

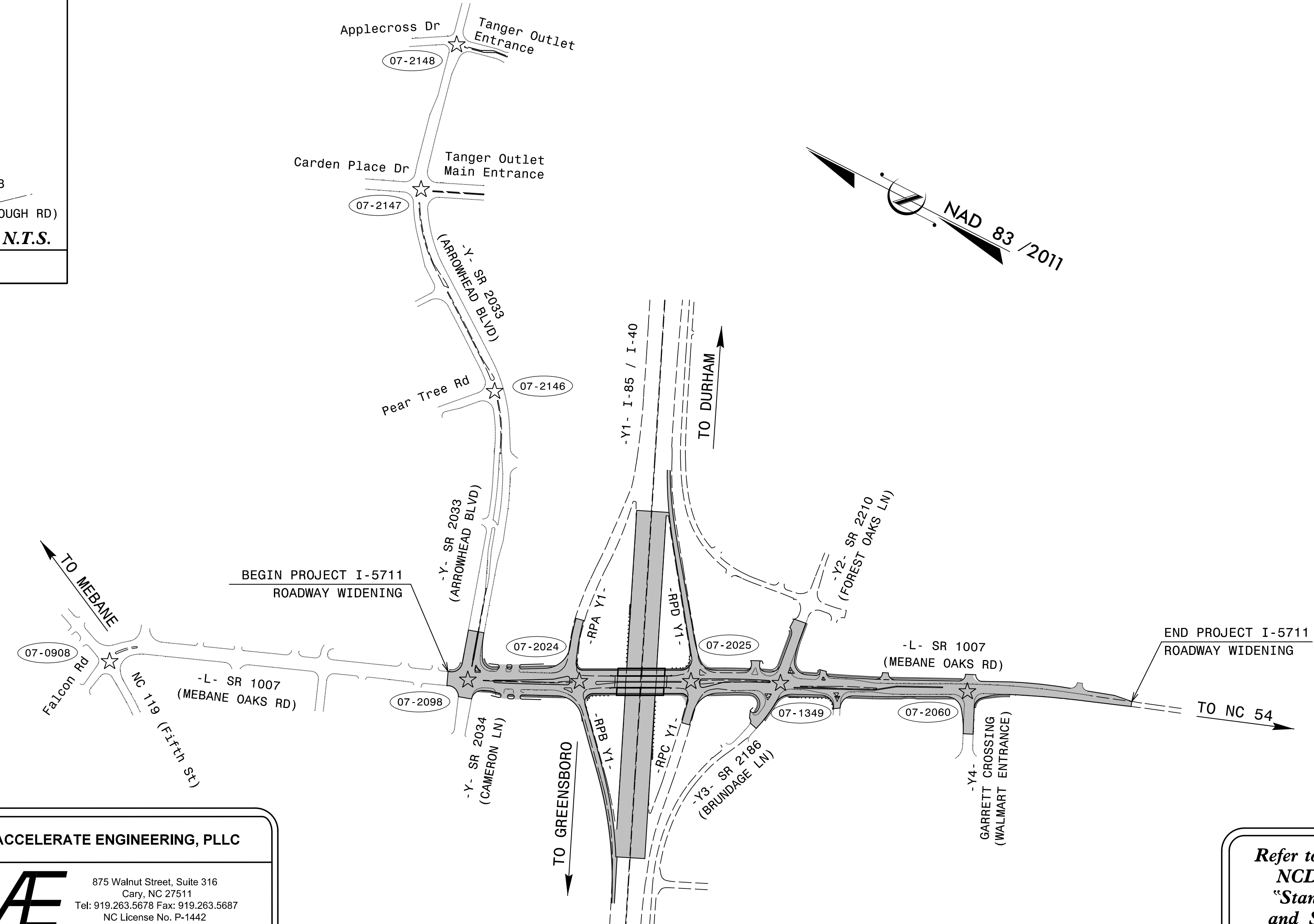
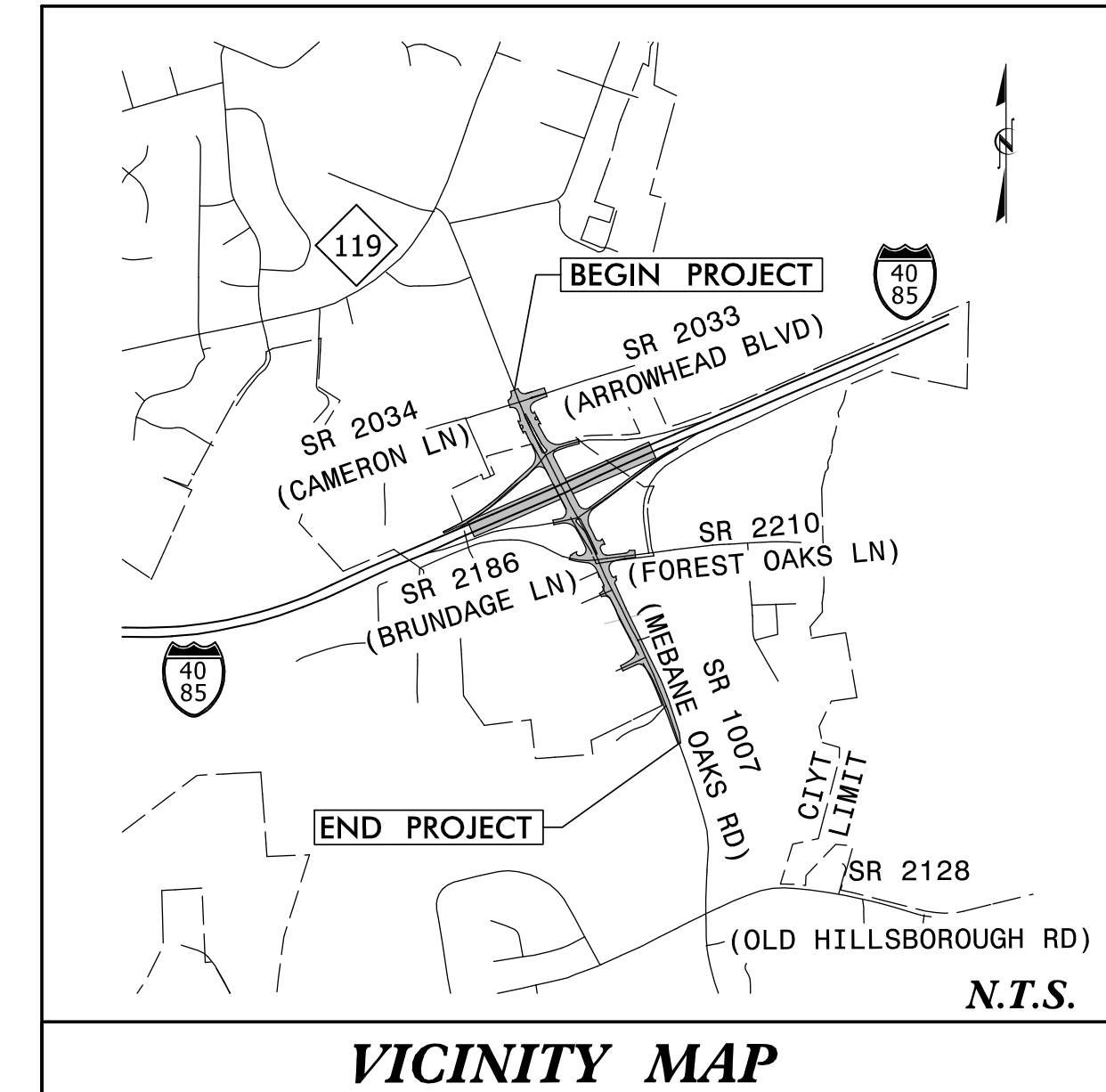
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS


ALAMANCE COUNTY

**LOCATION: INTERCHANGE IMPROVEMENTS AT I-40 /I-85
AND SR 1007 (MEBANE OAKS RD) IN MEBANE**
TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS

T.I.P. Project: I-5711

CONTRACT: C204352



PLAN PREPARED BY:	ACCELERATE ENGINEERING, PLLC
ZHAOLONG (GAVIN) TENG, PE, PTOE PROJECT MANAGER	 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.

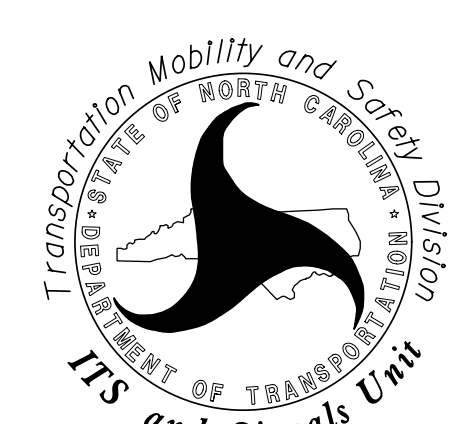
Index of Plans		Location/Description
Sheet #	Reference #	
Sig. 1.0	-----	Title Sheet
Sig. 2.0-2.2	07-0908	NC 119 (S. Fifth Street) at SR 1007 (Mebane Oaks Road) and Falcon Road
Sig. 3.0-6.3	07-2098	SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)
Sig. 7.0-10.2	07-2024	SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps
Sig. 11.0-14.2	07-2025	SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps
Sig. 15.0-18.6	07-1349	SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)
Sig. 19.0-22.3	07-2060	SR 1007 (Mebane Oaks Rd) at Garrett Crossing (Walmart Entrance)
Sig. 23.0-23.3	07-2146	SR 2033 (Arrowhead Boulevard) at Pear Tree Road
Sig. 24.0-24.4	07-2147	SR 2033 (Arrowhead Boulevard) at Carden Place Drive / Tanger Outlet Main Entrance
Sig. 25.0-25.2	07-2148	SR 2033 (Arrowhead Boulevard) at Applecross Drive / Tanger Outlet Entrance
Sig. 26.0-26.1	-----	Standard Plate Sheets
Sig. M1-M8	-----	Metal Pole Standard Drawings
Scp. 1-12	-----	Signal Communications Plans

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT

Contacts:

Robert J. Ziemba, PE - Central Region Signals Engineer
Keith M. Mims, PE - Signal Equipment Design Engineer
Neil Avery - Intelligent Transportation Systems Engineer

DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION

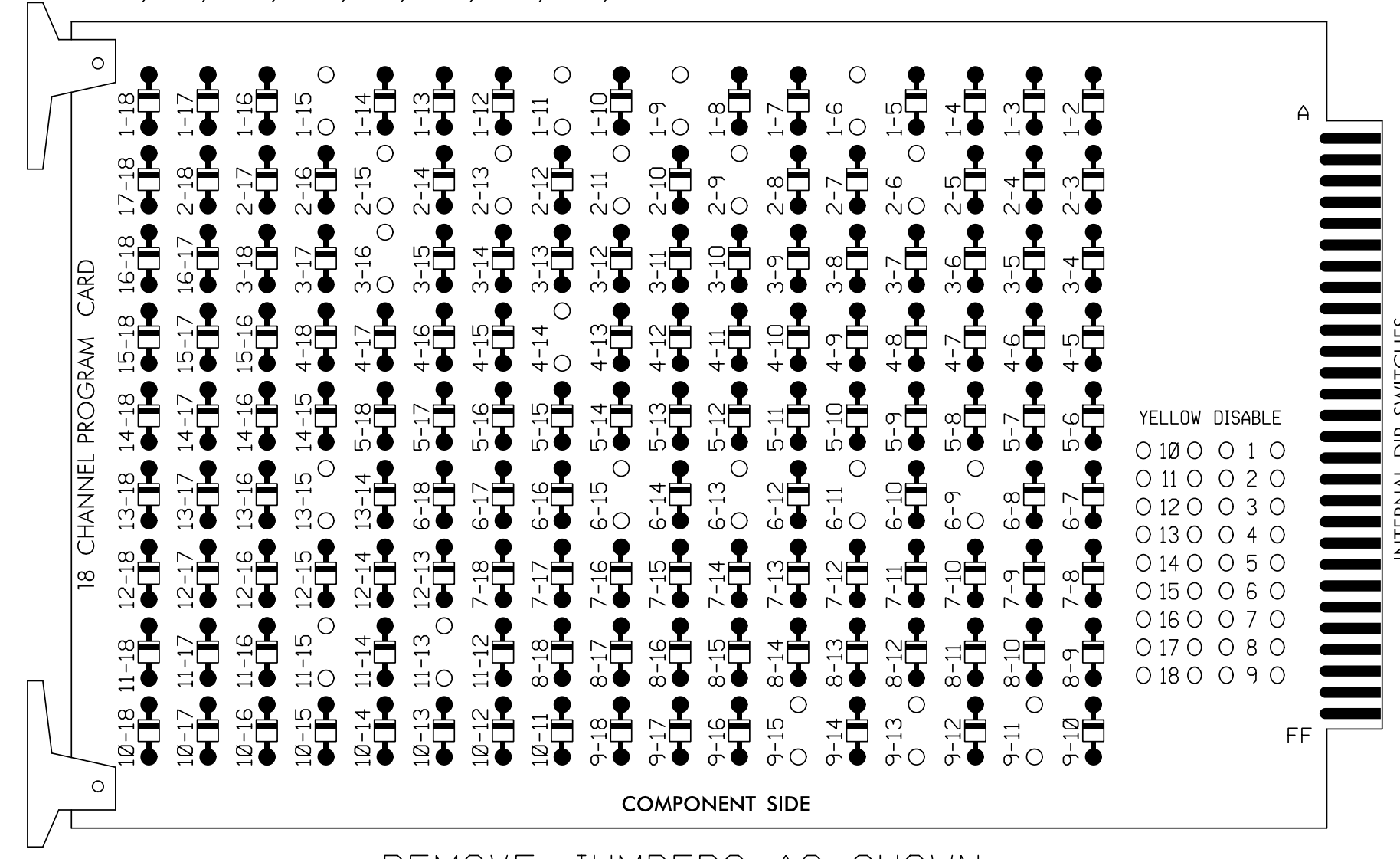


750 N. Greenfield Parkway, Garner, NC 27529

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

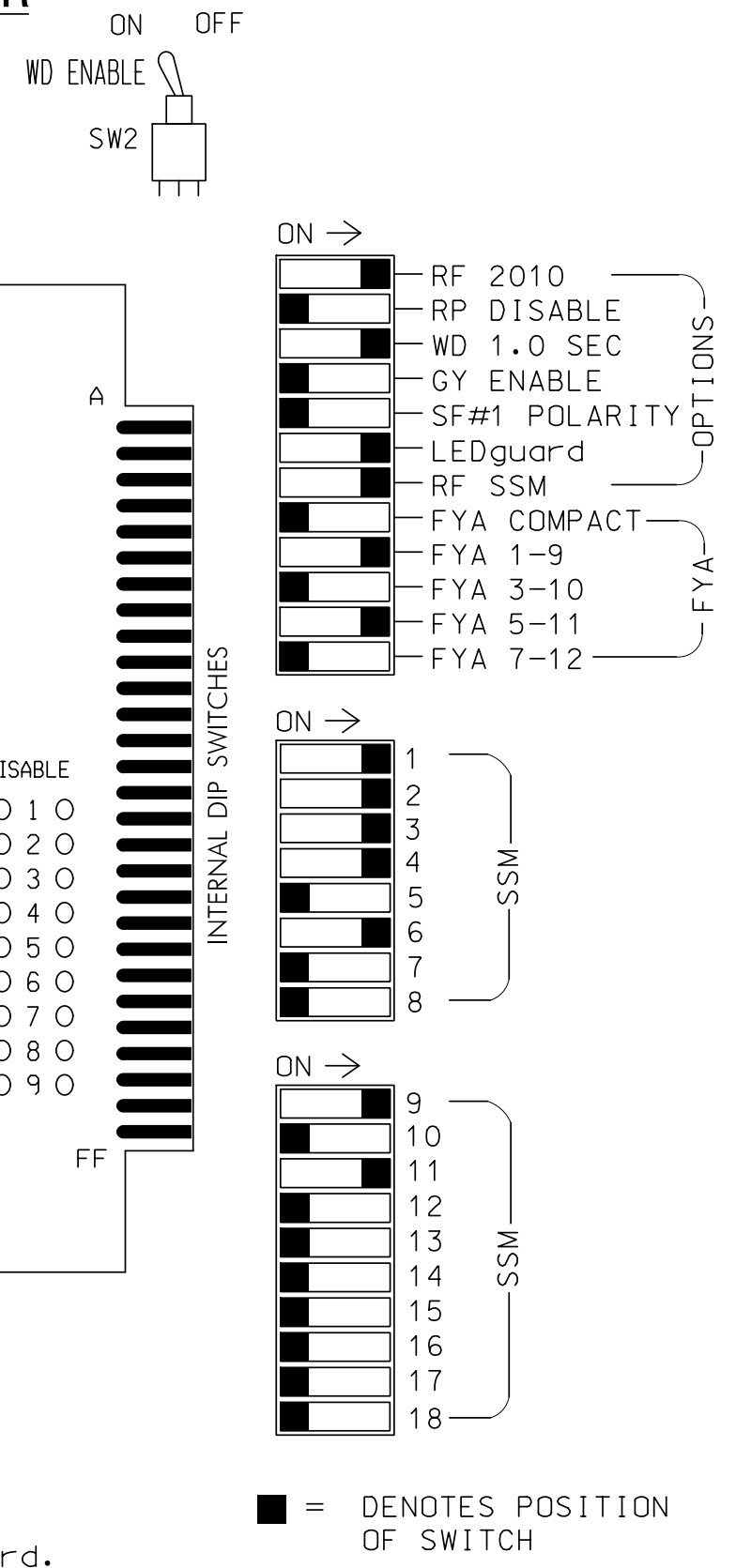
(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

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



NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans. 2. Program controller to start up in phase 2 Walk and phase 6 Walk. 3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

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

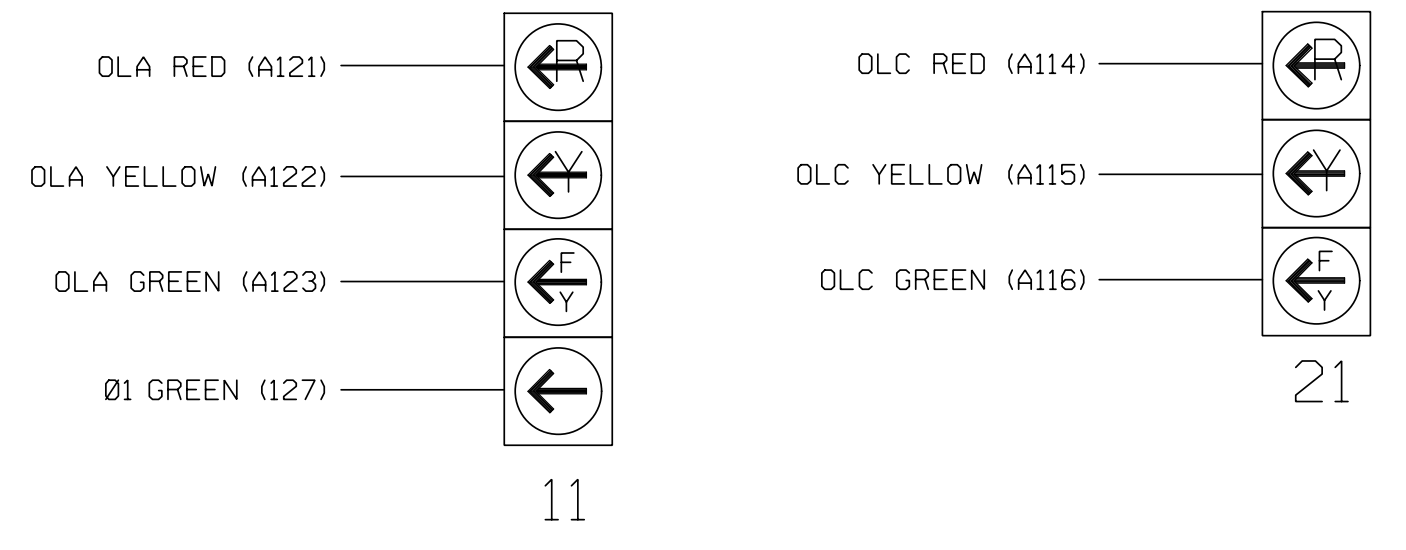
SIGNAL HEAD HOOK-UP CHART

Table with columns for LOAD SWITCH NO., S1-S12, AUX S1-S6, PHASE, SIGNAL HEAD NO., RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW, and signal head types (OLA, OLC, OLB, OLB SPARE, OLC, OLC SPARE).

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

Table showing input file positions 1-14 with columns for FILE U, FILE L, and various detector types (Ø1, Ø2, Ø3, Ø4, Ø6, DC ISOLATOR, FS).

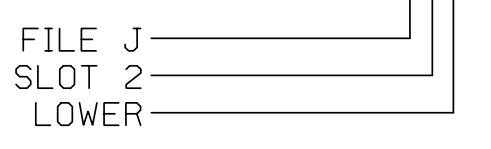
EX.: 1A, 2A, ETC. = LOOP NO.'S FS = FLASH SENSE ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns: LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND TIME, DELAY TIME, ADDED INITIAL, DETECTOR TYPE. Includes notes about DC isolators and push buttons.

1 Add jumper from I1-W to J4-W, on rear of input file. * System detector only. Remove any assigned vehicle phase.

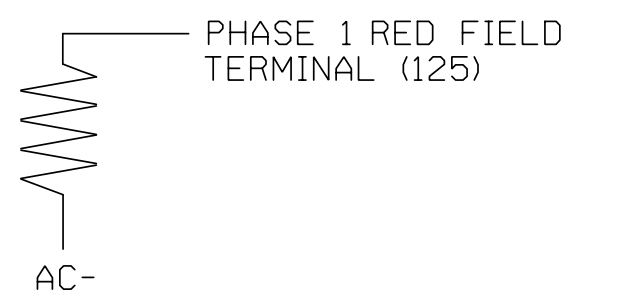
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

Table for ACCEPTABLE VALUES showing VALUE (ohms) and WATTAGE for 1.5K-1.9K (25W min) and 2.0K-3.0K (10W min).

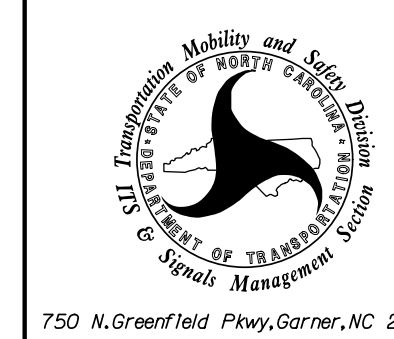


COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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.

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

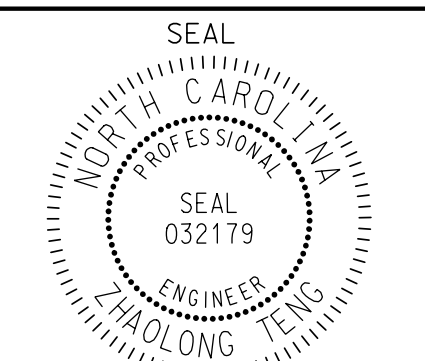


NC 119 (S. Fifth Street) at SR 1007 (Mebane Oaks Road) and Falcon Road

Division 7 Alamance County Mebane PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

Table with columns: REVISIONS, INIT., DATE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Zhaolong Teng 12/17/2019 DATE: 07-0908

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0908 DESIGNED: November 2019 SEALED: 12/17/2019 REVISED: N/A

PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

Vertical text on the left edge of the page.

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

```

OVERLAP A
Select TMG VEH OVLP [A] and 'PPLT FYA'
TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2
FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Twice

```

OVERLAP C
Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'
TMG VEH OVLP...[C] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

END PROGRAMMING

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

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

```

PED DET PHASE ASSIGNMENT MODE: NTCIP
PHASE 1 2 3 4 5 6 7 8
DETECTOR 0 2 8 4 0 6 0 0
PHASE 9 10 11 12 13 14 15 16
DETECTOR 0 0 0 0 0 0 0 0
    
```

← NOTICE PED DETECTOR 8 ASSIGNED TO PHASE 3

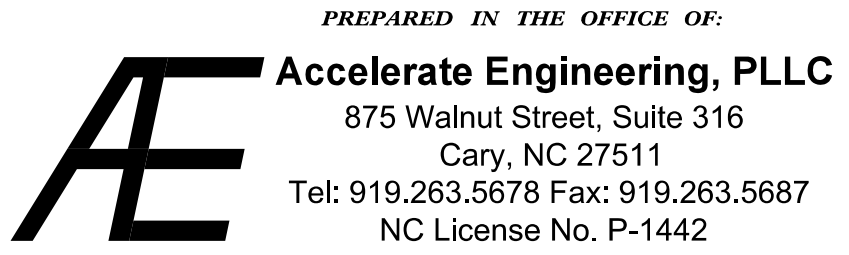
- 1. From Main Menu select 1. CONFIGURATION
- 2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

```

LD SWITCH ASSIGN
PHASE /OVLP TYPE DIMMING ---FLASH---
R Y G D PWR AUT TGR
1 1 V . . . + A R X
2 2 V . . . + A Y .
3 3 V . . . + A R X
4 4 V . . . + A R .
5 5 V . . . - A R .
6 6 V . . . - A Y X
7 7 V . . . - A R .
8 8 V . . . - A R X
9 1 0 . . . + A R X
10 2 0 . . . + A R X
11 3 0 . . . - A R .
12 4 0 . . . - A R .
13 2 P . . . + A . .
14 4 P . . . - A . .
15 6 P . . . + A . .
16 3 P . . . - A . .
    
```

→ NOTICE PHASE 3 PED ASSIGNED TO LD SWITCH 16

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0908
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A



Electrical Detail - Sheet 2 of 2

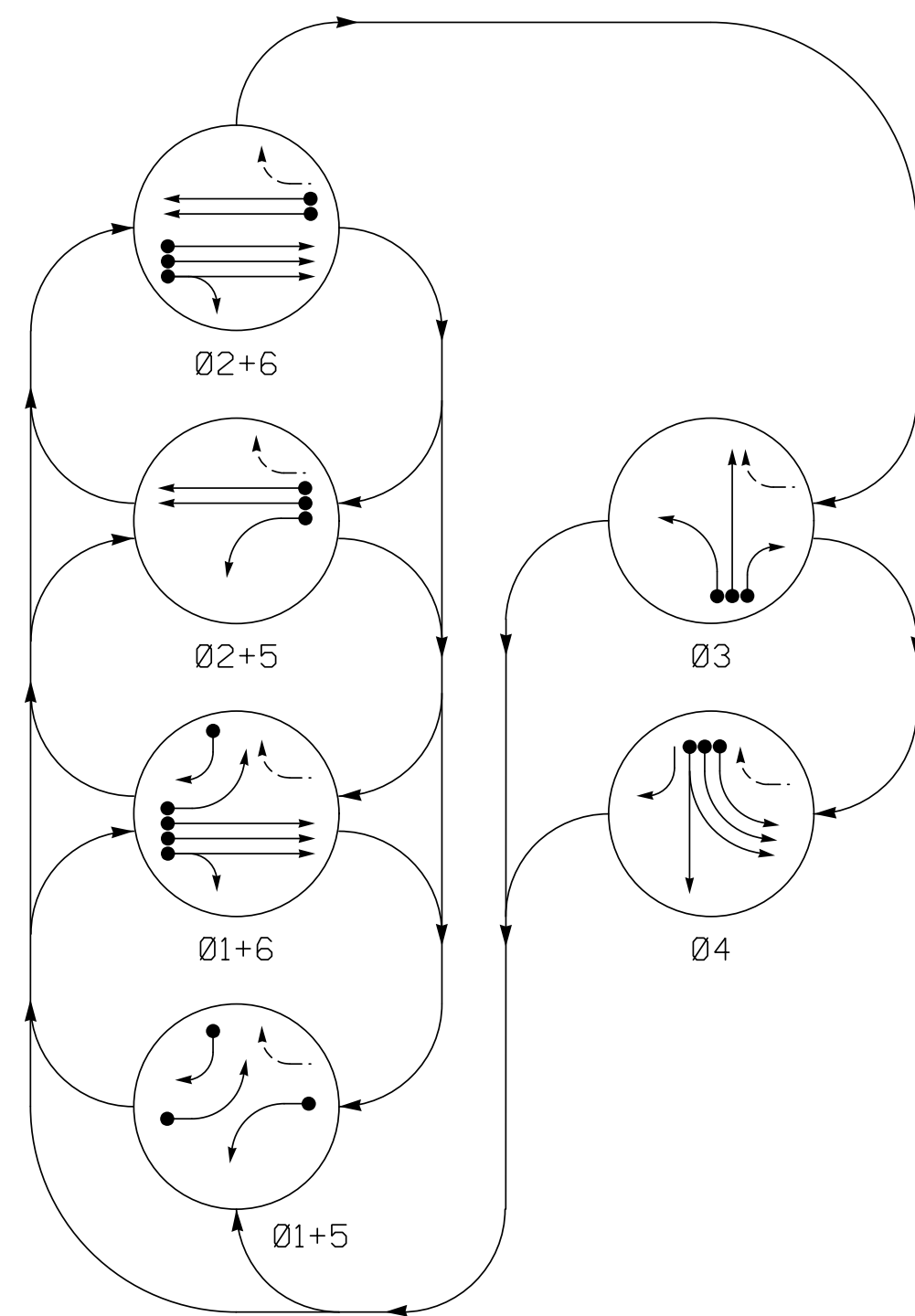
	NC 119 (S. Fifth Street) at SR 1007 (Mebane Oaks Road) and Falcon Road Division 7 Alamance County Mebane
	PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:
REVISIONS	INIT. DATE
_____	_____
_____	_____

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL 	SEAL 032179 ZHAOLONG TENG ENGINEER STATE OF NORTH CAROLINA
DocuSigned by: 	12/17/2019 DATE
SIG. INVENTORY NO. 07-0908	

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DONG\$\$\$\$\$
 \$\$\$SERNAME\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES (Medium Priority)

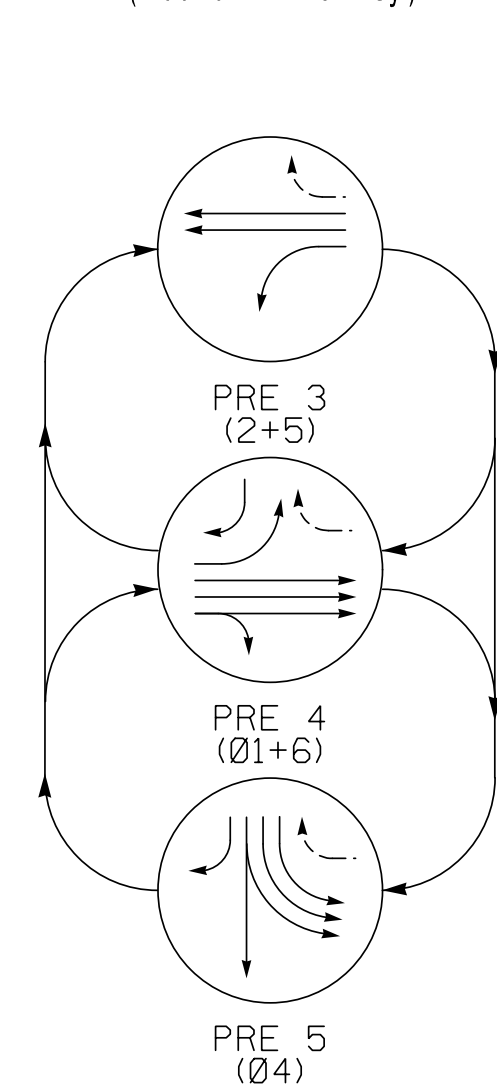


TABLE OF OPERATION

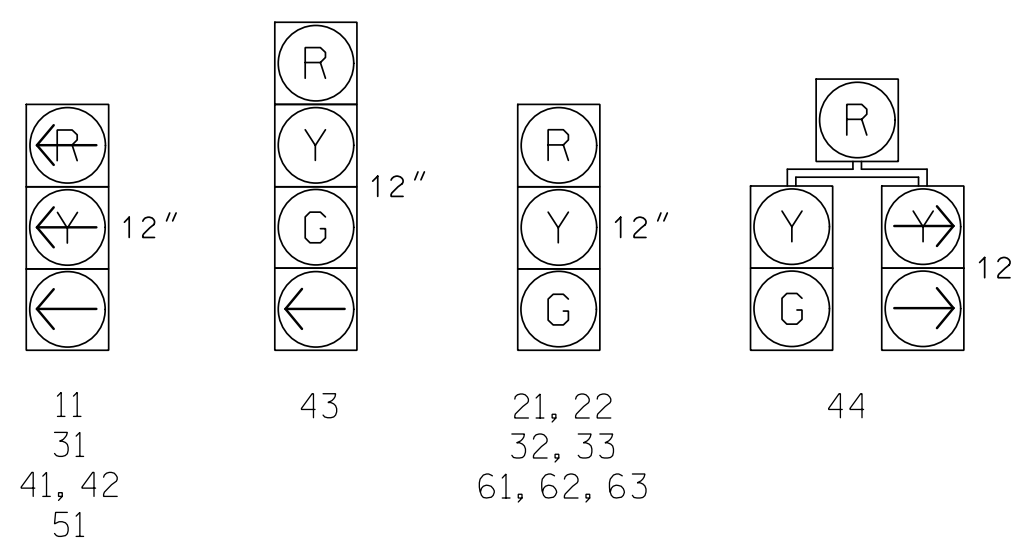
SIGNAL FACE	PHASE											
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3	Ø 4	PRE 3	PRE 4	PRE 5	FLASH	Y	
11	←	←	←	←	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	G	R	R	Y		
31	←	←	←	←	←	←	←	←	←	←	←	←
32, 33	R	R	R	R	G	R	R	R	R	R		
41, 42	←	←	←	←	←	←	←	←	←	←	←	←
43	R	R	R	R	R	G	R	R	G	R		
44	←	←	←	←	←	←	←	←	←	←	←	←
51	←	←	←	←	←	←	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	R	R	G	R	Y		

ASC/3 DETECTOR INSTALLATION CHART

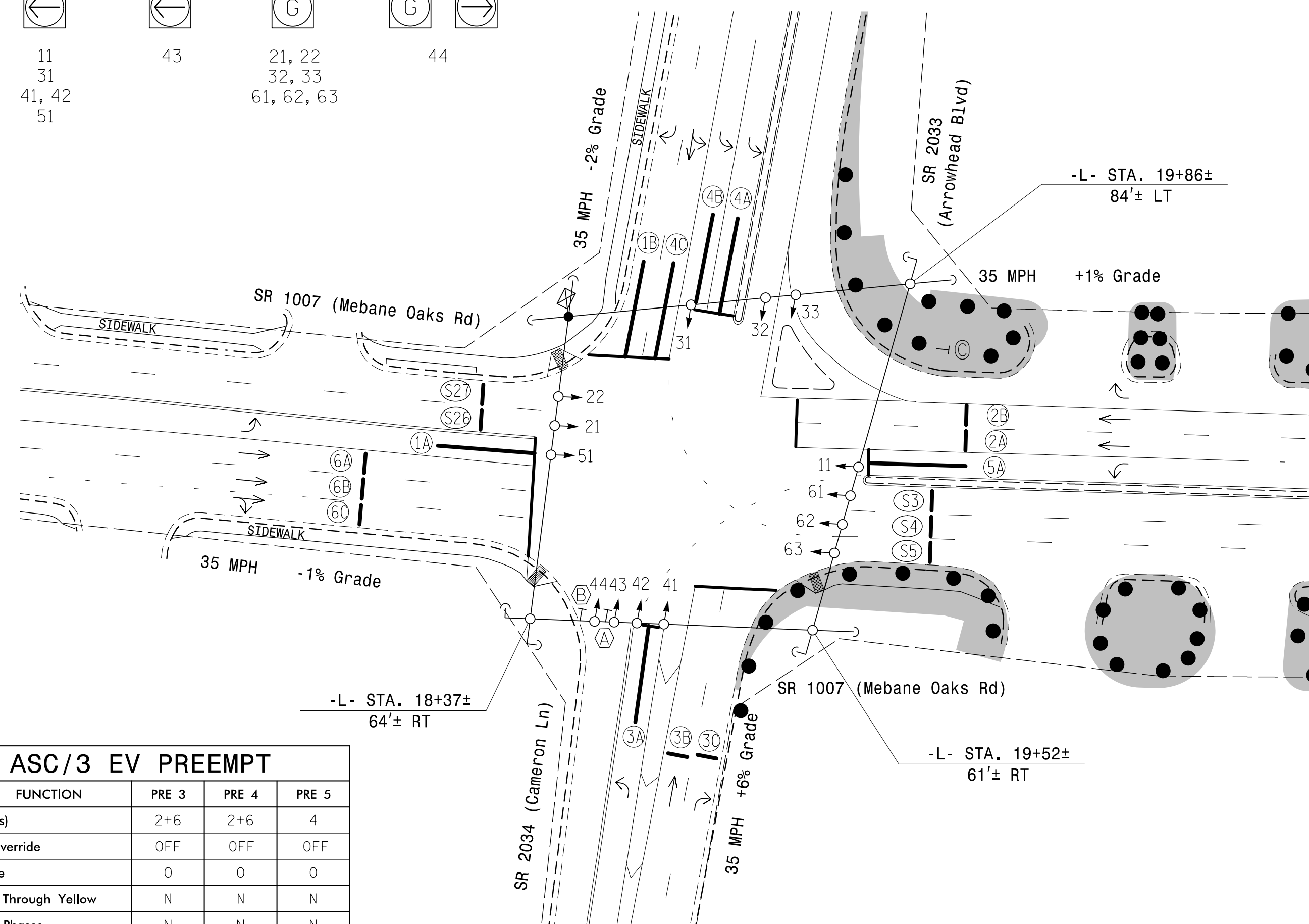
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
1A	6x40	0	*	*	1	Yes	-	3	-	S	-	*
1B	6x40	0	*	*	1	Yes	-	15	-	S	-	*
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
3A	6x40	0	*	*	3	Yes	-	3	-	S	-	*
3B	6x40	0	*	*	3	Yes	-	-	-	S	-	*
3C	6x40	0	*	*	3	Yes	-	15	-	S	-	*
4A	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4B	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4C	6x40	0	*	*	4	Yes	-	-	-	S	-	*
5A	6x40	0	*	*	5	Yes	-	-	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6C	6x6	70	*	*	6	Yes	-	-	-	S	-	*
S3	6X6	+165	*	*	-	No	-	-	-	N	X	*
S4	6X6	+165	*	*	-	No	-	-	-	N	X	*
S5	6X6	+165	*	*	-	No	-	-	-	N	X	*
S26	6X6	+130	*	*	-	No	-	-	-	N	X	*
S27	6X6	+130	*	*	-	No	-	-	-	N	X	*

SIGNAL FACE I.D.

All Heads L.E.E.D.



* Video Detection Zone



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	10	7	7	7	10
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	30	60	15	50	15	60
Yellow	3.0	3.8	3.5	4.0	3.0	3.9
Red Clear	2.9	1.6	2.4	2.1	3.3	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 4	PRE 5
Exit Phase(s)	2+6	2+6	4
Preempt Override	OFF	OFF	OFF
Delay Time	0	0	0
Ped Clear Through Yellow	N	N	N
Terminate Phases	N	N	N
Entrance Walk	255*	255*	255*
Entrance Ped Clear	255*	255*	255*
Entrance Min Green	1	1	1
Entrance Yellow Clear	25.5*	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*	25.5*
Min Dwell Time	7	7	7
Preempt Input Extension Time	2	2	2
Preempt Max Time	120	120	120
Exit Yellow Clear	25.5*	25.5*	25.5*
Exit Red Clear	25.5*	25.5*	25.5*

* Time defaults to time used for phase during normal operation

6 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

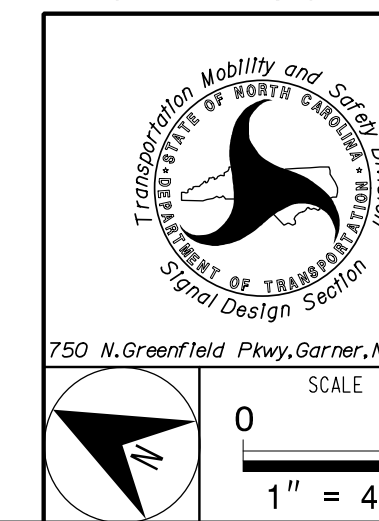
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output File for future use.
8. Pavement markings are existing.
9. Relocate the existing GPS Emergency Vehicle Preemption system.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Closed loop system data: Controller Asset #: 2098.

