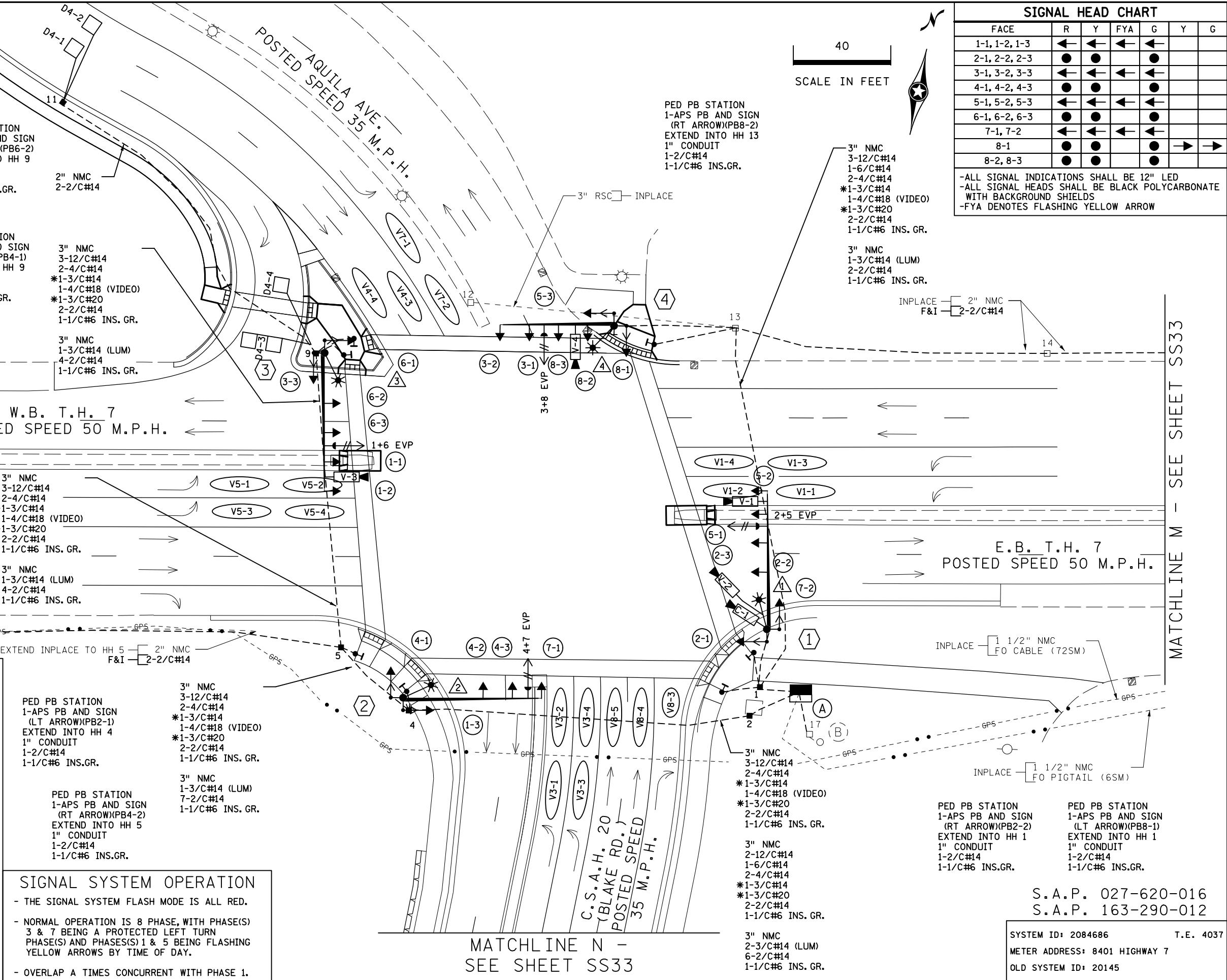
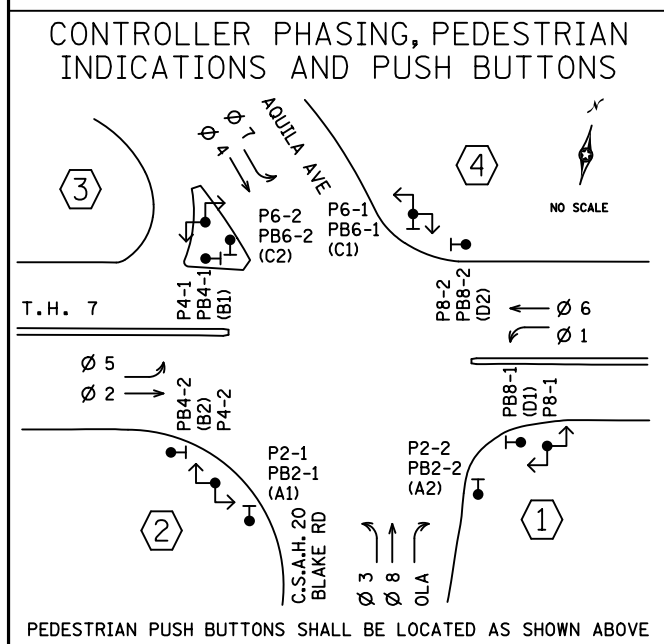


