

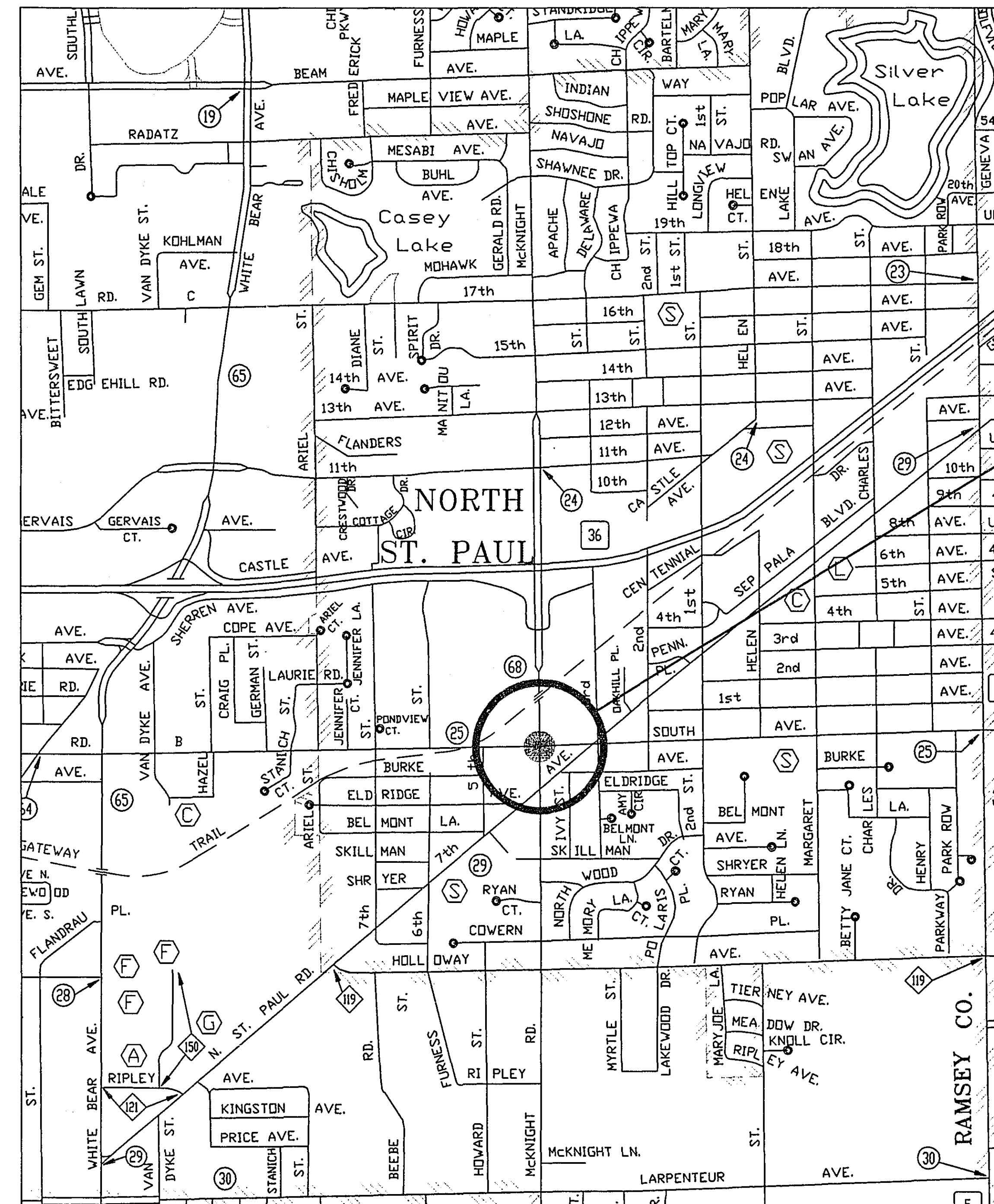
ABBREVIATIONS

3-1 (e.g.)	-SIGNAL HEAD, PHASE "3", NO. "1"
BL	-BLUE
BLK	-BLACK
BLK/WH	-BLACK WITH WHITE TRACER
BL/BLK	-BLUE WITH WHITE TRACER
BR. GR.	-BARE GROUND
CH. SW.	-CHECK SWITCH
CLR	-CLEAR
D2-1 (e.g.)	-DETECTOR, PHASE "2", NO. "1"
DNL	-DOWNLIGHT
DWK	-DON'T WALK
EQG	-EQUIPMENT GROUND
EVP	-EMERGENCY VEHICLE PRE-EMPTION
F&I	-FURNISH AND INSTALL
FL	-FLASH/FLASHING
G	-GREEN
GLTA	-GREEN LEFT TURN ARROW
GRN	-GREEN
GRTA	-GREEN RIGHT TURN ARROW
GR.R.	-GROUND ROD
GTHA	-GREEN THROUGH ARROW
G/BLK	-GREEN WITH BLACK TRACER
HPS	-HIGH PRESSURE SODIUM
H.H.	-HANDHOLE
IMC	-INTERMEDIATE METAL CONDUIT
J.B.	-JUNCTION BOX
LTA	-LEFT TURN ARROW
LUM	-LUMINAIRE
MV	-MERCURY VAPOR
NEU	-NEUTRAL
NMC	-NON-METALLIC CONDUIT
O	-ORANGE
O/BLK	-ORANGE WITH BLACK TRACER
P1-1 (e.g.)	-PEDESTRIAN INDICATION, PHASE "1", NO. "1"
PB	-PUSH BUTTON
PB2-1 (e.g.)	-PUSH BUTTON, PHASE "2", NO. "1"
PED	-PEDESTRIAN
P.E.C.	-PHOTOELECTRIC CELL
R	-RED
R&S	-REMOVE AND SALVAGE
RSC	-RIGID STEEL CONDUIT
RTA	-RIGHT TURN ARROW
R/BLK	-REN WITH BLACK TRACER
SPR	-SPARE
STA	-STATION
ST. LHT.	-STREET LIGHT
SW	-SWITCH
SWD	-SWITCHED
S.O.P.	-SOURCE OF POWER
TDW	-TELEPHONE DROP WIRE
WH	-WHITE
WH/BLK	-WHITE WITH BLACK TRACER
WLK	-WALK
YEL	-YELLOW
YLTA	-YELLOW LEFT TURN ARROW
YRTA	-YELLOW RIGHT TURN ARROW
YTHA	-YELLOW THROUGH ARROW

FOR PLANS AND UTILITIES SYMBOLS SEE
MN/DOT TECHNICAL MANUAL.

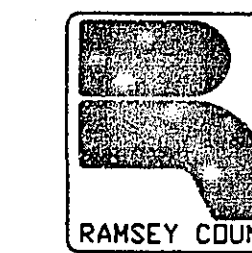
-GOVERNING SPECIFICATIONS-

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION "STANDARD SPECIFICATION FOR
CONSTRUCTION" AS AMENDED BY THE "SUPPLEMENTAL
SPECIFICATIONS" DATED MAY 2, 1994 SHALL APPLY.



DESIGN DESIGNATION

	C.S.A.H.68 McKNIGHT RD	C.S.A.H.25 SOUTH AVE	
		WEST LEG	EAST LEG
PRESENT ADT (1996)	15,900	4,500	3,100
PROJECTED ADT (2016)	19,100	6,500	4,400
FUNCTIONAL CLASSIFICATION	HIGH DENSITY ARTERIAL	LOW DENSITY ARTERIAL	LOW DENSITY ARTERIAL
TRAFFIC LANES	4	4	4
PARKING LANES	0	0	0
DESIGN SPEED	35	35	30



RAMSEY COUNTY

DEPARTMENT OF PUBLIC WORKS
CONSTRUCTION PLAN FOR TRAFFIC CONTROL SIGNAL SYSTEM
& RIGHT OF WAY

S.A.P. No. 62-668-37
S.A.P. NO. 151-020-09

McKNIGHT ROAD & SOUTH AVE.....SYSTEM A

INDEX

SHEET NO.	DESCRIPTION
1	TITLE
2-3	ESTIMATED QUANTITIES & DETAILS
4-6	SYSTEM A
7	SYSTEM B
8	MAST ARM SIGNS
9	UTILITIES, CONSTRUCTION & R/W

SYSTEM A

McKNIGHT RD & SOUTH AVE

DESIGN SQUAD RWW DATE 10/10/95
DRAWN BY _____ DATE _____
CHECKED BY _____ DATE _____

RAMSEY COUNTY

RECOMMENDED FOR APPROVAL RHP LICF DATE 1-05-96
CONST. ENGR.
RECOMMENDED FOR APPROVAL KMS DATE 1-5-96
DESIGN ENGR.
RECOMMENDED FOR APPROVAL Tony Noonan DATE 1-8-96
ENVR. ENGR.
RECOMMENDED FOR APPROVAL David J. Schacht DATE 1-8-96
MAINT. ENGR.
RECOMMENDED FOR APPROVAL T. J. Schacht DATE 1-5-96
PLANNER
RECOMMENDED FOR APPROVAL JAP DATE 1-8-96
R.O.W. ENGR.
RECOMMENDED FOR APPROVAL D.E. Schacht DATE 1/10/96
TRAFFIC ENGR.
RECOMMENDED _____ DATE _____
SPECIAL PROJECTS ENGR.
RECOMMENDED James E. Schacht DATE 1/5/96
PROGRAM ENGR.

