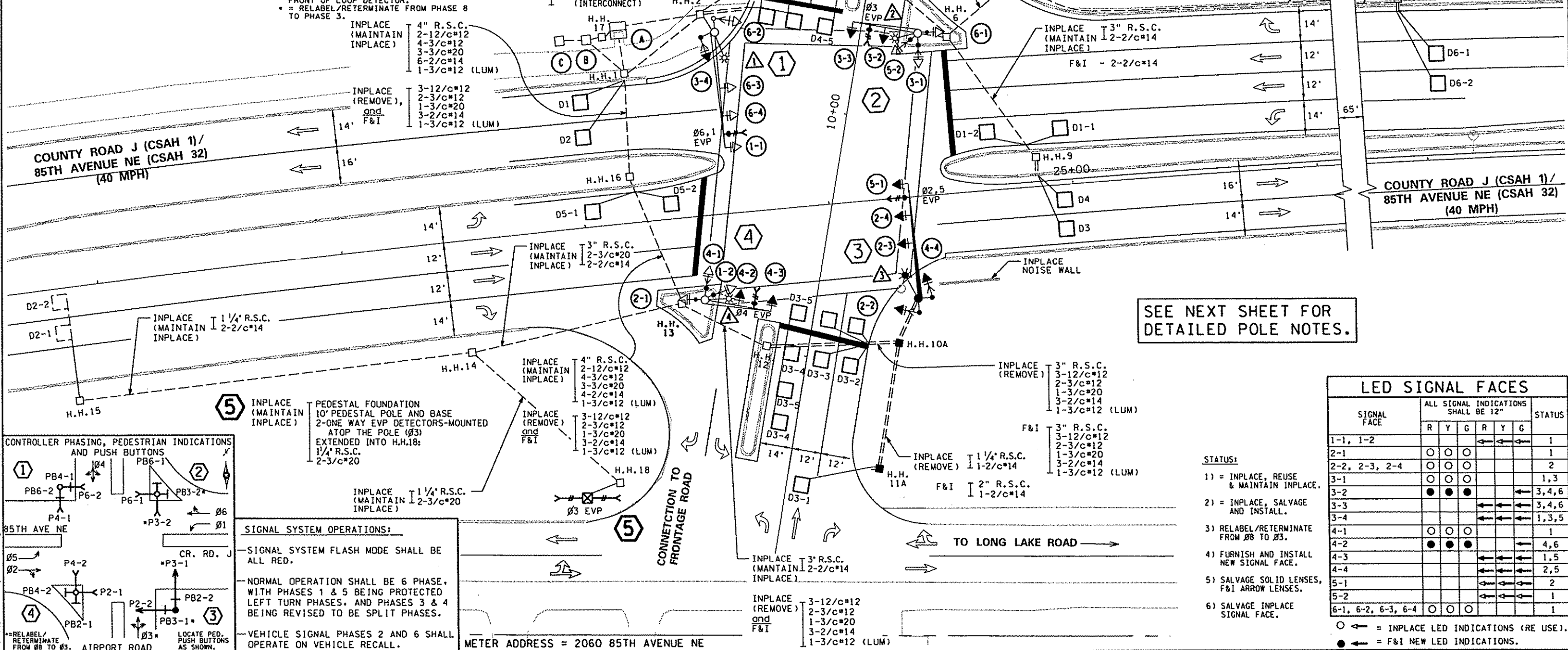


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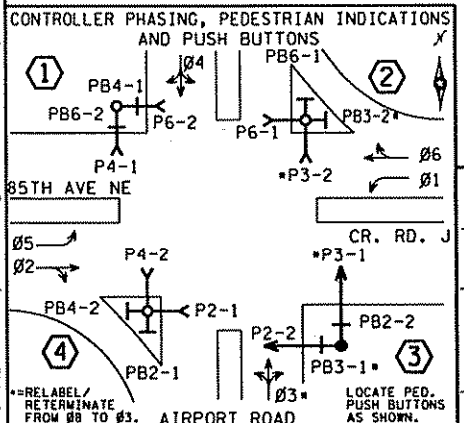
- NOTES:**
- 1) LOCATION OF POLES, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
 - 3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
 - 4) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - 5) EACH PEDESTRIAN INDICATION IS A ONE SECTION LED HAND/WALKING PERSON INDICATION, AND IS INPLACE.
 - 6) ALL NEW VEHICLE SIGNAL INDICATIONS SHALL BE LED.
 - 7) CONTRACTOR SHALL MAINTAIN OPERATION OF INPLACE SIGNAL SYSTEM AT ALL TIMES, UNTIL APPROVED BY ENGINEER FOR SIGNAL SYSTEM TO BE TURNED OFF.
 - 8) CONTRACTOR SHALL COORDINATE ALL TRAFFIC SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION TO BE COMPLETED BY OTHERS AS PART OF ENTIRE PROJECT.
 - 9) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR AS NOTED IN ESTIMATED QUANTITIES AND SPECIAL PROVISIONS (* DENOTES ITEMS INCLUDED UNDER THIS PAY ITEM).
 - 10) (S&I) = ITEMS TO BE SALVAGED AND INSTALLED BY CONTRACTOR.
(F&I) = ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.

NMC LOOP DETECTORS					
NUMBER	SIZE (FEET)	LOCATION	FUNCTION	STATUS	
D1-1	6x6	40'	1	F&I	
D1-2	6x6	10'	1	F&I	
D2-1	6x6	250'	1	INPLACE	
D2-2	6x6	250'	1	INPLACE	
D3-1	6x6	60'	2	F&I	
D3-2	2-6x6	5'	3	F&I	
D3-3	2-6x6	5'	3	F&I	
D3-4	2-6x6	5' & 35'	1	F&I	
D3-5	2-6x6	5' & 20'	1	F&I	
D4-1	2-6x6	120'	2	F&I	
D4-2	2-6x6	5'	3	F&I	
D4-3	2-6x6	5'	3	F&I	
