

SIGNAL STRUCTURE AND COMPONENT LOCATION			
NO.	LOCATION	NO.	LOCATION
HH-1	STA 42+13 (NORTH), 55' RT	HH-11	STA 42+96 (NORTH), 42' RT
HH-2	STA 41+49 (NORTH), 57' RT	HH-12	STA 43+47 (NORTH), 44' RT
HH-3	STA 96+23, 24' LT		
HH-4	STA 40+87 (NORTH), 48' RT	JB-1	STA 38+60 (NORTH), 30' RT
HH-5	STA 39+89 (NORTH), 33' RT		
HH-6	STA 41+39 (SOUTH), 19' LT		
HH-7	STA 42+05 (SOUTH), 19' LT		
HH-8	STA 44+30 (SOUTH), 19' LT	CAC-1	STA 42+66 (NORTH), 40' RT
HH-9	STA 42+05 (SOUTH), 22' RT	SP-1	STA 42+68 (NORTH), 40' RT
HH-10	STA 42+50 (NORTH), 40' RT	SOP-1	WOOD POLE (TO BE FURNISHED AND INSTALLED BY NSP)

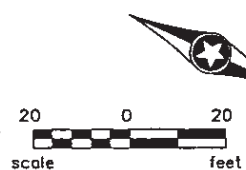
NO.	LOCATION
MA-1	STA 42+39 (NORTH), 39' RT AIM ARM TO STA 42+39 (NORTH), 6' LT (45' ARM)
MA-2	STA 41+18 (SOUTH), 24' LT AIM ARM TO STA 41+18 (SOUTH), 6' RT (30' ARM)
MA-3	STA 41+86 (SOUTH), 22' RT AIM ARM TO STA 41+51 (SOUTH), 22' RT (35' ARM)
SA-1	STA 41+44 (NORTH), 40' RT (10' PEDESTAL POLE AND BASE)
SA-2	STA 40+87 (NORTH), 33' RT (15' PEDESTAL POLE AND BASE)
SA-3	STA 41+83 (SOUTH), 21' LT (15' PEDESTAL POLE AND BASE)

NO.	LOCATION	LOOP SIZE (FT)	NO. OF TURNS	DETECTOR FUNCTION
D2-1,2	NORTH EDGE AT STA 44+33 (SOUTH), EAST EDGE AT 4' LT, 10' RT	6 x 8	4	(1)
D4-1,2	NORTH EDGE AT STA 96+14, EAST EDGE AT 3' RT, 10' LT	6 x 8	4	(1)
D4-3,4,5	NORTH EDGE AT STA 42+13, 42+04, 41+97 (NORTH), EAST EDGE AT 37' RT, 50' RT, 83' RT	6 x 8	4	(2)
D4-6,7,8	NORTH EDGE AT STA 41+75 (NORTH), EAST EDGE AT 35' RT, 50' RT, 65' RT	6 x 8	4	(1)
D4-9,10,11	NORTH EDGE AT STA 41+63 (NORTH), EAST EDGE AT 35' RT, 50' RT, 65' RT	6 x 8	4	(1)
D6-1,2,3	NORTH EDGE AT STA 38+52 (NORTH), EAST EDGE AT 21' RT, 9' RT, 4' LT	6 x 8	4	(1)

* = NUMBER OF TURNS IN THE LOOP UNLESS SPECIFIED BY THE MANUFACTURER.
 (1) = CALL AND EXTEND
 (2) = DELAYED CALL AND IMMEDIATE EXTEND

