

# CONSTRUCTION OF A REVISED TRAFFIC CONTROL SIGNAL SYSTEM IN THE CITY OF FRIDLEY ANOKA COUNTY, MINNESOTA

## GOVERNING SPECIFICATIONS

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

## INDEX

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1	TITLE SHEET
2	UTILITY LOCATIONS
3	INTERSECTION LAYOUT
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## EXCAVATION NOTICE SYSTEM

A CALL TO GOPHER STATE ONE (454-0002) IS  
REQUIRED A MINIMUM OF 48 HOURS PRIOR TO  
PERFORMING ANY EXCAVATION.

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.



350 Westwood Lake Office  
8441 Wayzata Boulevard  
Minneapolis, MN 55426

612-541-4800  
FAX 541-1700

INFRASTRUCTURE - ENGINEERS - PLANNERS

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.

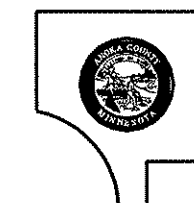
DATE 03/14/97 REG. NO. 18327 ENGR. Ronald B. Bray

DESIGN SQUAD RONALD B. BRAY

APPROVED \_\_\_\_\_ 19\_\_\_\_\_  
CITY OF FRIDLEY ENGINEER

APPROVED J. J. J. 10/13 1997  
ANOKA COUNTY ENGINEER

Prepared for:



Anoka County  
Highway Department  
1440 Bunker Lakes Blvd  
Andover, Minnesota 55304

## PLAN SYMBOLS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT-OF-WAY LINE
- SLOPE EASEMENT
- PRESENT RIGHT-OF-WAY
- CONTROL OF ACCESS LINE
- PROPERTY LINES (EXCEPT LAND LINES)
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- TRUNK HIGHWAY CENTER LINE
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT-OF-WAY
- 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
- HEDGE
- 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 ROD OR PIPE
- MONUMENT (STONE, CONCRETE, OR METAL)
- WOODEN HUB
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY

## UTILITY SYMBOLS

- POWER POLE LINE
- TELEPHONE OR TELEGRAPH POLE LINE
- JOINT TELEPHONE AND POWER ON POWER POLE
- ON TELEPHONE POLES
- ANCHOR
- 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

## SCALES



**PROJECT LOCATION**  
**CSAH 1 (East River Road) &**  
**CSAH 2 (42nd Street)**  
**C.P. 96-21-01**

### DESIGN DESIGNATION - CSAH 1 (East River Road)

ADT (CURRENT YEAR)	96	=	14,000	DESIGN SPEED	40	mph
ADT (FUTURE YEAR)	2016	=	23,000	BASED ON	N/A	SIGHT DISTANCE
DHV (DESIGN HR. VOL.)		=	N/A	HT OF EYE	N/A	ft
D (DIRECTIONAL DISTR.)		=	50/50 %	HT OF OBJECT	N/A	ft
T (HEAVY COMMERCIAL)		=	N/A %	DESIGN SPEED NOT ACHIEVED AT:		
FUNCTIONAL CLASSIFICATION		=	ARTERIAL	STA. _____	TO STA. _____	mph
NO. OF TRAFFIC LANES		=	2	STA. _____	TO STA. _____	mph
NO. OF PARKING LANES		=	2			

### DESIGN DESIGNATION - CSAH 2 (143rd Avenue)

ADT (CURRENT YEAR)	96	=	5700	DESIGN SPEED	35	mph
ADT (FUTURE YEAR)	2016	=	9690	BASED ON	N/A	SIGHT DISTANCE
DHV (DESIGN HR. VOL.)		=	N/A	HT OF EYE	N/A	ft
D (DIRECTIONAL DISTR.)		=	50/50 %	HT OF OBJECT	N/A	ft
T (HEAVY COMMERCIAL)		=	N/A %	DESIGN SPEED NOT ACHIEVED AT:		
FUNCTIONAL CLASSIFICATION		=	ARTERIAL	STA. _____	TO STA. _____	mph
NO. OF TRAFFIC LANES		=	2	STA. _____	TO STA. _____	mph
NO. OF PARKING LANES		=	2			

### ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL
0565.511	REVISED TRAFFIC CONTROL SIGNAL SYSTEM	SIGNAL SYSTEM	1

