

SIGNAL HEAD CHART				
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	●	●	●	●
-ALL SIGNAL INDICATIONS SHALL BE 12" LED				
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS				
-FYA DENOTES FLASHING YELLOW ARROW				

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO INP HH 1:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 4" RSC
2-12/C 12
2-3/C 12
1-3/C 20
6-2/C 14
1-FO CABLE (12SM)
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
2-3/C 16 (LUM)
4-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB4-1)
EXTEND INTO INP HH 16:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 4" RSC
2-12/C 12
2-3/C 12
1-3/C 20
6-2/C 14
1-FO CABLE (12SM)
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
2-3/C 16 (LUM)
7-2/C 14
1-1/C 6 INS. GR.

INPLACE: 4" RSC
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
1-3/C 12 (LUM)
1-FO CABLE (12SM)
REMOVE: 3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
2-3/C 16 (LUM)
7-2/C 14
1-1/C 6 INS. GR.

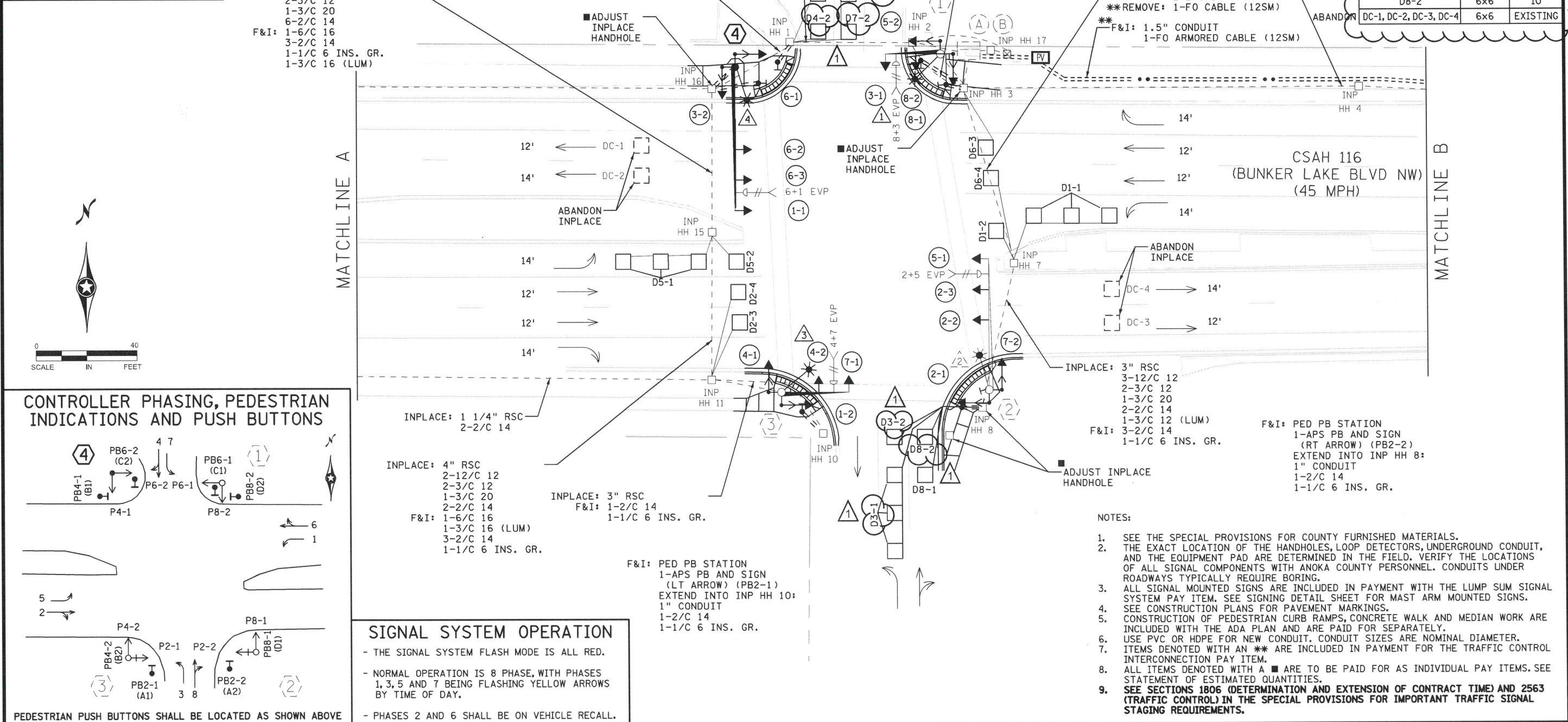
F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB6-1)
EXTEND INTO INP HH 3:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO INP HH 3:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 2" RSC
1-3/C 12 (LUM)
F&I: 1-3/C 16 (LUM)

