

ANOKA COUNTY MINNESOTA

CONSTRUCTION PLANS FOR

TRAFFIC SIGNAL SYSTEMS

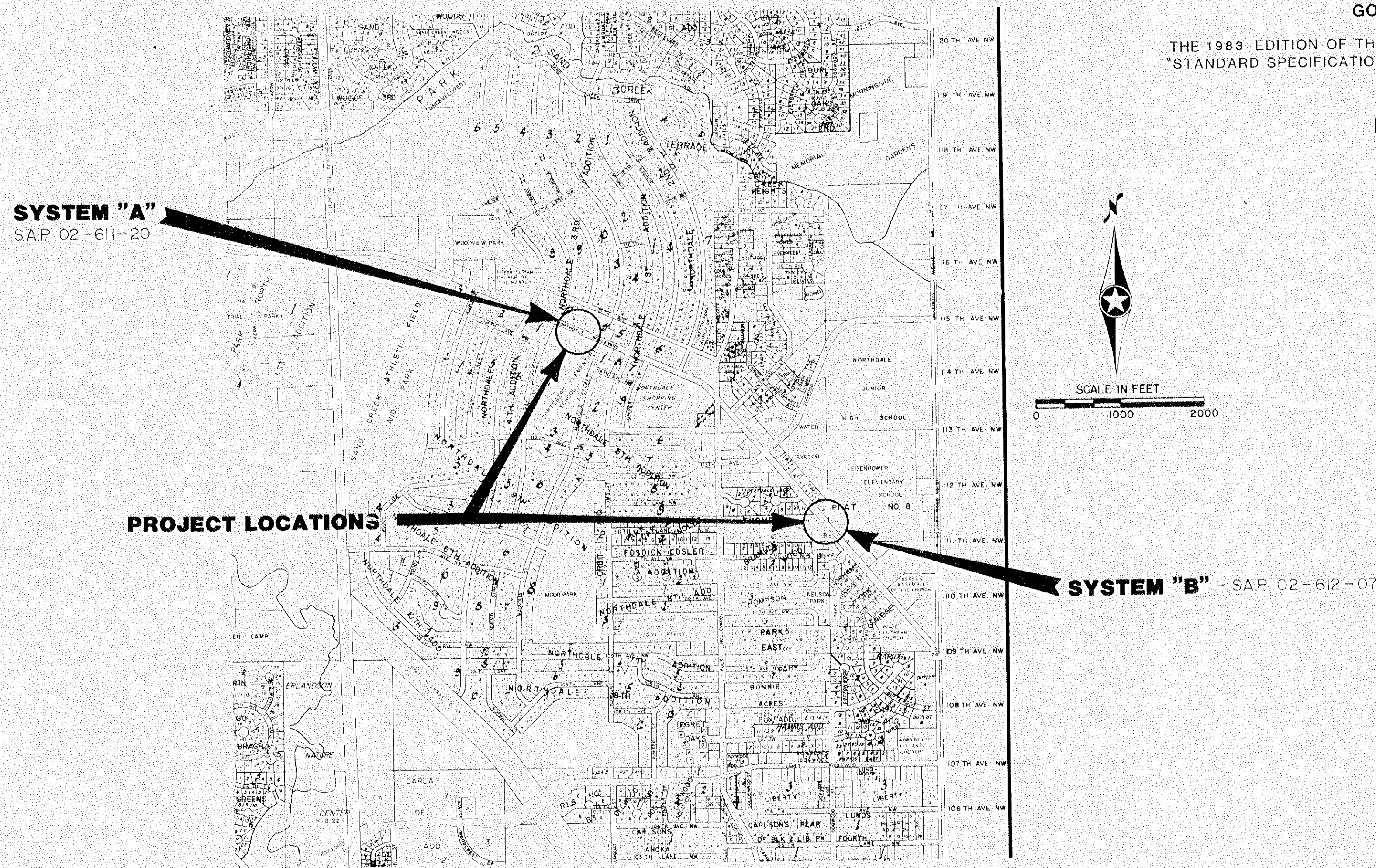
C.S.A.H. 11 (NORTHDAL BLVD.) AT SORTEBERG ELEMENTARY SCHOOL
C.S.A.H. 12 (NORTHDAL BLVD.) AND 111th LANE N.W. NEAR EISENHOWER ELEMENTARY SCHOOL

GOVERNING SPECIFICATIONS

THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" SHALL GOVERN.

INDEX OF SHEETS

- 1 TITLE SHEET
- 2-5 INTERSECTION LAYOUTS AND
FIELD WIRING DIAGRAMS
- 6-7 UTILITIES
- 8 DETAILS



COON RAPIDS, MINNESOTA

"ELECTRICAL ENGINEER CERTIFICATION"
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.
Date: _____ Reg.No. _____

ESTIMATED QUANTITIES

PROJECT NO.	ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES
	2565.511	FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM "A"	SIGNAL SYSTEM	1
	2565.511	FULL TRAFFIC ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM "B"	SIGNAL SYSTEM	1

Recommended for Approval _____
Recommended for Approval Delbert D. Ottobald 9-27-85
Recommended for Approval Paul K. Rind
COUNTY ENGINEER
Recommended for Approval C.E. Weichselbaum 9/12/85
DISTRICT STATE AID ENGINEER
Recommended for Approval _____
DIRECTOR, TRAFFIC ENGINEERING
APPROVED 9/21/85 Michael M. Gray
DIRECTOR OFFICE OF STATE AID
S.A.P. 02-612-07
S.A.P. 02-611-20

SURVEY:	CHECKED BY:	NO.	DATE	REVISIONS	DATE	REG. NO.
DESIGN: M.K.	G.V.W.					9089
DRAWN: M.K.						

SHORT - ELLIOTT - HENDRICKSON, INC.
Saint Paul, Minnesota • Chippewa Falls, Wisconsin

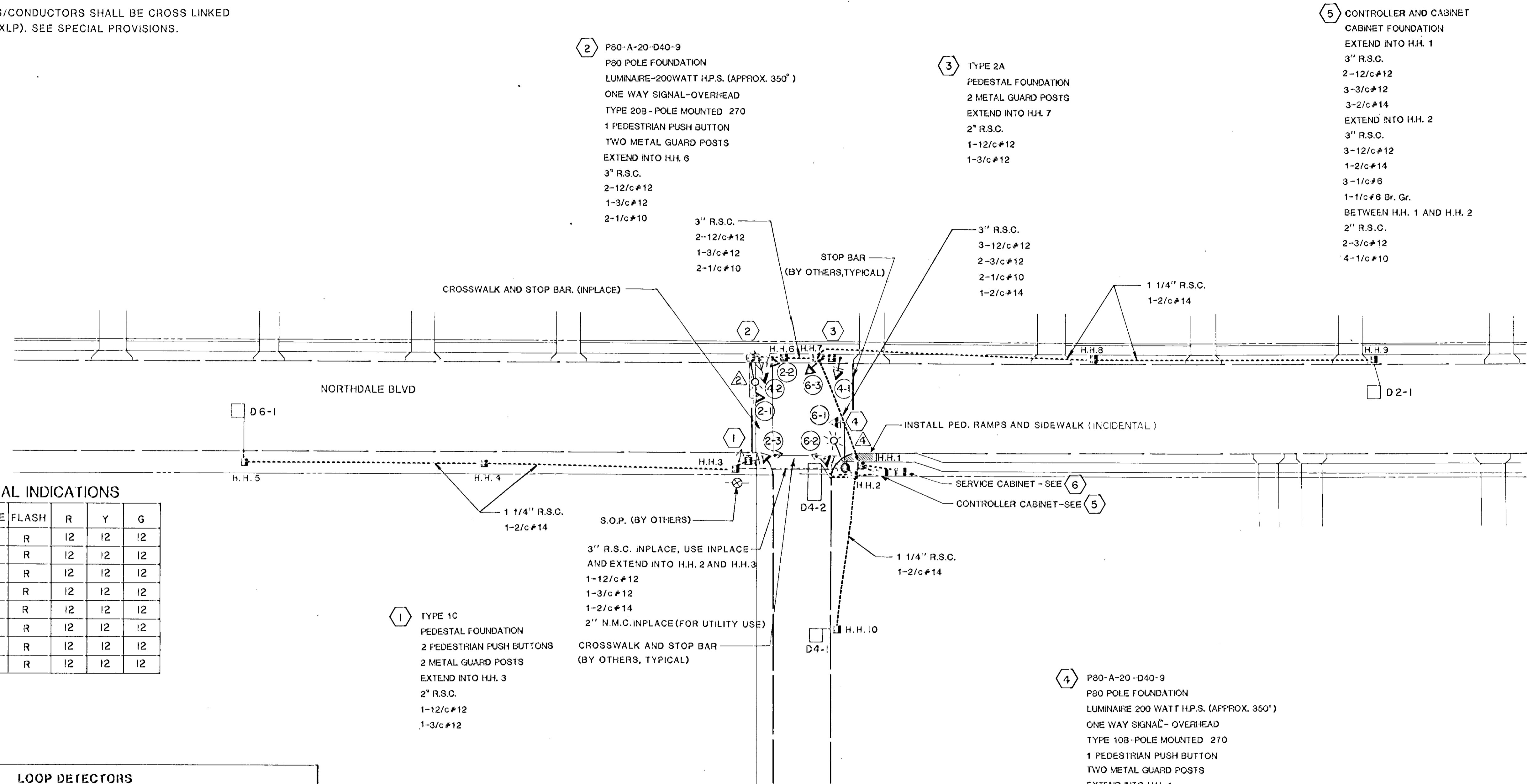
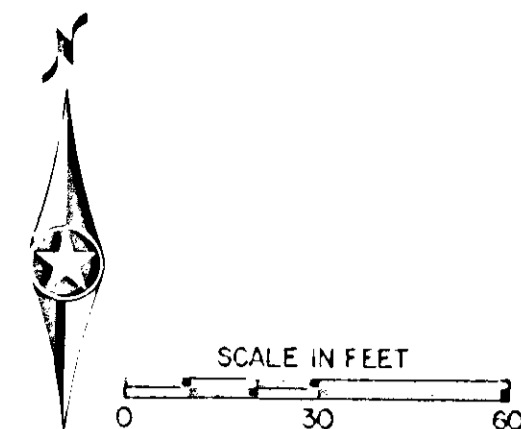
SIGNAL SYSTEM
TITLE SHEET

