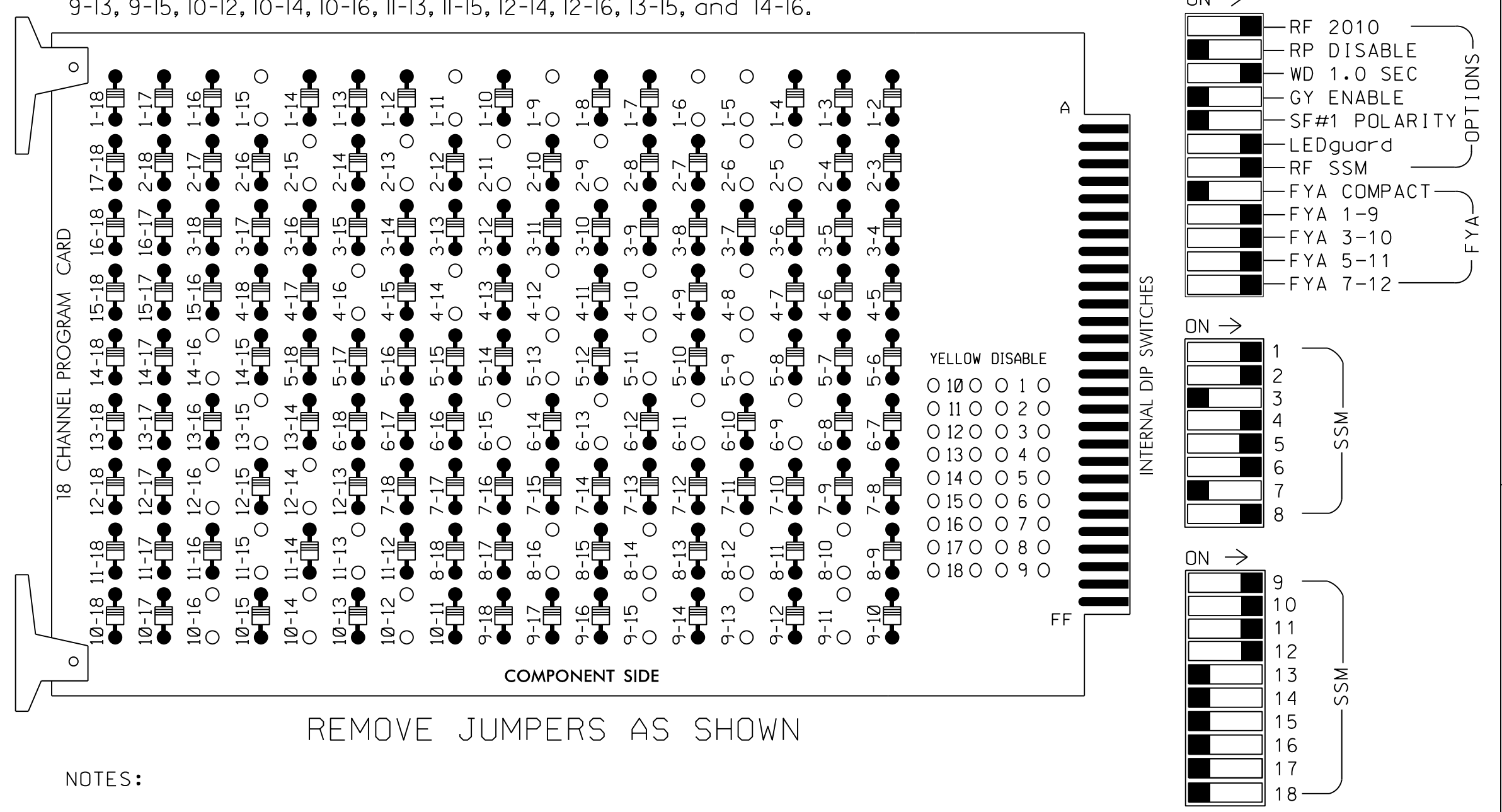


18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

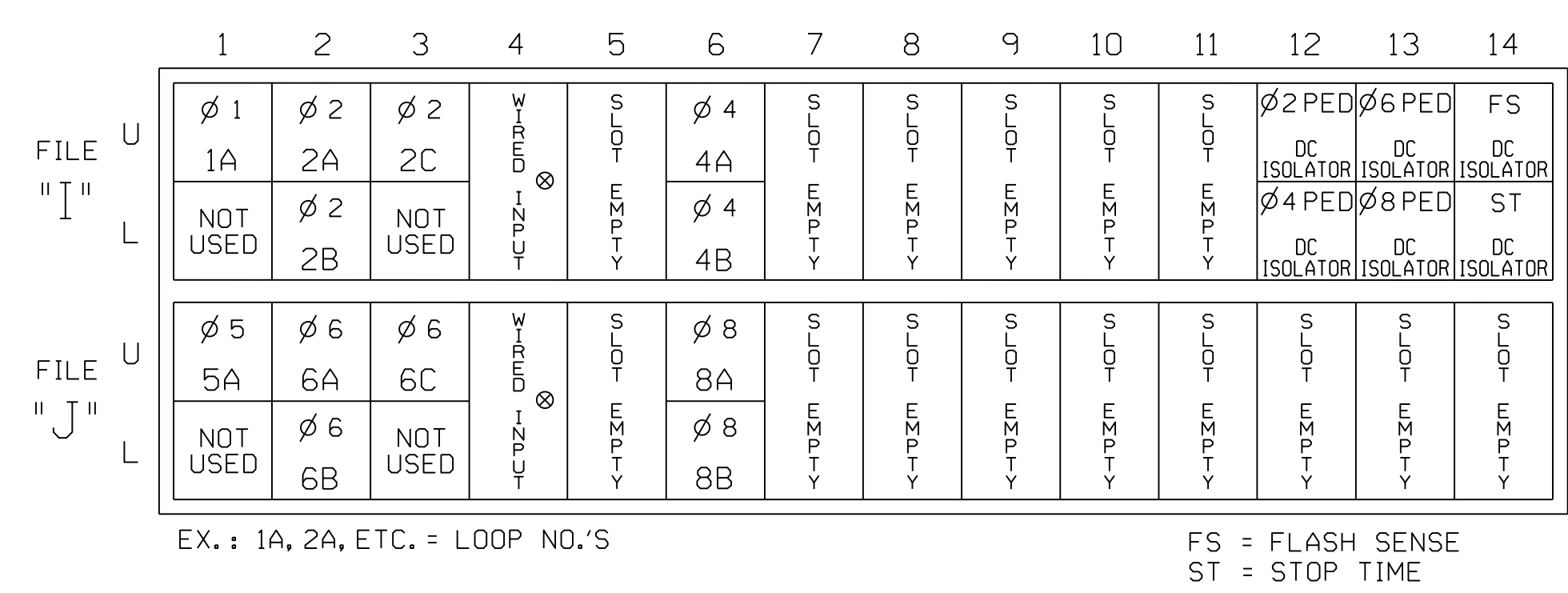
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMI CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22,23	P21,P22	NU	42,43	P41,P42	51	61,62,63	P61,P62	NU	82,83	P81,P82	11	81	NU	51	41	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127							133										
Hand icon			113			104			119			110						
Person icon			115			106			121			112						

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

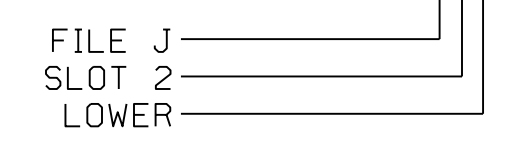
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES				G
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
4B	TB4-11,12	I6L	45	14	4	YES		10		N
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES				G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2	PED				
P41,P42	TB8-5,6	I12L	69	PED 4	4	PED				
P61,P62	TB8-7,9	I13U	68	PED 6	6	PED				
P81,P82	TB8-8,9	I13L	70	PED 8	8	PED				

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- * See vehicle detector setup programming detail for alternate phasing on sheet 3.

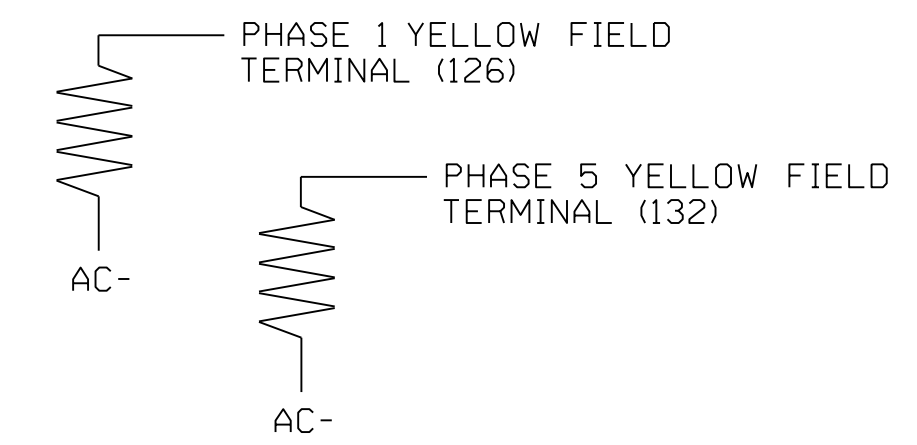
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

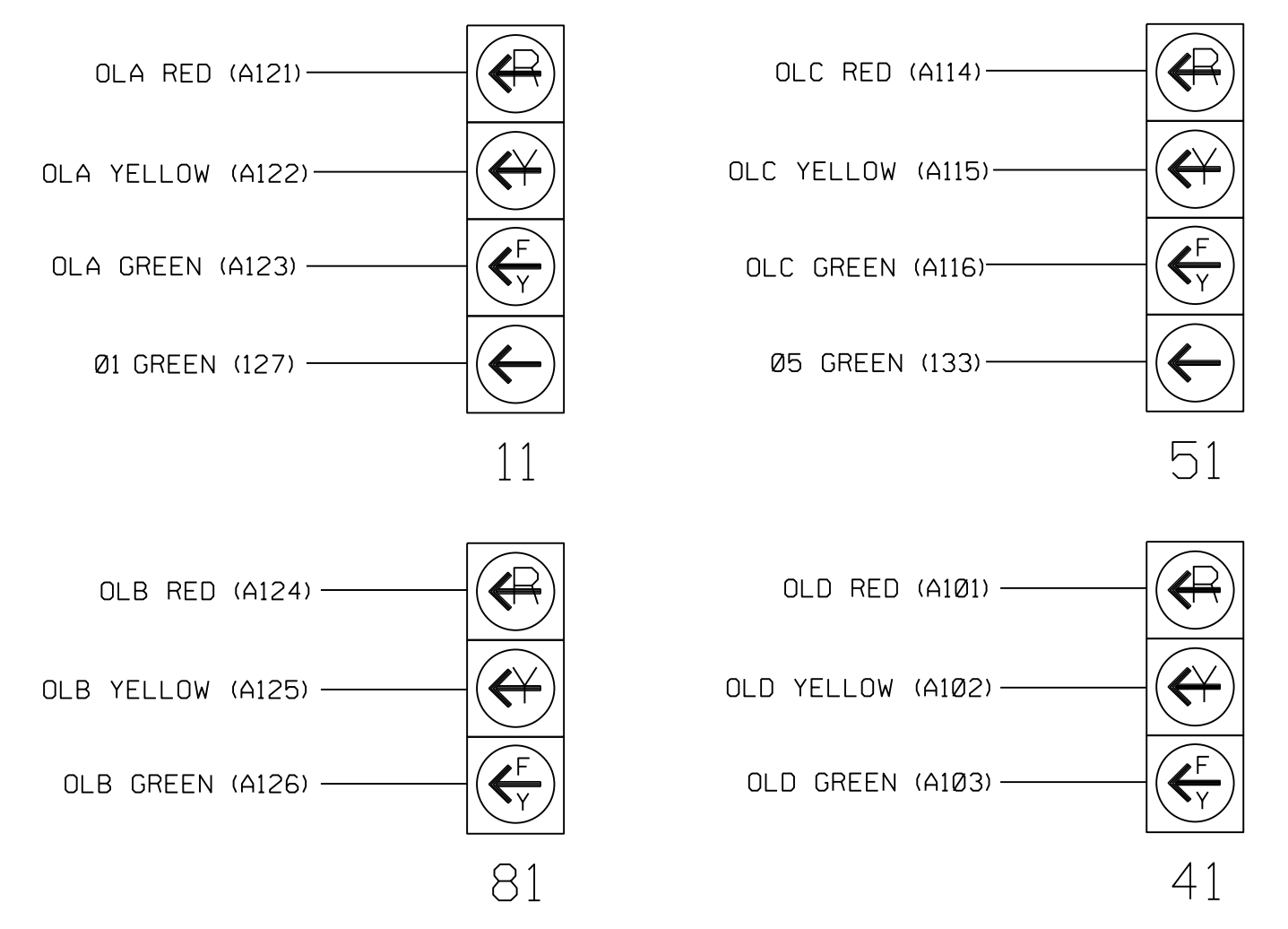
(install resistors as shown)

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0491
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 1 of 5

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Prepared for the Offices of:
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 J. GALLOWAY
 SEAL 029904
 ENGINEER
 J. GALLOWAY
 10/8/2024

US 401 Business (Raeford Road)
 at
 Sandalwood Drive/
 Layfayette Ford Entrance
 Division 6 Cumberland County Fayetteville
 PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

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REVISIONS	INIT.	DATE

SIG. INVENTORY NO. 06-0491

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1
  
```

← NOTICE ACTION PLAN SF BIT "1"

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5
  
```

← NOTICE ACTION PLAN SF BIT "5"

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

END PROGRAMMING

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, and 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, and 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1, AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

- SF BITS 1,5:** Modifies overlap parent phases for heads 11, and 51 to run protected turns only.
- VEH DET PLAN 2:** Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0491
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 5

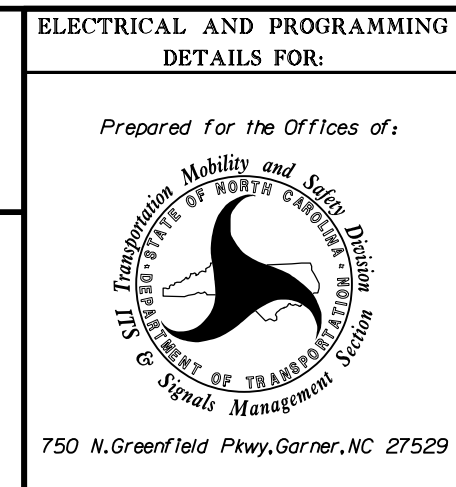
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COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.



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US 401 Business (Raeford Road)
 at
 Sandalwood Drive/
 Layfayette Ford Entrance
 Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE



8:53:32 AM U:\Projects\Signalis - U-4405B\Drawings\electrical\Detail\Signalis - U-4405B.dwg User: jgalloway

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
CALL OPTION... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY- NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
CALL OPTION... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY- NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN... [ *]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY.... NO
PMT COND DELAY  NO
  PHASE  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL  . . . . .
WALK 2   . . . . .
VEX 2    . . . . .
VEH RCL  . . . . .
MAX RCL  . . . . .
MAX 2    . . . . .
  PHASE  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3    . . . . .
CS INH   . . . . .
OMIT     . . . . .
SPC FCT  X . . . X . . . (1-8)
AUX FCT  . . . (1-3)
  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15  . . . . .
LP 16-30 . . . . .
LP 31-45 . . . . .
LP 46-60 . . . . .
LP 61-75 . . . . .
LP 76-90 . . . . .
LP 91-100 . . . . .
  
```

* The Action Plan numbers are to be determined by the Division and/or City Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0491
DESIGNED: AUG 2024
SEALED: 10/8/2024
REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 5

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ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
at
Sandalwood Drive/
Layfayette Ford Entrance
Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL

SEAL 029904
ENGINEER
JASON P. GALLOWAY

Signed by: Jason Galloway
DATE: 10/8/2024

SIG. INVENTORY NO. 06-0491

8:53:41 AM
U:\Projects\2024\Sigs\Signal_S - U-4405B\4005B\4005B.dwg
User: jgalloway

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR LEADING PED INTERVAL (DELAYED GREEN)

(program controller as shown)

The following logic processor configuration holds the FYA's on signal heads 11 and 51 red for the duration of the delayed green time (leading ped interval) when serving a ped call on the opposing through phase.

- 1. From Main Menu select **1. CONFIGURATION**
- 2. From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- 3. From the LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 1 COPY FROM: 1 ACTIVE: M (T/F)
IF PED ON PH WALK 2 IS ON
AND VEH GREEN ON PH 2 IS OFF

THEN SIG SET OLP RED 1 ON
SIG SET OLP YELLOW 1 OFF
SIG SET OVLP GREEN 1 OFF

ELSE

```

HOLD SIGNAL HEAD 11 FYA RED DURING THE PHASE 2 DELAYED GREEN TIME (LEADING PED INTERVAL)

ENTER A "2" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 2 COPY FROM: 2 ACTIVE: M (T/F)
IF PED ON PH WALK 6 IS ON
AND VEH GREEN ON PH 6 IS OFF

THEN SIG SET OLP RED 3 ON
SIG SET OLP YELLOW 3 OFF
SIG SET OVLP GREEN 3 OFF

ELSE

```

HOLD SIGNAL HEAD 51 FYA RED DURING THE PHASE 6 DELAYED GREEN TIME (LEADING PED INTERVAL)

- 1. From Main Menu select **1. CONFIGURATION**
- 2. From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- 3. From the LOGIC PROCESSOR Submenu select **1. LOGIC STATEMENT CONTROL**

ENABLE LOGIC PROCESSOR STATEMENTS 1-2 BY POSITIONING THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE THEM .

LOGIC STATEMENT CONTROL	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
LP 1-15	E	E	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

In order to ensure that signals flash concurrently on the same approach, make the following flasher circuit changes:

- 1. On rear of PDA - remove wire from Term. T2-4 and terminate on T2-2.
- 2. On rear of PDA - remove wire from Term. T2-5 and terminate on T2-3.
- 3. Remove flasher unit 2.

The changes listed above ties all phases and overlaps to flasher unit 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0491
DESIGNED: AUG 2024
SEALED: 10/8/2024
REVISED: N/A

Final Design
Electrical Detail - Sheet 4 of 5

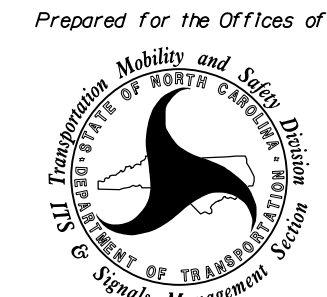
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



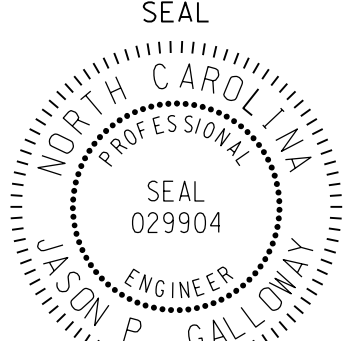
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PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL



Signed by: Jason Galloway 10/8/2024
DATE

SIG. INVENTORY NO. 06-0491

8:53:50 AM
U:\Projects\2024\Sigs\Sigs - U-4405B\4405B\4405B.dgn
User: JGalloway

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- 1. From Main Menu select **1. CONFIGURATION**
- 2. From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- 3. From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select **2. CONTROLLER**
- 2. From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE    G      G
          A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

```

Scroll down on this screen and set "Exit Fl" to Green "G"

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0491
DESIGNED: AUG 2024
SEALED: 10/8/2024
REVISED: N/A

Final Design
Electrical Detail - Sheet 5 of 5

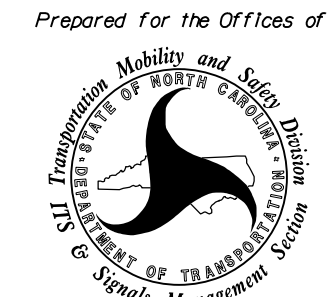
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



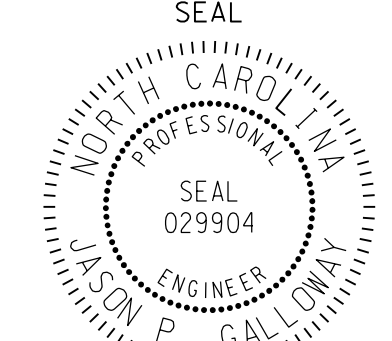
750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road) at Sandalwood Drive/ Layfayette Ford Entrance
Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL

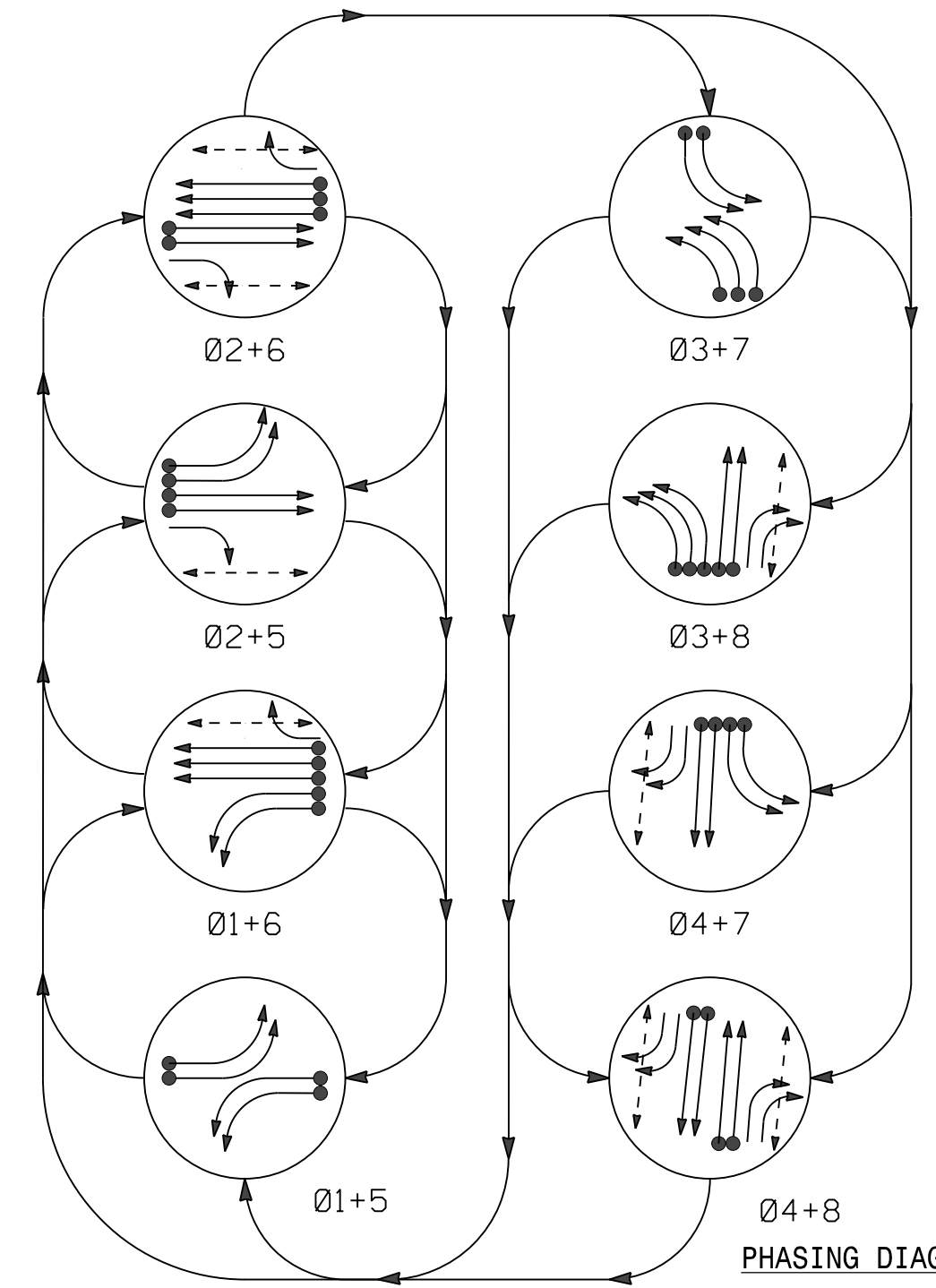


SEAL 029904
ENGINEER
JASON P. GALLOWAY

Signed by: Jason Galloway DATE: 10/8/2024
SIG. INVENTORY NO. 06-0491

8/5/24 10:00 AM U:\Projects\Signal\Signal - U-4405B\Drawings\electrical\Detail\Signal - U-4405B.s.dwg User: jgalloway

PHASING DIAGRAM



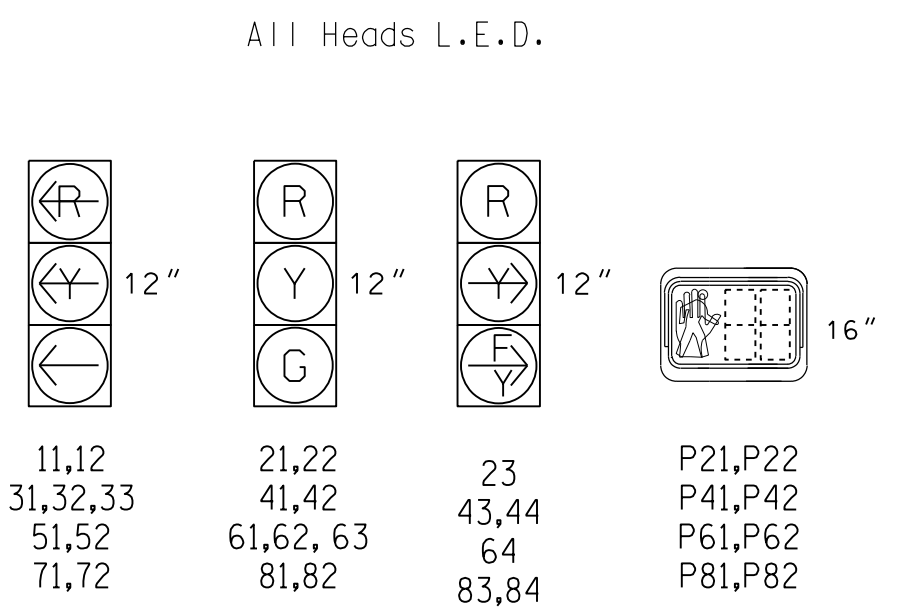
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH
	01+5	02+5	03+7	03+8	04+7	04+8	04+8	04+8	
11,12	←	←	←	←	←	←	←	←	
21,22	R	R	G	G	R	R	R	R	
23	R	R	←	←	←	←	←	←	
31,32,33	←	←	←	←	←	←	←	←	
41,42	R	R	R	R	R	R	G	G	R
43,44	R	R	R	R	R	R	←	←	R
51,52	←	←	←	←	←	←	←	←	
61,62,63	R	G	R	G	R	R	R	R	
64	R	←	←	←	←	←	←	←	
71,72	←	←	←	←	←	←	←	←	
81,82	R	R	R	R	R	G	R	G	R
83,84	R	R	R	R	←	←	←	←	R
P21,P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	DW	DW	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK	

SIGNAL FACE I.D.



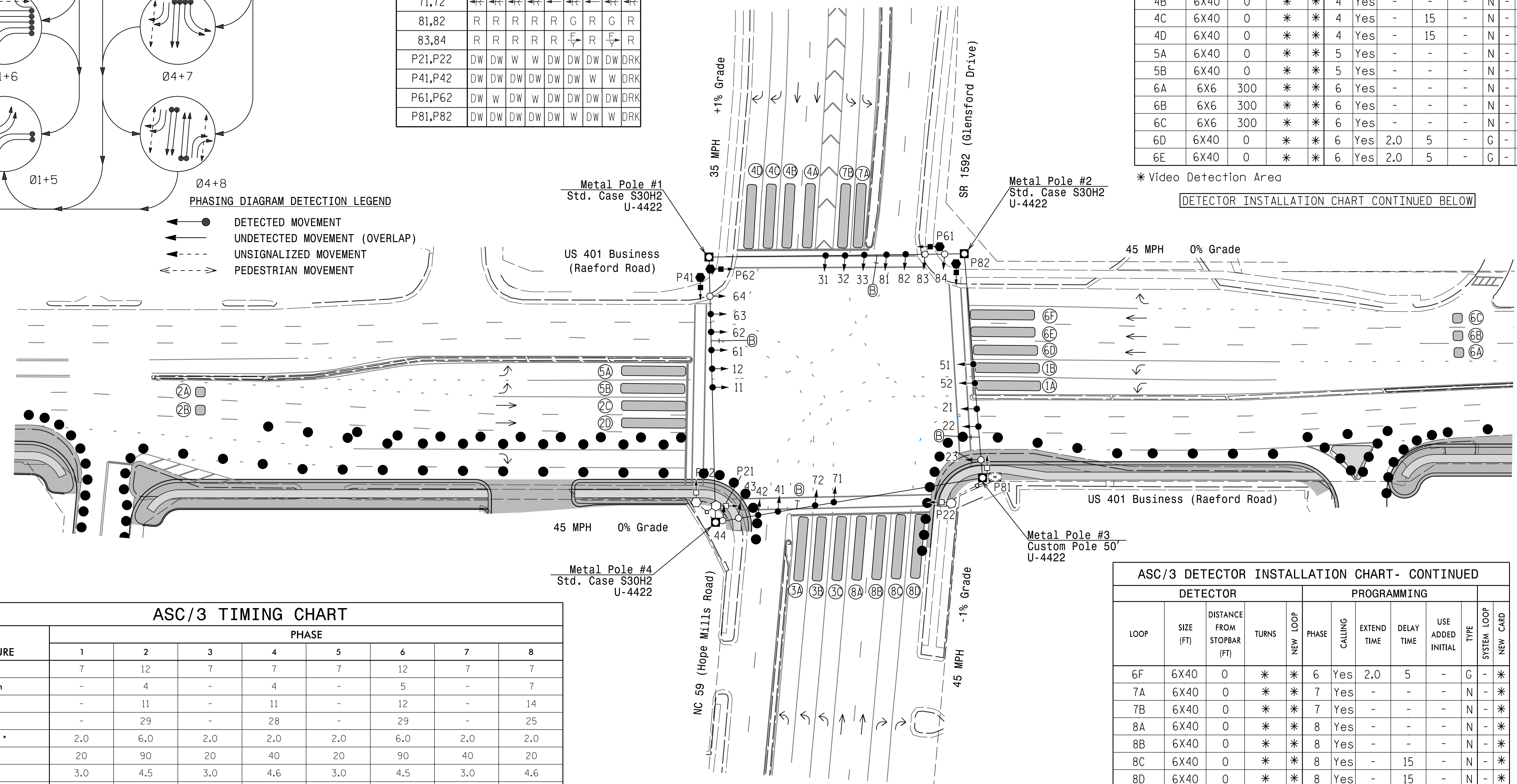
Remove Existing "U-Turn Yield to Right Turn" Signs

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	*	1	Yes	-	-	-	N	-	*
1B	6X40	0	*	*	1	Yes	-	-	-	N	-	*
2A	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2C	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2D	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
3A	6X40	0	*	*	3	Yes	-	3	-	N	-	*
3B	6X40	0	*	*	3	Yes	-	-	-	N	-	*
3C	6X40	0	*	*	3	Yes	-	-	-	N	-	*
4A	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4C	6X40	0	*	*	4	Yes	-	15	-	N	-	*
4D	6X40	0	*	*	4	Yes	-	15	-	N	-	*
5A	6X40	0	*	*	5	Yes	-	-	-	N	-	*
5B	6X40	0	*	*	5	Yes	-	-	-	N	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6C	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6E	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*

* Video Detection Area

DETECTOR INSTALLATION CHART CONTINUED BELOW



ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Delayed Green	-	4	-	4	-	5	-	7
Walk *	-	11	-	11	-	12	-	14
Ped Clear	-	29	-	28	-	29	-	25
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	40	20	90	40	20
Yellow	3.0	4.5	3.0	4.6	3.0	4.5	3.0	4.6
Red Clear	4.2	2.6	4.1	3.1	4.2	2.6	3.8	3.1
Red Revert	-	-	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	-	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

ASC/3 DETECTOR INSTALLATION CHART- CONTINUED

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
6F	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
7A	6X40	0	*	*	7	Yes	-	-	-	N	-	*
7B	6X40	0	*	*	7	Yes	-	-	-	N	-	*
8A	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8C	6X40	0	*	*	8	Yes	-	15	-	N	-	*
8D	6X40	0	*	*	8	Yes	-	15	-	N	-	*

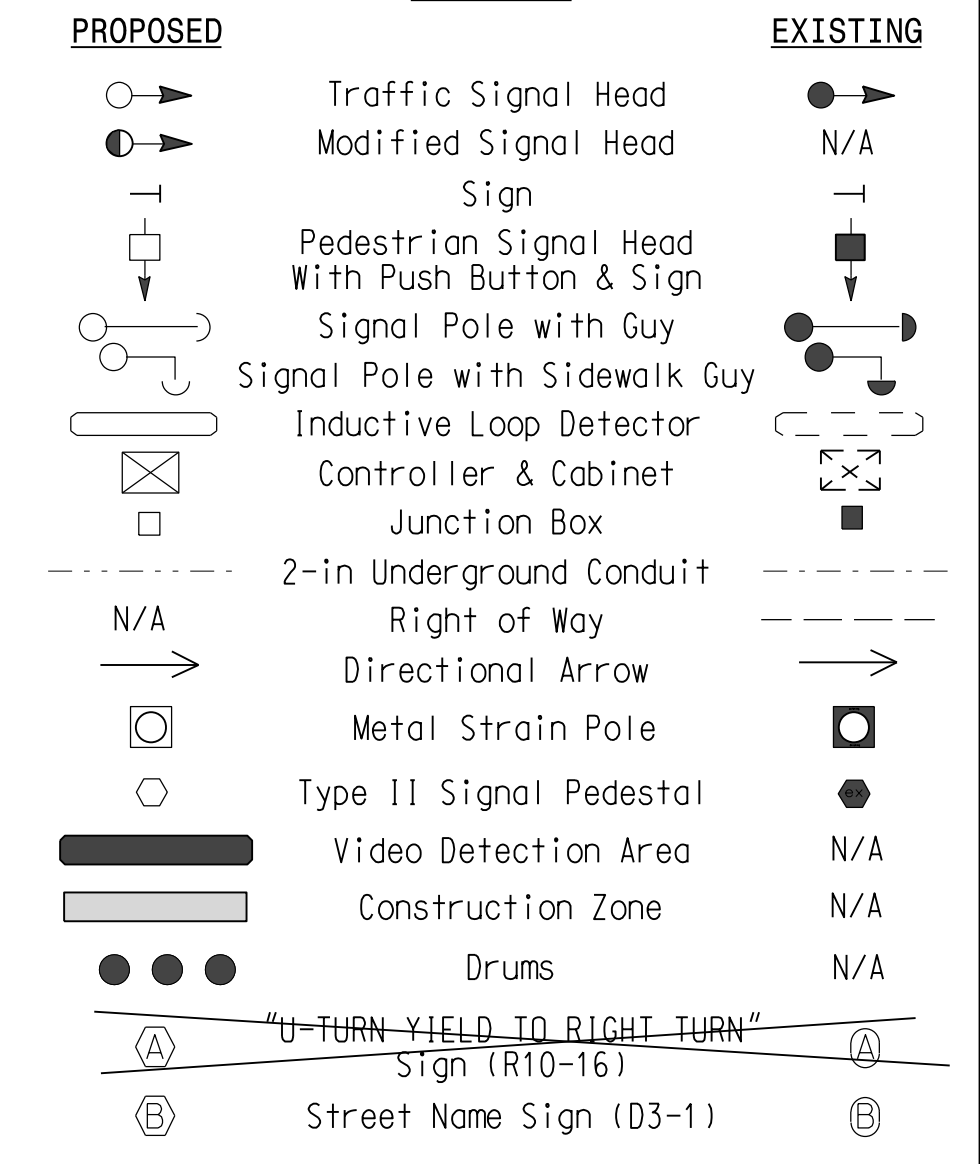
* Video Detection Area

8 Phase Fully Actuated Fayetteville Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet foundation so as not to obstruct sight distance of vehicles turning right on red. Relocate existing cabinet and controller onto new foundation.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

LEGEND



Signal Upgrade Temporary Design 1 - TMP Phase I

Stantec Consulting Services Inc.
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www.stantec.com
License No. F-0672

Prepared for the Offices of:

TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
SIGNAL DESIGN SECTION

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville

PLAN DATE: November 2024 REVIEWED BY: J. Galloway, PE

PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

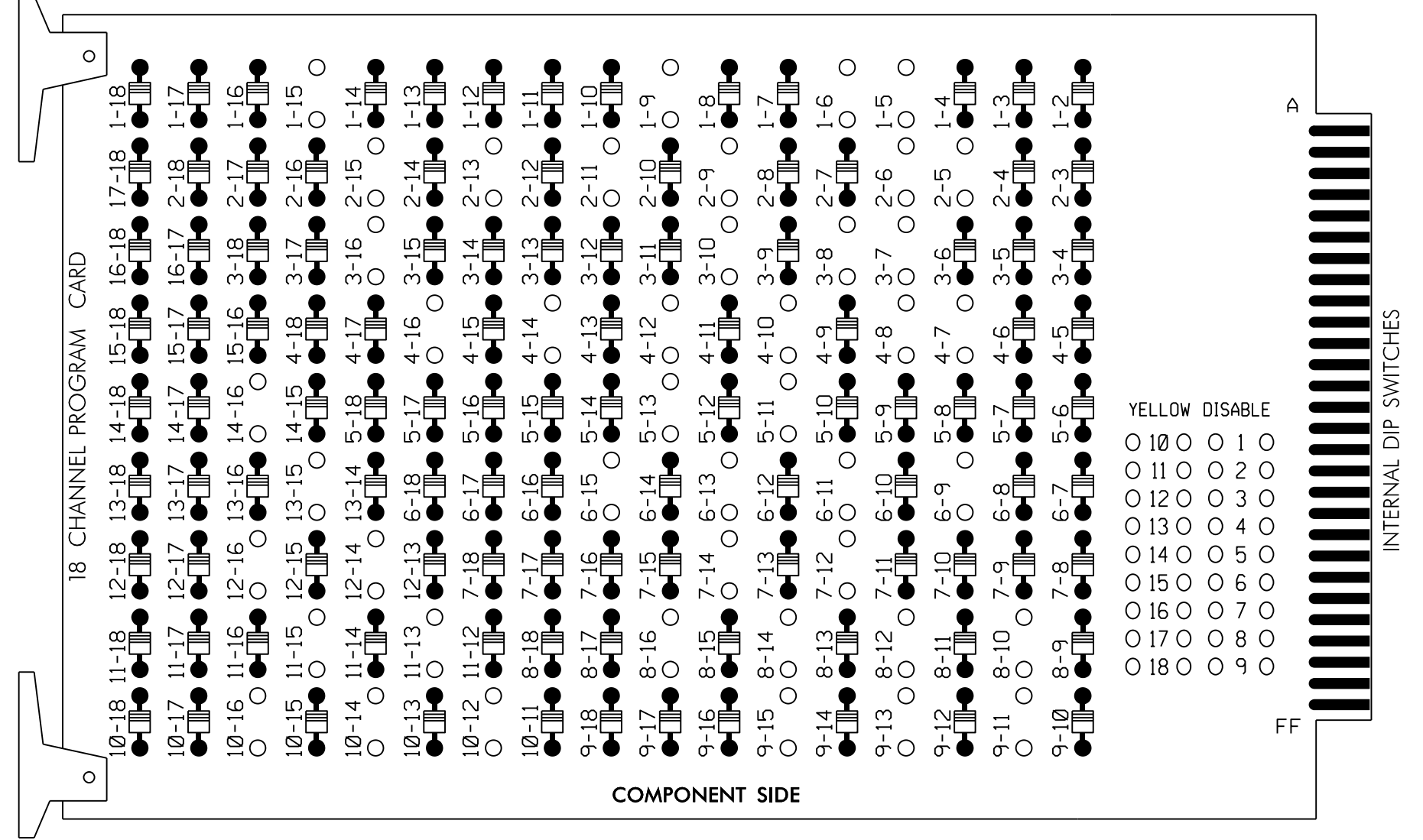
SEAL 029904
JASON GALLOWAY
ENGINEER
DATE 11/13/2024
SIC INVENTORY NO. 06-015511

11/13/2024
 U:\Traffic\045\Signal\U-4405B\045\Signal\Des\gn\Temporary Des\gn\U-4405B\sig_dsn_06-015511.dgn
 User: jgalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

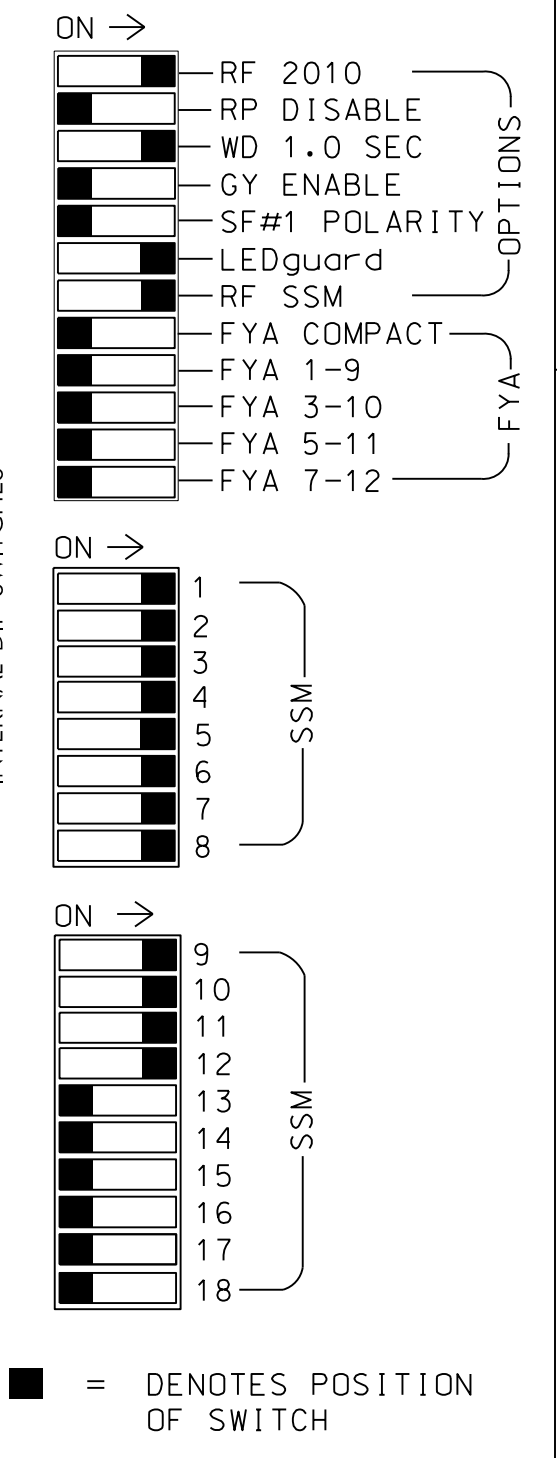
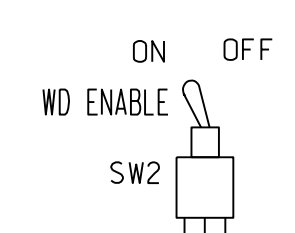
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 GREEN and 6 GREEN.
3. The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,
 S9,S10,S11,S12,AUXS1,AUXS2,
 AUXS4,AUXS5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,
 6PED,7,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11,12	21,22	P21, P22	31,32, 33	41,42	P41, P42	51,52	61,62, 63	P61, P62	71,72	81,82	P81, P82	64*	83,84*	NU	23*	43,44*	NU
RED		128			101			134			107		A121	A124		A114	A101	
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125				116			131			122							
YELLOW ARROW	126				117			132			123		A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127				118			133			124							
Hand					113			104			119							
Foot					115			106			121							

NU = Not Used

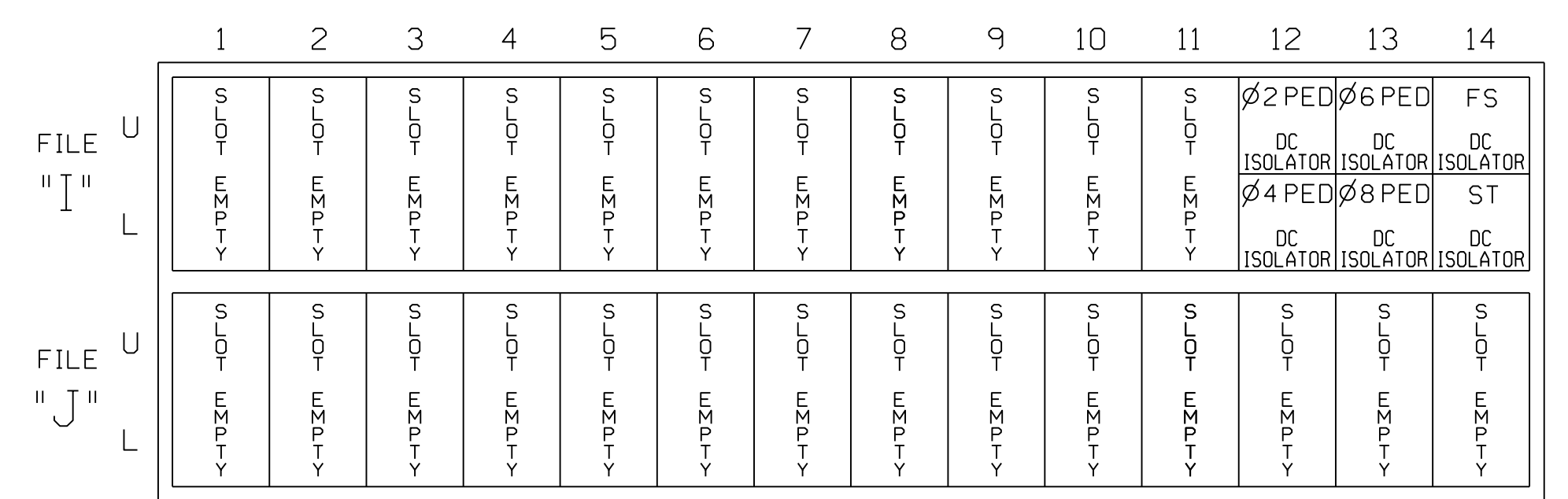
* Denotes install load resistor. See load resistor installation detail this sheet.

* See pictorial of head wiring in detail this sheet.

NOTE: Output functions for load switch S4, S10, AUX S3, and AUX S6 have been reassigned. See sheet 2 for details.

INPUT FILE POSITION LAYOUT

(front view)

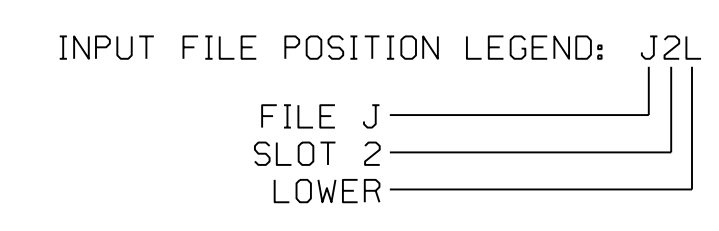


EX.: 1A, 2A, ETC. = LOOP NO.'S FS = FLASH SENSE ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

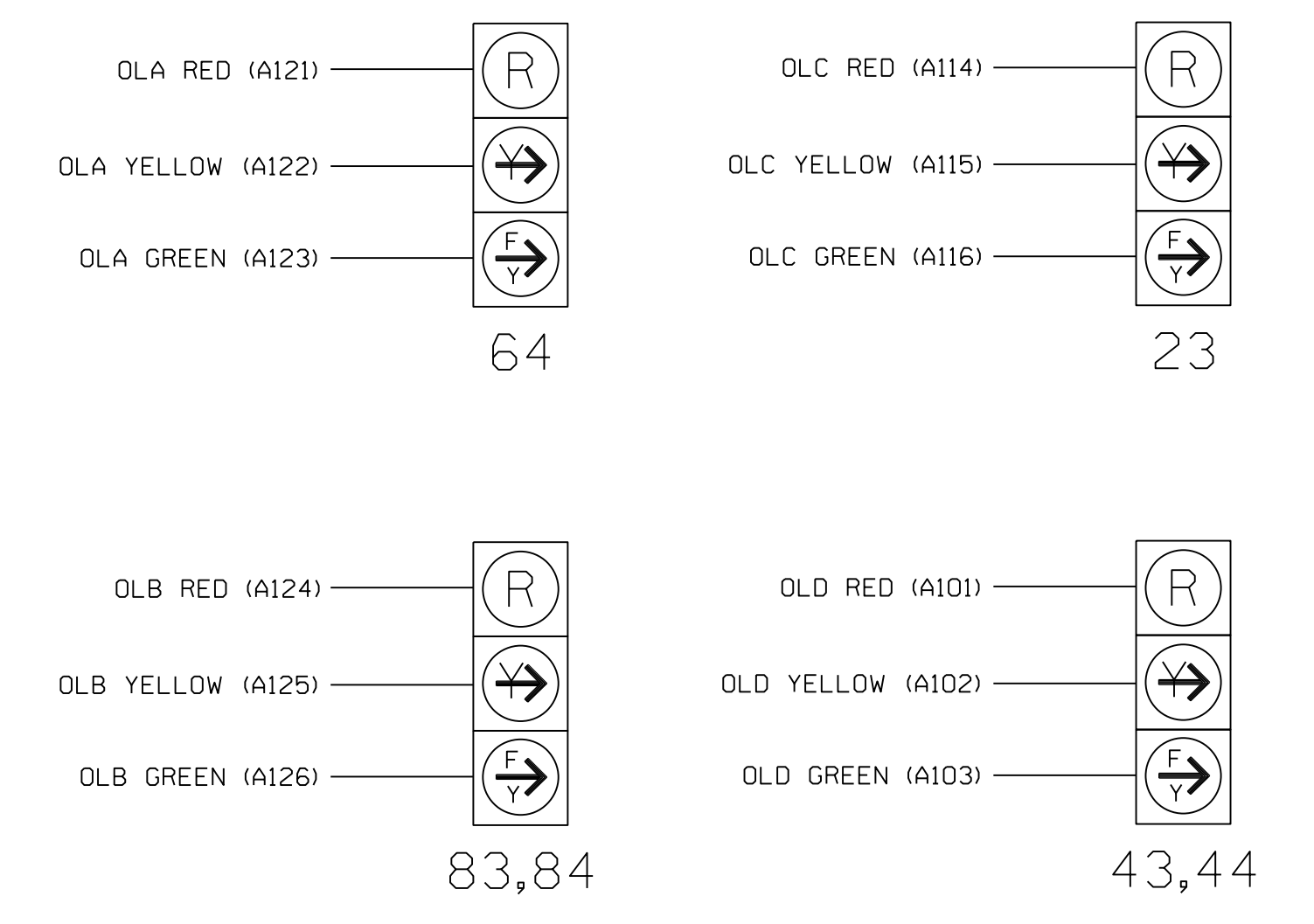
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE
PED PUSH BUTTONS					
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T1
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

