

# MINNESOTA DEPARTMENT OF TRANSPORTATION

## ANOKA COUNTY

### CONSTRUCTION PLAN FOR GRADING, AGG.BASE, BITUMINOUS SURFACING, DRAINAGE, CURB & GUTTER AND SIGNAL SYSTEM.

LOCATED ON CSAH 116 BETWEEN 1340' WEST OF JEFFERSON ST AND 1390' EAST OF JEFFERSON ST (Geographic Description)

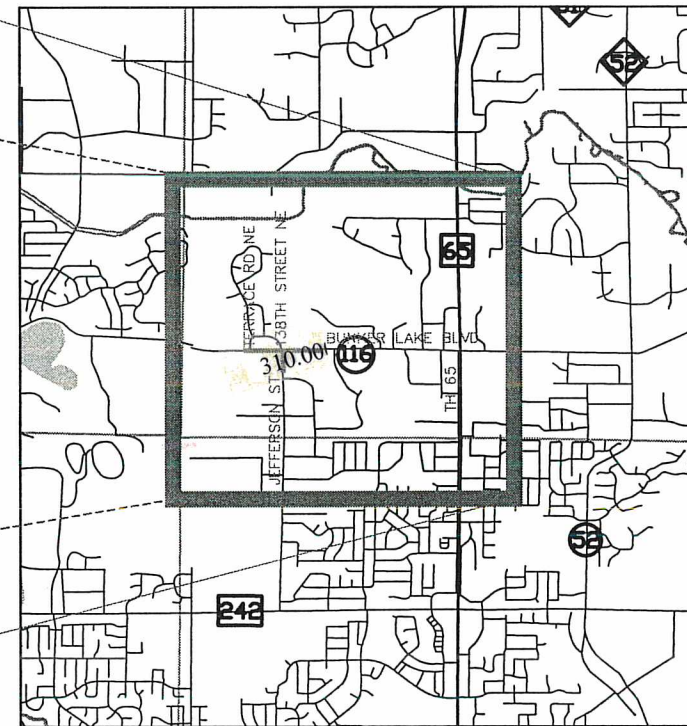
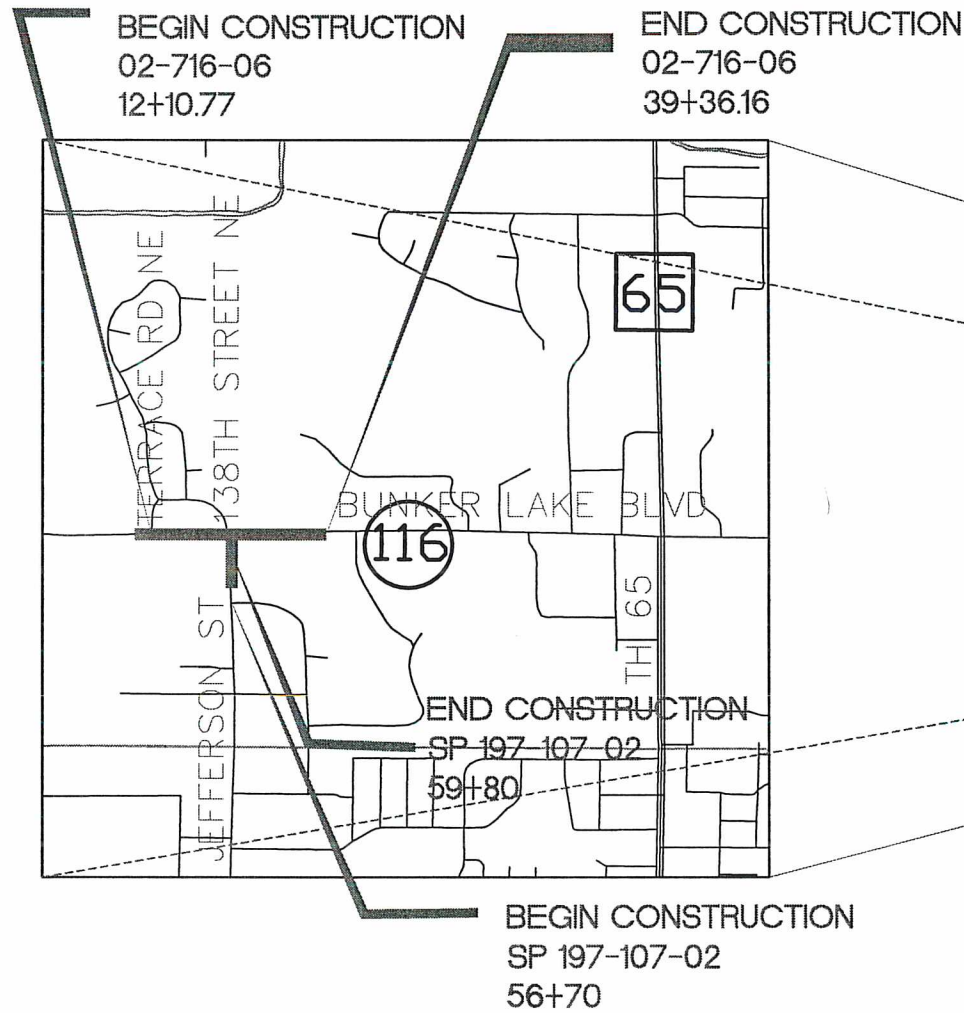
LOCATED ON JEFFERSON ST BETWEEN 400' SOUTH OF CSAH 116 AND 107' SOUTH OF CSAH 116 (Geographic Description)

STATE PROJ. NO. SP 02-716-06  
C.S.A.H. 116

CITY PROJ. NO. SP 197-107-02  
JEFFERSON ST

GROSS LENGTH 2725.39 FEET = 0.516 MILES  
 BRIDGES-LENGTH 0.00 FEET = 0.000 MILES  
 EXCEPTIONS-LENGTH 0.00 FEET = 0.000 MILES  
 NET LENGTH 2725.39 FEET = 0.516 MILES

GROSS LENGTH 310.00 FEET = 0.059 MILES  
 BRIDGES-LENGTH 0.00 FEET = 0.000 MILES  
 EXCEPTIONS-LENGTH 0.00 FEET = 0.000 MILES  
 NET LENGTH 310.00 FEET = 0.059 MILES



BEGIN CONSTRUCTION  
 SP 197-107-02  
56+70

DESIGN DESIGNATION for JEFFERSON STREET

ESAL<sub>20</sub> 542757  
 R VALUE 55  
 ADT (2004)= 3900  
 Proj. ADT (2024)= 5460  
 Proj. HCADT (2024)= 322  
 Soil Factor NA  
10 TON DESIGN

Functional Classification COLLECTOR  
 No. of Traffic Lanes 2 No. of Parking Lanes 0  
 Design Speed 40 MPH  
 Based on Stopping Sight Distance  
 Height of eye 3.5' Height of object 0.5'  
 Design Speed not achieved at:  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH

#### GOVERNING SPECIFICATIONS

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."

#### INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-3	STATEMENT OF ESTIMATED QUANTITIES/ CONSTRUCTION & SOIL NOTES/
4	STANDARD PLATES/TAB INDEX/BASIS OF QTY'S
5	CLEAR & GRUB TABULATION
6	REMOVAL & UTILITY TABULATIONS
7	CONSTRUCTION TABULATIONS
8	EXISTING CONDITIONS AND REMOVALS
9	EARTHWORK SUMMARY
10-12	TYPICAL SECTIONS
13	MISCELLANEOUS DETAILS
14	ALIGNMENT PLAN AND TABULATIONS
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17-19	CONSTRUCTION PLAN AND PROFILE
20	STORM DRAINAGE TABULATIONS
21-30	CROSS-SECTIONS
31-32	TURF ESTABLISHMENT AND EROSION CONTROL
33-37	PERMANENT AND TEMPORARY EROSION CONTROL
38	SIGNING AND STRIPING TAB & DETAILS
39-40	SIGNING & STRIPING PLAN
41-46	TRAFFIC SIGNAL PLANS

THIS PLAN CONTAINS 46 SHEETS

DESIGN DESIGNATION for CSAH 116

ESAL<sub>20</sub> 1657775  
 R VALUE 55  
 ADT (2004)= 11911  
 Proj. ADT (2024)= 16675  
 Proj. HCADT (2024)= 984  
 Soil Factor NA  
10 TON DESIGN

Functional Classification MINOR ARTERIAL  
 No. of Traffic Lanes 2 No. of Parking Lanes 0  
 Design Speed 55 MPH  
 Based on Stopping Sight Distance  
 Height of eye 3.5' Height of object 0.5'  
 Design Speed not achieved at:  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH

Approved 4/22/20 *[Signature]*  
 ANOKA COUNTY ENGINEER  
 Approved 4/23/20 *[Signature]*  
 CITY OF HAM LAKE  
 Reviewed for Compliance with State Aid and/or Federal Aid Rules/Policy 9-30-20 *[Signature]*  
 DISTRICT STATE AID ENGINEER  
 Approved for State Aid and Federal Aid Funding 10-9-20 *[Signature]*  
 STATE AID ENGINEER

#### PLAN SYMBOLS

- COUNTY LINE \_\_\_\_\_
- TOWNSHIP OR RANGE LINE \_\_\_\_\_
- SECTION LINE \_\_\_\_\_
- QUARTER LINE \_\_\_\_\_
- SIXTEENTH LINE \_\_\_\_\_
- RIGHT OF WAY LINE \_\_\_\_\_
- SLOPE EASEMENT \_\_\_\_\_
- EXISTING RIGHT OF WAY \_\_\_\_\_
- PROPERTY LINE \_\_\_\_\_
- CORPORATE OR CITY LIMITS \_\_\_\_\_
- RETAINING WALL \_\_\_\_\_
- RAILROAD \_\_\_\_\_
- RAILROAD RIGHT OF WAY \_\_\_\_\_
- RIVER OR CREEK \_\_\_\_\_
- DRAINAGE DITCH \_\_\_\_\_
- CULVERT \_\_\_\_\_
- DROP INLET \_\_\_\_\_
- GUARD RAIL \_\_\_\_\_
- BARBED WIRE FENCE \_\_\_\_\_
- WOVEN WIRE FENCE \_\_\_\_\_
- CHAIN LINK FENCE \_\_\_\_\_
- WOOD FENCE \_\_\_\_\_
- STONE WALL OR FENCE \_\_\_\_\_
- HEDGE \_\_\_\_\_

- LOWLAND \_\_\_\_\_
- TIMBER \_\_\_\_\_
- ORCHARD \_\_\_\_\_
- BRUSH \_\_\_\_\_
- NURSERY \_\_\_\_\_

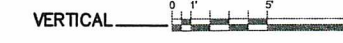
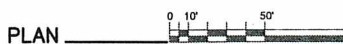
- CATTLE GUARD \_\_\_\_\_
- OVERPASS (Highway Over) \_\_\_\_\_
- UNDERPASS (Highway Under) \_\_\_\_\_
- BRIDGE \_\_\_\_\_

- BUILDING (One Story Frame) \_\_\_\_\_
- F-FRAME C-CONCRETE \_\_\_\_\_
- S-STONE T-TILE \_\_\_\_\_
- B-BRICK ST-STUCCO \_\_\_\_\_
- RAILROAD CROSSING BELL \_\_\_\_\_
- RAILROAD CROSSING GATE \_\_\_\_\_
- MANHOLE \_\_\_\_\_
- CATCH BASIN \_\_\_\_\_
- FIRE HYDRANT \_\_\_\_\_
- CAST IRON MONUMENT \_\_\_\_\_
- IRON PIN \_\_\_\_\_
- GRAVEL PIT \_\_\_\_\_
- SAND PIT \_\_\_\_\_
- BORROW PIT \_\_\_\_\_
- ROCK QUARRY \_\_\_\_\_

#### UTILITY SYMBOLS

- POWER POLE LINE \_\_\_\_\_
- TELEPHONE OR TELEGRAPH POLE LINE \_\_\_\_\_
- JOINT TELEPHONE & POWER ON POWER POLES \_\_\_\_\_
- ON TELEPHONE POLES \_\_\_\_\_
- ANCHOR \_\_\_\_\_
- STEEL TOWER \_\_\_\_\_
- STREET LIGHT \_\_\_\_\_
- PEDESTAL (Cable Terminal) \_\_\_\_\_
- GAS MAIN \_\_\_\_\_
- WATER MAIN \_\_\_\_\_
- TELEPHONE CABLE IN CONDUIT \_\_\_\_\_
- ELECTRIC CABLE IN CONDUIT \_\_\_\_\_
- TELEPHONE MANHOLE \_\_\_\_\_
- ELECTRIC MANHOLE \_\_\_\_\_
- BURIED TELEPHONE CABLE \_\_\_\_\_
- BURIED ELECTRIC CABLE \_\_\_\_\_
- AERIAL TELEPHONE CABLE \_\_\_\_\_
- SEWER (Sanitary or Storm) \_\_\_\_\_
- SEWER MANHOLE \_\_\_\_\_

#### SCALES



#### GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *[Signature]*  
 DATE: 4/13/20 LICENSE NO. 28828

DRAWN BY SK DATE 01/00/04  
 DESIGN BY MTH DATE 04/18/04  
 CHECKED BY JAR DATE 00/00/00



**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

TITLE SHEET

Sheet 01

## STATEMENT OF ESTIMATED QUANTITIES

TAB LETTER, PAGE NUMBER	NOTE	ITEM NO.	ITEM	UNIT	TOTAL	ANOKA COUNTY SP 02-716-06		ANOKA COUNTY NON- PARTICIPATING		CITY OF HAM LAKE SP 197-107-02		CITY OF HAM LAKE NON- PARTICIPATING		STORM SEWER SP 02-716-06 SP 197-107-02	
						EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
		2013.602	CELLULAR MOBILE TELEPHONE	EACH	2			2							
		2021.501	MOBILIZATION	LS	1	1									
		2031.501	FIELD OFFICE TYPE D	EACH	1			1							
A-5		2101.502	CLEARING	TREE	210	181				29					
A-5		2101.507	GRUBBING	TREE	210	188				22					
D-6	1	2104.501	REMOVE CULVERT	LIN FT	116	116									
C-6	1	2104.501	REMOVE CURB & GUTTER	LIN FT	437	129				308					
E-6	1	2104.501	REMOVE FENCE	LIN FT	25	25									
B-6	2,3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	12,569	12,462				107					
B-6	1	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	485	172				313					
E-6	4	2104.521	SALVAGE FENCE	LIN FT	972	972									
N-38	5	2104.523	SALVAGE SIGN PANEL TYPE C	EACH	19	19									
M-38	5	2104.523	SALVAGE SIGN TYPE SPECIAL	EACH	3			3							
G-8		2105.501	COMMON EXCAVATION (EV) (P)	CU YD	9,432	8,827				605					
G-8		2105.505	MUCK EXCAVATION (EV)	CU YD	5,489	5,489									
G-8		2105.521	GRANULAR BORROW (LV)	CU YD	4,545	4,438				107					
G-8		2105.525	TOPSOIL BORROW (LV)	CU YD	404	404									
	6	2130.501	WATER	MGAL	3	3									
F-6, I-9	11	2211.503	AGGREGATE BASE (CV) CL 5 (P)	CU YD	3,069	2,980				89					
		2221.501	AGGREGATE SHOULDERING (CV), CLASS 7B	TON	94	94									
I-9		2232.501	MILL BITUMINOUS SURFACE (2")	SQ YD	1,038	101				937					
I-9		2350.501	TYPE MV4 WEARING COURSE MIXTURE (C)	TON	1,807	1,648				159					
I-9		2350.502	TYPE MV 3 NON WEARING COURSE MIXTURE (C)	TON	1,416	1,364				52					
I-9		2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (B)	TON	1,371	1,371				0					
I-9		2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	1,258	1,189				69					
	9	2411.618	MODULAR BLOCK RETAINING WALL	SQ FT	645	645									
K-20		2501.511	15" CS PIPE CULVERT	LIN FT	65	65									
K-20		2501.511	18" RC PIPE CULVERT CL V	LIN FT	88	88									
K-20		2501.521	28" SPAN RC PIPE- ARCH CULVERT CL IIA	LIN FT	84	84									
K-20		2501.525	28" SPAN RC PIPE- ARCH APRON	EACH	2	2									
K-20		2501.567	15" RC SAFETY APRON & GRATE	EACH	1									1	
K-20		2501.567	15" GS SAFETY APRON & GRATE	EACH	2	2									
K-20		2501.567	18" RC SAFETY APRON & GRATE	EACH	2	2									
K-20		2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT	239									239	
		2503.618	TWO-INCH (2") RIGID FOAM INSULATION	SQ FT	160	160									
K-20		2506.501	CONST DRAINAGE STRUCTURE DESIGN G	LIN FT	13.36									13.36	
L-20		2506.516	CASTING ASSEMBLY	EACH	4									4	
K-20		2511.501	RANDOM RIPRAP, CL III	CU YD	37									37	
K-20		2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD	46									46	
H-9		2521.501	4" CONCRETE WALK	SQ FT	15,114	15,114				0					
H-9		2531.501	CONCRETE CURB AND GUTTER B412	LIN FT	4,799	4,286				513					
H-9		2531.501	CONCRETE CURB AND GUTTER B618	LIN FT	398	39				359					
F-6		2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	10	10									
H-9	8	2531.602	PEDESTRIAN CURB RAMP (TRUNCATED DOME)	EACH	4	4									

NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 07/28/2004 01:56:32 PM CDT					

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.

PRINT NAME: KIRSTEN L. OLSON

SIGNATURE: [Signature]

DATE: 7/28/04 LICENSE NO. 26826

DRAWN BY: MTH DATE 04/15/04

DESIGN BY: MTH DATE 04/15/04

CHECKED BY: HG DATE 04/15/04



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06

STATE AID PROJECT NO. \_\_\_\_\_

CITY PROJECT NO. SP 197-107-02

COUNTY PROJECT NO. \_\_\_\_\_

**STATEMENT OF  
ESTIMATED QUANTITIES**


Sheet 02 of 46 Sheets

### STATEMENT OF ESTIMATED QUANTITIES

TAB LETTER, PAGE NUMBER	NOTE	ITEM NO.	ITEM	UNIT	TOTAL	ANOKA COUNTY SP 02-716-06		ANOKA COUNTY NON- PARTICIPATING		CITY OF HAM LAKE SP 197-107-02		CITY OF HAM LAKE NON- PARTICIPATING		STORM SEWER SP 02-716-06 SP 197-107-02	
						EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
H-9	7	2531.618	CONCRETE APPROACH NOSE DES 7113	SQ FT	125	125									
		2557.602	RELOCATE MAIL BOX SUPPORT	EACH	1	1									
		2563.601	DETOUR SIGNING	LS	1	1									
		2563.601	TRAFFIC CONTROL	LS	1	1									
		2563.610	POLICE OFFICER	HOUR	30	30									
		2564.602	TEMPORARY RELOCATE SIGN TYPE SPECIAL	EACH	3	3									
		2564.602	PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORMED	EACH	4	4									
		2564.602	PAVEMENT MESSAGE (RIGHT ARROW) POLY PREFORMED	EACH	6	6									
		2564.602	PAVEMENT MESSAGE (LEFT-THRU ARROW) POLY PREFORMED	EACH	2	2									
		2564.603	24" STOP LINE WHITE-POLY PREFORMED	LIN FT	132	132									
		2564.618	ZEBRA CROSSWALK WHITE-POLY PREFORMED	SQ FT	810	810									
M-38		2564.537	INSTALL SIGN TYPE SPECIAL	EACH	1			1							
		2565.511	FULL T ACT T CONTROL SIGNAL SYSTEM	SIGS	1	0.25				0.75					
		2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM	LS	1					1					
J-9		2573.502	SILT FENCE, TYPE HEAVY DUTY	LIN FT	6,259	5,879				380					
11		2573.508	BITUMINOUS LINED FLUME	SQ YD	20	20									
K-20		2573.602	SILT FENCE BOX	EACH	4	4									
J-9		2575.501	SEEDING	ACRE	2.46	2.37				0.09					
J-9		2575.608	SEED MIXTURE 240	POUND	185	178				7					
J-9		2575.505	SODDING TYPE LAWN	SQ YD	100	100									
J-9		2575.523	EROSION CONTROL BLANKETS CATEGORY 2	SQ YD	11,930	11,486				444					
J-9		2575.532	COMMERCIAL FERT ANALYSIS 22-5-10	LB	863	831				32					

**CONSTRUCTION NOTES:**

- 1) INCLUDES ALL TYPES AND SIZES
- 2) INCLUDES ALL DEPTHS
- 3) BORINGS OF THE DRIVING LANES INDICATE PAVEMENT DEPTH AVERAGING 4.5". BIDDER TO MAKE HIS OWN DETERMINATION BEFORE SUBMITTING HIS BID.
- 4) SALVAGE FENCE IS TO BE STOCKPILED OUTSIDE OF THE CONSTRUCTION LIMITS ON THE HOMEOWNERS PROPERTY. FENCE TO BE UTILIZED AT HOMEOWNERS DISCRETION.
- 5) TRAFFIC SIGNS SCHEDULED TO BE SALVAGED AND NOT REINSTALLED SHALL BE STOCKPILED ON THE JOB SITE AT A LOCATION DETERMINED BY THE ENGINEER. BOTH COUNTY AND CITY PERSONNEL SHALL REMOVE THE SIGNS FROM THE JOB SITE.
- 6) FOR DUST CONTROL, AS DIRECTED BY THE ENGINEER.
- 7) CONCRETE DRIVEWAY APRONS, SEE ENTRANCE DETAILS ON SHEET 11 AND MNDOT STD PL 7035.
- 8) SEE THE TECHNICAL MEMO NO. 03-19-TS-02, IN THE ATTACHMENTS, FOR THE TRUNCATED DOME CONSTRUCTION DETAILS.
- 9) SEE RETAINING WALL DETAIL ON SHEET 13, AND RETAINING WALL PROFILE ON SHEET 17.
- 10) LEFT BLANK INTENTIONALLY
- 11) IT IS ESTIMATED THAT 1400 CY OF AGGREGATE BASE CL5/7 CAN BE OBTAINED FROM RECLAMATION OF THE EXISTING PAVEMENT SECTION BASED ON A PAVEMENT THICKNESS OF A 4.5--INCH PAVEMENT SECTION THICKNESS. THE CONTRACTOR IS RESPONSIBLE TO ASCERTAIN THE ACTUAL PAVEMENT THICKNESS.
- 12) WHENEVER THE WORD "INCIDENTAL" IS USED IN THIS PLAN, IT SHALL MEAN NO DIRECT COMPENSATION WILL BE MADE.

	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. PRINT NAME: <u>KIRSTEN L. OLSON</u> SIGNATURE: <u><i>Kirsten L. Olson</i></u> DATE: <u>7/28/04</u> LICENSE NO. <u>28828</u>	DRAWN BY: <u>MTH</u> DATE <u>04/15/04</u> DESIGN BY: <u>MTH</u> DATE <u>04/15/04</u> CHECKED BY: <u>HG</u> DATE <u>04/15/04</u>	 <b>ANOKA COUNTY HIGHWAY DEPT.</b>	STATE PROJECT NO. <u>SP 02-716-06</u> STATE AID PROJECT NO. _____ CITY PROJECT NO. <u>SP 197-107-02</u> COUNTY PROJECT NO. _____	<b>STATEMENT OF ESTIMATED QUANTITIES</b> Sheet <u>03</u> of <u>46</u> Sheets
NO. _____ DATE _____ BY _____ CKD _____ APPR _____ REVISION _____ NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 07/28/2004 02:57:02 PM CDT					

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

**STANDARD PLATES**

PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
3007C	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3022C	PRECAST CONCRETE SAFETY APRON
3040F	CORRUGATED METAL PIPE CULVERT
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3110G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3124B	METAL APRON CONNECTION
3128H	METAL SAFETY APRON & GRATE
3133C	RIPRAP AT RCP OUTLETS
3134C	RIPRAP AT CMP OUTLETS
3145E	CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
4006L	MANHOLE OR CATCH BASIN
4020I	MANHOLE OR CATCH BASIN COVER (FOR USE WITH OR WITHOUT TRAFFIC LOADS)
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4126F	CATCH BASIN FRAME CASTING
4134A	CURB BOX CASTING FOR CATCH BASIN
4149C	GRATE CASTING FOR CATCH BASIN - CASTING NO. 810
4161F	CURB BOX CASTING FOR CATCH BASIN
7035L	CONCRETE WALK & CURB RETURNS AT ENTRANCES
7100G	CONCRETE CURB & GUTTER
7111J	INSTALLATION OF CATCH BASIN CASTINGS
7113A	CONCRETE APPROACH NOSE DETAIL
8000I	STANDARD BARRICADES

**INDEX OF TABULATION CHARTS**

CHART	SHEET	DESCRIPTION
A	5	CLEAR AND GRUB
B	6	REMOVE BITUMINOUS PAVEMENT & SAWING BITUMINOUS PAVEMENT
C	6	REMOVE CONCRETE CURB AND GUTTER
D	6	REMOVE EXISTING CULVERTS
E	6	SALVAGE & INSTALL FENCE
F	6	DRIVEWAY REMOVAL AND CONSTRUCTION
G	8	EARTHWORK SUMMARY
H	7	CONCRETE CONSTRUCTION
I	7	BASE AND BITUMINOUS QUANTITIES
J	7	TURF ESTABLISHMENT
K	20	STORM SEWER
L	20	CASTING ASSEMBLY SCHEDULE
M	38	SALVAGE SIGN TYPE SPECIAL
N	38	SALVAGE SIGN PANEL TYPE C
W	6	GAS - CENTERPOINT ENERGY/MINNEGASCO
X	6	OVERHEAD POWER - CONNEXUS ENERGY
Y	6	TELEPHONE - QWEST
Z	6	CABLE TELEVISION - COMCAST

**BASIS OF ESTIMATED QUANTITIES**

SPEC. NO	RATE
2357.502	BITUMINOUS MATERIAL FOR TACK COAT 0.05 GAL./SQ YD/PER LIFT APPLIED
2360.501	TYPE MV 4 WEARING COURSE MIXTURE C 115 LBS * SQ YDS * INCHES / 2000 = TONS
2360.502	TYPE MV 3 WEARING COURSE MIXTURE C 115 LBS * SQ YDS * INCHES / 2000 = TONS
2360.502	TYPE LV 3 NON WEARING COURSE MIXTURE B 115 LBS * SQ YDS * INCHES / 2000 = TONS
2575.608	SEED MIXTURE 240 75 LBS / ACRE
2575.532	COMMERCIAL FERTILIZER ANALYSIS 22-5-10 400 LBS / ACRE

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten L. Olson*  
 DATE: 7/20/04 LICENSE NO. 28828

DRAWN BY: ST DATE 04/08/04  
 DESIGN BY: MH DATE 04/08/04  
 CHECKED BY: MTH DATE 04/15/04



**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**TABULATION CHARTS**  
 Sheet 4 of 46 Sheets

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 07/22/2004 10:06:23 AM CDT

CLEAR & GRUB (CSAH 116) (A)			
STATION	OFFSET	CLEARING	GRUBBING
	LT LWB	TREE	TREE
16+46	35	1	1
16+57	37	1	1
16+72	36	1	1
16+83	35	1	1
16+83	28	1	1
16+85	28	1	1
16+99	28	1	1
17+00	28	1	1
17+13	40	1	1
17+16	33	1	1
17+18	33	1	1
18+70	48	1	1
18+98	49	0	1
18+98	33	1	1
19+05	35	1	1
19+21	34	1	1
19+22	42	0	1
19+24	51	0	1
19+42	34	1	1
19+44	44	0	1
19+45	42	0	1
19+45	33	0	1
19+50	34	0	1
19+58	44	0	1
19+58	44	0	1
19+61	28	0	1
19+65	44	0	1
19+72	44	0	1
19+73	36	1	1
19+79	28	0	1
19+79	44	0	1
19+94	29	0	1
19+96	32	1	1
19+98	26	0	1
20+83	39	1	1
20+93	39	1	1
20+93	37	1	1
21+02	37	1	1
21+08	41	1	1
21+36	39	1	1
21+45	44	1	1
21+51	36	1	1
22+81	44	1	1
22+86	44	1	1
23+23	40	1	1
23+73	41	1	1
23+89	41	1	1
26+33	32	1	1
26+45	34	1	1
26+51	34	1	1
26+56	34	1	1
26+62	34	1	1
26+68	33	1	1
26+75	34	1	1
26+77	37	1	1
26+84	38	1	1
26+87	34	1	1
26+94	32	1	1
26+96	38	1	1
27+00	34	1	1
27+02	37	1	1
27+06	33	1	1
27+09	37	1	1
27+15	39	1	1
27+17	39	1	1
27+25	33	1	1
27+38	34	1	1
27+75	33	1	1
29+17	45	1	1
29+29	35	1	1
29+41	31	2	1
29+49	37	1	1
29+54	42	1	1
29+62	41	1	1
29+68	38	1	1
29+69	40	1	1
29+75	34	1	1
29+76	44	1	1
29+79	33	1	1
29+81	31	1	1
29+87	38	2	1
29+94	35	2	1
30+05	39	3	1
TOTALS		72	83

CLEAR & GRUB (CSAH 116) (A)			
STATION	OFFSET	CLEARING	GRUBBING
	RT LEB	TREE	TREE
21+07	44	1	1
21+17	40	1	1
21+17	47	1	1
21+21	47	1	1
21+21	40	1	1
21+23	48	1	1
21+25	40	1	1
21+26	45	1	1
21+32	41	1	1
21+44	37	2	1
21+47	35	1	1
22+47	23	1	1
22+56	24	1	1
22+62	26	1	1
22+65	24	1	1
22+85	24	2	1
22+95	24	1	1
23+01	26	1	1
23+02	23	1	1
23+04	25	1	1
23+05	24	1	1
23+13	23	1	1
23+27	32	2	1
23+27	23	1	1
23+30	31	1	1
23+37	25	1	1
23+43	25	1	1
23+45	26	1	1
23+46	25	1	1
23+47	25	1	1
23+48	25	1	1
23+67	23	3	1
23+95	26	1	1
23+98	25	1	1
24+05	26	2	1
25+06	26	1	1
25+11	26	1	1
25+21	26	1	1
25+26	26	1	1
26+45	45	1	1
26+46	48	1	1
26+46	40	1	1
26+46	49	1	1
26+50	47	1	1
26+55	42	1	1
26+55	46	1	1
26+59	45	1	1
26+64	45	1	1
26+74	43	1	1
26+74	45	1	1
26+74	39	1	1
26+78	44	1	1
26+89	48	1	1
26+89	44	1	1
26+97	46	1	1
27+03	44	1	1
27+04	47	1	1
27+13	43	1	1
27+26	34	1	1
27+42	43	1	1
27+52	34	1	1
27+70	33	1	1
27+77	33	1	1
27+83	34	1	1
27+97	33	1	1
28+00	31	1	1
28+00	28	1	1
28+07	29	1	1
28+08	33	1	1
28+12	29	1	1
28+14	32	1	1
28+20	36	1	1
28+21	32	1	1
28+24	29	1	1
28+31	33	1	1
28+37	33	1	1
28+39	30	1	1
28+42	34	1	1
28+44	29	1	1
28+47	34	1	1
28+50	29	1	1
28+52	34	1	1
28+58	33	1	1

CLEAR & GRUB (CSAH 116) (A)			
STATION	OFFSET	CLEARING	GRUBBING
	RT LEB	TREE	TREE
28+67	29	1	1
28+68	34	1	1
28+77	29	1	1
28+80	34	1	1
28+89	31	1	1
28+95	30	1	1
28+97	35	1	1
29+01	31	1	1
29+02	35	1	1
29+07	32	1	1
29+52	38	1	1
29+07	32	1	1
29+51	33	0	1
29+52	38	1	1
29+52	37	0	1
30+95	44	1	1
31+02	39	0	1
31+02	40	2	1
31+02	40	1	1
31+10	42	1	1
31+12	41	0	1
31+16	41	2	1
TOTALS		109	105

CLEAR & GRUB (JEFFERSON ST) (A)			
JEFFERSON STATION	OFFSET	CLEARING	GRUBBING
	RT	TREE	TREE
57+31	34	1	1
57+61	32	1	1
57+66	32	1	1
58+13	36	3	1
58+36	33	1	1
58+38	35	1	1
58+48	33	1	1
58+56	37	1	1
58+67	39	1	1
58+71	30	1	1
58+73	42	1	1
58+79	42	1	1
58+82	36	1	1
58+91	51	1	1
58+95	39	1	1
58+97	41	1	1
59+02	34	4	1
59+04	39	1	1
59+07	50	1	1
59+11	39	1	1
59+20	33	1	1
59+57	29	3	1
TOTALS		29	22

SUMMARY (A)		
	CLEARING TREE	GRUBBING TREE
LEFT OF LWB	72	83
RIGHT OF LEB	109	105
Subtotal	181	188
RT of Jefferson	29	22
TOTAL	210	210

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: [Signature]  
 DATE: 6/13/04 LICENSE NO. 26826

DRAWN BY: ST DATE 04/08/04  
 DESIGN BY: MTH DATE 04/08/04  
 CHECKED BY: HG DATE 04/12/04



ANOKA COUNTY  
 HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

CLEAR & GRUB  
 TABULATIONS  
 Sheet 5 of 46 Sheets

NO	DATE	BY	CKD	APPR	REVISION
NAME:	P:\02-716-06\PLAN\Quantity Tab.dwg				06/03/2004 11:55:38 AM CDT

REMOVE BITUMINOUS PAVEMENT (B)				
STATION TO STATION	LOCATION	DESCRIPTION	REMOVE PAVEMENT SECTION SQ YD	SAWING BITUMINOUS PAVEMENT LIN FT
13+48	22 LT- 23RT LEB	BEGIN RECONSTRUCTION		45
13+48 to 38+26	LT- RT LEB	116 MAINLINE & SHOULDER	11,841	
38+26	20 LT- 24 RT LEB	END RECONSTRUCTION		45
25+64.2 to 25+91.4	83 RT- 82 RT LEB	JEFFERSON ST		28
25+44.2 to 26+17.4	12 RT- 83 RT LEB	JEFFERSON ST	269	0
15+82.7 to 16+10.6	55.0 LT LWB	TERRACE RD		28
15+56.9 to 16+20.0	16 LT- 55 LT LWB	TERRACE RD	144	
25+64.2 to 25+89.2	59 LT- 61 LT LWB	138th Ave		26
25+64.2 to 25+91.4	17 LT- 61 LT LWB	138th Ave	208	
SUBTOTAL			12,462	172
JEFFERSON ST ALIGNMENT				
56+70.6 to 59+80.4	12 RT	JEFFERSON ST		313
56+70.6 to 59+80.4	12.0 RT - 15.1 RT	JEFFERSON ST	107	
SUBTOTAL			107	313
TOTALS			12,569	485

CURB REMOVAL (C)		
STATION TO STATION	OFFSET	CURB REMOVAL L.F.
25+54 to 25+62	20-78 RT LEB	61
25+96 to 26+04	82-18 RT LEB	68
SUBTOTAL		
JEFFERSON ST		
56+70 to 59+90	15 RT	308
SUBTOTAL		
TOTAL		

CULVERT REMOVAL (D)				
STATION	LOCATION	INPLACE	REMARKS	REMOVE LIN.FT
15+71 to 16+24	32 LT LWB	12 inch CMP	Terrace Road	53
34+96	38LT- 25RT LEB	12 inch CMP	Bunker Lake Boulevard	63
TOTALS				116

FENCE REMOVAL/SALVAGE (E)				
STATION TO STATION	LOCATION	REMOVE LIN. FT.	SALVAGE LIN. FT.	REMARKS
15+01.5 TO 20+98.8	38 - 53 RT LEB		632	
22+40.1 TO 25+47.4	26 - 33 RT LEB		340	
27+02 TO 27+27	28 RT LEB	25		
TOTALS		25	972	

DRIVEWAY REMOVAL AND CONSTRUCTION (F)																
STATION	LOCATION	ADDRESS	REMOVAL				CONCRETE CONSTRUCTION				GRAVEL CONSTRUCTION				REMARKS	
			GRAVEL	LENGTH	WIDTH	AREA	CL-5(1)	LENGTH	WIDTH	AREA	CL-5(2)	LENGTH	WIDTH	AREA		CL-5(2)
			SQ. YD.	LIN. FT.	LIN. FT.	SQ. YD.	CU. YD.	LIN. FT.	LIN. FT.	SQ. YD.	CU. YD.	LIN. FT.	LIN. FT.	SQ. YD.		CU. YD.
17+27.4	28 RT LEB	532 BLB	130							30	20	67	11	FIELD ENTRANCE		
21+62	23 RT LEB	532 BLB	139											ELIMINATE DRIVE		
22+00	24 RT LEB	532 BLB		4	18	10	1					231	39	NEW DRIVEWAY		
22+24	24 RT LEB	532 BLB	114									0	0	ELIMINATE DRIVE		
TOTALS			383			10	1					298	50			

(1) BASED ON 4" DEPTH, CLASS-5 QUANTITY SHOWN FOR INFORMATIONAL ONLY, QUANTITY INCIDENTAL

(2) BASED ON 6" DEPTH, QUANTITY PAID UNDER ITEM NO. 2211.503 AGGREGATE BASE, CL-5 (CV) (P)

OVERHEAD POWER - CONNEXUS ENERGY (X)			
STATION	OFFSET	INPLACE ITEM	REMARKS
12+73.9	27.3 RT LEB	POWERPOLE	RELOCATE
15+84.3	36.3 RT LEB	POWERPOLE	RELOCATE
18+91.7	19.5 RT LEB	POWERPOLE	RELOCATE
22+04.8	18.2 RT LEB	POWERPOLE	RELOCATE
24+72.3	18.6 RT LEB	POWERPOLE	RELOCATE
25+39.5	19.1 RT LEB	POWERPOLE	RELOCATE
25+51.3	60.0 RT LEB	POWERPOLE	RELOCATE
26 +44.1	19.0 RT LEB	POWERPOLE	RELOCATE
29+22.8	20.0 RT LEB	POWERPOLE	RELOCATE
32+49.9	19.5 RT LEB	POWERPOLE	RELOCATE
35+71.4	23.9 RT LEB	POWERPOLE	RELOCATE
26+45.0	29 RT LEB	ELEC CABINET	RELOCATE

TELEPHONE - QWEST (Y)			
STATION TO STATION	OFFSET	INPLACE ITEM	REMARKS
12+88.1 to 26+02.8	24-31 LT LWB	PHONE LINE	LEAVE AS IS
25+46.5	44 RT LEB	SPLICE BOX	RELOCATE
25+52.5	43 RT LEB	SPLICE BOX	RELOCATE
26+12.7	48 RT LEB	SPLICE BOX	RELOCATE
25+46.5 to 40+96.8	48-23 RT LEB	PHONE LINE	LEAVE AS IS

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PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten Olson*  
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 COUNTY PROJECT NO. \_\_\_\_\_

REMOVAL AND  
UTILITY TABS

Sheet 6 of 46 Sheets

CONSTRUCT CONCRETE							(H)
STATION TO STATION	OFFSET	DESCRIPTION	B412 LIN. FT	B618 LIN. FT	PED CURB RAMP (TRUNCATED DOME) EACH	4" CONCRETE MEDIAN SQ. FT.	CONCRETE APPROACH NOSE DES 7003 (6" CONC.) SQ. FT.
15+75 to 25+23	LT LEB	MEDIAN CURB	964			8630	
15+75 to 25+23	RT LWB	MEDIAN CURB	964				
26+23 to 35+50	LT LEB	MEDIAN CURB	925			5884	
26+23 to 35+50	RT LWB	MEDIAN CURB	920				
19+50 to 25+63	LT LWB	SHOULDER	636				
22+01 to 25+62	RT LEB	SHOULDER	390				
26+08 to 26+58	RT LEB	RADIUS AT JEFFERSON		78			
15+75	LT LEB	MEDIAN NOSE					30
25+23	LT LEB	MEDIAN NOSE					30
26+23	LT LEB	MEDIAN NOSE					30
35+50	LT LEB	MEDIAN NOSE					35
25+50	LT LWB	TRUNCATED DOME			1	150	
25+50	RT LEB	TRUNCATED DOME			1	150	
26+25	RT LEB	TRUNCATED DOME			1	150	
26+25	LT LWB	TRUNCATED DOME			1	150	
<b>SUBTOTAL</b>			<b>4799</b>	<b>78</b>	<b>4</b>	<b>15114</b>	<b>125</b>
JEFFERSON ST							
56+70 to 59+90	16-29 RT	TURN LANE		320			
		<b>TOTALS</b>	<b>4799</b>	<b>398</b>	<b>4</b>	<b>15114</b>	<b>125</b>

