

DESCRIPTION OF WORK

- 1) SALVAGE AND INSTALL POLE 5 AND ALL ATTACHED EQUIPMENT TO THE PROPOSED LOCATION. FURNISH AND INSTALL A NEW FOUNDATION FOR POLE 5. ADJUST SIGNAL HEAD OFFSETS TO ALIGN WITH LANES.
- 2) SALVAGE AND INSTALL POLE 4 AND ALL ATTACHED EQUIPMENT TO THE PROPOSED LOCATION. FURNISH AND INSTALL A NEW FOUNDATION FOR POLE 4.
- 3) SALVAGE AND INSTALL POLE 6 AND ALL ATTACHED EQUIPMENT TO PROPOSED LOCATION. FURNISH AND INSTALL A NEW FOUNDATION FOR POLE 6.
- 4) REMOVE THE POLE 1 MAST ARM. FURNISH AND INSTALL A NEW MAST ARM TO THE EXISTING POLE 1 POST. FURNISH AND INSTALL A MAST ARM EXTENSION TO THE END OF THE NEW MAST ARM. ADJUST SIGNAL HEAD OFFSETS TO ALIGN WITH LANES.
- 5) REMOVE SIGNAL HEADS 4-1 AND 4-2. FURNISH AND INSTALL NEW SIGNAL HEADS 4-1 AND 4-2 AT THE EXISTING LOCATIONS.
- 6) REMOVE EXISTING HANDHOLES 5, 6, 7, 8, 9, 10, 12 AND 13. FURNISH AND INSTALL NEW HANDHOLES 5, 6, 7, 8, 9, 10, 12 AND 13.
- 7) REMOVE EXISTING CONDUIT BETWEEN RELOCATED POLES AND NEW HANDHOLES. FURNISH AND INSTALL NEW CONDUIT BETWEEN MODIFIED POLES AND MODIFIED HANDHOLES.
- 8) PULL BACK EXISTING WIRING TO BE REUSED. FURNISH AND INSTALL NEW WIRE AS INDICATED IN THE PLANS.
- 9) REMOVE DETECTORS D1-1, D1-2, D3-3, D3-4, D5-1, D5-2, D5-3, D5-4, D7-1, AND D7-2. FURNISH AND INSTALL NEW LOOP DETECTORS D1-1, D1-2, D3-3, D3-4, D3-5, D3-6, D5-1, D5-2, D6-4, D7-1, D7-2, D7-3, D7-4 AND D8-3.
- 10) TRAFFIC SIGNAL SYSTEM SHALL BE REPAINTED ACCORDING TO SPECIAL PROVISIONS.

INPLACE TRANSFORMER PAD (SOP)
(BY CONNEXUS ENERGY)

NOTES

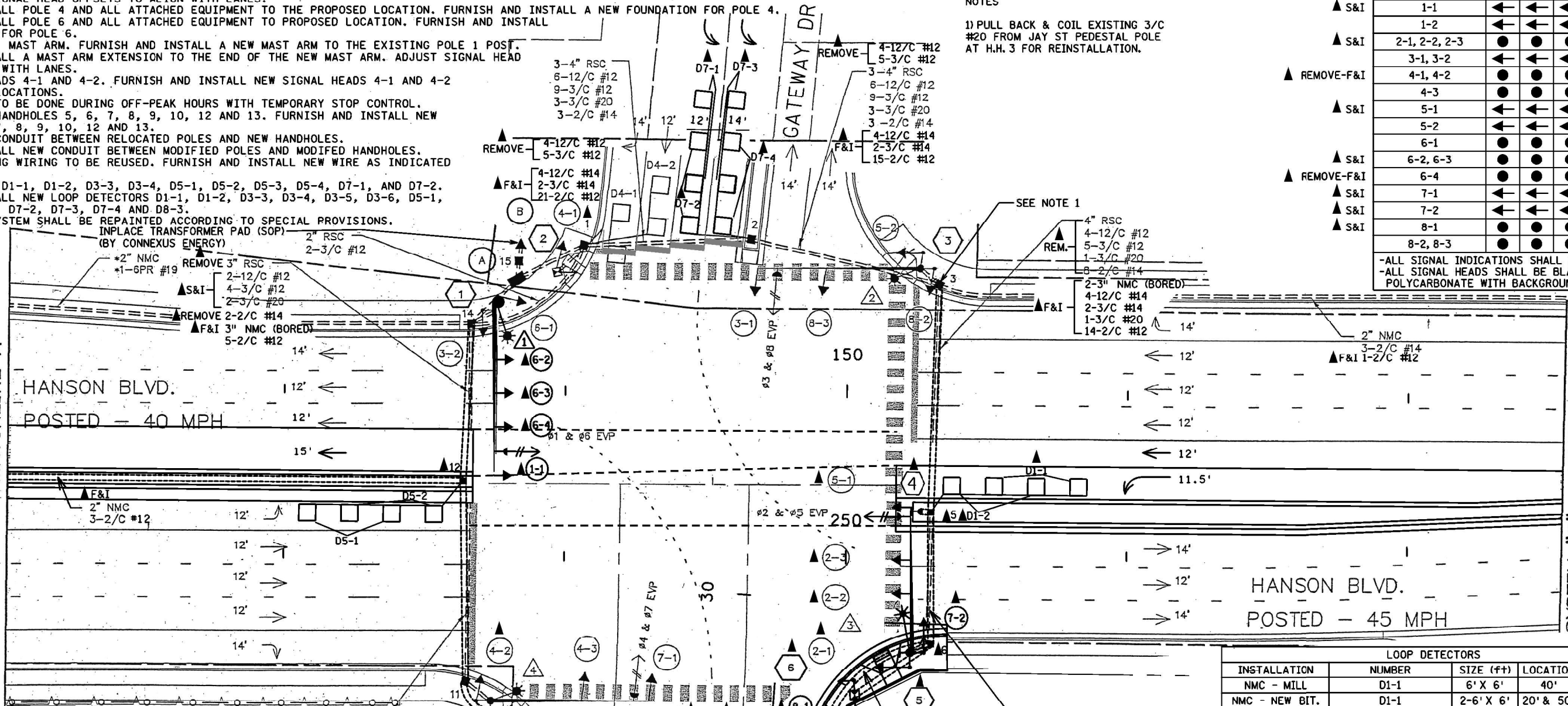
- 1) PULL BACK & COIL EXISTING 3/4" #20 FROM JAY ST PEDESTAL POLE AT H.H. 3 FOR REINSTALLATION.

