

# MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY

CONSTRUCTION PLAN FOR \_\_\_\_\_ MILL BITUMINOUS, BITUMINOUS SURFACING, CURB & GUTTER, AND SEWER REPAIRS \_\_\_\_\_

LOCATED ON CSAH 23 BETWEEN 700' WEST OF KEITH ROAD AND 800' EAST OF 2ND AVENUE

GOVERNING SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MNMUTCD), AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

THIS PLAN CONTAINS 17 SHEETS

**INDEX**

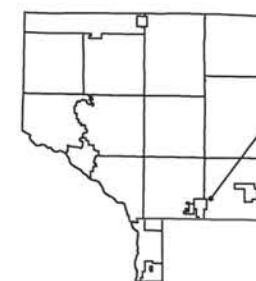
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	TABLATIONS
4	TYPICAL SECTIONS
5	DETAILS
6 - 7	CONSTRUCTION PLAN
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END CP 15-18-23  
CSAH 23 , STA: 54+60

BEGIN CP 15-18-23  
CSAH 23 , STA: 11+00



## PROJECT LOCATION



<u>CSAH 23</u>			
GROSS LENGTH	4360 FEET	0.83 MILES	
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES	
NET LENGTH	0.00 FEET	0.000 MILES	
DESIGN SPEED	50 MPH		
CURRENT ADT	17500		

CITY OF LINO LAKES  
ANOKA COUNTY  
MN/DOT TRANSPORTATION DISTRICT - METRO  
SECTION 19  
TOWNSHIP 31 NORTH  
RANGE 22 WEST

Approved: 4/2/15  
ANOKA COUNTY ENGINEER

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: 8px;">NO</td> <td style="font-size: 8px;">DATE</td> <td style="font-size: 8px;">BY</td> <td style="font-size: 8px;">CKD</td> <td style="font-size: 8px;">APPR</td> <td style="font-size: 8px;">REVISION</td> <td style="font-size: 8px;">04/02/2015</td> <td style="font-size: 8px;">2:59:25 PM</td> </tr> <tr> <td colspan="8" style="font-size: 8px;">NAME: P:\15-01-00\CSAH_23(LinoLakesCL-2ndAve)\Base\PROPOSED\TEMPLATE_PLAN.dgn</td> </tr> </table>	NO	DATE	BY	CKD	APPR	REVISION	04/02/2015	2:59:25 PM	NAME: P:\15-01-00\CSAH_23(LinoLakesCL-2ndAve)\Base\PROPOSED\TEMPLATE_PLAN.dgn								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: MATTHEW J. JOHN SIGNATURE: DATE: 4/2/15 LICENSE NO. 51639	DRAWN BY SAT DATE 3-26-15 DESIGN BY SAT DATE 3-26-15 CHECKED BY MJJ DATE 3-26-15	 <b>ANOKA COUNTY HIGHWAY DEPT.</b>	COUNTY PROJECT <u>15-18-23</u>	TITLE SHEET Sheet <u>1</u> of <u>17</u> Sheets
NO	DATE	BY	CKD	APPR	REVISION	04/02/2015	2:59:25 PM														
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mjohn

STATEMENT OF ESTIMATED QUANTITIES

ITEM NUMBER	(CODE)	ITEM DESCRIPTION	NOTES	UNIT	TOTAL PROJECT QUANTITIES ESTIMATED
2021.501	00010	MOBILIZATION		LUMP SUM	1
2104.501	00022	REMOVE CURB AND GUTTER	1	LN FT	40
2104.503	00021	REMOVE CONCRETE WALK	1, 2	SQ FT	80
2104.505	00120	REMOVE BITUMINOUS PAVEMENT	1	SQ YD	9
2104.509	00105	REMOVE CASTING	1	EACH	4
2104.511	00011	SAWING CONCRETE PAVEMENT (FULL DEPTH)	1	LN FT	75
2104.513	00011	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	1	LN FT	155
2104.523	00539	SALVAGE SIGN	3	EACH	4
2211.501	00050	AGGREGATE BASE CLASS 5	4	TON	80
2221.501	00050	SHOULDER BASE AGGREGATE CLASS 5		TON	175
2232.501	00080	MILL BITUMINOUS SURFACE (2")	5	SQ YD	29770
2232.604	00010	MILL BITUMINOUS PAVEMENT (SPECIAL)	6	SQ YD	930
2357.502	00010	BITUMINOUS MATERIAL FOR TACK COAT		GAL	725
2360.501	14500	TYPE SP 12.5 WEARING COURSE MIXTURE (4,E)	7	TON	3646
2360.501	14500	TYPE SP 12.5 WEARING COURSE MIXTURE (3,B)	8	TON	47
2360.505	20100	TYPE SP 12.5 BITUMINOUS MIXTURE FOR PATCHING	9	TON	25
2506.515	00010	CASTING ASSEMBLY	10	EACH	4
2506.602	00010	CLEAN OUT CATCH BASIN		EACH	5
2506.602	00060	GROUT CATCH BASIN OR MANHOLE	11	EACH	5
2521.501	00050	4" CONCRETE WALK	1, 2	SQ FT	270
2521.501	00060	6" CONCRETE WALK		SQ FT	1050
2531.501	02320	CONCRETE CURB AND GUTTER DESIGN B624		LN FT	150
2531.618	00010	TRUNCATED DOMES		SQ FT	64
2540.602	00150	MAIL BOX SUPPORT	12	EACH	5
2550.602	10000	LOOP DETECTOR DESIGN NMC	13	EACH	6
2563.601	00010	TRAFFIC CONTROL	14, 15	LUMP SUM	1
2563.610	00020	POLICE OFFICER		hour	40
2563.613	01100	PORTABLE CHANGEABLE MESSAGE SIGN	16	UNIT DAY	14
2564.602	00015	INSTALL SIGN	3	EACH	4
2573.530	00010	STORM DRAIN INLET PROTECTION	17	EACH	10
2575.523	00009	EROSION CONTROL BLANKETS CATEGORY 0	18	SQ YD	265
2581.501	00010	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	19	LN FT	640
2582.502	41104	4" SOLID LINE WHITE-EPOXY	20	LN FT	12925
2582.502	42104	4" SOLID LINE YELLOW-EPOXY	20	LN FT	5600
2582.502	41204	4" DOUBLE SOLID LINE YELLOW-EPOXY	20	LN FT	2540
2582.601		PAVEMENT MESSAGE (LT ARROW) PREFORMED THERMOPLASTIC	20	EACH	6
2582.601		PAVEMENT MESSAGE (RT ARROW) PREFORMED THERMOPLASTIC	20	EACH	6
2582.602		24" SOLID LINE YELLOW PREFORMED THERMOPLASTIC	20	LN FT	698
2582.602		24" SOLID LINE WHITE PREFORMED THERMOPLASTIC	20	LN FT	176
2582.618		3' X 6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	20	SQ FT	1080

CONSTRUCTION NOTES

1	REFERENCE DETAILS (SHEET 5)
2	ITEM INCLUDES CONCRETE MEDIAN
3	ITEM USED FOR SIGNS IN MEDIAN REPLACEMENT AREAS (CASTING REPLACEMENTS)
4	ITEM TO BE USED AS BASE FOR NEW CONCRETE WALK. EXCAVATION AND DISPOSAL OF EXISTING GRADING MATERIAL IS INCIDENTAL TO AGGREGATE BASS CLASS 5.
5	DETAIL MILLING AROUND MANHOLES, CATCH BASINS, AND GATE VALVES IS INCIDENTAL TO THIS ITEM.
6	TO BE USED FOR MILLING STREET APPROACHES AND/OR DETAIL MILLING AREAS AS IDENTIFIED IN THE PLAN. DETAIL MILLING AROUND MANHOLES, CATCH BASINS, GATE VALVES, AND ALONG CURB LINE IS INCIDENTAL TO THIS ITEM.
7	INCLUDES CSAH 49 (HODGSON ROAD) STREET APPROACHES
8	STREET APPROACHES & BITUMINOUS DRIVEWAYS. CONTRACTOR IS RESPONSIBLE FOR CONTACTING PROPERTY OWNER 48 HOURS BEFORE STARTING OPERATION.
9	ITEM INCLUDES BITUMINOUS PATCHING AROUND NEW CURB, STORM STRUCTURE REPAIRS, AND ANY POTHOLE.
10	ITEM INCLUDES FULL REPLACEMENT OF CASTING ADJUSTMENT RINGS. SEE STORM TABULATIONS FOR RING HEIGHTS.
11	ITEM INCLUDES GROUTING OF INVERTS, DOGHOUSES, RINGS, AND CASTINGS AS REQUIRED
12	MAILBOXES ARE TO BE INSTALLED AT THE EXISTING MAILBOX LOCATION OR AS DIRECTED BY THE LOCAL POSTAL AUTHORITY, CONTRACTOR IS RESPONSIBLE FOR CONTACTING. MAILBOX REMOVAL AND ALL MATERIALS ARE INCIDENTAL TO INSTALLATION.
13	FULL LOOP REPLACEMENT REQUIRED (MAINLINE CSAH 23 ONLY). CONTRACTOR SHALL CONTACT ANOKA COUNTY TO DETERMINE PLACEMENT. ORIGINAL SIGNAL PLANS ARE INCLUDED AT THE END OF THIS PLAN.
14	DO NOT PASS, PASS WITH CARE AND NO CENTER STRIPE SIGNS MUST BE INPLACE DURING MILLING, RECLAIMING OR PAVING OPERATIONS.
15	CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY SIGNAGE WHENEVER EXISTING SIGNAGE IS REMOVED. TEMPORARY SIGNAGE SHALL BE INCIDENTAL TO TRAFFIC CONTROL.
16	2 MESSAGE BOARDS, ONE ON THE EACH END OF PROJECT WILL BE INSTALLED 7 DAYS PRIOR TO ANY CONSTRUCTION; REFERENCE STRIPING PLAN FOR DETAILS.
17	ALL DRAINAGE STRUCTURES AFFECTED BY THIS PROJECT MUST HAVE INLET PROTECTION.
18	4" OF TOPSOIL, TYPE 25-121 SEED, AND TYPE 1 FERTILIZER ARE INCIDENTAL TO THIS ITEM.
19	CENTERLINE AND LANE DESIGNATION SKIPS TO BE APPLIED AS SOON AS POSSIBLE ON EACH NEW LIFT OF PAVEMENT; SKIPS MUST BE INPLACE BEFORE THE CONTRACTOR LEAVES FOR THE DAY. CONTRACTOR IS TO REMOVE PRIOR TO FINAL PAINT STRIPING.
20	FINAL STRIPING SHALL BE INSTALLED WITHIN 72 HOURS OF COMPLETION OF MAINLINE WEAR COURSE PAVING.

BASIS OF PLANNED QUANTITIES

2357	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL / SQ YD
2211	AGGREGATE BASE CLASS 5	1.8 TONS / CU YD
2360	ALL BITUMINOUS PAVEMENT	115 LBS / SQ YD / IN THICKNESS
2581	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	2' AT 50' INTERVALS

NO	DATE	BY	CKD	APPR	REVISION	
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NAME: P:\15-01-00\CSAH\_23(LinoLakeCL-2ndAve)\Base\PROPOSED\TEMPLATE\_PLAN.dgn

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PRINT NAME: MATTHEW J. JOHN

SIGNATURE: *Matthew J. John*

DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY SAT DATE 2-28-15

DESIGN BY SAT DATE 3-28-15

CHECKED BY MJJ DATE 3-28-15



ANOKA COUNTY  
HIGHWAY DEPT.

