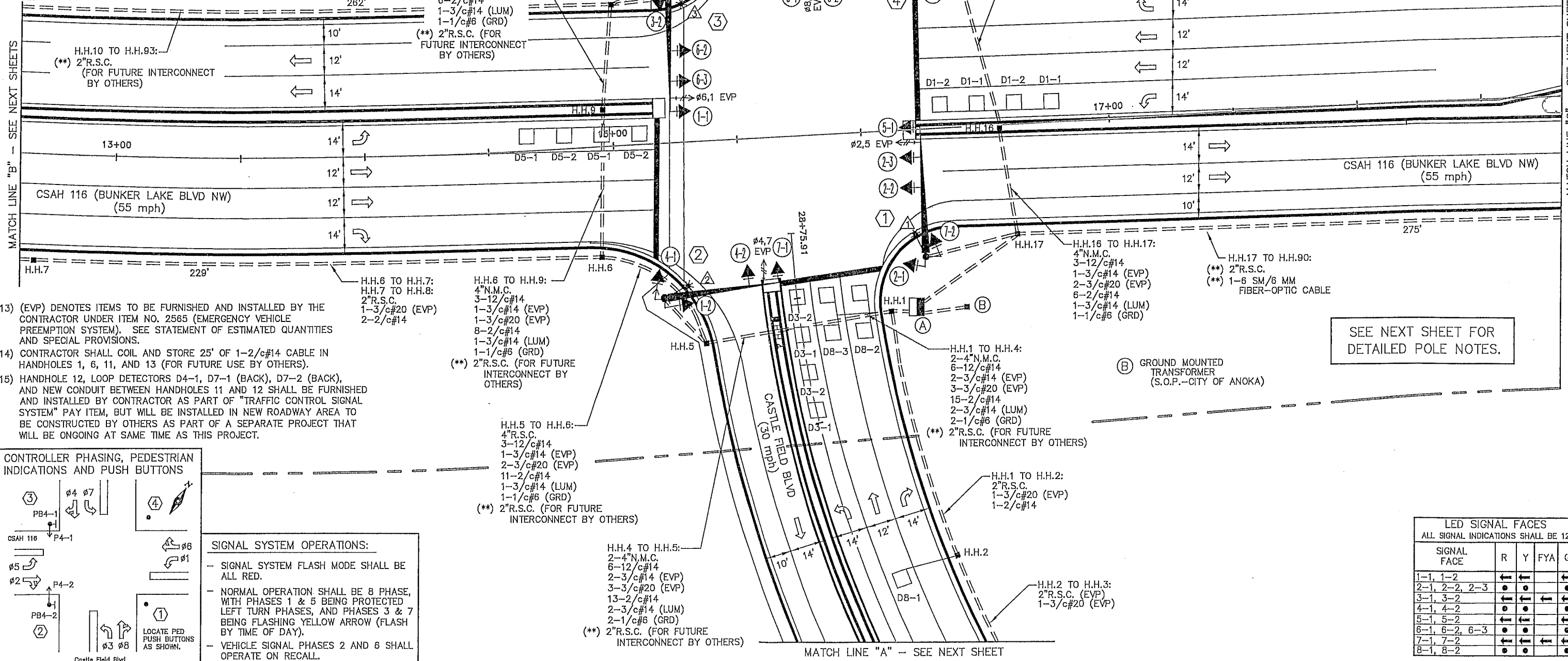


- NOTES:
- THE EXACT LOCATION OF HANDHOLES, FOUNDATIONS, AND LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
 - A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE, AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CITY OF ANOKA). SEE SPECIAL PROVISIONS.
 - SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM").
 - EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
 - ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
 - EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
 - SEE DETAILS, SPECIAL PROVISIONS, AND STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
 - LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
 - (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.

