This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

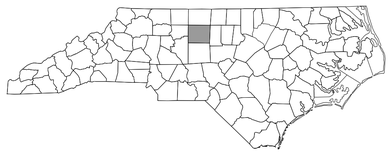
Project: U-5850

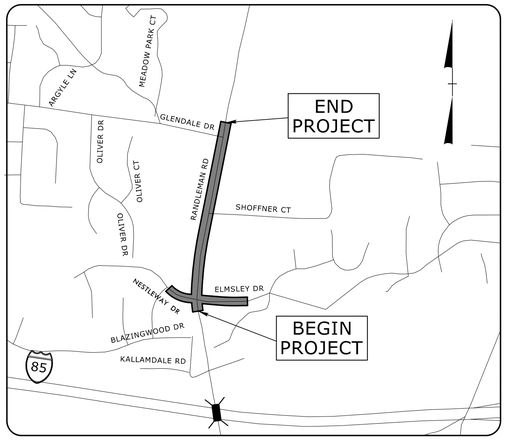
CONTRACT: DG00636

Project No.	Sheet No.
U-5850	Sig. 1.0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY





VICINITY MAP

NOT TO SCALE

LOCATION: SR 1007 (RANDLEMAN RD) FROM W. ELMSLEY DR. TO GLENDALE DR.
TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS

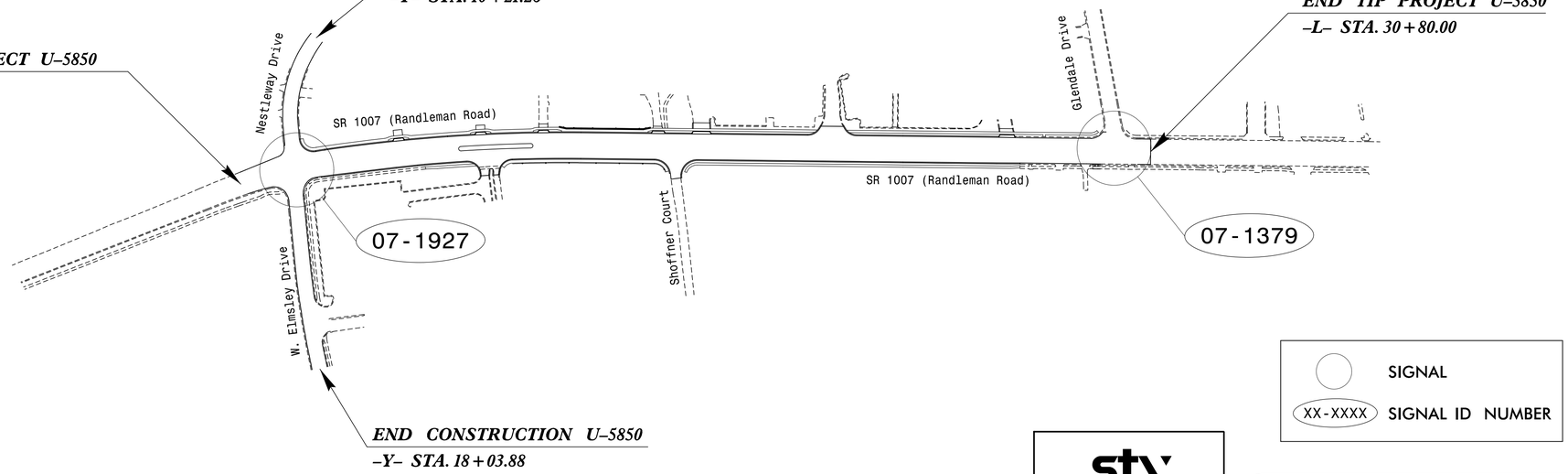
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BEGIN CONSTRUCTION U-5850
-Y- STA. 10+21.26

BEGIN TIP PROJECT U-5850
-L- STA. 11+20.22

END TIP PROJECT U-5850
-L- STA. 30+80.00



END CONSTRUCTION U-5850
-Y- STA. 18+03.88

SIGNAL
XX-XXXX SIGNAL ID NUMBER

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

Index of Plans

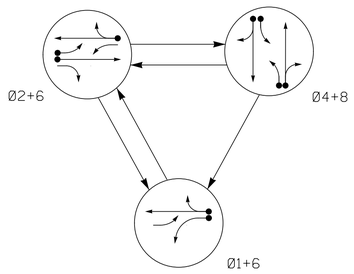
Sheet #	Reference #	Location/Description
Sig. 1.0	-------	Title Sheet
Sig. 2.0-3.4	07-1927	SR 1007 (Randleman Road) at Nestleway Drive/ W. Elmsley Drive
Sig. 4.0-5.4	07-1379	SR 1007 (Randleman Road) at Glendale Drive
SCP 1-7	N/A	Signal Communication Plans

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT
Contacts:
Rob Ziemba, PE - Central Region Signals Engineer
D. Todd Joyce, PE - Signal Equipment Design Engineer
Gregory A. Green - Signal Communications Project Engineer
Heidi Berggren, EI - Signal Communication Project Design Engineer
STV Engineers, Inc.
Contacts:
Trent M. Moody, PE - Senoir Associate Engineering Director

Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION
TSMO UNIT
750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 2.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

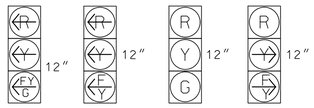
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4+8	FLASH
11	←-	F/Y	R	R
21	F/Y	F/Y	R	R
22, 23	R	G	R	R
24	R	F/Y	R	R
41, 42	R	R	G	R
43	R	R	F/Y	R
61, 62	G	G	R	R
81, 82	R	R	G	R
83	R	R	F/Y	R

SIGNAL FACE I.D.

All Heads L.E.D.

F/Y/G = Bimodal Section



LOOP & DETECTOR UNIT INSTALLATION CHART

TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

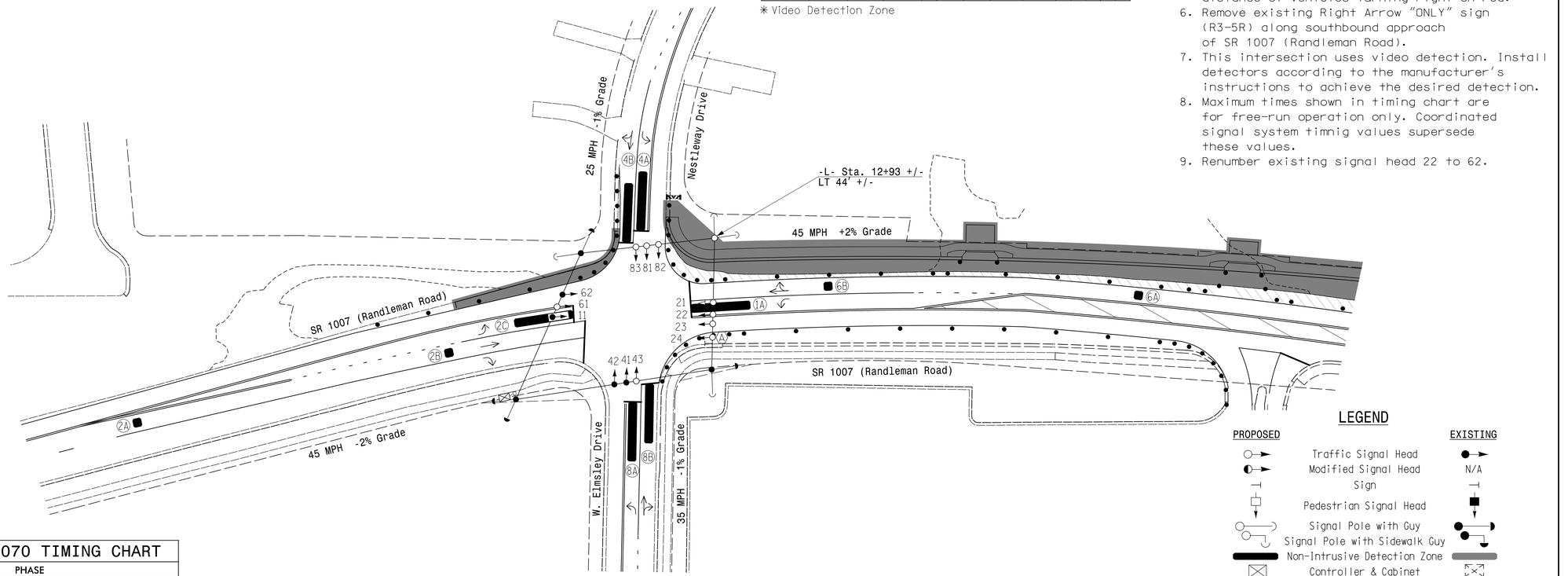
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
1A*	6X40	0	*	*	1	-	15	-	X	X	-	-	*
2A*	6X6	300	*	*	2	-	-	1.6	X	X	X	-	*
2B*	6X6	90	*	*	2	-	-	-	X	X	X	-	*
2C*	6X40	0	*	*	2	-	-	-	X	X	-	-	*
4A*	6X40	0	*	*	4	-	3	-	X	X	-	-	*
4B*	6X40	0	*	*	4	-	10	-	X	X	-	-	*
6A*	6X6	300	*	*	6	-	-	1.6	X	X	X	-	*
6B*	6X6	90	*	*	6	-	-	-	X	X	X	-	*
8A*	6X40	0	*	*	8	-	3	-	X	X	-	-	*
8B*	6X40	0	*	*	8	-	10	-	X	X	-	-	*

* Video Detection Zone

3 Phase
Fully Actuated
(Greensboro 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 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Remove existing Right Arrow "ONLY" sign (R3-5R) along southbound approach of SR 1007 (Randleman Road).
7. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timnig values supersede these values.
9. Renumber existing signal head 22 to 62.



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head	■
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
▬	Non-Intrusive Detection Zone	▬
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	———
→	Directional Arrow	→
▬	Construction Zone	▬
●●	Construction Zone Drums	●●
⋈	Pedestrian Barricade	⋈
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ

TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 1	2	4	6	8
Min Green *	7	12	7	12	7
Gap, Extension *	2.0	2.0	2.0	2.0	2.0
Maximum Green 1 *	20	75	30	75	30
Maximum Green 2 *	-	-	-	-	-
Yellow Clear	3.0	4.7	3.9	4.7	3.9
Red Clear	1.9	1.0	2.1	1.0	2.1
Walk *	-	-	-	-	-
Pedestrian Clear	-	-	-	-	-
Green/Ped Delay	-	-	-	-	-
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Lock Calls	NO	YES	NO	YES	NO
Dual Entry	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* 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.

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Signal Upgrade -
Temporary Design - (TMP Phase 2, Step 1)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section

750 N.Greenfield Pkwy.Garner,NC 27529

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.W. Moody

PREPARED BY: R.L. Aristondo REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

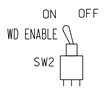
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

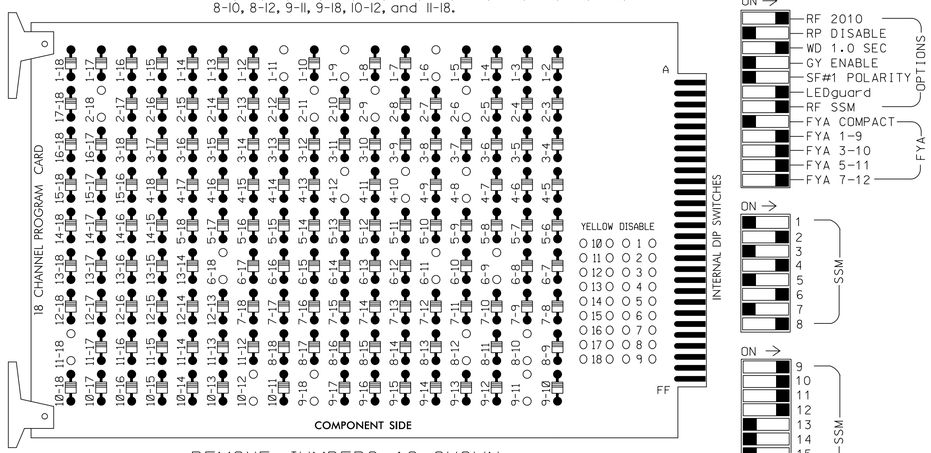
SIG. INVENTORY NO. 07-1927T

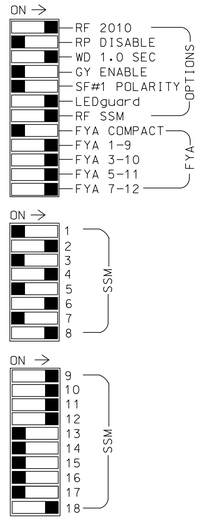
18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS I-6, I-9, I-11, 2-6, 2-9, 2-11, 2-18, 4-8, 4-10, 4-12, 6-9, 6-11, 6-18, 8-10, 8-12, 9-11, 9-18, 10-12, and 11-18.





REMOVE JUMPERS AS SHOWN

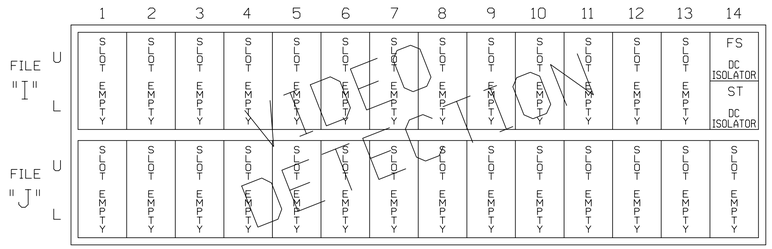
■ = DENOTES POSITION OF SWITCH

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. Ensure Conflict Monitor Ethernet port is connected to a Switch port located within the cabinet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC IO Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Program "Start Red Time" for 6 sec.
7. Ensure "Local Flash Start" feature is set to "RSt"
8. Ensure "InhFYARedSt" feature is set to "ON".
9. Ensure "Flash Mode" is set to "Channel" (MM 1-4-1).
10. Ensure all channels are programmed to flash Red (MM 1-8-1)
11. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

FROM MAIN MENU->1->8->7 (I/O LOGIC)

```
Result Src.Fcn    TimeOp Time
I208  =  01208    DLY      1
```

12. Program phases 4 and 8 for dual entry.
13. The cabinet and controller are part of the Greensboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....TRAFFICWARE APOGEE
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S5,S8,S11,AUX S1,AUX S2, AUX S4,AUX S5 & AUX S6
PHASES USED.....1,2,4,6,8
OVERLAP A.....*
OVERLAP B.....*
OVERLAP C.....*
OVERLAP D.....*
OVERLAP E.....NOT USED
OVERLAP F.....*

* See Sheet 2 of 3 for Overlap Programming Detail.

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 2.1

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	OLF
SIGNAL HEAD NO.	11★	22,23	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	11★	83★	NU	21★	43★	24★
RED		128			101			134			107							A104
YELLOW	✳	129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	A105
FLASHING YELLOW ARROW													A123	A126		A116	A103	A106
GREEN ARROW	127																	
✋																		
🚶																		

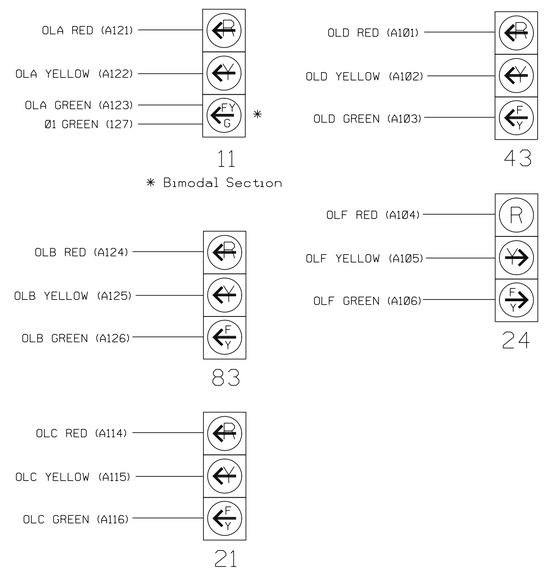
NU = Not Used

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

★ See pictorial of head wiring in detail below.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1927T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Traffic Engineering Branch Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro
PLAN DATE: June 2025 | REVIEWED BY: T.W. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
REGISTERED ENGINEER SIGNATURE DATE

SIG. INVENTORY NO. 07-1927T

OVERLAP PROGRAMMING DETAIL
FOR OVERLAPS A, B, C, D, AND F*

(program controller as shown below)

* NOTE FOR ALL OVERLAPS: Use Default values for Overlap 'PLUS' programming details.

