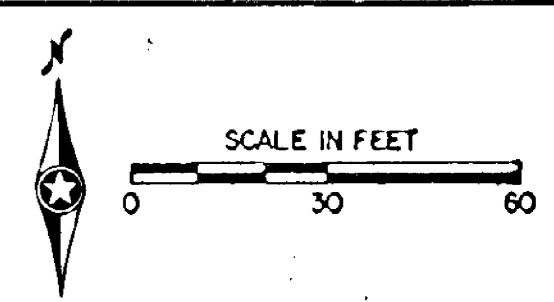




Notes:

- SEE SPECIAL PROVISIONS FOR CONTRACTOR RESPONSIBILITY FOR THE LOCATION OF UTILITIES.
- SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- LUMINAIRE  $\Delta$  WITH P.E.C.
- SEE SPECIAL PROVISIONS FOR ANOKA COUNTY SERVICE CABINET DETAILS.
- ALL HANDHOLES SHALL BE CONCRETE WITH TYPE "C" COVERS.
- LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1" N.M.C. SEE SPECIAL PROVISIONS AND DETAILS.
- ALL PEDESTRIAN INDICATIONS SHALL BE FURNISHED BY COUNTY FOR CONTRACTOR TO INSTALL AND SHALL BE 12"x12".
- SEE SPECIAL PROVISIONS FOR DETAILS ON WOOD POLE SCREW ANCHORS.
- SEE DETAIL SHEET FOR WOOD POLE, SPAN WIRE MOUNTING AND PEDESTRIAN PUSH BUTTON DETAILS.
- LOOP DETECTORS D3-1, D8-1, D8-2, D8-3 AND D8-4 ARE INPLACE AND SHALL BE USED AS PART OF SIGNAL SYSTEM "A". CONTRACTOR SHALL FURNISH AND INSTALL LEAD-IN CABLES AND MAKE ALL SPLICES TO MAKE INPLACE LOOP DETECTORS OPERATIONAL.
- HANDHOLES 1,3,4,5 AND 12 ARE INPLACE AND SHALL BE USED AS PART OF SIGNAL SYSTEM "A".
- CONTRACTOR SHALL COIL AND STORE SUFFICIENT CABLE AND SPAN WIRE AT EACH POLE LOCATION IN ORDER TO ALLOW FOR FUTURE CONSTRUCTION AND CONTINUED USE OF SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.



SIGNAL INDICATIONS								
FACE	PHASE	FLASH	R	Y	G	RLTA	YLTA	GLTA
1-1	1	R				12	12	12
1-2	1	R				12	12	12
2-1	2	R	12	12	12			
2-2	2	R	12	12	12			
3-1	3	R				12	12	12
3-2	3	R				12	12	12
4-1	4	R	12	12	12			
4-2	4	R	12	12	12			
5-1	5	R				12	12	12
5-2	5	R				12	12	12
6-1	6	R	12	12	12			
6-2	6	R	12	12	12			
6-3	6	R	12	12	12			
7-1	7	R				12	12	12
7-2	7	R				12	12	12
8-1	8	R	12	12	12			
8-2	8	R	12	12	12			

Note: ALL SIZES ARE IN INCHES.

LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	MULTIPLE	—	1
D2-1	6x6	330'	1
D2-2	6x6	—	2
D2-3	2-6x6	—	5
D3-1	MULTIPLE	—	1
D4-1	2-6x6	400'	1
D4-2	6x6	—	4
D4-3	6x6	—	4
D5-1	MULTIPLE	—	1
D8-1	6x6	330'	1
D8-2	6x6	—	2
D8-3	2-6x6	—	5
D7-1	MULTIPLE	—	1
D8-1	2-6x6	400'	1
D8-2	6x6	—	4
D8-3	6x6	—	4
D8-4	2-6x6	—	6

- LOOP DETECTORS FUNCTIONS:**
- CALL AND EXTEND
  - CALL ONLY
  - EXTEND ONLY
  - CALL ONLY DENSITY
  - DELAYED CALL ONLY
  - DELAYED CALL ONLY DENSITY
  - DELAYED CALL-IMMEDIATE EXTEND
  - CARRY OVER (STRETCH)
  - ADVISORY DETECTOR
  - SAMPLING DETECTOR
  - SPECIAL DETECTOR
  - CALL AND EXTEND AFTER TIME DELAY

**1** 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (1-1)  
 TYPE 10B-WOOD POLE MOUNTED (4-2)  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 3" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 3-12/c#12  
 1-3/c#12

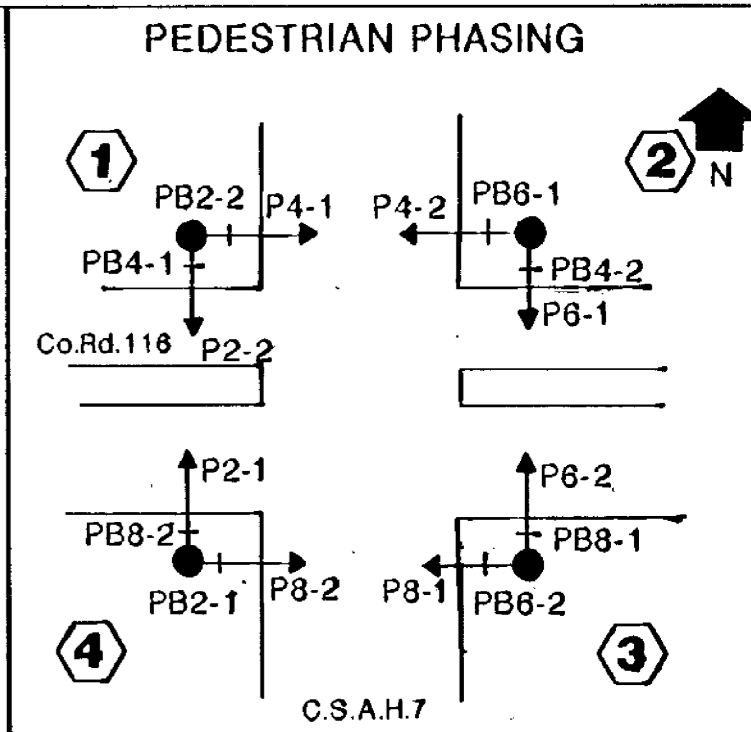
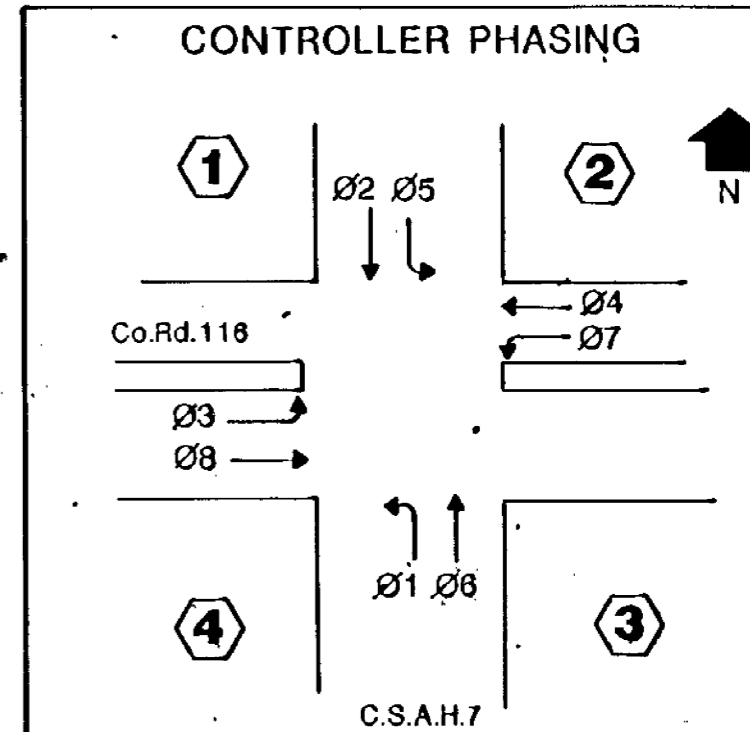
**4** 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (2-2)  
 TYPE 10B-WOOD POLE MOUNTED (7-1)  
 LUMINAIRE-250 WATT H.P.S. AND 15' MAST ARM  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 2" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 2-12/c#12  
 EXTEND INTO H.H.18:  
 2" R.S.C. RISER BELOW JUNCTION BOX  
 2-12/c#12  
 1-3/c#12  
 EXTEND INTO H.H.18:  
 3" R.S.C. RISER AND WEATHERHEAD  
 4-12/c#12  
 3-3/c#12  
 3" R.S.C. RISER AND WEATHERHEAD  
 2-12/c#12  
 1-3/c#12  
 8-2/c#14  
 2-1/c#10

**A** SERVICE CABINET (SEE SPECIAL PROVISIONS)  
 CABINET FOUNDATION  
 STUB OUT 2" R.S.C. (For Service By Others)  
 EXTEND INTO H.H.17:  
 METERED SIGNAL SERVICE  
 1 1/4" R.S.C.  
 3-1/c#6  
 EXTEND INTO H.H.18:  
 UNMETERED STREET LIGHT SERVICE  
 1 1/4" R.S.C.  
 2-1/c#10

**2** 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (3-1)  
 TYPE 10B-WOOD POLE MOUNTED (6-3)  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 3" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 3-12/c#12  
 2-3/c#12

**3** 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (5-1)  
 TYPE 10B-WOOD POLE MOUNTED (8-2)  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 3" R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 3-12/c#12  
 1-3/c#12  
 8-2/c#14  
 EXTEND INTO H.H.13:  
 2" R.S.C. RISER BELOW JUNCTION BOX  
 8-2/c#14

**B** CONTROLLER AND CABINET  
 CABINET FOUNDATION  
 EXTEND INTO H.H.17:  
 METERED SIGNAL SERVICE  
 1 1/4" R.S.C.  
 3-1/c#6  
 EXTEND INTO H.H.11:  
 4" R.S.C.  
 9-2/c#14  
 EXTEND INTO H.H.18:  
 4" R.S.C.  
 4-12/c#12  
 3-3/c#12  
 4" R.S.C.  
 4-12/c#12  
 2-3/c#12  
 8-2/c#14



Note:  
 LOCATION=DISTANCE FROM STOP BAR TO LOOP DETECTOR.

