





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 & GUTTER	7	LN FT	2950
2104.503	00021	REMOVE CONCRETE WALK		SQ FT	710
2104.503	00121	REMOVE BITUMINOUS PAVEMENT	6	SQ YD	475
2104.505	00110	REMOVE CONCRETE PAVEMENT		SQ YD	62
2104.511	00011	SAWING CONCRETE PAVEMENT (FULL DEPTH)		LN FT	145
2104.513	00010	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LN FT	3070
2211.501	00050	AGGREGATE BASE CLASS 5	2	TON	343
2215.501	00010	FULL DEPTH RECLAMATION		SQ YD	7524
2215.502	00010	HAUL FULL DEPTH RECLAMATION (LV)		CU YD	160
2221.501	00050	SHOULDER BASE AGGREGATE CLASS 5		TON	97
2232.501	00050	MILL BITUMINOUS SURFACE (2.0")	13	SQ YD	1117
2232.501	00080	MILL BITUMINOUS SURFACE (3.0")	14	SQ YD	28275
2357.502	00010	BITUMINOUS MATERIAL FOR TACK COAT		GALLON	1654
2360.501	23200	TYPE SP 12.5 WEARING COURSE MIX (3,B)	4	TON	129
2360.501	24500	TYPE SP 12.5 WEARING COURSE MIX (4,E)		TON	8560
2360.505	20100	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	3	TON	162
2504.602	00033	ADJUST GATE VALVE	16	EACH	7
2506.516	00010	CASTING ASSEMBLY	17	EACH	35
2506.602	00002	RECONSTRUCT DRAINAGE STRUCTURE	1	EACH	3
2506.602	00003	GROUT CATCH BASIN OR MANHOLE		EACH	1
2506.602	00009	ADJUST FRAME & RING CASTING	5	EACH	4
2521.501	00060	6" CONCRETE WALK		SQ FT	710
2531.501	02320	CONCRETE CURB & GUTTER DESIGN B624	7	LN FT	2950
2531.604	00108	8" CONCRETE VALLEY GUTTER		SQ YD	62
2531.618	00010	TRUNCATED DOMES		SQ FT	80
2545.602	00021	ADJUST HANDHOLE		EACH	1
2550.602	10000	LOOP DETECTOR DESIGN NMC	6, 15	EACH	19
2563.601	00010	TRAFFIC CONTROL	6,18	LUMP SUM	1
2563.610	00020	POLICE OFFICER		OUR	30
2563.613	01100	PORTABLE CHANGEABLE MESSAGE SIGN	11	UDAY	14
2573.530	00010	STORM DRAIN INLET PROTECTION	12	EACH	23
2574.525	00010	COMMON TOPSOIL BORROW	8	CU YD	60
2575.523	00009	EROSION CONTROL BLANKET CATEGORY 0	19	SQ YD	665
2581.501	00010	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	9	LN FT	834
2582.502	41104	4" SOLID LINE WHITE-EPOXY	10	LN FT	14330
2582.502	42104	4" SOLID LINE YELLOW-EPOXY	10	LN FT	1050
2582.502	42404	4" DOUBLE SOLID LINE YELLOW-EPOXY	10	LN FT	3095
2582.502	42204	4" BROKEN LINE YELLOW-EPOXY	10	LN FT	754
2582.601		PAVEMENT MESSAGE (LT ARROW) PREFORMED THERMOPLASTIC	10	EACH	4
2582.601		PAVEMENT MESSAGE (RT ARROW) PREFORMED THERMOPLASTIC	10	EACH	4
2582.602		24" SOLID LINE YELLOW PREFORMED THERMOPLASTIC	10	LN FT	104
2582.602		24" SOLID LINE WHITE PREFORMED THERMOPLASTIC	10	LN FT	91
2582.618		3' X 6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	10	SQ FT	432

CONSTRUCTION NOTES

1	INCLUDES TOP HAT OF STRUCTURES CALLED OUT ON STORM SEWER TAB
2	MATERIAL TO FIX SUPER ELEVATION FROM CSAH 116 TO ANDOVER FIRE STATION & FOR BASE FOR CONCRETE WALK.
3	ITEM INCLUDES BITUMINOUS PATCHING AROUND NEW CURB, STORM STRUCTURE REPAIRS, AND ANY POTHOLES.
4	CONTRACTOR IS RESPONSIBLE FOR CONTACTING PROPERTY OWNER 48 HOURS BEFORE STARTING OPERATION. FOR STREET APR AND DRIVEWAYS
5	SEE STORM TABULATIONS FOR RING HEIGHTS.
6	CONTRACTOR WILL NOTIFY ANOKA COUNTY SIGNAL DEPARTMENT 5 WORKING DAYS PRIOR TO PAVEMENT RECLAMATION OR BITUMINOUS REMOVAL AT INTERSECTION OF CSAH 116 & CR 18, TO COORDINATE CAMERA INSTALLATION FOR TRAFFIC CONTROL
7	REFERENCE STORM SEWER REPAIR TAB AND CONSTRUCTION PLAN FOR LOCATION OF CURB REMOVAL AND REPLACEMENT
8	TO BE USE FOR CORRECTING IN-SLOPES IN THE CORRECTIVE SUPPER LOCATION. AS DIRECTED BY ENGINEER.
9	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.
10	FINAL STRIPING SHALL BE INSTALLED WITHIN 72 HOURS OF COMPLETION OF MAINLINE WEAR COURSE PAVING.
11	2 MESSAGE BOARDS, ONE ON THE EACH END OF PROJECT WILL BE INSTALLED 7 DAYS PRIOR TO ANY CONSTRUCTION; REFERENCE STRIPING PLAN FOR DETAILS.
12	ALL DRAINAGE STRUCTURES AFFECTED BY THIS PROJECT MUST HAVE INLET PROTECTION.
13	TO BE USED FOR STREET APPROACHES. DETAIL MILLING AROUND MANHOLES, CATCH BASINS AND GATE VALVES IS INCIDENTAL TO THIS ITEM.
14	DETAIL MILLING AROUND MANHOLES, CATCH BASINS AND GATE VALVES IS INCIDENTAL TO THIS ITEM
15	FULL LOOP REPLACEMENT REQUIRED THROUGH MAINLINE WORK AREAS AT CSAH 116 AND AT ANDOVER BLVD. REMAINING LOOP REPLACEMENT ONLY IF DAMAGED DURING MILLING OPERATION. CONTRACTOR TO CONTACT ANOKA COUNTY FOR PLACEMENT LOCATION. ORIGINAL SIGNAL PLANS ARE LOCATED AT THE END OF THIS PLAN SET.
16	GATE VALVES TO BE ADJUSTED ONLY AS NECESSARY AS DETERMINED BY THE ENGINEER.
17	ITEM INCLUDES FULL REPLACEMENT OF CASTING ADJUSTMENT RINGS. SEE STORM TABULATION FOR RING HEIGHTS.
18	DO NOT PASS, PASS WITH CARE AND NO CENTER STRIPE SIGNS TO BE INPLACE DURING MILLING, RECLAIMING OR PAVING OPERATIONS.
19	TYPE 25-121 SEED AND TYPE 1 FERTILIZER ARE INCIDENTAL TO THIS ITEM.

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 PREFORM PAVEMENT MARKING TAPE	2' AT 50' INTERVALS
2401	REINFORCEMENT BARS (EPOXY COATED) #4 BAR	0.668 LBS / LN FT

MNDOT STANDARD PLATES

PLATE NUMBER	DESCRIPTION
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4035N	CONCRETE WALK
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110F	COVER CASTING FOR MANHOLE
7038A	DETECTABLE WARNING SURFACE
7100H	CONCRETE CURB AND GUTTER
7113A	CONCRETE APPROACH NOSE DETAIL

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: CSO DATE: 1/30/2015

DESIGN BY: CSO DATE:

CHECKED BY: MJJ DATE:



ANOKA COUNTY  
HIGHWAY DEPT.

COUNTY PROJECT 15-16-18

STATEMENT OF ESTIMATED QUANTITIES

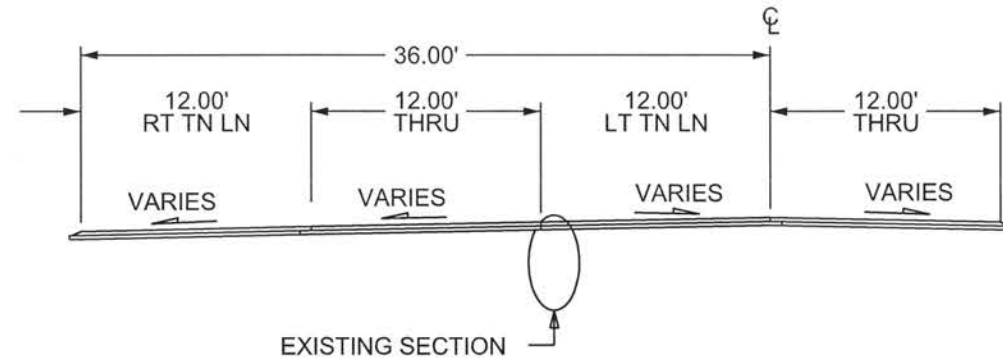
Sheet 2 of 22 Sheets



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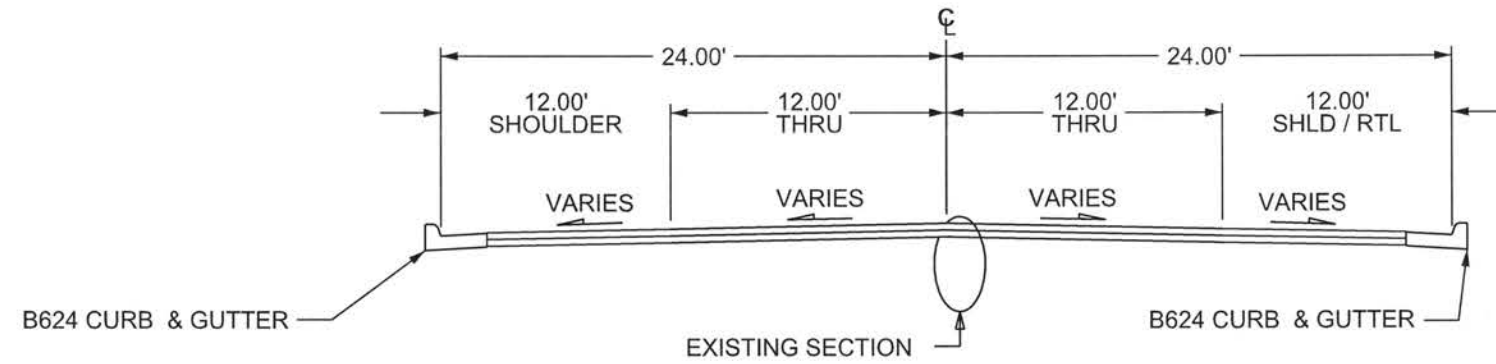
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EXISTING SECTION  
10+95 TO 15+00



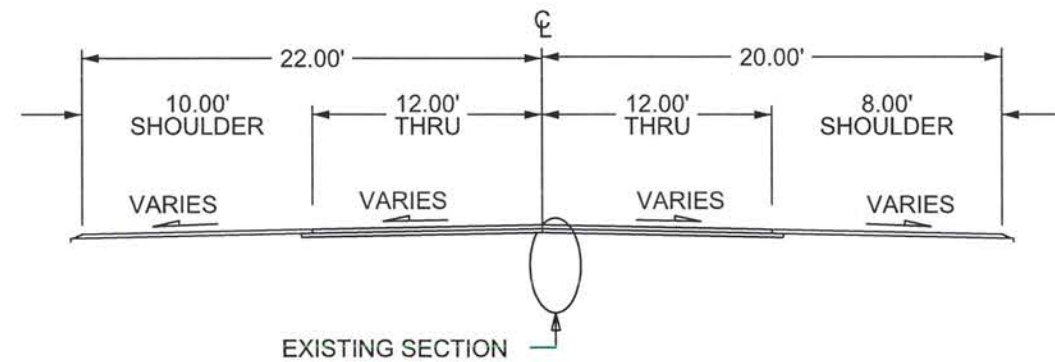
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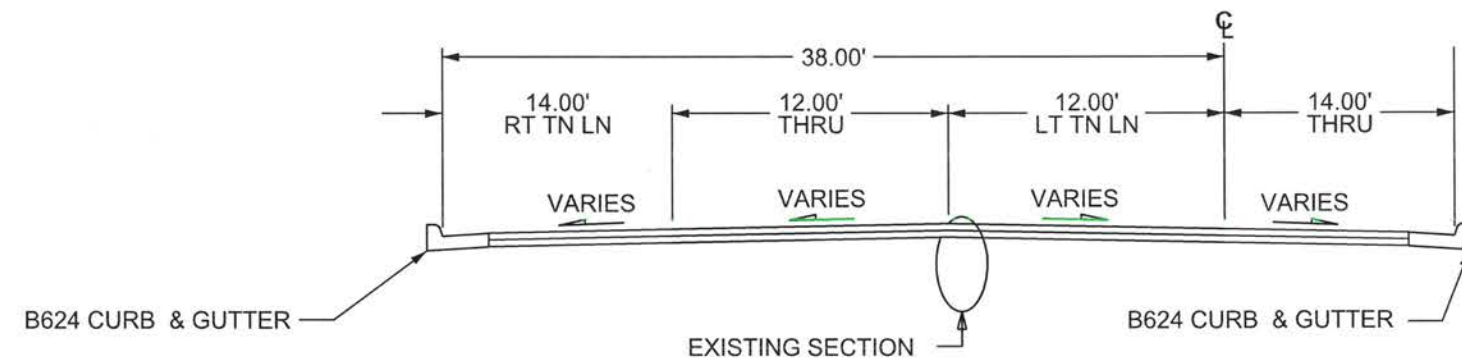
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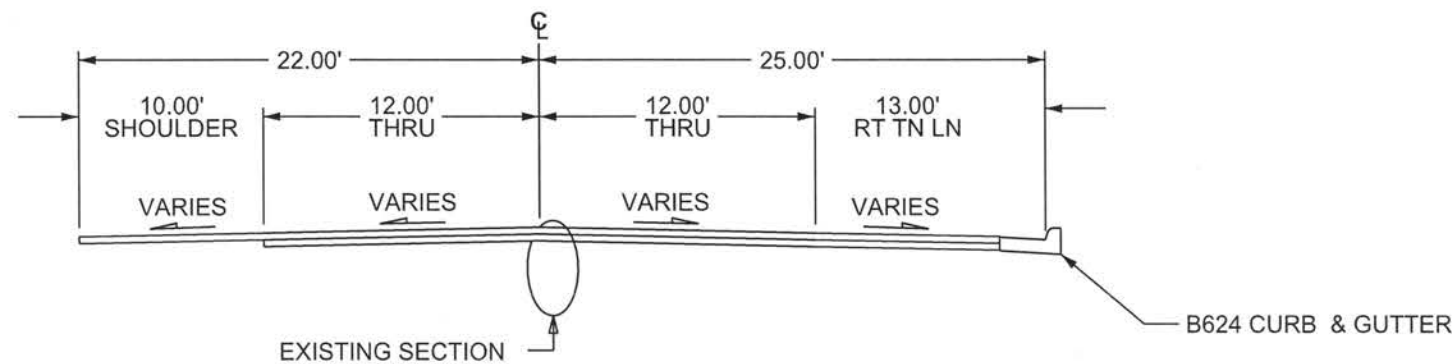
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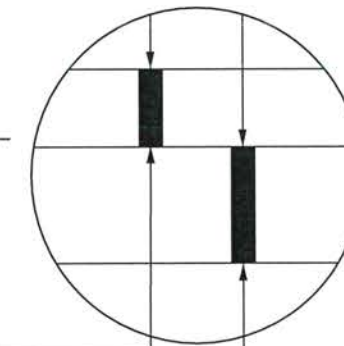


