

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	code	ITEM	NOTES	UNIT	TOTAL EST. QUANT.	UNIT PRICE	COST EST.
2021.501	00010	MOBILIZATION		LUMP SUM	1	\$19,714.62	\$19,714.62
2104.501	00022	REMOVE CURB AND GUTTER	6	LIN FT	1136	\$8.16	\$9,269.76
2104.503	00015	REMOVE BITUMINOUS WALK	18	SQ FT	400	\$4.80	\$1,920.00
2104.503	00020	REMOVE CONCRETE SIDEWALK	18	SQ FT	705	\$3.25	\$2,291.25
2104.509	00105	REMOVE CASTING		EACH	1	\$405.00	\$405.00
2231.604	00010	BITUMINOUS PATCH SPECIAL		SQ YD	119	\$6.00	\$714.00
2232.501	00050	MILL BITUMINOUS SURFACE (2.0")	9	SQ YD	22599	\$1.70	\$38,418.30
2232.604	00010	MILL BITUMINOUS PAVEMENT (SPECIAL)	18	SQ FT	889	\$7.80	\$6,934.20
2357.502	00010	BITUMINOUS MATERIAL FOR TACK COAT		GAL	1174	\$1.40	\$1,643.60
2360.501	24500	TYPE SP 12.5 WEARING COURSE MIXTURE(4,E)		TON	2599	\$70.00	\$181,930.00
2360.501	24500	TYPE SP 12.5 WEARING COURSE MIXTURE (4,B)	11	TON	102	\$50.00	\$5,100.00
2501.602	00049	CLEAN PIPE / CULVERTS	19	EACH	2	\$500.00	\$1,000.00
2506.522	00010	ADJUST FRAME AND RING CASTING	13,15,16,17	EACH	14	\$350.00	\$4,900.00
2506.516	00010	CASTING ASSEMBLY	10	EACH	1	\$600.00	\$600.00
2506.602	00003	GROUT CATCH BASIN OR MANHOLE	14	EACH	18	\$265.00	\$4,770.00
2521.501	00060	6" CONCRETE WALK	18	SQ FT	1105	\$6.00	\$6,630.00
2531.501	02315	CONCRETE CURB & GUTTER DESIGN B618	14	LIN FT	221	\$11.30	\$2,497.30
2531.501	02320	CONCRETE CURB & GUTTER DESIGN B624	14	LIN FT	915	\$11.30	\$10,339.50
2531.618	00010	TRUNCATED DOMES	18	SQ FT	196	\$39.25	\$7,693.00
2563.601	00010	TRAFFIC CONTROL	1,2,4	LUMP SUM	1	\$5,000.00	\$5,000.00
2563.613	01100	PORTABLE CHANGEABLE MESSAGE SIGN	12	UDAY	14	\$2,700.00	\$37,800.00
2565.602	51717	NMC LOOP DETECTORS 6' X 6'	3	EACH	20	\$1,000.00	\$20,000.00
2573.530	00010	STORM DRAINAGE INLET PROTECTION	8,13	EACH	17	\$117.81	\$2,002.77
2575.505	00050	SODDING TYPE SALT RESISTANT	7	SQ YD	386	\$4.22	\$1,628.92
2581.501	00010	REMOVABLE PREFORMED PLASTIC MARKING	5	LIN FT	324	\$1.50	\$486.00
2582.501	02102	PAVT MSSG (RT ARROW) PREF THERMOPLASTIC	2,6	EACH	5	\$420.00	\$2,100.00
2582.501	02101	PAVT MSSG (LT ARROW) PREF THERMOPLASTIC	2,6	EACH	9	\$420.00	\$3,780.00
2582.501	02103	PAVT MSSG (THRU ARROW) PREF THERMOPLASTIC	2,6	EACH	4	\$420.00	\$1,680.00
2582.501	02107	PAVT MSSG (RT-THRU ARROW) PREF THERMOPLASTIC	2,6	EACH	2	\$800.00	\$1,600.00
2582.502	41104	4" SOLID LINE WHITE-EPOXY	2,6	LIN FT	10458	\$0.25	\$2,614.50
2582.502	51204	4" BROKEN LINE WHITE - EPOXY	2,6	LIN FT	140	\$0.25	\$35.00
2582.502	42404	4" DOUBLE SOLID LINE YELLOW-EPOXY	2,6	LIN FT	5207	\$0.55	\$2,863.85
2582.502	21124	24" WHITE PREF THERMOPLASTIC	2,6	LIN FT	181	\$17.42	\$3,153.02
2582.502	22124	24" YELLOW PREF THERMOPLASTIC	2,6	LIN FT	840	\$17.42	\$14,632.80
2582.618	00010	3 X 6 ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	2,6	SQ FT	828	\$10.70	\$8,859.60

\$ 415,006.99

PLAN SYMBOLS

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

- LOWLAND _____
- TIMBER _____
- ORCHARD _____
- BRUSH _____
- NURSERY _____

- CATTLE GUARD _____
- OVERPASS (Highway Over) _____
- UNDERPASS (Highway Under) _____
- BRIDGE _____

- BUILDING (One Story Frame) _____
- F-FRAME C-CONCRETE _____
- S-STONE T-TILE _____
- B-BRICK ST-STUCCO _____

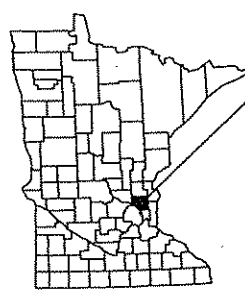
- RAILROAD CROSSING BELL _____
- RAILROAD CROSSING GATE _____
- MANHOLE _____
- CATCH BASIN _____
- FIRE HYDRANT _____
- CAST IRON MONUMENT _____
- IRON PIN _____
- GRAVEL PIT _____
- SAND PIT _____
- BORROW PIT _____
- ROCK QUARRY _____

UTILITY SYMBOLS

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

SCALES

- PLAN _____
- PROFILE _____
- HORIZONTAL _____
- VERTICAL _____
- X-SECTIONS _____
- HORIZONTAL _____
- VERTICAL _____



PROJECT LOCATION
 CITIES OF COON RAPIDS AND ANDOVER
 ANOKA COUNTY
 MN/DOT TRANSPORTATION DISTRICT - METRO
 SECTIONS 3, 4, 33, 34
 TOWNSHIP 31, 32 NORTH
 RANGE 24 WEST

MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

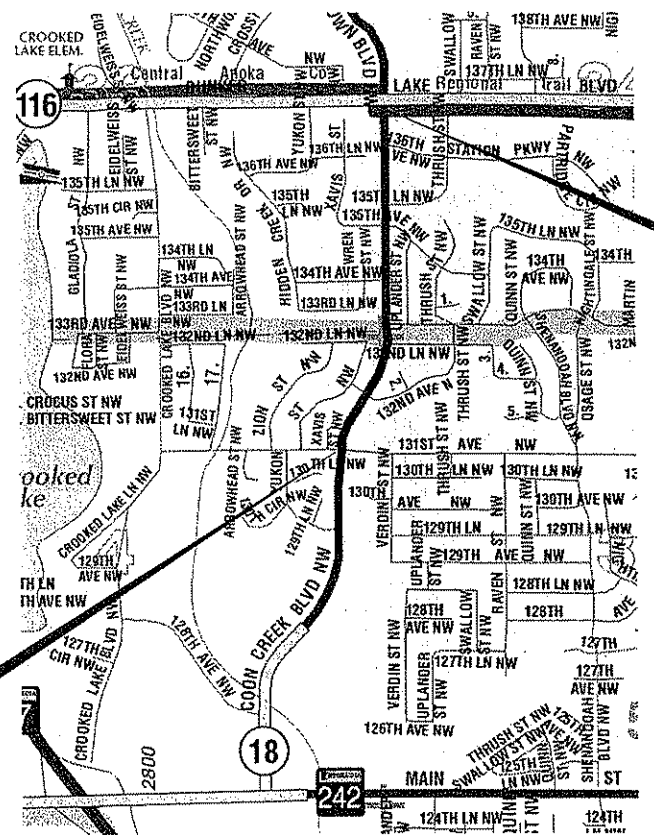
CONSTRUCTION PLAN FOR MILL BITUMINOUS SURFACE, BITUMINOUS SURFACING, STORM STRUCTURE AND B618 / B624 CURB REPLACEMENT

LOCATED ON CSAH 18 BETWEEN 131ST AVE AND CSAH 116

COUNTY PROJ. NO. C.P. 13-18-18
CSAH 18

GROSS LENGTH	4045 FEET	0.766 MILES
BRIDGES-LENGTH	0.00 FEET	0.000 MILES
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	4045 FEET	0.766 MILES

CITIES OF COON RAPIDS &
ANDOVER



BEGIN C.P. 13-18-18
 CSAH 18 STA. 10+00

END C.P. 13-18-18
 CSAH 18 STA. 50+45



GOVERNING SPECIFICATIONS

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

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3-6	TYPICAL SECTIONS
7-8	DRAINAGE TABULATIONS & MISCELLANEOUS DETAILS
9-10	CONSTRUCTION PLAN
11	SIGNAL LOOP DETAIL
12-18	SIGNING AND STRIPING PLAN
19-21	MISCELLANEOUS SIGNAL SHEETS

THIS PLAN CONTAINS 21 SHEETS
 DESIGN DESIGNATION

ESAL 20	1636000
R VALUE	50
ADT (2012) =	13500
Proj. ADT (2032) =	18900
Proj. HCADT (2032) =	380
Soil Factor	NA
<u>9</u> TON DESIGN	

Functional Classification MAJOR COLLECTOR
 No. of Traffic Lanes 4 No. of Parking Lanes 0
 Design Speed MPH N/A
 Based on Stopping Sight Distance
 Height of eye 3.5' Height of object 2.0'
 Design Speed not achieved at:
 STA. TO STA. MPH

Approved: 3/14/13
 ANOKA COUNTY ENGINEER

NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\13-01-00\CSAH_18 (131st-CSAH116)\Plan\TITLE.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: ANDREW WITTER
 SIGNATURE:
 DATE: 3/13 LICENSE NO. 42757

DRAWN BY SRK DATE 2/28/13
 DESIGN BY SRK DATE 2/28/13
 CHECKED BY XXX DATE

ANOKA COUNTY
HIGHWAY DEPT.

STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

TITLE SHEET

Sheet 1 of 21 Sheets

CSAH 18 STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	NOTES	UNIT	TOTAL EST. QUANT.
2021.501	MOBILIZATION		LUMP SUM	1
2104.501	REMOVE CURB AND GUTTER	6	LIN FT	1136
2104.503	REMOVE BITUMINOUS WALK	18	SQ FT	400
2104.503	REMOVE CONCRETE SIDEWALK	18	SQ FT	705
2104.509	REMOVE CASTING		EACH	1
2231.604	BITUMINOUS PATCH SPECIAL		SQ YD	119
2232.501	MILL BITUMINOUS SURFACE (2.0")	9	SQ YD	22599
2232.604	MILL BITUMINOUS PAVEMENT (SPECIAL)	18	SQ FT	889
2357.502	BITUMINOUS MATERIAL FOR TACK COAT		GAL	1174
2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE(4,E)		TON	2599
2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (4,B)	11	TON	102
2501.602	CLEAN PIPE / CULVERTS	19	EACH	2
2506.522	ADJUST FRAME AND RING CASTING	13,15,16,17	EACH	14
2506.516	CASTING ASSEMBLY	10	EACH	1
2506.602	GROUT CATCH BASIN OR MANHOLE	14	EACH	18
2521.501	6" CONCRETE WALK	18	SQ FT	1105
2531.501	CONCRETE CURB & GUTTER DESIGN B618	14	LIN FT	221
2531.501	CONCRETE CURB & GUTTER DESIGN B624	14	LIN FT	915
2531.618	TRUNCATED DOMES	18	SQ FT	196
2563.601	TRAFFIC CONTROL	1,2,4	LUMP SUM	1
2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	12	UDAY	14
2565.602	NMC LOOP DETECTORS 6' X 6'	3	EACH	20
2573.530	STORM DRAINAGE INLET PROTECTION	8,13	EACH	17
2575.505	SODDING TYPE SALT RESISTANT	7	SQ YD	386
2581.501	REMOVABLE PREFORMED PLASTIC MARKING	5	LIN FT	324
2582.501	PAVT MSSG (RT ARROW) PREF THERMOPLASTIC	2,6	EACH	5
2582.501	PAVT MSSG (LT ARROW) PREF THERMOPLASTIC	2,6	EACH	9
2582.501	PAVT MSSG (THRU ARROW) PREF THERMOPLASTIC	2,6	EACH	4
2582.501	PAVT MSSG (RT-THRU ARROW) PREF THERMOPLASTIC	2,6	EACH	2
2582.502	4" SOLID LINE WHITE-EPOXY	2,6	LIN FT	10458
2582.502	4" BROKEN LINE WHITE - EPOXY	2,6	LIN FT	140
2582.502	4" DOUBLE SOLID LINE YELLOW-EPOXY	2,6	LIN FT	5207
2582.502	24" WHITE PREF THERMOPLASTIC	2,6	LIN FT	181
2582.502	24" YELLOW PREF THERMOPLASTIC	2,6	LIN FT	840

CSAH 18 CONSTRUCTION NOTES

1	DO NOT PASS, PASS WITH CARE, NO CENTER STRIPE AND BUMP/BUMP AHEAD SIGNS TO BE INPLACE DURING MILLING / PAVING OPERATIONS.
2	MARKINGS SHALL BE IN PLACE WITHIN 72 HOURS OF FINAL MAINLINE PAVING.
3	ONLY NEED TO REPLACE IF EXISTING LOOPS ARE DAMAGED DURING CONSTRUCTION.
4	ALL TRAFFIC CONTROL DEVICES AND METHODS SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL.
5	SKIPS WILL BE PLACED AS SOON AS POSSIBLE AFTER MILLING AND PAVING OPERATIONS
6	REFERENCE CONSTRUCTION PLAN FOR LOCATION AND STREET APPROACH TAB.
7	ITEM TO BE USED BEHIND NEW CURB.
8	ALL DRAINAGE STRUCTURES ON THIS ROAD SEGMENT MUST HAVE INLET PROTECTION
9	DETAIL MILLING AROUND MANHOLE AND CATCH BASINS IS INCIDENTAL TO THIS ITEM
10	ITEM INCLUDES REMOVING THE EXISTING ADJUSTMENT RINGS & INSTALLING NEW ADJUSTMENT RINGS.
11	ITEM FOR STREET APPROACHES, BIT PATCHING, AND CB REPAIRS.
12	2 MESSAGE BOARDS, ONE ON EACH END OF THE PROJECT, MUST BE INSTALLED 7 DAYS PRIOR TO START OF CONSTRUCTION TO INFORM LOCAL TRAFFIC OF UPCOMING CONSTRUCTION. SIGNS MAY BE REMOVED ONCE CONSTRUCTION HAS BEGUN AND ALL CONSTRUCTION SIGNS ARE INPLACE.
13	REFERENCE STRUCTURE REPAIR TAB. ITEM INCLUDES SALVAGING EXISTING CASTING, REMOVING EXISTING ADJUSTMENT RINGS, INSTALL NEW ADJUSTING RINGS, AND INSTALLING SALVAGED CASTING.
14	REFERENCE STRUCTURE REPAIR & CURB REMOVAL TABS (SEE SHEET 7).
15	ITEM INCLUDES STORM M.H.
16	AGGREGATE BASE CLASS 5 IS INCIDENTAL FOR COMPACTING AROUND CB'S AND MH'S.
17	ALL MANHOLES MUST BE LOCATED AND PROTECTED AT ALL TIMES DURING MILLING AND PAVING OPERATIONS. CONTRACTOR RESPONSIBILITY.
18	REFERENCE STREET APPROACH TAB. ITEM INCLUDES REMOVE BIT. WALK, REMOVE CONC. SIDEWALK, TRUNCATED DOMES, AND 6" CONC. WALK.
19	CLEAN OUT STRUCTURES 7 & 8 (STA 41+90), AS BOTH ARE PLUGGED WITH DEBRIS. WATER SITTING IN BOTH STRUCTURES.