Temporary Design 1 - TMP Phase I
 Electrical Detail - Sheet 1 of 2

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville
 PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . X . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE    G          G
          A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED.. 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

```

Scroll down on this screen and set "Exit Fl" to Green "G"

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T1
DESIGNED: NOV 2024
SEALED: 11/13/2024
REVISED: N/A

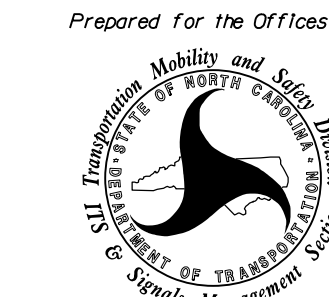
Temporary Design 1 - TMP Phase I
Electrical Detail - Sheet 2 of 2



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PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

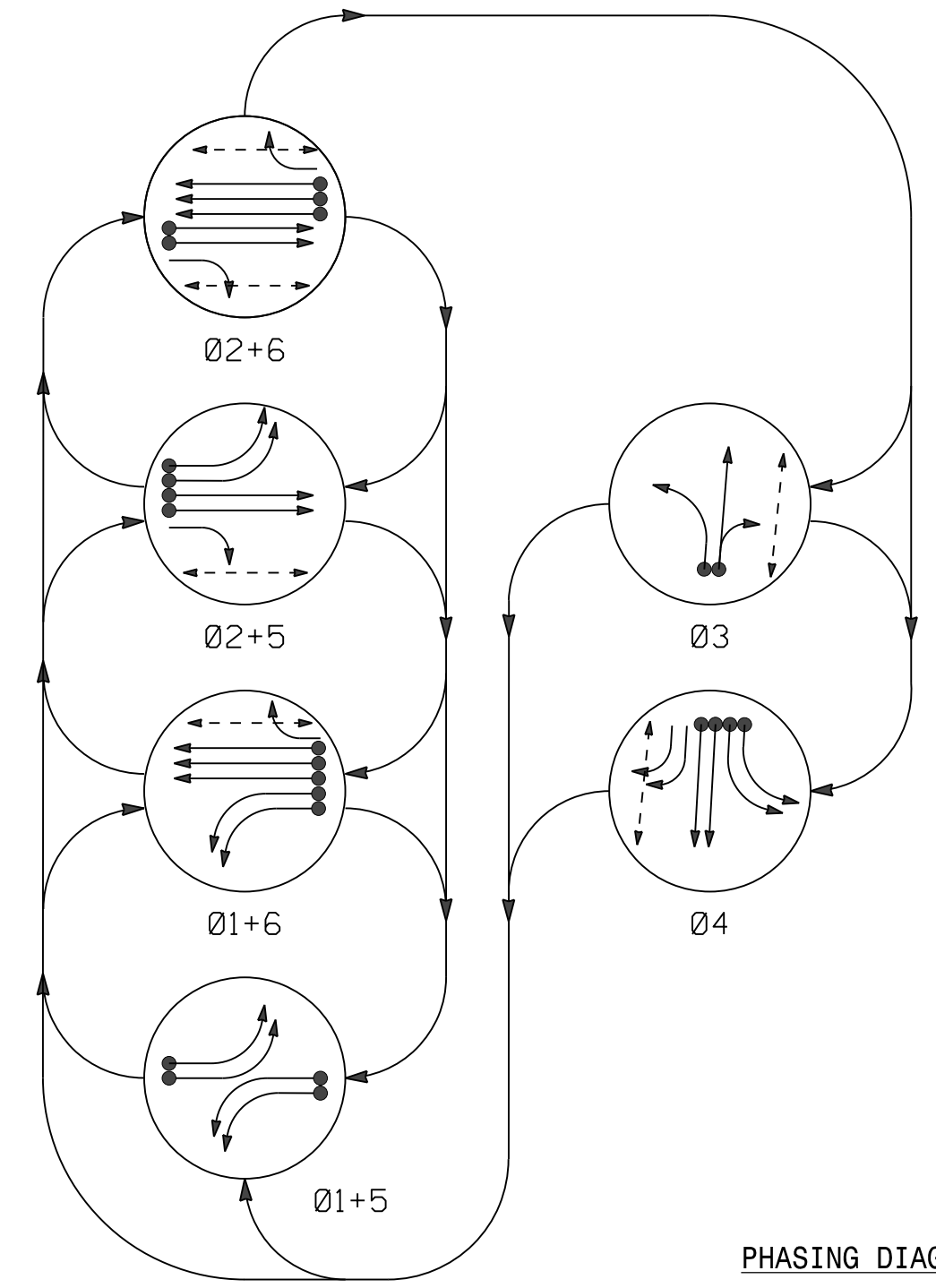
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904

Signed by: Jason Galloway 11/13/2024

SIGNATURE DATE
06-0155T1
SIG. INVENTORY NO. 06-0155T1

9:20:15 AM U:\Projects\06-0155T1\06-0155T1.dgn User: jgalloway

PHASING DIAGRAM



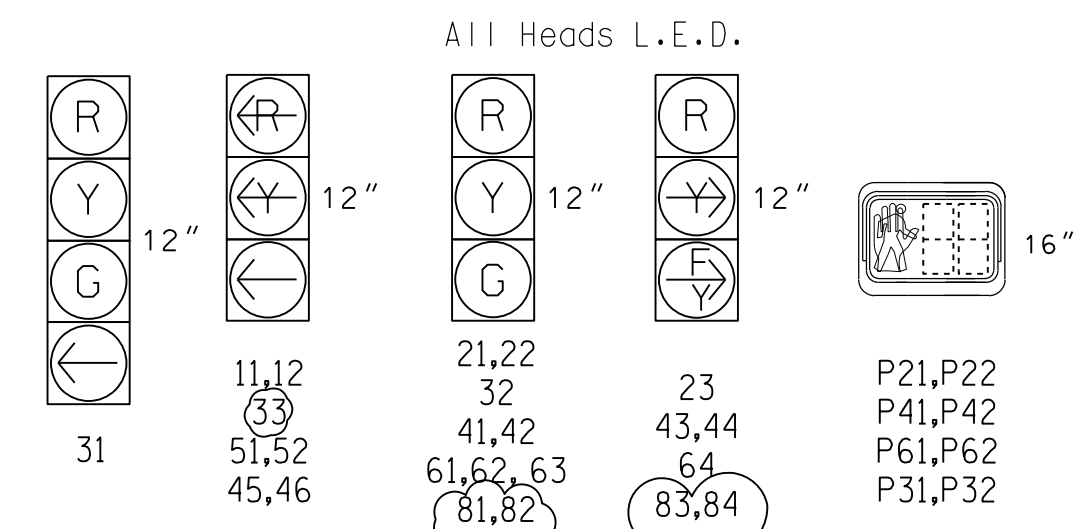
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
11,12	←	→	←	→	←	→
21,22	R	R	G	G	R	R
23	R	R	F	F	R	R
31	←	→	←	→	←	→
32	R	R	R	R	G	R
33	←	→	←	→	←	→
41,42	R	R	R	R	G	R
43,44	R	R	R	R	F	R
51,52	←	→	←	→	←	→
61,62,63	R	G	R	F	R	R
64	R	F	F	R	R	R
45,46	←	→	←	→	←	→
81,82	R	R	R	R	G	R
83,84	R	R	R	R	F	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DRK
P61,P62	DW	W	DW	W	DW	DRK
P31,P32	DW	DW	DW	W	DW	DRK

SIGNAL FACE I.D.



Bag and Disconnect Signal Heads 33, 81, 82, 83, and 84.

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	*	1	Yes	-	-	-	N	-	*
1B	6X40	0	*	*	1	Yes	-	-	-	N	-	*
2A	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2C	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2D	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
3A	6X40	0	*	*	3	Yes	-	3	-	N	-	*
3B	6X40	0	*	*	3	Yes	-	-	-	N	-	*
3C	6X40	0	*	*	3	Yes	-	-	-	N	-	*
4A	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4C	6X40	0	*	*	4	Yes	-	15	-	N	-	*
4D	6X40	0	*	*	4	Yes	-	15	-	N	-	*
5A	6X40	0	*	*	5	Yes	-	-	-	N	-	*
5B	6X40	0	*	*	5	Yes	-	-	-	N	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6C	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6E	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*

* Video Detection Area

DETECTOR INSTALLATION CHART CONTINUED BELOW

6 Phase Fully Actuated Fayetteville Signal System

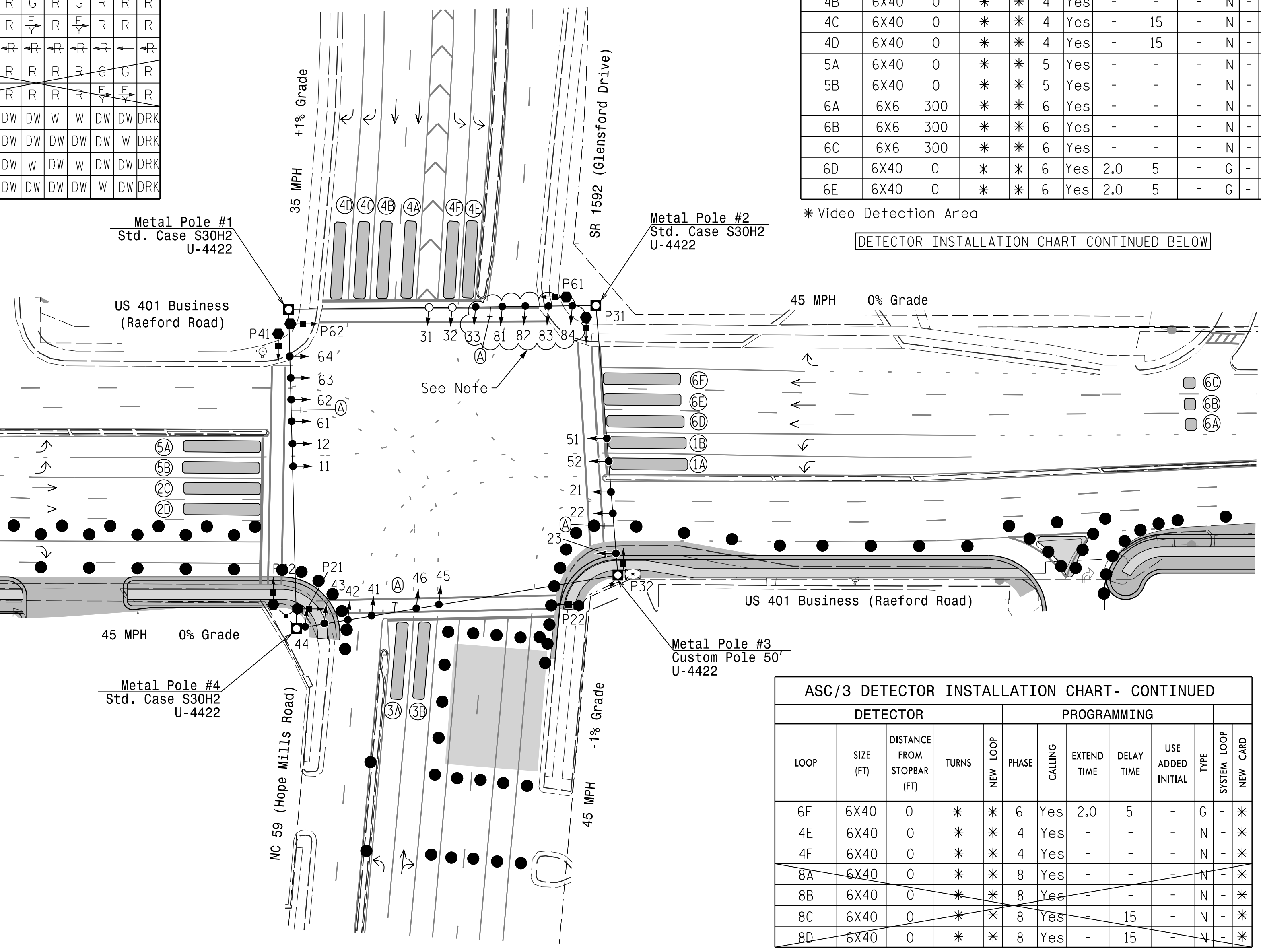
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Delayed Green	-	4	7	4	-	5
Walk *	-	11	14	11	-	12
Ped Clear	-	29	25	28	-	29
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0
Max 1 *	20	90	20	40	20	90
Yellow	3.0	4.5	4.6	3.8	3.0	4.5
Red Clear	4.2	2.6	2.5	3.1	4.2	2.6
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	45	-	-	-	45
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

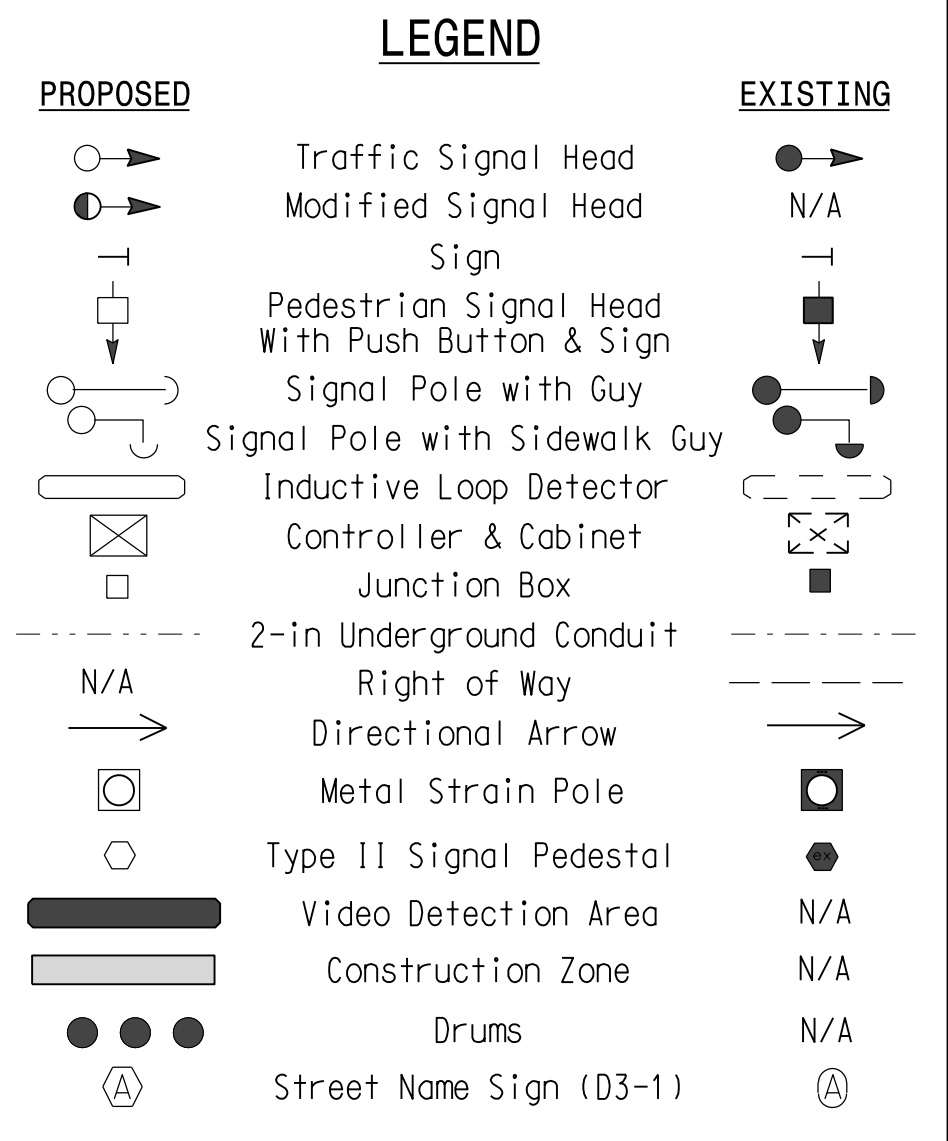
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



ASC/3 DETECTOR INSTALLATION CHART- CONTINUED

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
6F	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
4E	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4F	6X40	0	*	*	4	Yes	-	-	-	N	-	*
8A	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8C	6X40	0	*	*	8	Yes	-	15	-	N	-	*
8D	6X40	0	*	*	8	Yes	-	15	-	N	-	*

* Video Detection Area



Signal Upgrade Temporary Design 1A - TMP Phase I - Waterline Construction

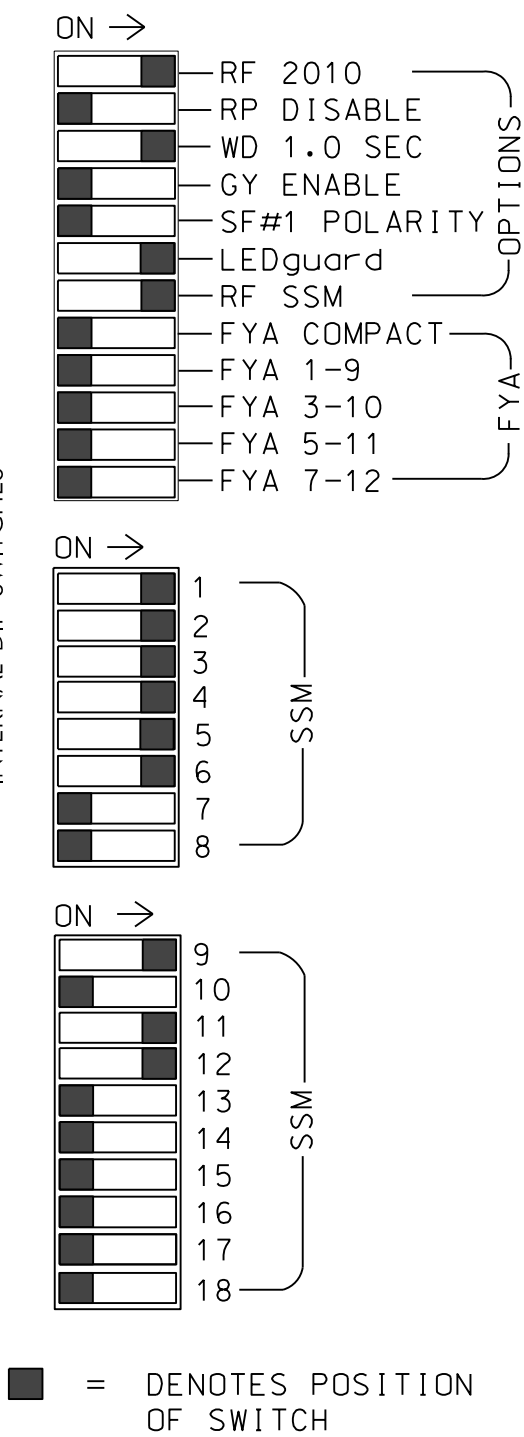
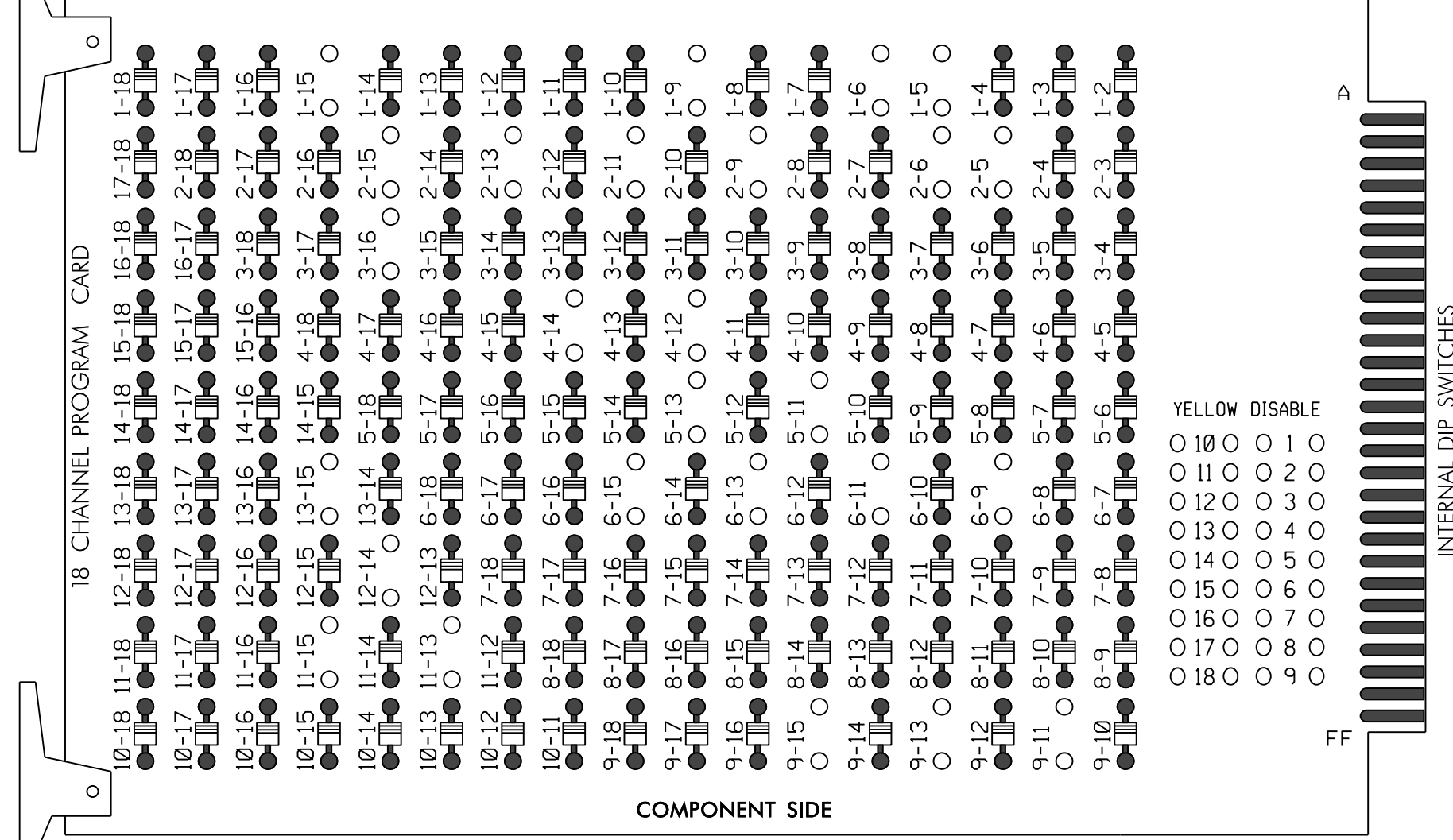
<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>Prepared for the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27526</p>	<p>US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)</p>		<p>SEAL JASON GALLOWAY PROFESSIONAL ENGINEER NO. 029904 DATE 11/13/2024</p>						
		<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: November 2024 REVIEWED BY: J. Galloway, PE</p> <p>PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE</p>								
<p>SCALE: 0" = 40'</p> <p>1" = 40'</p>		<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	INIT.	DATE				<p>Signed by: Jason Galloway 11/13/2024</p> <p>4014284084466 DATE</p> <p>SIG. INVENTORY NO. 06-015511A</p>
NO.	INIT.	DATE								

11/13/2024
 U:\Traffic\045\Sigs\U-4405B\Sig.dgn
 User: jgalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-16, 4-12, 4-14, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15, 12-14, and 13-15.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 GREEN and 6 GREEN.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,
 S9,S12,AUXS1,
 AUXS4,AUXS5
 PHASES USED.....1,2,2PED,3,3PED,4,4PED,5,6,
 6PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

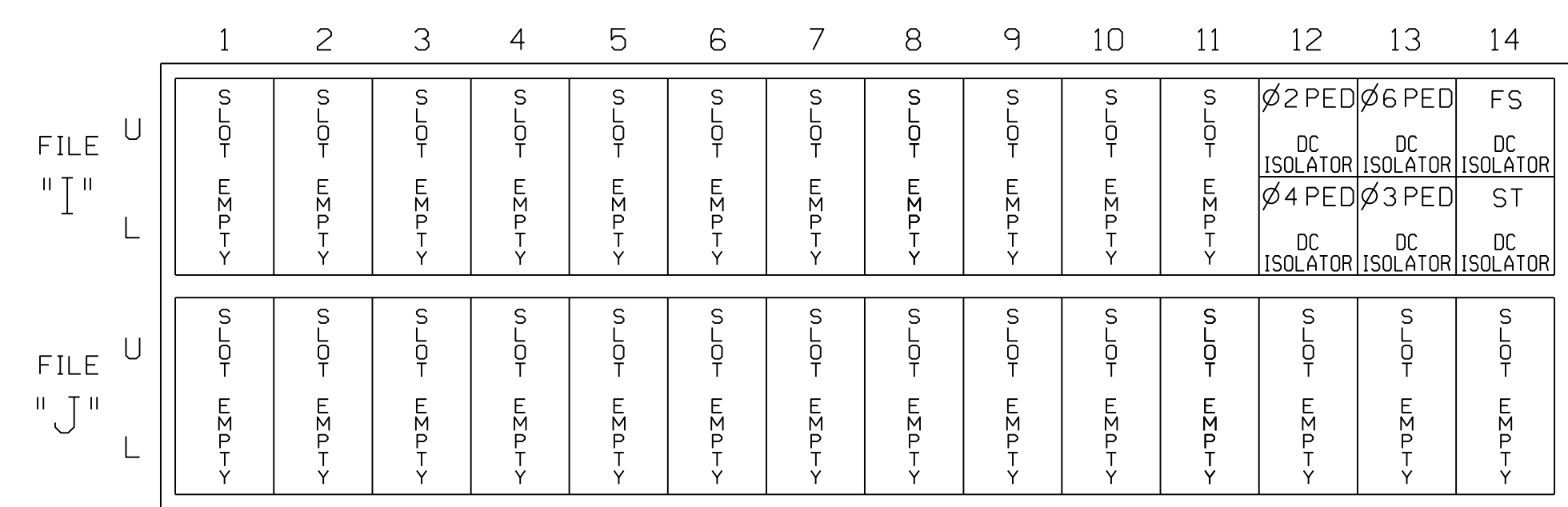
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED	OLA	OLB	OLE	OLC	OLD	OLF	
SIGNAL HEAD NO.	11,12	21,22	P21, P22	31	32	45,46	41,42	P41, P42	51,52	61,62, 63	P61, P62	NU	NU	P31, P32	64	NU	23	43,44	
RED		128		116	116		101								A121			A114	A101
YELLOW		129		117	117		102												
GREEN		130		118	118		103												
RED ARROW	125						101			131									
YELLOW ARROW	126						102			132					A122			A115	A102
FLASHING YELLOW ARROW															A123			A116	A103
GREEN ARROW	127			118			103			133									
Hand				113						104			119					110	
Foot																			112

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

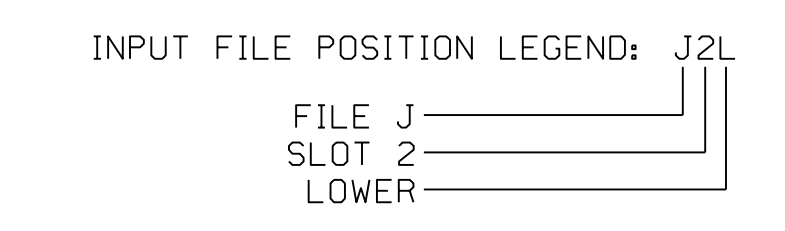


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

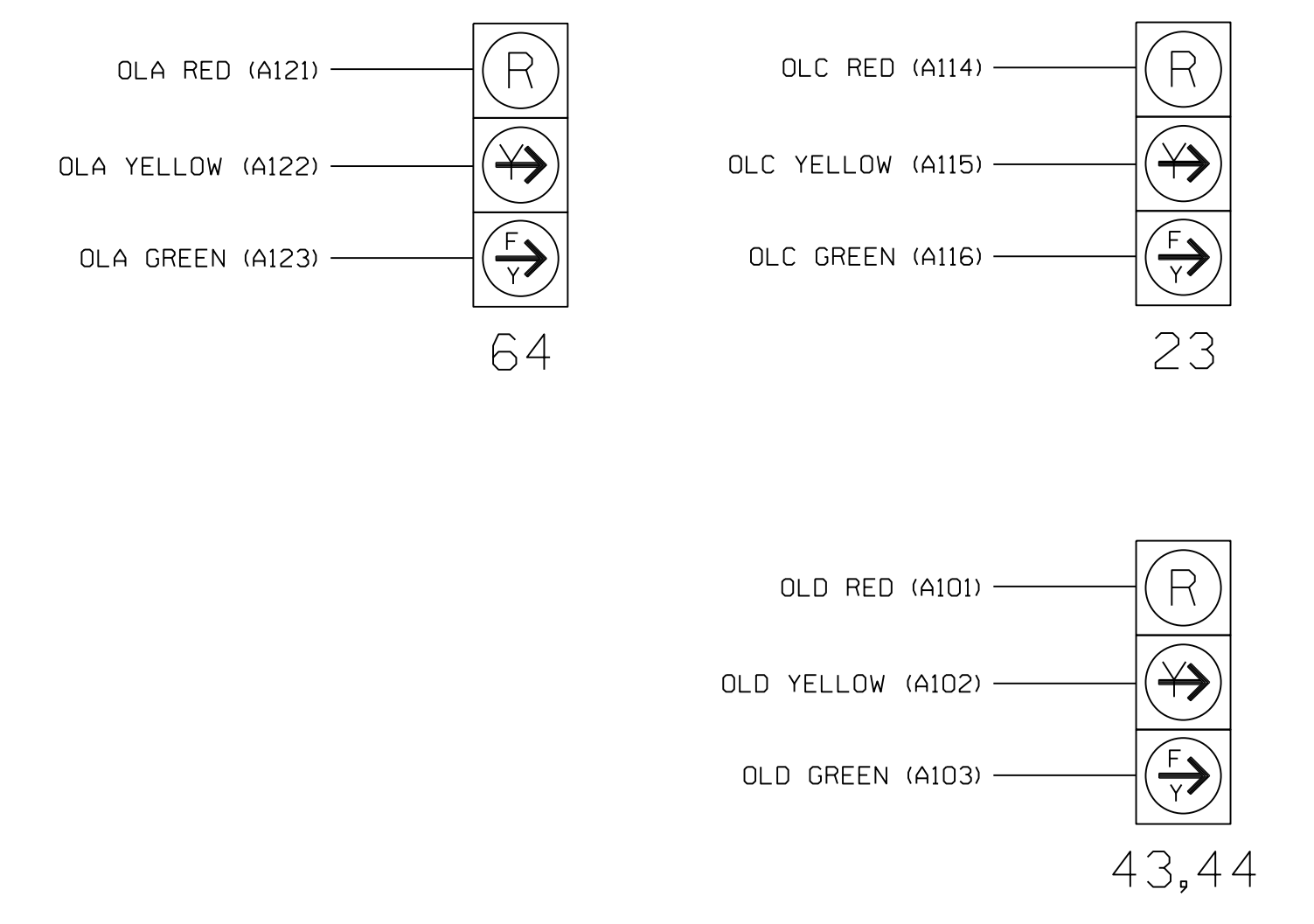
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE
PED PUSH BUTTONS					
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED
P31,P32	TB8-8,9	I13L	70	PED 8	3 PED

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T1
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

Temporary Design 1A - TMP Phase I
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville

PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE

PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON GALLOWAY

Signed by: Jason Galloway 11/13/2024

SIGNATURE DATE 11/13/2024

SIG. INVENTORY NO. 06-0155T1A

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A
Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . . . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . . . . . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

 LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP B
Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . . . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . . . . . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

 LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Disable Overlap B

Toggle Once

OVERLAP C
Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

 LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP D
Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . . . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . . . . . X . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

 LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **3. PED DETECTOR INPUT ASSIGNMENT**

PED DET PHASE ASSIGNMENT MODE: NTCIP

PHASE	1	2	3	4	5	6	7	8
DETECTOR	0	2	8	4	0	6	0	0
PHASE	9	10	11	12	13	14	15	16
DETECTOR	0	0	0	0	0	0	0	0

NOTICE PED DETECTOR 8 ASSIGNED TO PHASE 3

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **3. LOAD SW ASSIGN**

LD SWITCH ASSIGN

PHASE	DIMMING	---FLASH---
/OVLP TYPE	R Y G D	PWR AUT TGR
1	1 V . . . + A	R X
2	2 V . . . + A	R .
3	3 V . . . + A	R X
4	4 V . . . + A	R .
5	5 V . . . - A	R .
6	6 V . . . - A	R X
7	7 V . . . - A	R .
8	8 V . . . - A	R X
9	1 O . . . + A	R X
10	2 O . . . + A	R X
11	3 O . . . - A	R .
12	4 O . . . - A	R .
13	2 P . . . + A	. .
14	4 P . . . - A	. .
15	6 P . . . + A	. .
16	3 P . . . - A	. .

NOTICE PHASE 3 PED ASSIGNED TO LD SWITCH 16

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

START/FLASH DATA
-----START UP-----
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE G G
A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED.. 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

Temporary Design 1A - TMP Phase I
Electrical Detail - Sheet 2 of 2

Stantec Consulting Services Inc.
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www.stantec.com
License No. F-0672

ELECTRICAL AND PROGRAMMING DETAILS FOR:
Prepared for the Offices of:
North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
at NC 59 (Hope Mills Road) /
SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville

PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 029904
J. Galloway
13/2024
SIGNATURE DATE
SIG. INVENTORY NO. 06-0155T1A

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T1
DESIGNED: NOV 2024
SEALED: 11/13/2024
REVISED: N/A

06-23-2024 AM
U:\Projects\06-0155T1\Sigs\06-0155T1-1A.dgn
User: jgalloway

PHASING DIAGRAM

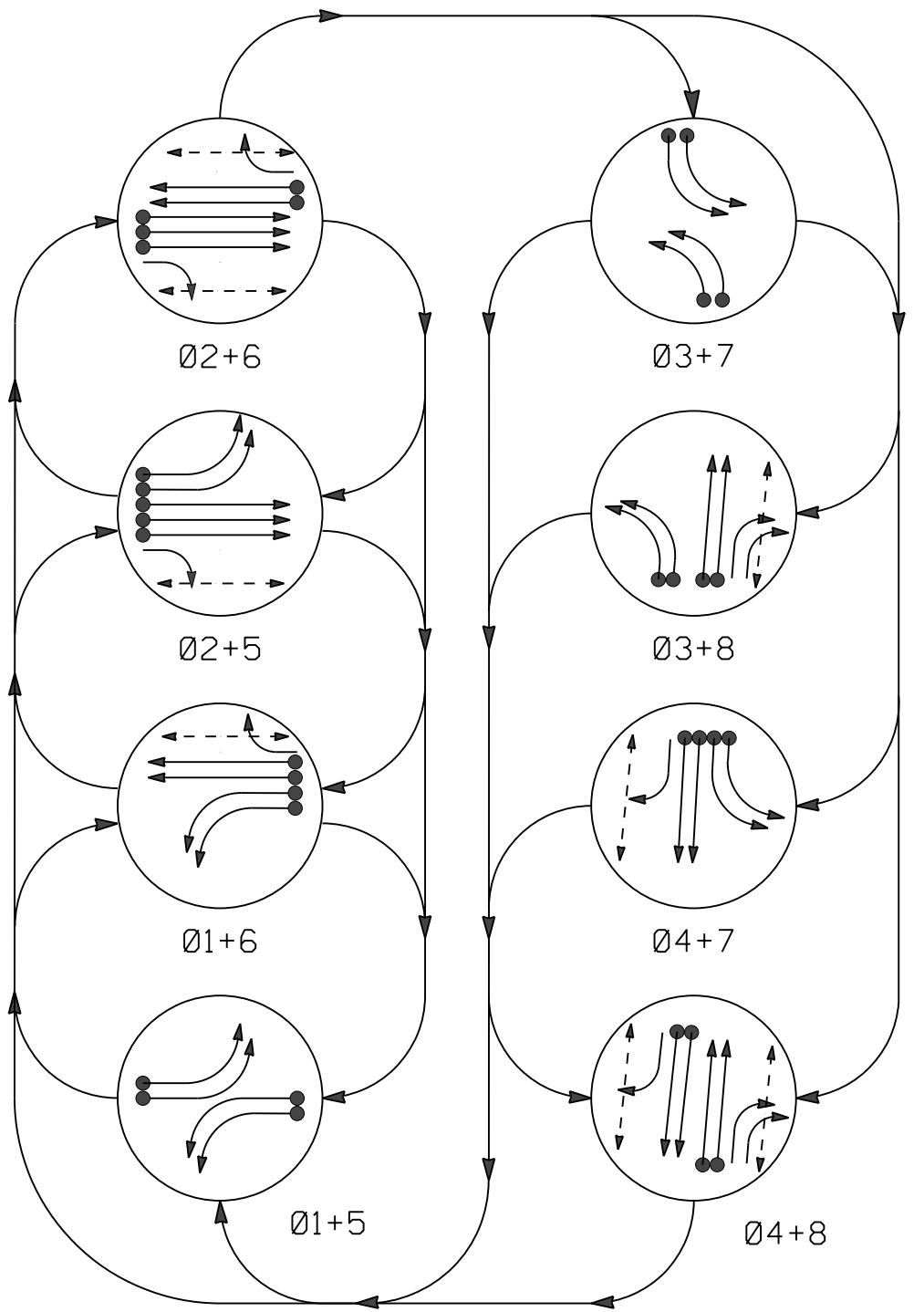
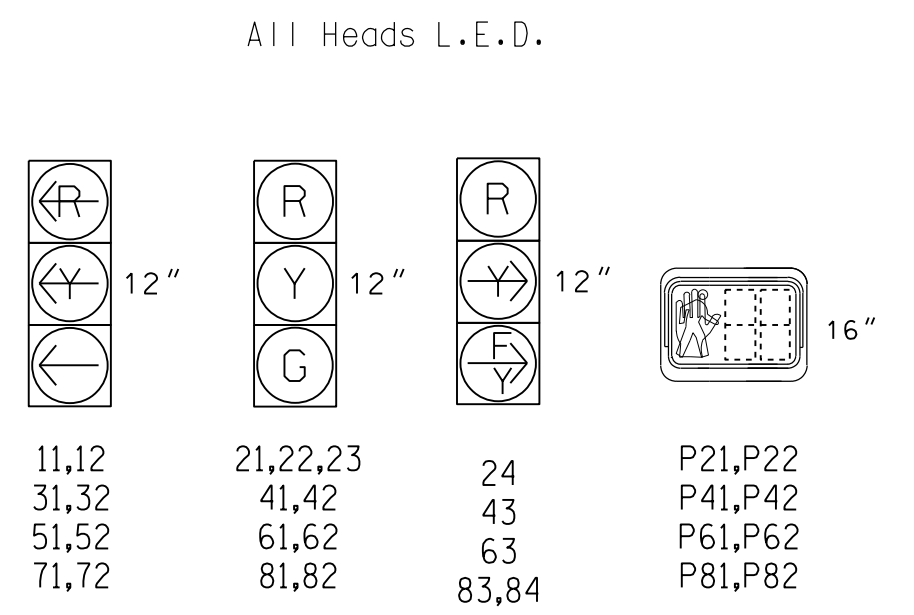


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01	02	03	04	05	06	07	08
11,12	←	←	←	←	←	←	←	←
21,22,23	R	R	G	G	R	R	R	R
24	R	R	R	R	R	R	R	R
31,32	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	R	G	G
43	R	R	R	R	R	R	F	F
51,52	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	R
63	R	F	R	F	R	R	R	R
71,72	←	←	←	←	←	←	←	←
81,82	R	R	R	R	R	G	R	G
83,84	R	R	R	R	R	F	R	F
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DW	DRK

SIGNAL FACE I.D.

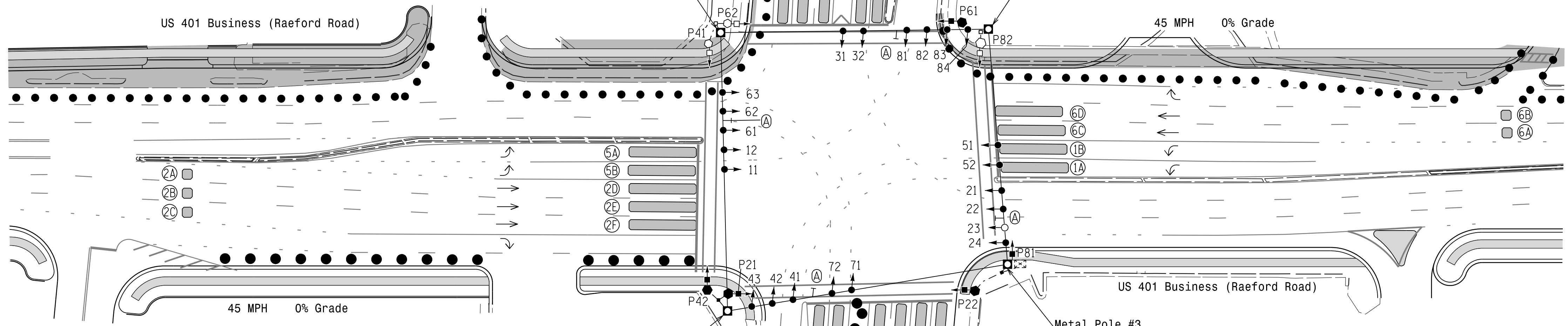
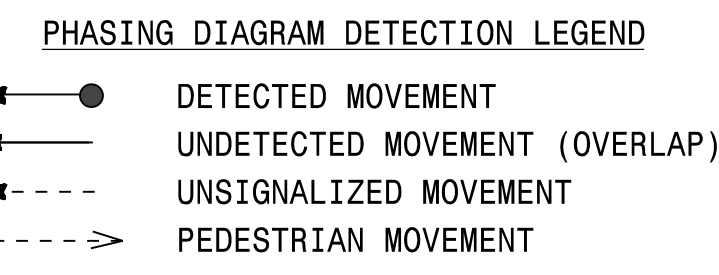


ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
1A	6X40	0	*	*	1	Yes	-	-	-	N	-	*
1B	6X40	0	*	*	1	Yes	-	-	-	N	-	*
2A	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2C	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2D	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2E	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2F	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
3A	6X40	0	*	*	3	Yes	-	3	-	N	-	*
3B	6X40	0	*	*	3	Yes	-	-	-	N	-	*
4A	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	-	-	N	-	*
4C	6X40	0	*	*	4	Yes	-	15	-	N	-	*
5A	6X40	0	*	*	5	Yes	-	-	-	N	-	*
5B	6X40	0	*	*	5	Yes	-	-	-	N	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6C	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*

8 Phase Fully Actuated Fayetteville Signal System NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Reposition existing signal head 24 and 63.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



DETECTOR INSTALLATION CHART CONTINUED BELOW

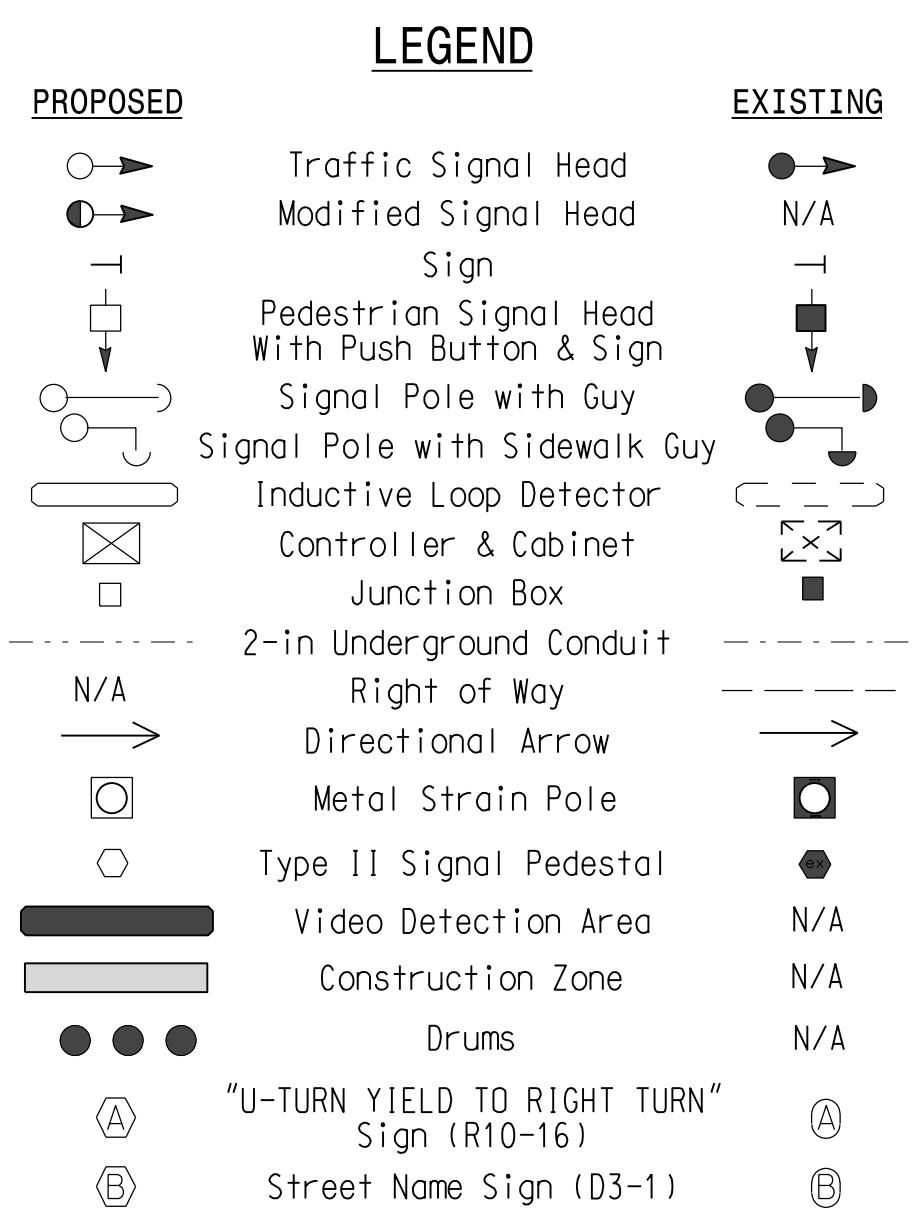
ASC/3 DETECTOR INSTALLATION CHART- CONTINUED

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
7A	6X40	0	*	*	7	Yes	-	-	-	N	-	*
7B	6X40	0	*	*	7	Yes	-	-	-	N	-	*
8A	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	-	-	N	-	*
8C	6X40	0	*	*	8	Yes	-	15	-	N	-	*
8D	6X40	0	*	*	8	Yes	-	15	-	N	-	*

ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Delayed Green	-	4	-	7	-	6	-	6
Walk *	-	11	-	14	-	13	-	13
Ped Clear	-	30	-	28	-	29	-	27
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max I *	20	90	20	40	20	90	40	20
Yellow	3.0	4.5	3.0	4.6	3.0	4.5	3.0	4.6
Red Clear	4.2	2.6	3.9	3.1	4.1	2.6	3.8	3.1
Red Revert	-	-	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	-	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade Temporary Design 2 - TMP Phase II

Stantec
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 www.stantec.com
 License No. F-0672

Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27526
 SCALE: 0 40
 1" = 40'

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: November 2024 REVIEWED BY: J. Galloway, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

SEAL

 Jason Galloway 11/13/2024
 40015284084466
 SIG. INVENTORY NO. 06-015512

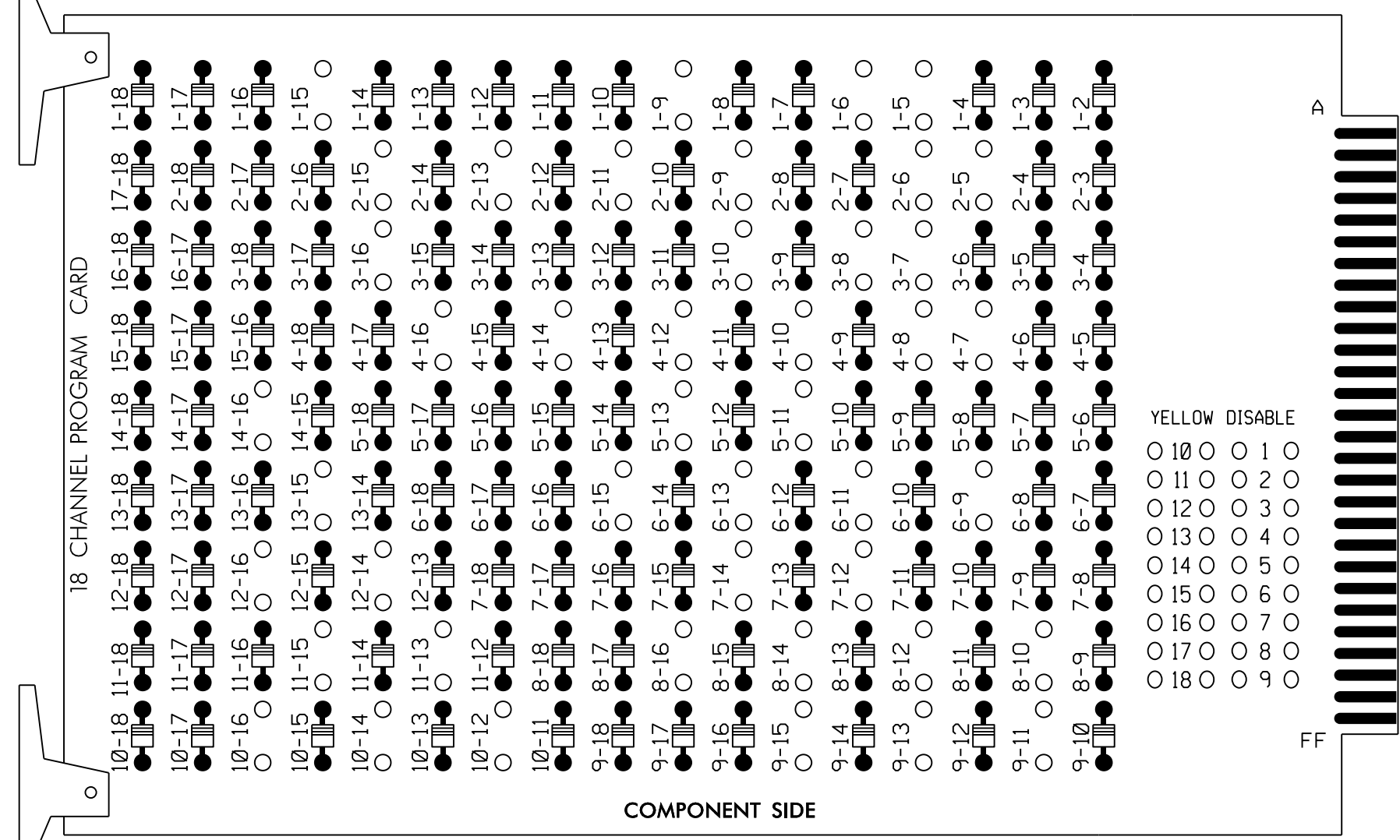
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

11/13/2024
 U:\Projects\2024\U-4405B\Drawings\Signal\Des\gms\Temporary\Des\gms\U-4405B\Sig_dsn_06-015512.dgn
 User: jgalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

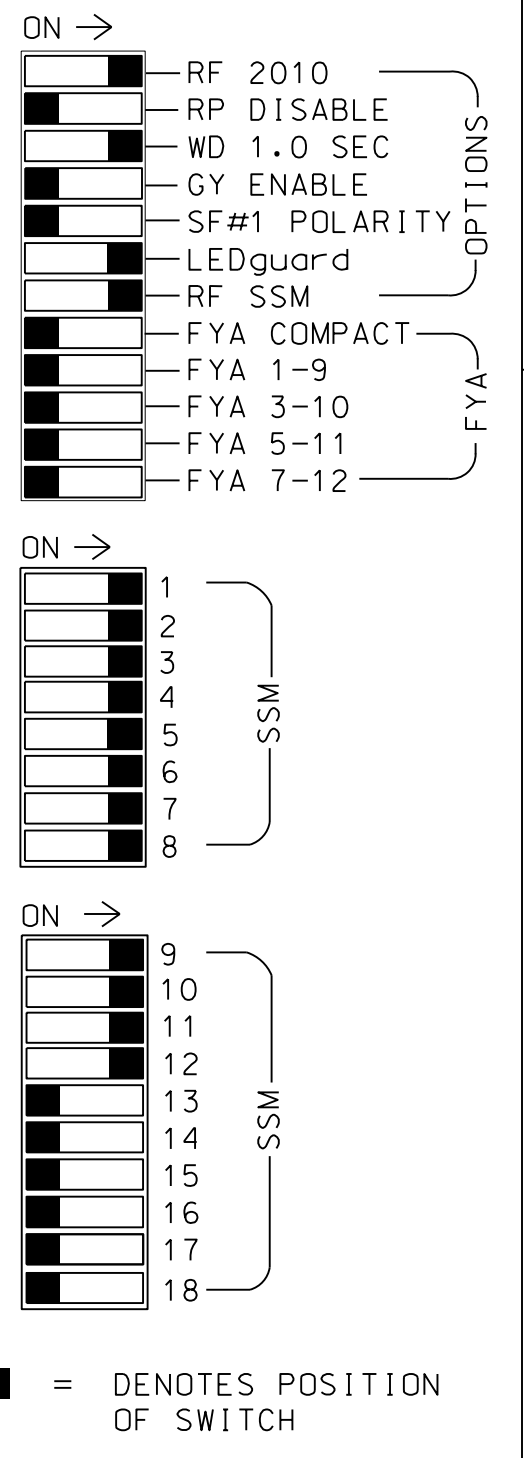
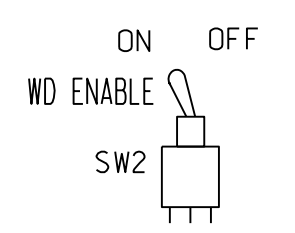
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 GREEN and 6 GREEN.
3. The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,
 S9,S10,S11,S12,AUXS1,AUXS2,
 AUXS4,AUXS5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,
 6PED,7,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11,12	21,22 23	P21 P22	31,32	41,42	P41 P42	51,52	61,62	P61 P62	71,72	81,82	P81 P82	63*	83,84*	NU	24*	43*	NU
RED		128			101			134			107		A121	A124		A114	A101	
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125				116			131			122							
YELLOW ARROW	126				117			132			123		A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127				118			133			124							
Hand					113			104			119							
Walking Person					115			106			121							

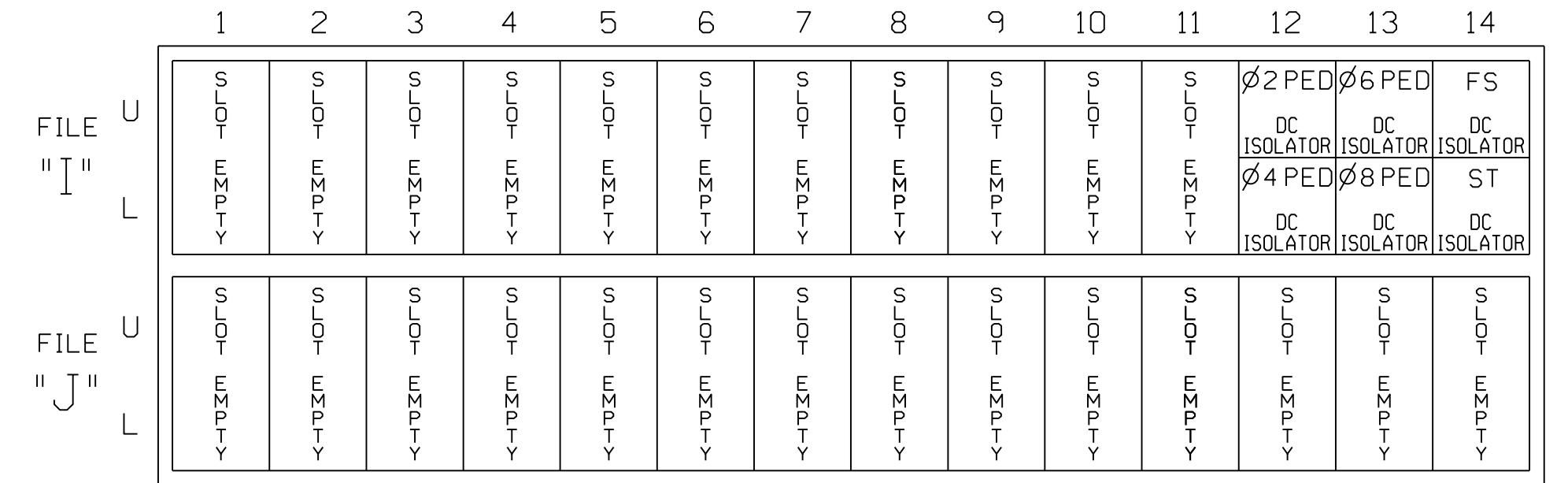
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

* See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

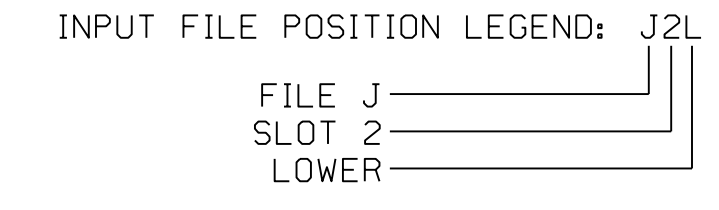
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE
PED PUSH BUTTONS					
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED

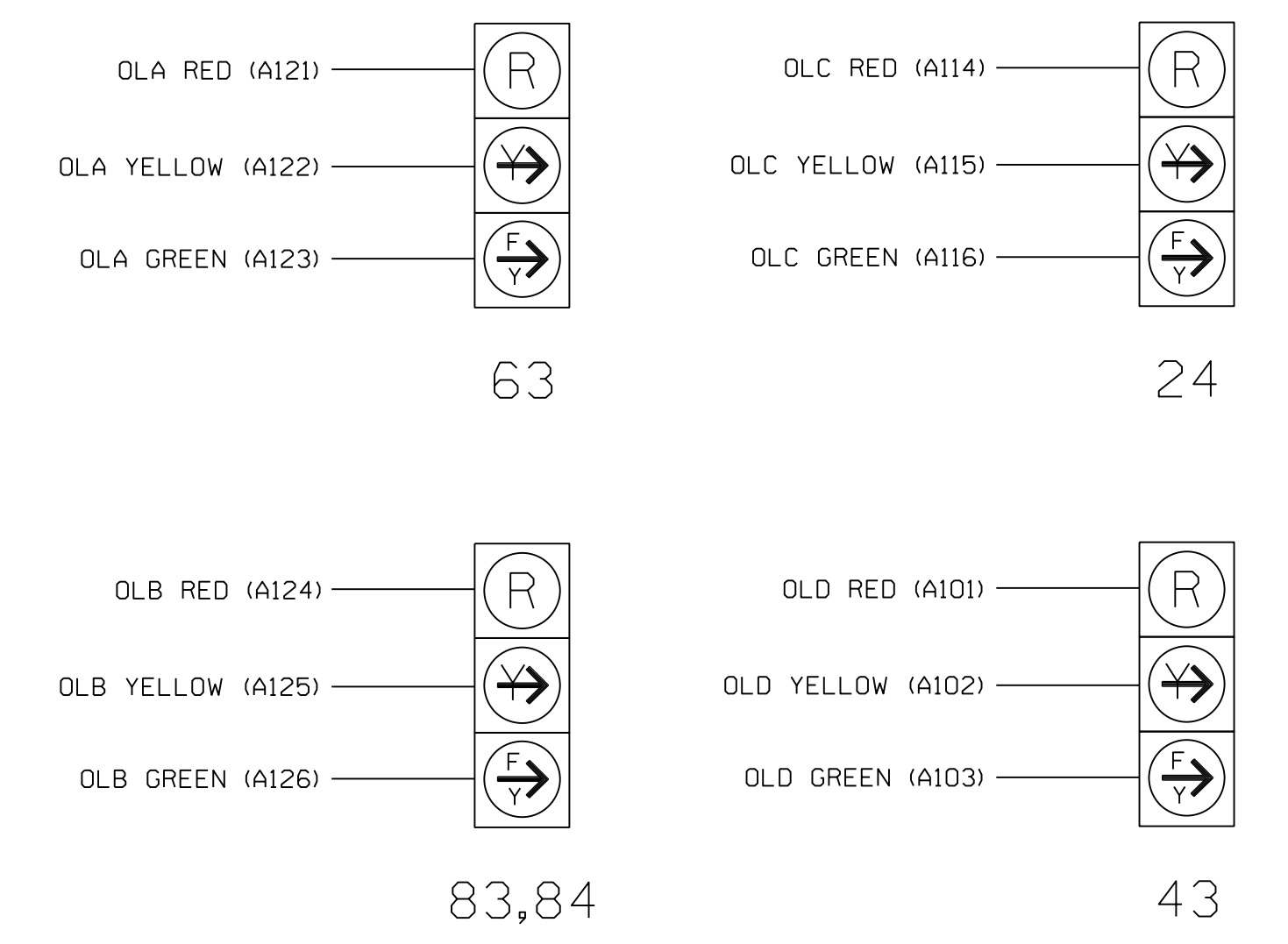
NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T2
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

Temporary Design 2 - TMP Phase II Electrical Detail - Sheet 1 of 2

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: Jason Galloway 11/13/2024
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0155T2

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE    G          G
          A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

```

Scroll down on this screen and set "Exit Fl" to Green "G"

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T2
DESIGNED: NOV 2024
SEALED: 11/13/2024
REVISED: N/A

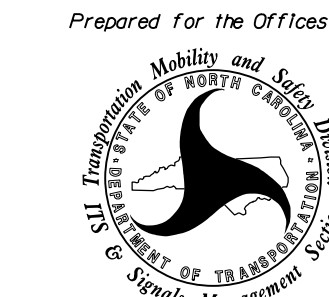
Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 2 of 2



Stantec Consulting Services Inc.
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Raleigh, NC 27606
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
at NC 59 (Hope Mills Road)/
SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville

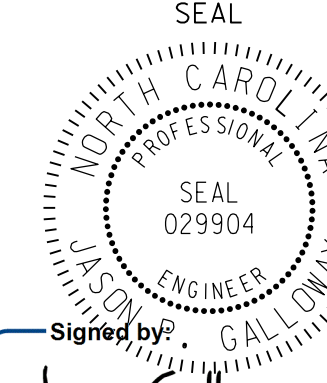
PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE

PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



SEAL 029904

Signed by: **Jason Galloway** 11/13/2024

SIGNATURE DATE

SIG. INVENTORY NO. 06-0155T2

9:20:34 AM
U:\Projects\06-0155T2\06-0155T2.dgn
User: jgalloway

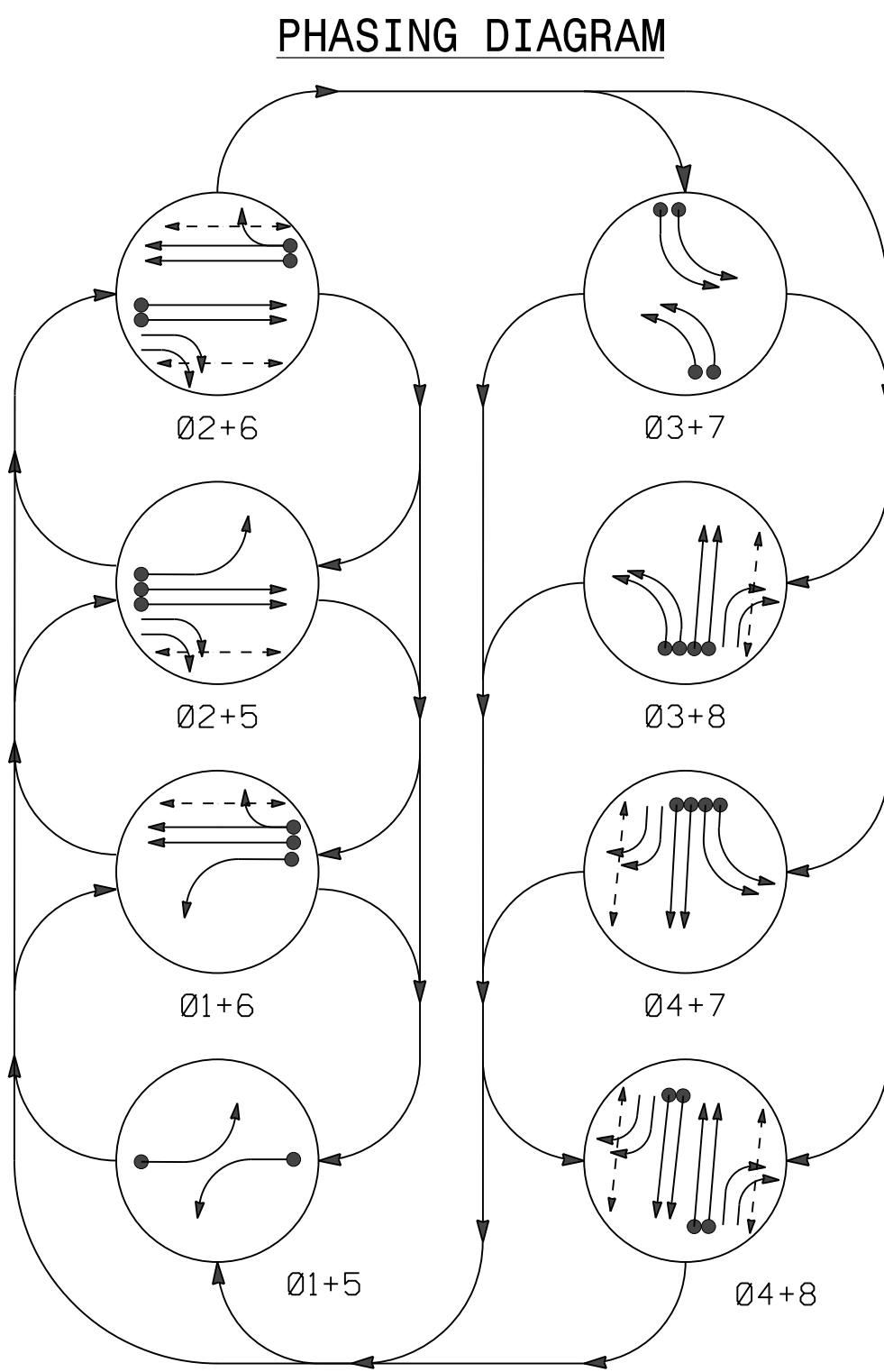
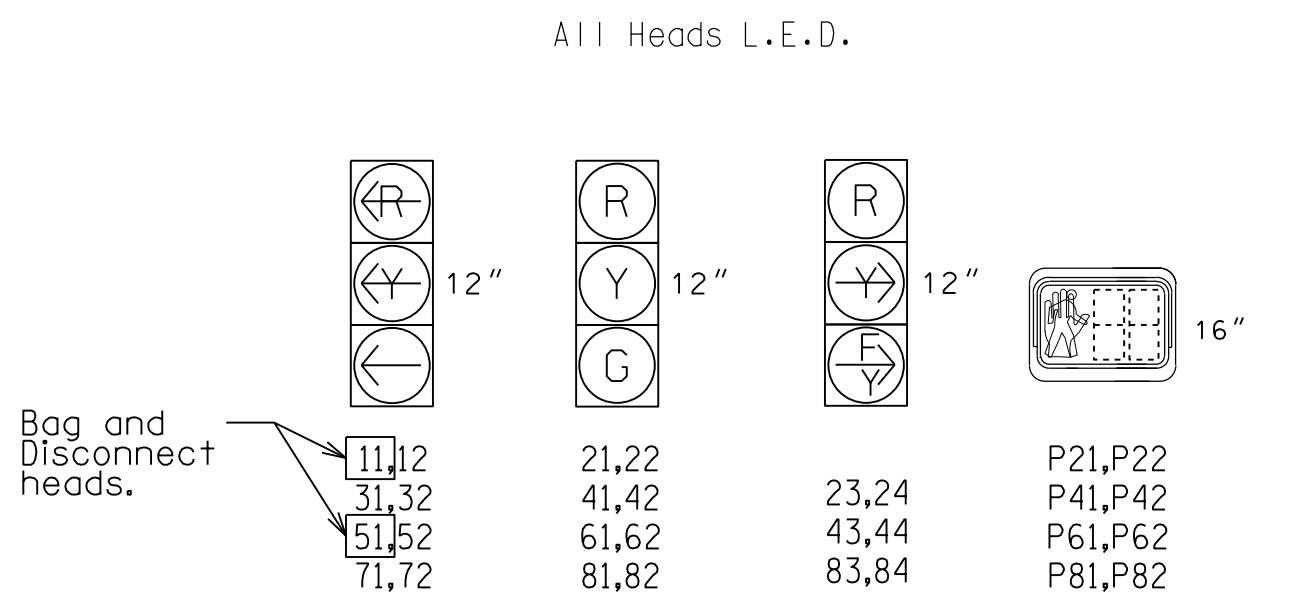


TABLE OF OPERATION table with columns for SIGNAL FACE and PHASE (01+5 to 04+8). Rows list signal face numbers and their corresponding phase operations (e.g., R, G, Y, W, DRK).