LEGEND

PROPOSED	EXISTING
○	●
+	+
○	○
⊗	⊗
□	□
- - -	- - -
N/A	N/A
→	→
●	●
■	■
N/A	N/A
⊕	⊕
⊖	⊖
⊙	⊙

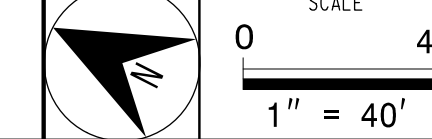
(TMP Phase I)
Signal Upgrade - Temporary Design 1



SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)	
Division 7 Alamance County Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT. DATE

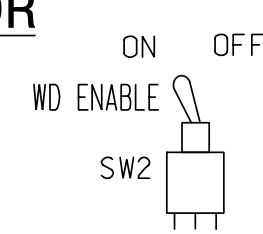
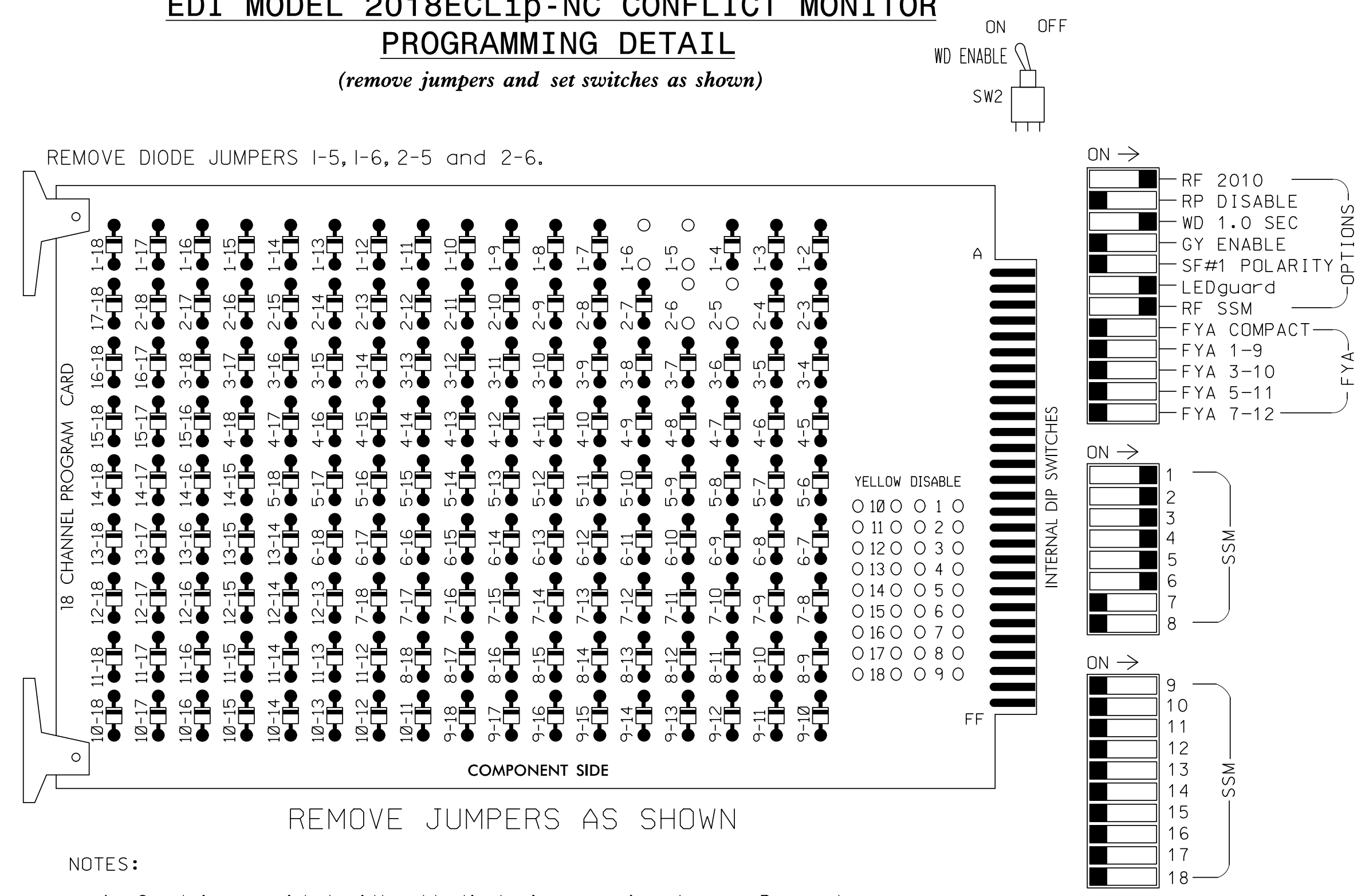
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 032179
ZHAOLONG TENG
DATE 12/17/2019
SIG. INVENTORY NO. 07-2098T1

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches 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. Integrate monitor with Ethernet network in 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. Program controller to start up in phase 2 Green and phase 6 Green.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	44	21,22	NU	31	32,33	41, 42	43	44	NU	51	61, 62 63	NU	NU	NU	NU	NU	NU
RED		128		116	101	101		134										
YELLOW		129		117	102	102		135										
GREEN		130		118	103	103		136										
RED ARROW	125			116	101			131										
YELLOW ARROW	126	126		117	102			132										
GREEN ARROW	127	127		118	103	103		133										

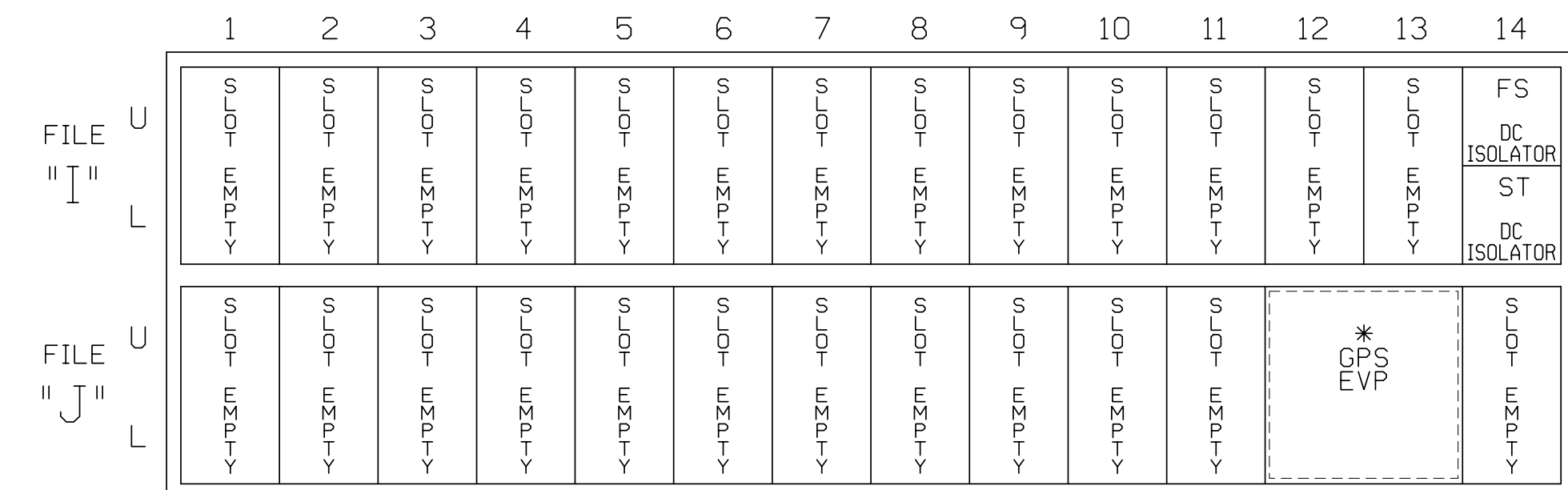
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAP 'A'.....NOT USED
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2098T1
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 1
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road)
 at
 SR 2033 (Arrowhead Boulevard)
 and SR 2034 (Cameron Lane)



Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2098T1

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

\$\$\$\$\$\$SYTIME\$\$\$\$\$\$
 \$\$\$\$\$\$DOCSIGN\$\$\$\$\$\$
 \$\$\$\$\$\$USERNAME\$\$\$\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 4. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #4.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

PREEMPT PLAN [3] ENABLE...YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V
TRKCLR O
ENA TRL
DWEL VEH . X . . X
DWEL PED
DWEL OLP
CYC VEH
CYC PED
CYC OLP
EXIT PH . X . . . X
EXIT CAL
SP FUNC

ENABLE... YES IPMT OVRIDE.. I INTERLOCK. NO
DET LOCK... X IDELAY.. 0 IINHIBIT... 0
OVERIDE FL. IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT... OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN... OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

PREEMPT PLAN [4] ENABLE...YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V
TRKCLR O
ENA TRL
DWEL VEH X X
DWEL PED
DWEL OLP
CYC VEH
CYC PED
CYC OLP
EXIT PH . X . . . X
EXIT CAL
SP FUNC

ENABLE... YES IPMT OVRIDE.. I INTERLOCK. NO
DET LOCK... X IDELAY.. 0 IINHIBIT... 0
OVERIDE FL. IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT... OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN... OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 .. BYPASSED.. .. BYPASSED..
2 .. BYPASSED.. .. BYPASSED..
3 .. PREEMPT 3. .. BYPASSED..
4 .. PREEMPT 4. .. BYPASSED..
5 .. PREEMPT 5. .. BYPASSED..
6 .. BYPASSED.. .. BYPASSED..
7 .. BYPASSED.. .. BYPASSED..
8 .. BYPASSED.. .. BYPASSED..
9 .. BYPASSED.. .. BYPASSED..
10 .. BYPASSED.. .. BYPASSED..

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2098T1
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

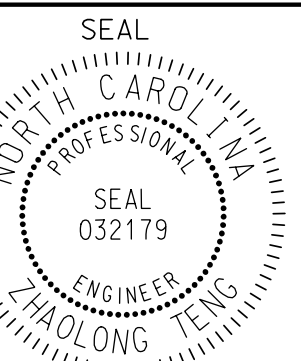
Temporary Design 1
Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)

Table with columns: Division 7, Plan Date, Prepared By, Revisions, Init, Date

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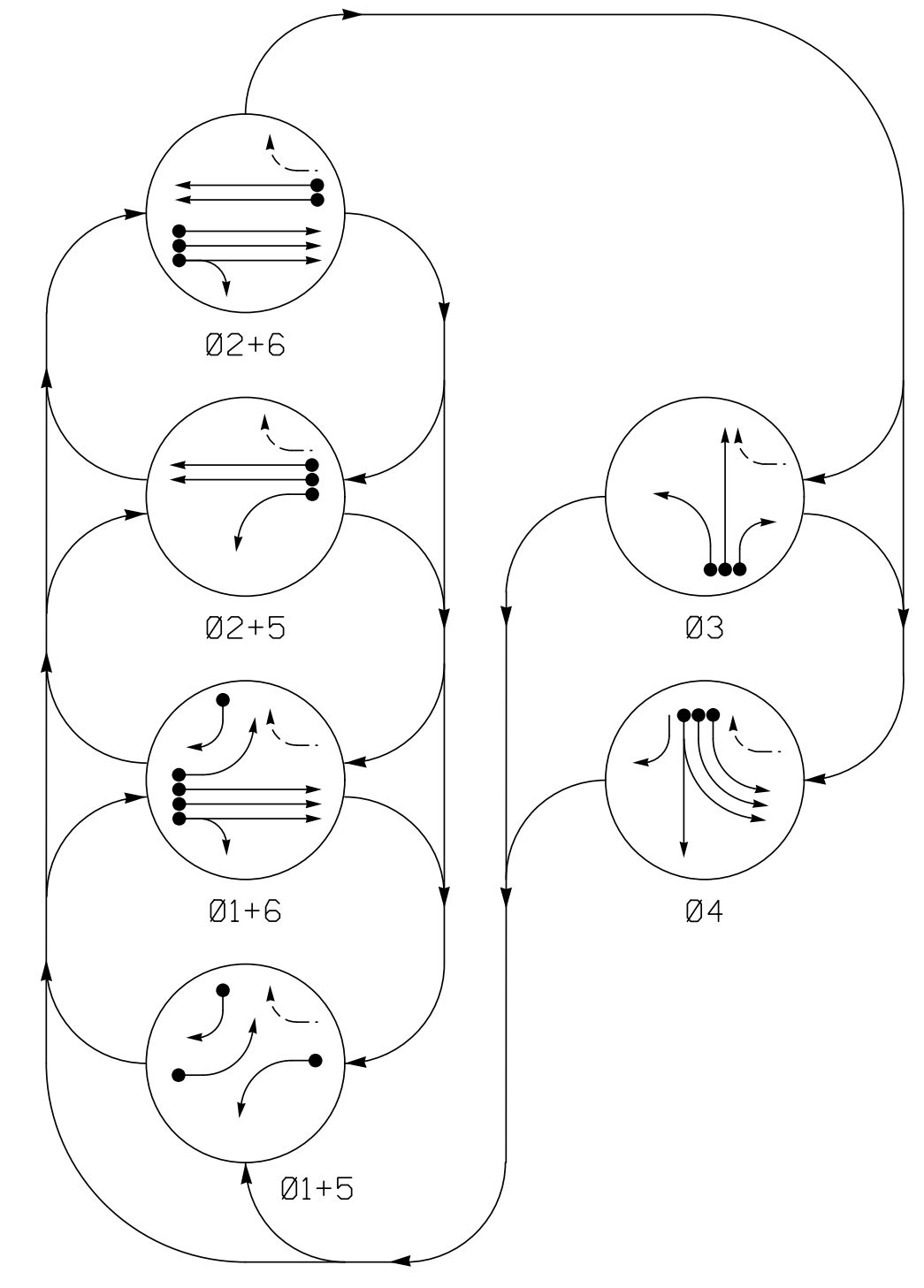
DocuSigned by: Zhaolong Teng 12/17/2019
SIG. INVENTORY NO. 07-2098T1



PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

Vertical text on the left margin containing technical details and identifiers.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
UNDETECTED MOVEMENT (OVERLAP)
UNSIGNALIZED MOVEMENT

EV PREEMPT PHASES (Medium Priority)

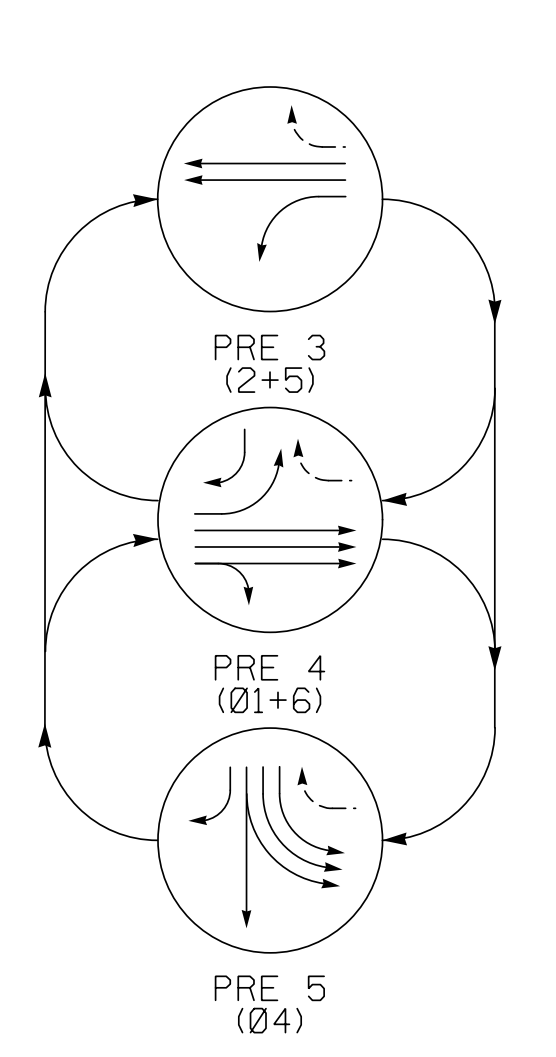


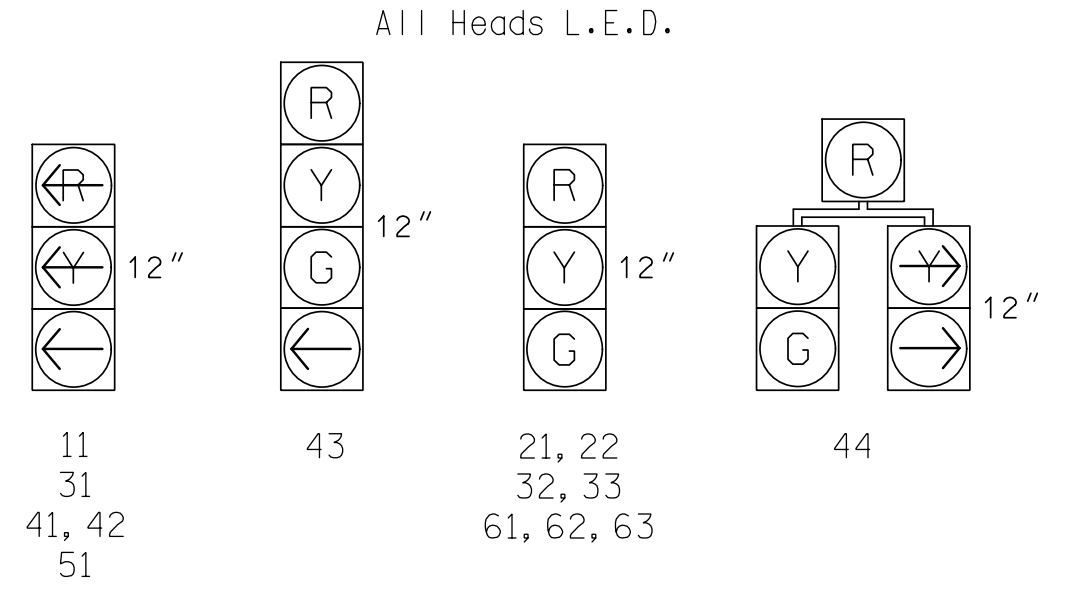
TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (01+5, 01+6, 02+5, 02+6, 03, 04, PRE 3, PRE 4, PRE 5, FLASH), and rows for signal faces 11, 21, 22, 31, 32, 33, 41, 42, 43, 44, 51, 61, 62, 63.

ASC/3 DETECTOR INSTALLATION CHART

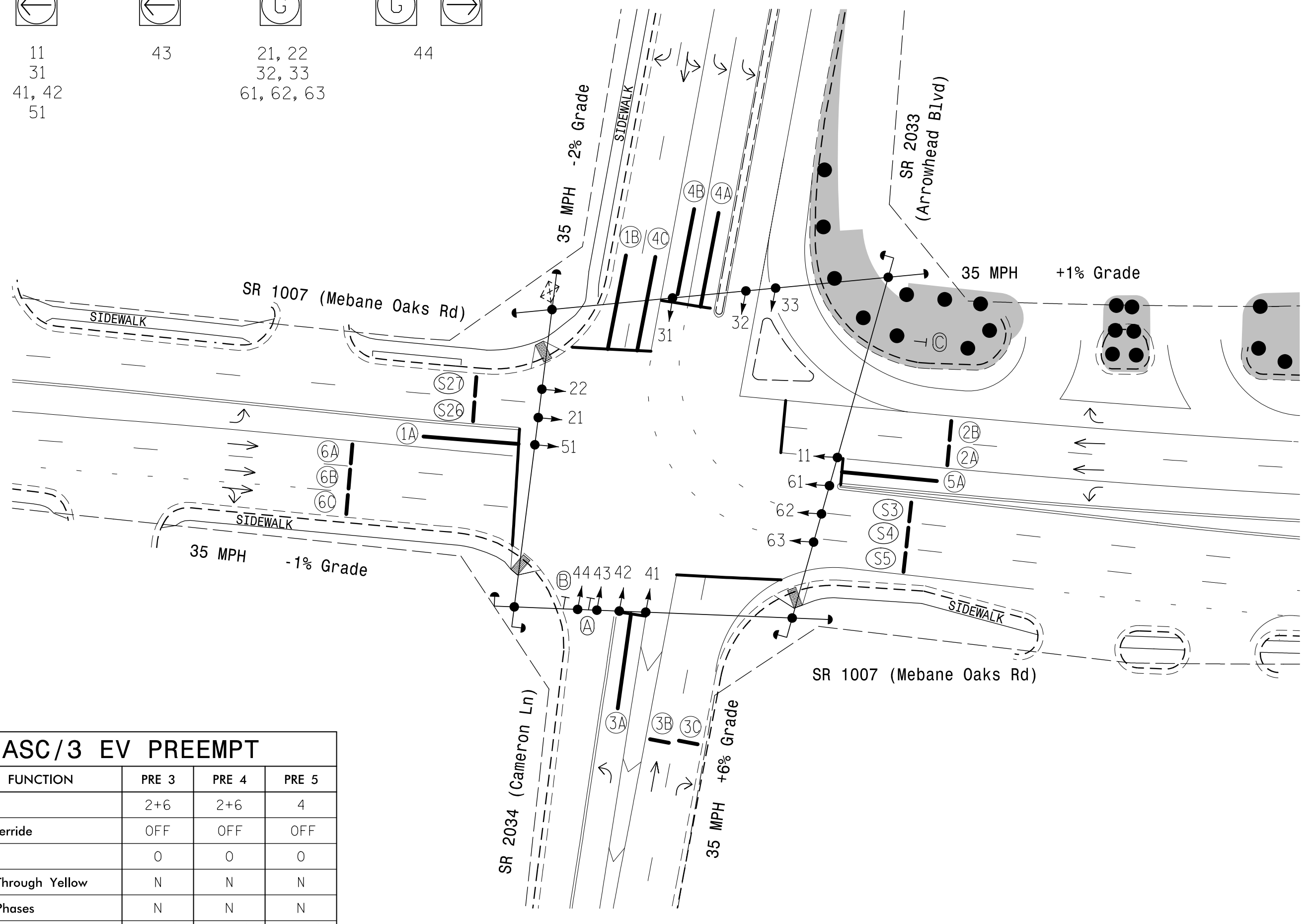
Table with columns: ZONE, DETECTOR (SIZE, DISTANCE, TURNS, NEW LOOP), PROGRAMMING (PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD), and rows for zones 1A through S27.

SIGNAL FACE I.D.



ASC/3 TIMING CHART table with columns: FEATURE, PHASE (1-6), and rows for timing parameters like Min Green, Walk, Ped Clear, etc.

ASC/3 EV PREEMPT table with columns: FUNCTION, PRE 3, PRE 4, PRE 5, and rows for preemption functions like Exit Phase, Ped Clear, etc.



LEGEND

- PROPOSED: Traffic Signal Head, Signal Pole with Guy, etc.
EXISTING: Traffic Signal Head, Signal Pole with Guy, etc.

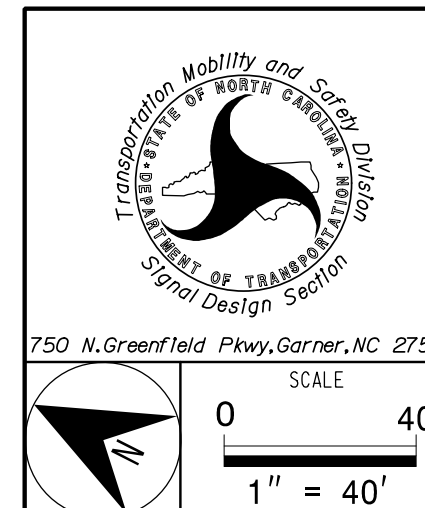
6 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation...
3. Phase 1 and/or phase 5 may be lagged.

(TMP Phase II) Signal Upgrade - Temporary Design 2

PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511

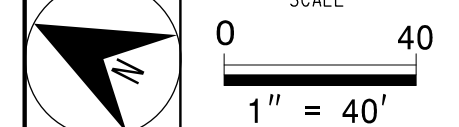


SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)
Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

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SEAL
STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
CHAD LONG TENG
032179

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

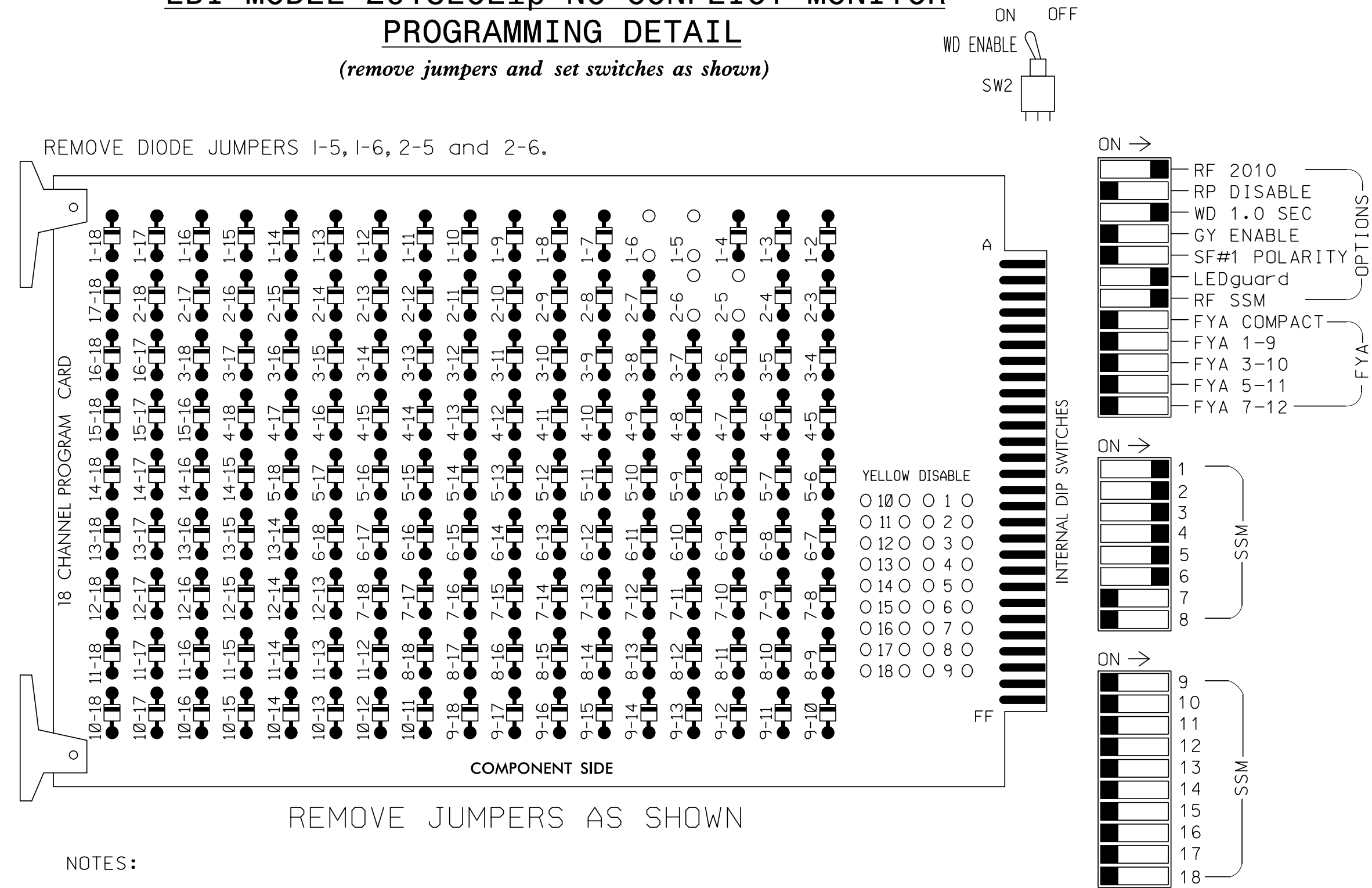
* Time defaults to time used for phase during normal operation



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EDI MODEL 2018ECLip-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Green and phase 6 Green.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	44	21,22	NU	31	32,33	41, 42	43	44	NU	51	61,62 63	NU	NU	NU	NU	NU	NU
RED		128			116	101	101					134						
YELLOW		129			117	102	102					135						
GREEN		130			118	103	103					136						
RED ARROW	125				116	101						131						
YELLOW ARROW	126	126			117	102						132						
GREEN ARROW	127	127			118	103	103					133						

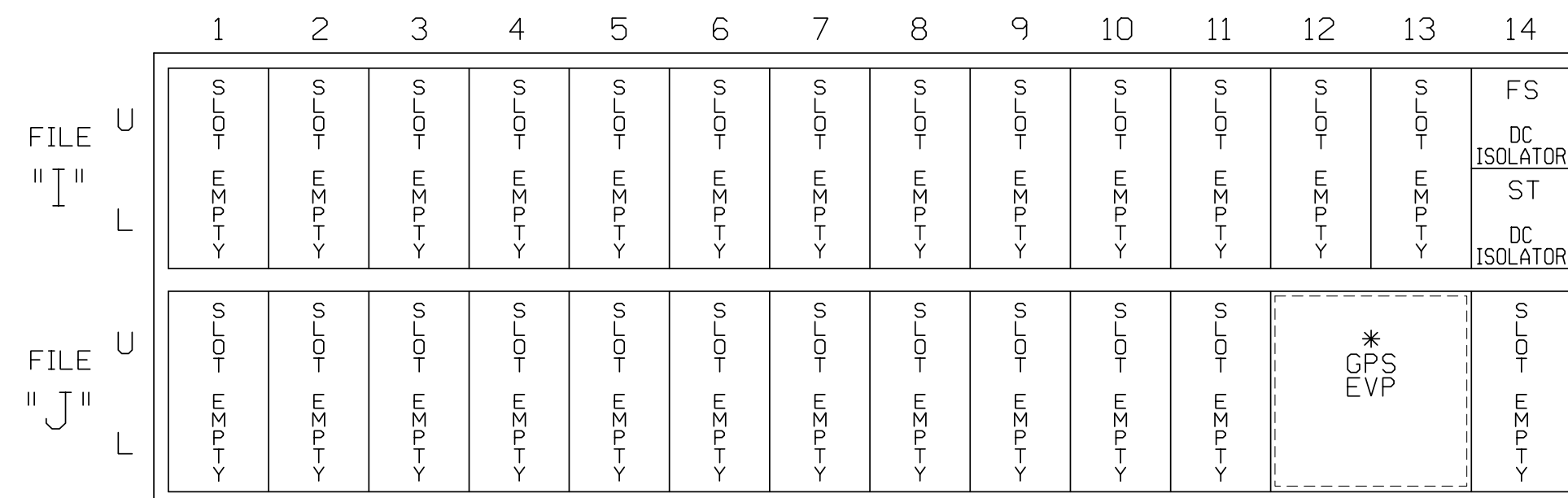
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAP 'A'.....NOT USED
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2098T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 2
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING
 DETAILS FOR:

SR 1007 (Mebane Oaks Road)
 at
 SR 2033 (Arrowhead Boulevard)
 and SR 2034 (Cameron Lane)

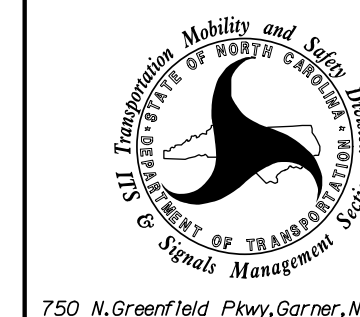
Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

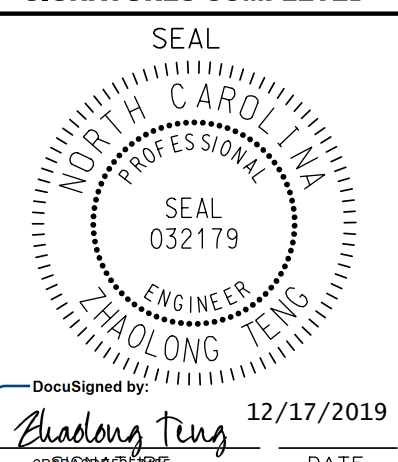
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS INIT. DATE

PREPARED IN THE OFFICE OF:
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 875 Walnut Street, Suite 316
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 NC License No. P-1442



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DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE

SIG. INVENTORY NO. 07-2098T2

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 4. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #4.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

PREEMPT PLAN [ 4]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

```

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

```

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

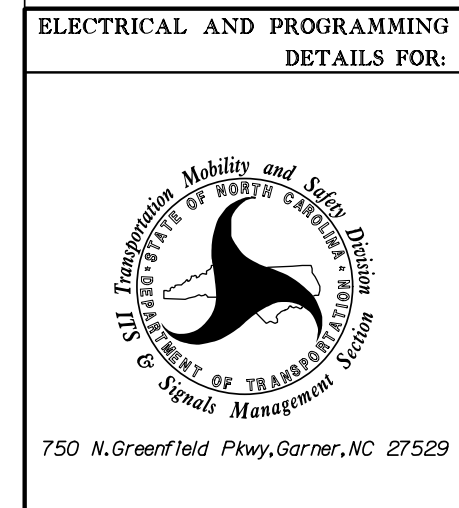
```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ..PREEMPT 4. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..

```

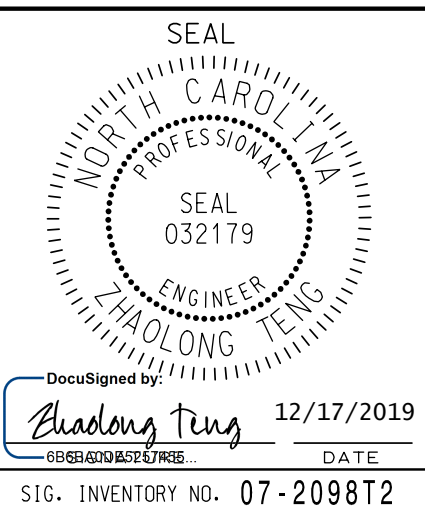
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2098T2
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Temporary Design 2
Electrical Detail - Sheet 2 of 2



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

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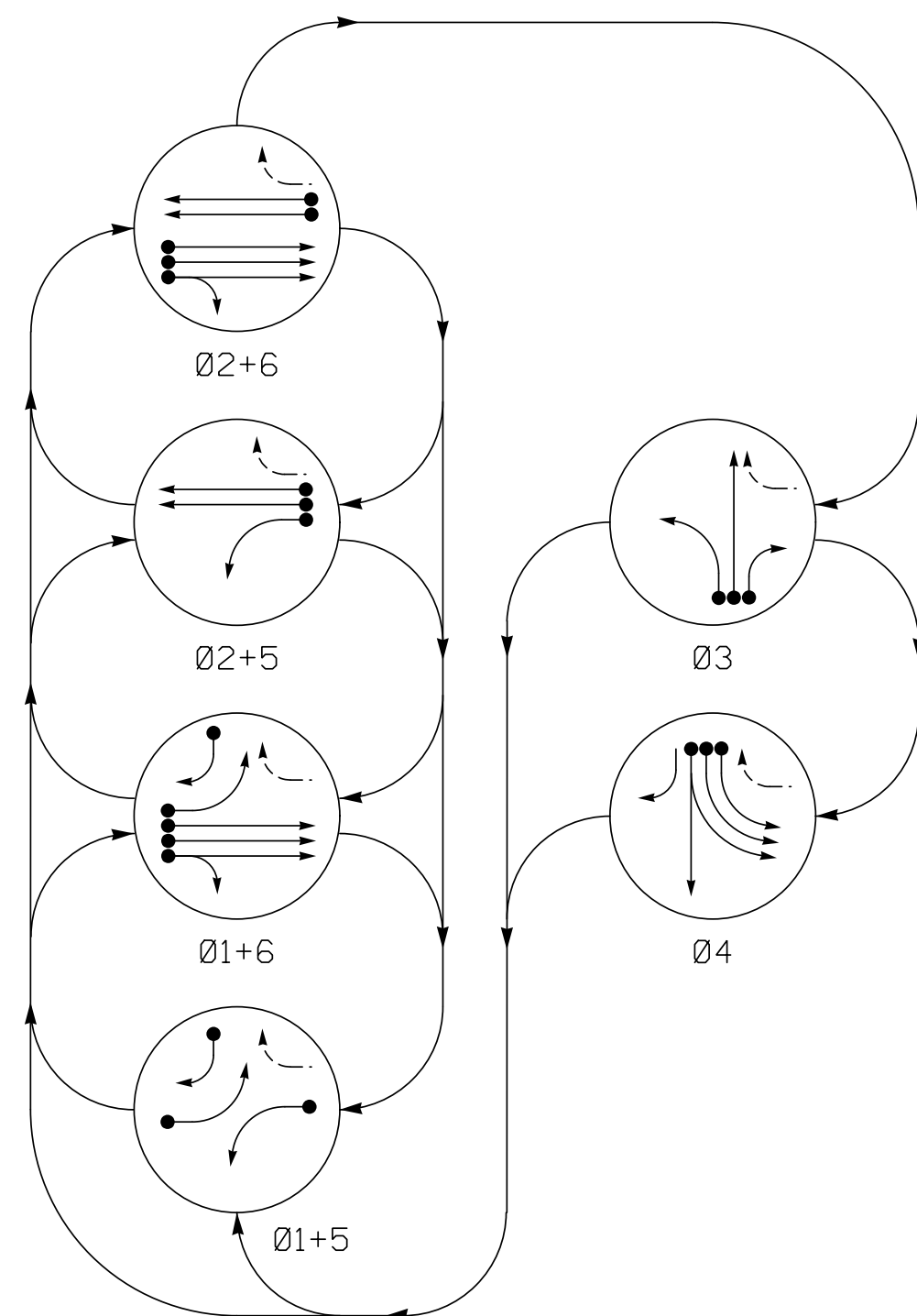


DocuSigned by:
Zhaolong Teng
12/17/2019
SIG. INVENTORY NO. 07-2098T2

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DOCSIGN\$\$\$\$\$
 \$\$\$SERIALNAME\$\$\$\$\$

PREPARED IN THE OFFICE OF:
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 875 Walnut Street, Suite 316
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 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES (Medium Priority)

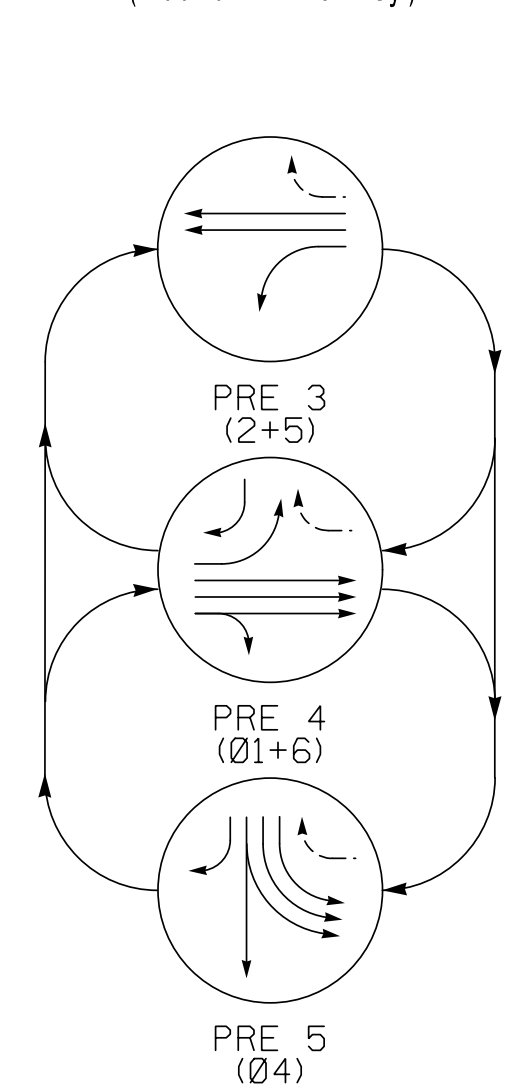


TABLE OF OPERATION

SIGNAL FACE	PHASE											
	01+5	01+6	02+5	02+6	03	04	PRE 3	PRE 4	PRE 5	FLASH	FLASH	FLASH
11	←	←	←	←	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	G	R	R	Y		
31	←	←	←	←	←	←	←	←	←	←	←	←
32, 33	R	R	R	R	G	R	R	R	R	R	R	R
41, 42	←	←	←	←	←	←	←	←	←	←	←	←
43	R	R	R	R	R	G	R	R	G	R		
44	←	←	←	←	←	←	←	←	←	←	←	←
51	←	←	←	←	←	←	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	R	R	G	R	Y		

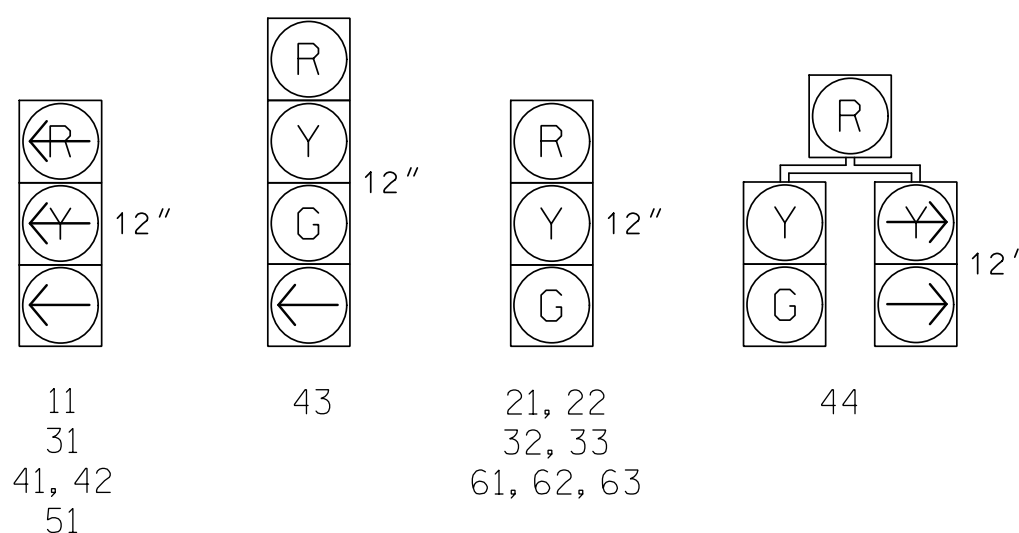
ASC/3 DETECTOR INSTALLATION CHART

ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP	NEW CARD
1A	6x40	0	*	*	1	Yes	-	3	-	S	-	*
1B	6x40	0	*	*	1	Yes	-	15	-	S	-	*
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
3A	6x40	0	*	*	3	Yes	-	3	-	S	-	*
3B	6x40	0	*	*	3	Yes	-	-	-	S	-	*
3C	6x40	0	*	*	3	Yes	-	15	-	S	-	*
4A	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4B	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4C	6x40	0	*	*	4	Yes	-	-	-	S	-	*
5A	6x40	0	*	*	5	Yes	-	-	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6C	6x6	70	*	*	6	Yes	-	-	-	S	-	*
S3	6X6	+165	*	*	-	No	-	-	-	N	X	*
S4	6X6	+165	*	*	-	No	-	-	-	N	X	*
S5	6X6	+165	*	*	-	No	-	-	-	N	X	*
S26	6X6	+135	*	*	-	No	-	-	-	N	X	*
S27	6X6	+135	*	*	-	No	-	-	-	N	X	*

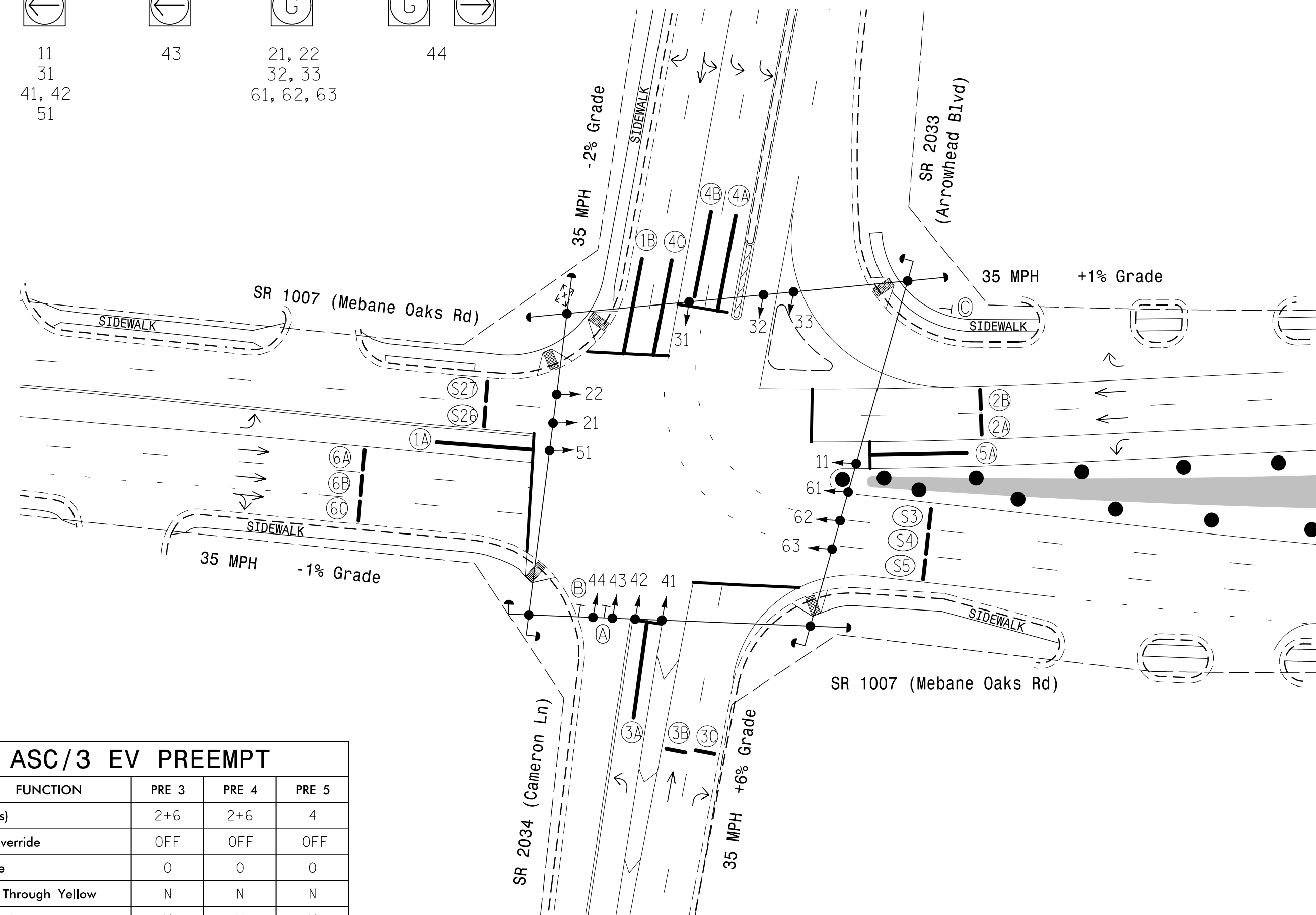
* Video Detection Zone

SIGNAL FACE I.D.

All Heads L.E.D.



