

NOTES:

- SEE SPECIAL PROVISIONS FOR STATE FURNISHED MATERIALS.
- THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS, EQUIPMENT PAD, AND PEDESTRIAN CURB RAMPS SHALL BE DETERMINED IN THE FIELD BY MNDOT TRAFFIC OFFICE PERSONNEL.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL.
- FOR TYPE D SIGNS SEE DETAIL SHEET. ALL SIGNS REQUIRED ARE INCIDENTAL.
- FOR PAVEMENT MARKINGS SEE DETAIL SHEET. PAVEMENT MARKINGS ARE INCLUDED IN PAVEMENT MARKING PLAN.
- CONSTRUCTION OF PEDESTRIAN CURB RAMPS ARE PART OF THE CONSTRUCTION PLAN AND ARE NOT INCLUDED IN PAYMENT FOR THE SIGNAL SYSTEM.
- THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS MAY REQUIRE BORING.
- ALL NEW CONDUIT SHALL BE NMC - SCHEDULE 80 OR HDPE SCHEDULE 80 AND SHALL CARRY 1/C#6 GREEN INSULATED GROUNDING CONDUCTOR AS SHOWN IN THE PLAN.
- ITEMS DENOTED WITH AN \* ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
- ITEMS DENOTED WITH AN \*\* ARE INCLUDED IN PAYMENT FOR THE INTERCONNECT SYSTEM PAY ITEM.
- PULL VAULT (PV) SEE SPECIAL PROVISIONS.
- REMOVAL OF EXISTING TRAFFIC CONTROL SIGNAL SYSTEM AND ALL ITS COMPONENTS IS INCLUDED IN THE TRAFFIC CONTROL SIGNAL SYSTEM PAY ITEM.

- (A) EQUIPMENT PAD - SEE DETAIL SERVICE CABINET CONTROLLER AND CABINET**
- 4" CONDUIT TO HH 1:
  - 5-12/C#14
  - 2-4/C#14
  - 2-4/C#14
  - \* 1-3/C#14
  - \* 2-3/C#20
  - 5-2/C#14
  - 1-1/C#6 INS. GR.
  - 3" CONDUIT STUBBED OUT - CAPPED BOTH ENDS
  - 3/4" CONDUIT STUBBED OUT CAPPED FOR TELEPHONE LINE (SEE TMS PLAN)
  - 2" CONDUIT TO SERVICE CABINET
  - 2-1/C#6
  - 1-1/C#6 INS. GR.
  - 2-2" CONDUIT STUBBED OUT AND CAPPED BOTH ENDS
  - 1 1/2" NMC CONDUIT SEE TMS PLAN
- SERVICE CABINET TO HH 17:**
- 2" CONDUIT
  - 3-1/C #2
- SERVICE CABINET TO HH 1:**
- 2" CONDUIT
  - 2-3/C #14 (LUM)
  - HH 1 TO HH 2:
  - 2" CONDUIT
  - 1-3/C#14 (LUM)

- (1) WB STA 1303+70, 40' LT PA100 POLE FOUNDATION TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)**
- 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
  - 2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12' AND 24'
  - 1-ANGLE MOUNT C.D. PED IND AT 180 DEG
  - \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1 & 6)
  - \* 1-ONE WAY EVP DETECTOR (PHASE 4)
  - LUMINAIRE-250W HPS
  - 1-SIGN (R9-30) FACING POLE 6
  - 1-SIGN D-20 TH 169 SOUTH
  - 3" CONDUIT TO HH 1:
  - 2-12/C#14
  - 1-4/C#14
  - 1-3/C#14 (LUM)
  - \* 1-3/C#14
  - \* 2-3/C#20
  - 1-1/C#6 INS. GR.

- (B) S.O.P. FIBERGLASS PAD BY XCEL ENERGY**
- 4" CONDUIT
  - 4-12/C#14
  - 2-4/C#14
  - 1-3/C#14 (LUM)
  - \* 2-3/C#14
  - \* 1-3/C#20
  - 11-2/C#14
  - 1-1/C#6 INS. GR.

