

**NOTES:**

- 1) THE EXACT LOCATION OF HANDHOLES, FOUNDATIONS, AND LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
- 4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE, AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
- 5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
- 6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM B").
- 7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
- 8) ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
- 9) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
- 10) SEE DETAILS, SPECIAL PROVISIONS, AND STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
- 11) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
- 12) (\*\*) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 13) (EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM "B"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.

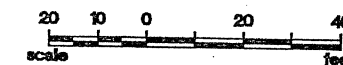
**LOOP DETECTORS FUNCTIONS:**

- 1) CALL AND EXTEND
- 3) EXTEND ONLY
- 7) DELAYED CALL, IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)

**F & I N.M.C. LOOP DETECTORS**

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	10'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D5-1	6x6	40'	1
D5-2	6x6	10'	1
D6-1	6x6	400'	1
D6-2	6x6	400'	1
D8-1	6x6	180'	3,8
D8-2	6x6	180'	3,8
D8-3	2-6x6	5' & 20'	7
D8-4	2-6x6	5' & 20'	7

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



- (A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)**  
 EQUIPMENT PAD FOUNDATION  
 BATTERY BACK-UP SIGNAL SERVICE CABINET  
 BETWEEN CONTROLLER CABINET AND SERVICE CABINET:  
 METERED SIGNAL SERVICE  
 2"R.S.C.  
 3-1/c#6  
 CONTROLLER CABINET TO H.H.1:  
 4"R.S.C.  
 4-12/c#14  
 1-3/c#14 (EVP)  
 3-3/c#20 (EVP)  
 11-2/c#14  
 2-1/c#6 (GRD.)  
 CONTROLLER CABINET TO H.H.13:  
 4"R.S.C.  
 3-12/c#14  
 1-6/c#14  
 2-3/c#14 (EVP)  
 3-3/c#20 (EVP)  
 5-2/c#14  
 2-1/c#6 (GRD.)  
 CONTROLLER CABINET TO H.H.1:  
 2"R.S.C.  
 (\*\*\*) 1-6 SM/6 MM FIBER-OPTIC CABLE  
 CONTROLLER CABINET TO H.H.13:  
 2"R.S.C.  
 (\*\*\*) 2"R.S.C.  
 (FOR FUTURE INTERCONNECT BY OTHERS)  
 SERVICE CABINET TO H.H.1:  
 2"R.S.C.  
 UNMETERED STREET LIGHT SERVICE  
 1-3/c#14 (LUM)  
 SERVICE CABINET TO H.H.13:  
 2"R.S.C.  
 UNMETERED STREET LIGHT SERVICE  
 1-3/c#14 (LUM)  
 SERVICE CABINET TO H.H.14:  
 2"R.S.C.  
 3-1/c#2  
 STUB OUT 1"R.S.C. FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)  
 STUB OUT 3"R.S.C. FROM CONTROLLER CABINET TO NORTH (THREAD AND CAP-FOR FUTURE USE)