COON RAPIDS, MINNESOTA

FILE NO. 85202	1
DATE: 7/19/85	8

NOTES:

- 1) ALL LOOP DETECTORS ARE IN 1" N.M.C. (SEE DETAILS).
- 2) SEE SPECIAL PROVISIONS FOR INSTALLING GUARD POSTS.
- 3) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR THE LOCATION OF UTILITIES.
- 4) LOOP DETECTORS/CONDUCTORS SHALL BE CROSS LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.



SIGNAL INDICATIONS

FACE	PHASE	FLASH	R	Y	G
2-1	2	R	12	12	12
2-2	2	R	12	12	12
2-3	2	R	12	12	12
4-1	1	R	12	12	12
4-2	1	R	12	12	12
6-1	2	R	12	12	12
6-2	2	R	12	12	12
6-3	2	R	12	12	12

LOOP DETECTORS

NUMBER	SIZE	FUNCTION	DISTANCE	NO. OF TURNS
D2-1	1-6'x6'	(1)	258'	3
D4-1	1-6'x6'	(2)	75'	3
D4-2	1-6'x20'	(3)	--	2
D6-1	1-6'x6'	(1)	258'	3

FUNCTIONS

- (1) CALL AND EXTEND
- (2) EXTEND ONLY
- (3) CALL AFTER DELAY, EXTEND IMMEDIATELY

5 CONTROLLER AND CABINET
 CABINET FOUNDATION
 EXTEND INTO H.H. 1
 3" R.S.C.
 2-12/c#12
 3-3/c#12
 3-2/c#14
 EXTEND INTO H.H. 2
 3" R.S.C.
 3-12/c#12
 1-2/c#14
 3-1/c#8
 1-1/c#8 Br. Gr.
 BETWEEN H.H. 1 AND H.H. 2
 2" R.S.C.
 2-3/c#12
 4-1/c#10

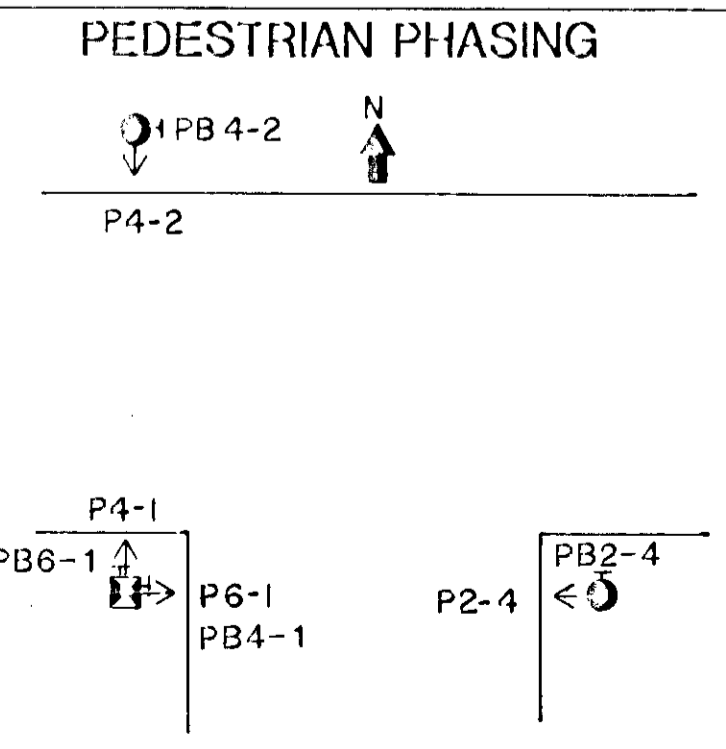
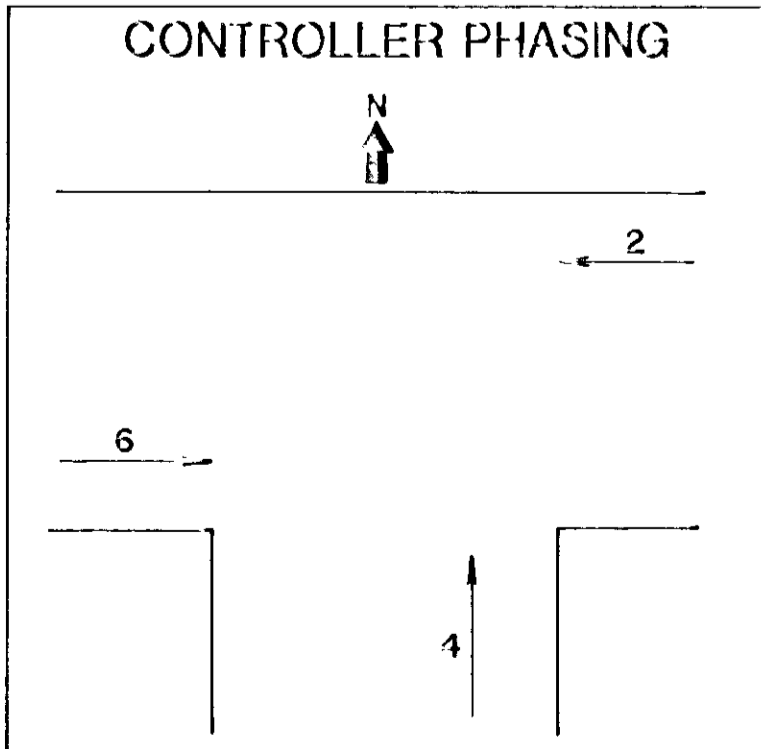
6 SERVICE CABINET
 STUB OUT 1 1/4" R.S.C.
 EXTEND INTO H.H. 2
 1 1/4" R.S.C.
 3-1/c#6
 1-1/c#6 Br. Gr.
 1" R.S.C.
 2-1/c#10

2 P80-A-20-D40-9
 P80 POLE FOUNDATION
 LUMINAIRE-200WATT H.P.S. (APPROX. 350°)
 ONE WAY SIGNAL-OVERHEAD
 TYPE 20B- POLE MOUNTED 270
 1 PEDESTRIAN PUSH BUTTON
 TWO METAL GUARD POSTS
 EXTEND INTO H.H. 6
 3" R.S.C.
 2-12/c#12
 1-3/c#12
 2-1/c#10

3 TYPE 2A
 PEDESTAL FOUNDATION
 2 METAL GUARD POSTS
 EXTEND INTO H.H. 7
 2" R.S.C.
 1-12/c#12
 1-3/c#12

4 P80-A-20-D40-9
 P80 POLE FOUNDATION
 LUMINAIRE 200 WATT H.P.S. (APPROX. 350°)
 ONE WAY SIGNAL- OVERHEAD
 TYPE 10B-POLE MOUNTED 270
 1 PEDESTRIAN PUSH BUTTON
 TWO METAL GUARD POSTS
 EXTEND INTO H.H. 1
 3" R.S.C.
 1-12/c#12
 4-3/c#12
 2-1/c#10