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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: 11/10 Reg No. 9089



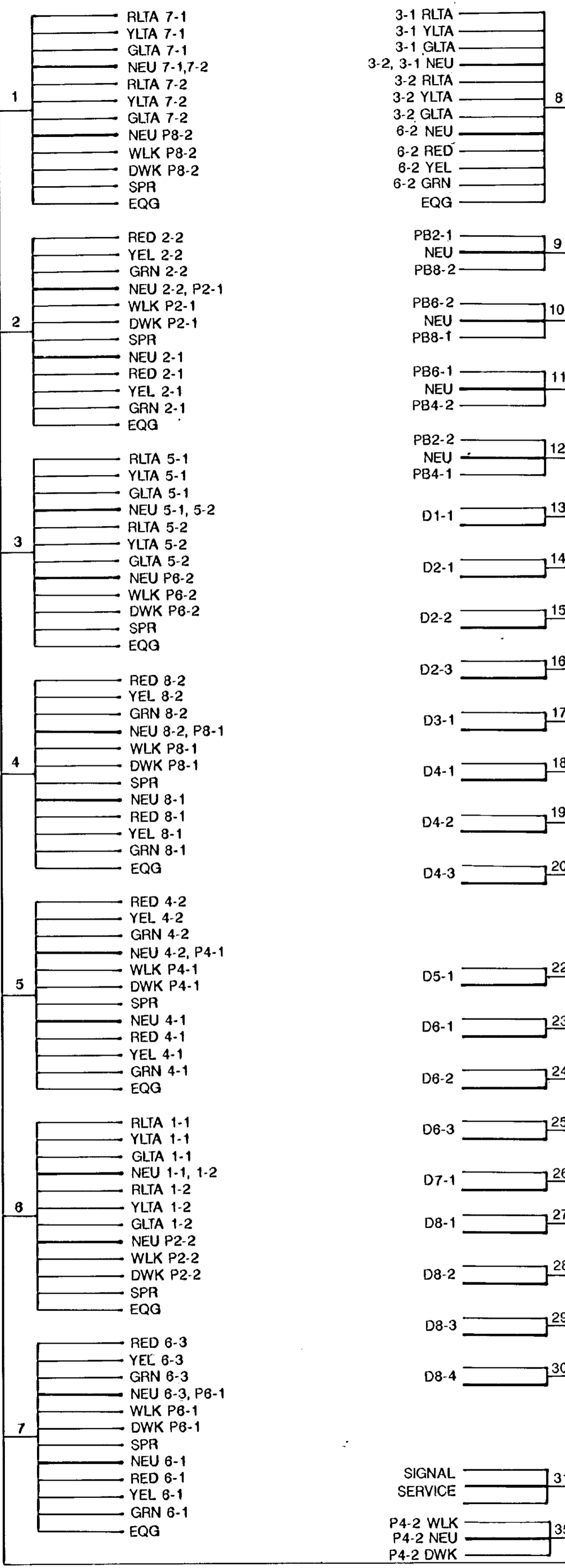
ANOKA COUNTY, MINNESOTA  
 C.P. 90-20-116

TRAFFIC SIGNAL SYSTEM "A"  
 INTERSECTION LAYOUT  
 C.S.A.H. 7 AT COUNTY ROAD 116

FILE NO. 91016  
 DATE 8/30/90  
 2  
 9

CONTROLLER CABINET

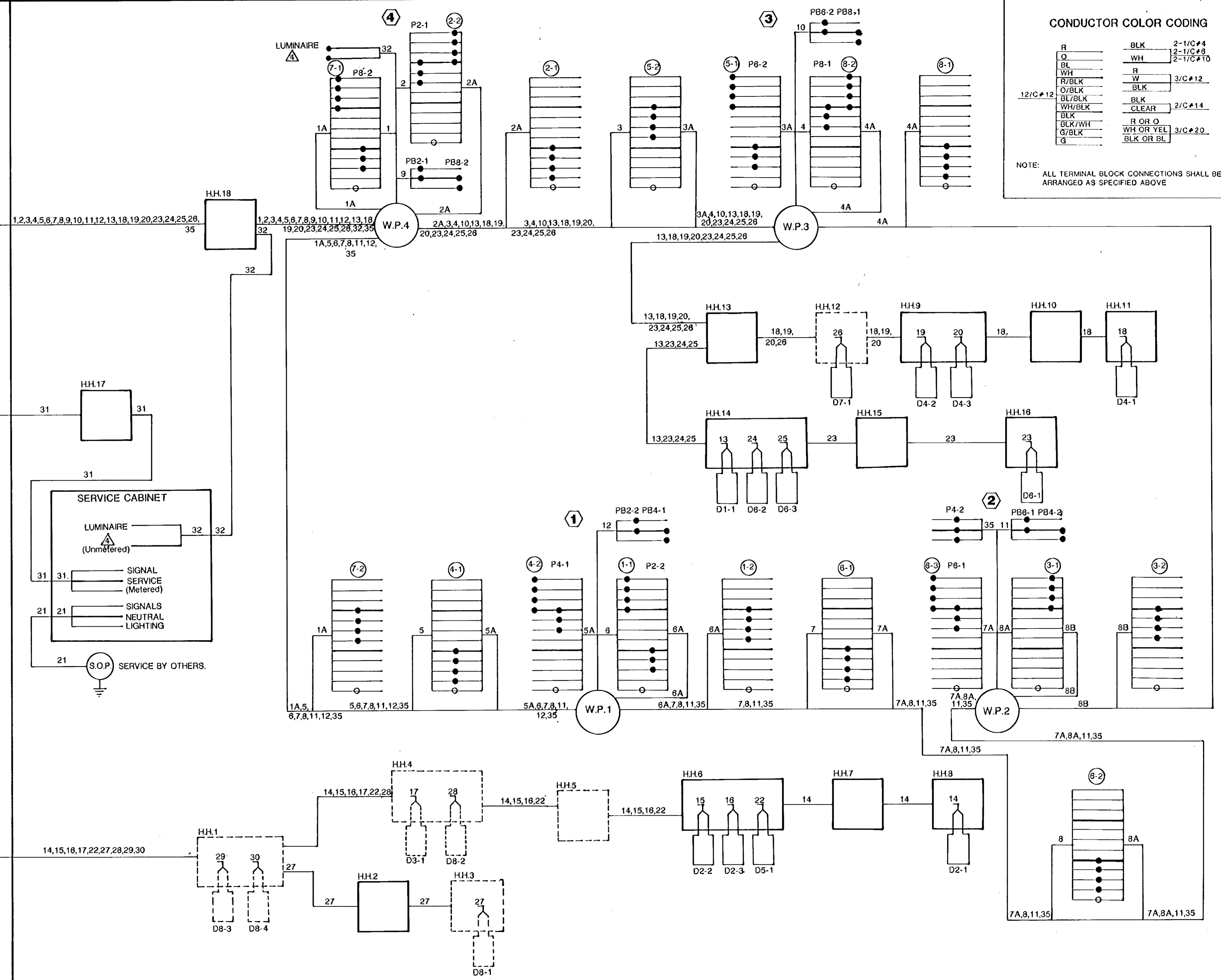
BASE OVERLAY DRG. NO.



CONDUCTOR COLOR CODING

R	BLK	2-1/C#4
O	WH	2-1/C#8
BL	W	2-1/C#10
WH	R	
R/BLK	W	3/C#12
O/BLK	BLK	
BL/BLK	BLK	
WH/BLK	CLEAR	2/C#14
BLK	BLK	
BLK/WH	R OR O	
G/BLK	WH OR YEL	3/C#20
G	BLK OR BL	

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



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

*Alan Van Worman*  
Date 4/16/72 Reg No. 9089



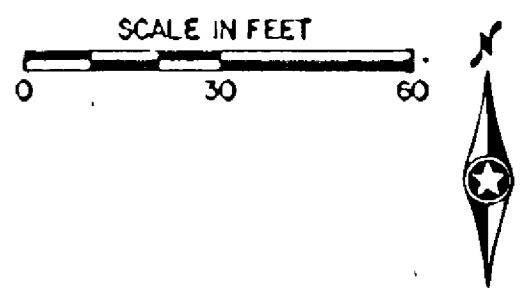
ANOKA COUNTY, MINNESOTA  
C.P.90-20-116

TRAFFIC SIGNAL SYSTEM "A"  
FIELD WIRING DIAGRAM  
C.S.A.H.7 AT COUNTY ROAD 116

FILE NO.	91016	3
DATE	8/30/90	9

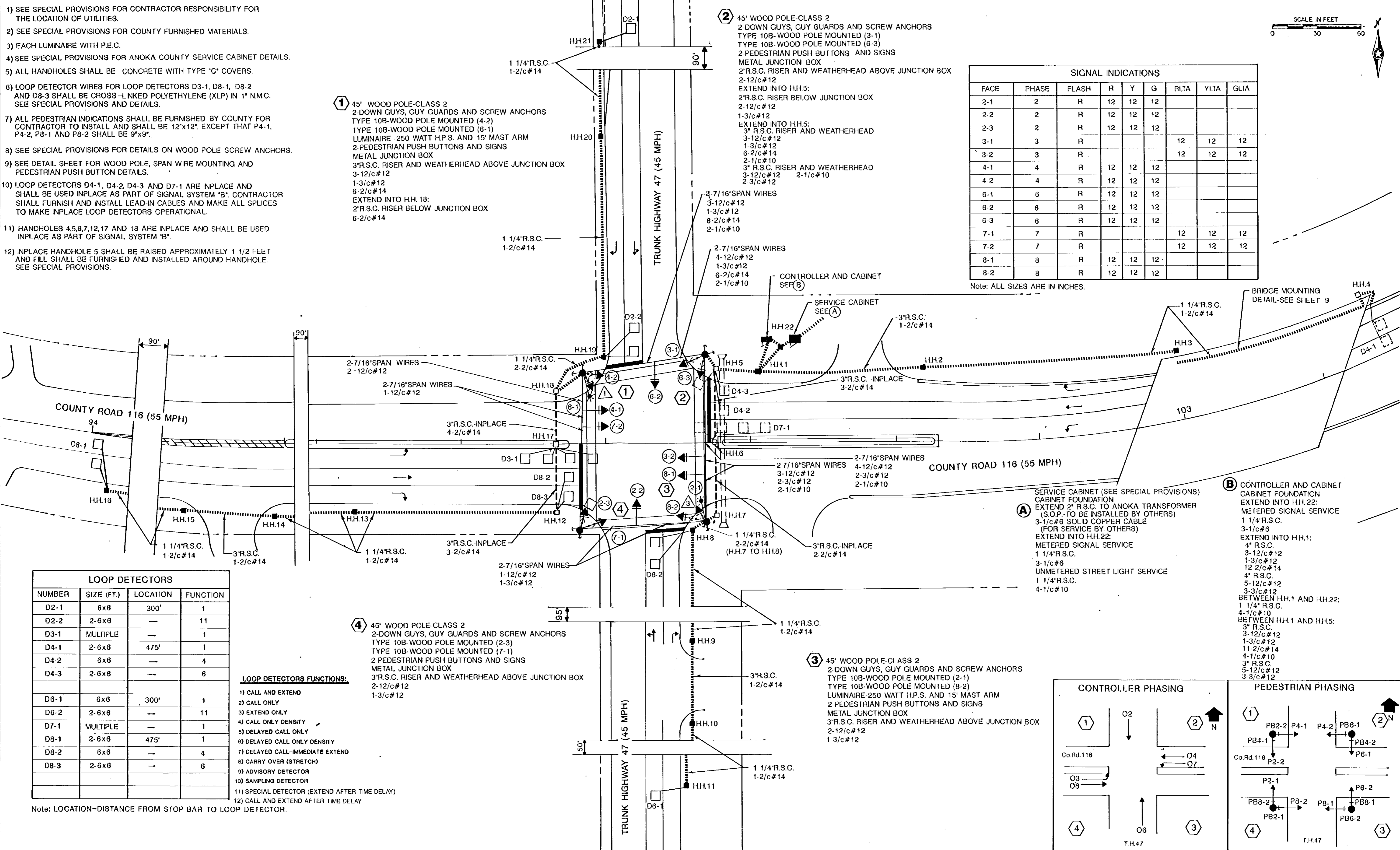
Notes:

- 1) SEE SPECIAL PROVISIONS FOR CONTRACTOR RESPONSIBILITY FOR THE LOCATION OF UTILITIES.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) EACH LUMINAIRE WITH P.E.C.
- 4) SEE SPECIAL PROVISIONS FOR ANOKA COUNTY SERVICE CABINET DETAILS.
- 5) ALL HANDHOLES SHALL BE CONCRETE WITH TYPE "C" COVERS.
- 6) LOOP DETECTOR WIRES FOR LOOP DETECTORS D3-1, D8-1, D8-2 AND D8-3 SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1" N.M.C. SEE SPECIAL PROVISIONS AND DETAILS.
- 7) ALL PEDESTRIAN INDICATIONS SHALL BE FURNISHED BY COUNTY FOR CONTRACTOR TO INSTALL AND SHALL BE 12"x12", EXCEPT THAT P4-1, P4-2, P8-1 AND P8-2 SHALL BE 9"x9".
- 8) SEE SPECIAL PROVISIONS FOR DETAILS ON WOOD POLE SCREW ANCHORS.
- 9) SEE DETAIL SHEET FOR WOOD POLE, SPAN WIRE MOUNTING AND PEDESTRIAN PUSH BUTTON DETAILS.
- 10) LOOP DETECTORS D4-1, D4-2, D4-3 AND D7-1 ARE INPLACE AND SHALL BE USED INPLACE AS PART OF SIGNAL SYSTEM "B". CONTRACTOR SHALL FURNISH AND INSTALL LEAD-IN CABLES AND MAKE ALL SPLICES TO MAKE INPLACE LOOP DETECTORS OPERATIONAL.
- 11) HANDHOLES 4,5,6,7,12,17 AND 18 ARE INPLACE AND SHALL BE USED INPLACE AS PART OF SIGNAL SYSTEM "B".
- 12) INPLACE HANDHOLE 5 SHALL BE RAISED APPROXIMATELY 1 1/2 FEET AND FILL SHALL BE FURNISHED AND INSTALLED AROUND HANDHOLE. SEE SPECIAL PROVISIONS.