### CR 18 (CROSSTOWN BLVD)

EXISTING SECTION  
25+00 TO 28+50



### EXISTING SECTION



6" EXISTING BITUMINOUS

6" EXISTING BASE

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COUNTY PROJECT 15-16-18

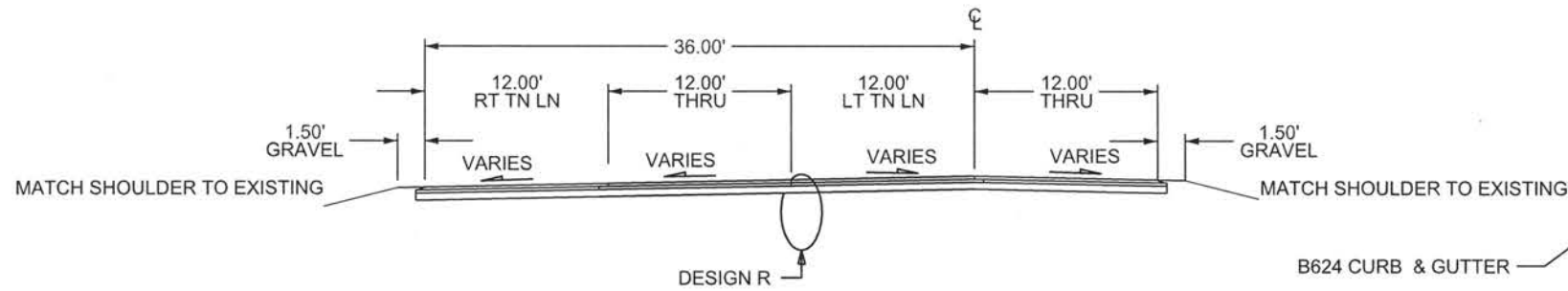
TYPICAL SECTIONS  
Sheet 3 of 22 Sheets

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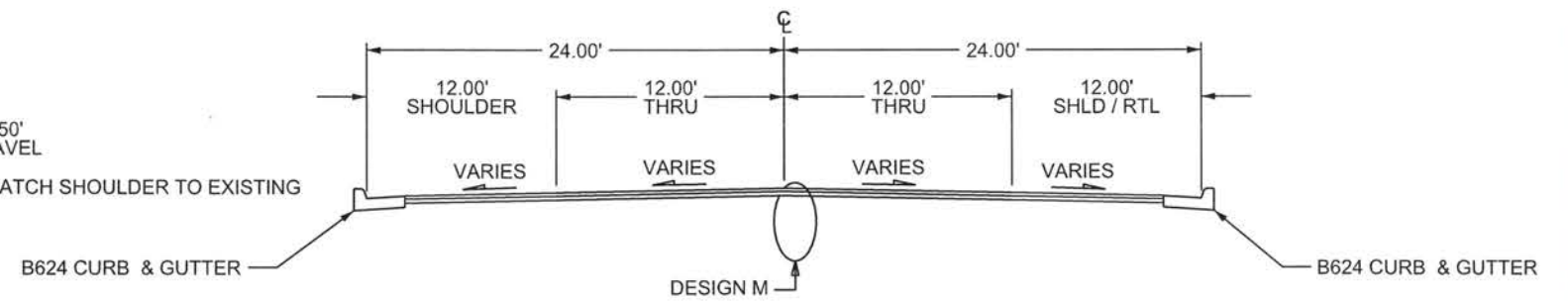
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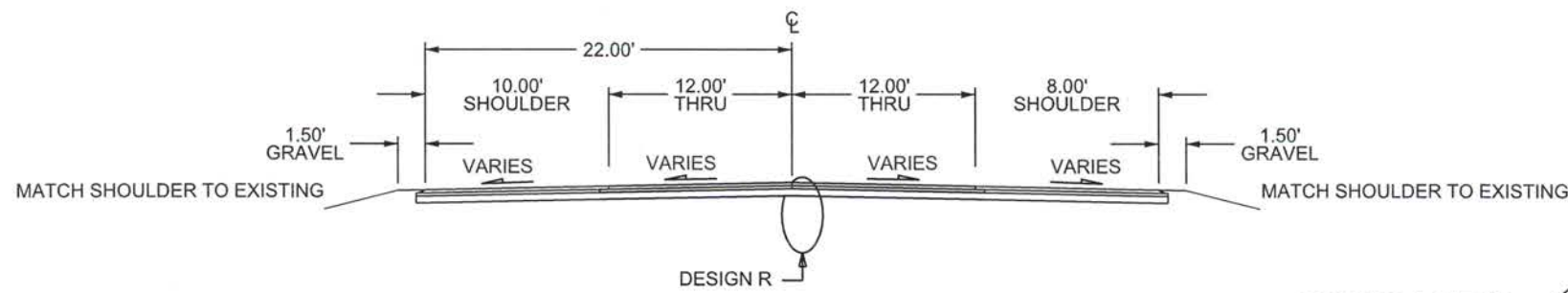
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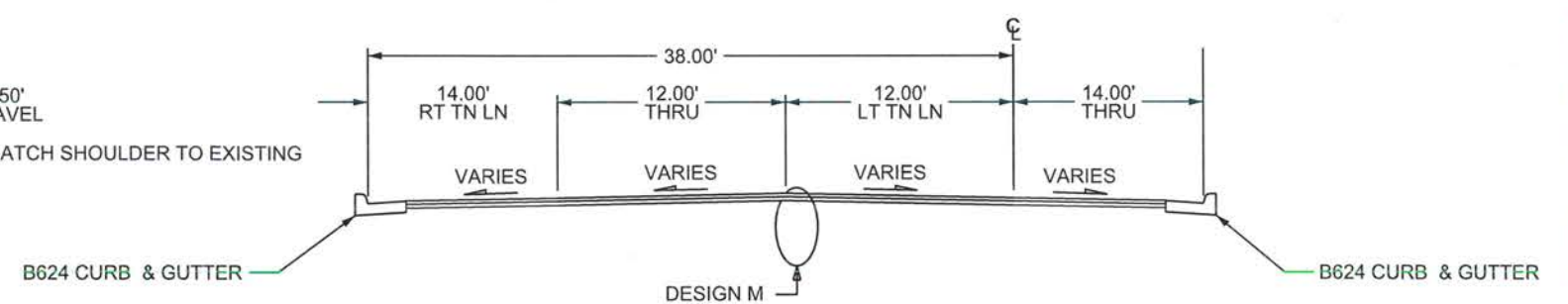
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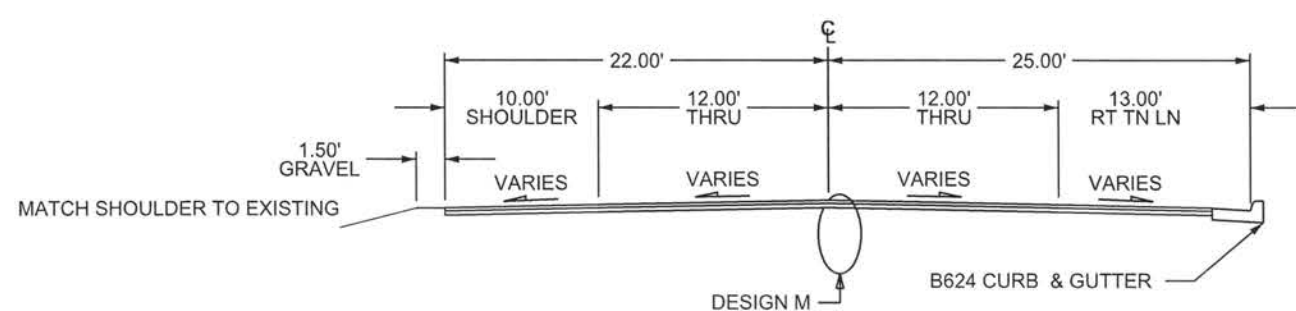
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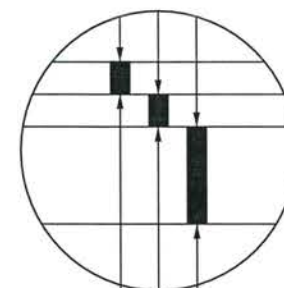
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PROPOSED SECTION

25+00 TO 28+50

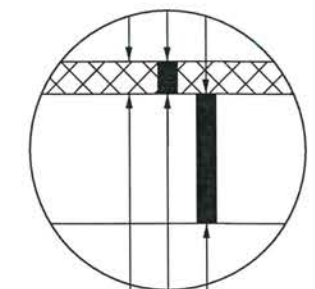


### DESIGN R RECLAIM SECTION



2.0" BITUMINOUS WEAR(SPWEB440E)  
 2.0" BITUMINOUS WEAR(SPWEB440E)  
 RECLAIMED BITUMINOUS

### DESIGN M MILL SECTION



3.0" MILL BITUMINOUS  
 2 LIFTS OF 1 1/2" BITUMINOUS WEAR(SPWEB440E)  
 REMAINING BITUMINOUS

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ANOKA COUNTY  
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COUNTY PROJECT 15-16-18

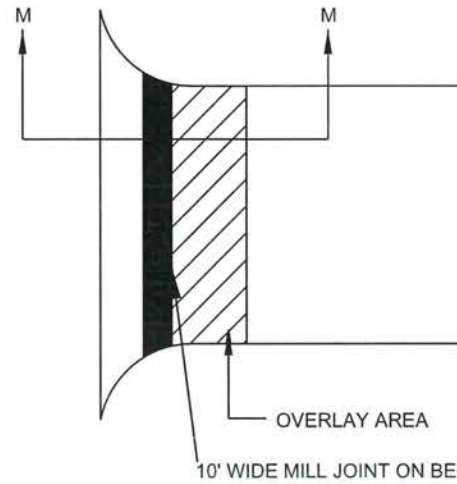
TYPICAL SECTIONS  
 Sheet 4 of 22 Sheets



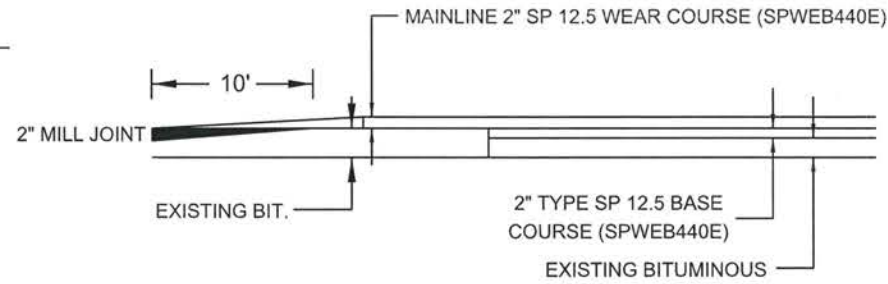
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### MAINLINE JOINT DETAIL

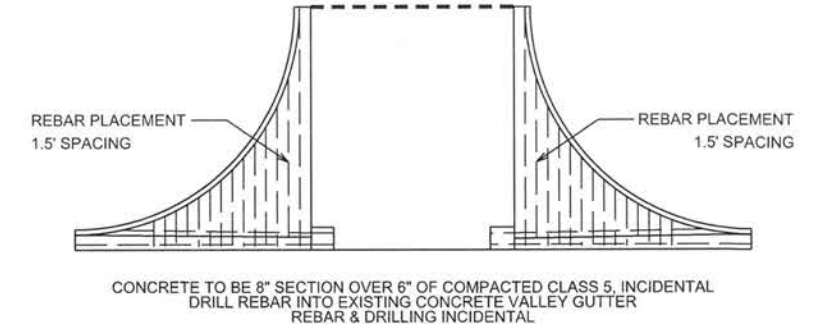
PLAN VIEW



SECTION M - M

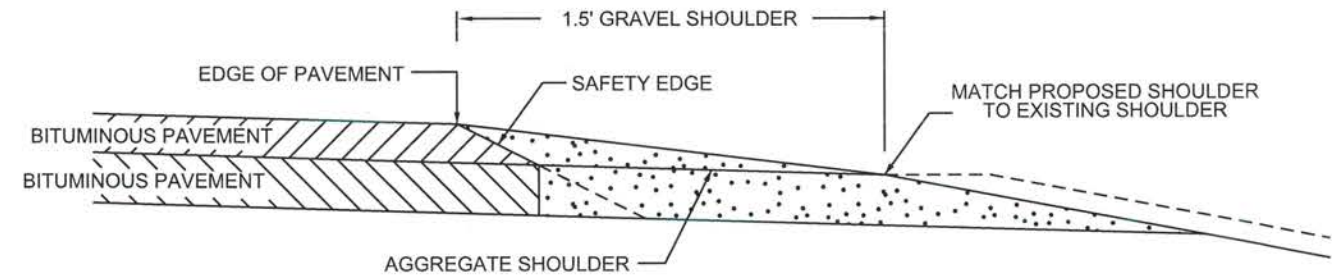


### CONCRETE VALLEY GUTTER 8"



### SHOULDER DETAIL

BITUMINOUS SAFETY EDGE  
GRAVEL SHOULDER

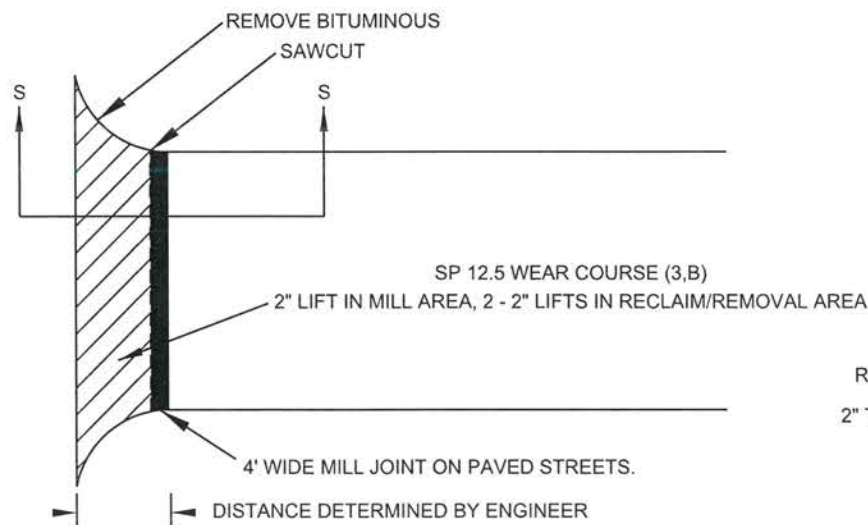


SAFETY EDGE TO BE USED IN ALL NON-CURB AREAS ON SHOULDER.