ORIGINAL

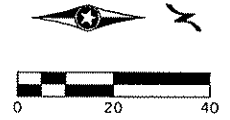
1/2-SIZE

COUNTY PROJECT  
NO. 96-21-01

TITLE SHEET

SHEET NO. 1 OF 5 SHEETS

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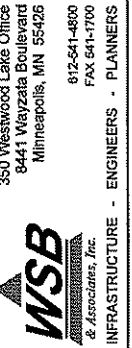


Marshall Street

CSAH 1 (East River Road) 55 MPH

CSAH 1 (East River Road)

CSAH 2 (42 Street)



CSAH 1 (East River Road)  
CSAH 2 (42nd Street)  
Fridley, Anoka County, Minnesota

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
*Ronald S. Bivart, P.E.*  
RONALD S. BIVART, P.E.  
DATE: 03/14/03 REG. NO.: 18327

REVISION NO.	DATE	EXPLANATION

SCALE:	AS NOTED	DESIGN BY:
PLAN BY:	CHK:	CTR:
DRAWN BY:	RBB:	PROJECT NO. 1044.03
RECORD COPY BY:		DATE:

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2'-6" x 20'	1	-
D2-1	6' x 6'	1	420'
D2-2	6' x 6'	1	420'
D5-1	2'-6" x 20'	1	150'
D6-1	6' x 6'	1	420'
D6-2	6' x 6'	1	420'
D6-3	6' x 20'	2	-
D6-4	6' x 20'	2	-
*D7-1	6' x 6'	3	-
*D7-2	6' x 6'	3	-
F&I *D7-3	2'-6" x 6'	1	5' & 20'
F&I *D7-4	2'-6" x 6'	1	5' & 20'
*D8-1	6' x 6'	3	30'
*D8-2	6' x 20'	1	-

**NOTES:**

- \* 1) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
- \* 2) ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.
- \* 3) SIGNAL FACES SHALL BE SALVAGED TO ANOKA COUNTY.
- \* 4) NEW SIGNAL FACES (7-2) AND (8-2) SHALL BE 12" 4 SECTION R.Y.G.GLTA  
NEW SIGNAL FACES (7-3) (7-4) AND (8-1) SHALL BE 12" 3 SECTION R.Y.LTA, GLTA.
- \* 5) CONTRACTOR SHALL PAINT ALL COMPONENTS OF THE SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.
- \* 6) CONTRACTOR SHALL FURNISH AND INSTALL LOOPS D7-3 AND D7-4. ALL OTHER LOOPS SHALL REMAIN IN PLACE.

- 1) TYPE A-30-D-40-12 ONEWAY SIGNAL (OVERHEAD)  
2 ONEWAY SIGNALS TYPE 10B (POLE MOUNTED AT 0° AND 270°)  
2 SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSH BUTTONS  
LUMINARIE 200W HPS (350°)  
EXTEND INTO HH 2  
2" RSC  
1-12/C#12  
7-3/C#12  
EXTEND INTO HH 1  
1 1/4" RSC  
4-1/C#6

- \* F&I 1 1/4" RSC  
\* F&I 3-1/C#6 TO S.O.P.
- \* F&I 1 1/4" RSC  
\* F&I 3-1/C#6
- \* R&S 1 1/4" RSC  
\* R&S 2-1/C#6
- \* F&I 1 1/4" RSC  
\* F&I 2-1/C#6 (LUM)

- \* R&S 1 1/4" RSC  
\* R&S 3-1/C#6 TO S.O.P.
- 1 1/4" RSC  
1-2/C#14
- 3 1/2" RSC  
8-2/CS#14  
4-12/C#12  
5-3/C#12  
2-1/C#6  
\* F&I 2-2/C#14
- 3 1/2" RSC  
6-2/CS#14  
3-12/C#12  
5-3/C#12  
2-1/C#6  
\* F&I 2-2/C#14

- 2) 8 FT SIGNAL PEESTAL (TYPE 4B)  
2 SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSH BUTTONS  
EXTEND INTO HH 4  
2" RSC  
4-3/C#12

- 3) MST A-25  
TWOWAY SIGNAL (OVERHEAD)  
ONEWAY SIGNAL TYPE 10B (POLE MOUNTED AT 270°)  
ONEWAY SIGNAL TYPE 10A (POLE MOUNTED AT 0°)  
1 SET PEDESTRIAN INDICATIONS  
1 PEDESTRIAN PUSH BUTTON  
R10-10 SIGN  
EXTEND INTO HH 8  
2" RSC  
2-12/C#12  
1-3/C#12