FROM MAIN MENU PRESS "1" CONTROLLER
AND THEN "5" OVERLAPS

```
Overlaps
[1.General Parms]
2.Program
3.Status
```

```
General Overlap Parameters
      Lock Inhibit OFF
   Confl Lock Enable OFF
     Parent P Clrncs ON
Extra Included Phases OFF
  InhibitLockInterval ALWAYS
```

PRESS "ESC"

```
Overlaps
1.General Parms
[2.Program]
3.Status
```

```
Enter Overlap #  1
   then press Enter
```

```
Overlap A-1
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
 Ovrlp A-1   Ps.....................
Included Ps    1  0  0  0  0  0  0  0
Modifier Ps    2  0  0  0  0  0  0  0
Type:FYA-4  Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  2
   then press Enter
```

```
Overlap B-2
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
 Ovrlp B-2   Ps.....................
Included Ps    4  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  3
   then press Enter
```

```
Overlap C-3
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
 Ovrlp C-3   Ps.....................
Included Ps    6  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  4
   then press Enter
```

```
Overlap D-4
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
 Ovrlp D-4   Ps.....................
Included Ps    8  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  6
   then press Enter
```

```
Overlap F-6
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
 Ovrlp F-6   Ps.....................
Included Ps    2  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

END OF OVERLAP PROGRAMMING DETAIL

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 2.2

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE 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: 07-1927T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody

PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

NC Department of Transportation Mobility and Safety Division Traffic Engineering Branch Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1927T

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 2.3

4-SECTION PPLT FYA OUTPUT PROGRAMMING DETAIL

(program controller as shown below)

1. Before proceeding with output programming, be sure to switch the "RUN ENABLE STATUS" to "OFF". The "RUN ENABLE STATUS" setting is located from Main Menu, key strokes 1-7.

2. The Flashing Yellow Arrow in a 4-section PPLT FYA head is controlled by a normally unused PED Yellow output. This programming takes a specific PED Yellow output and remaps it to the appropriate Overlap Green output.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
I/O Parameters
C1-C11-ABC IO Mode: USER
     D Conn Mapping: NONE
        T&F Biu Map: DEFAULT
Invert Rail Inputs: OFF
  EVP Ped Confirm: OFF
 Peer-Peer Timeout:   0
```

SELECT USER MODE

PRESS "ESC"

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
User I/O Maps
1. Inputs
2. Outputs
3. Init Map
```

```
Initialize User I/O Maps
    Init ABC with: VIRCTL
      Init D with: NONE
     Init 2A with: MODE 5
Init TF BIUs with: NONE
```

SELECT MODE 5

PRESS "ESC"

```
User I/O Maps
1. Inputs
2. Outputs
3. Init Map
```

```
User Output Maps
1.NEMA A    4.NEMA D
2.NEMA B    5.FIO 2A
3.NEMA C                  9.TS2 IO
```

PRESS "+" KEY TWICE

Pin	Fcn	Description	Pin	Fcn	Description
4-5	54	Ch6 Green	-4-6	5	Ch5 Red
4-7	29	Ch5 Yellow	4-8	53	Ch5 Green
5-1	0	Unused	5-2	39	Ch15 Yellow
5-3	38	Ch14 Yellow	5-4	40	Ch16 Yellow
5-5	115	Not Used	5-6	124	LdSwtchFlsh
5-7	115	Not Used	5-8	114	Watchdog
6-1	115	Not Used	+6-2	115	Not Used

PRESS "+" KEY ONCE

Pin	Fcn	Description	Pin	Fcn	Description
6-3	12	Ch12 Red	-6-4	36	Ch12 Yellow
6-5	60	Ch12 Green	6-6	11	Ch11 Red
6-7	35	Ch11 Yellow	6-8	59	Ch11 Green
7-1	115	Not Used	7-2	115	Not Used
7-3	10	Ch10 Red	7-4	34	Ch10 Yellow
7-5	58	Ch10 Green	7-6	9	Ch9 Red
7-7	33	Ch9 Yellow	+7-8	37	Ch13 Yellow

OUTPUT PROGRAMMING COMPLETE

Programming notes:

Pin	Default Fcn	Description	Change To: Fcn	Description
5-1	37	Ch13 Yellow.....	0	Unused

Programming notes:

Pin	Default Fcn	Description	Change To: Fcn	Description
7-8	57	Ch9 Green	37	Ch13 Yellow

Pin 5-1 (C1 pin 37) = Load Switch S3-Y
Pin 7-8 (C1 pin 99) = Load Switch AUX S1-G

! Press the "*" key to return to Main Menu. Now go back to "RUN-ENABLE STATUS" and switch to "ON".

NOTE

I/O re-programming is necessary for proper FYA operation. See Channel & I/O Programming Detail For FYA Operation on this sheet.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1927T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash. It also specifies which overlap is to be overridden for the FYA to display properly.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

```
      Chan.1...2...3...4...5...6...7...8 >
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn .   .   .   .   .   .   .   .
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

```
      Chan.9..10..11..12..13..14..15..16
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   X   .   .   .   <
Flash Grn .   X   X   X   .   .   .   .   <
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   1   0   0   0   <
```

PRESS "ESC"

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
      Chan.17..18..19..20..21..22..23..24>
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn .   X   .   .   .   .   .   .
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

NOTE

Output re-mapping is necessary for proper FYA operation. See the 4-Section PPLT FYA Output Programming Detail on this sheet.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody

PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

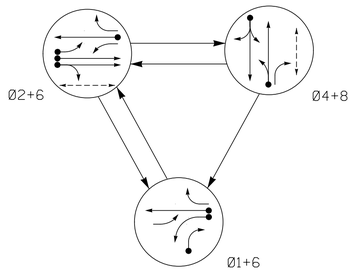
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

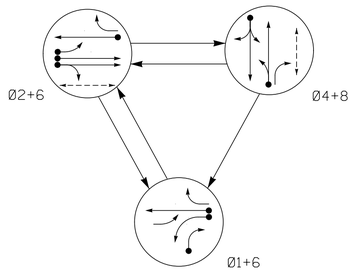
SIG. INVENTORY NO. 07-1927T

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 3.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4+8	FLASH
11	←	F/Y	R	R
21	F/Y	F/Y	R	R
22, 23	R	G	R	R
41, 42	R	R	G	R
61, 62	G	G	R	R
63	F/Y	F/Y	R	R
81, 82	R	R	G	R
83	→	R	F/Y	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4+8	FLASH
11	←	R	R	R
21	F/Y	F/Y	R	R
22, 23	R	G	R	R
41, 42	R	R	G	R
61, 62	G	G	R	R
63	F/Y	F/Y	R	R
81, 82	R	R	G	R
83	→	R	F/Y	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

LOOP & DETECTOR UNIT INSTALLATION CHART

TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

INDUCTIVE LOOPS					DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	-	5	-	X	X	-	-	X
1B	6X40	0	2-4-2	X	1	-	15	-	X	X	-	-	X
2A	6X6	300	4	X	2	-	-	-	X	X	X	-	X
2B	6X6	300	4	X	2	-	-	-	X	X	X	-	X
2C	6X40	0	2-4-2	X	2	-	-	-	X	X	-	-	X
4A	6X40	0	2-4-2	X	4	-	10	-	X	X	-	-	X
6A	6X6	300	6	X	6	-	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	X	8	-	3	-	X	X	-	-	X

3 Phase Fully Actuated (Greensboro Signal System)

NOTES

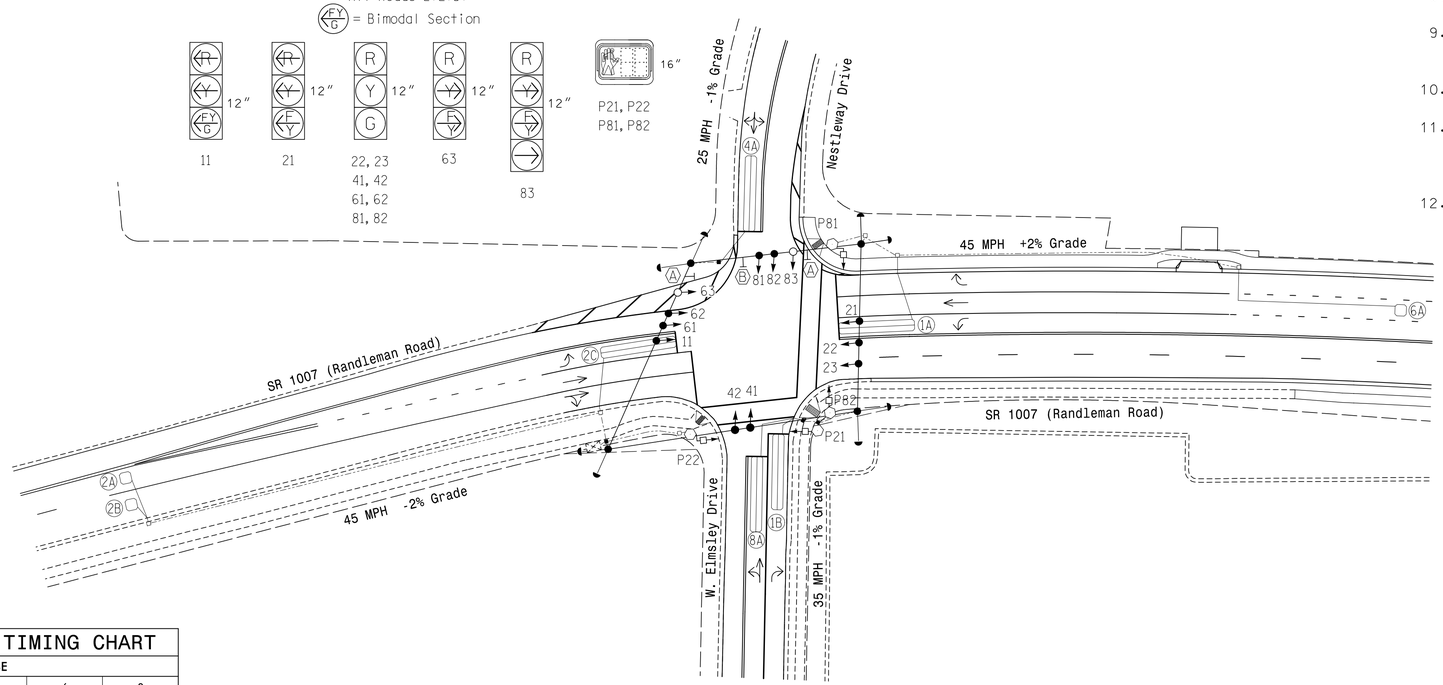
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Remove existing signal heads numbered 24 and 43.
5. Reposition all existing signal heads.
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. Remove existing Right Arrow "ONLY" sign (R3-5R) along northbound approach of SR 1007 (Randleman Road).
10. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timnig values supersede these values.
12. Lane control signs A and B may be removed at the discretion of the Division Traffic Engineer

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.
(F/Y/G) = Bimodal Section



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▭↓	Pedestrian Signal Head	■↓
○→	Signal Pole with Guy	●→
○↓	Signal Pole with Sidewalk Guy	●↓
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	———
→	Directional Arrow	→
⬡	Type II Signal Pedestal	●
N/A	Curb Ramp	◪
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ
Ⓑ	Combined Thru and Left Arrow Sign (R3-6L)	Ⓑ

TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 1	2	4	6	8
Min Green *	7	12	7	12	7
Gap, Extension *	2.0	6.0	2.0	6.0	2.0
Maximum Green 1 *	20	90	30	90	30
Maximum Green 2 *	-	-	-	-	-
Yellow Clear	3.0	4.7	3.9	4.7	3.9
Red Clear	2.3	1.0	2.5	1.0	2.5
Walk *	-	14	-	-	14
Pedestrian Clear	-	9	-	-	17
Green/Ped Delay	-	7	-	-	7
Added Initial *	-	1.5	-	2.5	-
Maximum Initial *	-	34	-	34	-
Time Before Reduction *	-	15	-	15	-
Time To Reduce *	-	30	-	30	-
Minimum Gap	-	3.0	-	3.0	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Lock Calls	NO	YES	NO	YES	NO
Dual Entry	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* 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 - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1007 (Randleman Road) at Nestleway Drive/W. Elmsley Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.W. Moody

PREPARED BY: R.L. Aristondo REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

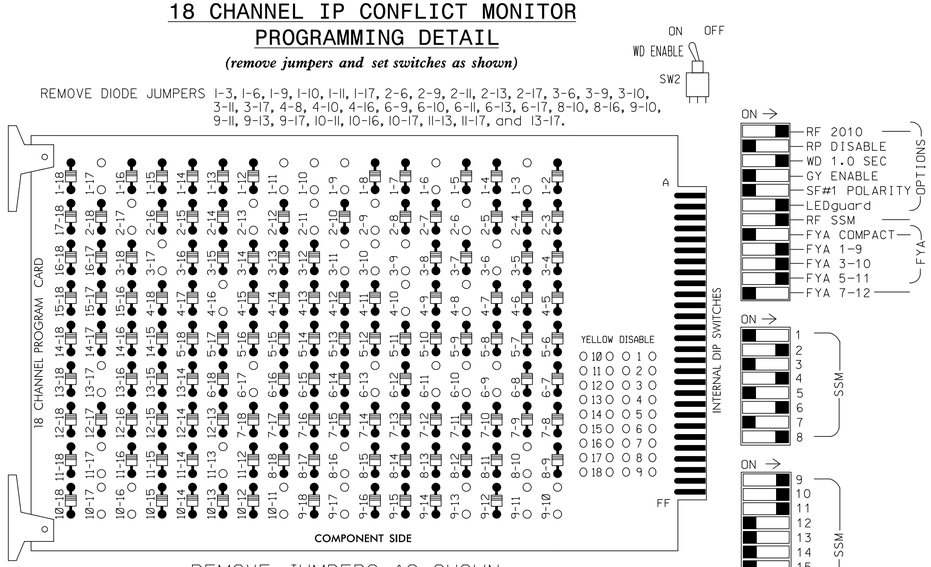
DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1927

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS I-3, I-6, I-9, I-10, I-11, I-17, 2-6, 2-9, 2-11, 2-13, 2-17, 3-6, 3-9, 3-10, 3-11, 3-17, 4-8, 4-10, 4-16, 6-9, 6-10, 6-11, 6-13, 6-17, 8-10, 8-16, 9-10, 9-11, 9-13, 9-17, 10-11, 10-16, 10-17, 11-13, 11-17, and 13-17.



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

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. Ensure Conflict Monitor Ethernet port is connected to a Switch port located within the cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC IO Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Program "Start Red Time" for 6 sec.
7. Ensure "Local Flash Start" feature is set to "RSt"
8. Ensure "InhFYARedSt" feature is set to "ON".
9. Ensure "Flash Mode" is set to "Channel" (MM 1-4-1).
10. Ensure all channels are programmed to flash Red (MM 1-8-1)
11. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

FROM MAIN MENU->1->8->7 (I/O LOGIC)

Result Src.Fcn	TimeOp Time
I208 = 0I208	DLY 1

12. Program phases 4 and 8 for Dual Entry.
13. The cabinet and controller are part of the Greensboro Signal System.

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 3.1

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	OLG	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11 ★	22,23	P21, P22	83 ★	41,42	NU	NU	61,62	NU	NU	81,82	P81, P82	11 ★	83 ★	63 ★	21 ★	NU	NU
RED		128			101			134			107							
YELLOW	✳	129		✳	102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124	A111	A114		
YELLOW ARROW													A122	A125	A112	A115		
FLASHING YELLOW ARROW													A123	A126	A113	A116		
GREEN ARROW	127			118														
✋			113									110						
🚶			115									112						

NU = Not Used

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

★ See pictorial of head wiring in detail below.