FACE	SIGNAL FACES				
	R	Y	G	YRA	GRA
▲ S&I 1-1	←	←	←		
▲ S&I 1-2	←	←	←		
▲ S&I 2-1, 2-2, 2-3	●	●	●		
▲ S&I 3-1, 3-2	←	←	←		
▲ REMOVE-F&I 4-1, 4-2	●	●	●	→	→
▲ S&I 4-3	●	●	●		
▲ S&I 5-1	←	←	←		
▲ S&I 5-2	←	←	←		
▲ S&I 6-1	●	●	●		
▲ S&I 6-2, 6-3	●	●	●		
▲ REMOVE-F&I 6-4	●	●	●		
▲ S&I 7-1	←	←	←		
▲ S&I 7-2	←	←	←		
▲ S&I 8-1	●	●	●		
▲ S&I 8-2, 8-3	●	●	●		

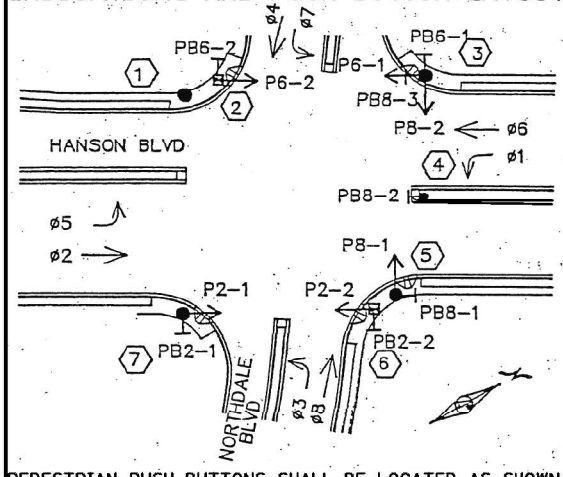
-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS

SYSTEM "B" - MATCHLINE A

SYSTEM "B" - MATCHLINE B



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTON LAYOUT



SIGNAL SYSTEM OPERATION

- SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE WITH PHASES 1, 3, 5 & 7 BEING PROTECTED LEFT TURN PHASES.
- PHASES 2 & 6 SHALL BE ON VEHICLE RECALL.

▲ DENOTES REVISE SIGNAL SYSTEM PAY ITEM WORK. ALL OTHER ITEMS SHOWN ARE INPLACE TO REMAIN.

SYSTEM ID #: 22379
TE #: 3423
MASTER ID #: 20216
METER ADDRESS:

LOOP DETECTORS				
INSTALLATION	NUMBER	SIZE (FT)	LOCATION	STATUS
NMC - MILL	D1-1	6' X 6'	40'	REMOVE ▲
NMC - NEW BIT.	D1-1	2-6' X 6'	20' & 50'	F&I ▲
NMC - MILL	D1-2	6' X 6'	10'	REMOVE ▲
NMC - NEW BIT.	D1-2	2-6' X 6'	5' & 35'	F&I ▲
NMC - NEW BIT.	D2-1, D2-2, D2-3	6' X 6'	250'	INPLACE ▲
NMC - MILL	D3-1, D3-2	6' X 6'	250'	INPLACE ▲
NMC - MILL	D3-3, D3-4	2-6' X 6'	5' & 20'	REMOVE ▲
NMC - MILL	D3-3, D3-5	2-6' X 6'	20' & 50'	F&I ▲
NMC - MILL	D3-4, D3-6	2-6' X 6'	5' & 35'	F&I ▲
NMC - NEW BIT.	D4-1, D4-2	2-6' X 6'	5' & 20'	INPLACE ▲
NMC - NEW BIT.	D5-1, D5-2, D5-3, D5-4	6' X 6'	40' & 10'	REMOVE ▲
NMC - NEW BIT.	D5-1	2-6' X 6'	20' & 50'	F&I ▲
NMC - NEW BIT.	D5-2	2-6' X 6'	5' & 35'	F&I ▲
NMC - NEW BIT.	D6-1, D6-2, D6-3	6' X 6'	250'	INPLACE ▲
NMC - NEW BIT.	D6-4	6' X 6'	250'	F&I ▲
NMC - NEW BIT.	D7-1, D7-2	2-6' X 6'	5' & 20'	REMOVE ▲
NMC - MILL	D7-1, D7-3	2-6' X 6'	20' & 50'	F&I ▲
NMC - MILL	D7-2, D7-4	2-6' X 6'	5' & 35'	F&I ▲
NMC - NEW BIT.	D8-1	6' X 6'	250'	INPLACE ▲
NMC - NEW BIT.	D8-2	2-6' X 6'	5' & 20'	INPLACE ▲
NMC - NEW BIT.	D8-3	2-6' X 6'	5' & 20'	F&I ▲