- 4) TYPE A-40-D-40-12 ONEWAY SIGNAL (OVERHEAD)  
2 ONEWAY SIGNALS TYPE 10B (POLE MOUNTED AT 0° AND 270°)  
2 SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSH BUTTONS  
LUMINARIE 200W HPS (350°)  
EXTEND INTO HH 12  
2 1/2" RSC  
2-12/C#12  
2-3/C#12  
2-1/C#6

- 6) ONEWAY SIGNAL TYPE 1A  
1 PEDESTRIAN PUSH BUTTON  
R10-10 SIGN  
EXTEND INTO HH 17  
2" RSC  
1-12/C#12  
2-3/C#12
- 5) TWOWAY SIGNAL TYPE 2C  
2 PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSH BUTTON  
EXTEND INTO HH 13  
2" RSC  
2-12/C#12  
6-3/C#12

- A) \* R&S EXISTING CONTROLLER & CABINET  
\* INSTALL CONTROLLER AND CABINET  
CABINET FOUNDATION  
EXTEND INTO HH 1  
3 1/2" RSC  
8-2/CS#14  
4-12/C#12  
5-3/C#12  
\* F&I 2-2/C#14  
EXTEND INTO HH 2  
6-2/CS#14  
3-12/C#12  
10-3/C#12  
EXTEND TO SERVICE CABINET  
1 1/4" RSC  
2-1/C#6
- B) \* R&S EXISTING SERVICE CABINET  
\* F&I SERVICE CABINET FOUNDATION  
\* F&I SERVICE CABINET  
SERVICE CABINET TO SOP  
\* F&I 1 1/4" RSC  
\* F&I 3-1/C#6  
SERVICE CABINET TO CONTROLLER CABINET  
\* F&I 1 1/4" RSC  
\* F&I 3-1/C#6

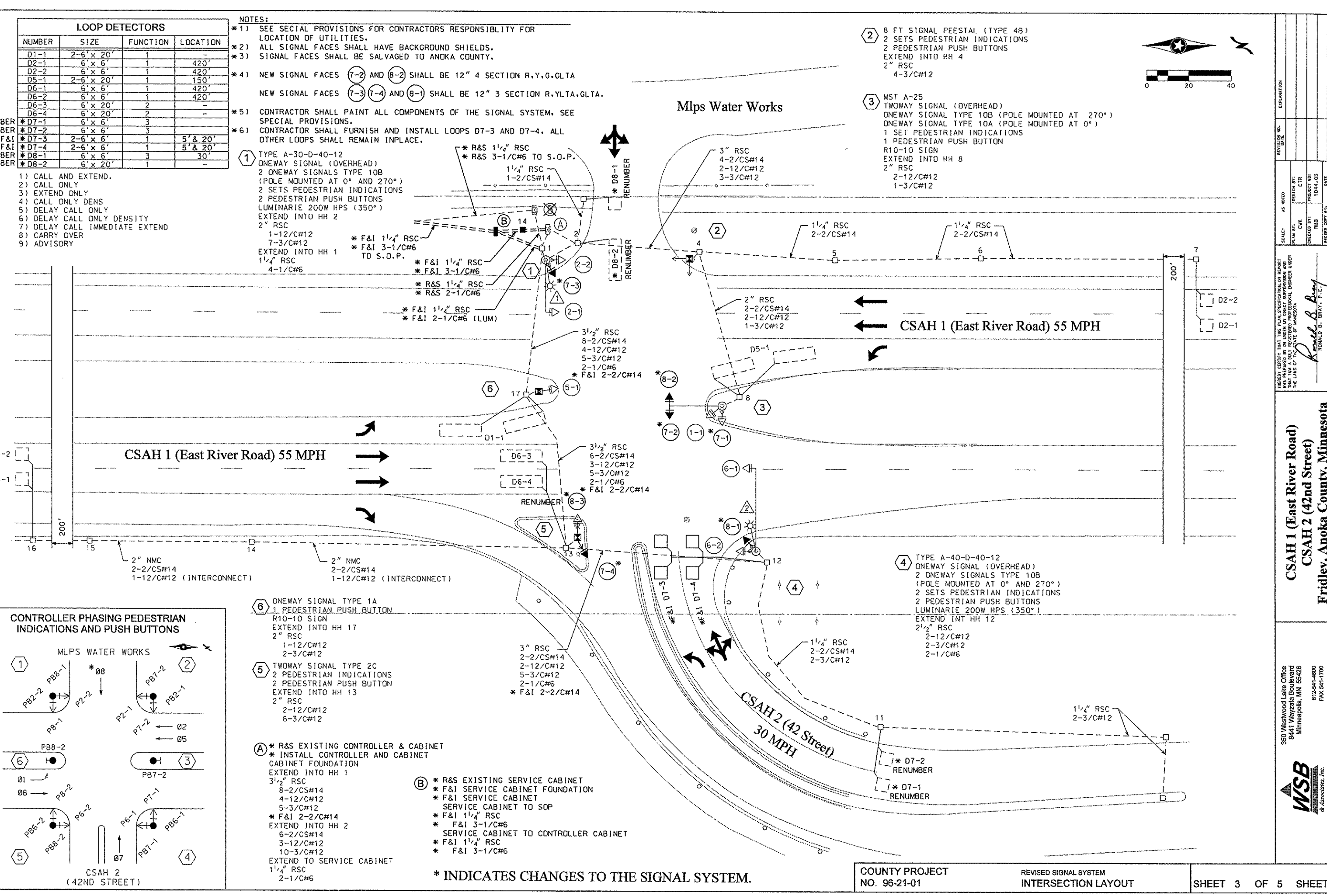
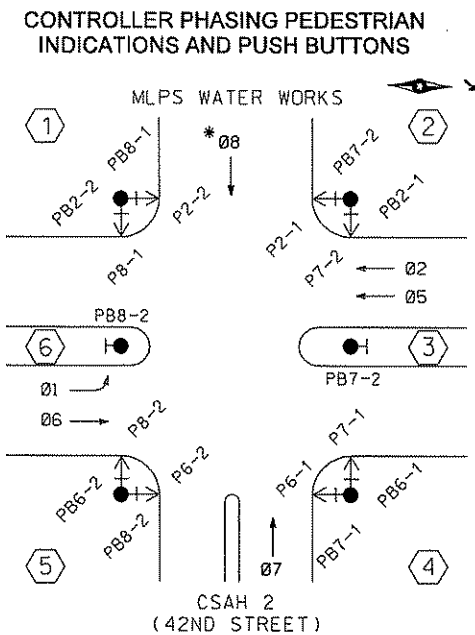
\* INDICATES CHANGES TO THE SIGNAL SYSTEM.