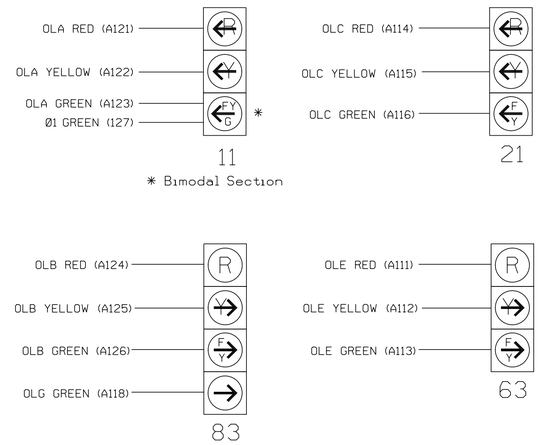
EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....TRAFFICWARE APOGEE
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S8,S11,S12, AUX S1,AUX S2,AUX S3 & AUX S4.
PHASES USED.....1,2,2PED,4,6,8,8PED
OVERLAP A.....✳
OVERLAP B.....✳
OVERLAP C.....✳
OVERLAP D.....NOT USED
OVERLAP E.....✳
OVERLAP F.....NOT USED
OVERLAP G.....✳

✳ See Sheet 2 of 4 for Overlap Programming Detail.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø1 1B	Ø2 2A	SLOT EMPTY	Ø2 2C	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	NOT USED	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø2 2B		NOT USED	NOT USED						NOT USED	Ø8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED				NOT USED								

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.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
1A	TB2-1,2	I1U	56	1	1		5		X	X	
1B	TB2-5,6	I2U	39	2	1		15		X	X	
2A	TB2-9,10	I3U	63	4	2				X	X	X
2B	TB2-11,12	I3L	76	5	2				X	X	X
2C	TB4-5,6	I5U	58	7	2				X	X	
4A	TB4-9,10	I6U	41	8	4		10		X	X	
6A	TB3-5,6	J2U	40	16	6				X	X	X
8A	TB5-9,10	J6U	42	22	8		3		X	X	
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED						
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED						

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

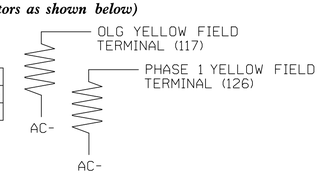
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: Ø7-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Electrical Detail - Sheet 1 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1927

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 3.2

OVERLAP PROGRAMMING DETAIL FOR OVERLAPS A, B, C, E, AND G*

(program controller as shown below)

* NOTE FOR ALL OVERLAPS: Use Default values for Overlap 'PLUS' programming details.

FROM MAIN MENU PRESS "1" CONTROLLER AND THEN "5" OVERLAPS

```
Overlaps
[1.General Parms]
2.Program
3.Status
```

```
General Overlap Parameters
      Lock Inhibit OFF
   Confl Lock Enable OFF
     Parent P Clrncs ON
Extra Included Phases OFF
  InhibitLockInterval ALWAYS
```

PRESS "ESC"

```
Overlaps
1.General Parms
[2.Program]
3.Status
```

```
Enter Overlap #  1
   then press Enter
```

```
Ovrlp A-1   Ps.....................
Included Ps    1  0  0  0  0  0  0  0
Modifier Ps    2  0  0  0  0  0  0  0
Type:FYA-4  Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  2
   then press Enter
```

```
Overlap B-2
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
Ovrlp B-2   Ps.....................
Included Ps    1  0  0  0  0  0  0  0
Modifier Ps    8  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  3
   then press Enter
```

```
Overlap C-3
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
Ovrlp C-3   Ps.....................
Included Ps    6  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  5
   then press Enter
```

```
Overlap E-5
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
Ovrlp E-5   Ps.....................
Included Ps    6  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  7
   then press Enter
```

```
Overlap G-7
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
Ovrlp G-7   Ps.....................
Included Ps    1  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

END OF OVERLAP PROGRAMMING DETAIL

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE 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: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Electrical Detail - Sheet 2 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE:	June 2025	REVIEWED BY:	T.M. Moody
PREPARED BY:	R.L. Aristondo	REVIEWED BY:	

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by:
Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1927

4-SECTION PPLT FYA OUTPUT PROGRAMMING DETAIL

(program controller as shown below)

1. Before proceeding with output programming, be sure to switch the "RUN ENABLE STATUS" to "OFF". The "RUN ENABLE STATUS" setting is located from Main Menu, key strokes 1-7.
2. The Flashing Yellow Arrow in a 4-section PPLT FYA head is controlled by a normally unused PED Yellow output. This programming takes a specific PED Yellow output and remaps it to the appropriate Overlap Green output.

FROM MAIN MENU, KEYSTROKES 1-8

```
              Channel & I/O
1.Chan  1-16  4.Chan+  1-16 7.IO Logic
2.chan 17-24  5.chan+ 17-24 8.IO Viewer
3.Chan Parms  [6.IO Parms]  9.IO UserMap
```

SELECT USER MODE →

```
           I/O Parameters
C1-C11-ABC IO Mode: USER
    D Conn Mapping: NONE
      T&F Biu Map: DEFAULT
 Invert Rail Inputs: OFF
    EVP Ped Confirm: OFF
  Peer-Peer Timeout:   0
```

PRESS "ESC"

```
              Channel & I/O
1.Chan  1-16  4.Chan+  1-16 7.IO Logic
2.chan 17-24  5.chan+ 17-24 8.IO Viewer
3.Chan Parms  6.IO Parms    [9.IO UserMap]
```

```
       User I/O Maps
1. Inputs
2. Outputs
[3. Init Map]
```

SELECT MODE 5 →

```
     Initialize User I/O Maps
   Init ABC with: VIRCTL
     Init D with: NONE
    Init 2A with: MODE 5
 Init TF BIUs with: NONE
```

PRESS "ESC"

```
       User I/O Maps
1. Inputs
[2. Outputs]
3. Init Map
```

```
       User Output Maps
1.NEMA A    4.NEMA D
2.NEMA B   [5.FIO 2A]
3.NEMA C                 9.TS2 IO
```

PRESS "+" KEY TWICE

Pin	Fcn	Description	Pin	Fcn	Description
4-5	54	Ch6 Green	-4-6	5	Ch5 Red
4-7	29	Ch5 Yellow	4-8	53	Ch5 Green
[5-1	0	Unused]	5-2	39	Ch15 Yellow
[5-3	0	Unused]	5-4	40	Ch16 Yellow
5-5	115	Not Used	5-6	124	LdSwtchFlsh
5-7	115	Not Used	5-8	114	Watchdog
6-1	115	Not Used	+6-2	115	Not Used

Programming notes:

Pin	Default Fcn	Default Description	Change To: Fcn	Change To: Description
5-1	37	Ch13 Yellow.....	0	Unused
5-3	38	Ch14 Yellow.....	0	Unused

PRESS "+" KEY ONCE

Pin	Fcn	Description	Pin	Fcn	Description
6-3	12	Ch12 Red	-6-4	36	Ch12 Yellow
6-5	60	Ch12 Green	6-6	11	Ch11 Red
6-7	35	Ch11 Yellow	6-8	59	Ch11 Green
7-1	115	Not Used	7-2	115	Not Used
7-3	10	Ch10 Red	7-4	34	Ch10 Yellow
[7-5	38	Ch14 Yellow]	7-6	9	Ch9 Red
7-7	33	Ch9 Yellow	+[7-8	37	Ch13 Yellow]

Programming notes:

Pin	Default Fcn	Default Description	Change To: Fcn	Change To: Description
7-8	57	Ch9 Green	37	Ch13 Yellow
7-5	58	Ch10 Green	38	Ch14 Yellow

OUTPUT PROGRAMMING COMPLETE

```
Pin 5-1 (C1 pin 37) = Load Switch S3-Y
Pin 5-3 (C1 pin 38) = Load Switch S6-Y
Pin 7-8 (C1 pin 57) = Load Switch AUX S1-G
Pin 7-5 (C1 pin 58) = Load Switch AUX S2-G
```

! Press the "*" key to return to Main Menu. Now go back to "RUN-ENABLE STATUS" and switch to "ON".

NOTE

I/O re-programming is necessary for proper FYA operation. See Channel & I/O Programming Detail For FYA Operation on this sheet.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash. It also specifies which overlap is to be overridden for the FYA to display properly.

FROM MAIN MENU, KEYSTROKES 1-8

```
              Channel & I/O
1.Chan  1-16  [4.Chan+  1-16] 7.IO Logic
2.chan 17-24  5.chan+ 17-24 8.IO Viewer
3.Chan Parms  6.IO Parms    9.IO UserMap
```

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

```
           Chan.1...2...3...4...5...6...7...8 >
 Flash Red .   .   .   .   .   .   .   .
 Flash Yel .   .   .   .   .   .   .   .
 Flash Grn .   .   .   .   .   .   .   .
 Inhibit Red Flash In
   Preempt .   .   .   .   .   .   .   .
 Olap Ovrd 0   0   0   0   0   0   0   0
```

```
           Chan.9..10..11..12..13..14..15..16
 Flash Red .   .   .   .   .   .   .   .
 Flash Yel .   .   .   .   X   X   .   .     ←
 Flash Grn .   .   X   .   .   .   .   .     ←
 Inhibit Red Flash In
   Preempt .   .   .   .   .   .   .   .
 Olap Ovrd 0   0   0   0   1   2   0   0     ←
```

```
              Channel & I/O
1.Chan  1-16  4.Chan+  1-16 7.IO Logic
2.chan 17-24  [5.chan+ 17-24] 8.IO Viewer
3.Chan Parms  6.IO Parms    9.IO UserMap
```

```
           Chan.17..18..19..20..21..22..23..24>
 Flash Red .   .   .   .   .   .   .   .
 Flash Yel .   .   .   .   .   .   .   .
 Flash Grn X   .   .   .   .   .   .   .
 Inhibit Red Flash In
   Preempt .   .   .   .   .   .   .   .
 Olap Ovrd 0   0   0   0   0   0   0   0
```

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

NOTE

Output re-mapping is necessary for proper FYA operation. See the 4-Section PPLT FYA Output Programming Detail on this sheet.

CHANNEL & I/O PROGRAMMING DETAIL ASSIGN CHANNELS FOR OVERLAP G

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-8
THEN SELECT CHAN 1-16

```
              Channel & I/O
[1.Chan  1-16] 4.Chan+  1-16 7.IO Logic
2.chan 17-24  5.chan+ 17-24 8.IO Viewer
3.Chan Parms  6.IO Parms    9.IO UserMap
```

```
           Chan.1...2...3...4...5...6...7...8 >
 P/Olp#    1   2   7   4   5   6   7   8
  Type    VEH VEH OLP VEH VEH VEH VEH VEH
  Flash   RED RED RED RED RED RED RED RED
 Alt Hz    X   .   X   .   .   X   .   X
 Dim Grn   .   .   .   .   .   .   .   .
 Dim Yel   .   .   .   .   .   .   .   .
 Dim Red+  .   .   .   .   .   .   .   .
 Flsh Grn 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

```
           Chan.9..10..11..12..13..14..15..16 >
 P/Olp#    1   2   3   4   2   4   6   8
  Type    OLP OLP OLP OLP PED PED PED PED
  Flash   RED RED RED RED DRK DRK DRK DRK
 Alt Hz    X   X   .   .   .   .   .   .
 Dim Grn   .   .   .   .   .   .   .   .
 Dim Yel   .   .   .   .   .   .   .   .
 Dim Red+  .   .   .   .   .   .   .   .
 Flsh Grn 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

Channel & I/O programming complete

Electrical Detail - Sheet 3 of 4

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division — State of North Carolina Department of Transportation — ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1007 (Randleman Road) at Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: North Carolina Professional Engineer, SEAL 040329, Trent M. Moody
DocuSigned by: Trent Moody 45EA1D4836704E0 — SIGNATURE — DATE 6/27/2025

SIG. INVENTORY NO. 07-1927

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 3.4

ALTERNATE PHASING BY TIME OF DAY (TOD) DETAIL

(program controller as shown below)

The purpose of this programming is to turn off Flashing Yellow Arrows (FYA) for signal head 11, and to remove the delay for loop 1A by Time of Day (TOD).

1. Set up Alternate Detector Prog Set# 1.

FROM MAIN MENU, KEYSTROKES 5-5

```
        Alternate Detector Programs
1.Veh Parms    4.Ped Parms
2.Veh Options
3.Veh Parm+                    Prog Set# [1] <----ENTER MAP # 1
```

2. Select Veh Parms (1) to set up vehicle parameters.

Row	Det#	Call	Switch	Delay	Extend	Queu >
1	1	1	0	0.0	0.0	0
2	0	0	0	0.0	0.0	0
3	0	0	0	0.0	0.0	0
4	0	0	0	0.0	0.0	0
5	0	0	0	0.0	0.0	0
6	0	0	0	0.0	0.0	0
7	0	0	0	0.0	0.0	0

ESC

3. Select Veh Options (2) to set up Call/Extend options for vehicle detectors.

Row	Det#	Call	Extend	Queue	Add.Init	>
1	1	X	X	.	.	
2	0	.	.	.	.	
3	0	.	.	.	.	
4	0	.	.	.	.	
5	0	.	.	.	.	
6	0	.	.	.	.	
7	0	.	.	.	.	

4. From Main Menu go to Time Based Scheduler.

FROM MAIN MENU, KEYSTROKES 4

```
          Time Based Scheduler
1.Set Date/Time  4.Day Plan       7.Status
2.Easy Schedule  5.Action Table   8.Resrvd
3.Adv Schedule   6.Parameters     9.More
```

5. Go to Easy Schedule (2) or Advanced Schedule (3) to run day plan.

6. Set up Day Plan Table (4) to schedule Pattern.

7. Set up Action Table (5) to run Pattern.

8. Set up Pattern #1 to turn off Overlap 1, thus turning off FYA outputs. Also enable Detector Group 1.

FROM MAIN MENU, KEYSTROKES 2-6

Pat#	Alt:	POpt	PTime	DetGrp	Call/Inh >
1		0	0	1	0
2		0	0	0	0
3		0	0	0	0
4		0	0	0	0
5		0	0	0	0
6		0	0	0	0
7		0	0	0	0

<Pat#	Olp.Off:	12345678	ASC	CNA1	MAX2	Dia
1		X.......	0	.	.	DFT
2		....	0	.	.	DFT
3		....	0	.	.	DFT
4		....	0	.	.	DFT
5		....	0	.	.	DFT
6		....	0	.	.	DFT
7	+	....	0	.	.	DFT

TOD Programming Complete

GREEN DELAY PROGRAMMING DETAIL FOR LEADING PEDESTRIAN INTERVAL OPERATION

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-1