NOTE: LOCATION = DISTANCE FROM STOP TO FRONT OF LOOP DETECTOR
ALL LOOP DETECTORS SHALL BE INSTALLED IN NMC.

REVISE SYSTEM "B"
NORTDALE AT C.S.A.H. 78

REVISE SYSTEM "B" INTERSECTION LAYOUT

SHEET NO. 189 OF 230 SHEETS

S.P. 002-678-025 (CSAH 78), S.P. 114-020-053

I hereby certify that this plan, specification, or report 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.

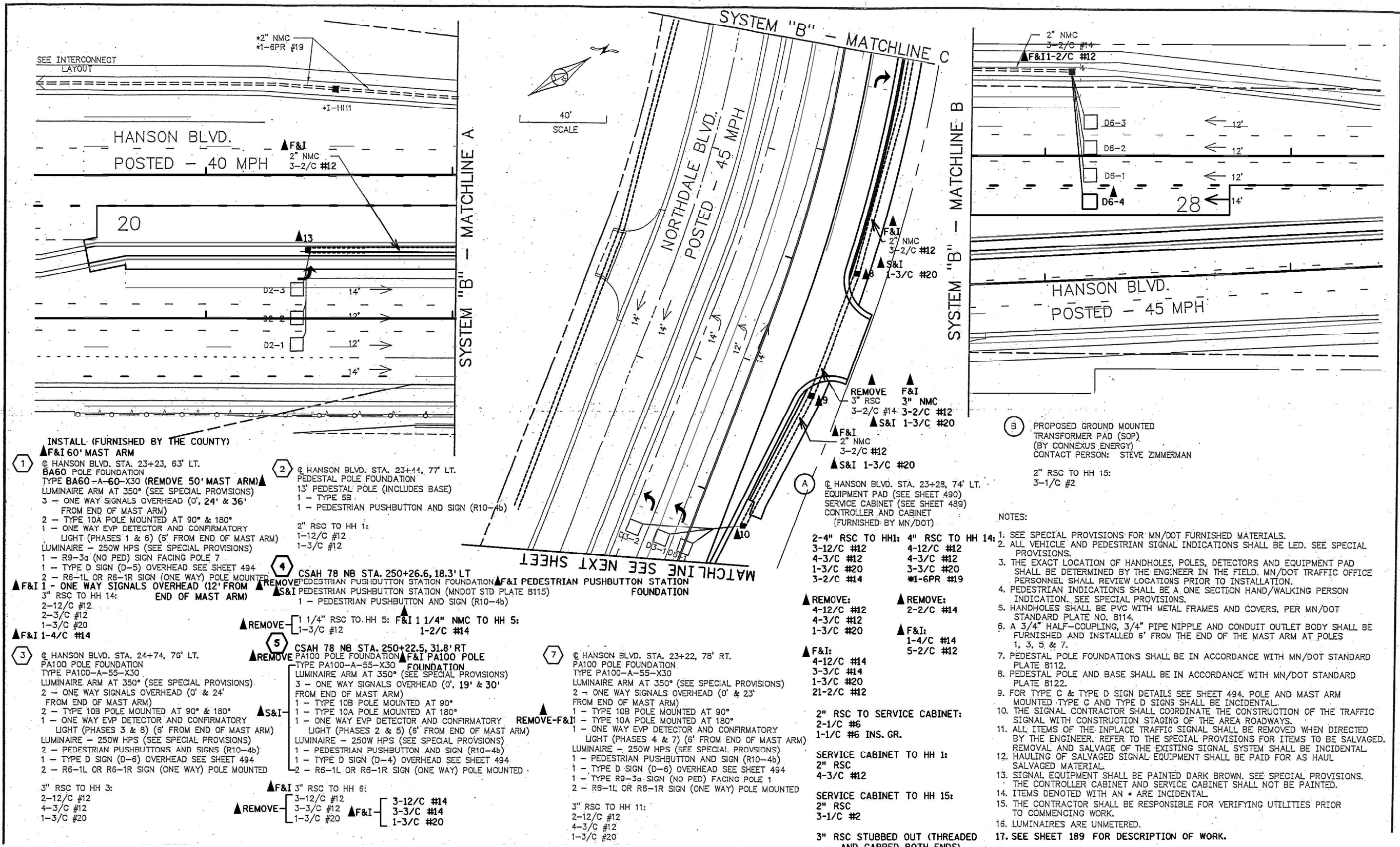
NAME: ANDREW J. HENGEL LIC. NO. 52256
CERTIFIED BY: [Signature] DATE 11/22/2019
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: SY
DESIGNED BY: AJH
CHECKED BY: KAS



