

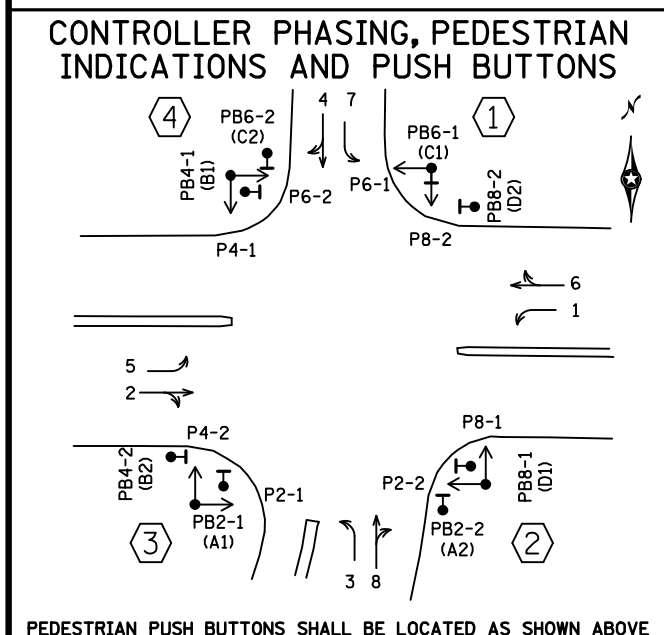
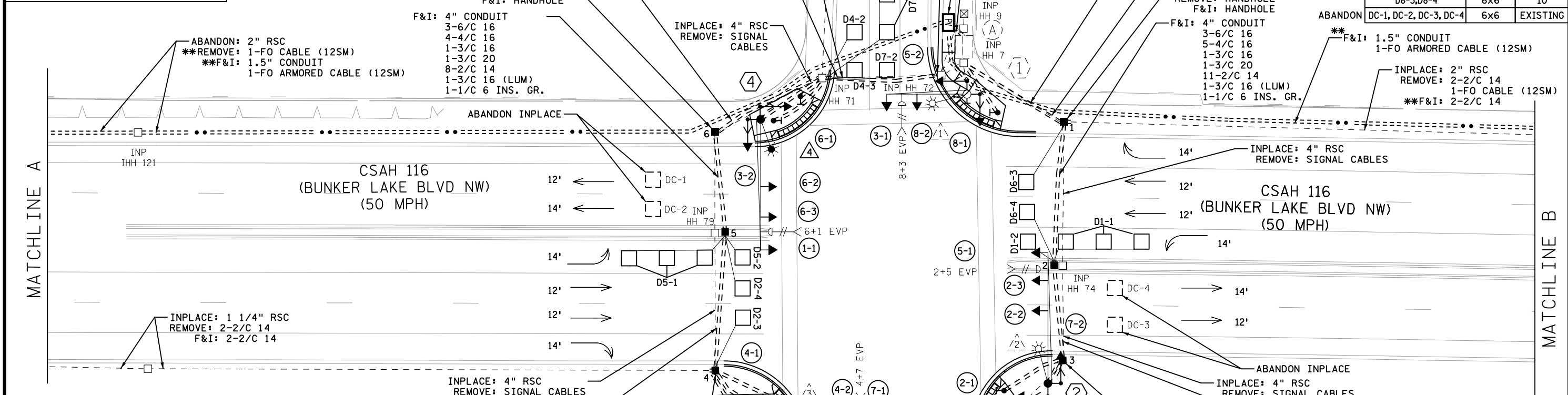
SIGNAL HEAD CHART				
FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●	●	●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●	●	●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●	●	●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●	●	●

-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 71:
1" CONDUIT
1-2/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 71:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

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, D7-1	3-6x6	25, 40, 55
D3-2, D7-2	6x6	10
D4-1	6x6	EXISTING
D4-2	6x6	25
D4-3	6x6	10
D6-1, D6-2	6x6	EXISTING
D6-3, D6-4	6x6	25
D8-2	6x6	25
D8-3, D8-4	6x6	10
DC-1, DC-2, DC-3, DC-4	6x6	EXISTING



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.

F&I: 4" CONDUIT
3-6/C 16
4-4/C 16
1-3/C 16
1-3/C 20
5-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB4-2)
EXTEND INTO INP HH 78:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