```
                Channel & I/O
1.Times       4.Ring,Start,Concur   7.Times+
2.Options     5.Call,Inh,Redirect   8.Copy
[3.Options+]  6.Alt Progs+          9.AdvWarn
```

PRESS "+" KEY ONCE

Options+	P..1..2..3..4..5..6..7..8 >
Ped Delay	- . . . .
Red Rest On Gap	. . . .
Conflicting P	0 0 0 0 0 0 0 0
Grn/Ped Delay	0 7 0 0 0 0 0 7
Omit Yel. Yel P	0 0 0 0 0 0 0 0
Ped Out/Ovrlp P	0 0 0 0 0 0 0 0
StartYel.Next P	+ 0 0 0 0 0 0 0 0

CHANNEL & I/O PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: Ø7-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Electrical Detail - Sheet 4 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Nestleway Drive/W. Elmsley Drive

Division 7 | Guilford County | Greensboro

PLAN DATE:	June 2025	REVIEWED BY:	T.M. Moody
PREPARED BY:	R.L. Aristondo	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

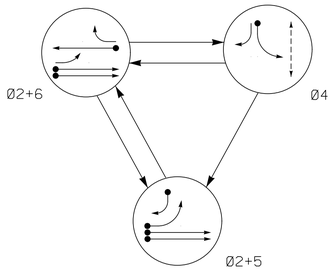
DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1927

750 N.Greenfield Pkwy.Garner,NC 27529

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 4.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

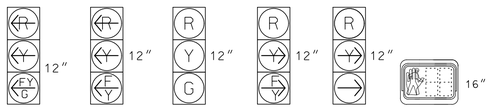
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21, 22	G	G	R	R
41, 43	~~R~~	~~R~~	~~FY~~	~~R~~
42	→	R	→	R
51	←	~~FY~~	~~R~~	~~R~~
61,62	R	G	R	R
63	R	~~FY~~	R	R
P43,P44	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

(FY/G) = Bimodal Section



LOOP & DETECTOR UNIT INSTALLATION CHART

TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

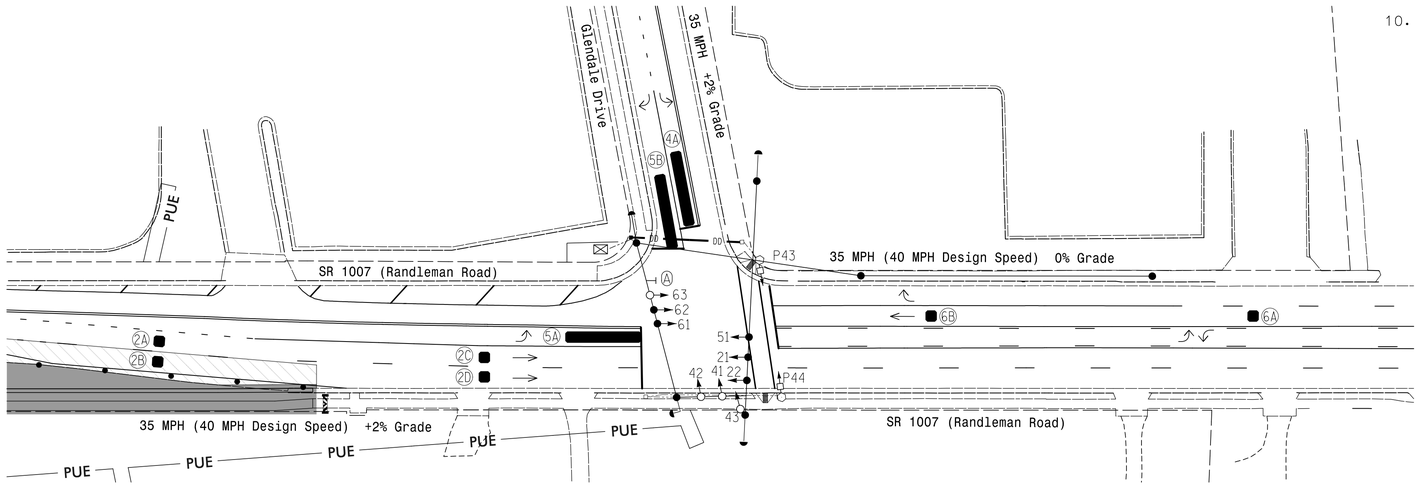
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
2A*	6X6	250	✳	✳	2	-	-	1.3	X	X	-	-	✳
2B*	6X6	250	✳	✳	2	-	-	-	X	X	-	-	✳
2C*	6X6	80	✳	✳	2	-	-	-	X	X	-	-	✳
2D*	6X6	80	✳	✳	2	-	-	-	X	X	-	-	✳
4A*	6X40	0	✳	✳	4	-	3	-	X	X	-	-	✳
5A*	6X40	0	✳	✳	5	-	15	-	X	X	-	-	✳
5B*	6X40	0	✳	✳	5	-	15	-	X	X	-	-	✳
6A*	6X6	250	✳	✳	6	-	-	1.3	X	X	-	-	✳
6B*	6X6	80	✳	✳	6	-	-	-	X	X	-	-	✳

✳ Video Detection Zone

3 Phase
Fully Actuated
(Greensboro 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 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Remove existing Left Arrow "ONLY" sign (R3-5L).
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. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timnig values supersede these values.



TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green *	10	7	7	10
Gap, Extension *	2.0	2.0	2.0	2.0
Maximum Green 1 *	60	30	20	60
Maximum Green 2 *	-	-	-	-
Yellow Clear	4.2	3.7	3.0	4.2
Red Clear	1.1	1.9	1.8	1.1
Walk *	-	13	-	-
Pedestrian Clear	-	14	-	-
GreenPed Delay	-	6	-	-
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL
Lock Calls	YES	NO	NO	YES
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* 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	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head	■↓
○→	Signal Pole with Guy	●→
○→	Signal Pole with Sidewalk Guy	●→
▬	Non-Intrusive Detection Zone	▬
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-----	2-in Underground Conduit	-----
N/A	Right of Way	-----
→	Directional Arrow	→
DD	Directional Drill	N/A
⬡	Type II Signal Pedestal	⬢
▨	Construction Zone	▨
••	Construction Zone Drums	••
⋈	Pedestrian Barricade	⋈
N/A	Curb Ramp	◢
(A)	Right Arrow "ONLY" Sign (R3-5R)	(A)

Signal Upgrade -
Temporary Design (TMP Phase 1, Step 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo REVIEWED BY:

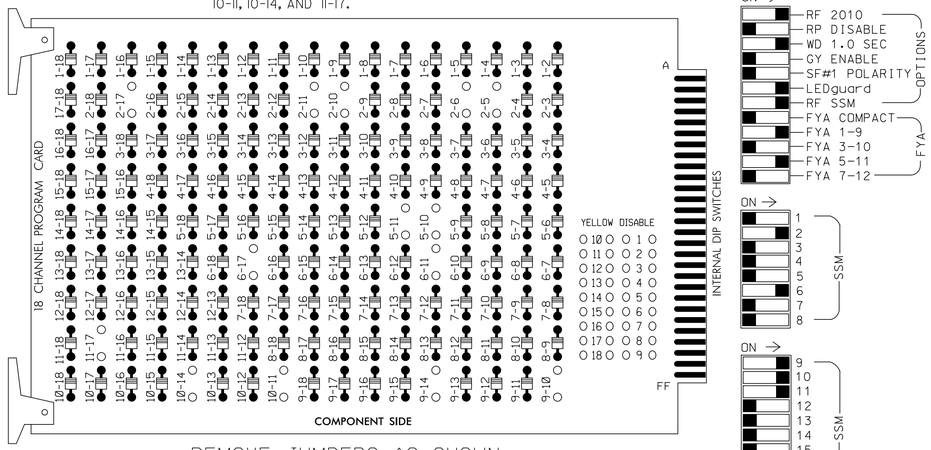
SCALE 0 40 1"=40'

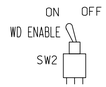
REVISIONS	INIT.	DATE

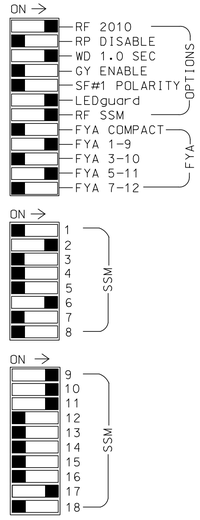
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

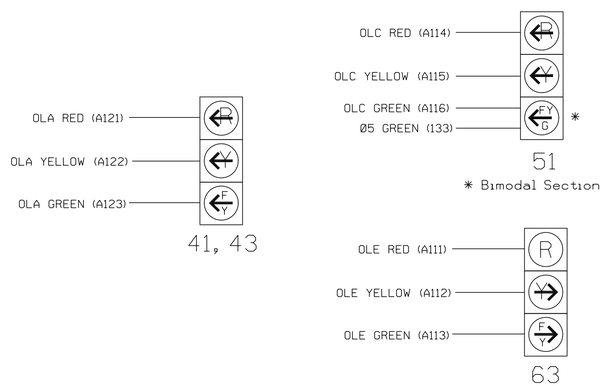
DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

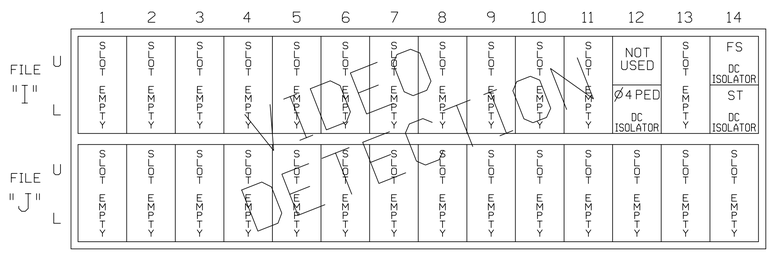
SIG. INVENTORY NO. 07-1379T











PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 4.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-10, 2-11, 2-17, 5-10, 5-11, 6-11, 6-17, 9-10, 9-14, 10-11, 10-14, AND 11-17.

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. Ensure Conflict Monitor Ethernet port is connected to a Switch port located within the cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC IO Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Program "Start Red Time" for 6 sec.
7. Ensure "Local Flash Start" feature is set to "RSt"
8. Ensure "InhFYARedSt" feature is set to "ON".
9. Ensure "Flash Mode" is set to "Channel" (MM 1-4-1).
10. Ensure all channels are programmed to flash Red (MM 1-8-1)
11. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

FROM MAIN MENU->1->8->7 (I/O LOGIC)

```
Result Src.Fcn  TimeOp Time
I208   =  OI208  DLY      1
```

12. The cabinet and controller are part of the Greensboro Signal System.

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	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NC	P43, P44	51★	61,62	NU	NU	NU	NU	41,43★	42	63★	51★	NU	NU
RED		128						134						A124	A111			
YELLOW		129					✳	135										
GREEN		130						136										
RED ARROW													A121			A114		
YELLOW ARROW													A122	A125	A112	A115		
FLASHING YELLOW ARROW													A123		A113	A116		
GREEN ARROW							133							A126				
✋						104												
🚶						106												

NU = Not Used

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

★ See pictorial of head wiring in detail below.

EQUIPMENT INFORMATION

CONTROLLER.................2070
CABINET....................332 W/ AUX
SOFTWARE...................TRAFFICWARE APOGEE
CABINET MOUNT..............BASE
OUTPUT FILE POSITIONS......18 (12-STD, 6-AUX)
LOAD SWITCHES USED.........S2,S6,S7,S8,AUX S1,AUX S2, AUX S3 & AUX S4
PHASES USED................2,#4,4PED,5,6
OVERLAP A..................✳
OVERLAP B..................✳
OVERLAP C..................✳
OVERLAP D..................NOT USED
OVERLAP E..................✳

✳ See Sheet 2 of 3 for Overlap Programming Detail.
Timing Purposes Only.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	SLOT EMPTY	FS DC ISOLATOR
	L												Ø4 PED DC ISOLATOR		ST DC ISOLATOR
"J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L														

VIDEO DETECTION

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.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
PED PUSH BUTTONS											
P43,P44	TB8-5,6	I12L	69	PED 4	4 PED						

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT I12.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1379T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

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

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.

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

ELECTRICAL AND PROGRAMMING DETAILS FOR:

ITS & Signals Management Section
Transportation Mobility and Safety Division
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025		REVIEWED BY: T.M. Moody	
PREPARED BY: R.L. Aristondo		REVIEWED BY:	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
SEAL 040329
TRENT M. MOODY

DocuSigned by:
Trent Moody
45EA1D4836704E0...
SIGNATURE
6/27/2025
DATE

SIG. INVENTORY NO. 07-1379T

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 4.2

OVERLAP PROGRAMMING DETAIL FOR OVERLAPS A, B, C, AND E*

(program controller as shown below)

* NOTE FOR ALL OVERLAPS: Use Default values for Overlap 'PLUS' programming details.

FROM MAIN MENU PRESS "1" CONTROLLER AND THEN "5" OVERLAPS

```
Overlaps
[1.General Parms]
2.Program
3.Status
```

```
General Overlap Parameters
     Lock Inhibit OFF
   Confl Lock Enable OFF
     Parent P Clrncs ON
Extra Included Phases OFF
  InhibitLockInterval ALWAYS
```

PRESS "ESC"

```
Overlaps
1.General Parms
[2.Program]
3.Status
```

```
Enter Overlap #  1
   then press Enter
```

```
Overlap A-1
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
  Ovrlp A-1   Ps.....................
Included Ps    4  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  2
   then press Enter
```

```
Overlap B-2
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
  Ovrlp B-2   Ps.....................
Included Ps    4  5  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  3
   then press Enter
```

```
Overlap C-3
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
  Ovrlp C-3   Ps.....................
Included Ps    5  0  0  0  0  0  0  0
Modifier Ps    6  0  0  0  0  0  0  0
Type:FYA-4  Grn:  0  Yel: 3.5  Red: 1.5
```

PRESS "ESC" TWICE

```
Enter Overlap #  5
   then press Enter
```

```
Overlap E-5
[1.Program Parms]
2.Confl Prog+
3.Program Parms+
```

```
  Ovrlp E-5   Ps.....................
Included Ps    6  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

END OF OVERLAP PROGRAMMING DETAIL

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE 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: 07-1379T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC Department of Transportation Mobility and Safety Division Traffic Engineering Branch Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025	REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1379T

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 4.3

4-SECTION PPLT FYA OUTPUT PROGRAMMING DETAIL

(program controller as shown below)

1. Before proceeding with output programming, be sure to switch the "RUN ENABLE STATUS" to "OFF". The "RUN ENABLE STATUS" setting is located from Main Menu, key strokes 1-7.

2. The Flashing Yellow Arrow in a 4-section PPLT FYA head is controlled by a normally unused PED Yellow output. This programming takes a specific PED Yellow output and remaps it to the appropriate Overlap Green output.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
I/O Parameters
C1-C11-ABC IO Mode: USER
     D Conn Mapping: NONE
        T&F Biu Map: DEFAULT
Invert Rail Inputs: OFF
  EVP Ped Confirm: OFF
 Peer-Peer Timeout:   0
```

SELECT USER MODE

PRESS "ESC"

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
User I/O Maps
1. Inputs
2. Outputs
3. Init Map
```

```
Initialize User I/O Maps
Init ABC with: VIRCTL
  Init D with: NONE
  Init 2A with: MODE 5
Init TF BIUs with: NONE
```

SELECT MODE 5

PRESS "ESC"

```
User I/O Maps
1. Inputs
2. Outputs
3. Init Map
```

```
User Output Maps
1.NEMA A    4.NEMA D
2.NEMA B    5.FIO 2A
3.NEMA C                  9.TS2 IO
```

PRESS "+" KEY TWICE

Pin	Fcn	Description	Pin	Fcn	Description
4-5	54	Ch6 Green	-4-6	5	Ch5 Red
4-7	29	Ch5 Yellow	4-8	53	Ch5 Green
5-1	37	Ch13 Yellow	5-2	0	Unused
5-3	38	Ch14 Yellow	5-4	40	Ch16 Yellow
5-5	115	Not Used	5-6	124	LdSwtchFlsh
5-7	115	Not Used	5-8	114	Watchdog
6-1	115	Not Used	+6-2	115	Not Used

PRESS "+" KEY ONCE

Pin	Fcn	Description	Pin	Fcn	Description
6-3	12	Ch12 Red	-6-4	36	Ch12 Yellow
6-5	60	Ch12 Green	6-6	11	Ch11 Red
6-7	35	Ch11 Yellow	6-8	39	Ch15 Yellow
7-1	115	Not Used	7-2	115	Not Used
7-3	10	Ch10 Red	7-4	34	Ch10 Yellow
7-5	58	Ch10 Green	7-6	9	Ch9 Red
7-7	33	Ch9 Yellow	+7-8	57	Ch9 Green

OUTPUT PROGRAMMING COMPLETE

Programming notes:

Pin	Default Fcn Description	Change To: Fcn Description
5-2	39 Ch15 Yellow..... 0	Unused

Programming notes:

Pin	Default Fcn Description	Change To: Fcn Description
6-8	59 Ch11 Green 39	Ch15 Yellow

Pin 5-2 (C1 pin 39) = Load Switch S9-Y
Pin 6-8 (C1 pin 59) = Load Switch AUX S4-G

! Press the "*" key to return to Main Menu. Now go back to "RUN-ENABLE STATUS" and switch to "ON".