BASE AND BITUMINOUS QUANTITIES											(I)
STATION TO STATION	LOCATION	DESCRIPTION	BITUMINOUS SURFACE	MILL BITUMINOUS 2 INCH DEPTH	2 INCH WEAR COURSE	2 INCH BINDER COURSE	2 INCH BASE COURSE	TACK COAT	AGGREGATE SURFACE	AGGREGATE VOLUME	
			SQ YD	SQ YD	TON	TON	TON	GALLON	SQ YD	CU YD	
13+48 to 38+26		MAIN LINE, RTL's	11789	101	1358	1364	1371	1189	13088	2181	
13+48 to 15+53	LT LWB	shoulder	205		20				192	53	
13+48 to 20+66	RT LEB	shoulder	656		73				674	187	
26+58 to 38+26	RT LEB	shoulder	680		120				1107	308	
30+70 to 38+26	LT LWB	shoulder	1072		78				722	201	
<b>SUBTOTALS</b>			<b>14402</b>	<b>101</b>	<b>1648</b>	<b>1364</b>	<b>1371</b>	<b>1189</b>	<b>15784</b>	<b>2930</b>	
JEFFERSON STREET											
56+70 to 59+80		MAIN LINE, RTL's	1386	937	159	52		69	534	89	
<b>SUBTOTALS</b>			<b>1386</b>	<b>937</b>	<b>159</b>	<b>52</b>		<b>69</b>	<b>534</b>	<b>89</b>	
<b>TOTALS</b>			<b>15788</b>	<b>1038</b>	<b>1807</b>	<b>1416</b>	<b>1371</b>	<b>1258</b>	<b>16318</b>	<b>3019</b>	

TURF ESTABLISHMENT								(J)
STATION TO STATION	LOCATION	SODDING TYPE, LAWN	EROSION BLANKET	SEEDING	SEED MIXTURE	FERT. 22-5-10	SILT FENCE	
		SQ. YD.	SQ. YD.	ACRE	POUND	POUND	L.F.	
13+48 to 16+00	LWB		599	0.12	9	43	1252	
16+00 to 25+50	LWB		2028	0.42	31	147	950	
15+00 to 21+50	LEB		1951	0.40	30	141	650	
21+50 to 22+00	LEB		414	0.09	6	30	50	
22+25 to 25+50	LEB		881	0.18	14	64	325	
22+25 to 24+25	LEB	100	0	0.00	0	0	200	
26+00 to 38+26	LWB		2641	0.55	41	191	1226	
26+00 to 38+26	LEB		2973	0.61	46	215	1226	
<b>SUBTOTAL</b>		<b>100</b>	<b>11486</b>	<b>2.37</b>	<b>178</b>	<b>831</b>	<b>5879</b>	
JEFFERSON STREET								
56+00 to 59+80	RT		444	0.09	7	32	380	
<b>SUBTOTAL</b>		<b>0</b>	<b>444</b>	<b>0.09</b>	<b>7</b>	<b>32</b>	<b>380</b>	
<b>TOTALS</b>		<b>100</b>	<b>11930</b>	<b>2.46</b>	<b>185</b>	<b>863</b>	<b>6259</b>	

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 07/22/2004 12:59:34 PM CDT

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 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *[Signature]*  
 DATE: 7/20/04 LICENSE NO. 28826

DRAWN BY: ST DATE 04/08/04  
 DESIGN BY: MH DATE 04/08/04  
 CHECKED BY: MTH DATE 04/15/04



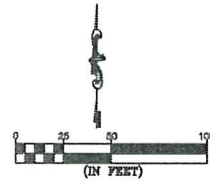
ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

TABULATION CHARTS

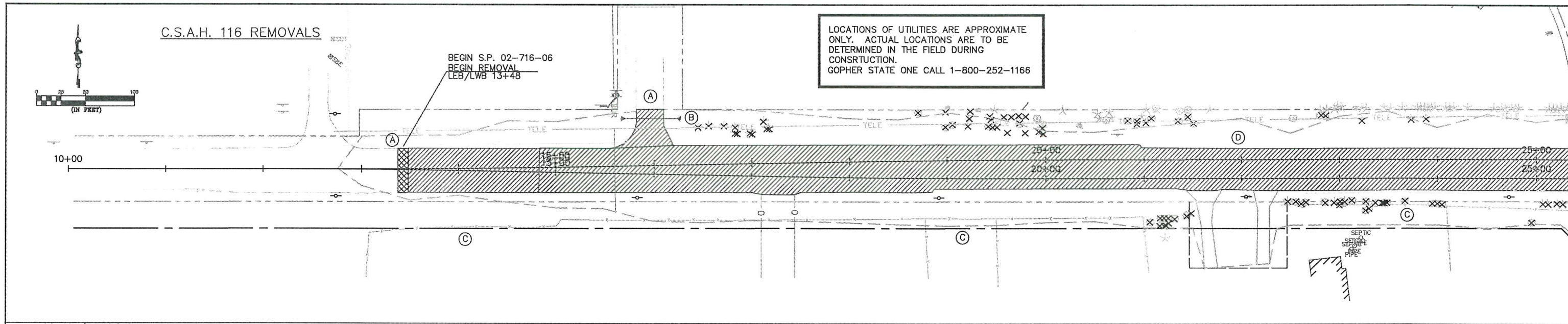
Sheet 7 of 46 Sheets

C.S.A.H. 116 REMOVALS

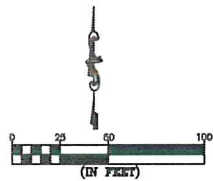
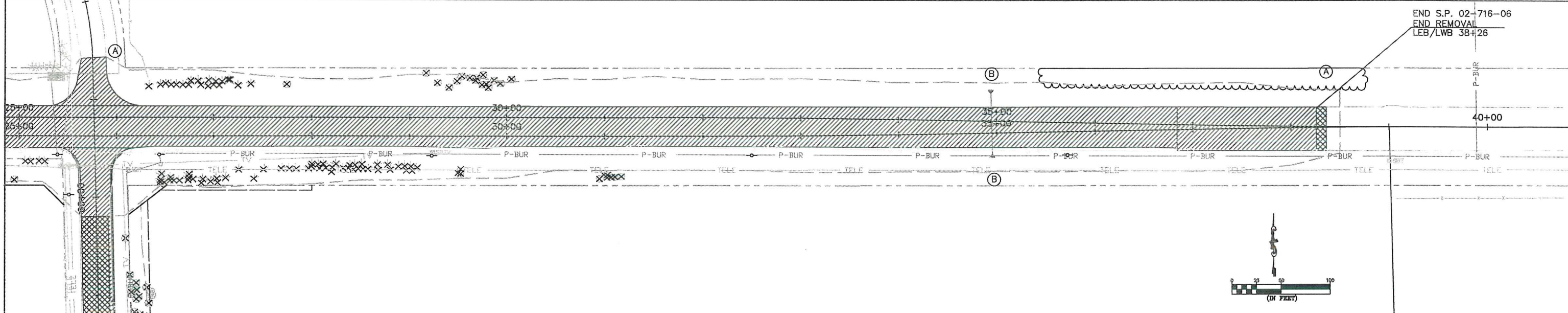


LOCATIONS OF UTILITIES ARE APPROXIMATE ONLY. ACTUAL LOCATIONS ARE TO BE DETERMINED IN THE FIELD DURING CONSTRUCTION.  
GOPHER STATE ONE CALL 1-800-252-1166

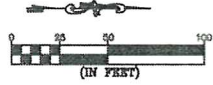
BEGIN S.P. 02-716-06  
BEGIN REMOVAL  
LEB/LWB 13+48



END S.P. 02-716-06  
END REMOVAL  
LEB/LWB 38+26

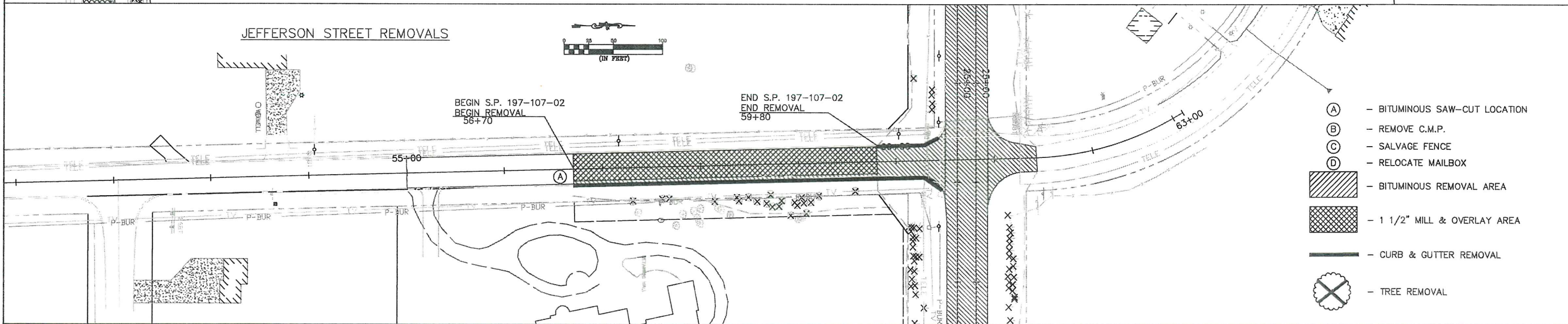


JEFFERSON STREET REMOVALS



BEGIN S.P. 197-107-02  
BEGIN REMOVAL  
56+70

END S.P. 197-107-02  
END REMOVAL  
59+80



- (A) - BITUMINOUS SAW-CUT LOCATION
- (B) - REMOVE C.M.P.
- (C) - SALVAGE FENCE
- (D) - RELOCATE MAILBOX
- [Hatched Area] - BITUMINOUS REMOVAL AREA
- [Cross-hatched Area] - 1 1/2" MILL & OVERLAY AREA
- [Solid Line] - CURB & GUTTER REMOVAL
- [X in Circle] - TREE REMOVAL

NO	DATE	BY	CKD	APPR	REVISION

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COUNTY PROJECT NO. \_\_\_\_\_

EXISTING CONDITIONS AND REMOVAL PLAN  
Sheet 8 of 46 Sheets



EARTHWORK SUMMARY SHEET SP 02-716-06

EXCAVATIONS (EV)		CSAH 116 from 1340' west of Jefferson St to 1390' east of Jefferson St	JEFFERSON St. from CSAH 116 to 402' south of CSAH 116	TOTAL	COMMENTS	
		CuYd	CuYd	CuYd		
COMMON EXCAVATION (1)	10,810 CuYd	REGULAR	5,842	308	6,150	INCLUDE REMOVALS AND EXCLUDES TOPSOIL STRIPPING.
MUCK EXCAVATION	5489 CuYd	SUB CUT	2,580	287	2,867	1' SUBCUT TREATMENT
(1)- INCLUDES REMOVALS, SUBCUT, & TOPSOIL STRIPPING		MUCK	5,489	0	5,489	
		TOPSOIL STRIPPING	1,724	69	1,793	DISTURB AREA 3 INCH TOPSOIL DEPTH
PAY ITEM = COMMON EXCAVATION - REMOVALS =		10,810 - 1378		=	9,432	CuYd
PAY ITEM = SUB GRADE ( MUCK ) EXCAVATION				=	5489	CuYd
REMOVALS:		Removals				
CSAH 116 from 1340' west of Jefferson St to 1390' east of Jefferson St		SqYd	=	CuYd		
JEFFERSON St. from CSAH 116 to 402' south of CSAH 116		10,566		1319		
		470		59		
Total =		11,036	SqYd =	1378	CuYd	Will be paid under ITEM 2104

EMBANKMENT (CV)		CSAH 116 from 1340' west of Jefferson St to 1390' east of Jefferson St	JEFFERSON St. from CSAH 116 to 402' south of CSAH 116	TOTAL	COMMENTS	
		CuYd	CuYd	CuYd		
GRANULAR	2104 CuYd	GRANULAR (REGULAR FILL)	1838	266	2104	
SUB GRADE (REPL. MUCK)	5489 CuYd	SUB GRADE (MUCK REPLACEMENT)	5489	0	5489	
SUB CUT	2867 CuYd	SUB CUT	2580	287	2867	
MUCK DISPOSAL	0 CuYd	MUCK DISPOSAL	0	0	0	
TOPSOIL DRESSING	1745 CuYd	TOPSOIL DRESSING	1705	40	1745	DISTURB AREA x 4 INCH DEPTH

BALANCE		[ GRANULAR + SUB GRADE + SUB CUT ] - [ ( REGULAR EXC. (EV) - REMOVALS (EV) ) x SHRINK. FACTOR ] - ( SUB CUT (EV) x SHRINK. FACTOR ) = EXCESS (-) OR SHORTAGE (+)			
SELECT GRANULAR MATERIAL (CV)		[[ 2104 + 5489 + 2867 ] - ( 6150 - 1378 ) x 80% - ( 2867 x 80% )]	=	4349	CuYd
MUCK		[ MUCK DISPOSAL (CV) - MUCK EXCAVATION (EV) x SHRINKAGE FACTOR ] = EXCESS (-) OR SHORTAGE (+)		0 - 5489 x 140% = -7685	CuYd (CV) EXCESS
TOPSOIL DRESSING		TOP SOIL DRESSING (CV) - [ TOPSOIL STRIPPING (EV) x SHRINKAGE FACTOR ] = EXCESS (-) OR SHORTAGE (+)		1745 - ( 1793 x 80% ) = 311	CuYd (CV)
		PAY ITEM = -311 (CV) x 130% = -404			CuYd (LV) BORROW

SOIL FACTORS	
( 1 ) REGULAR GRADING AND TOPSOIL DRESSING ( EV TO CV ):	80% SHRINKAGE
( 2 ) SUB CUT COMPACTION ( EV TO CV ):	80% SHRINKAGE
( 3 ) MUCK DISPOSAL ( EV TO CV ):	140% SHRINKAGE
( 4 ) SELECT GRANULAR BORROW ( CV TO LV ):	140% SWELL
( 5 ) TOPSOIL BORROW ( CV TO LV ):	130% SWELL

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 06/15/2004 09:24:01 AM CDT

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.

PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten Olson*  
 DATE: 6/15/04 LICENSE NO. 26826

DRAWN BY: ST DATE 04/08/04  
 DESIGN BY: MTH DATE 04/08/04  
 CHECKED BY: HG DATE 04/12/04

**ANOKA COUNTY HIGHWAY DEPT.**

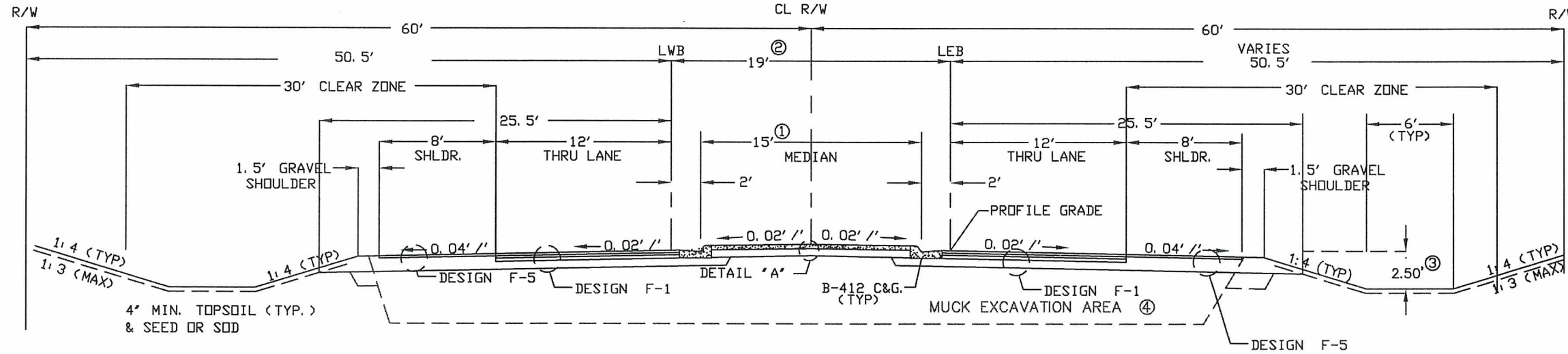
STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

EARTHWORK SUMMARY

Sheet 09 of 46 Sheets

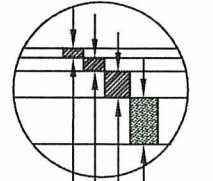
C. S. A. H. NO. 116 / TYPICAL SECTION DETAIL

LEB STA. 15+79 - STA. 16+08 & STA 31+78 - 35+50  
CL R/W



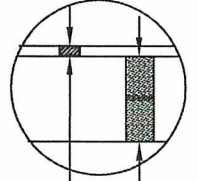
DESIGN F-1

- 2" 2350 TYPE MVWE35035 (C)
- 2" 2350 TYPE MVNW35035 (C)
- 2" 2350 TYPE LVNW35030 (B)
- 6" AGGREGATE BASE CLASS 5A



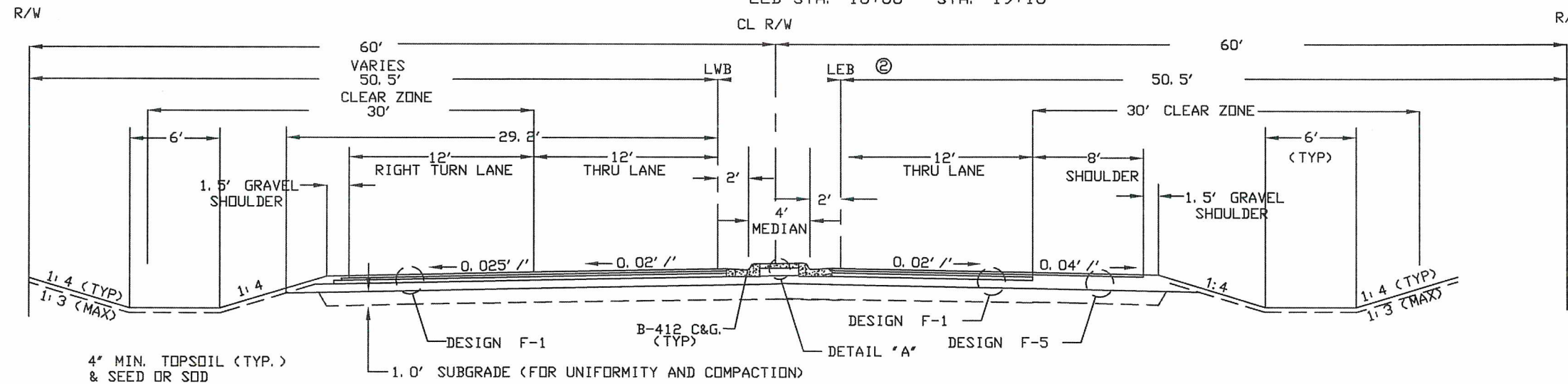
DESIGN F-5

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- 10" AGGREGATE BASE CLASS 5A

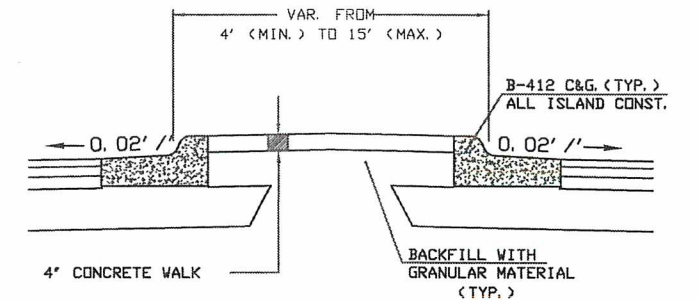


C. S. A. H. NO. 116 / RIGHT TURN LANE DETAIL

LEB STA. 16+08 - STA. 19+10  
CL R/W

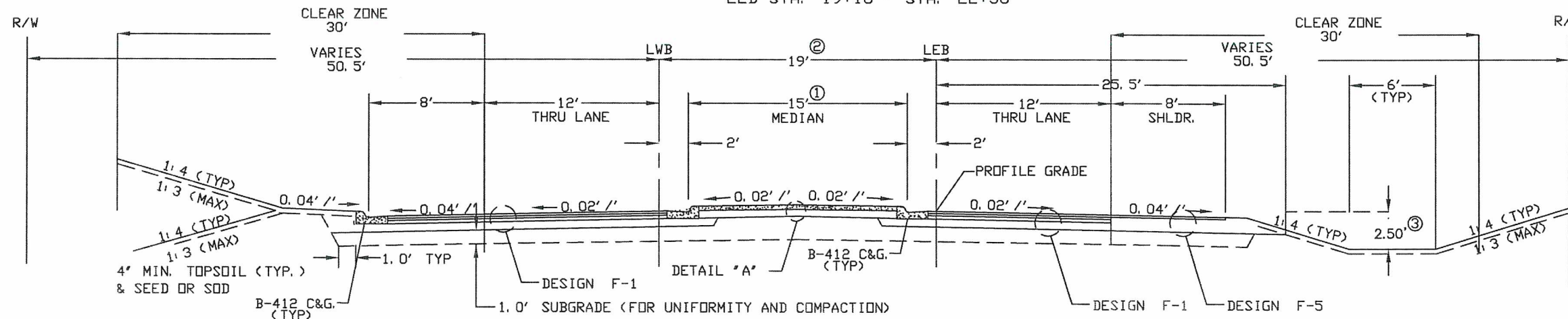


DETAIL "A"



C. S. A. H. NO. 116 / TYPICAL SECTION DETAIL

LEB STA. 19+10 - STA. 22+36  
CL R/W



- ① SEE PLAN & PROFILE FOR VARIABLE WIDTHS AND LOCATIONS
- ② 0' @ 12+10 TO 19' @ 20+29 & 19' @ 33+03 TO 0' @ 39+36
- ③ DITCH DEPTH FROM FINISHED PROFILE SEE PLAN & PROFILE VIEW FOR SPECIAL DITCH LOCATIONS
- ④ MUCK EXCAVATION AREA STA. 31+50 - 36+50 BACKFILLED WITH GRANULAR MATERIAL

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Typical Sections.dwg 07/22/2004 10:08:04 AM CDT

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.  
PRINT NAME: KIRSTEN L. CLSON  
SIGNATURE: *Kirsten L. Clson*  
DATE: 7/20/04 LICENSE NO. 26826

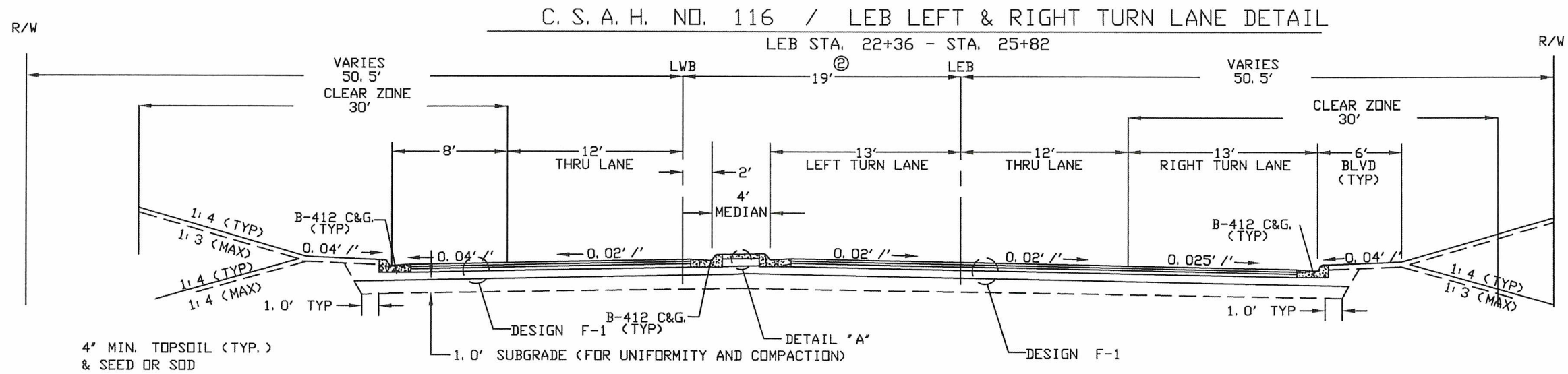
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CHECKED BY: MTH DATE 04/13/04



ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
STATE AID PROJECT NO. \_\_\_\_\_  
CITY PROJECT NO. SP 197-107-02  
FEDERAL PROJECT NO. STPX 0204 (037)

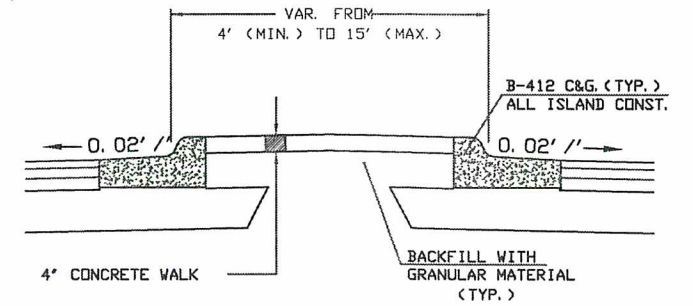
TYPICAL SECTIONS  
Sheet 10 of 46 Sheets



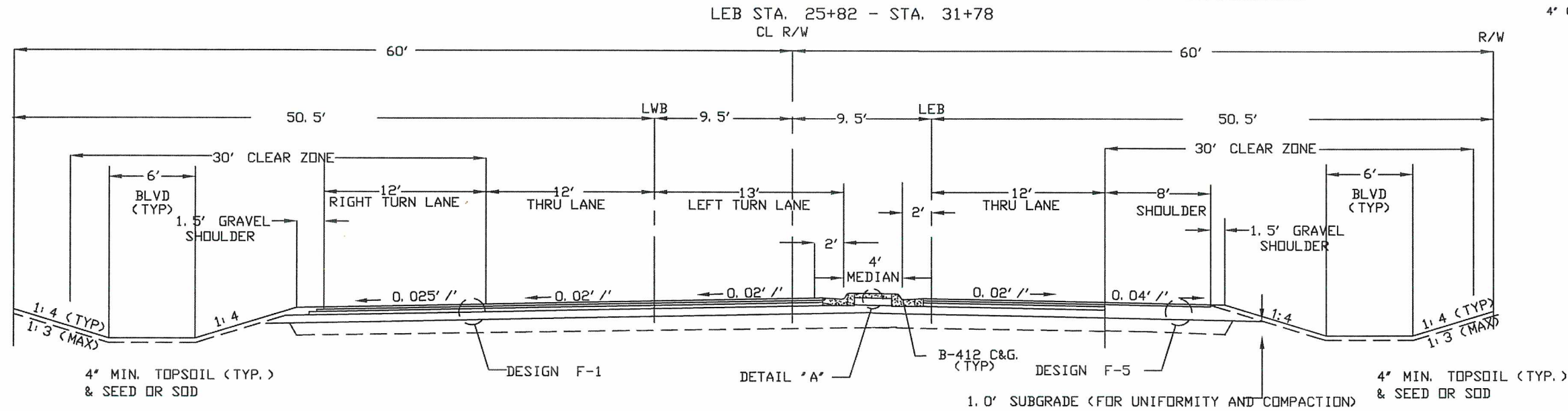
**DESIGN F-1**

- 2' 2350 TYPE MVWE35035 (C)
- 2' 2350 TYPE MVNW35035 (C)
- 2' 2350 TYPE LVNW35030 (B)
- 6' AGGREGATE BASE CLASS 5A

**DETAIL "A"**



**C. S. A. H. NO. 116 / LEFT & RIGHT TURN LANE DETAIL**  
LEB STA. 25+82 - STA. 31+78



**DESIGN F-5**

- 2' 2350 TYPE MVWE35035 (C)
- 10' AGGREGATE BASE CLASS 5A

- ① SEE PLAN & PROFILE FOR VARIABLE WIDTHS AND LOCATIONS
- ② 0' @ 12+10 TO 19' @ 20+29 & 19' @ 33+03 TO 0' @ 39+36
- ③ DITCH DEPTH FROM FINISHED PROFILE SEE PLAN & PROFILE VIEW FOR SPECIAL DITCH LOCATIONS

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Typical Sections.dwg 07/22/2004 10:08:04 AM CDT

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 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: [Signature]  
 DATE: 7/22/04 LICENSE NO. 26826

DRAWN BY: HG DATE 04/01/04  
 DESIGN BY: HG DATE 04/01/04  
 CHECKED BY: MTH DATE 04/13/04



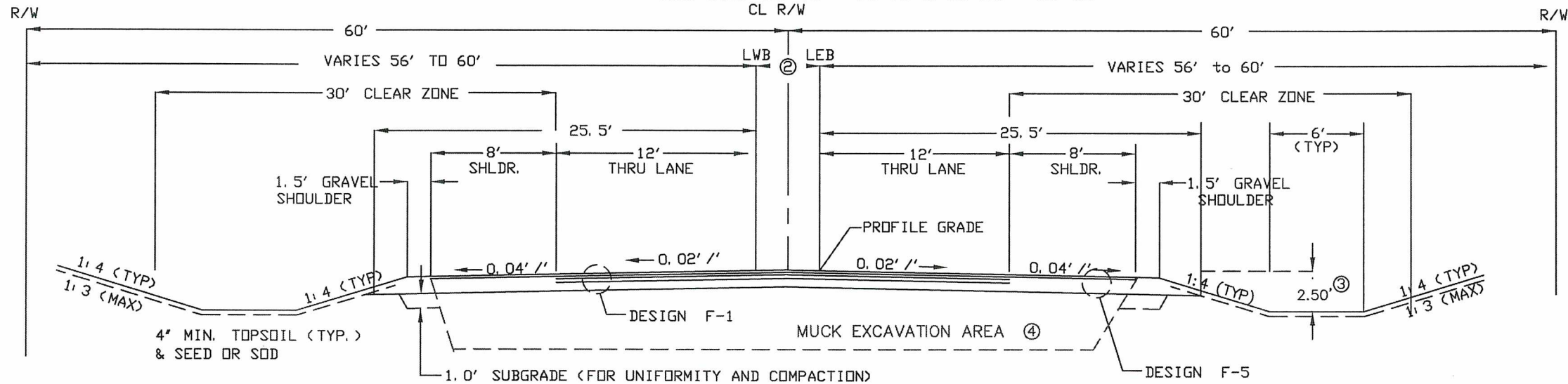
**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO.    
 CITY PROJECT NO. SP 197-107-02  
 FEDERAL PROJECT NO. STPX 0204 (037)

**TYPICAL SECTIONS**

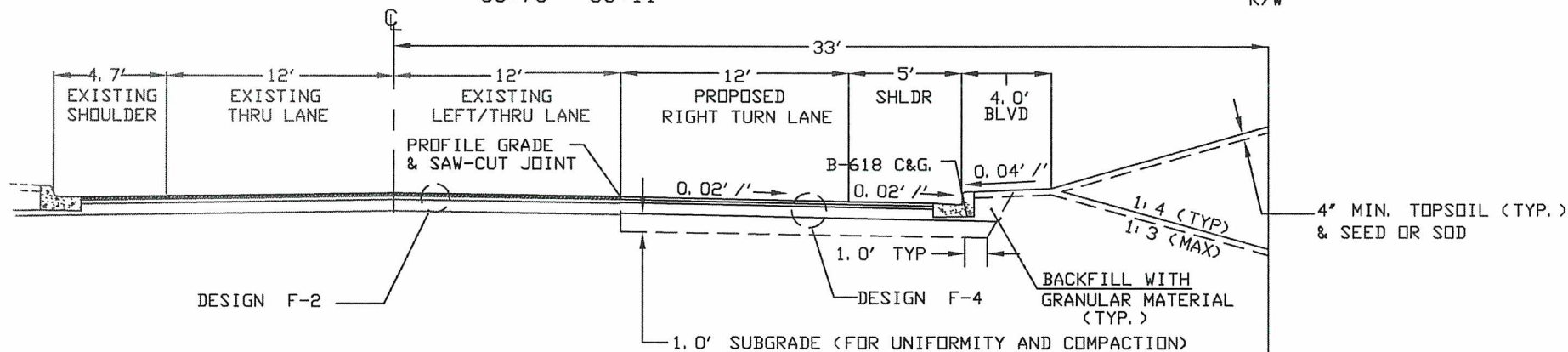
C. S. A. H. NO. 116 / TYPICAL SECTION DETAIL

LEB STA. 13+48 - 15+79 & 35+50 - 38+25

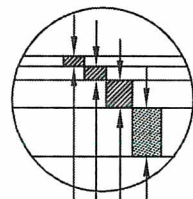


JEFFERSON STREET DETAIL

56+70 - 60+11

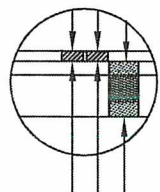


DESIGN F-1



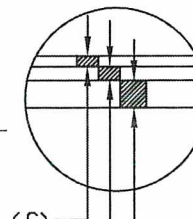
- 2" 2350 TYPE MVWE35035 (C)
- 2" 2350 TYPE MVNW35035 (C)
- 2" 2350 TYPE LVNW35030 (B)
- 6" AGGREGATE BASE CLASS 5A

DESIGN F-2



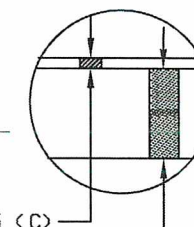
- 2" MILL
- 2" OVERLAY- TYPE MVWE35035 (C)
- REMAINING EXISTING SECTION

DESIGN F-4



- 2" 2350 TYPE MVWE35035 (C)
- 2" 2350 TYPE MVNW35035 (C)
- 6" AGGREGATE BASE CLASS 5A

DESIGN F-5



- 2" 2350 TYPE MVWE35035 (C)
- 10" AGGREGATE BASE CLASS 5A

- ① SEE PLAN & PROFILE FOR VARIABLE WIDTHS AND LOCATIONS
- ② 0' @ 12+10 TO 19' @ 20+29 & 19' @ 33+03 TO 0' @ 39+36
- ③ DITCH DEPTH FROM FINISHED PROFILE  
SEE PLAN & PROFILE VIEW FOR SPECIAL DITCH LOCATIONS
- ④ MUCK EXCAVATION AREA (STA. 31+50 - 36+50)  
BACKFILLED WITH GRANULAR MATERIAL

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PRINT NAME: KIRSTEN L. OLSON  
SIGNATURE: *Kirsten L. Olson*  
DATE: 7/20/04 LICENSE NO. 26826

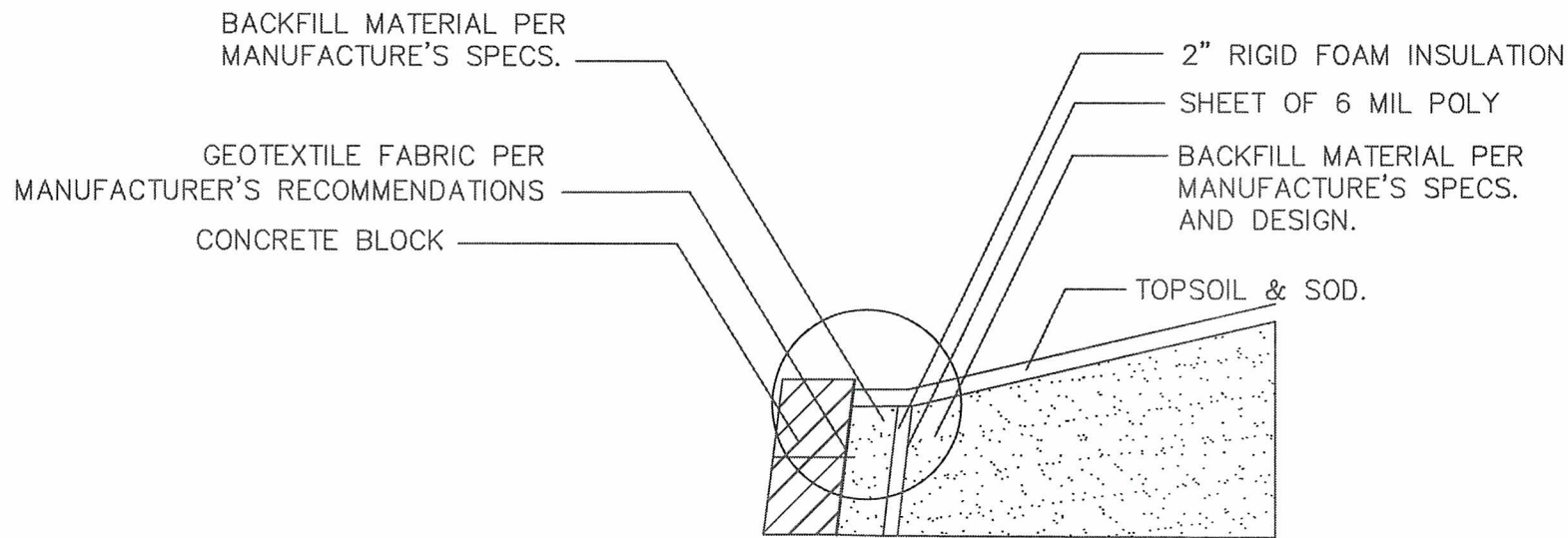
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CHECKED BY: MTH DATE 04/13/04



ANOKA COUNTY  
HIGHWAY DEPT.

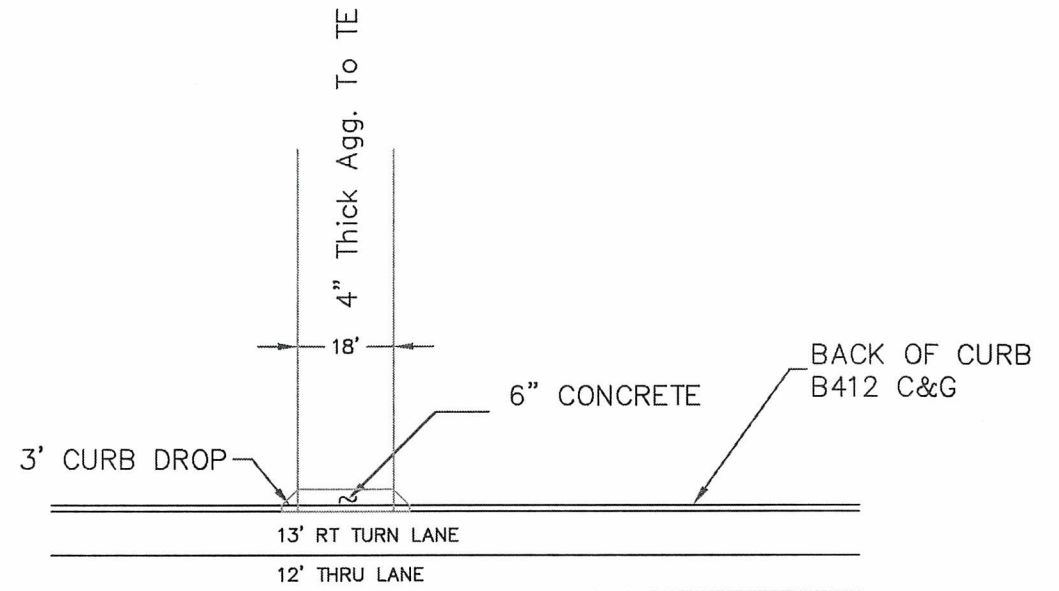
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STATE AID PROJECT NO. \_\_\_\_\_  
CITY PROJECT NO. SP 197-107-02  
FEDERAL PROJECT NO. STPX 0204 (037)

TYPICAL SECTIONS



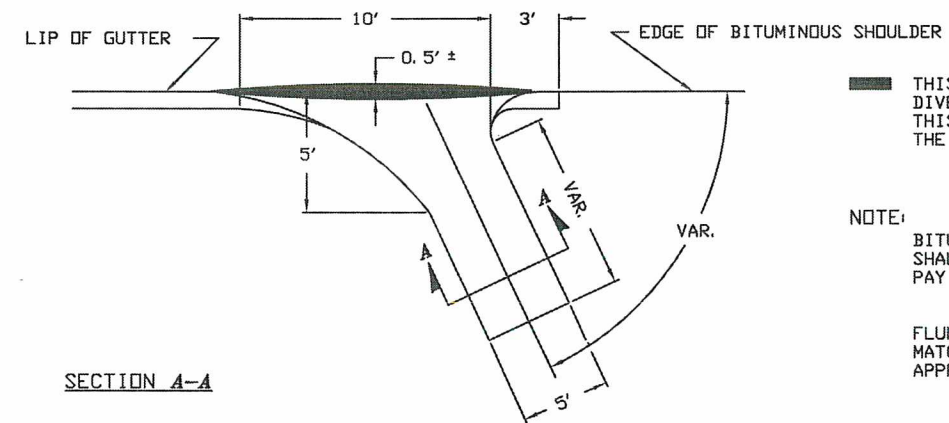
DETAIL A

NOTE 1: 2" RIGID FOAM INSULATION BOARD AND 6 MIL POLY TO BE INSTALLED FOR THE LENGTH OF THE SEPTIC SYSTEM DRAIN FIELD



RURAL RESIDENTIAL ENTRANCE

TYPICAL BITUMINOUS FLUME



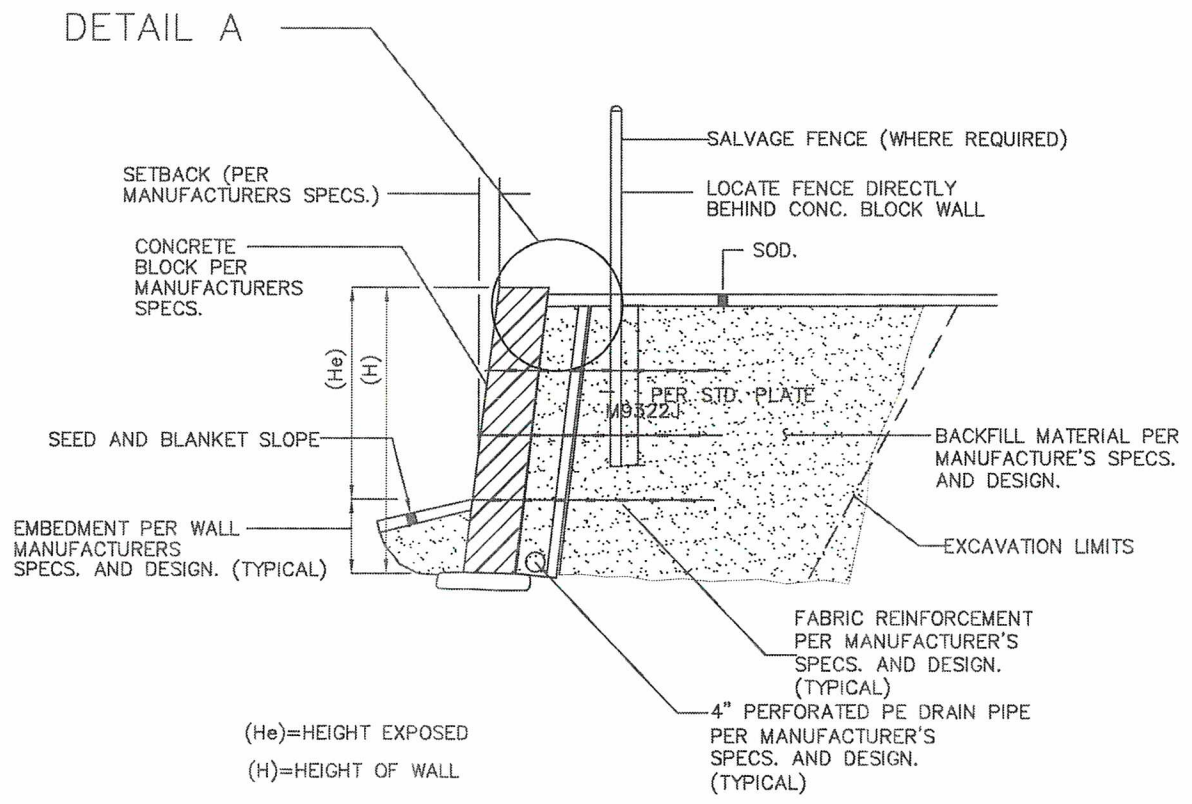
THIS AREA OF INCREASED SLOPE TO DIVERT WATER FLOW INTO FLUME. THIS MUST BE ACCOMPLISHED DURING THE SHOULDER PAVING OPERATION.