- (2) WB STA 1304+49, 39' LT PEDESTAL FOUNDATION 10' PEDESTAL POLE & BASE**
- 1-STRAIGHT MOUNT C.D. PED IND
  - 1-APS PB AND SIGN (LT ARROW PB6-1)
  - 1-SIGN R6-1R (36 X 12)
  - 1-SIGN R6-1L (36 X 12)
  - 1-SIGN (R9-30) FACING POLE 4
  - 3" CONDUIT TO HH 3:
  - 1-4/C#14
  - 1-2/C#14
  - 1-1/C#6 INS. GR.

- PED PUSH BUTTON STATION**
- 1-APS PEDESTRIAN PUSH BUTTON AND SIGN (RT ARROW PB6-2)
  - 2" CONDUIT INTO HH 1:
  - 1-2/C#14

- 2-3" CONDUIT S.O.P. SWEEPING RADIUS CURVES ONLY, (NO BENDS ALLOWED) CABLES BY XCEL ENERGY**

- 1 1/2" INTERDUCT**
- \* 1-6SM F/O

- 1 1/2" CONDUIT TO PV 13:**
- 1-6SM F/O \*\*
- 3" CONDUIT TO PV 14:**
- 1-6SM F/O \*\*
- TMS NETWORK CONNECTION (SEE TMS PLAN)**

- 2" CONDUIT**
- 3-2/C#14

- (6) WB STA 1303+69, 27' RT PAB5 POLE FOUNDATION TYPE PAB5-A-10**
- 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
  - 1-ANGLE MOUNT SIGNAL AT 0 DEG
  - 1-SIGN D-25 (LT TURN YIELD ON FY)
  - 2-SIGN (R9-30) FACING POLE 1 & 5
  - 3" CONDUIT TO HH 11:
  - 2-12/C#14
  - 1-1/C#6 INS. GR.

- (5) EB STA 1303+61, 50' RT PEDESTAL FOUNDATION 15' PEDESTAL POLE & BASE**
- 1-STRAIGHT MOUNT SIGNAL
  - 1-STRAIGHT MOUNT C.D. PED IND
  - 1-APS PB AND SIGN (LT ARROW PB2-1)
  - 1-SIGN R6-1R (36 X 12)
  - 1-SIGN R6-1L (36 X 12)
  - 1-SIGN (R9-30) FACING POLE 6
  - 3" CONDUIT TO HH 10:
  - 1-12/C#14
  - 1-4/C#14
  - 1-2/C#14
  - 1-1/C#6 INS. GR.

- (4) EB STA 1304+48, 24' RT PA90 POLE FOUNDATION TYPE PA90-A-35**
- 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
  - 1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 18'
  - 2-ANGLE MOUNT SIGNALS AT 180 AND 270 DEG
  - 1-ANGLE MOUNT C.D. PED IND AT 270 DEG
  - \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 4)
  - 1-SIGN (R9-30) FACING POLE 2
  - 1-SIGN D-24 N & S TH 169
  - 1-SIGN R6-1L (36 X 12)
  - 3" CONDUIT TO HH 9:
  - 2-12/C#14
  - 1-4/C#14
  - \* 1-3/C#14
  - \* 1-3/C#20
  - 1-1/C#6 INS. GR.

- (3) EB STA 1304+73, 24' RT PA100 POLE FOUNDATION TYPE PA100-A-40-D40-9 (DAVIT AT 350 DEG)**
- 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
  - 2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12' AND 24'
  - 2-ANGLE MOUNT SIGNAL AT 90 & 180 DEG
  - \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 2)
  - LUMINAIRE-250W HPS
  - 1-SIGN (R9-30) FACING POLE 2
  - 1-SIGN D-24 N & S TH 169
  - 1-SIGN R6-1L (36 X 12)
  - 3" CONDUIT TO HH 9:
  - 2-12/C#14
  - 1-3/C#14 (LUM)
  - \* 1-3/C#14
  - \* 1-3/C#20
  - 1-1/C#6 INS. GR.

