

PLANS SYMBOLS

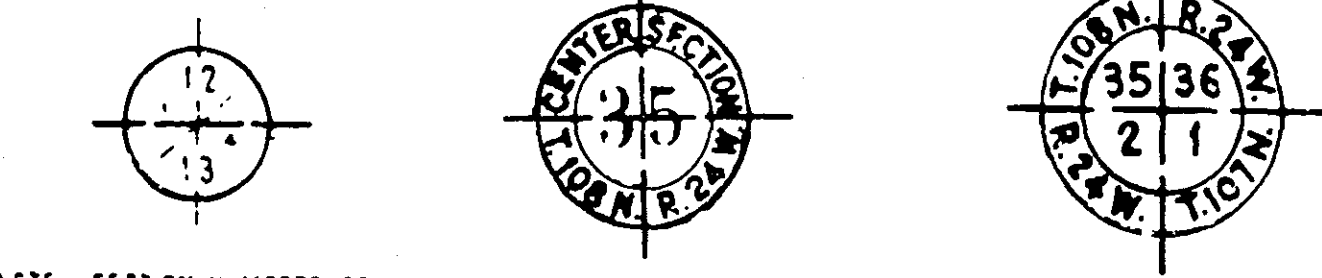
STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
PRESENT RIGHT OF WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT OF WAY LINE
RIVER OR CREEK
DRY RUN
DRAINAGE DITCH
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
WEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER

SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
CATCH BASIN
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame)
F FRAME C CONCRETE
S STONE T TILE
B BRICK ST STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY

UTILITIES SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH
POLE LINE
JOINT TELEPHONE AND POWER
OR POWER POLES
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDestal TELEPHONE CABLE
TERMINAL
GAS MAIN
WATER MAIN

CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRIC CABLE
AERIAL TELEPHONE CABLE
SEWER (SANITARY OR STORM)
SEWER MANHOLE



NOTE: SECTION NUMBERS REF. FROM "THE SCL"

PIT DATA

PIT NO. Located in Dead Haul
PIT NO. Located in Dead Haul

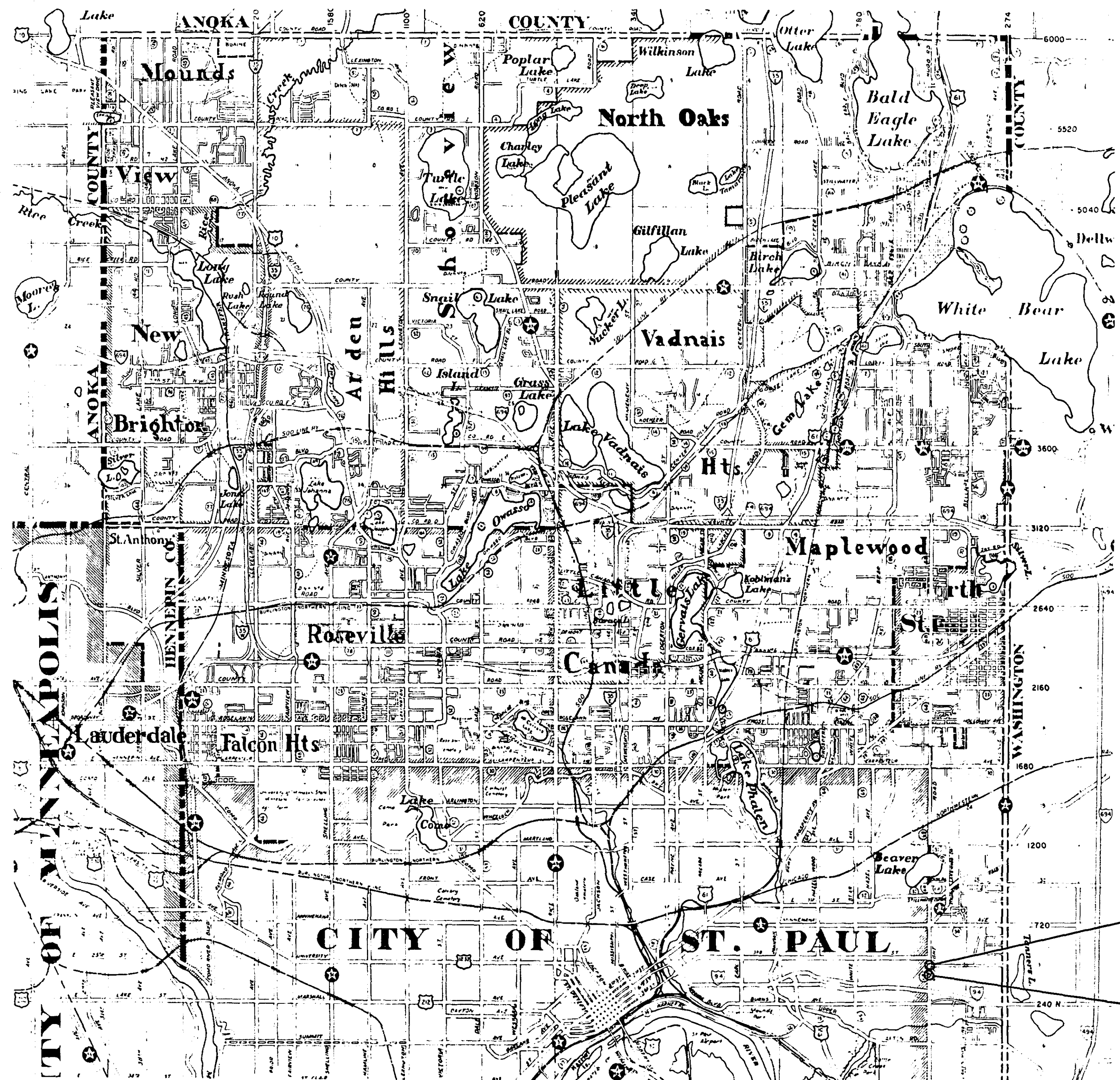
THE "MINNESOTA HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" DATED JANUARY 1, 1972 AS AMENDED BY "SUPPLEMENTAL SPECIFICATIONS" DATED APRIL 1, 1976 SHALL GOVERN.