1 TYPE 1C
 PEDESTAL FOUNDATION
 2 PEDESTRIAN PUSH BUTTONS
 2 METAL GUARD POSTS
 EXTEND INTO H.H. 3
 2" R.S.C.
 1-12/c#12
 1-3/c#12



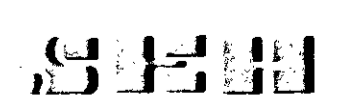
SAP 02-611-20

SIGNAL SYSTEM A
 INTERSECTION LAYOUT
 NORTHDALE BLVD AT SORTEBERG SCHOOL

COON RAPIDS, MINNESOTA

SURVEY	CHECKED BY:	NO	DATE	REVISIONS
DESIGN: MK	GWW	1	8/15	Per Anoka County
DRAWN: MK				

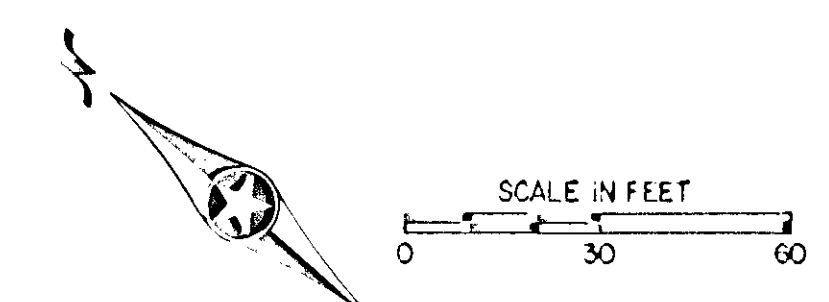
7/19/85 9089



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FILE NO.: 85202	2
DATE: 7/19/85	8

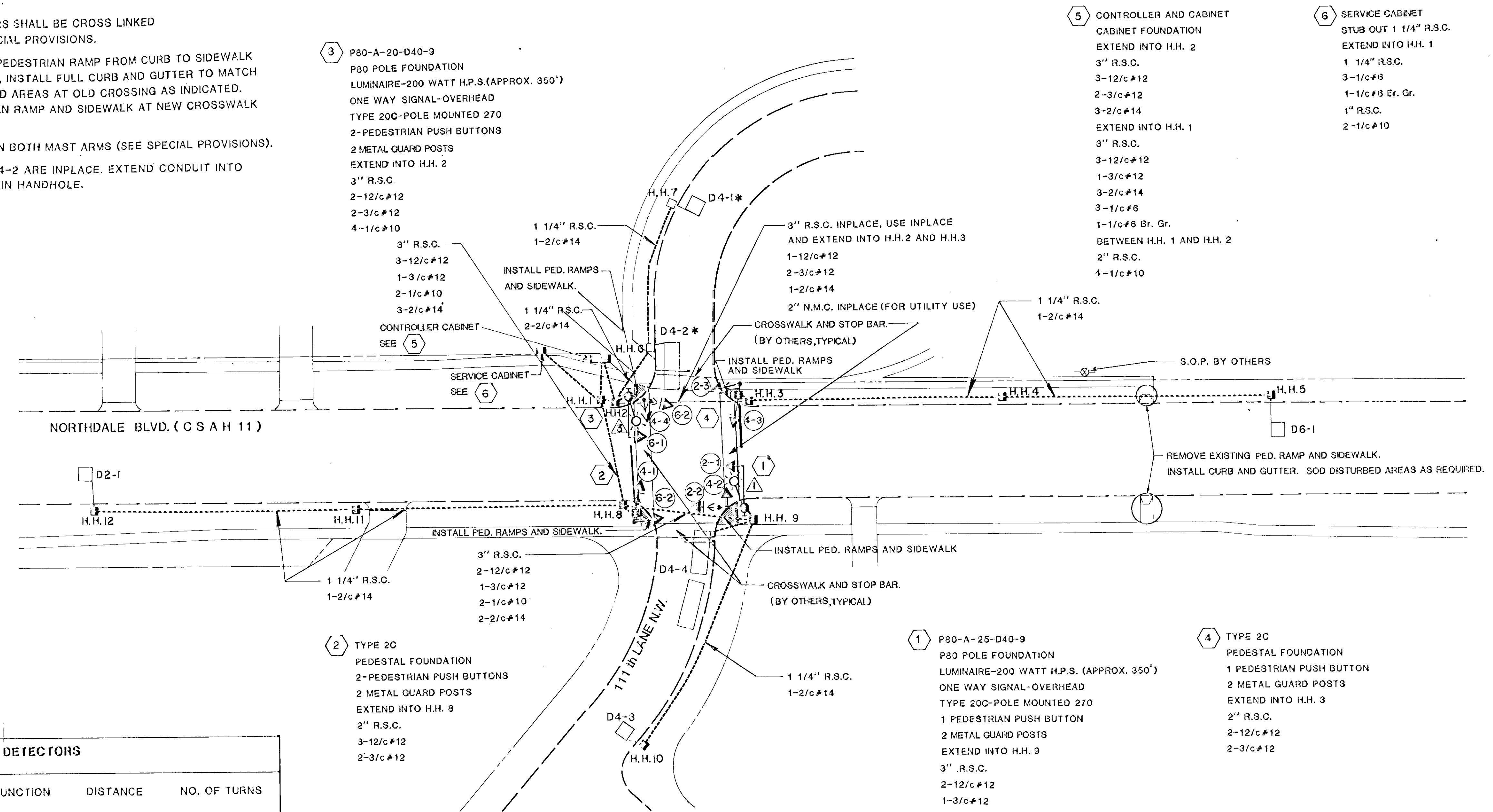
- 1) ALL LOOP DETECTORS ARE IN 1" N.M.C. (SEE DETAILS).
- 2) SEE SPECIAL PROVISIONS FOR INSTALLING GUARD POSTS.
- 3) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR THE LOCATION OF UTILITIES.
- 4) LOOP DETECTORS /CONDUCTORS SHALL BE CROSS LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
- 5) REMOVE EXISTING HANDICAPED PEDESTRIAN RAMP FROM CURB TO SIDEWALK PARALLELING NORTHDALE BLVD., INSTALL FULL CURB AND GUTTER TO MATCH INPLACE AND SOD ALL DISTURBED AREAS AT OLD CROSSING AS INDICATED. INSTALL HANDICAPED PEDESTRIAN RAMP AND SIDEWALK AT NEW CROSSWALK AS INDICATED. (INCIDENTAL)
- 6) INSTALL STREET NAME SIGNS ON BOTH MAST ARMS (SEE SPECIAL PROVISIONS).
- 7) LOOP DETECTORS D4-1 AND D4-2 ARE INPLACE. EXTEND CONDUIT INTO HANDHOLE AND SPLICE CABLE IN HANDHOLE.



- 5 CONTROLLER AND CABINET
CABINET FOUNDATION
EXTEND INTO H.H. 2
3" R.S.C.
3-12/c#12
2-3/c#12
3-2/c#14
EXTEND INTO H.H. 1
3" R.S.C.
3-12/c#12
1-3/c#12
3-2/c#14
3-1/c#6
1-1/c#6 Br. Gr.
BETWEEN H.H. 1 AND H.H. 2
2" R.S.C.
4-1/c#10
- 6 SERVICE CABINET
STUB OUT 1 1/4" R.S.C.
EXTEND INTO H.H. 1
1 1/4" R.S.C.
3-1/c#6
1-1/c#6 Br. Gr.
1" R.S.C.
2-1/c#10

SIGNAL INDICATIONS

FACE	PHASE	FLASH	R	Y	G
2-1	2	R	12	12	12
2-2	2	R	12	12	12
2-3	2	R	12	12	12
4-1	1	R	12	12	12
4-2	1	R	12	12	12
6-1	2	R	12	12	12
6-2	2	R	12	12	12
6-3	2	R	12	12	12
4-3	1	R	12	12	12
4-4	1	R	12	12	12



- 3 P80-A-20-D40-9
P80 POLE FOUNDATION
LUMINAIRE-200 WATT H.P.S.(APPROX. 350")
ONE WAY SIGNAL-OVERHEAD
TYPE 20C-POLE MOUNTED 270
2-PEDESTRIAN PUSH BUTTONS
2 METAL GUARD POSTS
EXTEND INTO H.H. 2
3" R.S.C.
2-12/c#12
2-3/c#12
4-1/c#10

- 2 TYPE 2C
PEDESTAL FOUNDATION
2-PEDESTRIAN PUSH BUTTONS
2 METAL GUARD POSTS
EXTEND INTO H.H. 8
2" R.S.C.
3-12/c#12
2-3/c#12