NOTE

I/O re-programming is necessary for proper FYA operation. See Channel & I/O Programming Detail For FYA Operation on this sheet.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1379T
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash. It also specifies which overlap is to be overridden for the FYA to display properly.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

```
      Chan.1...2...3...4...5...6...7...8 >
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn .   .   .   .   .   .   .   .
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

```
      Chan.9..10..11..12..13..14..15..16
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   X   .
Flash Grn X   X   .   .   .   .   .   .
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   3   0
```

PRESS "ESC"

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16  7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

```
      Chan.17..18..19..20..21..22..23..24>
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn X   .   .   .   .   .   .   .
Inhibit Red Flash In
  Preempt .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

NOTE

Output re-mapping is necessary for proper FYA operation. See the 4-Section PPLT FYA Output Programming Detail on this sheet.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Traffic Engineering, Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Traffic Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

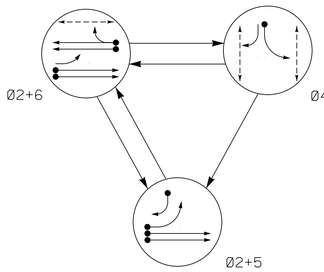
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
RSE SIGNATURE SIGNATURE DATE

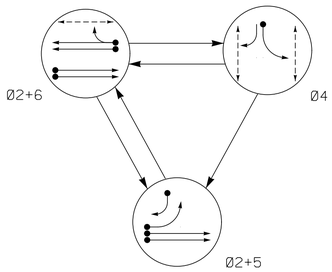
SIG. INVENTORY NO. 07-1379T

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 5.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4	FLASH
21, 22	G	G	R	R
41, 43	~~R~~	~~R~~	FY	~~R~~
42	→	R	FY	R
51	←	FY	~~R~~	~~R~~
61,62	R	G	R	R
P41, P42	DW	DW	W	DRK
P43, P44	DW	DW	W	DRK
P61, P62	DW	W	DW	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4	FLASH
21, 22	G	G	R	R
41, 43	~~R~~	~~R~~	FY	~~R~~
42	→	R	FY	R
51	←	~~R~~	~~R~~	~~R~~
61,62	R	G	R	R
P41, P42	DW	DW	W	DRK
P43, P44	DW	DW	W	DRK
P61, P62	DW	W	DW	DRK

LOOP & DETECTOR UNIT INSTALLATION CHART

TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
2A	6X6	250	4	X	2	-	-	-	X	X	X	-	X
2B	6X6	250	4	X	2	-	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	X	4	-	3	-	X	X	-	-	X
5A	6X40	0	2-4-2	X	5	-	5	-	X	X	-	-	X
5B	6X40	0	2-4-2	X	5	-	15	-	X	X	-	-	X
6A	6X6	250	4	X	6	-	-	-	X	X	X	-	X
6B	6X6	250	4	X	6	-	-	-	X	X	X	-	X

3 Phase
Fully Actuated
(Greensboro 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. Set all detector units to presence mode.
4. Phase 5 may be lagged.
5. Remove existing signal head 63.
6. Reposition existing signal heads 61 and 62.
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. Remove existing Right Arrow "ONLY" sign (R3-5R).
10. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timnig values supersede these values.

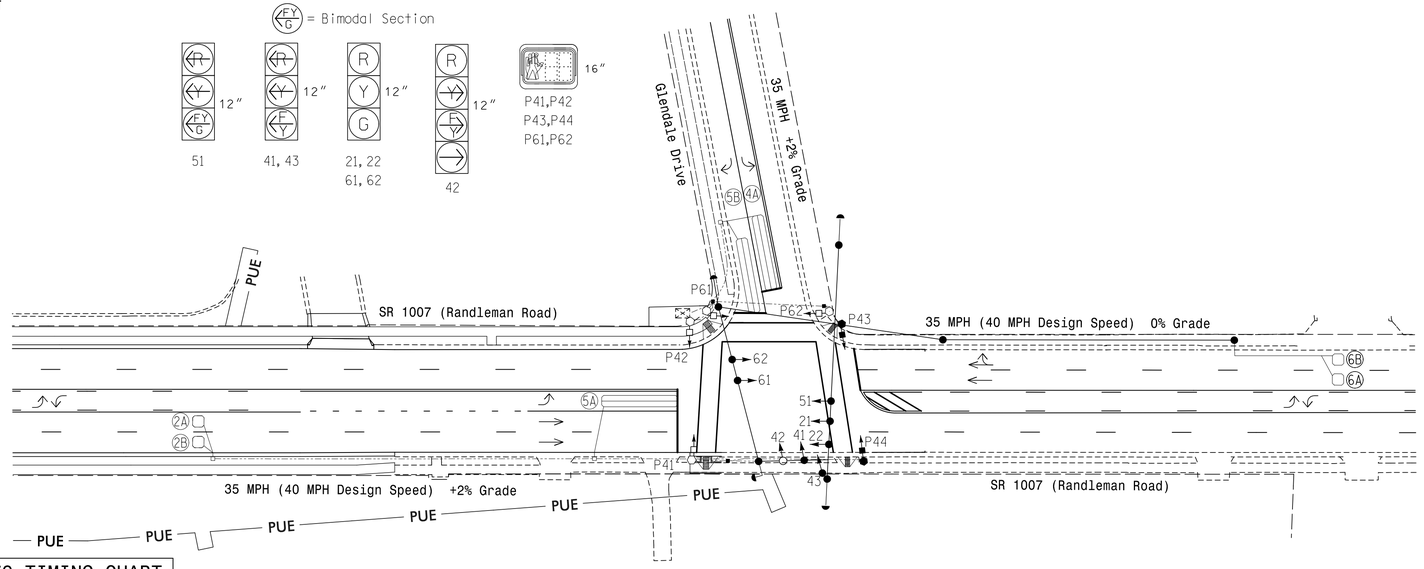
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

FY/G = Bimodal Section



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▯↓	Pedestrian Signal Head	■↓
○→	Signal Pole with Guy	●→
○↓	Signal Pole with Sidewalk Guy	●↓
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----------	2-in Underground Conduit	----------
N/A	Right of Way	----------
→	Directional Arrow	→
⬡	Type II Signal Pedestal	⬢
N/A	Curb Ramp	

TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 2	4	5	6
Min Green *	10	7	7	10
Gap, Extension *	6.0	2.0	2.0	6.0
Maximum Green 1 *	75	30	20	75
Maximum Green 2 *	-	-	-	-
Yellow Clear	4.2	3.7	3.0	4.2
Red Clear	1.4	1.9	2.4	1.4
Walk *	-	13	-	14
Pedestrian Clear	-	15	-	11
GreenPed Delay	-	6	-	7
Added Initial *	1.5	-	-	1.5
Maximum Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Lock Calls	YES	NO	NO	YES
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* 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 - Final Design

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1007 (Randleman Road) at Glendale Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.M. Moody

PREPARED BY: R.L. Aristondo REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

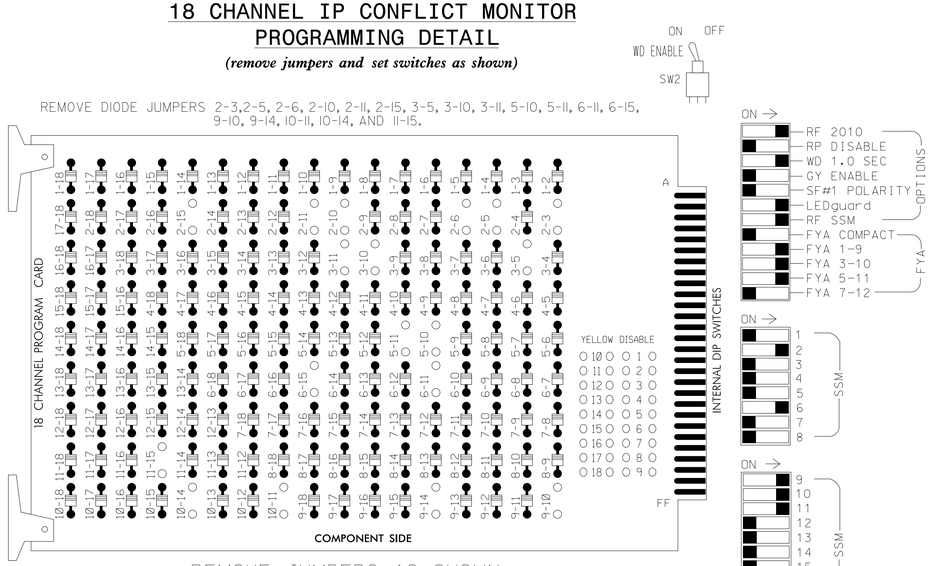
SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1379

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches 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. Ensure Conflict Monitor Ethernet port is connected to a Switch port located within the cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC IO Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Program "Start Red Time" for 6 sec.
7. Ensure "Local Flash Start" feature is set to "RSt"
8. Ensure "InhFYARedSt" feature is set to "ON".
9. Ensure "Flash Mode" is set to "Channel" (MM 1-4-1).
10. Ensure all channels are programmed to flash Red (MM 1-8-1)
11. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

FROM MAIN MENU->1->8->7 (I/O LOGIC)

```
Result Src.Fcn    TimeOp Time
I208  =  0I208    DLY      1
```

12. The cabinet and controller are part of the Greensboro Signal System.

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 5.1

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	OLG	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	42★	NU	P41,P42 P43,P44	51★	61,62	P61, P62	NU	NU	NU	41,43★	42★	NU	51★	NU	NU
RED		128						134						A124				
YELLOW		129		✳			✳	135										
GREEN		130						136										
RED ARROW													A121			A114		
YELLOW ARROW													A122	A125		A115		
FLASHING YELLOW ARROW													A123	A126		A116		
GREEN ARROW				118			133											
✋						104			119									
🚶						106			121									

NU = Not Used

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

★ See pictorial of head wiring in detail below.

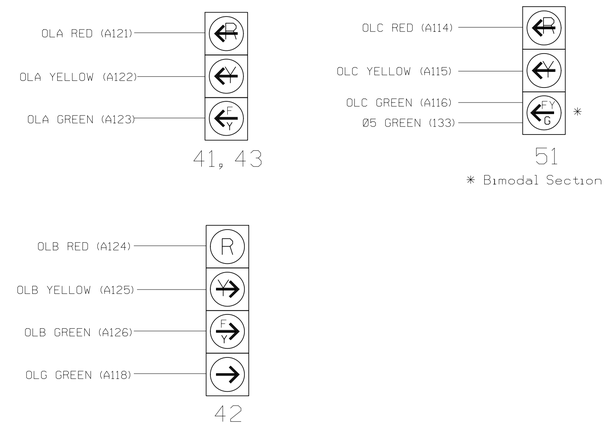
EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....TRAFFICWARE APOGEE
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S2,S4,S6,S7,S8,S9,AUX S1, AUX S2 & AUX S4
PHASES USED.....2,#4,4PED,5,6,6PED
OVERLAP A.....*
OVERLAP B.....*
OVERLAP C.....*
OVERLAP D.....NOT USED

* See Sheet 2 of 4 for Overlap Programming Detail.
# Timing Purposes Only.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø2 2B				NOT USED						Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø5 5B	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø6 6B											

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.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
2A	TB2-5,6	I2U	39	2	2				X	X	X
2B	TB2-7,8	I2L	43	3	2				X	X	X
4A	TB4-9,10	I6U	41	8	4		3		X	X	
5A	TB3-1,2	J1U	55	15	5		5		X	X	
5B	TB3-5,6	J2U	40	16	5		15		X	X	
6A	TB3-9,10	J3U	64	18	6				X	X	X
6B	TB3-11,12	J3L	77	19	6				X	X	X
PED PUSH BUTTONS											
P41,P42,P43,P44	TB8-5,6	I12L	69	PED 4	4 PED						
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED						

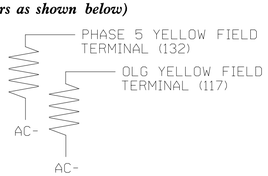
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 & I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



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.

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1379

NC Department of Transportation Mobility and Safety Division Traffic Engineering Branch Traffic Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 5.2

OVERLAP PROGRAMMING DETAIL FOR OVERLAPS A, B, C AND G*

(program controller as shown below)

* NOTE FOR ALL OVERLAPS: Use Default values for Overlap 'PLUS' programming details.

FROM MAIN MENU PRESS "1" CONTROLLER AND THEN "5" OVERLAPS

Overlaps
1.General Parms
2.Program
3.Status

General Overlap Parameters
Lock Inhibit OFF
Confl Lock Enable OFF
Parent P Clrncs ON
Extra Included Phases OFF
InhibitLockInterval ALWAYS

PRESS "ESC"

Overlaps
1.General Parms
2.Program
3.Status

Enter Overlap # 1
then press Enter

Overlap A-1
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp A-1 Ps.....................
Included Ps 4 0 0 0 0 0 0 0
Modifier Ps 0 0 0 0 0 0 0 0
Type:NORMAL Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC" TWICE

Enter Overlap # 2
then press Enter

Overlap B-2
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp B-2 Ps.....................
Included Ps 5 0 0 0 0 0 0 0
Modifier Ps 4 0 0 0 0 0 0 0
Type:NORMAL Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC" TWICE

Enter Overlap # 3
then press Enter

Overlap C-3
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp C-3 Ps.....................
Included Ps 5 0 0 0 0 0 0 0
Modifier Ps 6 0 0 0 0 0 0 0
Type:FYA-4 Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC" TWICE

Enter Overlap # 7
then press Enter

Overlap G-7
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp G-7 Ps.....................
Included Ps 5 0 0 0 0 0 0 0
Modifier Ps 0 0 0 0 0 0 0 0
Type:NORMAL Grn: 0 Yel: 3.5 Red: 1.5

END OF OVERLAP PROGRAMMING DETAIL

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE 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: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 2 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Glendale Drive

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo REVIEWED BY:

REVISIONS INIT. DATE

Transportation Mobility and Safety Division — ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

stv
STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody
SIGNATURE 6/27/2025 DATE

SIG. INVENTORY NO. 07-1379

PROJECT REFERENCE NO.	SHEET NO.
U-5850	Sig. 5.3

4-SECTION PPLT FYA OUTPUT PROGRAMMING DETAIL

(program controller as shown below)

1. Before proceeding with output programming, be sure to switch the "RUN ENABLE STATUS" to "OFF". The "RUN ENABLE STATUS" setting is located from Main Menu, key strokes 1-7.

2. The Flashing Yellow Arrow in a 4-section PPLT FYA head is controlled by a normally unused PED Yellow output. This programming takes a specific PED Yellow output and remaps it to the appropriate Overlap Green output.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16 7.IO Logic
2.chan 17-24   5.chan+ 17-24 8.IO Viewer
3.Chan Parms [6.IO Parms]    9.IO UserMap
```

SELECT USER MODE →

```
I/O Parameters
C1-C11-ABC IO Mode: USER
     D Conn Mapping: NONE
        T&F Biu Map: DEFAULT
 Invert Rail Inputs: OFF
   EVP Ped Confirm: OFF
  Peer-Peer Timeout:   0
```

PRESS "ESC"

```
Channel & I/O
1.Chan  1-16   4.Chan+  1-16 7.IO Logic
2.chan 17-24   5.chan+ 17-24 8.IO Viewer
3.Chan Parms   6.IO Parms   [9.IO UserMap]
```

```
User I/O Maps
1. Inputs
2. Outputs
[3. Init Map]
```

```
Initialize User I/O Maps
    Init ABC with: VIRCTL
      Init D with: NONE
     Init 2A with: MODE 5
Init TF BIUs with: NONE
```

SELECT MODE 5 →

PRESS "ESC"

```
User I/O Maps
1. Inputs
[2. Outputs]
3. Init Map
```

```
User Output Maps
1.NEMA A    4.NEMA D
2.NEMA B  [ 5.FIO 2A ]
3.NEMA C              9.TS2 IO
```

PRESS "+" KEY TWICE

Pin	Fcn	Description	Pin	Fcn	Description
4-5	54	Ch6 Green	-4-6	5	Ch5 Red
4-7	29	Ch5 Yellow	4-8	53	Ch5 Green
5-1	37	Ch13 Yellow	[5-2	0	Unused]
[5-3	0	Unused]	5-4	40	Ch16 Yellow
5-5	115	Not Used	5-6	124	LdSwtchFlsh
5-7	115	Not Used	5-8	114	Watchdog
6-1	115	Not Used	+6-2	115	Not Used

PRESS "+" KEY ONCE

Pin	Fcn	Description	Pin	Fcn	Description
6-3	12	Ch12 Red	-6-4	36	Ch12 Yellow
6-5	60	Ch12 Green	6-6	11	Ch11 Red
6-7	35	Ch11 Yellow	[6-8	39	Ch15 Yellow]
7-1	115	Not Used	7-2	115	Not Used
7-3	10	Ch10 Red	7-4	34	Ch10 Yellow
[7-5	38	Ch14 Yellow]	7-6	9	Ch9 Red
7-7	33	Ch9 Yellow	+7-8	57	Ch9 Green

OUTPUT PROGRAMMING COMPLETE

Programming notes:

Pin	Default Fcn	Description	Change To: Fcn	Description
5-3	38	Ch14 Yellow	0	Unused
5-2	39	Ch15 Yellow	0	Unused

Programming notes:

Pin	Default Fcn	Description	Change To: Fcn	Description
7-5	58	Ch10 Green	38	Ch14 Yellow
6-8	59	Ch11 Green	39	Ch15 Yellow

Pin 5-3 (C1 pin 38) = Load Switch S6-Y
Pin 5-2 (C1 pin 39) = Load Switch S9-Y
Pin 7-5 (C1 pin 58) = Load Switch AUX S2-G
Pin 6-8 (C1 pin 59) = Load Switch AUX S4-G

Press the "*" key to return to Main Menu. Now go back to "RUN-ENABLE STATUS" and switch to "ON".

NOTE

I/O re-programming is necessary for proper FYA operation. See Channel & I/O Programming Detail For FYA Operation on this sheet.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash. It also specifies which overlap is to be overridden for the FYA to display properly.

FROM MAIN MENU, KEYSTROKES 1-8