COUNTY PROJECT 15-18-23

STATEMENT OF ESTIMATED QUANTITIES

Sheet 2 of 17 Sheets

STORM DRAINAGE TAB							
NUMBER	TYPE	ACTION	NEW CASTING	CASTING ASSEMBLY (EACH)	RING HEIGHT (LIN FT) (INCIDENTAL)	CLEAN OUT CATCH BASIN (EACH)	GROUT CATCH BASIN OR MANHOLE (EACH)
100	CB	CLEAN, GROUT				1	1
101	CB	CLEAN, GROUT				1	1
102	CB	CLEAN, RE-RING	R-3250-1	1	1(1.2)	1	
103	CB	CLEAN, GROUT				1	1
106	CB	GROUT					1
107	CB	CLEAN, RE-RING	R-3250-1	1	1 (0.5)	1	
108	MH	OK					
109	CB	RE-RING	R-3250-1	1	1 (0.7)		
110	CB	RE-RING	R-3250-1	1	1 (1.2)		
111	CB	GROUT					1
<b>TOTALS:</b>				<b>4</b>	<b>4(3.6)</b>	<b>5</b>	<b>5</b>

CASTING ASSEMBLIES SUMMARY					
ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	QUANTITY	DESCRIPTION
NEENAH*	R-3250-1	K	YES	4	-
*OR APPROVED EQUAL					
ALL CASTING HEIGHTS ARE TO BE VERIFIED IN THE FIELD.					
ALL MANHOLE COVERS SHOULD BE LABELED AS STORM OR SANITARY					

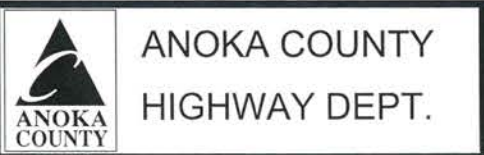
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COUNTY PROJECT 15-18-23

TABULATIONS  
 Sheet 3 of 17 Sheets

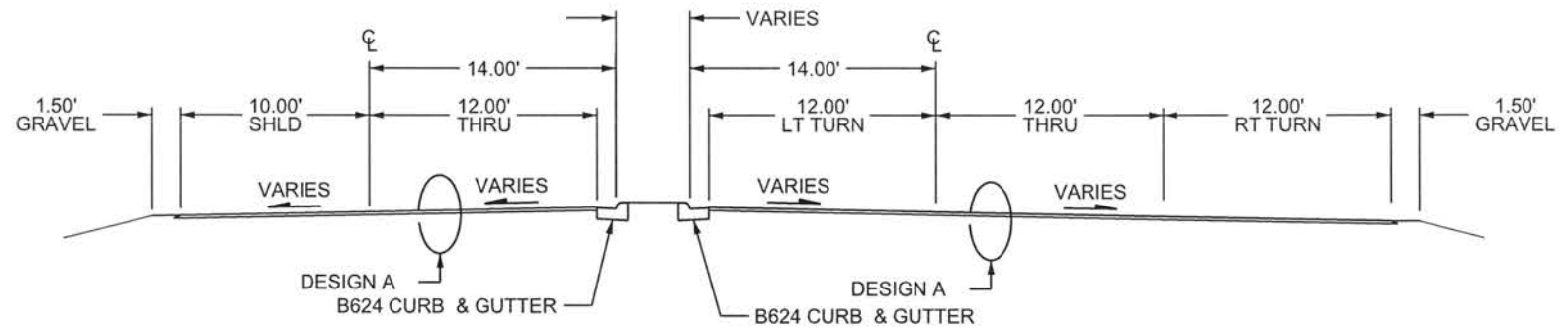


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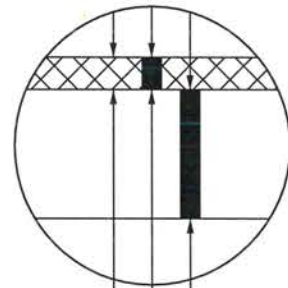
### LAKE DRIVE (CSAH 23)

TYPICAL MAINLINE

14+20 - 18+60  
22+40 - 26+00  
28+10 - 32+00  
42+50 - 46+50 (A)



### DESIGN A MILL SECTION

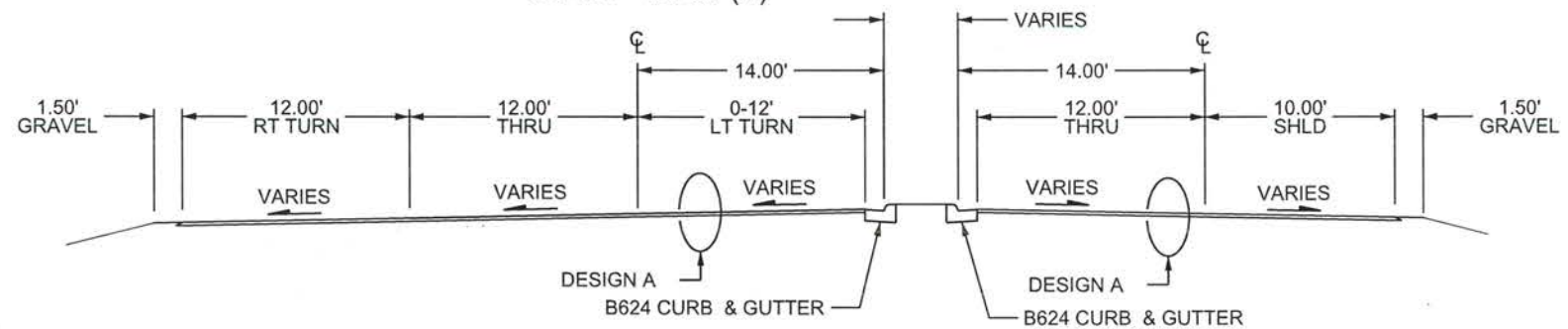


2.0" MILL BITUMINOUS  
2.0" BITUMINOUS WEAR(SPWEB440E)  
REMAINING BITUMINOUS

### LAKE DRIVE (CSAH 23)

TYPICAL MAINLINE

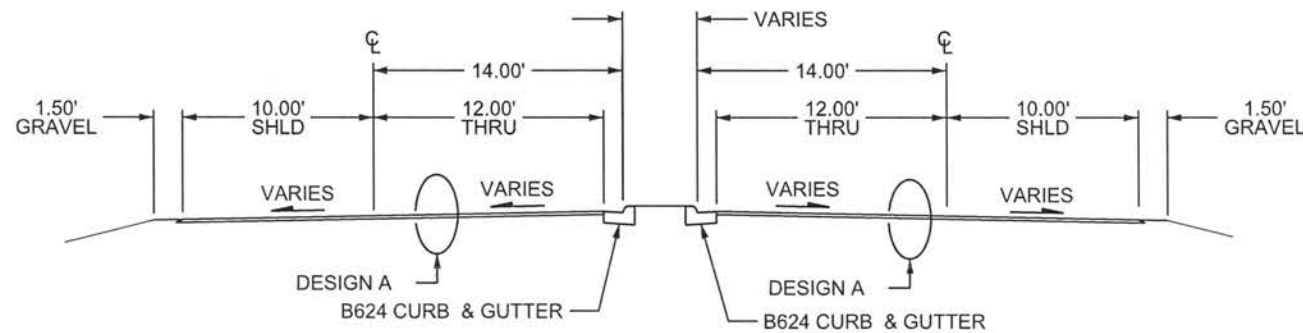
18+60 - 22+40  
26+00 - 28+10  
32+00 - 37+00  
39+00 - 42+50 (A)



### LAKE DRIVE (CSAH 23)

TYPICAL MAINLINE

11+00 - 14+20  
37+00 - 39+00  
46+50 - 54+60 (A)



(A) THIS RANGE IS A PAINTED GORE AREA  
AND THERE IS NO MEDIAN OR MEDIAN CURB

NO	DATE	BY	CKD	APPR	REVISION	04/02/2015	1:00:08 PM
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DATE: 4/2/15 LICENSE NO. 51839

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DESIGN BY: SAT DATE: 3-26-15  
CHECKED BY: MJJ DATE: 3-26-15



ANOKA COUNTY  
HIGHWAY DEPT.