VIDEO DETECTOR CHART			
DESIGNATION	DETECTOR	MOUNT	LOCATION
V1-1, V1-2	V-3	MASTARM	35' & 5'
V1-3, V1-4	V-3	MASTARM	35' & 5'
V3-1, V3-2	V-4	MASTARM	35' & 5'
V3-3, V3-4	V-4	MASTARM	35' & 5'
V4-3, V4-4	V-2	LUMINAIRE	5'
V5-1, V5-2	V-1	MASTARM	35' & 5'
V5-3, V5-4	V-1	MASTARM	35' & 5'
V7-1, V7-2	V-2	MASTARM	35' & 5'
V8-1, V8-2	V-4	MASTARM	180'
V8-3, V8-4, V8-5	V-4	MASTARM	5'

LOOP DETECTOR CHART			
NUMBER	SIZE (FT)	LOCATION	STATUS
D2-1, D2-2	6x6	350'	F&I
D4-1, D4-2	6x6	180'	F&I
D4-3	2-6x6	-10'	F&I
D4-4	6x6	5'	F&I
D6-1, D6-2	6x6	400'	F&I

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET

- NOTES:
- SEE SPECIAL PROVISIONS FOR STATE FURNISHED MATERIALS.
 - REFER TO "FOR INFORMATION ONLY" SHEETS FOR INPLACE SIGNAL COMPONENTS.
 - ENSURE THE EXACT LOCATION OF THE HANDHOLES, POLES, LOOP DETECTORS AND EQUIPMENT PAD ARE VERIFIED IN THE FIELD BY MNDOT OFFICE PERSONNEL.
 - FOR CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK SEE DETAIL SHEET.
 - THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
 - USE PVC OR HDPE FOR ALL NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
 - ALL WIRES LISTED ARE AWG (AMERICAN WIRE GAUGE).
 - REMOVAL OF EXISTING SIGNAL COMPONENTS SPECIFIED IN THIS PLAN IS INCIDENTAL. CONTRACTOR SHALL MAINTAIN AND ADJUST INPLACE HANDHOLES AS NOTED IN THE PLANS TO THE NEW FINISH GRADE, TO THE SATISFACTION OF THE ENGINEER.
 - THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.



SIGNAL HEAD CHART						
FACE	R	Y	FYA	G	Y	G
1-1, 1-2, 1-3	←	←	←	←		
2-1, 2-2, 2-3	●	●	●	●		
3-1, 3-2, 3-3	←	←	←	←		
4-1, 4-2, 4-3	●	●	●	●		
5-1, 5-2, 5-3	←	←	←	←		
6-1, 6-2, 6-3	●	●	●	●		
7-1, 7-2	←	←	←	←		
8-1	●	●	●	●	→	→
8-2, 8-3	●	●	●	●		

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASE(S) 3 & 7 BEING A PROTECTED LEFT TURN PHASE(S) AND PHASE(S) 1 & 5 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
- OVERLAP A TIMES CONCURRENT WITH PHASE 1.

NO	DATE	DWN	CKD	REVISIONS

REVISED AT MN/DOT RED LINE AS BUILT BY JBA 4/8/19

I HEREBY CERTIFY THAT THIS SHEET 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.

PRINT NAME: _____
SIGNATURE: _____
DATE: _____ LICENSE # _____

TRAFFIC SIGNAL SYSTEM F LAYOUT
T.H. 7 AT C.S.A.H. 20 (BLAKE RD./AQUILA AVE.)

