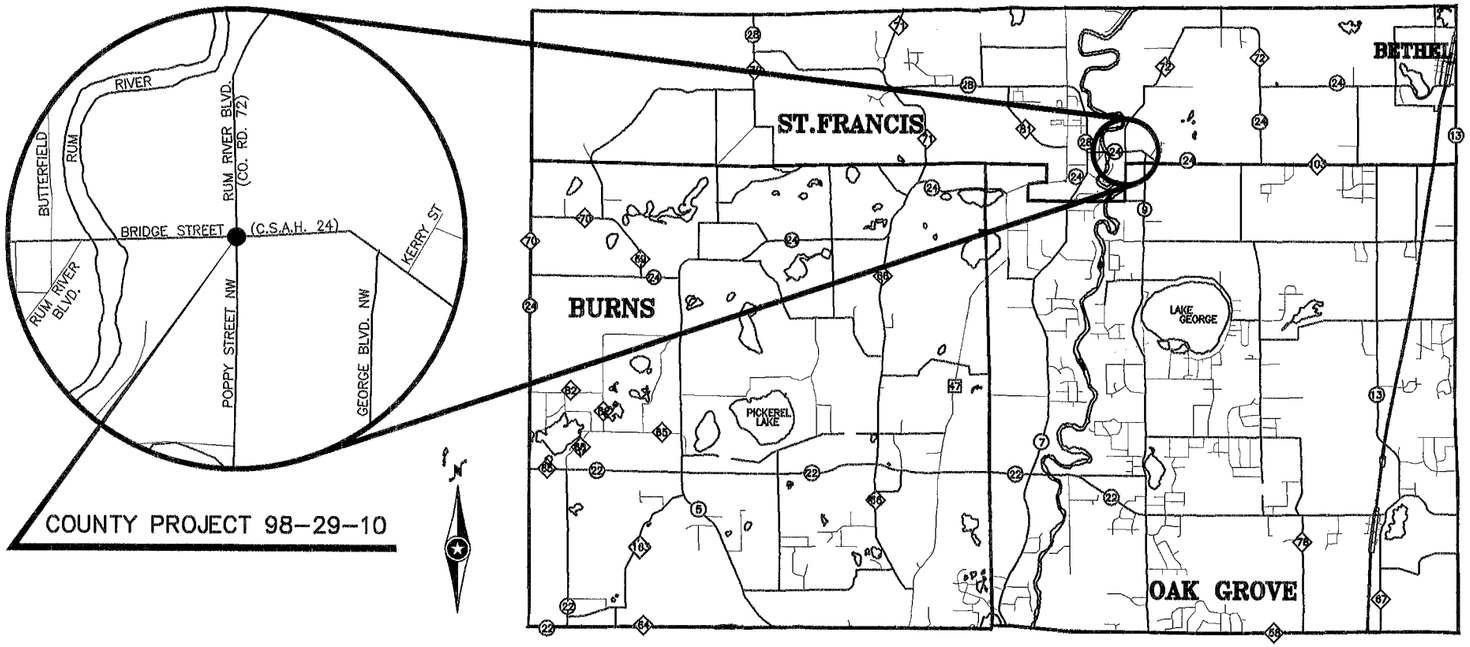
MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY, MINNESOTA
CITY OF ST. FRANCIS

CONSTRUCTION PLAN FOR ONE PERMANENT FULL-TRAFFIC-ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM

LOCATED ON C.S.A.H. 24 (BRIDGE STREET) AT CO. RD 72 (RUM RIVER BLVD) / POPPY STREET NW

ANOKA COUNTY STATE-AID PROJECT NO. 02-624-23

INDEX MAP



PLAN SYMBOLS

COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
SLOPE EASEMENT
PRESENT RIGHT OF WAY
PROPERTY LINE
CORPORATE OR CITY LIMITS
RETAINING WALL
RAILROAD
RAILROAD RIGHT OF WAY
RIVER OR CREEK
DRAINAGE DITCH
CULVERT
DROP INLET
GAURD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
WOOD FENCE
STONE WALL OR FENCE
HEDGE
LOWLAND
TIMBER
ORCHARD
BRUSH
NURSERY
CATTLE GAURD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) 1-S-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE M.H.
CATCH BASIN C.B.
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE & POWER ON POWER POLES
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (Cable Terminal)
GAS MAIN
WATERMAIN
TELEPHONE CABLE IN CONDUIT G
ELECTRIC CABLE IN CONDUIT P
TELEPHONE MANHOLE T
ELECTRIC MANHOLE P
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
AERIAL TELEPHONE CABLE T-AE
SEWER (Sanitary or Storm)
SEWER MANHOLE

SCALES

PLAN 0 5 10 (METERS)

INDEX MAP 0 1 2 (KILOMETERS)

ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	PARTICIPATION	
				ANOKA COUNTY S.A.P. 02-624-23	NON-PARTICIPATING
2104.601	REMOVE ENTRANCE	LS	1	1	
2565.511	FULL-TRAFFIC-ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM	SIG SYS	1	0.75	0.25

ATTENTION: THIS IS A METRIC PLAN

PROJECT LOCATION
COUNTY : ANOKA
DISTRICT : METRO

FEDERAL PROJECT NO. :

GOVERNING SPECIFICATIONS

THE 1995 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), INCLUDING THE JANUARY 1998 EDITION OF THE "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

INDEX

THIS PLAN SET CONTAINS 7 SHEETS

PLAN CERTIFICATIONS

DESIGN ENGINEER: 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.

Steven M. Bowen
DATE 8/3/99 REG. NO. 21817

APPROVED: Steve Bierk CITY OF ST. FRANCIS ENGINEER DATE 8/4/99

APPROVED: for ANOKA COUNTY ENGINEER DATE 8/4/99

APPROVED: Patti J. Loken METRO ASSISTANT DIVISION ENGINEER – STATE AID (REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY) DATE 8/5/99

APPROVED: Patti J. Loken APPROVED FOR STATE-AID FUNDING STATE AID ENGINEER DATE 8/5/99

APPROVED: DATE

APPROVED: DATE

SIGNAL SYSTEM DESIGN DESCRIPTION

	BRIDGE STREET (C.S.A.H. 24)	RUM RIVER BLVD. (CO. RD. 72) / POPPY STREET N.W.
DESIGN SPEED	60 KPH/40 MPH	60 KPH (35 MPH) / 50 KPH (30 MPH)
EXISTING A.D.T. (1999)	6400	2000 / 500
PROJECTED A.D.T. (2015)	10,000	2200 / 600
FUNCTIONAL CLASSIFICATION	ARTERIAL	COLLECTOR / LOCAL
NO. OF TRAFFIC LANES	3	3 / 2
NO. OF PARKING LANES	0	0 / 0

NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.
Steven M. Bowen
DATE 8/3/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

STATE PROJECT NO.
STATE PROJECT NO.
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO.