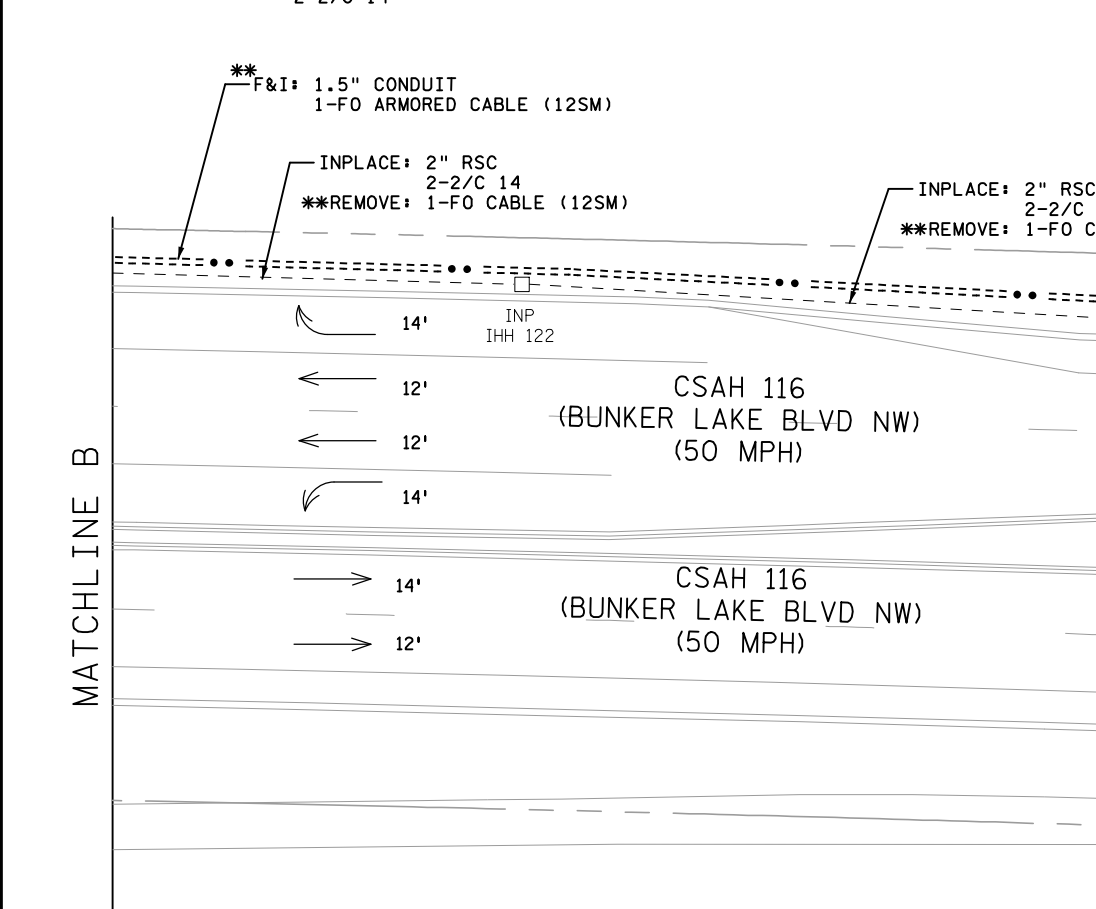
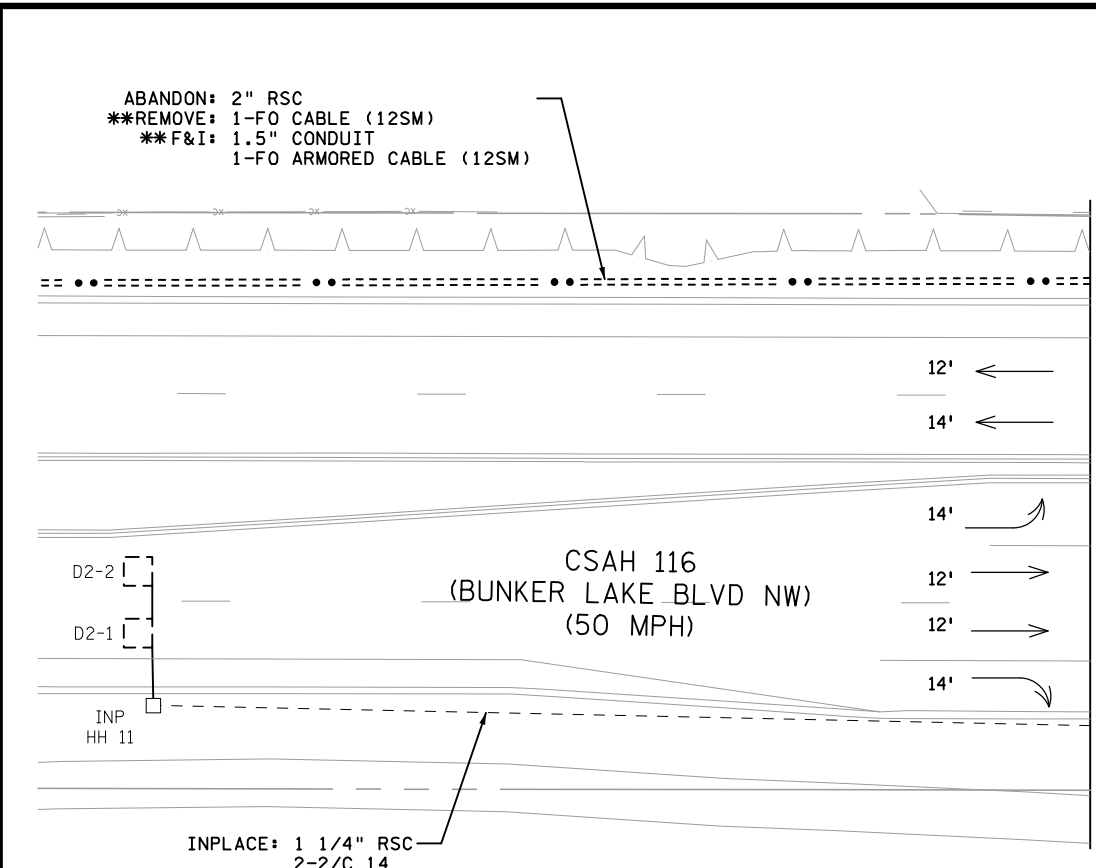
F&I: PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB2-1)
EXTEND INTO INP HH 78:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB8-2)
EXTEND INTO INP HH 7:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB8-1)
EXTEND INTO INP HH 75:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB2-2)
EXTEND INTO INP HH 4:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

NOTES:
1. 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.
2. 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.
3. 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.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
6. SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.



