

NMC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	10' & 40'	1
D1-2	2-6x6	0' & 25'	1
D2-1	6x6	350'	1
D3-1	2-6x6	10' & 40'	1
D3-2	2-6x6	0' & 25'	1
D4-1, D4-2	6x6	240'	3
D4-3, D4-4	2-6x6	0' & 10'	1
D4-5	4-6x6	AS SHOWN	7
D5-1	2-6x6	10' & 40'	1
D5-2	2-6x6	0' & 25'	1
D6-1	6x6	350'	1
D7-1	2-6x6	10' & 40'	1
D7-2	2-6x6	0' & 25'	1
D8-1, D8-2	6x6	240'	3
D8-3	3-6x6	AS SHOWN	1
D8-4	2-6x6	0' & 10'	1

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

FUNCTIONS:  
 (1) CALL AND EXTEND  
 (3) EXTEND ONLY  
 (7) DELAY CALL  
 IMMEDIATE EXTEND

F & I | APS PUSH BUTTON STATION (SEE DETAILS)  
 1-APS PB & SIGN (RT ARROW) (PB2-2)  
 EXTEND INTO HH 1:  
 1" CONDUIT  
 1-2/C 14  
 1-1/C 6 (INS GR)

F & I | APS PUSH BUTTON STATION (SEE DETAILS)  
 1-APS PB & SIGN (RT ARROW) (PB4-2)  
 EXTEND INTO HH 5:  
 1" CONDUIT  
 1-2/C 14  
 1-1/C 6 (INS GR)

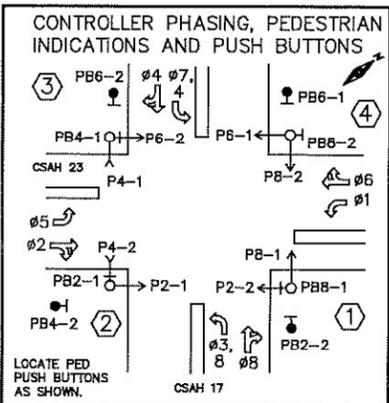
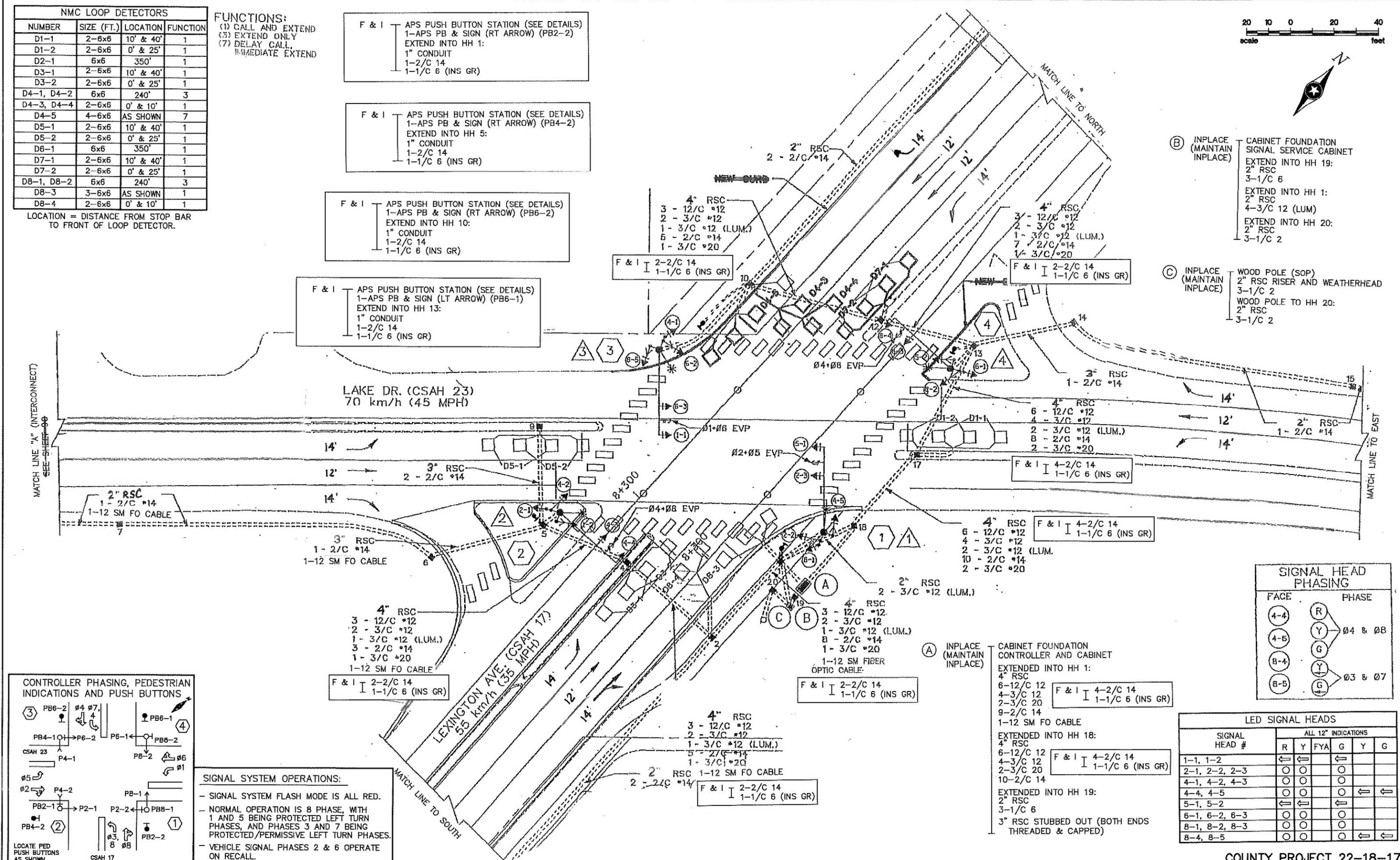
F & I | APS PUSH BUTTON STATION (SEE DETAILS)  
 1-APS PB & SIGN (RT ARROW) (PB6-2)  
 EXTEND INTO HH 10:  
 1" CONDUIT  
 1-2/C 14  
 1-1/C 6 (INS GR)