NOTE: BITUMINOUS FLUME CONSTRUCTION SHALL BE PAID FOR BY THE SQ YD UNDER PAY ITEM 2572.508 BITUMINOUS LINED FLUME

FLUME DESIGN MAY BE MODIFIED TO MATCH EXISTING CONDITIONS UPON APPROVAL OF THE ENGINEER.

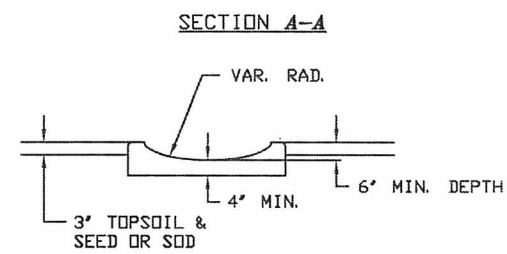
\* LOCATIONS ARE APPROX. EXACT LOCATIONS ARE TO BE DETERMINED IN THE FIELD DURING CONST.

BITUMINOUS FLUME LOC.		
STA.	LOC.	SQ. YDS.
19+39	LT LWB	10
21+69	RT LEB	7
26+60	RT LEB	3
TOTAL SQ YDS =		20



(He)=HEIGHT EXPOSED  
(H)=HEIGHT OF WALL

CONCRETE BLOCK RETAINING WALL DETAIL



NO	DATE	BY	CKD	APPR	REVISION

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: [Signature]  
 DATE: 7/20/04 LICENSE NO. 26826

DRAWN BY ST DATE 04/12/04  
 DESIGN BY MTH DATE 04/12/04  
 CHECKED BY HG DATE 04/12/04

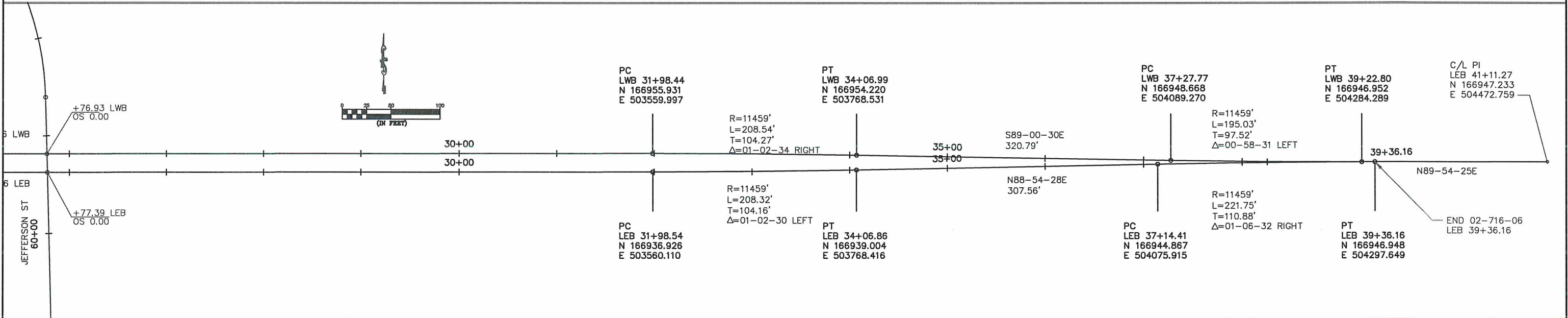
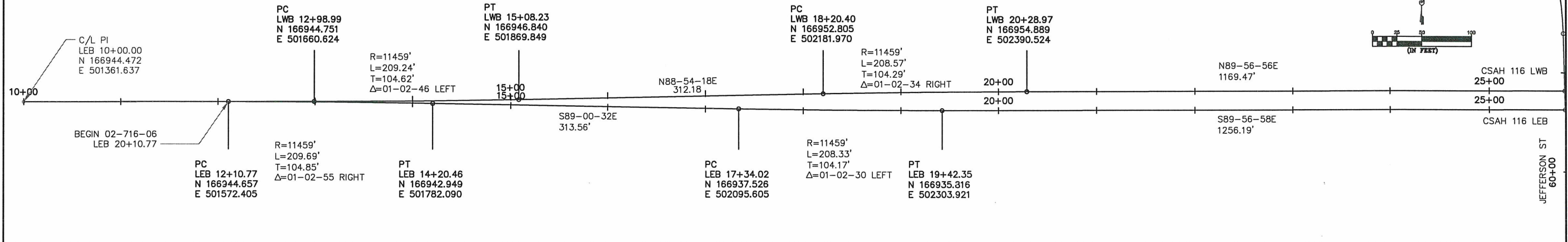


ANOKA COUNTY  
HIGHWAY DEPT.

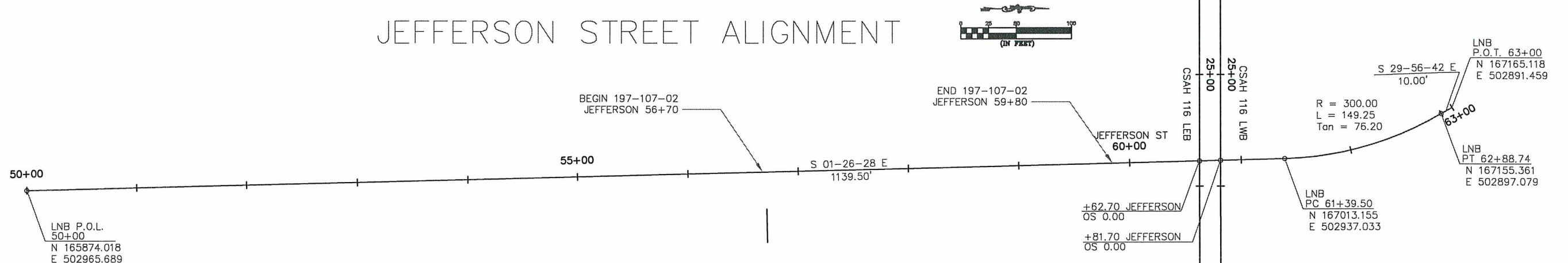
STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO.    
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO.  

MISCELLANEOUS DETAILS  
 Sheet 13 of 46 Sheets

# C.S.A.H. 116 ALIGNMENT



# JEFFERSON STREET ALIGNMENT



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Alignment Plan.dwg 06/03/2004 01:06:40 PM CDT

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.

PRINT NAME: KIRSTEN L. OLSON

SIGNATURE: *Kirsten L. Olson*

DATE: 6/13/04 LICENSE NO. 26826

DRAWN BY: HDG DATE 04/07/04

DESIGN BY: HDG DATE 04/07/04

CHECKED BY: MTH DATE 04/13/04



**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06

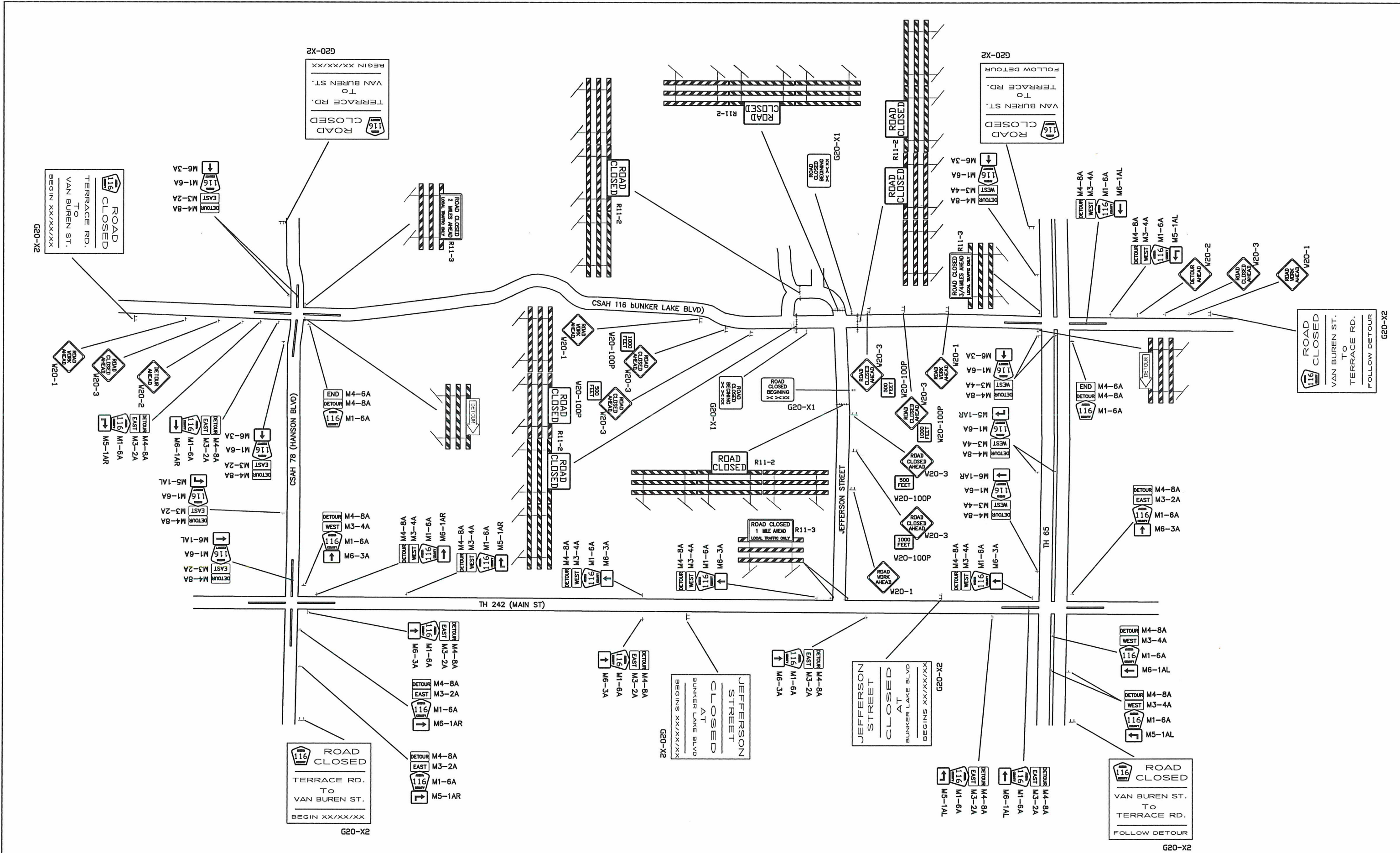
STATE AID PROJECT NO. \_\_\_\_\_

CITY PROJECT NO. SP 197-107-02

COUNTY PROJECT NO. \_\_\_\_\_

**ALIGNMENT PLAN**  
**CSAH 116 & JEFFERSON**

Sheet 14 of 46 Sheets



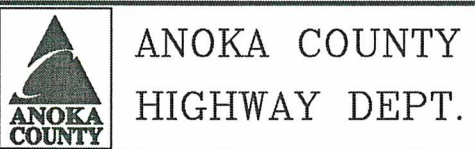
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten Olson*  
 DATE: 6/13/04 REG. NO. 26826

DRAWN BY: RLR DATE: 01/20/04  
 DESIGN BY: DATE: \_\_\_\_\_  
 CHECKED BY: MTH DATE: 04/15/04

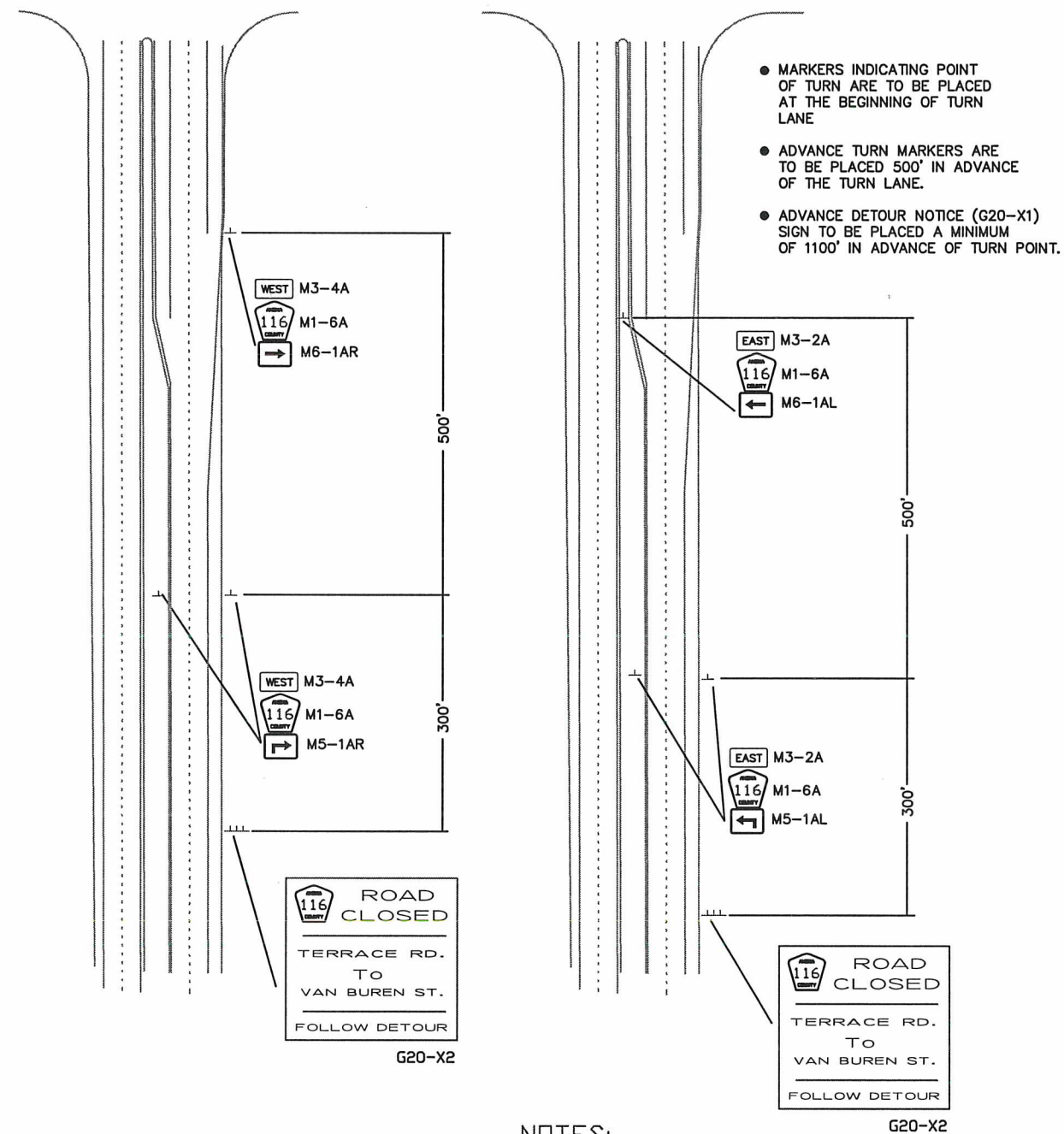


STATE PROJECT NO. 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

DETOUR LAYOUT  
 Sheet 15 of 46 Sheets

M. U. T. C. D. CODE	SIZE	INSERT	QUANTITY	M. U. T. C. D. CODE	SIZE	INSERT	QUANTITY
W20-1	48' x 48'		5	G20-X2	132' x 108'		SEE NOTE ④ 3
W20-2	48' x 48'		2	G20-X2	132' x 108'		SEE NOTE ④ 3
W20-3	48' x 48'		8	G20-X2	132' x 108'		SEE NOTE ⑤ 2
W20-100P	24' x 18'		3	G20-X1	60' x 48'		SEE NOTE ③ 3
W20-100P	24' x 18'		3	M4-8A	24' x 12'		3
M4-10R	48' x 18'		SEE NOTE ②	M3-4A	24' x 12'		2
TYPE III	8 FOOT		1	M1-6A	24' x 24'		3
M4-10L	48' x 18'		SEE NOTE ②		21' x 15'		2
TYPE III	8 FOOT		1				7
R11-2	48' x 30'		SEE NOTE ②	M4-8A	24' x 12'		2
TYPE III	8 FOOT		7	M3-2A	24' x 12'		2
R11-3	48' x 30'		SEE NOTE ②	M1-6A	24' x 24'		2
TYPE III	8 FOOT		1		21' x 15'		2
R11-3	48' x 30'		SEE NOTE ②				7
TYPE III	8 FOOT		1	M4-6A	24' x 12'		2
TYPE III	8 FOOT		5	M4-8A	24' x 12'		2
				M1-6A	24' x 24'		2
				TYPE III	8 FOOT		5
				R11-3	48' x 30'		SEE NOTE ②
				TYPE III	8 FOOT		2

### A.C.H.D. TYPICAL FOR PLACING DETOUR TRAIL BLAZERS ON A DIVIDED HIGHWAY



- MARKERS INDICATING POINT OF TURN ARE TO BE PLACED AT THE BEGINNING OF TURN LANE
- ADVANCE TURN MARKERS ARE TO BE PLACED 500' IN ADVANCE OF THE TURN LANE.
- ADVANCE DETOUR NOTICE (G20-X1) SIGN TO BE PLACED A MINIMUM OF 1100' IN ADVANCE OF TURN POINT.

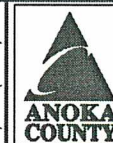
#### NOTES:

- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED JANUARY, 2001.
- 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES. BARRICADES MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE M. U. T. C. D.
- 3) SIGN TO BE INSTALLED A MINIMUM OF TEN DAYS PRIOR TO ACTUAL CLOSING DATE OF ROAD CLOSURE AND IMPLEMENTATION OF DETOUR SIGNING. SIGNS TO BE REMOVED AT TIME OF DETOUR INSTALLATION.
- 4) SIGN TO BE INSTALLED A MINIMUM OF TEN DAYS PRIOR TO ACTUAL CLOSING DATE OF ROAD CLOSURE AND IMPLEMENTATION OF DETOUR SIGNING. CHANGE BOTTOM PANEL TO: FOLLOW DETOUR
- 5) SIGN TO BE INSTALLED A MINIMUM OF TEN DAYS PRIOR TO ACTUAL CLOSING DATE OF ROAD CLOSURE AND IMPLEMENTATION OF DETOUR SIGNING. CHANGE BOTTOM PANEL TO: USE ALTERNATE ROUTE

NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE:   
 DATE: 6/13/04 REG. NO. 26826

DRAWN BY: RLB DATE: 01/20/04  
 DESIGN BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

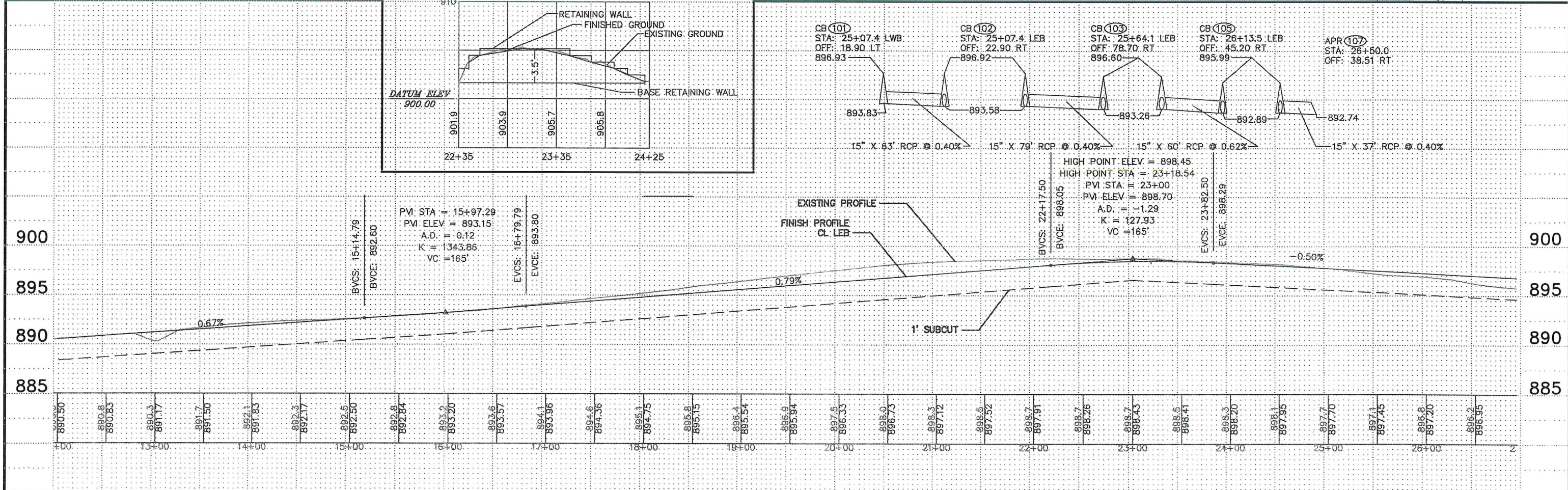
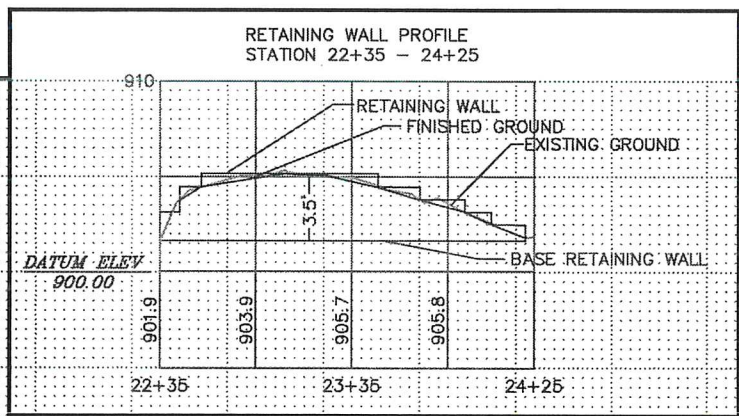
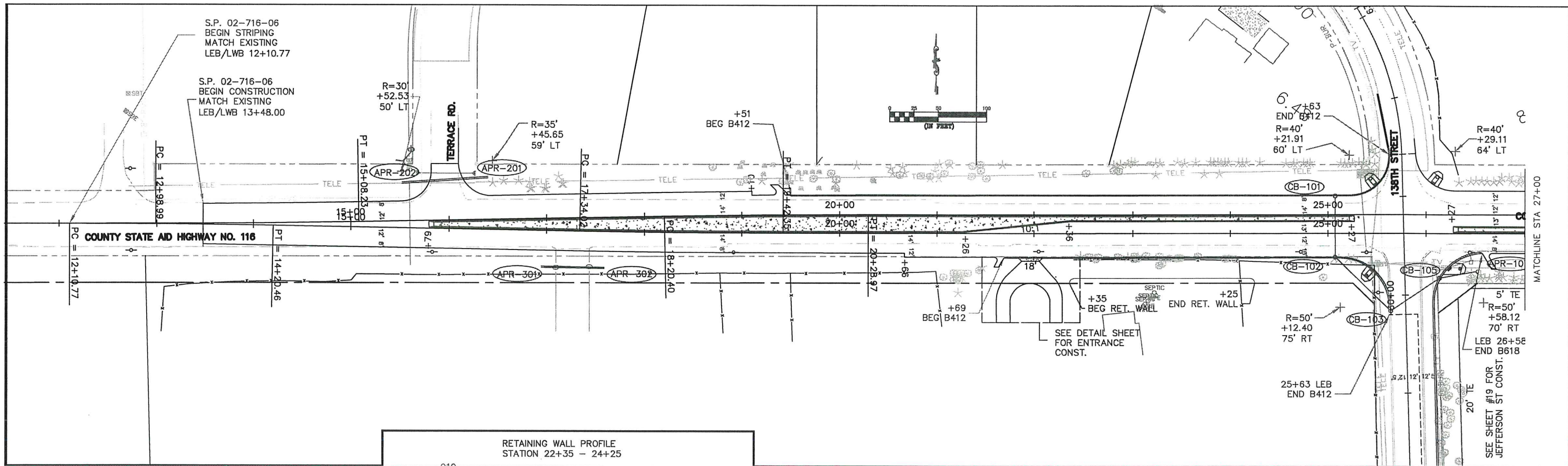


ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

DETOUR QUANTITIES  
 Sheet 16 of 46 Sheets





NO	DATE	BY	CKD	APPR	REVISION

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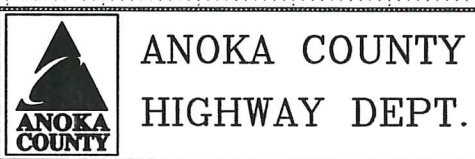
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DATE: 3/24/04 LICENSE NO. 26828

DRAWN BY: HG DATE 03/24/04

DESIGN BY: HG DATE 03/24/04

CHECKED BY: MTH DATE 03/24/04



STATE PROJECT NO. SP 02-716-06

STATE AID PROJECT NO. \_\_\_\_\_

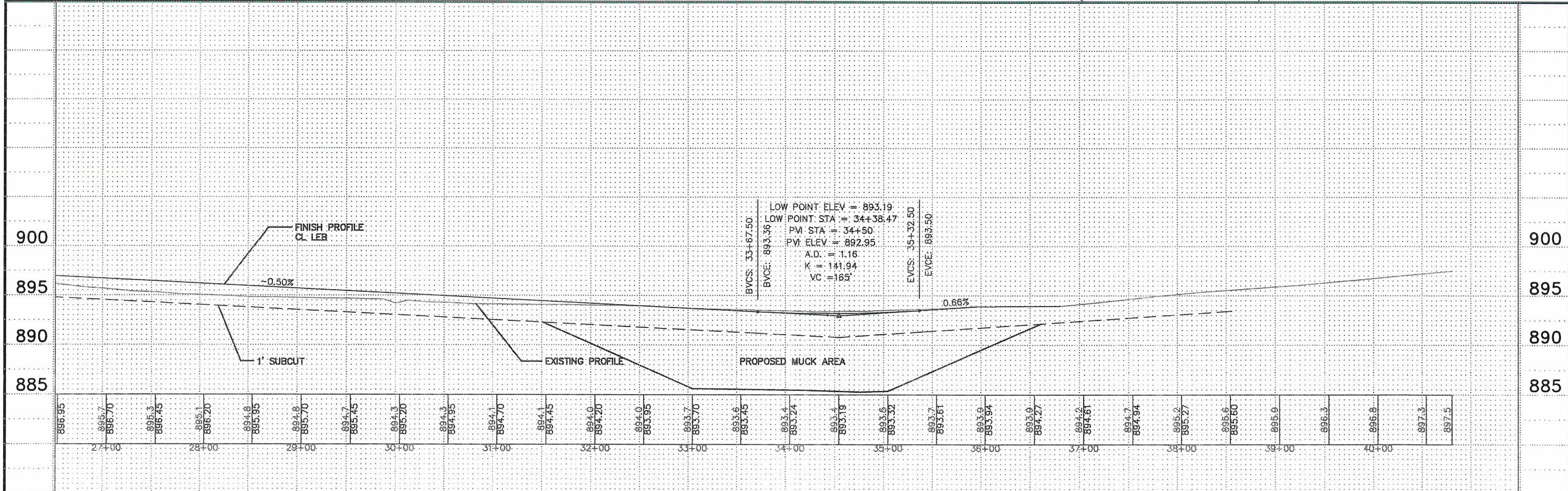
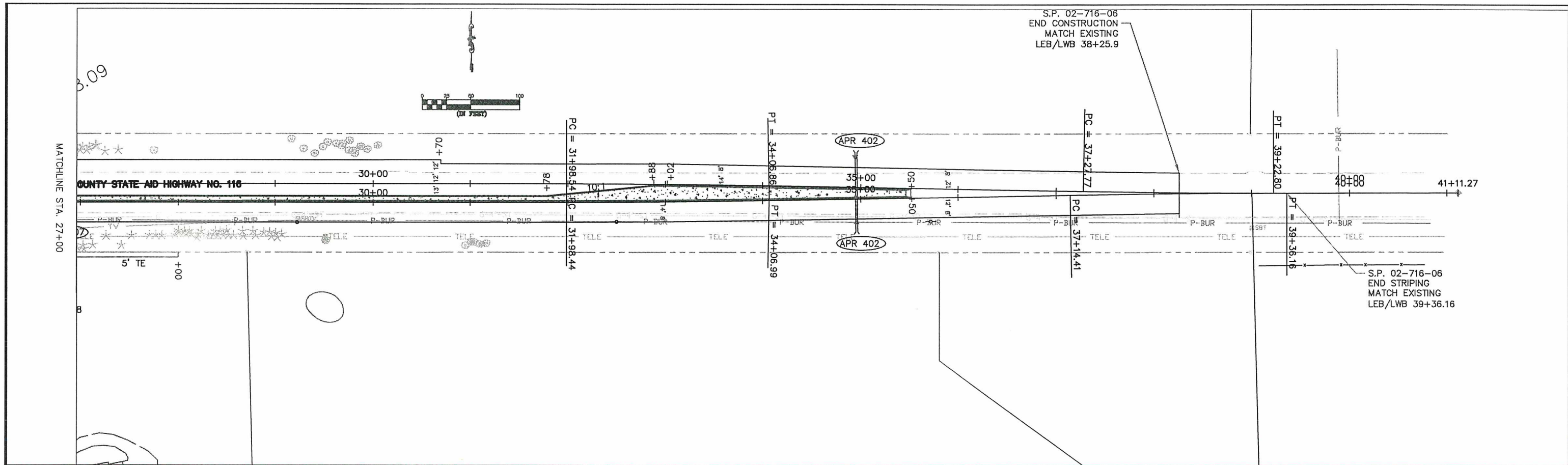
CITY PROJECT NO. SP 197-107-02

COUNTY PROJECT NO. \_\_\_\_\_

PLAN AND PROFILE

STA 12+10 TO 27+00

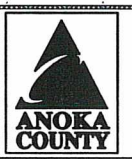
Sheet 17 of 46 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: [Signature]  
 DATE: 7/29/09 LICENSE NO. 26828

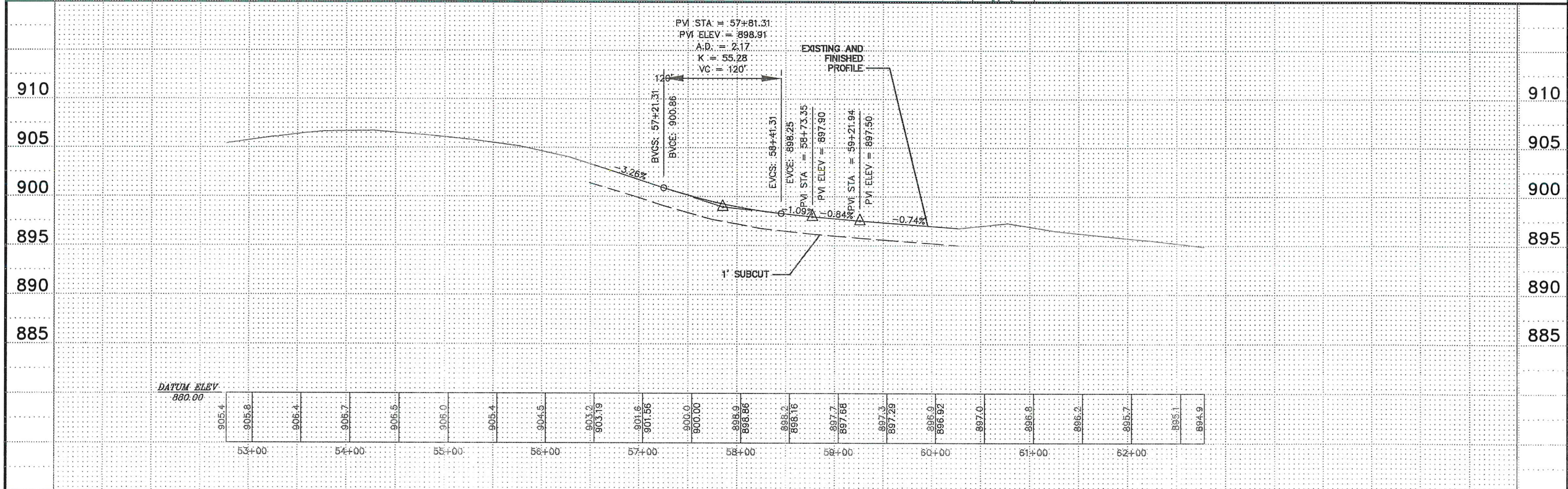
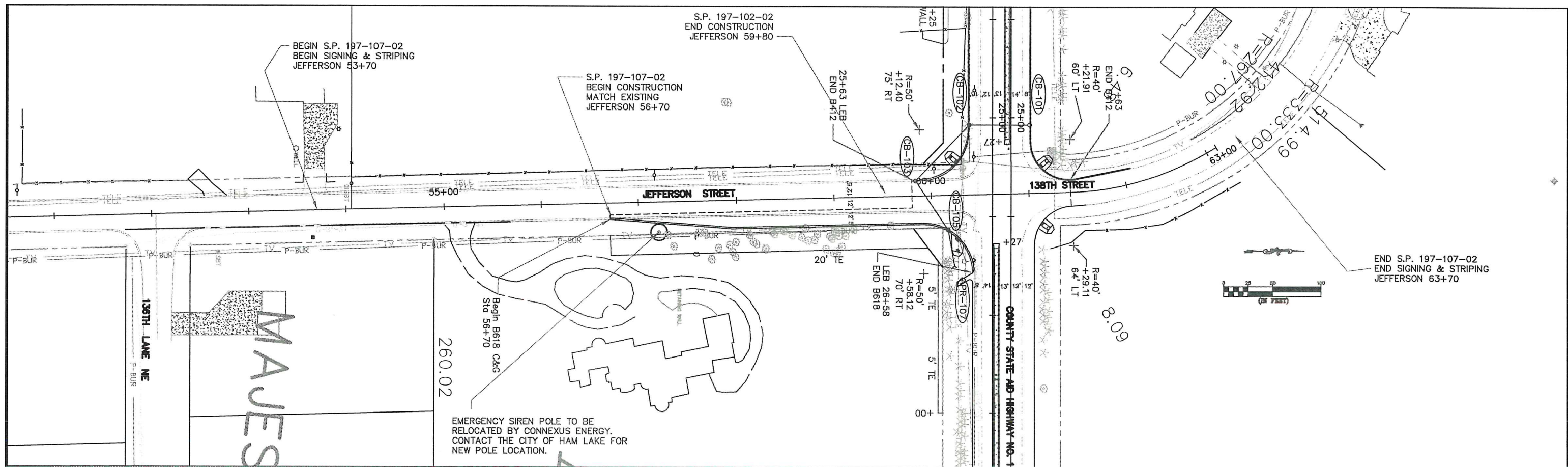
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 CHECKED BY: MTH DATE 03/24/04



**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO.                       
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO.                     

**PLAN AND PROFILE**  
 STA 27+00 TO 39+36  
 Sheet 18 of 46 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *[Signature]*  
 DATE: 7/28/04 LICENSE NO. 26828

DRAWN BY: HG DATE 03/24/04  
 DESIGN BY: HG DATE 03/24/04  
 CHECKED BY: MTH DATE 03/24/04



**ANOKA COUNTY  
HIGHWAY DEPT.**


STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO.    
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO.  