- 1 P80-A-25-D40-9
P80 POLE FOUNDATION
LUMINAIRE-200 WATT H.P.S. (APPROX. 350")
ONE WAY SIGNAL-OVERHEAD
TYPE 20C-POLE MOUNTED 270
1 PEDESTRIAN PUSH BUTTON
2 METAL GUARD POSTS
EXTEND INTO H.H. 9
3" R.S.C.
2-12/c#12
1-3/c#12
2-1/c#10

- 4 TYPE 2C
PEDESTAL FOUNDATION
1 PEDESTRIAN PUSH BUTTON
2 METAL GUARD POSTS
EXTEND INTO H.H. 3
2" R.S.C.
2-12/c#12
2-3/c#12

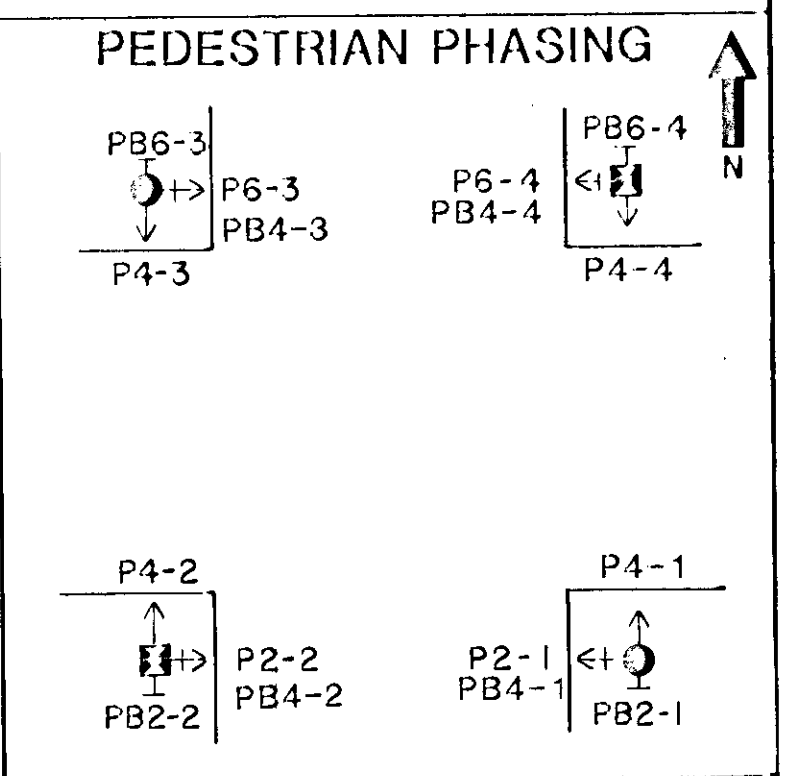
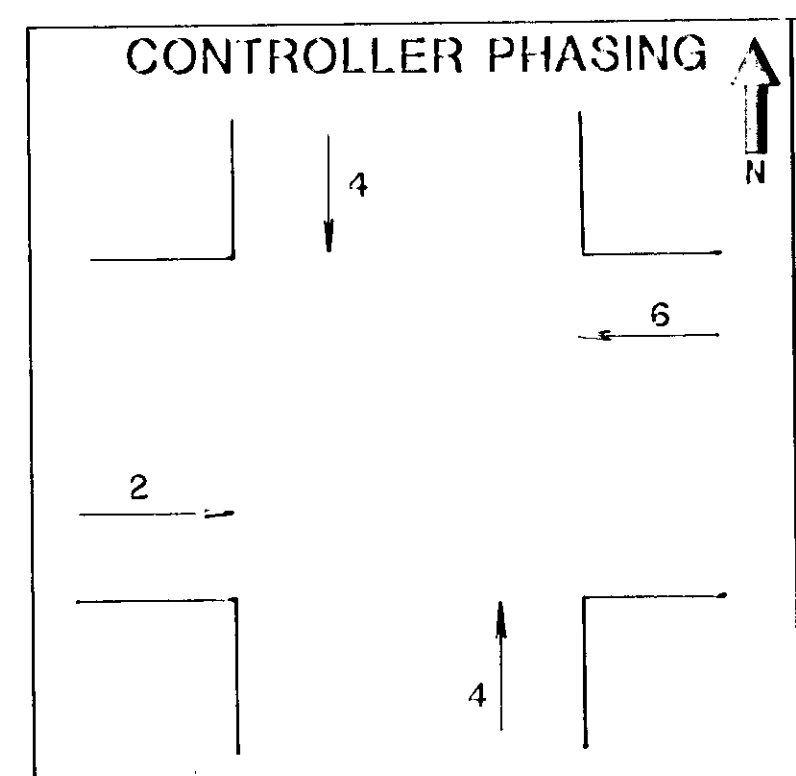
LOOP DETECTORS

NUMBER	SIZE	FUNCTION	DISTANCE	NO. OF TURNS
D2-1	1-6'x6'	1	258'	3
D4-1*	1-6'x6'	2	80'	3*
D4-2*	1-6'x20'	3	-	2*
D6-1	1-6'x6'	1	258'	3
D4-3	1-6'x6'	2	110'	3
D4-4	2-6'x20'	3	-	2

* LOOP DETECTORS D4-1 AND D4-2 ARE INPLACE. SEE NOTE 7.

FUNCTION

- (1) CALL AND EXTEND
- (2) EXTEND ONLY
- (3) CALL AFTER DELAY, EXTEND IMMEDIATELY



SURVEY	CHECKED BY	NO	DATE	REVISIONS
DESIGN MK.	GVW	1	8/15	Per Anoka County
DRAWN MK.				

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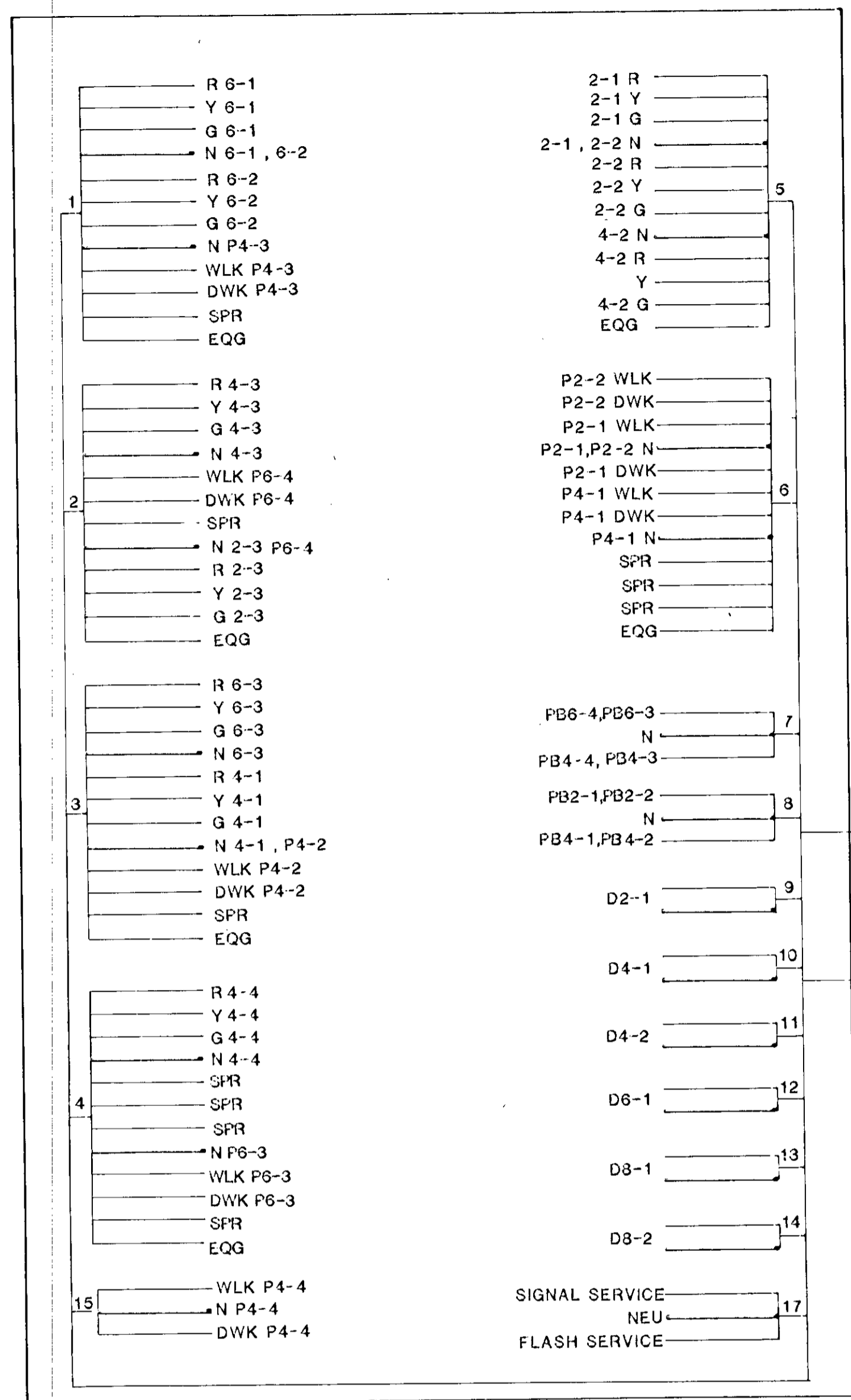
SIGNAL SYSTEM B
INTERSECTION LAYOUT
NORTHDALE BLVD. AND 111th LANE N.W.