F & I | APS PUSH BUTTON STATION (SEE DETAILS)  
 1-APS PB & SIGN (LT ARROW) (PB6-1)  
 EXTEND INTO HH 13:  
 1" CONDUIT  
 1-2/C 14  
 1-1/C 6 (INS GR)

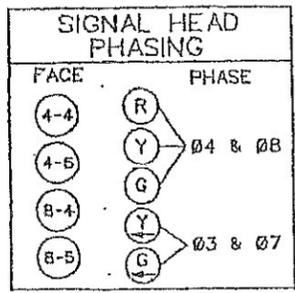


(B) INPLACE (MAINTAIN INPLACE) CABINET FOUNDATION SIGNAL SERVICE CABINET  
 EXTEND INTO HH 19:  
 2" RSC  
 3-1/C 6  
 EXTEND INTO HH 1:  
 2" RSC  
 4-3/C 12 (LUM.)  
 EXTEND INTO HH 20:  
 2" RSC  
 3-1/C 2

(C) INPLACE (MAINTAIN INPLACE) WOOD POLE (SOP)  
 2" RSC RISER AND WEATHERHEAD  
 3-1/C 2  
 WOOD POLE TO HH 20:  
 2" RSC  
 3-1/C 2



SIGNAL SYSTEM OPERATIONS:  
 - SIGNAL SYSTEM FLASH MODE IS ALL RED.  
 - NORMAL OPERATION IS 8 PHASE, WITH 1 AND 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 AND 7 BEING PROTECTED/PERMISSIVE LEFT TURN PHASES.  
 - VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.