SIGNAL FACE I.D.

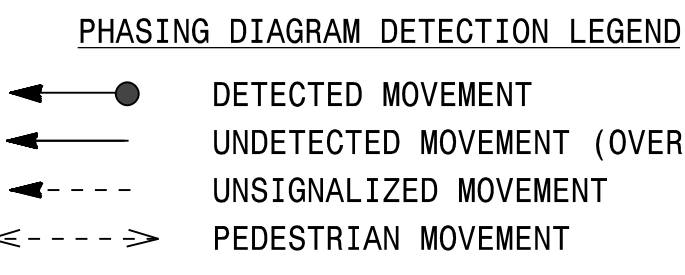
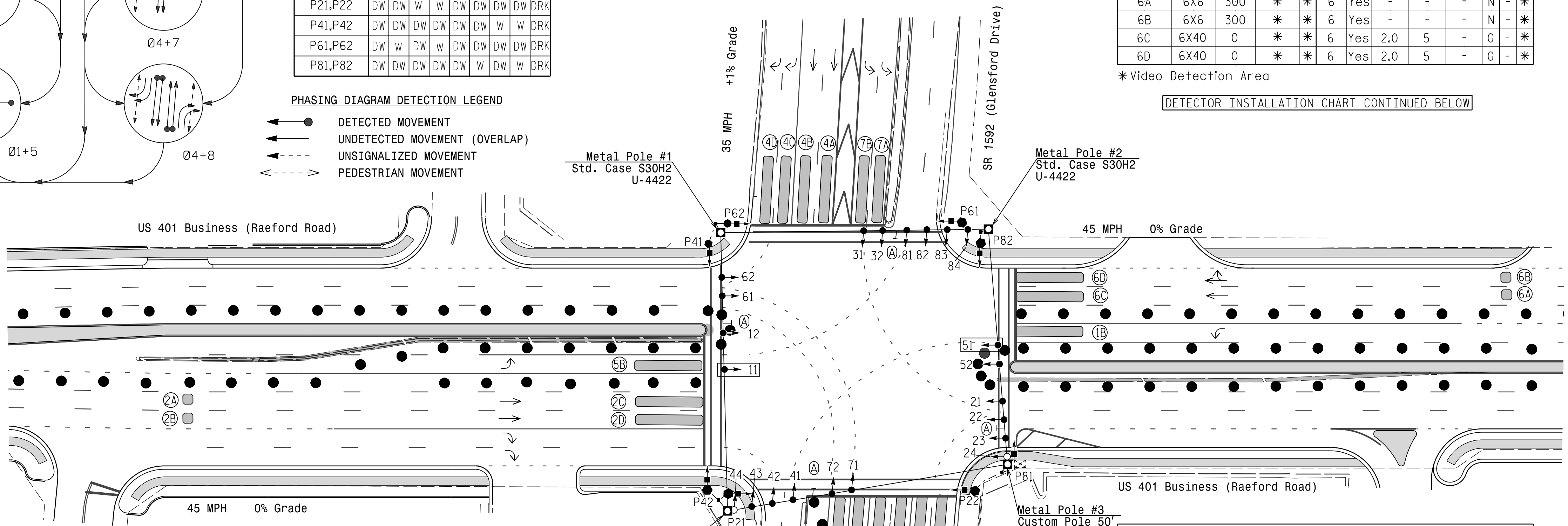


ASC/3 DETECTOR INSTALLATION CHART table with columns for DETECTOR (LOOP, SIZE, DISTANCE, TURNS, NEW LOOP) and PROGRAMMING (PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD).

8 Phase Fully Actuated Fayetteville Signal System

NOTES

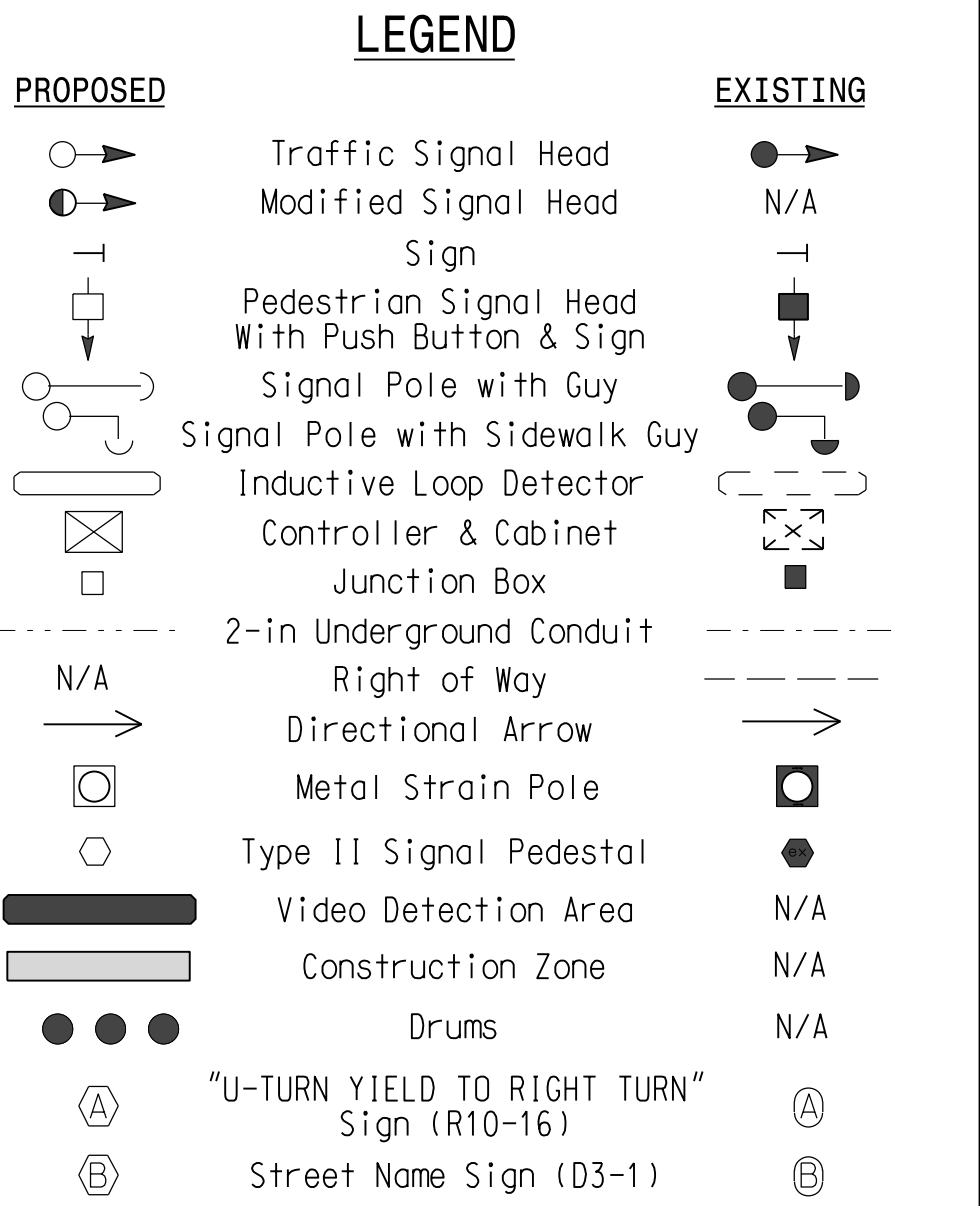
- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Bag & disconnect signal heads 11 and 51. Reposition existing signal heads 12, 22, 23, 31, 32, 52, 61, 62, & Sign A.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



*Video Detection Area
DETECTOR INSTALLATION CHART CONTINUED BELOW

ASC/3 TIMING CHART table with columns for FEATURE and PHASE (1 to 8). Rows list timing parameters such as Min Green, Delayed Green, Walk, Ped Clear, Veh. Extension, Max 1, Yellow, Red Clear, Red Revert, Actuations B4 Add, Seconds /Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, Dual Entry, and Simultaneous Gap.

ASC/3 DETECTOR INSTALLATION CHART- CONTINUED table with columns for DETECTOR (LOOP, SIZE, DISTANCE, TURNS, NEW LOOP) and PROGRAMMING (PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD).



* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade Temporary Design 3 - TMP Phase III

Project information block including Stantec logo, project name (US 401 Business (Raeford Road) at NC 59 (Hope Mills Road)/ SR 1592 (Glensford Drive)), division (Division 6 Cumberland County Fayetteville), plan date (November 2024), reviewed by (J. Galloway, PE), prepared by (D. Waller, PE), reviewed by (R. Muncy, PE), and a seal for Jason Galloway, PE, No. 029904.

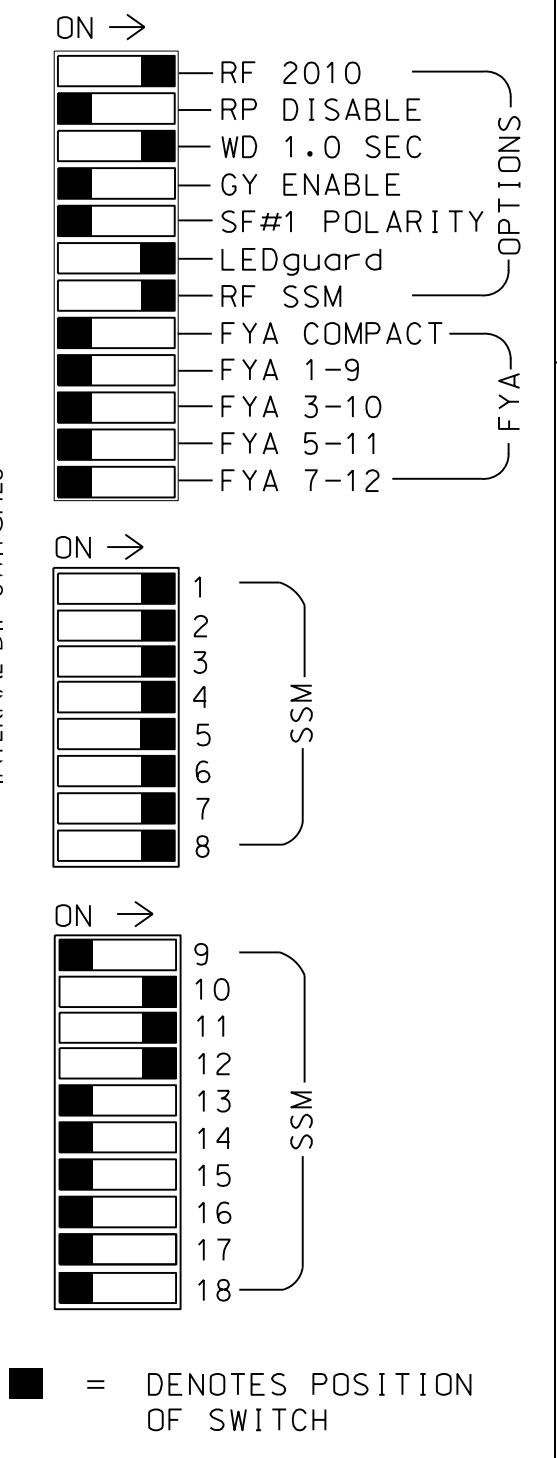
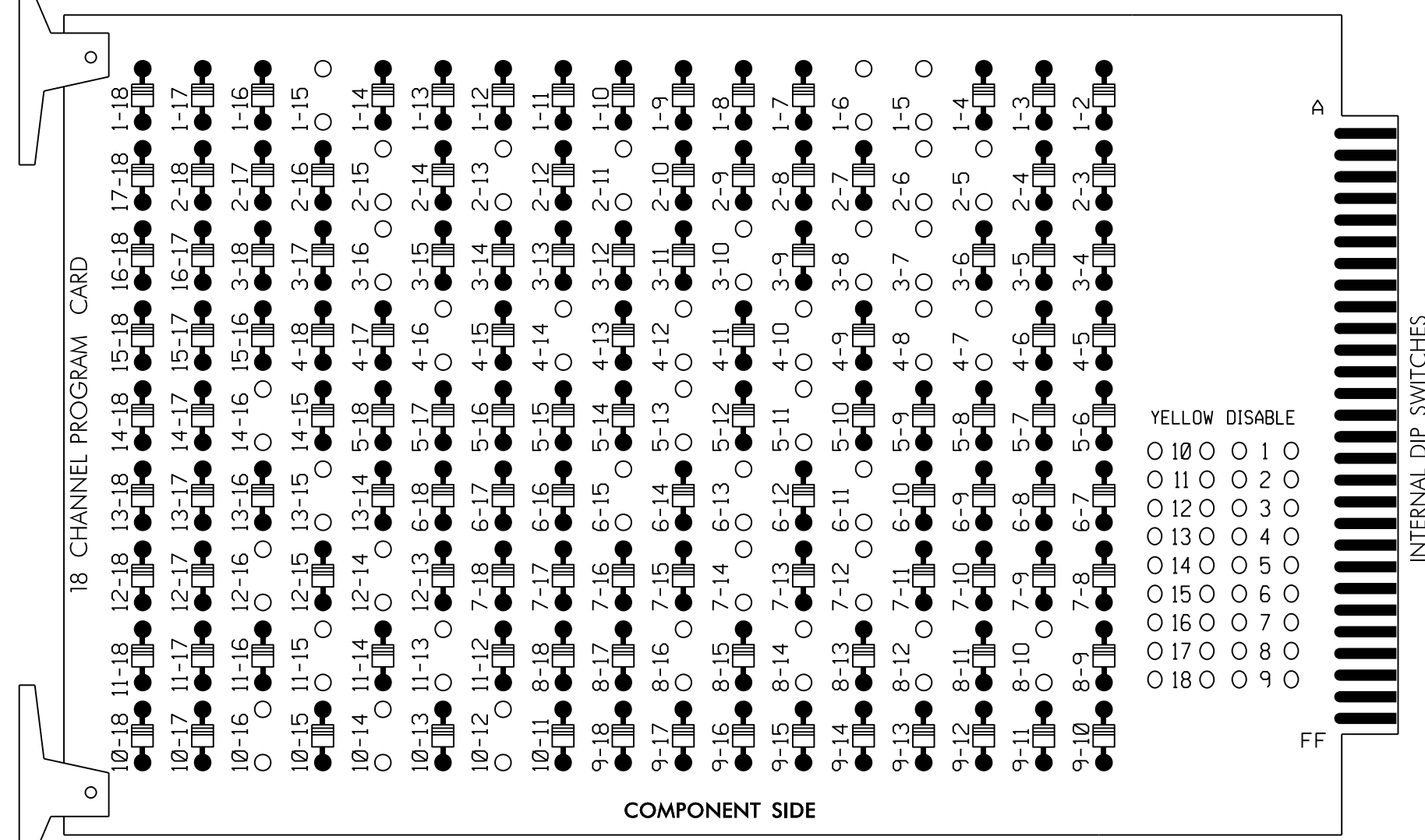
11/13/2024 U:\Projects\4405B\SIG\4405B_Sig.dwg U:\Projects\4405B\SIG\4405B_Sig.dwg U:\Projects\4405B\SIG\4405B_Sig.dwg U:\Projects\4405B\SIG\4405B_Sig.dwg User: jgalloway

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-11, 5-13, 6-11, 6-13, 6-15, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 GREEN and 6 GREEN.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,
 S9,S10,S11,S12,AUXS2,AUXS4,
 AUXS5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,
 6PED,7,8,8PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11,12	21,22,23	P21,P22	31,32	41,42	P41,P42	51,52	61,62	P61,P62	71,72	81,82	P81,P82	NU	83,84	NU	24	43	NU
RED	128			101				134			107			A124		A114	A101	
YELLOW	129			102				135			108							
GREEN	130			103				136			109							
RED ARROW	125			116				131			122							
YELLOW ARROW	126			117				132			123			A125		A115	A102	
FLASHING YELLOW ARROW														A126		A116	A103	
GREEN ARROW	127			118				133			124							
Hand				113				104			119			110				
Walker				115				106			121			112				

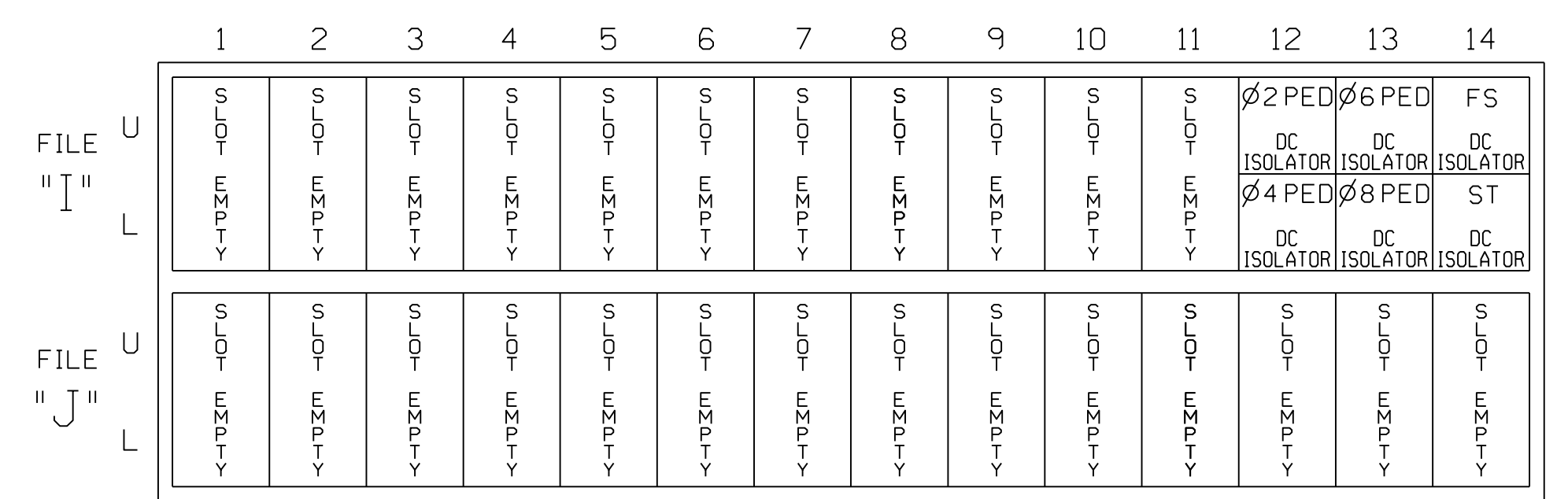
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



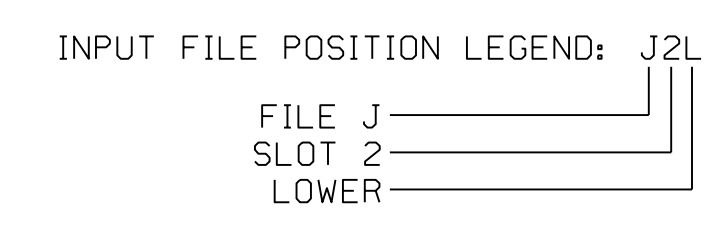
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

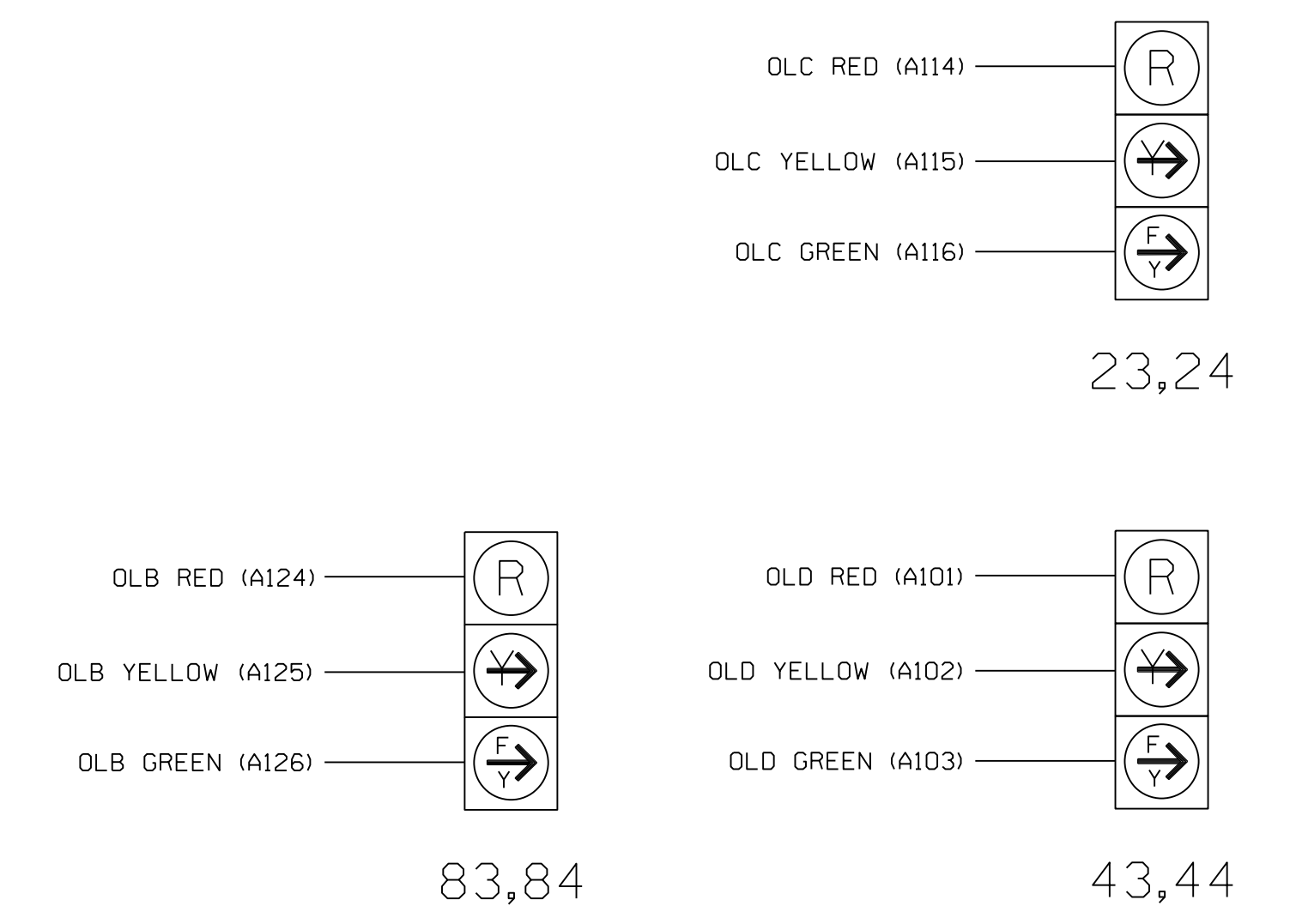
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE
PED PUSH BUTTONS					
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T3
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

Temporary Design 3 - TMP Phase III
 Electrical Detail - Sheet 1 of 2

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 License No. F-0672

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville
 PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 029904
 JASON GALLOWAY
 11/13/2024
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0155T3

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE    G          G
          A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED.. 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

```

Scroll down on this screen and set "Exit Fl" to Green "G"

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155T3
DESIGNED: NOV 2024
SEALED: 11/13/2024
REVISED: N/A

Temporary Design 3 - TMP Phase III
Electrical Detail - Sheet 2 of 2


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

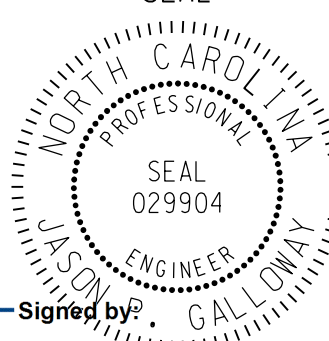
US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville

PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL

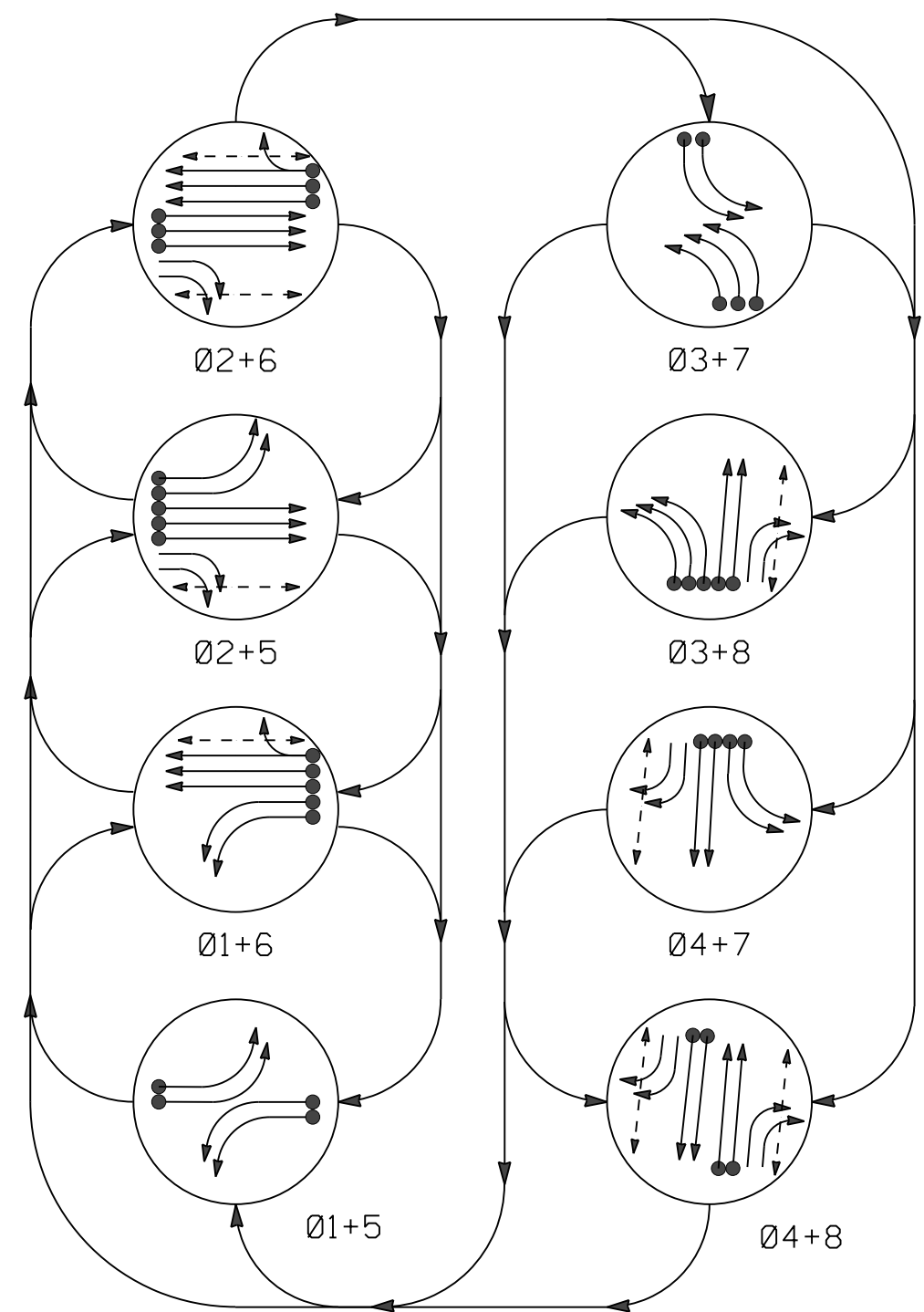


SEAL 029904

Signed by: **Jason Galloway** 11/13/2024

SIGNATURE DATE
10/12/2024 11/13/2024
SIG. INVENTORY NO. 06-0155T3

PHASING DIAGRAM



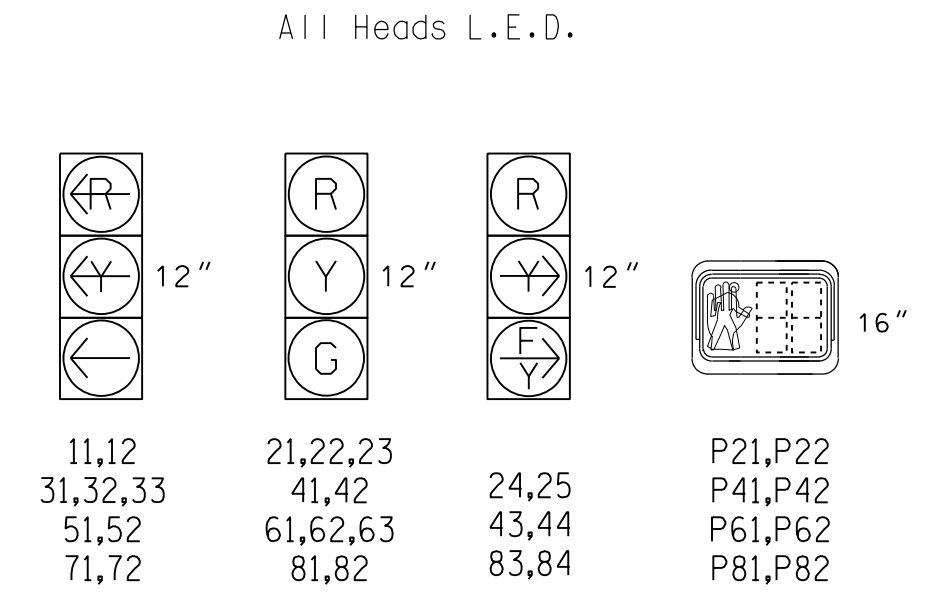
PHASING DIAGRAM DETECTION LEGEND

- ← ● DETECTED MOVEMENT
- ← ○ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ← --- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3+7	Ø 3+8	Ø 4+7	Ø 4+8
11,12	←	←	←	←	←	←	←	←
21,22,23	R	R	G	G	R	R	R	R
24,25	R	R	←	←	←	←	←	←
31,32,33	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	G	G	R
43,44	R	R	R	R	R	←	←	R
51,52	←	←	←	←	←	←	←	←
61,62,63	R	G	R	G	R	R	R	R
71,72	←	←	←	←	←	←	←	←
81,82	R	R	R	R	R	G	R	R
83,84	R	R	R	R	←	←	←	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	DW	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.



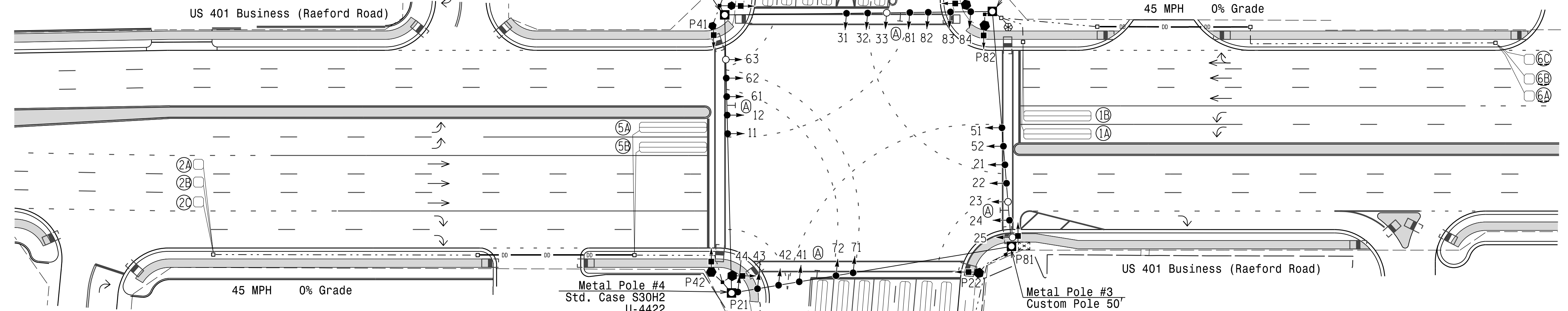
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	-	-	N	-	X
1B	6X40	0	2-4-2	X	1	Yes	-	-	-	N	-	X
2A	6X6	300	6	X	2	Yes	-	-	X	N	-	X
2B	6X6	300	6	X	2	Yes	-	-	X	N	-	X
2C	6X6	300	6	X	2	Yes	-	-	X	N	-	X
3A	6X40	0	2-4-2	X	3	Yes	-	3	-	N	-	X
3B	6X40	0	2-4-2	X	3	Yes	-	-	-	N	-	X
3C	6X40	0	2-4-2	X	3	Yes	-	-	-	N	-	X
4A	6X40	0	2-4-2	X	4	Yes	-	-	-	N	-	X
4B	6X40	0	2-4-2	X	4	Yes	-	-	-	N	-	X
4C	6X40	0	2-4-2	X	4	Yes	-	15	-	N	-	X
4D	6X40	0	2-4-2	X	4	Yes	-	15	-	N	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	-	-	N	-	X
5B	6X40	0	2-4-2	X	5	Yes	-	-	-	N	-	X
6A	6X6	300	6	X	6	Yes	-	-	X	N	-	X
6B	6X6	300	6	X	6	Yes	-	-	X	N	-	X
6C	6X6	300	6	X	6	Yes	-	-	X	N	-	X
7A	6X40	0	2-4-2	X	7	Yes	-	-	-	N	-	X
7B	6X40	0	2-4-2	X	7	Yes	-	-	-	N	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	-	-	N	-	X
8B	6X40	0	2-4-2	X	8	Yes	-	-	-	N	-	X
8C	6X40	0	2-4-2	X	8	Yes	-	15	-	N	-	X
8D	6X40	0	2-4-2	X	8	Yes	-	15	-	N	-	X

8 Phase Fully Actuated Fayetteville Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated July 2024 and "Standard Specifications for Roads and Structures" dated July 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or Phase 5 may be lagged.
- Phase 3 and/or Phase 7 may be lagged.
- Unbag and reconnect signal heads 11 and 51. Reposition existing signal heads 11, 12, 21, 22, 24, 25, 31, 32, 51, 52, 61, 62, & Sign A.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Delayed Green	-	6	-	4	-	5	-	7
Walk *	-	13	-	11	-	12	-	14
Ped Clear	-	32	-	32	-	30	-	28
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	40	20	90	40	20
Yellow	3.0	4.5	3.0	4.6	3.0	4.5	3.0	4.6
Red Clear	4.4	2.7	4.2	3.1	4.1	2.7	3.9	3.1
Red Revert	-	-	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	1.5	-	-	-	1.5	-	-
Max Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | | | | |
|--|---|--|---|
| | PROPOSED Traffic Signal Head | | EXISTING Traffic Signal Head |
| | PROPOSED Modified Signal Head | | EXISTING Modified Signal Head |
| | PROPOSED Sign | | EXISTING Sign |
| | PROPOSED Pedestrian Signal Head With Push Button & Sign | | EXISTING Pedestrian Signal Head |
| | PROPOSED Signal Pole with Guy | | EXISTING Signal Pole with Guy |
| | PROPOSED Signal Pole with Sidewalk Guy | | EXISTING Signal Pole with Sidewalk Guy |
| | PROPOSED Inductive Loop Detector | | EXISTING Inductive Loop Detector |
| | PROPOSED Controller & Cabinet | | EXISTING Controller & Cabinet |
| | PROPOSED Junction Box | | EXISTING Junction Box |
| | PROPOSED 2-in Underground Conduit | | EXISTING 2-in Underground Conduit |
| | PROPOSED Right of Way | | EXISTING Right of Way |
| | PROPOSED Directional Arrow | | EXISTING Directional Arrow |
| | PROPOSED Metal Strain Pole | | EXISTING Metal Strain Pole |
| | PROPOSED Type I Pushbutton Post | | EXISTING Type I Pushbutton Post |
| | PROPOSED Type II Signal Pedestal | | EXISTING Type II Signal Pedestal |
| | PROPOSED "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | | EXISTING "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) |
| | PROPOSED Street Name Sign (D3-1) | | EXISTING Street Name Sign (D3-1) |

Signal Upgrade - Final Design

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750 N. Greenfield Pkwy, Garner, NC 27529
SCALE
0 40
1" = 40'

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6 Cumberland County Fayetteville
PLAN DATE: November 2024 REVIEWED BY: J. Galloway, PE
PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

REVISIONS	INIT.	DATE

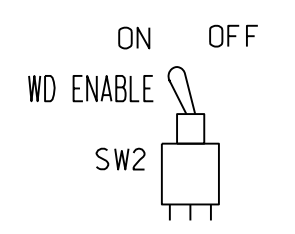
SEAL
JASON GALLOWAY
PROFESSIONAL ENGINEER
029904
SIGNED BY: J. Galloway
DATE: 11/13/2024
SCALE: 1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

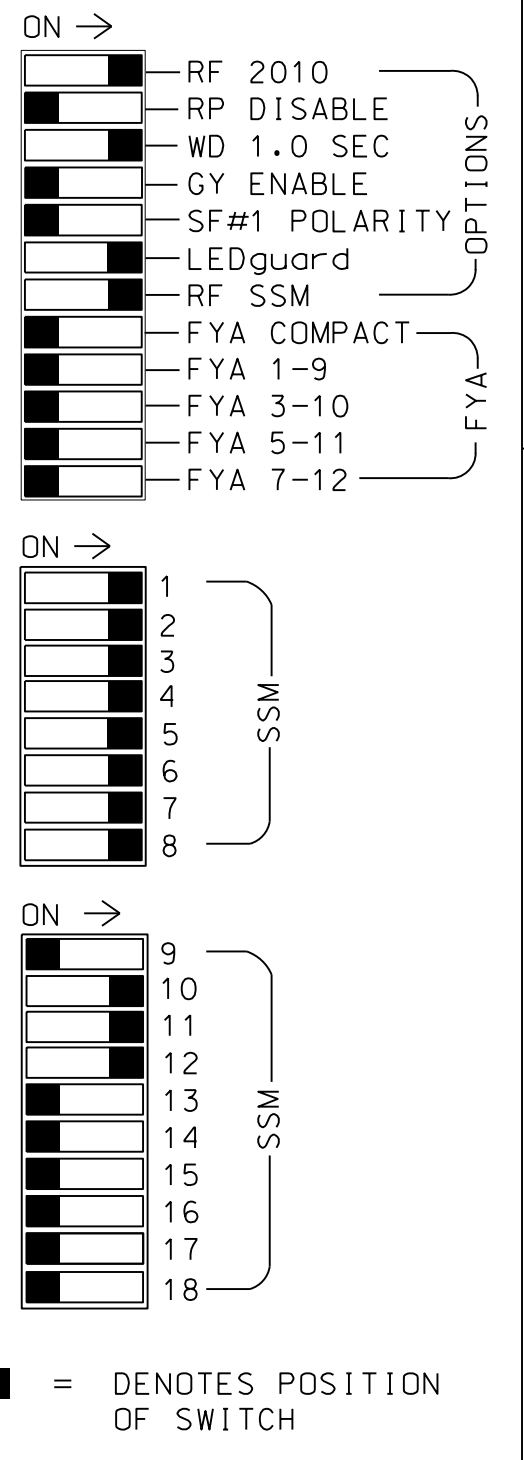
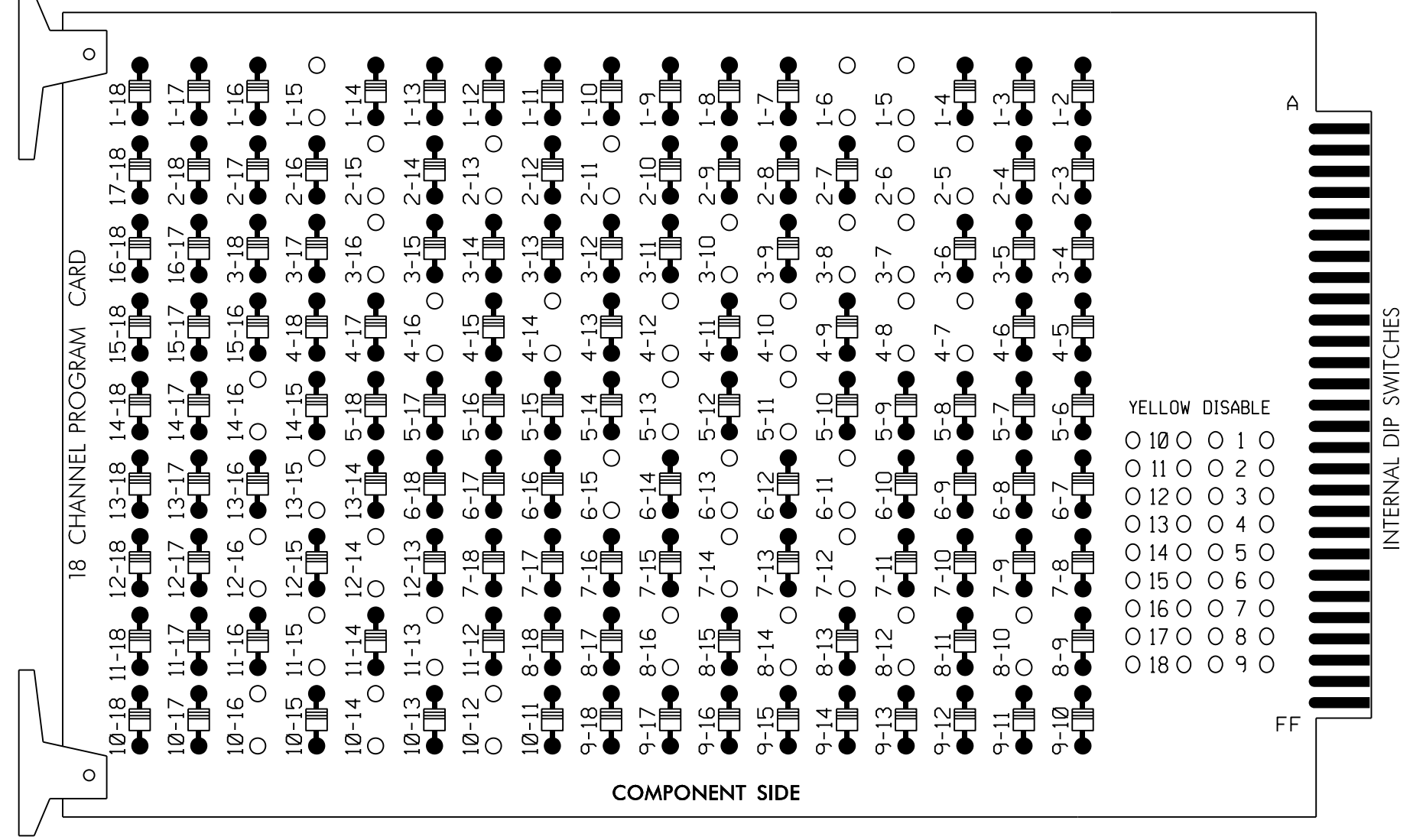
11/13/2024
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 User: JGalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-11, 5-13, 6-11, 6-13, 6-15, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,
 S9,S10,S11,S12,AUXS2,AUXS4,
 AUXS5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,
 6PED,7,8,8PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11,12	21,22 23	P21 P22	31,32	41,42	P41 P42	51,52	61,62	P61 P62	71,72	81,82	P81 P82	NU	83,84	NU	24	43	NU
RED		128		101				134			107			A124		A114	A101	
YELLOW		129		102				135			108							
GREEN		130		103				136			109							
RED ARROW	125			116				131			122							
YELLOW ARROW	126			117				132			123			A125		A115	A102	
FLASHING YELLOW ARROW														A126		A116	A103	
GREEN ARROW	127			118				133			124							
Hand			113			104			119			110						
Walker						106				121								

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 2	∅ 3	∅ 3	∅ 4	∅ 4	S	S	S	S	∅ 2 PED	∅ 6 PED	FS
L	1A	2A	2C	3A	3B	4A	4C	-	-	-	-	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
	∅ 1	∅ 2	NOT USED	NOT USED	∅ 3	∅ 4	∅ 4	Y	Y	Y	Y	∅ 4 PED	∅ 8 PED	ST
	1B	2B			3C	4B	4D	Y	Y	Y	Y	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 5	∅ 6	∅ 6	S	∅ 7	∅ 8	∅ 8	S	S	S	S	S	S	S
L	5A	6A	6C	-	7A	8A	8C	-	-	-	-	-	-	-
	∅ 5	∅ 6	NOT USED	Y	∅ 7	∅ 8	∅ 8	Y	Y	Y	Y	Y	Y	Y
	5B	6B		Y	7B	8B	8D	Y	Y	Y	Y	Y	Y	Y

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

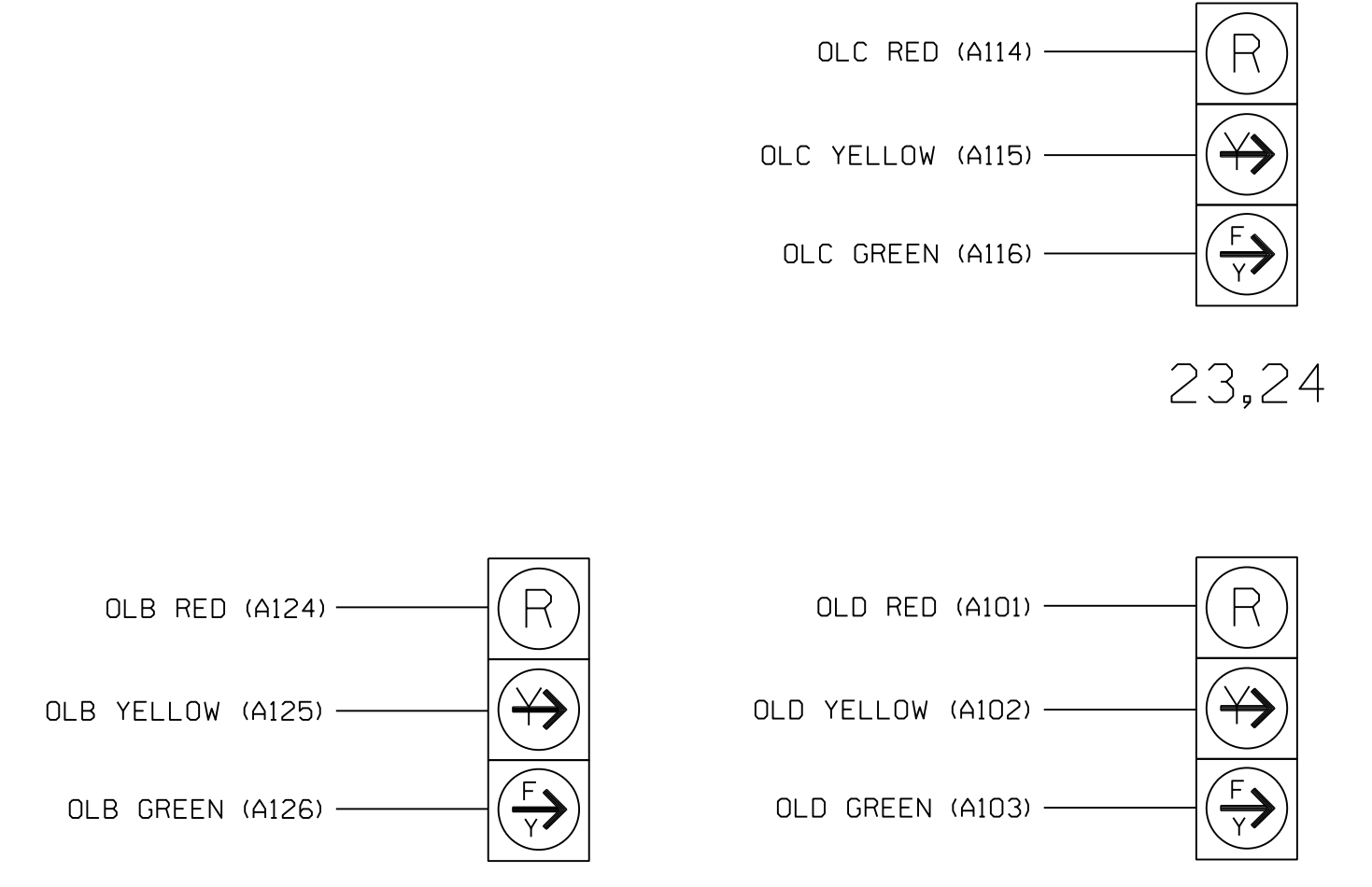
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES				N
1B	TB2-3,4	I1L	56	1	1	YES				N
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
3A	TB4-1,2	I4U	47	22	3	YES		3		N
3B	TB4-5,6	I5U	58	3	3	YES				N
3C	TB4-7,8	I5L	58	3	3	YES				N
4A	TB4-9,10	I6U	41	4	4	YES				N
4B	TB4-11,12	I6L	45	14	4	YES				N
4C	TB6-1,2	I7U	65	34	4	YES		15		N
4D	TB6-3,4	I7L	78	44	4	YES		15		N
5A	TB3-1,2	J1U	55	5	5	YES				N
5B	TB3-3,4	J1L	55	5	5	YES				N
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
7A	TB5-5,6	J5U	57	7	7	YES				N
7B	TB5-7,8	J5L	57	7	7	YES				N
8A	TB5-9,10	J6U	42	8	8	YES				N
8B	TB5-11,12	J6L	46	18	8	YES				N
8C	TB7-1,2	J7U	66	38	8	YES		15		N
8D	TB7-3,4	J7L	79	48	8	YES		15		N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2	PED				
P41,P42	TB8-5,6	I12L	69	PED 4	4	PED				
P61,P62	TB8-7,9	I13U	68	PED 6	6	PED				
P81,P82	TB8-8,9	I13L	70	PED 8	8	PED				

INPUT FILE POSITION LEGEND: J2L FILE J SLOT 2 LOWER

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



23,24

83,84

43,44

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 1 of 2

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

Division 6	Cumberland County	Fayetteville
PLAN DATE: November 2024	REVIEWED BY: R. Muncey, PE	
PREPARED BY: D. Waller, PE	REVIEWED BY: J. Galloway, PE	

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON GALLOWAY

9:20:57 AM U:\Projects\Signal - U-4405B\Drawings\elec\Final Detail\18\Final Des\gnw-4405B.sig.dwg User: jgalloway

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . . . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . . . . . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . X . . . . .
 PROTECT . . . . .
 PED PRTC . . . . .
 NOT OVLP . . . . .
 FLSH GRN . . . 1 . . . . .
 LAG X PH . . . . .
 LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE
    
```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      G          G
          A B C D E F G H I J K L M N O P
OVERLAP    X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO
    
