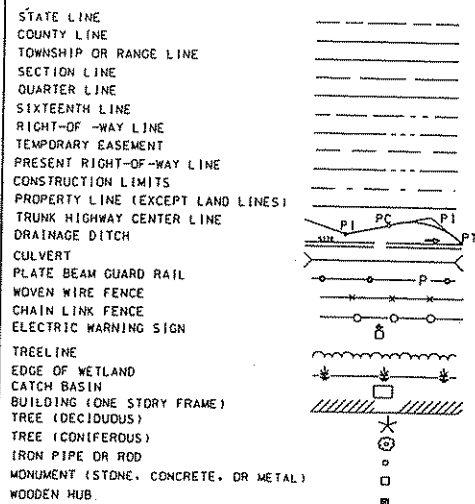
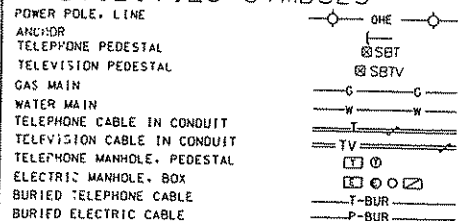


PLAN SYMBOLS



UTILITIES SYMBOLS

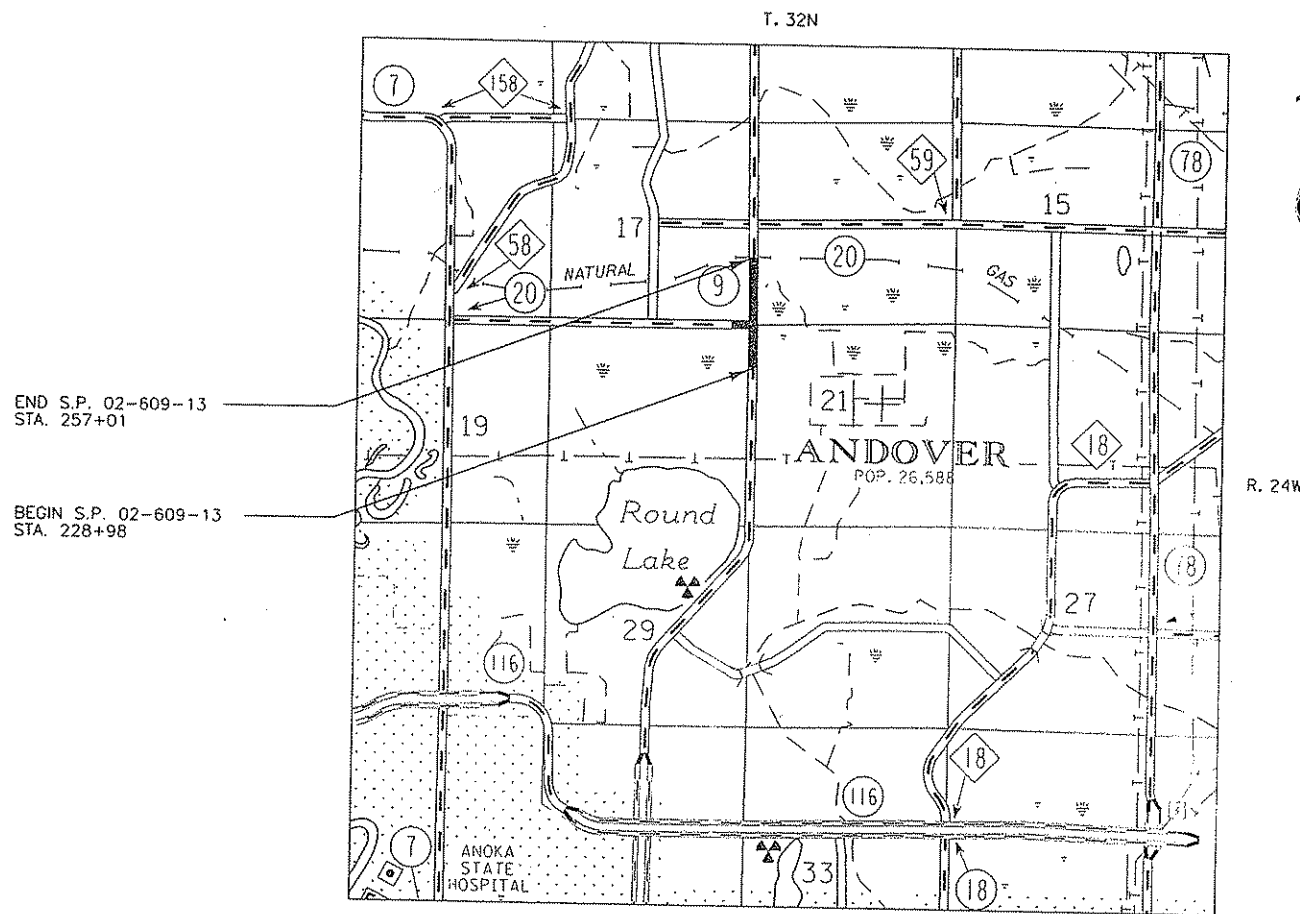


MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY

CONSTRUCTION PLAN FOR EXCAVATION, AGG. BASE, BIT. SURFACING AND SIGNALIZED TRAFFIC CONTROL SYSTEM

LOCATED ON CSAH 9 FROM 1110' SOUTH OF CSAH 20 (157TH AVENUE, NW) TO 1693' NORTH OF CSAH 20 (157TH AVENUE NW) AND ON CSAH 20 FROM 566' WEST OF ITS INTERSECTION WITH CSAH 9.

STATE PROJ. NO. 02-609-13/198-020-19
GROSS LENGTH 2803 FEET 0.531 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 2803 FEET 0.531 MILES
REF. POINT 228+98 TO REF. POINT 257+01



CITY OF ANDOVER
S.P. 198-020-19

DESIGN DESIGNATION (CSAH 9)

Design ESALS = 3,043,000
ADT (Current Year) 2004 = 13,800 Design Speed 55 MPH
ADT (Future Year) 2024 = 18,224 Based on Stopping Sight Distance
D (Directional Distr.) = 50% Height of eye 3.5' Height of object 0.5'
T (Heavy Commercial) = 7.1% R Value: 70
Ton of Design 10

DESIGN DESIGNATION (CSAH 20)

Design ESALS = 830,000
ADT (Current Year) 2004 = 3,383 Design Speed 55 MPH
ADT (Future Year) 2024 = 4,467 Based on Stopping Sight Distance
D (Directional Distr.) = 50% Height of eye 3.5' Height of object 0.5'
T (Heavy Commercial) = 7.1% R Value: 70
Ton of Design 10

DESIGN EXCEPTION: VERTICAL CURVE
(STA. 237+00.4 TO STA. 241+00.4)
MEETS 50 MPH



Howard R Green Company



PROJECT LOCATION
COUNTY: ANOKA
DISTRICT: METRO.

MINN. PROJ. NO. HES 0204(032)

GOVERNING SPECIFICATIONS

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

ANY USE OR REUSE OF THIS PLAN/DRAWING AND THE CORRESPONDING COMPUTER AIDED DESIGN/DRAFTING FILES WITHOUT THE EXPRESS WRITTEN CONSENT OF HOWARD R. GREEN CO., IS PROHIBITED. HRC SHALL NOT BE RESPONSIBLE FOR ANY UNAUTHORIZED USE OR REUSE OF THESE MATERIALS, OR DAMAGES RESULTING THEREFROM.

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

GOPHER STATE ONE CALL SYSTEM...1-800-252-1166

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE MN MUTCD AND PART VI, 'FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS'.

INDEX

- 1 TITLE SHEET
- 2-3 STATEMENT OF ESTIMATED QUANTITIES
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- 6 MISCELLANEOUS DETAILS
- 7-8 EARTHWORK TABULATIONS AND SUMMARY
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- 14-17 TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING
- 18 ALIGNMENT PLAN
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- 39-54 SIGNING AND STRIPING PLANS, TABULATIONS AND DETAILS
- 55-61 TRAFFIC SIGNAL PLAN AND DETAILS
- 62-87 CROSS SECTIONS

THIS PLAN CONTAINS 87 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: BRIAN C. JOHNSON LICENSE # 26815

DATE: 2-11-2005 SIGNATURE: *Brian C. Johnson*

DESIGN SQUAD WILLIAM KLINGBEIL, STEVE MANHART, LESLIE VAN DRASEK

APPROVED: *[Signature]* 4/14/05
ANOKA COUNTY ENGINEER

APPROVED: *[Signature]* 20.05
CITY OF ANDOVER ENGINEER

[Signature] 4-21-20.05
METRO DISTRICT STATE AID ENGINEER, REVIEWED FOR COMPLIANCE WITH STATE AND FEDERAL AID RULES/POLICY

[Signature] 4.21.20.05
APPROVED FOR STATE AND FEDERAL AID FUNDING: STATE AID ENGINEER

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE 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: _____ LICENSE # _____

DATE: _____ SIGNATURE: _____

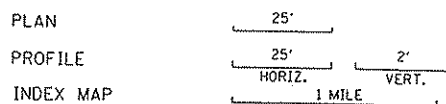
S.P. NO. 198-020-19 (CITY)
S.P. NO. 02-609-13 (COUNTY)

C.P. 90-20

SHEET NO. 1 OF 87 SHEETS

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

SCALES




STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	NOTES	UNIT	TOTAL QUANTITY		S.P. NO. 02-609-13							
				EST.	FINAL	SP 02-609-13		STORM SEWER		SP198-020-19		NON PARTICIPATING	
						EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
2013.602	CELLULAR MOBILE TELEPHONE		EACH	1									
2021.501	MOBILIZATION	1	LS	1.000		0.884		0.012		0.021		0.083	
2031.302	FIELD OFFICE TYPE D (MODIFIED)	1	EACH	1		1							
2101.501	CLEARING		ACRE	0.47		0.47							
2101.502	CLEARING		TREE	4		4							
2101.506	GRUBBING		ACRE	0.47		0.47							
2101.507	GRUBBING		TREE	4		4							
2104.501	REMOVE CURB AND GUTTER		LF	108.8		108.8							
2104.501	REMOVE PIPE CULVERTS		LF	125		125							
2104.501	REMOVE PIPE SEWERS		LF	50		50							
2104.501	REMOVE GUARD RAIL-PLATE BEAM		LF	600		600							
2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT		SY	166		166							
2104.505	REMOVE BITUMINOUS PAVEMENT	4	SY	1637		1637							
2104.505	REMOVE BITUMINOUS DRIVEWAY PAVEMENT		SY	170		170							
2104.509	REMOVE CASTING		EACH	1		1							
2104.509	REMOVE CATCH BASIN		EACH	1		1							
2104.509	REMOVE ANCHORAGE ASSEMBLY - PLATE BEAM		LF	2		2							
2104.509	REMOVE PIPE APRON		EACH	1		1							
2104.509	SALVAGE MARKER		EACH	6		6							
2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	5	LF	4278		4278							
2104.523	SALVAGE MAILBOX		EACH	6		6							
2104.523	SALVAGE MAILBOX SUPPORT		EACH	6		6							
2104.523	SALVAGE SIGN TYPE C		EACH	20		20							
2104.523	SALVAGE SIGN TYPE SPECIAL		EACH	1		1							
2104.601	HAUL SALVAGED MATERIALS		LS	1								1	
2105.501	COMMON EXCAVATION (EV) (P)	2,7	CY	7077		7077							
2105.505	MUCK EXCAVATION (EV)		CY	2399		2399							
2105.507	SUBGRADE EXCAVATION (EV) (P)		CY	2028		2028							
2105.521	GRANULAR BORROW (LV)		CY	3337		3337							
2105.522	SELECT GRANULAR BORROW (LV)		CY	3174		3174							
2105.523	COMMON BORROW (LV)		CY	969		969							
2105.525	TOPSOIL BORROW (LV)		CY	344		344							
2118.502	AGGREGATE SURFACING CLASS 1		CY	170		170							
2211.503	AGGREGATE BASE (CV) CLASS 5		CY	1746		1746							
2232.501	MILL BITUMINOUS SURFACE	3	SY	100		100							
2350.501	TYPE MV 3 WEARING COURSE MIXTURE (C)	8	TON	2232		2232							
2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)		TON	896		896							
2357.502	BITUMINOUS MATERIAL FOR TACK COAT		GAL	880		880							
2501.511	15' CS PIPE CULVERT		LF	29		29							
2501.515	18' RC PIPE APRON		EACH	1				1					
2501.515	15' GS PIPE APRON		EACH	2		2							
2501.561	18' RC PIPE CULVERT DESIGN 3006	6	LF	85		85							
2501.567	18' RC SAFETY APRON & GRATE DESIGN 3128		EACH	1		1							
2501.569	18' RC SAFETY APRON		EACH	1		1							
2501.602	PIPE TIES		EACH	16				16					
2503.541	18' RC PIPE SEWER DESIGN 3006		LF	36.5				36.5					
2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN G OR H		LF	1				1					
2506.516	CASTING ASSEMBLY		EACH	1				1					
2511.501	RANDOM RIPRAP CLASS V		CY	44		20		24					
2531.501	CONCRETE CURB & GUTTER DESIGN B424		LF	2500		1250				1250			
2531.507	6" CONCRETE DRIVEWAY PAVEMENT		SY	205		205							
2531.602	PEDESTRIAN CURB RAMP		EACH	4		4							
2540.602	INSTALL MAIL BOX SUPPORT		EACH	6		6							
2540.602	INSTALL MAIL BOX		EACH	6		6							
2563.601	TRAFFIC CONTROL		LS	1.000		0.884		0.013		0.021		0.082	
2564.531	SIGN PANELS TYPE C		SF	264.77		258.52						6.25	
2564.602	PAVEMENT MESSAGE (LT ARROW) - POLY PREFORM		EACH	4		4							
2564.602	PAVEMENT MESSAGE (RT ARROW) - POLY PREFORM		EACH	8		8							
2564.602	INSTALL MARKER		EACH	4		4							
2564.603	24" SOLID LINE WHITE - POLY PREFORM		LF	164		164							
2564.603	24" SOLID LINE YELLOW - EPOXY		LF	378		378							
2564.603	4" BROKEN LINE WHITE - EPOXY		LF	2191		2191							
2564.603	4" DOUBLE SOLID LINE YELLOW - EPOXY		LF	4650		4650							

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 SIGNATURE: *Brian E. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN E. JOHNSON LIC. NO. 26915

NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389

 Howard R Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

STATEMENT OF
 ESTIMATED QUANTITIES

SHEET NO.
 2

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	NOTES	UNIT	TOTAL QUANTITY		S.P. NO. 02-609-13							
				EST.	FINAL	SP 02-609-13		STORM SEWER		SP 198-020-19		NON PARTICIPATING	
						EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
2564.603	4" SOLID LINE WHITE - EPOXY		LF	7898		7898							
2564.618	ZEBRA CROSSWALK WHITE - POLY PREFORM		SF	684		684							
2565.511	FULL T ACT T CONTROL SIGNAL SYSTEM		SIG SYS	1		0.75						0.25	
2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM		LS	1		0.75						0.25	
2573.502	SILT FENCE, TYPE MACHINE SLICED		LF	1413		1413							
2573.508	BITUMINOUS LINED FLUME		SY	15		15							
2573.512	TEMPORARY DITCH CHECKS TYPE 3		LF	10		10							
2575.501	SEEDING		ACRE	2.42		2.42							
2575.502	SEED MIXTURE TYPE 60B MOD.		POUND	242		242							
2575.505	SODDING TYPE SALT RESISTANT		SY	2549		2549							
2575.511	MULCH MATERIAL TYPE 1		TON	4.84		4.84							
2575.519	DISK ANCHORING		ACRE	2.42		2.42							
2575.523	EROSION CONTROL BLANKETS CATEGORY 2		SY	5421		5421							
2575.532	COMMERCIAL FERTILIZER, ANALYSIS 20-20-10		POUND	1089		1089							

Notes:

- SEE SPECIAL PROVISIONS FOR DETAILS.
- TOPSOIL STRIP PAID FOR AS COMMON EXCAVATION. COMMON EXCAVATION QUANTITY INCLUDES 5044 CY COMMON EX. AND 2033 CY TOPSOIL STRIP.
- MILLING ONLY FOR CREATING SMOOTH, DURABLE JOINT BETWEEN EXISTING AND PROPOSED SURFACES.
- SAWCUT VARIES FROM 5' TO 12' ON CSAH 9
- BITUMINOUS REMOVAL INCLUDES BIT BURB.
- SHORT RADIUS BENDS WILL BE INCLUDED FOR PAYMENT UNDER 2503.541 (18" RC PIPE SEWER DESIGN 3006)
- QTY. INCLUDES 60 CY OF AGGREGATE SALVAGED FROM KNOLL DRIVEWAY
- QTY. INCLUDES BITUMINOUS FOR BOTH ROADWAY AND DRIVEWAYS

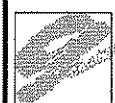
BASIS FOR ESTIMATED QUANTITIES

AGGREGATE MEASURED BY THE CUBIC YARD
BITUMINOUS MIXTURE NONWEARING COURSE MIXTURE - 110 LB/SY/IN WEARING COURSE MIXTURE - 110 LB/SY/IN
TACK COAT 0.035 GAL/YD2
SEED MIXTURE 60B 100 LB/ACRE
COMMERCIAL FERTILIZER 20-10-10 450 LB/ACRE SEEDING
MULCH MATERIAL TYPE 1 2.0 TON/ACRE SEEDING

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1326 ENERGY PARK DRIVE
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 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

STATEMENT OF
 ESTIMATED QUANTITIES

SHEET NO.
3

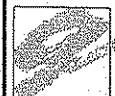
D UTILITY CONTACTS			
COMPANY NAME	PRIMARY CONTACT NAME & ADDRESS	PHONE NUMBER FAX CELL NUMBER	E-MAIL ADDRESS
City of Andover	Dave Berkowitz, P.E. 1685 Crosstown Blvd. Andover, MN 55304	763-767-5133 phone 763-755-8923 fax	dberkowitz@ci.andover.mn.us
Connexus	Barb Carlson 14601 Ramsey Blvd. Anoka, MN 55303	763-323-4216 phone	
Comcast	Barb Carlson 10 River Park Plaza St. Paul, MN 55107-1219	651-493-5172 phone	
Qwest	Judd Syverson 425 Monroe St. Anoka, MN 55303	763-712-5021 phone	
Xcel / Minnegasco	Richard Pilon Sr. Administration Engineer 700 W. Linden Ave. P.O. Box 1165 Minneapolis, MN 55440-1165	612-321-5426 phone	
Northern Natural Gas	Dianne Stahnke 6579 - 420th St. P.O. Box 309 North Branch, MN 55056	651-982-2121 phone 651-982-2170 fax	

TABULATION INDEX		
TAB	SHEET NO.	
A	18	ALIGNMENT TABULATION
B	7-8	EARTHWORK TABULATION
C	8	EARTHWORK SUMMARY/BALANCE
D	4	PRIVATE UTILITY CONTACTS
E	9	CLEARING AND GRUBBING
F	9	PAVEMENT REMOVAL
G	9	SAWING BITUMINOUS PAVEMENT
H	9	CURB & GUTTER REMOVAL
I	9	REMOVE PLATE BEAM GUARD RAIL
J	9	CULVERT, PIPE, & DRAINAGE STRUCTURE REMOVALS
K	10	AGGREGATE SUMMARY
L	10	BITUMINOUS SUMMARY
M	10	TURF ESTABLISHMENT
N	10	MAIL BOXES
O	39	SIGNS
P	40	PERMANENT PAVEMENT MARKING

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 THE LAWS OF THE STATE OF MINNESOTA.
 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
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NO.	DATE	BY	REVISION DESCRIPTION


 1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

UTILITY CONTACTS AND
 TABULATION INDEX

SHEET NO.
 4

CONSTRUCTION/SOILS NOTES

1. SUITABLE GRADING MATERIAL ON THIS PROJECT SHALL MEET THE REQUIREMENTS OF MN/DOT STANDARD SPECIFICATION 3149.2B1.
2. ITEMS REFERRED TO AS INCIDENTAL ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL WITH NO DIRECT COMPENSATION MADE THEREFORE.
3. BITUMINOUS AND CONCRETE SURFACING REMOVED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL EITHER BE RECYCLED OR DISPOSED OF OFF THE PROJECT, IN ACCORDANCE WITH THE PROVISIONS OF SPEC. 2104 AND 2105.
4. UNSUITABLE MATERIALS SHALL BE PLACED IN EMBANKMENTS OUTSIDE OF A 1-1/2H:1V SLOPE EXTENDING DOWN AND OUTWARD FROM THE GRADING PI OR THE BOULEVARD PI.
5. COMPACTION OF THE GRADING ITEMS OF THIS PROJECT SHALL BE BY THE "SPECIFIED DENSITY METHOD", EXCEPT WHEN WITHIN 3 FT. OF THE WATER TABLE, THEN BY THE "QUALITY COMPACTION METHOD".
6. COMPACTION OF THE AGGREGATE BASE ITEMS OF THIS PROJECT SHALL BE BY THE "SPECIFIED DENSITY METHOD" EXCEPT WHEN THE CONTRACTOR ELECTS TO USE RECYCLED MATERIALS FOR THE AGGREGATE BASE ITEMS, THEN THE "PENETRATION INDEX METHOD" SHALL BE UTILIZED.
7. WHERE WIDENING ADJACENT TO EXISTING PAVEMENT, CUT VERTICALLY TO THE BOTTOM OF THE CLASS 5 AGGREGATE BASE AND THEN AT A 1/2H:1V SLOPE TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION (AS SHOWN ON THE TYPICAL SECTIONS AND THE CROSS SECTIONS). BACKFILL PROMPTLY TO AVOID UNDERMINING THE EXISTING PAVEMENT.
8. PROVIDE 20H:1V LONGITUDINAL TAPERS BETWEEN CHANGES IN SUBGRADE AND SUBCUT DEPTHS.
9. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES AT A RATE OF 0.035 GAL/YD² AND WHERE CONCRETE CURBING ABUTS BITUMINOUS MIXTURES.
10. STRIP AND REUSE AS SLOPE DRESSING ALL EXISTING TOPSOIL, WHERE PRESENT, IN AREAS TO BE DISTURBED BY CONSTRUCTION. TOPSOIL STRIPING IS CONSIDERED TO BE COMMON EXCAVATION
11. PLACE A MINIMUM OF 4" SLOPE DRESSING ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT. ALL EXCESS TOPSOIL SHALL BE USED AS SLOPE DRESSING BY PROVIDING A THICKNESS GREATER THAN 4 INCHES.
12. SEEDING REQUIREMENTS ON THIS PROJECT SHALL BE AS FOLLOWS:
 - a. SEED MIXTURE 60B SHALL BE APPLIED AT A RATE OF 100 POUNDS PER ACRE.
 - b. MULCH MATERIAL TYPE I SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE.
 - c. COMMERCIAL FERTILIZER ANALYSIS 20-10-10 (OR EQUIVALENT) SHALL BE APPLIED AT A RATE OF 450 POUNDS PER ACRE.
13. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS
14. ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE MN MUTCD AND PART VI "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".


THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.	
Mn/DOT STANDARD PLATES	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR RC PIPE
3022C	PRECAST CONCRETE SAFETY APRON
3040F	CORRUGATED METAL PIPE CULVERT 2-2/3" X 1/2" CORRUGATION
3041D	CORRUGATED METAL PIPE 3" X 1" CORRUGATION
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3128H	METAL SAFETY APRON AND GRATE
3133C	RIPRAP AT RCP OUTLETS
3134C	RIPRAP AT CMP OUTLETS
3145E	REINFORCED CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
4006L	MANHOLE OR CATCH BASIN PRECAST DESIGNS G AND H
4010H	CONCRETE SHORT CONE AND ADJUSTING RING (SECTIONAL CONCRETE)
4011E	PRECAST CONCRETE BASE
4129G	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE)-CASTING NO. 802A
4153A	CATCH BASIN GRATE CASTING-CASTING NO. 815
4160D	CURB BOX CASTING FOR CATCH BASIN-CASTING NO. 823A AND 833A
7036F	PEDESTRIAN CURB RAMP
7100G	CONCRETE CURB AND GUTTER
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
8000I	STANDARD BARRICADES

NOTE: SEE SHEET 56 FOR ADDITIONAL STANDARD PLATES AS THEY APPLY TO TRAFFIC SIGNAL INSTALLATION.

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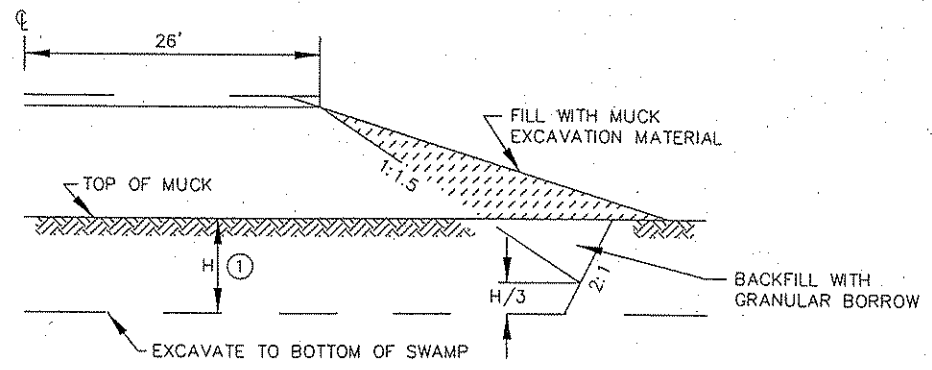
NO.	DATE	BY	REVISION DESCRIPTION


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 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

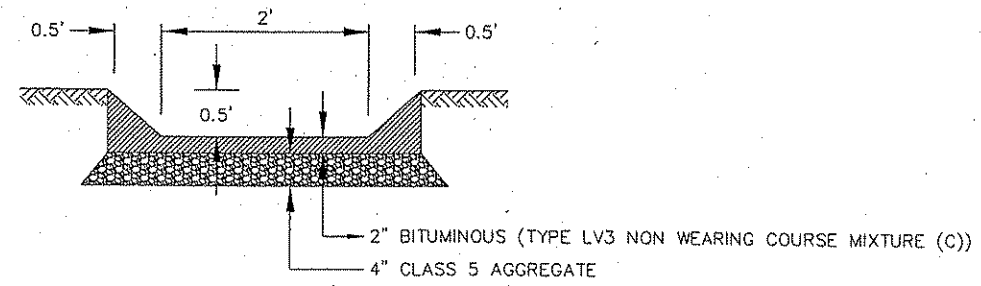
**CONSTRUCTION NOTES
 AND STANDARD PLATES**

SHEET NO.
5



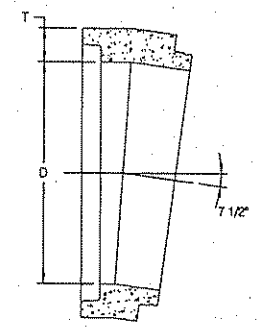
MUCK EXCAVATION DETAIL

NOTES:
 ① "H" VARIES FROM 6-8 FEET. SEE SOIL BORING LOG FOR DETAILS.



BITUMINOUS FLUME

GASKETED PIPE SHORT RADIUS BEND DETAIL



D	T	LAYING LENGTH ON CENTER OF PIPE	RADIUS OF CURVE AT CENTER OF PIPE	WEIGHT PER SECTION
INCHES	INCHES	INCHES	FEET	LBS.
15	5 3/4	9 1/2	6.1	315
18	6	9 13/16	6.2	305
21	6 1/4	9 11/16	6.2	415
24	6 1/2	10	6.4	530
27	6 3/4	11 3/16	7.1	620
30	7	12 3/16	7.7	870
36	7 1/2	14 1/16	8.9	1155
42	8	16 15/16	10.8	1700
48	8 1/2	18 9/16	11.8	2320
54	9	21	13.4	3230
60	9 1/2	22 1/8	14.1	3800
66	10	23 1/8	14.7	4585
72	7	22 5/8	14.4	3420

NOTES:
 BEND REINFORCING AND CONCRETE SHALL BE THE SAME AS REQUIRED FOR ADJOINING PIPE SECTIONS.

DRAWN BY: WCK JOB DATE: 5-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: April 06, 2004 2:58:43 p.m.
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 SIGNATURE: *Brian C. Johnson* DATE: 02-11-05
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26815

NO.	DATE	BY	REVISION DESCRIPTION

1325 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13
 CP 90-20

MISCELLANEOUS DETAILS

SHEET NO.
 6

B EARTHWORK QUANTITIES - CSAH 9/ROUND LAKE BLVD								
STATION	EXCAVATION				EMBANKMENT ①			
	COMMON ③	SUBGRADE	MUCK	TOPSOIL	SUITABLE	SELECT GRANULAR	GRANULAR	TOPSOIL ②
	CY	CY	CY	CY	CY	CY	CY	CY
228+98.00	0	0	0	0	0	0	0	0
229+50.00	3	7	0	2	1	15	0	7
230+00.00	0	0	0	0	0	0	0	0
230+25.00	0	0	0	0	0	0	0	0
230+50.00	0	0	0	0	0	0	0	0
230+67.28	0	0	0	0	0	0	0	0
230+98.75	4	2	0	1	0	3	0	3
231+18.93	5	5	0	4	3	7	0	6
231+50.00	8	11	0	9	12	15	0	11
231+83.00	7	11	0	10	17	16	0	13
232+00.00	4	6	0	6	21	8	0	8
232+19.50	5	7	0	8	35	10	0	11
232+50.00	7	11	0	11	48	16	0	15
233+00.00	13	18	0	16	59	26	0	22
233+41.00	19	16	0	13	18	23	0	8
233+50.00	5	4	0	2	0	5	0	0
234+00.00	21	24	0	21	43	33	0	21
234+50.00	25	32	0	28	57	45	0	32
235+00.00	65	39	0	27	15	55	0	15
235+50.00	106	50	0	29	2	71	0	17
235+63.78	31	17	0	8	0	23	0	6
236+00.00	83	46	0	22	0	64	0	14
236+33.00	81	43	0	20	0	61	0	14
236+50.00	43	23	0	10	0	32	0	7
237+00.00	106	68	0	29	0	95	0	18
237+22.00	41	30	0	13	0	42	0	6
237+50.00	51	39	0	17	0	54	0	7
238+00.00	92	68	0	28	0	95	0	17
238+50.00	101	68	0	29	0	95	0	18
239+00.00	142	68	0	33	0	95	0	25
239+34.00	126	46	0	23	1	65	0	20
240+20.00	177	75	0	36	36	105	0	24
240+80.00	193	42	0	34	24	70	0	32
241+00.00	103	21	0	19	0	36	0	20
241+25.00	74	25	0	20	0	46	0	20
241+50.00	35	23	0	17	2	46	0	17
242+00.00	31	40	110	41	173	91	148	41
242+50.00	38	51	113	39	379	91	148	63
243+00.00	49	47	98	53	578	91	132	87
243+45.73	85	30	174	73	753	83	244	98
243+50.00	16	3	16	7	75	8	22	10
243+76.14	104	18	104	43	410	46	146	59
244+00.00	84	16	95	37	357	41	133	50

B EARTHWORK QUANTITIES - C.S.A.H. 9/ROUND LAKE BLVD								
STATION	EXCAVATION				EMBANKMENT ①			
	COMMON ③	SUBGRADE	MUCK	TOPSOIL	SUITABLE	SELECT GRANULAR	GRANULAR	TOPSOIL ②
	CY	CY	CY	CY	CY	CY	CY	CY
244+50.00	208	43	195	77	632	83	273	109
245+00.00	272	53	202	81	481	80	283	118
245+50.00	285	51	208	83	459	78	291	122
246+00.00	289	50	209	85	487	76	293	125
246+50.00	312	47	198	88	568	73	277	130
247+00.00	327	41	188	89	628	71	263	134
247+35.00	207	30	133	59	432	49	186	80
247+50.00	69	14	58	23	172	21	81	31
248+00.00	111	41	198	60	427	68	277	85
248+50.00	15	39	100	36	170	65	140	43
248+75.00	15	21	0	11	10	31	0	7
249+00.00	40	20	0	14	5	31	0	13
249+50.00	114	40	0	37	15	61	0	46
250+00.00	130	39	0	40	20	58	0	53
250+25.00	57	20	0	19	7	28	0	17
250+50.00	40	20	0	14	3	28	0	10
251+00.00	68	38	0	32	18	54	0	41
251+50.00	86	35	0	37	49	51	0	50
251+75.00	38	10	0	16	17	15	0	20
251+90.00	7	3	0	7	10	4	0	8
Totals	4873	1805	2399	1746	7729	2848	3337	2104

NOTES

- 40% SHRINKAGE FACTOR USED TO ADJUST FILL FROM LOOSE VOLUME TO COMPACTED VOLUME.
- TOPSOIL EXCAVATION ASSUMES A 6" TOPSOIL STRIP.
- VALUES IN EARTHWORK TABLES ARE ADJUSTED VOLUMES.
- PAVEMENT REMOVAL IS NOT INCLUDED IN COMMON EXCAVATION.

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NO.	DATE	BY	REVISION DESCRIPTION



1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

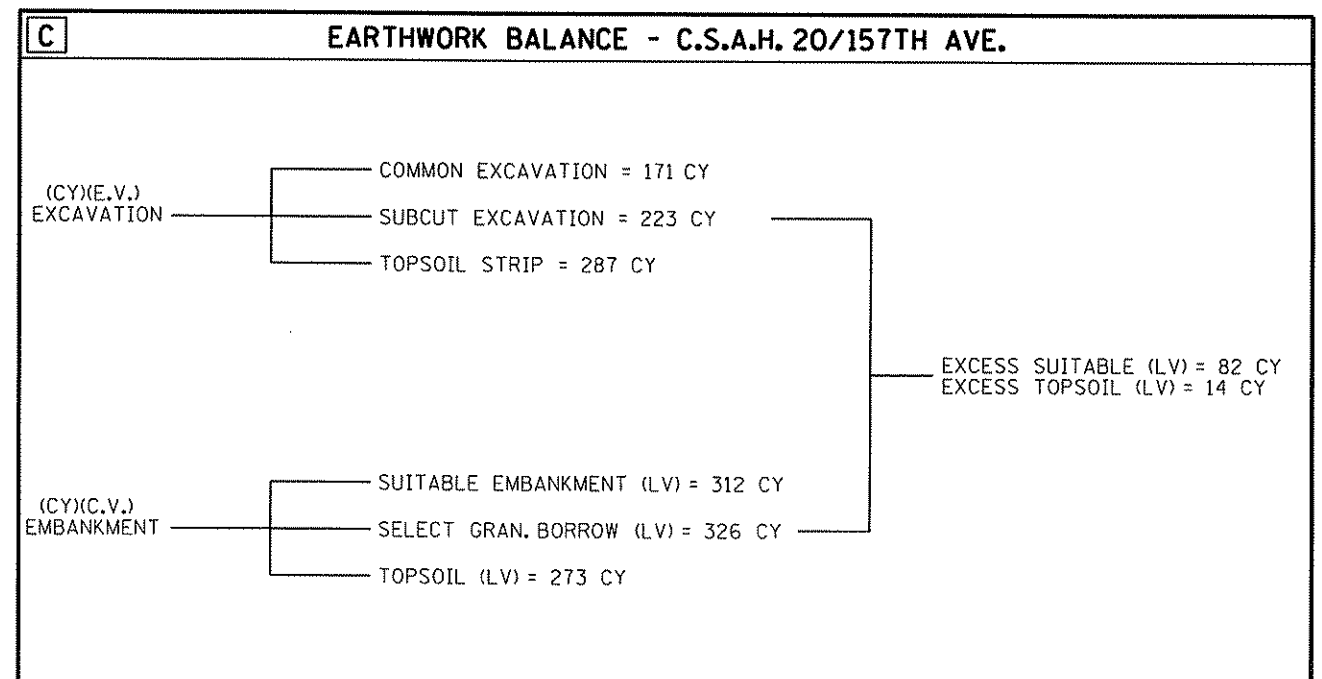
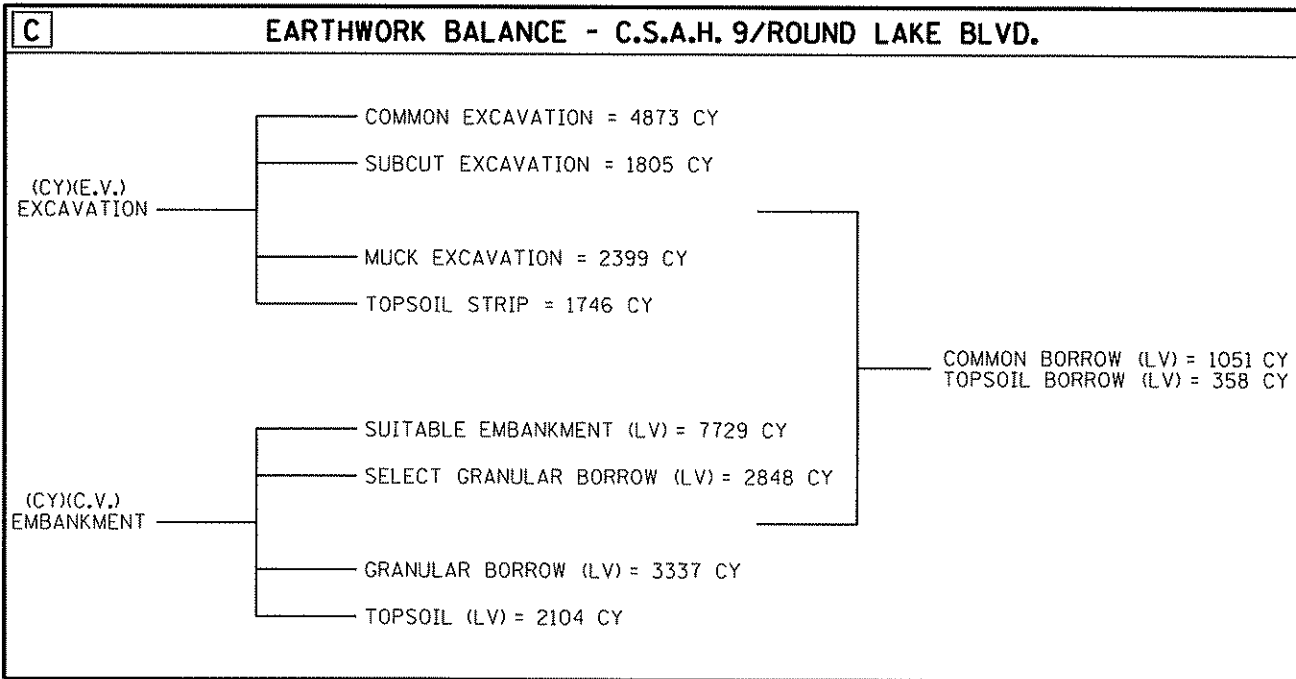
EARTHWORK TABULATIONS
 AND SUMMARY

SHEET NO.
 7

B EARTHWORK QUANTITIES - C.S.A.H. 20/157TH AVE								
STATION	EXCAVATION				EMBANKMENT ①			
	COMMON	SUBGRADE	MUCK	TOPSOIL	SUITABLE	SELECT GRANULAR	GRANULAR	TOPSOIL ②
	CY	CY	CY	CY	CY	CY	CY	CY
4+34.00	0	0	0	0	0	0	0	0
4+50.00	5	8	0	9	11	11	0	10
5+00.00	15	24	0	30	38	35	0	29
5+50.00	13	24	0	28	38	35	0	29
6+00.00	12	24	0	27	43	35	0	29
6+50.00	11	23	0	24	46	35	0	29
7+00.00	11	23	0	26	41	35	0	29
7+50.00	12	24	0	29	32	35	0	29
8+00.00	17	24	0	33	28	35	0	29
8+50.00	23	24	0	37	21	35	0	29
9+00.00	52	25	0	44	14	35	0	31
TOTALS	171	223	0	287	312	326	0	273

NOTES

1. 40% SHRINKAGE FACTOR USED TO ADJUST FILL FROM LOOSE VOLUME TO COMPACTED VOLUME.
2. TOPSOIL EXCAVATION ASSUMES A 6" TOPSOIL STRIP.
3. VALUES IN EARTHWORK TABLES ARE ADJUSTED VOLUMES.
4. PAVEMENT REMOVAL IS NOT INCLUDED IN COMMON EXCAVATION.



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NO.	DATE	BY	REVISION DESCRIPTION

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 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

EARTHWORK TABULATIONS
 AND SUMMARY

SHEET NO.
 8

E CLEARING & GRUBBING					
STATION	LOCATION	2101	2101	2101	2101
		CLEARING	CLEARING	GRUBBING	GRUBBING
		ACRE	TREE	ACRE	TREE
C.S.A.H. 9					
237+31	54' LT		1		1
238+44 - 249+67	50' LT	0.05		0.05	
240+39	65' RT		1		1
240+40 - 242+83	54' LT	0.08		0.08	
241+34 - 242+20	54' LT	0.05		0.05	
244+17 - 247+62	54' LT	0.10		0.10	
248+00 - 248+32	55' RT	0.05		0.05	
248+93 - 249+14	60' RT	0.05		0.05	
250+70	52' RT		1		1
251+56	56' RT		1		1
C.S.A.H. 20					
4+90 - 9+15	33' RT	0.09		0.09	
TOTAL		0.47	4	0.47	4

F PAVEMENT REMOVAL				
STATION	LOCATION	2104	2104	2104
		BITUMINOUS	BITUMINOUS	CONCRETE
		DRIVEWAY	PAVEMENT	DRIVEWAY
		SY	SY	SY
C.S.A.H. 9				
230+99 - 250+55	RT	60		
233+30 - 233+53	RT		537	
234+81 - 239+98	LT		187	
234+93 - 235+16	LT	56		
237+09 - 237+33	LT	54		
240+26 - 251+60	LT		245	
241+18 - 241+31	RT			97
250+03 - 250+40	RT			69
C.S.A.H. 20				
4+16 - 9+72	RT		620	
9+32 - 9+73	LT		48	
TOTAL		170	1637	166

G SAWING BITUMINOUS PAVEMENT		
STATION	LOCATION	2104
		FULL DEPTH
		LF
C.S.A.H. 9		
230+99 - 250+55	RT	1960
234+81 - 239+98	LT	525
240+26 - 251+60	LT	1138
C.S.A.H. 20		
4+16 - 9+72	RT	612
9+32 - 9+73	LT	43
TOTAL		4278

H CURB & GUTTER REMOVAL		
STATION	LOCATION	2104
		B424
		LF
C.S.A.H. 9		
233+73.5 - 234+82.3	LT	108.8
TOTAL		108.8

I REMOVE PLATE BEAM GUARDRAIL			
STATION	LOCATION	REMOVE	REMOVE
		GUARDRAIL	ANCHORAGE
		LF	EACH
CSAH 9			
242+00 - 248+00	RT	600	2
TOTAL		600	2

J CULVERT, PIPE, & DRAINAGE STRUCTURE REMOVALS						
STATION	LOCATION	2104	2104	2104	2104	2104
		REMOVE	REMOVE	REMOVE	REMOVE	REMOVE
		PIPE	RCP	CONCRETE	CATCH	CASTING
		CULVERT	SEWER	PIPE	BASIN	APRON
		LF	LF	EACH	EACH	EACH
C.S.A.H. 9						
240+00	LT	85				
243+50	RT		50	1	1	1
247+50	LT	40				
248+75	RT	45				
251+75	LT	40				
TOTAL		125	50	1	1	1

GENERAL NOTES:

1. PROTECT ALL EXISTING UTILITIES.
2. ALL OFFSETS SHOWN ARE FROM THE PROPOSED ALIGNMENT.
3. CONSTRUCT ALL RADII AS PER PLANS.
4. EROSION CONTROL TO BE PLACED BEFORE REMOVAL OF BITUMINOUS PAVEMENT.
5. SAW CUT ALL BITUMINOUS AND CONCRETE AS DIRECTED BY THE ENGINEER IN THE FIELD.
6. THE LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED IN THE FIELD BEFORE DIGGING. CONTRACTOR SHALL COORDINATE WITH RELOCATION OF PRIVATE UTILITIES.
7. CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL EROSION CONTROL MEASURES AS SHOWN ON THESE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY, OR AS DIRECTED BY ENGINEER, IN ORDER TO PROTECT ADJACENT PROPERTY.

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 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

QUANTITY TABULATIONS

SHEET NO.
 9

K AGGREGATE SUMMARY				
STATION	LOCATION	2350	2350	2350
		CLASS 5 ROADWAY AGGREGATE	CLASS 5 DRIVEWAY AGGREGATE	CLASS 1 DRIVEWAY SURFACE
		CY	CY	CY
C.S.A.H. 9				
228+98 - 240+00	LT & RT	541	30	170
240+00 - 257+01	LT & RT	944	35	0
CSAH 20				
4+34 - 9+00	LT & RT	196	0	0
TOTAL		1681	65	170

M TURF ESTABLISHMENT								
STATION	LOCATION	2575	2575	2575	2575	2575	2575	2573
		SOD SALT RESISTANT	SEEDING	SEED MIXTURE 60B	COMMERCIAL FERTILIZER ANALYSIS	MULCH MATERIAL TYPE 1	EROSION CONTROL BLANKET	SILT FENCE MACHINE SLICED
		SY	ACRE	LB	LB	TON	SY	LF
CSAH 9								
230+75 - 233+31	RT	532	0.09	9	41	0.18		259
233+51 - 235+56	RT	289						203
233+73 - 234+93	LT	134						
235+08 - 237+14	LT	297						
235+71 - 239+98	RT	1177						
237+30 - 238+43	LT	120						
238+43 - 239+84	LT		0.09	9	41	0.18		
240+30 - 251+52	LT		0.49	49	221	0.98		
240+32 - 242+23	RT		0.15	15	68	0.3		
242+23 - 248+65	RT		1.12	112	504	2.24	5421	
242+25 - 248+64	RT							672
242+97 - 245+76	LT							279
248+85 - 250+16	RT		0.10	10	45	0.2		
250+31 - 251+90	LT		0.10	10	45	0.2		
251+71 - 251+90	LT		0.01	1	5	0.02		
CSAH 20								
4+34 - 9+00	RT		0.22	22	99	0.44		
4+34 - 8+87	LT		0.05	5	23	0.1		
TOTAL		2549	2.42	242	1089	4.84	5421	1413

L BITUMINOUS SUMMARY					
STATION	LOCATION	2350	2350	2350	2357
		TYPE LV3 NON WEAR COURSE	TYPE MV3 WEAR COURSE (RD)	TYPE MV3 WEAR COURSE (DWY)	BITUMINOUS MATERIAL FOR TACK COAT
		TON	TON	TON	TON
C.S.A.H. 9					
228+98 - 240+00	LT & RT	445	852	24	372
240+00 - 257+01	LT & RT	451	1124	29	425
CSAH 20					
4+34 - 9+00	LT & RT	0	203	0	83
TOTAL		896	2179	53	880

N MAILBOXES			
STATION	LOCATION	2104	2540
		SALVAGE EACH	INSTALL EACH
CSAH 9			
233+21	RT	1	1
234+69	LT	1	1
238+95	RT	1	1
241+07	RT	1	1
247+62	LT	1	1
250+02	RT	1	1
TOTAL		6	6


GENERAL NOTES:

1. PROTECT ALL EXISTING UTILITIES.
2. ALL OFFSETS SHOWN ARE FROM THE PROPOSED ALIGNMENT.
3. CONSTRUCT ALL RADII AS PER PLANS.
4. EROSION CONTROL TO BE PLACED BEFORE REMOVAL OF BITUMINOUS PAVEMENT.
5. SAW CUT ALL BITUMINOUS AND CONCRETE AS DIRECTED BY THE ENGINEER IN THE FIELD.
6. THE LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED IN THE FIELD BEFORE DIGGING. CONTRACTOR SHALL COORDINATE WITH RELOCATION OF PRIVATE UTILITIES.
7. CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL EROSION CONTROL MEASURES AS SHOWN ON THESE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY, OR AS DIRECTED BY ENGINEER, IN ORDER TO PROTECT ADJACENT PROPERTY.

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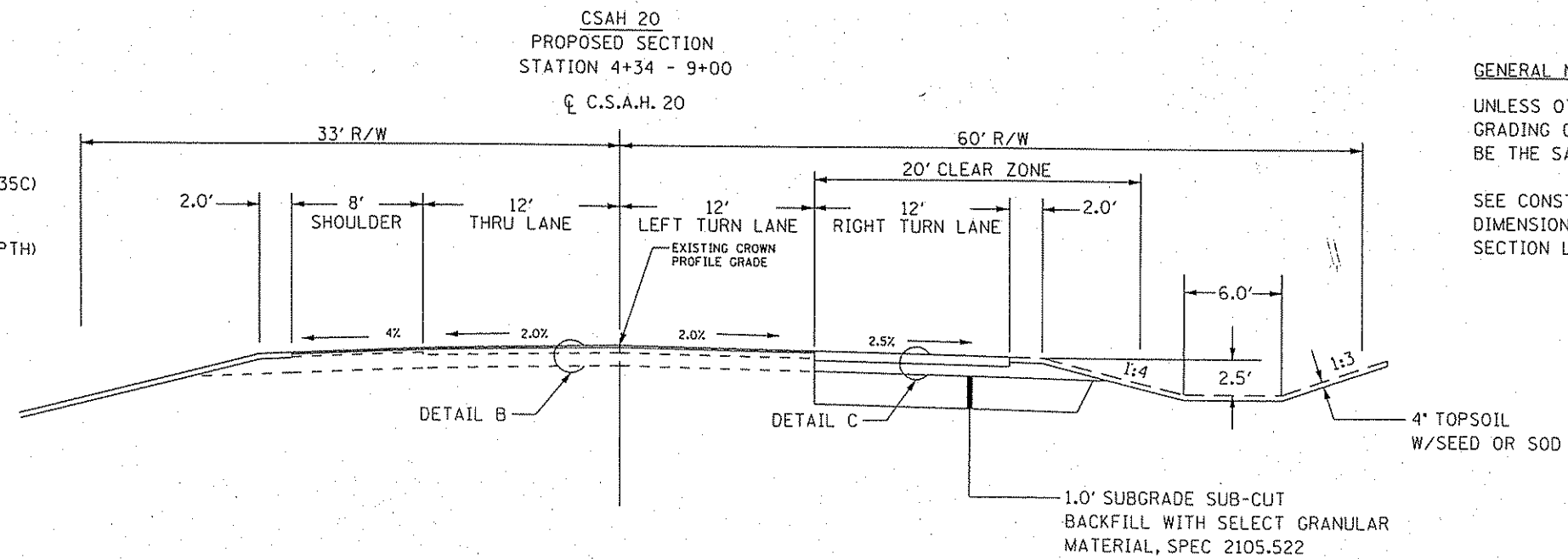
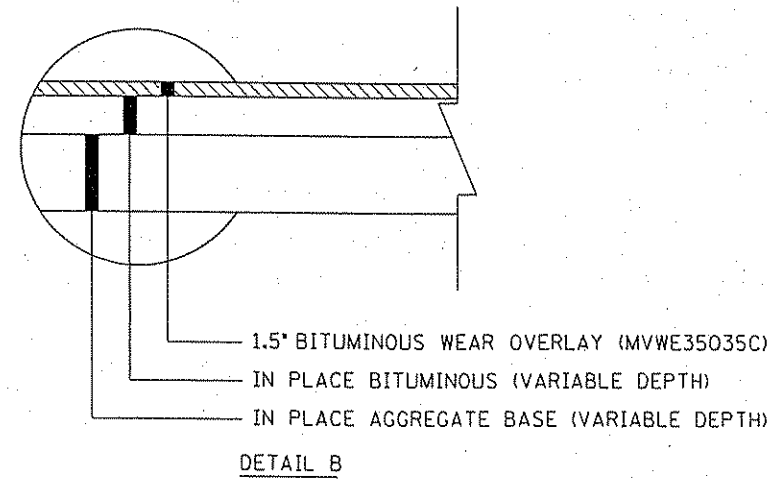
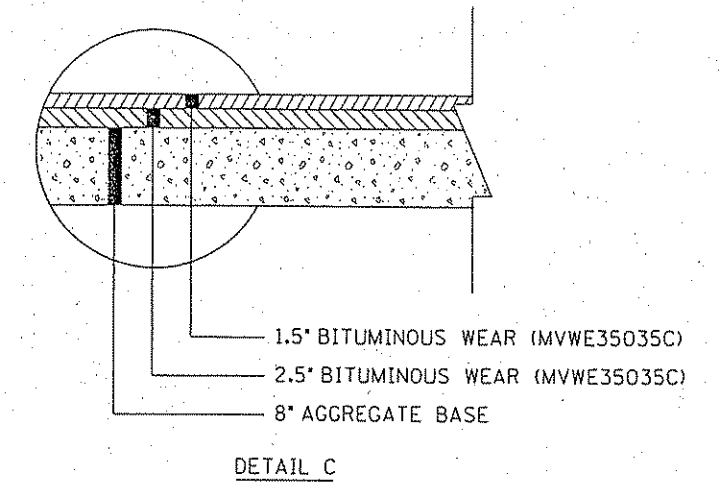
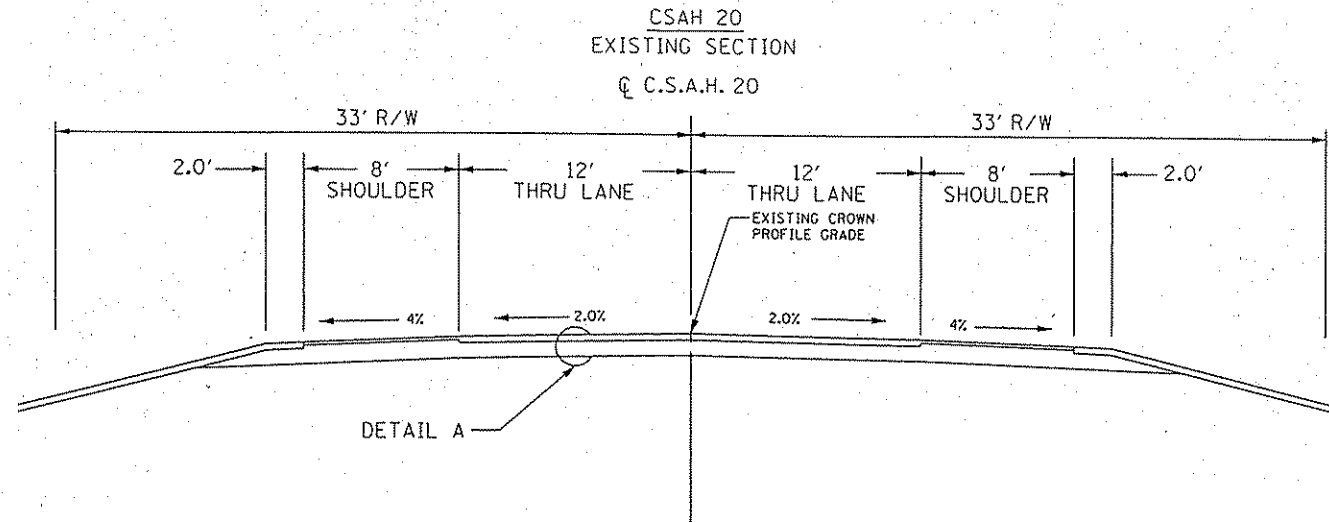
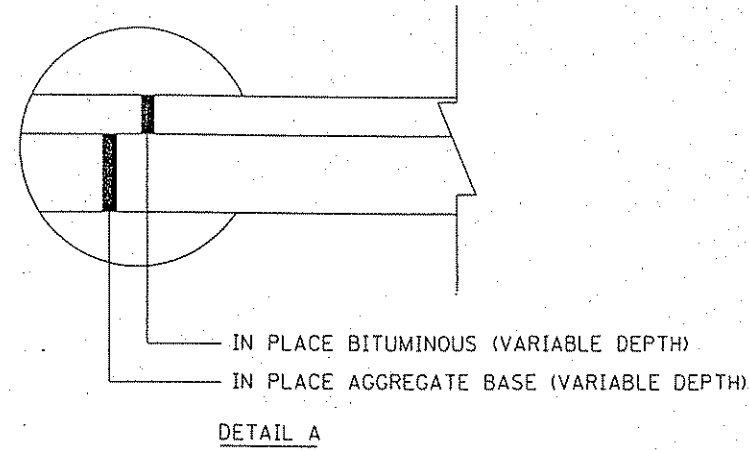
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
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QUANTITY TABULATIONS

SHEET NO.
 10



GENERAL NOTES:
UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES WILL BE THE SAME AS THE FINISHED SURFACE.
SEE CONSTRUCTION PLANS FOR R/W DIMENSIONS AS MEASURED FROM THE SECTION LINE.