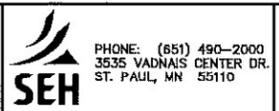
LED SIGNAL HEADS

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

DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG

DESIGN TEAM	NO.	BY	DATE	REVISIONS

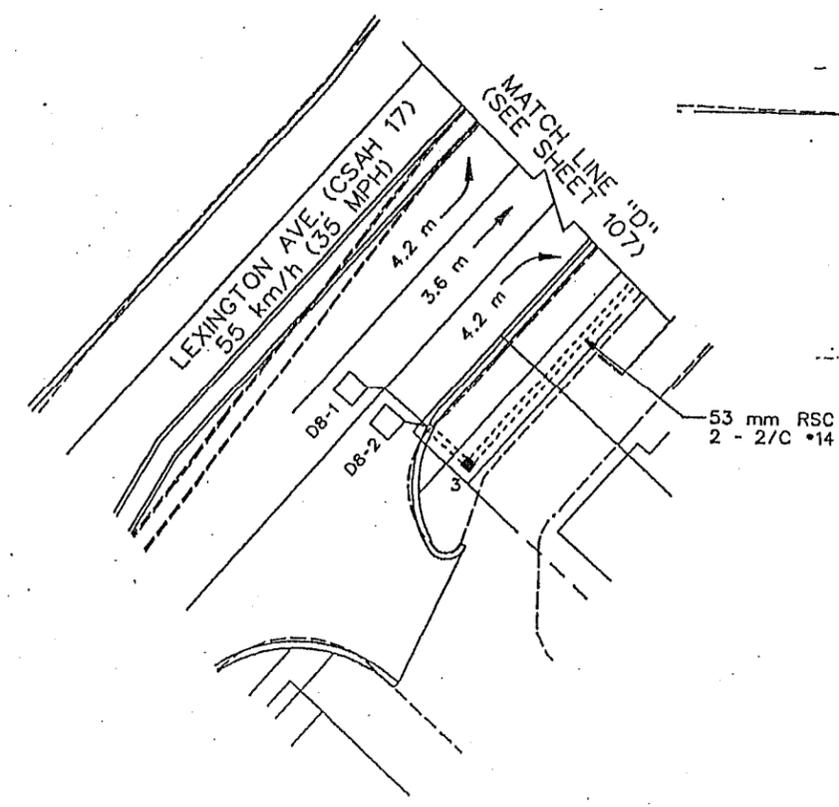
