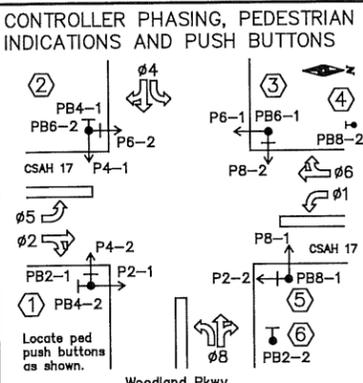
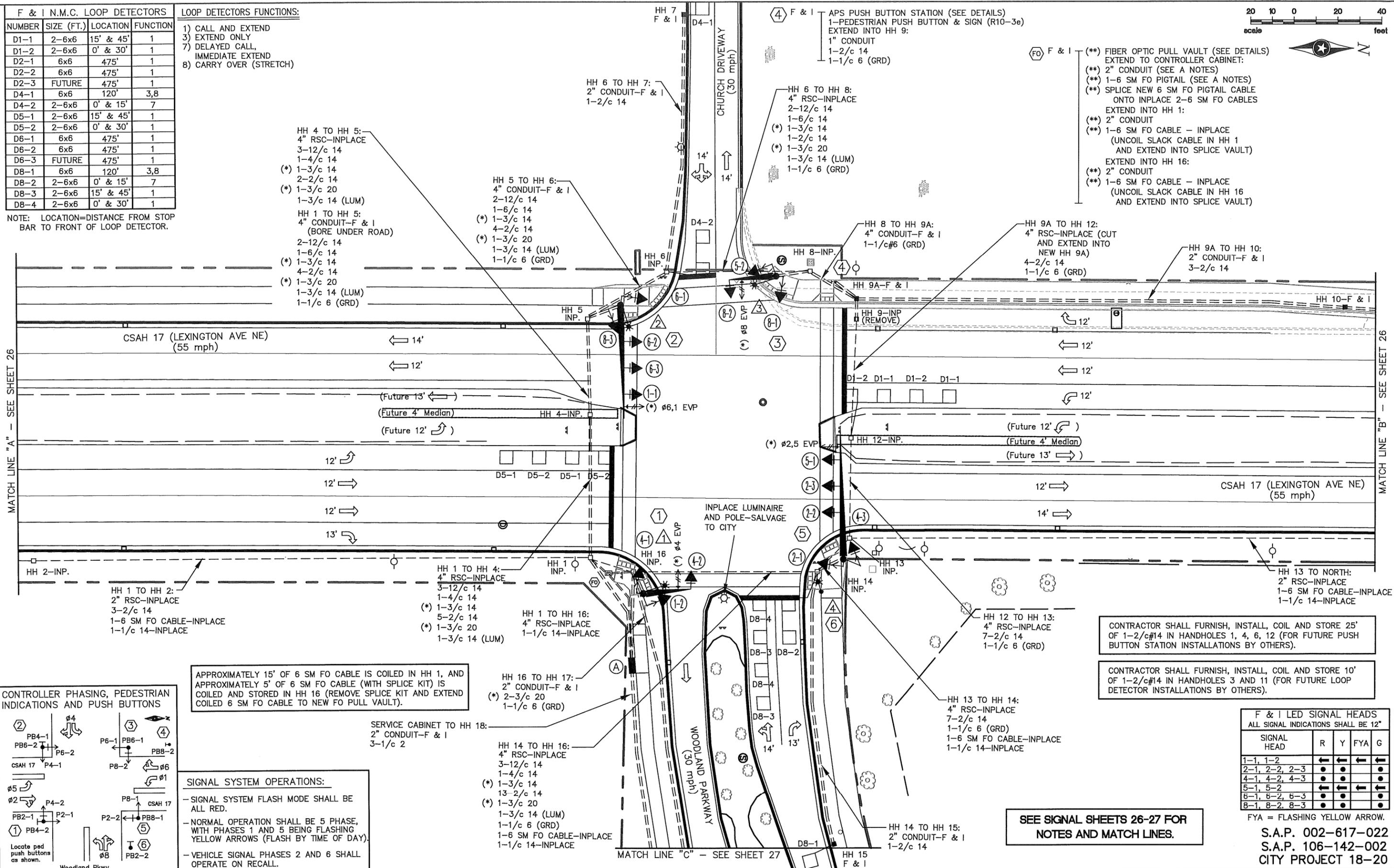