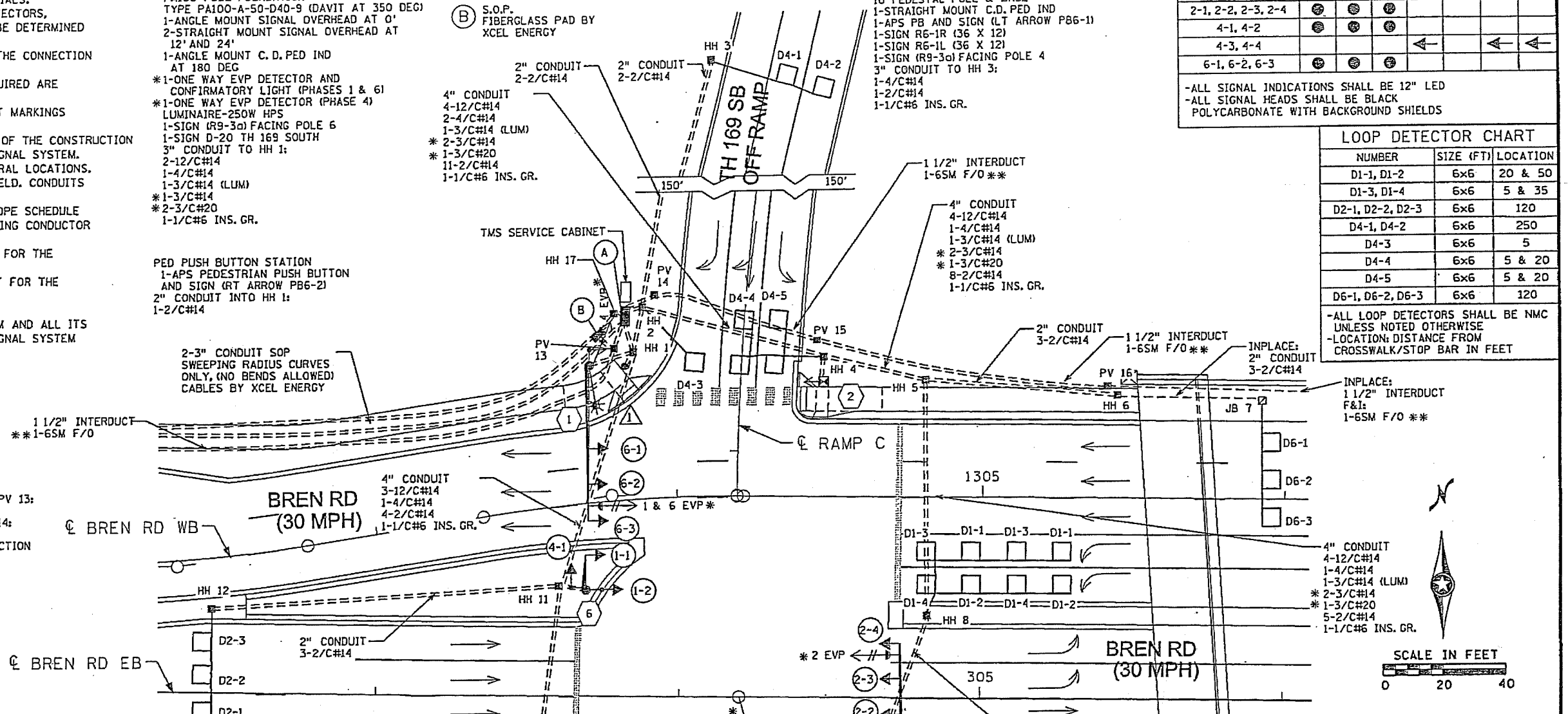
- PED PUSH BUTTON STATION**
- 1-APS PEDESTRIAN PUSH BUTTON AND SIGN (RT ARROW PB2-2)
  - 2" CONDUIT INTO HH 9:
  - 1-2/C#14

