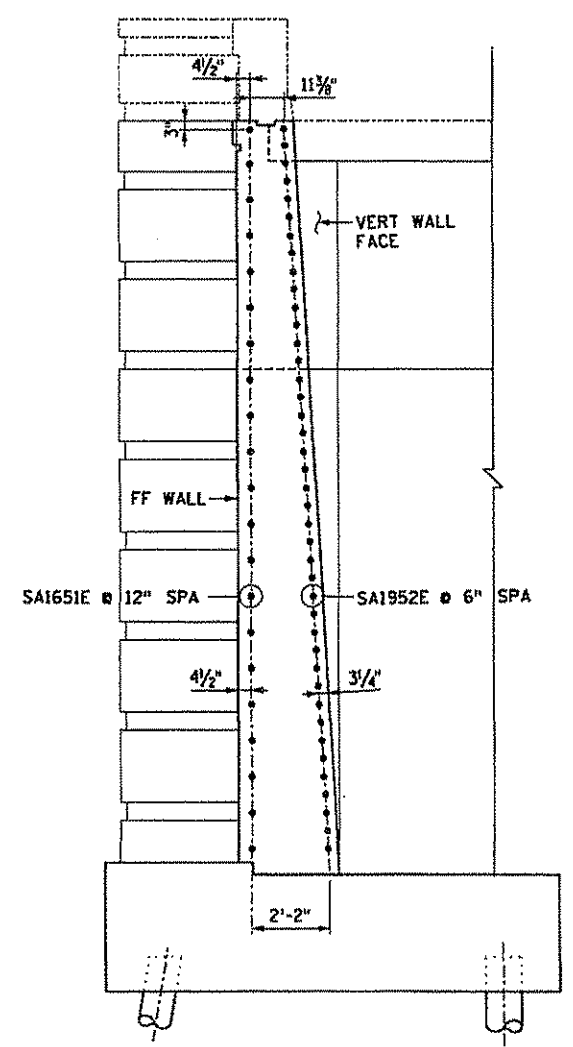




ABUTMENT SECTION 23A-23A



SOUTHWEST WINGWALL SECTION 23B-23B

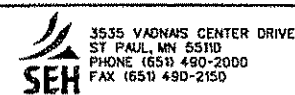


SOUTHWEST WINGWALL SECTION 23C-23C

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE  
BF=BACK FACE  
EF=EACH FACE



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

Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE:  
**SOUTH ABUTMENT DETAILS  
 STAGE 2**

SP 0280-55	SAP 02-623-13	APPROVED:	BRIDGE NO
DES: CAW	DR: MAW	CHK: JDS	95 SHEETS
CHK: JDS	CHK: CAW		
SHEET NO B23 OF 95 SHEETS			02817

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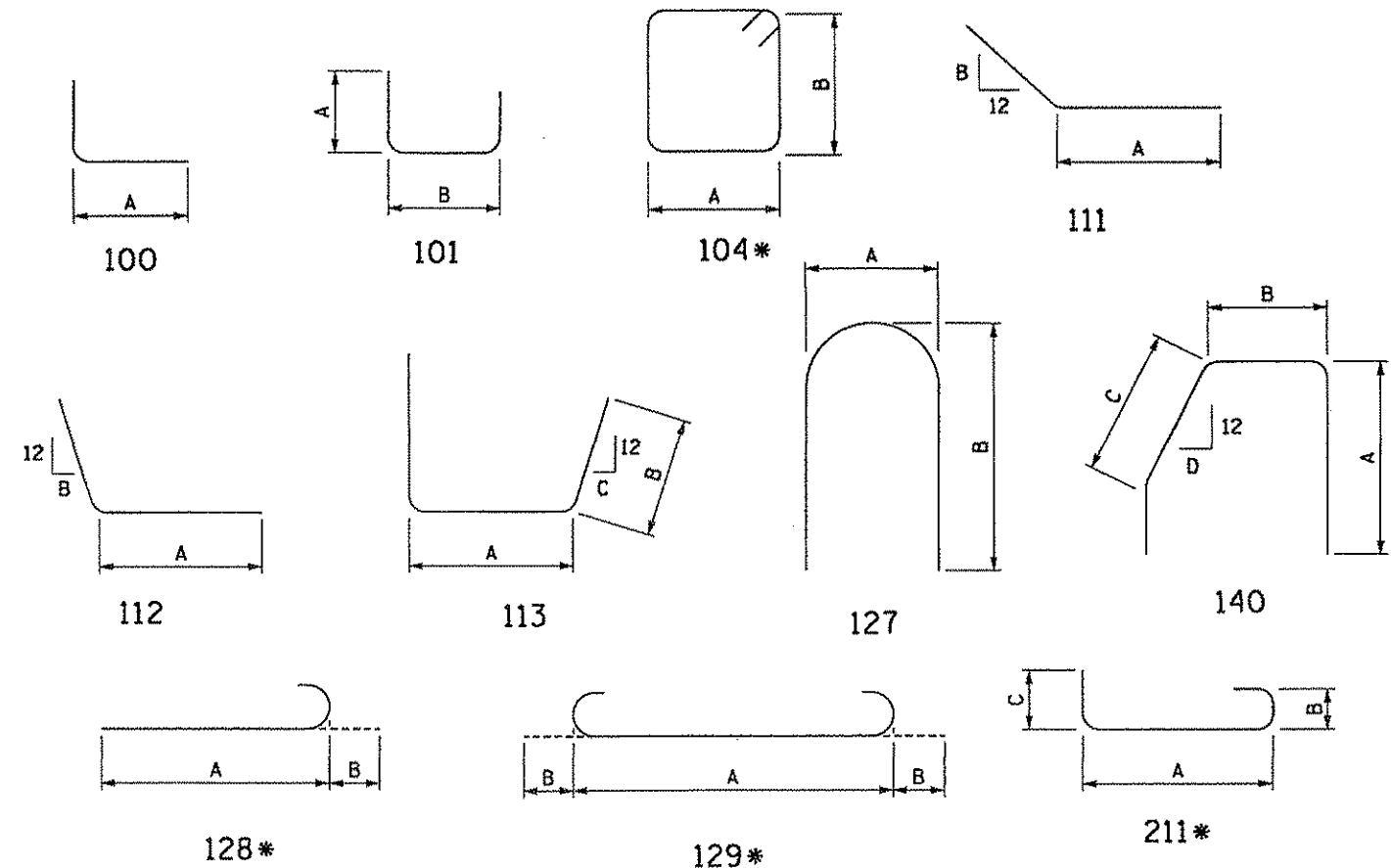
BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
SOUTH ABUTMENT-STAGE 2									
EPOXY COATED BARS									
SA1920E		156	5'-5"	100	4'-5"				FTG DWL FF
SA1921E		215	9'-11"	100	8'-11"				FTG DWL BF
SA2222E		63	12'-5"	112	11'-3"	1			FTG DWL BF
SA1923E		33	13'-8"	STR					VERT FF
SA1924E		39	17'-5"	STR					VERT BF
SA1925E		41	14'-8"	STR					VERT FF
SA1926E		70	18'-6"	STR					VERT BF
SA1627E		104	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
SA1628E		119	4'-2"	STR					PARAPET DWL
SA1629E		223	5'-6"	STR					VERT PARAPET
SA1630E		110	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
SA1631E		110	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
SA1932E		16	15'-11"	STR					VERT PILASTER
SA1633E		25	6'-6"	STR					VERT PILASTER
SA1934E		37	39'-6"	STR					HORIZ BODY
SA1635E		12	40'-10"	STR					HORIZ PARAPET
SA1936E		39	44'-0"	STR					HORIZ BODY
SA1637E		12	43'-5"	STR					HORIZ PARAPET
SA1940E		14	6'-0"	STR					HORIZ CORNER
SA1641E		6	6'-11"	111	5'-11"	14			HORIZ CORNER
SA1942E		14	10'-8"	100	5'-4"				HORIZ CORNER
SA1643E		6	11'-6"	120	5'-4"	5'-2"			HORIZ CORNER
SA1644E		21	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
SA1645E		27	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
SA1646E		4	6'-0"	100	3'-0"				CORNER TOP
SA2247E		32	20'-0"	STR					VERT WALL BF
SA1648E		32	19'-8"	STR					VERT WALL FF
SA2249E		9	19'-7"	STR					VERT WALL BF
SA1650E		17	19'-7"	STR					VERT WALL FF
SA1651E		21	7'-9"	STR					HORIZ DWL FF
SA1952E		42	12'-0"	STR					HORIZ DWL BF
SA1653E		21	14'-1"	101	4'-4"	5'-5"			HORIZ PILASTER
SA1654E		42	39'-4"	STR					WALL HORIZ
SA1655E		51	8'-4"	101	3'-10"	0'-8"			MOD P-1 RAIL
SA1656E		39	4'-9"	STR					VERT RAIL
SA1957E		34	14'-8"	STR					VERT FF
SA1658E	1	5	4'-6"	101	1'-8"	1'-2"			SEAT
			7'-9"		1'-8"	4'-5"			
SA1959E		18	36'-0"	STR					HORIZ BODY FF
SA1960E		17	30'-7"	STR					HORIZ BODY BF
SA1661E		42	3'-10"	100	3'-0"				HORIZ PILASTER
SA1662E		6	10'-0"	STR					HORIZ CORNER
SA1663E		2	3'-10"	100	2'-10"				HORIZ FF CORNER
SA1664E		100	6'-8"	101	2'-0"	2'-8"			BRG SEAT
SA1665E		6	30'-7"	STR					HORIZ PARAPET BF
SA1666E		6	32'-2"	STR					HORIZ PARAPET FF
SA1967E	1	4	32'-2"	STR					SEAT
			35'-7"						

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
SOUTH ABUTMENT - STAGE 2									
BLACK BARS									
SA2201		193	16'-2"	129	14'-6"	0'-10"			TRANSV B
SA2202		97	14'-6"	STR					TRANSV T
SA2203	1	24	4'-7"	128	3'-9"	0'-10"			TRANSV B
			14'-1"		13'-3"	0'-10"			
SA2204	1	12	3'-9"	STR					TRANSV T
			12'-10"						
SA2205		65	13'-8"	129	12'-0"	0'-10"			TRANSV B
SA2206		33	12'-0"	STR					TRANSV T
SA2207	1	15	3'-4"	128	2'-6"	0'-10"			TRANSV B
			11'-7"		10'-9"	0'-10"			
SA2208	1	8	2'-6"	STR					TRANSV T
			10'-9"						
SA1909		60	40'-0"	STR					LONGIT T&B
SA1910		6	35'-10"	STR					LONGIT T&B
SA1912	2	12	27'-3"	STR					LONGIT T&B
			39'-2"						
SA1913	2	10	35'-11"	STR					LONGIT T&B
			41'-11"						
SA1914		6	40'-0"	STR					LONGIT T&B
SA1915		6	7'-0"	111	3'-6"	10			LONGIT T&B

SUMMARY OF QUANTITIES FOR SOUTH ABUTMENT - STAGE 2		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	249
STRUCTURAL CONCRETE (3Y43)	CU YD	453
REINFORCEMENT BARS	POUND	19590
REINFORCEMENT BARS (EPOXY COATED)	POUND	32380
C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	3630
C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	3630
C-I-P CONCRETE TEST PILE 65 FT. LONG 12"	EACH	2
PILE POINTS	EACH	68
PILE ANALYSIS	EACH	1
3-PLY JOINT WATERPROOFING	LIN FT	196
ANTI-GRAFFITI COATING	SQ FT	1405
ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1405
ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1405

- ① DOES NOT INCLUDE TEST PILES.
- ② TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

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.

3535 WADNAS CENTER DRIVE  
 ST. PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *JEFFREY A. JOHNSON* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. J1280

TITLE: SOUTH ABUTMENT - STAGE 2  
 BARLIST &  
 SUMMARY OF QUANTITIES

SP 0280-55 SAP 02-623-13  
 DES: CAW DR: MAW APPROVED:  
 CHK: JDS CHK: CAW  
 SHEET NO B24 OF 95 SHEETS  
 BRIDGE NO 02817



NORTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
*FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

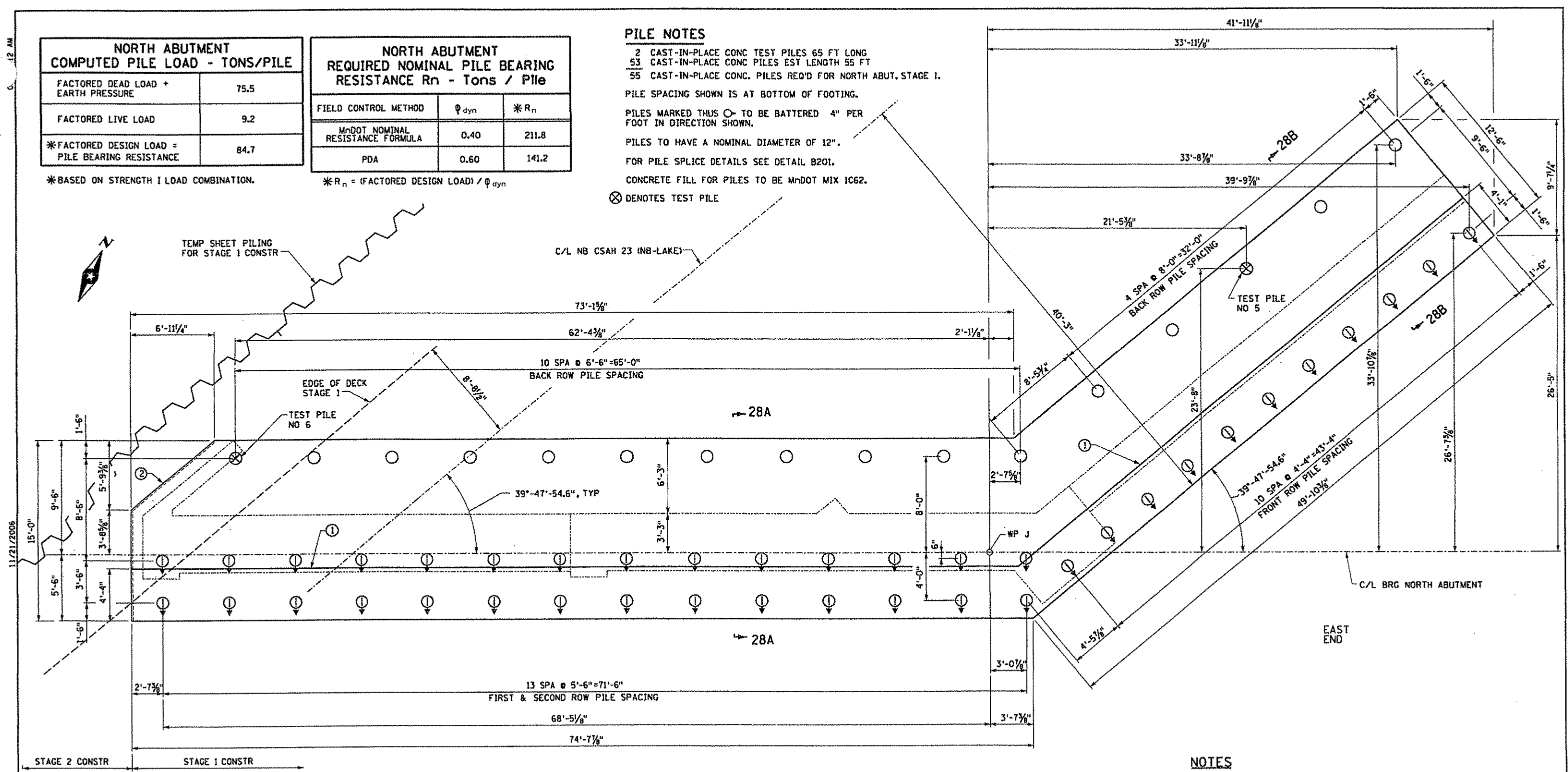
\*BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE $R_n$ - Tons / Pile		
FIELD CONTROL METHOD	$\phi_{dyn}$	* $R_n$
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

\*  $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

**PILE NOTES**

2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG  
 53 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT  
 55 CAST-IN-PLACE CONC. PILES REQ'D FOR NORTH ABUT, STAGE 1.  
 PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.  
 PILES MARKED THUS  $\odot$  TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.  
 PILES TO HAVE A NOMINAL DIAMETER OF 12".  
 FOR PILE SPLICE DETAILS SEE DETAIL B201.  
 CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.  
 $\otimes$  DENOTES TEST PILE



**FOOTING PLAN-STAGE 1**

**NOTES**

- ① EDGE OF 4" VERT FTG KEY.
  - ② HORIZ CONSTRUCTION JOINT W/ 2"x12" KEY CENTERED IN FOOTING.
- SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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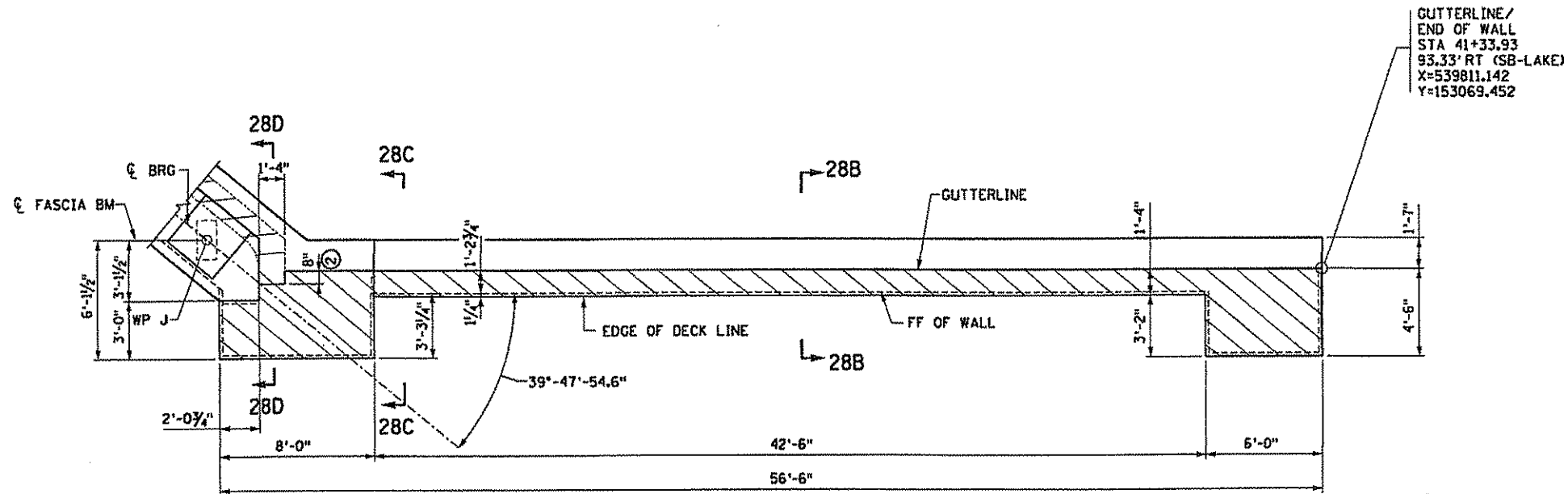
**SEH**  
 3535 VADNAIS CENTER DRIVE  
 ST PAUL, MN 5510  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

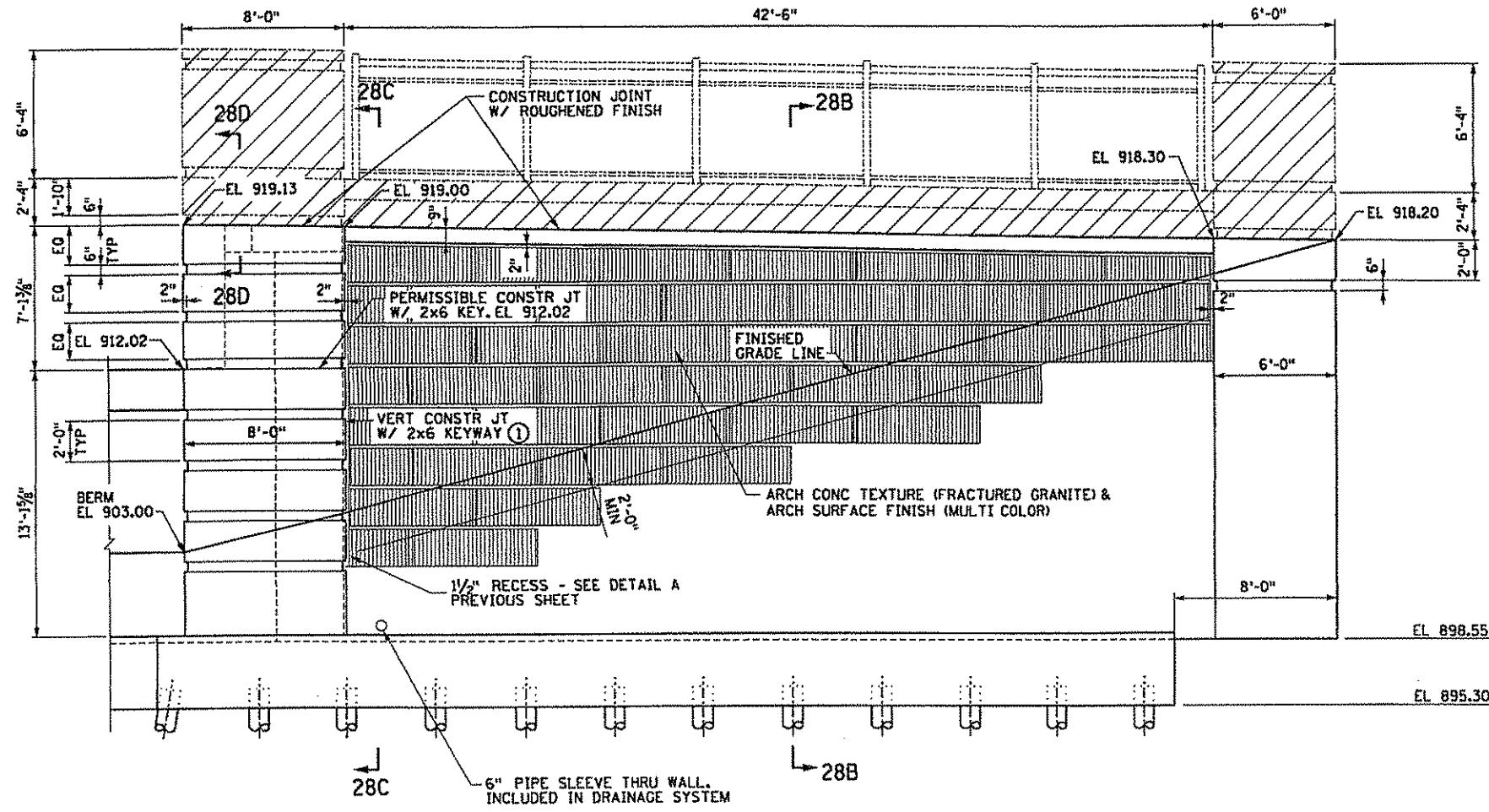
TITLE:  
**NORTH ABUTMENT DETAILS  
 STAGE 1**

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B25 OF 95 SHEETS			





NORTHEAST WINGWALL PLAN - STAGE 1



NORTHEAST WINGWALL ELEVATION - STAGE 1

NOTES

- SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.
- ① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
- ② REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

FF=FRONT FACE  
BF=BACK FACE  
EF=EACH FACE

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

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

Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE:  
NORTH ABUTMENT DETAILS  
STAGE 1

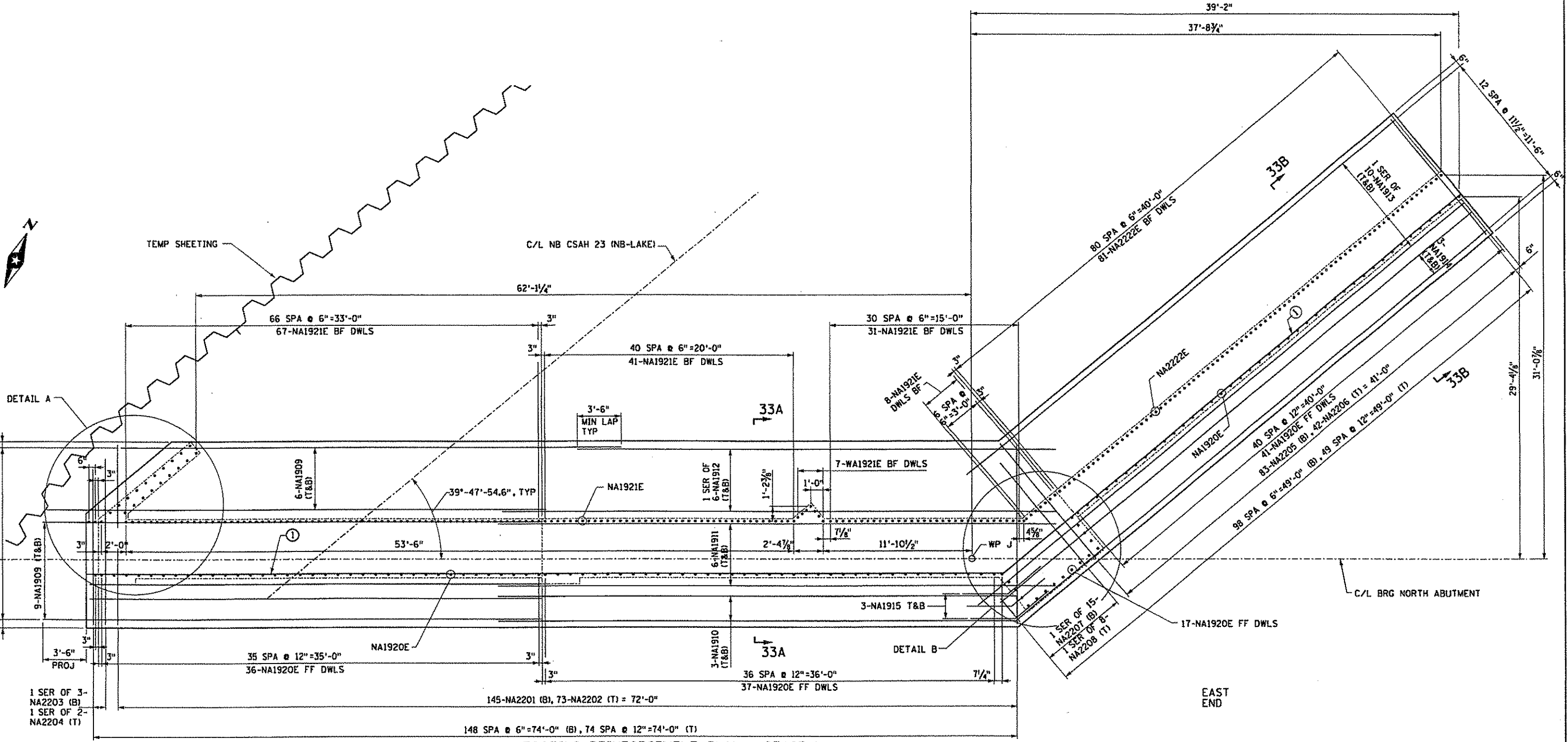
SP 0280-55		SAP 02-623-13	
DES: CAW	DR: MAW	APPROVED:	
CHK: JDS	CHK: CAW		
SHEET NO B27 OF 95 SHEETS			BRIDGE NO 02817



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11/21/2006

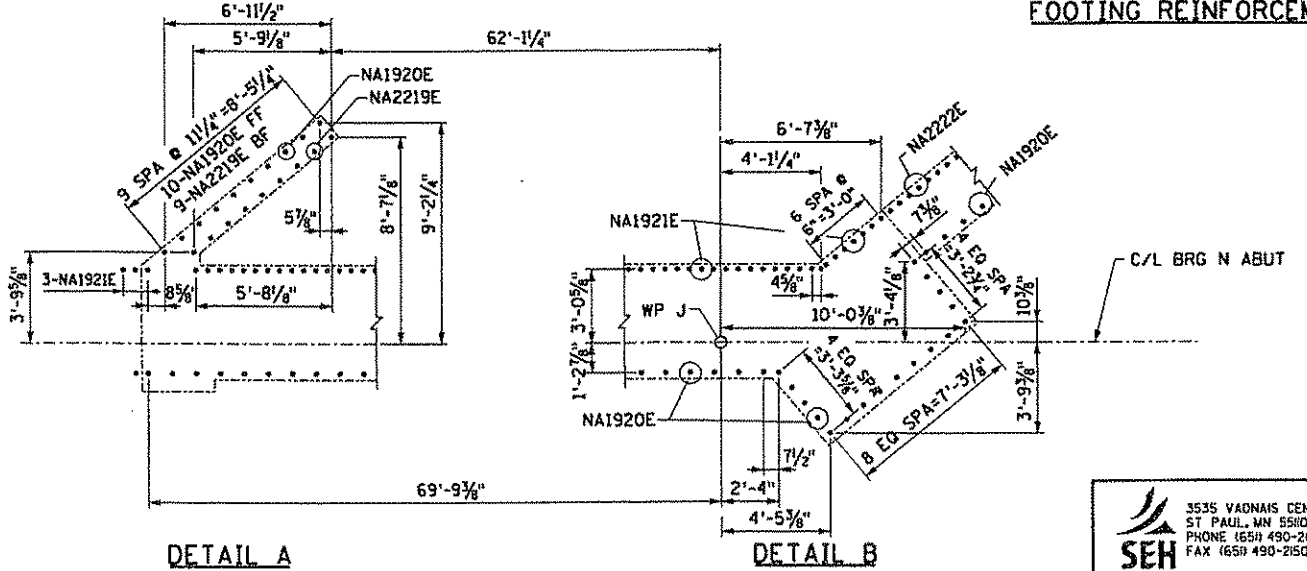
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FOOTING REINFORCEMENT PLAN - STAGE 1

NOTES

- ① EDGE OF 4" VERT FTG KEY.
- SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.



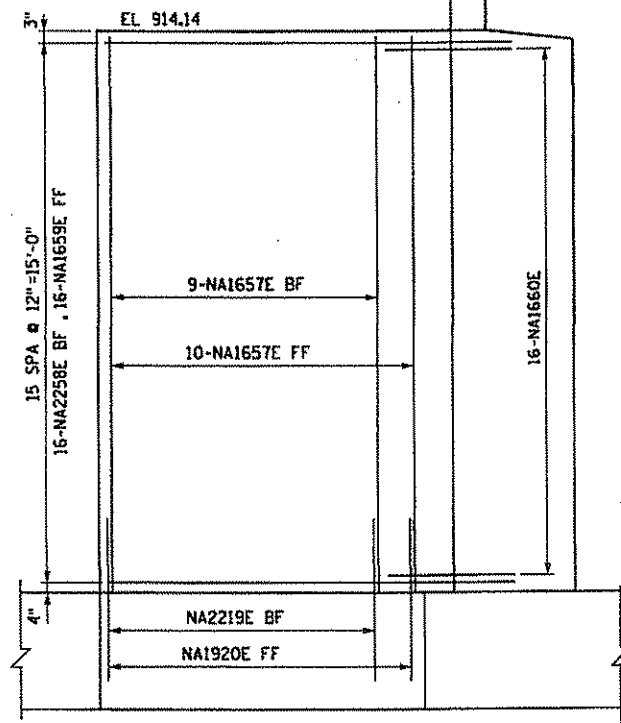

 3535 VADNAIS CENTER DRIVE  
 ST PAUL, MN 5510  
 PHONE (651) 430-2000  
 FAX (651) 430-2550

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

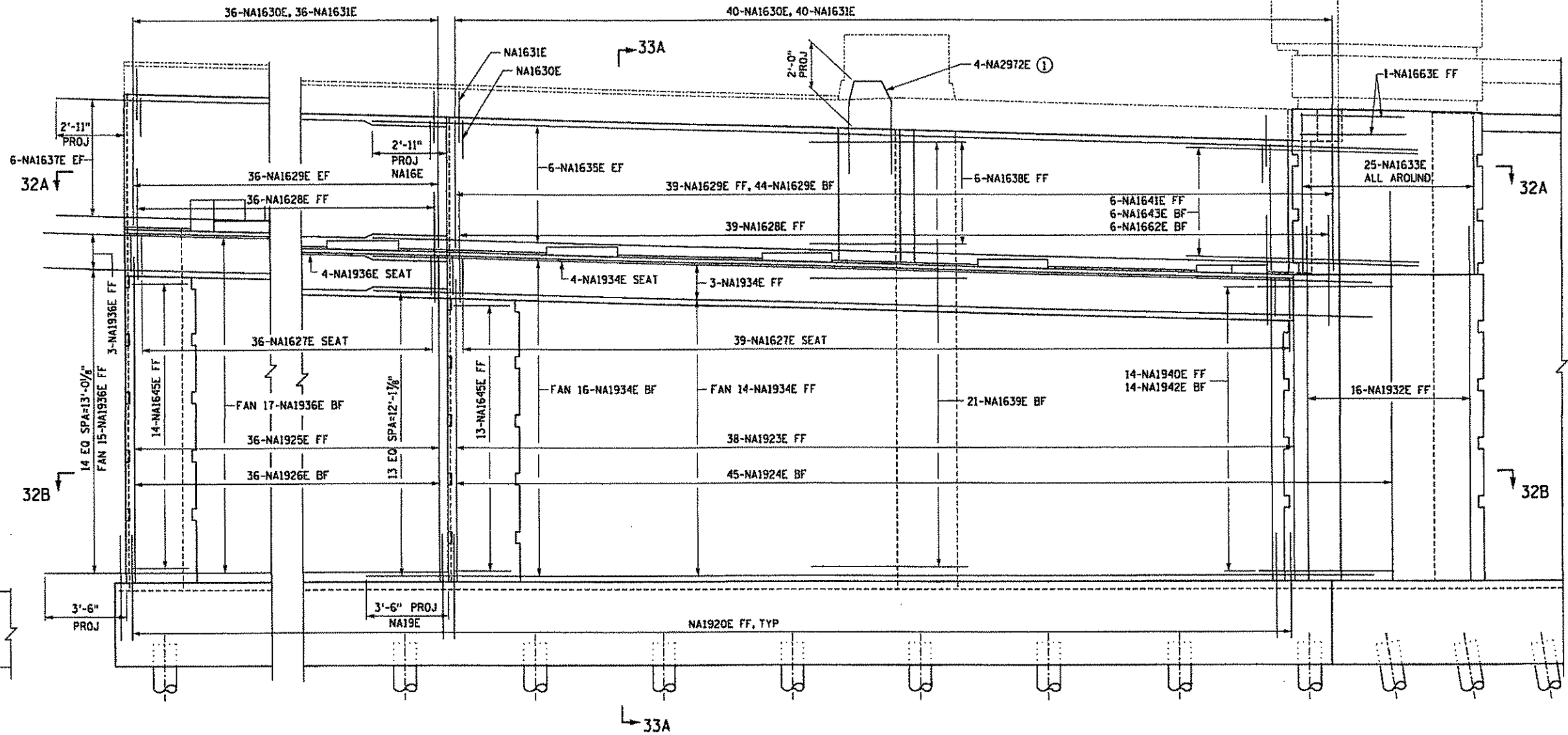
TITLE: NORTH ABUTMENT DETAILS  
 STAGE 1

SP 0280-55	SAP 02-623-13	APPROVED:	BRIDGE NO
DES: CAW	DR: MAW		02817
CHK: JDS	CHK: CAW		
SHEET NO B29 OF 95 SHEETS			





STUB WALL ELEVATION



NORTH ABUTMENT ELEVATION

NOTES

- SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- ① SEE SIDEWALK MEDIAN BARRIER (TYPE MOD P-4) FOR PLACEMENT.

FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

3535 YADNAIS CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

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

Signature: *Christopher A. Munsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. MUNSCH Reg. No. 42058

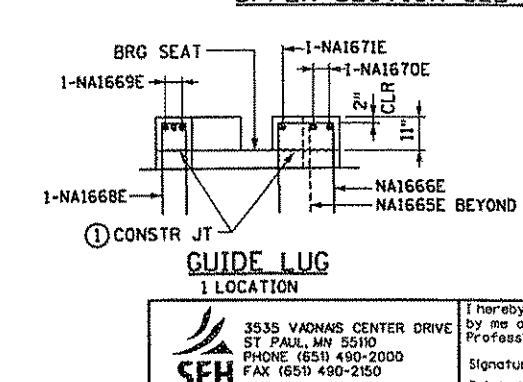
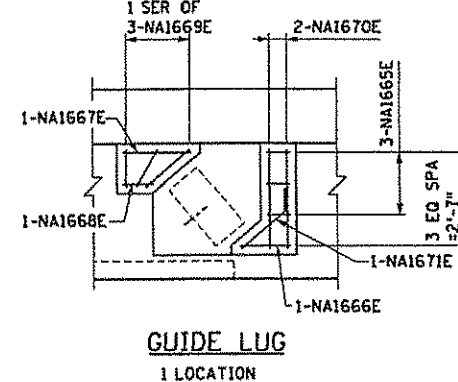
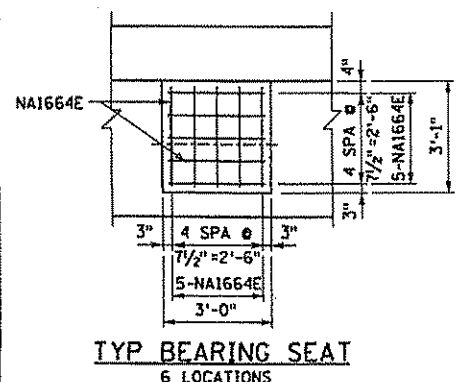
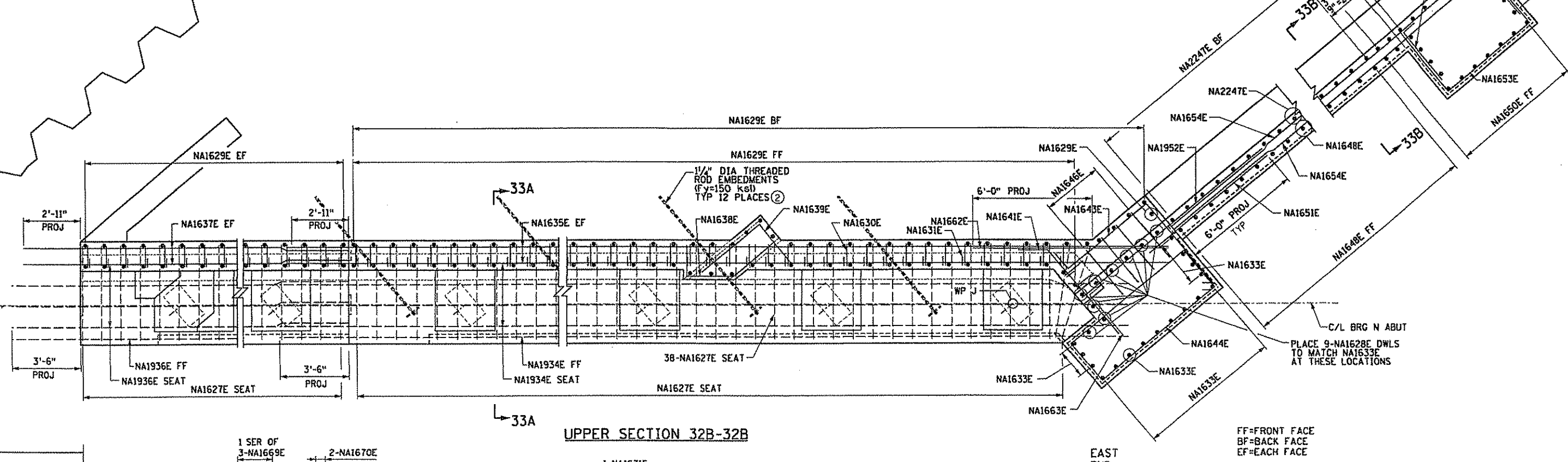
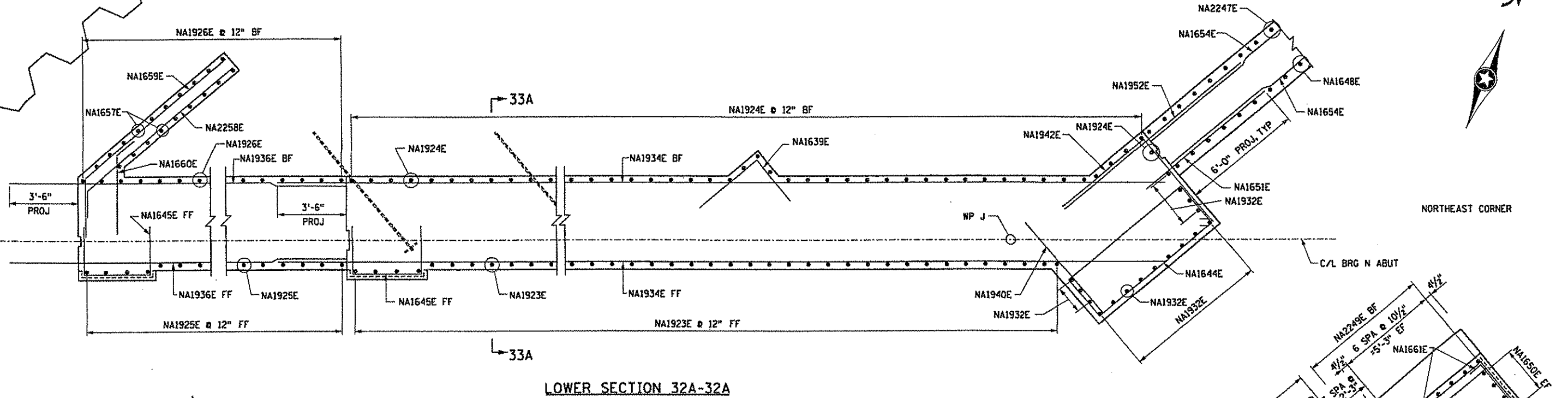
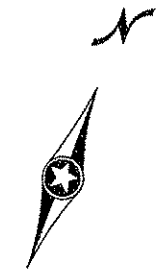
TITLE:  
 NORTH ABUTMENT DETAILS  
 STAGE 1

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	
SHEET NO B30 OF 95 SHEETS		

BRIDGE NO  
 02817



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- NOTES**
- SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - ① GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.
  - ② THREADED RODS TO BE INCLUDED IN PRICE BID FOR "STEEL SHEET PILING (TEMP)". SEE SHEETS B85-B95 FOR DETAILS.