S.P. 2706-237 (T.H.7)
SHEET NO. SS32 OF SS61 SHEETS

SYSTEM ID: 2084686 T.E. 4037
METER ADDRESS: 8401 HIGHWAY 7
OLD SYSTEM ID: 20145

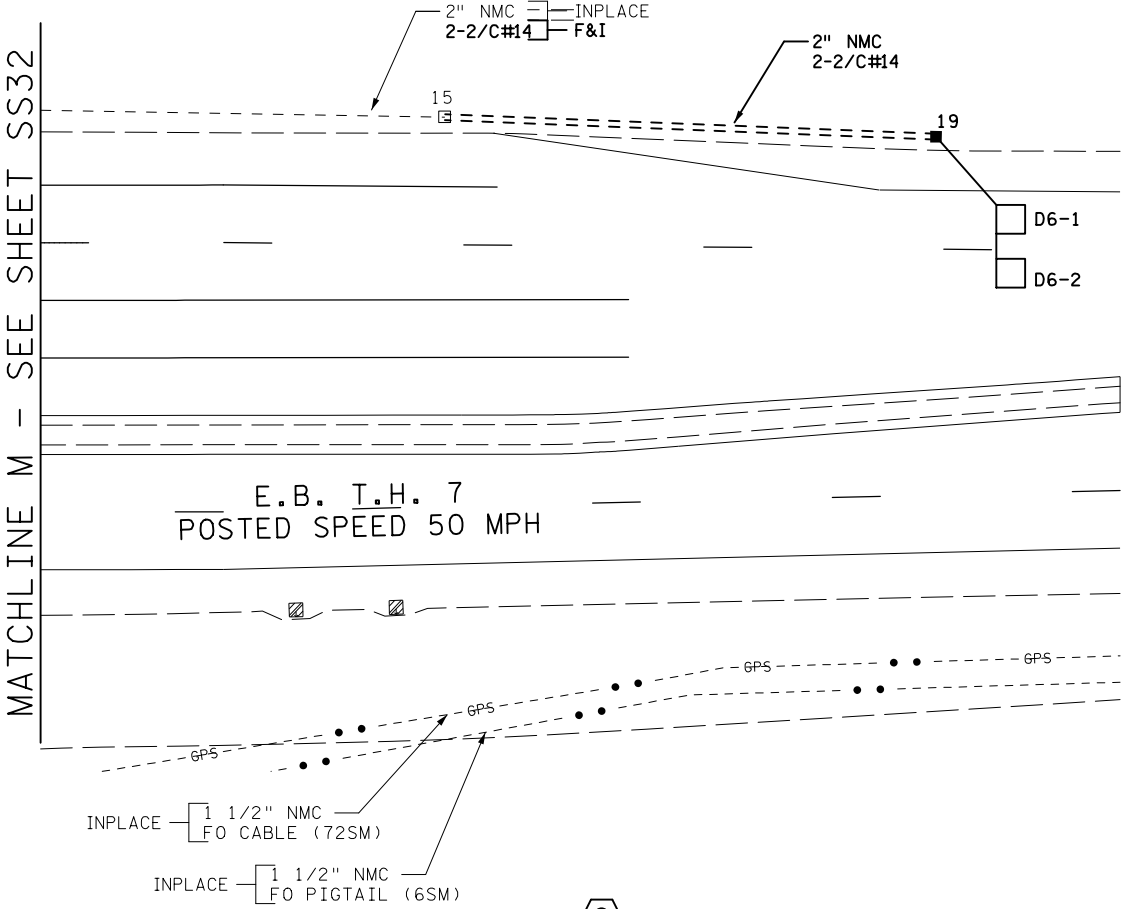
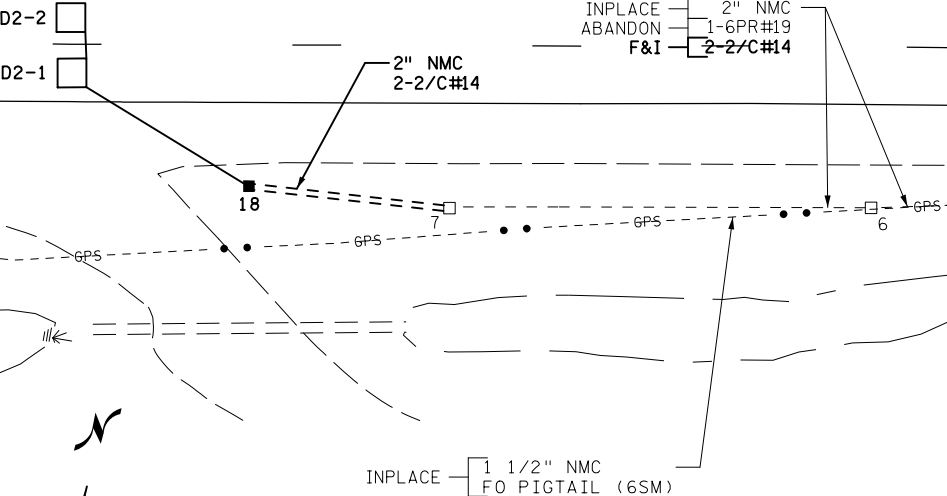
S.A.P. 027-620-016
S.A.P. 163-290-012

8 TIMES 30GNS

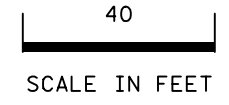
W.B. T.H. 7
POSTED SPEED 50 M.P.H.

E.B. T.H. 7
POSTED SPEED 50 MPH

C.S.A.H. 20 (BLAKE RD.)
POSTED SPEED 35 M.P.H.



- (A) EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET (SSB) NO BATTERY BACKUP SYSTEM OR BATTERIES
CONTROLLER AND CABINET (STATE FURNISHED)
- | | | |
|------------------|------------------|------------------|
| 3" NMC TO HH 1: | 3" NMC TO HH 2: | 3" NMC TO HH 2: |
| 3-12/C#14 | 2-12/C#14 | 6-2/C#14 |
| 2-4/C#14 | 1-6/C#14 | 1-1/C#6 INS. GR. |
| *1-3/C#14 | 2-4/C#14 | |
| 2-4/C#18 (VIDEO) | *1-3/C#14 | |
| *1-3/C#20 | *1-3/C#20 | |
| 3-2/C#14 | 3-2/C#14 | |
| 1-CAT5E | 1-1/C#6 INS. GR. | |
| 1-1/C#6 INS. GR. | | |
-
- | | |
|------------------|------------------|
| 3" NMC TO HH 1: | 3" NMC TO HH 2: |
| 3-12/C#14 | 3-12/C#14 |
| 1-6/C#14 | 2-4/C#14 |
| 2-4/C#14 | *1-3/C#14 |
| *1-3/C#14 | 1-4/C#18 (VIDEO) |
| 1-4/C#18 (VIDEO) | *1-3/C#20 |
| *1-3/C#20 | 2-2/C#14 |
| 2-2/C#14 | 1-1/C#6 INS. GR. |
| 1-1/C#6 INS. GR. | |
- GROUND WIRE AND GROUND ROD - MIN 8' OUT FROM PAD
1-2" AND 1-3" NMC STUBBED OUT (CAPPED BOTH ENDS)
EXTEND 1-1/2" NMC TO TMS VAULT:
1-FO PIGTAIL (6SM) - PULL BACK TO PULL VAULT AT TEXAS AVE. AND REINSTALL
CONTROLLER CABINET TO SERVICE CABINET:
2" NMC
3-1/C#6
SERVICE CABINET TO HH 1:
2" NMC
2-3/C#14 (LUM)
SERVICE CABINET TO EXTERNAL GR. RD.:
1" NMC
1-1/C#6 INS. GR.
(SEE EQUIPMENT PAD LAYOUT)
SERVICE CABINET TO HH 2:
2" NMC
2-3/C#14 (LUM)
HH1 TO SERVICE CABINET:
2" NMC
3-1/C#2
- (B) INPLACE SOP - WOOD POLE
(BY XCEL ENERGY)
2" CONDUIT RISER, WEATHERHEAD
AND CONDUIT TO HH 17:
3-1/C#2