- (B) GROUND MOUNTED TRANSFORMER (S.O.P.)-**  
 TO BE F & I BY CONNEXUS  
 EXTEND INTO H.H.15:  
 2"R.S.C.  
 3-1/c#2

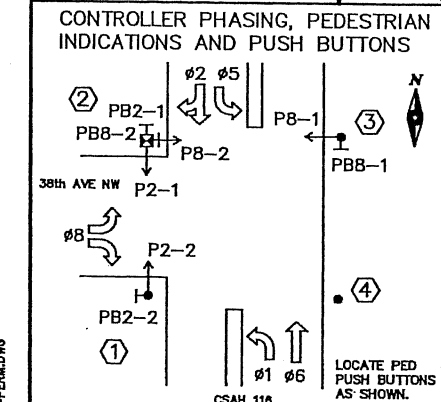
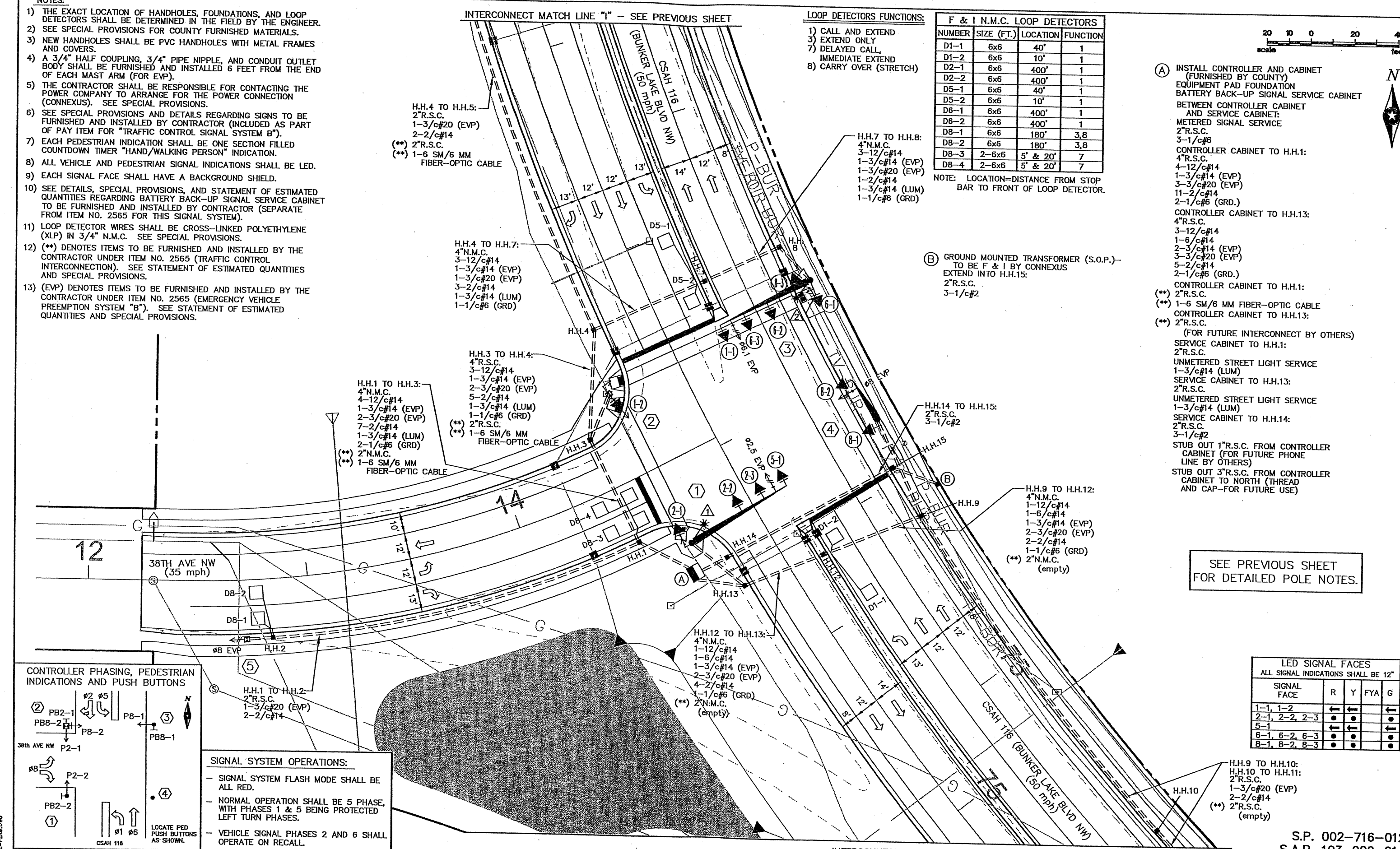
SEE PREVIOUS SHEET FOR DETAILED POLE NOTES.

