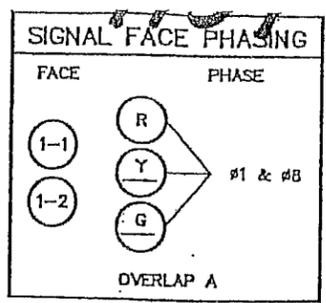


- LED RETROFIT-SYSTEM "KK" NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
  - 2) CONTRACTOR SHALL REMOVE THE INPLACE "HAND/WALKING PERSON" LENS FROM EACH INPLACE ONE SECTION PED SIGNAL INDICATION, AND SHALL FURNISH & INSTALL A NEW COUNTDOWN TIMER LED "HAND/WALKING PERSON" LENS IN ITS PLACE.
  - 3) CONTRACTOR SHALL PROTECT AND MAINTAIN EACH INPLACE ONE SECTION PEDESTRIAN SIGNAL HOUSING & VISOR WHEN REMOVING AND REPLACING EACH LENS, AND SHALL REPLACE THE COMPLETE PEDESTRIAN SIGNAL INDICATION UNIT (HOUSING, VISOR, AND LENS) SHOULD ANY DAMAGE BE DONE TO THE UNIT BY CONTRACTOR DURING WORK ON THIS PROJECT (INCIDENTAL).
  - 4) IN LIEU OF THE LENS REPLACEMENT WORK DESCRIBED ABOVE, THE CONTRACTOR ALSO HAS THE OPTION OF REMOVING EACH INPLACE ONE SECTION PEDESTRIAN SIGNAL INDICATION (HOUSING, VISOR AND LENS) AND REPLACING THEM WITH NEW ONE SECTION PEDESTRIAN SIGNAL INDICATIONS (HOUSING, VISOR, AND LED LENSES), AT NO ADDITIONAL COST TO THE PROJECT.



**LOOP DETECTORS**

NUMBER	SIZE (m)	LOCATION (m)	FUNCTION
D1-1, D1-2	1.7 X 1.7	76	3, 8
D1-3	2 - 1.7 X 3.4	1.5, 6	1
D1-4	2-1.7 X 1.7/3.4	1.5, 6	1
D2-1, D2-2, D2-3	1.7 X 1.7	46	1
D5-1	2-1.7 X 1.7	3, 12	1
D5-2	2-1.7 X 1.7	3, 12	1
D6-1, D6-2, D6-3	1.7 X 1.7	92	1
D8-1, D8-2	1.7 X 1.7	76	3, 8
D8-3, D8-4	2-1.7 X 1.7	1.5, 6	1
* D2-4	MICROWAVE	98	1

