

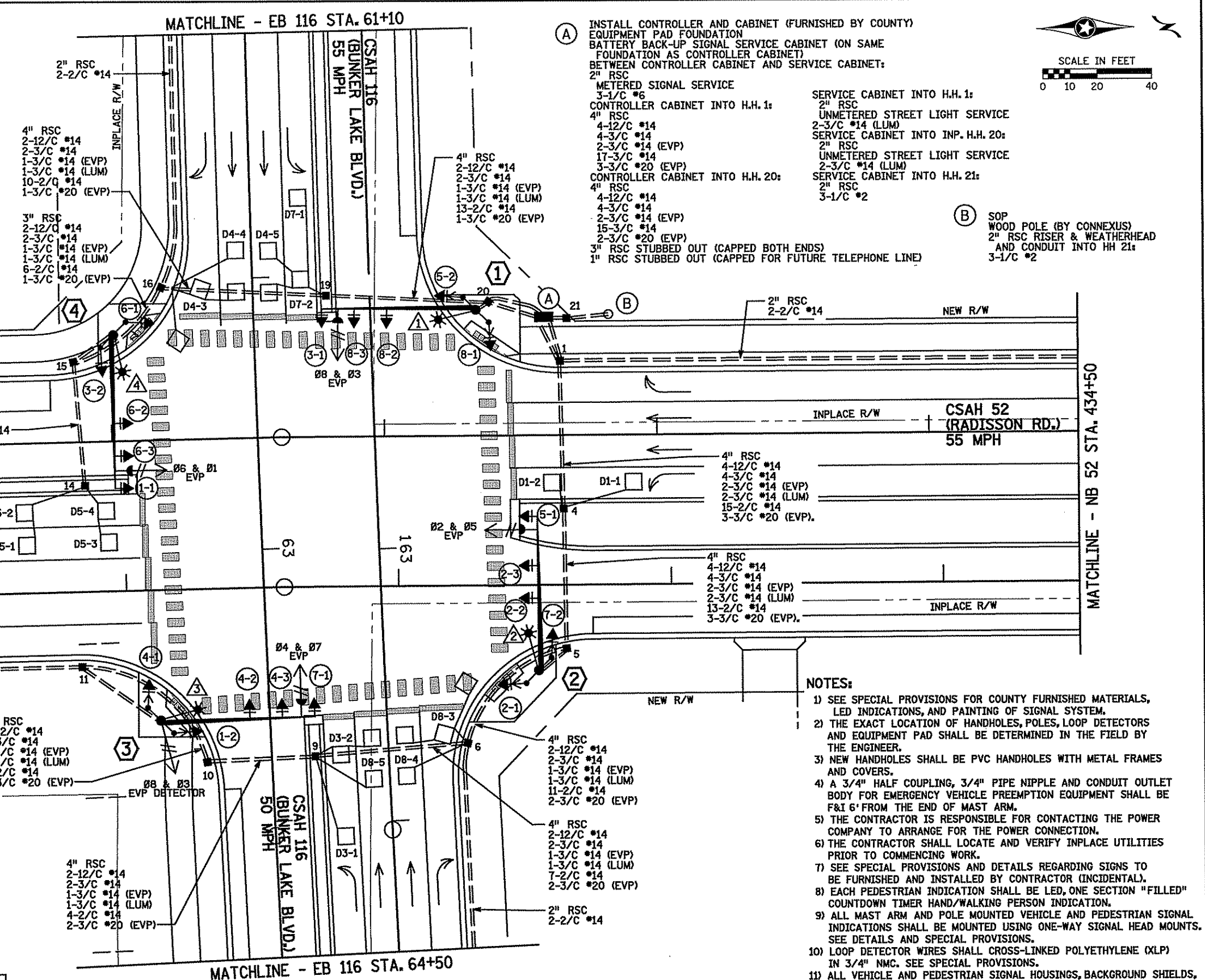
LOOP DETECTORS			
NUMBER	SIZE (FEET)	LOCATION	FUNCTION
D1-1	6'X6'	40'	1
D1-2	6'X6'	10'	1
D2-1,D2-2	6'X6'	475'	1
D3-1,D3-2	6'X6'	10' & 40'	1
D4-1,D4-2	6'X6'	475'	3,8
D4-3	2-6'X6'	-10' & 5'	7
D4-4,D4-5	2-6'X6'	5' & 20'	1
D5-1,D5-2	6'X6'	40'	1
D5-3,D5-4	6'X6'	10'	1
D6-1,D6-2	6'X6'	475'	1
D7-1,D7-2	6'X6'	10' & 40'	1
D8-1,D8-2	6'X6'	400'	3,8
D8-3	2-6'X6'	-10' & 5'	7
D8-4,D8-5	2-6'X6'	5' & 20'	1

- ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE.  
- LOCATION = DISTANCE FROM STOP BAR TO FRONT OF DETECTOR IN FEET.  
- LOOP DETECTOR FUNCTIONS:  
1 - CALL AND EXTEND.  
3 - EXTEND ONLY.  
7 - DELAYED CALL, IMMEDIATE EXTEND.  
8 - CARRY OVER (STRETCH).

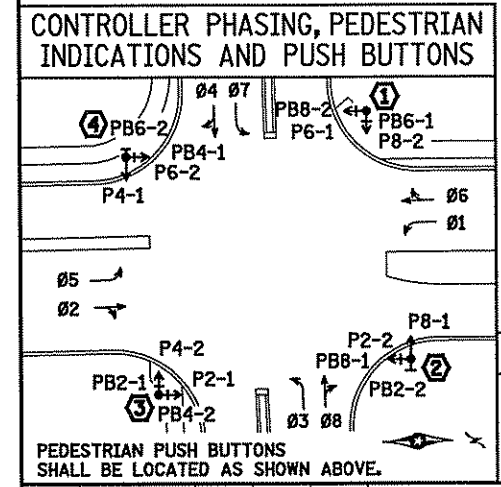
SIGNAL INDICATIONS						
FACE	R	Y	G	RLTA	YLTA	GLTA
1-1,1-2				←	←	←
2-1,2-2,2-3	●	●	●			
3-1,3-2				←	←	←
4-1,4-2,4-3	●	●	●			
5-1,5-2				←	←	←
6-1,6-2,6-3	●	●	●			
7-1,7-2				←	←	←
8-1,8-2,8-3	●	●	●			

- ALL SIGNAL INDICATIONS SHALL BE 12".  
- ALL SIGNAL INDICATIONS SHALL BE LED.  
- ALL SIGNAL FACES SHALL HAVE A BACKGROUND SHIELD.

\*\* LANE DESIGNATION ARROWS SHOWN FOR INFORMATION ONLY \*\*



- (A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)  
EQUIPMENT PAD FOUNDATION  
BATTERY BACK-UP SIGNAL SERVICE CABINET (ON SAME FOUNDATION AS CONTROLLER CABINET)  
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:  
2" RSC  
METERED SIGNAL SERVICE  
3-1/C \*6  
CONTROLLER CABINET INTO H.H. 1:  
2" RSC  
UNMETERED STREET LIGHT SERVICE  
4-12/C \*14  
4-3/C \*14  
SERVICE CABINET INTO INP. H.H. 20:  
2-3/C \*14 (EVP)  
17-3/C \*14  
2" RSC  
UNMETERED STREET LIGHT SERVICE  
2-3/C \*14 (LUM)  
CONTROLLER CABINET INTO H.H. 20:  
SERVICE CABINET INTO H.H. 21:  
2" RSC  
3-1/C \*2
- (B) SOP  
WOOD POLE (BY CONNEXUS)  
2" RSC RISER & WEATHERHEAD  
AND CONDUIT INTO HH 21:  
3-1/C \*2



**SIGNAL SYSTEM OPERATION**

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

- NOTES:**
- SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS, LED INDICATIONS, AND PAINTING OF SIGNAL SYSTEM.
  - THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS AND EQUIPMENT PAD SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
  - A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PREEMPTION EQUIPMENT SHALL BE F&I 6" FROM THE END OF MAST ARM.
  - THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION.
  - THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
  - SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
  - EACH PEDESTRIAN INDICATION SHALL BE LED, ONE SECTION "FILLED" COUNTDOWN TIMER HAND/WALKING PERSON INDICATION.
  - ALL MAST ARM AND POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS AND SPECIAL PROVISIONS.
  - LOOP DETECTOR WIRES SHALL CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" NMC. SEE SPECIAL PROVISIONS.
  - ALL VEHICLE AND PEDESTRIAN SIGNAL HOUSINGS, BACKGROUND SHIELDS, AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
  - (EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.