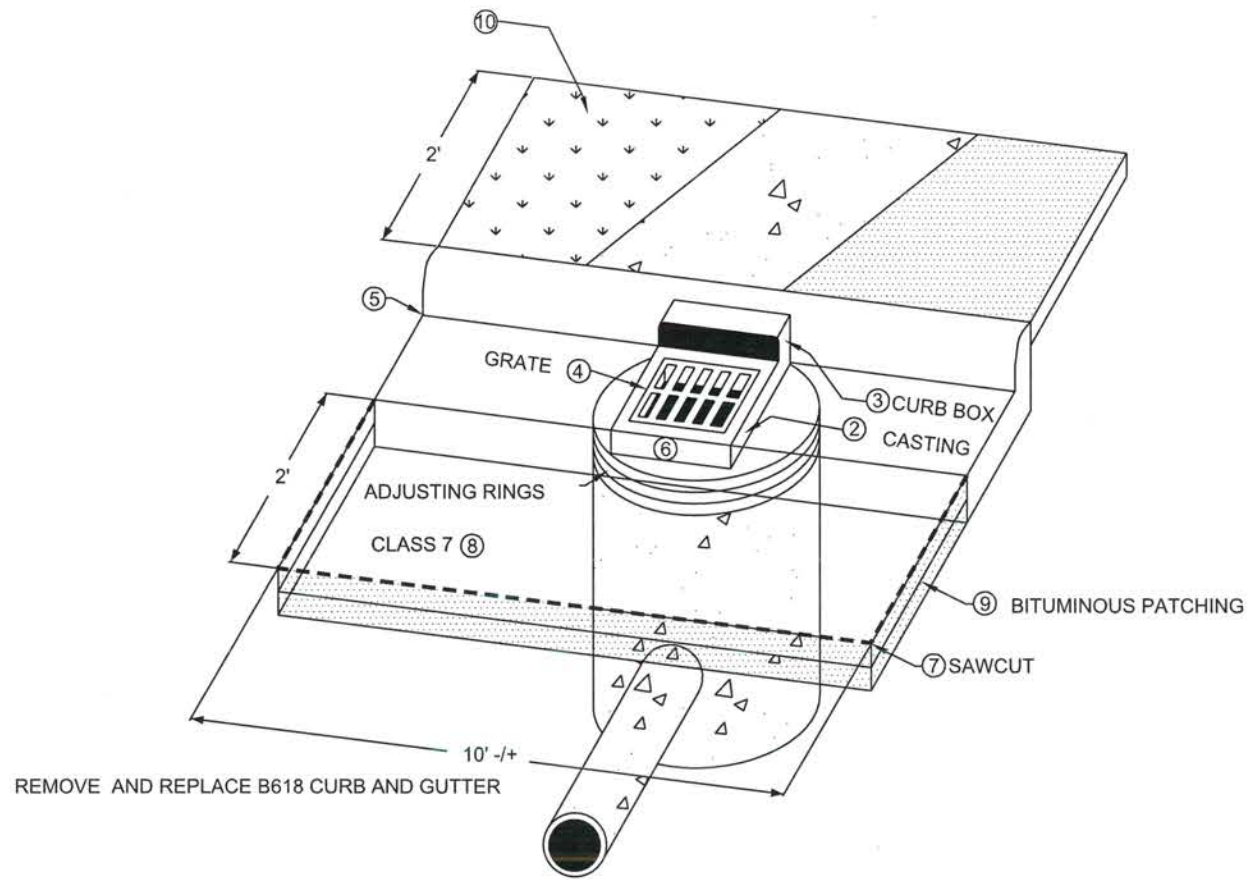
COUNTY PROJECT 15-18-23

TYPICAL SECTIONS  
Sheet 4 of 17 Sheets

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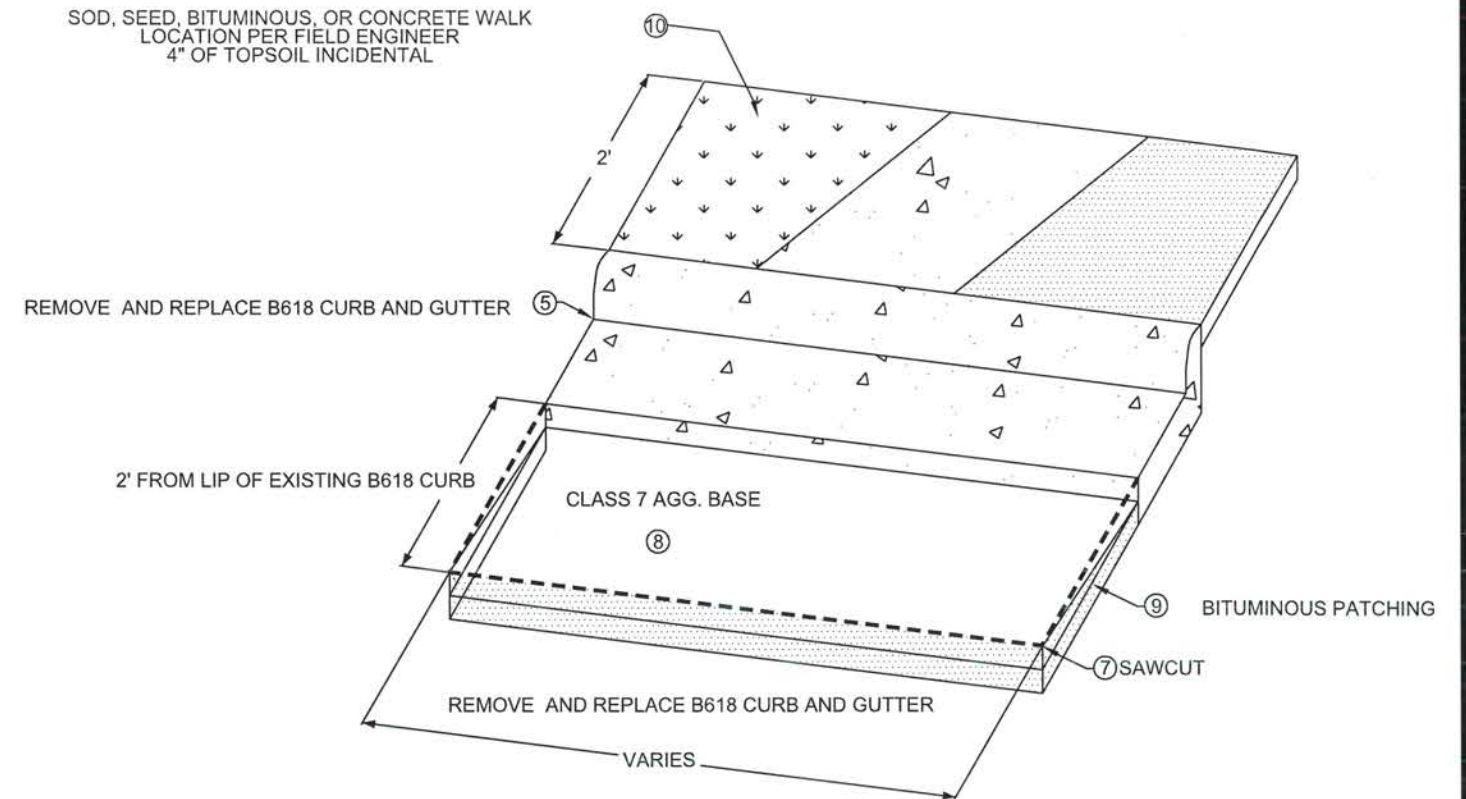
### CATCH BASIN DETAIL

SEE PLAN FOR LOCATION



### NEW CURB DETAIL

SEE PLAN FOR LOCATION



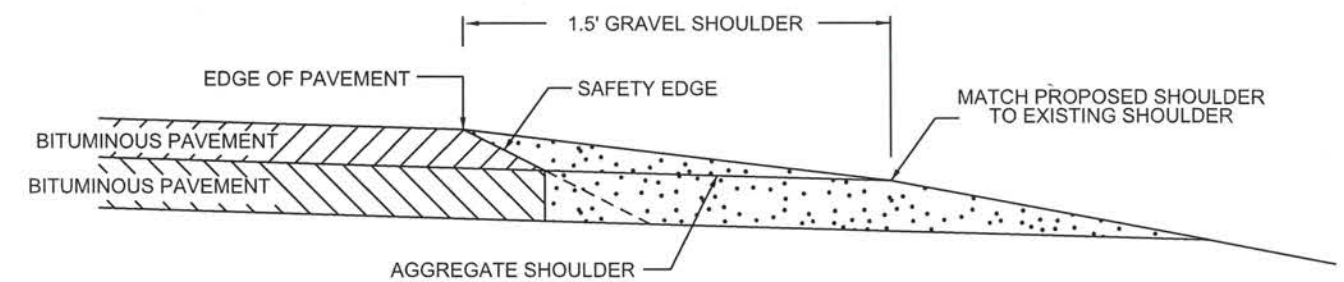
### NOTES

FOR TRAFFIC CONTROL AT CATCH BASIN AND MANHOLE REPAIRS REFER TO THE MINNESOTA MANUAL ON TEMPORARY TRAFFIC CONTROL LAYOUTS FIELD MANUAL.

- ① CONCRETE ENCASED CONCRETE ADJUSTING RINGS STANDARD PLATE 4026A
- ② RING AND FRAME CASTING; REFERENCE CASTING ASSEMBLIES SUMMARY CHART FOR CASTING TYPE
- ③ CURB BOX MATCHES CASTING REFERENCE CHART FOR CASTING TYPE
- ④ GRATE CASTING; REFERENCE CASTING ASSEMBLIES SUMMARY CHART FOR CASTING TYPE
- ⑤ CONCRETE CURB AND GUTTER DESIGN B STANDARD PLATE 7100G, FORM CURB TO FIT CASTING
- ⑥ INSTALLATION OF CATCH BASIN OR MANHOLE CASTINGS; REFERENCE STANDARD PLATE PER TYPE OF CASTING
- ⑦ SAWCUT BITUMINOUS PAVEMENT / CONCRETE CURB FULL DEPTH.
- ⑧ ADD AND COMPACT AGGREGATE BASE CLASS 7 AROUND REPAIRED STRUCTURE. ITEM INCIDENTAL TO ENTIRE STRUCTURE REPAIR
- ⑨ REMOVE VARIABLE DEPTH BITUMINOUS, PATCH WITH 2, 3" LIFTS OF BITUMINOUS, TOP LIFT SHOULD TAPER TO BOTTOM LIFT AT CURB.
- ⑩ REPLACE DISTURBED AREA BEHIND CATCH BASIN WITH EITHER SOD (RESIDENTAL AREAS), EROSION CONTROL BLANKET, BITUMINOUS, OR CONCRETE

### SHOULDER DETAIL

BITUMINOUS SAFETY EDGE  
GRAVEL SHOULDER



SAFETY EDGE TO BE USED IN ALL NON-CURB AREAS ON SHOULDER.

OPTIONAL DESIGN EXTENDS SAFETY EDGE DEEPER THAN 6" AND WIDER THAN 10.5". SEE SPECIAL PROVISIONS.

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 CHECKED BY: MJJ DATE 3-28-15



ANOKA COUNTY  
HIGHWAY DEPT.

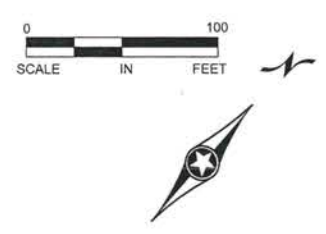
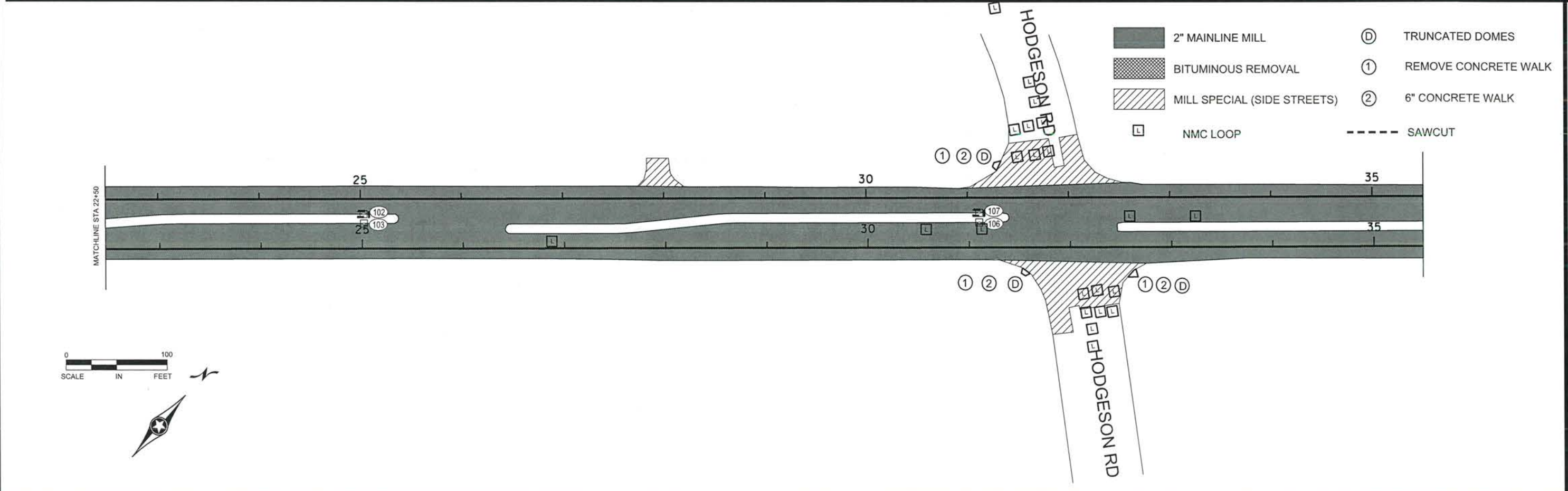
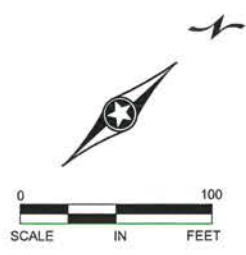
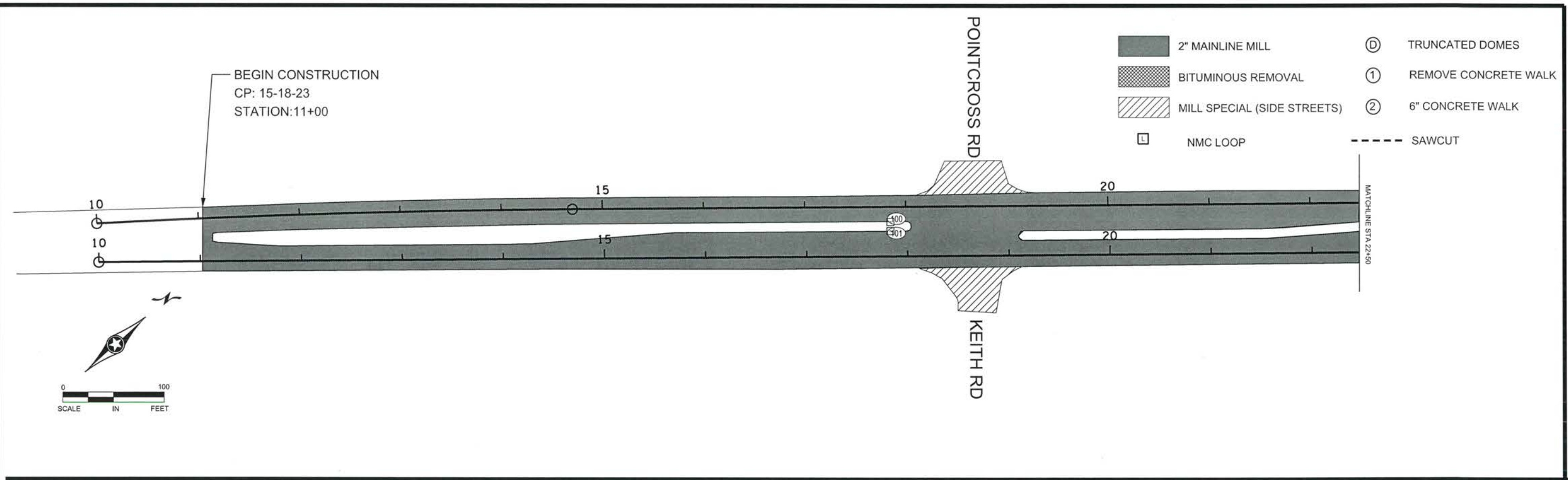
COUNTY PROJECT 15-18-23