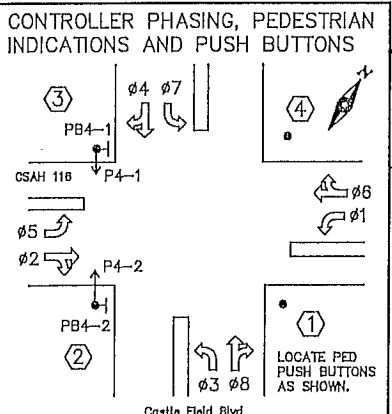
F & I N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-8x6	20' & 50'	1
D1-2	2-8x6	5' & 35'	1
D2-1	6x6	475'	1
D2-2	6x6	475'	1
D3-1	2-8x6	20' & 50'	1
D3-2	2-8x6	5' & 35'	1
D4-1	6x12	120'	3,8
D4-2	2-8x6	0' & 15'	7
D5-1	2-8x6	20' & 50'	1
D5-2	2-8x6	5' & 35'	1
D6-1	6x6	475'	1
D6-2	6x6	475'	1
D7-1	2-8x6	15' & 45'	1
D7-2	2-8x6	0' & 30'	1
D8-1	6x6	120'	3,8
D8-2	2-8x6	5' & 20'	7
D8-3	2-8x6	5' & 20'	1

- LOOP DETECTORS FUNCTIONS:
- CALL AND EXTEND
 - EXTEND ONLY
 - DELAYED CALL, IMMEDIATE EXTEND
 - CARRY OVER (STRETCH)

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



- (EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- CONTRACTOR SHALL COIL AND STORE 25' OF 1-2/c#14 CABLE IN HANDHOLES 1, 6, 11, AND 13 (FOR FUTURE USE BY OTHERS).
- HANDHOLE 12, LOOP DETECTORS D4-1, D7-1 (BACK), D7-2 (BACK), AND NEW CONDUIT BETWEEN HANDHOLES 11 AND 12 SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF "TRAFFIC CONTROL SIGNAL SYSTEM" PAY ITEM, BUT WILL BE INSTALLED IN NEW ROADWAY AREA TO BE CONSTRUCTED BY OTHERS AS PART OF A SEPARATE PROJECT THAT WILL BE ONGOING AT SAME TIME AS THIS PROJECT.



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 & 7 BEING FLASHING YELLOW ARROW (FLASH BY TIME OF DAY).
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

SEE NEXT SHEET FOR DETAILED POLE NOTES.

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

DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG

NO.	BY	DATE
1	JMG	09/13
2	JMG	10/13
3	JMG	10/14

REVISIONS		
NO.	BY	DATE
1	JMG	09/13
2	JMG	10/13
3	JMG	10/14

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.

Date: July 28, 2013 Name: John M. Gray, PE Lic. No. 22457

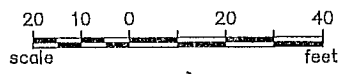
SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

CSAH 116 AND CASTLE FIELD BOULEVARD IMPROVEMENT PROJECT
ANOKA, MINNESOTA

TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT
CSAH 116 AT CASTLE FIELD BLVD/5TH AVE