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NO	DATE	BY	CKD	APPR	REVISION



- 1** INSTALL (FURNISHED BY THE COUNTY)
F&I 60' MAST ARM
 @ HANSON BLVD. STA. 23+23, 63' LT.
 BA60 POLE FOUNDATION
 TYPE BA60-A-60-X30 (REMOVE 50' MAST ARM)
 LUMINAIRE ARM AT 350° (SEE SPECIAL PROVISIONS)
 3 - ONE WAY SIGNALS OVERHEAD (0', 24' & 36' FROM END OF MAST ARM)
 2 - TYPE 10A POLE MOUNTED AT 90° & 180°
 1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1 & 6) (6' FROM END OF MAST ARM)
 LUMINAIRE - 250W HPS (SEE SPECIAL PROVISIONS)
 1 - R9-3a (NO PED) SIGN FACING POLE 7
 1 - TYPE D SIGN (D-5) OVERHEAD SEE SHEET 494
 2 - R6-1L OR R6-1R SIGN (ONE WAY) POLE MOUNTED
F&I 1 - ONE WAY SIGNALS OVERHEAD (12' FROM END OF MAST ARM)
 3" RSC TO HH 14:
 2-12/C #12
 2-3/C #12
 1-3/C #20
F&I 1-4/C #14

- 2** @ HANSON BLVD. STA. 23+44, 77' LT.
 PEDESTAL POLE FOUNDATION
 13' PEDESTAL POLE (INCLUDES BASE)
 1 - TYPE 5B
 1 - PEDESTRIAN PUSHBUTTON AND SIGN (R10-4b)
 2" RSC TO HH 1:
 1-12/C #12
 1-3/C #12

- 4** CSAH 78 NB STA. 250+26.6, 18.3' LT
 PEDESTRIAN PUSHBUTTON STATION FOUNDATION
F&I PEDESTRIAN PUSHBUTTON STATION
 S&I PEDESTRIAN PUSHBUTTON STATION (MNDOT STD PLATE 8115)
 1 - PEDESTRIAN PUSHBUTTON AND SIGN (R10-4b)
REMOVE 1 1/4" RSC TO HH 5: F&I 1 1/4" NMC TO HH 5:
 1-3/C #12 1-2/C #14

- 5** CSAH 78 NB STA. 250+22.5, 31.8' RT
 PA100 POLE FOUNDATION
 TYPE PA100-A-55-X30
 LUMINAIRE ARM AT 350° (SEE SPECIAL PROVISIONS)
 3 - ONE WAY SIGNALS OVERHEAD (0', 19' & 30' FROM END OF MAST ARM)
 1 - TYPE 10B POLE MOUNTED AT 90°
 1 - TYPE 10A POLE MOUNTED AT 180°
 1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2 & 5) (6' FROM END OF MAST ARM)
 LUMINAIRE - 250W HPS (SEE SPECIAL PROVISIONS)
 1 - PEDESTRIAN PUSHBUTTON AND SIGN (R10-4b)
 1 - TYPE D SIGN (D-4) OVERHEAD SEE SHEET 494
 2 - R6-1L OR R6-1R SIGN (ONE WAY) POLE MOUNTED
S&I
REMOVE-F&I
F&I 3" RSC TO HH 6:
 3-12/C #12
 3-3/C #12
REMOVE 1-3/C #20 **F&I** 3-12/C #14
 3-3/C #14
 1-3/C #20

- 7** @ HANSON BLVD. STA. 23+22, 78' RT.
 PA100 POLE FOUNDATION
 TYPE PA100-A-55-X30
 LUMINAIRE ARM AT 350° (SEE SPECIAL PROVISIONS)
 2 - ONE WAY SIGNALS OVERHEAD (0' & 23' FROM END OF MAST ARM)
 1 - TYPE 10B POLE MOUNTED AT 90°
 1 - TYPE 10A POLE MOUNTED AT 180°
 1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 4 & 7) (6' FROM END OF MAST ARM)
 LUMINAIRE - 250W HPS (SEE SPECIAL PROVISIONS)
 1 - PEDESTRIAN PUSHBUTTON AND SIGN (R10-4b)
 1 - TYPE D SIGN (D-5) OVERHEAD SEE SHEET 494
 1 - TYPE R9-3a SIGN (NO PED) FACING POLE 1
 2 - R6-1L OR R6-1R SIGN (ONE WAY) POLE MOUNTED
REMOVE-F&I
 3" RSC TO HH 11:
 2-12/C #12
 4-3/C #12
 1-3/C #20

- REMOVE:**
 4-12/C #12
 4-3/C #12
 1-3/C #20
F&I:
 4-12/C #14
 3-3/C #14
 1-3/C #20
 21-2/C #12
 2" RSC TO SERVICE CABINET:
 2-1/C #6
 1-1/C #6 INS. GR.
 SERVICE CABINET TO HH 1:
 2" RSC
 4-3/C #12
 SERVICE CABINET TO HH 15:
 2" RSC
 3-1/C #2
 3" RSC STUBBED OUT (THREADED AND CAPPED BOTH ENDS)
 2" RSC STUBBED OUT (THREADED AND CAPPED BOTH ENDS)
 3/4" NMC STUBBED OUT (THREADED AND CAPPED BOTH ENDS) (FUTURE PHONE LINE)