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET

LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6x6	25,40,55
D1-2, D5-2	6x6	10
D2-1, D2-2	6x6	EXISTING
D2-3, D2-4	6x6	10
D3-1	3-6x6	25,40,55
D3-2	6x6	10
D4-1	6x6	25
D4-2	6x6	10
D6-1, D6-2	6x6	EXISTING
D6-3, D6-4	6x6	10
D7-1	3-6x6	25,40,55
D7-2	6x6	10
D8-1	6x6	25
D8-2	6x6	10
DC-1, DC-2, DC-3, DC-4	6x6	EXISTING



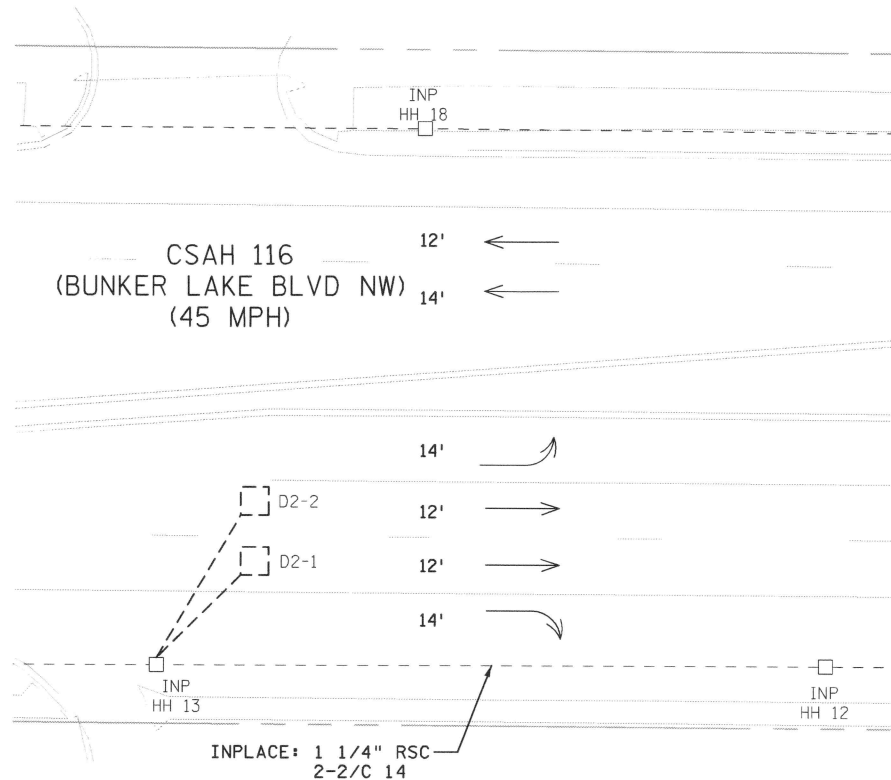
CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

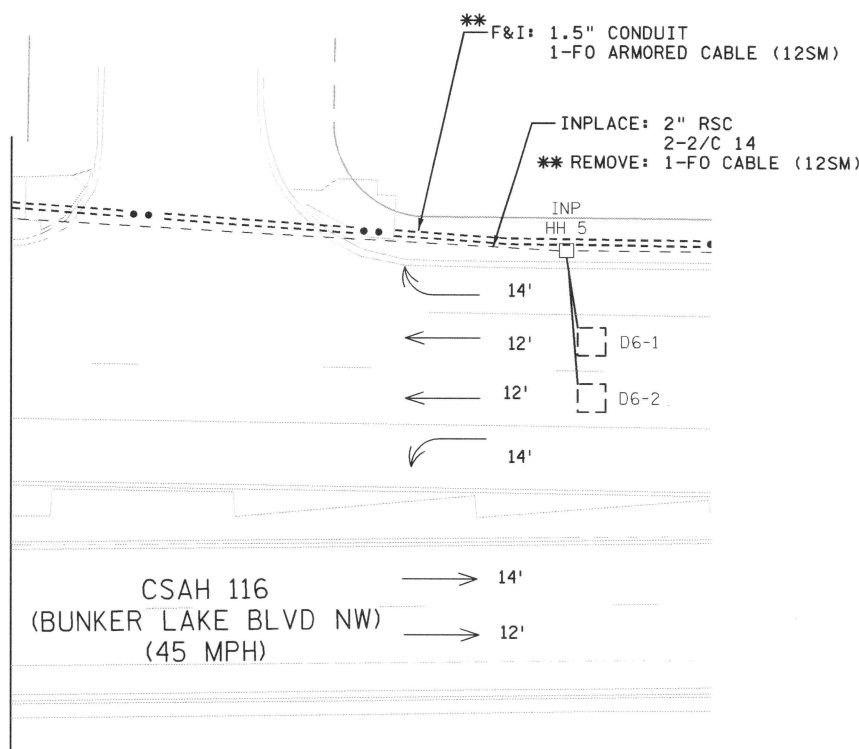
SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 1, 3, 5 AND 7 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