```

Scroll down on this screen and set "Exit Fl" to Green "G"

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0155
 DESIGNED: NOV 2024
 SEALED: 11/13/2024
 REVISED: N/A

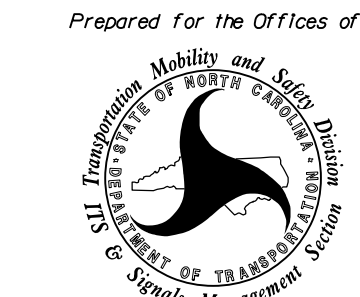
Final Design
 Electrical Detail - Sheet 2 of 2



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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road) at NC 59 (Hope Mills Road) / SR 1592 (Glensford Drive)

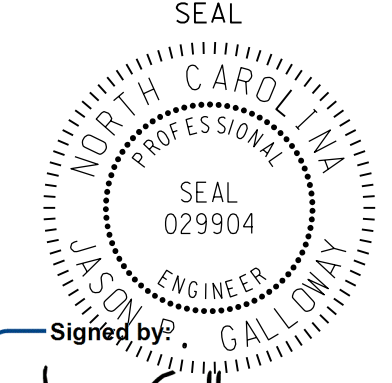
Division 6 Cumberland County Fayetteville

PLAN DATE: November 2024 REVIEWED BY: R. Muncey, PE

PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL



SEAL 029904

Signed by: Jason Galloway, PE

DATE: 11/13/2024

SIGNATURE: Jason Galloway

DATE: 11/13/2024

SIG. INVENTORY NO. 06-0155

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 User: jgalloway

PHASING DIAGRAM

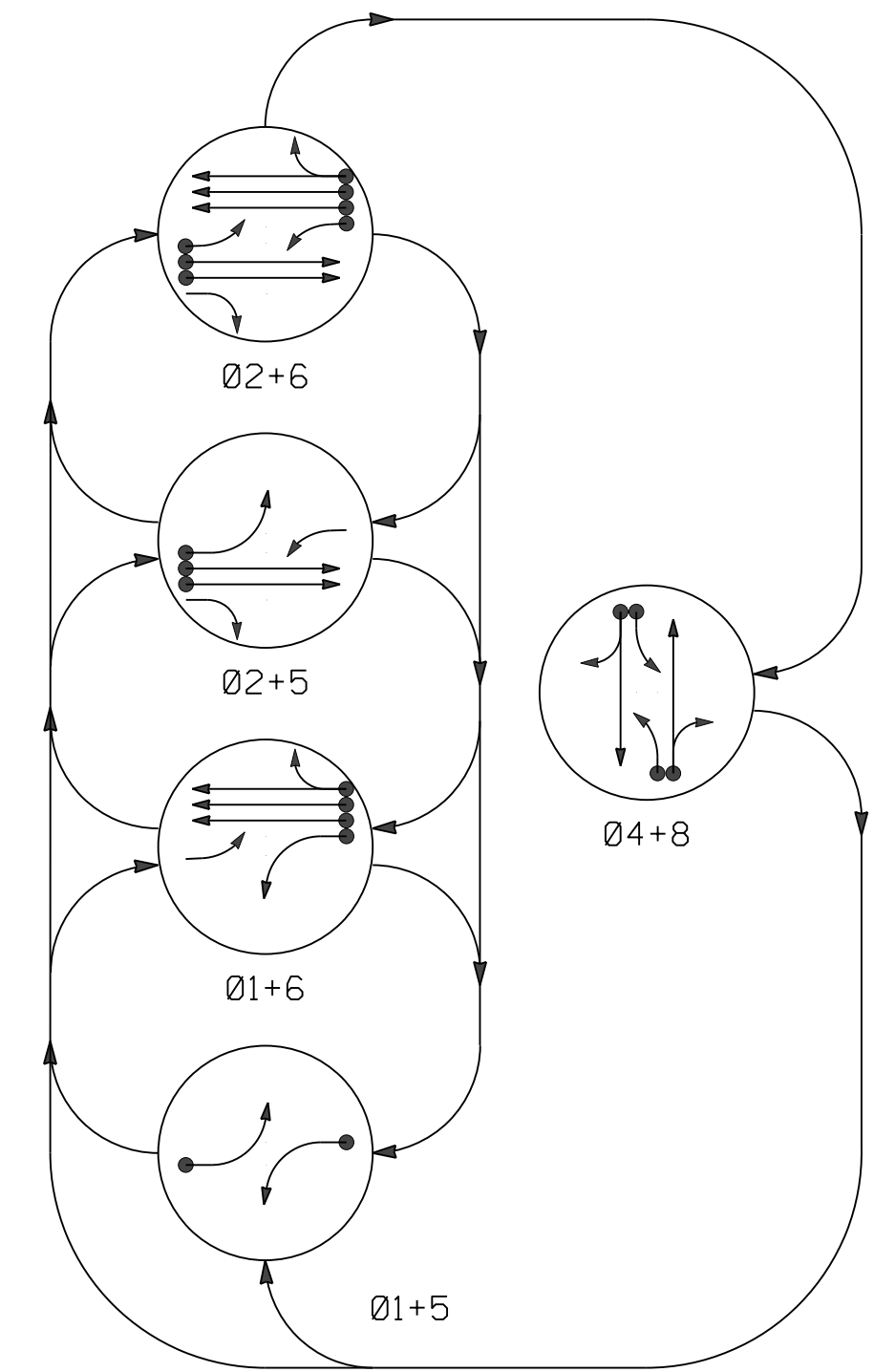
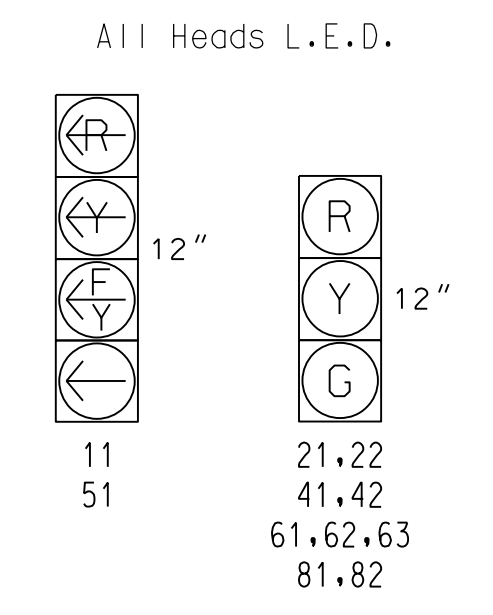


TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	02+5	02+6	04+8	01+6	01+5
11	←	←	←	←	←	←
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62,63	R	G	R	G	R	R
81,82	R	R	R	R	G	R

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	
1A	6X40	0	*	*	1	Yes	-	15	-	N	-	*
2A	6X6	300	*	*	2	Yes	-	3	-	G	-	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2C	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2D	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
4A	6X40	0	*	*	4	Yes	-	3	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	10	-	N	-	*
5A	6X40	0	*	*	5	Yes	-	15	-	N	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6C	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6E	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6F	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
8A	6X40	0	*	*	8	Yes	-	3	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	10	-	N	-	*

*Video Detection Area

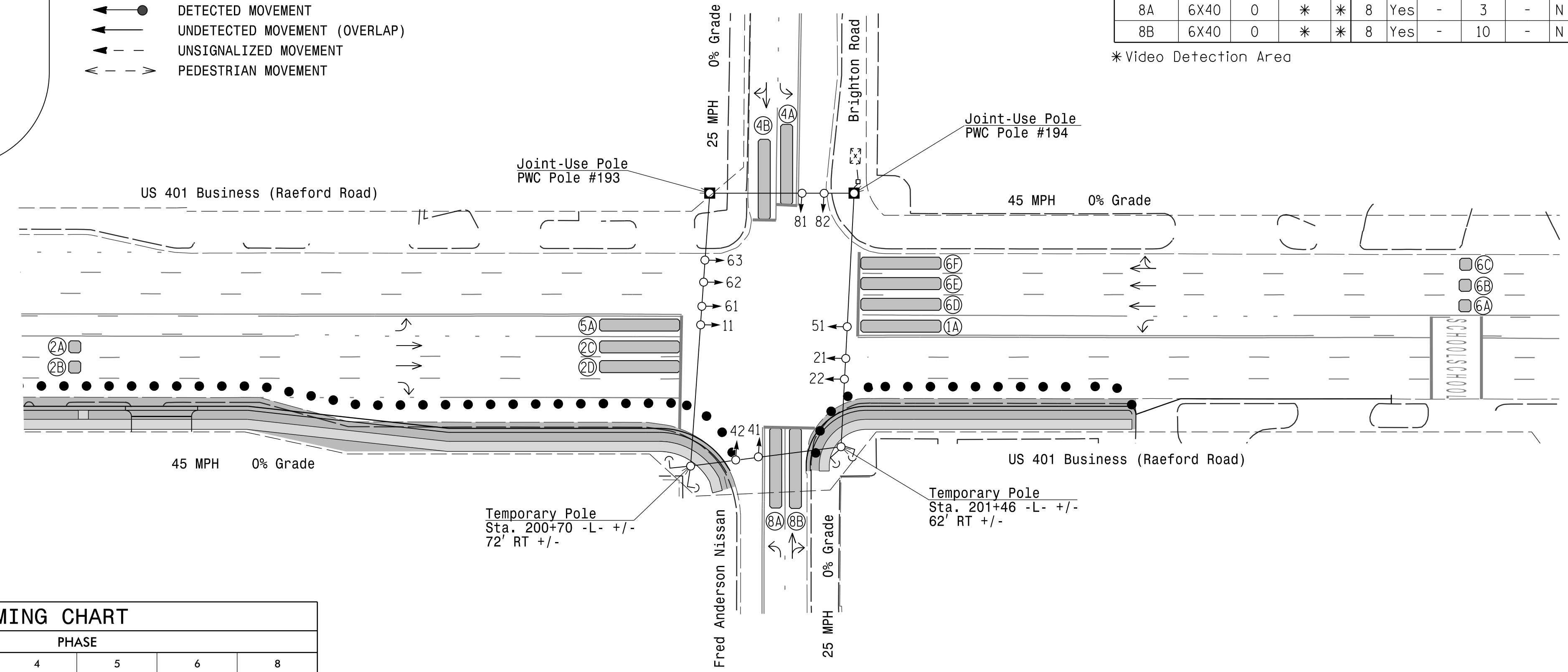
5 Phase Fully Actuated Fayetteville Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet foundation so as not to obstruct sight distance of vehicles turning right on red. Relocate existing cabinet and controller onto new foundation.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Field adjust temporary poles as needed.
8. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- - - PEDESTRIAN MOVEMENT



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	12	7	7	12	7
Delayed Green	-	-	7	-	-	-
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	25	15	90	25
Yellow	3.0	4.5	3.2	3.0	4.5	3.2
Red Clear	2.3	1.0	2.5	2.6	1.0	2.5
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	45	-	-	45	-
Minimum Gap	-	3.0	-	-	3.0	-
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ○ → Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & Sign |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Guy |
| ○ → Signal Pole with Sidewalk Guy | ○ → Signal Pole with Sidewalk Guy |
| ⊠ Inductive Loop Detector | ⊠ Inductive Loop Detector |
| ⊠ Controller & Cabinet | ⊠ Controller & Cabinet |
| ⊠ Junction Box | ⊠ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| ○ Metal Strain Pole | ○ Metal Strain Pole |
| ▬ Video Detection Area | N/A |
| ▬ Construction Zone | N/A |
| ● Drums | N/A |

Signal Upgrade Temporary Design 1 - TMP Phase I

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Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27526
 SCALE: 1" = 40'

US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville
 PLAN DATE: August 2024 REVIEWED BY: J. Galloway, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

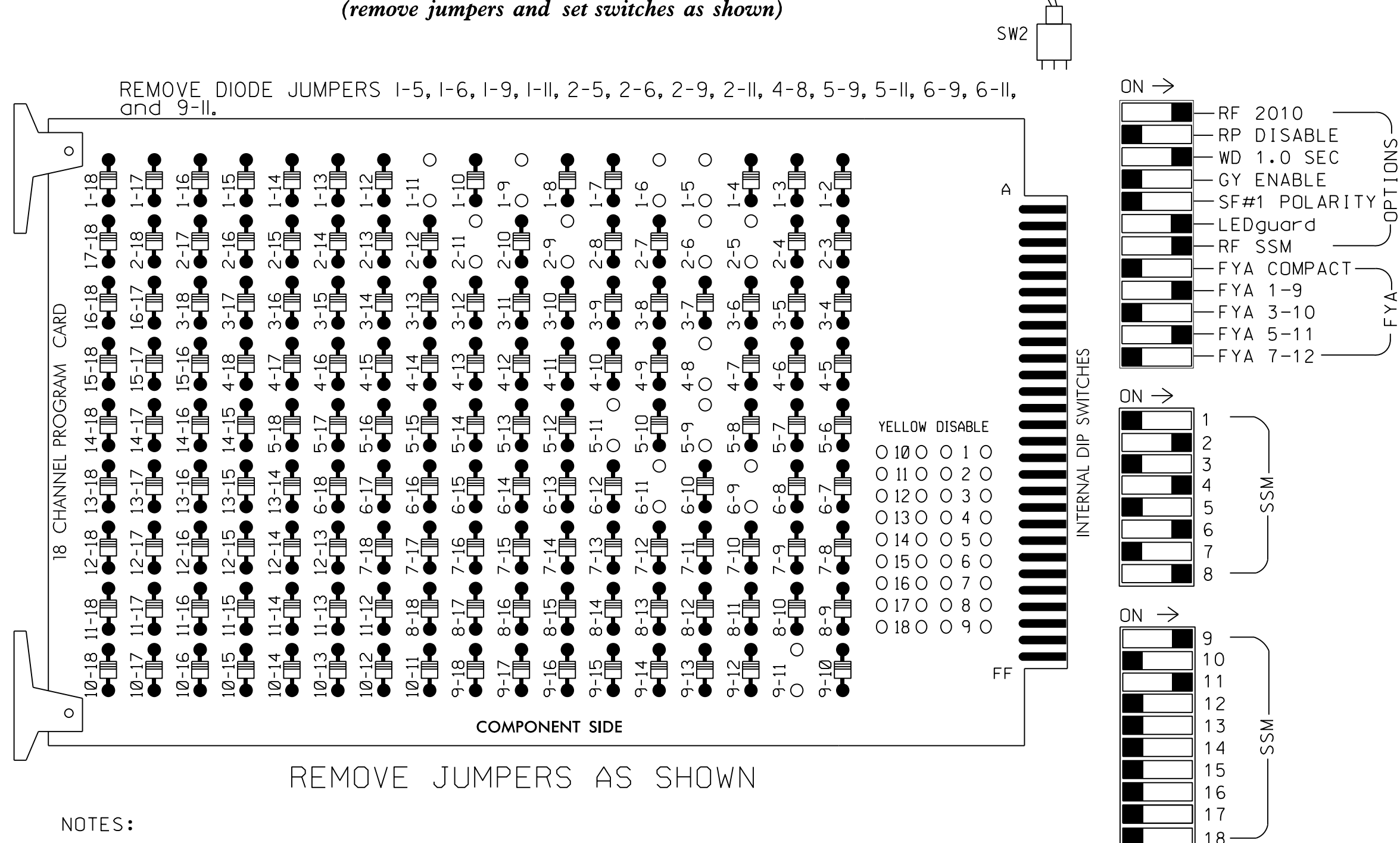
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JASON P. GALLOWAY
 SEAL 029904
 Signed by: Jason Galloway 10/8/2024
 DATE: 10/8/2024
 SIG. INVENTORY NO. 06-032811

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10/8/2024
 U:\Projects\4405B\Drawings\Signal\4405B_Sig.dwg, 06-032811.dgn
 User: JGalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11,AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

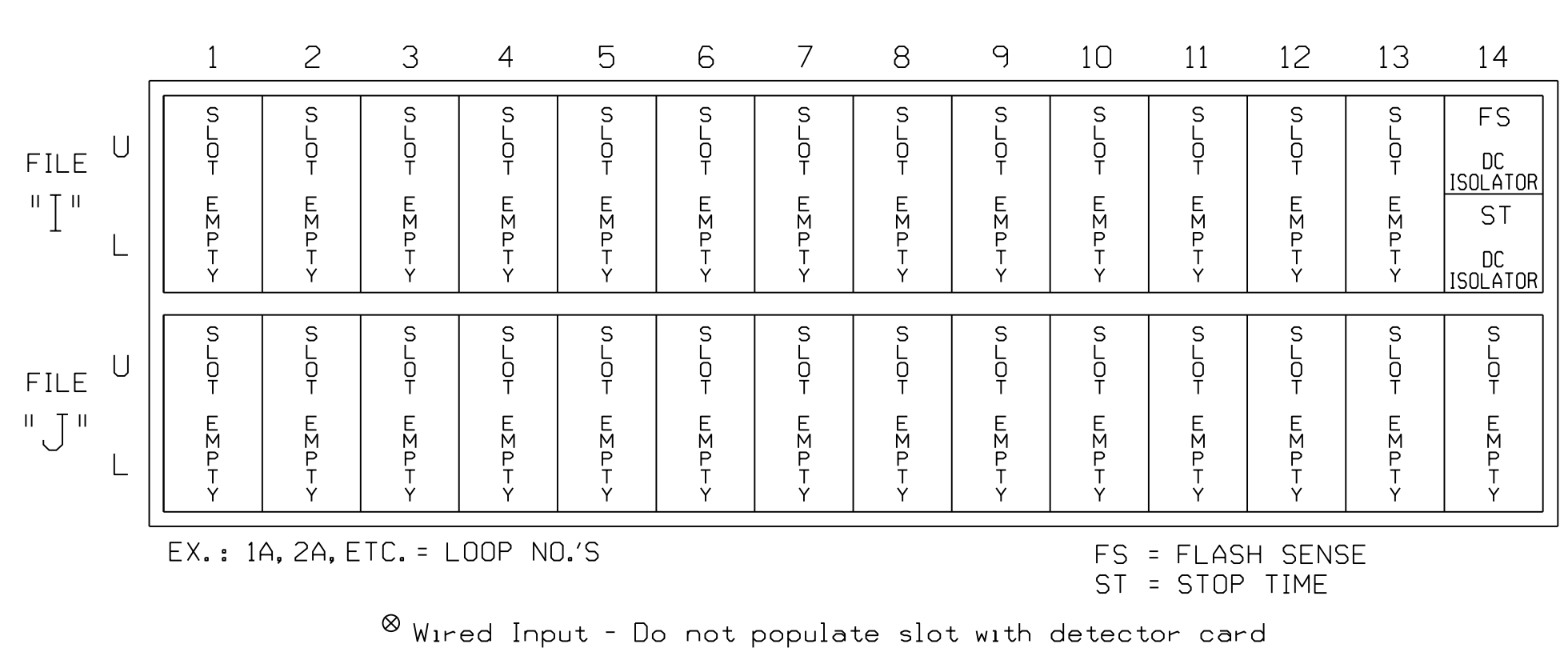
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	51	61,62,63	NU	NU	81,82	NU	11	NU	NU	51	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127							133										

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

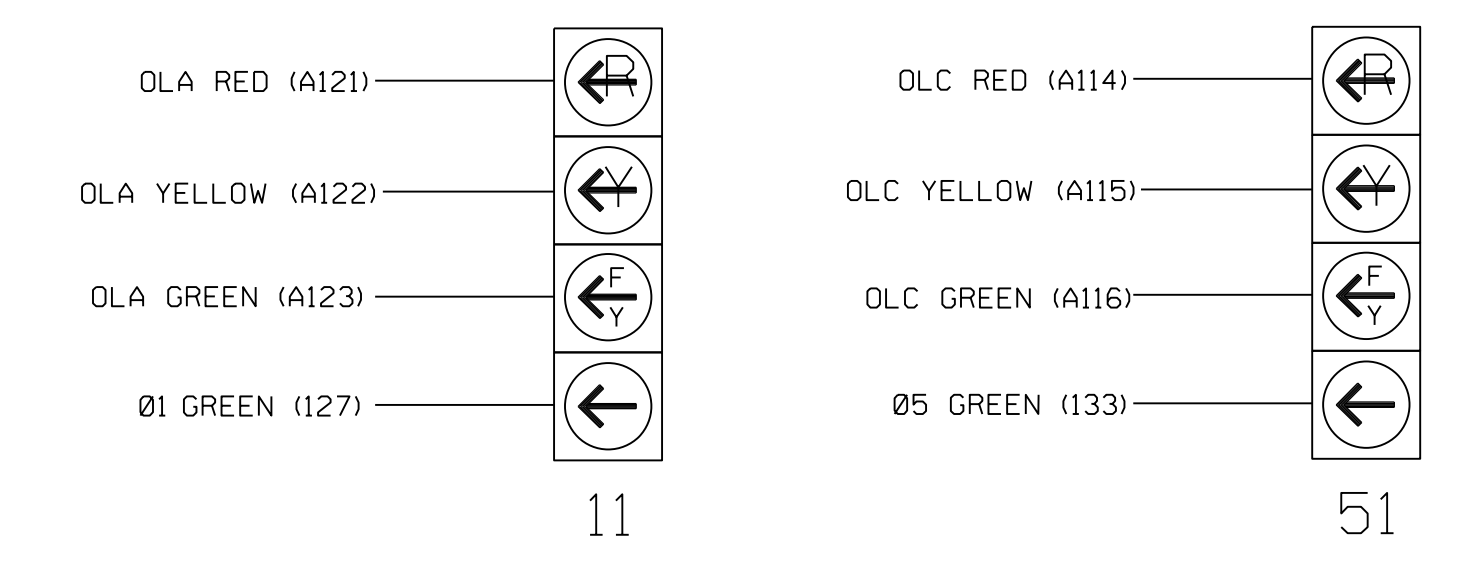
INPUT FILE POSITION LAYOUT

(from view)



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

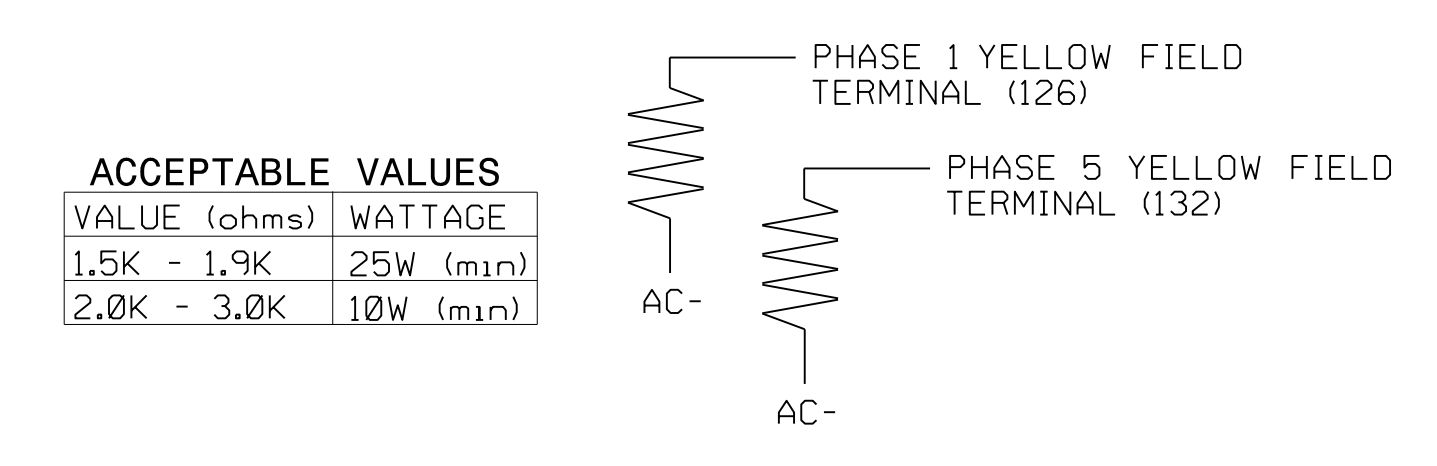


DETECTOR NOTES

- For all loops install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



Temporary Design 1 - TMP Phase I Electrical Detail - Sheet 1 of 2

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 at
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 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

Prepared for the Offices of:

 NORTH CAROLINA PROFESSIONAL ENGINEER
 JASON P. GALLOWAY
 SEAL 029904

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

Signed by: Jason Galloway 10/8/2024
 DATE

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 JASON P. GALLOWAY
 SEAL 029904

Signed by: Jason Galloway 10/8/2024
 DATE

SIG. INVENTORY NO. 06-0328T1

B:\51705-AM
 U:\Projects\4405B\Drawings\Electrical\Detail\18 Channel IP Conflict Monitor\18 Channel IP Conflict Monitor.dgn
 User: jgalloway

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
  
```

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
  
```

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select 2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE
  
```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 5. START/FLASH

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      G      G
          A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO
  
```

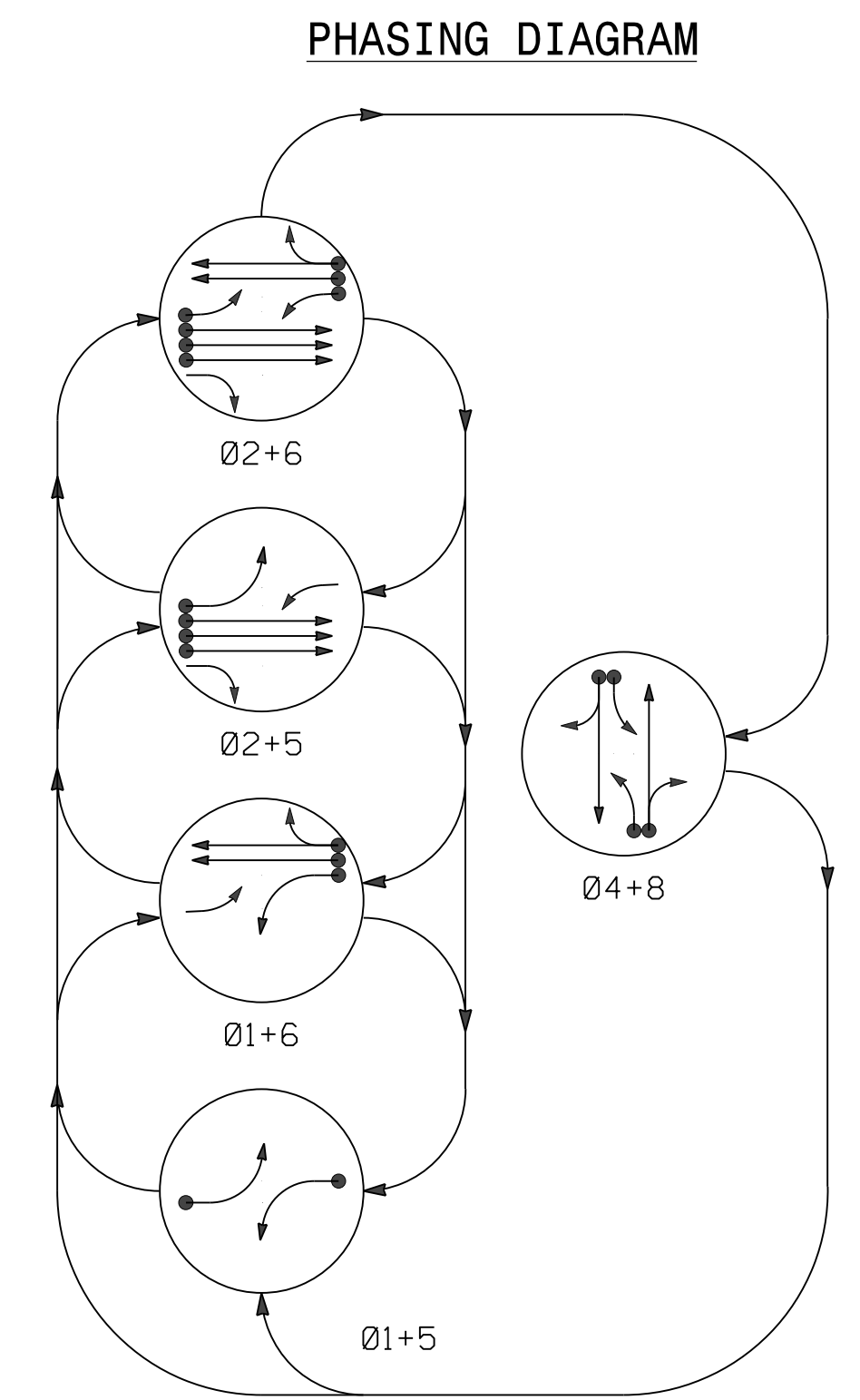
Scroll down on this screen and set "Exit Fl" to Green "G"

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328T1
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

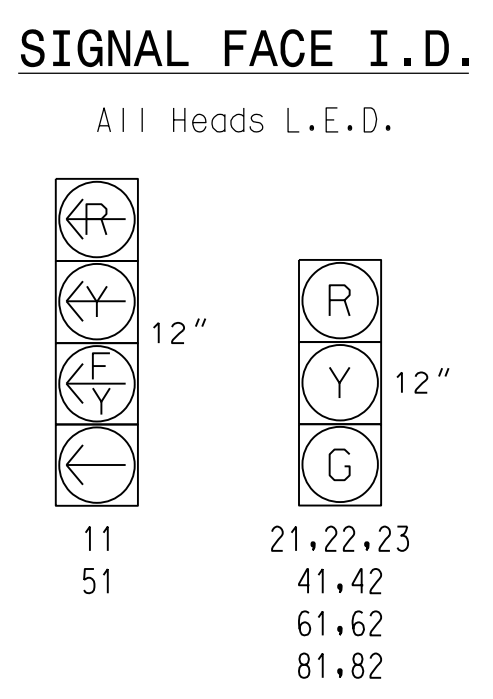
Temporary Design 1 - TMP Phase I
Electrical Detail - Sheet 2 of 2

 Stantec <small>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</small>	<small>ELECTRICAL AND PROGRAMMING DETAILS FOR:</small> <small>Prepared for the Offices of: North Carolina Department of Transportation Division 6 750 N. Greenfield Pkwy, Garner, NC 27529</small>	US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan <small>Division 6 Cumberland County Fayetteville</small>	<small>SEAL</small> <small>SEAL 029904</small>	<small>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</small>											
	<small>PLAN DATE: August 2024</small> <small>REVIEWED BY: R. Muncey, PE</small> <small>PREPARED BY: D. Waller, PE</small> <small>REVIEWED BY: J. Galloway, PE</small>	<small>SEAL</small> <small>SEAL 029904</small> <small>Signed by: Jason Galloway</small> <small>DATE: 10/8/2024</small>	<small>REVISIONS</small> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;">REVISIONS</th> <th style="width: 10%;">INIT.</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INIT.	DATE									
REVISIONS	INIT.	DATE													

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 User: JGalloway



SIGNAL FACE	PHASE					FLASH
	01+5	01+6	02+5	02+6	04+8	
11	←	←	←	←	←	
21,22,23	R	R	G	G	R	R
41,42	R	R	R	G	R	
51	←	←	←	←	←	
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R

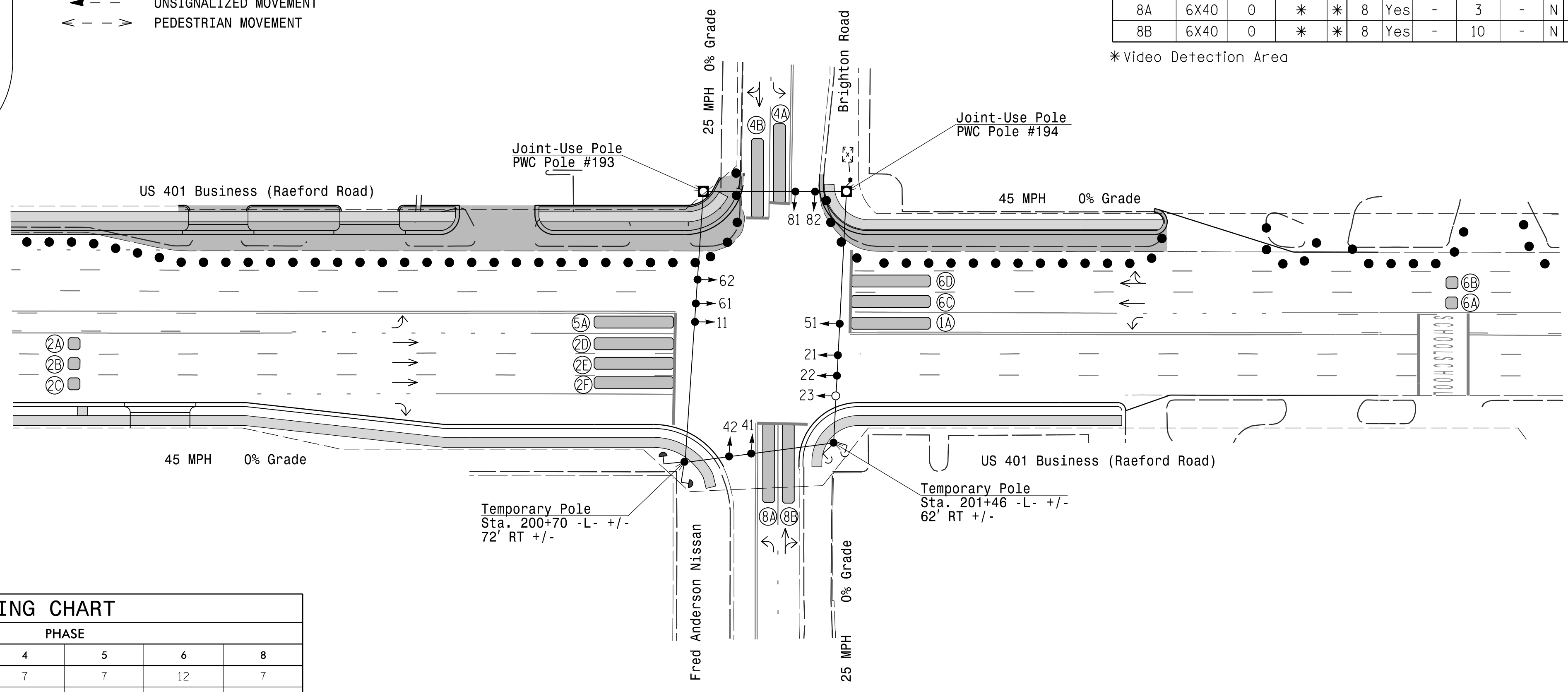
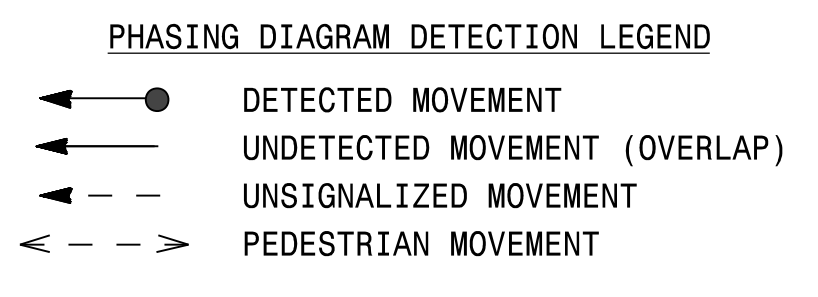


ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	*	1	Yes	-	15	-	N	-	*
					6	Yes	-	3	-	G	-	*
2A	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2C	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2E	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
2F	6X40	0	*	*	2	Yes	2.0	5	-	G	-	*
4A	6X40	0	*	*	4	Yes	-	3	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	10	-	N	-	*
5A	6X40	0	*	*	5	Yes	-	15	-	N	-	*
					2	Yes	-	3	-	G	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6C	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	-	*
8A	6X40	0	*	*	8	Yes	-	3	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	10	-	N	-	*

5 Phase Fully Actuated Fayetteville Signal System

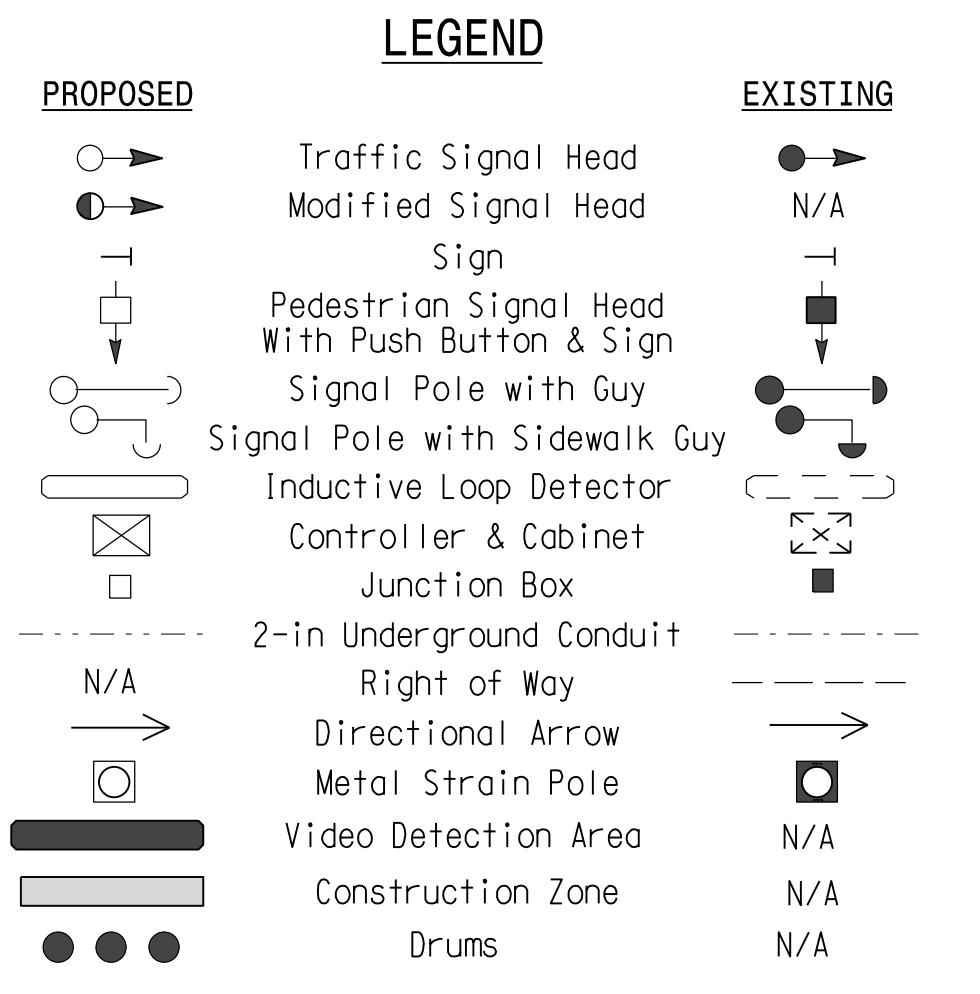
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer. Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



ASC/3 TIMING CHART						
FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	12	7	7	12	7
Delayed Green	-	-	-	-	-	-
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	25	15	90	25
Yellow	3.0	4.5	3.2	3.0	4.5	3.2
Red Clear	2.6	1.1	2.9	2.4	1.1	2.9
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	45	-	-	45	-
Minimum Gap	-	3.0	-	-	3.0	-
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade Temporary Design 2 - TMP Phase II

US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan

Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: J. Galloway, PE

PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

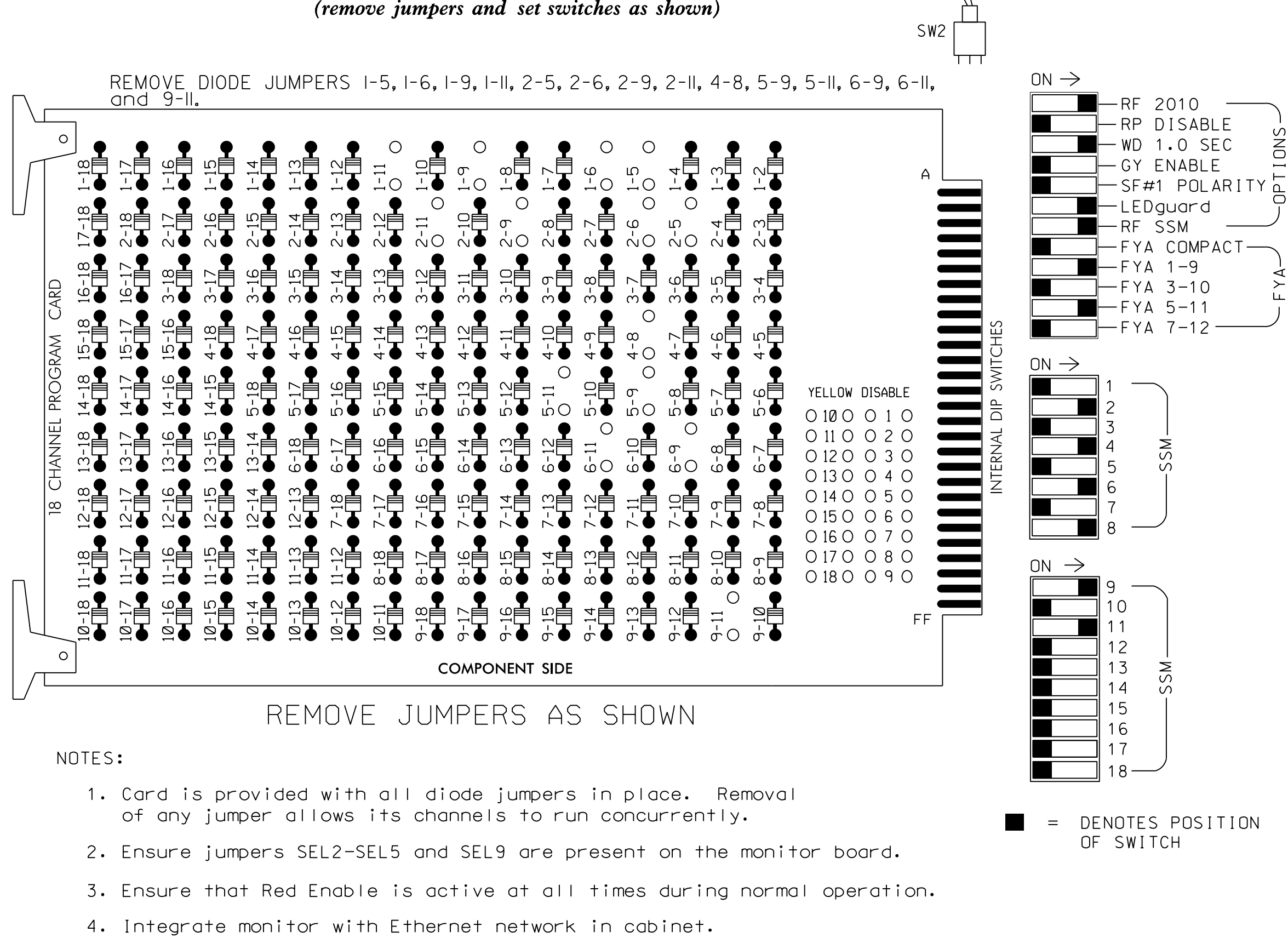
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18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11,AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

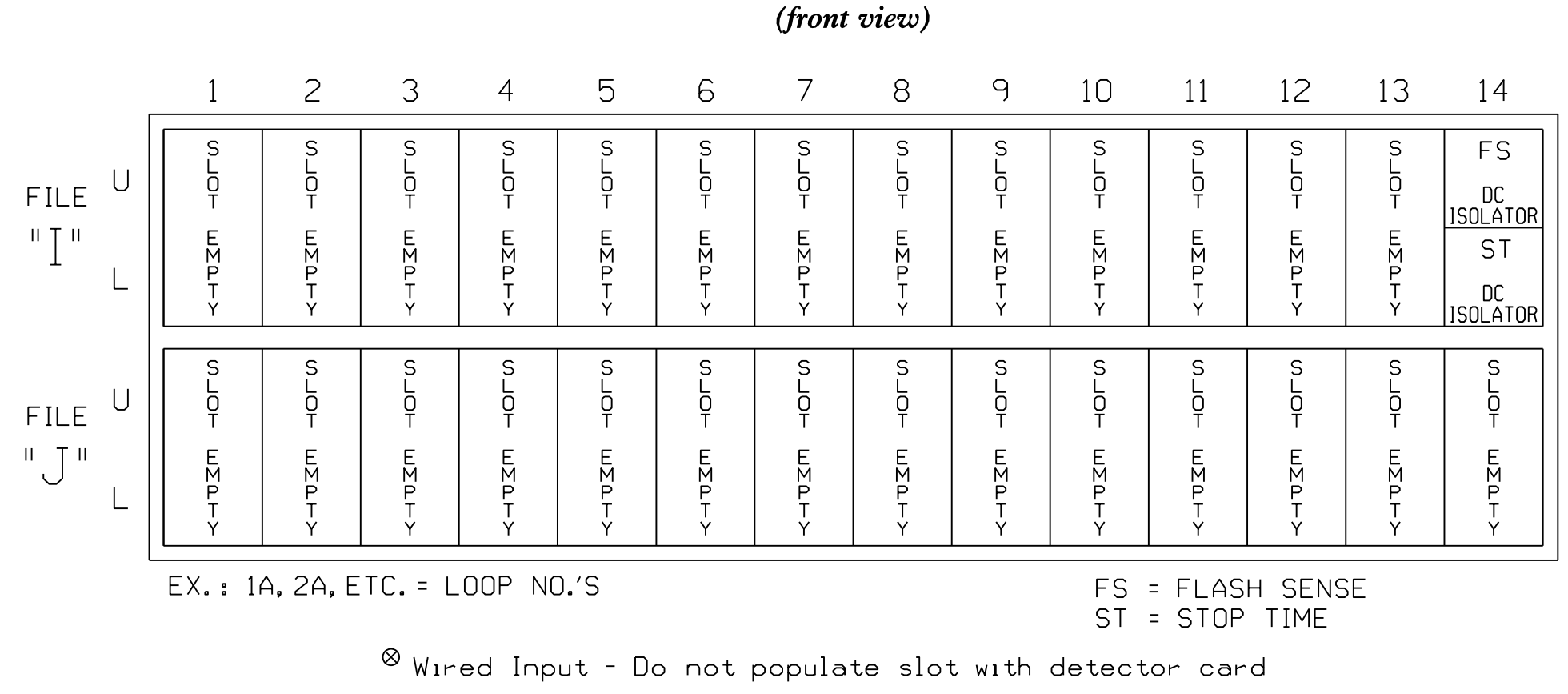
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22,23	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU	11	NU	NU	51	NU	NU
RED	128				101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW																A122		A115
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127							133										

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

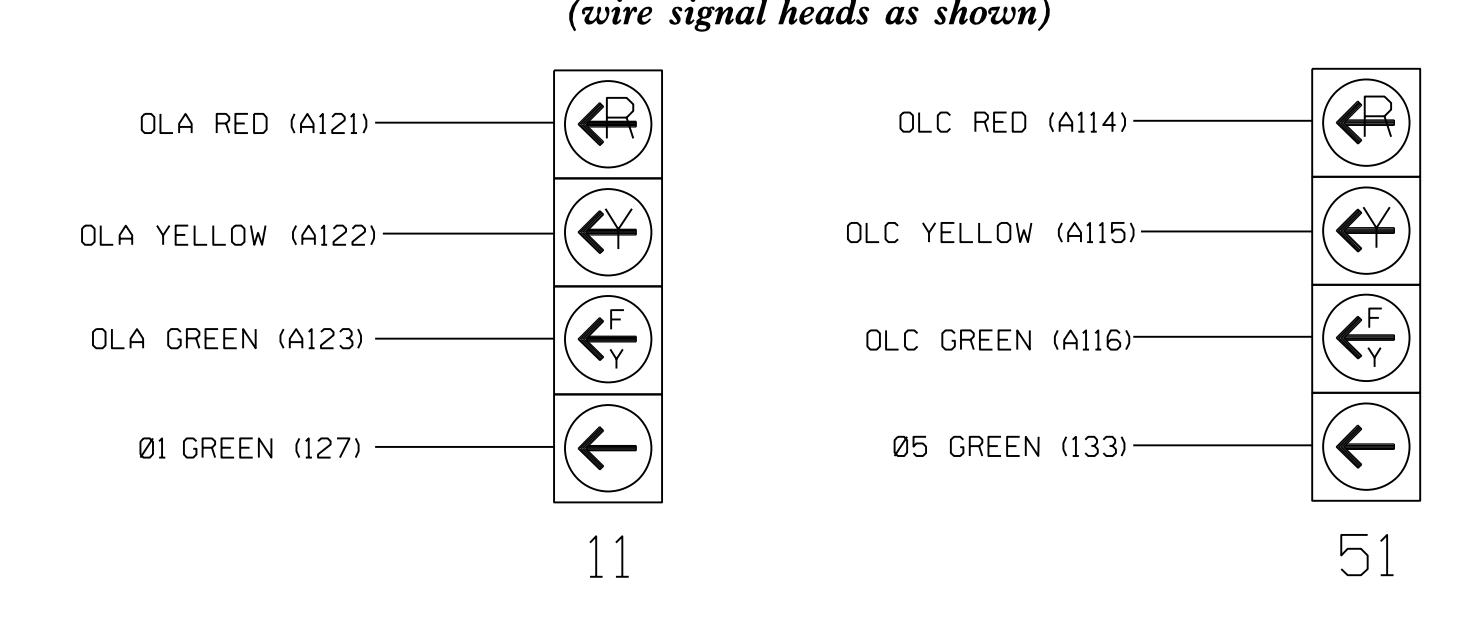
INPUT FILE POSITION LAYOUT

(from view)



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

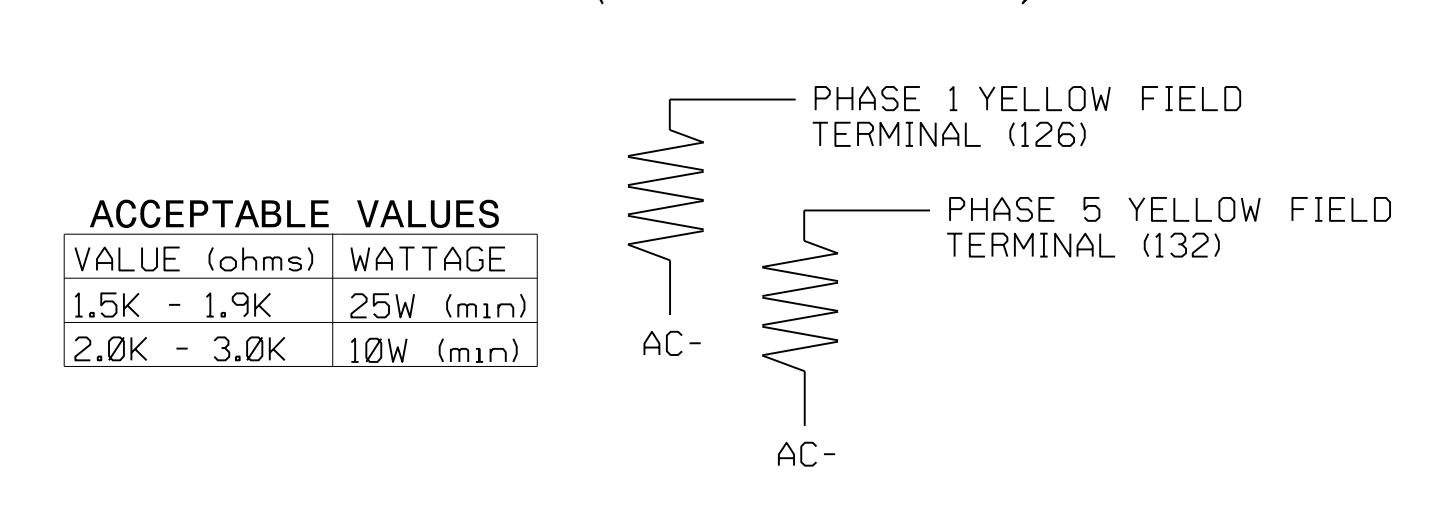


DETECTOR NOTES

- For all loops install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328T2
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

Temporary Design 2 - TMP Phase II
 Electrical Detail - Sheet 1 of 2

Stantec

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Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
 at
 Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL

SEAL 029904
 JASON P. GALLOWAY
 ENGINEER
 NORTH CAROLINA
 PROFESSIONAL ENGINEER

Signed by: Jason Galloway 10/8/2024
 DATE

SIG. INVENTORY NO. 06-0328T2

8:57:42 AM
 U:\Projects\06-0328T2\06-0328T2\06-0328T2.dgn
 User: jgalloway

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL (program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

```

OVERLAP A
Select TMG VEH OVLP [A] and 'PPLT FYA'
TMG VEH OVLP...[A] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1
  
```

NOTICE SF BIT DISABLE 1 ←

Toggle Twice

```

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5
  
```

NOTICE SF BIT DISABLE 1 ←

END PROGRAMMING

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE
  
```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL (program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **5. START/FLASH**