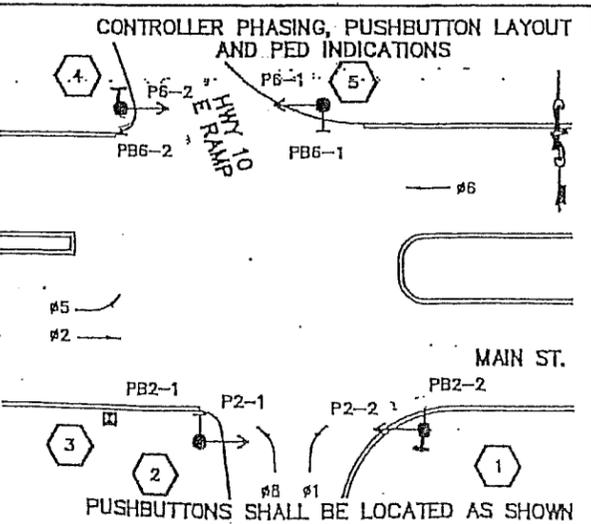
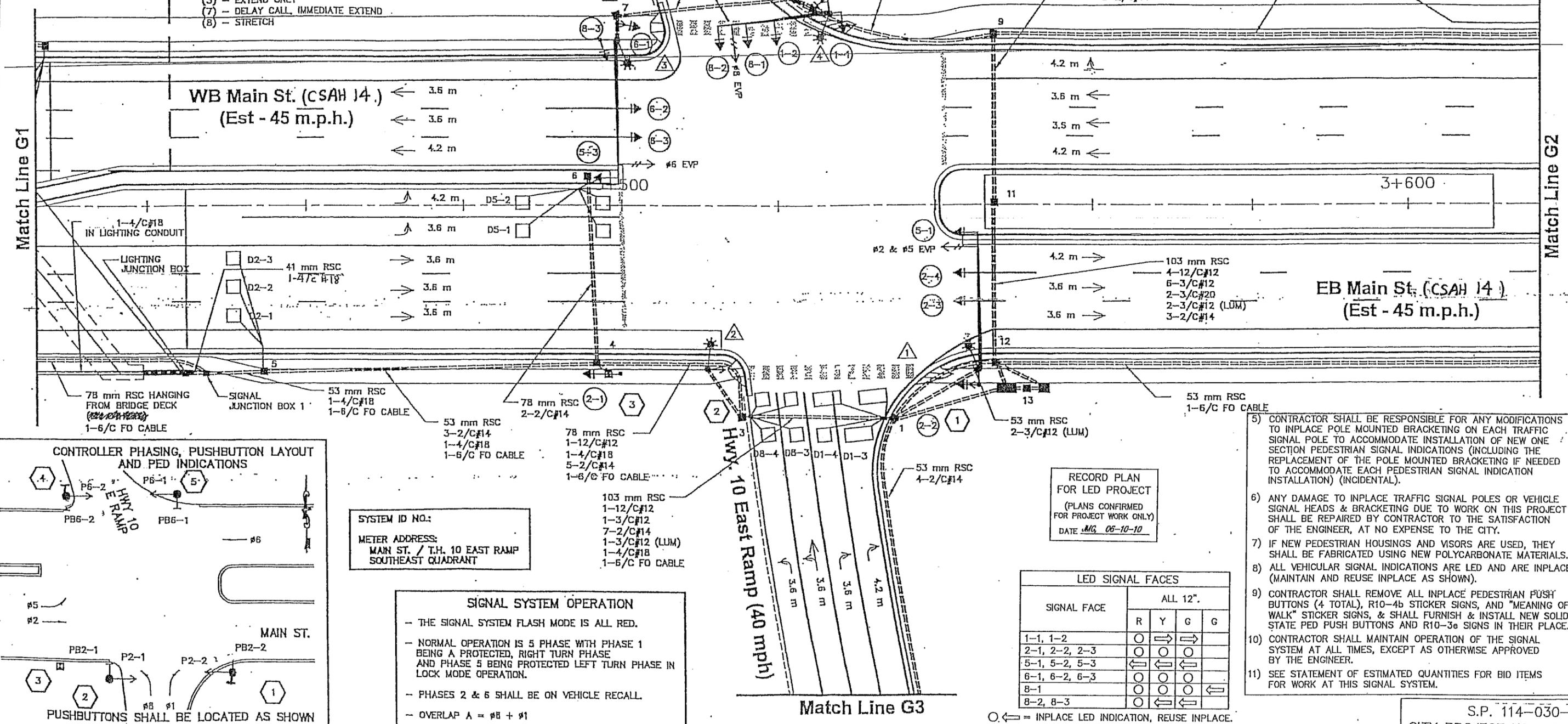
NOTE: LOCATION = DISTANCE FROM BACK OF STOP BAR / PEDESTRIAN MARKINGS TO FRONT OF LOOP DETECTOR

LOOP DETECTOR FUNCTIONS:  
 (1) - CALL AND EXTEND  
 (3) - EXTEND ONLY  
 (7) - DELAY CALL, IMMEDIATE EXTEND  
 (8) - STRETCH

Main St. / T.H. 10 West Ramp Signal System "F"

