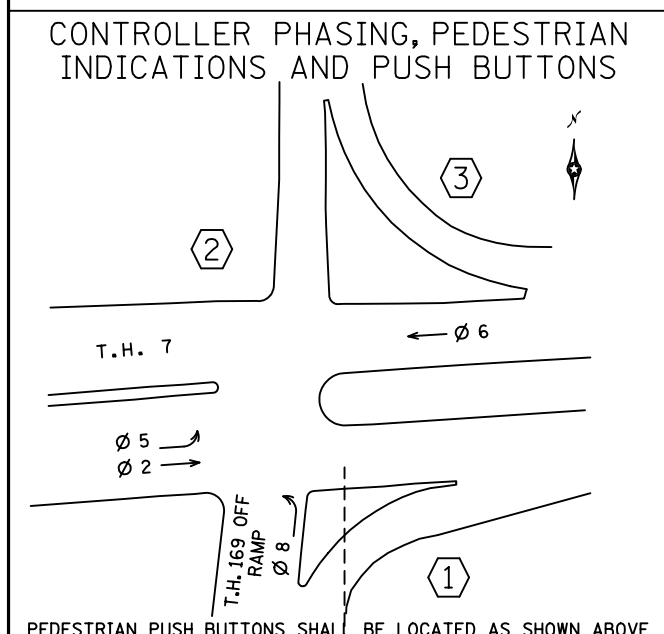
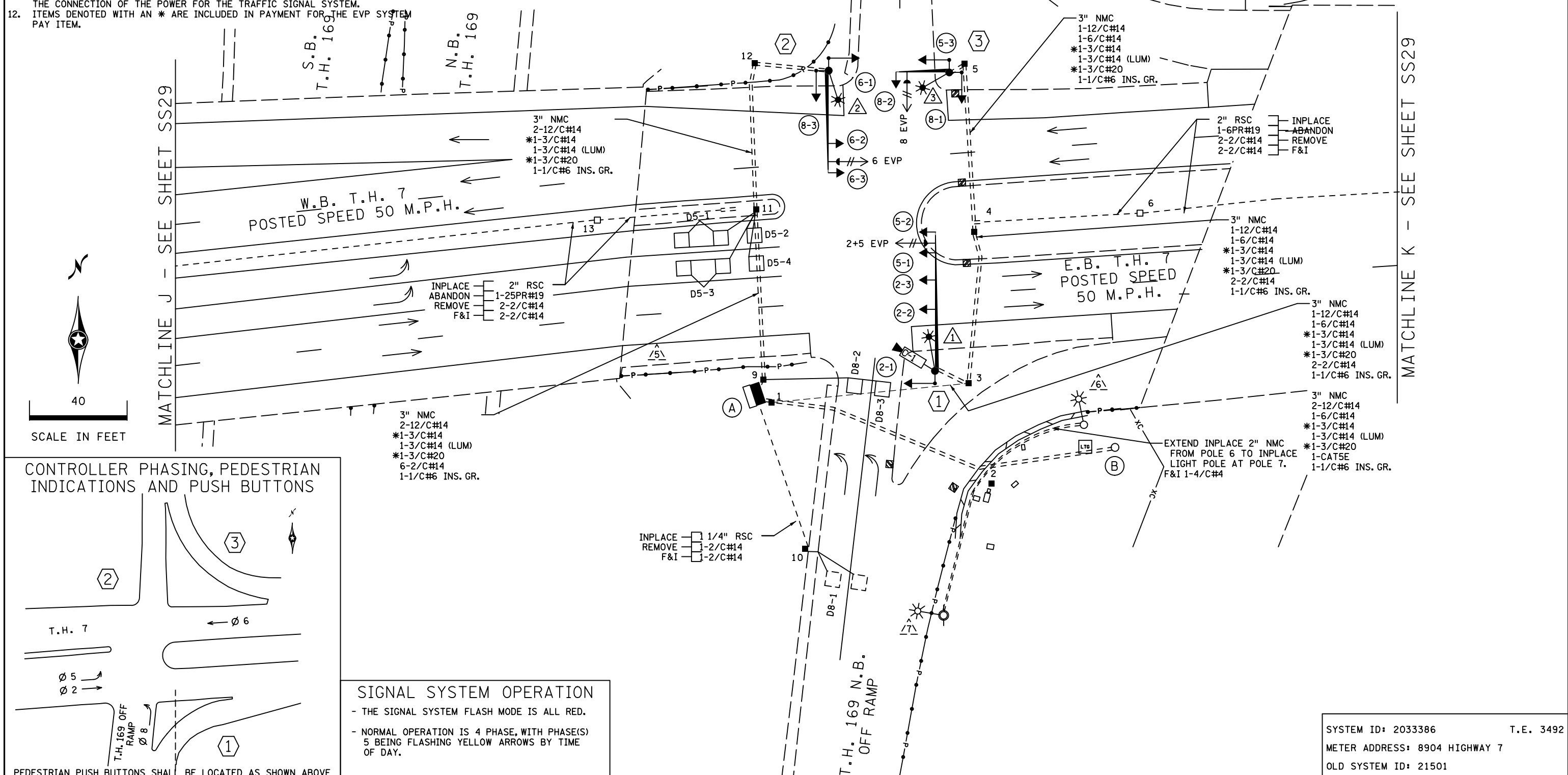