OFFICE OF COUNTY ENGINEER RAMSEY COUNTY

PLAN OF TRAFFIC CONTROL SYSTEM REVISIONS
FOR THE INTERSECTIONS OF

McKNIGHT RD. & CONWAY AVE. SYSTEM "A"
C.P. NO. TRF 532-31

McKNIGHT RD. & 3M ROAD SYSTEM "B"
C.P. NO. TRF 531-31



INDEX

SHEET NO.	DESCRIPTION
1	TITLE
2	DETAIL
3	INTERSECTION LAYOUT
4	REVISED FIELD WIRING DIAGRAM SYSTEM "A"
5	INTERSECTION LAYOUT & REVISED FIELD WIRING DIAGRAM SYSTEM "B"

I hereby certify that this plan, specification, or report 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.
Paul K. Kuhl
Date 8-11-77 Reg. No. 12703

McKNIGHT RD. & CONWAY AVE.
C.P. 532-31 SYSTEM "A"

McKNIGHT RD. & 3M RD.
C.P. 531-31 SYSTEM "B"

RECOMMENDED FOR APPROVAL *MDK* DATE 8-11-77
ENV. ENGR.
RECOMMENDED FOR APPROVAL *MDK* DATE 7/12/77
MAINT. ENGR.
RECOMMENDED FOR APPROVAL *JAB* DATE 7-14-77
CONST. ENGR.
RECOMMENDED FOR APPROVAL *LKE* DATE 7-7-77
DESIGN ENGR.
RECOMMENDED FOR APPROVAL *W. J. K. Kuhl* DATE 8-11-77
H.O.W. ENGR.
APPROVED *W. J. K. Kuhl* DATE 8-11-77
ENR.

RECOMMENDED FOR APPROVAL *Paul K. Kuhl* DATE 8-11-77
TRAFFIC ENGINEER
RECOMMENDED FOR APPROVAL *W. J. K. Kuhl* DATE 8-11-77
COUNTY ENGINEER
APPROVED _____ DATE _____
CHAIRMAN OF THE RAMSEY COUNTY BOARD
APPROVED _____ DATE _____
MINNESOTA STATE HIGHWAY DEPARTMENT
RECOMMENDED FOR APPROVAL _____ DATE _____
RECOMMENDED FOR APPROVAL _____ DATE _____
DISTRICT STATE AID ENGINEER
APPROVAL _____ DATE _____
STATE AID ENGINEER

STANDARD PLATES	
PLATE NO.	TITLE
* 8110 B	TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)
8111 A	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED)
8112 B	PEDESTAL FOUNDATION
8113 B	MAGNETIC VEHICLE DETECTOR INSTALLATION
* 8115 B	PEDESTRIAN PUSH BUTTON INSTALLATION
8116 C	STEEL GUARD POST
8117 E	PRECAST CONCRETE HANDHOLE
8118 B	SERVICE EQUIPMENT & POLE, TRAFFIC CONTROL SIGNALS
8119 B	GROUND MOUNTED CABINET FOUNDATION
8120 D	MAST ARM POLE FOUNDATION
8122 B	PEDESTAL AND PEDESTAL BASE
8123 A	POLE AND MAST ARM (LUMINAIRES AND TRAFFIC LIGHTS)
8124 B	SIGNAL HEAD MOUNTS
8125 A	SWING-AWAY HINGE (FOR TRAFFIC SIGNAL ARM MAST)
* 8130 B	SAW CUT LOOP DETECTORS