① INPLACE: PA100 POLE FOUNDATION
 TYPE PA100-A-30-D40-9 (DAVIT AT 350°)
 LUMINAIRE-LED
 REMOVE: 2-ONE WAY SIGNALS-OVERHEAD (0' & 12'
 FROM END OF MAST ARM)
 F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
 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) (PB6-1)
 AND APB PB POLE MOUNTED ADAPTOR
 INPLACE: ONE WAY EVP DETECTOR AND LIGHT (PHASES 3+8)
 REMOVE: R10-12 SIGN PANEL-ADJACENT TO 8-3
 TYPE D SIGN PANEL-OVERHEAD
 F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
 1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
 INPLACE: 3\"/>

③ X:486134.9955
 Y:167144.0514
 REMOVE: PA100 POLE FOUNDATION
 F&I: PA100 POLE FOUNDATION
 SALVAGE & REINSTALL: TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
 INPLACE: LUMINAIRE-LED
 REMOVE: 2-ONE WAY SIGNALS-OVERHEAD (0' & 12'
 FROM END OF MAST ARM)
 F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
 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 & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 3+7)
 REMOVE: R10-12 SIGN PANEL-ADJACENT TO 4-3
 TYPE D SIGN PANEL-OVERHEAD
 F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
 1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
 SALVAGE & REINSTALL: 2-R6-1 SIGN PANELS
 F&I: 3\"/>

② X:486244.9600
 Y:167163.8332
 REMOVE: PA100 POLE FOUNDATION
 F&I: PA100 FOUNDATION
 SALVAGE & REINSTALL: TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
 INPLACE: LUMINAIRE-LED
 REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 12' & 23'
 FROM END OF MAST ARM)
 F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 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 HOLES
 TYPE D SIGN PANEL-OVERHEAD
 SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
 F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
 1-SIGN (QUINN ST) (SEE SIGN DETAILS)
 INPLACE: 2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
 F&I: 3\"/>

④ X:486131.1275
 Y:167268.4472
 REMOVE: PA100 POLE FOUNDATION
 F&I: PA100 FOUNDATION
 SALVAGE & REINSTALL: TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
 REMOVE: LUMINAIRE-200 W HPS
 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 HOLES
 SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
 2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
 1-SIGN (QUINN ST) (SEE SIGN DETAILS)
 F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
 F&I: 3\"/>

(A) INPLACE: CONTROLLER AND CABINET
 CABINET FOUNDATION
 1 1/4\"/>

(B) INPLACE: SERVICE CABINET
 CABINET FOUNDATION
 REMOVE: SERVICE CABINET
 F&I: BATTERY BACKUP SERVICE CABINET (SEE DETAIL SHEET)
 INPLACE: 1 1/4\"/>

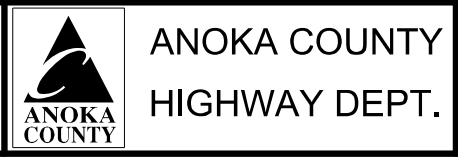
- NOTE:
- SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
 - USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
 - ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
 - SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) **F&I: 1.5\"/>

NO	DATE	BY	CKD	APPR	REVISION

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

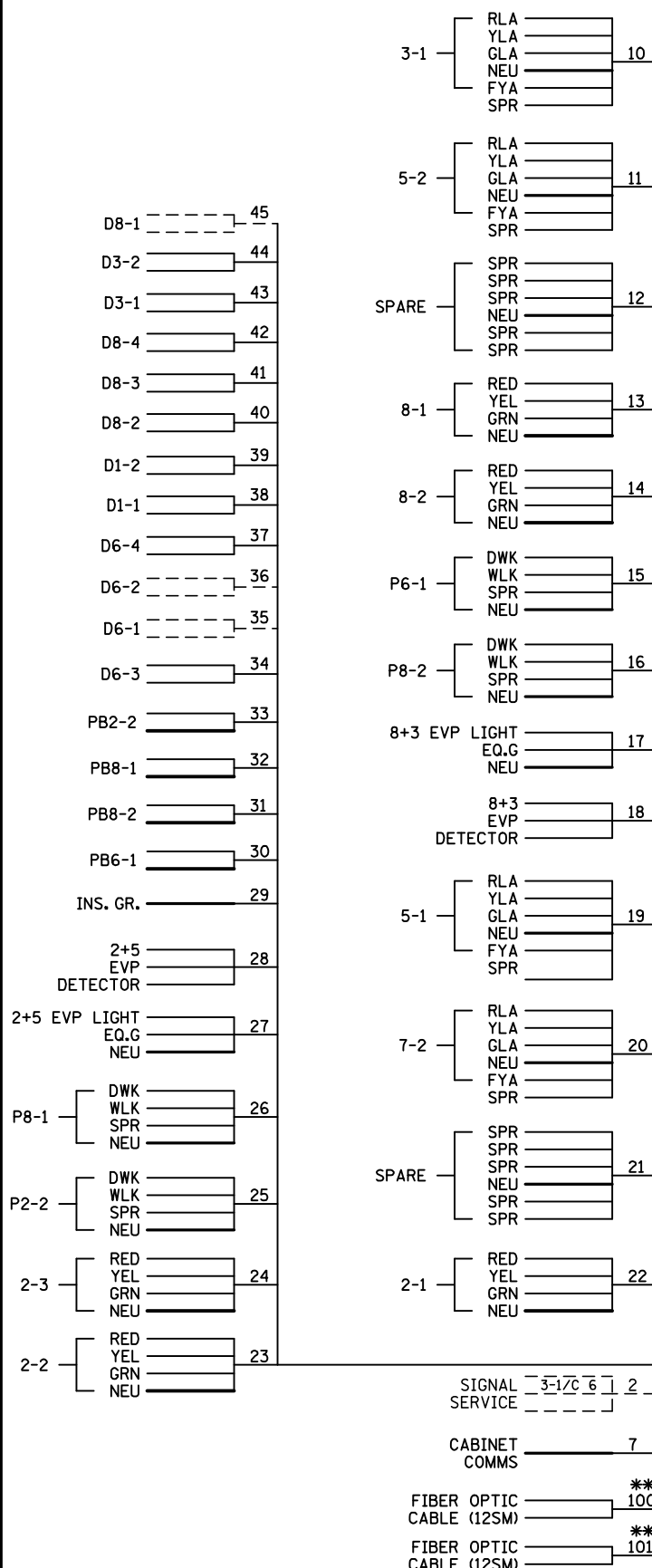
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REVISE SIGNAL SYSTEM D NOTES
 BUNKER LAKE BLVD & QUINN ST
 COUNTY PROJECT SAP 002-716-024
 CITY PROJECT SAP 198-020-040