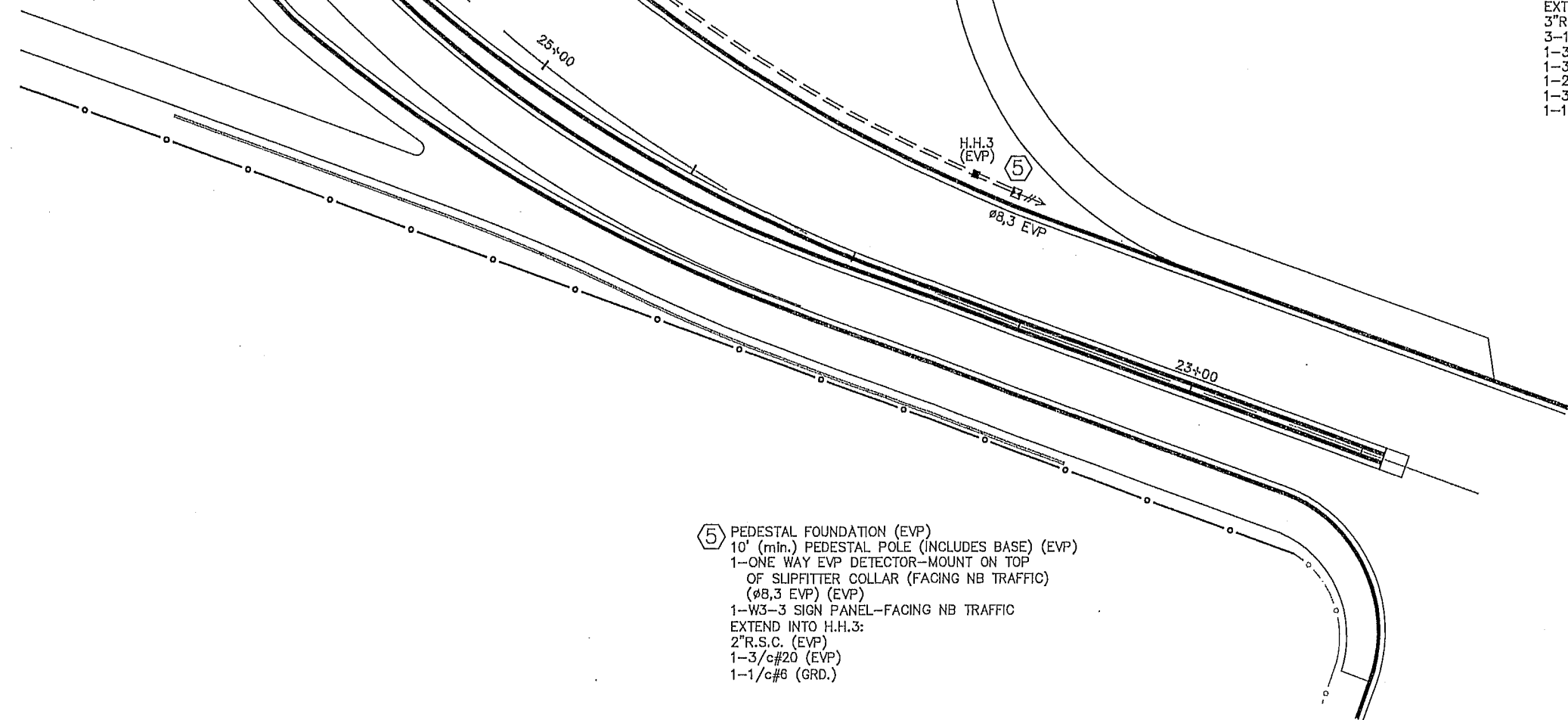
FILE NO. ANOKA 124725
DATE 07/28/2013
S6
S16

MATCH LINE "A" - SEE PREVIOUS SHEETS



H.H.2 TO H.H.3:
2"R.S.C. (EVP)
1-3/c#20 (EVP)

CASTLE FIELD BLVD
(30 mph)



- ① PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350')
LUMINAIRE-COBRAHEAD LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 180°
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
R9-3 SIGN PANEL-POLE MOUNTED (FACING POLE 4)
TYPE D SIGN PANEL-OVERHEAD (D-1)
ONE WAY EVP DETECTOR AND LIGHT (ø2,5) (EVP)
EXTEND INTO H.H.17:
3"R.S.C.
3-12/c#14
1-3/c#14 (EVP)
1-3/c#20 (EVP)
1-2/c#14
1-3/c#14 (LUM)
1-1/c#6 (GRD.)

- ② PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350')
LUMINAIRE-COBRAHEAD LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 180°
1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 180°
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
1-R10-X12 SIGN PANEL-ADJACENT TO 7-1
TYPE D SIGN PANEL-OVERHEAD (D-2)
ONE WAY EVP DETECTOR AND LIGHT (ø4,7) (EVP)
EXTEND INTO H.H.5:
3"R.S.C.
3-12/c#14
1-3/c#14 (EVP)
1-3/c#20 (EVP)
2-2/c#14
1-3/c#14 (LUM)
1-1/c#6 (GRD.)

- ③ PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350')
LUMINAIRE-COBRAHEAD LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 180°
1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED 90°
1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
1-R9-3 SIGN PANEL-POLE MOUNTED (FACING POLE 4)
TYPE D SIGN PANEL-OVERHEAD (D-3)
ONE WAY EVP DETECTOR AND LIGHT (ø6,1) (EVP)
EXTEND INTO H.H.10:
3"R.S.C.
3-12/c#14
1-3/c#14 (EVP)
1-3/c#20 (EVP)
1-2/c#14
1-3/c#14 (LUM)
1-1/c#6 (GRD.)

- ④ PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350')
LUMINAIRE-COBRAHEAD LED
1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'
2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90° & 180°
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
2-R9-3 SIGN PANELS-POLE MOUNTED (FACING POLES 1 & 3)
1-R10-X12 SIGN PANEL-ADJACENT TO 3-1
TYPE D SIGN PANEL-OVERHEAD (D-4)
ONE WAY EVP DETECTOR AND LIGHT (ø8,3) (EVP)
EXTEND INTO H.H.13:
3"R.S.C.
3-12/c#14
1-3/c#14 (EVP)
1-3/c#20 (EVP)
1-2/c#14
1-3/c#14 (LUM)
1-1/c#6 (GRD.)

