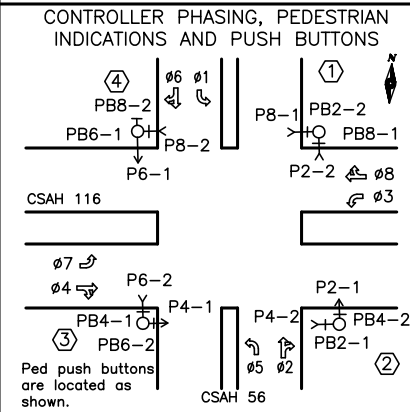
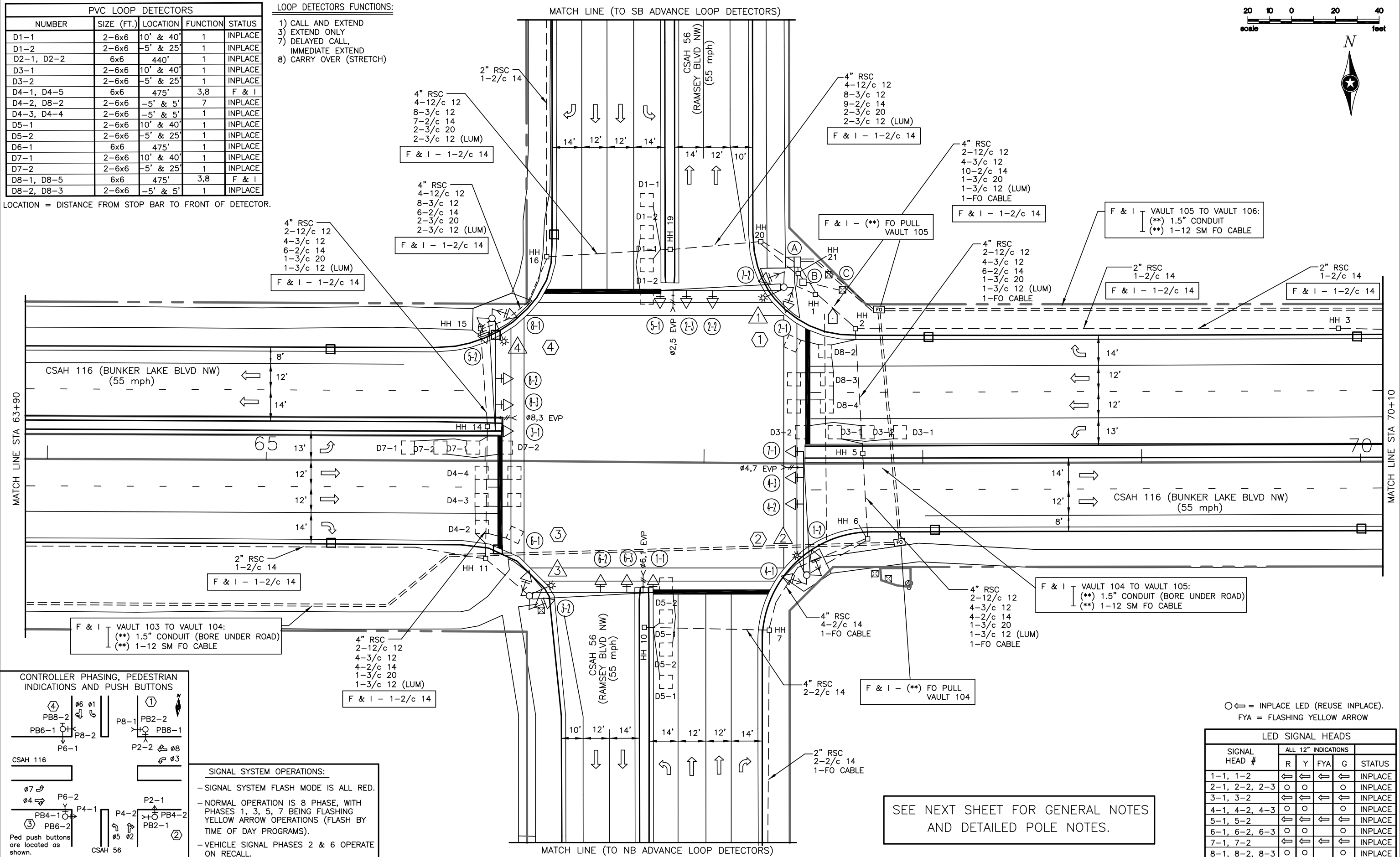
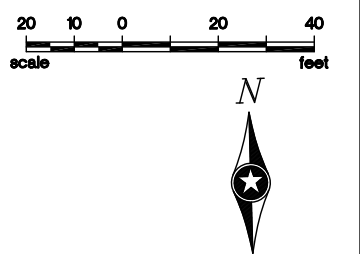