FACE	R	Y	G	RLA	FYA	YLA	GLA
1-1, 1-2, 1-3				←	←	←	←
2-1, 2-2, 2-3, 2-4	⊙	⊙	⊙				
4-1, 4-2	⊙	⊙	⊙				
4-3, 4-4				←	←	←	←
6-1, 6-2, 6-3	⊙	⊙	⊙				

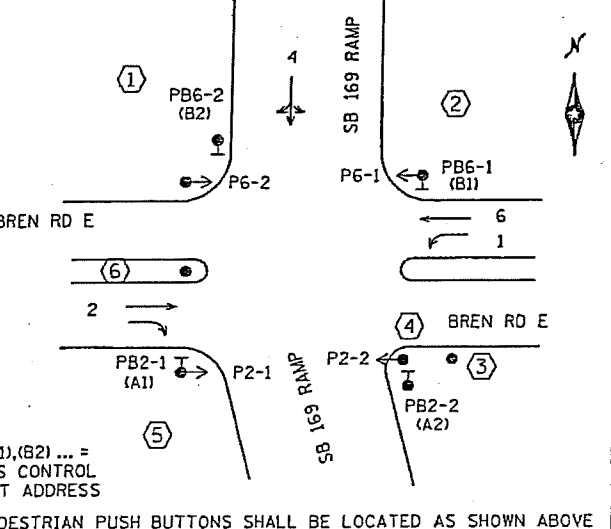
-ALL SIGNAL INDICATIONS SHALL BE 12" LED  
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS

NUMBER	SIZE (FT)	LOCATION
D1-1, D1-2	6x6	20 & 50
D1-3, D1-4	6x6	5 & 35
D2-1, D2-2, D2-3	6x6	120
D4-1, D4-2	6x6	250
D4-3	6x6	5
D4-4	6x6	5 & 20
D4-5	6x6	5 & 20
D6-1, D6-2, D6-3	6x6	120

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



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 4 PHASE, WITH PHASE 1 BEING A FYA TURN PHASE.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

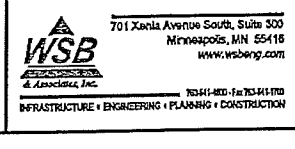
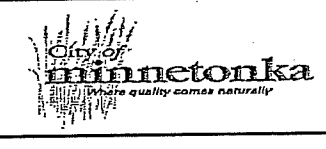
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NO	DATE	BY	CHK	REVISIONS

Drawn By: M SCHWARTZ  
Designed By: M SCHWARTZ  
Checked By: S DELMORE  
Approved By: S DELMORE