B PROPOSED GROUND MOUNTED TRANSFORMER PAD (SOP) (BY CONNEXUS ENERGY) CONTACT PERSON: STEVE ZIMMERMAN
 2" RSC TO HH 15:
 3-1/C #2

- NOTES:**
- SEE SPECIAL PROVISIONS FOR MN/DOT FURNISHED MATERIALS.
 - ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
 - THE EXACT LOCATION OF HANDHOLES, POLES, DETECTORS AND EQUIPMENT PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD. MN/DOT TRAFFIC OFFICE PERSONNEL SHALL REVIEW LOCATIONS PRIOR TO INSTALLATION.
 - PEDESTRIAN INDICATIONS SHALL BE A ONE SECTION HAND/WALKING PERSON INDICATION. SEE SPECIAL PROVISIONS.
 - HANDHOLES SHALL BE PVC WITH METAL FRAMES AND COVERS. PER MN/DOT STANDARD PLATE NO. 8114.
 - A 3/4" HALF-COUPPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6' FROM THE END OF THE MAST ARM AT POLES 1, 3, 5 & 7.
 - PEDESTAL POLE FOUNDATIONS SHALL BE IN ACCORDANCE WITH MN/DOT STANDARD PLATE 8112.
 - PEDESTAL POLE AND BASE SHALL BE IN ACCORDANCE WITH MN/DOT STANDARD PLATE 8122.
 - FOR TYPE C & TYPE D SIGN DETAILS SEE SHEET 494. POLE AND MAST ARM MOUNTED TYPE C AND TYPE D SIGNS SHALL BE INCIDENTAL.
 - THE SIGNAL CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF THE TRAFFIC SIGNAL WITH CONSTRUCTION STAGING OF THE AREA ROADWAYS.
 - ALL ITEMS OF THE INPLACE TRAFFIC SIGNAL SHALL BE REMOVED WHEN DIRECTED BY THE ENGINEER. REFER TO THE SPECIAL PROVISIONS FOR ITEMS TO BE SALVAGED. REMOVAL AND SALVAGE OF THE EXISTING SIGNAL SYSTEM SHALL BE INCIDENTAL.
 - HAULING OF SALVAGED SIGNAL EQUIPMENT SHALL BE PAID FOR AS HAUL SALVAGED MATERIAL.
 - SIGNAL EQUIPMENT SHALL BE PAINTED DARK BROWN. SEE SPECIAL PROVISIONS. THE CONTROLLER CABINET AND SERVICE CABINET SHALL NOT BE PAINTED.
 - ITEMS DENOTED WITH AN * ARE INCIDENTAL.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UTILITIES PRIOR TO COMMENCING WORK.
 - LUMINAIRES ARE UNMETERED.
 - SEE SHEET 189 FOR DESCRIPTION OF WORK.

SYSTEM ID # 22379
 TE # 3423
 MASTER ID # 20216
 METER ADDRESS:

- 6** CSAH 78 NB STA. 250+2.95, 46.7' RT
REMOVE PEDESTAL POLE FOUNDATION **F&I PEDESTAL POLE FOUNDATION**
 13' PEDESTAL POLE (INCLUDES BASE)
S&I
 1-TYPE 5B
 1-PEDESTRIAN PUSHBUTTON AND SIGN (R10-4b)
F&I 3" RSC TO HH6:
REMOVE 1-12/C #12 **F&I** 1-12/C #14
 1-3/C #12 1-2/C #14

▲ DENOTES REVISE SIGNAL SYSTEM PAY ITEM WORK. ALL OTHER ITEMS SHOWN ARE INPLACE TO REMAIN.