PVC LOOP DETECTORS				
NUMBER	SIZE (FT.)	LOCATION	FUNCTION	STATUS
D1-1	2-6x6	10' & 40'	1	INPLACE
D1-2	2-6x6	-5' & 25'	1	INPLACE
D2-1, D2-2	6x6	440'	1	INPLACE
D3-1	2-6x6	10' & 40'	1	INPLACE
D3-2	2-6x6	-5' & 25'	1	INPLACE
D4-1, D4-5	6x6	475'	3,8	F & I
D4-2, D8-2	2-6x6	-5' & 5'	7	INPLACE
D4-3, D4-4	2-6x6	-5' & 5'	1	INPLACE
D5-1	2-6x6	10' & 40'	1	INPLACE
D5-2	2-6x6	-5' & 25'	1	INPLACE
D6-1	6x6	475'	1	INPLACE
D7-1	2-6x6	10' & 40'	1	INPLACE
D7-2	2-6x6	-5' & 25'	1	INPLACE
D8-1, D8-5	6x6	475'	3,8	F & I
D8-2, D8-3	2-6x6	-5' & 5'	1	INPLACE

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

LOCATION = DISTANCE FROM STOP BAR TO FRONT OF DETECTOR.



- SIGNAL SYSTEM OPERATIONS:
- SIGNAL SYSTEM FLASH MODE IS ALL RED.
 - NORMAL OPERATION IS 8 PHASE, WITH PHASES 1, 3, 5, 7 BEING FLASHING YELLOW ARROW OPERATIONS (FLASH BY TIME OF DAY PROGRAMS).
 - VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

SEE NEXT SHEET FOR GENERAL NOTES AND DETAILED POLE NOTES.

LED SIGNAL HEADS

SIGNAL HEAD #	ALL 12" INDICATIONS				STATUS
	R	Y	FYA	G	
1-1, 1-2	←	←	←	←	INPLACE
2-1, 2-2, 2-3	○	○	○	○	INPLACE
3-1, 3-2	←	←	←	←	INPLACE
4-1, 4-2, 4-3	○	○	○	○	INPLACE
5-1, 5-2	←	←	←	←	INPLACE
6-1, 6-2, 6-3	○	○	○	○	INPLACE
7-1, 7-2	←	←	←	←	INPLACE
8-1, 8-2, 8-3	○	○	○	○	INPLACE

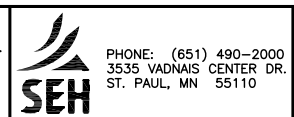
DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG

NO.	BY	DATE
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NO.	BY	DATE

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John M. Gray
Name: John M. Gray, PE
Lic. No. 22457
Date: July 7, 2021