NOTES:

- 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 RAMP, 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 THE EXISTING SIGNAL SYSTEM, TMS CABLES (SEE TMS PLANS), & LUMINAIRES SHALL BE CONSIDERED INCIDENTAL TO THE "TRAFFIC SIGNAL SYSTEM E" PAY ITEM.
- THE NEW SIGNAL SYSTEM SHALL BE CONSTRUCTED AROUND THE EXISTING SIGNAL SYSTEM TO MAINTAIN TRAFFIC SIGNAL OPERATIONS.
- 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.

LOOP DETECTOR CHART				SIGNAL HEAD CHART				
NUMBER	SIZE (FT)	LOCATION	STATUS	FACE	R	Y	G	FYA
D2-1, D2-2	6x6	400	F&I	2-1, 2-2, 2-3	●	●	●	
D5-1, D5-3	2-6x6	20 & 35	F&I	5-1, 5-2, 5-3	←	←	←	←
D5-2, D5-4	6x6	5	F&I	6-1, 6-2, 6-3	●	●	●	
D6-1, D6-2	6x6	370	F&I	8-1, 8-2, 8-3	●	●	●	
D8-1	2-6x6	90	INPLACE	-ALL SIGNAL INDICATIONS SHALL BE 12" LED -ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS				
D8-2, D8-3	6x6	10	F&I					

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



**SIGNAL SYSTEM OPERATION**

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 4 PHASE, WITH PHASE(S) 5 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.