- (1) PA100 POLE FOUNDATION
TYPE PA100-A-55-X6-350/CAM 400 EXTENSION
(MOUNTED AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
3-STRAIGHT MOUNT SIGNALS OVERHEAD AT 10', 22' & 34'
2-ANGLE MOUNT SIGNALS AT 90 & 180 DEG
2-ANGLE MOUNT C.D. PED HEADS
AT 90 AND 180 DEG
*1-ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 2+5)
1-VIDEO DETECTION CAMERA WITH MOUNT AT 6'
1-VIDEO DETECTION CAMERA WITH MOUNT (DAVIT)
1-VIDEO CAMERA WITH MOUNT
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD 5-2
2-TYPE D SIGNS (D-1 & D-2) (SEE SIGN DETAILS)
3" NMC TO HH 1:
3-12/C#14
*2-4/C#14
1-3/C#14
1-3/C#14 (LUM)
*2-4/C#18 (VIDEO)
1-3/C#20
1-CAT5E
7/16" GROUND BRAID TO GROUND ROD
1-1/C#6 INS. GR.

- (2) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-ANGLE MOUNT SIGNALS AT 90 & 180 DEG
2-ANGLE MOUNT C.D. PED HEADS
AT 90 AND 180 DEG
*1-ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 4+7)
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD 7-1
1-TYPE D SIGN (D-3) (SEE SIGN DETAILS)
3" NMC TO HH 4:
2-12/C#14
1-6/C#14
2-4/C#14
*1-3/C#14
1-3/C#14 (LUM)
*1-3/C#20
1-1/C#6 INS. GR.

- (3) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
3-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12', 24' & 36'
2-ANGLE MOUNT SIGNALS AT 90 & 180 DEG
2-ANGLE MOUNT C.D. PED HEADS
AT 90 AND 180 DEG
*1-ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 1+6)
1-VIDEO DETECTION CAMERA WITH MOUNT AT 6'
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD 1-2
2-TYPE D SIGNS (D-4 & D-5) (SEE SIGN DETAILS)
3" NMC TO HH 9:
3-12/C#14
2-4/C#14
*1-3/C#14
1-3/C#14 (LUM)
1-4/C#18 (VIDEO)
*1-3/C#20
1-1/C#6 INS. GR.

- (4) PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
3-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12', 24' & 36'
2-ANGLE MOUNT SIGNALS AT 90 & 180 DEG
2-ANGLE MOUNT C.D. PED HEADS
AT 90 AND 180 DEG
1-APS PB AND SIGN (LT ARROW)(PB6-1)
AND APS PB MOUNTING SPACERS
*1-ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 3+8)
1-VIDEO DETECTION CAMERA WITH MOUNT AT 30'
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD 3-2
1-TYPE D SIGN (D-3) (SEE SIGN DETAILS)
3" NMC TO INPLACE HH 13:
3-12/C#14
1-6/C#14
2-4/C#14
*1-3/C#14
1-3/C#14 (LUM)
1-4/C#18 (VIDEO)
*1-3/C#20
1-2/C#14
1-1/C#6 INS. GR.