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM
TITLE SHEET AND STATEMENT OF ESTIMATED QUANTITIES
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 1 of 7 Sheets

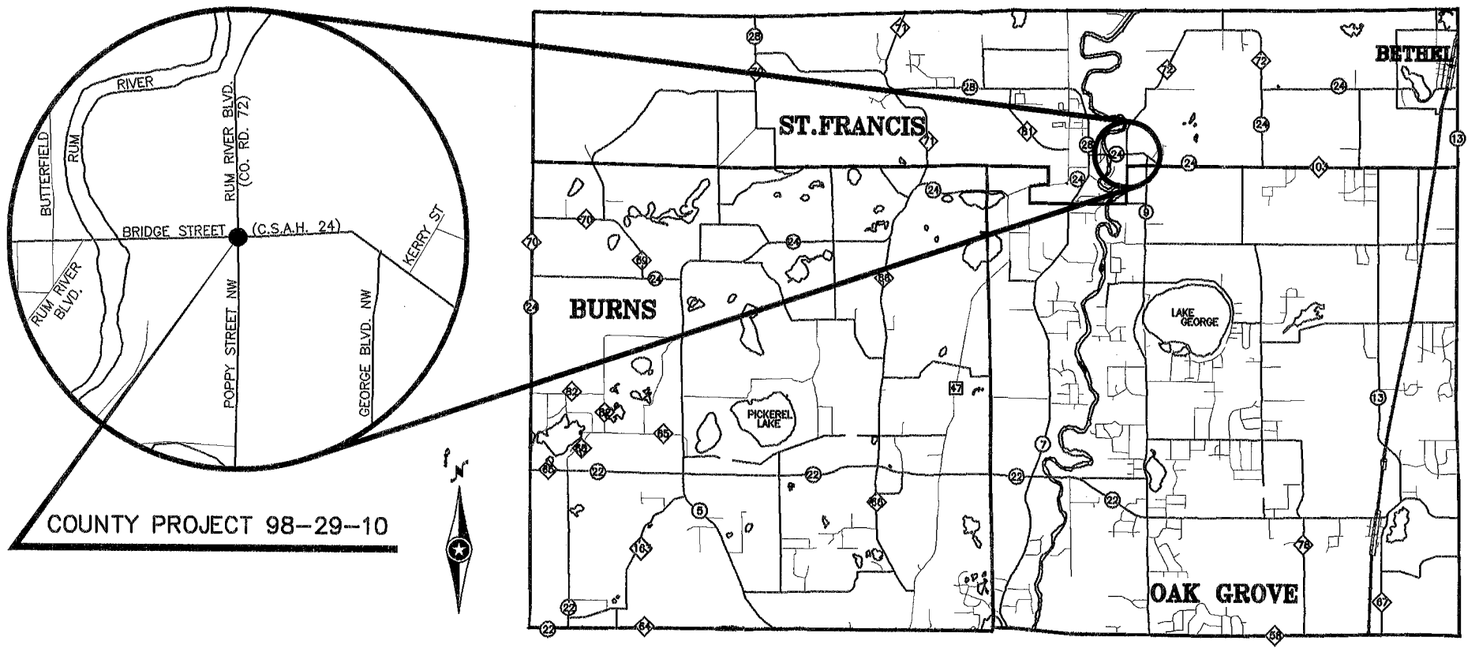
MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY, MINNESOTA
CITY OF ST. FRANCIS

CONSTRUCTION PLAN FOR ONE PERMANENT FULL-TRAFFIC-ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM

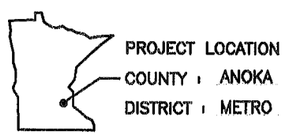
LOCATED ON C.S.A.H. 24 (BRIDGE STREET) AT CO. RD 72 (RUM RIVER BLVD) / POPPY STREET NW

ANOKA COUNTY STATE-AID PROJECT NO. 02-624-23

INDEX MAP



ATTENTION: THIS IS A METRIC PLAN



ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	PARTICIPATION	
				ANOKA COUNTY S.A.P. 02-624-23	NON-PARTICIPATING
2104.601	REMOVE ENTRANCE	LS	1	1	
2565.511	FULL-TRAFFIC-ACTUATED TRAFFIC CONTROL SIGNAL SYSTEM	SIG SYS	1	0.75	0.25

PLAN SYMBOLS

COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
SLOPE EASEMENT
PRESENT RIGHT OF WAY
PROPERTY LINE
CORPORATE OR CITY LIMITS
RETAINING WALL
RAILROAD
RAILROAD RIGHT OF WAY
RIVER OR CREEK
DRAINAGE DITCH
CULVERT
DROP INLET
GAURD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
WOOD FENCE
STONE WALL OR FENCE
HEDGE
LOWLAND
TIMBER
ORCHARD
BRUSH
NURSERY
CATTLE GAURD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) 1-S-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE M.H.
CATCH BASIN C.B.
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE & POWER ON POWER POLES
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (Cable Terminal)
GAS MAIN
WATERMAIN
TELEPHONE CABLE IN CONDUIT T-G
ELECTRIC CABLE IN CONDUIT P
TELEPHONE MANHOLE T
ELECTRIC MANHOLE P
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
AERIAL TELEPHONE CABLE T-AE
SEWER (Sanitary or Storm)
SEWER MANHOLE

SCALES

PLAN 0 5 10 (METERS)

INDEX MAP 0 1 2 (KILOMETERS)

FEDERAL PROJECT NO. :

GOVERNING SPECIFICATIONS

THE 1995 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), INCLUDING THE JANUARY 1998 EDITION OF THE "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

INDEX

THIS PLAN SET CONTAINS 7 SHEETS

PLAN CERTIFICATIONS

DESIGN ENGINEER: 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.

Steven M. Bowen

DATE 8/3/99 REG. NO. 21817

APPROVED: Steve Bjork CITY OF ST. FRANCIS ENGINEER DATE 8/4/99

APPROVED: for ANOKA COUNTY ENGINEER DATE 8/4/99

APPROVED: Patti J. Loken METRO ASSISTANT DIVISION ENGINEER - STATE AID (REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY) DATE 8/5/99

APPROVED: Patti J. Loken APPROVED FOR STATE-AID FUNDING STATE AID ENGINEER DATE 8/5/99

APPROVED: DATE

APPROVED: DATE

SIGNAL SYSTEM DESIGN DESCRIPTION

	BRIDGE STREET (C.S.A.H. 24)	RUM RIVER BLVD. (CO. RD. 72) / POPPY STREET N.W.
DESIGN SPEED	60 KPH/40 MPH	60 KPH (35 MPH) / 50 KPH (30 MPH)
EXISTING A.D.T. (1999)	6400	2000 / 500
PROJECTED A.D.T. (2015)	10,000	2200 / 600
FUNCTIONAL CLASSIFICATION	ARTERIAL	COLLECTOR / LOCAL
NO. OF TRAFFIC LANES	3	3 / 2
NO. OF PARKING LANES	0	0 / 0

NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.