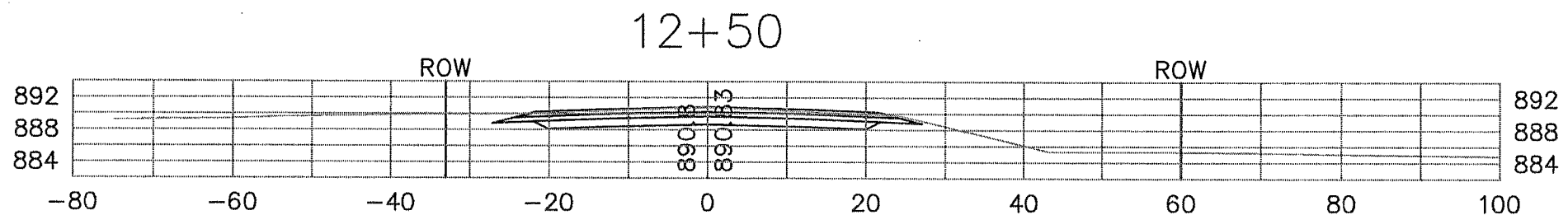
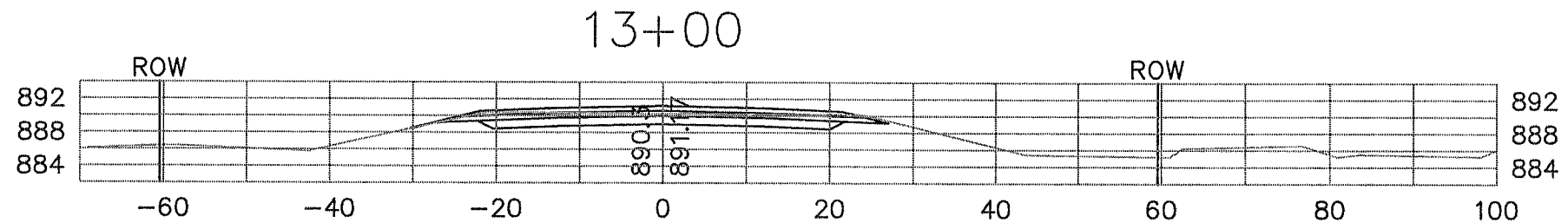
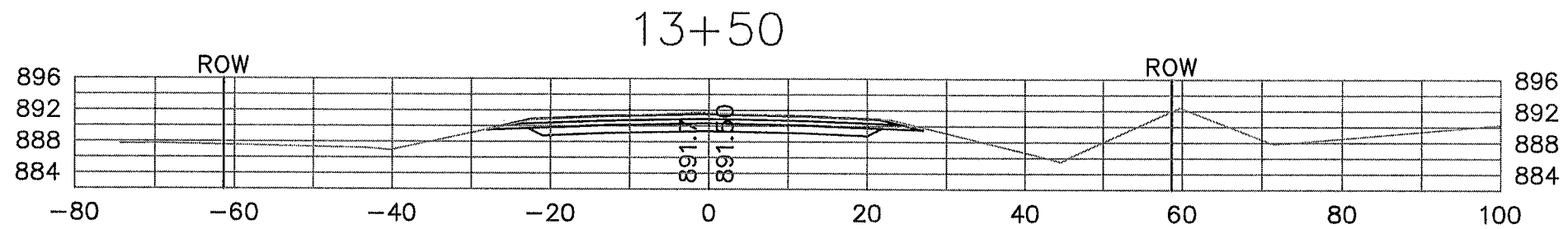
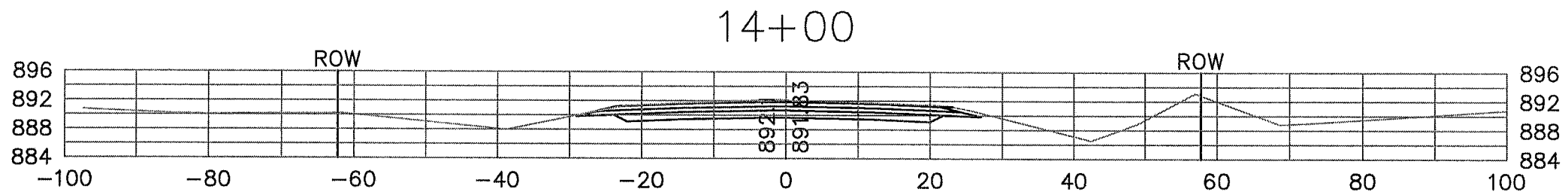
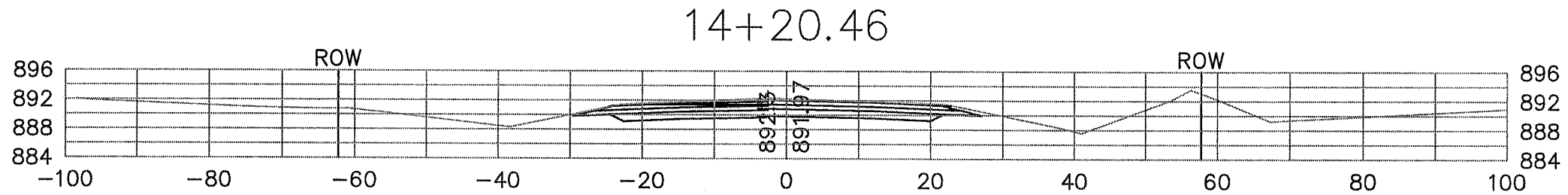
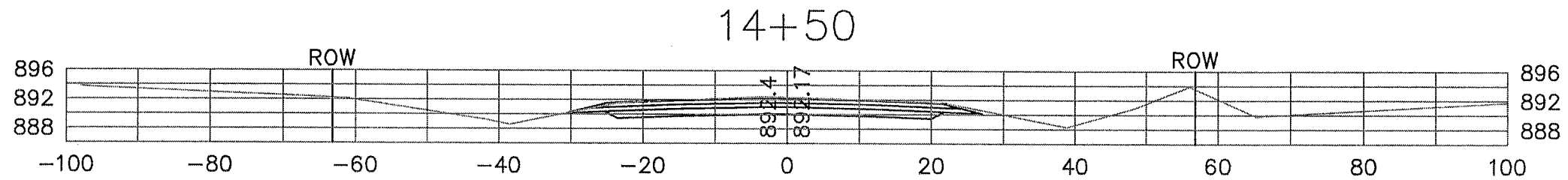
**PLAN AND PROFILE  
Jefferson Street  
Sta 56+70 to 59+80**  
 Sheet 19 of 46 Sheets

FLOWS FROM  STR. OR APRON INLET	ALIGNMENT	STATION	OFFSET	L/R	TOP OF CASTING ELEVATION	INVERT ELEVATION	INVERT ELEVATION FLOWS TO STRUCTURE	PIPE SLOPE	FLOWS TO STR. OR APRON OUTLET	NEW STRUCTURE CONSTRUCTION										RIPRAP AT RCP OUTLETS		FLOWS FROM STR. OR APRON INLET	Ⓚ			FOOTNOTES			
										DESIGN	PAY HT	CASTING ASSEMBLY	15 in RCP CL V	15 in RCP CL II APRON	15 in CS Culvert	15 in GS Culvert Safety APRON	18 in RCP CL III Culvert	18 in RCP CL II Culvert Safety APRON	28 in RC ARCH Culvert CL IIA	28 in RC ARCH APRON	CL III 18" DEPTH RIPRAP		GEOTEXTILE FILTER TYPE IV	PIPE GRADE %	PIPE UPPER ELEVATION		PIPE LOWER ELEVATION		
					FT	FT	FT	%		FT	TYPE	FT	EACH	FT	EACH	FT	EACH	FT	EACH	CU YD	SQ YD								
101	LWB	25+07.4	18.9	LT	896.93	893.83	893.58	0.40	102	G	B-1	63.0										101	0.40	893.83	893.58	A,C,D			
102	LEB	25+07.4	23.9	RT	896.92	893.58	893.26	0.40	103	G	B-1	79.0										102	0.40	893.58	893.26	A,C,D			
103	LEB	25+64.1	78.7	RT	896.60	893.26	892.89	0.62	105	G	B-1	60.0										103	0.62	893.26	892.89	A,C,D			
105	LEB	26+13.5	45.2	RT	895.99	892.89	892.74	0.40	107	G	B-1	37.0										105	0.40	892.89	892.74	A,C,D			
107	LEB	26+50.0	38.5	RT		892.74	892.74		Ditch	APRON			1							5.2	6.9	107		892.74	892.74	E			
Ditch																						Ditch							
201	LWB	16+40	39.5	LT		891.39	890.68	0.80	202	APRON						88.0	1					201	0.80	891.39	890.68				
202	LWB	15+53	35.5	LT		890.68			Ditch	APRON											7	9	202		890.68				
301	LEB	16+95	36.8	RT		891.42			Ditch	APRON				65.0	1						5.2	6.9	301		891.42				
302	LEB	17+59	35.5	RT		891.93	891.42	0.79	301	APRON												302	0.79	891.93	891.42				
401	LEB	34+96	35.0	RT		888.40	888.31	0.001	402	APRON									84.0	1	9.8	11.7	401	0.00	888.40	888.31			
402	LEB	34+96	49.0	LT		888.31		0.001		APRON											9.8	11.7	402	0.00	888.31				
TOTAL															13.36				239	1	65	2	88	2	84	2	37	46.2	

CASTING ASSEMBLY SCHEDULE Ⓚ						
ASSEMBLY	RING OR FRAME	COVER OR GRATE	CURB BOX	STANDARD PLATE	QUANTITY	REMARKS
B-1	801			4126	4	CATCH BASINS
		810		4149		
			821B	4161		
PROJECT TOTALS:					4	

NOTES:  
 (A) STATIONS, OFFSETS, AND TOP OF CASTING ELEVATIONS ARE GIVEN TO CENTER OF CASTING. SUMP DEPTH IS 0.10' FOR CATCH BASINS.  
 (B) ALL POTENTIAL CONFLICTS WITH PUBLIC AND PRIVATE UTILITIES SHALL BE FIELD VERIFIED PRIOR TO INSTALLATION OF STORM SEWER.  
 (C) F&I CASTING.  
 (D) SILT FENCE BOXES AND SILT FENCE SHALL BE USED ON ALL CB'S BEFORE THE ROAD IS PAVED. SEE STANDARD EROSION CONTROL PLAN SHEETS. (CONSIDERED INCIDENTAL TO STORM SEWER STRUCTURE)  
 (E) TIE LAST THREE JOINTS OF APRON ENDS. FURNISHING AND INSTALLING PIPE TIES CONSIDERED INCIDENTAL.

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. PRINT NAME: <u>KIRSTEN L. OLSON</u> SIGNATURE: <u>[Signature]</u> DATE: <u>7/22/04</u> LICENSE NO. <u>28828</u>					DRAWN BY <u>ST</u> DATE <u>04/08/04</u> DESIGN BY <u>MTH</u> DATE <u>04/08/04</u> CHECKED BY <u>HG</u> DATE <u>04/12/04</u>		 <b>ANOKA COUNTY</b> <b>HIGHWAY DEPT.</b>		STATE PROJECT NO. <u>SP 02-716-06</u> STATE AID PROJECT NO. _____ CITY PROJECT NO. <u>SP 197-107-02</u> COUNTY PROJECT NO. _____		<b>STORM SEWER TABS</b>  Sheet <u>20</u> of <u>46</u> Sheets	
NO	DATE	BY	CKD	APPR	REVISION							
					NAME: P:\02-716-06\PLAN\Quantity Tab.dwg 07/22/2004 10:06:23 AM CDT							



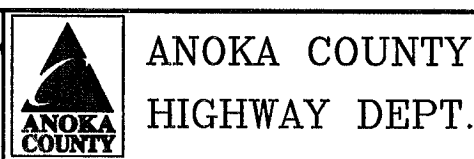
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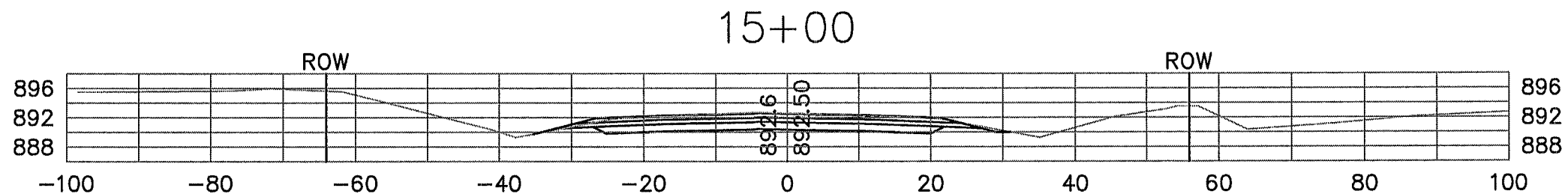
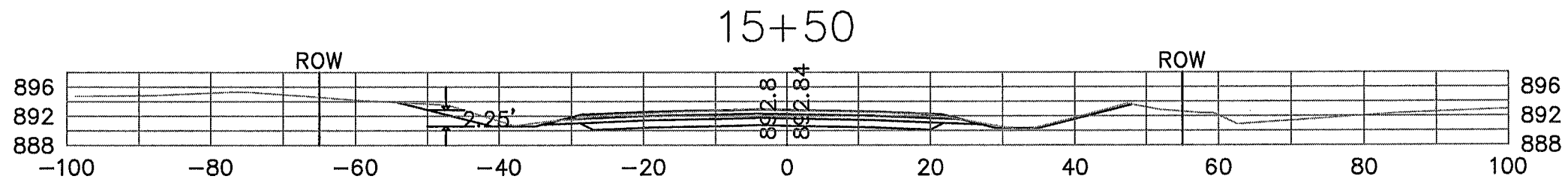
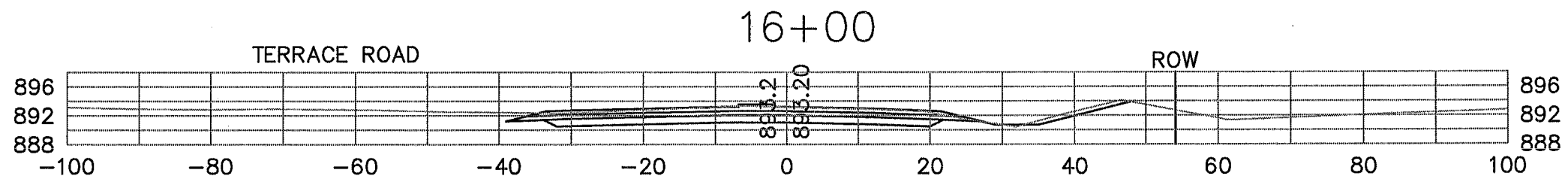
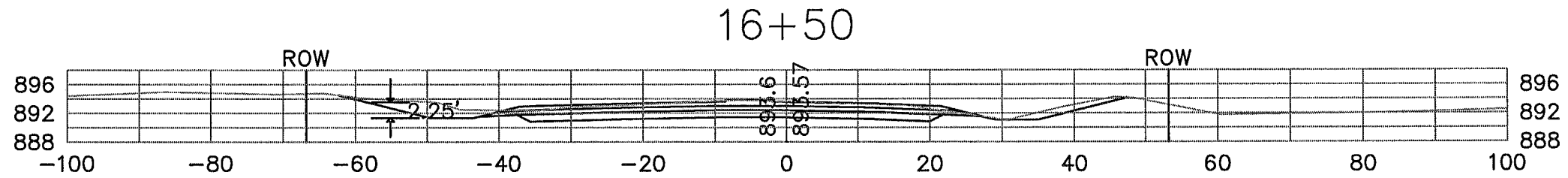
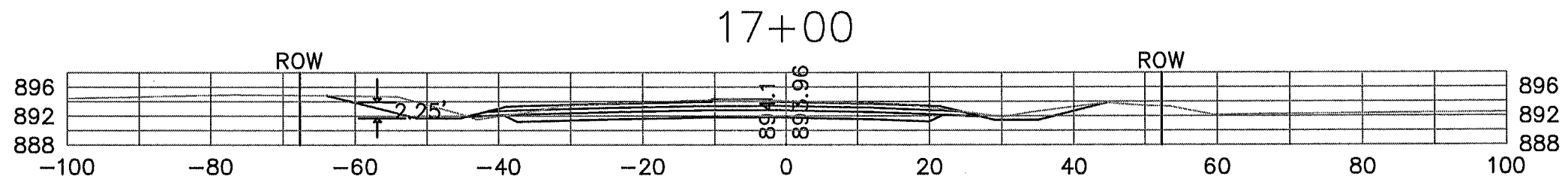
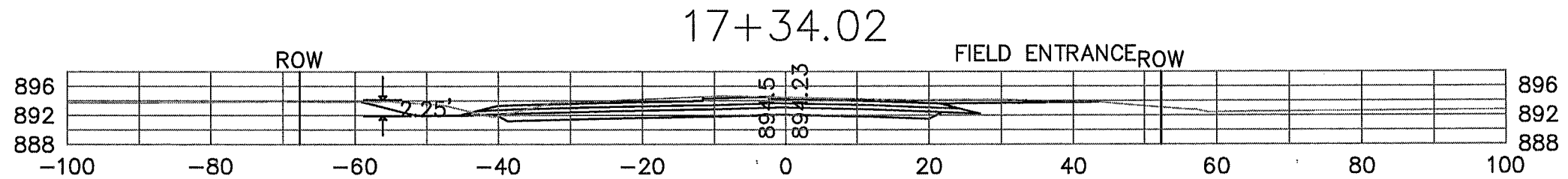
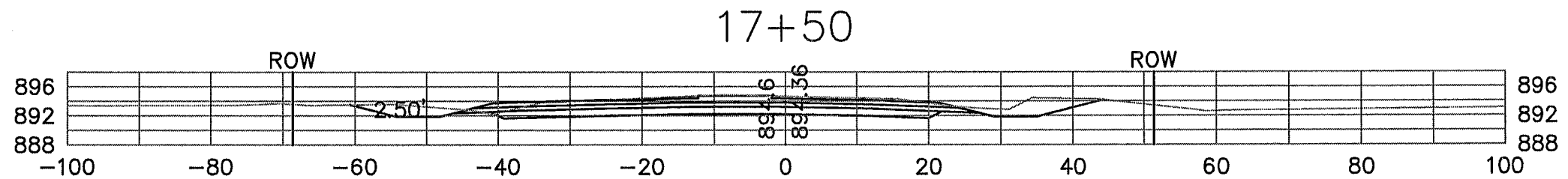
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DRAWN BY: MTH DATE 03/28/04  
 DESIGN BY: MTH DATE 03/28/04  
 CHECKED BY: LAR DATE 00/00/00



STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

CROSS SECTIONS  
 STA 12+50 TO 14+50  
 Sheet 21 of 46 Sheets



NO	DATE	BY	CHKD	APPR	REVISION

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.

PRINT NAME: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 DATE: \_\_\_\_\_ LICENSE NO. \_\_\_\_\_

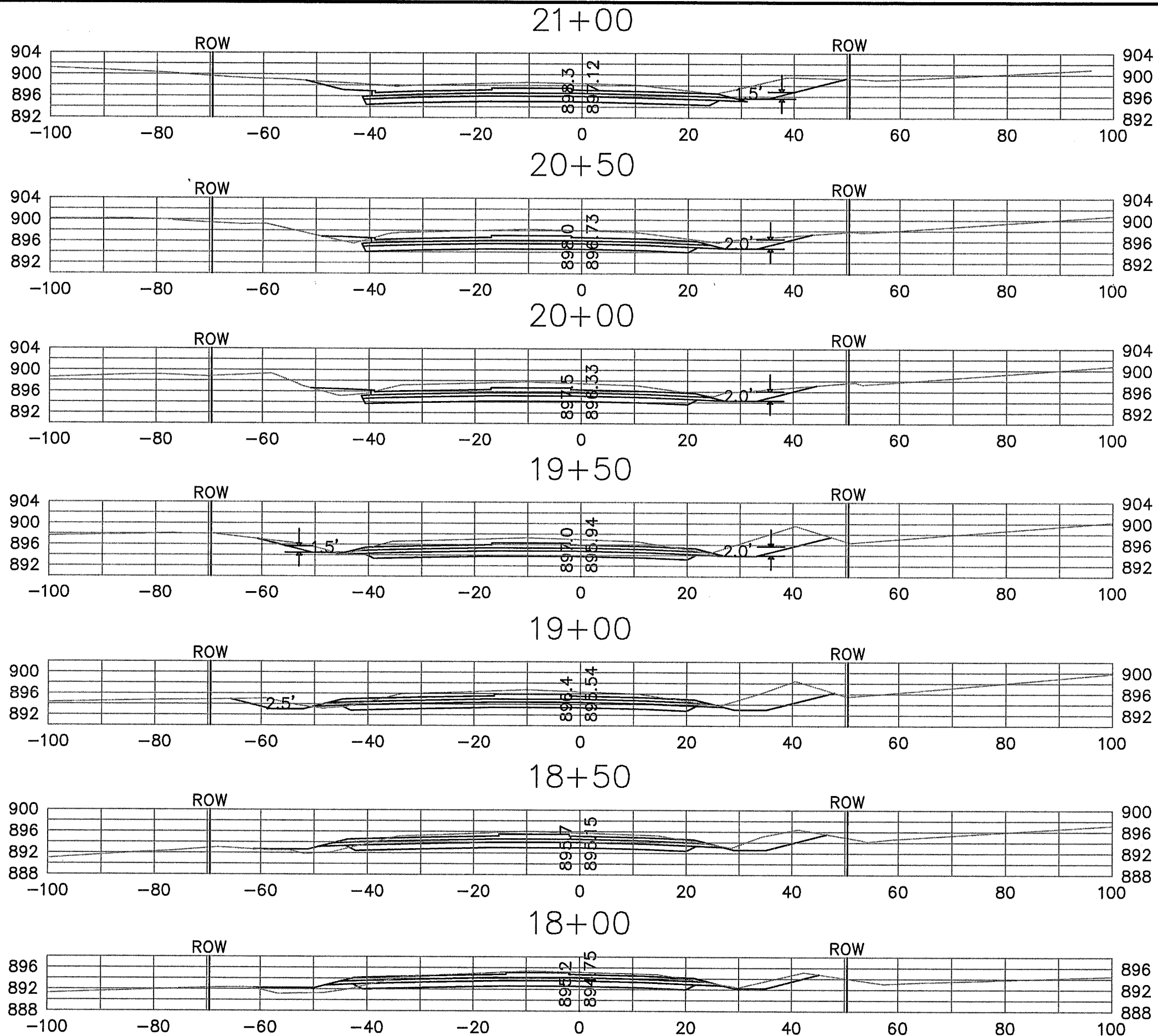
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 DESIGN BY: MTH DATE 03/28/04  
 CHECKED BY: LAR DATE 00/00/00



**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

CROSS SECTIONS  
 STA 15+00 TO 17+50  
 Sheet 22 of 46 Sheets



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.  
 PRINT NAME: \_\_\_\_\_  
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DRAWN BY: MTH DATE 03/28/04  
 DESIGN BY: MTH DATE 03/28/04  
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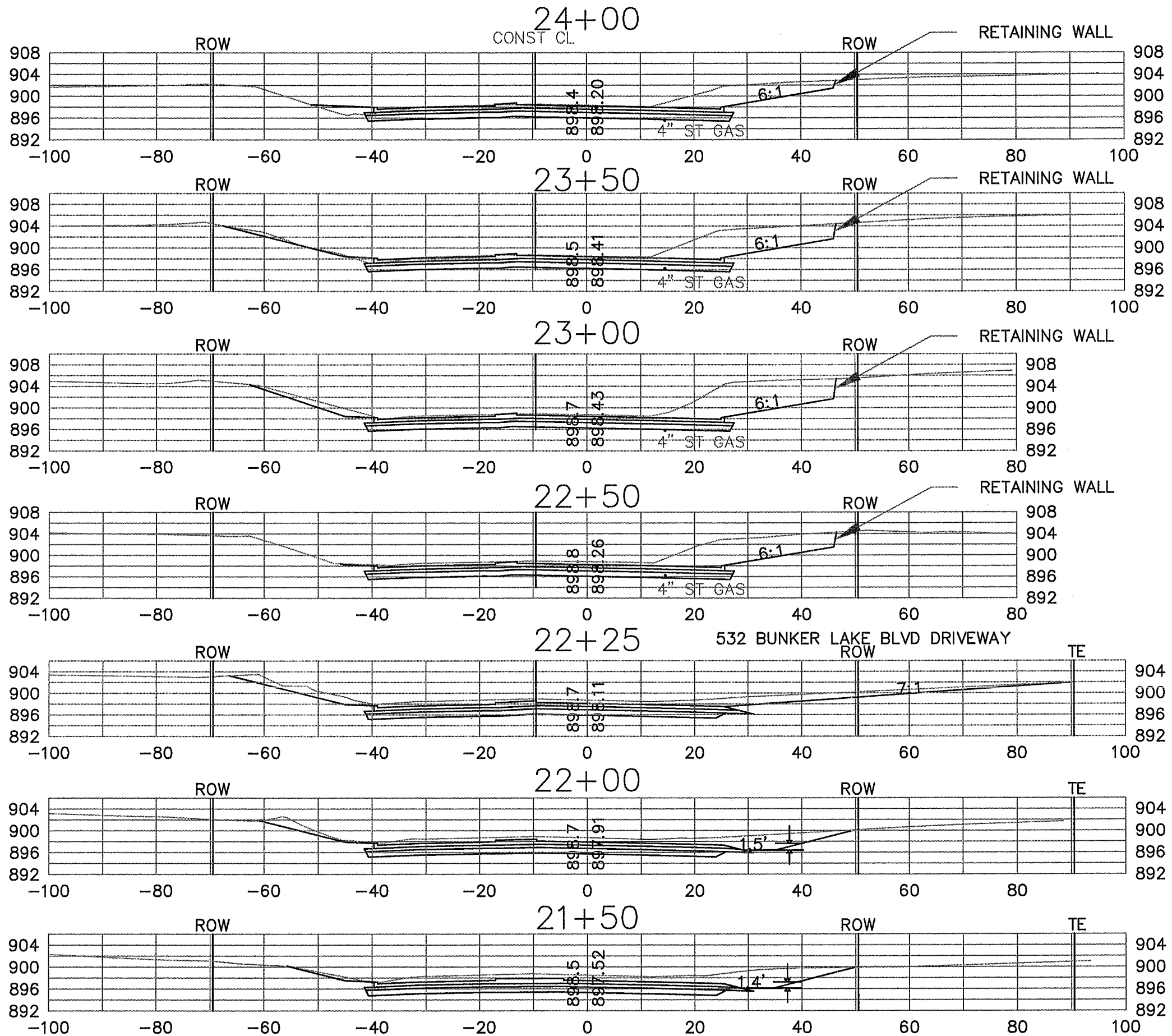
**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

CROSS SECTIONS  
 STA 18+00 TO 21+00  
 Sheet 23 of 46 Sheets

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\X-Sections.dwg 06/03/2004 02:58:23 PM DDT



NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\X-Sections.dwg 06/03/2004 02:46:54 PM CDT

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.

PRINT NAME: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 DATE: \_\_\_\_\_ LICENSE NO. \_\_\_\_\_

DRAWN BY: MTH DATE 03/26/04  
 DESIGN BY: MTH DATE 03/26/04  
 CHECKED BY: LAR DATE 00/00/00



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**CROSS SECTIONS**  
 STA 21+50 TO 24+00  
 Sheet 24 of 46 Sheets





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.

PRINT NAME: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 DATE: \_\_\_\_\_ LICENSE NO. \_\_\_\_\_

DRAWN BY: MTH DATE 03/26/04

DESIGN BY: MTH DATE 03/26/04

CHECKED BY: LAR DATE 00/00/00

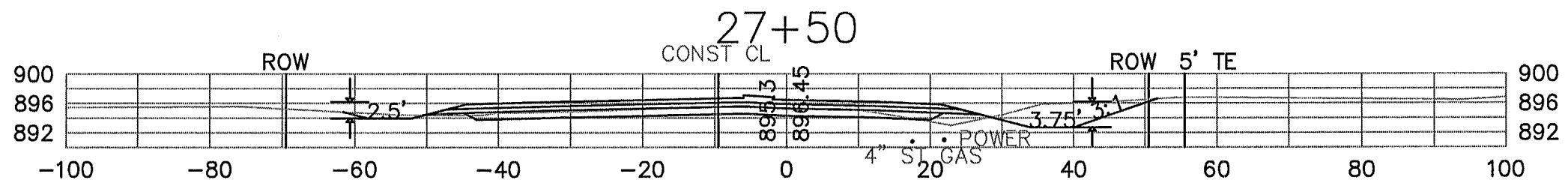
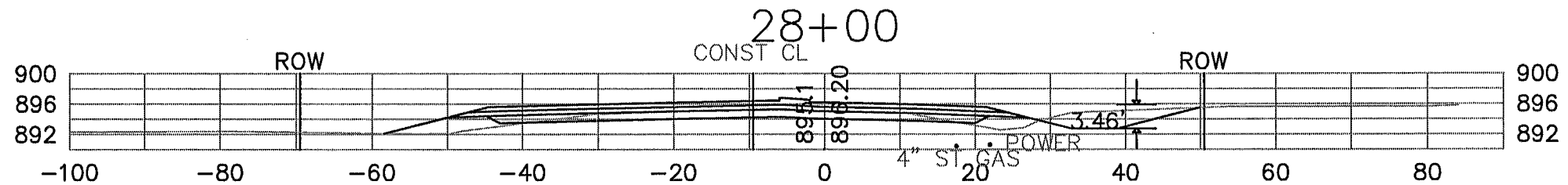
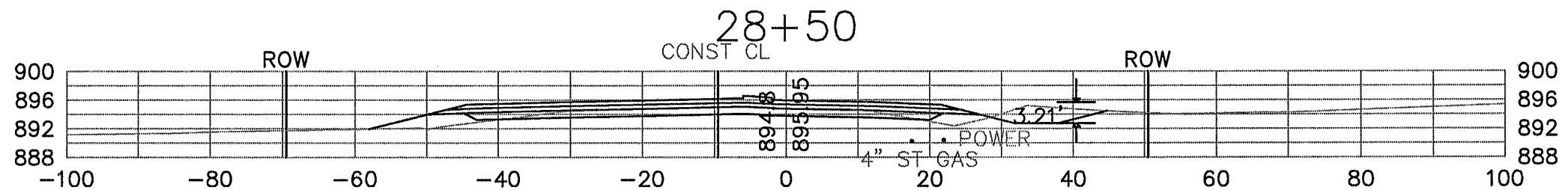
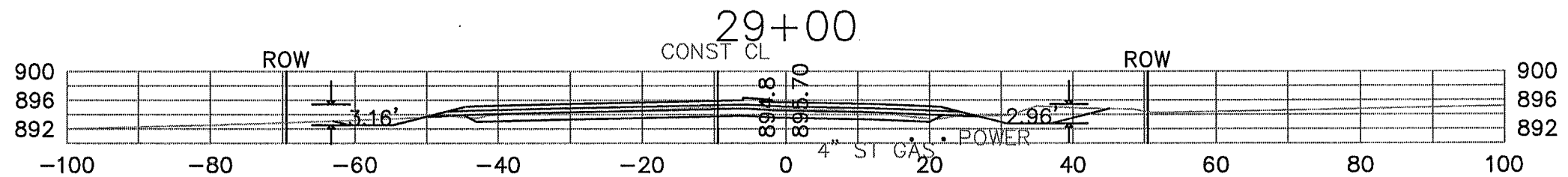
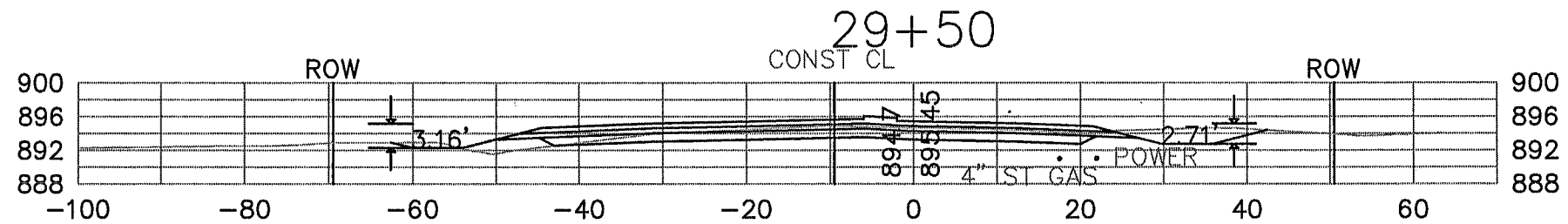
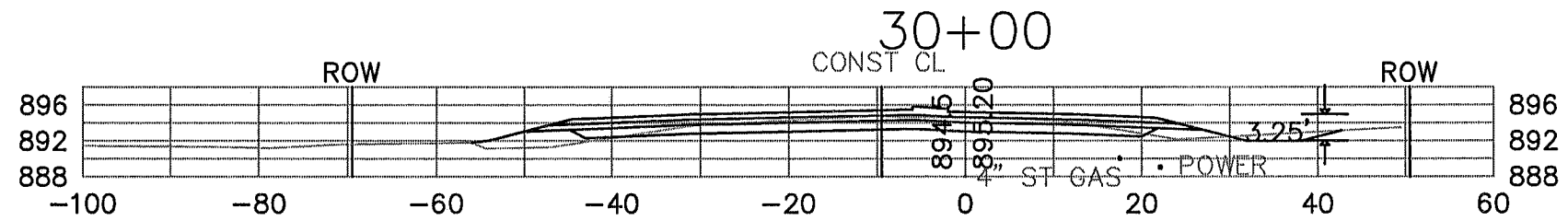


**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**CROSS SECTIONS  
 STA 24+50 TO 27+00**

Sheet 25 of 46 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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.

PRINT NAME: \_\_\_\_\_  
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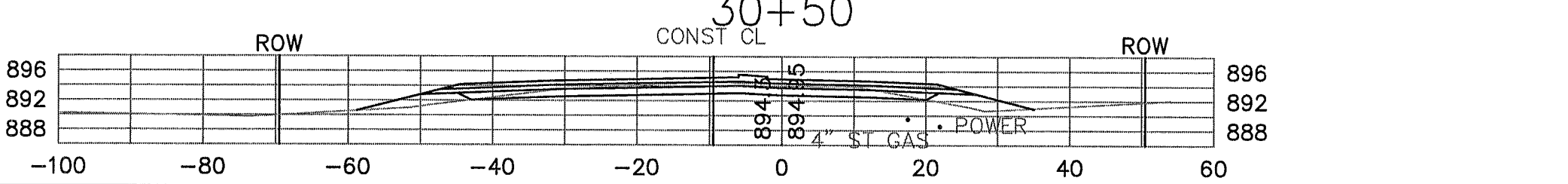
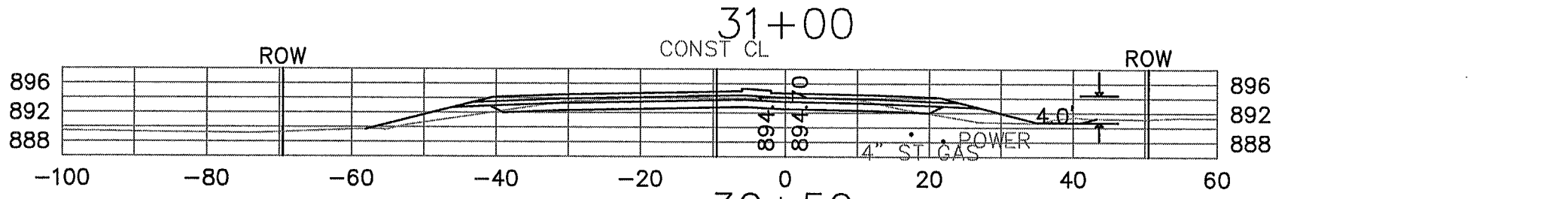
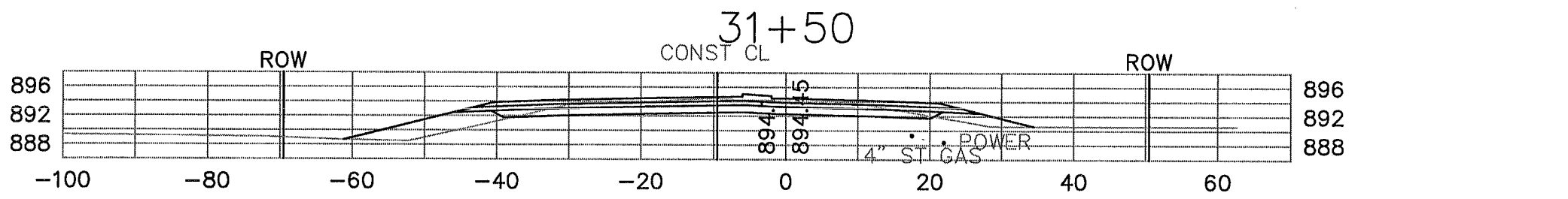
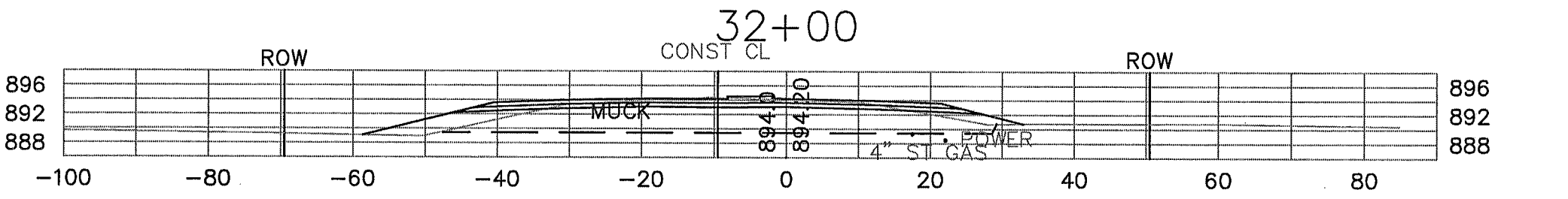
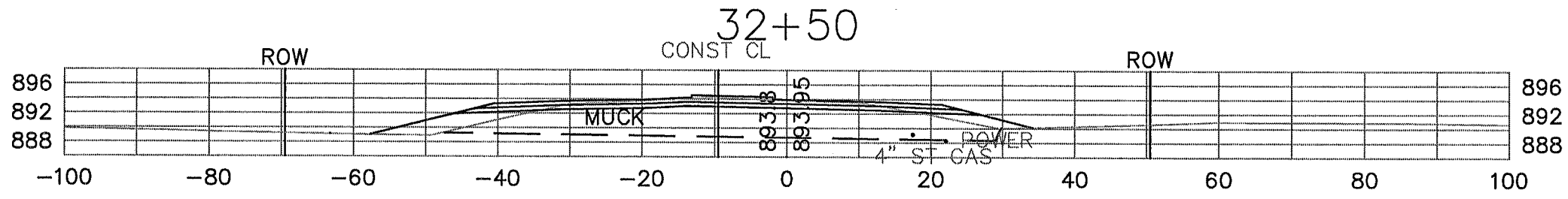
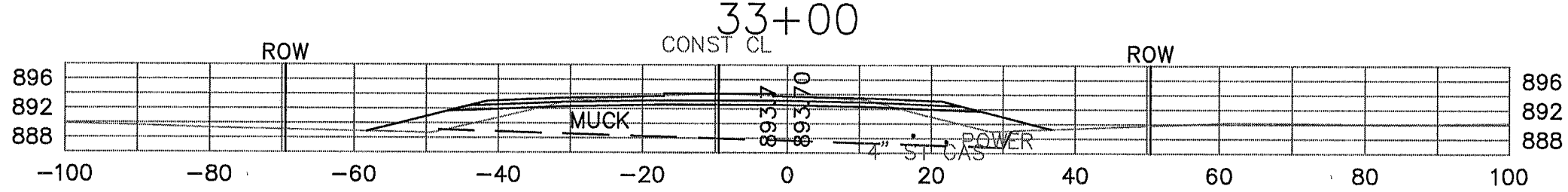
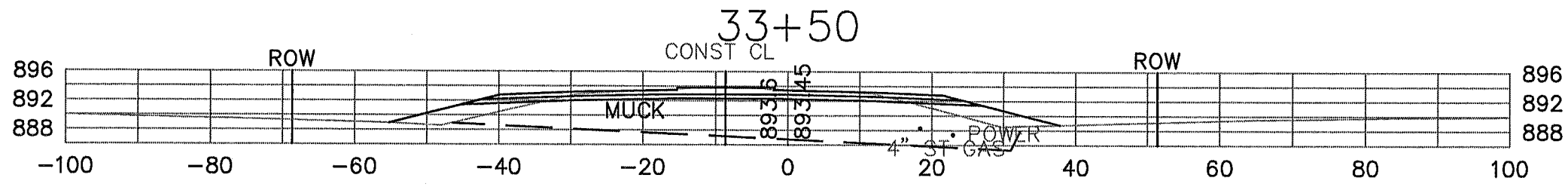
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**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**CROSS SECTIONS**  
 STA 27+50 TO 30+00  
 Sheet 26 of 46 Sheets



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.  
 PRINT NAME: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 DATE: \_\_\_\_\_ LICENSE NO. \_\_\_\_\_

DRAWN BY: \_\_\_\_\_ MTH. DATE 03/28/04.  
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 CHECKED BY: \_\_\_\_\_ LAR. DATE 00/00/00.



