



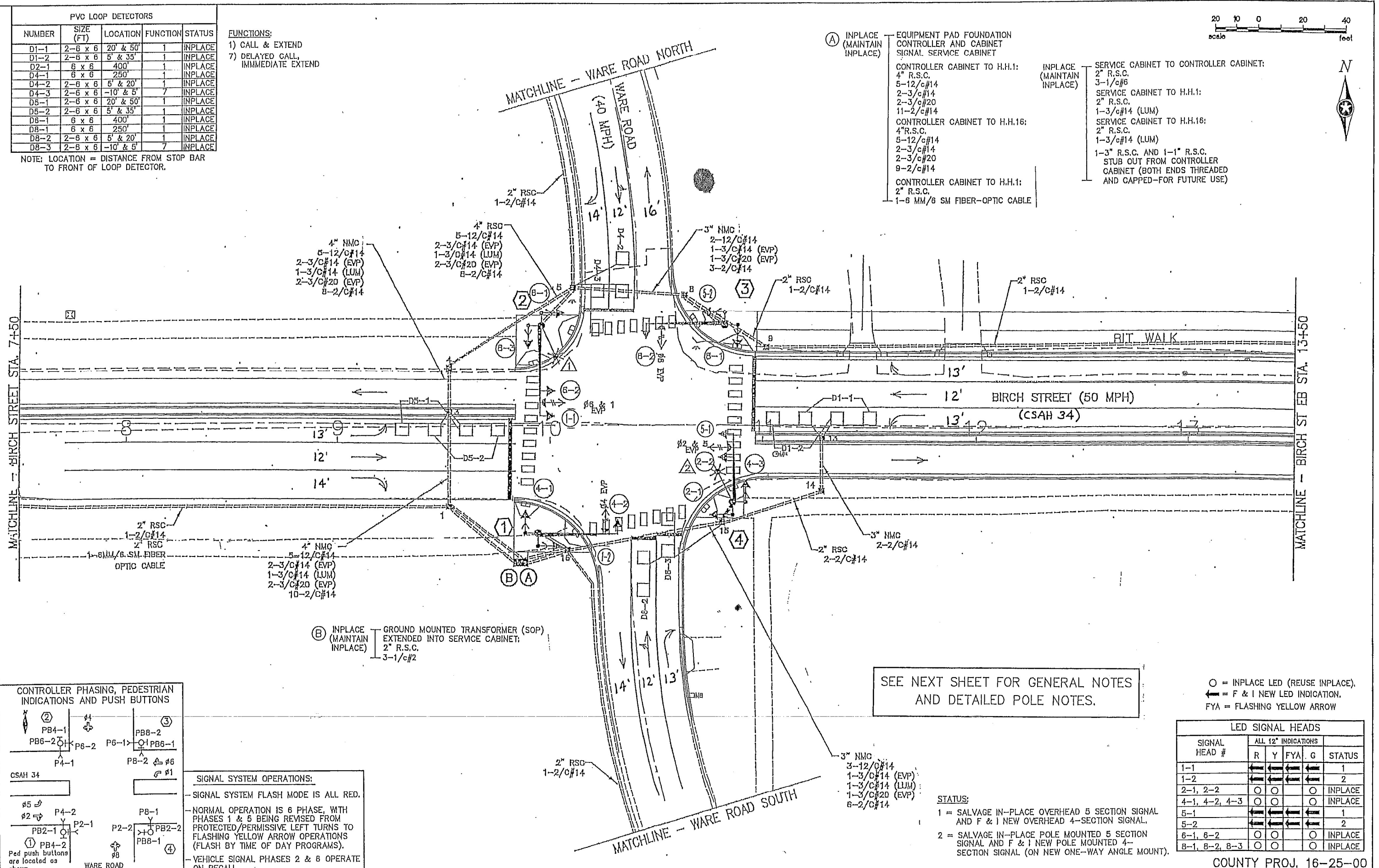
PVC LOOP DETECTORS				
NUMBER	SIZE (FT)	LOCATION	FUNCTION	STATUS
D1-1	2-6 x 6	20' & 50'	1	INPLACE
D1-2	2-6 x 6	5' & 35'	1	INPLACE
D2-1	6 x 6	400'	1	INPLACE
D4-1	6 x 6	250'	1	INPLACE
D4-2	2-6 x 6	5' & 20'	1	INPLACE
D4-3	2-6 x 6	-10' & 5'	7	INPLACE
D5-1	2-6 x 6	20' & 50'	1	INPLACE
D5-2	2-6 x 6	5' & 35'	1	INPLACE
D8-1	6 x 6	400'	1	INPLACE
D8-1	6 x 6	250'	1	INPLACE
D8-2	2-6 x 6	5' & 20'	1	INPLACE
D8-3	2-6 x 6	-10' & 5'	7	INPLACE