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B32 OF 95 SHEETS			

**SEH**  
3535 VADNA'S CENTER DRIVE  
ST. PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE:  
**NORTH ABUTMENT DETAILS  
STAGE 1**

SP 0280-55 SAP 02-623-13



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03/07/2007

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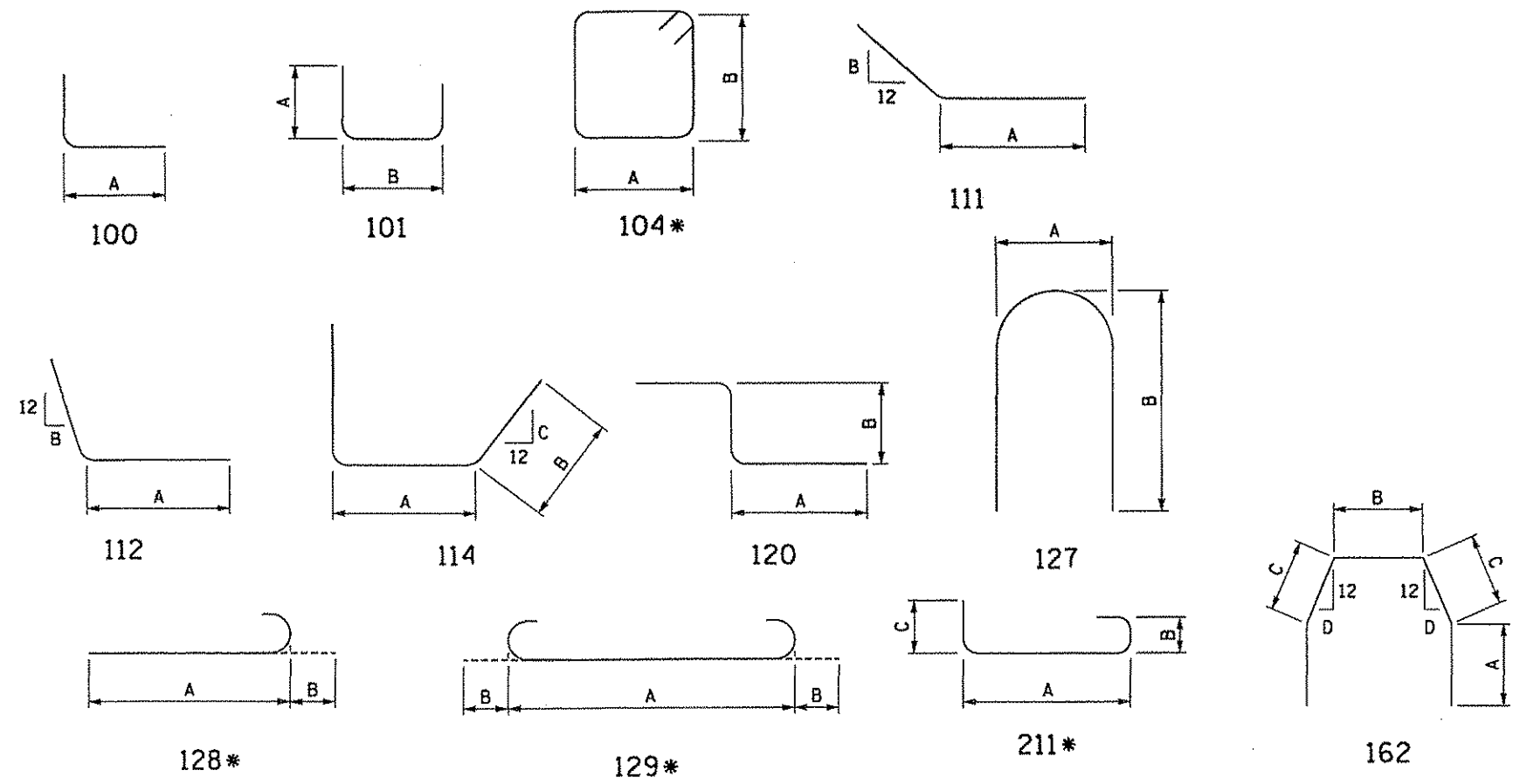
BAR MARK	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
				A	B	C	D	
NORTH ABUTMENT-STAGE 1								
EPOXY COATED BARS								
NA2219E	9	7'-2"	100	6'-0"				FTG DWL FF
NA1920E	143	5'-5"	100	4'-5"				FTG DWL FF
NA1921E	157	9'-11"	100	8'-11"				FTG DWL BF
NA2222E	81	12'-5"	112	11'-3"	1			FTG DWL BF
NA1923E	38	13'-0"	STR					VERT FF
NA1924E	45	16'-8"	STR					VERT BF
NA1925E	36	14'-0"	STR					VERT FF
NA1926E	36	17'-8"	STR					VERT BF
NA1627E	75	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
NA1628E	84	4'-2"	STR					PARAPET DWL
NA1629E	155	5'-6"	STR					VERT PARAPET
NA1630E	76	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
NA1631E	76	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
NA1932E	16	15'-3"	STR					VERT PILASTER
NA1633E	25	6'-10"	STR					VERT PILASTER
NA1934E	37	45'-10"	STR					HORIZ BODY
NA1635E	12	45'-3"	STR					HORIZ PARAPET
NA1936E	39	39'-0"	STR					HORIZ BODY
NA1637E	12	38'-5"	STR					HORIZ PARAPET
NA1638E	6	6'-8"	114	2'-4"	2'-9"	10		UNDER BARRIER
NA1639E	21	6'-3"	100	3'-10"				UNDER BARRIER
NA1940E	14	6'-0"	STR					HORIZ CORNER
NA1641E	6	6'-11"	111	5'-11"	14			HORIZ CORNER
NA1942E	14	10'-8"	100	5'-4"				HORIZ CORNER
NA1643E	6	11'-6"	120	5'-4"	5'-2"			HORIZ CORNER
NA1644E	20	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
NA1645E	27	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
NA1646E	4	6'-0"	100	3'-0"				CORNER TOP
NA2247E	41	19'-7"	STR					VERT WALL BF
NA1648E	41	19'-3"	STR					VERT WALL FF
NA2249E	9	19'-5"	STR					VERT WALL BF
NA1650E	17	19'-5"	STR					VERT WALL FF
NA1651E	21	7'-9"	STR					HORIZ DWL FF
NA1952E	42	12'-0"	STR					HORIZ DWL BF
NA1653E	20	13'-5"	101	4'-0"	5'-5"			HORIZ PILASTER
NA1654E	42	48'-4"	STR					WALL HORIZ
NA1655E	59	8'-4"	101	3'-10"	0'-8"			MOD P-1 RAIL
NA1656E	38	4'-9"	STR					VERT RAIL
NA1657E	19	15'-5"	STR					STUB WALL
NA2258E	16	11'-8"	111	9'-8"	14			STUB WALL
NA1659E	16	12'-4"	111	9'-4"	14			STUB WALL
NA1660E	16	5'-0"	111	4'-0"	14			STUB WALL
NA1661E	40	3'-10"	100	3'-0"				HORIZ PILASTER
NA1662E	6	10'-0"	STR					HORIZ CORNER
NA1663E	2	3'-10"	100	2'-10"				HORIZ FF CORNER
NA1664E	70	6'-8"	101	2'-0"	2'-8"			BRG SEAT
NA1665E	3	5'-8"	101	2'-6"	0'-8"			GUIDE LUG
NA1666E	1	6'-5"	101	2'-6"	1'-5"			GUIDE LUG
NA1667E	1	6'-11"	101	2'-6"	1'-11"			GUIDE LUG
NA1668E	1	5'-10"	101	2'-6"	0'-10"			GUIDE LUG
NA1669E	1	1'-0"	STR					GUIDE LUG
		1'-8"						
NA1670E	2	2'-9"	STR					GUIDE LUG
NA1671E	1	2'-7"	111	1'-9"	10			GUIDE LUG
NA2972E	4	8'-8"	162	3'-0"	0'-11"	10 1/2"	3	VERT RAIL

BAR MARK	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
				A	B	C	D	
NORTH ABUTMENT - STAGE 1								
BLACK BARS								
NA2201	145	16'-2"	129	14'-6"	0'-10"			TRANSV B
NA2202	73	14'-6"	STR					TRANSV T
NA2203	1	13'-4"	128	12'-6"	0'-10"			TRANSV B
		14'-2"		13'-4"	0'-10"			
NA2204	1	12'-6"	STR					TRANSV T
		13'-4"						
NA2205	83	13'-8"	129	12'-0"	0'-10"			TRANSV B
NA2206	42	12'-0"	STR					TRANSV T
NA2207	1	15	128	2'-6"	0'-10"			TRANSV B
		11'-7"		10'-9"	0'-10"			
NA2208	1	8	STR					TRANSV T
		10'-9"						
NA1909	30	40'-0"	STR					LONGIT T&B
NA1910	6	41'-6"	STR					LONGIT T&B
NA1911	12	44'-9"	STR					LONGIT T&B
NA1912	2	6	STR					LONGIT T&B
		44'-4"						
NA1913	2	10	STR					LONGIT T&B
		45'-0"						
		52'-0"						
NA1914	6	49'-5"	STR					LONGIT T&B
NA1915	6	7'-0"	111	3'-6"	10			LONGIT T&B

SUMMARY OF QUANTITIES FOR NORTH ABUTMENT - STAGE 1		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	206
STRUCTURAL CONCRETE (3Y43)	CU YD	344
REINFORCEMENT BARS	POUND	16470
REINFORCEMENT BARS (EPOXY COATED)	POUND	28730
C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2915
C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2915
C-I-P CONCRETE TEST PILE 65 FT LONG 12"	EACH	2
PILE POINTS	EACH	55
PILE ANALYSIS	EACH	1
3-PLY JOINT WATERPROOFING	LIN FT	120
ANTI-GRAFFITI COATING	SQ FT	1015
ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1015
ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1015
6" DIA PIPE SLEEVE WITH CAP	EACH	1

- ① DOES NOT INCLUDE TEST PILES.
- ② TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

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.

3535 VADNAN CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

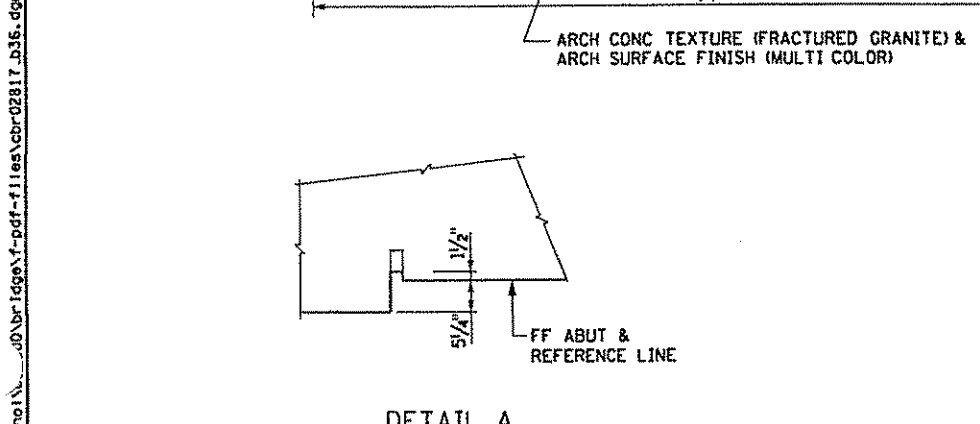
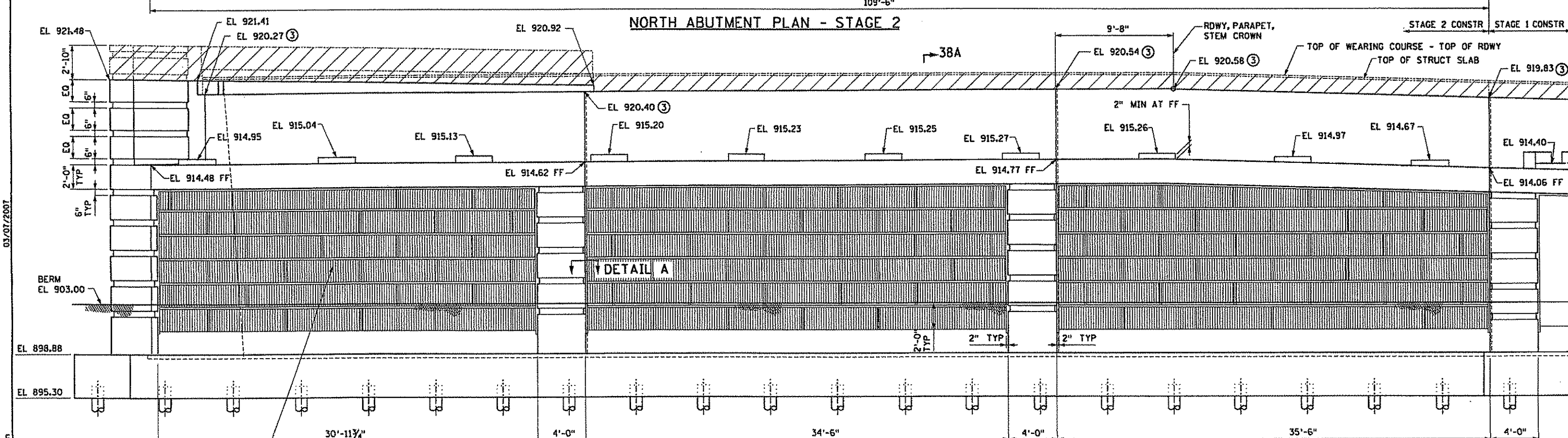
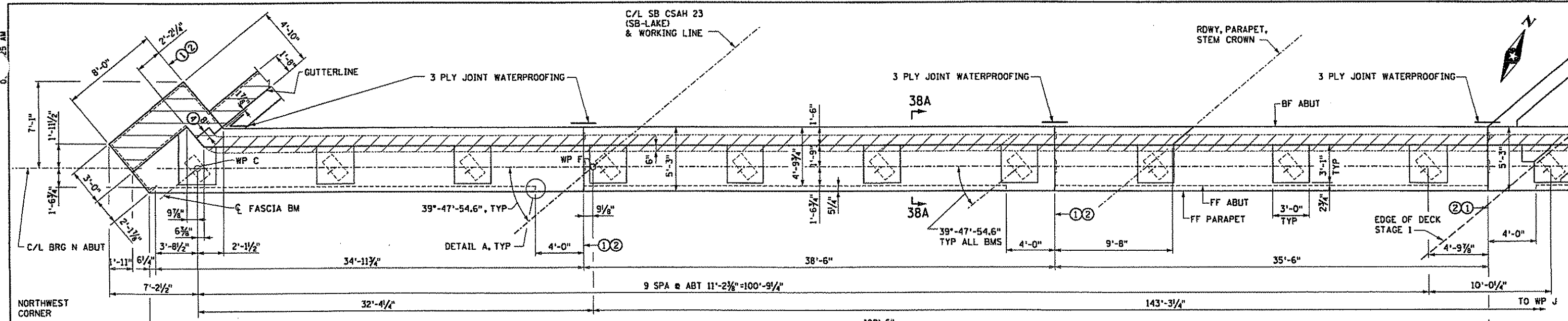
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT - STAGE 1  
 BARLIST &  
 SUMMARY OF QUANTITIES

SP 0280-55 SAP 02-623-13  
 DES: CAW DR: MAW APPROVED:  
 CHK: JDS CHK: CAW  
 SHEET NO B34 OF 95 SHEETS  
 BRIDGE NO 02817







**NOTES**

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② 2" x 8" KEY IN PARAPET AND 2" x 12" KEY IN STEM.

③ ELEVATION AT PARAPET FF.

④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

03/07/2007

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**NORTH ABUTMENT ELEVATION - STAGE 2**

3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

SEH

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

Signature: *[Signature]* Date: 3/5/2007  
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 2

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B36 OF 95 SHEETS			



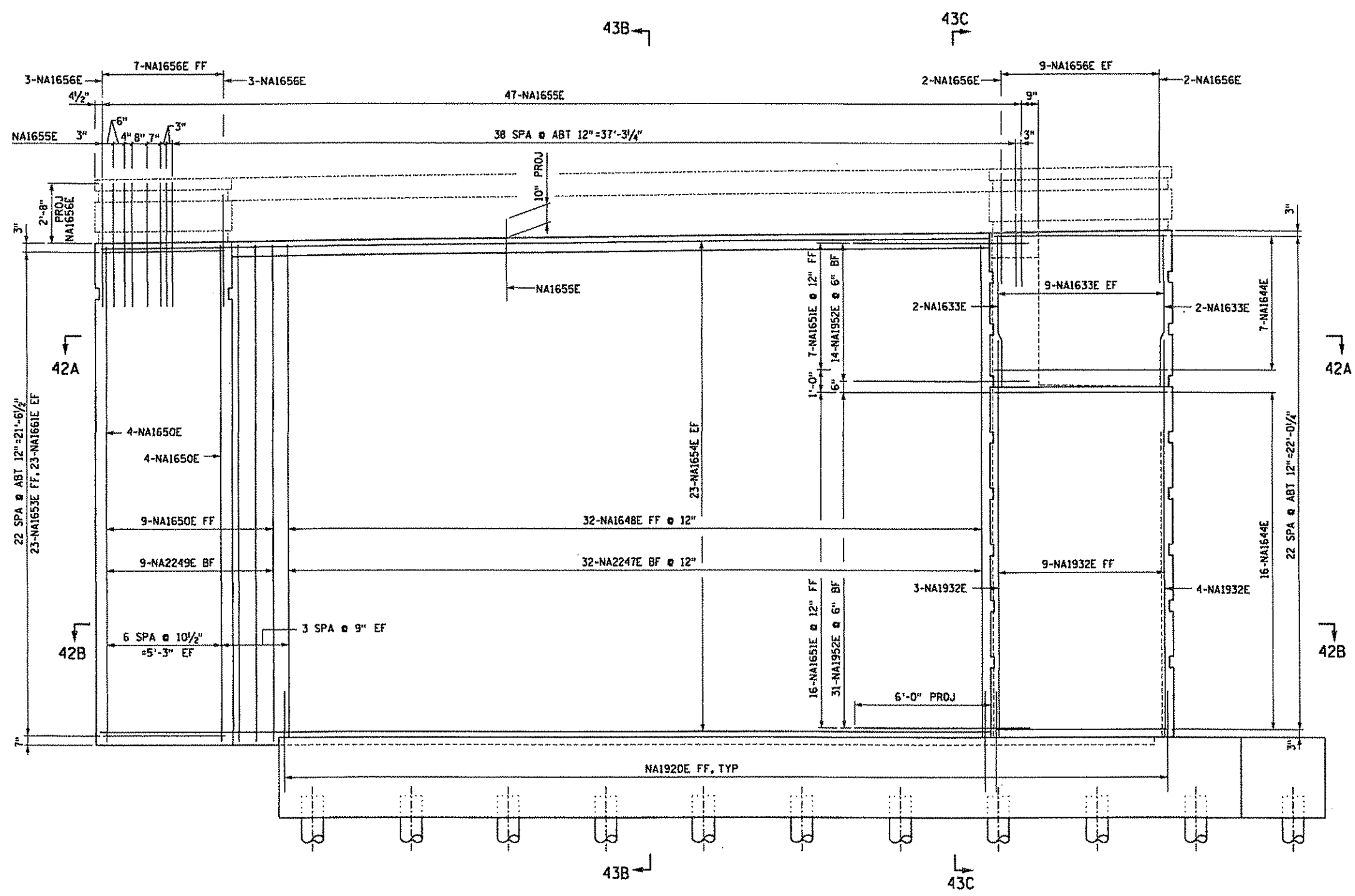








11/21/2006 11:21:2006 11/21/2006 11:21:2006



**NORTHWEST WINGWALL ELEVATION**

**NOTES**  
 SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.  
 FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

**SEH**  
 3535 VAONAI CENTER DRIVE  
 ST PAUL, MN 5510  
 PHONE (650) 490-2000  
 FAX (650) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**NORTH ABUTMENT DETAILS  
 STAGE 2**

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	
SHEET NO B41 OF 95 SHEETS		

BRIDGE NO  
**02817**











15 AM

### SUMMARY OF QUANTITIES ① FOR STEEL SHEET PILING (TEMPORARY) - STAGE 1

ITEM	UNIT	QUANTITY
A SHEET PILE TYPE A	SQ FT	9650
B STRUCTURAL STEEL (3306)	POUND	12850
C SOIL ANCHORS	EACH	38

- ① INCLUDES ALL STANDARD FABRICATED CORNERS AND TEE SECTIONS.
- ② INCLUDES WALE SECTIONS, ANCHOR PLATES, STIFFENER PLATES AND 1 SHIM PLATE PER LOCATION.
- ③ INCLUDES INSTALLATION ALONG WITH ROD, NUT, WEDGE WASHER AND ADDITIONAL SHIM PLATES. INCLUDES ANCHOR INTO EXISTING ABUTMENT.
- ④ SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

THE SUMMARY OF QUANTITIES FOR STEEL SHEET PILING (TEMPORARY) IS AS SHOWN ABOVE. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT FOR ALL ITEMS IN THE SUMMARY OF QUANTITIES WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2452.601 "STEEL SHEET PILING (TEMPORARY)".



### NOTES:

- ① INCLUDED UNDER GRADING PORTION OF CONTRACT.
- ② 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
- ③ SEE SHEET B54 FOR WALE DETAILS.
- ④ DRILL HOLE INTO EXIST ABUT STEM FOR UPPER ANCHORS. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

### DESIGN DATA

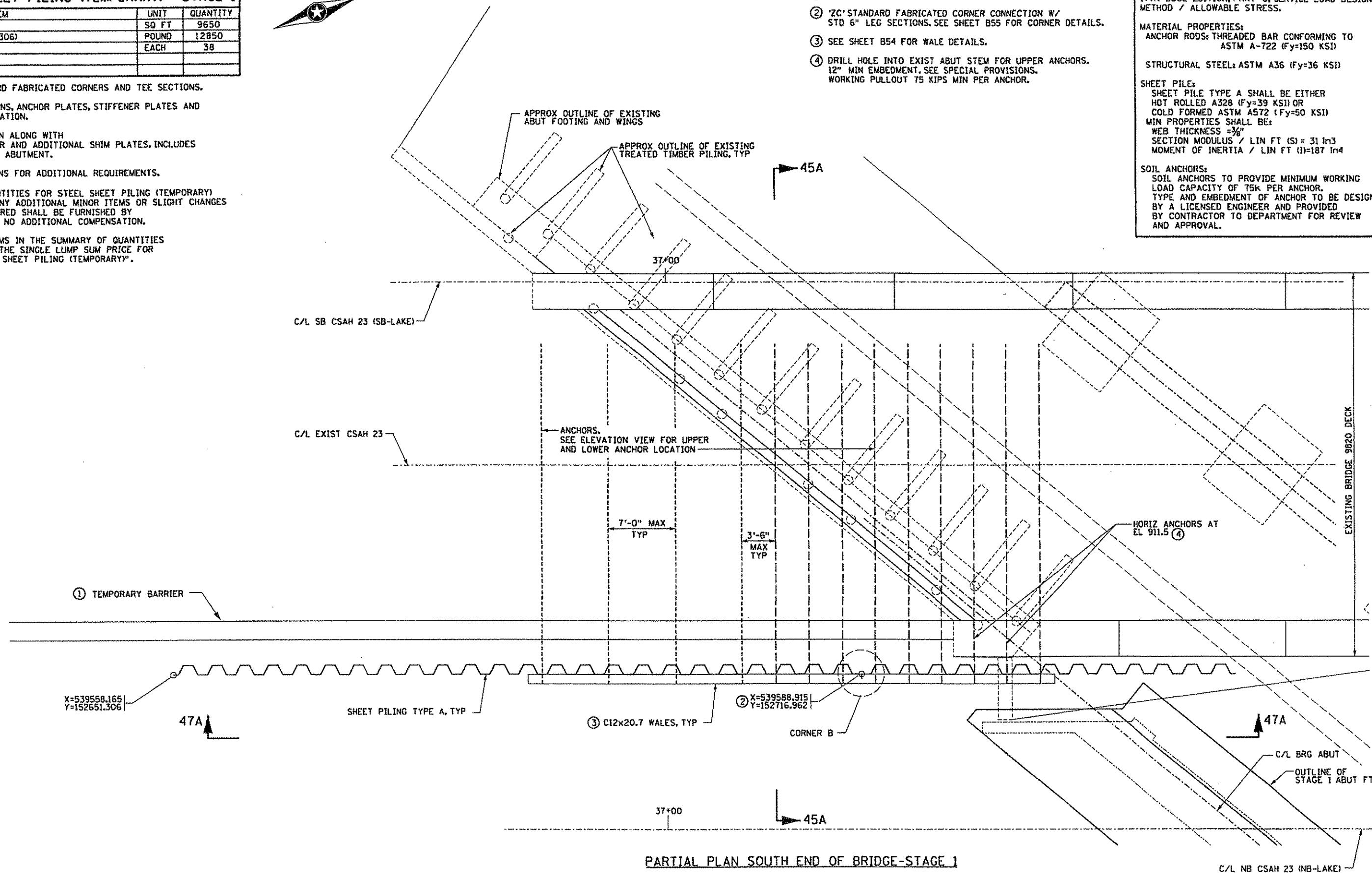
STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17th EDITION, PART C, SERVICE LOAD DESIGN METHOD / ALLOWABLE STRESS.

MATERIAL PROPERTIES:  
ANCHOR RODS: THREADED BAR CONFORMING TO ASTM A-722 (Fy=150 KSI)

STRUCTURAL STEEL: ASTM A36 (Fy=36 KSI)

SHEET PILE:  
SHEET PILE TYPE A SHALL BE EITHER HOT ROLLED A328 (Fy=39 KSI) OR COLD FORMED ASTM A572 (Fy=50 KSI)  
MIN PROPERTIES SHALL BE:  
WEB THICKNESS = 3/8"  
SECTION MODULUS / LIN FT (S) = 31 In<sup>3</sup>  
MOMENT OF INERTIA / LIN FT (I) = 187 In<sup>4</sup>

SOIL ANCHORS:  
SOIL ANCHORS TO PROVIDE MINIMUM WORKING LOAD CAPACITY OF 75k PER ANCHOR. TYPE AND EMBEDMENT OF ANCHOR TO BE DESIGNED BY A LICENSED ENGINEER AND PROVIDED BY CONTRACTOR TO DEPARTMENT FOR REVIEW AND APPROVAL.



PARTIAL PLAN SOUTH END OF BRIDGE-STAGE 1

01/02/2007

SEH\br\cgs\F-FILES\cbr\02817\_b46.dgn

3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 5510  
PHONE (651) 490-2000  
FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Signature: *John D. Steenberg* Date: 01/02/2007  
Printed Name: JOHN D. STEENBERG Reg. No. 13865

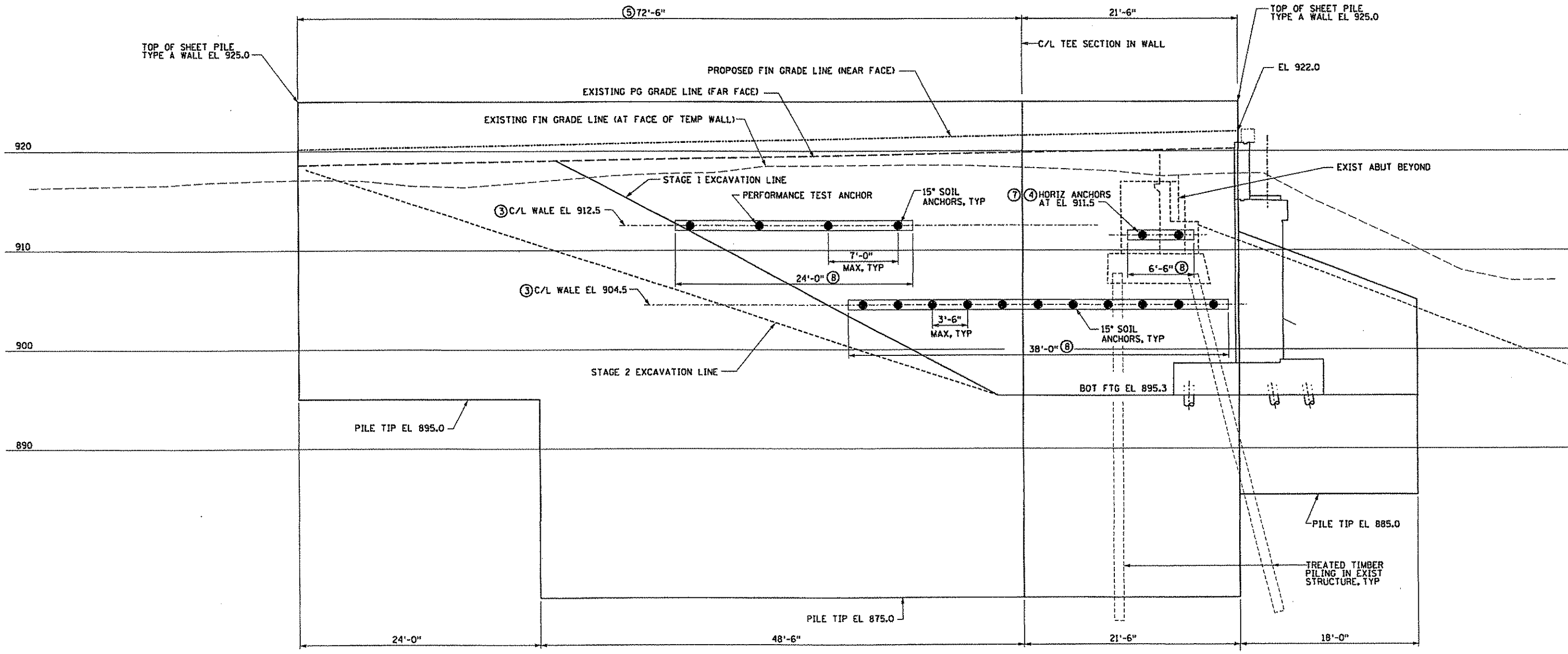
TITLE:  
TEMPORARY SHEETING DETAILS  
SOUTH ABUTMENT-STAGE 1

DES: ALGE	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JAJ	CHK: ALGE		
SHEET NO 846 OF 95 SHEETS			

SP 0280-55 SAP 02-623-13

**NOTES:**

- 1 SEE PLAN VIEW ON SHEET B46.
- 2 '2C' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS, SEE SHEET B55 FOR CORNER DETAILS.
- 3 SEE SHEET B54 FOR WALE DETAILS.
- 4 DRILL HOLE INTO EXIST ABUT STEM, 12" MIN EMBEDMENT, SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
- 5 DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B46).
- 6 SEE SHEET B46 FOR MIN BONDED AND UNBONDED ANCHOR LENGTHS.
- 7 DO NOT TENSION THIS ANCHOR, SNUG NUT TIGHT, DO NOT OVER TIGHTEN.
- 8 FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



DEVELOPED ELEVATION 47A-47A AT SOUTH ABUTMENT-STAGE 1

3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Signature: *John D. Steenberg* Date: 01/02/2007  
Printed Name: JOHN D. STEENBERG Reg. No. 13865

TITLE:  
TEMPORARY SHEETING DETAILS  
SOUTH ABUTMENT-STAGE 1

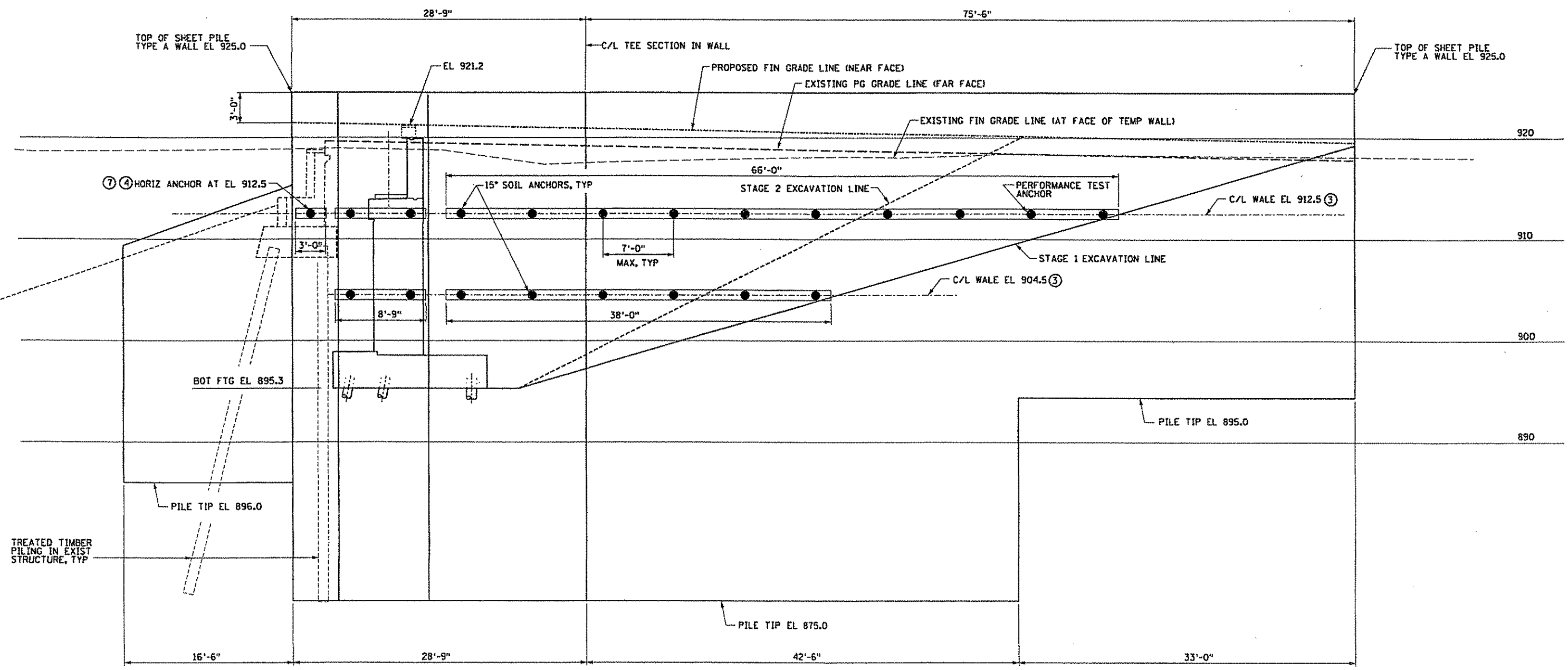
SP 0280-55		SAP 02-623-13		APPROVED:		BRIDGE NO 02817
DES: ALGE	DR: MAW					
CHK: JAJ	CHK: ALGE					
SHEET NO B47 OF 95 SHEETS						

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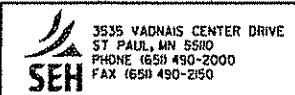


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- NOTES:**
- 1 SEE PLAN VIEW ON SHEET B48.
  - 2 'Z' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
  - 3 SEE SHEET B54 FOR WALE DETAILS.
  - 4 DRILL HOLE INTO EXIST ABUT STEM, 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
  - 5 DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B48).
  - 6 SEE SHEET B48 FOR ANCHOR LENGTHS.
  - 7 DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.



DEVELOPED ELEVATION 49A-49A AT NORTH ABUTMENT-STAGE 1



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *John D. Steenberg*  
 Printed Name: JOHN D. STEENBERG  
 Reg. No. 13865

TITLE:  
 TEMPORARY SHEETING DETAILS  
 NORTH ABUTMENT-STAGE 1

DES: ALGE	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JAJ	CHK: ALGE		
SHEET NO B49 OF 95 SHEETS			



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**SUMMARY OF QUANTITIES ①  
FOR STEEL SHEET PILING (TEMPORARY) - STAGE 2**

ITEM	UNIT	QUANTITY
(A) SHEET PILE TYPE A	SQ FT	1896
(B) STRUCTURAL STEEL (3306)	POUND	10967
(C) THREADED RODS	EACH	31

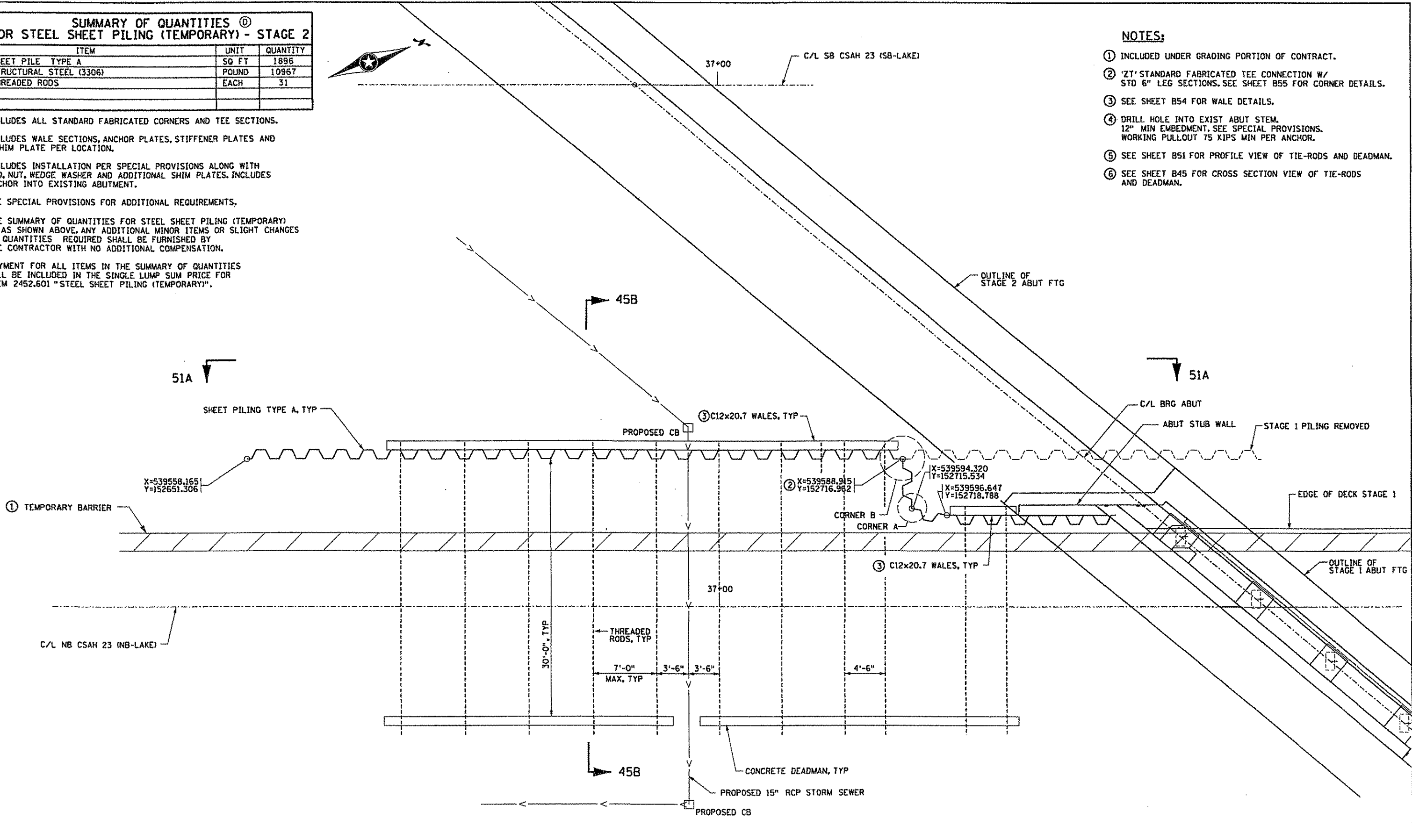
- (A) INCLUDES ALL STANDARD FABRICATED CORNERS AND TEE SECTIONS.
- (B) INCLUDES WALE SECTIONS, ANCHOR PLATES, STIFFENER PLATES AND 1 SHIM PLATE PER LOCATION.
- (C) INCLUDES INSTALLATION PER SPECIAL PROVISIONS ALONG WITH ROD, NUT, WEDGE WASHER AND ADDITIONAL SHIM PLATES. INCLUDES ANCHOR INTO EXISTING ABUTMENT.
- (D) SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS,

THE SUMMARY OF QUANTITIES FOR STEEL SHEET PILING (TEMPORARY) IS AS SHOWN ABOVE. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT FOR ALL ITEMS IN THE SUMMARY OF QUANTITIES WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2452.601 "STEEL SHEET PILING (TEMPORARY)".

**NOTES:**

- ① INCLUDED UNDER GRADING PORTION OF CONTRACT.
- ② 'Z' STANDARD FABRICATED TEE CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
- ③ SEE SHEET B54 FOR WALE DETAILS.
- ④ DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
- ⑤ SEE SHEET B51 FOR PROFILE VIEW OF TIE-RODS AND DEADMAN.
- ⑥ SEE SHEET B45 FOR CROSS SECTION VIEW OF TIE-RODS AND DEADMAN.

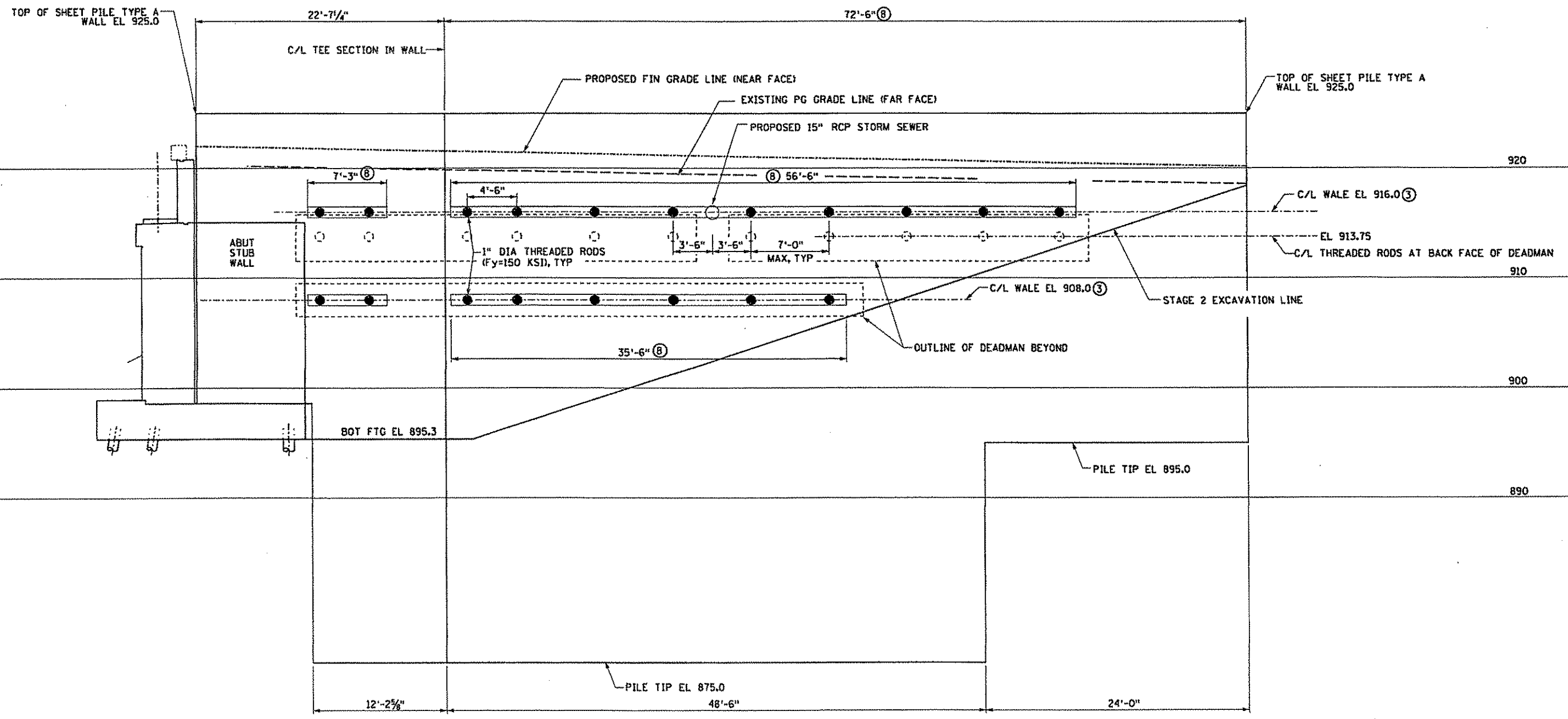


**PARTIAL PLAN SOUTH END OF BRIDGE-STAGE 2**

3535 VADNAIS CENTER DRIVE ST PAUL, MN 5590 PHONE 650 490-2000 FAX (650) 490-2150	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Signature: <i>John D. Steinhilber</i> Date: 01/02/2007 Printed Name: JOHN D. STEENBERG Reg. No. 13865	TITLE: <b>TEMPORARY SHEETING DETAILS SOUTH ABUTMENT-STAGE 2</b>		DES: ALGE CHK: JAJ	DR: MAW CHK: ALGE	APPROVED:	BRIDGE NO <b>02817</b>
		SP 0280-55 SAP 02-623-13		SHEET NO B50 OF 95 SHEETS			

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- NOTES:**
- 1 SEE PLAN VIEW ON SHEET B50.
  - 2 '2C' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
  - 3 SEE SHEET B54 FOR WALE DETAILS.
  - 4 DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
  - 5 DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B50).
  - 6 SEE SHEET B50 FOR ANCHOR LENGTHS.
  - 7 DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.
  - 8 FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



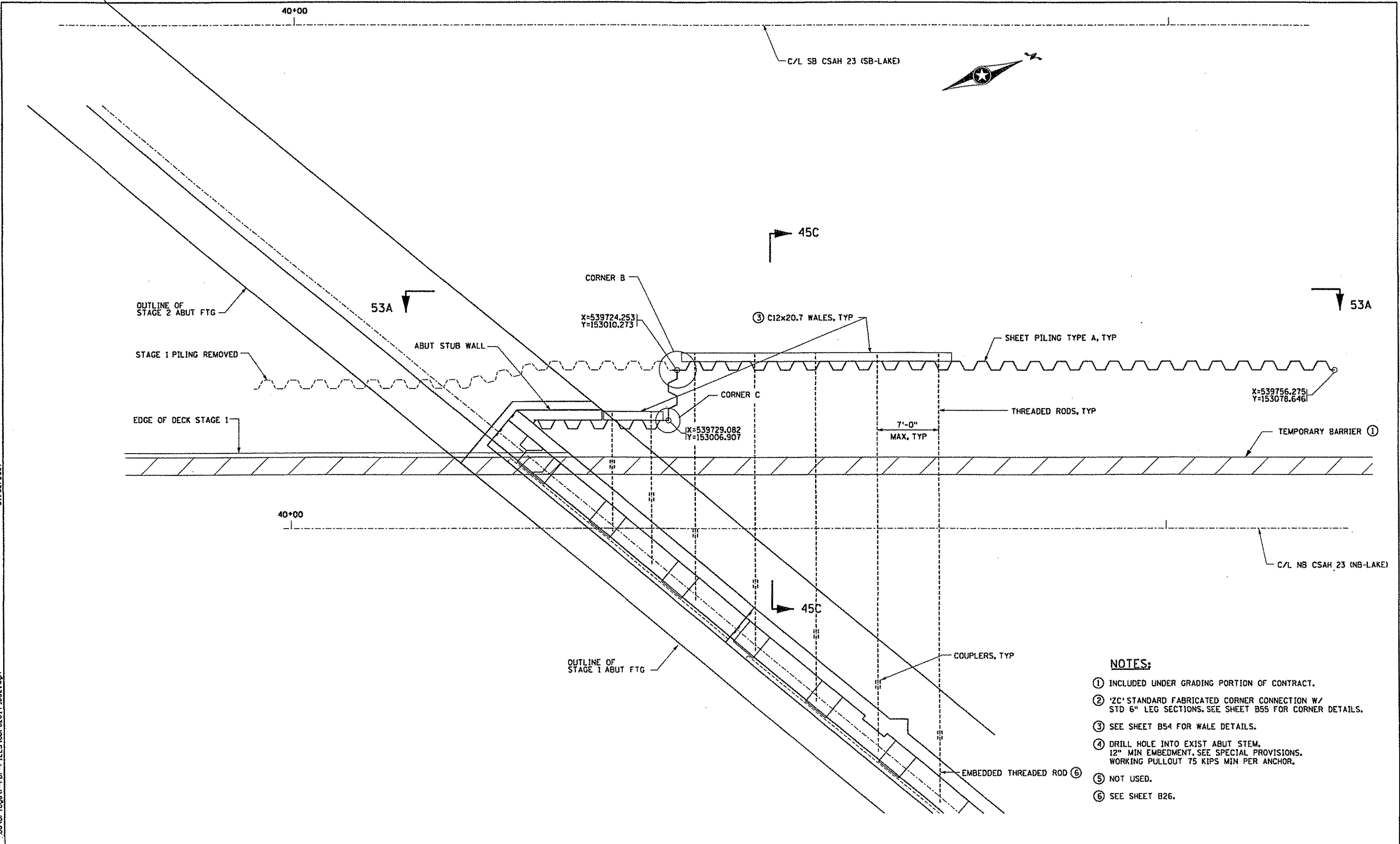
DEVELOPED ELEVATION 51A-51A AT SOUTH ABUTMENT-STAGE 2

 <small>3535 VADNAIS CENTER DRIVE ST PAUL, MN 5510 PHONE 651 490-2000 FAX 651 490-2150</small>	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Signature: <i>John D. Steenbergh</i> Date: 01/02/2007 Printer Name: JOHN D. STEENBERGH Reg. No. 13865	TITLE: <b>TEMPORARY SHEETING DETAILS SOUTH ABUTMENT-STAGE 2</b>		DES: ALGE CHK: JAJ	DR: MAW CHK: ALGE	APPROVED:	BRIDGE NO 02817
		SHEET NO B51 OF 95 SHEETS			SP 0280-55 SAP 02-623-13		

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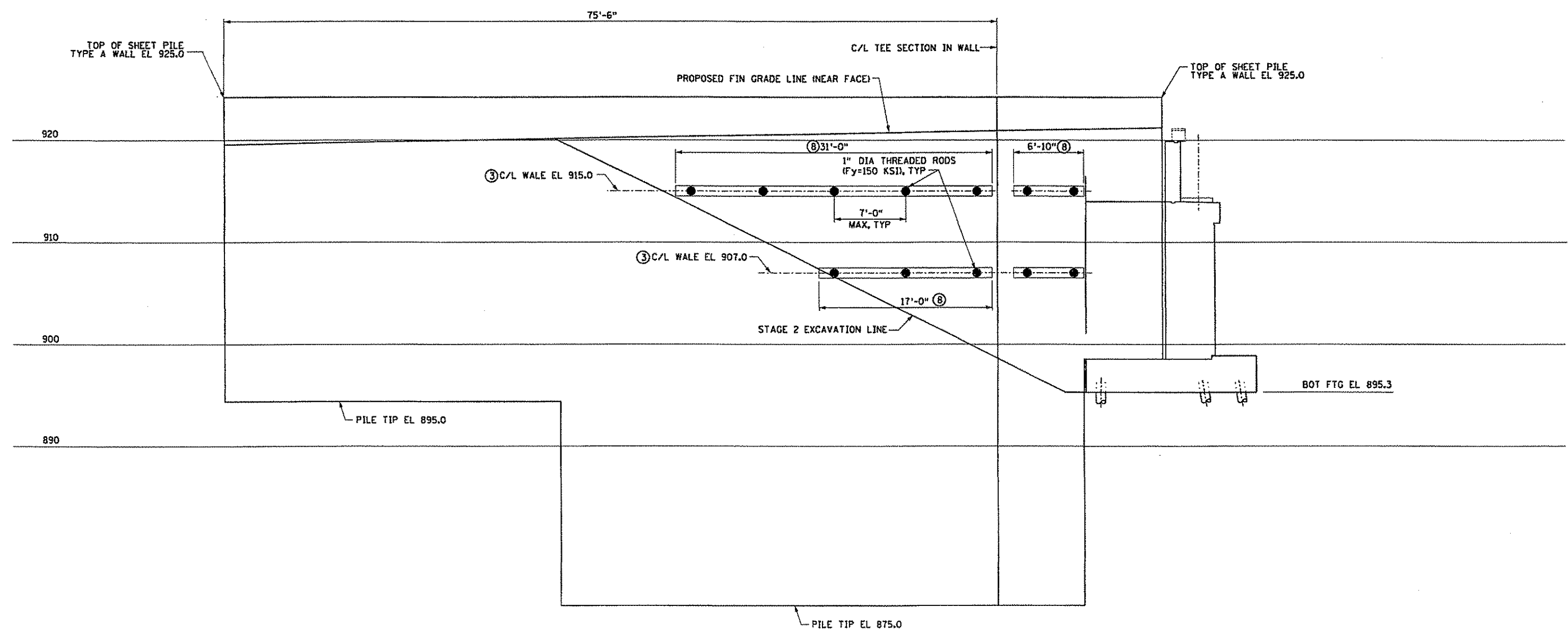
- NOTES:**
- ① INCLUDED UNDER GRADING PORTION OF CONTRACT.
  - ② 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
  - ③ SEE SHEET B54 FOR WALE DETAILS.
  - ④ DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
  - ⑤ NOT USED.
  - ⑥ SEE SHEET B26.