S.A.P. 027-620-016
S.A.P. 163-290-012

SYSTEM ID: 2084686 T.E. 4037
METER ADDRESS: 8401 HIGHWAY 7
OLD SYSTEM ID: 20145

NO	DATE	DWN	CKD	REVISIONS

REVISED AT MN/DOT
RED LINE AS BUILT
BY JBA 4/8/19

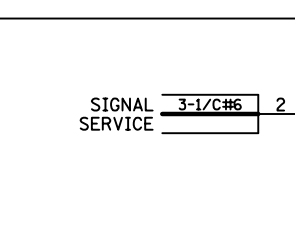
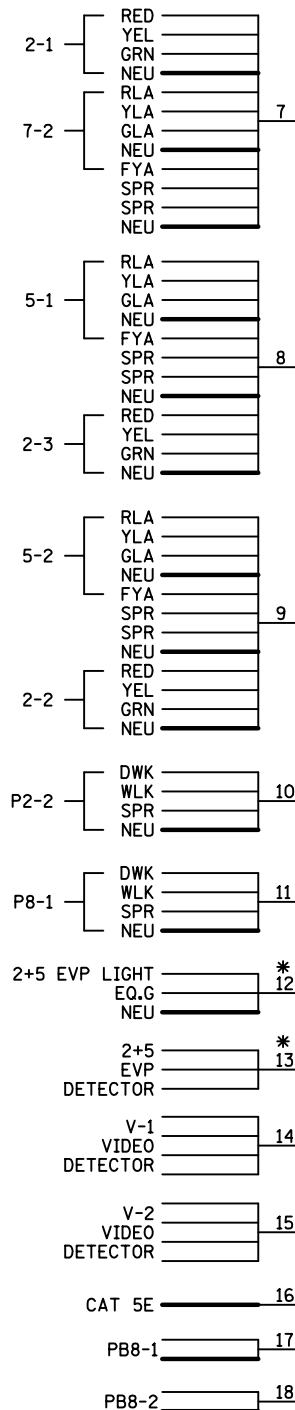
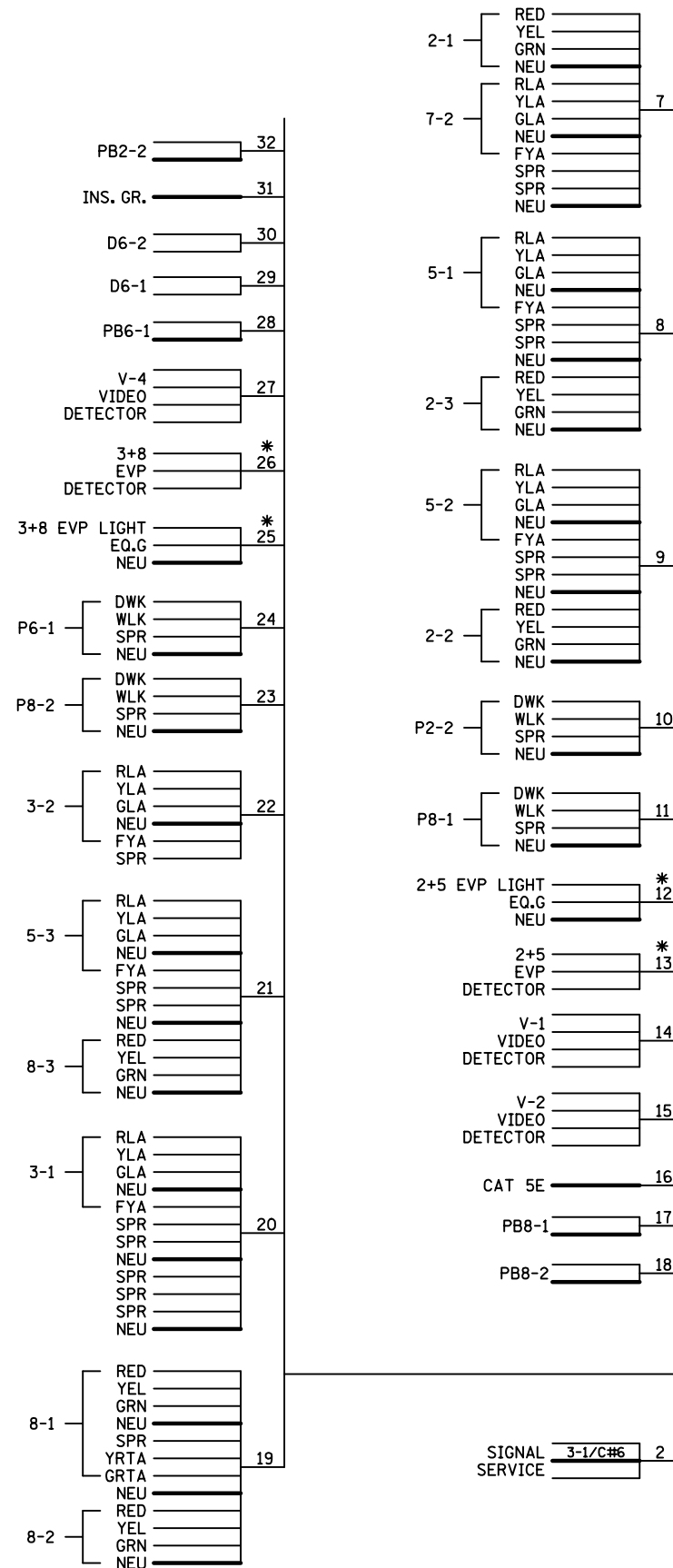
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UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: _____
SIGNATURE: _____
DATE: _____ LICENSE # _____

SIGNAL SYSTEM F MATCHLINES AND NOTES
T.H. 7 AT C.S.A.H. 20 (BLAKE RD./AQUILA AVE.)