Match Line G1

Match Line G2



SYSTEM ID NO.:  
 METER ADDRESS:  
 MAIN ST. / T.H. 10 EAST RAMP  
 SOUTHEAST QUADRANT

**SIGNAL SYSTEM OPERATION**

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 5 PHASE WITH PHASE 1 BEING A PROTECTED, RIGHT TURN PHASE AND PHASE 5 BEING PROTECTED LEFT TURN PHASE IN LOCK MODE OPERATION.
- PHASES 2 & 6 SHALL BE ON VEHICLE RECALL.
- OVERLAP A = #8 + #1

RECORD PLAN FOR LED PROJECT  
 (PLANS CONFIRMED FOR PROJECT WORK ONLY)  
 DATE: 06-10-10

**LED SIGNAL FACES**

SIGNAL FACE	ALL 12"			
	R	Y	G	G
1-1, 1-2	○	→	→	
2-1, 2-2, 2-3	○	○	○	
5-1, 5-2, 5-3	←	←	←	
6-1, 6-2, 6-3	○	○	○	
8-1	○	○	○	←
8-2, 8-3	○	←	←	

○ ← = INPLACE LED INDICATION, REUSE INPLACE.

- 5) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MODIFICATIONS TO INPLACE POLE MOUNTED BRACKETING ON EACH TRAFFIC SIGNAL POLE TO ACCOMMODATE INSTALLATION OF NEW ONE SECTION PEDESTRIAN SIGNAL INDICATIONS (INCLUDING THE REPLACEMENT OF THE POLE MOUNTED BRACKETING IF NEEDED TO ACCOMMODATE EACH PEDESTRIAN SIGNAL INDICATION INSTALLATION) (INCIDENTAL).
- 6) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL POLES OR VEHICLE SIGNAL HEADS & BRACKETING DUE TO WORK ON THIS PROJECT SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE CITY.
- 7) IF NEW PEDESTRIAN HOUSINGS AND VISORS ARE USED, THEY SHALL BE FABRICATED USING NEW POLYCARBONATE MATERIALS.
- 8) ALL VEHICULAR SIGNAL INDICATIONS ARE LED AND ARE INPLACE (MAINTAIN AND REUSE INPLACE AS SHOWN).
- 9) CONTRACTOR SHALL REMOVE ALL INPLACE PEDESTRIAN PUSH BUTTONS (4 TOTAL), R10-4b STICKER SIGNS, AND "MEANING OF WALK" STICKER SIGNS, & SHALL FURNISH & INSTALL NEW SOLID STATE PED PUSH BUTTONS AND R10-3e SIGNS IN THEIR PLACE.
- 10) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
- 11) SEE STATEMENT OF ESTIMATED QUANTITIES FOR BID ITEMS FOR WORK AT THIS SIGNAL SYSTEM.

S.P. 114-030-10  
 CITY PROJECT NO. 09-18

DRAWN BY: JMG	1	JMG	6/10	RECORD DRAWING FOR PROJECT
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  
 Llc. No. 22457  
 Date: May 18, 2009

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

**COON RAPIDS, MINNESOTA**

**LED RETROFIT-SYSTEM "KK" INTERSECTION LAYOUT**  
 CSAH 14 AT TH 10 EAST RAMP

FILE NO. 107418  
 DATE 05/18/2009  
 84  
 131

7139

- 1 TYPE PA100 POLE FOUNDATION  
TYPE PA100-A-16.8-X9.1  
LUMINAIRE ARM AT 350°  
(SEE SPECIAL PROVISIONS)  
LUMINAIRE 250 WATT METAL HALIDE  
WITH P.E.C. AND CHECK SWITCH  
(SEE SPECIAL PROVISIONS)  
3 - ONE WAY SIGNALS OVERHEAD (0.0 m,  
5.2 m & 8.8 m FROM END OF MAST ARM)  
1 - TYPE 10B POLE MOUNTED AT 180°  
1 - PEDESTRIAN PUSHBUTTON  
1 - "NO PED XING" SIGN (R9-3A) FACING POLE 5  
TYPE "D" SIGN PANEL OVERHEAD (D-12)  
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (#2 & #5)  
(1.8 m FROM END OF MAST ARM)  
  
EXTEND INTO HH 1:  
78 mm RSC  
2-12/C#12  
2-3/C#12  
1-3/C#20  
1-3/C#12 (LUM)