- ⑤ PEDESTAL FOUNDATION (EVP)
10' (min.) PEDESTAL POLE (INCLUDES BASE) (EVP)
1-ONE WAY EVP DETECTOR-MOUNT ON TOP OF SLIPFITTER COLLAR (FACING NB TRAFFIC) (ø8,3 EVP) (EVP)
1-W3-3 SIGN PANEL-FACING NB TRAFFIC
EXTEND INTO H.H.3:
2"R.S.C. (EVP)
1-3/c#20 (EVP)
1-1/c#6 (GRD.)

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

NO.	BY	DATE	REVISIONS
1	JMG	09/13	REVISED PER UPDATED INTERSECTION GEOMETRICS
2	JMG	10/13	ELIMINATED SOUTH SIDE PEDESTRIAN CROSSING, PUSH BUTTONS, AND INDICATIONS
3	JMG	10/14	RECORD DRAWING

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 26, 2013

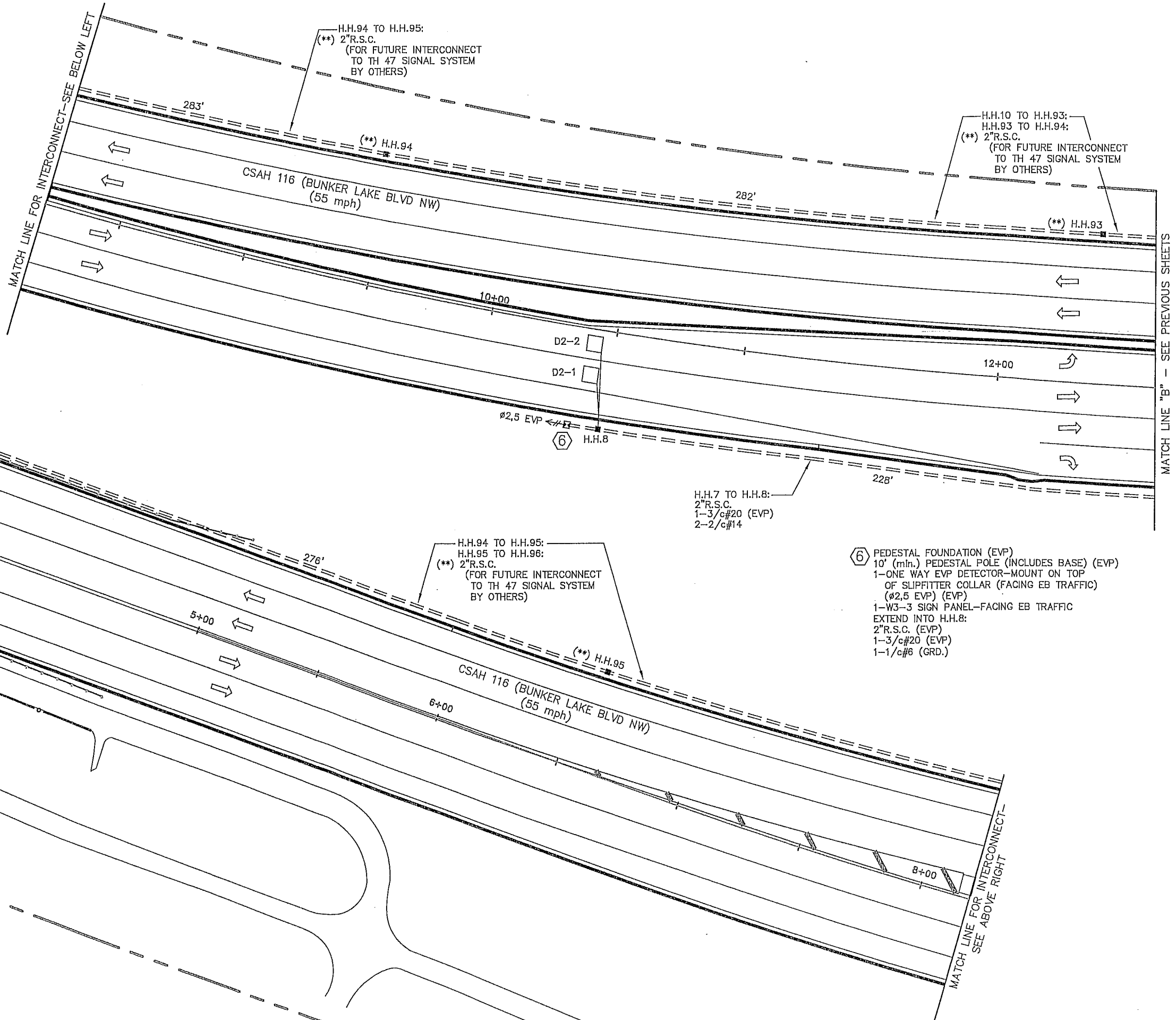
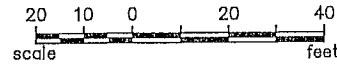
PHONE: (651) 490-2000
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ST. PAUL, MN 55110