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

FUNCTIONS:
 1) CALL & EXTEND
 7) DELAYED CALL, IMMEDIATE EXTEND

(A) INPLACE (MAINTAIN INPLACE)
 EQUIPMENT PAD FOUNDATION
 CONTROLLER AND CABINET
 SIGNAL SERVICE CABINET
 CONTROLLER CABINET TO H.H.1:
 4" R.S.C.
 5-12/c#14
 2-3/c#14
 2-3/c#20
 11-2/c#14
 CONTROLLER CABINET TO H.H.16:
 4" R.S.C.
 5-12/c#14
 2-3/c#14
 2-3/c#20
 9-2/c#14
 CONTROLLER CABINET TO H.H.1:
 2" R.S.C.
 1-6 MM/6 SM FIBER-OPTIC CABLE

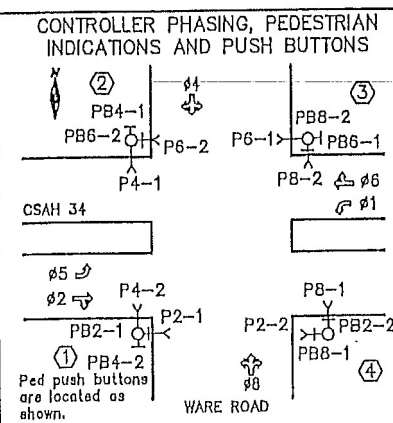
INPLACE (MAINTAIN INPLACE)
 SERVICE CABINET TO CONTROLLER CABINET:
 2" R.S.C.
 3-1/c#6
 SERVICE CABINET TO H.H.1:
 2" R.S.C.
 1-3/c#14 (LUM)
 SERVICE CABINET TO H.H.16:
 2" R.S.C.
 1-3/c#14 (LUM)
 1-3" R.S.C. AND 1-1" R.S.C.
 STUB OUT FROM CONTROLLER CABINET (BOTH ENDS THREADED AND CAPPED-FOR FUTURE USE)



(B) INPLACE (MAINTAIN INPLACE)
 GROUND MOUNTED TRANSFORMER (SOP) EXTENDED INTO SERVICE CABINET:
 2" R.S.C.
 3-1/c#2

SEE NEXT SHEET FOR GENERAL NOTES AND DETAILED POLE NOTES.

○ = INPLACE LED (REUSE INPLACE).
 ◀ = F & I NEW LED INDICATION.
 FYA = FLASHING YELLOW ARROW



SIGNAL SYSTEM OPERATIONS:
 - SIGNAL SYSTEM FLASH MODE IS ALL RED.
 - NORMAL OPERATION IS 6 PHASE, WITH PHASES 1 & 5 BEING REVISED FROM PROTECTED/PERMISSIVE LEFT TURNS TO FLASHING YELLOW ARROW OPERATIONS (FLASH BY TIME OF DAY PROGRAMS).
 - VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

STATUS:
 1 = SALVAGE IN-PLACE OVERHEAD 5 SECTION SIGNAL AND F & I NEW OVERHEAD 4-SECTION SIGNAL.
 2 = SALVAGE IN-PLACE POLE MOUNTED 5 SECTION SIGNAL AND F & I NEW POLE MOUNTED 4-SECTION SIGNAL (ON NEW ONE-WAY ANGLE MOUNT).