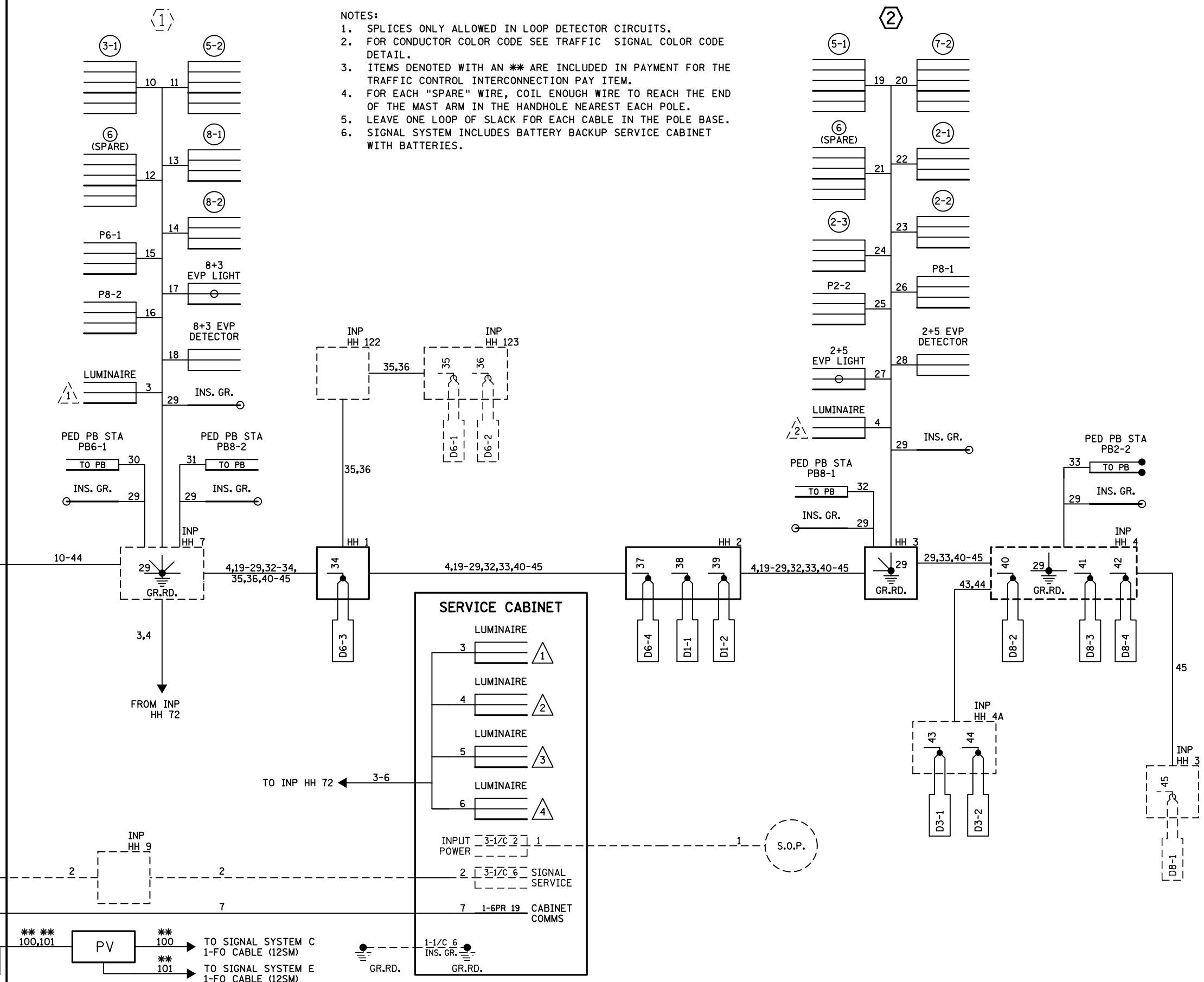
CSAH 116 (BUNKER LAKE BLVD)
 SIGNAL MODIFICATION
 & ADA IMPROVEMENTS
 Sheet 116 of 174 Sheets

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 ** 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.