COON RAPIDS, MINNESOTA

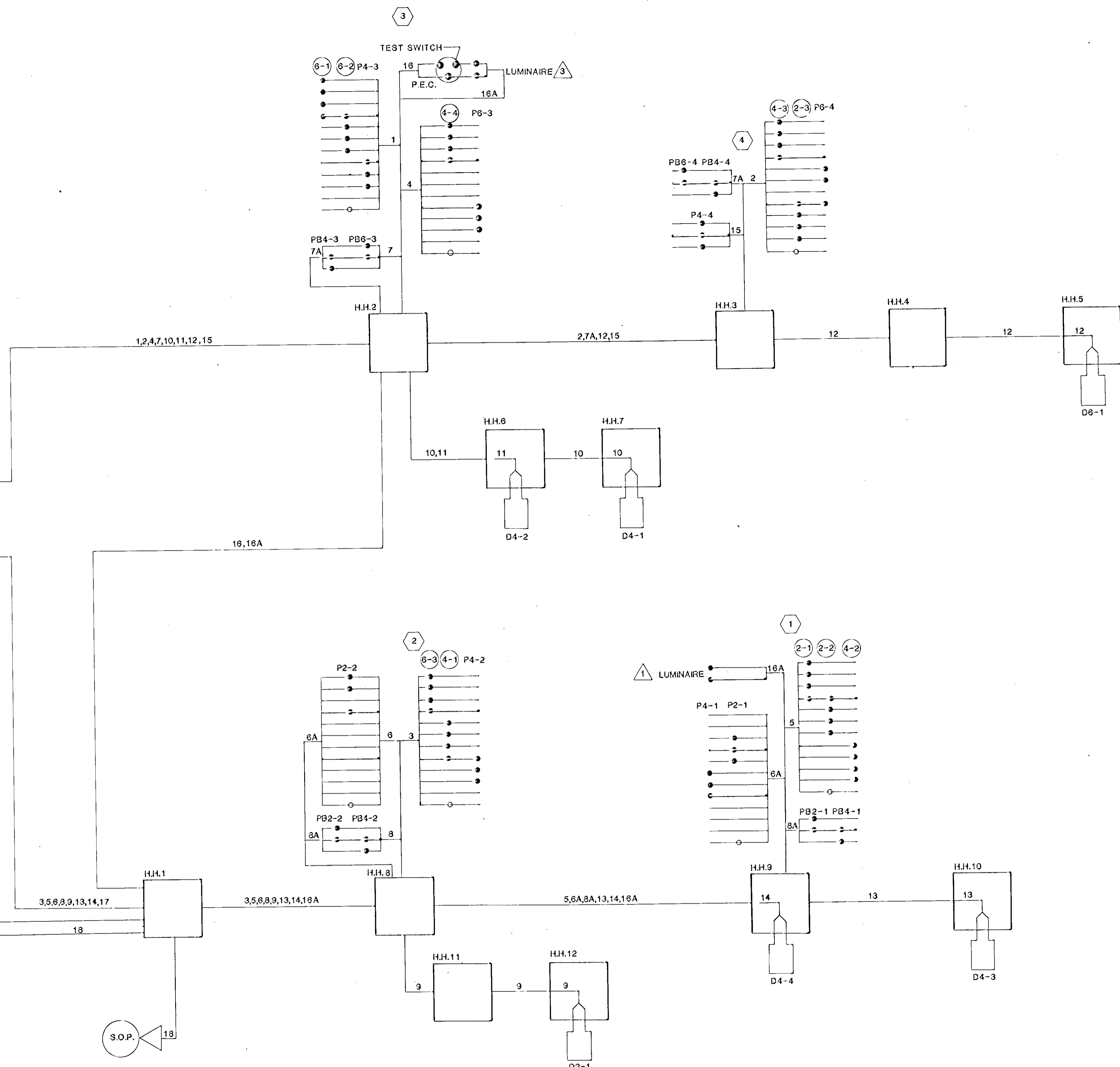
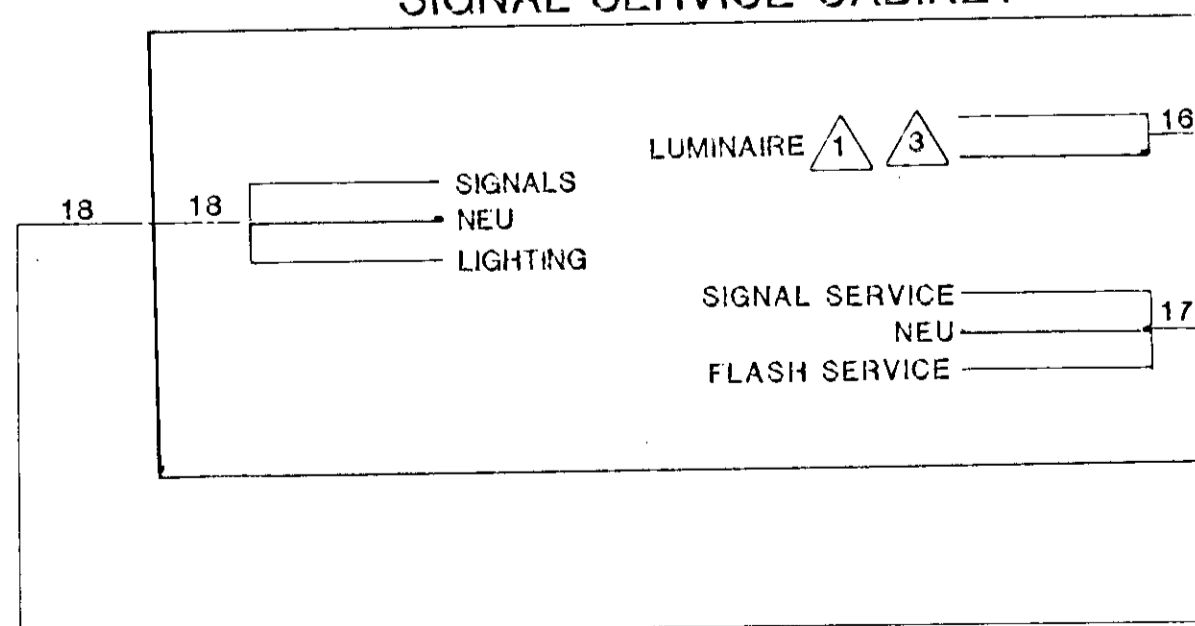
FILE NO.	85202
DATE	7/19/85

4
8

CONTROLLER CABINET



SIGNAL SERVICE CABINET



S.A.P. 02-612-37

SURVEY:	CHECKED BY:	NO.	DATE	REVISIONS
DESIGN: M.K.	GVW	1	8/15	Per Anoka County
DRAWN: G.N.				