* STANDARD PLATES APPLICABLE TO THIS PROJECT

STATEMENT OF ESTIMATED QUANTITIES				
PROJECT NO.	ITEM NO.	ITEM	UNIT	QUANT.
TRF 532-31	0565.610	REVISE SIGNAL SYSTEM "A"	SYSTEM	1
TRF 531-31	0565.610	REVISE SIGNAL SYSTEM "B"	SYSTEM	1

ABBREVIATIONS

EQUIPMENT & INDICATIONS

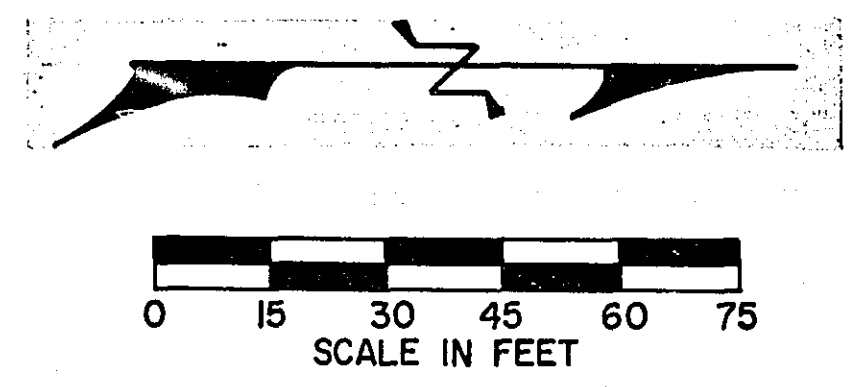
RED - RED
YEL - YELLOW
GRN - GREEN
LTA - LEFT TURN ARROW
THA - THRU ARROW
RTA - RIGHT TURN ARROW
TRA - THRU AND RIGHT ARROW
WLK - WALK
NEU - NEUTRAL
DWK - DON'T WALK
SW - SWITCH
SWD - SWITCHED
LUM - LUMINAIRE
PA1(eg) - PEDESTRIAN INDICATION-"A" PHASE
PBB2(eg) - PUSH BUTTON-"B" PHASE
C3(eg) - SIGNAL HEAD-"C" PHASE
DA4(eg) - DETECTOR-"A" PHASE
H.H. - HANDHOLE
GR.R. - GROUND ROD
SERV. - SERVICE
EVP - EMERGENCY VEHICLE PRE-EMPTION

DNL - DOWNLIGHT
PE.C.- PHOTOELECTRIC CELL
ST. LHT. - STREET LIGHT
CH. - CHECK
S.O.P. - SOURCE OF POWER
EQ.G. - EQUIPMENT GROUND
SPR - SPARE CONDUCTOR

COLOR CODING OF CONDUCTOR

R - RED
O - ORANGE
BL - BLUE
WH - WHITE
R/BLK - RED WITH BLACK TRACER
O/BLK - ORANGE WITH BLACK TRACER
BL/BLK - BLUE WITH BLACK TRACER
WH/BLK - WHITE WITH BLACK TRACER
BLK - BLACK
BLK/WH - BLACK WITH WHITE TRACER
G/BLK - GREEN WITH BLACK TRACER
G - GREEN