DETAILS

Sheet 5 of 17 Sheets



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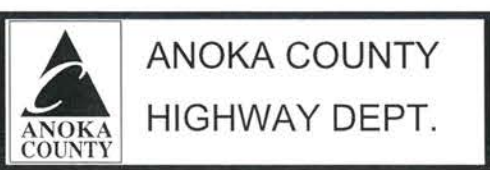
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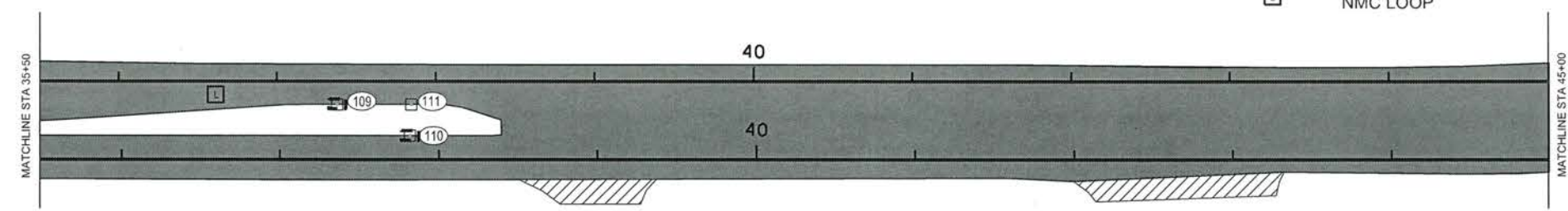
COUNTY PROJECT 15-18-23

CONSTRUCTION PLAN  
 STA 11+00 TO 54+60  
 Sheet 6 of 17 Sheets

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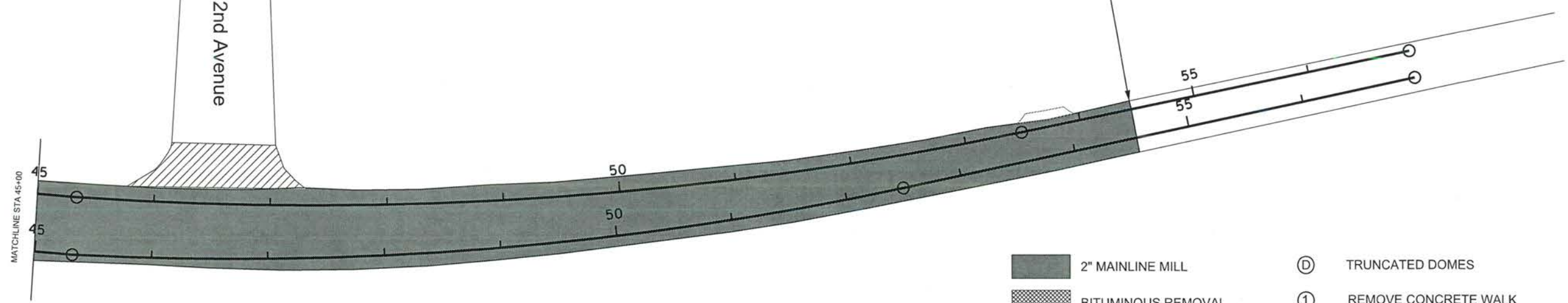


- 2" MAINLINE MILL
- BITUMINOUS REMOVAL
- MILL SPECIAL (SIDE STREETS)
- NMC LOOP
- TRUNCATED DOMES
- REMOVE CONCRETE WALK
- 6" CONCRETE WALK
- SAWCUT



END CONSTRUCTION  
 CP: 15-18-23  
 STATION: 54+60

2nd Avenue



- 2" MAINLINE MILL
- BITUMINOUS REMOVAL
- MILL SPECIAL (SIDE STREETS)
- NMC LOOP
- TRUNCATED DOMES
- REMOVE CONCRETE WALK
- 6" CONCRETE WALK
- SAWCUT



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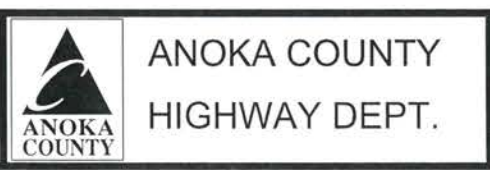
SIGNATURE: *Matthew J. John*

DATE: 4/2/15 LICENSE NO.: 51639

DRAWN BY: SAT DATE: 3-30-15

DESIGN BY: SAT DATE: 3-30-15

CHECKED BY: M.J. DATE: 3-30-15



COUNTY PROJECT 15-18-23

CONSTRUCTION PLAN

STA 35+50 TO 54+60

Sheet 7 of 17 Sheets



**PERMANENT PAVEMENT MARKING PLAN  
NOTES AND GUIDELINES**

**GENERAL INFORMATION:**

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

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

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

**EPOXY:**

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

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

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

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

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

**PREFORMED THERMOPLASTIC:**

THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

**PAINT:**

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

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OR DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

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

PERMANENT MARKING QUANTITIES		
ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE WHITE - EPOXY PAINT	LIN FT	12925
4" SOLID LINE YELLOW - EPOXY PAINT	LIN FT	5600
4" DOUBLE LINE YELLOW - EPOXY PAINT	LIN FT	2540
24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC	LIN FT	176
24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC	LIN FT	698
3'X6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	1080
PAVEMENT MESSAGE (RT ARROW) - PREFORMED THERMOPLASTIC	EACH	6
PAVEMENT MESSAGE (LFT ARROW) - PREFORMED THERMOPLASTIC	EACH	6

**SYMBOLS & MATERIALS LEGEND**

■ CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC

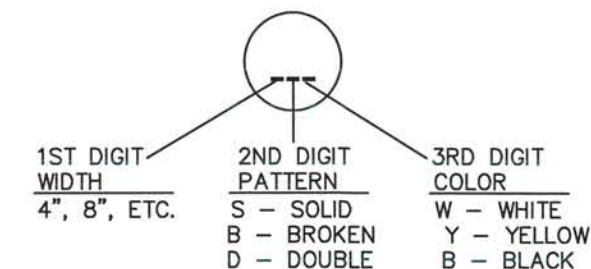
↩ PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

**STRIPING KEY**

○ CIRCLE - EPOXY      □ SQUARE PREFORMED THERMOPLASTIC

△ TRIANGLE - PAINT

⬠ PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



EXAMPLE: (4SW) = 4" SOLID LINE WHITE - EPOXY

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: MATTHEW J. JOHN  
 SIGNATURE: *[Signature]*  
 DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: RLB DATE: 2/14/14  
 DESIGN BY: RLB DATE: 2/14/14  
 CHECKED BY: JR DATE: 2/14/14



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
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 COUNTY PROJECT NO. 15-18-23

PERMANENT MARKING  
TABULATION  
 Sheet 8 of 17 Sheets

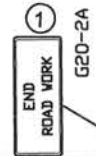
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NAME: P:\13-01-00\CSAH 18\Bases\TRAFFIC\Perm pvmt mrkg guide notes\_guidelines.dwg

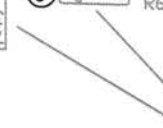
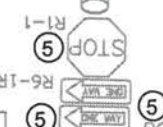
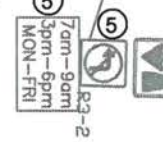
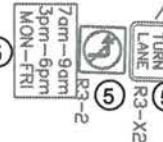
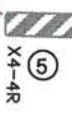


NOTES:

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- ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
- ANY REQUIRED PERMANENT SIGNING SHALL BE INSTALLED THE SAME DAY AS PERMANENT STRIPING
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CSAH 23 (LAKE DR)



POINT CROSS DR

KEITH RD

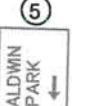
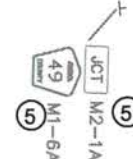
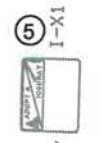
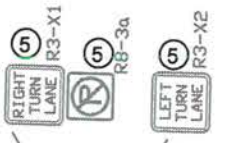


STATION 21+00

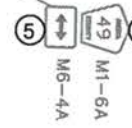
SIGN NOTES:

- ① TEMPORARY TRAFFIC CONTROL SIGN
- ② F & I PERMANENT SIGN
- ③ SALVAGE PERMANENT SIGN
- ④ RE-INSTALL PERMANENT SIGN
- ⑤ RETAIN INPLACE SIGN

STATION 21+00



CSAH 23 (LAKE DR)



CENTENNIAL POLICE



STATION 36+00

NO	DATE	BY	CKD	APPR	REVISION

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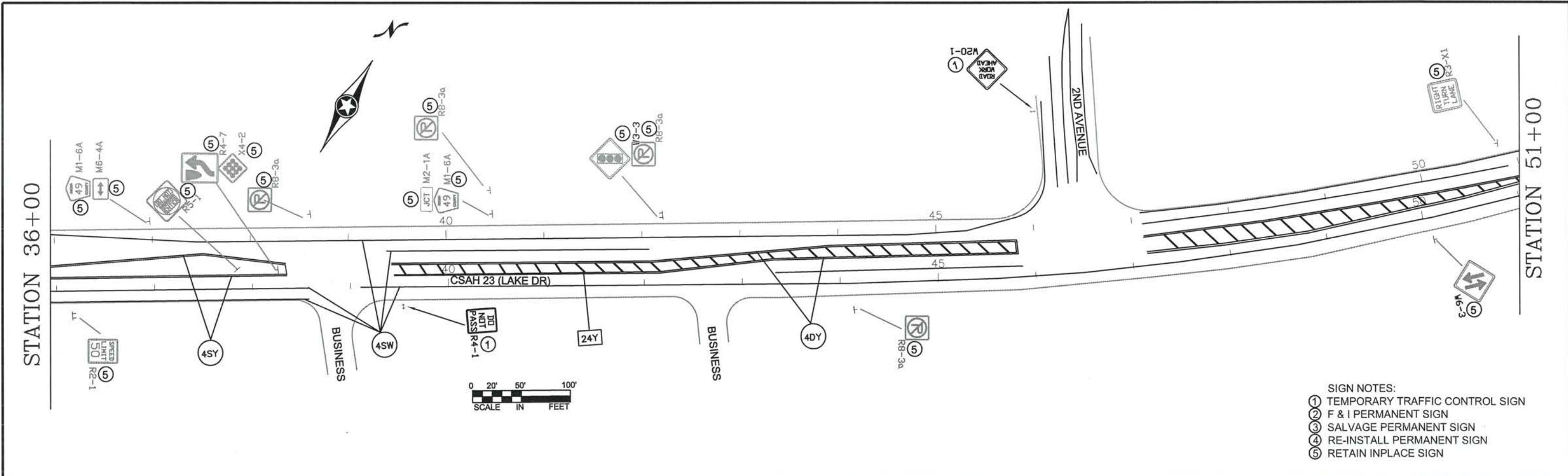