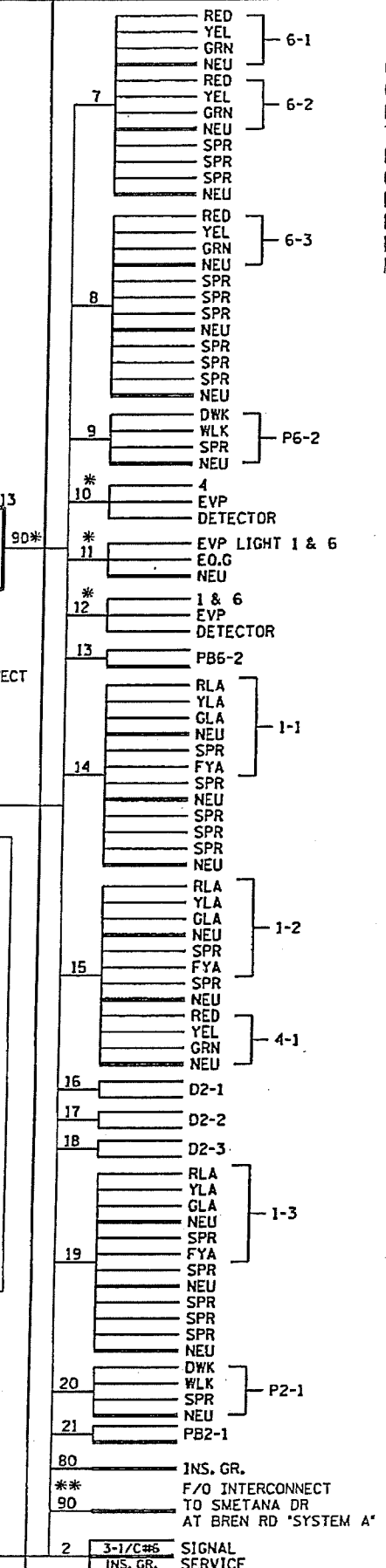
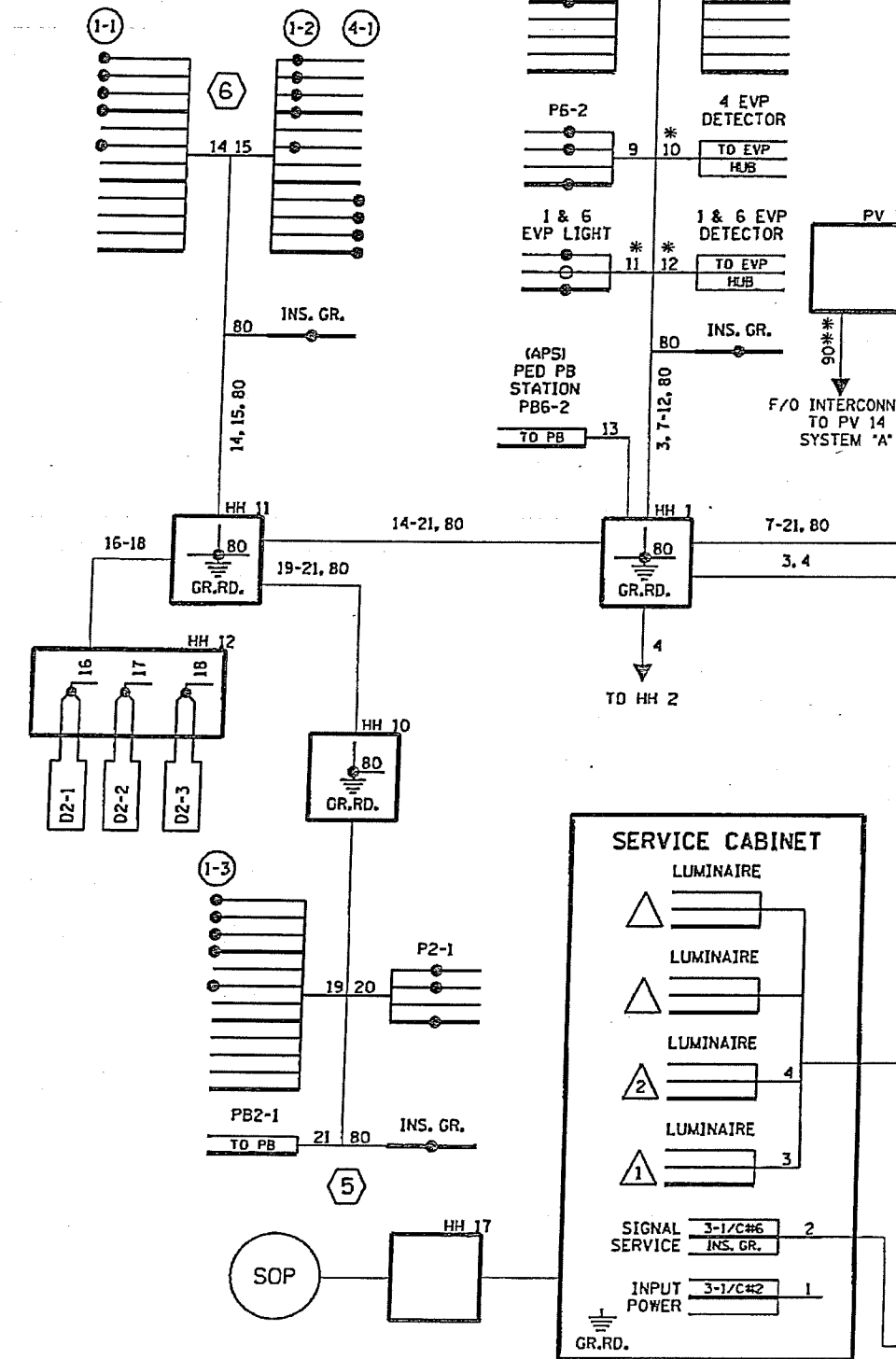
I HEREBY CERTIFY THAT THIS PLAN SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*Sean Delmore*  
SEAN DELMORE  
DATE: 12/10/10 LIC NO: 40945