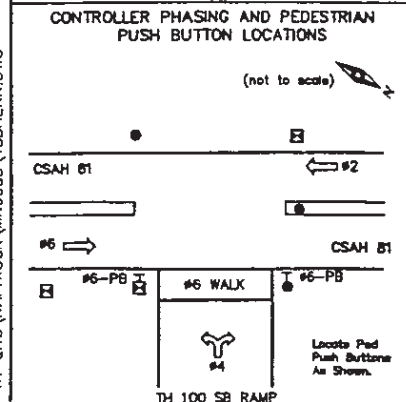
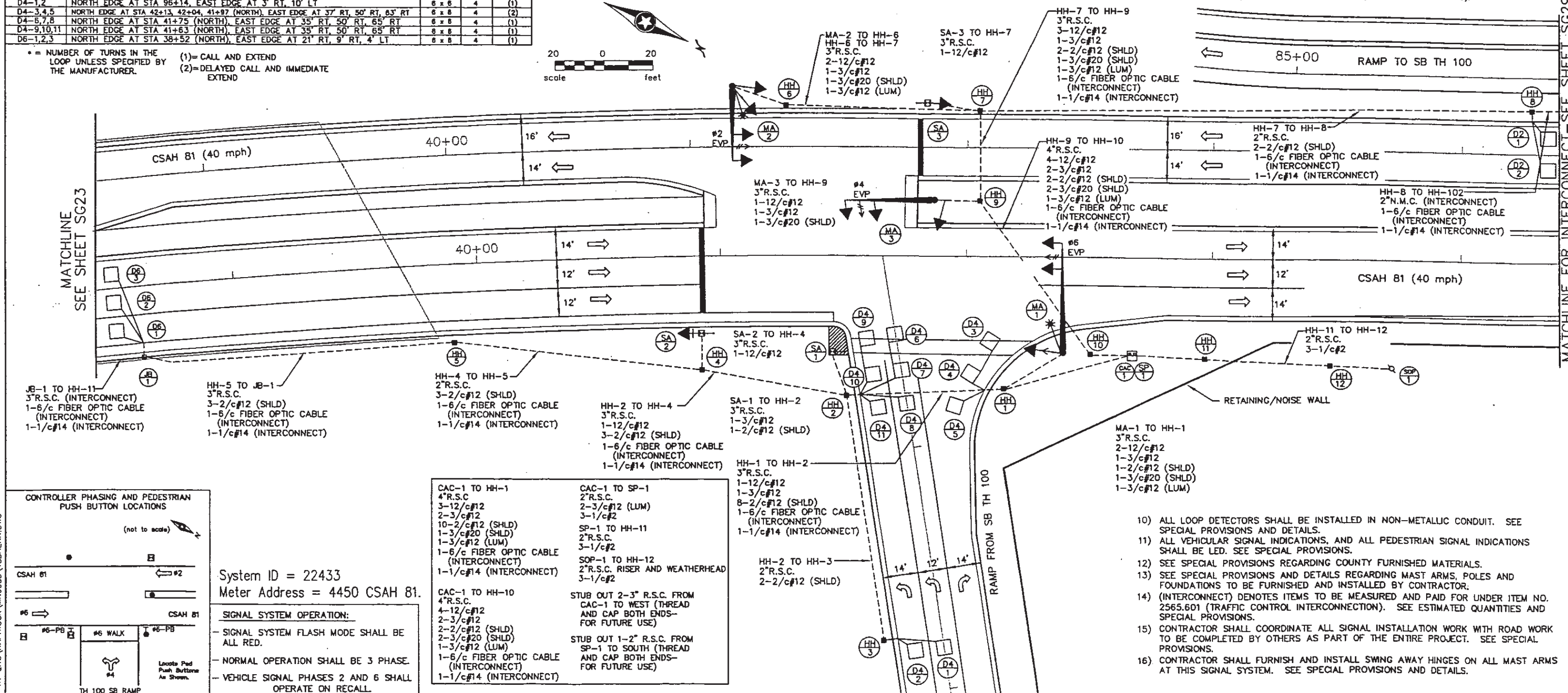
NOTES:

- HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS, WITH CONCRETE COLLARS (SEE SPECIAL PROVISIONS).
- PEDESTRIAN PUSH BUTTONS AND SIGNS SHALL BE INSTALLED FOR OPERATION AS SHOWN IN PHASING LAYOUT. PEDESTRIAN PUSH BUTTONS AND SIGNS SHALL BE IN ACCORDANCE WITH MN/DOT 3833 AND SPECIAL PROVISIONS.
- PEDESTRIAN INDICATIONS SHALL BE ONE SECTION INDICATIONS AND SHALL UTILIZE INTERNATIONAL HAND AND WALKING PERSON SYMBOLS (SEE SPECIAL PROVISIONS).
- 250 WATT HIGH PRESSURE SODIUM VAPOR LUMINAIRES (WITH PHOTOELECTRIC CELL RECEPTACLE) SHALL BE INSTALLED ON THE LUMINAIRE SHAFT EXTENSION AT MA-1 AND MA-2. SEE DETAILS.
- ALL SIGNAL INDICATIONS SHALL BE FITTED WITH BACKGROUND SHIELDS.
- NO SPLICES WILL BE ALLOWED IN 3/c#12 AND 3/c#20 CABLES (FOR EVP) FROM MAST ARM TO CONTROLLER CABINET. COMBINATION ONE-WAY EVP DETECTOR AND INDICATOR LIGHT SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM.
- TYPE C AND D SIGN PANELS SHALL BE FURNISHED AND INSTALLED AS CALLED FOR IN DETAILS AND SPECIAL PROVISIONS (INCIDENTAL TO ITEM NO. 2565.511).
- CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR POLE MOUNTED VEHICLE SIGNAL FACES.
- EXACT LOCATION OF FOUNDATIONS, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.



CSAH 81 AT TRUNK HIGHWAY 100 WEST RAMPS SIGNAL INDICATIONS AND BRACKETING													
SIGNAL POLE NO.	FACE NO.	SIGNAL FACE MOUNT	SIGNAL #	VEHICULAR INDICATION SIZE AND TYPE			PEDESTRIAN (IN)		BRACKET MOUNTING ANGLE, TYPE AND STANDARD PLATE NO.				
				CIRCULAR (IN)	TURN ARROWS (IN)	RED	YELLOW	GREEN	DON'T WALK	WALK			
SA-1	-	POLE MOUNT	6						**	**	TYPE 4A/PLATE B111C		
SA-2	6-1	POLE MOUNT	6	12	12	12					TYPE 5A/PLATE B111C		
SA-3	2-1	POLE MOUNT	2	12	12	12					TYPE 5A/PLATE B111C		
MA-1	6-4	MAST ARM (END)	6	12	12	12					ONE WAY MOUNT/PLATE B124E		
	6-3	MAST ARM (MID)	6	12	12	12					ONE WAY MOUNT/PLATE B124E		
	6-2	POLE MOUNT	6	12	12	12			**	**	270°, TYPE 10B/PLATE B110D		
MA-2	2-4	MAST ARM (END)	2	12	12	12					ONE WAY MOUNT/PLATE B124E		
	2-3	MAST ARM (MID)	2	12	12	12					ONE WAY MOUNT/PLATE B124E		
	2-2	POLE MOUNT	2	12	12	12					270°, TYPE 10A/PLATE B110D		
	4-4	POLE MOUNT	4	12			12 LT	12 LT			0°, TYPE 10A/PLATE B110D		
MA-3	4-3	MAST ARM (END)	4	12			12 LT	12 LT			ONE WAY MOUNT/PLATE B124E		
	4-2	MAST ARM (MID)	4	12			12 LT	12 LT			ONE WAY MOUNT/PLATE B124E		
	4-1	POLE MOUNT	4	12			12 RT	12 RT			180°, TYPE 10A/PLATE B110D		

LT = LEFT ARROW
 RT = RIGHT ARROW
 ** = ONE SECTION HAND/WALKING PERSON INDICATION (SEE SPECIAL PROVISIONS).



System ID = 22433
 Meter Address = 4450 CSAH 81.

SIGNAL SYSTEM OPERATION:
 - SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
 - NORMAL OPERATION SHALL BE 3 PHASE.
 - VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

CAC-1 TO HH-1
 4*R.S.C.
 3-12/c#12
 2-3/c#12
 10-2/c#12 (SHLD)
 1-3/c#20 (SHLD)
 1-3/c#12 (LUM)
 1-6/c FIBER OPTIC CABLE (INTERCONNECT)
 1-1/c#14 (INTERCONNECT)