- 2 TYPE PAB5 POLE FOUNDATION  
TYPE PAB5-A-X9.1  
LUMINAIRE ARM AT 350°  
(SEE SPECIAL PROVISIONS)  
LUMINAIRE 250 WATT METAL HALIDE  
WITH PEC AND CHECK SWITCH  
(SEE SPECIAL PROVISIONS)  
1 - TYPE 30A POLE MOUNTED AT 0°  
1 - PEDESTRIAN PUSHBUTTON  
1 - "NO PED XING" SIGN (R9-3A)  
FACING POLE NO.3  
  
EXTEND INTO HH 3:  
78 mm RSC  
1-3/C#12  
1-3/C#12 (LUM)  
2-12/C#12

- 4 TYPE PA100 POLE FOUNDATION  
TYPE PA100-A-16.8-X9.1  
LUMINAIRE ARM AT 350°  
(SEE SPECIAL PROVISIONS)  
LUMINAIRE 250 WATT METAL HALIDE  
WITH P.E.C. AND CHECK SWITCH  
(SEE SPECIAL PROVISIONS)  
3 - ONE WAY SIGNALS OVERHEAD (0.0 m,  
5.2 m & 8.8 m FROM END OF MAST ARM)  
1 - TYPE 10A POLE MOUNTED AT 90°  
1 - TYPE 10B POLE MOUNTED AT 180°  
1 - PEDESTRIAN PUSHBUTTON  
1 - "NO PED XING" SIGN (R9-3A) FACING POLE NO. 2  
TYPE "D" SIGN PANELS OVERHEAD (D-9,D-11)  
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (#6)  
(1.8 m FROM END OF MAST ARM)  
  
EXTEND INTO HH 7:  
78 mm RSC  
2-12/C#12  
2-3/C#12  
1-3/C#20  
1-3/C#12 (LUM)

- 5 TYPE PA100 POLE FOUNDATION  
TYPE PA100-A-13.7-X9.1  
LUMINAIRE ARM AT 350°  
(SEE SPECIAL PROVISIONS)  
LUMINAIRE 250 WATT METAL HALIDE  
WITH P.E.C. AND CHECK SWITCH  
(SEE SPECIAL PROVISIONS)  
3 - ONE WAY SIGNALS OVERHEAD (0.0 m,  
3.3 m & 6.9 m FROM END OF MAST ARM)  
1 - TYPE 10A POLE MOUNTED AT 180°  
1 - TYPE 10B POLE MOUNTED AT 90°  
INTERNALLY ILLUMINATED SIGN (D-1)  
WITH PEC AND SIGN SWITCH ON POLE  
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (#2 & #5)  
(1.8 m FROM END OF MAST ARM)  
  
EXTEND INTO HH 8:  
78 mm RSC  
2-12/C#12  
4-3/C#12  
1-3/C#20  
1-3/C#12 (LUM)

- B SERVICE CABINET  
CABINET FOUNDATION  
  
EXTEND INTO HH 13:  
METERED SIGNAL SERVICE  
35 mm RSC  
3-1/C#6  
  
EXTEND INTO HH 12:  
UNMETERED STREET LIGHT SERVICE  
35 mm RSC  
4-3/C#12 (LUM)  
UNMETERED ILLUMINATED SIGN SERVICE  
1-3/C#12  
  
STUB OUT 53mm RSC TO SOUTH  
(FOR POWER BY CONNEXUS)

