

**NOTES:**

- EXACT LOCATIONS OF FOUNDATIONS, HANDHOLES, AND LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY ENGINEER.
- PEDESTRIAN INDICATIONS SHALL BE ONE SECTION LED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATIONS.
- ALL POLE MOUNTED VEHICLE & PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE SPECIAL PROVISIONS AND DETAILS.
- A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED & INSTALLED 2' AND 6' FROM THE END OF EACH MAST ARM (FOR EVP).
- SEE DETAILS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING TYPE C AND TYPE D SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565-TRAFFIC CONTROL SIGNAL SYSTEM).
- ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE FABRICATED WITH POLYCARBONATE MATERIALS (INCLUDING BACKGROUND SHIELDS AND VISORS).
- (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM). SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, AND COORDINATING WITH STATE TO MAKE OPERATIONAL THE TRAFFIC SIGNAL CONTROLLER AND CABINET. SEE SPECIAL PROVISIONS.
- CONTRACTOR SHALL VERIFY GROUNDWATER LEVELS WHEN INSTALLING POLE FOUNDATIONS AND SHALL DE-WATER AS NECESSARY DURING FOUNDATION INSTALLATION (INCIDENTAL).
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL, AS WELL AS FOR WOOD POLE RAISING ON THE NORTH SIDE WITH XCEL ENERGY. SEE SPECIAL PROVISIONS.
- CONTRACTOR SHALL COIL AN ADDITIONAL 25' OF ALL CABLES AND CONDUCTORS IN HANDHOLES 6, 7, AND 13 (FOR FUTURE USE BY OTHERS).

P.V.C. LOOP DETECTORS		
NUMBER	SIZE (FT.)	LOCATION
D1-1	2-6x6	20' & 50'
D1-2	2-6x6	5' & 35'
D2-1	6x6	300'
D2-2	6x6	300'
D4-1	FUTURE	-
D4-2	FUTURE	-
D4-3	FUTURE	-
D4-4	FUTURE	-
D4-5	FUTURE	-
D5-1	FUTURE	-
D5-2	FUTURE	-
D6-1	6x6	300'
D6-2	6x6	300'
D8-1	6x6	120'
D8-2	6x6	120'
D8-3	2-6x6	5' & 20'
D8-4	2-6x6	20' & 50'
D8-5	2-6x6	5' & 35'
D1	6x6	50'
D2	6x6	50'
D3	6x6	50'
D4	6x6	50'

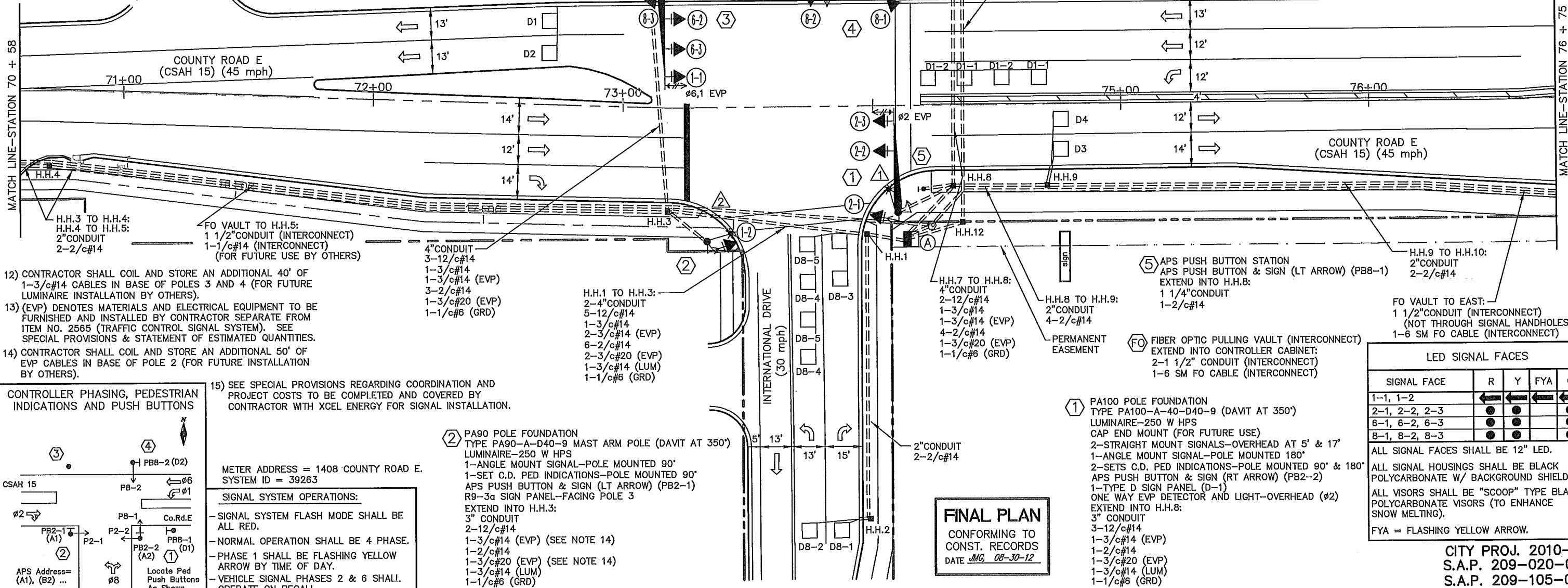
LOCATION = DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF LOOP DETECTOR.