- 11, 31, 41, 42, 51
- 43
- 21, 22, 32, 33, 61, 62, 63
- 44



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	10	7	7	7	10
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	30	60	15	50	15	60
Yellow	3.0	3.8	3.5	4.0	3.0	3.9
Red Clear	3.1	1.8	2.4	2.1	3.3	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	1
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 4	PRE 5
Exit Phase(s)	2+6	2+6	4
Preempt Override	OFF	OFF	OFF
Delay Time	0	0	0
Ped Clear Through Yellow	N	N	N
Terminate Phases	N	N	N
Entrance Walk	255*	255*	255*
Entrance Ped Clear	255*	255*	255*
Entrance Min Green	1	1	1
Entrance Yellow Clear	25.5*	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*	25.5*
Min Dwell Time	7	7	7
Preempt Input Extension Time	2	2	2
Preempt Max Time	120	120	120
Exit Yellow Clear	25.5*	25.5*	25.5*
Exit Red Clear	25.5*	25.5*	25.5*

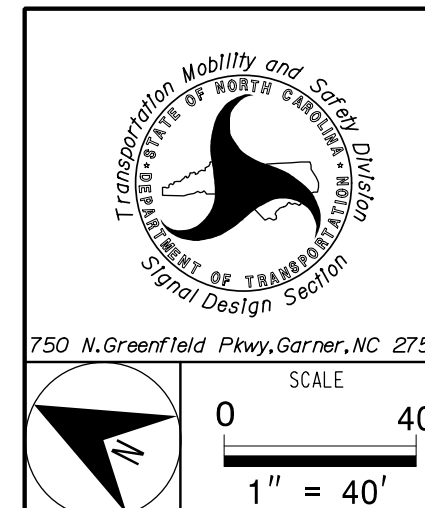
* Time defaults to time used for phase during normal operation

LEGEND

PROPOSED	EXISTING
○ →	● →
○ ⊥	● ⊥
○ ⊥ ⊥	● ⊥ ⊥
⊠	⊠
□	□
—	—
N/A	N/A
→	→
●	●
■	■
N/A	N/A
⊠	⊠
⊠	⊠
⊠	⊠

**(TMP Phase III)
Signal Upgrade - Temporary Design 3**

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



**SR 1007 (Mebane Oaks Road)
at
SR 2033 (Arrowhead Boulevard)
and SR 2034 (Cameron Lane)**

Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

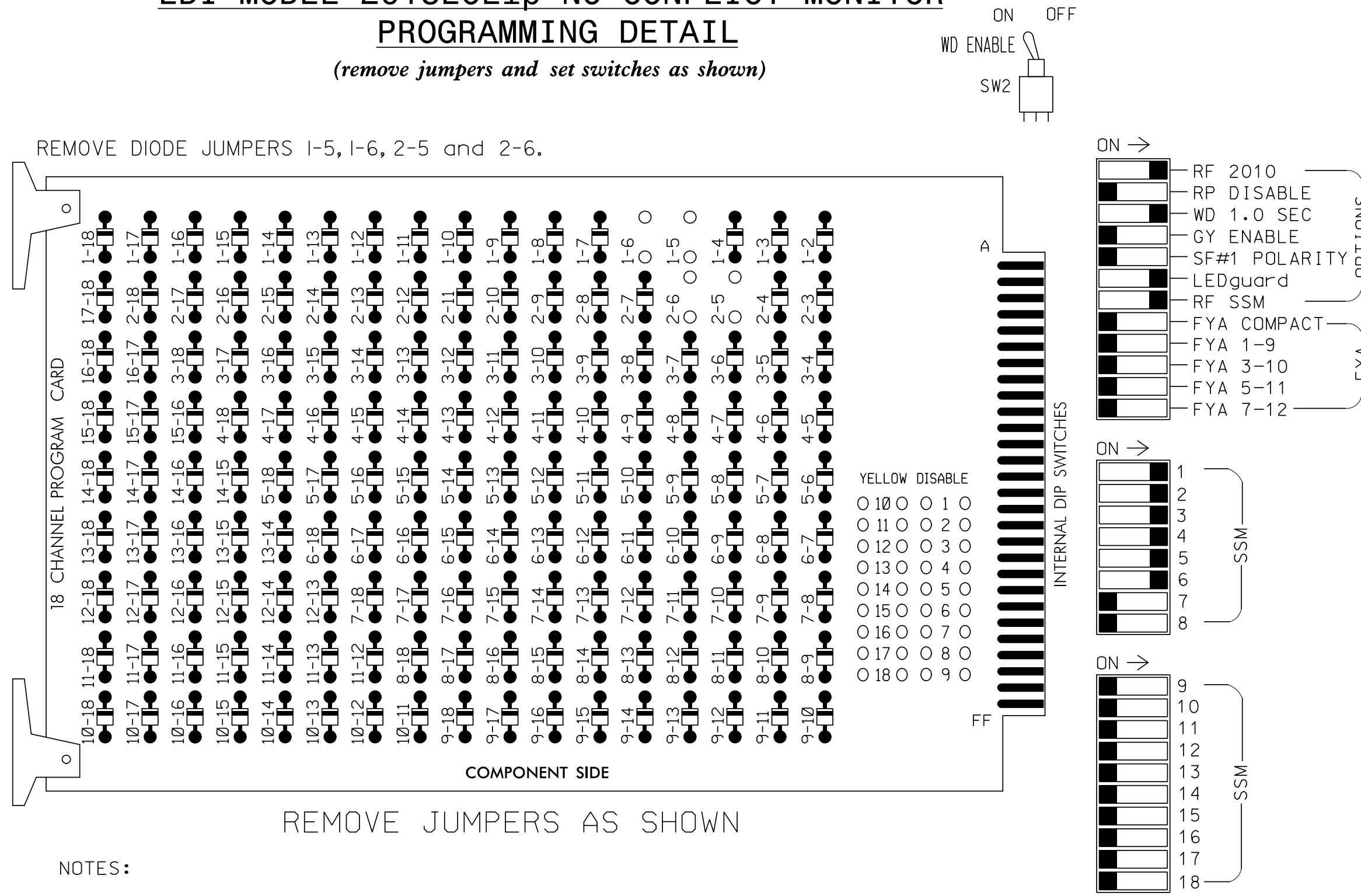
STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
ZHAOLONG TENG
032179

12/17/2019

SIG. INVENTORY NO. 07-2098T3

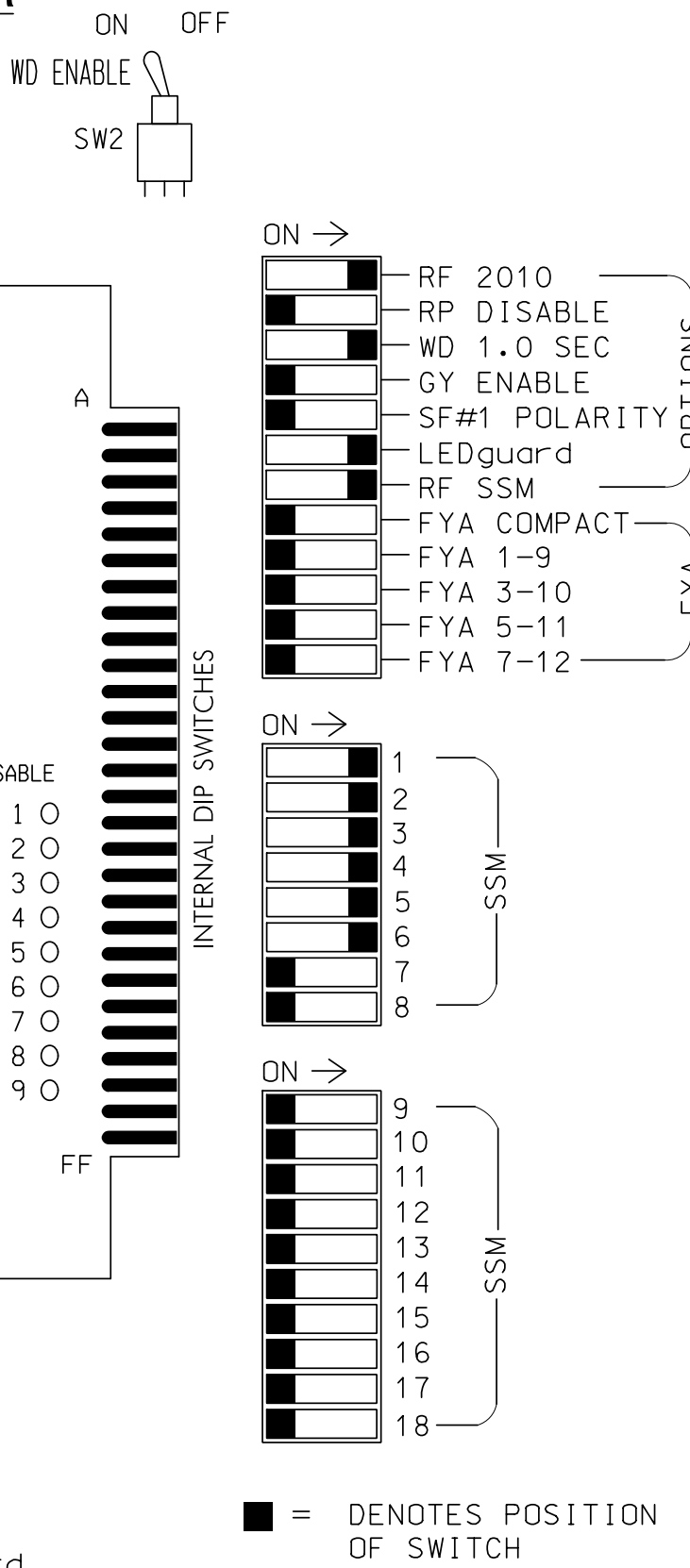
EDI MODEL 2018ECLIP-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	44	21,22	NU	31	32,33	41, 42	43	44	NU	51	61, 62, 63	NU	NU	NU	NU	NU	NU
RED		128			116	101	101				134							
YELLOW		129			117	102	102				135							
GREEN		130			118	103	103				136							
RED ARROW	125				116	101					131							
YELLOW ARROW	126	126			117	102					132							
GREEN ARROW	127	127			118	103	103				133							

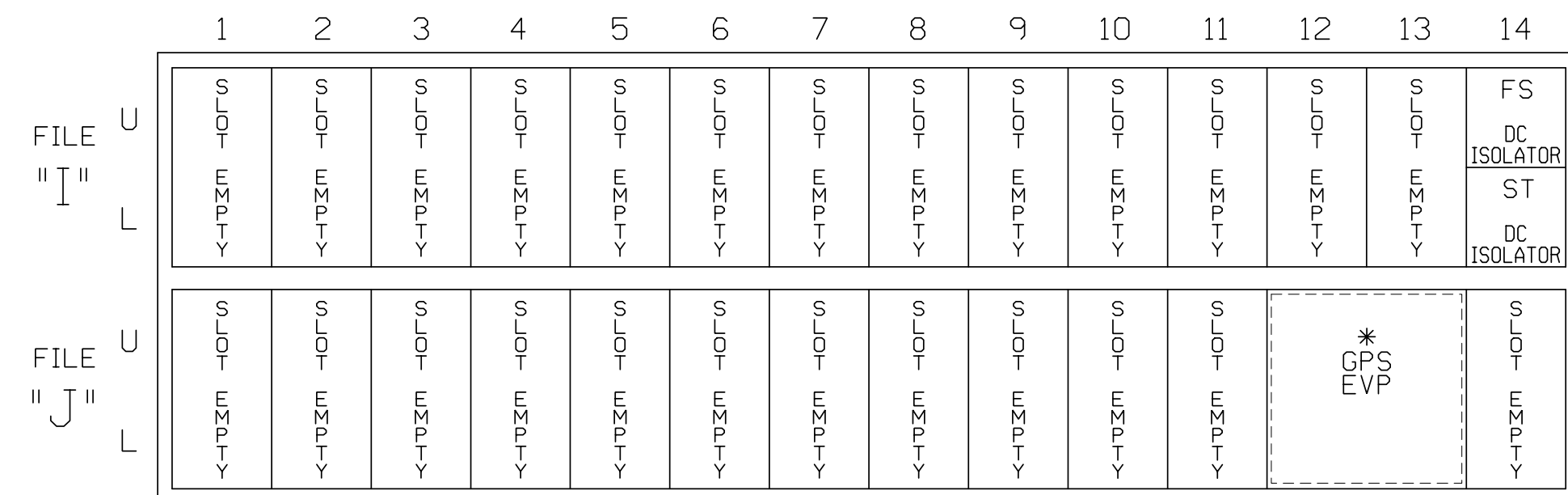
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAP 'A'.....NOT USED
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2098T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road)
 at
 SR 2033 (Arrowhead Boulevard)
 and SR 2034 (Cameron Lane)

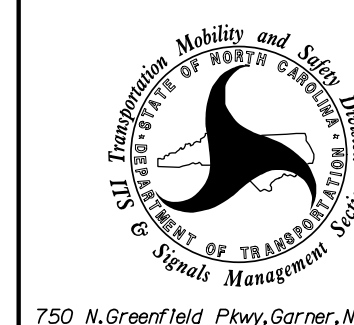
Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS INIT. DATE

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



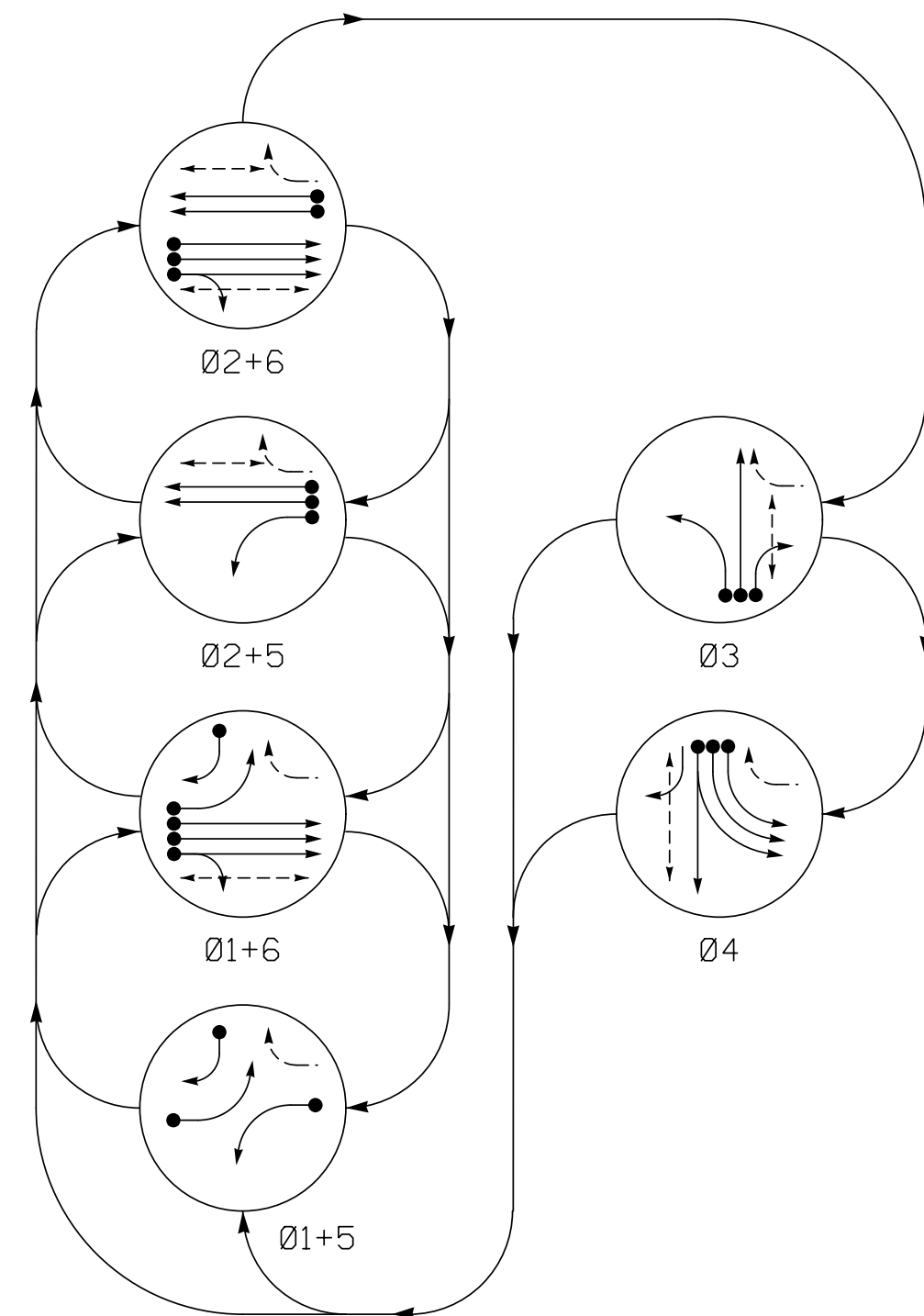
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DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE

SIG. INVENTORY NO. 07-2098T3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES (Medium Priority)

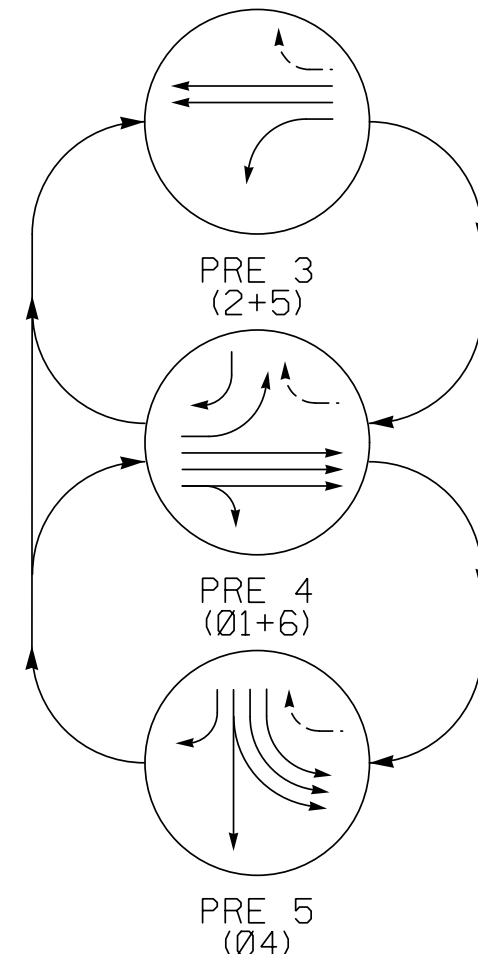
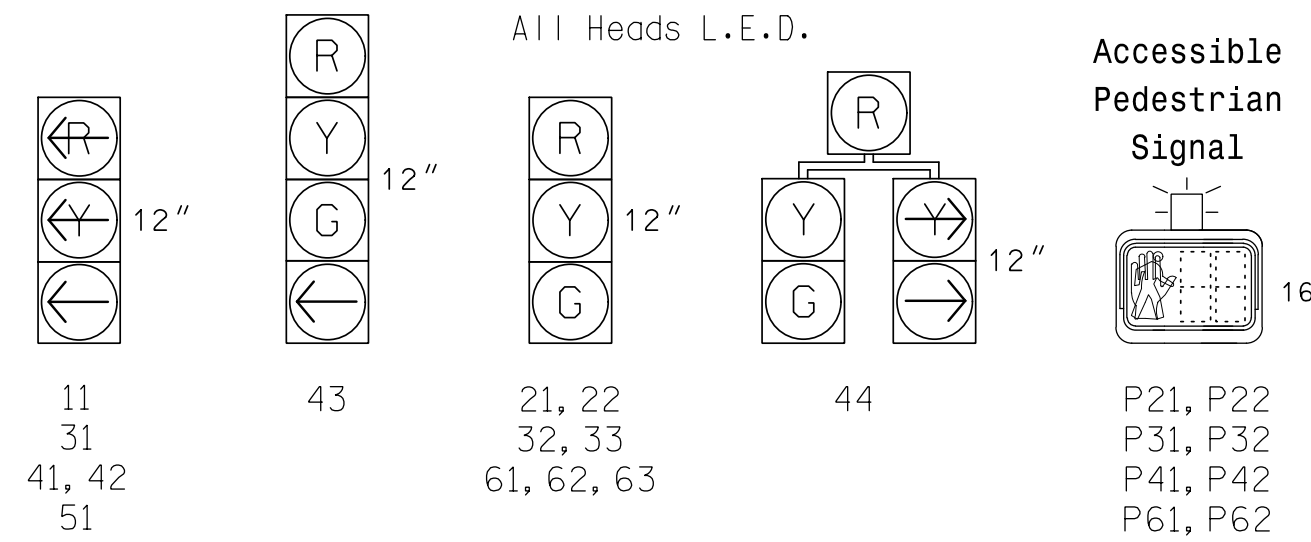


TABLE OF OPERATION

SIGNAL FACE	PHASE										
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	P RE 3	P RE 4	P RE 5	FLASH	
11	-	-	-	-	-	-	-	-	-	-	-
21, 22	R	R	G	G	R	R	G	R	R	Y	
31	-R	-R	-R	-R	-	-R	-R	-R	-R	-R	
32, 33	R	R	R	R	G	R	R	R	R	R	
41, 42	-R	-R	-R	-R	-	-R	-R	-R	-R	-R	
43	R	R	R	R	R	G	R	R	G	R	
44	-R	-R	-R	-R	-	-R	-R	-R	-R	-R	
51	-	-	-	-	-	-	-	-	-	-	
61, 62, 63	R	G	R	G	R	R	G	R	R	Y	
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DW	DRK	
P31, P32	DW	DW	DW	DW	W	DW	DW	DW	DW	DRK	
P41, P42	DW	DW	DW	DW	DW	W	DW	DW	DW	DRK	
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DRK	

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP	NEW CARD
1A	6x40	0	2-4-2	X	1	Yes	-	3	-	S	-	X
1B	6x40	0	2-4-2	X	1	Yes	-	15	-	S	-	X
2A	6x6	70	4	X	2	Yes	-	-	-	S	-	X
2B	6x6	70	4	X	2	Yes	-	-	-	S	-	X
3A	6x40	+5	2-4-2	X	3	Yes	-	3	-	S	-	X
3B	6x40	0	2-4-2	X	3	Yes	-	-	-	S	-	X
3C	6x40	0	2-4-2	X	3	Yes	-	15	-	S	-	X
4A	6x40	0	2-4-2	X	4	Yes	-	3	-	S	-	X
4B	6x40	0	2-4-2	X	4	Yes	-	-	-	S	-	X
4C	6x40	0	2-4-2	X	4	Yes	-	-	-	S	-	X
5A	6x40	+5	2-4-2	X	5	Yes	-	-	-	S	-	X
6A	6x6	70	4	X	6	Yes	-	-	-	S	-	X
6B	6x6	70	4	X	6	Yes	-	-	-	S	-	X
6C	6x6	70	4	X	6	Yes	-	-	-	S	-	X
S3	6X6	+165	5	X	-	No	-	-	-	N	X	X
S4	6X6	+165	5	X	-	No	-	-	-	N	X	X
S5	6X6	+165	5	X	-	No	-	-	-	N	X	X
S26	6X6	+140	3	X	-	No	-	-	-	N	X	X
S27	6X6	+140	3	X	-	No	-	-	-	N	X	X

6 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- This intersection features a GPS Emergency Vehicle Preemption system.
- This intersection features accessible pedestrian signals utilizing percussive tone walk indications and speech messages. Refer to section 4E.11 of the 2009 MUTCD for tone rate and frequency requirements.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 2098.

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk Flashing Don't Walk / Don't Walk	(Rapid Ticks) -
P22	X	-	Walk Flashing Don't Walk / Don't Walk	Arrowhead, Walk sign is on to cross Arrowhead. Wait, Wait to cross Arrowhead.
P31	X	-	Walk Flashing Don't Walk / Don't Walk	Mebane Oaks, Walk sign is on to cross Mebane Oaks. Wait, Wait to cross Mebane Oaks.
P32	-	X	Walk Flashing Don't Walk / Don't Walk	(Rapid Ticks) -
P41, P42	-	X	Walk Flashing Don't Walk / Don't Walk	(Rapid Ticks) -
P61, P62	-	X	Walk Flashing Don't Walk / Don't Walk	(Rapid Ticks) -

ASC/3 TIMING CHART

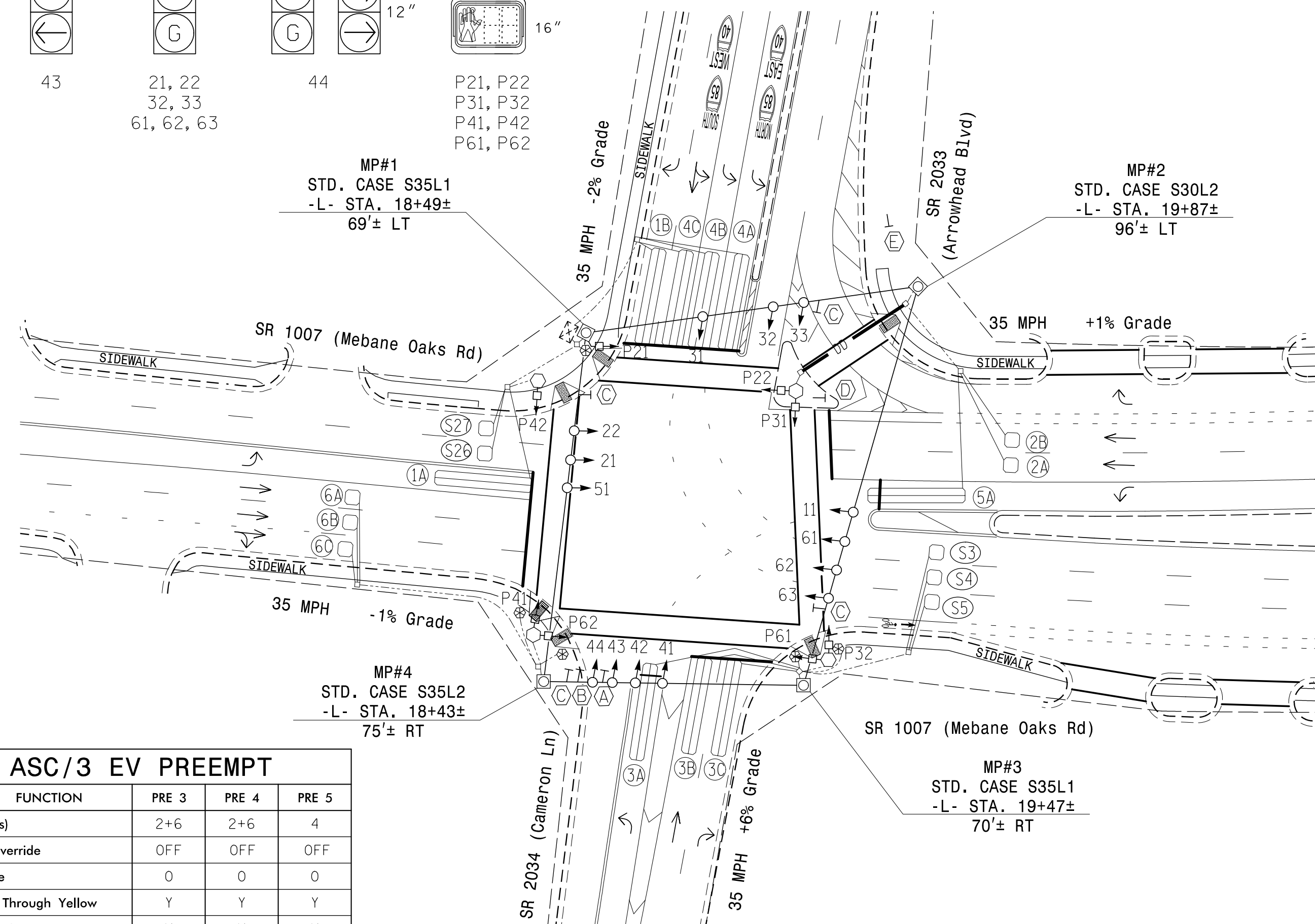
FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	10	7	7	7	10
Delayed Green	0	0	0	5	0	0
Walk *	0	7	7	7	0	7
Ped Clear	0	17	24	21	0	25
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	30	60	15	50	15	60
Yellow	3.0	3.8	3.5	4.0	3.0	3.9
Red Clear	3.3	2.1	2.7	2.5	3.5	2.3
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 4	PRE 5
Exit Phase(s)	2+6	2+6	4
Preempt Override	OFF	OFF	OFF
Delay Time	0	0	0
Ped Clear Through Yellow	Y	Y	Y
Terminate Phases	N	N	N
Entrance Walk	1	1	1
Entrance Ped Clear	13	13	13
Entrance Min Green	1	1	1
Entrance Yellow Clear	25.5*	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*	25.5*
Min Dwell Time	7	7	7
Preempt Input Extension Time	2	2	2
Preempt Max Time	120	120	120
Exit Yellow Clear	25.5*	25.5*	25.5*
Exit Red Clear	25.5*	25.5*	25.5*

* Time defaults to time used for phase during normal operation



LEGEND

PROPOSED	EXISTING

Signal Upgrade - Final Design

	SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)	
	Division 7 Alamance County Mebane	
	PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng
	PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
	REVISIONS	INIT. DATE
<p>0 40 1" = 40'</p>		

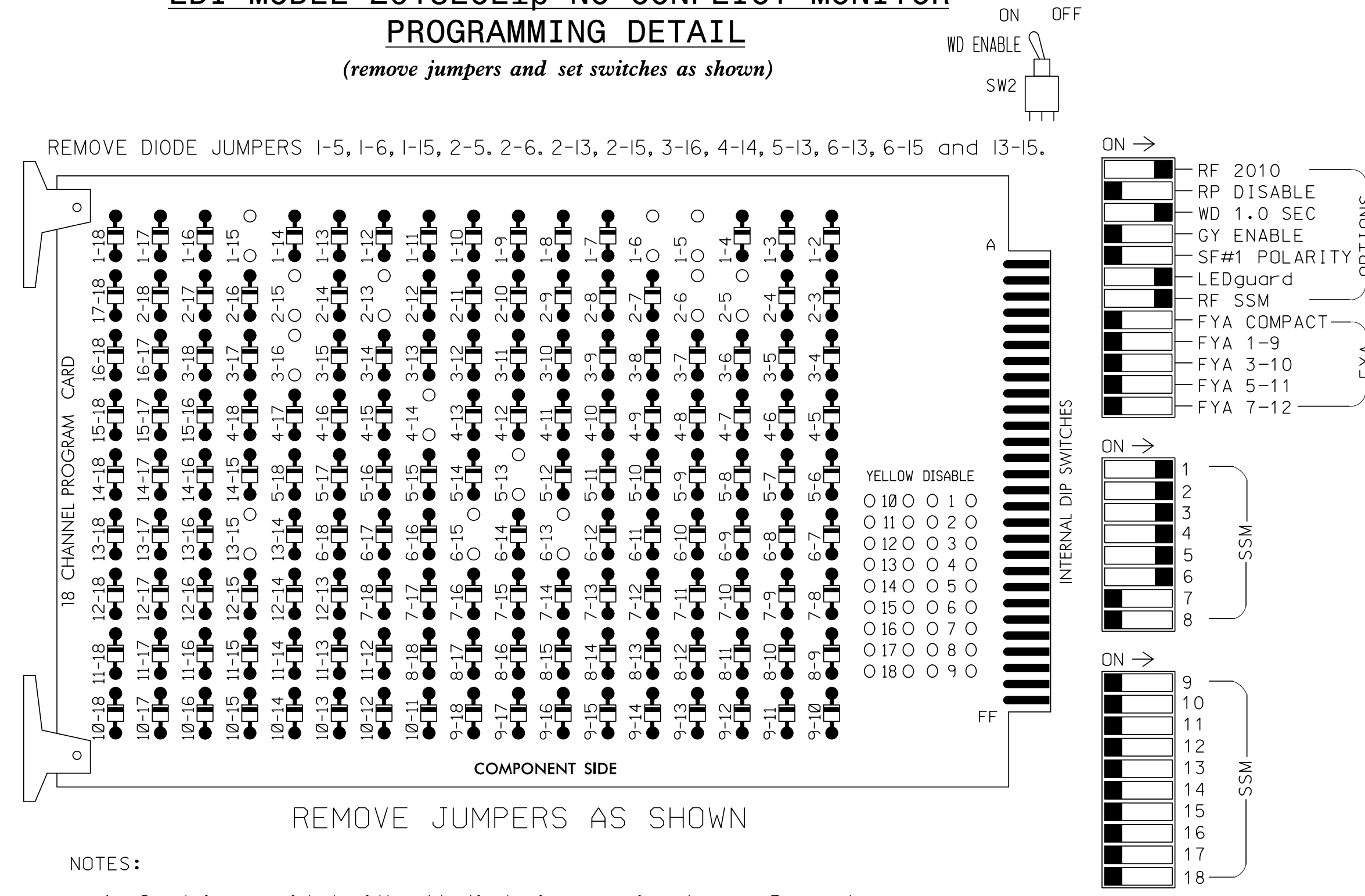
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

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SEAL
ZHAOLONG TENG
PROFESSIONAL ENGINEER
032179
DATE: 12/17/2019
SIG. INVENTORY NO. 07-2098

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Walk and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S12
 PHASES USED.....1,2,2PED,3,3PED,4,4PED,5,6,6PED
 OVERLAP 'A'.....NOT USED
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	44	21,22	P21, P22	31	32,33	41, 42	43	44	P41, P42	51	61,62, 63	P61, P62	NU	NU	P31, P32	NU	NU
RED		128		116	101	101				134								
YELLOW		129		117	102	102				135								
GREEN		130		118	103	103				136								
RED ARROW	125			116	101					131								
YELLOW ARROW	126	126		117	102					132								
GREEN ARROW	127	127		118	103	103				133								
Hand icon				113					104				119					110
Walking person icon				115					106				121					

NU = Not Used

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

- Install push buttons and APS equipment per manufacturer's instructions.
- Provide a dedicated cable to each push button per manufacturer's instructions.
- If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
- Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
- Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅1	∅2	∅2	∅4	∅4	SYS. DET. S3	SYS. DET. S4	∅4	∅4	∅4	∅4	∅2 PED	∅6 PED	FS
L	1A	2A	2B	4A	4C	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅5	∅6	∅6	∅3	∅3	SYS. DET. S26	SYS. DET. S27	∅3	∅3	∅3	∅3	∅4 PED	∅3 PED	ST
L	5A	6A	6C	3A	3C	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	NOT USED	∅6	NOT USED	∅3	∅3	SYS. DET. S26	SYS. DET. S27	∅3	∅3	∅3	∅3	∅4 PED	∅3 PED	ST
L	6B	6B	6B	3B	3B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR

EX.: 1A, 2A, ETC. = LOOP NO.'S
See GPS Preemption Installation Note Below

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

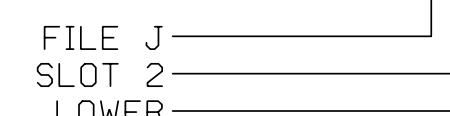
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-5,6	I2U	39	2	1	YES		3		S
1B	TB2-7,8	I2L	43	12	1	YES		15		S
2A	TB2-9,10	I3U	63	32	2	YES				S
2B	TB2-11,12	I3L	76	42	2	YES				S
3A	TB5-9,10	J6U	42	8	3	YES		3		S
3B	TB5-11,12	J6L	46	18	3	YES				S
3C	TB7-1,2	J7U	66	38	3	YES		15		S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES				S
4C	TB6-1,2	I7U	65	34	4	YES				S
5A	TB3-1,2	J1U	55	5	5	YES				S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S
6C	TB3-9,10	J3U	64	36	6	YES				S
* S3	TB6-5,6	I8U	49	24	SYS	NO				N
* S4	TB6-9,10	I9U	60	11	SYS	NO				N
* S5	TB6-11,12	I9L	62	13	SYS	NO				N
* S26	TB7-9,10	J9U	59	15	SYS	NO				N
* S27	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P31,P32	TB8-8,9	I13L	70	PED 8	3 PED					

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

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



Vertical text on the left edge of the page.

Final Design
Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)

Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE



750 N. Greenfield Pkwy, Garner, NC 27529

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
ZHAOLONG TENG
032179
12/17/2019
DATE
SIG. INVENTORY NO. 07-2098

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

1. From Main Menu select 6. DETECTORS
2. From DETECTOR Submenu select 3. PED DETECTOR INPUT ASSIGNMENT

PED DET PHASE ASSIGNMENT MODE: NTCIP								
PHASE	1	2	3	4	5	6	7	8
DETECTOR	0	2	8	4	0	6	0	0
PHASE	9	10	11	12	13	14	15	16
DETECTOR	0	0	0	0	0	0	0	0

← NOTICE PED DETECTOR 8
ASSIGNED TO PHASE 3

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

LD SWITCH ASSIGN									
PHASE	DIMMING	---FLASH---							
/DVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	Y	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	0	.	.	.	+	A	R	X
10	2	0	.	.	.	+	A	R	X
11	3	0	.	.	.	-	A	R	.
12	4	0	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	3	P	.	.	.	-	A	.	.

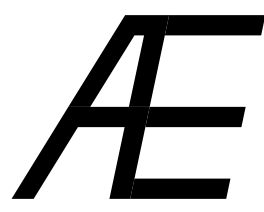
NOTICE PHASE 3 PED
ASSIGNED TO LD SWITCH 16 →

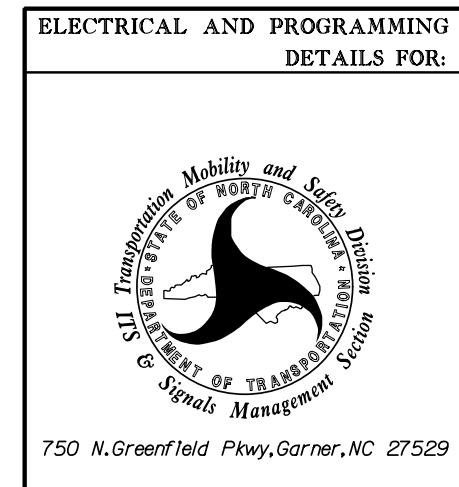
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2098
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 3

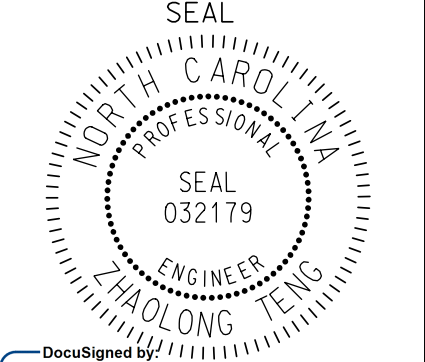
**DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED**

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DOWNS\$\$\$\$\$
 \$\$\$SERIAL\$\$\$\$\$
 \$\$\$FORMNAME\$\$\$\$\$


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ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at SR 2033 (Arrowhead Boulevard) and SR 2034 (Cameron Lane)	
Division 7		Alamance County	
PREPARED BY: Z. "Gavin" Teng		REVIEWED BY: Z. "Gavin" Teng	
REVISIONS	INIT.	DATE	
_____	_____	_____	

SEAL

ZHAOLONG TENG
 ENGINEER
 STATE OF NORTH CAROLINA
 License No. 032179

DocuSigned by:
Zhaolong Teng 12/17/2019
DATE
SIG. INVENTORY NO. 07-2098

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 4. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #4.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3 ]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 13I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
  
```

```

PREEMPT PLAN [ 4 ]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 13I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
  
```

```

PREEMPT PLAN [ 5 ]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

ENABLE... YESIPMT OVRIDE..IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 13I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
  
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

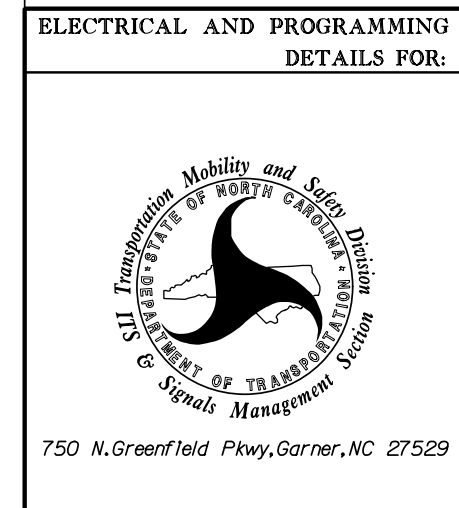
- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED... ..BYPASSED..
2 ...BYPASSED... ..BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ..PREEMPT 4. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED... ..BYPASSED..
7 ...BYPASSED... ..BYPASSED..
8 ...BYPASSED... ..BYPASSED..
9 ...BYPASSED... ..BYPASSED..
10 ...BYPASSED... ..BYPASSED..
  
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2098
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 3 of 3



SR 1007 (Mebane Oaks Road)
 at
 SR 2033 (Arrowhead Boulevard)
 and SR 2034 (Cameron Lane)
 Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

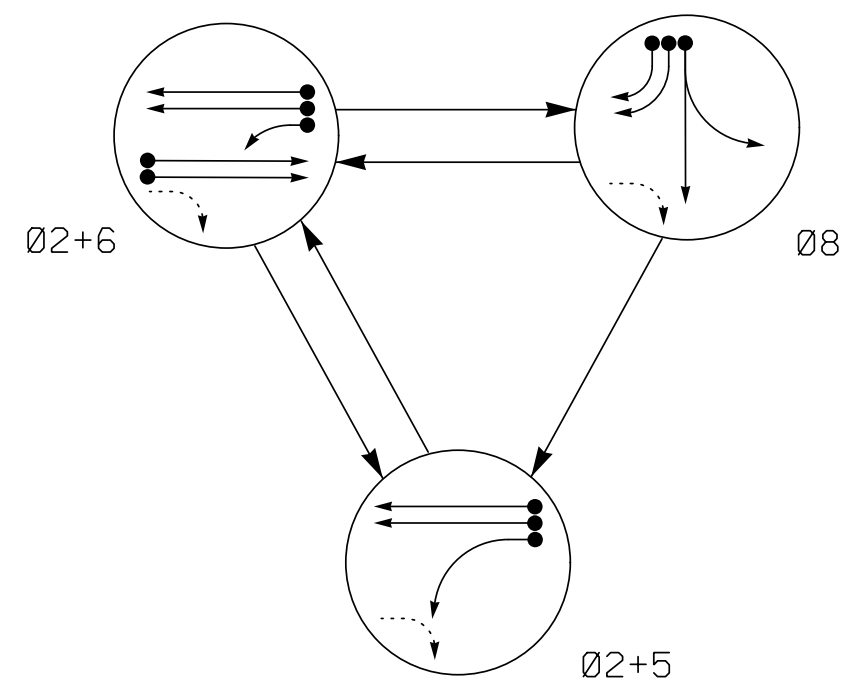
DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2098

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750 N. Greenfield Pkwy, Garner, NC 27529

\$\$\$\$\$CYTIME\$\$\$\$\$
 \$\$\$BUDGETNAME\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES
(Medium Priority)

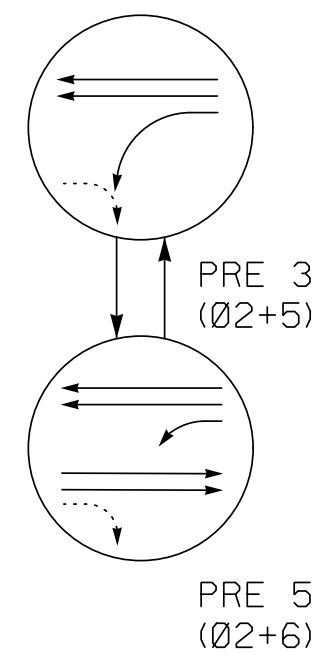
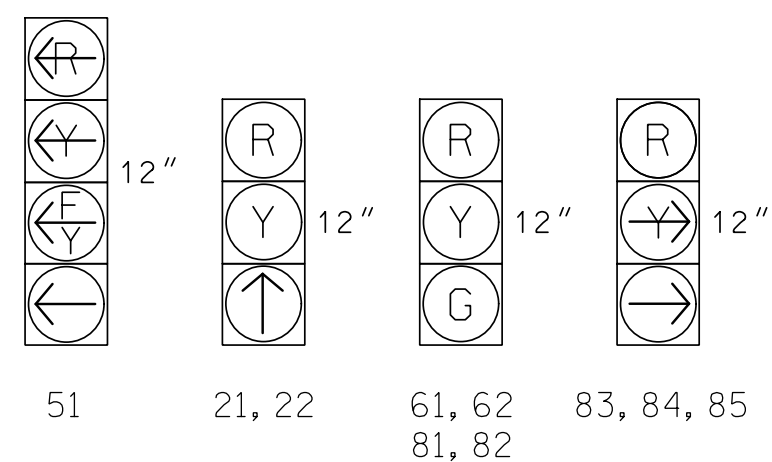


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	02+5	02+6	08	PRE 3	PRE 5	02+5	02+6	08
21, 22	↑	↑	R	↑	↑	Y		
51	←	←	R	←	←	Y		
61, 62	R	G	R	R	G	Y		
81, 82	R	R	G	R	R			
83, 84, 85	R	R	←	R	R			

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

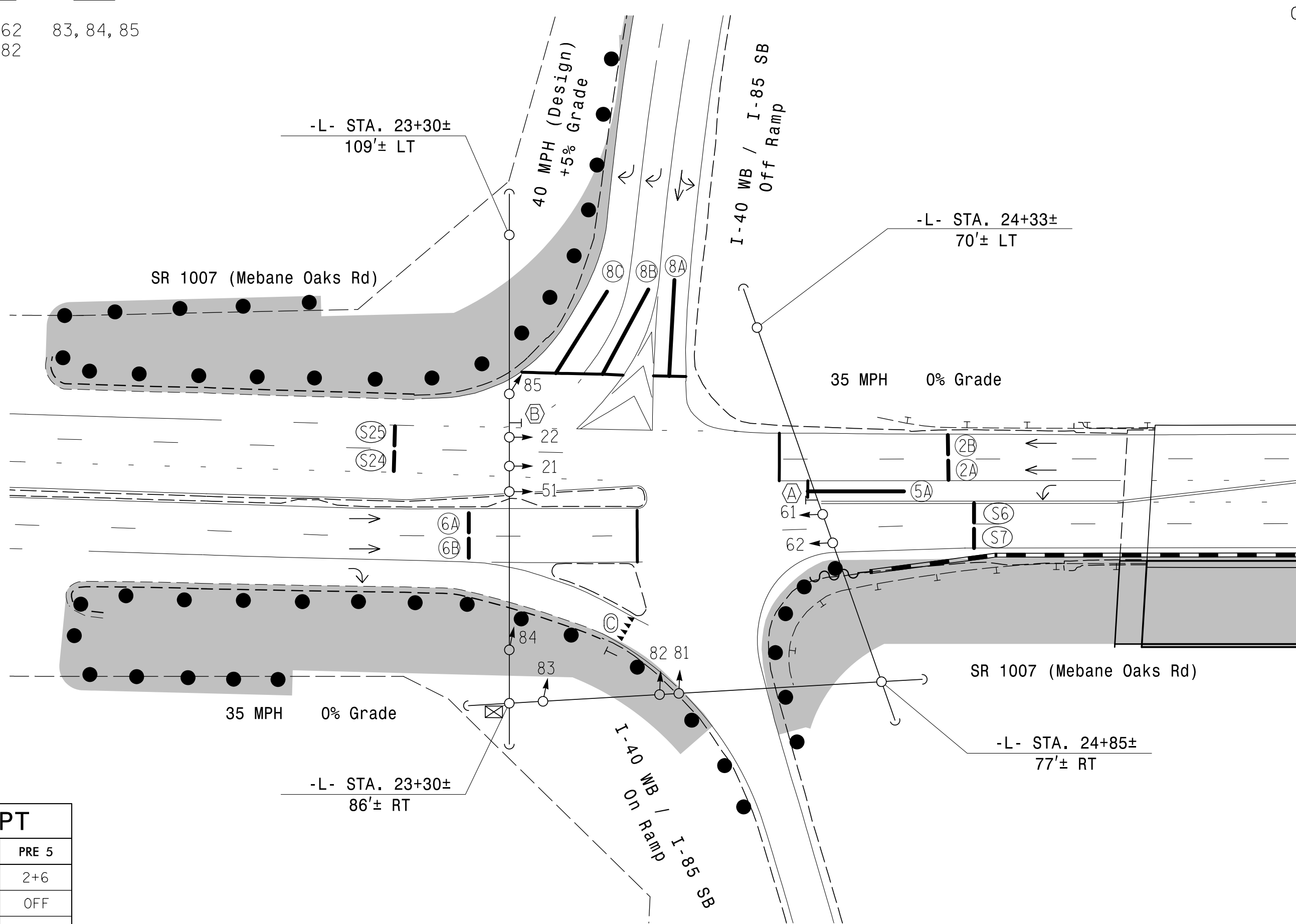
ZONE	DETECTOR				PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
5A	6x40	0	*	*	5	Yes	-	15	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
8A	6x40	0	*	*	8	Yes	-	-	-	S	-	*
8B	6x40	0	*	*	8	Yes	-	15	-	S	-	*
8C	6x40	0	*	*	8	Yes	-	15	-	S	-	*
S6	6x6	+140	*	*	-	No	-	-	-	N	X	*
S7	6x6	+140	*	*	-	No	-	-	-	N	X	*
S24	6x6	+160	*	*	-	No	-	-	-	N	X	*
S25	6x6	+160	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

3 Phase
Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Relocate the existing GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 2024.