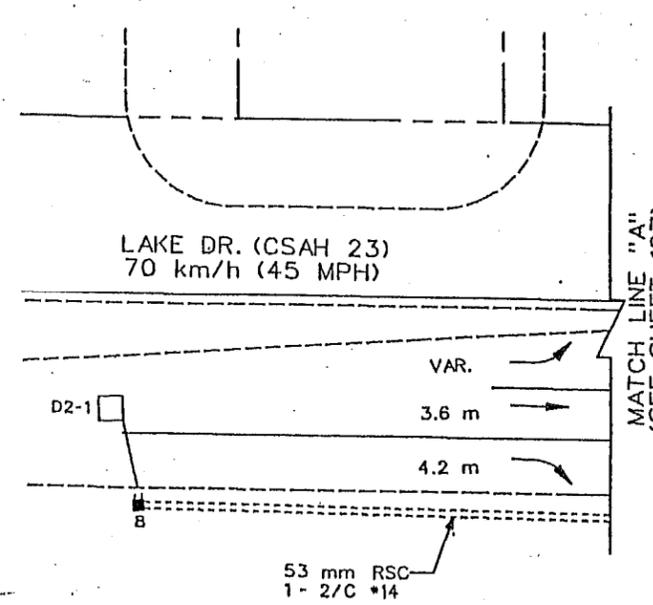
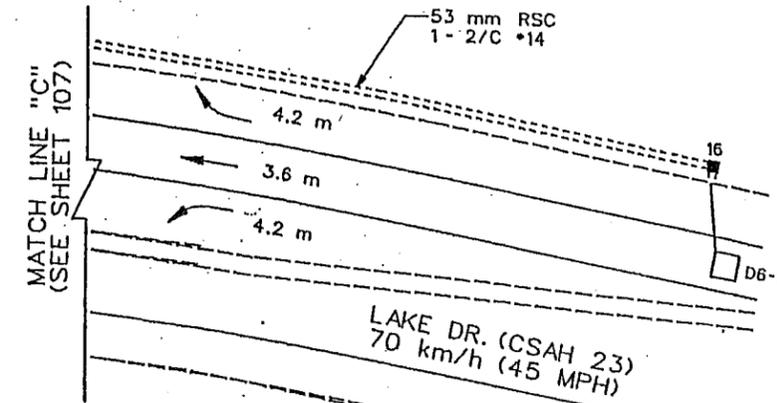
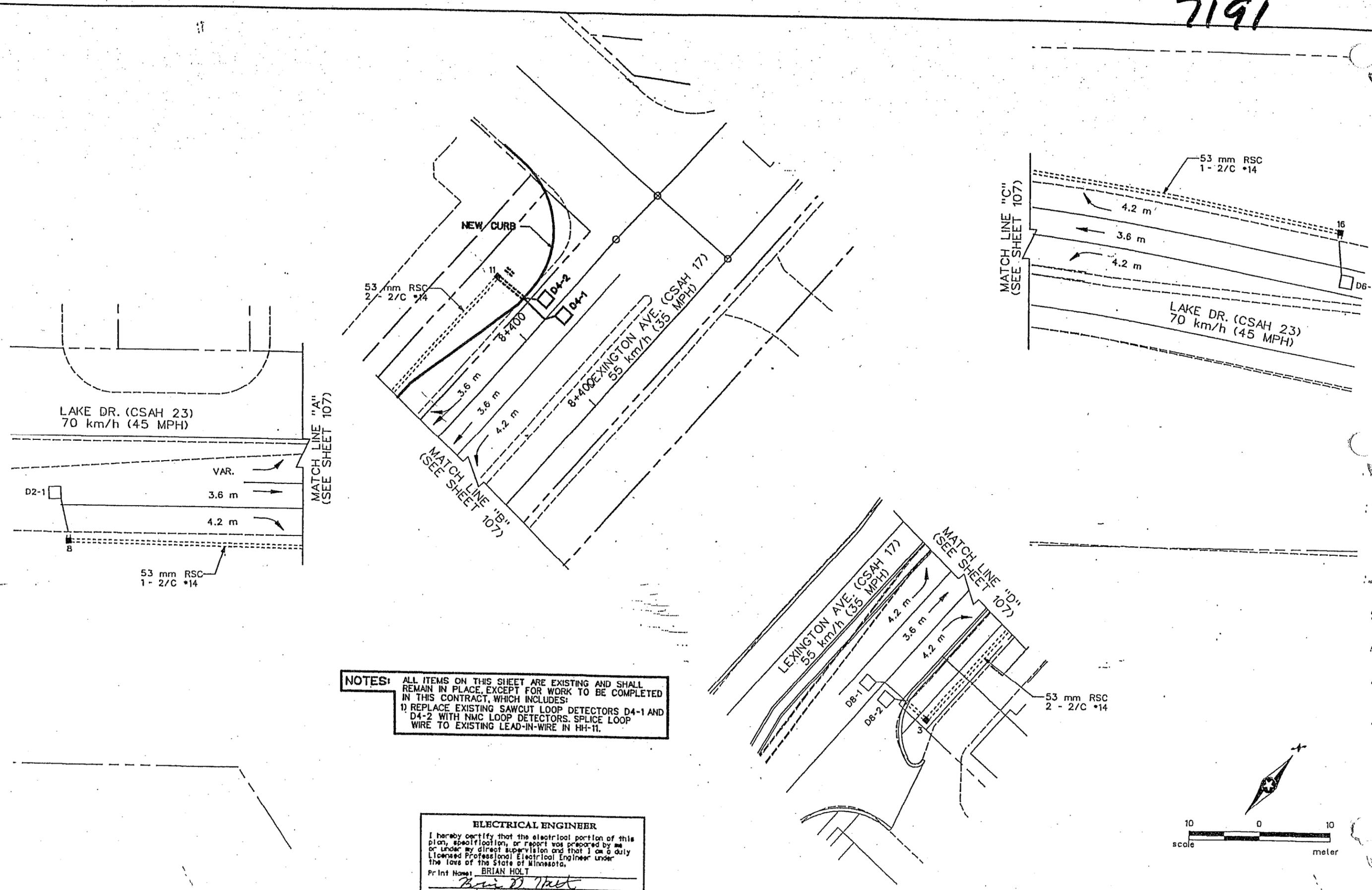
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Date: May 9, 2022 Name: John M. Gray, PE Lic. No. 22457