LED SIGNAL HEADS					
SIGNAL HEAD #	ALL 12" INDICATIONS				STATUS
	R	Y	FYA	G	
1-1	←	←	←	←	1
1-2	←	←	←	←	2
2-1, 2-2	○	○	○	○	INPLACE
4-1, 4-2, 4-3	○	○	○	○	INPLACE
5-1	←	←	←	←	1
5-2	←	←	←	←	2
6-1, 6-2	○	○	○	○	INPLACE
8-1, 8-2, 8-3	○	○	○	○	INPLACE

COUNTY PROJ. 16-25-00

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

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, PE

ANOKA COUNTY
 CITY OF LINO LAKES, MN
 PHONE: (651) 490-2000
 3535 VADNAIS CENTER DR.
 ST. PAUL, MN 55110

ANOKA COUNTY
 CITY OF LINO LAKES, MN

REVISE SIGNAL SYSTEM 'B'
 INTERSECTION LAYOUT
 CSAH 34 (BIRCH STREET) AT WARE ROAD

FILE NO. ANOK 136739
 DATE 09/23/2016
 12
 60

NOTES:

- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
- 2) ALL HANDHOLES ARE PVC HANDHOLES WITH METAL FRAMES AND COVERS AND ARE INPLACE (REUSE AND MAINTAIN INPLACE).
- 3) ALL PEDESTRIAN SIGNAL HEADS ARE ONE-SECTION LED "HAND/WALKING PERSON" COUNTDOWN TIMER INDICATIONS AND ARE INPLACE (REUSE AND MAINTAIN INPLACE).
- 4) ALL LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AND OPERATIONAL.
- 5) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL FACILITIES (CONDUIT, CABLES, HANDHOLES, SIGNAL POLES, ETC.), DUE TO TRAFFIC SIGNAL REVISION WORK, SHALL BE REPAIRED BY CONTRACTOR TO SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE COUNTY.
- 6) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY ENGINEER.
- 7) ALL NEW VEHICULAR SIGNAL HEADS SHALL HAVE BACKGROUND SHIELDS FURNISHED & INSTALLED BY CONTRACTOR. ALL INPLACE VEHICULAR SIGNAL HEADS BEING REUSED AS PART OF REVISE SIGNAL SYSTEM "B" HAVE BACKGROUND SHIELDS (REUSE AND MAINTAIN INPLACE).
- 8) F & I = NEW, FURNISH AND INSTALL.
S & I = INPLACE, SALVAGE AND INSTALL.
- 9) ALL NEW VEHICULAR SIGNAL HOUSINGS, BACKGROUND SHIELDS AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
- 10) SEE SPECIAL PROVISIONS REGARDING NEW TYPE C SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "REVISE SIGNAL SYSTEM B").

① INPLACE (MAINTAIN INPLACE) PA90 POLE FOUNDATION
 TYPE PA90-A-35
 1-ONE WAY SIGNAL-OVERHEAD AT 0' (4-2)
 (TURN HEAD TO ALIGN WITH LANE LINE)
 1-ONE WAY SIGNAL-POLE MOUNTED 180 DEG (4-1)
 2-SETS CD PED SIGNALS-POLE MOUNTED AT 90 DEG (P2-1) AND 180 DEG (P4-2)
 2-PEDESTRIAN PUSH BUTTONS & SIGNS
 TYPE D SIGN PANEL-OVERHEAD AT 10'
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (#4)
 EXTENDED INTO H.H.16;
 3" R.S.C.
 2-12/c#14
 1-3/c#14
 2-2/c#14
 1-3/c#20

INPLACE — ONE WAY SIGNAL AND MOUNT-POLE MOUNTED 90 DEG (OLD 6-4) (SALVAGE)
 F & I | 1-ONE WAY SIGNAL AND ANGLE MOUNT-POLE MOUNTED 90 DEG (NEW 1-2)
 | R10-12 (LEFT TURN YIELD ON GREEN) SIGN-ADJACENT TO 4-2

③ INPLACE (MAINTAIN INPLACE) PA90 POLE FOUNDATION
 TYPE PA90-A-35
 1-ONE WAY SIGNAL-OVERHEAD AT 0' (8-2)
 (TURN HEAD TO ALIGN WITH LANE LINE)
 1-ONE WAY SIGNAL-POLE MOUNTED 180 DEG (8-1)
 2-SETS CD PED SIGNALS-POLE MOUNTED AT 90 DEG (P8-1) AND 180 DEG (P8-2)
 2-PEDESTRIAN PUSH BUTTONS & SIGNS
 TYPE D SIGN PANEL-OVERHEAD AT 10'
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (#8)
 EXTENDED INTO H.H.8;
 3" R.S.C.
 2-12/c#14
 1-3/c#14
 2-2/c#14
 1-3/c#20