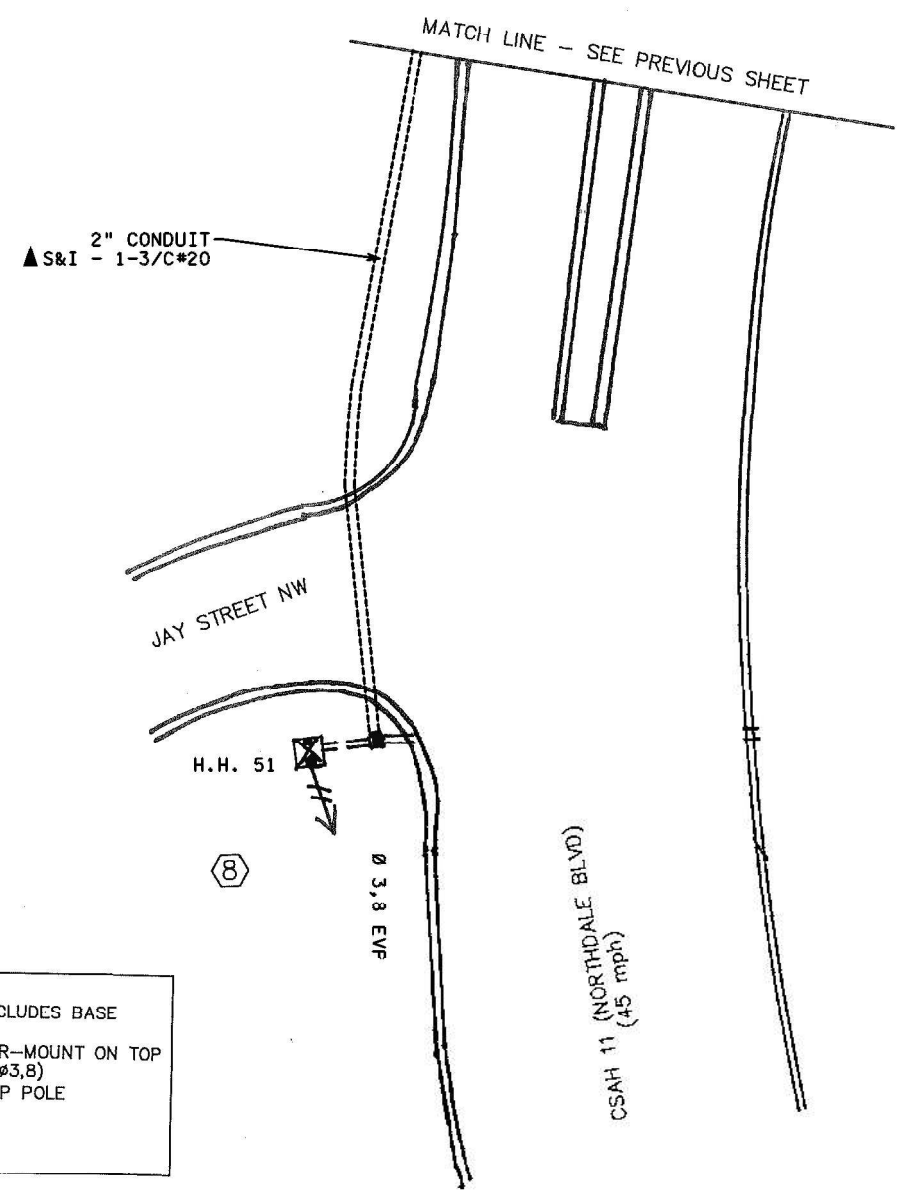
REVISE SYSTEM "B"
 NORTHDAL E AT C.S.A.H. 78
 MATCHLINES AND POLE NOTES
 SHEET NO. 190 OF 230 SHEETS

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NO	DATE	BY	CKD	APPR	REVISION

I hereby certify that this plan, specification, or report 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. NAME: <u>ANDREW J. HENGEL</u> LIC. NO. <u>52256</u> CERTIFIED BY: <u>[Signature]</u> 11/22/2019 LICENSED PROFESSIONAL ENGINEER DATE	DRAWN BY: SY DESIGNED BY: AJH CHECKED BY: KAS
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S.P. 002-678-025 (CSAH 78), S.P. 114-020-053



(8) PEDESTAL FOUNDATION
 10' PEDESTAL POLE (INCLUDES BASE AND WIND COLLAR)
 ONE WAY EVP DETECTOR—MOUNT ON TOP OF PEDESTAL POLE (Ø3.8)
 SLIPFITTER COLLAR ATOP POLE
 EXTEND TO H.H.51:
 2"R.S.C.
 ▲S&I - 1-3/c#20

▲ DENOTES REVISE SIGNAL SYSTEM PAY ITEM WORK. ALL OTHER ITEMS SHOWN ARE INPLACE TO REMAIN.