**LED SIGNAL FACES**  
 ALL SIGNAL INDICATIONS SHALL BE 12"

SIGNAL FACE	R	Y	FYA	G
1-1, 1-2	●	●	●	●
2-1, 2-2, 2-3	●	●	●	●
5-1	●	●	●	●
6-1, 6-2, 6-3	●	●	●	●
8-1, 8-2, 8-3	●	●	●	●

INTERCONNECT MATCH LINE "I" - SEE PREVIOUS SHEET

INTERCONNECT MATCH LINE "J" - SEE NEXT SHEETS



**SIGNAL SYSTEM OPERATIONS:**

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

DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG

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.

*John M. Gray*  
 Name: John M. Gray, PE  
 Lic. No. 22457  
 Date: June 7, 2012

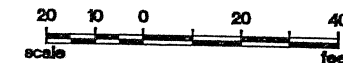
**SEH**  
 PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

**ANOKA COUNTY, MINNESOTA**  
 CITIES OF ANDOVER, ANOKA

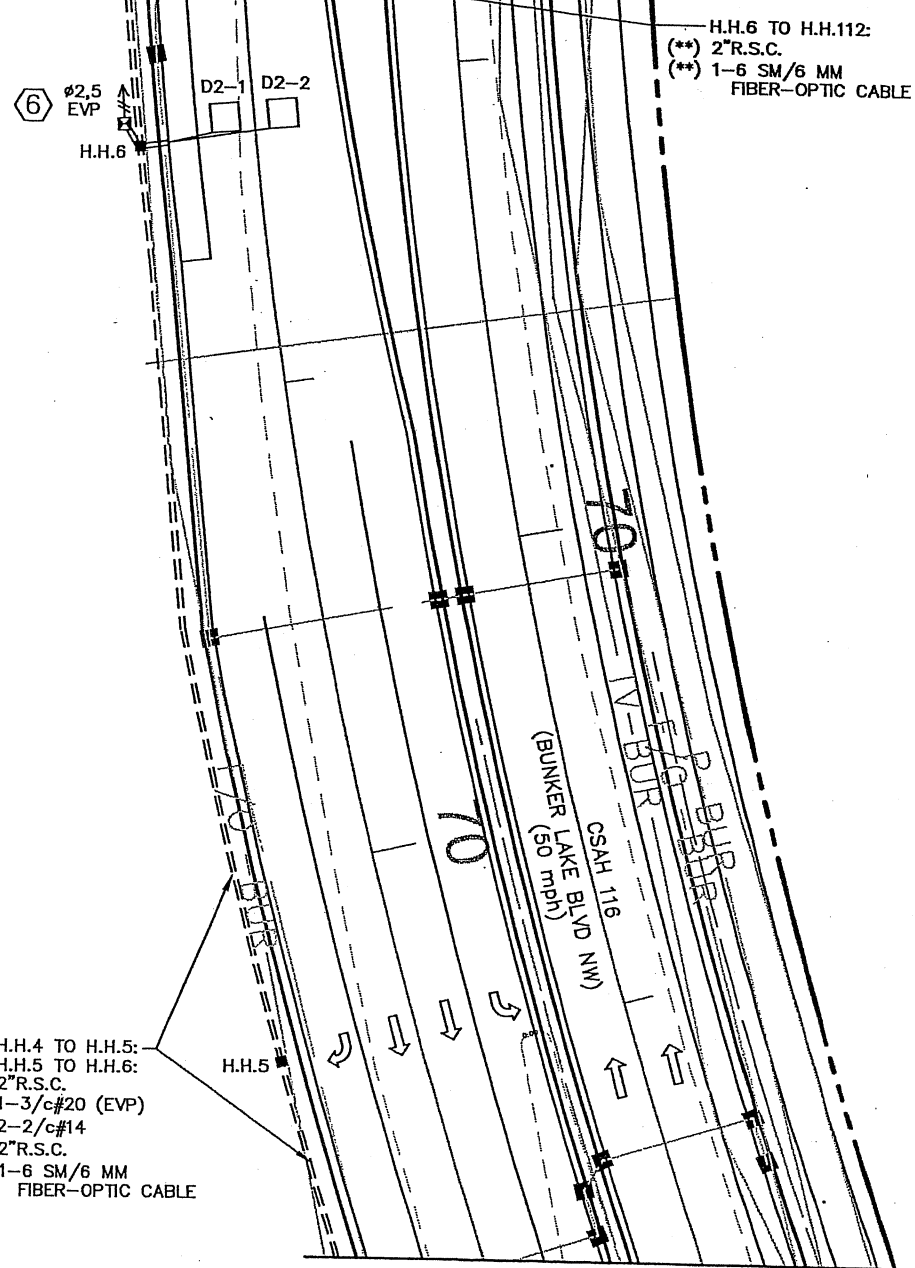
**TRAFFIC SIGNAL SYSTEM "B" INTERSECTION LAYOUT**  
 CSAH 116 AT 38TH AVENUE NW

FILE NO. ANOKC.120319  
**202**  
 SIGNAL SHEET  
 19 OF 25  
**282**

02/18/12\_SIGBASE-FERIL.DWG 08/07/2012



INTERCONNECT MATCH LINE "H" - STATION 68 + 00



- ① PA100 POLE FOUNDATION  
 TYPE PA100-A-50-D40-9 (DAVIT AT 350')  
 LUMINAIRE-250 W HPS  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'  
 1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180"  
 1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 180"  
 1-PEDESTRIAN PUSH BUTTON  
 1-R9-3 SIGN PANEL-FACING POLE 4  
 1-R6-1R SIGN PANEL-POLE MOUNTED 180"  