BASIS OF PLANNED QUANTITIES

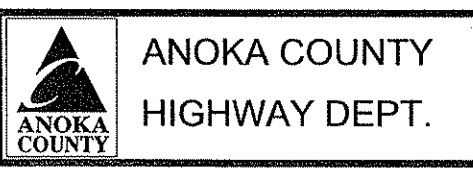
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	.05 GAL / SQ YD
2361.501	TYPE SP 12.5 WEARING COURSE MX (4, E)	115/SQ. YD./IN THICKNESS
2581.501	REMOVABLE PREFORMED PLASTIC MARKING	2' AT 50' INTERVALS FOR SKIPS

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\SEQ.dgn 02/27/2013 11:18:39 AM

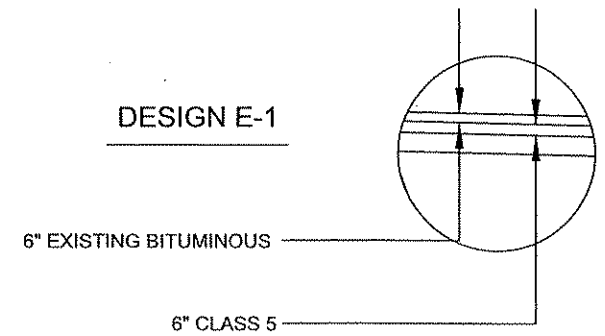
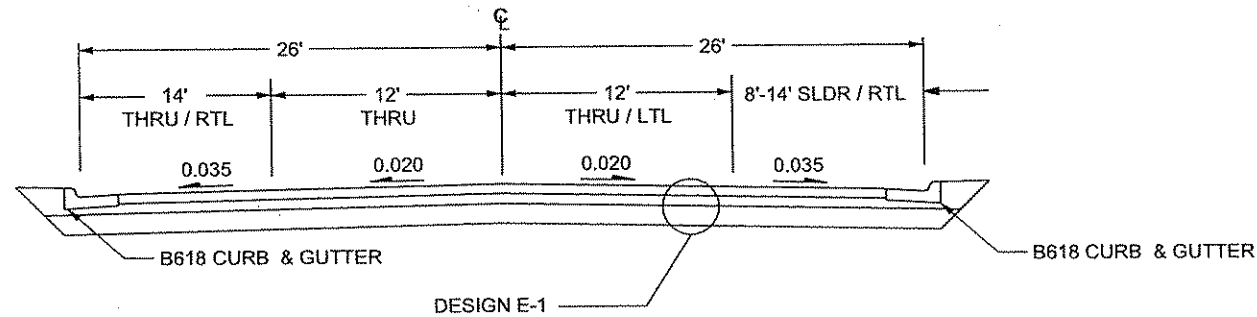
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: ANDREW WITTER
 SIGNATURE: *[Signature]*
 DATE: 2/28/2013 LICENSE NO. 42757

DRAWN BY: SRK DATE: 2/28/2013
 DESIGN BY: SRK DATE: 2/28/2013
 CHECKED BY: DFF DATE: _____

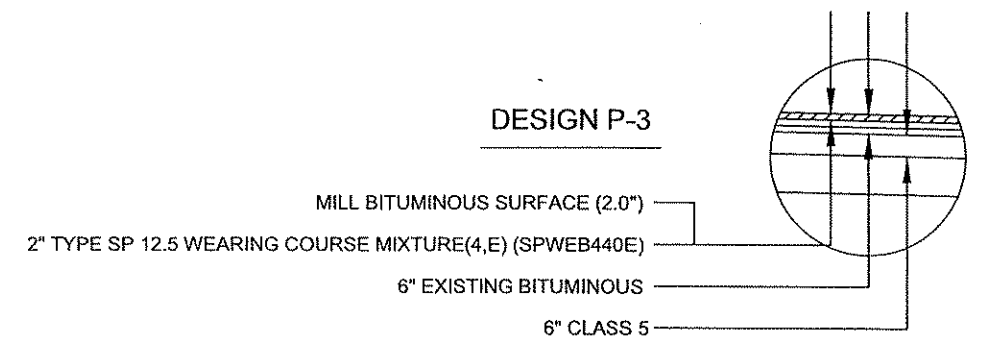
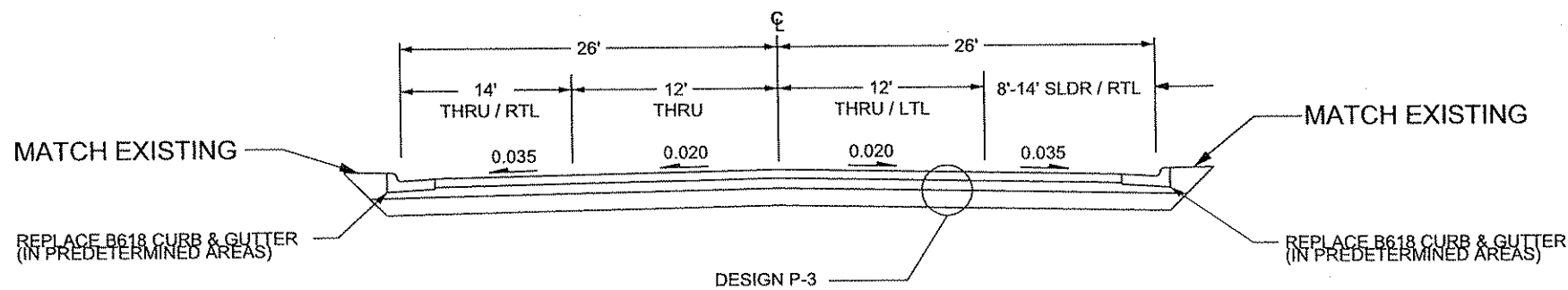


STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

C.S.A.H. 18
EXISTING ROAD
STA 10+00 - STA 24+40



C.S.A.H. 18
PROPOSED ROAD
STA 10+00 - STA 24+40



GENERAL NOTES:

- ALL CROSS SLOPES ARE APPROXIMATE
- UNLESS OTHERWISE SPECIFIED, THE CLASS 5 CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE OF THE MAINLINE.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\TYPICALS.dgn 02/26/2013 8:03:05 AM

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: ANDREW WITTER
SIGNATURE: *Andrew Witter*
DATE: 3/7/13 LICENSE NO. 42757

DRAWN BY: SRK DATE: 2/28/2013
DESIGN BY: SRK DATE: 2/28/2013
CHECKED BY: DFF DATE: _____

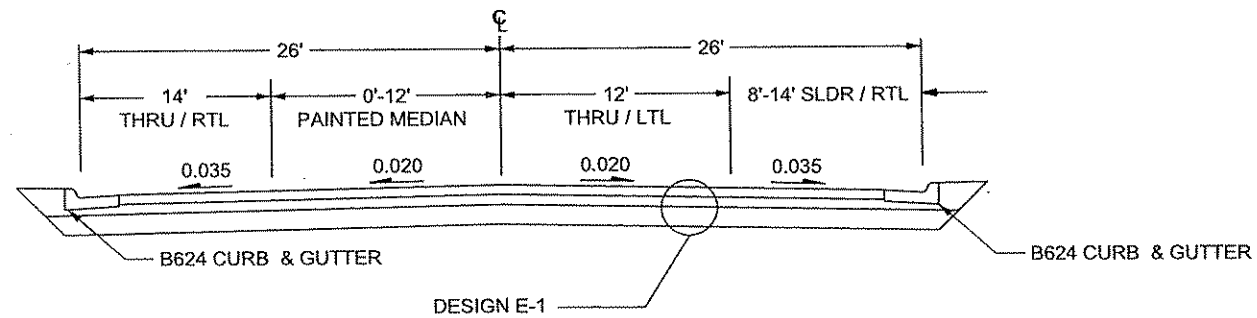
ANOKA COUNTY
HIGHWAY DEPT.

STATE PROJECT NO. _____
STATE AID PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 13-18-18

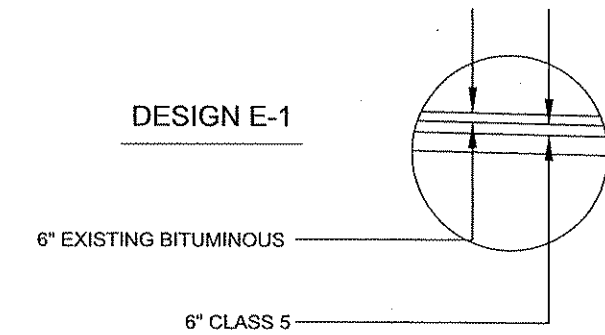
C.S.A.H. 18

EXISTING ROAD

STA 24+40 - STA 50+45



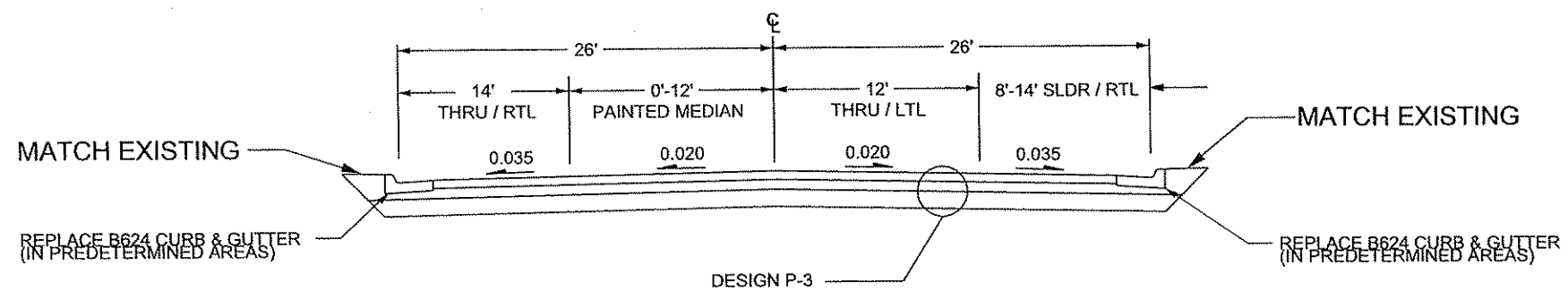
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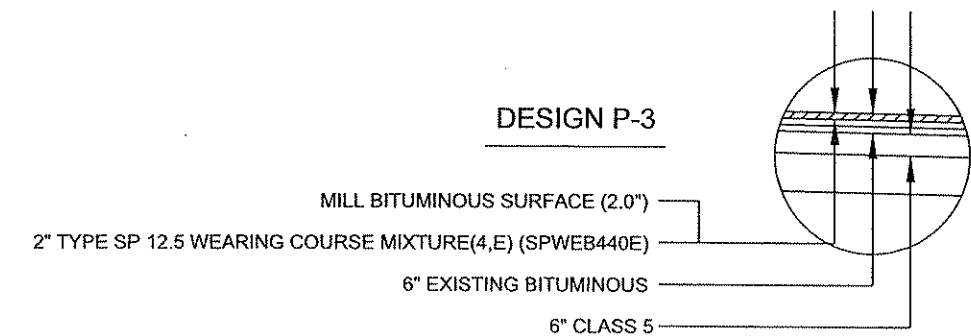
C.S.A.H. 18

PROPOSED ROAD

STA 24+40 - STA 50+45



DESIGN P-3



GENERAL NOTES:

- ALL CROSS SLOPES ARE APPROXIMATE
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NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\TYPICALS.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: ANDREW WITTEK
 SIGNATURE: *[Signature]*
 DATE: 3/7/13 LICENSE NO. 42757

DRAWN BY: SRK DATE: 2/28/2013
 DESIGN BY: SRK DATE: 2/28/2013
 CHECKED BY: DEF DATE: _____



**ANOKA COUNTY
 HIGHWAY DEPT.**

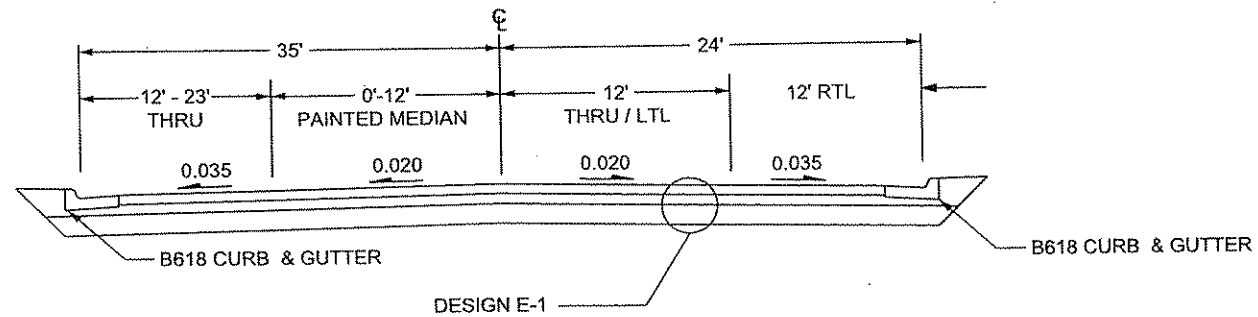
STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