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

Daniel E. Selzer REG. NO. 20452 DATE 1/10/96

RECOMMENDED FOR APPROVAL Paul K. Miller DATE 1/14/96
COUNTY ENGINEER

APPROVED _____ DATE _____
CHAIR OF THE RAMSEY COUNTY BOARD
APPROVED David J. Schacht DATE 2/19/96
CITY OF NORTH ST. PAUL

APPROVED _____ DATE _____
CITY OF _____
APPROVED _____ DATE _____
CITY OF _____
APPROVED _____ DATE _____
CITY OF _____

MINNESOTA DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL _____ DATE _____
RECOMMENDED FOR APPROVAL _____ DATE _____
METRO-ASST DIVISION ENGR.-STATE AID
RECOMMENDED FOR APPROVAL _____ DATE _____

APPROVED Julius Skellman DATE 3/3/96
STATE AID ENGINEER

PLAN REVISIONS		
DATE	SHEET NO. & DESCRIPTION	BY
1/5/96	STAFF REVIEW COMMENTS	RWW
2/8/96	RIGHT OF PLAN - SHEET NO. 9	RWW

S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

Sheet No. 1 of 9 Sheets

STANDARD PLATES		
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT		
PLATE NO.		DESCRIPTION
*	7035 J	CONCRETE WALK & CURB RETURNS AT ENTRANCES
*	7036 D	PEDESTRIAN CURB RAMP
*	7100 G	CONCRETE CURB AND GUTTERS (DESIGN B & DESIGN V)
	7103 C	PRECAST CONCRETE CURB
*	8110 C	TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)
	8111 B	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED)
	8112 C	PEDESTAL FOUNDATION
	8113 C	MAGNETIC VEHICLE DETECTOR INSTALLATION
*	8115 C	PEDESTRIAN PUSH BUTTON INSTALLATION
*	8117 F	PRECAST CONCRETE HANDHOLE
	8118 C	SERVICE EQUIPMENT & POLE, TRAFFIC CONTROL SIGNALS
	8119 C	GROUND MOUNTED CABINET FOUNDATION
*	8120 K	POLE FOUNDATION (PA85)
*	8121 D	TRANSFORMER BASE AND POLE BASE PLATE
	8222 C	PEDESTAL AND PEDESTAL BASE
*	8123 D	POLE AND MAST ARM (FOR ALL POLE TYPES)
	8124 D	MAST ARM SIGNAL HEAD MOUNTS
	8126 F	POLE FOUNDATION (PA90 AND PA100)
*	8130 D	SAW CUT LOOP DETECTORS

* STANDARD PLATES APPLICABLE TO THIS PROJECT

STATEMENT OF ESTIMATED QUANTITIES					
ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITY	PARTICIPATION (%)	
				RAMSEY CO. 62-668-37	N.ST.PAUL 151-020-09
2564.531	F&d SIGN PANELS TYPE D	SQ. FT.	45	100	0
2565.511	FULL T. ACT. T. CONTROL SIGNAL SYSTEM A	SIG. SYS.	1	100	0
0565.601	EMERGENCY VEHICLE PRE-EMPTION SYSTEM A	L. SUM	1	0	100
0565.601	TRAFFIC CONTROL INTERCONNECTION (TIMING)	L. SUM	1	100	0

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Daniel E. Sohn

Date 3/11/196Reg. No. 20452

S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

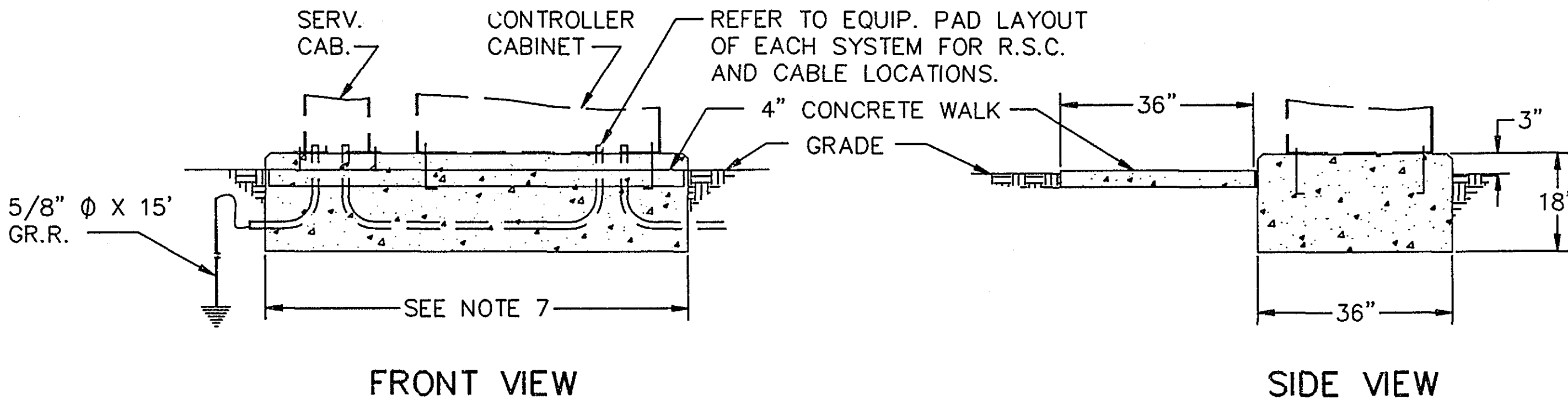
DETAILS
28-178

Sheet No. 2 of 9 Sheets

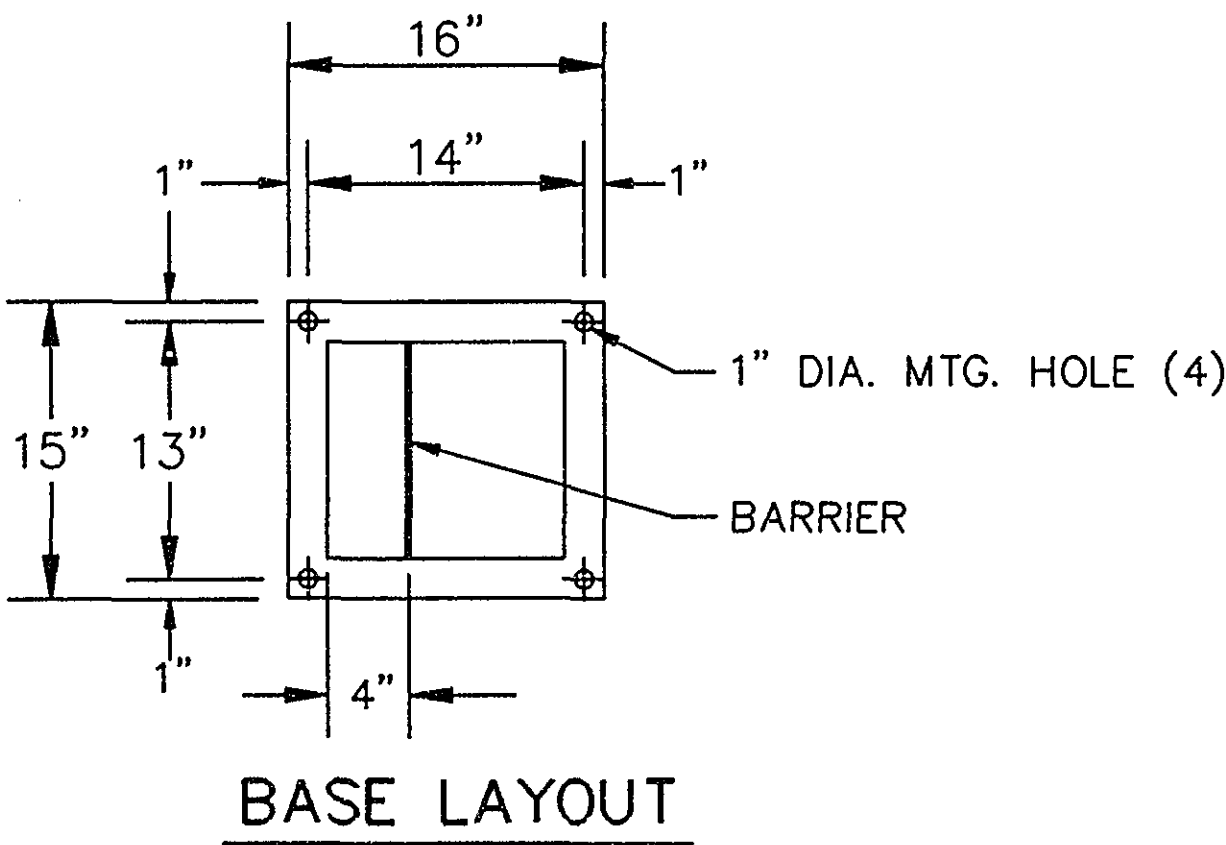
EQUIPMENT PAD FOUNDATION

NOTES:

1. ANCHOR RODS, NUTS AND WASHERS PER MN/DOT 3385 OR APPROVED EQUAL SET AS RECOMMENDED BY CABINET MANUFACTURER (NUMBER, SIZE AND LENGTH OF ANCHOR RODS) SHALL BE AS REQUIRED BY THE CABINET (MANUFACTURER).
2. UPPER PART OF FOUNDATION SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER IN THE FIELD.
3. TOP OF CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED). CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER BUT SHALL NOT INTERFERE WITH CABINET FUNCTIONS.
4. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR FOUNDATION AND CONCRETE WALK.
5. CONDUITS WHICH HAVE BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
6. EXACT LOCATIONS OF CONDUIT WITHIN THE PAD SHALL BE AS DETERMINED BY THE ENGINEER IN THE FIELD.
7. REFER TO EQUIPMENT PAD LAYOUT OF EACH SYSTEM FOR FOUNDATION SIZE, CONDUIT PLACEMENT AND EQUIPMENT TO BE INSTALLED.