- NOTES:
- SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
 - ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
 - SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
 - CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
 - USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
 - ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
 - ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
 - SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.



MATCHLINE A



MATCHLINE B

(1) INPLACE: PA85 POLE FOUNDATION
TYPE PA85-A-20
REMOVE: TYPE A-20 & 1-ONE WAY SIGNAL-OVERHEAD
F&I: TYPE A-20
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
1-D30-9 LUMINAIRE EXTENSION
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
SALVAGE AND REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 8+3)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
INPLACE: 3" RSC TO INP HH 3:
2-12/C 12
2-3/C 12
1-3/C 20
F&I: 1-6/C 16
1-3/C 16 (LUM)

(3) INPLACE: PA85 POLE FOUNDATION
TYPE PA85-A-25
REMOVE: TYPE A-25 & 1-ONE WAY SIGNAL-OVERHEAD
F&I: TYPE A-25
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
1-D30-9 LUMINAIRE EXTENSION
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-APS PB AND SIGN (RT ARROW) (PB4-2)
AND APS PB MOUNTING SPACERS
SALVAGE AND REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 4+7)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
INPLACE: 3" RSC TO INP HH 11:
2-12/C 12
2-3/C 12
1-3/C 20
F&I: 1-6/C 16
1-3/C 16 (LUM)

(A) INPLACE: CONTROLLER AND CABINET
CABINET FOUNDATION
1 1/4" RSC TO HH 16:
3-1/C 6
REMOVE: CONTROLLER AND CABINET
INSTALL: TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)
INPLACE: 4" RSC TO INP HH 2:
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
1-FO CABLE (12SM)
REMOVE: 3-12/C 12
2-3/C 12
1-3/C 20
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
7-2/C 14
INPLACE: 4" RSC TO INP HH 3:
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
**REMOVE: 1-FO CABLE (12SM)
F&I: 1-6/C 16
6-2/C 14
**F&I: 1.5" CONDUIT TO PULL VAULT
1-FO ARMORED CABLE (12SM)

(B) INPLACE: SERVICE CABINET
CABINET FOUNDATION
REMOVE: SERVICE CABINET
F&I: BATTERY BACKUP SERVICE
CABINET (SEE DETAIL SHEET)
INPLACE: 1 1/4" RSC TO INP HH 17:
3-1/C 6
1 1/4" RSC TO INP HH 2:
2-3/C 12 (LUM)
STUB OUT 2" RSC
REMOVE: 1-3/C 12 (LUM)
F&I: 3-3/C 16 (LUM)

(2) INPLACE: PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
REMOVE: LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
F&I: LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 11' & 23'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-APS PB AND SIGN (LT ARROW) (PB8-1)
AND APS PB MOUNTING SPACERS
INPLACE: ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (ROSE ST) (SEE SIGN DETAILS)
INPLACE: 2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
3" RSC TO INP HH 8:
3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)

(4) X: 477419.5866
Y: 167262.2921
REMOVE: PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23'
FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
F&I: PA100 POLE FOUNDATION
TYPE PA100-A-55-D30-9
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-ANGLE MOUNT SIGNALS AT 90° & 180°
2-ANGLE MOUNT C.D. PED HEADS AT 90° & 180°
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (ROSE ST) (SEE SIGN DETAILS)
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
REMOVE: 3" RSC TO INP HH 1:
3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)
F&I: 3" CONDUIT TO INP HH 16:
3-12/C 16
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)

NOTES:

- SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTTEM PAY ITEM. SEE SINGING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
- ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
- SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.

