

# ANOKA COUNTY, MINNESOTA

## CITIES OF ANDOVER, EAST BETHEL & ST. FRANCIS

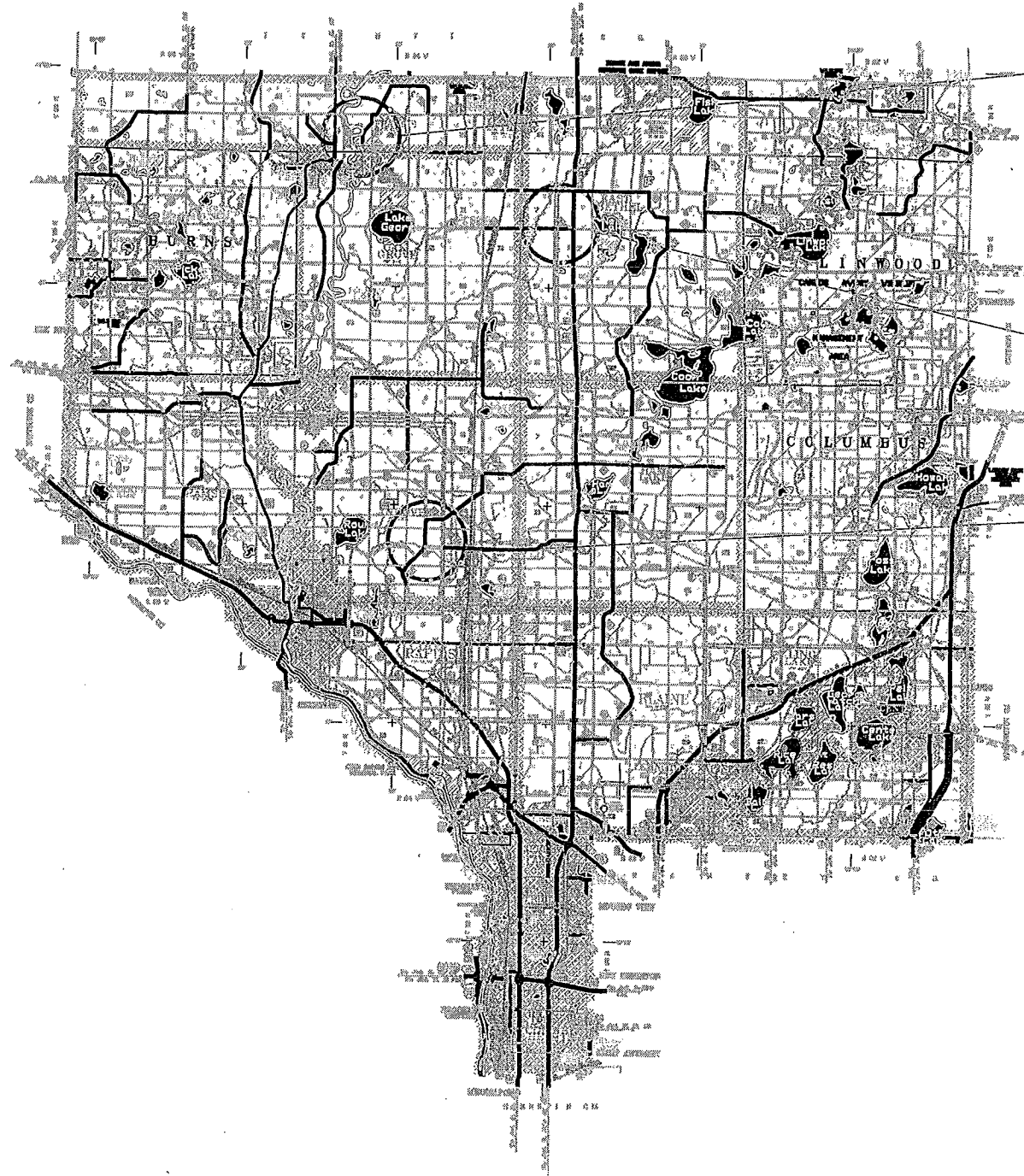
### CONSTRUCTION PLAN FOR: THREE (3) SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS STATE PROJECT NO. 02-070-008

**PLAN 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 \_\_\_\_\_
- WOODEN 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 PIPE OR ROD \_\_\_\_\_
- MONUMENT (STONE, CONCRETE, OR METAL) \_\_\_\_\_
- WOODEN HUB \_\_\_\_\_
- GRAVEL PIT \_\_\_\_\_
- SAND PIT \_\_\_\_\_
- BORROW PIT \_\_\_\_\_
- ROCK QUARRY \_\_\_\_\_

**UTILITY SYMBOLS**

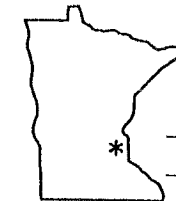
- POWER POLE LINE \_\_\_\_\_
- TELEPHONE OR TELEGRAPH POLE LINE \_\_\_\_\_
- JOINT TELEPHONE AND POWER ON POWER POLES ON TELEPHONE POLES \_\_\_\_\_
- ANCHOR \_\_\_\_\_
- STEEL TOWER \_\_\_\_\_
- STREET LIGHT \_\_\_\_\_
- PEDESTAL (TELEPHONE CABLE TERMINAL) \_\_\_\_\_
- GAS MAIN \_\_\_\_\_
- WATER MAIN \_\_\_\_\_
- CONDUIT \_\_\_\_\_
- TELEPHONE CABLE IN CONDUIT \_\_\_\_\_
- ELECTRIC CABLE IN CONDUIT \_\_\_\_\_
- TELEPHONE MANHOLE \_\_\_\_\_
- ELECTRIC MANHOLE \_\_\_\_\_
- BURIED COMMUNICATION CABLE \_\_\_\_\_
- BURIED TELEPHONE CABLE \_\_\_\_\_
- BURIED ELECTRIC CABLE \_\_\_\_\_
- SEWER, (SANITARY) \_\_\_\_\_
- SEWER, (STORM) \_\_\_\_\_
- SEWER MANHOLE \_\_\_\_\_
- HANDHOLE \_\_\_\_\_
- CATCH BASIN \_\_\_\_\_



SCHOOL SPEED ZONE FLASHER/SIGN SYSTEM "B"  
ALONG COUNTY ROAD 72 (RUM RIVER BLVD)—NEAR  
ST. FRANCIS HIGH SCHOOL, IN ST. FRANCIS

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEM "C"  
ALONG COUNTY ROAD 86 (SIMS ROAD)—NEAR  
EAST BETHEL/CEDAR CREEK SCHOOLS, IN EAST BETHEL

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEM "A"  
ALONG CSAH 18 (CROSSTOWN BLVD)—NEAR  
ANDOVER HIGH SCHOOL, IN ANDOVER



**PROJECT LOCATION**  
ANOKA COUNTY  
METRO DISTRICT

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" - CURRENT EDITION.

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL "D". THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 3802, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

MINN. PROJECT NO. CSF 08 (007)

**GOVERNING SPECIFICATIONS**

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

**INDEX**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	DETAILS, STANDARD PLATES AND ESTIMATED QUANTITIES
3	TYPICAL DETAILS
4-5	SYSTEM "A" (CSAH 18)
6-7	SYSTEM "B" (COUNTY ROAD 72)
8	SYSTEM "C" (COUNTY ROAD 86)

THIS PLAN CONTAINS 8 SHEETS.

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

DATE 7/22/10 LIC.NO. 22457 ENGR JMZ

SIGNAL DESIGN ENGINEER: I HEREBY CERTIFY THAT THESE SIGNAL PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, THAT THIS PLAN CONFORMS TO THE MMUTCD (EXCEPT WHERE A VARIANCE HAS BEEN GRANTED), AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 7/22/10 LIC.NO. 22457 ENGR JMZ

APPROVED \_\_\_\_\_ DATE 7/20/10  
ANOKA COUNTY ENGINEER

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

ANOKA COUNTY, MINNESOTA  
CITIES OF ANDOVER, EAST BETHEL, AND  
ST. FRANCIS

**TITLE SHEET**



PHONE: (651) 490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

THREE (3) SCHOOL SPEED ZONE FLASHER/ SIGN SYSTEMS	FILE NO. ANOKC 112799
	1
STATE PROJECT NO. 02-070-008	8

**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQUIP. NO's	Ⓐ
SIGNAL BASE NO.	Ⓜ
SIGNAL FACE NO.	Ⓝ
LUMINAIRE NO.	Ⓛ
CONTROLLER AND CABINET	□
CONTROLLER AND CABINET - IN PLACE	■
HANDHOLE	Ⓜ
HANDHOLE - IN PLACE	■
RIGID STEEL CONDUIT (RSC)	—
RIGID STEEL CONDUIT (RSC) - 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 - INPLACE	Ⓜ
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 - INPLACE	Ⓜ
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	—
EMERGENCY VEHICLE PREEMPTION DETECTOR	→

**ABBREVIATIONS**

3-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"
BR. GR.	BARE GROUND
CH. SW.	CHECK SWITCH
CLR	CLEAR
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"
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
GR. R	GROUND ROD
GRTA	GREEN RIGHT TURN ARROW
GTHA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
JB	JUNCTION BOX
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P2-1(EG)	PED INDICATION PHASE "2" - NO. "1"
PB	PUSH BUTTON
PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
R	RED
R&S	REMOVE AND SALVAGE
RLTA	RED LEFT TURN ARROW
RRTA	RED RIGHT TURN ARROW
RSC	RIGID STEEL CONDUIT
SOP	SOURCE OF POWER
SPR	SPARE
ST. LHT	STREET LIGHT
STA	STATION
SW	SWITCH
SWD	SWITCHED
S&R	SALVAGE AND REINSTALL
TDW	TELEPHONE DROP WIRE
WLK	WALK
YEL	YELLOW
YLTA	YELLOW LEFT TURN ARROW
YRTA	YELLOW RIGHT TURN ARROW
YTHA	YELLOW THRU ARROW