ANOKA COUNTY  
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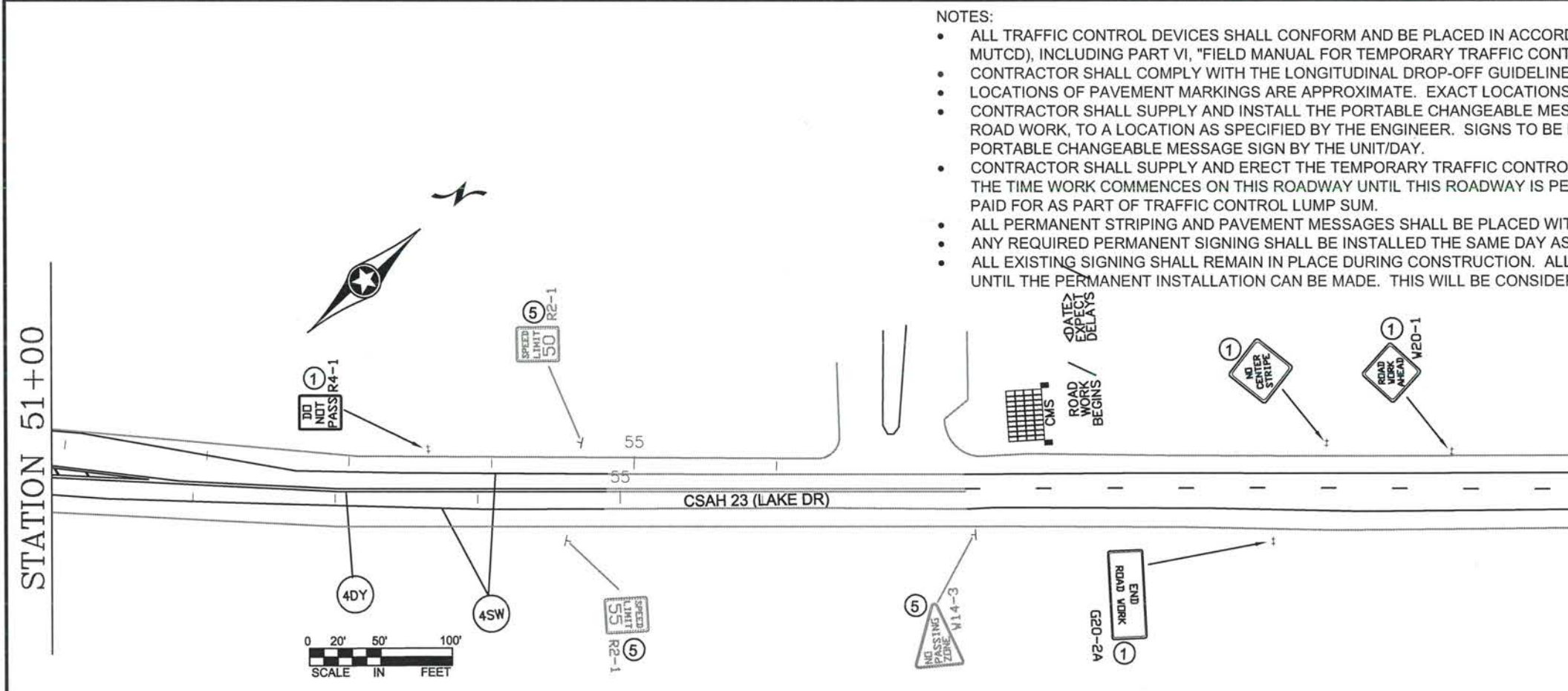
TEMPORARY SIGNING,  
 PERMANENT SIGNING  
 AND STRIPING  
 Sheet 9 of 17 Sheets





- SIGN NOTES:
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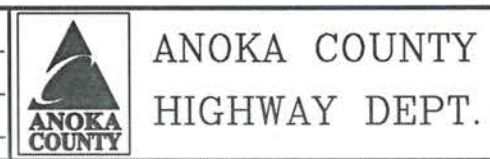
NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-19\base\Traffic\Curves from CSAH 18 to CSAH 22.dwg

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 COUNTY PROJECT NO. 15-18-23

TEMPORARY SIGNING,  
 PERMANENT SIGNING  
 AND STRIPING

Sheet 10 of 17 Sheets



TEMPORARY TRAFFIC CONTROL SIGNS

M.U.T.C.D. CODE	SIZE	PANEL AREA	INSERT	QUANTITY		MOUNTING HEIGHT TO PAVEMENT EDGE (FT.)
		FT. <sup>2</sup>			No. POST	
W8-12	48" x 48"	16.00		2	2	7.0'
R4-1	24" x 30"	5.00		2	1	7.0'
R4-2	24" x 30"	5.00		0	1	7.0'
G20-2A	48" x 24"	8.00		2	2	7.0'
W8-1A	48" x 48"	16.00		AS NEEDED		
W8-1A	48" x 48"	16.00		AS NEEDED		
W8-8	48" x 48"	16.00		AS NEEDED		
W8-9	48" x 48"	16.00		AS NEEDED		
	48" x 48"	16.00		AS NEEDED		
W8-11	48" x 48"	16.00		AS NEEDED		
W20-1	48" x 48"	16.00		AS NEEDED (ESTIMATED 7)		
CMS sign to be installed a minimum of seven days prior to actual commencement of road work. Signs to be removed when road work begins.				2		

NOTES:

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CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT

		R	O	A	D		
		W	O	R	K		
		B	E	G	I	N	S

	<	D	A	T	E	>	
		E	X	P	E	C	T
		D	E	L	A	Y	S

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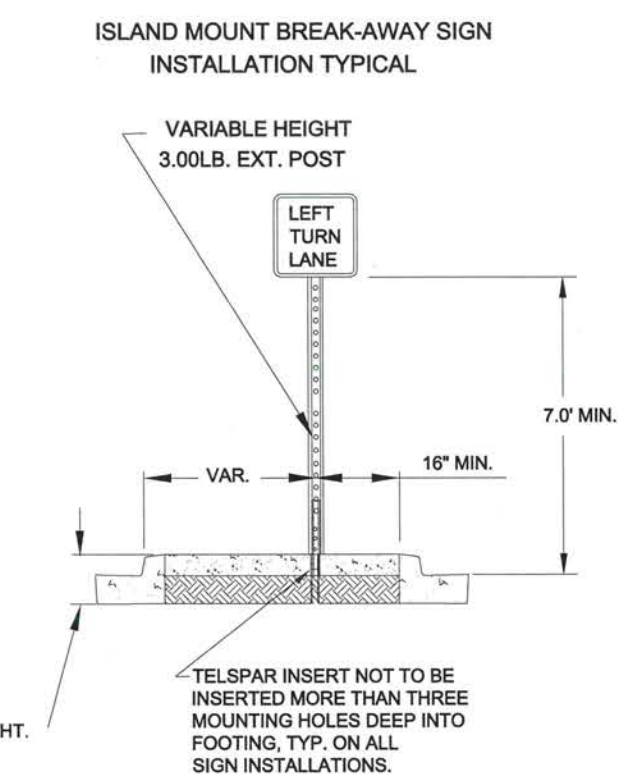
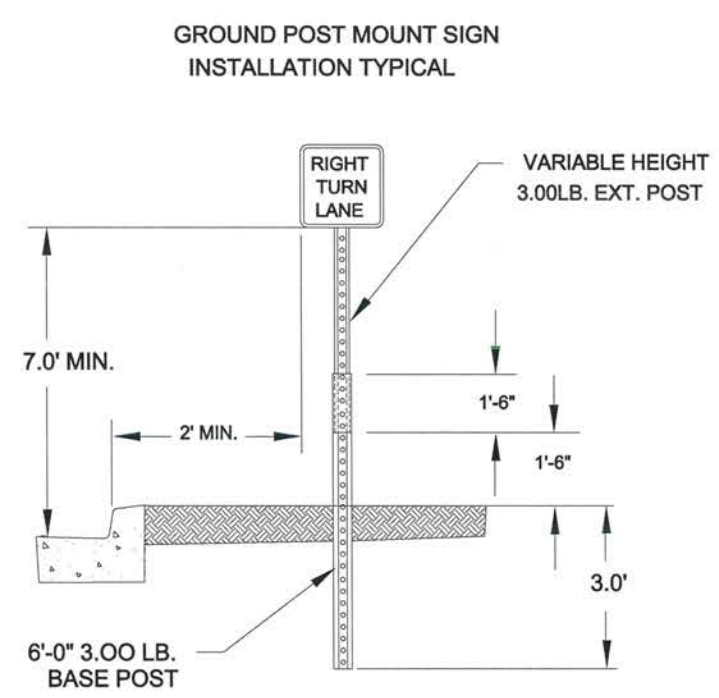
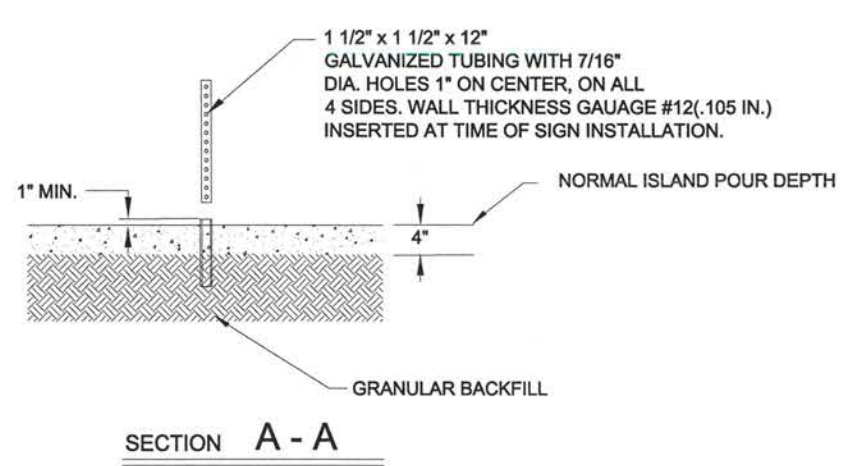
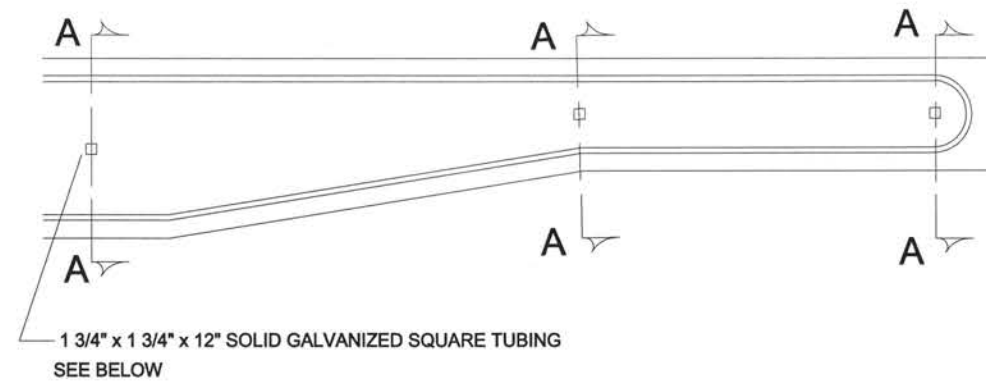


ANOKA COUNTY  
 HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_  
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 COUNTY PROJECT NO. 15-18-23