**PARTIAL PLAN NORTH END OF BRIDGE-STAGE 2**

<p>3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 430-2000 FAX (651) 430-2150</p>	<p>I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.</p> <p>Signature: <i>John D. Steenberg</i> Date: 01/02/2007 Printed Name: JOHN D. STEENBERG Reg. No. 13865</p>	<p>TITLE: <b>TEMPORARY SHEETING DETAILS NORTH ABUTMENT-STAGE 2</b></p>	<p>SP 0280-55 SAP 02-623-13</p>	<p>DES: ALGE DR: MAW APPROVED:</p>	<p>BRIDGE NO 02817</p>
			<p>CHK: JAJ CHK: ALGE</p>	<p>SHEET NO B52 OF 95 SHEETS</p>	

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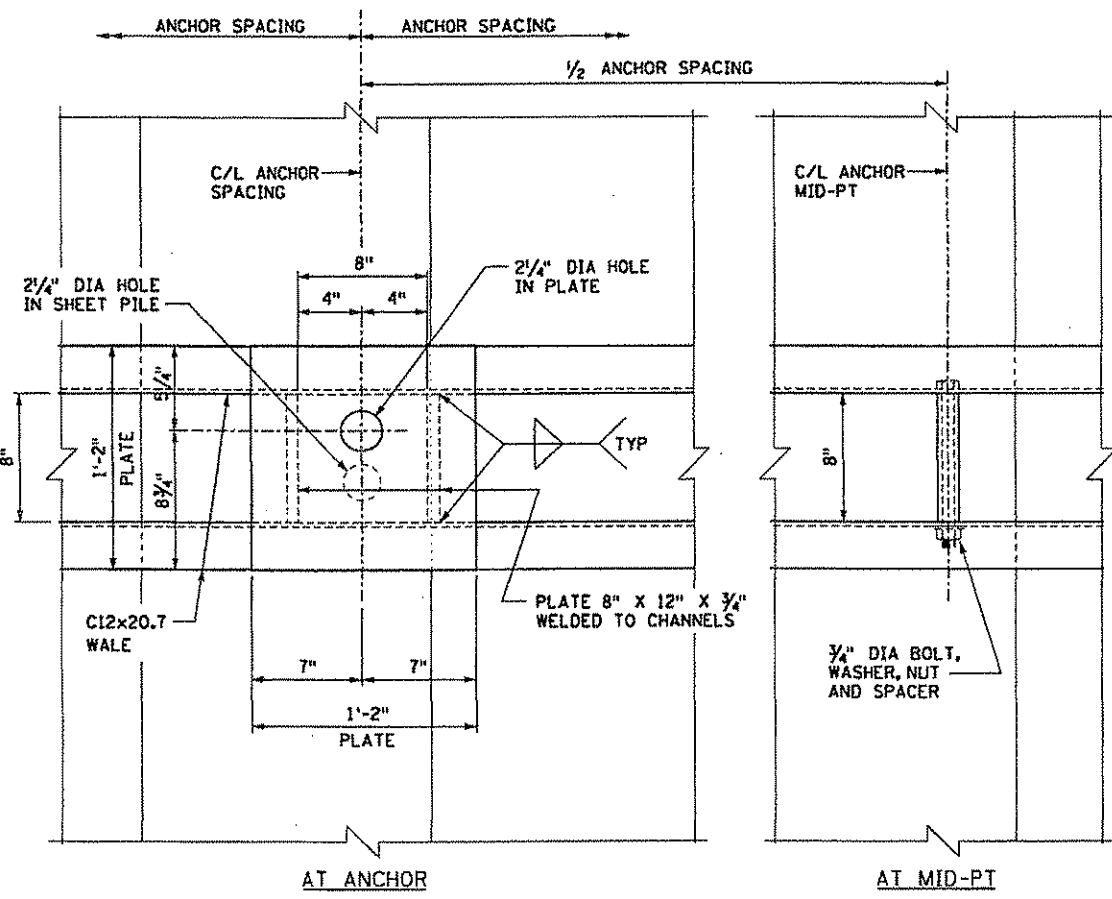
- NOTES:**
- 1 SEE PLAN VIEW ON SHEET B52.
  - 2 'C' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
  - 3 SEE SHEET B54 FOR WALE DETAILS.
  - 4 DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
  - 5 DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B52).
  - 6 SEE SHEET B52 FOR ANCHOR LENGTHS.
  - 7 DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.
  - 8 FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



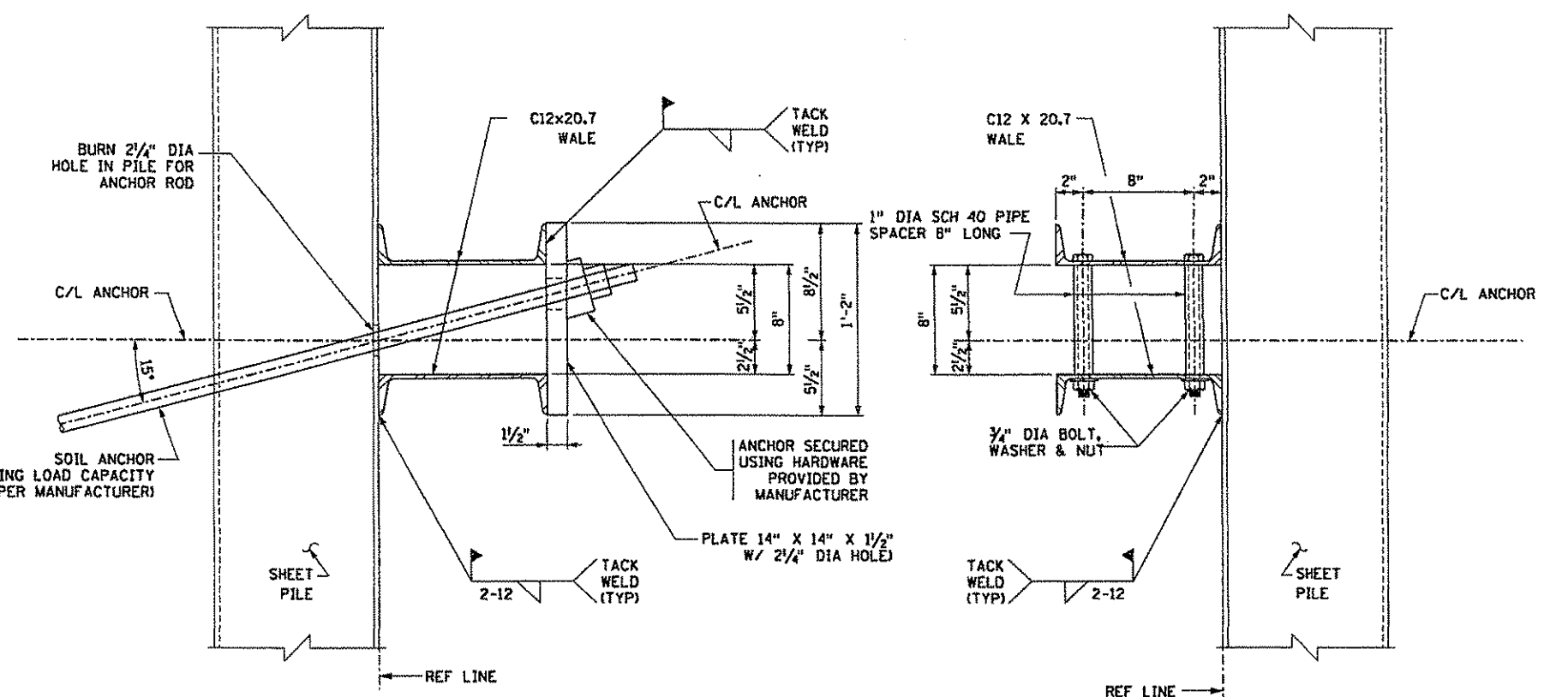
DEVELOPED ELEVATION 53A-53A AT NORTH ABUTMENT-STAGE 2

3535 VADNAIS CENTER DRIVE ST PAUL, MN 55102 PHONE (651) 490-2000 FAX (651) 490-2150	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Signature: <i>John D. Steenberg</i> Date: 01/02/2007 Printed Name: JOHN D. STEENBERG Reg. No. 13865	TITLE: TEMPORARY SHEETING DETAILS NORTH ABUTMENT-STAGE 2	SP 0280-55 SAP 02-623-13 DES: ALGE DR: MAW CHK: JAJ CHK: ALGE	APPROVED:  SHEET NO B53 OF 95 SHEETS	BRIDGE NO 02817
	SHEET NO B53 OF 95 SHEETS				

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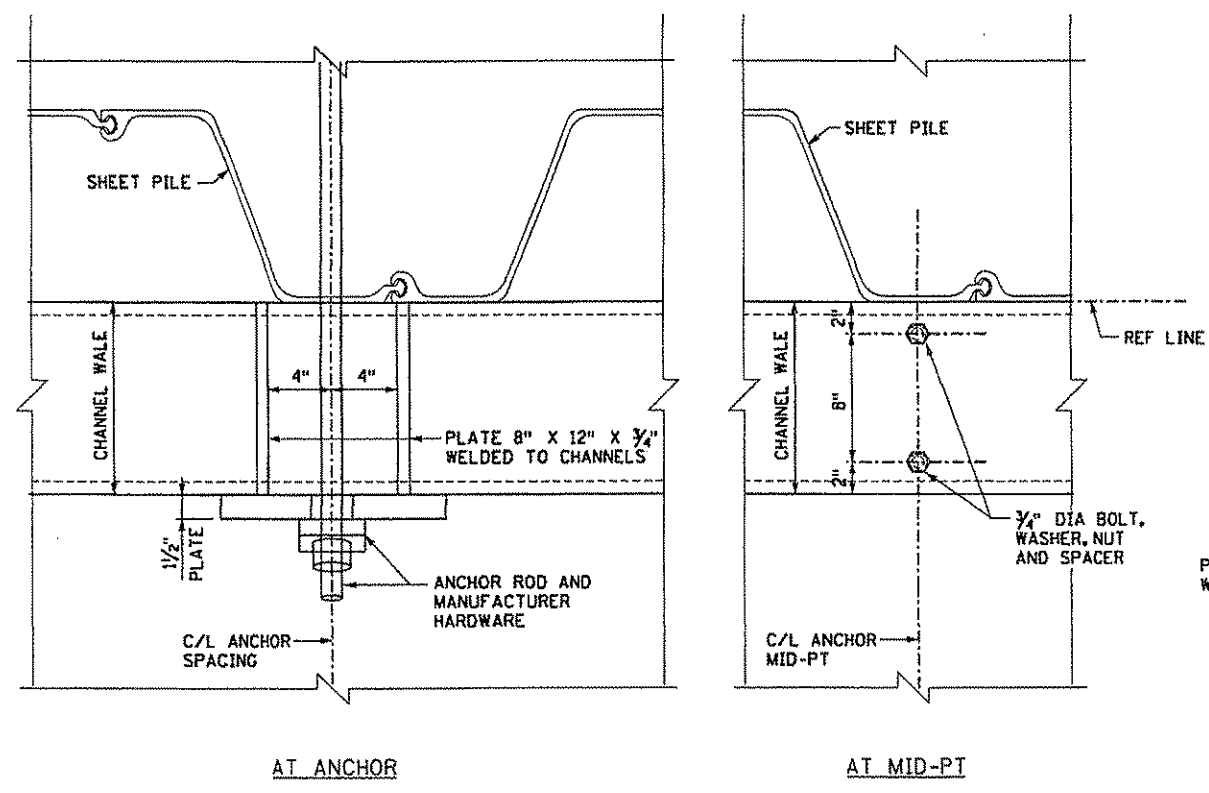


**ELEVATION**  
 (LOOKING AT FF OF SHEET PILE)  
 (ANCHOR ROD NOT SHOWN FOR CLARITY)

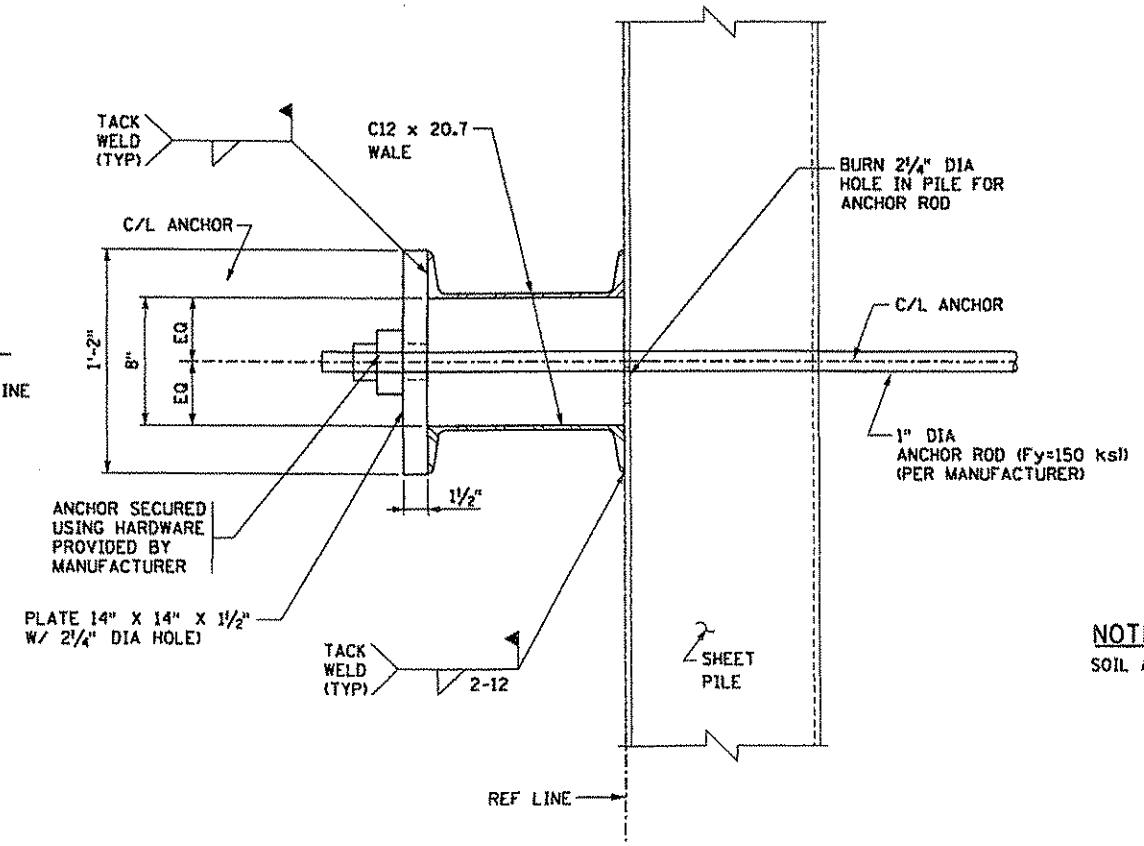


**TYP SECTION AT 15° SOIL ANCHOR (STAGE 1)**

**TYP SECTION AT MID-PT**



**PLAN**



**TYP SECTION AT HORIZONTAL THREADED ANCHOR ROD (STAGE 2)**

**NOTES**  
 SOIL ANCHOR - 75K WORKING LOAD CAPACITY SOIL ANCHOR OR HELICAL ANCHOR.

FF=FRONT FACE  
 BF=BACK FACE  
 EF=EACH FACE

3535 VADNAIS CENTER DRIVE  
 ST PAUL, MN 5580  
 PHONE (651) 490-2000  
 FAX (651) 490-2150  
**SEH**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.  
 Signature: *John D. Steensberg* Date: 01/02/2007  
 Printed Name: JOHN D. STEENSBERG Reg. No. 13865

TITLE:  
**WALE TO SHEET PILE CONNECTION DETAILS**

DES: ALGE	DR: DLF	APPROVED:	BRIDGE NO 02817
CHK: JAJ	CHK: ALGE		
SHEET NO B54 OF 95 SHEETS			

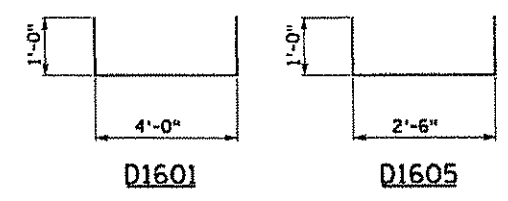


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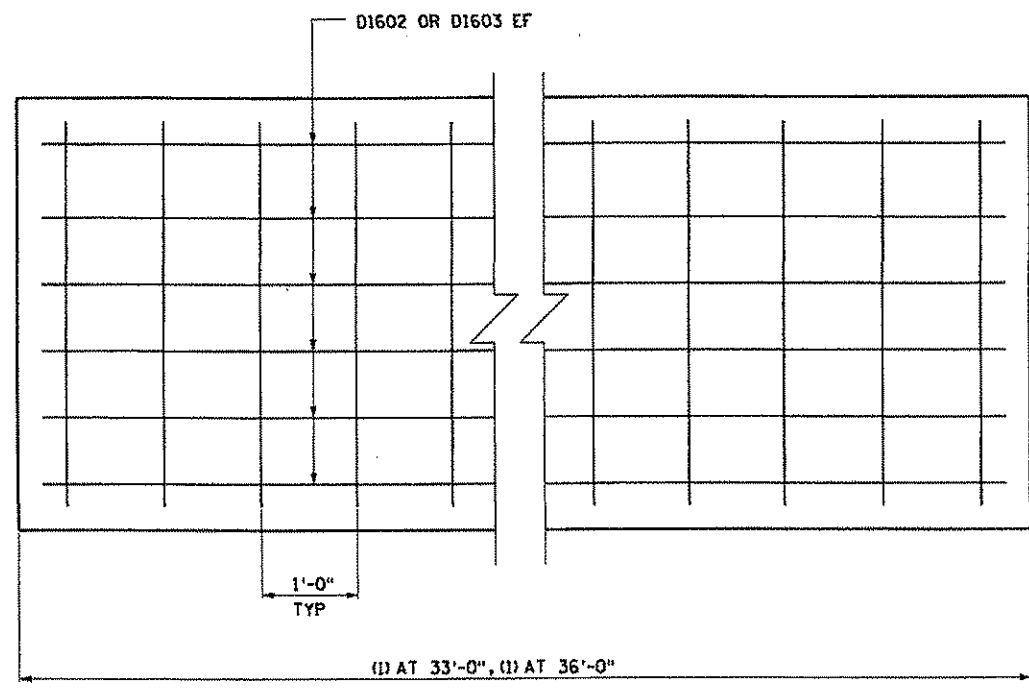
BILL OF REINFORCEMENT FOR DEADMAN					
BAR	NO.	LENGTH	SHAPE	LOCATION	WT
D1601	138	6'-0"	L	DEADMAN TIES	863.6
D1602	18	32'-6"	—	DEADMAN HORIZ	610.2
D1603	18	35'-6"	—	DEADMAN HORIZ	666.5
D1604	12	50'-6"	—	DEADMAN HORIZ	632.1
D1601	102	4'-6"	L	DEADMAN TIES	478.7

SUMMARY OF QUANTITIES ① FOR DEADMAN		
ITEM	UNIT	QUANTITY
STRUCTURE CONCRETE (1A43)	CJ YD	28
REINFORCEMENT BARS	POUND	3250

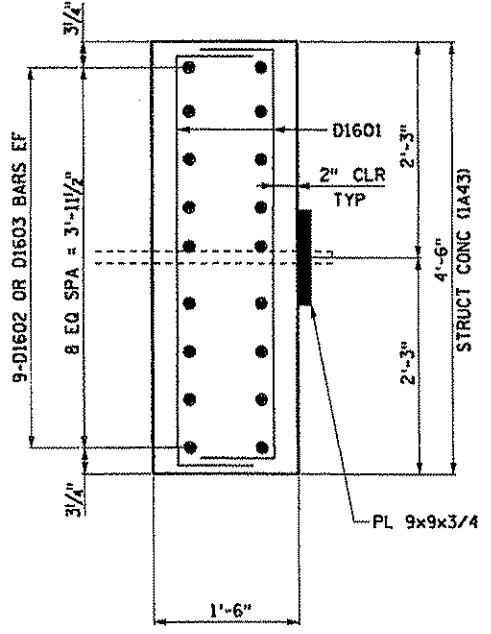
① QUANTITIES SHOWN FOR DEADMAN ARE TO BE INCLUDED IN PRICE BID FOR ANCHORS.



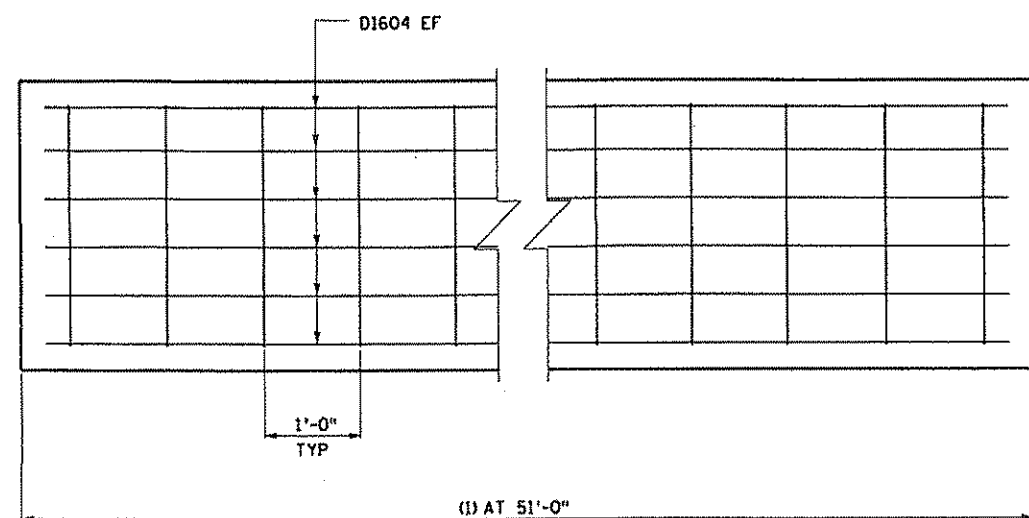
CONTRACTOR MAY PROVIDE A DIFFERENT DEADMAN DETAIL DESIGNED BY A LICENSED ENGINEER FOR APPROVAL.



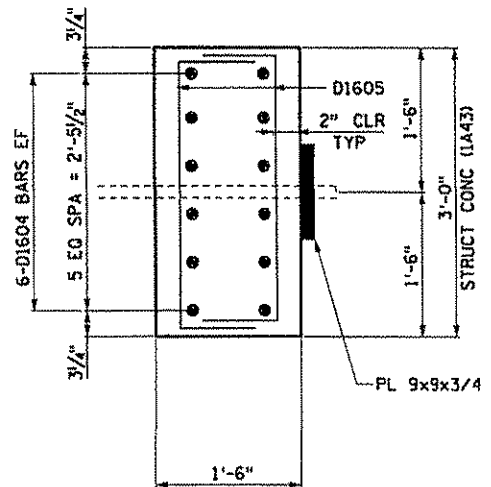
UPPER DEADMAN ELEVATION



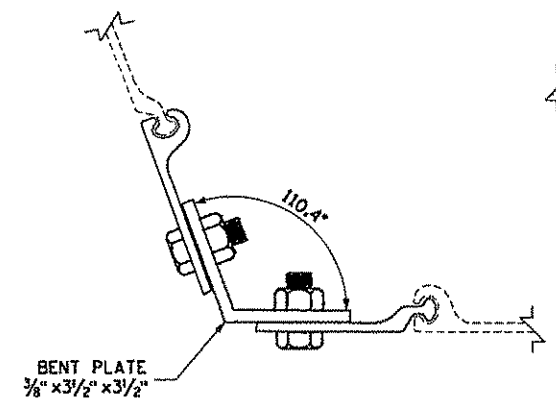
UPPER DEADMAN SECTION



LOWER DEADMAN ELEVATION

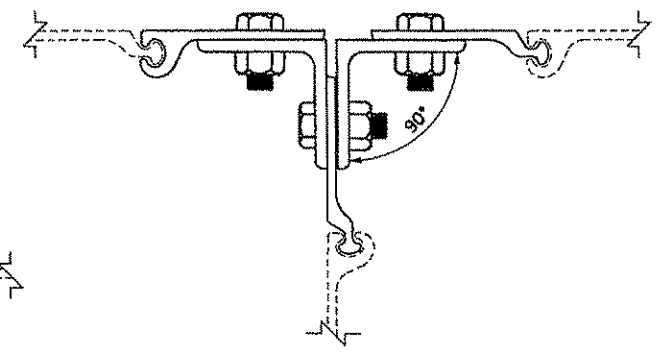


LOWER DEADMAN SECTION



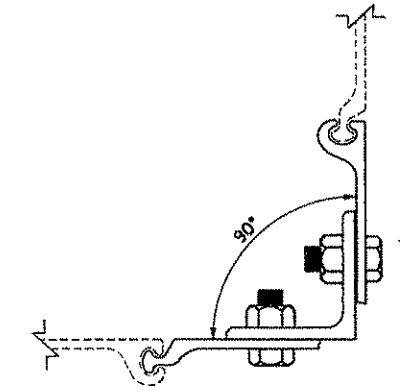
STD FABRICATED CORNER CONNECTION ZC270

CORNER A



STD FABRICATED CORNER CONNECTION ZT270

CORNER B



STD FABRICATED CORNER CONNECTION ZC271

CORNER C

ALL CORNERS USE 6" STANDARD LEGS AND 3/2x3 1/2x3/8 ANGLES UNLESS SHOWN OR NOTED OTHERWISE.  
 FASTENERS ARE 7/8" DIA A325(X) BOLTS SPACED ON 6" CENTERS THROUGHOUT THE LENGTH OF THE SECTION, EXCEPT FOR 2'-0" AT EACH END WHERE THEY ARE LOCATED ON 3" CENTERS.

3535 VADNAIS CENTER DRIVE  
 ST PAUL, MN 5580  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.  
 Signature: *John D. Steenberg*  
 Printed Name: JOHN D. STEENBERG  
 Title: *John D. Steenberg*  
 No. 13865

TITLE:  
 TEMPORARY SHEETING DETAILS  
 STAGE 1 AND 2

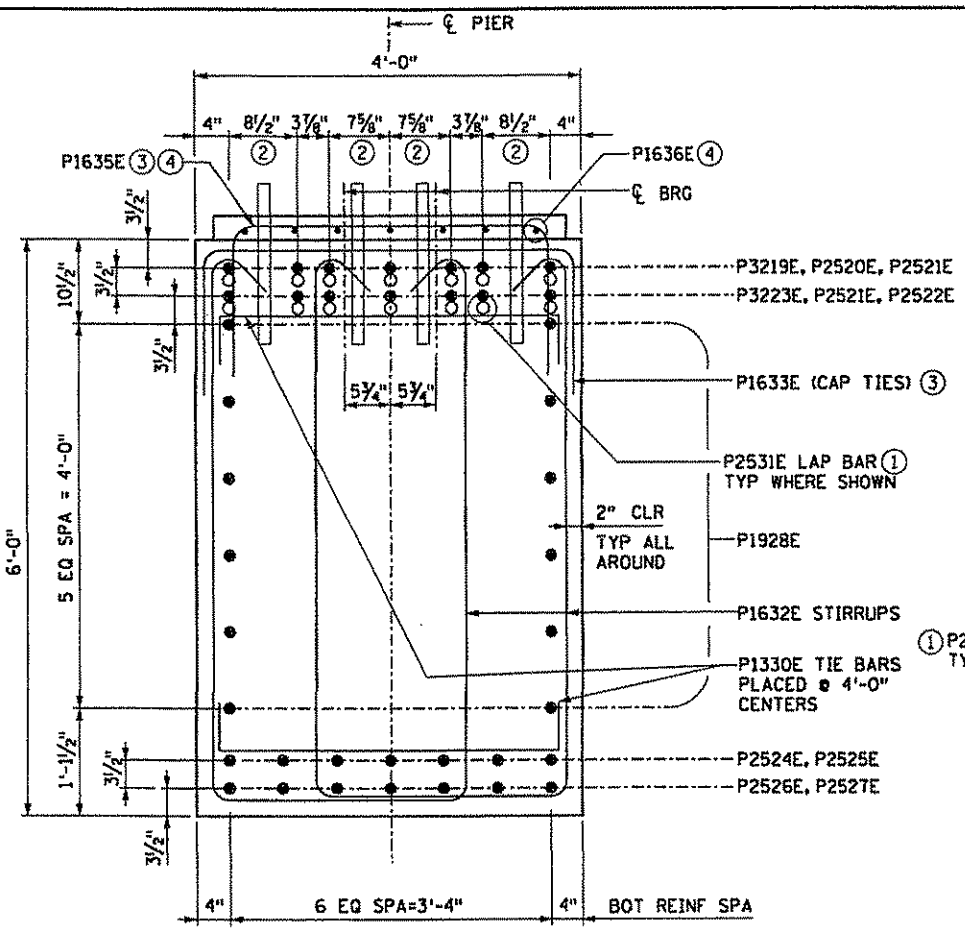
SP 0280-55 SAP 02-623-13  
 DES: ALGE DR: MAW APPROVED:  
 CHK: JAJ CHK: ALGE  
 SHEET NO B55 OF 95 SHEETS

BRIDGE NO 02817

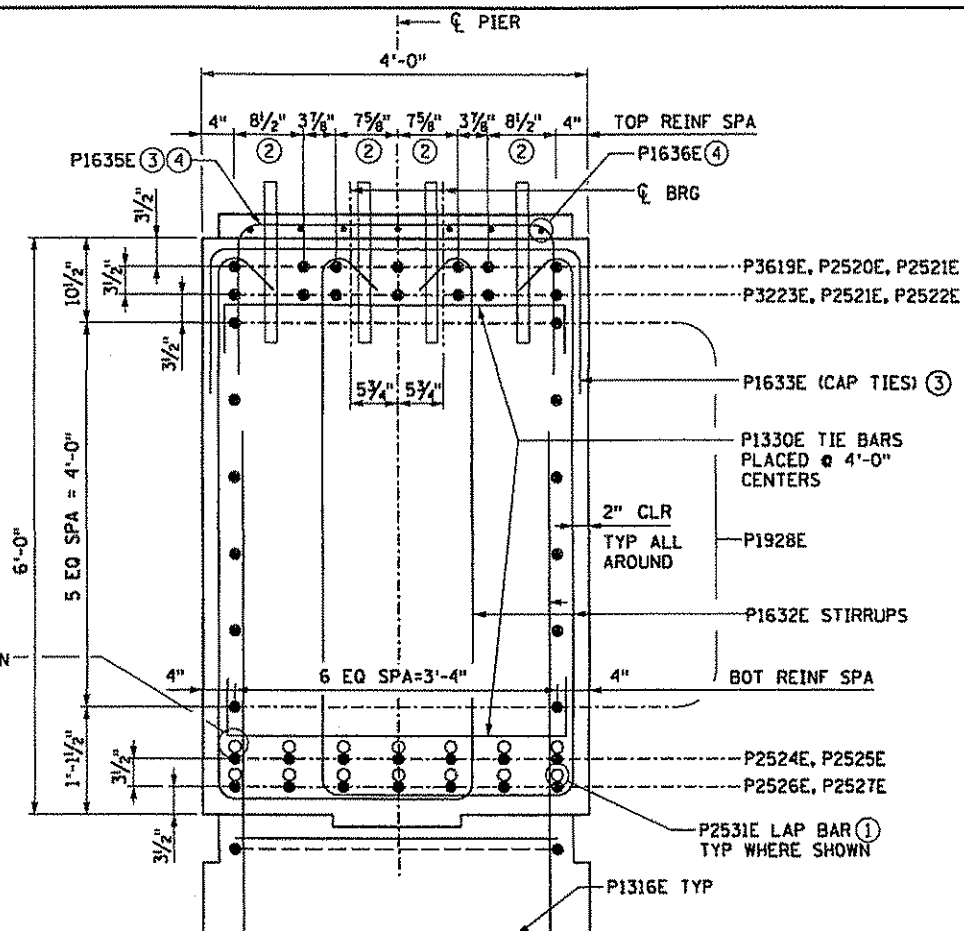




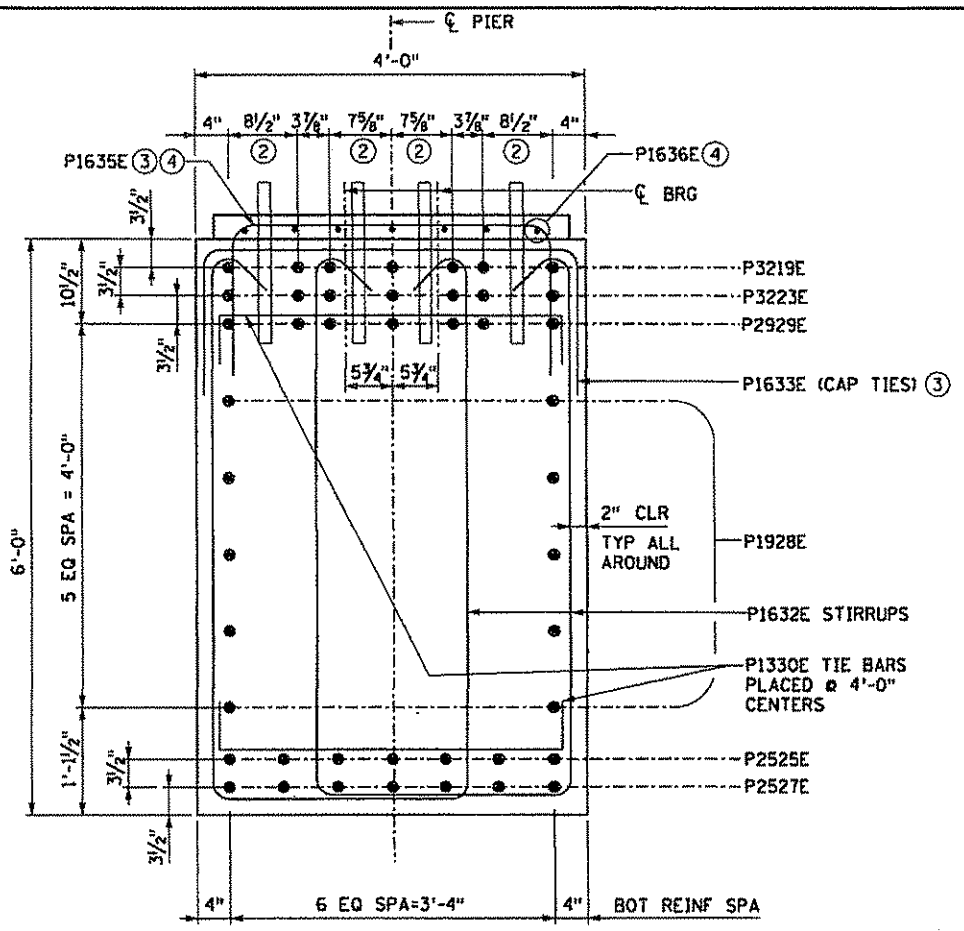
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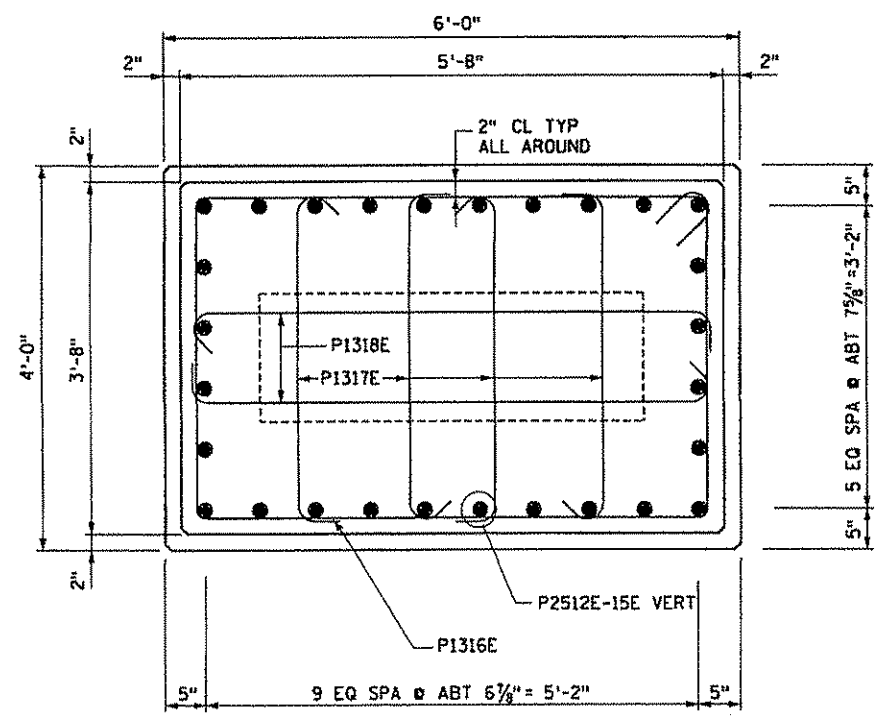
TYP CAP SECTION BETWEEN COLUMNS



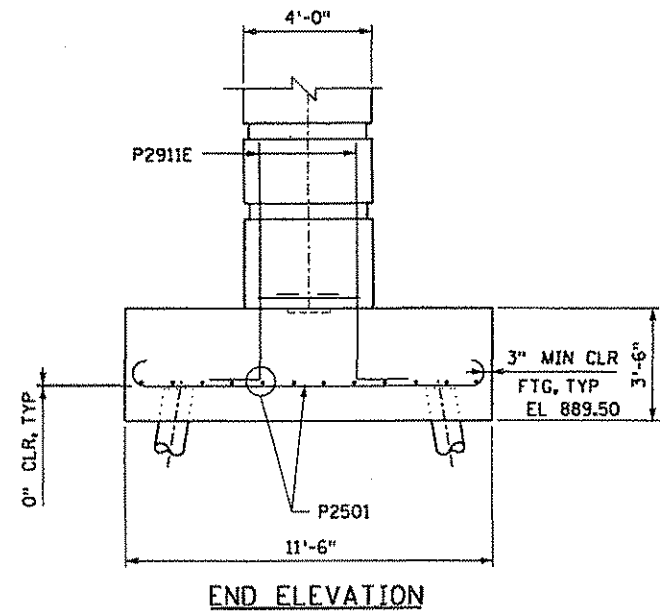
TYP CAP SECTION AT COLUMNS



CAP SECTION AT CANTILEVERED END



TYP COLUMN SECTION



END ELEVATION

- NOTES**
- SEE SHEET B59 FOR BAR LIST AND SUMMARY OF QUANTITIES.
  - SEE SHEET B56 FOR ARCHITECTURAL TREATMENT DETAILS.
  - ① SEE SHEET B57 FOR LAP LOCATIONS.
  - ② NO LAP ENCROACHMENT IN THIS AREA. SPACE MUST BE MAINTAINED FOR DRILLED ANCHOR RODS.
  - ③ PULL UP TO 2" CLEAR.
  - ④ SEE SHEET B57 FOR SPACING.

3535 VAUNIA CENTER DRIVE  
 ST PAUL, MN 5510  
 PHONE (650) 490-2000  
 FAX (650) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**PIER DETAILS**

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		
SHEET NO B58 OF 95 SHEETS			

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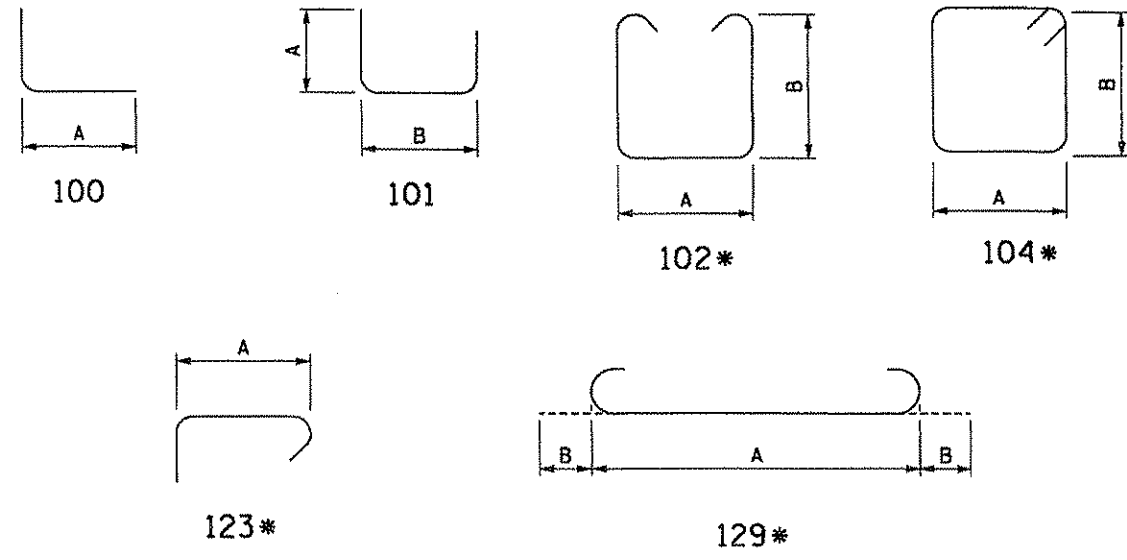
BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
PIER - STAGE 1									
EPOXY COATED BARS									
P2911E	112		9'-2"	100	7'-7"	1'-7"			FTG DWL
P2512E	28		20'-5"	STR					COLUMN VERT
P2513E	28		20'-10"	STR					COLUMN VERT
P2514E	28		21'-3"	STR					COLUMN VERT
P2515E	28		21'-8"	STR					COLUMN VERT
P1316E	66		18'-1"	104	5'-4"	3'-4"			COLUMN TIES
P1317E	264		4'-1"	123	3'-4"				COLUMN TIES
P1318E	132		6'-1"	123	5'-4"				COLUMN TIES
P3219E	7		27'-4"	100	22'-4"				CAP TOP
P2520E	7		18'-8"	100	13'-8"				CAP TOP
P2521E	14		43'-5"	STR					CAP TOP
P2522E	7		18'-3"	100	13'-3"				CAP TOP
P3223E	7		27'-0"	100	22'-0"				CAP TOP
P2524E	7		24'-6"	STR					CAP BOT
P2525E	7		55'-1"	STR					CAP BOT
P2526E	7		46'-6"	STR					CAP BOT
P2527E	7		33'-1"	STR					CAP BOT
P1928E	22		41'-3"	STR					CAP SIDE
P2929E	7		25'-8"	100	21'-8"				CAP TOP
P1330E	40		4'-8"	101	0'-6"	3'-8"			CAP TIES
P2531E	42		8'-9"	STR					LAP BAR
P1632E	164		14'-8"	102	2'-7"	5'-8"			CAP STIRRUPS
P1633E	107		7'-8"	101	2'-0"	3'-8"			CAP TIES
P1934E	12		8'-6"	101	2'-6"	3'-6"			CAP ENDS
P1635E	64		8'-5"	101	2'-6"	3'-5"			BRG SEAT
P1636E	56		9'-4"	101	2'-6"	4'-3 1/2"			BRG SEAT
P1937E	2		24'-0"	STR					CAP SIDE

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
PIER - STAGE 1									
BLACK BARS									
P2501		136	12'-10"	129	11'-0"	0'-11"			FOOTING BOT

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	69
STRUCTURAL CONCRETE (3Y43)	CU YD	132
REINFORCEMENT BARS	POUND	4660
REINFORCEMENT BARS (EPOXY COATED)	POUND	26540
C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2050
C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2050
C-I-P CONCRETE TEST PILE 60 FT LONG 12"	EACH	2
PILE POINTS	EACH	43
PILE ANALYSIS	EACH	1

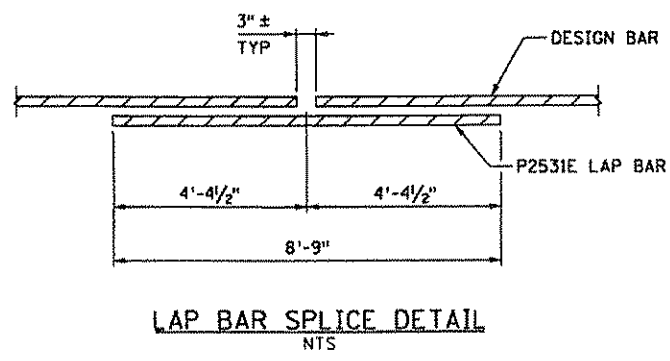
① DOES NOT INCLUDE TEST PILES.