ANOKA COUNTY  
 CITY OF BLAINE

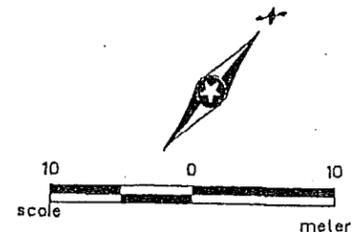
REVISE SIGNAL SYSTEM 'C'  
 INTERSECTION LAYOUT  
 CSAH 17 (LEXINGTON AVENUE)  
 AT CSAH 23 (LAKE DRIVE)  
 FILE NO. ANOKC 122928  
 SIGNAL SHEET 14 OF 35  
 63A  
 94

7191



**NOTES:** ALL ITEMS ON THIS SHEET ARE EXISTING AND SHALL REMAIN IN PLACE, EXCEPT FOR WORK TO BE COMPLETED IN THIS CONTRACT, WHICH INCLUDES:  
 1) REPLACE EXISTING SAWCUT LOOP DETECTORS D4-1 AND D4-2 WITH NMC LOOP DETECTORS. SPLICE LOOP WIRE TO EXISTING LEAD-IN WIRE IN HH-11.

**ELECTRICAL ENGINEER**  
 I hereby certify that the electrical portion of this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Electrical Engineer under the laws of the State of Minnesota.  
 Pr Int Name: BRIAN HOLT  
*Brian D. Holt*  
 Date: 5/14/01 License #: 21428



FILE: D:\AC\111\0472842\SIGNALS\3507\_11c  
 LET: D:\AC\111\0472842\SIGNALS\3507\_11c  
 BY: RHP/BJR  
 DATE: 05/04/2001 13:40:43

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.  
 STATE AID PROJECT NO. S.A.P. 106-020-14  
 DRAWN BY: R. W. SMITH DATE: 04-01  
 DESIGNED BY: R. W. SMITH

**GATE CONSULTING**

ANOKA COUNTY

SHEET

REVISE SIGNAL SYSTEM C NOTES:

- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS BOXED IN AND NOTED OTHERWISE ON PLANS.
- 2) ALL HANDHOLES ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT AS FOLLOWS:
  - ADJUST HANDHOLES 5 AND 13 TO FINISHED SURROUNDING SIDEWALK, MEDIAN, OR BOULEVARD GRADE AFTER ALL WORK IS COMPLETED (REUSE EXISTING METAL FRAME & COVER).
  - ALL HANDHOLE ADJUSTMENT WORK IS INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (REVISE SIGNAL SYSTEM C). SEE DETAILS & SPECIAL PROVISIONS FOR FURTHER INFORMATION.
- 3) LOCATION OF NEW PUSH BUTTON STATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) 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.
- 5) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) 12 AWG IN 3/4" NMC. LOOP DETECTORS IMPACTED BY EITHER CURB RAMP WORK OR MILL/OVERLAY WORK SHALL BE FURNISHED, INSTALLED & MADE OPERATIONAL BY CONTRACTOR TO SATISFACTION OF ENGINEER. SEE DETAILS & SPECIAL PROVISIONS.
- 6) CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING LOOP DETECTOR SPLICE KITS (FOR ANY LOOP DETECTOR BEING REPLACED AS PART OF THIS PROJECT) AND SHALL FURNISH AND INSTALL NEW LOOP DETECTOR SPLICE KITS IN THE ADJACENT HANDHOLE FOR THESE LOOP DETECTORS AS CALLED FOR IN THE SPECIAL PROVISIONS.
- 7) A SEPARATE PAY ITEM HAS BEEN ADDED (2565 - RIGID PVC LOOP DETECTOR 6' x 6') FOR REPLACEMENT OF LOOP DETECTORS, SHOULD THESE LOOP DETECTORS BE REQUIRED TO BE REPLACED BY THE CONTRACTOR EITHER DUE TO MILL/OVERLAY OR CURB RAMP/CURB AND GUTTER WORK THAT CAUSES THE EXISTING LOOP DETECTOR TO BE DAMAGED. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROTECT AND MAINTAIN THE EXISTING LOOP DETECTORS (INCLUDING LEAD-IN CONDUITS FROM HANDHOLE TO IN-PAVEMENT LOOP DETECTOR CONDUIT) AND SHALL NOTIFY THE ENGINEER IF THEY ANTICIPATE THAT A LOOP DETECTOR WILL BE DAMAGED DUE TO THEIR WORK. COUNTY WILL PROVIDE INITIAL LOCATION OF THESE LOOP DETECTORS FOR CONTRACTOR TO BE ABLE TO PLAN FOR WORKING AROUND THESE LOOP DETECTORS. SEE SPECIAL PROVISIONS.
- 8) CONTRACTOR SHALL MAINTAIN A SIGNAL SYSTEM IN OPERATION AT THIS INTERSECTION AT ALL TIMES, UNLESS OTHERWISE APPROVED BY THE ENGINEER FOR THE SIGNAL SYSTEM TO BE PLACED INTO ALL-RED FLASH DURING NON-PEAK TRAFFIC PERIODS (FOR WORK THAT REQUIRES THE SIGNAL SYSTEM TO BE OUT OF OPERATION OR TO ACCOMMODATE ROAD WORK AT THE INTERSECTION).
- 9) 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.
- 10) F & I = NEW, FURNISH AND INSTALL.  
S & I = INPLACE, SALVAGE AND INSTALL.
- 11) CONTRACTOR SHALL MAINTAIN AND REUSE EXISTING PEDESTRIAN SIGNAL HOUSINGS AND VISORS, SHALL REMOVE INPLACE LED HAND/WALKING PERSON INDICATIONS, AND SHALL FURNISH AND INSTALL NEW COUNTDOWN TIMER LED "HAND/WALKING PERSON" INDICATIONS IN THEIR PLACE FOR 6 OF THE 8 PED SIGNALS (INCIDENTAL TO REVISE SIGNAL SYSTEM C PAY ITEM).

① INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION  
 TYPE PA100-A-40-D40-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-200 W HPS WITH PEC & CHK.SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD AT 0.5' & 12.5'  
 TYPE 10B-POLE MOUNTED 90 DEG  
 TYPE 20B-POLE MOUNTED 180 DEG  
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT-OVERHEAD (ø2,5)  
 EXTENDED INTO HH 1:  
 3" RSC  
 3-12/c 12  
 2-3/c 12  
 1-3/c 20  
 1-3/c 12 (LUM)

INPLACE (SALVAGE) 2-LED PED INDICATIONS (LEAVE HOUSING/VISOR INPLACE)  
 2-PEDESTRIAN PUSH BUTTONS AT 225/315 DEG  
 INPLACE (REMOVE) 2-R10-4b STICKER SIGNS AT 225/315 DEG  
 F & I 2-LED COUNTDOWN TIMER PED INDICATIONS (P2-2, P8-1)  
 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB8-1)  
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 225/315 DEG)  
 1-2/C 14

③ INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION  
 TYPE PA100-A-40-D40-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-200 W HPS WITH PEC & CHK.SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD AT 0.5' & 12.5'  
 TYPE 10B-POLE MOUNTED 90 DEG (P4-1 IS CDT)  
 TYPE 20B-POLE MOUNTED 180 DEG  
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT-OVERHEAD (ø6,1)  
 EXTENDED INTO HH 10:  
 3" RSC  
 3-12/c 12  
 2-3/c 12  
 1-3/c 20  
 1-3/c 12 (LUM)