COUNTY PROJECT  
NO. 96-21-01

REVISED SIGNAL SYSTEM  
INTERSECTION LAYOUT

SHEET 3 OF 5 SHEETS

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REVISION NO.	DATE	EXPLANATION

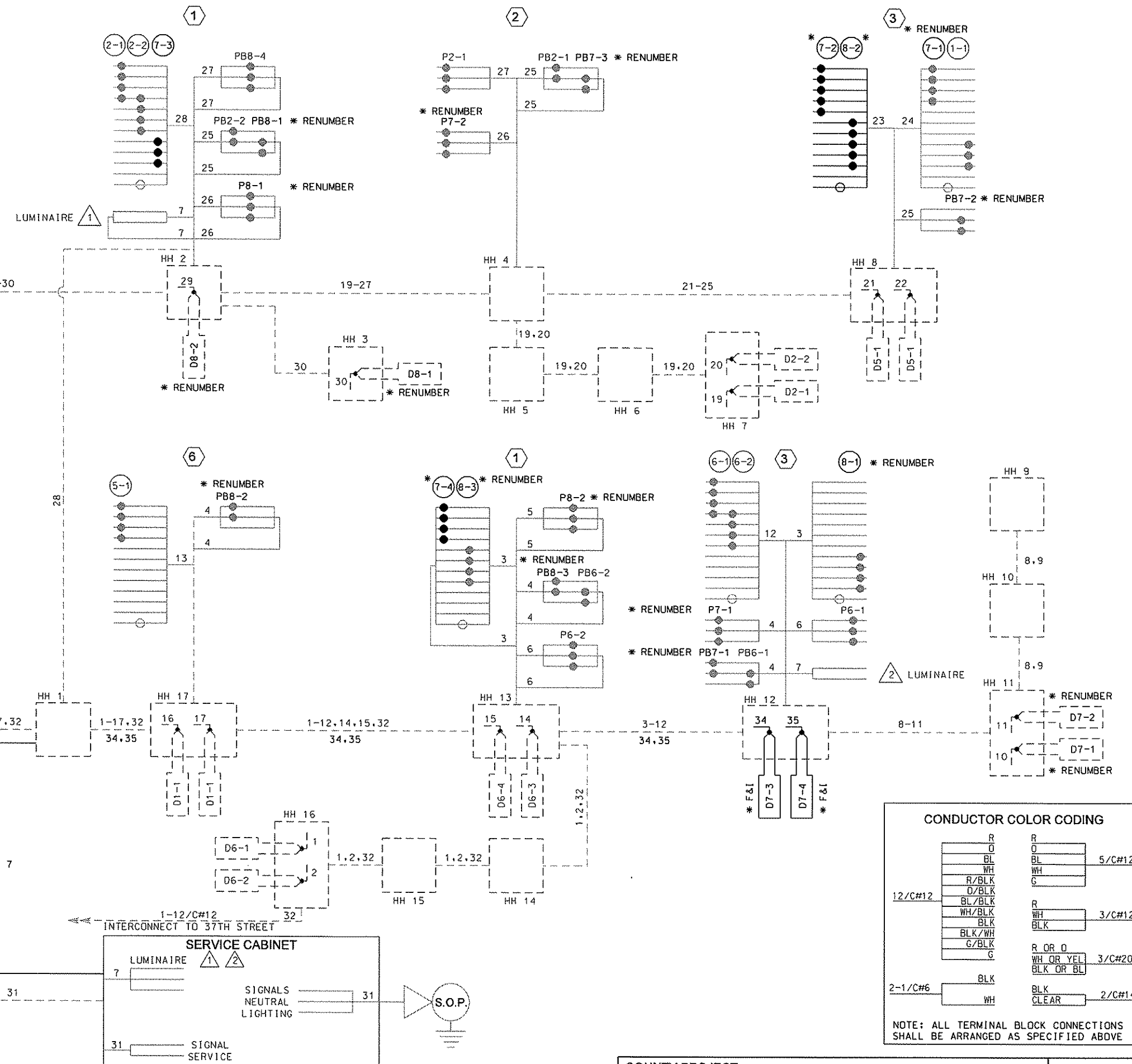
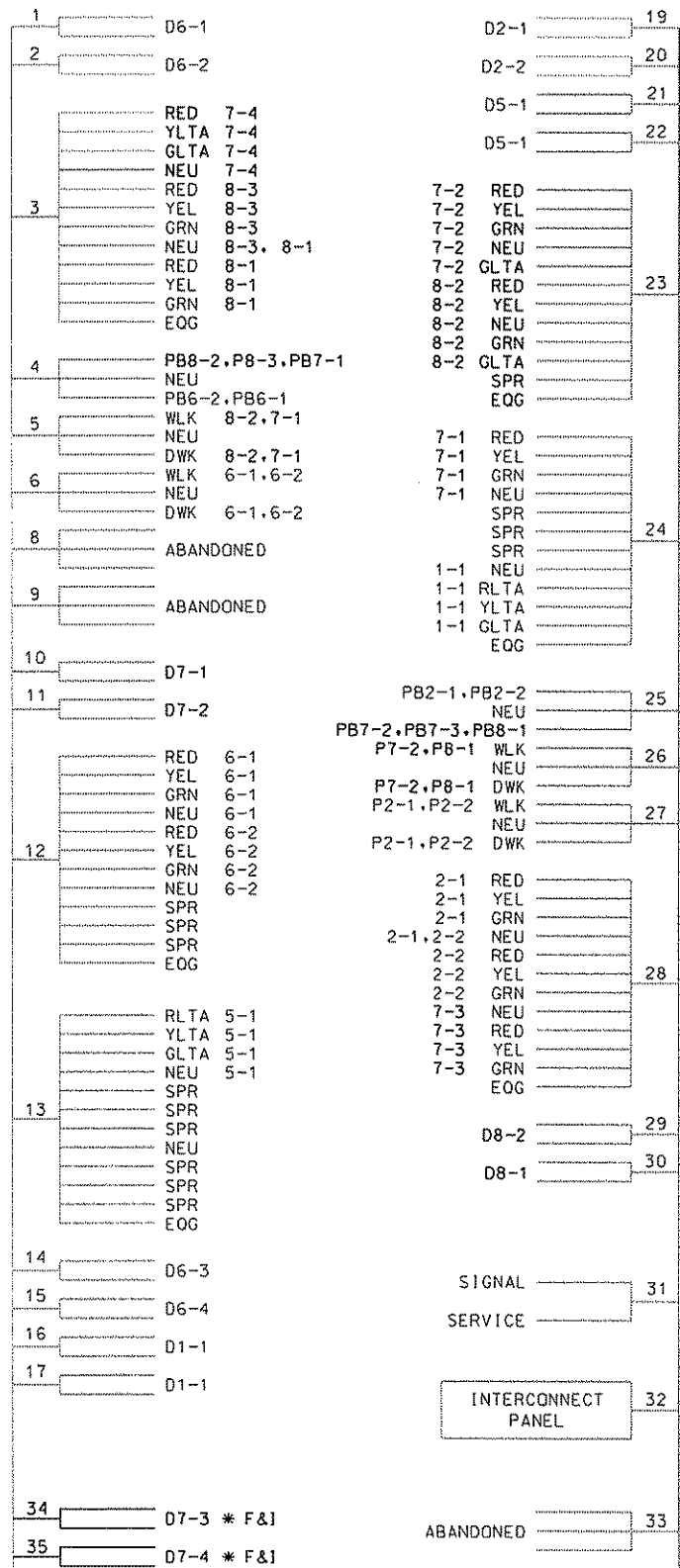
**CSAH 1 (East River Road)**  
**CSAH 2 (42nd Street)**  
**Fridley, Anoka County, Minnesota**