SIGNAL INDICATIONS								
FACE	PHASE	FLASH	R	Y	G	RLTA	YLTA	GLTA
2-1	2	R	12	12	12			
2-2	2	R	12	12	12			
2-3	2	R	12	12	12			
3-1	3	R				12	12	12
3-2	3	R				12	12	12
4-1	4	R	12	12	12			
4-2	4	R	12	12	12			
6-1	6	R	12	12	12			
6-2	6	R	12	12	12			
6-3	6	R	12	12	12			
7-1	7	R				12	12	12
7-2	7	R				12	12	12
8-1	8	R	12	12	12			
8-2	8	R	12	12	12			

Note: ALL SIZES ARE IN INCHES.



LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D2-1	6x6	300'	1
D2-2	2-6x6	—	11
D3-1	MULTIPLE	—	1
D4-1	2-6x6	475'	1
D4-2	6x6	—	4
D4-3	2-6x6	—	6
D6-1	6x6	300'	1
D6-2	2-6x6	—	11
D7-1	MULTIPLE	—	1
D8-1	2-6x6	475'	1
D8-2	6x6	—	4
D8-3	2-6x6	—	6

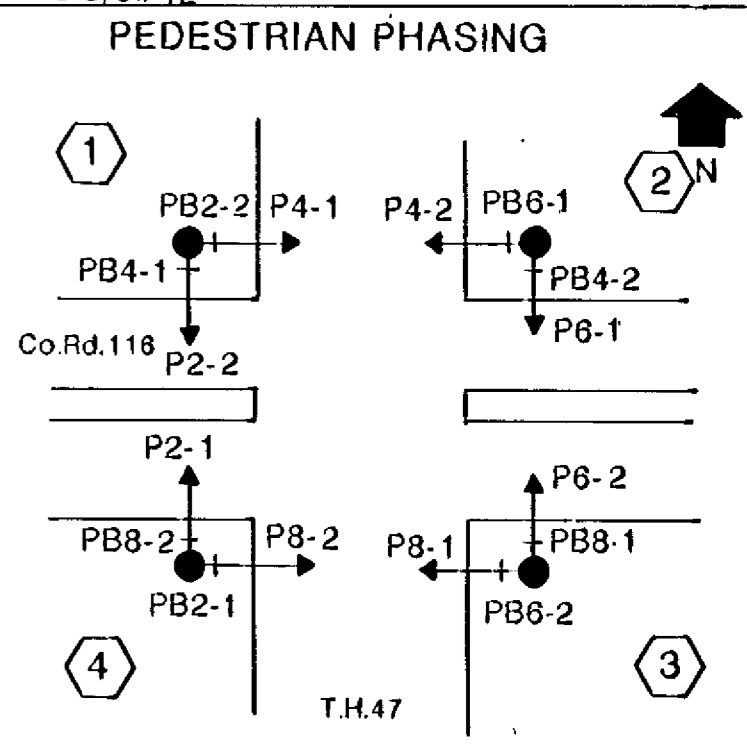
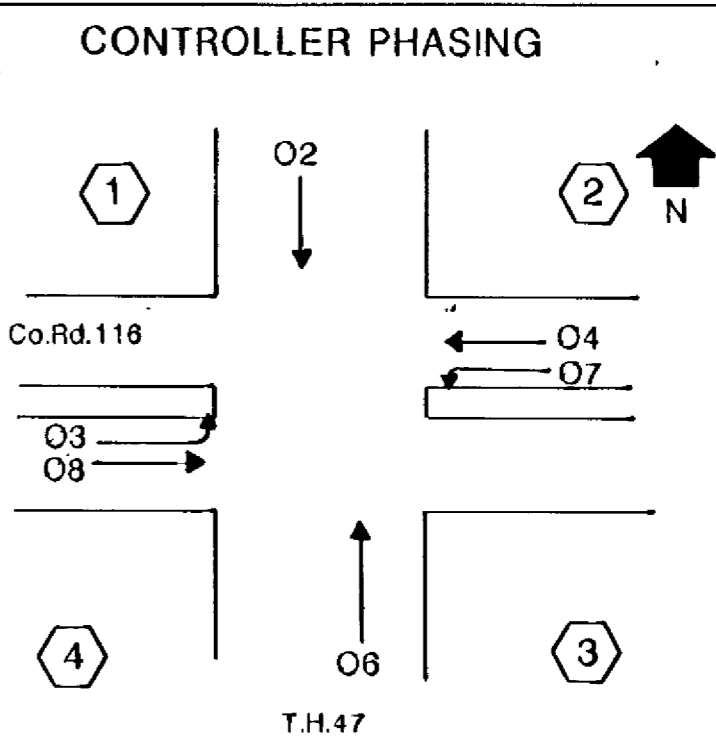
LOOP DETECTORS FUNCTIONS:

- 1) CALL AND EXTEND
- 2) CALL ONLY
- 3) EXTEND ONLY
- 4) CALL ONLY DENSITY
- 5) DELAYED CALL ONLY
- 6) DELAYED CALL ONLY DENSITY
- 7) DELAYED CALL-IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)
- 9) ADVISORY DETECTOR
- 10) SAMPLING DETECTOR
- 11) SPECIAL DETECTOR (EXTEND AFTER TIME DELAY)
- 12) CALL AND EXTEND AFTER TIME DELAY

Note: LOCATION=DISTANCE FROM STOP BAR TO LOOP DETECTOR.

④ 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (2-3)  
 TYPE 10B-WOOD POLE MOUNTED (7-1)  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 3"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 2-12/c#12  
 1-3/c#12

③ 45' WOOD POLE-CLASS 2  
 2-DOWN GUYS, GUY GUARDS AND SCREW ANCHORS  
 TYPE 10B-WOOD POLE MOUNTED (2-1)  
 TYPE 10B-WOOD POLE MOUNTED (8-2)  
 LUMINAIRE-250 WATT H.P.S. AND 15' MAST ARM  
 2-PEDESTRIAN PUSH BUTTONS AND SIGNS  
 METAL JUNCTION BOX  
 3"R.S.C. RISER AND WEATHERHEAD ABOVE JUNCTION BOX  
 2-12/c#12  
 1-3/c#12



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	JMG	9/8	PER Mn/DOT COMMENTS			

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.  
*Allen VanArman*  
 Date: 9/6/90 Reg No. 9089