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

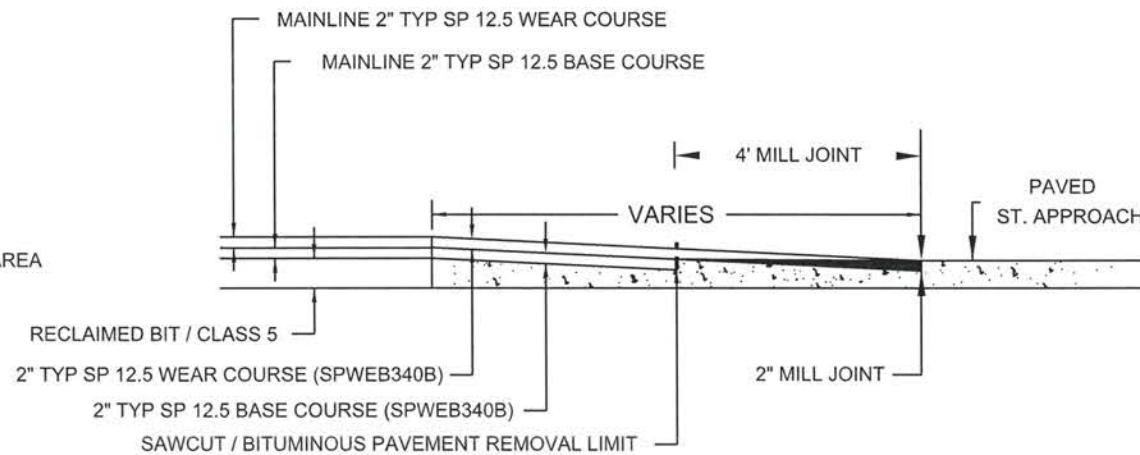
### STREET APPROACH DETAIL

PLAN VIEW



BITUMINOUS STREET

SECTION S - S



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ANOKA COUNTY  
HIGHWAY DEPT.

COUNTY PROJECT 15-16-18

DETAILS

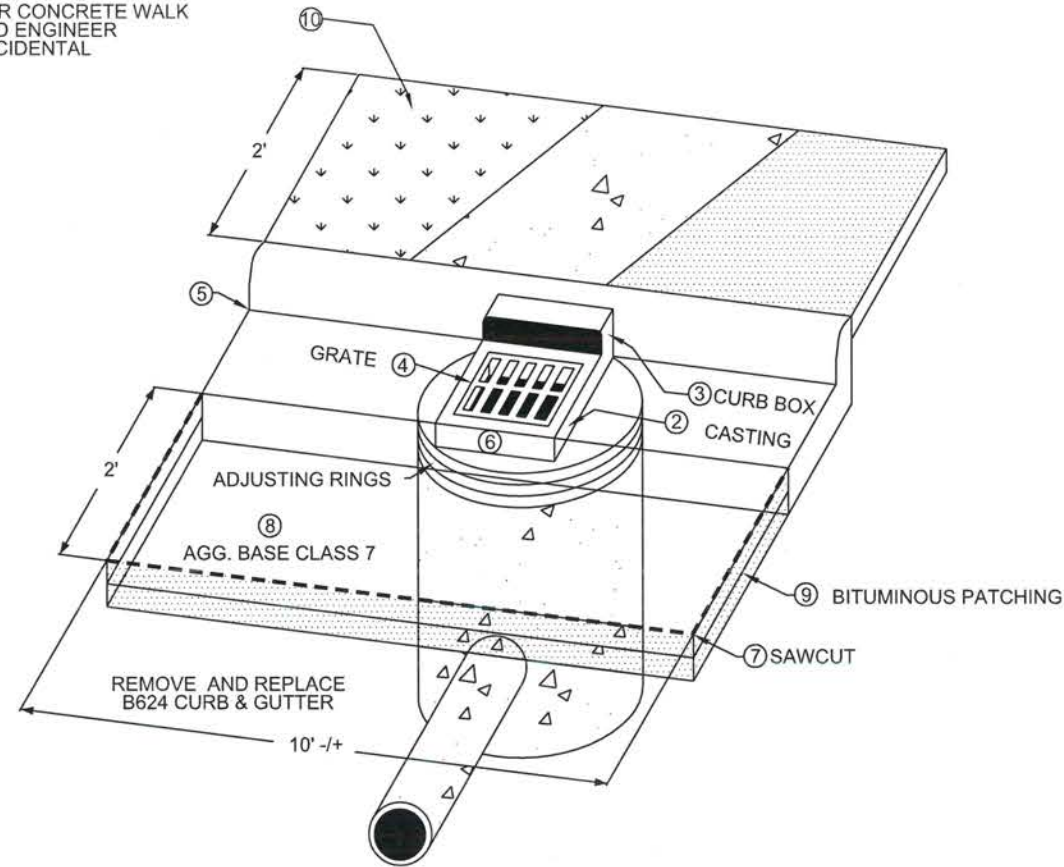
Sheet 5 of 22 Sheets

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### CATCH BASIN DETAIL

SEE STRUCTURE TAB FOR LOCATION  
(PAGE 3)

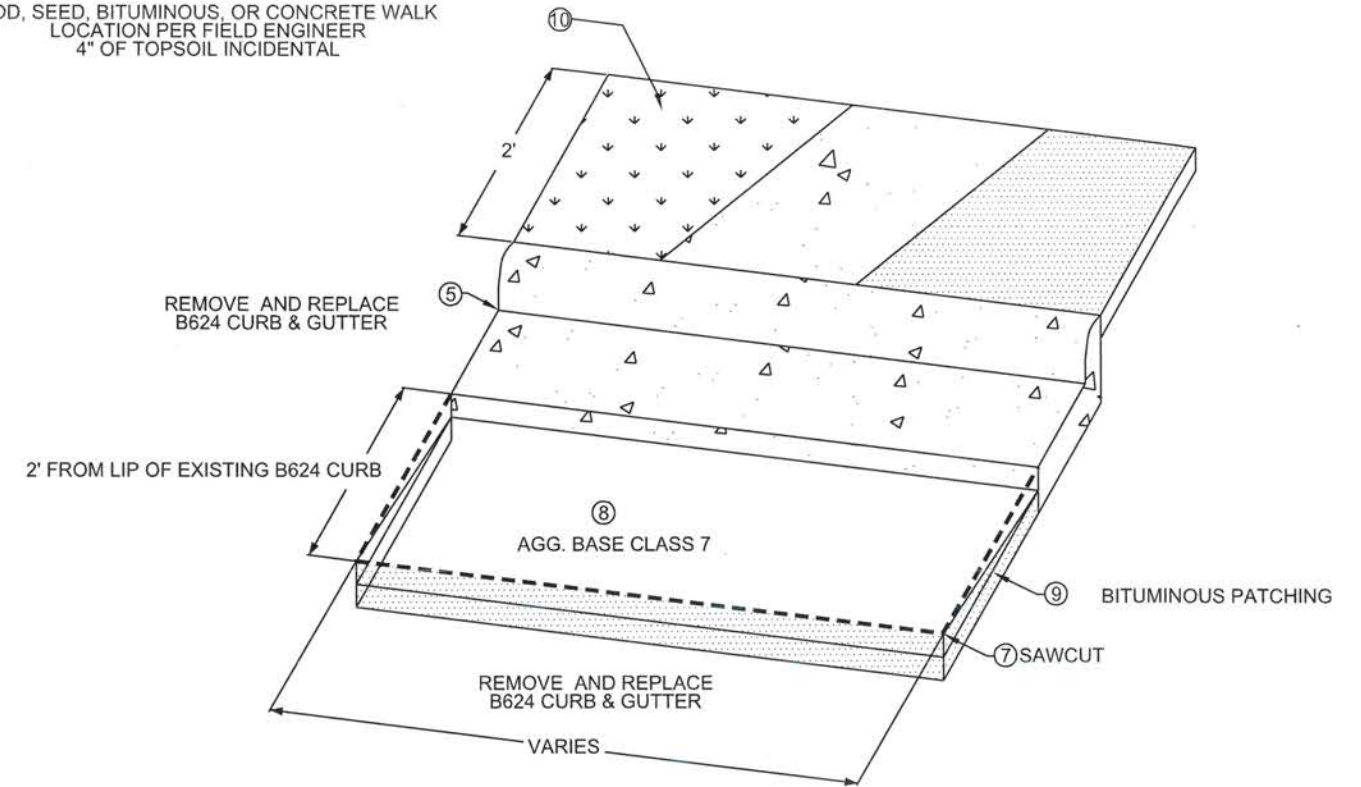
SOD, SEED, BITUMINOUS, OR CONCRETE WALK  
LOCATION PER FIELD ENGINEER  
4" OF TOPSOIL INCIDENTAL



### NEW CURB DETAIL

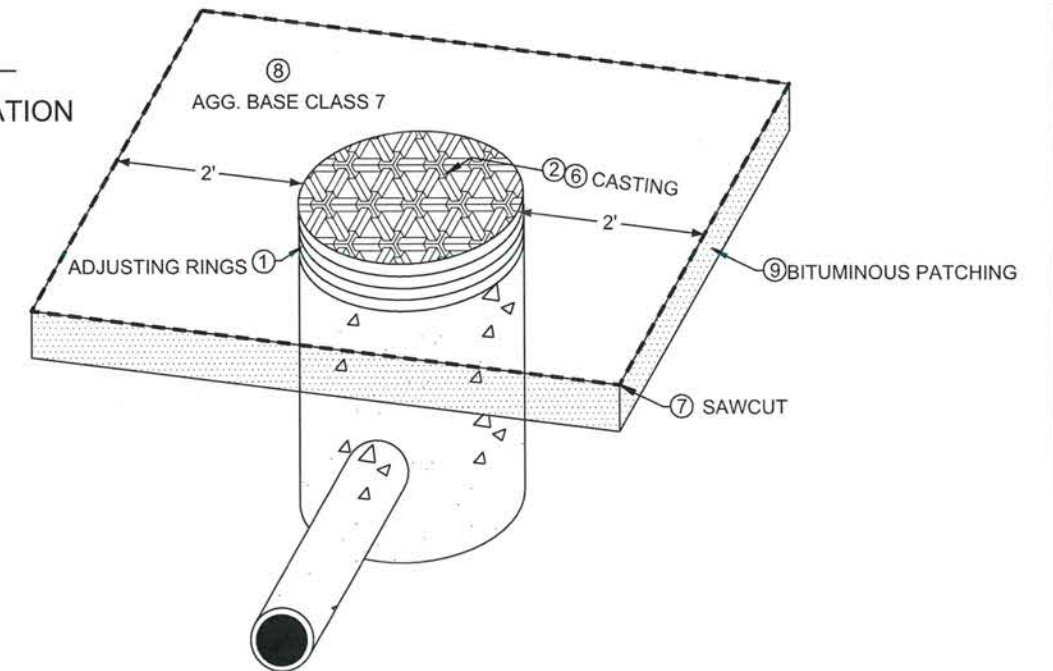
SEE PLAN FOR LOCATION

SOD, SEED, BITUMINOUS, OR CONCRETE WALK  
LOCATION PER FIELD ENGINEER  
4" OF TOPSOIL INCIDENTAL



### MANHOLE DETAIL

SEE STRUCTURE TAB FOR LOCATION  
(PAGE 3)



### 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
- 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 (RESIDENTIAL AREAS), EROSION CONTROL BLANKET, BITUMINOUS, OR CONCRETE

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ANOKA COUNTY  
HIGHWAY DEPT.