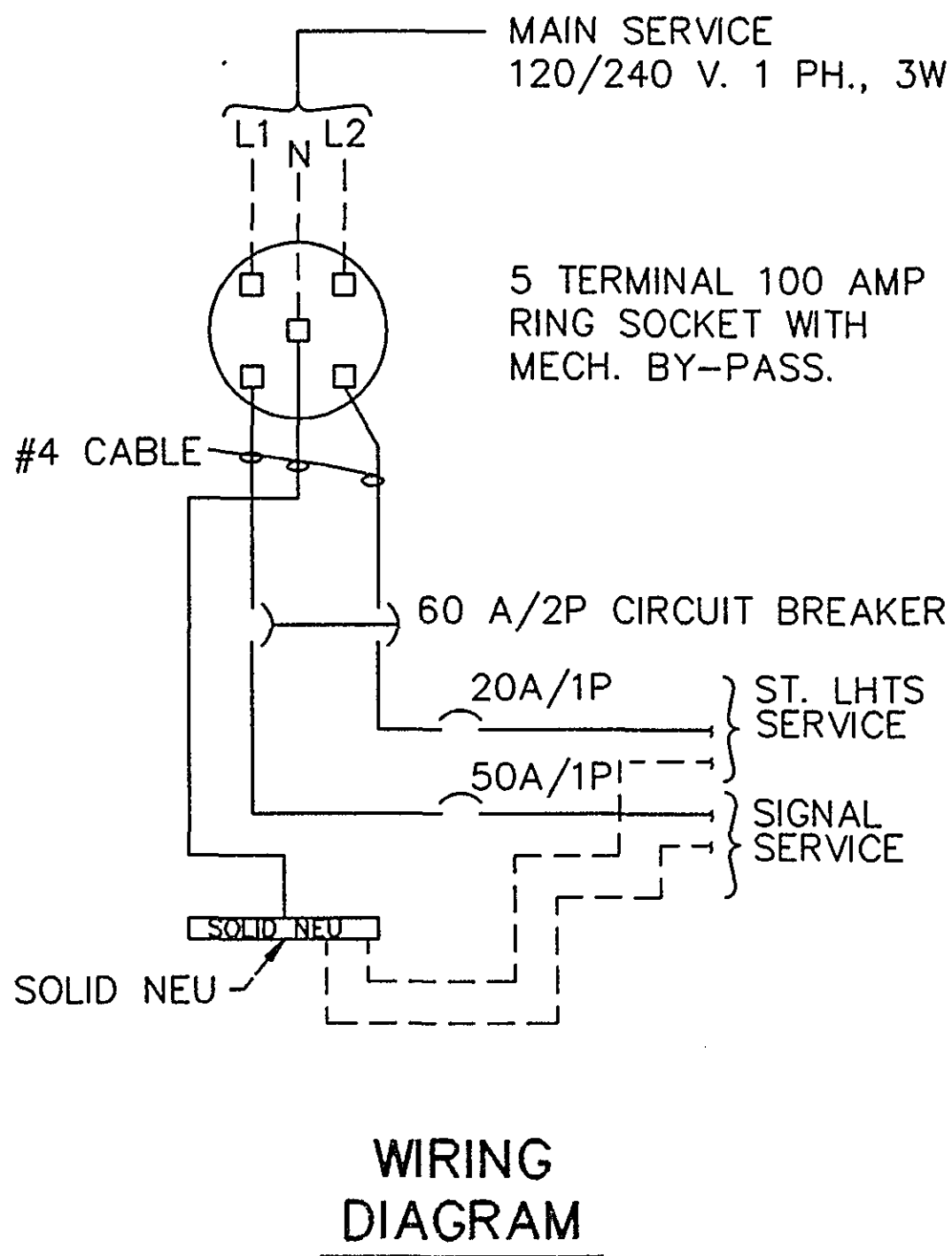
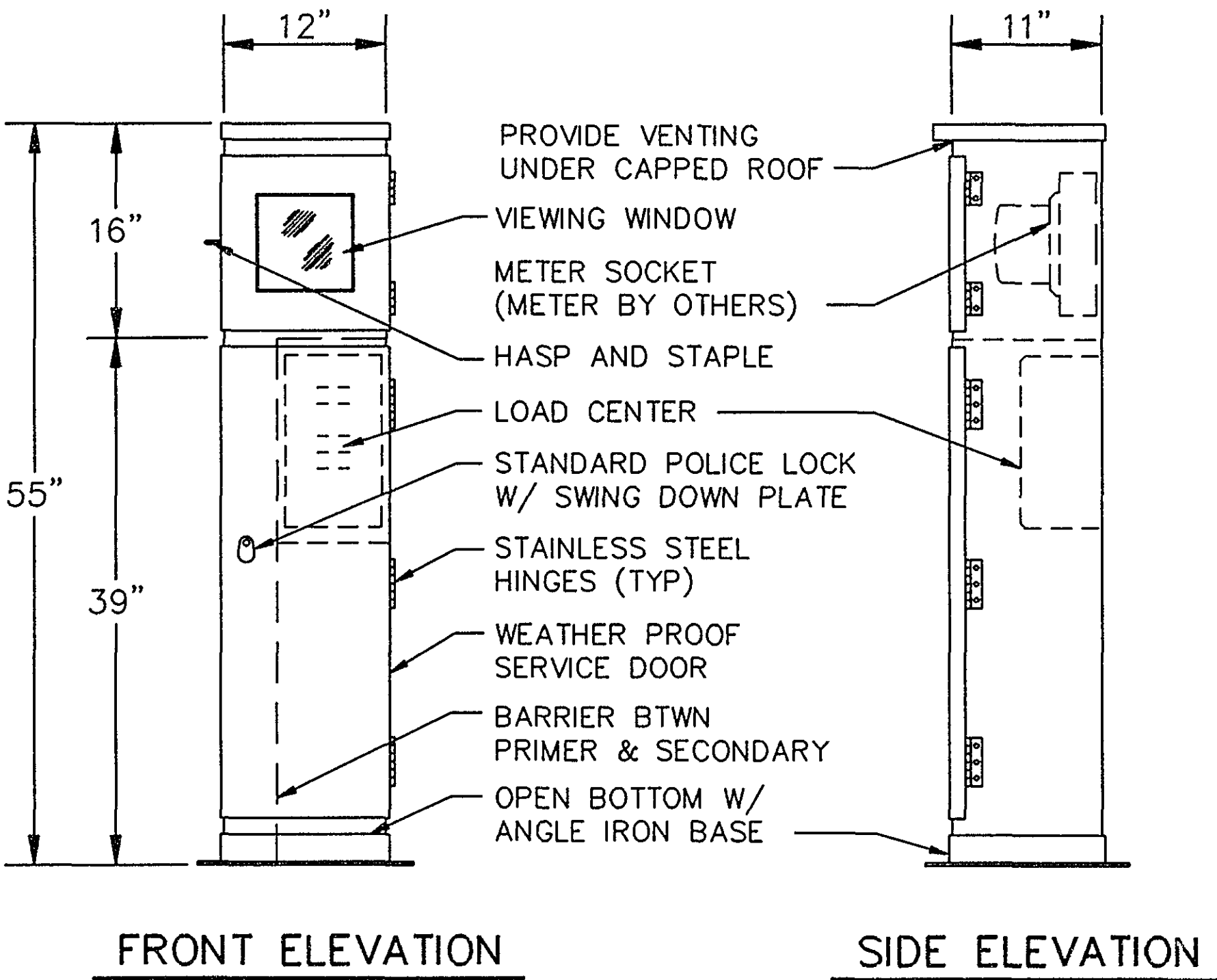


SERVICE CABINET DETAILS

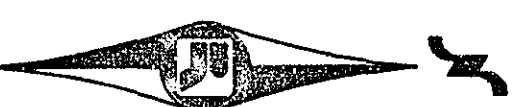


NOTES:

- PEDESTAL SHALL BE FABRICATED FROM 0.125 INCH ALUMINUM WITH WELDED SEAMS FOR USE AS AN OUTDOOR WEATHER PROOF SERVICE.
- DOOR OPENINGS SHALL BE SEALED WITH NEOPRENE GASKET.
- ALL HINGES, HINGE PINS AND LOCKS SHALL BE MADE FROM NON-CORRODING MATERIALS.
- THE VIEWING WINDOW SHALL BE LEXAN MATERIAL - 7" X 7" MIN.
- THE PEDESTAL CABINET SHALL BE PROTECTED INSIDE AND OUT WITH A ANODIC COATING. SEE SPECIAL PROVISIONS.
- ANCHOR RODS, NUTS & WASHERS - SEE EQUIPMENT PAD NOTE No. 1.