NO	DATE	BY	CKD	APPR	REVISION
1	12/13/2024				

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.
PRINT NAME: NICK VANGUNST
SIGNATURE: *Nick Vangunst*
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY: KAS DATE: 11/26/24
DESIGN BY: KAS DATE: 11/26/24
CHECKED BY: NHV DATE: 11/26/24

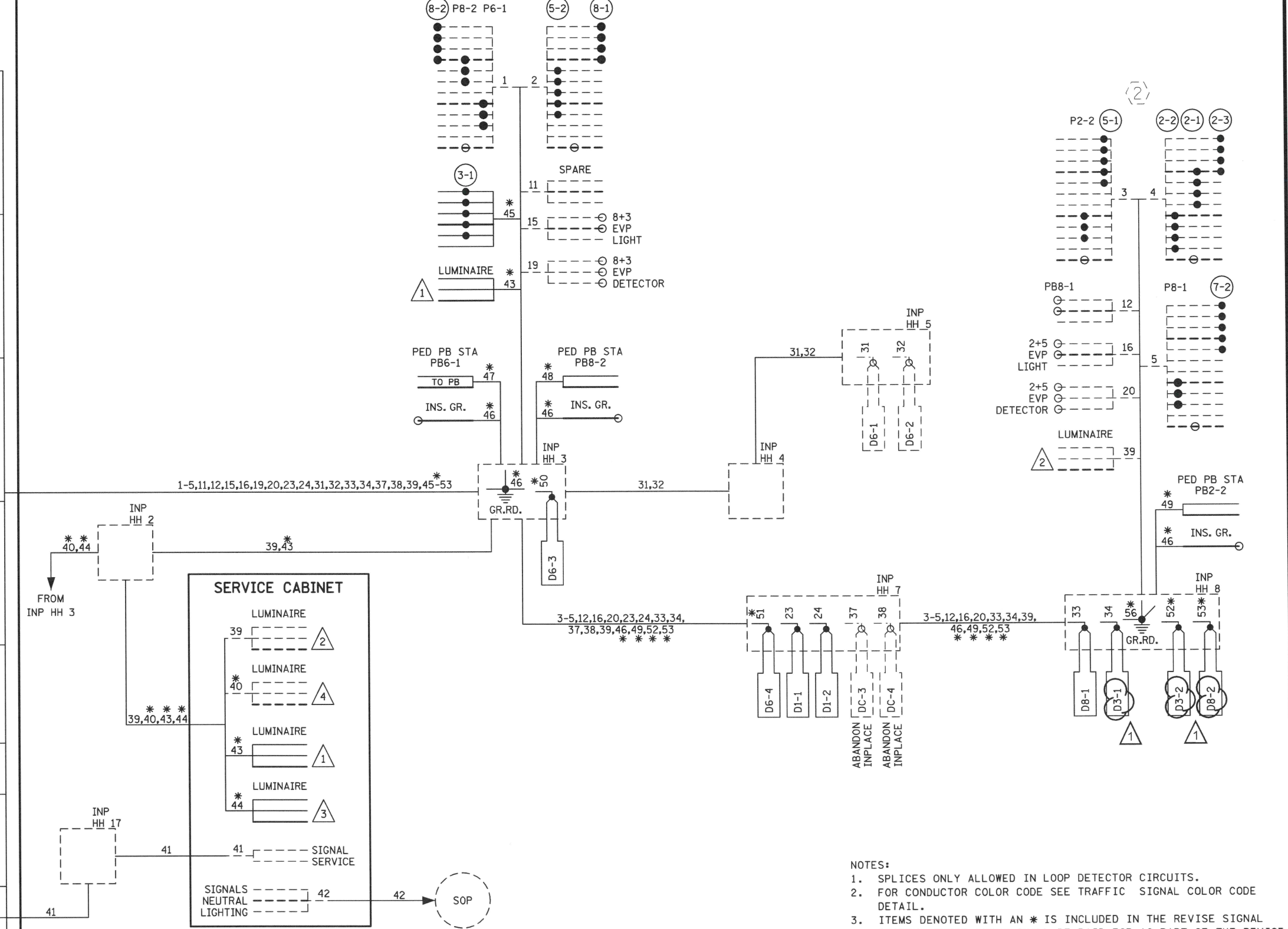
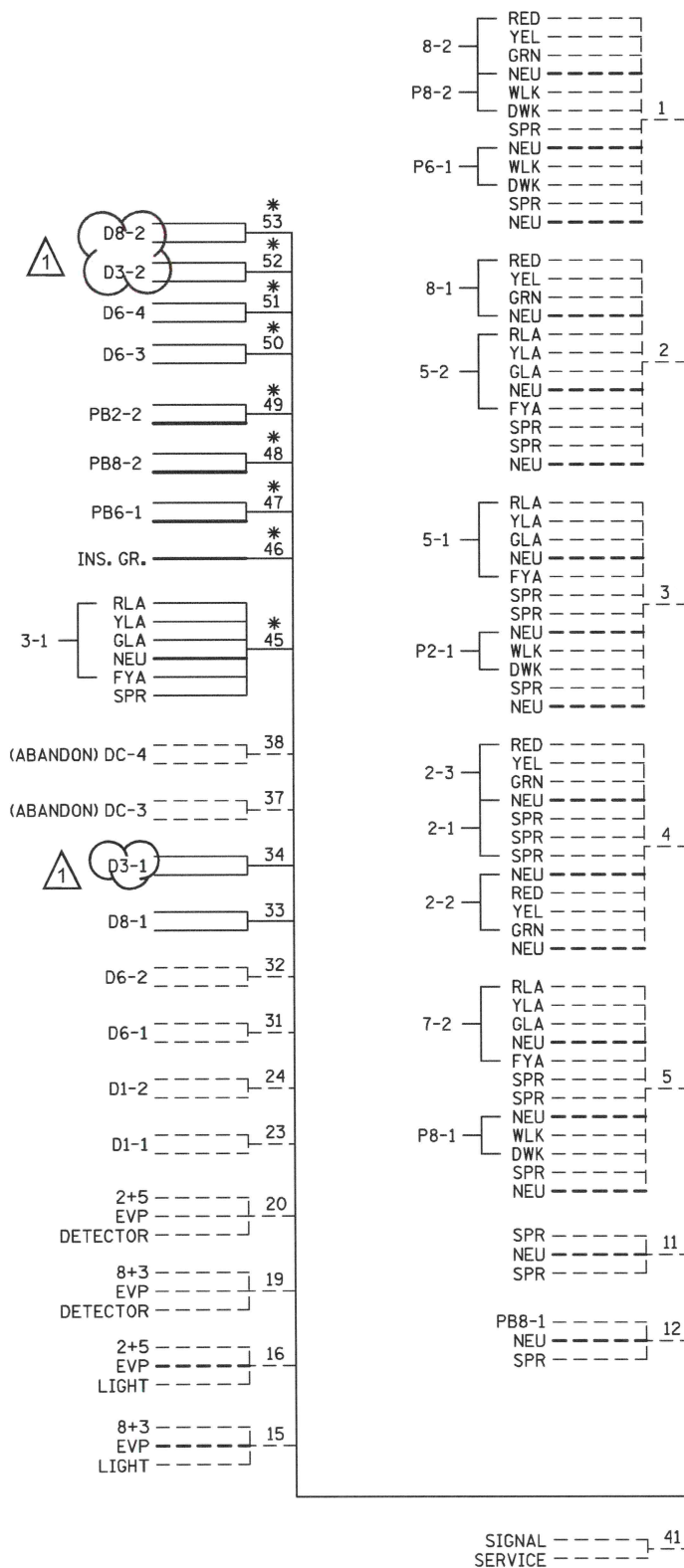


