

NMC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	1
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D3-1	2-6x6	15' & 45'	1
D3-2	2-6x6	0' & 30'	1
D3-3	2-6x6	15' & 45'	1
D3-4	2-6x6	0' & 30'	1
D4-1	6x6	180'	3,8
D4-2	2-6x6	5' & 20'	7
D4-3	2-6x6	5' & 20'	1
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	5' & 35'	1
D6-1	6x6	300'	1
D6-2	6x6	300'	1
D6-3	6x6	300'	1
D7-1	2-6x6	15' & 45'	1
D7-2	2-6x6	0' & 30'	1
D8-1	6x6	120'	3,8
D8-2	6x6	180'	-
D8-3	3-6x6	-10',0',15'	7
DS-1	6x6	50'	11
DS-2	6x6	50'	11
DS-3	6x6	50'	11
DS-4	6x6	10'	11
DS-5	6x6	10'	11
DS-6	6x6	10'	11

LOOP DETECTORS FUNCTIONS:

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

F & I | APS PUSH BUTTON STATION (SEE DETAILS)
 1-APS PB & SIGN (RT ARROW) (PB8-2)
 EXTEND INTO HH 14:
 1" CONDUIT
 1-1/C 6 (INS GR)

INPLACE (S & I) | 1-2/c 14 (CABLE 78) - SALVAGE BACK FROM POLE 4 TO HH 13-14, REINSTALL TO NEW PUSH BUTTON STATION

HH 14 TO HH 17
 2-4" RSC
 6-12/c 14
 2-3/c 14
 2-3/c 20
 12-2/c 14
 2-3/c 14 (LUM)

HH 13 TO HH 14
 2-3" RSC
 6-12/c 14
 2-3/c 14
 2-3/c 20
 8-2/c 14
 2-3/c 14 (LUM)

HH 12A TO HH 13
 4" CONDUIT
 3-2/c 14

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

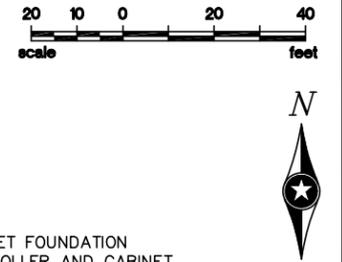
HH 14 TO HH 15
 2" RSC
 3-2/c 14

MATCH LINE TO NORTH

NOTE: CONTRACTOR INSTALLED LOOP DETECTORS D4-4 & D4-5 BUT THESE LOOPS WERE NOT HOOKED UP TO A LEAD-IN CABLE IN HH 9 AND 11 PER COUNTY.

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

INPLACE (S & I) | 1-2/c 14 (CABLE 61) - UNCOIL IN HH 1 AND EXTEND TO NEW PB STATION



(B) INPLACE (MAINTAIN INPLACE) | CABINET FOUNDATION SIGNAL SERVICE CABINET EXTENDED INTO HH 19:
 2" RSC
 3-1/c 2
 EXTENDED INTO HH 18:
 METERED SIGNAL SERVICE
 2" RSC
 3-1/c 6
 UNMETERED STREET LIGHT SERVICE
 2-3/c 14 (LUM)
 2" RSC
 2-3/c 14 (LUM)

(A) INPLACE (MAINTAIN INPLACE) | CABINET FOUNDATION CONTROLLER AND CABINET EXTENDED INTO HH 18:
 METERED SIGNAL SERVICE
 2" RSC
 3-1/c 6
 EXTENDED INTO HH 1:
 2-4" RSC
 5-12/c 12
 5-3/c 12
 2-3/c 20
 16-2/c 14
 1-6/c FO CABLE
 1-1/c 14

F & I | 2-2/c 14
 1-1/c 6 (INS GR)

EXTENDED INTO HH 17:
 2-4" RSC
 6-12/c 14
 2-3/c 14
 2-3/c 20
 17-2/c 14
 1-6/c FO CABLE
 1-1/c 14