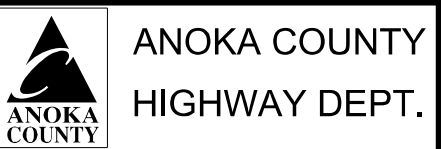
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 SIGNATURE: *Nick Van Gunst*
 DATE: 11/26/24 LICENSE NO. 44683

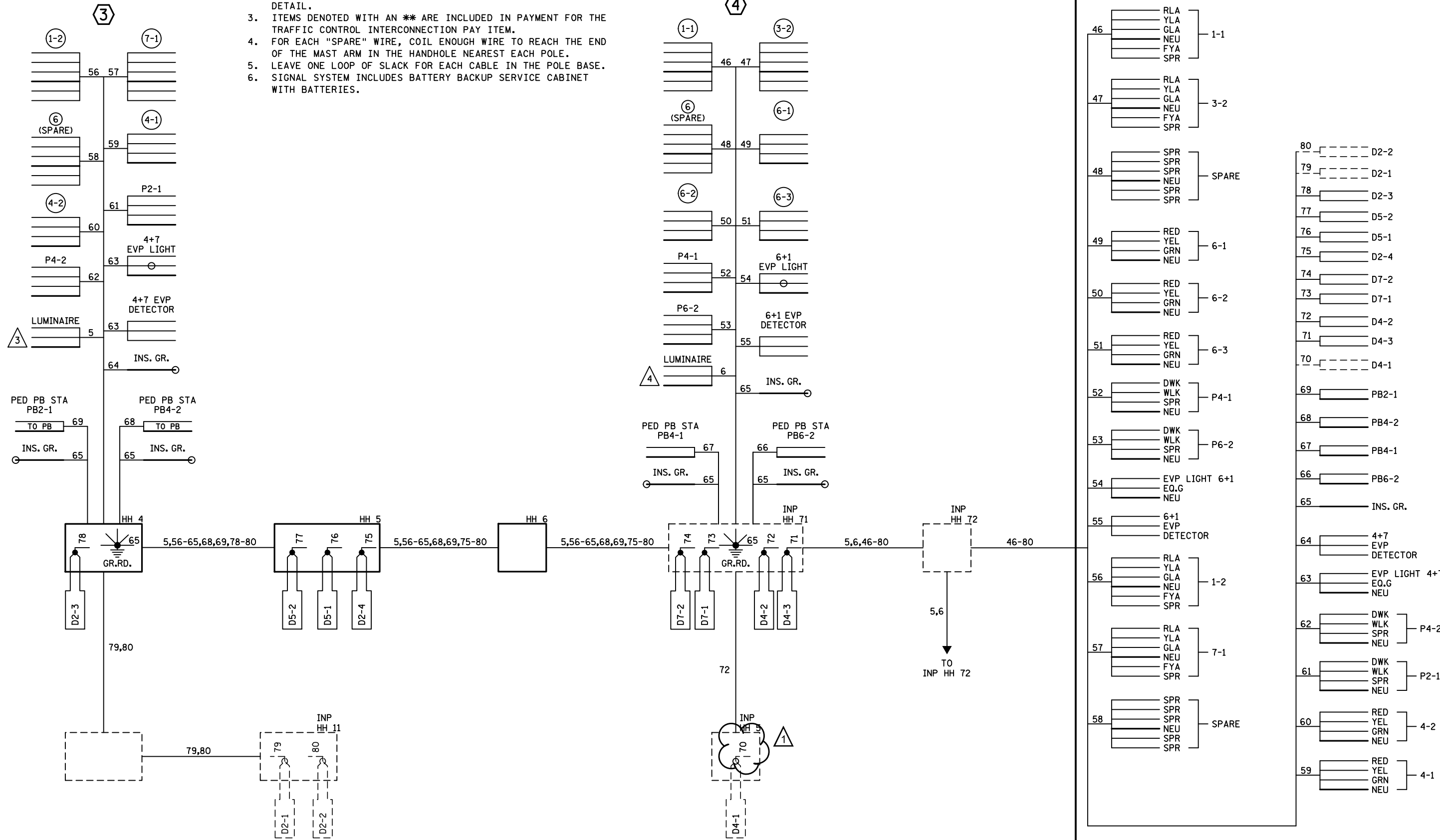
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REVISE SIGNAL SYSTEM D WIRING
 BUNKER LAKE BLVD & QUINN ST
 COUNTY PROJECT SAP 002-716-024
 CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
 SIGNAL MODIFICATION
 & ADA IMPROVEMENTS
 Sheet 117 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.