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.



3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 5510  
PHONE (651) 490-2000  
FAX (651) 490-2150

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

Signature: *Christopher A. Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: PIER BARLIST & SUMMARY OF QUANTITIES STAGE 1

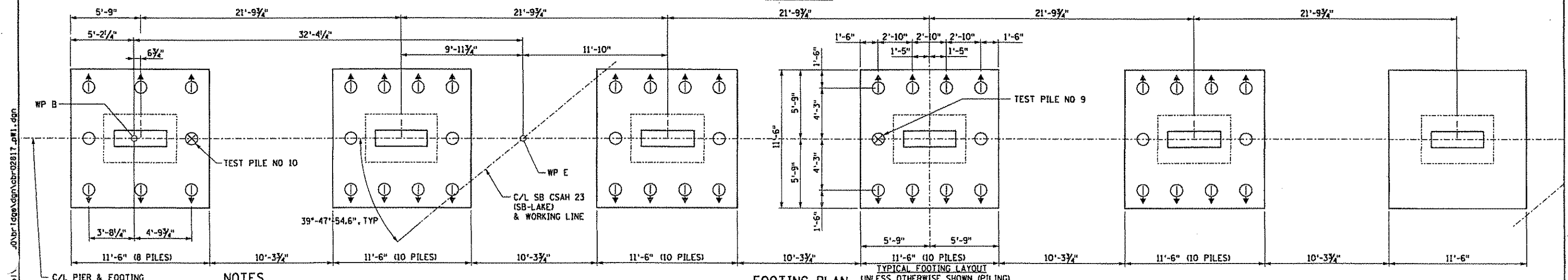
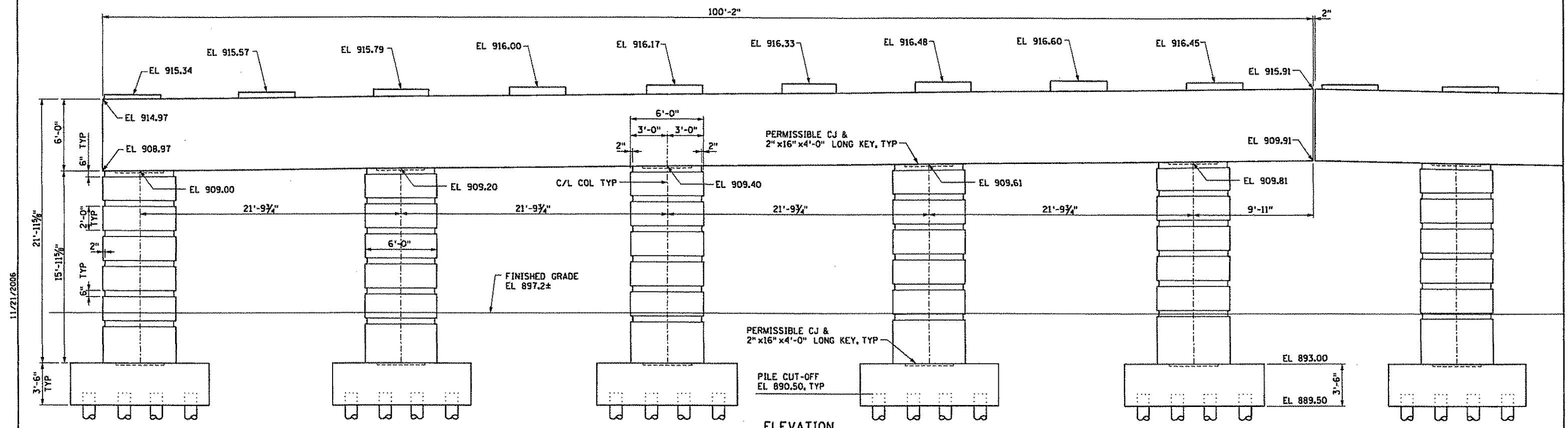
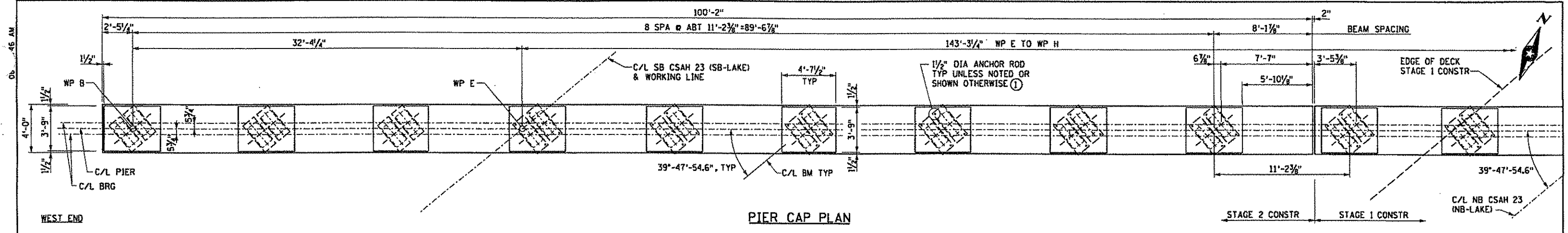
SP 0280-95 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B59 OF 95 SHEETS

BRIDGE NO 02817





**NOTES**

(1) SEE SHEET B61 FOR TYPICAL ANCHOR ROD LAYOUT. SEE FRAMING PLAN FOR BEARING TYPES AND LOCATIONS.

SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.

**SEH**  
 3535 VAONAS CENTER DRIVE  
 ST PAUL, MN 55109  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

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

Signature: *Christopher A. Nunsch* Date: 11/21/2005  
 Printed Name: CHRISTOPHER A. NUNSCH Reg. No. 42058

TITLE:  
**PIER DETAILS - WEST FRAME  
 STAGE 2**

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

BRIDGE NO 02817

SHEET NO B60 OF 95 SHEETS

05-46 AM  
 11/21/2006  
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11/21/2006  
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 11/21/2006  
 11/21/2006

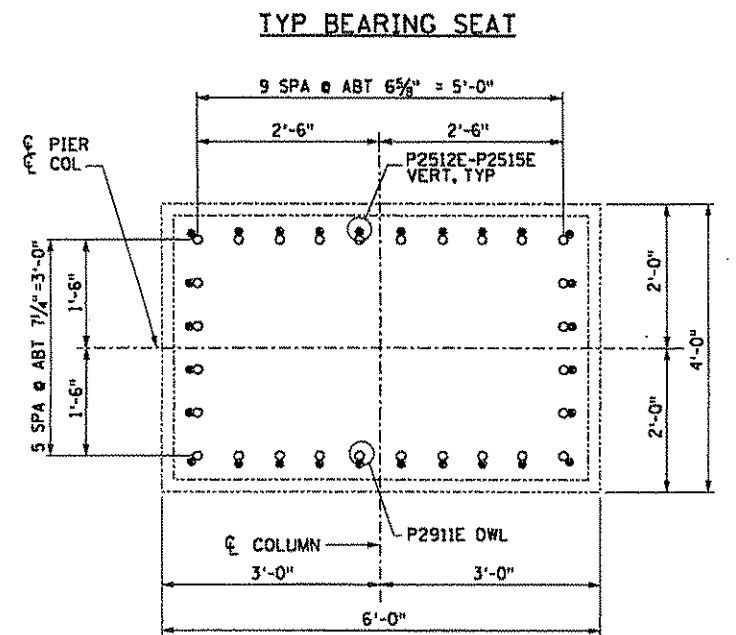
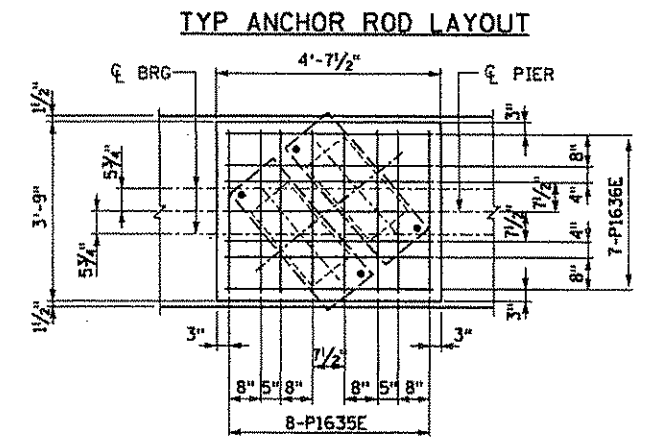
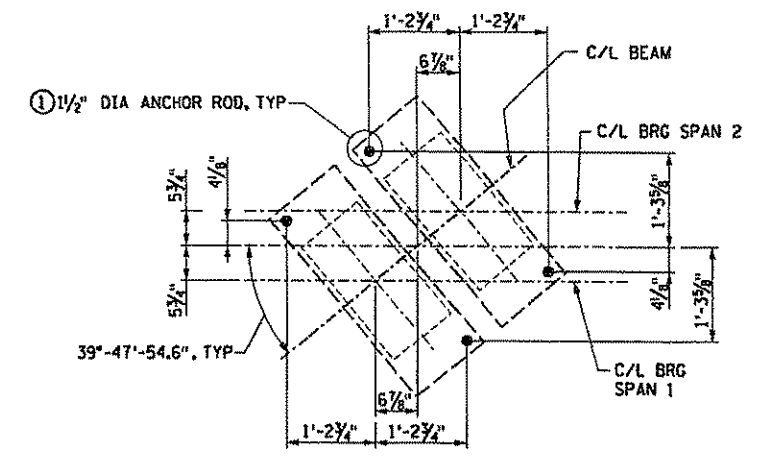
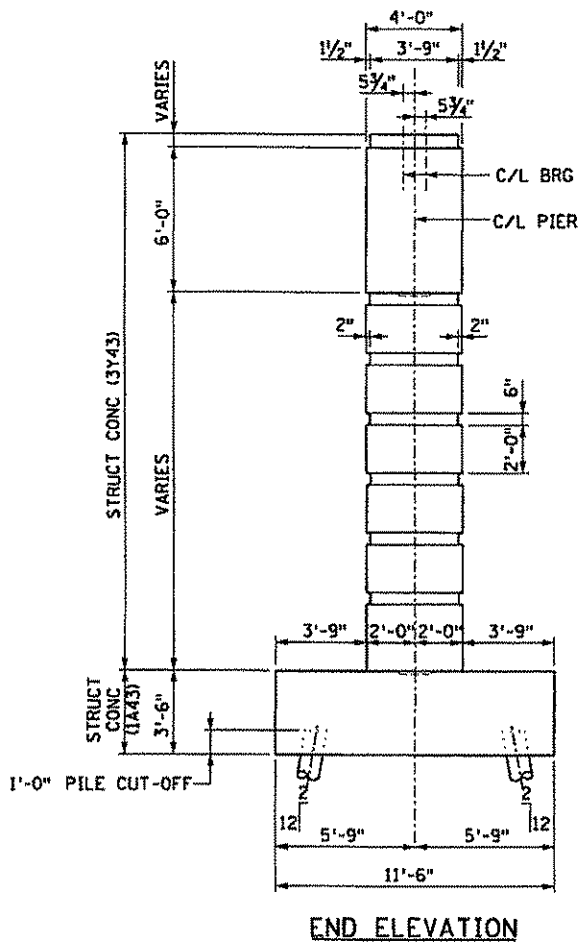
PIER COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	50.9
FACTORED LIVE LOAD	21.8
FACTORED OVERTURNING	11.6
*FACTORED TOTAL LOAD	84.3

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE $R_n$ - Tons / Pile		
FIELD CONTROL METHOD	$\phi_{dyn}$	* $R_n$
MNDOT NOMINAL RESISTANCE FORMULA	0.40	210.8
PDA	0.60	140.5

\* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

**PILE NOTES**

- 2 CAST-IN-PLACE CONC TEST PILES 60 FT LONG
- 46 CAST-IN-PLACE CONC PILES EST LENGTH 50 FT
- 48 CAST-IN-PLACE CONC PILES REQ'D FOR PIER EAST FRAME (STAGE 1).
- PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
- PILES MARKED THUS  $\odot$  TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.
- PILES TO HAVE A NOMINAL DIAMETER OF 12".
- FOR PILE SPLICE DETAILS SEE DETAIL B201.



**NOTES**  
 ① SEE FRAMING PLAN FOR BEARING TYPES & LOCATIONS.

SEH  
 3535 YAONAS CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**PIER DETAILS - WEST FRAME  
 STAGE 2**

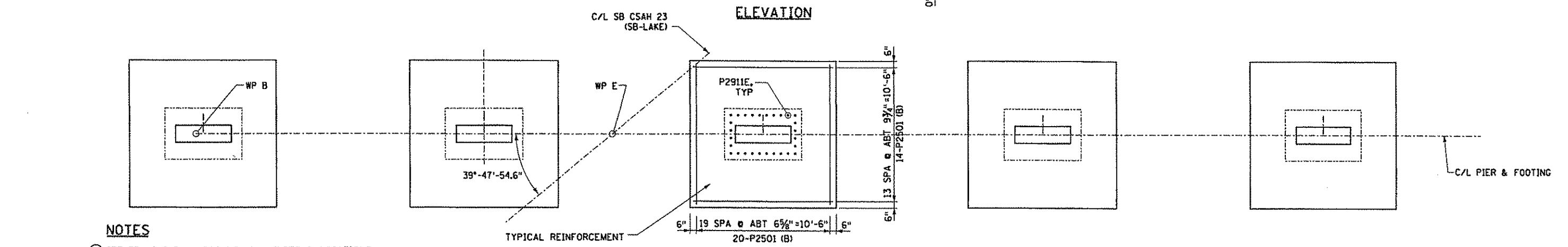
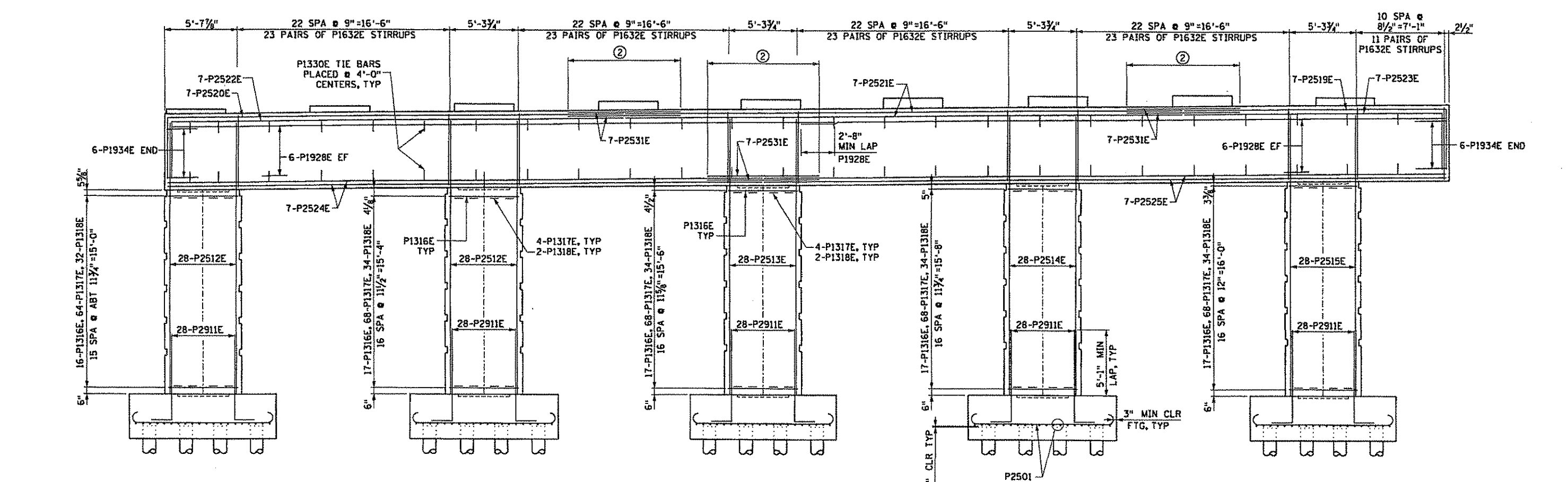
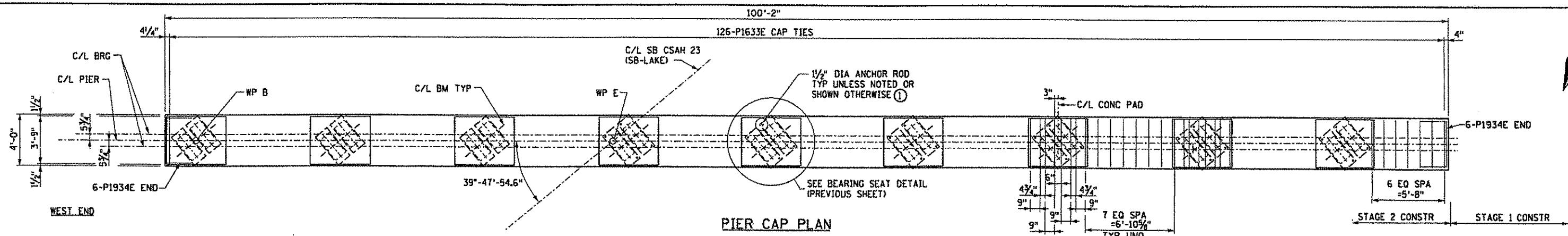
SP 0280-55 SAP 02-623-13  
 DES: CAW DR: MAW APPROVED:  
 CHK: JDS CHK: CAW  
 SHEET NO B61 OF 95 SHEETS

BRIDGE NO  
**02817**

06-148 AM

11/21/2006

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- NOTES**
- ① SEE FRAMING PLAN FOR BEARING TYPES & LOCATIONS.
  - ② LAP BAR SPLICE DETAIL. SEE SHEET B64.
  - ③ STIRRUP SPACING CENTERED OVER COLUMNS IN THIS AREA.
- SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- UNO=UNLESS NOTED OTHERWISE

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55103  
PHONE (651) 490-2000  
FAX (651) 490-2150

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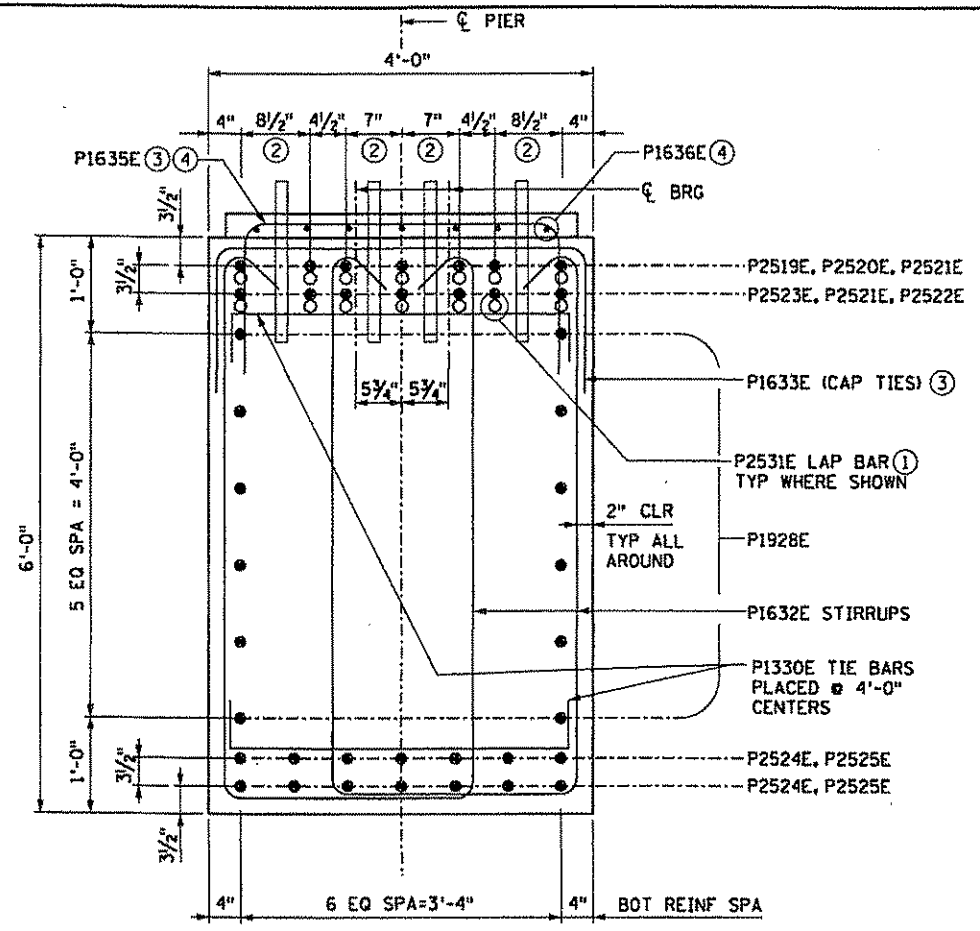
Signature: *CHRISTOPHER & WUNSCH* Date: 11/21/2006  
Printed Name: CHRIS ZOPHER & WUNSCH Reg. No. 42058

TITLE:  
**PIER DETAILS - WEST FRAME  
STAGE 2**

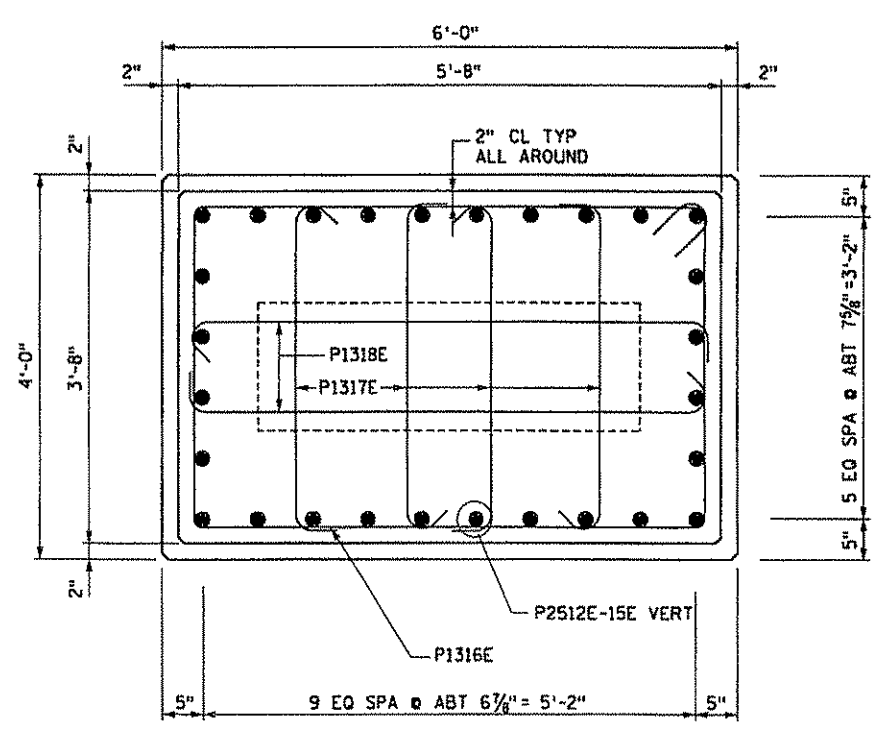
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	
SHEET NO B62 OF 95 SHEETS		

BRIDGE NO  
02817

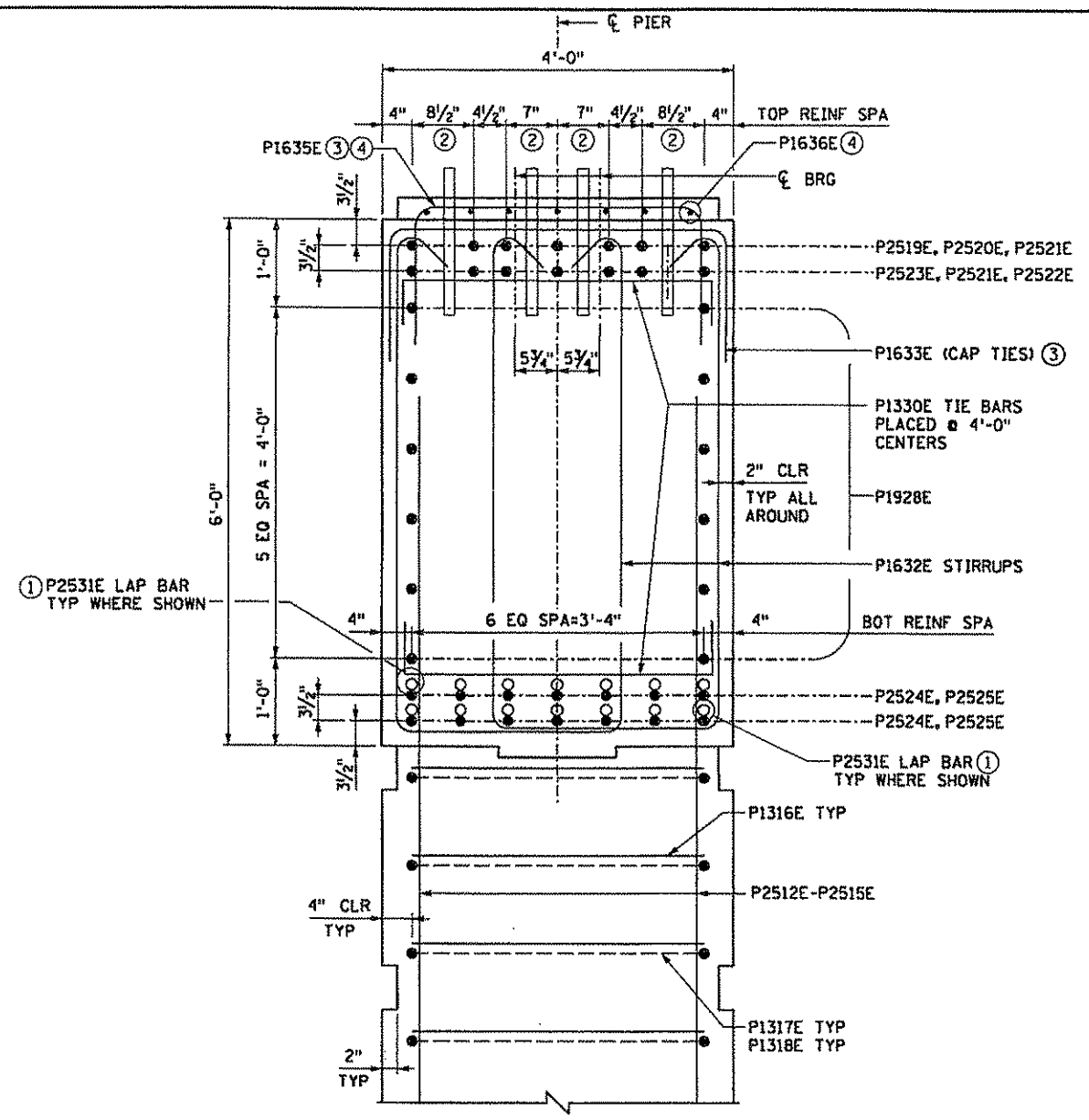
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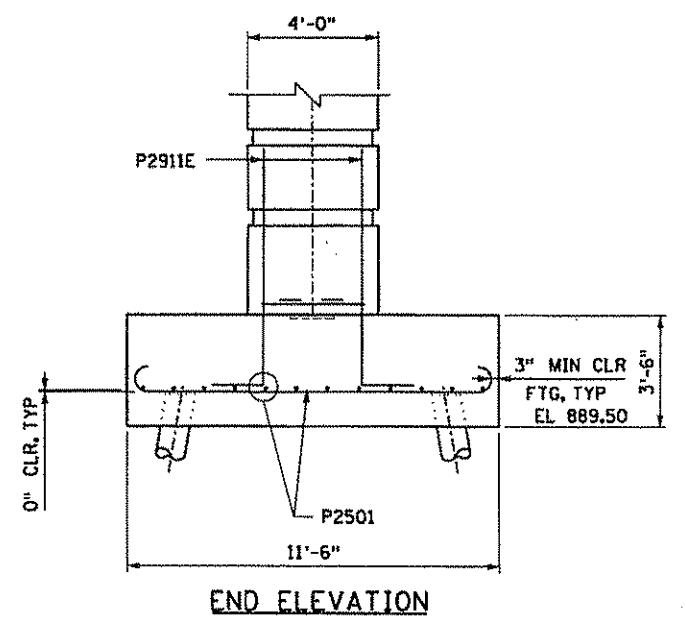
TYP CAP SECTION BETWEEN COLUMNS



TYP COLUMN SECTION



TYP CAP SECTION AT COLUMNS



END ELEVATION

**NOTES**

- SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.
- SEE SHEET B60 FOR ARCHITECTURAL TREATMENT DETAILS.
- ① SEE SHEET B62 FOR LAP LOCATIONS.
- ② NO LAP ENCROACHMENT IN THIS AREA. SPACE MUST BE MAINTAINED FOR DRILLED ANCHOR RODS.
- ③ PULL UP TO 2" CLEAR.
- ④ SEE SHEET B61 FOR SPACING.

<p>3535 VADNAIS CENTER DRIVE ST. PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150</p>	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.		TITLE: PIER DETAILS - STAGE 2		SP 0280-55 SAP 02-623-13
	Signature: <i>Christopher A. Wunsch</i> Date: 11/21/2006		DES: CAW DR: MAW		APPROVED:
	Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058		CHK: JDS CHK: CAW		BRIDGE NO 02817

SHEET NO B63 OF 95 SHEETS

11/21/2006

11/21/2006

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BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
PIER (STAGE 2)									
EPOXY COATED BARS									
P2911E		140	9'-2"	100	7'-7"	1'-7"			FTG DWL
P2512E		56	21'-3"	STR					COLUMN VERT
P2513E		28	21'-8"	STR					COLUMN VERT
P2514E		28	21'-10"	STR					COLUMN VERT
P2515E		28	22'-1"	STR					COLUMN VERT
P1316E		84	18'-1"	104	5'-4"	3'-4"			COLUMN TIES
P1317E		336	4'-1"	123	3'-4"				COLUMN TIES
P1318E		168	6'-1"	123	5'-4"				COLUMN TIES
P2519E		7	25'-6"	100	20'-6"				CAP TOP
P2520E		7	40'-5"	100	35'-5"				CAP TOP
P2521E		14	43'-6"	STR					CAP TOP
P2522E		7	40'-1"	100	35'-1"				CAP TOP
P2523E		7	25'-2"	100	20'-2"				CAP TOP
P2524E		14	46'-4"	STR					CAP BOT
P2525E		14	53'-3"	STR					CAP BOT
P1928E		24	51'-3"	STR					CAP SIDE
P1330E		52	4'-8"	101	0'-6"	3'-8"			CAP TIES
P2531E		42	8'-9"	STR					LAP BAR
P1632E		206	14'-8"	102	2'-7"	5'-8"			CAP STIRRUPS
P1633E		126	7'-8"	101	2'-0"	3'-8"			CAP TIES
P1934E		12	8'-6"	101	2'-6"	3'-6"			CAP ENDS
P1635E		72	8'-5"	101	2'-6"	3'-5"			BRG SEAT
P1636E		63	9'-4"	101	2'-6"	4'-3 1/2"			BRG SEAT

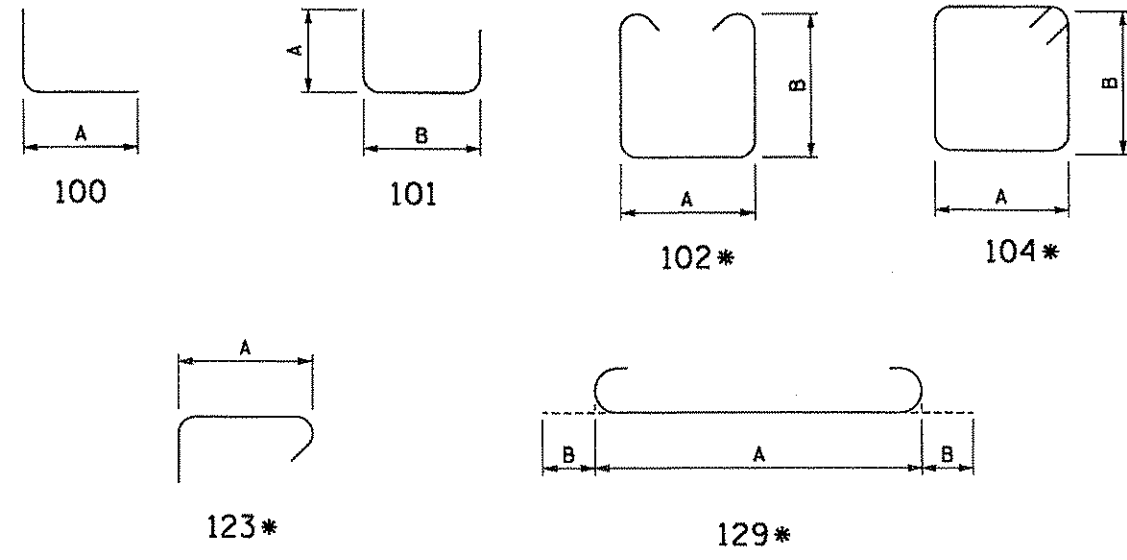
BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
PIER (STAGE 2)									
BLACK BARS									
P2501		170	12'-10"	129	11'-0"	0'-11"			FOOTING BOT

**SUMMARY OF QUANTITIES FOR PIER - STAGE 2**

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	86
STRUCTURAL CONCRETE (3Y43)	CU YD	167
REINFORCEMENT BARS	POUND	5830
REINFORCEMENT BARS (EPOXY COATED)	POUND	31410
C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2300
C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2300
C-I-P CONCRETE TEST PILE 60 FT LONG 12"	EACH	2
PILE POINTS	EACH	48
PILE ANALYSIS	EACH	1

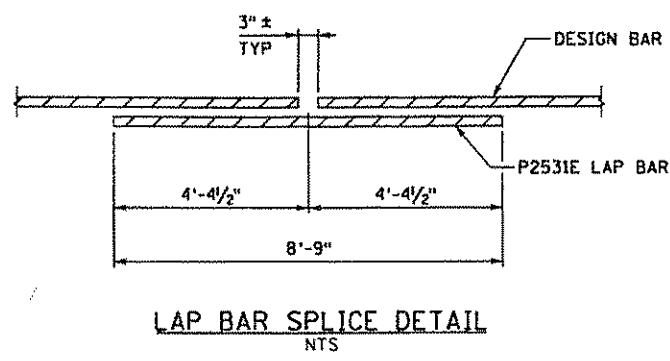
① DOES NOT INCLUDE TEST PILES.

**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.



3535 VADNAIS CENTER DRIVE  
ST PAUL, MN 5510  
PHONE (651) 490-2000  
FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Signature: *Christopher A Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: PIER BARLIST & SUMMARY OF QUANTITIES STAGE 2

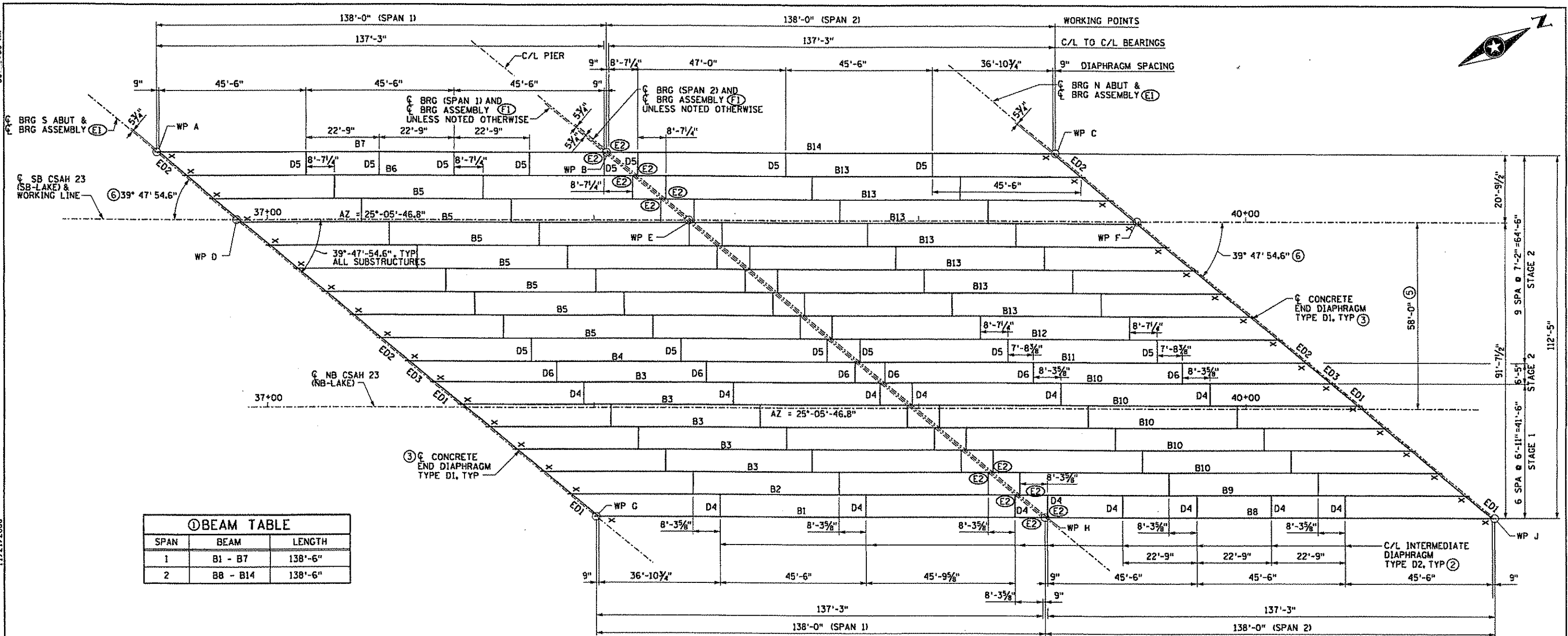
SP 0280-55 SAP 02-623-13  
DES: CAW DR: MAW APPROVED:  
CHK: JDS CHK: CAW  
SHEET NO B64 OF 95 SHEETS  
BRIDGE NO 02817



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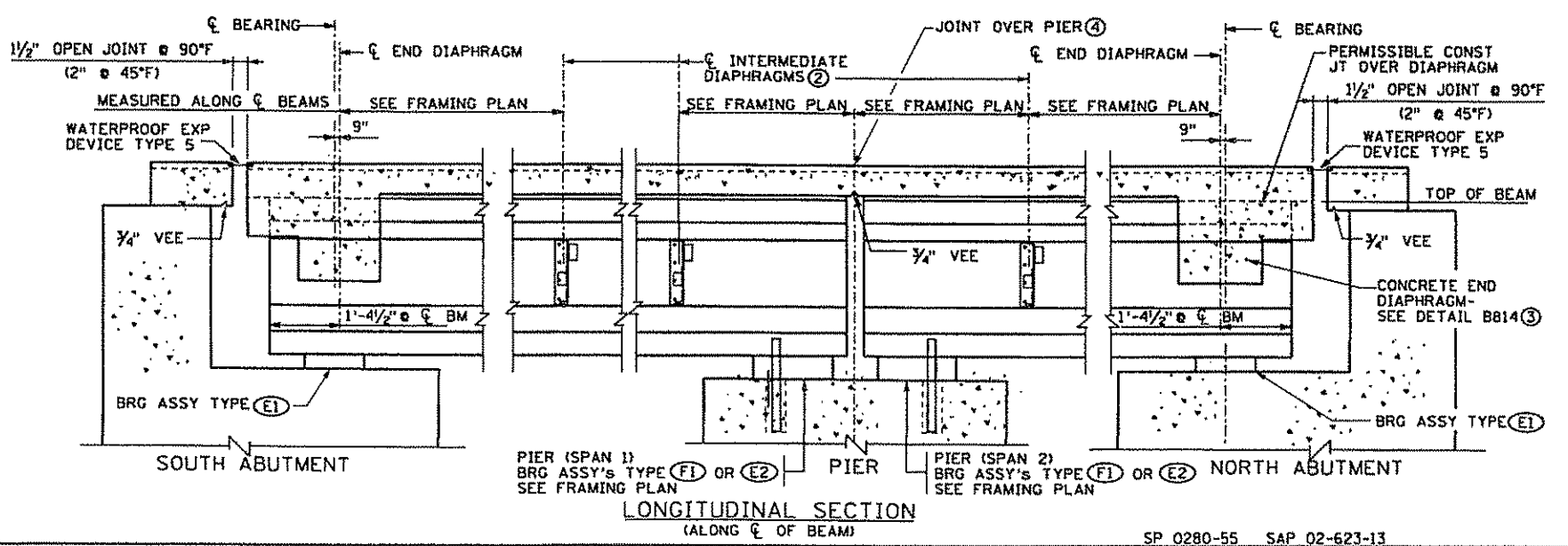
**① BEAM TABLE**

SPAN	BEAM	LENGTH
1	B1 - B7	138'-6"
2	B8 - B14	138'-6"

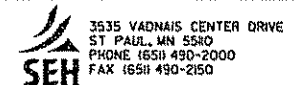
FRAMING PLAN

**NOTES**

- "X" DENOTES END OF BEAM.
- ALL BEAMS SET PARALLEL TO WORKING LINE.
- ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.
- MARKS SHOWN (E1) & (E2) DENOTE EXPANSION BEARING ASSEMBLIES.
- MARKS SHOWN (F1) DENOTE FIXED BEARING ASSEMBLIES.
- SEE DETAILS SHEET B84 FOR BEARING DETAILS.
- ① SEE SHEET B66 FOR BEAM DETAILS.
- ② SEE SHEET B85 FOR INTERMEDIATE DIAPHRAGM DETAIL B403.
- ③ SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPHRAGMS (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU, YD.
- ④ MAKE 1" DEEP BY 3/8" WIDE SAW CUT IN CONCRETE ROADWAY SLAB (CONC MIX NO 3Y36) OVER PIERS AS SOON AS CUTTING CAN BE DONE WITHOUT RAVELING THE CONCRETE. AFTER CONSTRUCTION OF LOW SLUMP CONCRETE WEARING COURSE, MAKE 1" DEEP BY 3/8" WIDE SAW CUT DIRECTLY OVER PREVIOUS SAW CUT. FILL WITH CONCRETE JOINT SEALER, PER MNDOT SPEC 3723.
- ⑤ MEASURED PERP TO WORKING LINE.
- ⑥ ANGLE=39°-47'-54.6" (TYPICAL ALL SUBSTRUCTURES & DIAPHRAGMS).
- ⑦ SYMMETRICAL ABOUT CENTERLINE UNLESS SHOWN OR NOTED OTHERWISE.