Steven M. Bowen

DATE 8/3/99 REG. NO. 21817

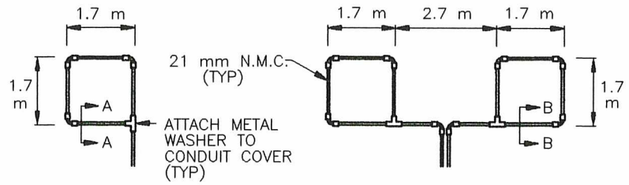
DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

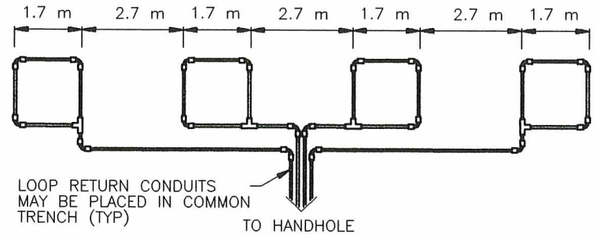
STATE PROJECT NO.
STATE PROJECT NO.
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO.

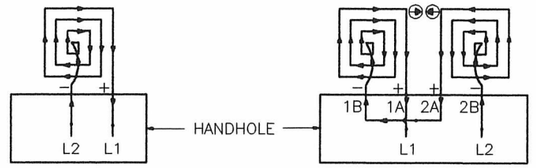
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM
TITLE SHEET AND STATEMENT OF ESTIMATED QUANTITIES
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 1 of 7 Sheets







LOOP DETECTOR DETAIL 'A'

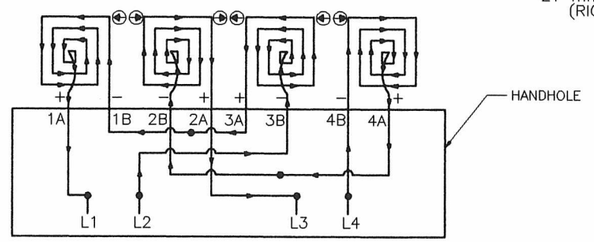
(LOOP PHASING FOR SINGLE CONNECTION)

LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'B'

(LOOP PHASING FOR SERIES CONNECTION)



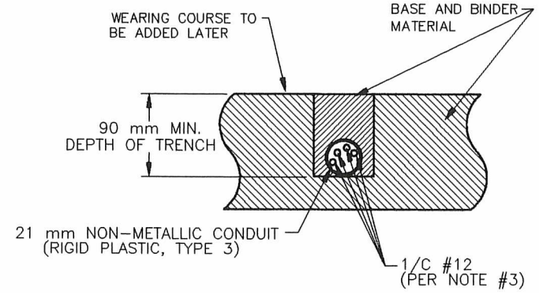
LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A	L3 TO 2A
1B TO 3A	2B TO 4A
3B TO L2	4B TO L4

ALL SPLICES SHALL BE LOCATED IN THE HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN THE HANDHOLE (1A, 1B, ETC.).

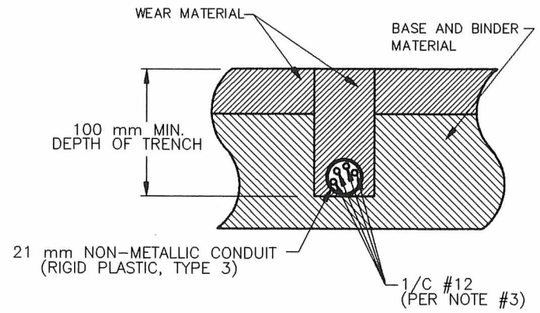
LOOP DETECTOR DETAIL 'C'

(LOOP PHASING FOR TWO DOUBLE-LOOP DETECTORS EACH WITH SERIES CONNECTION)



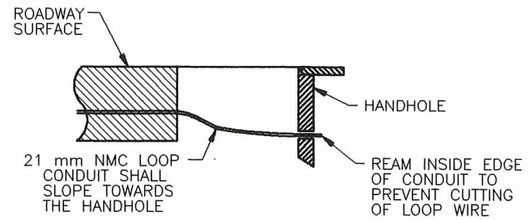
SECTION A-A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B-B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

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 0.3 METER (1 FOOT) THROUGH THE CONDUIT TO THE HANDHOLE.
5. NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6. LOOPS 1.7 m x 1.7 m THRU 1.7 m x 4.3 m SHALL HAVE (4) TURNS.
7. LOOPS 1.7 m x 4.6 m AND LARGER SHALL HAVE (2) TURNS.

STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
* M7036 D	PEDESTRIAN CURB RAMP
* M8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
M8111 C	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
M8112 C	PEDESTAL FOUNDATION - TRAFFIC CONTROL SIGNALS
* M8114 A	PVC HANDHOLE/PULLBOX
M8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
M8117 F	PRECAST CONCRETE HANDHOLE (OR PULLBOX)
M8118 C	SERVICE EQUIPMENT AND POLE-TRAFFIC CONTROL SIGNALS
* M8119 C	GROUND MOUNTED CABINET FOUNDATION
M8120 K	PA85 POLE FOUNDATION
* M8121 D	TRANSFORMER BASE AND POLE BASE PLATE
M8122 C	PEDESTAL AND PEDESTAL BASE
* M8123 D	POLE AND MAST ARM
* M8124 E	MAST ARM SIGNAL HEAD MOUNTS
* M8126 F	POLE FOUNDATION (PA90 AND PA100)

* - APPLIES TO THIS PROJECT

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

ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"	P2-1(EG)	PEDESTRIAN INDICATION PHASE "2" - NO. "1"
BR. GR.	BARE GROUND	PB	PUSH BUTTON
CH. SW.	CHECK SWITCH	PB2-1(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
EQG	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	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

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

NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.