COUNTY PROJECT 15-16-18

DETAILS  
Sheet 6 of 22 Sheets



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**STORM DRAINAGE TAB**


NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	STRUCTURE TYPE	ADJUST EACH FRAME AND RING CASTING EACH (LIN FT)		GROUT CATCH BASIN OR MANHOLE (EACH)	RECONSTRUCT DRAINAGE STRUCTURE EACH (LIN FT)	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONCRETE CURB & GUTTER DESIGN B624	SAWING PAVEMENT (FULL DEPTH)	REMOVE BITUMINOUS PAVEMENT	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	NOTES
						LIN FT	LIN FT			LIN FT	LIN FT	SQ YD	TON			
99	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.8			5	11	11	15		0.42	
100	CB															
101	CB	RE-RING STRUCTURE	R-3250-DVSP	1	48-4020		0.68			5	11	11	15		0.42	
102	CB	RE-RING STRUCTURE, REPLACE HAT	R-3250-DVSP	1	48-4020				1 (1.1)	5	11	11	15		0.42	
103	MH SAN	RE-RING STRUCTURE	A-7D	1			1.02							4	0.69	
104	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.58			5	11	11	15		0.42	
105	CB	HAT	R-3250-DVSP	1	48-4020			1	1 (1.0)							
106	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.38			5	12	12	16		0.46	
107	MH SAN	RE-RING STRUCTURE	A-7D	1			0.92							4	0.69	
108	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.68			5	11	11	15		0.42	
109	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.78			5	13	13	17		0.50	
110	MH SAN	RE-RING STRUCTURE	A-7D	1			1.12							4	0.69	
111	MH SAN	RE-RING STRUCTURE	A-7D	1			0.72							4	0.69	
112	MH SAN	RE-RING STRUCTURE	A-7D	1			1.02							4	0.69	
113	MH SAN	RE-RING STRUCTURE	A-7D	1			0.62							4	0.69	
113A	MH SAN	RE-RING STRUCTURE	A-7D	1			1.22							4	0.69	
114	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.88			5	13	13	17		0.50	
115	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.88			5	10	10	14		0.38	
116	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.78			5	10	10	14		0.38	
117	MH	RE-RING STRUCTURE, REPLACE HAT	A-7D	1	BLOCK				1 (0.9)					4	0.69	
118	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.08			5	10	10	14		0.38	
120	MH				48-4020	1										
121	MH SAN	RE-RING STRUCTURE	A-7D	1			0.32							4	0.69	
123	MH SAN					1										
124	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.38			5	14	14	18		0.54	
125	MH	RE-RING STRUCTURE	A-7D	1			0.52							4	0.69	
126	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.08			5	12	12	16		0.46	
129	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.08			5	12	12	16		0.46	
130	MH				BLOCK	1	1.32									
131	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.78			5	13	13	17		0.50	
133	MH SAN	RE-RING STRUCTURE	A-7D	1			1.02							4	0.69	
135	MH					1	0.82									
136	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.18			5	10	10	14		0.38	
137	MH SAN	RE-RING STRUCTURE	A-7D	1			0.62							4	0.69	
138	MH SAN	RE-RING STRUCTURE	A-7D	1			1.52							4	0.69	
139	MH	RE-RING STRUCTURE	A-7D	1			0							4	0.69	
140	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.08			5	12	12	16		0.46	
141	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		1.08			5	11	11	15		0.42	
142	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.38			5	10	10	14		0.38	
143	CB	RE-RING STRUCTURE	R-3250-DVSP	1	G		0.88			5	13	13	17		0.50	
144	CB				G											
STATION			LT / RT													
24+24	26+01	NEW CURB	RT								177	177	181	40	10	
35+50	38+00	CURB REPLACEMENT	LT							5	250	250	254	56	13	
39+40	46+20	CURB REPLACEMENT	LT							5	680	680	684	152	35	
52+43	57+43	CURB REPLACEMENT	LT							5	500	500	504	112	26	
59+20	62+61	CURB REPLACEMENT	LT							5	341	341	345	76	18	
63+78	64+59	CURB REPLACEMENT	RT							5	81	81	85	18	5	
67+80	73+75	CURB REPLACEMENT	LT							5	595	595	599	133	31	
76+24		CURB REPLACEMENT	18 & 16 SW QUAD							5	30	30	34	7	2	
76+25		CURB REPLACEMENT	18 & 16 NE QUAD							5	18	18	22	4	0.69	
77+10		CURB REPLACEMENT	18 & 16 SE QUAD							5	48	48	52	11	1.84	
<b>TOTALS</b>				35		4		1	3	145	2950	2950	3070	665	162	

NO	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:36 PM
NAME: P:\15-01-00\CR_18(Bunker-Andover Blvd)\Base\PROPOSED\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: *Matthew J. John*  
 DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: CSO DATE: 1/30/2015  
 DESIGN BY: CSO DATE: \_\_\_\_\_  
 CHECKED BY: MJJ DATE: \_\_\_\_\_

**ANOKA COUNTY HIGHWAY DEPT.**

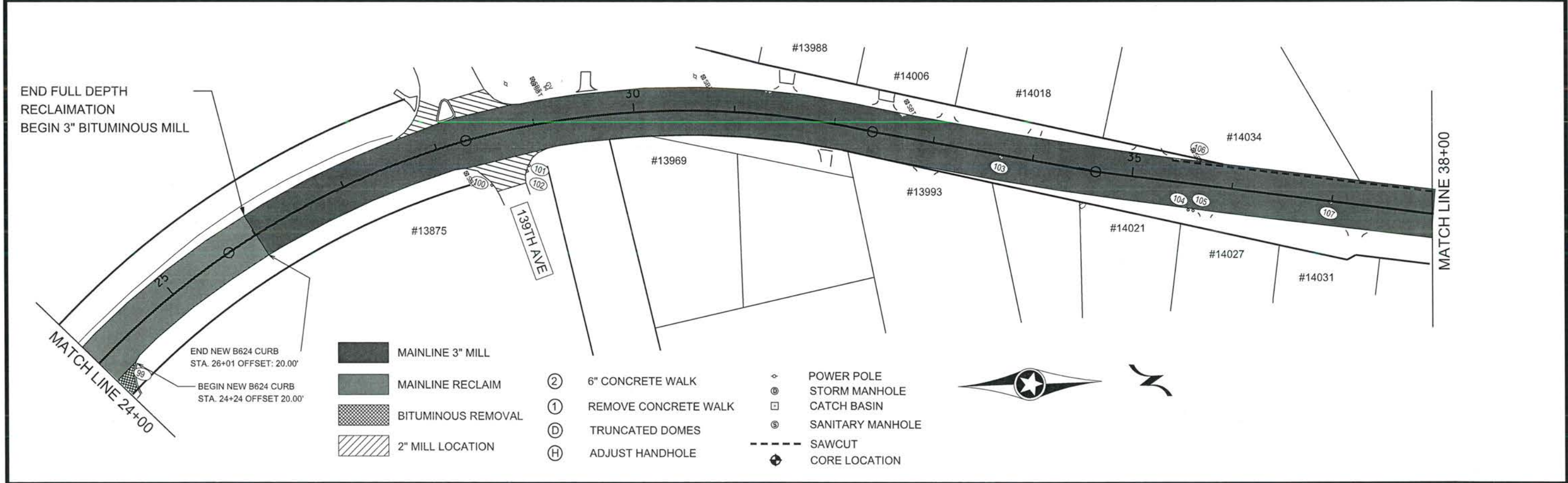
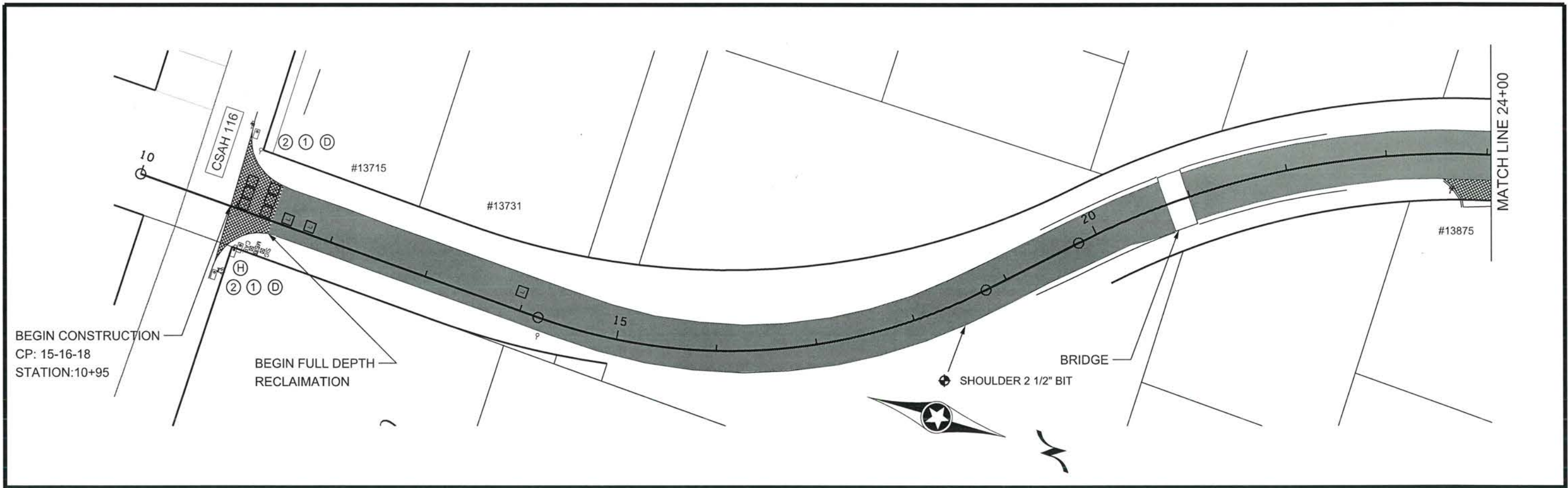


COUNTY PROJECT 15-16-18

DETAILS  
 Sheet 7 of 22 Sheets



mjohn



NO	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:27 PM
NAME: P:\15-01-00\CR_18(Bunker-Andover\svd)\Base\PROPOSED\PLAN.dgn							

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

COUNTY PROJECT 15-16-18

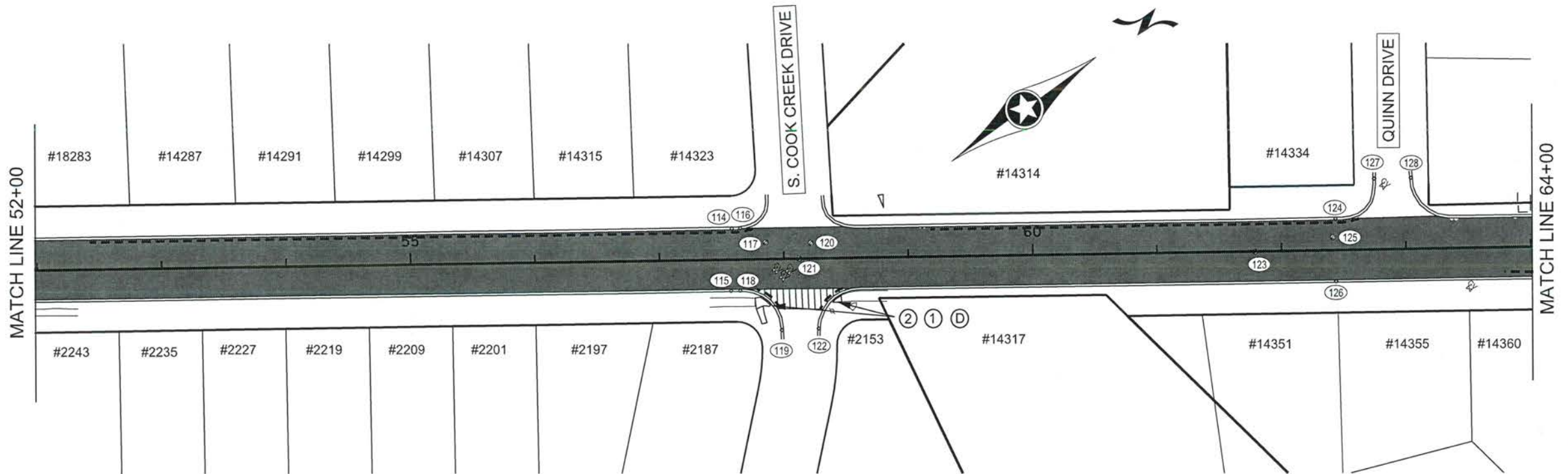
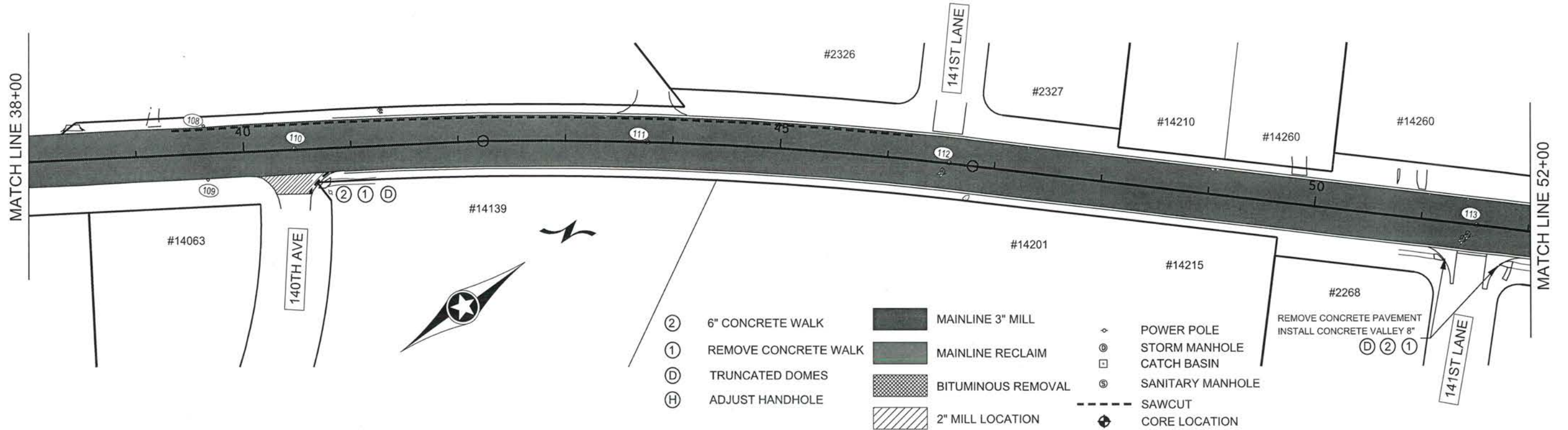
CONSTRUCTION PLAN

STA 10+95 TO 38+00

Sheet 8 of 22 Sheets



mjohn



NO	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:28 PM
NAME: P:\15-01-00\CR_18(Bunker-AndoverB\vd)\Base\PROPOSED\PLAN.dgn							