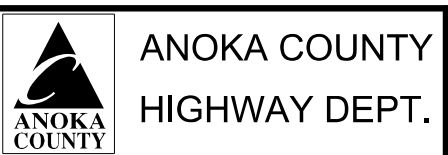


1	1/9/2025	NHV	NHV	NHV	ADD CABLE # FOR D4-1 AT INP HH 5
NO	DATE	BY	CKD	APPR	REVISION
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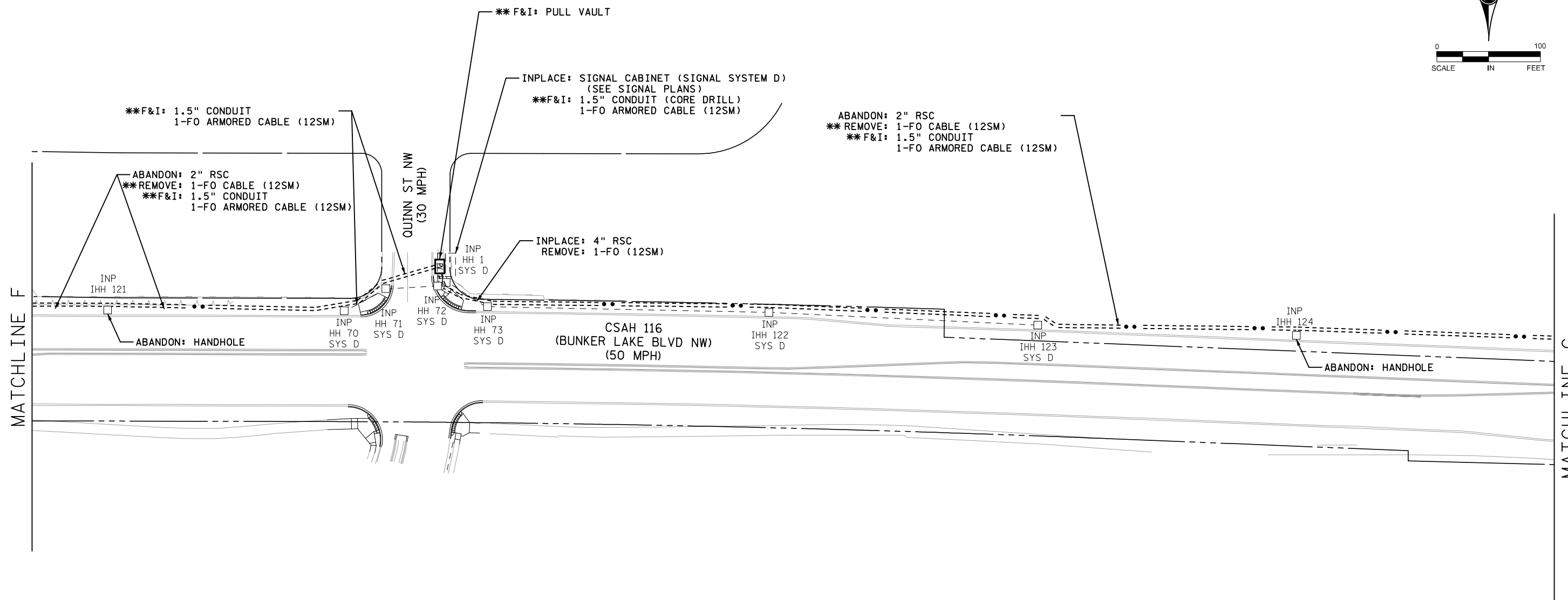
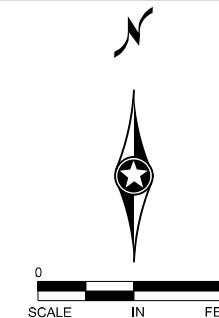
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 SIGNATURE: *Nick Van Gunst*
 DATE: 11/26/24 LICENSE NO. 44683

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

CSAH 116 (BUNKER LAKE BLVD)
 SIGNAL MODIFICATION
 & ADA IMPROVEMENTS
 Sheet 118 of 174 Sheets



NOTES:

1. THE LOCATION OF PULL VAULTS AND CONDUITS SHOWN IN THE PLAN ARE APPROXIMATE. EXACT LOCATIONS SHALL BE COORDINATED WITH ALL UTILITY FACILITIES IN SIDEWALK AND ROADWAY AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.
2. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ITEMS DENOTED WITH ** ARE INCLUDED IN THE PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECT PAY ITEM.
4. CONTRACTOR SHALL TERMINATE FIBER OPTIC CABLE WITHIN TRAFFIC SIGNAL CABINETS IN THE CONTRACTOR PROVIDED TERMINATION PANEL. SEE SPECIAL PROVISIONS.
5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

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PRINT NAME: NICK VANGUNST

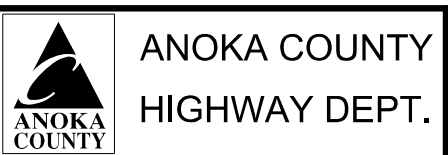
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DATE: 11/26/24 LICENSE NO. 44683

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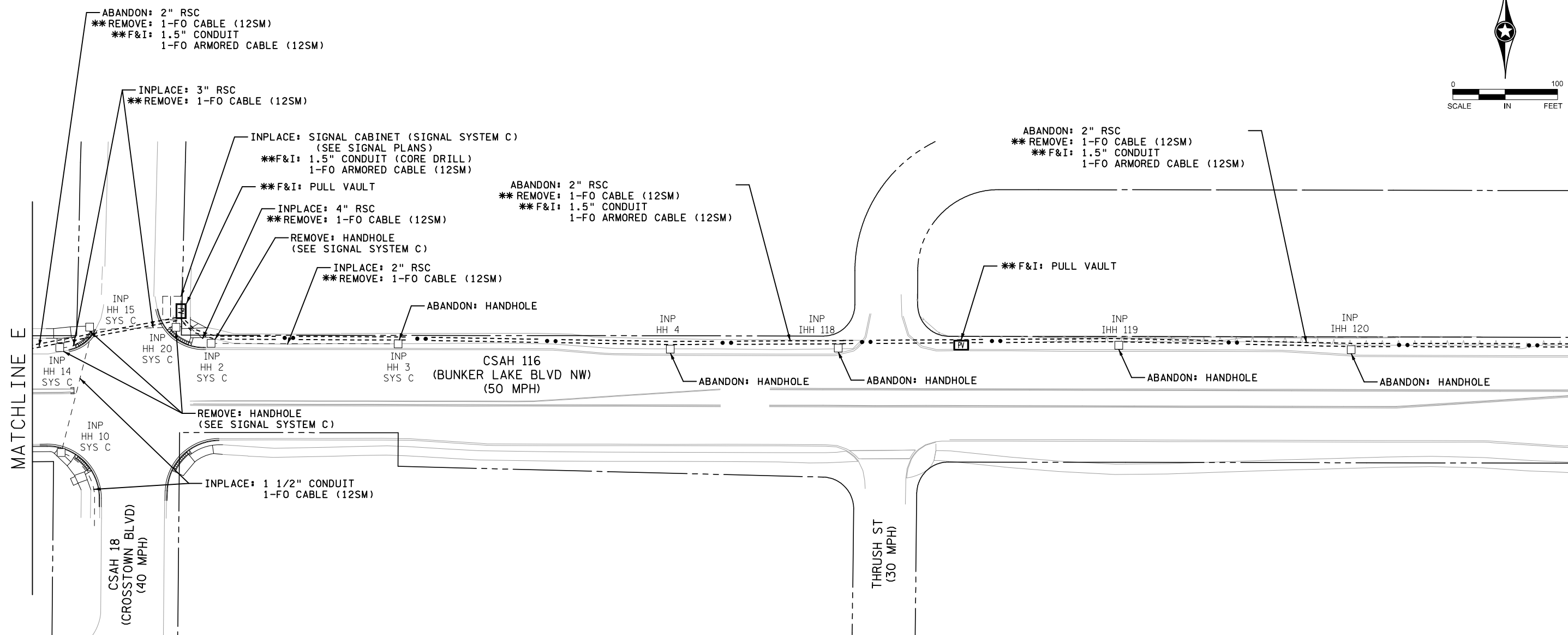
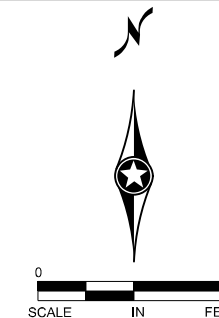


