

(A) INSTALL CONTROLLER AND CABINET
(FURNISHED BY COUNTY)
CABINET FOUNDATION
EXTEND INTO H.H.19:
METERED SIGNAL SERVICE
2" R.S.C.
3-1/c#8
EXTEND INTO H.H.1:
3" R.S.C.
2-2/c#14

(**) 1-12 SM FIBER-OPTIC CABLE-F & I

EXTEND INTO H.H.3:
2-4" R.S.C.
6-12/c#12
4-3/c#12
3-3/c#20
12-2/c#14

EXTEND INTO H.H.18:
2-4" R.S.C.
6-12/c#12
4-3/c#12
3-3/c#20
8-2/c#14

EXTEND INTO H.H.20:
4" R.S.C.
2-6 Pr.#19-INPLACE
8-2/c#14

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

STUB OUT 1" R.S.C. FROM CABINET TO WEST (THREAD AND CAP-FOR FUTURE PHONE LINE)

H.H.2 TO H.H.100:
2" R.S.C.-INPLACE (EMPTY)

H.H.18 TO H.H.19:
2" R.S.C.
4-3/c#12 (LUM)

H.H.3 TO H.H.18:
2" R.S.C.
2-3/c#12 (LUM)

H.H.20 TO H.H.21:
4" R.S.C.-INPLACE (EXTEND INTO NEW H.H.20)
2-6 Pr.#19-INPLACE
8-2/c#14

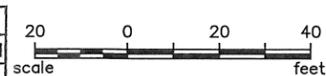
H.H.1 TO H.H.100:

(**) 1.5" CONDUIT-F & I (BORE UNDER EXISTING ROAD/WALK)
(**) 1-12 SM FIBER-OPTIC CABLE-F & I (TO 91ST AVE SIGNAL SYSTEM)

(B) SIGNAL SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO H.H.19:
2" R.S.C.
METERED SIGNAL SERVICE
3-1/c#8
UNMETERED STREET LIGHT SERVICE
4-3/c#12 (LUM)
STUB OUT 2" R.S.C. FROM SERVICE CABINET (FOR SERVICE BY CONNEXUS)