NO	DATE	DWN	CKD	REVISIONS

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

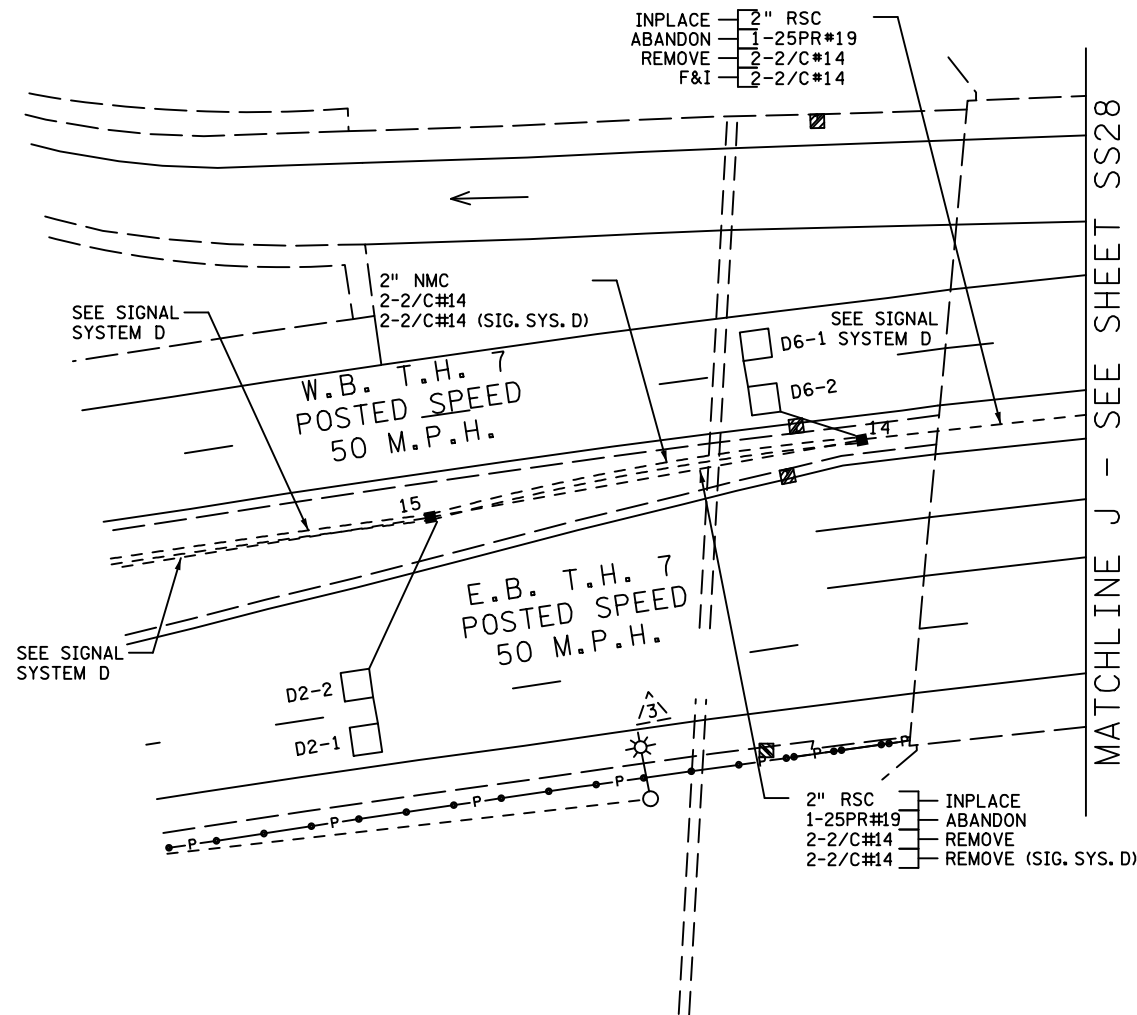
I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_ LICENSE # \_\_\_\_\_