TYPICAL SECTIONS
 Sheet 4 of 21 Sheets

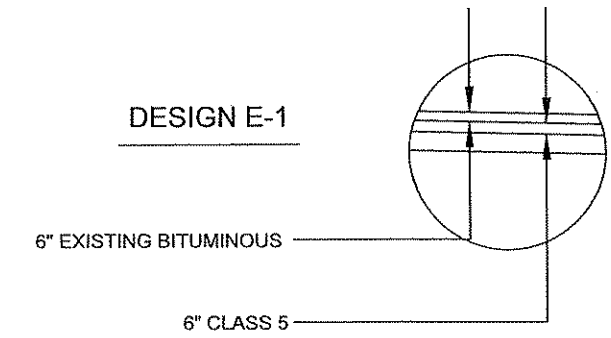
C.S.A.H. 18

EXISTING ROAD

STA 10+00 - STA 24+40



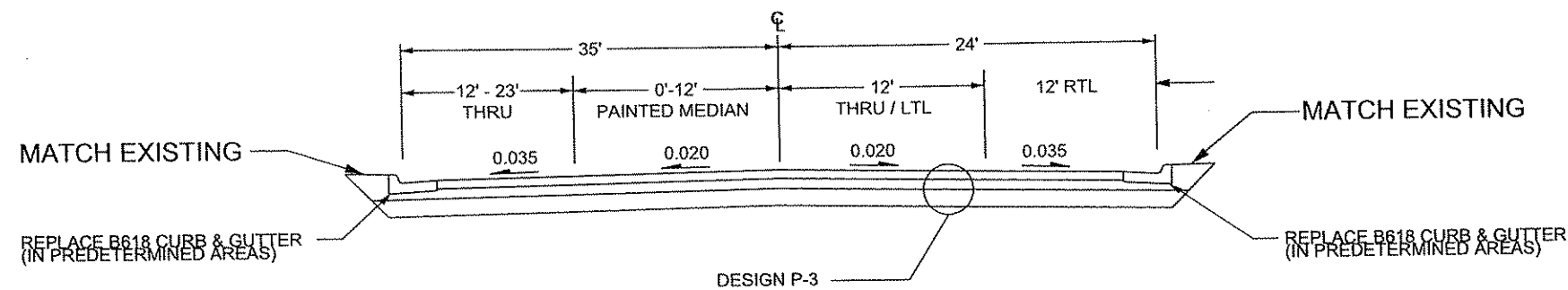
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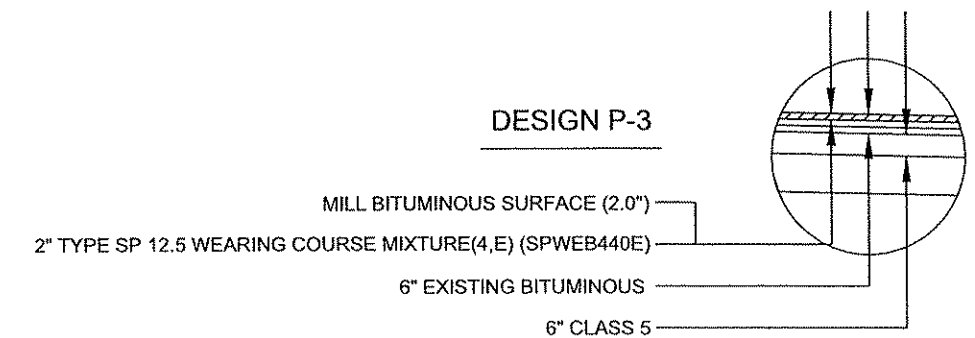
C.S.A.H. 18

PROPOSED ROAD

STA 10+00 - STA 24+40



DESIGN P-3



GENERAL NOTES:

- ALL CROSS SLOPES ARE APPROXIMATE
- UNLESS OTHERWISE SPECIFIED, THE CLASS 5 CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE OF THE MAINLINE.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_131st-CSAH116\Plan\TYPICALS.dgn 02/26/2013 8:03:52 AM

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: ANDREW WITTER
 SIGNATURE: *Andrew Witter*
 DATE: 3/13/13 LICENSE NO. 42757

DRAWN BY SRK DATE 2/28/2013
 DESIGN BY SRK DATE 2/28/2013
 CHECKED BY DEF DATE



ANOKA COUNTY
HIGHWAY DEPT.

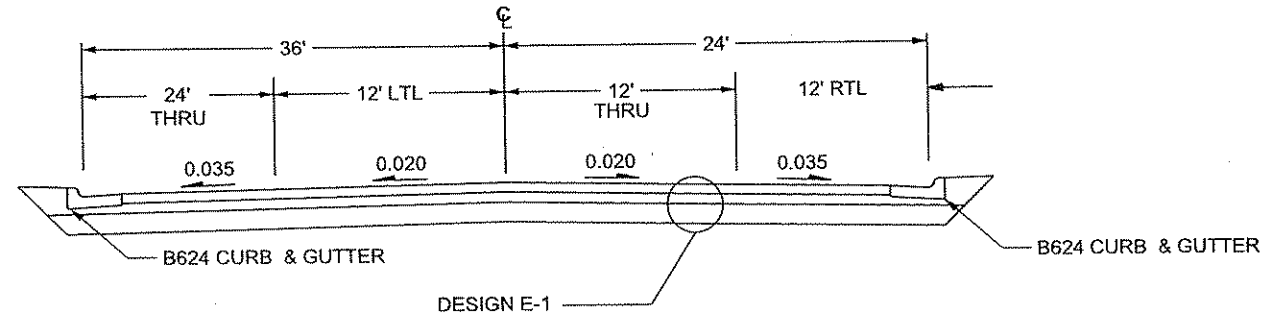
STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

TYPICAL SECTIONS
 Sheet 5 of 21 Sheets

C.S.A.H. 18

EXISTING ROAD

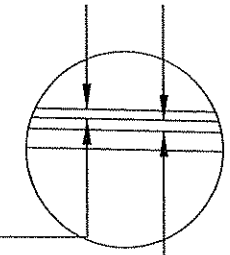
STA 24+40 - STA 50+45



DESIGN E-1

6" EXISTING BITUMINOUS

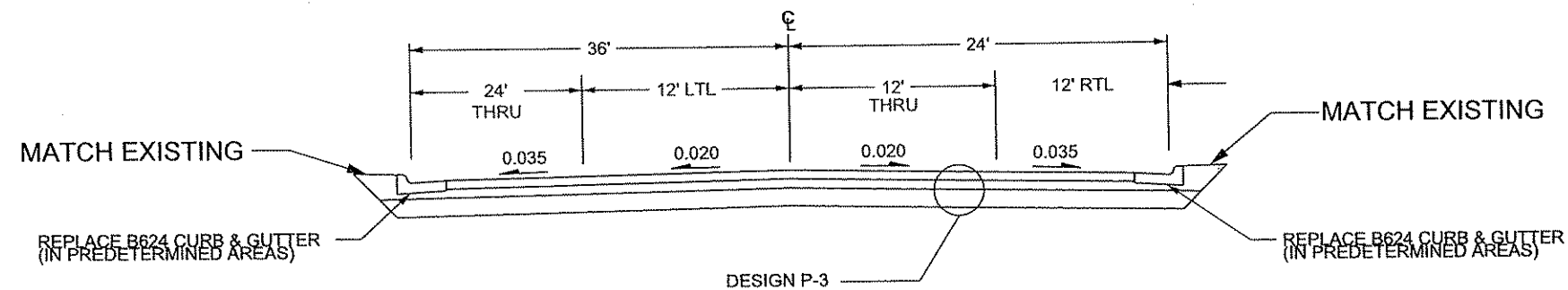
6" CLASS 5



C.S.A.H. 18

PROPOSED ROAD

STA 10+00 - STA 24+40



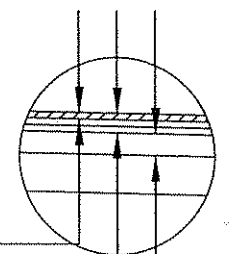
DESIGN P-3

MILL BITUMINOUS SURFACE (2.0")

2" TYPE SP 12.5 WEARING COURSE MIXTURE(4,E) (SPWEB440E)

6" EXISTING BITUMINOUS

6" CLASS 5



GENERAL NOTES:

- ALL CROSS SLOPES ARE APPROXIMATE

- UNLESS OTHERWISE SPECIFIED, THE CLASS 5 CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE OF THE MAINLINE.

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\TYPICALS.dgn 02/28/2013 8:04:18 AM

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: ANDREW WITTER
 SIGNATURE: *Andrew Witter*
 DATE: 5/7/13 LICENSE NO. 42757

DRAWN BY SRK DATE 2/28/2013
 DESIGN BY SRK DATE 2/28/2013
 CHECKED BY DFF DATE

ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

TYPICAL SECTIONS
 Sheet 6 of 21 Sheets

A.			STRUCTURE REPAIRS												
STRUCTURE	STATION	OFFSET	FURNISH AND INSTALL CASTING	GROUT	REMOVE C&G	ADJUST EACH FRAME AND RING CASTING (EST. RING HT)*	REPLACE B624 C:&G	REPLACE B618 C:&G	REPLACE BIT. PAVEMENT	INLET PROTECTION	ACTION	BLOCK	TYPE	CASTING	NOTES
			EA	EA	LF	EACH	LF	LF	TON						
1	50+36	-48.9		1		1			2.4		RE-RING	4.5	BLOCK	MH (STORM)	RE-RING / CLEAN & GROUT
2	49+90	-37.4		1						1	NONE		G STR.	ROUND W/ BACK	CLEAN & GROUT
3	49+97	24.7		1	10	1	10		0.8	1	RE-RING		G STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT
4	48+12	25.1		1	10	1	10		0.8	1	RE-RING		G STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT
5	46+31	14.4		1	10	1	10		0.8	1	RE-RING		G STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT
6	44+97	40.8		1	10	1	10		0.8	1	RE-RING		G STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT, RAISE CASTING FOR DRAINAGE
7	41+90	22.6		1	10	1	10		0.8	1	RE-RING		H STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT, STRUCTURE FILLED WITH WATER
8	41+87	-33.6		1	10	1	10		0.8	1	RE-RING		G STR.	ROUND W/ BACK	RE-RING / CLEAN & GROUT, STRUCTURE FILLED WITH WATER
9	37+77	25.4		1						1	NONE		G STR.	ROUND W/ BACK	CLEAN & GROUT
10	36+43	31.6		1	10	1	10		0.8	1	RE-RING	7.8	BLOCK	ROUND W/ BACK	RE-RING / CLEAN & GROUT, LOWER CASTING FOR DRAINAGE
11	33+91	24.6	1	1	10		10		0.8	1	RE-RING	5.6	BLOCK	ROUND W/ BACK	RE-RING / CLEAN & GROUT, FURNISH CASTING
12	33+89	-25.1		1						1	NONE	6.4	BLOCK	ROUND W/ BACK	CLEAN & GROUT
13	24+96	25.6		1	10	1	10		0.8	1	RE-RING	3.3	BOX	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
14	24+18	26.4		1	10	1		10	0.8	1	RE-RING	4.2	BLOCK	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
15	21+60	25.1		1	10	1		10	0.8	1	RE-RING	5.1	BLOCK	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
16	21+61	-25.4		1	10	1		10	0.8	1	RE-RING	3.6	BOX	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
17	20+71	-25.5		1	10	1		10	0.8	1	RE-RING	3.3	BOX	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
18	20+70	24.9		1	10	1		10	0.8	1	RE-RING	5.1	BLOCK	1.5' X 3' W/ BACK	RE-RING / CLEAN & GROUT
TOTAL:			1	18	140	14	90	50	13.6	17					

* CONTRACTOR TO VERIFY MATERIALS REQUIRED.

STREET APPROACH AREAS						
STREET	REMOVE CURB (LF)	REMOVE BIT. WALK (SQ FT)	REMOVE CONC. S-WALK (SQ FT)	TRUNCATED DOMES (SQ FT)	6" CONC. WALK	MILL BIT. PAVT. (SPECIAL) (SQ YD)
132ND AVE (E. SIDE)	26		100	20	100	87
132ND AVE (W. SIDE)	26		100	20	100	83
133RD AVE (E. SIDE)	78		259	40	259	165
133RD AVE (W. SIDE)	26		100	20	100	
134TH AVE. (W. SIDE)	32	160		32	160	128
135TH AVE. (W. SIDE)	32	160		32	160	142
STATION PKWY. (E. SIDE)						284
BUNKER LAKE BLVD.	47	80	146	32	226	
ST. APPROACH TOTALS	267	400	705	196	1105	889

B. CASTING ASSEMBLIES SUMMARY					
ASSEMBLY	RING OR FRAME	COVER OR	CURB BOX	STANDARD PLATE NO.	QUANTITY
NEENAH	R-3250-DVSP	TYPE V			1
ALL CASTING HEIGHTS ARE TO BE DETERMINED IN THE FIELD.					
ALL MANHOLE CASTINGS NEED TO HAVE "SANITARY SEWER" OR "STORM" STAMPED ON THEM.					

NOTE: NOT TO SCALE

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_ (131st-CSAH116)\Plan\MISC DETAILS.dgn 02/26/2013 8:17:19 AM

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: ANDREW WITTER
 SIGNATURE: *[Signature]*
 DATE: 3/7/13 LICENSE NO. 42757

DRAWN BY SRK DATE 2/28/2013
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ANOKA COUNTY
HIGHWAY DEPT.