REVISE SYSTEM "B"
 NORTHDALE BLVD AT JAY STREET

MATCHLINES AND POLE NOTES
 SHEET NO. 191 OF 230 SHEETS

S.P. 002-678-025 (CSAH 78), S.P. 114-020-053

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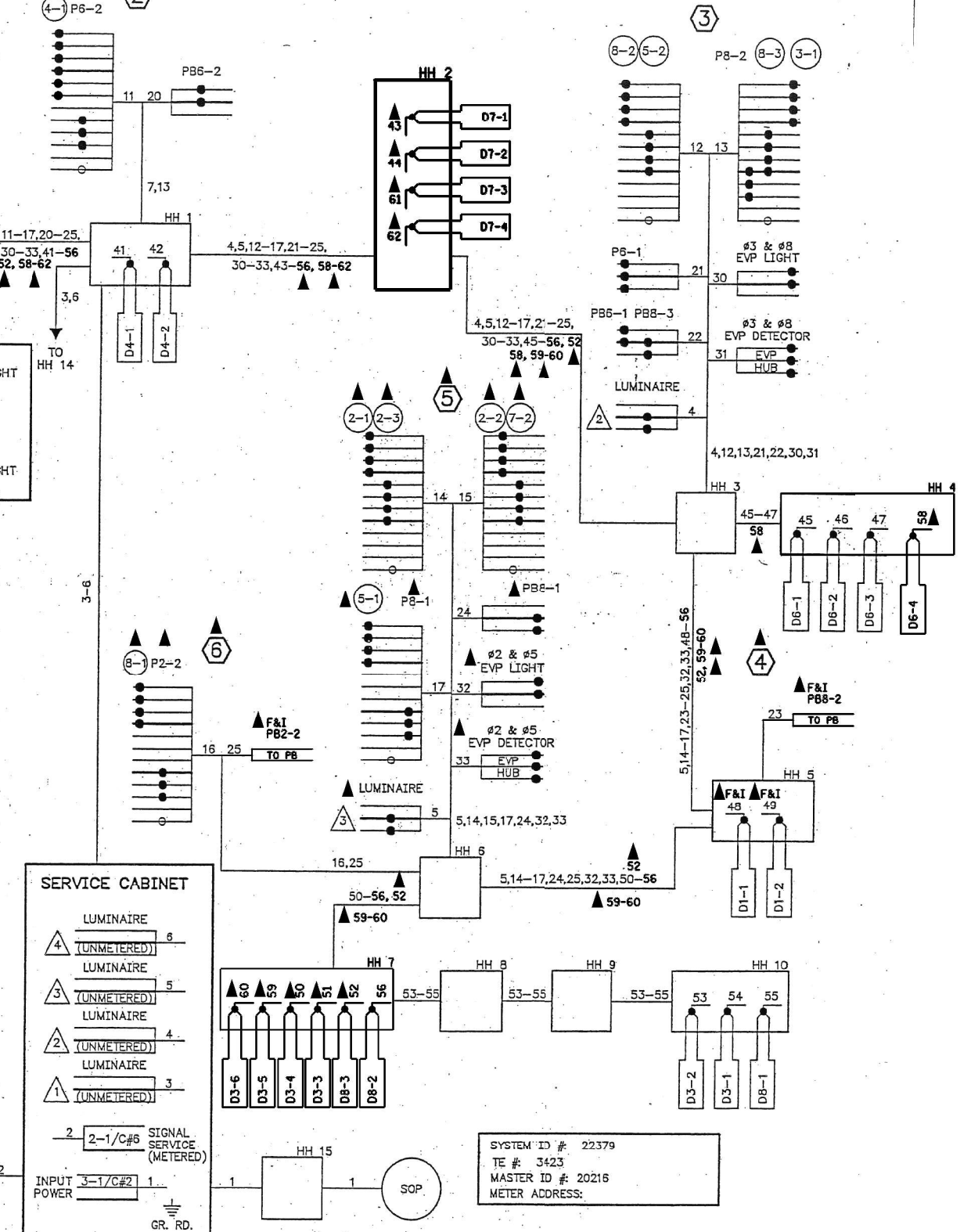
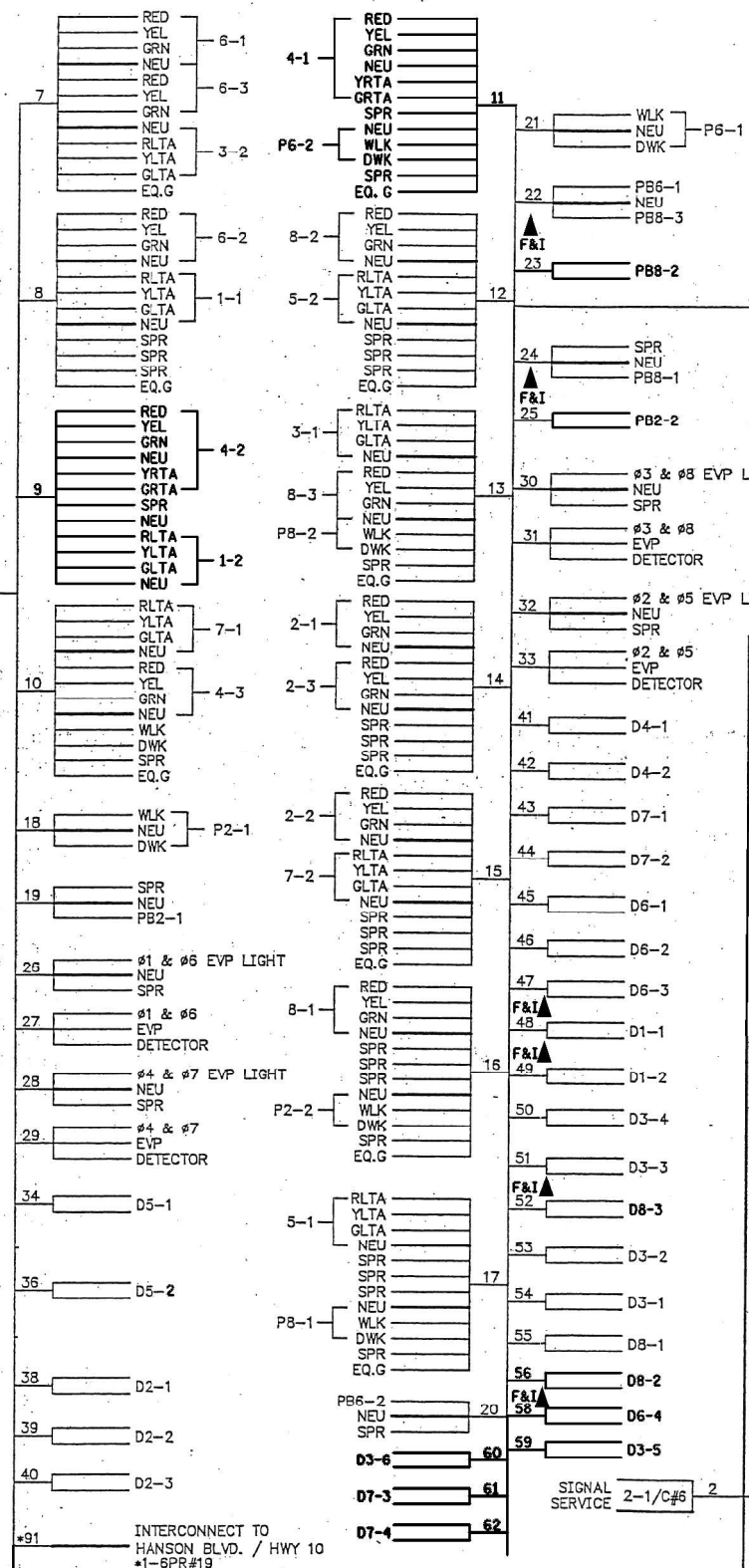
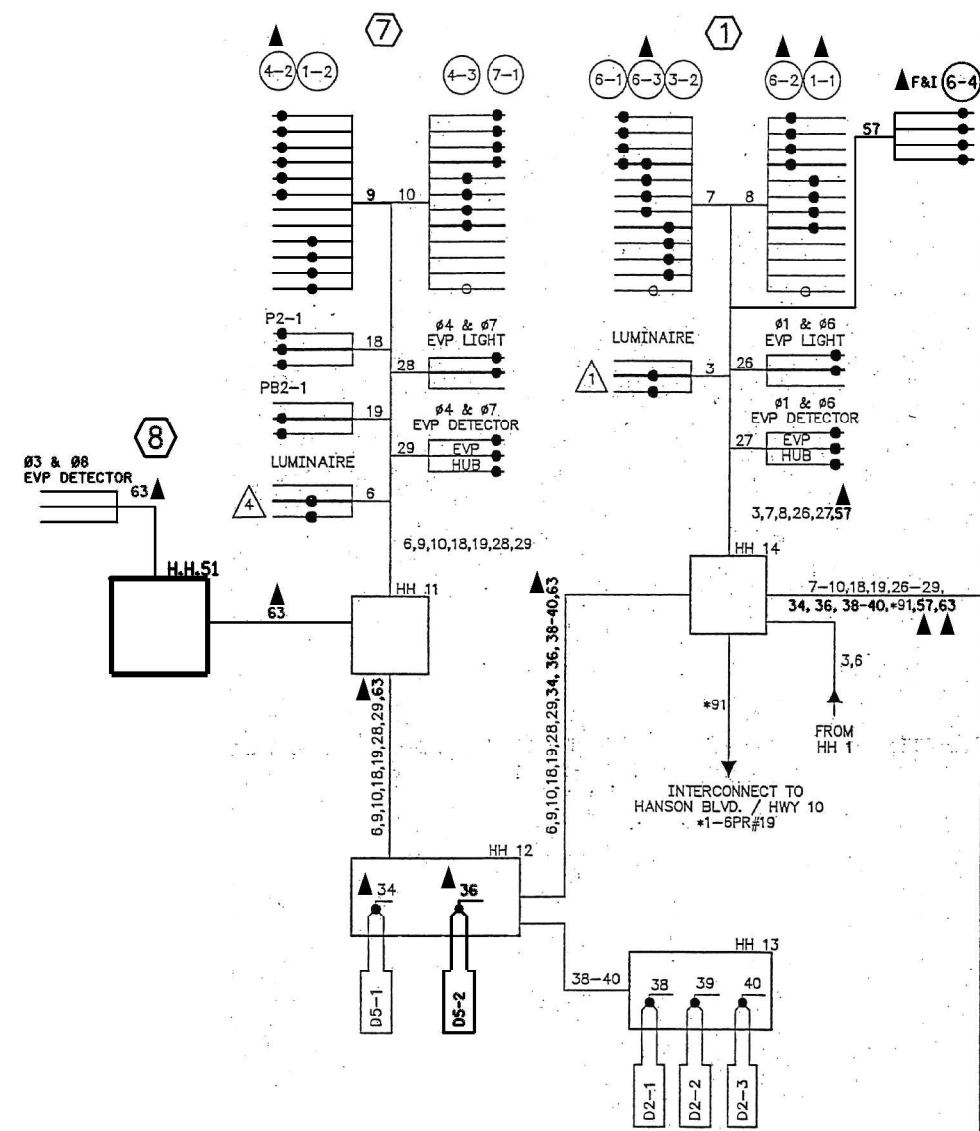
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CONTROLLER CABINET



CONDUCTOR COLOR CODE

TO SIGNAL CABINET		TO DEVICE	
3/C#20	R OR D WH OR YEL BLK OR BL	7/C#14	R RED BL YEL WH GRN O/BLK NEU BL/BLK YLTA WH/BLK GLTA BLK BRN SPR
2/C#14	BLK CLR	5/C#14	R RED O YEL G GRN BLK WH NEU G/BLK GLTA
2-1/C	BLK WH	4/C#14	R DWK BL WLK WH NEU BLK SPR
6PR#19		3/C#12	WH EVL/PB/FLASHER BLK NEU

NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

SYSTEM ID #: 22379
TE #: 3423
MASTER ID #: 20216
METER ADDRESS:

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REVISE SYSTEM "B" NORTHDALE AT C.S.A.H. 78

REVISE SYSTEM "B" WIRING DIAGRAM

SHEET NO. 192 OF 230 SHEETS

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