(C) INPLACE WOOD POLE WITH LUMINAIRE-REMOVE INPLACE OVERHEAD CABLES-TO BE REMOVED BY CONNEXUS

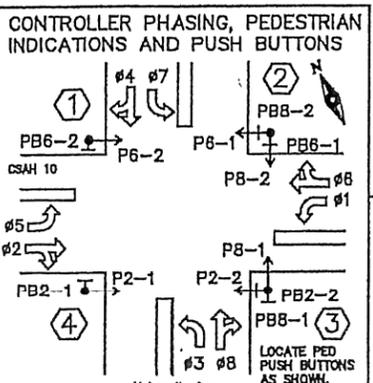
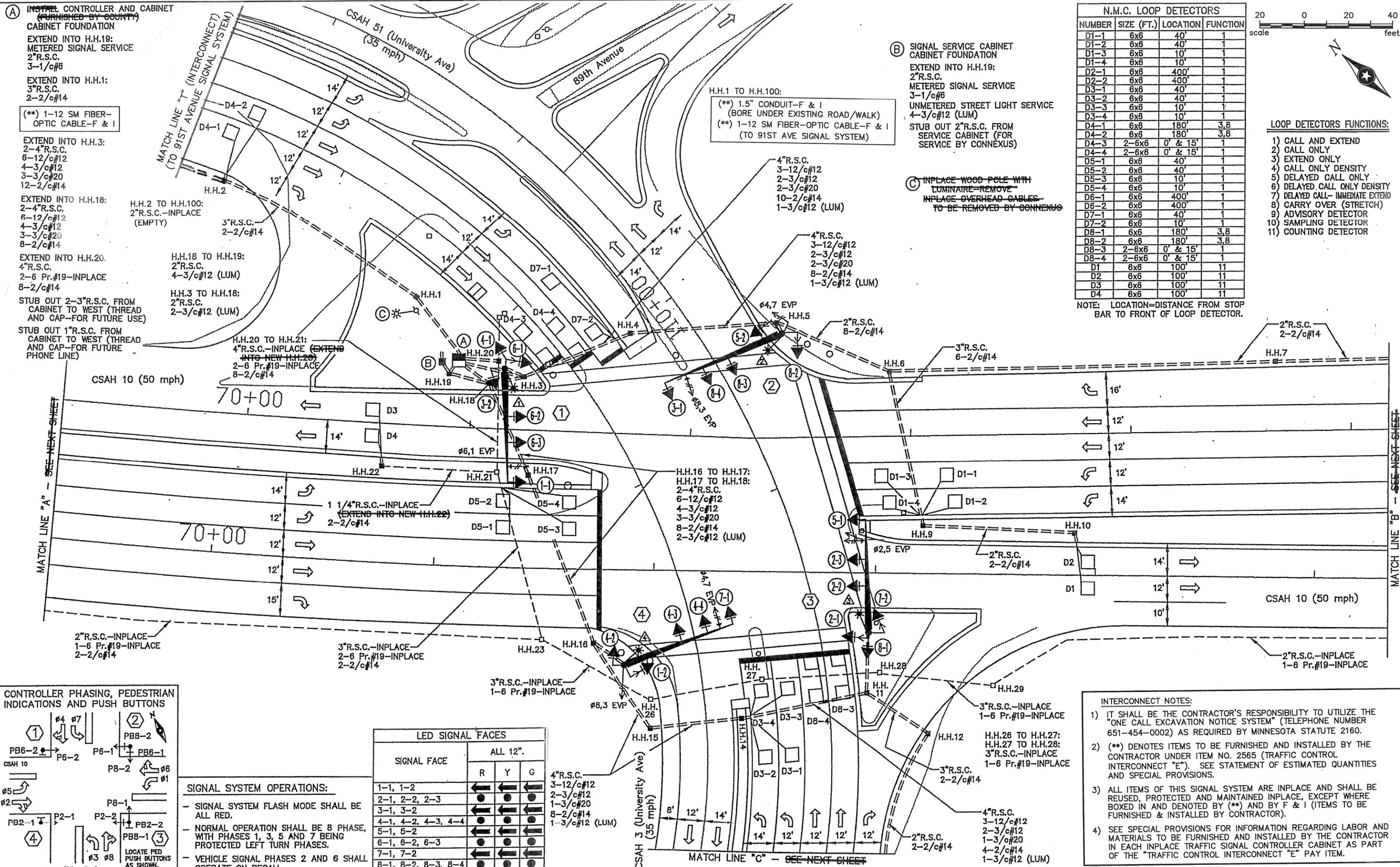
N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	40'	1
D1-3	6x6	10'	1
D1-4	6x6	10'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D3-1	6x6	40'	1
D3-2	6x6	40'	1
D3-3	6x6	10'	1
D3-4	6x6	10'	1
D4-1	6x6	180'	3,8
D4-2	6x6	180'	3,8
D4-3	2-6x6	0' & 15'	1
D4-4	2-6x6	0' & 15'	1
D5-1	6x6	40'	1
D5-2	6x6	40'	1
D5-3	6x6	10'	1
D5-4	6x6	10'	1
D6-1	6x6	400'	1
D6-2	6x6	400'	1
D7-1	6x6	40'	1
D7-2	6x6	10'	1
D8-1	6x6	180'	3,8
D8-2	6x6	180'	3,8
D8-3	2-6x6	0' & 15'	1
D8-4	2-6x6	0' & 15'	1
D1	6x6	100'	11
D2	6x6	100'	11
D3	6x6	100'	11
D4	6x6	100'	11



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) COUNTING DETECTOR

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



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.

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

INTERCONNECT NOTES:

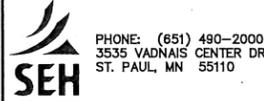
- 1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
- 2) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "E"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED BY (**) AND BY F & I (ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR).
- 4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECT "E" PAY ITEM.

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.