**TRAFFIC SIGNAL SYSTEM
INTERCONNECT LAYOUT**

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

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

Sheet 153 of 174 Sheets



NOTES:

1. THE LOCATION OF PULL VAULTS AND CONDUITS SHOWN IN THE PLAN ARE APPROXIMATE. EXACT LOCATIONS SHALL BE COORDINATED WITH ALL UTILITY FACILITIES IN SIDEWALK AND ROADWAY AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.
2. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ITEMS DENOTED WITH ** ARE INCLUDED IN THE PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECT PAY ITEM.
4. CONTRACTOR SHALL TERMINATE FIBER OPTIC CABLE WITHIN TRAFFIC SIGNAL CABINETS IN THE CONTRACTOR PROVIDED TERMINATION PANEL. SEE SPECIAL PROVISIONS.
5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

NO	DATE	BY	CKD	APPR	REVISION
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PRINT NAME: NICK VANGUNST
 SIGNATURE: *Nick Van Gunst*
 DATE: 11/26/24 LICENSE NO. 44683

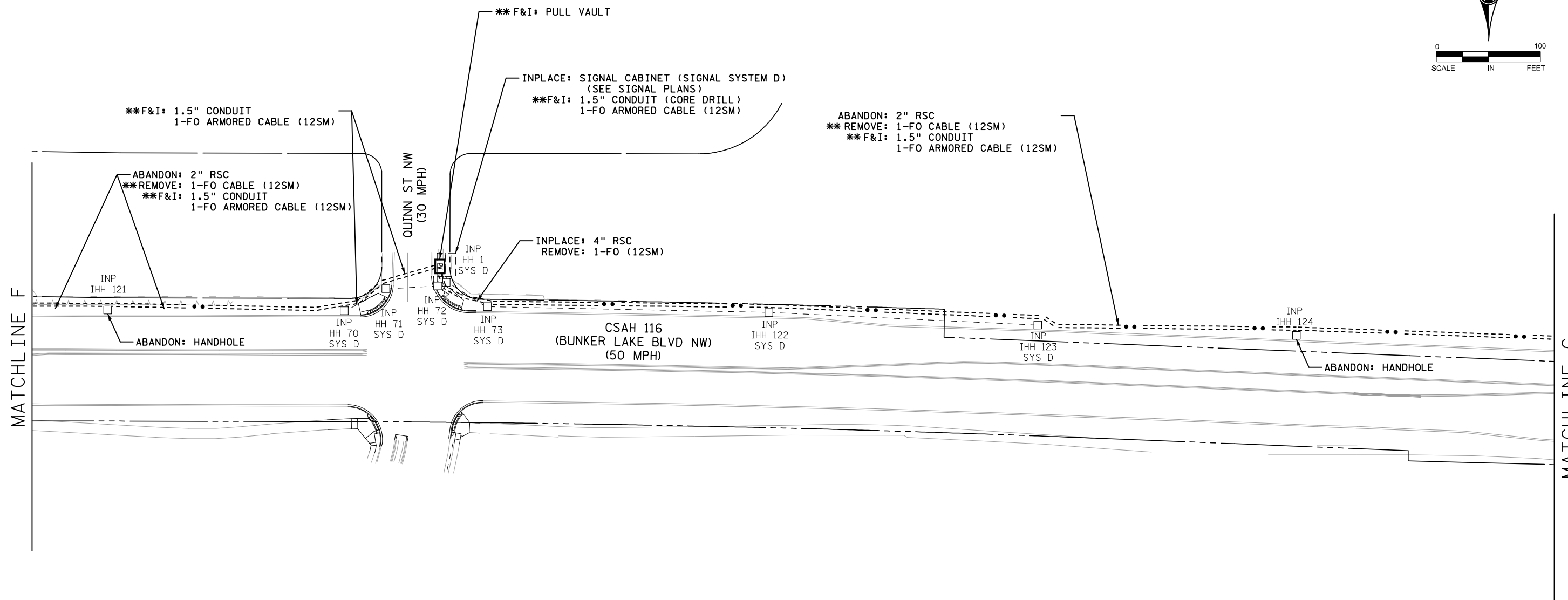
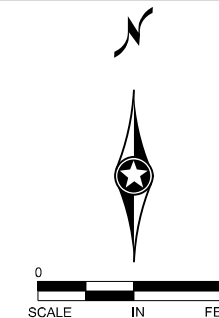
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 CHECKED BY: NHV DATE 11/26/24



**ANOKA COUNTY
HIGHWAY DEPT.**

TRAFFIC SIGNAL SYSTEM
 INTERCONNECT LAYOUT
 COUNTY PROJECT SAP 002-716-024
 CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
 SIGNAL MODIFICATION
 & ADA IMPROVEMENTS
 Sheet 152 of 174 Sheets