Steven N. Bowey
DATE 6/28/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO. _____

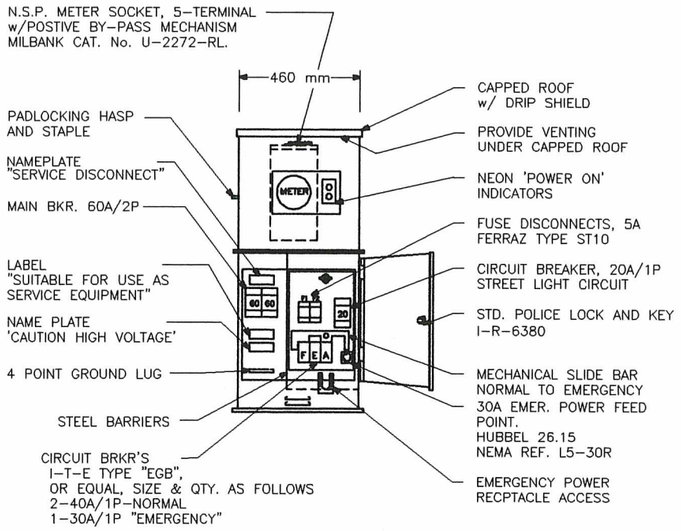
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

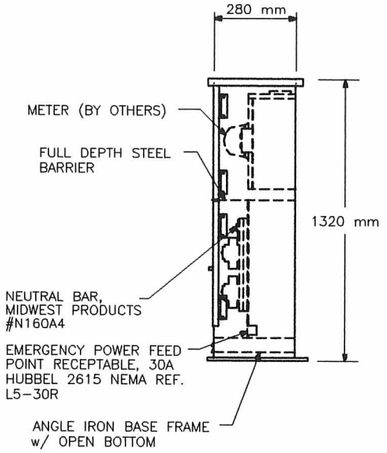
TRAFFIC SIGNAL SYSTEM
DETAILS AND STANDARD PLATES
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 2 of 7 Sheets

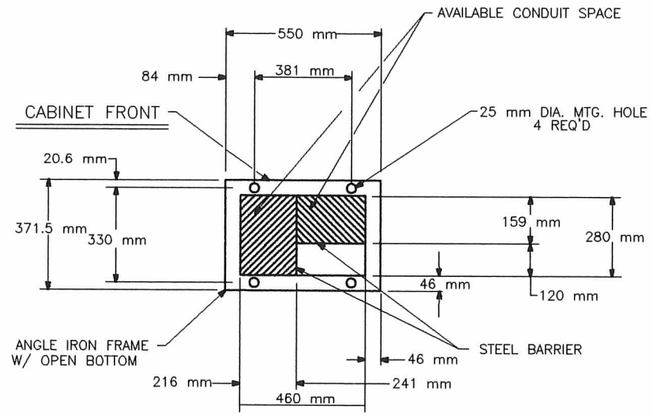
SIGNAL SERVICE CABINET



FRONT ELEV.

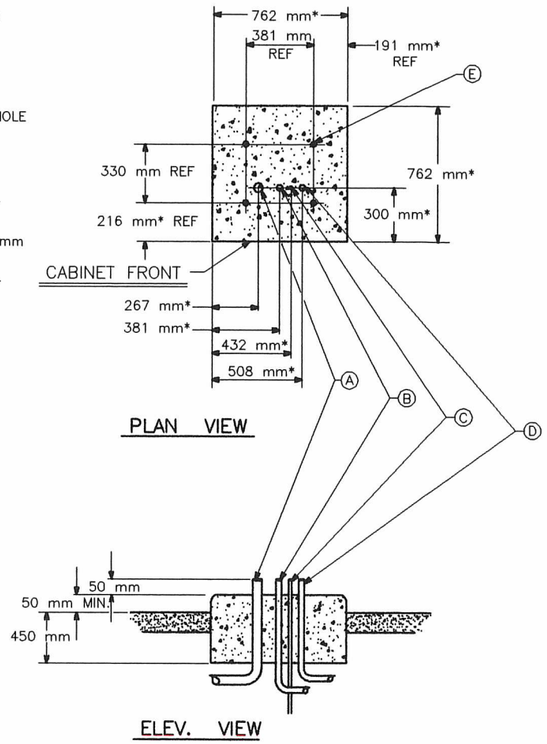


RIGHT SIDE ELEV.



BASE VIEW

SERVICE CABINET FOUNDATION



PLAN VIEW

ELEV. VIEW

CONSTRUCTION NOTES

ENCLOSURE SHALL BE FABRICATED FROM #12 GA. ALL WELDED COLD ROLLED STEEL FOR OUTDOOR WEATHER PROOF SERVICE. DOORS TO BE GASKETED, ALL HINGES, PINS AND LOCKS TO BE OF NON CORRODING CONSTRUCTION. CABINET TO BE PRIMED INSIDE AND OUT WITH RUST INHIBITING PRIMER. FINISH PER MN/DOT #3527.

ENCLOSURE SHALL BE 'UL' APPROVED

Ⓐ 53 mm RSC TO S.O.P. (POLE B -- CONNECTION TO BE MADE BY CONNEXUS ENERGY)

Ⓑ 35 mm RSC TO CONTROLLER CABINET VIA H.H.. 14

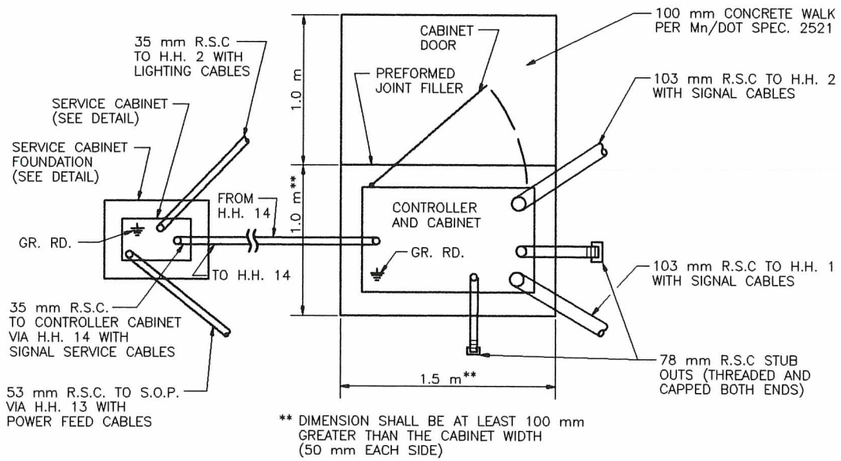
Ⓒ GROUNDING ROD

Ⓓ 35 mm RSC TO HANDHOLE 2 (FOR INTERSECTION LIGHTING)

Ⓔ ANCHOR BOLT LOCATIONS (4 REQUIRED)