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      G      G
          A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO
  
```

Scroll down on this screen and set "Exit FI" to Green "G"

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0328T2
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 2 of 2

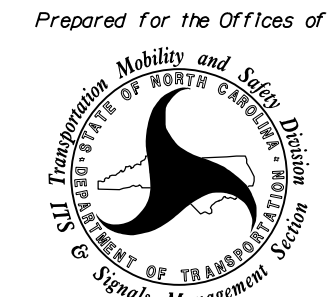
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ELECTRICAL AND PROGRAMMING
 DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
 at
 Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

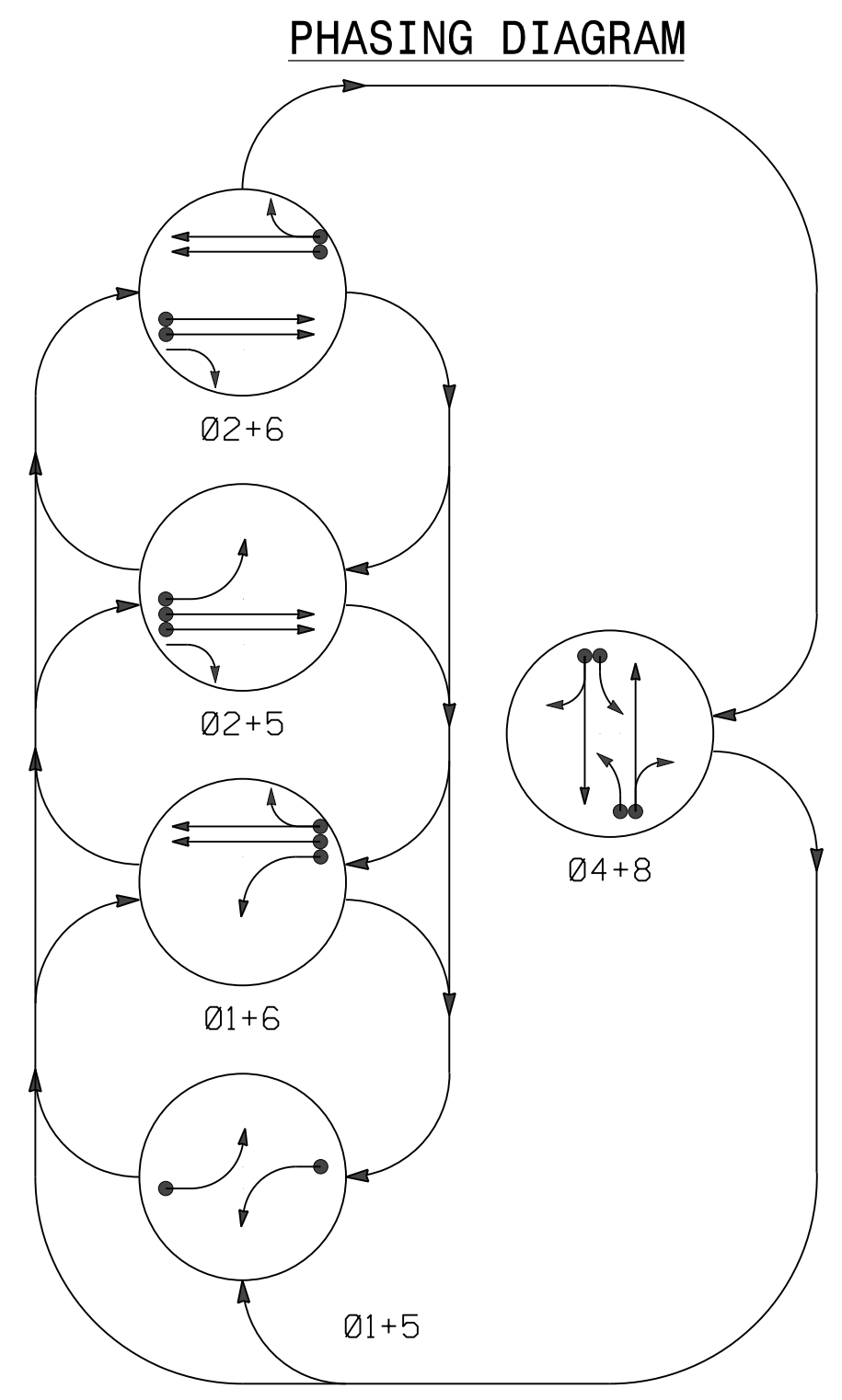
REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 029904
 J. GALLOWAY

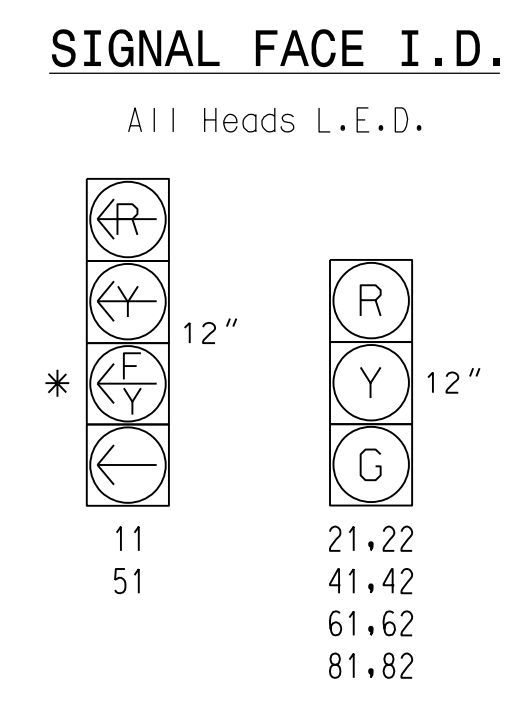
Signed by: Jason Galloway 10/8/2024
 DATE

SIG. INVENTORY NO. 06-0328T2

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User: jgalloway



SIGNAL FACE	PHASE					
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←	←	←	←	←	←
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R



* Disconnect FYA wiring on signalheads 11 and 51.

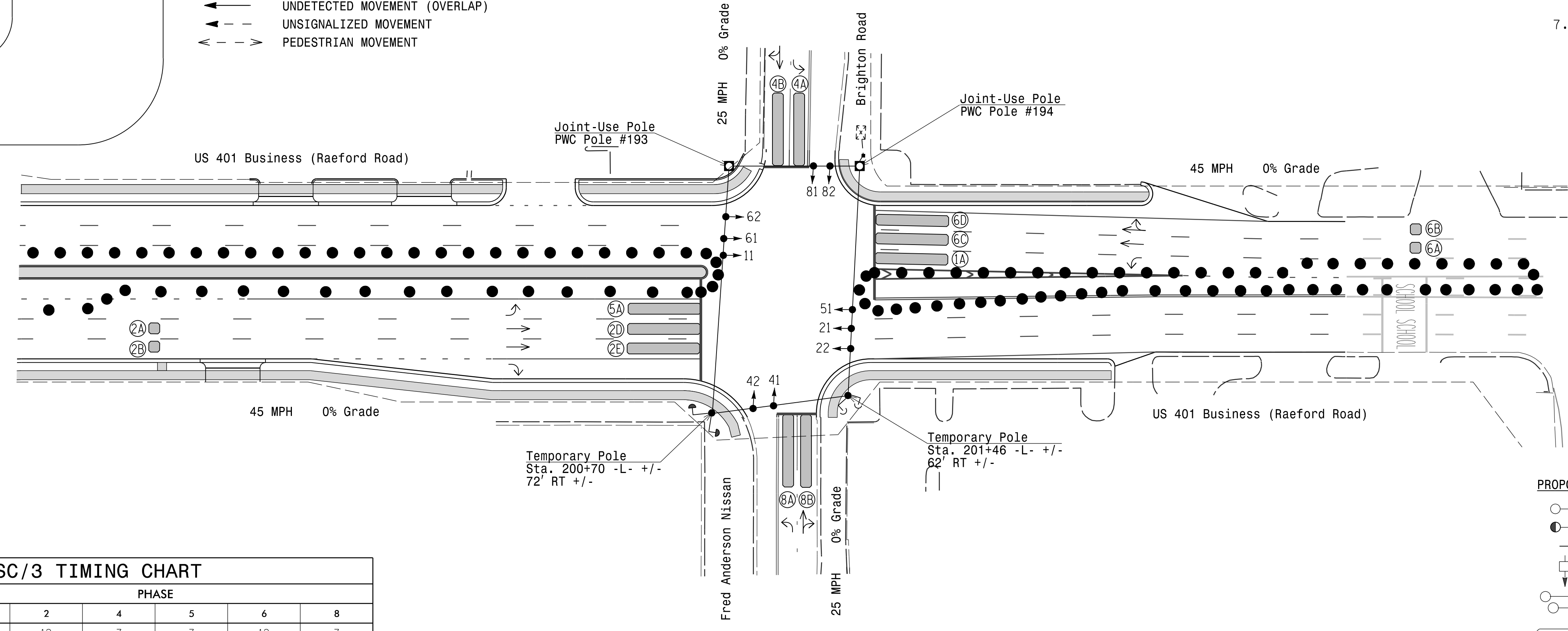
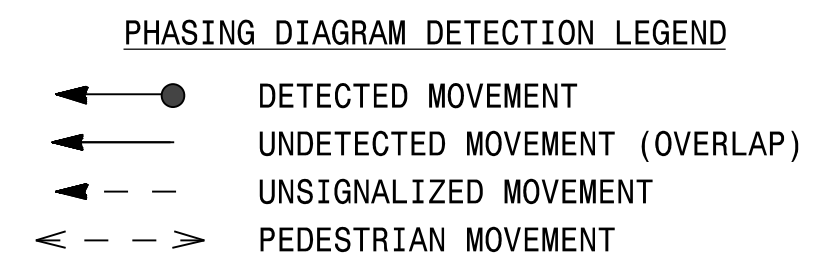
ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	URNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW CARD
1A	6X40	0	*	*	1	Yes	-	-	-	N	*
2A	6X6	300	*	*	2	Yes	-	-	-	N	*
2B	6X6	300	*	*	2	Yes	-	-	-	N	*
2C	6X40	0	*	*	2	Yes	2.0	5	-	G	*
2D	6X40	0	*	*	2	Yes	2.0	5	-	G	*
4A	6X40	0	*	*	4	Yes	-	3	-	N	*
4B	6X40	0	*	*	4	Yes	-	10	-	N	*
5A	6X40	0	*	*	5	Yes	-	-	-	N	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	*
6B	6X6	300	*	*	6	Yes	-	-	-	N	*
6C	6X40	0	*	*	6	Yes	2.0	5	-	G	*
6D	6X40	0	*	*	6	Yes	2.0	5	-	G	*
8A	6X40	0	*	*	8	Yes	-	3	-	N	*
8B	6X40	0	*	*	8	Yes	-	10	-	N	*

* Video Detection Area

5 Phase Fully Actuated Fayetteville Signal System

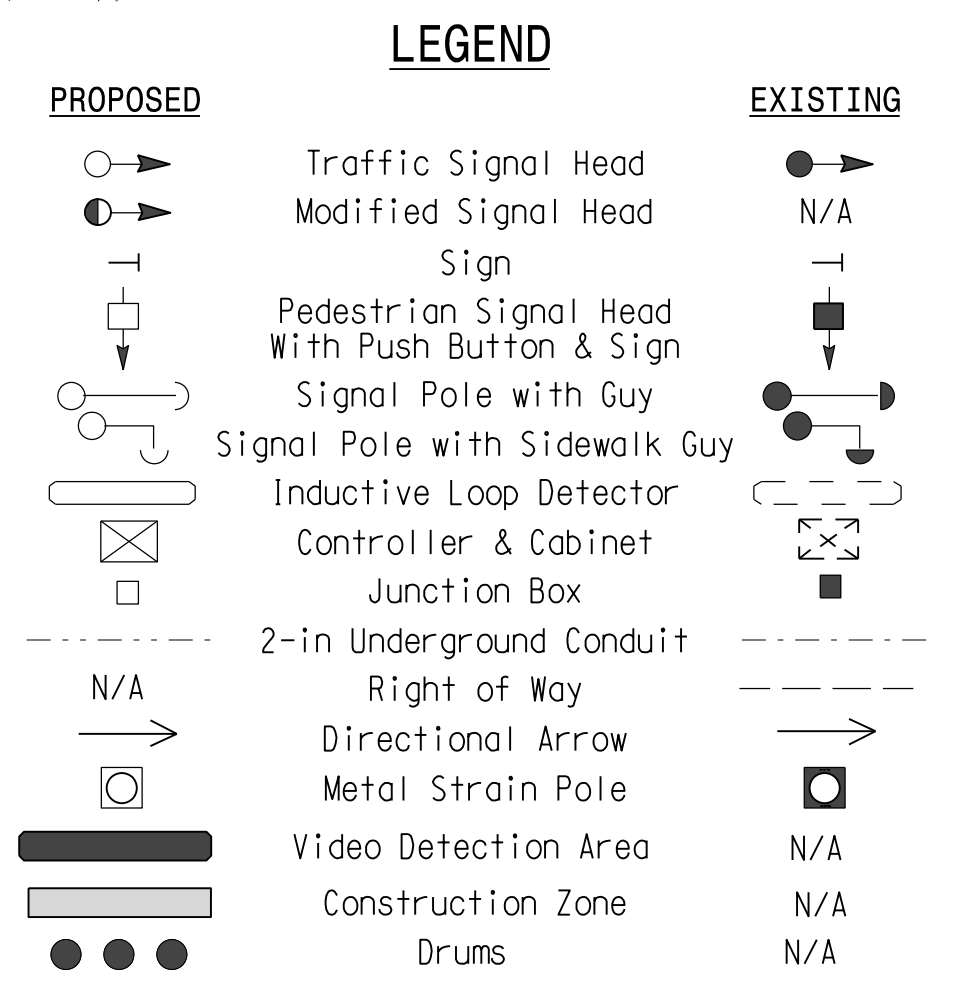
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2034.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer. Phase 1 and/or phase 5 may be lagged.
- Reposition existing signal heads numbered #11, 21, 22, 51, 61, and 62.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green *	7	12	7	7	12	7	
Delayed Green	-	-	-	-	-	-	
Walk *	-	-	-	-	-	-	
Ped Clear	-	-	-	-	-	-	
Veh. Extension *	2.0	6.0	2.0	2.0	6.0	2.0	
Max I *	15	90	25	15	90	25	
Yellow	3.0	4.5	3.2	3.0	4.5	3.2	
Red Clear	3.2	1.0	3.2	3.1	1.0	3.2	
Red Revert	-	-	-	-	-	-	
Actuations B4 Add *	-	-	-	-	-	-	
Seconds /Actuation *	-	-	-	-	-	-	
Max Initial *	-	-	-	-	-	-	
Time Before Reduction *	-	15	-	-	15	-	
Time To Reduce *	-	45	-	-	45	-	
Minimum Gap	-	3.0	-	-	3.0	-	
Locking Detector	-	-	-	-	-	-	
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-	
Dual Entry	-	-	X	-	-	X	
Simultaneous Gap	X	X	X	X	X	X	

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade Temporary Design 3 - TMP Phase III

US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan

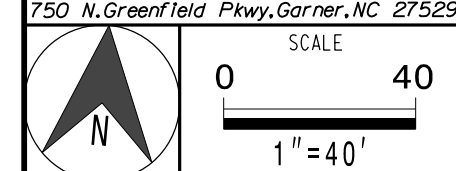
Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: J. Galloway, PE

PREPARED BY: D. Waller, PE REVIEWED BY: R. Muncy, PE

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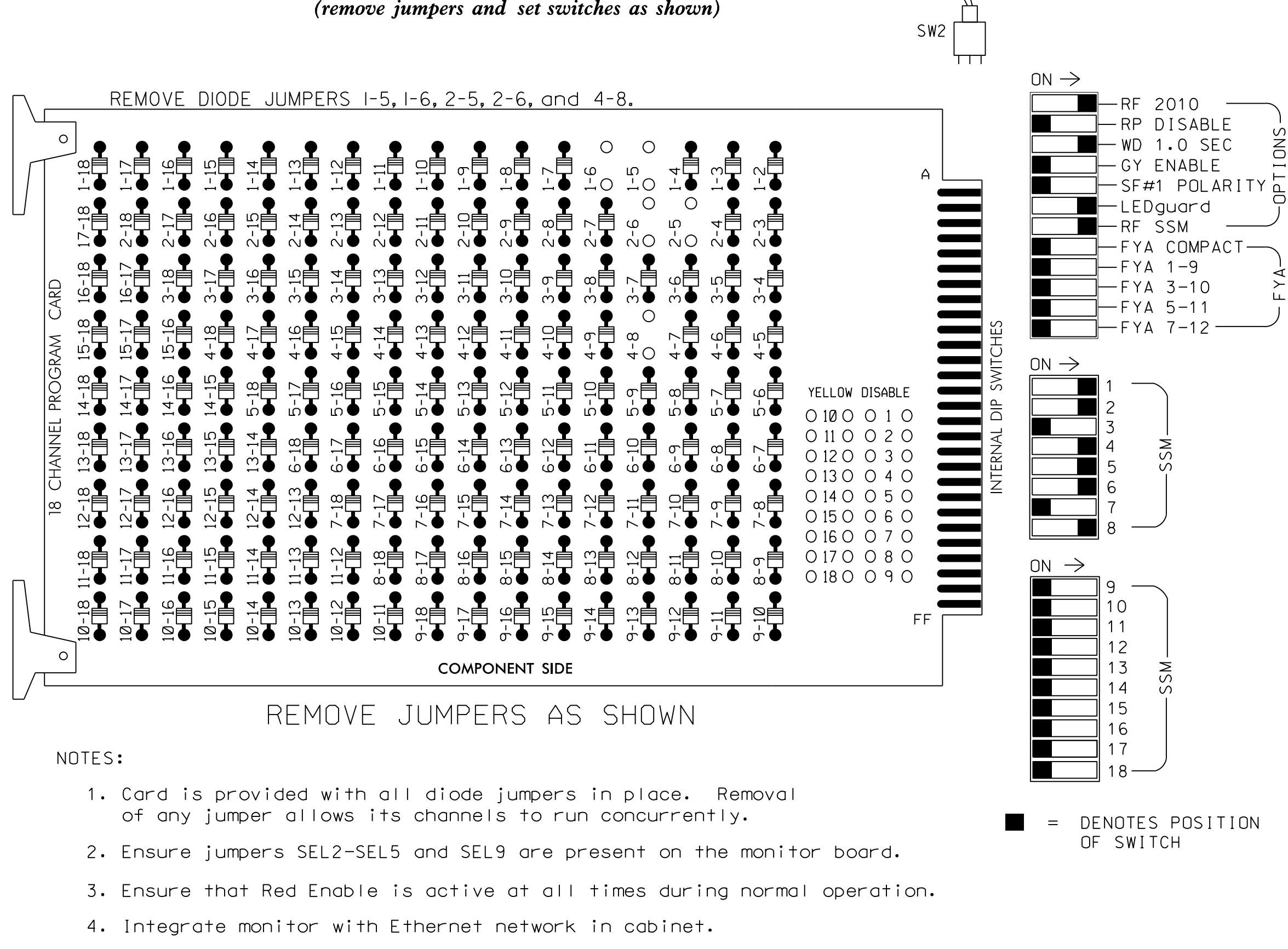


REVISIONS	INIT.	DATE

Signed by: J. Galloway 10/8/2024
 PROJECT NO. 4405B SHEET NO. SIG-26.0
 DATE 10/8/2024
 SIG. INVENTORY NO. 06-032813

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Return Controller to Factory Defaults before programming per this electrical detail.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

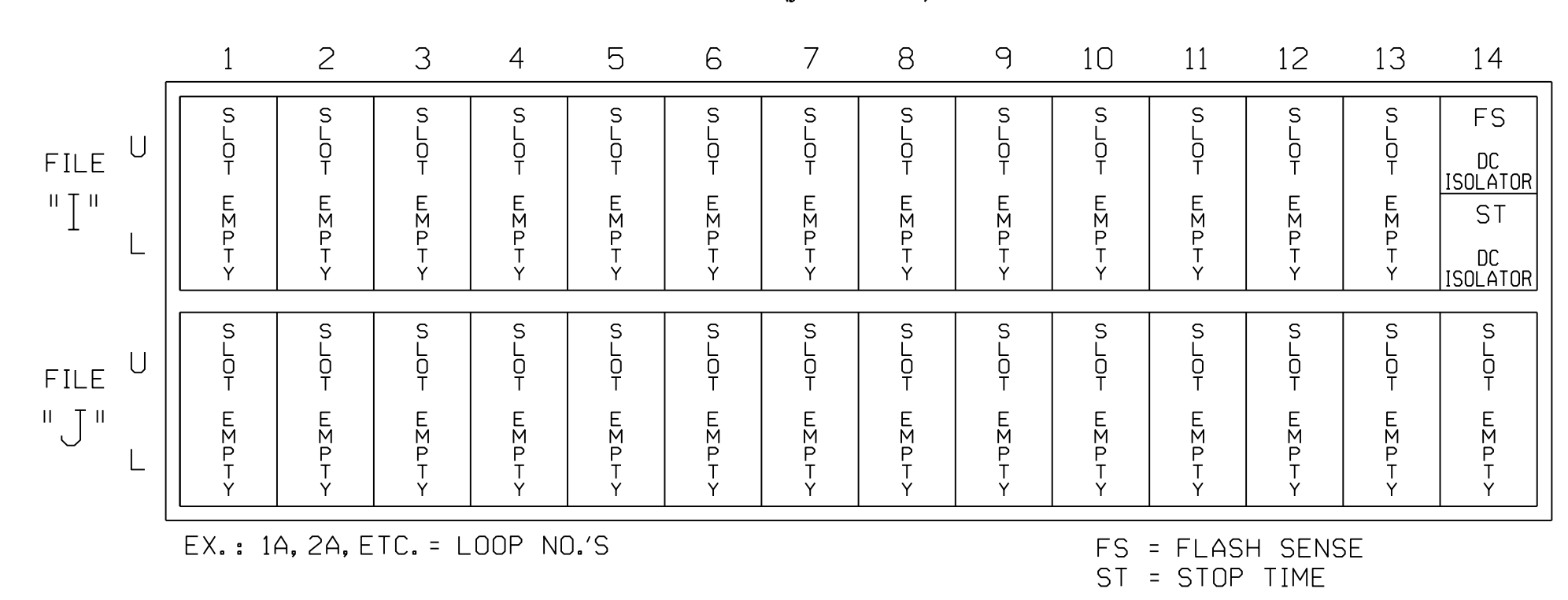
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CHU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	NU	41,42	NU	51★	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125							131										
YELLOW ARROW	126							132										
GREEN ARROW	127							133										

NU = Not Used
 ★ See pictorial of head wiring in detail this sheet.

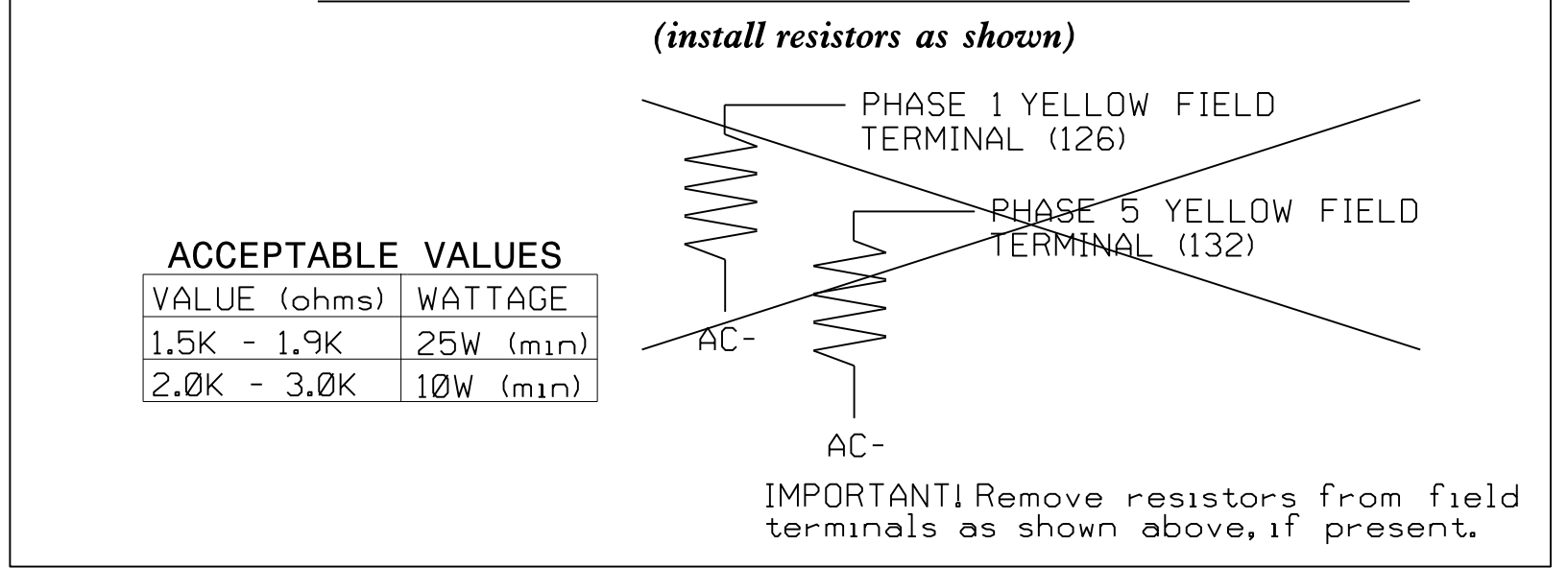
INPUT FILE POSITION LAYOUT

(front view)



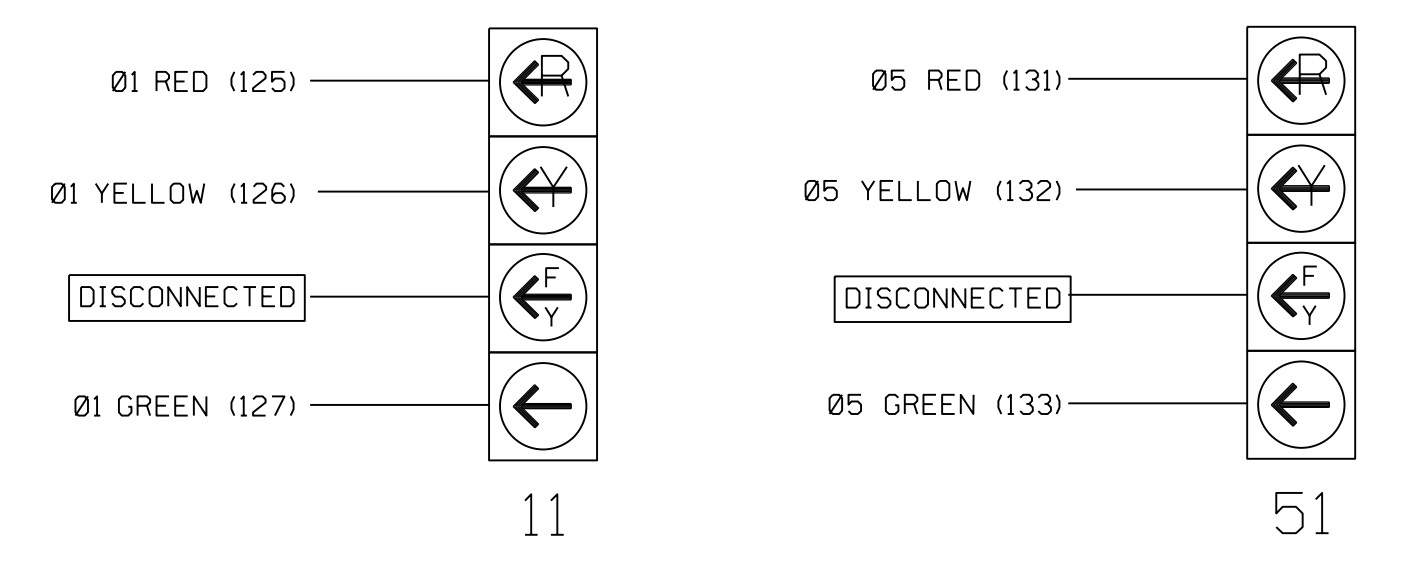
LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328T3
 DESIGNED: AUG 2024
 SEALED: 10/8/2024
 REVISED: N/A

DETECTOR NOTES

- For all loops install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

Temporary Design 3 - TMP Phase III
 Electrical Detail - Sheet 1 of 2

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 at
 Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

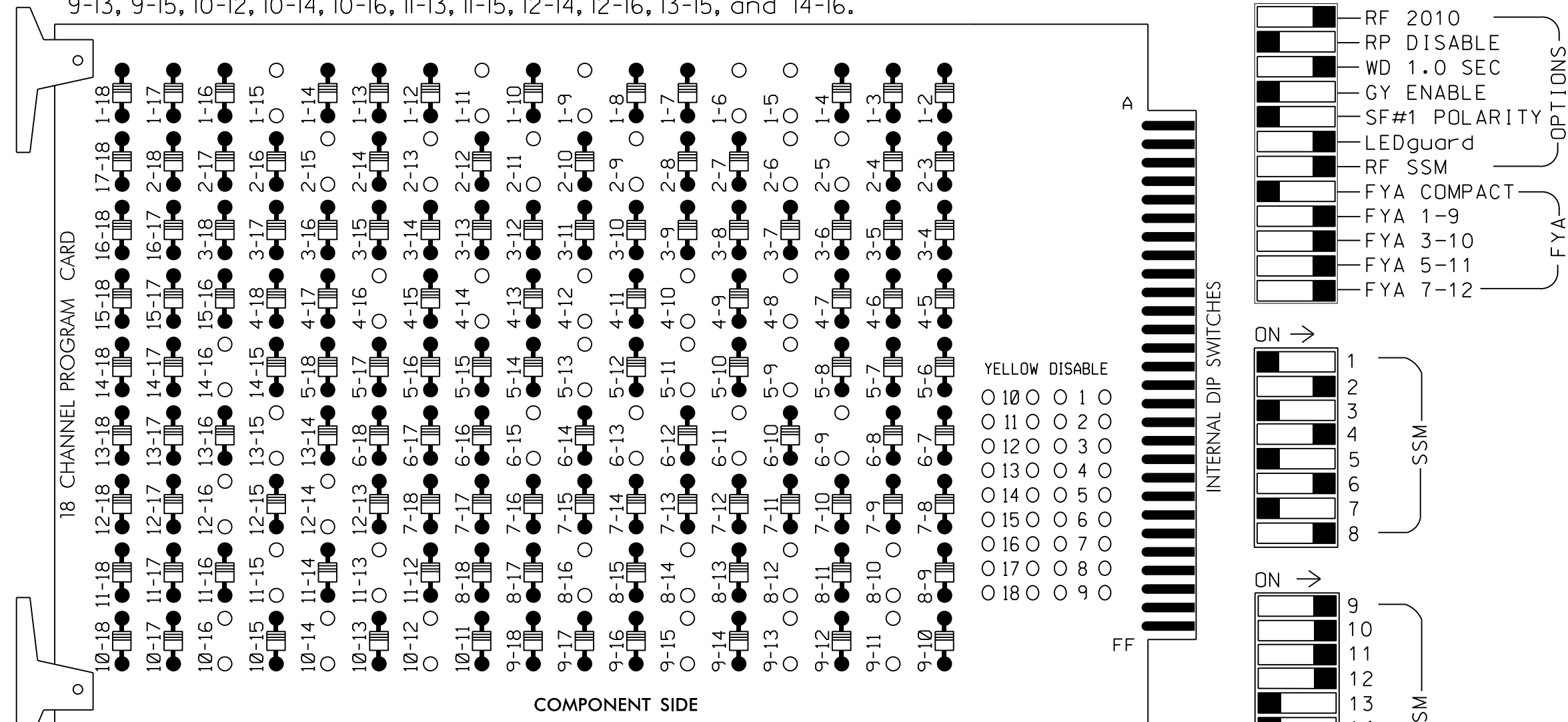
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 029904
 J. GALLOWAY
 10/8/2024
 DATE
 SIG. INVENTORY NO. 06-0328T3

8:58:20 AM
 U:\Projects\Signal Systems - U-4405B\Drawings\Electrical\Detail\18 Channel IP Conflict Monitor\18 Channel IP Conflict Monitor.dgn
 User: JGalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

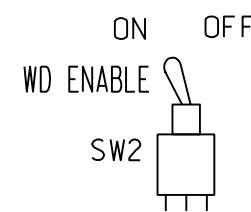
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

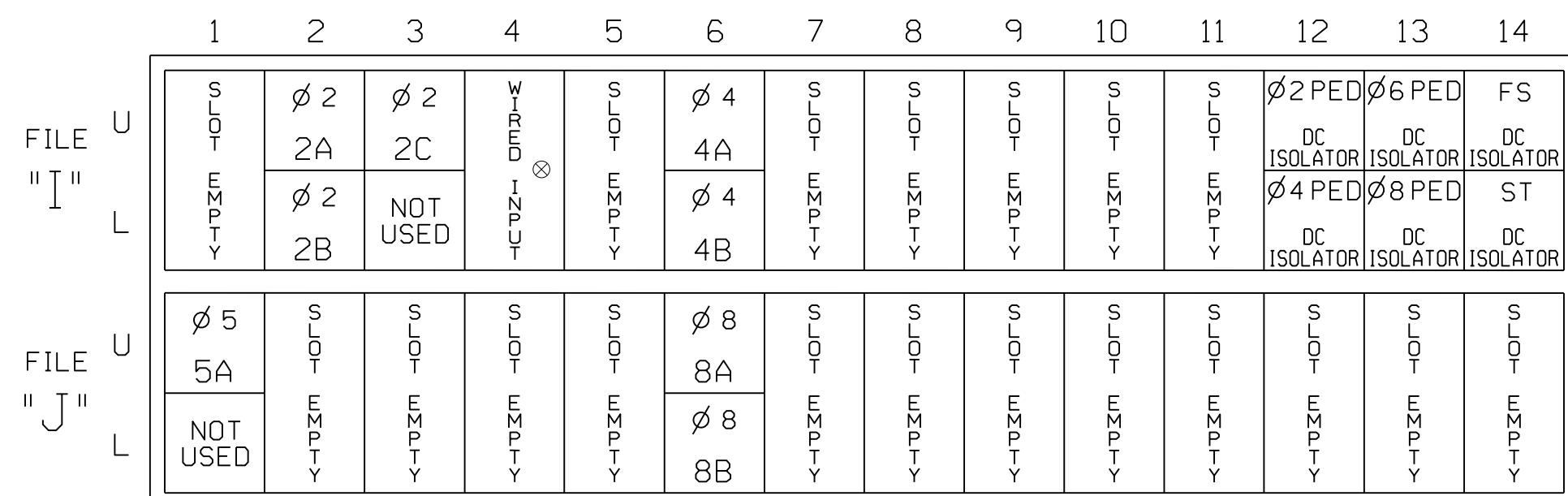
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22,23	P21,P22	NU	42,43	P41,P42	51	61,62,63	P61,P62	NU	82,83	P81,P82	11	81	NU	51	41	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127							133										
Hand icon					113			104			119		110					
Person icon					115			106			121		112					

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT (front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
4B	TB4-11,12	I6L	45	14	4	YES		10		N
5A ¹	TB3-1,2	J1U	55	5 ★	5	YES		15		N
		I4U	47	22 ★	2	YES				G
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

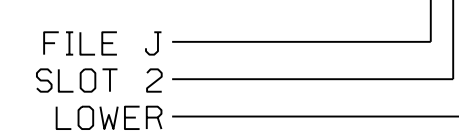
NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

¹Add jumper from J1-W to I4-W, on rear of input file.

★ See vehicle detector setup programming detail for alternate phasing on sheet 3.

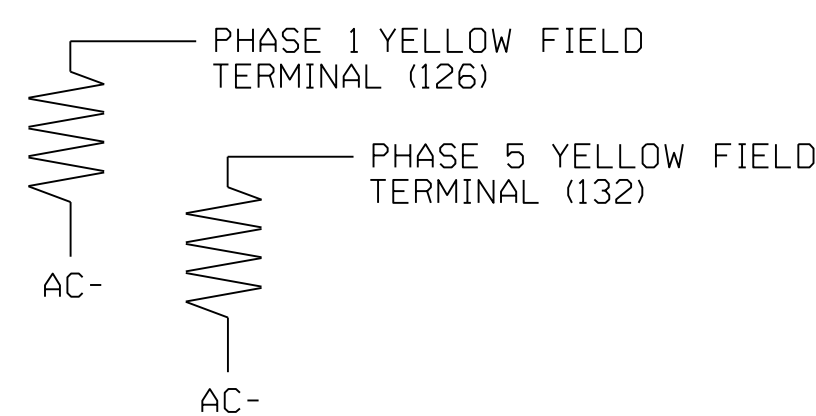
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



DETECTOR NOTES

- For all loops 1A, 6A, 6B, and 6C install a video detection system for vehicle detection. Per form installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

Final Design
 Electrical Detail - Sheet 1 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road) at Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville
 PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 029904
 JASON GALLOWAY
 3/10/2025
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0328

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12:05:10 PM U:\Projects\Signal\U-4405B\Drawings\elec\Detail\18\Final_Design\U-4405B.sig.dwg User: jgalloway

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1
  
```

Toggle Once

← NOTICE ACTION PLAN SF BIT "1"

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5
  
```

Toggle Once

← NOTICE ACTION PLAN SF BIT "5"

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

END PROGRAMMING

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, and 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, and 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1, AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,5: Modifies overlap parent phases for heads 11, and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0328
 DESIGNED: Aug 2024
 SEALED: 3/10/2025
 REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 5

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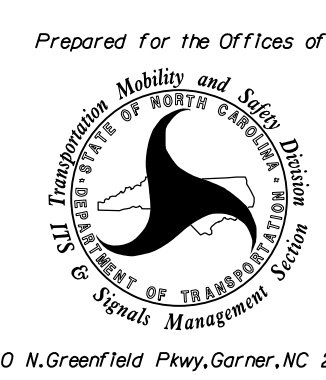
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.



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ELECTRICAL AND PROGRAMMING
 DETAILS FOR:



Prepared for the Offices of:
 Transportation, Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 STATE OF NORTH CAROLINA
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
 at
 Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
 PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

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 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 029904
 Jason Galloway
 3/10/2025

SIG. INVENTORY NO. 06-0328

12:05:20 PM U:\Projects\Signal\Signal - U-4405B\Drawings\electrical\Detail\Signal - U-4405B.dwg User: jgalloway

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP

PROGRAMMING DETAIL FOR ALTERNATE PHASING

LOOPS 1A, 5A

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```
COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "3".

```
VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
CALL OPTION.... YES DELAY TIME... 3.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY- NO
```

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```
VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

```
VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY- NO
```

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

```
VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
CALL OPTION.... YES DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN

PROGRAMMING DETAIL

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```
ACTION PLAN... [ *]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY.... NO
PMT COND DELAY  NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL . . . . .
WALK 2 . . . . .
VEX 2 . . . . .
VEH RCL . . . . .
MAX RCL . . . . .
MAX 2 . . . . .
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3 . . . . .
CS INH . . . . .
OMIT . . . . .
SPC FCT X . . . X . . . (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15 . . . . .
LP 16-30 . . . . .
LP 31-45 . . . . .
LP 46-60 . . . . .
LP 61-75 . . . . .
LP 76-90 . . . . .
LP 91-100 . . . . .
```

* The Action Plan numbers are to be determined by the Division and/or City Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328
DESIGNED: Aug 2024
SEALED: 3/10/2025
REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 5

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Prepared for the Offices of:
North Carolina State Department of Transportation
Division of Traffic Management

US 401 Business (Raeford Road)
at
Brighton Road/
Fred Anderson Nissan
Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024	REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE	REVIEWED BY: J. Galloway, PE
REVISIONS	INIT. DATE

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NORTH CAROLINA
PROFESSIONAL ENGINEER
JASON P. GALLOWAY
3/10/2025
DATE
SIG. INVENTORY NO. 06-0328

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User: jgalloway

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR LEADING PED INTERVAL (DELAYED GREEN)

(program controller as shown)

The following logic processor configuration holds the FYA's on signal heads 11, 41, 51 and 81 red for the duration of the delayed green time (leading ped interval) when serving a ped call on the opposing through phase.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From the LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

ENTER A "1" IN THE LP# FIELD. PRESS 'ENTER'. AND PROGRAM AS SHOWN.

```

LP#: 1 COPY FROM: 1 ACTIVE: M (T/F)
IF PED ON PH WALK 2 IS ON
AND VEH GREEN ON PH 2 IS OFF

THEN SIG SET OLP RED 1 ON
SIG SET OLP YELLOW 1 OFF
SIG SET OVLP GREEN 1 OFF

ELSE

```

HOLD SIGNAL HEAD 11 FYA RED DURING THE PHASE 2 DELAYED GREEN TIME (LEADING PED INTERVAL)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From the LOGIC PROCESSOR Submenu select **1. LOGIC STATEMENT CONTROL**

ENABLE LOGIC PROCESSOR STATEMENTS 1-4 BY POSITIONING THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE THEM .

LOGIC STATEMENT CONTROL	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
LP 1-15	E	E	E	E	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90

ENTER A "2" IN THE LP# FIELD. PRESS 'ENTER'. AND PROGRAM AS SHOWN.

```

LP#: 2 COPY FROM: 2 ACTIVE: M (T/F)
IF PED ON PH WALK 4 IS ON
AND VEH GREEN ON PH 4 IS OFF

THEN SIG SET OLP RED 2 ON
SIG SET OLP YELLOW 2 OFF
SIG SET OVLP GREEN 2 OFF

ELSE

```

HOLD SIGNAL HEAD 81 FYA RED DURING THE PHASE 4 DELAYED GREEN TIME (LEADING PED INTERVAL)

END PROGRAMMING

ENTER A "3" IN THE LP# FIELD. PRESS 'ENTER'. AND PROGRAM AS SHOWN.

```

LP#: 3 COPY FROM: 3 ACTIVE: M (T/F)
IF PED ON PH WALK 6 IS ON
AND VEH GREEN ON PH 6 IS OFF

THEN SIG SET OLP RED 3 ON
SIG SET OLP YELLOW 3 OFF
SIG SET OVLP GREEN 3 OFF

ELSE

```

HOLD SIGNAL HEAD 51 FYA RED DURING THE PHASE 6 DELAYED GREEN TIME (LEADING PED INTERVAL)

ENTER A "4" IN THE LP# FIELD. PRESS 'ENTER'. AND PROGRAM AS SHOWN.

```

LP#: 4 COPY FROM: 4 ACTIVE: M (T/F)
IF PED ON PH WALK 8 IS ON
AND VEH GREEN ON PH 8 IS OFF

THEN SIG SET OLP RED 4 ON
SIG SET OLP YELLOW 4 OFF
SIG SET OVLP GREEN 4 OFF

ELSE

```

HOLD SIGNAL HEAD 41 FYA RED DURING THE PHASE 8 DELAYED GREEN TIME (LEADING PED INTERVAL)


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328
DESIGNED: Aug 2024
SEALED: 3/10/2025
REVISED: N/A

Final Design
Electrical Detail - Sheet 4 of 5



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ELECTRICAL AND PROGRAMMING DETAILS FOR:



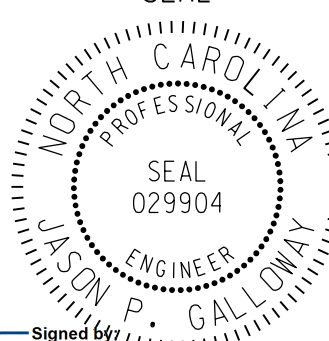
Prepared for the Offices of:
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US 401 Business (Raeford Road)
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Division 6 Cumberland County Fayetteville

PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE
PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Signed by: Jason P. Galloway
DATE: 3/10/2025
SIG. INVENTORY NO. 06-0328

12:05:28 PM U:\Projects\Signal\Signal - U-4405B\Drawings\Electrical\Detail\Signal Detail.dwg User: jgalloway

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select 2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "c" key. then hit "ENTER". select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE
  
```

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 5. START/FLASH

```

START/FLASH DATA
-----START UP-----
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      G      G
          A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO
  
```

Scroll down on this screen and set "Exit FI" to Green "G"

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0328
 DESIGNED: Aug 2024
 SEALED: 3/10/2025
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 5 of 5

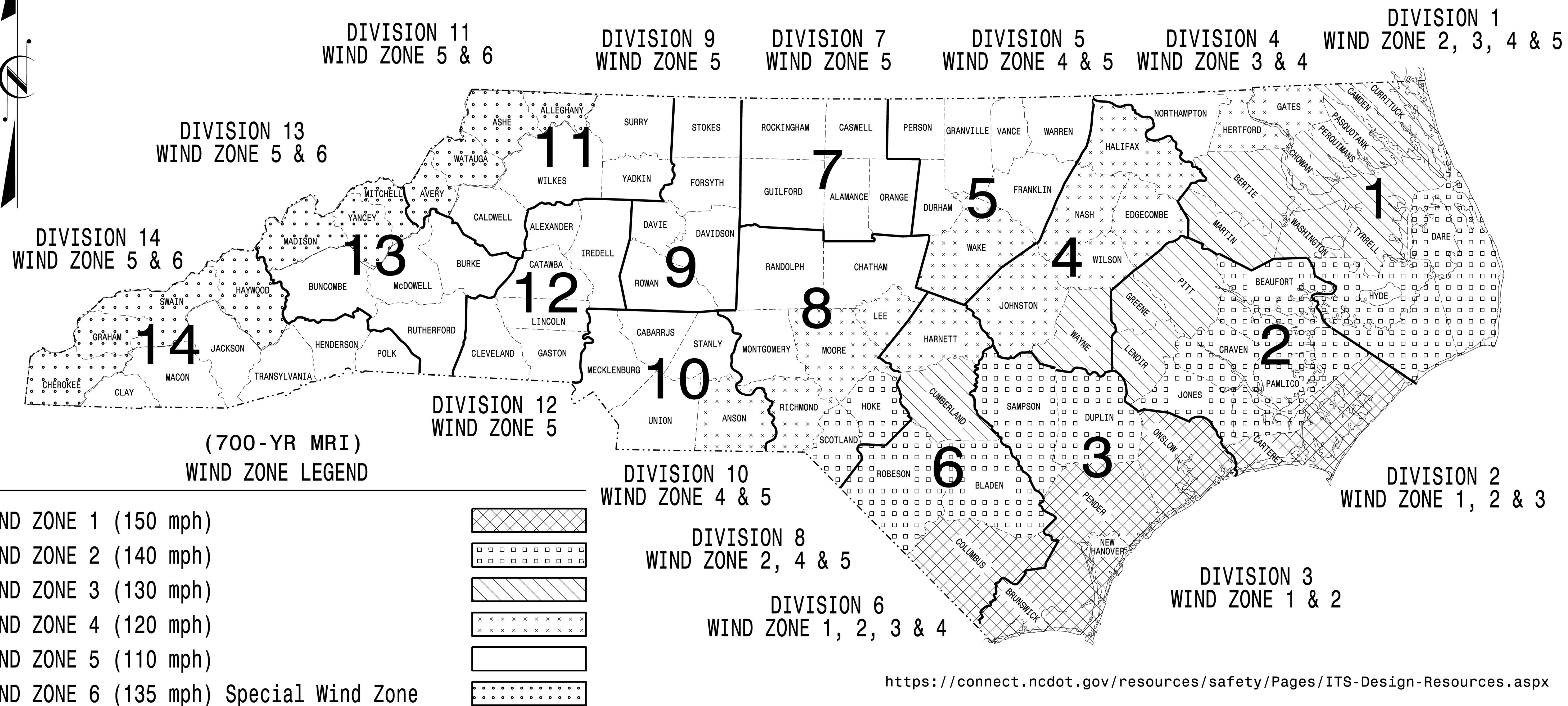
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

 Stantec	ELECTRICAL AND PROGRAMMING DETAILS FOR:	US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER JASON P. GALLOWAY 029904
	Prepared for the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	Division 6 Cumberland County Fayetteville PLAN DATE: August 2024 REVIEWED BY: R. Muncey, PE PREPARED BY: D. Waller, PE REVIEWED BY: J. Galloway, PE	REVISIONS INIT. DATE _____ _____ _____	Signed by: Jason Galloway 3/11/2025 SEAL RELEASE DATE SIG. INVENTORY NO. 06-0328

10:35:26 AM
 U:\Projects\Signal\Signal - U-4405B\Drawings\Electrical\Detail\Signal - U-4405B.sig.dwg, 06-0328.dgn
 User: jhambri

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

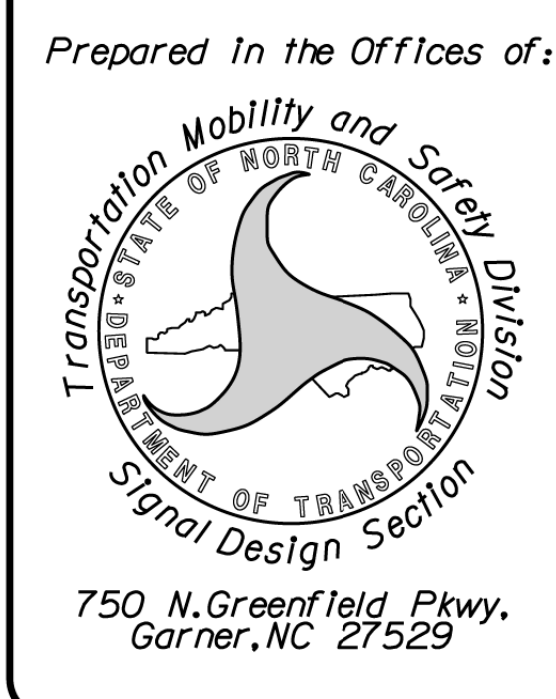
STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

NCDOT METAL POLE STANDARDS

03-DOCT-2023 12:07 S:\ITS&SI\ITS_Signals\Signal Design\Sections\Structures\Drawings\2024_Metal_Pole_Std Drawings for LRFD\2024_Sig_M1A_Standard All Metal Pole (700-yr MRI).dgn kcdurigon



Designed in conformance with the latest 2020 Interim to the 1st Edition 2015
AASHTO LRFD
Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

DRAWING NUMBER	INDEX OF PLANS DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700-yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10-yr MRI)
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions
Sig. M 9	Typical Fabrication Details-CCTV Camera Poles

MOBILITY AND SAFETY DIVISION - TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

D.Y. ISHAK - STATE SIGNALS ENGINEER

K. DURIGON, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

B. WALKER, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

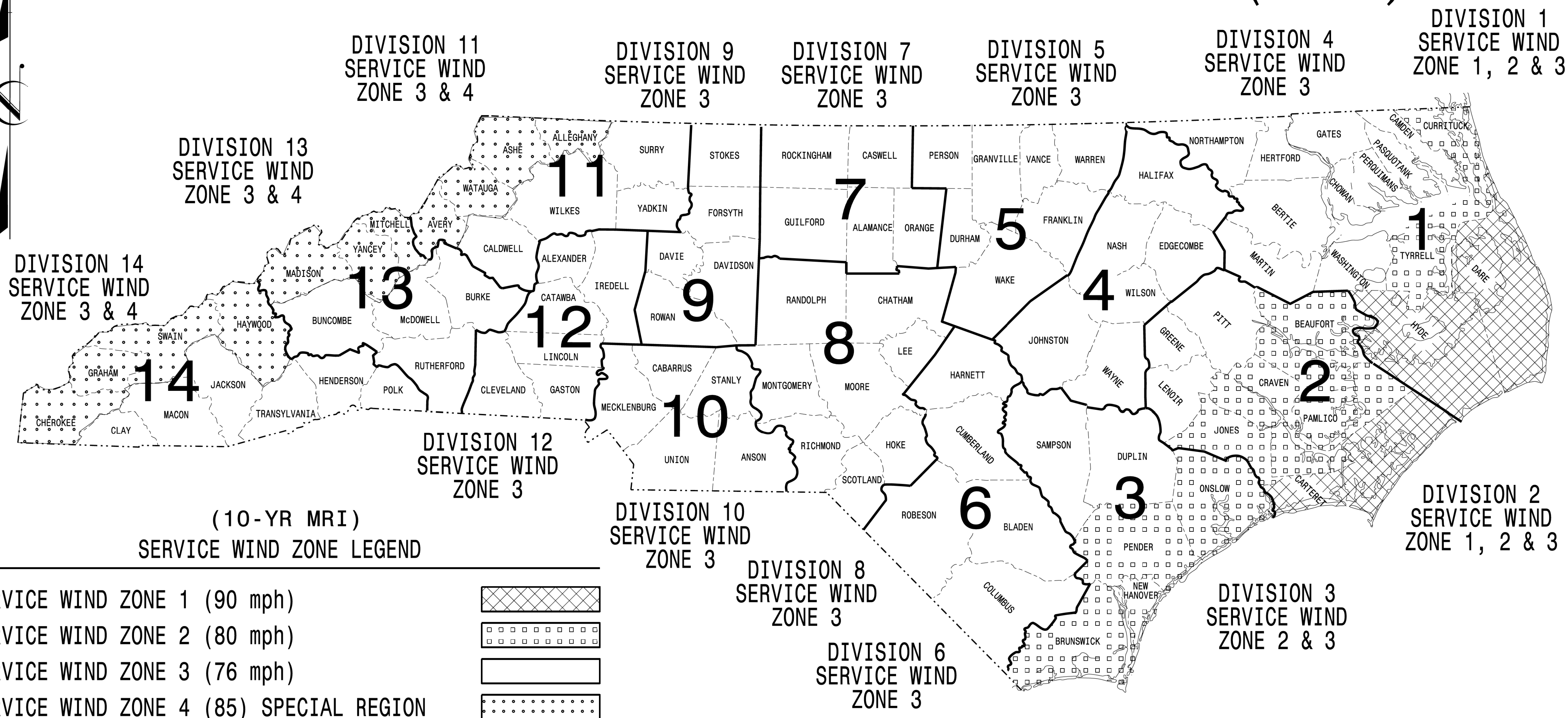
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3764DA

09/21/2023
DATE

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

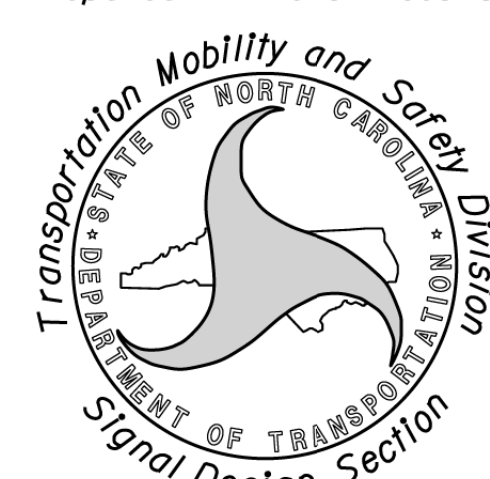
STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared in the Offices of:



750 N. Greenfield Pkwy.
Garner, NC 27529

Designed in conformance
with the latest
2020 Interim to the
1st Edition 2015

AASHTO LRFD

Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

**DRAWING
NUMBER**

**INDEX OF PLANS
DESCRIPTION**

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Sig. M 3	Typical Fabrication Details-Strain Poles
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Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions
Sig. M 9	Typical Fabrication Details-CCTV Camera Poles

NCDOT CONTACTS:

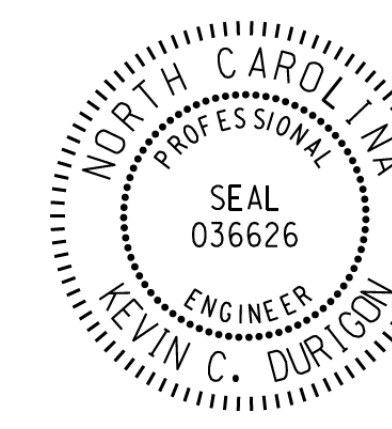
**MOBILITY AND SAFETY DIVISION -
TRANSPORTATION SYSTEMS MANAGEMENT
AND OPERATIONS UNIT**