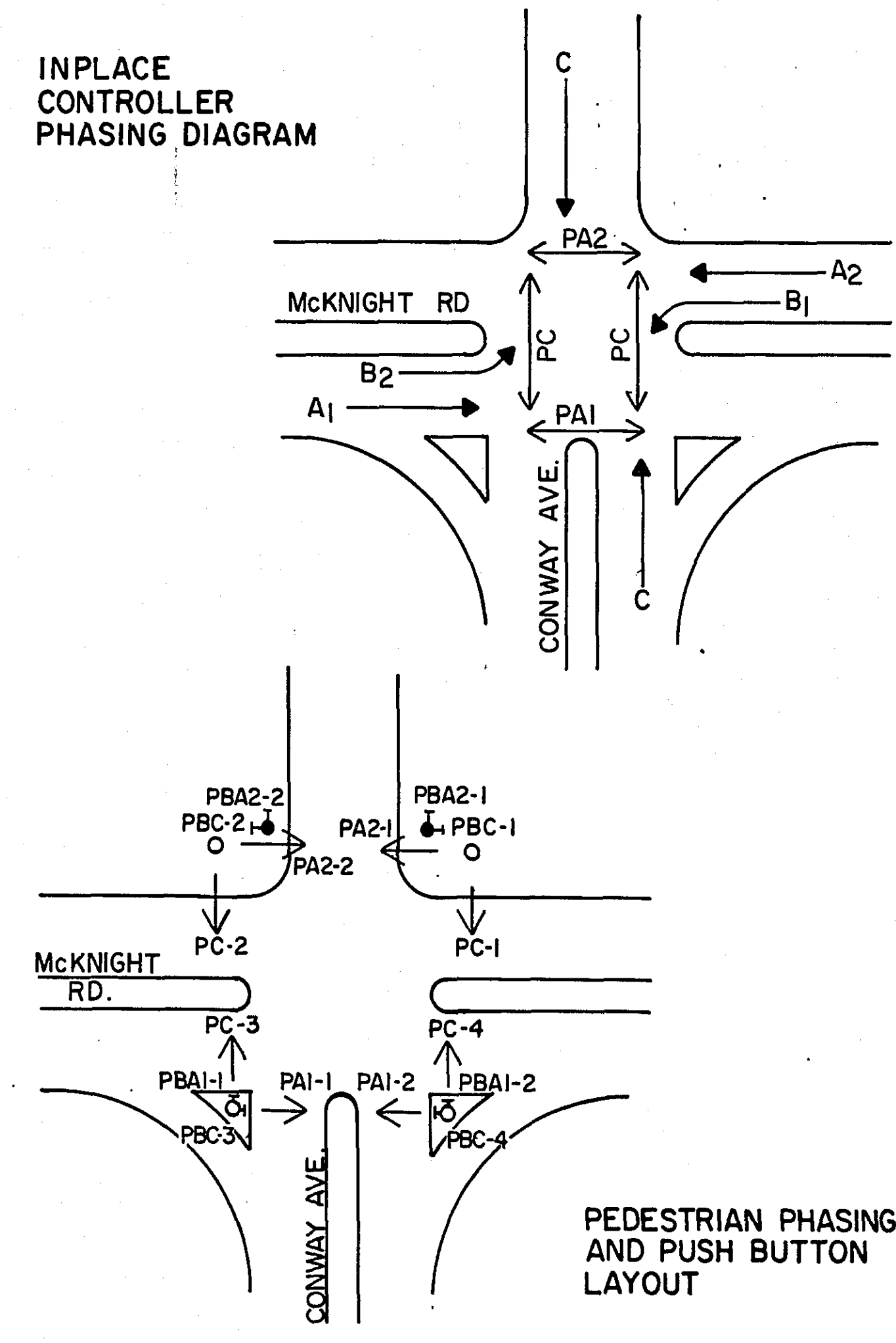
I hereby certify that this plan, specification,
or report was prepared by me or under my
direct supervision and that I am a duly
Registered Professional Engineer under
the laws of the State of Minnesota.
Paul K. Kuntz
Date 8-11-77 Reg. No. 12703



LEGEND OF SYMBOLS

- SIGNAL BASE No. (5)
- SIGNAL FACE No. (A2)
- CONTROLLER AND CABINET
- CONTROLLER AND CABINET-INPLACE
- HANDHOLE
- HANDHOLE-INPLACE
- RIGID STEEL CONDUIT (R.S.C.)
- RIGID STEEL CONDUIT (R.S.C.)-INPLACE
- SIGNAL FACE
- SIGNAL FACE WITH BACKGROUND SHIELD
- SIGNAL FACE - INPLACE
- PEDESTRIAN INDICATIONS
- PEDESTRIAN INDICATIONS - INPLACE
- PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE
- PEDESTRIAN PUSH BUTTON STATION
- TRAFFIC SIGNAL PEDESTAL
- TRAFFIC SIGNAL PEDESTAL - INPLACE
- TRAFFIC SIGNAL POLE AND MAST ARM
- TRAFFIC SIGNAL POLE AND MAST ARM - INPLACE
- MAST ARM AND LUMINAIRE
- MAST ARM AND LUMINAIRE - INPLACE
- WOOD POLE
- WOOD POLE - INPLACE
- SOURCE OF POWER
- EMERGENCY VEHICLE PRE-EMPTION DETECTOR LOCATION