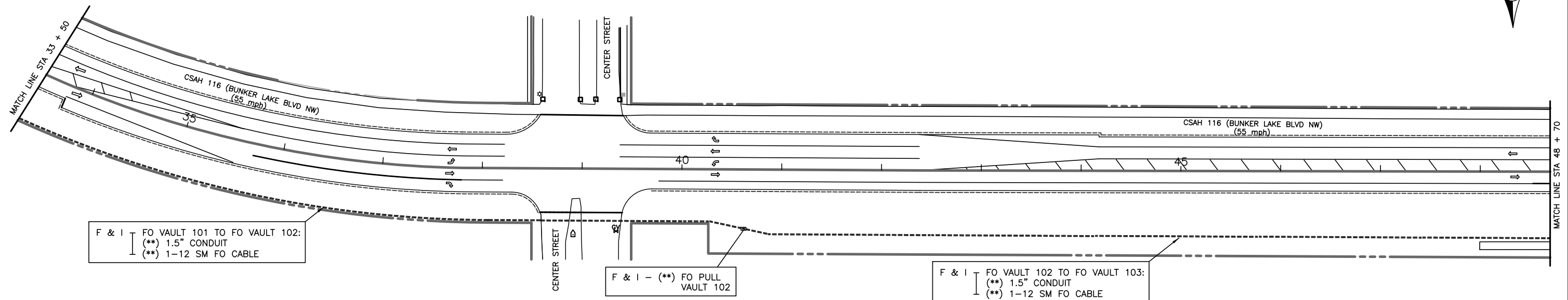
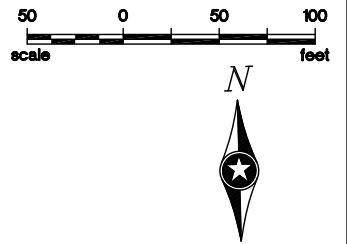


ANOKA COUNTY, MN
CITY OF RAMSEY
SAP 002-716-021
SAP 199-104-014

REVISE SIGNAL SYSTEM 'B'
INTERSECTION LAYOUT
CSAH 116 (BUNKER LAKE BLVD NW)
AT CSAH 56 (RAMSEY BLVD NW)

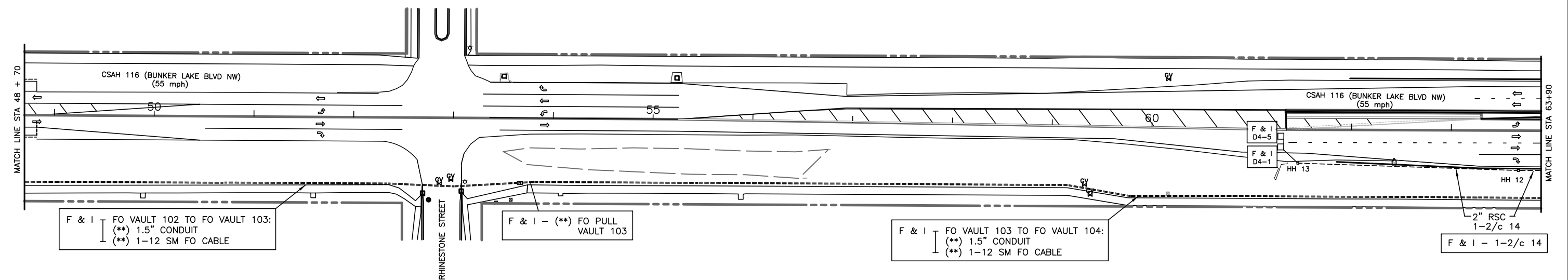
FILE NO. ANOKC 159572
SIGNAL SHEET 14 OF 25
193
259

NOTE SCALE CHANGE ON THIS SHEET.



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 AS DETERMINED IN THE FIELD BY THE ENGINEER.
- 3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
- 5) NEW LOOP DETECTORS FOR EB CSAH 116 WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 2565 (REVISE SIGNAL SYSTEM B).



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 CHECKED BY: JMG
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 Lic. No. 22457
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 ST. PAUL, MN 55110