350 Westwood Lake Office  
8441 Wayzata Boulevard  
Minneapolis, MN 55426  
612-541-4600  
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**WSB & Associates, Inc.**  
INFRASTRUCTURE - ENGINEERS - PLANNERS

DATE: 03/14/2017 REC. NO: 18327

CONTROLLER CABINET



CONDUCTOR COLOR CODING

12/C#12	R	R	5/C#12
	O	BL	
	BL	WH	
	WH	WH	
	R/BLK	G	
	D/BLK	R	3/C#12
	BL/BLK	WH	
	WH/BLK	BLK	
	BLK	R OR O	3/C#20
	BLK/WH	WH OR YEL	
	G/BLK	BLK OR BL	
	G	R OR O	3/C#20
	BLK	WH OR YEL	
	WH	BLK OR BL	
2-1/C#6	BLK	BLK CLEAR	2/C#14
	WH		

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

REVISION NO. DATE

SCALE: AS NOTED

DESIGN BY: CTR

CHK: RBB

PROJECT NO: 1044.03

DRAWN BY: RBB

RECORD COPY BY:

DATE: 03/19/97

REG. NO: 18327

EVERY CERTIFY THAT THE PLAN, SPECIFICATION OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THE LAWS OF THE STATE OF MINNESOTA

*Ronald B. Bay*

RONALD B. BAY, P.E.

CSAH 1 (East River Road)  
CSAH 2 (42nd Street)  
Fridley, Anoka County, Minnesota

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Minneapolis, MN 55426  
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WSB & Associates, Inc.  
INFRASTRUCTURE - ENGINEERS - PLANNERS