INPLACE (SALVAGE) 1-LED PED INDICATION AT 180 DEG (LEAVE HOUSING/VISOR INPLACE)  
 2-PEDESTRIAN PUSH BUTTONS AT 180/270 DEG  
 INPLACE (REMOVE) 2-R10-4b STICKER SIGNS AT 180/270 DEG  
 F & I 1-LED COUNTDOWN TIMER PED INDICATION AT 180 DEG (P6-2)  
 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB4-1)  
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 180/270 DEG)  
 1-2/C 14

② INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION  
 TYPE PA100-A-35-D40-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-200 W HPS WITH PEC & CHK.SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD AT 0' & 12'  
 TYPE 10B-POLE MOUNTED 90 DEG  
 TYPE 20B-POLE MOUNTED 180 DEG (P4-2 IS CDT)  
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG  
 R10-12 SIGN PANEL-ADJACENT TO 4-4  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT-OVERHEAD (ø4)  
 EXTENDED INTO HH 5:  
 3" RSC  
 3-12/c 12  
 2-3/c 12  
 1-3/c 20  
 1-3/c 12 (LUM)

INPLACE (SALVAGE) 1-LED PED INDICATION AT 90 DEG (LEAVE HOUSING/VISOR INPLACE)  
 2-PEDESTRIAN PUSH BUTTONS AT 0/270 DEG  
 INPLACE (REMOVE) 2-R10-4b STICKER SIGNS AT 0/270 DEG  
 F & I 1-LED COUNTDOWN TIMER PED INDICATION AT 90 DEG (P2-1)  
 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB2-1)  
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 0/270 DEG)  
 1-2/C 14

④ INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION  
 TYPE PA100-A-35-D40-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-200 W HPS WITH PEC & CHK.SWITCH  
 2-ONE WAY SIGNALS-OVERHEAD AT 0' & 12'  
 TYPE 10B-POLE MOUNTED 90 DEG  
 TYPE 20B-POLE MOUNTED 180 DEG  
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG  
 R10-12 SIGN PANEL-ADJACENT TO 8-4  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT-OVERHEAD (ø8)  
 EXTENDED INTO HH 13:  
 3" RSC  
 3-12/c 12  
 2-3/c 12  
 1-3/c 20  
 1-3/c 12 (LUM)

INPLACE (SALVAGE) 2-LED PED INDICATIONS (LEAVE HOUSING/VISOR INPLACE)  
 2-PEDESTRIAN PUSH BUTTONS AT 0/270 DEG  
 INPLACE (REMOVE) 2-R10-4b STICKER SIGNS AT 0/270 DEG  
 F & I 2-LED COUNTDOWN TIMER PED INDICATIONS (P6-1, P8-2)  
 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB8-2)  
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 0/270 DEG)  
 1-2/C 14

COUNTY PROJECT 22-18-17

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

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.  
 Date: May 9, 2022 Name: John M Gray, PE Lic. No. 22457