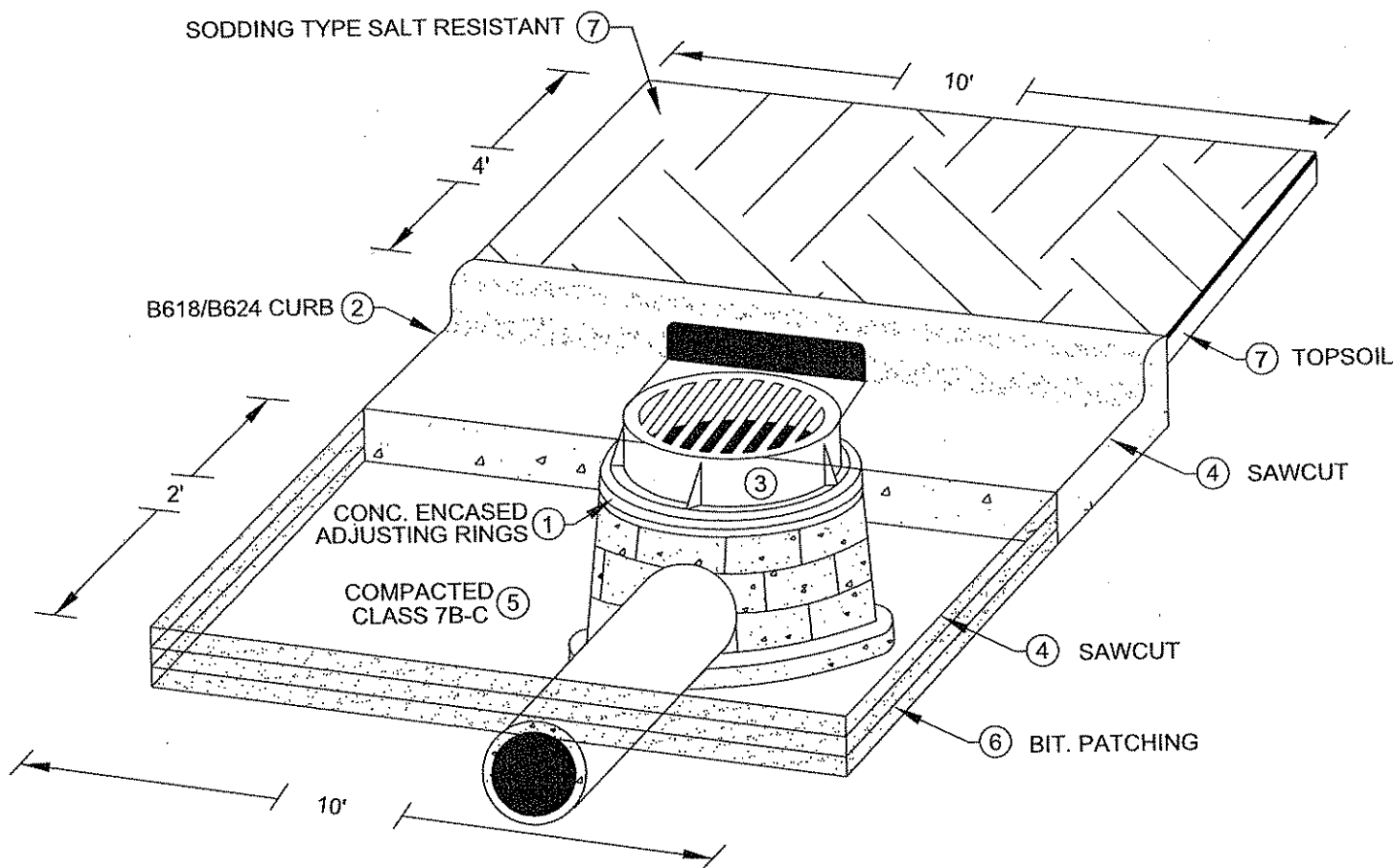
STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

DRAINAGE TABULATIONS
AND DETAILS

Sheet 7 of 21 Sheets

C.B. REPAIR DETAIL


- NOTES: 1 ALL STRUCTURE TYPES AND BUILD HEIGHTS ARE TO BE VERIFIED AND DETERMINED IN THE FIELD.
 2 R-1733, R-3250, R-3250 EVSP, R-3250 DVSP CB DENOTE NEENAH CASTING ASSEMBLIES OR APPROVED EQUALS.
 3 ALL CASTING TYPES AND CASTING HEIGHTS ARE TO BE VERIFIED AND DETERMINED IN THE FIELD.
 4 ALL MANHOLE CASTINGS NEED TO HAVE "SANITARY SEWER" OR "STORM" STAMPED ON THEM.



NOTES.. FOR TRAFFIC CONTROL AT CATCH BASIN REPAIRS REFER TO THE MINNESOTA MANUAL ON TEMPORARY TRAFFIC CONTROL LAYOUTS FIELD MANUAL. REFER TO MINNESOTA STANDARD PLATES MANUAL FOR THE FOLLOWING...

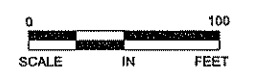
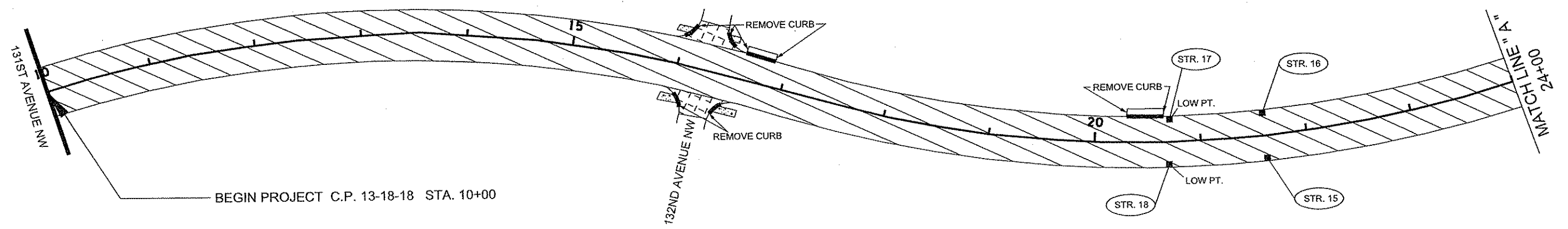
- ① CONCRETE ENCASED CONCRETE ADJUSTING RINGS STANDARD PLATE 4026A
- ② CONCRETE CURB AND GUTTER DESIGN B STANDARD PLATE 7100G
- ③ INSTALLATION OF CATCH BASIN CASTINGS STANDARD PLATE 7111J
- ④ SAWCUT BIT./CONCRETE CURB FULL DEPTH.
- ⑤ ADD AND COMPACT CL-5 AROUND REPAIRED STRUCTURE.
- ⑥ REMOVE VAR. DEPTH BITUMINOUS 3"-6" / PATCH 2-LIFTS OF BITUMINOUS.
- ⑦ REPLACE DISPLACED TOPSOIL WITH SODDING TYPE SALT RESISTANT. TOPSOIL INNCCIDENTAL.

NOTE: NOT TO SCALE

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: ANDREW WITTER SIGNATURE: <i>[Signature]</i> DATE: 3/1/13 LICENSE NO. 42757					DRAWN BY SRK DATE 2/28/2013 DESIGN BY SRK DATE 2/28/2013 CHECKED BY DFF DATE		 <p>ANOKA COUNTY HIGHWAY DEPT.</p>		STATE PROJECT NO. _____ STATE AID PROJECT NO. _____ CITY PROJECT NO. _____ COUNTY PROJECT NO. 13-18-18		MISCELLANEOUS DETAILS Sheet <u>8</u> of <u>21</u> Sheets	
NO DATE BY CKD APPR REVISION NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\MISC DETAILS.dgn 02/28/2013 8:17:56 AM												

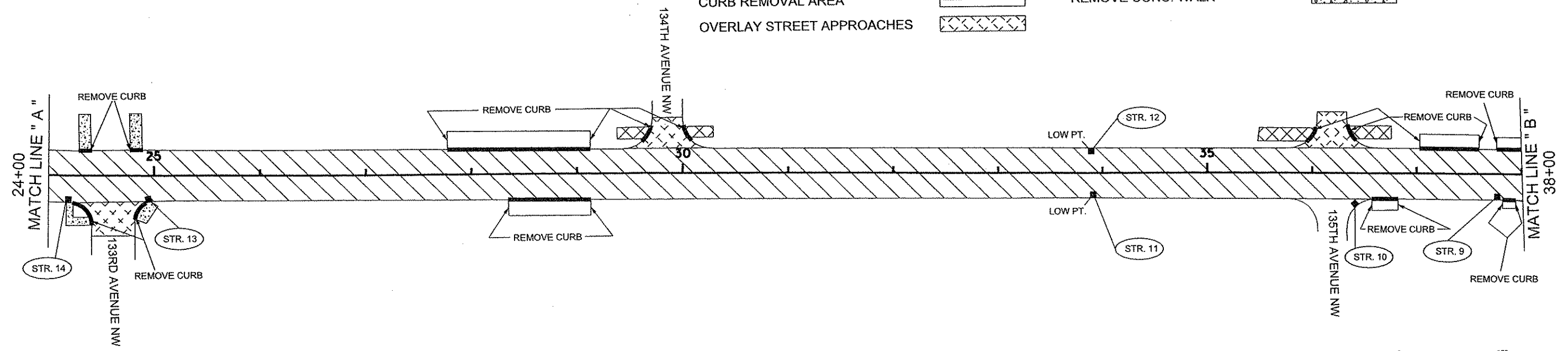
MILL AREA
 CURB REMOVAL AREA
 OVERLAY STREET APPROACHES

REMOVE BIT. WALK
 REMOVE CONC. WALK



MILL AREA
 CURB REMOVAL AREA
 OVERLAY STREET APPROACHES

REMOVE BIT. WALK
 REMOVE CONC. WALK



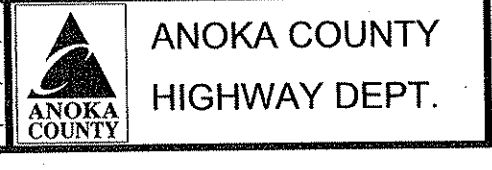
1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

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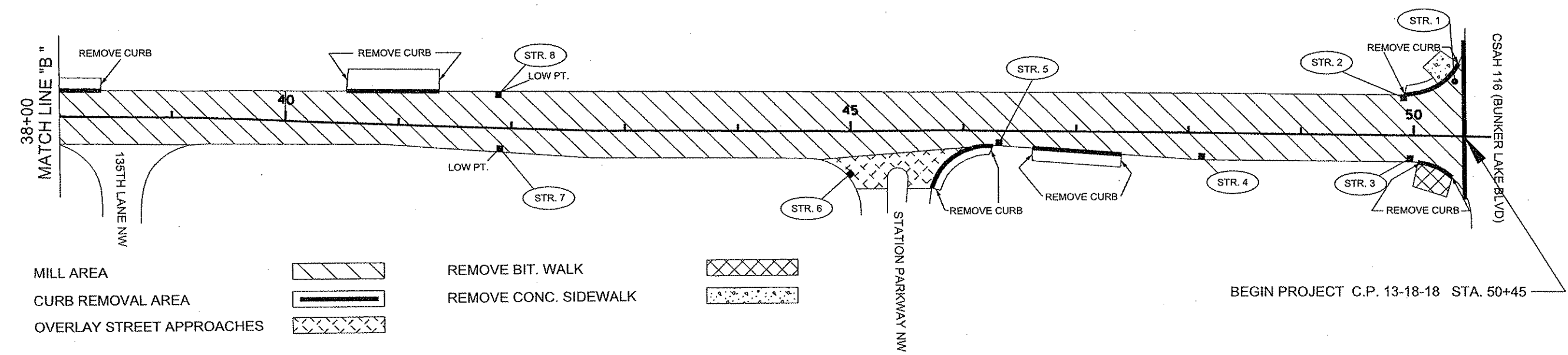
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STATE PROJECT NO. _____
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 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

CONSTRUCTION PLAN
 STA 10+00 TO 38+00
 Sheet 9 of 21 Sheets



ALIGNMENT TABULATION

POINT NUMBER	POINT	ALIGNMENT	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH	
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N		
Q C.S.A.H. 18 <LNB>											
	PC	Q C.S.A.H. 18	10+00.000						483,926.1781	163,239.0270	N 2° 52' 43.96" E
LNB-1	PI		13+58.627	35° 21' 38.96" RT	5° 05' 33.76"	1,125.055'	358.627'	694.342'	483,944.1901	163,597.2014	PI
	CC								485,049.8131	163,182.5214	
	PRC		16+94.342						484,166.1633	163,878.8772	N 38° 14' 22.92" E
	PRC		16+94.342						484,166.1633	163,878.8772	N 38° 14' 22.92" E
LNB-2	PI		20+78.103	37° 41' 47.82" LT	5° 05' 47.97"	1,124.183'	383.761'	739.634'	484,403.6933	164,180.2940	PI
	CC								483,283.1981	164,574.6935	
	PT		24+33.976						484,407.3308	164,564.0380	N 0° 32' 35.10" E
LNB2	POT		50+91.865						484,432.5235	167,221.8073	

NOTE: ALIGNMENT ESTABLISHED FROM HALF-SECTION MAP.

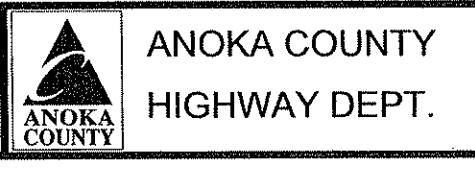
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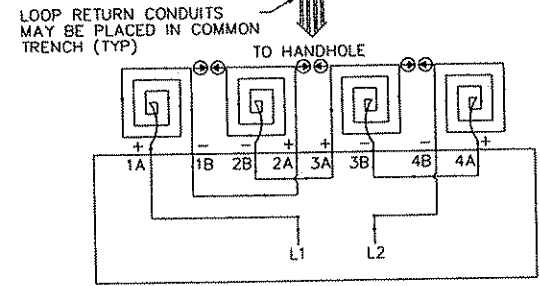
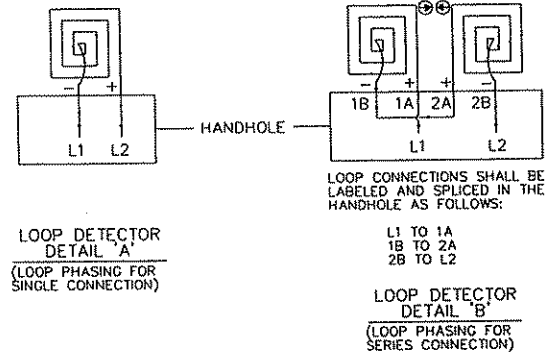
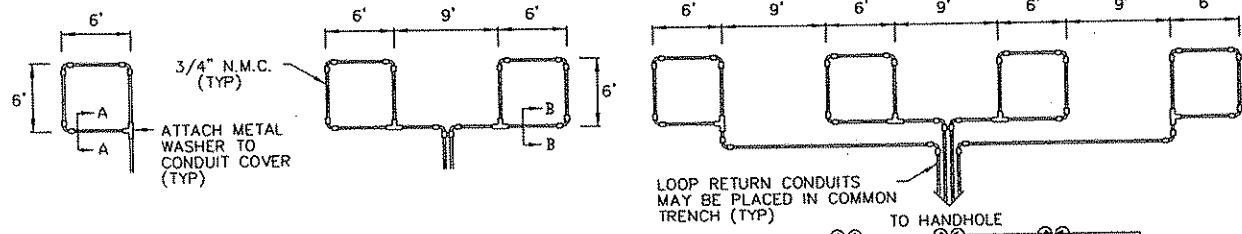
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CONSTRUCTION PLAN
 STA 38+00 TO 50+45
 Sheet 10 of 21 Sheets

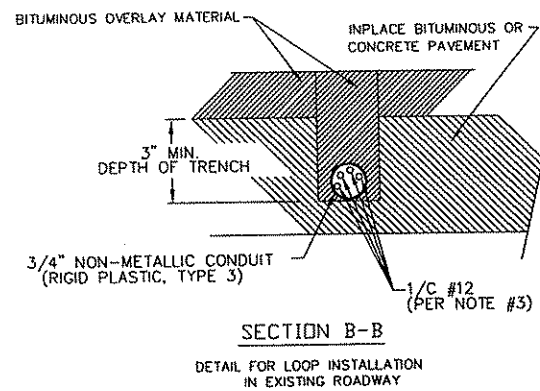
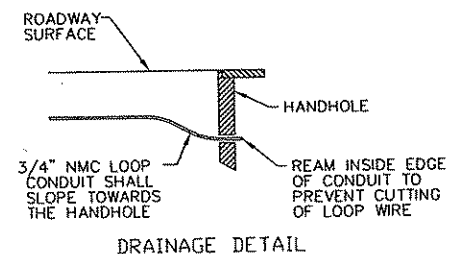
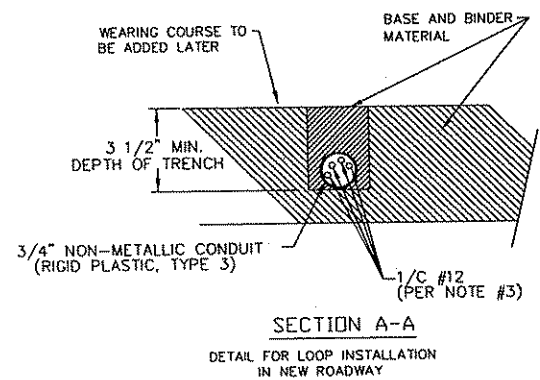
ANOKA COUNTY SIGNAL LOOP DETAIL