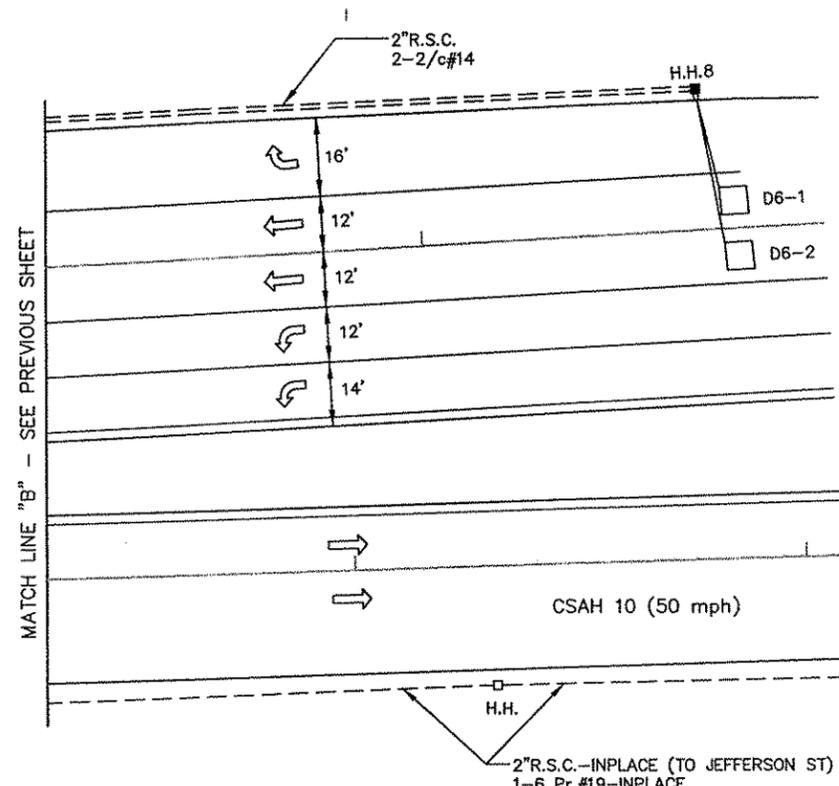
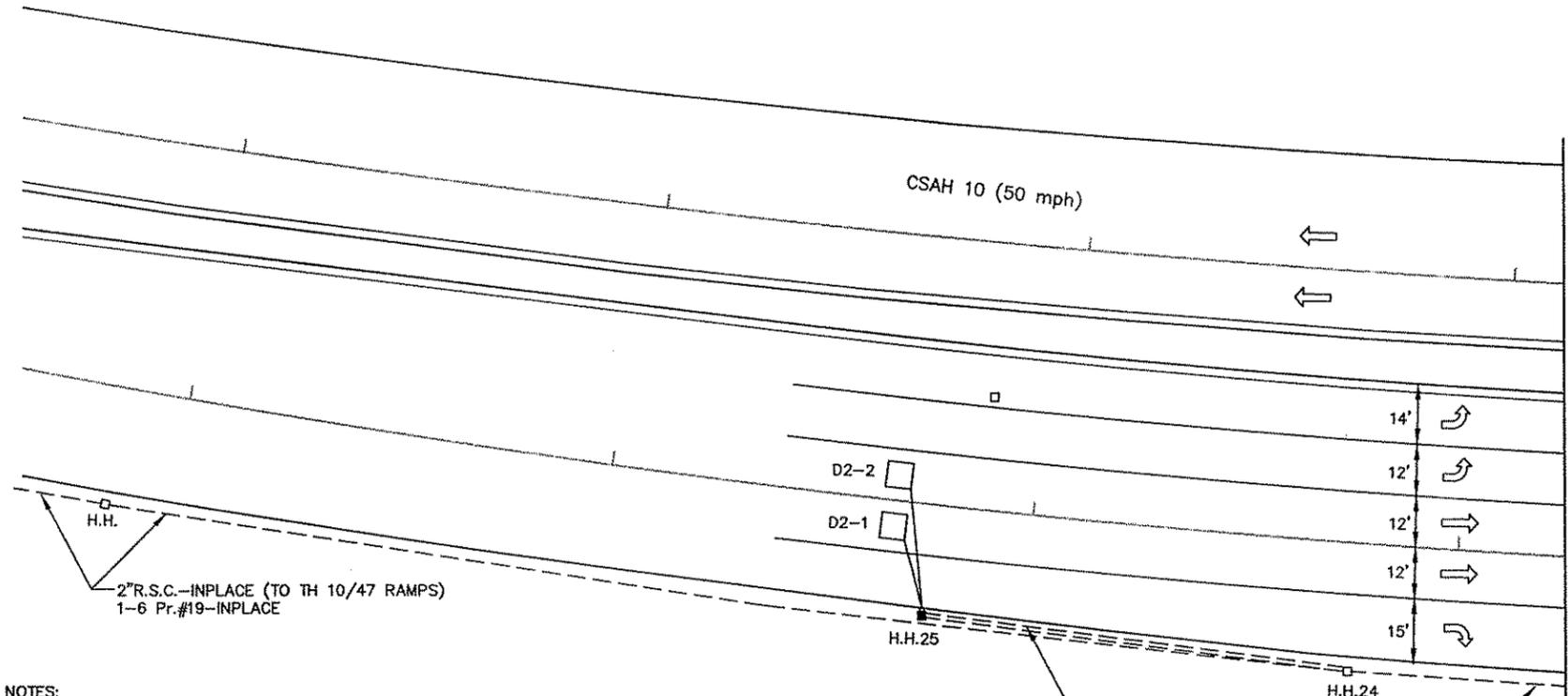
John M. Gray
Name: John M. Gray, PE
Lic. No. 22457
Date: July 6, 2018