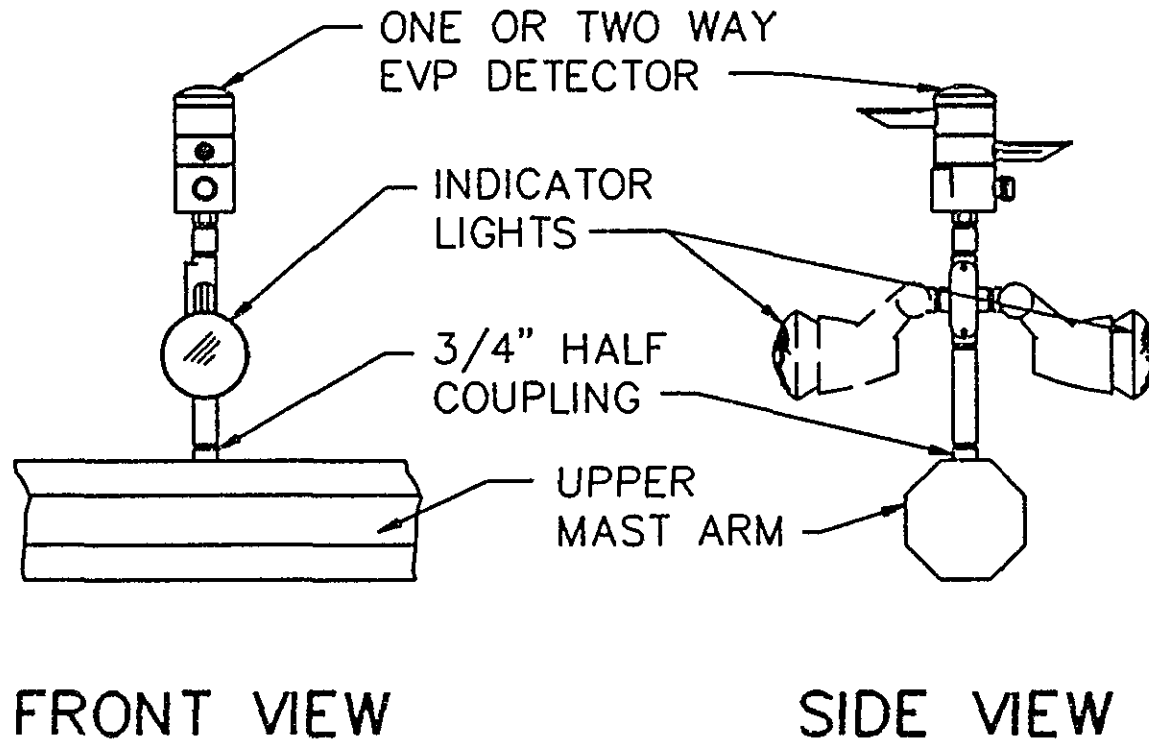
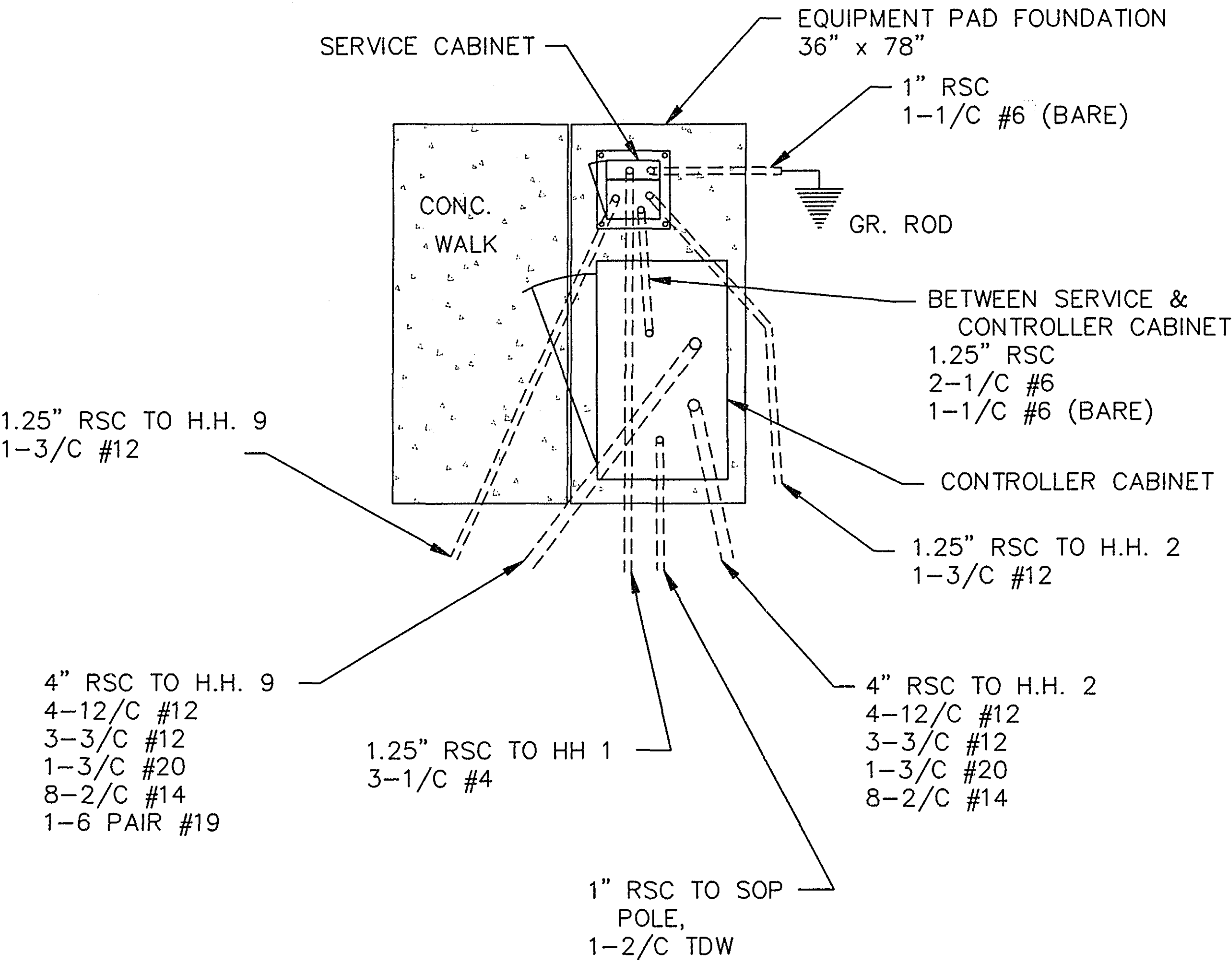


SERVICE PAD LAYOUT



SYSTEM A

McKNIGHT RD & SOUTH AVE



EVP DETECTOR & LIGHT MOUNTING DETAIL ON MAST ARM

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Daniel F. Solu

Date 3/1/196 Reg. No. 20452

S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

DETAILS

28-178

Sheet No. 3 of 9 Sheets

SIGNAL INDICATION CHART						
FACE	PHASE	INDICATION SIZE				
		R	Y	G	Y	G
2-1	2	12"	12"	12"		
2-2	2	12"	12"	12"		
2-3	2	12"	12"	12"		
4-1	4	12"	12"	12"		
4-2	4	12"	12"	12"		
4-3	4	12"	12"	12"		
6-1	6	12"	12"	12"		
6-2	6	12"	12"	12"		
6-3	6	12"	12"	12"		
8-1	8	12"	12"	12"		
8-2	8	12"	12"	12"		
8-3	8	12"	12"	12"		

SIGNING

F&I OVERHEAD TYPE D SIGN, SEE SHEET (SEPARATE PAY ITEM)

F&I PEDESTRIAN PUSH BUTTON SIGNS TYPE R10-4d (6"x10") WITH SYMBOL MESSAGE.

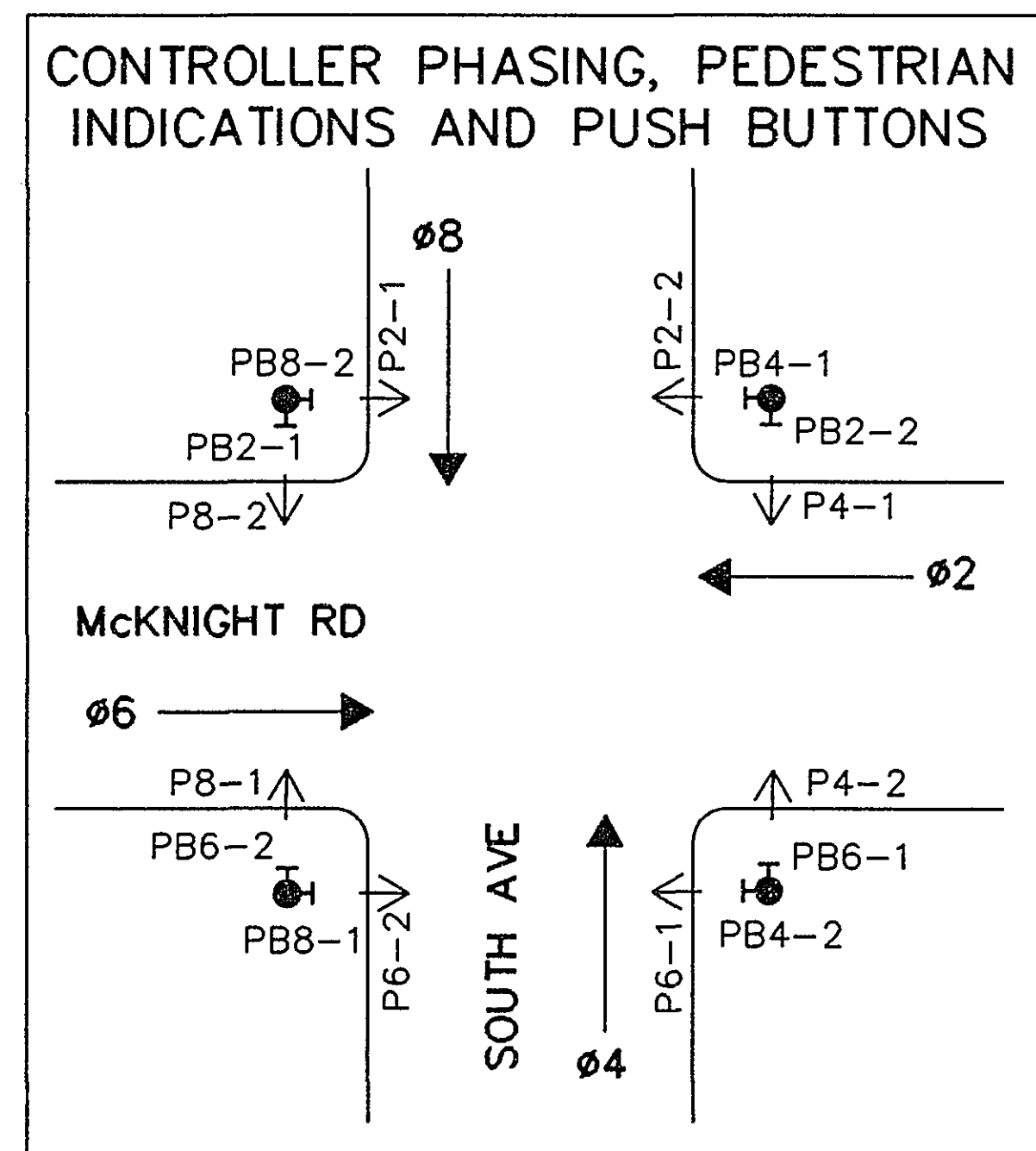
SIGNAL SYSTEM OPERATION

THE SIGNAL SYSTEM FLASH MODE IS ALL RED.

PHASES 2 AND 6 ARE ON VEHICLE RECALL.