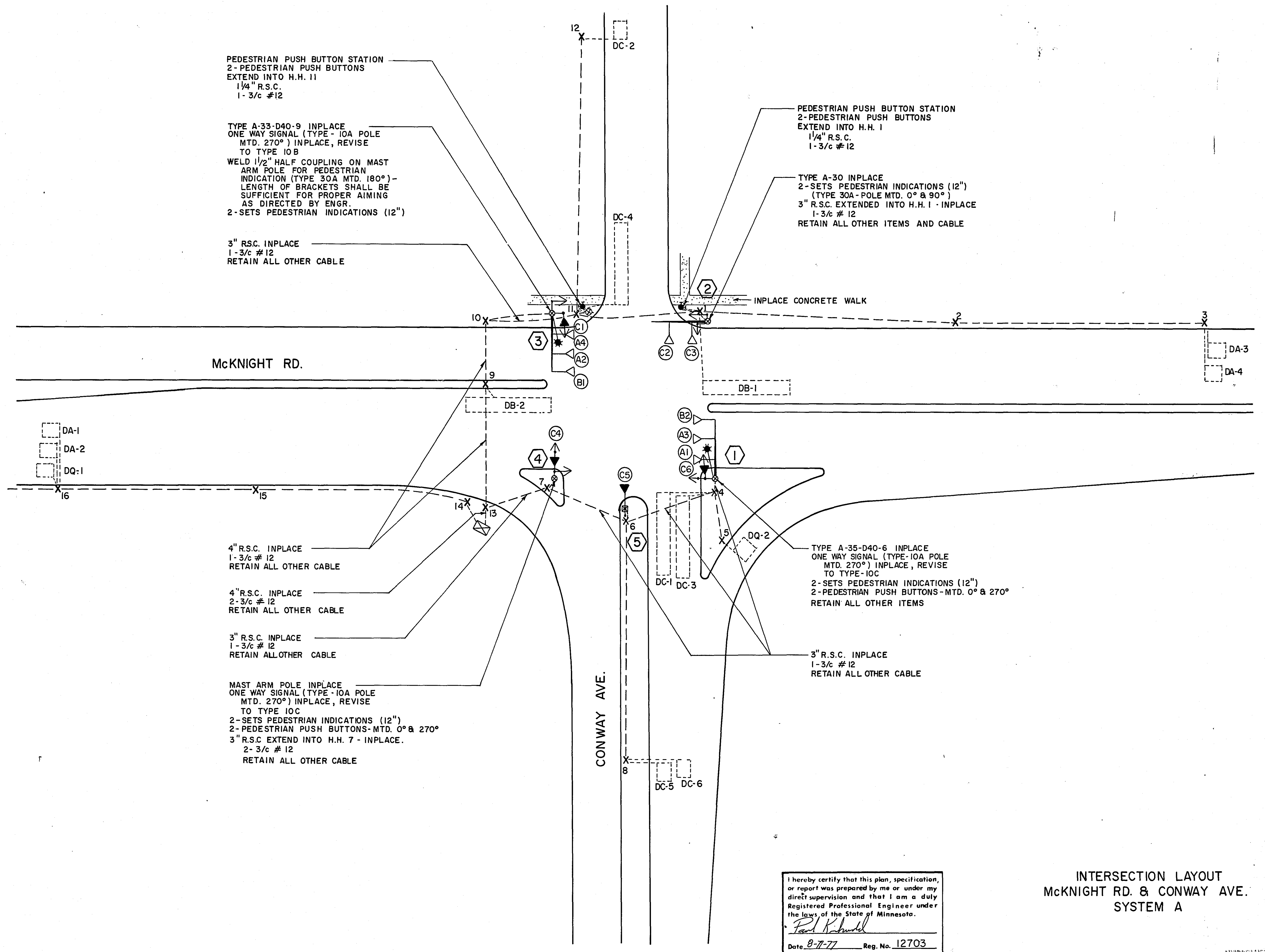
INPLACE CONTROLLER PHASING DIAGRAM



PEDESTRIAN PHASING AND PUSH BUTTON LAYOUT

SIGNAL INDICATION CHART							
FACE	PHASE	FLASH	INPLACE INDICATIONS				
			R	Y	G	←	→
* A1	A1	Y	12"	12"	12"	-	-
* A2	A2	Y	12"	12"	12"	-	-
* A3	A1	Y	12"	12"	12"	-	-
* A4	A2	Y	12"	12"	12"	-	-
* B1	B1	Y	12"	12"	-	12"	-
* B2	B2	Y	12"	12"	-	12"	-
* C1	C	R	12"	12"	12"	-	-
* C2	C	R	12"	12"	12"	-	-
* C3	C	R	12"	12"	12"	-	-
C4	C	R	12"	12"	12"	-	-
C5	C	R	12"	12"	12"	-	-
C6	C	R	12"	12"	12"	-	-