D4-4	2-6x6	5' & 35'	1	F&I	
D4-5	2-6x6	5' & 20'	1	F&I	
D5-1	6x6	40'	1	F&I	
D5-2	6x6	10'	1	F&I	
D6-1	6x6	250'	1	F&I	
D6-2	6x6	250'	1	F&I	
D1	6x6	50'	4	F&I	
D2	6x6	50'	4	F&I	
D3	6x6	50'	4	F&I	
D4	6x6	50'	4	F&I	

- LOOP DETECTOR FUNCTIONS:**
- 1) = CALL AND EXTEND.
 - 2) = EXTEND ONLY.
 - 3) = DELAYED CALL, IMMEDIATE EXTEND.
 - 4) = COUNT DETECTOR.



SEE NEXT SHEET FOR DETAILED POLE NOTES.



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES. AND PHASES 3 & 4 BEING REVISED TO BE SPLIT PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

LED SIGNAL FACES							
SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"						STATUS
	R	Y	G	R	Y	G	
1-1, 1-2							1
2-1	○	○	○				1
2-2, 2-3, 2-4	○	○	○				2
3-1	○	○	○				1,3
3-2	●	●	●				3,4,6
3-3				←	←	←	3,4,6
3-4				←	←	←	1,3,5
4-1	○	○	○				1
4-2	●	●	●				4,6
4-3				←	←	←	1,5
4-4				←	←	←	2,5
5-1				←	←	←	2
5-2				←	←	←	1
6-1, 6-2, 6-3, 6-4	○	○	○				1

- STATUS:**
- 1) = INPLACE, REUSE & MAINTAIN INPLACE.
 - 2) = INPLACE, SALVAGE AND INSTALL.
 - 3) RELABEL/RETERMINATE FROM #8 TO #3.
 - 4) FURNISH AND INSTALL NEW SIGNAL FACE.
 - 5) SALVAGE SOLID LENSES, F&I ARROW LENSES.
 - 6) SALVAGE INPLACE SIGNAL FACE.

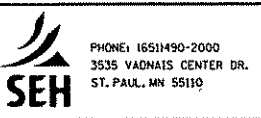
○ ← = INPLACE LED INDICATIONS (RE USE).
● ← = F&I NEW LED INDICATIONS.

DESIGN TEAM			
DRAWN BY:	CIF		
DESIGNER:	JMG		
CHECKED BY:	JMG		
NO.	BY	DATE	

REVISIONS			
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.