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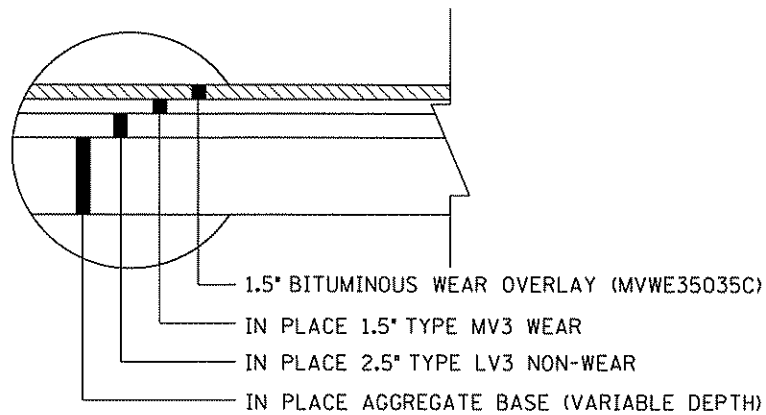
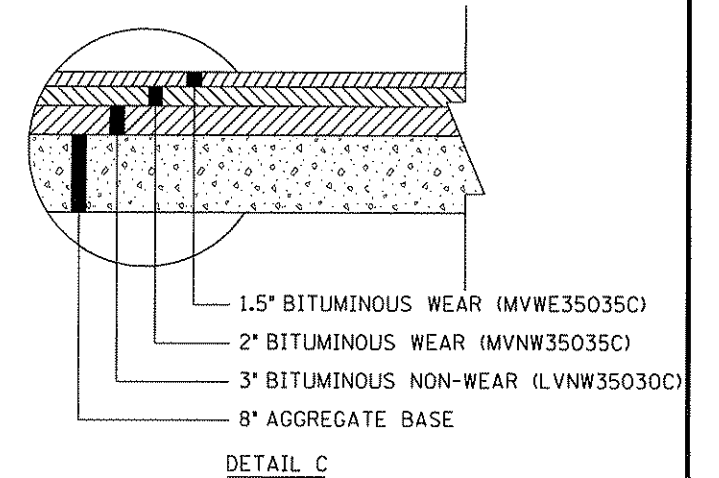
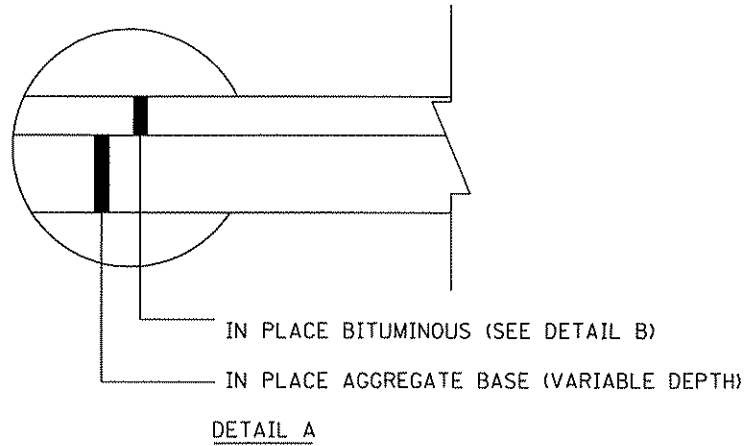
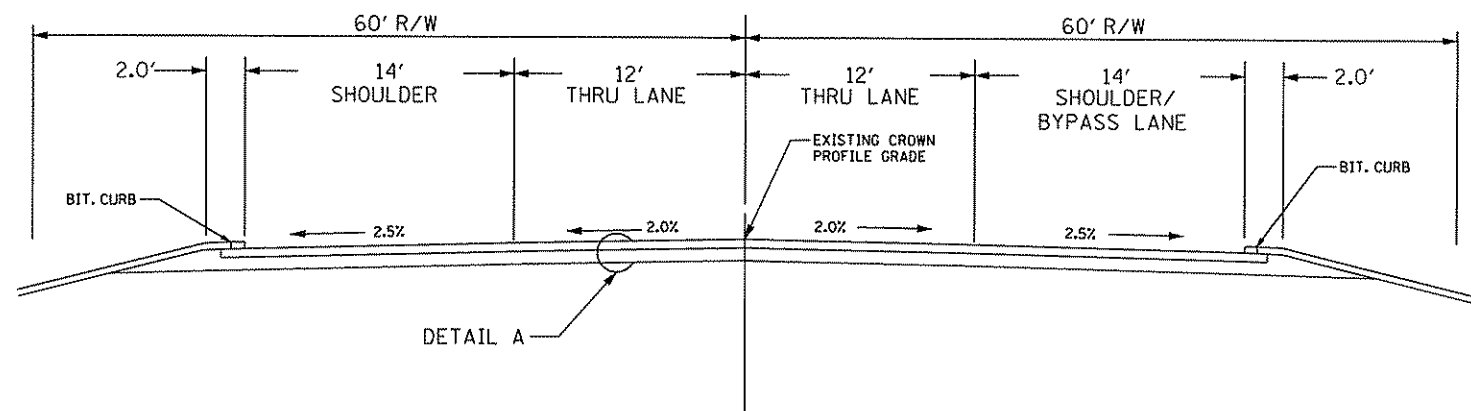
1326 ENERGY PARK DRIVE
ST. PAUL, MINNESOTA 55108
(651) 644-4389
Howard R. Green Company

ANOKA COUNTY
CSAH 9 AND CSAH 20
SP 02-609-13 (COUNTY)
SP 198-020-19 (CITY)

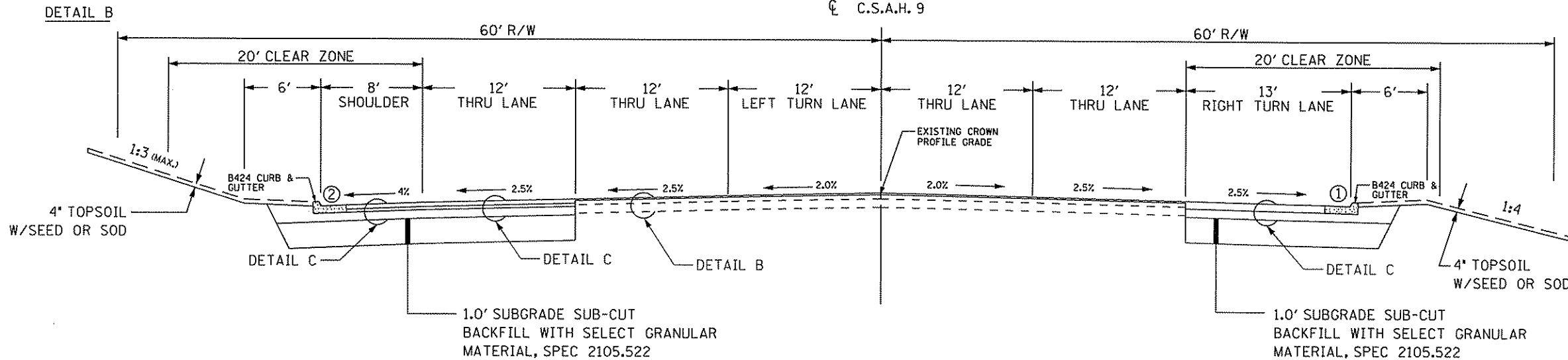
TYPICAL SECTIONS

SHEET NO.
11

CSAH 9
EXISTING SECTION
(SOUTH OF CSAH 20)
C.S.A.H. 9



CSAH 9
PROPOSED SECTION
STATION 228+98 - 240+00
C.S.A.H. 9



GENERAL NOTES:
UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES WILL BE THE SAME AS THE FINISHED SURFACE.

SEE CONSTRUCTION PLANS FOR R/W DIMENSIONS AS MEASURED FROM THE SECTION LINE.

NOTES:

1. B424 CURB AND GUTTER EXTENDS TO STA 244+87 ON EAST SIDE OF CSAH 9.
2. B424 CURB AND GUTTER ON WEST SIDE OF CSAH 9 BETWEEN STATIONS 247+12 - 251+90

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SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26815

NO.	DATE	BY	REVISION DESCRIPTION



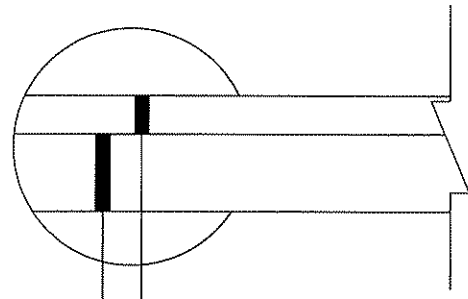
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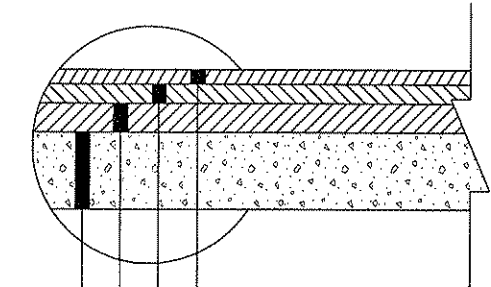
TYPICAL SECTIONS

SHEET NO.
12



IN PLACE BITUMINOUS (SEE DETAIL B)
 IN PLACE AGGREGATE BASE (VARIABLE DEPTH)

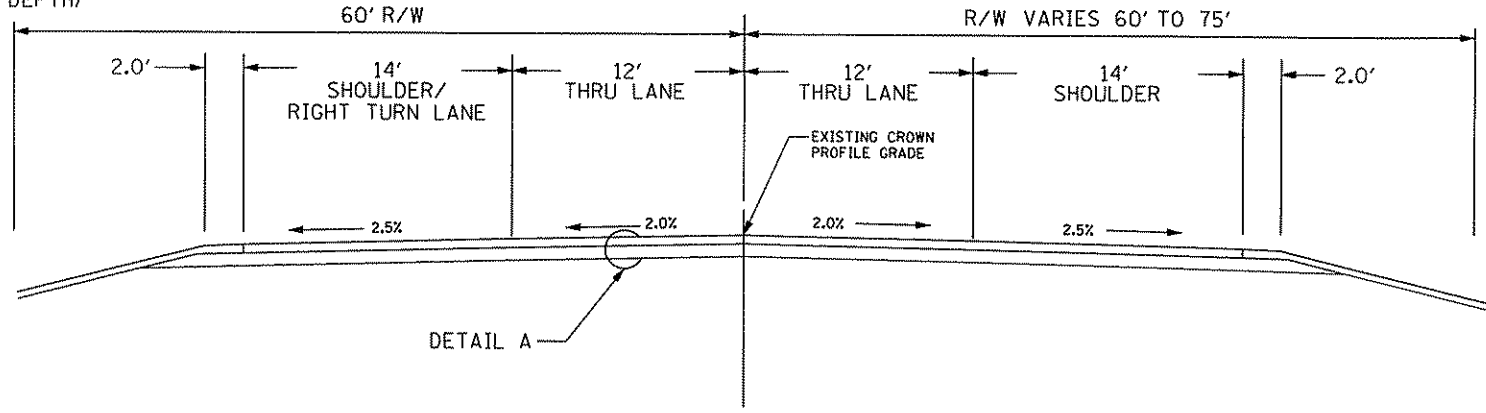
DETAIL A



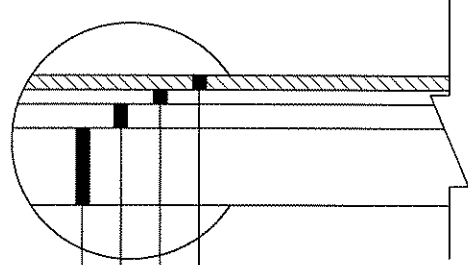
1.5" BITUMINOUS WEAR (MVWE35035C)
 2" BITUMINOUS WEAR (MVWE35035C)
 3" BITUMINOUS NON-WEAR (LVNW35030C)
 8" AGGREGATE BASE

DETAIL C

CSAH 9
 EXISTING SECTION
 (NORTH OF CSAH 20)
 C.S.A.H. 9



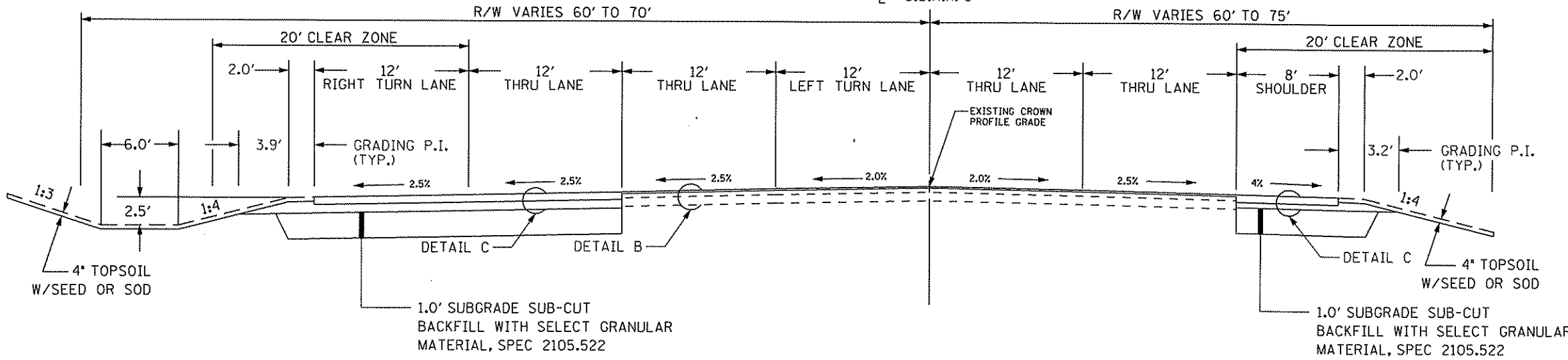
DETAIL A



1.5" BITUMINOUS WEAR OVERLAY (MVWE35035C)
 IN PLACE 1.5" TYPE MV4 WEAR
 IN PLACE 2.5" TYPE LV3 NON-WEAR
 IN PLACE AGGREGATE BASE (VARIABLE DEPTH)

DETAIL B

CSAH 9
 PROPOSED SECTION
 STATION 240+00 - 251+90
 C.S.A.H. 9



DETAIL C

DETAIL B

DETAIL C

GENERAL NOTES:
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 SEE CONSTRUCTION PLANS FOR R/W
 DIMENSIONS AS MEASURED FROM THE
 SECTION LINE.

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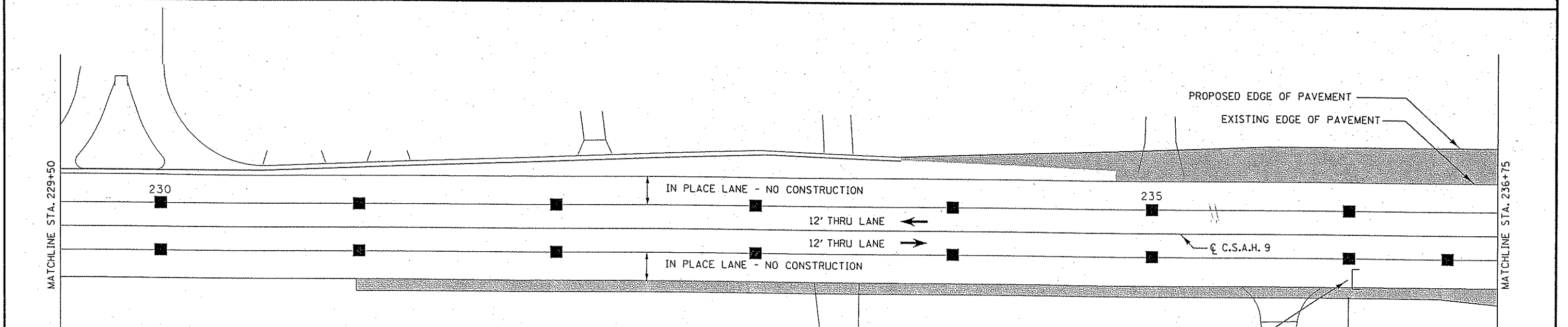
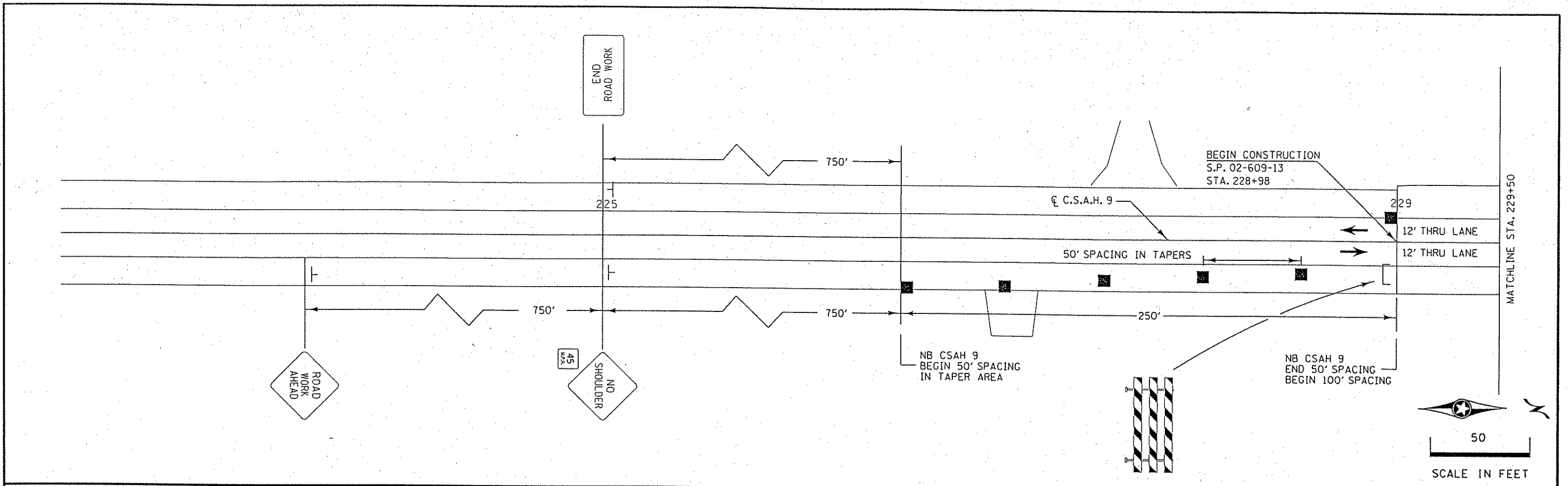
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ANOKA COUNTY
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 SP 198-020-19 (CITY)

TYPICAL SECTIONS

SHEET NO.
 13



LEGEND

- CONSTRUCTION ZONE
- TYPE III BARRICADE
- RETROREFLECTIVE CHANNELIZING DEVICE. CONES SHALL NOT BE USED AT UNATTENDED WORK SITES.

- NOTES:**
1. SPACING NOTES ARE RELATIVE TO DIRECTION OF TRAVEL.
 2. CONTRACTOR SHALL MAINTAIN TRAVERSABLE ACCESS TO ALL DRIVEWAYS.
 3. PROJECT IS TO BE CONSTRUCTED UNDER TRAFFIC, THEREFORE CONTRACTOR SHALL PERFORM WORK IN STAGES SO AS TO MINIMIZE THE NEED TO CROSS THE ROADWAY.
 4. ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE MN MUTCD AND PART VI 'FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS'.
 5. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.

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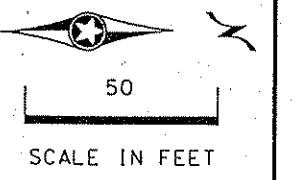
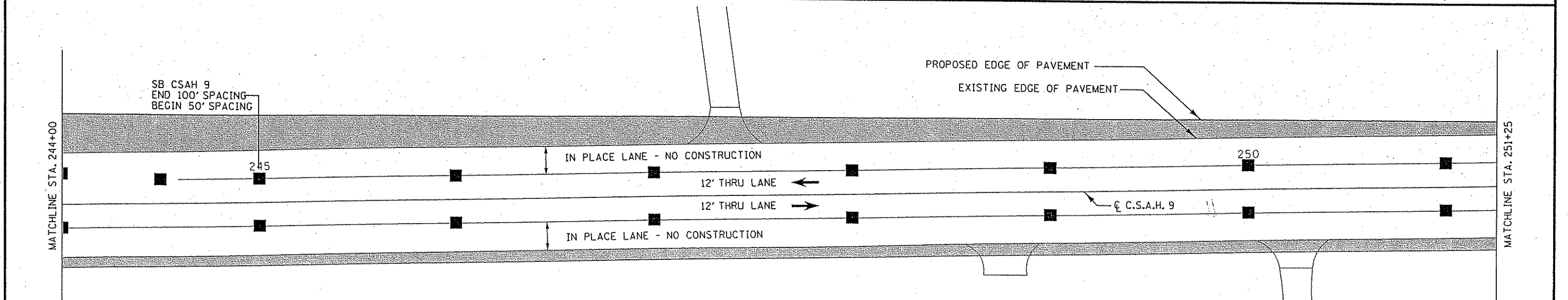
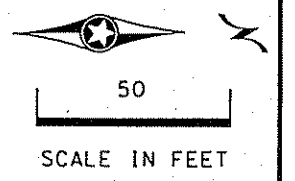
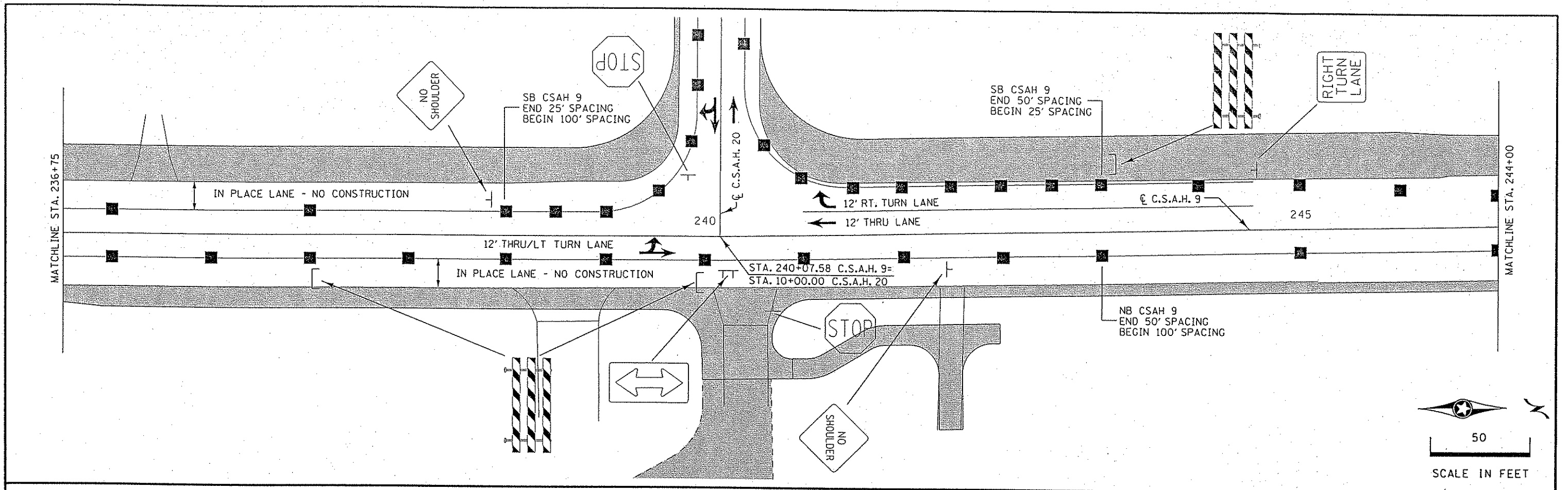
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 CSAH 9 AND CSAH 20
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 SP 198-020-19 (CITY)

TRAFFIC CONTROL AND
 CONSTRUCTION SEQUENCING

SHEET NO.
 14



LEGEND	
	CONSTRUCTION ZONE
	TYPE III BARRICADE
	RETROREFLECTIVE CHANNELIZING DEVICE. CONES SHALL NOT BE USED AT UNATTENDED WORK SITES.

- NOTES:
1. SPACING NOTES ARE RELATIVE TO DIRECTION OF TRAVEL.
 2. CONTRACTOR SHALL MAINTAIN TRAVERSABLE ACCESS TO ALL DRIVEWAYS.
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 5. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.

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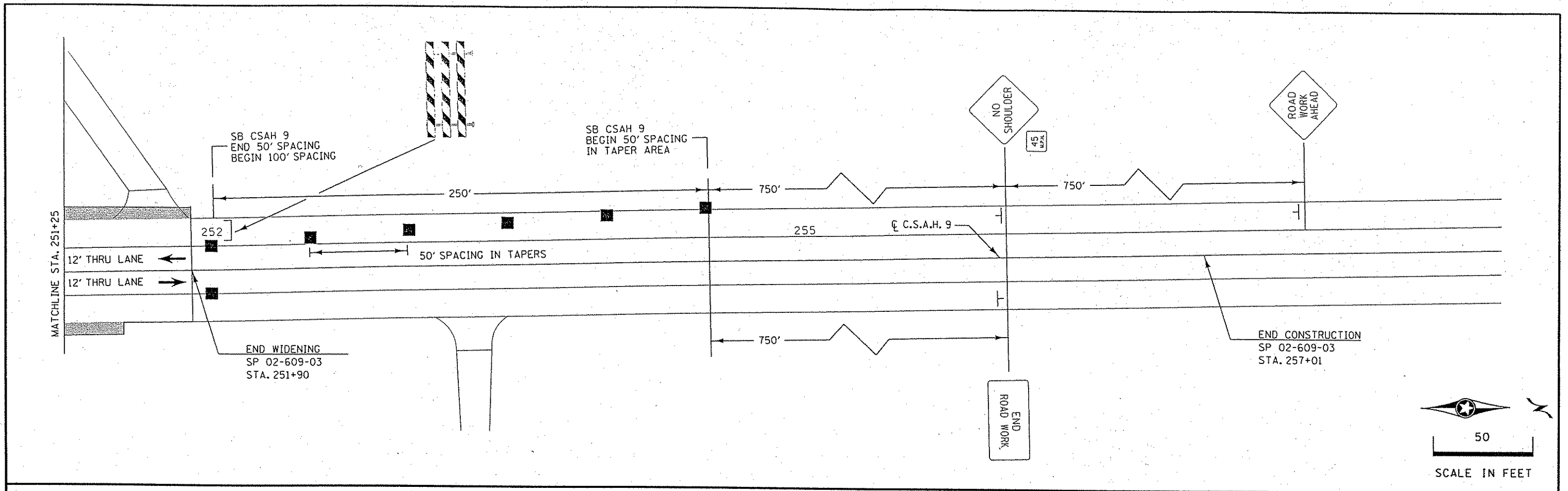
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 CSAH 9 AND CSAH 20
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TRAFFIC CONTROL AND
 CONSTRUCTION SEQUENCING

SHEET NO.
 15



LEGEND	
	CONSTRUCTION ZONE
	TYPE III BARRICADE
	RETROREFLECTIVE CHANNELIZING DEVICE. CONES SHALL NOT BE USED AT UNATTENDED WORK SITES.

- NOTES:
1. SPACING NOTES ARE RELATIVE TO DIRECTION OF TRAVEL.
 2. CONTRACTOR SHALL MAINTAIN TRAVERSABLE ACCESS TO ALL DRIVEWAYS.
 3. PROJECT IS TO BE CONSTRUCTED UNDER TRAFFIC, THEREFORE CONTRACTOR SHALL PERFORM WORK IN STAGES SO AS TO MINIMIZE THE NEED TO CROSS THE ROADWAY.
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 5. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.

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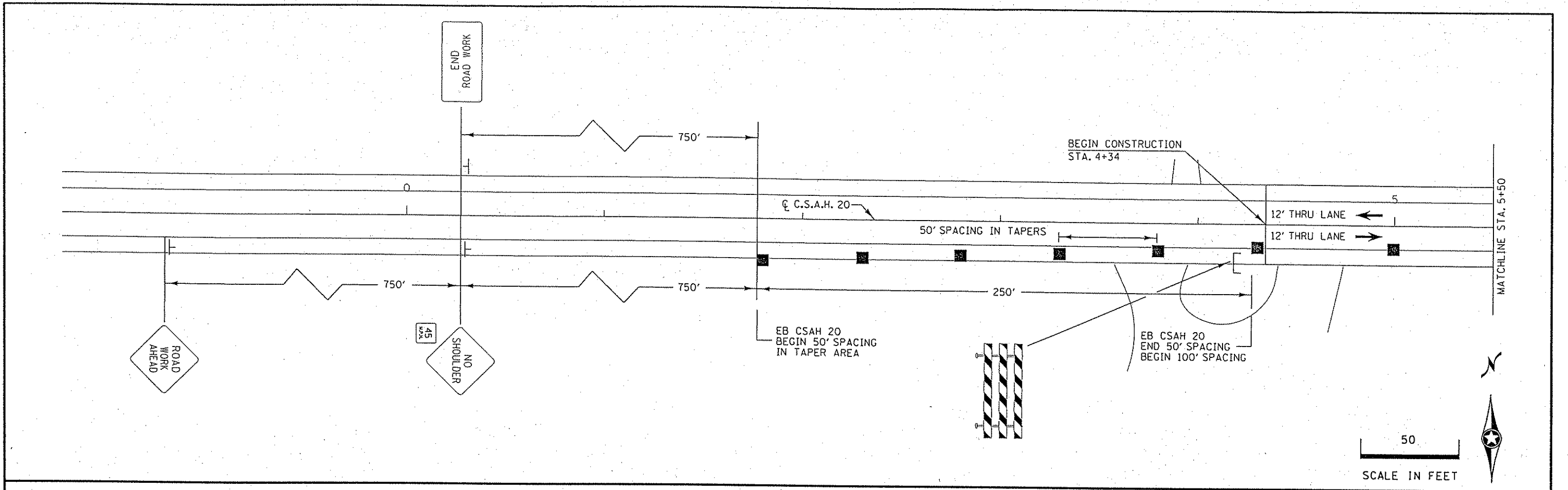
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
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TRAFFIC CONTROL AND
 CONSTRUCTION SEQUENCING

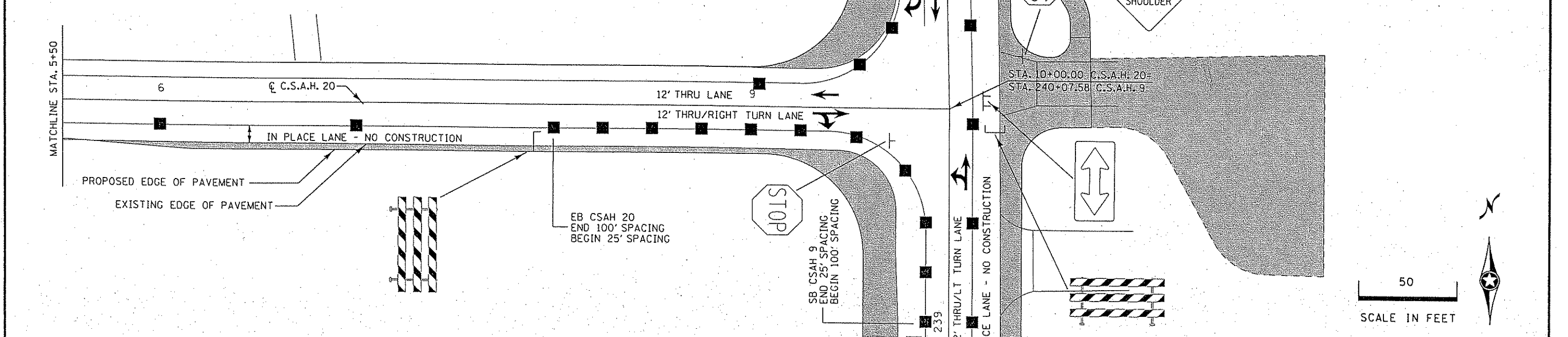
SHEET NO.
 16



LEGEND

- CONSTRUCTION ZONE
- TYPE III BARRICADE
- RETROREFLECTIVE CHANNELIZING DEVICE. CONES SHALL NOT BE USED AT UNATTENDED WORK SITES.

- NOTES:**
1. SPACING NOTES ARE RELATIVE TO DIRECTION OF TRAVEL.
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 5. ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.



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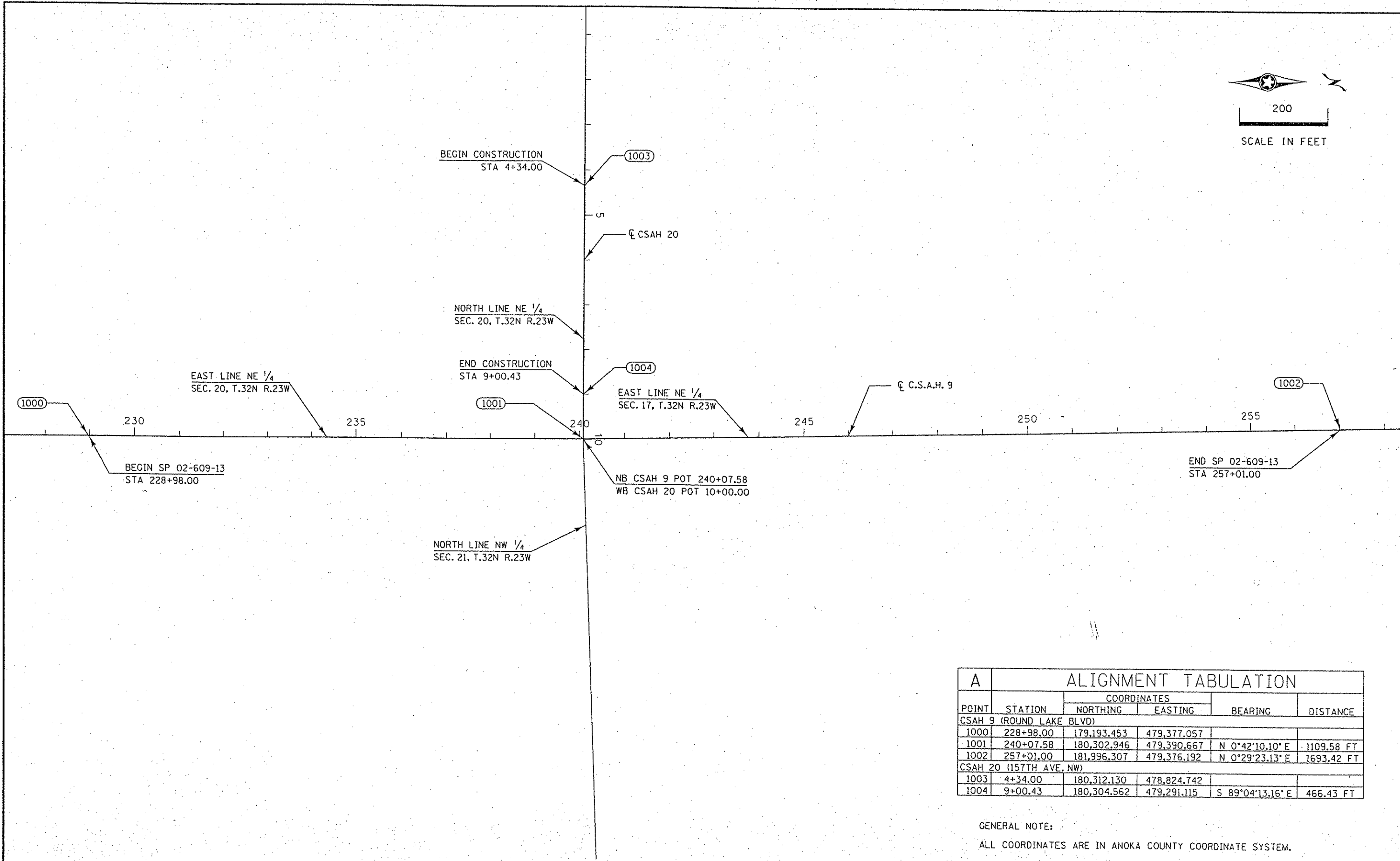
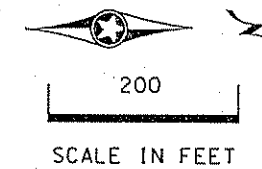
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
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TRAFFIC CONTROL AND
 CONSTRUCTION SEQUENCING

SHEET NO.
 17



A ALIGNMENT TABULATION					
POINT	STATION	COORDINATES		BEARING	DISTANCE
		NORTHING	EASTING		
CSAH 9 (ROUND LAKE BLVD)					
1000	228+98.00	179,193.453	479,377.057		
1001	240+07.58	180,302.946	479,390.667	N 0°42'10.10" E	1109.58 FT
1002	257+01.00	181,996.307	479,376.192	N 0°29'23.13" E	1693.42 FT
CSAH 20 (157TH AVE, NW)					
1003	4+34.00	180,312.130	478,824.742		
1004	9+00.43	180,304.562	479,291.115	S 89°04'13.16" E	466.43 FT

GENERAL NOTE:
ALL COORDINATES ARE IN ANOKA COUNTY COORDINATE SYSTEM.

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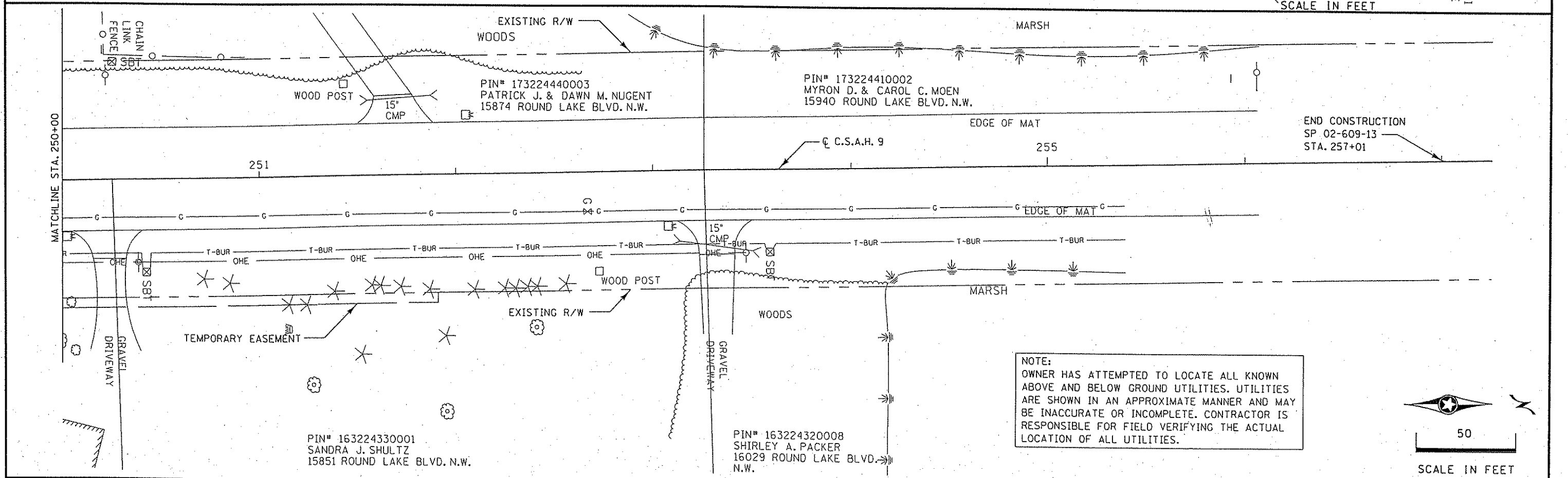
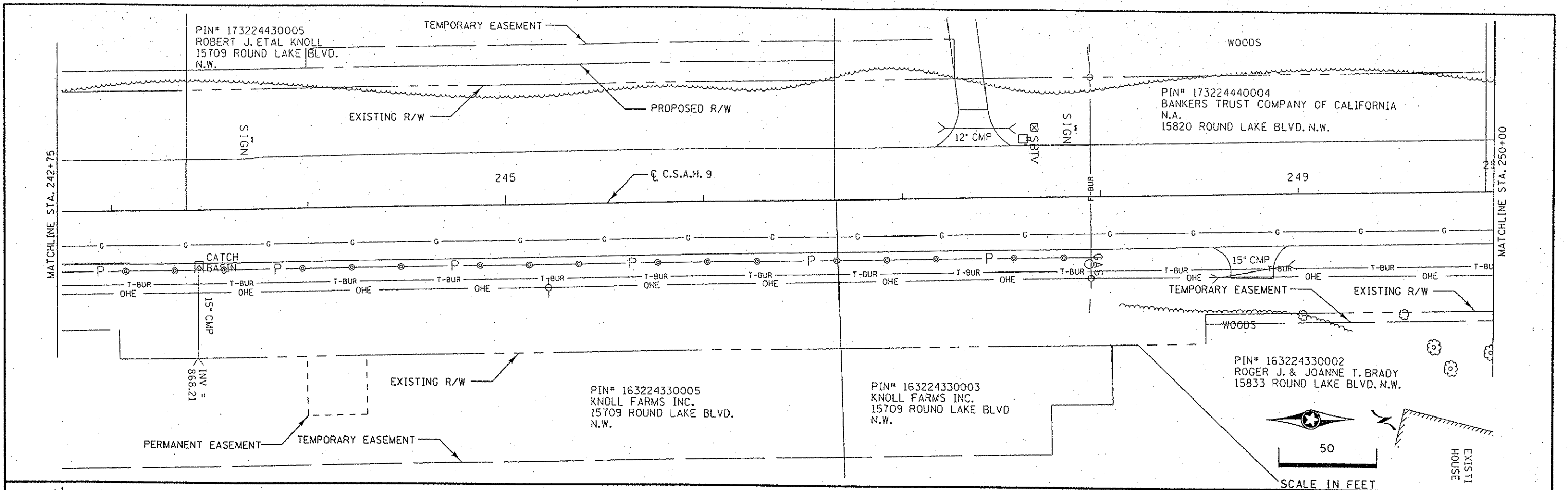
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

ALIGNMENT PLAN

SHEET NO.
18



NOTE:
OWNER HAS ATTEMPTED TO LOCATE ALL KNOWN ABOVE AND BELOW GROUND UTILITIES. UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER AND MAY BE INACCURATE OR INCOMPLETE. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THE ACTUAL LOCATION OF ALL UTILITIES.

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NO.	DATE	BY	REVISION DESCRIPTION

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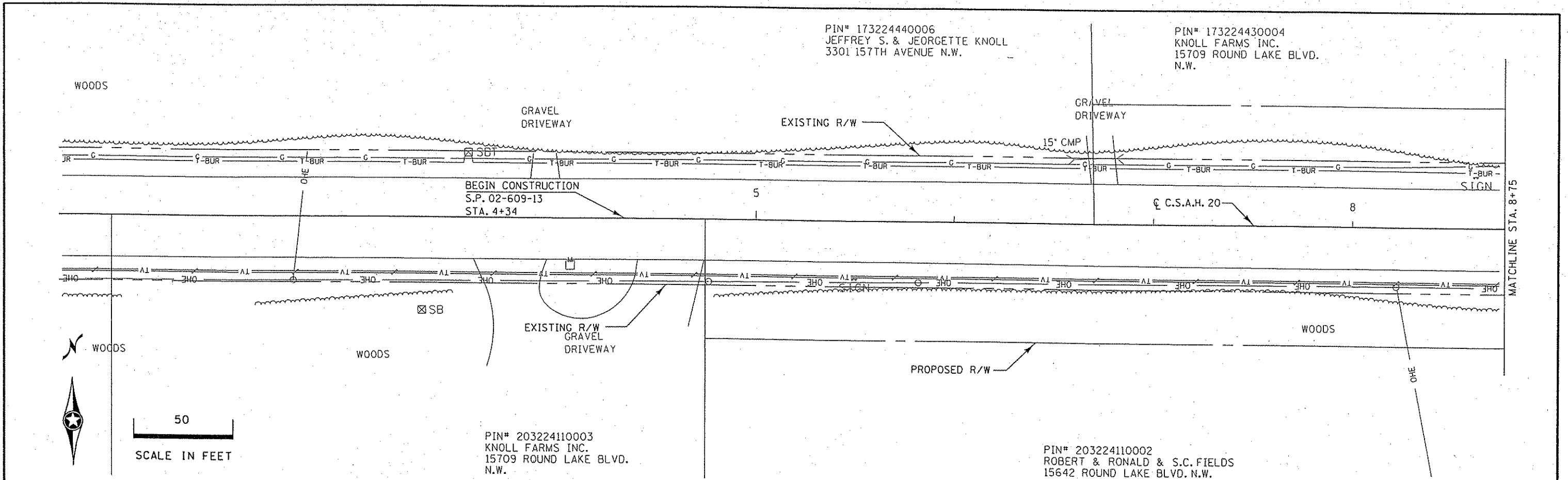
ANOKA COUNTY
 CSAH 9 AND CSAH 20
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 SP 198-020-19 (CITY)

TOPOGRAPHY, PROPERTY OWNERS AND IN-PLACE PRIVATE UTILITIES

SHEET NO.
 20

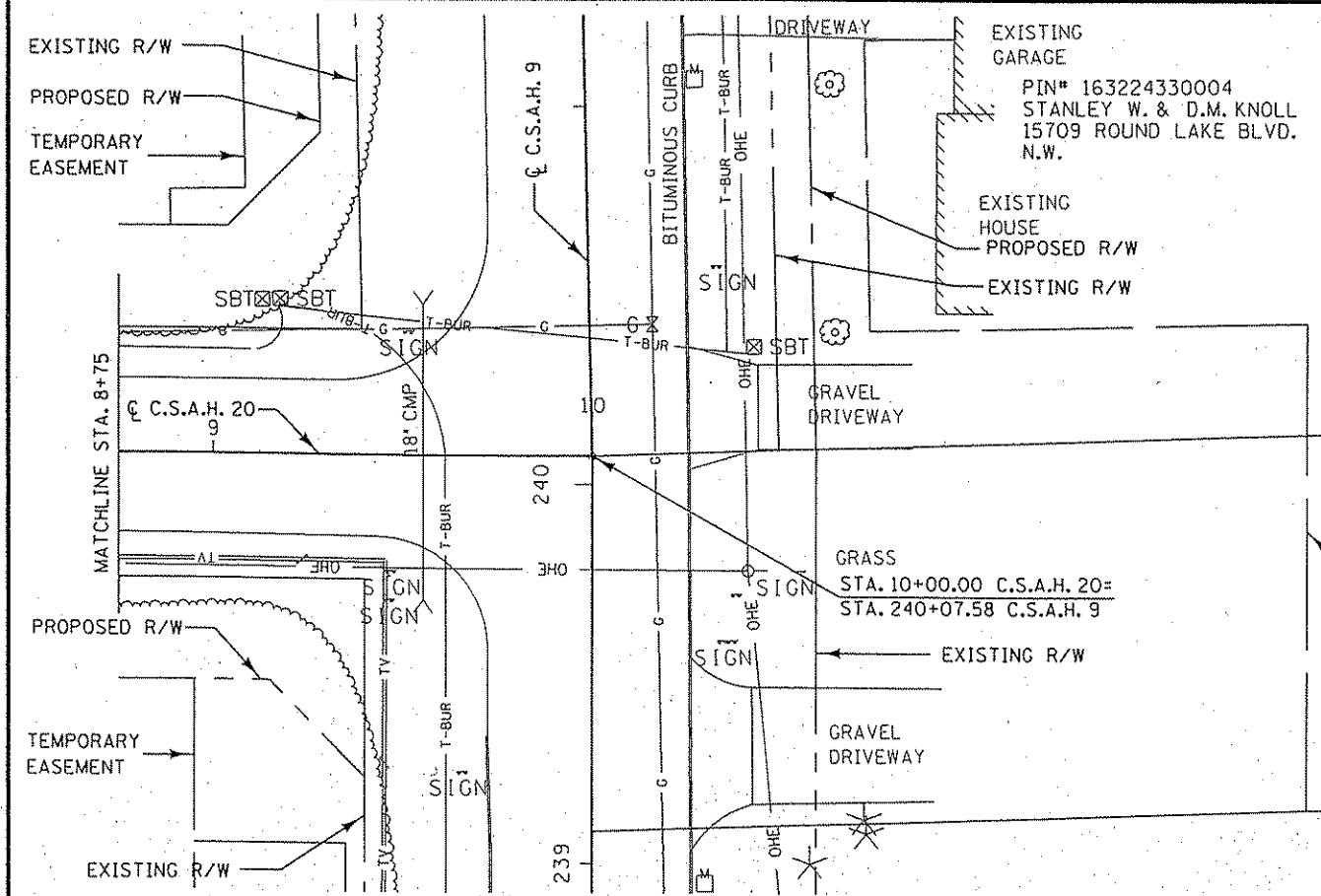
PIN# 17322440006
JEFFREY S. & JEORGETTE KNOLL
3301 157TH AVENUE N.W.

PIN# 173224430004
KNOLL FARMS INC.
15709 ROUND LAKE BLVD.
N.W.



PIN# 203224110003
KNOLL FARMS INC.
15709 ROUND LAKE BLVD.
N.W.

PIN# 203224110002
ROBERT & RONALD & S.C. FIELDS
15642 ROUND LAKE BLVD. N.W.



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PIN# 213224220003
KNOLL FARMS INC.
15709 ROUND LAKE BLVD. N.W.

PIN# 213224220008
KNOLL FARMS INC.
15709 ROUND LAKE BLVD.
N.W.

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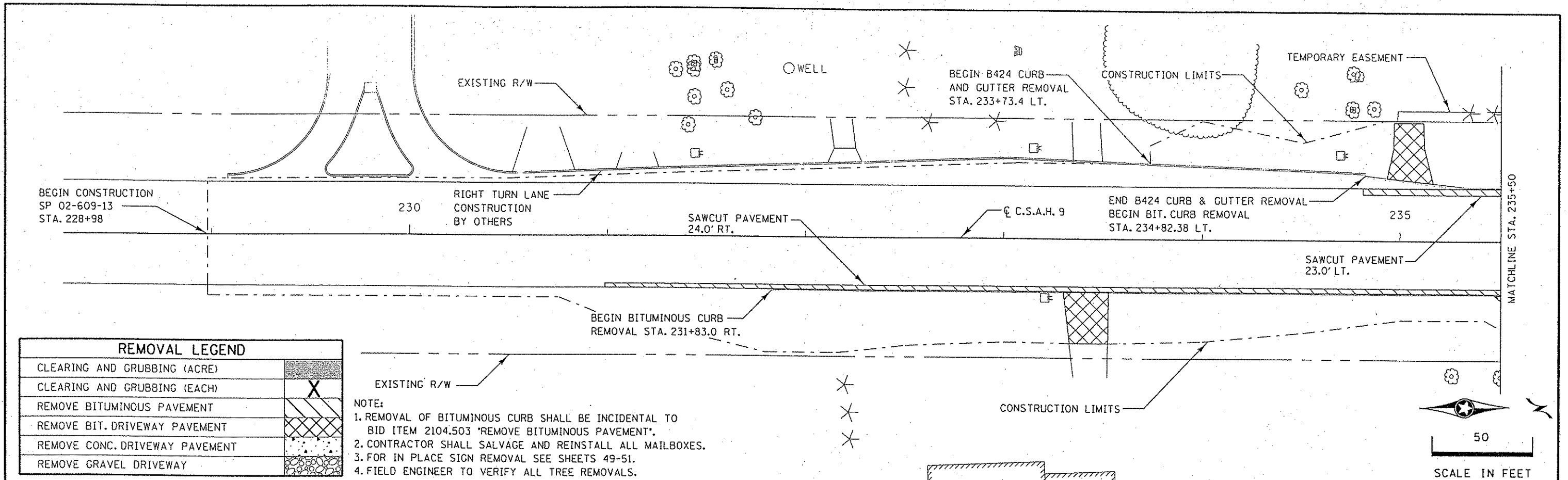
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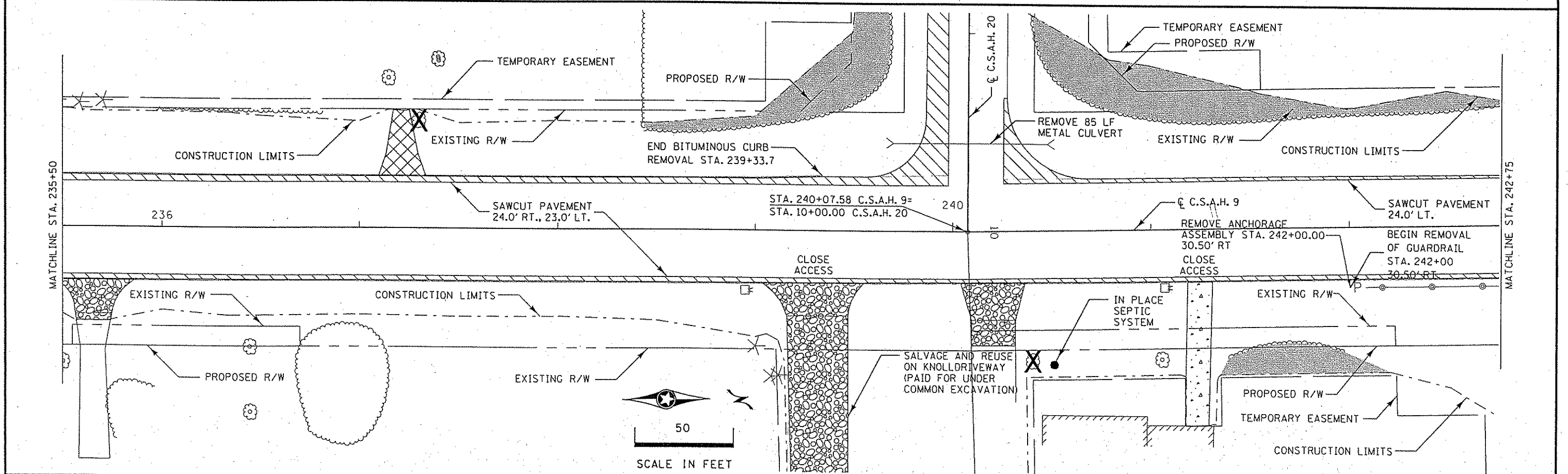
TOPOGRAPHY, PROPERTY OWNERS
AND IN-PLACE PRIVATE UTILITIES

SHEET NO.
21



REMOVAL LEGEND	
CLEARING AND GRUBBING (ACRE)	[Pattern]
CLEARING AND GRUBBING (EACH)	[Pattern]
REMOVE BITUMINOUS PAVEMENT	[Pattern]
REMOVE BIT. DRIVEWAY PAVEMENT	[Pattern]
REMOVE CONC. DRIVEWAY PAVEMENT	[Pattern]
REMOVE GRAVEL DRIVEWAY	[Pattern]

- NOTE:
1. REMOVAL OF BITUMINOUS CURB SHALL BE INCIDENTAL TO BID ITEM 2104.503 'REMOVE BITUMINOUS PAVEMENT'.
 2. CONTRACTOR SHALL SALVAGE AND REINSTALL ALL MAILBOXES.
 3. FOR IN PLACE SIGN REMOVAL SEE SHEETS 49-51.
 4. FIELD ENGINEER TO VERIFY ALL TREE REMOVALS.