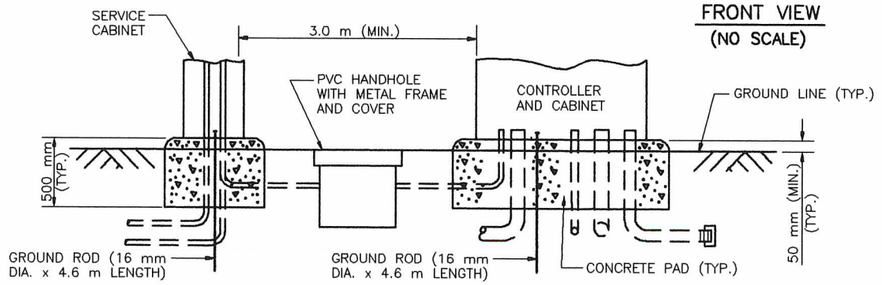
EQUIPMENT PAD LAYOUT--PLAN VIEW

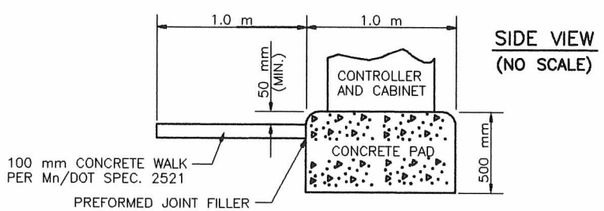
(SEE INTERSECTION LAYOUT AND WIRING DIAGRAM FOR CABLE INFORMATION)
(NO SCALE)



** DIMENSION SHALL BE AT LEAST 100 mm GREATER THAN THE CABINET WIDTH (50 mm EACH SIDE)

FRONT VIEW
(NO SCALE)





SIDE VIEW
(NO SCALE)

CONSTRUCTION NOTES :

1. SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE UPPER EDGES OF THE EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERRED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. ALL CONDUITS SHALL PROJECT A MINIMUM OF 50 mm ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET COMPONENTS OR FUNCTION (SUPPORTING MEMBERS, ETC.).
5. ALL CONCRETE CONSTRUCTION (EQUIPMENT PAD AND SIDEWALK AREAS) SHALL BE MIX 3A32 OR APPROVED EQUAL.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT EXTEND BENEATH THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. CONTROLLER CABINET SHALL BE PER Mn/DOT M8119C.

NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.
Steven M. Bowers
DATE 6/28/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

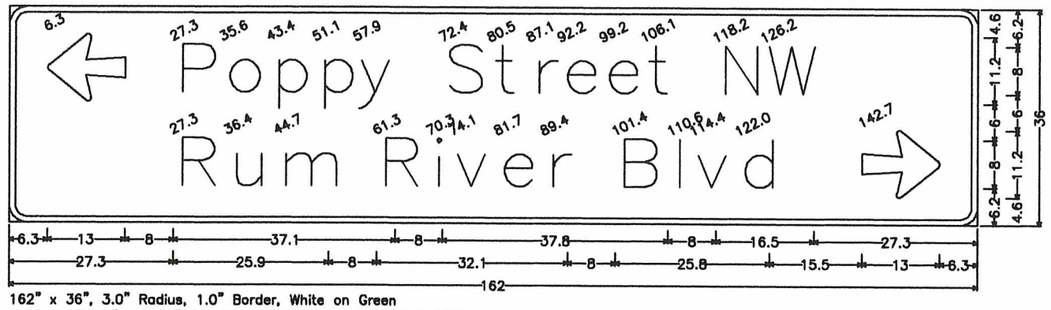
STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO. _____

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

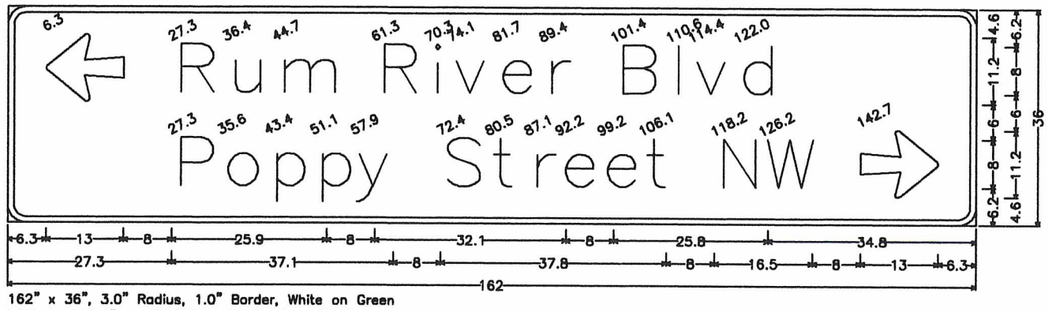
TRAFFIC SIGNAL SYSTEM
CABINET AND PAD DETAILS
CSAH 24 (BRIDGE ST) ● CO. RD. 72

Sheet 3 of 7 Sheets



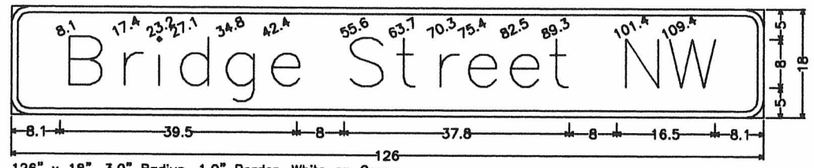
162" x 36", 3.0" Radius, 1.0" Border, White on Green
LINE 1 128.4" : ARROW 5–13 AT 180°, 8"–6" SERIES E–MOD
LINE 2 128.4" : 8"–6" SERIES E–MOD, ARROW 5–13 AT 0°

D–1



162" x 36", 3.0" Radius, 1.0" Border, White on Green
LINE 1 128.4" : ARROW 5–13 AT 180°, 8"–6" SERIES E–MOD
LINE 2 128.4" : 8"–6" SERIES E–MOD, ARROW 5–13 AT 0°

D–3

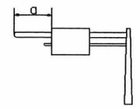


126" x 18", 3.0" Radius, 1.0" Border, White on Green
LINE 1 109.8" : 8"–6" SERIES E–MOD

D–2, D–4

MAST ARM MOUNTED SIGNING

NOTE: ALL DIMENSIONS OF DETAILED SIGN PANELS ARE IN INCHES.