NO	DATE	BY	CKD	APPR	REVISION

NAME: K:\a-f\Anoka\1386700\hwy-brdg\hwy\p\In-sh\c0265205\_sgg.dgn 10/15/2009

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.

SIGNATURE: *Bryant J. Fickel*  
PRINTED NAME: BRYANT J. FICKEL  
DATE: 10/15/2009 LIC. NO. 42802

DRAWN BY SFH DATE 10/15/2009  
DESIGN BY BJF DATE 10/15/2009  
CHECKED BY TAC DATE 10/15/2009

S.P. 02-652-05  
S.P. 02-716-09  
S.P. 106-020-28  
S.P. 197-124-001

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ANOKA COUNTY  
SIGNAL SYSTEM "C" INTERSECTION LAYOUT  
CSAH 52/116 RECONSTRUCTION  
CSAH 52 AND CSAH 116

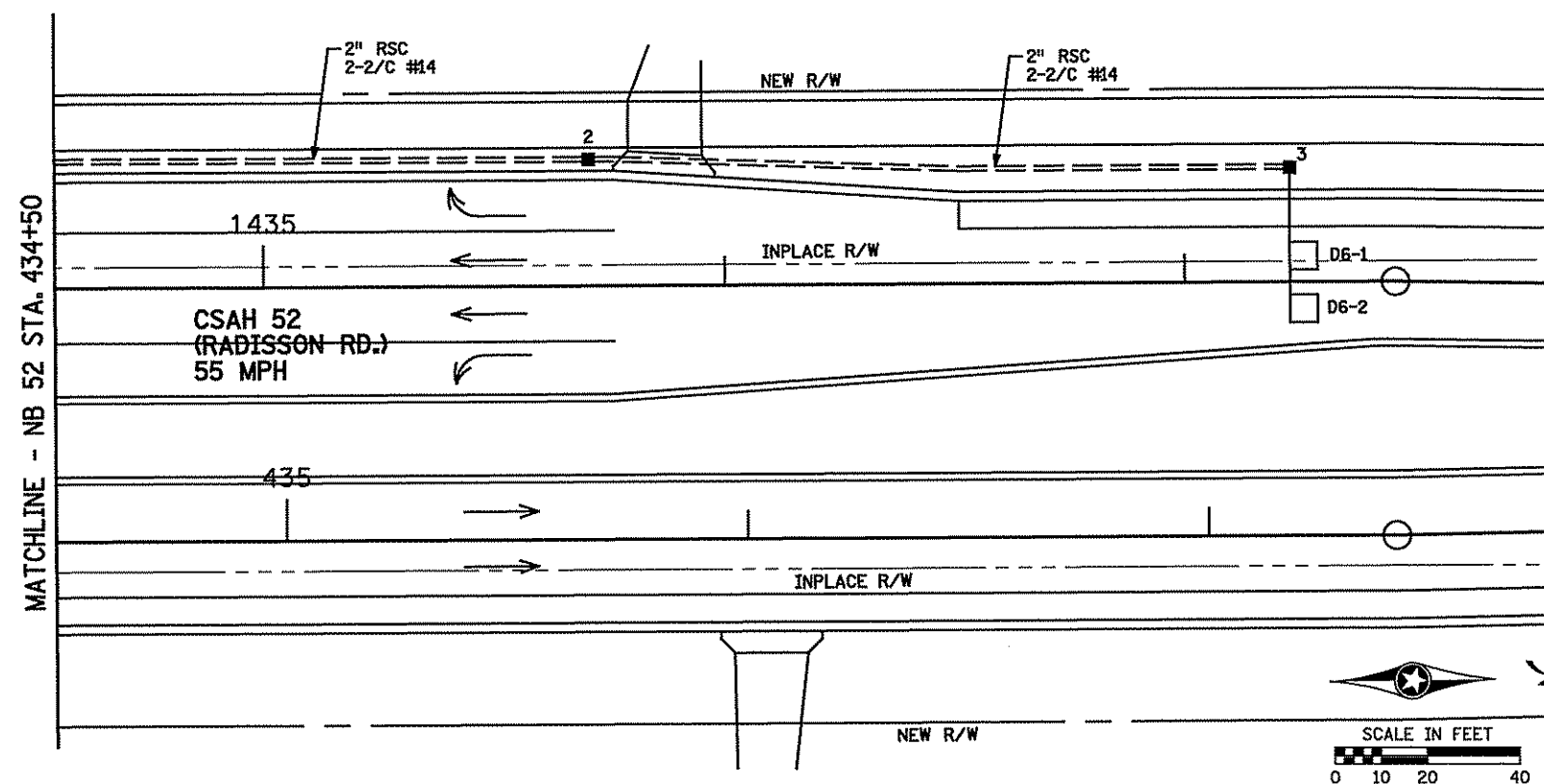
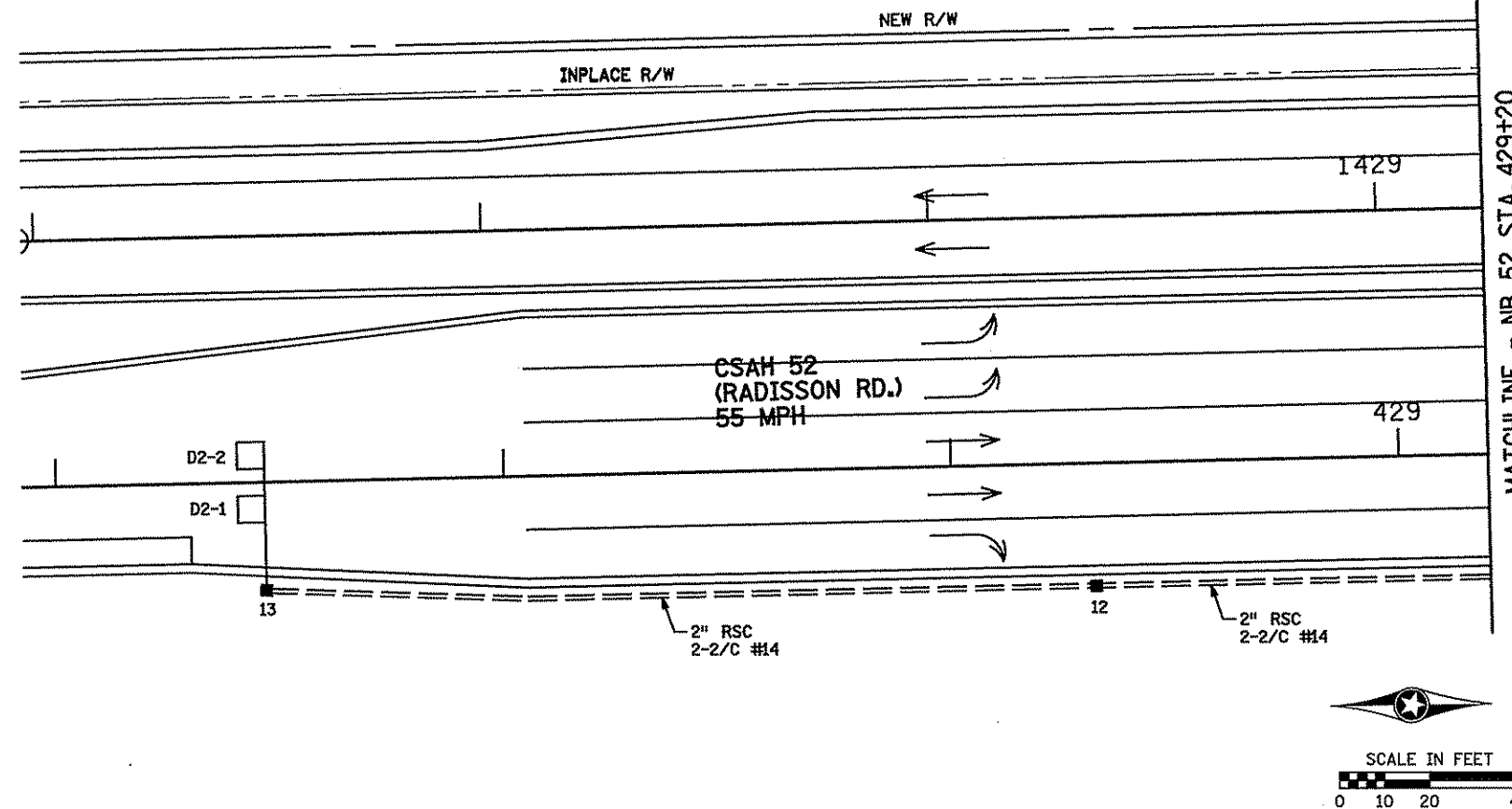
SHEET 15.18 OF 294