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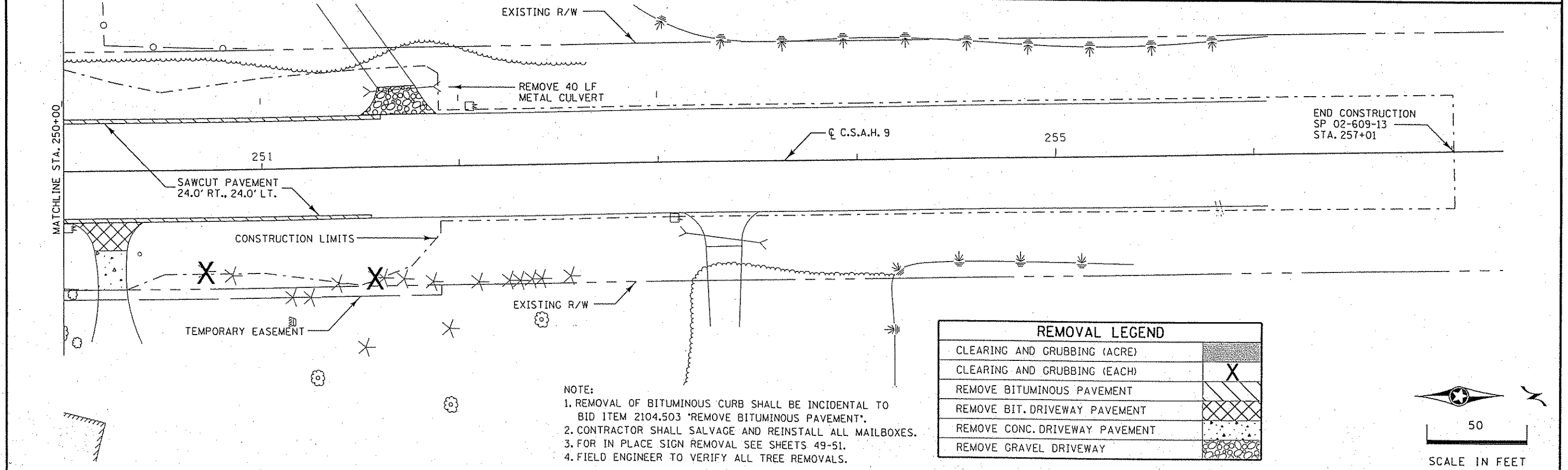
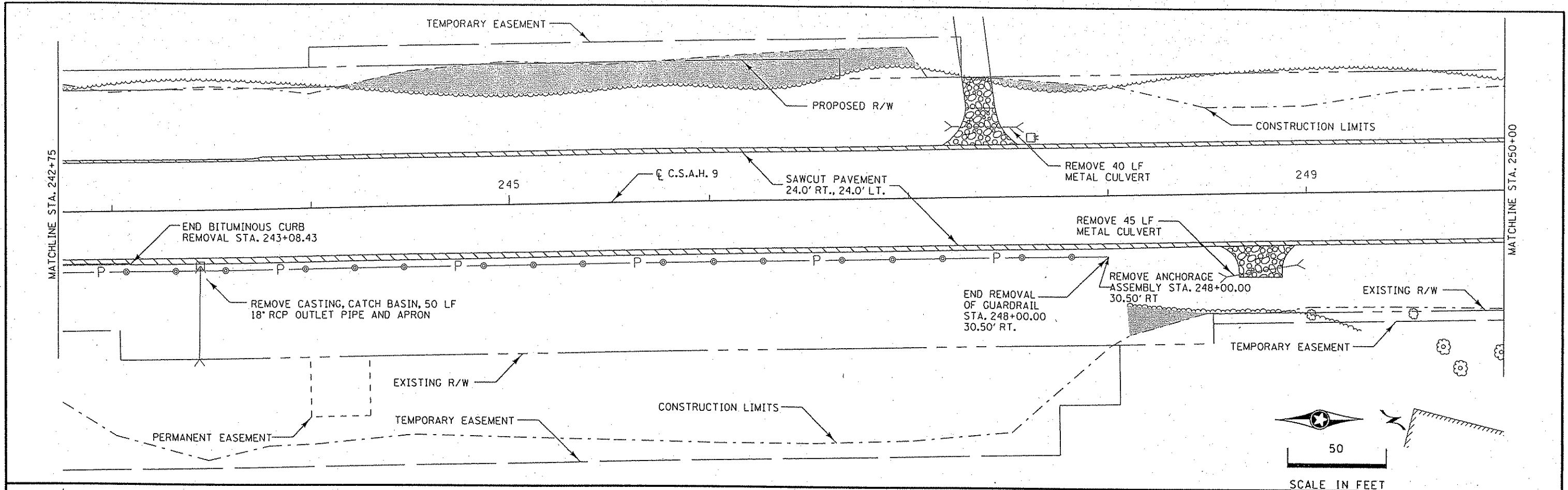
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ANOKA COUNTY
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REMOVAL PLAN

SHEET NO.
 22



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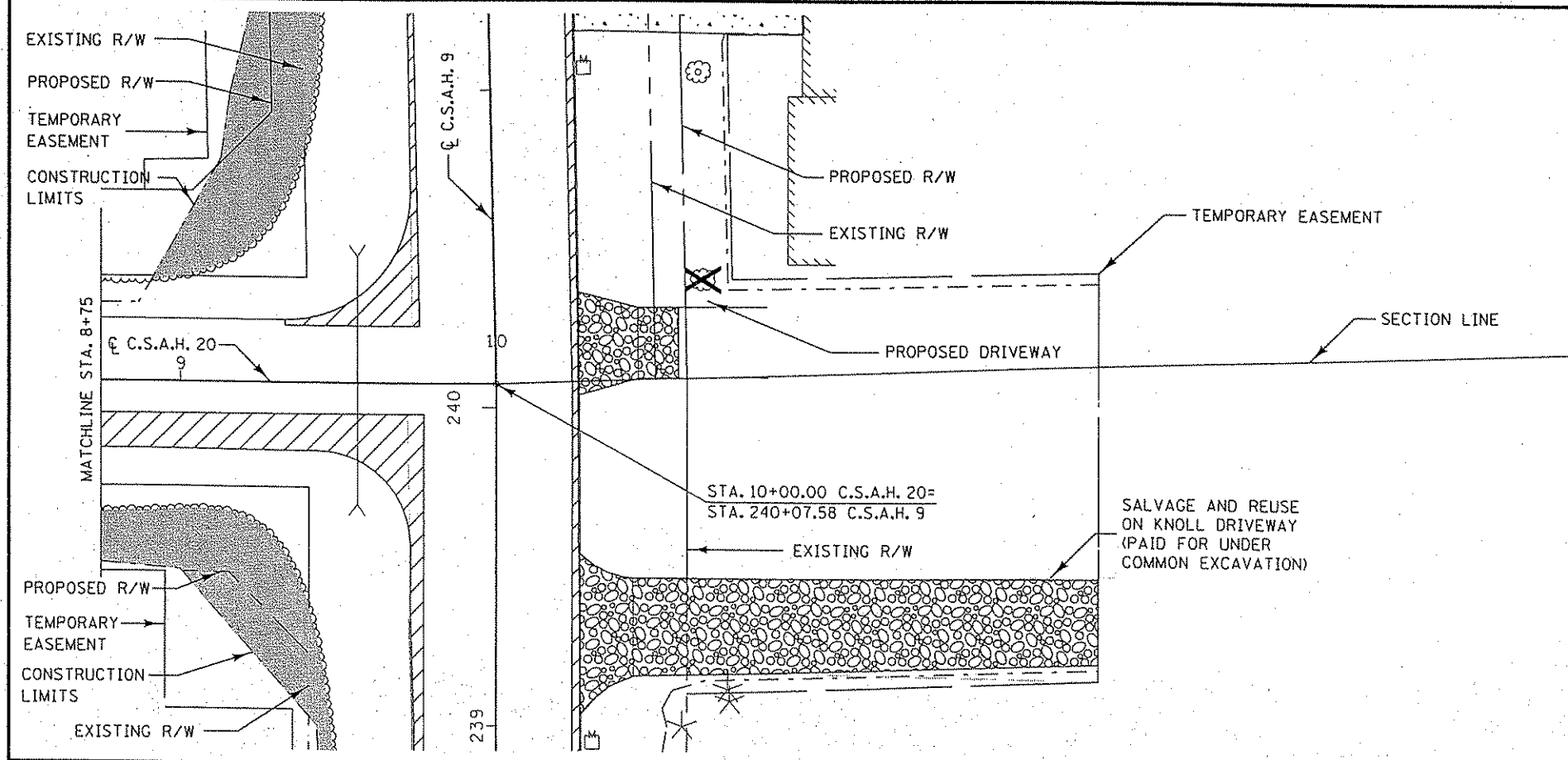
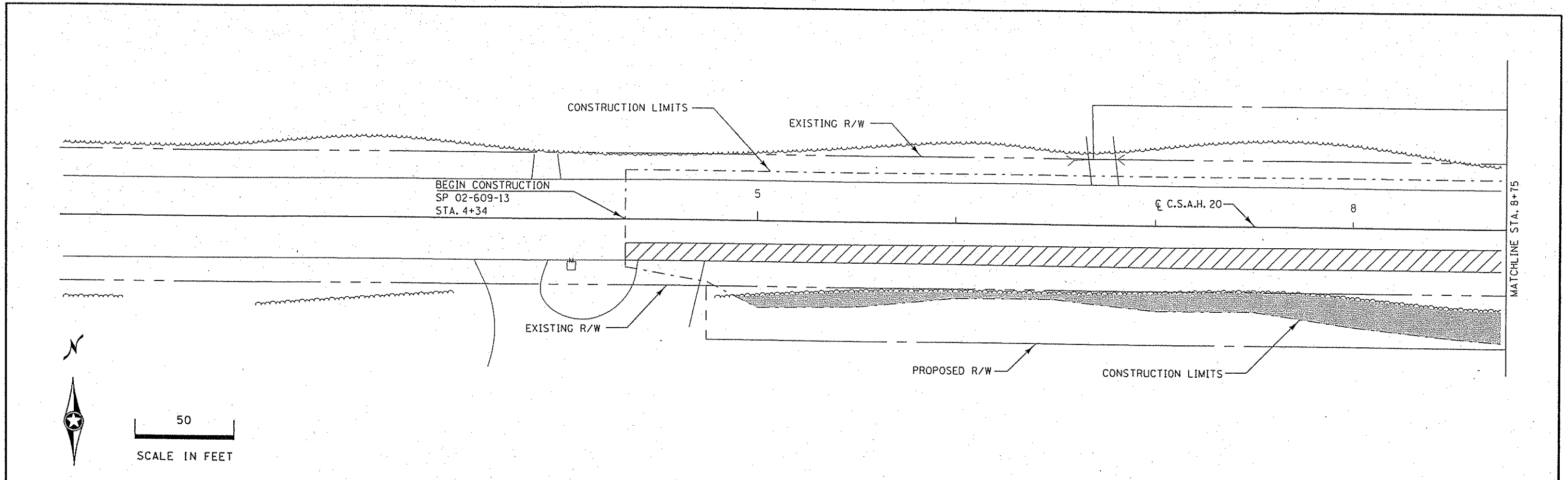
NO.	DATE	BY	REVISION DESCRIPTION

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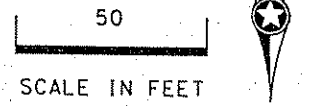
REMOVAL PLAN

SHEET NO.
 23



REMOVAL LEGEND	
CLEARING AND GRUBBING (ACRE)	[Pattern]
CLEARING AND GRUBBING (EACH)	[Pattern with X]
REMOVE BITUMINOUS PAVEMENT	[Pattern]
REMOVE BIT. DRIVEWAY PAVEMENT	[Pattern]
REMOVE CONC. DRIVEWAY PAVEMENT	[Pattern]
REMOVE GRAVEL DRIVEWAY	[Pattern]

- NOTE:
1. REMOVAL OF BITUMINOUS CURB SHALL BE INCIDENTAL TO BID ITEM 2104.503 "REMOVE BITUMINOUS PAVEMENT".
 2. CONTRACTOR SHALL SALVAGE AND REINSTALL ALL MAILBOXES.
 3. FOR IN PLACE SIGN REMOVAL SEE SHEETS 49-51.
 4. FIELD ENGINEER TO VERIFY ALL TREE REMOVALS.



DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: B18750J
 CAD DATE: 03:27:28 PM Ivandra
 CAD FILE: o:\cad\818750\design\sheet\818750J.rmc

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 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26815

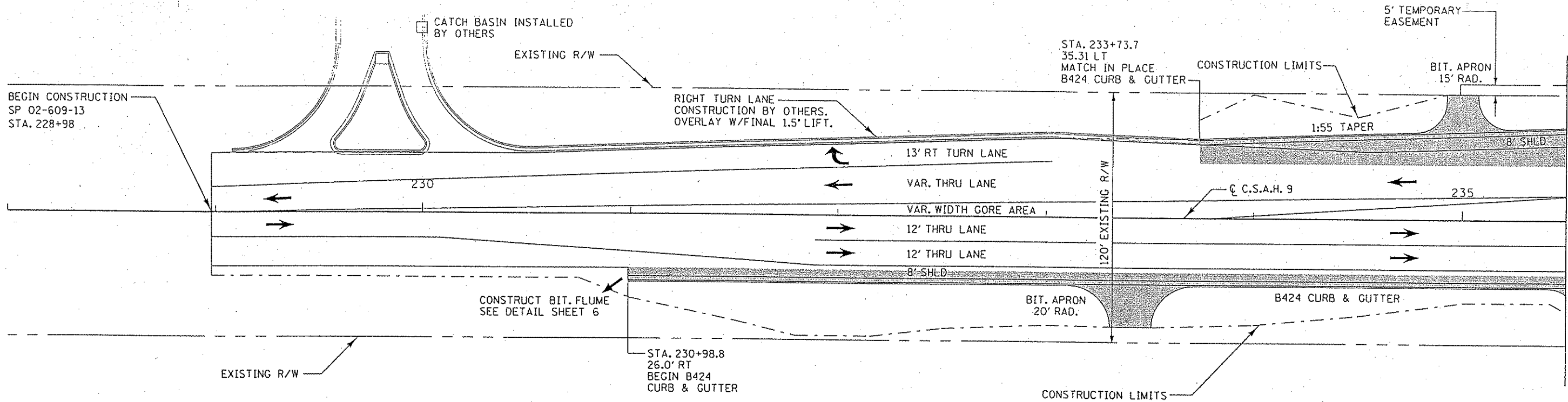
NO.	DATE	BY	REVISION DESCRIPTION

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 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

REMOVAL PLAN

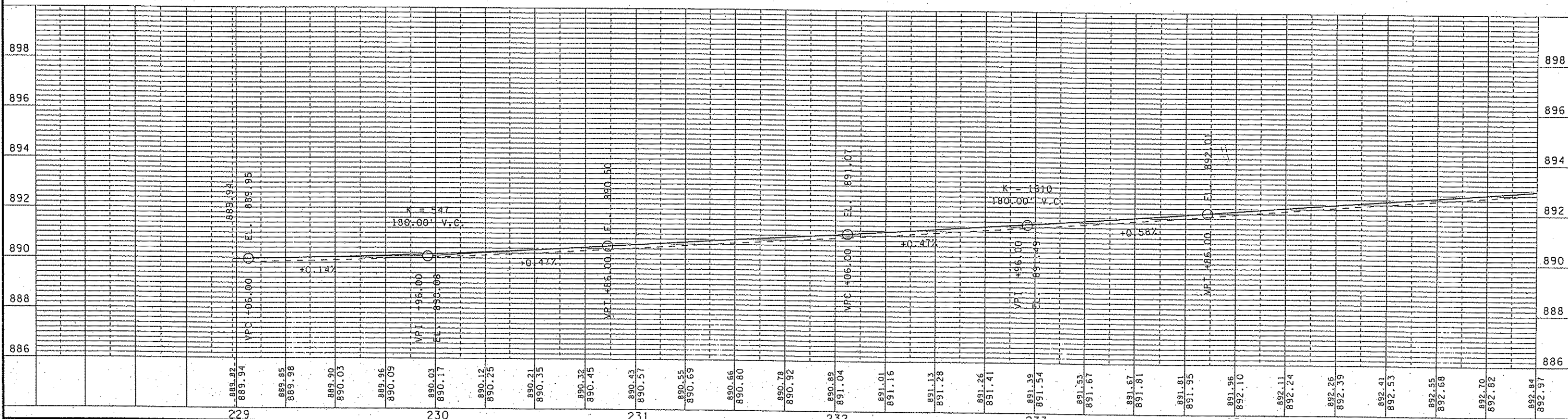
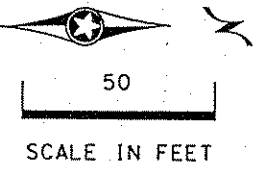
SHEET NO.
 24



LEGEND

PROPOSED CONSTRUCTION

- CONSTRUCTION NOTES:**
1. GRADE DRIVEWAY SIDE SLOPES TO 1:6 WITHIN CSAH 9 CLEAR ZONE.
 2. DROP CURB AT DRIVEWAY LOCATIONS.



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 CAD FILE: o:\cad\818750\desgn\sheet\818750j.cpa

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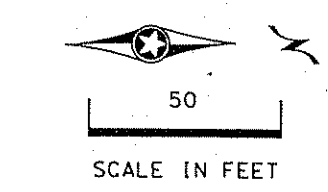
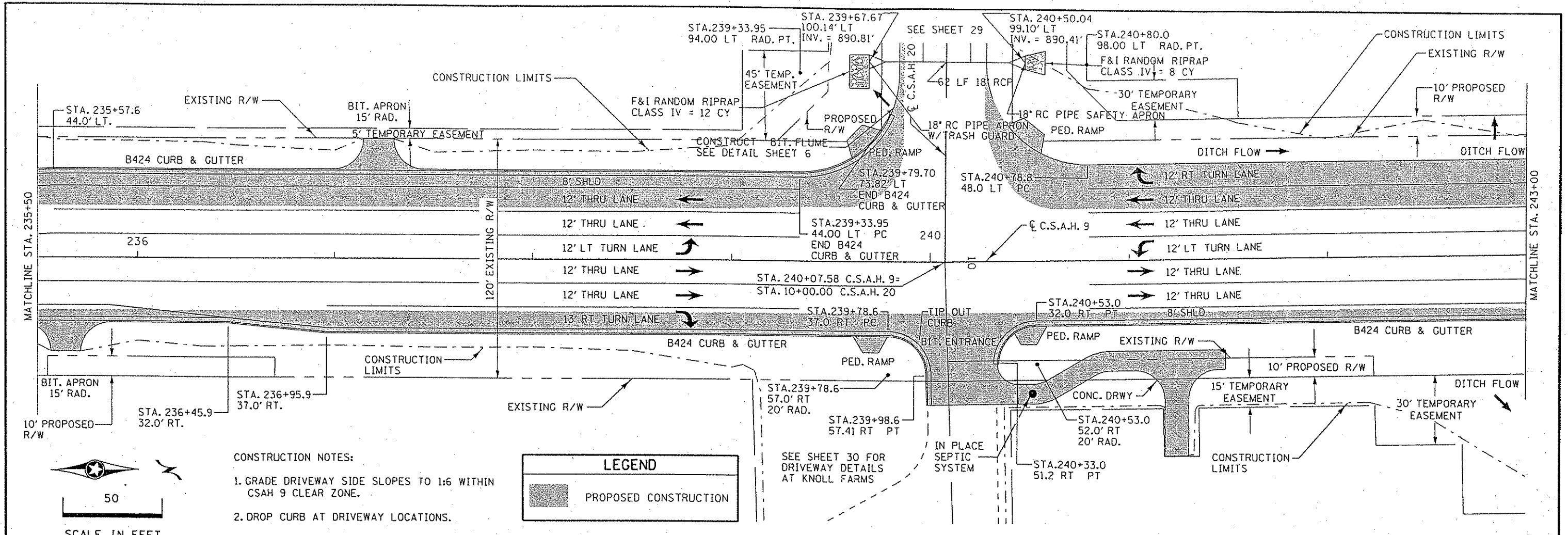
NO.	DATE	BY	REVISION DESCRIPTION

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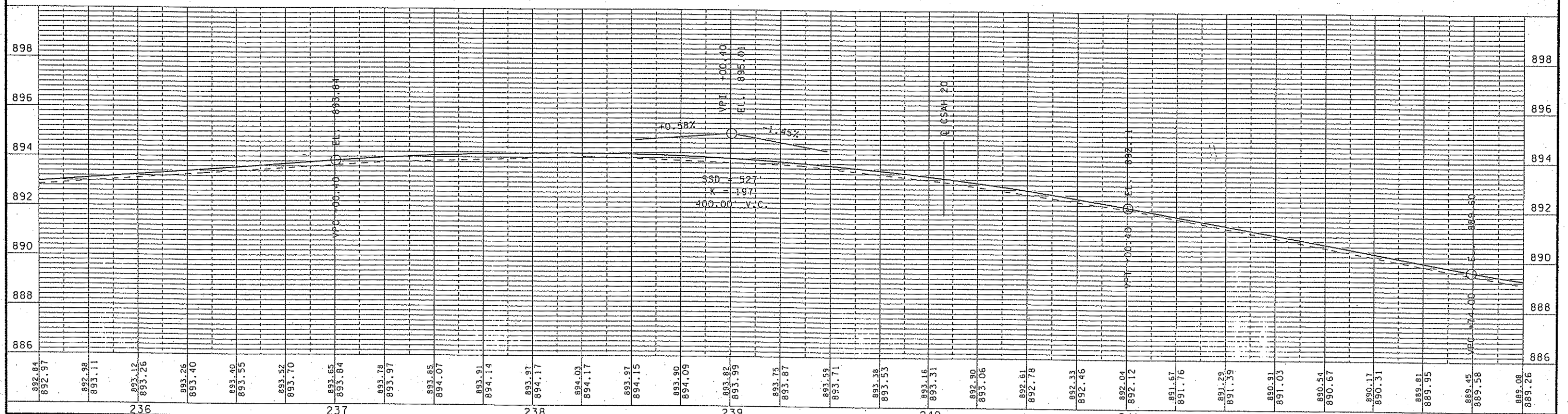
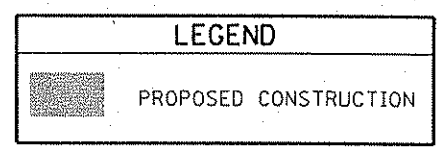
ANOKA COUNTY
CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

CONSTRUCTION
PLAN AND PROFILE
 (CSAH 9)

SHEET NO.
25



- CONSTRUCTION NOTES:**
1. GRADE DRIVEWAY SIDE SLOPES TO 1:6 WITHIN CSAH 9 CLEAR ZONE.
 2. DROP CURB AT DRIVEWAY LOCATIONS.



DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:27:34 PM
 CAD FILE: o:\cad\818750\design\sheet\818750J.cdb

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 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26915

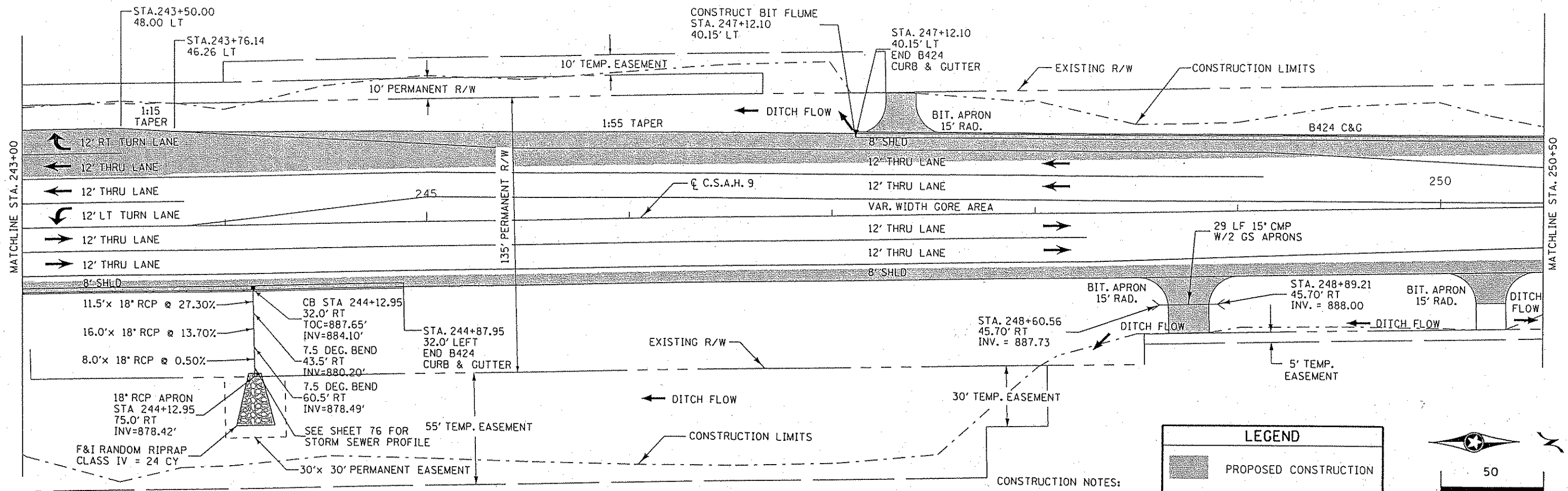
NO.	DATE	BY	REVISION DESCRIPTION

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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

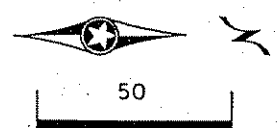
CONSTRUCTION
 PLAN AND PROFILE
 (CSAH 9)

SHEET NO.
 26

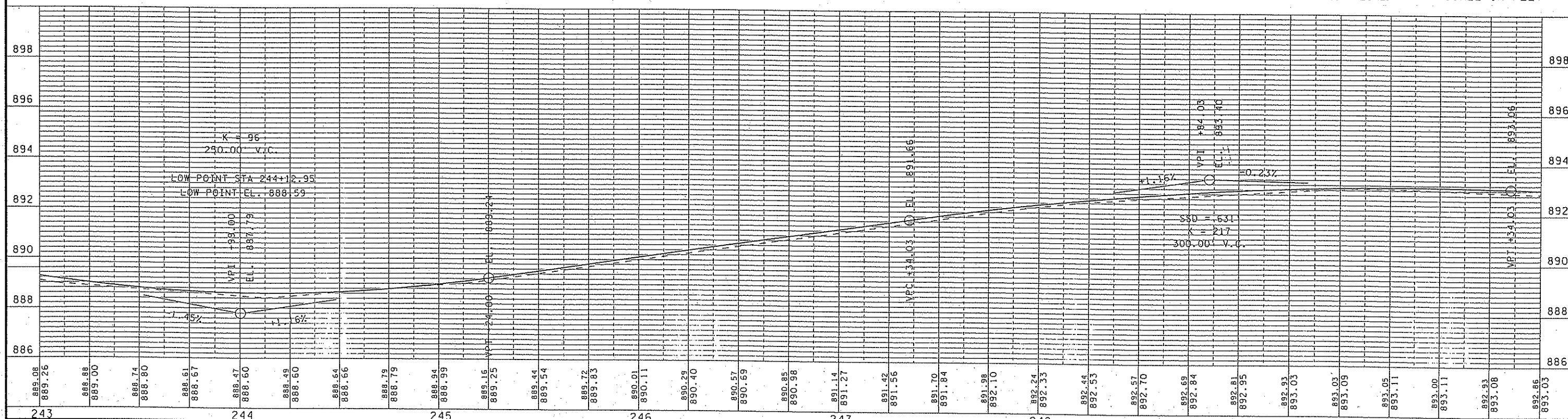


LEGEND

PROPOSED CONSTRUCTION



CONSTRUCTION NOTES:
 1. GRADE DRIVEWAY SIDE SLOPES TO 1:6 WITHIN CSAH 9 CLEAR ZONE.



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 CAD DATE: 03:27:35 PM Ivandra
 CAD FILE: o:\cod\818750\design\sheet\818750J.cpc

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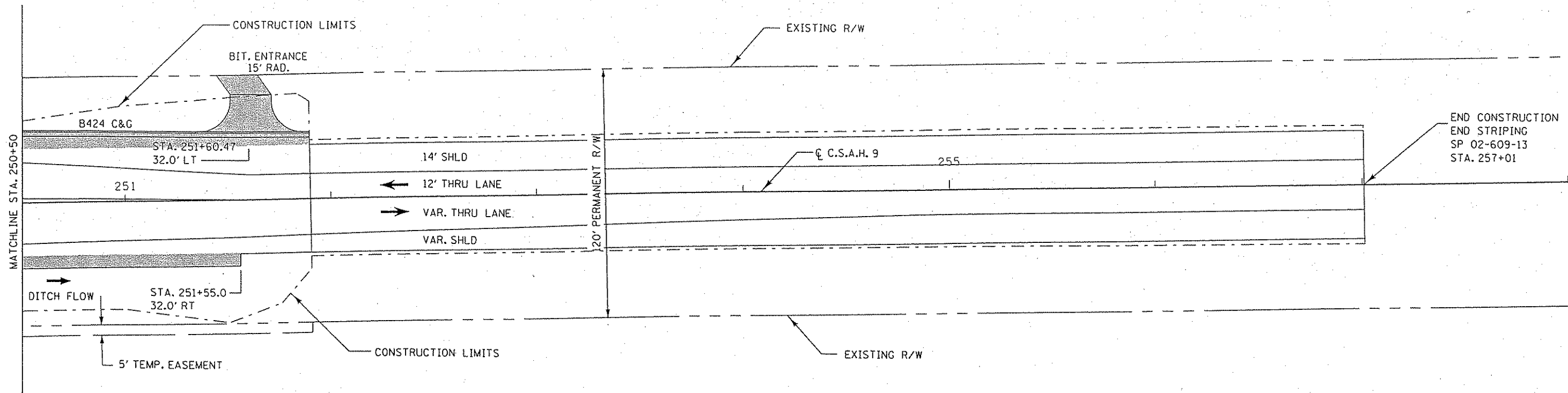
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
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CONSTRUCTION
 PLAN AND PROFILE
 (CSAH 9)

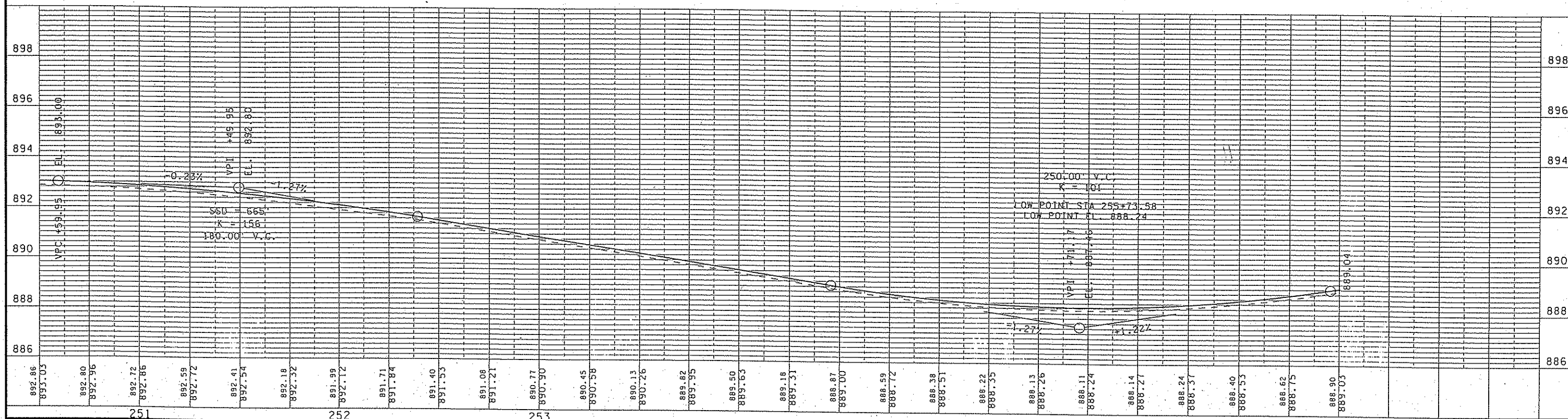
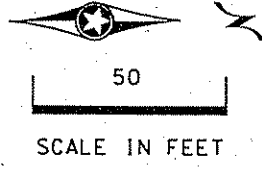
SHEET NO.
 27



LEGEND

PROPOSED CONSTRUCTION

CONSTRUCTION NOTES:
1. GRADE DRIVEWAY SIDE SLOPES TO 1:6 WITHIN CSAH 9 CLEAR ZONE.



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 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:27:37 PM Ivandra
 CAD FILE: o:\cod\818750\design\sheet\818750J.cad

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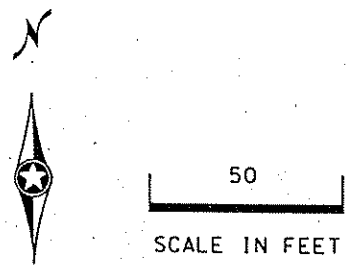
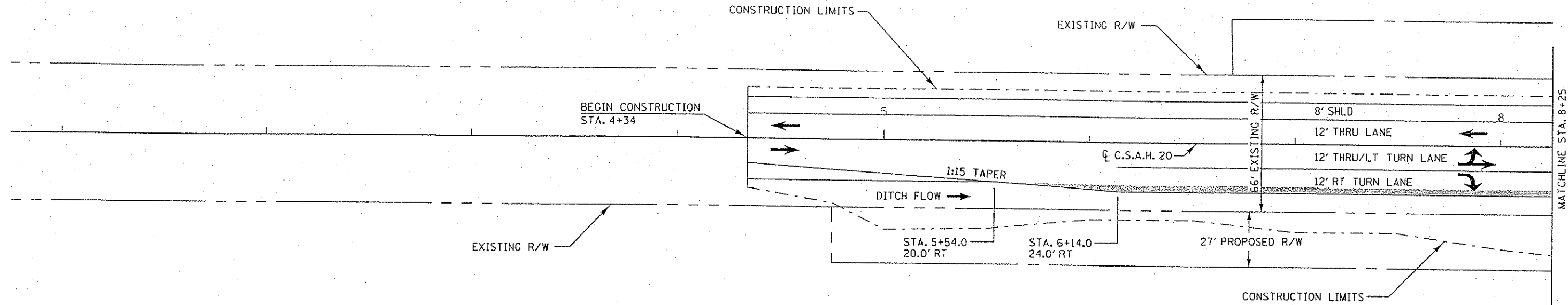
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
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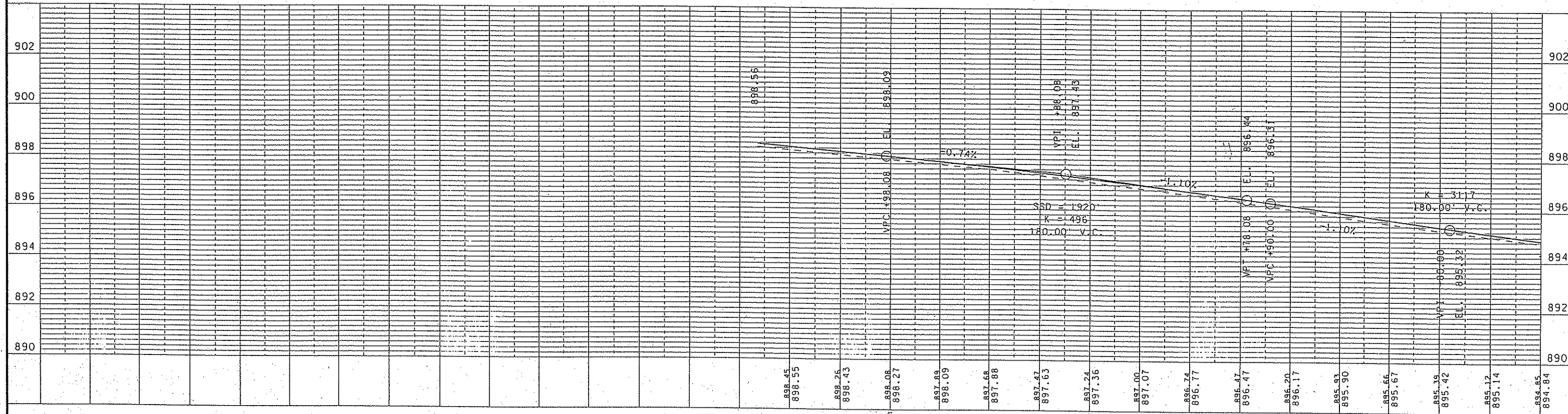
CONSTRUCTION
 PLAN AND PROFILE
 (CSAH 9)

SHEET NO.
 28



LEGEND

PROPOSED CONSTRUCTION



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 APPROVED: BCJ JOB NUMBER: 818750J
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 CAD FILE: g:\cad\818750\design\sheet8\818750j.cpe

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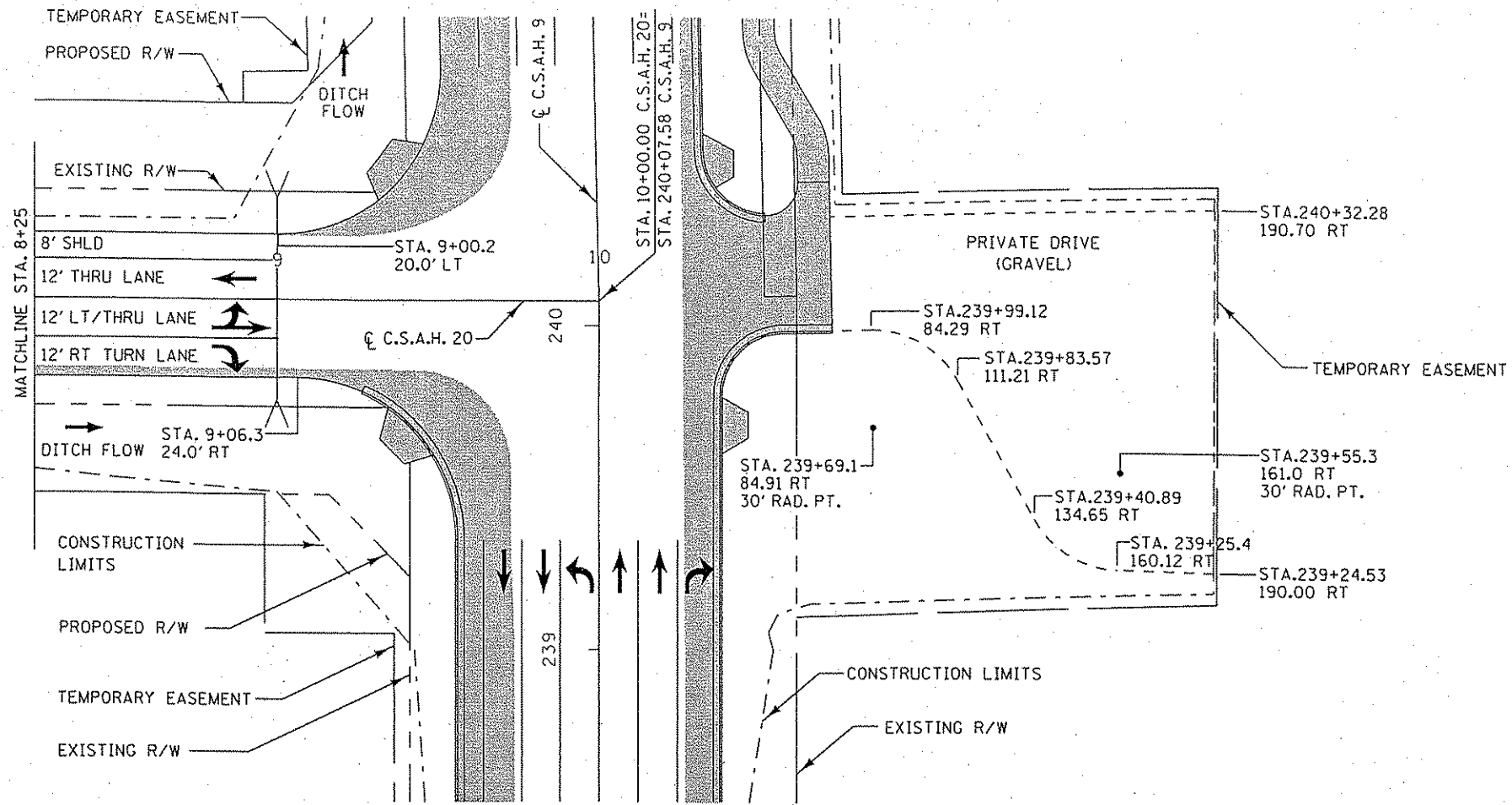
NO.	DATE	BY	REVISION DESCRIPTION

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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

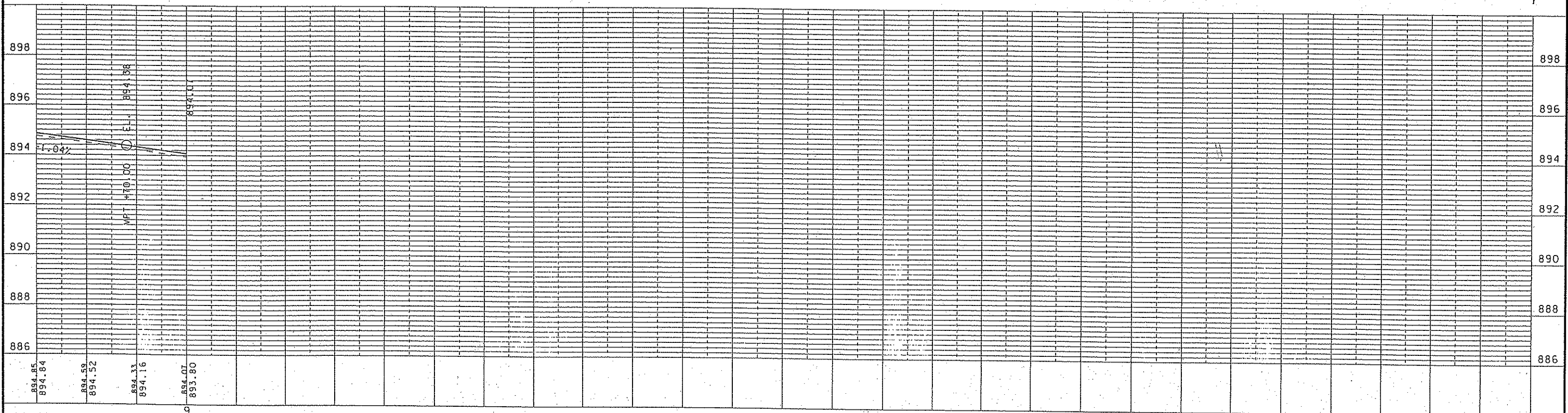
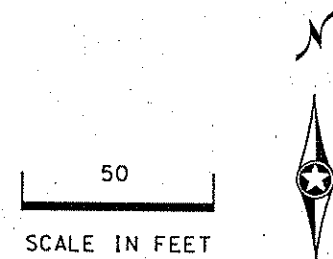
CONSTRUCTION
 PLAN AND PROFILE
 (CSAH 9)

SHEET NO.
 29



LEGEND

PROPOSED CONSTRUCTION



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 APPROVED: BCJ JOB NUMBER: 818750J
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NO.	DATE	BY	REVISION DESCRIPTION

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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

CONSTRUCTION
 PLAN AND PROFILE
 (CSAH 20)

SHEET NO.
 30

BEGIN CONSTRUCTION
SP 02-609-13
STA. 228+98

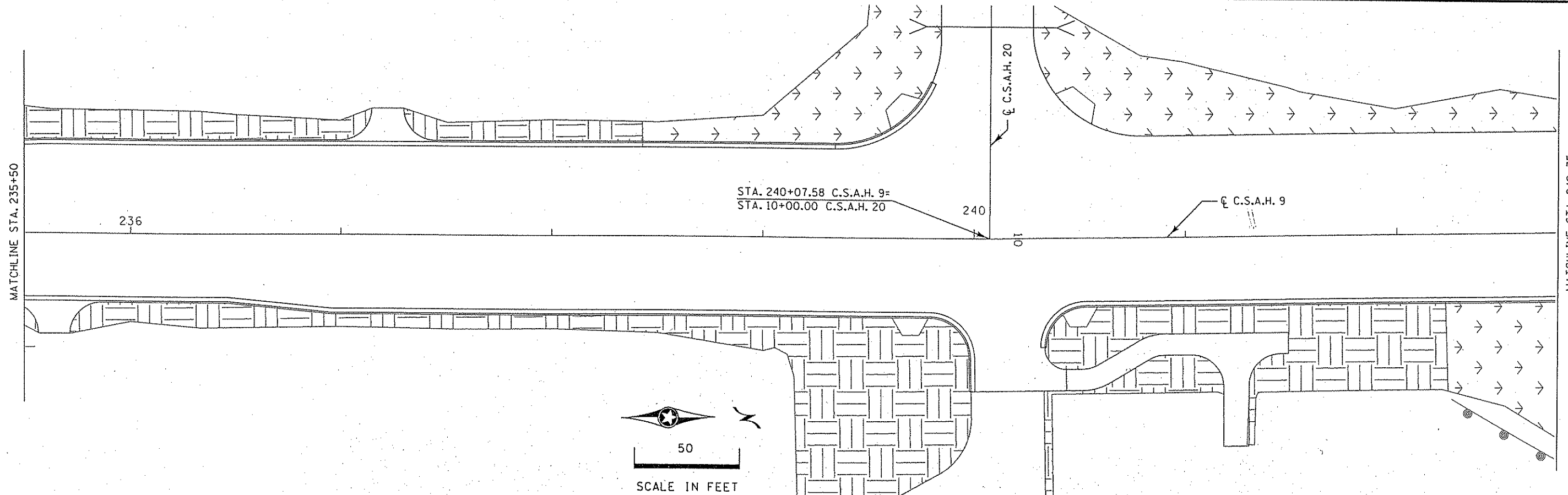
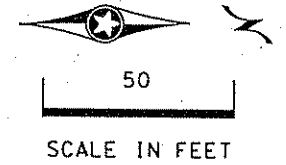
230

☉ C.S.A.H. 9

235

MATCHLINE STA. 235+50

LEGEND	
SEED TYPE 60B	
SOD TYPE SALT RESISTANT	
SILT FENCE	



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 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:27:51 PM lvondra
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NO.	DATE	BY	REVISION DESCRIPTION

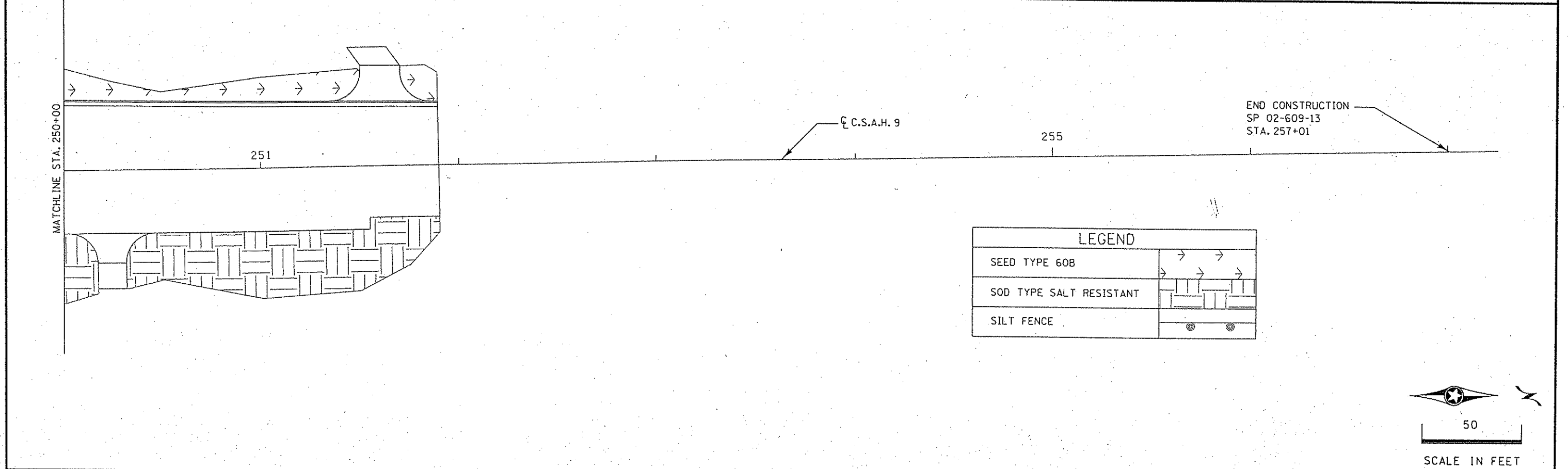
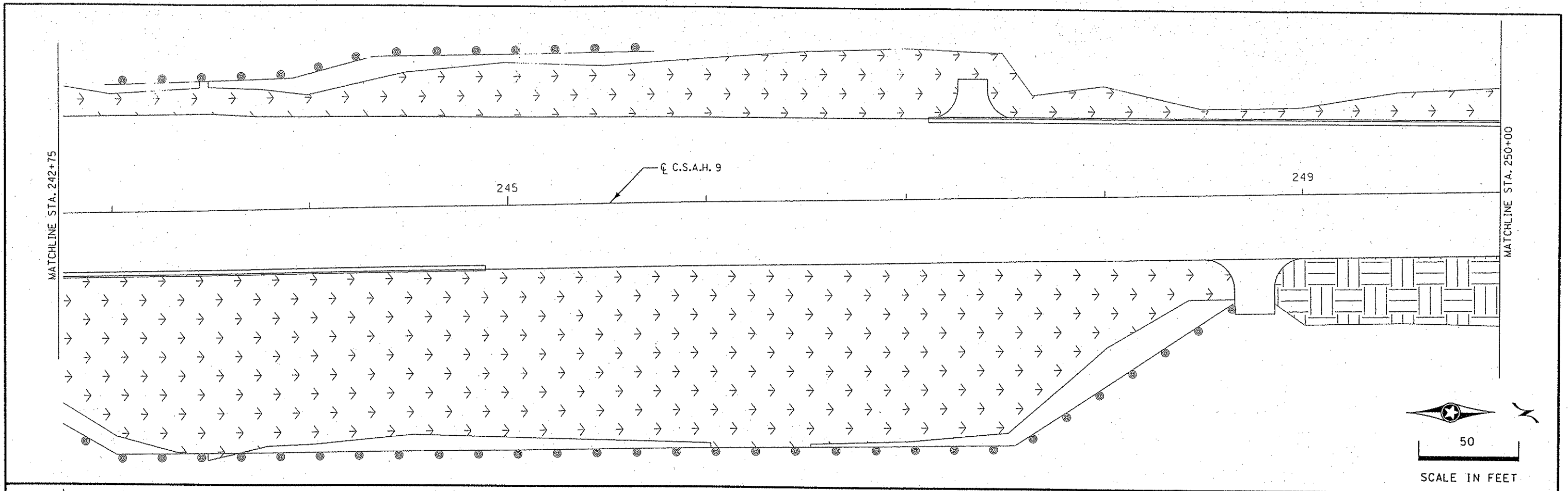
1326 ENERGY PARK DRIVE
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

EROSION CONTROL AND
 TURF ESTABLISHMENT PLAN

SHEET NO.
 31



LEGEND	
SEED TYPE 60B	
SOD TYPE SALT RESISTANT	
SILT FENCE	

DRAWN BY: WCK JOB DATE: 05-10-04
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NO.	DATE	BY	REVISION DESCRIPTION

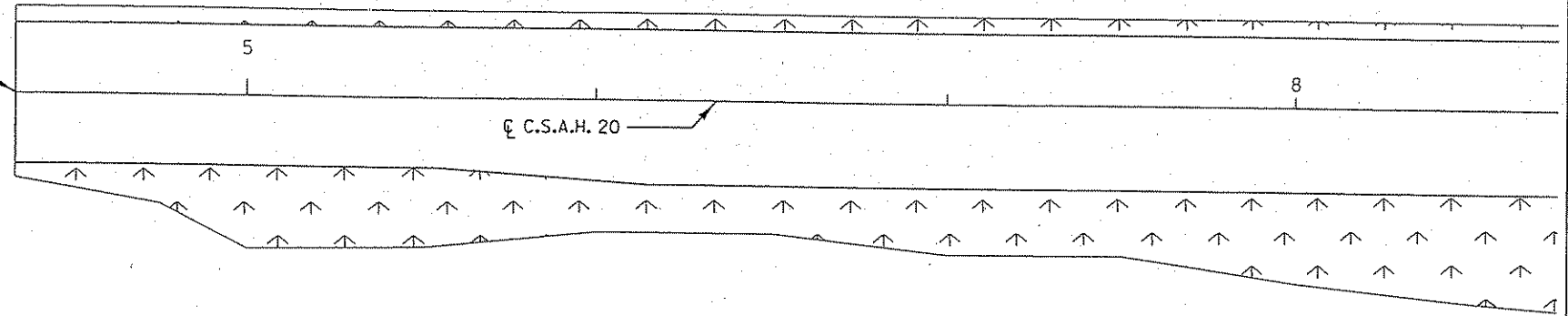
1326 ENERGY PARK DRIVE
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
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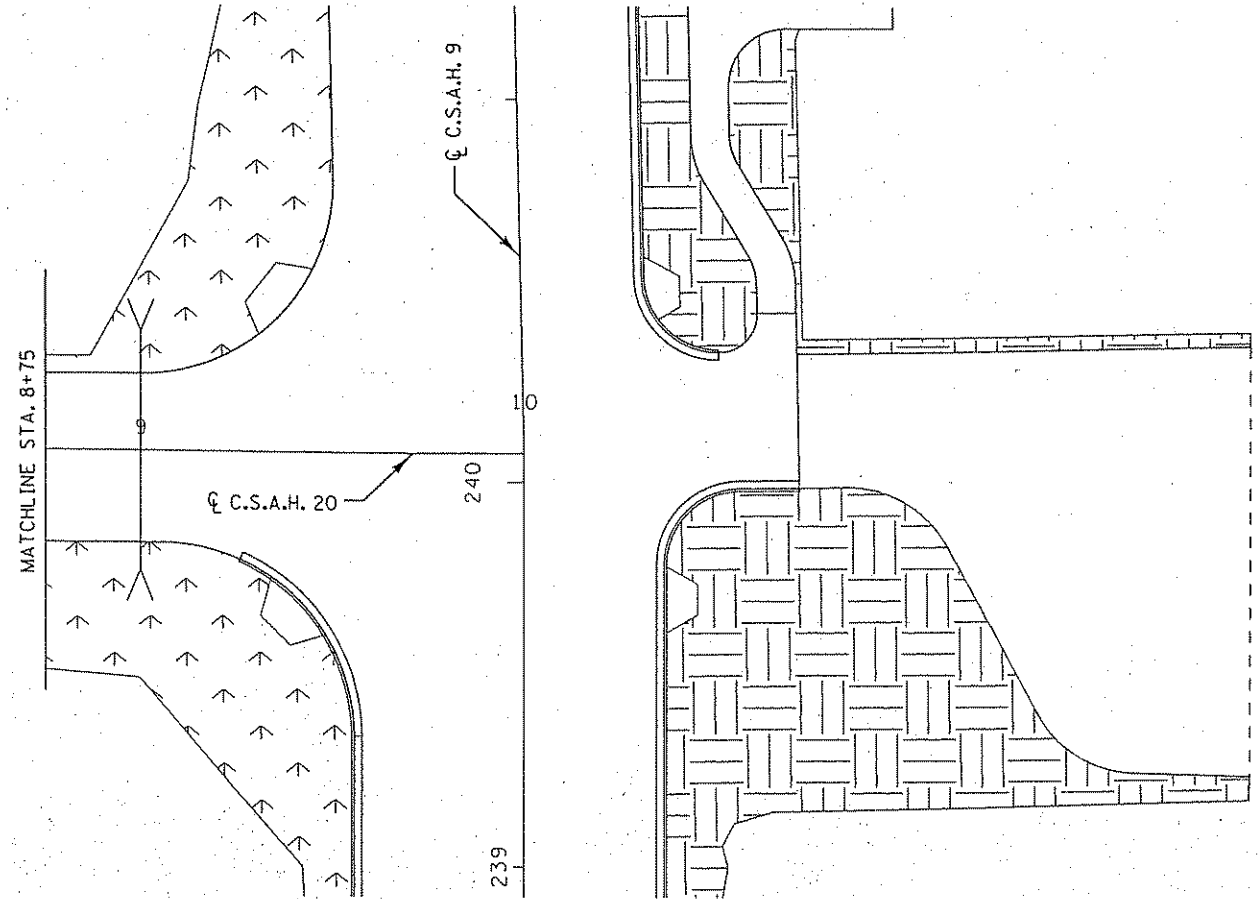
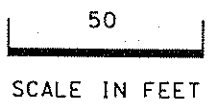
EROSION CONTROL AND
 TURF ESTABLISHMENT PLAN

SHEET NO.
 32

BEGIN CONSTRUCTION
STA. 4+34



MATCHLINE STA. 8+75



MATCHLINE STA. 8+75

☉ C.S.A.H. 9

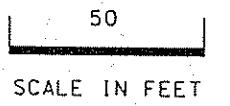
☉ C.S.A.H. 20

10

240

239

LEGEND	
SEED TYPE 60B	
SOD TYPE SALT RESISTANT	
SILT FENCE	



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 CAD DATE: 03:27:56 PM Ivandra
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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

EROSION CONTROL AND
 TURF ESTABLISHMENT PLAN

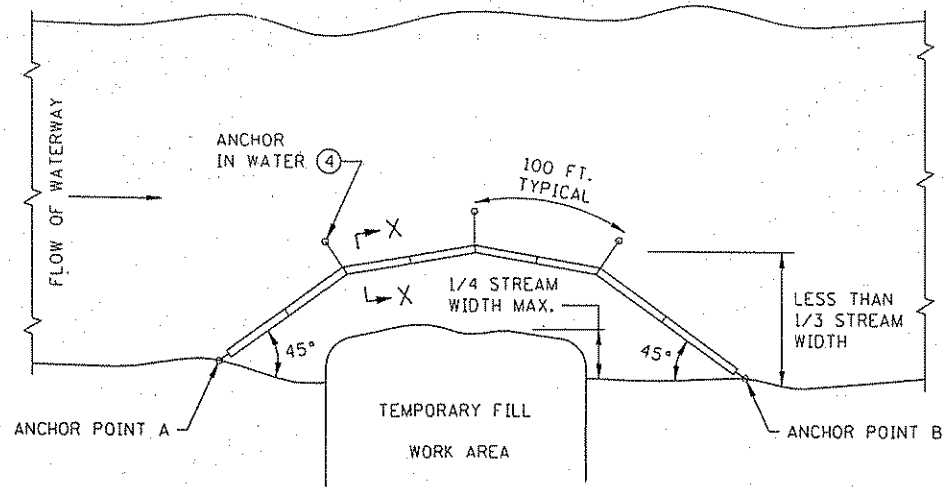
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03-27-57 PM

03-27-57 PM

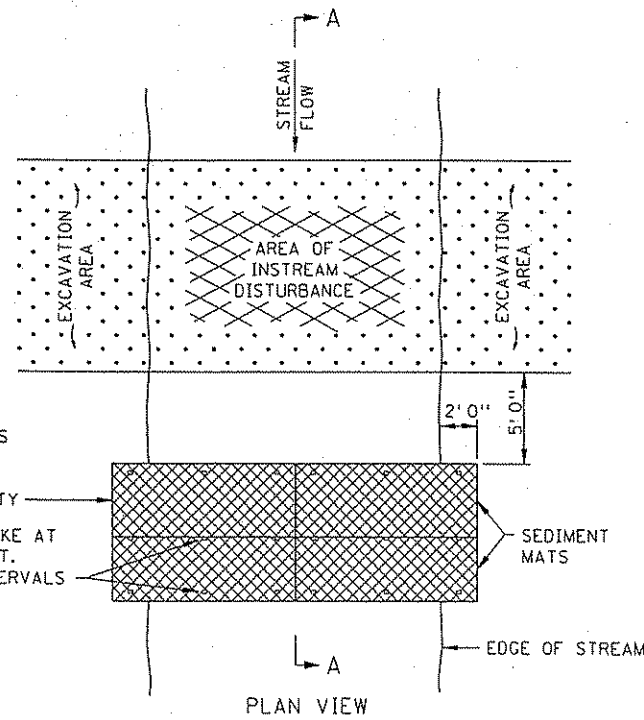
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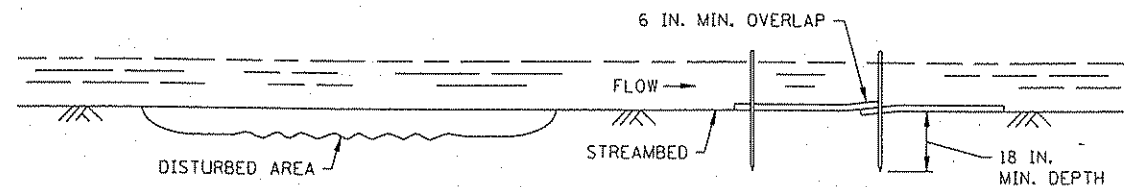


PLAN VIEW
FLOTATION SILT CURTAIN - TYPE WORK AREA
 (SPEC. 3887)
 FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

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



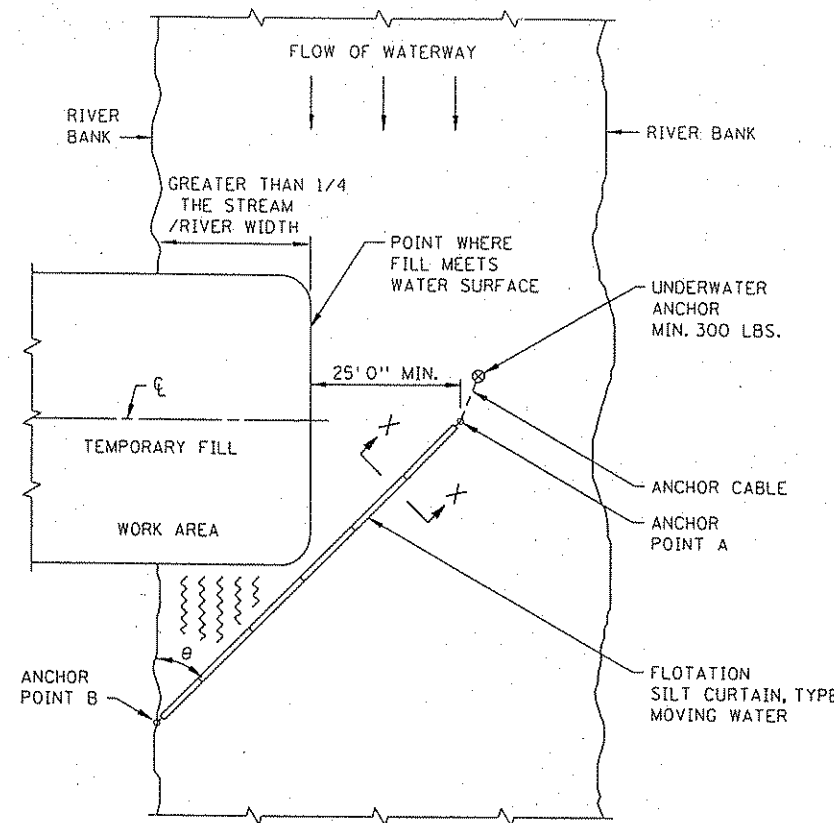
PLAN VIEW



SECTION A-A

SEDIMENT MAT
 (SPEC. 3894)

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



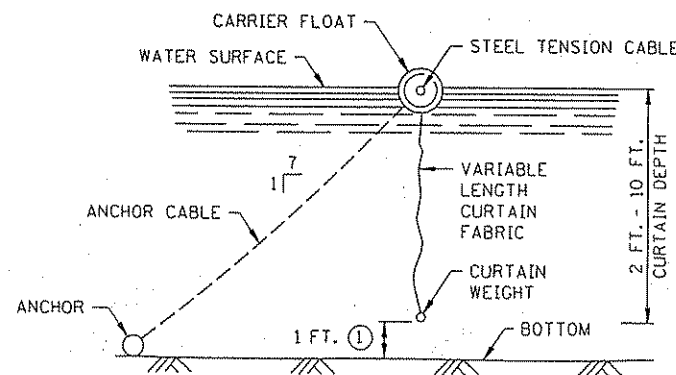
∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW

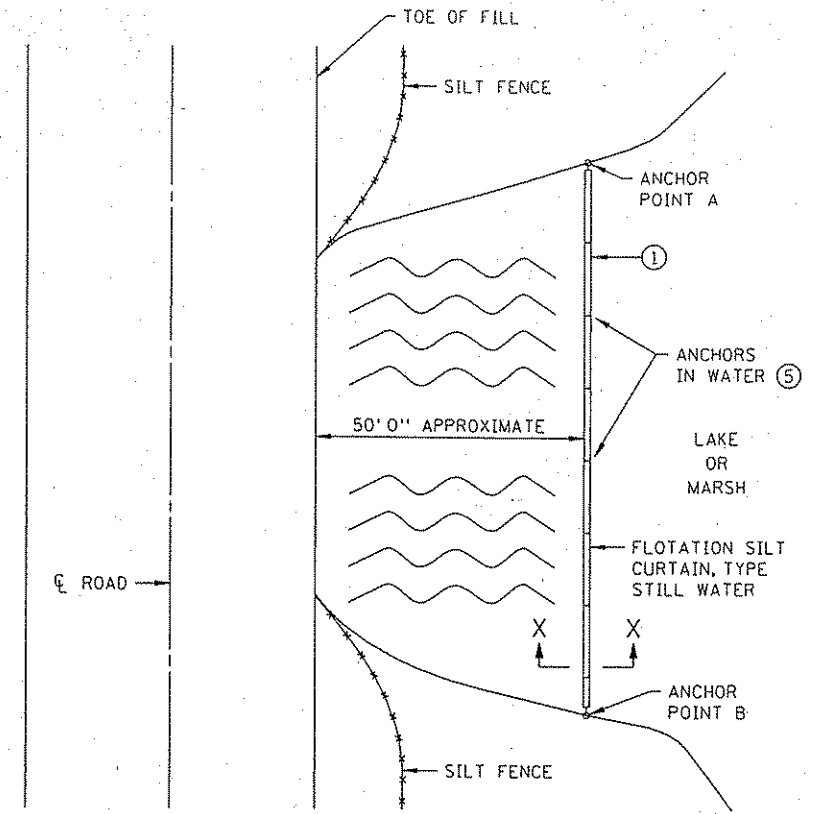
FLOTATION SILT CURTAIN - TYPE MOVING WATER
 (SPEC. 3887)

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCKROACHES 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.