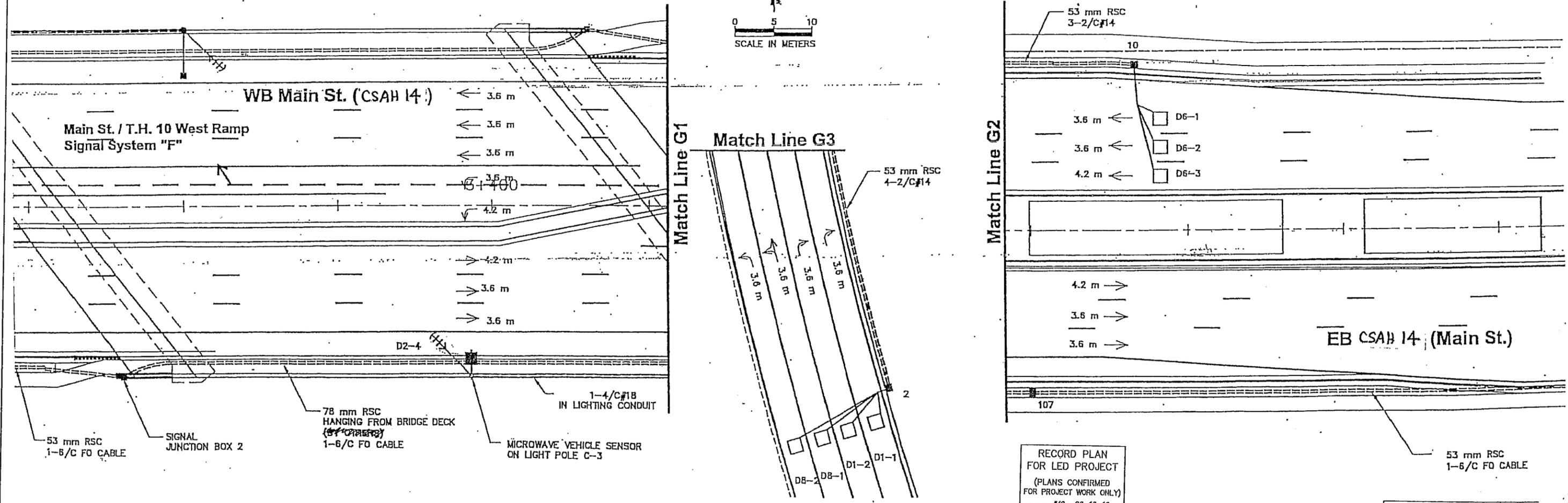
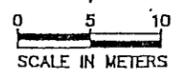
- 3 PEDESTAL FOUNDATION  
3.0 m PEDESTAL POLE AND BASE  
1 - TYPE 1A  
1 - PEDESTRIAN PUSHBUTTON  
  
EXTEND INTO HH 4:  
53 mm RSC  
1-12/C#12

- A ~~METERED~~ CONTROLLER AND CABINET  
~~(BY ANOTHER CONTRACTOR)~~  
CABINET FOUNDATION  
  
EXTEND INTO HH 12:  
103 mm RSC  
4-12/C#12  
5-3/C#12  
2-3/C#20  
3-2/C#14  
\* 1-6/C FO CABLE

- EXTEND INTO HH 1:  
103 mm RSC  
3-12/C#12  
3-3/C#12  
1-3/C#20  
13-2/C#14  
1-4/C#18  
\* 1-6/C FO CABLE

- EXTEND INTO HH 13:  
METERED SIGNAL SERVICE  
35 mm RSC  
3-1/C#6

STUB OUT 78 mm RSC FROM CABINET TO WEST  
(THREAD AND CAP BOTH ENDS)



RECORD PLAN  
FOR LED PROJECT  
(PLANS CONFIRMED  
FOR PROJECT WORK ONLY)  
DATE 06-10-10

S.P. 114-030-10  
CITY PROJECT NO. 09-18

DRAWN BY: JMG	1	JMG 6/10	RECORD DRAWING FOR PROJECT
DESIGNER: JMG			
CHECKED BY: JMG			
DESIGN TEAM	NO.	BY	DATE
			REVISIONS

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*J.M.G.*  
Date: May 18, 2009 Name: John M. Gray, PE  
Lic. No. 22457