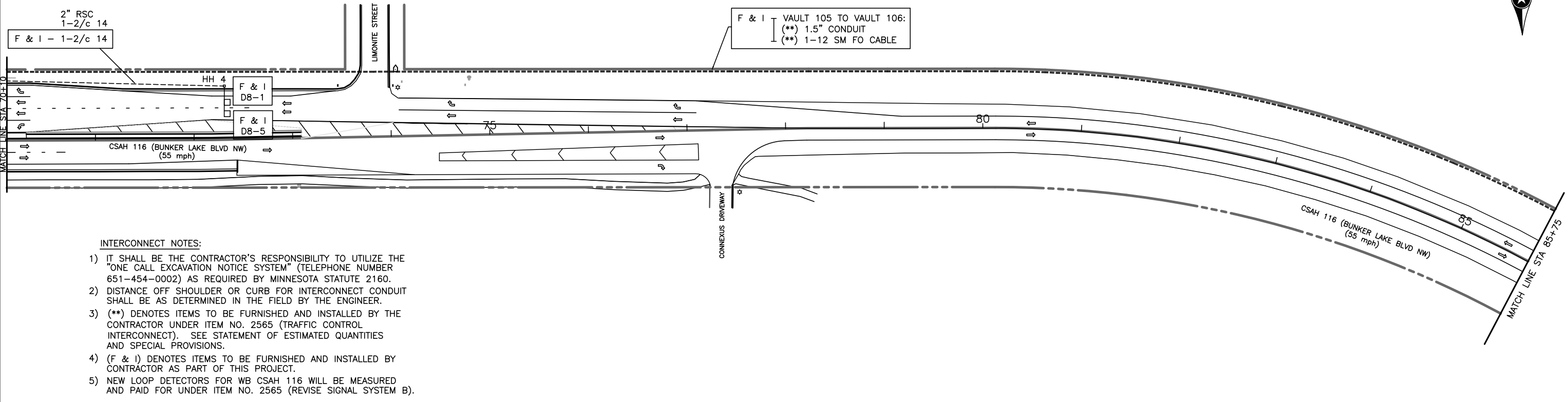
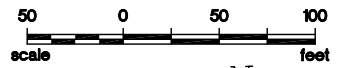
ANOKA COUNTY, MN
 CITY OF RAMSEY
 SAP 002-716-021
 SAP 199-104-014

REVISE SIGNAL "B"/INTERCONNECT
 INTERSECTION LAYOUT
 CSAH 116 (BUNKER LAKE BLVD NW)
 (CSAH 83 TO CSAH 56)

FILE NO.
 ANOKC 159572
 SIGNAL SHEET
 13 OF 25

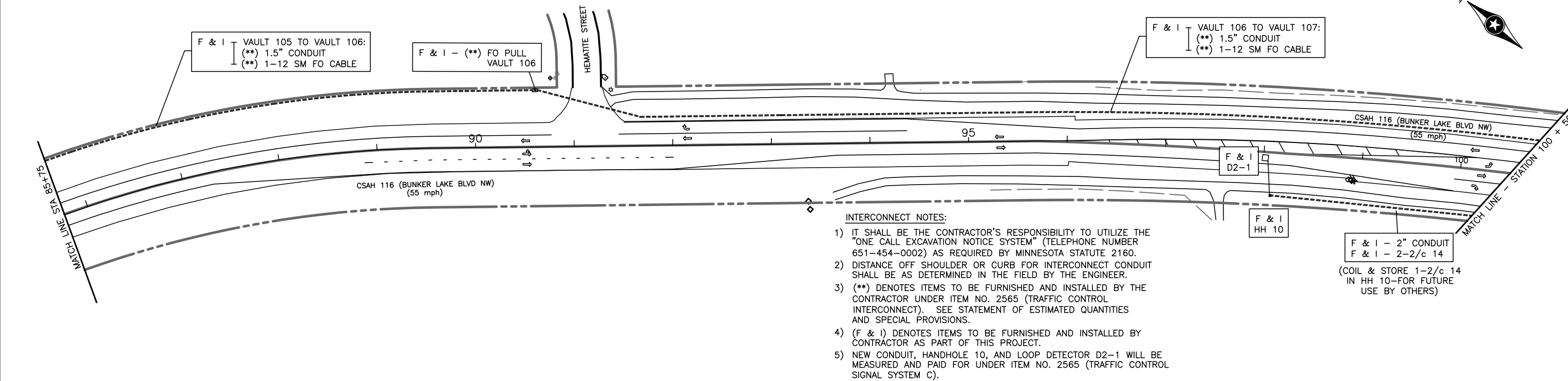
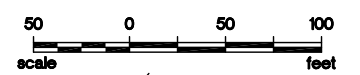
192
 259

NOTE SCALE CHANGE ON THIS SHEET.