TRAFFIC CONTROL  
 QUANTITY





NO	DATE	BY	CKD	APPR	REVISION

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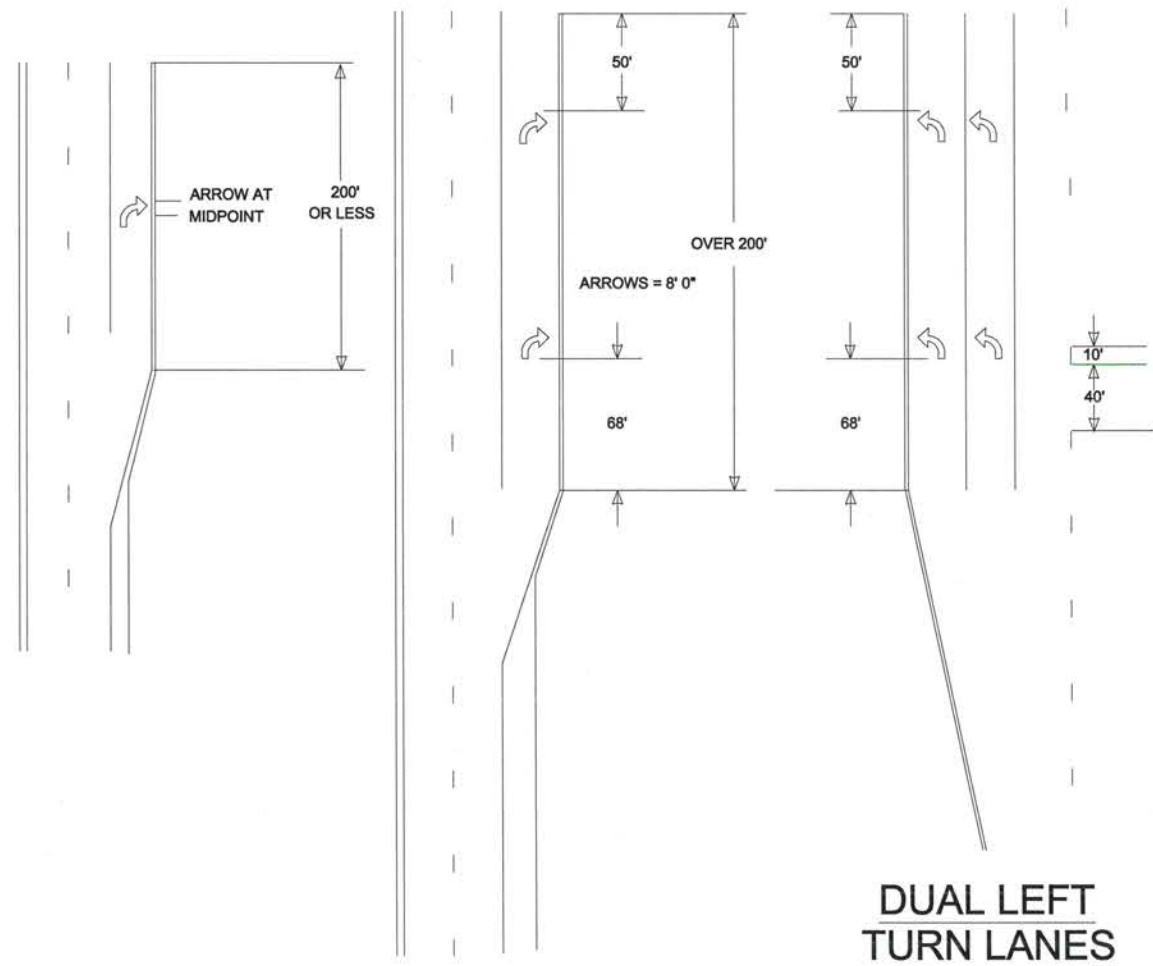
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SIGNING & STRIPING  
 DETAILS

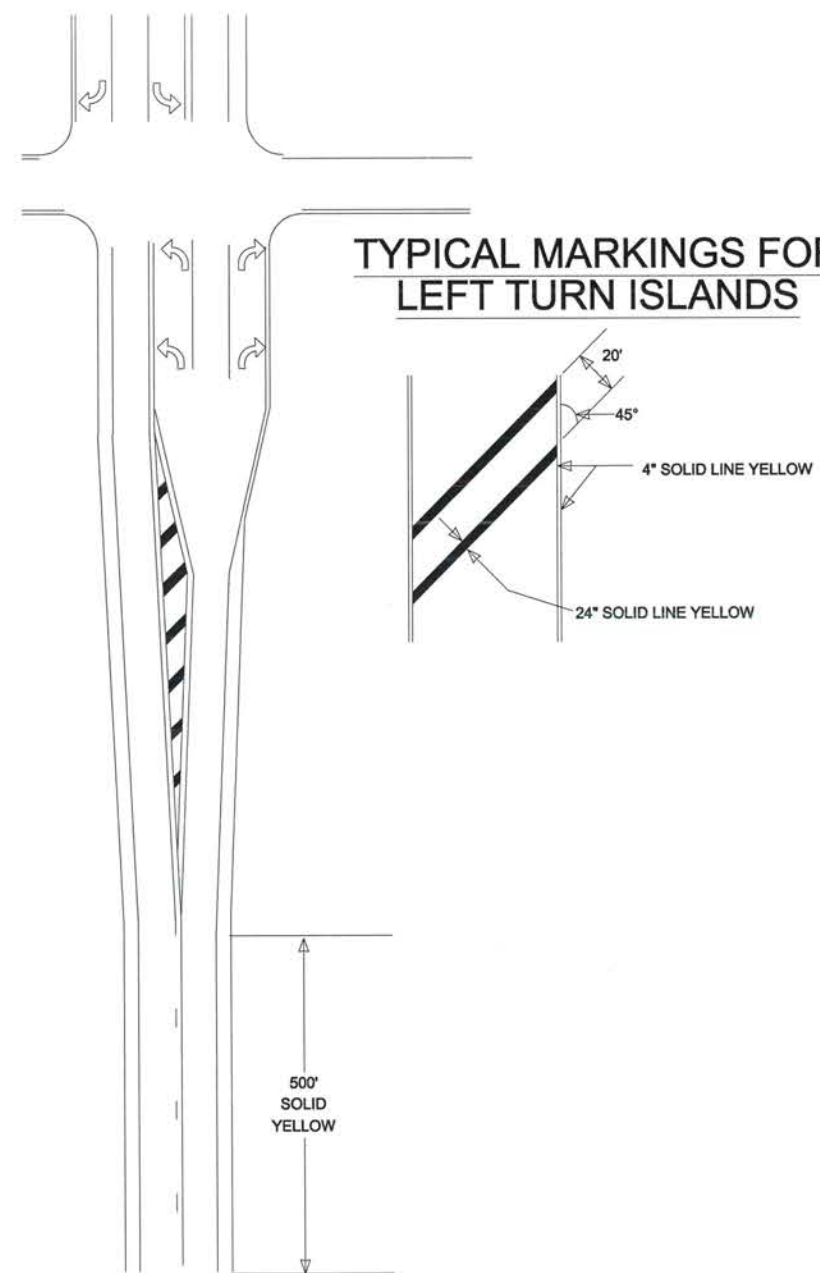
Sheet 12 of 17 Sheets



**TYPICAL MESSAGE PLACEMENT  
FOR TURN LANES**



**TYPICAL MARKINGS FOR  
LEFT TURN ISLANDS**



NO	DATE	BY	CKD	APPR	REVISION

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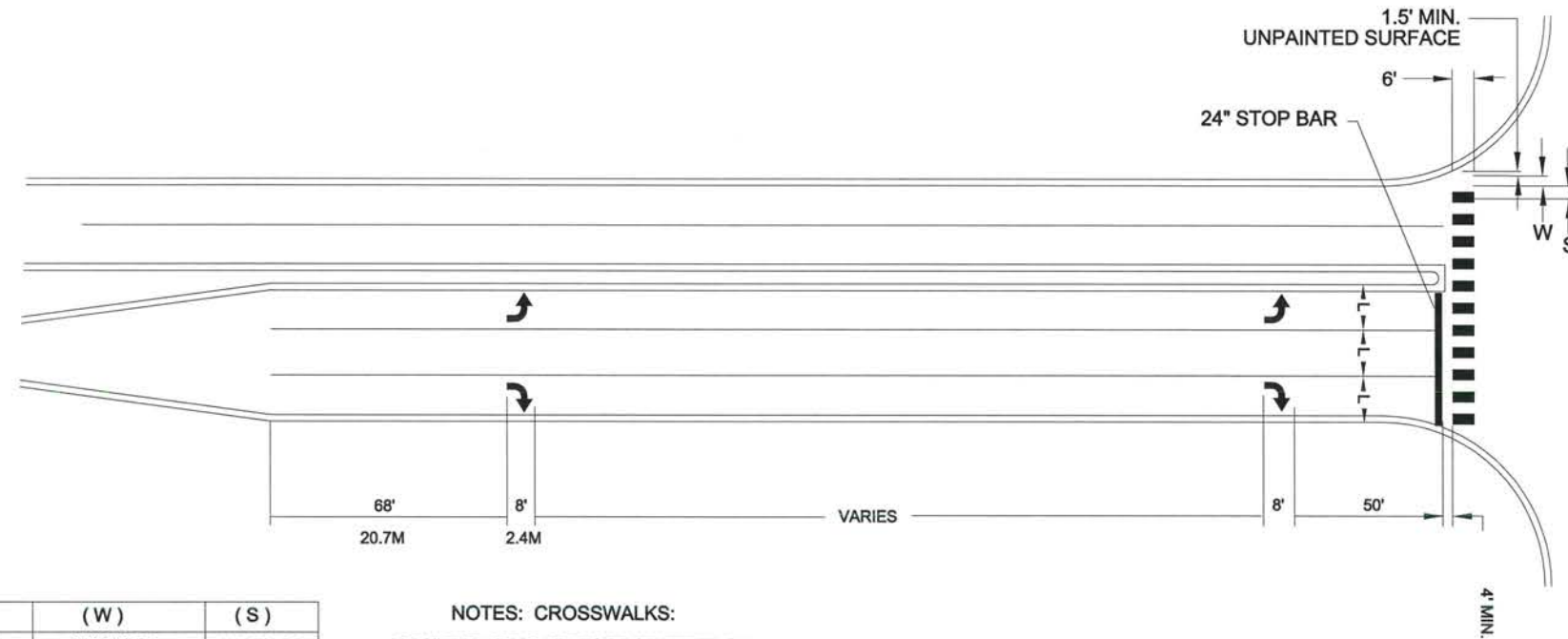
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**SIGNING & STRIPING  
DETAILS**

Sheet 13 of 17 Sheets



# MARKINGS FOR PEDESTRIAN CROSSWALKS



(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'

**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 RAMPS 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' (3.3mm) INSIDE LANE.

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DETAILS

NO	DATE	BY	CKD	APPR	REVISION



7196

- NOTES:**
- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY MR./DOT METRO TRAFFIC OFFICE PERSONNEL.
  - 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
  - 3) EACH PEDESTRIAN INDICATION SHALL BE A ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
  - 4) ALL HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, AND SHALL CONTAIN A DEPARTMENT FURNISHED "BALL LOCATOR". SEE SPECIAL PROVISIONS.
  - 5) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED FOR EWP APPROXIMATELY 6' FROM THE END OF EACH MAST ARM.
  - 6) SEE SPECIAL PROVISIONS FOR DEPARTMENT FURNISHED MATERIALS.
  - 7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR (INCIDENTAL TO ITEM NO. 2555.611).
  - 8) CONTRACTOR SHALL COORDINATE ALL TRAFFIC SIGNAL CONSTRUCTION WITH ROAD CONSTRUCTION TO BE DONE AS PART OF THIS PROJECT.
  - 9) SEE SPECIAL PROVISIONS AND DETAILS REGARDING INSTALLATION OF CROSSWALKS (INCIDENTAL TO ITEM NO. 2555.511).
  - 10) ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATION LENSES SHALL BE GLASS LENSES.