 TYPE D SIGN PANEL-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT (Ø2,5) (EVP)  
 EXTEND INTO H.H.13:  
 3"R.S.C.  
 2-12/c#14  
 1-3/c#14 (EVP)  
 1-3/c#20 (EVP)  
 1-2/c#14  
 1-3/c#14 (LUM)  
 1-1/c#6 (GRD.)

- ② PEDESTAL FOUNDATION  
 14' PEDESTAL POLE (INCLUDES BASE)  
 1-STRAIGHT MOUNT SIGNAL-POLE MOUNTED  
 2-STRAIGHT MOUNT C.D. PED INDICATIONS-  
 POLE MOUNTED  
 2-PEDESTRIAN PUSH BUTTONS  
 EXTEND INTO H.H.3:  
 3"R.S.C.  
 1-12/c#14  
 2-2/c#14  
 1-1/c#6 (GRD.)

- ③ PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D40-9 (DAVIT AT 350')  
 LUMINAIRE-250 W HPS  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'  
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 270°  
 1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 270°  
 1-PEDESTRIAN PUSH BUTTON  
 1-R6-1L SIGN PANELS-POLE MOUNTED 0°  
 TYPE D SIGN PANEL-OVERHEAD (D-6)  
 ONE WAY EVP DETECTOR AND LIGHT (Ø6,1) (EVP)  
 EXTEND INTO H.H.8:  
 3"R.S.C.  
 3-12/c#14  
 1-3/c#14 (EVP)  
 1-3/c#20 (EVP)  
 1-2/c#14  
 1-3/c#14 (LUM)  
 1-1/c#6 (GRD.)

- ④ PA85 POLE FOUNDATION  
 TYPE PA85-A-20  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180"  
 1-R9-3 SIGN PANEL-FACING POLE 1  
 TYPE D SIGN PANEL-OVERHEAD (D-7)  
 ONE WAY EVP DETECTOR AND LIGHT (Ø8) (EVP)  
 EXTEND INTO H.H.9:  
 3"R.S.C.  
 1-12/c#14  
 1-6/c#14  
 1-3/c#14 (EVP)  
 1-3/c#20 (EVP)  
 1-1/c#6 (GRD.)