D.Y. ISHAK - STATE SIGNALS ENGINEER

K. DURIGON, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

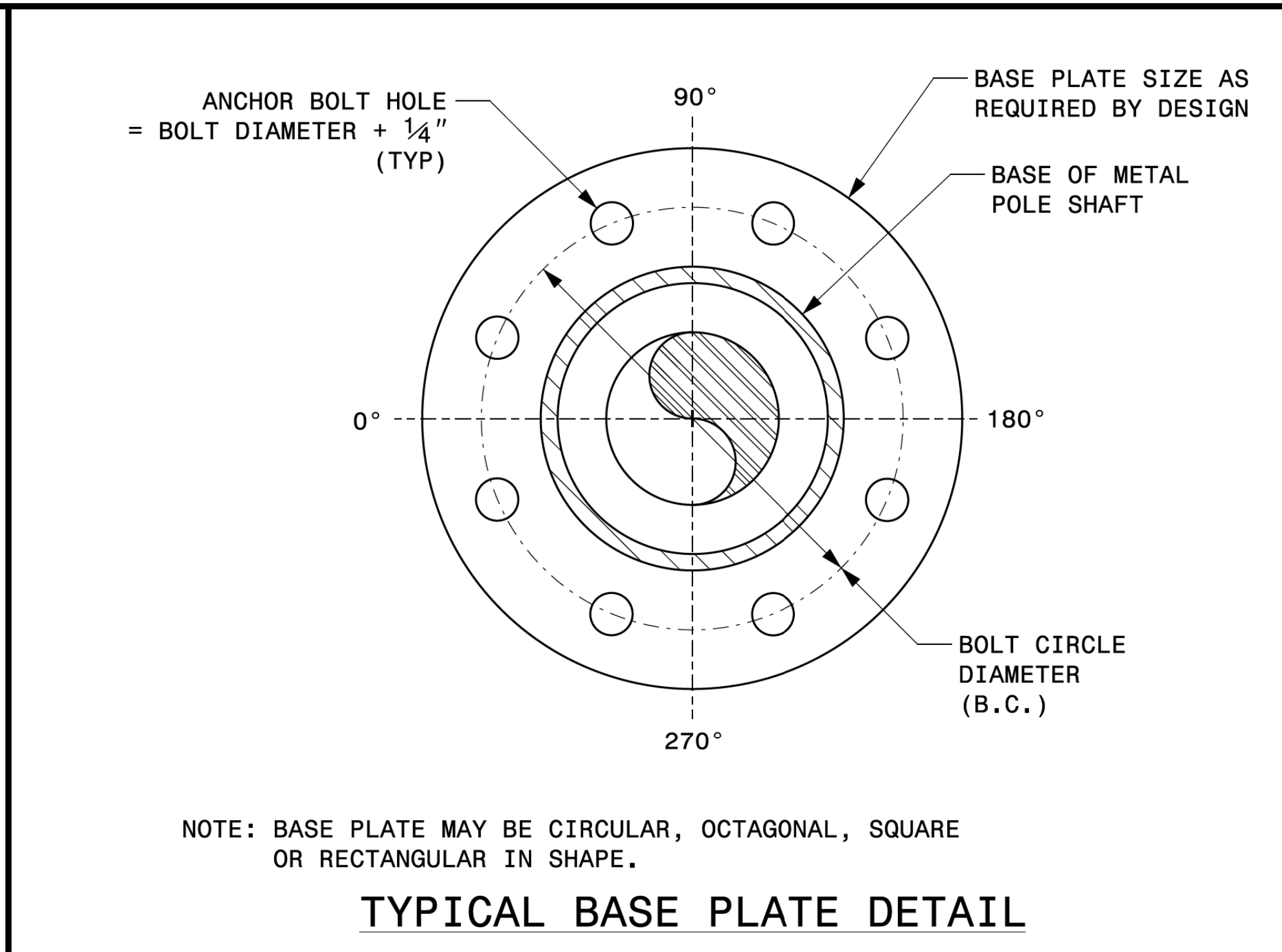
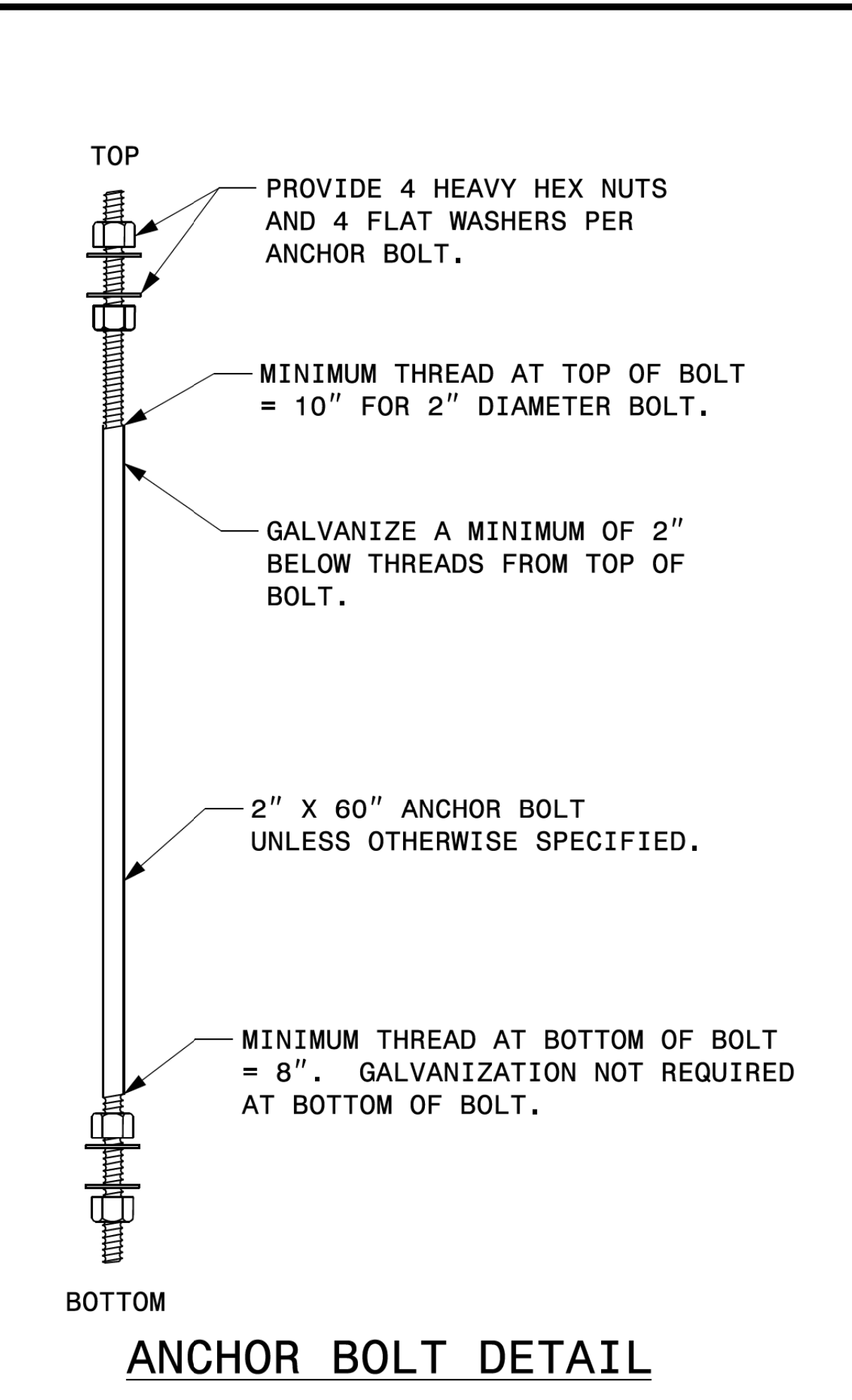
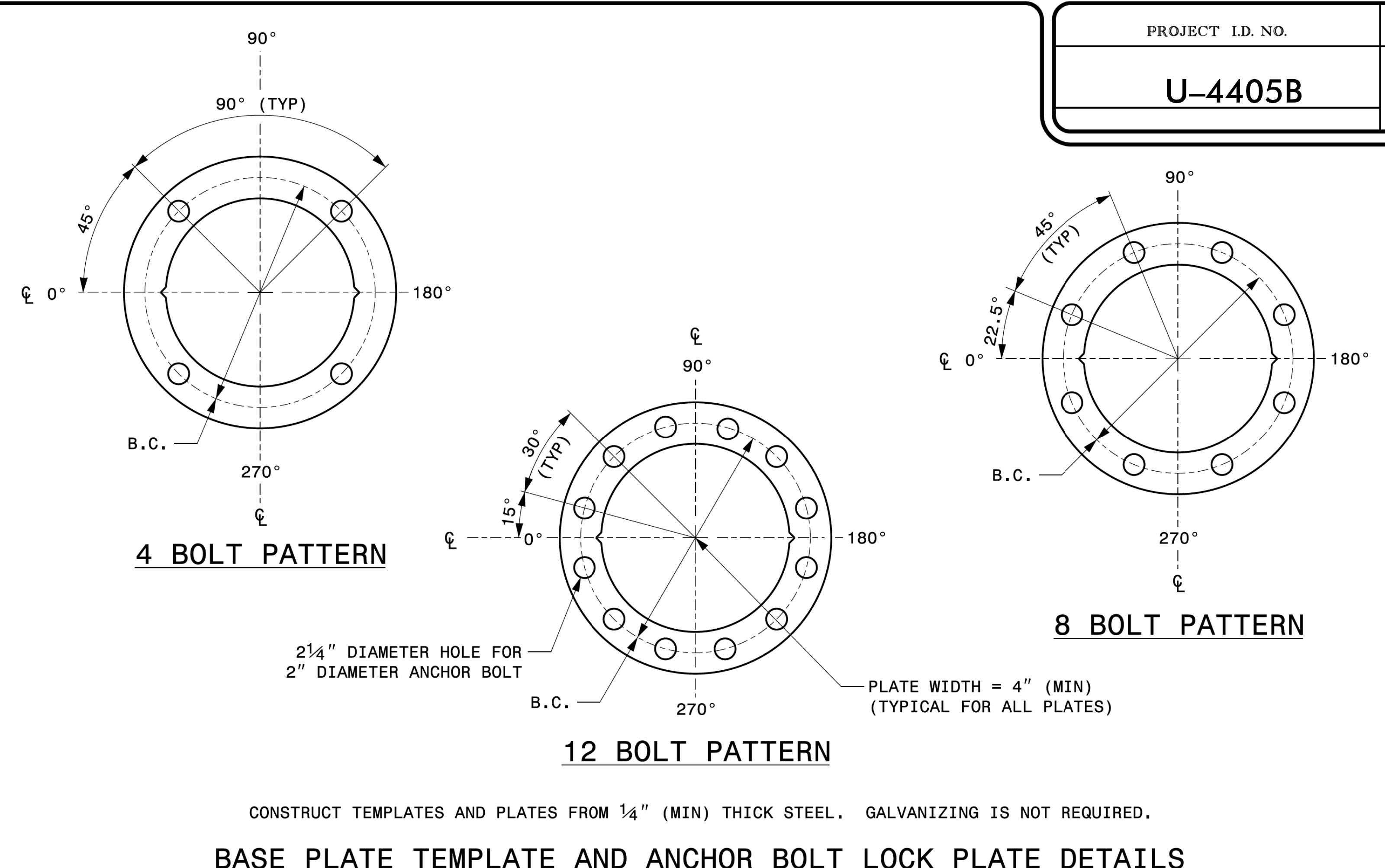
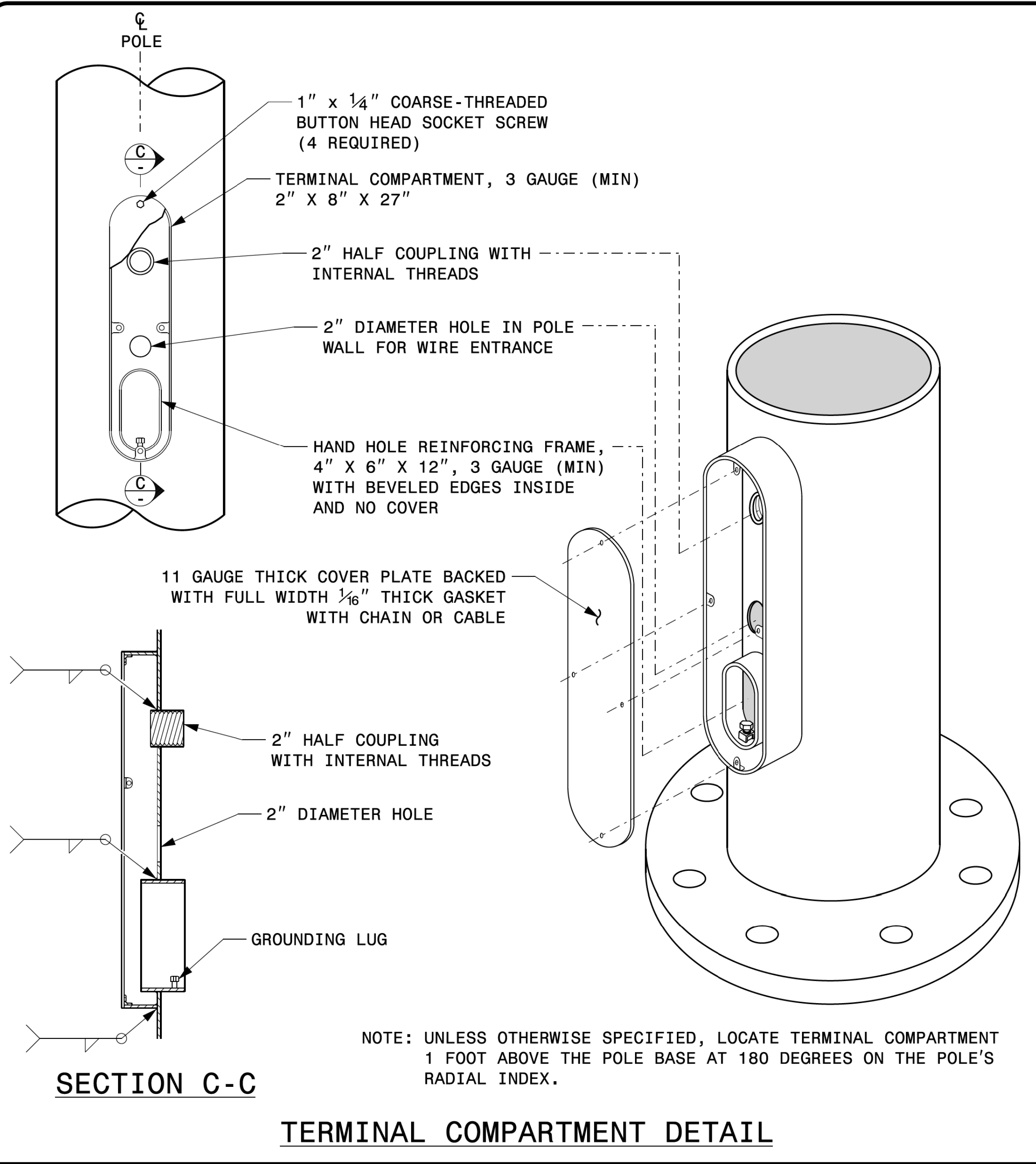
B. WALKER, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL



DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA

09/21/2023
DATE



MFG _____ MFG. DATE: MM/YY	MFG _____ MFG. DATE: MM/YY
SHAFT D/T/L/Y _____	SECTION D/T/L/Y _____
ARM-A D/T/L/Y _____	NCDOT SIG. INV. NO. _____
ARM-B D/T/L/Y _____	NCDOT POLE NO. _____
A.B. DIA./B.C./L/Y _____	ARM I.D. TAG (PROVIDE ON EACH SECTION OF A MULTI-SECTION MAST ARM)
NCDOT SIG. INV. NO. _____	
NCDOT POLE NO. _____	

SHAFT I.D. TAG
(PROVIDE ON SHAFT OF STRAIN POLES AND MAST ARM POLE SHAFT)

- NOTES:
- D = DIAMETER, T = THICKNESS, L = LENGTH, Y = YIELD STRENGTH
 - A.B. = ANCHOR BOLT
 - B.C. = BOLT CIRCLE OF ANCHOR BOLTS
 - IF STANDARD DESIGN, INCLUDE CASE NUMBER IN ADDITION TO POLE NUMBER ON "NCDOT POLE NO." LINE.
 - SIGNAL INV. NUMBER AND POLE I.D. NUMBER. SEE DRAWING M3 AND M4 FOR MOUNTING POSITIONS OF I.D. TAGS.

IDENTIFICATION TAG DETAILS

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For All Metal Poles</p>					
	<p>PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS</p> <p>PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> </tr> </table>		INIT.	DATE	
INIT.	DATE					

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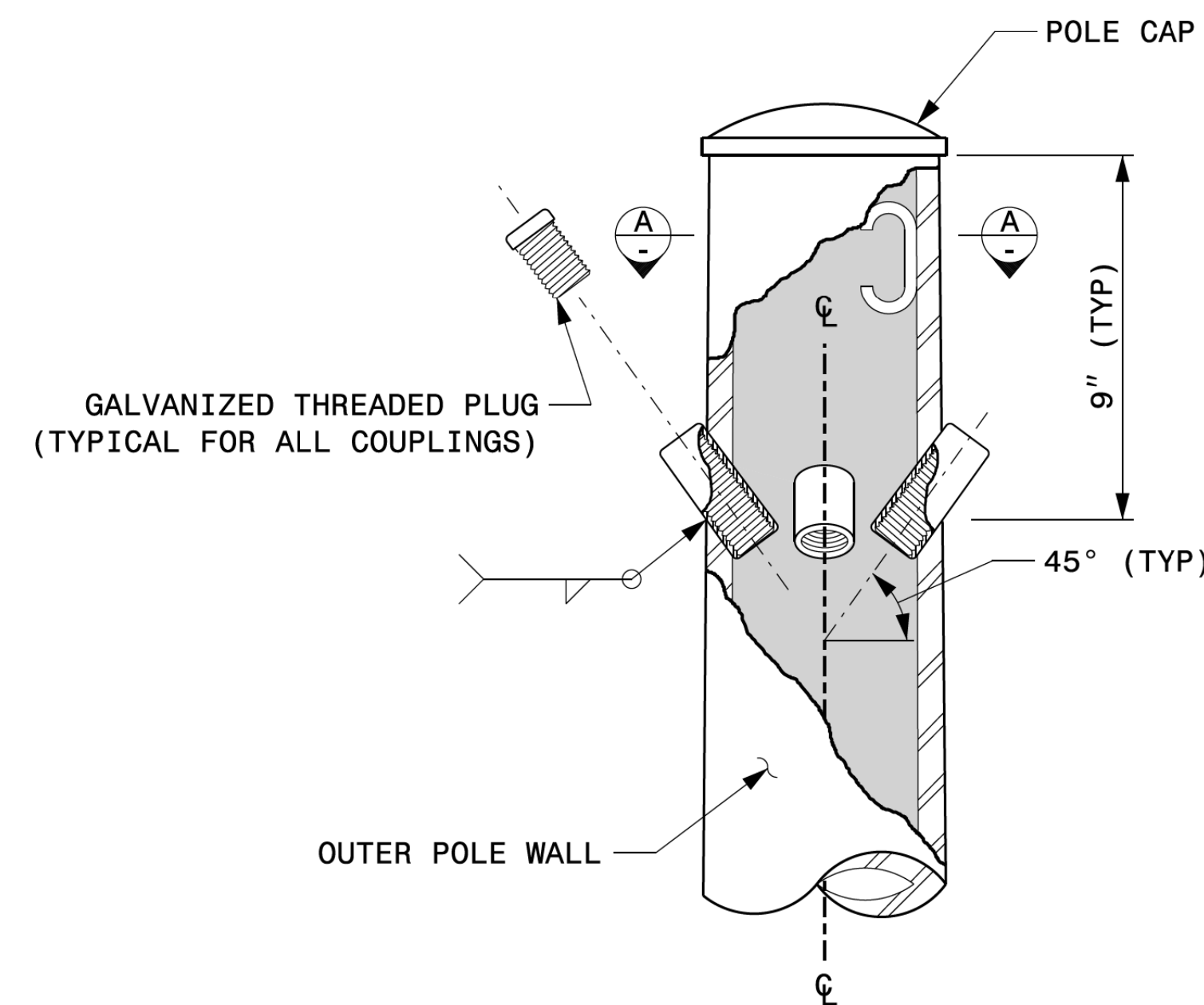
09/21/2023 DATE

03-OCT-2023 12:24 S:\TSS\511MITS Signal Structures\Drawings\2024 Metal Pole Std Drawings for LRFID\2024 Sig-M2 Std. Fabrication Details-All Poles-.dgn kcdurfg

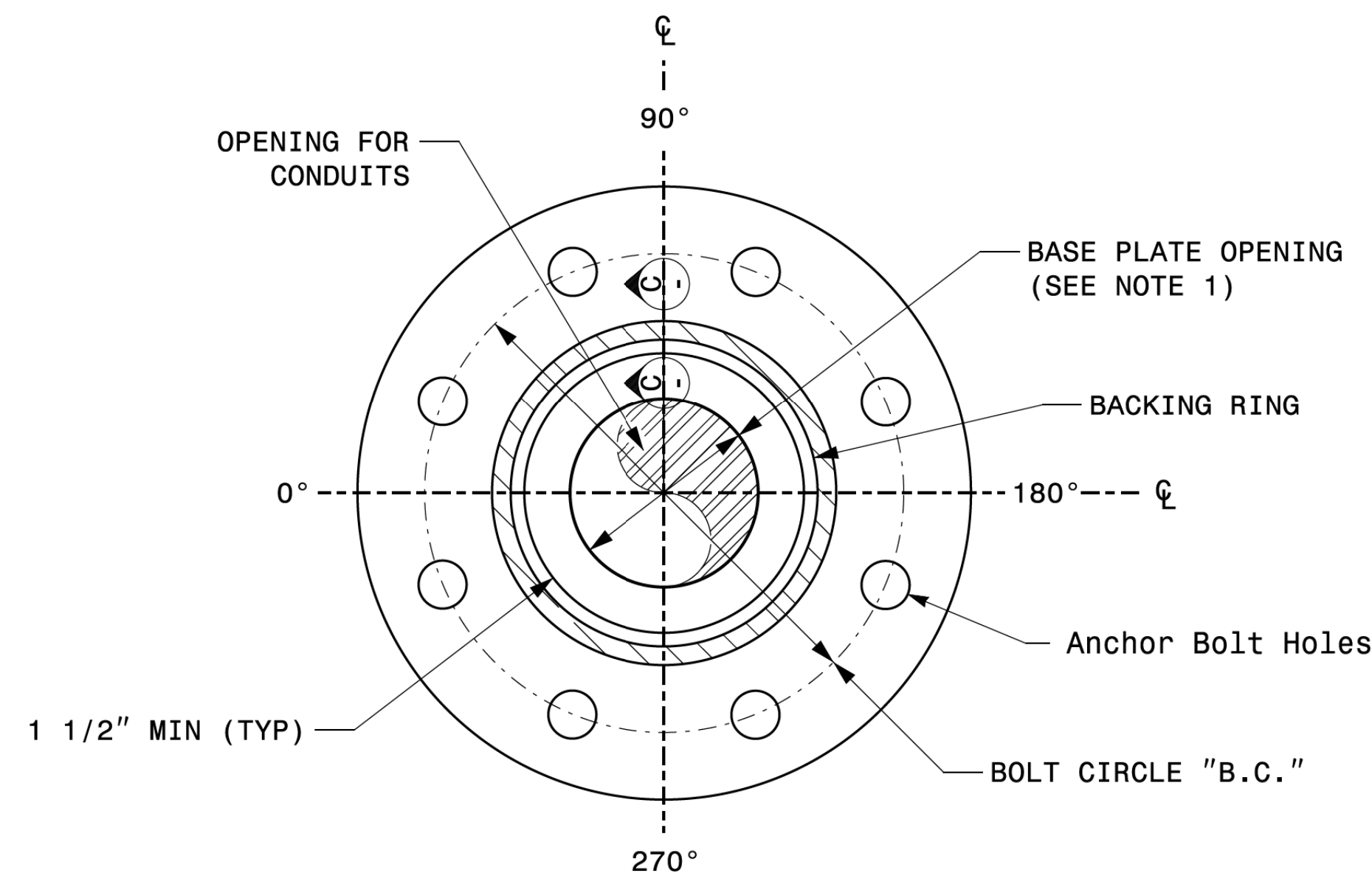
Fabrication Details – All Metal Poles

NOTE:

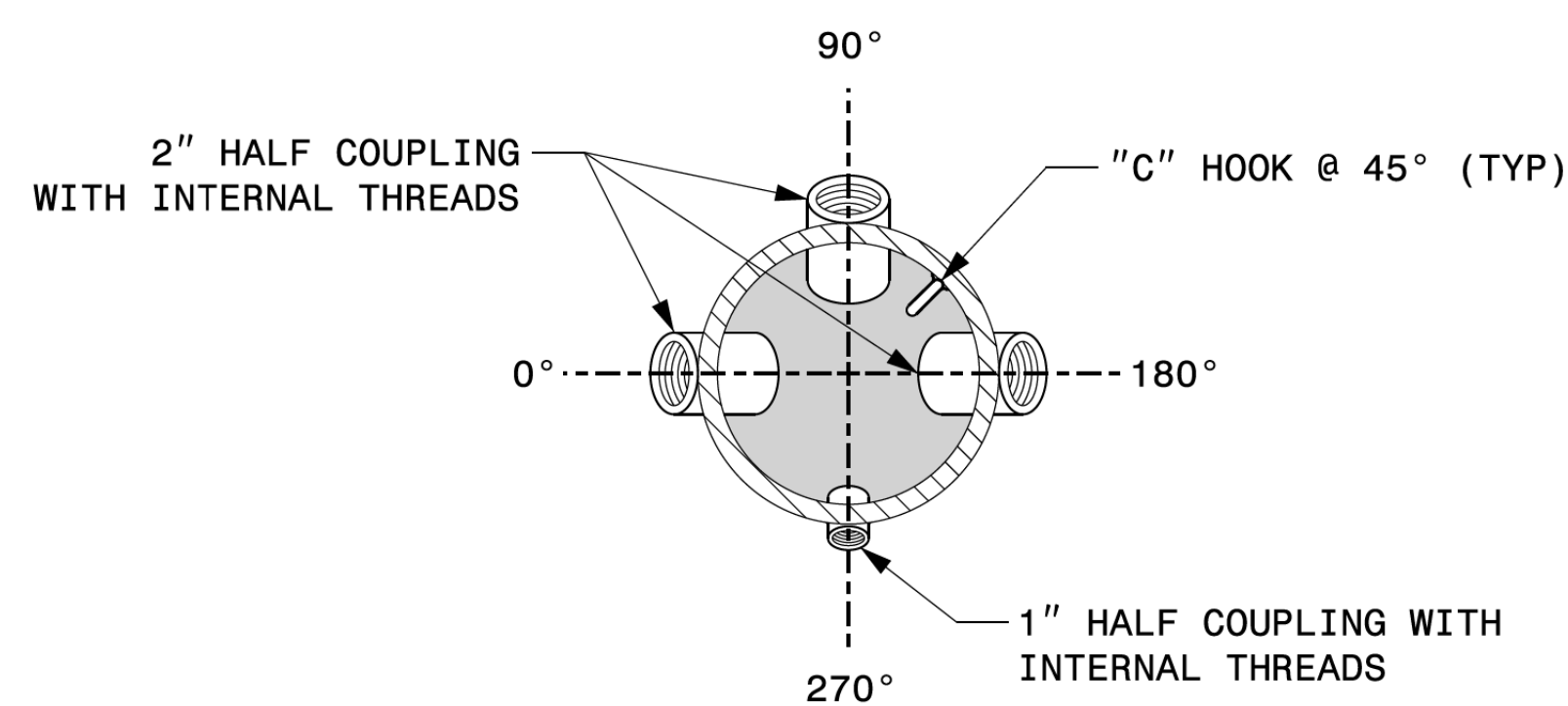
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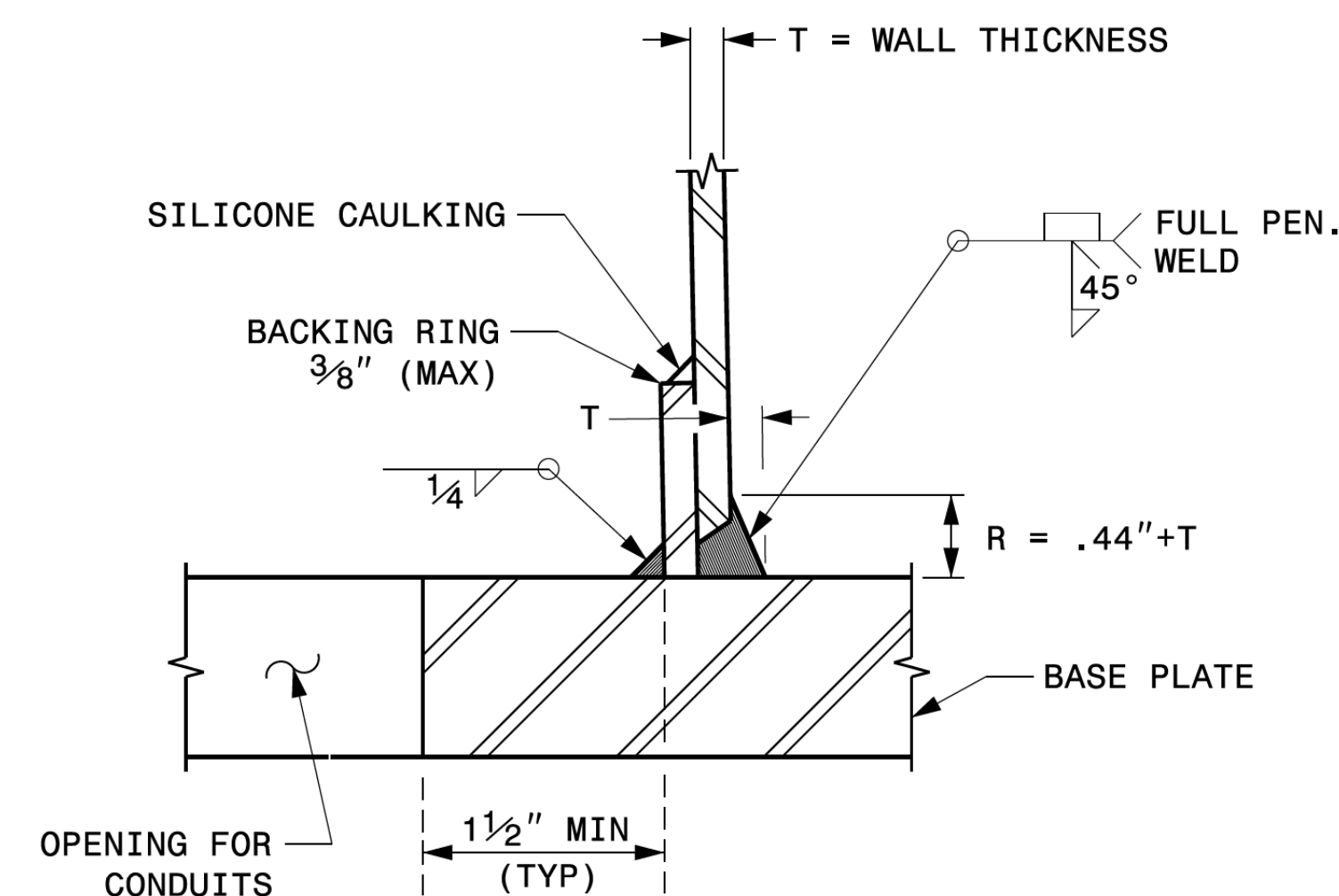
CABLE ENTRANCES AT TOP OF POLE



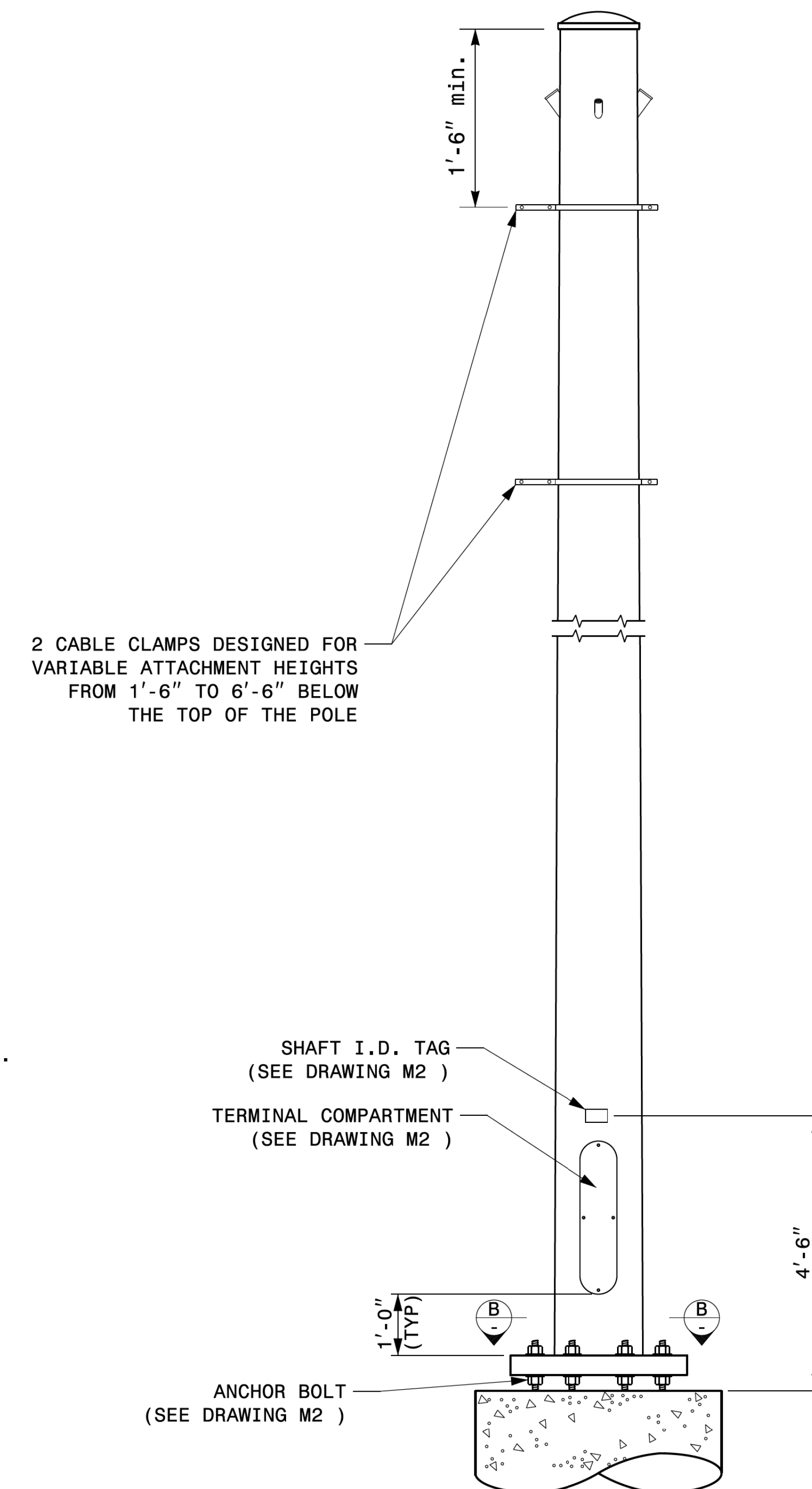
SECTION B-B
POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)



SECTION A-A
RADIAL ORIENTATION OF FACTORY INSTALLED
ACCESSORIES AT TOP OF POLE



SECTION C-C
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL



MONOTUBE STRAIN POLE

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles	
PLAN DATE: SEPTEMBER 2023	DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

DocuSigned by:

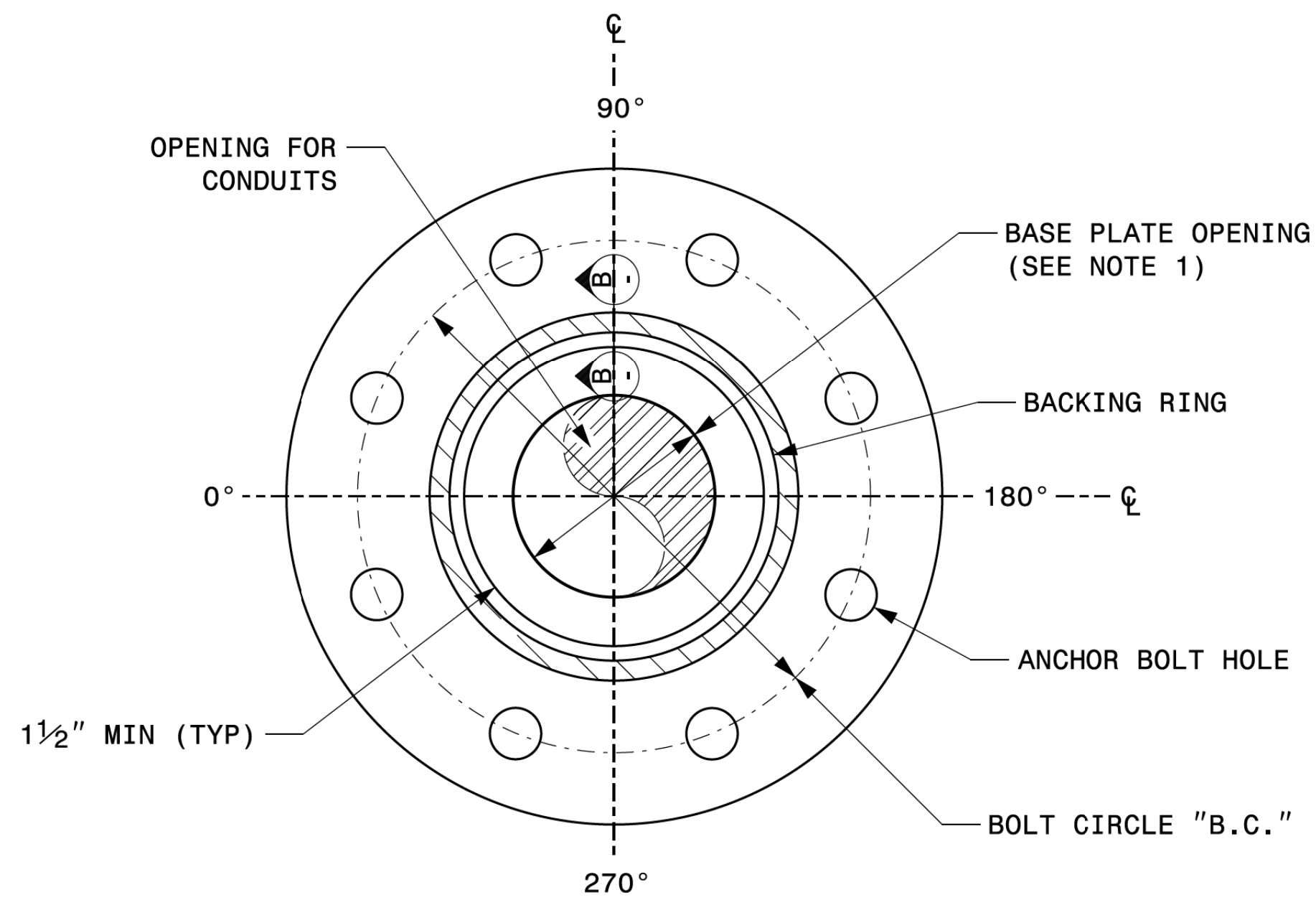
Kevin Durigon

09/21/2023

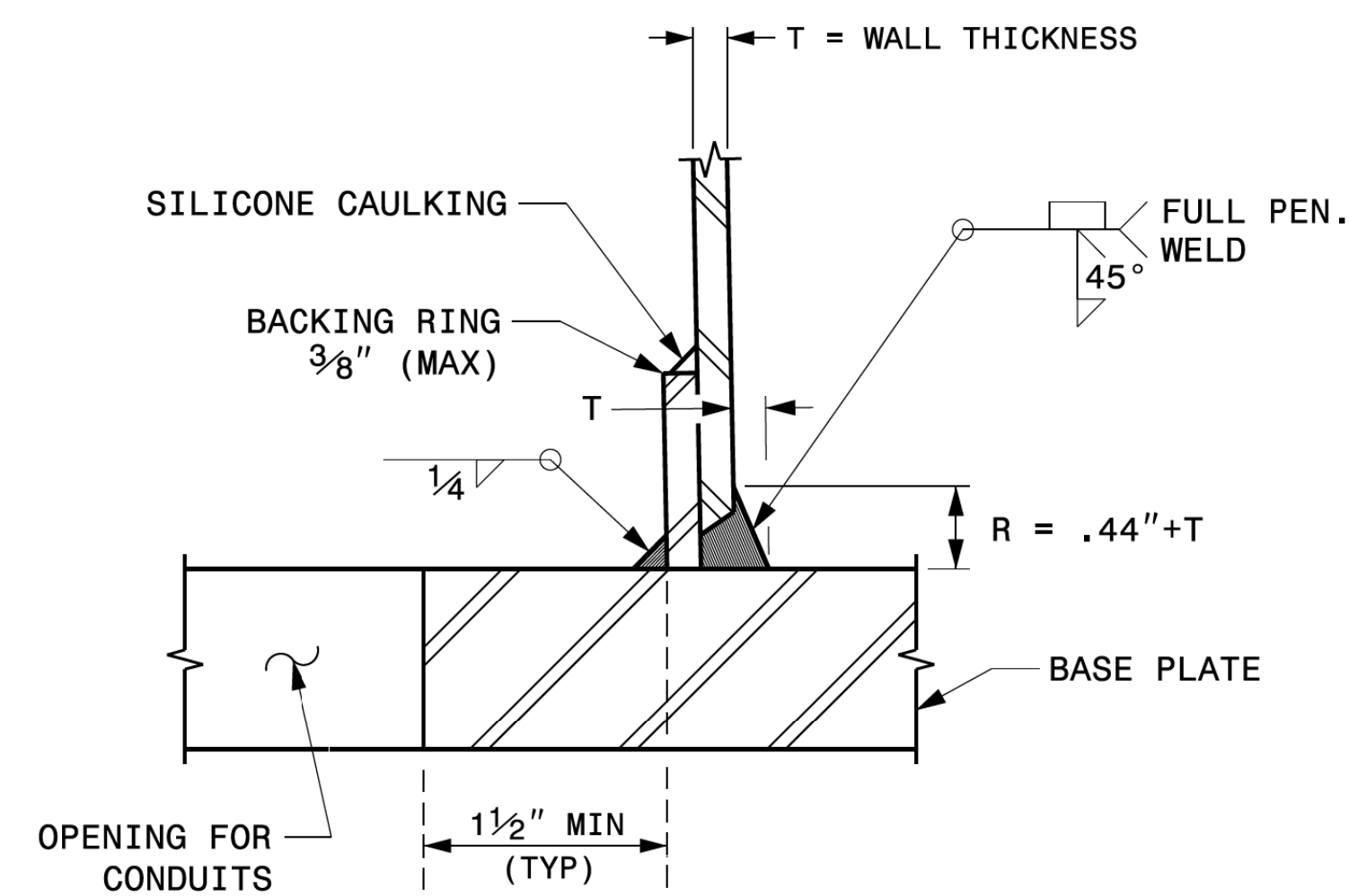
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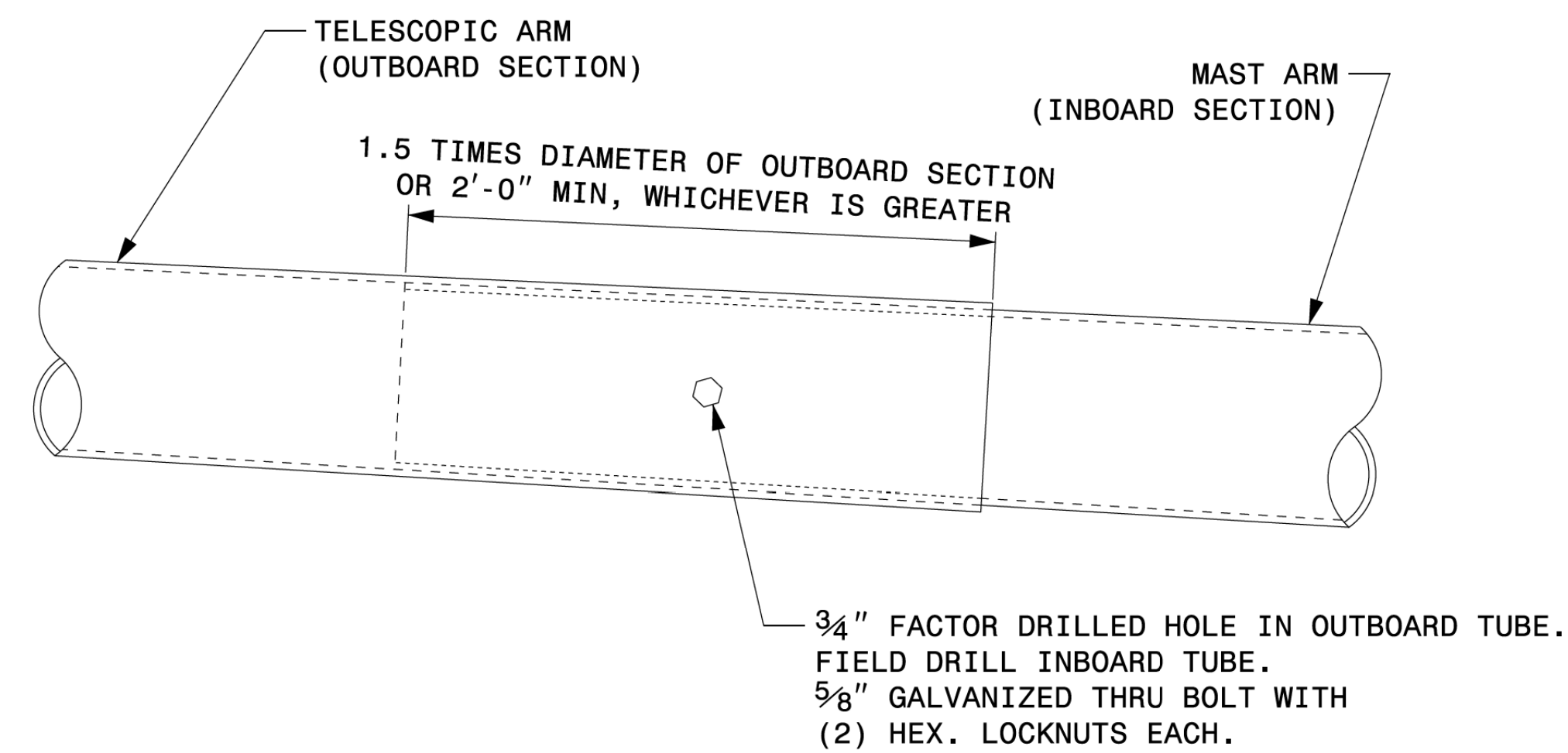
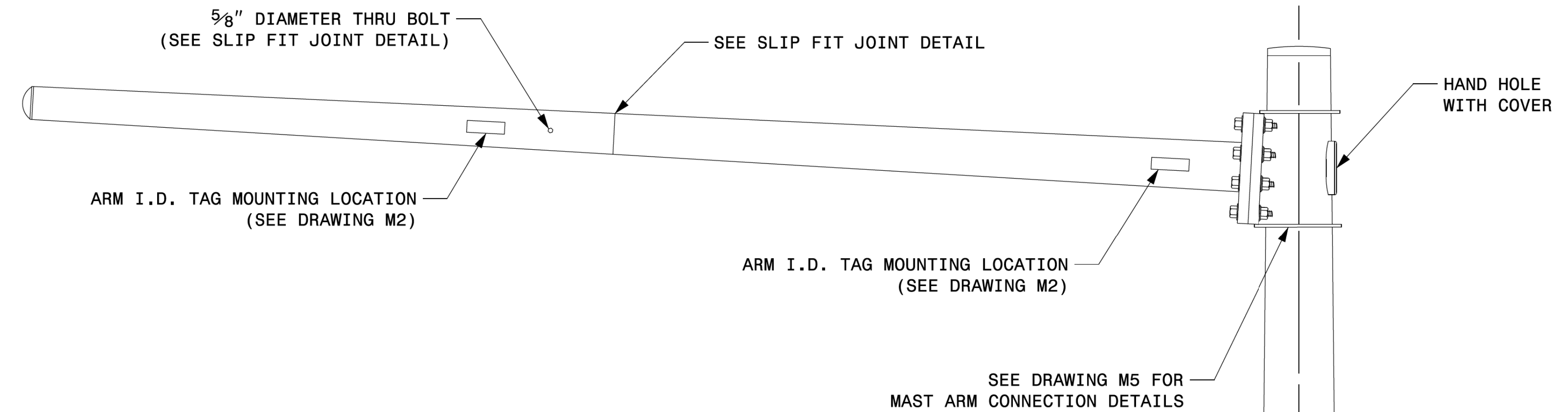
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3 1/2" BUT SHALL NOT BE LESS THAN 8 1/2".



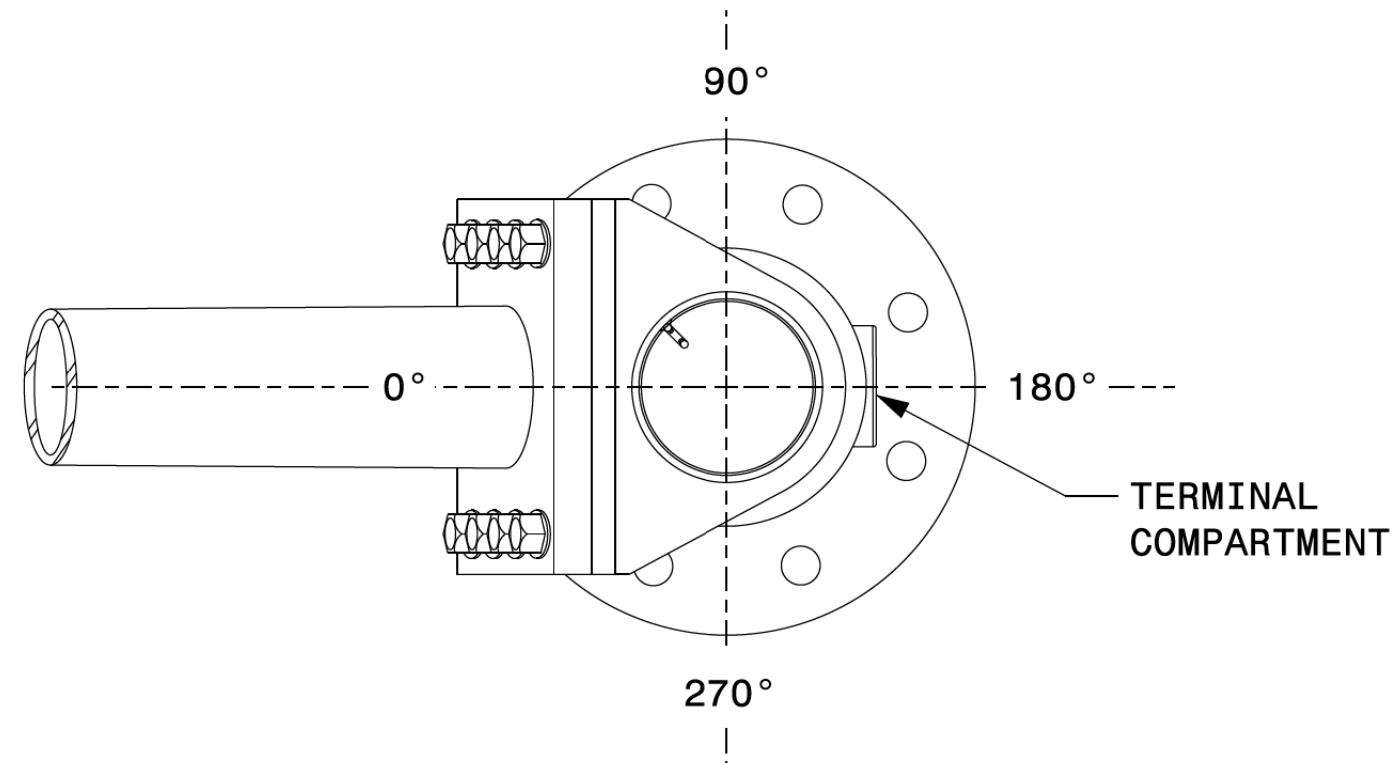
SECTION A-A
POLE BASE PLATE DETAILS



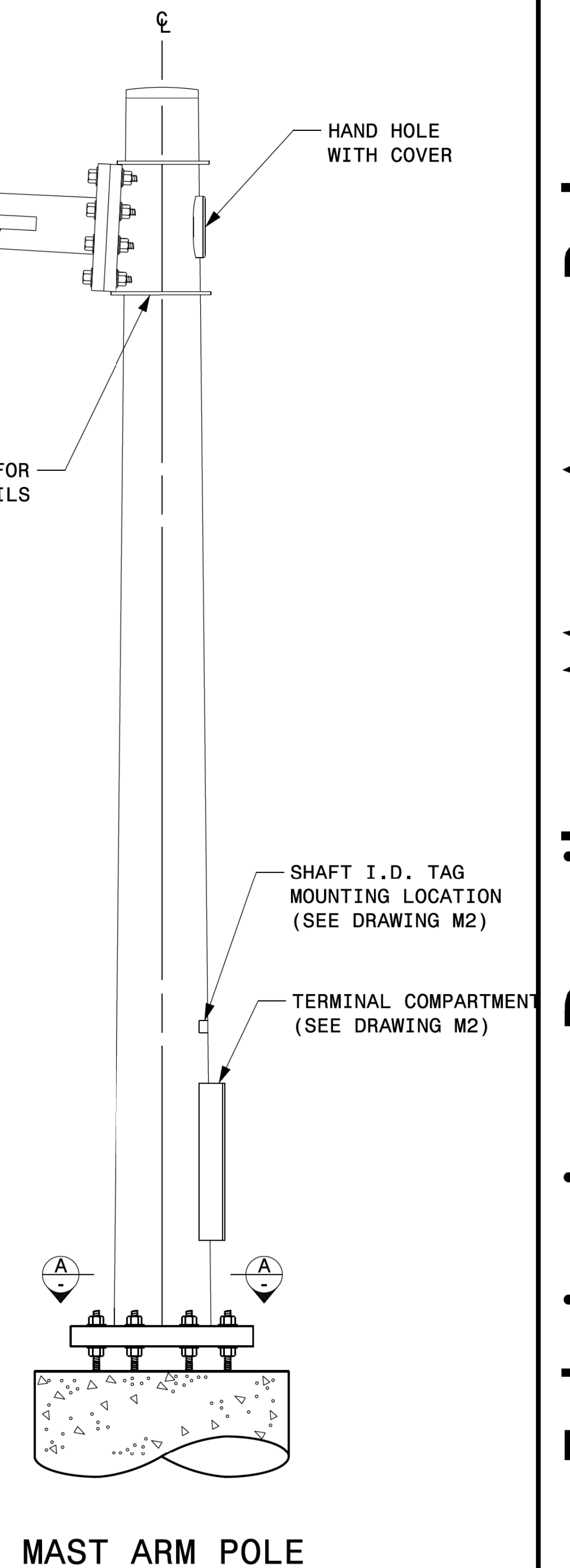
SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



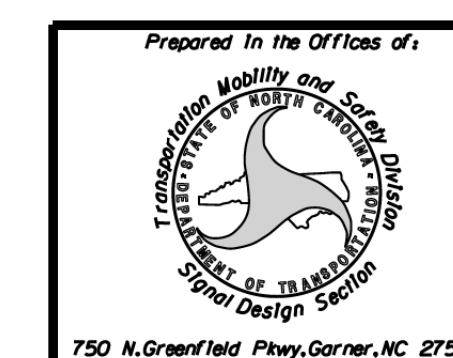
MAST ARM RADIAL ORIENTATION



MAST ARM POLE

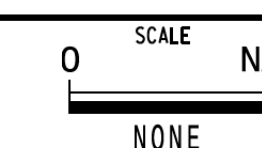
Fabrication Details - Mast Arm Poles

03-OCT-2023 12:35 S:\TSS\UMTS\Signal\Design\Sections\Structures\Drawings\2024_Mast1_Pole_Sha_Drawings\For_LRFD\2024_Sig.M4_Std_Fabrication_Details\Arm_Poles.dgn Kcd\rflooron



Typical Fabrication Details
For
Mast Arm Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR



REVISIONS	INIT.	DATE

DocuSigned by:
Kevin Durigon
4B23DC78B378ADA 09/21/2023 DATE

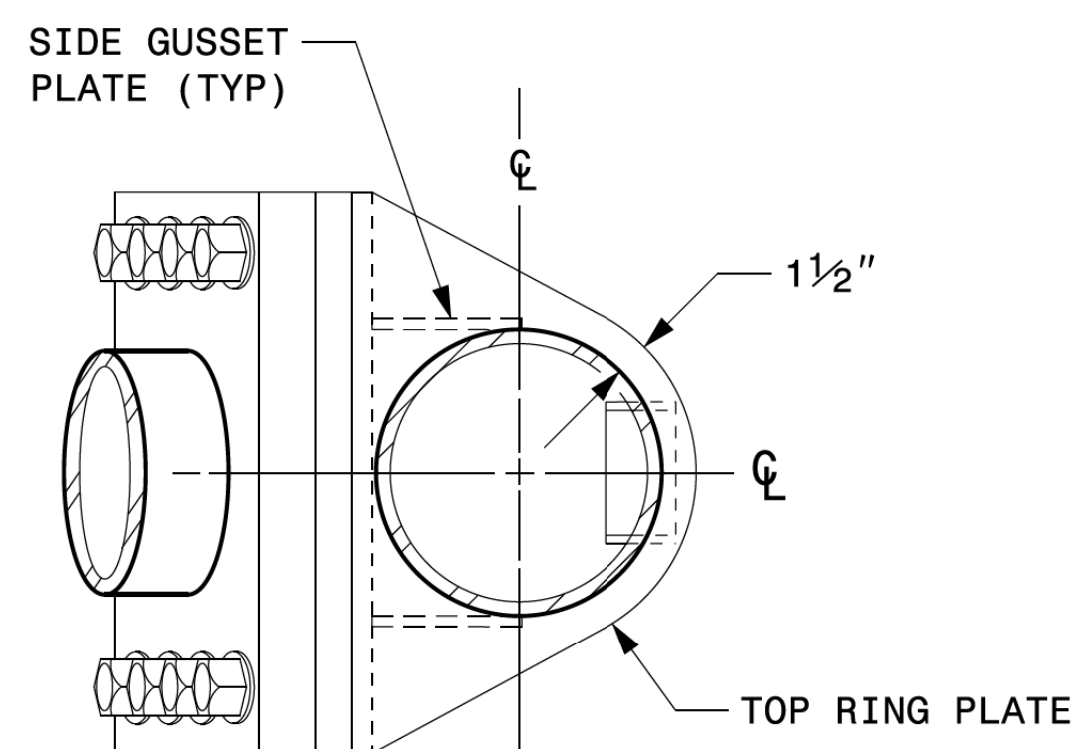
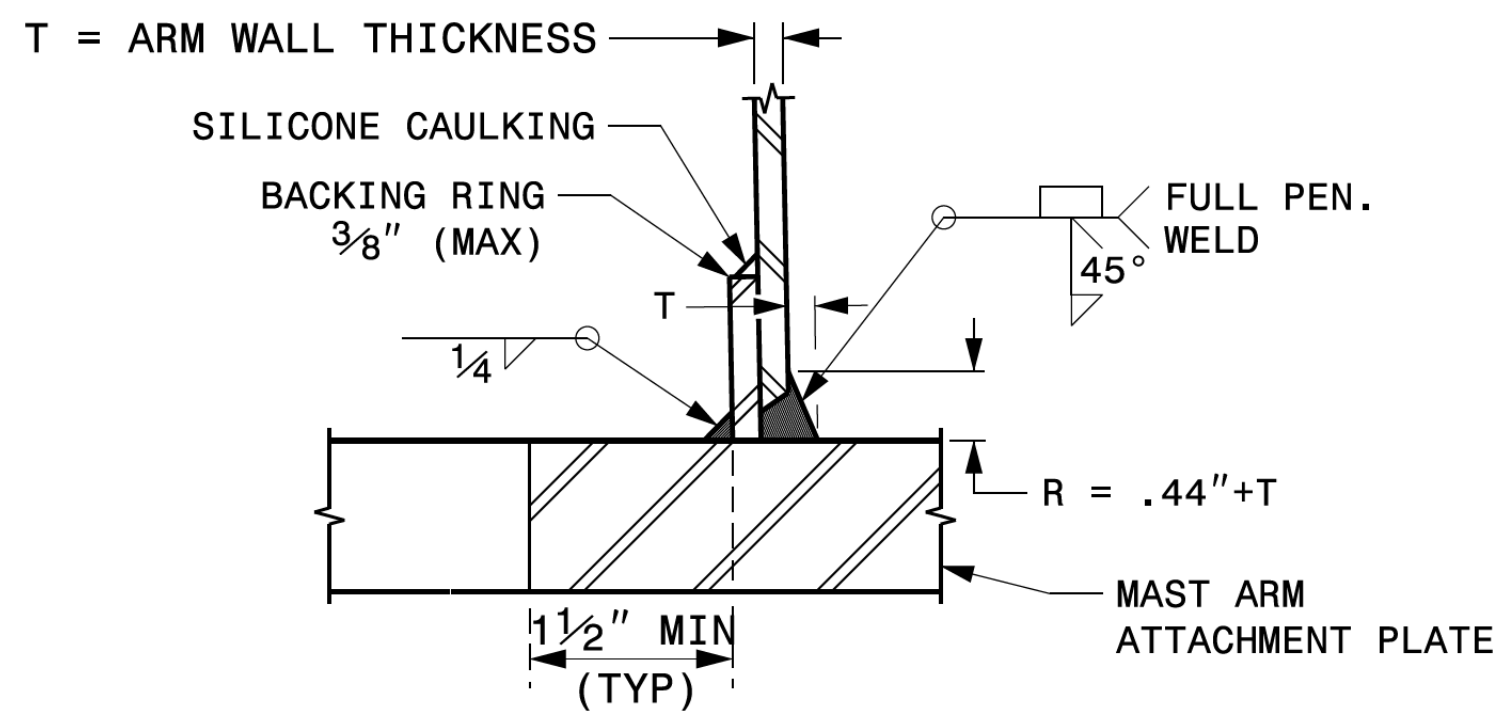
WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.