ANOKA COUNTY, MN
CITIES OF BLAINE, COON RAPIDS
SAP 002-030-010

TRAFFIC SIGNAL INTERCONNECT "E"
INTERSECTION LAYOUT
CSAH 51 (UNIVERSITY AVENUE)
AT CSAH 10

FILE NO. ANOK 142312
93
115



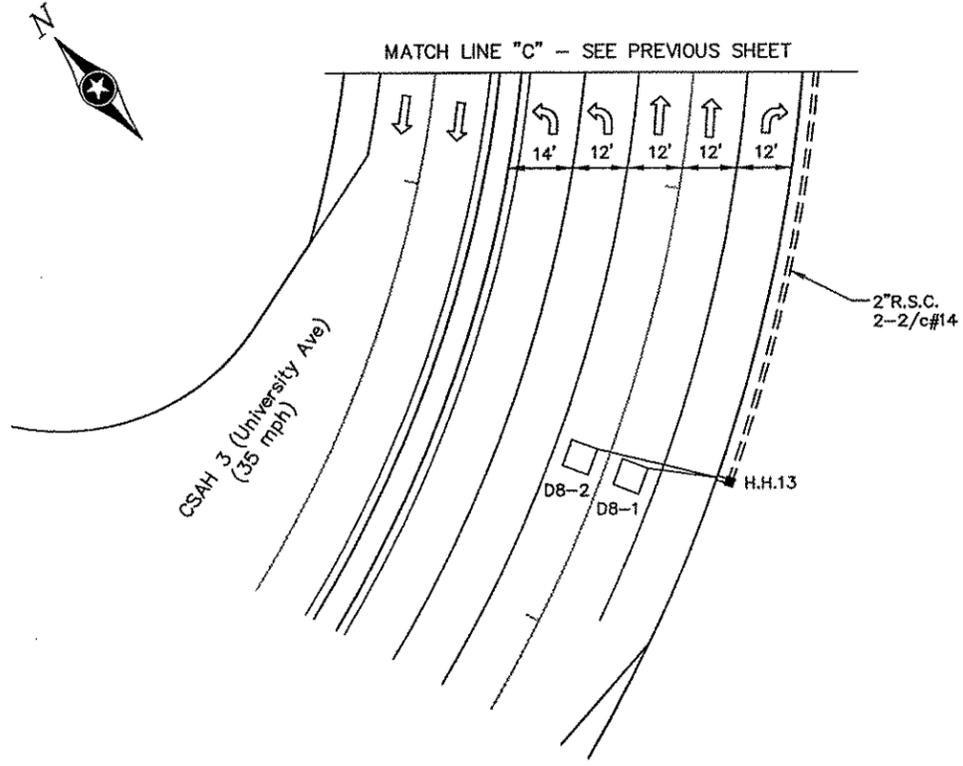
- NOTES:**
- 1) LOCATION OF POLES, CONTROLLER AND SERVICE CABINETS, LOOP DETECTORS & HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
 - 5) CONTRACTOR SHALL FURNISH & INSTALL NEW CONCRETE COVERS FOR INPLACE HANDHOLES 21, 23 AND 26.
 - 6) CONTRACTOR SHALL CUT HANDHOLE 27 DOWN BELOW ROADWAY, SHALL CONNECT INPLACE 3" R.S.C. WITHIN HANDHOLE (TO AID IN FUTURE CABLE PULLING THROUGH HANDHOLE), SHALL PULL ANY SLACK CABLE FROM HANDHOLE, SHALL PROVIDE METAL COVER OVER THE HANDHOLE, SHALL FILL HANDHOLE WITH SAND, AND SHALL PAVE OVER HANDHOLE, TO SATISFACTION OF ENGINEER.
 - 7) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
 - 8) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION HAND/WALKING PERSON INDICATION.
 - 9) ALL VEHICLE SIGNAL INDICATIONS, AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
 - 10) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNING TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
 - 11) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL FACE.
 - 12) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6' FROM END OF EACH MAST ARM (FOR EVP).
 - 13) CONTRACTOR SHALL COORDINATE ALL SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION TO BE COMPLETED BY OTHERS AS PART OF ENTIRE PROJECT.
 - 14) CONTRACTOR SHALL MAINTAIN OPERATION OF SIGNAL SYSTEM AT ALL TIMES, UNTIL OTHERWISE APPROVED BY ENGINEER FOR SIGNAL SYSTEM TO BE TURNED OFF.
 - 15) CONTRACTOR SHALL REMOVE & SALVAGE ALL ITEMS OF INPLACE SIGNAL SYSTEM (EXCEPT FOR INTERCONNECT CABLES) (TO BE MEASURED AND PAID FOR SEPARATELY UNDER ITEM NO. 2104).
 - 16) CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING & HOLDING EXISTING SIGNAL POLES & FOUNDATIONS INPLACE WHEN INSTALLING NEW CONCRETE FOUNDATIONS (INCIDENTAL TO ITEM NO. 2565).
 - 17) CONTRACTOR SHALL NOTE PRESENCE OF HIGH WATER TABLE THROUGH AREA, AND SHALL BE RESPONSIBLE FOR ALL WORK (INCLUDING DEWATERING) REQUIRED FOR FOUNDATION INSTALLATIONS.