**STATEMENT OF ESTIMATED QUANTITIES**

ITEM NO	ITEM	UNIT	TOTAL ESTIMATED QUANTITY	PARTICIPATION	
				STATE PROJECT 02-070-008	LOCAL FUNDING
2565.616	FLASHING BEACON SYSTEM "A"	SYSTEM	1	1	0
2565.616	FLASHING BEACON SYSTEM "B"	SYSTEM	1	1	0
2565.616	FLASHING BEACON SYSTEM "C"	SYSTEM	1	1	0

**SYSTEM IDENTIFICATION:**

"A" = ALONG CSAH 18 (ANDOVER HIGH SCHOOL), IN ANDOVER  
 "B" = ALONG CSAH 72 (ST. FRANCIS HIGH SCHOOL), IN ST. FRANCIS  
 "C" = ALONG CSAH 86 (EAST BETHEL/CEDAR CREEK SCHOOLS), IN EAST BETHEL

**TRAFFIC SIGNAL STANDARD PLATES**

THESE TRAFFIC SIGNAL STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
7035 M	CONCRETE WALK & CURB RETURNS AT ENTRANCES
7036 F	PEDESTRIAN CURB RAMP FOR THE HANDICAPPED
7100 H	CONCRETE CURB & GUTTER (DESIGN B & V)
* 8000 I	STANDARD BARRICADES
8110 E	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
* 8111 E	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
* 8112 F	PEDESTAL FOUNDATION
* 8114 A	PVC HANDHOLE/PULLBOX
* 8118 D	SERVICE EQUIPMENT AND POLE-TRAFFIC CONTROL SIGNALS
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
8120 N	PA85 POLE FOUNDATION
8121 F	TRANSFORMER BASE AND POLE BASE PLATE
* 8122 E	PEDESTAL AND PEDESTAL BASE
8123 F	POLE AND MAST ARM
8126 I	PA90 AND PA100 POLE FOUNDATION

\* - APPLIES TO THIS PROJECT

**CONDUCTOR COLOR CODING**

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

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

S:\MVA\ANOKA\CORPORATE\SCHOOL\_FLASHERS\2010\_FLASHERS\PLANS\2010PLANS.DWG

S.P. 02-070-008

DRAWN BY: JMG				
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*John M. Gray*  
 Name: John M. Gray, PE  
 Date: July 22, 2010 Lic. No. 22457

**SEH**  
 PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

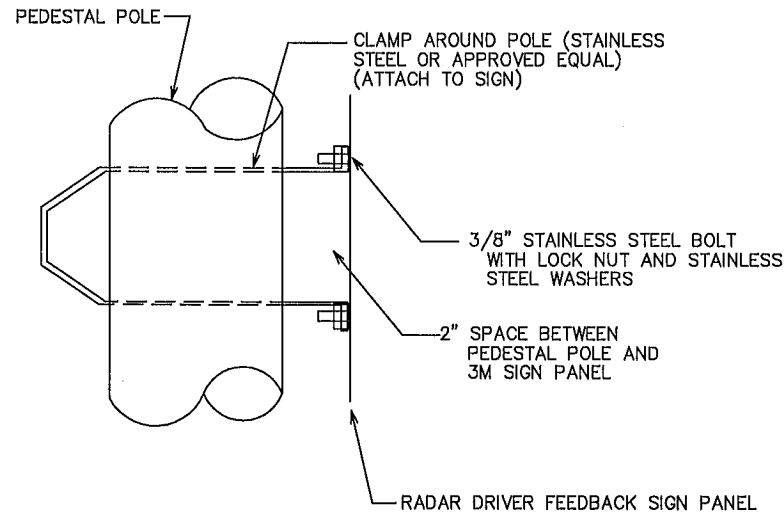
**ANOKA COUNTY, MN**  
**2010 SCHOOL FLASHERS**

**SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS**  
**DETAILS, STANDARD PLATES, AND ESTIMATED QUANTITIES**

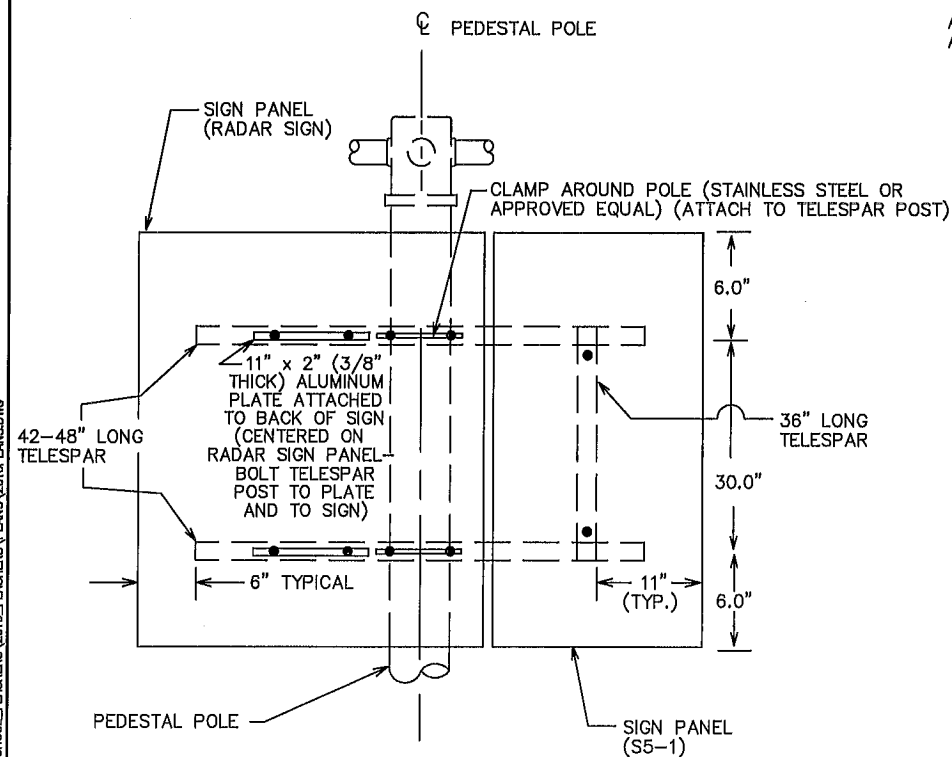
FILE NO. ANOKC 112799	2 8
DATE 07/22/2010	

# FLASHER SIGN MOUNTING ATTACHMENT DETAILS

## SIDE DETAIL

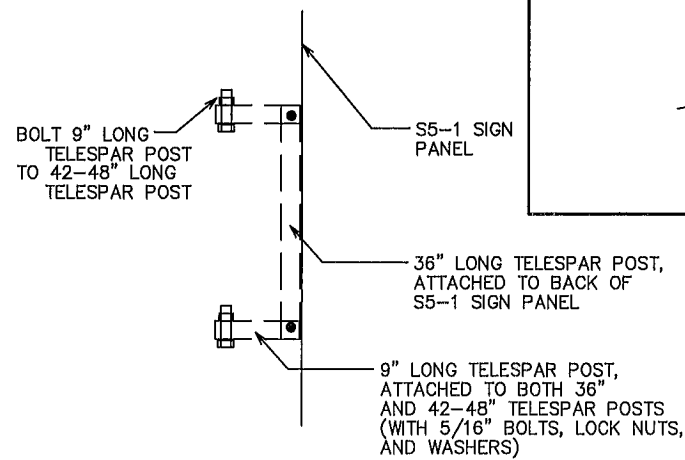


## FRONT DETAIL



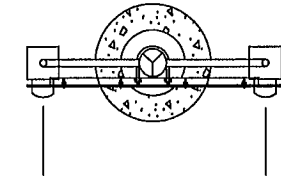
3/8" STAINLESS STEEL BOLTS WITH STAINLESS STEEL WASHERS & LOCK NUTS  
ALL TELES PAR POSTS ARE 2" POSTS.