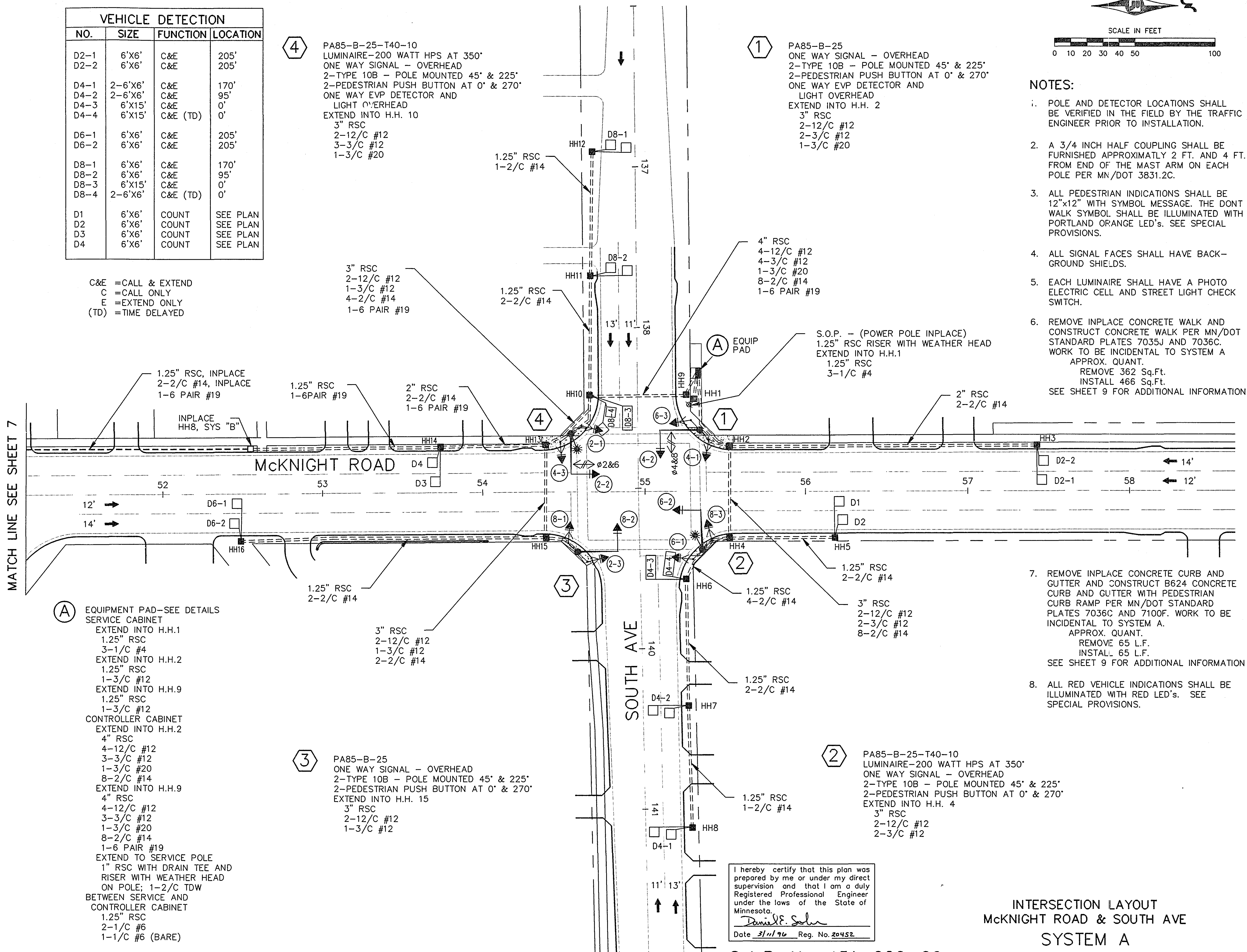
PHASES 2 AND 6 ARE LOCK DETECTION.

PHASES 4 AND 8 ARE NON-LOCK DETECTION



VEHICLE DETECTION			
NO.	SIZE	FUNCTION	LOCATION
D2-1	6'X6'	C&E	205'
D2-2	6'X6'	C&E	205'
D4-1	2-6'X6'	C&E	170'
D4-2	2-6'X6'	C&E	95'
D4-3	6'X15'	C&E	0'
D4-4	6'X15'	C&E (TD)	0'
D6-1	6'X6'	C&E	205'
D6-2	6'X6'	C&E	205'
D8-1	6'X6'	C&E	170'
D8-2	6'X6'	C&E	95'
D8-3	6'X15'	C&E	0'
D8-4	2-6'X6'	C&E (TD)	0'
D1	6'X6'	COUNT	SEE PLAN
D2	6'X6'	COUNT	SEE PLAN
D3	6'X6'	COUNT	SEE PLAN
D4	6'X6'	COUNT	SEE PLAN

C&E = CALL & EXTEND
C = CALL ONLY
E = EXTEND ONLY
(TD) = TIME DELAYED



- NOTES:**
- POLE AND DETECTOR LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE TRAFFIC ENGINEER PRIOR TO INSTALLATION.
 - A 3/4 INCH HALF COUPLING SHALL BE FURNISHED APPROXIMATELY 2 FT. AND 4 FT. FROM END OF THE MAST ARM ON EACH POLE PER MN/DOT 3831.2C.
 - ALL PEDESTRIAN INDICATIONS SHALL BE 12"x12" WITH SYMBOL MESSAGE. THE DON'T WALK SYMBOL SHALL BE ILLUMINATED WITH PORTLAND ORANGE LED'S. SEE SPECIAL PROVISIONS.
 - ALL SIGNAL FACES SHALL HAVE BACK-GROUND SHIELDS.
 - EACH LUMINAIRE SHALL HAVE A PHOTO ELECTRIC CELL AND STREET LIGHT CHECK SWITCH.
 - REMOVE INPLACE CONCRETE WALK AND CONSTRUCT CONCRETE WALK PER MN/DOT STANDARD PLATES 7035J AND 7036C. WORK TO BE INCIDENTAL TO SYSTEM A APPROX. QUANT. REMOVE 362 Sq.Ft. INSTALL 466 Sq.Ft. SEE SHEET 9 FOR ADDITIONAL INFORMATION
 - REMOVE INPLACE CONCRETE CURB AND GUTTER AND CONSTRUCT B624 CONCRETE CURB AND GUTTER WITH PEDESTRIAN CURB RAMP PER MN/DOT STANDARD PLATES 7036C AND 7100F. WORK TO BE INCIDENTAL TO SYSTEM A. APPROX. QUANT. REMOVE 65 L.F. INSTALL 65 L.F. SEE SHEET 9 FOR ADDITIONAL INFORMATION
 - ALL RED VEHICLE INDICATIONS SHALL BE ILLUMINATED WITH RED LED'S. SEE SPECIAL PROVISIONS.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Daniel F. Selzer

Date 3/11/96 Reg. No. 20452

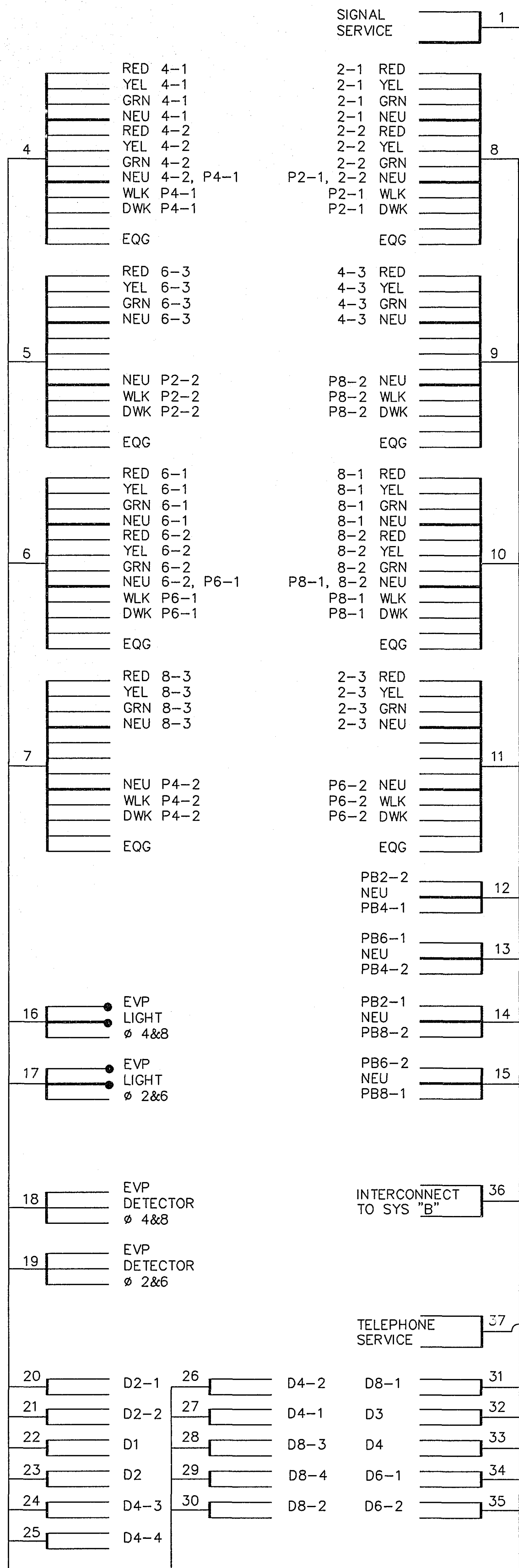
S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