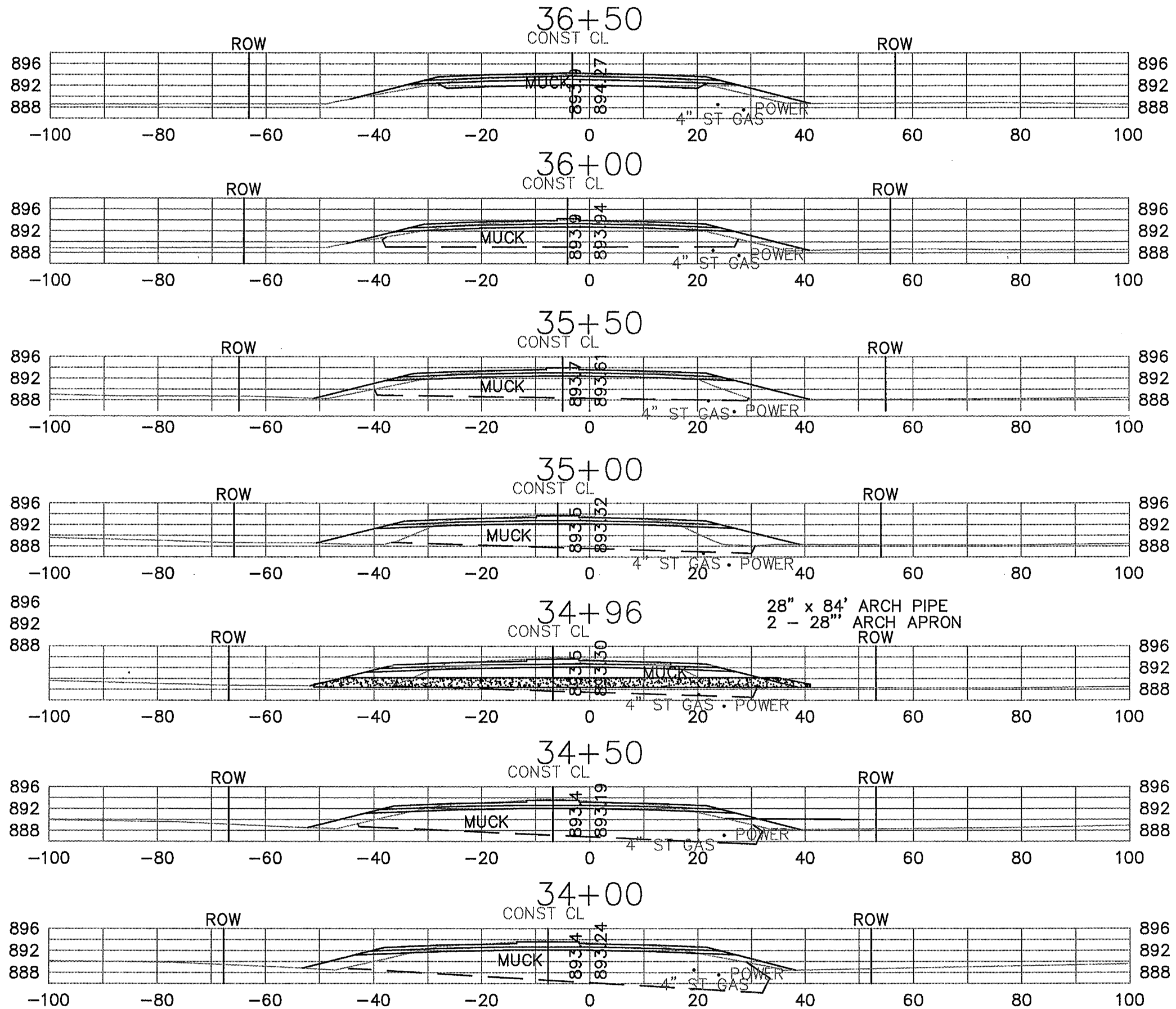
**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

CROSS SECTIONS  
 STA 30+50 TO 33+50  
 Sheet 27 of 46 Sheets

NO	DATE	BY	CKD	APPR	REVISION

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NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\X-Sections.dwg 06/04/2004 07:54:18 AM CDT

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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 SIGNATURE: \_\_\_\_\_  
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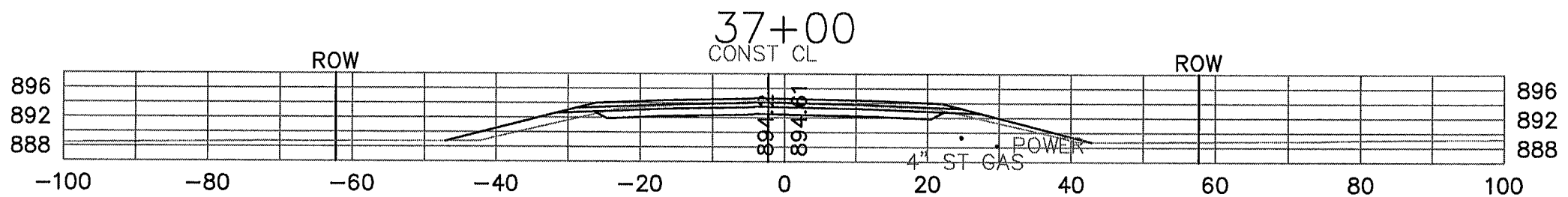
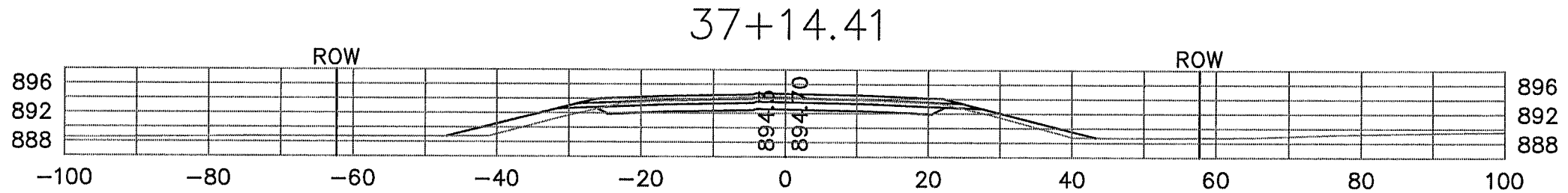
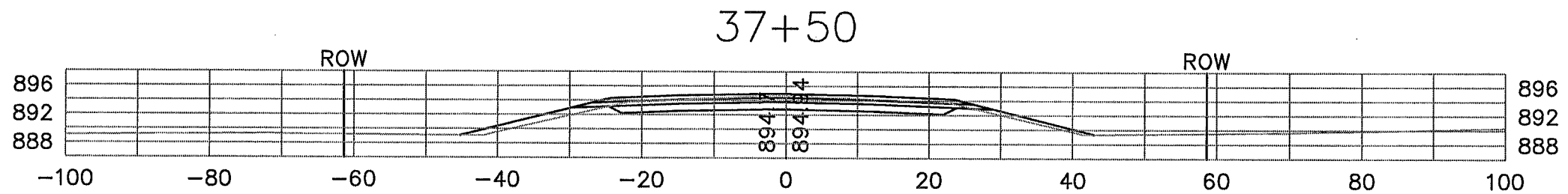
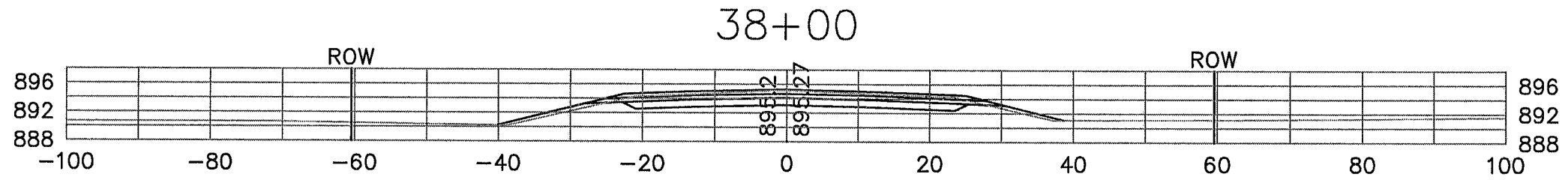
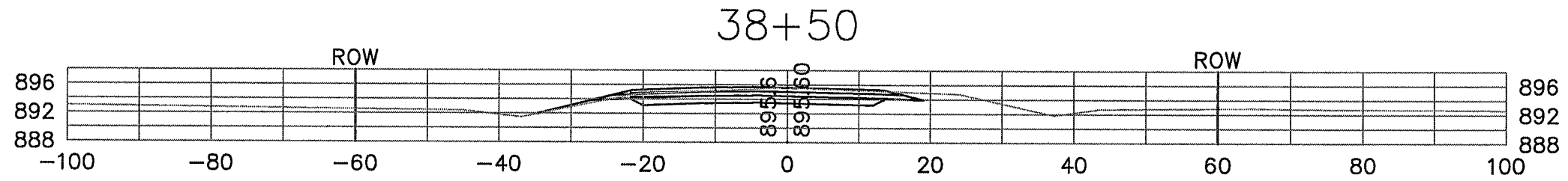
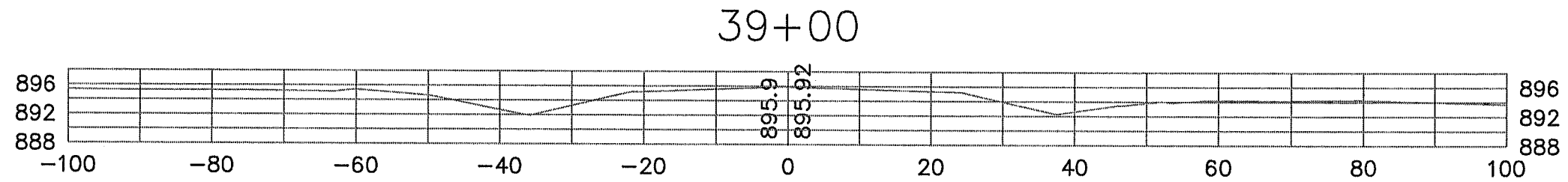
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**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**CROSS SECTIONS**  
 STA 34+00 TO 36+50  
 Sheet 28 of 46 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\X-Sections.dwg 06/04/2004 07:54:18 AM CBT

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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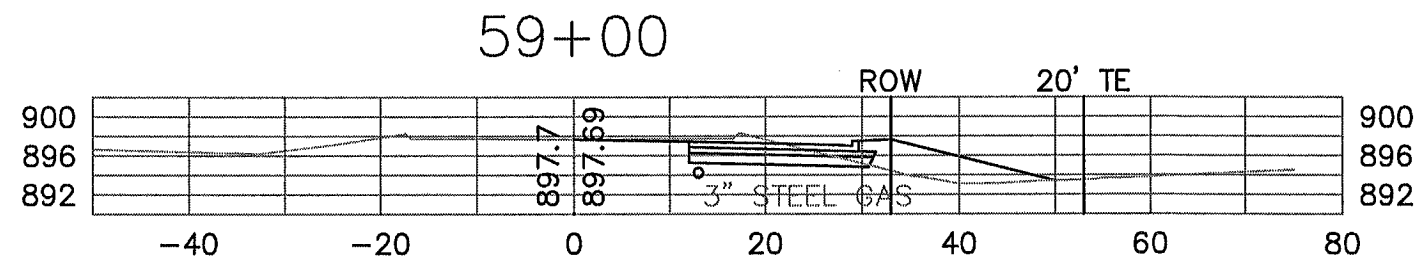
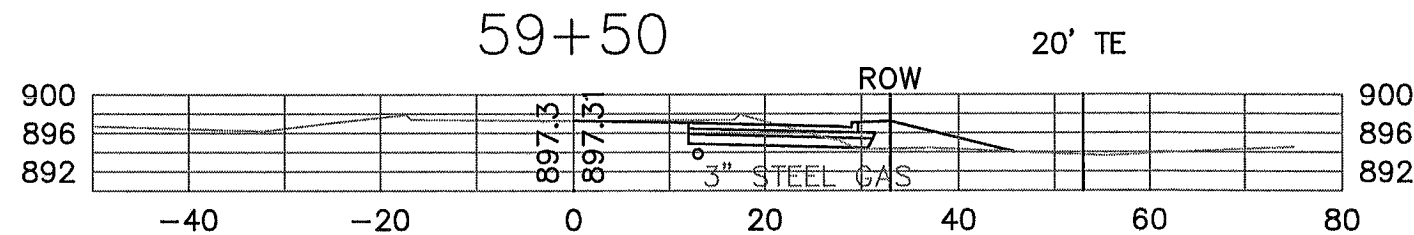
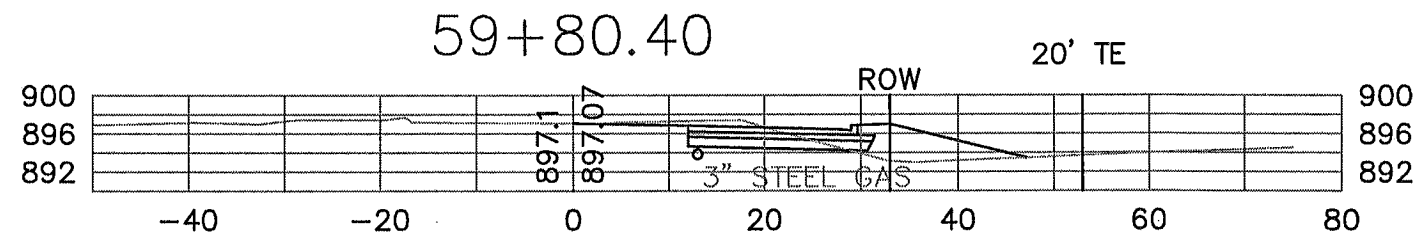
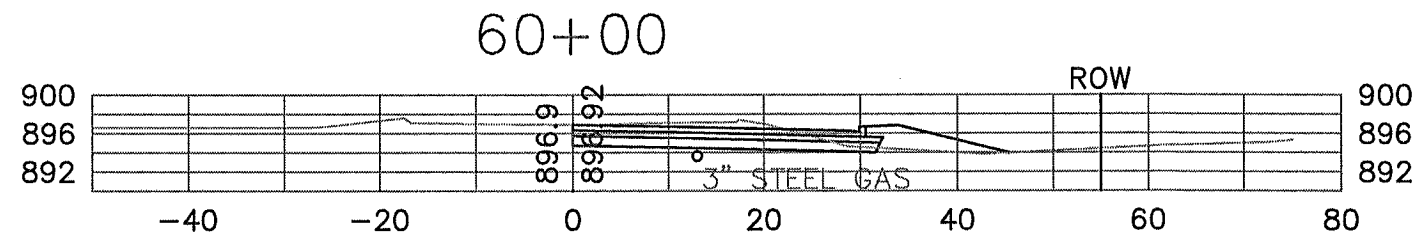
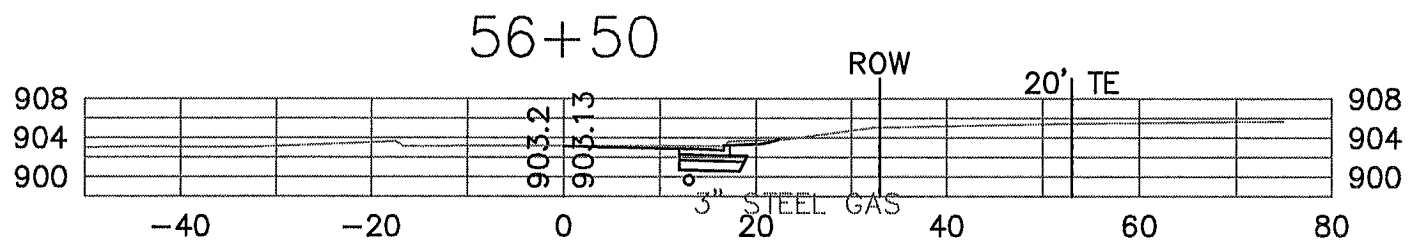
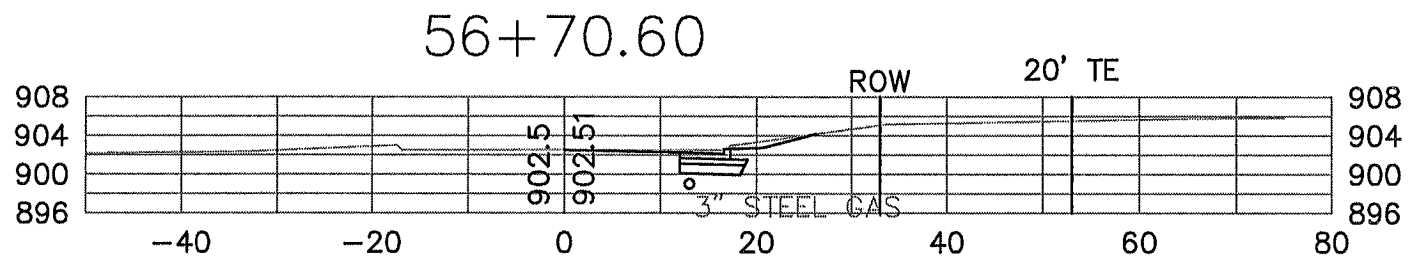
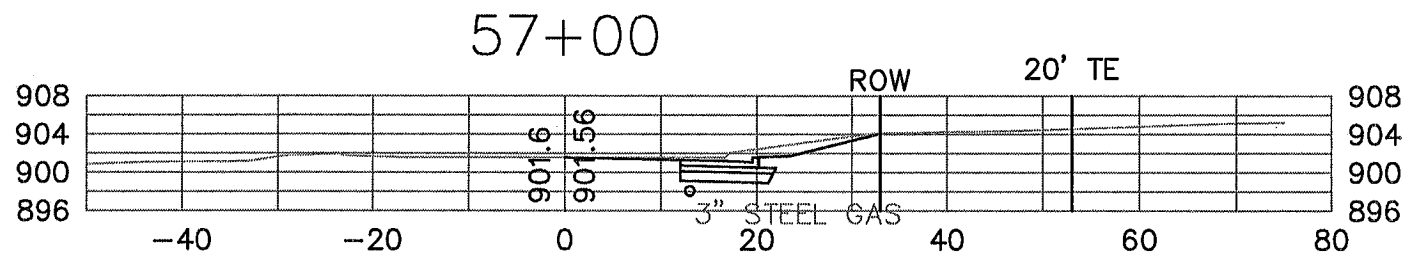
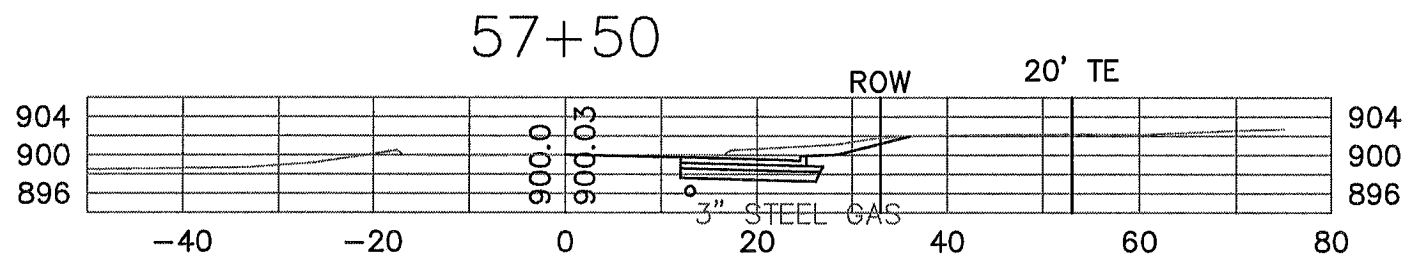
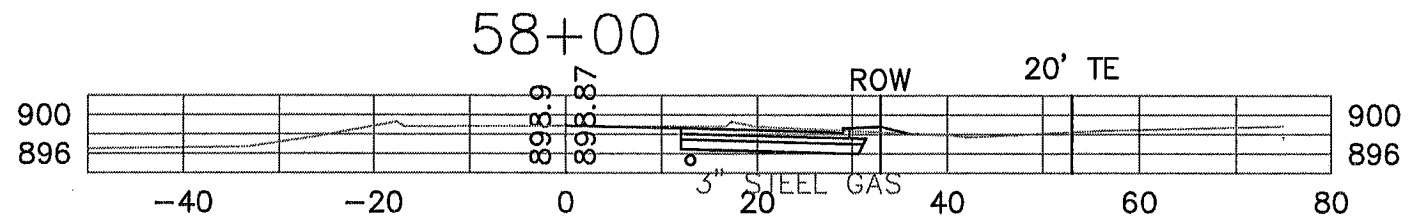
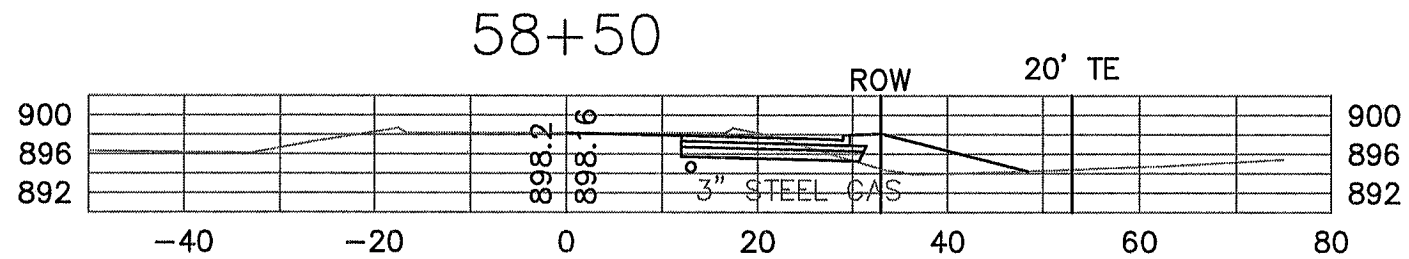


**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

**CROSS SECTIONS  
 STA 37+00 TO 39+00**

Sheet 29 of 46 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\X-Sections.dwg 06/04/2004 07:54:18 AM CDT

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.

PRINT NAME: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_ LICENSE NO. \_\_\_\_\_

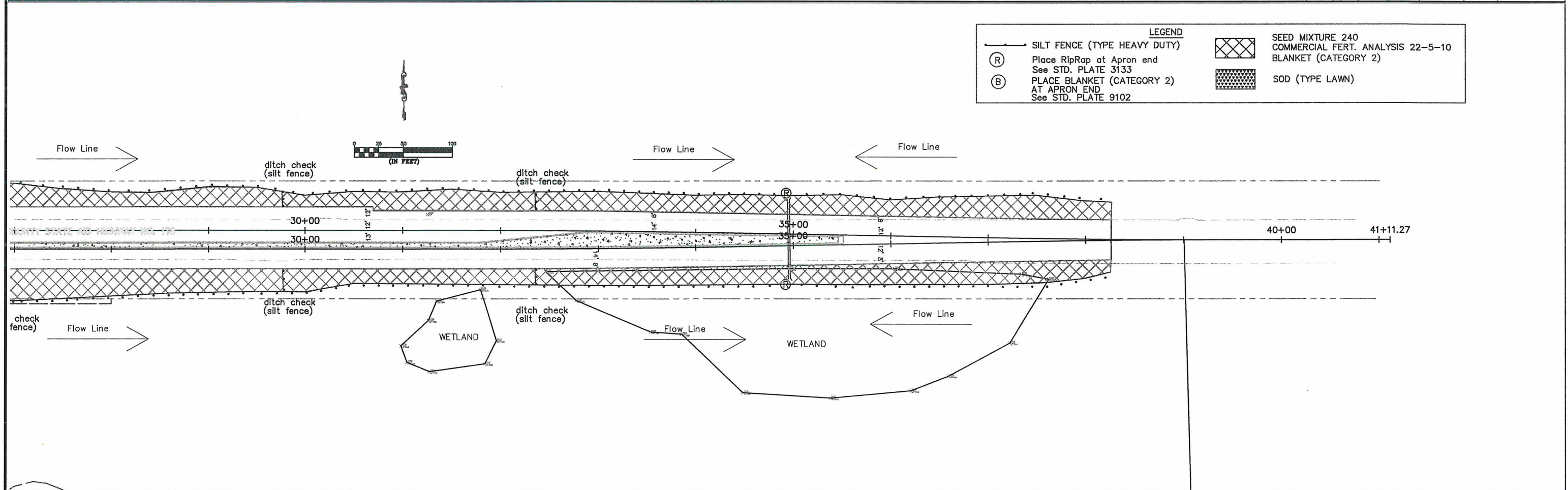
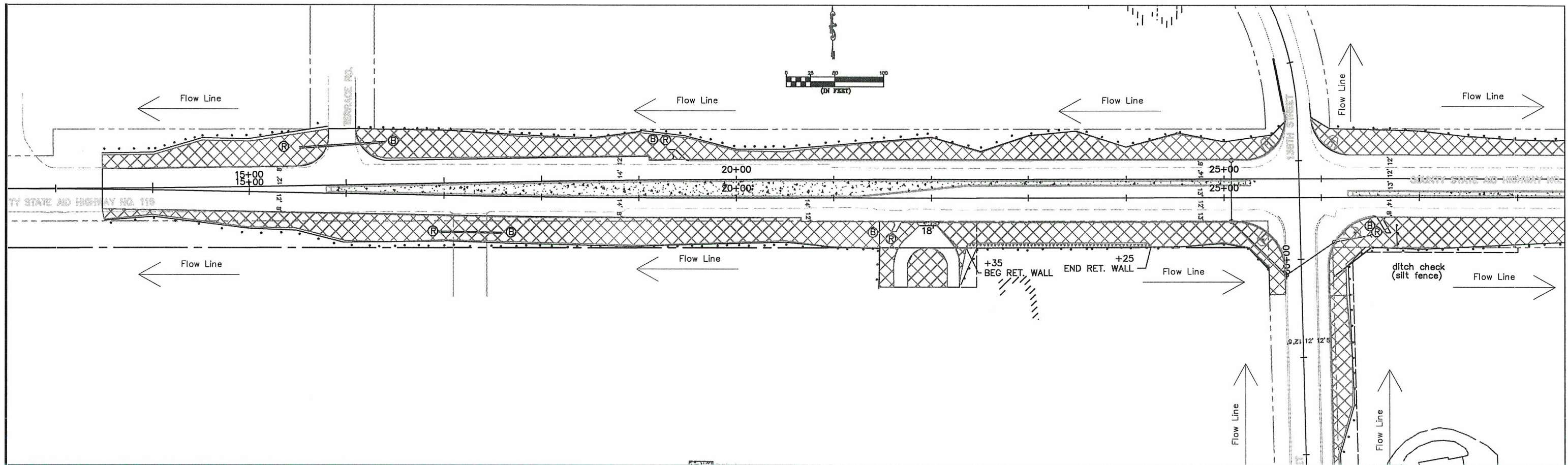
DRAWN BY: MTH DATE 03/26/04  
DESIGN BY: MTH DATE 03/26/04  
CHECKED BY: LAR DATE 00/00/00



ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
STATE AID PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. SP 197-107-02  
COUNTY PROJECT NO. \_\_\_\_\_

CROSS SECTIONS  
JEFFERSON STREET  
STA 56+50 TO 60+00  
Sheet 30 of 46 Sheets

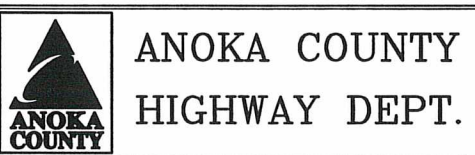


LEGEND	
—	SILT FENCE (TYPE HEAVY DUTY)
(R)	Place RipRap at Apron end See STD. PLATE 3133
(B)	PLACE BLANKET (CATEGORY 2) AT APRON END See STD. PLATE 9102
[Cross-hatch pattern]	SEED MIXTURE 240 COMMERCIAL FERT. ANALYSIS 22-5-10 BLANKET (CATEGORY 2)
[Dotted pattern]	SOD (TYPE LAWN)

NO	DATE	BY	CHKD	APPR	REVISION

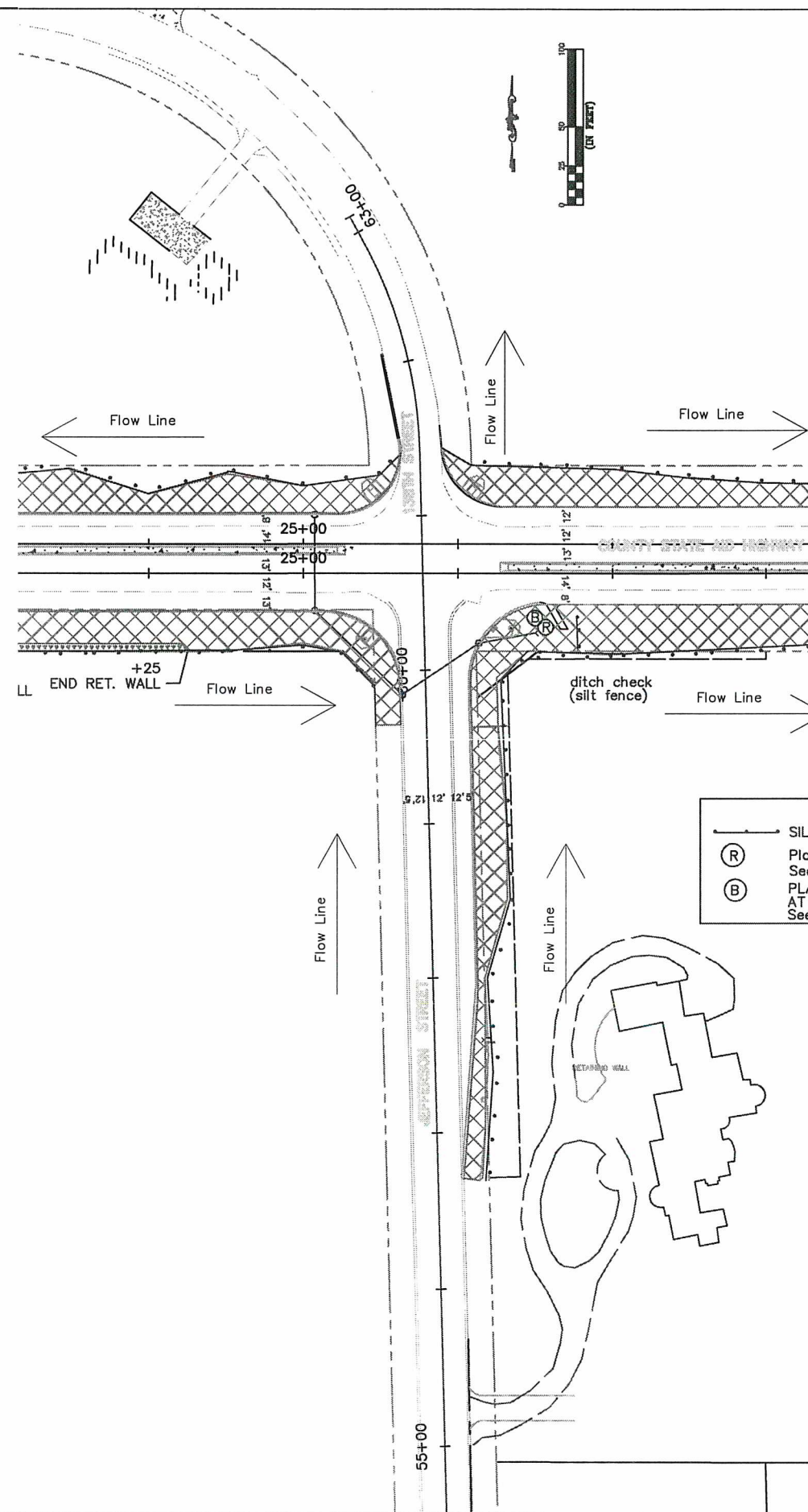
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten L. Olson*  
 DATE: 4/28/04 LICENSE NO. 26826

DRAWN BY: CSO DATE 1/21/04  
 DESIGN BY: MTH DATE 04/05/04  
 CHECKED BY: HG DATE 04/05/04



STATE PROJECT NO. 02-716-06  
 STATE AID PROJECT NO. \_\_\_\_\_  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

TURF ESTABLISHMENT AND EROSION CONTROL  
 STA 13+00 TO 39+00  
 Sheet 31 of 46 Sheets



LEGEND	
	SILT FENCE (TYPE HEAVY DUTY)
	Place RipRap at Apron end See STD. PLATE 3133
	PLACE BLANKET (CATEGORY 2) AT APRON END See STD. PLATE 9102
	SEED MIXTURE 240 COMMERCIAL FERT. ANALYSIS 22-5-10 BLANKET (CATEGORY 2)
	SOD (TYPE LAWN)

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Turf Estab.dwg 07/27/2004 04:12:06 PM CDT

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.

PRINT NAME: KIRSTEN L. OLSON

SIGNATURE:

DATE: 7/28/04 LICENSE NO. 28826

DRAWN BY CSO DATE 1/21/04

DESIGN BY MTL DATE 04/05/04

CHECKED BY HG DATED 4/05/04



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. 02-716-06

STATE AID PROJECT NO. \_\_\_\_\_

CITY PROJECT NO. SP 197-107-02

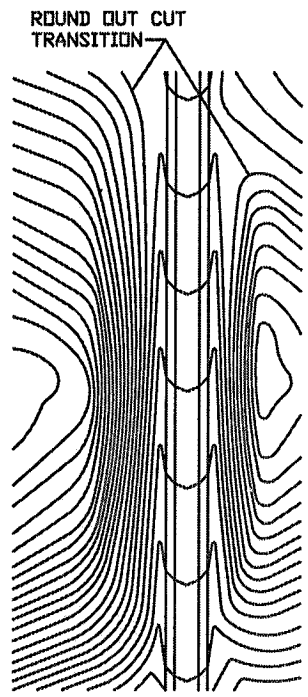
COUNTY PROJECT NO. \_\_\_\_\_

**TURF ESTABLISHMENT  
AND EROSION CONTROL**

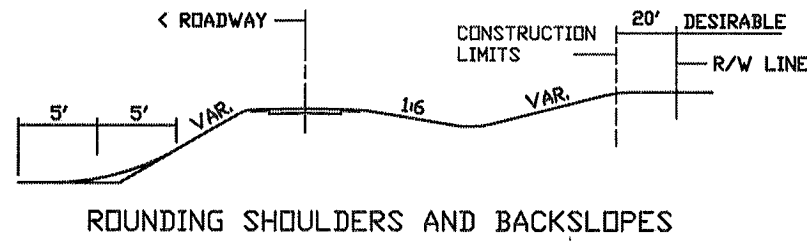
STA 56+00 TO 60+00

Sheet 32 of 46 Sheets

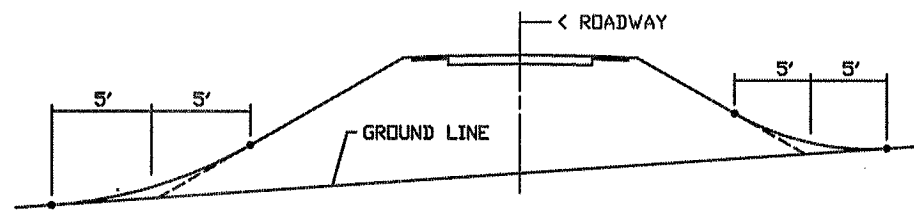




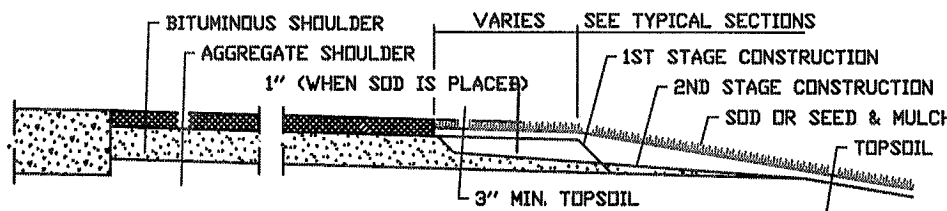
CONTOURING ROAD CUTS



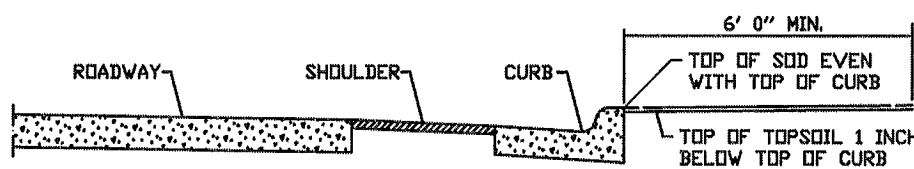
ROUNDING SHOULDERS AND BACKSLOPES



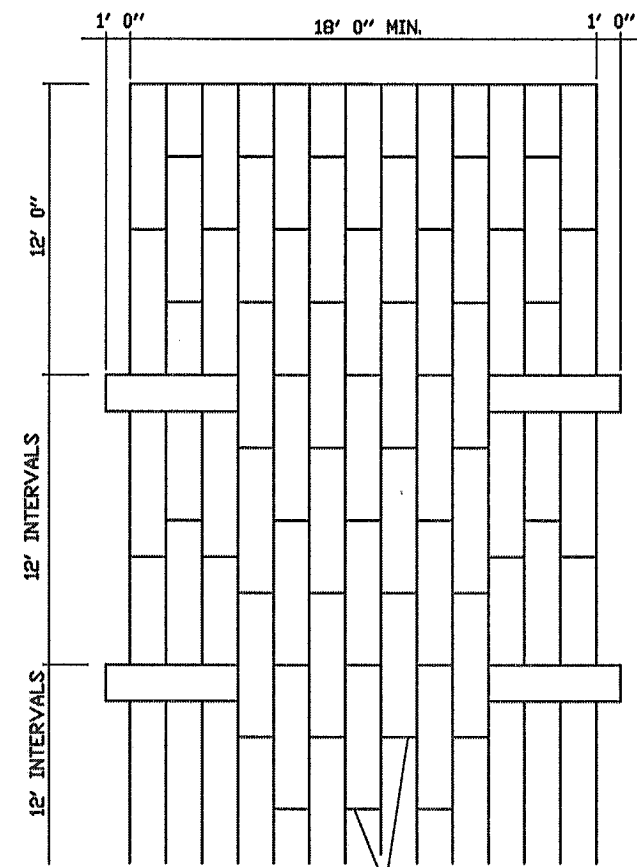
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



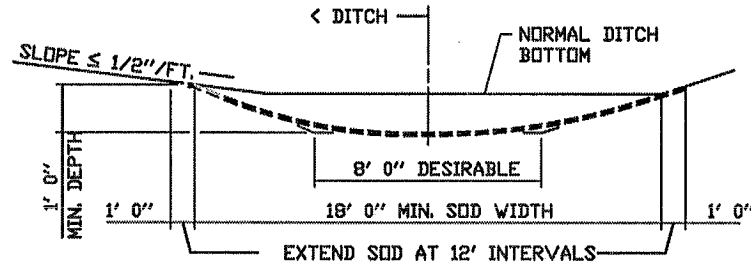
SHAPING AND TOPSOILING INSLOPES



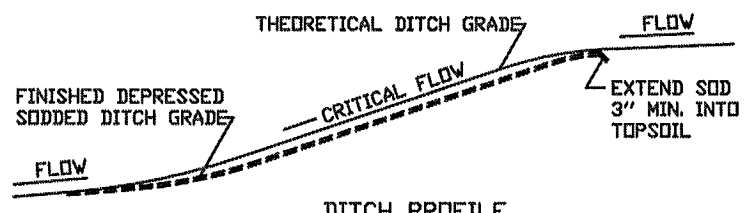
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



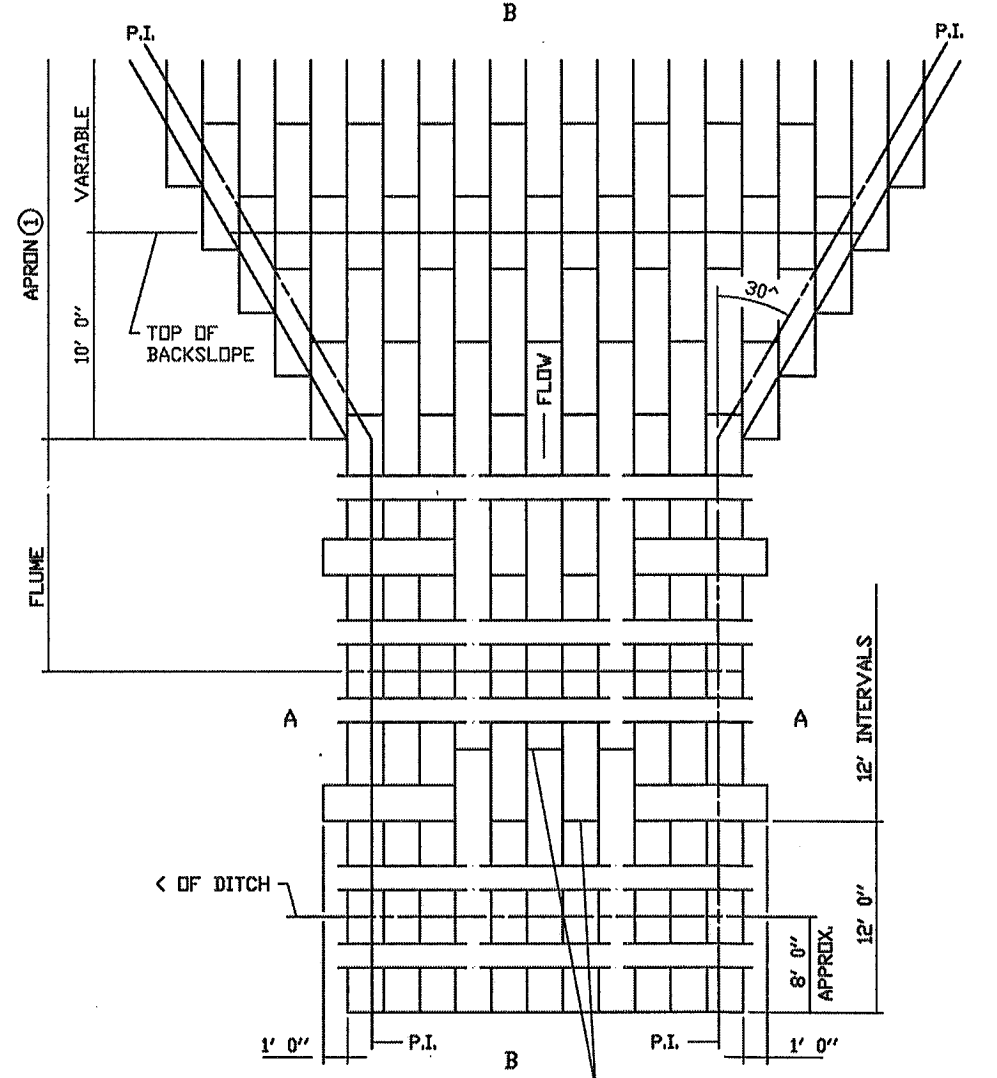
STAGGER JOINTS  
PLAN VIEW



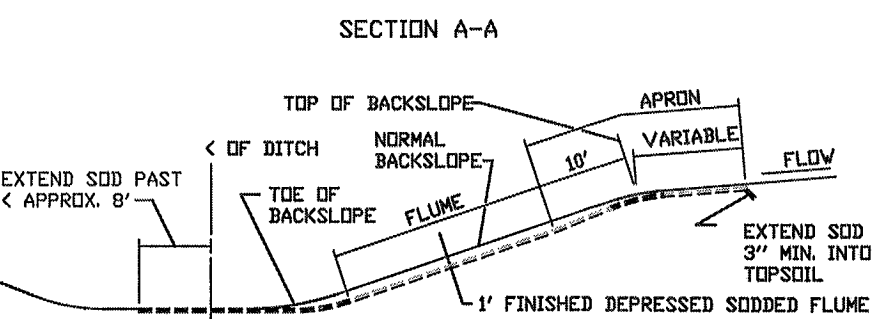
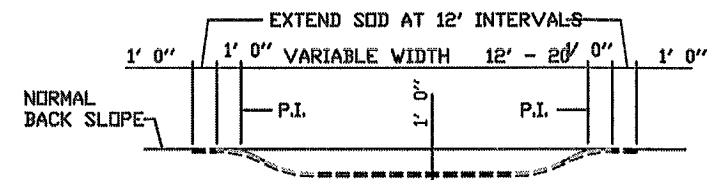
SODDED DITCH CROSS SECTION  
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.),  
FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



DITCH PROFILE  
SODDED DITCH DETAILS



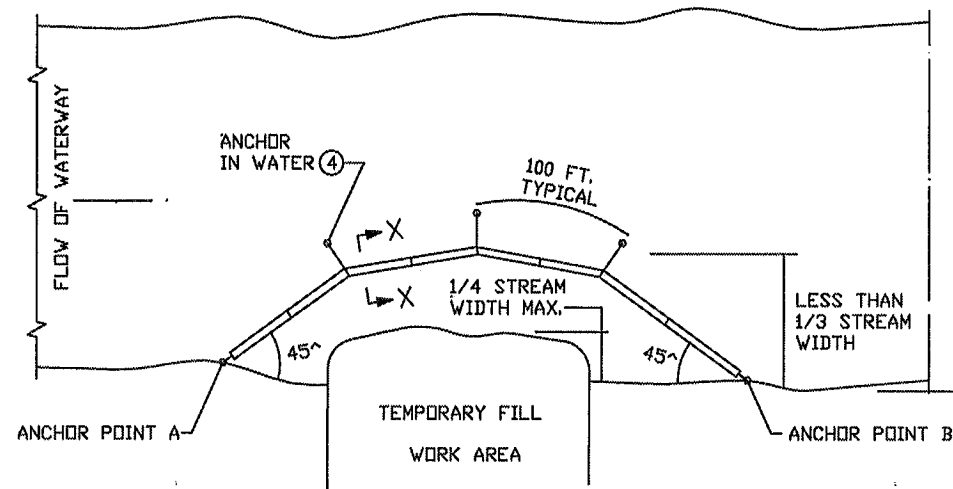
SODDED FLUME DETAILS  
PLAN VIEW



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.