CSAH 116 AND
CASTLE FIELD BOULEVARD
IMPROVEMENT PROJECT
ANOKA, MINNESOTA

TRAFFIC SIGNAL SYSTEM
INTERSECTION LAYOUT
CSAH 116 AT CASTLE FIELD BLVD/5TH AVE

FILE NO.
ANOKA 124725
DATE
07/26/2013

S7
S16



- ⑥ PEDESTAL FOUNDATION (EVP)
- 10' (min.) PEDESTAL POLE (INCLUDES BASE) (EVP)
- 1-ONE WAY EVP DETECTOR-MOUNT ON TOP OF SLIPFITTER COLLAR (FACING EB TRAFFIC) (Ø2.5 EVP) (EVP)
- 1-W3-3 SIGN PANEL-FACING EB TRAFFIC EXTEND INTO H.H.8:
- 2"R.S.C. (EVP)
- 1-3/c#20 (EVP)
- 1-1/c#6 (GRD.)

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) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1-2 FEET.
- 3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MNDOT STANDARD PLATE NO. 8114A.

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DRAWN BY:	JMG
DESIGNER:	JMG
CHECKED BY:	JMG

NO.	BY	DATE
1	JMG	09/13
2	JMG	10/14

REVISED PER UPDATED INTERSECTION GEOMETRICS		
RECORD DRAWING		
DESIGN TEAM		
REVISIONS		

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John M. Gray
 Name: John M. Gray, PE
 Lic. No. 22457
 Date: July 26, 2013

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 3535 VADNAIS CENTER DR.
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CSAH 116 AND CASTLE FIELD BOULEVARD IMPROVEMENT PROJECT
 ANOKA, MINNESOTA