INTERSECTION LAYOUT
McKNIGHT ROAD & SOUTH AVE
SYSTEM A

28-178
Sheet No. 4 of 9 Sheets

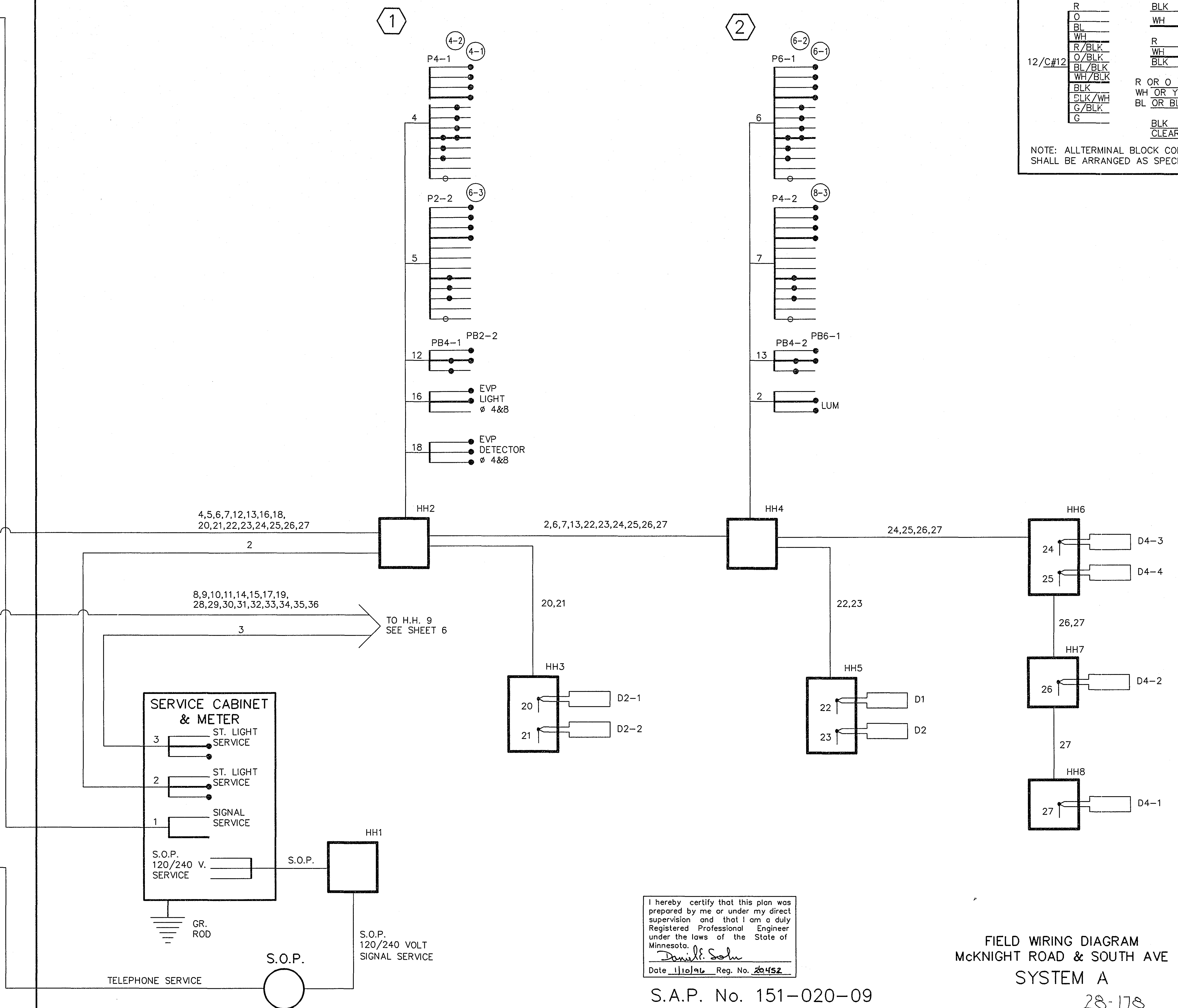
CONTROLLER CABINET



CONDUCTOR COLOR CODING

	R	BLK	
	O	WH	2-1/C#6
	BL		2-1/C#10
	WH		
	R/BLK	R	
	O/BLK	WH	3/C#12
	BL/BLK	BLK	
12/C#12	WH/BLK		
	BLK	R OR O	
	BLK/WH	WH OR YEL	3/C#20
	G/BLK	BL OR BLK	
	G		
		BLK	
		CLR	2/C#14