CAC-1 TO SP-1
 2*R.S.C.
 2-3/c#12 (LUM)
 3-1/c#2

SP-1 TO HH-11
 2*R.S.C.
 3-1/c#2

SOP-1 TO HH-12
 2*R.S.C. RISER AND WEATHERHEAD
 3-1/c#2

STUB OUT 2-3" R.S.C. FROM CAC-1 TO WEST (THREAD AND CAP BOTH ENDS- FOR FUTURE USE)

STUB OUT 1-2" R.S.C. FROM SP-1 TO SOUTH (THREAD AND CAP BOTH ENDS- FOR FUTURE USE)

- ALL LOOP DETECTORS SHALL BE INSTALLED IN NON-METALLIC CONDUIT. SEE SPECIAL PROVISIONS AND DETAILS.
- ALL VEHICULAR SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED. SEE SPECIAL PROVISIONS.
- SEE SPECIAL PROVISIONS REGARDING COUNTY FURNISHED MATERIALS.
- SEE SPECIAL PROVISIONS AND DETAILS REGARDING MAST ARMS, POLES AND FOUNDATIONS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
- (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR UNDER ITEM NO. 2565.601 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD WORK TO BE COMPLETED BY OTHERS AS PART OF THE ENTIRE PROJECT. SEE SPECIAL PROVISIONS.
- CONTRACTOR SHALL FURNISH AND INSTALL SWING AWAY HINGES ON ALL MAST ARMS AT THIS SIGNAL SYSTEM. SEE SPECIAL PROVISIONS AND DETAILS.

DESIGN TEAM	1	JMG	12/00
DRAWN BY:	GEN		
DESIGNER:	JMG		
CHECKED BY:	JMG		

PER STATE/COUNTY COMMENTS			
NO.	BY	DATE	REVISIONS

I hereby certify that this plan, specifications, or report 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.
 Signature: *John Gray* Date: 2/9/01
 Printed Name: John Gray Reg. No. 22457



MINNESOTA DEPARTMENT OF TRANSPORTATION
 STATE PROJECT NO. 2735-159
 (T.H. 100)