## SIDE DETAIL

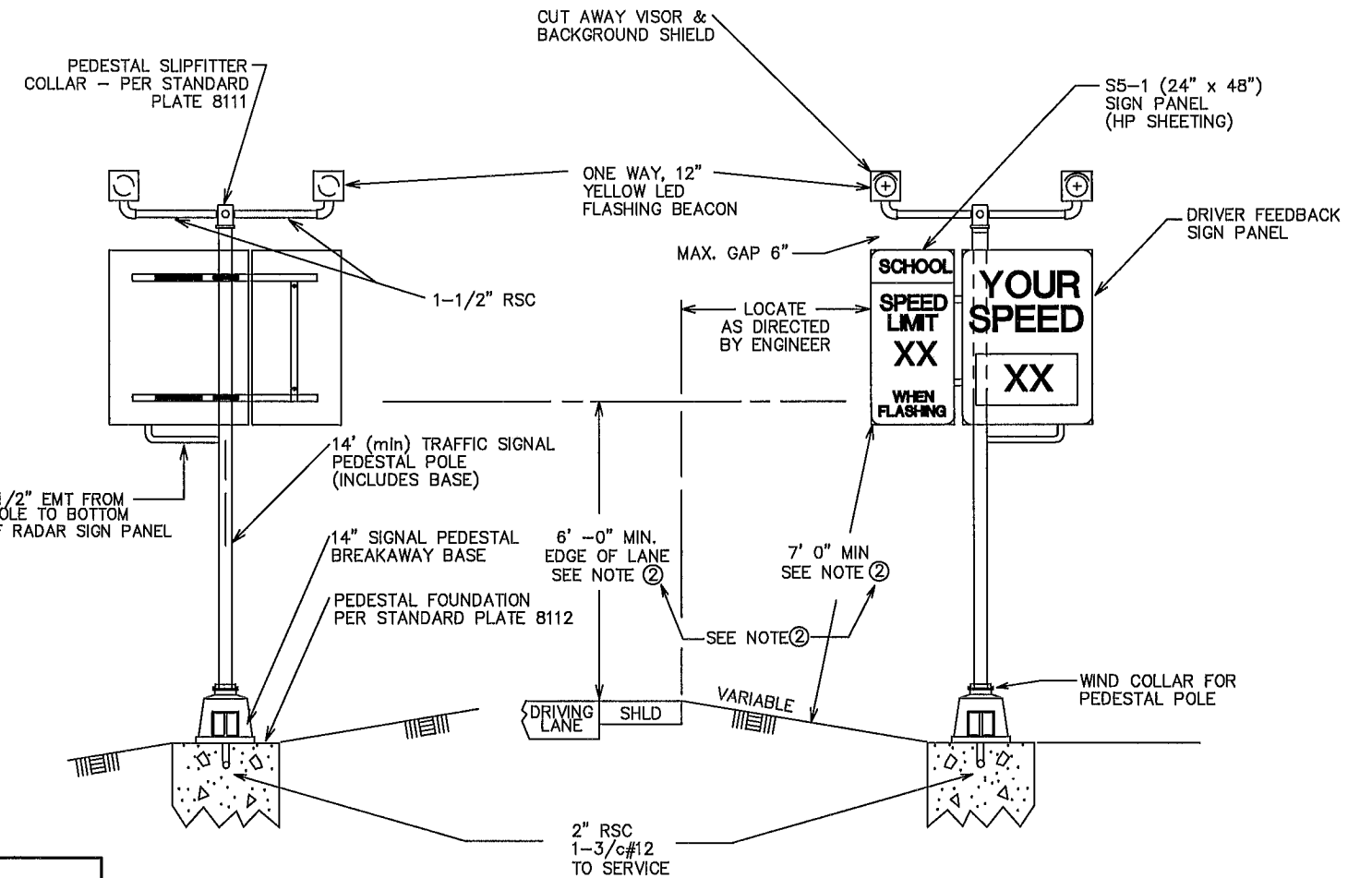


# HARDWIRE POWERED FLASHER POLE DETAILS

## TOP VIEW



## FRONT VIEW



② CONTRACTOR SHALL MEET BOTH MINIMUM REQUIRED MOUNTING HEIGHTS WITH THE SHORTEST PEDESTAL POLE POSSIBLE OR AS DIRECTED BY THE ENGINEER.

**NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.**

S.P. 02-070-008

DRAWN BY: JMG				
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Name: John M. Gray, PE  
 Lc. No. 22457  
 Date: July 22, 2010

SEH  
 PHONE: (651) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

ANOKA COUNTY, MN  
 2010 SCHOOL FLASHERS

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
 TYPICAL DETAILS

FILE NO.  
 ANOKC 112799  
 DATE  
 07/22/2010

3  
 8

SOUTH FLASHER SYSTEM

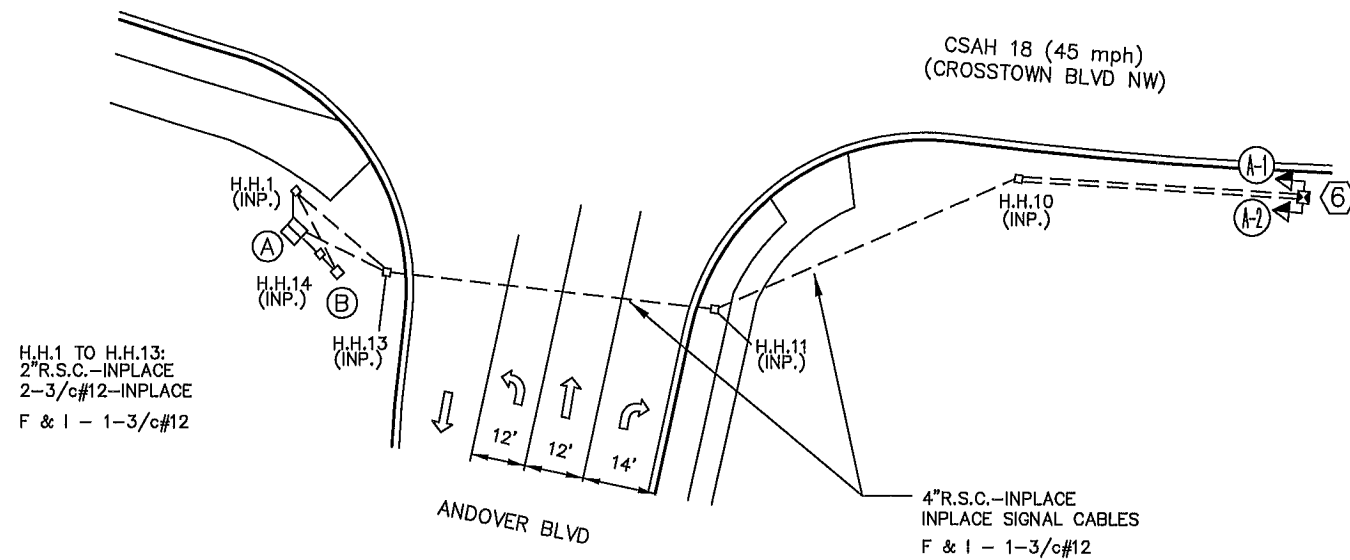


NORTH FLASHER SYSTEM

(B) INPLACE (MAINTAIN INPLACE) INPLACE SIGNAL SERVICE CABINET  
 CABINET FOUNDATION  
 SERVICE CABINET TO H.H.1:  
 2" R.S.C.  
 4-3/c#12 (LUM)  
 F & I - 1-3/c#12

ITEMS TO BE FURNISHED & INSTALLED BY COUNTY | CIRCUIT BREAKERS IN SERVICE CABINET (FOR FLASHERS/SIGN)

(A) INPLACE (MAINTAIN INPLACE) - TRAFFIC SIGNAL CONTROLLER CABINET



H.H.1 TO H.H.13:  
 2" R.S.C.-INPLACE  
 2-3/c#12-INPLACE  
 F & I - 1-3/c#12

CSAH 18 (45 mph)  
 (CROSTOWN BLVD NW)

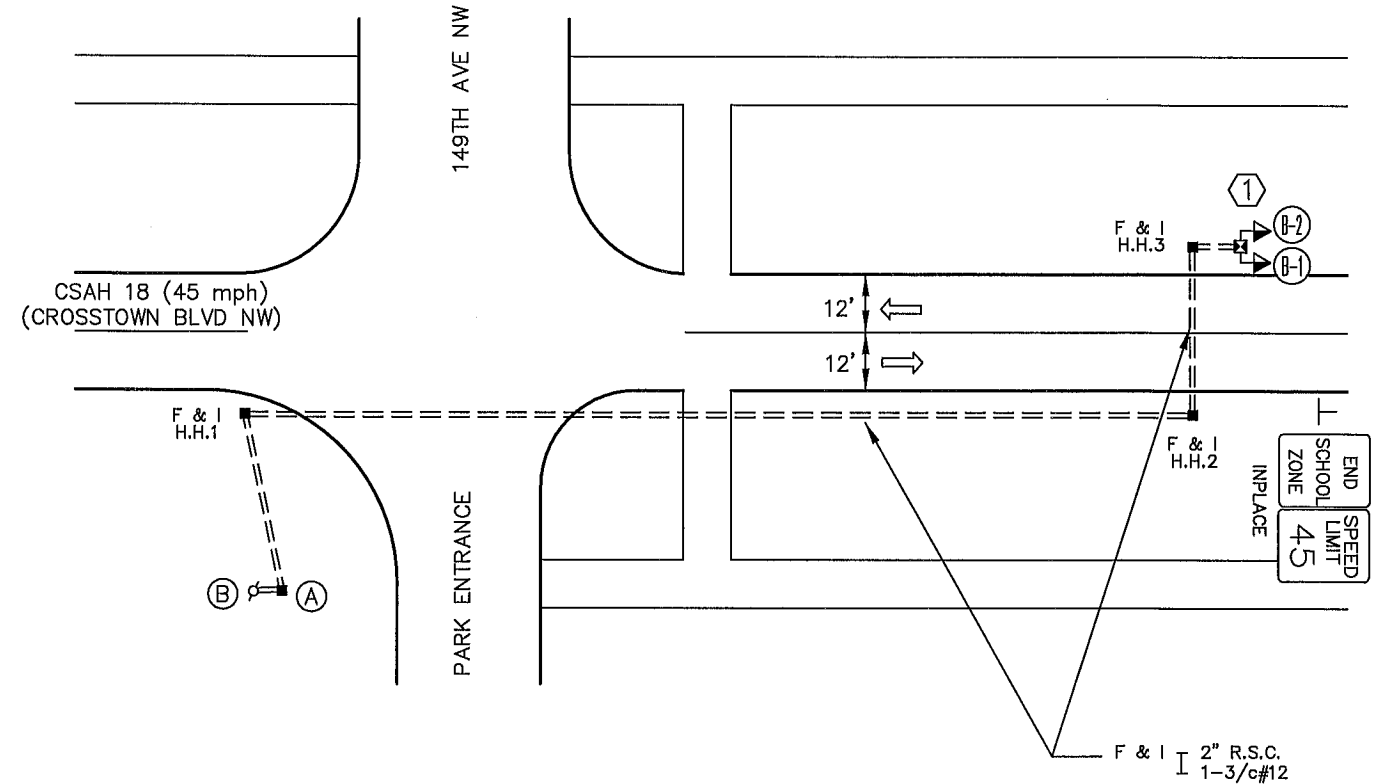
4" R.S.C.-INPLACE  
 INPLACE SIGNAL CABLES  
 F & I - 1-3/c#12