HH 16A TO HH 17
 4" CONDUIT
 2-2/c 14

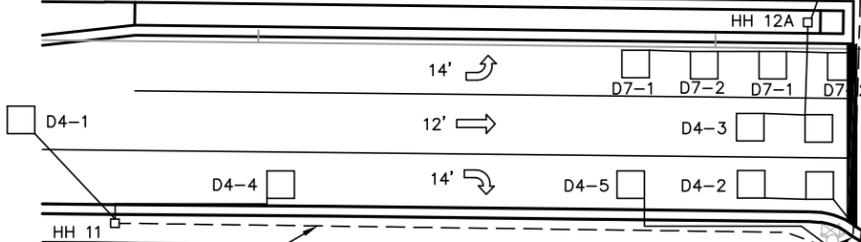
HH 1 TO HH 3
 3" RSC
 2-12/c 12
 3-3/c 12
 1-3/c 20
 10-2/c 14
 1-6/c FO CABLE
 1-1/c 14

F & I | 1-2/c 14
 1-1/c 6 (INS GR)

HH 1 TO HH 2
 2" RSC
 2-2/c 14

PHEASANT RIDGE DRIVE (35 mph)

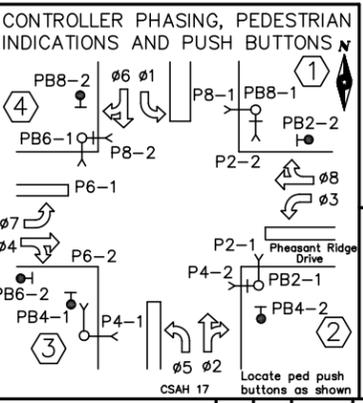
PHEASANT RIDGE DRIVE (30 mph)



F & I | APS PUSH BUTTON STATION (SEE DETAILS)
 1-APS PB & SIGN (LT ARROW) (PB4-1)
 EXTEND INTO HH 9:
 1" CONDUIT
 1-1/C 6 (INS GR)

INPLACE (S & I) | 1-2/c 14 (CABLE 87) - SALVAGE BACK FROM POLE 3 TO HH 9 AND REINSTALL TO NEW PUSH BUTTON STATION

HH 9 TO HH 13
 4" CONDUIT
 3-12/c 14
 1-3/c 14
 1-3/c 20
 4-2/c 14
 1-3/c 14 (LUM)



F & I | APS PUSH BUTTON STATION (SEE DETAILS)
 1-APS PB & SIGN (RT ARROW) (PB6-2)
 EXTEND INTO HH 9:
 1" CONDUIT
 1-1/C 6 (INS GR)

INPLACE (S & I) | 1-2/c 14 (CABLE 86) - SALVAGE BACK FROM POLE 3 TO HH 9 AND REINSTALL TO NEW PUSH BUTTON STATION

SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 1, 3, 5, AND 7 BEING FLASHING YELLOW ARROWS (FLASH BY TOD PROGRAMS).
- VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

F & I | 1-2/c 14
 1-1/c 6 (INS GR)

HH 4 TO HH 20
 2" CONDUIT
 5-2/c 14

HH 4 TO MEDIAN
 3" RSC-INPLACE (ABANDONED)

HH 7A TO HH 20
 4" CONDUIT
 5-2/c 14

HH 4 TO HH 5
 2" RSC
 2-2/c 14
 1-6/c FO CABLE
 1-1/c 14

F & I | APS PUSH BUTTON STATION (SEE DETAILS)
 1-APS PB & SIGN (RT ARROW) (PB4-2)
 EXTEND INTO HH 4:
 1" CONDUIT
 1-1/C 6 (INS GR)

INPLACE (S & I) | 1-2/c 14 (CABLE 63) - UNCOIL IN HH 4 AND EXTEND TO NEW PB STATION

(C) INPLACE (MAINTAIN INPLACE) | WOOD POLE (S.O.P.)
 2" RSC RISER AND WEATHERHEAD
 3-1/c 2
 EXTENDED INTO HH 19:
 2" RSC
 3-1/c 2

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

FYA = FLASHING YELLOW ARROW

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.