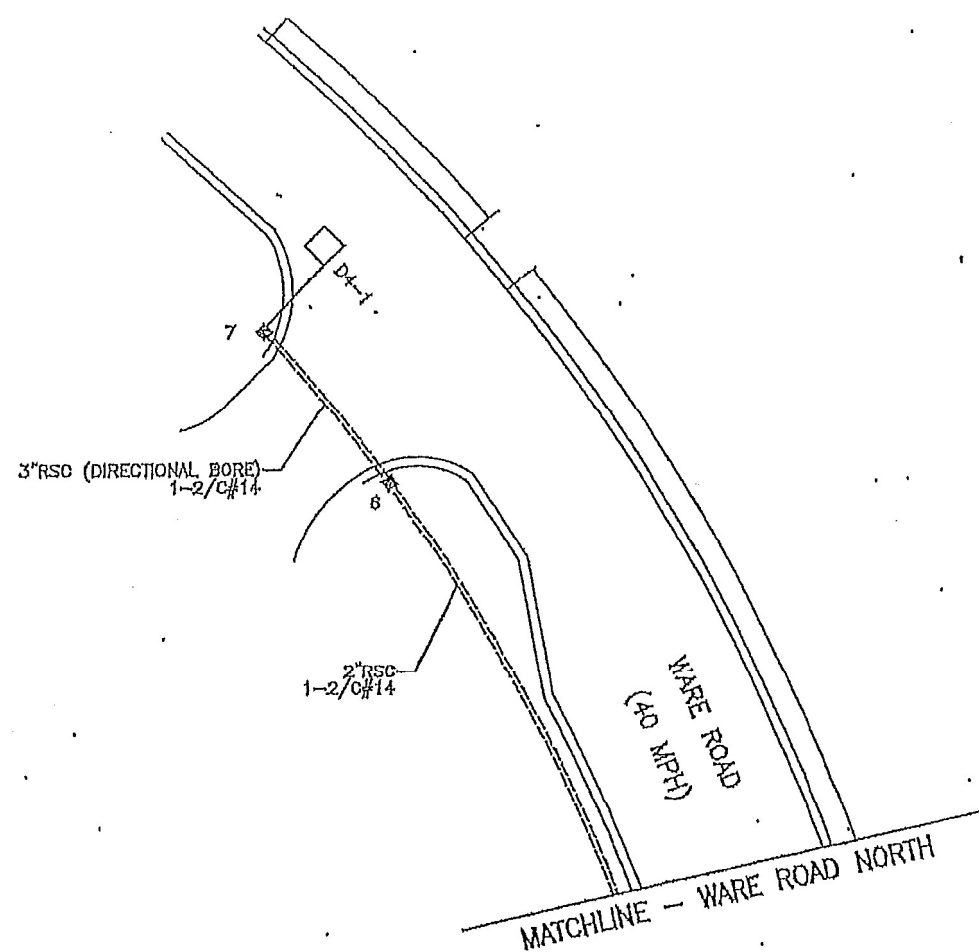
INPLACE — ONE WAY SIGNAL AND MOUNT-POLE MOUNTED 90 DEG (OLD 2-4) (SALVAGE)
 F & I | 1-ONE WAY SIGNAL AND ANGLE MOUNT-POLE MOUNTED 90 DEG (NEW 5-2)
 | R10-12 (LEFT TURN YIELD ON GREEN) SIGN-ADJACENT TO 8-2

② INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVT AT 350 DEG)
 LUMINAIRE-250 W HPS
 1-ONE WAY SIGNAL-OVERHEAD AT 11' (6-2)
 2-ONE WAY SIGNALS-POLE MOUNTED 90 DEG (8-3) AND 180 DEG (8-1)
 2-SETS CD PED SIGNALS-POLE MOUNTED AT 90 DEG (P4-1) AND 180 DEG (P8-2)
 TYPE D SIGN PANEL-OVERHEAD AT 18'
 2-PEDESTRIAN PUSH BUTTONS & SIGNS
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (#6,1)
 EXTENDED INTO H.H.5;
 3" R.S.C.
 3-12/c#14
 1-3/c#14
 2-2/c#14
 1-3/c#20
 1-3/c#14 (LUM)

INPLACE — ONE WAY SIGNAL AND MOUNT-OVERHEAD AT 0' (OLD 6-3) (SALVAGE)
 INPLACE — R10-12 SIGN PANEL-OVERHEAD (REMOVE)
 F & I | 1-ONE WAY SIGNAL AND ANGLE MOUNT-OVERHEAD AT 0' (NEW 1-1)
 | R10-X12 SIGN PANEL-ADJACENT TO 1-1