① PA100 POLE FOUNDATION
 TYPE PA100-A-50-D40-9 (DAVT AT 350')
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
 TYPE 10A-POLE MOUNTED 90°
 TYPE 20B-POLE MOUNTED 180°
 1-PEDESTRIAN PUSH BUTTON
 R9-3a SIGN PANEL-FACING POLE 4
 TYPE D SIGN PANEL-OVERHEAD (D-1)
 ONE WAY EVP DETECTOR AND LIGHT (#6,1)
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
 EXTEND INTO H.H.3:
 3"R.S.C.
 3-12/c#12
 2-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)

② PA100 POLE FOUNDATION
 TYPE PA100-A-55-D40-9 (DAVT AT 350')
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
 2-TYPE 10B-POLE MOUNTED 90° & 180°
 2-PEDESTRIAN PUSH BUTTONS
 TYPE D SIGN PANEL-OVERHEAD (D-2)
 ONE WAY EVP DETECTOR AND LIGHT (#8,3)
 ONE WAY EVP DETECTOR-POLE MOUNTED 90° (#4,7)
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
 EXTEND INTO H.H.5:
 3"R.S.C.
 3-12/c#12
 2-3/c#12
 2-3/c#20
 1-3/c#12 (LUM)

③ PA100 POLE FOUNDATION
 TYPE PA100-A-50-D40-9 (DAVT AT 350')
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
 TYPE 10B-POLE MOUNTED 90°
 TYPE 20B-POLE MOUNTED 180°
 2-PEDESTRIAN PUSH BUTTONS
 TYPE D SIGN PANELS-OVERHEAD (D-3)
 TWO WAY EVP DETECTOR AND ONE WAY LIGHT (#2,5)
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
 EXTEND INTO H.H.11:
 3"R.S.C.
 3-12/c#12
 2-3/c#12
 1-3/c#20
 1-3/c#12 (LUM)

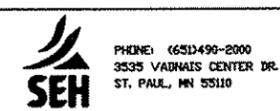
④ PA100 POLE FOUNDATION
 TYPE PA100-A-50-D40-9 (DAVT AT 350')
 LUMINAIRE-250 W HPS
 3-ONE WAY SIGNALS-OVERHEAD (0', 11' AND 23' FROM END OF MAST ARM)
 TYPE 10B-POLE MOUNTED 90°
 TYPE 10A-POLE MOUNTED 180°
 1-PEDESTRIAN PUSH BUTTON
 R9-3a SIGN PANEL-FACING POLE 1
 TYPE D SIGN PANEL-OVERHEAD (D-4)
 ONE WAY EVP DETECTOR AND LIGHT (#4,7)
 ONE WAY EVP DETECTOR-POLE MOUNTED 90° (#8,3)
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
 EXTEND INTO H.H.16:
 3"R.S.C.
 3-12/c#12
 2-3/c#12
 2-3/c#20
 1-3/c#12 (LUM)



10/21/04
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DESIGN TEAM	I	JMG	09/04	REVISED GEOMETRICS
DRAWN BY:	JMG			
DESIGNER:	JMG			
CHECKED BY:	JMG			
	NO.	BY	DATE	REVISIONS