- PA100 POLE FOUNDATION  
TYPE PA100-A-40  
MID-MOUNTS AT 11' & 23' (CAP-FOR FUTURE USE)  
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 5'  
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 17' & 29'  
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 180°  
R9-3a SIGN PANEL-FACING POLE 2  
R6-1L SIGN PANEL-POLE MOUNTED 0°  
R10-X12 SIGN PANEL-ADJACENT TO 1-1  
R3-4 SIGN PANEL-OVERHEAD  
1-TYPE D SIGN PANEL (D-2)  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#6,1)  
EXTEND INTO H.H.6:  
3" CONDUIT  
3-12/c#14  
1-3/c#14 (EVP)  
1-2/c#14  
1-3/c#20 (EVP)  
1-3/c#14 (LUM-SEE NOTE 12)  
1-1/c#6 (GRD)

- EQUIPMENT PAD FOUNDATION  
CONTROLLER AND CABINET  
BBU SIGNAL SERVICE CABINET (NO BATTERIES)  
CONTROLLER CABINET TO H.H.1:  
4" CONDUIT  
3-12/c#14  
1-3/c#14 (EVP)  
3-2/c#14  
1-3/c#20 (EVP)  
CONTROLLER CABINET TO H.H.8:  
4" CONDUIT  
3-12/c#14  
1-3/c#14 (EVP)  
6-2/c#14  
1-3/c#20 (EVP)  
1-1/c#6 (GRD)  
CONTROLLER CABINET TO H.H.13:  
4" CONDUIT  
2-12/c#14  
1-3/c#14 (EVP)  
2-2/c#14  
1-3/c#20 (EVP)

- SERVICE CABINET TO H.H.1:  
2" CONDUIT  
2-3/c#14 (LUM)  
SERVICE CABINET TO H.H.8:  
2" CONDUIT  
2-3/c#14 (LUM)  
BETWEEN SERVICE CABINET AND CONTROLLER CABINET:  
2" CONDUIT  
3-1/c#6  
SERVICE CABINET TO H.H.12:  
2" CONDUIT  
3-1/c#2  
STUB OUT 2-3" CONDUIT FROM CONTROLLER CABINET TO NORTH (CAP BOTH ENDS-FOR FUTURE USE)

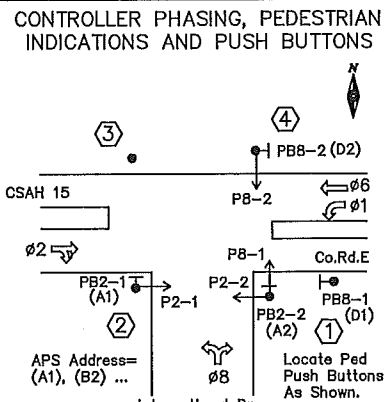
- PA90 POLE FOUNDATION  
TYPE PA90-A-30  
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0°  
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180°  
1-SET C.D. PEDESTRIAN INDICATIONS-POLE MOUNTED 180°  
APS PUSH BUTTON & SIGN (LT ARROW) (PB8-2)  
1-TYPE D SIGN PANEL (D-3)  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#8)  
EXTEND INTO H.H.7:  
3" CONDUIT  
2-12/c#14  
1-3/c#14 (EVP)  
2-2/c#14  
1-3/c#20 (EVP)  
1-3/c#14 (LUM-SEE NOTE 12)  
1-1/c#6 (GRD)