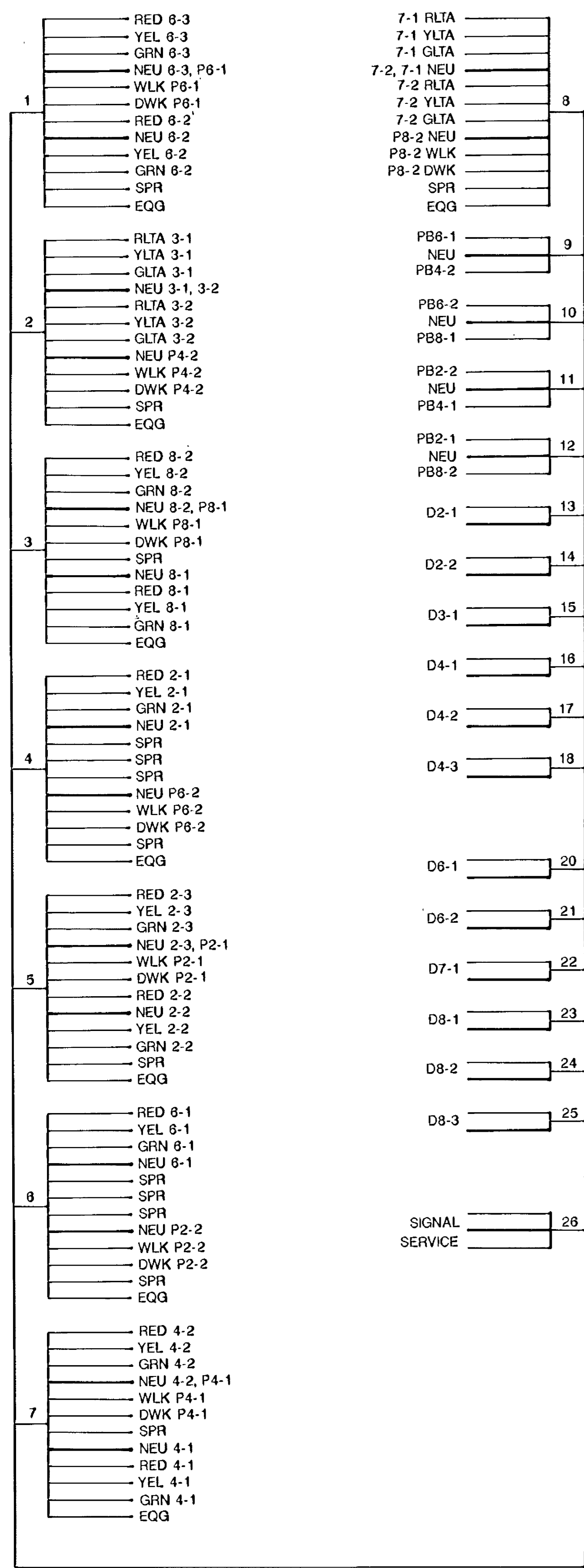


ANOKA COUNTY, MINNESOTA  
 C.P. 90-19-116

TRAFFIC SIGNAL SYSTEM "B"  
 INTERSECTION LAYOUT  
 TRUNK HIGHWAY 47 AT COUNTY ROAD 116

FILE NO. 91017	4
DATE 8/30/90	9

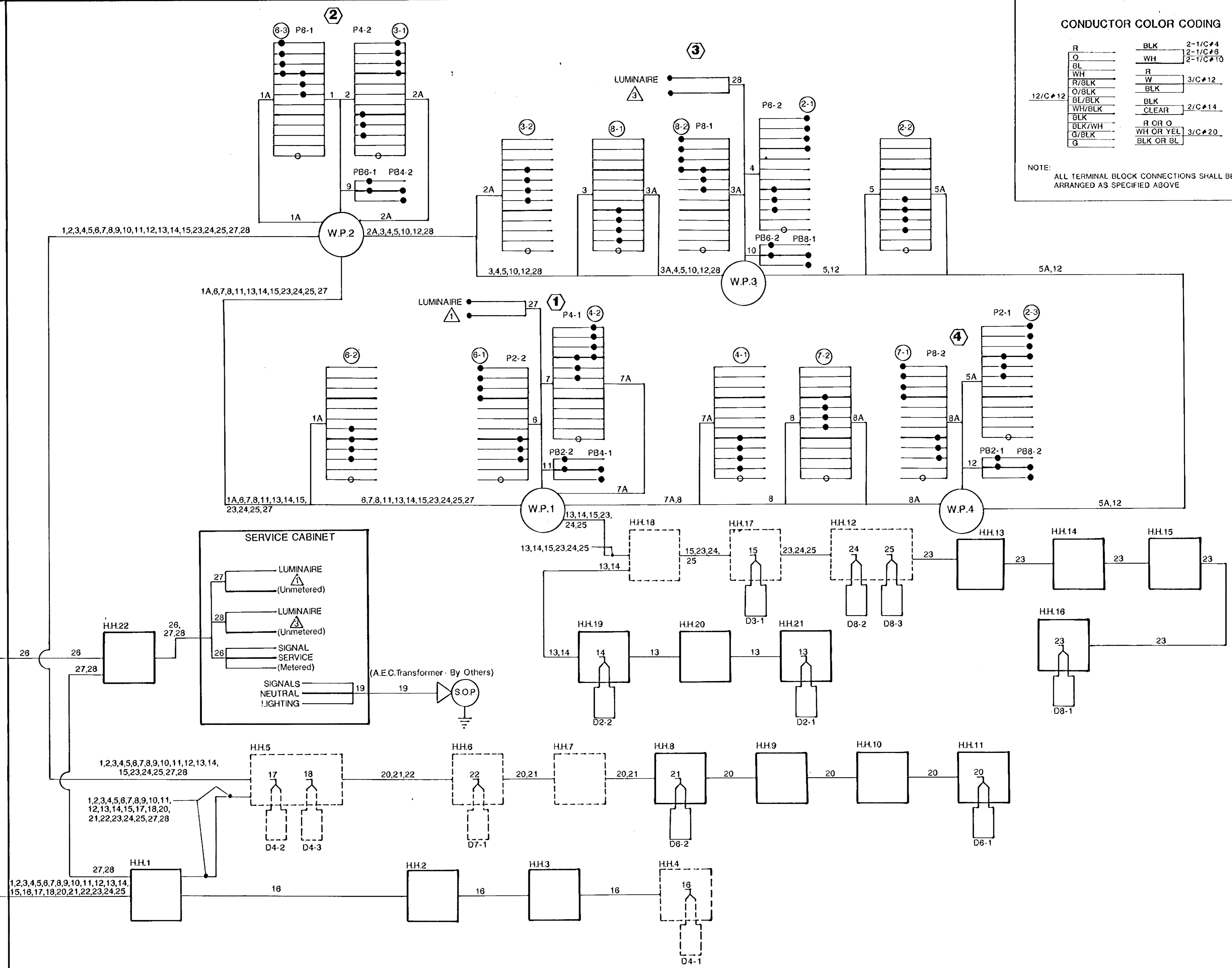
CONTROLLER CABINET



**CONDUCTOR COLOR CODING**

R	BLK	2-1/C#4
O	WH	2-1/C#8
BL	W	2-1/C#10
WH	R	3/C#12
R/BLK	BLK	
O/BLK	BLK	
BL/BLK	BLK	
WH/BLK	CLEAR	2/C#14
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



1	JMG	9/8	PER Mn/DOT COMMENTS
NO.	BY	DATE	REVISIONS

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.

*Alan J. M...*  
Date 4/6/10 Reg No. 9089



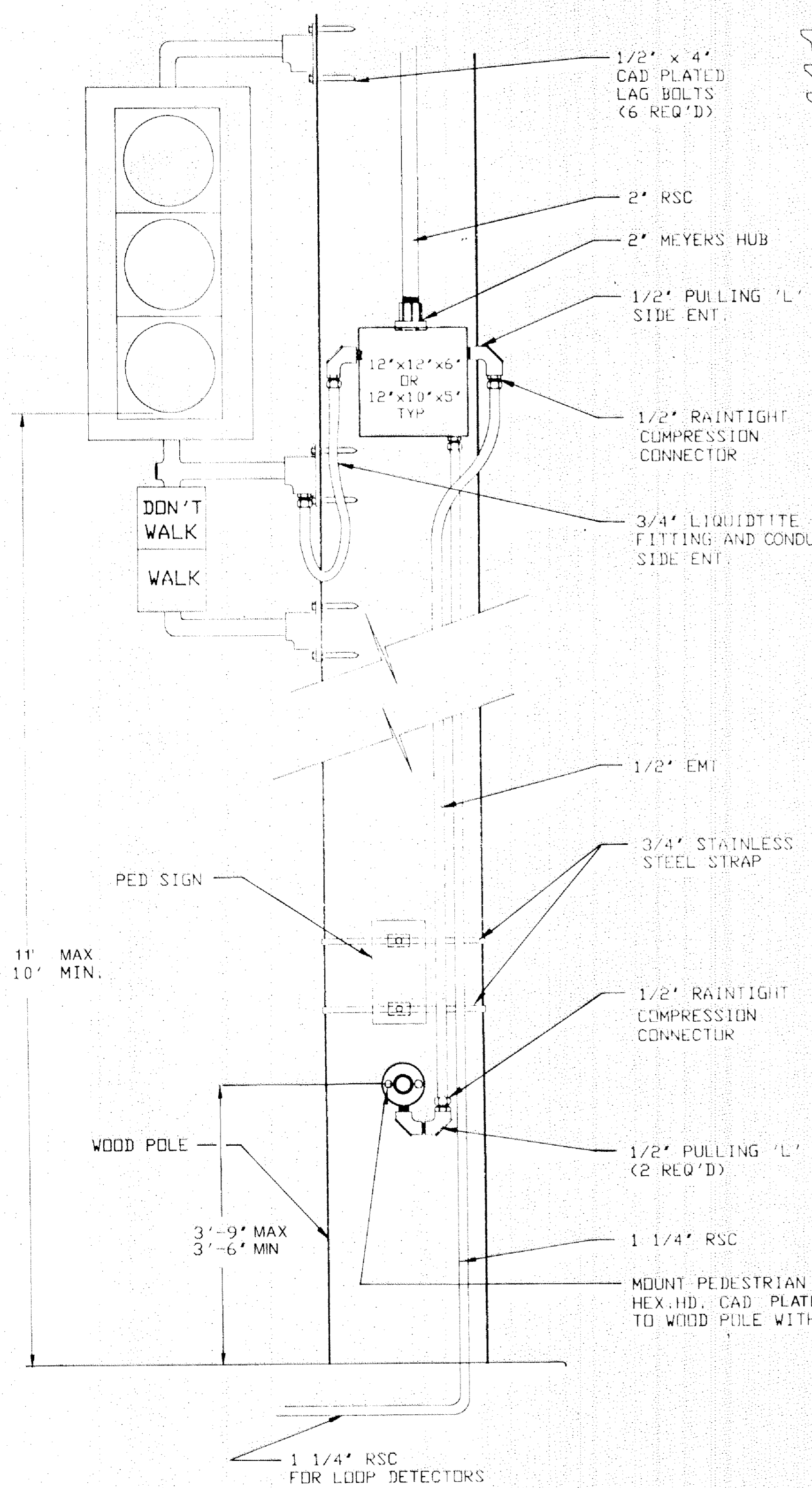
ANOKA COUNTY, MINNESOTA  
C.P.90-19-116

TRAFFIC SIGNAL SYSTEM "B"  
FIELD WIRING DIAGRAM  
TRUNK HIGHWAY 47 AT COUNTY ROAD 116

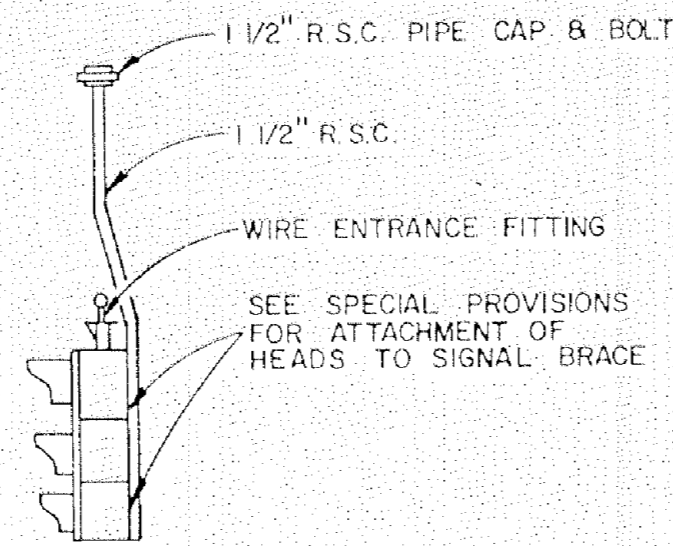
FILE NO.	91017	5
DATE	8/30/90	9

BASE	OVERLAY	DATE	NO.