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	DDN'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	SDP	SOURCE OF POWER
GLTA	GREEN LEFT TURN ARROW	SPR	SPARE
GRN	GREEN	ST. LHT	STREET LIGHT
GR. R	GRUND ROD	STA	STATION
GRTA	GREEN RIGHT TURN ARROW	SW	SWITCH
GTHA	GREEN THRU ARROW	SWD	SWITCHED
HH	HANDHOLE	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

LEGEND OF SYMBOLS	
CONTROLLER AND SERVICE EQUIP. NO'S	
SIGNAL BASE NO.	
SIGNAL FACE NO.	
LUMINAIRE NO.	
CONTROLLER AND CABINET	
CONTROLLER AND CABINET - IN PLACE	
HANDHOLE	
HANDHOLE - IN PLACE	
RIGID STEEL CONDUIT (RSC) - IN PLACE	
RIGID STEEL CONDUIT (RSC) - IN PLACE	
SIGNAL FACE WITH BACKGROUND SHIELD	
SIGNAL FACE W/O BACKGROUND SHIELD	
SIGNAL FACE - IN PLACE	
PEDESTRIAN INDICATORS	
PEDESTRIAN INDICATORS - IN PLACE	
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	
PEDESTRIAN PUSH BUTTON STATION	
TRAFFIC SIGNAL PEDESTAL	
TRAFFIC SIGNAL PEDESTAL - IN PLACE	
TRAFFIC SIGNAL POLE AND MAST ARM	
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	
STREET LIGHT POLE AND LUMINAIRE	
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	
MAST ARM AND LUMINAIRE	
MAST ARM AND LUMINAIRE - IN PLACE	
WOOD POLE	
WOOD POLE - IN PLACE	
SOURCE OF POWER	
RAILROAD SIGNAL - IN PLACE	
RIGHT OF WAY LINE	
CENTERLINE	
EDGE OF ROADWAY	
SHOULDERLINE	
CURB LINE	
STOP BAR	
EMERGENCY VEHICLE PREEMPTION DETECTOR	

STANDARD PLATES	
PLATE NO.	DESCRIPTION
7035 I	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7036 E	PEDESTRIAN CURB RAMP
7100 G	CONCRETE CURB AND GUTTER (DESIGN B)
8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
8111 C	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	IPABS 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 PAT00 POLE FOUNDATION



- 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.

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

INTERSECTION	# OF LOOP DETECTORS
131ST AVE	3
133RD AVE	9
BUNKER LAKE BLVD	8
TOTAL DETECTORS	20

NOTE: NOT TO SCALE

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\13-01-00\CSAH_18_(131st-CSAH116)\Plan\signal loop detail.dgn
 02/26/2013 8:48:59 AM

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DRAWN BY: SRK DATE: 2/28/13
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ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. _____
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 CITY PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

SIGNAL LOOP DETAIL

Sheet 11 of 21 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 FILD 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.

PAVEMENT MARKING QUANTITIES

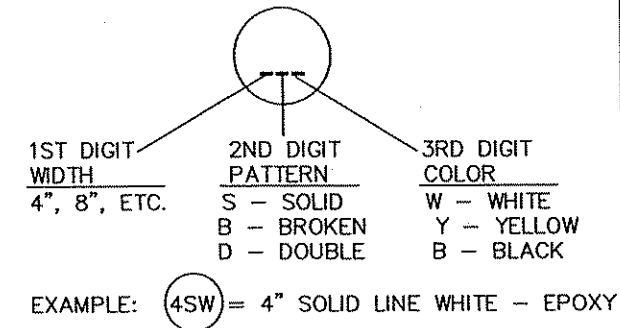
Item	Quantity	Units
Pavt Mssg (Rt Arrow) Pref Thermoplastic	5	Each
Pavt Mssg (Lt Arrow) Pref Thermoplastic	9	Each
Pavt Mssg (Thru Arrow) Pref Thermoplastic	4	Each
Pavt Mssg (Thru/Right Arrow) Pref Thermoplastic	2	Each
4" Solid Line White - Epoxy	10458	Lin Ft
4" Broken Line White - Epoxy (10 ft stripe / 40 ft gap)	140	Lin Ft
4" Double Solid Line Yellow - Epoxy	5207	Lin Ft
24" White Pref Thermoplastic	181	Lin Ft
24" Yellow Pref Thermoplastic	840	Lin Ft
3' x 6' Zebra Crosswalk Preformed Thermoplastic	828	SQ FT

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	CHKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: ANDREW WITTER
 SIGNATURE: *[Signature]*
 DATE: 3/13/13 LICENSE NO. 42757

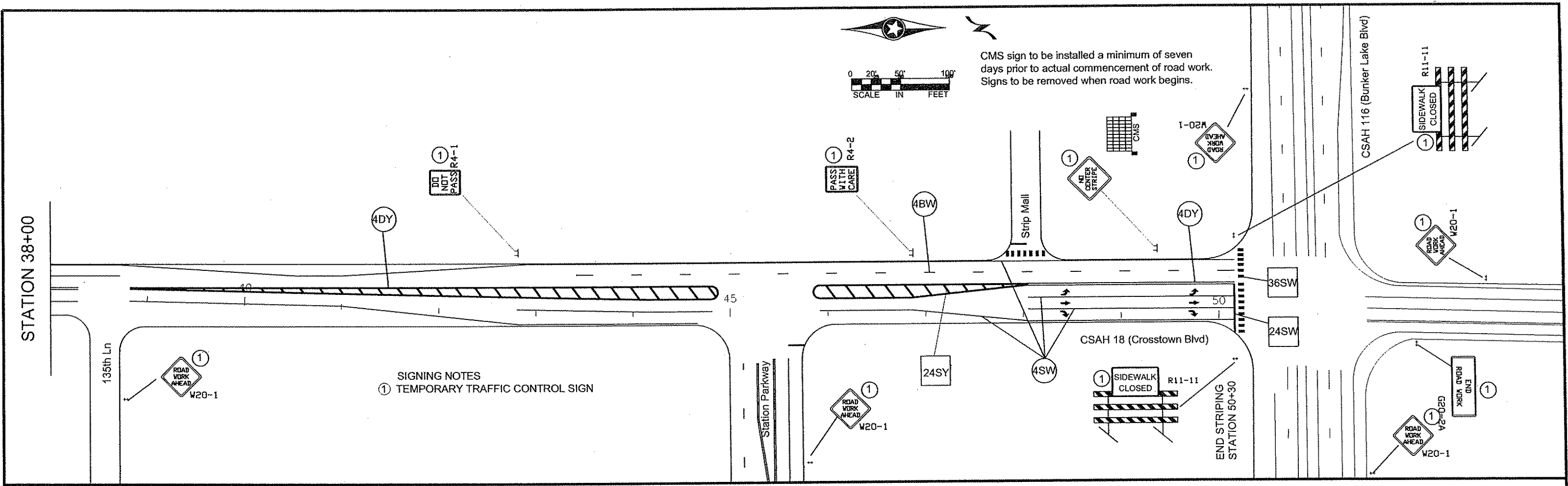
DRAWN BY: MTH DATE 12/26/2012
 DESIGN BY: MTH DATE 12/26/2012
 CHECKED BY: JR DATE xx/xx/2013



ANOKA COUNTY
HIGHWAY DEPT.

STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 STATE AID PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

PERMANENT MARKING
TABULATION
Sheet 12 of 21 Sheets



SIGNING NOTES
 ① TEMPORARY TRAFFIC CONTROL 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.

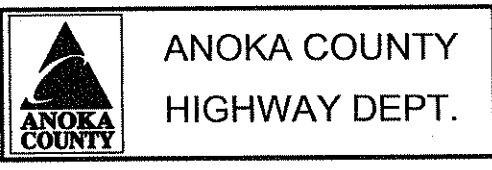
NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\113-01-00\CSAH 18(Crooked Lake)\base\PROPOSED\SIGNING AND STRIPING.DWG

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: ANDREW WITTER
 SIGNATURE: *Andrew Witter*
 DATE: 3/7/13 REG. NO. 42757















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 CHECKED BY: JR DATE 2/20/2013



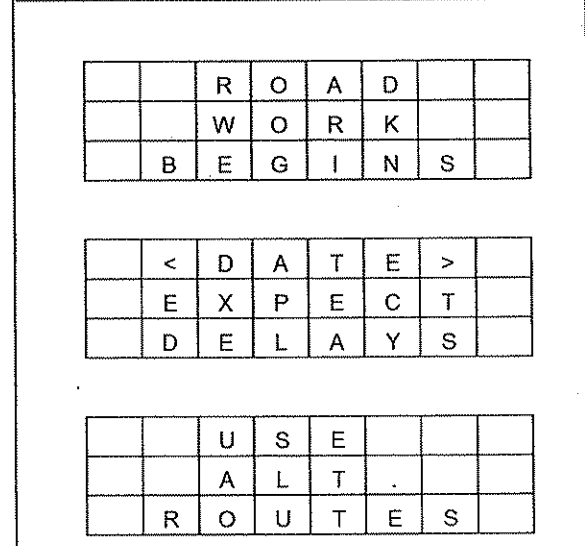
STATE PROJECT NO. _____
 STATE AID PROJECT NO. _____
 STATE AID PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

TEMPORARY SIGNING
 PERMANENT SIGNING, STRIPING
 AND PAVEMENT MESSAGES

Sheet 14 of 21 Sheets

TEMPORARY TRAFFIC CONTROL SIGNS						
M.U.T.C.D. CODE	SIZE	PANEL AREA FT. ²	INSERT	QUANTITY		MOUNTING HEIGHT TO MESSAGE FT.
					No. POST	
W8-12	48" x 48"	16.00		4	2	7.0'
R4-1	24" x 30"	5.00		4	1	7.0'
R4-2	24" x 30"	5.00		1	1	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 14)		
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		
R11-11	30" x 18"	3.75		AS NEEDED (ESTIMATED 5)		
TYPE 3	4' x 8'			AS NEEDED (ESTIMATED 5)		
G20-2A	48" x 24"	8.00		2		

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT



NOTES:

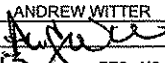
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
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- CONTRACTOR SHALL SUPPLY 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.
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- 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.

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\12-01-00\CSAH 18\base\PROPOSED\SIGNING AND STRIPING.DWG

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: ANDREW WITTER

SIGNATURE: 