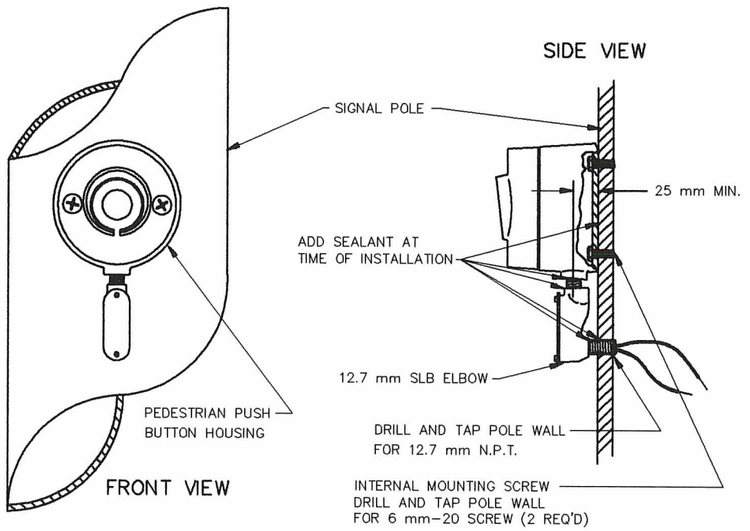


TYPE "D" SIGNS – FURNISH AND INSTALL								
SIGN PANEL	SIZE (inches)	SIZE (m)	NO. REQ.	NO. POSTS PER SIGN	POST SPACING (mm)	AREA PER SIGN (sq. m.)	POLE NO.	DIM. "a"
D–1	162x36	4.11x0.91	1	4	1145	3.74	1	3.4 m
D–2	126x18	3.20x0.46	1	3	1145	1.47	2	1.1 m
D–3	162x36	4.11x0.91	1	4	1145	3.74	3	3.4 m
D–4	126x18	3.20x0.46	1	3	1145	1.47	4	1.7 m
TYPE "C" SIGNS – FURNISH AND INSTALL								
R10–12	36x48	0.91x1.22	3	2	610	1.11	1,3,4	0.5 m

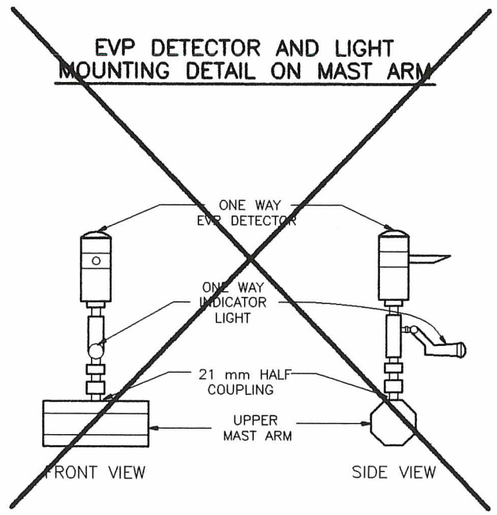
NOTES:

1) TYPE "D" SIGN COLOR–WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
3) FOR STRUCTURAL DETAILS, TYPE "C" AND "D" SIGNS, SEE DETAILS AND STANDARD SIGNS MANUAL.
4) FOR TYPE "D" STRINGER AND PANEL–JOINT DETAIL, SEE DETAILS AND STANDARD SIGNS MANUAL.
5) TYPE "C" AND "D" SIGN PANELS SHALL BE FURNISHED AND INSTALLED BY SIGNAL CONTRACTOR INCIDENTAL TO ITEM NO. 2565.511 FOR SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.

MAST ARM POLE PEDESTRIAN PUSH BUTTON DETAIL



EVP DETECTOR AND LIGHT MOUNTING DETAIL ON MAST ARM



NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton–Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.
Steven M Bowers
DATE 6/28/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE AID PROJECT NO. 02–624–23
COUNTY PROJECT NO. _____

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS AND SIGNING
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 4 of 7 Sheets

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 (SEE DETAIL AND NOTE 11)
INSTALL CONTROLLER AND CABINET (TO BE FURNISHED BY ANOKA COUNTY)
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 (SEE DETAIL)
CABINET FOUNDATION (SEE DETAIL)
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 (D-1)
EXTEND INTO HH 2:
78 mm RSC
2-12/C #12
4-3/C #12
1-3/C #20

LEGEND

CONSTRUCT 100 mm CONCRETE WALK PER Mn/DOT 2521 OVER 100 mm OF COMPACTED CLASS 5 AGGREGATE BASE (ALL WALK WORK SHALL BE CONSIDERED INCIDENTAL TO THE SIGNAL SYSTEM).

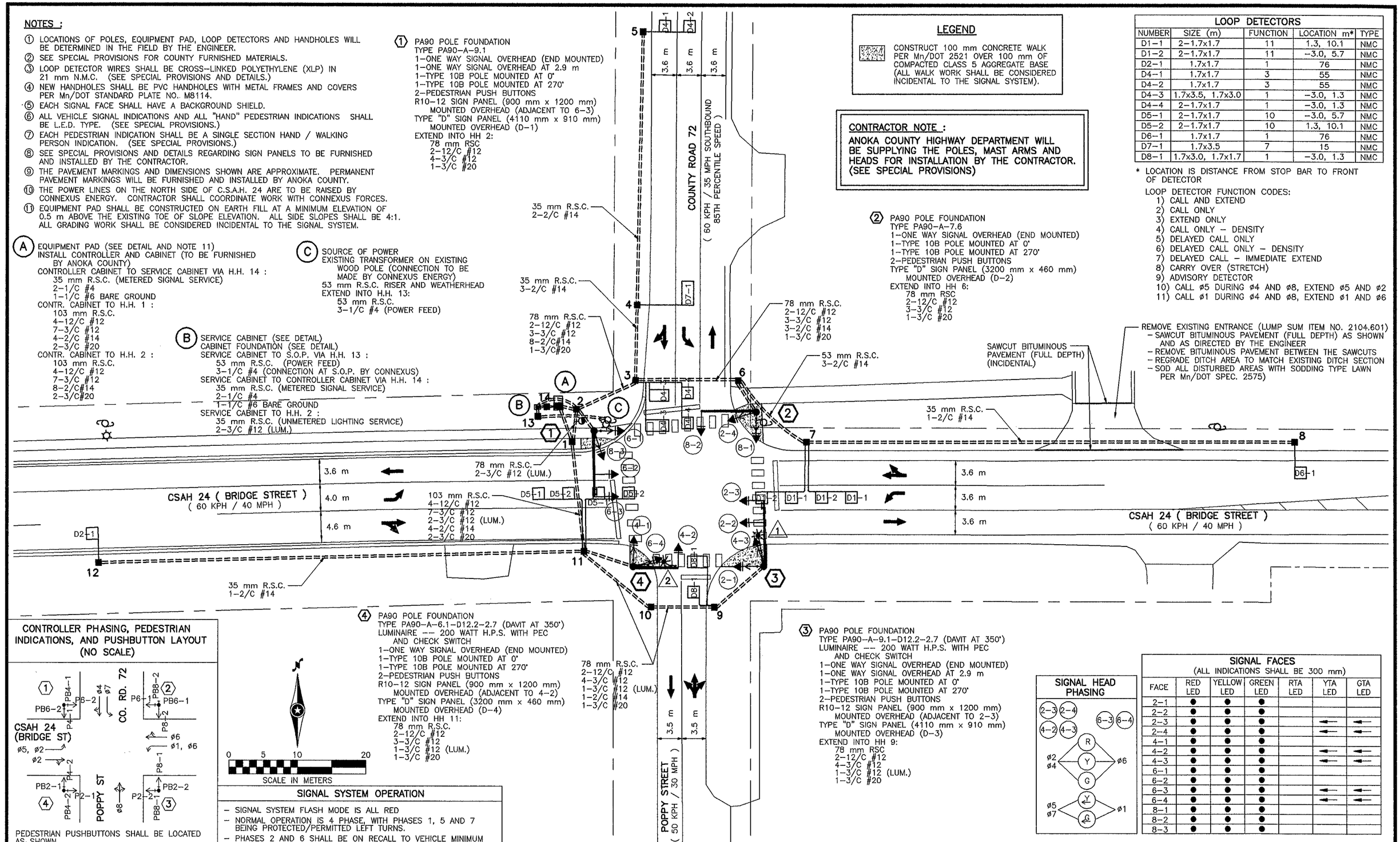
CONTRACTOR NOTE :
ANOKA COUNTY HIGHWAY DEPARTMENT WILL BE SUPPLYING THE POLES, MAST ARMS AND HEADS FOR INSTALLATION BY THE CONTRACTOR. (SEE SPECIAL PROVISIONS)