- CONTRACTOR SHALL COIL AND STORE AN ADDITIONAL 40' OF 1-3/c#14 CABLES IN BASE OF POLES 3 AND 4 (FOR FUTURE LUMINAIRE INSTALLATION BY OTHERS).
- (EVP) DENOTES MATERIALS AND ELECTRICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY CONTRACTOR SEPARATE FROM ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM). SEE SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES.
- CONTRACTOR SHALL COIL AND STORE AN ADDITIONAL 50' OF EVP CABLES IN BASE OF POLE 2 (FOR FUTURE INSTALLATION BY OTHERS).

- H.H.1 TO H.H.3:  
2-4" CONDUIT  
5-12/c#14  
1-3/c#14  
2-3/c#14 (EVP)  
6-2/c#14  
2-3/c#20 (EVP)  
1-3/c#14 (LUM)  
1-1/c#6 (GRD)

- H.H.7 TO H.H.8:  
4" CONDUIT  
2-12/c#14  
1-3/c#14  
1-3/c#14 (EVP)  
4-2/c#14  
1-3/c#20 (EVP)  
1-1/c#6 (GRD)



15) SEE SPECIAL PROVISIONS REGARDING COORDINATION AND PROJECT COSTS TO BE COMPLETED AND COVERED BY CONTRACTOR WITH XCEL ENERGY FOR SIGNAL INSTALLATION.

METER ADDRESS = 1408 COUNTY ROAD E.  
SYSTEM ID = 39263

**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 4 PHASE.
- PHASE 1 SHALL BE FLASHING YELLOW ARROW BY TIME OF DAY.
- VEHICLE SIGNAL PHASES 2 & 6 SHALL OPERATE ON RECALL.

- PA90 POLE FOUNDATION  
TYPE PA90-A-D40-9 MAST ARM POLE (DAVIT AT 350')  
LUMINAIRE-250 W HPS  
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 90°  
1-SET C.D. PED INDICATIONS-POLE MOUNTED 90°  
APS PUSH BUTTON & SIGN (LT ARROW) (PB2-1)  
R9-3a SIGN PANEL-FACING POLE 3  
EXTEND INTO H.H.3:  
3" CONDUIT  
2-12/c#14  
1-3/c#14 (EVP) (SEE NOTE 14)  
1-2/c#14  
1-3/c#20 (EVP) (SEE NOTE 14)  
1-3/c#14 (LUM)  
1-1/c#6 (GRD)

- PA100 POLE FOUNDATION  
TYPE PA100-A-40-D40-9 (DAVIT AT 350')  
LUMINAIRE-250 W HPS  
CAP END MOUNT (FOR FUTURE USE)  
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 5' & 17'  
1-ANGLE MOUNT SIGNAL-POLE MOUNTED 180°  
2-SETS C.D. PED INDICATIONS-POLE MOUNTED 90° & 180°  
APS PUSH BUTTON & SIGN (RT ARROW) (PB2-2)  
1-TYPE D SIGN PANEL (D-1)  
ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (#2)  
EXTEND INTO H.H.8:  
3" CONDUIT  
3-12/c#14  
1-3/c#14 (EVP)  
1-2/c#14  
1-3/c#20 (EVP)  
1-3/c#14 (LUM)  
1-1/c#6 (GRD)

LED SIGNAL FACES				
SIGNAL FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●	●	●
6-1, 6-2, 6-3	●	●	●	●
8-1, 8-2, 8-3	●	●	●	●

ALL SIGNAL FACES SHALL BE 12" LED.  
ALL SIGNAL HOUSINGS SHALL BE BLACK POLYCARBONATE W/ BACKGROUND SHIELDS.  
ALL VISORS SHALL BE "SCOOP" TYPE BLACK POLYCARBONATE VISORS (TO ENHANCE SNOW MELTING).  
FYA = FLASHING YELLOW ARROW.