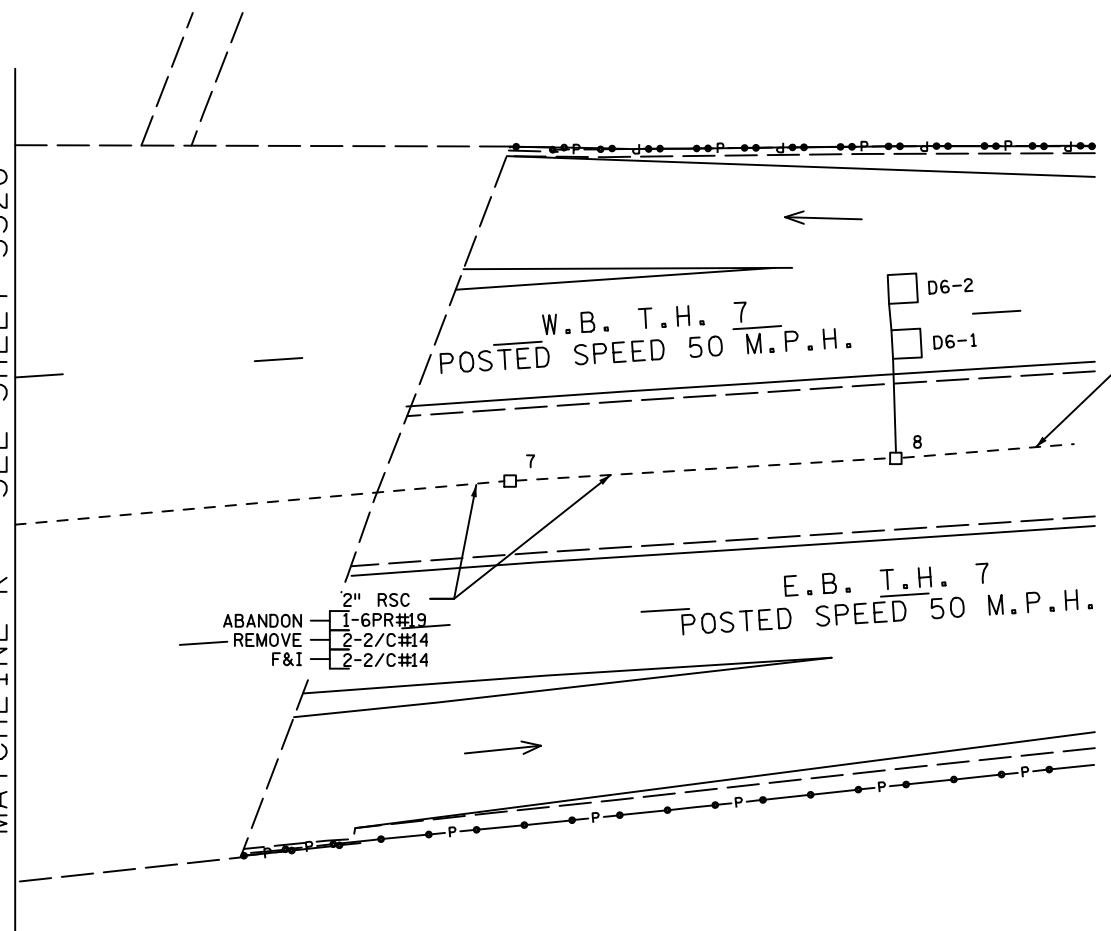
**TRAFFIC SIGNAL SYSTEM E LAYOUT**  
T.H. 7 AT T.H. 169 EAST RAMP

**S.P. 2706-237 (T.H.7)**  
SHEET NO. SS28 OF SS61 SHEETS

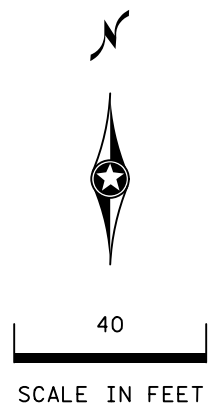
SYSTEM ID: 2033386 T.E. 3492  
METER ADDRESS: 8904 HIGHWAY 7  
OLD SYSTEM ID: 21501



MATCHLINE K - SEE SHEET SS28



2" RSC  
1-6PR#19  
INPLACE  
ABANDON



- ① PA100 POLE FOUNDATION  
TYPE PA100-A-55-X6-350/CAM 400 EXTENSION  
(MOUNTED AT 350 DEG)  
1-VIDEO CAMERA WITH MOUNT  
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'  
3-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11', 22' & 31'  
1-ANGLE MOUNT SIGNALS AT 180 DEG  
\*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 2+5)  
1-LUMINAIRE-LED (FOR 35' MOUNTING HEIGHT)  
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)  
2-R9-3A NO PED SIGN AT 0 AND 270 DEG  
TYPE D SIGN (D-6) (SEE SIGN DETAILS)  
3" NMC TO HH 3:  
2-12/C#14  
1-6/C#14  
\*1-3/C#14  
1-3/C#14 (LUM)  
\*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-40-D40-9 (DAVIT AT 350 DEG)  
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'  
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'  
2-ANGLE MOUNT SIGNALS AT 90 & 180 DEG  
\*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 6)  
LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)  
2-R9-3A NO PED SIGNS AT 0 AND 270 DEG  
TYPE D SIGN (D-7) (SEE SIGN DETAILS)  
3" NMC TO HH 12:  
2-12/C#14  
\*1-3/C#14  
1-3/C#14 (LUM)  
\*1-3/C#20  
1-1/C#6 INS. GR.

- ③ PA85 POLE FOUNDATION  
TYPE PA85-A-20-D40-9 (DAVIT AT 350 DEG)  
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'  
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG  
\*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 8)  
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)  
2-R3-9A NO PED SIGNS AT 0 AND 270 DEG  
1-R6-2(L) MOUNTED AT 0 DEG  
3" NMC TO HH 5:  
1-12/C#14  
1-6/C#14  
\*1-3/C#14  
1-3/C#14 (LUM)  
\*1-3/C#20  
1-1/C#6 INS. GR.