(2) PA90 POLE FOUNDATION
TYPE PA90-A-7.6
1-ONE WAY SIGNAL OVERHEAD (END MOUNTED)
1-TYPE 10B POLE MOUNTED AT 0°
1-TYPE 10B POLE MOUNTED AT 270°
2-PEDESTRIAN PUSH BUTTONS
TYPE "D" SIGN PANEL (3200 mm x 460 mm) MOUNTED OVERHEAD (D-2)
EXTEND INTO HH 6:
78 mm RSC
2-12/C #12
3-3/C #12
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 ø5 DURING ø4 AND ø8, EXTEND ø5 AND ø2
11) CALL ø1 DURING ø4 AND ø8, EXTEND ø1 AND ø6



(4) PA90 POLE FOUNDATION
TYPE PA90-A-6.1-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 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 4-2)
TYPE "D" SIGN PANEL (3200 mm x 460 mm) MOUNTED OVERHEAD (D-4)
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 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 2-3)
TYPE "D" SIGN PANEL (4110 mm x 910 mm) MOUNTED OVERHEAD (D-3)
EXTEND INTO HH 9:
78 mm RSC
2-12/C #12
4-3/C #12
1-3/C #12 (LUM.)
1-3/C #20

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

PEDESTRIAN PUSHBUTTONS SHALL BE LOCATED AS SHOWN

0 5 10 20
SCALE IN METERS

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 HEAD PHASING

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	●	●	●			

NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.
Steven V. Bowen
DATE 8/3/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

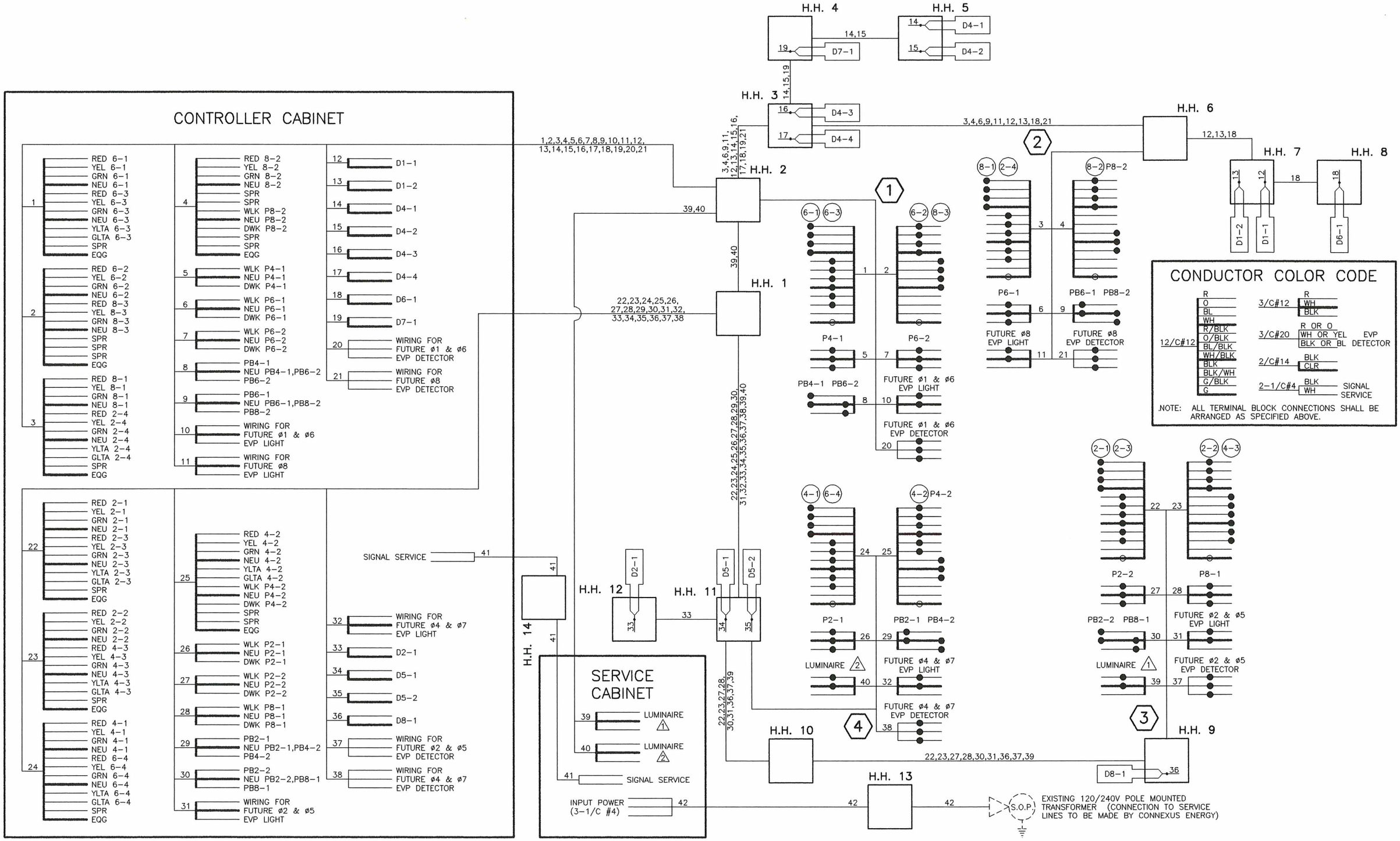
STATE PROJECT NO.
STATE PROJECT NO.
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO.