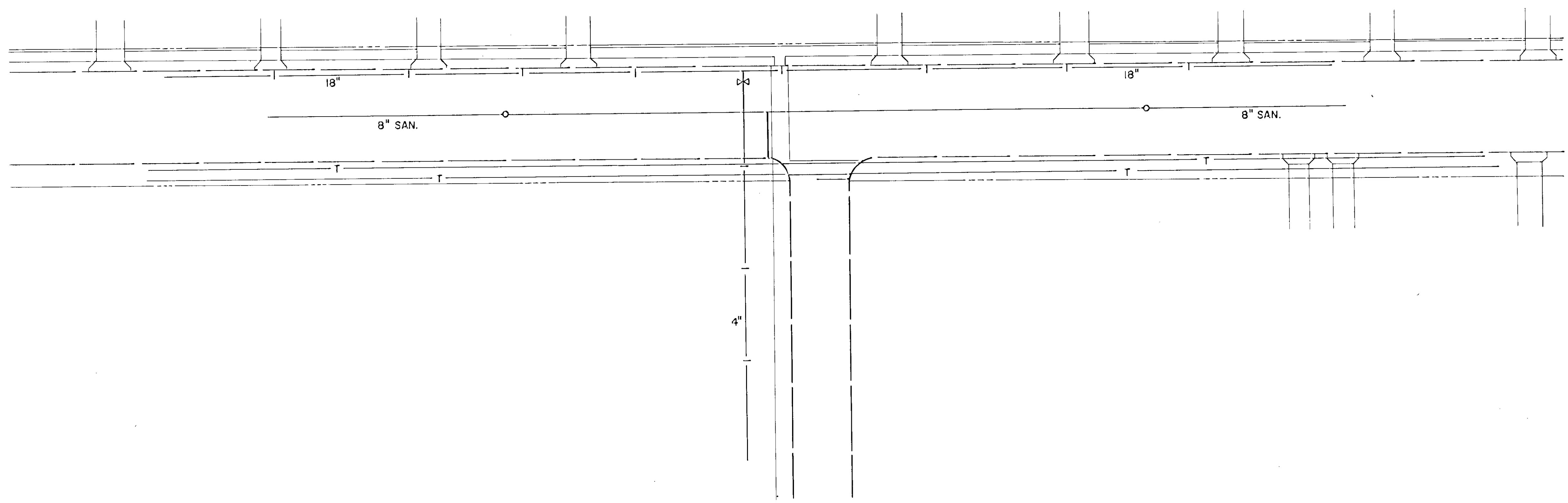
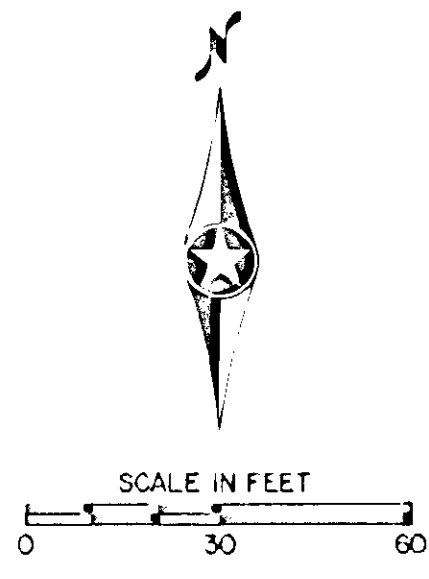
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 DATE: 7/19/85 REG. NO. 9089

SEH SHORT - ELLIOTT - HENDRICKSON, INC
 Saint Paul, Minnesota • Chippewa Falls, Wisconsin

SIGNAL SYSTEM B
 FIELD WIRING DIAGRAM
 NORTHDALE BLVD. AND 111th LANE N.W.

COON RAPIDS, MINNESOTA

FILE NO.:	85202	5
DATE:	7/19/85	8



SAP 02-611-20

SURVEY DESIGN MK DRAWN MK	CHECKED BY:	NO	DATE	REVISIONS

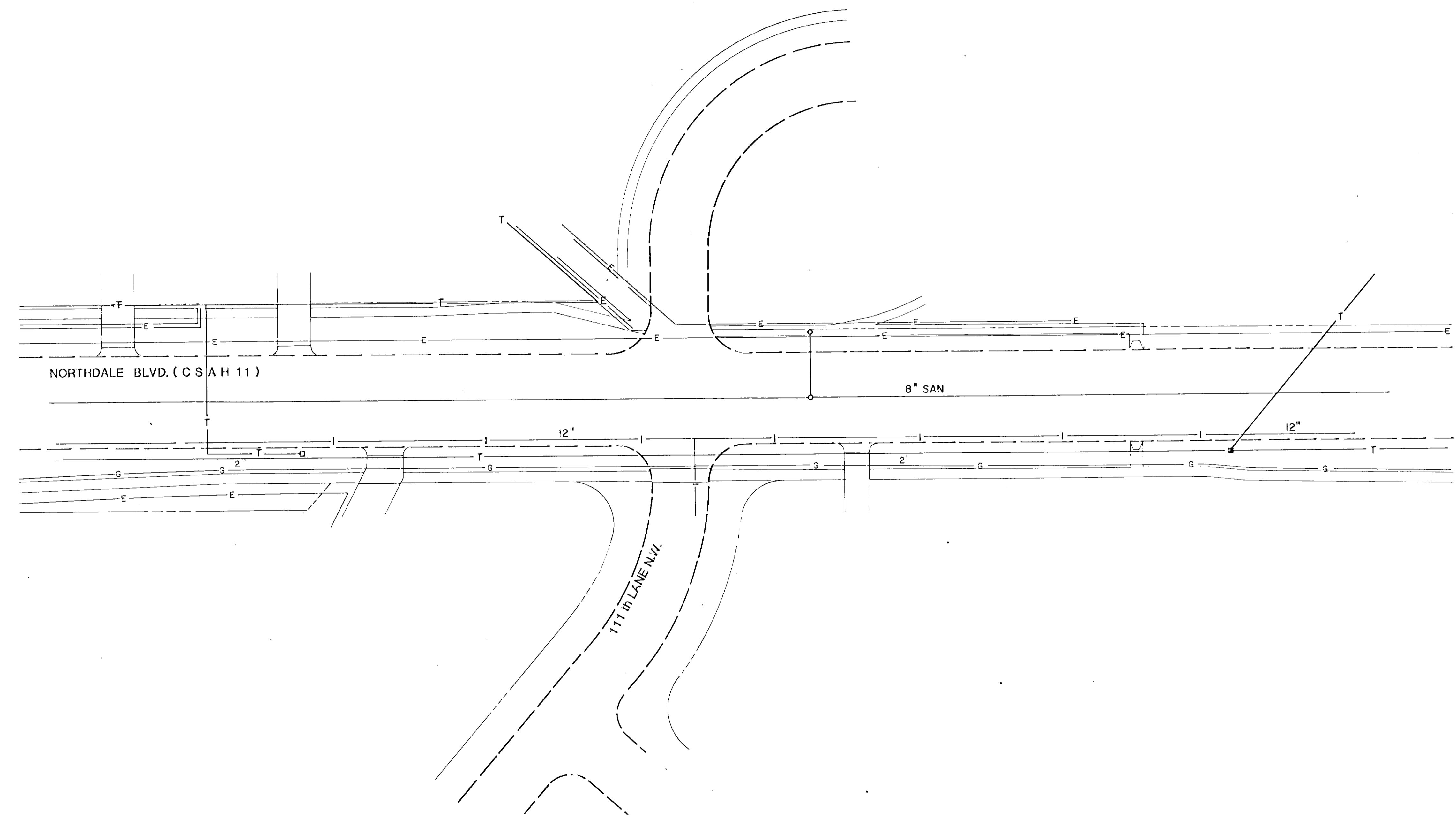
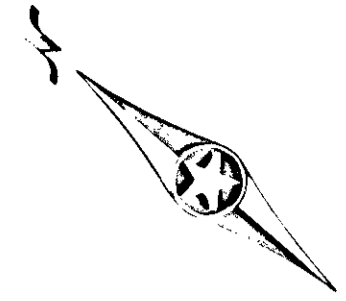
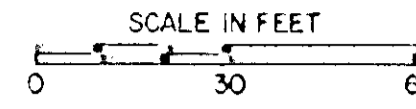
ENGINEER
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF MINNESOTA
 LICENSE NO. 12345
 DATE: 7/19/85

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SIGNAL SYSTEM A
 UTILITIES
 NORTHDAL BLVD. AT SORTEBERG SCHOOL

COON RAPIDS, MINNESOTA

FILE NO.: 85202	6
DATE: 7/19/85	8



S.A.P. 02-612-07

SURVEY:	CHECKED BY:	NO.	DATE	REVISIONS
DESIGN: M.K.				
DRAWN: M.K.				