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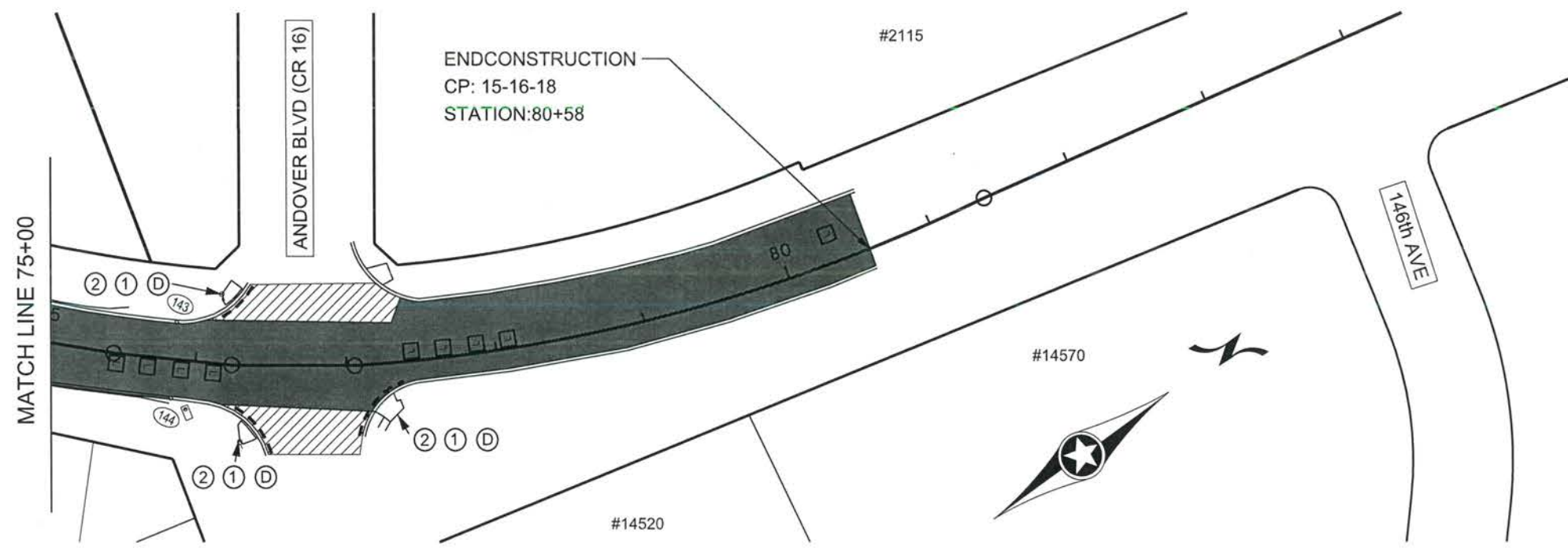
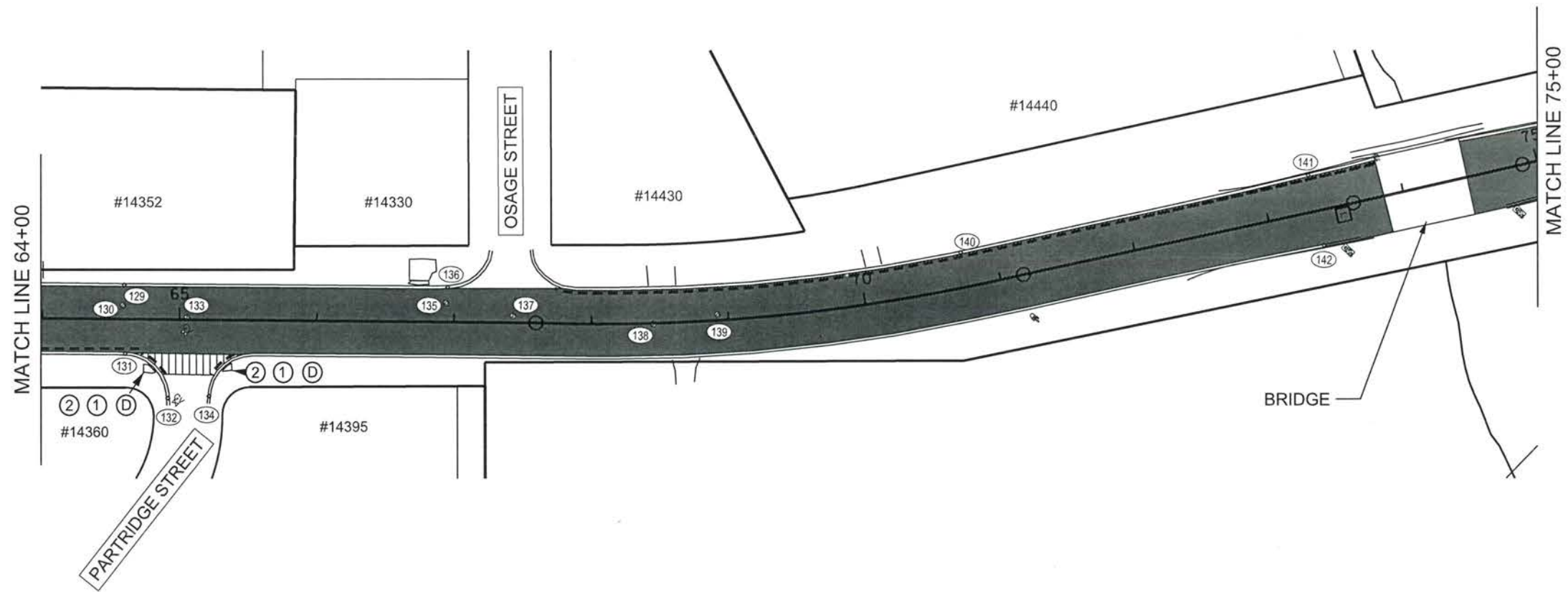
**ANOKA COUNTY**  
**HIGHWAY DEPT.**

COUNTY PROJECT 15-16-18

CONSTRUCTION PLAN  
 STA 38+00 TO 64+00  
 Sheet 9 of 22 Sheets



mjohn



- ② 6" CONCRETE WALK
- ① REMOVE CONCRETE WALK
- ⓓ TRUNCATED DOMES
- ⓓ ADJUST HANDHOLE
- ◇ POWER POLE
- ⊙ STORM MANHOLE
- ⊠ CATCH BASIN
- ⊙ SANITARY MANHOLE
- - - SAWCUT
- ⊕ CORE LOCATION
- MAINLINE 3" MILL
- MAINLINE RECLAIM
- ▨ BITUMINOUS REMOVAL
- ▨ 2" MILL LOCATION

ENDCONSTRUCTION  
 CP: 15-16-18  
 STATION: 80+58

NO	DATE	BY	CKD	APPR	REVISION	DATE	TIME
						03/31/2015	1:42:29 PM

NAME: P:\15-01-00\CR\_18(Bunker-AndoverBlvd)\Base\PROPOSED\PLAN.dgn

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

COUNTY PROJECT 15-16-18

CONSTRUCTION PLAN  
 STA 64+00 TO 80+58  
 Sheet 10 of 22 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	14330
4" SOLID LINE YELLOW - EPOXY PAINT	LIN FT	1050
4" BROKEN LINE YELLOW - EPOXY PAINT	LIN FT	754
4" DOUBLE LINE YELLOW - EPOXY PAINT	LIN FT	3095
24" YELLOW THERMO-PLASTIC	LIN FT	104
24" WHITE THERMO-PLASTIC	LIN FT	91
3' X 6' THERMO-PLASTIC ZEBRA CROSSWALK	SQ FT	432
STRAIGHT ARROW THERMO-PLASTIC	EACH	2
RIGHT ARROW THERMO-PLASTIC	EACH	4
LEFT ARROW THERMO-PLASTIC	EACH	4

**SYMBOLS & MATERIALS LEGEND**

■ CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC

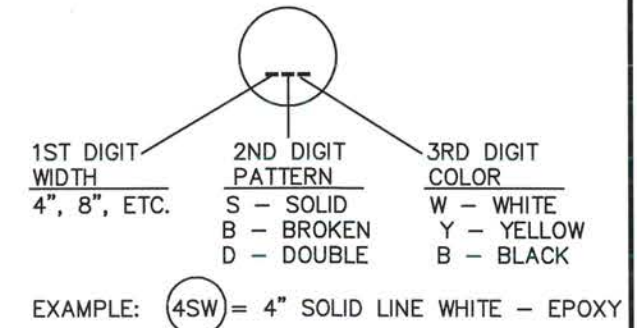
↩ PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

**STRIPING KEY**

○ CIRCLE - EPOXY    □ SQUARE PREFORMED THERMOPLASTIC

△ TRIANGLE - PAINT

⬠ PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



NO	DATE	BY	CKD	APPR	REVISION

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

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DESIGN BY: RLB DATE: 2/14/15  
CHECKED BY: JR DATE: 2/14/15



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. \_\_\_\_\_  
COUNTY PROJECT NO. 15-16-18

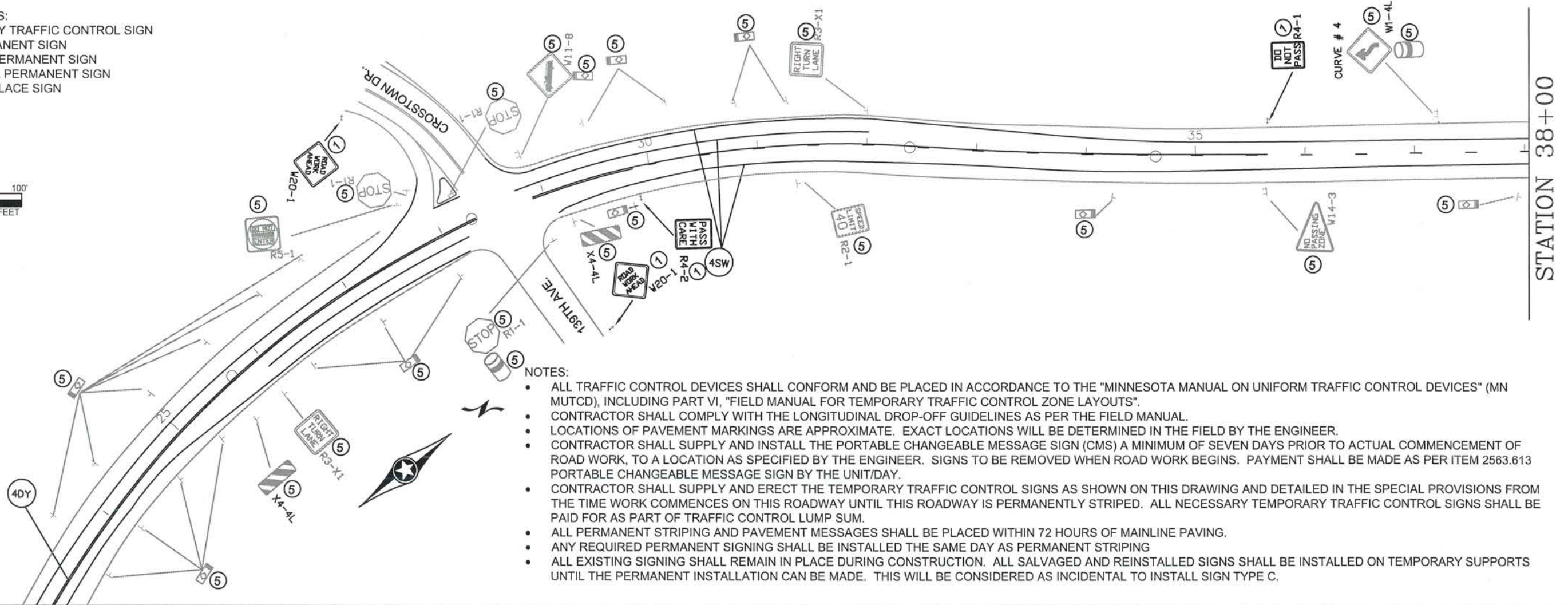
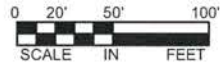
PERMANENT MARKING  
TABULATION  
Sheet 11 of 22 Sheets





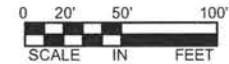
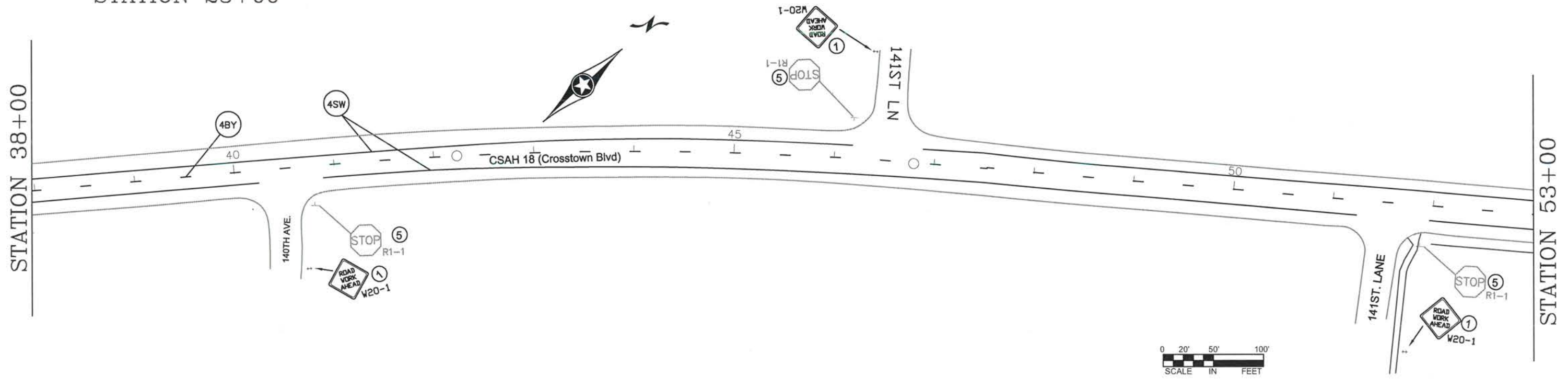


- SIGN NOTES:
- ① TEMPORARY TRAFFIC CONTROL SIGN
  - ② F & I PERMANENT SIGN
  - ③ SALVAGE PERMANENT SIGN
  - ④ RE-INSTALL PERMANENT SIGN
  - ⑤ RETAIN INPLACE SIGN



- NOTES:
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
  - CONTRACTOR SHALL COMPLY WITH THE LONGITUDINAL DROP-OFF GUIDELINES AS PER THE FIELD MANUAL.
  - LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM OF SEVEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
  - CONTRACTOR SHALL SUPPLY AND ERECT THE TEMPORARY TRAFFIC CONTROL SIGNS AS SHOWN ON THIS DRAWING AND DETAILED IN THE SPECIAL PROVISIONS FROM THE TIME WORK COMMENCES ON THIS ROADWAY UNTIL THIS ROADWAY IS PERMANENTLY STRIPED. ALL NECESSARY TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PAID FOR AS PART OF TRAFFIC CONTROL LUMP SUM.
  - 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
  - ALL EXISTING SIGNING SHALL REMAIN IN PLACE DURING CONSTRUCTION. ALL SALVAGED AND REINSTALLED SIGNS SHALL BE INSTALLED ON TEMPORARY SUPPORTS UNTIL THE PERMANENT INSTALLATION CAN BE MADE. THIS WILL BE CONSIDERED AS INCIDENTAL TO INSTALL SIGN TYPE C.