① PA100 POLE FOUNDATION  
 TYPE PA100-A-55-D40-9 (DAVIT @ 350")  
 3-ONE WAY SIGNALS-OVERHEAD (0', 11', AND 23' FROM END OF MAST ARM)  
 2-ONE WAY SIGNALS MOUNTED AT 45° AND 225°  
 2-ONE WAY PED INDICATIONS MOUNTED AT 45° AND 225°  
 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 08 & 03) (EVP)  
 LUMINAIRE - 250 WATT HPS  
 2-PED PUSH BUTTONS AND SIGNS  
 TYPE D SIGN PANEL-OVERHEAD (D-5)  
 2-R6-1 SIGN PANELS MOUNTED AT 0° AND 180°  
 3" RSC INTO HH 20:  
 2-12/C #14  
 2-3/C #14  
 1-3/C #14 (EVP)  
 1-3/C #14 (LUM)  
 2-2/C #14  
 1-3/C #20 (EVP)

② PA100 POLE FOUNDATION  
 TYPE PA100-A-55-D40-9 (DAVIT @ 350")  
 3-ONE WAY SIGNALS-OVERHEAD (0', 17', AND 29' FROM END OF MAST ARM)  
 2-ONE WAY SIGNALS MOUNTED AT 45° AND 225°  
 2-ONE WAY PED INDICATIONS MOUNTED AT 45° AND 225°  
 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 02 & 05) (EVP)  
 LUMINAIRE - 250 WATT HPS  
 2-PED PUSH BUTTONS AND SIGNS  
 TYPE D SIGN PANEL-OVERHEAD (D-6)  
 2-R6-1 SIGN PANELS MOUNTED AT 0° AND 180°  
 3" RSC INTO HH 5:  
 2-12/C #14  
 2-3/C #14  
 1-3/C #14 (EVP)  
 1-3/C #14 (LUM)  
 2-2/C #14  
 1-3/C #20 (EVP)

③ PA100 POLE FOUNDATION  
 TYPE PA100-A-55-D40-9 (DAVIT @ 350")  
 3-ONE WAY SIGNALS-OVERHEAD (0', 11', AND 23' FROM END OF MAST ARM)  
 2-ONE WAY SIGNALS MOUNTED AT 45° AND 225°  
 2-ONE WAY PED INDICATIONS MOUNTED AT 45° AND 225°  
 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 04 & 07) (EVP)  
 1-ONE WAY EVP DETECTOR (PHASES 08 & 03) (EVP)  
 LUMINAIRE - 250 WATT HPS  
 2-PED PUSH BUTTONS AND SIGNS  
 TYPE D SIGN PANEL-OVERHEAD (D-7)  
 2-R6-1 SIGN PANELS MOUNTED AT 0° AND 180°  
 3" RSC INTO HH 11:  
 2-12/C #14  
 2-3/C #14  
 1-3/C #14 (EVP)  
 1-3/C #14 (LUM)  
 2-2/C #14  
 2-3/C #20 (EVP)

④ PA100 POLE FOUNDATION  
 TYPE PA100-A-55-D40-9 (DAVIT @ 350")  
 3-ONE WAY SIGNALS-OVERHEAD (0', 11', AND 23' FROM END OF MAST ARM)  
 2-ONE WAY SIGNALS MOUNTED AT 45° AND 225°  
 2-ONE WAY PED INDICATIONS MOUNTED AT 45° AND 225°  
 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 06 & 01) (EVP)  
 LUMINAIRE - 250 WATT HPS  
 2-PED PUSH BUTTONS AND SIGNS  
 TYPE D SIGN PANEL-OVERHEAD (D-8)  
 2-R6-1 SIGN PANELS MOUNTED AT 0° AND 180°  
 3" RSC INTO HH 15:  
 2-12/C #14  
 2-3/C #14  
 1-3/C #14 (EVP)  
 1-3/C #14 (LUM)  
 2-2/C #14  
 1-3/C #20 (EVP)



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.  
 SIGNATURE: *Bryant J. Ficek*  
 PRINTED NAME: **BRYANT J. FICEK**  
 DATE: 10/15/2009 LIC. NO. 42802