SHEET NO.

U-4405B

Sig.M5

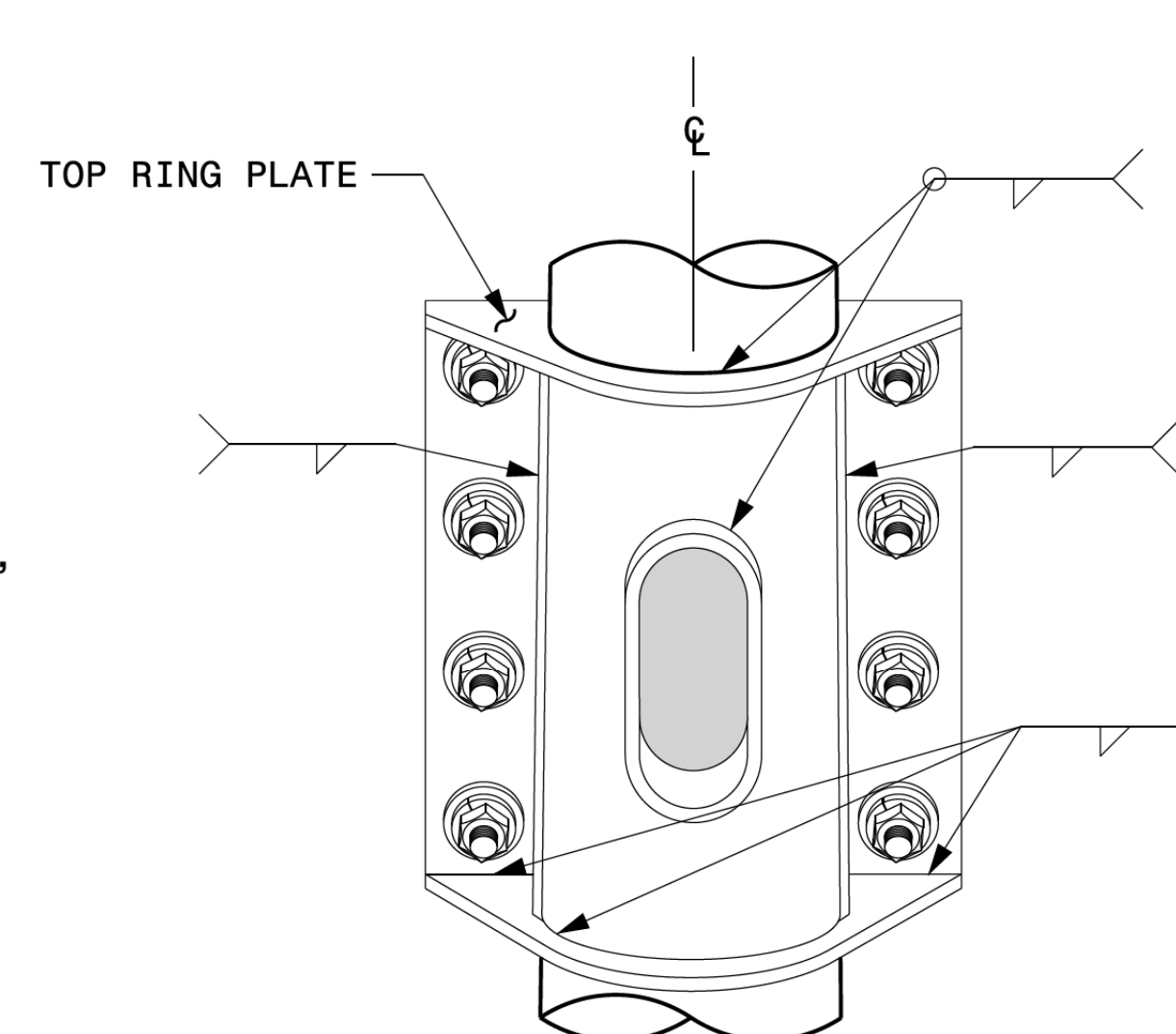
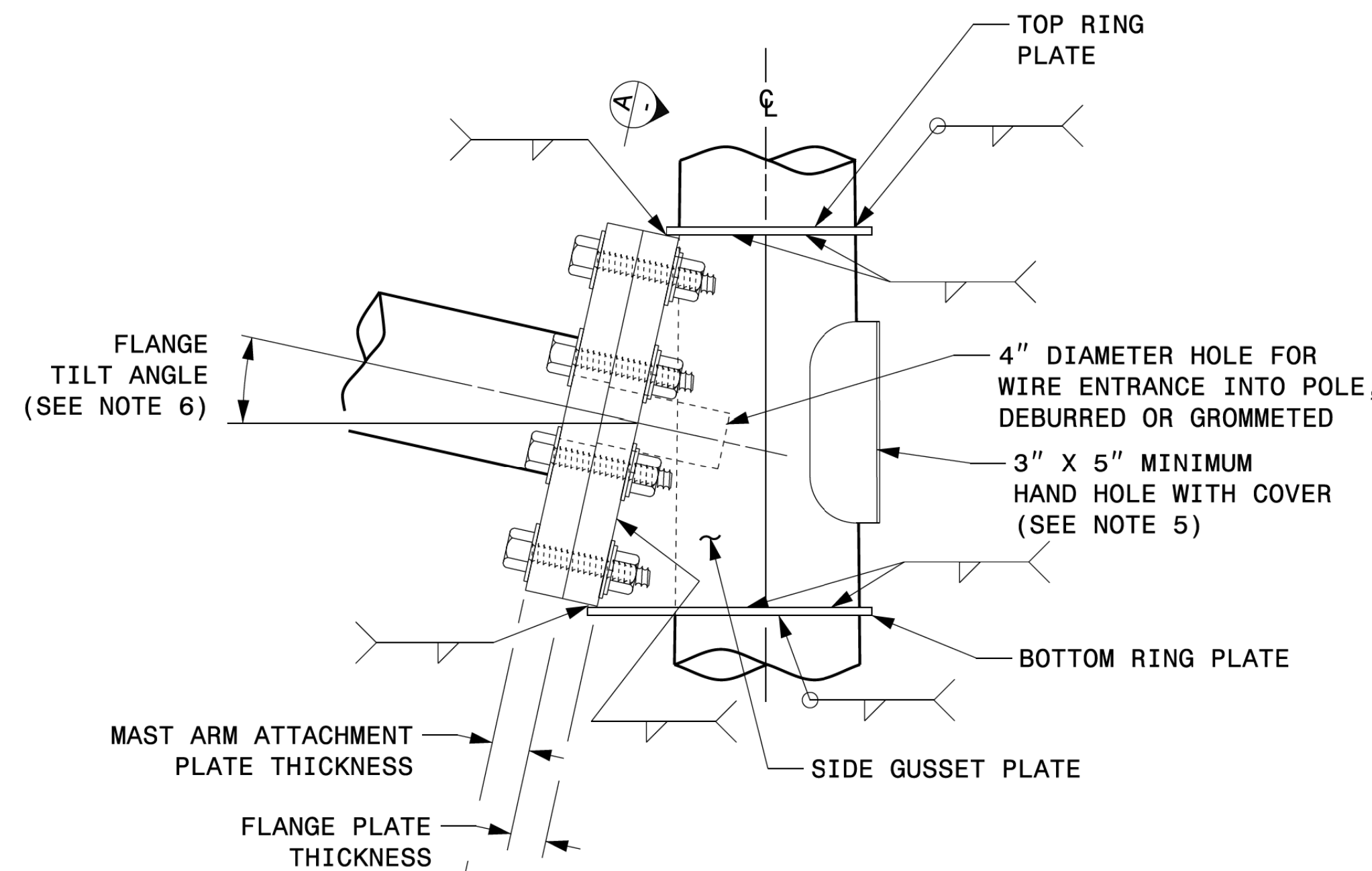
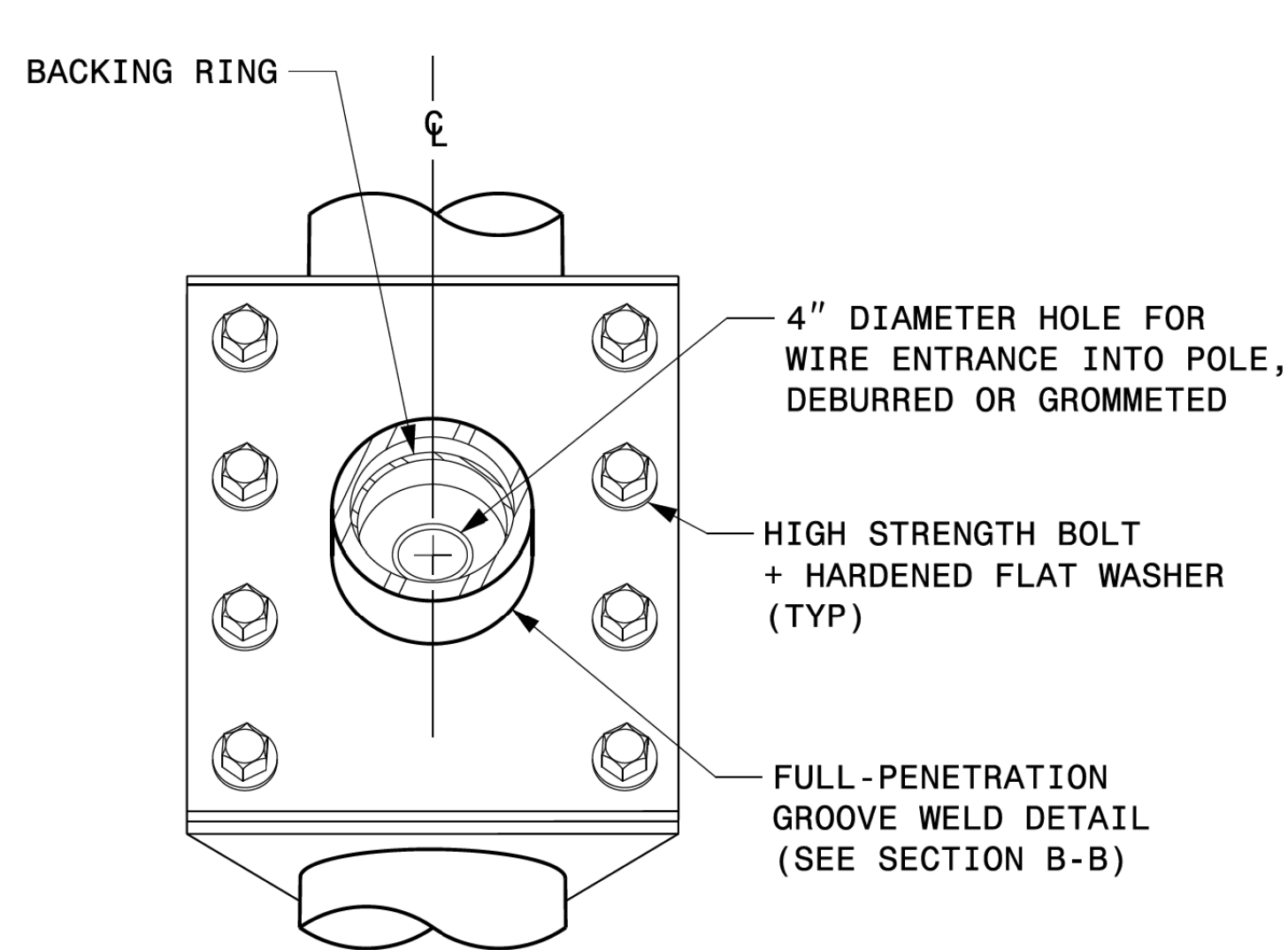


NOTES:

1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE HOLES AT DRAINAGE POINTS TO DRAIN GALVANIZING MATERIALS.
4. FOR MINIMUM EDGE DISTANCE AND NOMINAL BOLT HOLE SIZE, FOLLOW THE LATEST AISC STEEL CONSTRUCTION MANUAL.
5. PROVIDE UPPER HANDHOLE AS NECESSARY WHEN SHAFT EXTENSIONS ARE REQUIRED FOR LUMINAIRE ARMS OR CAMERA. FOR POLES WITHOUT LUMINAIRES/CAMERA, WIRING CAN BE DONE THROUGH THE TOP OF POLE.
6. ALLOWABLE RANGE OF FLANGE TILT ANGLE WILL VARY FROM 0° TO AS REQUIRED.

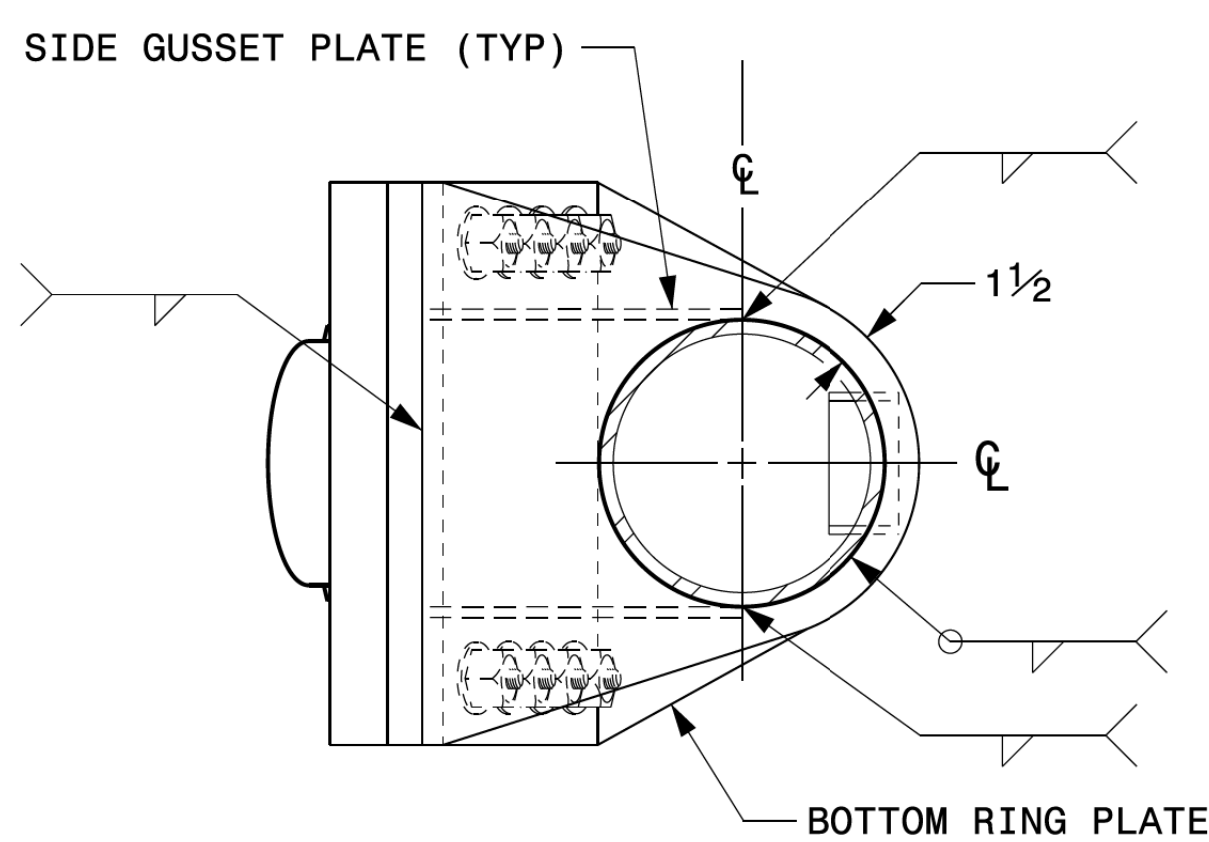
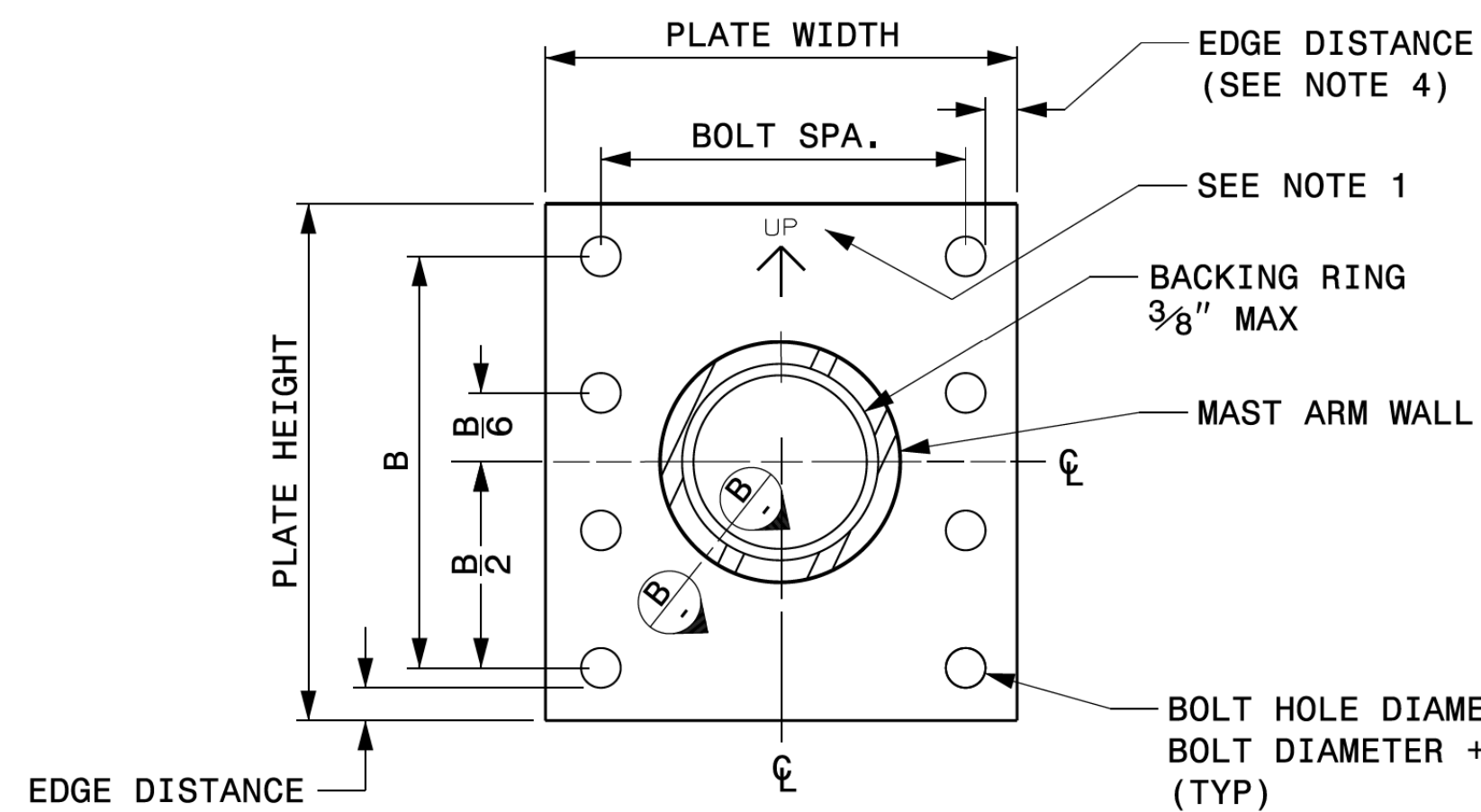
**SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL**

PLAN VIEW



BACK ELEVATION VIEW

SIDE ELEVATION VIEW



BOTTOM VIEW

Prepared in the Offices of:

TRANSFORMATION MOBILITY and SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SIGNAL DESIGN SECTION

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: NONE

Typical Fabrication Details
For
Mast Arm Connection To Pole

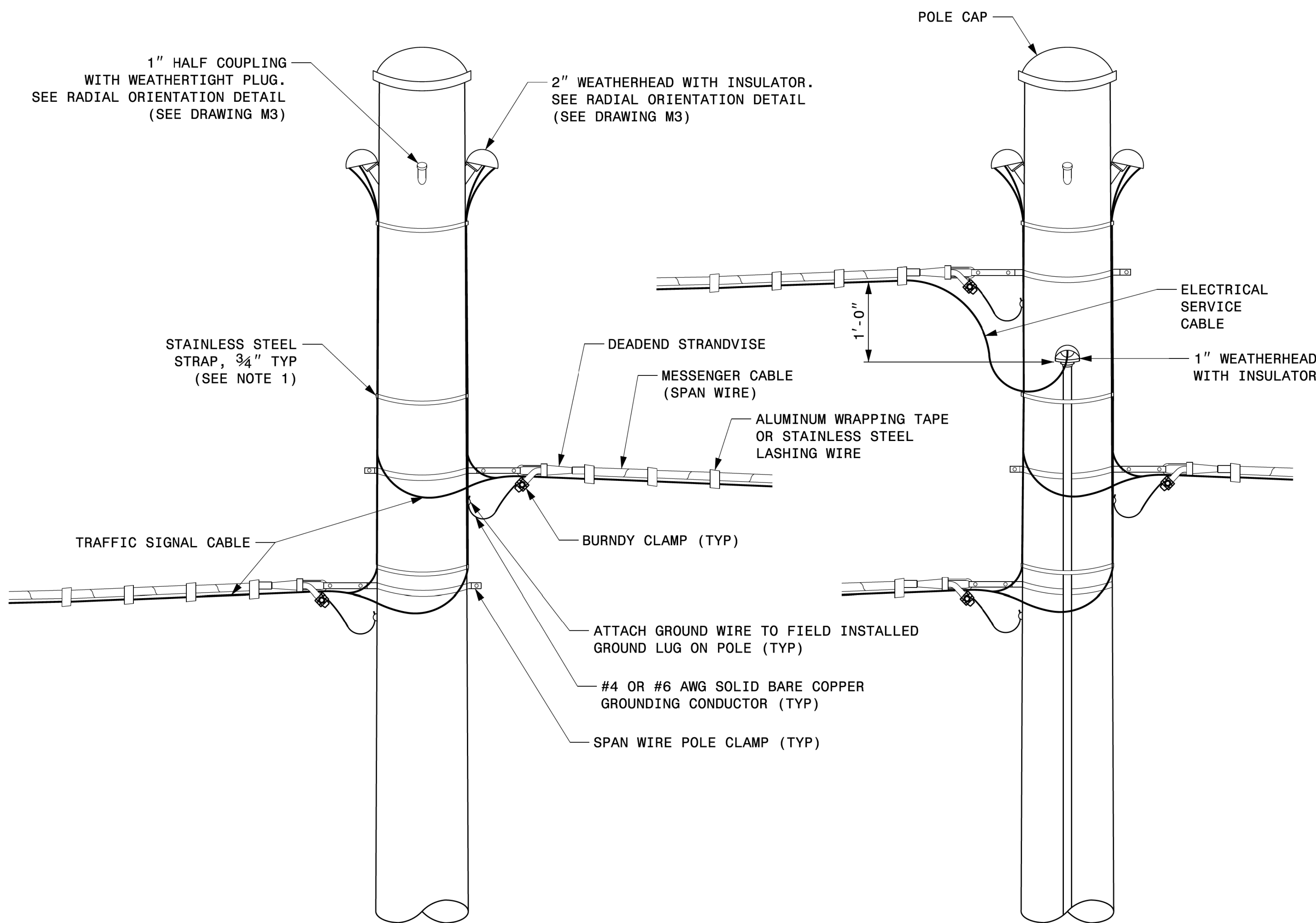
PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC78B3784DA

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

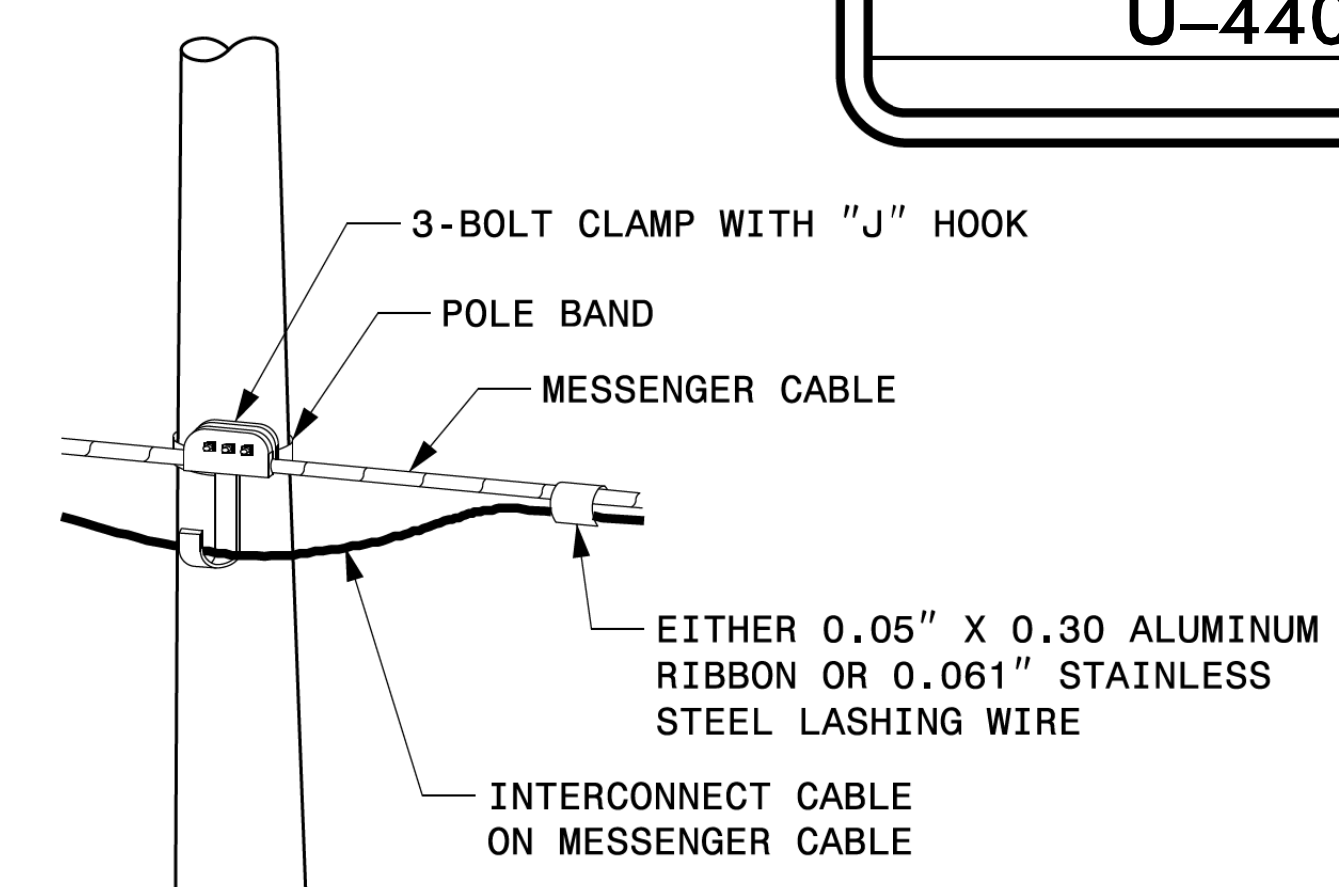
09/21/2023
DATE



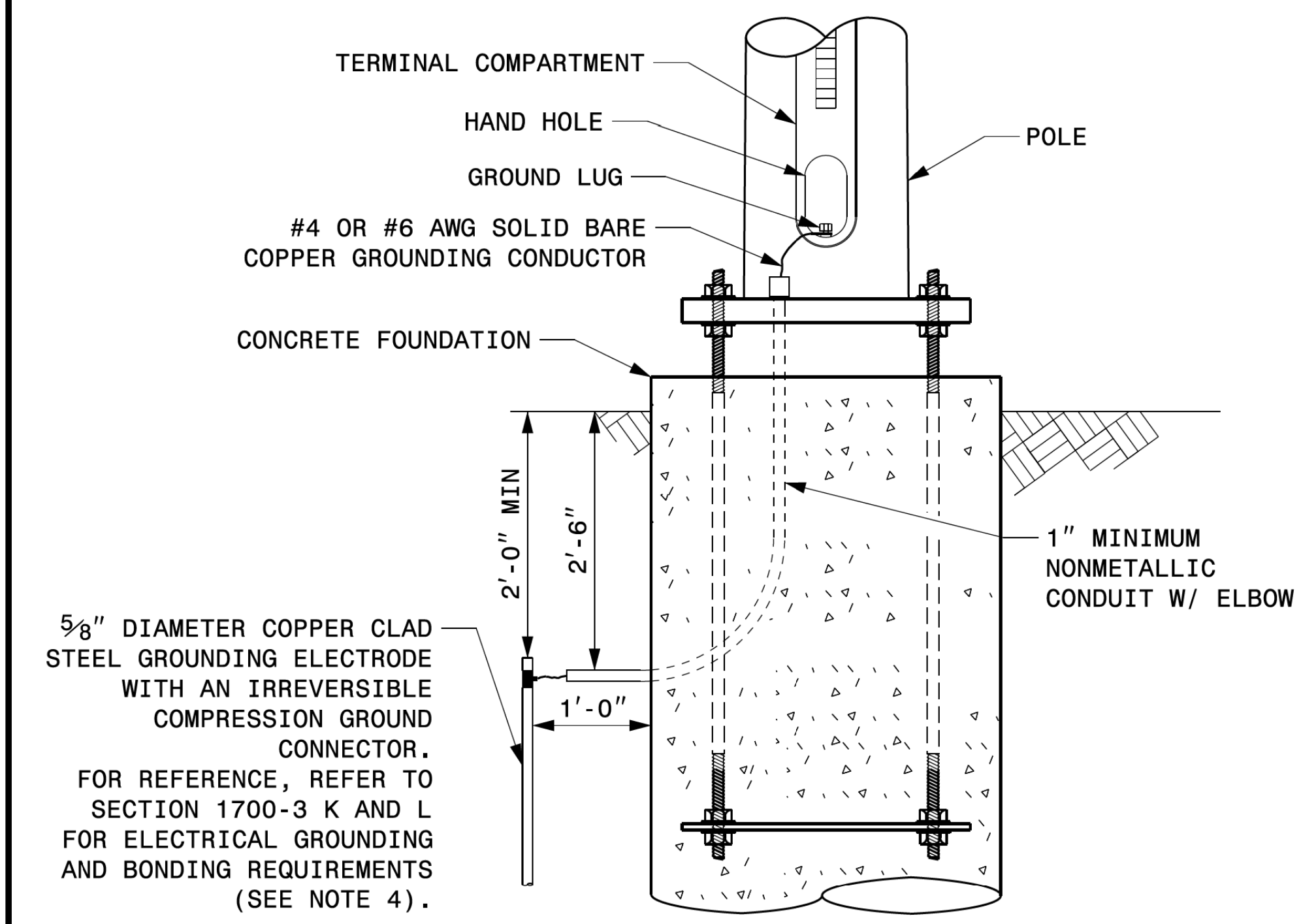
STRAIN POLE ATTACHMENTS

- NOTES:
1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH 3/4" STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3'-0".
 2. PROVIDE MINIMUM TWO SPAN WIRE POLE CLAMPS PER POLE.
 3. IT IS PROHIBITED TO ATTACH TWO SPAN WIRES AT ONE POLE CLAMP.
 4. FOR GENERAL REQUIREMENTS, REFER TO NCDOT STANDARD SPECIFICATIONS FOR ROADWAY AND STRUCTURES, JANUARY 2024.

03-OCT-2023 12:41 S:\TSS\UMTS_Signals\Signal_Design\Section\Structures\Drawings\2024_Metro1_Pole_Stra_Drawing\Details\Strain_Poles.dgn Kcdur100n



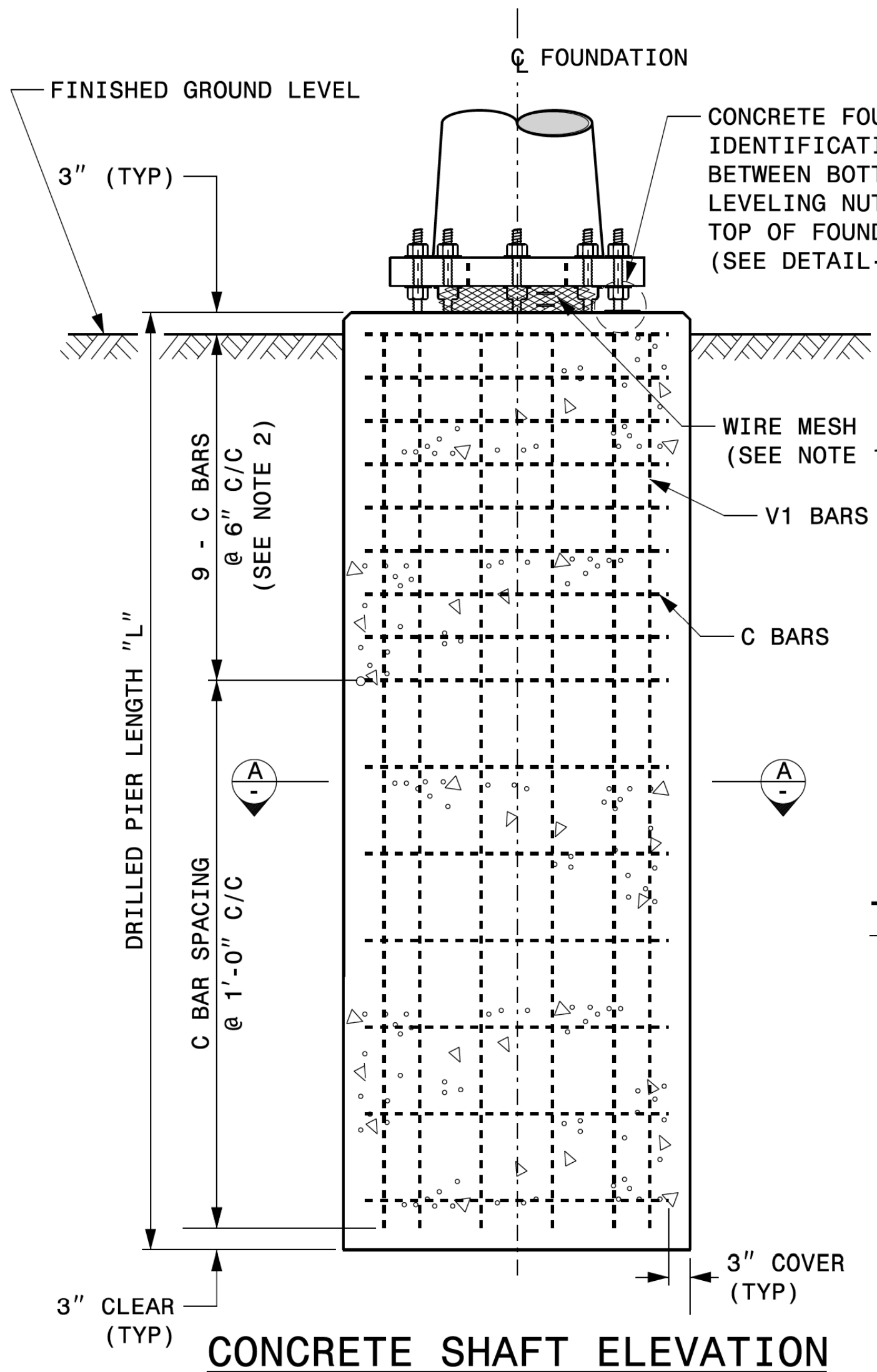
ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



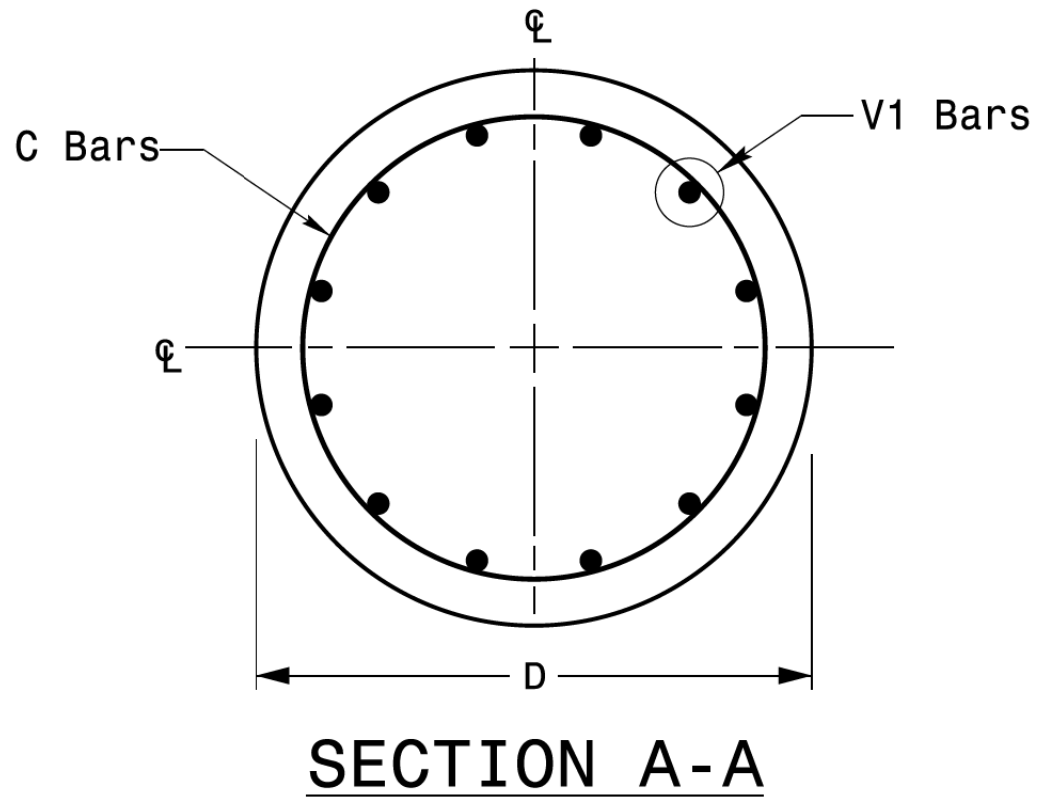
METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For Strain Pole Attachments</p>		<p>SEAL</p> <p>DocuSigned by: Kevin Durigon 4B23DC79B3784DA</p>					
	<p>PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS</p> <p>PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR</p>	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REVISIONS	INIT.	DATE		
REVISIONS	INIT.	DATE						

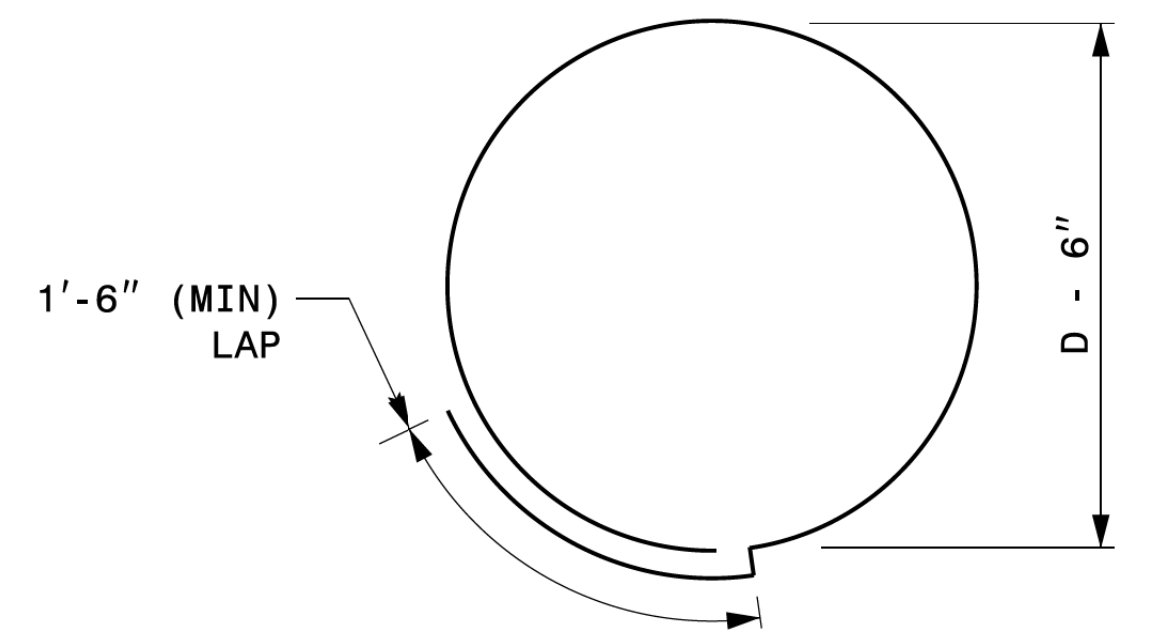
Fabrication Details – Strain Pole Attachments



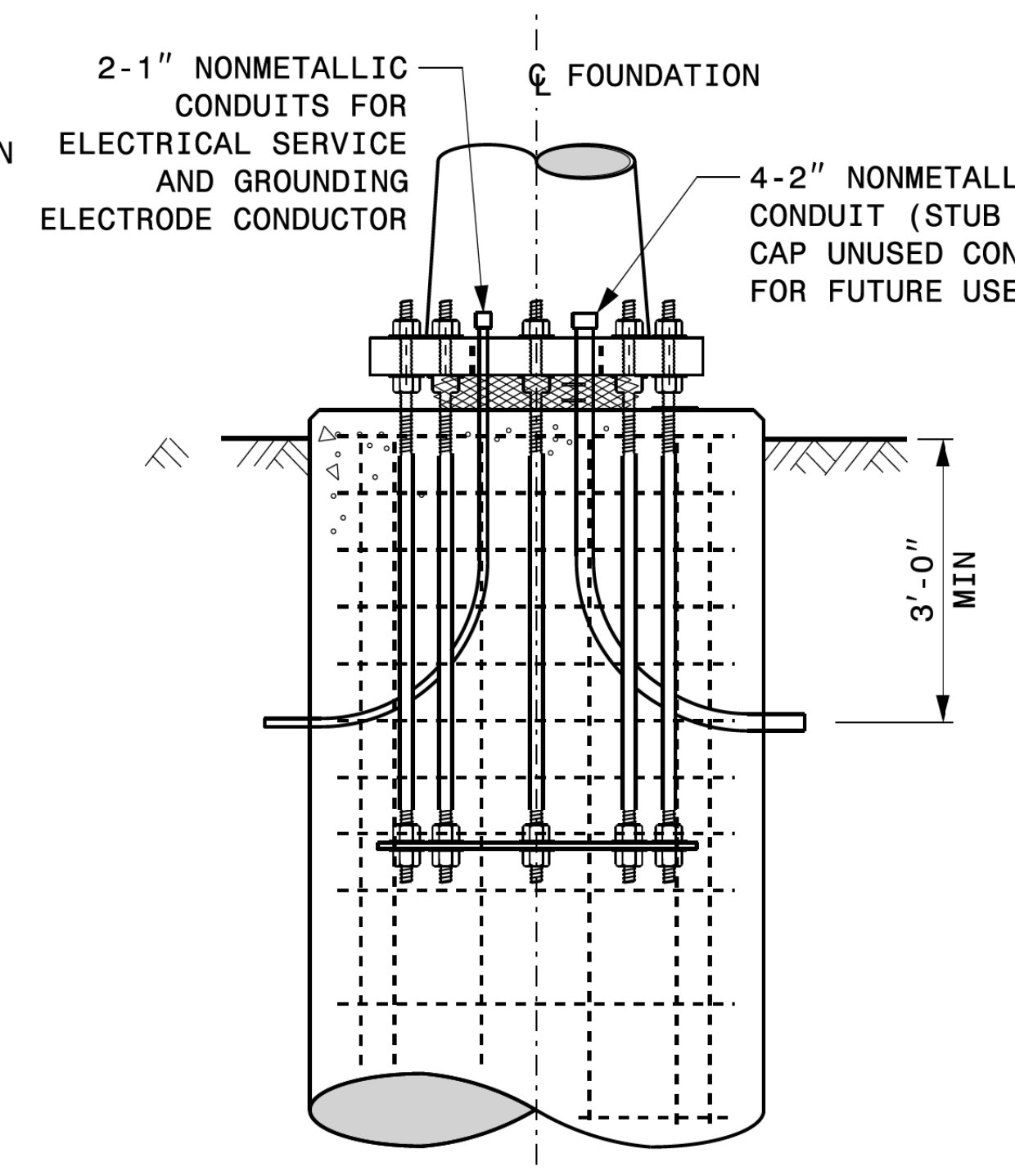
CONCRETE SHAFT ELEVATION



SECTION A-A



TYPICAL "C" BAR DETAIL



TYPICAL FOUNDATION CONDUIT DETAILS

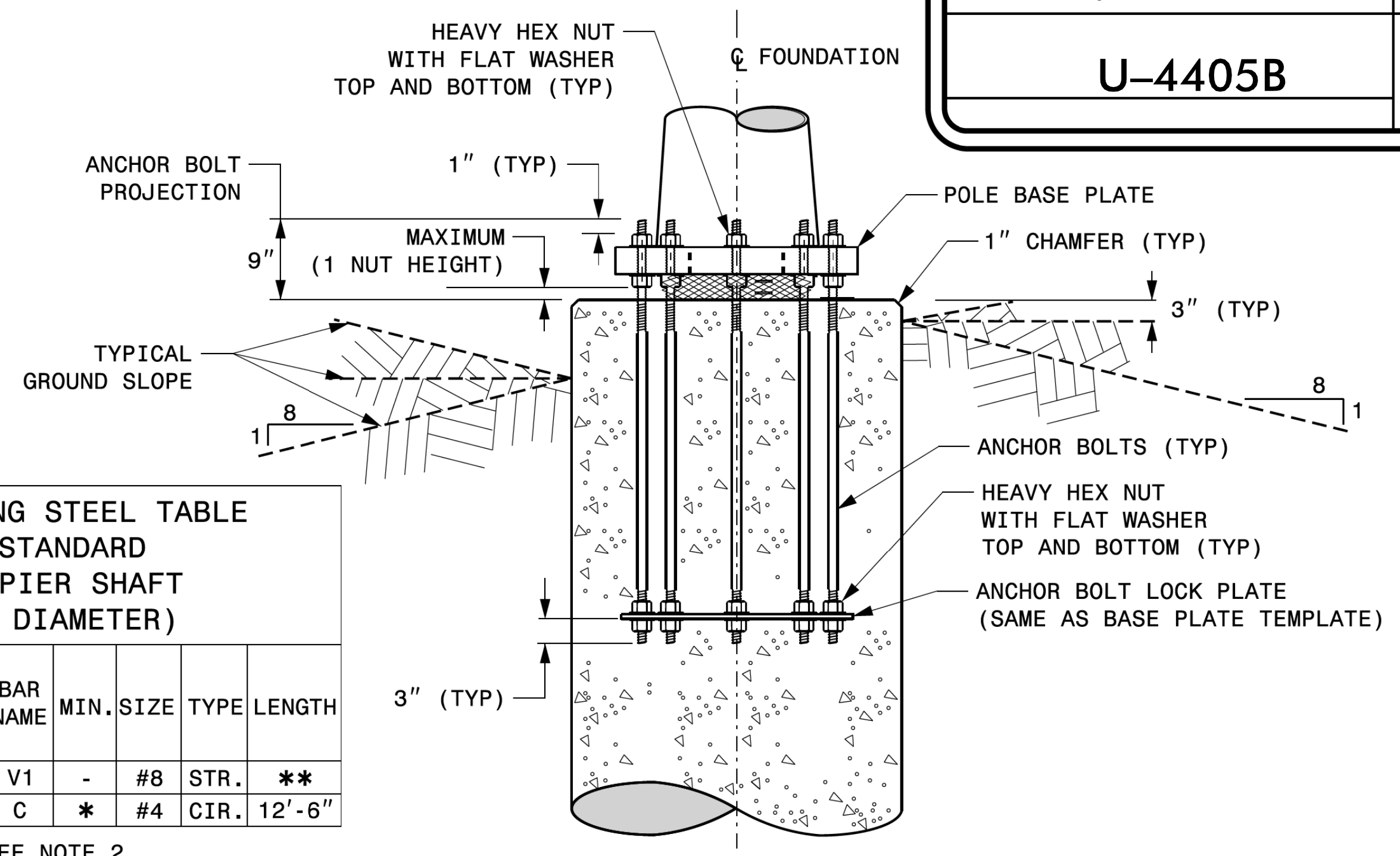
GENERAL NOTES:

- IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
- CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY +/- 3" AT A DEPTH BETWEEN 2'-0" AND 3'-0" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING IN THE CAGE.
- FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/- 3" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.
- PROVIDE 2" TO 5" FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.
- UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
- CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.
[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
- USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f'c=4500 psi (MIN) AFTER 28 DAYS.
- USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.
- PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6" WIDE AROUND PIPES UNDER THE BASE PLATE AND SECURE IT WITH TIES IF NECESSARY.
- PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)

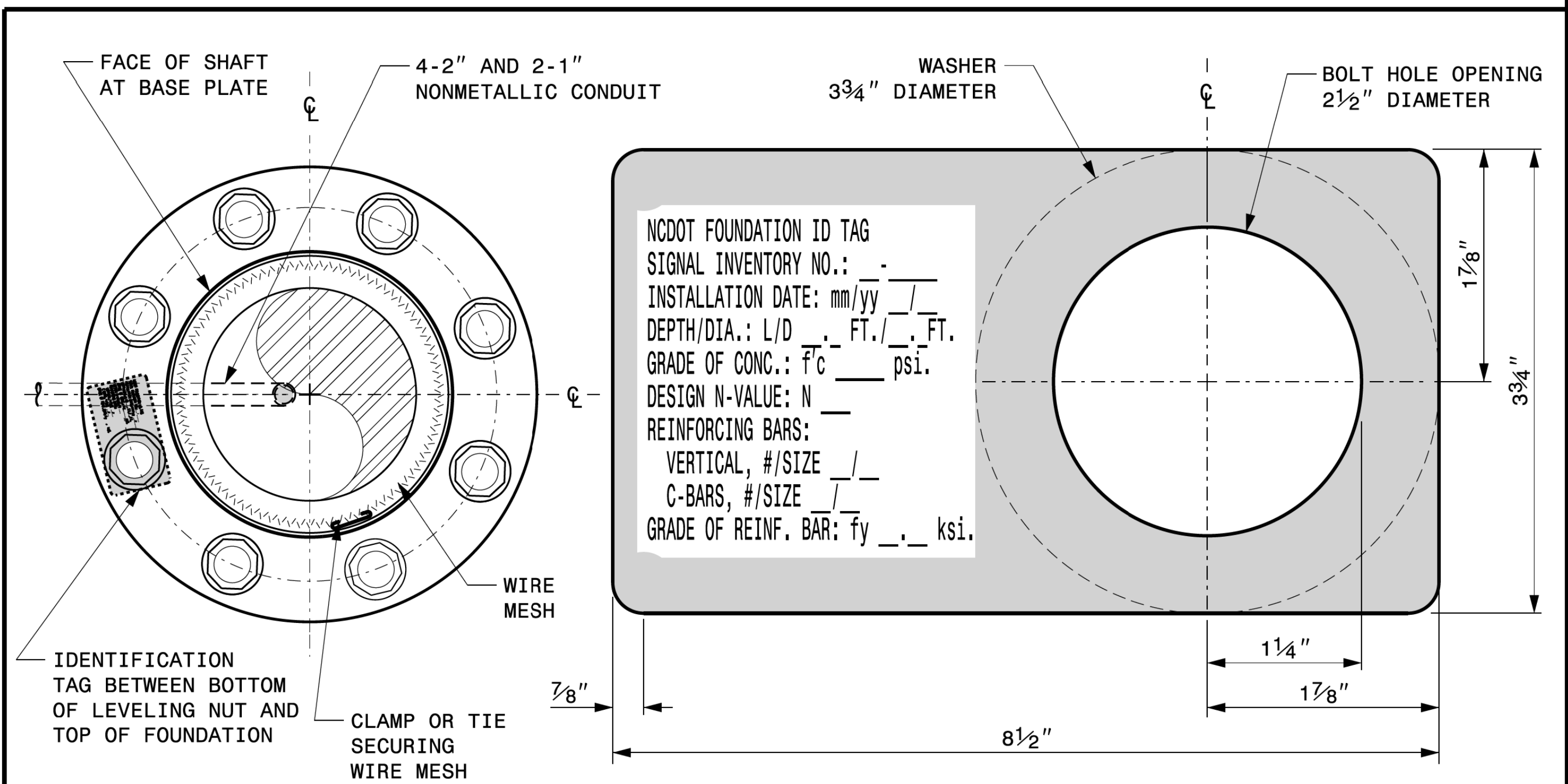
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN. SIZE	TYPE	LENGTH
4'-0"	.465 X L	V1	#8	STR.	**
		C	#4	CIR.	12'-6"

* SEE NOTE 2
** SEE NOTE 3



TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)



CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

D = DIAMETER
L = LENGTH / DEPTH
mm = MONTH
yy = YEAR

DETAIL - A

	<p>Construction Details For Foundations</p>	
	<p>PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON</p>	<p>REVIEWED BY: D.C. SARKAR</p>
<p>750 N. Grandfield Pkwy, Garner, NC 27529</p>	<p>SCALE: NA</p>	<p>DocuSigned by: Kevin Durigon 4B23DC79B3784DA</p>
<p>0</p>	<p>NONE</p>	<p>09/21/2023</p>

03-10-2023 12:45 S:\TSS\UITS\Sig.M7\Drawings\Drawings\2024\Meta1 Pole 5td Drawings For UIRFD\2024_Sig.M7_Std_Construction Details-Strain Poles.dgn Kcdur@ncdot.gov

Construction Details - Foundations

SOIL CONDITION

PROJECT I.D. NO.

SHEET NO.

U-4405B

Sig.M8

STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) – Feet							Reinforcement			
Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
			Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
S26L1	26	22	2	9	210	19.5	12.5	9	6.5	15.5	14.5	13	8	12	4	12
S26L2	26	23	2	10	240	19.5	12	9	6.5	15.5	14.5	13	8	12	4	12
S26L3	26	25	2	11	260	20.5	12	10	8	16	15	13	8	12	4	12
S30L1	30	22	2	9	230	19	11	9	7	15.5	14	12.5	8	12	4	12
S30L2	30	23	2	10	270	20	12	10	8	16	14.5	13	8	12	4	12
S30L3	30	25	2	11	290	21	12	10	8	17	15	13.5	8	12	4	12
S30H1	30	25	3	13	355	23	13	11	9	18	16.5	14.5	8	12	4	12
S30H2	30	29	3	15	405	25	14	11	9	19	17.5	15.5	8	14	4	12
S30H3	30	29	3	16	430	26	15	12	9	20	18	16	8	14	4	6
S35L1	35	22	3	8	260	19.5	12	10	8	15.5	14.5	13	8	12	4	12
S35L2	35	23	3	10	300	21	12	10	8	16.5	15	13.5	8	12	4	12
S35L3	35	25	3	10	320	21.5	13	10	8	17	15.5	14	8	12	4	12
S35H1	35	25	3	12	390	23.5	14	11	9	18	17	15	8	14	4	12
S35H2	35	29	4	14	460	26	15	12	9	20	18	16	8	14	4	6
S35H3	35	29	4	16	495	28.5	15	13.5	10	21.5	19	17	8	14	4	6

GENERAL NOTES:

1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.