(6) ITEMS TO BE FURNISHED & INSTALLED BY COUNTY | 14' PEDESTAL POLE (INCLUDES BASE)  
 WND COLLAR FOR PEDESTAL POLE  
 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING NORTHBOUND TRAFFIC)  
 RADAR SPEED SIGN (YOUR SPEED XX)- (30"x41")-POLE MOUNTED  
 S5-1 (SCHOOL-SPEED LIMIT 30-WHEN FLASHING) SIGN PANEL (24"x48")-POLE MOUNTED  
 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE  
 ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1-3/c#12 IN POLE BASE)  
 F & I | PEDESTAL FOUNDATION  
 EXTEND INTO H.H.10:  
 2" R.S.C.  
 1-3/c#12

FLASHER SYSTEM NOTES:

- 1) SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION REGARDING FLASHER SYSTEM INSTALLATION.
- 2) FLASHER/SIGN SYSTEM SHALL BE TIME OF DAY ACTUATED.
- 3) LOCATION OF FOUNDATION AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) INPLACE SIGN AND POST REMOVAL ADJACENT TO NEW PEDESTAL POLE MOUNTED FLASHER AND SIGN INSTALLATION SHALL BE COMPLETED BY COUNTY AT NO EXPENSE TO THE CONTRACTOR.
- 5) ALL YELLOW FLASHERS WILL BE LED.
- 6) SEE DETAILS FOR FURTHER INFORMATION REGARDING MOUNTING OF ALL FLASHER POLE MATERIALS AND ELECTRICAL EQUIPMENT.
- 7) HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MN/DOT STANDARD PLATE 8114.
- 8) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTACT WITH POWER COMPANY (CONNEXUS) FOR POWER CONNECTION.
- 9) SEE ATTACHED TRAFFIC SIGNAL PLAN (INTERSECTION LAYOUT) FOR FURTHER INFORMATION REGARDING EXISTING SIGNAL SYSTEM.

(1) ITEMS TO BE FURNISHED & INSTALLED BY COUNTY | 14' PEDESTAL POLE (INCLUDES BASE)  
 WND COLLAR FOR PEDESTAL POLE  
 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING SOUTHBOUND TRAFFIC)  
 RADAR SPEED SIGN (YOUR SPEED XX)- (30"x41")-POLE MOUNTED  
 S5-1 (SCHOOL-SPEED LIMIT 35-WHEN FLASHING) SIGN PANEL (24"x48")-POLE MOUNTED  
 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE  
 ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1-3/c#12 IN POLE BASE)  
 F & I | PEDESTAL FOUNDATION  
 EXTEND INTO H.H.3:  
 2" R.S.C.  
 1-3/c#12



(B) INPLACE GROUND MTD TRANSFORMER (S.O.P.)  
 F & I | EXTEND INTO SERVICE CABINET:  
 2" R.S.C.  
 3-1/c#6

(A) ITEMS TO BE FURNISHED & INSTALLED BY COUNTY - FLASHER/SIGN SYSTEM SERVICE CABINET  
 F & I | CONCRETE CABINET FOUNDATION  
 EXTEND INTO H.H.1:  
 2" R.S.C.  
 1-3/c#12

S:\A\A\COMMON\COMMON\SCHOOL\_FLASHERS\2010\_FLASHERS\PLANS\2010PLANS.DWG

DRAWN BY: JMG				
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

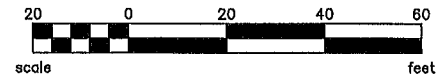
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
  
 Name: John M. Gray, PE  
 Lic. No. 22457  
 Date: July 22, 2010

PHONE: (851) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

ANOKA COUNTY, MN  
 2010 SCHOOL FLASHERS  
 CITY OF ANDOVER

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
 INTERSECTION LAYOUT-SYSTEM 'A'  
 CSAH 18 (CROSTOWN BLVD) AT  
 ANDOVER HIGH SCHOOL

S.P. 02-070-008  
 FILE NO. ANOKC 112799  
 DATE 07/22/2010  
 4  
 8



N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	10'	7
D2-1	6x6	270'	1
D3-1	6x6	40'	1
D3-2	6x6	10'	7
D4-1	6x6	120'	3,8
D4-2	2-6x6	5' & 20'	7
D4-3	2-6x6	5' & 20'	7
D5-1	6x6	40'	1
D5-2	6x6	10'	7
D6-1	6x6	250'	1
D7-1	6x6	40'	1
D7-2	6x6	10'	7
D8-1	6x6	120'	3,8
D8-2	2-6x6	5' & 20'	7
D8-3	2-6x6	5' & 20'	7

- 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

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

5 PEDESTAL FOUNDATION  
10' PEDESTAL POLE AND BASE  
ONE WAY EVP DETECTOR (#2,5)  
(MOUNT ON TOP OF POLE)  
EXTEND INTO H.H.20:  
2"N.M.C.  
1-3/c#20

2 PA90 POLE FOUNDATION  
TYPE PA90-A-35-D40-9 (DAVIT AT 350')  
LUMINAIRE-200 W HPS WITH PEC AND  
CHECK SWITCH  
2-ONE WAY SIGNALS-OVERHEAD (0' AND 11' FROM  
END OF MAST ARM)  
2-TYPE 10B-POLE MOUNTED 90° AND 180°  
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
TYPE "D" SIGN PANEL-OVERHEAD  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#6,1)  
EXTEND INTO H.H.5:  
3"R.S.C.  
2-12/c#12  
3-3/c#12  
1-3/c#20  
1-3/c#12 (LUM)

3 PA100 POLE FOUNDATION  
TYPE PA100-A-45-D40-9 (DAVIT AT 350')  
LUMINAIRE-250 W HPS WITH PEC AND  
CHECK SWITCH  
2-ONE WAY SIGNALS-OVERHEAD (0' & 11' FROM  
END OF MAST ARM)  
MID MAST ARM MOUNT AT 23' (CAPPED)  
2-TYPE 10B-POLE MOUNTED 90° AND 180°  
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
TYPE "D" SIGN PANEL-OVERHEAD  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8,3)  
EXTEND INTO H.H.8:  
3"R.S.C.  
2-12/c#12  
3-3/c#12  
1-3/c#20  
1-2/c#14  
1-3/c#12 (LUM)

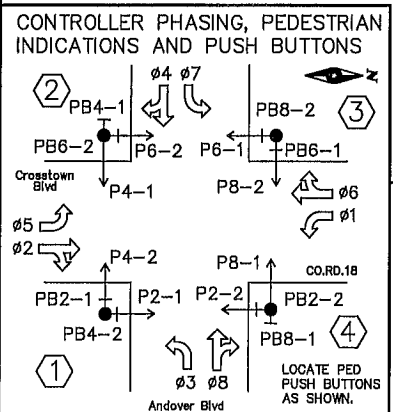
A CONTROLLER AND CABINET  
FOUNDATION  
EXTEND INTO H.H.14:  
METERED SIGNAL SERVICE  
2"R.S.C.  
3-1/c#6  
EXTEND INTO H.H.1:  
4"R.S.C.  
4-12/c#12  
6-3/c#12  
4-3/c#20  
8-2/c#14  
EXTEND INTO H.H.13:  
4"R.S.C.  
4-12/c#12  
6-3/c#12  
3-3/c#20  
8-2/c#14  
STUB OUT 2-3"R.S.C. FROM  
CABINET TO NORTH (THREAD  
AND CAP BOTH ENDS-  
FOR FUTURE USE)  
BETWEEN H.H.1 AND H.H.13:  
2"R.S.C.  
2-3/c#12 (LUM)

B SIGNAL SERVICE CABINET  
FOUNDATION  
EXTEND INTO H.H.14:  
METERED SIGNAL SERVICE  
2"R.S.C.  
3-1/c#6  
EXTEND INTO H.H.1:  
UNMETERED STREET LIGHT SERVICE  
2"R.S.C.  
4-3/c#12 (LUM)  
STUB OUT 2"R.S.C. TO SOUTH  
(FOR SERVICE CONNECTION  
BY CONNEXUS)

1 PA100 POLE FOUNDATION  
TYPE PA100-A-45-D40-9 (DAVIT AT 350')  
LUMINAIRE-250 W HPS WITH PEC AND  
CHECK SWITCH  
2-ONE WAY SIGNALS-OVERHEAD (0' & 11' FROM  
END OF MAST ARM)  
MID MAST ARM MOUNT AT 23' (CAPPED)  
2-TYPE 10B-POLE MOUNTED 90° AND 180°  
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
TYPE "D" SIGN PANEL-OVERHEAD  
ONE WAY EVP LIGHT ONLY-OVERHEAD (#4,7)  
ONE WAY EVP DETECTOR-POLE MOUNTED 180° (#4,7)  
ONE WAY EVP DETECTOR-POLE MOUNTED 180° (#8,3)  
EXTEND INTO H.H.1:  
3"R.S.C.  
2-12/c#12  
3-3/c#12  
2-3/c#20  
1-3/c#12 (LUM)

4 PA90 POLE FOUNDATION  
TYPE PA90-A-30-D40-9 (DAVIT AT 350')  
LUMINAIRE-200 W HPS WITH PEC AND  
CHECK SWITCH  
2-ONE WAY SIGNALS-OVERHEAD (0' AND 11' FROM  
END OF MAST ARM)  
2-TYPE 10B-POLE MOUNTED 90° AND 180°  
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)  
TYPE "D" SIGN PANEL-OVERHEAD  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#2,5)  
ONE WAY EVP DETECTOR-POLE MOUNTED 180° (#6,1)  
EXTEND INTO H.H.11:  
3"R.S.C.  
2-12/c#12  
3-3/c#12  
2-3/c#20  
1-3/c#12 (LUM)

- NOTES:**
- 1) LOOP DETECTOR WIRES ARE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C.
  - 2) HANDHOLES ARE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
  - 3) EACH SIGNAL FACE HAS BACKGROUND SHIELD.
  - 4) EACH PEDESTRIAN INDICATION IS A ONE SECTION HAND/WALKING PERSON INDICATION.
  - 5) ALL VEHICLE SIGNAL INDICATIONS AND ALL PEDESTRIAN SIGNAL INDICATIONS ARE LED.