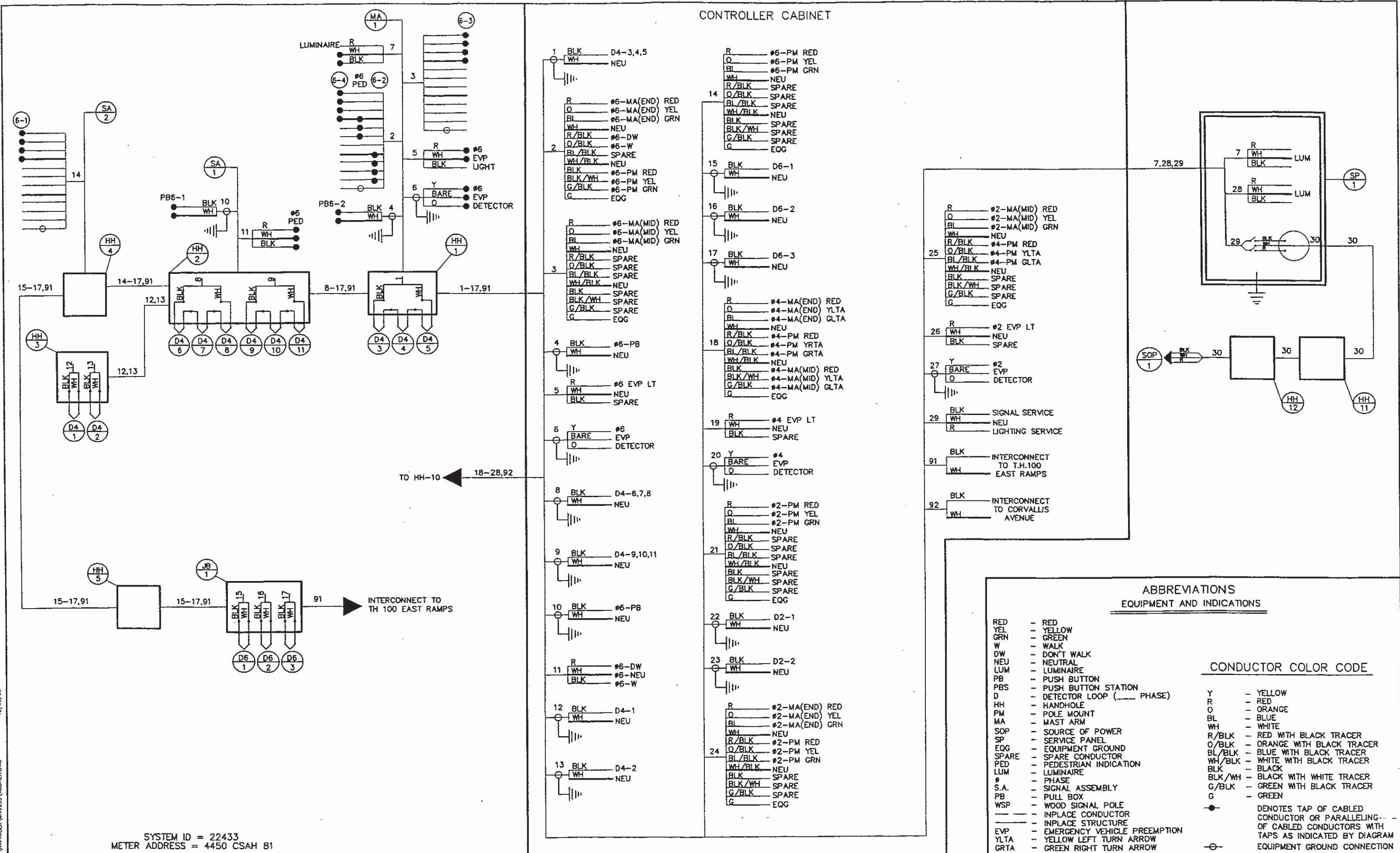
TRAFFIC SIGNAL SYSTEM "D"
 INTERSECTION LAYOUT
 CSAH 81 AT T.H.100 WEST RAMPS

FILE NO. 740
 MNDOT 933
 SG26
 OF SG37

929

N:\STAFF\2-TR-ENG\NAPIWOCK\W98933\TSDHENN.DWG

MATCHLINE FOR INTERCONNECT-SEE SHEET SG29



SYSTEM ID = 22433
METER ADDRESS = 4450 CSAH 81

DESIGN TEAM	1	JMG	12/00	PER STATE COMMENTS
DRAWN BY:	GEN			
DESIGNER:	JMG			
CHECKED BY:	JMG			
NO.	BY	DATE	REVISIONS	

I hereby certify that this plan, specifications, or report 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.
Signature: *John M. Gray* Date: 2/9/01
Printed Name: John Gray Reg. No. 22457