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 5 of 7 Sheets



NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.

Steven M. Bowser

DATE 6/28/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO. _____

ANOKA COUNTY
HIGHWAY DEPT.

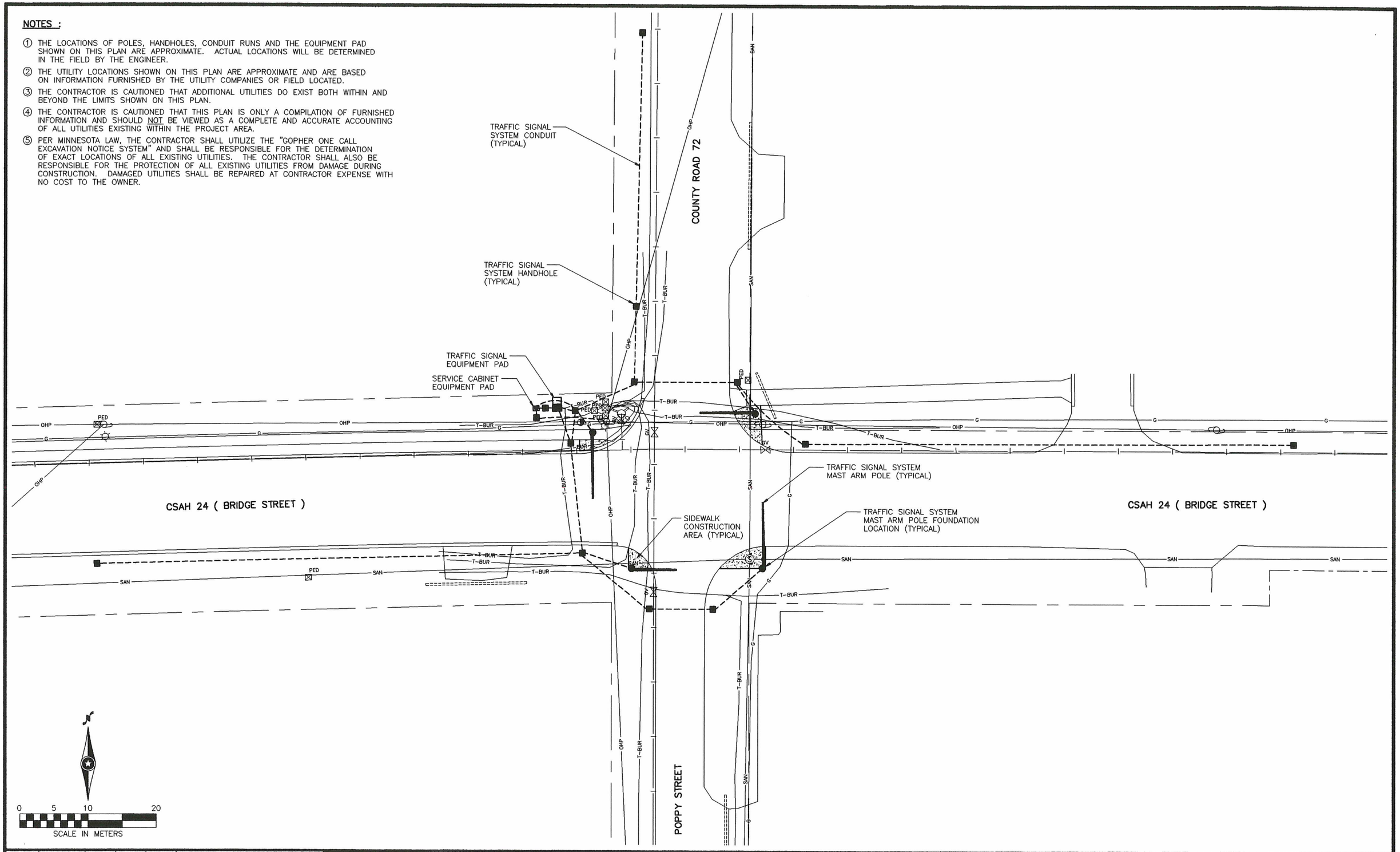
TRAFFIC SIGNAL SYSTEM FIELD WIRING DIAGRAM

CSAH 24 (BRIDGE ST) ● CO. RD. 72

Sheet 6 of 7 Sheets

NOTES :

1. THE LOCATIONS OF POLES, HANDHOLES, CONDUIT RUNS AND THE EQUIPMENT PAD SHOWN ON THIS PLAN ARE APPROXIMATE. ACTUAL LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. THE UTILITY LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED ON INFORMATION FURNISHED BY THE UTILITY COMPANIES OR FIELD LOCATED.
3. THE CONTRACTOR IS CAUTIONED THAT ADDITIONAL UTILITIES DO EXIST BOTH WITHIN AND BEYOND THE LIMITS SHOWN ON THIS PLAN.
4. THE CONTRACTOR IS CAUTIONED THAT THIS PLAN IS ONLY A COMPILATION OF FURNISHED INFORMATION AND SHOULD NOT BE VIEWED AS A COMPLETE AND ACCURATE ACCOUNTING OF ALL UTILITIES EXISTING WITHIN THE PROJECT AREA.
5. PER MINNESOTA LAW, THE CONTRACTOR SHALL UTILIZE THE "GOPHER ONE CALL EXCAVATION NOTICE SYSTEM" AND SHALL BE RESPONSIBLE FOR THE DETERMINATION OF EXACT LOCATIONS OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. DAMAGED UTILITIES SHALL BE REPAIRED AT CONTRACTOR EXPENSE WITH NO COST TO THE OWNER.



NO	DATE	BY	CKD	APPR	REVISION

PARSONS
Barton-Aschman Associates, Inc.
A Unit of Parsons Transportation Group Inc.

minnesota metric

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.
Steven N. Bowers
DATE 6/29/99 REG. NO. 21817

DRAWN BY SNB DATE 6/99
DESIGN BY SNB DATE 6/99
CHECKED BY LEW DATE 6/99

STATE PROJECT NO. _____
STATE PROJECT NO. _____
STATE AID PROJECT NO. 02-624-23
COUNTY PROJECT NO. _____

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM
SITE UTILITIES INFORMATION
CSAH 24 (BRIDGE ST) @ CO. RD. 72

Sheet 7 of 7 Sheets