LONGITUDINAL SECTION (ALONG C/L OF BEAM)



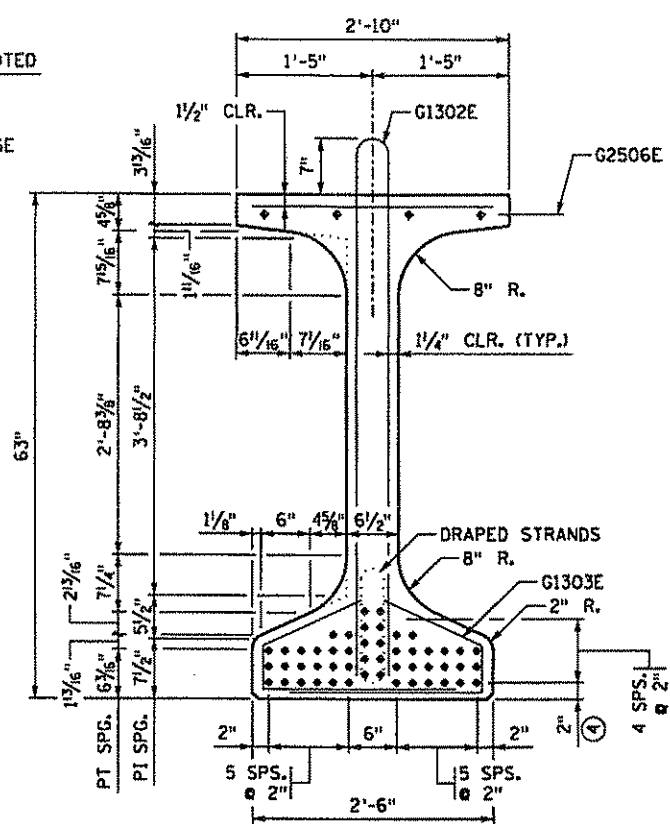
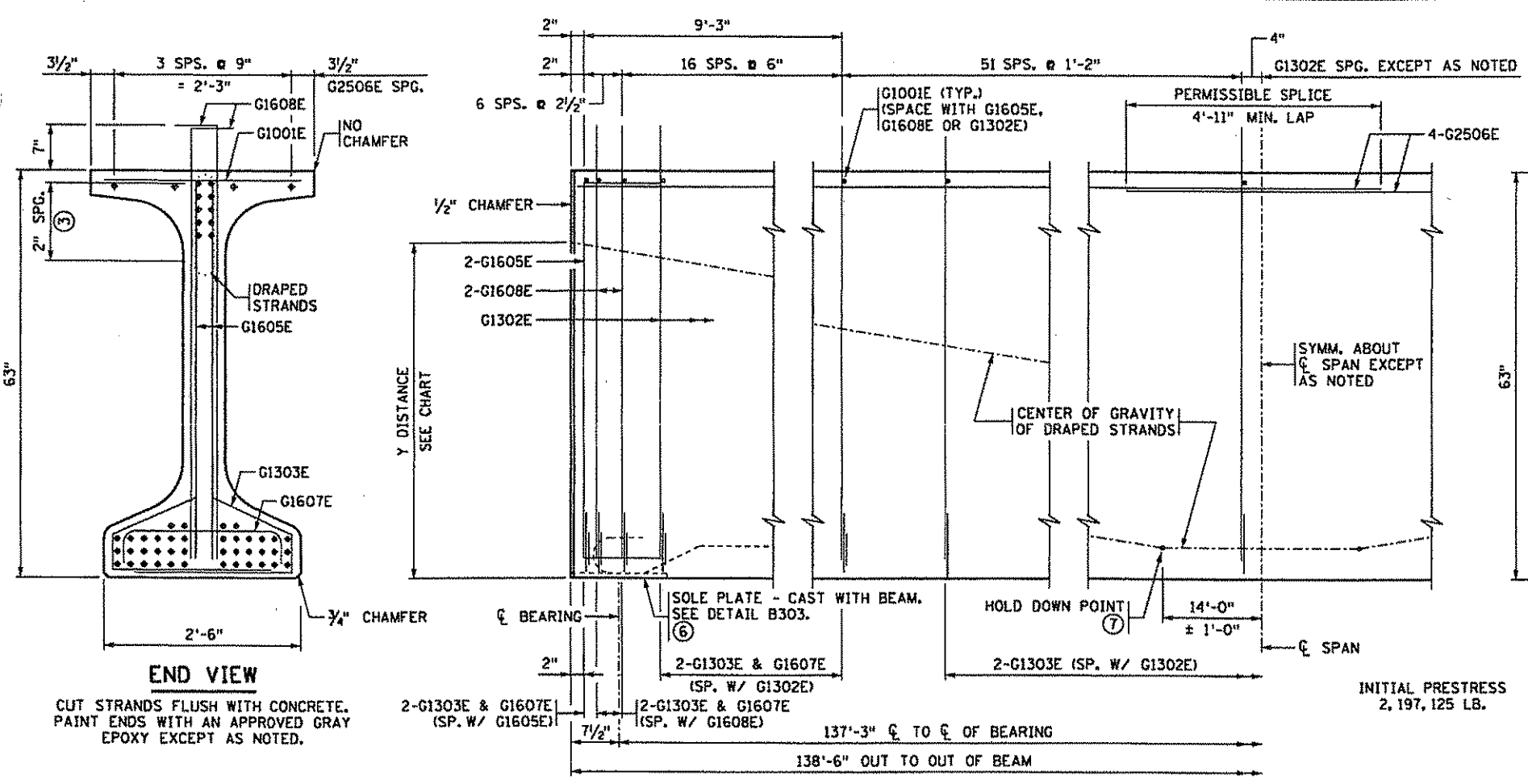
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: FRAMING PLAN

SP 0280-55	SAP 02-623-13	APPROVED:	BRIDGE NO
DES: CAW	DR: MAW		02817
CHK: JDS	CHK: CAW		
SHEET NO B65 OF 95 SHEETS			

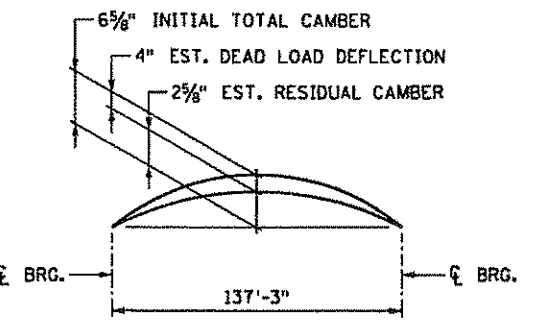
11/21/2006  
11/21/2006  
11/21/2006



Y DISTANCES (IN INCHES)			
	NO.	CL SPAN	END
STRAIGHT STRANDS	40	4.40	
DRAPED STRANDS	10	7.00	56.00 <sup>1)</sup>
TOTAL STRANDS	50	4.92	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

<sup>1)</sup> A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

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

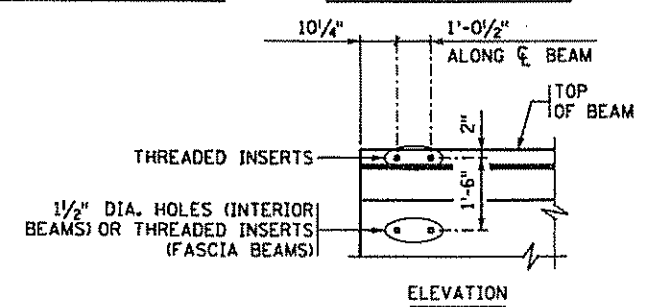
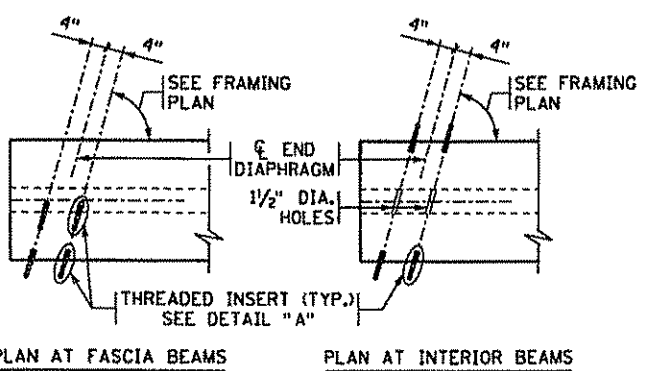
ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.

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

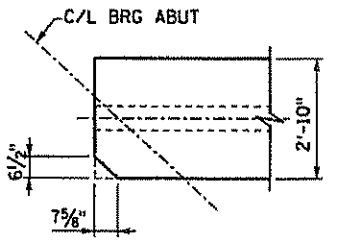
INITIAL PRESTRESS  
2, 197, 125 LB.

**SECTION AT CL SPAN**

**BEAM ELEVATION**

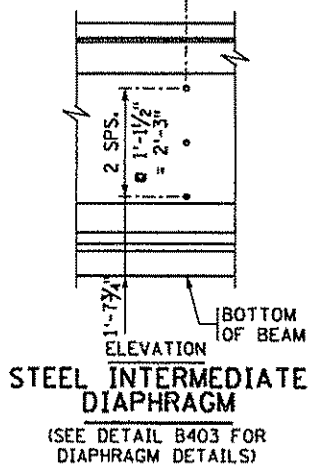


**CONCRETE END DIAPHRAGM**  
PARAPET ABUTMENT  
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



**BEAM COPE DETAIL**  
TYP TOP FLANGE AT ABUTMENTS

1/2" DIA. HOLE (INTERIOR BEAM) OR 3/8" DIA. BOLT ANCHORAGE (FASCIA BEAMS)

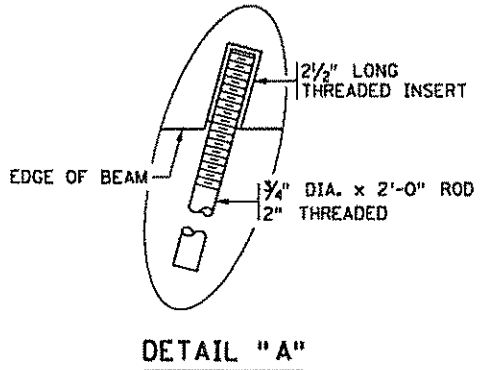


**STEEL INTERMEDIATE DIAPHRAGM**  
(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)

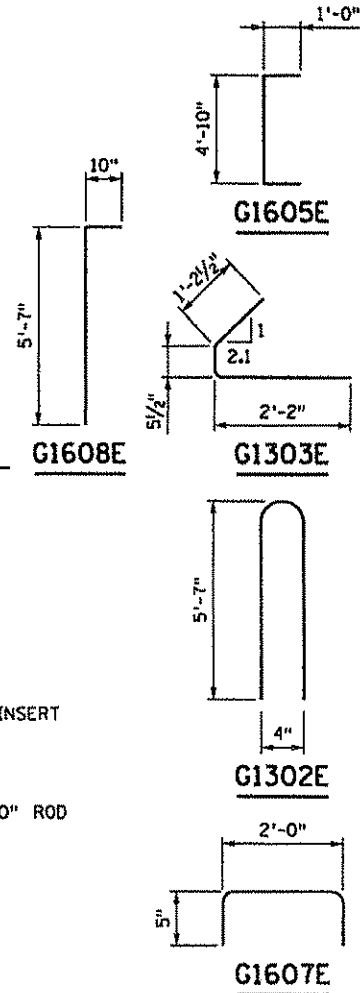
MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'ci	② f'c
6900	9000

PRESTRESSING STRAND DIAMETER	
④	⑤
1/2" □	0.60" □



**DETAIL "A"**



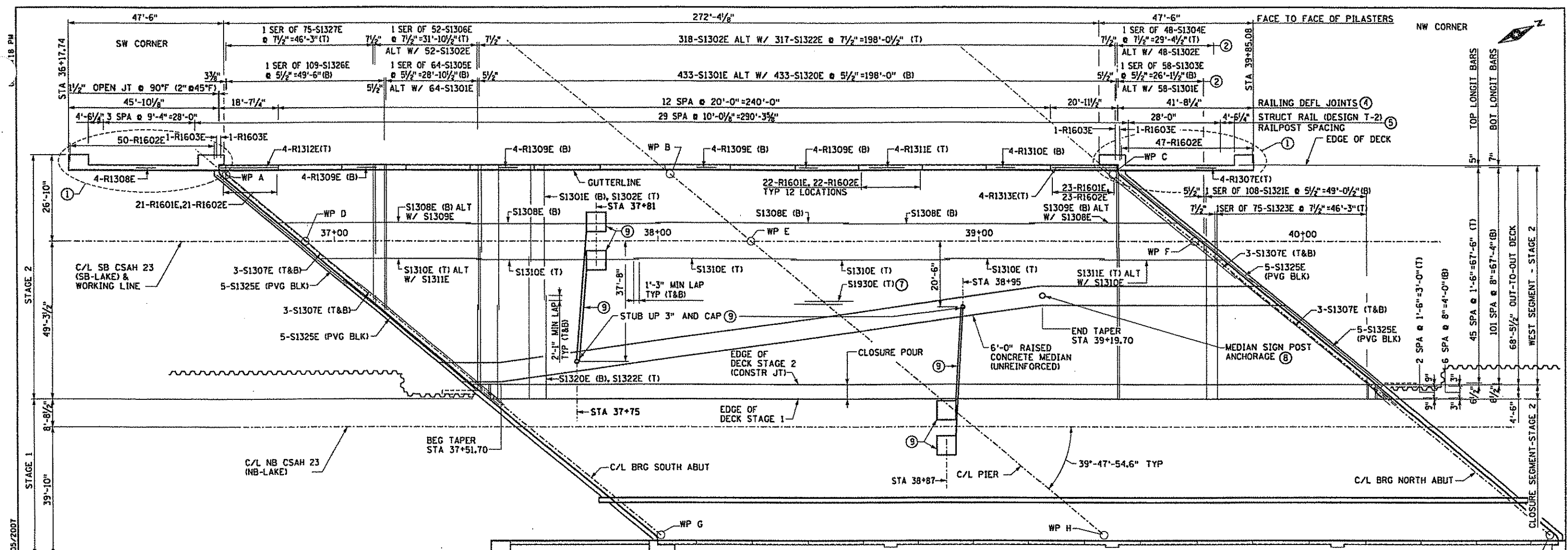
**GENERAL NOTES**

- TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.
- PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.
- EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. FASCIA BEAMS SHALL BE MARKED ON THE INSIDE FACE. ALL MARKINGS SHALL BE STENCILED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.
- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE Mn/DOT SPEC. 2405.
- SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.
- APPROXIMATE WEIGHT OF BEAM IS 60 TONS.
- AS AN ALTERNATE TO THE DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ DRAPED STRANDS.
- ④ STRAIGHT STRANDS.
- ⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE.
- ⑦ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

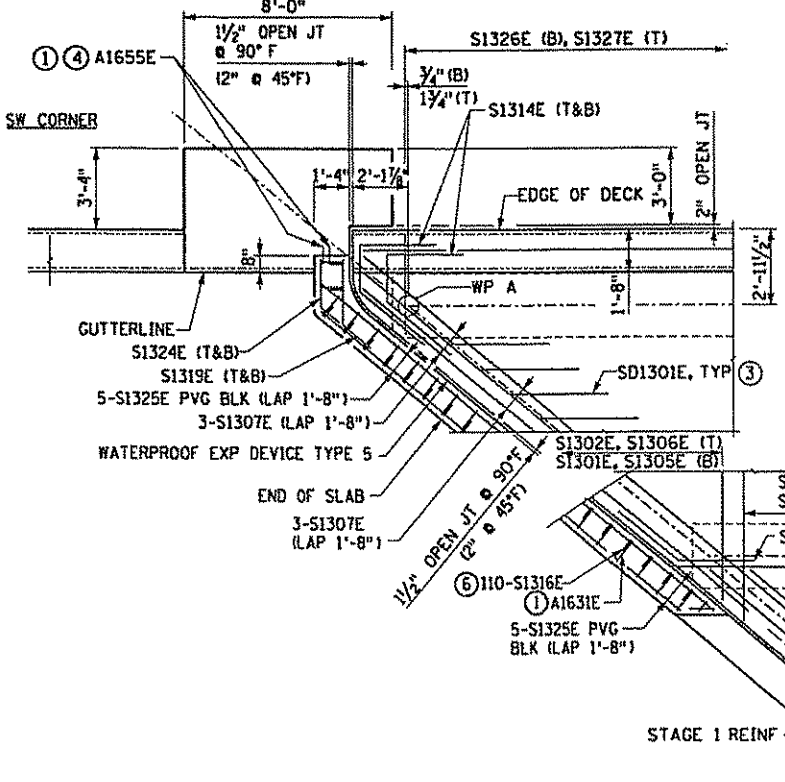
**BEAMS B1 - B14**

<p>3535 VAONAS CENTER DRIVE ST PAUL, MN 55110 PHONE (650) 490-2000 FAX (650) 490-2150</p>	<p>I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.</p> <p>Signature: <i>Christopher A. Wunsch</i> Date: 11/21/2006 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058</p>	<p>TITLE: <b>MN63" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-138</b></p>	<p>SP 0280-55 SAP 02-623-13 DES: CAW DR: MAW APPROVED: CHK: JDS CHK: CAW</p>	<p>BRIDGE NO <b>02817</b></p>
	<p>SHEET NO B66 OF 95 SHEETS</p>			

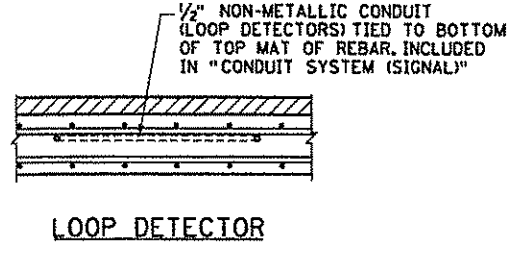




DECK PLAN - STAGE 2



CORNER LAYOUTS



LOOP DETECTOR

NOTES

- ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.
- SEE SHEET B72 FOR SUPERSTRUCTURE BAR LIST AND SUMMARY OF QUANTITIES - STAGE 2.
- THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).
- (T) DENOTES TOP  
(B) DENOTES BOTTOM
- ① SEE ABUTMENT SHEETS FOR DETAILS.
- ② TRANSVERSE BAR SPACING ALONG EDGE OF DECK.
- ③ SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPHRAGM (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU YD.
- ④ SEE SHEET B74 FOR CONCRETE BARRIER (P-4, TL-4) DETAILS.
- ⑤ SEE SHEET B78 FOR STRUCTURAL TUBE RAILING (DESIGN T-2) DETAILS.
- ⑥ SPACE WITH A16E ABUTMENT BARS.
- ⑦ SEE STAGGER DETAIL ON SHEET B70.
- ⑧ CENTER IN MEDIAN. SEE DETAIL ON SHEET B86.
- ⑨ 1/2" NON-METALLIC CONDUIT (LOOP DETECTORS) TIED TO BOTTOM OF TOP MAT OF REBAR. INCLUDED IN "CONDUIT SYSTEM (SIGNAL)". SEE SHEET B88.

03.05.2007  
 JOHNSON\A1\Ino...  
 JOHNSON\A1\Ino...

3535 VAUGHAN CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: SUPERSTRUCTURE DETAILS  
 STAGE 2

SP 0280-55	SAP 02-623-13	DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: CAW	CHK: CAW				
SHEET NO B68 OF 95 SHEETS					







11/21/2006

11/21/2006

11/21/2006

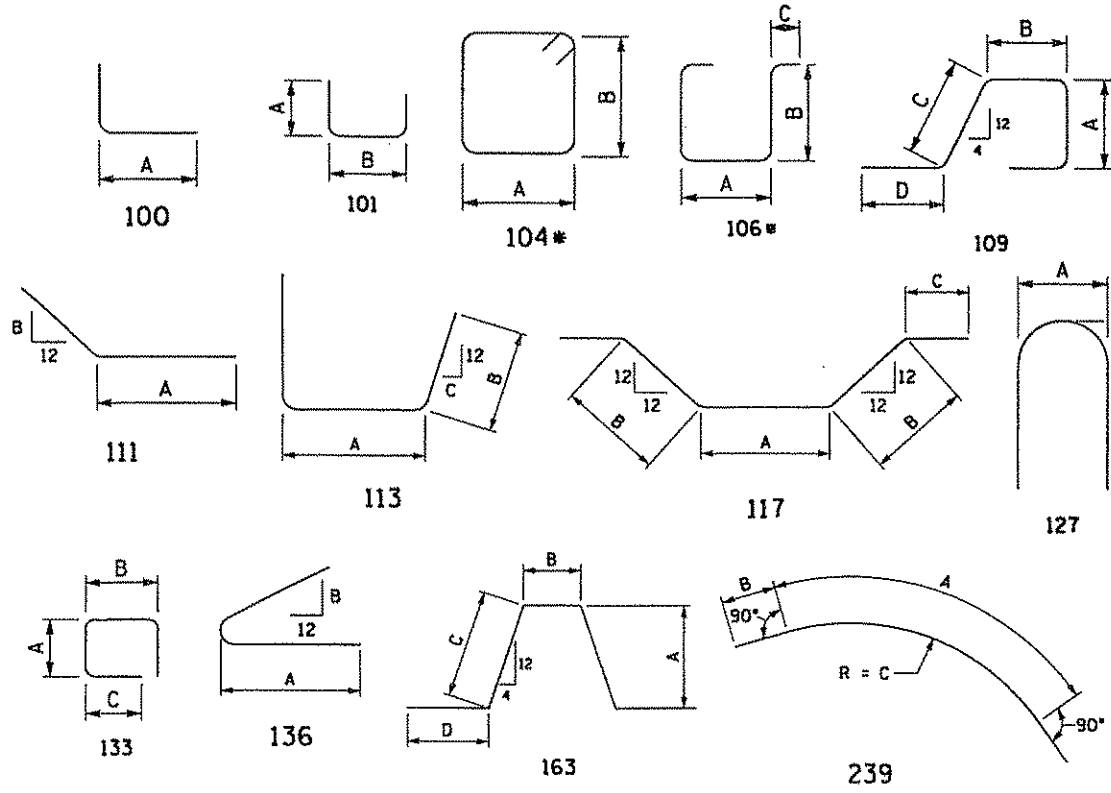
BAR MARK	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
				A	B	C	D	
SUPERSTRUCTURE DECK - STAGE 1								
EPOXY COATED BARS								
S1301E	491	47'-0"	STR					TRANS (B)
S1302E	361	47'-4"	STR					TRANS (T)
S1303E	1	118	2'-6"	STR				TRANS (B)
S1304E	1	86	2'-3"	STR				TRANS (T)
S1305E	1	107	4'-1"	STR				TRANS (B)
S1306E	1	79	4'-1"	STR				TRANS (T)
S1307E	44	40'-0"	STR					TRANS ENDS
S1308E	272	60'-0"	STR					LONGIT (B)
S1309E	68	45'-0"	STR					LONGIT (B)
S1310E	155	50'-0"	STR					LONGIT (T)
S1311E	31	36'-3"	STR					LONGIT (T)
S1312E	2	6'-0"	100	3'-0"				CORNER (T&B)
S1313E	2	6'-0"	136	3'-0"	10			CORNER (T&B)
S1314E	2	7'-6"	113	1'-6"	3'-0"	14		CORNER (T&B)
S1315E	2	6'-0"	111	3'-0"	10			CORNER (T&B)
S1316E	146	3'-3"	133	0'-10"	0'-11"	0'-8"		PAVING BLOCK
S1317E	2	2'-8"	111	1'-10"	10			PAVING BLOCK
S1318E	2	3'-8"	239	1'-6"	1'-8"	1'-9"		PAVING BLOCK
S1319E	2	3'-5"	111	2'-7"	10			PAVING BLOCK
S1320E	12	6'-5"	101	3'-0"	0'-5"			SLAB BLISTER
S1321E	6	3'-8"	STR					SLAB BLISTER
S1324E	2	2'-8"	111	2'-0"	10			PAVING BLOCK
S1930E	61	15'-0"	STR					LONG (T) AT PIER

CONCRETE BARRIER TYPE MOD P4 - STAGE 1								
EPOXY COATED BARS								
R1601E	6	5'-8"	109	1'-4"	10 1/2"	1'-5"	1'-6"	BARRIER DOWEL
R1602E	296	7'-11"	104	1'-0"	2'-6"			BARRIER VERT
R2504E	8	8'-9"	104	1'-0"	2'-6"			BARRIER VERT
R1605E	4	7'-5"	104	1'-6"	1'-9"			BARRIER VERT
R1606E	6	8'-11"	104	1'-6"	2'-6"			BARRIER VERT
R1308E	4	19'-10"	STR					BARRIER LONGIT
R1309E	16	50'-0"	STR					BARRIER LONGIT
R1310E	4	20'-0"	STR					BARRIER LONGIT
R1311E	48	19'-6"	STR					BARRIER LONGIT
R1312E	4	18'-10"	STR					BARRIER LONGIT
R1613E	4	2'-3"	STR					BARRIER LONGIT
R1614E	8	4'-0"	STR					BARRIER LONGIT
R1615E	12	3'-0"	STR					BARRIER LONGIT
R1619E	296	6'-7"	163	1'-4"	0'-9"	1'-5"	1'-6"	BARRIER DOWEL
R1620E	6	7'-0"	163	1'-4"	1'-2"	1'-5"	1'-6"	BARRIER DOWEL

END DIAPHRAGM - STAGE 1								
EPOXY COATED BARS								
SD1301E	60	8'-0"	106	1'-6"	2'-6"	0'-9"		VERTICAL TIE
SD2202E	24	5'-0"	STR					LONGIT THRU BM
SD1303E	24	6'-0"	STR					LONGIT TOP
SD2204E	24	6'-0"	STR					LONGIT BOTTOM
SD1905E	12	17'-3"	117	2'-5"	3'-5"	4'-0"		LONGITUDINAL

BAR MARK	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
				A	B	C	D	
CONCRETE RAILING TYPE MOD P1 - STAGE 1								
EPOXY COATED BARS								
R1630E	334	5'-0"	106	7 1/2"	1'-5"	1'-0"		RAIL BASE VERT DWL
R1631E	334	6'-2"	104	7 1/2"	2'-1"			RAIL BASE VERT
R1632E	4	4'-6"	104	7 1/2"	1'-2"			RAIL BASE VERT
R1333E	90	16'-11"	STR					RAIL LONG
R1334E	6	8'-3"	STR					RAIL LONG
R1335E	6	11'-7"	STR					RAIL LONG
R1336E	24	27'-10"	STR					RAIL LONG
R1637E	116	8'-6"	STR					VERT POSTS
R1638E	11	5'-10"	STR					VERT POSTS
R1639E	9	5'-0"	STR					VERT POSTS
R1640E	9	3'-6"	100	2'-6"				BENT POCKET VERT
R1341E	20	19'-1"	104	5'-5"	3'-9"			HORIZ POSTS
R1342E	6	20'-9"	104	7'-5"	2'-6"			HORIZ POSTS
R1343E	3	7'-2"	101	2'-6"	2'-2"			HORIZ POSTS
R1344E	30	10'-5"	104	3'-5"	1'-5"			HORIZ POSTS
R1645E	12	8'-6"	106	1'-6"	2'-9"	1'-0"		RAIL BASE VERT
R1646E	6	7'-3"	101	1'-0"	5'-3"			END POST TOP
R1647E	24	5'-7"	101	1'-0"	3'-7"			END POST TOP
R1648E	3	5'-3"	101	1'-0"	3'-3"			INTER POST TOP
R1649E	9	3'-3"	101	1'-0"	1'-3"			INTER POST TOP
R1350E	14	23'-1"	104	7'-5"	3'-9"			HORIZ POSTS
R1651E	6	9'-3"	101	1'-0"	7'-3"			END POST TOP
R1352E	3	10'-5"	101	2'-6"	5'-5"			HORIZ POSTS

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 FOR SUPERSTRUCTURE - STAGE 1

ITEM	UNIT	QUANTITY
8 STRUCTURAL CONCRETE (3Y43)	CU YD	9
4 BRIDGE SLAB CONCRETE (3Y36)	SQ FT	12918
5 TYPE MOD P-1 RAILING CONCRETE (3Y46)	LIN FT	386
5 TYPE MOD P-4 RAILING CONCRETE (3Y46)	LIN FT	288
10 REINFORCEMENT BARS (EPOXY COATED)	POUND	70380
13 BRIDGE DECK PLANING	SQ FT	9860
ORNAMENTAL METAL RAILING	LIN FT	339
EXPANSION DEVICES TYPE 5	LIN FT	145
11 BEARING ASSEMBLY	EACH	28
24 CONCRETE WEARING COURSE (3U17A)	SQ FT	10411
PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	1939
9 DIAPHRAGMS FOR TYPE MN63" PRESTRESSED BEAMS	LIN FT	263
1 BRIDGE NAME PLATE	EACH	1
1 PREFORMED JOINT FILLER	---	---
1 BENCH MARK DISK	EACH	2
1 CONDUIT SYSTEM (LIGHTING)	LUMP SUM	1

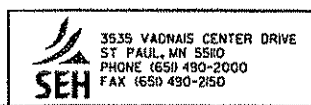
- 1 INCLUDED IN PRICE BID FOR OTHER ITEMS.
- 2 SEE JOINT FILLER TABLE.
- 3 STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.
- 4 THE APPROXIMATE CONCRETE QUANTITIES ARE: BRIDGE SLAB CONCRETE BASED ON AVERAGE STOOL HEIGHT OF 3" (3Y36) 359 CU YD

CONCRETE OVERLAY (3U17A) 64 CU YD  
QUANTITIES INCLUDE ABUTMENT PAVING BLOCKS

- 5 TYPE MOD P-1 RAILING CONCRETE (3Y46) APPROX VOLUME = 74 CU YD. TYPE MOD P-4 RAILING CONCRETE (3Y46) APPROX VOLUME = 41 CU YD.
- 6 TABLE IS FOR CONTRACTORS CONVENIENCE ONLY. CUT TO FIT.
- 7 NOTE 7 NOT USED.
- 8 END DIAPHRAGM CONCRETE ONLY.
- 9 INTERMEDIATE DIAPHRAGMS ONLY.
- 10 INCLUDES END DIAPHRAGMS, RAILING & DECK REINFORCEMENT.
- 11 INCLUDES THE FOLLOWING: EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E1 14 EA. EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E2 6 EA. FIXED CURVED PLATE BEARING ASSEMBLY TYPE F1 8 EA.
- 12 INCLUDES 2398 SF ON BRIDGE APPROACH PANELS.
- 13 INCLUDES 2320 SF ON BRIDGE APPROACH PANELS.

6 1 PREFORMED JOINT FILLER LIST

TYPE	NO	SIZE	LOCATION
CORK	13	1" x 1'-2" x 1'-10"	TYPE MODIFIED P-4 RAIL DEFL JOINTS
CORK	16	1" x 1'-0" x 2'-4"	TYPE MODIFIED P-1 RAIL DEFL JOINTS
POLYSTYRENE	14	1/2" x 1'-4" x 1'-7"	BEAM FLANGES AT PIER / CUT 2 FROM 1



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota. Signature: CHRISTOPHER A. WUNSCH Date: 11/21/2006 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: SUPERSTRUCTURE BAR LISTS AND QUANTITIES STAGE 1

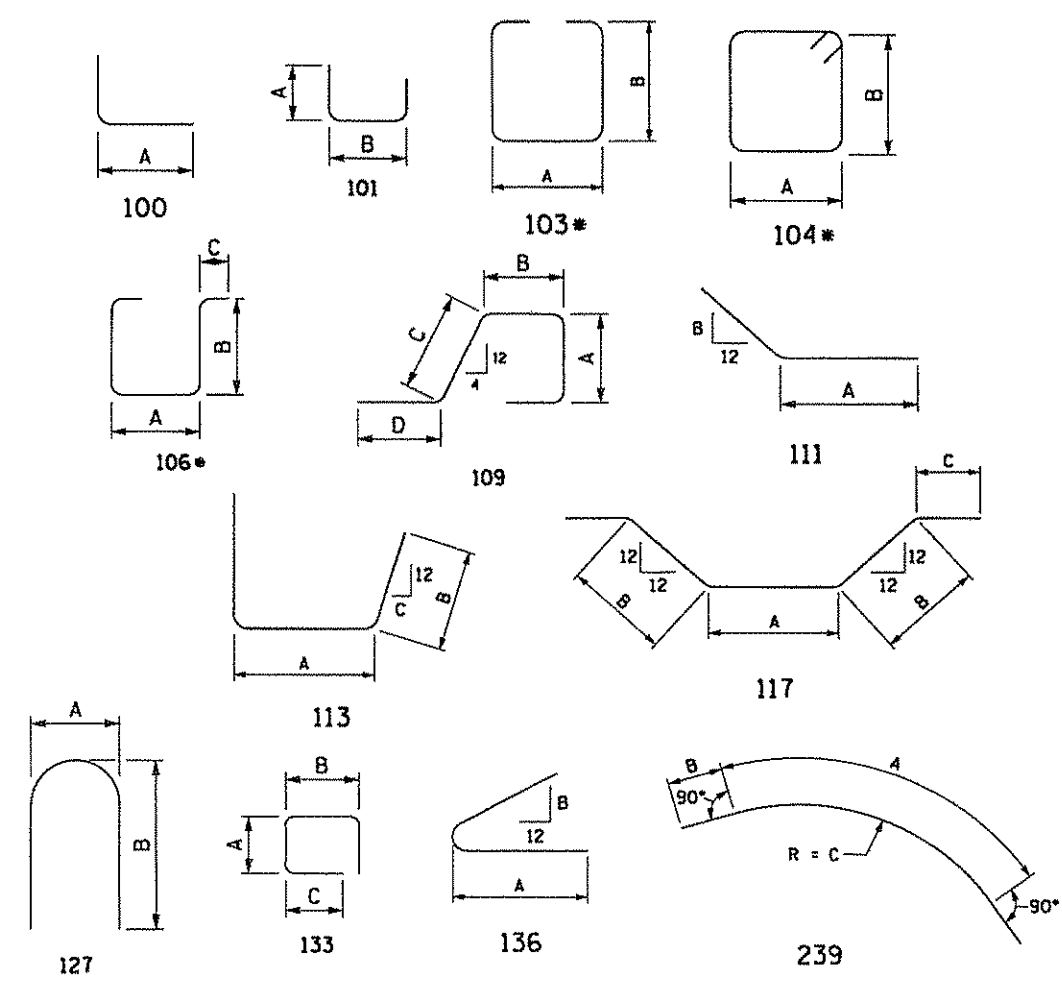
SP 0280-55 SAP 02-623-13 DES: MAW DR: MAW APPROVED: CHK: CAW CHK: CAW BRIDGE NO 02817 SHEET NO B71 OF 95 SHEETS

11/21/2006 11:21/2006 0:14 AM

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
<b>SUPERSTRUCTURE DECK - STAGE 2</b>									
<b>EPOXY COATED BARS</b>									
S1301E		555	47'-4"	STR					TRANS (B)
S1302E		418	44'-4"	STR					TRANS (T)
S1303E	1	58	2'-6"	STR					TRANS (B)
S1304E	1	48	2'-3"	STR					TRANS (T)
S1305E	1	64	4'-1"	STR					TRANS (B)
S1306E	1	52	2'-6"	STR					TRANS (T)
S1307E		24	56'-0"	STR					TRANS ENDS
S1308E		436	60'-0"	STR					LONGIT (B)
S1309E		109	45'-0"	STR					LONGIT (B)
S1310E		245	50'-0"	STR					LONGIT (T)
S1311E		49	36'-3"	STR					LONGIT (T)
S1312E	2	6'-0"	100	3'-0"					CORNER (T&B)
S1313E	2	6'-0"	136	3'-0"	10				CORNER (T&B)
S1314E	4	7'-6"	113	1'-6"	3'-0"	14			CORNER (T&B)
S1315E	2	6'-0"	111	3'-0"	10				CORNER (T&B)
S1316E	217	3'-3"	133	0'-10"	0'-11"	0'-8"			PAVING BLOCK
S1317E	2	2'-8"	111	1'-10"	10				PAVING BLOCK
S1318E	2	3'-8"	239	1'-6"	1'-8"	1'-9"			PAVING BLOCK
S1319E	2	3'-5"	111	2'-7"	10				PAVING BLOCK
S1320E	433	27'-9"	STR						TRANS (B)
S1321E	1	108	4'-10"	STR					TRANS (B)
S1322E	317	30'-9"	STR						TRANS (T)
S1323E	1	75	4'-10"	STR					TRANS (T)
S1324E	2	2'-8"	111	2'-0"	10				PAVING BLOCK
S1325E	20	53'-6"	STR						TRANS ENDS
S1326E	1	109	2'-6"	STR					TRANS (B)
S1327E	1	75	2'-6"	STR					TRANS (T)
S1328E	10	4'-4"	STR						TRANS (T&B)
S1329E	2	4	2'-4"	STR					TRANS (T&B)
S1930E	97	15'-0"	STR						LONGIT (T) @ PIER
<b>CONCRETE BARRIER TYPE MOD P4 - STAGE 2</b>									
<b>EPOXY COATED BARS</b>									
R1601E		308	5'-8"	109	1'-4"	10 1/2"	1'-5"	1'-6"	BARRIER DOWEL
R1602E		405	7'-11"	104	1'-0"	2'-6"			BARRIER VERT
R1603E		4	6'-5"	104	1'-0"	1'-9"			BARRIER VERT
R2206E		2	6'-7"	127	1'-0"	3'-0"			BARRIER END
R1307E		8	41'-2"	STR					BARRIER LONGIT
R1308E		8	45'-4"	STR					BARRIER LONGIT
R1309E		16	50'-0"	STR					BARRIER LONGIT
R1310E		4	37'-7"	STR					BARRIER LONGIT
R1311E		48	19'-6"	STR					BARRIER LONGIT
R1312E		4	18'-1"	STR					BARRIER LONGIT
R1313E		4	20'-6"	STR					BARRIER LONGIT
R1316E		16	5'-0"	100	4'-0"				END POST
R1317E		8	15'-7"	103	5'-5"	4'-1"			END POST
R1318E		8	20'-5"	104	7'-5"	2'-5"			END POST
R1620E		4	9'-3"	101	1'-0"	7'-3"			END POST TOP
R1621E		6	7'-3"	101	1'-0"	5'-3"			END POST TOP
R1622E		7	4'-3"	101	1'-0"	2'-3"			END POST TOP
R1623E		17	6'-2"	101	1'-0"	4'-2"			END POST TOP

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION				LOCATION
					A	B	C	D	
<b>END DIAPHRAGM - STAGE 2</b>									
<b>EPOXY COATED BARS</b>									
SD1301E		118	8'-0"	106	1'-6"	2'-6"	0'-9"		VERTICAL TIE
SD2202E		36	5'-0"	STR					LONGIT THRU BM
SD1303E		4	5'-3"	STR					LONGIT TOP
SD2204E		4	5'-3"	STR					LONGIT BOTTOM
SD1905E		2	16'-5"	117	1'-7"	3'-5"	4'-0"		LONGITUDINAL
SD1306E		36	6'-5"	STR					LONGIT TOP
SD2507E		36	6'-5"	STR					LONGIT BOTTOM
SD1908E		18	17'-7"	117	2'-9"	3'-5"	4'-0"		LONGITUDINAL

**BAR BENDING DIAGRAMS**



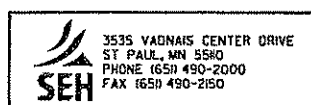
\* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

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 FOR SUPERSTRUCTURE - STAGE 2		
ITEM	UNIT	QUANTITY
⑧ STRUCTURAL CONCRETE (3Y43)	CU YD	16
④ BRIDGE SLAB CONCRETE (3Y36)	SQ FT	20712
⑤ TYPE MOD P-4 RAILING CONCRETE (3Y46)	LIN FT	368
⑦ RAISED MEDIAN CONCRETE (3Y46)	SQ FT	1547
⑩ REINFORCEMENT BARS (EPOXY COATED)	POUND	97230
⑬ BRIDGE DECK PLANING	SQ FT	26090
EXPANSION DEVICES TYPE 5	LIN FT	214
⑪ BEARING ASSEMBLY	EACH	40
STRUCTURAL TUBE RAILING DESIGN T-2	LIN FT	355
⑫ CONCRETE WEARING COURSE (3U17A)	SQ FT	27820
PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	2770
⑨ DIAPHRAGMS FOR TYPE MN63" PRESTRESSED BEAMS	LIN FT	440
②① PREFORMED JOINT FILLER		
CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1

- ① INCLUDED IN PRICE BID FOR OTHER ITEMS.
- ② SEE JOINT FILLER TABLE.
- ③ NOTE 3 NOT USED.
- ④ THE APPROXIMATE CONCRETE QUANTITIES ARE:  
BRIDGE SLAB CONCRETE BASED ON AVERAGE STOOL HEIGHT OF 3" (3Y36)  
531 CU YD  
CONCRETE OVERLAY (3U17A)  
178 CU YD  
QUANTITIES INCLUDE ABUTMENT PAVING BLOCKS
- ⑤ TYPE MOD P-4 RAILING CONCRETE (3Y46) APPROX VOLUME = 64 CU YD.
- ⑥ TABLE IS FOR CONTRACTORS CONVENIENCE ONLY. CUT TO FIT.
- ⑦ RAISED MEDIAN CONCRETE (3Y46) APPROXIMATE VOLUME = 35 CU YD.
- ⑧ END DIAPHRAGM CONCRETE ONLY.
- ⑨ INTERMEDIATE DIAPHRAGMS ONLY.
- ⑩ INCLUDES END DIAPHRAGMS, RAILING & DECK REINFORCEMENT.
- ⑪ INCLUDES THE FOLLOWING:  
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E1 20 EA.  
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E2 6 EA.  
FIXED CURVED PLATE BEARING ASSEMBLY TYPE F1 14 EA.
- ⑫ INCLUDES 8405 SF ON BRIDGE APPROACH PANELS.
- ⑬ INCLUDES 8011 SF ON BRIDGE APPROACH PANELS.

⑥① PREFORMED JOINT FILLER LIST			
TYPE	NO	SIZE	LOCATION
CORK	13	1" x 1'-2" x 1'-10"	TYPE MODIFIED P-4 RAIL DEFL JOINTS
POLYSTYRENE	20	1/2" x 1'-4" x 1'-7"	BEAM FLANGES AT PIER / CUT 2 FROM 1



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.  
Signature: *[Signature]* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. MUNSCH Reg. No. 42058

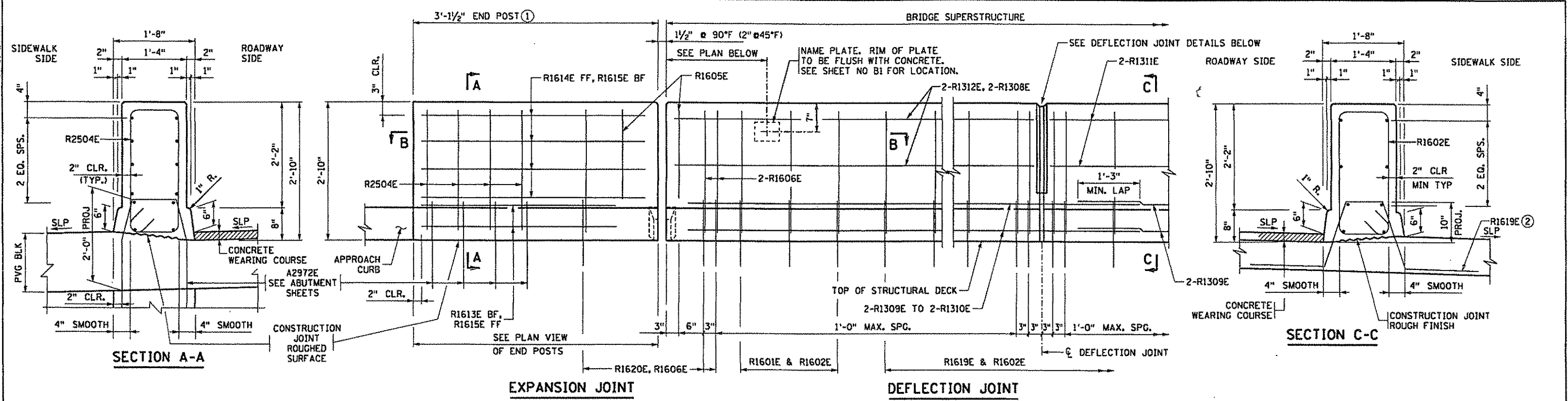
TITLE: SUPERSTRUCTURE BAR LISTS AND QUANTITIES STAGE 2

SP 0280-55 SAP 02-623-13  
DES: MAW DR: MAW APPROVED: \_\_\_\_\_  
CHK: CAW CHK: CAW  
BRIDGE NO 02817  
SHEET NO B72 OF 95 SHEETS

06-1124 AM

11/21/2006

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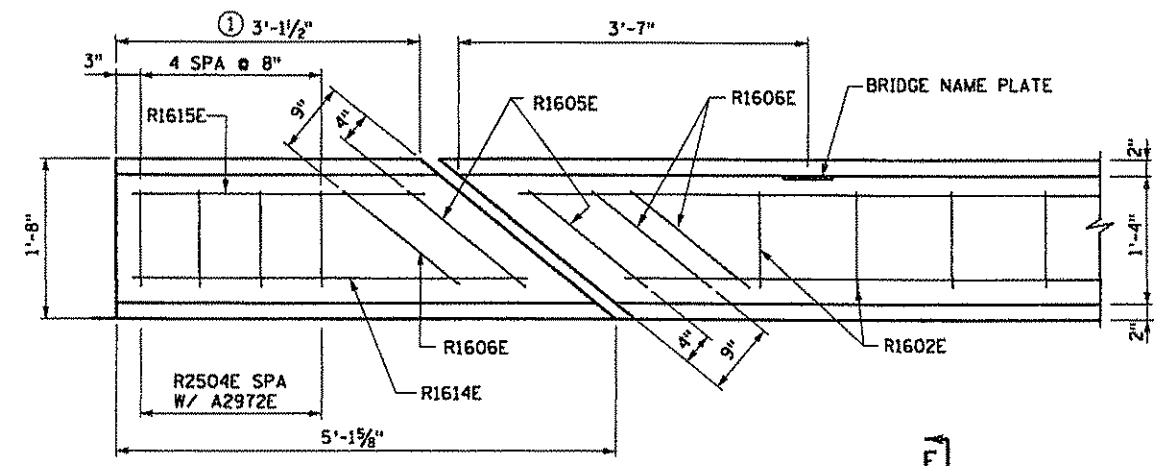


**EXPANSION JOINT**

**DEFLECTION JOINT**

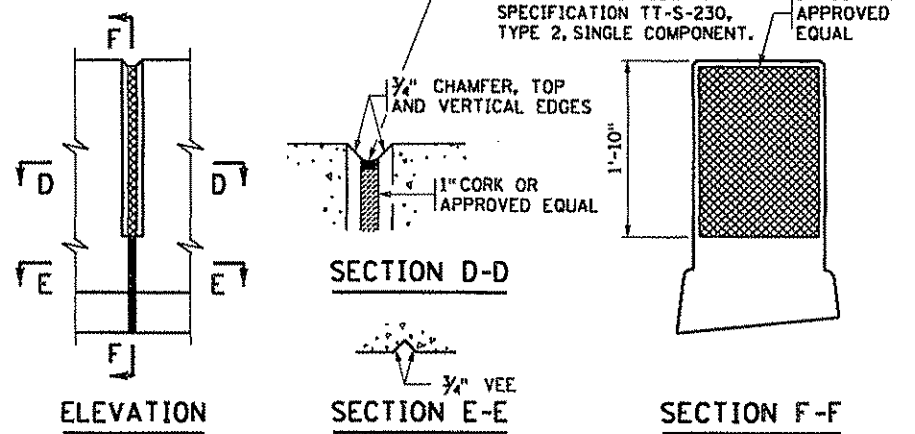
EXPANSION DEVICE NOT SHOWN  
INSIDE ELEVATION OF RAILING  
CONCRETE WEARING COURSE NOT SHOWN

RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350



**PLAN SECTION B-B OF END POSTS**

- ① END POST DIMENSIONS ARE ALONG OUTSIDE FACE OF END POST.
- ② PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.