F & I	N.M.C. LOOP DETECTORS	LOOP DETECTORS FUNCTIONS:	
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	15' & 45'	1
D1-2	2-6x6	0' & 30'	1
D2-1	6x6	475'	1
D2-2	6x6	475'	1
D2-3	FUTURE	475'	1
D4-1	6x6	120'	3,8
D4-2	2-6x6	0' & 15'	7
D5-1	2-6x6	15' & 45'	1
D5-2	2-6x6	0' & 30'	1
D6-1	6x6	475'	1
D6-2	6x6	475'	1
D6-3	FUTURE	475'	1
D8-1	6x6	120'	3,8
D8-2	2-6x6	0' & 15'	7
D8-3	2-6x6	15' & 45'	1
D8-4	2-6x6	0' & 30'	1

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

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



APPROXIMATELY 15' OF 6 SM FO CABLE IS COILED IN HH 1, AND APPROXIMATELY 5' OF 6 SM FO CABLE (WITH SPLICE KIT) IS COILED AND STORED IN HH 16 (REMOVE SPLICE KIT AND EXTEND COILED 6 SM FO CABLE TO NEW FO PULL VAULT).

SIGNAL SYSTEM OPERATIONS:
 - SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
 - NORMAL OPERATION SHALL BE 5 PHASE, WITH PHASES 1 AND 5 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY).
 - VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 25' OF 1-2/c#14 IN HANDHOLES 1, 4, 6, 12 (FOR FUTURE PUSH BUTTON STATION INSTALLATIONS BY OTHERS).

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 10' OF 1-2/c#14 IN HANDHOLES 3 AND 11 (FOR FUTURE LOOP DETECTOR INSTALLATIONS BY OTHERS).

F & I LED SIGNAL HEADS				
ALL SIGNAL INDICATIONS SHALL BE 12"				
SIGNAL HEAD	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●	●	●
4-1, 4-2, 4-3	●	●	●	●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●	●	●
8-1, 8-2, 8-3	●	●	●	●

FYA = FLASHING YELLOW ARROW.

SEE SIGNAL SHEETS 26-27 FOR NOTES AND MATCH LINES.

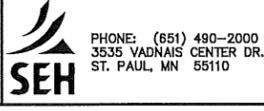
S.A.P. 002-617-022
 S.A.P. 106-142-002
 CITY PROJECT 18-20

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.

John M. Gray
 Name: John M. Gray, PE
 Lic. No. 22457
 Date: May 10, 2019



ANOKA COUNTY
CITY OF BLAINE

TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT		FILE NO.	25
CSAH 17 (LEXINGTON AVENUE) AT WOODLAND PARKWAY		ANOKC 148315	
		DATE	31
		05/10/2019	

NOTES:

- 1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) NEW HANDHOLES 7, 9A, 10, 11, 15, 17, AND 18 SHALL BE PVC HANDHOLES WITH METAL FRAMES & COVERS (SEE SPECIAL PROVISIONS).
INPLACE HANDHOLES 1, 2, 3, 4, 5, 6, 8, 12, 13, 14, AND 16 (PVC HANDHOLES WITH METAL FRAMES AND COVERS) SHALL BE ADJUSTED TO FINISHED SURROUNDING GRADE AFTER ALL WORK IS COMPLETED (INCIDENTAL). SEE DETAILS & SPECIAL PROVISIONS.
INPLACE HANDHOLE 9 SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- 4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
- 5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (XCEL ENERGY). SEE SPECIAL PROVISIONS.
- 6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (TO BE MEASURED AND PAID FOR SEPARATELY FROM TRAFFIC SIGNAL SYSTEM PAY ITEM).
- 7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
- 8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
- 9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
- 10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) #12 AWG IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
- 11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.
- 12) (**) 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.
- 13) SEE SHEETS 29-31 FOR FURTHER INFORMATION REGARDING INPLACE CONDUIT, HANDHOLES & FIBER OPTIC CABLE TO BE INCORPORATED INTO NEW TRAFFIC SIGNAL INSTALLATION.
- 14) SOIL BORINGS NEAR PROPOSED NEW SIGNAL POLE FOUNDATION LOCATIONS INDICATE THAT SOILS GENERALLY CONSIST OF POORLY GRADED SAND WITH SILT MATERIAL, WITH A WATER TABLE AT AROUND 5 FEET AT SOME LOCATIONS. SOILS SHOULD BE SUFFICIENT FOR SUPPORTING ALL FOUNDATION INSTALLATIONS, BUT CONTRACTOR SHALL PLAN FOR ADDITIONAL ENCASEMENT OF ALL POLE FOUNDATIONS TO ACCOUNT FOR SHALLOW WATER TABLE AND TO STABILIZE SOILS AROUND FOUNDATIONS (INCIDENTAL).
- 15) ALL CABLES AND CONDUCTORS SHALL BE NEW (FURNISHED AND INSTALLED BY CONTRACTOR), EXCEPT FOR INTERCONNECT CABLES NOTED TO BE REUSED AS PART OF NEW SIGNAL INSTALLATION.