④ INPLACE (MAINTAIN INPLACE) PA90 POLE FOUNDATION
 TYPE PA90-A-30-D40-9 (DAVT AT 350 DEG)
 LUMINAIRE-250 W HPS
 1-ONE WAY SIGNAL-OVERHEAD AT 11' (2-2)
 2-ONE WAY SIGNALS-POLE MOUNTED 90 DEG (4-3) AND 180 DEG (2-1)
 2-SETS CD PED SIGNALS-POLE MOUNTED AT 90 DEG (P8-1) AND 180 DEG (P2-2)
 TYPE D SIGN PANEL-OVERHEAD AT 16'
 2-PEDESTRIAN PUSH BUTTONS & SIGNS
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (#2,5)
 EXTENDED INTO H.H.15;
 3" R.S.C.
 3-12/c#14
 1-3/c#14
 2-2/c#14
 1-3/c#20
 1-3/c#14 (LUM)

INPLACE — ONE WAY SIGNAL AND MOUNT-OVERHEAD AT 0' (OLD 2-3) (SALVAGE)
 INPLACE — R10-12 SIGN PANEL-OVERHEAD (REMOVE)
 F & I | 1-ONE WAY SIGNAL AND ANGLE MOUNT-OVERHEAD AT 0' (NEW 5-1)
 | R10-X12 SIGN PANEL-ADJACENT TO 5-1

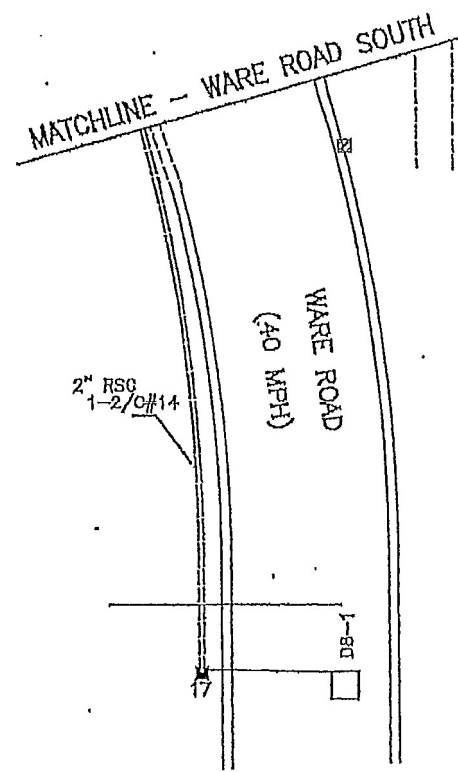
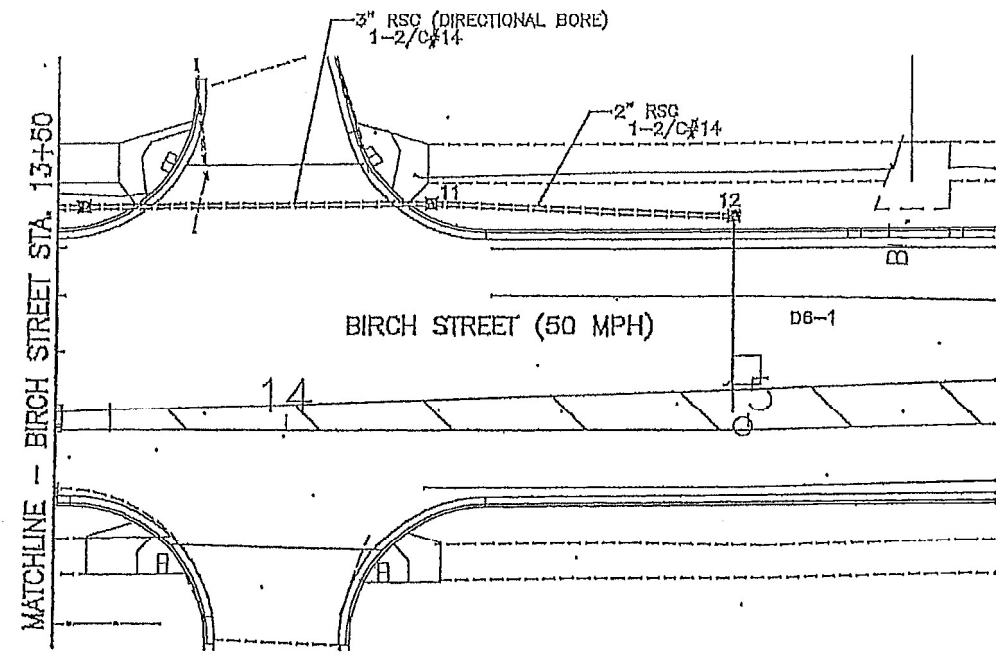