① PA100 POLE FOUNDATION  
 TYPE PA100-A-50-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD  
 MID MAST ARM MOUNT AT 11'  
 2-TYPE 108-POLE MOUNTED 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
 TYPE "D" SIGN PANEL (108"x36")-OVERHEAD (D-1)  
 ONE WAY EWP DETECTOR AND LIGHT-OVERHEAD (B2 & B1)  
 EXTEND INTO H.H.11:  
 3'R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#12 (LUM.)  
 1-3/c#20

② PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD  
 MID MAST ARM MOUNT AT 11'  
 2-TYPE 108-POLE MOUNTED 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
 TYPE "D" SIGN PANEL (108"x36")-OVERHEAD (D-2)  
 ONE WAY EWP DETECTOR - OVERHEAD (B2 & B3)  
 ONE WAY EWP DETECTOR - POLE MOUNTED 150" (B2 & B3)  
 EXTEND INTO H.H.4:  
 3'R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#12 (LUM.)  
 1-3/c#20

③ PA100 POLE FOUNDATION  
 TYPE PA100-A-50-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD  
 MID MAST ARM MOUNT AT 11'  
 2-TYPE 108-POLE MOUNTED 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
 TYPE "D" SIGN PANEL (108"x36")-OVERHEAD (D-3)  
 ONE WAY EWP DETECTOR AND LIGHT-OVERHEAD (B2 & B5)  
 EXTEND INTO H.H.14:  
 3'R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#12 (LUM.)  
 1-3/c#20

**SIGNAL FACES**

ALL SIGNAL INDICATIONS SHALL BE 12"

SIGNAL FACE	R	Y	G	R	Y	G
1-1, 1-2, 8-1, 8-2	•	•	•	•	•	•
2-1, 2-2	•	•	•	•	•	•
3-1, 3-2, 7-1, 7-2	•	•	•	•	•	•
4-1, 4-2	•	•	•	•	•	•
5-1, 5-2	•	•	•	•	•	•
6-1, 6-2	•	•	•	•	•	•
8-1, 8-2	•	•	•	•	•	•

CABINET TO H.H.11:  
 4'R.S.C.  
 4-12/c#12  
 6-3/c#12  
 8-2/c#14  
 2-3/c#20

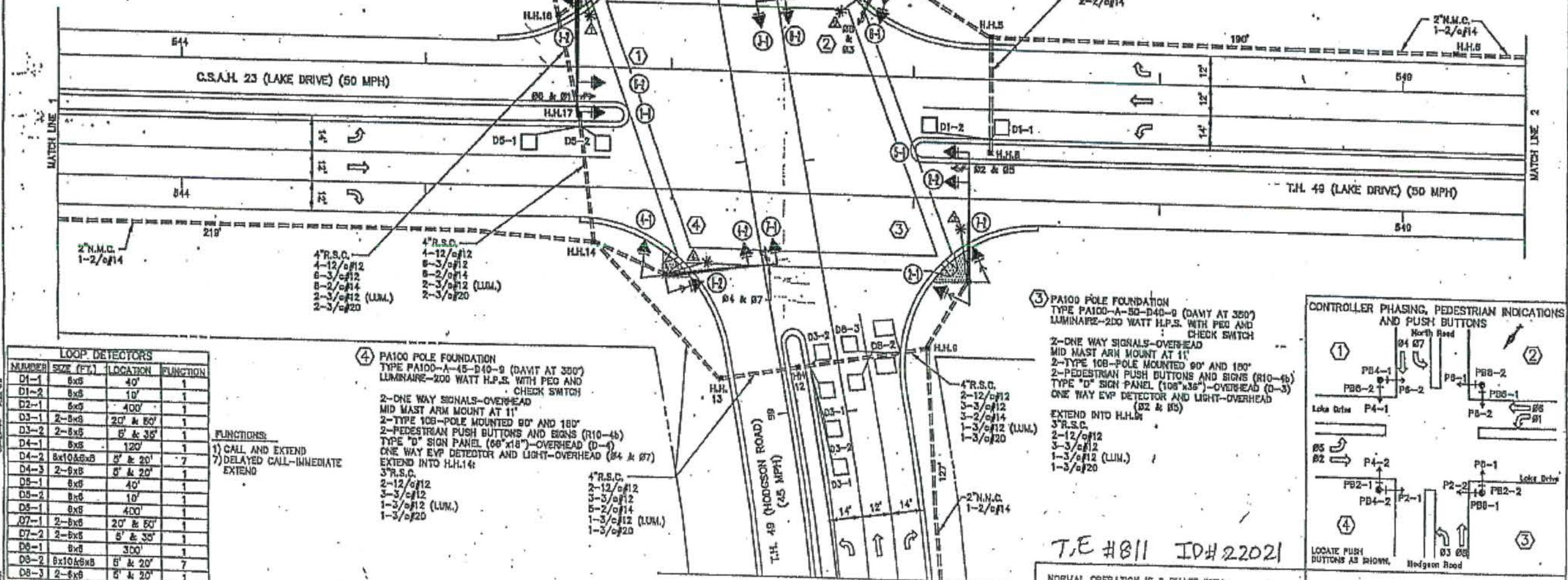
METER TO H.H.10:  
 2'R.S.C.  
 3-1/c#2

LOAD CENTER TO CABINET:  
 1 1/4'R.S.C.  
 2-1/c#8  
 1-1/c#8 Br.Gr.

LOAD CENTER TO H.H.18:  
 2'R.S.C.  
 4-3/c#12 (LUM.)

STUB OUT 1-2'R.S.C. AND 1-3'R.S.C. FROM CABINET TO SOUTH (THREAD AND CAP BOTH ENDS - FOR FUTURE USE)

④ GROUND MOUNTED TRANSFORMER (7 & 1) BY NSP  
 EXTEND INTO H.H.19:  
 2'R.S.C.  
 3-1/c#2



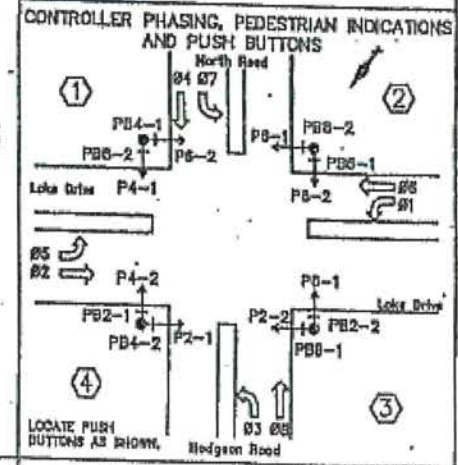
**LOOP DETECTORS**

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	8x8	40'	1
D1-2	8x8	10'	1
D2-1	8x8	400'	1
D3-1	2-8x8	20' & 60'	1
D3-2	2-8x8	5' & 35'	1
D4-1	8x8	120'	1
D4-2	8x10A&B	5' & 20'	7
D4-3	2-8x8	5' & 20'	1
D5-1	8x8	40'	1
D5-2	8x8	10'	1
D6-1	8x8	400'	1
D7-1	2-8x8	20' & 60'	1
D7-2	2-8x8	5' & 35'	1
D8-1	8x8	300'	1
D8-2	8x10A&B	5' & 20'	7
D8-3	2-8x8	5' & 20'	1

**FUNCTIONS:**  
 1) CALL AND EXTEND  
 2) DELAYED CALL-IMMEDIATE EXTEND

④ PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD  
 MID MAST ARM MOUNT AT 11'  
 2-TYPE 108-POLE MOUNTED 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
 TYPE "D" SIGN PANEL (108"x36")-OVERHEAD (D-4)  
 ONE WAY EWP DETECTOR AND LIGHT-OVERHEAD (B4 & B7)  
 EXTEND INTO H.H.14:  
 3'R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#12 (LUM.)  
 1-3/c#20

③ PA100 POLE FOUNDATION  
 TYPE PA100-A-50-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD  
 MID MAST ARM MOUNT AT 11'  
 2-TYPE 108-POLE MOUNTED 90° AND 180°  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
 TYPE "D" SIGN PANEL (108"x36")-OVERHEAD (D-3)  
 ONE WAY EWP DETECTOR AND LIGHT-OVERHEAD (B2 & B5)  
 EXTEND INTO H.H.14:  
 3'R.S.C.  
 2-12/c#12  
 3-3/c#12  
 1-3/c#12 (LUM.)  
 1-3/c#20



T.E #811 ID#22021

NORMAL OPERATION IS 8 PHASE WITH  
 - VEHICLE PHASES 2 AND 6 ON RECALL  
 - PROTECTED LEFT TURNS ON PHASES 1,3,5 ON 7,  
 - SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.

S.P. 0204-12  
 S.A.P. 02-623-07  
 S.A.P. 02-610-09

FOR REFERENCE PURPOSES ONLY

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: MATTHEW J. JOHN  
 SIGNATURE: *[Signature]*  
 DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: SAT DATE 3-26-15  
 DESIGN BY: SAT DATE 3-26-15  
 CHECKED BY: MJJ DATE 3-26-15



ANOKA COUNTY  
 HIGHWAY DEPT.