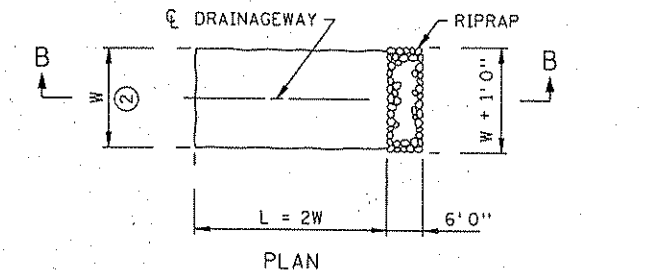
SECTION X-X
FLOTATION SILT CURTAINS
 (SPEC. 3887)



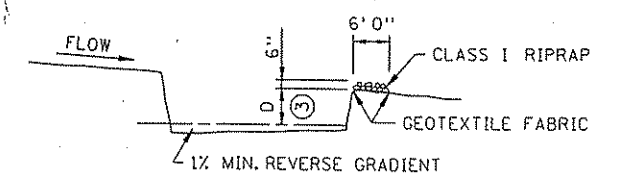
PLAN VIEW

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

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



PLAN



SECTION B-B

SEDIMENT TRAP DETAIL
 (SPEC. 2573)

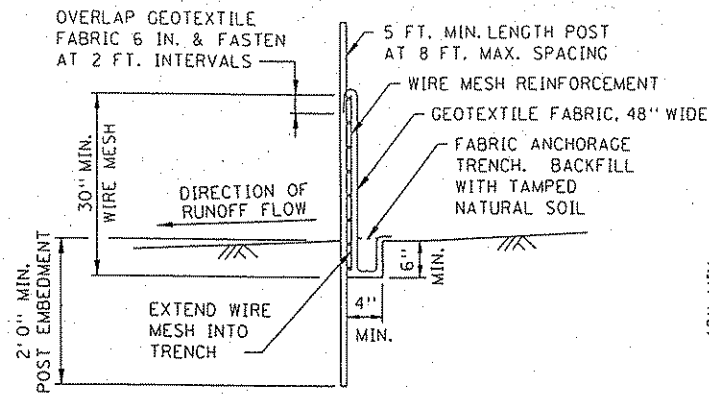
NOTES:

SEE SPECS. 2573, 3887 & 3894.

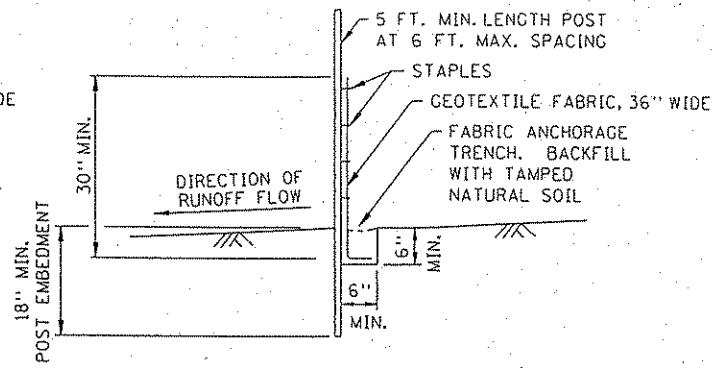
- ① CURTAIN 1 FT. FROM BOTTOM
- ② W = 10 FT. MIN., 20 FT. MAX.
- ③ D = 2 FT.
- ④ 100 FT. MAX. SPACING BETWEEN ANCHORS, MIN. 40 LBS.
- ⑤ USE ENOUGH ANCHORS TO HOLD SILT CURTAIN IN PLACE.

STANDARD SHEET NO.
 5-297.405 (1 OF 4)
 STANDARD APPROVED:
 July 30, 2001

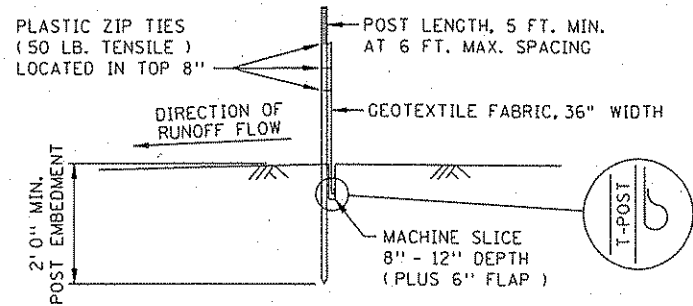
TITLE:
 TEMPORARY EROSION CONTROL



HEAVY DUTY



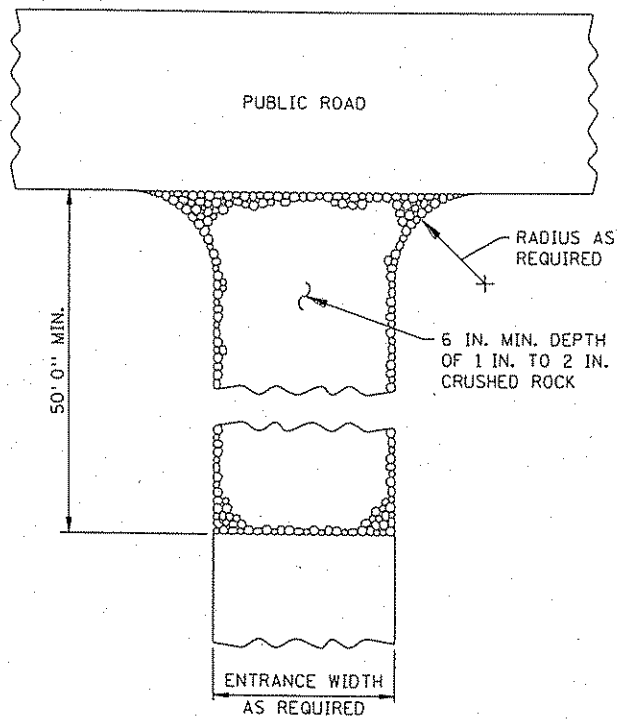
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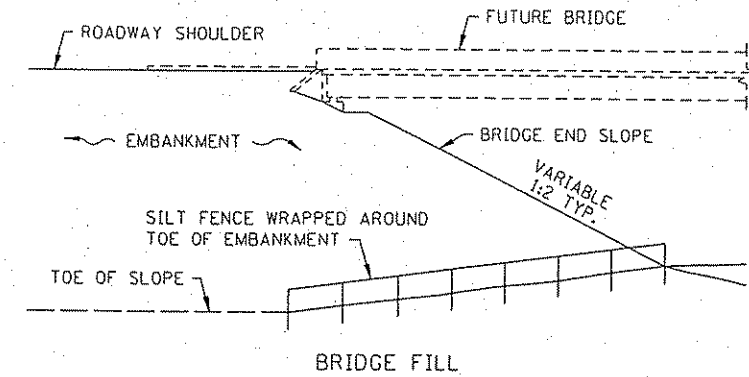
STANDARD MACHINE SLICED

DESIGN GUIDELINES:
MAXIMUM CONTRIBUTING AREA: 3 ACRES

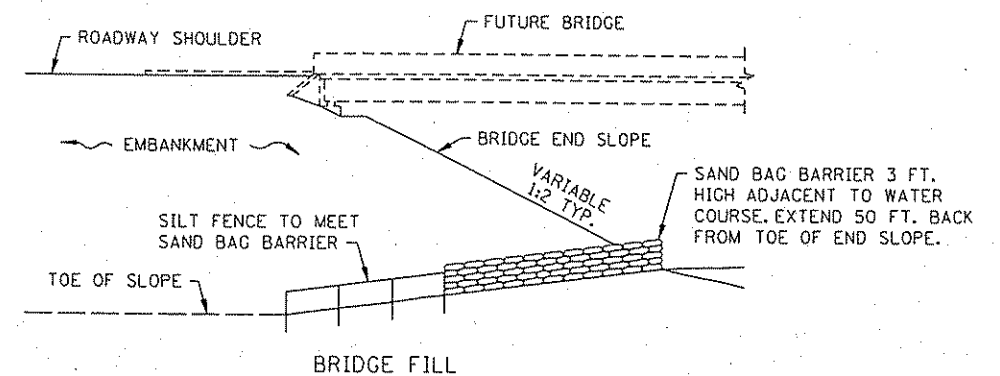
SILT FENCE DETAILS
TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)



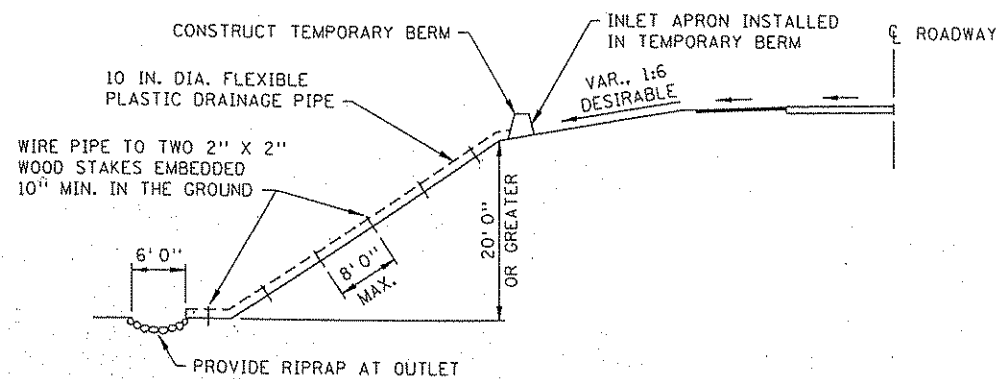
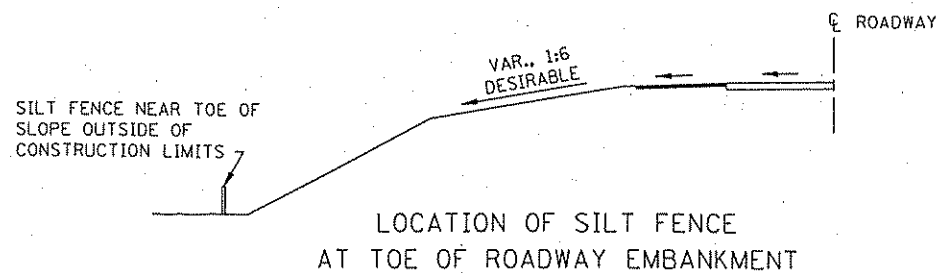
ROCK CONSTRUCTION ENTRANCE ①



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

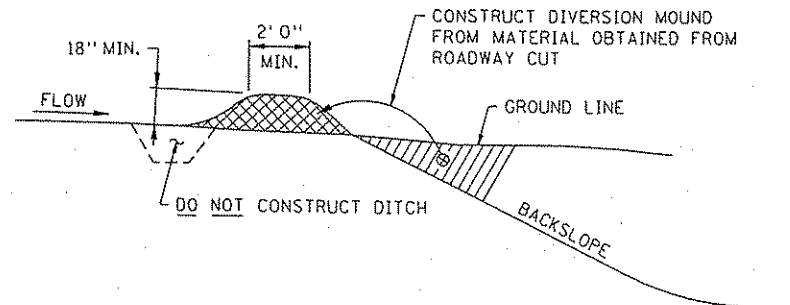


DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE



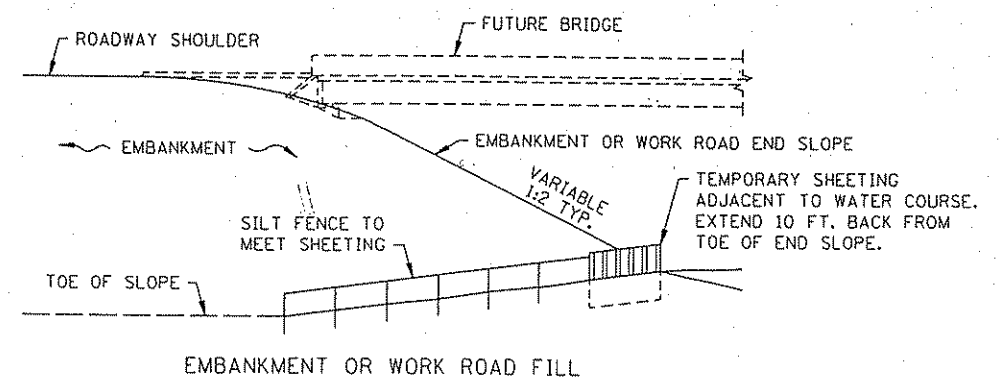
TEMPORARY DRAIN ON FILL SLOPE

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



DIVERSION MOUND

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



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

SILT FENCE AT BRIDGE EMBANKMENT

NOTES:

SEE SPECS. 2573 & 3886.

① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE DRIVING ON MAIN ROAD. THIS WILL PREVENT AUTO DAMAGE. WE NEED TO KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.

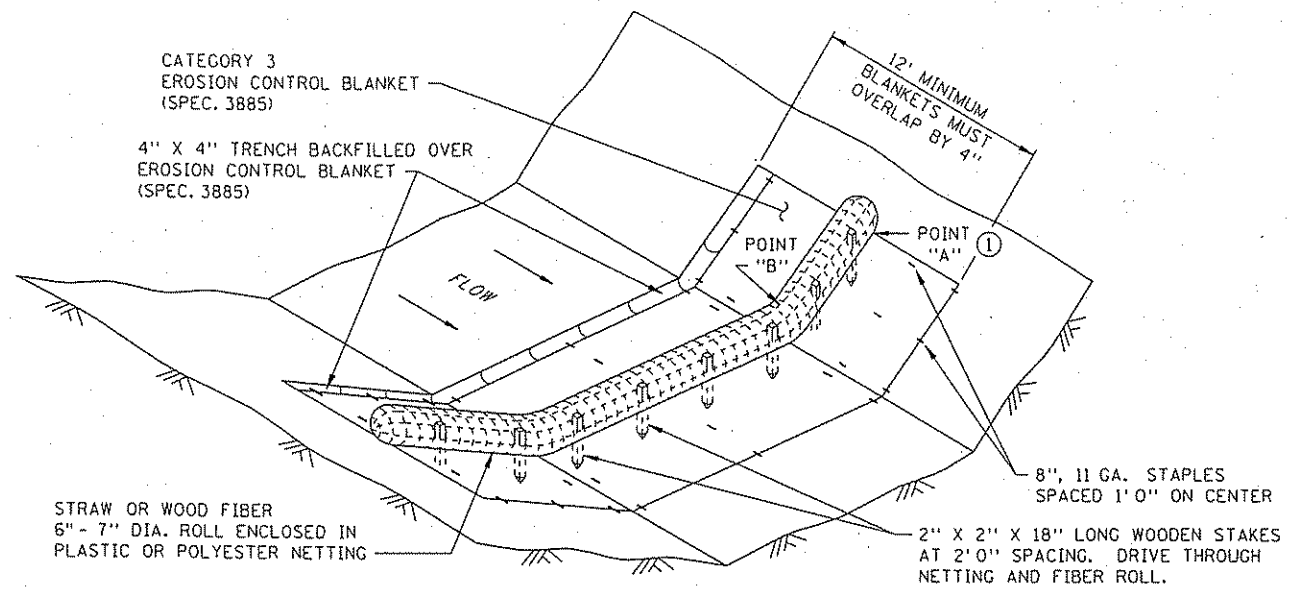
STANDARD SHEET NO. 5-297.405 (2 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: JULY 30, 2001	
STATE PROJ. NO. 02-606-13/198-020-19 SHEET NO. 35 OF 87 SHEETS	

ivandra

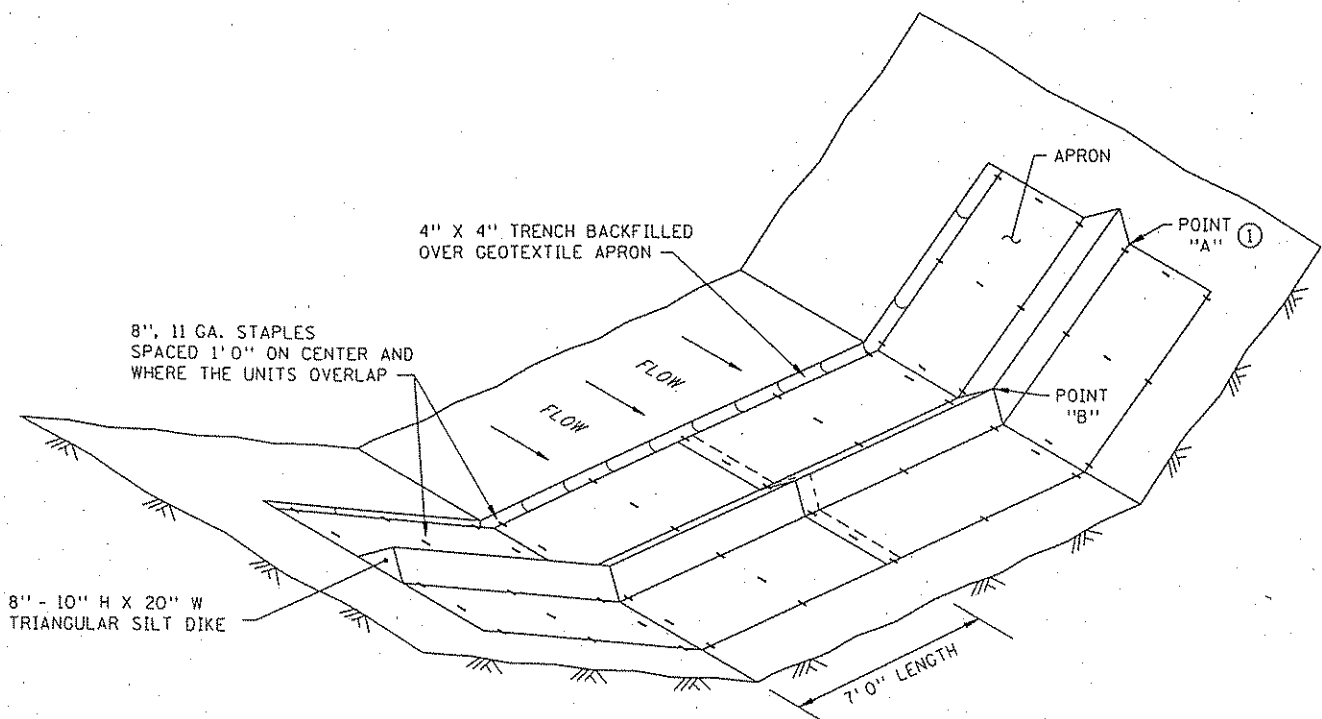
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or:\cod\818750\design\sheet\8187501.ecf

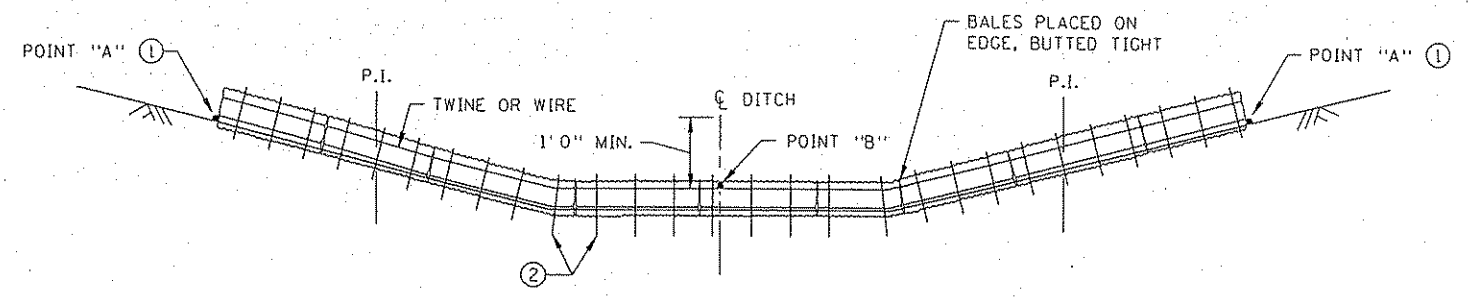
FILE NAME S4053K02.SPN



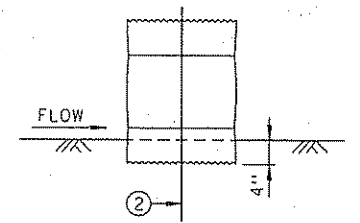
BIOROLL BLANKET SYSTEM
(TYPE 3 SPEC. 3889)



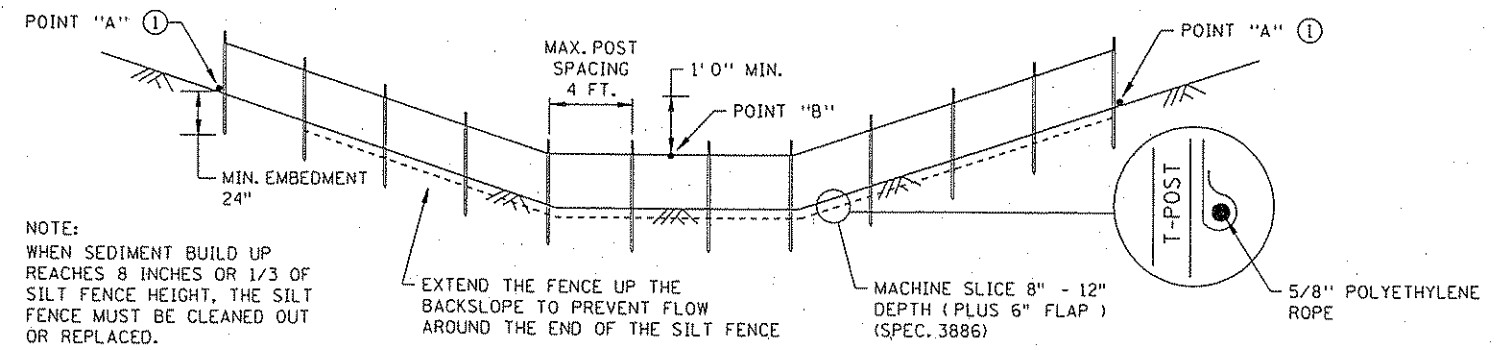
GEOTEXTILE TRIANGULAR DIKE
(TYPE 6 SPEC. 3889)



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

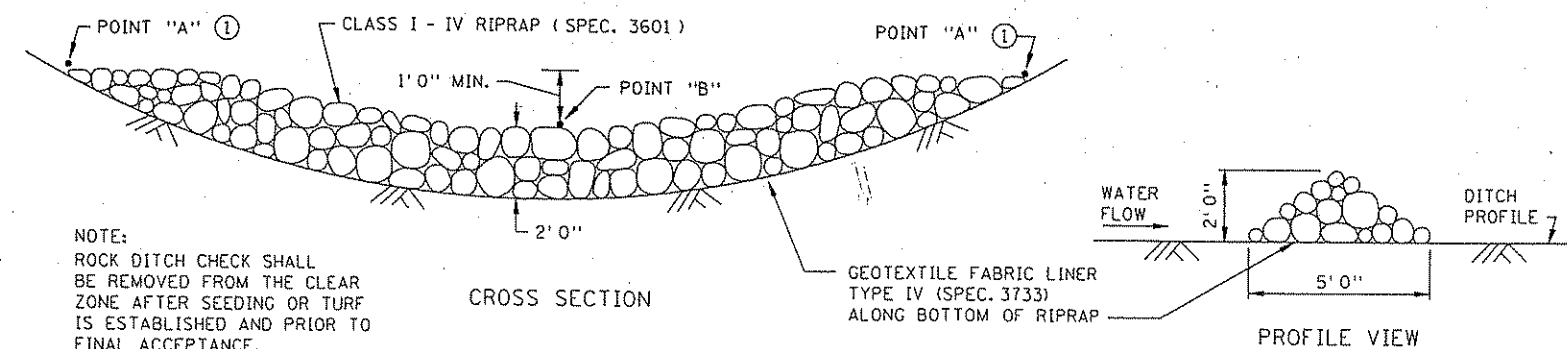


EMBEDMENT METHOD BALE CHECK DETAIL



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

MACHINE SLICED SILT FENCE
(TYPE 1 SPEC. 3889)

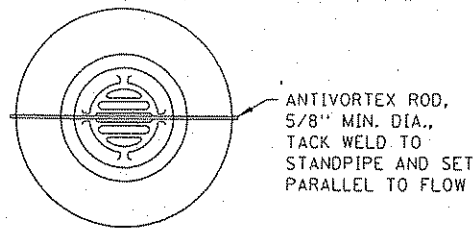


NOTE:
ROCK DITCH CHECK SHALL BE REMOVED FROM THE CLEAR ZONE AFTER SEEDING OR TURF IS ESTABLISHED AND PRIOR TO FINAL ACCEPTANCE.

ROCK CHECK
(TYPE 7 SPEC. 3889)

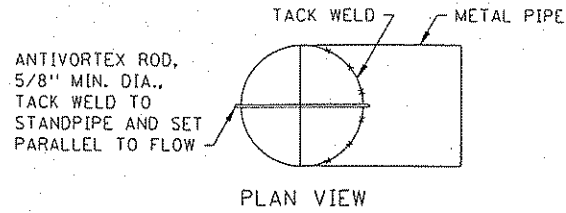
- NOTES:
SEE SPECS. 2573, 3882, 3885, 3886 & 3889.
SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM SPACING FORMULA:
SPACING OF DITCH CHECKS (FT) = $\frac{(\text{HEIGHT OF DITCH CHECK (FT)} \times 100)}{\text{DITCH GRADE IN PERCENT}}$
- ① POINT A MUST BE 1' 0" MIN. HIGHER THAN POINT B TO ENSURE 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)	TITLE: TEMPORARY EROSION CONTROL DITCH CHECKS
STANDARD APPROVED: NOVEMBER 5, 2002	
STATE PROJ. NO. 02-609-13/198-020-19 SHEET NO. 36 OF 87 SHEETS	



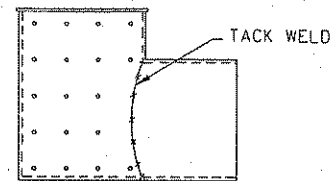
ANTIVORTEX ROD,
5/8" MIN. DIA.,
TACK WELD TO
STANDPIPE AND SET
PARALLEL TO FLOW

PLAN VIEW

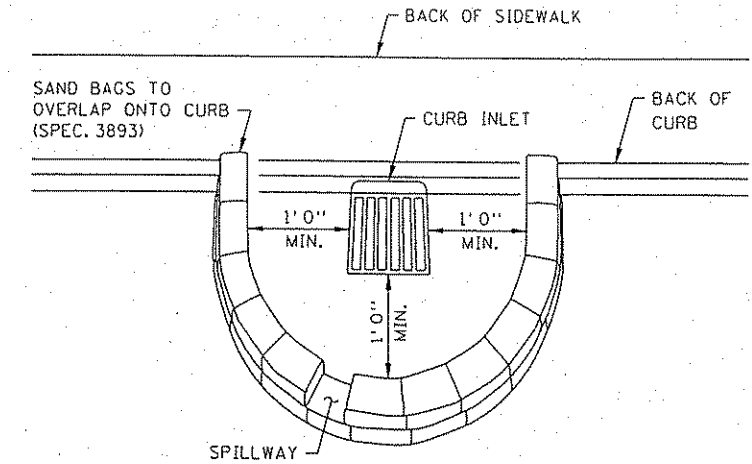


ANTIVORTEX ROD,
5/8" MIN. DIA.,
TACK WELD TO
STANDPIPE AND SET
PARALLEL TO FLOW

PLAN VIEW

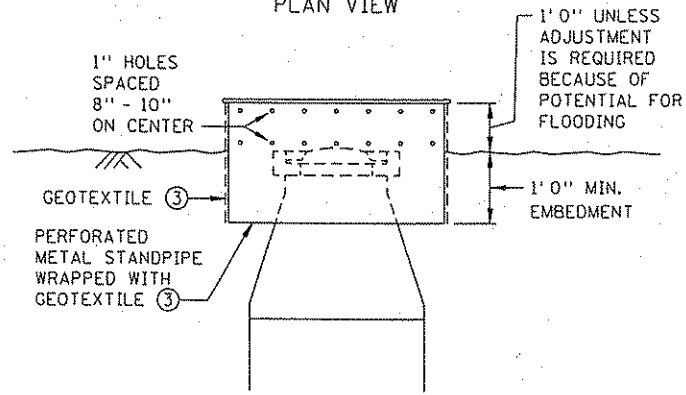


CULVERT STANDPIPE

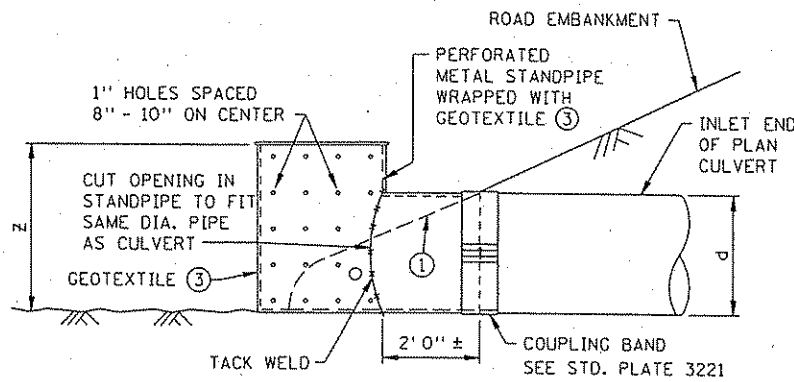


SAND BAGS TO
OVERLAP ONTO CURB
(SPEC. 3893)

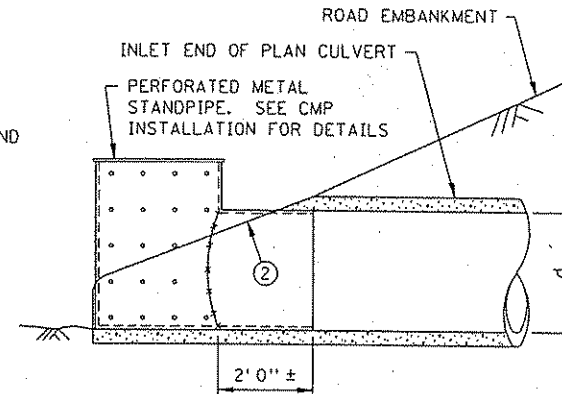
SANDBAG BARRIER AT STREET INLET
THIS INLET PROTECTION IS USED DURING ROUGH GRADING
ONLY. USE BEFORE ROAD IS OPEN TO TRAFFIC OR IS PAVED.
(SPEC. 3893)



ELEVATION
RISER STANDPIPE
TO PROTECT DROP INLET



ELEVATION OF CSP INSTALLATION



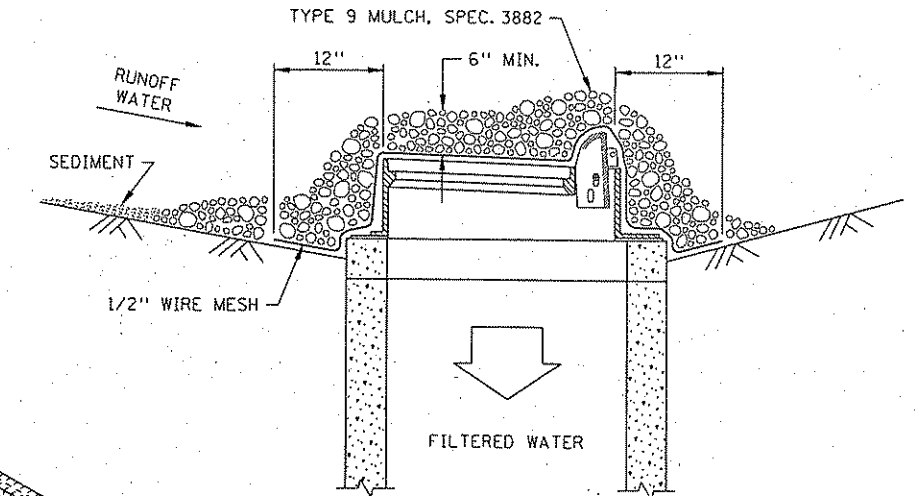
ELEVATION OF RCP INSTALLATION

CULVERT STANDPIPE PROTECTION

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

CULVERT SIZE: 12" - 36"

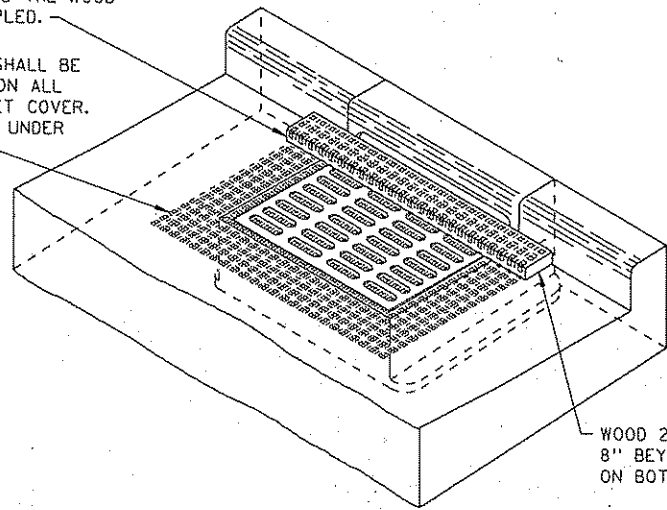
d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT
Z = LENGTH OF PERFORATED STANDPIPE (d + 12")



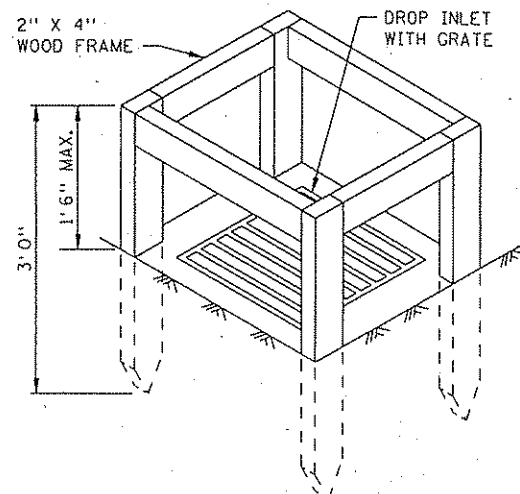
AGGREGATE FILTER AT CURB INLET
(TYPE B WITHOUT CURB SPEC. 3891)
(TYPE C WITH CURB SPEC. 3891)

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

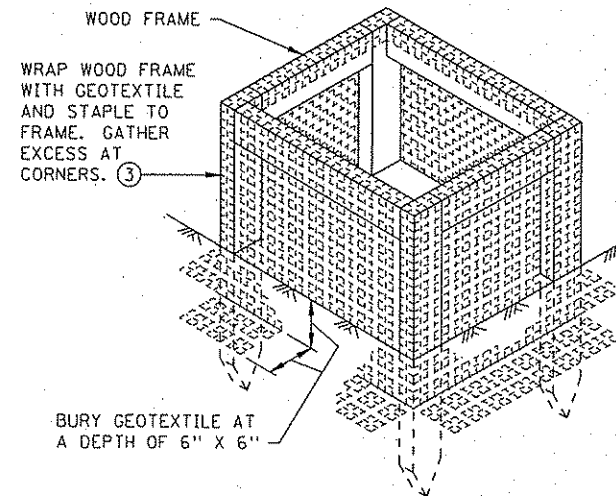
GEOTEXTILE SIZE SHALL BE
8" MIN. GREATER ON ALL
SIDES OF THE INLET COVER.
PLACE GEOTEXTILE UNDER
INLET COVER. ③



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)



BURY GEOTEXTILE AT
A DEPTH OF 6" X 6"

NOTES:

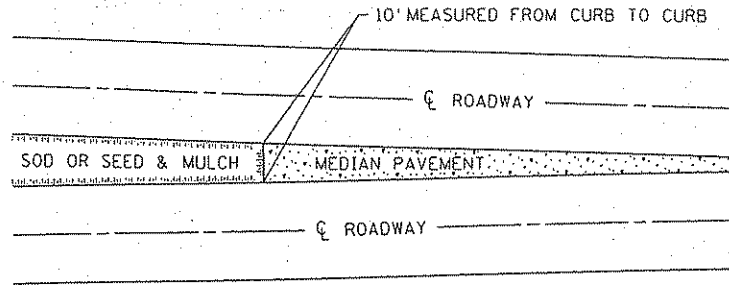
SEE SPECS. 2573, 3891 & 3893.

MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S
APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

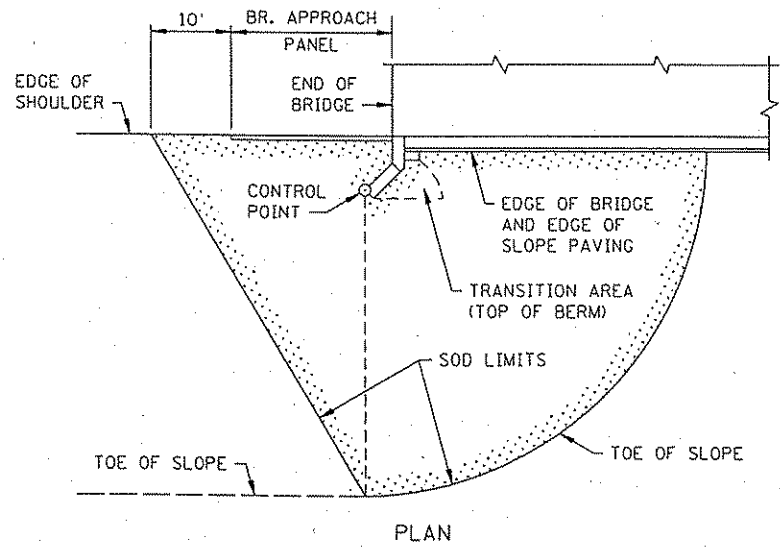
- ① FOR CSP, REMOVE TEMPORARY STANDPIPE AND INSTALL
CULVERT APRON AFTER VEGETATION IS ESTABLISHED.
- ② FOR RCP, INSTALL CULVERT APRON AND SLIDE
TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION
IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.
- ③ ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE
MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886
FOR MACHINE SLICED.

STANDARD SHEET NO.
5-297.405 (4 OF 4)
STANDARD APPROVED:
NOVEMBER 5, 2002

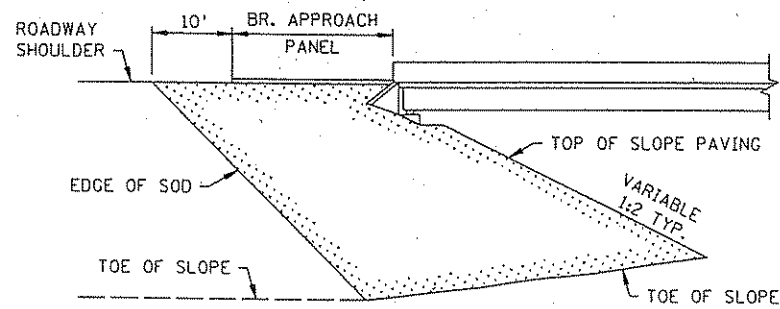
TEMPORARY EROSION CONTROL
TEMPORARY INLET PROTECTION



SODDING LIMITS AT GORE AREA

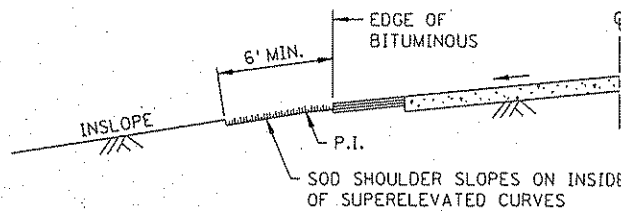


PLAN

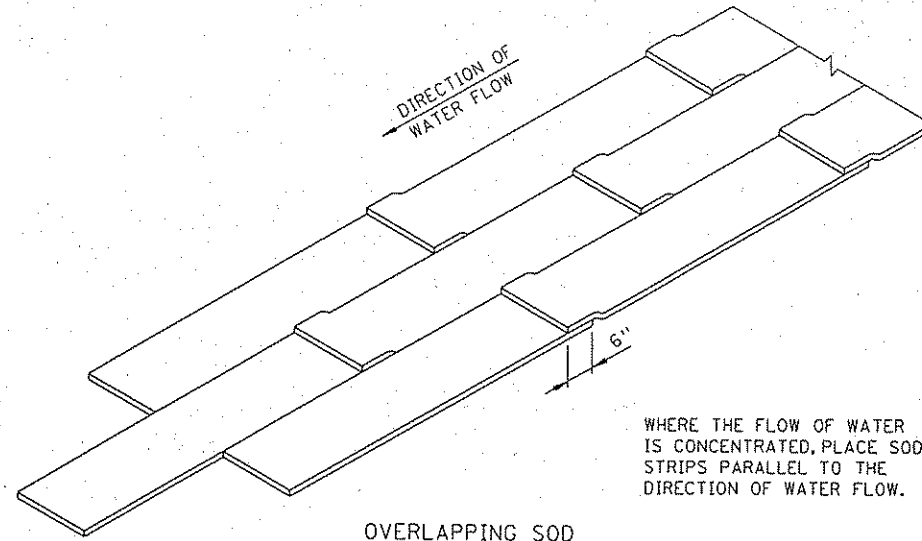


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

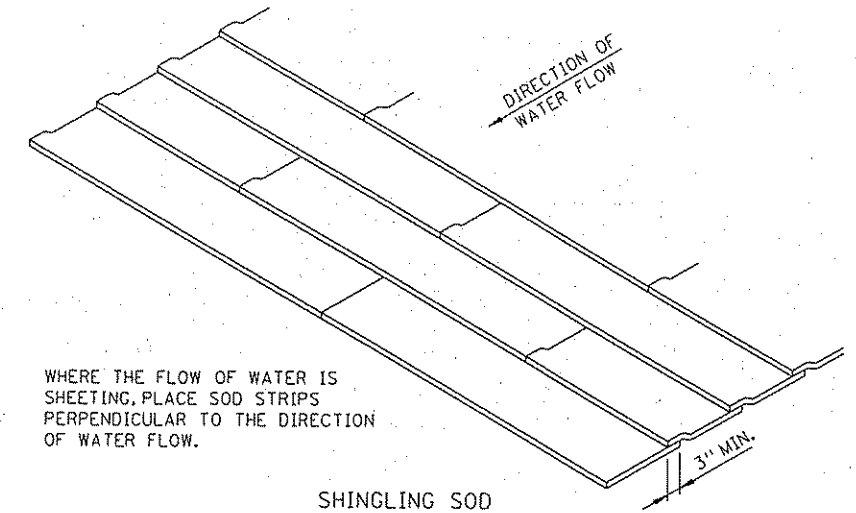


SODDING INSLOPES OF SUPERELEVATED CURVES



OVERLAPPING SOD

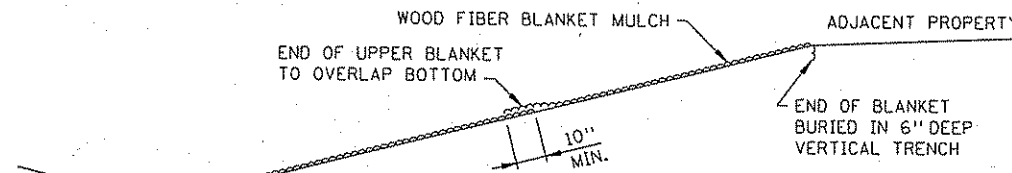
WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.



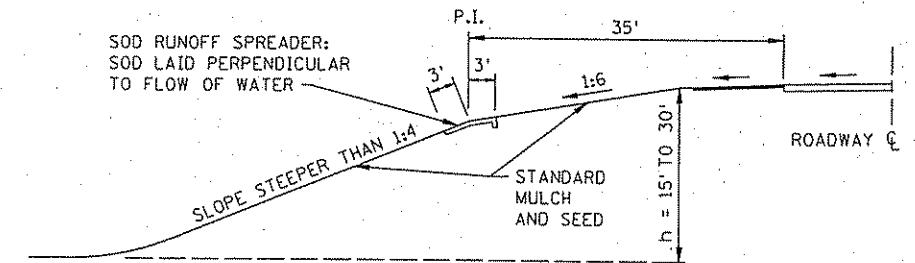
SHINGLING SOD

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

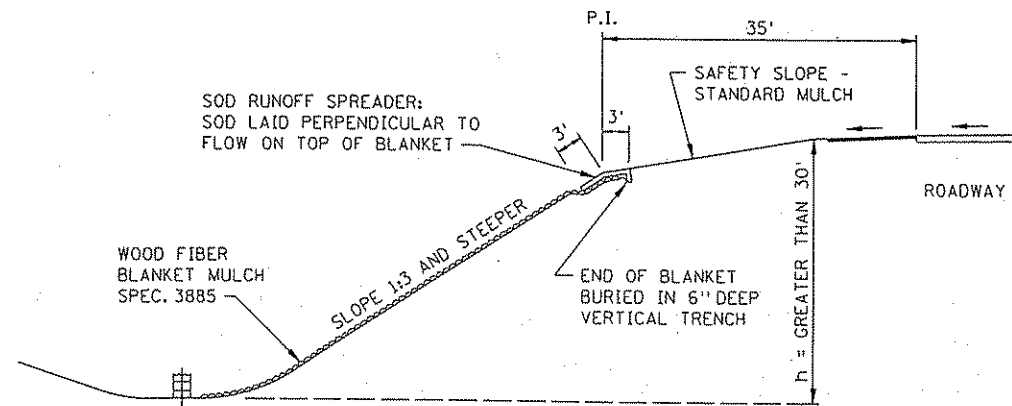
SPECIAL SOD PLACEMENT TECHNIQUES



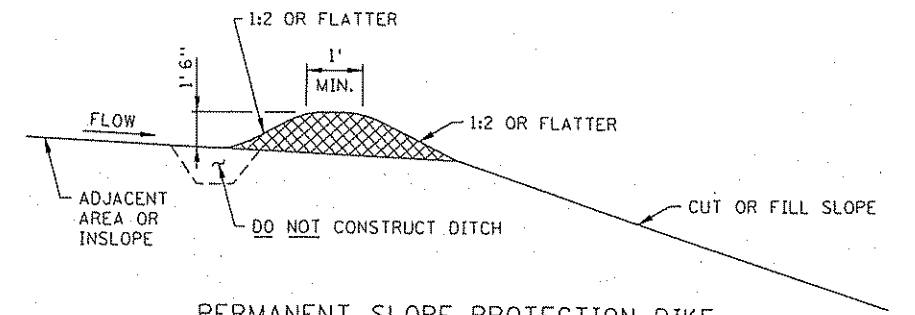
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE (WHEN REQUIRED)



PERMANENT SLOPE PROTECTION DIKE

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 FILE NAME: S406A85.SPN
 o:\ecod\818750\design\sheet\8187501.ech

STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
REVISION DATE 10-26-2000	STATE PROJ. NO. 02-609-13/198-020-19 SHEET NO. 38 OF 87 SHEETS

0 SALVAGE SIGN TYPE C						
SIGN NO.	POSTS			QTY	PANEL SIZE (IN.)	PANEL LEGEND
	NO. & TYPE	KNEE BRACES QTY	LEN. (FT.)			
C-100	2-U	0	17	1		STOP AHEAD
C-101	2-U	0	17	1		STOP
C-102	2-U	0	17	1	21 x 16	(double arrow)
C-200	2-U	0	16	1	21 x 15 24 x 24	JCT County 9
C-201	2-U	0	16	1	24 x 30	Speed Limit 55
C-202	2-U	0	16	1	24 x 12 24 x 24	WEST County 20
C-203	2-U	0	16	1	21 x 15 24 x 12 24 x 24	JCT WEST County 20
C-204	2-U	0	16	1	24 x 30	Speed Limit 55
C-205	2-U	0	16	1	24 x 12 24 x 24	SOUTH County 9
C-206	2-U	0	16	1	24 x 12 24 x 24 21 x 16 24 x 12	WEST County 20 (left arrow) EAST
C-207	2-U	0	16	1	24 x 24 21 x 16	County 20 (up arrow)
C-208	2-U	0	16	1	24 x 24 21 x 16	County 20 (left arrow)
C-209	2-U	0	16	1	24 x 24 21 x 16	County 9 (double arrow)
C-210	2-U	0	16	1	24 x 12 24 x 24 24 x 12	NORTH County 9 WEST
C-211	2-U	0	16	1	24 x 24 21 x 16	County 20 (right arrow)
C-212	2-U	0	16	1	24 x 30	Speed Limit 55
C-213	2-U	0	16	1	30 x 30 21 x 15	RIGHT TURN LANE JCT
C-214	2-U	0	16	1	24 x 12 24 x 24	WEST County 20
C-215	2-U	0	16	1	36 x 48	No Passing Zone
C-216	2-U	0	18	1	30 x 30	No Hunting South of here
TOTAL				20		

0 SIGN PANELS TYPE C									
SIGN NO.	POSTS			MTG HT (FT.)	PANEL SIZE (IN.)	AREA (SQ.FT.)	CODE NO.	PANEL LEGEND	
	NO. & TYPE	KNEE BRACES QTY	LEN. (FT.)						
C-200	2-U	0	16	7	21 x 15 24 x 24	2.19 4.00	M2-1 M1-6	JCT County 9	
C-201	2-U	0	16	7	24 x 30	5.00	R2-1	Speed Limit 55	
C-202	2-U	0	16	7	24 x 12 24 x 24	2.00 4.00	M3-4 M1-6	WEST County 20	
C-203	2-U	0	16	7	21 x 15 24 x 12 24 x 24	2.19 2.00 4.00	M2-1 M3-4 M1-6	JCT WEST County 20	
C-204	2-U	0	16	7	24 x 30	5.00	R2-1	Speed Limit 55	
C-205	2-U	0	16	7	24 x 12 24 x 24	2.00 4.00	M3-3 M1-6	SOUTH County 9	
C-206	2-U	0	16	7	24 x 12 24 x 24 21 x 15	2.00 4.00 2.19	M3-4 M1-6 M6-1	WEST County 20 (left arrow)	
C-207	2-U	0	16	7	24 x 12 24 x 24 21 x 15	2.00 4.00 2.19	M3-2 M1-6 M6-3	EAST County 20 (up arrow)	
C-208	2-U	0	16	7	24 x 24 21 x 15	4.00 2.19	M1-6 M6-1	County 20 (left arrow)	
C-209	2-U	0	16	7	24 x 24 21 x 15	4.00 2.19	M1-6 M6-4	County 9 (double arrow)	
C-210	2-U	0	16	7	24 x 12 24 x 24	2.00 4.00	M3-1 M1-6	NORTH County 9	
C-211	2-U	0	16	7	24 x 12 24 x 24 21 x 15	2.00 4.00 2.19	M3-4 M1-6 M6-1	WEST County 20 (right arrow)	
C-212	2-U	0	16	7	24 x 30	5.00	R2-1	Speed Limit 55	
C-213	2-U	0	16	7	30 x 30 21 x 15	6.25 2.19	R3-X1 M2-1	RIGHT TURN LANE JCT	
C-214	2-U	0	16	7	24 x 12 24 x 24	2.00 4.00	M3-4 M1-6	WEST County 20	
C-215	2-U	0	16	7	36 x 48	12.00	W14-3	No Passing Zone	
C-216	2-U	0	18	7	30 x 30	6.25	-	No Hunting South of here	
C-400	2-U	0	15	7	36 x 36	9.00	W3-3	SIGNAL AHEAD	
C-401	2-U	0	15	7	36 x 36	-	W3-3	omitted	
C-402	2-U	0	15	7	30 x 30	6.25	R3-X1	RIGHT TURN LANE	
C-403	2-U	0	15	7	30 x 30	-	R3-X1	omitted	
C-404	2-U	0	15	7	36 x 36	9.00	W3-3	SIGNAL AHEAD	
C-405	2-U	0	15	7	30 x 30	6.25	R3-X1	RIGHT TURN LANE	
C-406	2-U	0	15	7	36 x 36	9.00	W9-2L	LANE ENDS MERGE LEFT	
C-407	2-U	0	15	7	48 x 48	16.00	-	TRAFFIC CONTROL CHANGE AHEAD	
C-408	2-U	0	15	7	36 x 36	9.00	W9-2L	LANE ENDS MERGE LEFT	
C-409	2-U	0	15	7	36 x 36	9.00	W3-3	SIGNAL AHEAD	
C-410	2-U	0	15	7	48 x 48	16.00	-	TRAFFIC CONTROL CHANGE AHEAD	
C-411	2-U	0	15	7	36 x 36	9.00	W9-1R	RIGHT LANE ENDS	
C-412	2-U	0	15	7	36 x 36	9.00	W4-2R	Lane Reduction Right	
C-413	2-U	0	15	7	36 x 36	9.00	W9-1R	RIGHT LANE ENDS	
C-414	2-U	0	15	7	36 x 36	9.00	W4-2R	Lane Reduction Right	
C-415	2-U	0	15	7	48 x 48	16.00	-	TRAFFIC CONTROL CHANGE AHEAD	
C-416	2-U	0	15	7	24 x 24	6.25	W11-XX	PRIVATE DRIVE	
TOTAL						264.77			

0 SALVAGE MARKERS					
SIGN NO.	POSTS			QTY	PANEL LEGEND
	NO. & TYPE	KNEE BRACES QTY	LEN. (FT.)		
X-100	2-U	0	X	1	X4-4R CLEARANCE MARKER
X-101	2-U	0	X	1	X4-4L CLEARANCE MARKER
X-300	2-U	0		16	X4-5 DOWN
X-301	2-U	0		16	X4-5 DOWN
X-302	2-U	0		16	X4-5 UP
X-303	2-U	0		16	X4-5 DOWN
TOTAL				6	

0 SALVAGE STREET SIGNS					
SIGN NO.	POSTS			QTY	PANEL LEGEND
	NO. & TYPE	KNEE BRACES QTY	LEN. (FT.)		
S-100	2-U	0	17	1	ROUND LAKE ROAD NW 157TH AVE NW
TOTAL				1	

0 MARKERS					
SIGN NO.	POSTS			QTY	PANEL LEGEND
	NO. & TYPE	KNEE BRACES QTY	LEN. (FT.)		
X-300	2-U	0	16	1	X4-5 DOWN
X-301	2-U	0	16	1	X4-5 DOWN
X-302	2-U	0	16	1	X4-5 UP
X-303	2-U	0	16	1	X4-5 DOWN
TOTAL				4	

DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:28:19 PM Ivandra
 CAD FILE: g:\cad\818750\design\sheet\818750J.sso

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 25815

NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

SIGNING AND STRIPING
 TABULATION

SHEET NO.
 39

P PERMANENT PAVEMENT MARKING AND STRIPING - EPOXY									
ROADWAY	STATION TO STATION	LOCATION	4 IN DBL	24 IN	4 IN	4 IN	24 IN ①	ZEBRA ①	PVMT ①
			SOLID LINE YELLOW	SOLID LINE YELLOW	SOLID LINE WHITE	BRKN LINE WHITE	SOLID LINE WHITE	X-WALK	MARKING ARROWS
			LF	LF	LF	LF	LF	SF	EACH
CSAH 9	228+98 - 239+61	CL-LT	1063						2
	228+98 - 235+50	CL-RT	660	144					
	228+98 - 233+03	LT			405				
	228+98 - 239+61	RT			1014				
	230+54 - 239+34	LT			880				
	231+89 - 239+61	RT				772			
	235+58 - 239+61	CL			403				
	235+58 - 239+61	LT				403			
	236+61	LT							1
	236+96 - 239+61	RT			265				
	237+68	RT			78				1
	239+06	LT							1
	239+06	RT							1
	239+34 - 239+84	LT							
	239+61	LT-RT					49		
	239+70	LT-RT						252	
	240+22 - 257+01	LT			1696				
	240+33 - 257+01	RT			1683				
	240+48	LT-RT						234	
	240+57	LT-RT					51		
	240+57 - 243+50	LT			292				
	240+57 - 243+80	LT			323				
	240+57 - 248+25	RT							
	240+57 - 249+12	LT				767			
	240+57 - 257+01	CL	1629			249			
	241+03	LT							1
	241+03	LT							1
	242+71	LT							1
	243+07	LT							1
	243+79 - 251+60	CL-LT	781						
	Subtotal		4133		6634	2191	100	486	10
CSAH 20									
	4+34 - 9+00	LT			466				
	4+34 - 9+32	CL	498						
	4+34 - 9+14	RT			480				
	6+14 - -+32	RT			318				
	6+86	RT							1
	8+85	RT							1
	9+33	CL-RT					28		
	9+41.5	RT						198	
	10+52	LT-RT					36		
	10+53 - 10+72	LT	19						
	Subtotal		517	0	1264	0	64	198	2
	TOTAL		4650	378	7898	2191	164	684	12