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1, 3, 5 AND 7 BEING PROTECTED LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

INPLACE LED SIGNAL FACES						
SIGNAL FACE	ALL SIGNAL INDICATIONS ARE 12"					
	R	Y	G	R	Y	G
1-1, 1-2				←	←	←
2-1, 2-2	•	•	•			
3-1, 3-2				←	←	←
4-1, 4-2	•	•	•			
5-1, 5-2				←	←	←
6-1, 6-2	•	•	•			
7-1, 7-2				←	←	←
8-1, 8-2	•	•	•			

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

DRAWN BY: JMG  
DESIGNER: JMG  
CHECKED BY: JMG  
DESIGN TEAM

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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
Date: July 22, 2010 Name: John M. Gray, PE Lic. No. 22457

SEH  
PHONE: (651) 490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

ANOKA COUNTY, MN  
2010 SCHOOL FLASHERS  
CITY OF ANDOVER

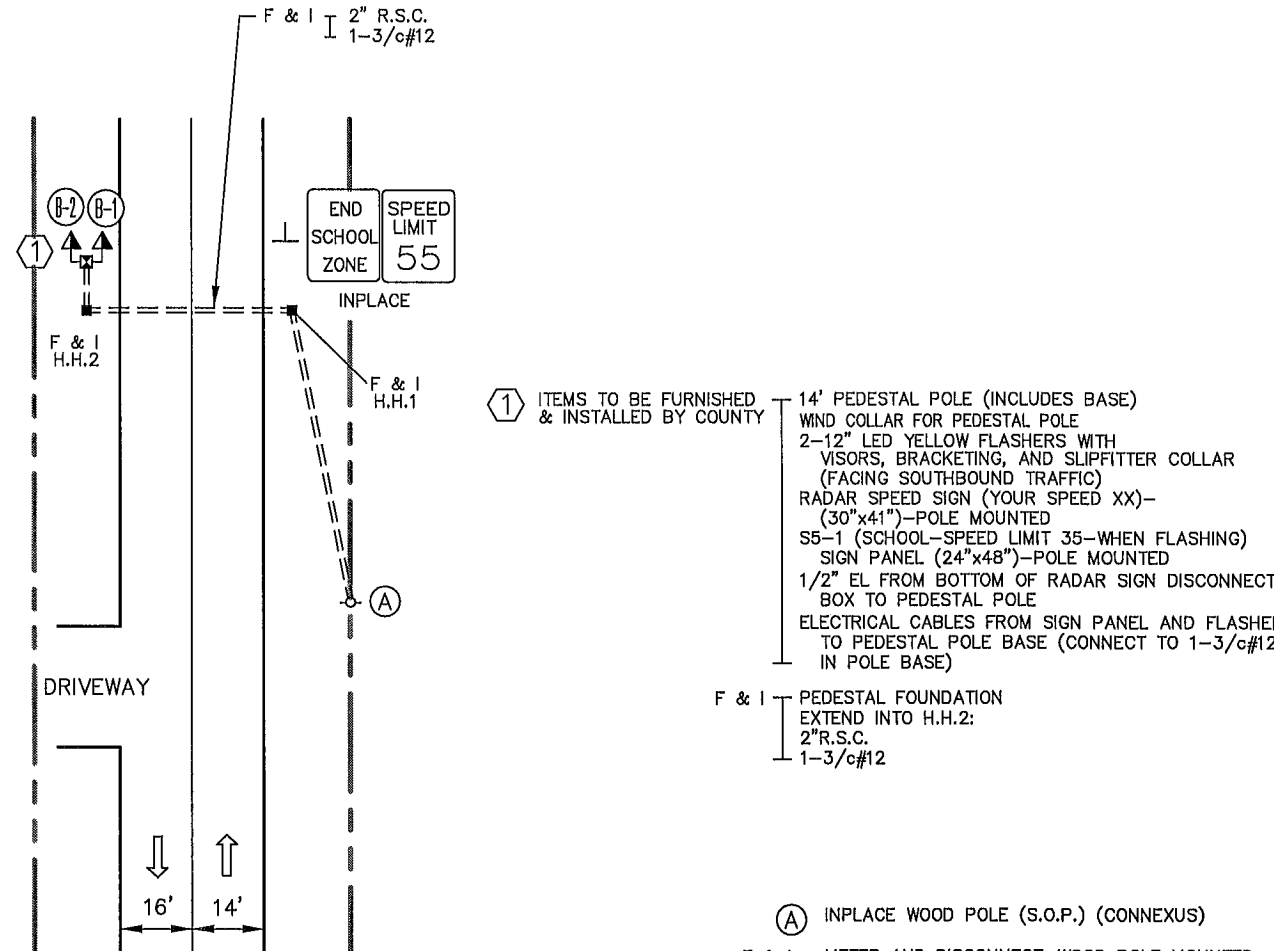
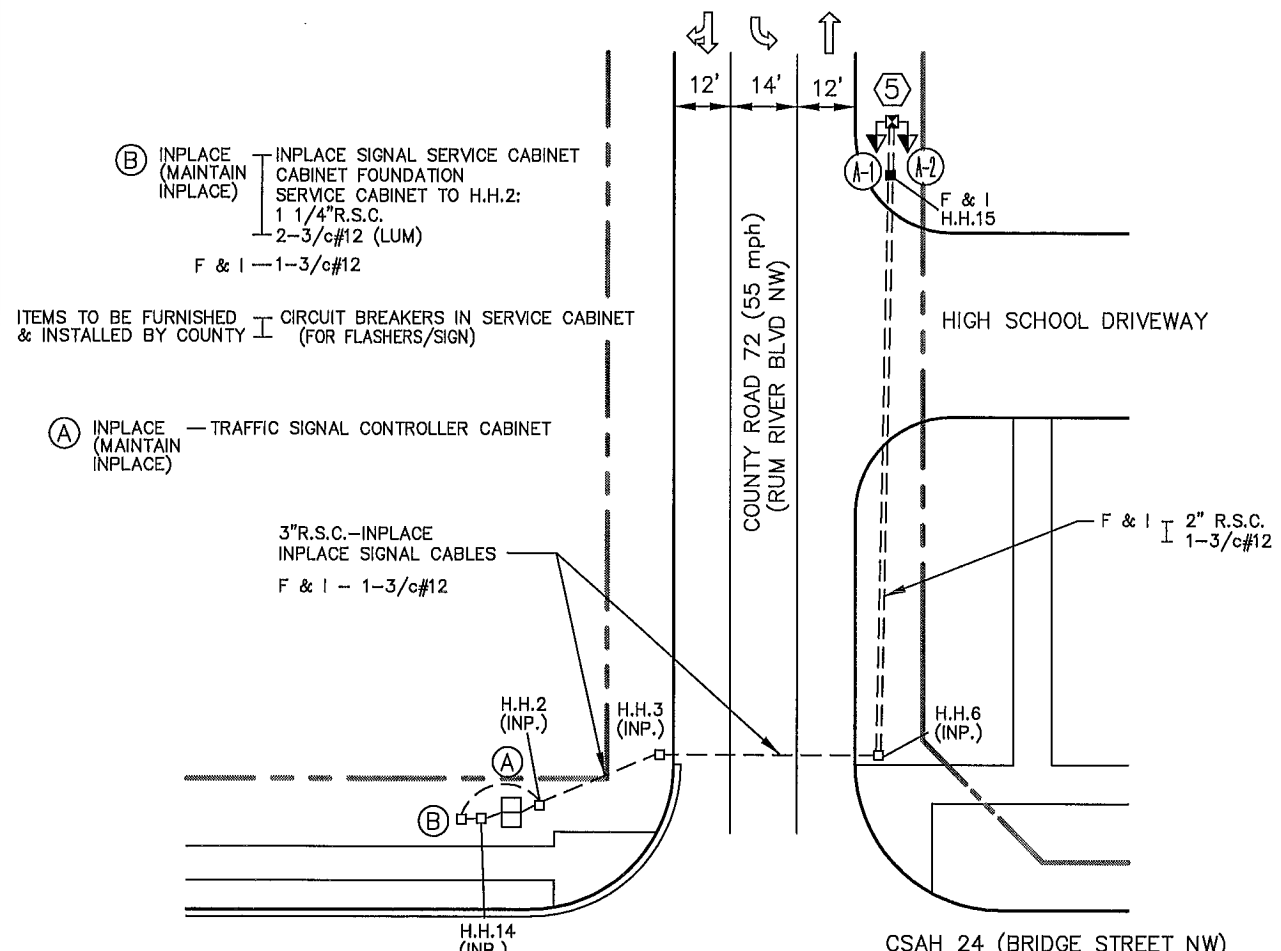
SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
INPLACE SIGNAL SYSTEM 'A'  
CSAH 18 (CROSSTOWN BLVD) AT  
ANDOVER BOULEVARD