LEGEND

- | PROPOSED | EXISTING |
|---|---|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| — Sign | — Sign |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| ☒ Controller & Cabinet | ☒ Controller & Cabinet |
| □ Junction Box | ■ Junction Box |
| - - - 2-in Underground Conduit | - - - 2-in Underground Conduit |
| N/A Right of Way | - - - Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| ▨ Video Detection Area | ▨ Video Detection Area |
| N/A Curb Ramp | ▨ Curb Ramp |
| N/A Guardrail | ▨ Guardrail |
| (A) No U Turn / No Left Turn Sign (R3-18) | (A) No U Turn / No Left Turn Sign (R3-18) |
| (B) No Right Turn Sign (R3-1) | (B) No Right Turn Sign (R3-1) |
| (C) "YIELD" Sign (R1-2) | (C) "YIELD" Sign (R1-2) |

ASC/3 TIMING CHART

FEATURE	PHASE			
	2	5	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max 1 *	60	25	60	35
Yellow	3.8	3.0	3.8	3.8
Red Clear	2.3	1.8	2.3	1.6
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

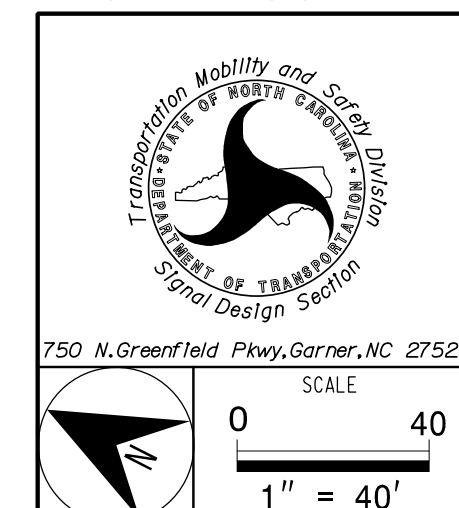
ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

(TMP Phase I)
Signal Upgrade - Temporary Design 1

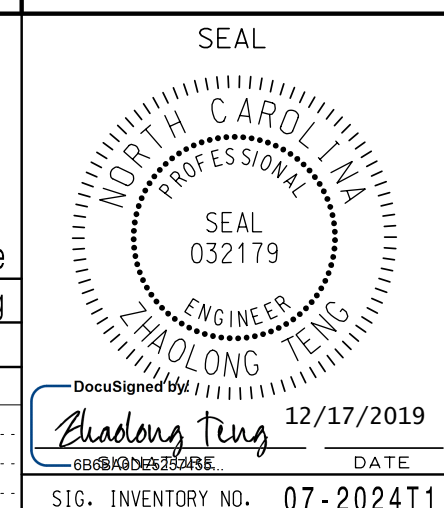
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SR 1007 (Mebane Oaks Road)
at
I-40 WB / I-85 SB Ramps
Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

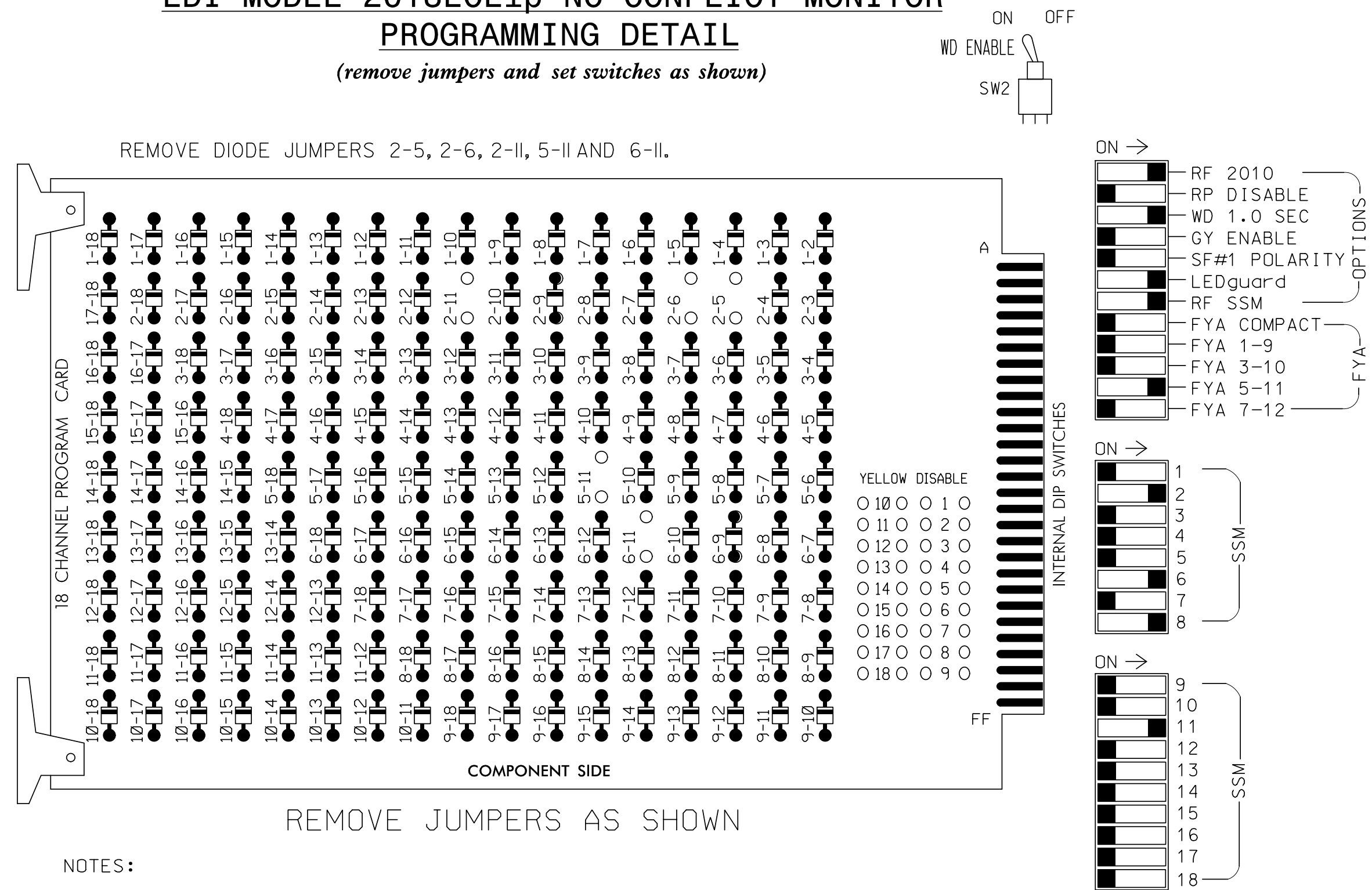
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



12/17/2019
DATE
SIG. INVENTORY NO. 07-2024T1

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	51	61,62	NU	NU	81,82	83,84 85	NU	NU	NU	51	NU	NU
RED		128						134			107	107						
YELLOW		129					*	135			108							
GREEN								136			109							
RED ARROW																		A114
YELLOW ARROW											108							A115
FLASHING YELLOW ARROW																		A116
GREEN ARROW		130						133			109							

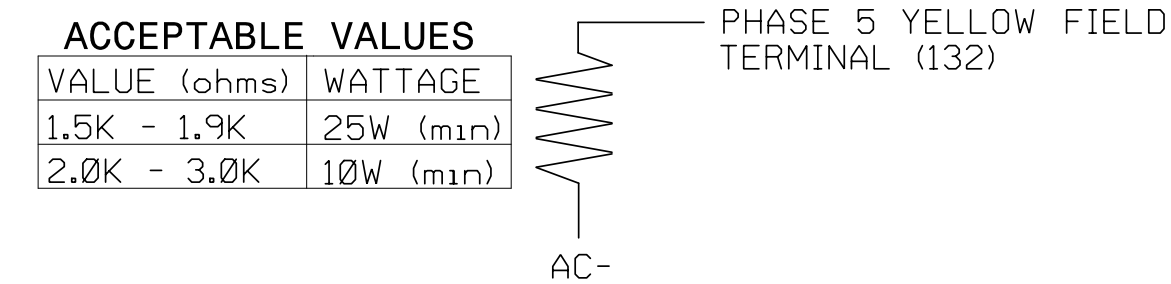
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

LOAD RESISTOR INSTALLATION DETAIL

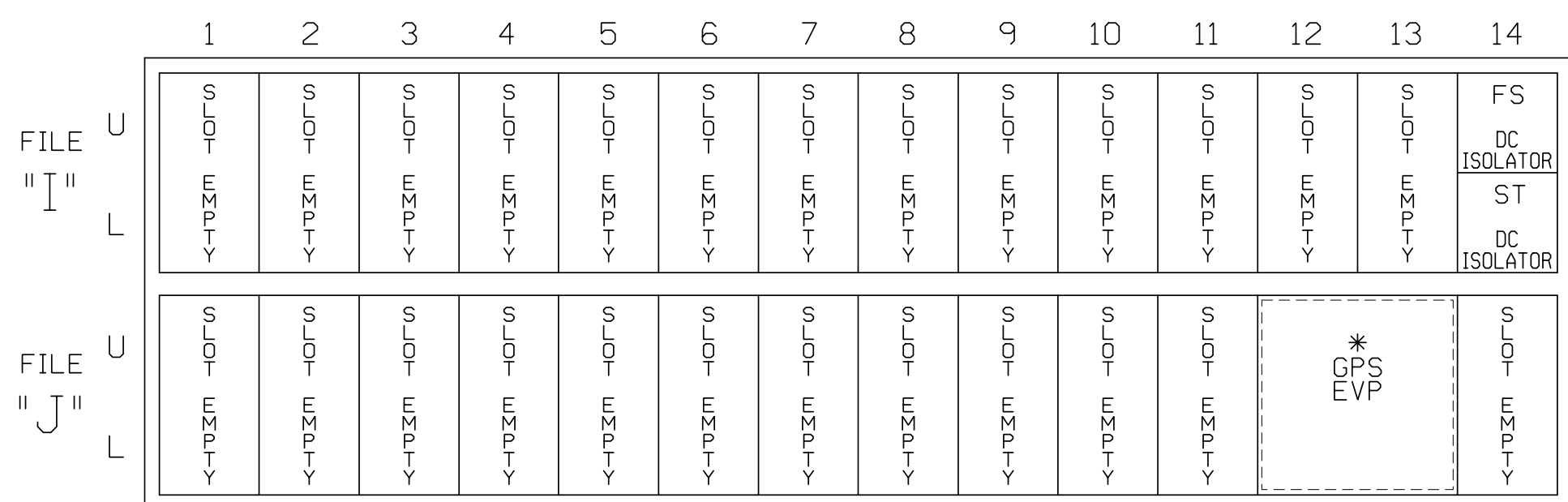
(install resistor as shown below)



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

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

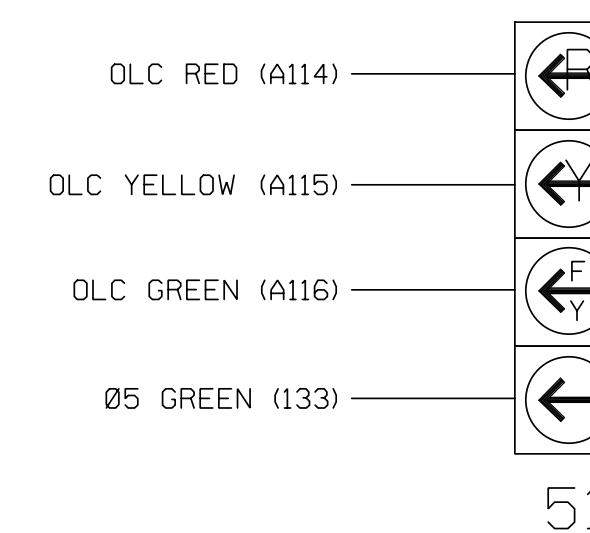
Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

FYA SIGNAL WIRING DETAIL

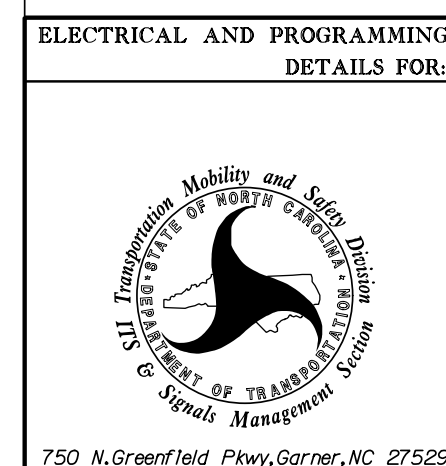
(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T1
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

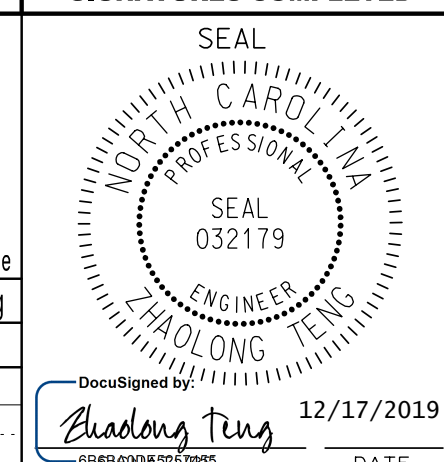
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

Temporary Design 1
 Electrical Detail - Sheet 1 of 2



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 07-2024T1

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ..BYPASSED.. ..BYPASSED..
2 ..BYPASSED.. ..BYPASSED..
3 ..PREEMPT 3. ..BYPASSED..
4 ..BYPASSED.. ..BYPASSED..
5 ..PREEMPT 5. ..BYPASSED..
6 ..BYPASSED.. ..BYPASSED..
7 ..BYPASSED.. ..BYPASSED..
8 ..BYPASSED.. ..BYPASSED..
9 ..BYPASSED.. ..BYPASSED..
10 ..BYPASSED.. ..BYPASSED..

```

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

Toggle Twice

OVERLAP C

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

```

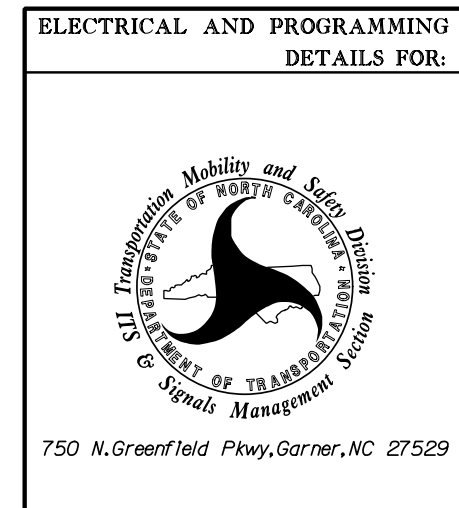
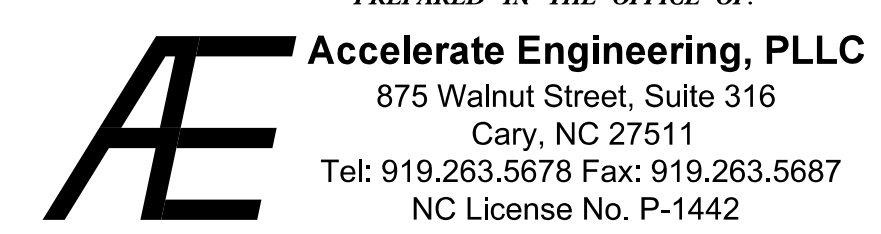
TMG VEH OVLP...[C] TYPE: ....[PPLT FYA]
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0

```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T1
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 1
 Electrical Detail - Sheet 2 of 2

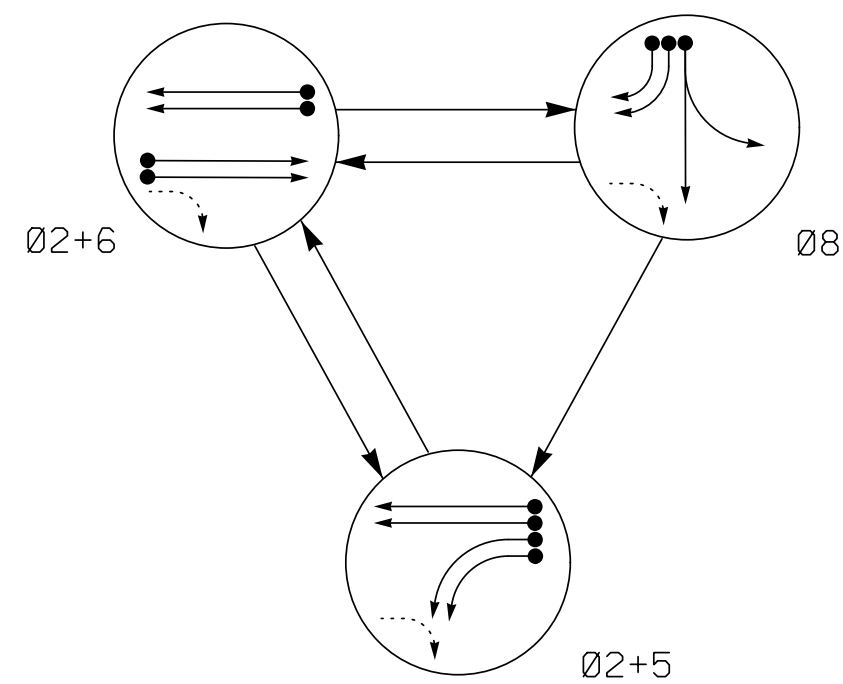


SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps
 Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by Zhaolong Teng 12/17/2019
 SIG. INVENTORY NO. 07-2024T1

\$\$\$\$\$CYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES
(Medium Priority)

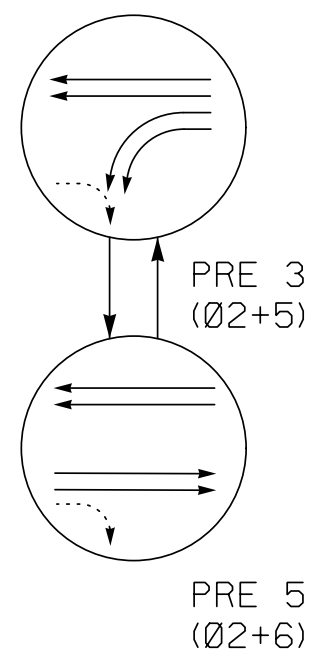
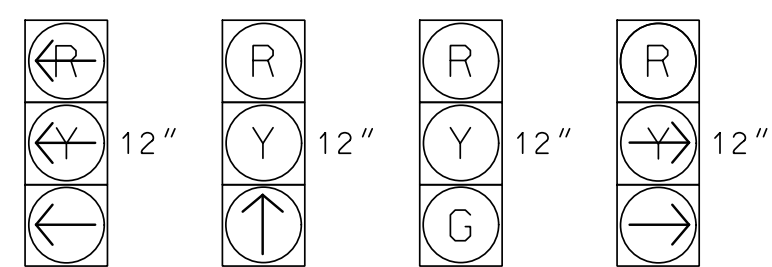


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 2+5	Ø 2+6	Ø 8	PRE 3	PRE 5	Ø 2+5	Ø 2+6	Ø 8
21, 22	↑	↑	R	↑	↑	Y		
51, 52	←	←	R	←	←	R		
61, 62	R	↑	R	R	↑	Y		
81, 82	R	R	G	R	R	R		
83, 84, 85	R	R	→	R	R	R		

SIGNAL FACE I.D.

All Heads L.E.D.



51, 52 21, 22 61, 62 83, 84, 85

ASC/3 DETECTOR INSTALLATION CHART

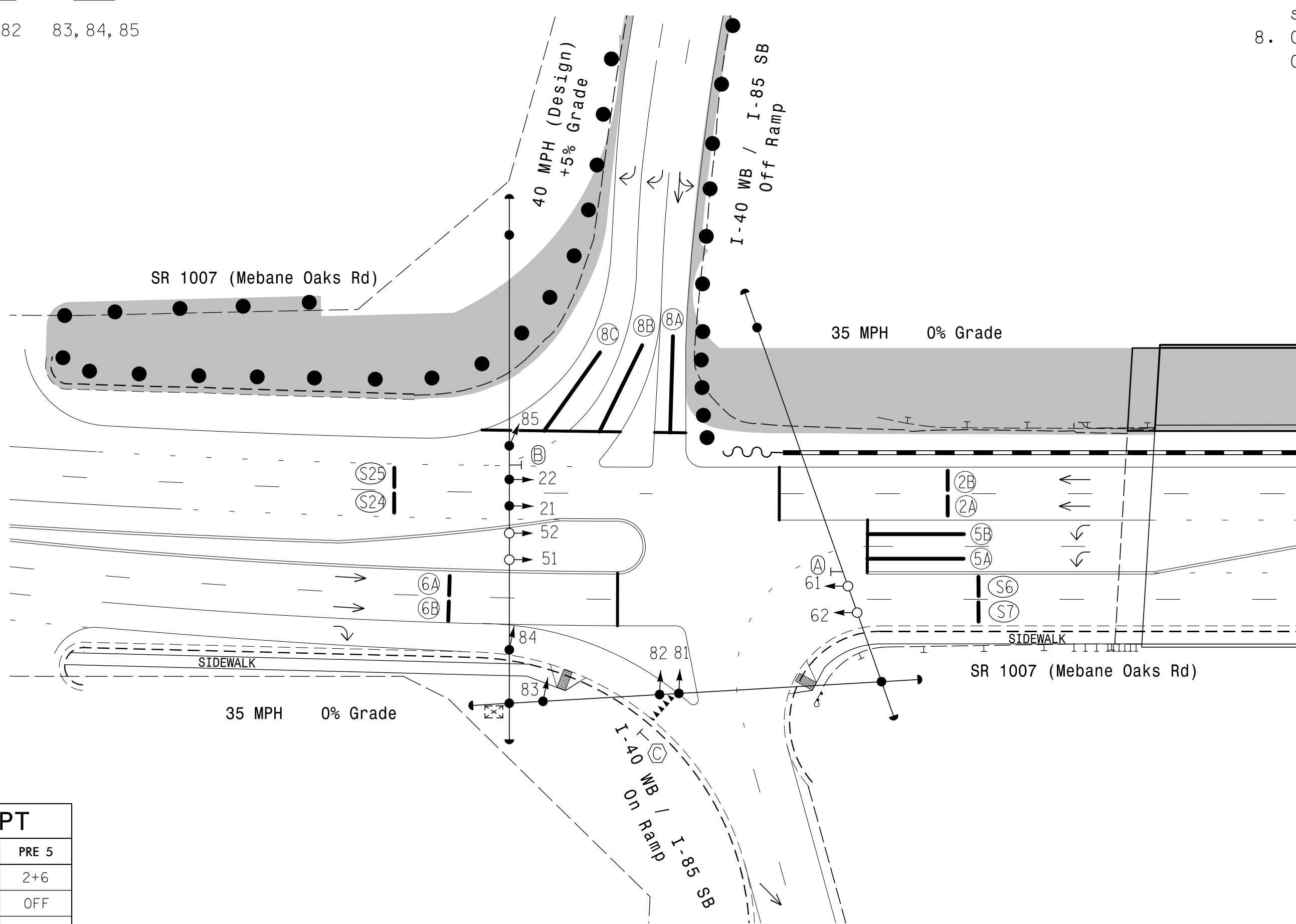
ZONE	DETECTOR				PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
5A	6x40	0	*	*	5	Yes	-	3	-	S	-	*
5B	6x40	0	*	*	5	Yes	-	-	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
8A	6x40	0	*	*	8	Yes	-	-	-	S	-	*
8B	6x40	0	*	*	8	Yes	-	15	-	S	-	*
8C	6x40	0	*	*	8	Yes	-	15	-	S	-	*
S6	6X6	+150	*	*	-	No	-	-	-	N	X	*
S7	6X6	+150	*	*	-	No	-	-	-	N	X	*
S24	6X6	+160	*	*	-	No	-	-	-	N	X	*
S25	6X6	+160	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

3 Phase
Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Reposition existing signal heads numbered 21, 22, 85 and signs A and B. Replace signal heads numbered 61 and 62 with new display as shown.
- Set all detector units to presence mode.
- This intersection features a GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 2024.



LEGEND

- | PROPOSED | EXISTING |
|---|---|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| — Sign | — Sign |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| □ Signal Pole with Sidewalk Guy | ■ Signal Pole with Sidewalk Guy |
| □ Controller & Cabinet | ■ Controller & Cabinet |
| □ Junction Box | ■ Junction Box |
| - - - 2-in Underground Conduit | - - - 2-in Underground Conduit |
| N/A Right of Way | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| ■ Construction Zone Drums | ■ Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| ■ Video Detection Area | ■ Video Detection Area |
| N/A Curb Ramp | ■ Curb Ramp |
| N/A Guardrail | — Guardrail |
| (A) No U Turn / No Left Turn Sign (R3-18) | (A) No U Turn / No Left Turn Sign (R3-18) |
| (B) No Right Turn Sign (R3-1) | (B) No Right Turn Sign (R3-1) |
| (C) "YIELD" Sign (R1-2) | (C) "YIELD" Sign (R1-2) |

ASC/3 TIMING CHART

FEATURE	PHASE			
	2	5	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max 1 *	60	25	60	35
Yellow	3.8	3.0	3.8	3.8
Red Clear	2.5	2.8	1.4	2.0
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

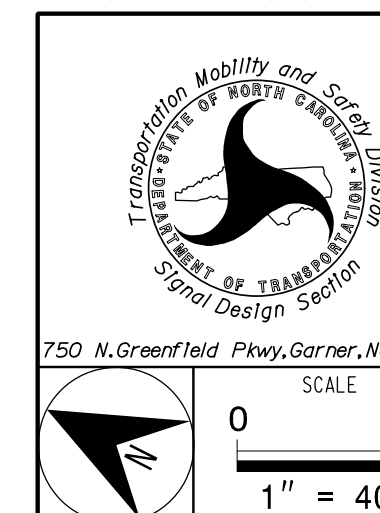
ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

(TMP Phase II)
Signal Upgrade - Temporary Design 2

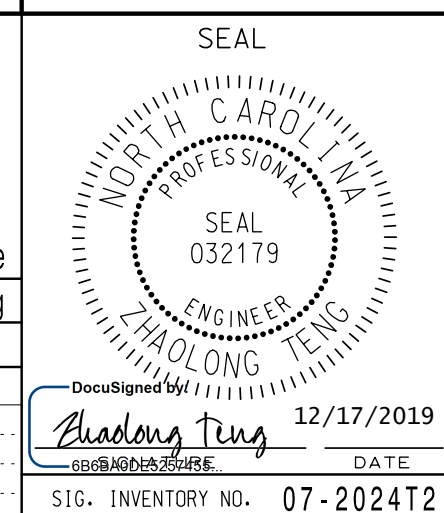
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



SR 1007 (Mebane Oaks Road)
at
I-40 WB / I-85 SB Ramps
Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

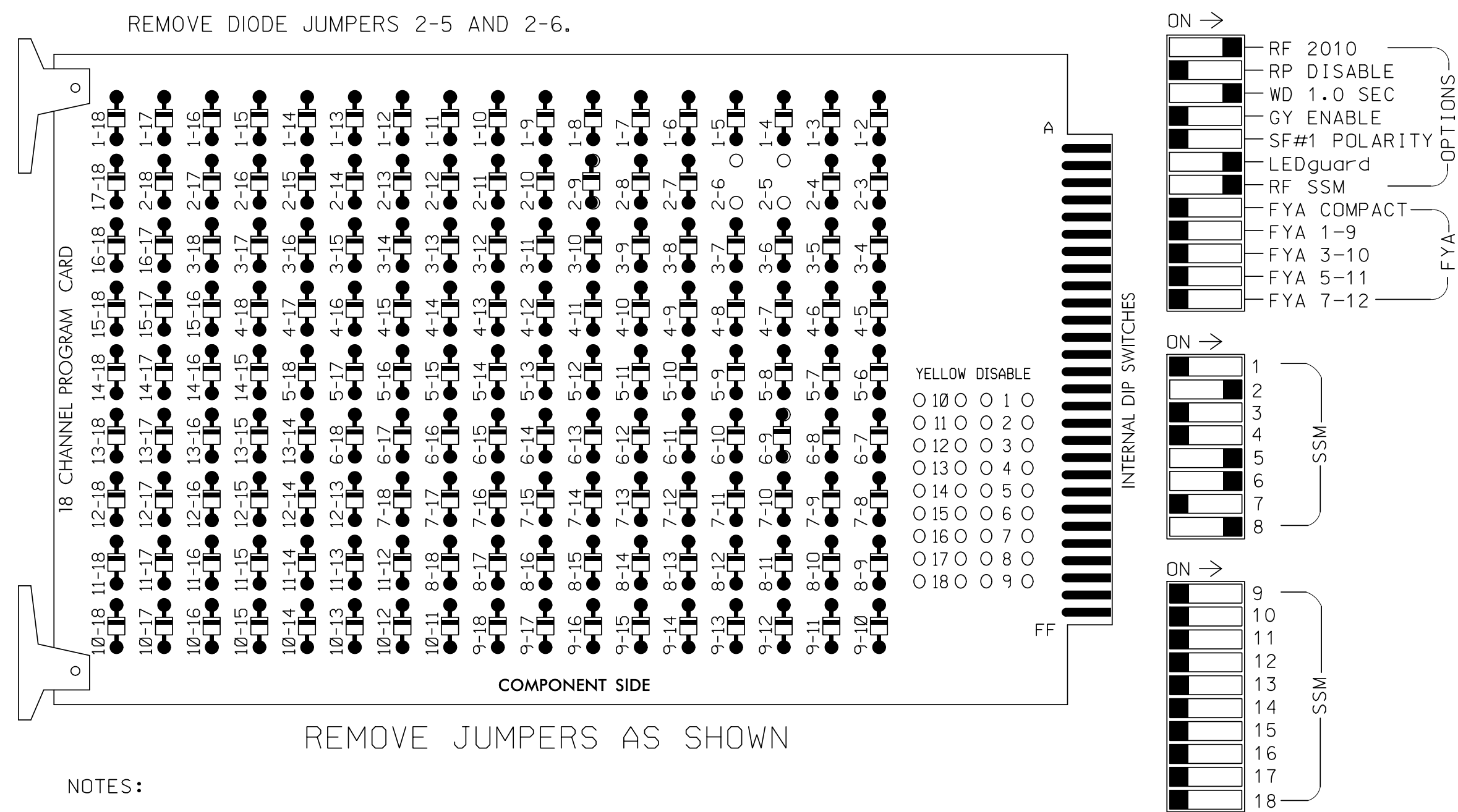
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



12/17/2019
DATE
SIG. INVENTORY NO. 07-2024T2

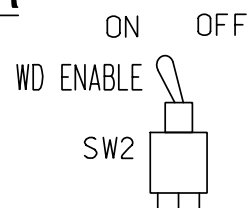
EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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. Integrate monitor with Ethernet network in cabinet.



NOTES

Return controller to Factory Defaults before programming per this electrical detail.

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. Program controller to start up in phase 2 Green and phase 6 Green.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

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

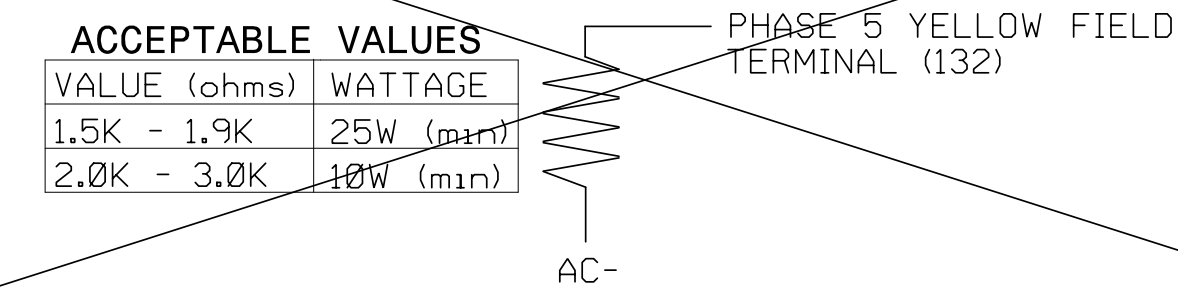
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	51,52	61,62	NU	NU	81,82	83,84 85	NU	NU	NU	NU	NU	NU
RED		128								134		107	107					
YELLOW		129								135		108						
GREEN												109						
RED ARROW									131									
YELLOW ARROW									132			108						
GREEN ARROW		130							133	136		109						

NU = Not Used

LOAD RESISTOR INSTALLATION DETAIL

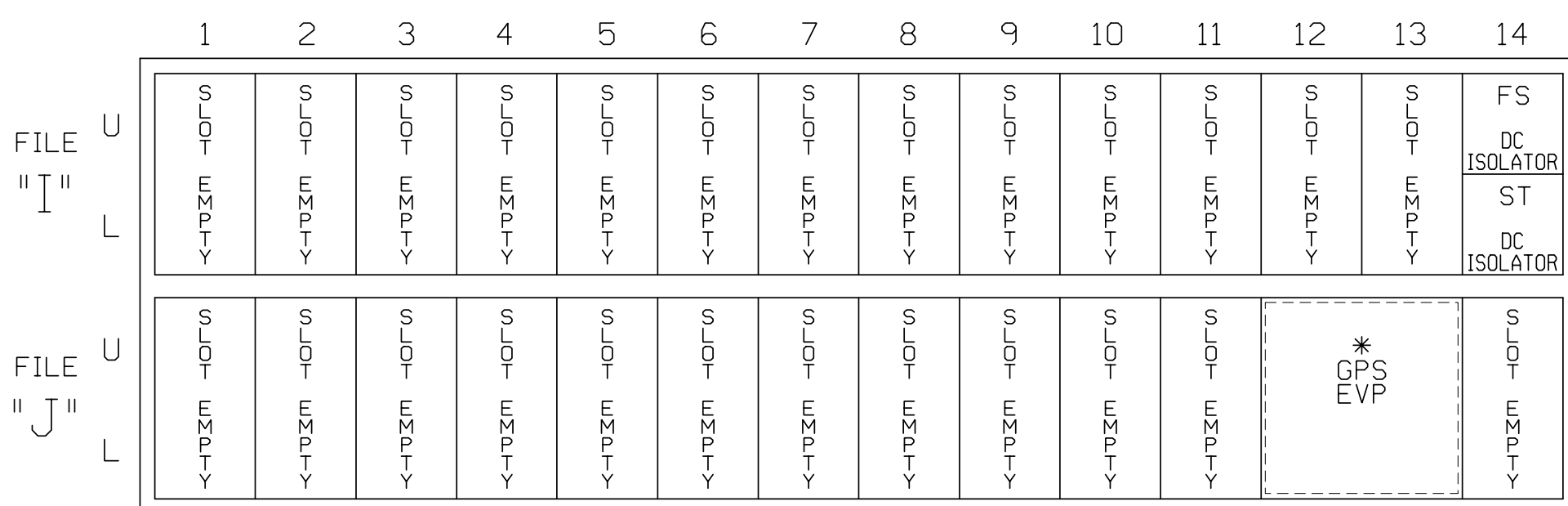
(install resistor as shown below)



REMOVE LOAD RESISTOR

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 2
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

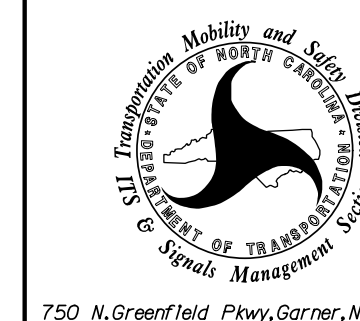
SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps

Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by: Zhaolong Teng
 12/17/2019
 SIG. INVENTORY NO. 07-2024T2

PREPARED IN THE OFFICE OF:
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 NC License No. P-1442



750 N. Greenfield Pkwy, Garner, NC 27529

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select 4. PREEMPTOR/TSP
- 2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select 4. PREEMPTOR/TSP
- 2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

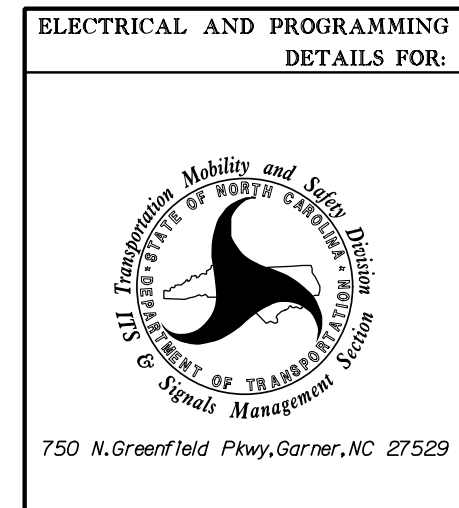
```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..

```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

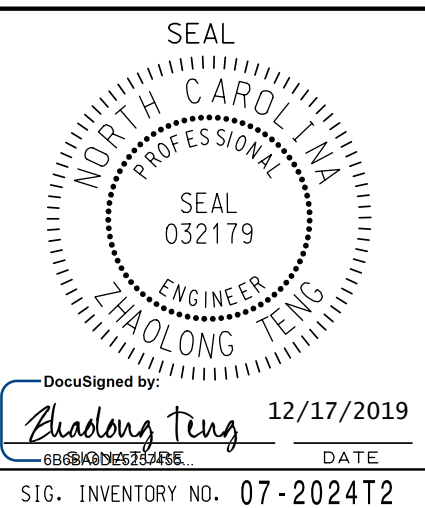
Temporary Design 2
Electrical Detail - Sheet 2 of 2



SR 1007 (Mebane Oaks Road)
 at
 I-40 WB / I-85 SB Ramps

Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

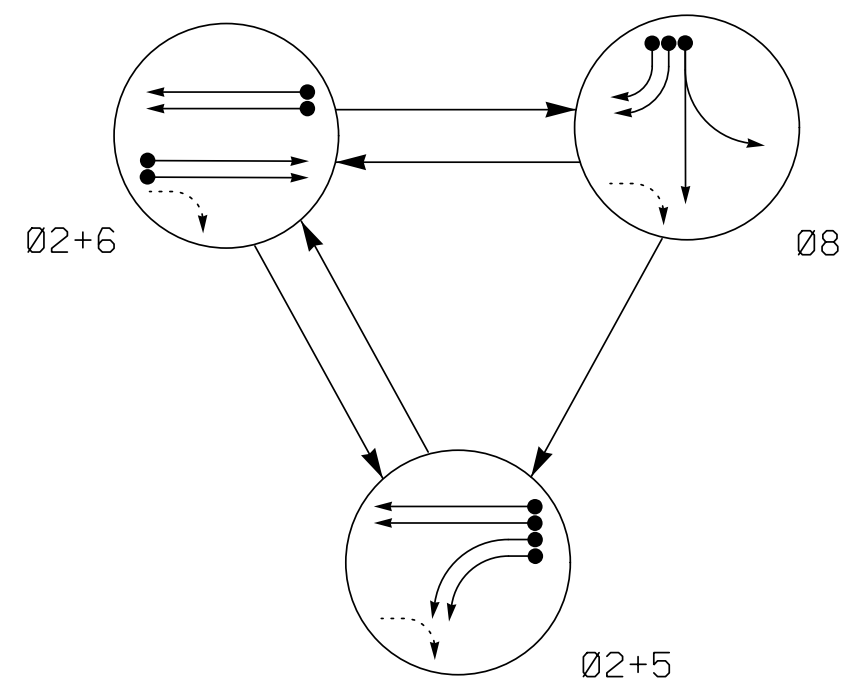


DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2024T2

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 NC License No. P-1442

\$\$\$\$\$CYTIME\$\$\$\$\$
 \$\$\$SUNSERNAME\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES
(Medium Priority)

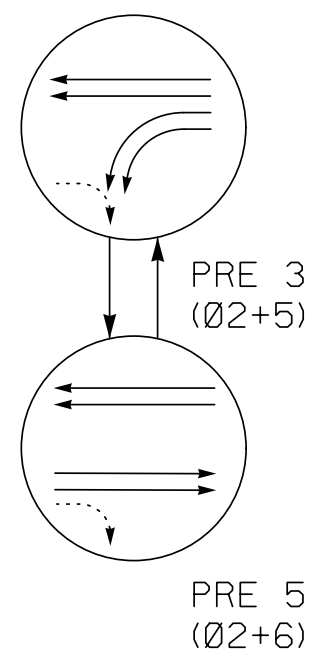
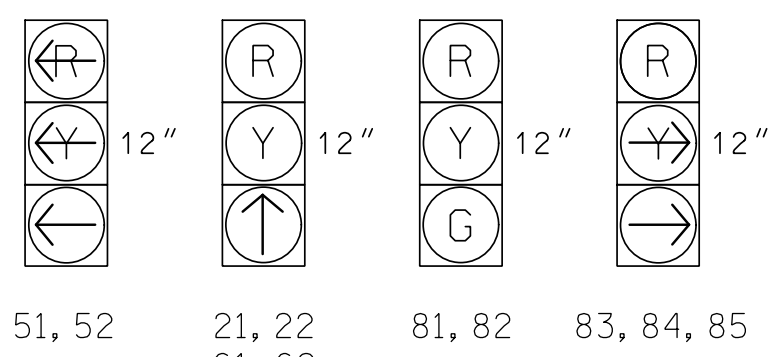


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	02+5	02+6	08	PRE 3	PRE 5	08	02+5	02+6
21, 22	↑	↑	R	↑	↑	Y		
51, 52	←	←	R	←	←	R		
61, 62	R	↑	R	R	↑	Y		
81, 82	R	R	G	R	R	R		
83, 84, 85	R	R	→	R	R	R		

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

ZONE	DETECTOR				PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
5A	6x40	0	*	*	5	Yes	-	-	-	S	-	*
5B	6x40	0	*	*	5	Yes	-	-	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
8A	6x40	0	*	*	8	Yes	-	-	-	S	-	*
8B	6x40	0	*	*	8	Yes	-	15	-	S	-	*
8C	6x40	0	*	*	8	Yes	-	15	-	S	-	*
S6	6X6	+150	*	*	-	No	-	-	-	N	X	*
S7	6X6	+150	*	*	-	No	-	-	-	N	X	*
S24	6X6	+160	*	*	-	No	-	-	-	N	X	*
S25	6X6	+160	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

3 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 21, 22, 51, 52, 85 and sign B.
5. Set all detector units to presence mode.
6. This intersection features a GPS Emergency Vehicle Preemption system.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Closed loop system data: Controller Asset #: 2024.

ASC/3 TIMING CHART

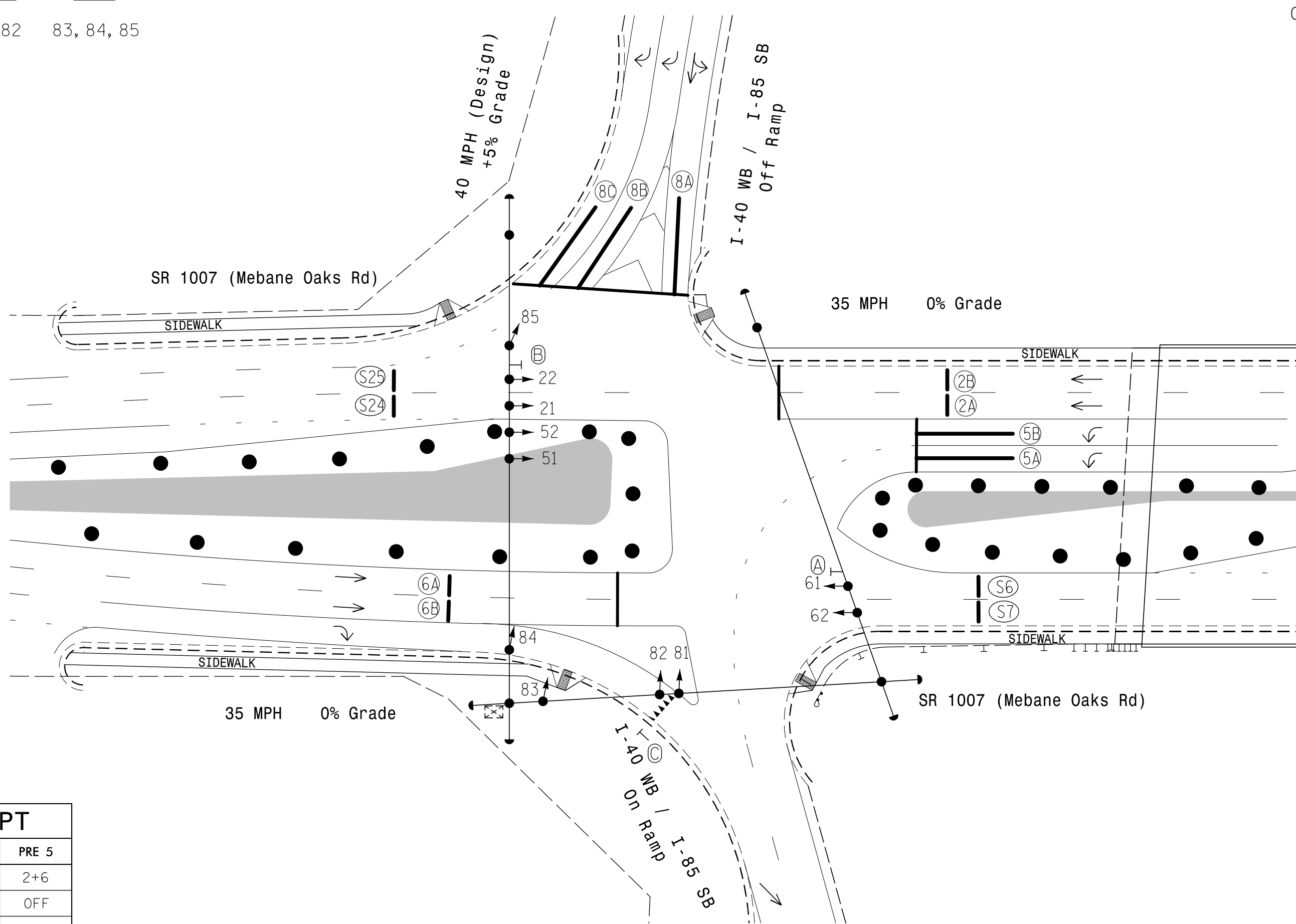
FEATURE	PHASE			
	2	5	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max 1 *	60	25	60	35
Yellow	3.8	3.0	3.8	3.8
Red Clear	3.2	3.6	1.4	3.0
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	1	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

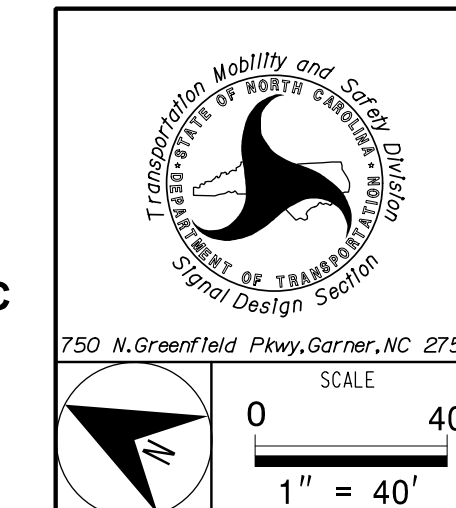


LEGEND

PROPOSED	EXISTING
○	●
+	+
○	○
○	○
□	□
□	□
- - -	- - -
N/A	N/A
→	→
●	●
■	■
- - -	- - -
N/A	N/A
N/A	N/A
(A)	(A)
(B)	(B)
(C)	(C)

(TMP Phase III) Signal Upgrade - Temporary Design 3

PREPARED IN THE OFFICE OF:
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NC License No. P-1442



SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps

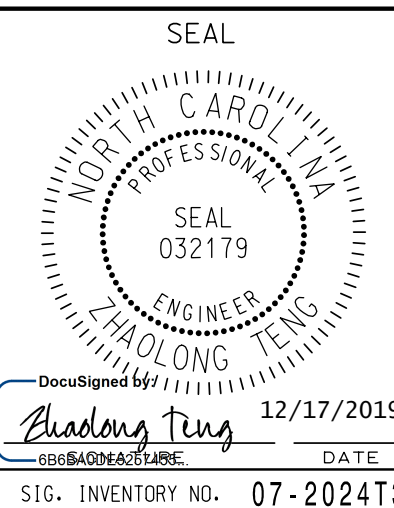
Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

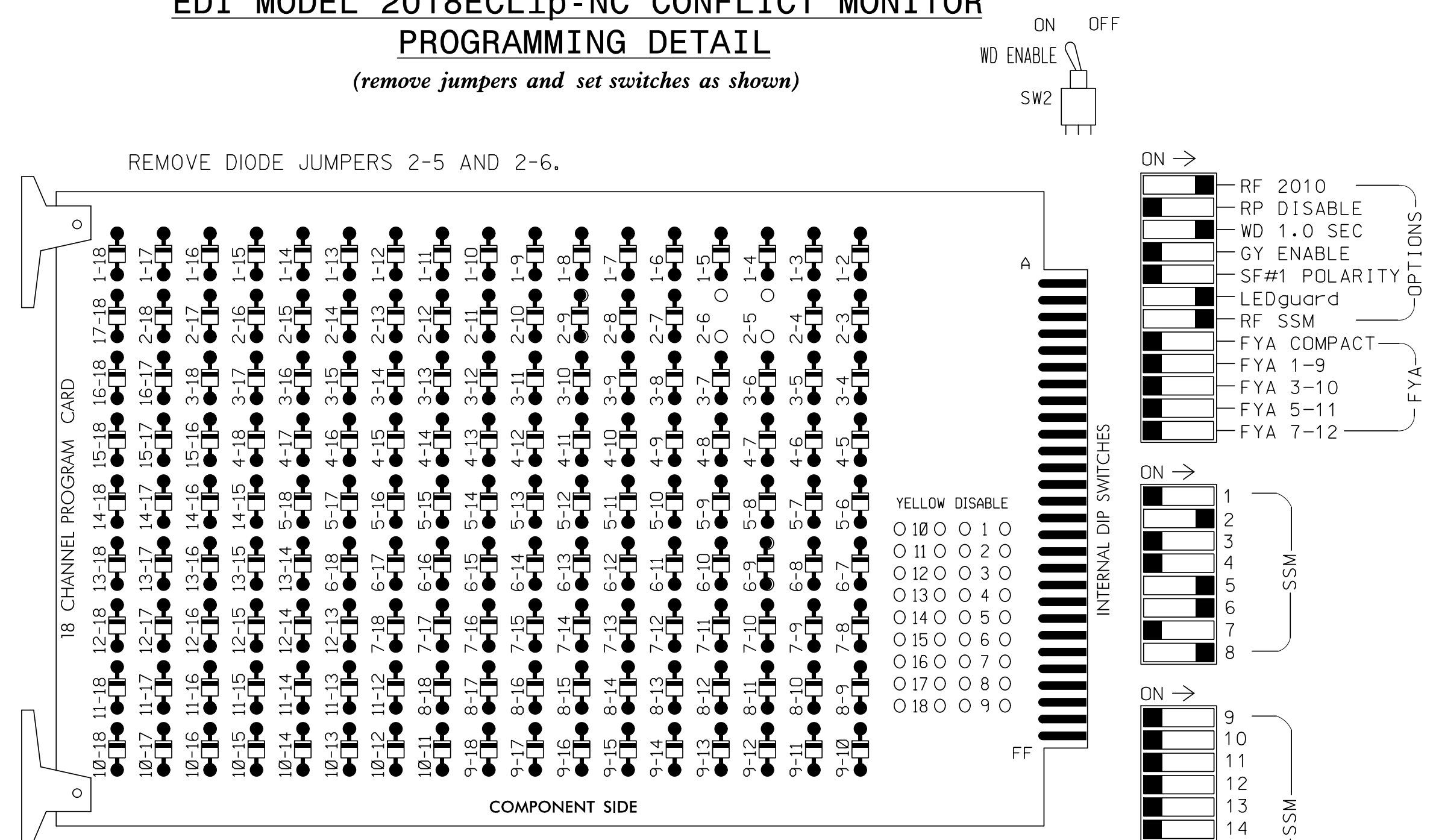
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



12/17/2019
DATE
SIG. INVENTORY NO. 07-2024T3

EDI MODEL 2018ECLip-NC 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. Integrate monitor with Ethernet network in 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. Program controller to start up in phase 2 Green and phase 6 Green.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

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

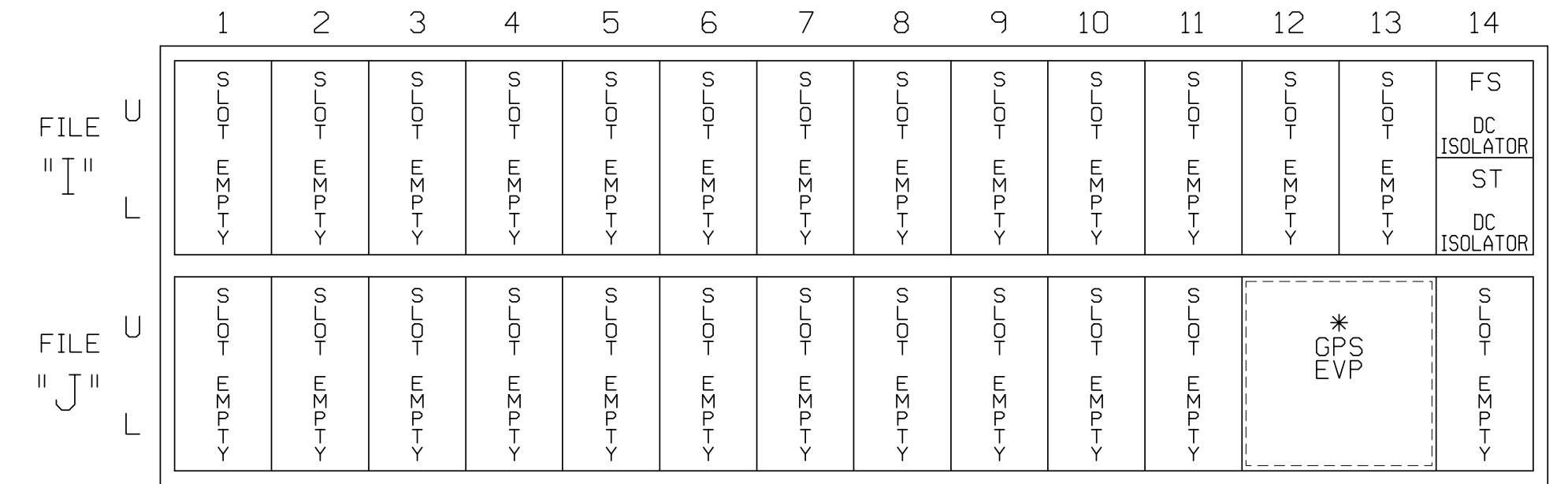
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
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	DLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	51,52	61,62	NU	NU	81,82	83,84 85	NU	NU	NU	NU	NU	NU
RED		128						134			107	107						
YELLOW		129						135			108							
GREEN											109							
RED ARROW							131											
YELLOW ARROW							132				108							
GREEN ARROW		130					133	136			109							

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 1 of 2

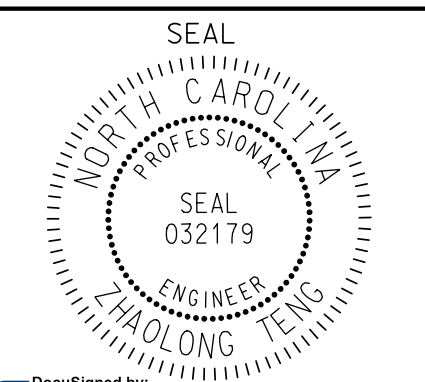
ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road)
 at
 I-40 WB / I-85 SB Ramps



Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

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REVISIONS	INIT.	DATE

DocuSigned by: Zhaolong Teng
 12/17/2019
 DATE

SIG. INVENTORY NO. 07-2024T3

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\$\$\$\$\$SYTIME\$\$\$\$\$
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ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
  VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  OVERLAP A B C D E F G H I J K L M N O P
  TRKCLR V . . . . .
  TRKCLR O . . . . .
  ENA TRL . . . . .
  DWEL VEH . X . . X . . . . .
  DWEL PED . . . . .
  DWEL OLP . . . . .
  CYC VEH . . . . .
  CYC PED . . . . .
  CYC OLP . . . . .
  EXIT PH . X . . . X . . . . .
  EXIT CAL . . . . .
  SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
  VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  OVERLAP A B C D E F G H I J K L M N O P
  TRKCLR V . . . . .
  TRKCLR O . . . . .
  ENA TRL . . . . .
  DWEL VEH . X . . . X . . . . .
  DWEL PED . . . . .
  DWEL OLP . . . . .
  CYC VEH . . . . .
  CYC PED . . . . .
  CYC OLP . . . . .
  EXIT PH . X . . . X . . . . .
  EXIT CAL . . . . .
  SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

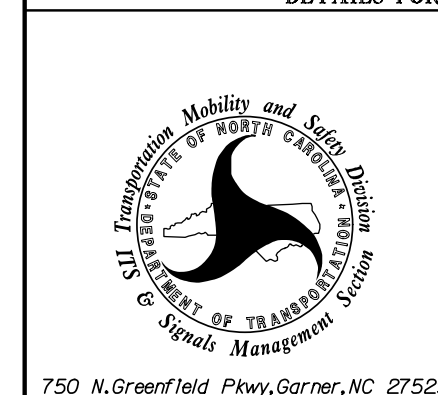
```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
      2 ...BYPASSED.. ...BYPASSED..
      3 ..PREEMPT 3. ...BYPASSED..
      4 ...BYPASSED.. ...BYPASSED..
      5 ..PREEMPT 5. ...BYPASSED..
      6 ...BYPASSED.. ...BYPASSED..
      7 ...BYPASSED.. ...BYPASSED..
      8 ...BYPASSED.. ...BYPASSED..
      9 ...BYPASSED.. ...BYPASSED..
     10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 2 of 2