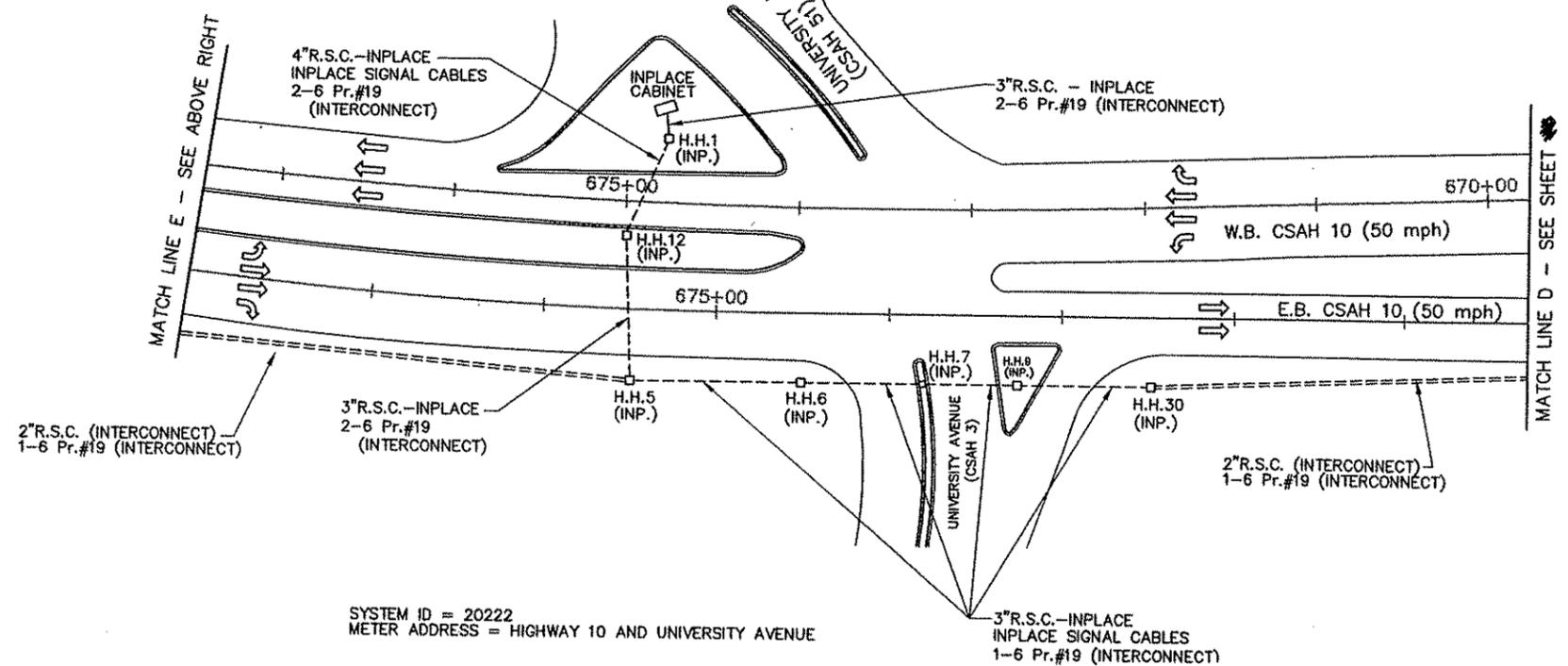
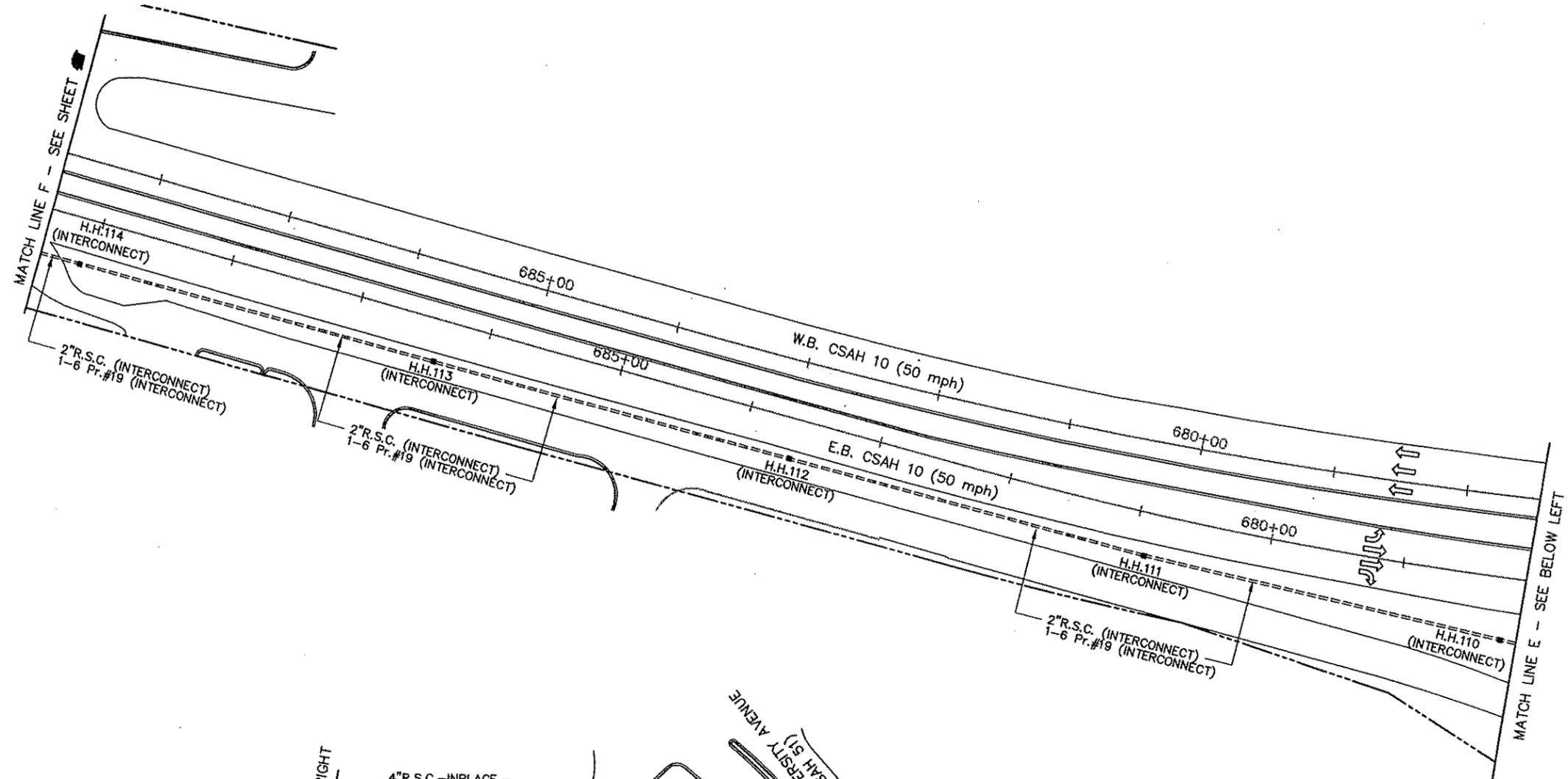
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
 Certified By: *John M. Gray* Lic. No. 22457
 Printed Name: John M. Gray Date: 10/21/04