FILE NO. ANOKC 112799  
DATE 07/22/2010  
5  
8

SOUTH FLASHER SYSTEM



NORTH FLASHER SYSTEM



- (B)** INPLACE (MAINTAIN INPLACE) INPLACE SIGNAL SERVICE CABINET FOUNDATION SERVICE CABINET TO H.H.2: 1 1/4" R.S.C. 2-3/c#12 (LUM) F & I - 1-3/c#12
- ITEMS TO BE FURNISHED & INSTALLED BY COUNTY

  - (A)** INPLACE — TRAFFIC SIGNAL CONTROLLER CABINET
  - 3" R.S.C.—INPLACE INPLACE SIGNAL CABLES F & I - 1-3/c#12
  - H.H.2 (INP.) H.H.3 (INP.) H.H.6 (INP.) H.H.14 (INP.)
- (5)** ITEMS TO BE FURNISHED & INSTALLED BY COUNTY

  - 14' PEDESTAL POLE (INCLUDES BASE) WIND COLLAR FOR PEDESTAL POLE 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING NORTHBOUND TRAFFIC) RADAR SPEED SIGN (YOUR SPEED XX)—(30"x41")—POLE MOUNTED S5-1 (SCHOOL—SPEED LIMIT 35—WHEN FLASHING) SIGN PANEL (24"x48")—POLE MOUNTED 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1-3/c#12 IN POLE BASE)
  - F & I PEDESTAL FOUNDATION EXTEND INTO H.H.15: 2" R.S.C. 1-3/c#12

FLASHER SYSTEM NOTES:

- 1) SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION REGARDING FLASHER SYSTEM INSTALLATION.
- 2) FLASHER/SIGN SYSTEM SHALL BE TIME OF DAY ACTUATED.
- 3) LOCATION OF FOUNDATION AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) INPLACE SIGN AND POST REMOVAL ADJACENT TO NEW PEDESTAL POLE MOUNTED FLASHER AND SIGN INSTALLATION SHALL BE COMPLETED BY COUNTY AT NO EXPENSE TO THE CONTRACTOR.
- 5) ALL YELLOW FLASHERS WILL BE LED.
- 6) SEE DETAILS FOR FURTHER INFORMATION REGARDING MOUNTING OF ALL FLASHER POLE MATERIALS AND ELECTRICAL EQUIPMENT.
- 7) HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MN/DOT STANDARD PLATE 8114.
- 8) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTACT WITH POWER COMPANY (CONNEXUS) FOR POWER CONNECTION.
- 9) SEE ATTACHED TRAFFIC SIGNAL PLAN (INTERSECTION LAYOUT) FOR FURTHER INFORMATION REGARDING EXISTING SIGNAL SYSTEM.

- (1)** ITEMS TO BE FURNISHED & INSTALLED BY COUNTY

  - 14' PEDESTAL POLE (INCLUDES BASE) WIND COLLAR FOR PEDESTAL POLE 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING SOUTHBOUND TRAFFIC) RADAR SPEED SIGN (YOUR SPEED XX)—(30"x41")—POLE MOUNTED S5-1 (SCHOOL—SPEED LIMIT 35—WHEN FLASHING) SIGN PANEL (24"x48")—POLE MOUNTED 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1-3/c#12 IN POLE BASE)
  - F & I PEDESTAL FOUNDATION EXTEND INTO H.H.2: 2" R.S.C. 1-3/c#12
- (A)** INPLACE WOOD POLE (S.O.P.) (CONNEXUS)

  - F & I METER AND DISCONNECT—WOOD POLE MOUNTED 1-60A/2P MAIN BREAKER 4-20A/1P SIGN/FLASHER BREAKERS EXTEND ABOVE METER AND UP WOOD POLE: 1 1/4" R.S.C. RISER AND WEATHERHEAD 3-1/c#6 BETWEEN METER AND DISCONNECT: 1 1/4" R.S.C. 3-1/c#6 EXTEND BELOW DISCONNECT INTO H.H.1: 2" R.S.C. 1-3/c#12

S:\A\ANOKA\COMMON\SCHOOL\_FLASHERS\2010\_FLASHERS\PLANS\2010PLANS.DWG

DRAWN BY: JMG				
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*John M. Gray*  
 Name: John M. Gray, PE  
 Date: July 22, 2010 Lic. No. 22437

**SEH**  
 PHONE: (851) 490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

ANOKA COUNTY, MN  
 2010 SCHOOL FLASHERS  
 CITY OF ST. FRANCIS

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
 INTERSECTION LAYOUT-SYSTEM 'B'  
 COUNTY ROAD 72 (RUM RIVER BLVD)  
 AT ST. FRANCIS HIGH SCHOOL

S.P. 02-070-008

FILE NO. ANOKC 112799	6
DATE 07/22/2010	
	8



**NOTES :**

- ① LOCATIONS OF POLES, EQUIPMENT PAD, LOOP DETECTORS AND HANDHOLES WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- ② SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- ③ LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 21 mm N.M.C. (SEE SPECIAL PROVISIONS AND DETAILS.)
- ④ NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER Mn/DOT STANDARD PLATE NO. M8114.
- ⑤ EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
- ⑥ ALL VEHICLE SIGNAL INDICATIONS AND ALL "HAND" PEDESTRIAN INDICATIONS SHALL BE L.E.D. TYPE. (SEE SPECIAL PROVISIONS.)
- ⑦ EACH PEDESTRIAN INDICATION SHALL BE A SINGLE SECTION HAND / WALKING PERSON INDICATION. (SEE SPECIAL PROVISIONS.)
- ⑧ SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
- ⑨ THE PAVEMENT MARKINGS AND DIMENSIONS SHOWN ARE APPROXIMATE. PERMANENT PAVEMENT MARKINGS WILL BE FURNISHED AND INSTALLED BY ANOKA COUNTY.
- ⑩ THE POWER LINES ON THE NORTH SIDE OF C.S.A.H. 24 ARE TO BE RAISED BY CONNEXUS ENERGY. CONTRACTOR SHALL COORDINATE WORK WITH CONNEXUS FORCES.
- ⑪ EQUIPMENT PAD SHALL BE CONSTRUCTED ON EARTH FILL AT A MINIMUM ELEVATION OF 0.5 m ABOVE THE EXISTING TOE OF SLOPE ELEVATION. ALL SIDE SLOPES SHALL BE 4:1. ALL GRADING WORK SHALL BE CONSIDERED INCIDENTAL TO THE SIGNAL SYSTEM.

**(A) EQUIPMENT PAD WITH CONTROLLER AND CABINET.**  
 CONTROLLER CABINET TO SERVICE CABINET VIA H.H. 14 :  
 35 mm R.S.C. (METERED SIGNAL SERVICE)  
 2-1/C #4  
 1-1/C #6 BARE GROUND  
 CONTR. CABINET TO H.H. 1 :  
 103 mm R.S.C.  
 4-12/C #12  
 7-3/C #12  
 4-2/C #14  
 2-3/C #20  
 CONTR. CABINET TO H.H. 2 :  
 103 mm R.S.C.  
 4-12/C #12  
 7-3/C #12  
 8-2/C #14  
 2-3/C #20

**(B) SERVICE CABINET CABINET FOUNDATION SERVICE CABINET TO S.O.P. VIA H.H. 13 :**  
 53 mm R.S.C. (POWER FEED)  
 3-1/C #4 (CONNECTION AT S.O.P. BY CONNEXUS)  
 SERVICE CABINET TO CONTROLLER CABINET VIA H.H. 14 :  
 35 mm R.S.C. (METERED SIGNAL SERVICE)  
 2-1/C #4  
 1-1/C #6 BARE GROUND  
 SERVICE CABINET TO H.H. 2 :  
 35 mm R.S.C. (UNMETERED LIGHTING SERVICE)  
 2-3/C #12 (LUM.)

**(C) SOURCE OF POWER EXISTING TRANSFORMER ON EXISTING WOOD POLE (CONNECTION TO BE MADE BY CONNEXUS ENERGY)**  
 53 mm R.S.C. RISER AND WEATHERHEAD EXTEND INTO H.H. 13:  
 53 mm R.S.C.  
 3-1/C #4 (POWER FEED)

**① PA90 POLE FOUNDATION TYPE PA90-A-9.1**  
 1-ONE WAY SIGNAL OVERHEAD (END MOUNTED)  
 1-ONE WAY SIGNAL OVERHEAD AT 2.9 m  
 1-TYPE 10B POLE MOUNTED AT 0°  
 1-TYPE 10B POLE MOUNTED AT 270°  
 2-PEDESTRIAN PUSH BUTTONS  
 R10-12 SIGN PANEL (900 mm x 1200 mm) MOUNTED OVERHEAD (ADJACENT TO 6-3)  
 TYPE "D" SIGN PANEL (4110 mm x 910 mm) MOUNTED OVERHEAD  
 EXTEND INTO HH 2:  
 78 mm RSC  
 2-12/C #12  
 4-3/C #12  
 1-3/C #20