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



I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Daniel F. Sohn

Date 11/10/96 Reg. No. 20452

S.A.P. No. 151-020-09

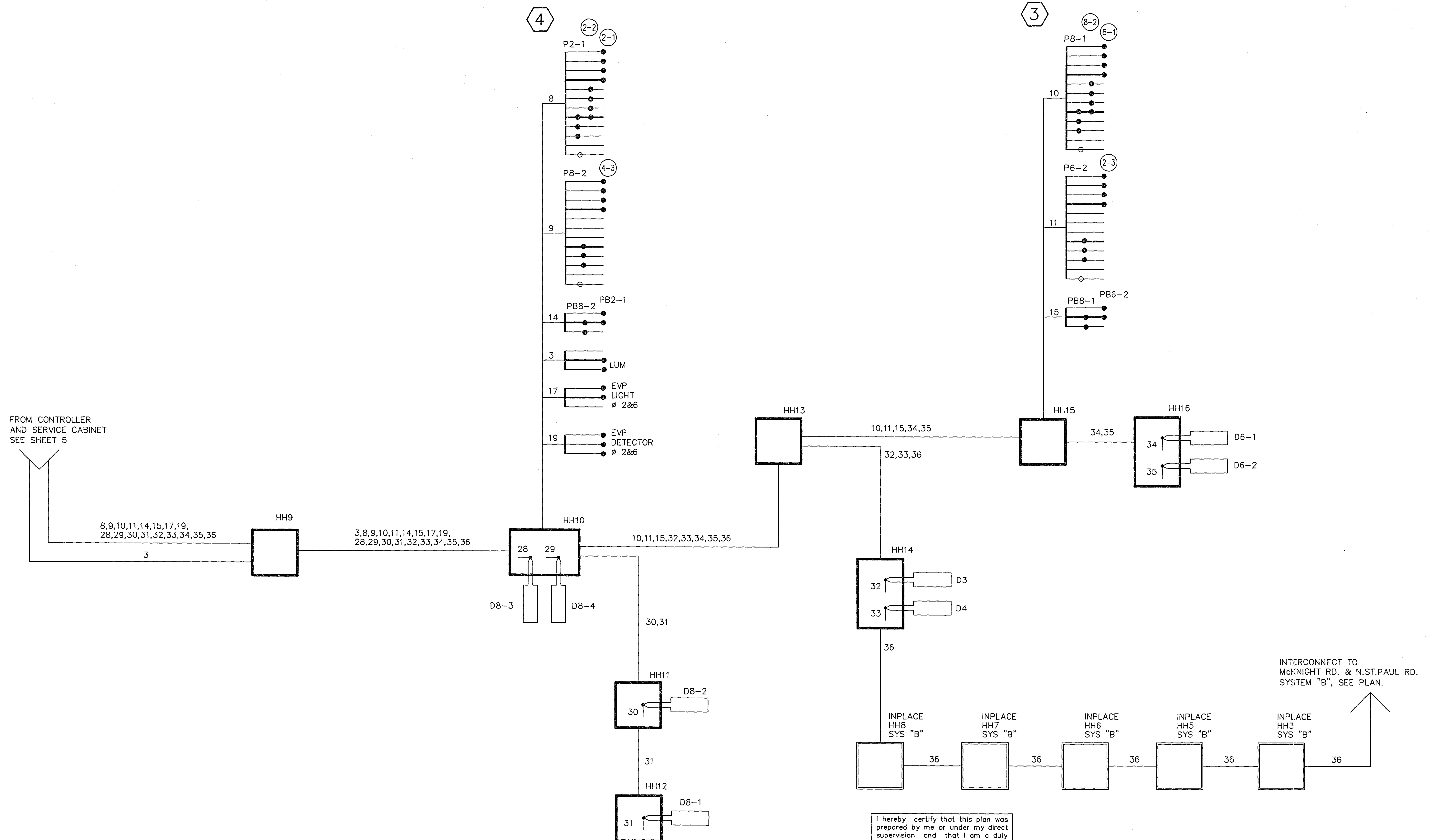
S.A.P. No. 62-668-37

FIELD WIRING DIAGRAM
McKNIGHT ROAD & SOUTH AVE
SYSTEM A

28-178

Sheet No. 5 of 9 Sheets

FROM CONTROLLER
AND SERVICE CABINET
SEE SHEET 5



I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

David F. Solu

Date 11/01/16 Reg. No. 20452

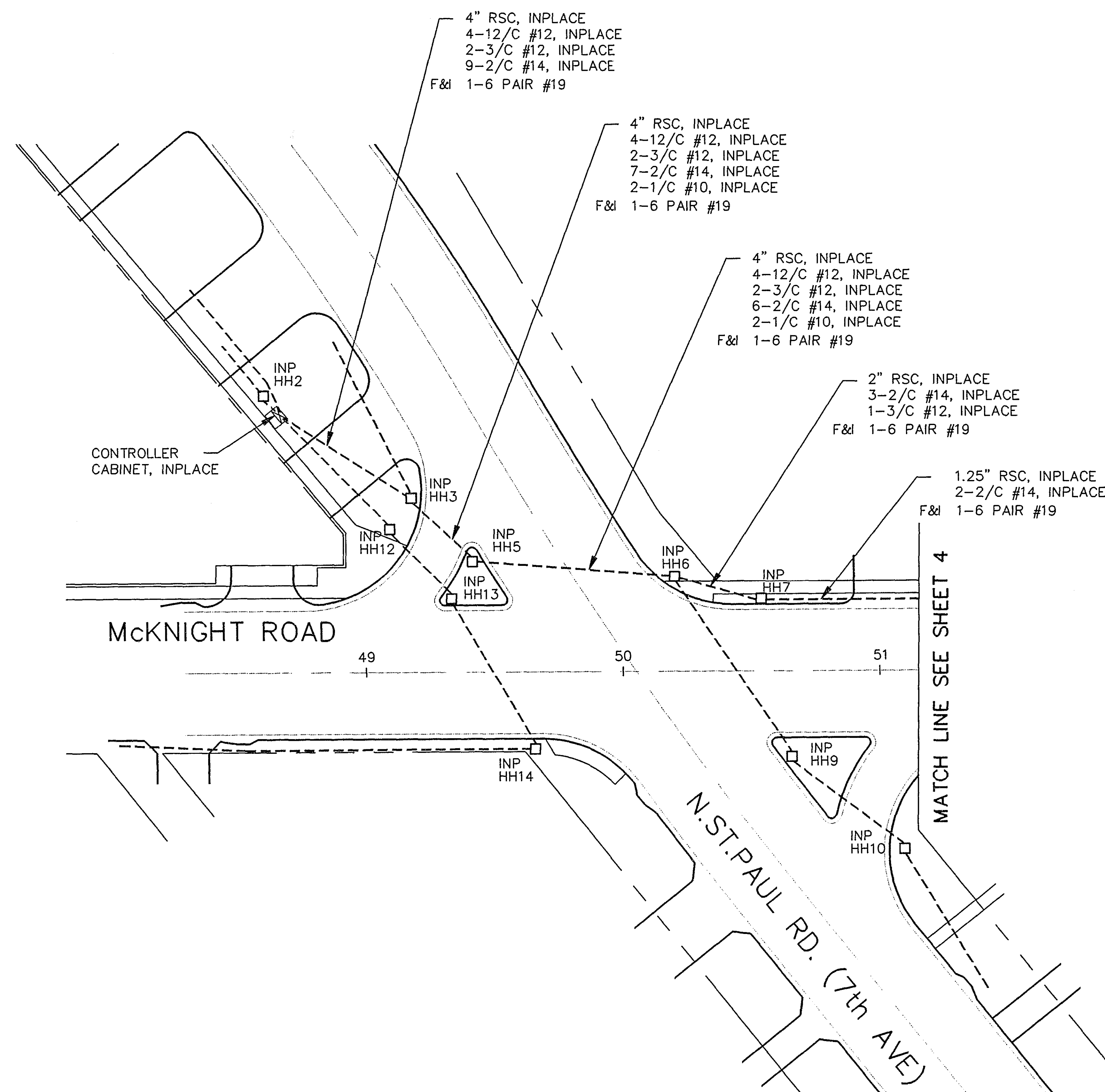
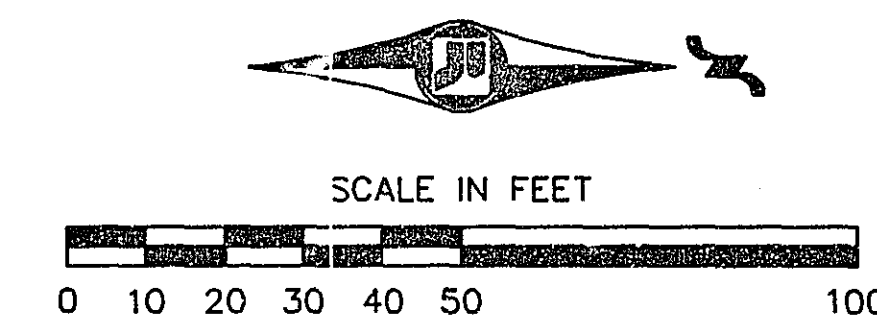
S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

FIELD WIRING DIAGRAM
McKNIGHT ROAD & SOUTH AVE
SYSTEM A

28-178

Sheet No. 6 of 9 Sheets



I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Daniel F. Sch
Date 3/1/16 Reg. No. 20452

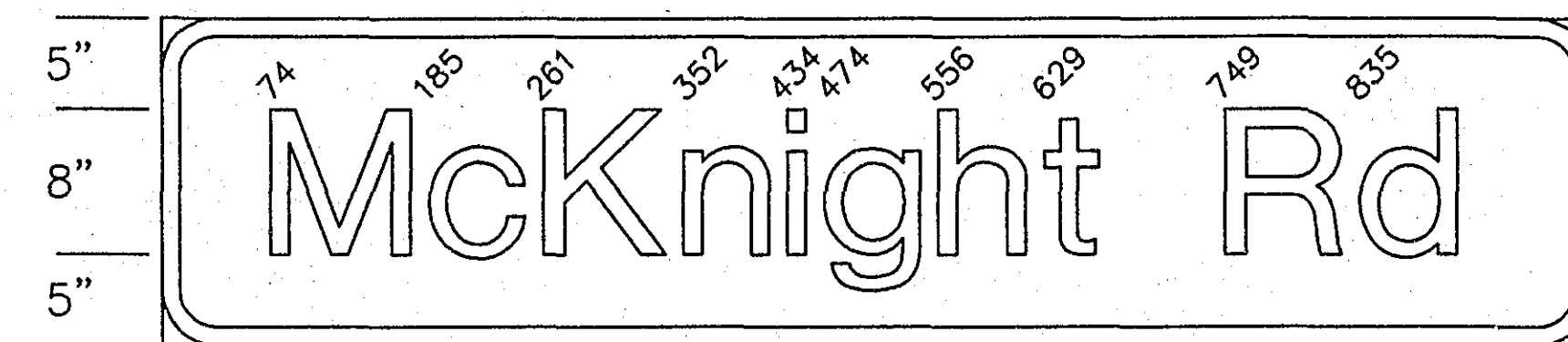
INTERSECTION LAYOUT
McKNIGHT ROAD & N.ST.PAUL RD. (7th AVE)
SYSTEM B

S.A.P. No. 151-020-09

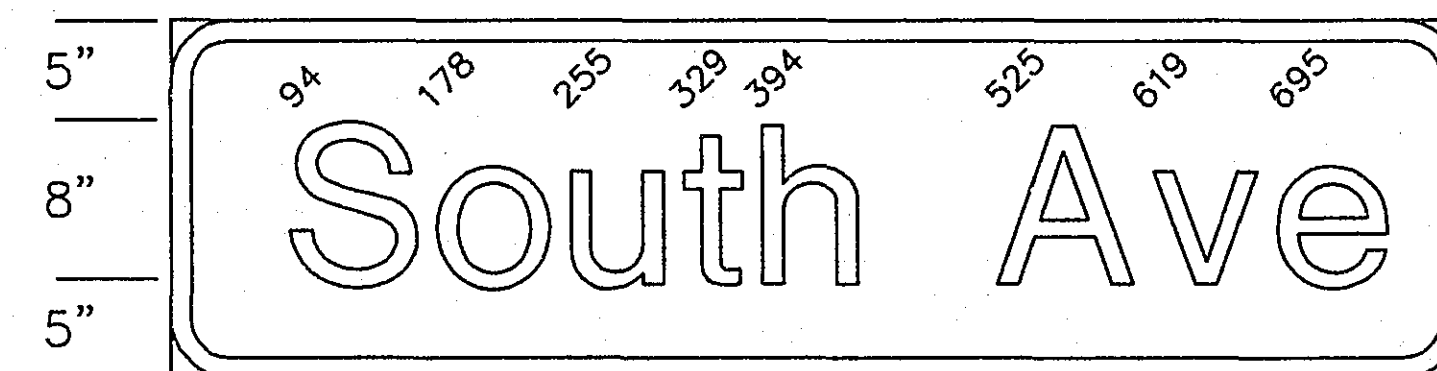
S.A.P. No. 62-668-37

Sheet No. 7 of 9 Sheets

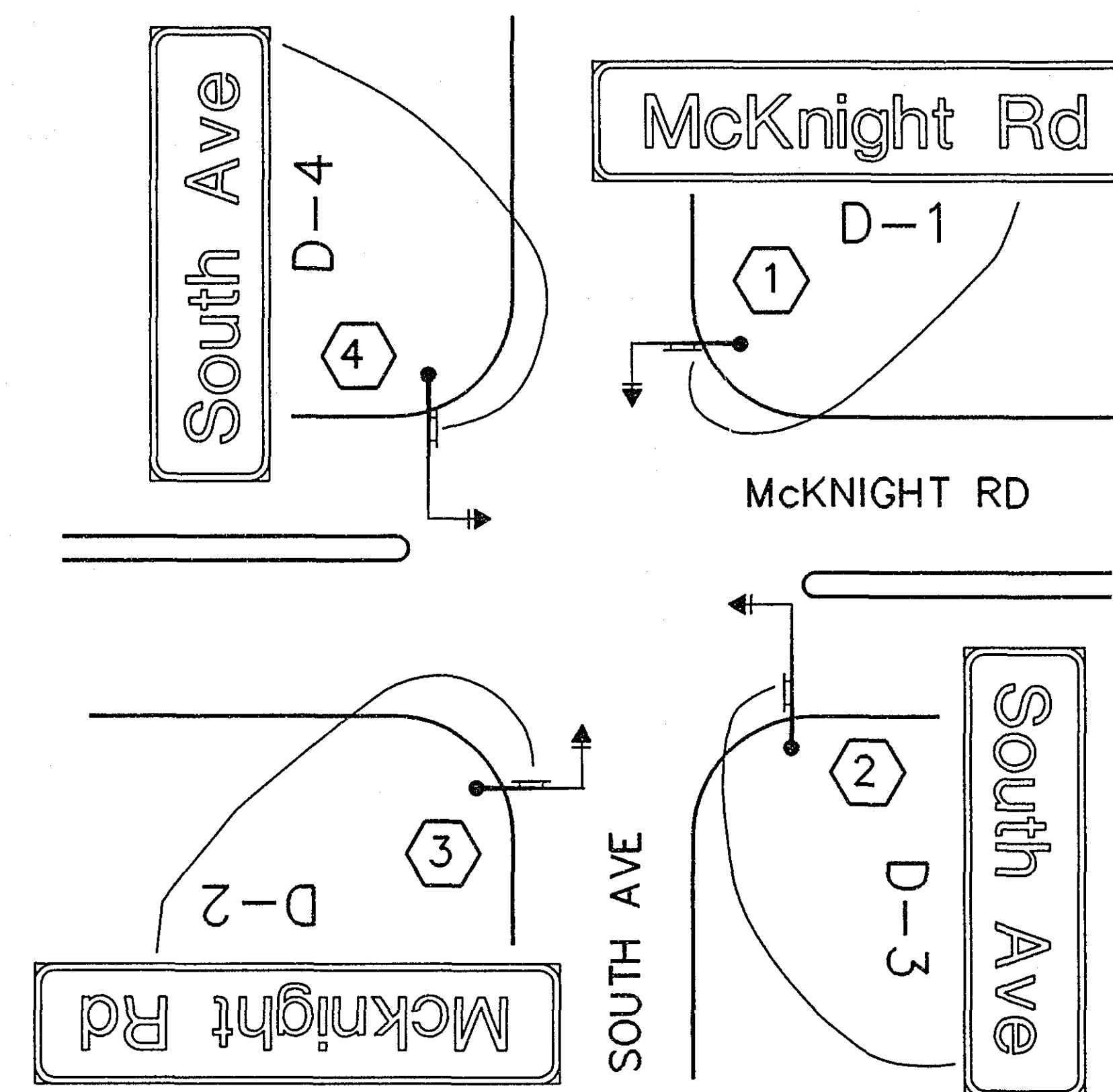
28-178



D-1 & D-2
96" X 18", 3.0 R. 1.0 B
LINE 1 = 81.15" : 8"-6" "E" MOD.