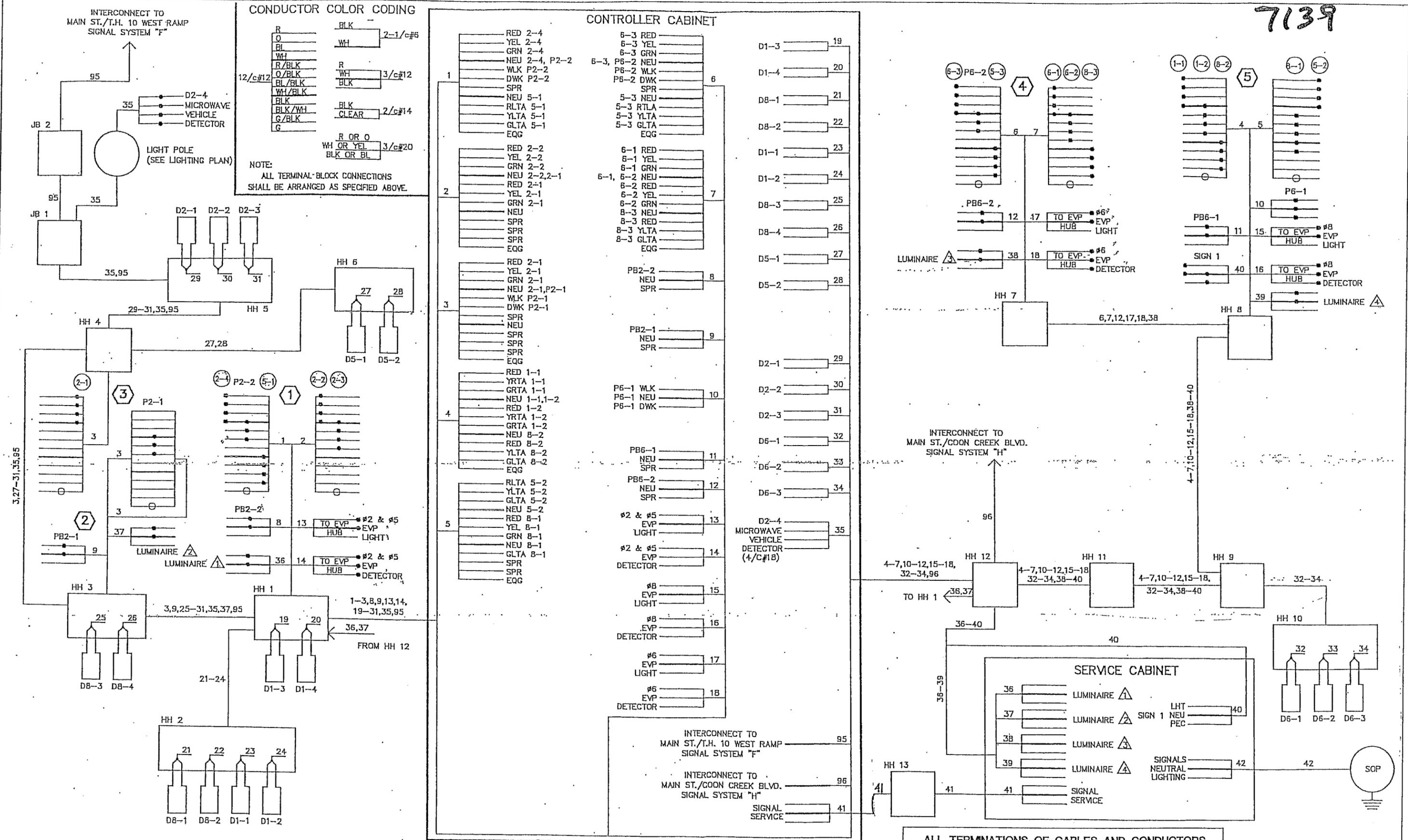
SEH  
PHONE: (651) 490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

COON RAPIDS,  
MINNESOTA

LED RETROFIT-SYSTEM "KK"  
INTERSECTION LAYOUT  
CSAH 14 AT TH 10 EAST RAMP

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

NO.	BY	DATE	REVISIONS

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ST. PAUL, MN 55110

COON RAPIDS,  
MINNESOTA

LED RETROFIT-SYSTEM "KK"  
FIELD WIRING DIAGRAM  
CSAH 14 AT TH 10 EAST RAMPS

FILE NO. 107418  
DATE 05/18/2009  
86  
131