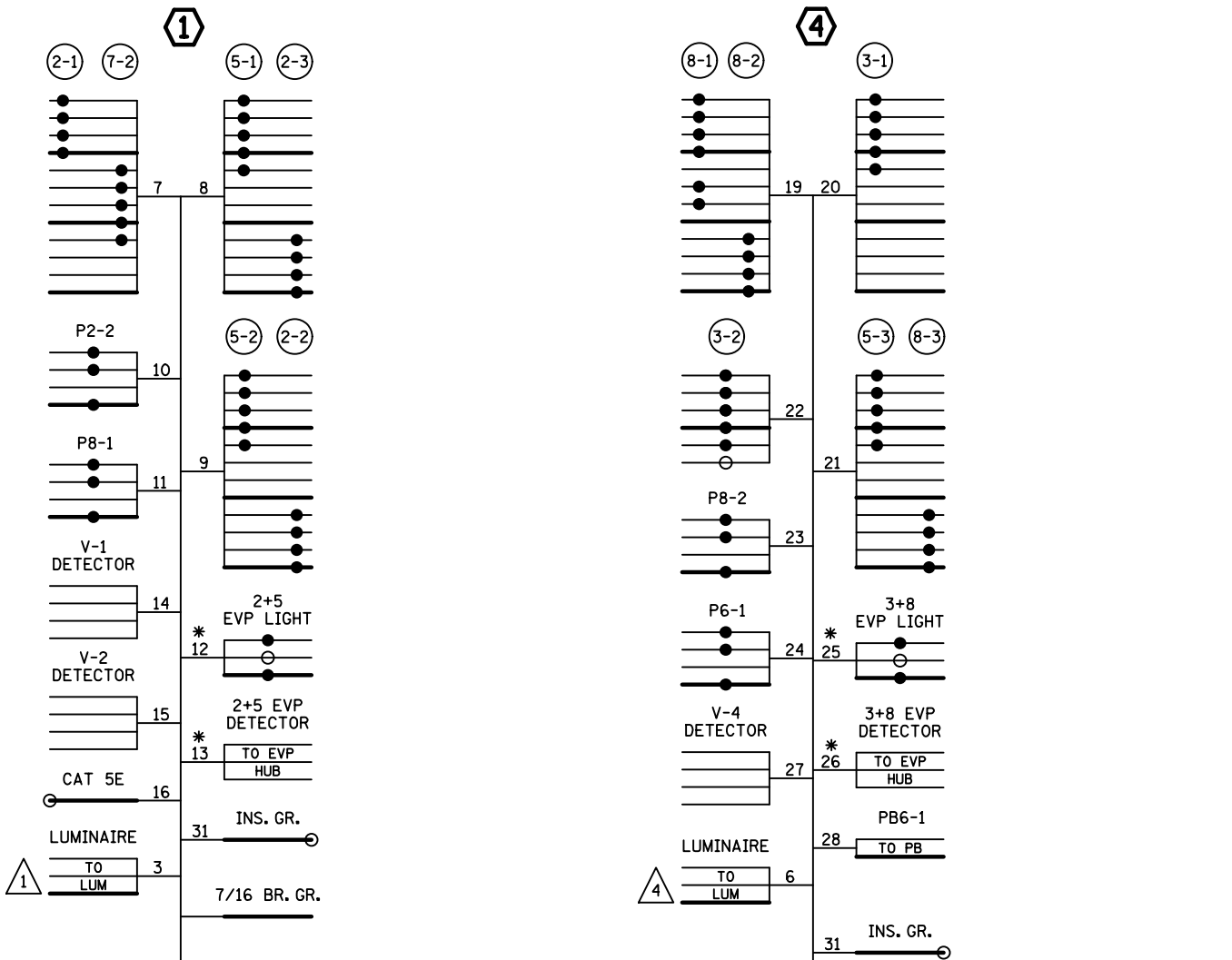
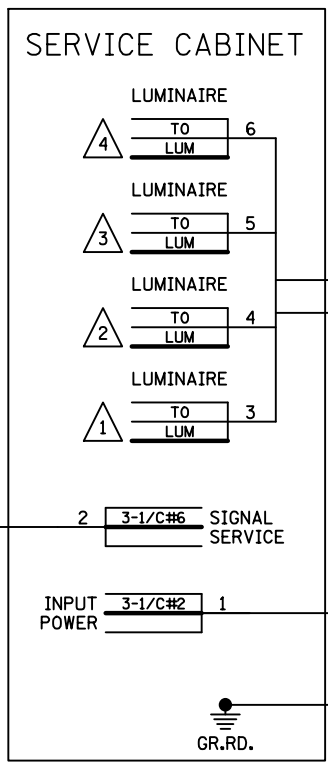
S.P. 2706-237 (T.H.7)
SHEET NO. SS33 OF SS61 SHEETS

CONTROLLER CABINET



NOTES:

1. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
2. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
3. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET (NO BATTERIES).



NO	DATE	DWN	CKD	REVISIONS

REVISED AT MN/DOT
RED LINE AS BUILT
BY JBA 4/8/19

I HEREBY CERTIFY THAT THIS SHEET 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.