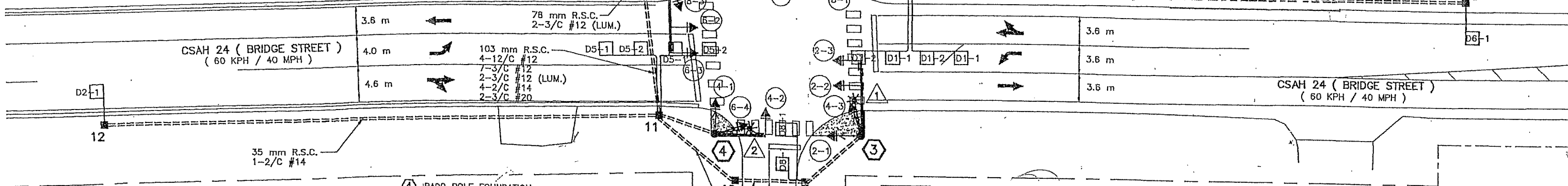
**② PA90 POLE FOUNDATION TYPE PA90-A-7.8**  
 1-ONE WAY SIGNAL OVERHEAD (END MOUNTED)  
 1-TYPE 10B POLE MOUNTED AT 90°  
 1-TYPE 10B POLE MOUNTED AT 270°  
 2-PEDESTRIAN PUSH BUTTONS  
 TYPE "D" SIGN PANEL (3200 mm x 460 mm) MOUNTED OVERHEAD  
 EXTEND INTO HH 6:  
 78 mm RSC  
 2-12/C #12  
 3-3/C #12  
 1-3/C #20

**④ PA90 POLE FOUNDATION TYPE PA90-A-5.1-D12.2-2.7 (DAVIT AT 350°)**  
 LUMINAIRE -- 200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 1-ONE WAY SIGNAL OVERHEAD (END MOUNTED)  
 1-TYPE 10B POLE MOUNTED AT 90°  
 1-TYPE 10B POLE MOUNTED AT 270°  
 2-PEDESTRIAN PUSH BUTTONS  
 R10-12 SIGN PANEL (900 mm x 1200 mm) MOUNTED OVERHEAD (ADJACENT TO 4-2)  
 TYPE "D" SIGN PANEL (3200 mm x 460 mm) MOUNTED OVERHEAD  
 EXTEND INTO HH 11:  
 78 mm R.S.C.  
 2-12/C #12  
 3-3/C #12  
 1-3/C #12 (LUM.)  
 1-3/C #20

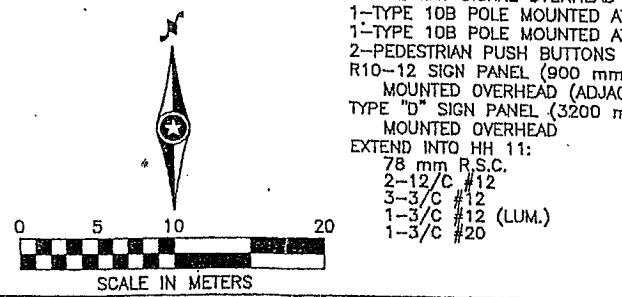
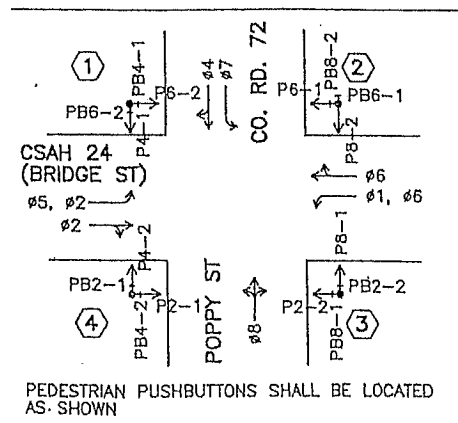
**③ PA90 POLE FOUNDATION TYPE PA90-A-9.1-D12.2-2.7 (DAVIT AT 350°)**  
 LUMINAIRE -- 200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 1-ONE WAY SIGNAL OVERHEAD (END MOUNTED)  
 1-ONE WAY SIGNAL OVERHEAD AT 2.9 m  
 1-TYPE 10B POLE MOUNTED AT 90°  
 1-TYPE 10B POLE MOUNTED AT 270°  
 2-PEDESTRIAN PUSH BUTTONS  
 R10-12 SIGN PANEL (900 mm x 1200 mm) MOUNTED OVERHEAD (ADJACENT TO 2-3)  
 TYPE "D" SIGN PANEL (4110 mm x 910 mm) MOUNTED OVERHEAD  
 EXTEND INTO HH 9:  
 78 mm RSC  
 2-12/C #12  
 4-3/C #12  
 1-3/C #12 (LUM.)  
 1-3/C #20

LOOP DETECTORS				
NUMBER	SIZE (m)	FUNCTION	LOCATION m*	TYPE
D1-1	2-1.7x1.7	11	1.3, 10.1	NMC
D1-2	2-1.7x1.7	11	-3.0, 5.7	NMC
D2-1	1.7x1.7	1	76	NMC
D4-1	1.7x1.7	3	55	NMC
D4-2	1.7x1.7	3	55	NMC
D4-3	1.7x3.5, 1.7x3.0	1	-3.0, 1.3	NMC
D4-4	2-1.7x1.7	1	-3.0, 1.3	NMC
D5-1	2-1.7x1.7	10	-3.0, 5.7	NMC
D5-2	2-1.7x1.7	10	1.3, 10.1	NMC
D6-1	1.7x1.7	1	76	NMC
D7-1	1.7x3.5	7	15	NMC
D8-1	1.7x3.0, 1.7x1.7	1	-3.0, 1.3	NMC

- \* LOCATION IS DISTANCE FROM STOP BAR TO FRONT OF DETECTOR
- LOOP DETECTOR FUNCTION CODES:**
- 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) CALL #5 DURING #4 AND #8, EXTEND #5 AND #2
  - 11) CALL #1 DURING #4 AND #8, EXTEND #1 AND #6

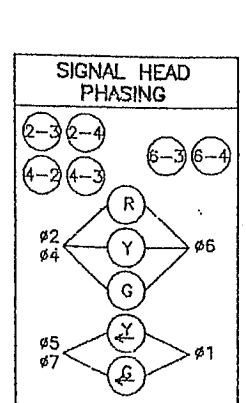


**CONTROLLER PHASING, PEDESTRIAN INDICATIONS, AND PUSHBUTTON LAYOUT (NO SCALE)**



**SIGNAL SYSTEM OPERATION**

- SIGNAL SYSTEM FLASH MODE IS ALL RED
- NORMAL OPERATION IS 4 PHASE, WITH PHASES 1, 5 AND 7 BEING PROTECTED/PERMITTED LEFT TURNS.
- PHASES 2 AND 6 SHALL BE ON RECALL TO VEHICLE MINIMUM



SIGNAL FACES (ALL INDICATIONS SHALL BE 300 mm)						
FACE	RED LED	YELLOW LED	GREEN LED	RTA LED	YTA LED	GTA LED
2-1	●	●	●			
2-2	●	●	●			
2-3	●	●	●			
2-4	●	●	●			
4-1	●	●	●			
4-2	●	●	●			
4-3	●	●	●			
6-1	●	●	●			
6-2	●	●	●			
6-3	●	●	●			
6-4	●	●	●			
8-1	●	●	●			
8-2	●	●	●			
8-3	●	●	●			

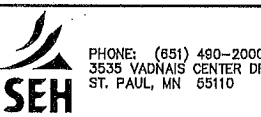
**NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.**

DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG

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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*John M. Gray*  
 Name: John M. Gray, PE  
 Date: July 22, 2010  
 Lj. No. 22457



ANOKA COUNTY, MN  
 2010 SCHOOL FLASHERS  
 CITY OF ST. FRANCIS

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
**INPLACE SIGNAL SYSTEM "B"**  
 CSAH 24 (BRIDGE STREET) AT  
 COUNTY ROAD 72 (RUM RIVER BLVD)