NOTES:
1. POLY PREFORM

DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:28:19 PM Ivandra
 CAD FILE: o:\cad\818750J\design\sheet\818750J.ssa

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT
 WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND
 THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER
 THE LAWS OF THE STATE OF MINNESOTA.
 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26815

NO.	DATE	BY	REVISION DESCRIPTION



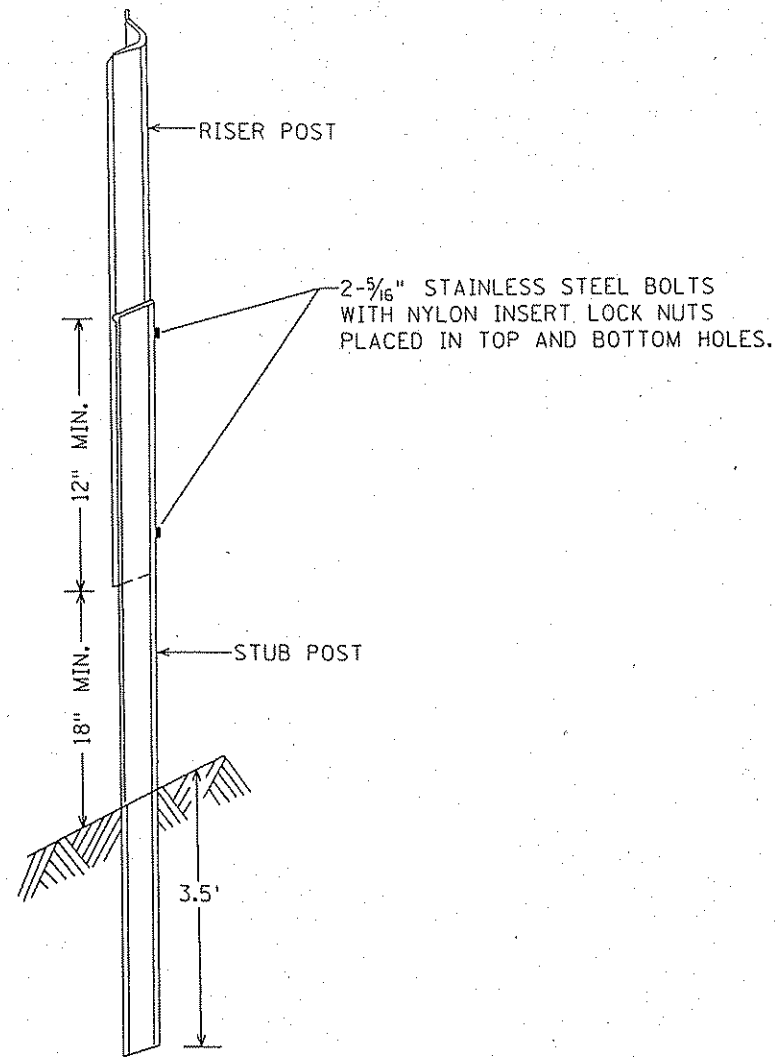
1326 ENERGY PARK DRIVE
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 CSAH 9 AND CSAH 20
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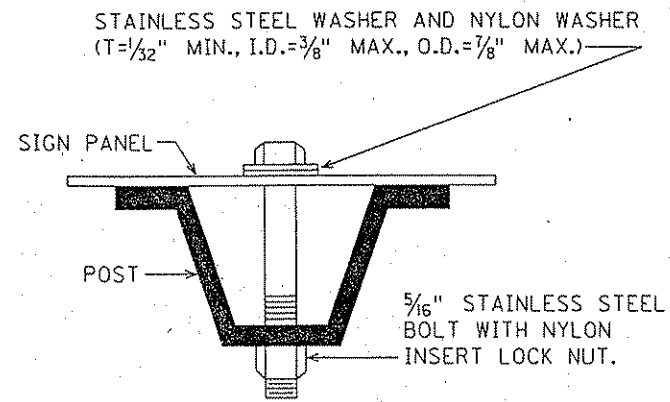
SIGNING AND STRIPING
 TABULATION

SHEET NO.
 40

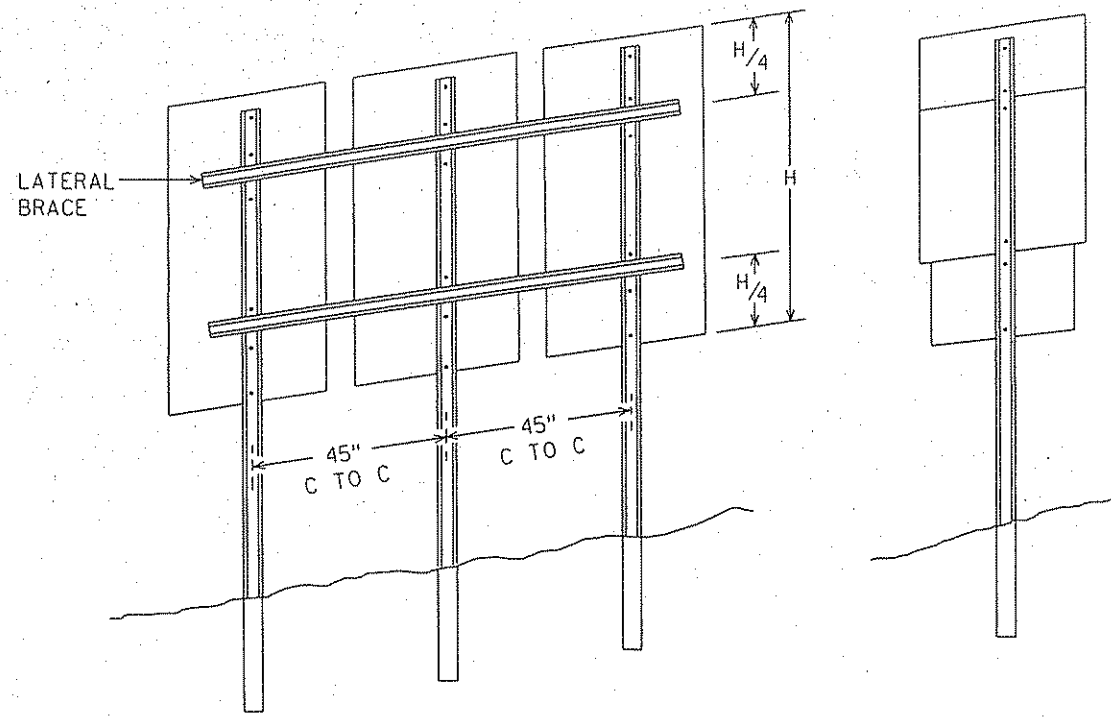
TYPE "C" & "D" POST



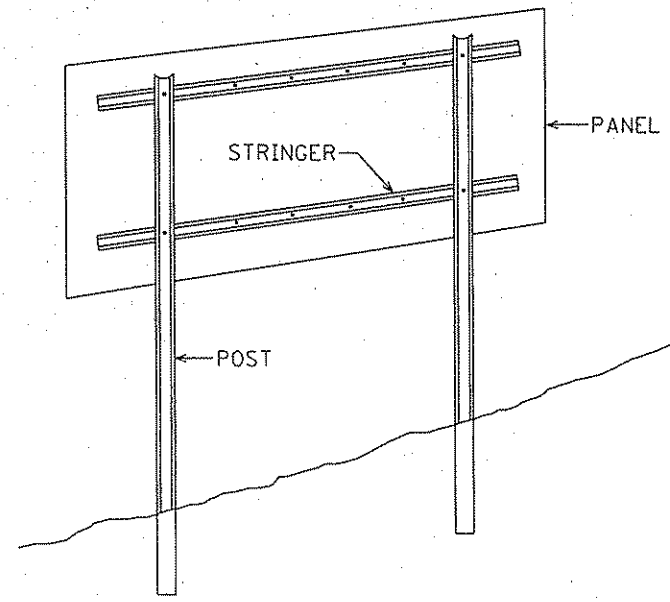
"U POST" SPLICE



"U POST" MOUNTING
TYPE "C" SIGNS



TYPICAL TYPE "C" INSTALLATIONS

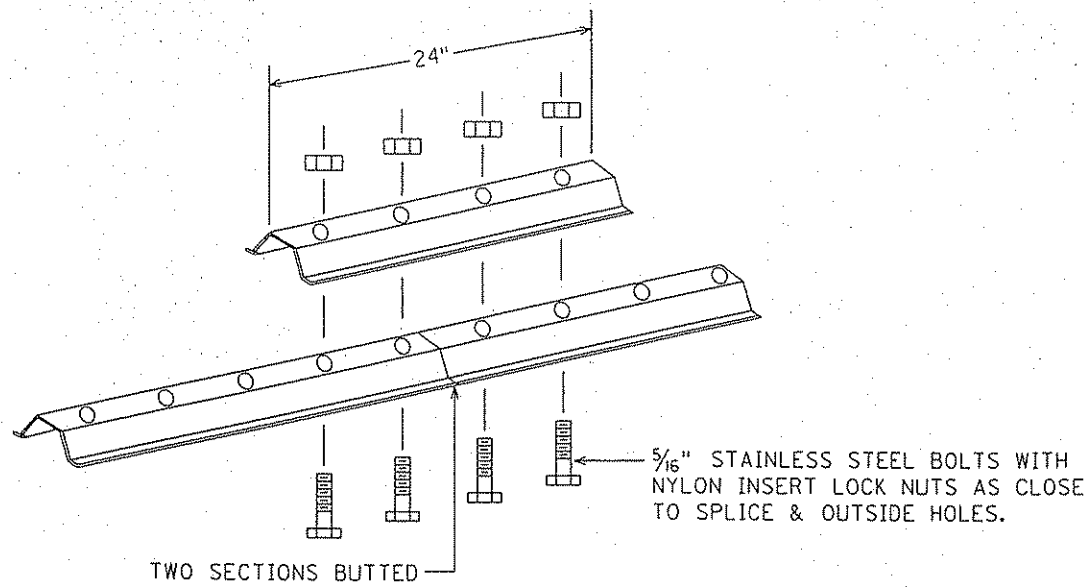


TYPICAL TYPE "D" INSTALLATION

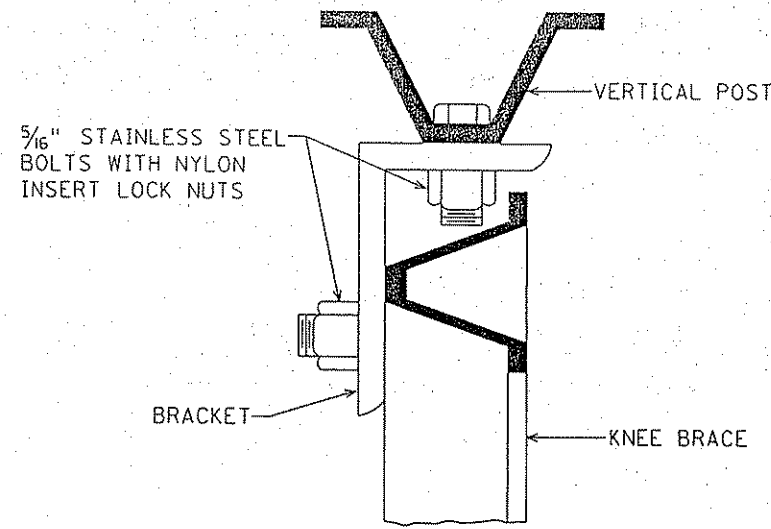
NOTES:

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

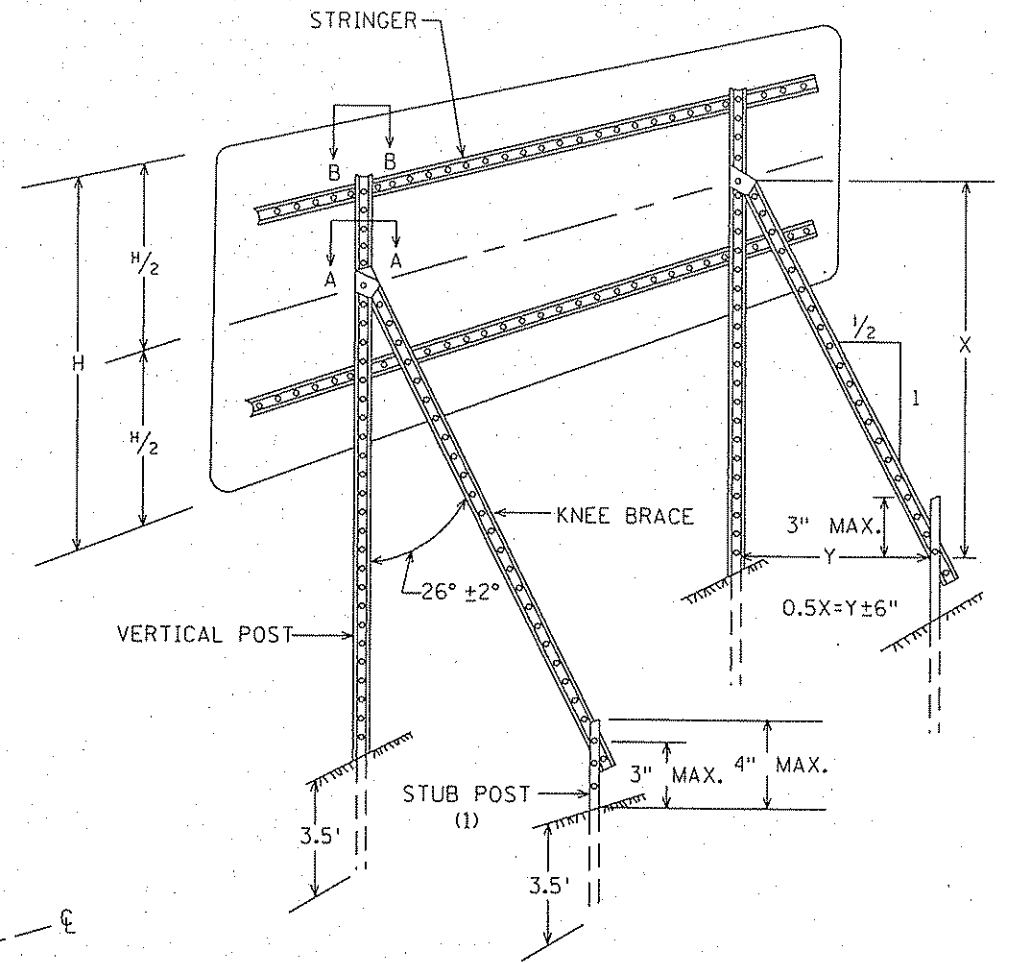
TYPE C & D SIGN
STRUCTURAL DETAILS



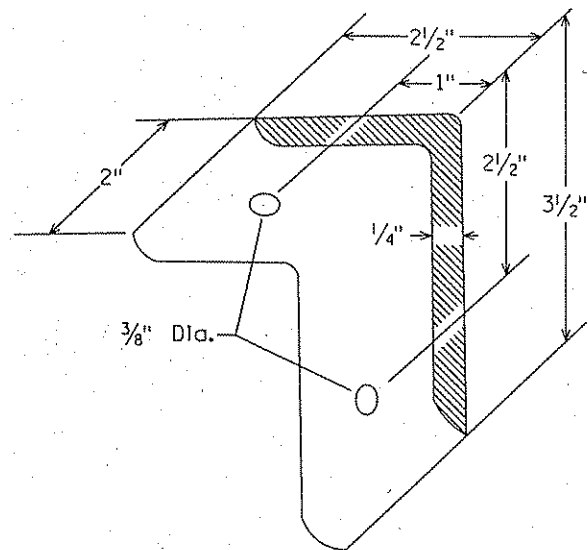
LATERAL BRACE OR STRINGER
SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

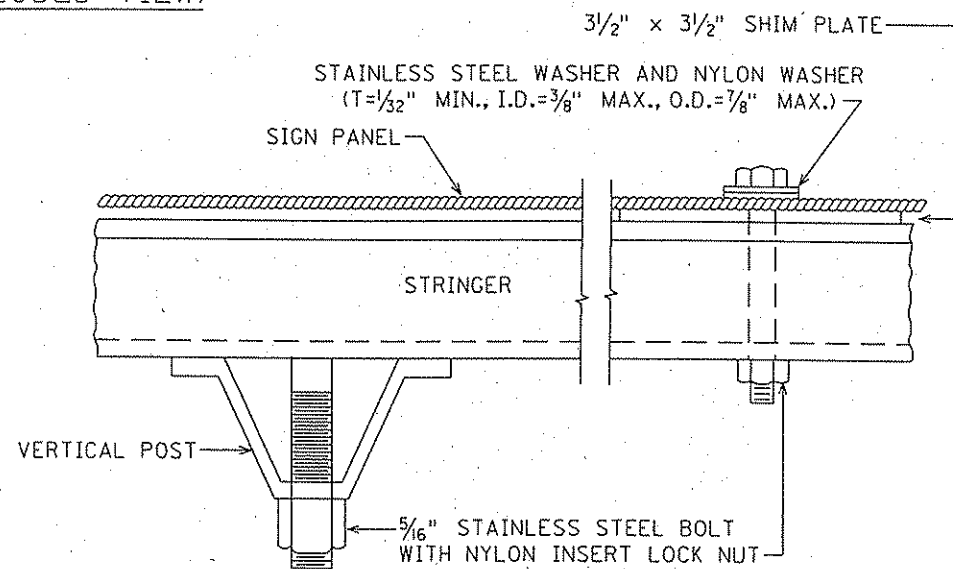


TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS

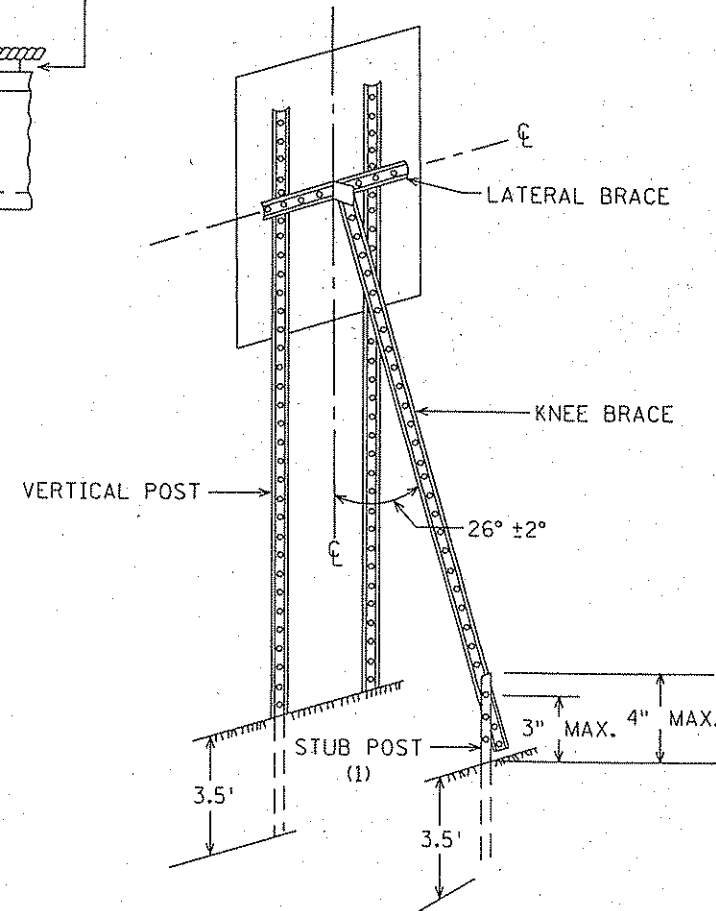


A-FRAME BRACKET

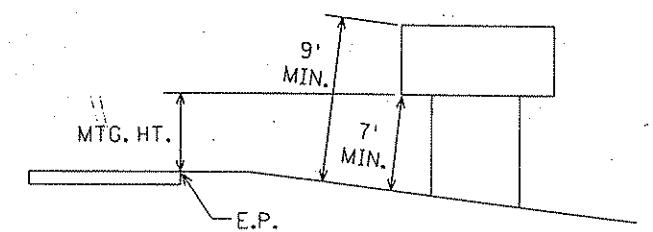
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



SECTION B-B



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



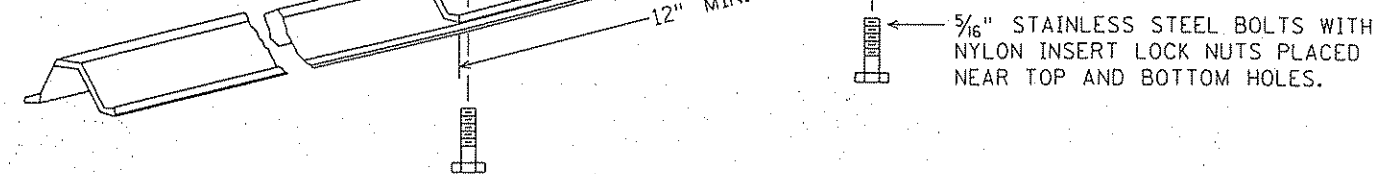
TYPICAL MOUNTING

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

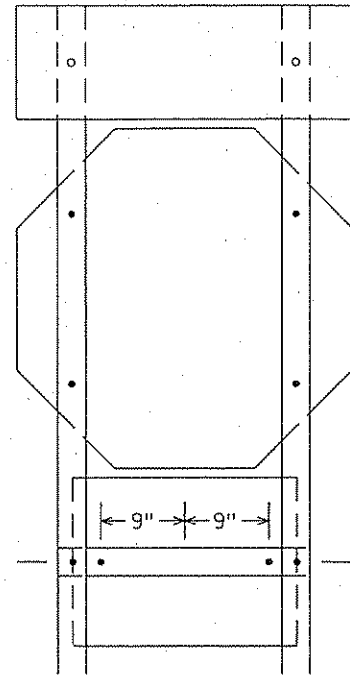
TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 2 of 3

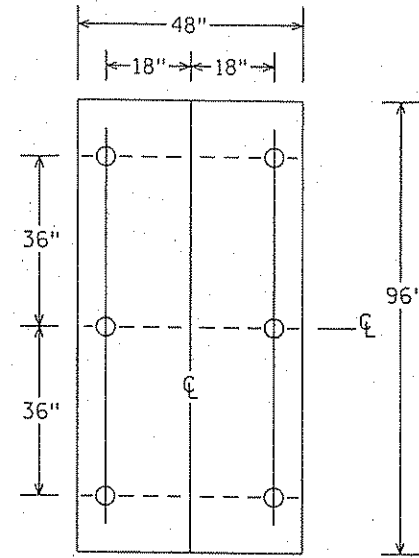
KNEE BRACE SPLICE



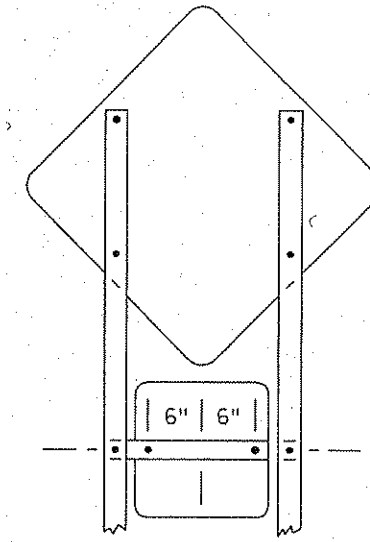
Revised 6-18-99



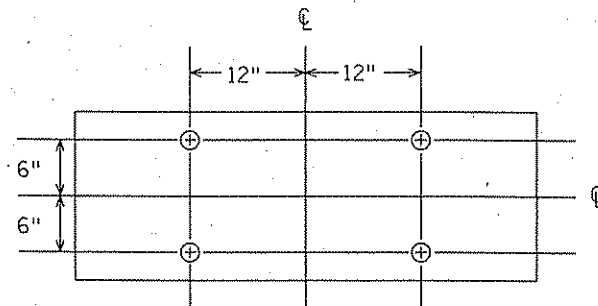
R6-1, R1-1 & (R6-3 OR R6-3a)
MOUNTING



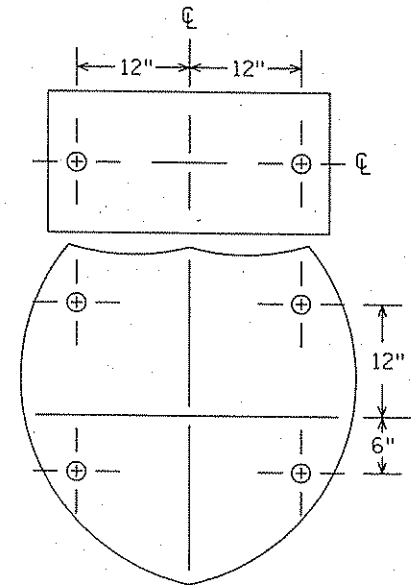
PUNCHING FOR R2-4b
SPEED LIMIT



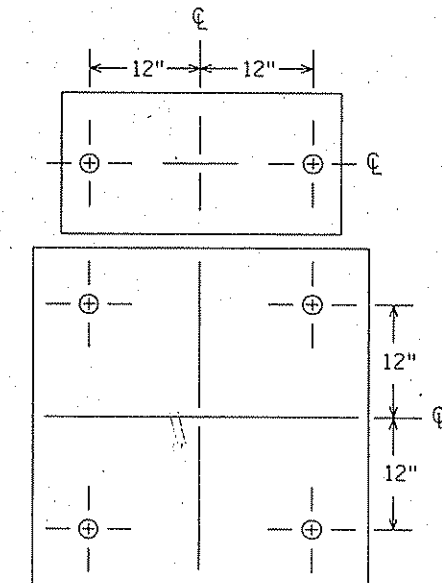
(W1-1, W1-2, W1-3, W1-4 OR W1-5) & W13-1
MOUNTING



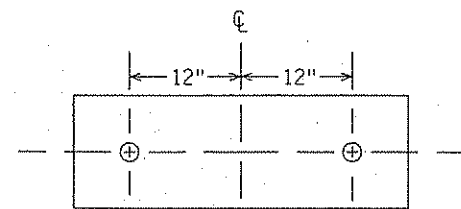
PUNCHING FOR R6-1(48" x 18")



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



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

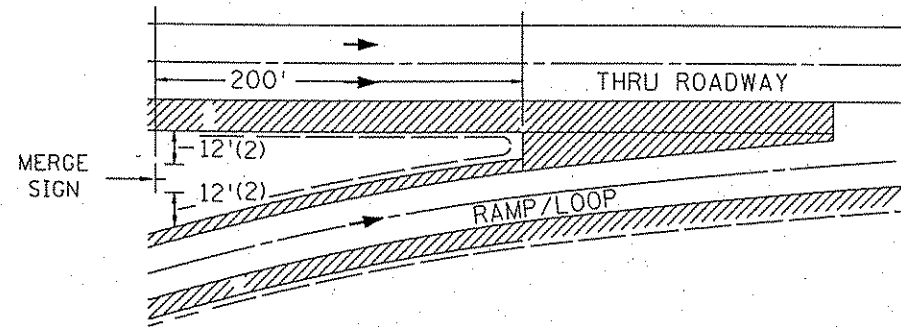
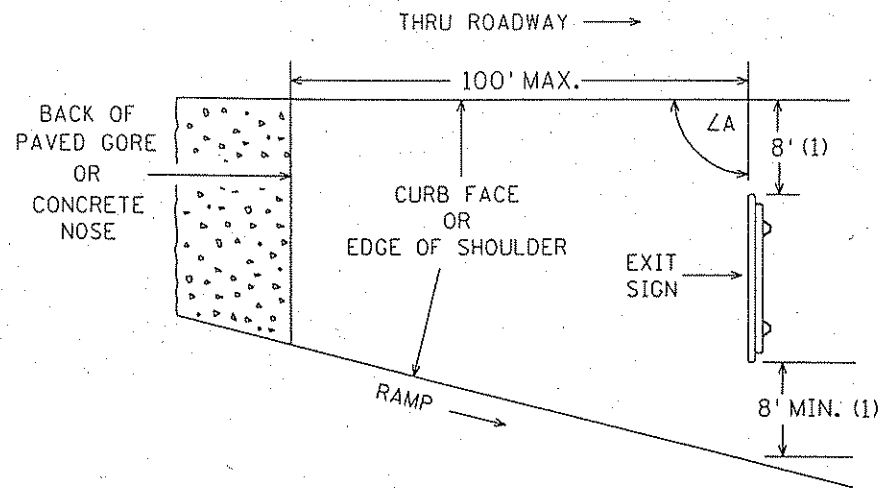


PUNCHING FOR R6-1(36" x 12")

TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 3 of 3

GORE PLACEMENT



SPECIFIC NOTES:

(1) EXIT SIGNS

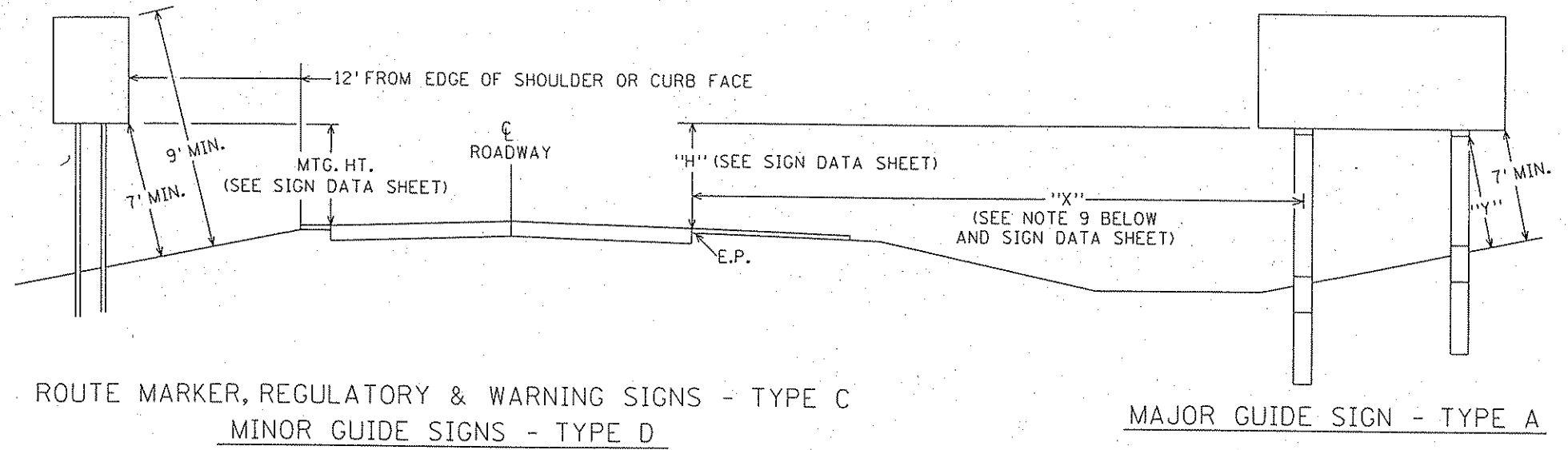
IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE OTE SIGNING UNIT.

IF THE GORE NEEDS TO BE DELINEATED, INSTALL A HAZARD MARKER X4-2 JUST BEYOND THE PAVED GORE. IN ADDITION, INSTALL RAMP DELINEATORS ON SEPARATE POSTS TO MAINTAIN THEIR PROPER LOCATIONS AND SPACINGS.

(2) MERGE SIGNS

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

ROADSIDE PLACEMENT

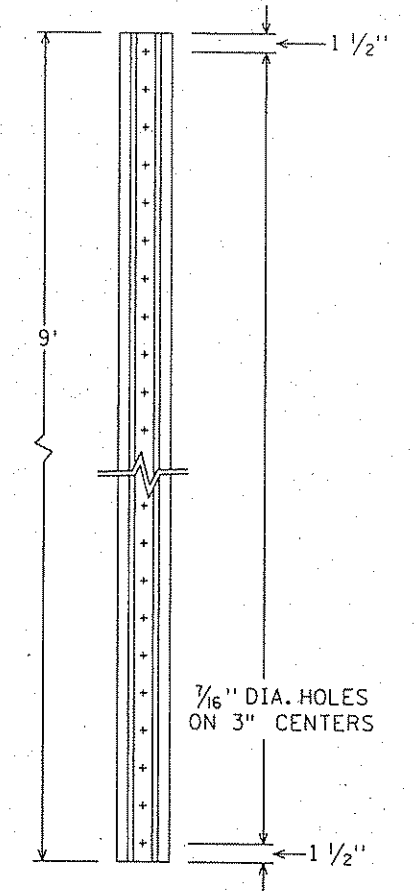
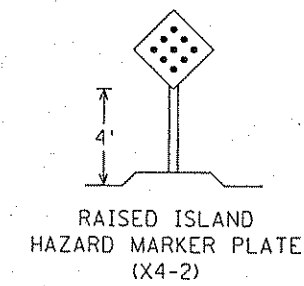
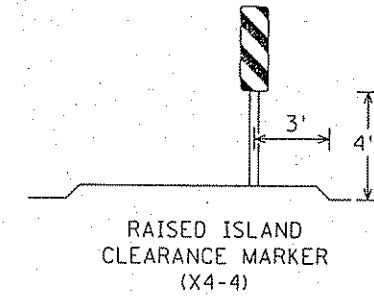
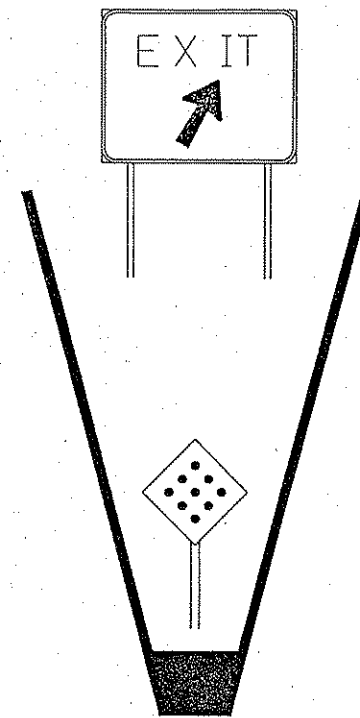
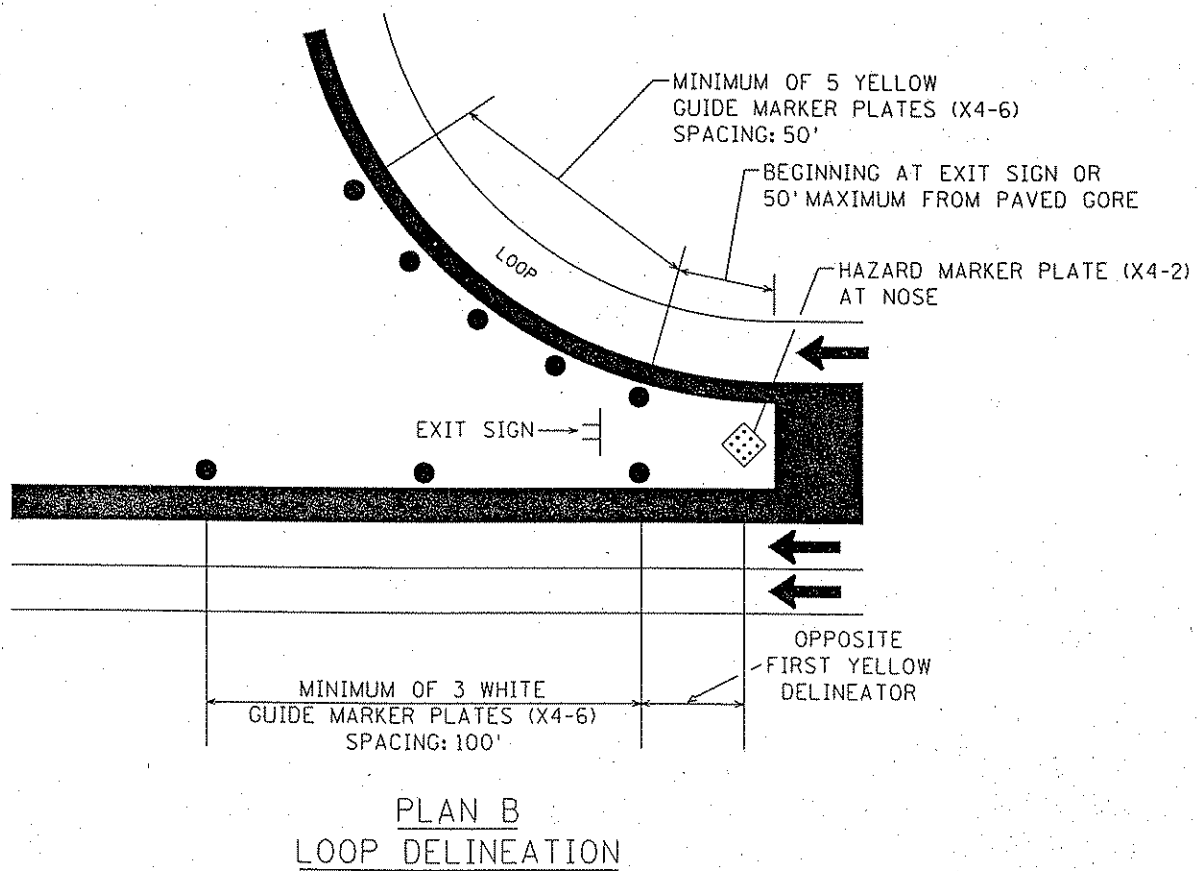
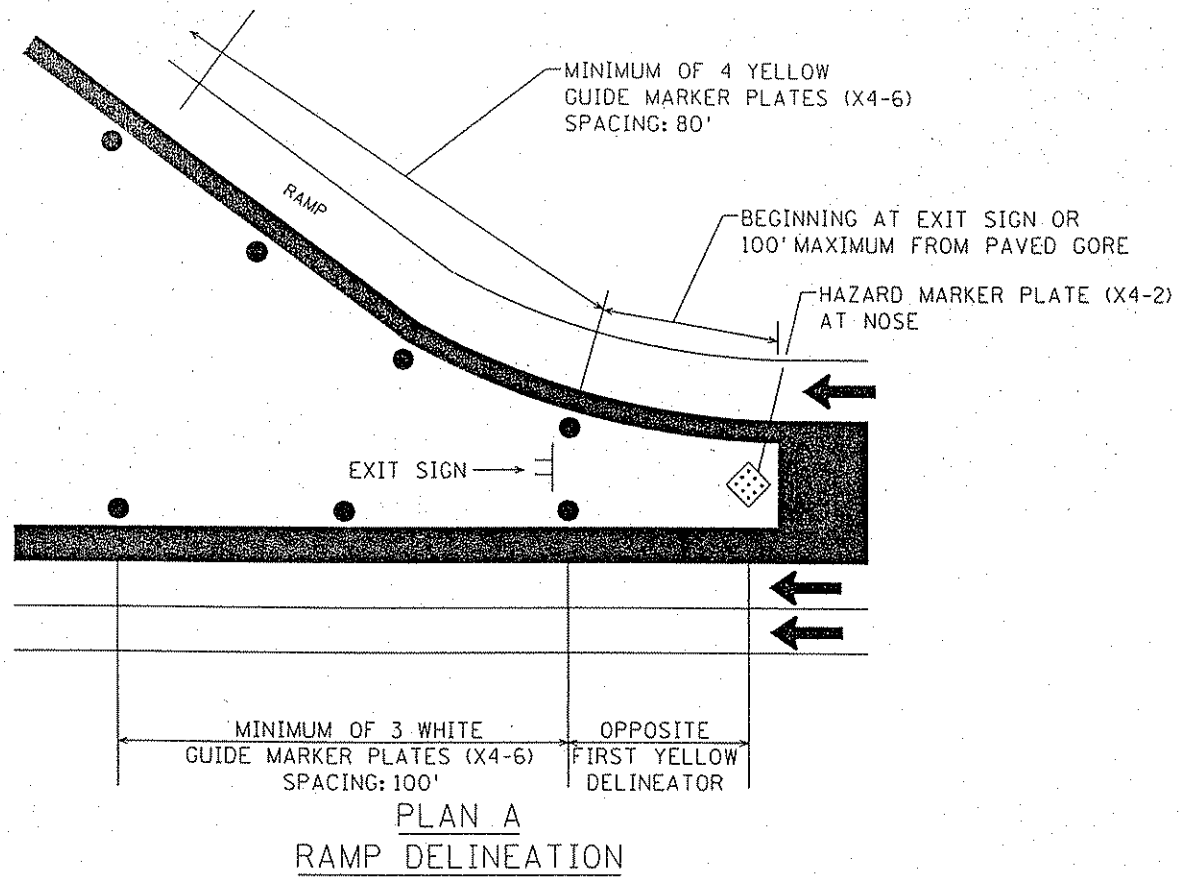


NOTES:

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

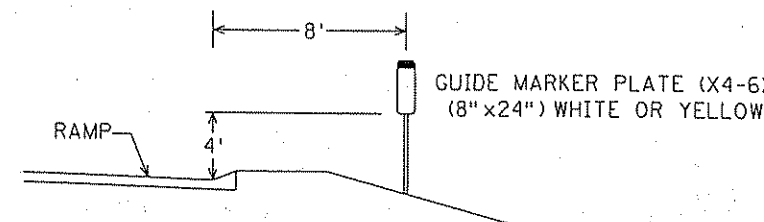
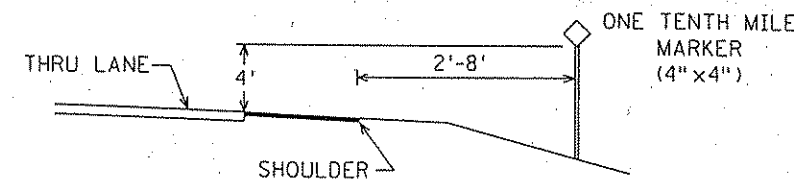
SIGN PLACEMENT

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 POST SKATING 13HT.591 11-01-01
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 lvandra

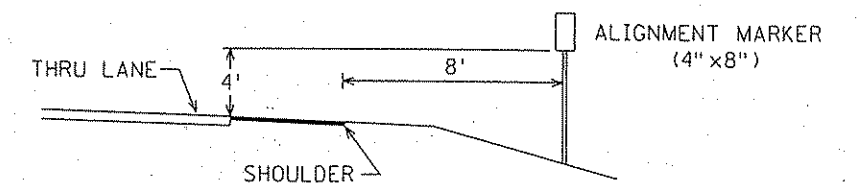
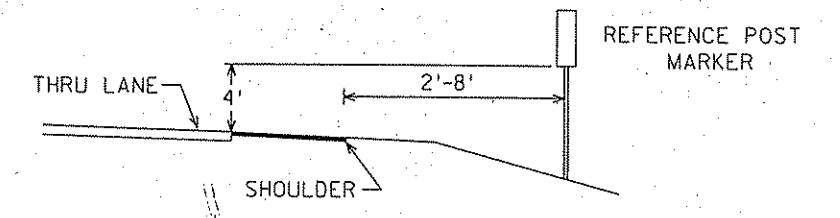


MN/DOT 3401
NORMAL WEIGHT = 2 LB./FT.

DELINEATOR POST



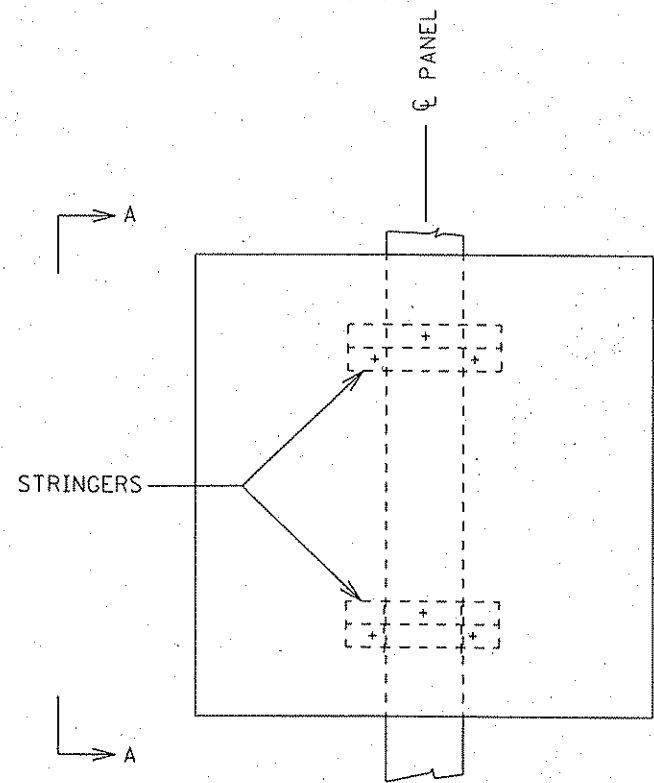
TYPICAL PLACEMENT



DELINEATORS AND MARKERS

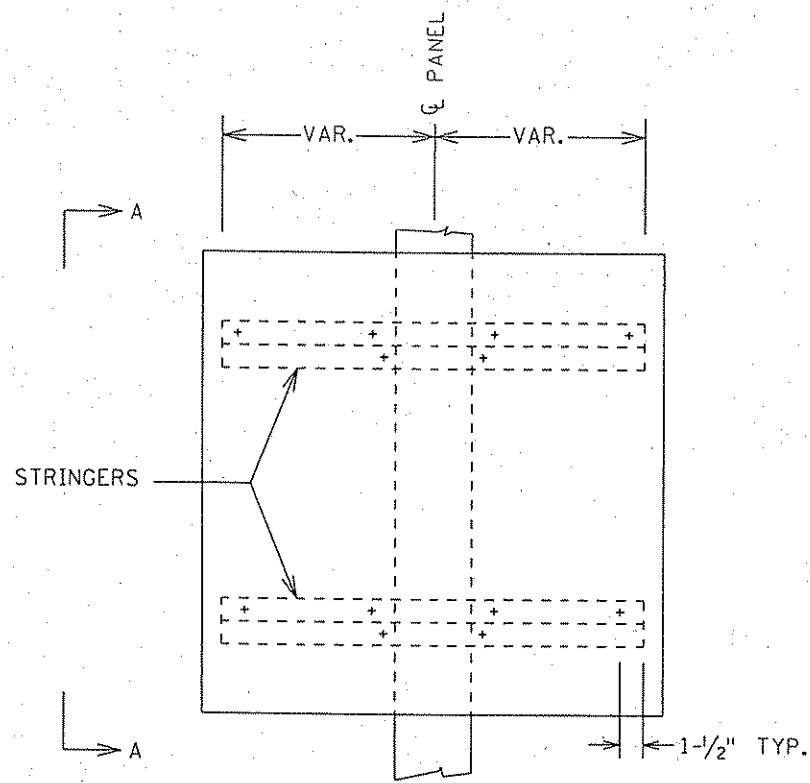
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POST SKATING (SHT. 001) 11-01-01

Revised 6-11-01



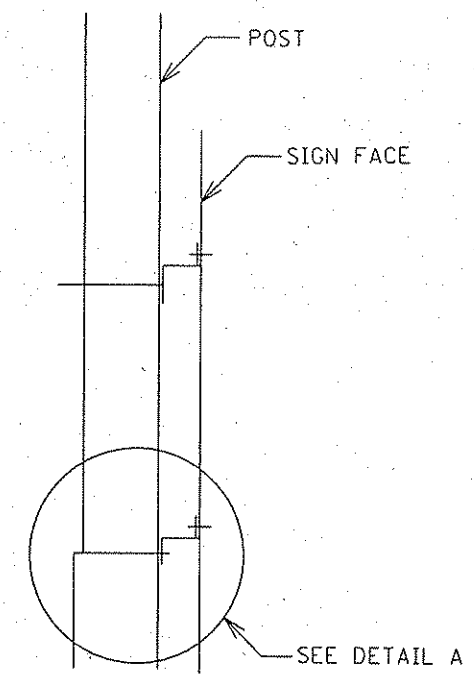
TYPE "C" SIGNS WITH SINGLE POST PUNCHING

ELEVATION

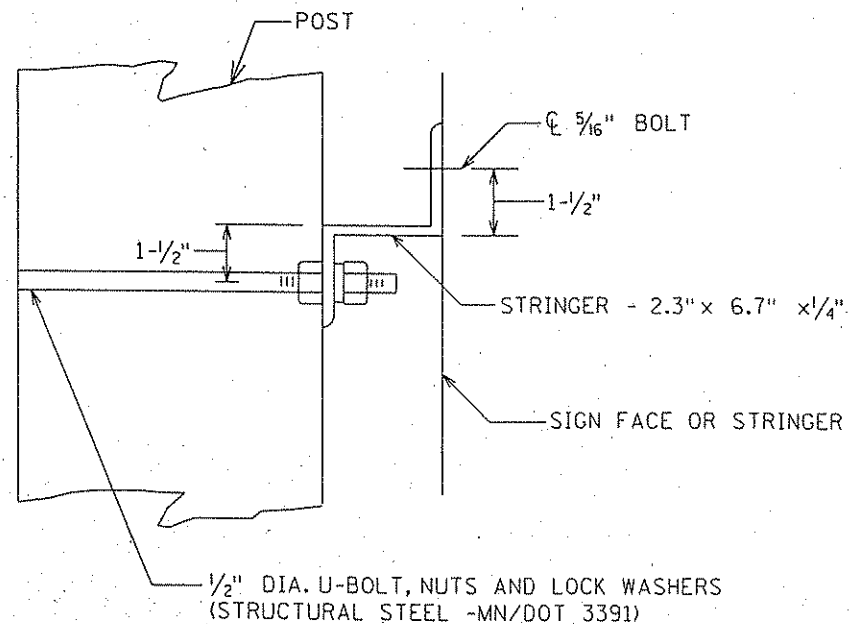


TYPE "C" SIGNS WITH 2-POST PUNCHING

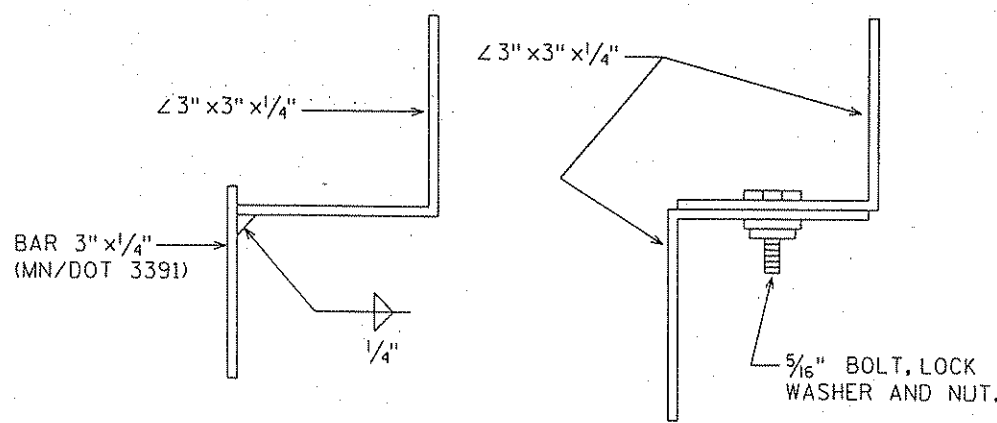
ELEVATION



VIEW A-A



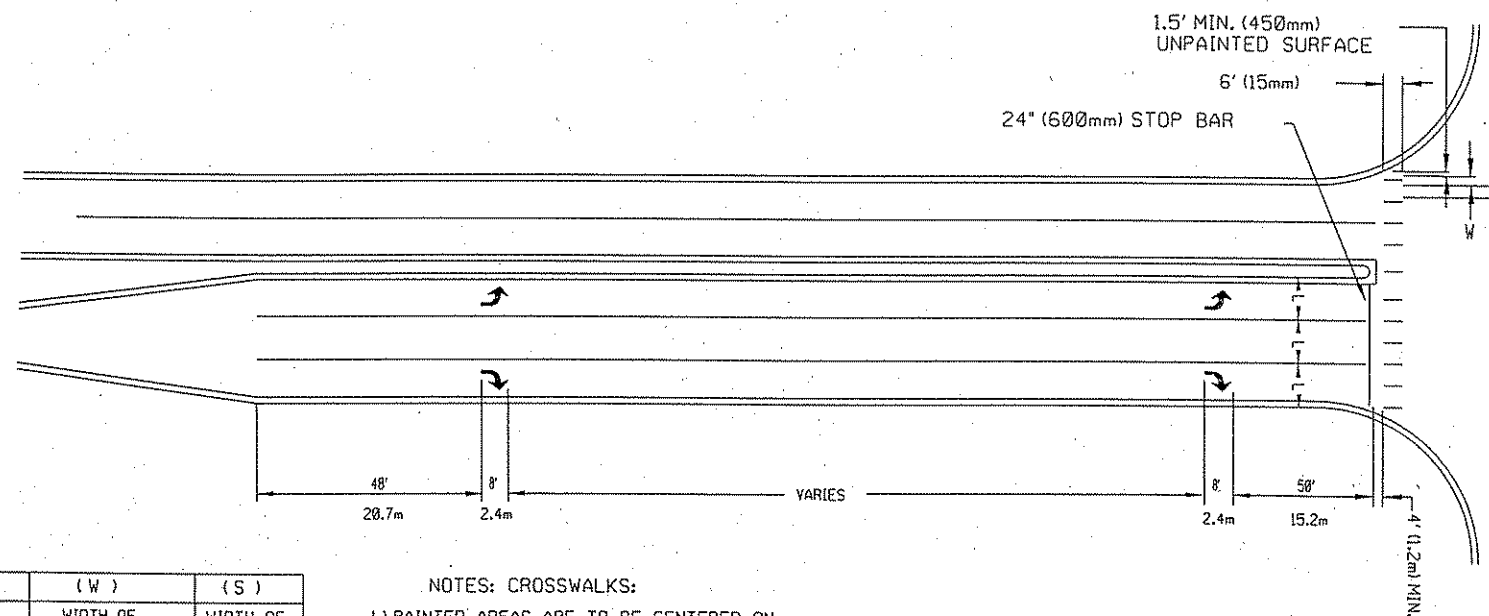
DETAIL A



DETAIL A STRINGER ALTERNATES

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

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



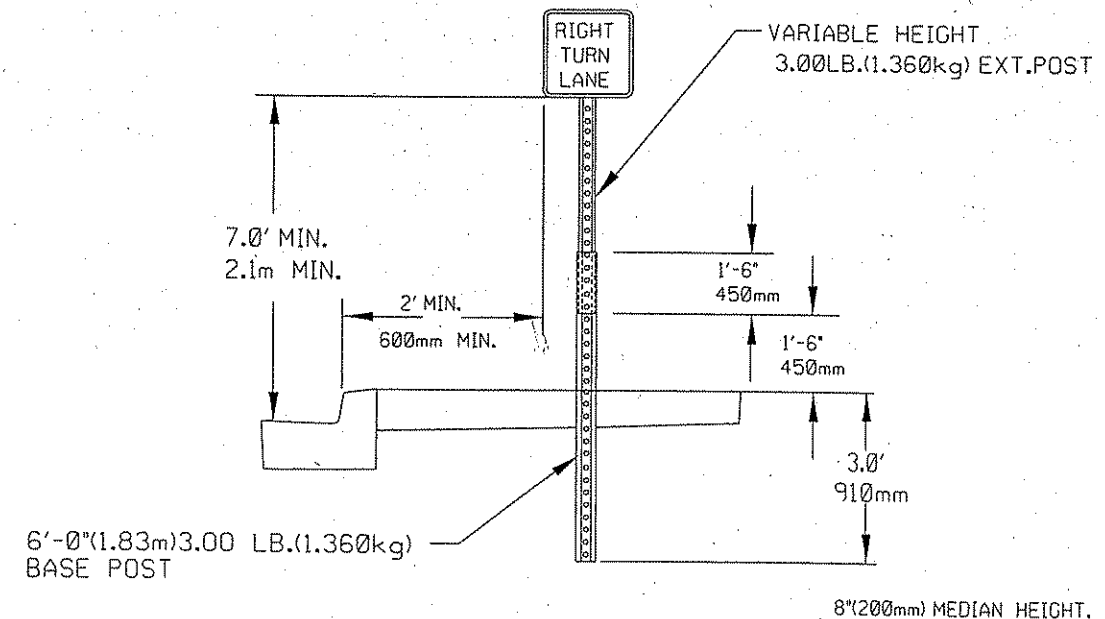
(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
2.7m	600mm	750mm
3.0m	750mm	750mm
3.3m	750mm	900mm
3.6m	900mm	900mm
4.0m	900mm	1100mm

NOTES: CROSSWALKS:

- 1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.
- 2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMPERS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERIFIED DURING CONSTRUCTION BY THE FIELD ENGR.
- 3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES, EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.
- 4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.
- 5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3m) INSIDE LANE.

GROUND POST MOUNT SIGN INSTALLATION TYPICAL



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SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26815

NO.	DATE	BY	REVISION DESCRIPTION



Howard R. Green Company

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ST. PAUL, MINNESOTA 55108
(651) 644-4389

ANOKA COUNTY
CSAH 9 AND CSAH 20
SP 02-609-13 (COUNTY)
SP 198-020-19 (CITY)

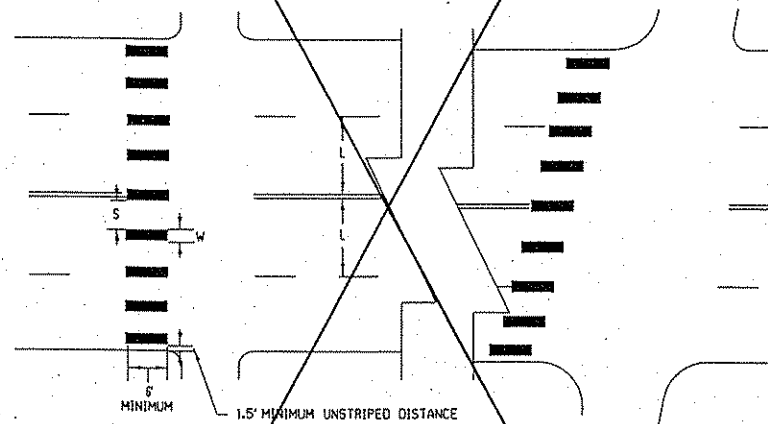
SIGNING AND STRIPING DETAILS

SHEET NO.