**DEFLECTION JOINT DETAILS**

ESTIMATED QUANTITY OF CORK PER JOINT = 2.15 SQ. FT.

**GENERAL NOTES**

- LENGTH OF "TYPE MOD P-4, TL-4 BARRIER CONCRETE(3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER.
- CONCRETE BARRIER = 579 LBS./FT. (0.143 CU. YDS./FT.)
- FINISH ALL EDGES OF BARRIER WITH 1/2" VEE, EXCEPT WHERE OTHERWISE NOTED.
- MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 20 FT.
- SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.
- GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.
- GALVANIZE STRUCTURAL STEEL PER Mn/DOT SPEC. 3394 AFTER FABRICATION.
- GUARDRAIL CONNECTION, CORK AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE P-4, TL-4 BARRIER CONCRETE (3Y46 OR 3Y46A)".
- SEE SHEET B71 FOR BAR LISTS AND SUMMARY OF QUANTITIES.

REVISED: 10-26-2005

APPROVED: JULY 25, 2005

*David A. Halverson*  
STATE BRIDGE ENGINEER

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55000  
PHONE 1650 490-2000  
FAX 1650 490-2150

**SEH**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Signature: *Christopher A. Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: **CONC BARRIER (TYPE MOD P-4, TL-4) STAGE 1**  
INTEGRAL END POST (WITH CONC. WEARING COURSE)

MODIFIED

SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

FIG. 5-397.173

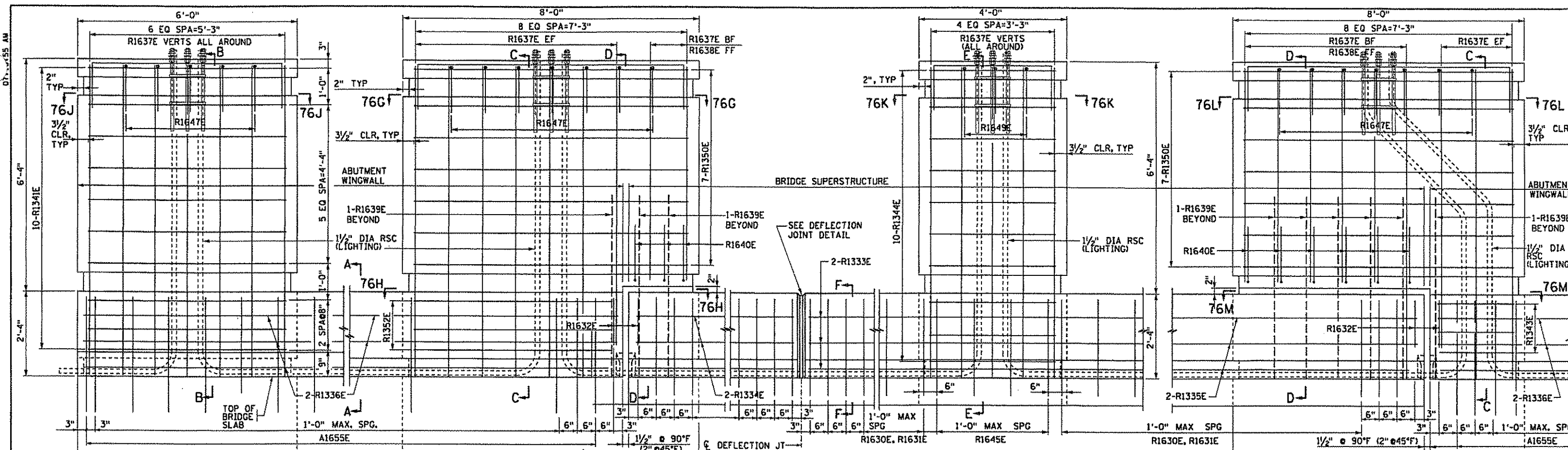
BRIDGE NO 02817

SHEET NO B73 OF 95 SHEETS









END POST

EXPANSION JOINT - NORTH  
EXP. DEVICE NOT SHOWN

DEFLECTION JOINT  
INSIDE ELEVATION OF RAILING

INTERMEDIATE POST

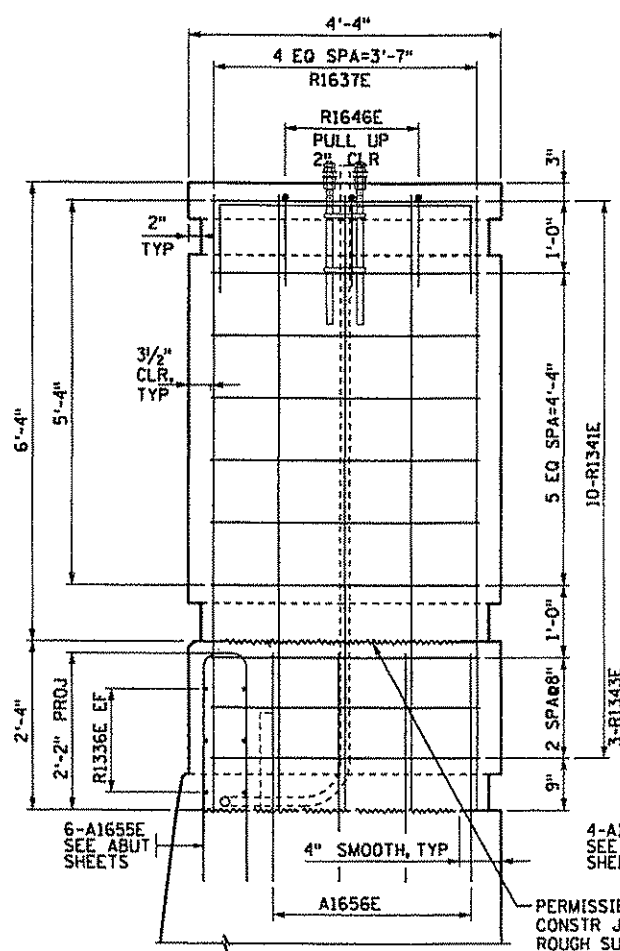
EXPANSION JOINT - SOUTH  
EXP. DEVICE NOT SHOWN

RAIL MEETS TEST LEVEL 2 REQUIREMENTS OF NCHRP REPORT 350. THE RAIL MUST BE USED NEXT TO WALKWAY. AN F-BARRIER MUST BE USED TO SEPARATE TRAFFIC FROM THIS RAIL IN THE 45 MPH (OR OVER) SPEED ZONE.

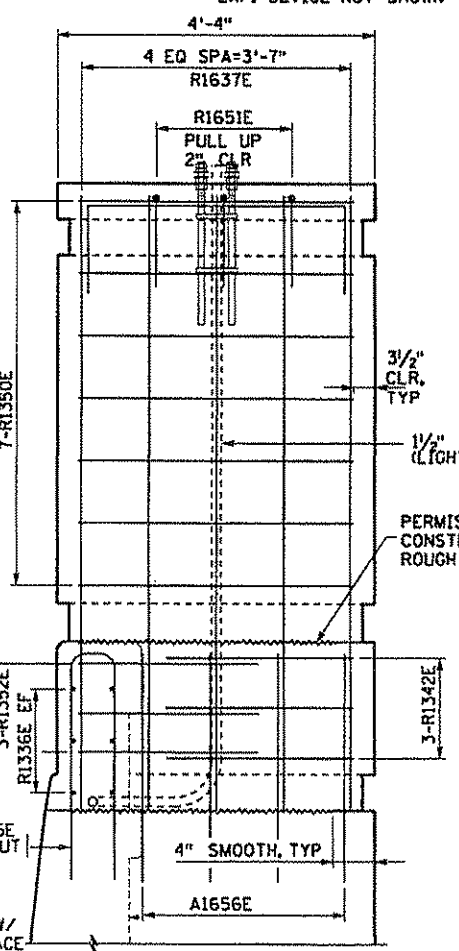
GENERAL NOTES

- LENGTH OF "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAILING.
- CONCRETE PARAPET = 380 LBS./FT. (10.093 CU. YDS./FT.)
- FINISH ALL EDGES OF CONCRETE PARAPET WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.
- MAX. SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE ±20 FT. FOR SECTIONS G-G, J-J, H-H, K-K SEE SHEET B78.
- RAIL QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

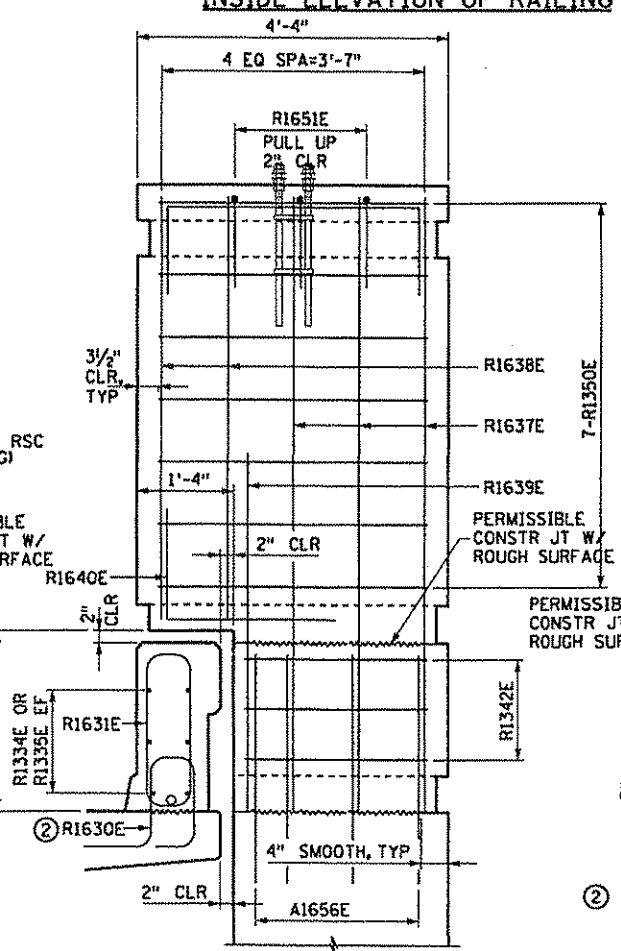
- ① SEE SHEET B77 FOR DETAILS.
- ② PLACE BAR ON BOTTOM REINFORCEMENT MAT. SEE SHEET B69 FOR DETAILS.



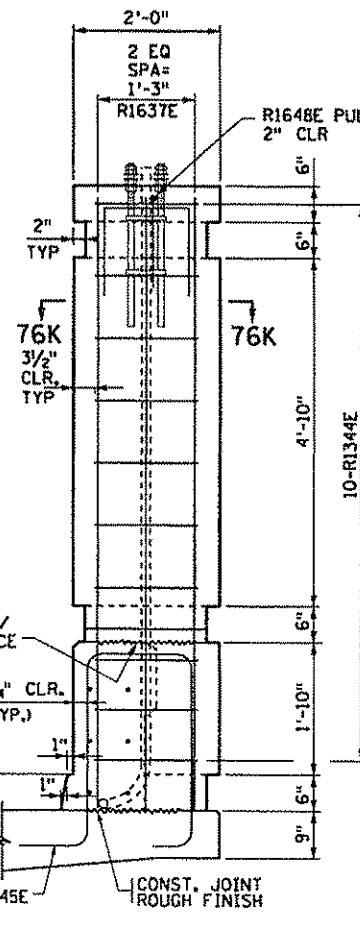
SECTION B-B



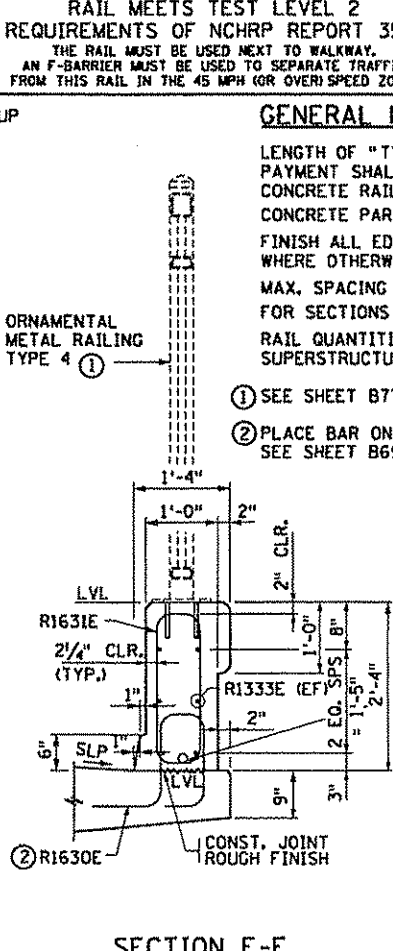
SECTION C-C



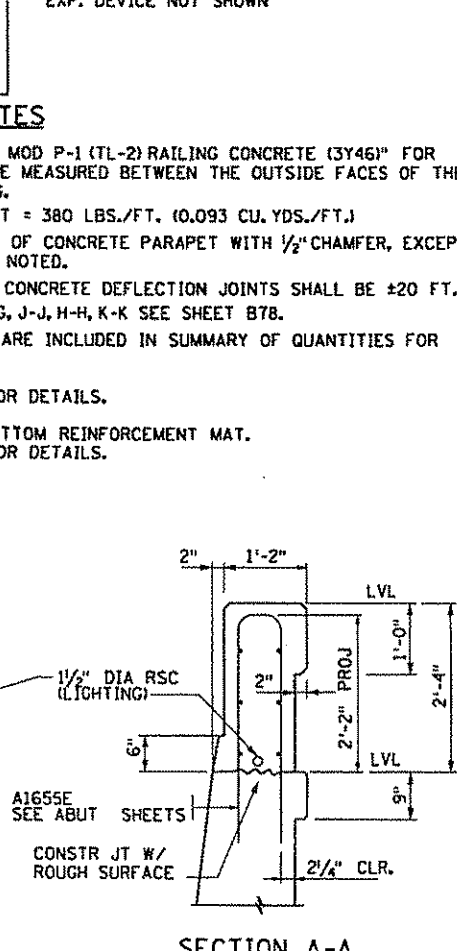
SECTION D-D



SECTION E-E



SECTION F-F



SECTION A-A

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55800  
PHONE 651 490-2000  
FAX 651 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *CHRISTOPHER A. WUNSCH* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

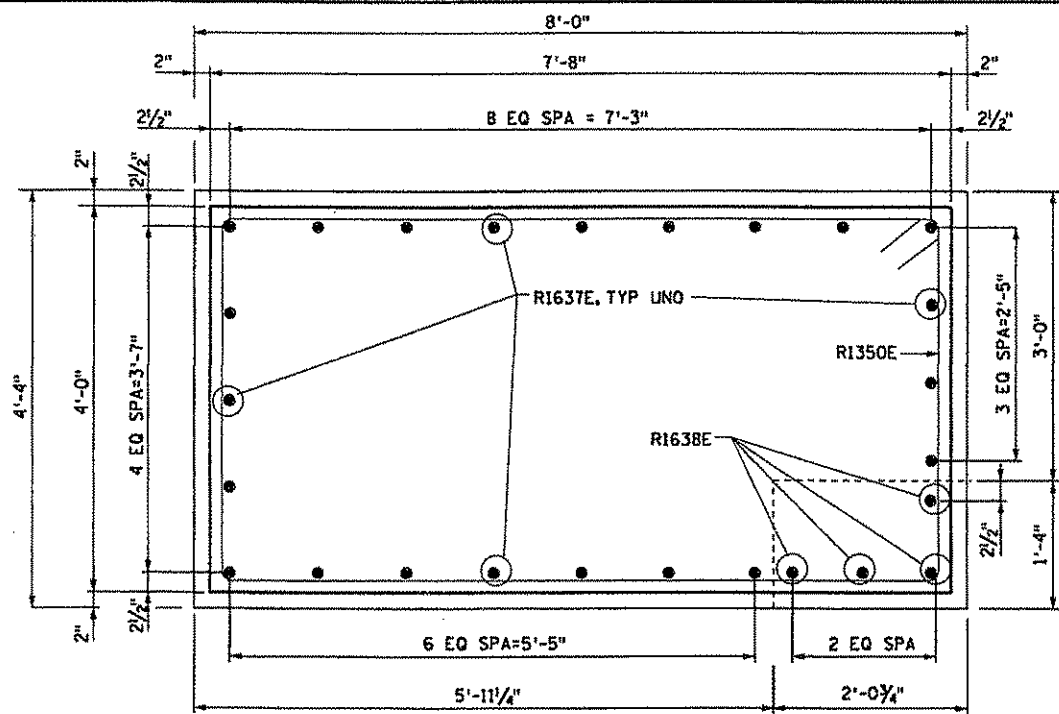
TITLE:  
CONCRETE PARAPET TYPE MOD P-1  
DETAILS

SP 0280-55 SAP 02-623-13  
DES: MAW DR: MAW APPROVED:  
CHK: CAW CHK: CAW

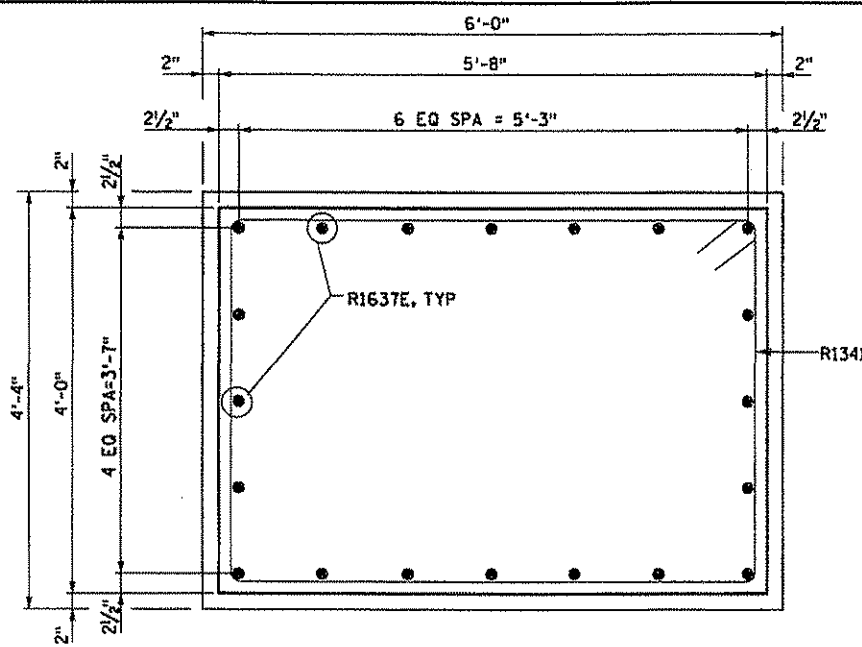
BRIDGE NO  
02817

SHEET NO B75 OF 95 SHEETS

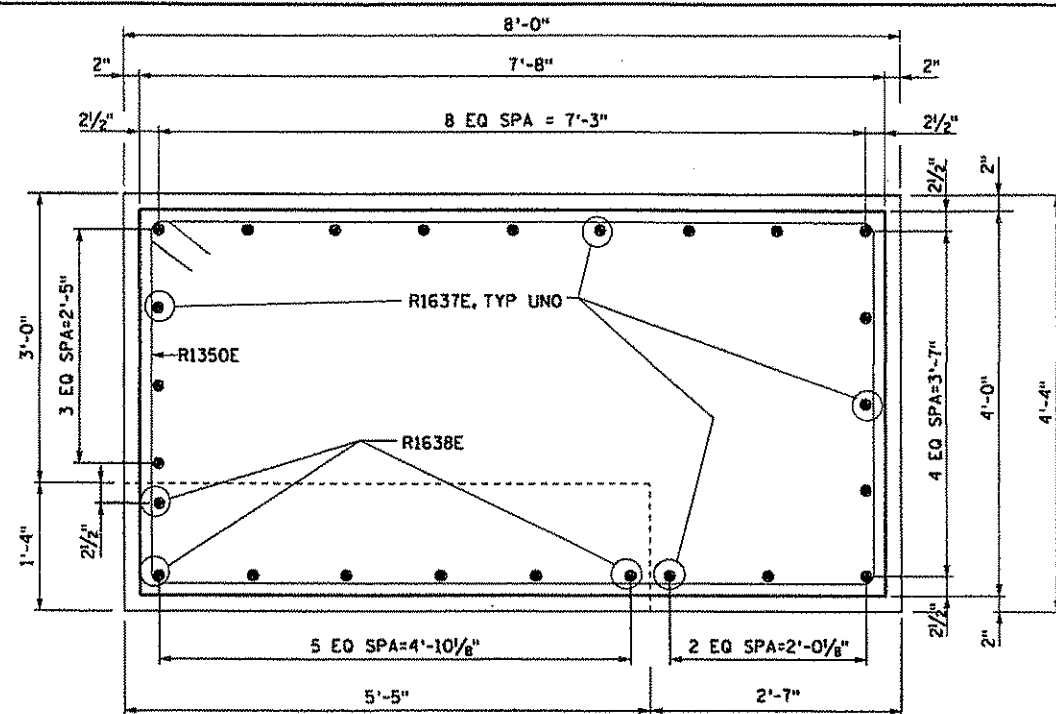
11/21/2006  
 D:\br\edge\sgn\cbr\02817\_1\ra1102.dgn  
 56 AM  
 11/21/2006



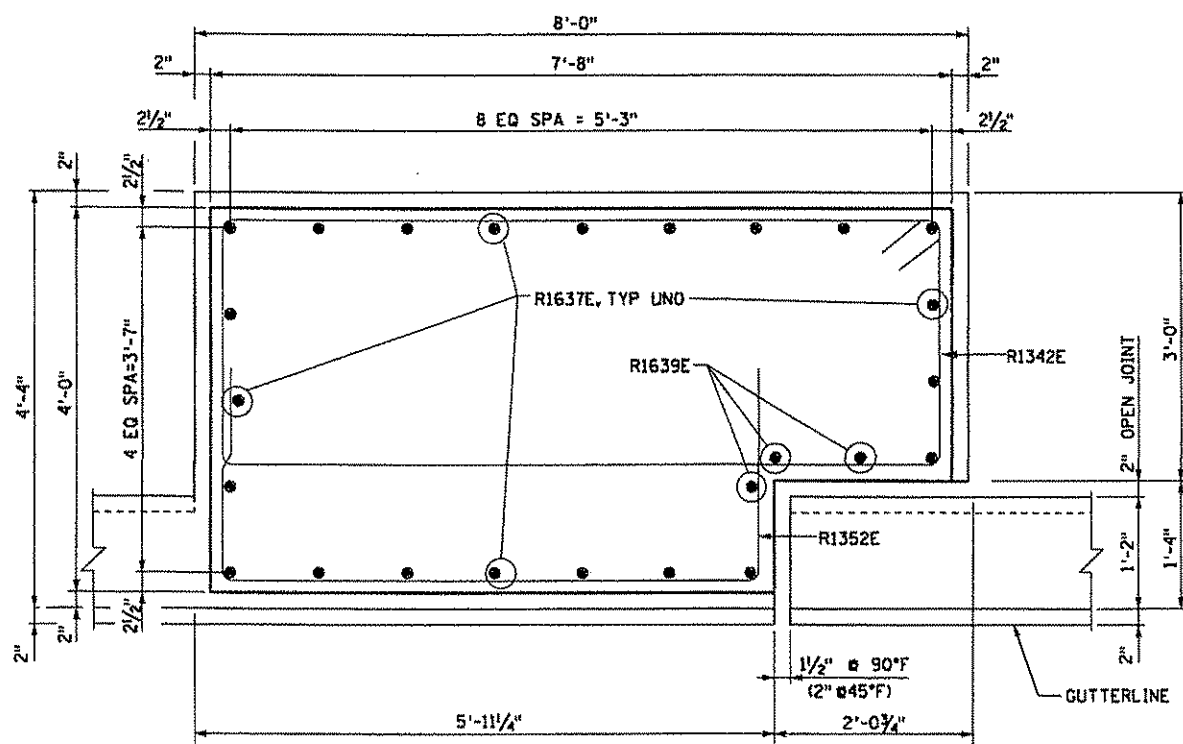
**SECTION 76G-76G**  
NE CORNER SHOWN



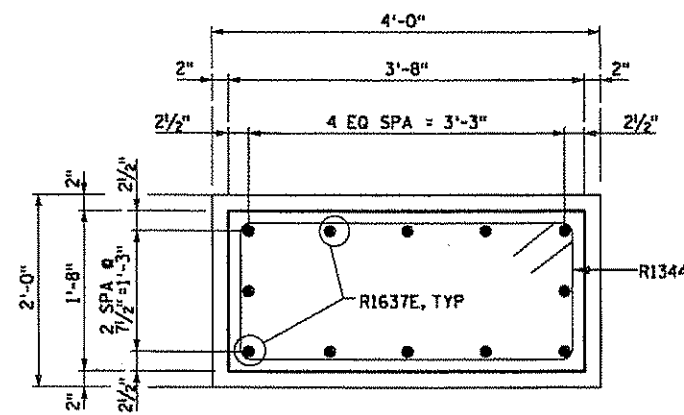
**SECTION 76J-76J**  
END POST



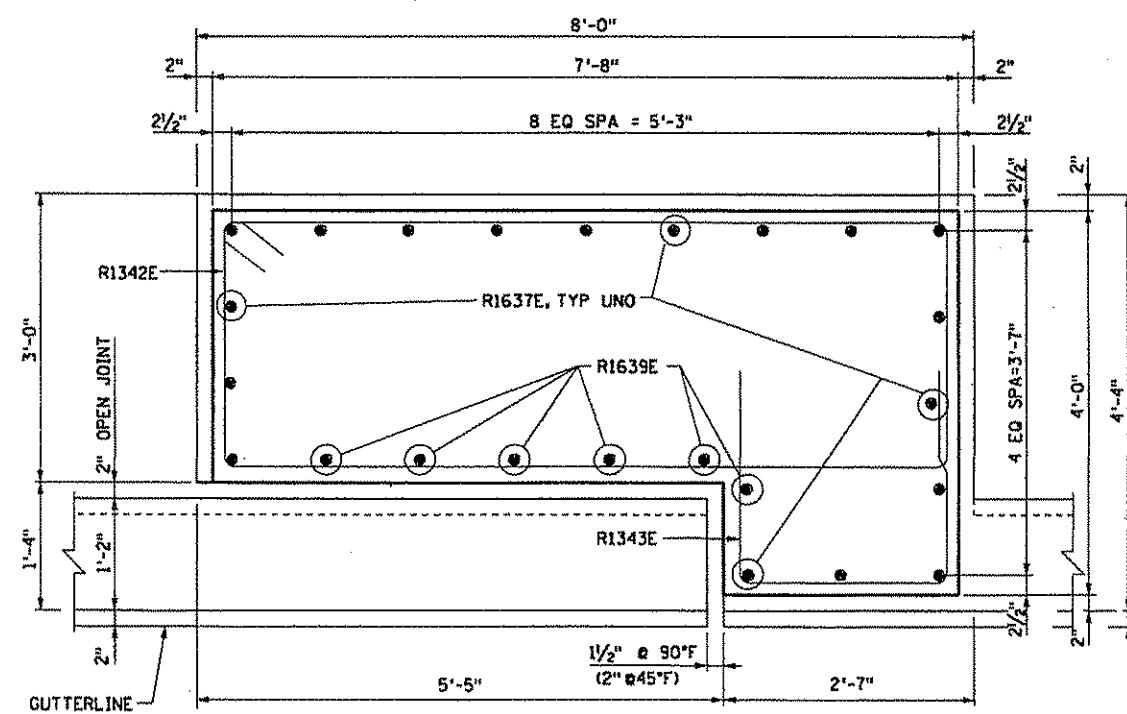
**SECTION 76L-76L**  
SE CORNER SHOWN



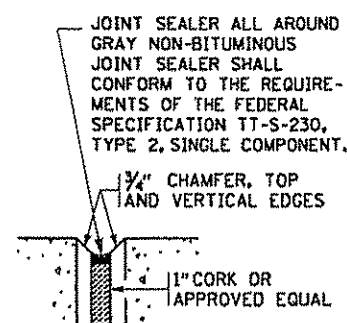
**SECTION 76H-76H**  
NE CORNER SHOWN



**SECTION 76K-76K**  
INTERMEDIATE POST

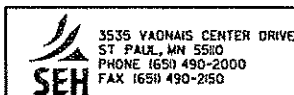


**SECTION 76M-76M**  
SE CORNER SHOWN



**DEFLECTION JOINT DETAIL**

JOINT SEALER ALL AROUND  
GRAY NON-BITUMINOUS  
JOINT SEALER SHALL  
CONFORM TO THE REQUIRE-  
MENTS OF THE FEDERAL  
SPECIFICATION TT-S-230,  
TYPE 2, SINGLE COMPONENT.



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**CONCRETE PARAPET TYPE P-1  
DETAILS**

SP 0280-55 SAP 02-623-13  
 DES: MAW DR: MAW APPROVED:  
 CHK: CAW CHK: CAW  
 SHEET NO B76 OF 95 SHEETS

BRIDGE NO  
02817







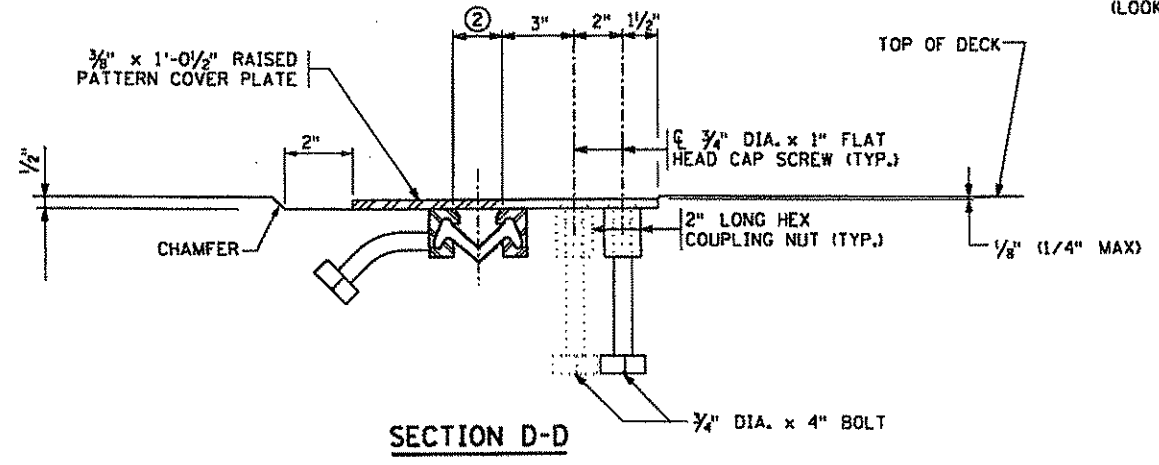
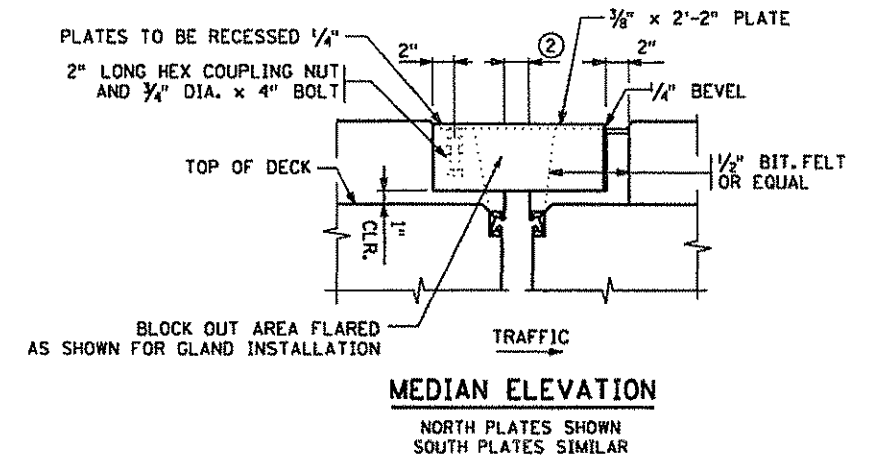
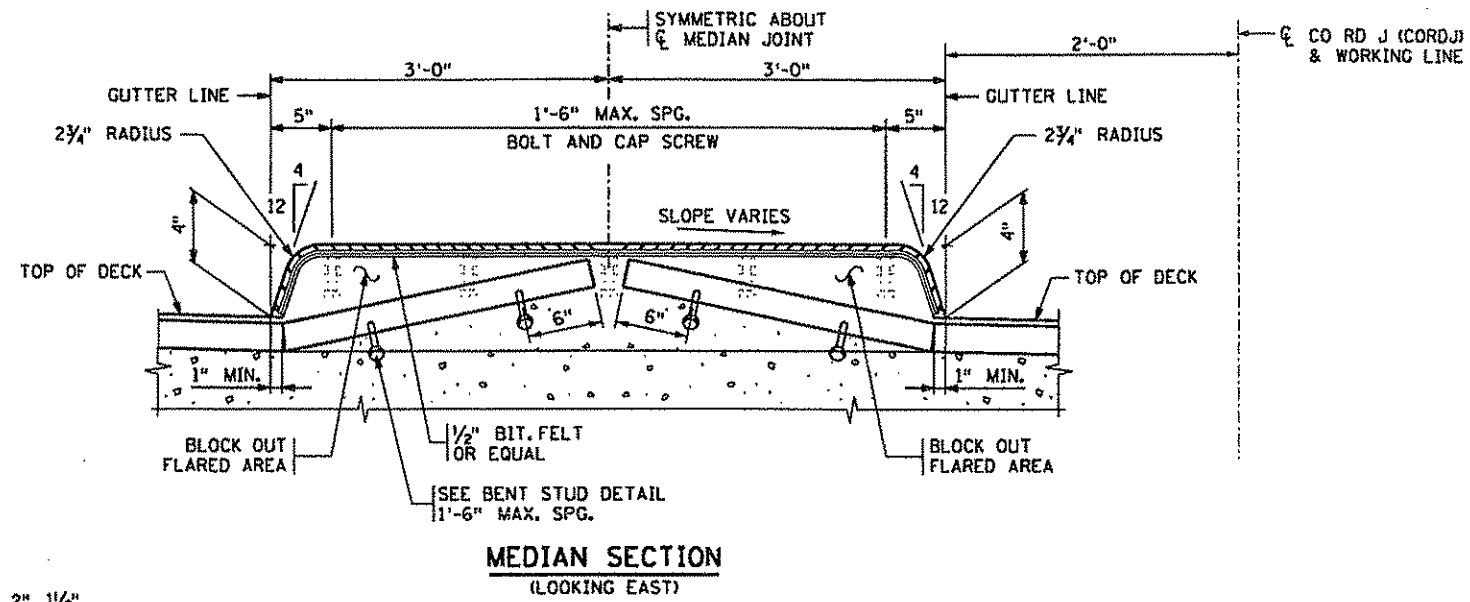




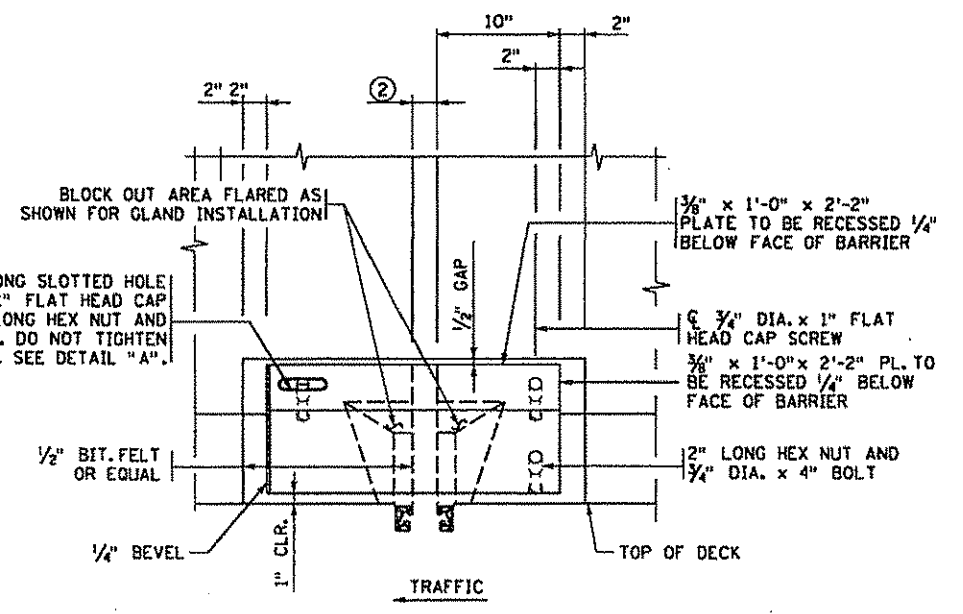
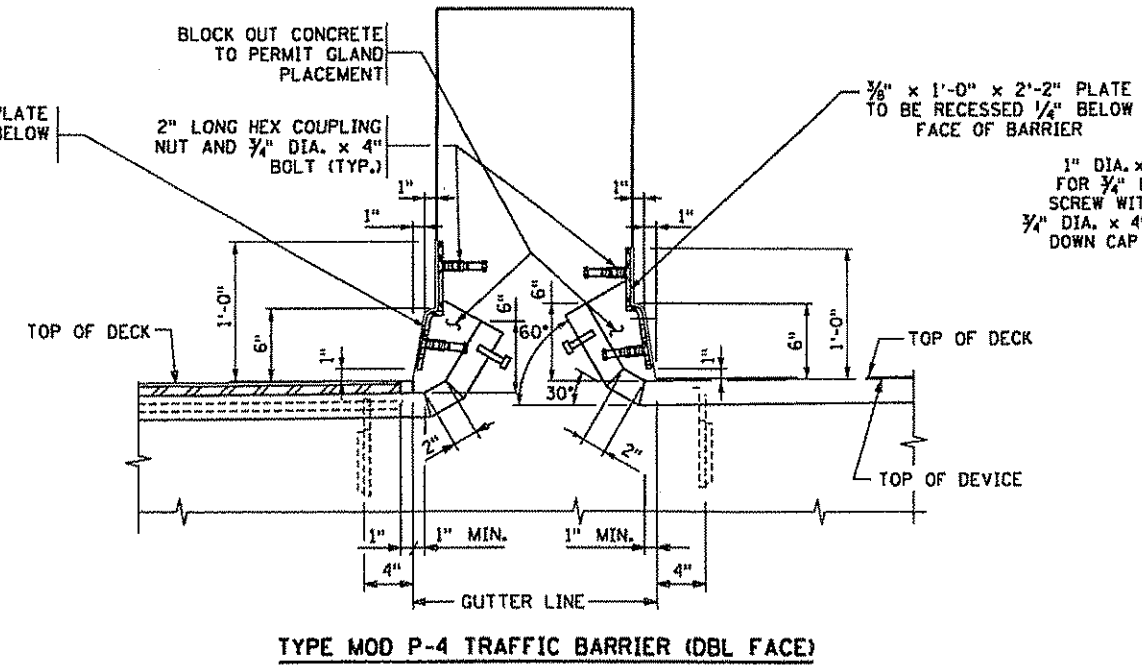
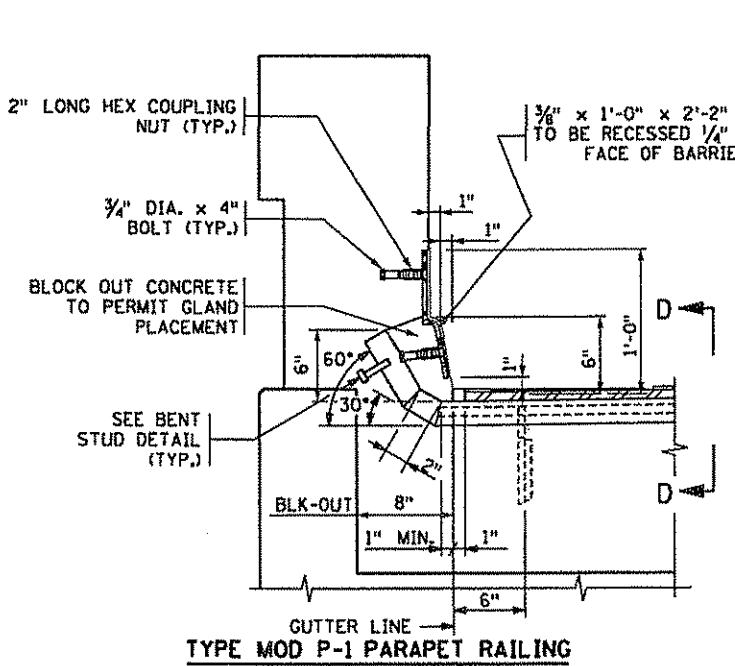
01 AM

11/21/2006

31AK0111 (1) 100\br\lgsa\dgn\ncbr\2817\_630.dgn



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



GENERAL NOTE  
SEE DETAIL 5-397.627 SHEET B69 FOR ADDITIONAL DETAILS AND NOTES.