* SPECIAL SIGNAL FACES INPLACE



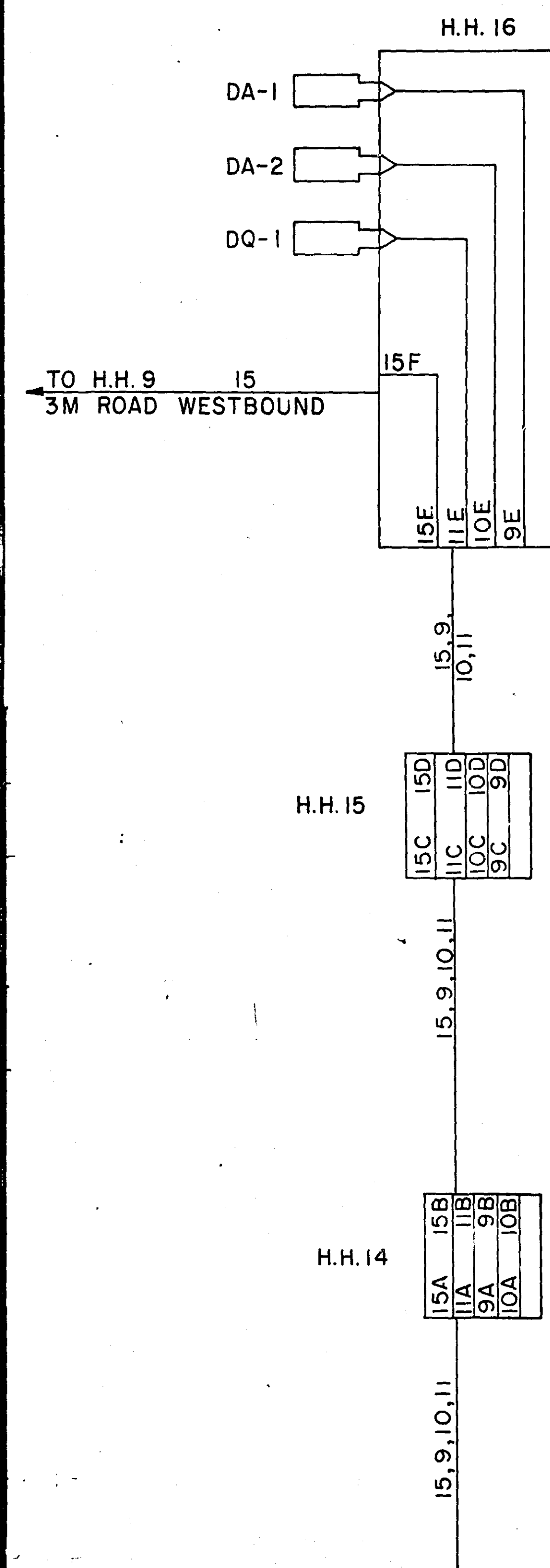
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Paul K. Schmidt
Date 8-7-77 Reg. No. 12703

INTERSECTION LAYOUT
McKNIGHT RD. & CONWAY AVE.
SYSTEM A

3/C #12	BLK
	WH
	RED
12/C #12	1 R
	2 O
	3 BL
	4 WH
	5 R/BL
	6 O/BLK
	7 BL/BLK
	8 WH/BLK
	9 BLK
	10 BLK/WH
11 G/BLK	
12 G	

2/C	BLK
Shielded	CLEAR
Cable	BLK
2-1/C #6	WH
2-1/C #10	

NOTE: O- Equipment Ground To Base
Of Metal Poles



CONDUCTOR COLOR CODING

3/C #12	BLK
	WH
	RED

1	R
2	O
3	BL
4	WH
5	R/BL
6	O/BLK
7	BL/BLK
8	WH/BLK
9	BLK
10	BLK/WH
11	G/BLK
12	G

2/C	BLK
Shielded Cable	CLEAR
2-1/C #6	BLK
2-1/C #10	WH

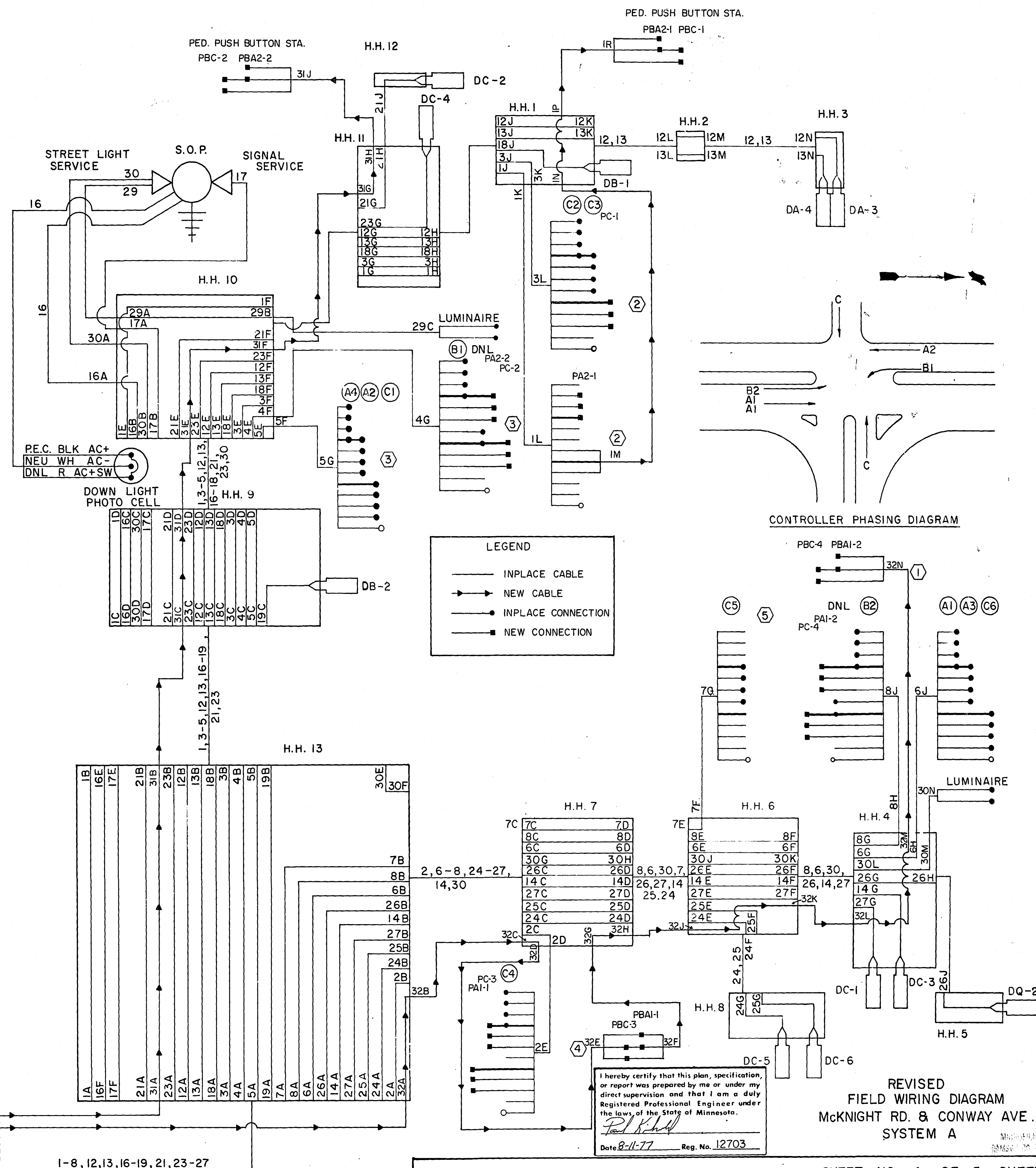
NOTE: O- Equipment Ground To Base Of Metal Poles