- ⑤ PEDESTAL FOUNDATION (EVP)  
 12' PEDESTAL POLE (INCLUDES BASE) (EVP)  
 ONE WAY EVP DETECTOR-MOUNT ON TOP  
 OF PEDESTAL POLE (ON SLIPFITTER  
 COLLAR) (Ø8) (EVP)  
 EXTEND INTO H.H.2:  
 2"R.S.C. (EVP)  
 1-3/c#20 (EVP)

- ⑥ PEDESTAL FOUNDATION (EVP)  
 12' PEDESTAL POLE (INCLUDES BASE) (EVP)  
 ONE WAY EVP DETECTOR-MOUNT ON TOP  
 OF PEDESTAL POLE (ON SLIPFITTER  
 COLLAR) (Ø2,5) (EVP)  
 EXTEND INTO H.H.6:  
 2"R.S.C. (EVP)  
 1-3/c#20 (EVP)

- ⑦ PEDESTAL FOUNDATION (EVP)  
 12' PEDESTAL POLE (INCLUDES BASE) (EVP)  
 ONE WAY EVP DETECTOR-MOUNT ON TOP  
 OF PEDESTAL POLE (ON SLIPFITTER  
 COLLAR) (Ø6,1) (EVP)  
 EXTEND INTO H.H.11:  
 2"R.S.C. (EVP)  
 1-3/c#20 (EVP)

- H.H.4 TO H.H.5:  
 H.H.5 TO H.H.6:  
 2"R.S.C.  
 1-3/c#20 (EVP)  
 2-2/c#14  
 (\*\*) 2"R.S.C.  
 (\*\*) 1-6 SM/6 MM  
 FIBER-OPTIC CABLE

INTERCONNECT MATCH LINE "I" - SEE NEXT SHEET

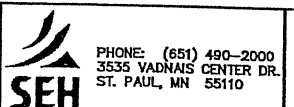
0271612\_SIGBASE-PERMDWG 06/07/2012

DRAWN BY:	JMG
DESIGNER:	JMG
CHECKED BY:	JMG
DESIGN TEAM	

NO.	BY	DATE	REVISIONS

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.

*John M. Gray*  
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 Date: June 7, 2012  
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**ANOKA COUNTY, MINNESOTA**  
 CITIES OF ANDOVER, ANOKA