47

MARKINGS FOR PEDESTRIAN CROSSWALKS

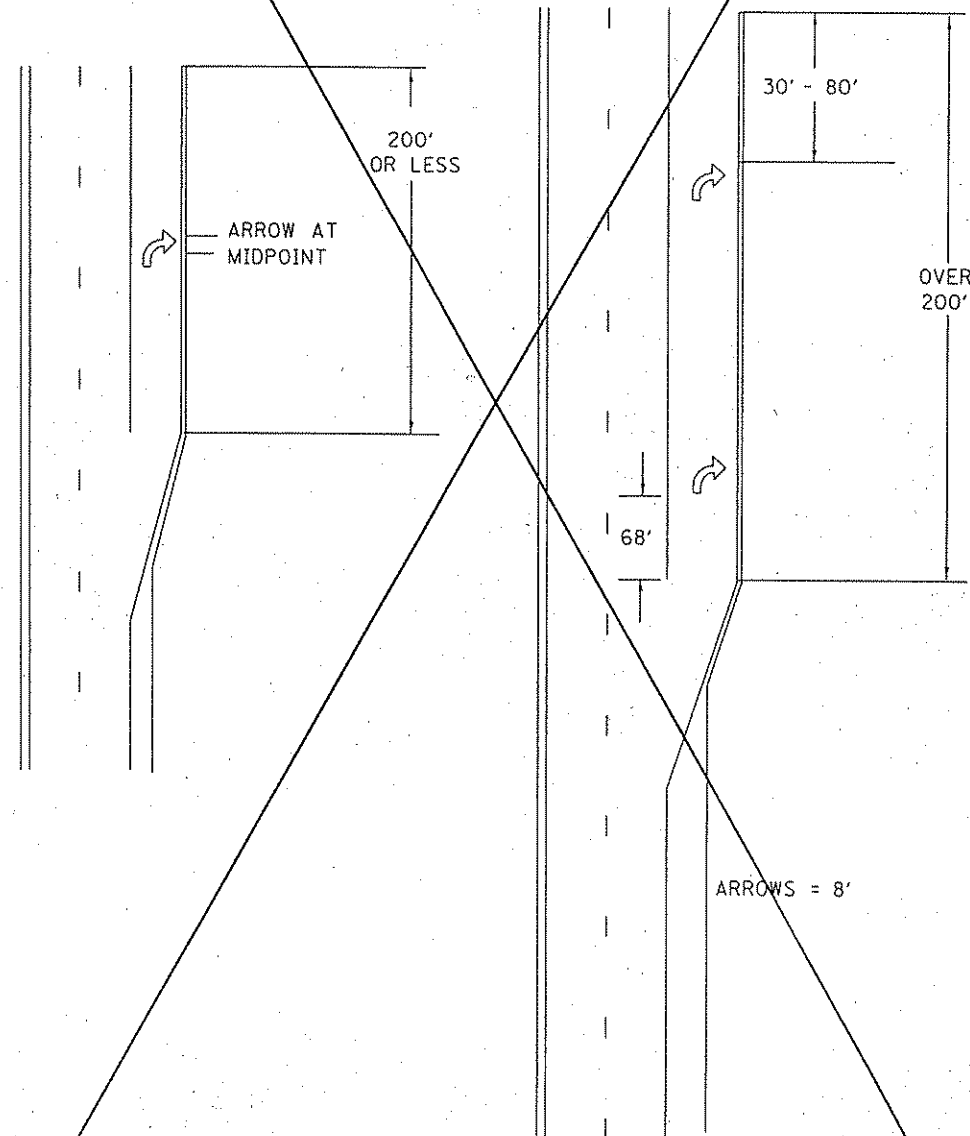
(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'



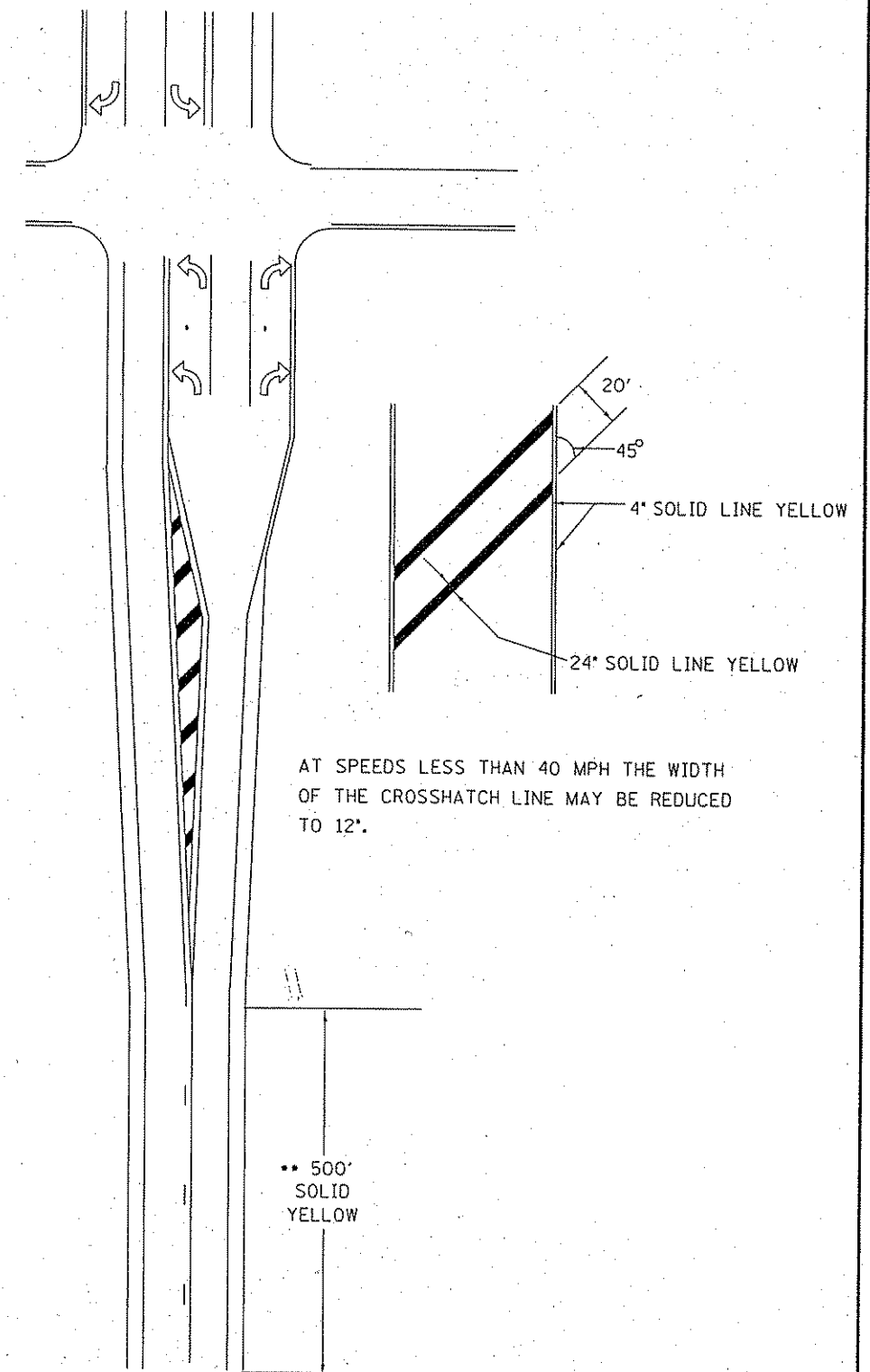
NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FEET CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11 FOOT INSIDE LANE.
4. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.

TYPICAL MESSAGE PLACEMENT FOR TURN LANES



TYPICAL MARKINGS FOR LEFT TURN ISLANDS



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 CAD FILE: o:\cod\818750J\design\sheet\818750J.ssh

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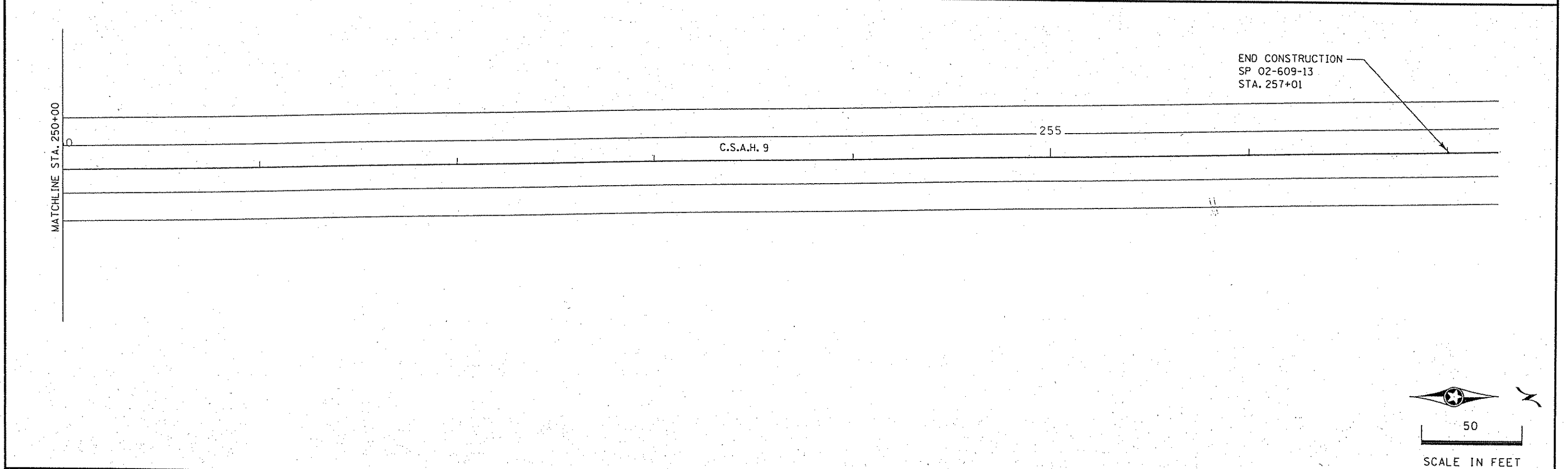
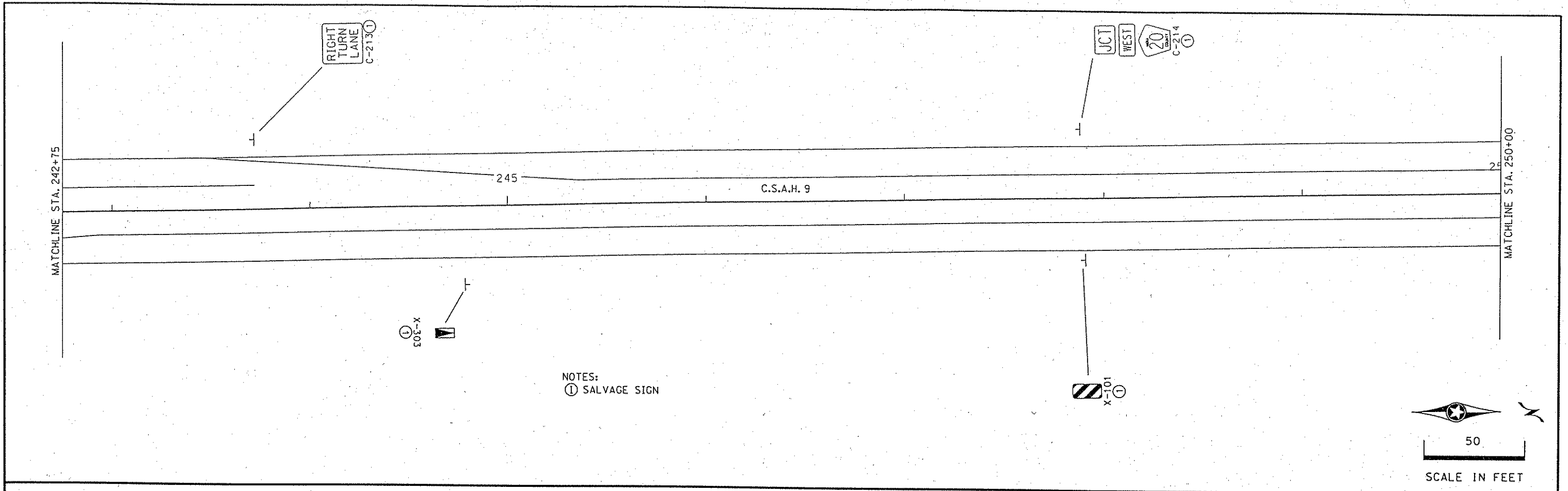
NO.	DATE	BY	REVISION DESCRIPTION

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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

SIGNING AND STRIPING DETAILS


SHEET NO.
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DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:28:24 PM lvondra
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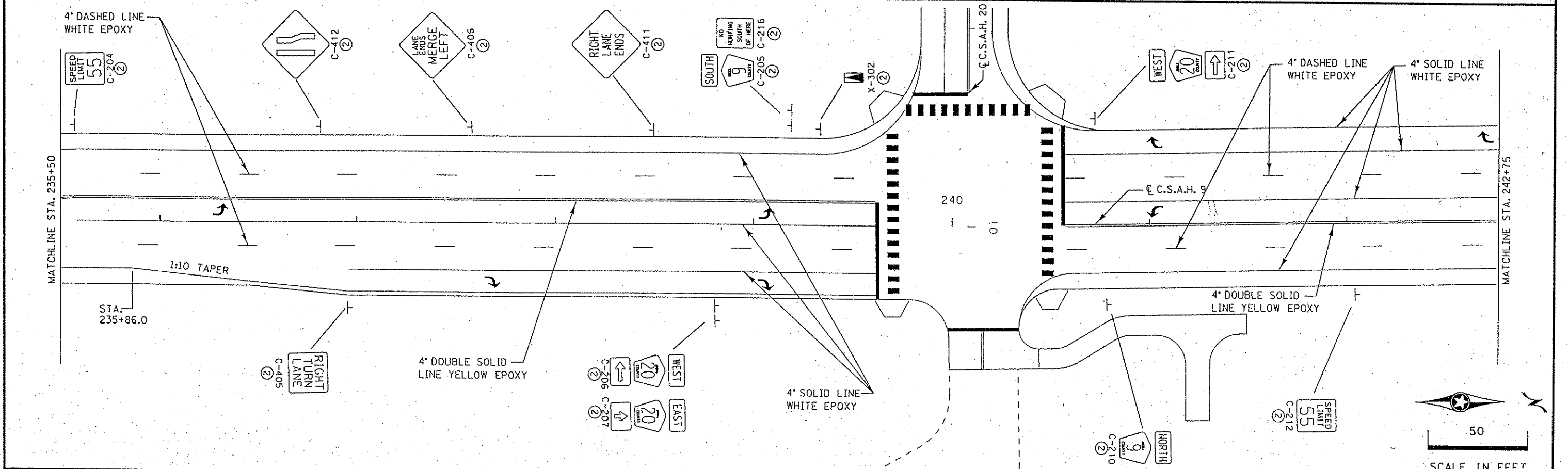
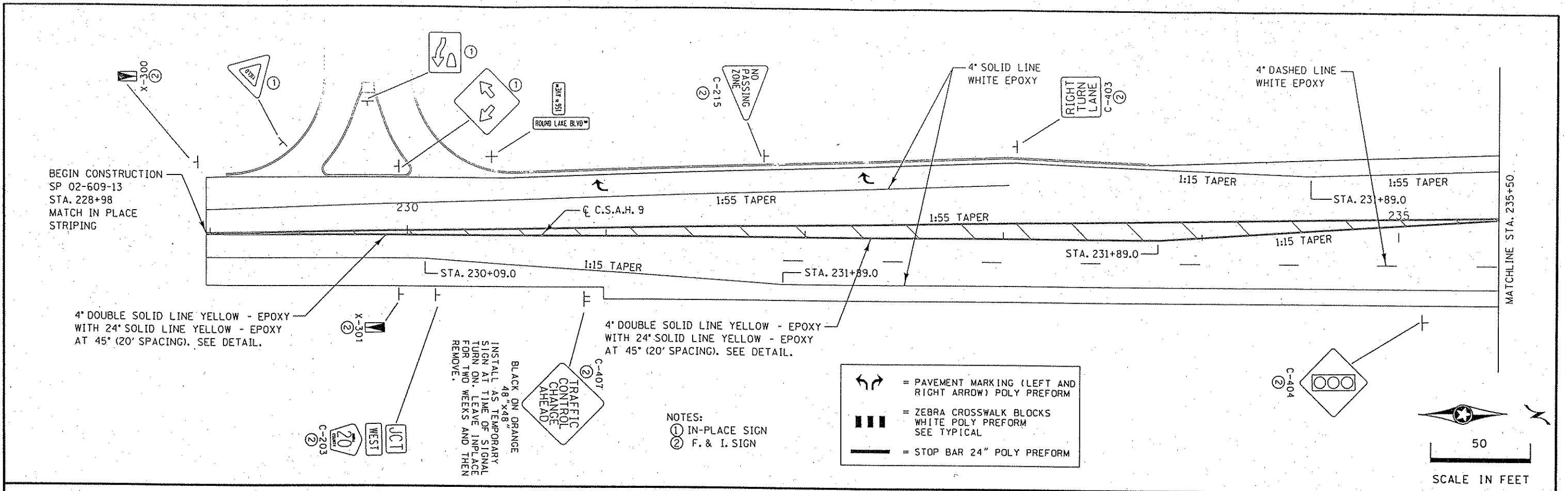
NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389

 Howard R Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

IN-PLACE SIGNS

SHEET NO.
 50



DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:28:29 PM lvandra
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 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 25815

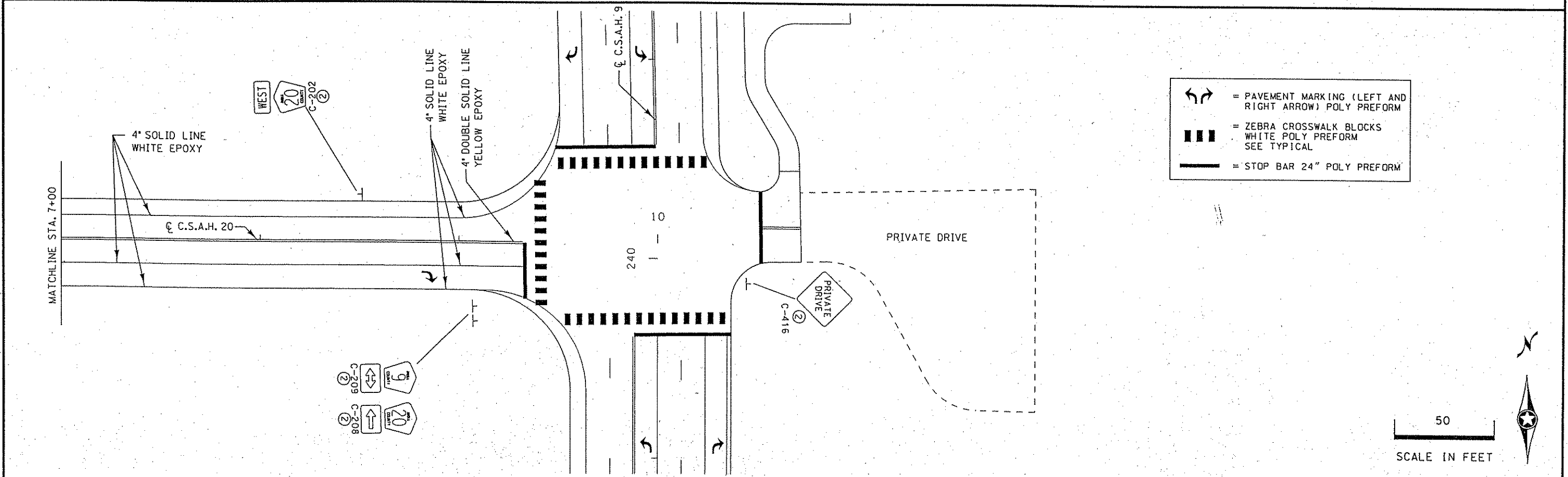
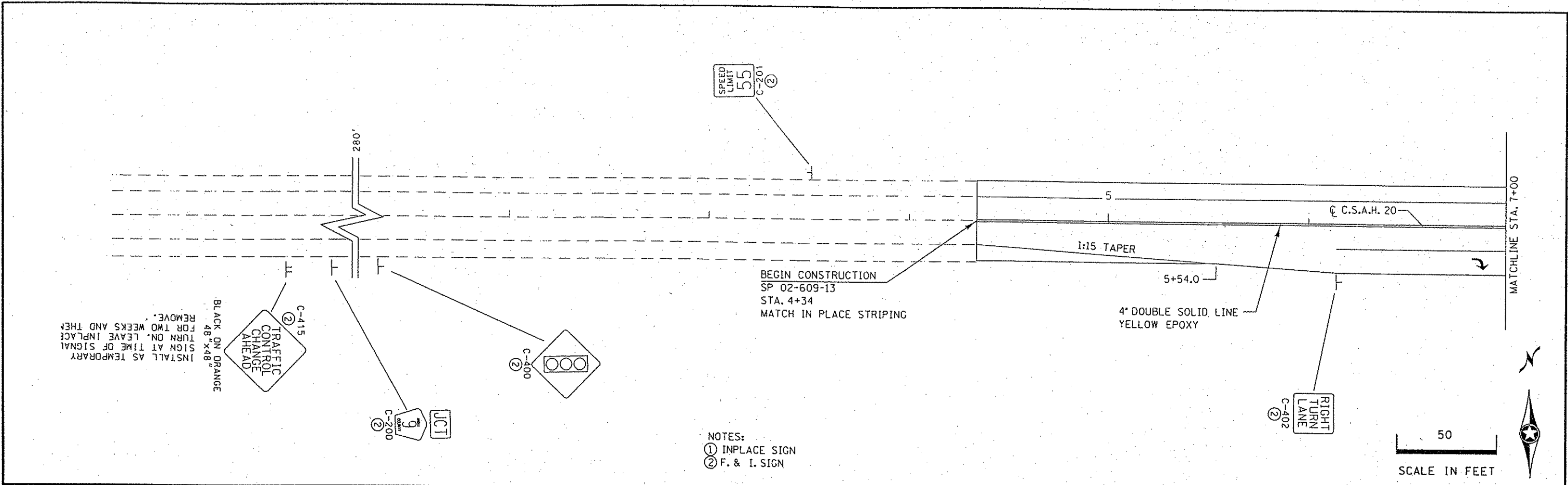
NO.	DATE	BY	REVISION DESCRIPTION

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 Howard R Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

SIGNING AND STRIPING PLANS

SHEET NO.
 52



DRAWN BY: WCK JOB DATE: 05-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: 03:28:34 PM ivandra
 CAD FILE: o:\cad\818750\design\sheet\818750J.ssg

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 SIGNATURE: *Brian C. Johnson* DATE: 02-11-2005
 PRINTED NAME: BRIAN C. JOHNSON LIC. NO. 26615

NO.	DATE	BY	REVISION DESCRIPTION

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ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

SIGNING AND STRIPING PLANS

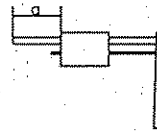
SHEET NO.
 54

MAST ARM MOUNTED SIGNING

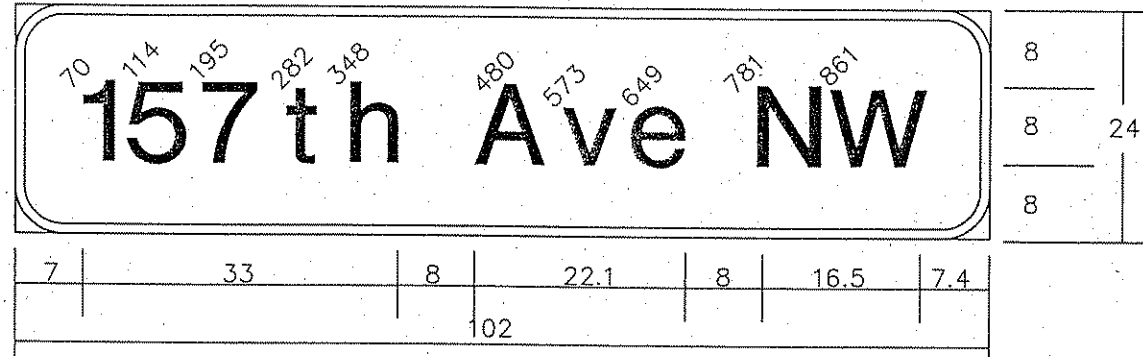
TYPE "D" SIGNS - F & I							
SIGN PANEL	SIZE (inches)	NO. REQ.	NO. POSTS PER SIGN	POST SPACING	AREA (sq.ft.) PER SIGN	POLE NO.	a
D-1	102x24	1	3	45"	17.00	1	28'
D-2	120x24	1	2	54"	20.00	4	8'
D-3	102x24	1	3	45"	17.00	3	28'

NOTES:

- 1) TYPE "D" SIGN COLOR--WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
- 2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- 3) FOR STRUCTURAL DETAILS, TYPE "D" SIGNS, SEE DETAILS AND STANDARD SIGNS MANUAL.
- 4) FOR TYPE "D" STRINGER AND PANEL--JOINT DETAIL, SEE DETAILS AND STANDARD SIGNS MANUAL.
- 5) TYPE "D" SIGN PANELS SHALL BE FURNISHED AND INSTALLED BY SIGNAL CONTRACTOR INCIDENTAL TO ITEM NO. 2565.511 FOR SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.
- 6) ALL SIGNS SHALL BE FABRICATED USING VIP SHEETING.

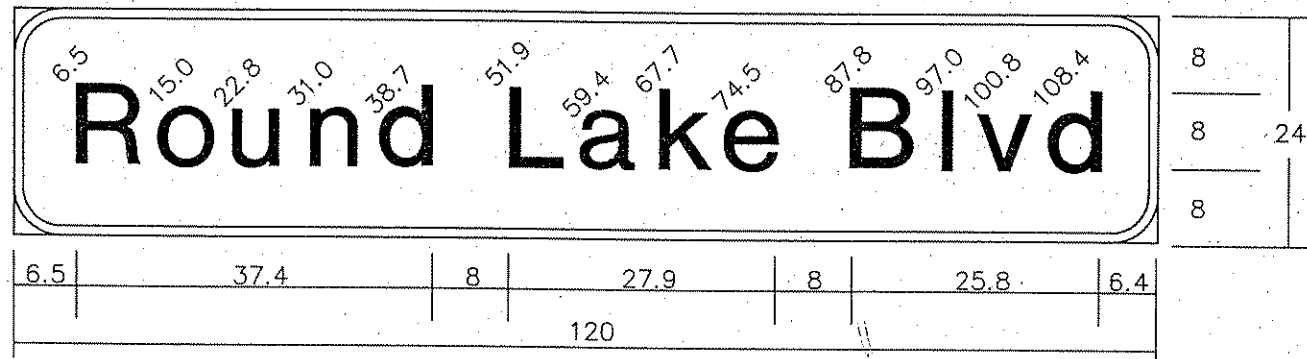


D-1, D-3



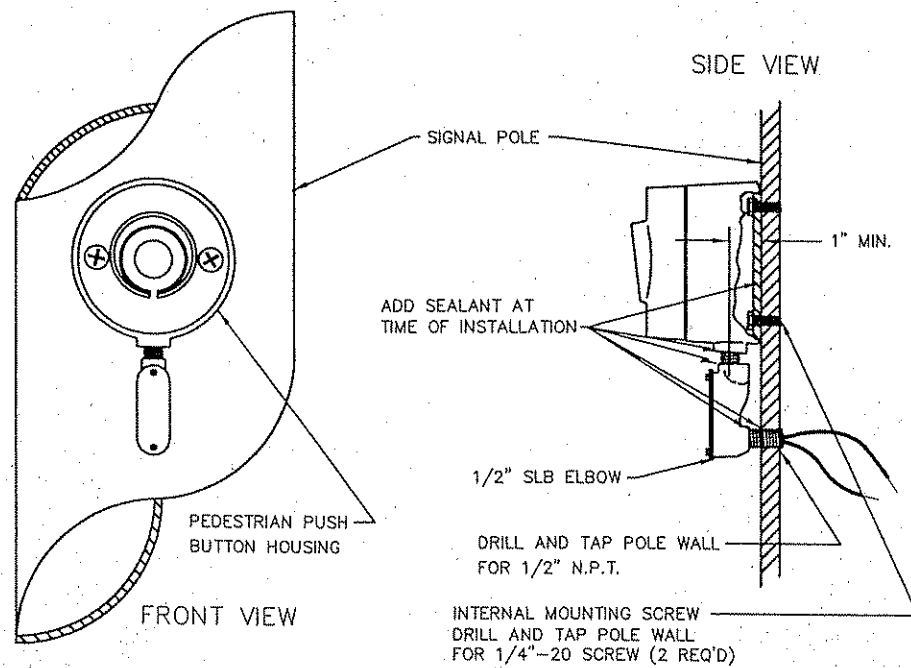
D-1, D-3; 102" x 24", 3.0" Radius, 1.0" Border, White on Green
"157th Ave NW" E Mod.

D-2



D-2; 120" x 24", 3.0" Radius, 1.0" Border, White on Green
"Round Lake Blvd" E Mod.

MAST ARM POLE
PEDESTRIAN PUSH BUTTON DETAIL



DRAWN BY: WCK JOB DATE: 5-10-04
 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: March 31, 2004 3:34:59 p.m.
 CAD FILE: 818750\design\Sheets\signal\SIGNAL-DETAIL503D104.DWG (R)

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 SIGNATURE: *Stephen J. Manhaac* DATE: 02-11-05
 PRINTED NAME: STEPHEN J. MANHAAC, NO. 22428

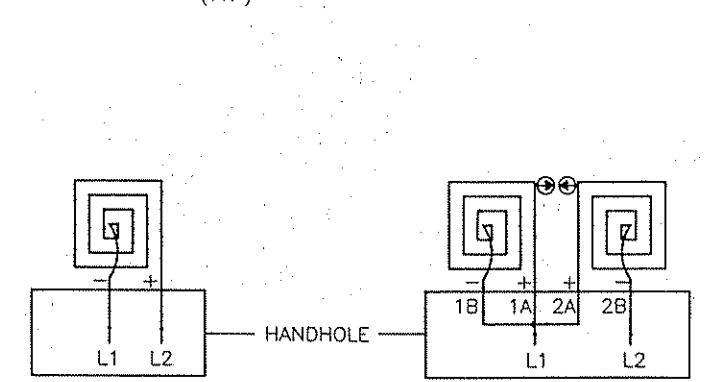
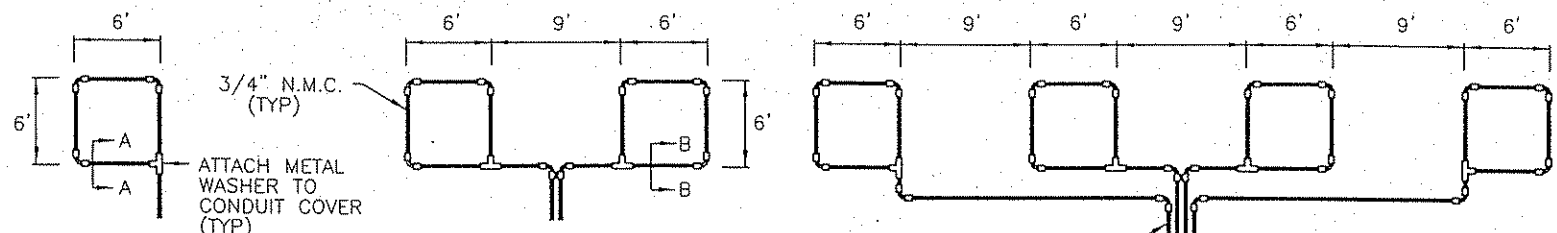
NO.	DATE	BY	REVISION DESCRIPTION

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 Howard R. Green Company

ANOKA COUNTY
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 SP 02-609-13
 CP 90-20

TRAFFIC SIGNAL SYSTEM
 SIGNING & DETAILS

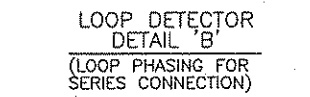
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 55



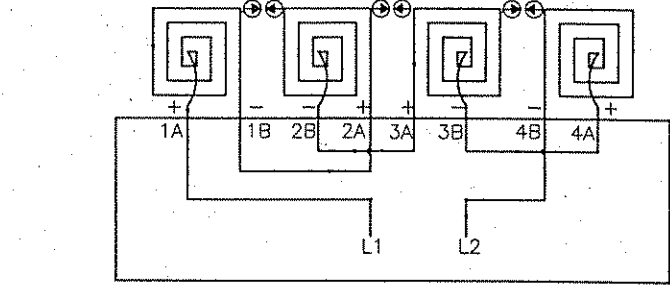
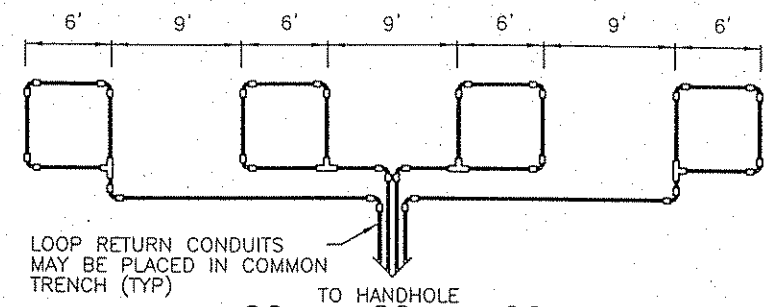
LOOP DETECTOR
DETAIL 'A'
(LOOP PHASING FOR
SINGLE CONNECTION)

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)

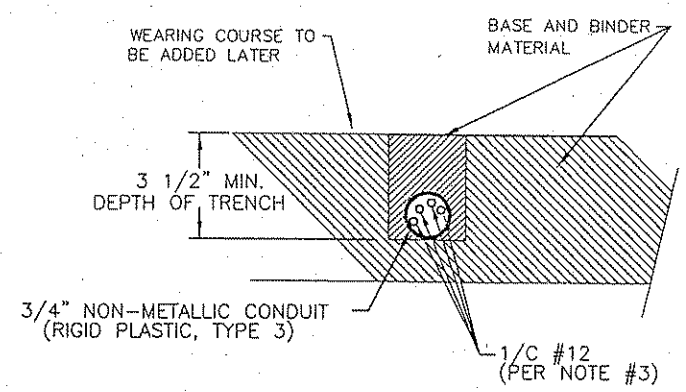


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED
IN THE HANDHOLE AS FOLLOWS:

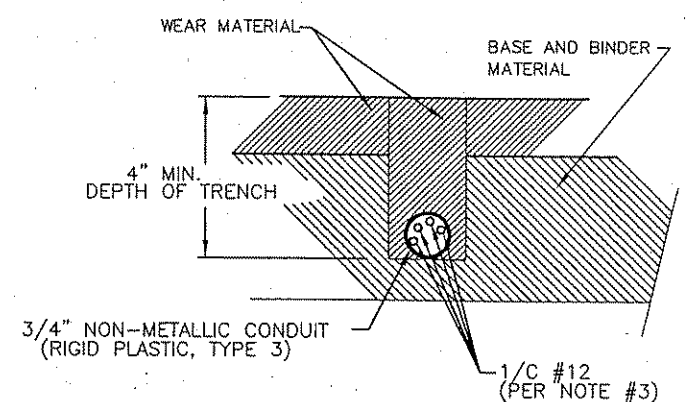
- L1 TO 1A
- 1B TO 2A
- 2B TO 3A
- 3B TO 4A
- 4B TO L2

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

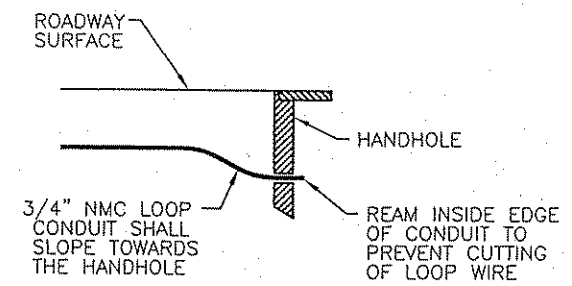
LOOP DETECTOR
DETAIL 'C'
(LOOP PHASING FOR
SERIES CONNECTION)



SECTION A-A
DETAIL FOR LOOP INSTALLATION
IN NEW ROADWAY



SECTION B-B
DETAIL FOR LOOP INSTALLATION
IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
- 2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
- 3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
- 4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
- 5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
- 6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
- 7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

STANDARD PLATES	
THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:	
PLATE NO.	DESCRIPTION
* 7035 L	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
* 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

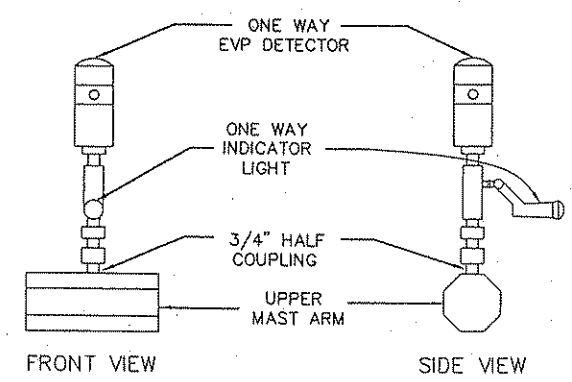
LEGEND OF SYMBOLS

CONTROLLER AND SERVICE EQUIP. NO's	(A)
SIGNAL BASE NO.	(1)
SIGNAL FACE NO.	(2)
LUMINAIRE NO.	(3)
CONTROLLER AND CABINET	(4)
CONTROLLER AND CABINET - IN PLACE	(5)
HANDHOLE	(6)
HANDHOLE - IN PLACE	(7)
RIGID STEEL CONDUIT (RSC)	(8)
RIGID STEEL CONDUIT (RSC) - IN PLACE	(9)
SIGNAL FACE WITH BACKGROUND SHIELD	(10)
SIGNAL FACE W/O BACKGROUND SHIELD	(11)
SIGNAL FACE - IN PLACE	(12)
PEDESTRIAN INDICATORS	(13)
PEDESTRIAN INDICATORS - IN PLACE	(14)
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	(15)
PEDESTRIAN PUSH BUTTON STATION	(16)
TRAFFIC SIGNAL PEDESTAL	(17)
TRAFFIC SIGNAL PEDESTAL - IN PLACE	(18)
TRAFFIC SIGNAL POLE AND MAST ARM	(19)
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	(20)
STREET LIGHT POLE AND LUMINAIRE	(21)
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	(22)
MAST ARM AND LUMINAIRE	(23)
MAST ARM AND LUMINAIRE - IN PLACE	(24)
WOOD POLE	(25)
WOOD POLE - IN PLACE	(26)
SOURCE OF POWER	(27)
RAILROAD SIGNAL - IN PLACE	(28)
RIGHT OF WAY LINE	(29)
CENTERLINE	(30)
EDGE OF ROADWAY	(31)
SHOULDERLINE	(32)
CURB LINE	(33)
STOP BAR	(34)
EMERGENCY VEHICLE PREEMPTION DETECTOR	(35)

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
EGG	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

EVP DETECTOR AND LIGHT
MOUNTING DETAIL ON MAST ARM



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 APPROVED: BCJ JOB NUMBER: 818750J
 CAD DATE: March 31, 2004 3:34:59 p.m.
 CAD FILE: 818750\design\sheet\signal\SIGNAL-DETAILS030104.DWG (8/30/04)

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 SIGNATURE: *Stephen J. Manuac* DATE: 02-11-05
 PRINTED NAME: STEPHEN J. MANUAC NO. 22428

NO.	DATE	BY	REVISION DESCRIPTION

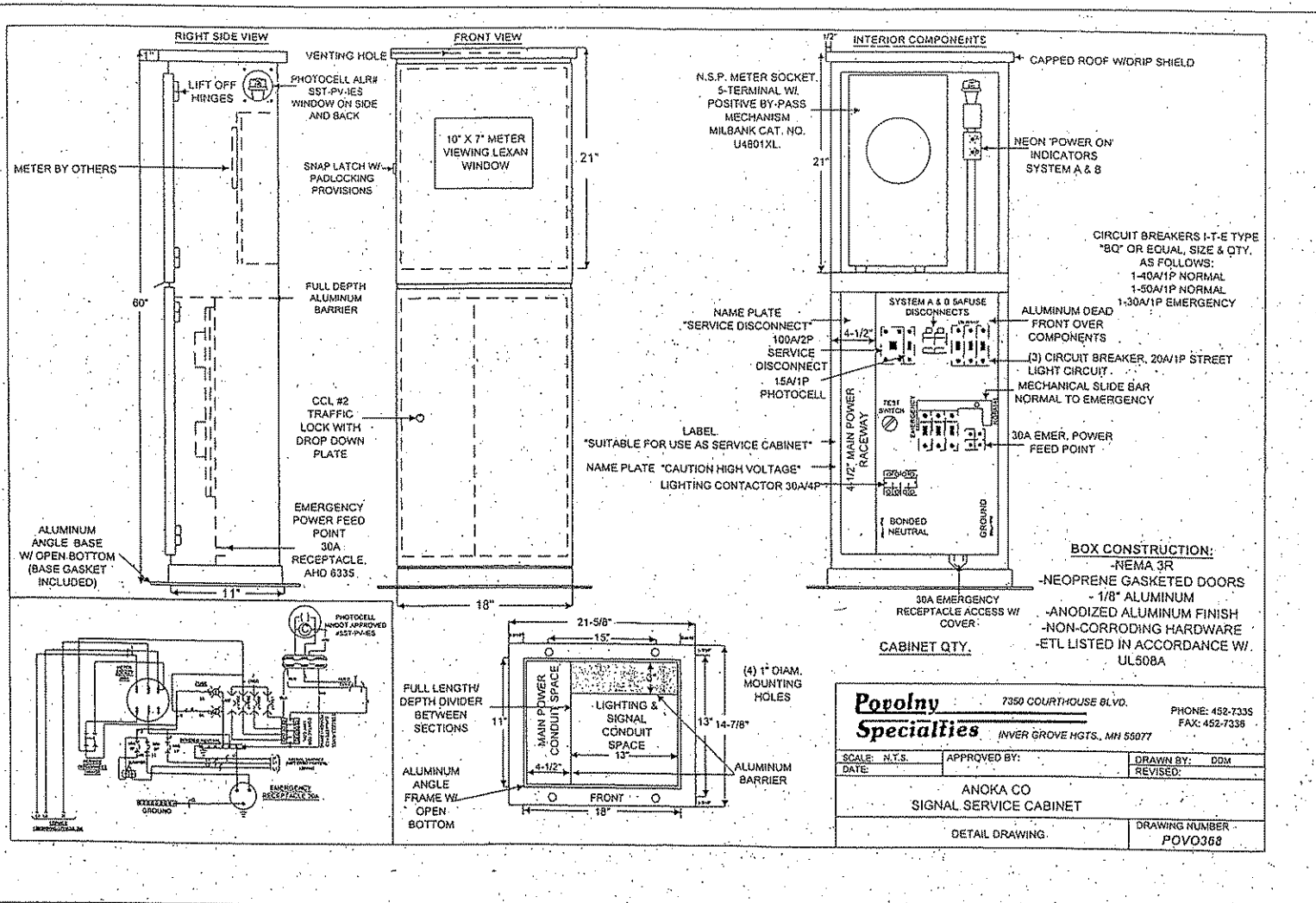
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 Howard R. Green Company

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 SP 02-609-13
 CP 90-20

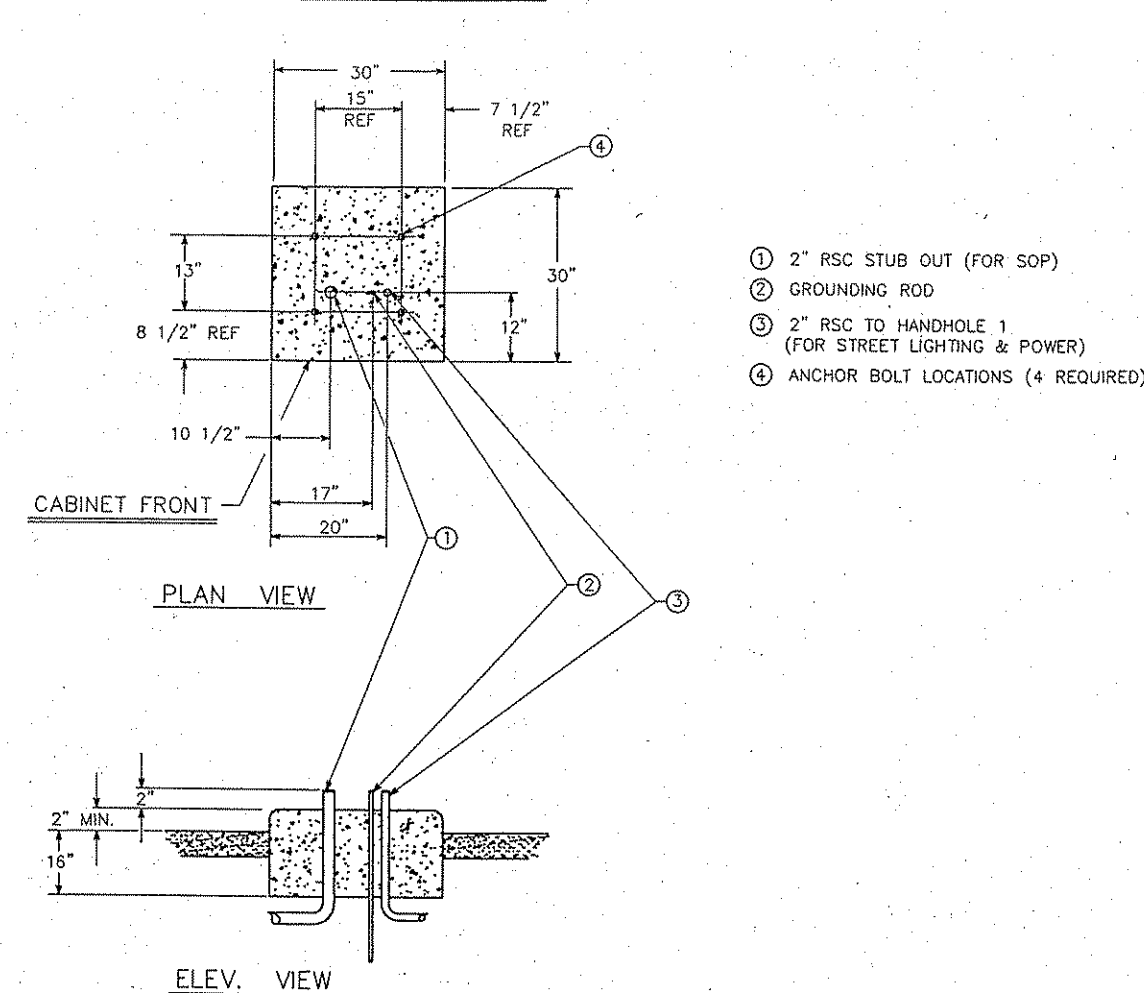
TRAFFIC SIGNAL SYSTEM
 DETAILS & STANDARD PLATES

SHEET NO.
 56

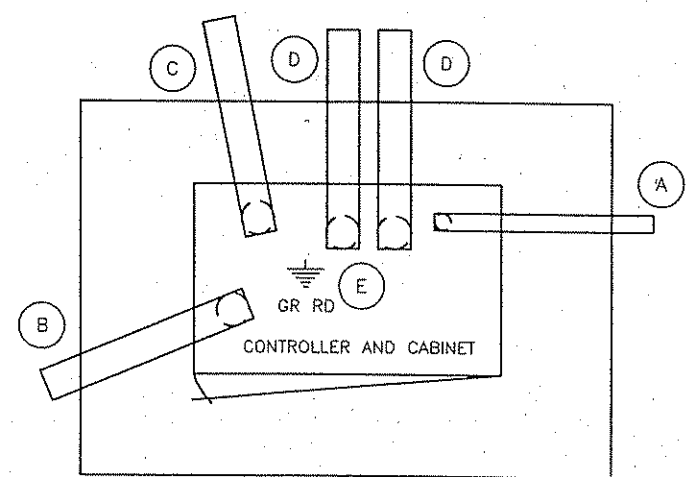
SIGNAL SERVICE CABINET



SERVICE CABINET FOUNDATION



- Ⓐ 2" R.S.C. FOR SERVICE CONNECTION (VIA HH 1)
- Ⓑ 4" R.S.C. TO HH 1
- Ⓒ 4" R.S.C. TO HH 13
- Ⓓ 3" R.S.C. STUBOUT, THREAD & CAP BOTH ENDS (FOR FUTURE USE).
- Ⓔ 5/8" DIA X 15' GROUND ROD



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

SEE INTERSECTION LAYOUT FOR
 CONDUIT & CABLE INFORMATION

TYPICAL CONTROLLER CABINET PAD LAYOUT
 NO SCALE

DRAWN BY: S.J.M. JDB DATE: 5-10-04
 APPROVED: S.J.M. JDB NUMBER: B18750J
 CAD DATE: March 31, 2004 3:34:59 p.m.
 CAD FILE: B18750\design\Sheets\signal\SIGNAL-DETAIL.S030104.DWG

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 SIGNATURE: *Stephen J. Manward* DATE: 02-11-05
 PRINTED NAME: STEPHEN J. MANWARD 22428

NO.	DATE	BY	REVISION DESCRIPTION

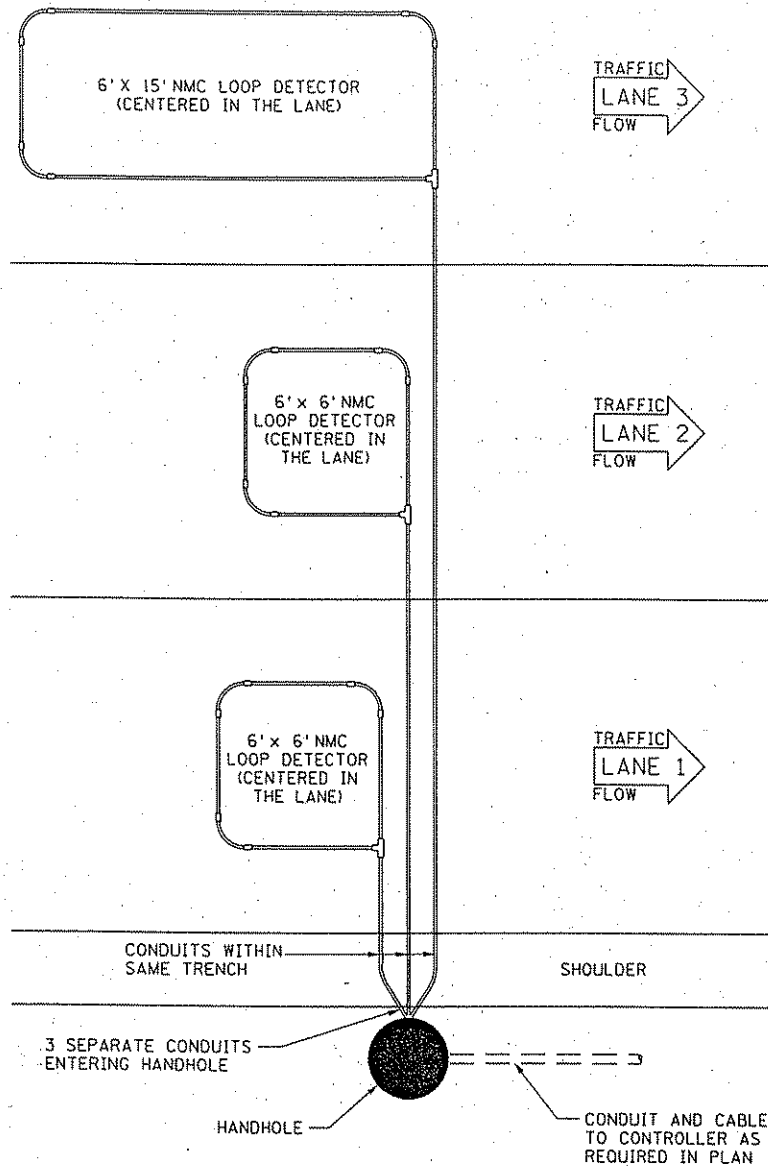
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 SP 02-609-13
 CP 90-20

TRAFFIC SIGNAL SYSTEM
 EQUIPMENT PAD DETAILS

SHEET NO.
 57

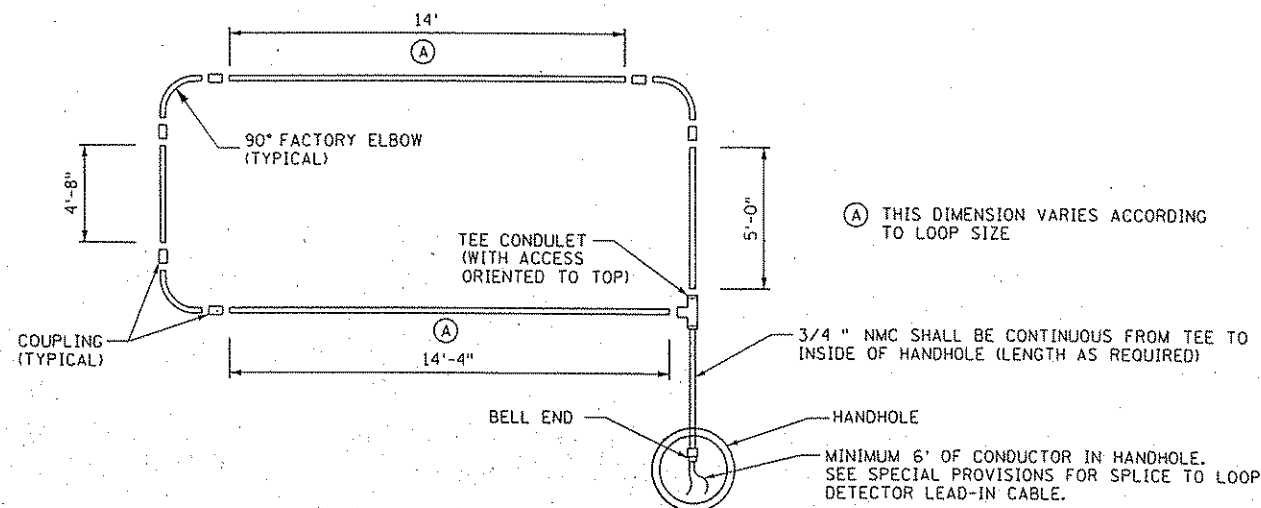
TYPICAL NMC LOOP DETECTOR LAYOUT



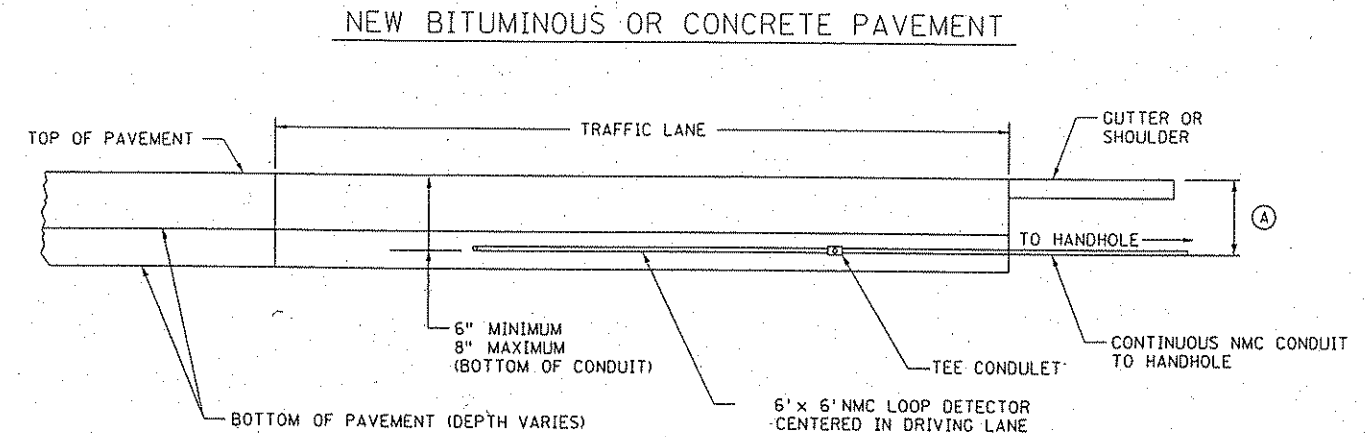
NOTES:

- SEE SPECIAL PROVISIONS FOR REQUIRED LOOP DETECTOR CONDUCTORS AND SPLICE KITS.
- THE 3/4" NON-METALLIC CONDUIT (NMC) AND FITTINGS SHALL BE SCHEDULE 40 HEAVY WALL RIGID POLYVINYL CHLORIDE (PVC). SEE SPEC. 3803.
- THREE CORNERS OF EACH LOOP DETECTOR SHALL BE A 90° FACTORY ELBOW (6" RADIUS). THE FOURTH SHALL BE AN NMC TEE CONDULET.
- APPROVED PVC PRIMER AND CEMENT SHALL BE USED FOR THE PVC JOINTS.
- ALL SLACK MUST BE REMOVED FROM LOOP DETECTOR CONDUCTORS WITHIN THE NMC.
- THE LOOP DETECTOR ROADWAY CONDUCTORS (1/C#14) SHALL BE TWISTED THREE TURNS PER FOOT FROM THE NMC TEE CONDULET TO THE HANDHOLE.
- ATTACH A FERROUS METAL ITEM TO THE INTERIOR OF THE TEE CONDULET COVER.
- EACH LOOP DETECTOR CONDUIT TO THE HANDHOLE SHALL BE SLOPED TOWARDS THE HANDHOLE.
- LOOP DETECTOR CONDUITS TO THE HANDHOLE MAY BE PLACED WITHIN THE SAME TRENCH.
- THE LOOP DETECTOR ROADWAY CONDUCTORS SHALL END IN THE HANDHOLE.
- NO SPLICES ALLOWED IN CONDUIT TO TEE CONDUIT.
- THE LOOP DETECTOR ROADWAY CONDUCTORS AND THE LOOP DETECTOR LEAD-IN CABLE CONDUCTORS SHALL BE PROPERLY PREPARED AND CLEANED BEFORE SPLICING.
- SPLICE KITS SHALL BE INSTALLED IN HANDHOLES IN SUCH A MANNER AS TO ENSURE THAT EACH SPLICE KIT IS SUSPENDED AND/OR SECURED NEAR THE TOP OF THE HANDHOLE TO THE SATISFACTION OF THE ENGINEER. (PLACING SPLICE KITS ON TOP OF THE ELECTRICAL CABLES AND CONDUCTORS IS NOT ACCEPTABLE).
- TYPICAL SIZE OF LOOP DETECTORS ARE 6' x 6', 6' x 10', 6' x 15', AND 6' x 20'. REFER TO INTERSECTION LAYOUT FOR SPECIFIC LOOP DETECTORS TO BE PLACED.
- ALL LOOP DETECTORS SHALL HAVE 4 TURNS OF CONDUCTORS.