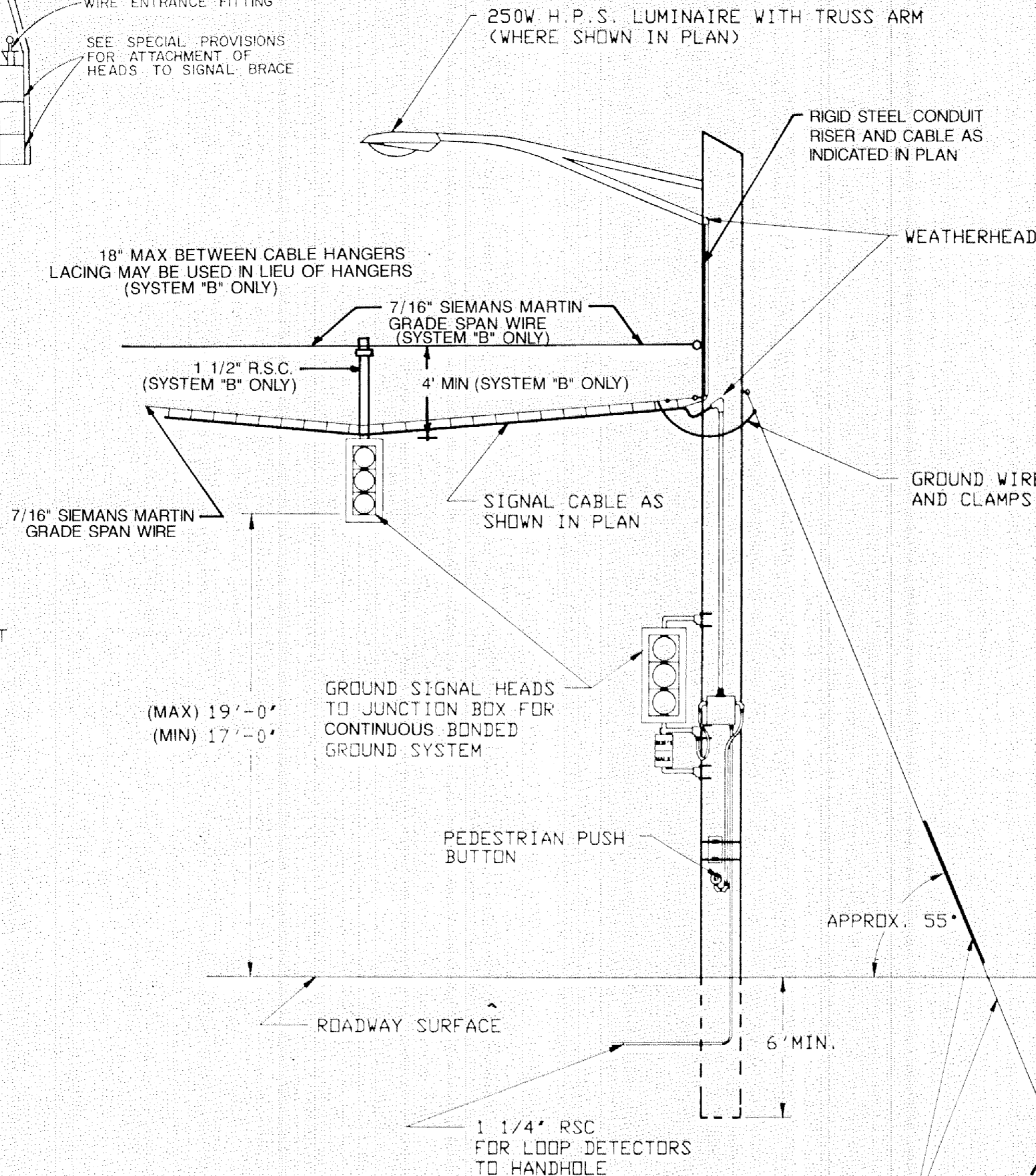
**PED BUTTON WIRING DETAIL**



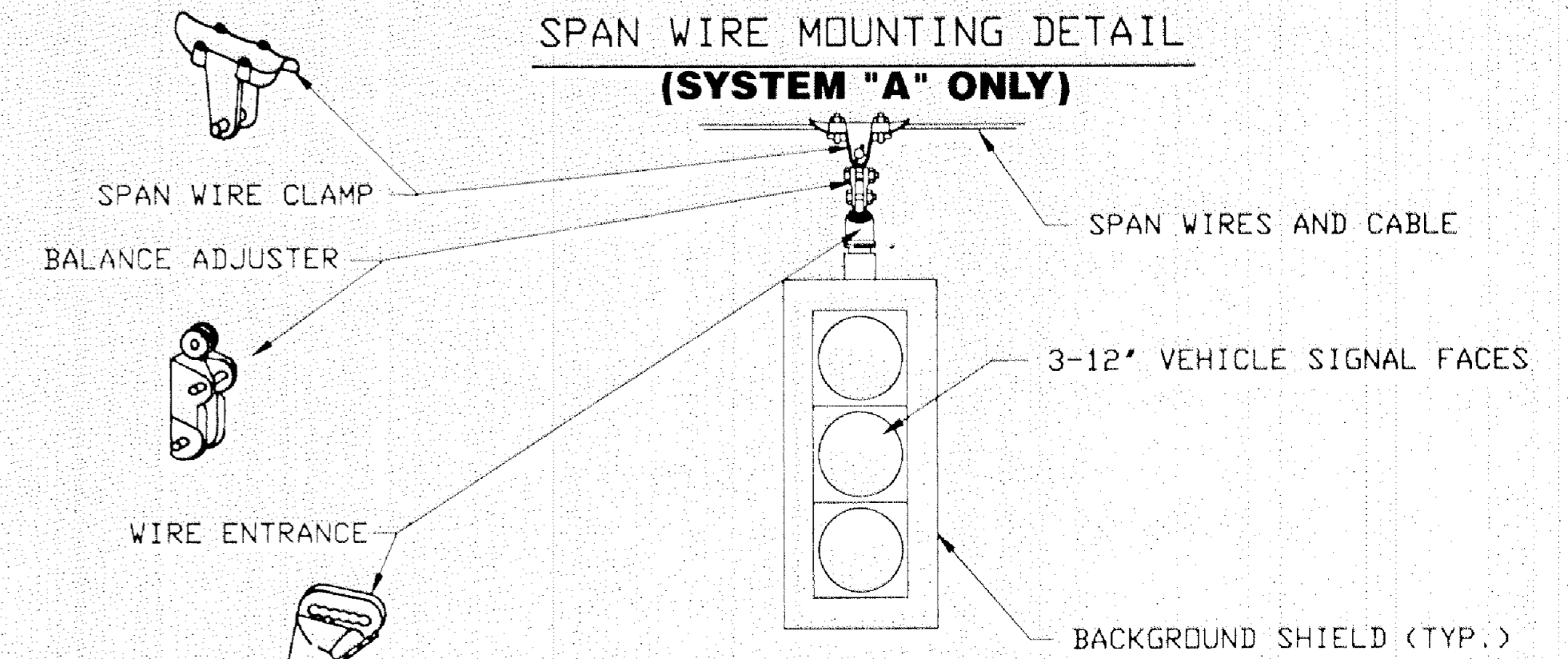
**(SYSTEM "B" ONLY)  
OVERHEAD SIGNAL BRACE**



**TEMPORARY POLE DETAIL**



**SPAN WIRE MOUNTING DETAIL  
(SYSTEM "A" ONLY)**



**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQPT NOS.	_____
SIGNAL BASE NO.	_____
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 INDICATORS	_____
PEDESTRIAN INDICATORS IN PLACE	_____
PEDESTRIAN PUSH BUTTONS 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	_____
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	_____
CENTERLINE	_____
EDGE OF ROADWAY	_____
SHOULDERLINE	_____
CURB LINE	_____
STOP BAR	_____

**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
EDG - 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
P2 - 2 PEDESTRIAN INDICATIONS
2-1(eg) - SIGNAL HEADS-PHASE '2'
SPR. - SPARE CONNECTORS
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

**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
* 8117 F	PRECAST CONCRETE HAND HOLE
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 D	SIGNAL HEAD MOUNTS
8126 C	P-100 POLE FOUNDATION
* 8130 D	SAW CUT LOOP DETECTORS
* 0004 A	SPECIFICATION REFERENCE
3124 B	METAL APRON CONNECTION
3221 C	CORRUGATED STEEL PIPE COUPLING BAND
7035 J	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7100 F	CONCRETE CURB AND GUTTERS

\* APPLIES TO THIS PROJECT

**CONDUCTOR COLOR CODE**

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 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



**ANOKA COUNTY, MINNESOTA**  
C.P. 90-19-116  
C.P. 90-20-116

**DETAILS**

FILE NO.  
91016-17  
DATE  
8/30/90

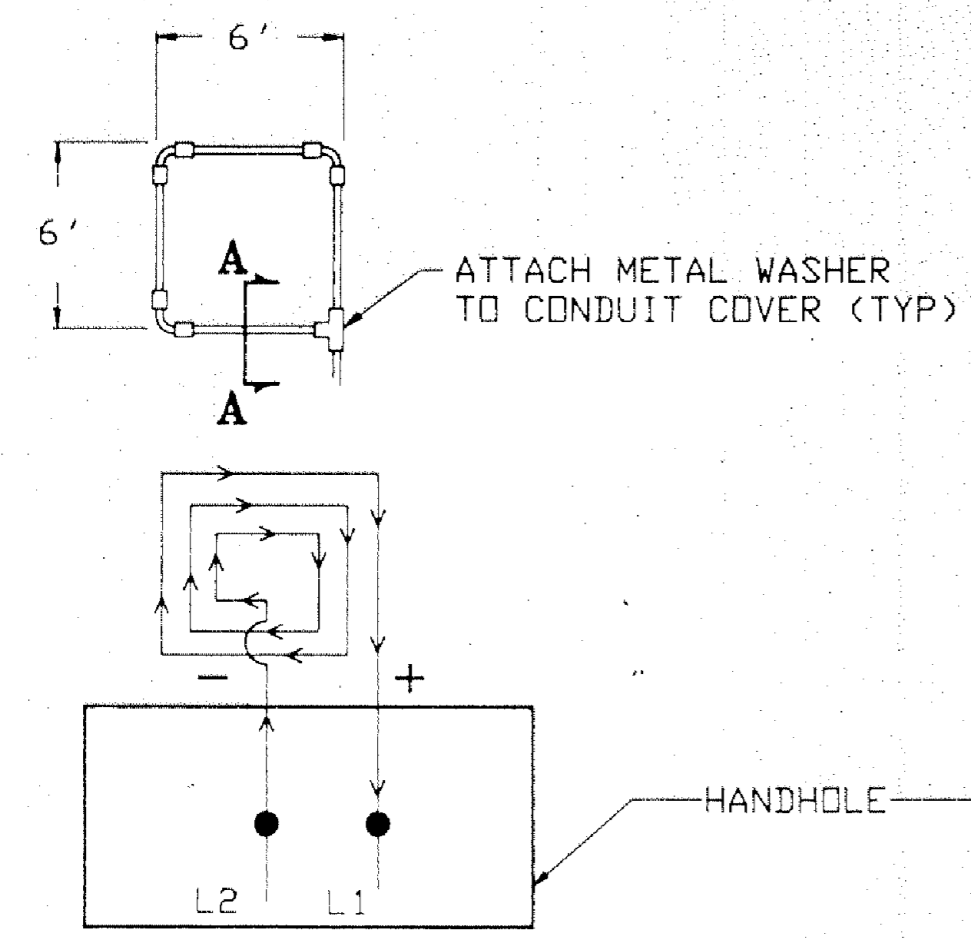
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9

1	JMG	9/6	PER Mn/DOT COMMENTS						
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	PROJECT	DATE	REG. NO.	

BASE OVERLAY DRG NO.

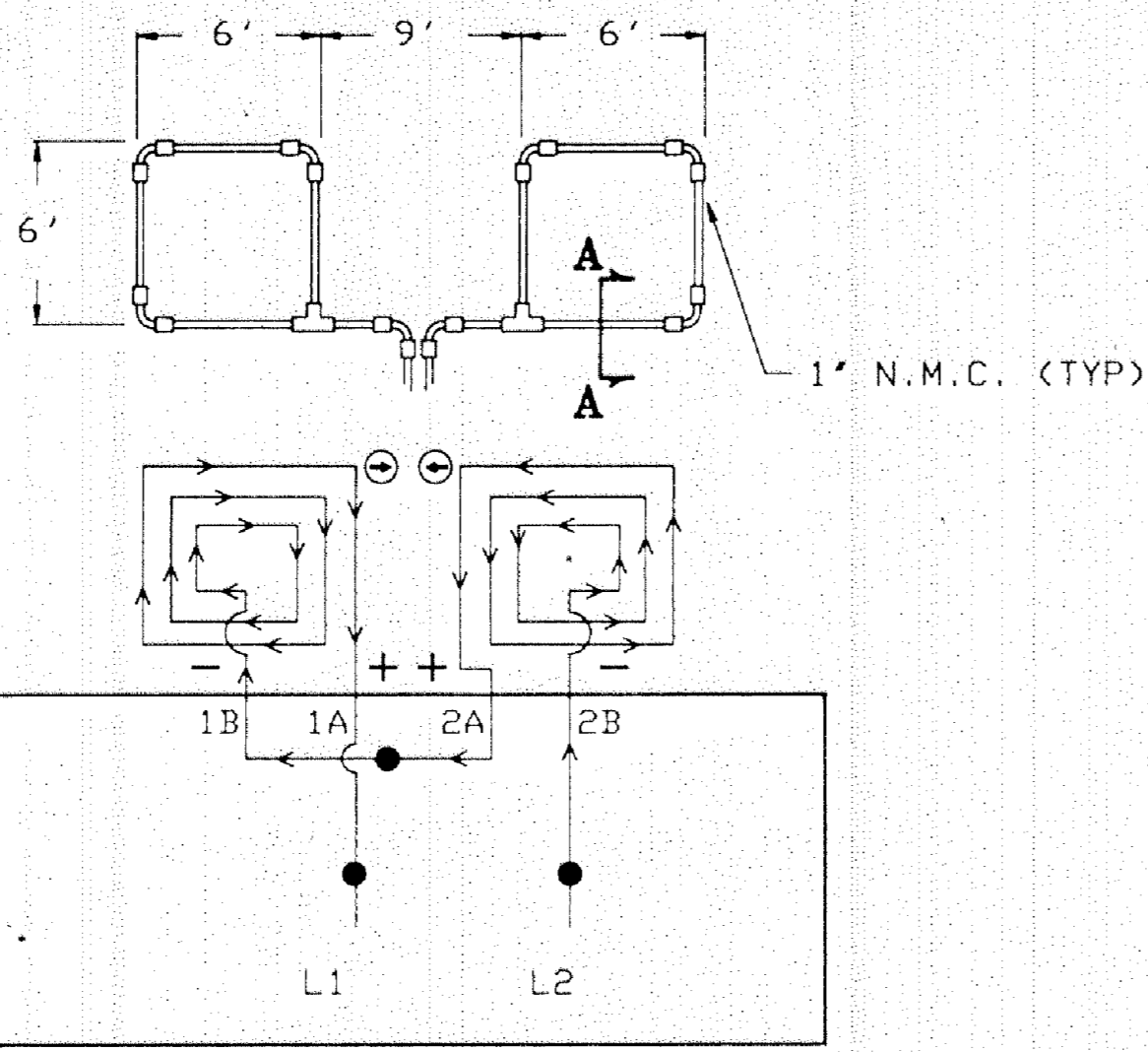
**LOOP DETECTOR DETAIL 'A'**

PLAN VIEW (NOT TO SCALE)  
(LOOP PHASING FOR SINGLE CONNECTION)