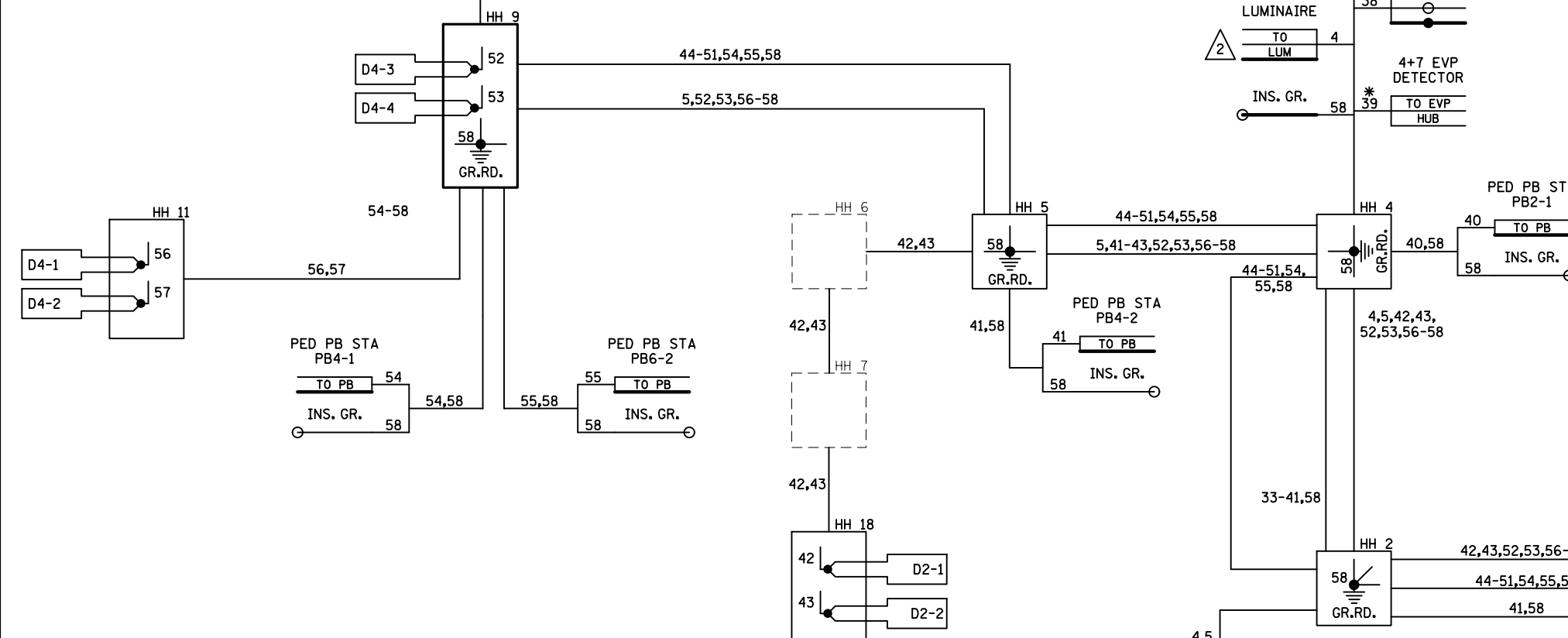
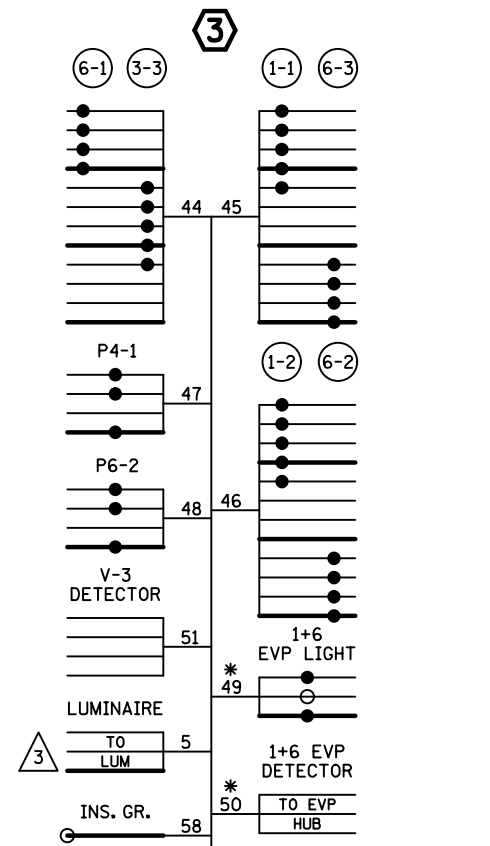
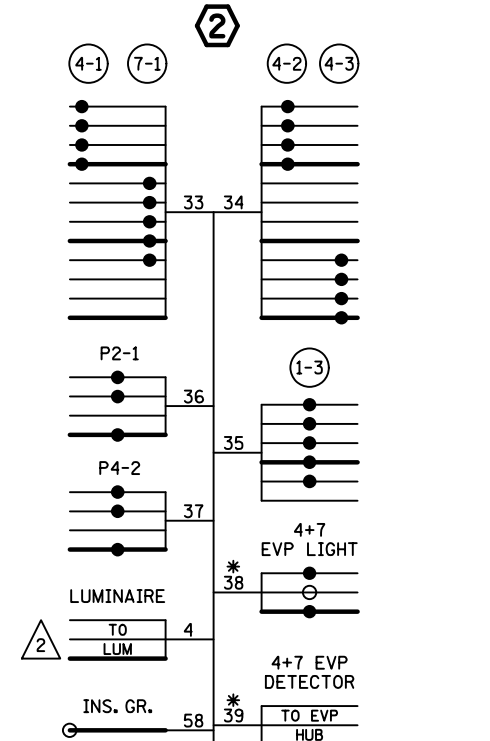
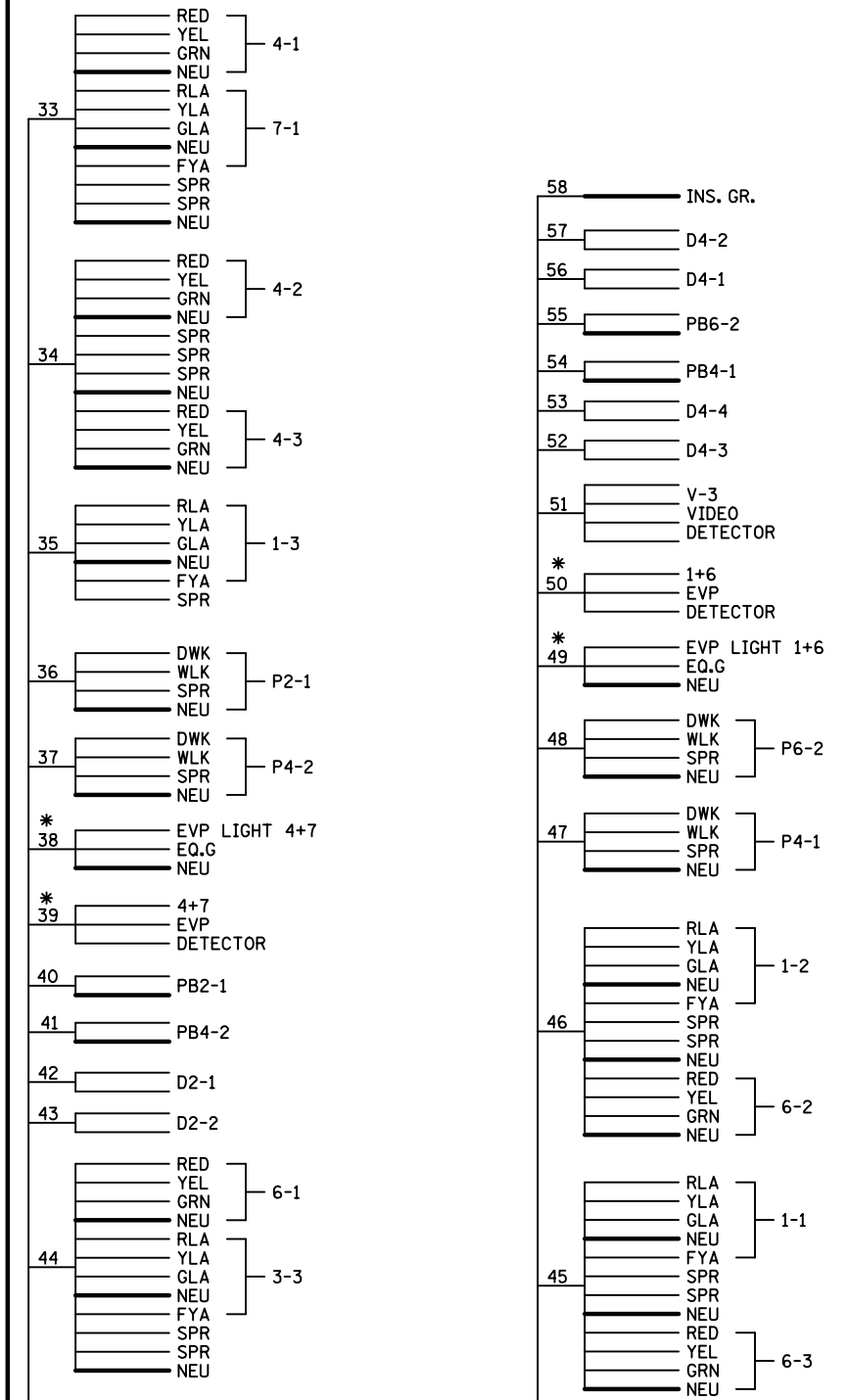
PRINT NAME: _____
SIGNATURE: _____
DATE: _____ LICENSE # _____