**FINAL PLAN**  
CONFORMING TO  
CONST. RECORDS  
DATE MG, 08-30-12

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, PE*  
Name: John M. Gray, PE  
L.C. No. 22457  
Date: January 5, 2011

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

**VADNAIS HEIGHTS, MINNESOTA**

**TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT CSAH 15 (COUNTY ROAD E) AT INTERNATIONAL DRIVE**

FILE NO. VADNA 113155  
DATE 01/05/11  
19  
27

DRAWN BY: JMG  
DESIGNER: JMG  
CHECKED BY: JMG

NO.	BY	DATE
1	JMG	8/2012

RECORD DRAWING

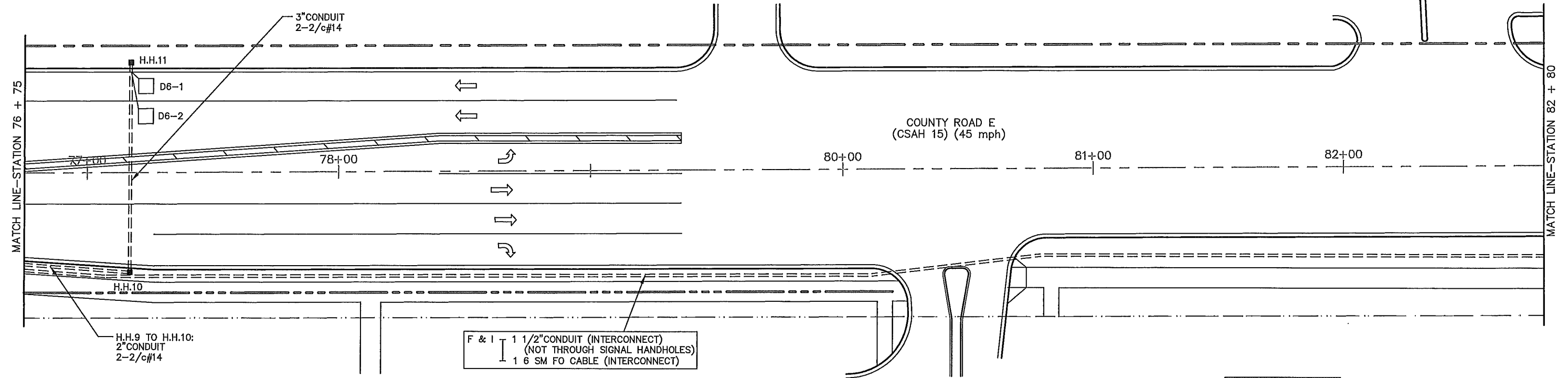
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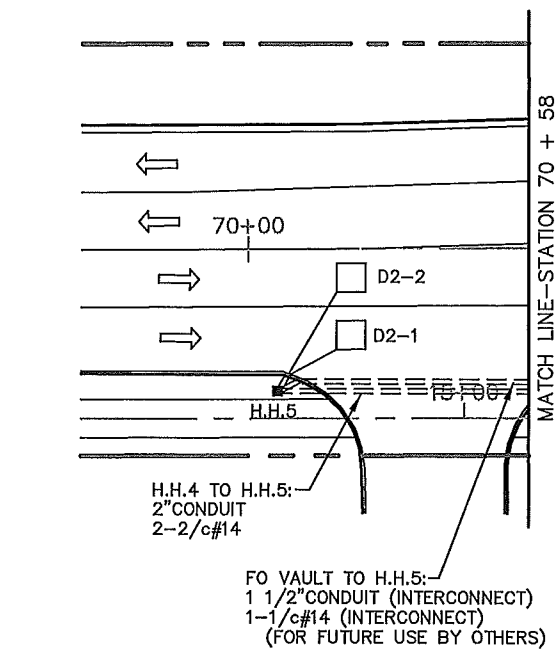
**INTERCONNECT NOTES:**

- 1) LOCATION OF SPLICE VAULTS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002), AS REQUIRED BY MINNESOTA STATUTE 2160.
- 3) ALL NEW CONDUIT SHALL BE FURNISHED AND INSTALLED DIRECTLY BEHIND THE CURB UNLESS OTHERWISE APPROVED BY ENGINEER.
- 4) F & I = MATERIALS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR AS PART OF INTERCONNECT PAY ITEM.
- 5) (INTERCONNECT) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES.
- 6) ALL NEW CONDUIT UNDER EXISTING ROADWAYS AND DRIVEWAYS SHALL BE DIRECTIONALLY BORED BY CONTRACTOR (NO TRENCHING UNDER EXISTING DRIVEWAYS AND ROADWAYS).