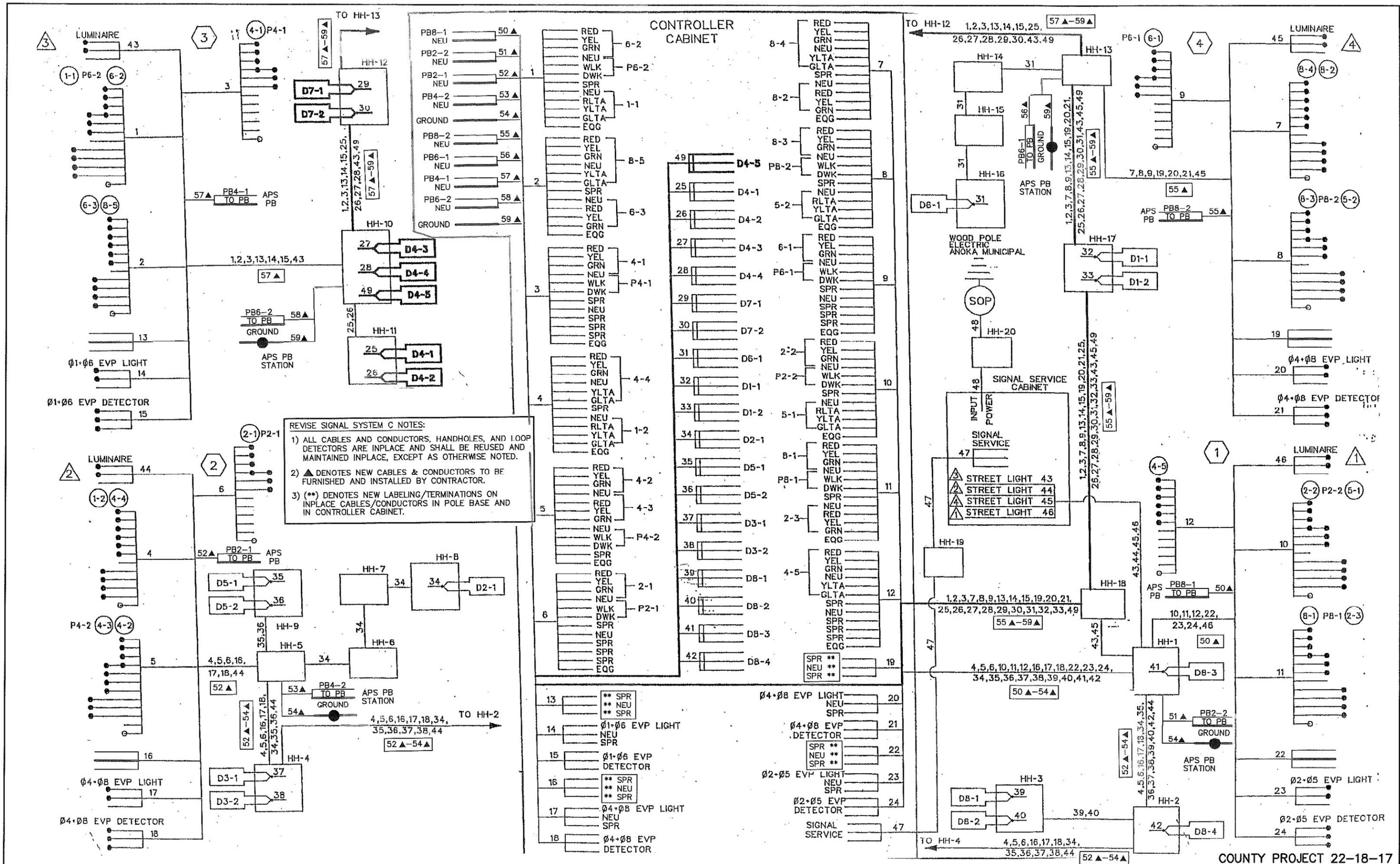
SEH PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

ANOKA COUNTY  
 CITY OF BLAINE

REVISE SIGNAL SYSTEM 'C'  
 SIGNAL SYSTEM NOTES  
 CSAH 17 (LEXINGTON AVENUE)  
 AT CSAH 23 (LAKE DRIVE)

FILE NO.  
 ANOK 122928  
 SIGNAL SHEET  
 15 OF 35

63B  
 94



DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG

DESIGN TEAM	NO.	BY	DATE	REVISIONS

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*John M. Gray*  
 Name: John M. Gray, PE  
 Lic. No. 22457  
 Date: May 9, 2022

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

**ANOKA COUNTY  
 CITY OF BLAINE**

**REVISE SIGNAL SYSTEM 'C'  
 FIELD WIRING DIAGRAM  
 CSAH 17 (LEXINGTON AVENUE)  
 AT CSAH 23 (LAKE DRIVE)**

FILE NO. ANOKC 122928  
 SIGNAL SHEET 16 OF 35  
**63C**  
**94**