**SECTION THROUGH RAILINGS - INTEGRAL SIDEWALK/PAVING BLOCK**

REVISION:  
APPROVED: SEPTEMBER 26, 2003  
*Daniel J. Johnson*  
STATE BRIDGE ENGINEER

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 5580  
PHONE 650 490-2000  
FAX 650 490-2150  
**SEH**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: *Christopher A. Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

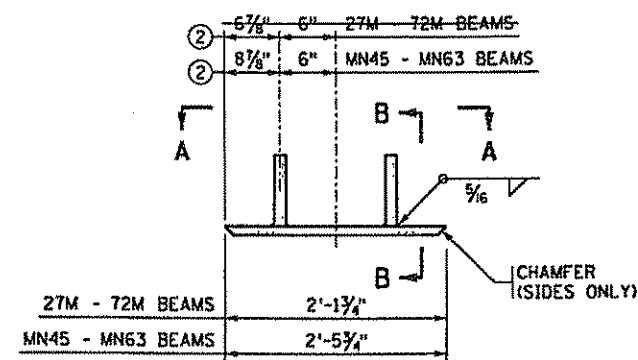
TITLE:  
**WATERPROOF EXPANSION DEVICE**  
(WITH RAISED MEDIAN OR SIDEWALK)

SP 0280-55 SAP 02-623-13  
DES: MAW DR: MAW  
CHK: CAW CHK: CAW

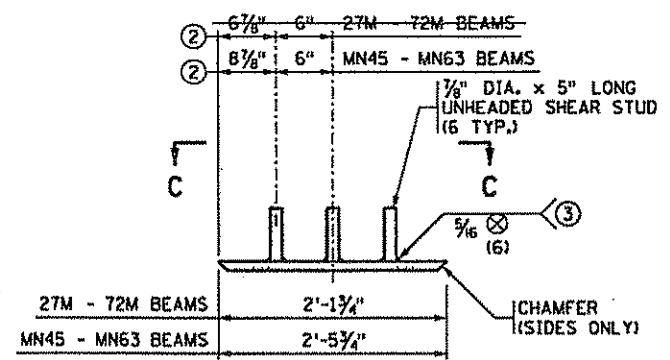
MODIFIED  
FIG. 5-397.630  
APPROVED:  
BRIDGE NO  
02817  
SHEET NO B81 OF 95 SHEETS



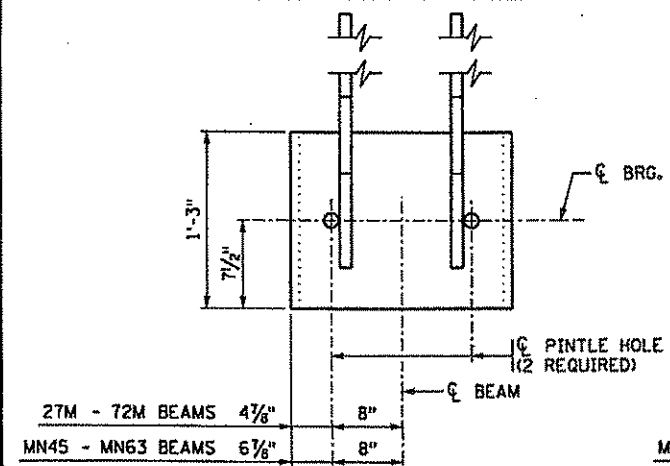
03/05/2007  
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 ST:\KOL\I.Tro1



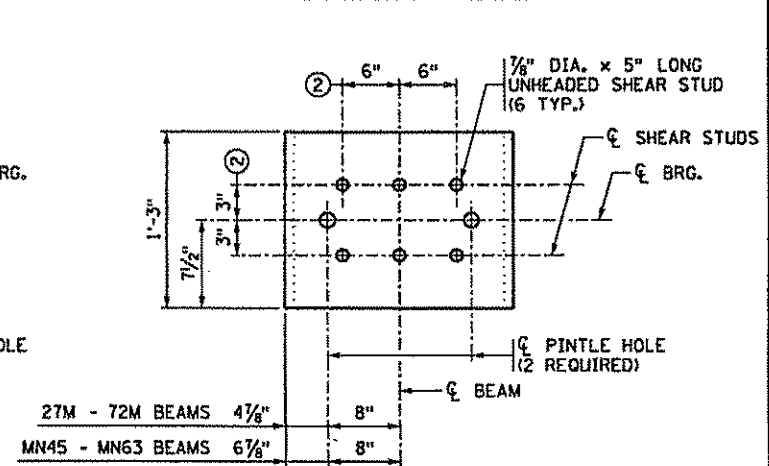
**FRONT ELEVATION - OPTION 1**



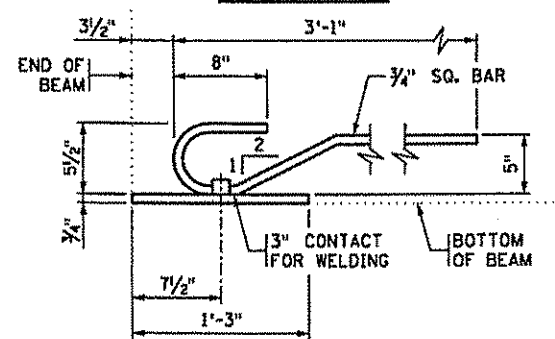
**FRONT ELEVATION - OPTION 2**



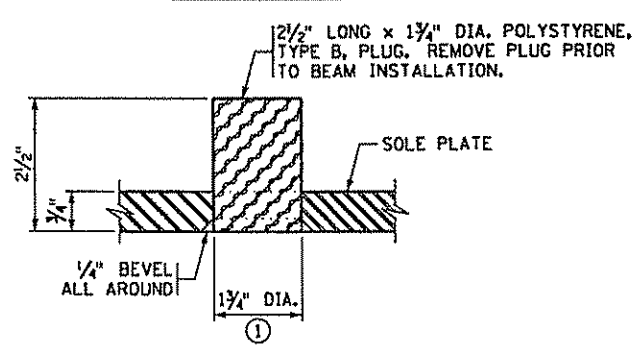
**SECTION A-A**



**SECTION C-C**



**SECTION B-B**



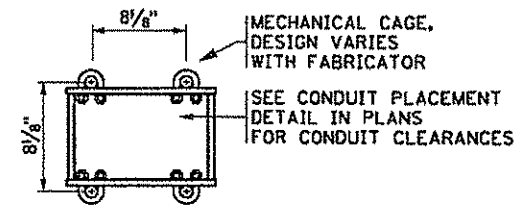
**PINTLE HOLE DETAIL**

- NOTES:**
- MATERIAL TO BE STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.
  - WELDED STUDS TO BE WELDABLE CARBON STEEL PER Mn/DOT SPEC. 3391.2D.
  - SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER Mn/DOT SPEC. 3394 AFTER FABRICATION.
  - PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.
  - PAYMENT FOR SOLE PLATES ARE INCLUDED IN ITEM "PRESTRESSED CONCRETE BEAMS".
- ① FOR 1/2" DIA. PINTLES.
  - ② THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.
  - ③ THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.5.

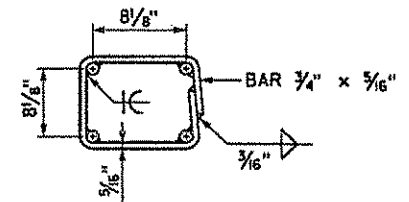
APPROVED: OCTOBER 26, 2005  
*Daniel J. Morgan*  
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**SOLE PLATE**  
 (PRESTRESSED CONCRETE BEAMS)  
 (FOR BEARINGS WITH PINTLES)

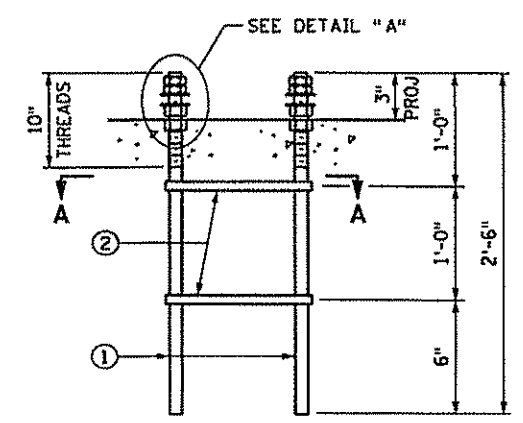
REVISED  
 DETAIL NO. MODIFIED  
**B303**



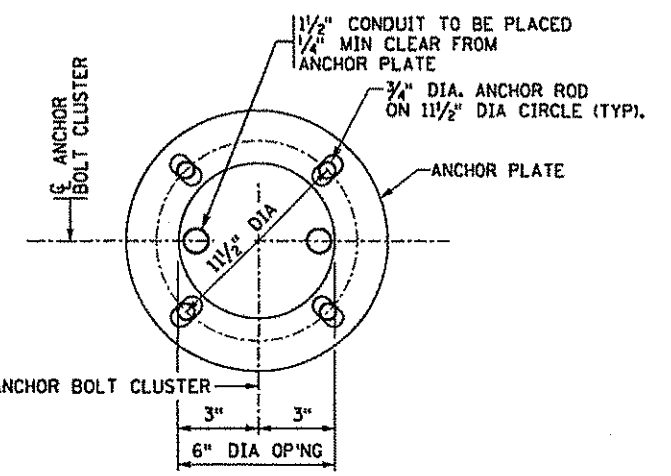
**SECTION A-A**  
 ALTERNATE MECHANICAL CAGE



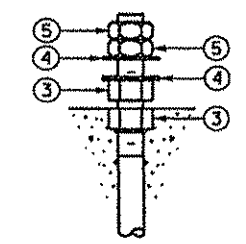
**SECTION A-A**  
 ALTERNATE WELDED CAGE



**ELEVATION**



**CONDUIT PLACEMENT DETAIL**  
 CONDUIT SYSTEM (LIGHTING)

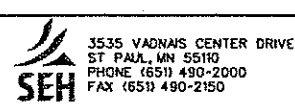


**DETAIL "A"**

APPROVED: NOVEMBER 22, 2002  
*Daniel J. Morgan*  
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**ANCHOR BOLT CLUSTER FOR LIGHT POLES**

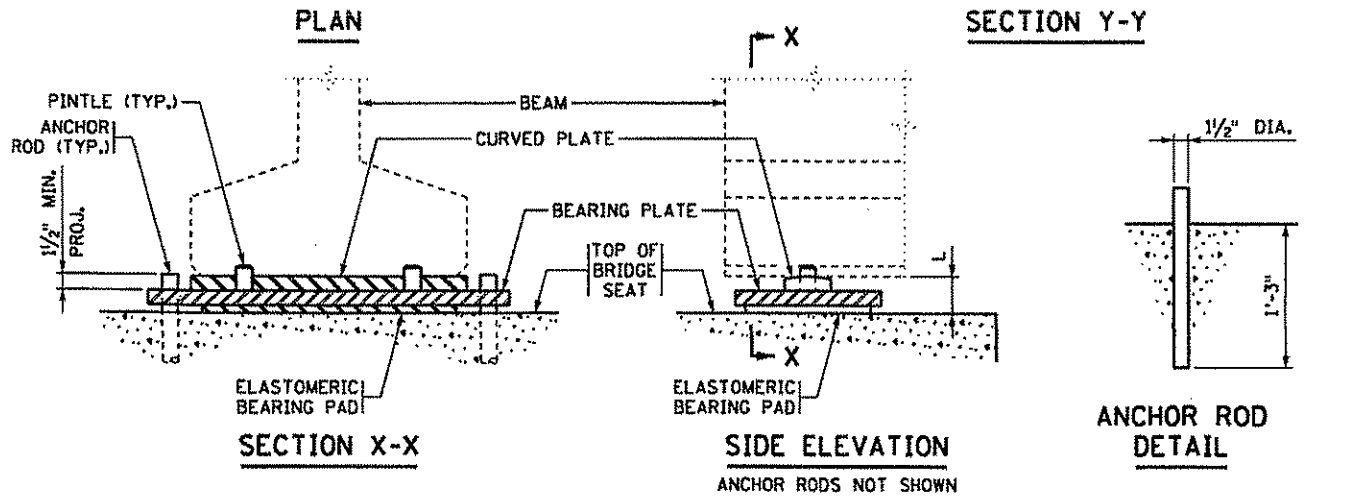
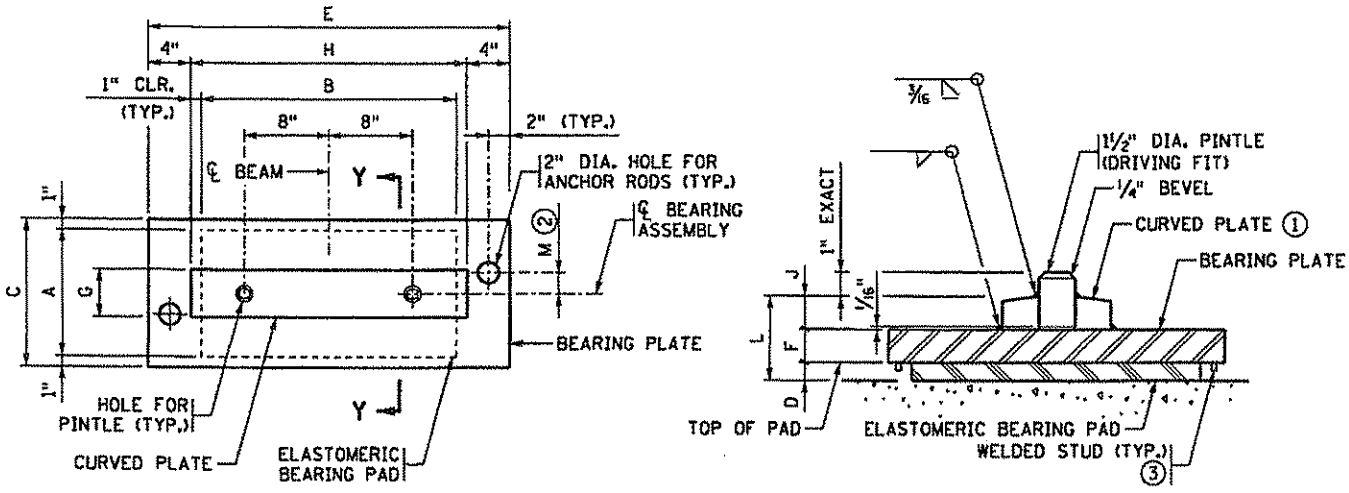
REVISED  
 10-26-2004  
 03-02-2005  
 DETAIL NO. MODIFIED  
**B950**



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Jeffrey A. Johnson* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

**B DETAILS**

SP 0280-55	SAP 02-623-13	DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: CAW	CHK: CAW				
SHEET NO B83 OF 95 SHEETS					



ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ANCHOR ROD OFFSET	ASSY. HEIGHT	CURVED PLATE	
			A	B	D		C	E	F	G	H	J				L
F1	PIER	MN63"	12"	24"	1/2"	8.0	14"	38"	1 1/2"	4 1/2"	26"	1 1/4"	+	5"	3 1/4"	19"

**NOTES:**

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH Mn/DOT SPEC. 3306. GALVANIZE PER Mn/DOT SPEC. 3394.

PINTLES SHALL COMPLY WITH Mn/DOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE MIN. RADIUS OF THE CURVED PLATE IS SHOWN. THE MAX. RADIUS IS 30". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② "+" DENOTES OFFSET AS SHOWN. "-" DENOTES OFFSET OPPOSITE OF SHOWN.

③ 3/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

**DESIGN DATA:**  
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

APPROVED: NOVEMBER 22, 2002

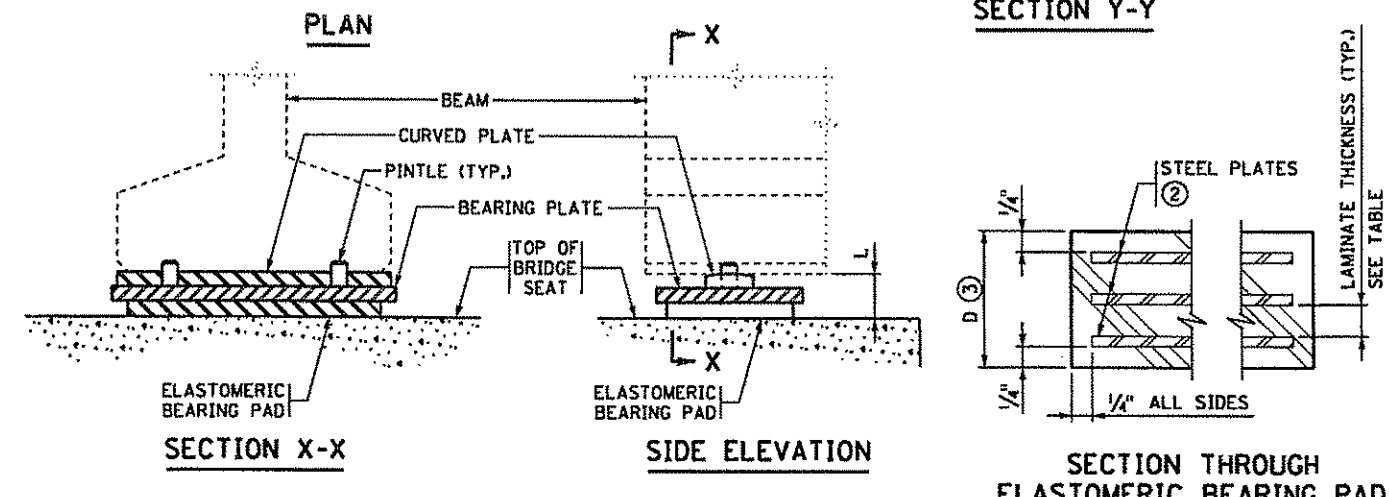
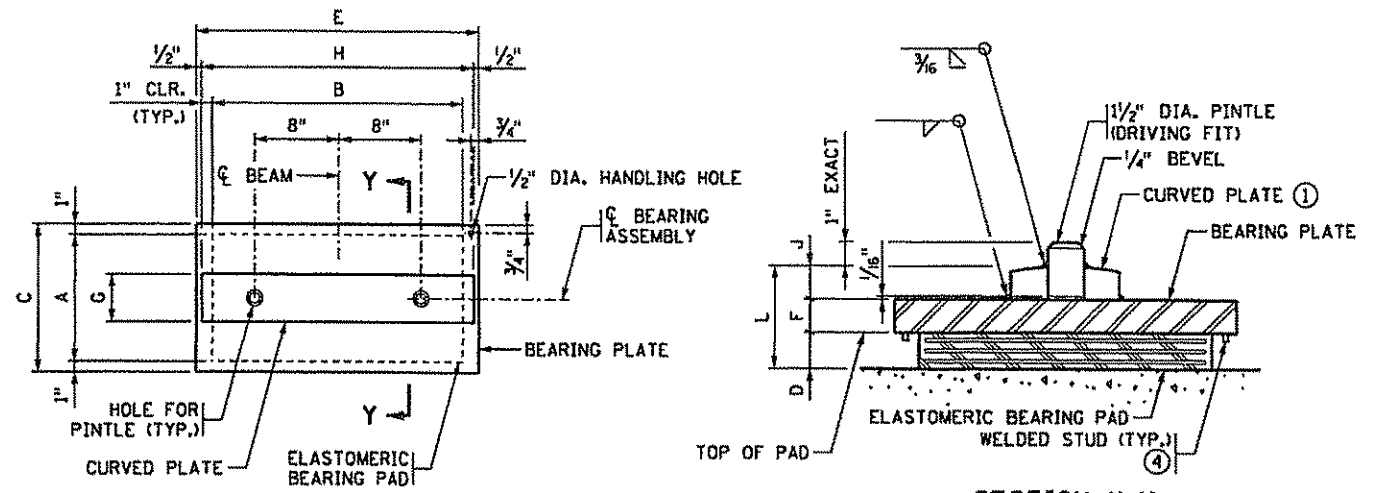
STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION

*Daniel J. Morgan*  
STATE BRIDGE ENGINEER

**CURVED PLATE BEARING ASSEMBLY**  
(PRESTRESSED CONCRETE BEAMS)  
(FIXED)

REVISED  
04-20-2004  
12-01-2004

DETAIL NO.  
**B310**



ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES	LAMINATES	SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ASSY. HEIGHT	CURVED PLATE		
			A	B	D				NO. THICK.	NO. THICK.	C	E	F	G			H	J
E1	ABUTS	MN63"	12"	24"	2 1/2"	4	1/8"	3	1/2"	8.0	14"	27"	1 1/2"	4 1/2"	26"	1 1/4"	5 1/4"	19"
E2	PIER	MN63"	12"	24"	1/2"	-	-	-	-	8.0	14"	27"	1 1/2"	4 1/2"	26"	1 1/4"	3 1/4"	19"

**NOTES:**

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

PINTLES SHALL COMPLY WITH Mn/DOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE MIN. RADIUS OF THE CURVED PLATE IS SHOWN. THE MAX. RADIUS IS 30". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ 3/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

**DESIGN DATA:**  
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

APPROVED: NOVEMBER 22, 2002

STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION

*Daniel J. Morgan*  
STATE BRIDGE ENGINEER

**CURVED PLATE BEARING ASSEMBLY**  
(PRESTRESSED CONCRETE BEAMS)  
(EXPANSION)

REVISED  
04-20-2004

DETAIL NO.  
**B311**

3535 YADNAIS CENTER DRIVE  
ST. PAUL, MN 5510  
PHONE (651) 490-2000  
FAX (651) 490-2150

**SEH**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Minnesota.

Signature: *Christopher A. Wunsch* Date: 11/21/2006  
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**B DETAILS**

DES: CAW DR: MAW  
CHK: JDS CHK: CAW

APPROVED:

SHEET NO B84 OF 95 SHEETS

BRIDGE NO  
**02817**

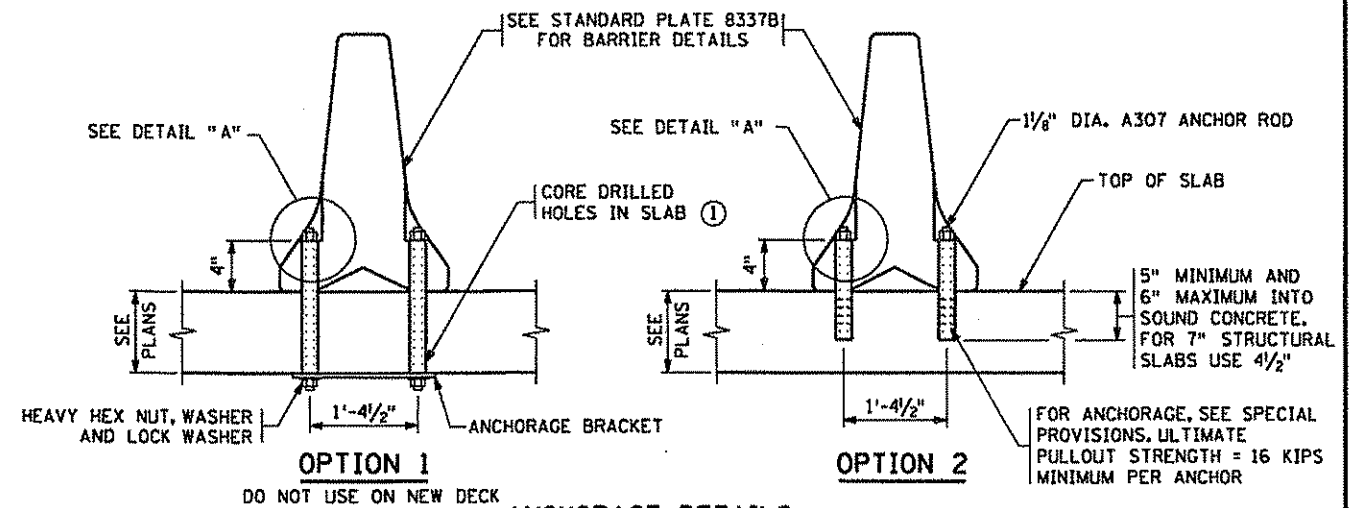
11/21/2006 J:\02br\tdgs\sgn\cbr\02817\_b311.dgn



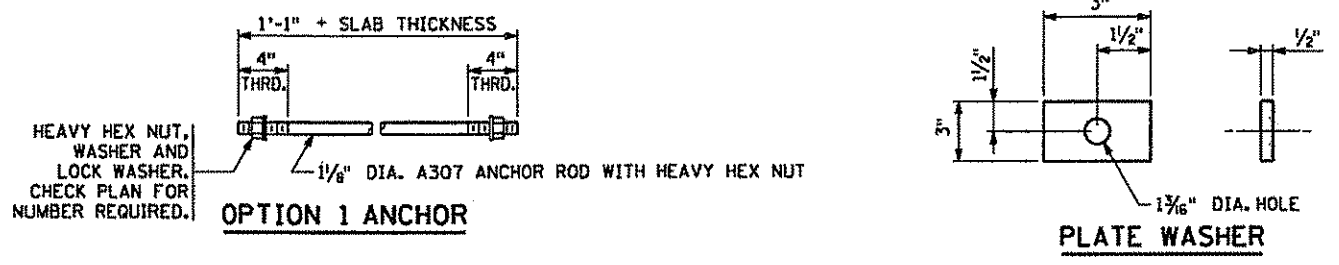




01/08/2007  
D:\b\1000\1-PORT-FILES\cbr-02817\_b87.dgn

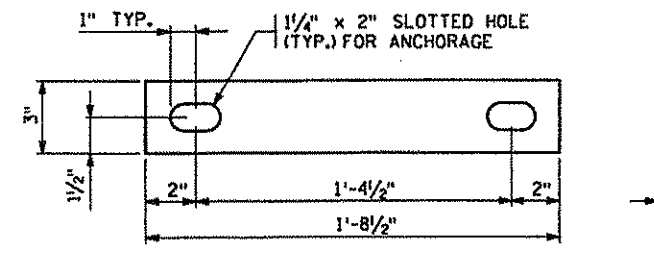


**ANCHORAGE DETAILS**  
REINFORCEMENT NOT SHOWN

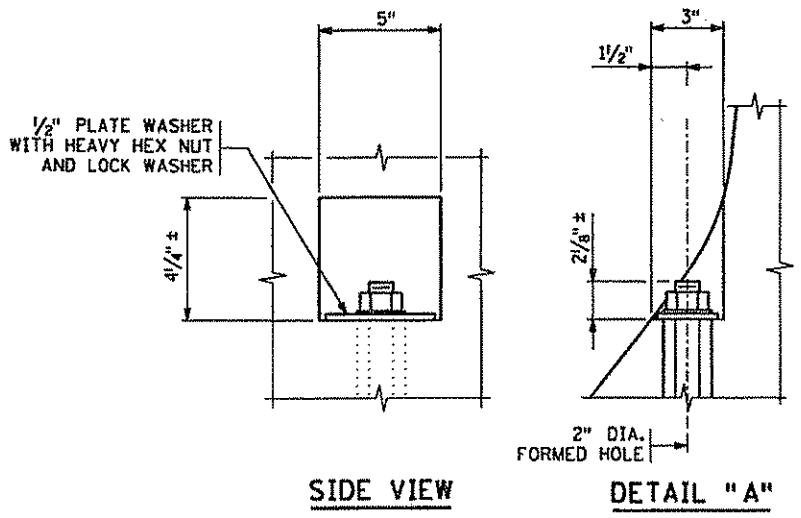


**OPTION 1 ANCHOR**

**PLATE WASHER**



**ANCHORAGE BRACKET FOR OPTION 1**



**SIDE VIEW**

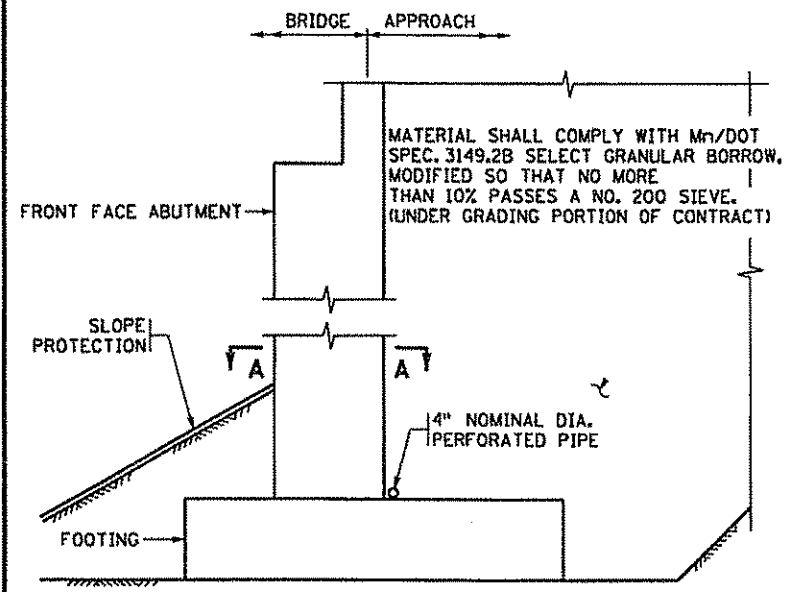
**DETAIL "A"**

**NOTES:**  
ALL EXPOSED HARDWARE IS TO BE GALVANIZED AS PER Mn/DOT SPEC. 3392.  
ALL STRUCTURAL STEEL IS TO BE Mn/DOT SPEC. 3306 UNLESS OTHERWISE NOTED.  
COST OF ANCHORAGES IS INCIDENTAL TO THE COST OF PLACING THE PORTABLE PRECAST BARRIER.  
FILL ANCHORAGE HOLES WITH AN APPROVED EPOXY GROUT AFTER THE PORTABLE BARRIERS ARE REMOVED.  
① PERCUSSION DRILLING OF THESE HOLES IS NOT PERMITTED.

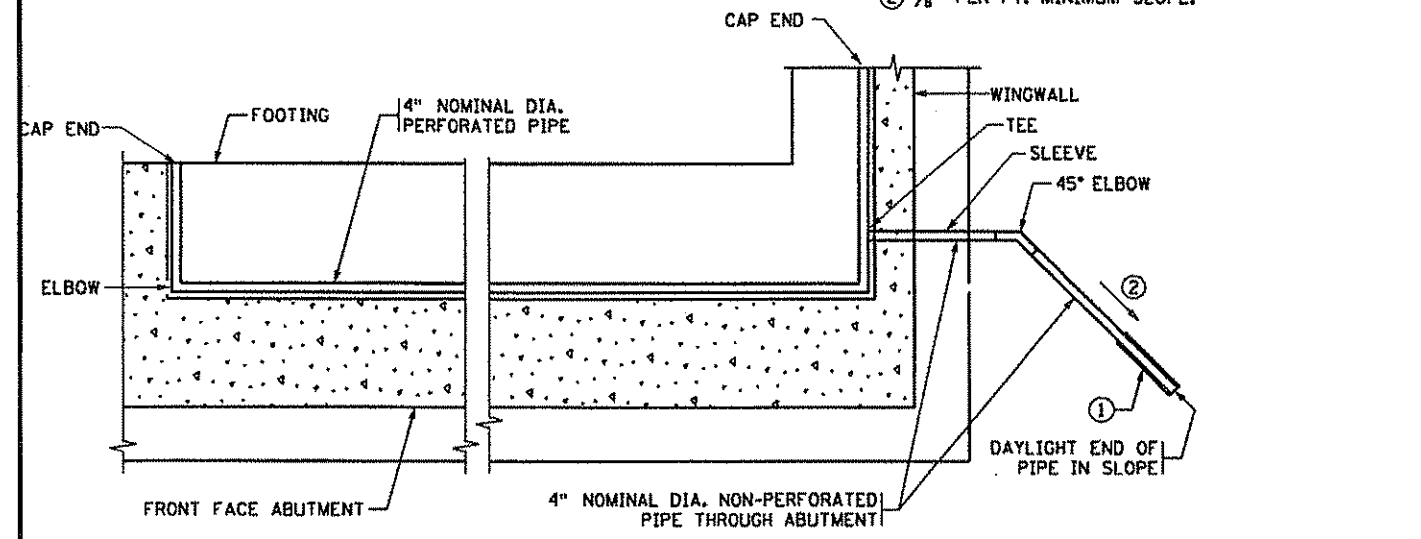
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 07-29-2003	DETAIL NO. MODIFIED B920
 STATE BRIDGE ENGINEER		<b>PORTABLE PRECAST BARRIER ANCHORAGE</b> (TEMPORARY USAGE IN LIMITED BARRIER DISPLACEMENT AREAS)	

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55110  
PHONE (651) 490-2000  
FAX (651) 490-2150

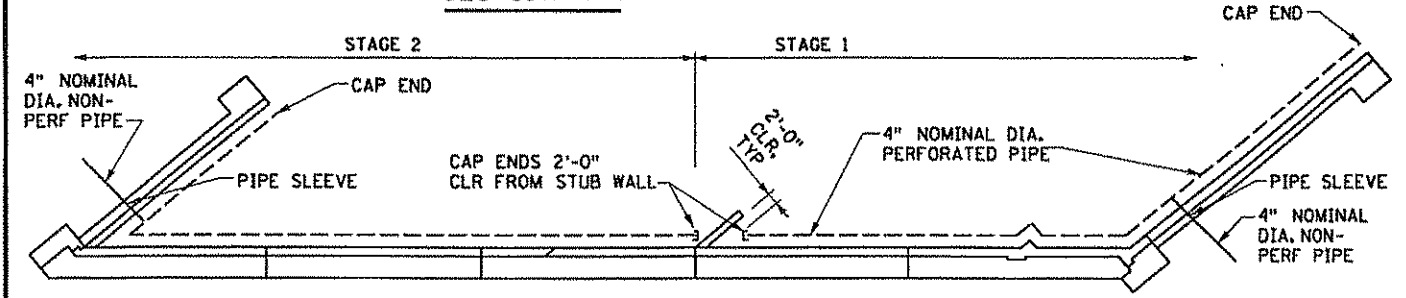
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.  
Signature:   
Printed Name: JOHN D. STEENBERG  
Date: 01/08/2007  
Reg. No. 13865



**SECTION THROUGH ABUTMENT**



**SECTION A-A**



**ABUTMENT SCHEMATIC**  
NORTH ABUTMENT SHOWN

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 04-20-2004	DETAIL NO. MODIFIED B910
 STATE BRIDGE ENGINEER		<b>DRAINAGE SYSTEM</b> (FOR HIGH ABUTMENTS)	

**B DETAILS**

**SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM**

4" DIA PERFORATED PIPE	532 LIN FT
4" DIA NON-PERFORATED PIPE	80 LIN FT
4" DIA ELBOW	4 EACH
4" DIA END CAP	8 EACH
4" DIA COUPLING	2 EACH
PIPE SLEEVE	4 EACH
① PRECAST CONCRETE HEADWALL	4 EACH

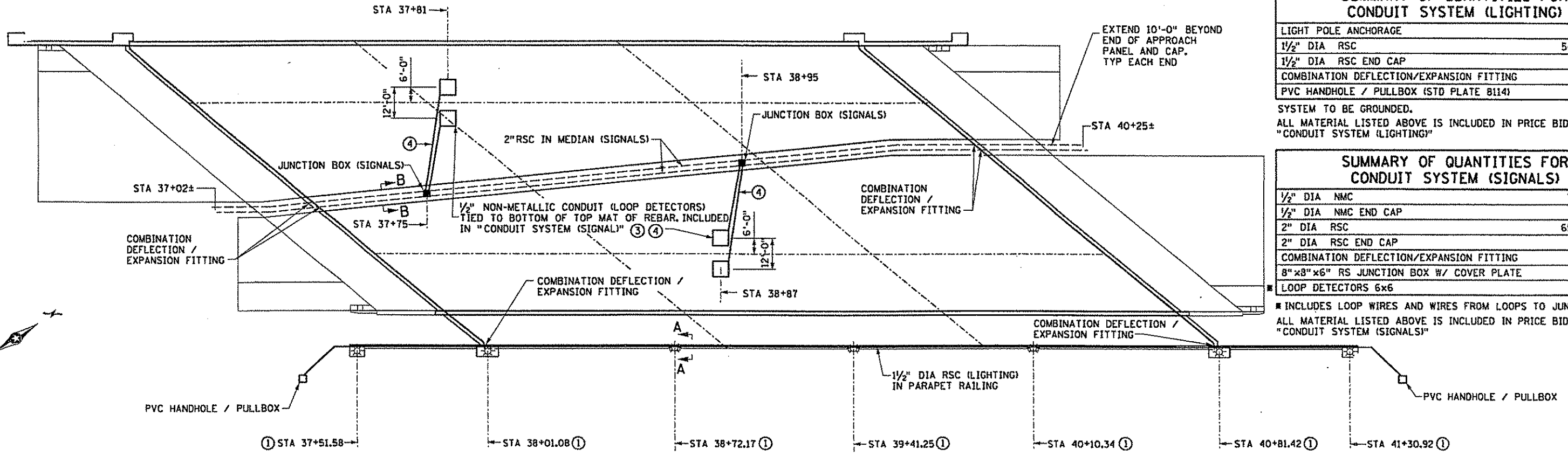
THE SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM IS AS SHOWN ABOVE. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2502.502 "DRAINAGE SYSTEM TYPE (B910)".

- NOTES:**
- ALL PIPE SHALL BE AS PER Mn/DOT SPEC. 3245.
  - WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER Mn/DOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER Mn/DOT SPEC. 2502.
  - ① PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.
  - ② 1/8" PER FT. MINIMUM SLOPE.

DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: CAW	CHK: CAW		
SHEET NO B87 OF 95 SHEETS			

03/05/2007  
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 SA:\VOL 11\No

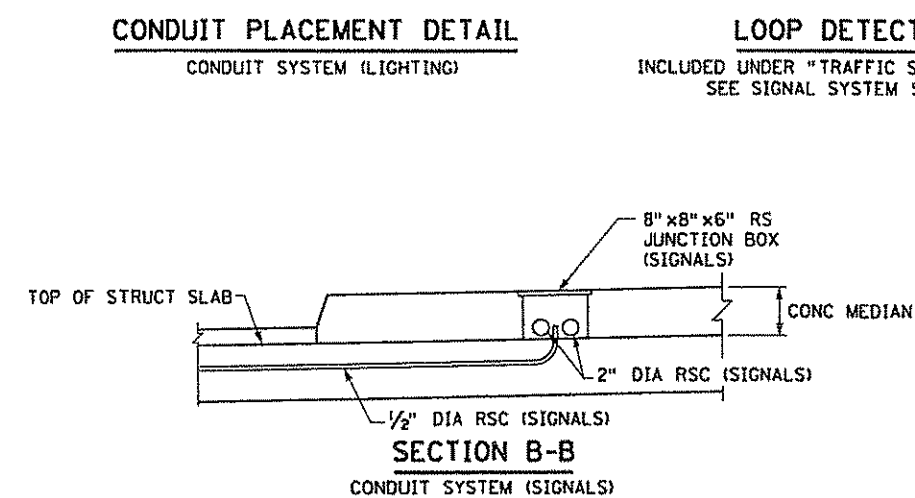
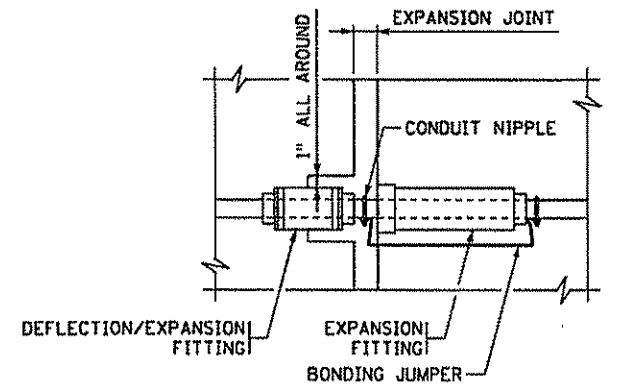
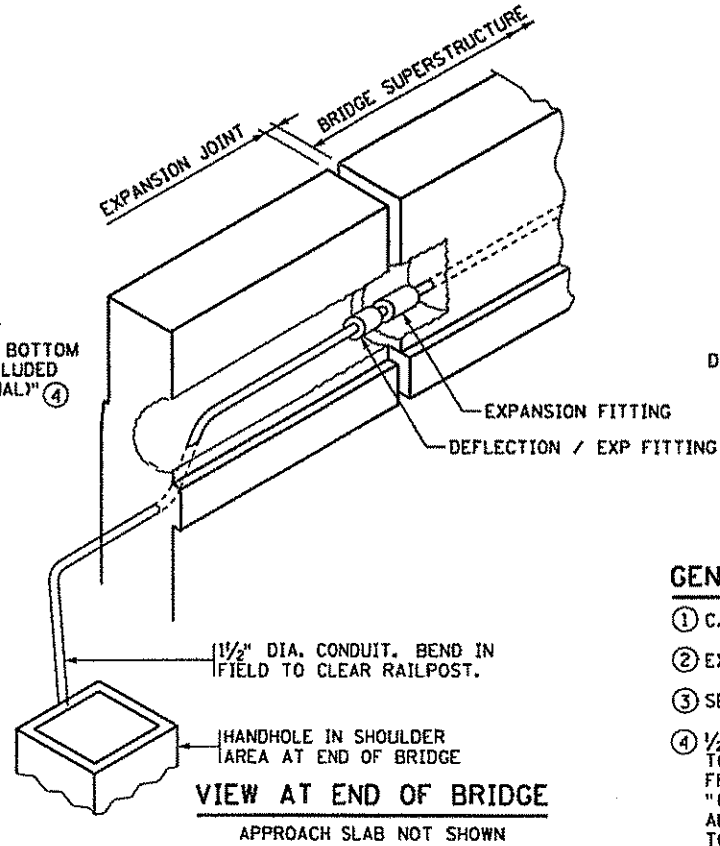
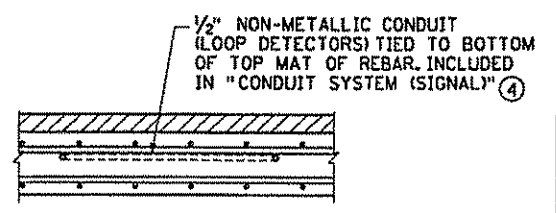
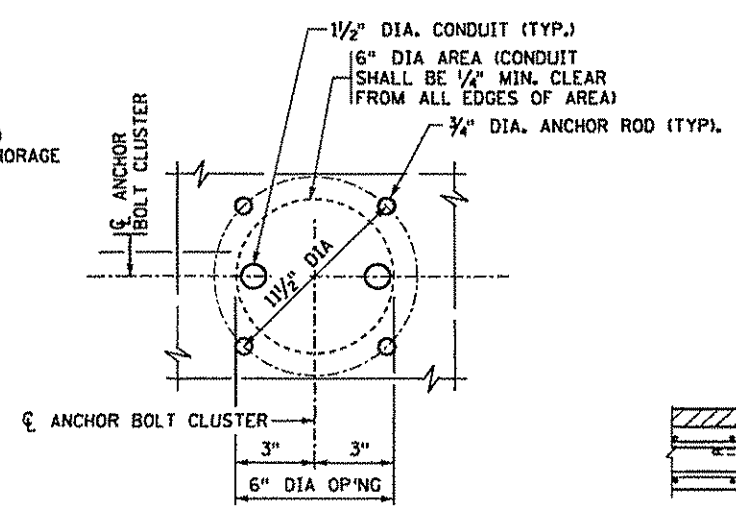
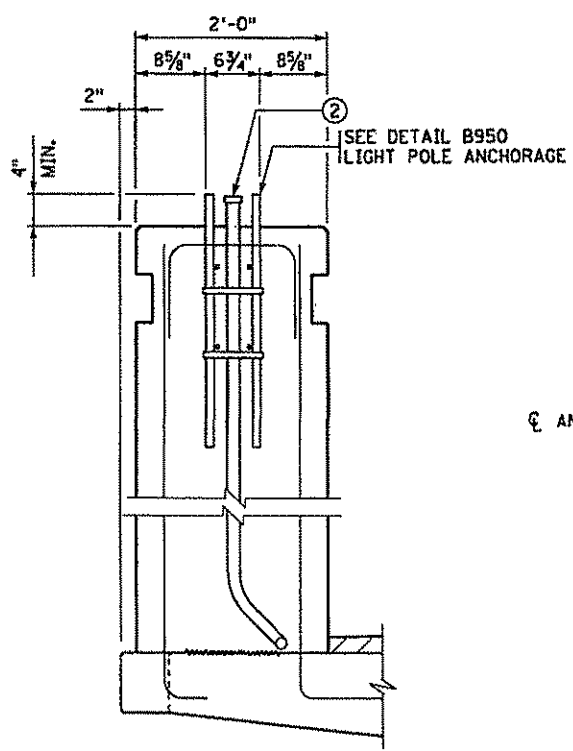


SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING)	
LIGHT POLE ANCHORAGE	7 EACH
1 1/2" DIA RSC	545 LIN. FT.
1 1/2" DIA RSC END CAP	2 EACH
COMBINATION DEFLECTION/EXPANSION FITTING	2 EACH
PVC HANDHOLE / PULLBOX (STD PLATE 8114)	2 EACH

SYSTEM TO BE GROUNDED.  
 ALL MATERIAL LISTED ABOVE IS INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (LIGHTING)"

SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (SIGNALS)	
1/2" DIA NMC	70 LIN FT
1/2" DIA NMC END CAP	3 EACH
2" DIA RSC	650 LIN FT
2" DIA RSC END CAP	4 EACH
COMBINATION DEFLECTION/EXPANSION FITTING	4 EACH
8" x 8" x 6" RS JUNCTION BOX W/ COVER PLATE	2 EACH
LOOP DETECTORS 6x6	4 EACH

INCLUDES LOOP WIRES AND WIRES FROM LOOPS TO JUNCTION BOX.  
 ALL MATERIAL LISTED ABOVE IS INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (SIGNALS)"



- GENERAL NOTES**
- ① C/L LIGHT STANDARD.
  - ② EXTEND CONDUIT 3" ABOVE CONCRETE AND CAP.
  - ③ SEE TRAFFIC SIGNAL PLANS FOR ADDITIONAL LOOP INFORMATION.
  - ④ 1/2" NON-METALLIC CONDUIT (LOOP DETECTORS) TIED TO BOTTOM OF TOP MAT OF REBAR (OR SO CONFIGURED AS TO BE A MIN OF 1" CLR FROM THE TOP OF THE STRUCTURAL DECK). INCLUDED IN "CONDUIT SYSTEM (SIGNAL)". COORDINATE W/ TRAFFIC SIGNAL PLANS. ALL WIRING ASSOCIATED W/ LOOP DETECTORS FROM THE LOOPS TO THE JUNCTION BOX IN THE MEDIAN TO BE INSTALLED UNDER BRIDGE CONTRACT.
- RS = RIGID STEEL  
 RSC = RIGID STEEL CONDUIT  
 NMC = NON-METALLIC CONDUIT

REVISION:  
 APPROVED: SEPTEMBER 26, 2003  
 Daniel A. Johnson  
 STATE BRIDGE ENGINEER

3535 VADNAS CENTER DRIVE  
 ST PAUL, MN 55110  
 PHONE (651) 430-2000  
 FAX (651) 430-2150  
**SEH**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: Jeffrey A. Johnson Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17289

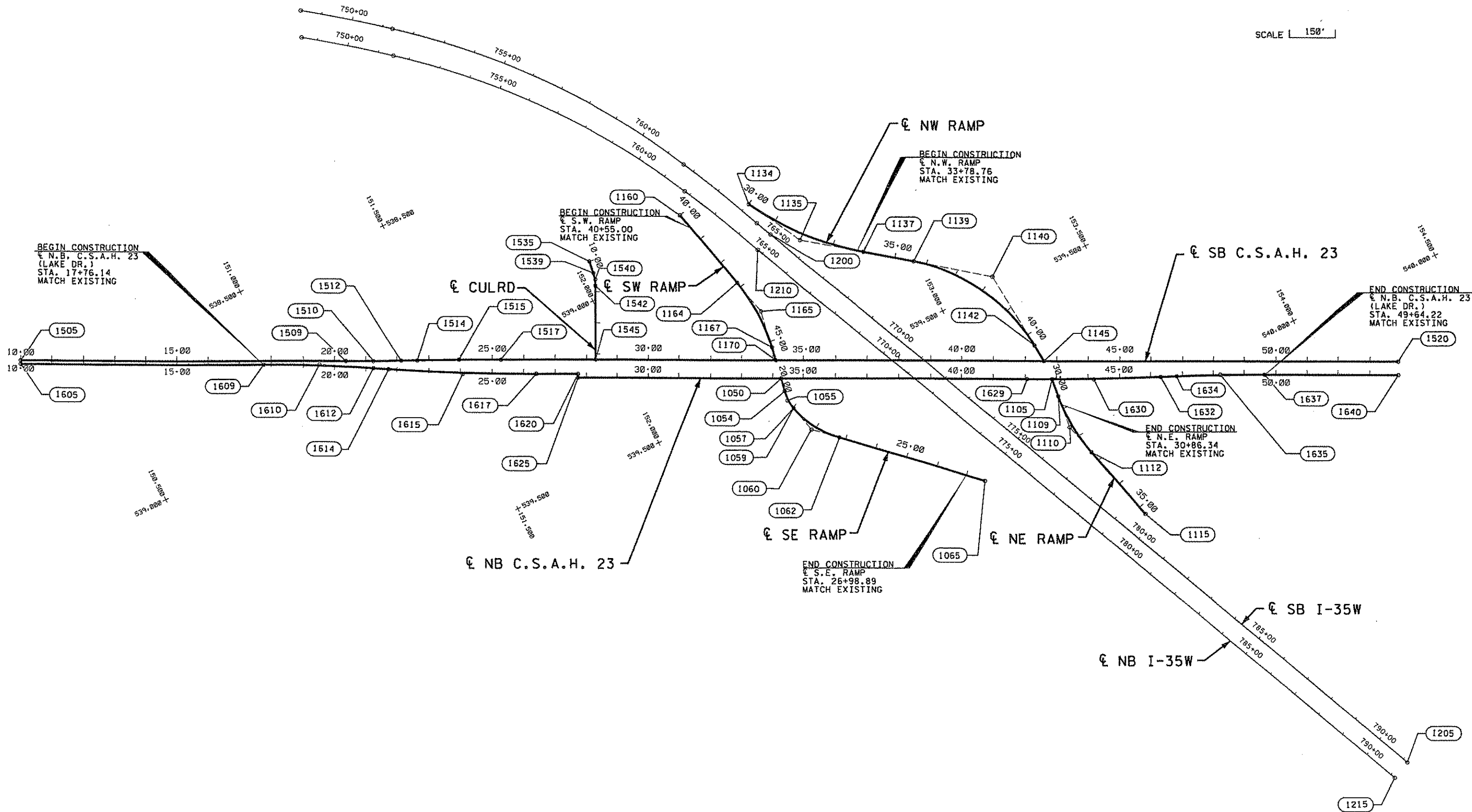
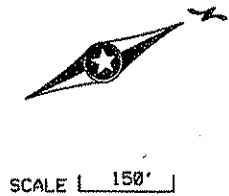
TITLE:  
**CONDUIT SYSTEMS**

MODIFIED  
**FIG. 5-397.403**  
 SP 0280-55 SAP 02-623-13  
 DES: MAW DR: MAW APPROVED:  
 CHK: CAW CHK: CAW  
 SHEET NO B88 OF 95 SHEETS  
 BRIDGE NO 02817





ANDERSON COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 83 ADJUSTMENT SOUTH ZONE.