ANOKA COUNTY
HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A NOTES
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS
Sheet 87 of 174 Sheets

CONTROLLER CABINET



- NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
 2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
 3. ITEMS DENOTED WITH AN * IS INCLUDED IN THE REVISE SIGNAL SYSTEM. THESE ITEMS SHALL BE PAID FOR AS PART OF THE REVISE SIGNAL SYSTEM.
 4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.

1	1/6/2025	NHV	NHV	NHV	UPDATE DETECTION ASSIGNMENT
NO	DATE	BY	CKD	APPR	REVISION
NAME: ...	1/6/2025	4:15:27 PM			

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.

PRINT NAME: NICK VANGUNST

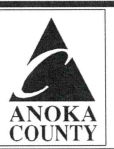
SIGNATURE: *Nick Van Gunst*

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY: KAS DATE: 11/26/24

DESIGN BY: KAS DATE: 01/06/25

CHECKED BY: NHV DATE: 11/26/24

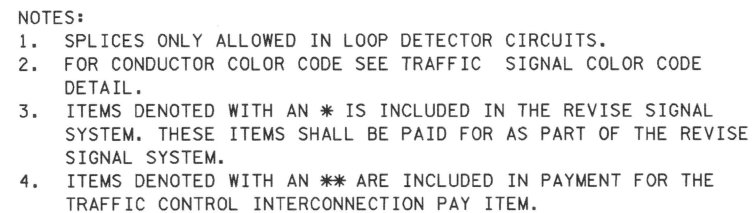


ANOKA COUNTY
HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A WIRING
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

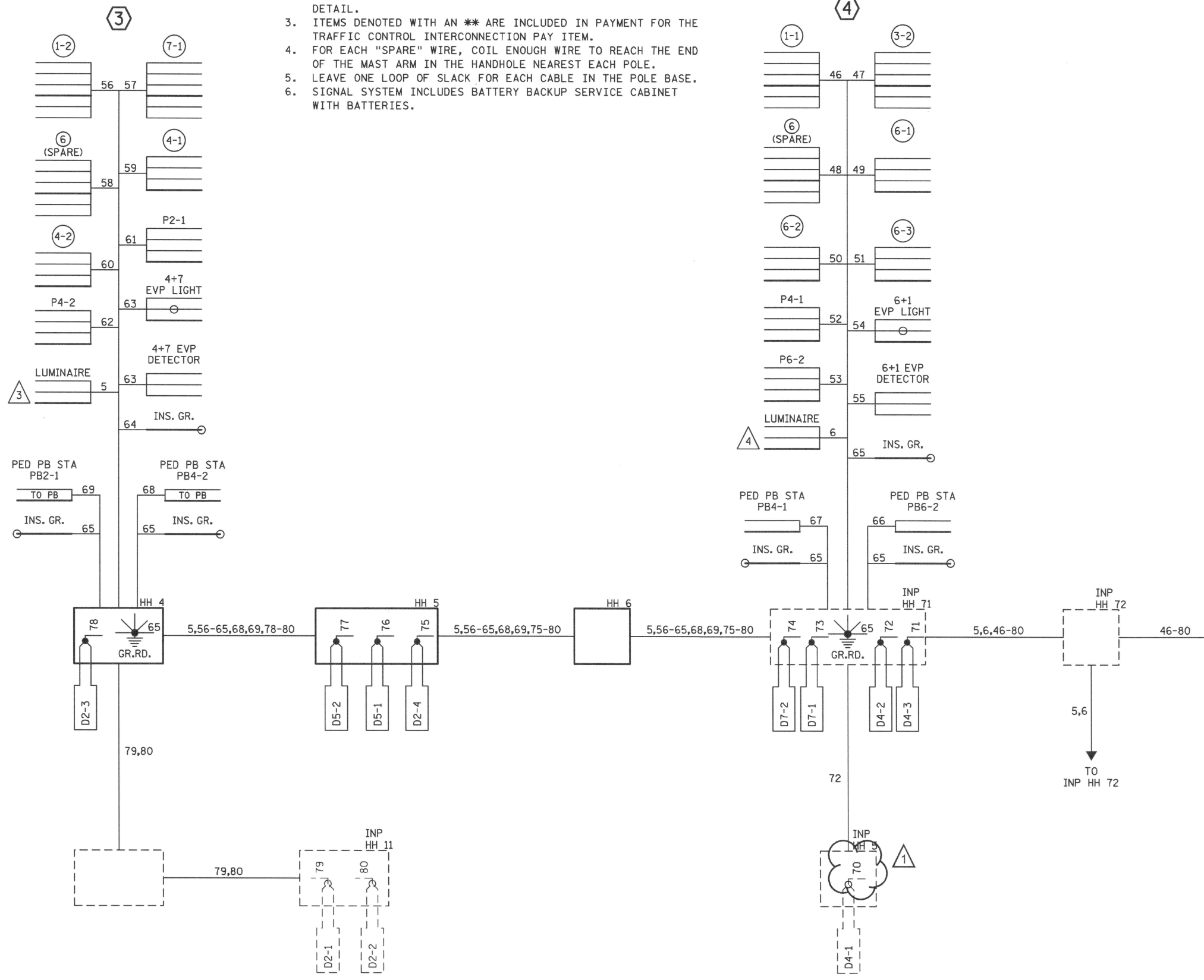
Sheet 88 of 174 Sheets



CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 89 of 174 Sheets

- NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
 2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
 3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
 4. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
 5. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
 6. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



CONTROLLER CABINET