ANDOKA COUNTY, MINNESOTA
INTERSECTION IMPROVEMENTS:
CSAH 10 @ CSAH 51/CSAH 3

TRAFFIC SIGNAL SYSTEM
INTERSECTION LAYOUT
 STATE PROJECT NO. 02-610-11
 STATE PROJECT NO. 106-020-24

FILE NO.	62
ANOKC0410.00	
DATE	10/21/04
	92



SYSTEM ID = 20222
METER ADDRESS = HIGHWAY 10 AND UNIVERSITY AVENUE

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATION ONLY.

10/21/04

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DESIGN TEAM			
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.

Certified By: *John M. Gray* Lic. No. 22457
Printed Name: John M. Gray Date: 10/21/04

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



ANOKA COUNTY, MINNESOTA
**INTERSECTION IMPROVEMENTS:
CSAH 10 @ CSAH 51/CSAH 3**

**INPLACE SIGNAL SYSTEM
FOR INFORMATION ONLY**

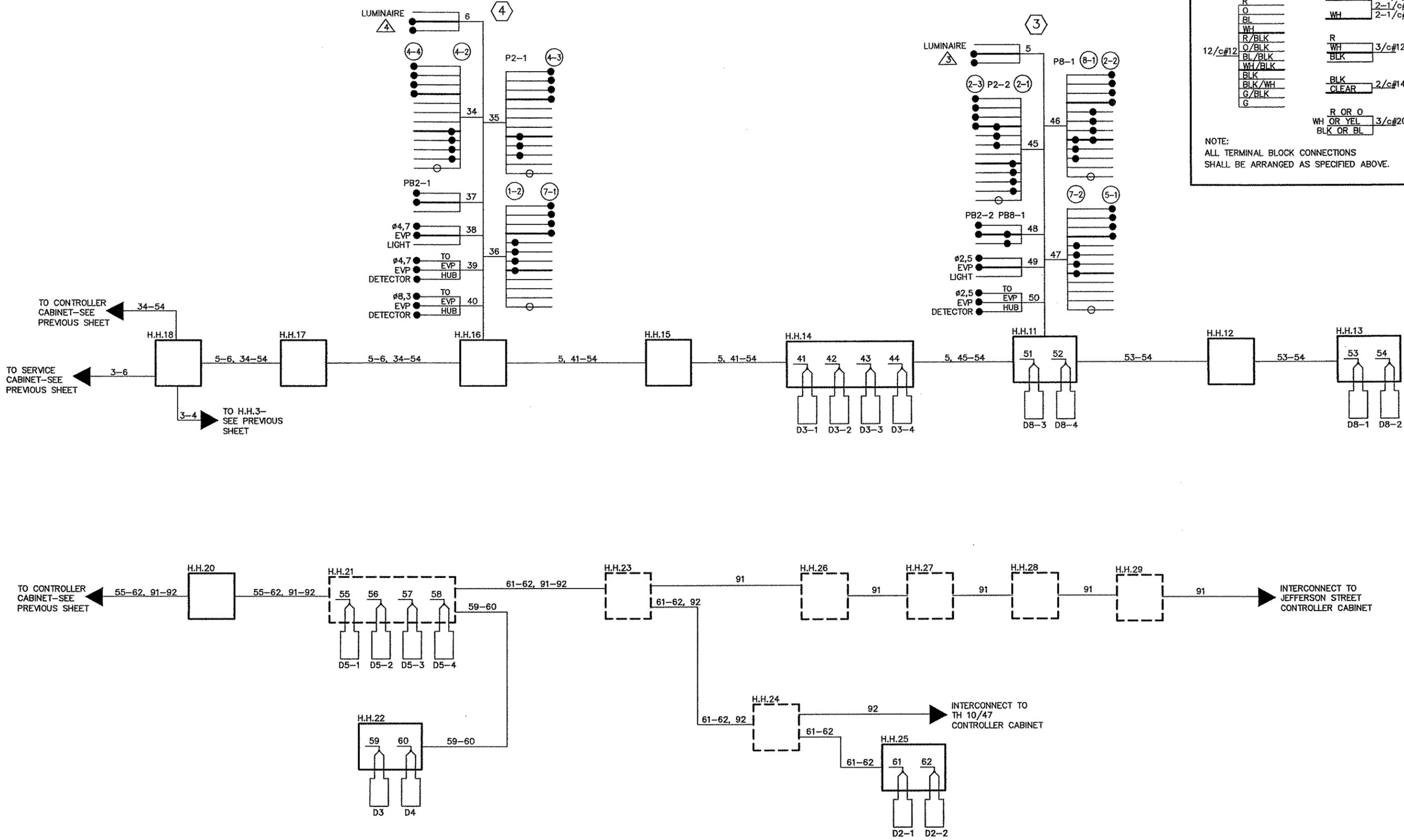
STATE PROJECT NO. 02-610-11
STATE PROJECT NO. 106-020-24

FILE NO.	65
ANDKCO410.00	
DATE	10/21/04
	92

CONDUCTOR COLOR CODING

R	BLK	2-1/c#2
O	WH	2-1/c#6
BL	WH	2-1/c#10
WH	R	
R/BLK	WH	3/c#12
O/BLK	BLK	
BL/BLK	BLK	
WH/BLK	BLK	
BLK	BLK	2/c#14
BLK/WH	CLEAR	
G/BLK	CLEAR	
G	R OR O	
	WH OR YEL	3/c#20
	BLK OR BL	

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



10/21/04

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DESIGN TEAM	1	JMG	09/04	REVISED GEOMETRICS	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. Certified By: <i>[Signature]</i> L.C. No. 22457 Printed Name: John M. Gray Date: 10/21/04		ANOKA COUNTY, MINNESOTA INTERSECTION IMPROVEMENTS: CSAH 10 @ CSAH 51/CSAH 3	TRAFFIC SIGNAL SYSTEM FIELD WIRING DIAGRAM STATE PROJECT NO. 02-610-11 STATE PROJECT NO. 106-020-24	FILE NO.	64
DRAWN BY:	JMG			ANOKC0410.00					DATE	
DESIGNER:	JMG									
CHECKED BY:	JMG									