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 AS DETERMINED IN THE FIELD BY THE ENGINEER.
- 3) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
- 5) NEW LOOP DETECTORS FOR WB CSAH 116 WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 2565 (REVISE SIGNAL SYSTEM B).



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 AS DETERMINED IN THE FIELD BY THE ENGINEER.
- 3) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) (F & I) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THIS PROJECT.
- 5) NEW CONDUIT, HANDHOLE 10, AND LOOP DETECTOR D2-1 WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM C).

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ANOKA COUNTY, MN
CITY OF RAMSEY
 SAP 002-716-021
 SAP 199-104-014

SIGNAL SYSTEMS "B-C"/INTERCONNECT
INTERSECTION LAYOUT
 CSAH 116 (BUNKER LAKE BLVD NW)
 (CSAH 56 TO SUNWOOD DRIVE)

FILE NO. ANOKC 159572
 SIGNAL SHEET 17 OF 25
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REVISE SIGNAL SYSTEM B NOTES:

- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
- 2) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING PVC HANDHOLES (WITH METAL FRAMES AND COVERS) IN THE VICINITY OF CONSTRUCTION, AND SHALL ADJUST HANDHOLES 4 AND 13 AS NEEDED TO MATCH FINISHED SURROUNDING GRADE AFTER ROAD WORK HAS BEEN COMPLETED. SEE SPECIAL PROVISIONS (INCIDENTAL).
- 3) LOCATION OF FIBER VAULT AND LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 5) ALL LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AND OPERATIONAL, EXCEPT AS FOLLOWS: CONTRACTOR SHALL FURNISH AND INSTALL NEW LOOP DETECTORS D4-1, D4-5, D8-1, D8-5 IN PVC AS PER THE DETAILS INCLUDED ELSEWHERE IN THESE PLANS. LOOP DETECTOR WIRES FOR NEW LOOP DETECTORS SHALL BE CROSS-LINKED POLY-ETHYLENE (XLP) #12 AWG IN 3/4" NMC. SEE SPECIAL PROVISIONS.
- 6) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL FACILITIES (CONDUIT, CABLES, HANDHOLES, SIGNAL POLES, ETC.), DUE TO TRAFFIC SIGNAL OR ROAD WORK, SHALL BE REPAIRED BY CONTRACTOR TO SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE COUNTY.
- 7) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY ENGINEER.
- 8) ALL VEHICULAR HEADS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE (ALL HAVE BACKGROUND SHIELDS).
- 9) F & I = NEW, FURNISH AND INSTALL.
- 10) ALL CABLES AND CONDUCTORS, CONDUIT, HANDHOLES, AND LOOP DETECTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED OTHERWISE.
- 11) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.

① INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 11', 23'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
 R10-X12 SIGN-ADJACENT TO 5-1
 TYPE D SIGN PANEL-OVERHEAD AT 30'
 2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (ø2,5)
 EXTENDED INTO HH 1:
 3" RSC
 2-12/c 12
 4-3/c 12
 1-3/c 20
 1-3/c 12 (LUM)

② INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 11', 23'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
 R10-X12 SIGN-ADJACENT TO 7-1
 TYPE D SIGN PANEL-OVERHEAD AT 30'
 2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (ø4,7)
 EXTENDED INTO HH 6:
 3" RSC
 2-12/c 12
 4-3/c 12
 1-3/c 20
 1-3/c 12 (LUM)

③ INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 11', 23'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
 R10-X12 SIGN-ADJACENT TO 1-1
 TYPE D SIGN PANEL-OVERHEAD AT 30'
 2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (ø6,1)
 EXTENDED INTO HH 11:
 3" RSC
 2-12/c 12
 4-3/c 12
 1-3/c 20
 1-3/c 12 (LUM)

④ INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 11', 23'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
 R10-X12 SIGN-ADJACENT TO 3-1
 TYPE D SIGN PANEL-OVERHEAD AT 30'
 2-R6-1 SIGN PANELS-POLE MOUNTED 0/180 DEG
 ONE WAY EVP DETECTOR AND LIGHT AT 6' (ø8,3)
 EXTENDED INTO HH 15:
 3" RSC
 2-12/c 12
 4-3/c 12
 1-3/c 20
 1-3/c 12 (LUM)

Ⓐ INPLACE (MAINTAIN INPLACE) CABINET FOUNDATION
 CONTROLLER AND CABINET
 CONTROLLER CABINET TO HH 1:
 4" RSC
 4-12/c 12
 8-3/c 12 F & I - 1-2/c 14
 2-3/c 20
 10-2/c 14
 1-FIBER OPTIC CABLE
 CONTROLLER CABINET TO HH 20:
 4" RSC
 4-12/c 12
 8-3/c 12 F & I - 1-2/c 14
 2-3/c 20
 10-2/c 14
 CONTROLLER CABINET TO HH 21:
 2" RSC
 METERED SIGNAL SERVICE
 3-1/c 6
 2-3" RSC STUB OUTS FROM CONTROLLER CABINET (BOTH ENDS THREADED AND CAPPED FOR FUTURE USE)
 F & I CONTROLLER CABINET TO FO VAULT 105:
 (**) 3" RSC STUB OUT FROM CABINET (EXTEND INTO VAULT 105)
 (**) 2-12 SM FO CABLES

Ⓑ INPLACE (MAINTAIN INPLACE) CABINET FOUNDATION
 SIGNAL SERVICE CABINET
 EXTENDED INTO HH 21:
 2" RSC
 METERED SIGNAL SERVICE
 3-1/c 6
 UNMETERED STREET LIGHT SERVICE
 4-3/c 12 (LUM)
 EXTENDED TO SOURCE OF POWER:
 2" RSC
 3-1/c 2

Ⓒ INPLACE (MAINTAIN INPLACE) GROUND MOUNTED TRANSFORMER (SOP)
 EXTENDED TO SERVICE CABINET:
 2" RSC
 3-1/c 2

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DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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 ST. PAUL, MN 55110

ANOKA COUNTY, MN
 CITY OF RAMSEY
 SAP 002-716-021
 SAP 199-104-014

REVISE SIGNAL SYSTEM 'B'
 SIGNAL SYSTEM NOTES
 CSAH 116 (BUNKER LAKE BLVD NW)
 AT CSAH 56 (RAMSEY BLVD NW)