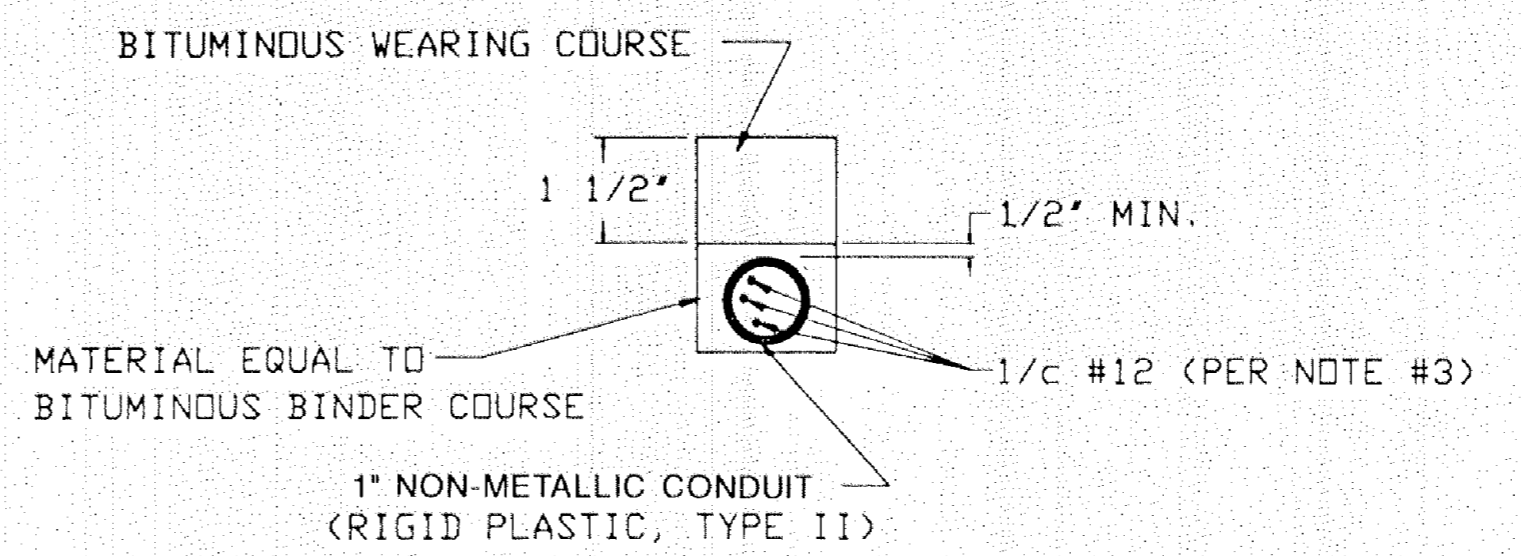
**LOOP DETECTOR DETAIL 'B'**

PLAN VIEW (NOT TO SCALE)  
(LOOP PHASING FOR SERIES CONNECTION)

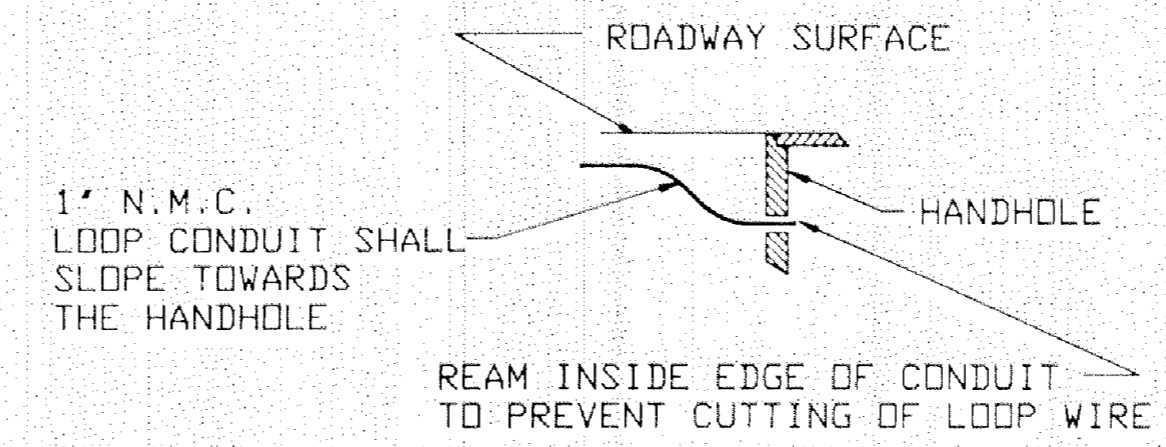


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:  
L1 TO 1A, 1B TO 2A, AND 2B TO L2.

**CROSS SECTION A-A**

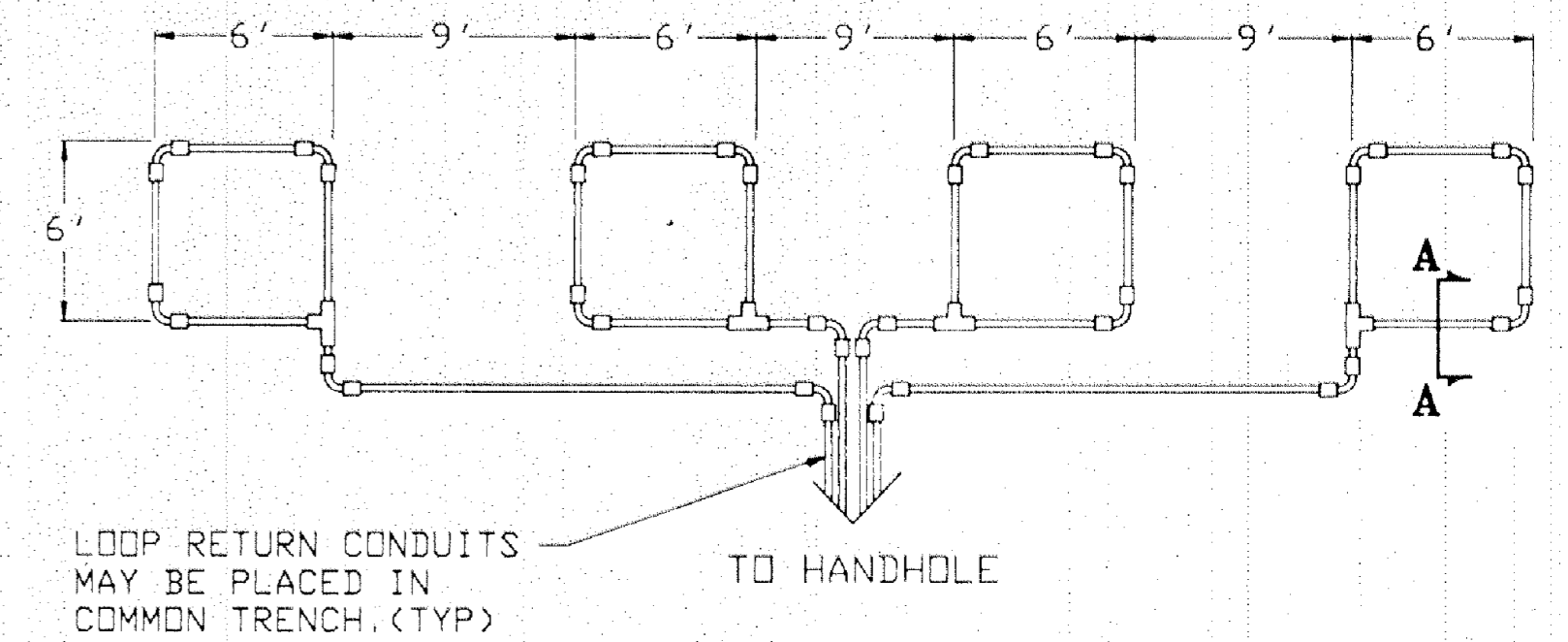


**DRAINAGE DETAIL**

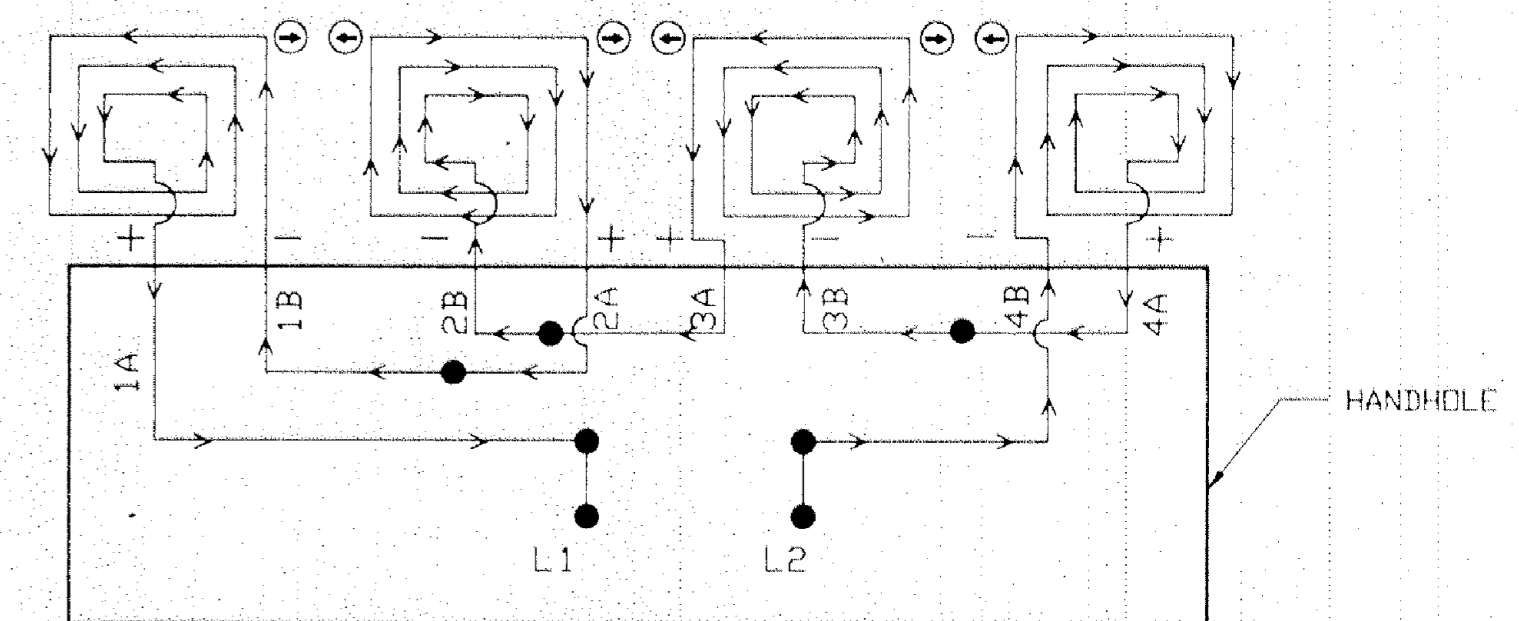


**LOOP DETECTOR DETAIL 'C'**

PLAN VIEW (NOT TO SCALE)  
(LOOP PHASING FOR SERIES CONNECTION)