Certified By: *John M. Gray* Lic. No. 22457
Printed Name: JOHN M. GRAY Date: 02/17/2006



RAMSEY COUNTY
COUNTY ROAD J
S.A.P. 02-632-14. S.A.P. 62-601-11

REVISE SIGNAL SYSTEM "B"
INTERSECTION LAYOUT
COUNTY ROAD J/85TH AVENUE NE (CSAH 1/32)
AT AIRPORT ROAD

FILE NO. 259
ARAME0503
SG13
OF SGI 297

1 INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
 LUMINAIRE-200 W HPS W/ PEC
 AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD
 TYPE 10B - POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-4b)
 2-R6-1 SIGN PANELS - POLE MOUNTED 0° & 180°
 ONE WAY EVP DETECTOR AND LIGHT (Ø6.1)
 EXTENDED INTO H.H.2:
 3" R.S.C.
 3-12/c*12
 2-3/c*12
 1-3/c*20
 1-3/c*12 (LUM)

INPLACE (SALVAGE) TYPE 10B BRACKETING - POLE MOUNTED 90°
 ONE WAY SIGNAL - POLE MOUNTED (8-4)

INPLACE (S&I) - 1 SET PEDESTRIAN INDICATIONS (P4-1)

F&I TYPE 10B BRACKETING - POLE MOUNTED 90°
 ONE WAY SIGNAL - POLE MOUNTED (3-4)

2 INPLACE (MAINTAIN INPLACE) PA85 POLE FOUNDATION
 TYPE PA85-A-25-D40-9 (DAVIT AT 350°)
 LUMINAIRE-200 W HPS W/ PEC
 AND CHECK SWITCH
 2-TYPE 10B - POLE MOUNTED 0° & 270°
 TYPE 10A - POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-4b)
 TYPE D SIGN PANEL-OVERHEAD
 ONE WAY EVP DETECTOR AND LIGHT (Ø3)
 EXTENDED INTO H.H.6:
 3" R.S.C.
 2-12/c*12
 4-3/c*12
 1-3/c*20
 1-3/c*12 (LUM)

INPLACE (SALVAGE) 2-ONE WAY SIGNALS-OVERHEAD (8-2, 8-3)
 R10-12 SIGN PANEL-OVERHEAD

F&I - 2-ONE WAY SIGNALS-OVERHEAD (3-2, 3-3)

3 INPLACE (REMOVE) PA100 POLE FOUNDATION
 EXTENDED INTO H.H.10:
 3" R.S.C.
 3-12/c*12
 2-3/c*12
 1-3/c*20
 1-3/c*12 (LUM)

INPLACE (S&I) TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
 LUMINAIRE-200 W HPS W/ PEC
 AND CHECK SWITCH
 3-ONE WAY SIGNALS-OVERHEAD
 2-TYPE 10B - POLE MOUNTED 90° & 180°
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-4b)
 2-R6-1 SIGN PANELS - POLE MOUNTED 0° & 180°
 ONE WAY EVP DETECTOR AND LIGHT (Ø2.5)

F&I PA100 POLE FOUNDATION
 12" RLTA/YLTA/GLTA LENSES FOR 4-4
 (SALVAGE RYG LENSES)
 EXTENDED INTO H.H.10A:
 3" R.S.C.
 3-12/c*12
 2-3/c*12
 1-3/c*20
 1-3/c*12 (LUM)

4 INPLACE (MAINTAIN INPLACE) PA85 POLE FOUNDATION
 TYPE PA85-A-25-D40-9 (DAVIT AT 350°)
 LUMINAIRE-200 W HPS W/ PEC
 AND CHECK SWITCH
 ONE WAY SIGNAL-OVERHEAD (4-3)
 2-TYPE 10B - POLE MOUNTED 0° & 270°
 TYPE 10A - POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-4b)
 TYPE D SIGN PANEL-OVERHEAD
 ONE WAY EVP DETECTOR AND LIGHT (Ø4)
 EXTENDED INTO H.H.13:
 3" R.S.C.
 2-12/c*12
 4-3/c*12
 1-3/c*20
 1-3/c*12 (LUM)

INPLACE (SALVAGE) ONE WAY SIGNAL-OVERHEAD (4-2)
 R10-12 SIGN PANEL-OVERHEAD

F&I ONE WAY SIGNAL-OVERHEAD (4-2)
 12" RLTA/YLTA/GLTA LENSES FOR 4-3
 (SALVAGE RYG LENSES)