COUNTY PROJECT 15-18-23

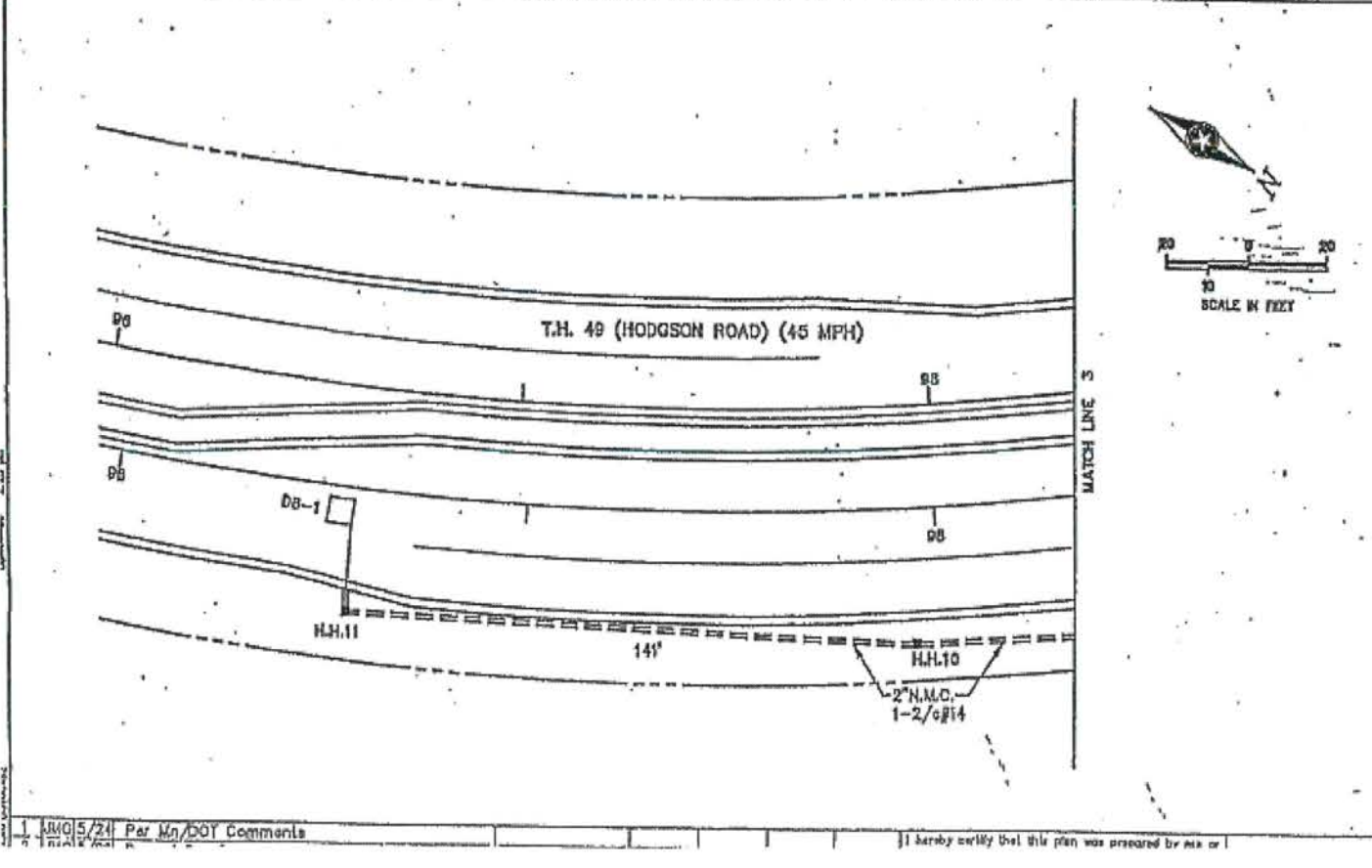
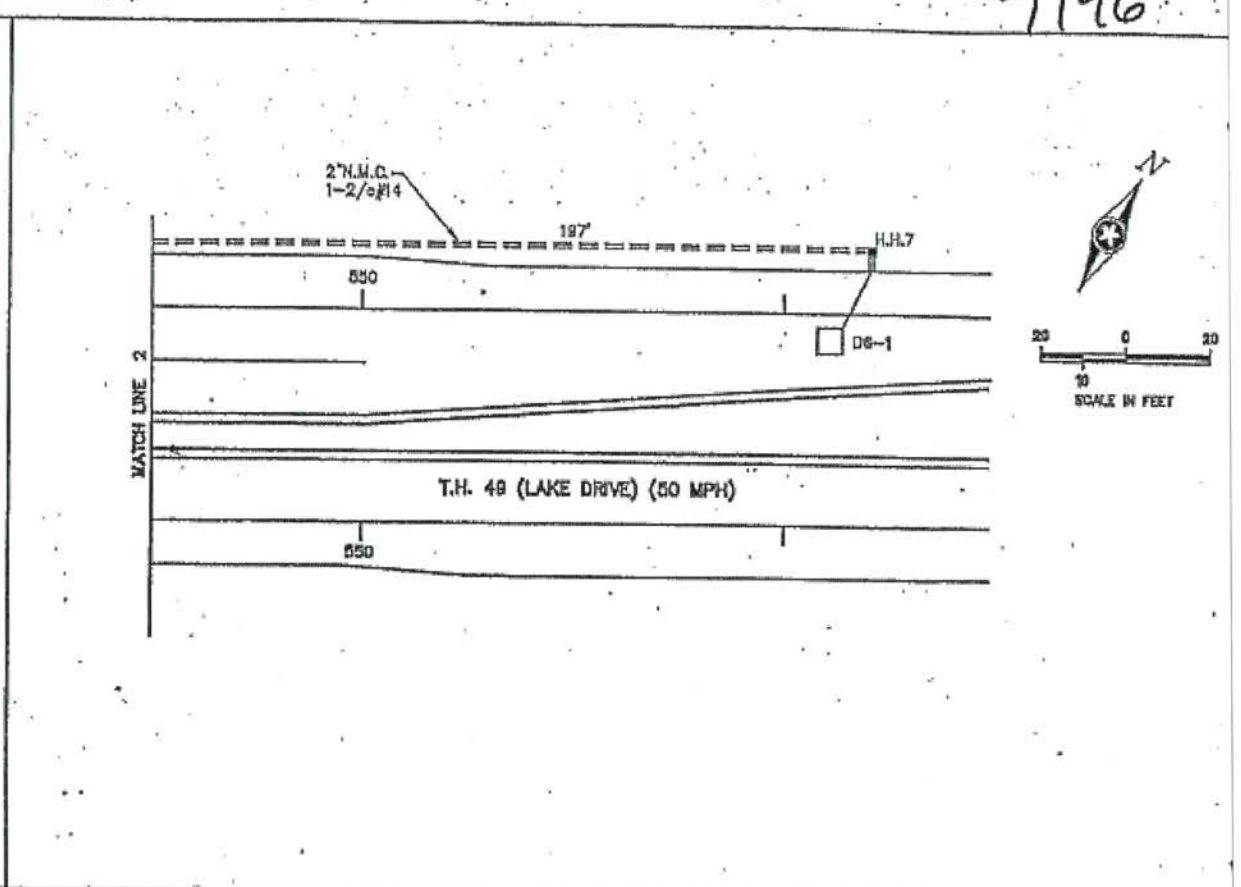
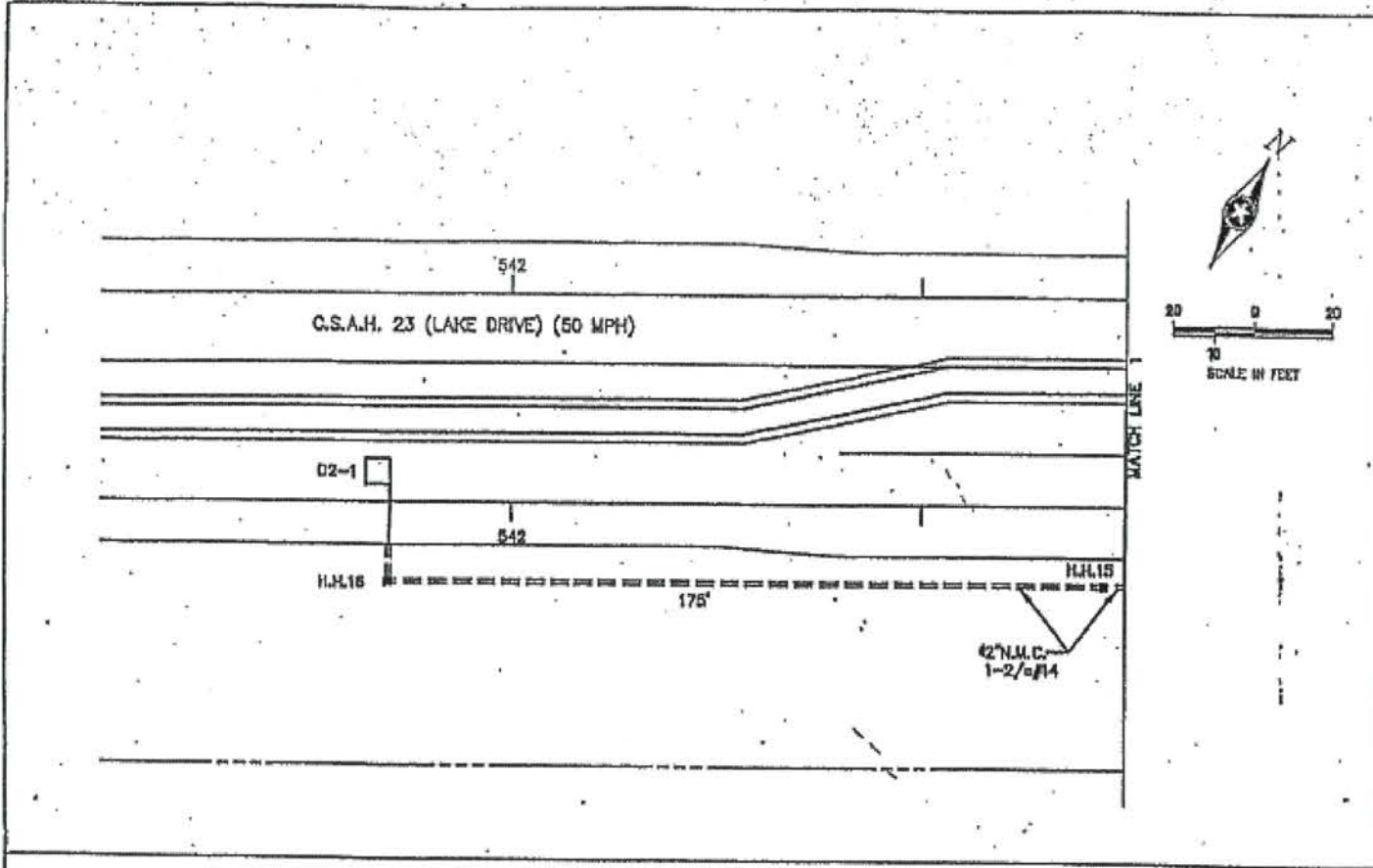
ORIGINAL SIGNAL PLANS

Sheet 15 of 17 Sheets



mjohn

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FOR REFERENCE PURPOSES ONLY

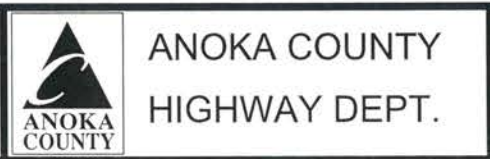
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S.A.P. 02-623-07

NO	DATE	BY	CKD	APPR	REVISION	TIME
1	5/24/15	Per MJD			Comments	1:11:58 PM

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: MATTHEW J. JOHN  
 SIGNATURE: *Matthew J. John*  
 DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: SAT DATE: 3-26-15  
 DESIGN BY: SAT DATE: 3-26-15  
 CHECKED BY: MJJ DATE: 3-26-15



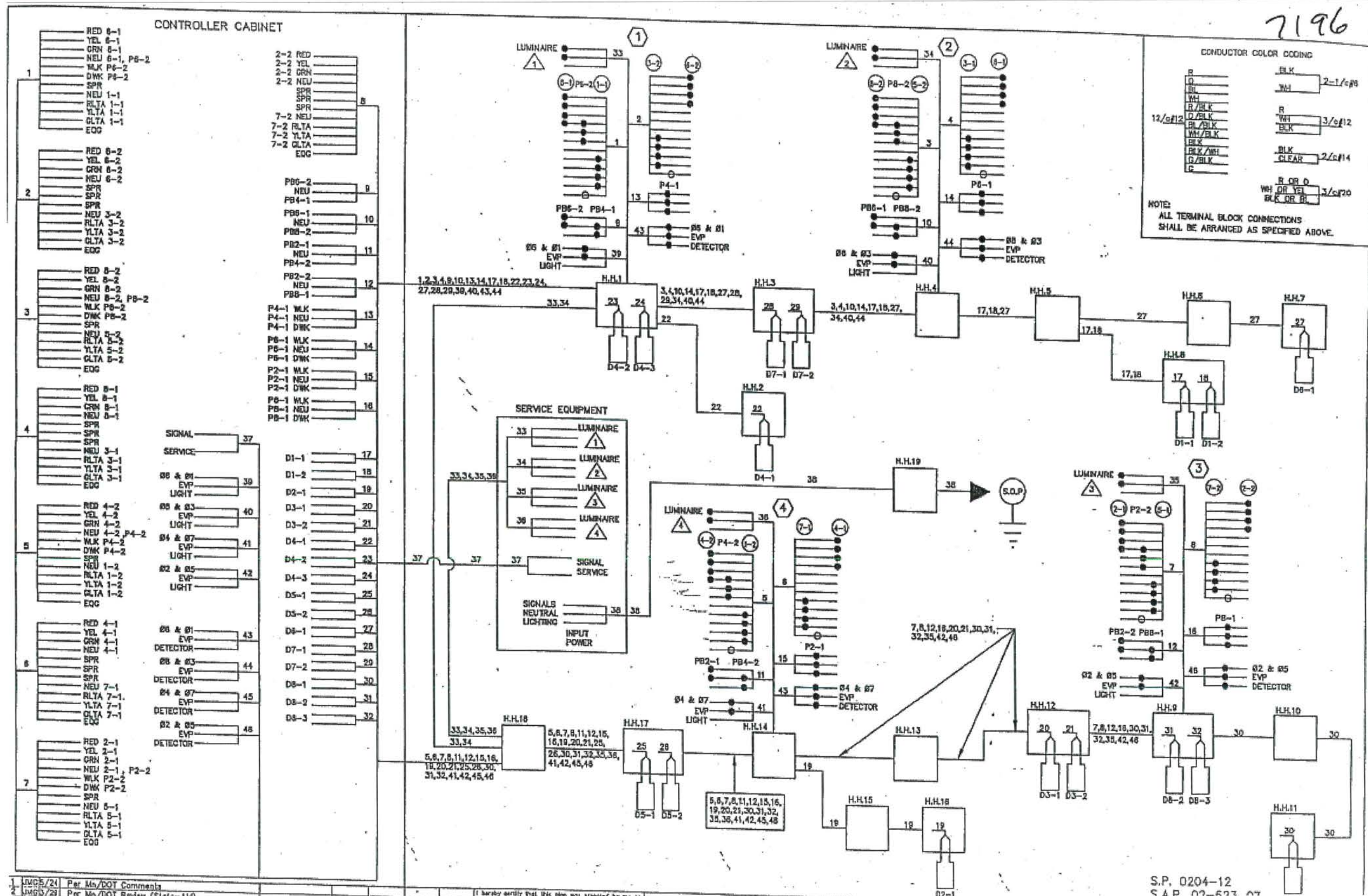
COUNTY PROJECT 15-18-23

ORIGINAL SIGNAL PLANS  
 Sheet 16 of 17 Sheets



mjohn

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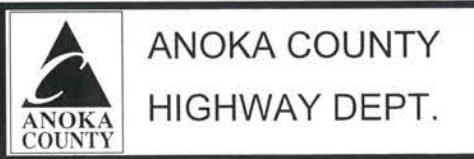


FOR REFERENCE PURPOSES ONLY

1. JWG/S/24 Per Mh/DOY Comments  
 2. JWG/S/23 Per Mh/DOY Review (State-Aid)

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: MATTHEW J. JOHN  
 SIGNATURE: *Matthew J. John*  
 DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: SAT DATE 3-26-15  
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COUNTY PROJECT 15-18-23

ORIGINAL SIGNAL PLANS  
 Sheet 17 of 17 Sheets