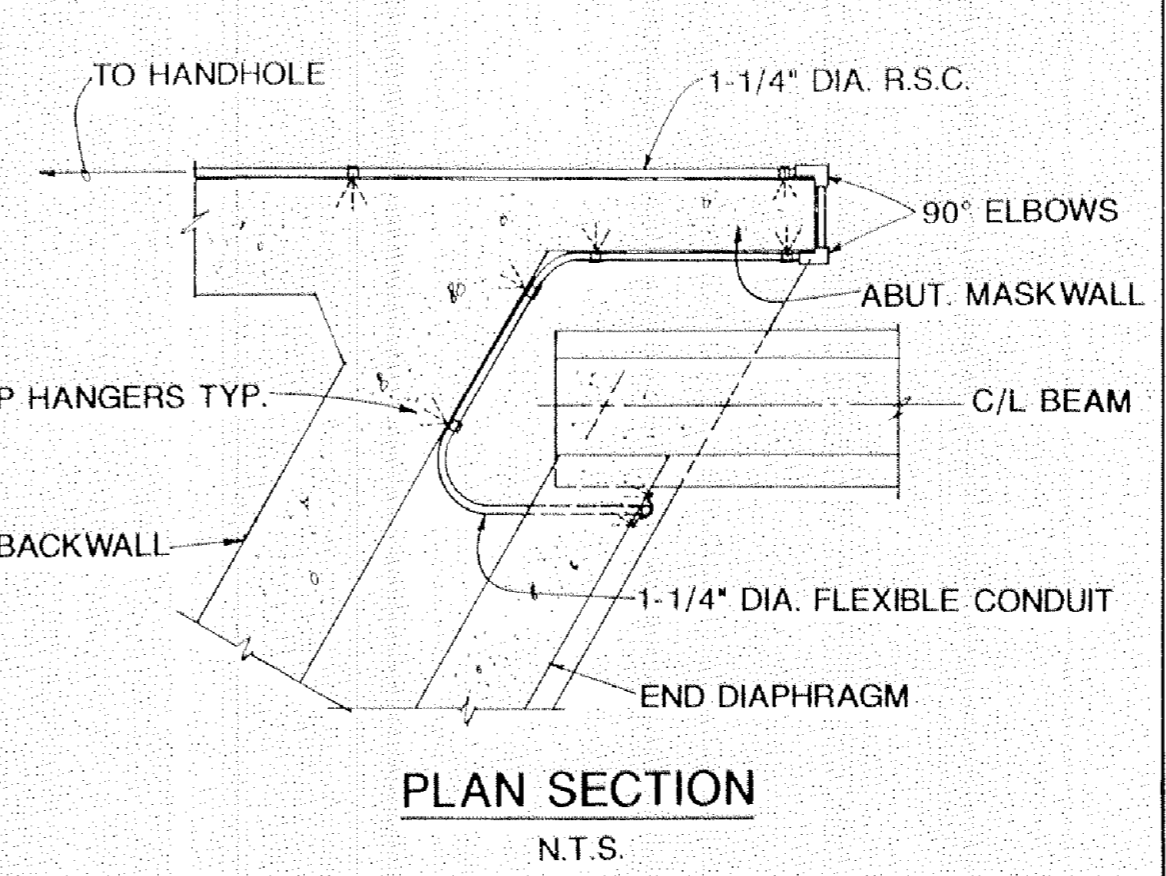
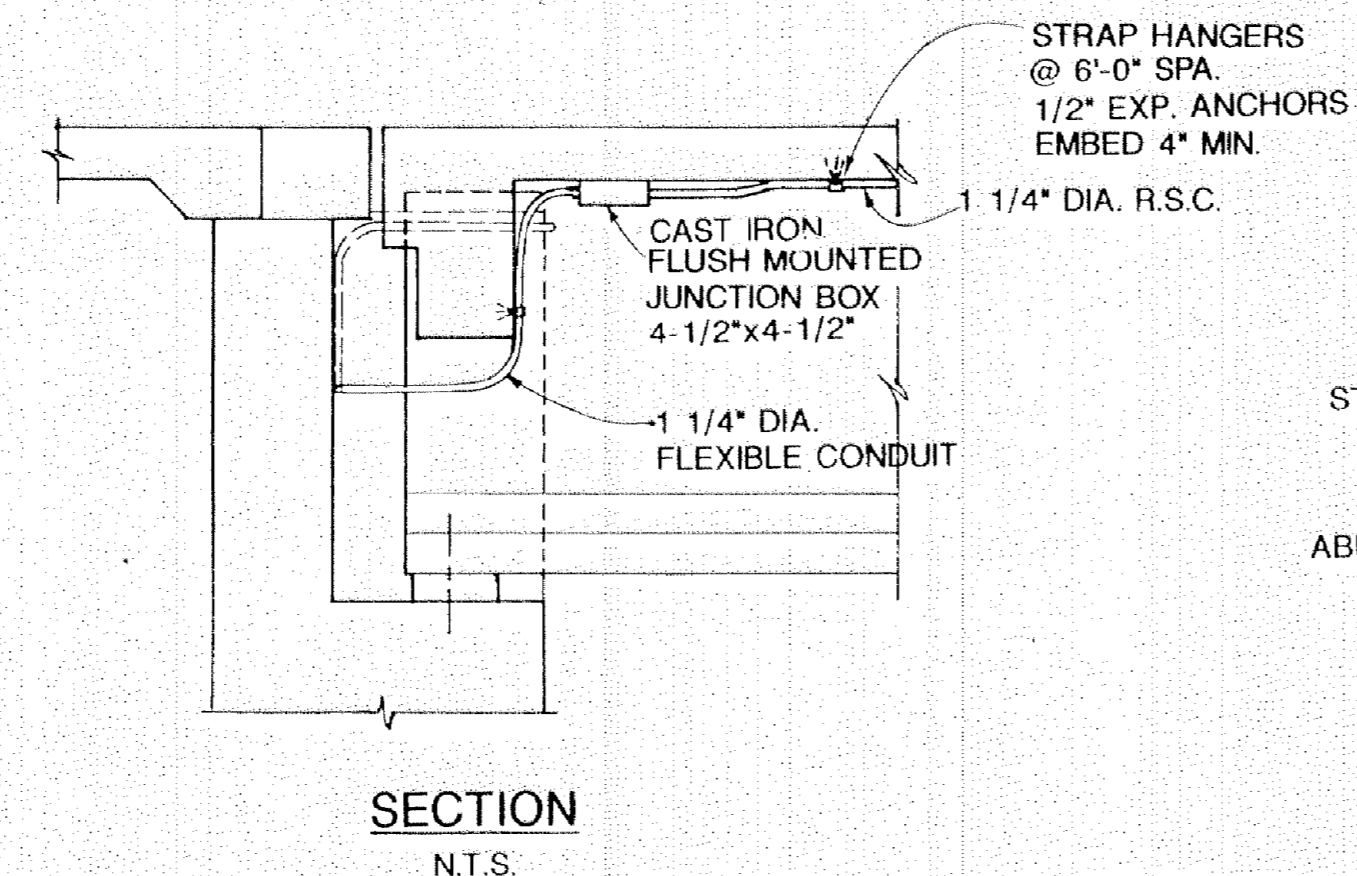
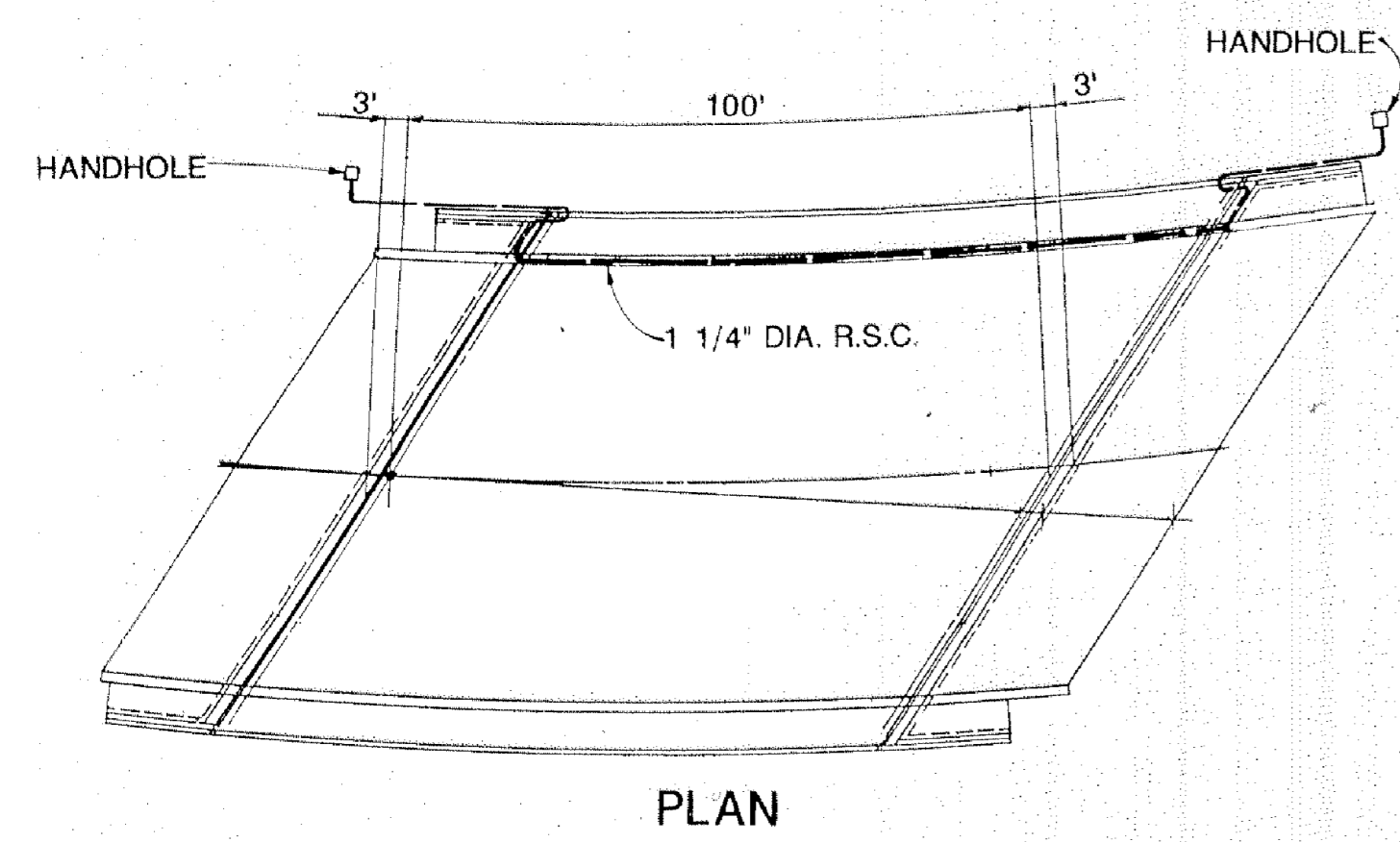
LOOP RETURN CONDUITS MAY BE PLACED IN COMMON TRENCH (TYP) TO HANDHOLE



LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:  
L1 TO 1A, 1B TO 2A, 2B TO 3A, 3B TO 4A AND 4B TO L2.  
SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ETC.)