```
Channel & I/O
1.Chan  1-16  [4.Chan+  1-16] 7.IO Logic
2.chan 17-24   5.chan+ 17-24  8.IO Viewer
3.Chan Parms   6.IO Parms     9.IO UserMap
```

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

Chan.	1	2	3	4	5	6	7	8 >
Flash Red	.	.	.	.	.	.	.	.
Flash Yel	.	.	.	.	.	.	.	.
Flash Grn	.	.	.	.	.	.	.	.
Inhibit Red Flash In Preempt	.	.	.	.	.	.	.	.
Olap Ovrd	0	0	0	0	0	0	0	0

Chan.	9	10	11	12	13	14	15	16
Flash Red	.	.	.	.	.	.	.	.
Flash Yel	.	.	.	.	.	X	X	.
Flash Grn X	.	.	.	.	.	.	.	.
Inhibit Red Flash In Preempt	.	.	.	.	.	.	.	.
Olap Ovrd	0	0	0	0	0	2	3	0

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

NOTE

Output re-mapping is necessary for proper FYA operation. See the 4-Section PPLT FYA Output Programming Detail on this sheet.

CHANNEL & I/O PROGRAMMING DETAIL ASSIGN CHANNELS FOR OVERLAP G

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-8
THEN SELECT CHAN 1-16

```
Channel & I/O
[1.Chan  1-16] 4.Chan+  1-16 7.IO Logic
2.chan 17-24   5.chan+ 17-24 8.IO Viewer
3.Chan Parms   6.IO Parms    9.IO UserMap
```

Chan.	1	2	3	4	5	6	7	8 >
P/Olp#	1	2	7	4	5	6	7	8
Type	VEH	VEH	OLP	VEH	VEH	VEH	VEH	VEH
Flash	RED	RED	RED	RED	RED	RED	RED	RED
Alt Hz	.	X	X	.	X	.	.	.
Dim Grn	.	.	.	.	.	.	.	.
Dim Yel	.	.	.	.	.	.	.	.
Dim Red+	.	.	.	.	.	.	.	.
Fish Grn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Chan.	9	10	11	12	13	14	15	16 >
P/Olp#	1	2	3	4	2	4	6	8
Type	OLP	OLP	OLP	OLP	PED	PED	PED	PED
Flash	RED	RED	RED	RED	DRK	DRK	DRK	DRK
Alt Hz	.	X	X	.	.	.	.	.
Dim Grn	.	.	.	.	.	.	.	.
Dim Yel	.	.	.	.	.	.	.	.
Dim Red+	.	.	.	.	.	.	.	.
Fish Grn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Channel & I/O programming complete

Electrical Detail - Sheet 3 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road) at Glendale Drive

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE | DATE

SIG. INVENTORY NO. 07-1379

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Traffic Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

ALTERNATE PHASING BY TIME OF DAY (TOD) DETAIL

(program controller as shown below)

The purpose of this programming is to turn off Flashing Yellow Arrows (FYA) for signal head 51, and to remove the delay for loop 5A by Time of Day (TOD).

1. Set up Alternate Detector Prog Set# 1.

FROM MAIN MENU, KEYSTROKES 5-5

```
      Alternate Detector Programs
1.Veh Parms   4.Ped Parms
2.Veh Options
3.Veh Parm+                  Prog Set# [1]
```

←ENTER MAP # 1

2. Select Veh Parms (1) to set up vehicle parameters.

Row	Det#	Call	Switch	Delay	Extend	Queu >
1	0	0	0	0.0	0.0	0
2	15	5	0	0.0	0.0	0
3	0	0	0	0.0	0.0	0
4	0	0	0	0.0	0.0	0
5	0	0	0	0.0	0.0	0
6	0	0	0	0.0	0.0	0
7	0	0	0	0.0	0.0	0

ESC

3. Select Veh Options (2) to set up Call/Extend options for vehicle detectors.

Row	Det#	Call	Extend	Queue	Add.Init >
1	0	.	.	.	.
2	15	X	X	.	.
3	0	.	.	.	.
4	0	.	.	.	.
5	0	.	.	.	.
6	0	.	.	.	.
7	0	.	.	.	.

4. From Main Menu go to Time Based Scheduler.

FROM MAIN MENU, KEYSTROKES 4

```
        Time Based Scheduler
1.Set Date/Time  4.Day Plan      7.Status
2.Easy Schedule  5.Action Table  8.Resrvd
3.Adv Schedule   6.Parameters    9.More
```

5. Go to Easy Schedule (2) or Advanced Schedule (3) to run day plan.
6. Set up Day Plan Table (4) to schedule Pattern.
7. Set up Action Table (5) to run Pattern.
8. Set up Pattern #1 to turn off Overlap 3, thus turning off FYA outputs. Also enable Detector Group 1.

FROM MAIN MENU, KEYSTROKES 2-6

Pat#	Alt:	POpt	PTime	DetGrp	Call/Inh >
1		0	0	1	0
2		0	0	0	0
3		0	0	0	0
4		0	0	0	0
5		0	0	0	0
6		0	0	0	0
7		0	0	0	0

<Pat#	Olp.Off:12345678	ASC	CNA1	MAX2	Dia
1	..X.....	0	.	.	DFT
2	....	0	.	.	DFT
3	....	0	.	.	DFT
4	....	0	.	.	DFT
5	....	0	.	.	DFT
6	....	0	.	.	DFT
7 +	....	0	.	.	DFT

TOD Programming Complete

GREEN DELAY PROGRAMMING DETAIL FOR LEADING PEDESTRIAN INTERVAL OPERATION

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-1