D-3 & D-4
84" X 18", 3.0 R. 1.0 B
LINE 1 = 65.25" : 8"-6" "E" MOD.



McKNIGHT RD & SOUTH AVE
(SYSTEM A)

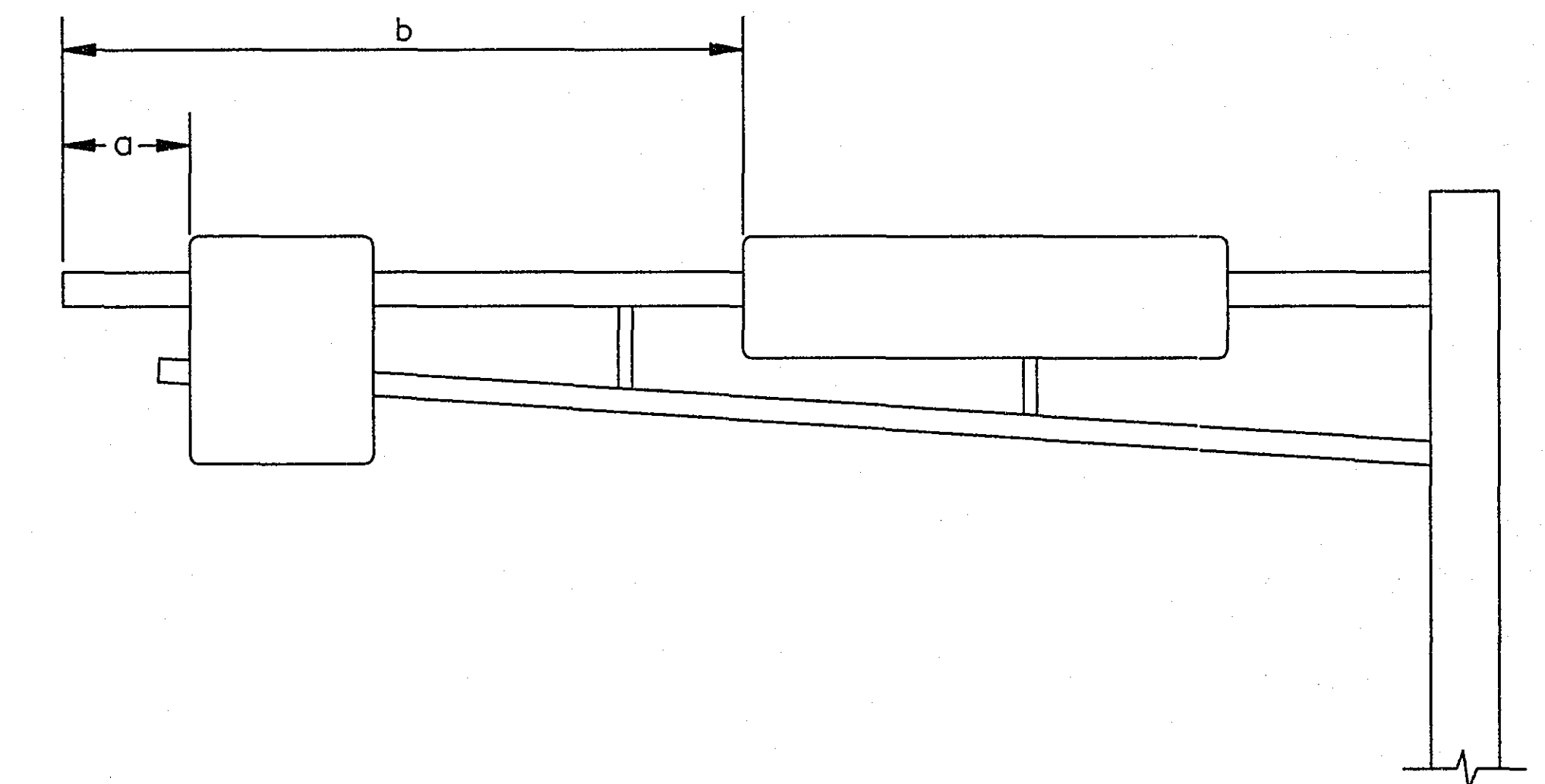


I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Samuel E. Sohn
Date 1/10/16 Reg. No. 20452

TYPE "D" SIGNS – SIGNALS

SIGN PANEL	SIZE	QUANTITY REQUIRED	BRACKETS PER SIGN	BRACKET SPACING	SQUARE FT. PER SIGN	a	b	MAST ARM POLE NUMBER
D-1	96" x 18"	1	2	54"	12		5'	(A)①
D-2	96" x 18"	1	2	54"	12		5'	(A)③
D-3	84" x 18"	1	2	54"	10.5		8'	(A)②
D-4	84" x 18"	1	2	54"	10.5		8'	(A)④

(A) – SYSTEM A



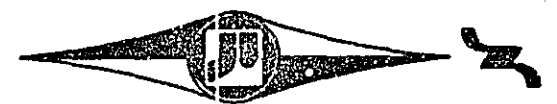
MAST ARM SIGN DIMENSIONING DETAIL

NOTES:

- COLOR – WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED WITH PRISMATIC LENS REFLECTIVE SHEETING.
- CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- BOARDERS SHALL BE 1".
- SEE STANDARD SIGN MANUAL FOR ARROW DETAILS
- FOR STRUCTURAL DETAILS, TYPE "D" SIGNS SEE STANDARD SIGNS MANUAL, PAGE 105.
- FOR TYPE "D" STRINGER AND PANEL – JOINT DETAIL, SEE STANDARD SIGNS MANUAL, PAGE 105.
- LETTERING STYLE SHALL BE HIGHWAY GOTHIC CONFORMING TO MN/DOT STANDARDS.

MAST ARM SIGNS
SYSTEM A

28-178



SCALE IN FEET
0 10 20 30 40 50 100

PARCEL NO. 1
2255 SOUTH AVE E.
PIN # 11-29-22-44-0021

DALE M. HAMLIN 1485 GLEN RD., NEWPORT
JANET M. HAMLIN
TWIN CITY FEDERAL SAVINGS
AND LOAN ASSOCIATION.

ADDITIONAL RIGHT OF WAY
318.51 SQ.FT.

PARCEL NO.

REMOVE CONCRETE WALK 129 Sq.Ft.
REMOVE CONCRETE C&G 20 L.F.
INSTALL CONCRETE WALK 165 Sq.Ft.
INSTALL CONCRETE C&G 20 L.F.
(DESIGN B624)

EXISTING 15'x15' Δ

56+00 SEC. LINE 57+00
CONST. C

REMOVE CONCRETE WALK 0 Sq.Ft.
REMOVE CONCRETE C&G 15 L.F.
INSTALL CONCRETE WALK 32 Sq.Ft.
INSTALL CONCRETE C&G 15 L.F.
(DESIGN B624)

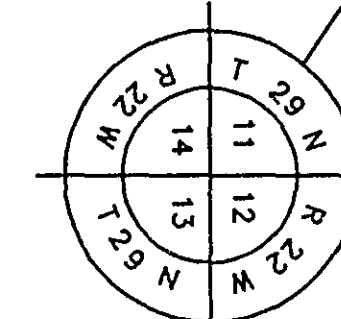
NOTES:

INSTALLATION AND REMOVALS OF WALK
AND CURB & GUTTER WILL BE CONSIDERED
INCIDENTAL TO THE CONSTRUCTION OF
SYSTEM "A" AT McKNIGHT RD AND SOUTH AVE.

QUANTITIES SHOWN ARE ESTIMATED FOR
BIDDING PURPOSES ONLY. SEE SHEET 4
AND SPECIAL PROVISIONS FOR ADDITIONAL
INFORMATION.

REMOVE CONCRETE WALK 127 Sq.Ft.
REMOVE CONCRETE C&G 20 L.F.
INSTALL CONCRETE WALK 163 Sq.Ft.
INSTALL CONCRETE C&G 20 L.F.
(DESIGN B624)

REMOVE CONCRETE WALK 106 Sq.Ft.
REMOVE CONCRETE C&G 10 L.F.
INSTALL CONCRETE WALK 106 Sq.Ft.
INSTALL CONCRETE C&G 10 L.F.
(DESIGN B624)



I hereby certify that this plan was
prepared by me or under my direct
supervision and that I am a duly
Registered Professional Engineer
under the laws of the State of
Minnesota.
Daniel F. Sohn
Date 2/13/96 Reg. No. 20452

S.A.P. No. 151-020-09

S.A.P. No. 62-668-37

McKNIGHT ROAD
N.ST.PAUL RD. TO SOUTH AVE
UTILITIES, CONSTRUCTION
& RIGHT OF WAY

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