DATE: 3/7/13 REG. NO. 42757

DRAWN BY: MTH DATE 1/12/2012

DESIGN BY: MTH DATE 1/12/2012

CHECKED BY: JR DATE 2/20/2013

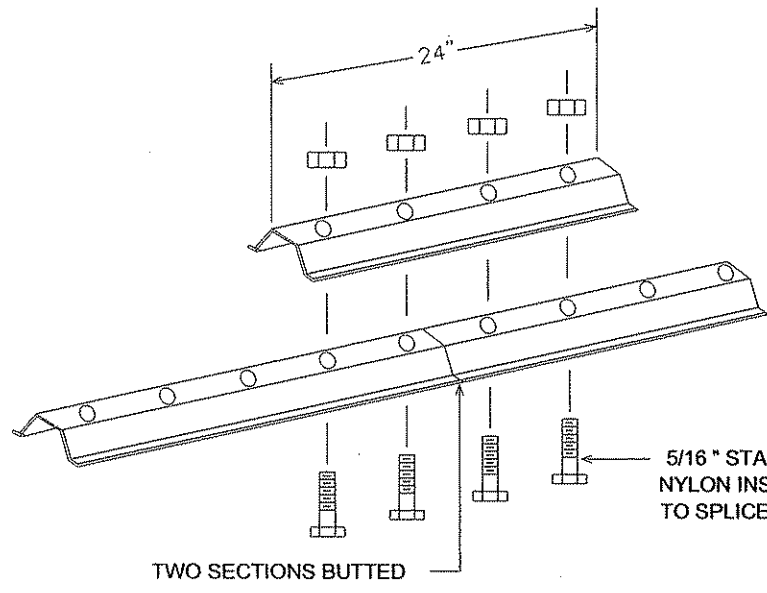


STATE PROJECT NO. _____

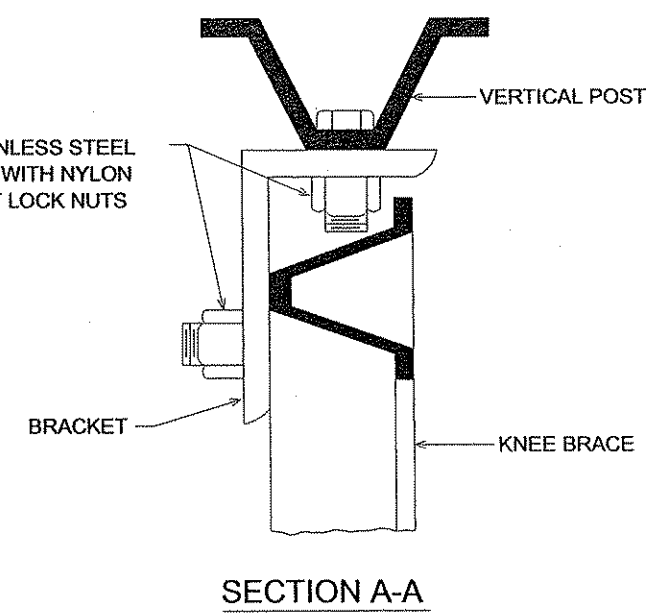
STATE AID PROJECT NO. _____

STATE AID PROJECT NO. _____

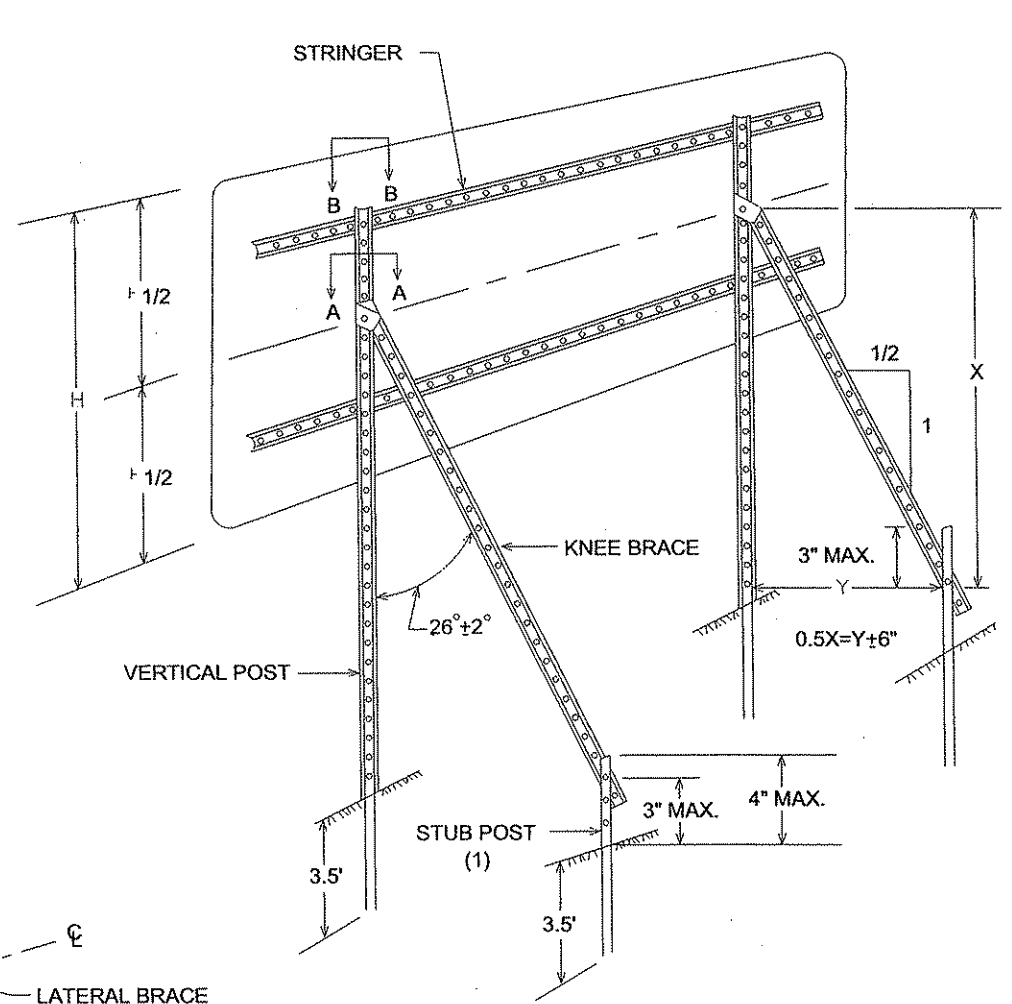
COUNTY PROJECT NO. 13-18-18



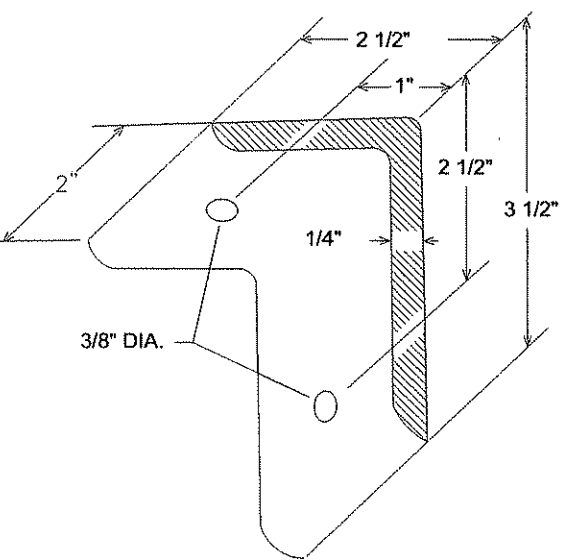
LATERAL BRACE OR STRINGER
SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

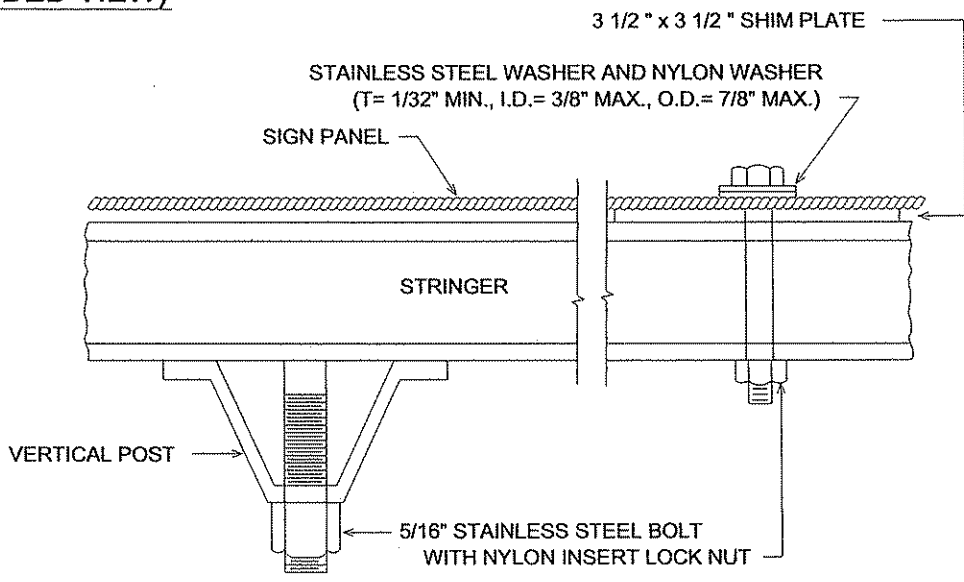


TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS

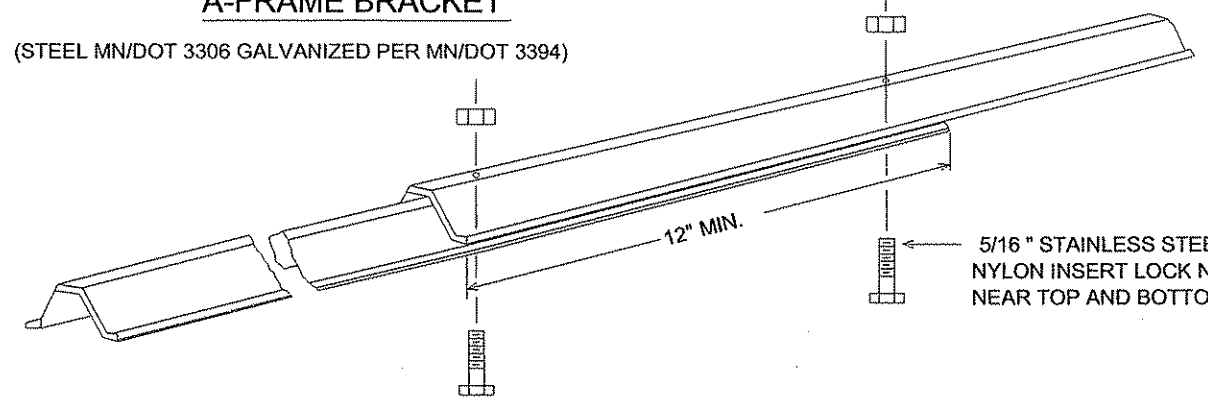


A-FRAME BRACKET

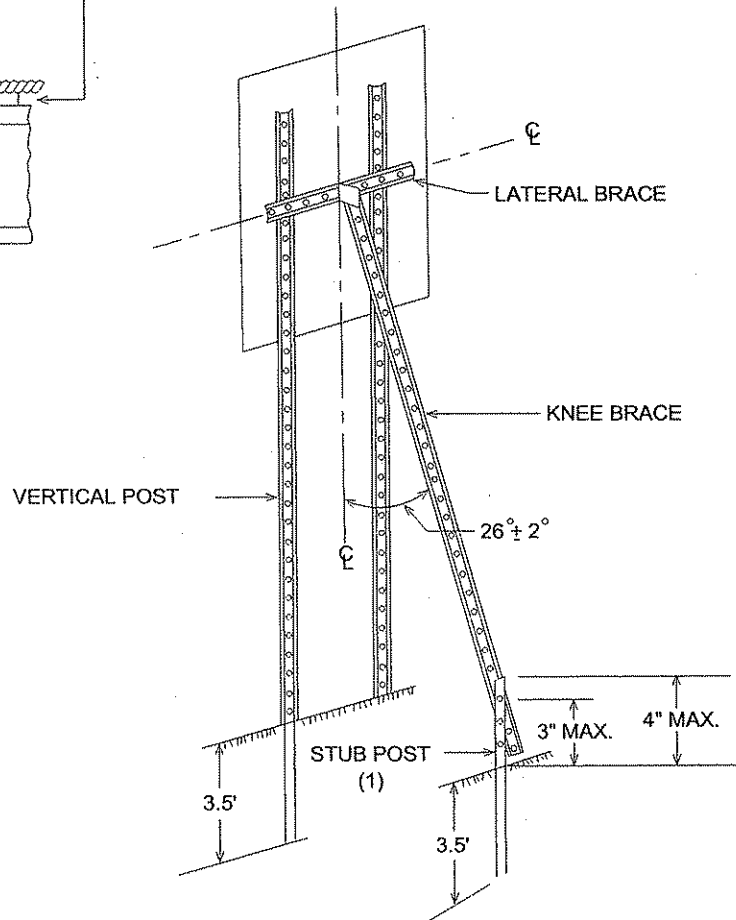
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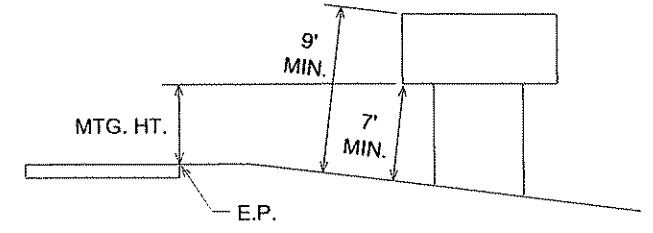
SECTION B-B



KNEE BRACE SPLICE



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

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: ANDREW WATERS
SIGNATURE: *Andrew Waters*
DATE: 3/1/18 LICENSE NO. 42757

DRAWN BY MTH DATE 2-05-13
DESIGN BY MTH DATE 2-05-13
CHECKED BY JR DATE 1-21-11



ANOKA COUNTY
HIGHWAY DEPT.

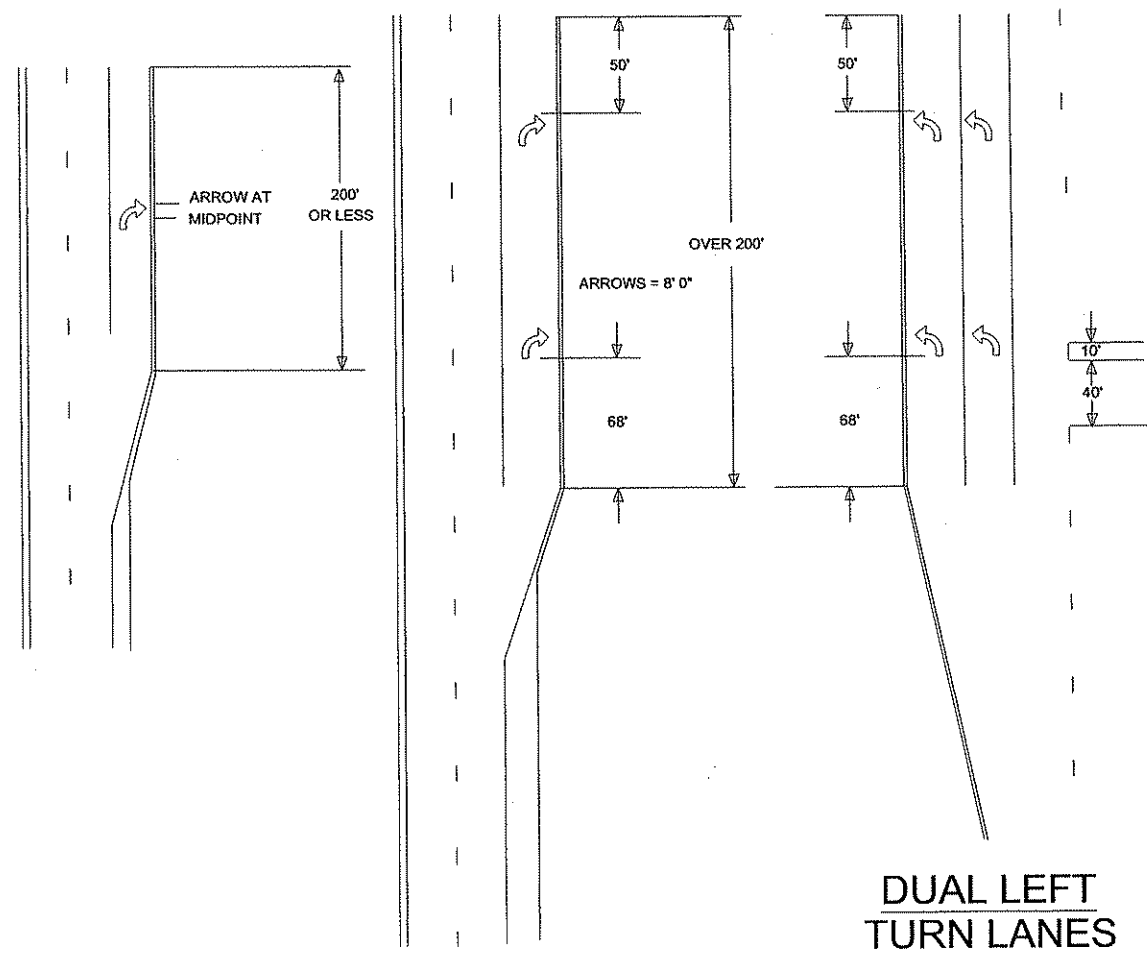
STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE PROJECT NO. _____
COUNTY PROJECT NO. 13-18-18