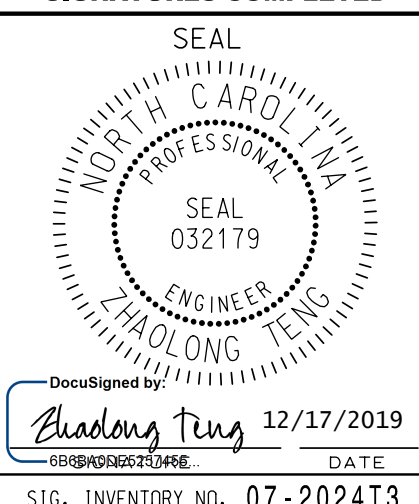
ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1007 (Mebane Oaks Road)
 at
 I-40 WB / I-85 SB Ramps

Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



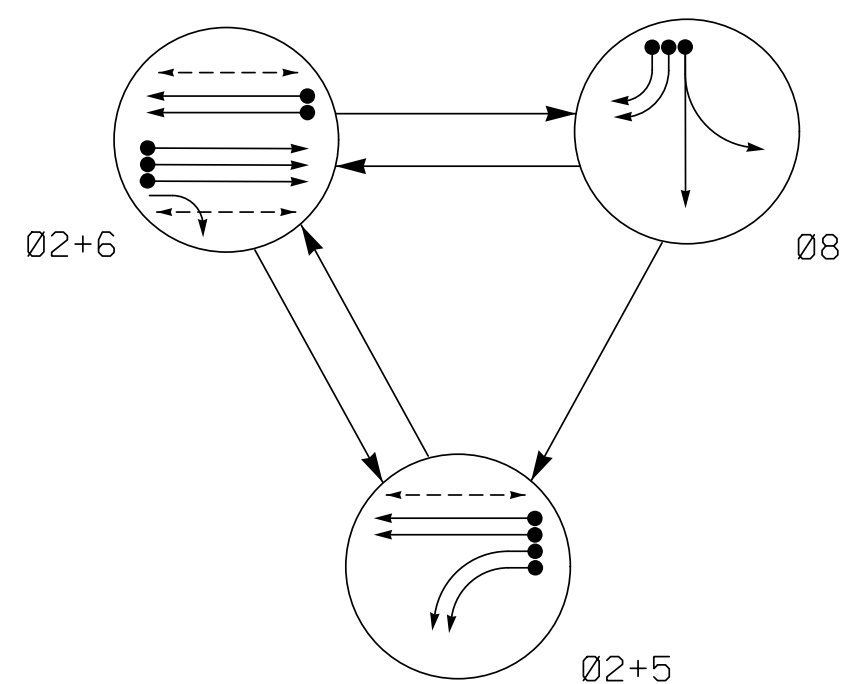
DocuSigned by:
 Zhaolong Teng 12/17/2019
 SIG. INVENTORY NO. 07-2024T3

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

750 N. Greenfield Pkwy, Garner, NC 27529

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES (Medium Priority)

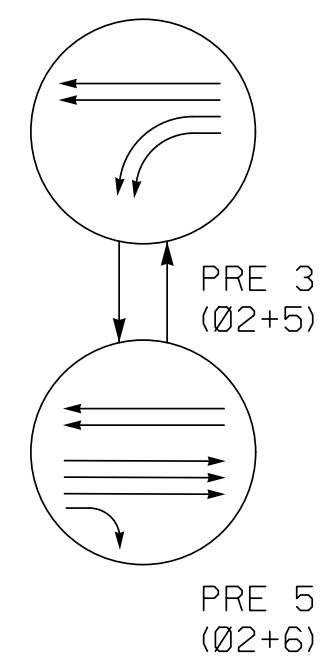


TABLE OF OPERATION

SIGNAL FACE	PHASE						
	02+5	02+6	08	PRE 3	PRE 5	FLASH	FL
21, 22	↑	↑	R	↑	↑	Y	
51, 52, 53	←	←	←	←	←	←	
61, 62, 63	R	↑	R	R	↑	Y	
64	R	↑	R	R	↑	Y	
65	R	G	R	R	G	Y	
81, 82	R	R	G	R	R		
83, 84, 85	R	R	←	R	R		
P21, P22	W	W	DW	DW	DW	DRK	
P61, P62	DW	W	DW	DW	DW	DRK	

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6x6	70	5	X	2	Yes	-	-	-	S	-	X
2B	6x6	70	5	X	2	Yes	-	-	-	S	-	X
5A	6x40	0	2-4-2	X	5	Yes	-	-	-	S	-	X
5B	6x40	0	2-4-2	X	5	Yes	-	-	-	S	-	X
6A	6x6	70	3	X	6	Yes	-	-	-	S	-	X
6B	6x6	70	3	X	6	Yes	-	-	-	S	-	X
6C	6x6	70	3	X	6	Yes	-	-	-	S	-	X
8A	6x40	0	2-4-2	X	8	Yes	-	-	-	S	-	X
8B	6x40	0	2-4-2	X	8	Yes	-	15	-	S	-	X
8C	6x40	0	2-4-2	X	8	Yes	-	15	-	S	-	X
S6	6X6	+160	4	X	-	No	-	-	-	N	X	X
S7	6X6	+160	4	X	-	No	-	-	-	N	X	X
S8	6X6	+160	4	X	-	No	-	-	-	N	X	X
S24	6X6	+150	4	X	-	No	-	-	-	N	X	X
S25	6X6	+150	4	X	-	No	-	-	-	N	X	X

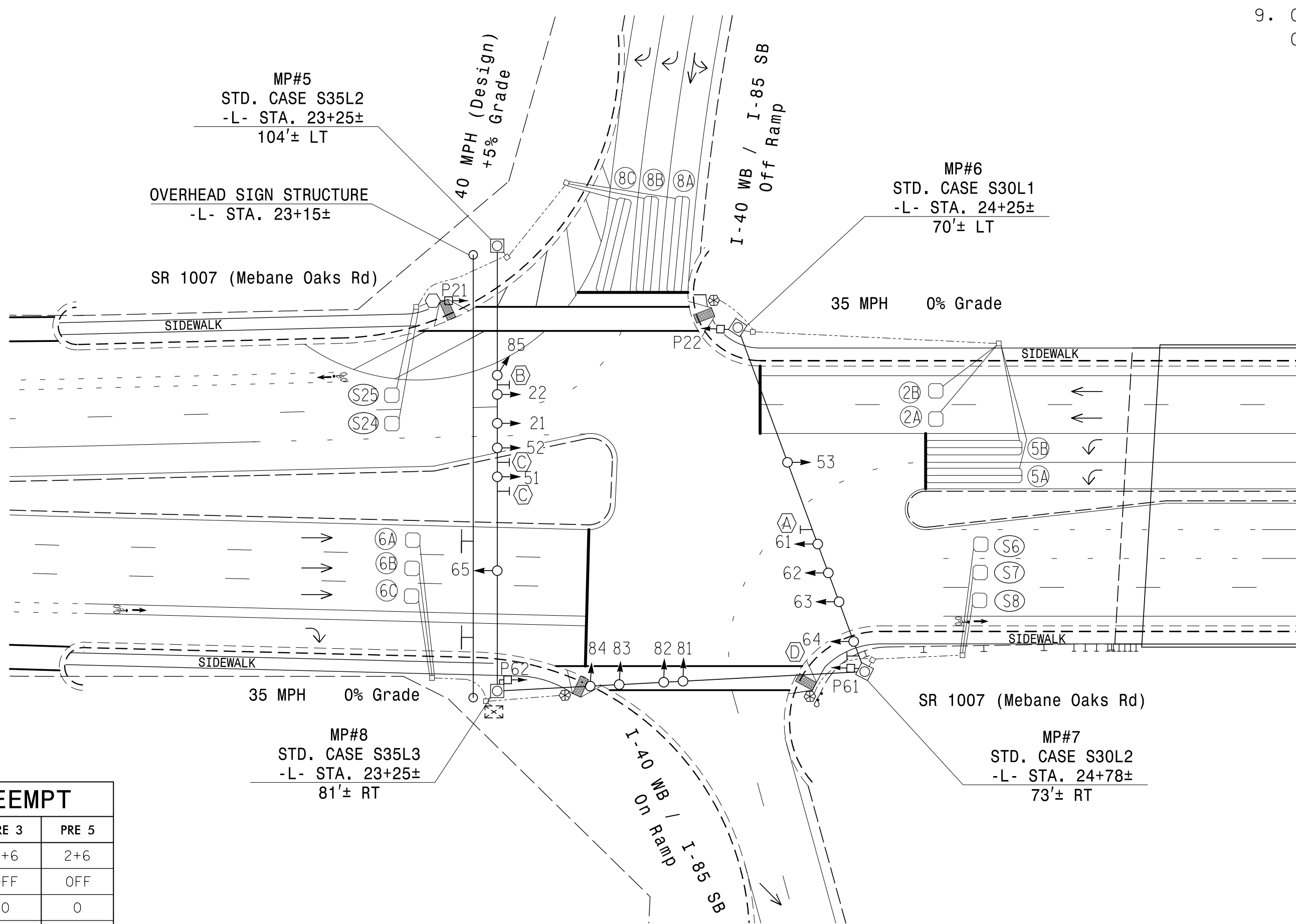
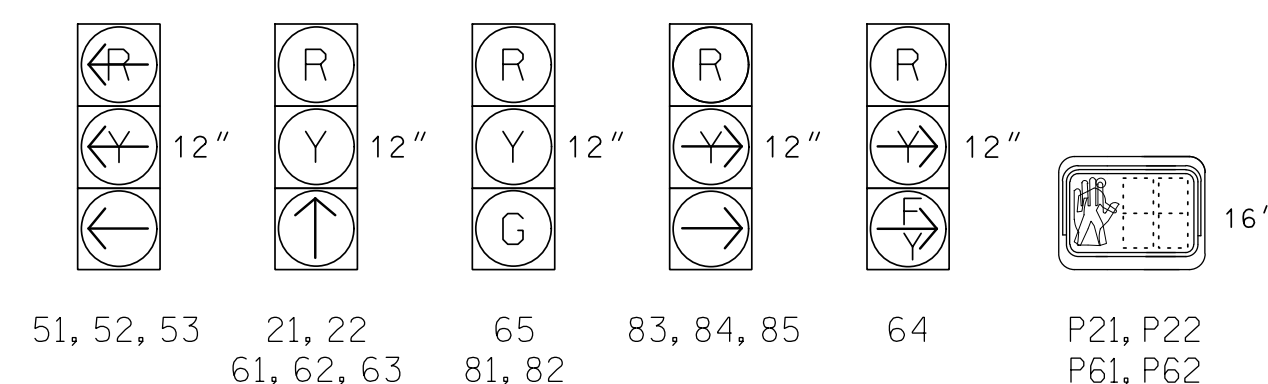
3 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
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. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. This intersection features a GPS Emergency Vehicle Preemption system.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset #: 2024.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| ○ | ● |
| ○ | ○ |
| ○ | ○ |
| □ | □ |
| □ | □ |
| N/A | N/A |
| → | → |
| ⊗ | ⊗ |
| ⊗ | ⊗ |
| ○ | ○ |
| N/A | N/A |
| N/A | N/A |
| ⊙ | ⊙ |
| ⊙ | ⊙ |
| ⊙ | ⊙ |
| ⊙ | ⊙ |

ASC/3 TIMING CHART

FEATURE	PHASE			
	2	5	6	8
Min Green *	10	7	10	7
Walk *	7	0	7	0
Ped Clear	27	0	21	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max I *	60	25	60	35
Yellow	3.8	3.0	3.8	3.8
Red Clear	2.4	3.8	1.7	2.8
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

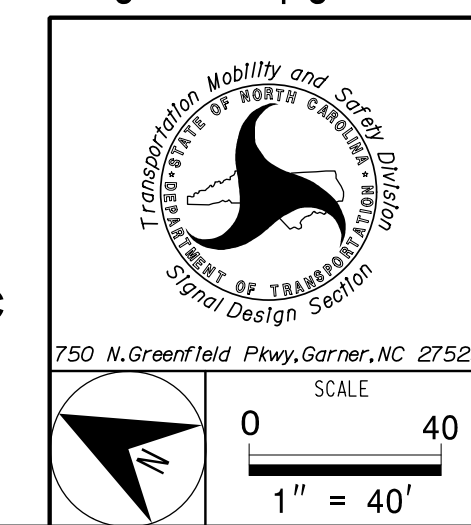
ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	Y	Y
Terminate Phases	N	N
Entrance Walk	1	1
Entrance Ped Clear	14	14
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

Signal Upgrade - Final Design

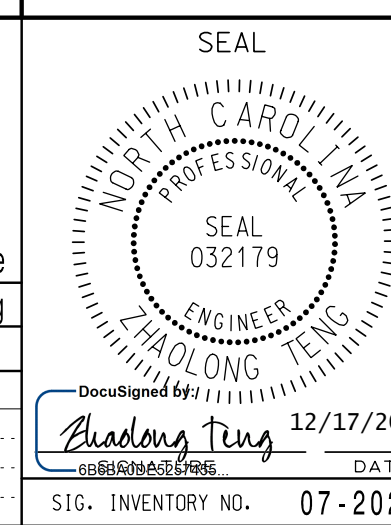
PREPARED IN THE OFFICE OF:
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 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
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SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps
 Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

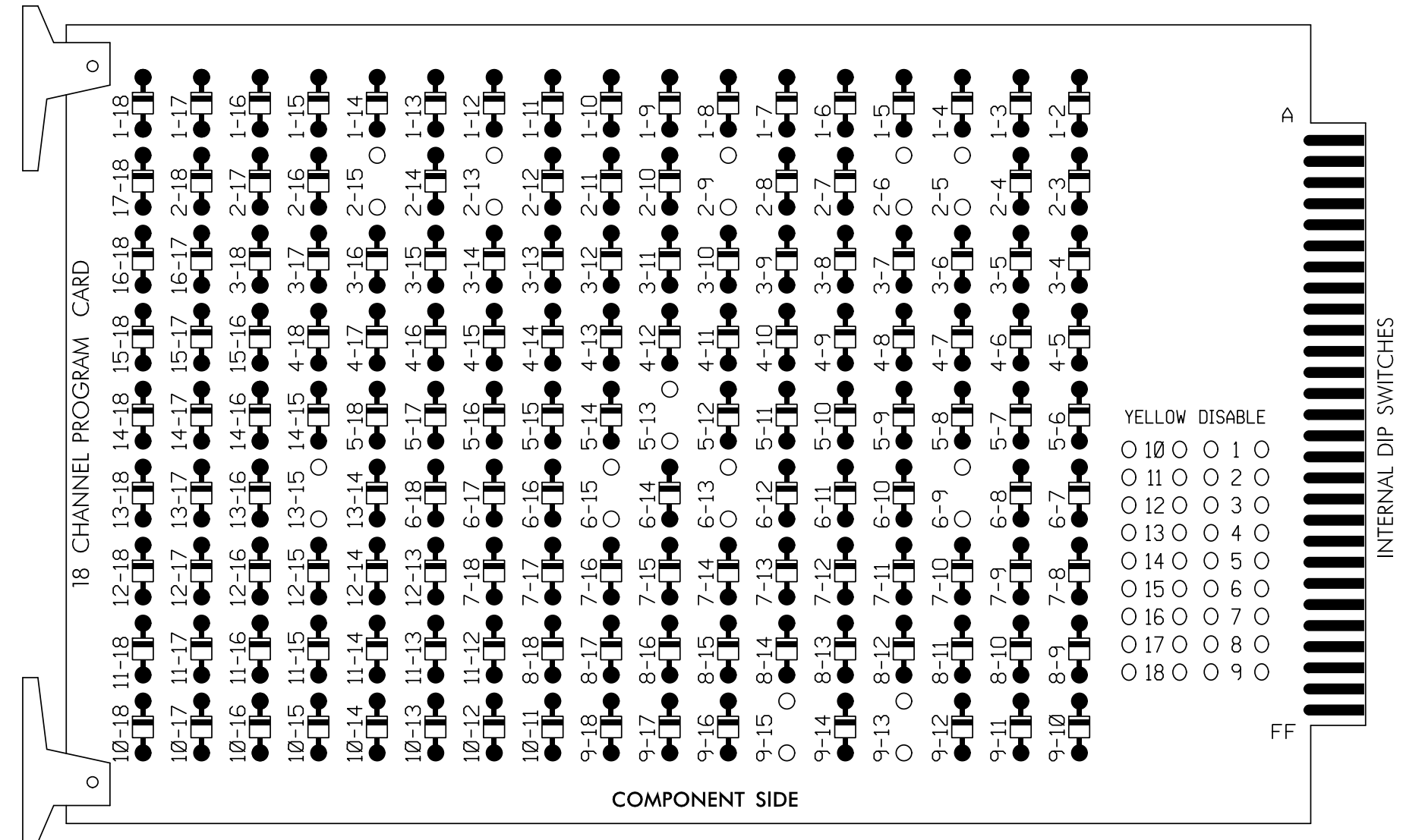


12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2024

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

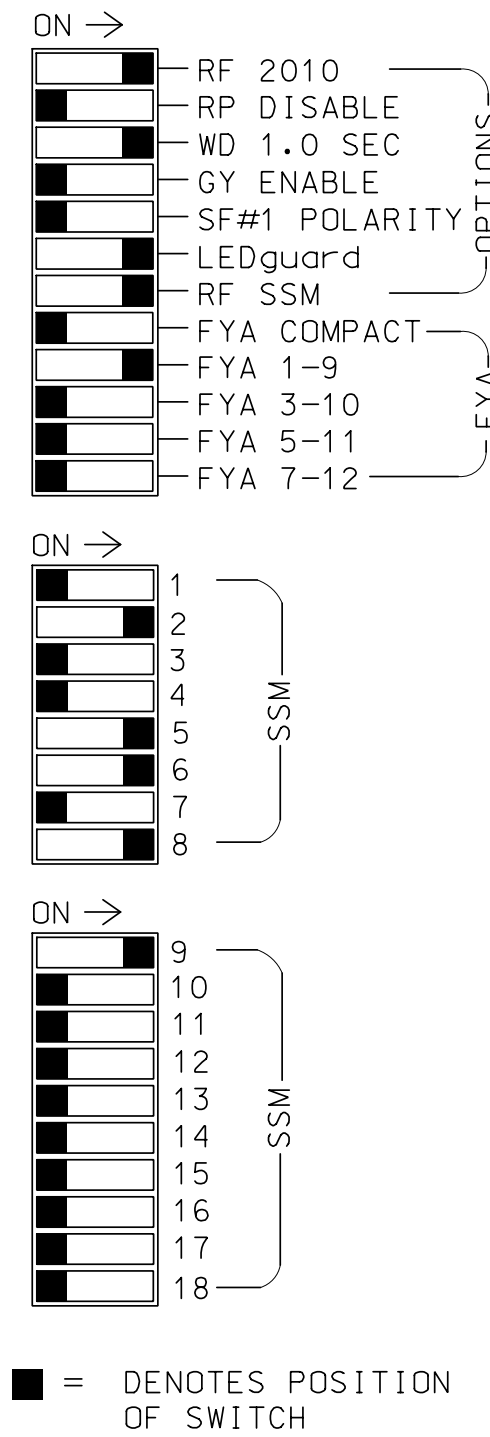
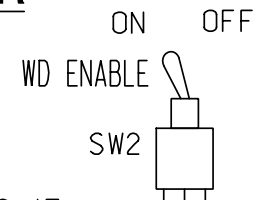
REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-13, 2-15, 5-13, 6-9, 6-13, 6-15, 9-13, 9-15 AND 13-15.



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Walk and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S3,S7,S8,S9,S11
 AUX S1
 PHASES USED.....2,2PED,5,6,6PED,8
 OVERLAP 'A'.....*
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

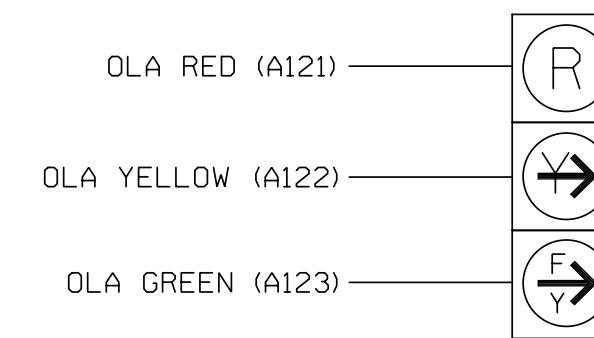
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	P21, P22	NU	NU	NU	51, 52 53	61,62 63	65	P61, P62	NU	81,82 83,84 85	64	NU	NU	NU	NU	NU
RED		128						134	134		107	107	A121					
YELLOW		129									108							
GREEN									136		109							
RED ARROW								131										
YELLOW ARROW								132			108		A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW		130						133	136		109							
Hand icon			113							119								
Walker icon			115							121								

NU = Not Used

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

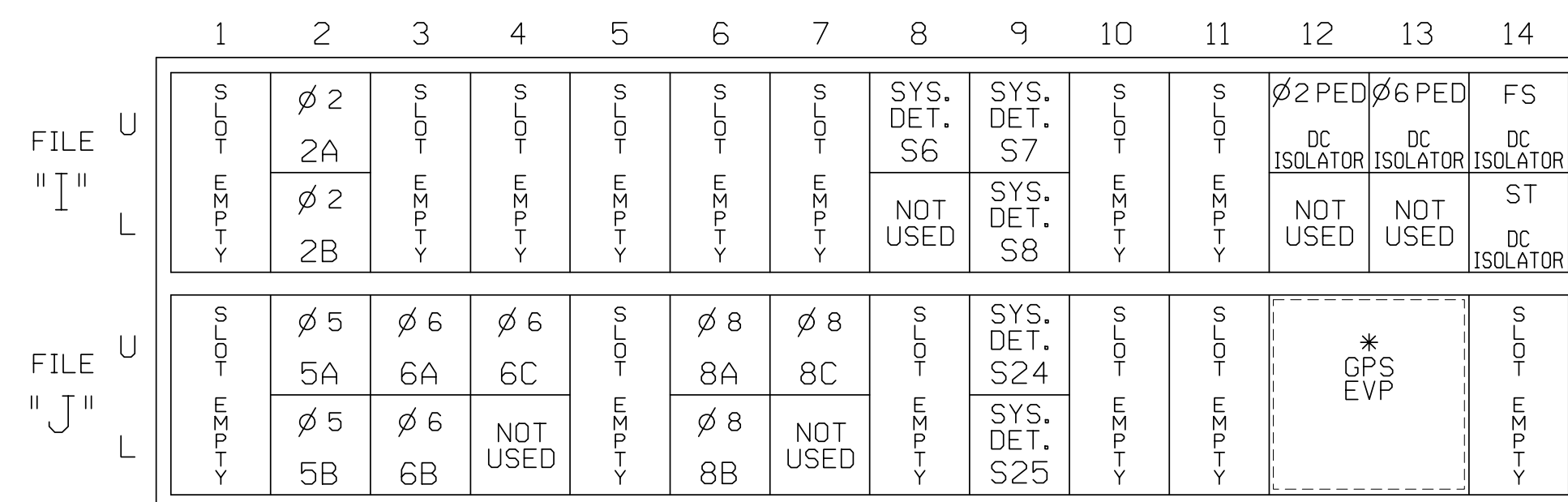
(wire signal heads as shown)



84

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
See GPS Preemption Installation Note Below

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

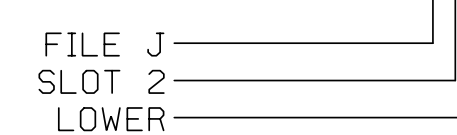
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
2B	TB2-7,8	I2L	43	12	2	YES				S
5A	TB3-5,6	J2U	40	6	5	YES				S
5B	TB3-7,8	J2L	44	16	5	YES				S
6A	TB3-9,10	J3U	64	36	6	YES				S
6B	TB3-11,12	J3L	77	46	6	YES				S
6C	TB5-1,2	J4U	48	26	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S
8B	TB5-11,12	J6L	46	18	8	YES		15		S
8C	TB7-1,2	J7U	66	38	8	YES		15		S
* S6	TB6-5,6	I8U	49	24	SYS	NO				N
* S7	TB6-9,10	I9U	60	11	SYS	NO				N
* S8	TB6-11,12	I9L	62	13	SYS	NO				N
* S24	TB7-9,10	J9U	59	15	SYS	NO				N
* S25	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

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

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



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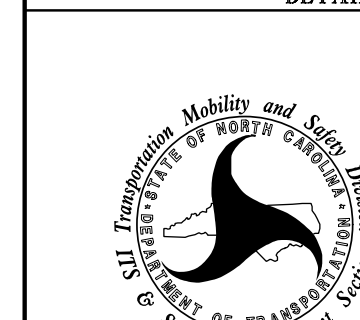
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Final Design
Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

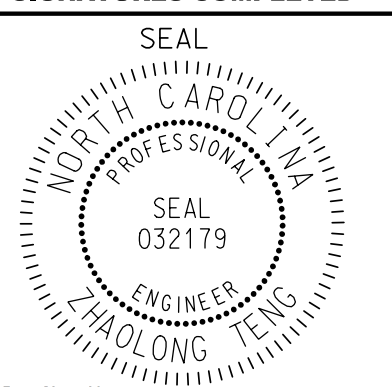


SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2024

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED... ..BYPASSED..
2 ...BYPASSED... ..BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED... ..BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED... ..BYPASSED..
7 ...BYPASSED... ..BYPASSED..
8 ...BYPASSED... ..BYPASSED..
9 ...BYPASSED... ..BYPASSED..
10 ...BYPASSED... ..BYPASSED..

```

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

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

```

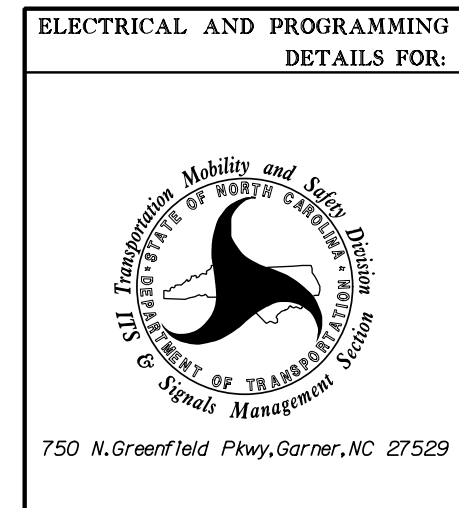
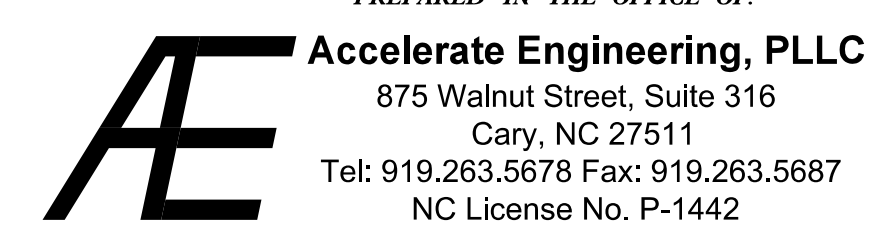
TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2024
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 2 of 2



SR 1007 (Mebane Oaks Road) at I-40 WB / I-85 SB Ramps	
Division 7	Alamance County Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT. DATE

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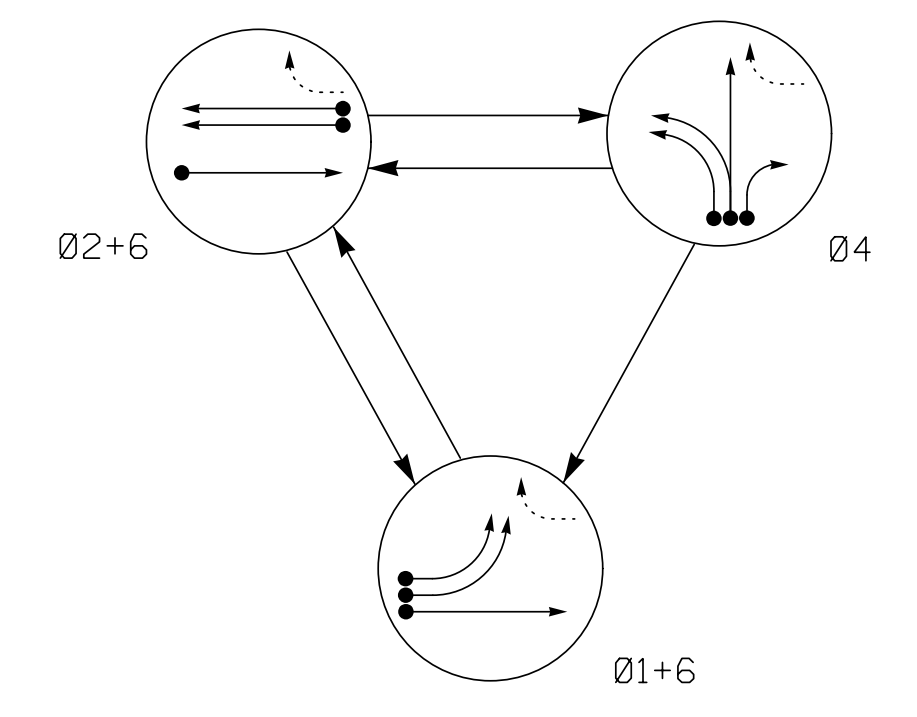
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG

DocuSigned by:
 Zhaolong Teng 12/17/2019
 DATE

SIG. INVENTORY NO. 07-2024

\$\$\$\$\$CYTIME\$\$\$\$\$
 \$\$\$DDON\$\$\$\$\$
 \$\$\$SUFNAME\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT

EV PREEMPT PHASES (Medium Priority)

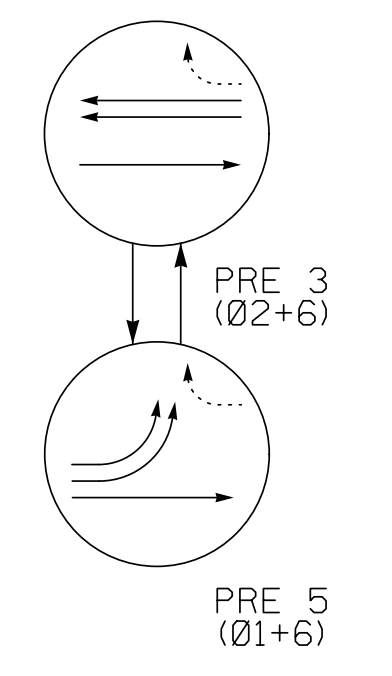


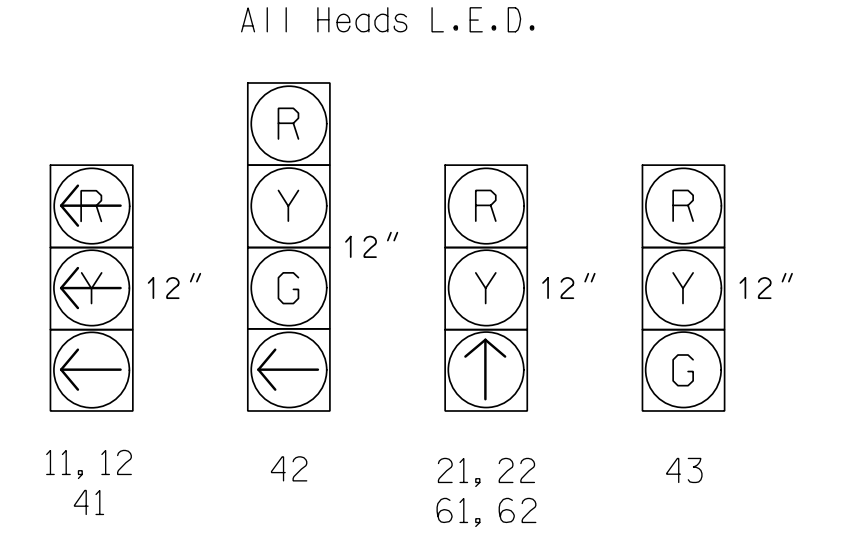
TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (0 1 + 6, 0 2 + 6, 0 4, PRE 3, 0 1 + 6, 0 4, PRE 5, 0 1 + 6), and signal indicators.