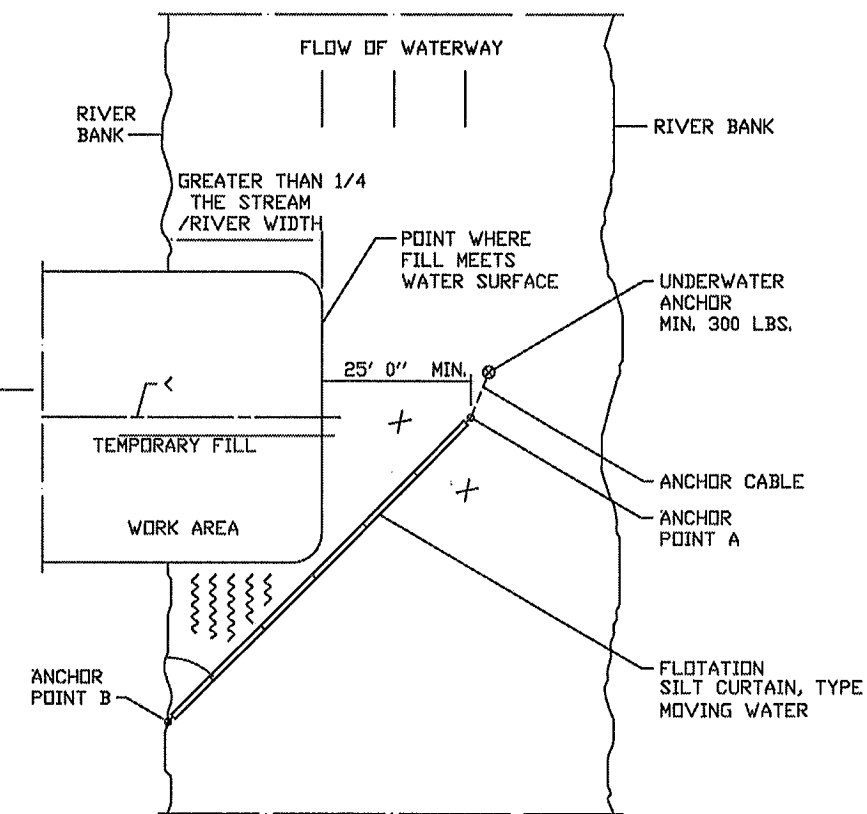
STANDARD SHEET NO. 5-297.404	STATE PROJECT NO. SP 02-716-06 STATE AID PROJECT NO.	PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: NOVEMBER 20, 2002	CITY PROJECT NO. SP 197-107-02 COUNTY PROJECT NO.	
		Sheet 33 of 46 Sheets



PLAN VIEW  
**FLOTATION SILT CURTAIN - TYPE WORK AREA**  
 ( SPEC. 3887 )  
 FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:  
 WHEN TEMPORARY FILL ENCRDACHES LESS THAN 1/4 OF THE WIDTH OF STREAM,  
 MAXIMUM WATER VELOCITY: 5 FT./SEC.  
 MAXIMUM WATER DEPTH: 11 FT.

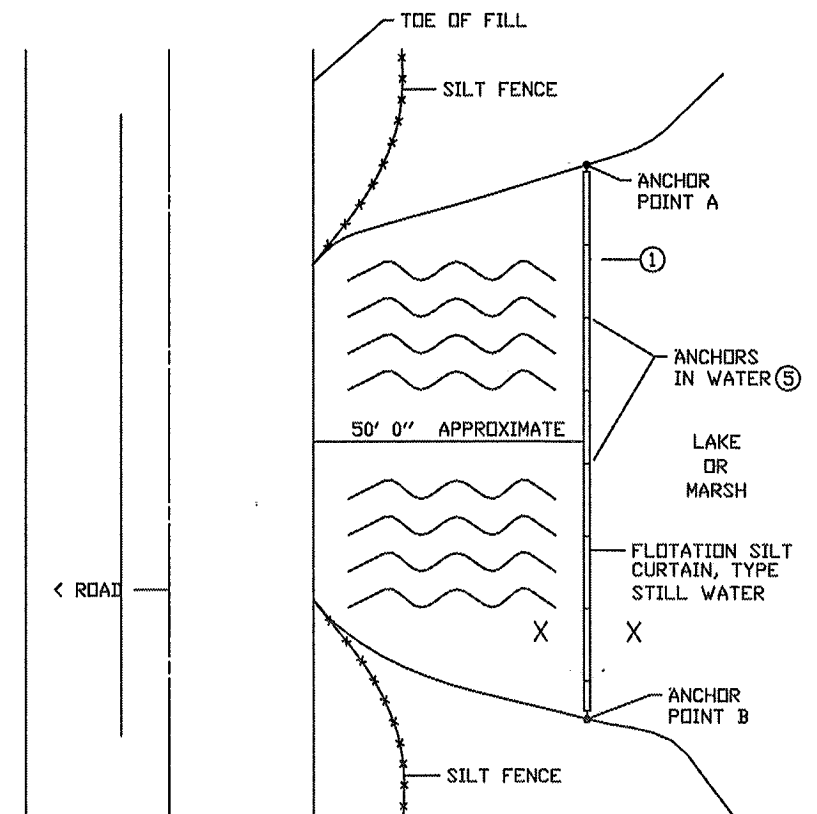
A



ANGLE	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

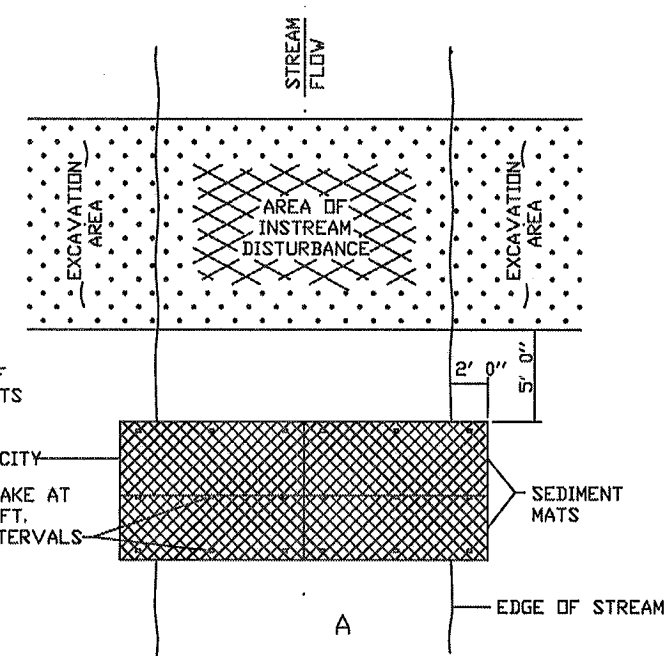
PLAN VIEW  
**FLOTATION SILT CURTAIN - TYPE MOVING WATER**  
 ( SPEC. 3887 )

DESIGN GUIDELINES:  
 WHEN TEMPORARY FILL ENCRDACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM,  
 MAXIMUM WATER DEPTH: 11 FT. ①  
 MINIMUM WATER DEPTH: 3 FT.  
 MAXIMUM WATER VELOCITY: 5 FT./SEC.

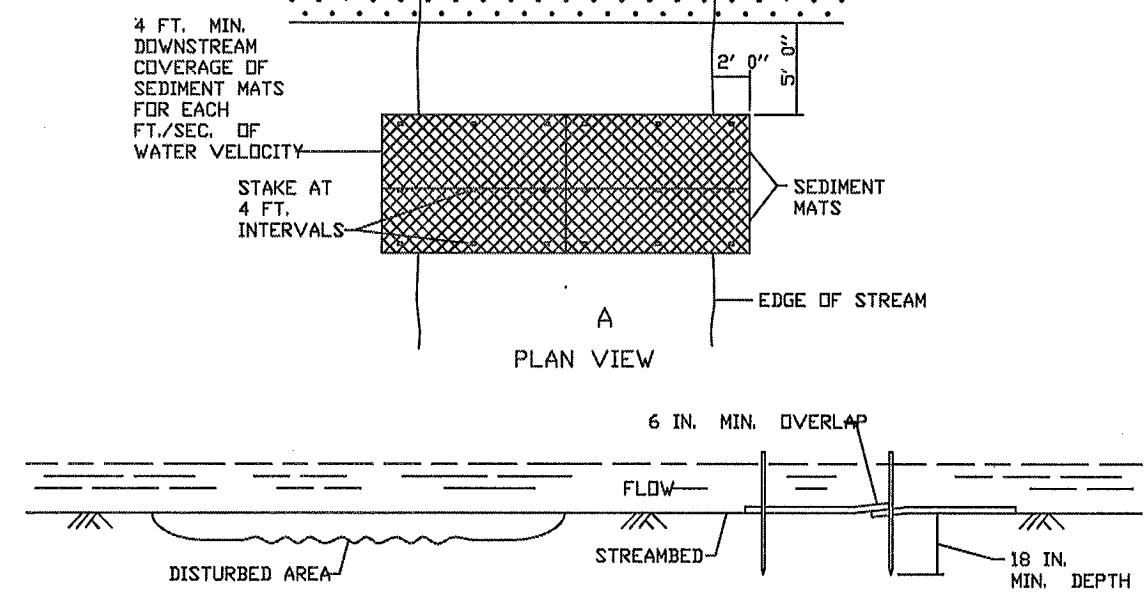


PLAN VIEW  
**FLOTATION SILT CURTAIN - TYPE STILL WATER**  
 ( SPEC. 3887 )

DESIGN GUIDELINES:  
 MAXIMUM WATER DEPTH: 11 FT. ①  
 MINIMUM WATER DEPTH: 3 FT.

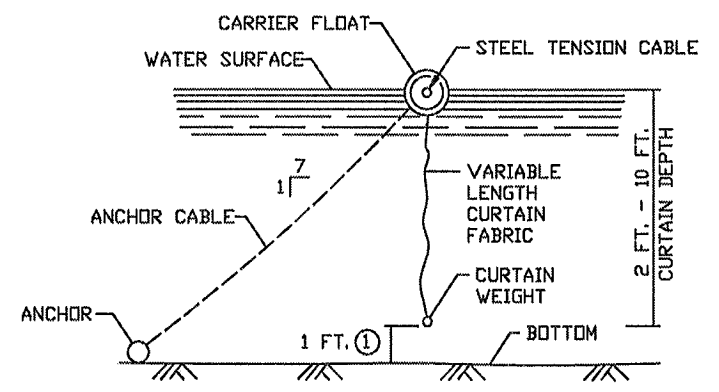


PLAN VIEW

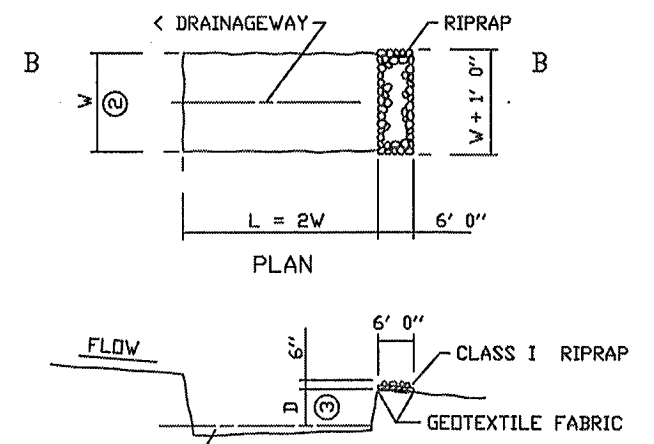


SECTION A-A  
**SEDIMENT MAT**  
 ( SPEC. 3894 )

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



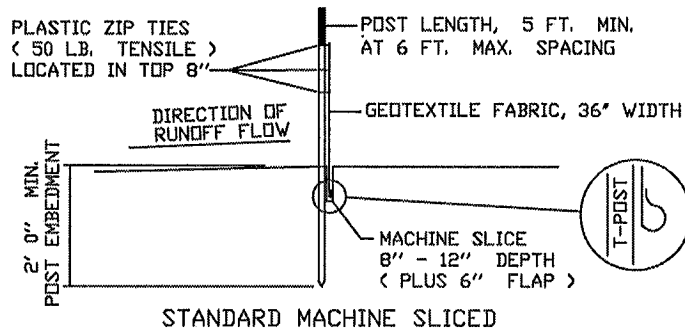
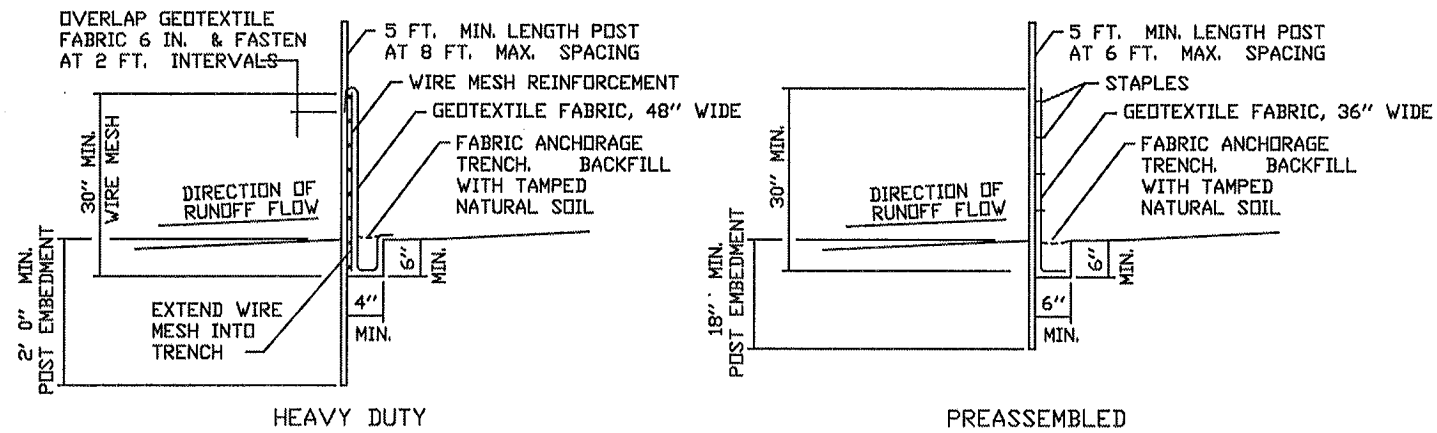
SECTION X-X  
**FLOTATION SILT CURTAINS**  
 ( SPEC. 3887 )



SECTION B-B  
**SEDIMENT TRAP DETAIL**  
 ( SPEC. 2573 )

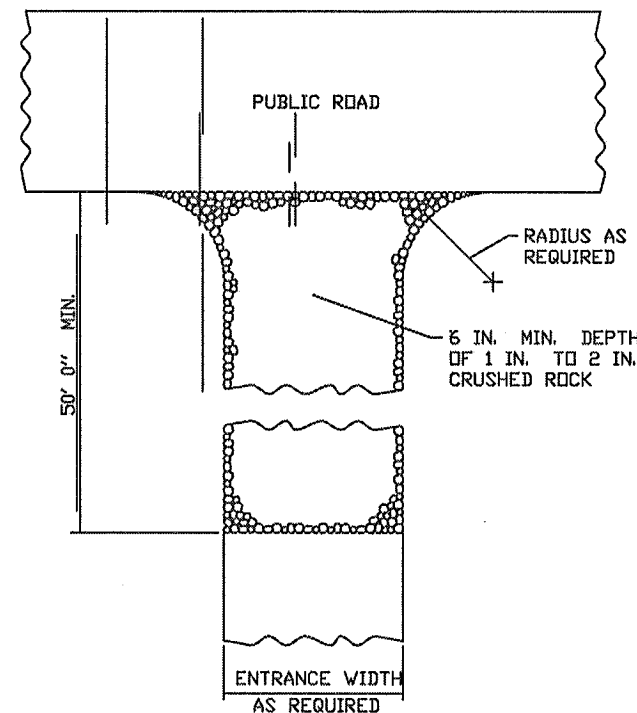
- NOTES:  
 SEE SPECS. 2573, 3887 & 3894.
- ① CURTAIN 1 FT. FROM BOTTOM
  - ② W = 10 FT. MIN., 20 FT. MAX.
  - ③ D = 2 FT.
  - ④ 100 FT. MAX. SPACING BETWEEN ANCHORS, MIN. 40 LBS.
  - ⑤ USE ENOUGH ANCHORS TO HOLD SILT CURTAIN IN PLACE.

STANDARD SHEET NO. 5-297.405 ( 1 of 4 )	STATE PROJECT NO. <u>SP 02-716-06</u>	<b>TEMPORARY EROSION CONTROL</b>
STANDARD APPROVED: JULY 30, 2001	STATE AID PROJECT NO. _____ CITY PROJECT NO. <u>SP 197-107-02</u> COUNTY PROJECT NO. _____	
		Sheet <u>34</u> of <u>46</u> Sheets

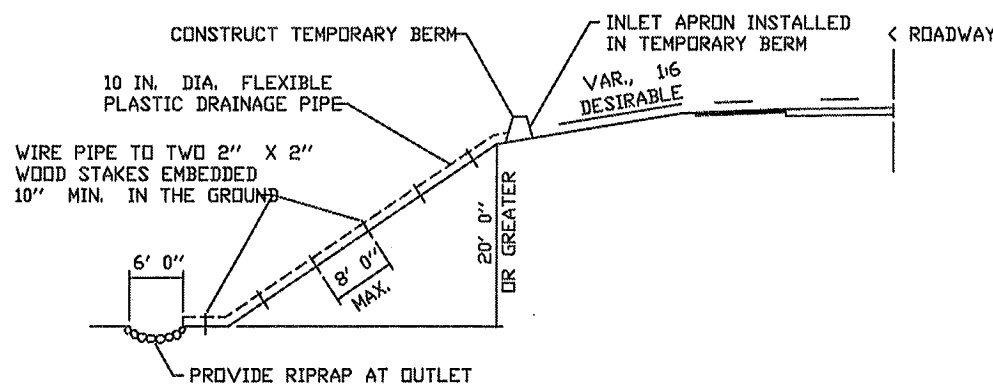
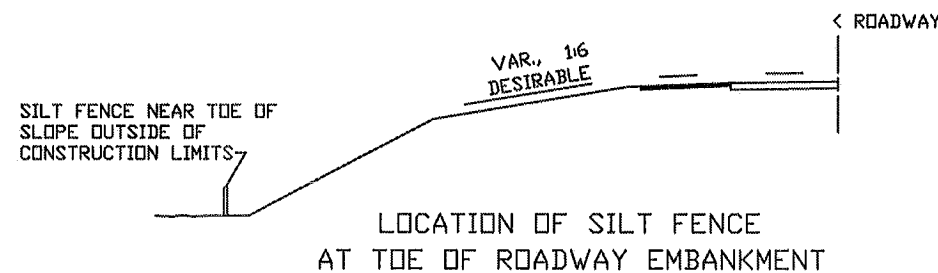


DESIGN GUIDELINES:  
MAXIMUM CONTRIBUTING AREA: 3 ACRES

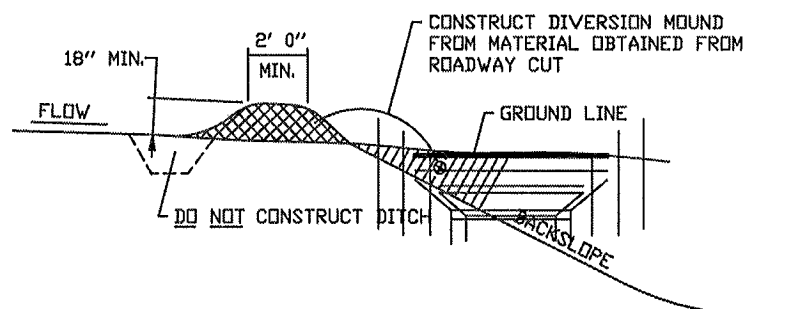
**SILT FENCE DETAILS**  
TO PROTECT AREAS FROM SHEET FLOW  
( SEE SPEC. 3886 )



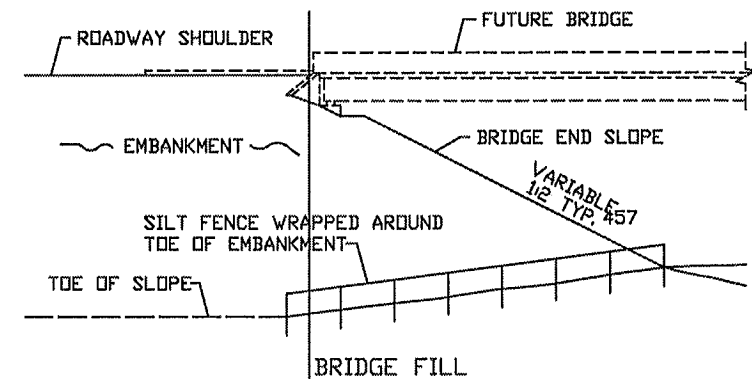
**ROCK CONSTRUCTION ENTRANCE**



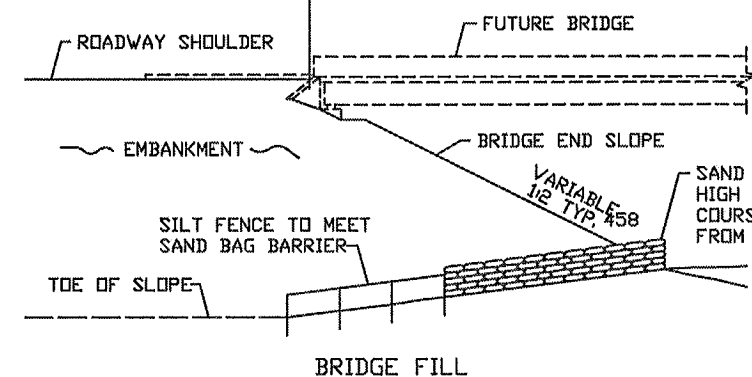
DESIGN GUIDELINES:  
STORM FREQUENCY: 2 YEAR - 24 HOUR  
MAXIMUM DRAINAGE AREA: 3 ACRES



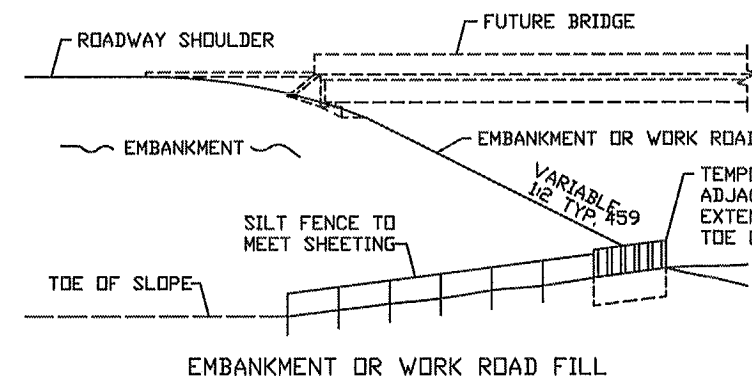
DESIGN GUIDELINES:  
STORM FREQUENCY: 10 YEAR - 24 HOUR  
MAXIMUM DRAINAGE AREA: 5 ACRES  
MAXIMUM DIVERSION: GRADE 5%



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**

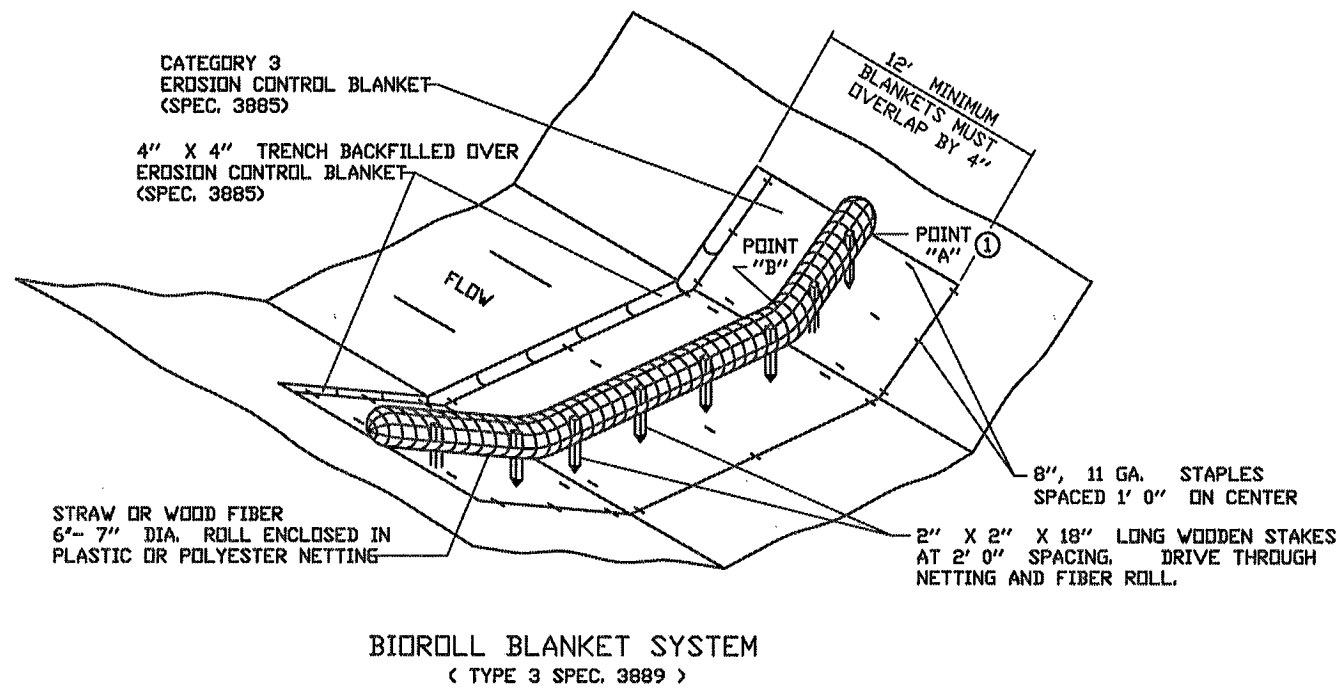
STANDARD SHEET NO.  
5-297.405 ( 2 of 4 )

STANDARD APPROVED:  
JULY 30, 2001

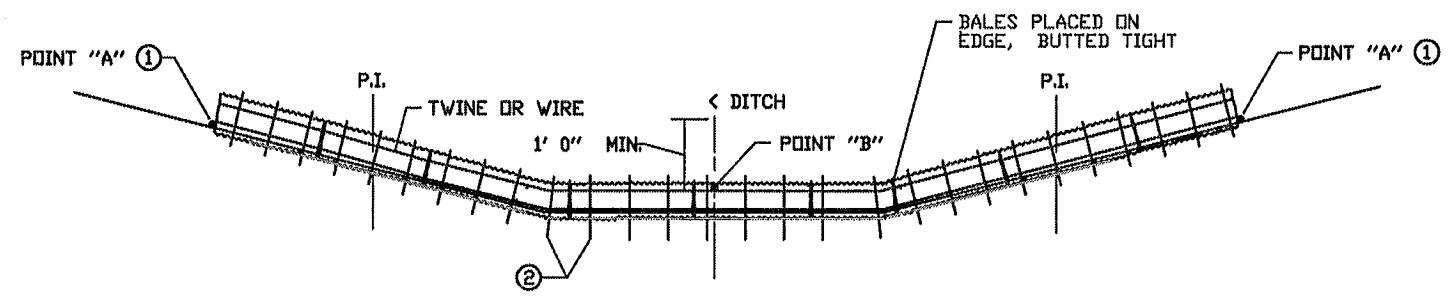
STATE PROJECT NO. SP 02-716-06  
STATE AID PROJECT NO. \_\_\_\_\_  
CITY PROJECT NO. SP 197-107-02  
COUNTY PROJECT NO. \_\_\_\_\_

**TEMPORARY EROSION CONTROL**  
DITCHES CHECKS

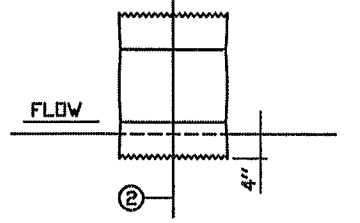
Sheet 35 of 46 Sheets



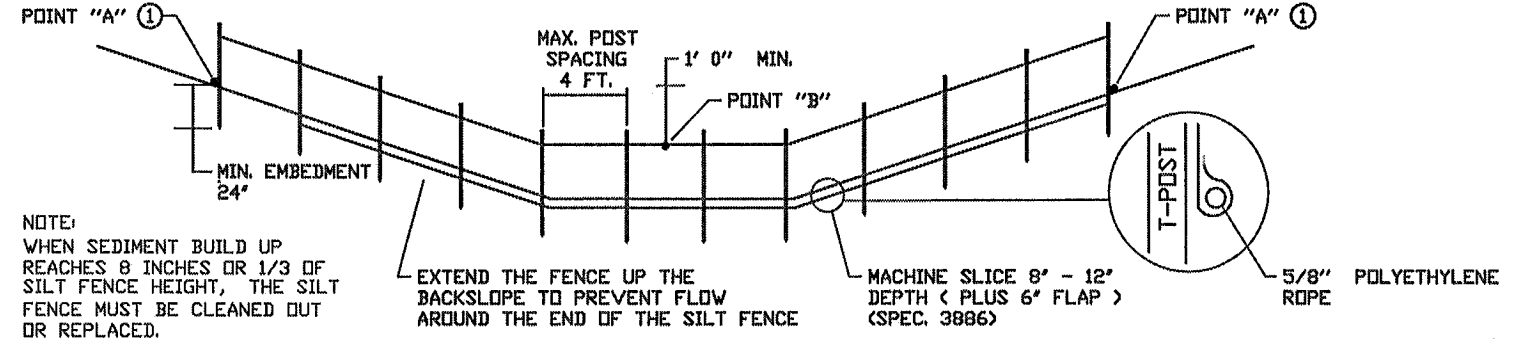
**BIOROLL BLANKET SYSTEM**  
( TYPE 3 SPEC. 3889 )



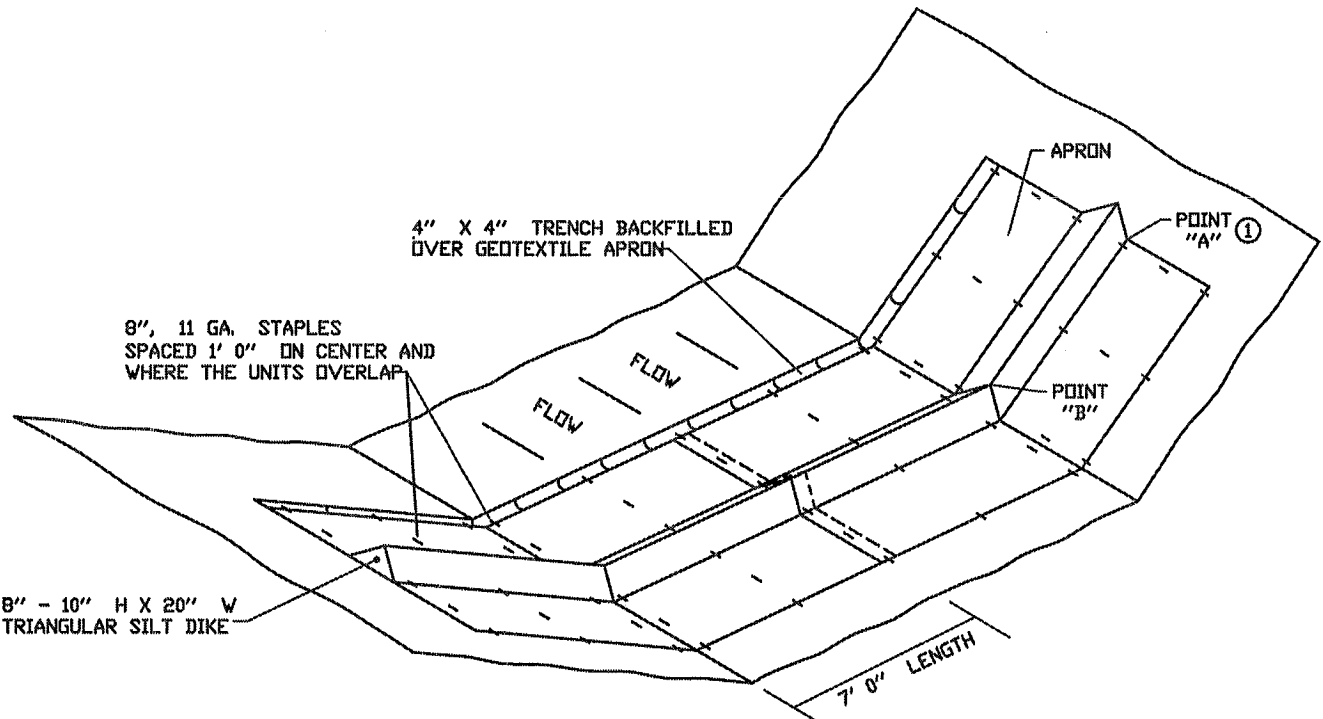
**BALE DITCH CHECK**  
( USED ON ROUGH GRADED SOIL. REMOVE AFTER ROUGH GRADING IS COMPLETED. CAN BE USED AT WETLAND PERIMETERS ANYTIME )



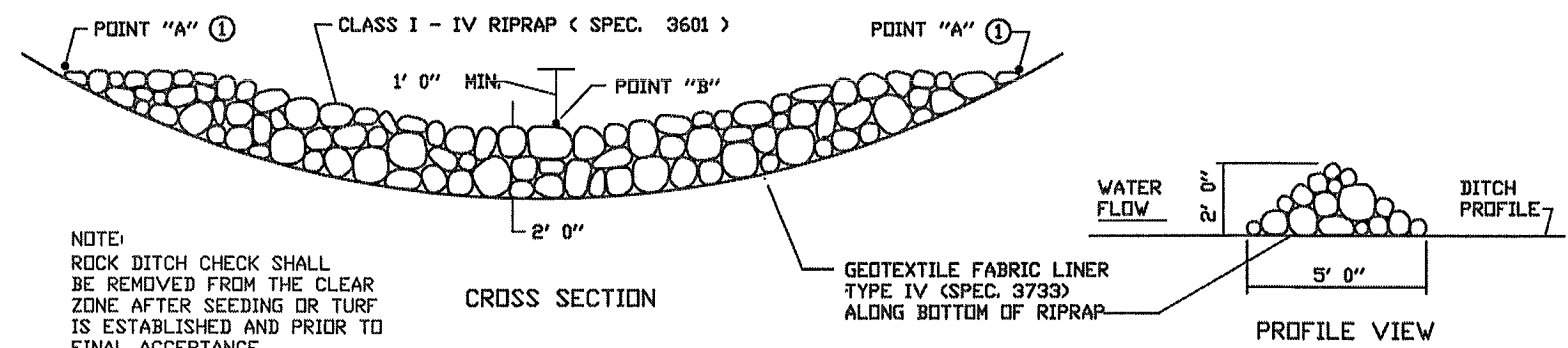
**EMBEDMENT METHOD BALE CHECK DETAIL**



**MACHINE SLICED SILT FENCE**  
( TYPE 1 SPEC. 3889 )



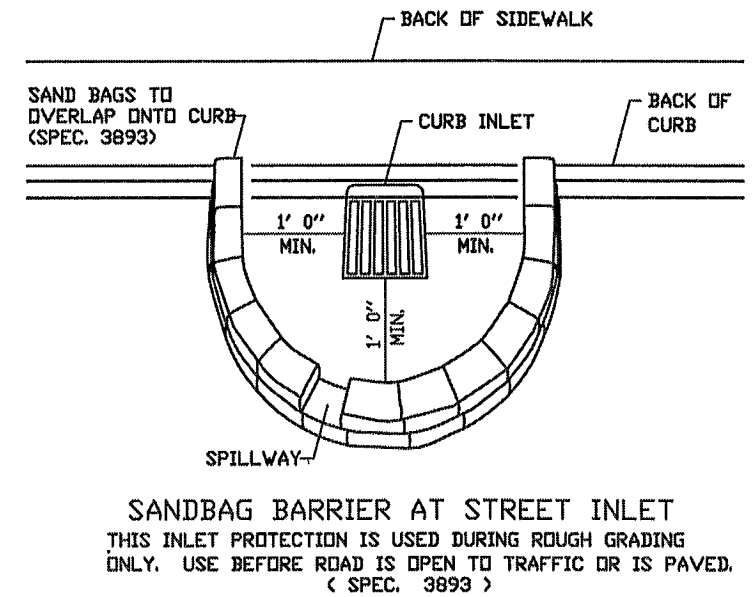
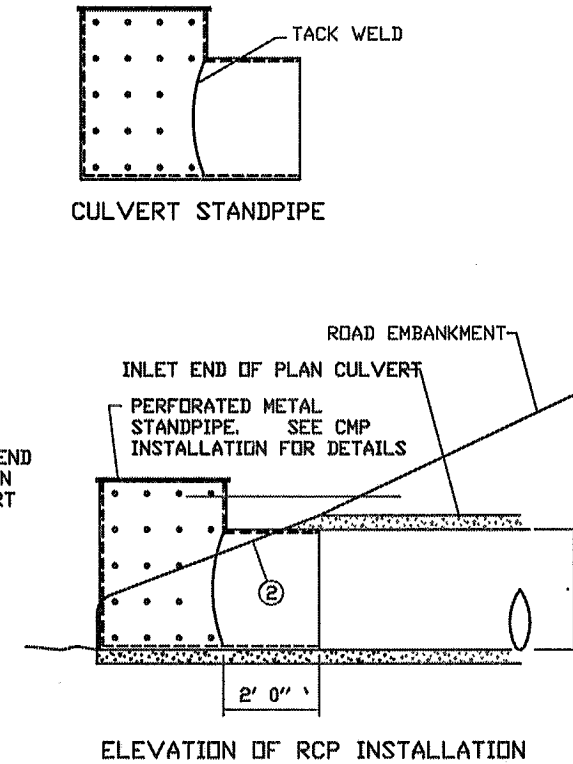
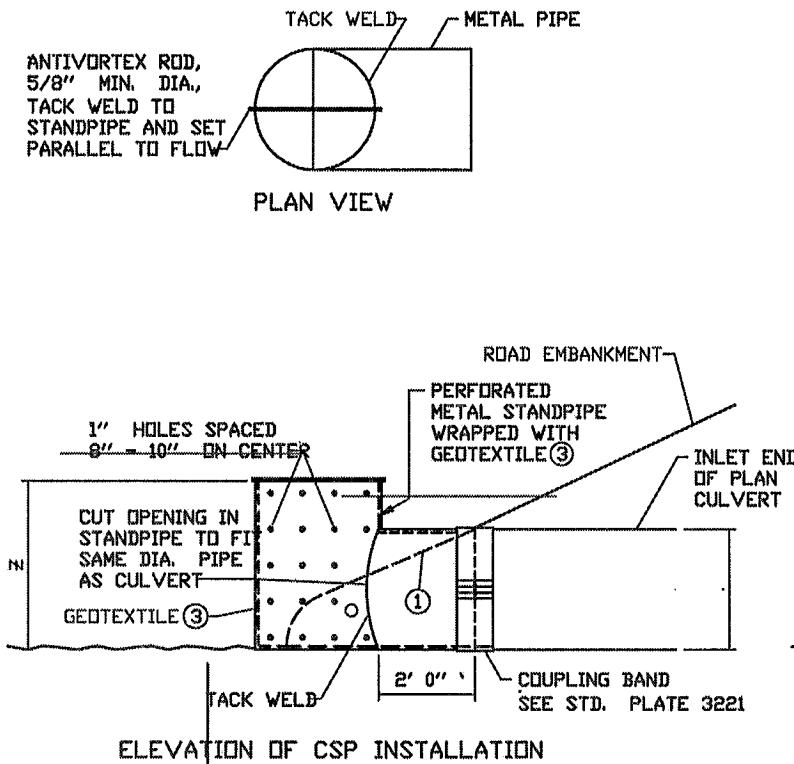
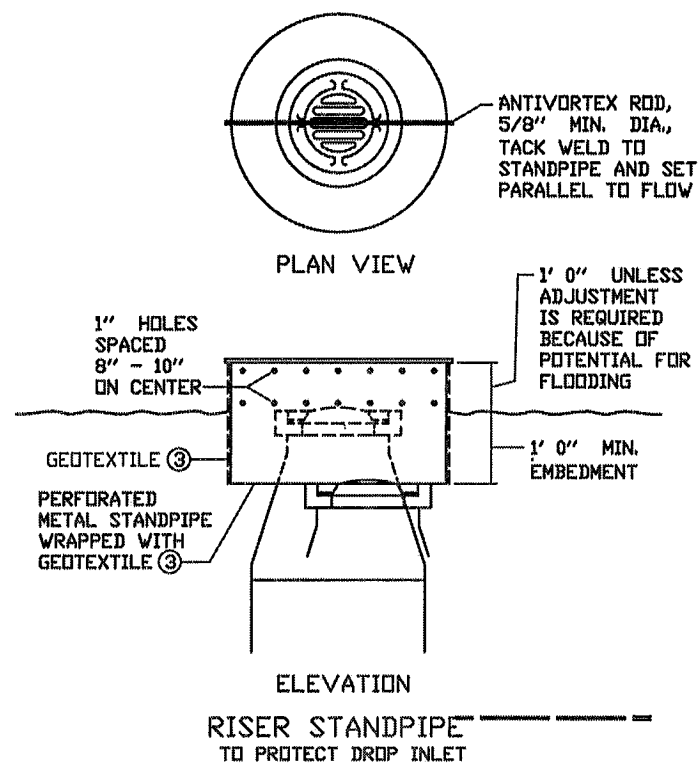
**GEOTEXTILE TRIANGULAR DIKE**  
( TYPE 6 SPEC. 3889 )



**ROCK CHECK**  
( TYPE 7 SPEC. 3889 )

**NOTES:**  
SEE SPECS. 2573, 3882, 3885, 3886 & 3889.  
SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM SPACING FORMULA:  
$$\text{SPACING OF DITCH CHECKS (FT)} = \frac{\text{HEIGHT OF DITCH CHECK (FT)} \times 100}{\text{DITCH GRADE IN PERCENT}}$$
  
① POINT A MUST BE 1' 0" MIN. HIGHER THAN POINT B TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.  
② TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE AND EMBEDDED IN THE GROUND 10 IN. MINIMUM.