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
DATE: _____ REG. NO. 9089



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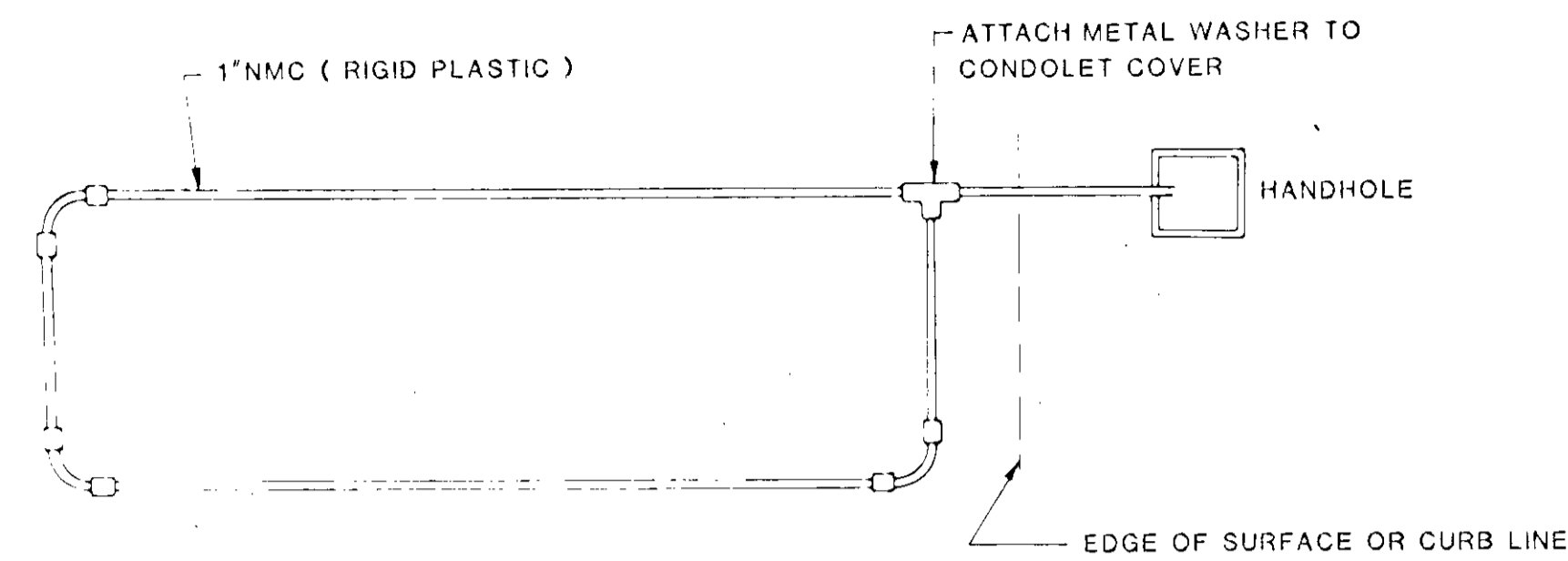
SIGNAL SYSTEM B
UTILITIES
NORTHDAL BLVD. AND 111th LANE N.W.

COON RAPIDS, MINNESOTA

FILE NO.:	7
DATE:	7/19/85
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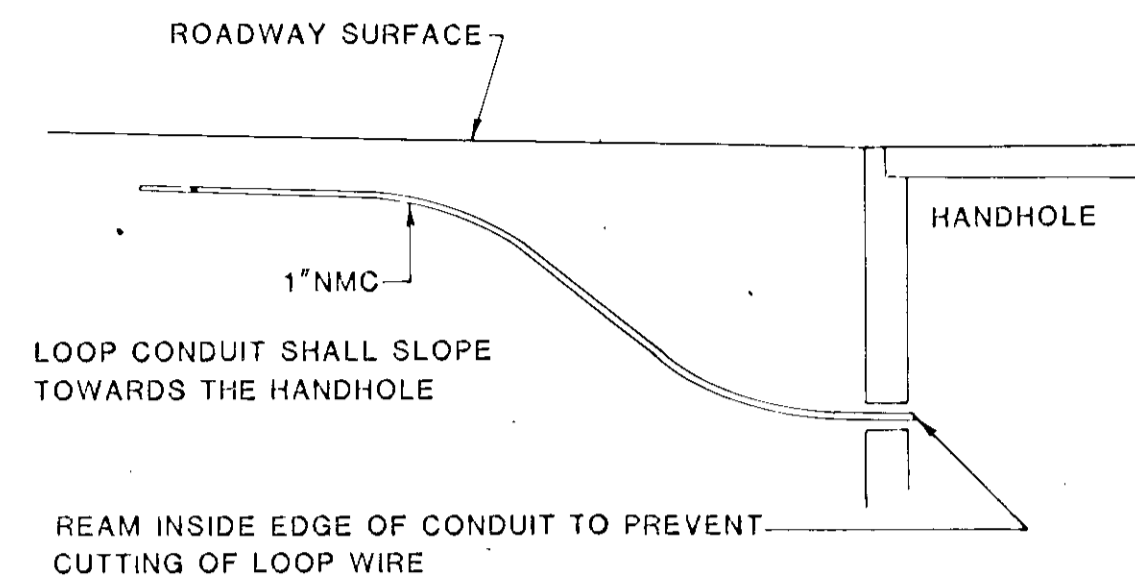
LOOP DETECTOR DETAIL "A"

PLAN VIEW
(NOT TO SCALE)