```
              Channel & I/O
1.Times       4.Ring,Start,Concur   7.Times+
2.Options     5.Call,Inh,Redirect   8.Copy
[3.Options+]  6.Alt Progs+          9.AdvWarn
```

PRESS "+" KEY ONCE

Options+	P	1	2	3	4	5	6	7	8 >
Ped Delay	-	.	.	.	.	.	.	.	.
Red Rest On Gap		.	.	.	.	.	.	.	.
Conflicting P		0	0	0	0	0	0	0	0
Grn/Ped Delay		0	0	0	6	0	7	0	0	←
Omit Yel. Yel P		0	0	0	0	0	0	0	0
Ped Out/Ovrlp P		0	0	0	0	0	0	0	0
StartYel.Next P	+	0	0	0	0	0	0	0	0

CHANNEL & I/O PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1379
DESIGNED: June 2025
SEALED: 6/27/2025
REVISED: N/A

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Electrical Detail - Sheet 4 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Randleman Road)
at
Glendale Drive

Transportation Mobility and Safety Division — ITS & Signals Management Section — State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

Division 7	Guilford County	Greensboro	
PLAN DATE: June 2025		REVIEWED BY: T.M. Moody	
PREPARED BY: R.L. Aristondo		REVIEWED BY:	
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 45EA1D4836704E0... 6/27/2025
SIGNATURE DATE

SIG. INVENTORY NO. 07-1379

PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 1

No.	Note
1	INSTALL COAX CABLE
2	INSTALL ETHERNET CABLE
3	EXISTING ETHERNET (OR COAX) CABLE
4	INSTALL SMFO CABLE
5	EXISTING SMFO CABLE
6	INSTALL 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 STUB–OUTS
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 EXISTING POLE MOUNTED CABINET
25	INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26	INSTALL NEW ETHERNET EDGE SWITCH
27	INSTALL NEW FIBER OPTIC TRANSCEIVER
28	INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29	INSTALL UNDERGROUND SPLICE ENCLOSURE
30	INSTALL AERIAL SPLICE ENCLOSURE
31	MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE
32	INSTALL POLE MOUNTED SPLICE CABINET
33	INSTALL BASE MOUNTED SPLICE CABINET
34	INSTALL CABINET FOUNDATION
35	INSTALL CCTV CAMERA POLE MOUNTED CABINET
36	INSTALL CCTV CAMERA ASSEMBLY
37	INSTALL CCTV CAMERA WOOD POLE
38	INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39	INSTALL JUNCTION BOX
40A	INSTALL OVERSIZED JUNCTION BOX
40B	INSTALL SPECIAL OVERSIZED JUNCTION BOX (36″ x 24″ x 24″)
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
48A	REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
48B	REMOVE EXISTING COMMUNICATIONS CABLE
49	BACK PULL EXISTING COMMUNICATIONS CABLE
50	INSTALL CELL MODEM AND ANTENNA
51	INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52A	INSTALL DELINEATOR MARKER
52B	INSTALL JUNCTION BOX MARKER
53A	STORE 20 FEET OF COMMUNICATIONS CABLE
53B	STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54	LASH CABLE(S) TO EXISTING 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
59	INSTALL NEW EQUIPMENT CABINET DISCONNECT
60	BOND TRACER WIRE TO EQUIPMENT GROUND BUS
61	DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS
62	BOND RISER AND MESSENGER CABLE TO POLE GROUND
63	BOND RISER TO POLE GROUND
64	BOND MESSENGER CABLE TO POLE GROUND
65	INSTALL HEAT SHRINK TUBING RETROFIT KIT
66	INSTALL MOLDABLE DUCT SEAL
67	SLACK SPAN

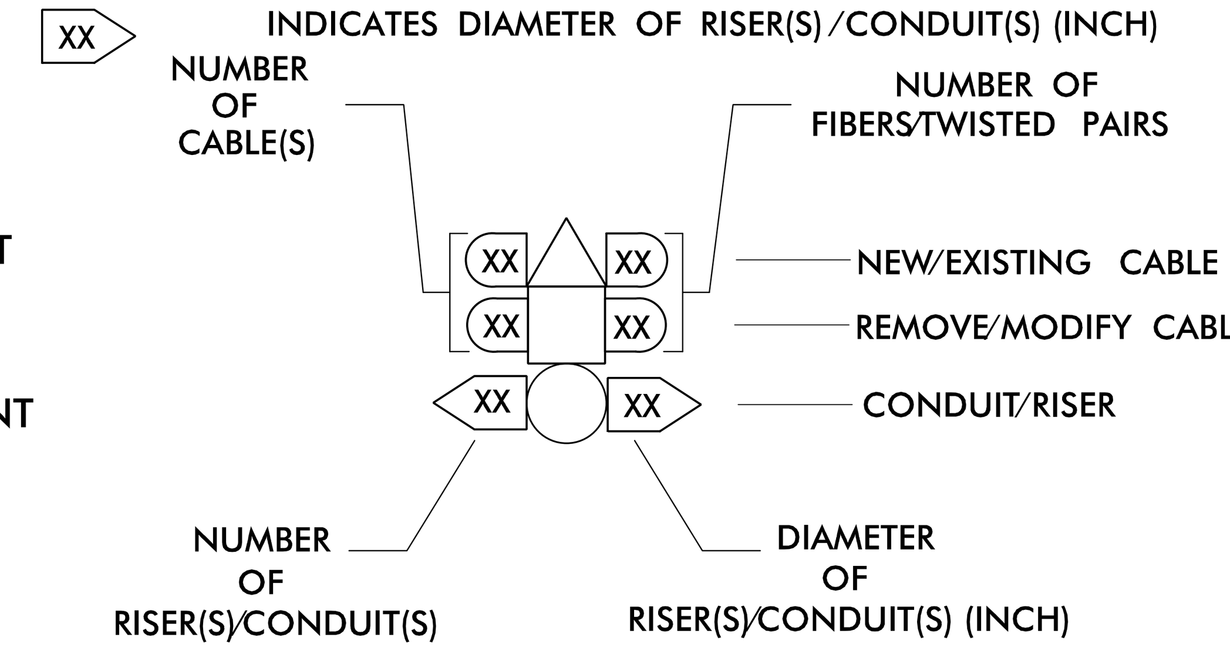
LEGEND

Line	Description
FO	NEW FIBER OPTIC COMMUNICATIONS CABLE
EXI	EXISTING COMMUNICATIONS CABLE
REM	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW AERIAL GUY ASSEMBLY
	NEW CONDUIT
	EXISTING CONDUIT
DD	NEW DIRECTIONAL DRILLED CONDUIT

NEW		EXISTING
	OVERSIZED JUNCTION BOX	
	WOOD POLE	
S	AERIAL SPLICE ENCLOSURE	S
S	UNDERGROUND SPLICE ENCLOSURE	S
	METAL POLE	
	CCTV ASSEMBLY	
	STANDARD GUY ASSEMBLY	
	SIDEWALK GUY ASSEMBLY	
	CABLE STORAGE RACKS (SNOW SHOES)	
	SIGNAL/EQUIPMENT CABINET	
S	SPLICE CABINET	
	FLAT PANEL ANTENNA (SINGLE)	
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION	
	YAGI ANTENNA (SINGLE)	
	OMNI ANTENNA	
SP	SIGNAL POLE	SP
XX–XXXX	SIGNAL INVENTORY NUMBER	XX–XXXX

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)



ATTACHMENT POINT:

- XX″/SS over YYY — DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT
- YYY over XX″/SS — REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT

"SS" REFERENCE LOCATION	
FS =	FRONT SIDE OF POLE
BS =	BACK SIDE OF POLE

Signal Communications - (TMP Phase 1 Step 2)

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE N/A

GREENSBORO SIGNAL SYSTEM
CONSTRUCTION NOTES
SR 1007 (Randleman Road)

Division 7 — Guilford County — Greensboro

PLAN DATE: June 2025 — REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo — REVIEWED BY:

REVISIONS — INIT. — DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

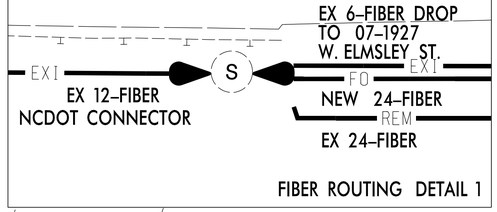
SEAL — NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody — 6/27/2025 — SIGNATURE — DATE

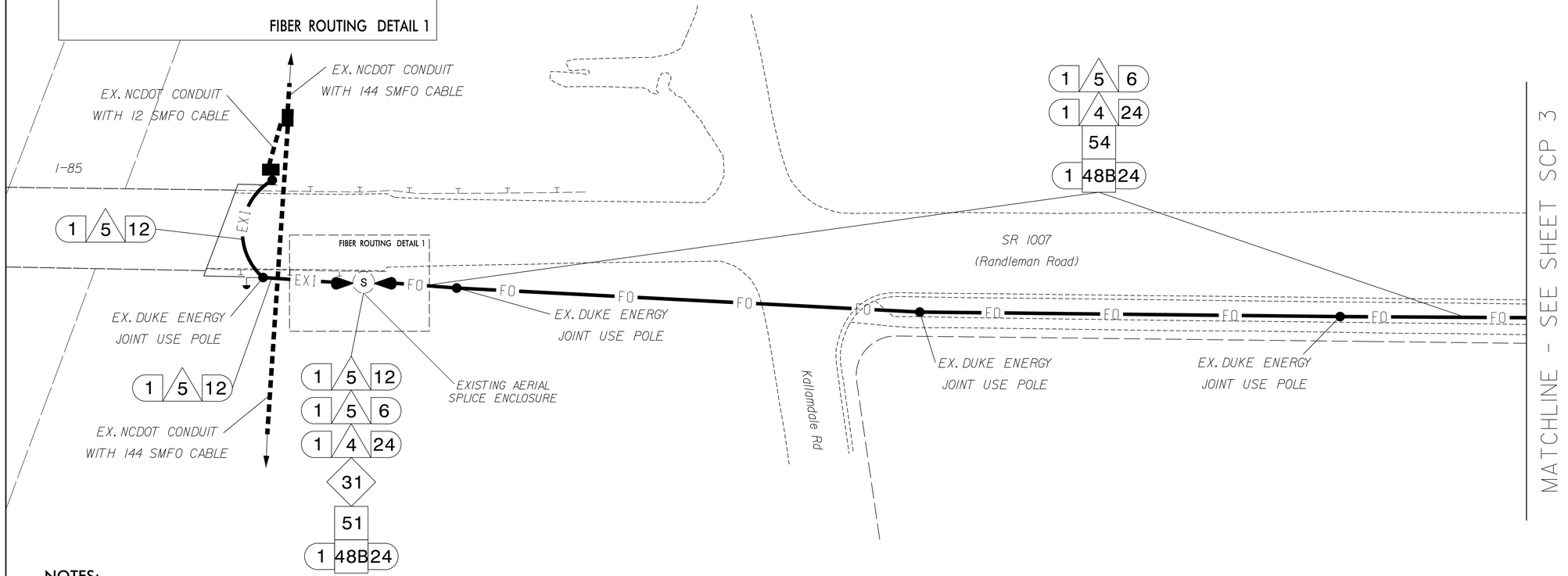
CADD FILE NAME: U-5850_SCP_01

PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 2

SPLICE GREEN & BROWN FIBER OF EX 6 FIBER DROP TO BLUE & ORANGE OF PROPOSED 24 FIBER DISCONNECT AND REMOVE EX 24 FIBER CABLE (SEE SHEET SCP 6 FOR DETAIL)



FIBER ROUTING DETAIL 1



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373-4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.

2. MAINTAIN EXISTING FIBER OPTIC CABLE AND COMMUNICATION SERVICE UNTIL ALL NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND READY FOR SPLICE CONNECTIONS AT ALL SPLICE /TERMINATION LOCATIONS. ONCE THE EXISTING FIBER CABLE IS DISCONNECTED, CONTRACTOR WILL HAVE 8 HOURS TO ENSURE THAT THE CUTOVER TO THE NEW FIBER OPTIC CABLE IS COMPLETE AND THE SYSTEM IS BACK UP AND OPERATIONAL. SEE ICT.

3. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, REMOVE EXISTING 24-FIBER OPTIC CABLE.

4. ALL CABLE ATTACHMENT POINTS ARE AT THE EXISTING CABLE ATTACHMENT HEIGHT, UNLESS OTHERWISE NOTED.

Signal Communications - (TMP Phase 1 Step 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N.Greenfield Pkwy.Garner,NC 27529

GREENSBORO SIGNAL SYSTEM
CABLE ROUTING PLANS
SR 1007 (Randleman Road)

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody

PREPARED BY: R.L. Aristondo | REVIEWED BY:

SCALE: N/A

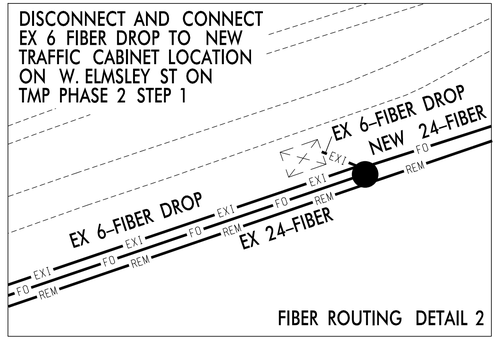
REVISIONS	INIT.	DATE

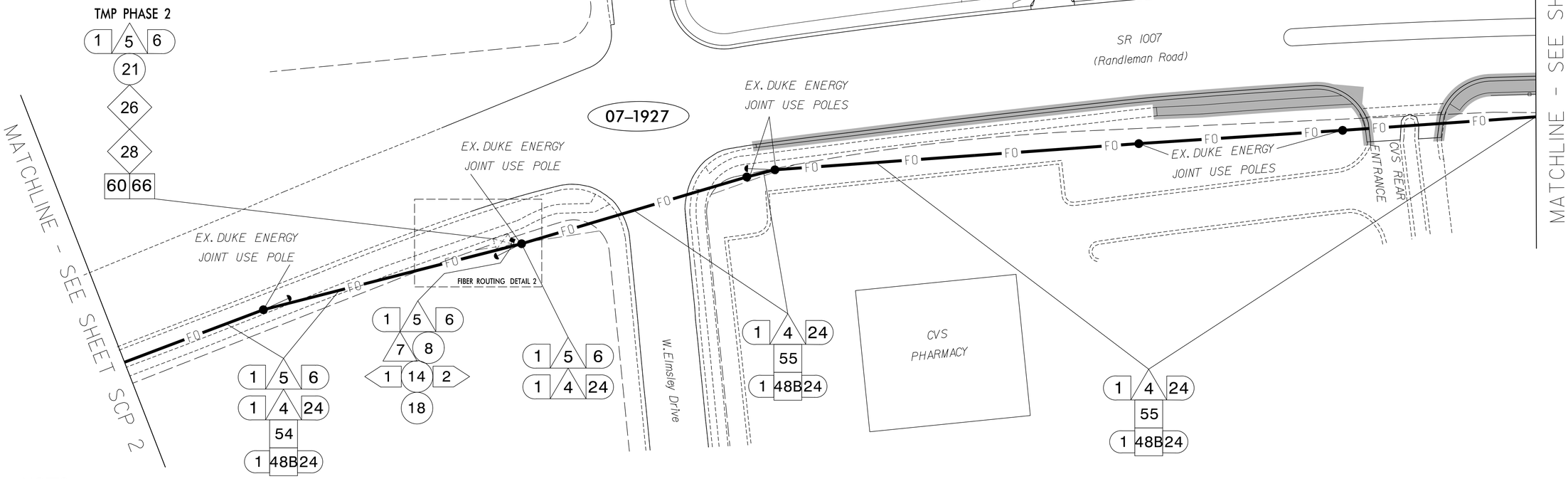
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

CADD FILE NAME: U-5850 _SCP_02

PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 3





NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373–4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.