① F & I PA90 POLE FOUNDATION
LUMINAIRE-LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
TYPE D SIGN PANEL-OVERHEAD (D-1)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#4)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO HH 16:
3" CONDUIT
2-12/c 14
1-6/c 14
(*) 1-3/c 14
2-2/c 14
(*) 1-3/c 20
1-3/c 14 (LUM)
2-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) TYPE PA90-A-20-D30-9 (DAVIT AT 350 DEG) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#4)

② F & I PA100 POLE FOUNDATION
LUMINAIRE-LED
CAP END OF MAST ARM (FOR FUTURE USE)
3-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11', 23', 35'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)
R10-X12 SIGN PANEL-ADJACENT TO 1-1
TYPE D SIGN PANEL-OVERHEAD (D-2)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#6,1)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO HH 5:
3" CONDUIT
3-12/c 14
1-4/c 14
(*) 1-3/c 14
2-2/c 14
(*) 1-3/c 20
1-3/c 14 (LUM)
2-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) TYPE PA100-A-50-D30-9 (DAVIT AT 350 DEG) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#6,1)

③ F & I PA90 POLE FOUNDATION
LUMINAIRE-LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
TYPE D SIGN PANEL-OVERHEAD (D-3)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#8)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO HH 8:
3" CONDUIT
2-12/c 14
1-6/c 14
(*) 1-3/c 14
1-2/c 14
(*) 1-3/c 20
1-3/c 14 (LUM)
1-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) TYPE PA90-A-20-D30-9 (DAVIT AT 350 DEG) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#8)

⑤ F & I PA100 POLE FOUNDATION
CAP END OF MAST ARM (FOR FUTURE USE)
3-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11', 23', 35'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
R10-X12 SIGN PANEL-ADJACENT TO 5-1
TYPE D SIGN PANEL-OVERHEAD (D-4)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#2,5)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO HH 14:
3" CONDUIT
3-12/c 14
1-4/c 14
(*) 1-3/c 14
1-2/c 14
1-3/c 20
2-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) TYPE PA100-A-55 ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#2,5)

⑥ F & I STREET LIGHT POLE FOUNDATION
LUMINAIRE-LED
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
EXTEND INTO HH 14:
3" CONDUIT
1-2/c 14
1-3/c 14 (LUM)
1-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) TYPE D30-9 LUMINAIRE POLE AND DAVIT ARM (AT 315 DEG)

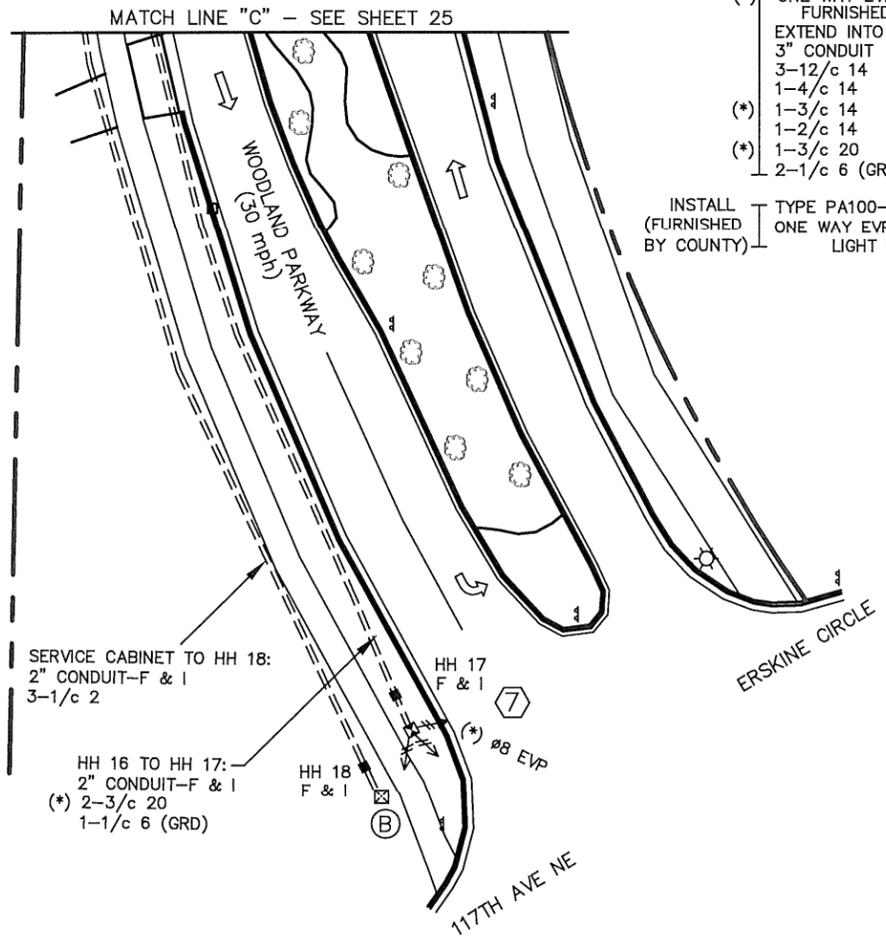
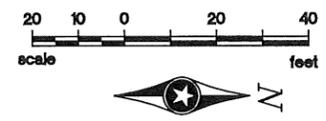
ⓑ INPLACE GROUND MOUNTED TRANSFORMER (SOP) (XCEL ENERGY)
F & I EXTEND INTO HH 18:
2" CONDUIT
3-1/c 2