DRAWN BY SFH DATE 10/15/2009  
 DESIGN BY BJF DATE 10/15/2009  
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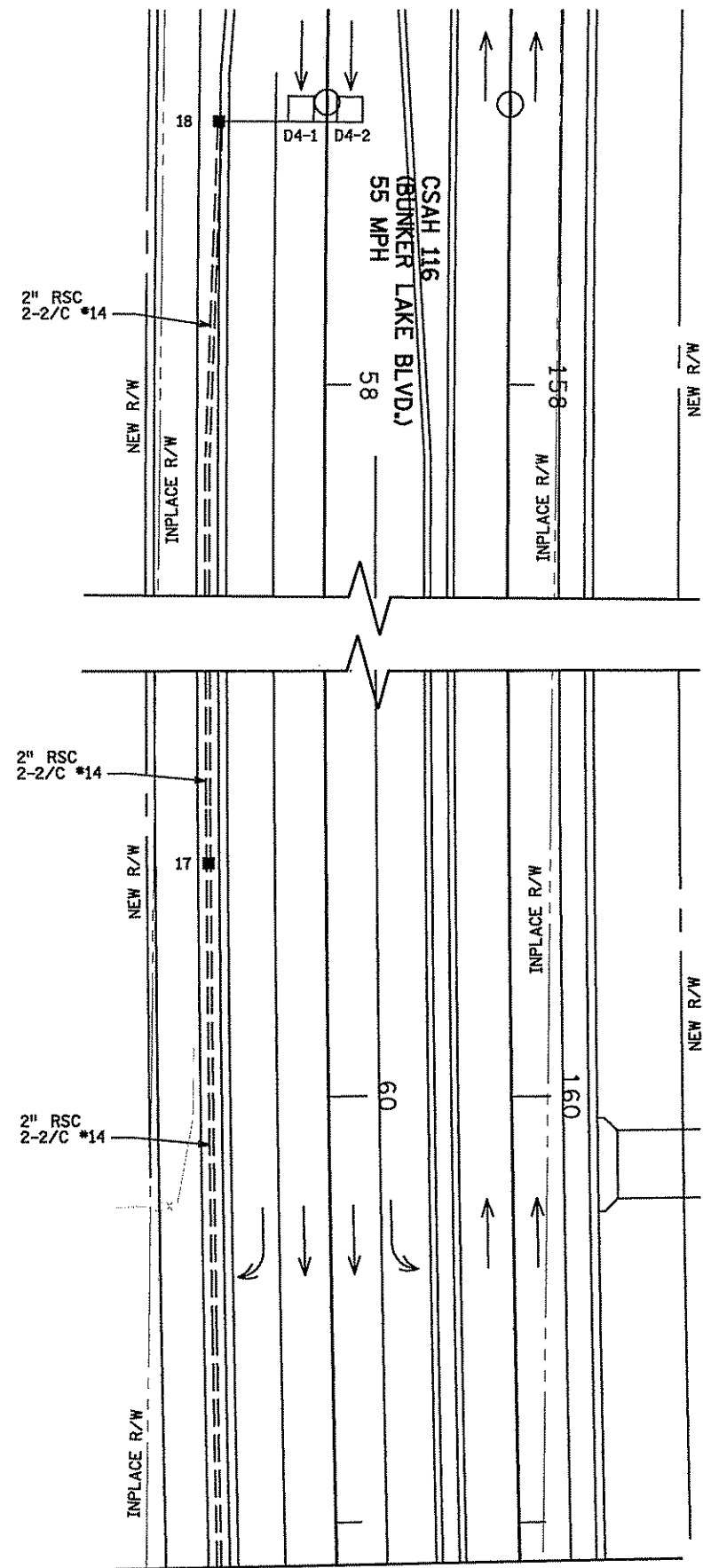
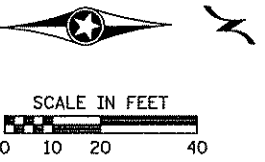
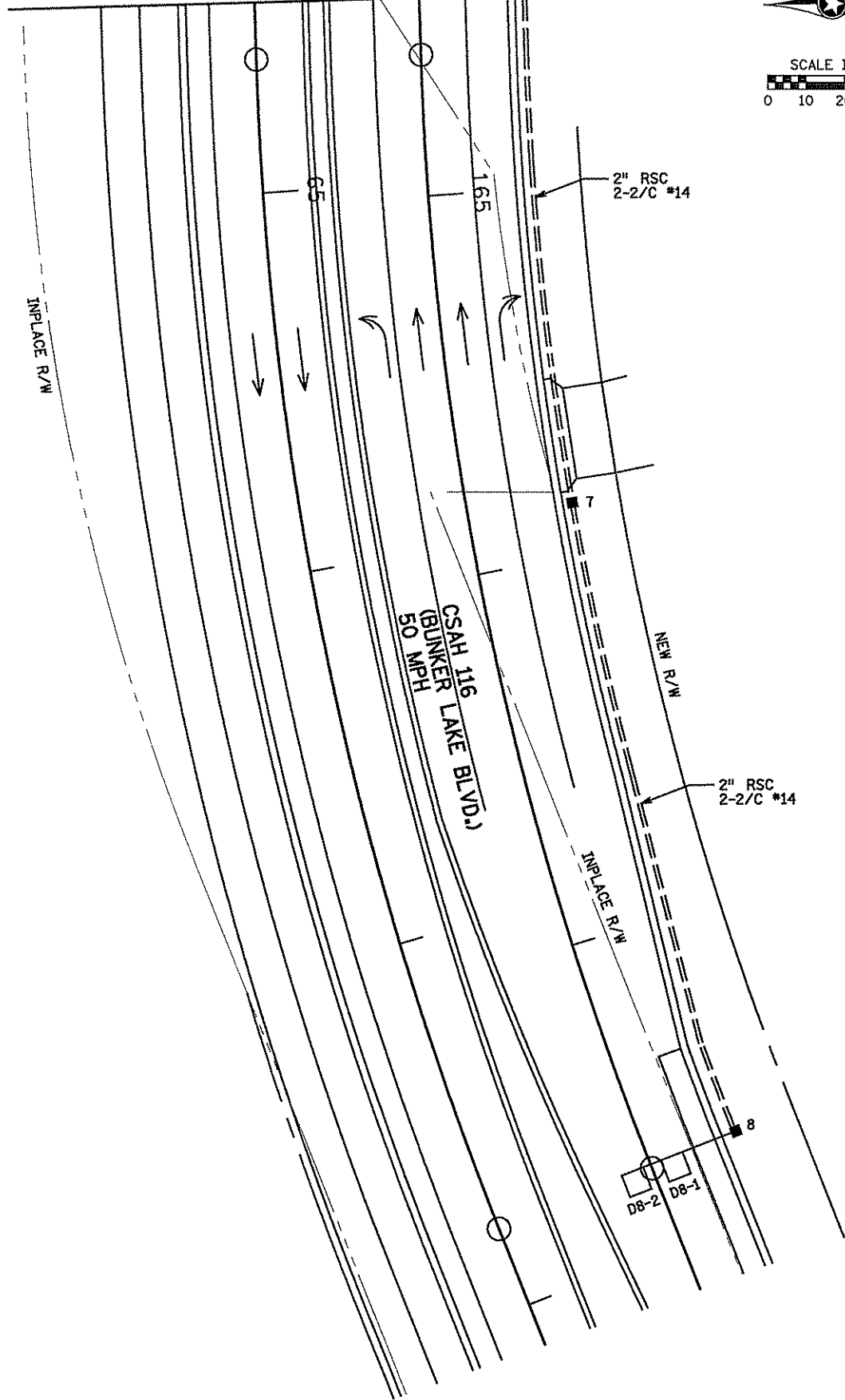
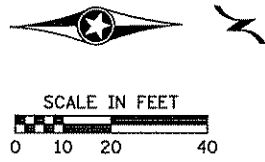
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ANOKA COUNTY  
 SIGNAL SYSTEM "C" MATCHLINE  
 CSAH 52/116 RECONSTRUCTION  
 CSAH 52 AND CSAH 116

SHEET  
 15.19  
 OF  
 294

MATCHLINE - EB 116 STA. 64+50



MATCHLINE - EB 116 STA. 61+10

NO	DATE	BY	CKD	APPR	REVISION

NAME: K:\a-f\AnokaCity\13867000\hwy-brdg\hwy\p\in-sh\c0265205\_sgl.dgn 6/5/2009

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