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

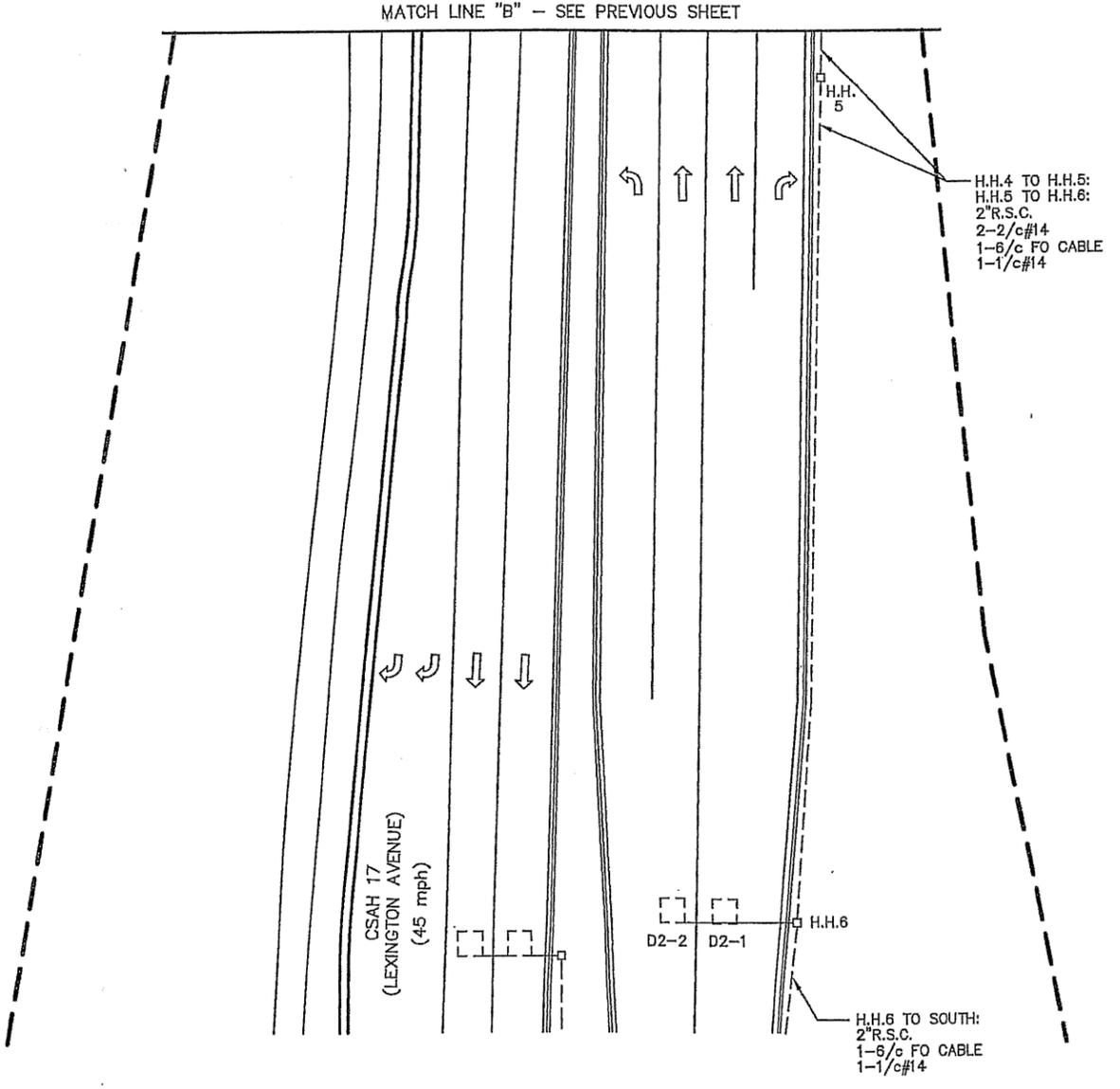
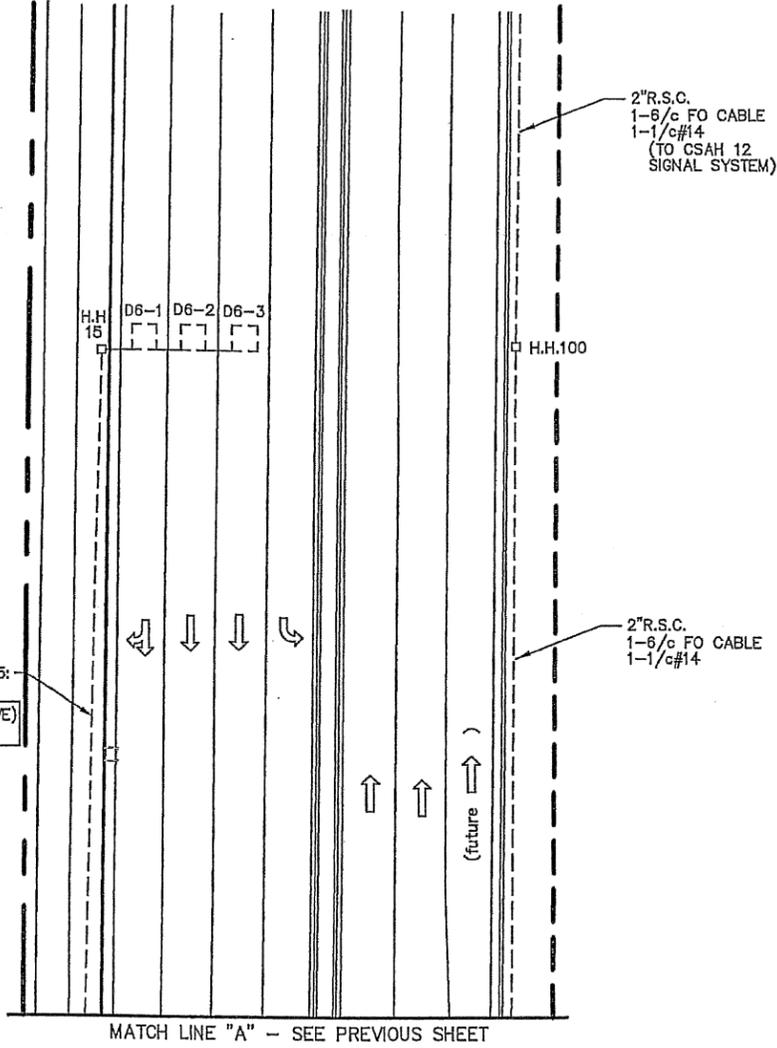
SEH
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 3535 VADNAIS CENTER DR.
 ST. PAUL, MN 55110