⑦ F & I (*) PEDESTAL FOUNDATION
(*) 10' PEDESTAL POLE, BASE, WIND COLLAR
(*) SLIPFITTER COLLAR ATOP POLE
(*) INSTALL 1-ONE WAY AND 1-TWO WAY EVP DETECTORS ATOP POLE (BOTH #8)
EXTEND INTO HH 17:
(*) 2" CONDUIT
(*) 2-3/c 20
(*) 1-1/c 6 (GRD)
INSTALL (FURNISHED BY COUNTY) 1-ONE WAY AND 1-TWO WAY EVP DETECTORS (BOTH #8)

Ⓐ INSTALL (FURNISHED BY COUNTY) CONTROLLER AND CABINET

F & I EQUIPMENT PAD FOUNDATION
BBU SIGNAL SERVICE CABINET
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2" CONDUIT
3-1/c 6
CONTROLLER CABINET TO HH 1:
4" CONDUIT 4" CONDUIT
3-12/c 14 2-12/c 14
1-4/c 14 1-6/c 14
(*) 1-3/c 14 (*) 1-3/c 14
9-2/c 14 4-2/c 14
(*) 1-3/c 20 (*) 1-3/c 20
1-1/c 6 (GRD)
CONTROLLER CABINET TO HH 16:
4" CONDUIT 4" CONDUIT
3-12/c 14 2-12/c 14
1-4/c 14 1-6/c 14
(*) 1-3/c 14 (*) 1-3/c 14
13-2/c 14 2-2/c 14
(*) 1-3/c 20 (*) 3-3/c 20
1-1/c 6 (GRD)

F & I SERVICE CABINET TO HH 1:
1 1/4" CONDUIT
UNMETERED STREET LIGHT SERVICE
2-3/c 14 (LUM)
SERVICE CABINET TO HH 16:
1 1/4" CONDUIT
UNMETERED STREET LIGHT SERVICE
2-3/c 14 (LUM)
SERVICE CABINET TO HH 18:
2" CONDUIT
3-1/c 2
STUB OUT 3" CONDUIT FROM CONTROLLER CABINET TO WEST (THREAD AND CAP-FOR FUTURE USE)
STUB OUT 1" CONDUIT FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)
CONTROLLER CABINET TO FO VAULT:
(**) 2" CONDUIT
(**) 1-6 SM FIBER-OPTIC PIGTAIL