NOTES:

1. THE LOCATION OF PULL VAULTS AND CONDUITS SHOWN IN THE PLAN ARE APPROXIMATE. EXACT LOCATIONS SHALL BE COORDINATED WITH ALL UTILITY FACILITIES IN SIDEWALK AND ROADWAY AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.
2. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ITEMS DENOTED WITH ** ARE INCLUDED IN THE PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECT PAY ITEM.
4. CONTRACTOR SHALL TERMINATE FIBER OPTIC CABLE WITHIN TRAFFIC SIGNAL CABINETS IN THE CONTRACTOR PROVIDED TERMINATION PANEL. SEE SPECIAL PROVISIONS.
5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

NO	DATE	BY	CKD	APPR	REVISION
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_ic16.dgn 11/26/2024 3:06:07 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
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 CHECKED BY NHV DATE 11/26/24



**ANOKA COUNTY
HIGHWAY DEPT.**

**TRAFFIC SIGNAL SYSTEM
INTERCONNECT LAYOUT
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040**

**CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS**
 Sheet 153 of 174 Sheets



ABANDON: 2" RSC
 ** REMOVE: 1-FO CABLE (12SM)
 ** F&I: 1.5" CONDUIT
 1-FO ARMORED CABLE (12SM)

ABANDON: 2" RSC
 ** REMOVE: 1-FO CABLE (12SM)
 ** F&I: 1.5" CONDUIT
 1-FO ARMORED CABLE (12SM)

** F&I: 1.5" CONDUIT
 2-FO ARMORED CABLE (12SM)

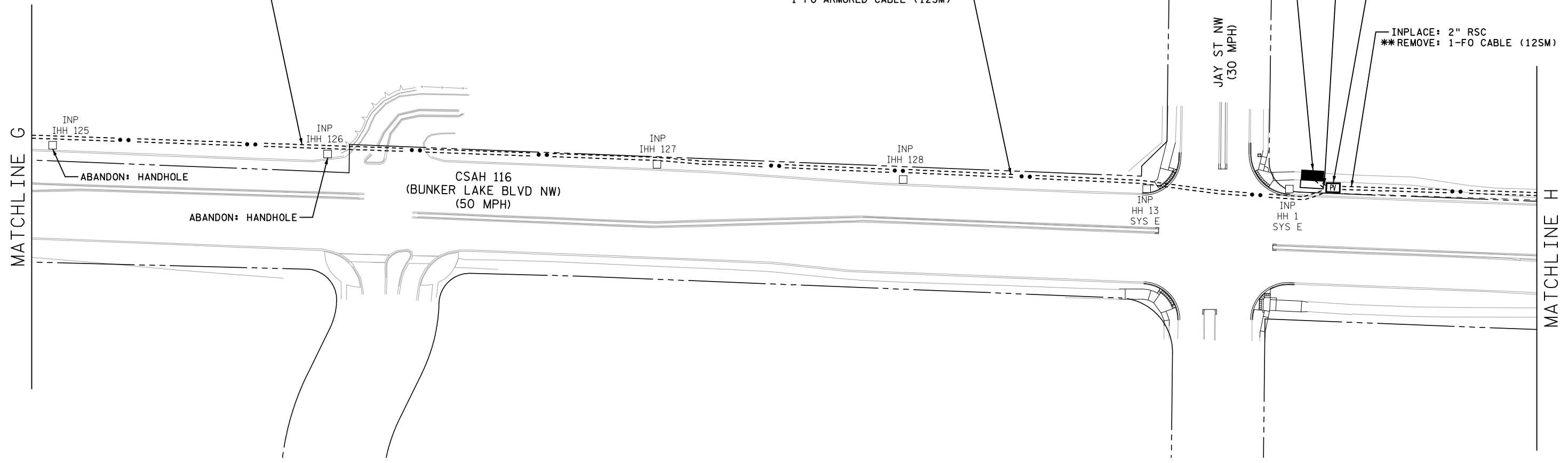
** F&I: PULL VAULT

INPLACE: 2" RSC
 ** REMOVE: 1-FO CABLE (12SM)

PROPOSED SIGNAL CABINET (SIGNAL SYSTEM E)
 (SEE SIGNAL PLANS)

MATCHLINE G

MATCHLINE H



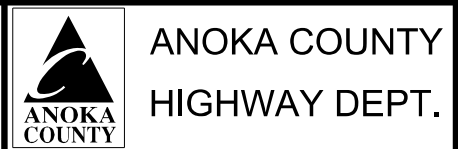
NOTES:

1. THE LOCATION OF PULL VAULTS AND CONDUITS SHOWN IN THE PLAN ARE APPROXIMATE. EXACT LOCATIONS SHALL BE COORDINATED WITH ALL UTILITY FACILITIES IN SIDEWALK AND ROADWAY AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.
2. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ITEMS DENOTED WITH ** ARE INCLUDED IN THE PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECT PAY ITEM.
4. CONTRACTOR SHALL TERMINATE FIBER OPTIC CABLE WITHIN TRAFFIC SIGNAL CABINETS IN THE CONTRACTOR PROVIDED TERMINATION PANEL. SEE SPECIAL PROVISIONS.
5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

NO	DATE	BY	CHKD	APPR	REVISION
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_ic17.dgn 11/26/2024 3:06:16 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 11/26/24
 CHECKED BY: NHV DATE 11/26/24



ANOKA COUNTY
 HIGHWAY DEPT.
 TRAFFIC SIGNAL SYSTEM
 INTERCONNECT LAYOUT
 COUNTY PROJECT SAP 002-716-024
 CITY PROJECT SAP 198-020-040

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