STATION 23+00



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 SIGNATURE: *Matthew J. John*  
 DATE: 4/2/15 REG. NO. 51639

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 DESIGN BY: RLB DATE: 1/7/14  
 CHECKED BY: JR DATE: 1/7/14



ANOKA COUNTY  
 HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 14-54-63

TEMPORARY SIGNING,  
 PERMANENT SIGNING  
 AND STRIPING

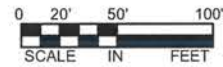
Sheet 13 of 22 Sheets



- 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 53+00

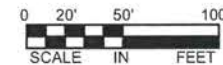
STATION 68+00



NOTES:

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STATION 68+00



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ANOKA COUNTY  
 HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_  
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 COUNTY PROJECT NO. 14-54-63

TEMPORARY SIGNING,  
 PERMANENT SIGNING  
 AND STRIPING  
 Sheet 14 of 22 Sheets



TEMPORARY TRAFFIC CONTROL SIGNS

M.U.T.C.D. CODE	SIZE	PANEL AREA	INSERT	QUANTITY		MOUNTING HEIGHT TO PAVEMENT EDGE
		FT. <sup>2</sup>			No. POST	FT.
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		2	1	7.0'
G20-2A	48" x 24"	8.00		4	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 15)		
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 LAY OUT

		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

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.

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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PRINT NAME: MATTHEW J. JOHN

SIGNATURE:

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

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ANOKA COUNTY HIGHWAY DEPT.

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

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

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

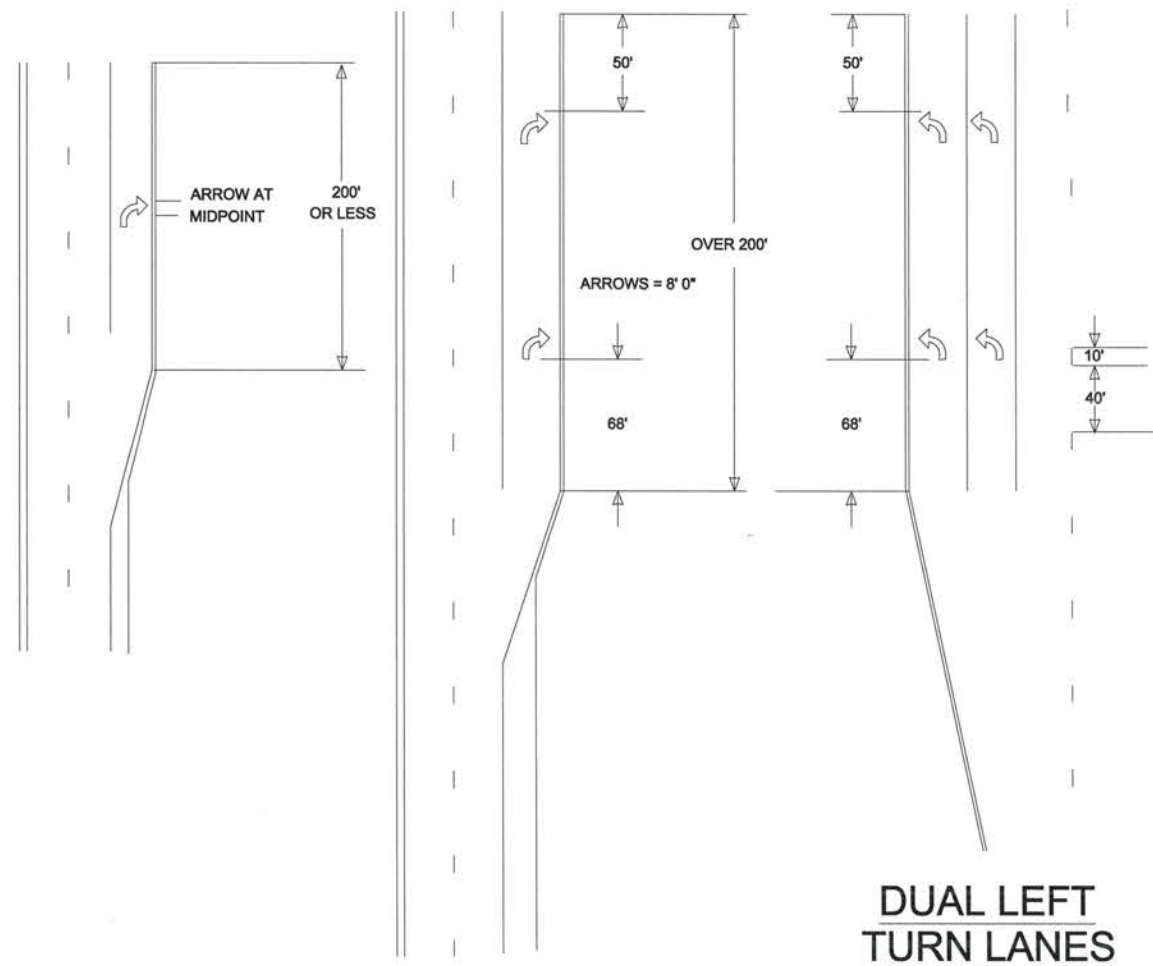
COUNTY PROJECT NO. 15-16-18

TRAFFIC CONTROL QUANTITY

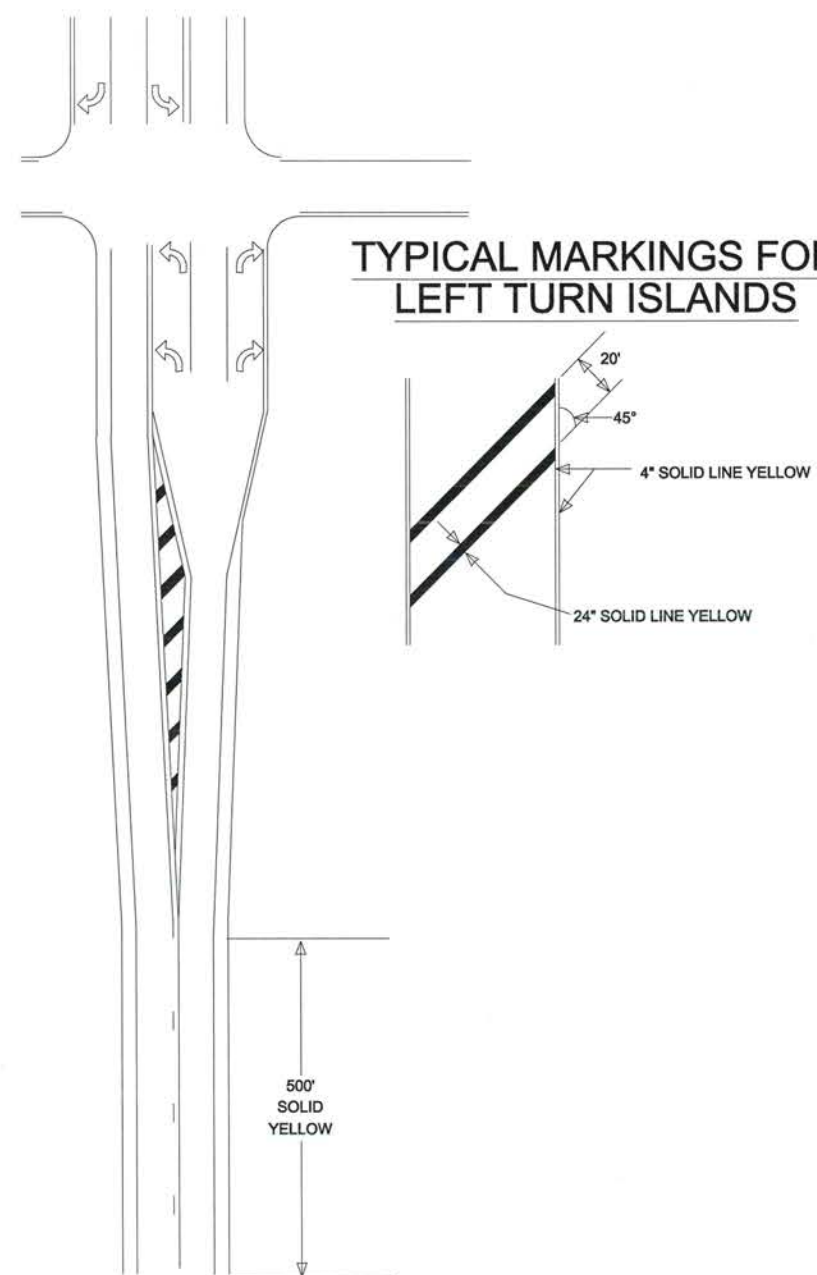
Sheet 15 of 22 Sheets



**TYPICAL MESSAGE PLACEMENT FOR TURN LANES**



**TYPICAL MARKINGS FOR LEFT TURN ISLANDS**



NO	DATE	BY	CKD	APPR	REVISION

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**ANOKA COUNTY  
HIGHWAY DEPT.**

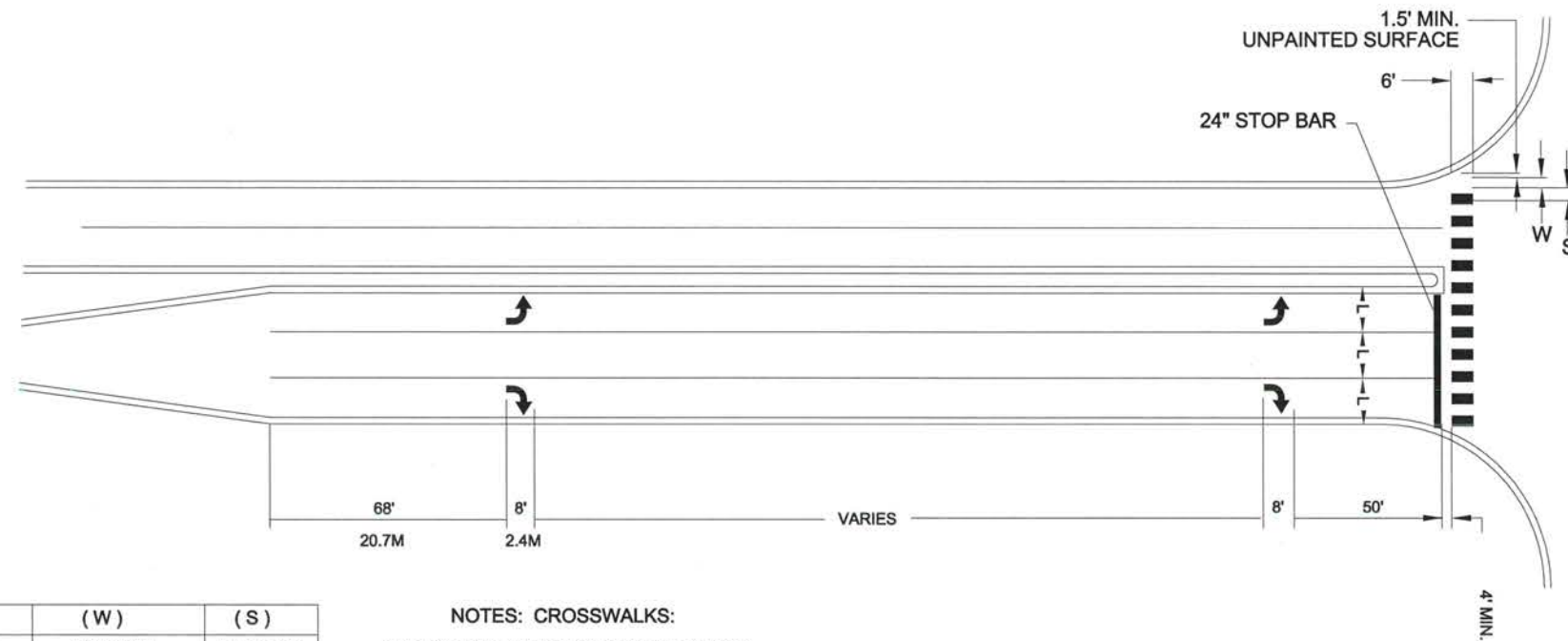
STATE PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. \_\_\_\_\_  
COUNTY PROJECT NO. 15-16-18

**SIGNING & STRIPING  
DETAILS**

Sheet 16 of 22 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.