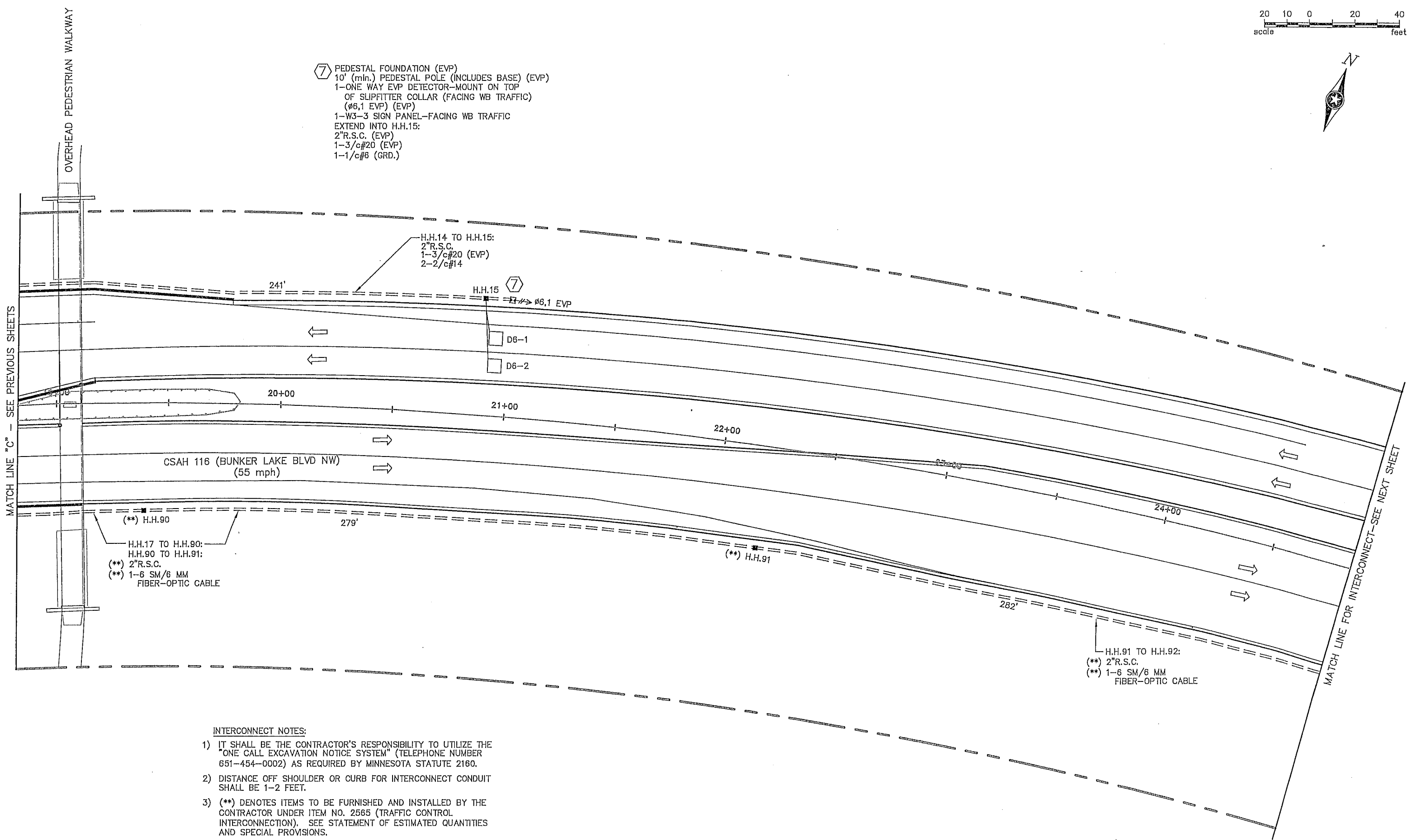
TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT
 CSAH 116 AT CASTLE FIELD BLVD/5TH AVE

FILE NO.	ANOKA 124725
DATE	07/26/2013

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S16



- ⑦ PEDESTAL FOUNDATION (EVP)
- 10' (min.) PEDESTAL POLE (INCLUDES BASE) (EVP)
- 1-ONE WAY EVP DETECTOR-MOUNT ON TOP OF SLIPFITTER COLLAR (FACING WB TRAFFIC) (Ø6,1 EVP) (EVP)
- 1-W3-3 SIGN PANEL-FACING WB TRAFFIC EXTEND INTO H.H.15:
- 2"R.S.C. (EVP)
- 1-3/c#20 (EVP)
- 1-1/c#6 (GRD.)



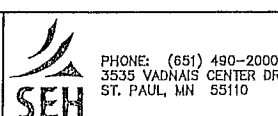
- INTERCONNECT NOTES:**
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 - 2) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1-2 FEET.
 - 3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MNDOT STANDARD PLATE NO. 8114A.