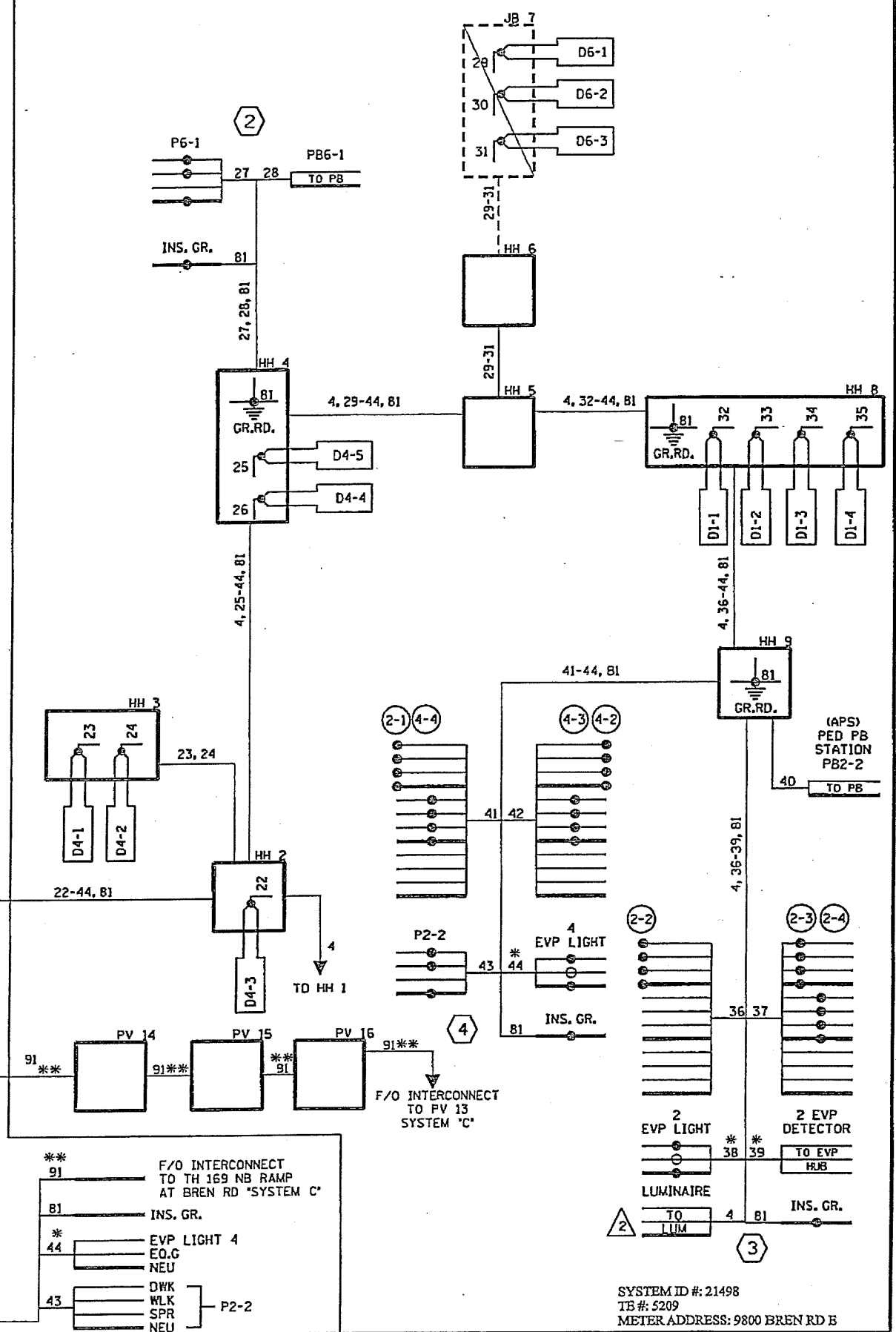
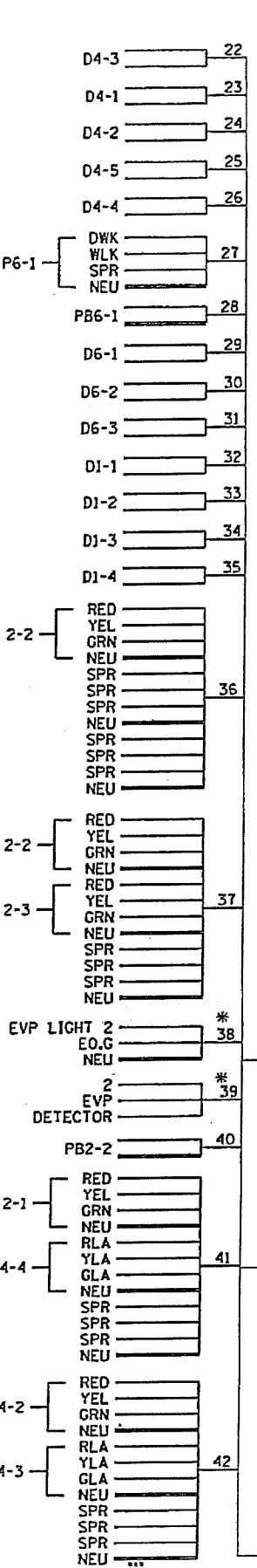