METER ADDRESS = 2060 85TH AVENUE NE

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

Certified By: *John M. Gray* Lic. No. 22457
 Printed Name: JOHN M. GRAY Date: 02/17/2006

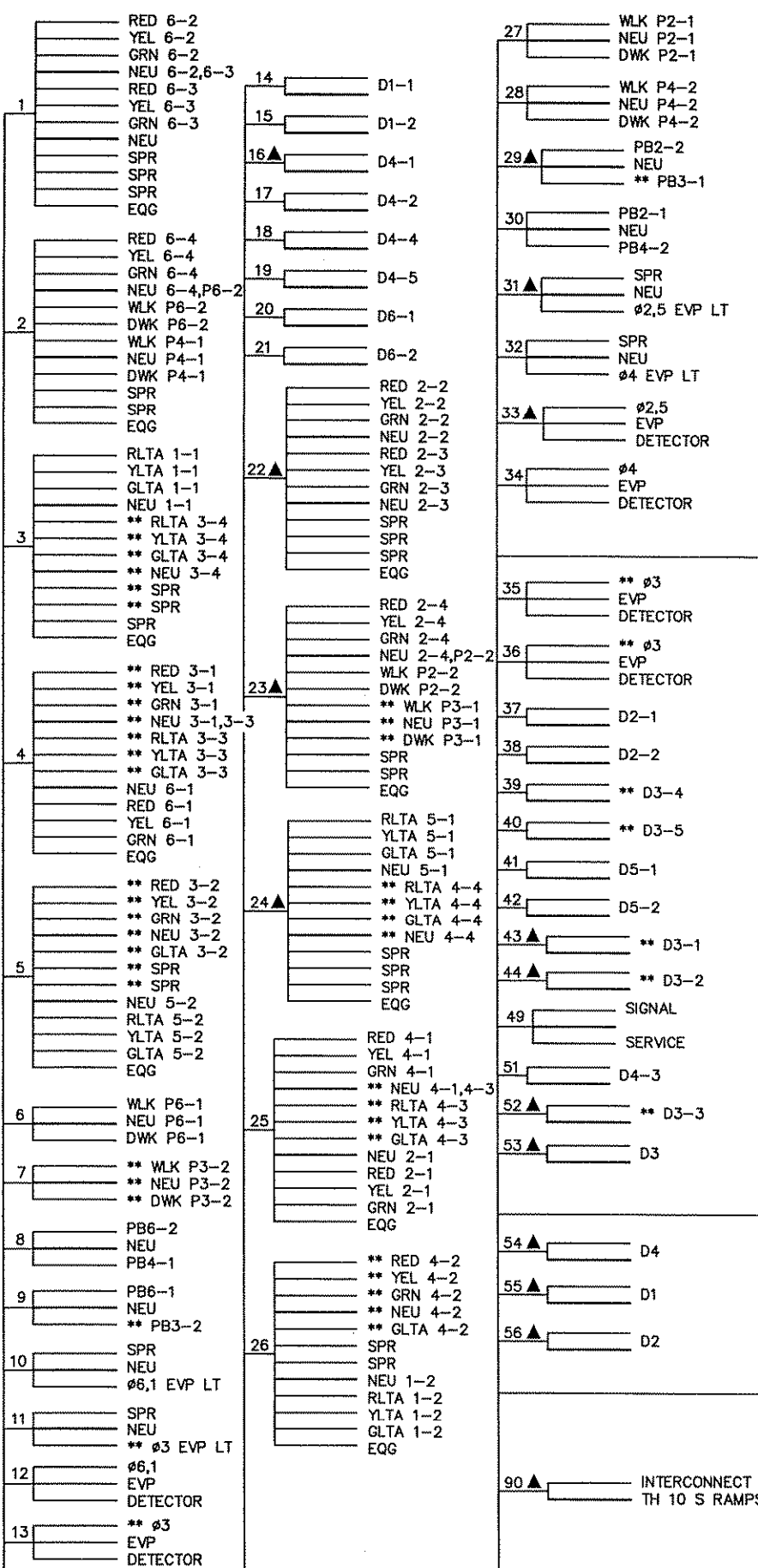


RAMSEY COUNTY
COUNTY ROAD J
 S.A.P. 02-632-14, S.A.P. 62-601-11

REVISE SIGNAL SYSTEM "B"
 INTERSECTION LAYOUT
 COUNTY ROAD J/85TH AVENUE NE (CSAH 1/32)
 AT AIRPORT ROAD

FILE NO. ARAMSE0503	260
SG14 OF SCS1	297

CONTROLLER AND CABINET

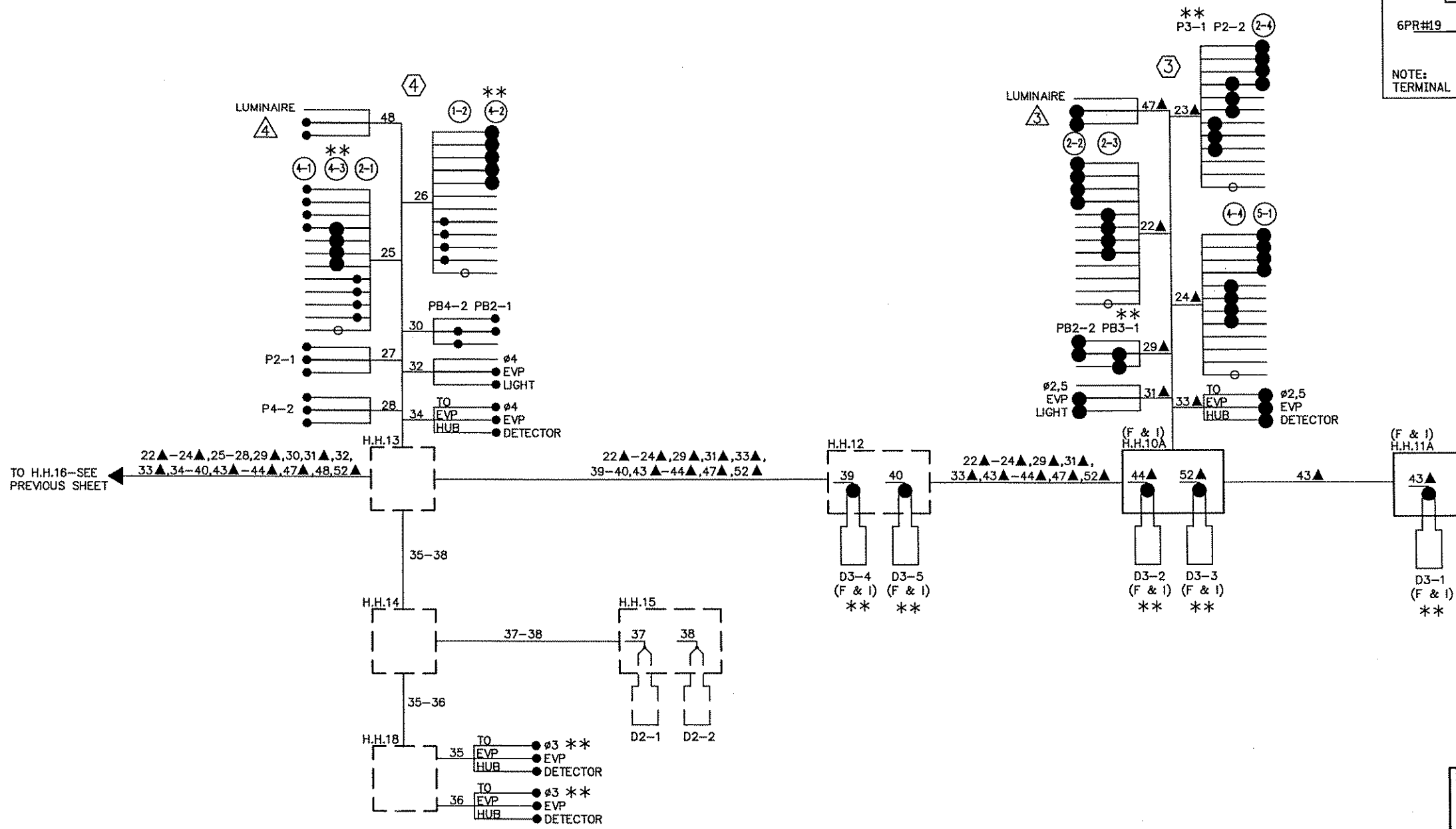


CONDUCTOR COLOR CODE

TO SIGNAL CABINET		TO DEVICE	
R	RED	R	RED
BL	BLK	BL	YEL
WH	WH	GRN	GRN
R/BLK	R/BLK	NEU	NEU
O/BLK	O/BLK	YLTA	YLTA
BL/BLK	BL/BLK	GLTA	GLTA
WH/BLK	WH/BLK	SPR	SPR
BLK	BLK	RED	RED
BLK/WH	BLK/WH	YEL	YEL
G/BLK	G/BLK	GRN	GRN
G	G	GLTA	GLTA
R	R	BLK	BLK
O	O	WH	WH
BL	BL	BLK	BLK
WH	WH	WH	WH
G	G	BLK	BLK
BLK	BLK	WH	WH
WH	WH	BLK	BLK
G	G	WH	WH
BLK	BLK	R	R
WH	WH	O	O
R	R	BL	BL
O	O	WH	WH
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
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O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