SIGNAL SYSTEM F FIELD WIRING DIAGRAM
T.H. 7 AT C.S.A.H. 20 (BLAKE RD./AQUILA AVE.)

S.P. 2706-237 (T.H.7)
SHEET NO. SS34 OF SS61 SHEETS

S.A.P. 027-620-016
S.A.P. 163-290-012
SYSTEM ID: 2084686 T.E.4037
METER ADDRESS: 8401 HIGHWAY 7
OLD SYSTEM ID: 20145

CONTROLLER CABINET



- NOTES:
- FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
 - ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
 - SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET (NO BATTERIES).

S.A.P. 027-620-016
S.A.P. 163-290-012

SYSTEM ID: 2084686 T.E.4037
METER ADDRESS: 8401 HIGHWAY 7
OLD SYSTEM ID: 20145

SIGNAL SYSTEM F FIELD WIRING DIAGRAM
T.H. 7 AT C.S.A.H. 20 (BLAKE RD./AQUILA AVE.)

S.P. 2706-237 (T.H.7)
SHEET NO. SS35 OF SS61 SHEETS

NO	DATE	DWN	CKD	REVISIONS

REVISED AT MN/DOT
RED LINE AS BUILT
BY JBA 4/8/19

I HEREBY CERTIFY THAT THIS SHEET 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.
PRINT NAME: _____
SIGNATURE: _____
DATE: _____ LICENSE # _____