SIGNING & STRIPING DETAILS
Sheet 16 of 21 Sheets

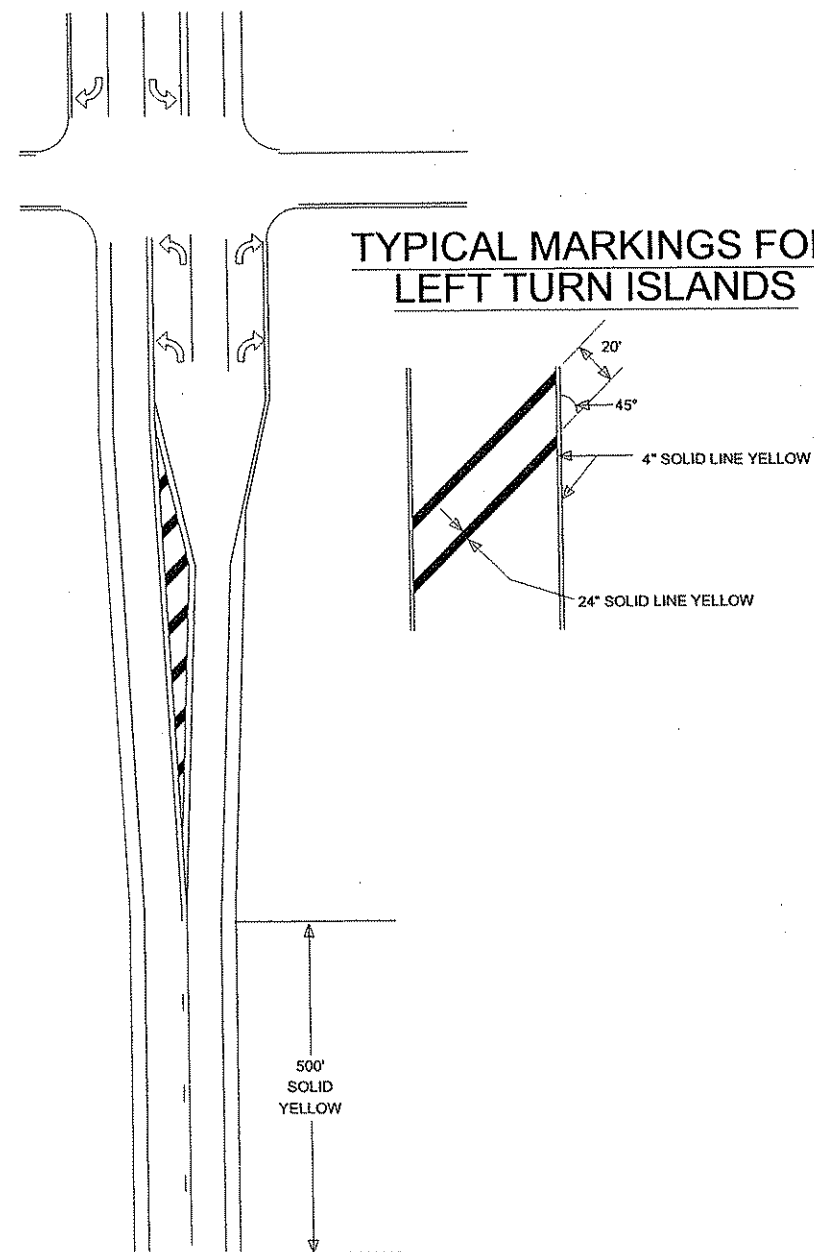
NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\13-01-00\Base\TRAFFIC\CSAH 18\Sign&Stripe_Details.dwg

**TYPICAL MESSAGE PLACEMENT
FOR TURN LANES**



**TYPICAL MARKINGS FOR
LEFT TURN ISLANDS**



NO	DATE	BY	CHKD	APPR	REVISION

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

PRINT NAME: ANDREW WITTER

SIGNATURE: *Andrew Witter*

DATE: 3/1/13 LICENSE NO. 42757

DRAWN BY MTH DATE 2-05-13

DESIGN BY MTH DATE 2-05-13

CHECKED BY JR DATE 02-XX-12



**ANOKA COUNTY
HIGHWAY DEPT.**

STATE PROJECT NO. _____

STATE PROJECT NO. _____

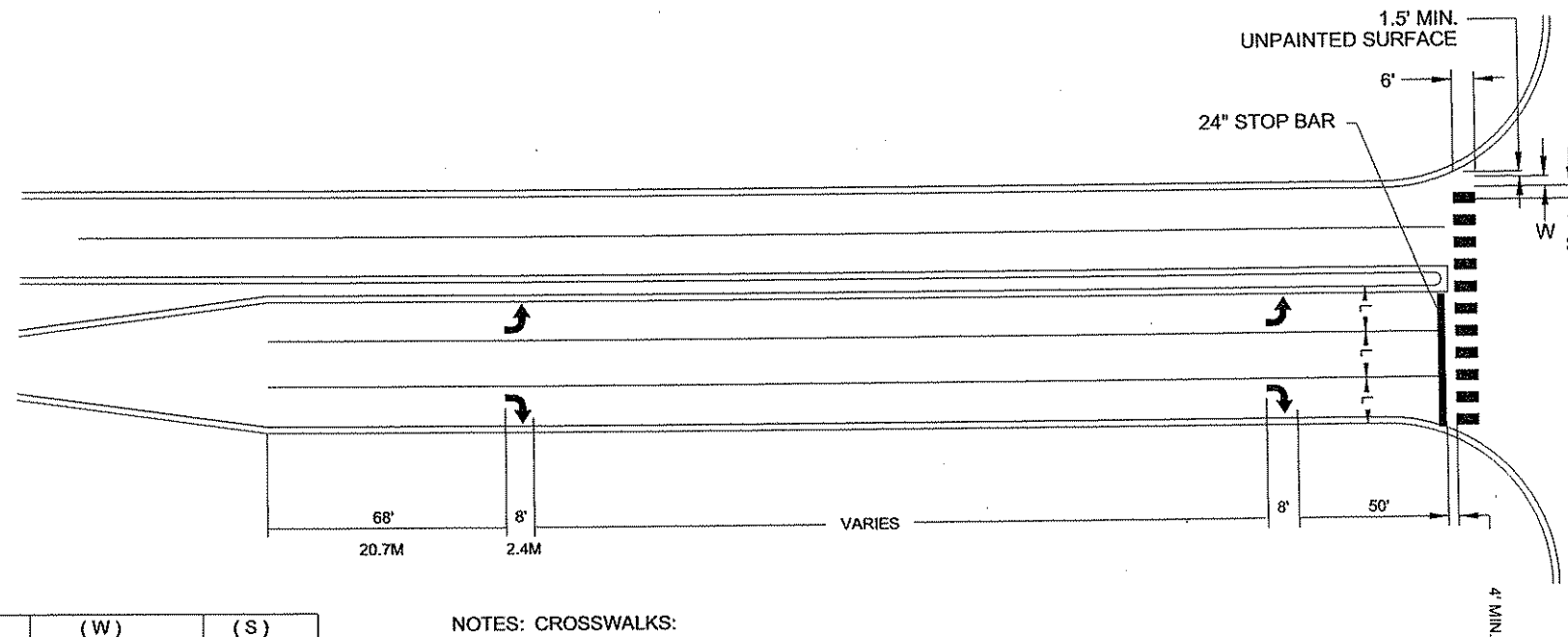
STATE PROJECT NO. _____

COUNTY PROJECT NO. 13-18-18

SIGNING & STRIPING DETAILS

Sheet 17 of 21 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:

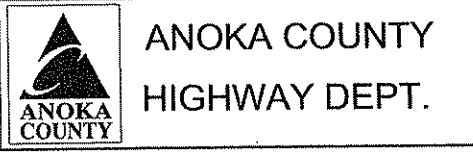
- 1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.
- 2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMP ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERIFIED DURING CONSTRUCTION BY THE FIELD ENGR.
- 3.) ZEBRA 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) NSIDE 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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ANDREW WITTE
 SIGNATURE: *Andrew Witte*
 DATE: 3/7/13 LICENSE NO. 42757

DRAWN BY MTH DATE 2-05-13
 DESIGN BY MTH DATE 2-05-13
 CHECKED BY JR DATE 02-14-12

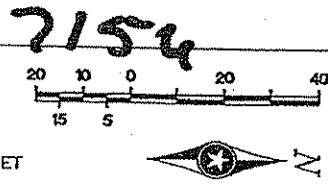


STATE PROJECT NO. _____
 STATE PROJECT NO. _____
 STATE PROJECT NO. _____
 COUNTY PROJECT NO. 13-18-18

SIGNING & STRIPING DETAILS

Sheet 18 of 21 Sheets

NOTE: INFORMATIONAL USE ONLY



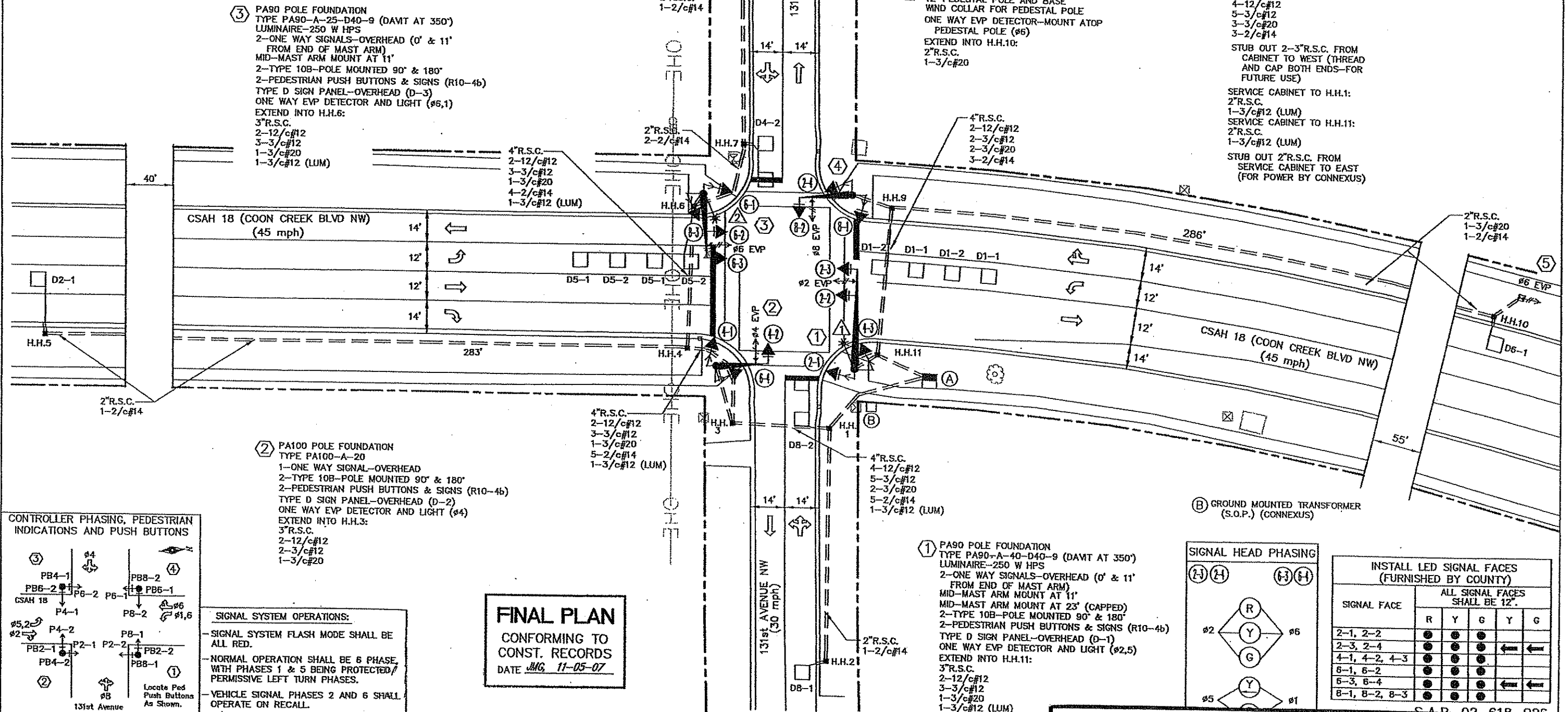
- NOTES:**
- 1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) SEE SPECIAL PROVISIONS REGARDING COUNTY FURNISHED MATERIALS.
 - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
 - 5) EACH SIGNAL FACE WILL HAVE BACKGROUND SHIELD.
 - 6) EACH PEDESTRIAN INDICATION WILL BE A ONE SECTION "FILLED" HAND/WALKING PERSON COUNTDOWN TIMER INDICATION.
 - 7) ALL VEHICLE SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS WILL BE LED.
 - 8) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS, CONCRETE WALK, AND PEDESTRIAN CURB RAMPS TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL).

F & I NMC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	3
D2-1	6x6	300'	1
D4-1	6x6	120'	2
D4-2	2-6x6	0' & 15'	3
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	5' & 35'	3
D6-1	6x6	300'	1
DB-1	6x6	120'	2
DB-2	2-6x6	0' & 15'	3

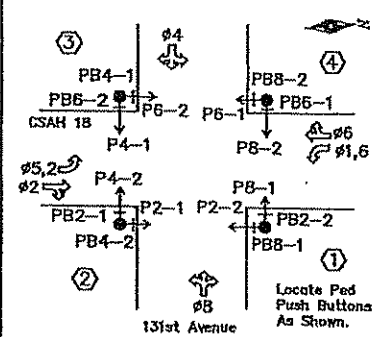
LOOP DETECTORS FUNCTIONS:

- 1) CALL AND EXTEND
- 2) EXTEND ONLY
- 3) DELAYED CALL, IMMEDIATE EXTEND

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



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



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

FINAL PLAN
CONFORMING TO
CONST. RECORDS
DATE JMG 11-05-07

DRAWN BY: JMG	1	JMG	11/07	RECORD DRAWING
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

© SHIRT ELLIOTT HENDRICKSON 1998. ANY USE OR REUSE OF THIS PLAN/DRAWING AND THE CORRESPONDING COMPUTER AIDED DESIGN/DRAFTING FILES WITHOUT THE EXPRESS WRITTEN CONSENT OF SEH, IS PROHIBITED. SEH SHALL NOT BE RESPONSIBLE FOR ANY UNAUTHORIZED USE OR REUSE OF THESE MATERIALS, OR DAMAGES RESULTING THEREFROM.