11/21/2006

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**SEH**  
 3535 WADNAIS CENTER DRIVE  
 ST PAUL, MN 5510  
 PHONE 1650 490-2000  
 FAX 1650 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE:  
**ALIGNMENT PLAN**

DES: SRH	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: CAW	CHK: CAW		
SHEET NO B90 OF 95 SHEETS			

SP 0280-55 SAP 02-623-13

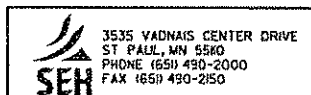
07/11/11 AM

11/21/2006

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POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
<b>N.B. C.S.A.H. 23 (CHAIN: NB-LAKE)</b>										
1605	POT	9+99.450						538,413.5823	150,263.4363	
1609	PC	17+76.141						538,743.2247	150,966.7037	N 25° 06' 49.99" E
1610	PI	19+50.044	3° 28' 37.16" RT	1° 00' 00.00"	5,729.578'	173.903'	347.699'	538,817.0324	151,124.1668	PI
1611	CC							543,931.1625	148,534.9625	
1612	PT	21+23.840						538,900.2539	151,276.8637	N 28° 35' 27.15" E
1614	PC	21+73.840						538,924.1815	151,320.7667	N 28° 35' 27.15" E
1615	PI	24+06.881	3° 29' 40.35" LT	0° 45' 00.00"	7,639.437'	233.042'	465.939'	539,035.7041	151,525.3910	PI
1616	CC							532,216.3034	154,976.6350	
1617	PT	26+39.778						539,134.5467	151,736.4326	N 25° 05' 46.81" E
1620	POT	27+72.337						539,190.7705	151,856.4776	
1625	POT	27+72.337						539,201.6377	151,851.3879	
1629	PC	42+05.583						539,809.5366	153,149.3293	N 25° 05' 46.81" E
1630	PI	44+18.199	2° 07' 33.29" LT	0° 30' 00.00"	11,459.156'	212.616'	425.183'	539,899.7158	153,341.8733	PI
1631	CC							529,432.1717	158,009.6329	
1632	PT	46+30.766						539,982.6904	153,537.6300	N 22° 58' 13.52" E
1634	PC	46+80.766						540,002.2032	153,583.6654	N 22° 58' 13.52" E
1635	PI	48+22.510	2° 07' 33.29" RT	0° 45' 00.00"	7,639.437'	141.744'	283.455'	540,057.5196	153,714.1699	PI
1636	CC							547,035.8823	150,602.3301	
1637	PT	49+64.221						540,117.6390	153,842.5325	N 25° 05' 46.81" E
1640	POT	53+90.400						540,298.3990	154,228.4779	
<b>S.B. C.S.A.H. 23 (CHAIN: SB-LAKE)</b>										
1505	POT	10+00.004						538,402.7184	150,268.5329	
1509	PC	20+35.751						538,842.3092	151,206.3669	N 25° 06' 49.99" E
1510	PI	21+24.567	1° 19' 55.82" LT	0° 45' 00.00"	7,639.437'	88.815'	177.623'	538,880.0042	151,286.7863	PI
1511	CC							531,925.0588	154,448.6885	
1512	PT	22+13.374						538,915.8193	151,368.0604	N 23° 46' 54.17" E
1514	PC	22+63.374						538,935.9820	151,413.8148	N 23° 46' 54.17" E
1515	PI	23+94.842	1° 18' 52.63" RT	0° 30' 00.00"	11,459.156'	131.468'	262.924'	538,988.9968	151,534.1195	PI
1516	CC							549,422.1227	146,792.8726	
1517	PT	25+26.299						539,044.7578	151,653.1762	N 25° 05' 46.81" E
1520	POT	53+90.203						540,259.4583	154,246.7160	
<b>S.W. RAMP (CHAIN: SWRAMP)</b>										
1160	POT	40+00.000						538,868.4785	152,373.2315	
1164	PC	42+82.998						539,141.7916	152,446.6346	N 74° 58' 01.00" E
1165	PI	44+02.975	23° 39' 12.89" RT	10° 00' 00.00"	572.958'	119.977'	236.536'	539,257.6623	152,477.7537	PI
1166	CC							539,290.4033	151,893.2855	
1167	PT	45+19.534						539,376.2837	152,459.7704	S 81° 22' 46.11" E
1170	POT	45+63.209						539,419.4652	152,453.2240	
<b>N.E. RAMP (CHAIN: NERAMP)</b>										
1105	POT	30+00.000						539,842.9847	153,221.7195	
1109	PC	30+57.617						539,900.3743	153,216.6014	S 84° 54' 13.19" E
1110	PI	31+63.368	20° 54' 52.81" LT	10° 00' 00.00"	572.958'	105.750'	209.147'	540,005.7064	153,207.2075	PI
1111	CC							539,951.2704	153,787.2941	
1112	PT	32+66.764						540,107.4519	153,236.0338	N 74° 10' 54.00" E

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
<b>S.E. RAMP (CHAIN: SERAMP)</b>										
1050	POT	20+00.000						539,479.2654	152,444.1582	
1054	PC	20+42.381						539,521.1671	152,437.8058	S 81° 22' 46.11" E
1055	PI	20+73.710	23° 35' 39.85" LT	38° 11' 49.87"	150.000'	31.329'	61.770'	539,552.1422	152,433.1099	PI
1056	CC							539,543.6506	152,586.1112	
1057	PCC	21+04.151						539,582.4074	152,441.2046	N 75° 01' 34.05" E
1059	PCC	21+04.151						539,582.4074	152,441.2046	N 75° 01' 34.05" E
1060	PI	21+94.079	33° 22' 24.05" LT	19° 05' 54.94"	300.000'	89.928'	174.742'	539,669.2820	152,464.4402	PI
1061	CC							539,504.8938	152,731.0178	
1062	PT	22+78.893						539,729.0497	152,531.6333	N 41° 39' 10.00" E
1065	POT	27+60.489						540,049.1252	152,891.4749	
<b>N.W. RAMP (CHAIN: NWRAMP)</b>										
1134	PC	30+00.000						538,928.9408	152,588.8101	N 59° 52' 47.67" E
1135	PI	32+02.083	23° 53' 50.67" LT	6° 00' 00.00"	954.930'	202.083'	398.290'	539,103.7378	152,690.2183	PI
1136	CC							538,449.7436	153,414.8009	
1137	PT	33+98.290						539,222.4694	152,853.7433	N 35° 58' 57.00" E
1139	PC	35+58.761						539,316.7523	152,983.5960	N 35° 58' 57.00" E
1140	PI	38+14.668	48° 08' 06.12" RT	10° 00' 00.00"	572.958'	255.907'	481.350'	539,467.1072	153,190.6748	PI
1141	CC							539,780.3877	152,646.9615	
1142	PT	40+40.112						539,721.6664	153,216.9022	N 84° 07' 03.12" E
1145	POT	40+98.705						539,779.9512	153,222.9073	
<b>CUL-DE-SAC (CHAIN: CULRD)</b>										
1535	POT	10+00.000						538,880.0791	152,043.0179	
	PC	10+39.891						538,919.8010	152,039.3444	95° 17' 01.34"
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI
	CC							538,908.9807	151,922.3437	
	PT	10+80.558						538,958.8499	152,028.7360	115° 06' 49.99"
1545	POT	13+17.647						539,173.5253	151,928.1112	
1535	POT	10+00.000						538,880.0791	152,043.0179	
	PC	10+39.891						538,919.8010	152,039.3444	95° 17' 01.34"
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI
	CC							538,908.9807	151,922.3437	
	PT	10+80.558						538,958.8499	152,028.7360	115° 06' 49.99"
1545	POT	13+17.647						539,173.5253	151,928.1112	
<b>N.B. I-35W (CHAIN: EXNB35W)</b>										
1210	POT	764+80.772						539,073.9430	152,552.1540	
1215	POT	791+16.337						541,460.5279	153,670.3740	
<b>S.B. I-35W (CHAIN: EXSB35W)</b>										
1200	POT	764+80.772						539,046.7890	152,610.1080	
1205	POT	791+16.337						541,433.3740	153,728.3280	



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 11/21/2006  
 Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

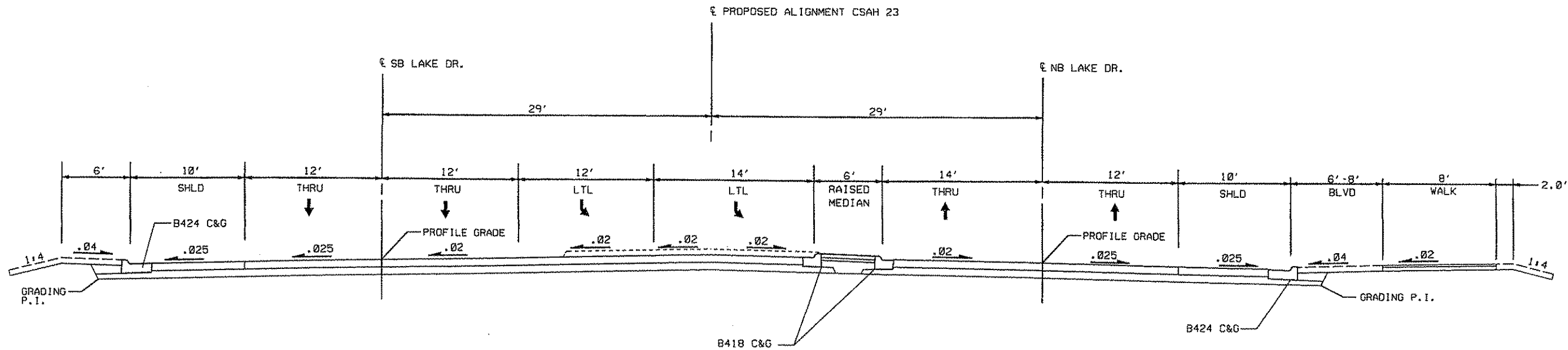
TITLE: **ALIGNMENT TABULATIONS**

SP 0280-55 SAP 02-623-13  
 DES: SRH DR: MAW APPROVED:  
 CHK: CAW CHK: CAW  
 SHEET NO B91 OF 95 SHEETS  
 BRIDGE NO 02817

TYPICAL SECTION NO. 6 - LAKE DRIVE OVER I-35W

N.B. STA. 34+27 TO STA. 37+55  
 S.B. STA. 34+27 TO STA. 36+85

N.B. STA. 40+38 TO STA. 42+86  
 S.B. STA. 39+69 TO STA. 42+85



11/21/2005  
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 11/21/2005

**SEH**  
 3535 VADNAIS CENTER DRIVE  
 ST PAUL, MN 55101  
 PHONE (651) 490-2000  
 FAX (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *Christopher A. Wunsch* Date: 11/21/2005  
 Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: TYPICAL ROADWAY SECTIONS

SP 0280-55 SAP 02-623-13  
 DES: SRH DR: MAW APPROVED:  
 CHK: CAW CHK: CAW  
 SHEET NO B92 OF 95 SHEETS

BRIDGE NO 02817

**CONTRACTED PROFILE**

SCALE: HOR. 0 50 VER. 0 10

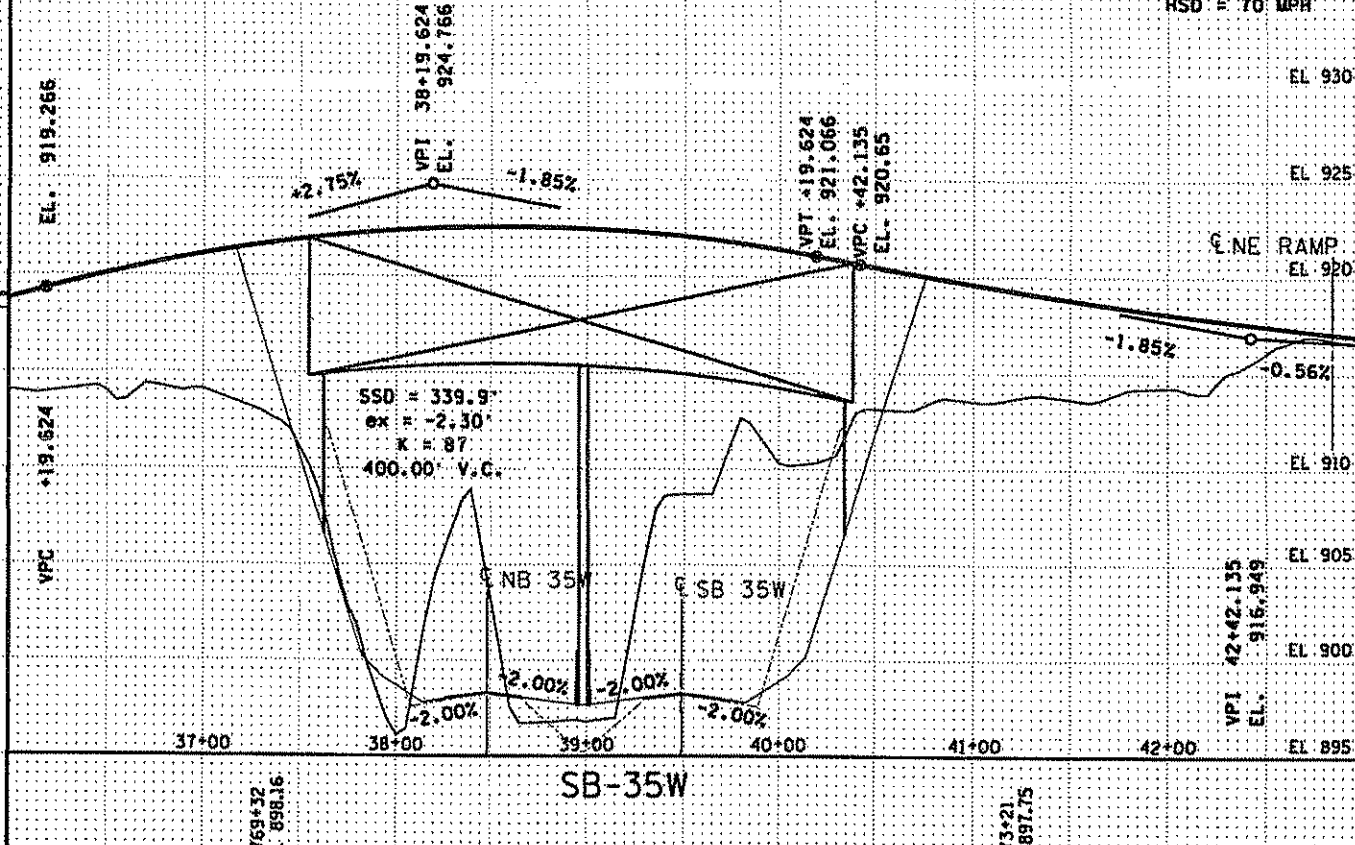
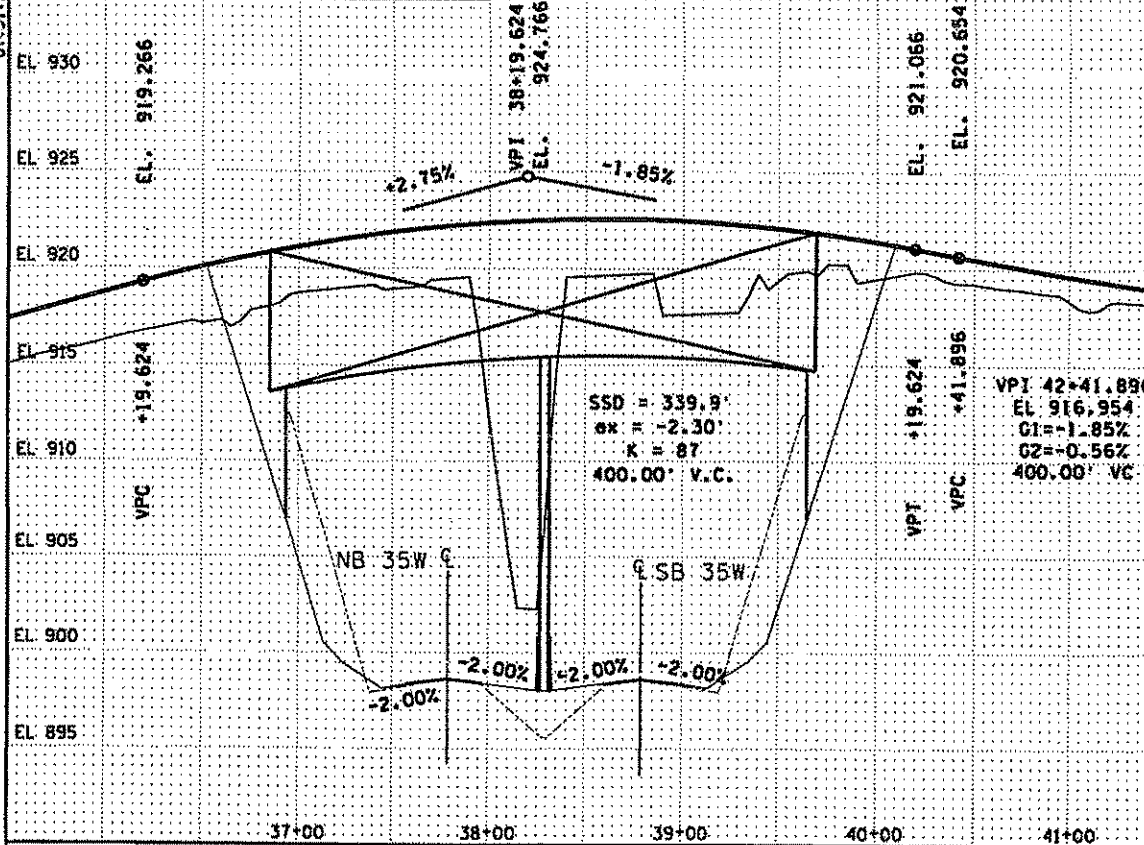
**SB-LAKE**

**NB-LAKE**

gk = 0.645  
K = 310.1  
400.00' V.C.  
HSD = 70 MPH

**LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE**

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

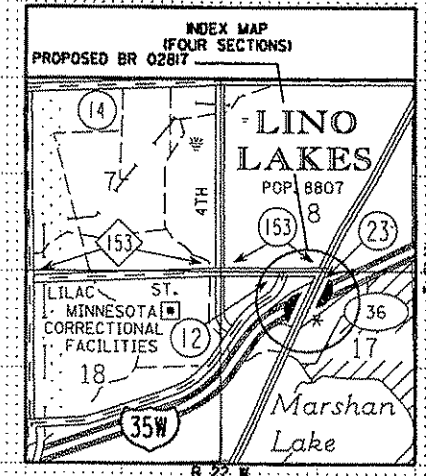
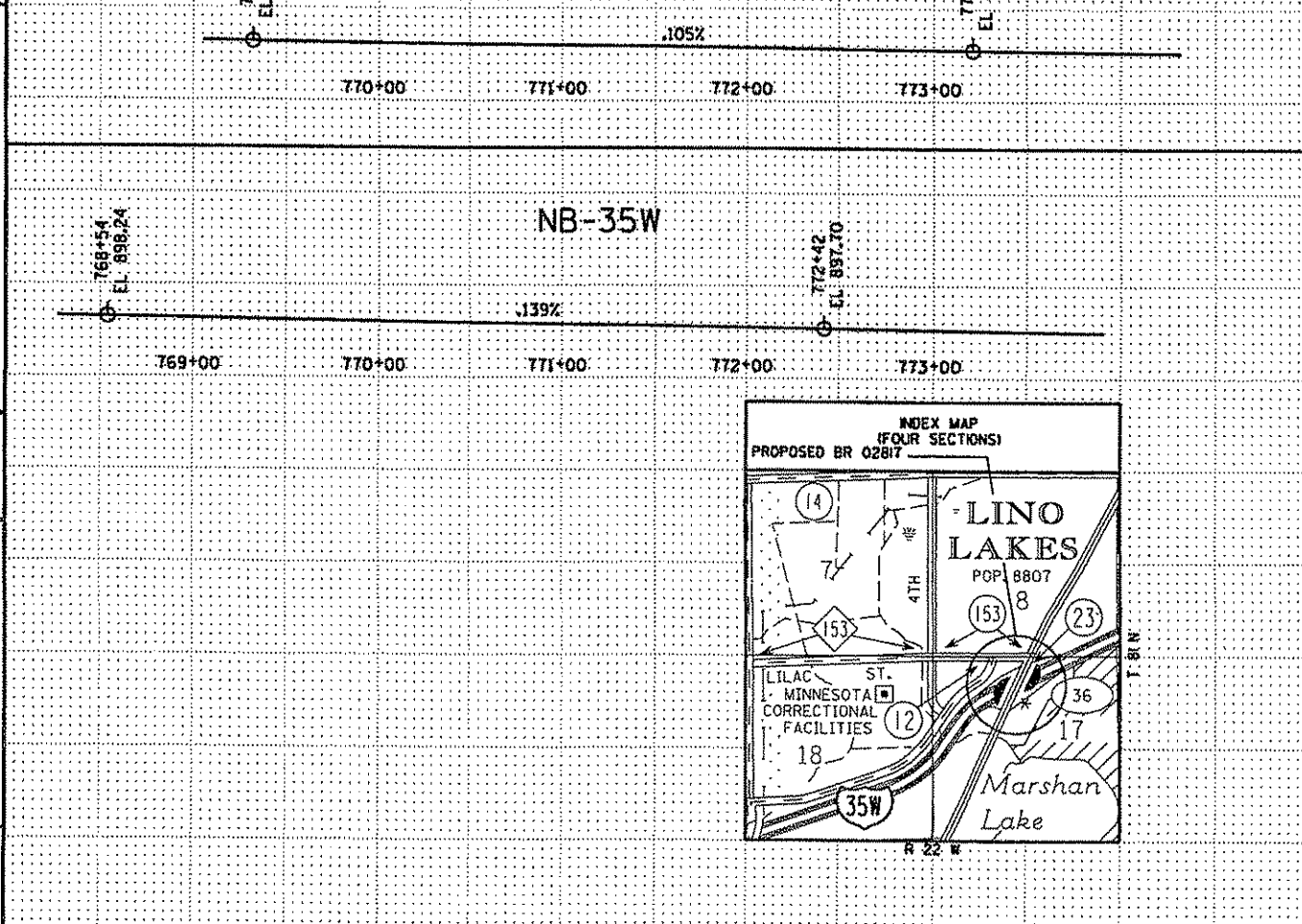
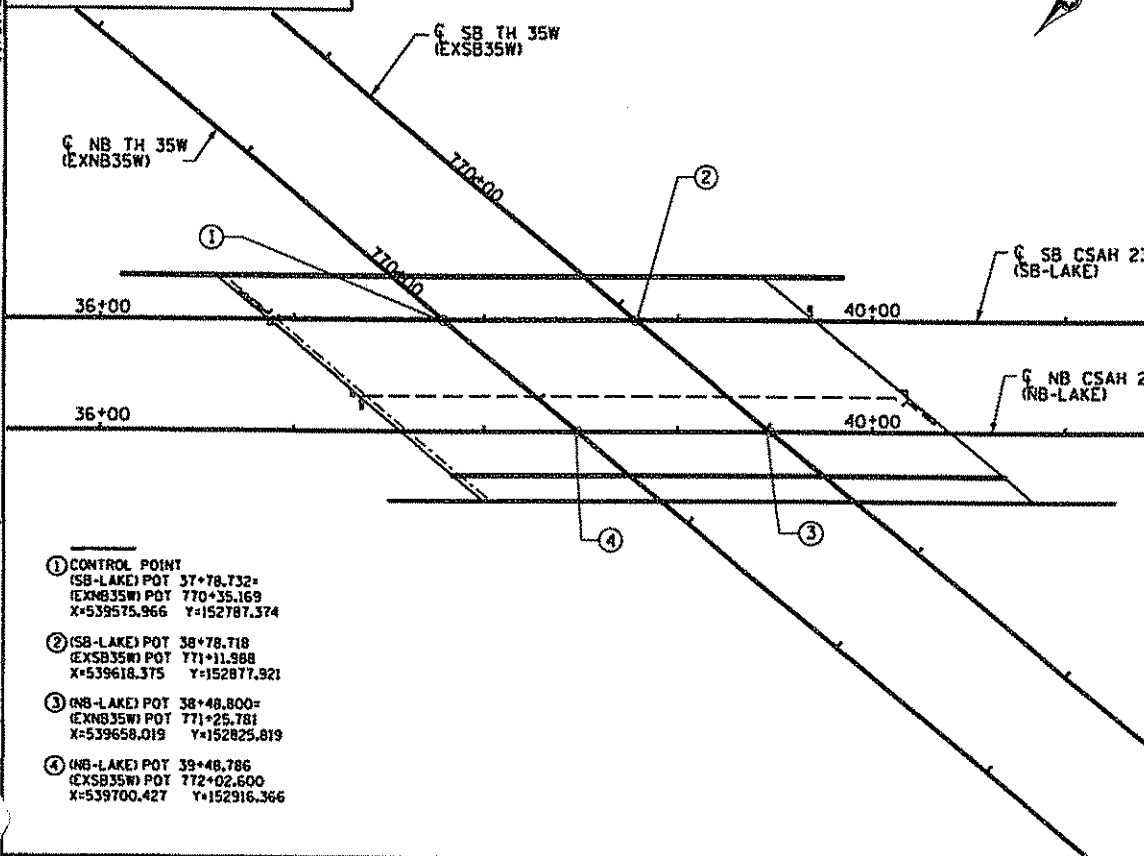


**HYDRAULIC RECOMMENDATIONS DATED**

STREAM		
FLOOD OF RECORD ( )	UNKNOWN	CFS
MAXIMUM OBSERVED HIGHWATER ELEV. ( )		CFS
DESIGN FLOOD ( YEAR FREQUENCY)		
DESIGN STAGE		
TOTAL STAGE INCREASE		FT
DESIGN MEAN VELOCITY THROUGH STRUCTURE		FPS
LOW MEMBER AT OR ABOVE ELEVATION		
MIN. WATERWAY AREA REQUIRED BELOW ELEV. AT RIGHT ANGLE TO CHANNEL		SF
BASIC FLOOD (100 YEAR FREQUENCY)		
STAGE		
TOTAL STAGE INCREASE		FT
MEAN VELOCITY THROUGH STRUCTURE		FPS
APPROX. FLOWLINE ELEV. SKEW ANGLE		DEG.
ESTIMATED PIER SCOUR ELEV. ( YEAR FREQUENCY)		

**PLAT**

SCALE: 0 50



**DESIGN STAGE AND STAGE ARE TAILWATER ELEVATIONS AT BRIDGE.**

BRIDGE SURVEY SHEETS MADE FROM:  
SEH SURVEY  
BENCH MARK ELEVATION 918.965 (NAVD 88 DATUM)  
NAME & LOCATION:  
SE CORNER EXISTING BRIDGE 9820  
X=539592.837 Y=152731.248

**BRIDGE SURVEY**

PROPOSED BRIDGE LOCATED  
TH 35W UNDER CSAH 23  
IN LINO LAKES  
SEC 17 TWP 81 N R 22 W  
CITY OF LINO LAKES ANOKA CO  
BRIDGE NO 02817

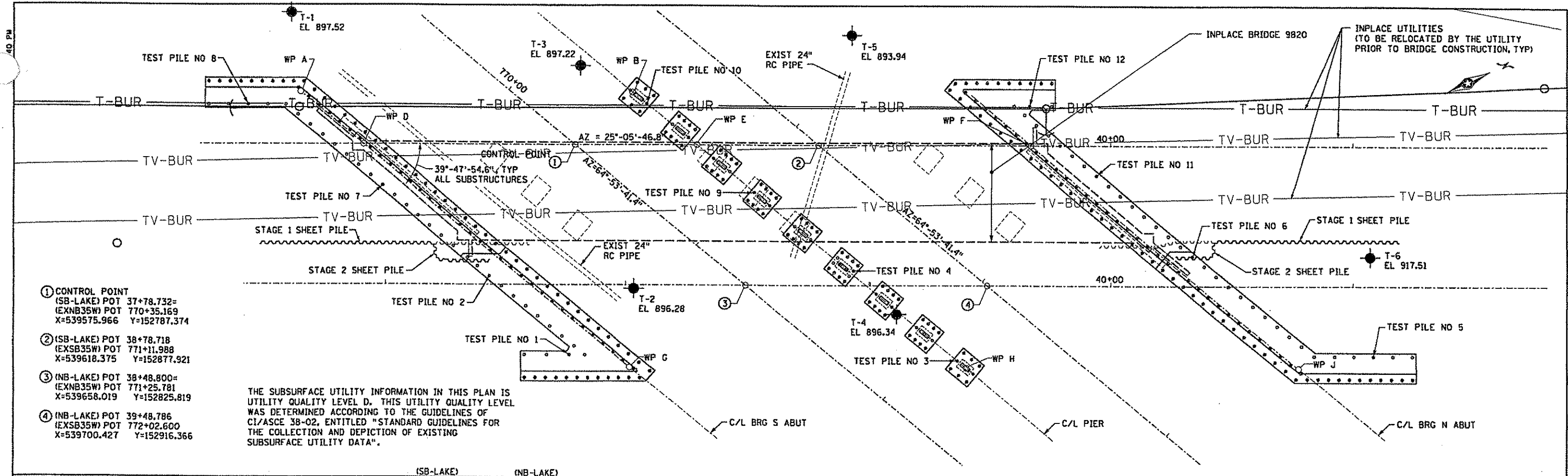
- CONTROL POINT  
(SB-LAKE) POT 37+78.732  
(EXNB35W) POT 770+35.169  
X=539575.966 Y=152787.374
- (SB-LAKE) POT 38+78.718  
(EXSB35W) POT 771+11.988  
X=539618.375 Y=152877.921
- (NB-LAKE) POT 38+48.800  
(EXNB35W) POT 771+25.781  
X=539658.019 Y=152825.819
- (NB-LAKE) POT 39+48.786  
(EXSB35W) POT 772+02.600  
X=539700.427 Y=152916.366

3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55100  
PHONE: (651) 490-2000  
FAX: (651) 490-2150

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
Signature: Christopher A. Munsch Date: 11/21/2006  
Printed Name: CHRISTOPHER A. MUNSCH Reg. No. 42058

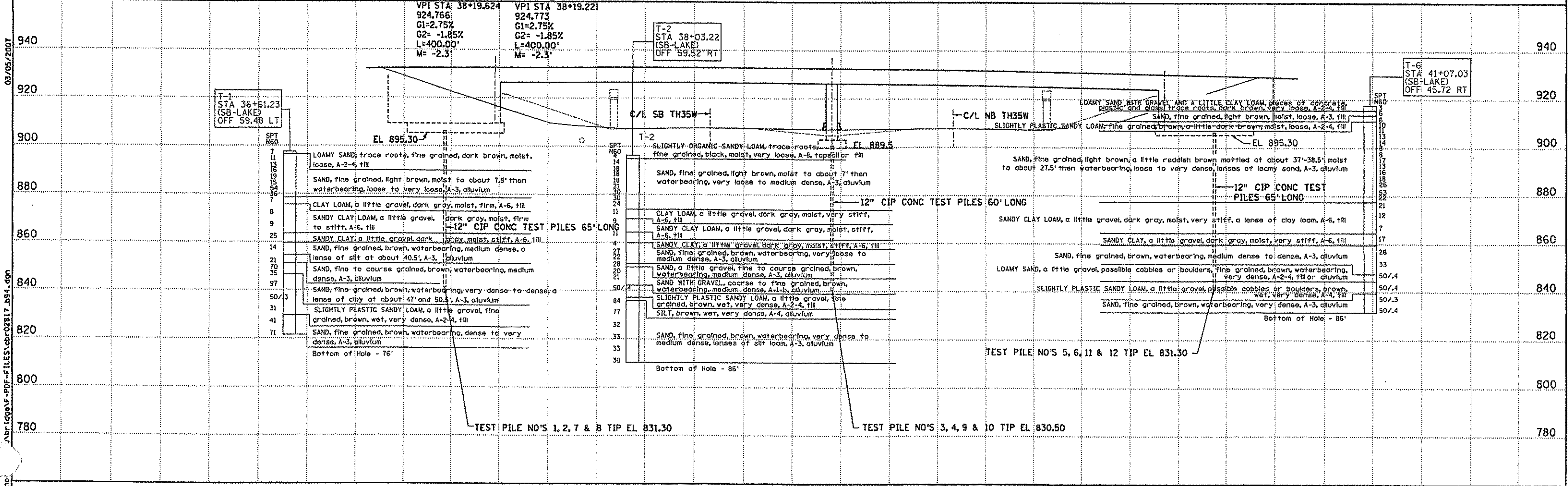
TITLE:  
**BRIDGE SURVEY**

SP 0280-55 SAP 02-623-13  
DES: MAW DR: MAW APPROVED:  
CHK: CAW CHK: CAW  
SHEET NO B93 OF 95 SHEETS  
BRIDGE NO 02817



- ① CONTROL POINT  
(SB-LAKE) POT 37+78.732=  
(EXNB35W) POT 770+35.169  
X=539575.966 Y=152787.374
- ② (SB-LAKE) POT 38+78.718  
(EXSB35W) POT 771+11.988  
X=539618.375 Y=152877.921
- ③ (NB-LAKE) POT 38+48.800=  
(EXNB35W) POT 771+25.781  
X=539658.019 Y=152825.819
- ④ (NB-LAKE) POT 39+48.786  
(EXSB35W) POT 772+02.600  
X=539700.427 Y=152916.366

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".



(SB-LAKE)  
VPI STA 38+19.624  
924.766  
G1=2.75%  
G2= -1.85%  
L=400.00'  
M= -2.3'

(NB-LAKE)  
VPI STA 38+19.221  
924.773  
G1=2.75%  
G2= -1.85%  
L=400.00'  
M= -2.3'

T-2  
STA 38+03.22  
(SB-LAKE)  
OFF 59.52' RT

T-6  
STA 41+07.03  
(SB-LAKE)  
OFF 45.72 RT

T-1  
STA 36+51.23  
(SB-LAKE)  
OFF 59.48 LT

SOIL LOG T-1 (SB-LAKE):  
 7-11: LOAMY SAND, trace roots, fine grained, dark brown, moist, loose, A-2-4, fill  
 11-14: SAND, fine grained, light brown, moist to about 7.5' then waterbearing, loose to very loose, A-3, alluvium  
 14-17: CLAY LOAM, a little gravel, dark gray, moist, firm, A-6, fill  
 17-21: SANDY CLAY LOAM, a little gravel, dark gray, moist, firm to stiff, A-6, fill  
 21-24: SANDY CLAY, a little gravel, dark gray, moist, stiff, A-6, fill  
 24-27: SAND, fine grained, brown, waterbearing, medium dense, a lense of silt at about 40.5', A-3, alluvium  
 27-31: SAND, fine to coarse grained, brown, waterbearing, medium dense, A-3, alluvium  
 31-33: SAND, fine grained, brown, waterbearing, very dense to dense, a lense of clay at about 47' and 50.5', A-3, alluvium  
 33-35: SLIGHTLY PEASTIC SANDY LOAM, a little gravel, fine grained, brown, wet, very dense, A-2-4, fill  
 35-41: SAND, fine grained, brown, waterbearing, dense to very dense, A-3, alluvium  
 Bottom of Hole - 76'

SOIL LOG T-2 (SB-LAKE):  
 9-11: SLIGHTLY ORGANIC SANDY LOAM, trace roots, fine grained, black, moist, very loose, A-8, topsoil or fill  
 11-14: SAND, fine grained, light brown, moist to about 7' then waterbearing, very loose to medium dense, A-3, alluvium  
 14-17: CLAY LOAM, a little gravel, dark gray, moist, very stiff, A-6, fill  
 17-21: SANDY CLAY LOAM, a little gravel, dark gray, moist, stiff, A-6, fill  
 21-24: SANDY CLAY, a little gravel, dark gray, moist, stiff, A-6, fill  
 24-27: SAND, fine grained, brown, waterbearing, very loose to medium dense, A-3, alluvium  
 27-31: SAND, a little gravel, fine to coarse grained, brown, waterbearing, medium dense, A-3, alluvium  
 31-33: SAND WITH GRAVEL, coarse to fine grained, brown, waterbearing, medium dense, A-1-b, alluvium  
 33-35: SLIGHTLY PLASTIC SANDY LOAM, a little gravel, fine grained, brown, wet, very dense, A-2-4, fill  
 35-41: SILT, brown, wet, very dense, A-4, alluvium  
 Bottom of Hole - 86'

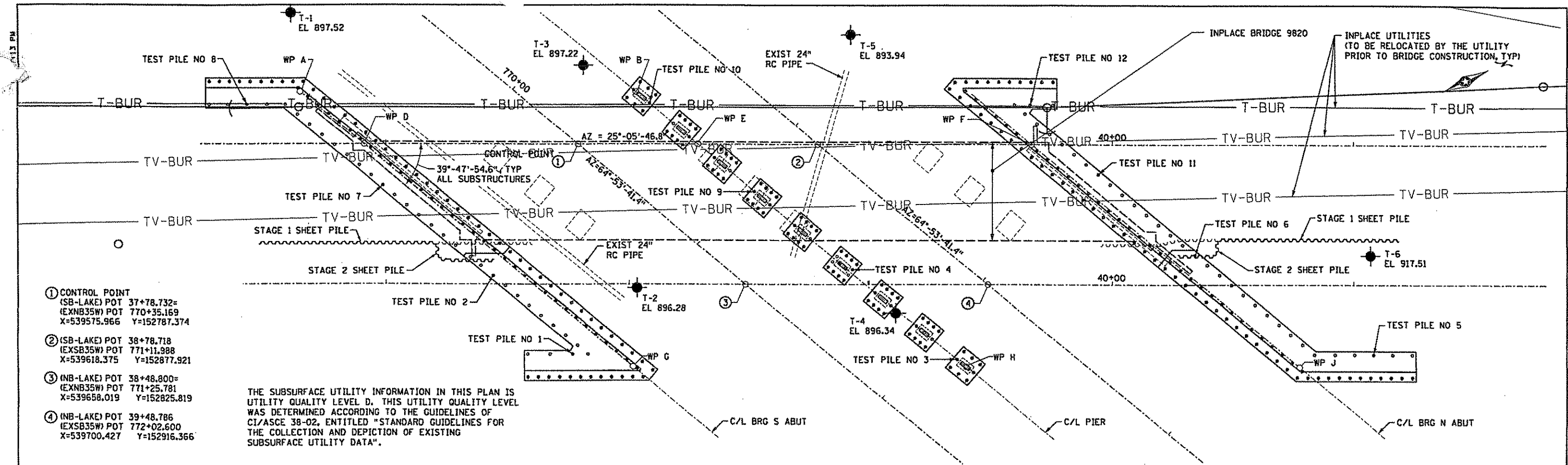
SOIL LOG T-6 (SB-LAKE):  
 7-11: LOAMY SAND WITH GRAVEL AND A LITTLE CLAY LOAM, pieces of concrete, plastic and glass, trace roots, dark brown, moist, loose, A-2-4, fill  
 11-14: SAND, fine grained, light brown, moist, loose, A-3, fill  
 14-17: SANDY CLAY LOAM, fine grained, brown, a little dark brown, moist, loose, A-2-4, fill  
 17-21: SANDY CLAY LOAM, a little gravel, dark gray, moist, very stiff, a lense of clay loam, A-6, fill  
 21-24: SANDY CLAY, a little gravel, dark gray, moist, very stiff, A-6, fill  
 24-27: SAND, fine grained, brown, waterbearing, medium dense to dense, A-3, alluvium  
 27-31: LOAMY SAND, a little gravel, possible cobbles or boulders, fine grained, brown, waterbearing, very dense, A-2-4, fill or alluvium  
 31-33: SLIGHTLY PLASTIC SANDY LOAM, a little gravel, possible cobbles or boulders, brown, wet, very dense, A-4, fill  
 33-35: SAND, fine grained, brown, waterbearing, very dense, A-3, alluvium  
 Bottom of Hole - 86'

TEST PILE NO'S 1, 2, 7 & 8 TIP EL 831.30

TEST PILE NO'S 3, 4, 9 & 10 TIP EL 830.50

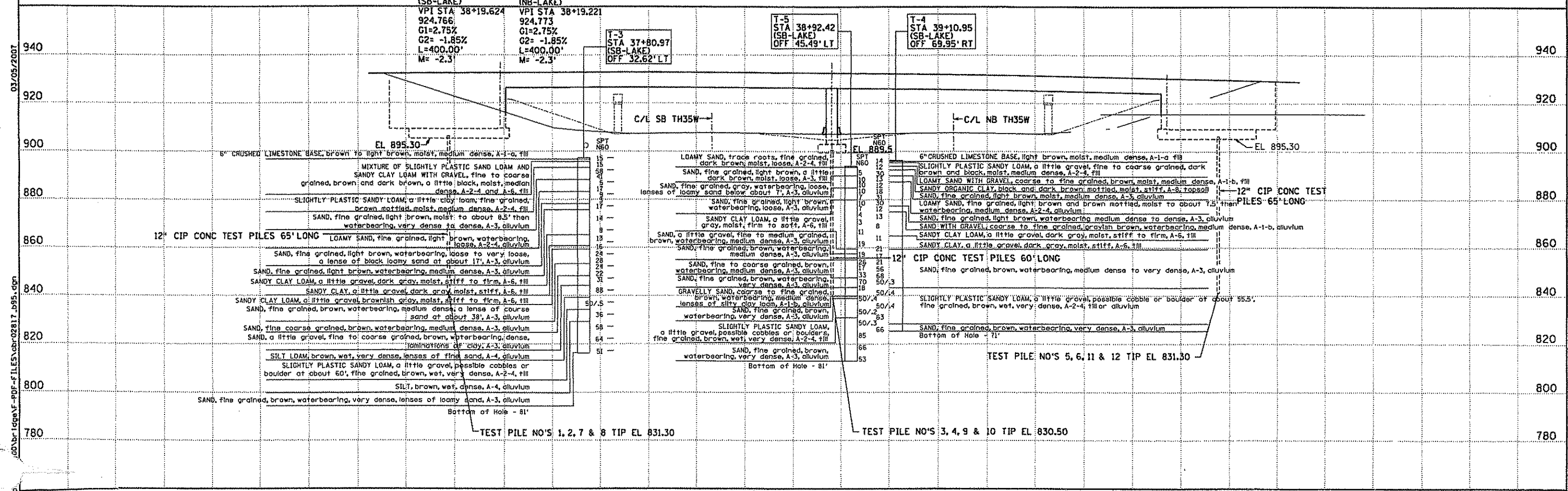
TEST PILE NO'S 5, 6, 11 & 12 TIP EL 831.30



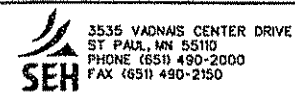


- ① CONTROL POINT  
(SB-LAKE) POT 37+78.732=  
(EXNB35W) POT 770+35.169  
X=539575.966 Y=152877.374
- ② (SB-LAKE) POT 38+78.718  
(EXSB35W) POT 771+11.988  
X=539618.375 Y=152877.921
- ③ (NB-LAKE) POT 38+48.800=  
(EXNB35W) POT 771+25.781  
X=539658.019 Y=152825.819
- ④ (NB-LAKE) POT 39+48.786  
(EXSB35W) POT 772+02.600  
X=539700.427 Y=152916.366

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".



03/05/2007  
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.  
 Signature: *[Signature]* Date: 3/5/2007  
 Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: BRIDGE SURVEY PLAN AND PROFILE BORINGS T3, T4 & T5

SP 0280-55	SAP 02-623-13	DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW			
SHEET NO B95		SHEETS		
		BRIDGE NO 02817		