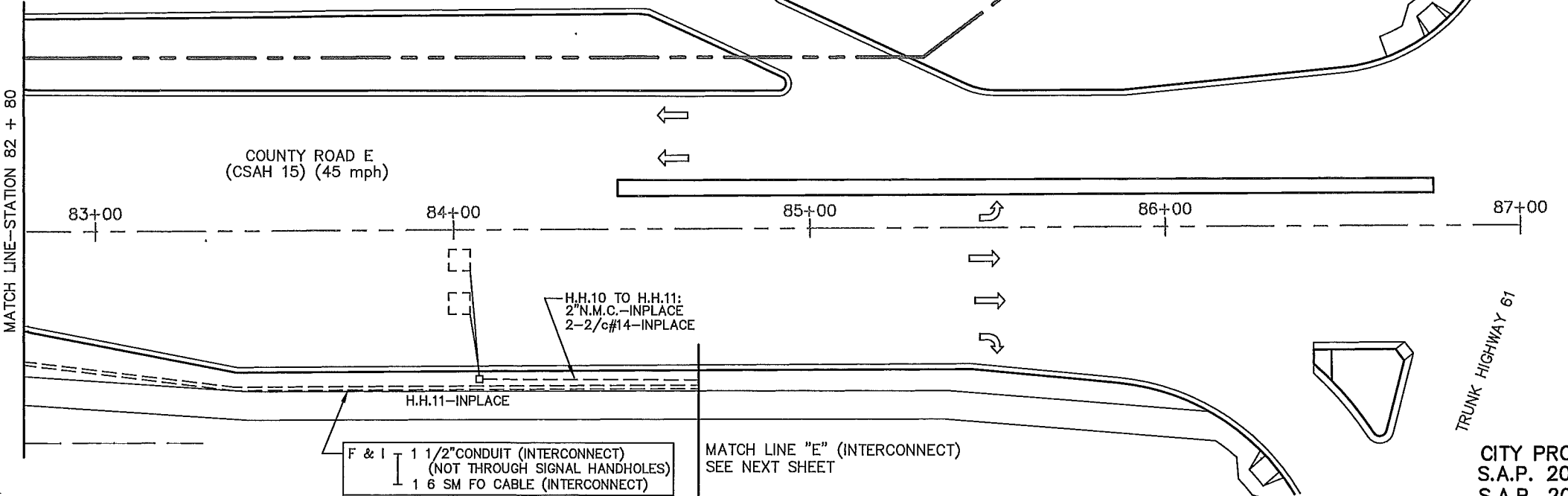


F & I 1 1/2" CONDUIT (INTERCONNECT)  
 (NOT THROUGH SIGNAL HANDHOLES)  
 1 6 SM FO CABLE (INTERCONNECT)

**FINAL PLAN**  
 CONFORMING TO  
 CONST. RECORDS  
 DATE JMG 08-30-12



FO VAULT TO H.H.5:  
 1 1/2" CONDUIT (INTERCONNECT)  
 1-1/c#14 (INTERCONNECT)  
 (FOR FUTURE USE BY OTHERS)



F & I 1 1/2" CONDUIT (INTERCONNECT)  
 (NOT THROUGH SIGNAL HANDHOLES)  
 1 6 SM FO CABLE (INTERCONNECT)

MATCH LINE "E" (INTERCONNECT)  
 SEE NEXT SHEET

S:\VADNA\113155\5-DSSN\CIVIL\SI-CADD\EP\VADNA113155BA-SIGREC.DWG

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

NO.	BY	DATE	REVISIONS
1	JMG	8/2012	RECORD DRAWING

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 ST. PAUL, MN 55110

**VADNAIS HEIGHTS,  
 MINNESOTA**

**TRAFFIC SIGNAL/INTERCONNECT  
 INTERSECTION LAYOUT  
 CSAH 15 (COUNTY ROAD E)  
 (INTERNATIONAL DRIVE TO TH 61)**

FILE NO. VADNA 113155	<b>21</b>
DATE 01/05/11	<b>27</b>

CITY PROJ. 2010-17  
 S.A.P. 209-020-010  
 S.A.P. 209-105-002