Diagram Components:

- H.H. 16:** DA-1, DA-2, DQ-1, 15F, 15E, 11E, 10E, 9E
- H.H. 15:** 15C, 15D, 11C, 11D, 10C, 10D, 9C, 9D
- H.H. 14:** 15A, 15B, 11A, 11B, 10A, 10B, 9A, 9B

Terminal Block Connections:

1	WLK PA2-1	A4	RED
	DWK PA2-1	A4	YEL
	NEU PA2-1	A4	GRN
		A2	NEU
		A2	RED
		A2	YEL
		A2	GRN
		C1	NEU
		C1	RED
		C1	YEL
		C1	GRN
		C1	EQG
2	PBA2-1	A1	RED
	NEU	A1	YEL
	PBC-1	A1	GRN
		A1	NEU
		A3	RED
		A3	YEL
		A3	GRN
		C6	NEU
		C6	RED
		C6	YEL
		C6	GRN
		C6	EQG
3	RED C2	C5	NEU
	YEL C2	C5	RED
	GRN C2	C5	YEL
	NEU C2 C3	C5	GRN
	RED C3		SPR
	YEL C3		SPR
	GRN C3		SPR
	NEU PC-1		SPR
	WLK PC-1		SPR
	DWK PC-1		SPR
	SPR		EQG
	EQG		
4	RED BI	B2	RED
	YEL BI	B2	YEL
	LTA BI	B2	LTA
	NEU BI, PA22	PAI-2, B2	NEU
	WLK PA2-2	PAI-2 WLK	
	DWK PA2-2	PAI-2 DWK	
	AC+ DNL	DNL AC+	
	NEU DNL, PC-2	PC-4, DNL	NEU
	WLK PC-2	PC-4 WLK	
	DWK PC-2	PC-4 DWK	
	SPR		SPR
	EQG		EQG
9	DA-1		
10	DA-2	DC-4	23
11	DQ-1	DC-5	24
12	DA-3	DC-6	25
13	DA-4	DQ-2	26
14	DC-3	DC-1	27
15	1-25 PR #19 INTERCONNECT CABLE		
18	DB-1	DC-2	21
19	DB-2	SERVICE	17
16	P.E.C. NEU DNL		
		PBA2-2	31
		NEU	
		PBC-2	
		PBAI-2, PBAI-1	
		NEU	32
		PBC-4, PBC-3	



REVISED
FIELD WIRING DIAGRAM
McKNIGHT RD. & CONWAY AVE.
SYSTEM A

LEGEND OF SYMBOLS

SIGNAL BASE NO.	(5)
SIGNAL FACE NO.	(A2)
CONTROLLER AND CABINET	
CONTROLLER AND CABINET-INPLACE	
HANDHOLE	
HANDHOLE-INPLACE	
RIGID STEEL CONDUIT (R.S.C.)	
RIGID STEEL CONDUIT (R.S.C.)-INPLACE	
SIGNAL FACE	
SIGNAL FACE WITH BACKGROUND SHIELD	
SIGNAL FACE - INPLACE	
PEDESTRIAN INDICATIONS	
PEDESTRIAN INDICATIONS - INPLACE	
PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE	
PEDESTRIAN PUSH BUTTON STATION	
TRAFFIC SIGNAL PEDESTAL	
TRAFFIC SIGNAL PEDESTAL - INPLACE	
TRAFFIC SIGNAL POLE AND MAST ARM	
TRAFFIC SIGNAL POLE AND MAST ARM - INPLACE	
MAST ARM AND LUMINAIRE	
MAST ARM AND LUMINAIRE - INPLACE	
WOOD POLE	
WOOD POLE - INPLACE	
SOURCE OF POWER	
EMERGENCY VEHICLE PRE-EMPTION DETECTOR LOCATION	

McKNIGHT RD.