ANOKA COUNTY
 CITY OF BLAINE

REVISE SIGNAL SYSTEM 'E'
 INTERSECTION LAYOUT
 CSAH 17 (LEXINGTON AVENUE)
 AT PHEASANT RIDGE DRIVE

FILE NO.
 ANOKC 122928
 SIGNAL SHEET
 20 OF 35

63G
 94



H.H.14 TO H.H.15:
2\"/>

H.H.4 TO H.H.5:
H.H.5 TO H.H.6:
2\"/>

H.H.6 TO SOUTH:
2\"/>

MATCH LINE "A" - SEE PREVIOUS SHEET

MATCH LINE "B" - SEE PREVIOUS SHEET

CSAH 17
(LEXINGTON AVENUE)
(45 mph)

S.A.P. 106-128-002
CITY PROJ. 16-14

PHEASANT RIDGE DRIVE - SIGNAL - 2019.DWG

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
Date: April 11, 2019 Lic. No. 22457

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BLAINE, MINNESOTA
ANOKA COUNTY

REVISE SIGNAL SYSTEM
MATCH LINES
CSAH 17 AT PHEASANT RIDGE DRIVE

FILE NO. BLAIN 141682	28
SIGNAL SHEET 4 OF 8	

REVISE SIGNAL SYSTEM E 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 1, 3, 4, 9, 13, AND 14 TO FINISHED SURROUNDING SIDEWALK OR BOULEVARD GRADE AFTER ALL WORK IS COMPLETE (REUSE METAL FRAME/COVER ON HH 1, 3, 4, 9, 14)
 - REMOVE INPLACE CONCRETE FRAME AND COVER (HH 13) AND FURNISH AND INSTALL NEW PVC METAL FRAME AND COVER ON THIS HANDHOLE AFTER CONCRETE HANDHOLE BODY HAS BEEN ADJUSTED, SO THAT NEW COVER IS INSTALLED TO BE FLUSH WITH FINISHED SURROUNDING GRADE.
 - ALL HANDHOLE ADJUSTMENT WORK (INCLUDING FRAME & COVER REMOVAL AND REPLACEMENT) IS INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (REVISE SIGNAL SYSTEM E). SEE DETAILS AND 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.

① INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-55 (WITH NEW 26" TRANSFORMER BASE)
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 12', AND 24'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-C.D. PEDESTRIAN SIGNAL LENSES
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG
 TYPE D SIGN PANEL-OVERHEAD AT 32'
 R10-X12 SIGN PANEL-ADJACENT TO 5-1
 ONE WAY EVP DETECTOR AND LIGHT (Ø2,5) AT 6'
 EXTENDED INTO HH 1:
 3" RSC
 3-12/c 12
 2-3/c 12
 1-3/c 20

INPLACE (SALVAGE) 2-PEDESTRIAN PUSH BUTTONS AT 0/270 DEG
 2-R10-3e METAL SIGNS AT 0/270 DEG
 F & I 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR AT 270 DEG (PB8-1)
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 0/270 DEG)
 1-2/C 14

③ INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-50-D30-9 (DAVIT AT 350 DEG)
 LUMINAIRE-LED W/PEC
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 12', & 24'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-C.D. PEDESTRIAN SIGNAL LENSES
 TYPE D SIGN PANEL-OVERHEAD
 ONE WAY EVP DETECTOR AND LIGHT (Ø6,1) AT 6'
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG
 R10-X12 SIGN PANEL-ADJACENT TO 1-1
 EXTENDED INTO HH 9:
 3" RSC
 3-12/c 14
 1-3/c 14
 1-3/c 20
 1-3/c 14 (LUM)

INPLACE (SALVAGE) 2-PEDESTRIAN PUSH BUTTONS AT 180/270 DEG
 2-R10-3e METAL SIGNS AT 180/270 DEG
 INPLACE (S & I) 2-2/c 14 (CABLES 86-87) - SALVAGE BACK TO HH 9 AND REINSTALL TO NEW PUSH BUTTON STATIONS
 F & I PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 180/270 DEG)

② INPLACE (MAINTAIN INPLACE) PA100 POLE FOUNDATION
 TYPE PA100-A-45 (WITH NEW 26" TRANSFORMER BASE)
 2-ONE WAY SIGNALS-OVERHEAD AT 0' & 14'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-C.D. PEDESTRIAN SIGNAL LENSES
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG
 TYPE D SIGN PANEL-OVERHEAD AT 28'
 R10-X12 SIGN PANEL-ADJACENT TO 7-1
 ONE WAY EVP DETECTOR AND LIGHT (Ø4,7) AT 6'
 EXTENDED INTO HH 4:
 3" RSC
 2-12/c 12
 3-3/c 12
 1-3/c 20

INPLACE (SALVAGE) 2-PEDESTRIAN PUSH BUTTONS AT 0/270 DEG
 2-R10-3e METAL SIGNS AT 0/270 DEG
 F & I 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR AT 270 DEG (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-40-D25-6 (DAVIT AT 270 DEG)
 (WITH NEW 26" TRANSFORMER BASE)
 LUMINAIRE-LED W/PEC
 3-ONE WAY SIGNALS-OVERHEAD AT 0', 14', & 26'
 2-TYPE 10B-POLE MOUNTED 90/180 DEG
 2-C.D. PEDESTRIAN SIGNAL LENSES
 2-R6-1 (ONE WAY) SIGNS-POLE MOUNTED 0/180 DEG
 TYPE D SIGN PANEL-OVERHEAD AT 28'
 R10-X12 SIGN PANEL-ADJACENT TO 3-2
 ONE WAY EVP DETECTOR AND LIGHT (Ø8,3) AT 6'
 EXTENDED INTO HH 13:
 3" RSC
 3-12/c 14
 1-3/c 14
 1-3/c 20
 1-2/c 14
 1-3/c 14 (LUM)

INPLACE (SALVAGE) 2-PEDESTRIAN PUSH BUTTONS AT 0/270 DEG
 2-R10-3e METAL SIGNS AT 0/270 DEG
 INPLACE (S & I) 1-2/c 14 (CABLE 78) - SALVAGE BACK TO HH 13 AND HH 14, AND REINSTALL TO NEW PB STATION
 F & I 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR AT 270 DEG (PB6-1)
 PLUG HOLES ON MAST ARM POLE WHERE PUSH BUTTONS USED TO BE (AT 0/270 DEG)