NO	DATE	BY	CKD	APPR	REVISION

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

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

DRAWN BY: RLB DATE: 2/6/15  
 DESIGN BY: RLB DATE: 2/6/15  
 CHECKED BY: JR DATE: 2/6/15



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 15-16-18

SIGNING & STRIPING  
DETAILS

Sheet 17 of 22 Sheets



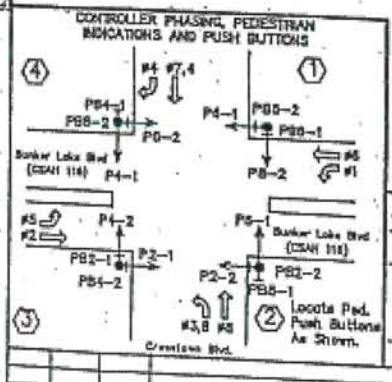
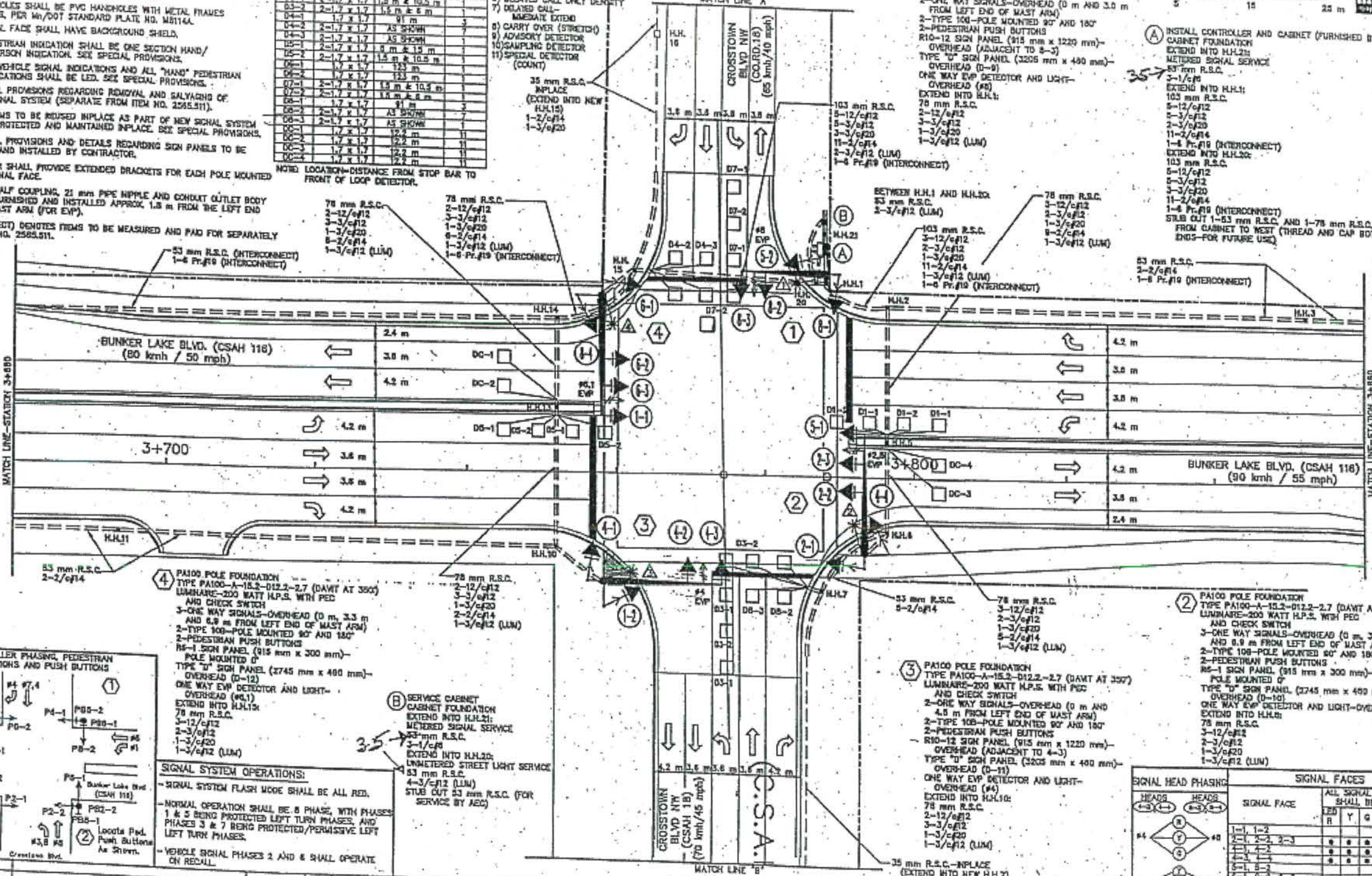
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- NOTES:**
- LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
  - LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLPE) IN 21 mm R.M.C. SEE SPECIAL PROVISIONS.
  - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER MTD/DOT STANDARD PLATE NO. M8114A.
  - EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
  - EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
  - ALL "RED" VEHICLE SIGNAL INDICATIONS AND ALL "HAND" PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
  - SEE SPECIAL PROVISIONS REGARDING REMOVAL AND SALVAGING OF INPLACE SIGNAL SYSTEM (SEPARATE FROM ITEM NO. 2565.511).
  - INPLACE ITEMS TO BE REUSED INPLACE AS PART OF NEW SIGNAL SYSTEM SHALL BE PROTECTED AND MAINTAINED INPLACE. SEE SPECIAL PROVISIONS.
  - SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
  - A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 1.8 m FROM THE LEFT END OF EACH MAST ARM (FOR E.V.P.).
  - (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511.

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (m)	LOCATION	FUNCTION
01-1	2-1.7 x 1.7	8 m & 15 m	1
01-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
02-1	1.7 x 1.7	112 m	1
03-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
04-1	1.7 x 1.7	91 m	3
04-2	2-1.7 x 1.7	AS SHOWN	3
04-3	2-1.7 x 1.7	AS SHOWN	3
05-1	2-1.7 x 1.7	8 m & 15 m	1
05-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
06-1	1.7 x 1.7	123 m	1
06-2	1.7 x 1.7	123 m	1
07-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
07-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
08-1	1.7 x 1.7	91 m	3
08-2	2-1.7 x 1.7	AS SHOWN	7
08-3	2-1.7 x 1.7	AS SHOWN	7
09-1	1.7 x 1.7	122 m	11
09-2	1.7 x 1.7	122 m	11
09-3	1.7 x 1.7	122 m	11
09-4	1.7 x 1.7	122 m	11
09-5	1.7 x 1.7	122 m	11
09-6	1.7 x 1.7	122 m	11
09-7	1.7 x 1.7	122 m	11
09-8	1.7 x 1.7	122 m	11
09-9	1.7 x 1.7	122 m	11
09-10	1.7 x 1.7	122 m	11
09-11	1.7 x 1.7	122 m	11

- LOOP DETECTOR FUNCTIONS:**
- CALL AND EXTEND
  - CALL ONLY
  - EXTEND ONLY
  - CALL ONLY DENSITY
  - DELAYED CALL ONLY
  - DELAYED CALL ONLY DENSITY
  - MAINTAIN EXTEND
  - CARRY OVER (STRETCH)
  - ADVISORY DETECTOR
  - SAMPLING DETECTOR
  - SPECIAL DETECTOR (COUNT)

12-07-98 1:24 pm cpulb0ap



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 & 7 BEING PROTECTED/PERMISSIVE LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON REDD.

**SERVICE CABINET**  
CABINET FOUNDATION  
EXTEND INTO H.H.21;  
METERED SIGNAL SERVICE  
EXTEND INTO H.H.20;  
UNMETERED STREET LIGHT SERVICE  
EXTEND INTO H.H.10;  
4-3/c#12 (LUM)  
4-3/c#12 (LUM)  
STUB OUT 53 mm R.S.C. (FOR SERVICE BY AEC)

SIGNAL HEAD PHASING		SIGNAL FACES			
HEADS	HEADS	ALL SIGNAL INDICATIONS SHALL BE 300 mm.			
1-2	3-4	SIGNAL FACE	LED	Y	G
1-1	1-2	1-1	1-2	1-3	1-4
2-1	2-2	2-1	2-2	2-3	2-4
3-1	3-2	3-1	3-2	3-3	3-4
4-1	4-2	4-1	4-2	4-3	4-4
5-1	5-2	5-1	5-2	5-3	5-4
6-1	6-2	6-1	6-2	6-3	6-4
7-1	7-2	7-1	7-2	7-3	7-4
8-1	8-2	8-1	8-2	8-3	8-4

NO.	BY	DATE	REVISIONS	DESIGN	DATE

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



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

TRAFFIC SIGNAL SYSTEM "D"  
INTERSECTION 15V11T

FAC. NO. 55-11  
ANOKA01806.01

FOR REFERENCE PURPOSES ONLY

NO.	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:37 PM

NAME: P:\115-01-00\CR\_18(Bunker-AndoverBvd)\Base\PROPOSED\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: *[Signature]*  
DATE: 4/2/15 LICENSE NO. 51639

DRAWN BY: CSO DATE: 01/30/2015  
DESIGN BY: CSO DATE: \_\_\_\_\_  
CHECKED BY: MJJ DATE: \_\_\_\_\_



ANOKA COUNTY  
HIGHWAY DEPT.

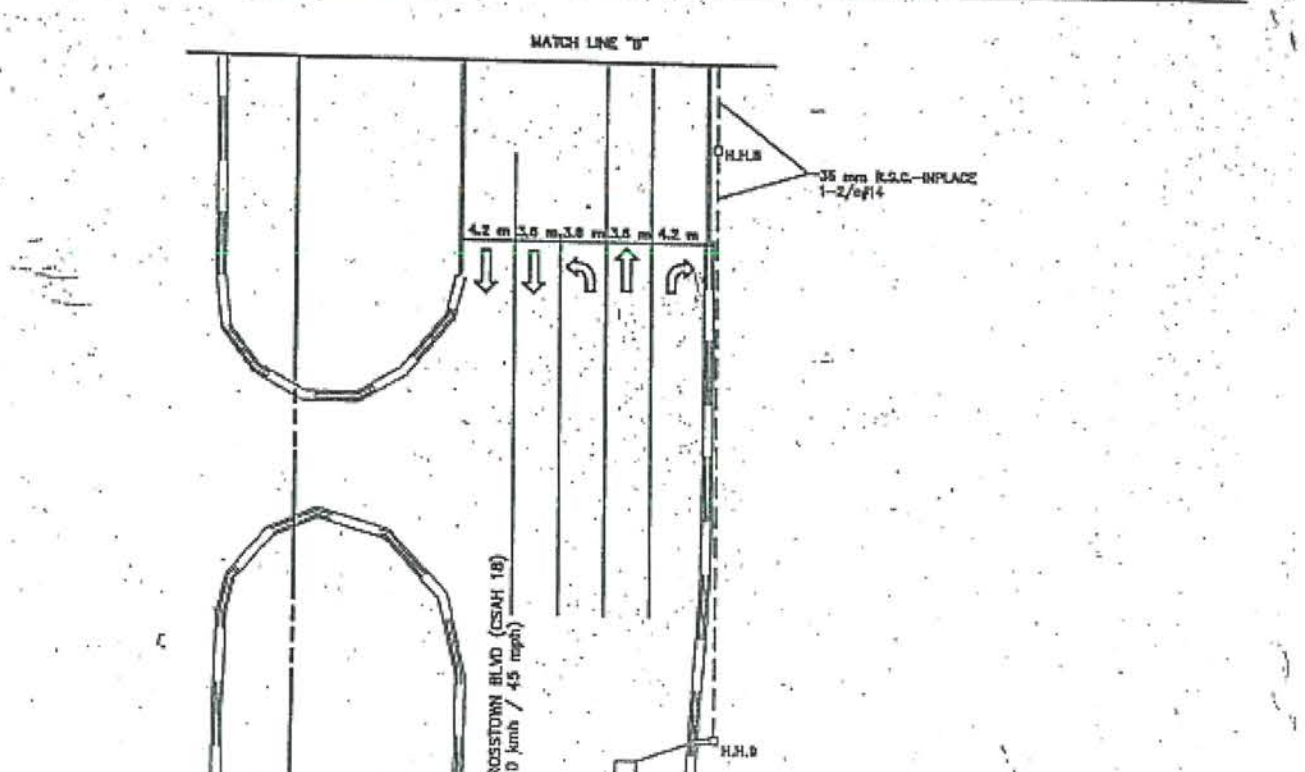
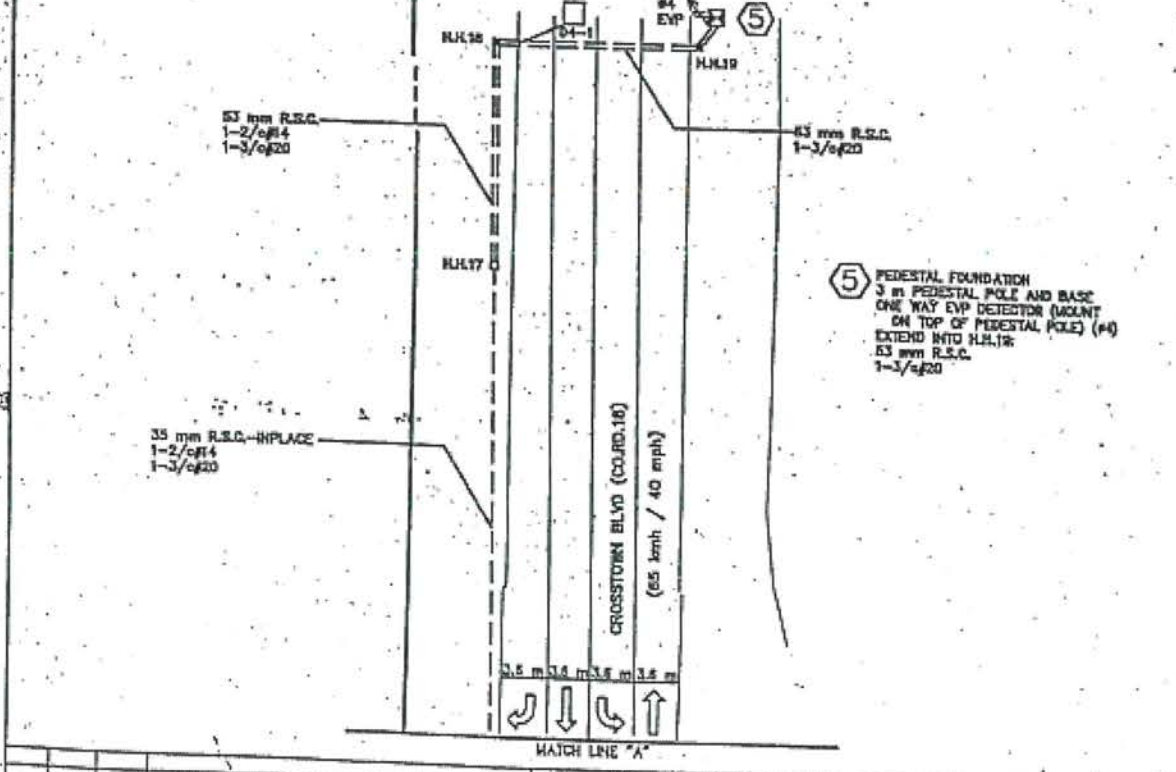
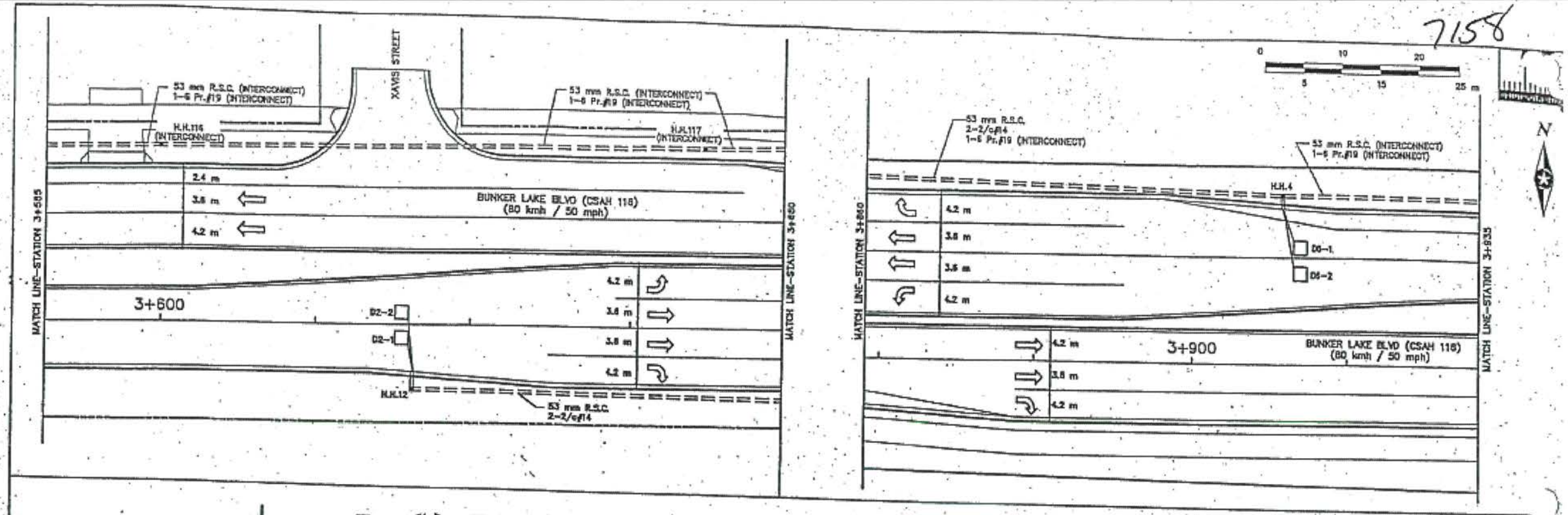
COUNTY PROJECT 15-16-18

ORIGINAL SIGNAL PLANS  
Sheet 18 of 22 Sheets



mjohn

C:\CLIENTS\VA\_THRU\_F\ANOKA\8838\EP\AK2015\TCS.DWG 01-27-15 11:20 am epu80xp



5 PEDESTAL FOUNDATION  
3 m PEDESTAL POLE AND BASE  
ONE WAY EVD DETECTOR (MOUNT  
ON TOP OF PEDESTAL POLE) (#4)  
EXTEND INTO H.H.17  
53 mm R.S.C.  
1-3/ø20

NO.	BY	DATE

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.