**DETAIL FOR INSTALLATION AND MOUNTING OF CONDUIT ON BRIDGE**

(SYSTEM "B"-T.H.47 AT COUNTY ROAD 116)



**LOOP DETECTOR WIRING**

NOTES:

- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS
- 2) CONNECT WIRES IN HANDHOLES USING WESTERN UNION SPLICE, SOLDERED, TAPED, & WATERPROOFED.
- 3) LOOP DETECTOR WIRES SHALL BE # 12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
- 4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
- 5) N.M.C. DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
- 6) LOOPS 6'x6' THRU 6'x14' SHALL HAVE (3) TURNS.
- 7) LOOPS 6'x15' AND LARGER SHALL HAVE TWO (2) TURNS.
- 8) A 3/4 INCH FOAM BACKER ROD SHALL BE ATTACHED WITH LAST TURN OF WIRE FOR EACH LOOP DETECTOR INSTALLED IN N.M.C.
- 9) SEE SPECIAL PROVISIONS FOR DETAILS ON SAW-CUT LOOP DETECTORS (SYSTEM "B" ONLY).

1	JMG	9/6	PER Mn/DOT COMMENTS
NO.	BY	DATE	REVISIONS

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 7/6/90 Reg No. 9089

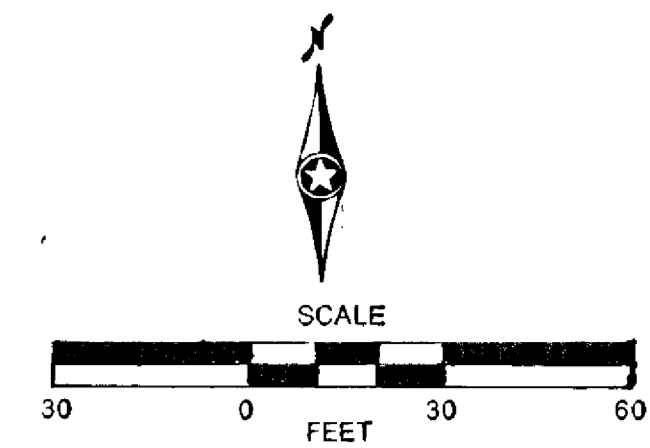


ANOKA COUNTY, MINNESOTA  
C.P. 90-19-116  
C.P. 90-20-116

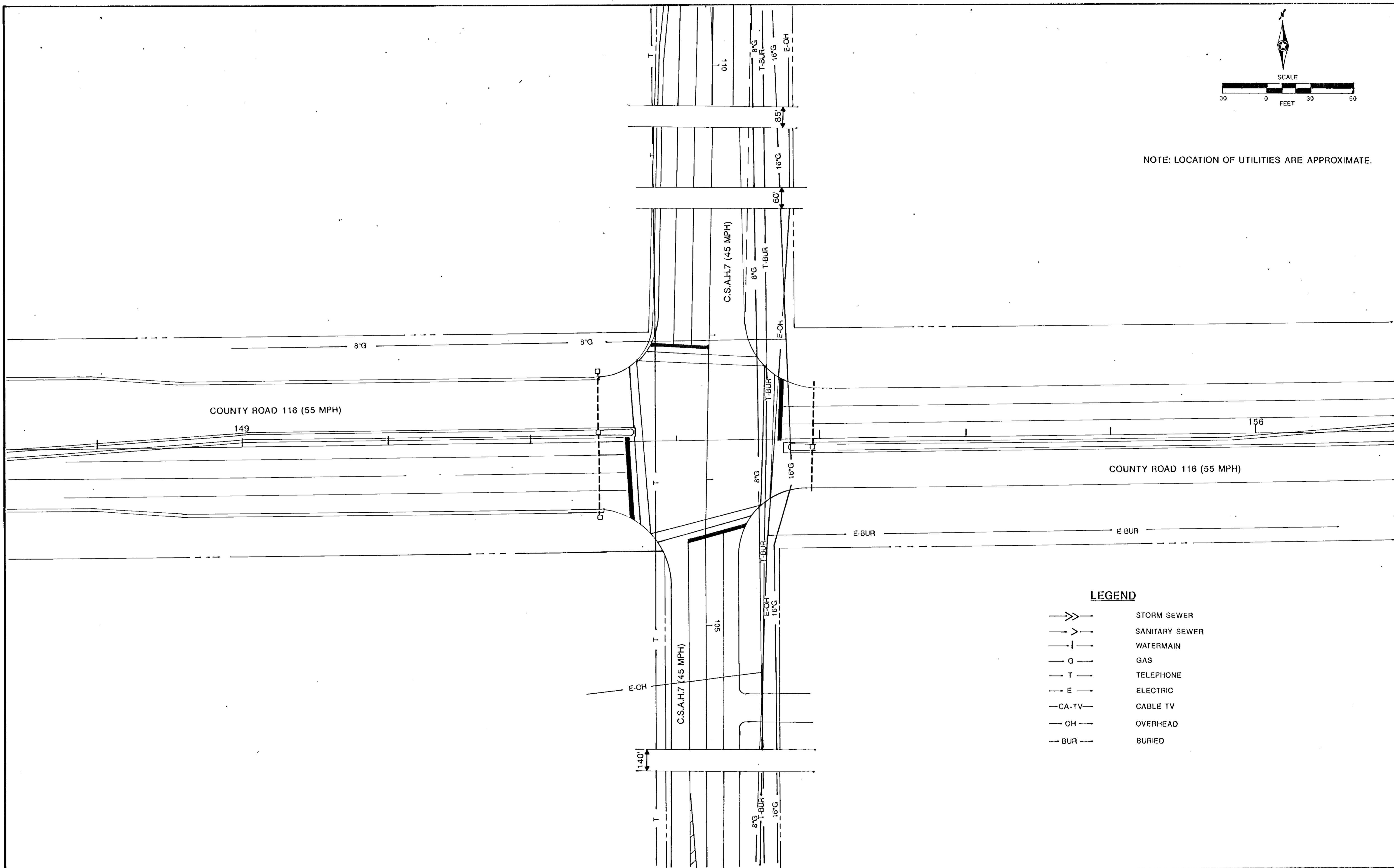
**LOOP DETECTOR DETAILS**

FILE NO.	91016-17	7
DATE	8/30/90	9

BASE OVERLAY DRG NO.



NOTE: LOCATION OF UTILITIES ARE APPROXIMATE.



**LEGEND**

- >>— STORM SEWER
- >— SANITARY SEWER
- |— WATERMAIN
- G— GAS
- T— TELEPHONE
- E— ELECTRIC
- CA-TV— CABLE TV
- OH— OVERHEAD
- BUR— BURIED

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.  
*Stanley A. New*  
 Date 7/6/90 Reg. No. 9089



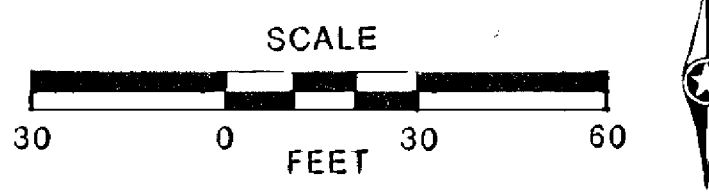
ANOKA COUNTY, MINNESOTA  
 C.P. 90-20-116

TRAFFIC SIGNAL SYSTEM "A"  
 UTILITIES  
 C.S.A.H. 7 AT COUNTY ROAD 116

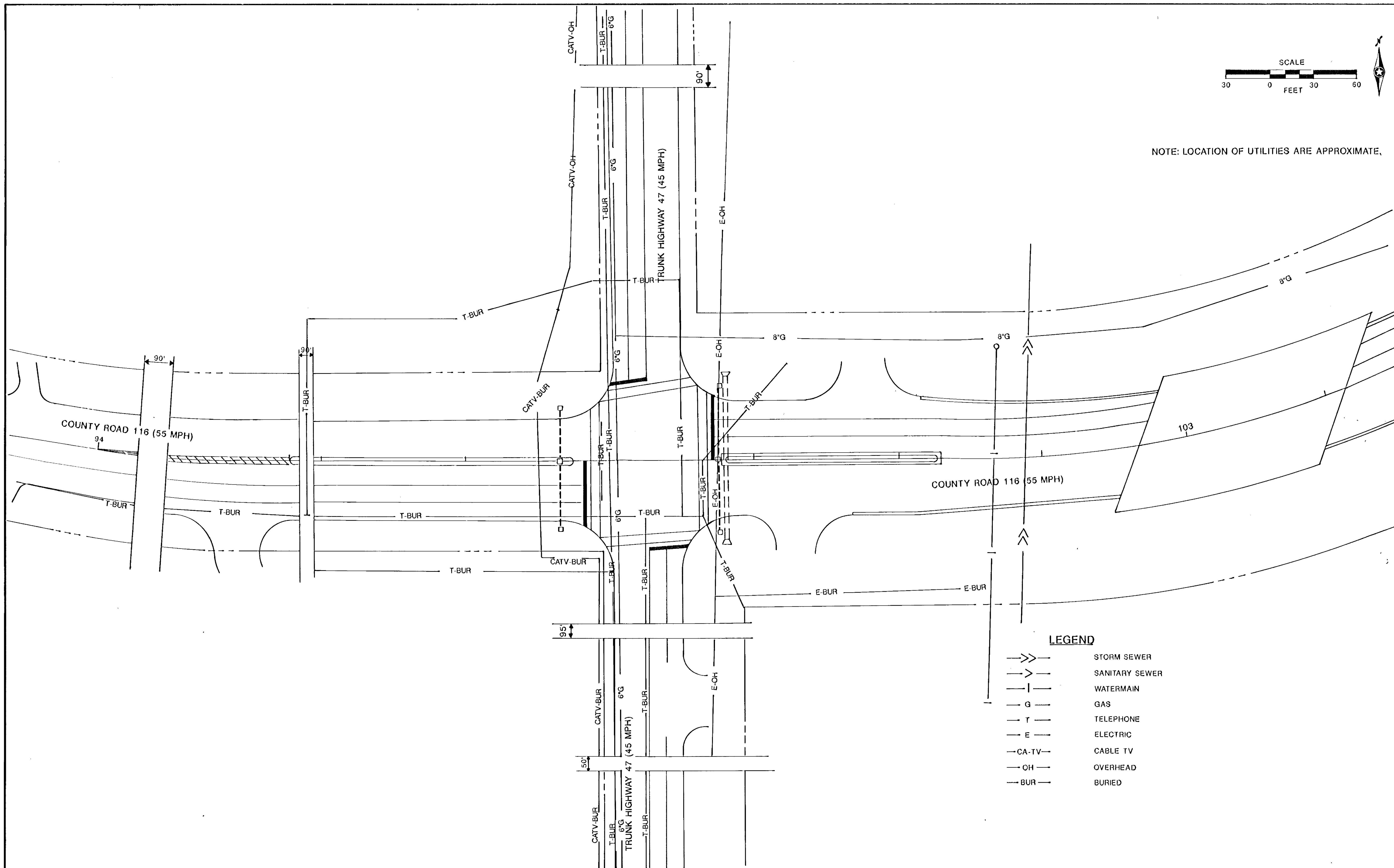
FILE NO. 91016	8
DATE 8/30/90	9



BASE OVERLAY DRG NO.



NOTE: LOCATION OF UTILITIES ARE APPROXIMATE.



**LEGEND**

	STORM SEWER
	SANITARY SEWER
	WATERMAIN
	GAS
	TELEPHONE
	ELECTRIC
	CABLE TV
	OVERHEAD
	BURIED

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

*Alan L. Williams*  
Date: 8/30/90 Reg. No. 9089



ANOKA COUNTY, MINNESOTA  
C.P. 90-19-116

TRAFFIC SIGNAL SYSTEM "B"  
UTILITIES  
TRUNK HIGHWAY 47 AT COUNTY ROAD 116

FILE NO. 91017	9
DATE 8/30/90	9