- Ⓐ EQUIPMENT PAD (SEE DETAIL SHEET)  
SERVICE CABINET (SSB) NO BATTERY BACKUP SYSTEM OR BATTERIES  
CONTROLLER AND CABINET (STATE FURNISHED)  
3" NMC TO HH 1:  
2-12/C#14  
1-6/C#14  
\*1-3/C#14  
\*1-3/C#20  
1-CAT5E  
1-1/C#6 INS. GR.  
3" NMC TO HH 1:  
1-12/C#14  
1-6/C#14  
\*1-3/C#14  
\*1-3/C#20  
2-2/C#14  
1-1/C#6 INS. GR.  
2-3" NMC TO HH 9:  
2-12/C#14  
\*1-3/C#14  
\*1-3/C#20  
9-2/C#14  
1-1/C#14 INS. GR.

GROUND WIRE AND GROUND ROD - MIN 8' OUT FROM PAD  
2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)  
EXTEND 1 1/2" CONDUIT TO TMS VAULT;  
PULLBACK TO TMS VAULT & REINSTALL 1-FO PIGTAIL (6SM)  
CONTROLLER CABINET TO SERVICE CABINET:  
2" NMC  
3-1/C#6  
CONTROLLER CABINET TO SERVICE CABINET (COMM):  
2" NMC  
1-6PR#19  
SERVICE CABINET TO SOP:  
2" NMC  
3-1/C#2  
SERVICE CABINET TO HH1:  
2" NMC  
2-3/C#14 (LUM)  
SERVICE CABINET TO HH2:  
2" NMC  
1-3/C#14 (LUM)  
SERVICE CABINET TO EXTERNAL GR. RD.:  
1" NMC  
1-1/C#6 INS. GR.  
(SEE EQUIPMENT PAD LAYOUT)

- Ⓑ INPLACE - SOP - WOOD POLE (BY XCEL ENERGY)  
2" CONDUIT RISER, WEATHERHEAD AND CONDUIT TO SERVICE CABINET;  
REMOVE - 2" CONDUIT RISER, WEATHERHEAD AND CONDUIT TO SERVICE CABINET;  
F&I - 2" CONDUIT RISER, WEATHERHEAD AND CONDUIT TO SERVICE CABINET;  
3-1/C#2