ANOKA COUNTY  
TRAFFIC SIGNAL SYSTEM "D" FILE NO. 15-12

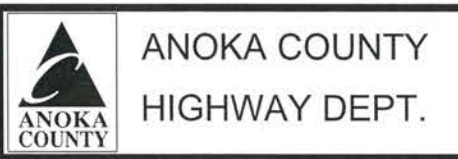
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NO.	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:38 PM

NAME: P:15-01-001CR\_18(Bunker-AndoverBnd)Base\PROPOSED\PLAN.dgn

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

DRAWN BY: CSO DATE: 01/30/2015  
DESIGN BY: CSO DATE:   
CHECKED BY: MJJ DATE:   
DATE: 4/2/15 LICENSE NO. 51639

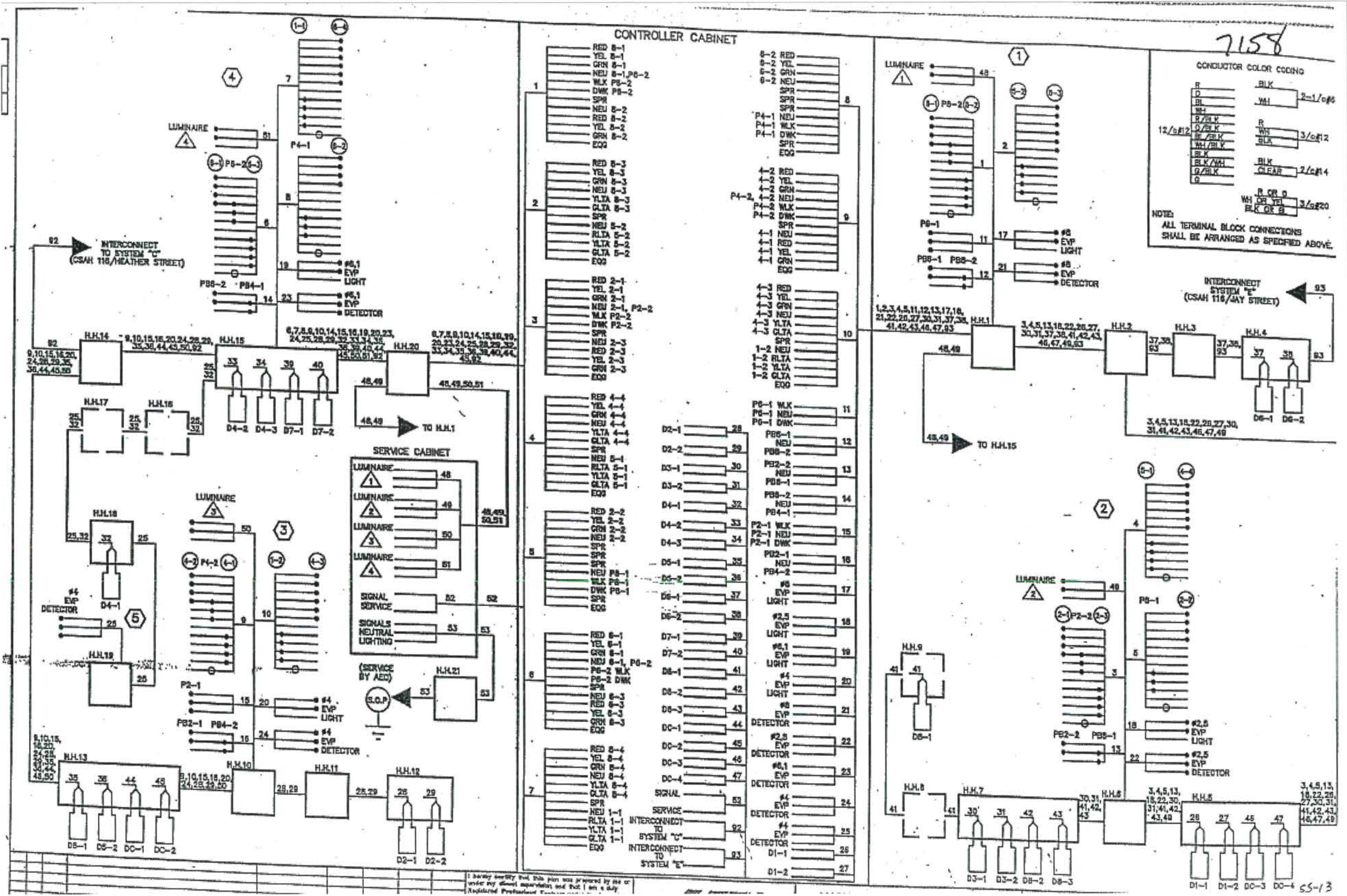


COUNTY PROJECT 15-16-18

ORIGINAL SIGNAL PLANS  
Sheet 19 of 22 Sheets



mjohn



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CONDUCTOR COLOR CODING

R	BLK	
D	WH	2-1/ø#6
BL		
W		
SPR		
Y/BLK	R	
D/BLK	WH	3/ø#12
BL/BLK	BLK	
WH/BLK		
BLK		
BLK/WH	BLK	2/ø#14
D/BLK	CLEAR	
R		
WH OR YEL	R OR D	
BLK OR B	WH OR YEL	3/ø#20

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

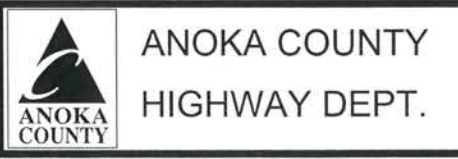
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NO	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:40 PM
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 DATE: 4/2/15 LICENSE NO. 51639

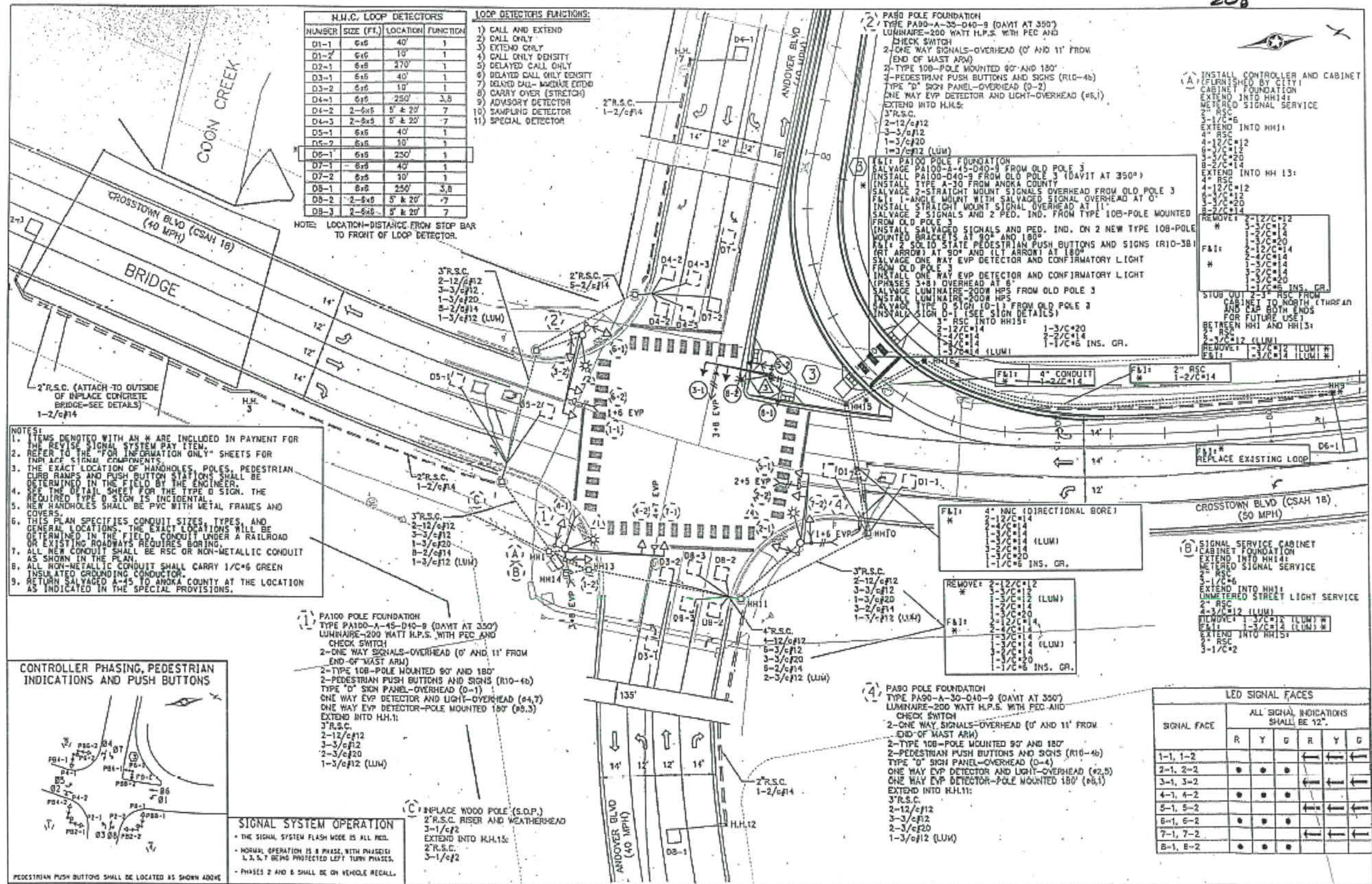
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 DESIGN BY: CSO DATE:  
 CHECKED BY: MJJ DATE:



COUNTY PROJECT 15-16-18

ORIGINAL SIGNAL PLANS  
 Sheet 20 of 22 Sheets

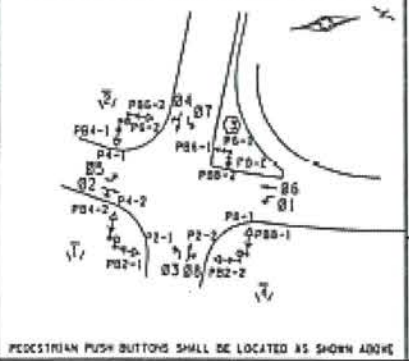




**NOTES:**

- ITEMS DENOTED WITH AN \* ARE INCLUDED IN PAYMENT FOR THE REVISED SIGNAL SYSTEM PAY ITEM.
- REFER TO THE "FOR INFORMATION ONLY" SHEETS FOR THE SIGNAL COMPONENTS.
- THE EXACT LOCATION OF HANDHOLES, POLES, PEDESTRIAN CURB RAMPS AND PUSH BUTTON STATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- SEE THE DETAIL SHEET FOR THE TYPE D SIGN. THE REQUIRED TYPE D SIGN IS INCIDENTAL.
- NEW HANDHOLES SHALL BE PVC WITH METAL FRAMES AND COVERS.
- THIS PLAN SPECIFIES CONDUIT SIZES, TYPES AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD CONDUIT UNDER A RAILROAD OR EXISTING ROADWAYS REQUIRES BORING.
- ALL NEW CONDUIT SHALL BE RSC OR NON-METALLIC CONDUIT AS SHOWN IN THE PLAN.
- ALL NON-METALLIC CONDUIT SHALL CARRY 1/2" x 6" GREEN INSULATED GROUNDING CONDUCTOR.
- RETURN SALVAGED A-45 TO ANOKA COUNTY AT THE LOCATION AS INDICATED IN THE SPECIAL PROVISIONS.

**CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS**



**SIGNAL SYSTEM OPERATION**

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



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.

DESIGNED: RBT  
 DRAWN: CSO  
 CHECKED: RBT

**BOLTON & MENK, INC.**  
 CONSULTING ENGINEERS & SURVEYORS  
 MINNAPOLIS, MN 55412, MN 55426, MN 55427, MN 55428, MN 55431, MN 55432, MN 55433, MN 55434, MN 55435, MN 55436, MN 55437, MN 55438, MN 55439, MN 55440, MN 55441, MN 55442, MN 55443, MN 55444, MN 55445, MN 55446, MN 55447, MN 55448, MN 55449, MN 55450, MN 55451, MN 55452, MN 55453, MN 55454, MN 55455, MN 55456, MN 55457, MN 55458, MN 55459, MN 55460, MN 55461, MN 55462, MN 55463, MN 55464, MN 55465, MN 55466, MN 55467, MN 55468, MN 55469, MN 55470, MN 55471, MN 55472, MN 55473, MN 55474, MN 55475, MN 55476, MN 55477, MN 55478, MN 55479, MN 55480, MN 55481, MN 55482, MN 55483, MN 55484, MN 55485, MN 55486, MN 55487, MN 55488, MN 55489, MN 55490, MN 55491, MN 55492, MN 55493, MN 55494, MN 55495, MN 55496, MN 55497, MN 55498, MN 55499, MN 55500

NO.	BY	CHK.	SAP 138-110-003, CITY OF ANDOVER, MN (CITY NO. 12-37A)	SHEET
			CROSSTOWN BOULEVARD RIGHT TURN LANE	26
			SIGNAL PLAN	74

FOR REFERENCE PURPOSES ONLY

NO.	DATE	BY	CKD	APPR	REVISION	03/31/2015	1:42:41 PM

NAME: P:\15-01\CR\_18\Bunker-AndoverBlvd\Bases\PROPOSED\PLAN.dgn

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 DESIGN BY: CSO DATE: \_\_\_\_\_  
 CHECKED BY: MJJ DATE: \_\_\_\_\_



COUNTY PROJECT 15-16-18

ORIGINAL SIGNAL PLANS  
 Sheet 21 of 22 Sheets