2. MAINTAIN EXISTING FIBER OPTIC CABLE AND COMMUNICATION SERVICE UNTIL ALL NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND READY FOR SPLICE CONNECTIONS AT ALL SPLICE /TERMINATION LOCATIONS. ONCE THE EXISTING FIBER CABLE IS DISCONNECTED, CONTRACTOR WILL HAVE 8 HOURS TO ENSURE THAT THE CUTOVER TO THE NEW FIBER OPTIC CABLE IS COMPLETE AND THE SYSTEM IS BACK UP AND OPERATIONAL. SEE ICT.

3. ONCE NEW 24–FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, REMOVE EXISTING 24–FIBER OPTIC CABLE.

4. ALL CABLE ATTACHMENT POINTS ARE AT THE EXISTING CABLE ATTACHMENT HEIGHT, UNLESS OTHERWISE NOTED.

Signal Communications - (TMP Phase 1 Step 2)

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N.Greenfield Pkwy,Garner,NC 27529

GREENSBORO SIGNAL SYSTEM
CABLE ROUTING PLANS
SR 1007 (Randleman Road)

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

SCALE: N/A

REVISIONS	INIT.	DATE

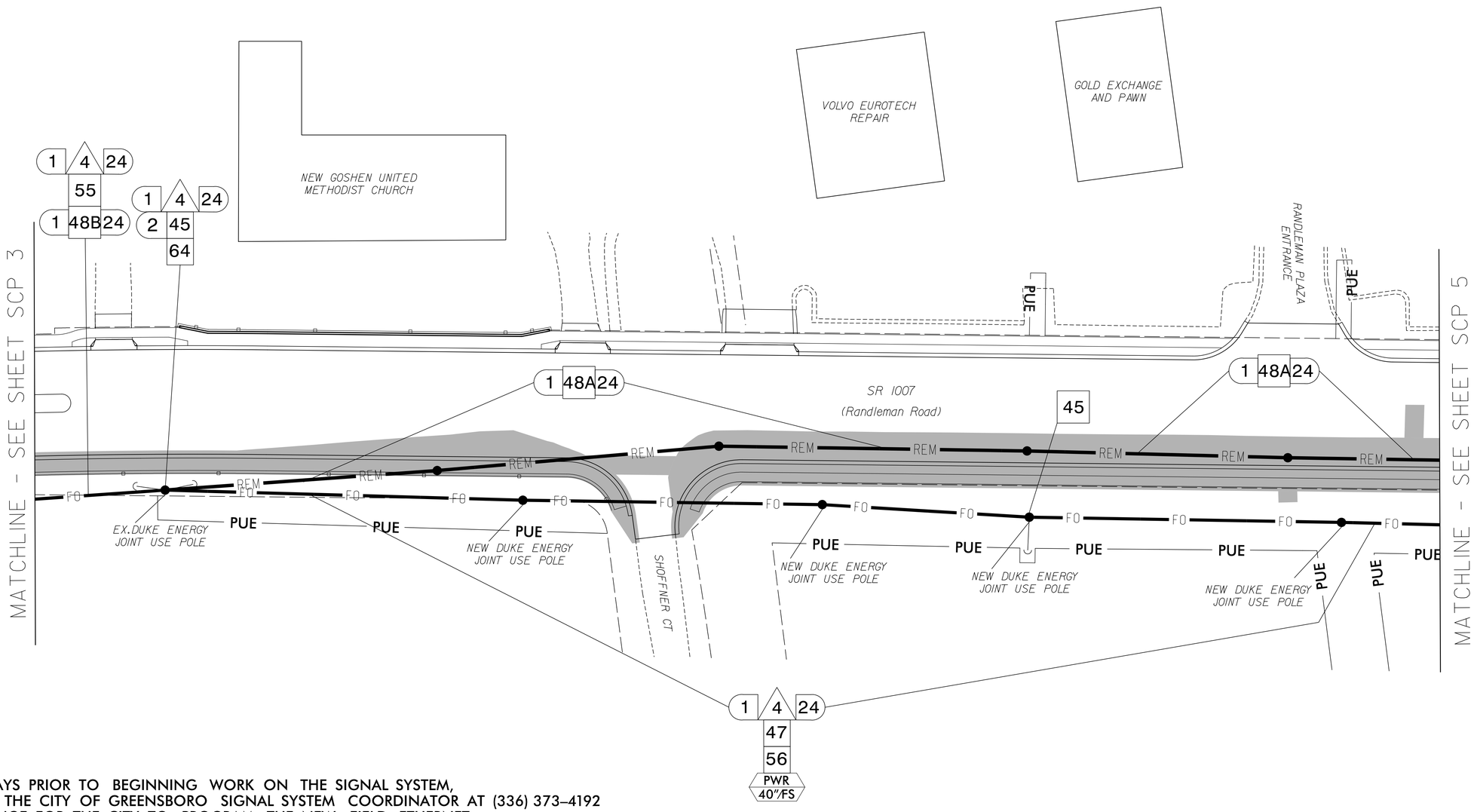
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

CADD FILE NAME: U-5850 _SCP_03

PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 4



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373–4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.

2. MAINTAIN EXISTING FIBER OPTIC CABLE AND COMMUNICATION SERVICE UNTIL ALL NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND READY FOR SPLICE CONNECTIONS AT ALL SPLICE /TERMINATION LOCATIONS. ONCE THE EXISTING FIBER CABLE IS DISCONNECTED, CONTRACTOR WILL HAVE 8 HOURS TO ENSURE THAT THE CUTOVER TO THE NEW FIBER OPTIC CABLE IS COMPLETE AND THE SYSTEM IS BACK UP AND OPERATIONAL. SEE ICT.

3. ONCE NEW 24–FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, REMOVE EXISTING 24–FIBER OPTIC CABLE.

4. ALL CABLE ATTACHMENT POINTS ARE AT THE EXISTING CABLE ATTACHMENT HEIGHT, UNLESS OTHERWISE NOTED.

Signal Communications - (TMP Phase 1 Step 2)

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N.Greenfield Pkwy,Garner,NC 27529

GREENSBORO SIGNAL SYSTEM
CABLE ROUTING PLAN
SR 1007 (Randleman Road)

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.W. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

SCALE: N/A

REVISIONS	INIT.	DATE

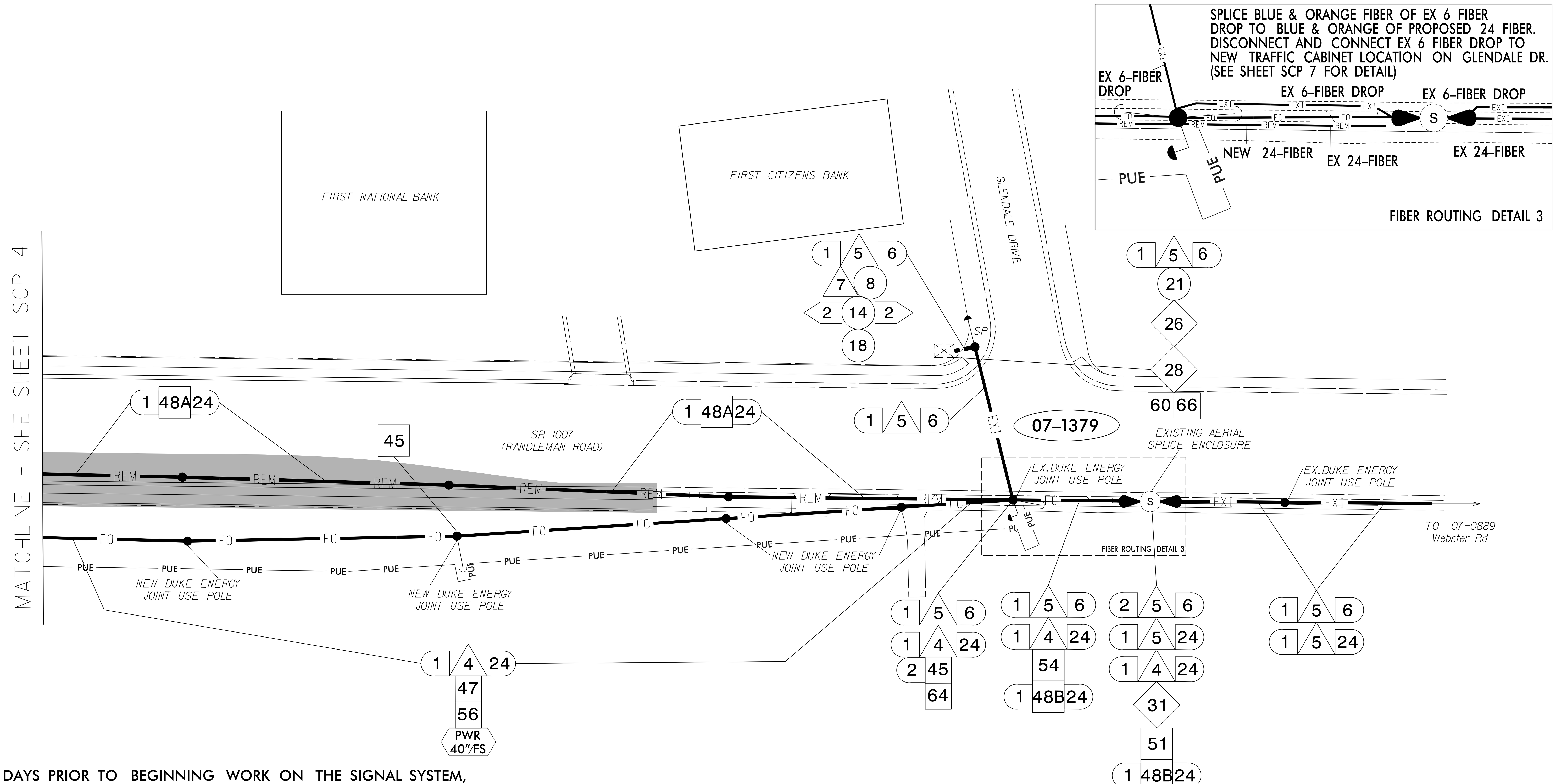
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
DATE

CADD FILE NAME: U-5850_SCP_04

PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 5



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373-4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.

2. MAINTAIN EXISTING FIBER OPTIC CABLE AND COMMUNICATION SERVICE UNTIL ALL NEW FIBER OPTIC CABLE HAS BEEN INSTALLED AND READY FOR SPLICE CONNECTIONS AT ALL SPLICE /TERMINATION LOCATIONS. ONCE THE EXISTING FIBER CABLE IS DISCONNECTED, CONTRACTOR WILL HAVE 8 HOURS TO ENSURE THAT THE CUTOVER TO THE NEW FIBER OPTIC CABLE IS COMPLETE AND THE SYSTEM IS BACK UP AND OPERATIONAL. SEE ICT.

3. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, REMOVE EXISTING 24-FIBER OPTIC CABLE.

4. ALL CABLE ATTACHMENT POINTS ARE AT THE EXISTING CABLE ATTACHMENT HEIGHT, UNLESS OTHERWISE NOTED.

Signal Communications - (TMP Phase 1 Step 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N.Greenfield Pkwy,Garner,NC 27529

GREENSBORO SIGNAL SYSTEM
CABLE ROUTING PLANS
SR 1007 (Randleman Road)

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo REVIEWED BY:

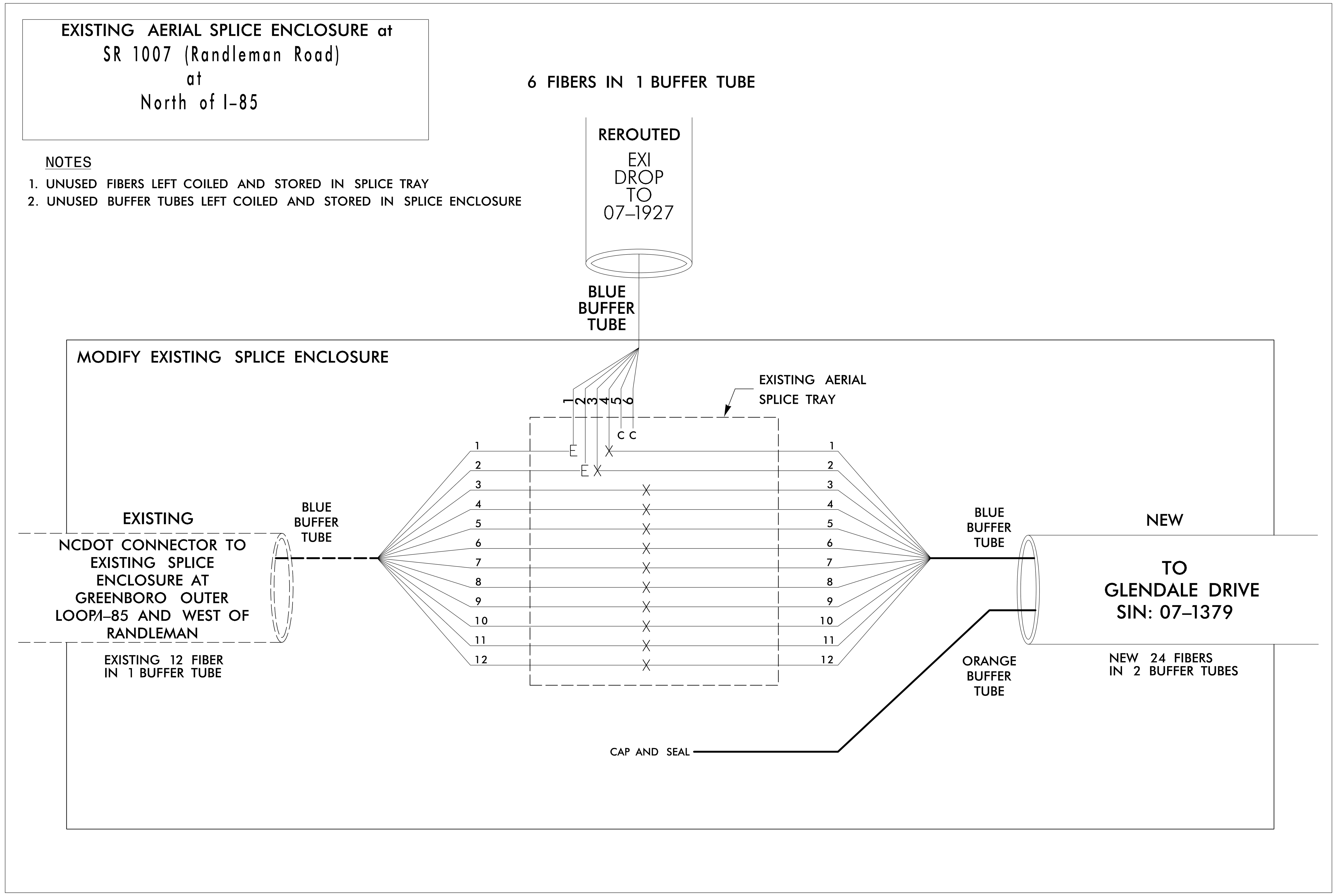
SCALE N/A

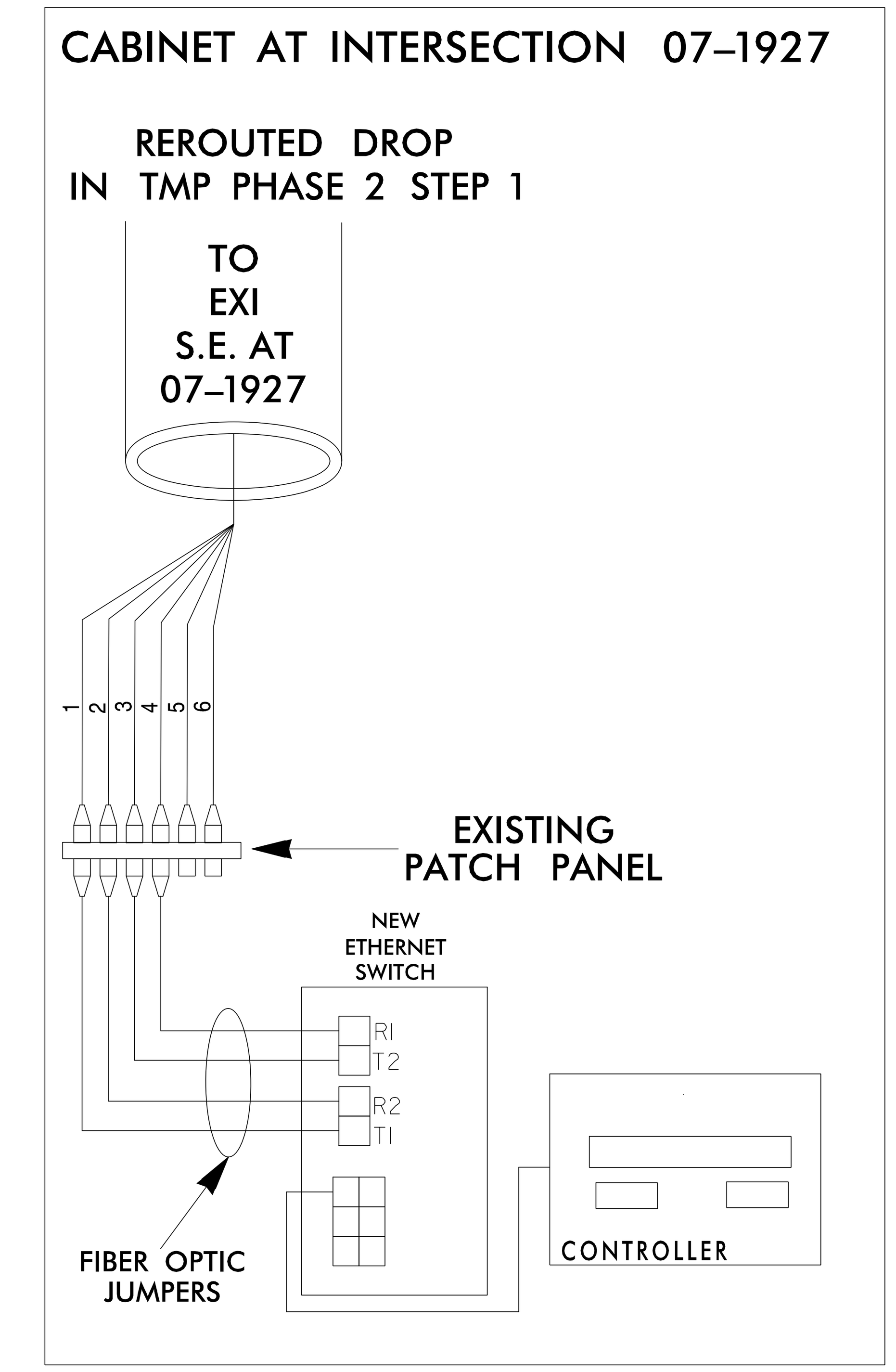
REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 040329
TRENT M. MOODY

DocuSigned by: Trent Moody 6/27/2025
SIGNATURE DATE

CADD FILE NAME: U-5850_SCP_05





1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373–4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SIGNAL SUPERVISOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

2) CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS–BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3) ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.

4) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1–4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

LEGEND

COLOR CODE TIA/EIA 598–A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA

E = EXISTING SPLICE
X = FUSION SPLICE
C = CAP AND SEAL

EXPRESS = EXPRESS ENTIRE BUFFER TUBE /FIBERS THROUGH WITHOUT CUTTING

BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR

Signal Communications - (TMP Phase 1 Step 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

stv
STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE N/A

GREENSBORO SIGNAL SYSTEM
SPLICE DETAILS
SR 1007 (Randleman Road)

Division 7 Guilford County Greensboro

PLAN DATE: June 2025 REVIEWED BY: T.M. Moody
PREPARED BY: R.L. Aristondo REVIEWED BY:

REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody
SIGNATURE 6/27/2025 DATE

CADD FILE NAME: U-5850_SCP_06

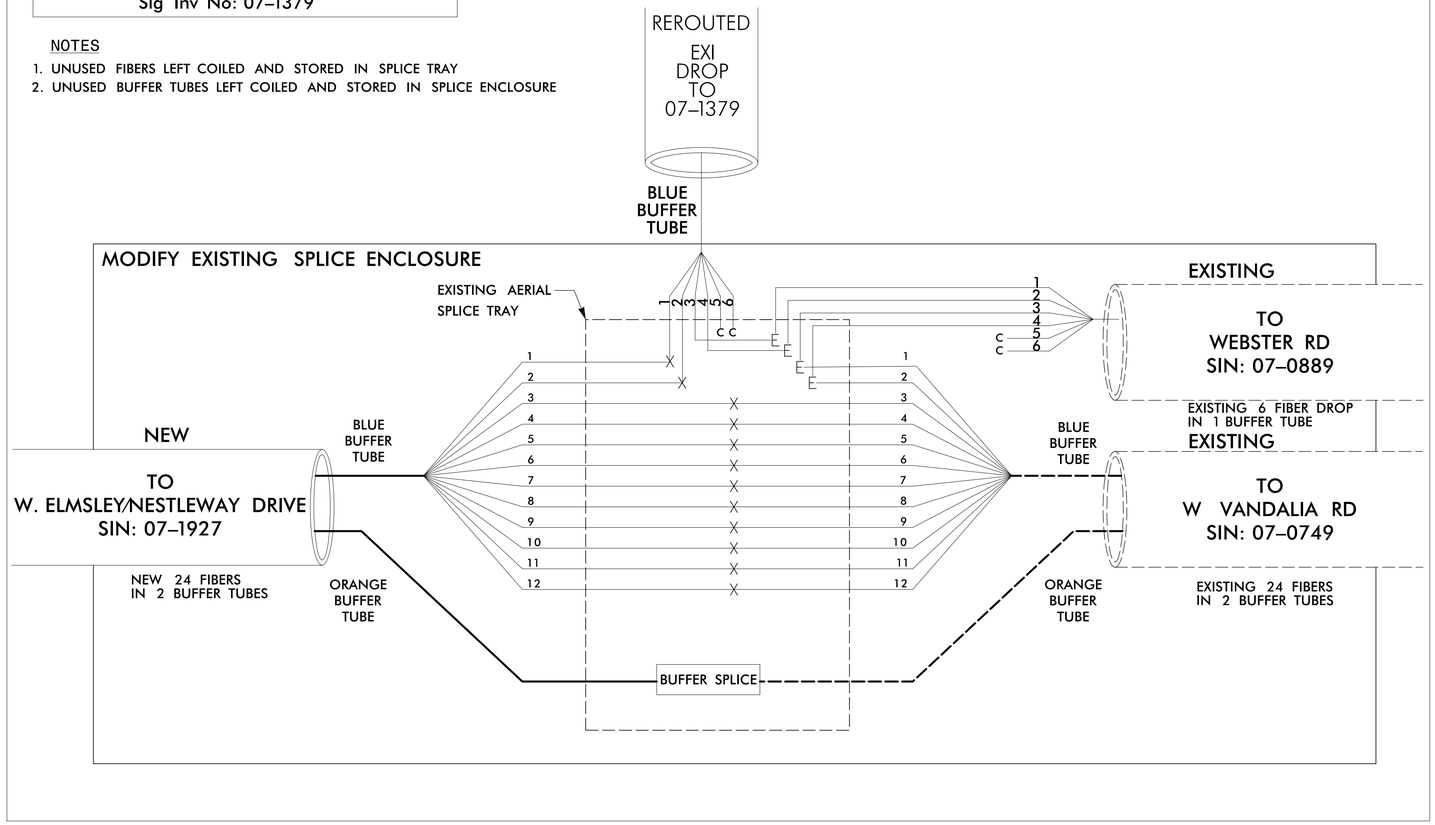
PROJECT REFERENCE NO.	SHEET NO.
U-5850	SCP 7

EXISTING AERIAL SPLICE ENCLOSURE at
SR 1007 (Randleman Road)
at
Glendale Drive
Sig Inv No: 07–1379

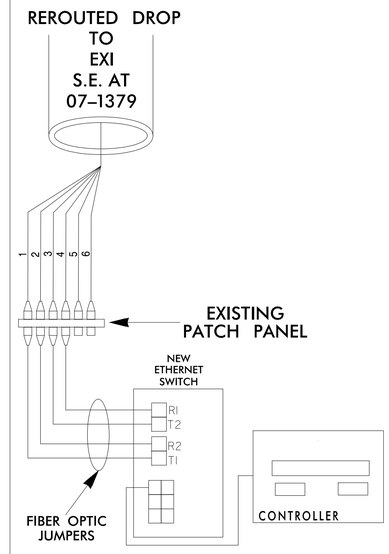
NOTES

1. UNUSED FIBERS LEFT COILED AND STORED IN SPLICE TRAY
2. UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPLICE ENCLOSURE

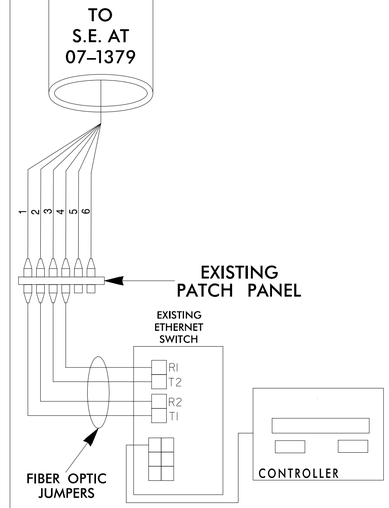
6 FIBERS IN 1 BUFFER TUBE



CABINET AT INTERSECTION 07–1379



CABINET AT INTERSECTION 07–0889



1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF GREENSBORO SIGNAL SYSTEM COORDINATOR AT (336) 373–4192 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SIGNAL SUPERVISOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

2) CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS–BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3) ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.

4) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

   1) SPLICE LOCATION
   2) DATE
   3) COMPANY NAME
   4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

   PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1–4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

LEGEND

COLOR CODE TIA/EIA 598–A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA

E = EXISTING SPLICE
X = FUSION SPLICE
C = CAP AND SEAL

EXPRESS = EXPRESS ENTIRE BUFFER TUBE /FIBERS THROUGH WITHOUT CUTTING

BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Signal Communications - (TMP Phase 1 Step 2)

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

SCALE: N/A

GREENSBORO SIGNAL SYSTEM
SPLICE DETAILS
SR 1007 (Randleman Road)

Division 7 | Guilford County | Greensboro

PLAN DATE: June 2025 | REVIEWED BY: T.W. Moody
PREPARED BY: R.L. Aristondo | REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 45EA1D4B3670AE0... SIGNATURE
6/27/2025 DATE

CADD FILE NAME: U-5850_SCP_07