SYSTEM ID: 2033386 T.E. 3492  
METER ADDRESS: 8904 HIGHWAY 7  
OLD SYSTEM ID: 21501

NO	DATE	DWN	CKD	REVISIONS

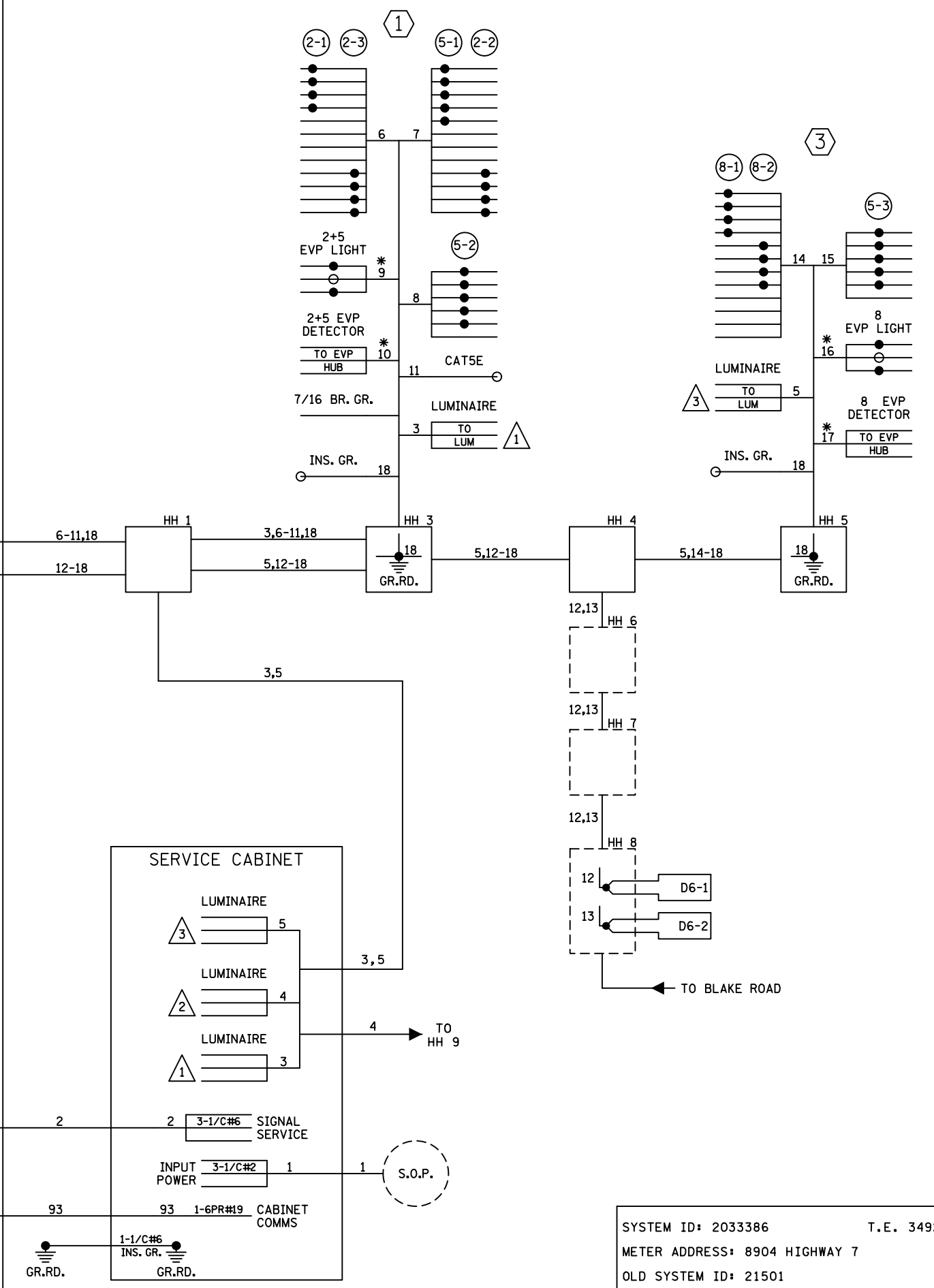
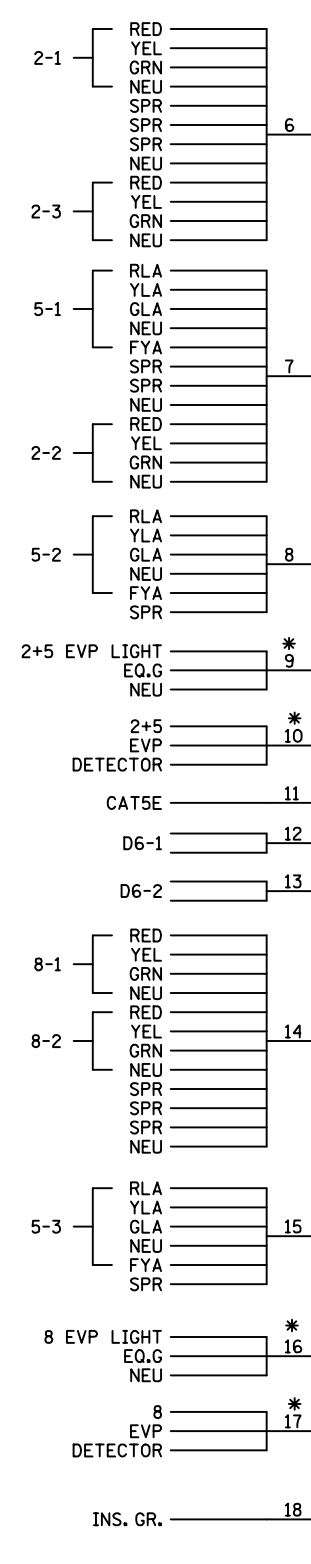
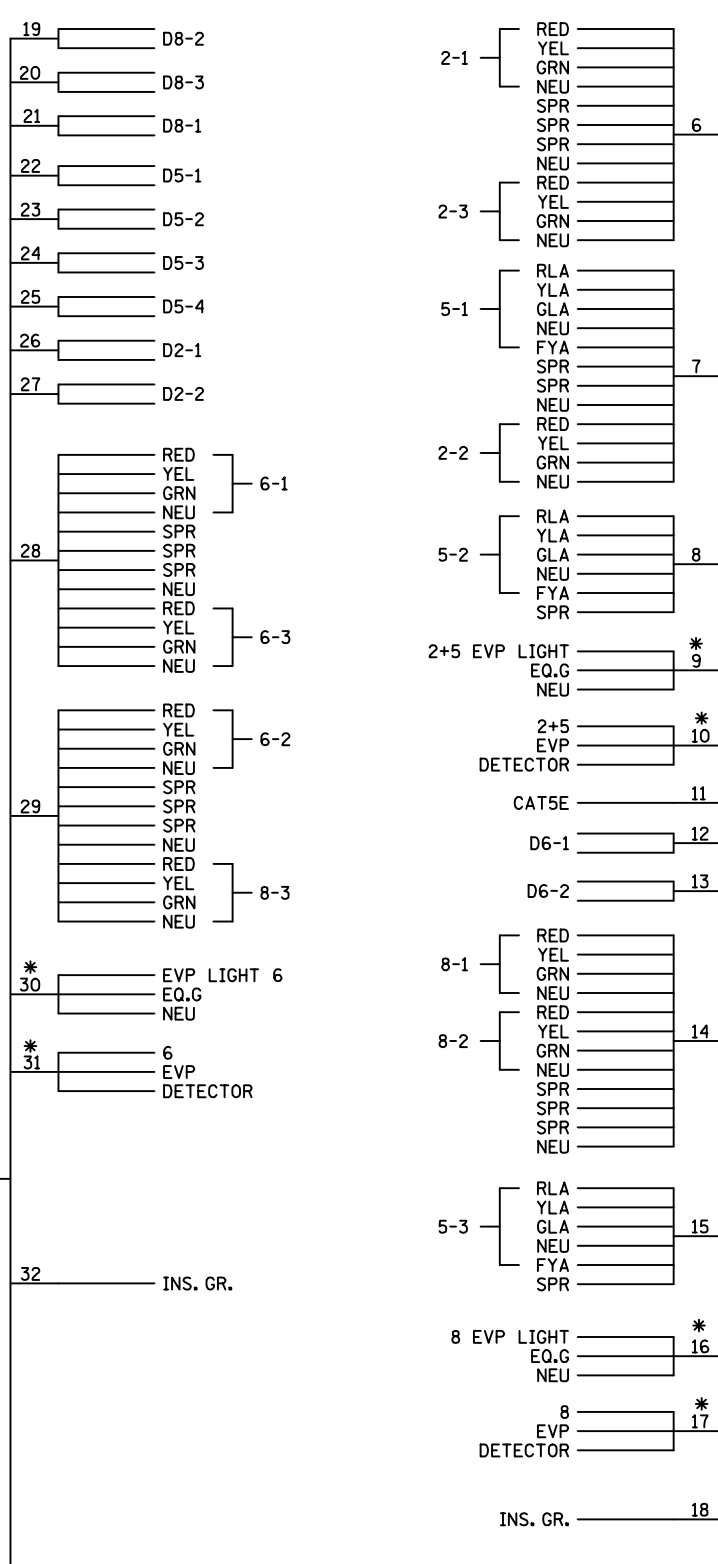
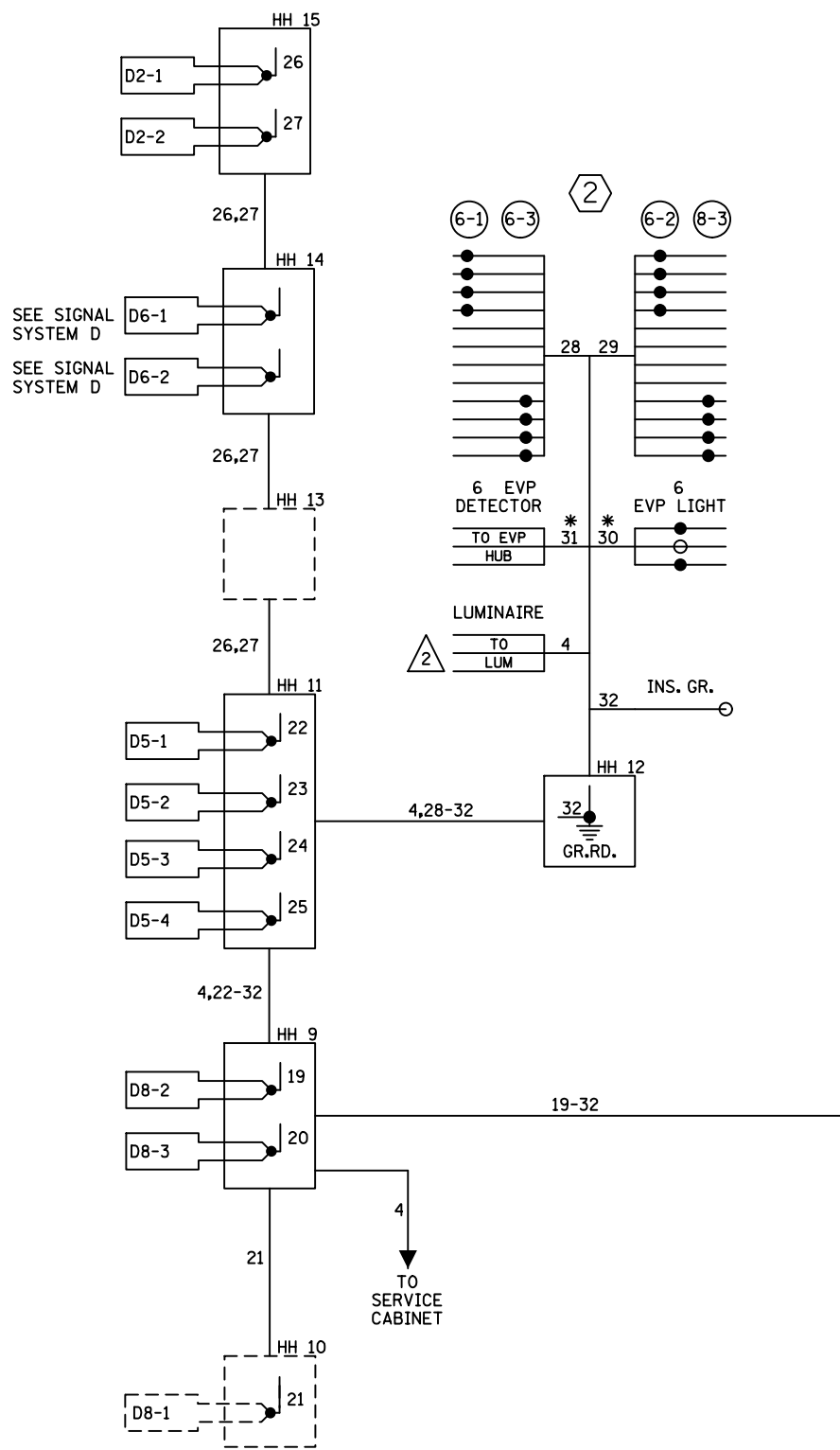
REVISED AT MN/DOT  
RED LINE AS BUILT  
BY JBA 4/8/19

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 E MATCHLINES AND NOTES  
T.H. 7 AT T.H. 169 EAST RAMP

S.P. 2706-237 (T.H.7)  
SHEET NO. SS29 OF SS61 SHEETS

CONTROLLER CABINET



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

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 E FIELD WIRING DIAGRAM  
T.H. 7 AT T.H. 169 EAST RAMP

S.P. 2706-237 (T.H.7)  
SHEET NO. SS30 OF SS61 SHEETS

SYSTEM ID: 2033386 T.E. 3492  
METER ADDRESS: 8904 HIGHWAY 7  
OLD SYSTEM ID: 21501

NO	DATE	DWN	CKD	REVISIONS