ASC/3 DETECTOR INSTALLATION CHART

Table with columns: DETECTOR (ZONE, SIZE, DISTANCE FROM STOPBAR, TURNS, NEW LOOP), PROGRAMMING (PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE), SYSTEM LOOP, NEW CARD.

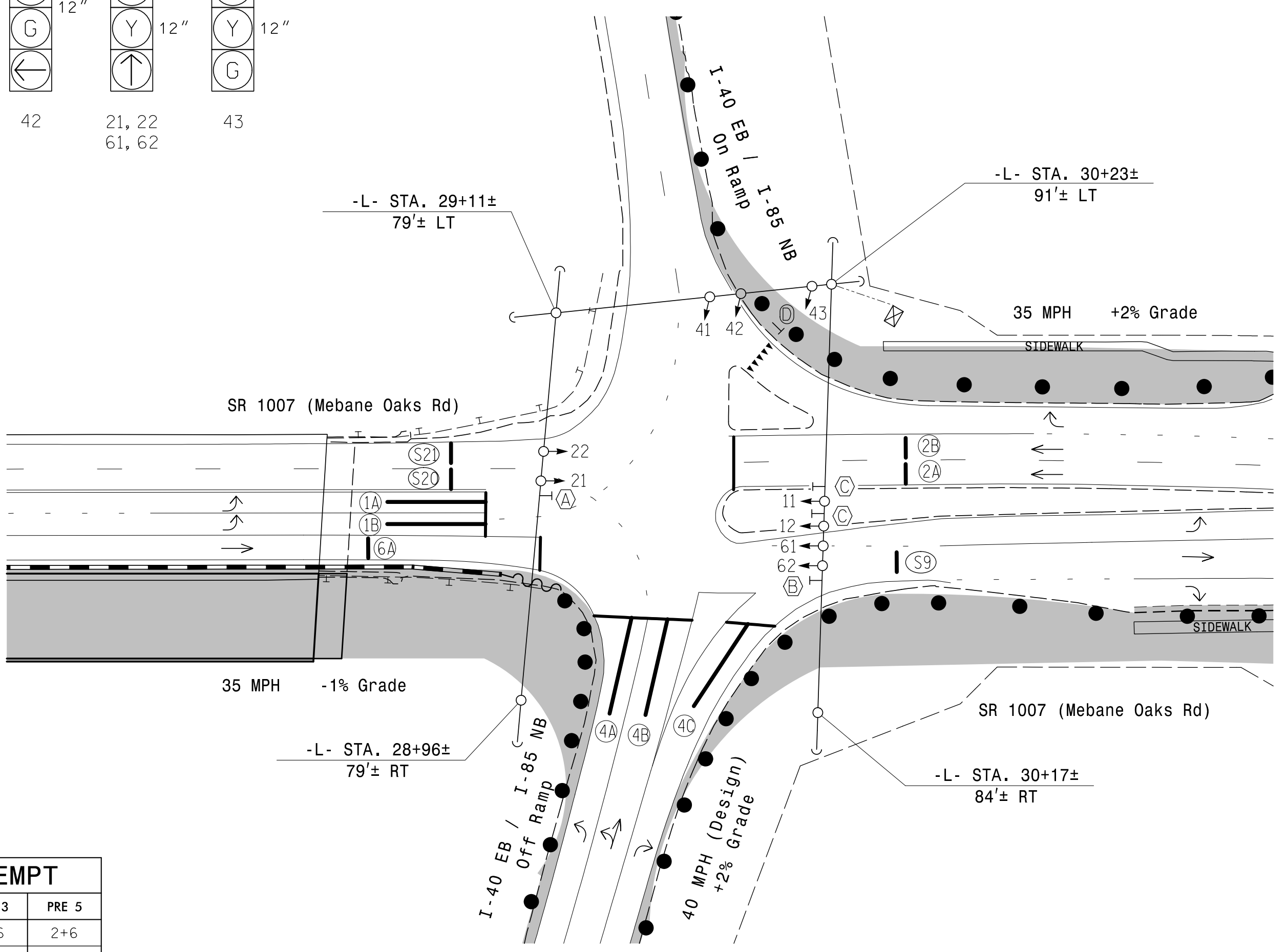
SIGNAL FACE I.D.



3 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation...
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...
6. The cabinet should be designed to include an Auxiliary Output File...
7. Relocate the existing GPS Emergency Vehicle Preemption system.
8. Maximum times shown in timing chart are for free-run operation only...
9. Closed loop system data: Controller Asset #: 2025.



ASC/3 TIMING CHART

Timing chart table with columns: FEATURE, PHASE (1, 2, 4, 6), and values for various features like Min Green, Walk, Ped Clear, etc.

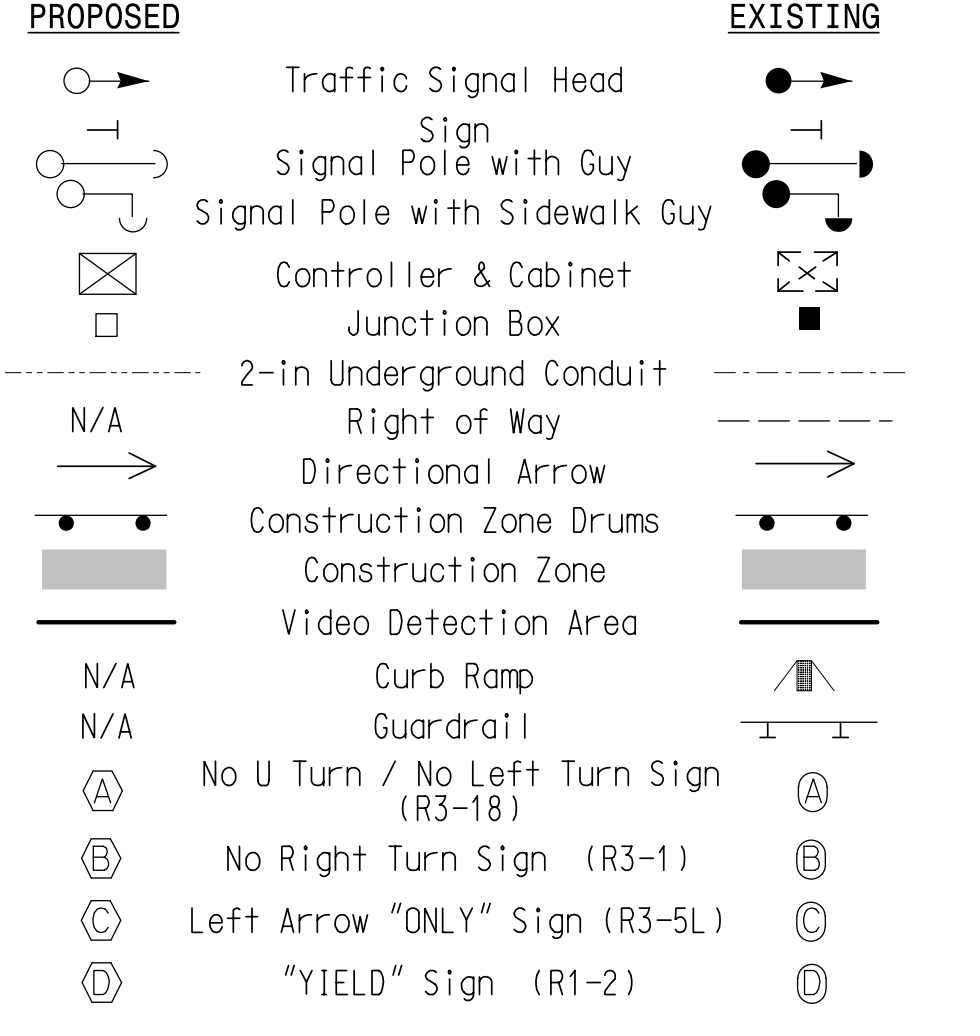
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown.

ASC/3 EV PREEMPT

Preempt table with columns: FUNCTION, PRE 3, PRE 5, and values for Exit Phase(s), Preempt Override, Delay Time, etc.

* Time defaults to time used for phase during normal operation

LEGEND



(TMP Phase I) Signal Upgrade - Temporary Design 1

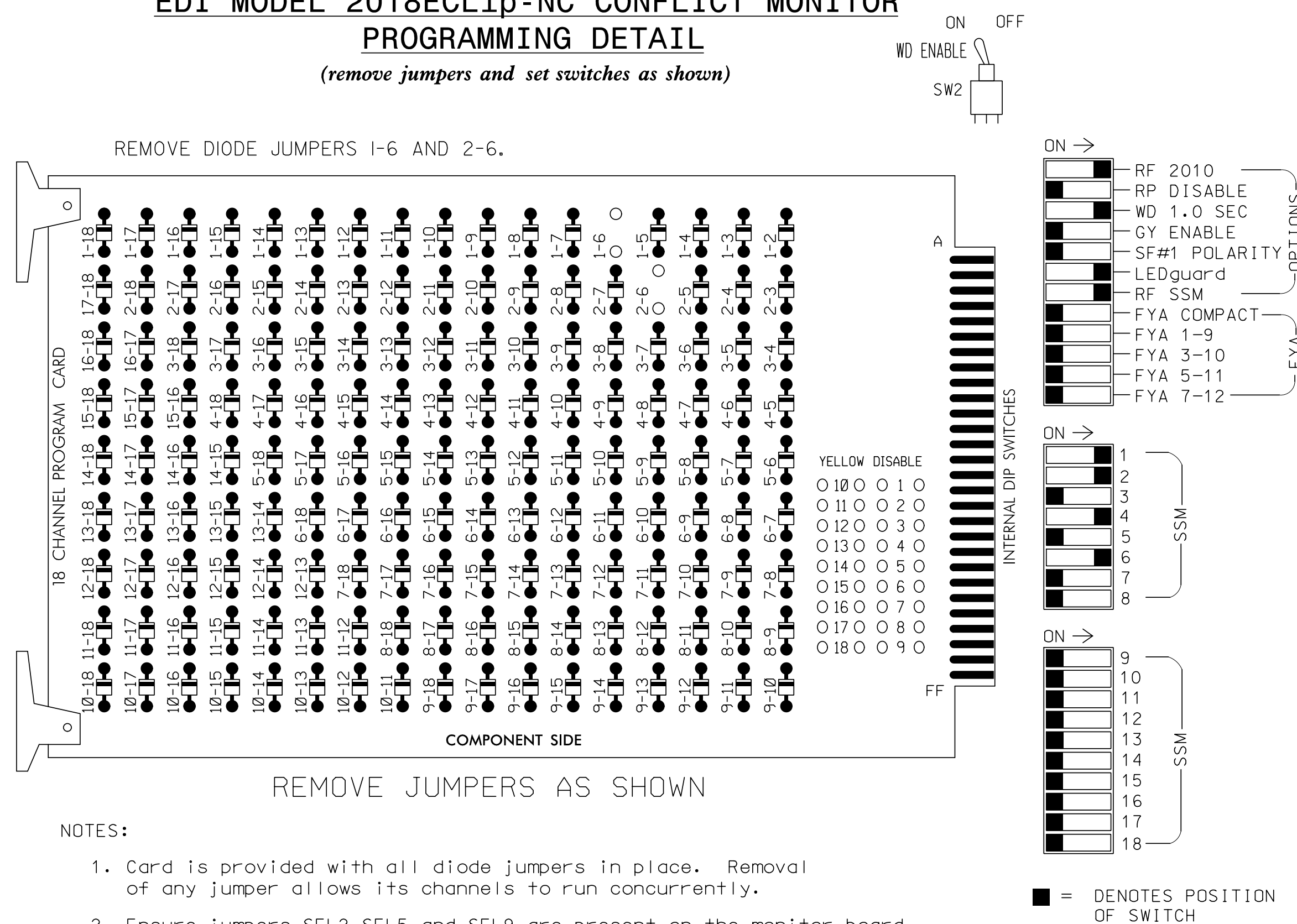
Accelerate Engineering, PLLC logo and contact information: 875 Walnut Street, Suite 316, Cary, NC 27511

Professional Engineer seal for Zhaolong Teng, project details for SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps, including plan date (November 2019) and revision table.

Vertical text string: \$\$\$\$\$\$SYTIME\$\$\$\$\$ \$\$\$\$\$\$SYTIME\$\$\$\$\$ \$\$\$\$\$\$SYTIME\$\$\$\$\$ \$\$\$\$\$\$SYTIME\$\$\$\$\$ \$\$\$\$\$\$SYTIME\$\$\$\$\$

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- 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.
- Program controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11,12	21,22	NU	NU	41	42	43	NU	NU	61,62	NU	NU	NU	NU	NU	NU	NU	NU
RED		128				101	101			134								
YELLOW		129				102	102			135								
GREEN						103	103											
RED ARROW	125					101												
YELLOW ARROW	126					102												
GREEN ARROW	127	130				103	103			136								

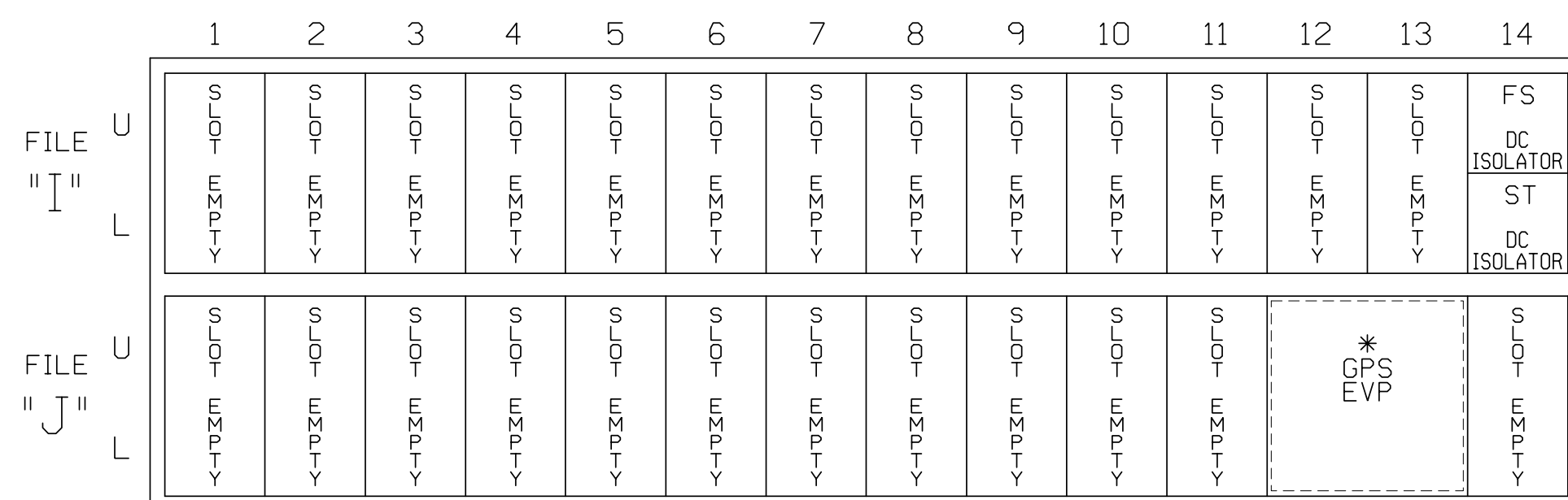
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

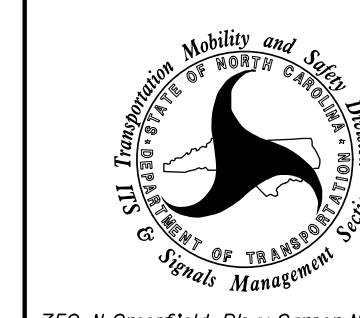
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T1
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 1
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps



Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by:
 Zhaolong Teng 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2025T1

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

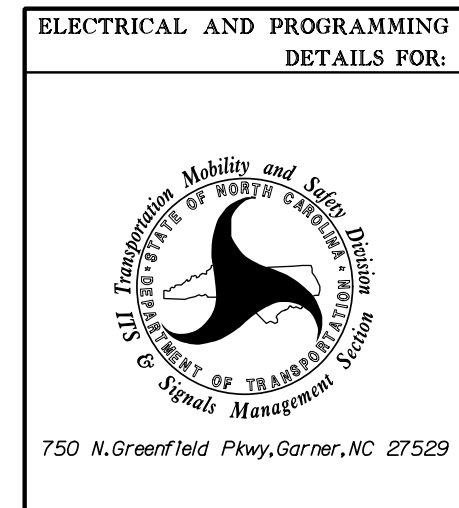
```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED... ..BYPASSED..
2 ...BYPASSED... ..BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED... ..BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED... ..BYPASSED..
7 ...BYPASSED... ..BYPASSED..
8 ...BYPASSED... ..BYPASSED..
9 ...BYPASSED... ..BYPASSED..
10 ...BYPASSED... ..BYPASSED..

```

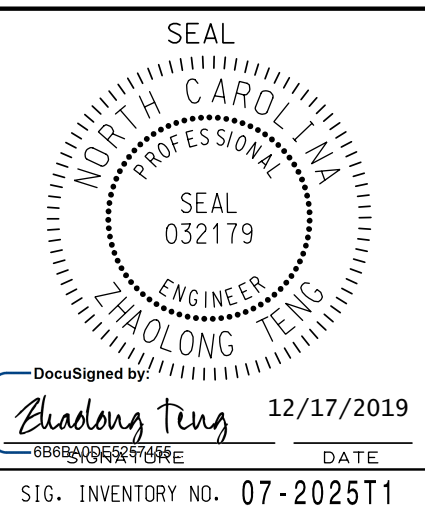
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T1
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Temporary Design 1
Electrical Detail - Sheet 2 of 2



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

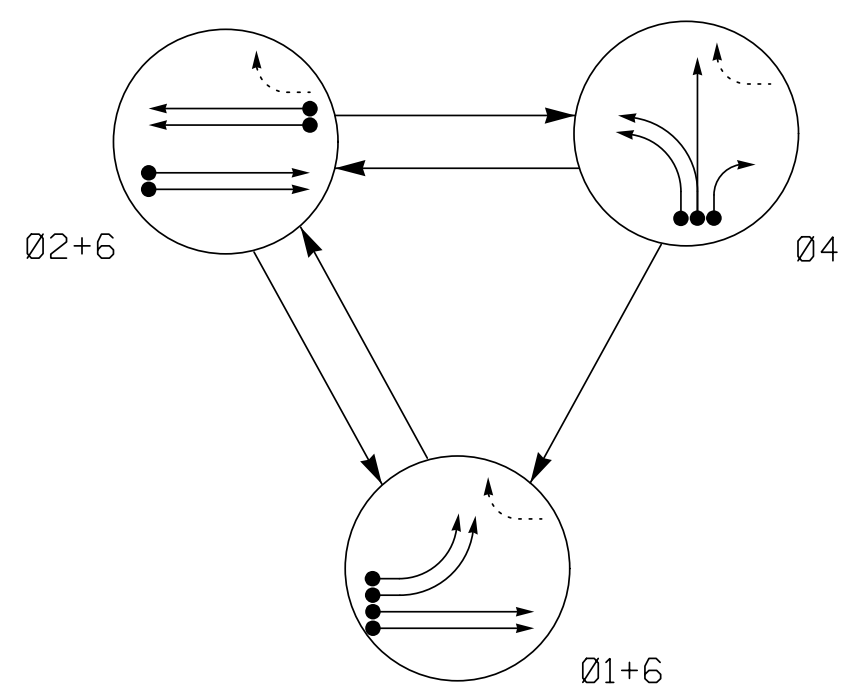
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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NC License No. P-1442

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\$\$\$\$\$\$\$\$\$\$DOCSIGN\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$NAME\$\$\$\$\$

PHASING DIAGRAM



EV PREEMPT PHASES
(Medium Priority)

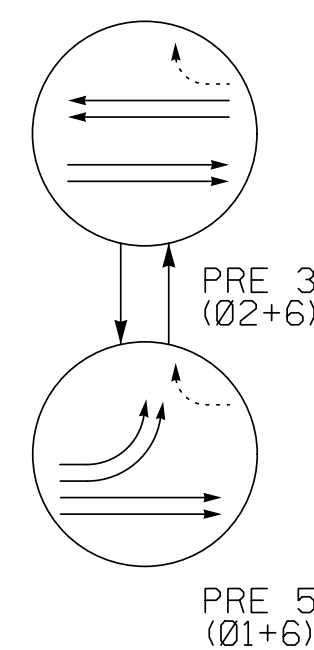


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1 1+6	Ø 2 2+6	Ø 4	PRE 3	PRE 5	PRE 6	PRE 7	PRE 8
11, 12	←	←	←	←	←	←	←	←
21, 22	←	←	←	←	←	←	←	←
41	←	←	←	←	←	←	←	←
42	←	←	←	←	←	←	←	←
43	←	←	←	←	←	←	←	←
61, 62	←	←	←	←	←	←	←	←

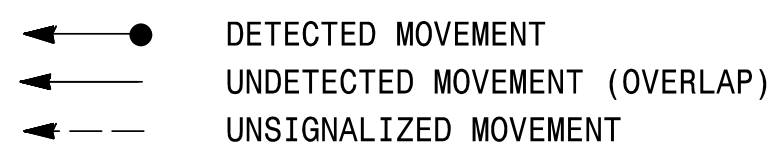
ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR					PROGRAMMING						
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW LOOP
1A	6x40	0	*	*	1	Yes	-	3	-	S	*
1B	6x40	0	*	*	1	Yes	-	-	-	S	*
2A	6x6	70	*	*	2	Yes	-	-	-	S	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	*
4A	6x40	0	*	*	4	Yes	-	-	-	S	*
4B	6x40	0	*	*	4	Yes	-	-	-	S	*
4C	6x40	0	*	*	4	Yes	-	15	-	S	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	*
S9	6x6	+160	*	*	-	No	-	-	-	N	X
S10	6x6	+160	*	*	-	No	-	-	-	N	X
S20	6x6	+120	*	*	-	No	-	-	-	N	X
S21	6x6	+120	*	*	-	No	-	-	-	N	X

3 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

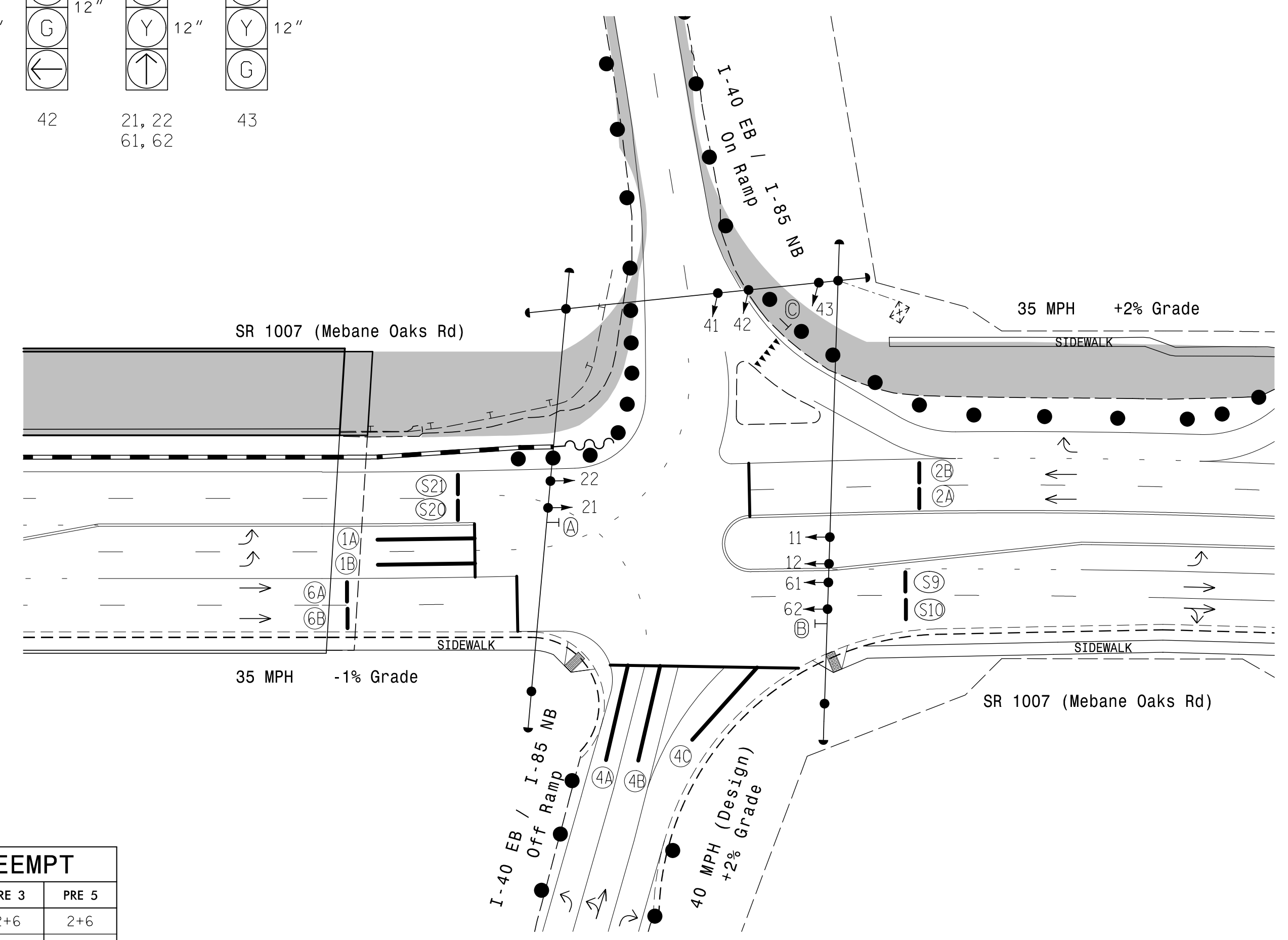
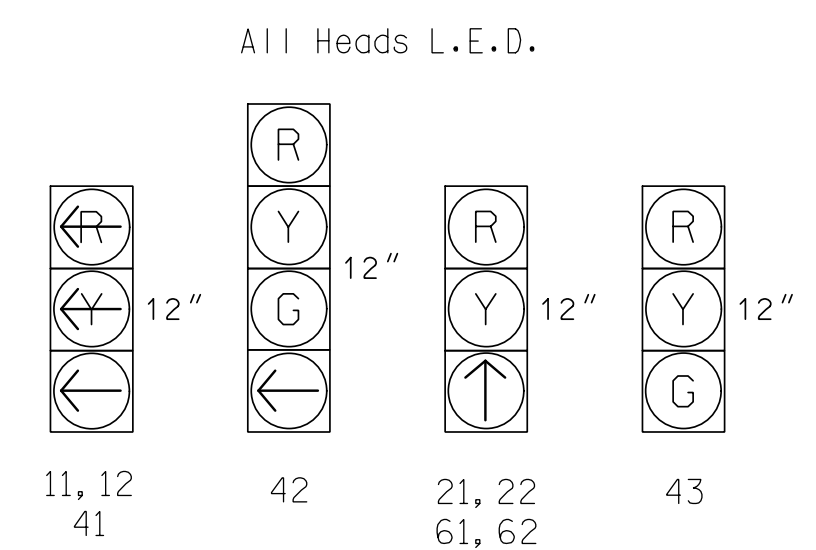
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Reposition existing signal heads numbered 11, 12, 21, 22, 61, 62 and signs A and B.
- Set all detector units to presence mode.
- This intersection features a GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 2025.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.



FEATURE	PHASE			
	1	2	4	6
Min Green *	7	10	7	10
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	2.0	3.0	2.0	3.0
Max 1 *	35	60	35	60
Yellow	3.0	3.7	4.0	3.9
Red Clear	3.2	1.0	1.6	2.4
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	X	-	X
Recall Position	-	VEH. RECALL	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

LEGEND

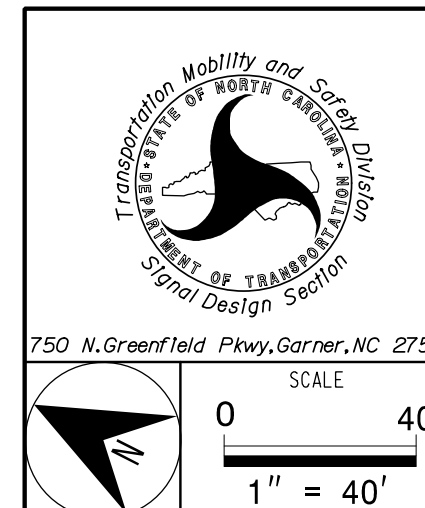
PROPOSED	EXISTING
Traffic Signal Head	Traffic Signal Head
Sign	Sign
Signal Pole with Guy	Signal Pole with Guy
Signal Pole with Sidewalk Guy	Signal Pole with Sidewalk Guy
Controller & Cabinet	Controller & Cabinet
Junction Box	Junction Box
2-in Underground Conduit	2-in Underground Conduit
N/A Right of Way	N/A Right of Way
Directional Arrow	Directional Arrow
Construction Zone Drums	Construction Zone Drums
Construction Zone	Construction Zone
Video Detection Area	Video Detection Area
N/A Curb Ramp	N/A Curb Ramp
N/A Guardrail	N/A Guardrail
No U Turn / No Left Turn Sign (R3-18)	No U Turn / No Left Turn Sign (R3-18)
No Right Turn Sign (R3-1)	No Right Turn Sign (R3-1)
"YIELD" Sign (R1-2)	"YIELD" Sign (R1-2)

* 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.

* Time defaults to time used for phase during normal operation

(TMP Phase II) Signal Upgrade - Temporary Design 2

PREPARED IN THE OFFICE OF:
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NC License No. P-1442



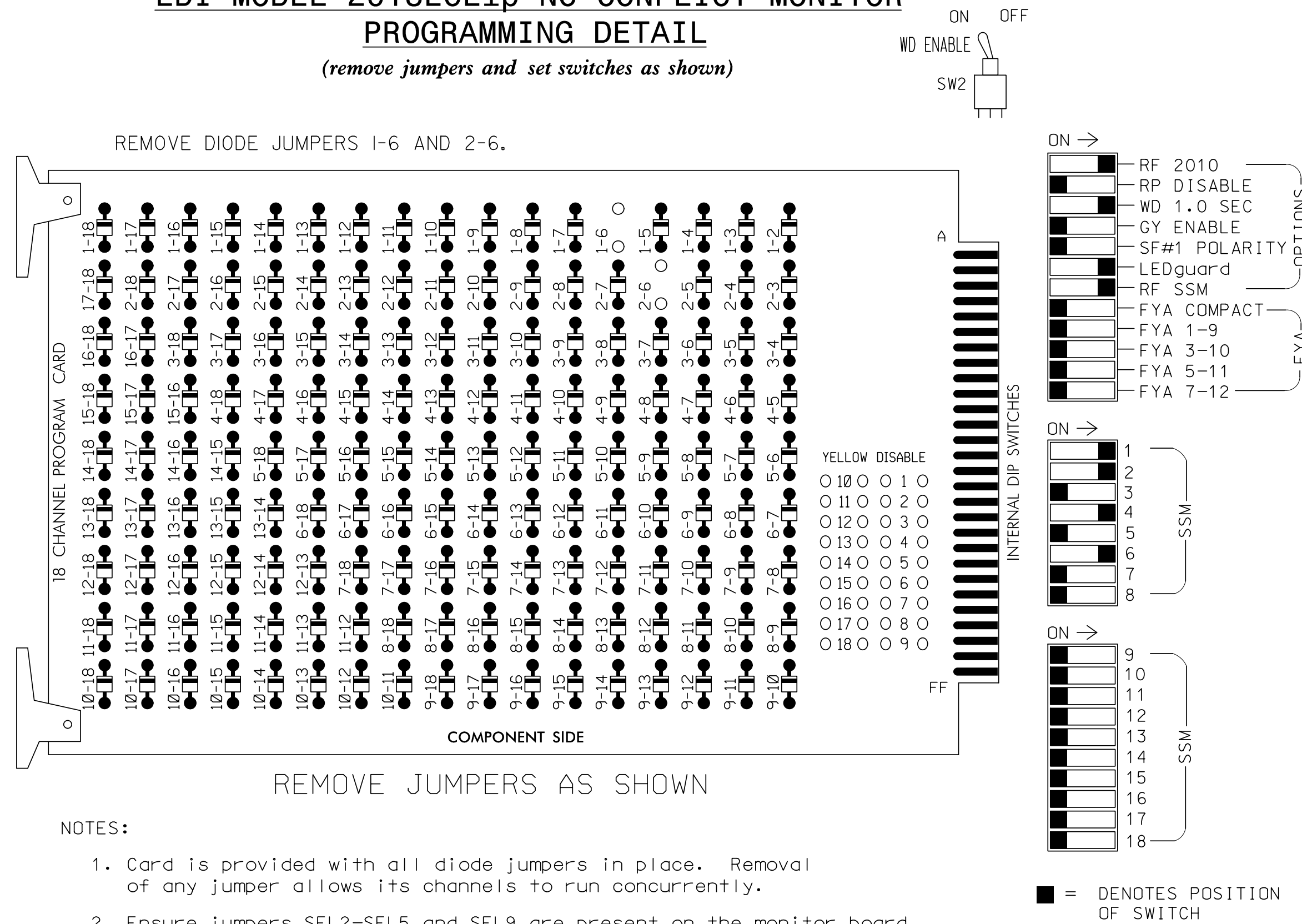
SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps		
Division 7 Alamance County Mebane		
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
ZHAOLONG TENG
12/17/2019
SIG. INVENTORY NO. 07-2025T2

EDI MODEL 2018ECLip-NC 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. Integrate monitor with Ethernet network in 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. Program controller to start up in phase 2 Green and phase 6 Green.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11,12	21,22	NU	NU	41	42	43	NU	NU	61,62	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			101	101				134								
YELLOW		129			102	102				135								
GREEN					103	103												
RED ARROW	125				101													
YELLOW ARROW	126				102													
GREEN ARROW	127	130			103	103				136								

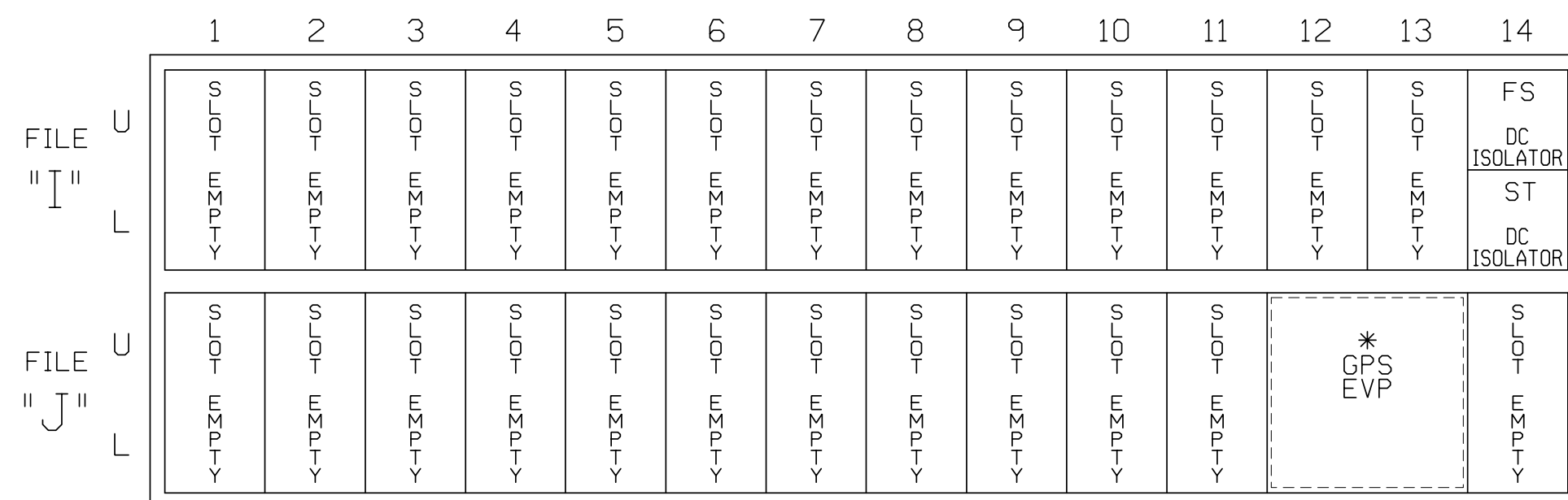
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

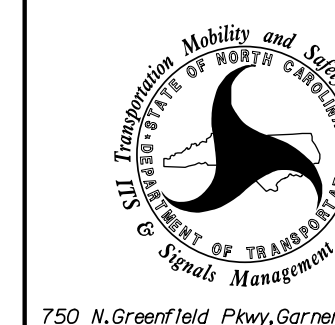
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 2
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by: Zhaolong Teng
 12/17/2019
 SIG. INVENTORY NO. 07-2025T2

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **4. PREEMPTOR/TSP**
- From PREEMPTOR/TSP/SCP Submenu select **1. PREEMPT PLAN 1-10**

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **4. PREEMPTOR/TSP**
- From PREEMPT/TSP/SCP Submenu select **2. ENABLE PREEMPT FILTERING & TSP/SCP**

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED... ..BYPASSED..
2 ...BYPASSED... ..BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED... ..BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED... ..BYPASSED..
7 ...BYPASSED... ..BYPASSED..
8 ...BYPASSED... ..BYPASSED..
9 ...BYPASSED... ..BYPASSED..
10 ...BYPASSED... ..BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 2
 Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1007 (Mebane Oaks Road)
 at
 I-40 EB / I-85 NB Ramps

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

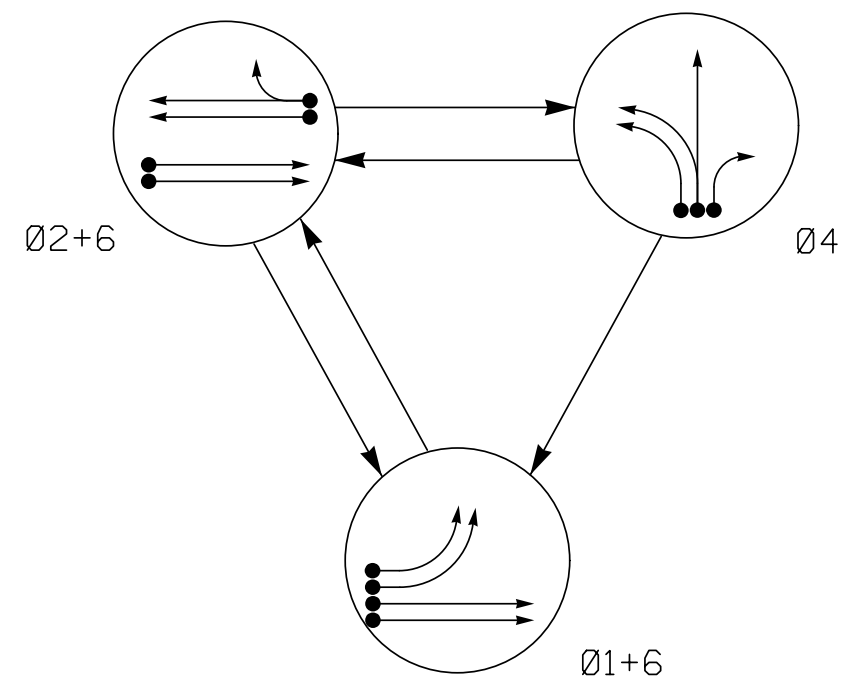
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by:
 Zhaolong Teng 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2025T2

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

750 N. Greenfield Pkwy, Garner, NC 27529

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

PHASING DIAGRAM



EV PREEMPT PHASES
(Medium Priority)

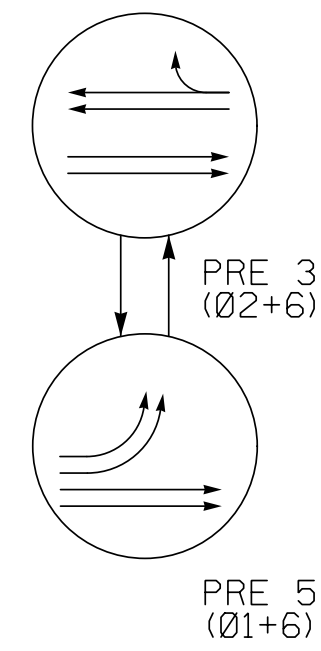


TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø 1 + 6	Ø 2 + 6	Ø 4	PRE 3	PRE 5	Ø 1 + 6
11, 12	←	←	←	←	←	←
21	R	↑	R	↑	R	Y
22	R	G	R	G	R	Y
41	←	←	←	←	←	←
42	R	R	G	R	R	R
43	R	R	G	R	R	R
61, 62	↑	↑	R	↑	↑	Y

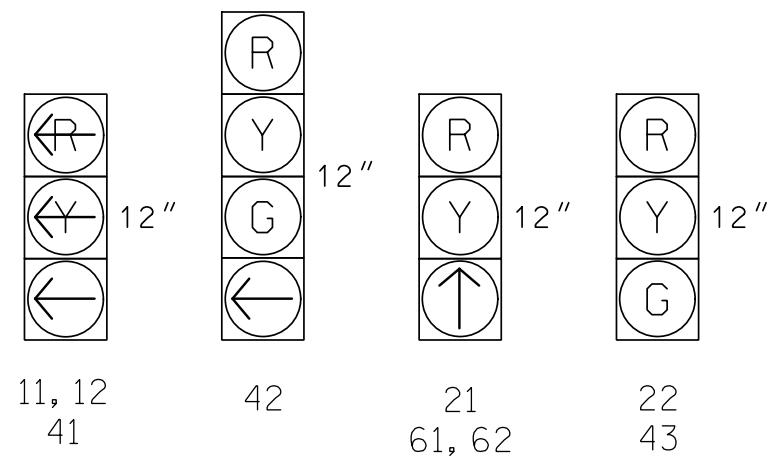
ASC/3 DETECTOR INSTALLATION CHART

ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE		
1A	6x40	0	*	*	1	Yes	-	-	-	S	-	*
1B	6x40	0	*	*	1	Yes	-	-	-	S	-	*
2A	6x6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6x6	70	*	*	2	Yes	-	-	-	S	-	*
4A	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4B	6x40	0	*	*	4	Yes	-	-	-	S	-	*
4C	6x40	0	*	*	4	Yes	-	15	-	S	-	*
6A	6x6	70	*	*	6	Yes	-	-	-	S	-	*
6B	6x6	70	*	*	6	Yes	-	-	-	S	-	*
S9	6x6	+160	*	*	-	No	-	-	-	N	X	*
S10	6x6	+160	*	*	-	No	-	-	-	N	X	*
S20	6x6	+135	*	*	-	No	-	-	-	N	X	*
S21	6x6	+135	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ←- UNIGNALIZED MOVEMENT

3 Phase Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Reposition existing signal head 21 and sign A. Replace signal head 22 with new display as shown.
- Set all detector units to presence mode.
- This intersection features a GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 2025.