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

NO.	BY	DATE	REVISIONS

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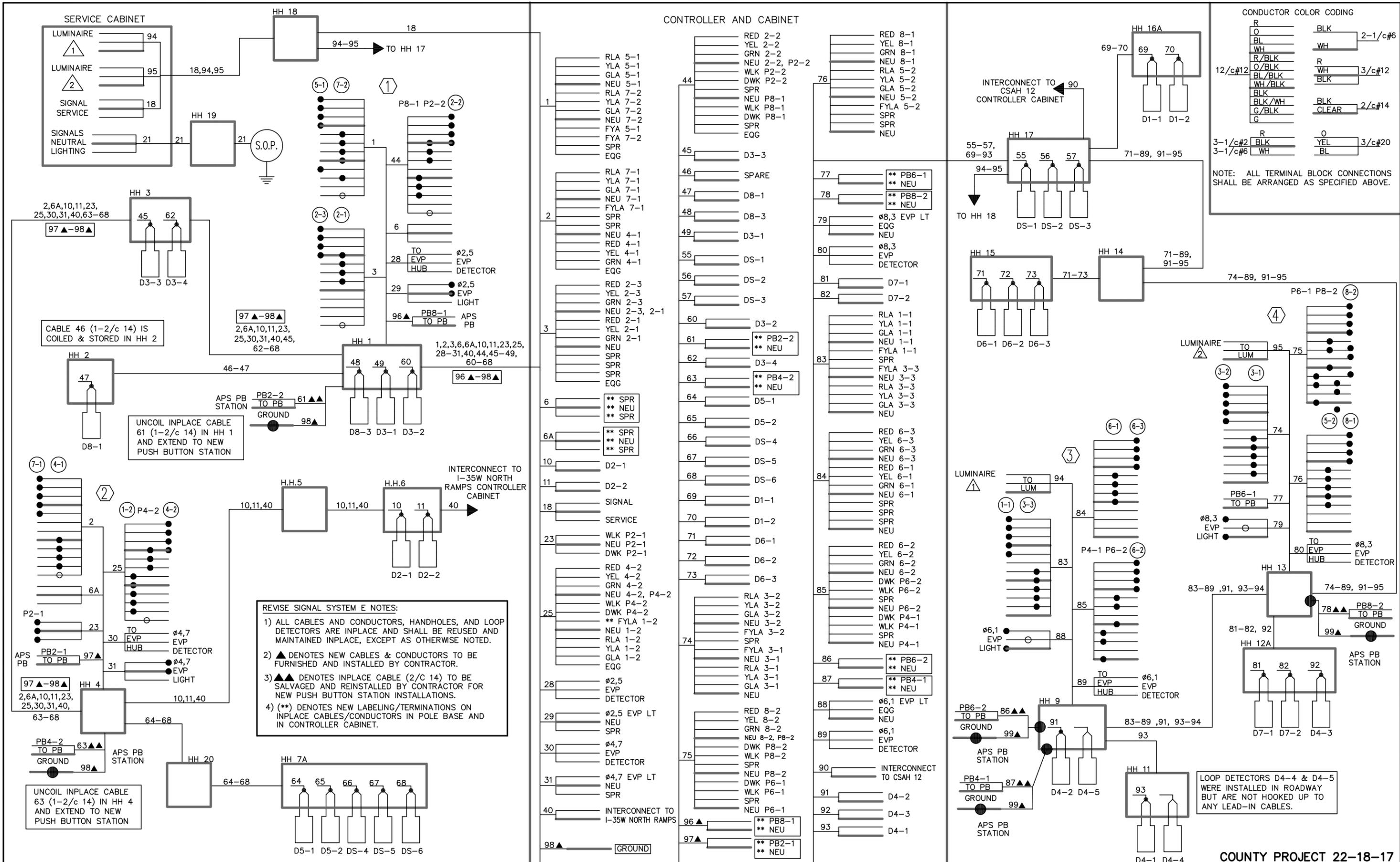
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ANOKA COUNTY
 CITY OF BLAINE

REVISE SIGNAL SYSTEM 'E'
 SIGNAL SYSTEM NOTES
 CSAH 17 (LEXINGTON AVENUE)
 AT PHEASANT RIDGE DRIVE

FILE NO.
 ANOKC 122928
 SIGNAL SHEET
 21 OF 35

63H
 94



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ANOKA COUNTY
CITY OF BLAINE

REVISE SIGNAL SYSTEM 'E'
FIELD WIRING DIAGRAM
 CSAH 17 (LEXINGTON AVENUE)
 AT PHEASANT RIDGE DRIVE

FILE NO. ANOKC 122928
 SIGNAL SHEET 22 OF 35
63J
94