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BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
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BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
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R	R	RED	RED
O	O	YEL	YEL
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WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK	BLK	GLTA	GLTA
WH	WH	SPR	SPR
R	R	RED	RED
O	O	YEL	YEL
BL	BL	GRN	GRN
WH	WH	NEU	NEU
G	G	YLTA	YLTA
BLK			

CONDUCTOR COLOR CODE			
TO SIGNAL CABINET		TO DEVICE	
3/C#20 R OR O WH OR YEL BLK OR BL	12/C#12	R	R
		BL	BL
		WH	WH
		R/BLK	R/BLK
		O/BLK	O/BLK
		BL/BLK	BL/BLK
		WH/BLK	WH/BLK
		BLK	BLK
		BLK/WH	BLK/WH
		G/BLK	G/BLK
2/C#14 BLK CLR	5/C#12	R	R
		O	O
		BL	BL
2-1/C BLK WH	4/C#14	BL	BL
		WH	WH
6PR#19	3/C#12	BLK	BLK
		WH	WH
		R	R
		BASE OF POLE OR PEDESTAL	
		R	RED
		BL	BLK
		WH	YEL
		R/BLK	GRN
		O/BLK	NEU
		BL/BLK	5-SECTION SIGNAL INDICATION
		WH/BLK	YLTA
		BLK	GLTA
		BRN	SPR
		R	RED
		O	YEL
		BL	3 & 4- SECTION SIGNAL INDICATION
		BLK/WH	GRN