FILE NO.
 ANOKC 159572
 SIGNAL SHEET
 15 OF 25

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 259

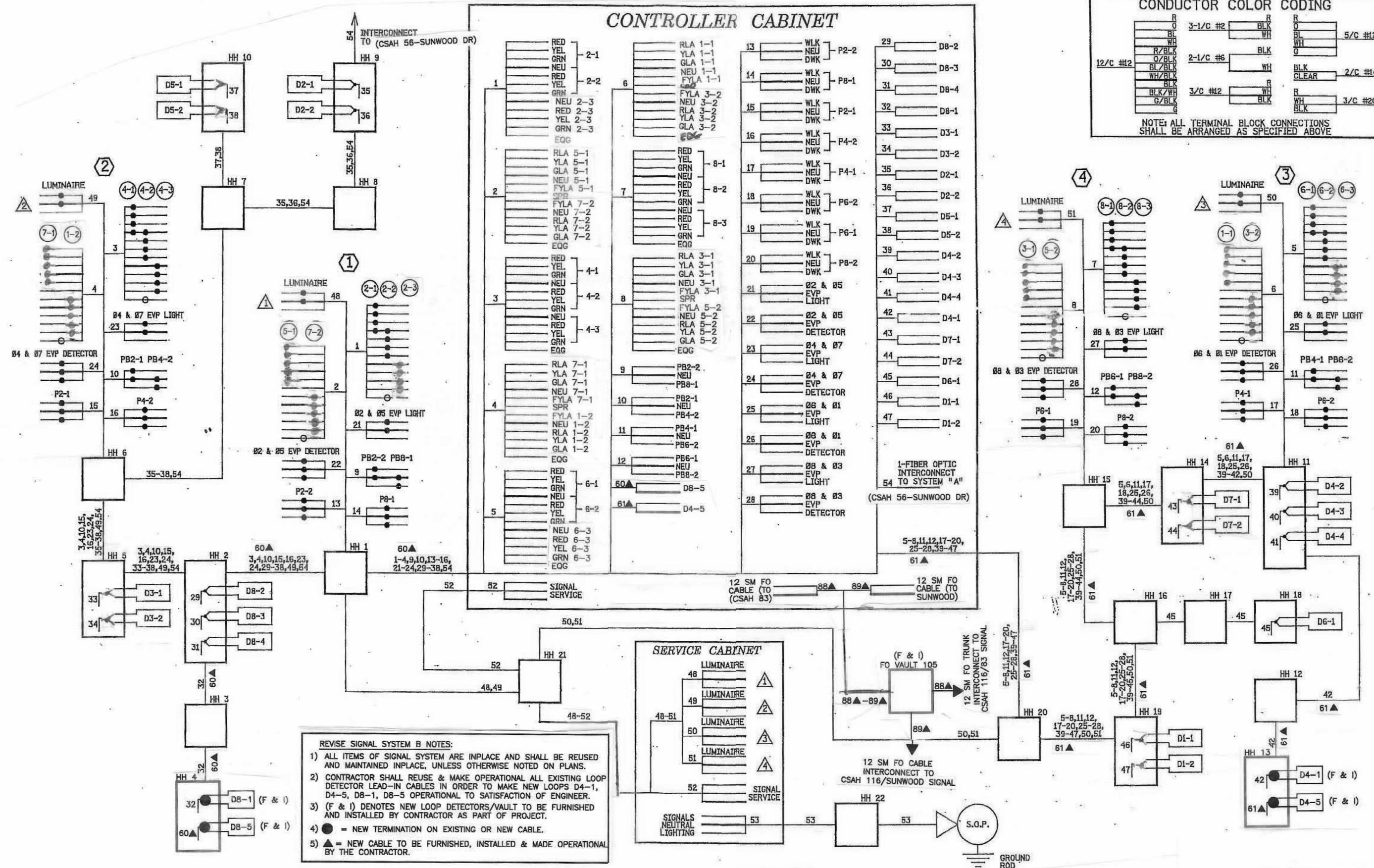
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CONDUCTOR COLOR CODING

R	R	R
O	BLK	BLK
BL	WH	WH
WH		
R/BLK	BLK	5/C #12
O/BLK		
BL/BLK	WH	BLK
WH/BLK		CLEAR
BLK	R	2/C #14
BLK/WH	BLK	R
G/BLK		WH
		BLK
		3/C #20

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

CONTROLLER CABINET



- REVISE SIGNAL SYSTEM B NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
 - 2) CONTRACTOR SHALL REUSE & MAKE OPERATIONAL ALL EXISTING LOOP DETECTOR LEAD-IN CABLES IN ORDER TO MAKE NEW LOOPS D4-1, D4-5, D8-1, D8-5 OPERATIONAL TO SATISFACTION OF ENGINEER.
 - 3) (F & I) DENOTES NEW LOOP DETECTORS/VAULT TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF PROJECT.
 - 4) ● = NEW TERMINATION ON EXISTING OR NEW CABLE.
 - 5) ▲ = NEW CABLE TO BE FURNISHED, INSTALLED & MADE OPERATIONAL BY THE CONTRACTOR.

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 DESIGNER: JMG
 CHECKED BY: JMG
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ANOKA COUNTY, MN
 CITY OF RAMSEY
 SAP 002-716-021
 SAP 199-104-014

REVISE SIGNAL SYSTEM 'B'
 FIELD WIRING DIAGRAM
 CSAH 116 (BUNKER LAKE BLVD NW)
 AT CSAH 56 (RAMSEY BLVD NW)

FILE NO.
 ANOKC 159572
 SIGNAL SHEET
 16 OF 25

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