LEGEND

- | PROPOSED | EXISTING |
|---|---|
| ○→ Traffic Signal Head | ●→ Traffic Signal Head |
| ┆ Sign | ┆ Sign |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| ⊠ Controller & Cabinet | ⊠ Controller & Cabinet |
| □ Junction Box | ■ Junction Box |
| - - - 2-in Underground Conduit | - - - 2-in Underground Conduit |
| N/A Right of Way | - - - Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| ▭ Video Detection Area | ▭ Video Detection Area |
| N/A Curb Ramp | ▴ Curb Ramp |
| N/A Guardrail | ┆ Guardrail |
| (A) No U Turn / No Left Turn Sign (R3-18) | (A) No U Turn / No Left Turn Sign (R3-18) |
| (B) No Right Turn Sign (R3-1) | (B) No Right Turn Sign (R3-1) |

ASC/3 TIMING CHART

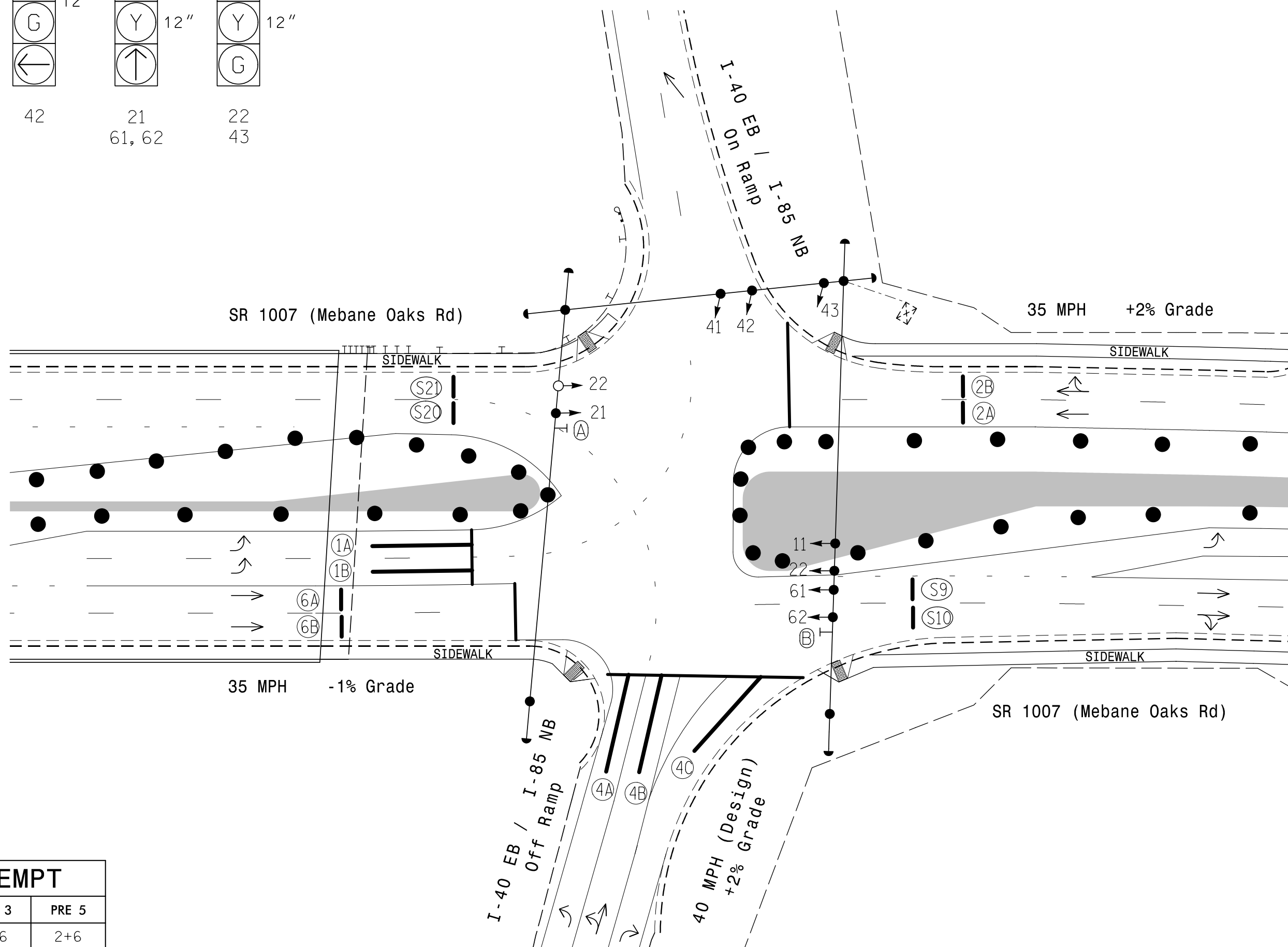
FEATURE	PHASE			
	1	2	4	6
Min Green *	7	10	7	10
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	2.0	3.0	2.0	3.0
Max I *	35	60	35	60
Yellow	3.0	3.7	4.0	3.9
Red Clear	3.7	1.2	2.5	2.4
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	X	-	X
Recall Position	-	VEH. RECALL	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

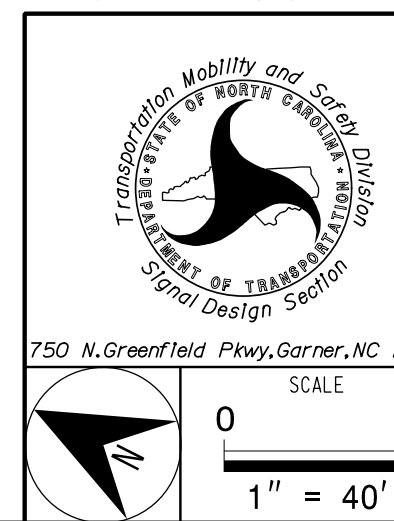
ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation



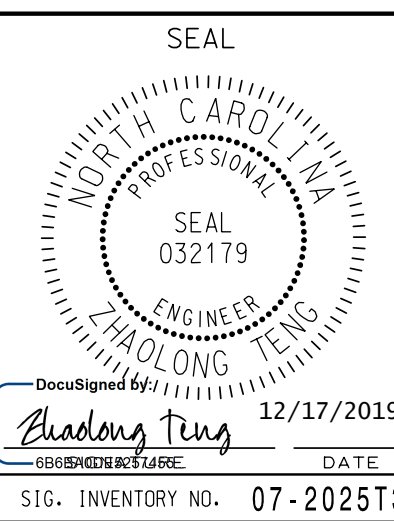
(TMP Phase III)
Signal Upgrade - Temporary Design 3



SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps
Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

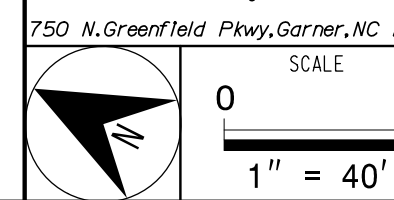
REVISIONS	INIT.	DATE

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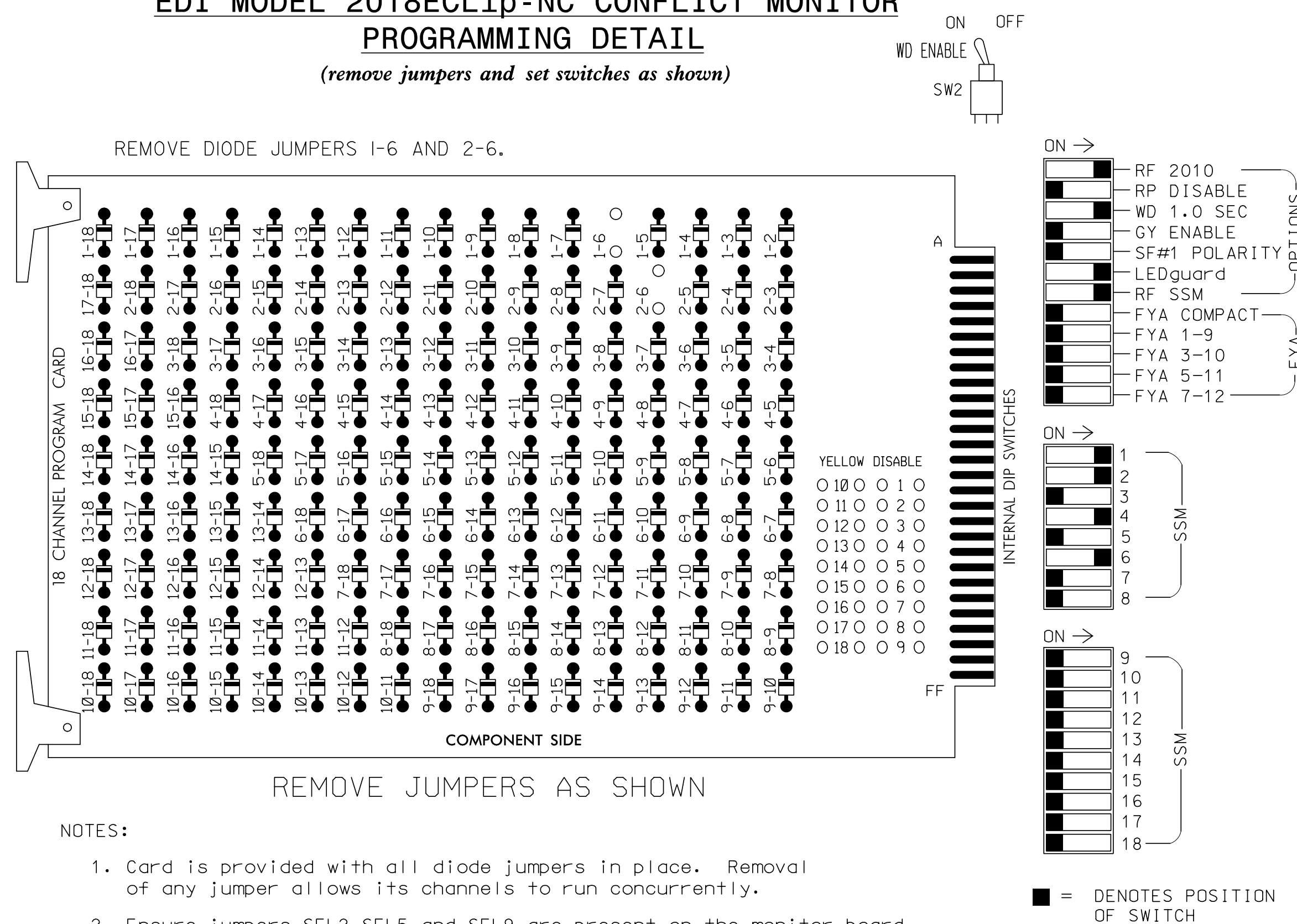
DATE: 12/17/2019
SIG. INVENTORY NO. 07-2025T3

PREPARED IN THE OFFICE OF:
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Cary, NC 27511
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NC License No. P-1442



EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- 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.
- Program controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop 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	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11,12	21	22	NU	NU	41	42	43	NU	NU	61,62	NU	NU	NU	NU	NU	NU	NU
RED		128	128			101	101				134							
YELLOW		129	129			102	102				135							
GREEN			130			103	103											
RED ARROW	125					101												
YELLOW ARROW	126					102												
GREEN ARROW	127	130				103	103				136							

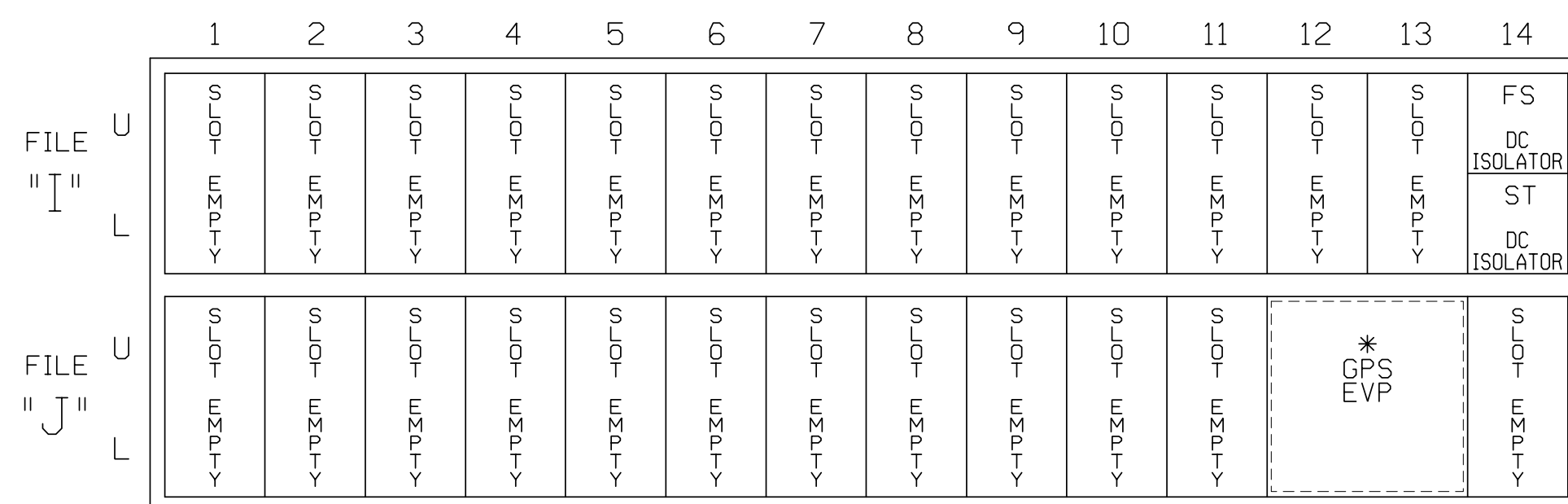
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

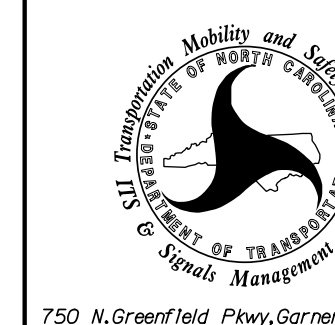
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps

PREPARED IN THE OFFICE OF:
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Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

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SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032179 ZHAOLONG TENG

DocuSigned by: Zhaolong Teng 12/17/2019

SIG. INVENTORY NO. 07-2025T3

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
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ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OIINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1125.5125.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5125.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5125.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2025T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 2 of 2

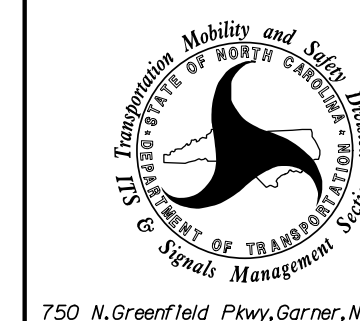
ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road)
 at
 I-40 EB / I-85 NB Ramps

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



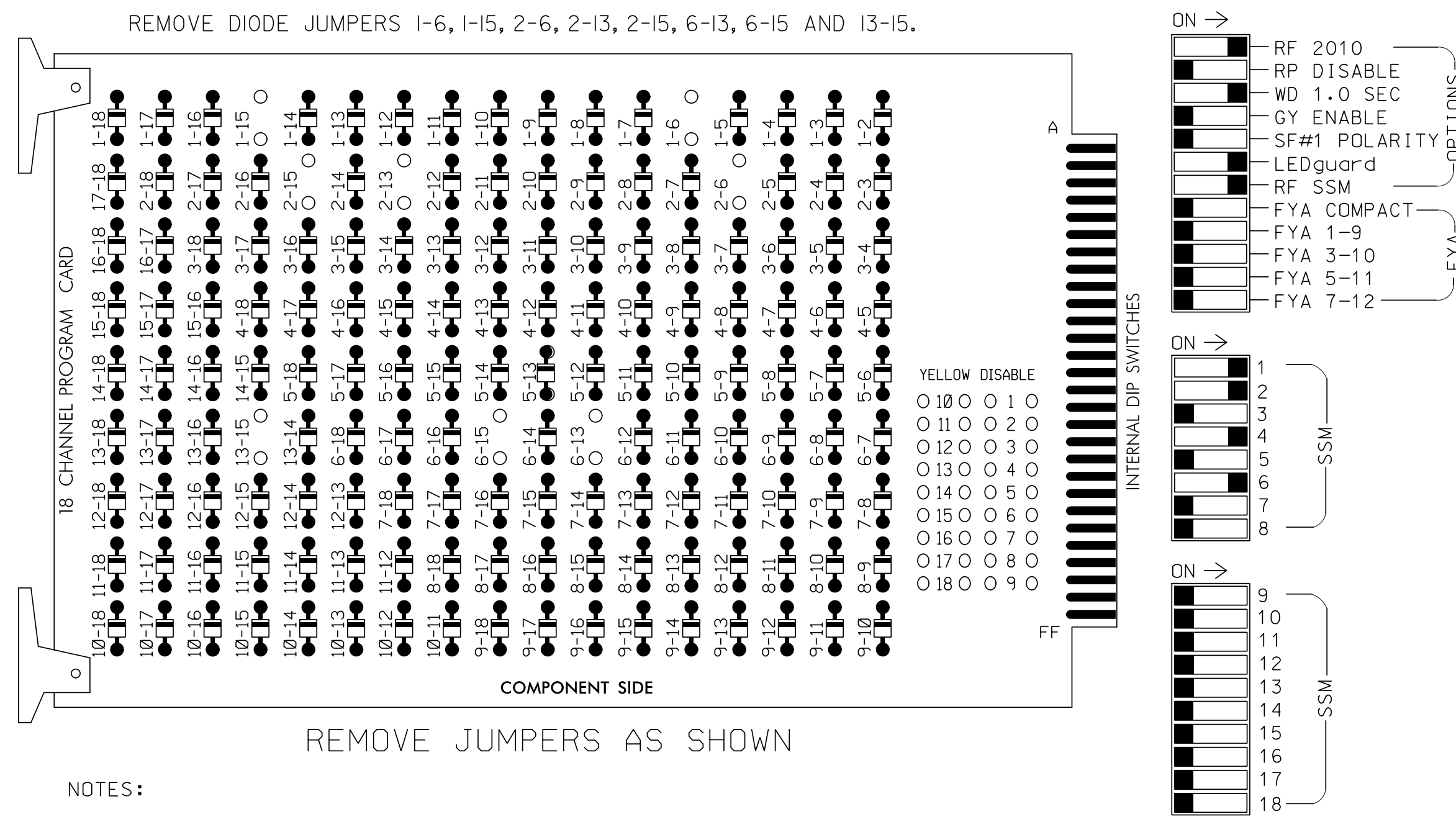
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SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG
 DocuSigned by:
 Zhaolong Teng 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2025T3

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EDI MODEL 2018ECLip-NC 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. Integrate monitor with Ethernet network in 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. Program controller to start up in phase 2 Walk and phase 6 Walk.
3. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S8,S9
 PHASES USED.....1,2,2PED,4,6,6PED
 OVERLAP 'A'.....NOT USED
 OVERLAP 'B'.....NOT USED
 OVERLAP 'C'.....NOT USED
 OVERLAP 'D'.....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
DMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11,12	21,22	23,24	P21, P22	NU	41	42	43	NU	NU	61,62	P61, P62	NU	NU	NU	NU	NU	NU
RED	128	128			101	101			134									
YELLOW	129	129			102	102			135									
GREEN		130			103	103												
RED ARROW	125				101													
YELLOW ARROW	126				102													
GREEN ARROW	127	130			103	103			136									
Hand icon					113								119					
Walking person icon					115								121					

NU = Not Used

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.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	∅1	∅2	∅2	∅4	∅4	SYS. DET. S9	SYS. DET. S10	SYS. DET. S20	∅2 PED	∅6 PED	FS	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
	1B	2B	NOT USED	4B	NOT USED	NOT USED	SYS. DET. S20	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
FILE "J"	∅6	∅6	∅6	∅6	∅6	∅6	∅6	∅6	SYS. DET. S21	SYS. DET. S22	SYS. DET. S23	* GPS EVP	∅6	∅6
	6A	6B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

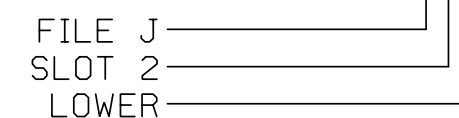
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-5,6	I2U	39	2	1	YES				S
1B	TB2-7,8	I2L	43	12	1	YES				S
2A	TB2-9,10	I3U	63	32	2	YES				S
2B	TB2-11,12	I3L	76	42	2	YES				S
2C	TB4-1,2	I4U	47	22	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
4B	TB4-11,12	I6L	45	14	4	YES				S
4C	TB6-1,2	I7U	65	34	4	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S
* S9	TB6-5,6	I8U	49	24	SYS	NO				N
* S10	TB6-9,10	I9U	60	11	SYS	NO				N
* S20	TB6-11,12	I9L	62	13	SYS	NO				N
* S21	TB7-5,6	J8U	50	28	SYS	NO				N
* S22	TB7-9,10	J9U	59	15	SYS	NO				N
* S23	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

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

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

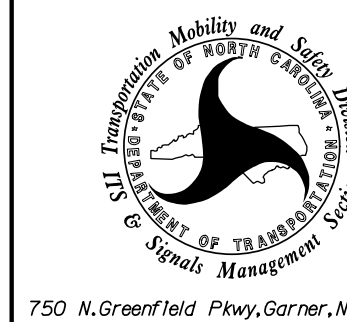


Final Design
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Road) at I-40 EB / I-85 NB Ramps

Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	12/17/2019
SEAL	DATE
SIG. INVENTORY NO.	07-2025

\$\$\$\$\$SYTIME\$\$\$\$\$
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ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **4. PREEMPTOR/TSP**
- From PREEMPTOR/TSP/SCP Submenu select **1. PREEMPT PLAN 1-10**

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. IINTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERRIDE FL. .IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....OIX FLCOLR REDIEEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **4. PREEMPTOR/TSP**
- From PREEMPT/TSP/SCP Submenu select **2. ENABLE PREEMPT FILTERING & TSP/SCP**

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2025
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING
 DETAILS FOR:

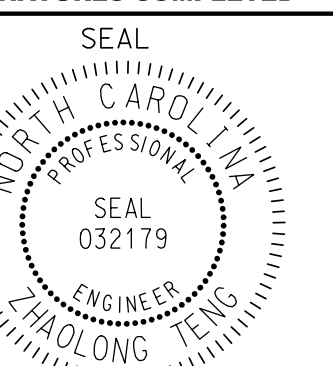
SR 1007 (Mebane Oaks Road)
 at
 I-40 EB / I-85 NB Ramps

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

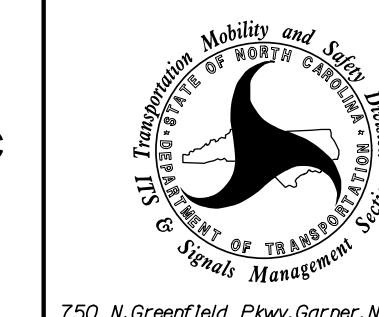
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DocuSigned by:
 Zhaolong Teng 12/17/2019
 DATE

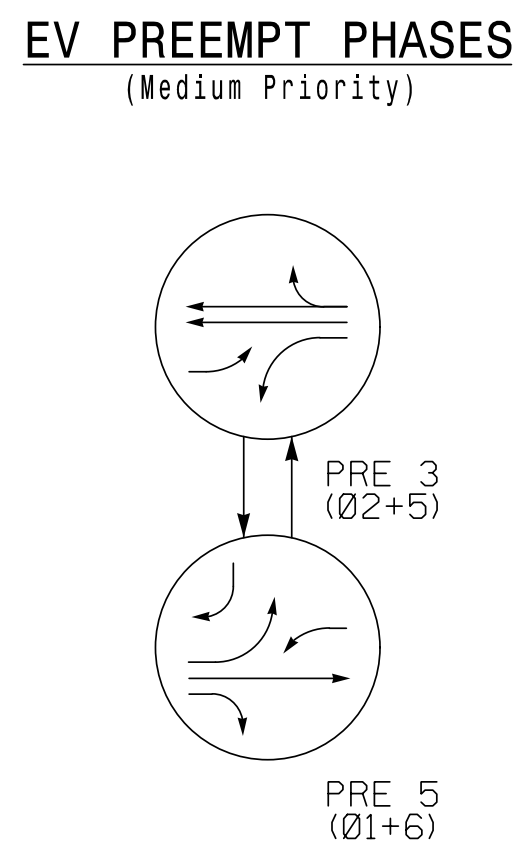
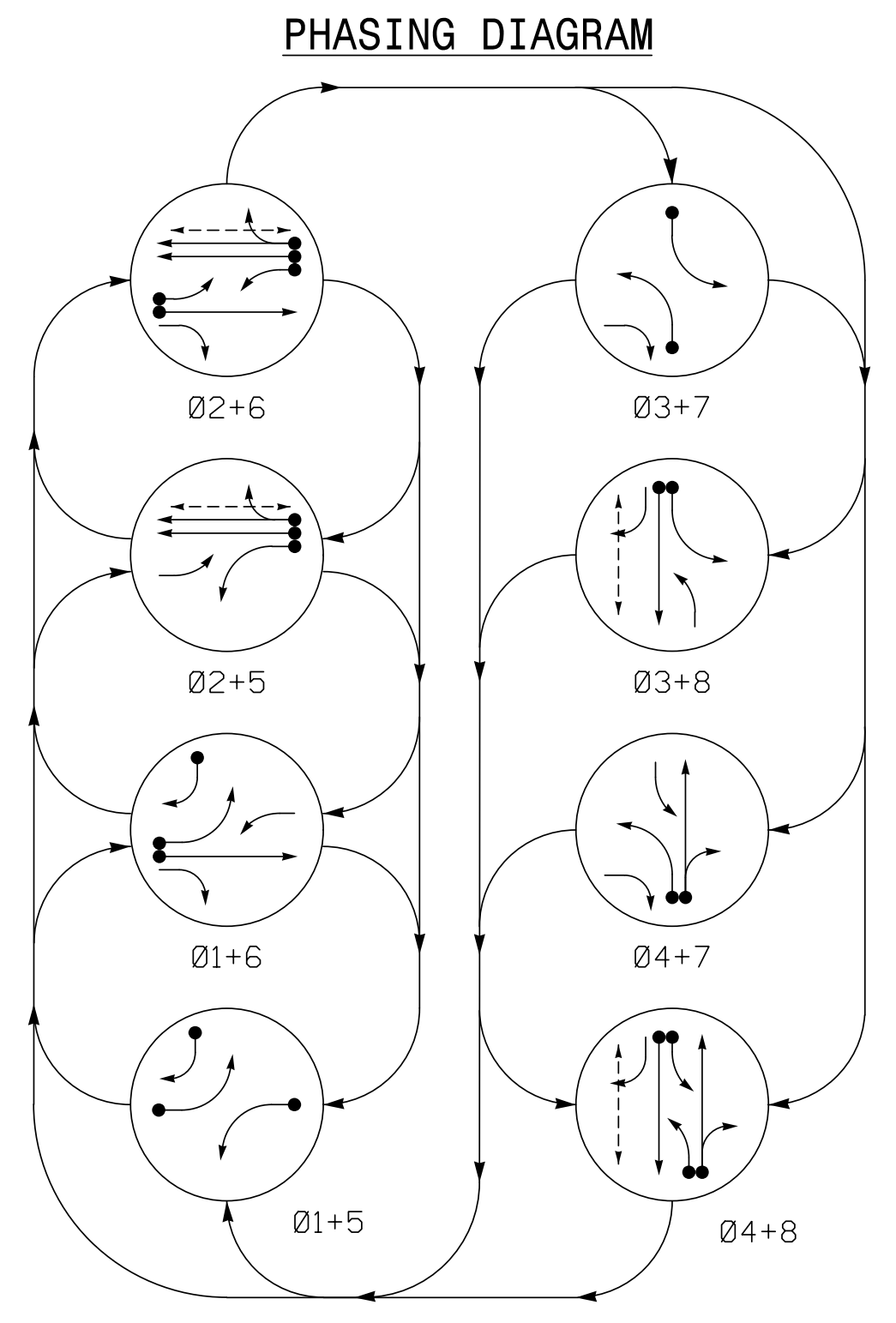
SIG. INVENTORY NO. 07-2025

PREPARED IN THE OFFICE OF:
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 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



750 N. Greenfield Pkwy, Garner, NC 27529

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$



SIGNAL FACE	PHASE										
	01+5	02+5	03+5	04+5	01+6	02+6	03+6	04+6	PRE 3 (02+5)	PRE 5 (01+6)	FLASH
11	R	R	R	R	R	R	R	R	R	R	R
21, 22	R	R	R	R	R	R	R	R	R	R	R
31	R	R	R	R	R	R	R	R	R	R	R
41, 42, 43	R	R	R	R	R	R	R	R	R	R	R
51	R	R	R	R	R	R	R	R	R	R	R
61	R	R	R	R	R	R	R	R	R	R	R
62	R	R	R	R	R	R	R	R	R	R	R
71	R	R	R	R	R	R	R	R	R	R	R
81	R	R	R	R	R	R	R	R	R	R	R
82	R	R	R	R	R	R	R	R	R	R	R
P21, P22	DW	DW	W	DW	DW	DW	DW	DW	DW	DRK	DRK
P81, P82	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DRK

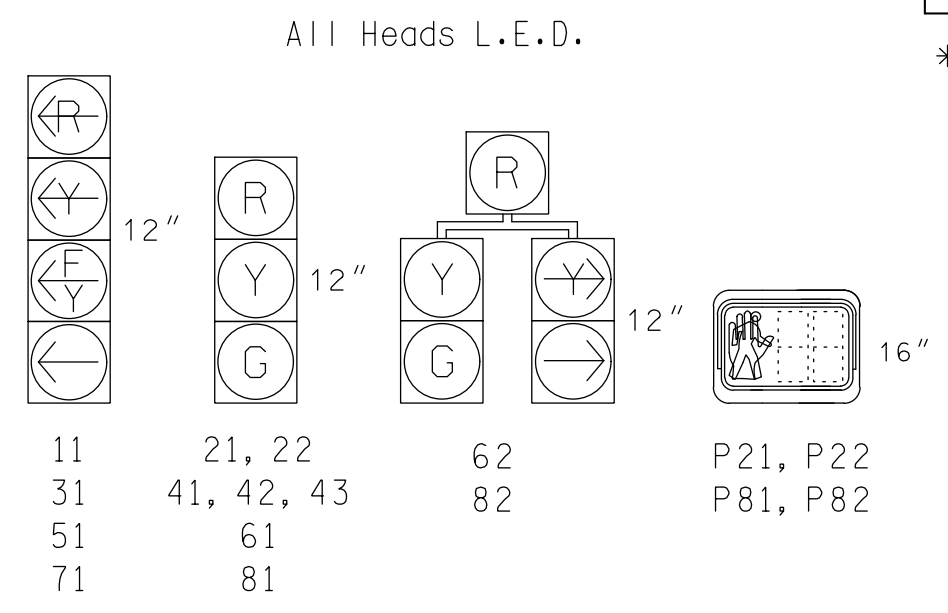
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	*	1	Yes	-	15	-	S	-	*
1B	6X40	0	*	*	6	Yes	-	-	-	S	-	*
2A	6X6	70	*	*	2	Yes	-	-	-	S	-	*
2B	6X6	70	*	*	2	Yes	-	-	-	S	-	*
3A	6X40	0	*	*	3	Yes	-	15	-	S	-	*
4A	6X40	0	*	*	4	Yes	-	10	-	S	-	*
5A	6X40	0	*	*	5	Yes	-	15	-	S	-	*
6A	6X6	70	*	*	6	Yes	-	-	-	S	-	*
7A	6X40	0	*	*	7	Yes	-	15	-	S	-	*
8A	6X40	0	*	*	8	Yes	-	-	-	S	-	*
S17	6x6	+155	*	*	-	No	-	-	-	N	X	*
S18	6x6	+155	*	*	-	No	-	-	-	N	X	*

8 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

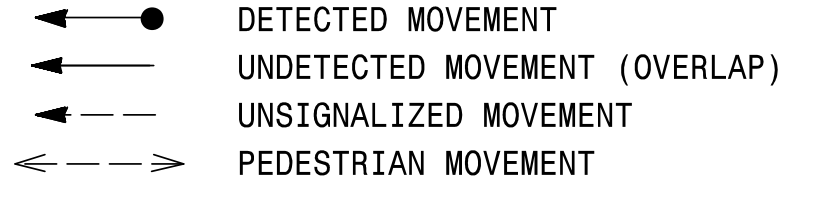
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. Pavement markings are existing.
10. Relocate the existing GPS Emergency Vehicle Preemption system..
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Closed loop system data: Controller Asset #: 1349.

SIGNAL FACE I.D.



PHASING DIAGRAM DETECTION LEGEND



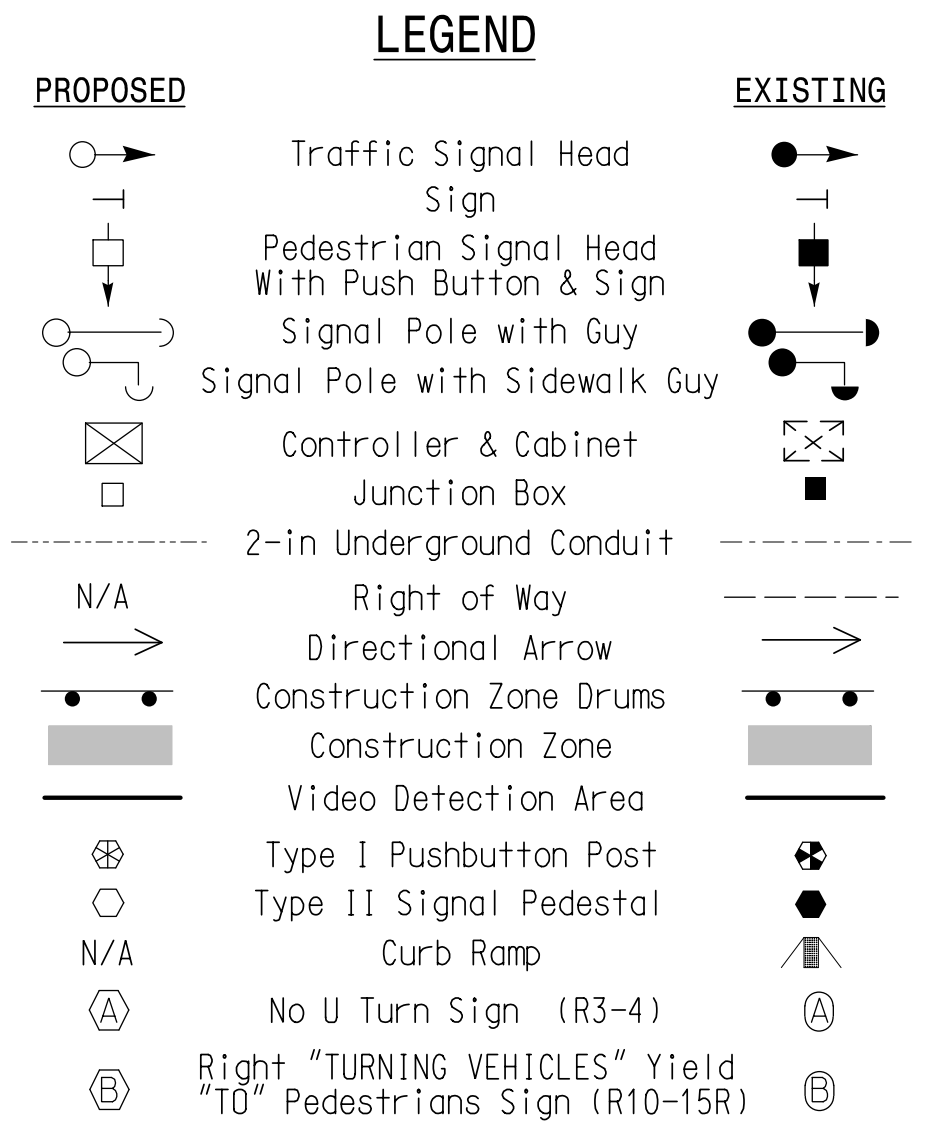
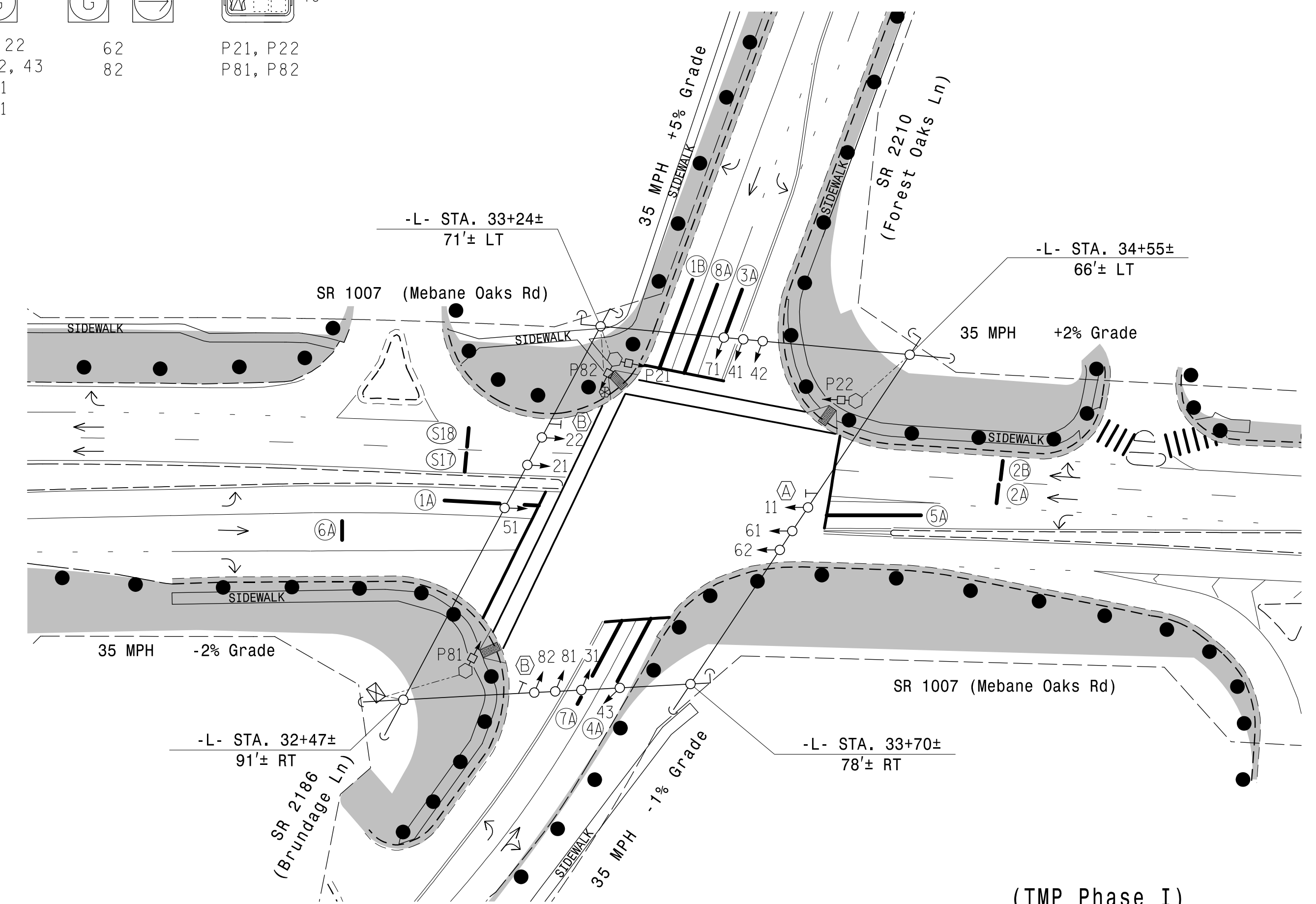
ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	Y	Y
Terminate Phases	N	N
Entrance Walk	1	1
Entrance Ped Clear	15	15
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	0	7	0	0	0	0	0	4
Ped Clear	0	21	0	0	0	0	0	30
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow	3.0	4.0	3.0	3.9	3.0	4.0	3.0	3.9
Red Clear	3.1	2.5	2.3	1.9	3.2	2.5	2.3	1.9
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	X	X	X	X	X	X

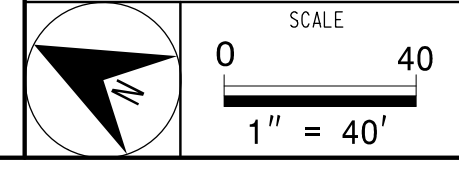
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



(TMP Phase I) Signal Upgrade - Temporary Design 1

	SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)		SEAL ZHAOLONG TENG ENGINEER 032179
	Division 7 Alamance County Mebane PLAN DATE: November 2019 PREPARED BY: Z. "Gavin" Teng REVISIONS: _____ INIT. DATE: _____	REVIEWED BY: Z. "Gavin" Teng REVIEWED BY: _____	

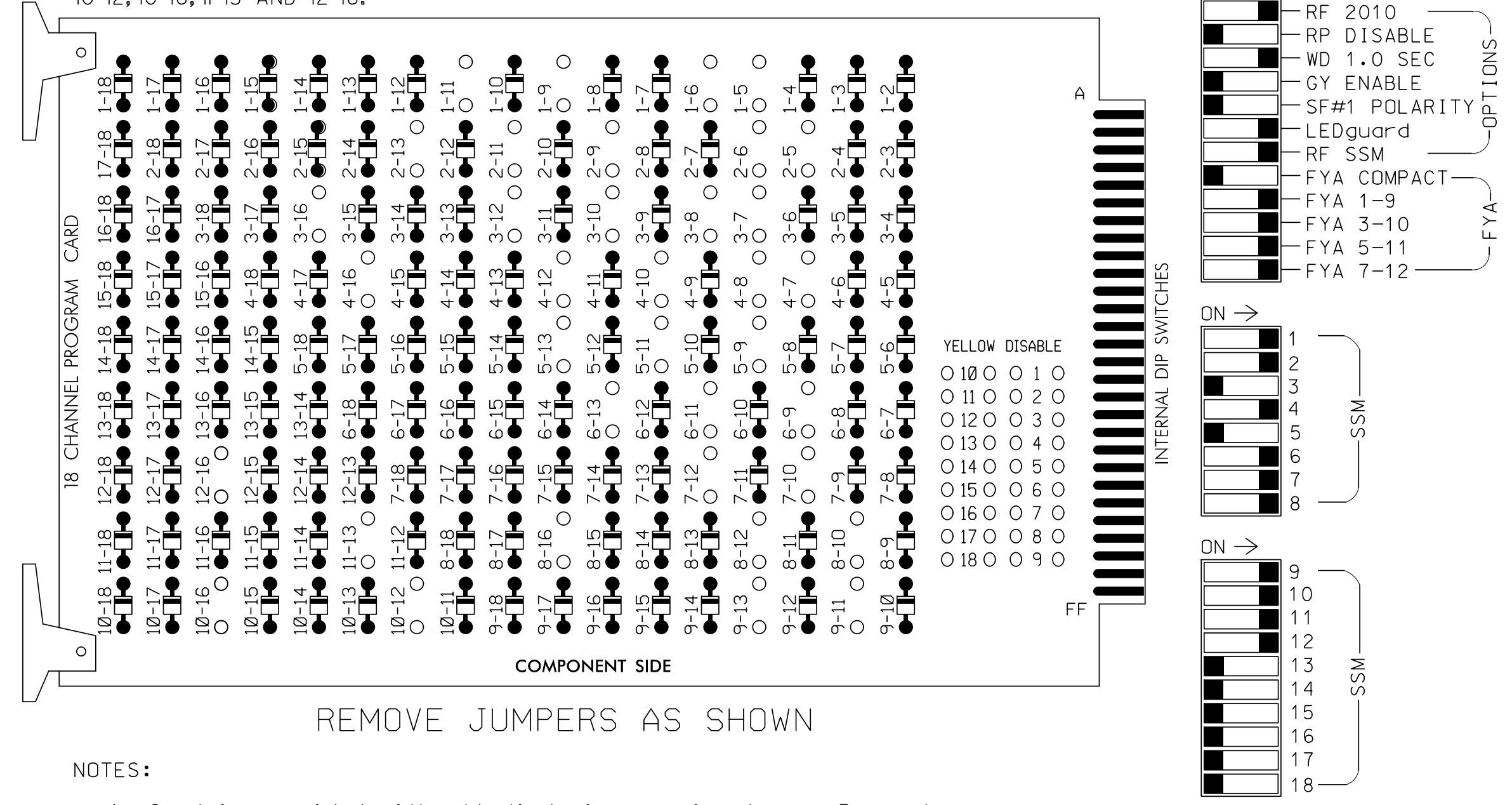
PREPARED IN THE OFFICE OF:
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 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Walk and phase 6 Green.
4. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S7,S8,S10,S11,S12,AUX S1,AUX S2,AUX S4,AUX S5
PHASES USED.....1,2,2PED,3,4,5,6,7,8,8PED
OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....*
OVERLAP "D".....*

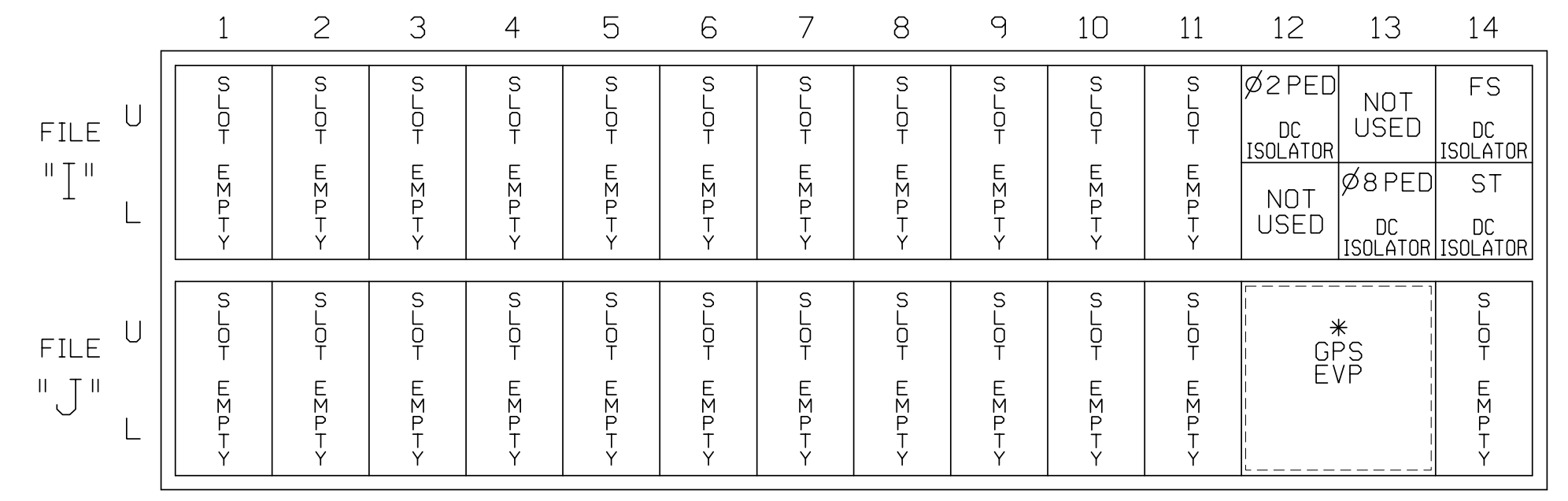
SIGNAL HEAD HOOK-UP CHART

Table with columns for Load Switch No., Channel No., Phase, Signal Head No., and various signal types (RED, YELLOW, GREEN, ARROW) with corresponding terminal numbers and auxiliary switch assignments.