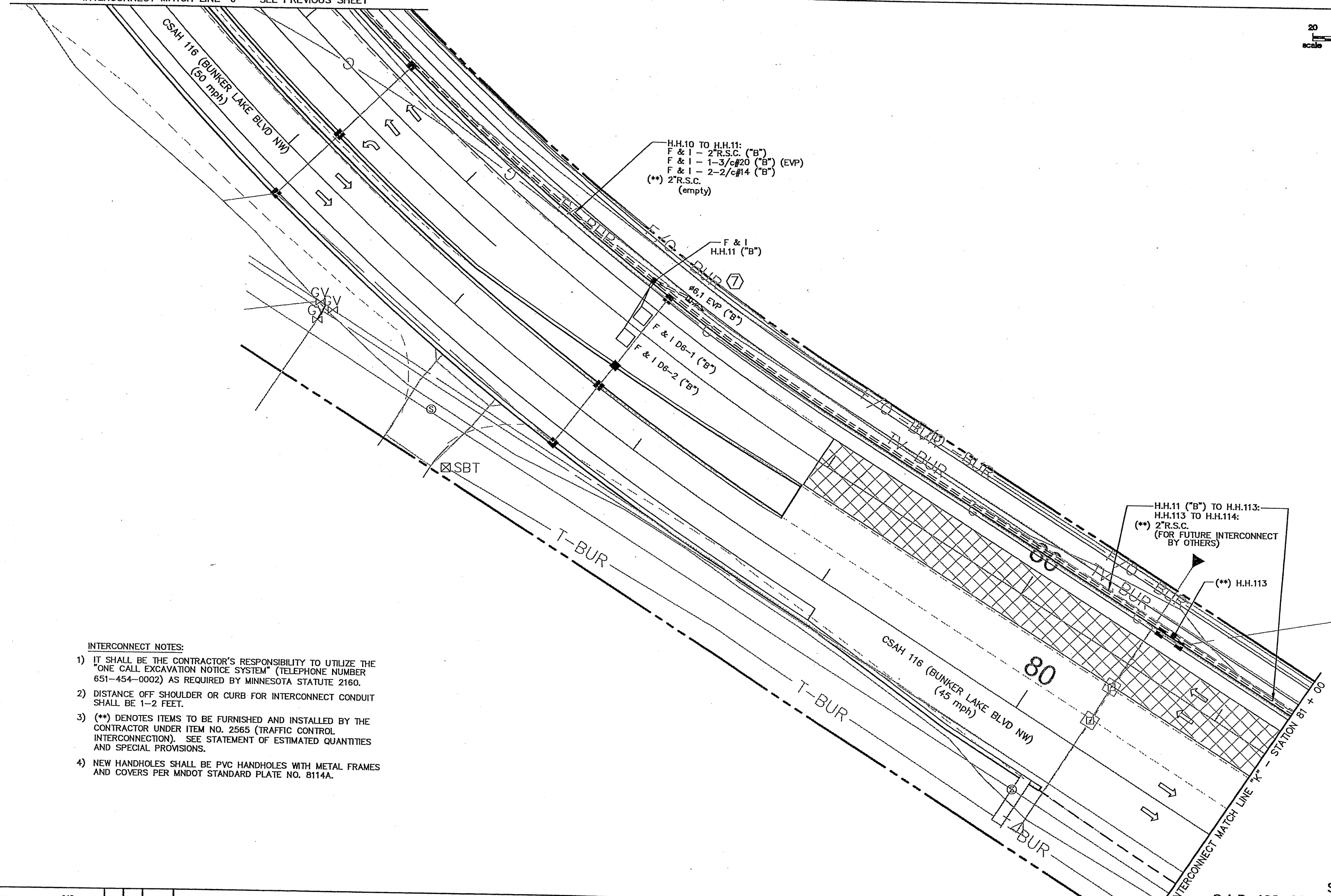
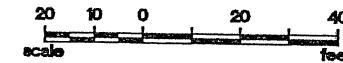
**TRAFFIC SIGNAL SYSTEM "B"**  
**INTERSECTION LAYOUT**  
**CSAH 116 AT 38TH AVENUE NW**

FILE NO.  
 ANOKC 120319  
 SIGNAL SHEET  
 18 OF 26

**201**  
**282**

S.P. 002-716-012  
 S.A.P. 103-020-014  
 S.A.P. 198-020-031

INTERCONNECT MATCH LINE "J" - SEE PREVIOUS SHEET



H.H.10 TO H.H.11:  
 F & I - 2"R.S.C. ("B")  
 F & I - 1-3/c#20 ("B") (EVP)  
 F & I - 2-2/c#14 ("B")  
 (\*\*) 2"R.S.C.  
 (empty)

F & I  
 H.H.11 ("B")

#6.1 EVP ("B")  
 F & I D6-1 ("B")  
 F & I D6-2 ("B")

H.H.11 ("B") TO H.H.113:  
 H.H.113 TO H.H.114:  
 (\*\*) 2"R.S.C.  
 (FOR FUTURE INTERCONNECT  
 BY OTHERS)

(\*\*) H.H.113

**INTERCONNECT NOTES:**

- 1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
- 2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1-2 FEET.
- 3) (\*\*) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MNDOT STANDARD PLATE NO. 8114A.

0271812\_SIGBASE-PERIM.DWG 06/07/2012

DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG

NO.	BY	DATE	REVISIONS

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**ANOKA COUNTY, MINNESOTA**  
 CITIES OF ANDOVER, ANOKA

TRAFFIC SIGNAL SYSTEM 'B'/INTERCONNECT  
 INTERSECTION LAYOUT  
 CSAH 116 (38TH AVE NW TO CSAH 9)

FILE NO. ANOKC 120319  
 SIGNAL SHEET 20 OF 26

203  
 282

S.P. 002-716-012  
 S.A.P. 103-020-014  
 S.A.P. 198-020-030 & 198-020-031