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

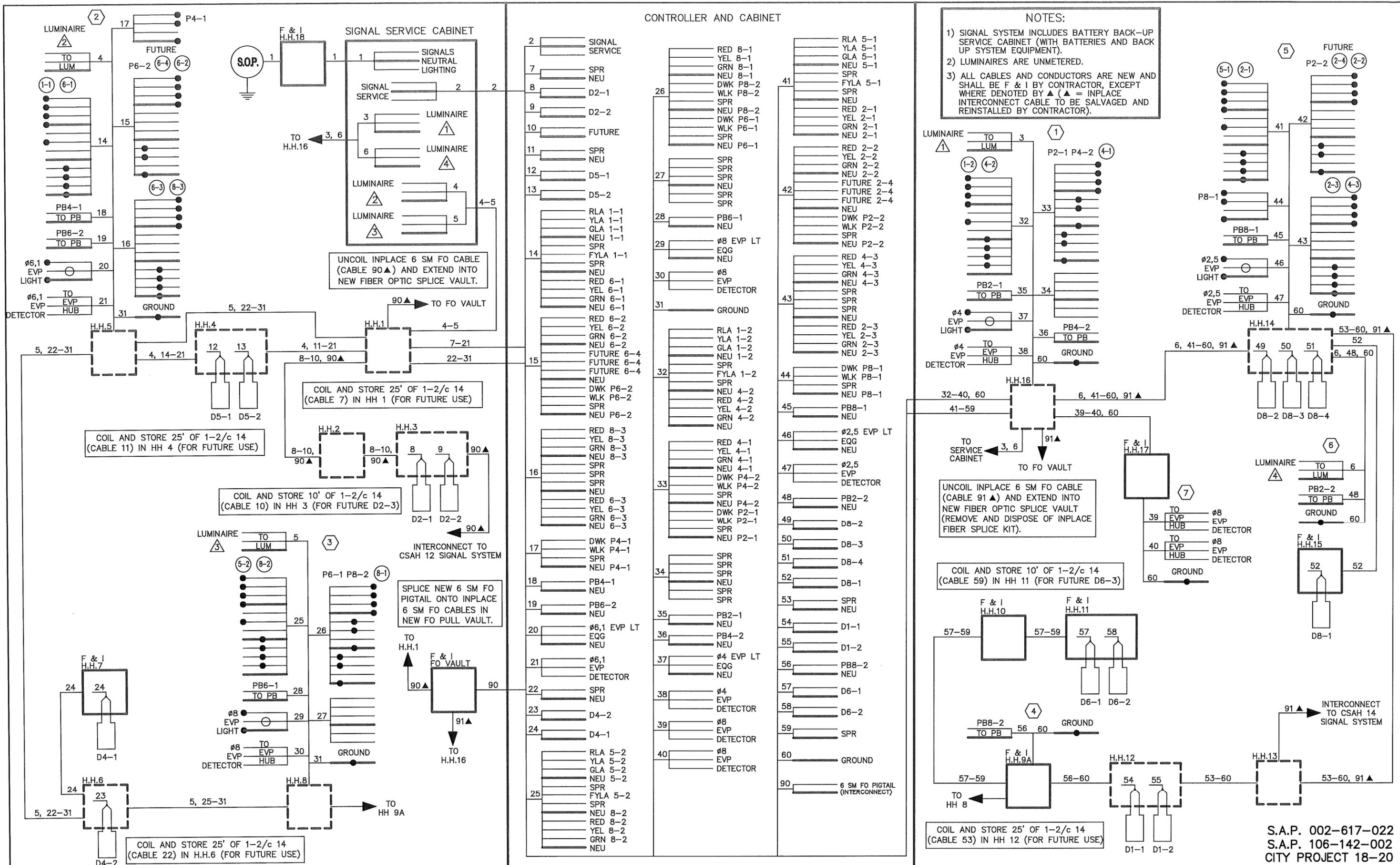
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: May 10, 2019 Name: John M. Gray, PE Lic. No. 22457

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

ANOKA COUNTY CITY OF BLAINE

TRAFFIC SIGNAL SYSTEM NOTES
CSAH 17 (LEXINGTON AVENUE) AT WOODLAND PARKWAY

S.A.P. 002-617-022
S.A.P. 106-142-002
CITY PROJECT 18-20
FILE NO. ANOKC 148315
DATE 05/10/2019
27
31



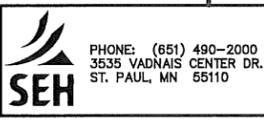
- NOTES:**
- 1) SIGNAL SYSTEM INCLUDES BATTERY BACK-UP SERVICE CABINET (WITH BATTERIES AND BACK UP SYSTEM EQUIPMENT).
 - 2) LUMINAIRES ARE UNMETERED.
 - 3) ALL CABLES AND CONDUCTORS ARE NEW AND SHALL BE F & I BY CONTRACTOR, EXCEPT WHERE DENOTED BY ▲ (▲ = INPLACE INTERCONNECT CABLE TO BE SALVAGED AND REINSTALLED BY CONTRACTOR).

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.

John M. Gray
 Name: John M. Gray, PE
 Lic. No. 22457
 Date: May 10, 2019



**ANOKA COUNTY
 CITY OF BLAINE**

**TRAFFIC SIGNAL SYSTEM
 FIELD WIRING DIAGRAM
 CSAH 17 (LEXINGTON AVENUE)
 AT WOODLAND PARKWAY**

FILE NO. ANOKC 148315
 DATE 05/10/2019
28
31

S.A.P. 002-617-022
 S.A.P. 106-142-002
 CITY PROJECT 18-20