STANDARD SHEET NO. 5-297.405 ( 3 of 4 )	STATE PROJECT NO. <u>SP 02-716-06</u>	TEMPORARY EROSION CONTROL DITCHES CHECKS
STANDARD APPROVED: NOVEMBER 5, 2002	STATE AID PROJECT NO. _____ CITY PROJECT NO. <u>SP 197-107-02</u>	
COUNTY PROJECT NO. _____		Sheet <u>36</u> of <u>46</u> Sheets

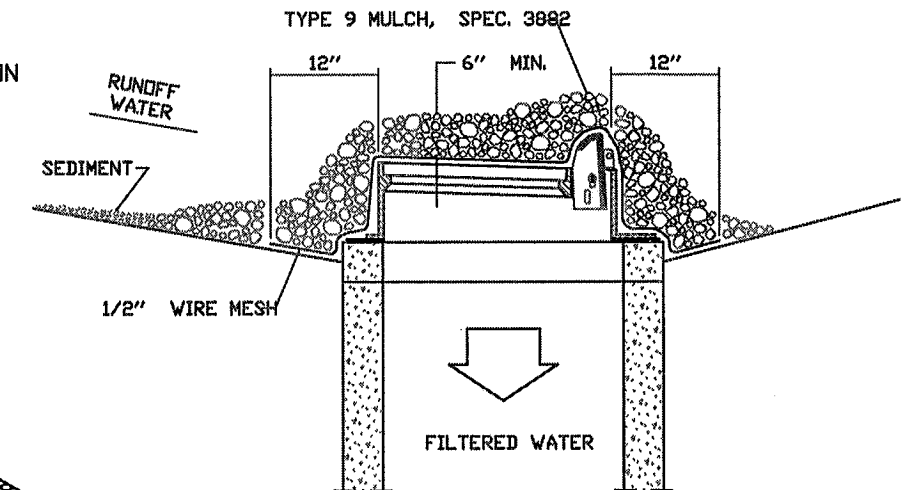


CULVERT STANDPIPE PROTECTION FOR SEDIMENT CONTROL ON CULVERT INLET (TYPE D SPEC. 3891)

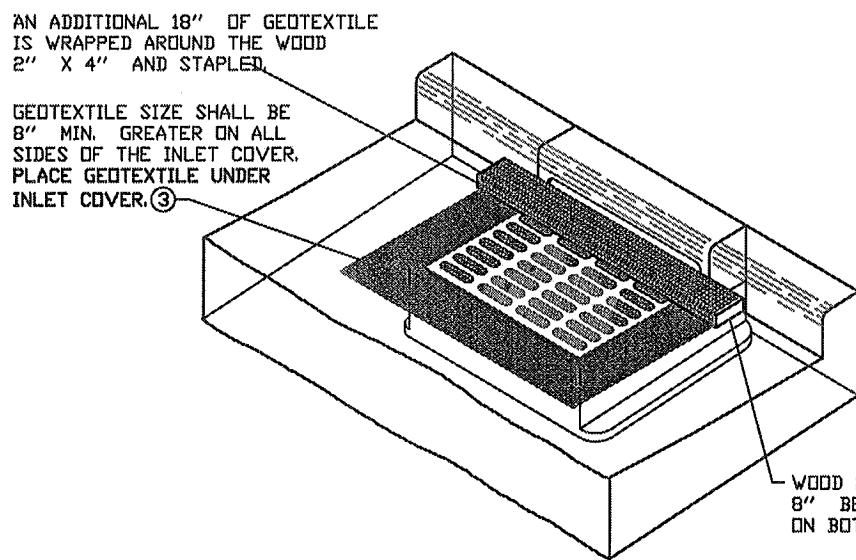
CULVERT SIZE: 12" - 36"

D = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT

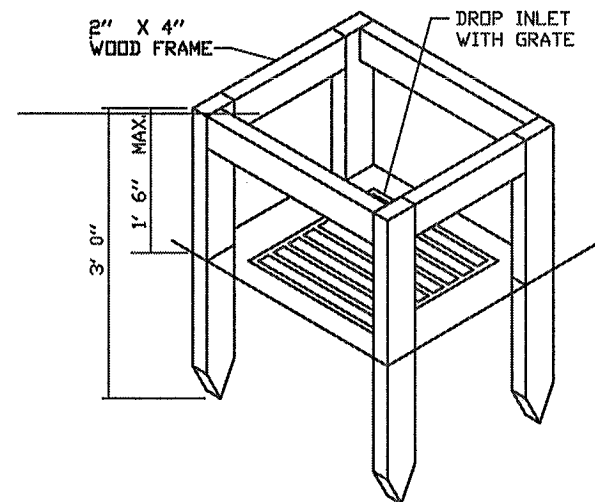
Z = LENGTH OF PERFORATED STANDPIPE (← 12" )



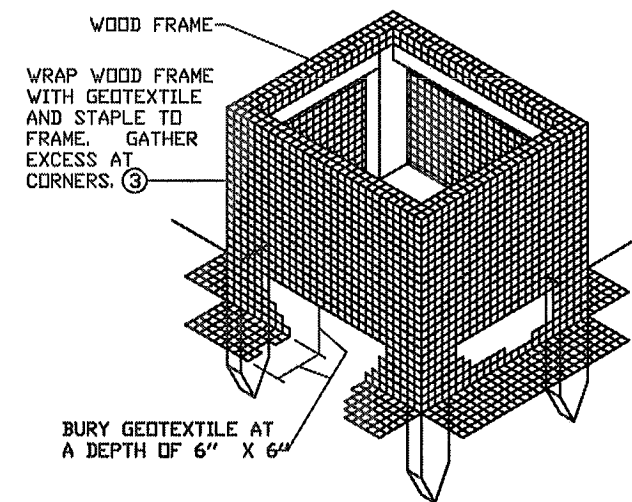
AGGREGATE FILTER AT CURB INLET (TYPE B WITHOUT CURB SPEC. 3891) (TYPE C WITH CURB SPEC. 3891)



GEOTEXTILE FILTER AT STREET INLET WITH CURB BOX TYPE C SPEC. 3891



SILT FENCE BOX TO PROTECT DROP INLETS USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 OR LESS (TYPE A SPEC. 3891)



- NOTES:  
SEE SPECS. 2573, 3891 & 3893.  
MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.
- FOR CSP, REMOVE TEMPORARY STANDPIPE AND INSTALL CULVERT APRON AFTER VEGETATION IS ESTABLISHED.
  - FOR RCP, INSTALL CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.
  - ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.

STANDARD SHEET NO. 5-297.405 ( 4 of 4 )	STATE PROJECT NO. <u>SP 02-716-06</u> STATE AID PROJECT NO. _____	TEMPORARY EROSION CONTROL TEMPORARY INLET PROTECTION
STANDARD APPROVED: NOVEMBER 5, 2002	CITY PROJECT NO. <u>SP 197-107-02</u> COUNTY PROJECT NO. _____	
		Sheet <u>37</u> of <u>46</u> Sheets

SALVAGE & INSTALL SIGN - TYPE SPECIAL			
SALVAGE SIGN TYPE SPECIAL	INSTALL SIGN TYPE SPECIAL	NO. OF POSTS & TYPE	PANEL LEGEND
1	1	1-ROUND	TERRACE RD NE BUNKER LAKE BLVD NE
1		1-ROUND	138TH STREET NE BUNKER LAKE BLVD NE
1		1-ROUND	JEFFERSON STREET NE BUNKER LAKE BLVD NE
3	1		

SALVAGE SIGN - TYPE C				
MMUTCD CODE	QTY	SIGN PANEL SIZE (INCHES)	NO. OF POSTS & TYPE	PANEL LEGEND
W2-1	2	36 X 36	2-U	CROSS ROAD
W13-1	2	24 X 24	-	ADVISORY SPEED PLAQUE
R3-X1	2	30 X 30	1-U	RIGHT TURN LANE
R2-4	2	24 X 30	1-U	"SPEED LIMIT 50"
W14-3	1		2-U	NO PASSING ZONE
R1-1	1	30 X 30	1-U	STOP SIGN
R1-1	4	36 X 36	2-U	STOP SIGN
R1-X2	4	36 X 12	-	CROSS TRAFFIC DOES NOT STOP DELINEATORS
	1	12 X 18	1-U	NO PARKING ANYTIME
TOTAL	19			

SIGN PANELS - TYPE C						
MMUTCD CODE	QTY	SIGN PANEL			NO. OF POSTS & TYPE	PANEL LEGEND
		SIZE (INCHES)	AREA (SQ FT)	TOTAL AREA (SQ FT)		
R1-1	1	30 X 30	9.00	9.00	2	STOP
R3-X2	2	30 X 30	6.25	12.50	1	LEFT TURN LANE
R3-X1	2	30 X 30	6.25	12.50	1	RIGHT TURN LANE
R5-1	3	30 X 30	6.25	18.75	1	DO NOT ENTER
W3-3	4	48 X 48	16.00	64.00	2	SIGNAL AHEAD
R6-1R	5	36 X 12	3.00	15.00	2	ONE WAY
R3-8	1	30 X 30	6.25	6.25	2	LEFT/THRU AND RIGHT
R4-7	4	24 X 30	5.00	20.00	1	KEEP RIGHT
X4-2	4	18 X 18	2.25	9.00		HAZARD MARKER (mounted below R4-7)
DELINEATOR	1	4"Diam X 15"	1.31	1.31		DELINEATOR (mounted below R1-1)
TOTALS	27			168.31		

GENERAL NOTES:

- ISLAND SIGN MOUNTS WILL BE PROVIDED BY ANOKA COUNTY.
- SALVAGE SIGN TYPE SPECIAL TO THE CITY OF HAM LAKE.
- SALVAGE SIGN PANELS - TYPE C TO ANOKA COUNTY 1440 BUNKER LAKE BLVD, ANDOVER.
- ANOKA COUNTY HIGHWAY PERSONNEL TO INSTALL SIGN PANELS - TYPE C.
- ANOKA COUNTY HIGHWAY PERSONNEL TO APPLY ALL STRIPING.
- LOCATIONS OF 'NO PASSING ZONES' ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD.
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

M. U. T. C. D. CODE	SIZE	INSERT	QTY	SQ. FT.	TOTAL SQ. FT.	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT
R1-1	30" X 30"	STOP	1	6.25	6.25	2	7.0
R3-X2	30" x 30"	LEFT TURN LANE	2	6.25	12.50	1	7.0
R3-X1	30" x 30"	RIGHT TURN LANE	2	6.25	12.50	1	7.0
R3-4	24" x 24"		2	4.00	8.00	③	7.0
R5-1	30" x 30"	DO NOT ENTER	3	6.25	18.75	1	7.0
W3-3	48" x 48"		4	16.00	64.00	2	7.0
W14-3	36"x48"x48"	NO PASSING ZONE	3	6.00	18.00	2	7.0
R6-1R	36"x12"	ONE WAY	5	3.00	15.00	2	7.0
R3-8	30"x30"		1	6.25	6.25	2	7.0
R4-7	24"x30"		4	5.00	20.00	1	7.0
X4-2	18"x18"		4	2.25	9.00	①	
X4-4R	12"x36"		1	3.00	3.00	1	4.0
DELINEATOR 4"DIA x 15"			1	0.87	0.87	②	
TOTAL			33		196.87		

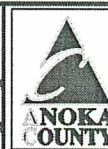
- ① MOUNTED BELOW R4-7 (24"x30")
- ② MOUNTED BELOW R1-1 (36"x36")
- ③ MOUNTED BEHIND R4-7 (24"x30")

NOTE: SIGNS TO BE INSTALLED BY ACHD  
STRIPING TO BE APPLIED BY ACHD

NO	DATE	BY	CHKD	APPR	REVISION

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.  
 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten Olson*  
 DATE: 6/13/04 LICENSE NO. 26826

DRAWN BY: RLB DATE: 01/15/04  
 DESIGN BY: MTH DATE: 04/06/04  
 CHECKED BY: HG DATE: 04/06/04

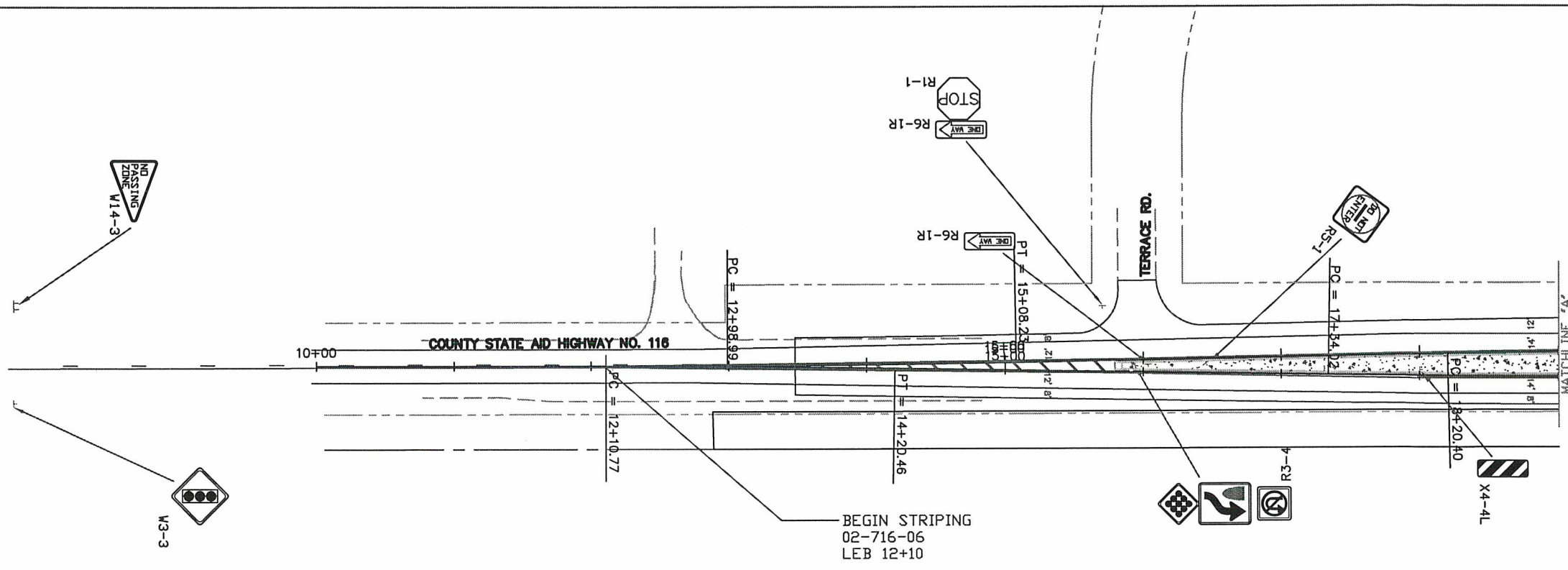


ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. SP 02-716-06  
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO. \_\_\_\_\_

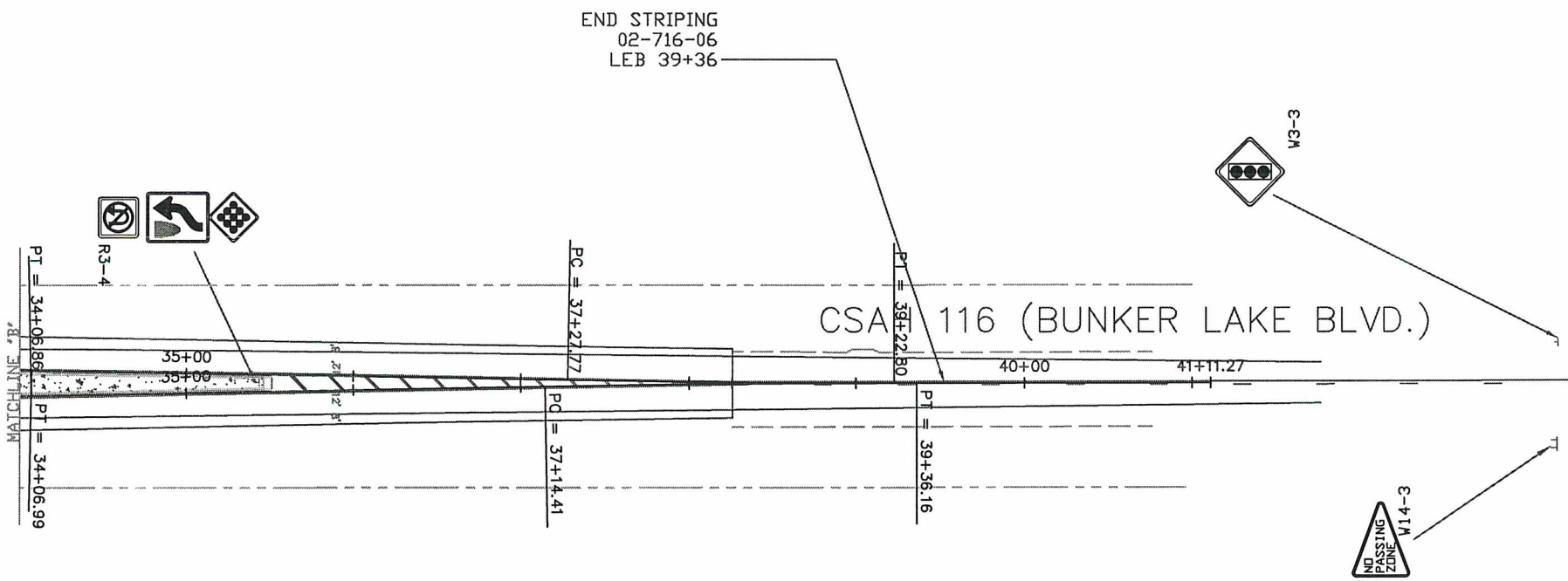
SIGNING QUANTITY  
TABULATIONS

CSAH 116 (BUNKER LAKE BLVD.)



END STRIPING  
02-716-06  
LEB 39+36

CSAH 116 (BUNKER LAKE BLVD.)



NOTE: SIGNS TO BE INSTALLED BY ACHD  
STRIPING TO BE APPLIED BY ACHD

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-716-06\PLAN\Signing & Striping.dwg 06/04/2004 10:52:37 AM CDT					

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.  
PRINT NAME: KIRSTEN L. OLSON  
SIGNATURE: *Kirsten Olson*  
DATE: 6/13/04 LICENSE NO. 26826

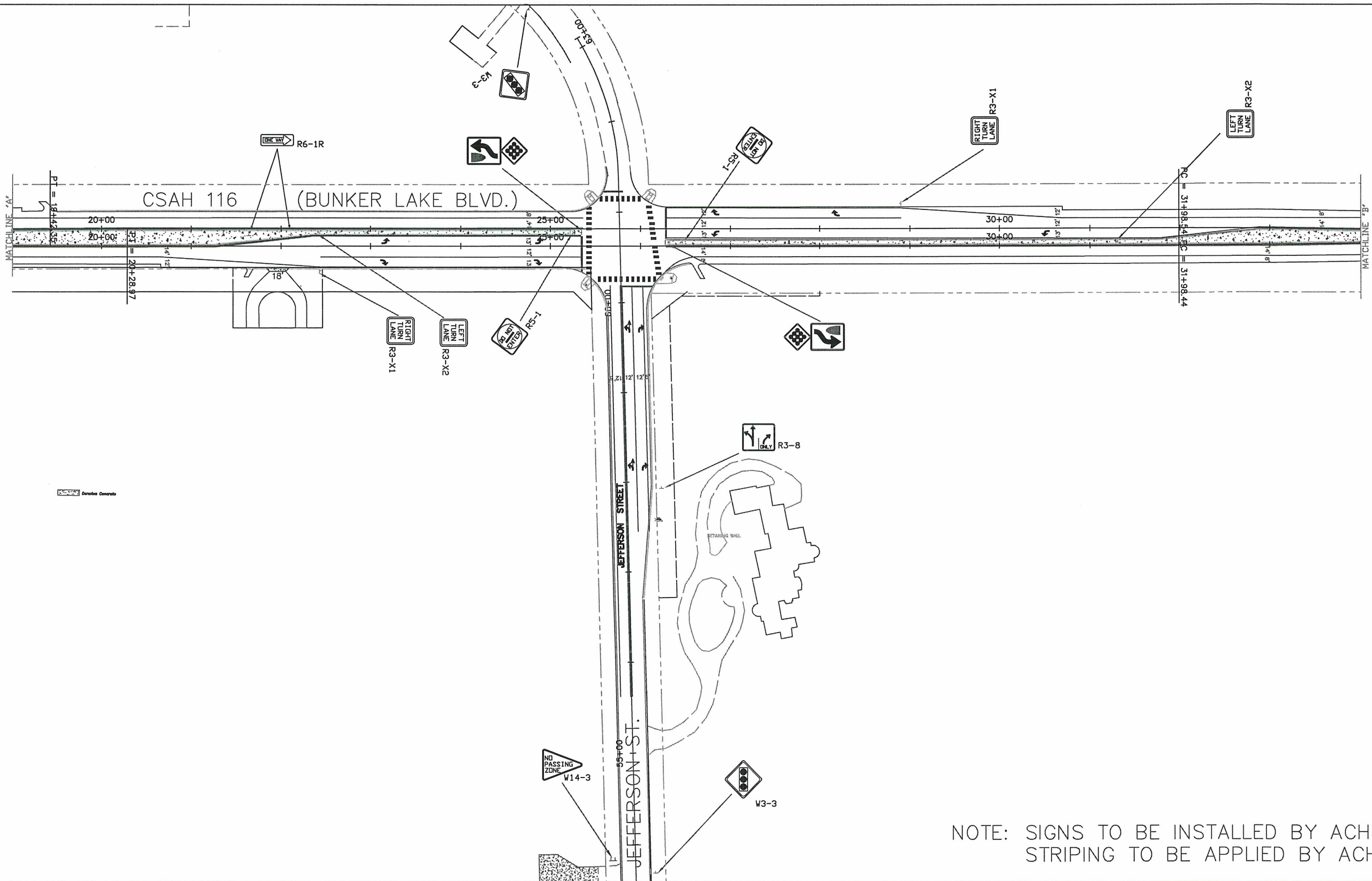
DRAWN BY RLB DATE 01/15/04  
DESIGN BY MN DATE 00/00/00  
CHECKED BY LAR DATE 00/00/00



ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
STATE AID PROJECT NO.    
CITY PROJECT NO. SP 197-107-02  
COUNTY PROJECT NO.  

SIGNING & STRIPING  
PLAN  
STA 10+00 TO 18+00  
STA 35+00 TO 40+00  
Sheet 39 of 46 Sheets



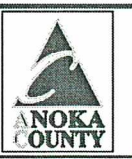
NOTE: SIGNS TO BE INSTALLED BY ACHD  
STRIPING TO BE APPLIED BY ACHD

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-716-06\PLAN\Signing & Striping.dwg 06/04/2004 10:52:37 AM CDT

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 PRINT NAME: KIRSTEN L. OLSON  
 SIGNATURE: *Kirsten Olson*  
 DATE: 06/13/04 LICENSE NO. 26826

DRAWN BY: RLB DATE: 01/15/04  
 DESIGN BY: MN DATE: 00/00/00  
 CHECKED BY: JAR DATE: 00/00/00

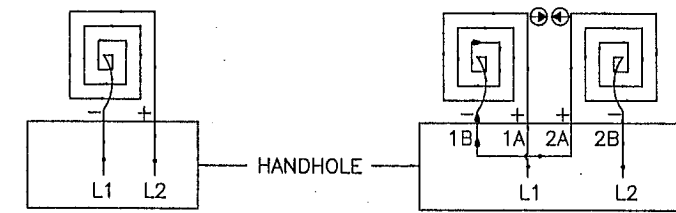
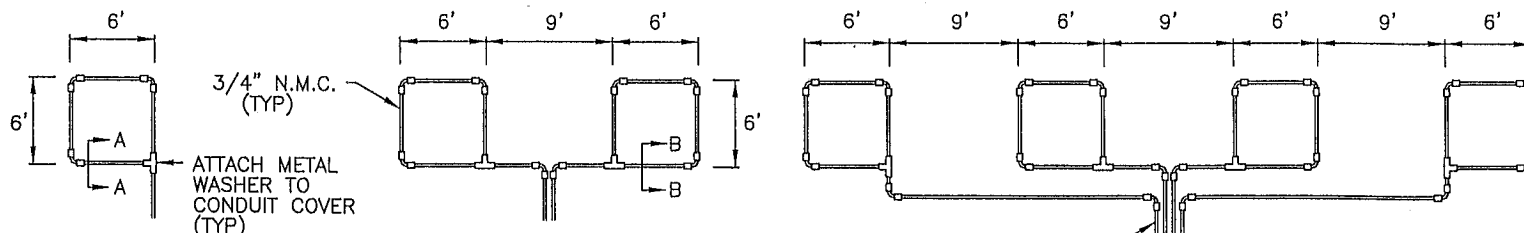


ANOKA COUNTY  
HIGHWAY DEPT.

STATE PROJECT NO. SP 02-716-06  
 STATE AID PROJECT NO.                       
 CITY PROJECT NO. SP 197-107-02  
 COUNTY PROJECT NO.                     

SIGNING & STRIPING  
PLAN  
STA 19+00 TO 34+00  
Sheet 40 of 46 Sheets



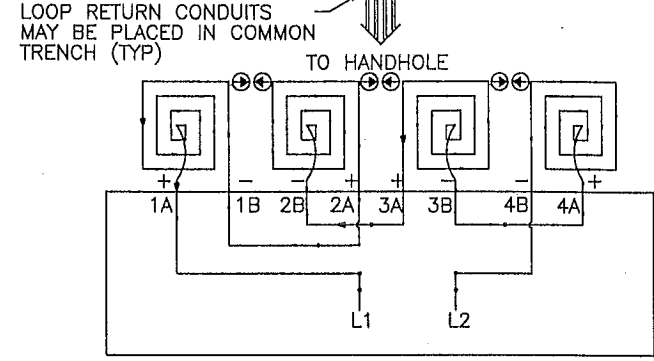
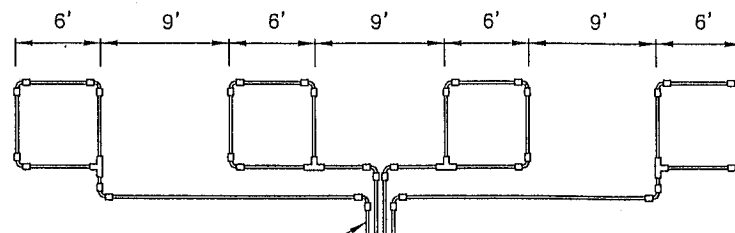


**LOOP DETECTOR  
DETAIL 'A'**  
(LOOP PHASING FOR  
SINGLE CONNECTION)

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)

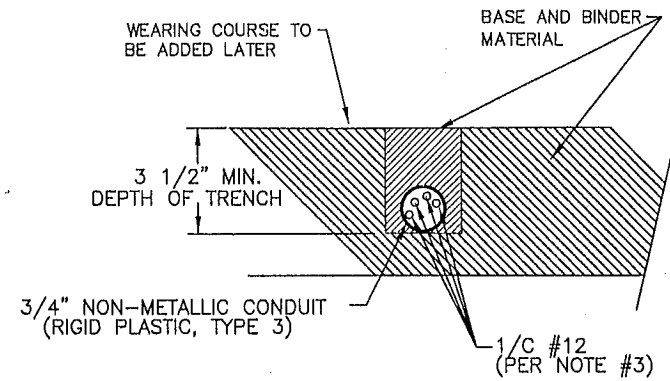


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED  
IN THE HANDHOLE AS FOLLOWS:

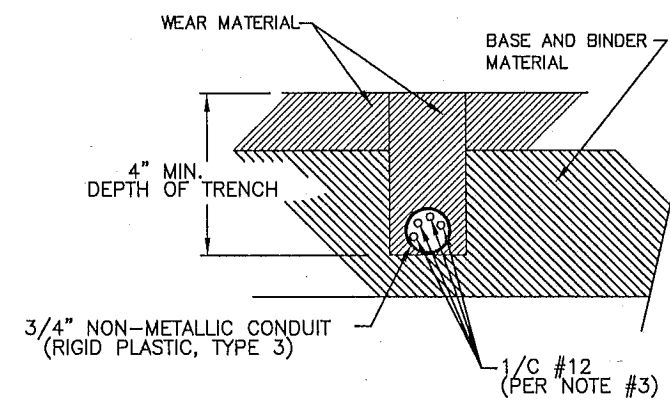
- L1 TO 1A      3B TO 4A
- 1B TO 2A      4B TO L2
- 2B TO 3A

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

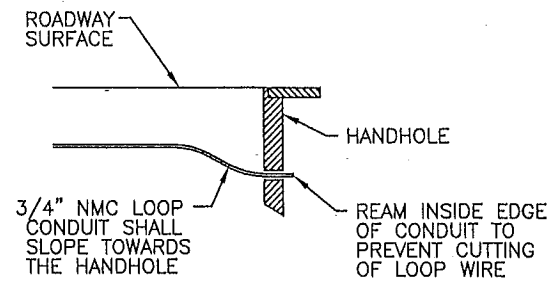
**LOOP DETECTOR  
DETAIL 'C'**  
(LOOP PHASING FOR  
SERIES CONNECTION)



**SECTION A-A**  
DETAIL FOR LOOP INSTALLATION  
IN NEW ROADWAY



**SECTION B-B**  
DETAIL FOR LOOP INSTALLATION  
IN EXISTING ROADWAY



**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.

**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQUIP. NO's	(A)
SIGNAL BASE NO.	(B)
SIGNAL FACE NO.	(C)
LUMINAIRE NO.	(D)
CONTROLLER AND CABINET	(E)
CONTROLLER AND CABINET - IN PLACE	(F)
HANDHOLE	(G)
HANDHOLE - IN PLACE	(H)
RIGID STEEL CONDUIT (RSC)	(I)
RIGID STEEL CONDUIT (RSC) - IN PLACE	(J)
SIGNAL FACE WITH BACKGROUND SHIELD	(K)
SIGNAL FACE W/O BACKGROUND SHIELD	(L)
SIGNAL FACE - IN PLACE	(M)
PEDESTRIAN INDICATORS	(N)
PEDESTRIAN INDICATORS - IN PLACE	(O)
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	(P)
PEDESTRIAN PUSH BUTTON STATION	(Q)
TRAFFIC SIGNAL PEDESTAL	(R)
TRAFFIC SIGNAL PEDESTAL - INPLACE	(S)
TRAFFIC SIGNAL POLE AND MAST ARM	(T)
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	(U)
STREET LIGHT POLE AND LUMINAIRE	(V)
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	(W)
MAST ARM AND LUMINAIRE	(X)
MAST ARM AND LUMINAIRE - INPLACE	(Y)
WOOD POLE	(Z)
WOOD POLE - IN PLACE	(AA)
SOURCE OF POWER	(AB)
RAILROAD SIGNAL - IN PLACE	(AC)
RIGHT OF WAY LINE	(AD)
CENTERLINE	(AE)
EDGE OF ROADWAY	(AF)
SHOULDERLINE	(AG)
CURB LINE	(AH)
STOP BAR	(AI)
EMERGENCY VEHICLE PREEMPTION DETECTOR	(AJ)

**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

STANDARD PLATES	
THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:	
PLATE NO.	DESCRIPTION
* 8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
8111 D	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
8112 C	PEDESTAL FOUNDATION
* 8114 A	PVC HANDHOLE/PULLBOX
8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
* 8118 C	SERVICE EQUIPMENT AND POLE-TRAFFIC CONTROL SIGNALS
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
* 8120 K	PA85 POLE FOUNDATION
* 8121 D	TRANSFORMER BASE AND POLE BASE PLATE
8122 C	PEDESTAL AND PEDESTAL BASE
* 8123 E	POLE AND MAST ARM
* 8124 E	MAST ARM SIGNAL HEAD MOUNTS
* 8126 F	PA90 AND PA100 POLE FOUNDATION

\* - APPLIES TO THIS PROJECT

**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

DRAWN BY: JMG			
DESIGNER: JMG			
CHECKED BY: JMG			
DESIGN TEAM	NO.	BY	DATE
			REVISIONS

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Name: John M. Gray, P.E.  
 Lic. No. 22457  
 Date: April 22, 2004

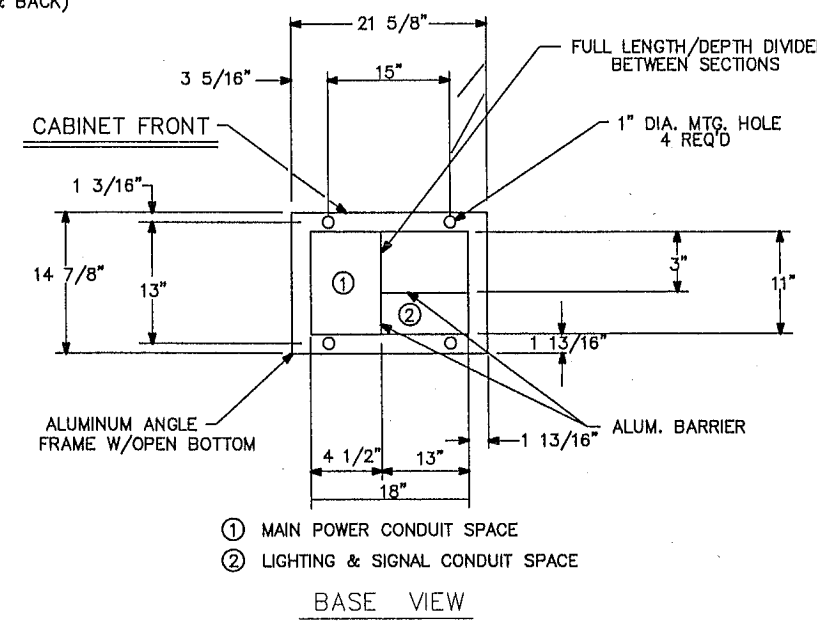
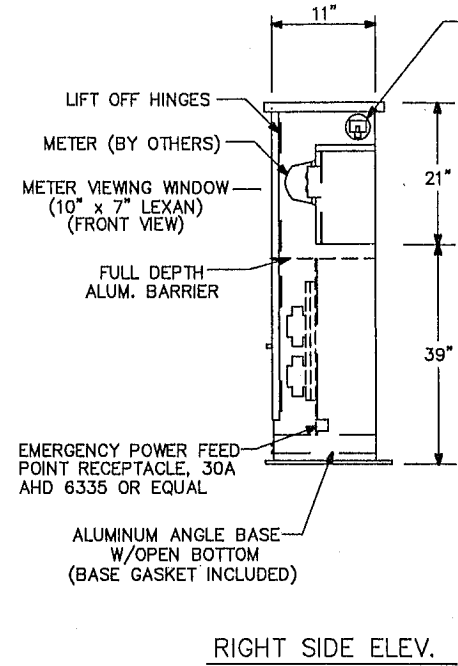
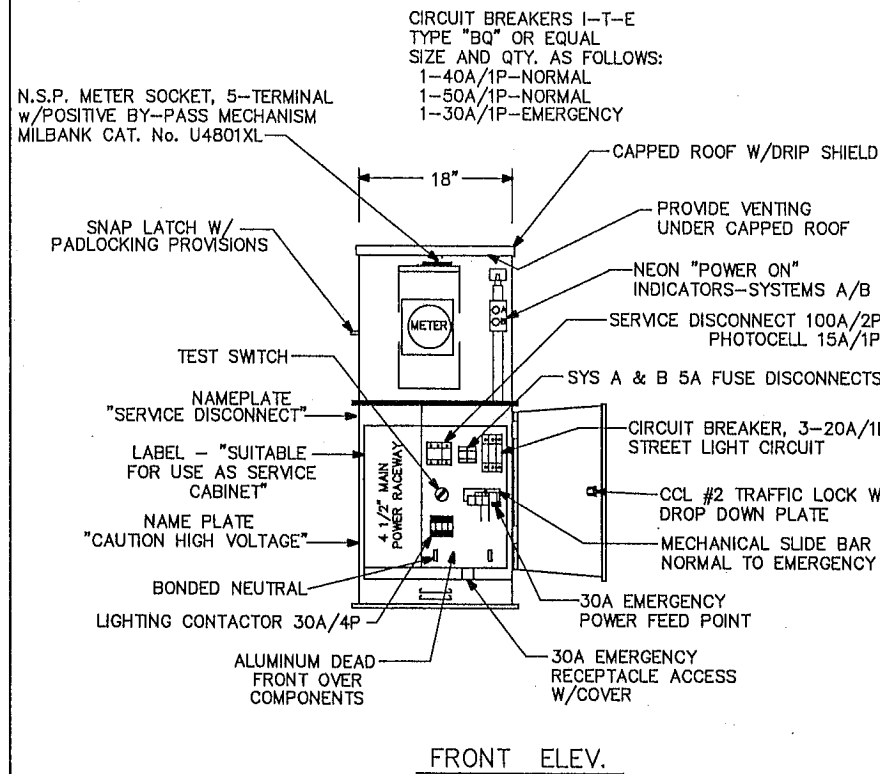
SEH  
 PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

**ANOKA COUNTY**  
 CITY OF HAM LAKE

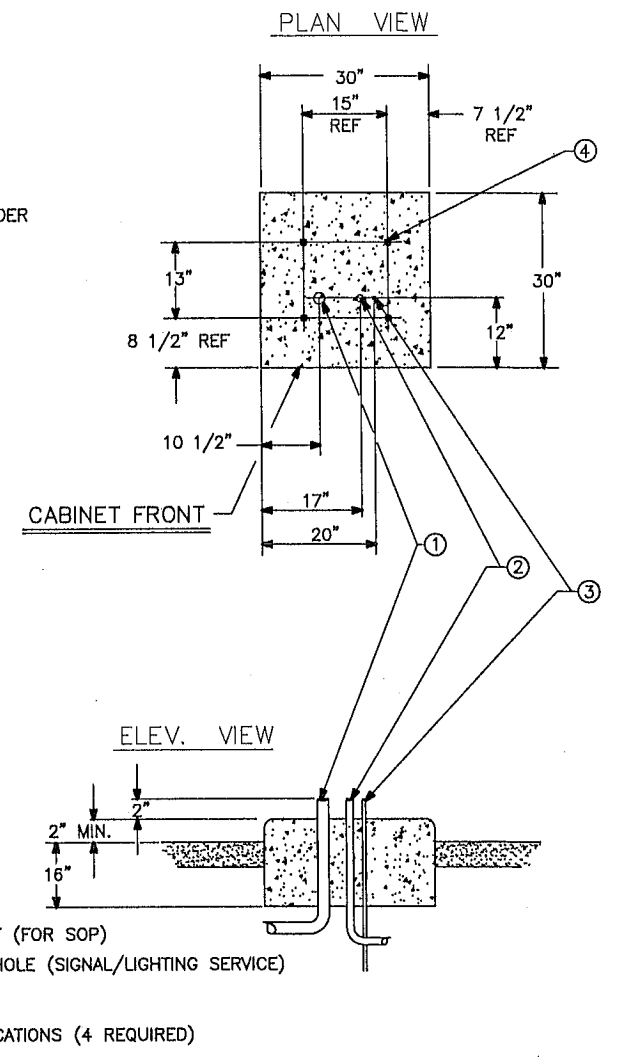
**TRAFFIC SIGNAL SYSTEM**  
 DETAILS & STANDARD PLATES  
 CSAH 116 AT JEFFERSON ST NE

S.P. 02-716-06
FILE NO. 41
DATE 04/22/04
46

**SIGNAL SERVICE CABINET**



**SERVICE CABINET FOUNDATION**



**CONSTRUCTION NOTES**

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

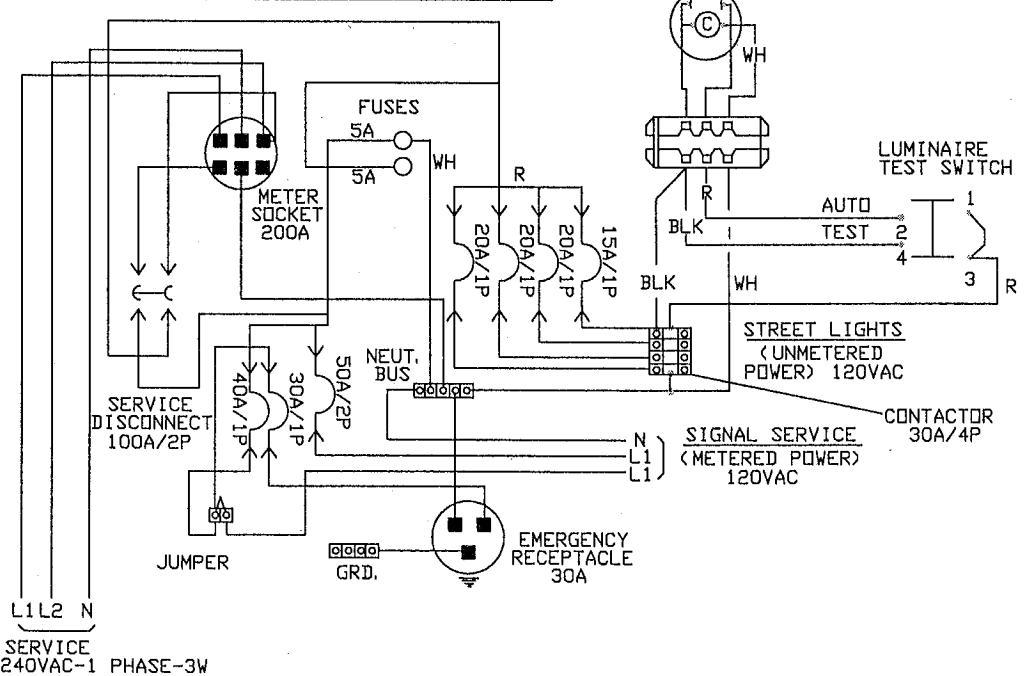
DOORS TO BE NEOPRENE GASKETED. ALL HINGES, PINS AND LOCKS TO BE OF NON-CORRODING CONSTRUCTION.