A →

← A

3M ROAD

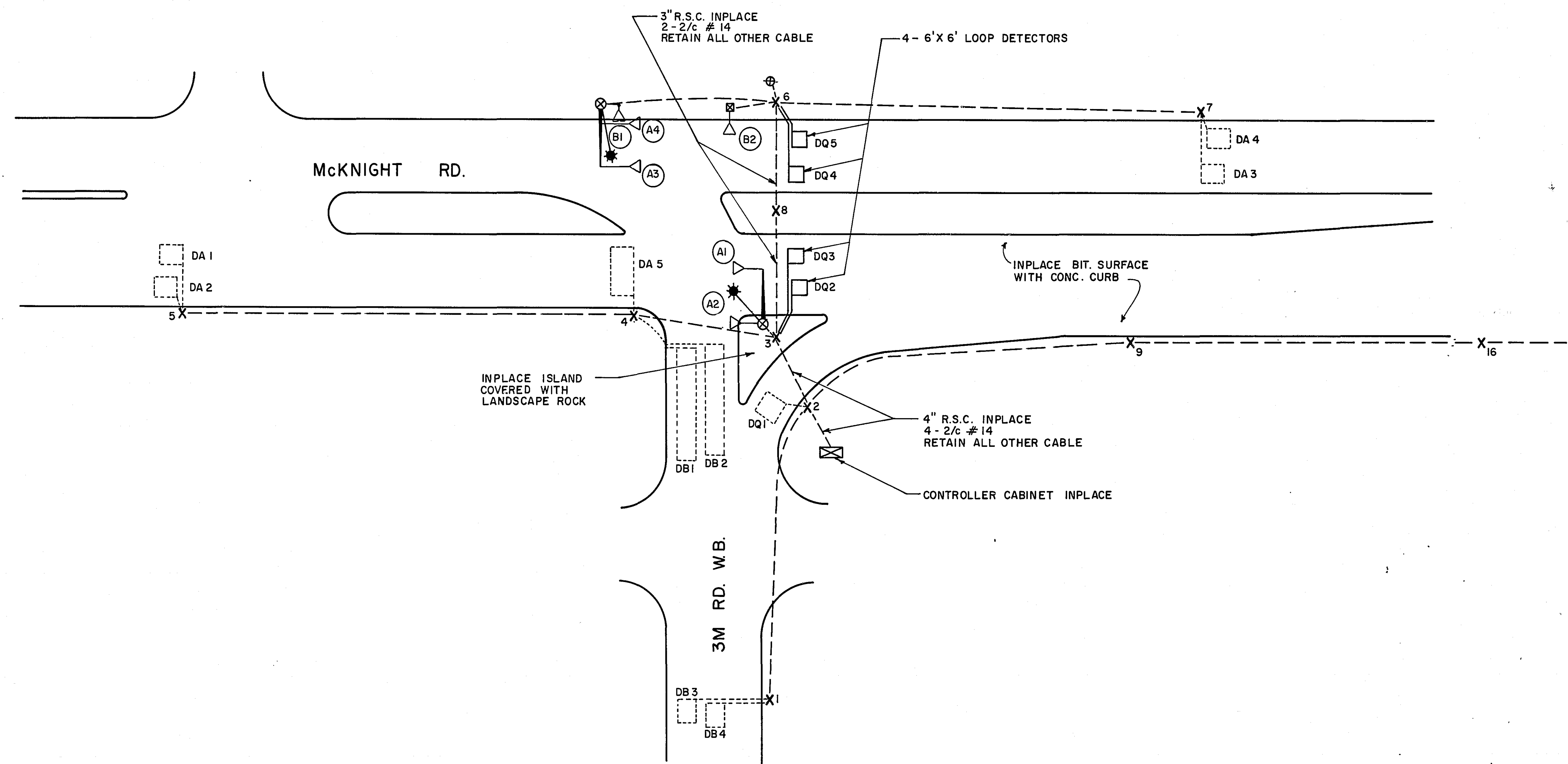
B ↑

Yield sign at intersection

SIGNAL INDICATION CHART

[illegible]

CONTROLLER
CABINET



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

Paul K. Kunkel

Date 8-11-77 Reg. No. 12703

INTERSECTION LAYOUT
McKNIGHT RD. & 3M RD.
SYSTEM B