TYPICAL NMC LOOP DETECTOR DETAIL- (6' X 15' LOOP)

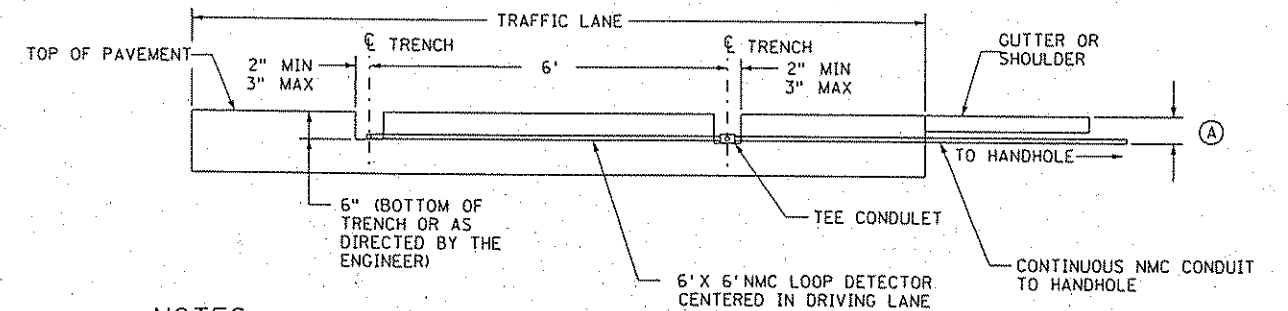


TYPICAL NMC LOOP DETECTOR INSTALLATION



(A) VARIABLE DEPTH-MAINTAIN DRAINAGE TO HANDHOLE

INPLACE BITUMINOUS PAVEMENT



NOTES:

- USE THE LOOP DETECTOR TO BE INSTALLED FOR THE PURPOSE OF MARKING THE PAVEMENT LOCATION FOR THE MILLING OPERATION.
- TO ACHIEVE FULL TRENCH DEPTH FOR CONDUIT PLACEMENT, MILL BEYOND THE DESIRED PAVEMENT MARKING.
- PROVIDE A MINIMUM 2" VERTICAL EDGE, MEASURED FROM THE TOP OF PAVEMENT, ON ALL MILLED TRENCH CUTS.
- AN AIR COMPRESSOR UNIT (50 HP) IS REQUIRED FOR REMOVING ALL LOOSE MATERIAL FROM TRENCH PRIOR TO TACK COAT APPLICATION.
- APPLY A TACK COAT AT A UNIFORM RATE TO THE BOTTOM AND EDGES OF THE MILLED AREA USE AN EMULSIFIED ASPHALT PER SPEC. 2357.2A
- MIXTURE USED TO FILL THE RETROFIT LOOP DETECTOR TRENCHES SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 2350 OR 2360. AGGREGATE SIZE 3 OR 4 WILL BE ALLOWED WHEN 2350 IS UTILIZED AND AGGREGATE SIZE A OR B WILL BE ALLOWED WHEN 2360 IS UTILIZED. OTHER WEARING COURSE MIXTURE TYPES ARE ALLOWED WHEN APPROVED BY THE ENGINEER.
- THE USE OF PETROLEUM DISTILLATES AS AN ANTI-ADHESIVE AGENT IS NOT ALLOWED. REFER TO MN/DOT TECH. MEMO NO. 94-16-MRE-05 DATED 3/10/94 FOR ADDITIONAL INFORMATION.
- COMPACTION SHALL BE OBTAINED BY THE ORDINARY COMPACTION METHOD. BACKFILL THE TRENCH WITH A MINIMUM OF TWO LIFTS AND COMPACT EACH LIFT. BEFORE COMPACTING THE FIRST LIFT ENSURE THAT THERE IS ADEQUATE MIXTURE ON EACH SIDE AND ABOVE THE CONDUIT SO THAT THE CONDUIT IS NOT DAMAGED DURING COMPACTION OPERATIONS.
- THE COMPACTED MIXTURE IN THE TRENCH SHOULD BE LEFT 1/4" TO 1/2" ABOVE THE ADJACENT PAVEMENT SURFACE TO PROVIDE FOR ADDITIONAL COMPACTION BY TRAFFIC.
- APPLY A BITUMINOUS FOG SEAL ON THE NEWLY COMPACTED MIXTURE TO PROVIDE AN ADDITIONAL SURFACE SEAL (EMULSIFIED ASPHALT 2355.2A). DRY SAND SHALL BE SPREAD ON THE FOG SEAL TO PREVENT MATERIAL PICKUP AND TRACKING.

PREFORMED NON-METALLIC CONDUIT (NMC)
LOOP DETECTOR DETAILS

DRAWN BY:

CHECKED BY:

CERTIFIED BY:

John J. Mark
LICENSED ENGINEER

LIC. NO. 22428 DATE 2/11/05

STATE PROJ. NO.

SHEET NO. 58 OF 87 SHEETS

NMC LOOP DETECTORS

NUMBER	SIZE (FEET)	FUNCTION	LOCATION
D1-1	2-6x6	1	20', 50'
D1-2	2-6x6	1	5', 35'
D2-1	1-6x6	1	475'
D2-2	1-6x6	1	475'
D3-1	6x6 & 6x10	7	AS SHOWN
D4-1	2-6x6	3,8	5', 35'
D4-2	6x6 & 6x10	7	AS SHOWN
D4-3	2-6x6	7	AS SHOWN
D5-1	2-6x6	1	20', 50'
D5-2	2-6x12	1	5' & 35'
D6-1	1-6x6	1	475'
D6-2	1-6x6	1	475'

LOCATION IS FROM STOP BAR
 * FROM RIGHT TURN LANE EDGE

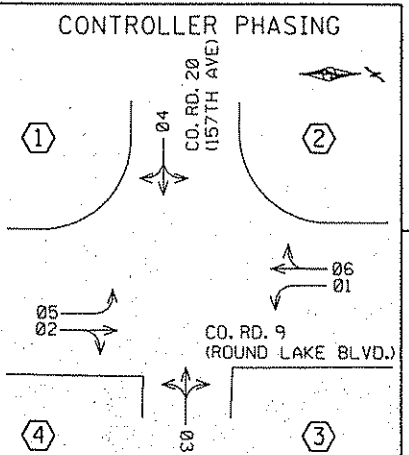
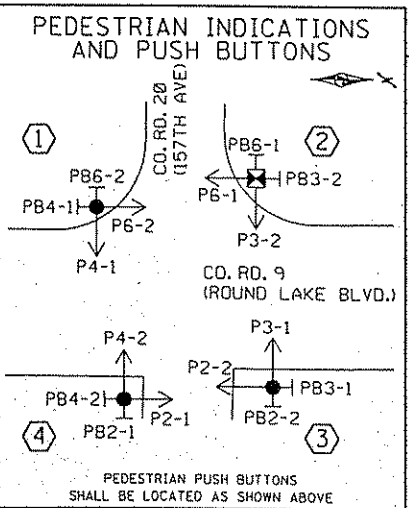
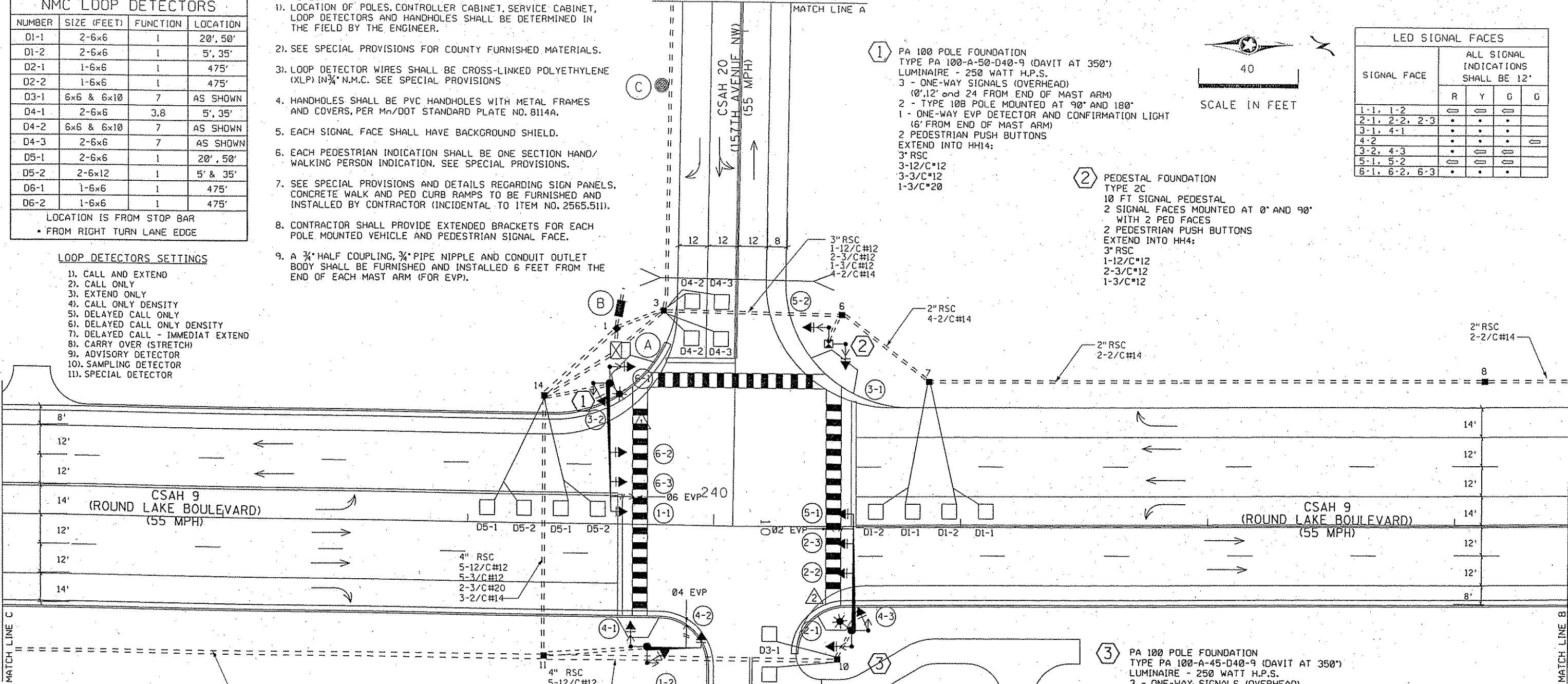
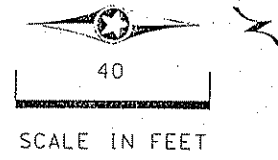
LOOP DETECTORS SETTINGS

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

- NOTES:
- 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). HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. 8114A.
 - 5). EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - 6). EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - 7). SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS. CONCRETE WALK AND PED CURB RAMPS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511).
 - 8). CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL FACE.
 - 9). 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).

LED SIGNAL FACES

SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"			
	R	Y	G	G
1-1, 1-2	◻	◻	◻	◻
2-1, 2-2, 2-3	◻	◻	◻	◻
3-1, 4-1	◻	◻	◻	◻
4-2	◻	◻	◻	◻
3-2, 4-3	◻	◻	◻	◻
5-1, 5-2	◻	◻	◻	◻
6-1, 6-2, 6-3	◻	◻	◻	◻



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 AND 5 BEING PROTECTED LEFT TURN PHASES, AND WITH PHASES 3 & 4 BEING SPLIT PHASES.
- THE SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED. VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

- 1) PA 100 POLE FOUNDATION
 TYPE PA 100-A-50-D40-9 (DAVIT AT 350')
 LUMINAIRE - 250 WATT H.P.S.
 3 - ONE-WAY SIGNALS (OVERHEAD)
 (0', 12' and 24' FROM END OF MAST ARM)
 2 - TYPE 10B POLE MOUNTED AT 90° AND 180°
 1 - ONE-WAY EVP DETECTOR AND CONFIRMATION LIGHT (6' FROM END OF MAST ARM)
 2 PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH14:
 3" RSC
 3-12/C#12
 3-3/C#12
 1-3/C#20
- 2) PEDESTAL FOUNDATION
 TYPE 2C
 10 FT SIGNAL PEDESTAL
 2 SIGNAL FACES MOUNTED AT 0° AND 90°
 WITH 2 PED FACES
 2 PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH4:
 3" RSC
 1-12/C#12
 2-3/C#12
 1-3/C#12
- 3) PA 100 POLE FOUNDATION
 TYPE PA 100-A-45-D40-9 (DAVIT AT 350')
 LUMINAIRE - 250 WATT H.P.S.
 3 - ONE-WAY SIGNALS (OVERHEAD)
 (0', 12' and 24' FROM END OF MAST ARM)
 2 - TYPE 10B POLE MOUNTED AT 90° AND 180°
 1 - ONE-WAY EVP DETECTOR AND CONFIRMATION LIGHT (6' FROM END OF MAST ARM)
 2 PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH10:
 3" RSC
 3-12/C#12
 3-3/C#12
 1-3/C#20
- 4) PA 85 POLE FOUNDATION
 TYPE PA 85-A-20-D40-9 (DAVIT AT 350')
 LUMINAIRE - 250 WATT H.P.S.
 1 - ONE-WAY SIGNALS (OVERHEAD)
 (0' FROM END OF MAST ARM)
 2 - TYPE 10B POLE MOUNTED AT 90° AND 180°
 1 - ONE-WAY EVP DETECTOR AND CONFIRMATION LIGHT (6' FROM END OF MAST ARM)
 2 PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH10:
 3" RSC
 2-12/C#12
 2-3/C#12
 1-3/C#20

DESIGNED BY: WCK DRAWN BY: WCK
 APPROVED BY: SJM JOB NUMBER 818750J
 CAD DATE: 02/15/2005 03:29:00 PM
 CAD FILE: s:\cadd\818750\design\traffic control\signal layout.dwg

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 DATE 02-11-2005 REG. NO. 22428

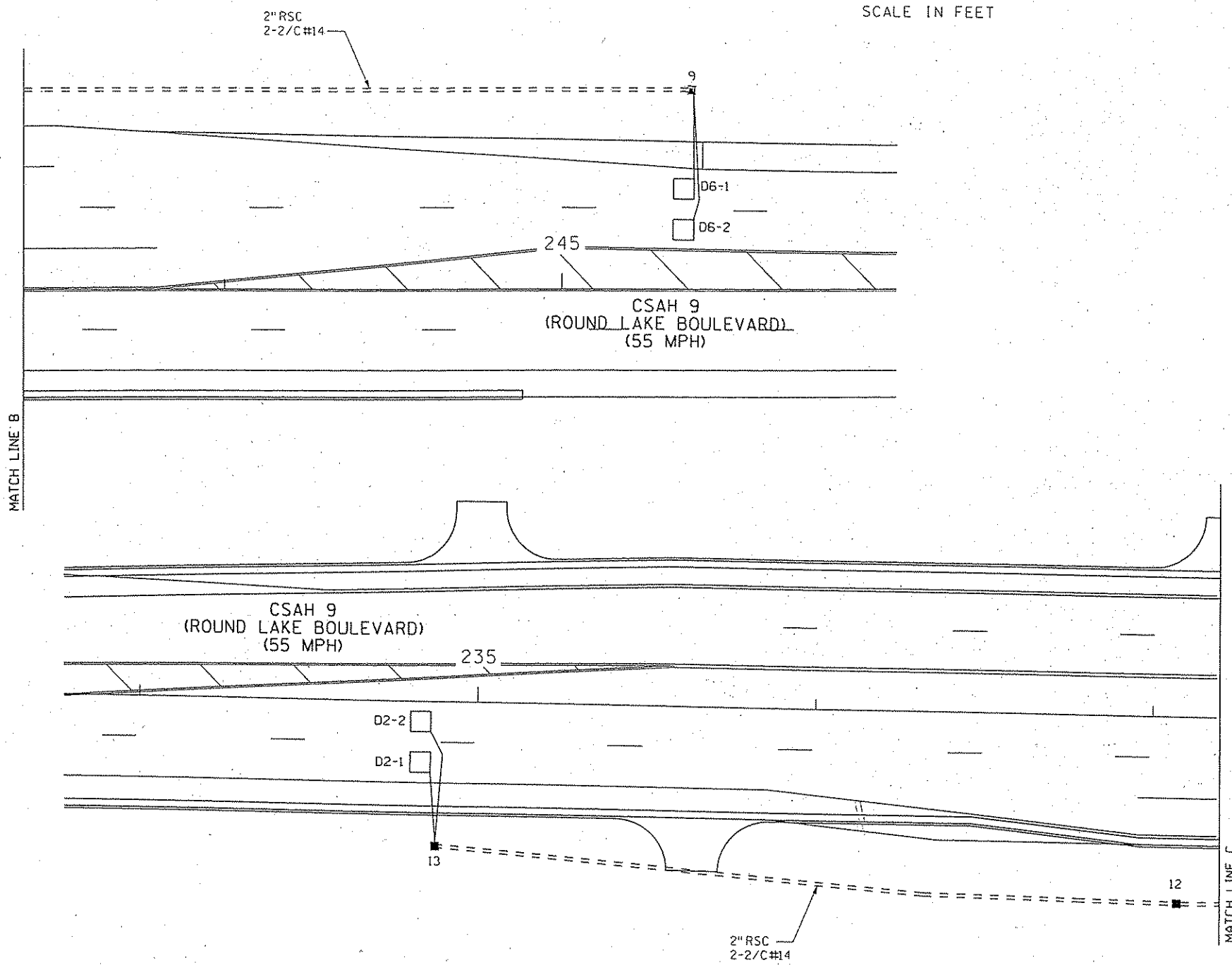
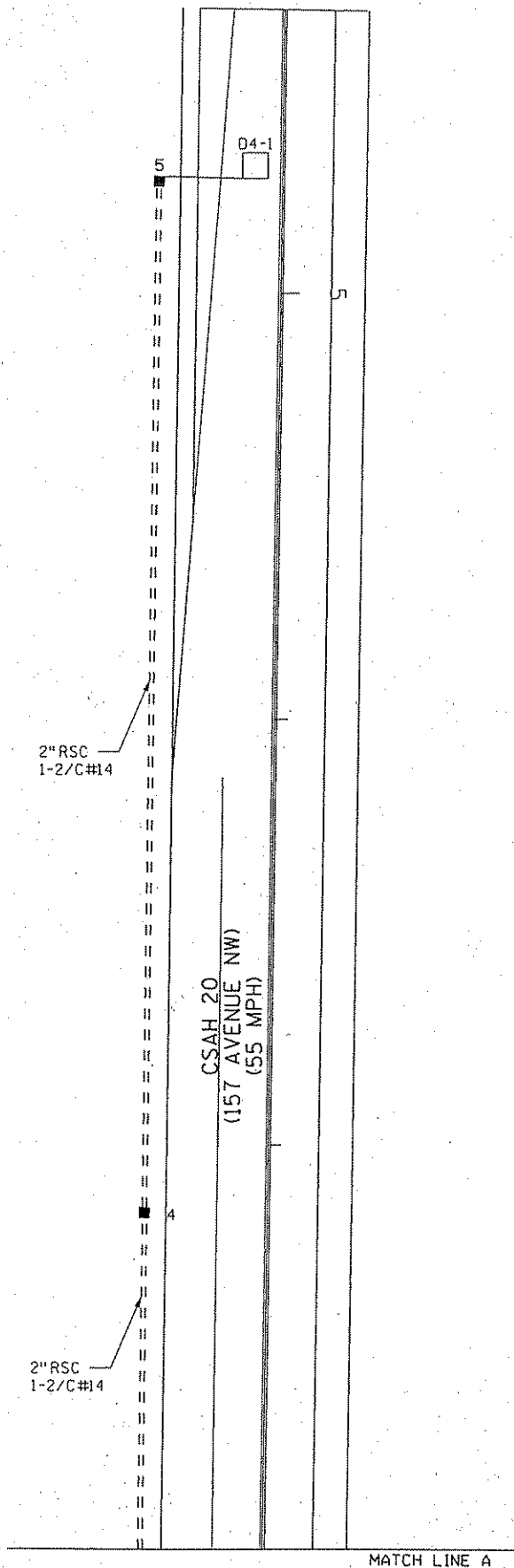
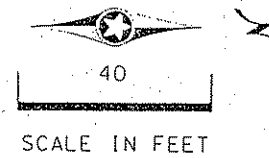
NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

TRAFFIC SIGNAL SYSTEM
 INTERSECTION LAYOUT

SHEET NO.
 59



DESIGNED BY: WCK DRAWN BY: WCK
 APPROVED BY: SJM JOB NUMBER: 818750J
 CAD DATE: 02/15/2005 03:28:59 PM
 CAD FILE: a:\cad\818750\design\traffic control\signal\conduit

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Stephen M. Wall
 DATE 02-11-2005 REG. NO. 22428

NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389

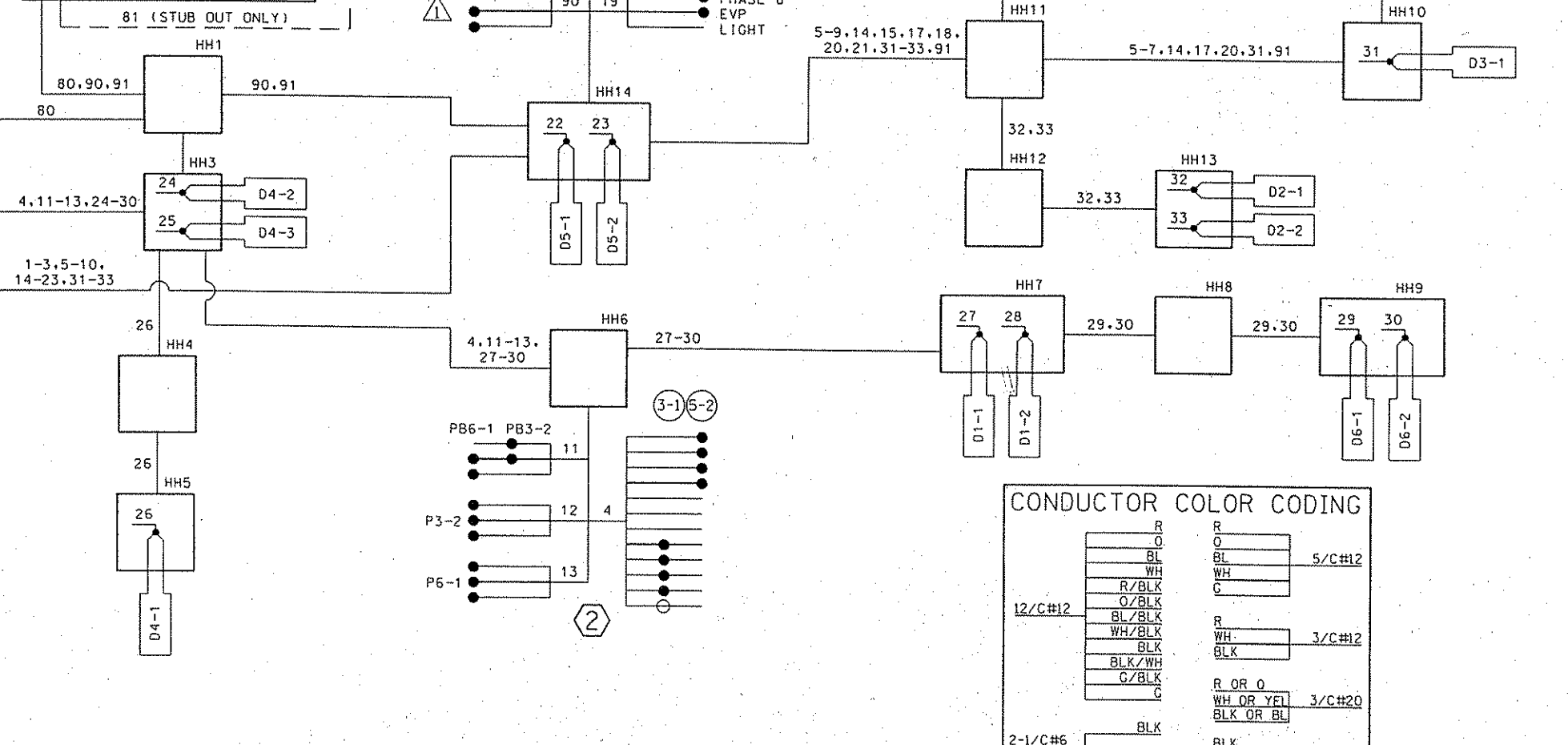
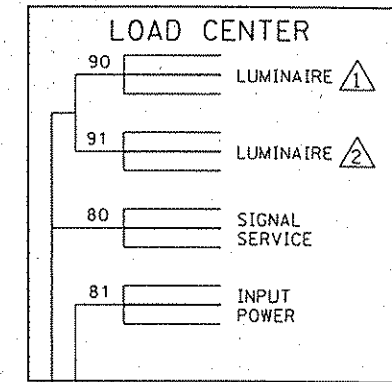
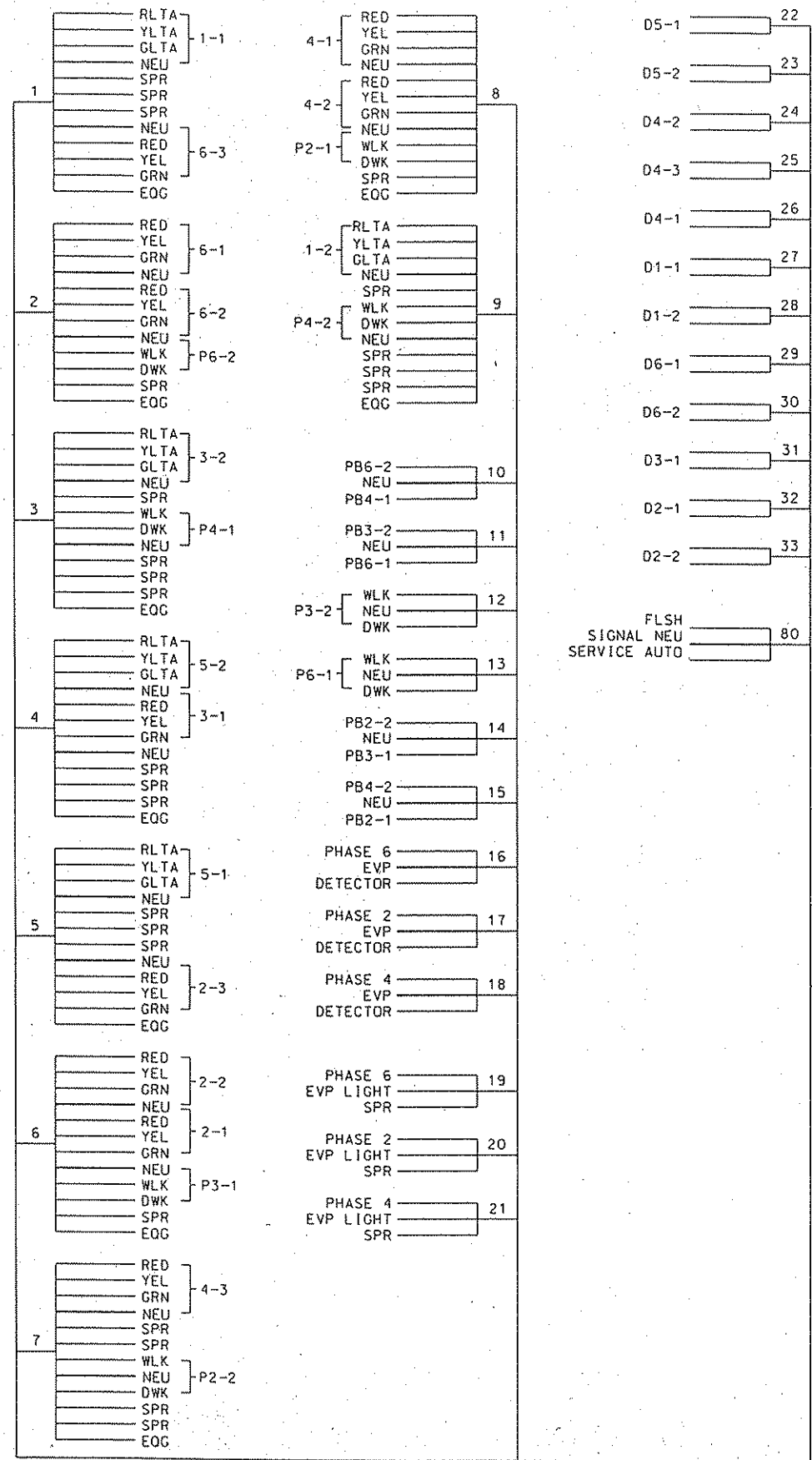
Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

TRAFFIC SIGNAL SYSTEM
 CONDUIT LAYOUT

SHEET NO.
 60

CONTROLLER CABINET



CONDUCTOR COLOR CODING

R	R
O	O
BL	BL
WH	WH
R/BLK	5/C#12
O/BLK	G
BL/BLK	R
WH/BLK	WH
BLK	3/C#12
BLK/WH	BLK
G/BLK	R OR O
G	WH OR YEL
	3/C#20
	BLK OR BL
2-1/C#6	BLK
	BLK CLEAR
	2/C#14

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

DESIGNED BY: WCK DRAWN BY: WCK
 APPROVED BY: SJM JOB NUMBER 818750J
 CAD DATE: 02/15/2005 03:29:02 PM
 CAD FILE: c:\oad\818750j\design\traffic control\signal

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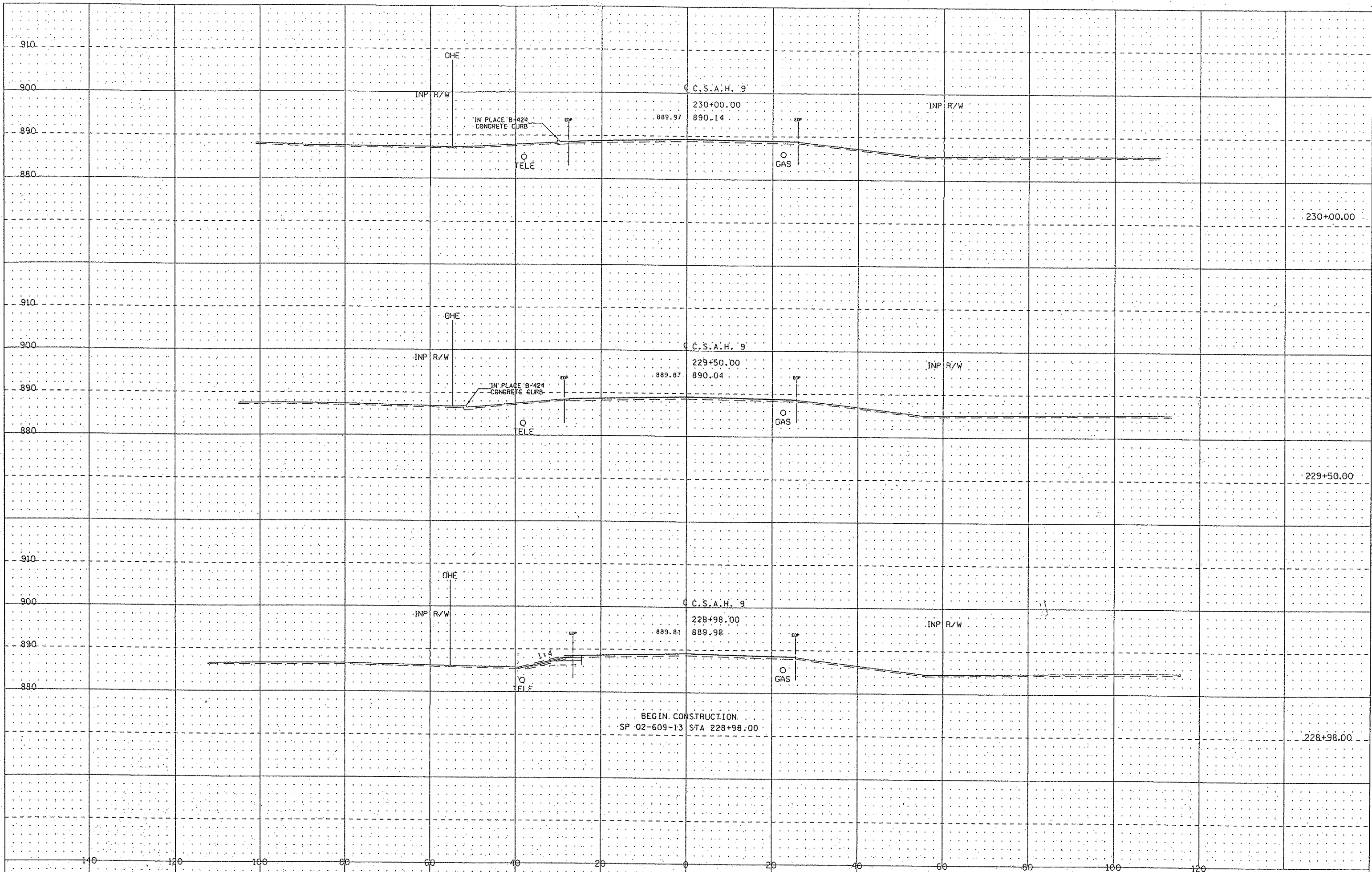
NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (651) 644-4389
 Howard R. Green Company

ANOKA COUNTY
 CSAH 9 AND CSAH 20
 SP 02-609-13 (COUNTY)
 SP 198-020-19 (CITY)

TRAFFIC SIGNAL SYSTEM
 WIRING DIAGRAM

SHEET NO.
 61



910

900

890

880

910

900

890

880

910

900

890

880

230+00.00

229+50.00

228+98.00

140

120

100

80

60

40

20

0

20

40

60

80

100

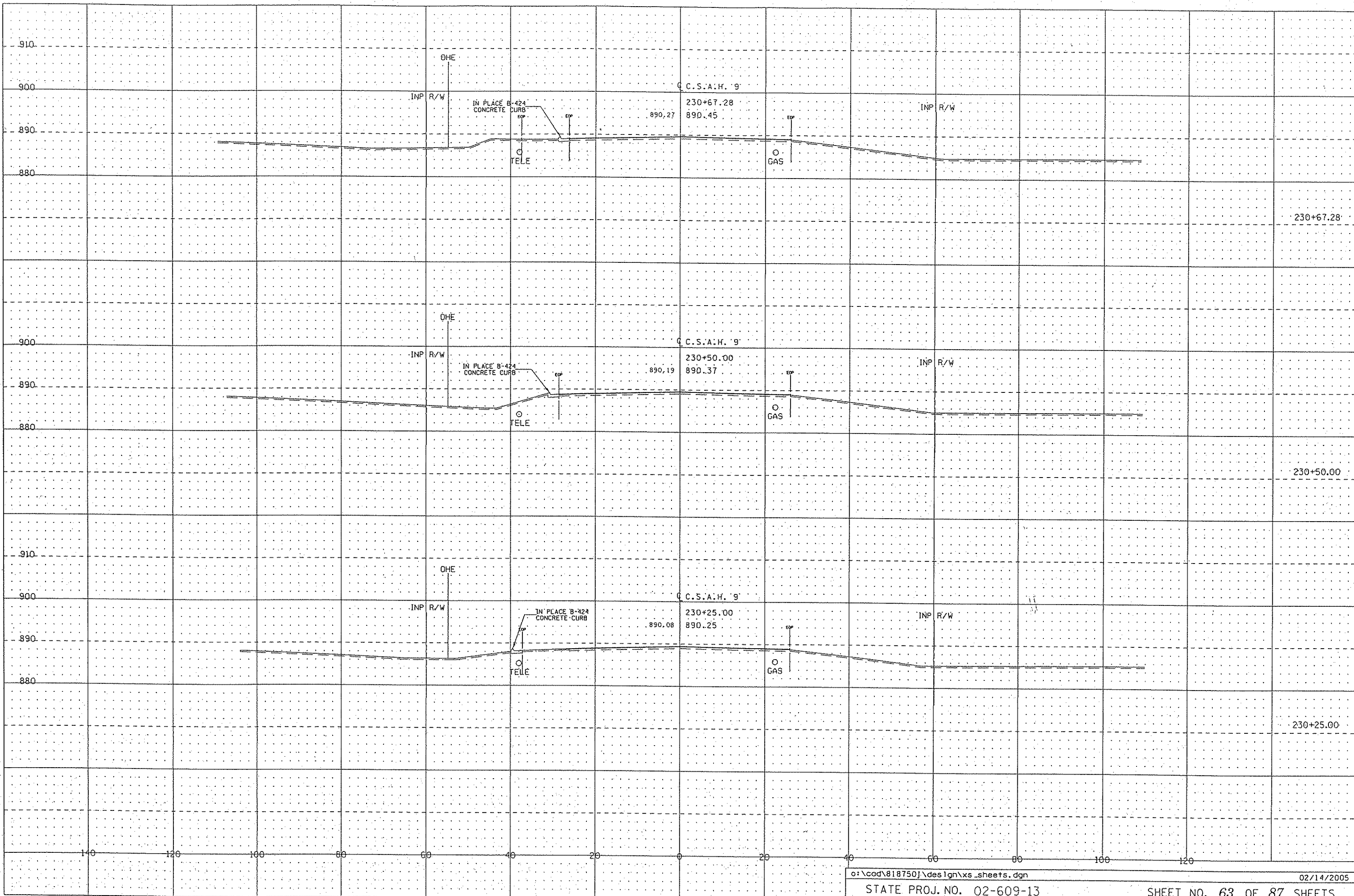
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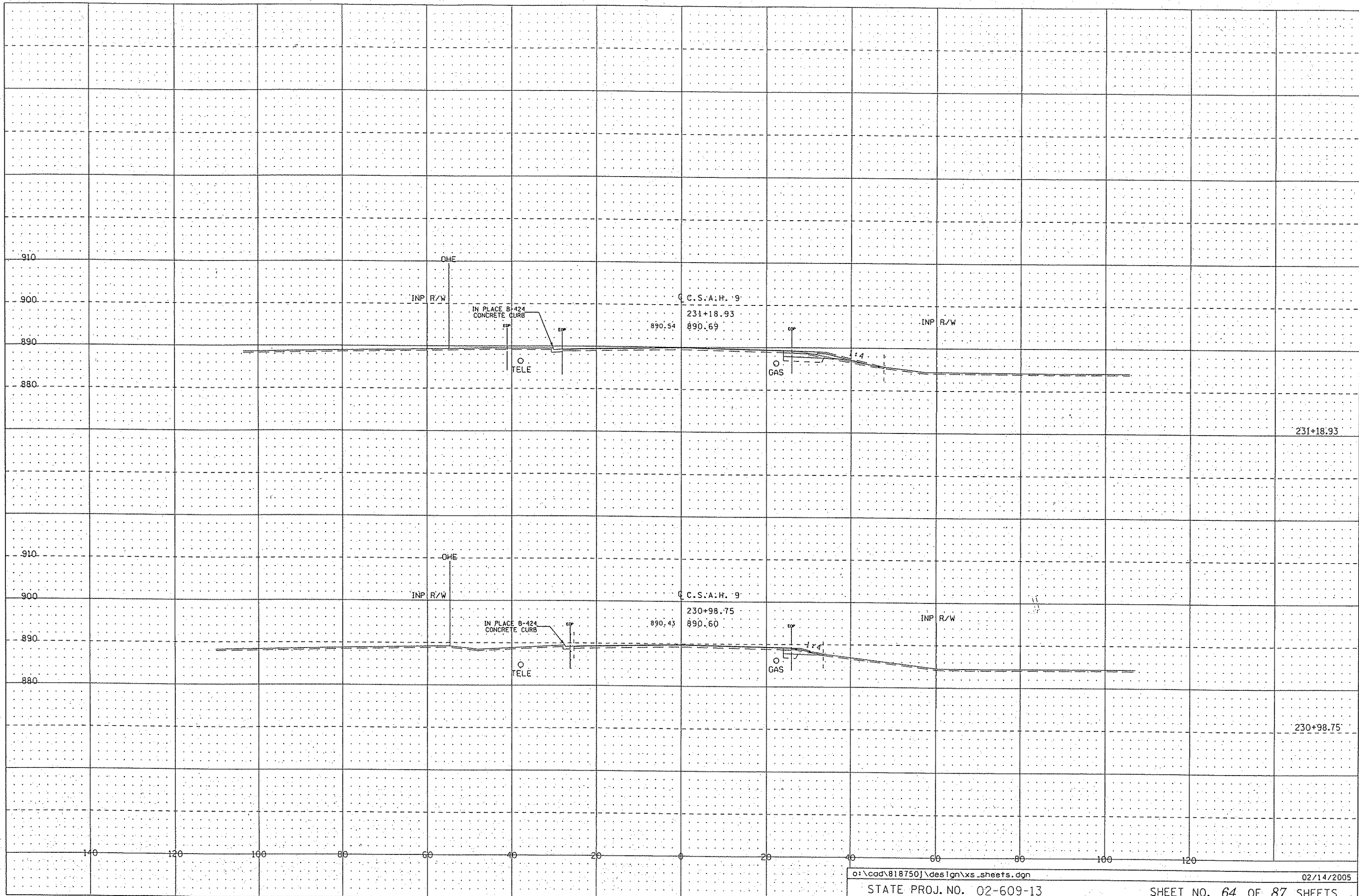
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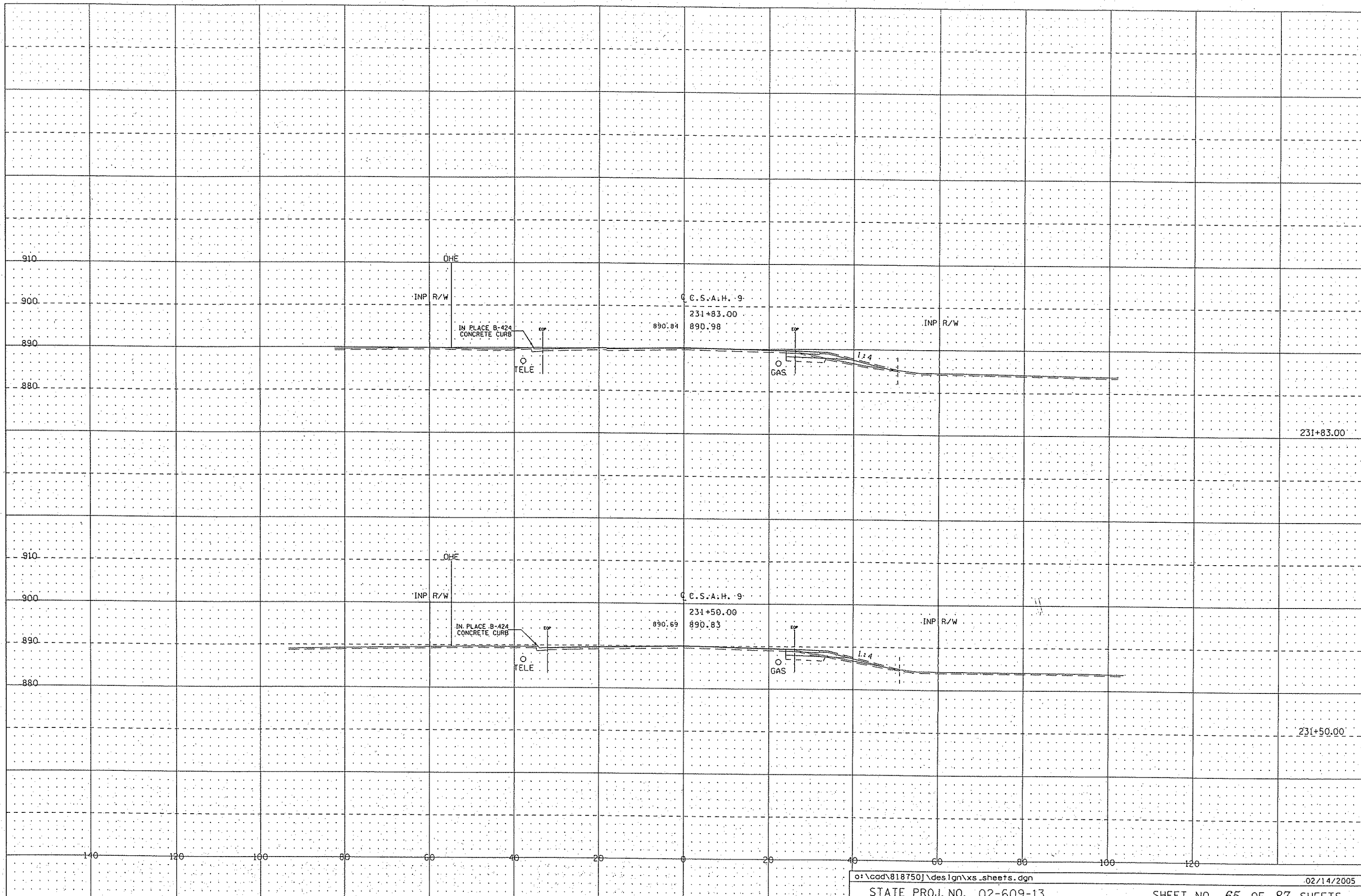
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STATE PROJ. NO. 02-609-13

SHEET NO. 62 OF 87 SHEETS





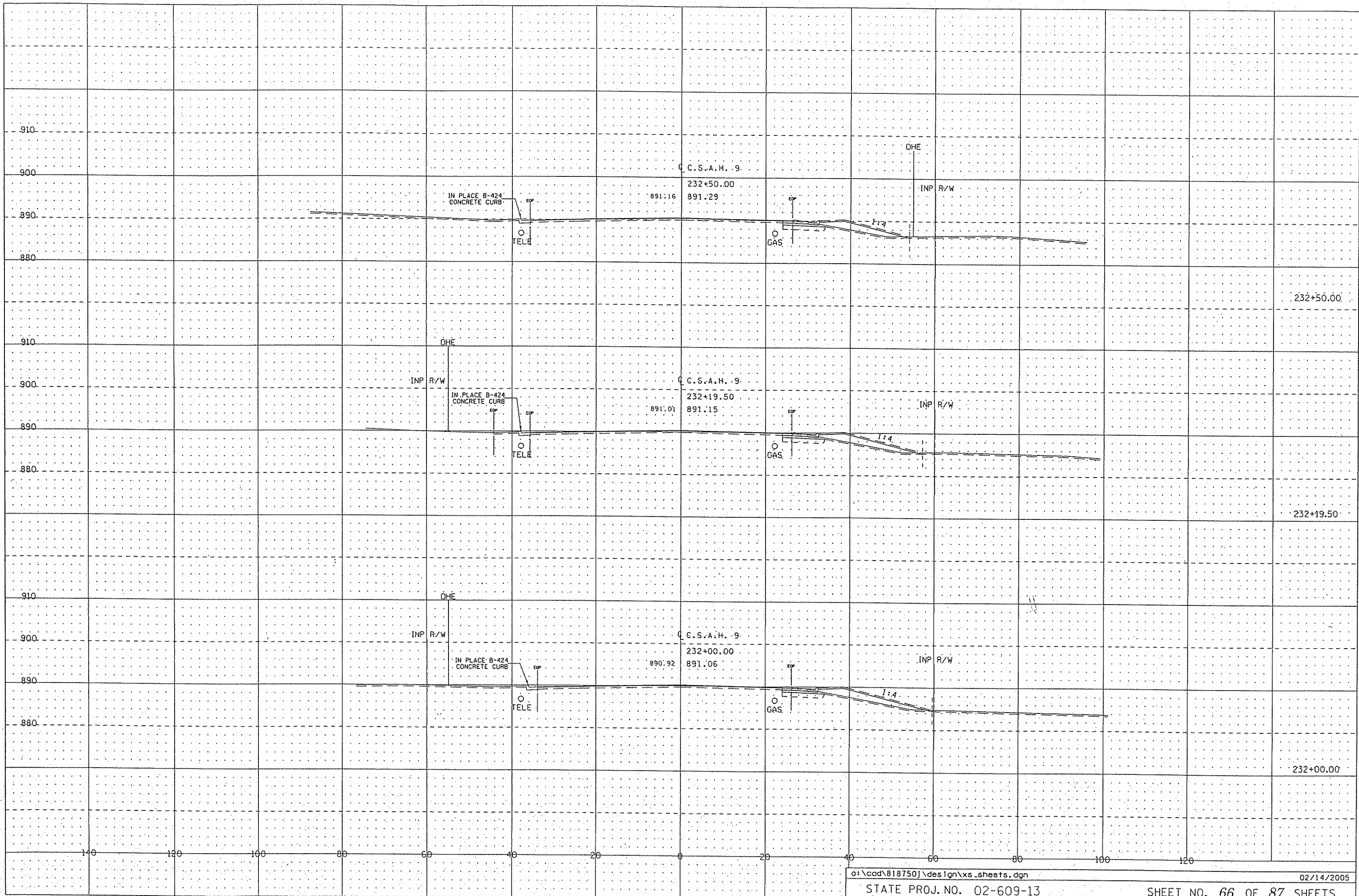


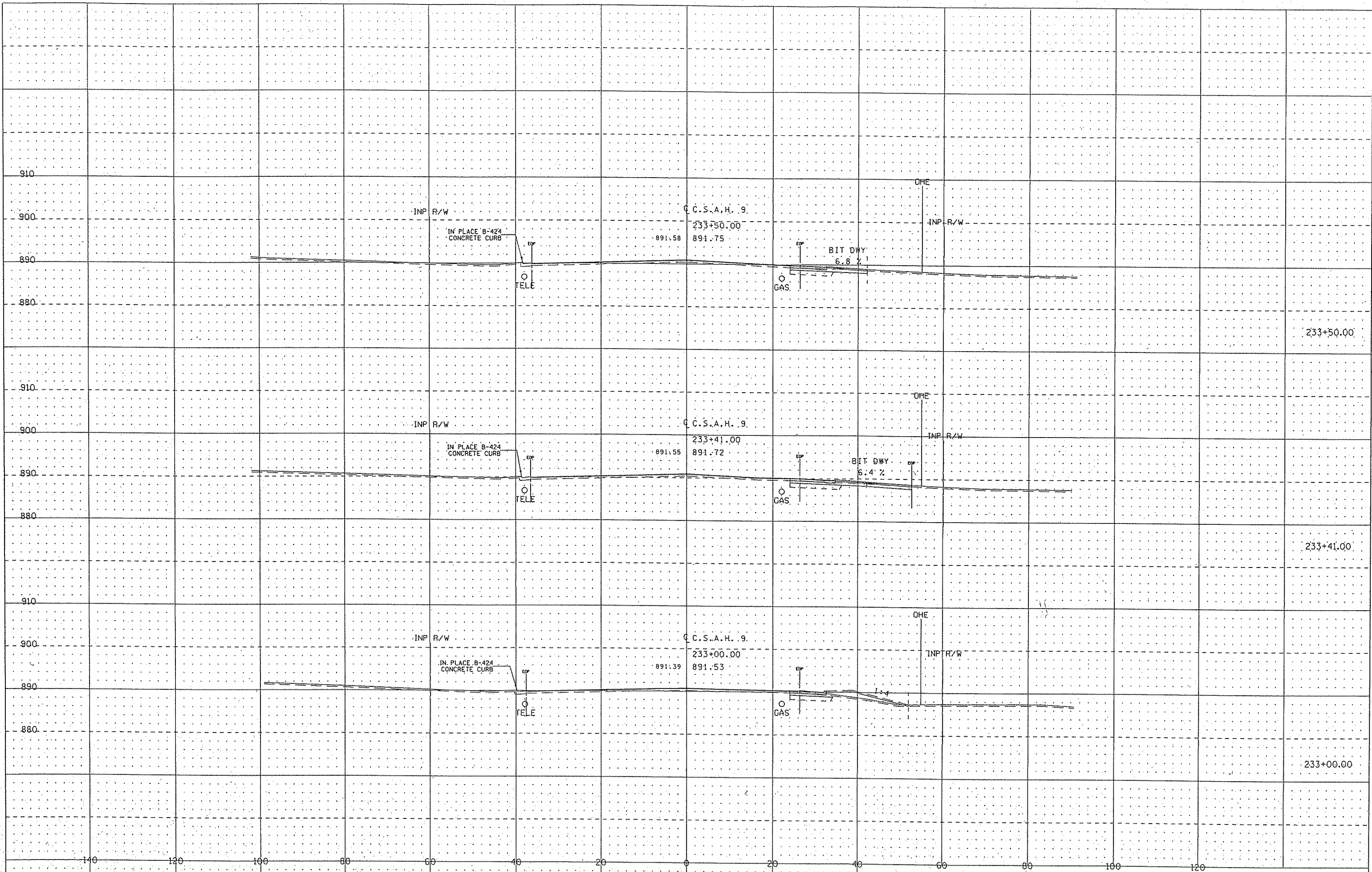
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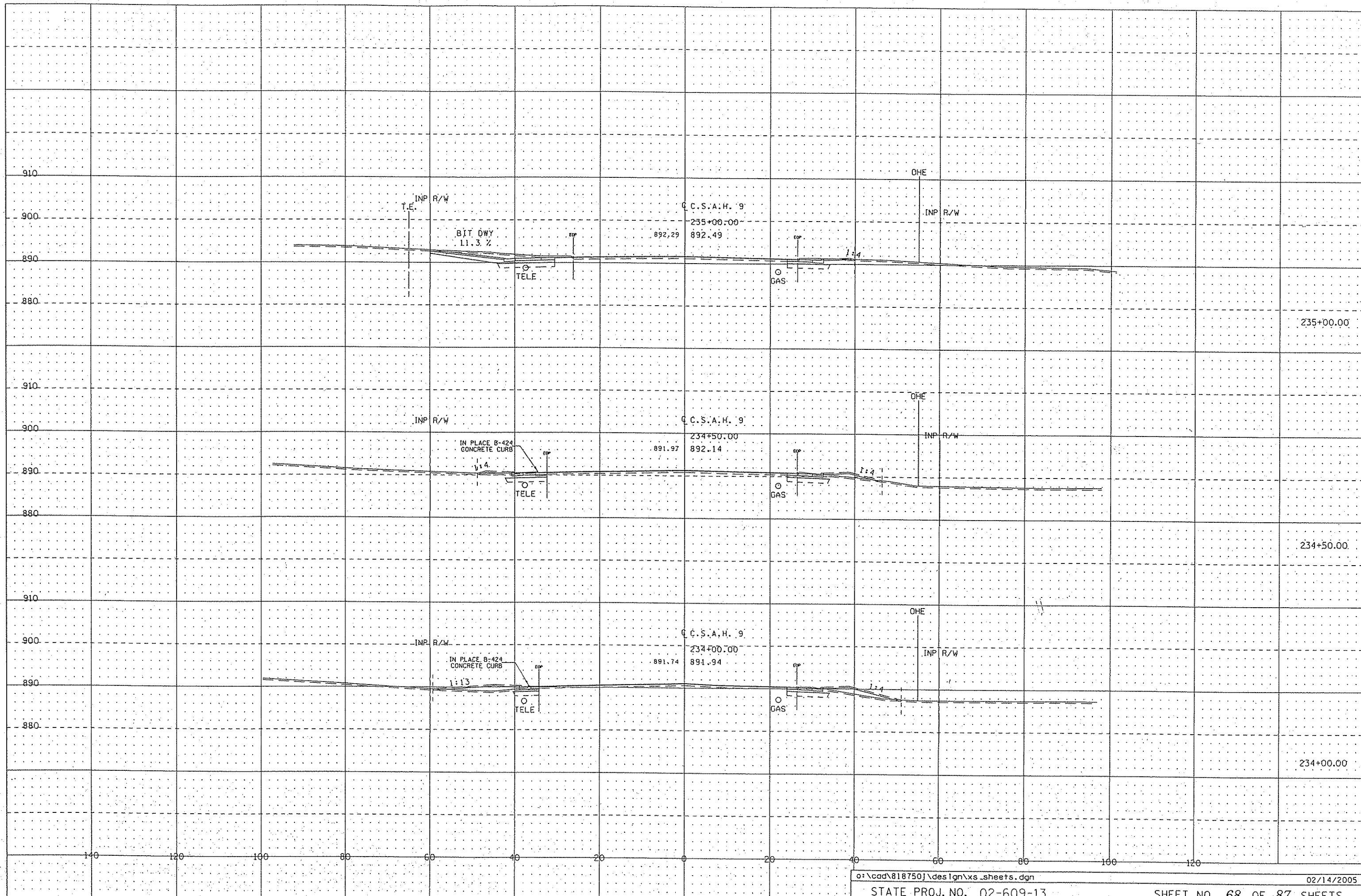
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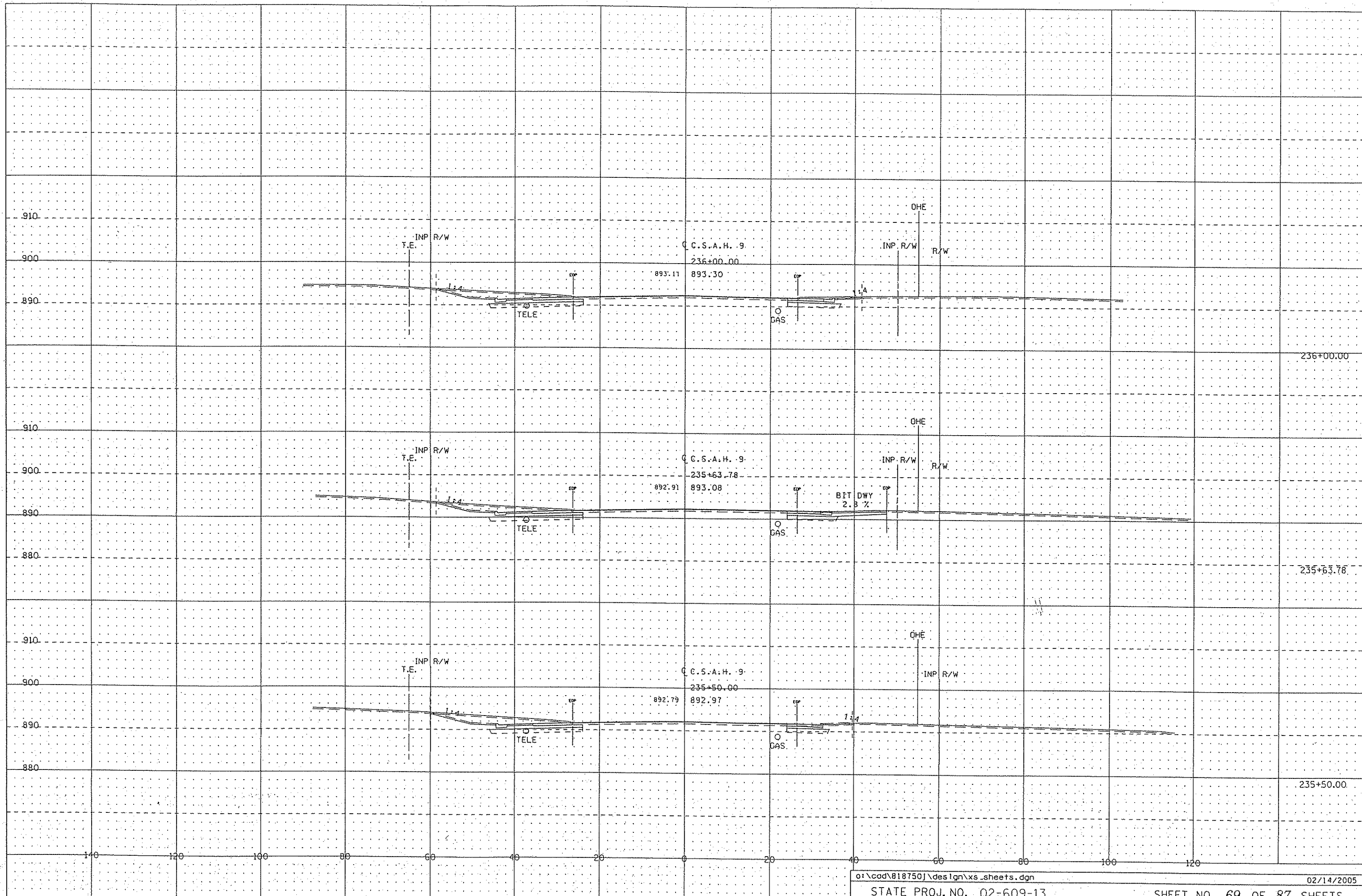