(A) INSTALL CONTROLLER AND CABINET
 (FURNISHED BY COUNTY)
 EQUIPMENT PAD FOUNDATION
 BETWEEN CONTROLLER AND CABINET AND SERVICE CABINET
 METERED SIGNAL SERVICE
 2" RSC
 3-1/0 #8
 4" RSC INTO HH 1:
 5-12/C#14
 2-3/C#14 (EVP)
 2-3/C#20 (EVP)
 1-2/C#14
 4" RSC INTO HH 18:
 5-12/C#14
 2-3/C#14 (EVP)
 2-3/C#20 (EVP)
 9-2/C#14
 2" RSC (INTERCONNECT) INTO HH1
 1-BMM/BSM FIBEROPTIC CABLE (INTERCONNECT)
 STUB OUT 3" RSC FROM CABINET TO EAST
 (THREAD AND CAP FOR FUTURE USE)
 STUB OUT 1" RSC FROM CABINET
 (FOR FUTURE PHONE LINE BY OTHERS)

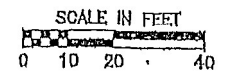
(B) SIGNAL SERVICE CABINET
 (ON SAME FOUNDATION AS CONTROLLER CABINET)
 2" RSC INTO HH 1:
 UNMETERED STREET LIGHT SERVICE
 1-3/C#14 (LUM)
 2" RSC INTO HH 18:
 UNMETERED STREET LIGHT SERVICE
 1-3/C#14 (LUM)
 STUB OUT 2" RSC FROM SERVICE CABINET TO WEST
 (FOR POWER CONNECTION)

(2) PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVT AT 350')
 LUMINAIRE 250W HPS
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
 1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED AT 90° AND 180°
 2-ANGLE MOUNT C.D. PED. INDICATIONS-POLE MOUNTED AT 90° AND 180°
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS
 1-SIGN R10-12 OVERHEAD AT 2'
 TYPE D SIGN PANEL-OVERHEAD (D-2)
 ONE WAY EVP DETECTOR AND LIGHT (#4,1) (EVP)
 3" RSC INTO HH 8:
 3-12/C#14
 1-3/C#14 (EVP)
 1-3/C#14 (LUM)
 1-3/C#20 (EVP)
 2-2/C#14

(3) PA90 POLE FOUNDATION
 TYPE PA90-A-35
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED AT 90° + 180°
 2-ANGLE MOUNT C.D. PED. INDICATIONS-POLE MOUNTED AT 90° + 180°
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS
 TYPE D SIGN PANEL-OVERHEAD (D-1)
 ONE WAY EVP DETECTOR AND LIGHT (#8) (EVP)
 3" RSC INTO HH 8:
 2-12/C#14
 1-3/C#14 (EVP)
 1-3/C#20 (EVP)
 2-2/C#14



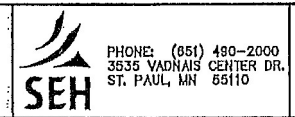
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COUNTY PROJ. 16-25-00

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 DESIGNER: JMG
 CHECKED BY: JMG