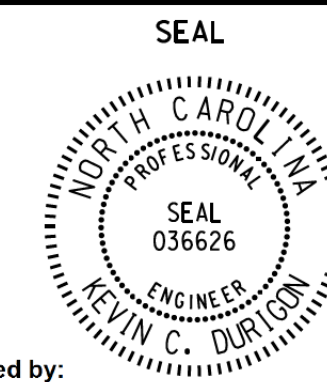
FOUNDATION SELECTION:

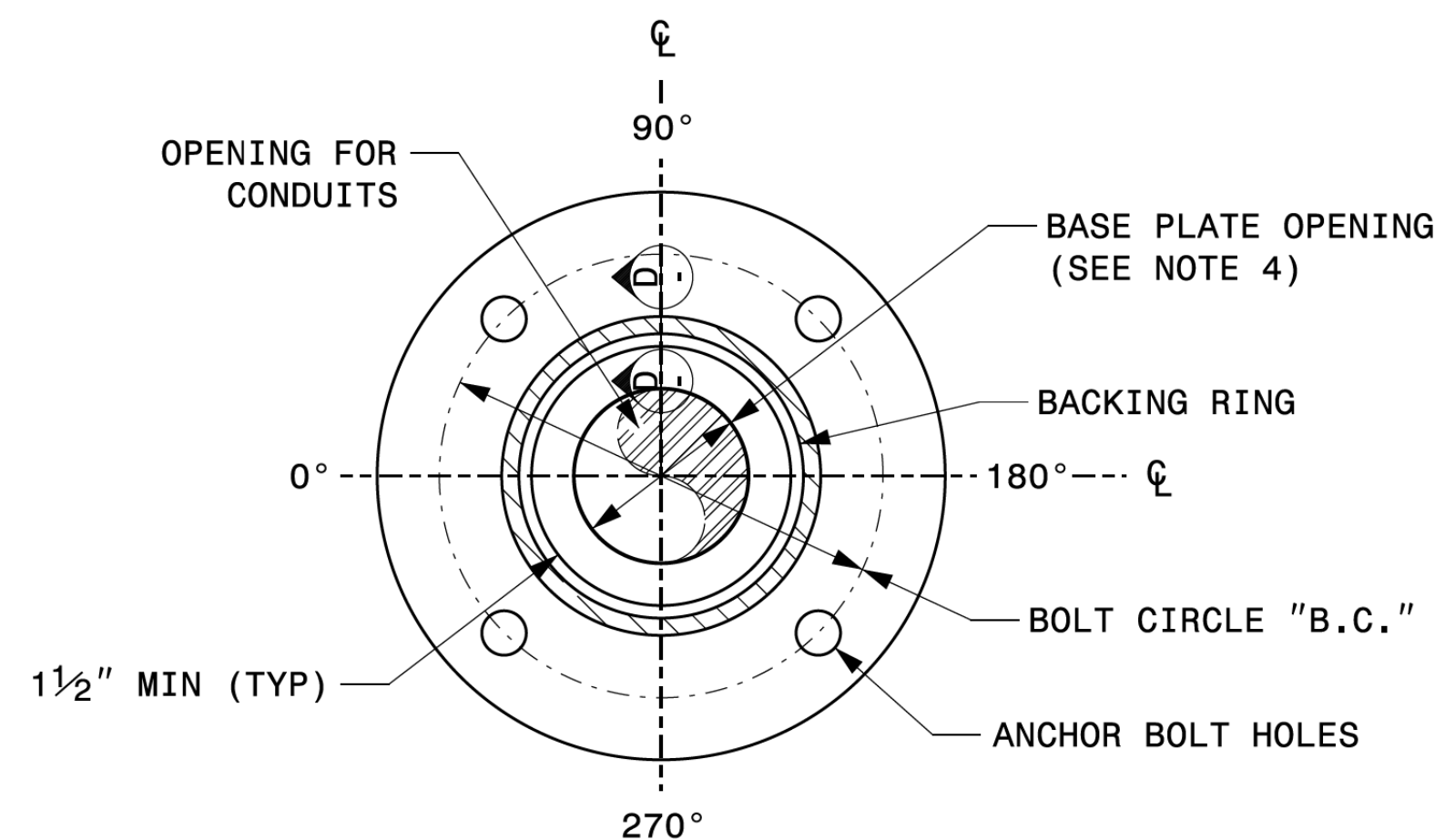
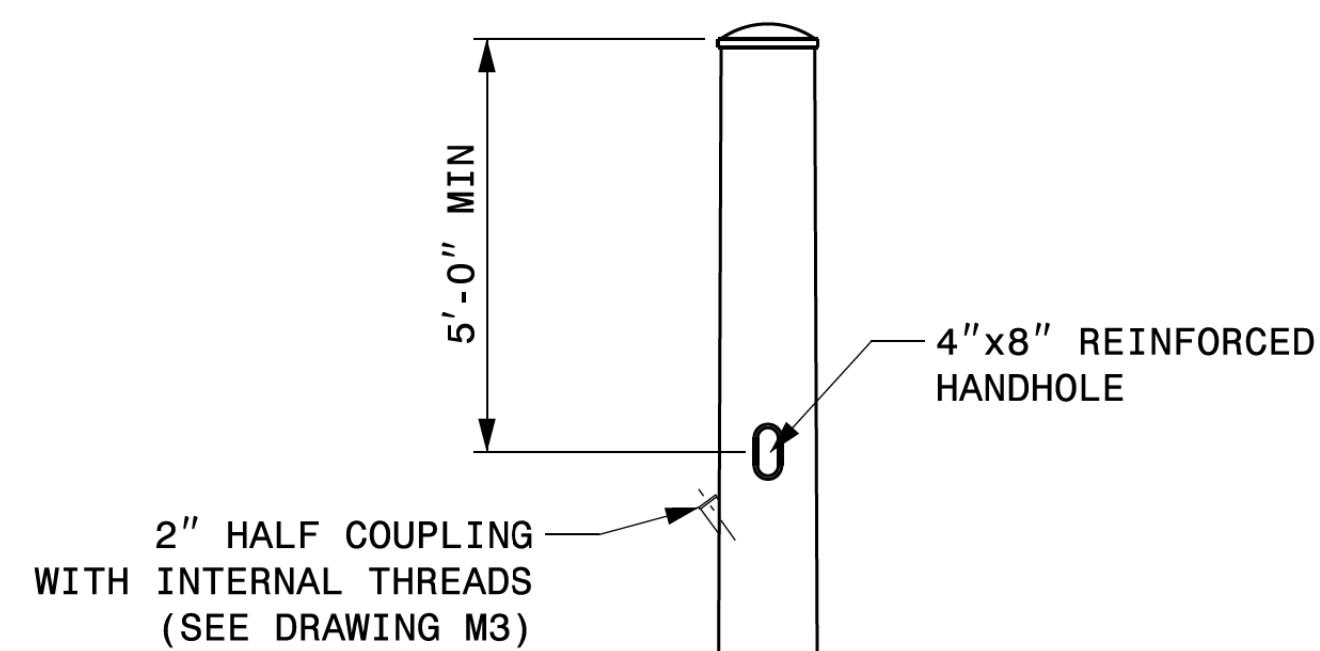
1. PERFORM A STANDARD PENETRATION TEST AT EACH PROPOSED FOUNDATION SITE TO DETERMINE "N" VALUE.
2. SELECT THE APPROPRIATE WIND ZONE FROM M1 DRAWING.
3. SELECT THE SOIL TYPE (CLAY OR SAND) THAT BEST DESCRIBES THE SOIL CHARACTERISTICS.
4. GET THE APPROPRIATE STANDARD POLE CASE NUMBER FROM THE PLANS OR FROM THE ENGINEER.
5. SELECT THE APPROPRIATE COLUMN UNDER "STANDARD FOUNDATIONS" BASED ON SOIL TYPE AND "N" VALUE. SELECT THE APPROPRIATE ROW BASED ON THE POLE LOAD CASE.
6. THE FOUNDATION DEPTH IS THE VALUE SHOWN IN THE "STANDARD FOUNDATIONS" CATEGORY WHERE THE COLUMN AND THE ROW INTERSECT.
7. USE CONSTRUCTION PROCEDURES AND DESIGN METHODS PRESCRIBED BY FHWA-NHI-10-016 MANUAL FOR DRILLED SHAFTS.

48" DIAMETER FOUNDATION CONCRETE VOLUME (CUBIC YARDS) = (0.465) x DRILLED PIER LENGTH

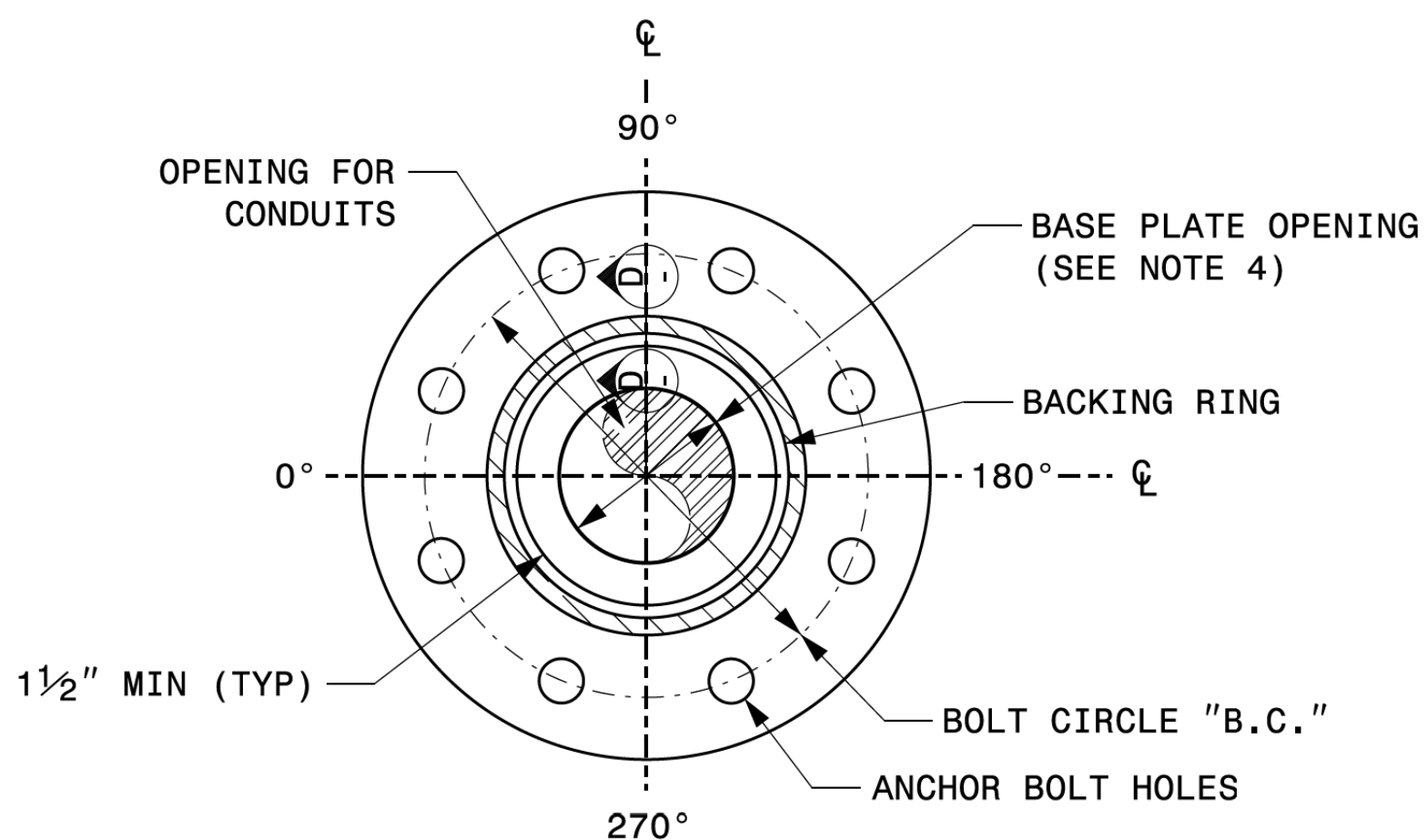
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Standard Strain Pole Foundation – All Soil Conditions

 <p style="font-size: 0.8em;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-weight: bold; font-size: 1.1em;">Standard Strain Pole Foundation for All Soil Conditions</p> <p style="font-size: 0.8em;">PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR</p>	<p style="font-size: 0.8em;">SEAL</p>  <p style="font-size: 0.8em;">DocuSigned by: <i>Kevin Durigon</i> 4B23DC79B3784DA</p>						
<p style="font-size: 0.8em;">SCALE</p> <p style="font-size: 0.8em;">0 NA</p> <p style="font-size: 0.8em;">NONE</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.7em;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE				<p style="font-size: 0.8em;">09/21/2023</p> <p style="font-size: 0.8em;">DATE</p>
REVISIONS	INIT.	DATE						

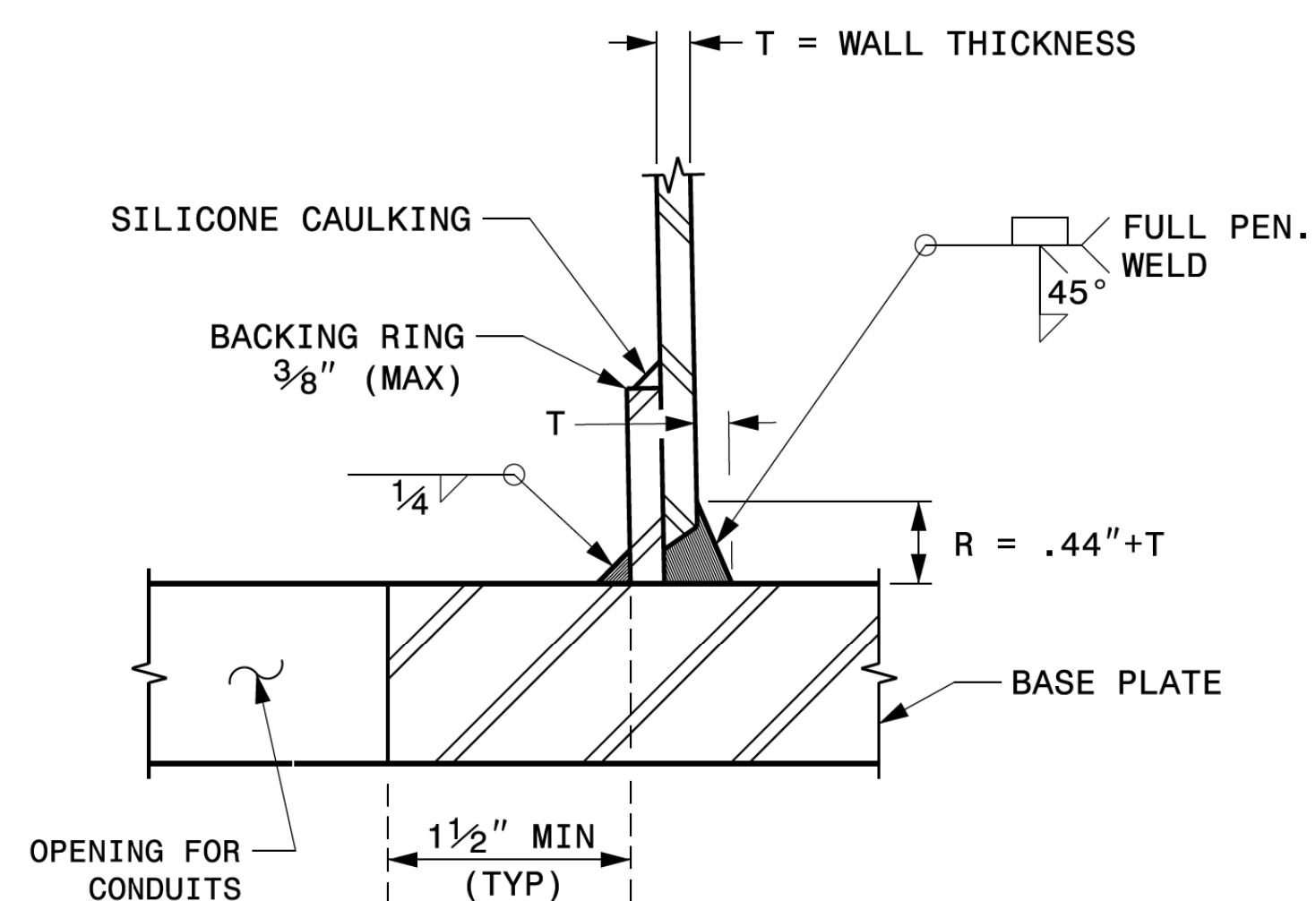


4 BOLT PATTERN FOR POLES UP TO 40'

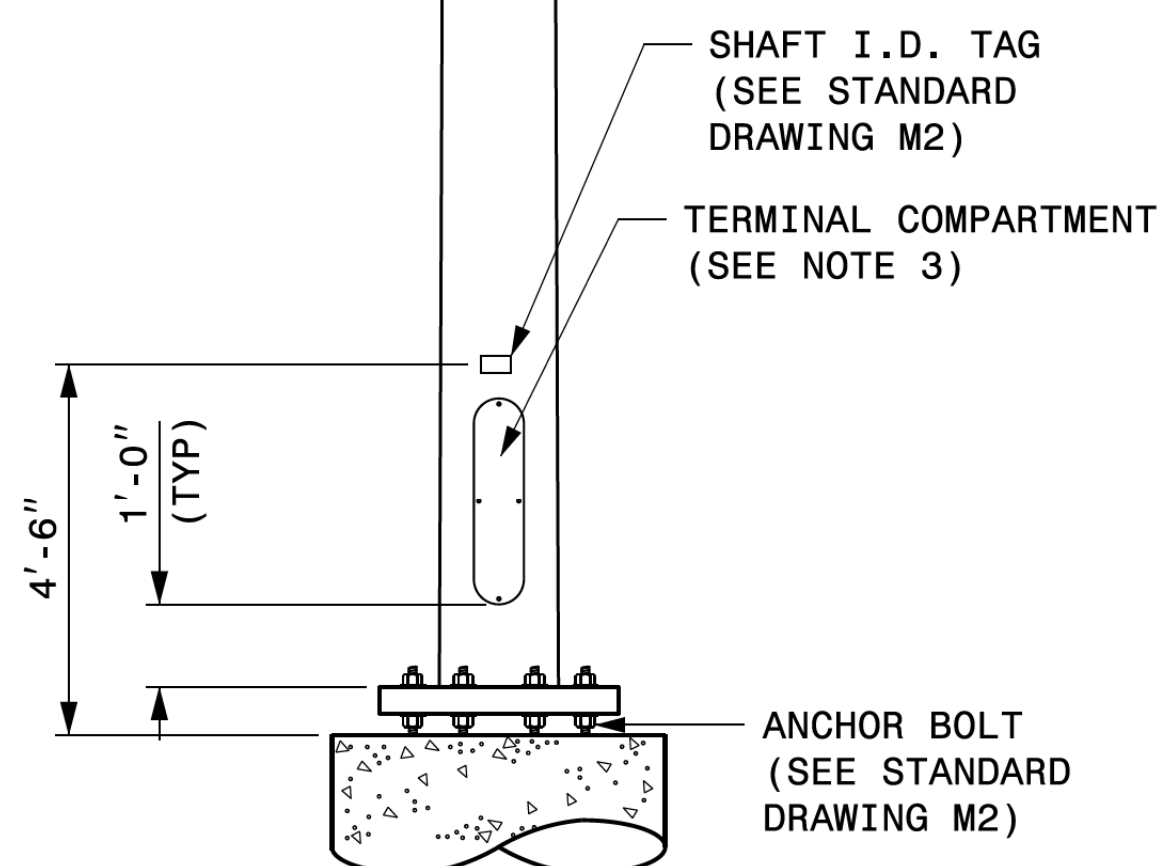


8 BOLT PATTERN FOR POLES TALLER THAN 40'

BASE PLATE DETAILS



SECTION D-D (POLE ATTACHMENT TO BASE PLATE) FULL-PENETRATION GROOVE WELD DETAIL



CCTV CAMERA POLE (NOT TO SCALE)

NOTES:

1. THIS DRAWING PROVIDES BASIC DETAILS FOR CCTV POLES. PROJECT REQUIREMENTS MAY REQUIRE SPECIAL FACTORY PREPS THAT ARE NOT SHOWN ON THESE DETAILS.
2. DETAILS FOR INTERNAL CAMERA LOWERING SYSTEMS ARE NOT SHOWN.
3. POLE MOUNTED CABINETS MAY REQUIRE MODIFICATIONS TO THE LOWER HANDHOLE OPENING TO MOUNT CABINETS. 4" X 8" REINFORCED HANDHOLES ARE ACCEPTABLE OPTIONS, AND MAY BE PREFERRED.
4. OPENING IN POLE BASE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3 1/2" BUT SHALL NOT BE LESS THAN 8 1/2".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 NA NONE

Typical Fabrication Details For CCTV Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON

PREPARED BY: K.C. DURIGON REVIEWED BY: C.F. ANDREWS

REVISIONS	INIT.	DATE

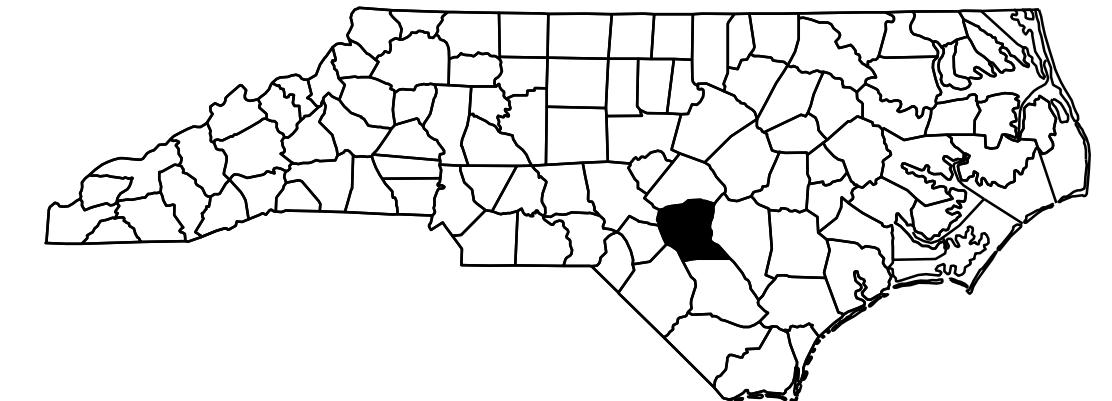
SEAL

DocuSigned by: Kevin Durigon

4B23DC79B3784DA

09/21/2023 DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

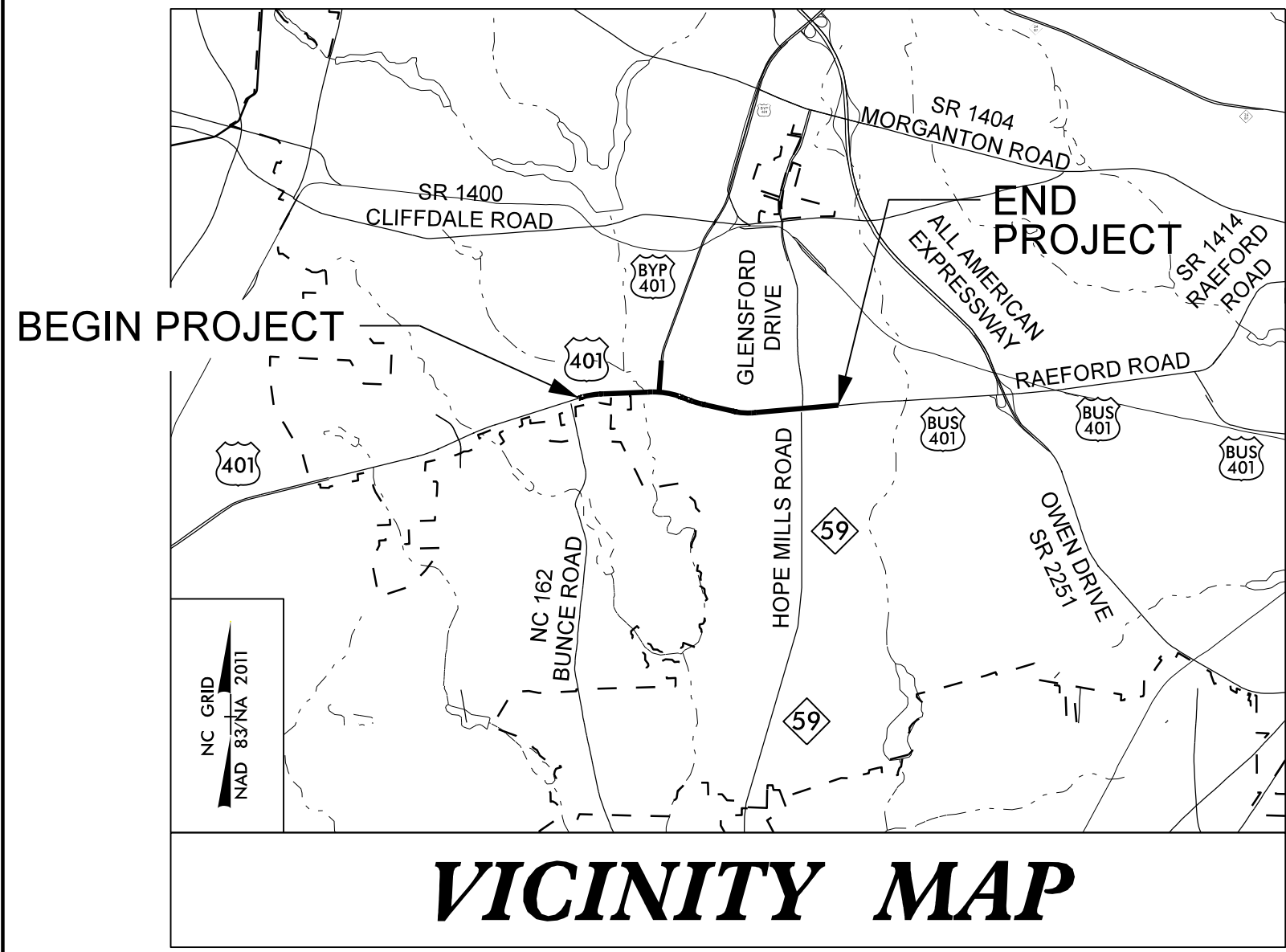


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

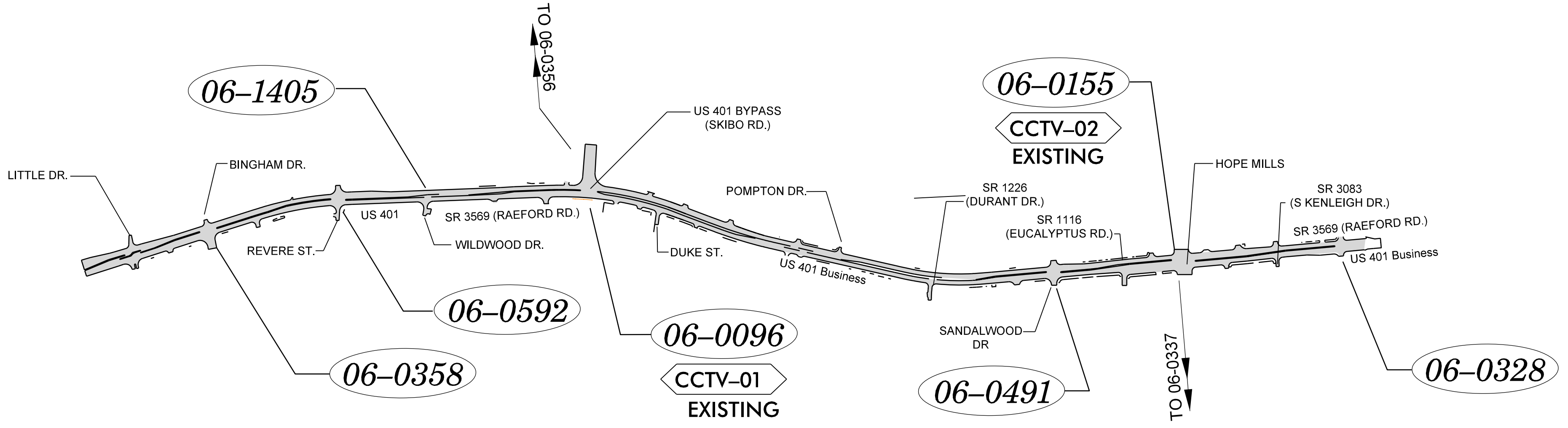
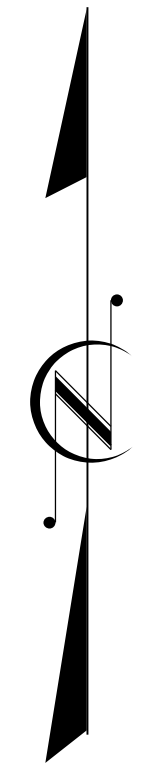
CUMBERLAND COUNTY

**LOCATION: FAYETTEVILLE - US 401 (RAEFORD ROAD) FROM
EAST OF NC 126 (BUNCE ROAD) TO EAST OF BRIGHTON ROAD**

TYPE OF WORK: TRAFFIC SIGNALS COMMUNICATIONS, AND CCTV



TIP PROJECT: U-4405B



Refer to "Roadway Standard Drawings
NCDOT" dated January 2024 and
"Standard Specifications for Roads
and Structures" dated January 2024.

INDEX OF PLANS

SHEET NUMBER	LOCATION / DESCRIPTION
SCP 1	TITLE SHEET
SCP 2	DRAWING FORMAT ITEMS - CONSTRUCTION NOTES, CABLE INSTALLATION NOTES
SCP 3-8	CABLE ROUTING PLAN
SCP 9-14	FIBER CABLE SPLICING DETAILS

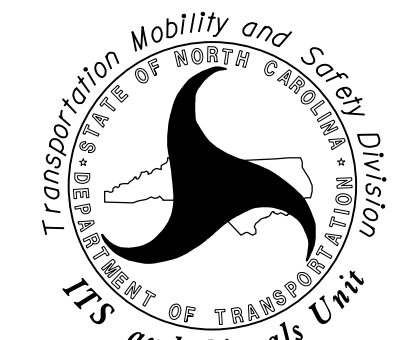
LEGEND
XX-XXXX SIGNAL INVENTORY No.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" ROADWAY DESIGN UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS.

STD. No.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURE
1101.04	TEMPORARY SHOULDER CLOSURE
1715.01	UNDERGROUND CONDUIT - TRENCHING
1716.01	JUNCTION BOXES
1720.01	WOOD POLES
1721.01	GUY ASSEMBLIES
1730.01	FIBER OPTIC CABLE - SPARE CABLE STORAGE
1751.01	CONTROLLER AND CABINETS - CABINET COMPONENT LAYOUT
1751.02	CONTROLLER AND CABINETS - POWER, GROUND, AND AUXILIARY

Plans Prepared for:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY DIVISION



750 N. Greenfield Parkway, Garner, NC 27529



Stantec Consulting Services Inc.
801 Jones Franklin Rd-Suite 300
Raleigh, NC 27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com
License No. F-0672

Regina Muncey, PE
Senior Transportation Engineer

James Hambricht
Senior Transportation Technician

NCDOT CONTACT:
**TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS UNIT**

Gregg Green
Signal Communication Project Engineer

12:40:32 PM U:\Traffic\Signals - U-4405B\Design\ITS and SCP Design\Cable Routing\U-4405B_SCP_SCP-01.dgn User:rmuncey

- 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE - 38, (FIGURE - 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE - 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 4 INSTALL SMFO CABLE
- 4A EXISTING SMFO CABLE
- 5 INSTALL WEATHERPROOF CATEGORY 5e UTP - 4 PAIR 23 AWG CABLE (PoE)
- 6 INSTALL FIBER OPTIC DROP CABLE
- 6A EXISTING FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET
- 28A MODIFY INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPlice ENCLOSURE
- 29A MODIFY UNDERGROUND SPlice ENCLOSURE
- 30 INSTALL AERIAL SPlice ENCLOSURE
- 30A MODIFY AERIAL SPlice ENCLOSURE
- 31 INSTALL POLE MOUNTED CABINET
- 32 INSTALL BASE MOUNTED SPlice CABINET (336) WITH EXTENDED BASE
- 33 REMOVE EXISTING SPlice CABINET

- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING MESSENGER CABLE
- 49 REMOVE EXISTING COMMUNICATIONS CABLE
- 49A BACK-PULL EXISTING COMMUNICATION CABLE
- 50 INSTALL ETHERNET SWITCH
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 50 FEET OF COMMUNICATIONS CABLE
- 54 STORE 20 FEET OF COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE FOR DMS/CCTV
- 58A INSTALL NEW POLE MOUNTED DMS CABINET
- 58B INSTALL DISCONNECT ON DMS STRUCTURE
- 58C INSTALL PEDESTAL-TYPE SIGN STRUCTURE FOUNDATION AND DMS ASSEMBLY
- 59 INSTALL NEW BASE MOUNTED CABINET (336)
- 60 SEAL ALL CONDUIT ENTERING JUNCTION BOXES AND SIGNAL/CCTV/DMS CONTROL CABINETS WITH MOLDABLE DUCT SEAL
- 61 INSTALL COMMUNICATION CABLES THROUGH EXISTING NIPPLE ON METAL POLE. ROUTE CABLE(S) INSIDE METAL POLE AND OUT TO SIGNAL CABINET. USE EXISTING JUNCTION BOXES AND CONDUIT SYSTEMS WHEN AVAILABLE. ENSURE FIBER CABLES DO NOT SHARE JUNCTION BOXES AND CONDUIT SYSTEMS WITH SIGNAL CABLES OR OTHER 120 VOLT CURRENT CARRYING CONDUCTORS.
- 62 INSTALL HEAT SHRINK TUBING RETROFIT KIT
- 63 INSTALL CELLULAR MODEM AND ANTENNA
- 64 BOND TRACER WIRE TO EQUIPMENT GROUND BUS

LEGEND

	NEW FIBER OPTIC COMMUNICATIONS CABLE
	NEW TWISTED PAIR COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW AERIAL GUY ASSEMBLY
	NEW CONDUIT
	EXISTING CONDUIT
	NEW DIRECTIONAL DRILLED CONDUIT
	NEW BORED AND JACKED CONDUIT
	NEW JUNCTION BOX
	EXISTING JUNCTION BOX
	NEW WOOD POLE
	EXISTING WOOD POLE
	NEW AERIAL SPICE ENCLOSURE
	EXISTING AERIAL SPICE ENCLOSURE
	NEW METAL POLE
	EXISTING METAL POLE
	NEW CCTV CAMERA ASSEMBLY
	EXISTING CCTV CAMERA ASSEMBLY
	NEW STANDARD GUY ASSEMBLY
	NEW STANDARD GUY USING EXISTING ANCHOR
	NEW SIDEWALK GUY ASSEMBLY
	NEW CABLE STORAGE RACKS (SNOW SHOES)
	EXISTING CABLE STORAGE RACKS (SNOW SHOES)
	EXISTING CONTROLLER CABINET
	EXISTING SPICE CABINET
	NEW SPICE CABINET, BASE MOUNTED
	EXISTING CCTV CABINET
	SIGNAL POLE
	SIGNAL INVENTORY NUMBER
	CCTV IDENTIFICATION NUMBER
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	EXISTING UTILITY CABLE TO BE RELOCATED OR REMOVED
	EXISTING POWER PEDESTAL
	UTILITY POLE TAG NUMBER
	JOINT USE POLE
	METAL POLE

CONSTRUCTION NOTE SYMBOLOGY KEY

XX INDICATES NUMBER OF CABLES, LOOPS, ETC.

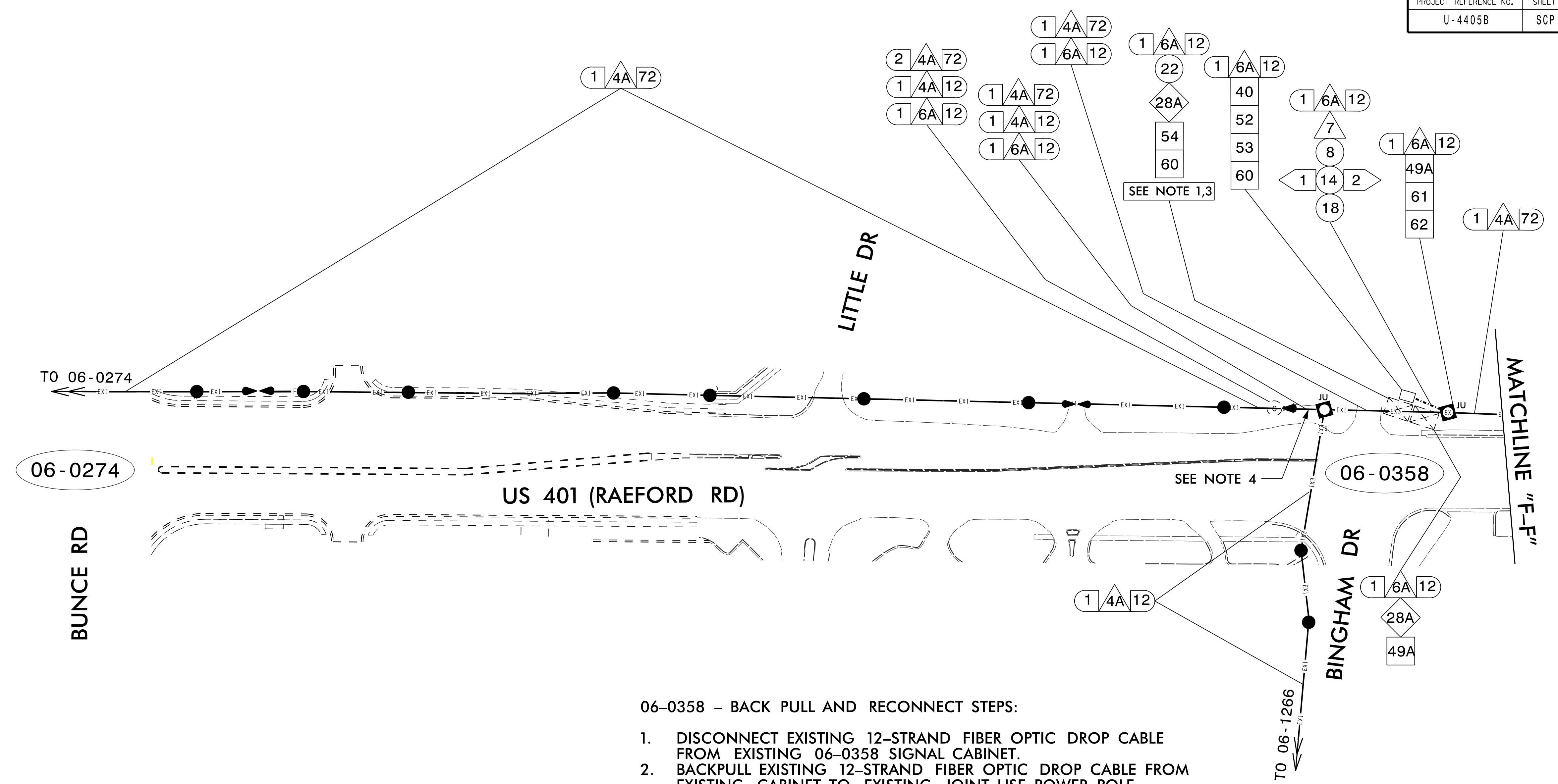
XX INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.

XX INDICATES NUMBER OF RISER(S)/CONDUIT(S)

XX INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)

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Prepared for the Offices of: 		SEAL REGINA M. MUNCEY ENGINEER	
CONSTRUCTION NOTES AND LEGEND			
DIVISION 06 CUMBERLAND CO. FAYETTEVILLE		REVIEWED BY: R. MUNCEY	
PLAN DATE: AUGUST 2024		REVIEWED BY: L. OVERN	
PREPARED BY:		REVISIONS	
SCALE		INIT. DATE	
NTS			
750 N. Greenfield Plaza, Garner, NC 27529		DocuSigned by: Regina M. Muncey 10/8/2024	
		SIGNATURE DATE	
		CADD FILE NAME	



06-0358 - BACK PULL AND RECONNECT STEPS:

1. DISCONNECT EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING 06-0358 SIGNAL CABINET.
2. BACKPULL EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING CABINET TO EXISTING JOINT-USE POWER POLE.
3. RELOCATE EXISTING CABINET, CONTROLLER, & ETHERNET SWITCH ONTO NEW CABINET FOUNDATION.
4. REINSTALL/REROUTE EXISTING DROP CABLE THROUGH JOINT-USE POWER POLE TO RELOCATED CABINET.
5. RE-SPLICE EXISTING 12-STRAND FIBER OPTIC DROP CABLE AT RELOCATED 06-0358 SIGNAL CABINET.
6. REMOVE ANY REMAINING TEMPORARY MESSENGER CABLE/OTHER ASSOCIATED HARDWARE, AS APPLICABLE.

GENERAL NOTE:

FIVE (5) DAYS BEFORE BEGINNING ANY WORK ON THE SIGNAL COMMUNICATIONS SYSTEM, THE CONTRACTOR SHALL CONTACT THE CITY OF FAYETTEVILLE TRAFFIC SERVICES DIVISION AT 910-433-1660. WORK IS NOT COMPLETE UNTIL ALL MODIFICATIONS TO THE SIGNAL COMMUNICATION SYSTEM HAVE BEEN MADE AND THE SYSTEM IS OPERATIONAL.

NOTES:

1. AS PART OF TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1), THE EXISTING CONTROLLER AND CABINET WILL BE RELOCATED TO A NEW CABINET FOUNDATION AND THE EXISTING COMMUNICATION CABLES WILL NEED TO BE BACK-PULLED FROM THE EXISTING CABINET LOCATION AND RECONNECTED AT THE NEW CABINET LOCATION.
2. ALL EXISTING FIBER OPTIC SPLICES WERE INSTALLED BY OTHERS AND ARE ASSUMED TO BE INSTALLED PER THE SPLICING DETAILS (SEE SHEETS SCP-9 TO SCP-15). IF ANY DISCREPANCIES ARE NOTED, CONTACT DIVISION AND/OR CITY ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTION.
3. EXISTING CABINET RELOCATED ONTO NEW CABINET FOUNDATION.
4. EXISTING JOINT USE POLE WITH EXISTING SPARE COILED DROP CABLE. STORE EXTRA DROP CABLE IN JUNCTION BOX AND/OR CABINET.

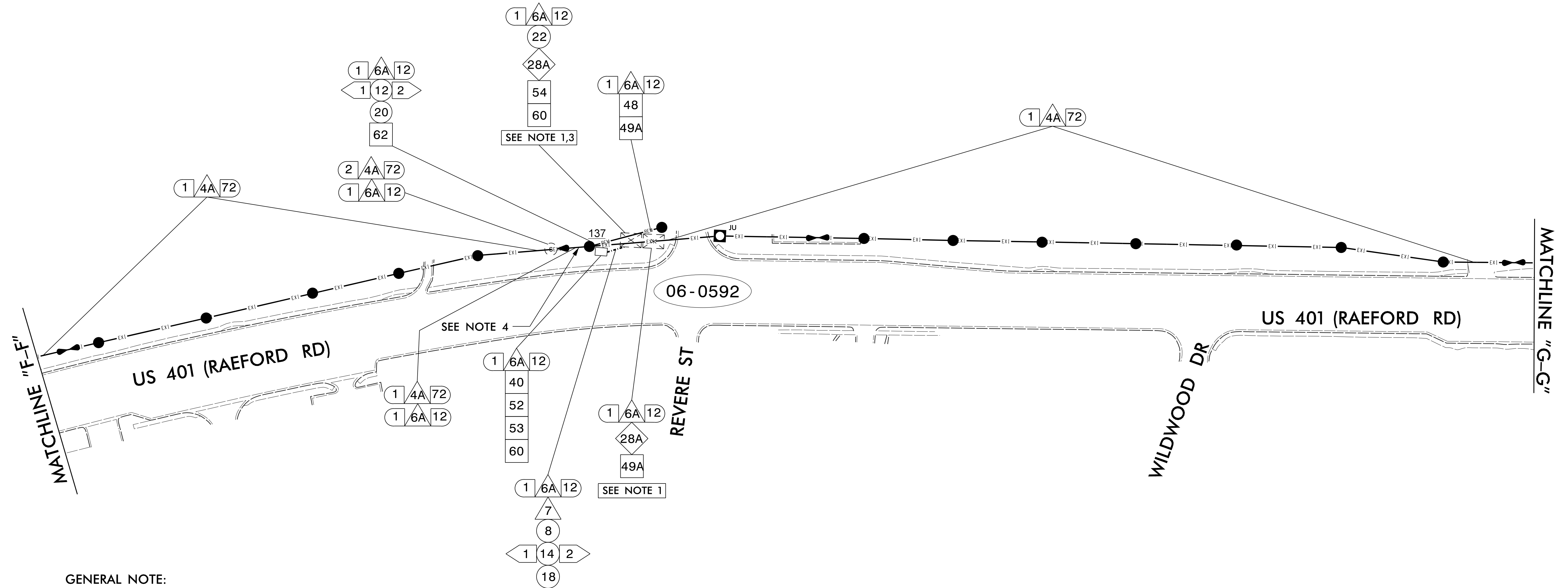
TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1)

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>		<p>COMMUNICATIONS CABLE / CONDUIT ROUTING PLANS</p>		
		<p>DIVISION 06 CUMBERLAND CO. FAYETTEVILLE</p> <p>PLAN DATE: AUGUST 2024 REVIEWED BY: R. MUNCEY</p> <p>PREPARED BY: L. OVERN REVIEWED BY: L. OVERN</p>	<p>INIT. DATE</p>	
<p>750 N. Greenfield Plaza, Garner, NC 27529</p>		<p>SCALE: NTS</p>	<p>REVISIONS</p>	<p>DocuSigned by: Regina M. Muncey 10/8/2024</p>

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06-0592 BACK PULL AND RECONNECT STEPS:

1. DISCONNECT EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING 06-0592 SIGNAL CABINET.
2. UNLASH EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING TEMPORARY MESSENGER CABLE. PULL DROP CABLE FROM EXISTING CABINET TO EXISTING POWER POLE (#137).
3. RELOCATE EXISTING CABINET, CONTROLLER, & ETHERNET SWITCH ONTO NEW CABINET FOUNDATION.
4. REINSTALL/REROUTE EXISTING DROP CABLE THROUGH RISER ON POWER POLE (#137), CONDUIT, AND JUNCTION BOX TO RELOCATED CABINET.
5. RE-SPLICE EXISTING 12-STRAND FIBER OPTIC DROP CABLE AT RELOCATED 06-0592 SIGNAL CABINET.
6. REMOVE ANY REMAINING TEMPORARY MESSENGER CABLE/OTHER ASSOCIATED HARDWARE, AS APPLICABLE.



GENERAL NOTE:

FIVE (5) DAYS BEFORE BEGINNING ANY WORK ON THE SIGNAL COMMUNICATIONS SYSTEM, THE CONTRACTOR SHALL CONTACT THE CITY OF FAYETTEVILLE TRAFFIC SERVICES DIVISION AT 910-433-1660. WORK IS NOT COMPLETE UNTIL ALL MODIFICATIONS TO THE SIGNAL COMMUNICATION SYSTEM HAVE BEEN MADE AND THE SYSTEM IS OPERATIONAL.

NOTES:

1. AS PART OF TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1), THE EXISTING CONTROLLER AND CABINET WILL BE RELOCATED TO A NEW CABINET FOUNDATION AND THE EXISTING COMMUNICATION CABLES WILL NEED TO BE BACK-PULLED FROM THE EXISTING CABINET LOCATION AND RECONNECTED AT THE NEW CABINET LOCATION.
2. ALL EXISTING FIBER OPTIC SPLICES WERE INSTALLED BY OTHERS AND ARE ASSUMED TO BE INSTALLED PER THE SPLICING DETAILS (SEE SHEETS SCP-9 TO SCP-15). IF ANY DISCREPANCIES ARE NOTED, CONTACT DIVISION AND/OR CITY ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTION.
3. EXISTING CABINET RELOCATED ONTO NEW CABINET FOUNDATION.
4. EXISTING JOINT USE POLE WITH EXISTING SPARE COILED DROP CABLE. STORE EXTRA DROP CABLE IN JUNCTION BOX AND/OR CABINET.

TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1)

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<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>750 N. Greenfield Plaza, Garner, NC 27529</p>	<p>COMMUNICATIONS CABLE / CONDUIT ROUTING PLANS</p>							
		<p>DIVISION 06 CUMBERLAND CO. FAYETTEVILLE</p> <p>PLAN DATE: AUGUST 2024 REVIEWED BY: R. MUNCEY</p> <p>PREPARED BY: L. OVERN REVIEWED BY: L. OVERN</p>	<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DESCRIPTION	INIT.	DATE	
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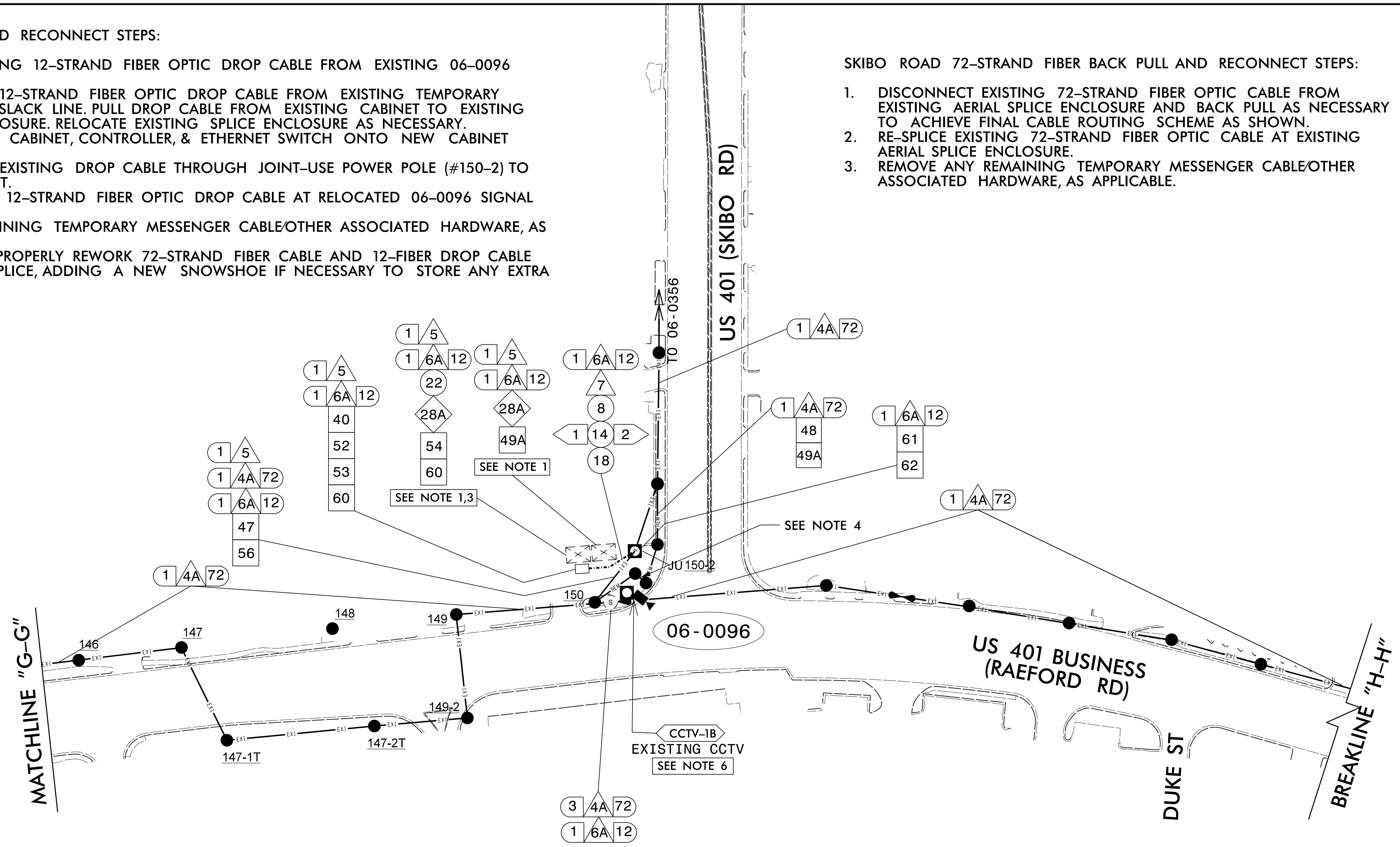
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06-0096 BACK PULL AND RECONNECT STEPS:

1. DISCONNECT EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING 06-0096 SIGNAL CABINET.
2. UNLASH EXISTING 12-STRAND FIBER OPTIC DROP CABLE FROM EXISTING TEMPORARY MESSENGER CABLE SLACK LINE. PULL DROP CABLE FROM EXISTING CABINET TO EXISTING AERIAL SPLICE ENCLOSURE. RELOCATE EXISTING SPLICE ENCLOSURE AS NECESSARY.
3. RELOCATE EXISTING CABINET, CONTROLLER, & ETHERNET SWITCH ONTO NEW CABINET FOUNDATION.
4. REINSTALL/ROUTER EXISTING DROP CABLE THROUGH JOINT-USE POWER POLE (#150-2) TO RELOCATED CABINET.
5. RE-SPLICE EXISTING 12-STRAND FIBER OPTIC DROP CABLE AT RELOCATED 06-0096 SIGNAL CABINET.
6. REMOVE ANY REMAINING TEMPORARY MESSENGER CABLE/OTHER ASSOCIATED HARDWARE, AS APPLICABLE.
7. CONTRACTOR TO PROPERLY REWORK 72-STRAND FIBER CABLE AND 12-FIBER DROP CABLE BACK TO AERIAL SPLICE, ADDING A NEW SNOWSHOE IF NECESSARY TO STORE ANY EXTRA FIBER.

SKIBO ROAD 72-STRAND FIBER BACK PULL AND RECONNECT STEPS:

1. DISCONNECT EXISTING 72-STRAND FIBER OPTIC CABLE FROM EXISTING AERIAL SPLICE ENCLOSURE AND BACK PULL AS NECESSARY TO ACHIEVE FINAL CABLE ROUTING SCHEME AS SHOWN.
2. RE-SPLICE EXISTING 72-STRAND FIBER OPTIC CABLE AT EXISTING AERIAL SPLICE ENCLOSURE.
3. REMOVE ANY REMAINING TEMPORARY MESSENGER CABLE/OTHER ASSOCIATED HARDWARE, AS APPLICABLE.



GENERAL NOTE:

FIVE (5) DAYS BEFORE BEGINNING ANY WORK ON THE SIGNAL COMMUNICATIONS SYSTEM, THE CONTRACTOR SHALL CONTACT THE CITY OF FAYETTEVILLE TRAFFIC SERVICES DIVISION AT 910-433-1660. WORK IS NOT COMPLETE UNTIL ALL MODIFICATIONS TO THE SIGNAL COMMUNICATION SYSTEM HAVE BEEN MADE AND THE SYSTEM IS OPERATIONAL.

NOTES:

1. AS PART OF TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1), THE EXISTING CONTROLLER AND CABINET WILL BE RELOCATED TO A NEW CABINET FOUNDATION AND THE EXISTING COMMUNICATION CABLES WILL NEED TO BE BACK-PULLED FROM THE EXISTING CABINET LOCATION AND RECONNECTED AT THE NEW CABINET LOCATION.
2. ALL EXISTING FIBER OPTIC SPLICES WERE INSTALLED BY OTHERS AND ARE ASSUMED TO BE INSTALLED PER THE SPLICING DETAILS (SEE SHEETS SCP-9 TO SCP-15). IF ANY DISCREPANCIES ARE NOTED, CONTACT DIVISION AND/OR CITY ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTION.
3. EXISTING CABINET RELOCATED ONTO NEW CABINET FOUNDATION.
4. EXISTING JOINT USE POLE WITH EXISTING SPARE COILED DROP CABLE. STORE EXTRA DROP CABLE IN JUNCTION BOX AND/OR CABINET.
5. THE SECTION OF FIBER CABLE SHOWN TO BE INSTALLED ON THE SOUTH SIDE OF THE ROAD, FROM POLE No.147, 147-1T, 147-2T, 149-2 AND BACK TO POLE No. 149, IS A TEMPORARY CABLE ROUTE TO ACCOMMODATE CULVERT CONSTRUCTION. ONCE THIS WORK IS COMPLETED, THE CONTRACTOR SHALL REINSTALL THE FO CABLE BACK TO THE NORTH SIDE OF RAEFORD ROAD UTILIZING POLE No. 147, No. 148 AND No. 149, THIS WORK SHALL BE AT THE DIRECTION OF THE ENGINEER.
6. THE EXISTING CCTV CAMERA SHALL BE DISCONNECTED FROM THE ETHERNET EDGE SWITCH IN EXISTING CABINET LOCATION AND RECONNECTED TO THE ETHERNET EDGE SWITCH IN NEW CABINET LOCATION VIA NEW CAT 5e/6 PoE CABLE.

TEMPORARY SIGNAL DESIGN 1 (TMP PHASE 1)

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