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

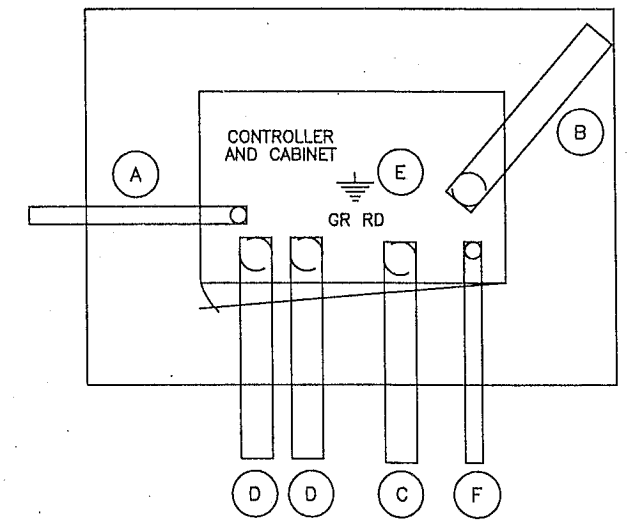
NEMA 3R ENCLOSURE SHALL BE "UL" APPROVED.

CABINET SHALL HAVE BASE GASKET INCLUDED.

**FEED POINT WIRING DIAGRAM**



- Ⓐ 2" R.S.C. FOR SERVICE CONNECTION (VIA HH 16)
- Ⓑ 4" R.S.C. TO HH 1
- Ⓒ 4" R.S.C. TO HH 15
- Ⓓ 3" R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).
- Ⓔ 5/8" DIA X 15' GROUND ROD
- Ⓕ 1" R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE PHONE LINE).



SEE INTERSECTION LAYOUT FOR CONDUIT & CABLE INFORMATION

DRAWN BY: JMG	NO.	BY	DATE	REVISIONS
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM				

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*John M. Gray*  
 Name: John M. Gray, P.E.  
 Date: April 22, 2004 Lic. No. 22457

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

**ANOKA COUNTY**  
 CITY OF HAM LAKE

**TRAFFIC SIGNAL SYSTEM**  
 CABINET DETAILS  
 CSAH 116 AT JEFFERSON ST NE

S.P. 02-716-06	FILE NO. AANOKC0404.00	42
	DATE 04/22/04	46

MAST ARM MOUNTED SIGNS							
SIGN PANELS - TYPE D							
SIGN PANEL	SIZE (In.)	NO. REQ.	NO. POSTS/STIFFENERS PER SIGN	BAND SPACING (**)	SQ. FT. PER SIGN	POLE NO.	α
D-1	138x36	1	5	-	34.50	1	16'
D-2	126x24	1	5	-	21.00	2	8'
D-3	138x36	1	5	-	34.50	3	16'
D-4	126x24	1	5	-	21.00	4	8'
TOTAL QUANTITIES		4			111.00		

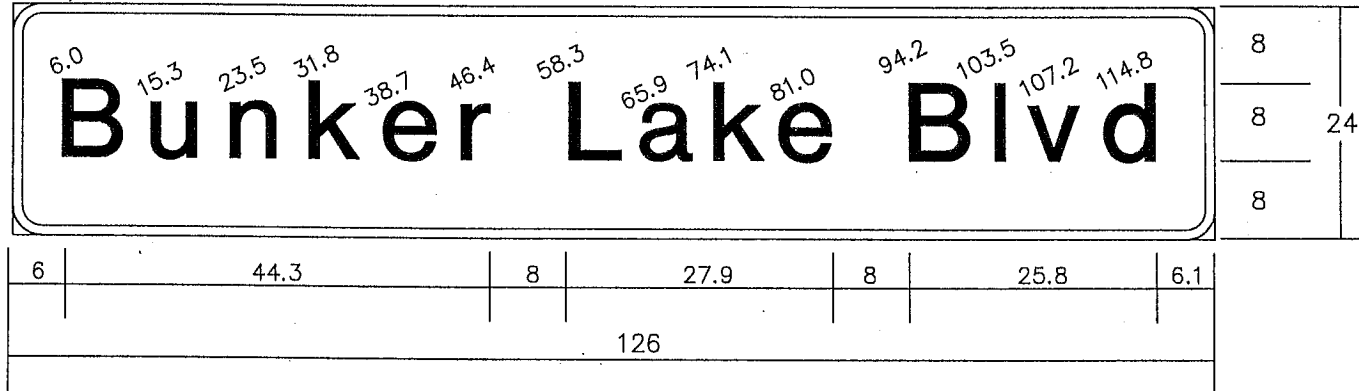
(\*\*)= SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE SPECIAL PROVISIONS AND STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE: 1/1/03) FOR BRACKET SPACING REQUIREMENTS.

SIGNAL POLE MOUNTED SIGNS							
SIGN PANELS - TYPE C							
SIGN PANEL	SIZE (In.)	NO. REQ.	NO. POSTS/STIFFENERS PER SIGN	BAND SPACING (**)	SQ. FT. PER SIGN	POLE NO.	α
R6-1L	36x12	2	①	-	3.00	1,3	-
R6-1R	36x12	2	①	-	3.00	1,3	-
TOTAL QUANTITIES		4			12.00		

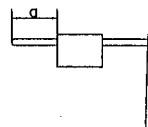
NOTES:

- COLOR FOR ALL TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
- CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- FOR STRUCTURAL DETAILS 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 DETAILS.
- SEE STANDARD SIGNS MANUAL FOR DETAILED DRAWINGS OF TYPE C SIGN PANELS.
- FURNISHING AND INSTALLING TYPE C AND D SIGNS SHALL BE CONSIDERED INCIDENTAL TO ITEM NO. 2565.511 (FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM). SEE SPECIAL PROVISIONS.
- ALL NEW TYPE C AND D SIGN PANELS SHALL BE FABRICATED USING VIP SHEETING. SEE SPECIAL PROVISIONS.
- ① = INSTALL SIGN PANEL ON TRAFFIC SIGNAL MAST ARM POLE.

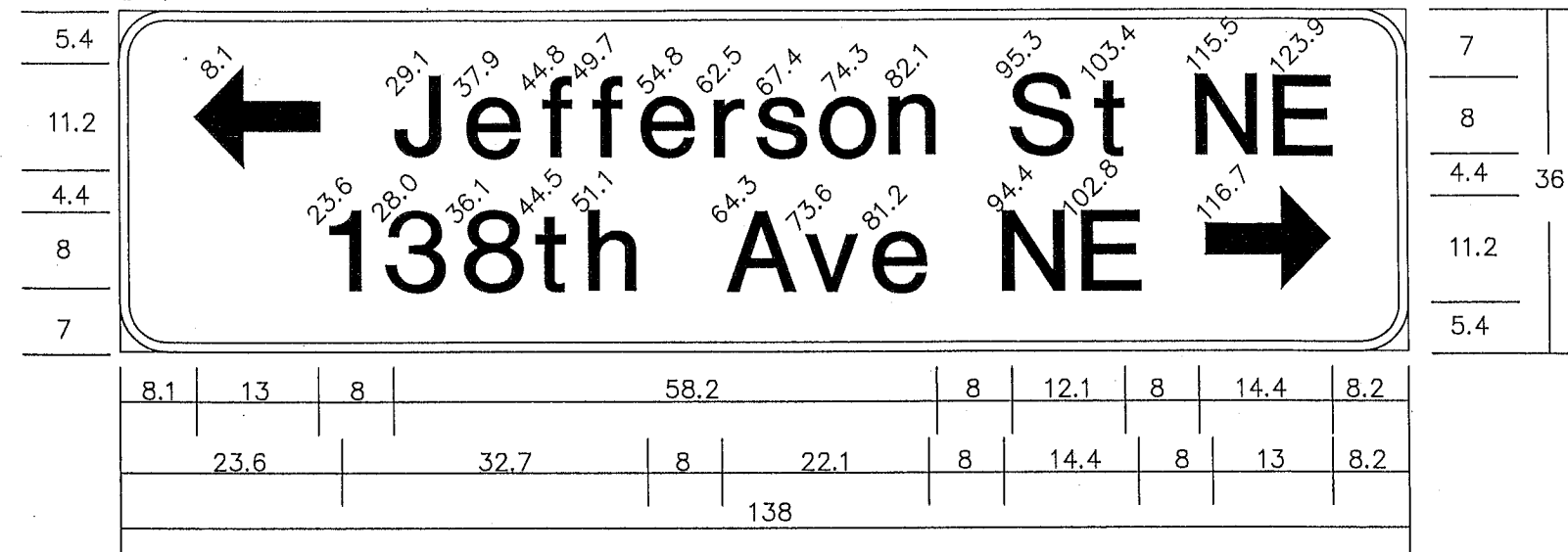
D-2, D-4



D-2, D-4: 3.0" Radius, 1.0" Border, White on Green; [Bunker Lake Blvd] E Mod;

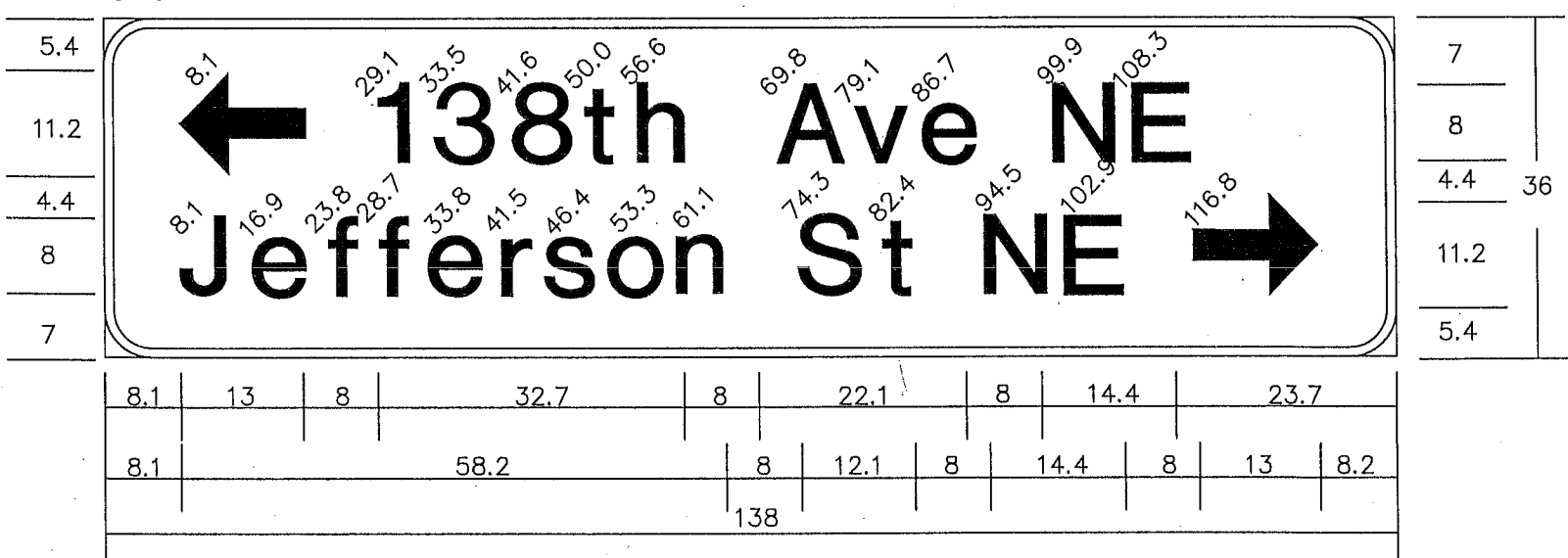


D-1



D-1; 138" x 36", 3.0" Radius, 1.0" Border, White on Green  
 Line 1: Arrow 5 - 13.0" 180°, "Jefferson St" E Mod.  
 Line 2: "138th Ave" E Mod., Arrow 5 - 13.0" 0°

D-3



D-3; 138" x 36", 3.0" Radius, 1.0" Border, White on Green  
 Line 1: Arrow 5 - 13.0" 180°, "138th Ave" E Mod.  
 Line 2: "Jefferson St" E Mod., Arrow 5 - 13.0" 0°

S.P. 02-716-06

DRAWN BY: JMG DESIGNER: JMG CHECKED BY: JMG DESIGN TEAM	NO. BY DATE REVISIONS	©SHORT ELLIOTT HENDRICKSON 1998. ANY USE OR REUSE OF THIS PLAN/DRAWING AND THE CORRESPONDING COMPUTER AIDED DESIGN/DRAFTING FILES WITHOUT THE EXPRESS WRITTEN CONSENT OF SEH, IS PROHIBITED. SEH SHALL NOT BE RESPONSIBLE FOR ANY UNAUTHORIZED USE OR REUSE OF THESE MATERIALS, OR DAMAGES RESULTING THEREFROM.	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.  Name: John M. Gray, P.E. Date: April 22, 2004 Lic. No. 22457	 PHONE: (651) 490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110	ANOKA COUNTY CITY OF HAM LAKE	TRAFFIC SIGNAL SYSTEM SIGNAL SIGNING DETAILS CSAH 116 AT JEFFERSON ST NE	FILE NO. AANOKC0404.00 43 DATE 04/22/04 46
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**NOTES:**

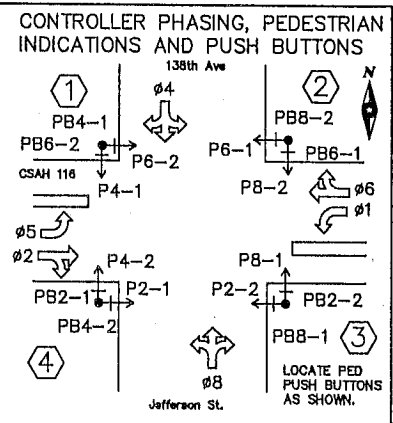
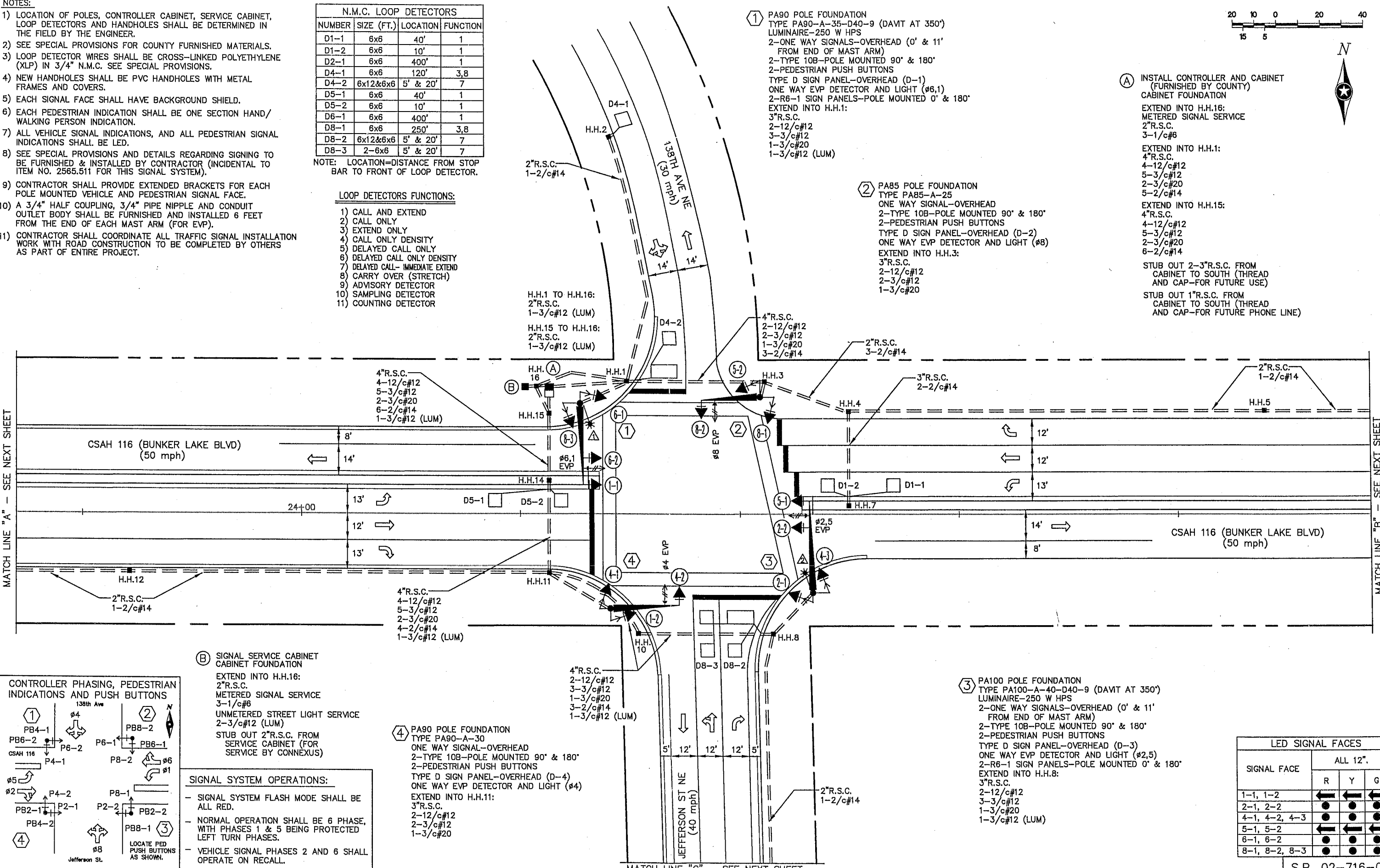
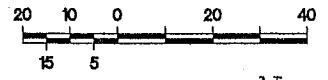
- 1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
- 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
- 5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION.
- 7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
- 8) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511 FOR THIS SIGNAL SYSTEM).
- 9) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL FACE.
- 10) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
- 11) CONTRACTOR SHALL COORDINATE ALL TRAFFIC SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION TO BE COMPLETED BY OTHERS AS PART OF ENTIRE PROJECT.

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	10'	1
D2-1	6x6	400'	1
D4-1	6x6	120'	3,8
D4-2	6x12&6x6	5' & 20'	7
D5-1	6x6	40'	1
D5-2	6x6	10'	1
D6-1	6x6	400'	1
D8-1	6x6	250'	3,8
D8-2	6x12&6x6	5' & 20'	7
D8-3	2-6x6	5' & 20'	7

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

**LOOP DETECTORS FUNCTIONS:**

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



**(B) SIGNAL SERVICE CABINET**  
 CABINET FOUNDATION  
 EXTEND INTO H.H.16:  
 2"R.S.C.  
 METERED SIGNAL SERVICE  
 3-1/c#6  
 UNMETERED STREET LIGHT SERVICE  
 2-3/c#12 (LUM)  
 STUB OUT 2"R.S.C. FROM SERVICE CABINET (FOR SERVICE BY CONNEXUS)

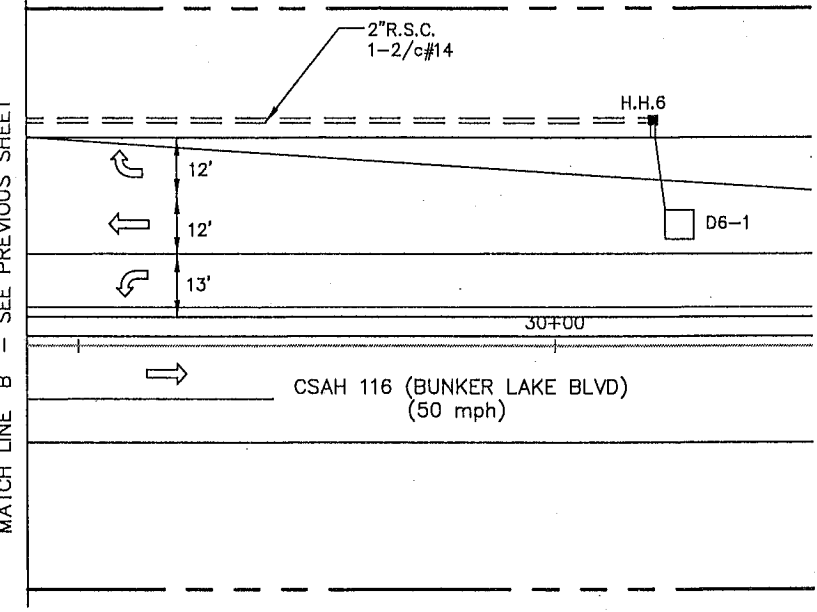
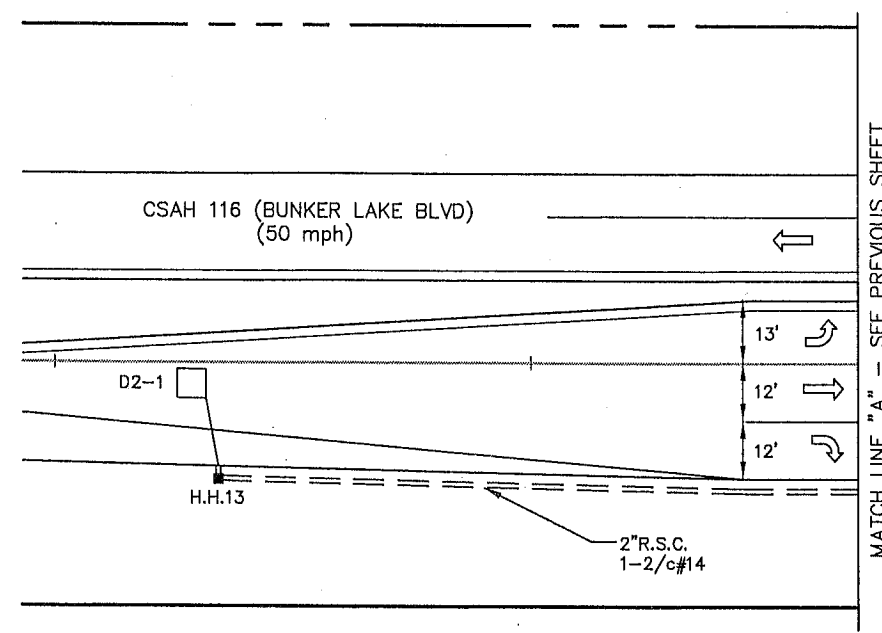
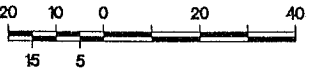
**SIGNAL SYSTEM OPERATIONS:**

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

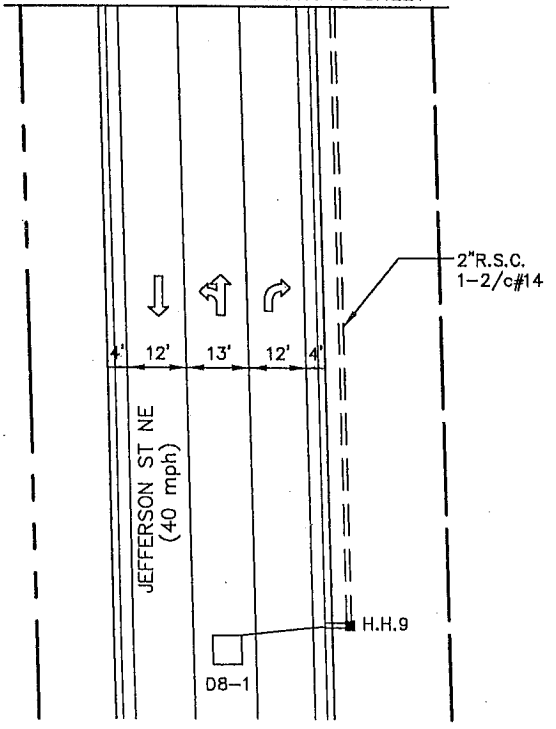
**(4) PA90 POLE FOUNDATION**  
 TYPE PA90-A-30  
 ONE WAY SIGNAL-OVERHEAD  
 2-TYPE 10B-POLE MOUNTED 90° & 180°  
 2-PEDESTRIAN PUSH BUTTONS  
 TYPE D SIGN PANEL-OVERHEAD (D-4)  
 ONE WAY EVP DETECTOR AND LIGHT (Ø4)  
 EXTEND INTO H.H.11:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20

**(3) PA100 POLE FOUNDATION**  
 TYPE PA100-A-40-D40-9 (DAVIT AT 350°)  
 LUMINAIRE-250 W HPS  
 2-ONE WAY SIGNALS-OVERHEAD (0° & 11° FROM END OF MAST ARM)  
 2-TYPE 10B-POLE MOUNTED 90° & 180°  
 2-PEDESTRIAN PUSH BUTTONS  
 TYPE D SIGN PANEL-OVERHEAD (D-3)  
 ONE WAY EVP DETECTOR AND LIGHT (Ø2,5)  
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°  
 EXTEND INTO H.H.8:  
 3"R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

LED SIGNAL FACES			
SIGNAL FACE	ALL 12"		
	R	Y	G
1-1, 1-2	←	←	←
2-1, 2-2	●	●	●
4-1, 4-2, 4-3	●	●	●
5-1, 5-2	←	←	←
6-1, 6-2	●	●	●
8-1, 8-2, 8-3	●	●	●



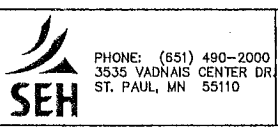
MATCH LINE "C" - SEE PREVIOUS SHEET



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 Name: John M. Gray, P.E.  
 Date: April 22, 2004 Lic. No. 22457



**ANOKA COUNTY**  
CITY OF HAM LAKE

**TRAFFIC SIGNAL SYSTEM**  
INTERSECTION LAYOUT  
CSAH 116 AT JEFFERSON ST NE

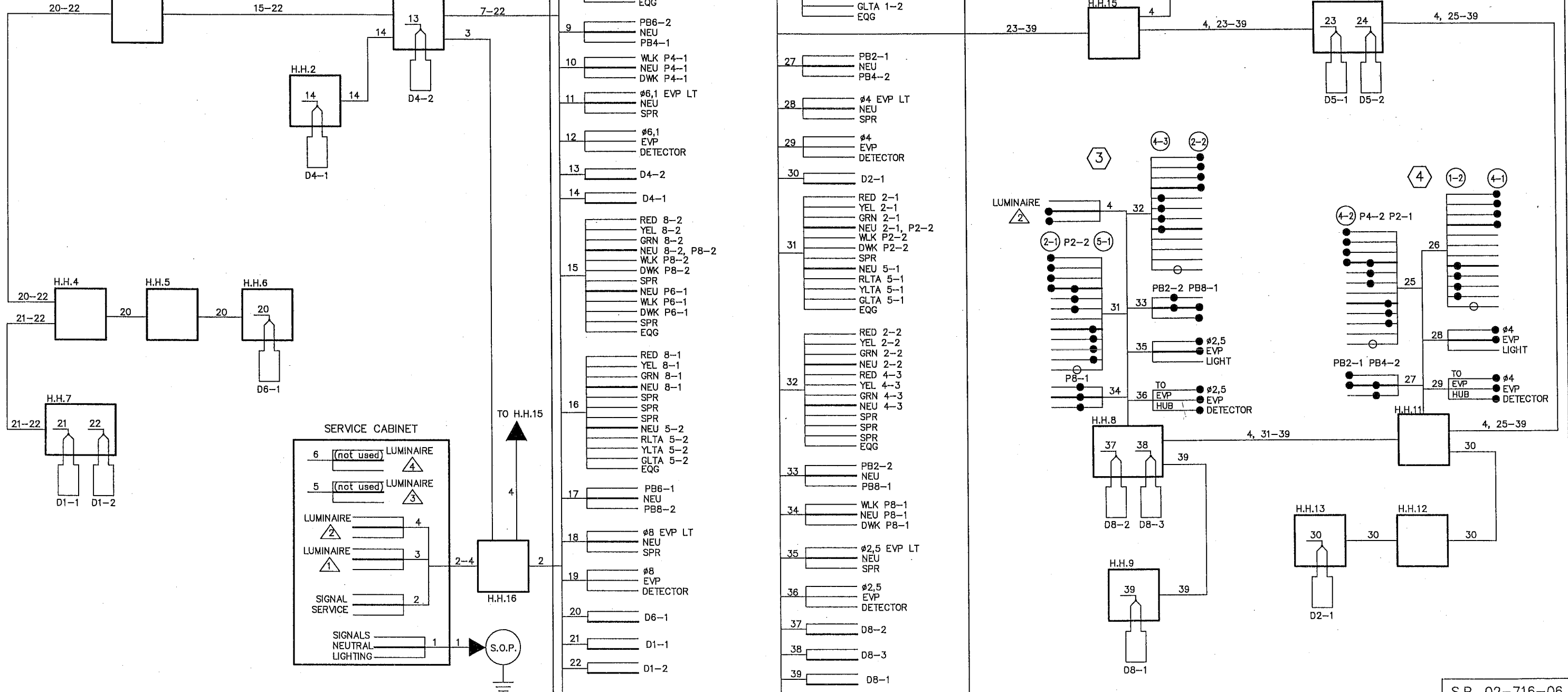
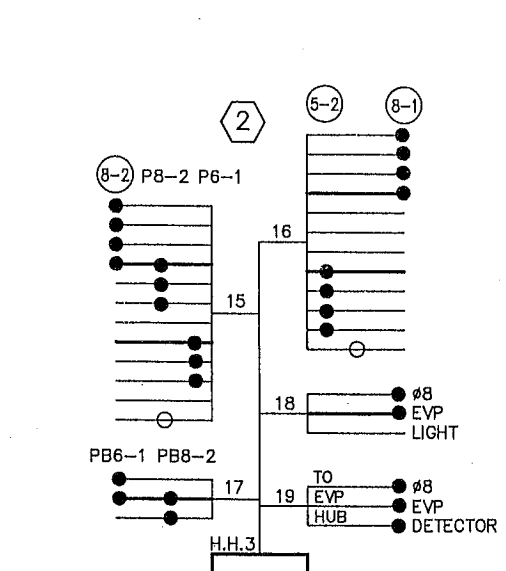
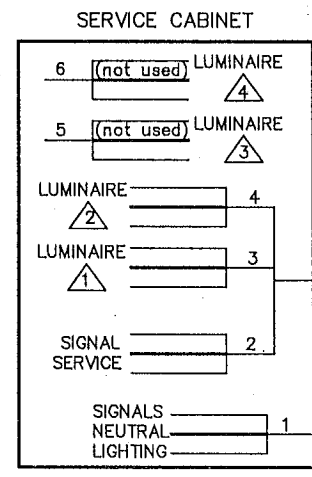
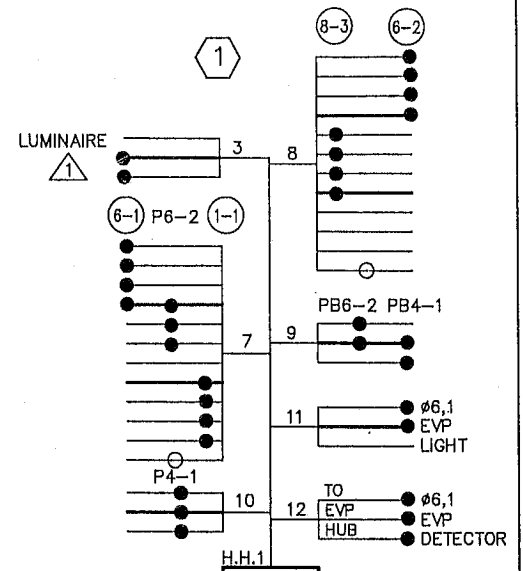
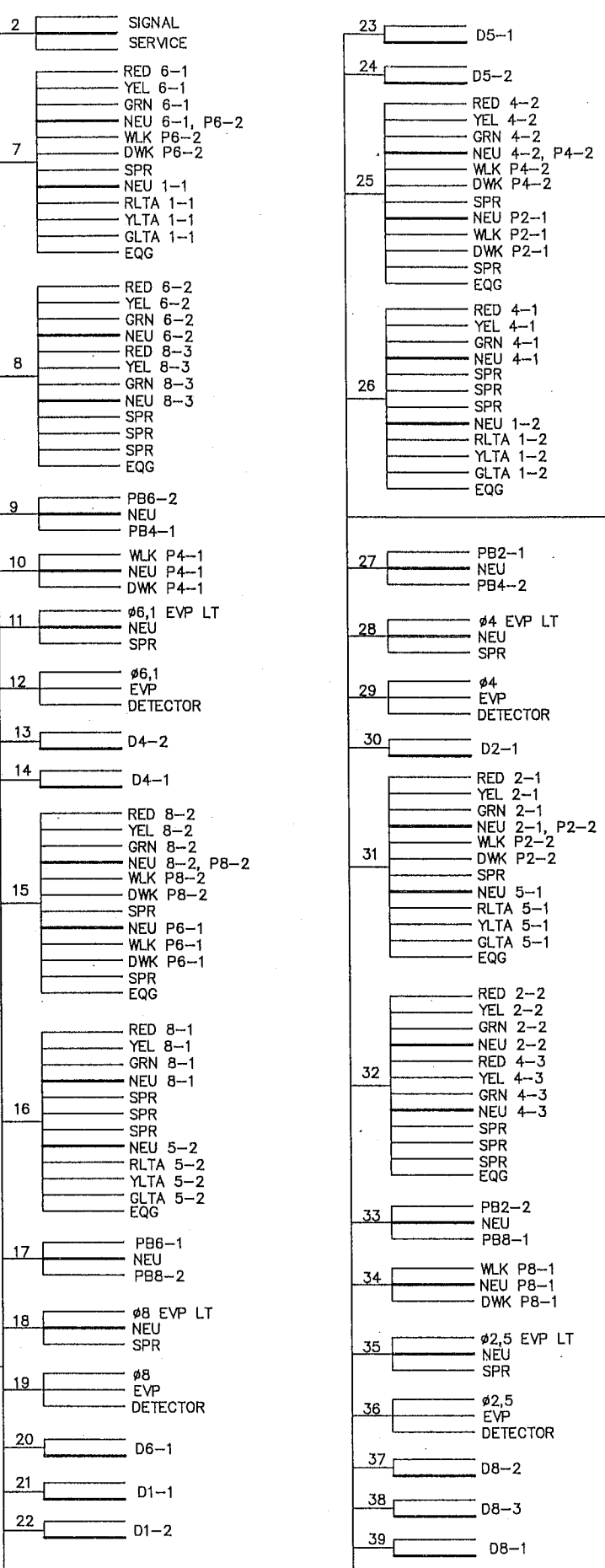
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	DATE 04/22/04	46

CONTROLLER CABINET

CONDUCTOR COLOR CODING

R	BLK	2-1/c#2
O	WH	2-1/c#6
BL	WH	2-1/c#10
WH	R	
R/BLK	WH	3/c#12
O/BLK	BLK	
BL/BLK	BLK	
WH/BLK	BLK	
BLK	BLK	2/c#14
BLK/WH	CLEAR	
G/BLK	CLEAR	
G	CLEAR	
R OR O	WH OR YEL	3/c#20
	BLK OR BL	

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



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

ANOKA COUNTY  
CITY OF HAM LAKE

TRAFFIC SIGNAL SYSTEM  
FIELD WIRING DIAGRAM  
CSAH 116 AT JEFFERSON ST NE

S.P. 02-716-06  
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DATE 04/22/04  
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