FILE NO. ANOKC 112799  
 DATE 07/22/2010  
**7**  
**8**

S.P. 02-070-008

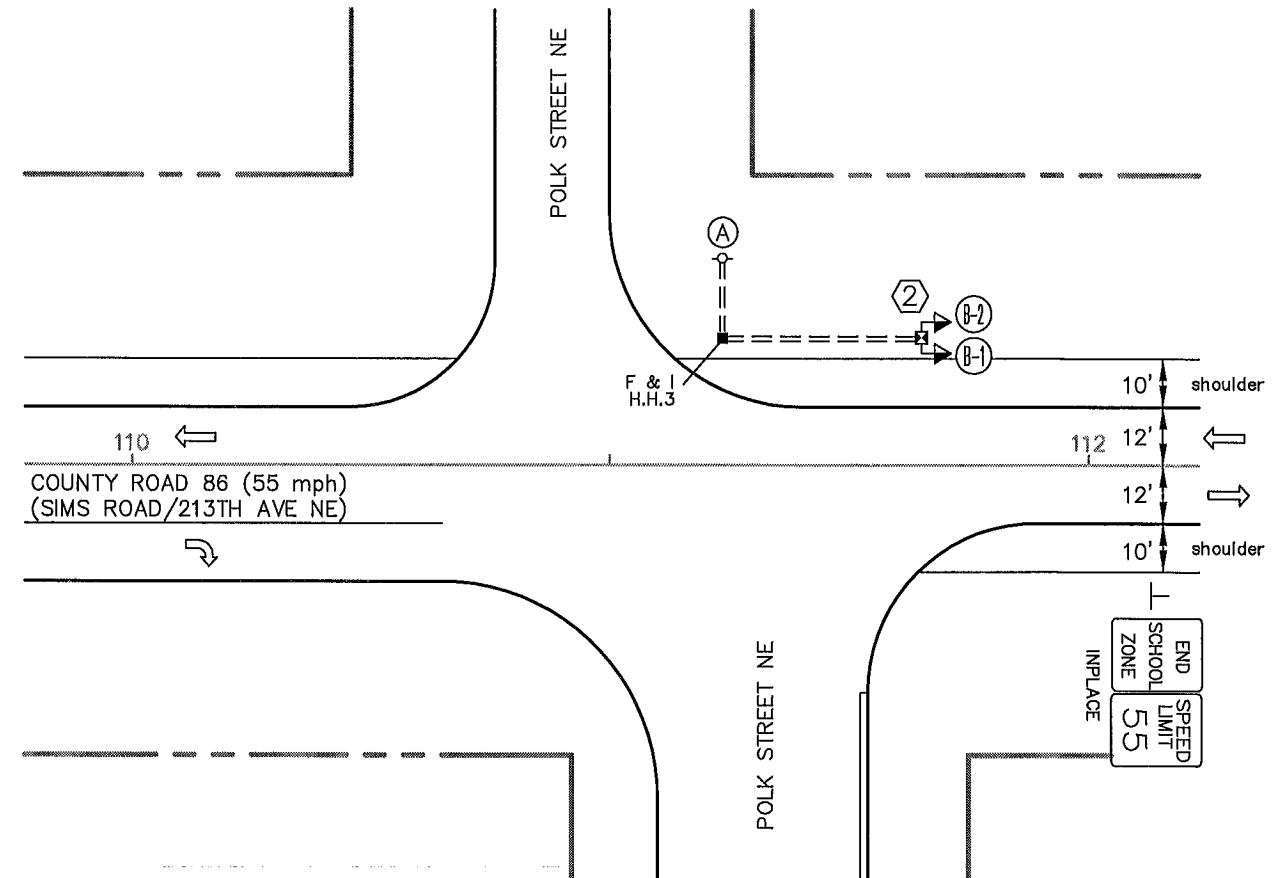
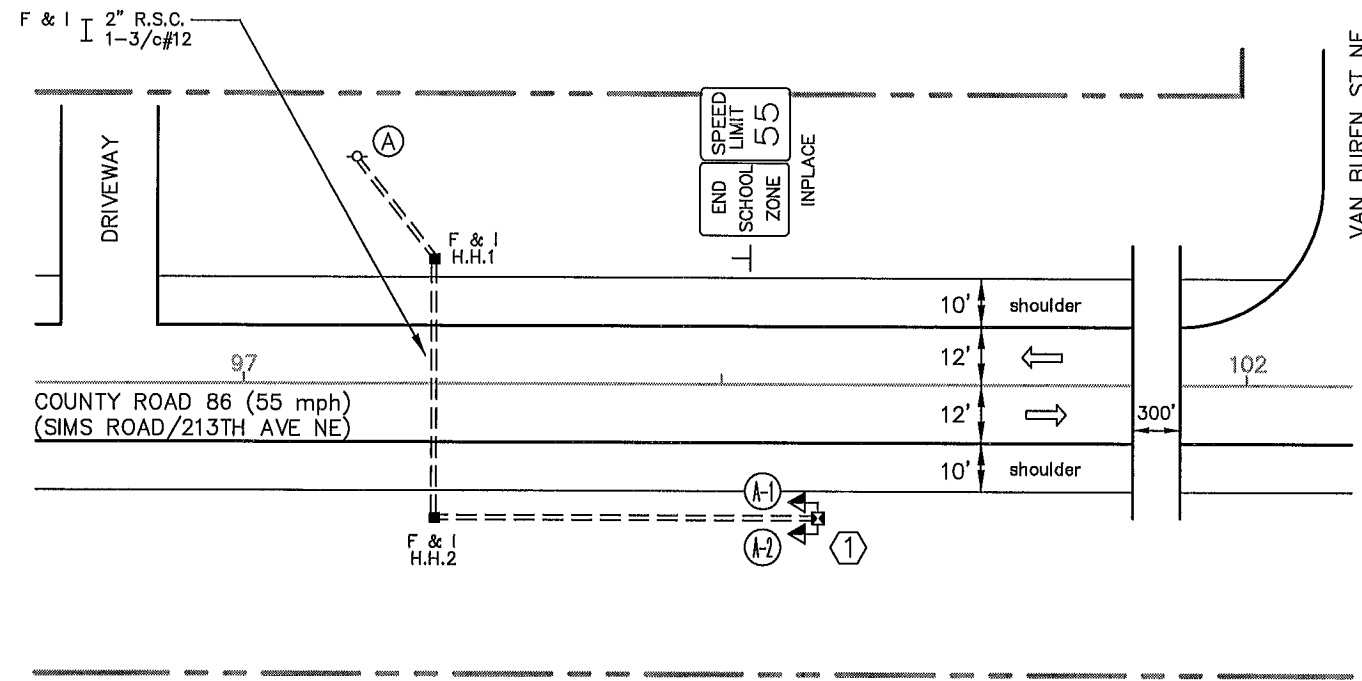
WEST FLASHER SYSTEM



EAST FLASHER SYSTEM

- (A) INPLACE WOOD POLE (S.O.P.) (CONNEXUS)
- F & I METER AND DISCONNECT—WOOD POLE MOUNTED
  - 1—60A/2P MAIN BREAKER
  - 4—20A/1P SIGN/FLASHER BREAKERS
- EXTEND ABOVE METER AND UP WOOD POLE:
  - 1 1/4" R.S.C. RISER AND WEATHERHEAD
  - 3—1/c#6
- BETWEEN METER AND DISCONNECT:
  - 1 1/4" R.S.C.
  - 3—1/c#6
- EXTEND BELOW DISCONNECT INTO H.H.1:
  - 2" R.S.C.
  - 1—3/c#12

- (2) ITEMS TO BE FURNISHED & INSTALLED BY COUNTY
  - 14' PEDESTAL POLE (INCLUDES BASE)
  - WIND COLLAR FOR PEDESTAL POLE
  - 2—12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING WESTBOUND TRAFFIC)
  - RADAR SPEED SIGN (YOUR SPEED XX)—(30"x41")—POLE MOUNTED
  - S5-1 (SCHOOL—SPEED LIMIT 35—WHEN FLASHING) SIGN PANEL (24"x48")—POLE MOUNTED
  - 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE
  - ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1—3/c#12 IN POLE BASE)
- F & I PEDESTAL FOUNDATION
  - EXTEND INTO H.H.3:
  - 2" R.S.C.
  - 1—3/c#12



- (1) ITEMS TO BE FURNISHED & INSTALLED BY COUNTY
  - 14' PEDESTAL POLE (INCLUDES BASE)
  - WIND COLLAR FOR PEDESTAL POLE
  - 2—12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING EASTBOUND TRAFFIC)
  - RADAR SPEED SIGN (YOUR SPEED XX)—(30"x41")—POLE MOUNTED
  - S5-1 (SCHOOL—SPEED LIMIT 35—WHEN FLASHING) SIGN PANEL (24"x48")—POLE MOUNTED
  - 1/2" EL FROM BOTTOM OF RADAR SIGN DISCONNECT BOX TO PEDESTAL POLE
  - ELECTRICAL CABLES FROM SIGN PANEL AND FLASHERS TO PEDESTAL POLE BASE (CONNECT TO 1—3/c#12 IN POLE BASE)
- F & I PEDESTAL FOUNDATION
  - EXTEND INTO H.H.2:
  - 2" R.S.C.
  - 1—3/c#12

FLASHER SYSTEM NOTES:

- 1) SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION REGARDING FLASHER SYSTEM INSTALLATION.
- 2) FLASHER/SIGN SYSTEM SHALL BE TIME OF DAY ACTUATED.
- 3) LOCATION OF FOUNDATION AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 4) INPLACE SIGN AND POST REMOVAL ADJACENT TO NEW PEDESTAL POLE MOUNTED FLASHER AND SIGN INSTALLATION SHALL BE COMPLETED BY COUNTY AT NO EXPENSE TO THE CONTRACTOR.
- 5) ALL YELLOW FLASHERS WILL BE LED.
- 6) SEE DETAILS FOR FURTHER INFORMATION REGARDING MOUNTING OF ALL FLASHER POLE MATERIALS AND ELECTRICAL EQUIPMENT.
- 7) HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MN/DOT STANDARD PLATE 8114.
- 8) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTACT WITH POWER COMPANY (CONNEXUS/GREAT RIVER ENERGY) FOR POWER CONNECTION.

- (A) INPLACE WOOD POLE (S.O.P.) (GREAT RIVER ENERGY)
- F & I METER AND DISCONNECT—WOOD POLE MOUNTED
  - 1—60A/2P MAIN BREAKER
  - 4—20A/1P SIGN/FLASHER BREAKERS
- EXTEND ABOVE METER AND UP WOOD POLE:
  - 1 1/4" R.S.C. RISER AND WEATHERHEAD
  - 3—1/c#6
- BETWEEN METER AND DISCONNECT:
  - 1 1/4" R.S.C.
  - 3—1/c#6
- EXTEND BELOW DISCONNECT INTO H.H.3:
  - 2" R.S.C.
  - 1—3/c#12

S:\A\A\ANOKA\COMMON\SCHOOL\_FLASHERS\2010\_FLASHERS\PLANS\2010PLANS.DWG

DRAWN BY: JMG  
 DESIGNER: JMG  
 CHECKED BY: JMG  
 DESIGN TEAM

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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Date: July 22, 2010 Name: John M. Gray, PE Lic. No. 22457



PHONE: (851) 490-2000  
 3835 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

ANOKA COUNTY, MN  
 2010 SCHOOL FLASHERS  
 CITY OF EAST BETHEL

SCHOOL SPEED ZONE FLASHER/SIGN SYSTEMS  
 INTERSECTION LAYOUT-SYSTEM "C"  
 CSAH 86 (SIMS ROAD) AT  
 EAST BETHEL/CEDAR CREEK SCHOOLS

S.P. 02-070-008  
 FILE NO. ANOKC 112799  
 DATE 07/22/2010  
 8  
 8