COUNTY PROJECT NO. 96-21-01

WIRING DIAGRAM

SHEET 4 OF 5 SHEETS

**ABBREVIATIONS**

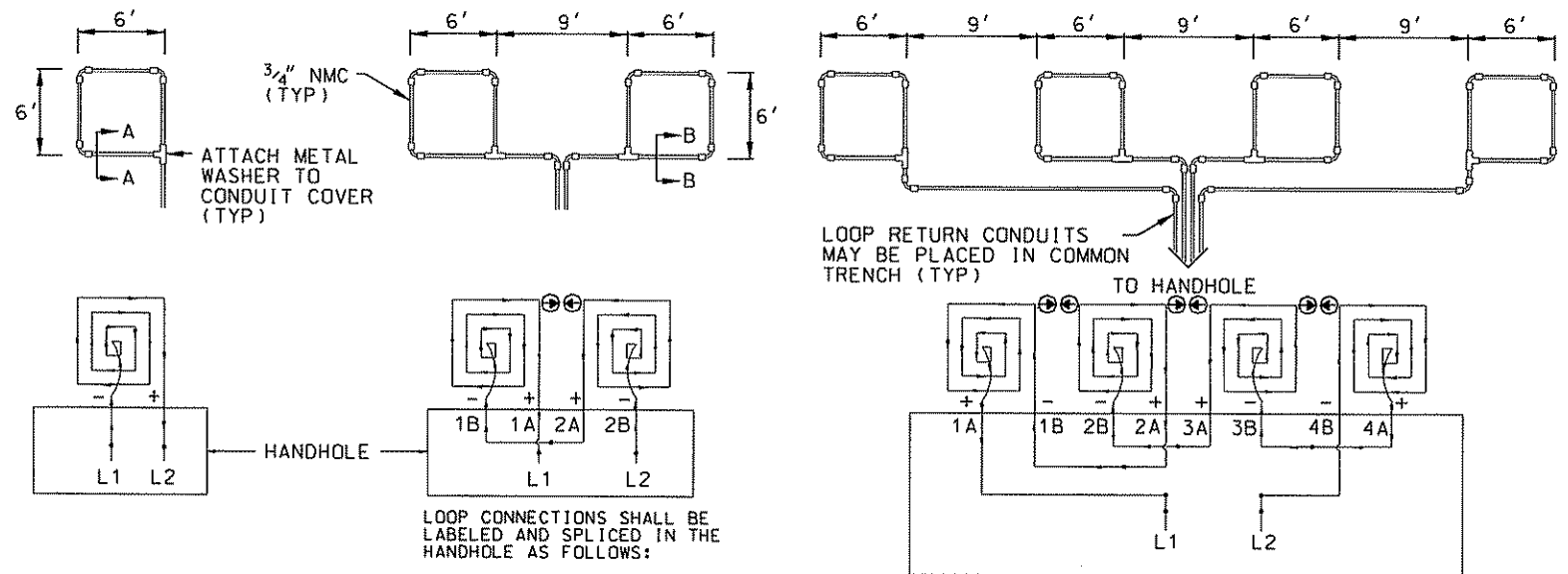
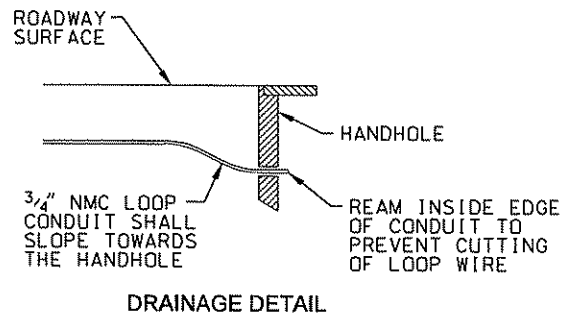
3-1(EG) SIGNAL HEAD PHASE "3" - NO. "1"	P1-(EG) PEDESTRIAN INDICATION PHASE "2"-NO. "1"
BR. GR. BARE GROUND	PB PUSH BUTTON
CH. SW. CHECK SWITCH	PB-2(EG) PUSH BUTTON PHASE "2"-NO. "1"
CLR CLEAR	PEC PHOTOELECTRIC CELL
D2-1(EG) DETECTOR PHASE "2" - NO. "1"	PED PEDESTRIAN
DWK DON'T WALK	R RED
EOG EQUIPMENT GROUND	R&S REMOVE AND SALVAGE
EVP EMERGENCY VEHICLE PRE-EMPTION	RLTA RED LEFT TURN ARROW
F&I FURNISH AND INSTALL	RRTA RED RIGHT TURN ARROW
FL FLASH/FLASHING	RSC RIGID STEEL CONDUIT
G GREEN	SOP SOURCE OF POWER
GLTA GREEN LEFT TURN ARROW	SPR SPARE
GRN GREEN	ST. LHT. STREET LIGHT
GR. R. GROUND ROD	STA STATION
GRTA GREEN RIGHT TURN ARROW	SW SWITCH
GTHA GREEN THRU ARROW	SWD SWITCHED
HH HANDHOLE	TDW TELEPHONE DROP WIRE
HPS HIGH PRESSURE SODIUM	WLK WALK
JB JUNCTION BOX	YEL YELLOW
LUM LUMINAIRE	YLTA YELLOW LEFT TURN ARROW
NEU NEUTRAL	YRTA YELLOW RIGHT TURN ARROW
NMC NONMETALLIC CONDUIT	YTHA YELLOW THRU ARROW