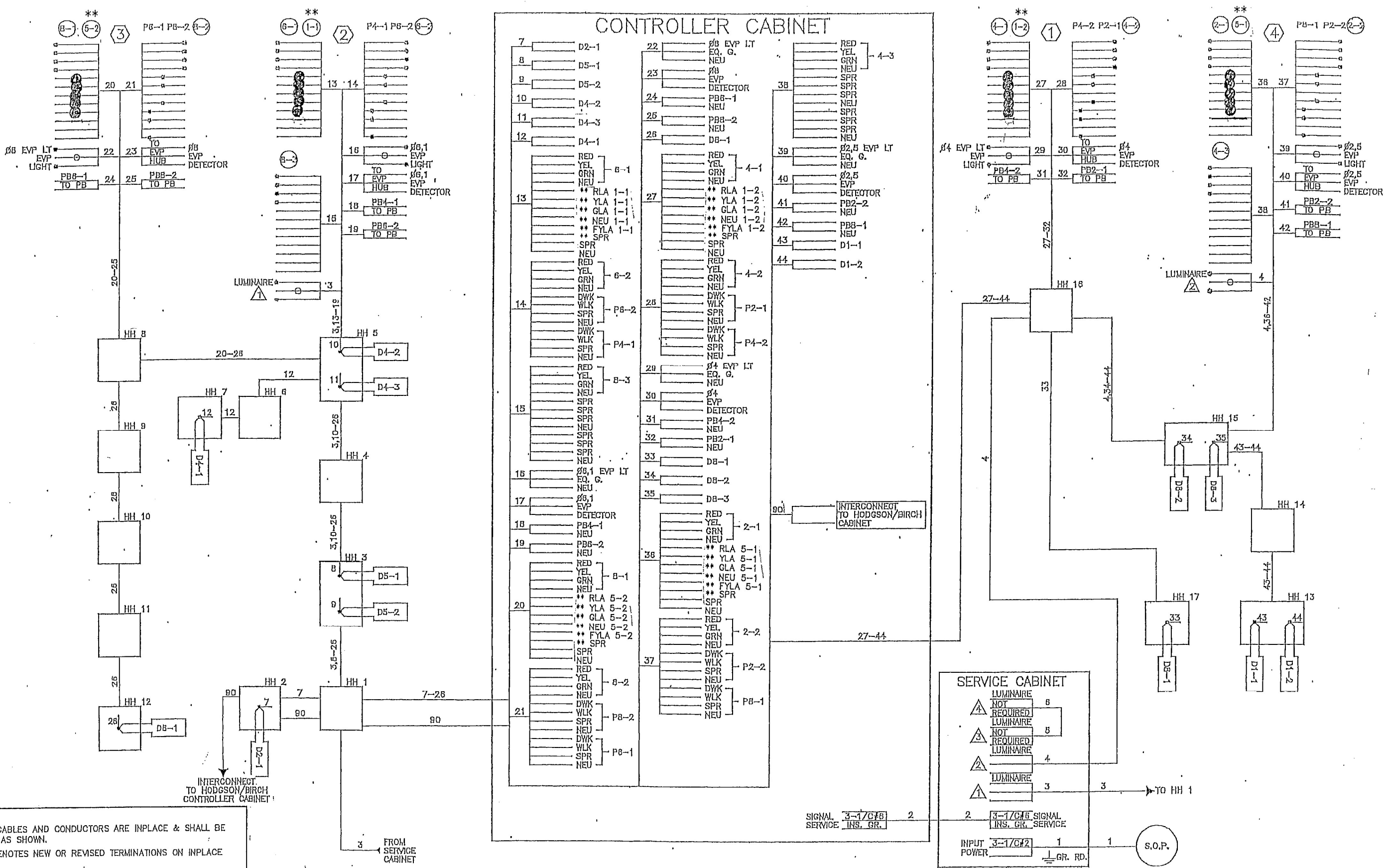
DESIGN TEAM	NO.	BY	DATE	REVISIONS



ANOKA COUNTY
 CITY OF LINO LAKES, MN

INPLACE SIGNAL SYSTEM 'B'
 'FOR INFORMATION ONLY'
 CSAH 34 (BIRCH STREET) AT WARE ROAD

FILE NO. ANOKA 138739
 DATE 09/23/2016
 16
 60



NOTES:
 1) ALL CABLES AND CONDUCTORS ARE IN PLACE & SHALL BE REUSED AS SHOWN.
 2) (1) DENOTES NEW OR REVISED TERMINATIONS ON INPLACE CABLES.
 3) ** DENOTES REVISED TERMINATIONS/LABELING ON INPLACE CABLES & CONDUCTORS IN POLE BASES, HANDHOLES, AND IN CONTROLLER CABINET.

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

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, PE

ANOKA COUNTY
 CITY OF LINO LAKES, MN

REVISE SIGNAL SYSTEM 'B'
 FIELD WIRING DIAGRAM

FILE NO. ANOKC 136739
 DATE

14
 60