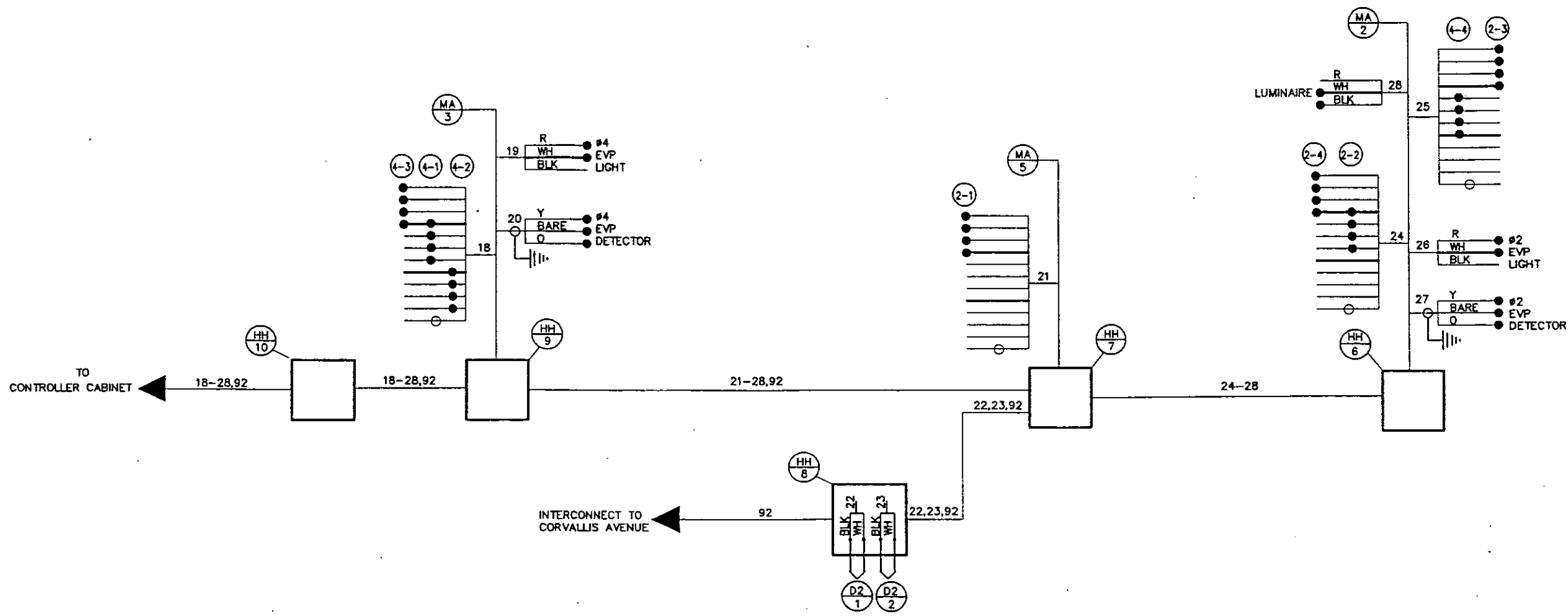


MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE PROJECT NO. 2735-159
(T.H. 100)

TRAFFIC SIGNAL SYSTEM "D"
FIELD WIRING DIAGRAM
CSAH 81 AT T.H.100 WEST RAMPS

FILE NO. 741
MNDOT933
SG27
OF SG37
929

12/00/00
W:\START\2-TR-ENG\WAPROCK\WAPROCK\19933\WOODHEN.DWG



INTERCONNECT TO CORVALLIS AVENUE

ABBREVIATIONS		EQUIPMENT AND INDICATIONS	
RED	- RED		
YEL	- YELLOW		
GRN	- GREEN		
W	- WALK		
DW	- DON'T WALK		
NEU	- NEUTRAL		
LUM	- LUMINAIRE		
PB	- PUSH BUTTON		
PBS	- PUSH BUTTON STATION		
O	- DETECTOR LOOP (____ PHASE)		
HH	- HANDHOLE		
PM	- POLE MOUNT		
MA	- MAST ARM		
SOP	- SOURCE OF POWER		
SP	- SERVICE PANEL		
EGG	- EQUIPMENT GROUND		
SPARE	- SPARE CONDUCTOR		
PED	- PEDESTRIAN INDICATION		
LUM	- LUMINAIRE		
Φ	- PHASE		
S.A.	- SIGNAL ASSEMBLY		
PB	- PULL BOX		
WSP	- WOOD SIGNAL POLE		
---	- INPLACE CONDUCTOR		
---	- INPLACE STRUCTURE		
EVP	- EMERGENCY VEHICLE PREEMPTION		
YLTA	- YELLOW LEFT TURN ARROW		
GRTA	- GREEN RIGHT TURN ARROW		
		CONDUCTOR COLOR CODE	
Y	- YELLOW		
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		
●	- DENOTES TAP OF CABLED CONDUCTOR OR PARALLELING OF CABLED CONDUCTORS WITH TAPS AS INDICATED BY DIAGRAM		
⊖	- EQUIPMENT GROUND CONNECTION		

SYSTEM ID = 22433
METER ADDRESS = 4450 CSAH 81

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DESIGNER:	JMG			
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

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STATE PROJECT NO. 2735-159
(T.H. 100)

TRAFFIC SIGNAL SYSTEM "D"
FIELD WIRING DIAGRAM
CSAH 81 AT T.H.100 WEST RAMPS

FILE NO.	742
MNDOT 933	
SG28	929
OF SG37	

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