TRAFFIC CONTROL SIGNAL SYSTEM INTERSECTION LAYOUT TH 169 @ BREN RD WEST RAMPS SYSTEM "B" SIGNAL PLAN SHEET 13 OF 22 SHEETS	SHEET 405 OF 507 SHEETS
SYSTEM ID #: 21498 TE #: 5209 METER ADDRESS: 9800 BREN RD E	
S.P. 2772-93 (TH 169); S.A.P. 142-148-005; S.A.P. 142-010-016	

- NOTES:  
 1. LUMINAIRE ARE METERED.  
 2. SIGNAL SYSTEM INCLUDES BATTERY- BACKUP SERVICE CABINET.  
 3. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.  
 4. ITEMS DENOTED WITH AN \* ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.  
 5. ITEMS DENOTED WITH AN \*\* ARE INCLUDED IN PAYMENT FOR THE INTERCONNECT SYSTEM PAY ITEM.



COMBINATION LETTER



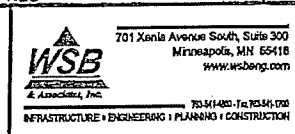
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NO	DATE	BY	CHK	REVISIONS

Drawn By:  
M. SCHWARTZ  
 Designed By:  
M. SCHWARTZ  
 Checked By:  
S. DELMORE  
 Approved By:  
S. DELMORE