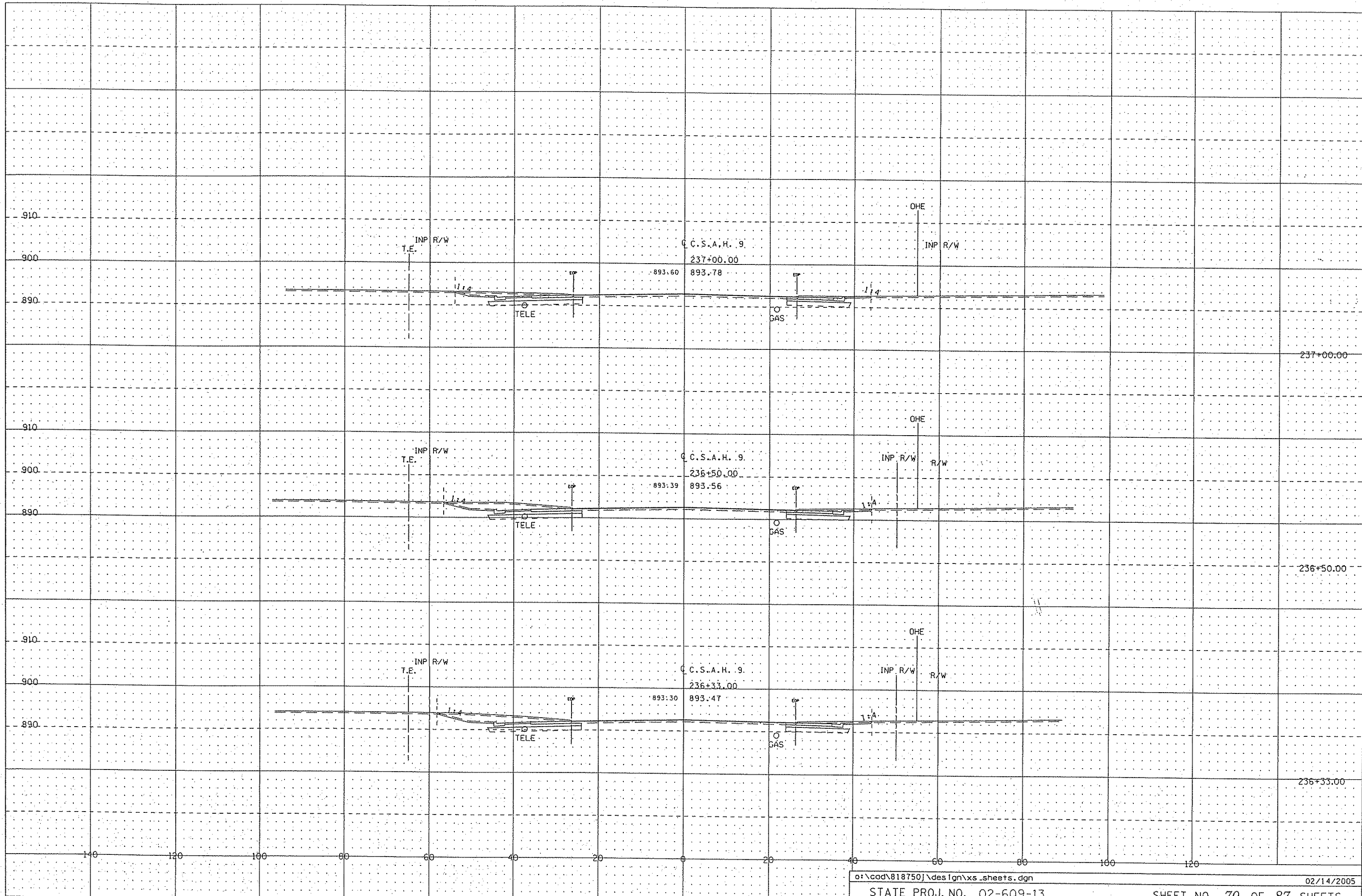
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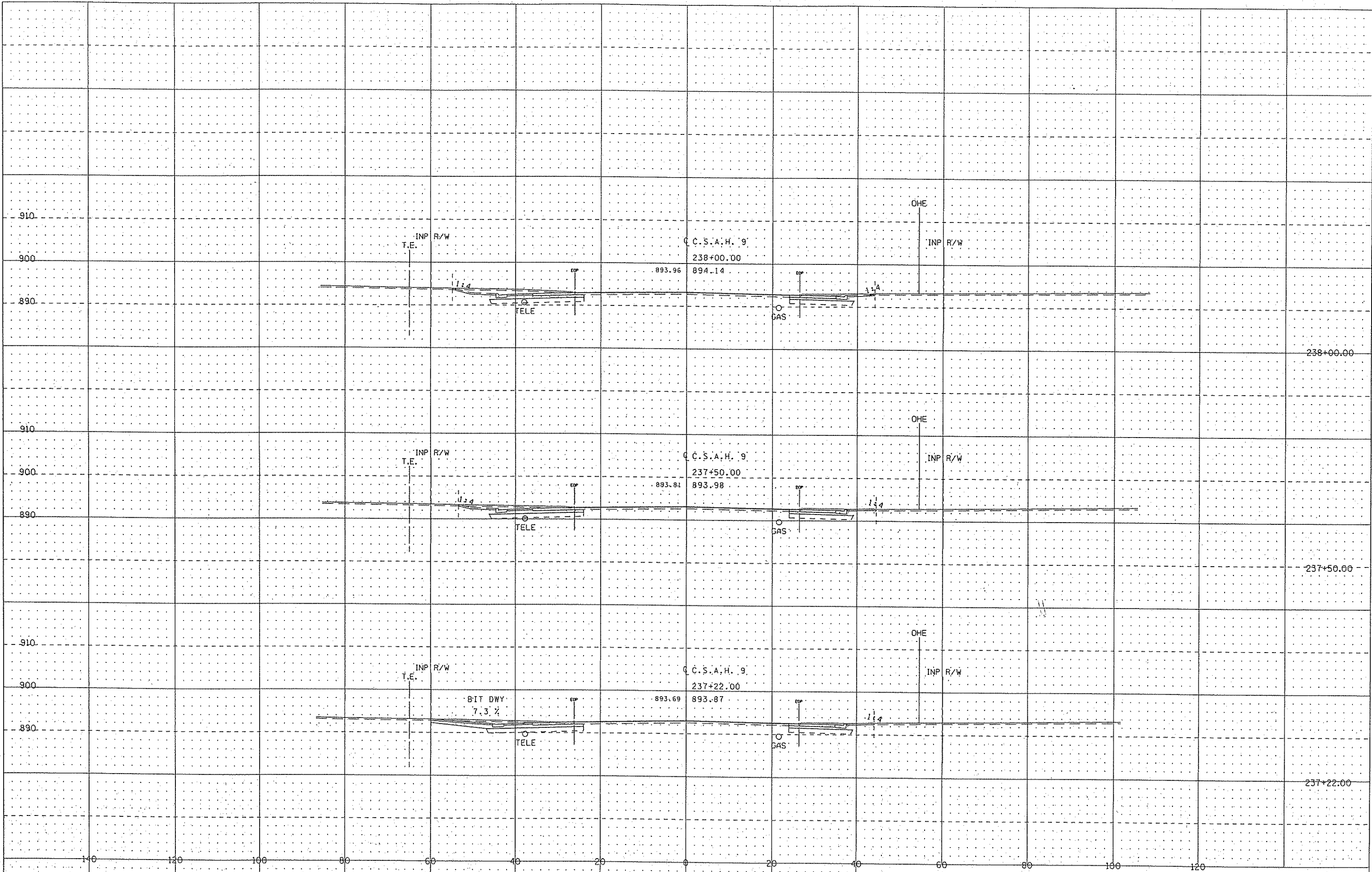
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SHEET NO. 68 OF 87 SHEETS



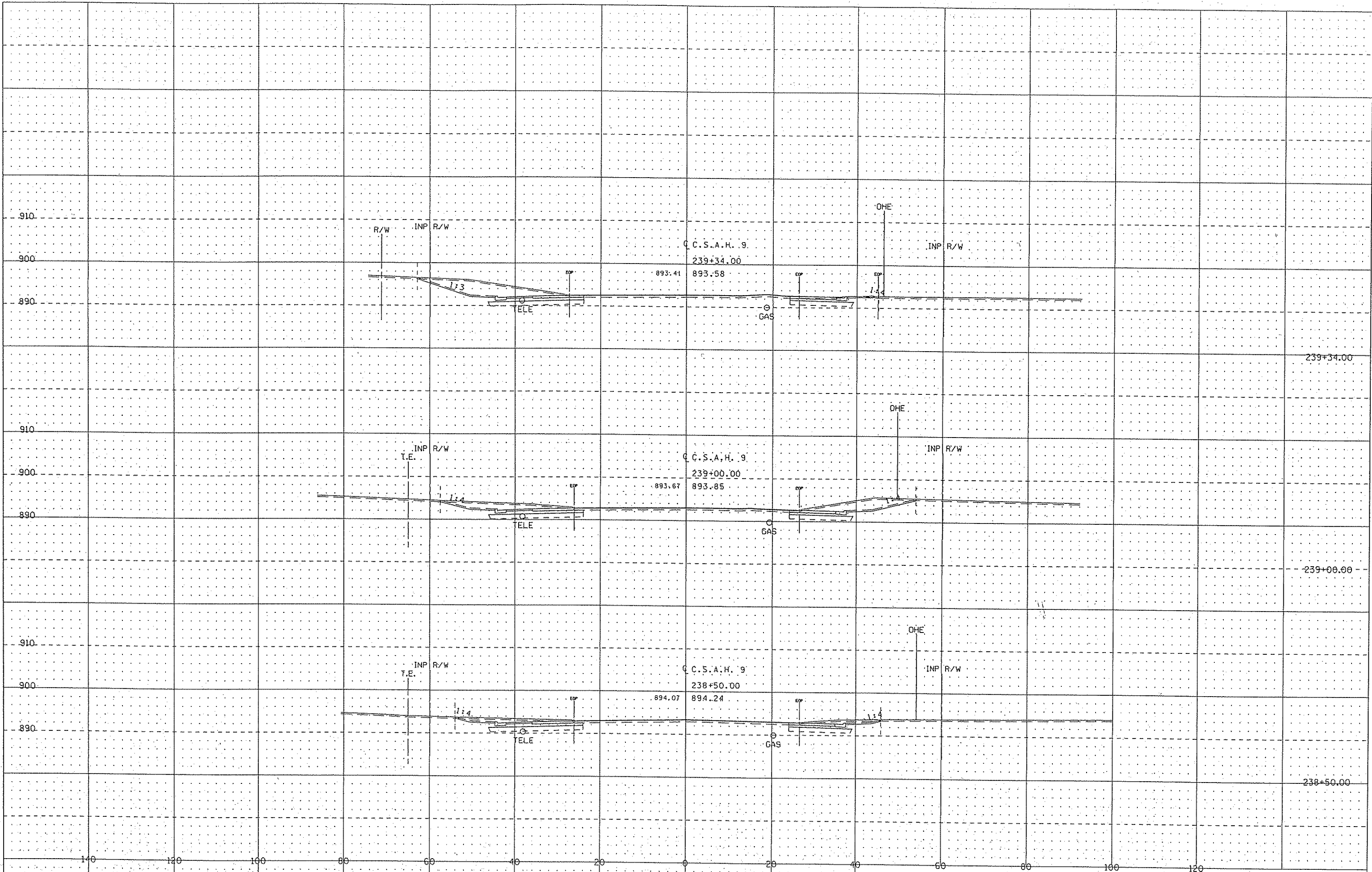


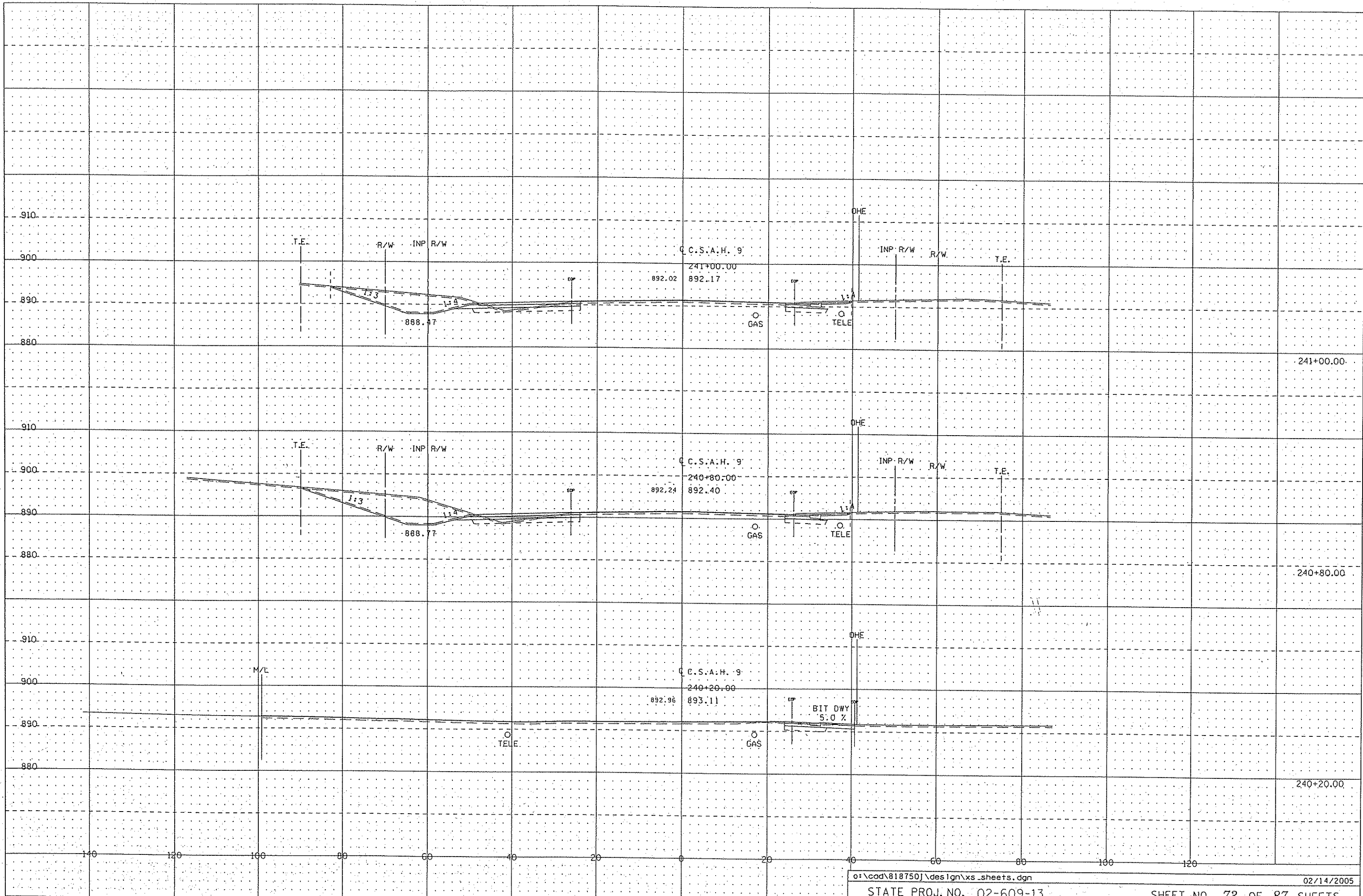


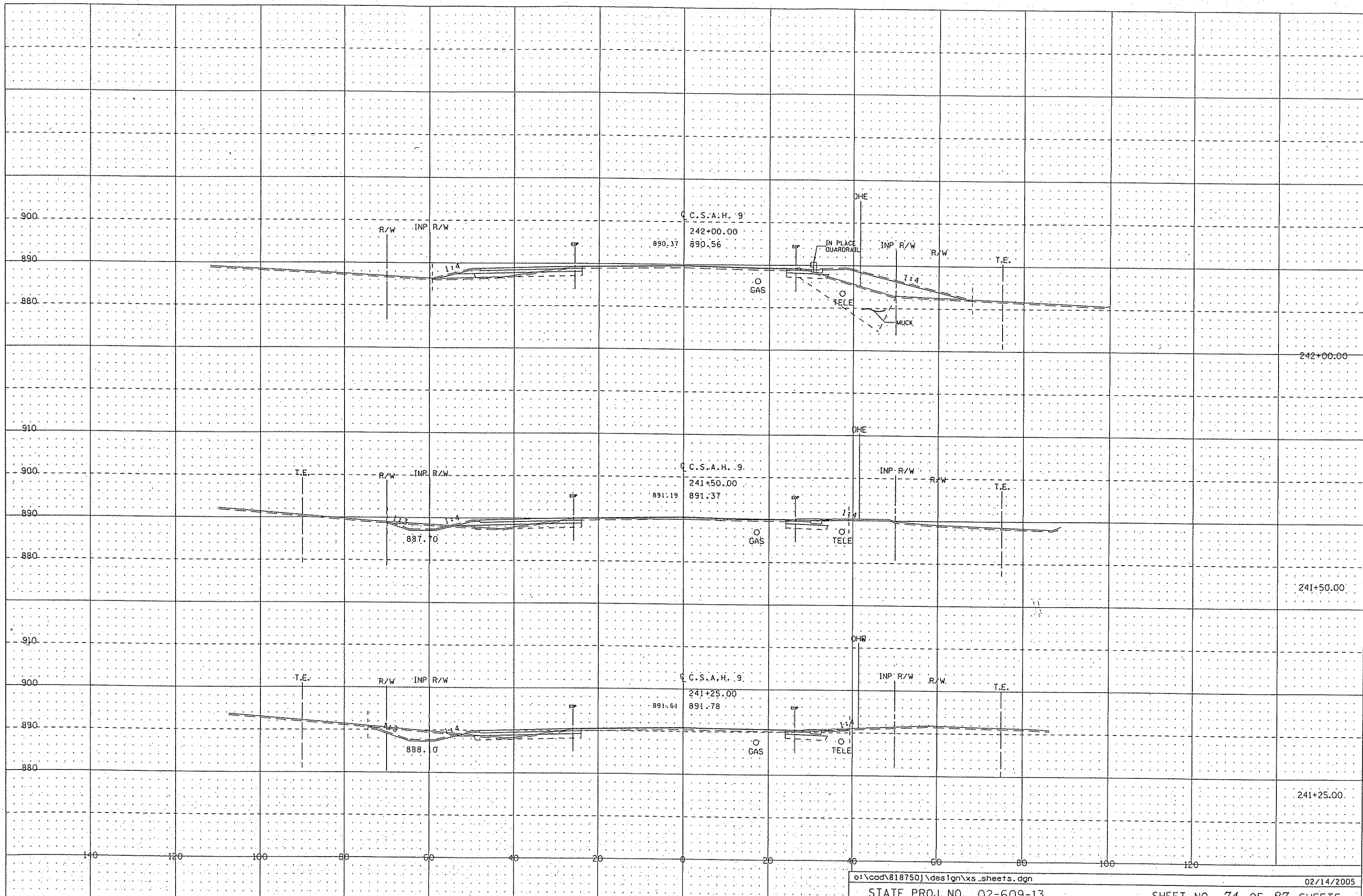
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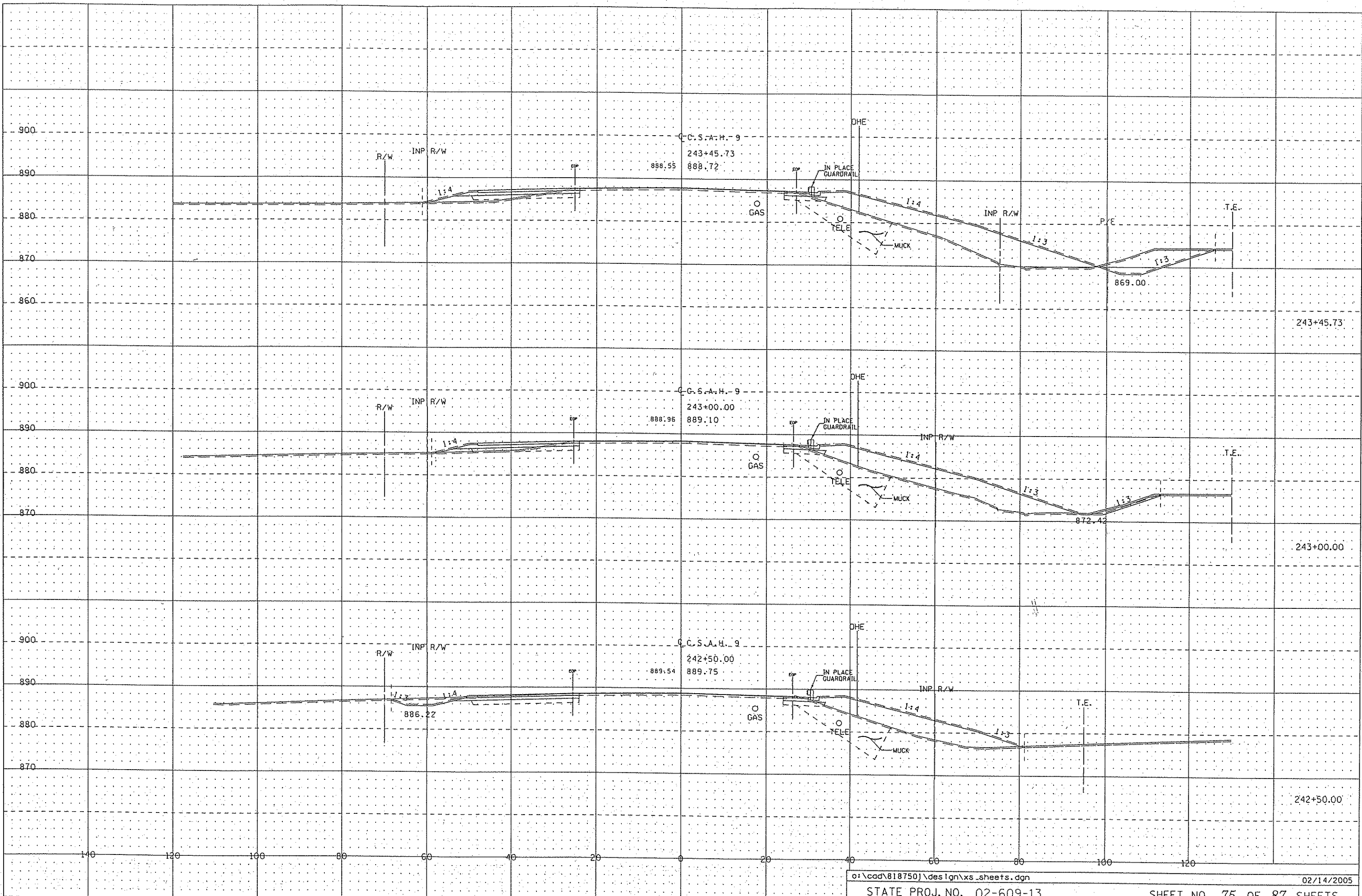
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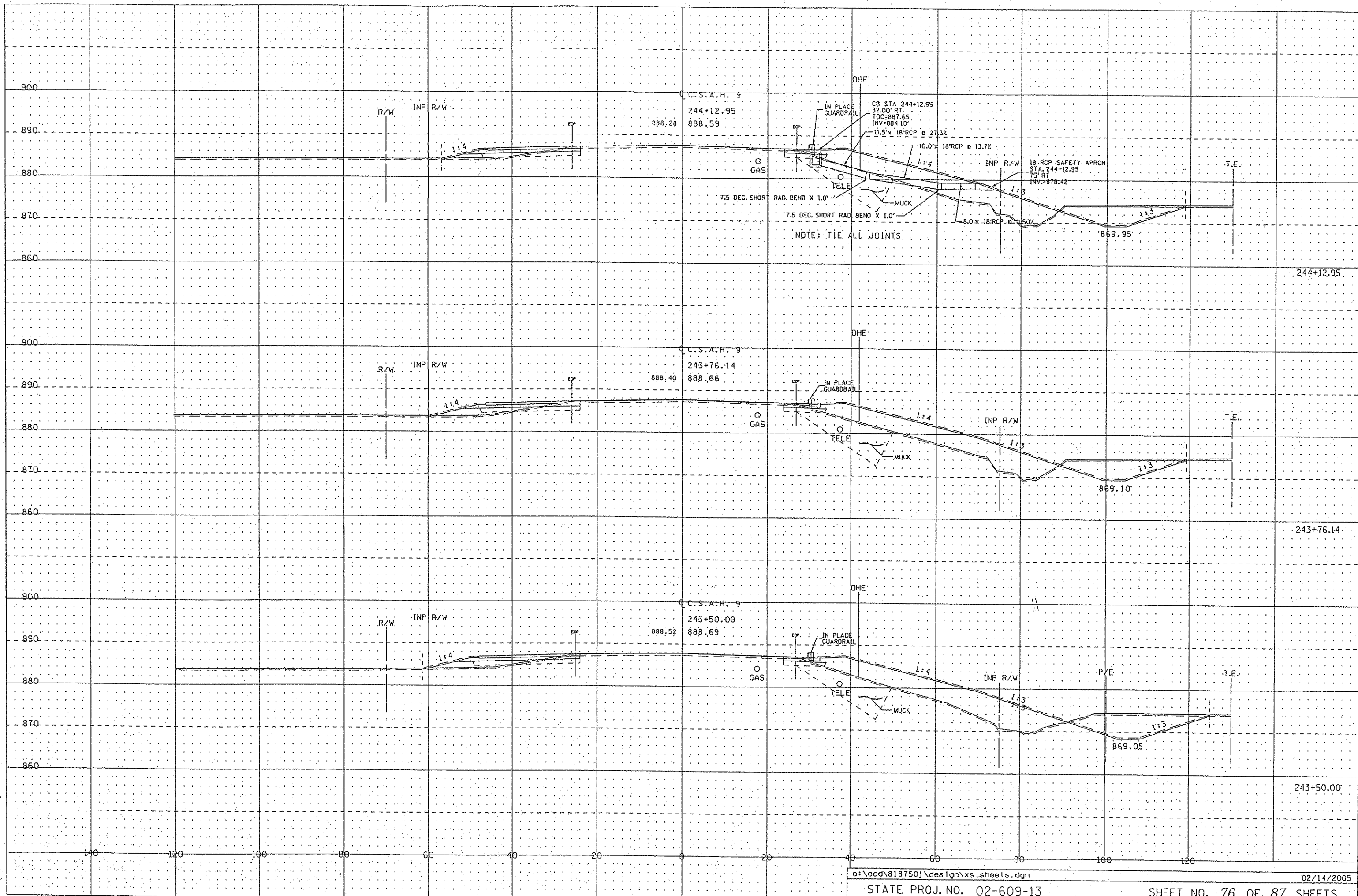
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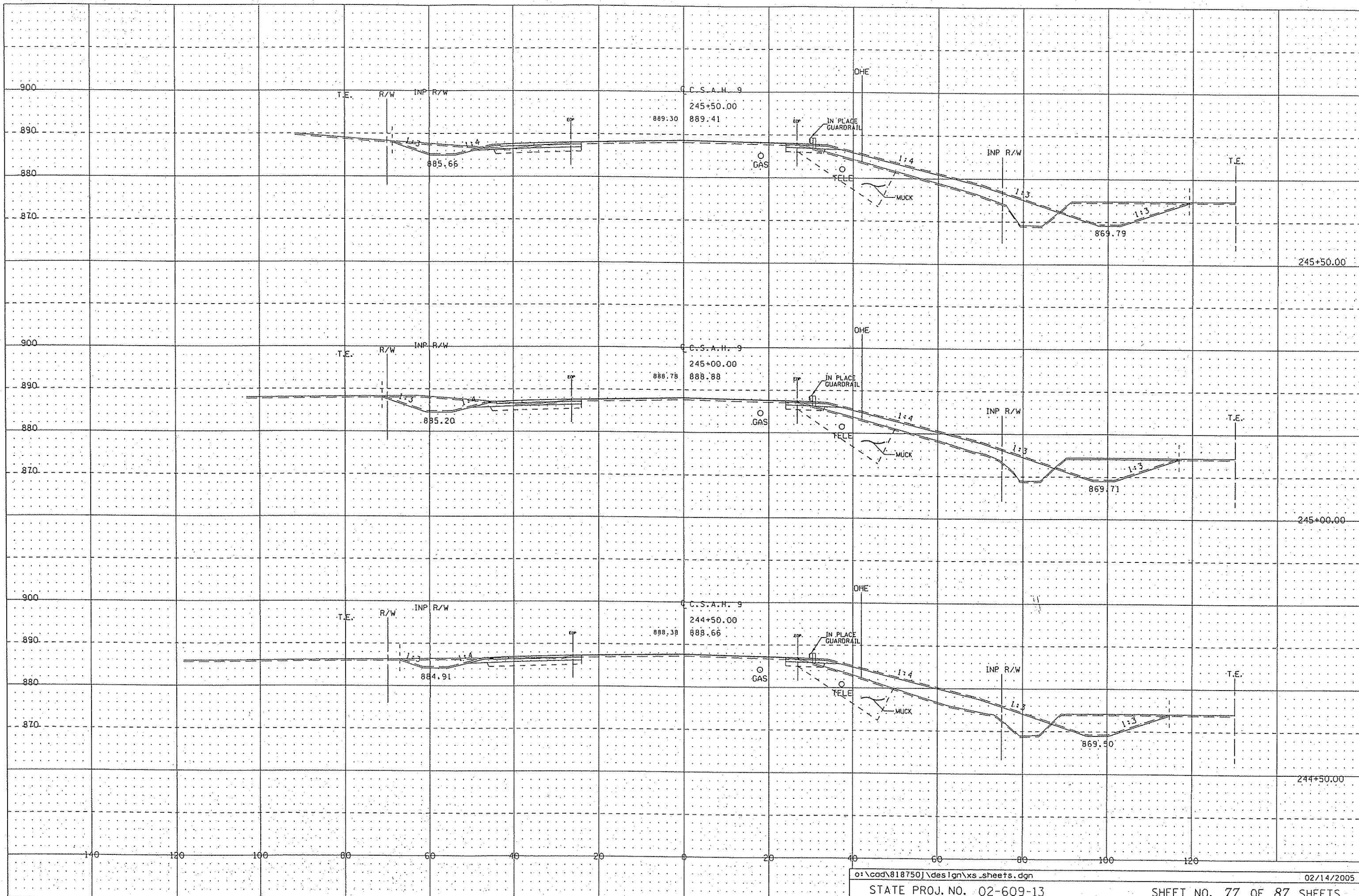


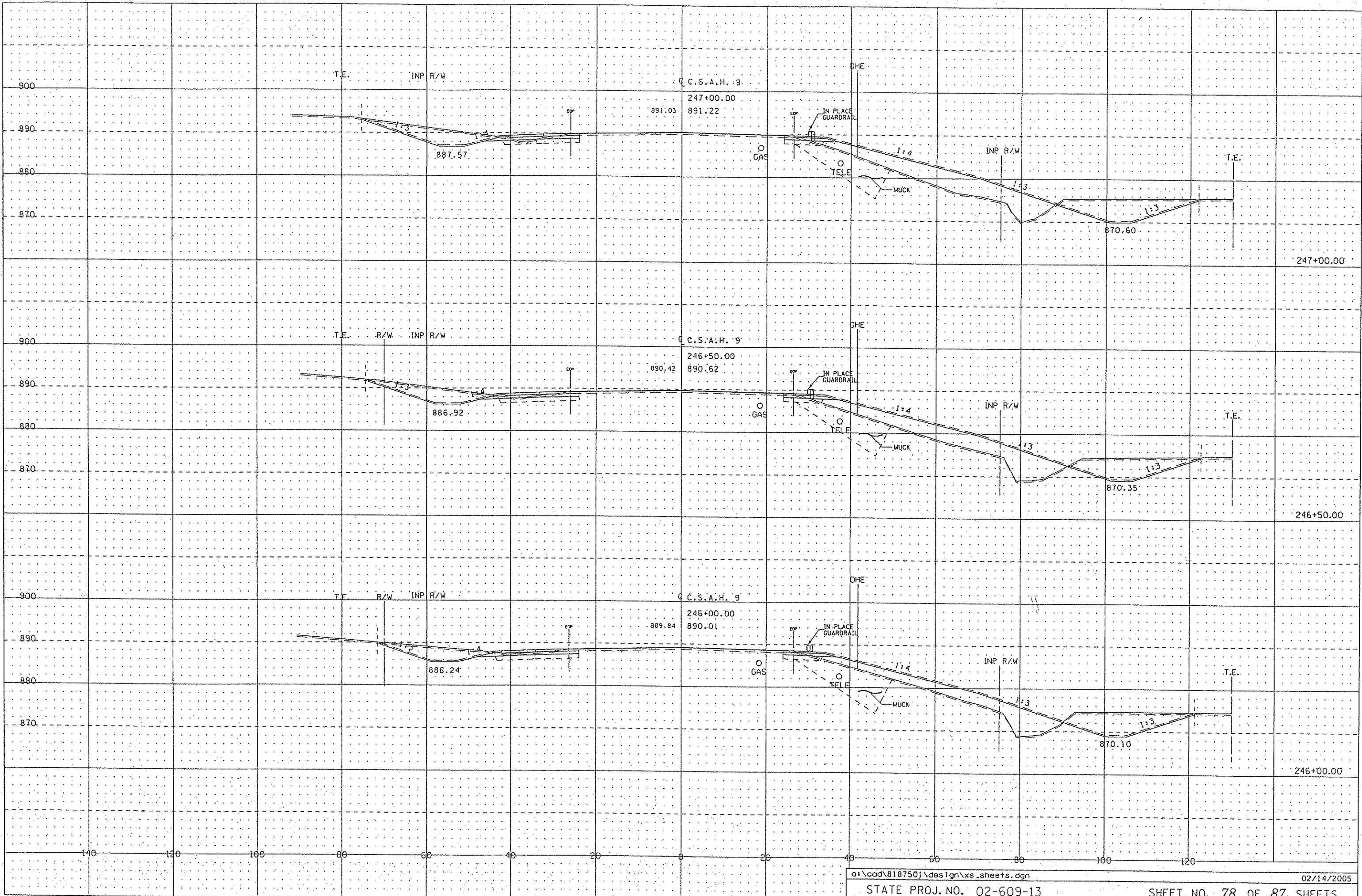


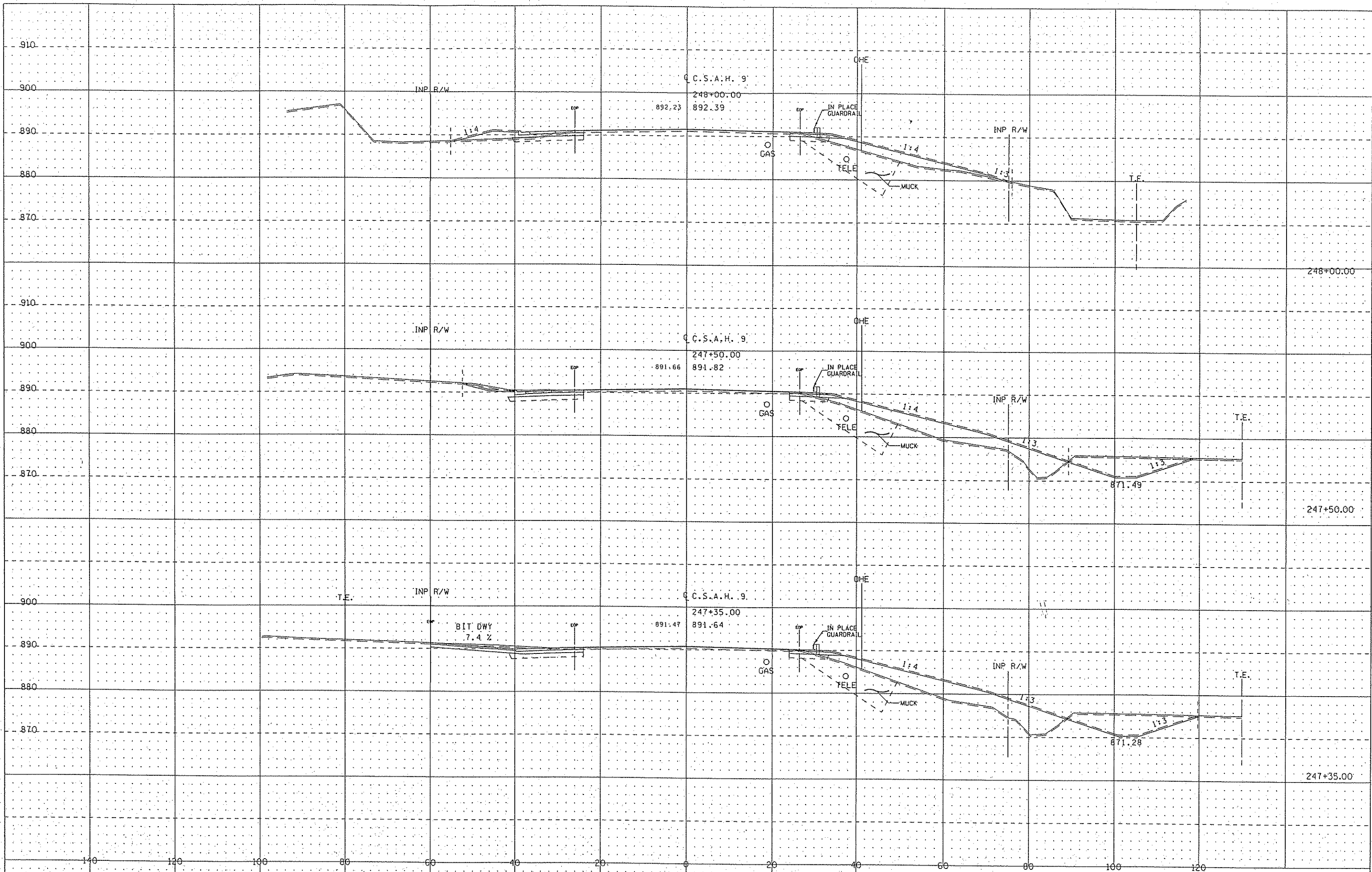


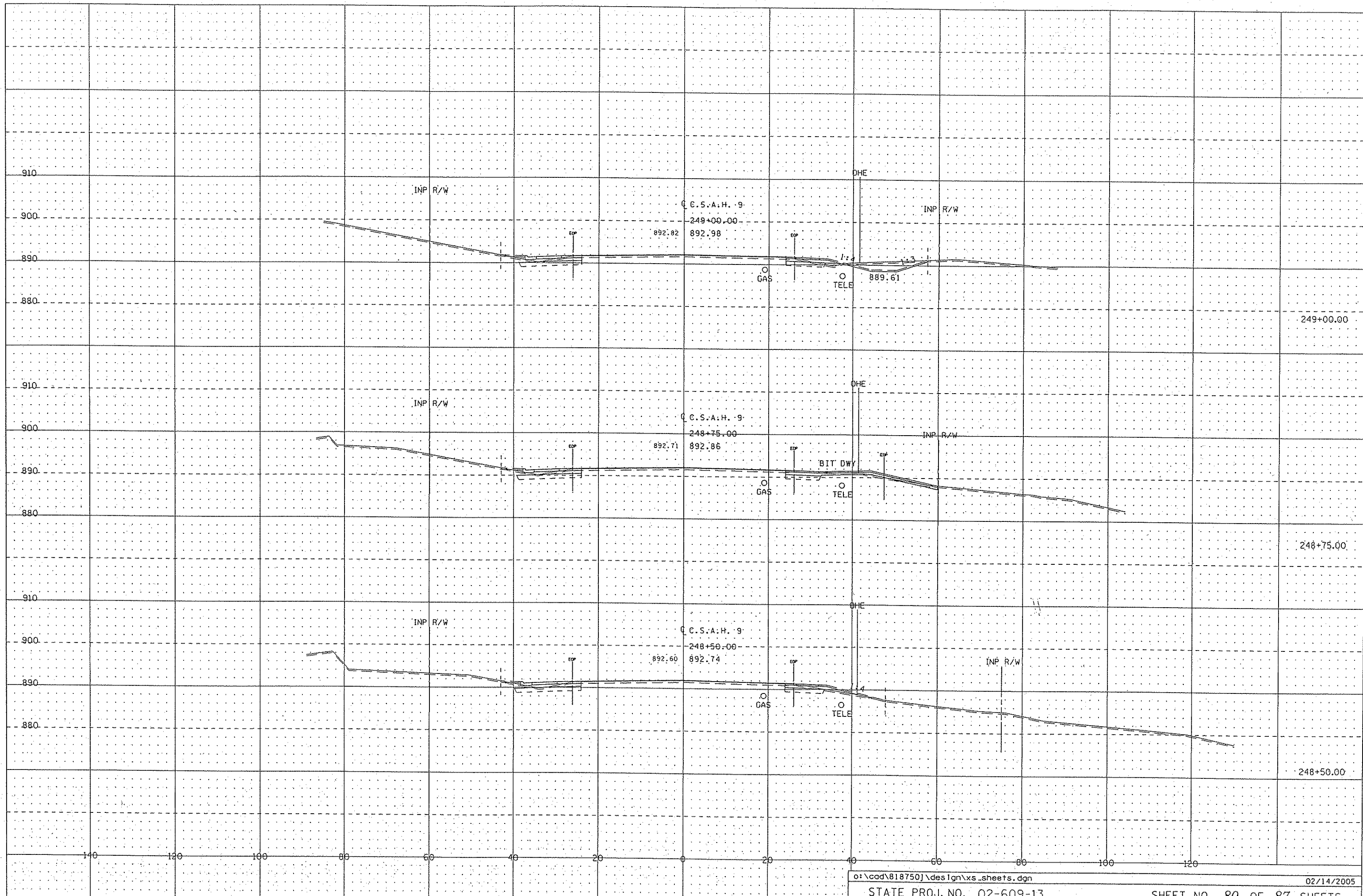


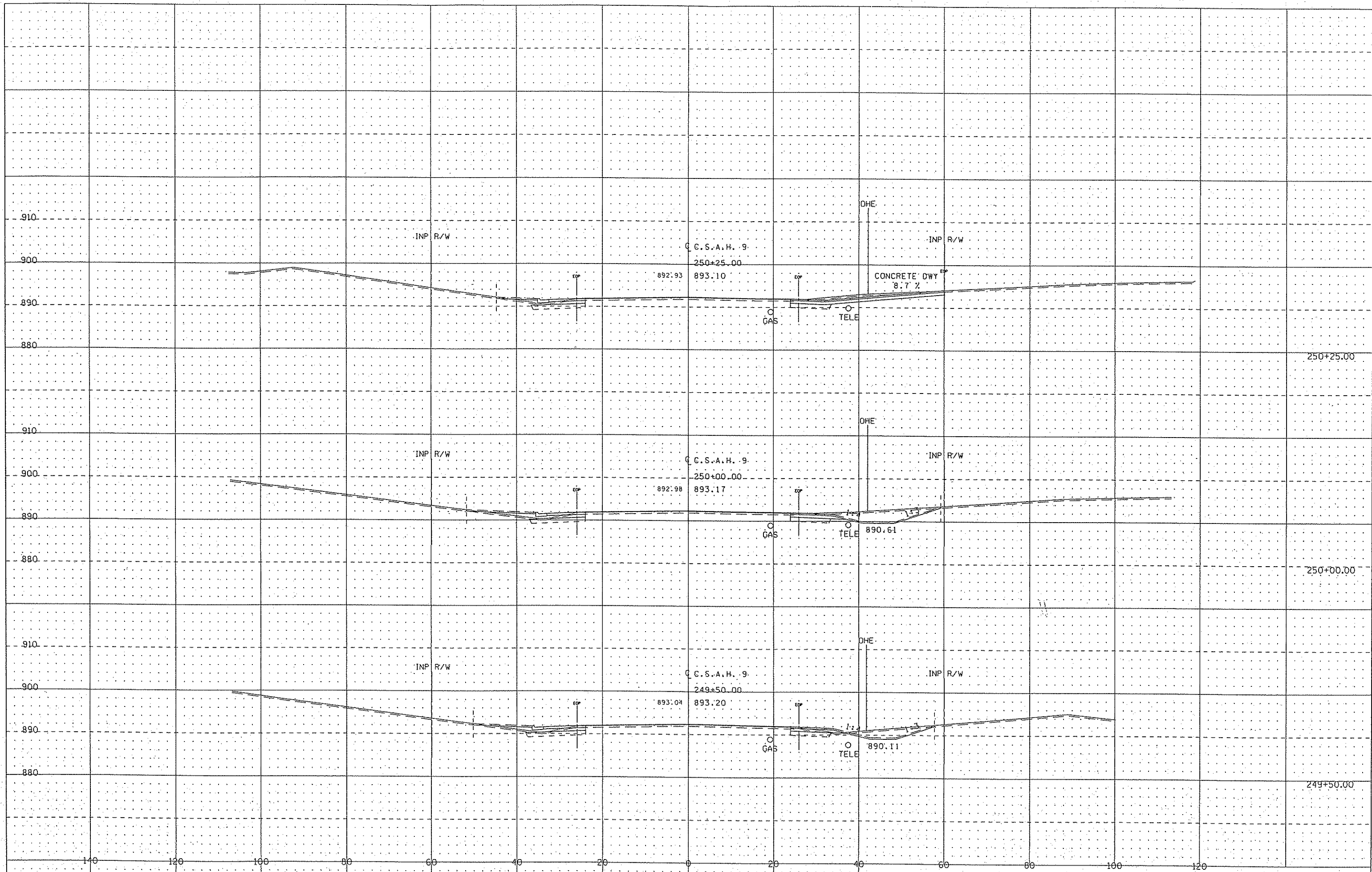


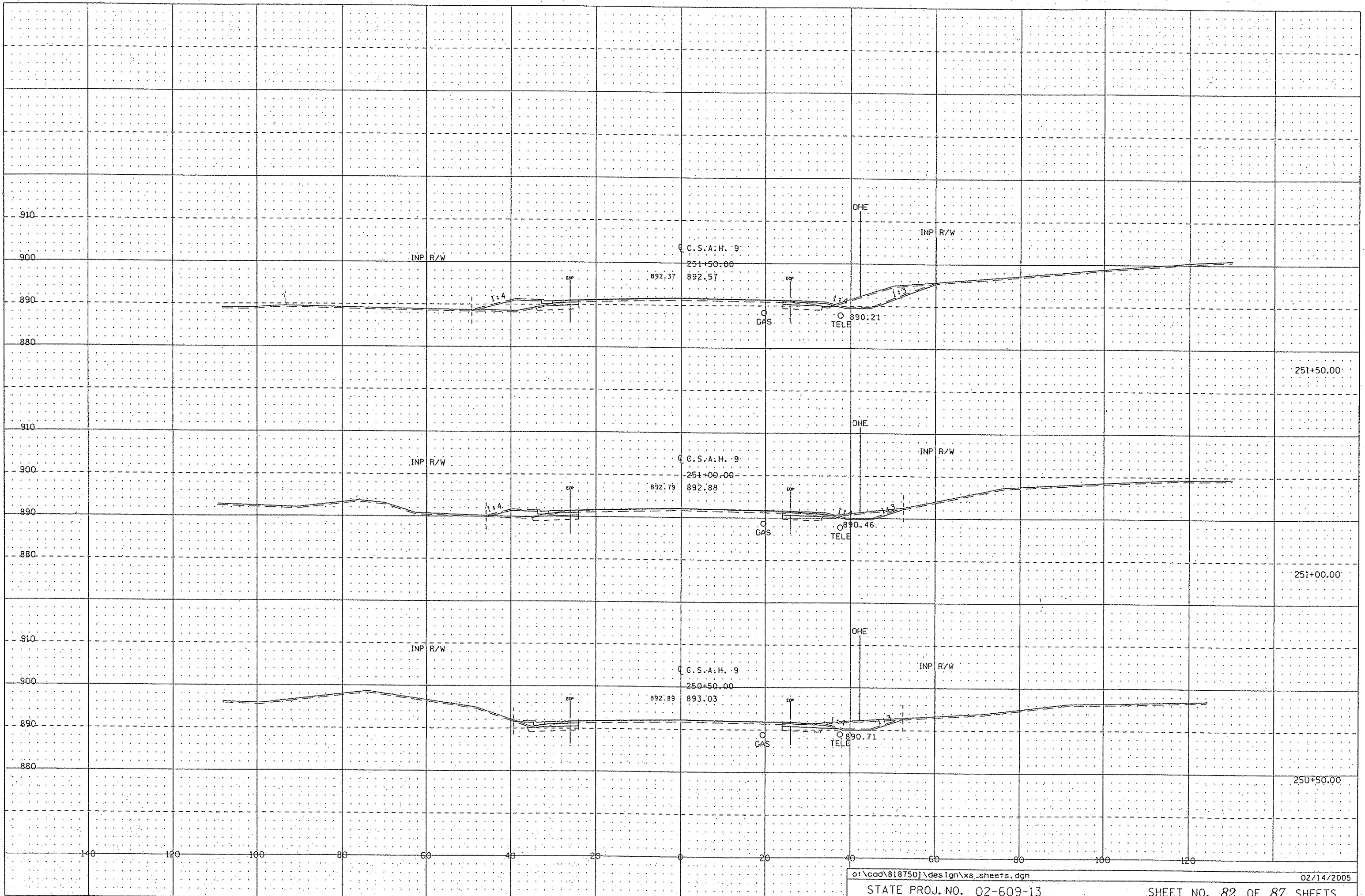


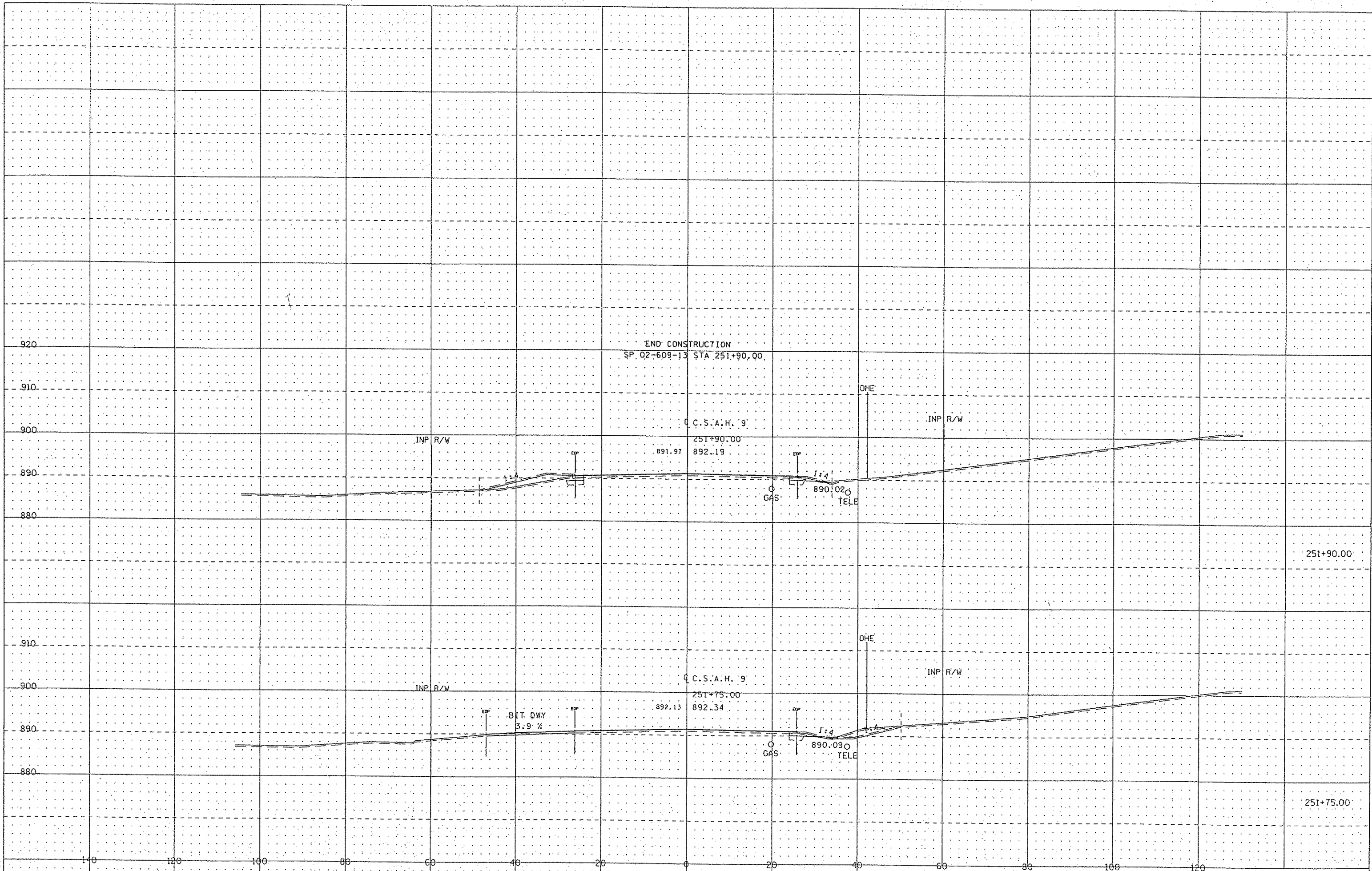












END CONSTRUCTION
 SP. 02-609-13 STA 251+90.00

C.S.A.H. '9'

251+90.00
 891.97 892.19

OHE

INP R/W

GAS

TELE

251+90.00

C.S.A.H. '9'

251+75.00
 892.13 892.34

OHE

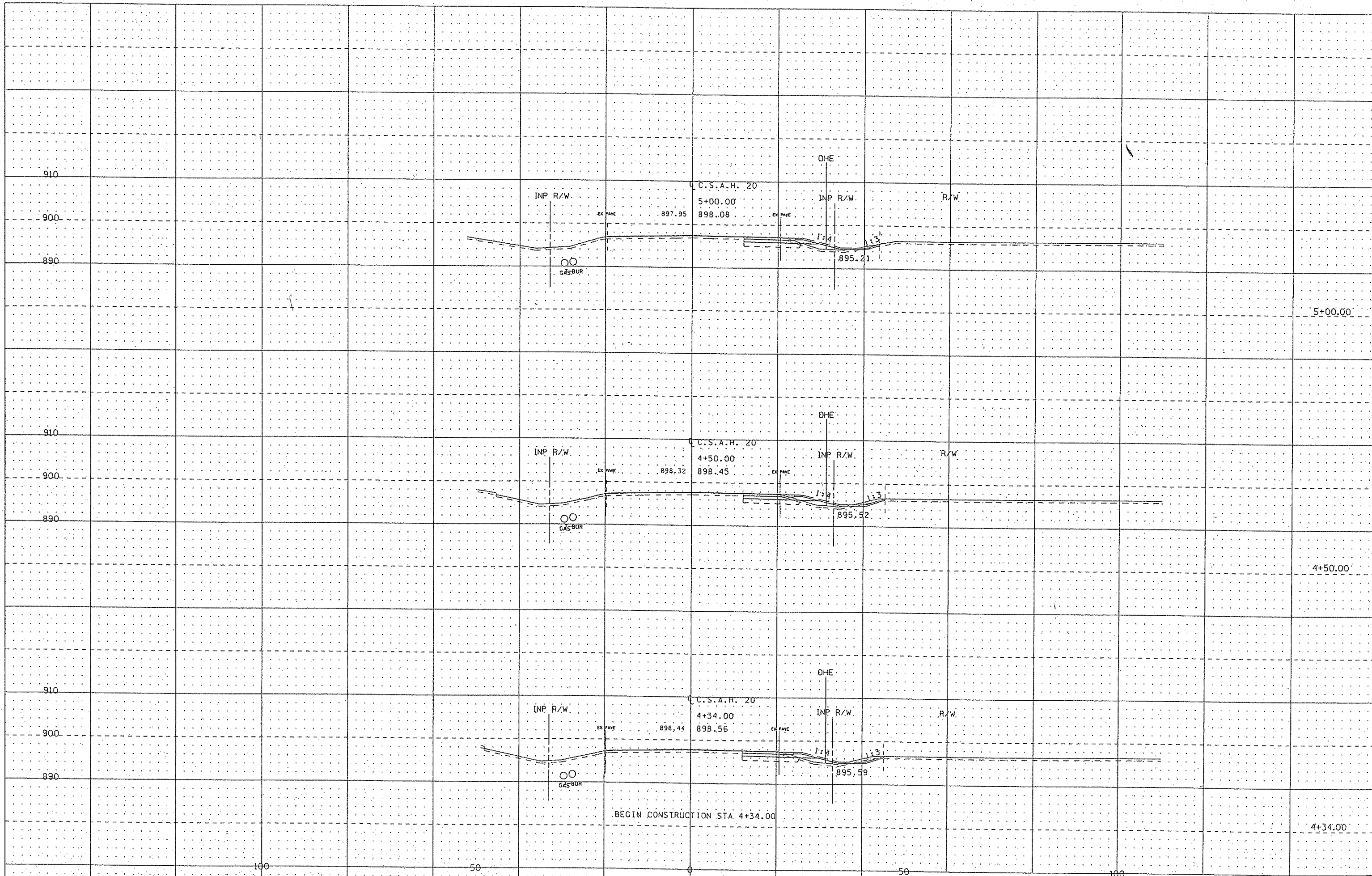
INP R/W

BIT. DWY
 3.9%

GAS

TELE

251+75.00



BEGIN CONSTRUCTION STA. 4+34.00