DRAWN BY:	JMG	1	JMG	09/13
DESIGNER:	JMG	2	JMG	10/14
CHECKED BY:	JMG			
DESIGN TEAM		NO.	BY	DATE

REVISED PER UPDATED INTERSECTION GEOMETRICS	
RECORD DRAWING	
NO.	REVISIONS

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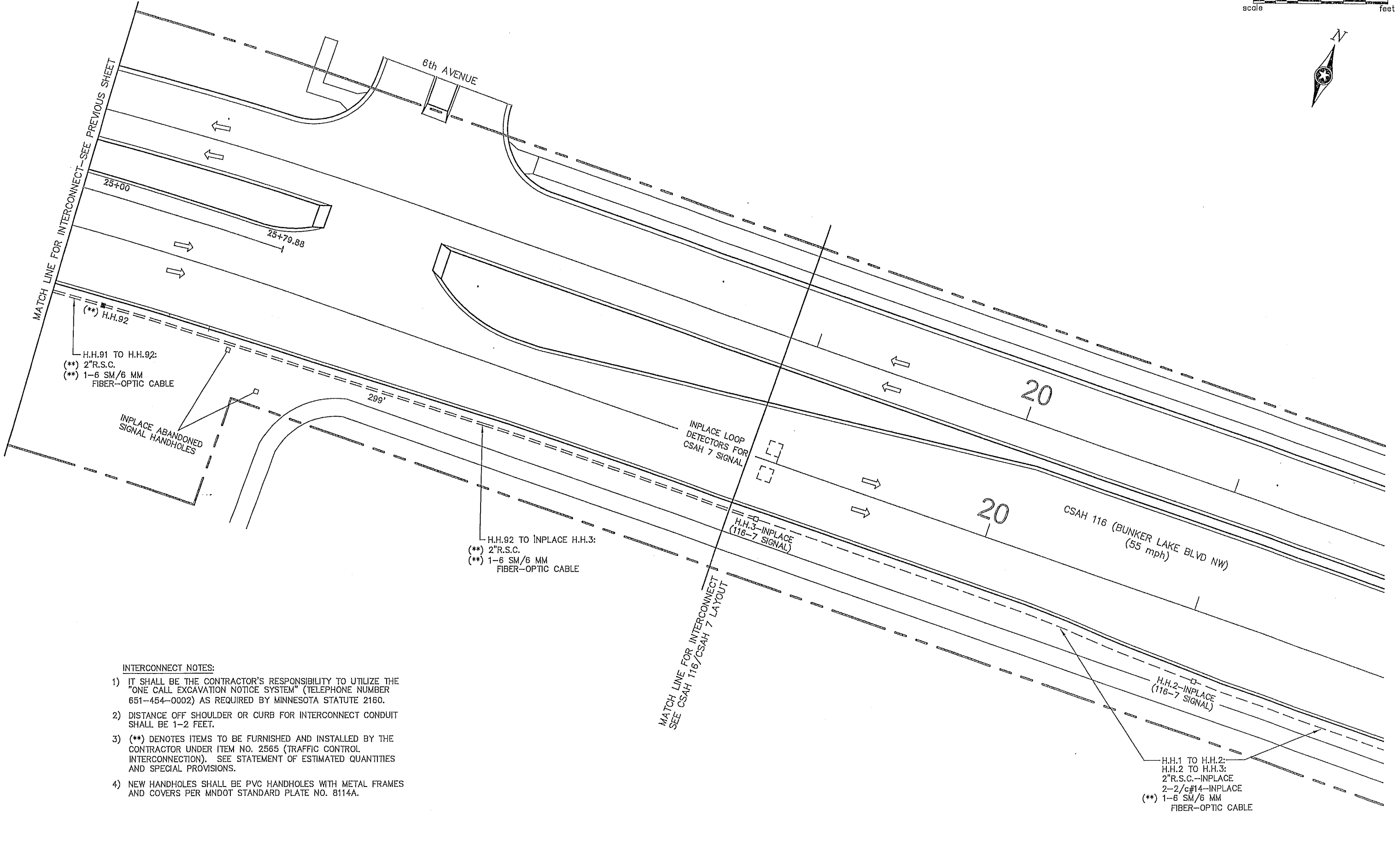
CSAH 116 AND CASTLE FIELD BOULEVARD IMPROVEMENT PROJECT
 ANOKA, MINNESOTA

TRAFFIC CONTROL INTERCONNECTION INTERSECTION LAYOUT
 CSAH 116 (CASTLE FIELD BLVD TO CSAH 7)

FILE NO. ANOKA 124725
 DATE 07/26/2013

S9
 S16

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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) DISTANCE OFF SHOULDER OR CURB FOR INTERCONNECT CONDUIT SHALL BE 1-2 FEET.
- 3) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS PER MNDOT STANDARD PLATE NO. 8114A.

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

NO.	BY	DATE	REVISIONS
1	JMG	10/14	RECORD DRAWING

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 3535 VADNAIS CENTER DR.
 ST. PAUL, MN 55110

CSAH 116 AND
 CASTLE FIELD BOULEVARD
 IMPROVEMENT PROJECT
 ANOKA, MINNESOTA

TRAFFIC CONTROL INTERCONNECTION
 INTERSECTION LAYOUT
 CSAH 116 (CASTLE FIELD BLVD TO CSAH 7)

FILE NO. ANOKA 124725
DATE 07/26/2013

S11
 S16