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*Sean Delmore*  
 SEAN DELMORE  
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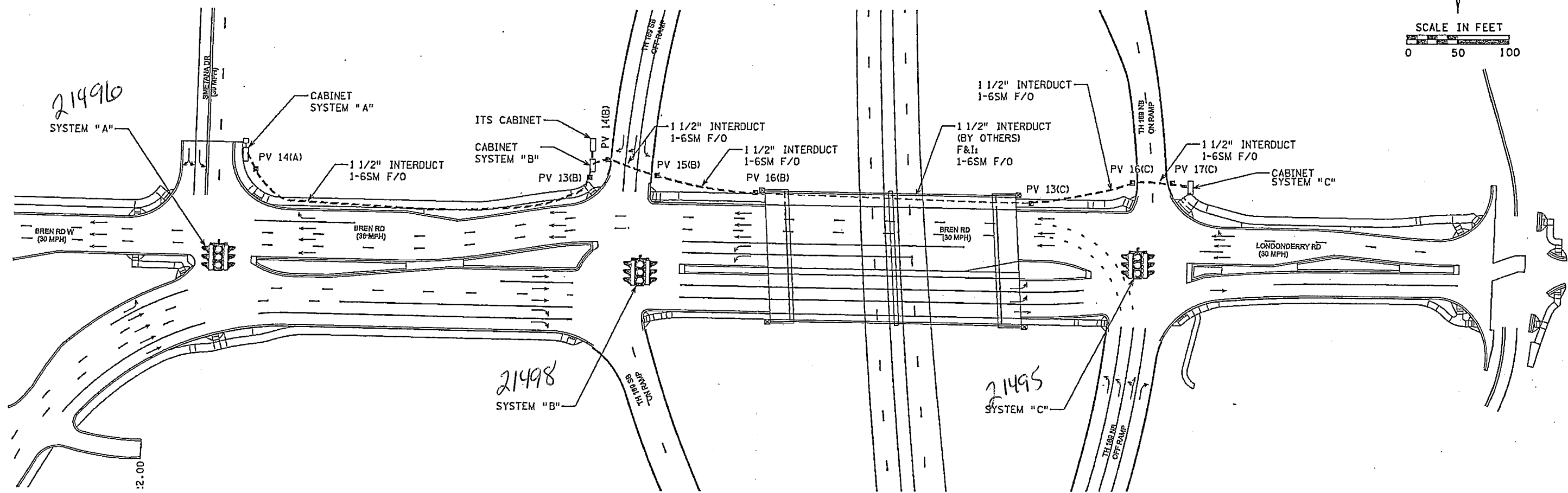
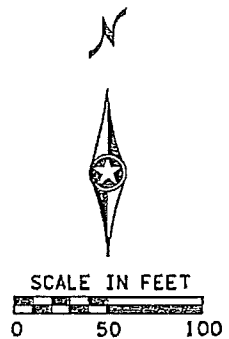


TRAFFIC CONTROL SIGNAL SYSTEM WIRING DIAGRAM  
 TH 169 @ BREN RD WEST RAMPS SYSTEM "B"  
 SIGNAL PLAN  
 SHEET 14 OF 22 SHEETS  
 S.P. 2772-93 (TH 169); S.A.P. 142-148-005; S.A.P. 142-010-016

SYSTEM ID #: 21498  
 TB #: 5209  
 METER ADDRESS: 9800 BREN RD B

SHEET 406 OF 507 SHEETS



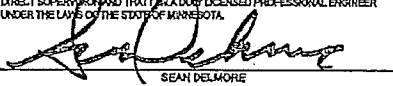


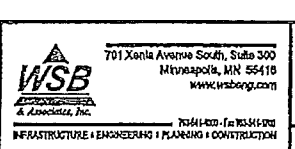
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NO	DATE	BY	CHK	REVISIONS

Drawn By:  
**M SCHWARTZ**  
 Designed By:  
**M SCHWARTZ**  
 Checked By:  
**S DELMORE**  
 Approved By:  
**S DELMORE**

I HEREBY CERTIFY THAT THIS PLAN 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.

  
 SEAN DELMORE  
 DATE: 12/10/10 LIC NO: 40945



INTERCONNECT PLAN  
 SIGNAL PLAN  
 SHEET 21 OF 22 SHEETS

S.P. 2772-93 (TH 169); S.A.P. 142-148-005; S.A.P. 142-010-016

SHEET  
 413  
 OF  
 507  
 SHEETS