		WH	NEU
		BLK	GLTA
		BL	DWK
		WH	WLK
		G	PEDESTRIAN INDICATION
		BLK	NEU
		WH	SPR
		BLK	EVP/PB/FLASHER
		WH	NEU

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



METER ADDRESS = 2060 85TH AVENUE NE

- NOTES:
- 1) ALL CABLES AND CONDUCTORS ARE INPLACE & SHALL BE REUSED AS SHOWN, EXCEPT WHERE DENOTED BY ▲ ▲ CABLES AND CONDUCTORS TO BE FURNISHED AND INSTALLED BY CONTRACTOR).
 - 2) ● = INPLACE TERMINATION.
 - 3) ● = NEW TERMINATION ON INPLACE OR NEW CABLE.
 - 4) F & I = LOOP DETECTOR/HANDHOLE TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
 - 5) ** = RELABEL INPLACE/ADD NEW VEHICLE OR PEDESTRIAN SIGNAL INDICATION OR LOOP DETECTOR AS SHOWN.

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

Certified By: *John M. Gray* Lic.No. 22457
Printed Name: JOHN M. GRAY Date: 12/15/05



RAMSEY COUNTY
COUNTY ROAD J
S.A.P. 02-632-14, S.A.P. 62-601-11

REVISE SIGNAL SYSTEM "B"
FIELD WIRING DIAGRAM
COUNTY ROAD J/85TH AVENUE NE (CSAH 1/32)
AT AIRPORT ROAD

FILE NO. ARAME0503	262
SG16 OF SG51	297

X:\NO RAMSEY\050300A\2/SIGNAL/SIGNAL.WIRING