**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQUIP. NO's	(A)
SIGNAL BASE NO.	(1)
SIGNAL FACE NO.	(2)
LUMINAIRE NO.	(3)
CONTROLLER AND CABINET	(4)
CONTROLLER AND CABINET - IN PLACE	(5)
HANDHOLE	(6)
HANDHOLE - IN PLACE	(7)
RIGID STEEL CONDUIT (RSC)	(8)
RIGID STEEL CONDUIT - IN PLACE	(9)
SIGNAL FACE WITH BACKGROUND SHIELD	(10)
SIGNAL FACE W/O BACKGROUND SHIELD	(11)
SIGNAL FACE - IN PLACE	(12)
PEDESTRIAN INDICATORS	(13)
PEDESTRIAN INDICATORS - IN PLACE	(14)
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	(15)
PEDESTRIAN PUSH BUTTON STATION	(16)
TRAFFIC SIGNAL PEDESTAL	(17)
TRAFFIC SIGNAL PEDESTAL - IN PLACE	(18)
TRAFFIC SIGNAL POLE AND MAST ARM	(19)
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	(20)
STREET LIGHT POLE AND LUMINAIRE	(21)
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	(22)
MAST ARM AND LUMINAIRE	(23)
MAST ARM AND LUMINAIRE - IN PLACE	(24)
WOOD POLE	(25)
WOOD POLE - IN PLACE	(26)
SOURCE OF POWER	(27)
RAILROAD SIGNAL - IN PLACE	(28)
RIGHT OF WAY LINE	(29)
CENTERLINE	(30)
EDGE OF ROADWAY	(31)
SHOULDERLINE	(32)
CURB LINE	(33)
STOP BAR	(34)

**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



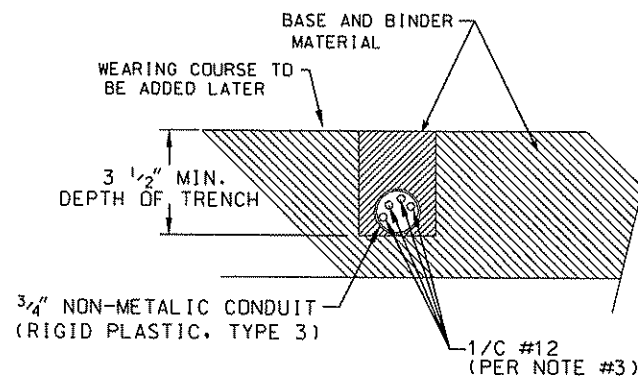
**LOOP DETECTOR DETAIL 'A'**  
(LOOP PHASING FOR SINGLE CONNECTION)

**LOOP DETECTOR DETAIL 'B'**  
(LOOP PHASING FOR SERIES CONNECTION)

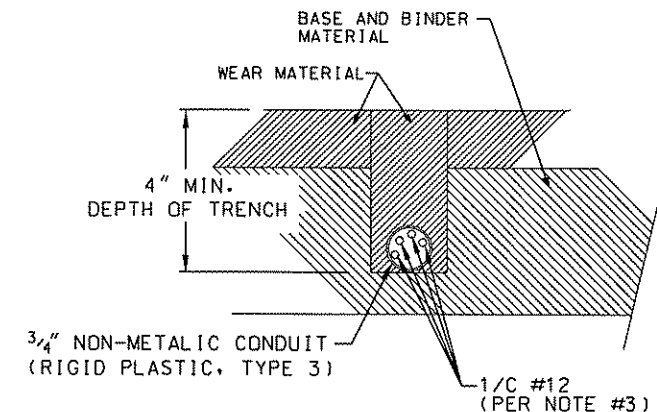
**LOOP DETECTOR DETAIL 'C'**  
(LOOP PHASING FOR SERIES CONNECTION)

**LOOP DETECTOR WIRING**

- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
- 2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
- 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) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
- 6) LOOPS 6'x 6' THRU 6'x 14' SHALL HAVE (4) TURNS.
- 7) LOOPS 6'x 15' AND LARGER SHALL HAVE (2) TURNS.



**SECTION A-A**  
DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



**SECTION B-B**  
DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY

WEEDY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY OR UNDER THE DIRECT SUPERVISION AND IN THE FULL KNOWLEDGE AND UNDER THE LAWS OF THE STATE OF MINNESOTA.  
Ronald B. Berry, P.E.  
DATE: 03/14/97 REG. NO: 19327

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