ALL CORNERS SHALL BE STANDARD 90° CONDUIT BENDS

DRAINAGE DETAILS

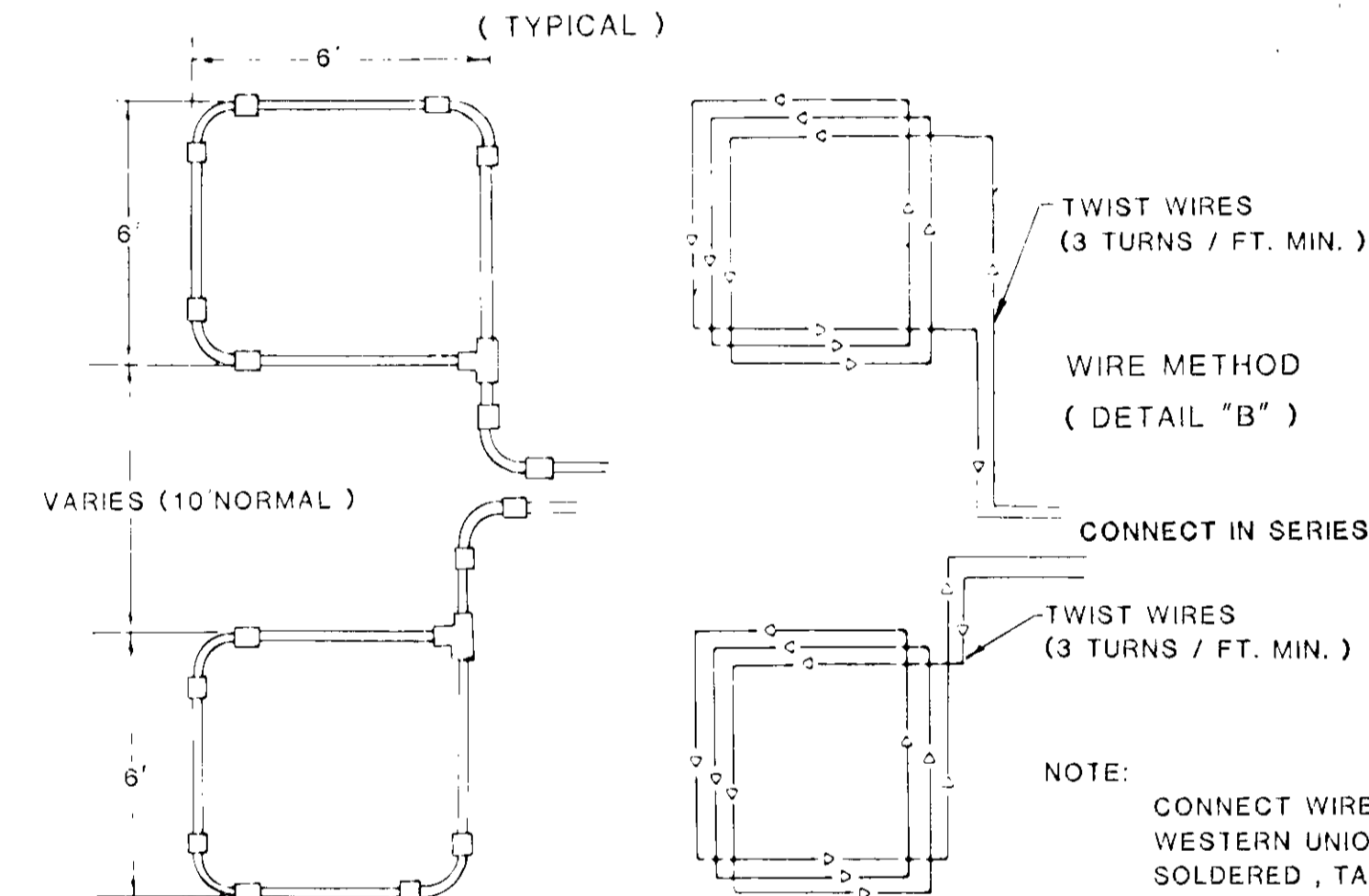


ABBREVIATIONS

- EQUIPMENT AND INDICATIONS**
- RED-RED
 - YEL-YELLOW
 - GRN-GREEN
 - WLK-WALK
 - NEU-NEUTRAL
 - DWK-DON'T WALK
 - LUM-LUMINAIRE
 - DNL-DOWNLIGHT
 - H.H.-HANDHOLE
 - EQG-EQUIPMENT GROUND
 - R.S.C.-RIGID STEEL CONDUIT
 - GLTA-GREEN LEFT TURN ARROW
 - YRTA-YELLOW RIGHT TURN ARROW
 - D2-1(eg)-DETECTOR-PHASE '2'
 - GR R-GROUND ROD
 - SER.-SERVICE
 - PAI- PEDESTRAIN INDICATIONS
 - 2-1(eg)-SIGNAL HEADS-PHASE '2'
 - SPR.-SPARE CONDUCTORS
 - N.M.C.-NON METALLIC CONDUIT
 - E.V.P.-EMERGENCY VEHICLE PRE-EMPTION
 - J.B.-JUNCTION BOX
 - W.P.-WOOD POLE
 - P.E.C.-PHOTOELECTRIC CELL

LOOP DETECTOR DETAIL "B"

PLAN VIEW
(NOT TO SCALE)
(TYPICAL)



CONDUITS MAY BE PLACED IN COMMON TRENCH.

NOTE: LOOP DETECTOR CONDUCTORS SHALL BE CROSS-LINKED POLYETHYLENE (XLP) SEE SPECIAL PROVISIONS

CONDUCTOR COLOR CODE

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

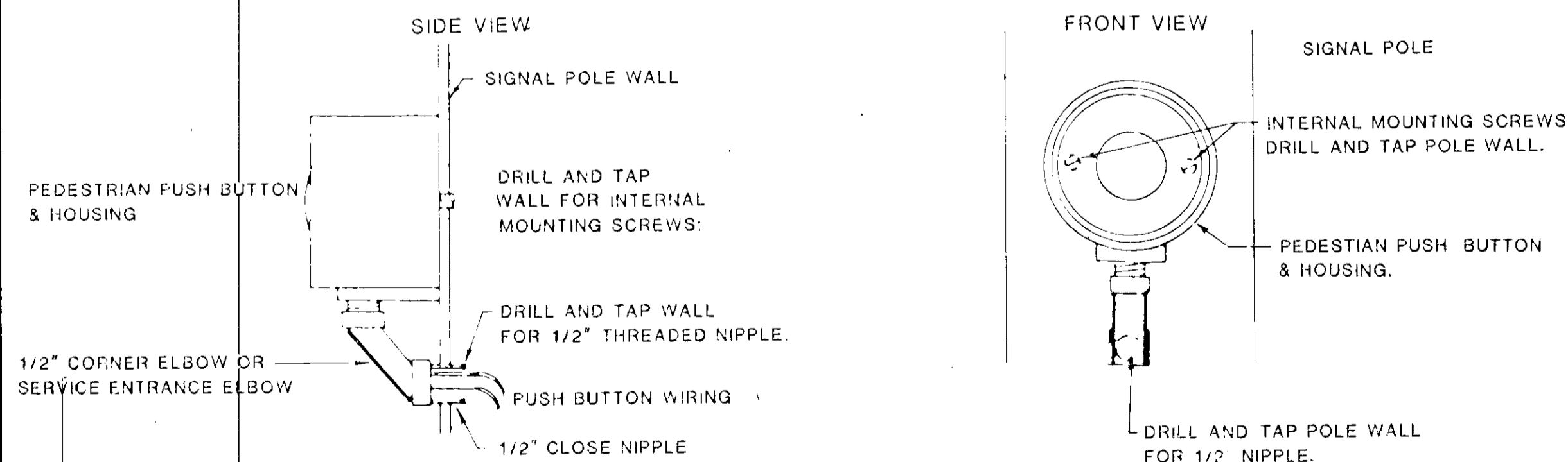
SIGNAL BASE NO.	①
SIGNAL FACE NO.	⊖
LUMINAIRE NO.	△
CONTROLLER AND CABINET	▭
CONTROLLER AND CABINET-IN PLACE	▭
HANDHOLE	■
HANDHOLE-IN PLACE	□
RIGID STEEL CONDUIT (R.S.C.)	-----
RIGID STEEL CONDUIT (R.S.C.)-IN PLACE	-----
SIGNAL FACE WITH BACKGROUND SHIELD	→
SIGNAL FACE W/O BACKGROUND SHIELD	→
SIGNAL FACE-IN PLACE	→
PEDESTRIAN INDICATIONS	→
PEDESTRIAN INDICATIONS-IN PLACE	→
PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE	□
PEDESTRIAN PUSH BUTTON STATION	○
TRAFFIC SIGNAL PEDESTAL	▭
TRAFFIC SIGNAL PEDESTAL-IN PLACE	▭
TRAFFIC SIGNAL POLE AND MAST ARM	○
TRAFFIC SIGNAL POLE AND MAST ARM-IN PLACE	○
STREET LIGHT POLE AND LUMINAIRE	○
STREET LIGHT POLE AND LUMINAIRE-IN PLACE	○
MAST ARM AND LUMINAIRE	○
MAST ARM AND LUMINAIRE-IN PLACE	○
WOOD POLE	○
WOOD POLE-IN PLACE	○
SOURCE OF POWER	○
RAILROAD SIGNAL-IN PLACE	⊕
RIGHT OF WAY LINE	-----
CENTER LINE	-----
EDGE OF ROADWAY	-----
SHOULDER LINE	-----
CURB LINE	-----
STOP BAR	-----
CROSSWALK	-----

CONDUCTOR COLOR CODING

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

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

PEDESTRIAN PUSH BUTTON MOUNTING DETAIL



CONDUIT INSTALLATION DETAIL FOR LOOP DETECTOR

LOOP DETECTOR CONDUITS ARE TO BE INSTALLED IN 3" CUT TRENCHES AS SHOWN ON PLANS. INSTALL EACH COMPLETE DETECTOR ASSEMBLY WITH THE DETECTOR WIRE PULLED THROUGH THE COMPLETE ASSEMBLY TO HANDHOLE. WHERE APPROPRIATE, PLACE DETECTOR CONDUIT IN BITUMINOUS BINDER COURSE PRIOR TO PLACEMENT OF THE WEARING COURSE. THE DEPTH OF THE TRENCH AND THE RESULTANT PLACEMENT OF THE DETECTOR CONDUIT SHALL BE SUCH THAT THE ENTIRE DETECTOR ASSEMBLY DRAINS INTO THE HANDHOLE. BACKFILL AND COMPACT THE TRENCHES WITH MATERIAL EQUIVALENT TO THE MATERIAL REMOVED.

NORTHDALE BLVD. (C.S.A.H.11) AT SORTEBERG ELEMENTARY SCHOOL
NORTHDALE BLVD (C.S.A.H. 11) AT 111th LANE N.W. NEAR ELSENHOWER ELEMENTARY SCHOOL

* THESE STANDARD PLATES APPLY TO THIS PLAN

STANDARD PLATES	
PLATE NO.	DESCRIPTION
* 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
* 8116 C	STEEL GUARD POST
* 8117 F	PRECAST CONCRETE HANDHOLE
8118 C	SERVICE EQUIPMENT AND POLE
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
* 8120 H	P-80 AND P-90 POLE FOUNDATION
* 8121 B	TRANSFORMER BASE WITH POLE BASE PLATE
* 8122 C	PEDESTAL AND PEDESTAL BASE
* 8123 B	POLE AND MAST ARM
* 8124 B	SIGNAL HEAD MOUNTS
8125 A	SWING AWAY HINGE
8126 C	P-100 POLE FOUNDATION
* 8130 D	SAW CUT LOOP DETECTORS
* 7036 C	PEDESTRIAN CURB RAMP
* 7100 F	CONCRETE CURB AND GUTTER

SURVEY	CHECKED BY:	NO	DATE	REVISIONS
DESIGN MK.	G.V.W.			
DRAWN MK.				

7/19/85	3089
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SHORT-ELLIOTT HENRICKSON, INC.
Saint Paul, Minnesota • Appleton Falls, Wisconsin

SIGNAL SYSTEM
DETAIL SHEET

COON RAPIDS, MINNESOTA

FILE NO.	8
85202	
DATE	
7/19/85	8

SAP.02-612-07
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