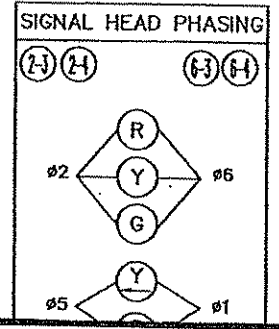
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

JMG
Name: John M. Gray, PE
Lic. No. 22457
Date: March 20, 2007

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

STATE PROJECT NO. _____
STATE AID PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 13-18-18

MISCELLANEOUS SIGNAL SHEETS
Sheet 19 of 21 Sheets



INSTALL LED SIGNAL FACES (FURNISHED BY COUNTY)

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

NOTE: INFORMATIONAL USE ONLY

7157

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2-6' x 6'	1	20' & 50'
D1-2	2-6' x 6'	1	5' & 35'
D2-1	6' x 6'	1	300'
D2-2	6' x 6'	1	300'
D6-1	6' x 6'	1	300'
D8-1	6' x 6'	3	250'
D8-2	6' x 6'	3	250'
D8-3	2-6' x 6'	7	5' & 20'
D8-4	2-6' x 6'	1	5' & 20'

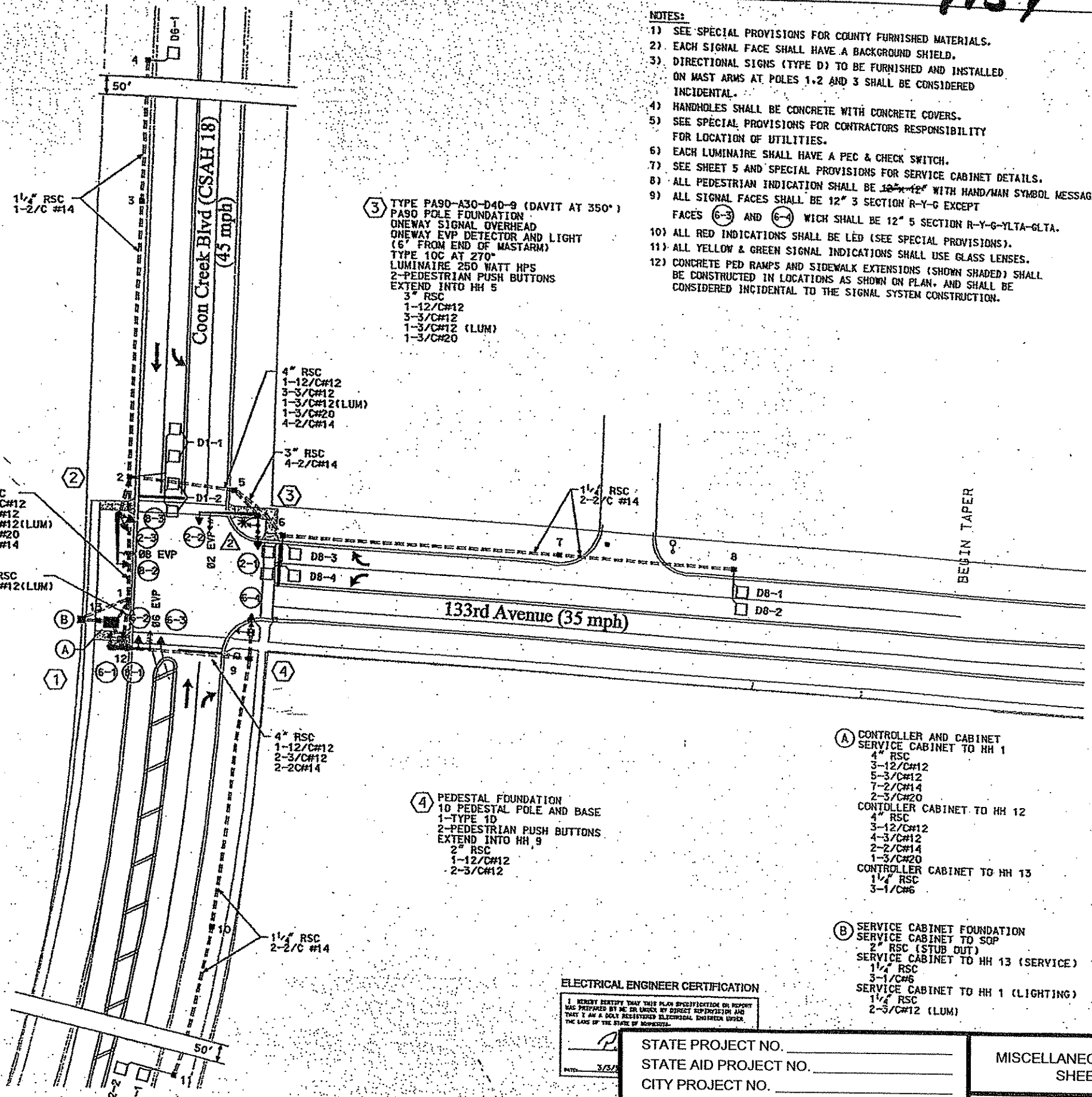
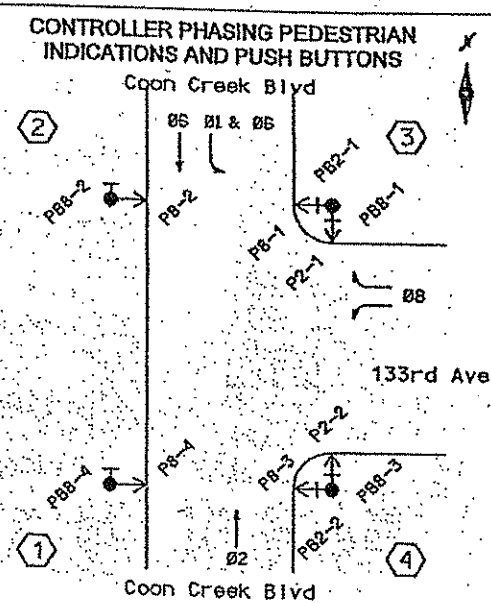
- 1) CALL AND EXTEND.
- 2) CALL ONLY
- 3) EXTEND ONLY
- 4) CALL ONLY DENS
- 5) DELAY CALL ONLY
- 6) DELAY CALL ONLY DENSITY
- 7) DELAY CALL IMMEDIATE EXTEND
- 8) CARRY OVER
- 9) ADVISORY

- 2) TYPE PA90-A25 PA90 POLE FOUNDATION ONEWAY SIGNAL OVERHEAD ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM) TYPE 10A AT 0° TYPE 10B AT 270° 1-PEDESTRIAN PUSH BUTTON EXTEND INTO HH 2
3" RSC
2-12/C#12
2-3/C#12
1-3/C#20

- 1) TYPE PA90-A25-D40-9 (DAVIT AT 350°) PA90 POLE FOUNDATION 2-ONEWAY SIGNALS OVERHEAD (10' AND 12' FROM END OF MASTARM) R10-12 (24x30) MOUNTED 3' FROM END OF MASTARM ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM) TYPE 10A AT 270° TYPE 10B AT 0° LUMINAIRE 250 WATT HPS 1-PEDESTRIAN PUSH BUTTON EXTEND INTO HH 12
3" RSC
2-12/C#12
2-3/C#12
1-3/C#12 (LUM)
1-3/C#20

- 3) TYPE PA90-A30-D40-9 (DAVIT AT 350°) PA90 POLE FOUNDATION ONEWAY SIGNAL OVERHEAD ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM) TYPE 10C AT 270° LUMINAIRE 250 WATT HPS 2-PEDESTRIAN PUSH BUTTONS EXTEND INTO HH 5
3" RSC
1-12/C#12
3-3/C#12
1-3/C#12 (LUM)
1-3/C#20

- NOTES:
- 1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - 2) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
 - 3) DIRECTIONAL SIGNS (TYPE D) TO BE FURNISHED AND INSTALLED ON MAST ARMS AT POLES 1, 2 AND 3 SHALL BE CONSIDERED INCIDENTAL.
 - 4) HANDHOLES SHALL BE CONCRETE WITH CONCRETE COVERS.
 - 5) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
 - 6) EACH LUMINAIRE SHALL HAVE A PEC & CHECK SWITCH.
 - 7) SEE SHEET 5 AND SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
 - 8) ALL PEDESTRIAN INDICATION SHALL BE 12" x 12" WITH HAND/MAN SYMBOL MESSAGE.
 - 9) ALL SIGNAL FACES SHALL BE 12" 3 SECTION R-Y-G EXCEPT FACES 6-3 AND 6-4 WHICH SHALL BE 12" 5 SECTION R-Y-G-YLTA-GLTA.
 - 10) ALL RED INDICATIONS SHALL BE LED (SEE SPECIAL PROVISIONS).
 - 11) ALL YELLOW & GREEN SIGNAL INDICATIONS SHALL USE GLASS LENSES.
 - 12) CONCRETE PED RAMPS AND SIDEWALK EXTENSIONS (SHOWN SHADED) SHALL BE CONSTRUCTED IN LOCATIONS AS SHOWN ON PLAN, AND SHALL BE CONSIDERED INCIDENTAL TO THE SIGNAL SYSTEM CONSTRUCTION.



- A) CONTROLLER AND CABINET SERVICE CABINET TO HH 1
4" RSC
3-12/C#12
5-3/C#12
7-2/C#14
2-3/C#20
CONTROLLER CABINET TO HH 12
4" RSC
3-12/C#12
4-3/C#12
2-2/C#14
1-3/C#20
CONTROLLER CABINET TO HH 13
1 1/2" RSC
3-1/C#6

- B) SERVICE CABINET FOUNDATION SERVICE CABINET TO SOP
2" RSC (STUB OUT)
SERVICE CABINET TO HH 13 (SERVICE)
1 1/2" RSC
3-1/C#6
SERVICE CABINET TO HH 1 (LIGHTING)
1 1/2" RSC
2-3/C#12 (LUM)

- 4) PEDESTAL FOUNDATION 10 PEDESTAL POLE AND BASE 1-TYPE 1D 2-PEDESTRIAN PUSH BUTTONS EXTEND INTO HH 9
2" RSC
1-12/C#12
2-3/C#12

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

STATE PROJECT NO. _____
STATE AID PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 13-18-18

MISCELLANEOUS SIGNAL SHEETS
Sheet 20 of 21 Sheets

350 Winwood Lake Office
8441 Fitzgerald Boulevard
Minneapolis, MN 55428
612-841-4800
FAX 612-841-4700

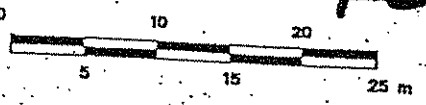
STRUCTURE - ENGINEERS - PLANNERS

Coon Creek Blvd (CSAH 18) & 133rd Avenue Anoka County, Minnesota

DATE: 3/2/87

NOTE: INFORMATIONAL USE ONLY

7158



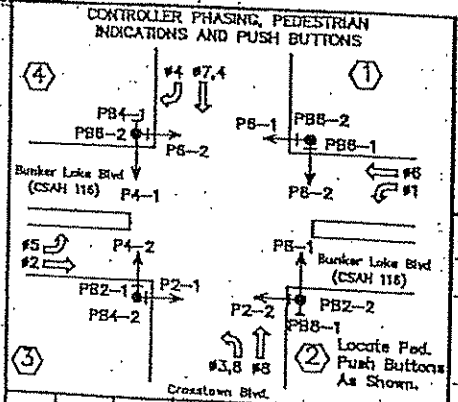
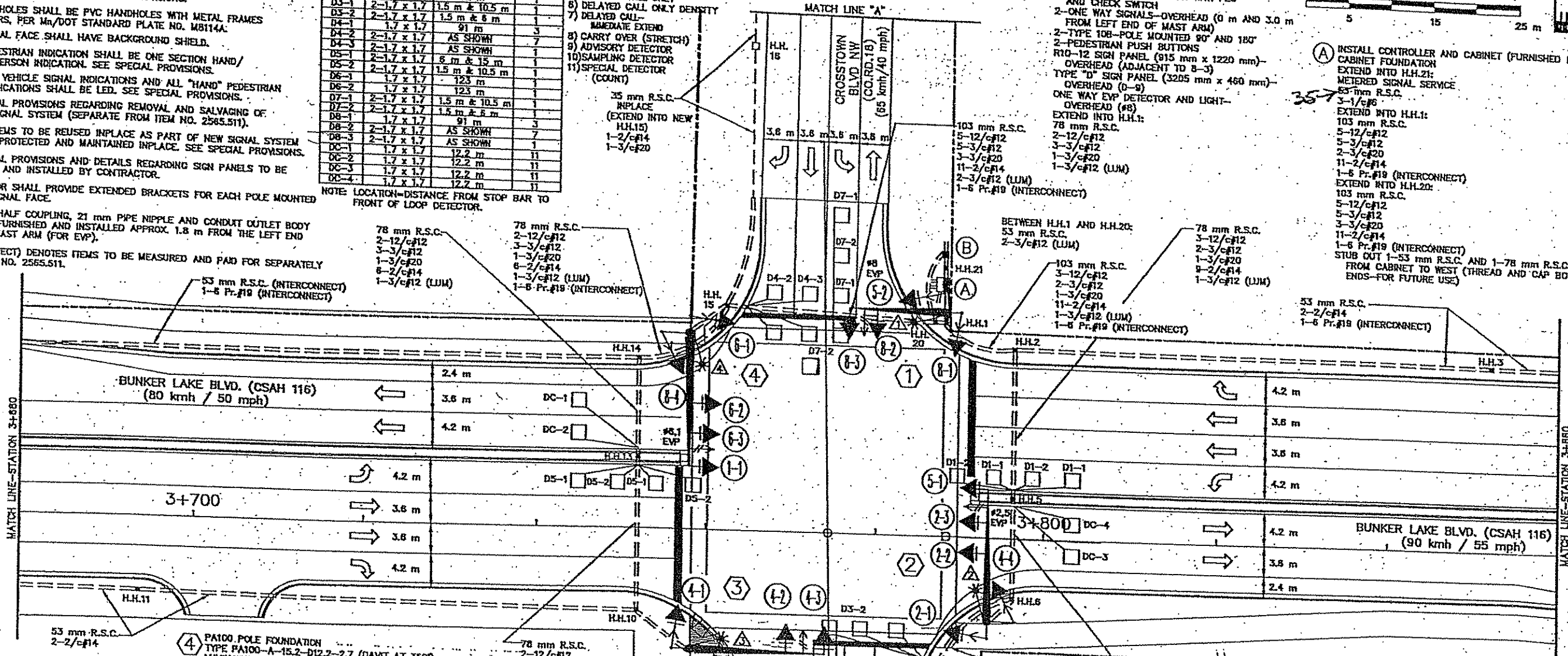
- NOTES:**
- LOCATIONS OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. SEE SPECIAL PROVISIONS.
 - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, PER Mn/DOT STANDARD PLATE NO. MS114A.
 - 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 EVP).
 - (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
D1-1	2-1.7 x 1.7	8 m & 15 m	1
D1-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D2-1	1.7 x 1.7	112 m	1
D2-2	1.7 x 1.7	112 m	1
D3-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
D3-2	2-1.7 x 1.7	1.5 m & 8 m	1
D4-1	1.7 x 1.7	91 m	3
D4-2	2-1.7 x 1.7	AS SHOWN	7
D4-3	2-1.7 x 1.7	AS SHOWN	7
D5-1	2-1.7 x 1.7	8 m & 15 m	1
D5-2	2-1.7 x 1.7	1.5 m & 10.5 m	1
D6-1	1.7 x 1.7	123 m	1
D6-2	1.7 x 1.7	123 m	1
D7-1	2-1.7 x 1.7	1.5 m & 10.5 m	1
D7-2	2-1.7 x 1.7	1.5 m & 8 m	1
D8-1	1.7 x 1.7	91 m	3
D8-2	2-1.7 x 1.7	AS SHOWN	7
D8-3	2-1.7 x 1.7	AS SHOWN	7
DC-1	1.7 x 1.7	12.2 m	11
DC-2	1.7 x 1.7	12.2 m	11
DC-3	1.7 x 1.7	12.2 m	11
DC-4	1.7 x 1.7	12.2 m	11

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

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



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 RECALL.

SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.21:
METERED SIGNAL SERVICE
53 mm R.S.C.
3-1/c#6
EXTEND INTO H.H.20:
UNMETERED STREET LIGHT SERVICE
53 mm R.S.C.
4-3/c#12 (LUM)
STUB OUT 53 mm R.S.C. (FOR SERVICE BY AEC)

SIGNAL HEAD PHASING

HEADS	HEADS
←	→
↖	↗
↘	↙
↻	↻

SIGNAL FACES

SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 300 mm.
1-1, 1-2	LED R Y G R Y G
2-1, 2-2, 2-3	LED R Y G R Y G

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



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