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

INPUT FILE POSITION LAYOUT

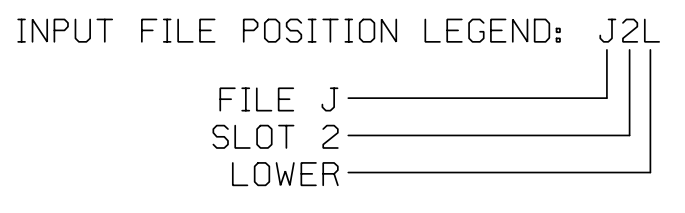
(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
See GPS Preemption Installation Note Below

INPUT FILE CONNECTION & PROGRAMMING CHART

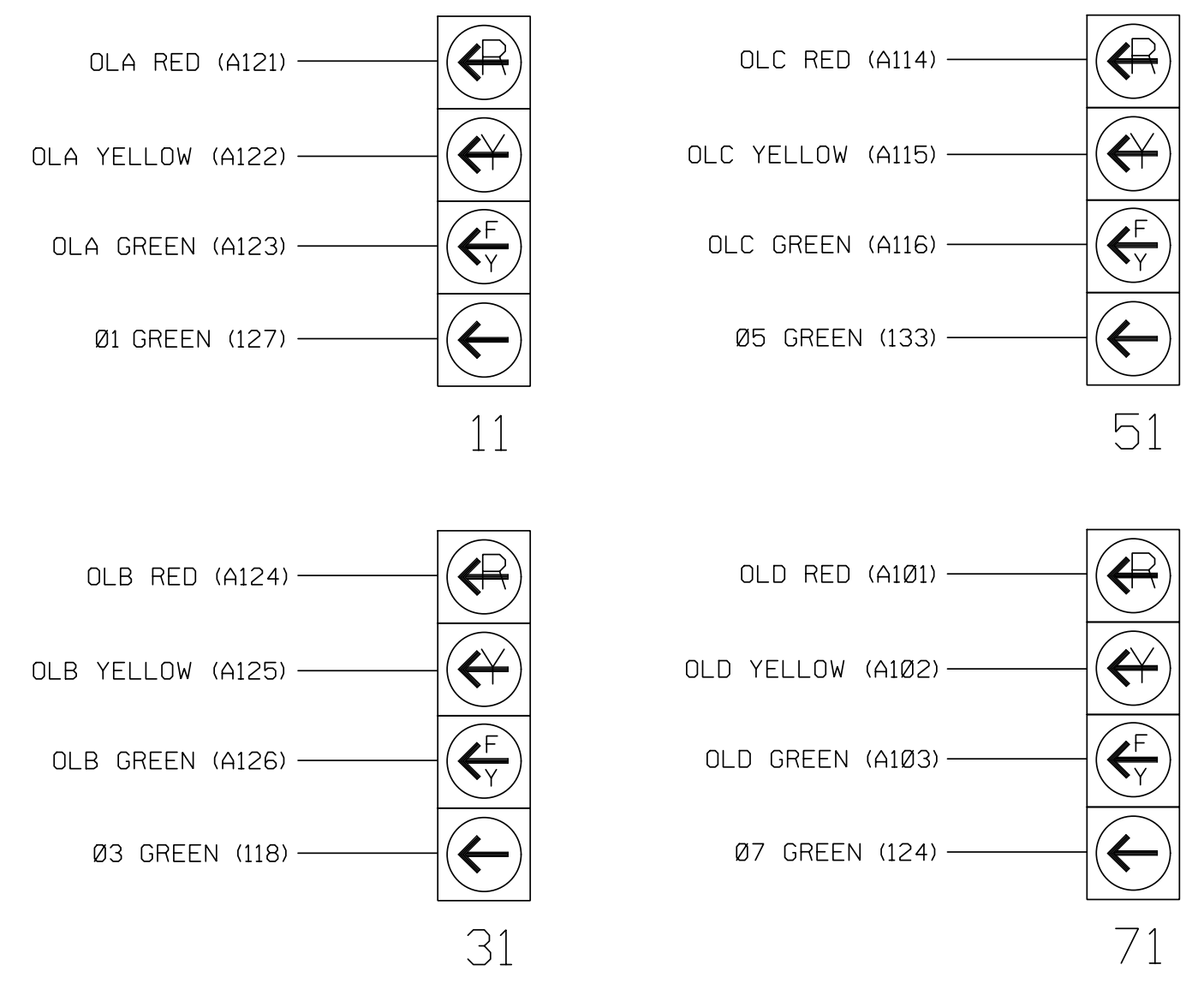
Table with columns: LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND TIME, DELAY TIME, ADDED INITIAL, DETECTOR TYPE. Includes rows for PED PUSH BUTTONS and P21,P22, P81,P82.



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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

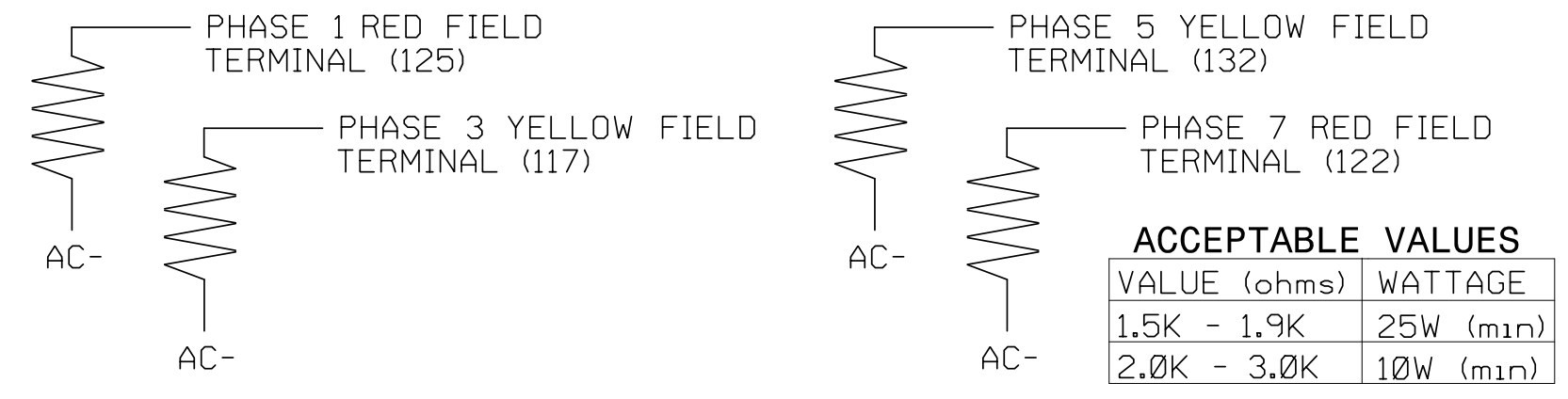
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

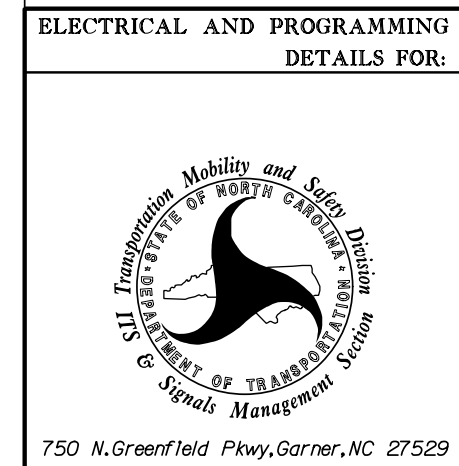


ACCEPTABLE VALUES table with columns for VALUE (ohms) and WATTAGE. Values include 1.5K - 1.9K, 2.0K - 3.0K, 25W (min), and 10W (min).

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T1
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

Temporary Design 1
Electrical Detail - Sheet 1 of 3



SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)
Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED. Includes seal and signature of Zhaolong Teng, dated 12/17/2019.

Vertical text on the left edge of the page.

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

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

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

Toggle Once

OVERLAP B

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

TMG VEH OVLP...[B] TYPE: PPLT FYA
 PROTECTED LEFT TURN.... PHASE 3
 OPPOSING THROUGH..... PHASE 4

 FLASHING ARROW OUTPUT.....CH10 ISOLATE
 DELAY START OF: FYA..0.0 CLEARANCE..0.0
 ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP C

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

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

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

Toggle Once

OVERLAP D

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

TMG VEH OVLP...[D] TYPE: PPLT FYA
 PROTECTED LEFT TURN.... PHASE 7
 OPPOSING THROUGH..... PHASE 8

 FLASHING ARROW OUTPUT.....CH12 ISOLATE
 DELAY START OF: FYA..0.0 CLEARANCE..0.0
 ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

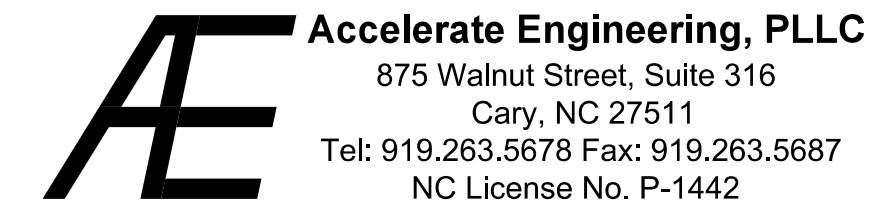
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

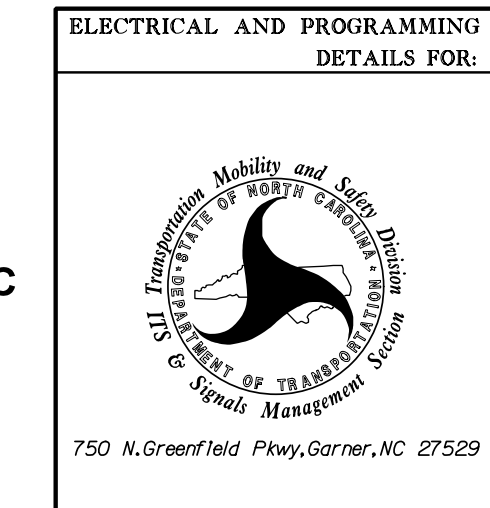
THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T1
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

\$\$\$SYTIME\$\$\$
 \$\$\$DOCSIGN\$\$\$
 \$\$\$SERIAL\$\$\$



Temporary Design 1
Electrical Detail - Sheet 2 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road)	
		at	
		SR 2186 (Brundage Lane) /	
		SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

STATE OF NORTH CAROLINA

PROFESSIONAL ENGINEER

SEAL 032179

ZHAOLONG TENG

DocuSigned By: Zhaolong Teng 12/17/2019

SIG. INVENTORY NO. 07-1349T1

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
  VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  OVERLAP A B C D E F G H I J K L M N O P
  TRKCLR V . . . . .
  TRKCLR O . . . . .
  ENA TRL . . . . .
  DWEL VEH . X . . X . . . . .
  DWEL PED . . . . .
  DWEL OLPF1 .F1 . . . . .
  CYC VEH . . . . .
  CYC PED . . . . .
  CYC OLP . . . . .
  EXIT PH . X . . . X . . . . .
  EXIT CAL . . . . .
  SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERRIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 15I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

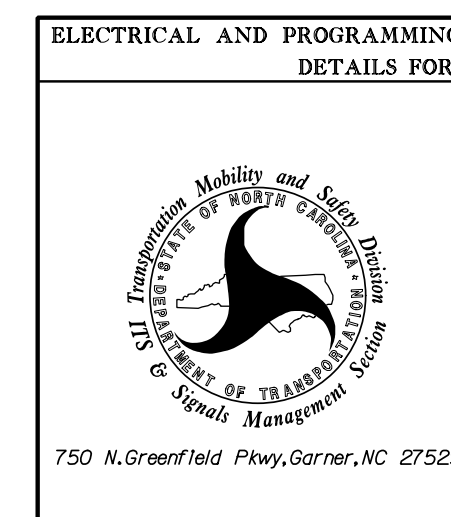
1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T1
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Temporary Design 1
Electrical Detail - Sheet 3 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road)	
		at	
		SR 2186 (Brundage Lane) /	
		SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

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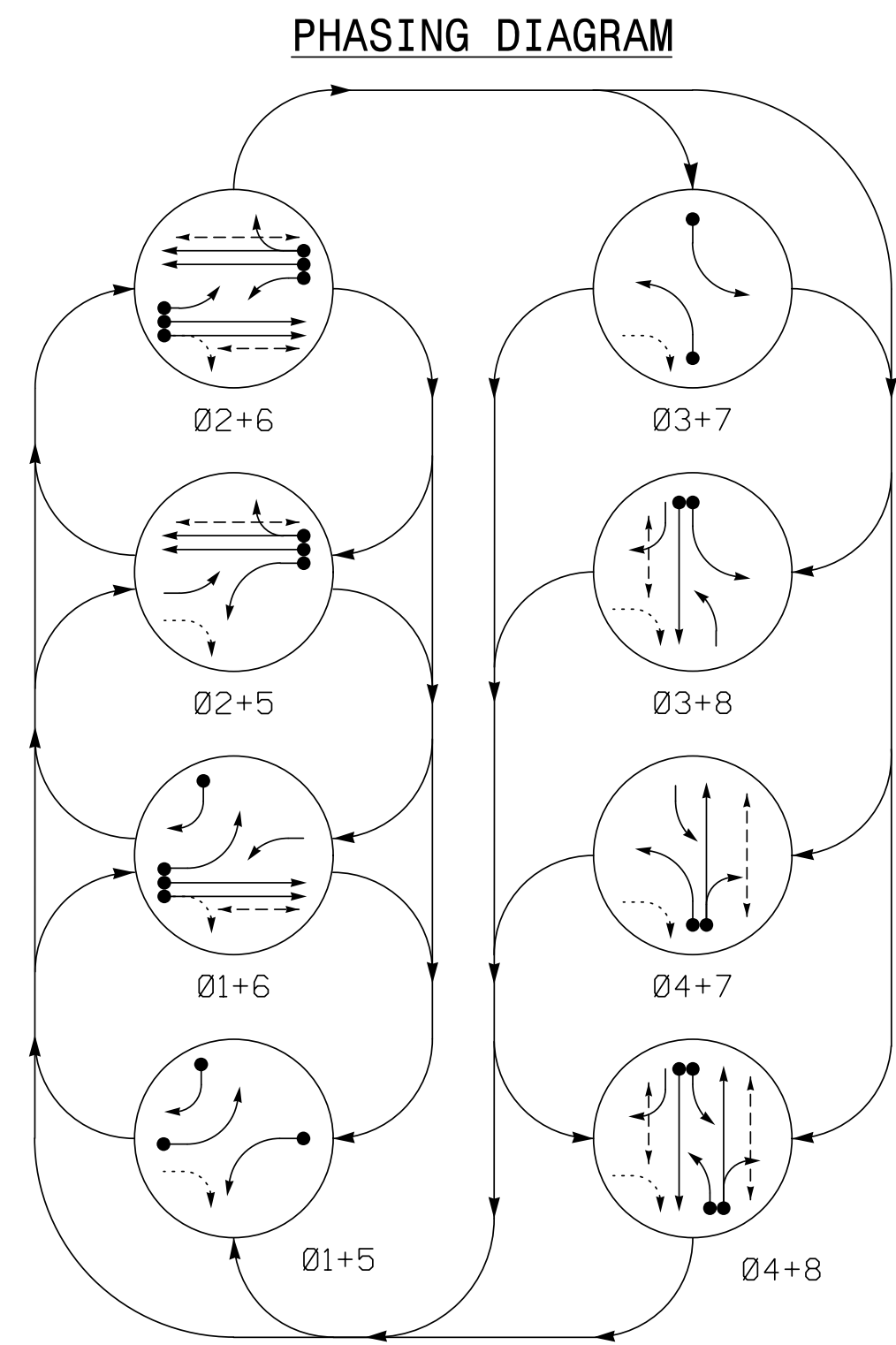
NORTH CAROLINA
PROFESSIONAL
ENGINEER
ZHAOLONG TENG
SEAL
032179

DocuSigned by:
Zhaolong Teng
12/17/2019
DATE

SIG. INVENTORY NO. 07-1349T1

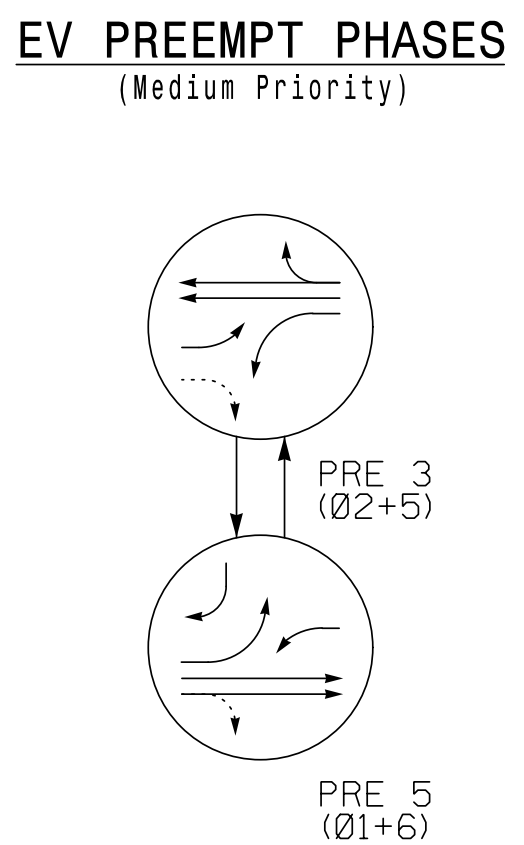
PREPARED IN THE OFFICE OF:
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875 Walnut Street, Suite 316
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Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

\$\$\$\$\$CYTIME\$\$\$\$\$
\$\$\$\$\$DATE\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



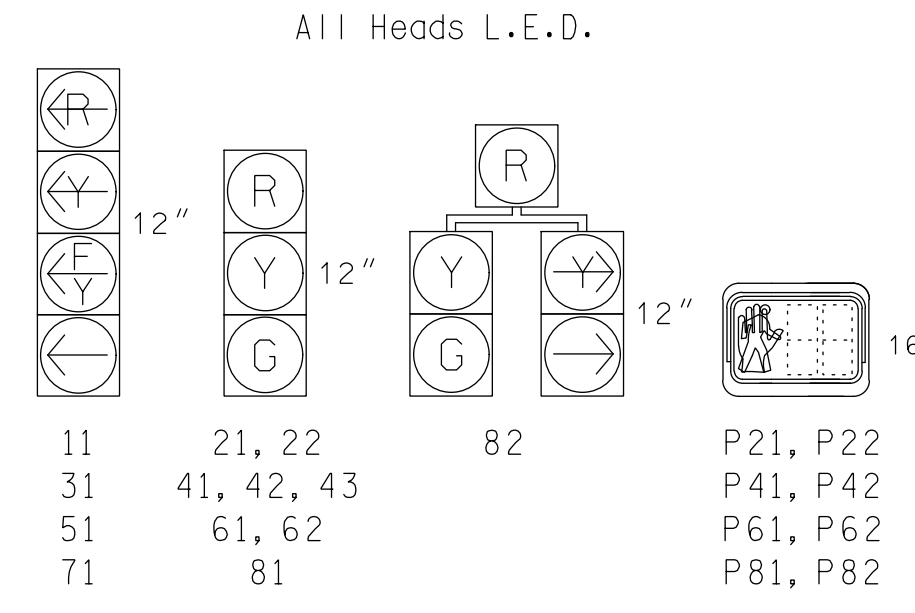
PHASING DIAGRAM DETECTION LEGEND

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



SIGNAL FACE	PHASE										
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	PRE 3	PRE 5	FLASH
11	←	←	←	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	R	R	G	R	Y
31	←	←	←	←	←	←	←	←	←	←	←
41, 42, 43	R	R	R	R	R	R	G	G	R	R	R
51	←	←	←	←	←	←	←	←	←	←	←
61, 62	R	G	R	G	R	R	R	R	R	G	Y
71	←	←	←	←	←	←	←	←	←	←	←
81	R	R	R	R	R	R	G	R	G	R	R
82	R	R	R	R	R	R	G	R	G	R	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	W	W	DW	DW	DRK	
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DRK	
P81, P82	DW	DW	DW	DW	W	DW	W	DW	DW	DRK	

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR				PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
1A	6X40	0	*	*	1	Yes	-	15	-	S	*
1B	6X40	0	*	*	6	Yes	-	15	-	S	*
2A	6X6	70	*	*	2	Yes	-	-	-	S	*
2B	6X6	70	*	*	2	Yes	-	-	-	S	*
3A	6X40	0	*	*	3	Yes	-	15	-	S	*
4A	6X40	0	*	*	4	Yes	-	10	-	S	*
5A	6X40	0	*	*	5	Yes	-	15	-	S	*
6A	6X6	70	*	*	2	Yes	-	-	-	S	*
6B	6X6	70	*	*	6	Yes	-	-	-	S	*
7A	6X40	0	*	*	7	Yes	-	15	-	S	*
8A	6X40	0	*	*	8	Yes	-	3	-	S	*
S17	6x6	+135	*	*	-	No	-	-	-	N	X
S18	6x6	+135	*	*	-	No	-	-	-	N	X

* Video Detection Zone

8 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

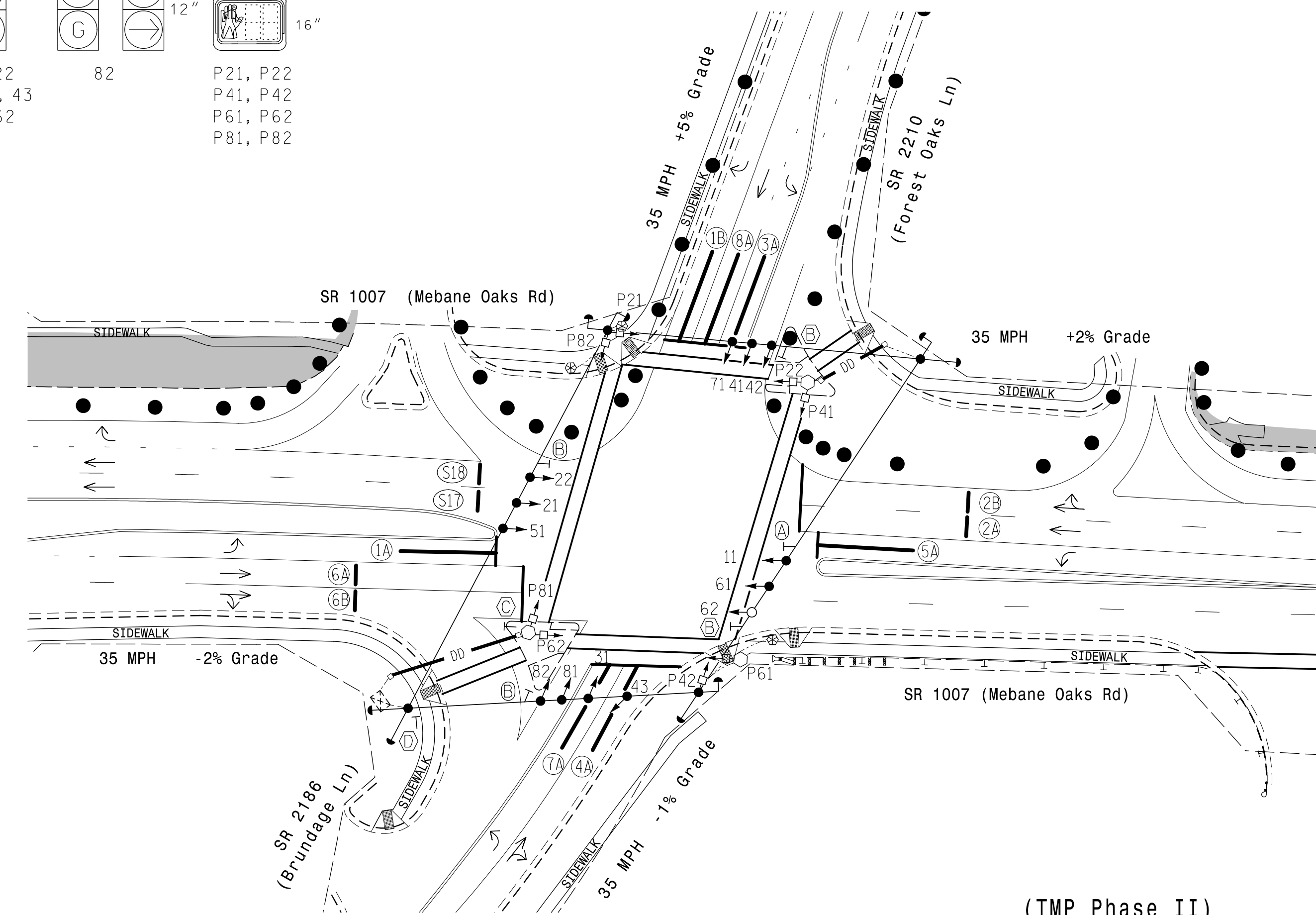
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Reposition existing signal heads numbered 11, 21, 22, 51, 61 and signs A and B. Replace signal head 62 with new display as shown.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- This intersection features a GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 1349.

ASC/3 EV PREEMPT		
FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	Y	Y
Terminate Phases	N	N
Entrance Walk	1	1
Entrance Ped Clear	14	14
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

ASC/3 TIMING CHART								
FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	0	7	0	4	0	7	0	4
Ped Clear	0	14	0	28	0	14	0	28
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow	3.0	4.0	3.0	3.9	3.0	4.0	3.0	3.9
Red Clear	3.8	2.8	3.2	2.6	3.3	2.8	2.3	2.6
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	X	X	X	X	X	X

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



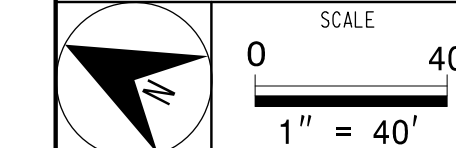
LEGEND

PROPOSED	EXISTING

(TMP Phase II) Signal Upgrade - Temporary Design 2

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)</p>		<p>SEAL</p> <p>ZHAOLONG TENG</p>
	<p>Division 7 Alamance County Mebane</p>		
	<p>PLAN DATE: November 2019</p>	<p>REVIEWED BY: Z. "Gavin" Teng</p>	

PREPARED IN THE OFFICE OF:
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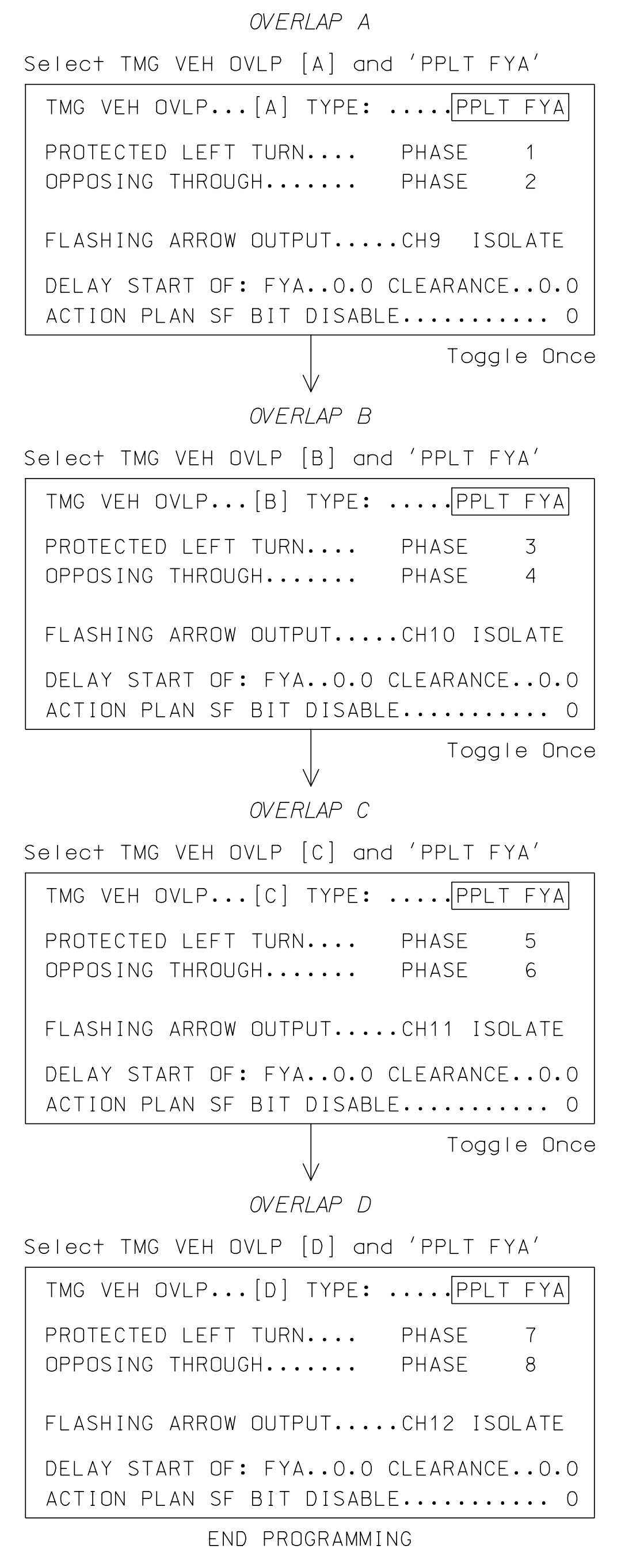
DATE

SIG. INVENTORY NO. 07-1349T2

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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



FLASHER CIRCUIT MODIFICATION DETAIL

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


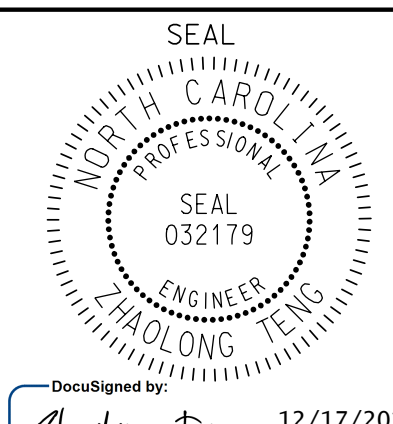
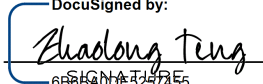
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-1349T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

\$\$\$SYTIME\$\$\$\$
 \$\$\$DONNG\$\$\$\$
 \$\$\$FORMNAME\$\$\$\$

Temporary Design 2
 Electrical Detail - Sheet 2 of 3

 750 N. Greenfield Pkwy, Garner, NC 27529	<p>PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442</p>	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: 1.2em;">SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)</p> <p>Division 7 Alamance County Mebane</p> <p>PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng</p> <p>PREPARED BY: Z. "Gavin" Teng REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE						
REVISIONS	INIT.	DATE									
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>											
<p>SEAL</p>  <p>DocuSigned by:  12/17/2019 DATE</p>		<p>SIG. INVENTORY NO. 07-1349T2</p>									

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLPF1 .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)


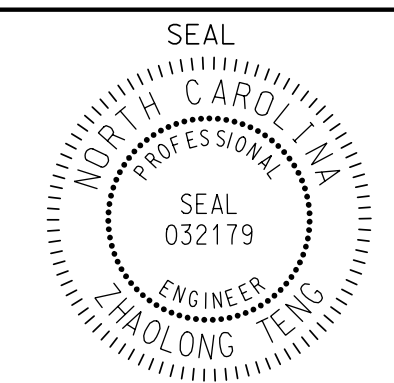
1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP


```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T2
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

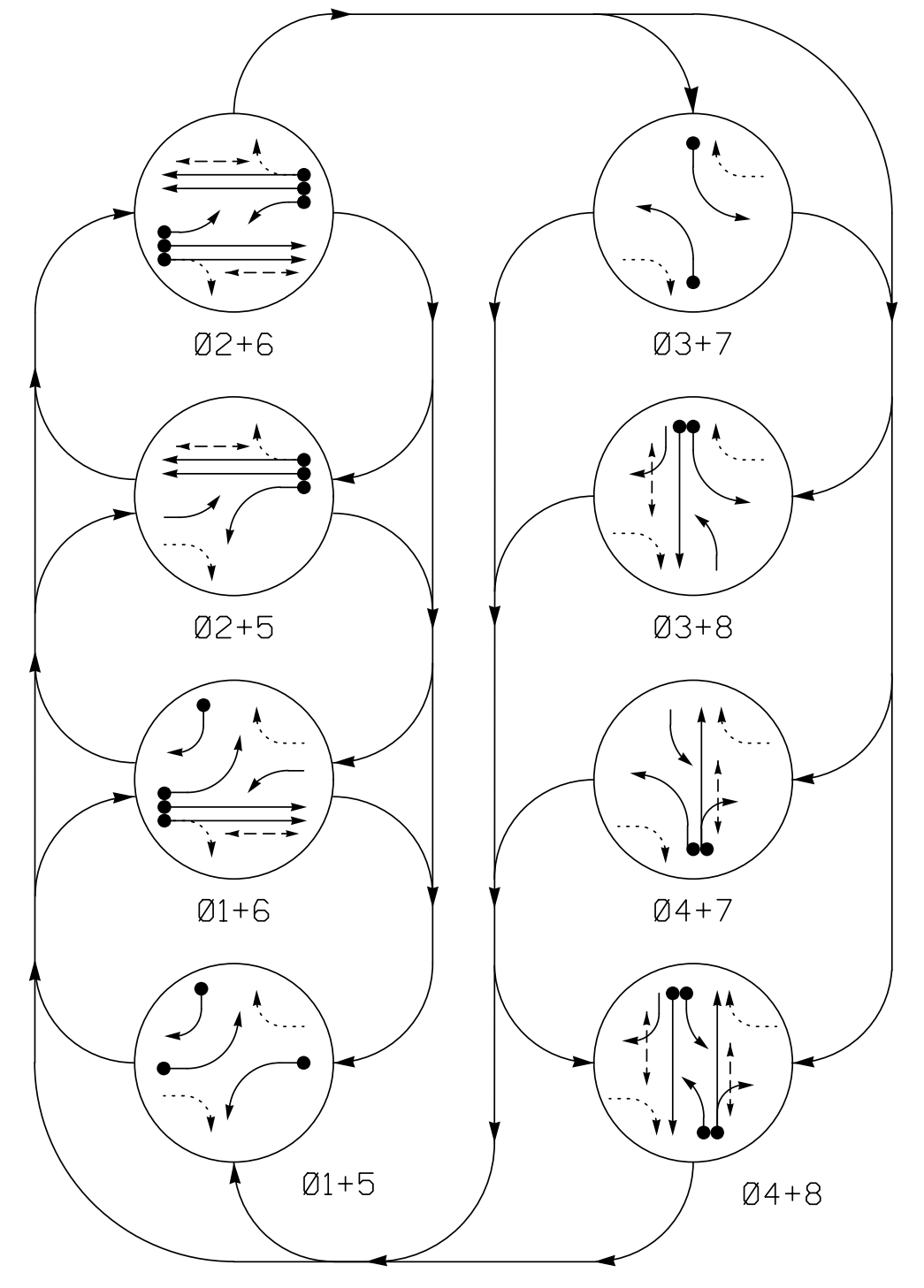
Temporary Design 2
Electrical Detail - Sheet 3 of 3

	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)</p> <p>Division 7 Alamance County Mebane</p> <p>PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng</p> <p>PREPARED BY: Z. "Gavin" Teng REVIEWED BY:</p>	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>SEAL</p>  <p>DocuSigned by: <i>Zhaolong Teng</i> 12/17/2019</p> <p>SIG. INVENTORY NO. 07-1349T2</p>						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REVISIONS	INIT.	DATE			
REVISIONS	INIT.	DATE						


ACCELERATE ENGINEERING, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

*****CYTIME*****
 *****DOCSIGN*****

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES (Medium Priority)

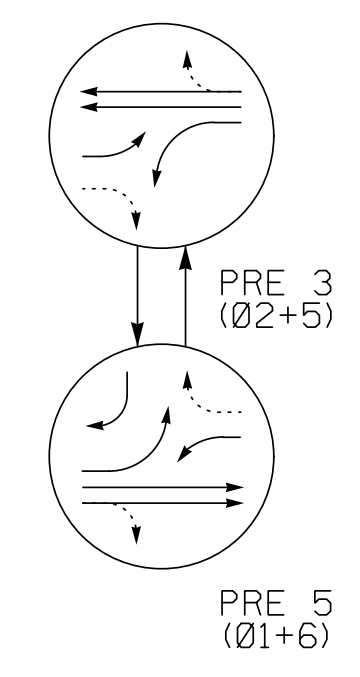
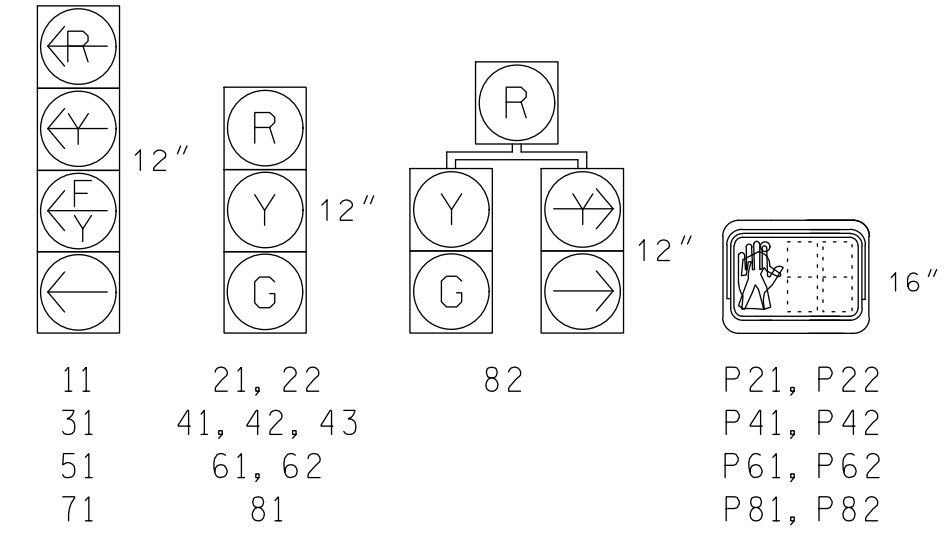


TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (Ø1+5 to Ø4+8, PRE 3, PRE 5, FLASH), and signal status (R, G, Y, W, DRK).

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

Table with columns: ZONE, SIZE, DISTANCE FROM STOPBAR, TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD.

* Video Detection Zone

8 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 11, 22, 51, 61, 62 and signs A and B.
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. This intersection features a GPS Emergency Vehicle Preemption system. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Closed loop system data: Controller Asset #: 1349.

ASC/3 EV PREEMPT

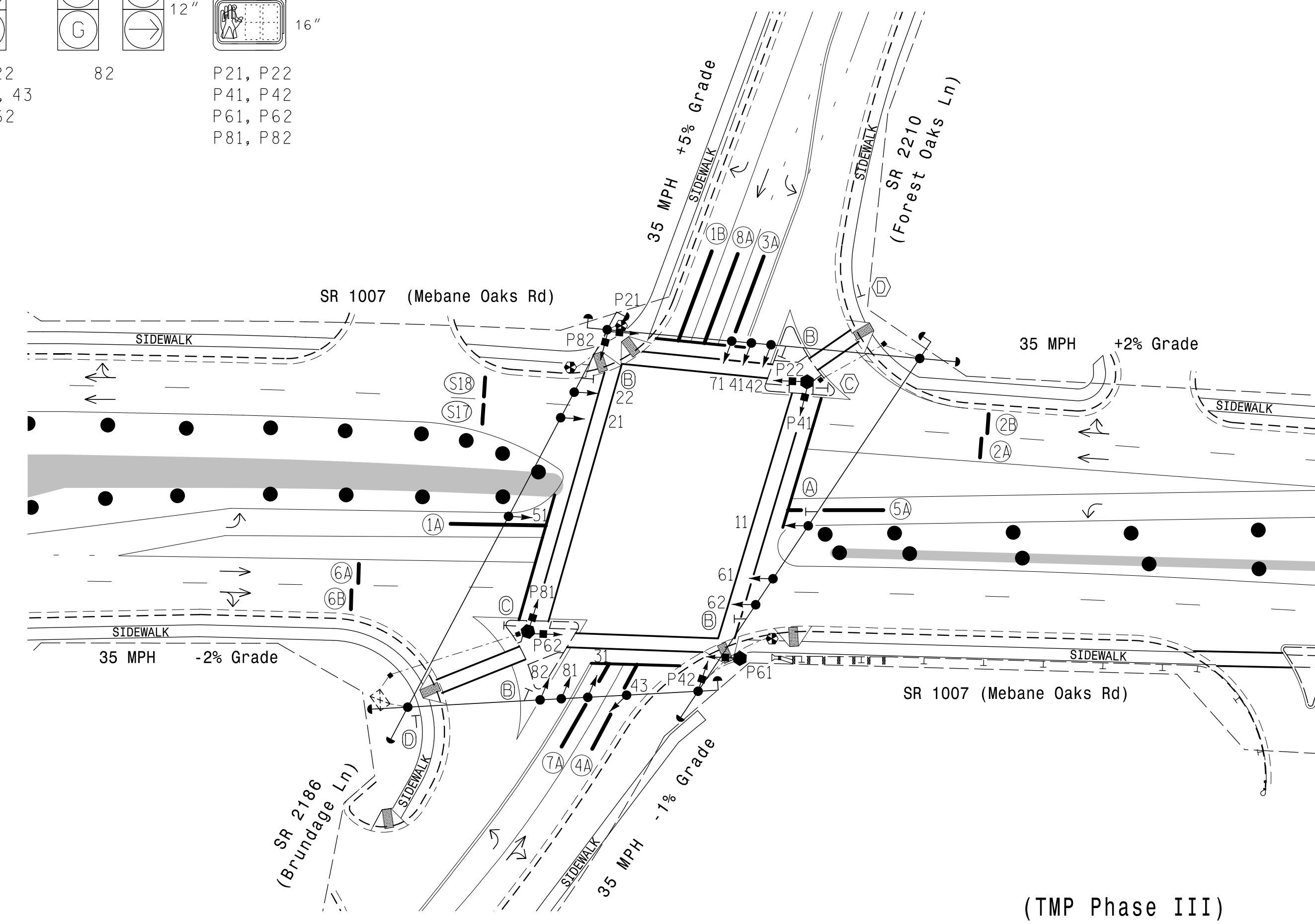
Table with columns: FUNCTION, PRE 3, PRE 5. Includes Exit Phase(s), Preempt Override, Delay Time, Ped Clear Through Yellow, etc.

* Time defaults to time used for phase during normal operation

ASC/3 TIMING CHART

Timing chart table with columns: FEATURE, PHASE (1-8), and timing values for Min Green, Walk, Ped Clear, Veh. Extension, etc.

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



LEGEND

- PROPOSED: Traffic Signal Head, Pedestrian Signal Head, Signal Pole with Sidewalk Guy, Controller & Cabinet Junction Box, 2-in Underground Conduit, Right of Way, Directional Arrow, Construction Zone Drums, Construction Zone, Video Detection Area, Type I Pushbutton Post, Type II Signal Pedestal, Curb Ramp, Guardrail, No U Turn Sign, Right "TURNING VEHICLES" Yield Sign, Pedestrian Warning Sign w/ Diagonal Arrow Plaque, "YIELD" Sign.
EXISTING: Traffic Signal Head, Pedestrian Signal Head, Signal Pole with Guy, Junction Box, Conduit, Right of Way, Directional Arrow, Construction Zone Drums, Construction Zone, Video Detection Area, Type I Pushbutton Post, Type II Signal Pedestal, Curb Ramp, Guardrail, No U Turn Sign, Yield Sign, Pedestrian Warning Sign, Yield Sign.

(TMP Phase III) Signal Upgrade - Temporary Design 3

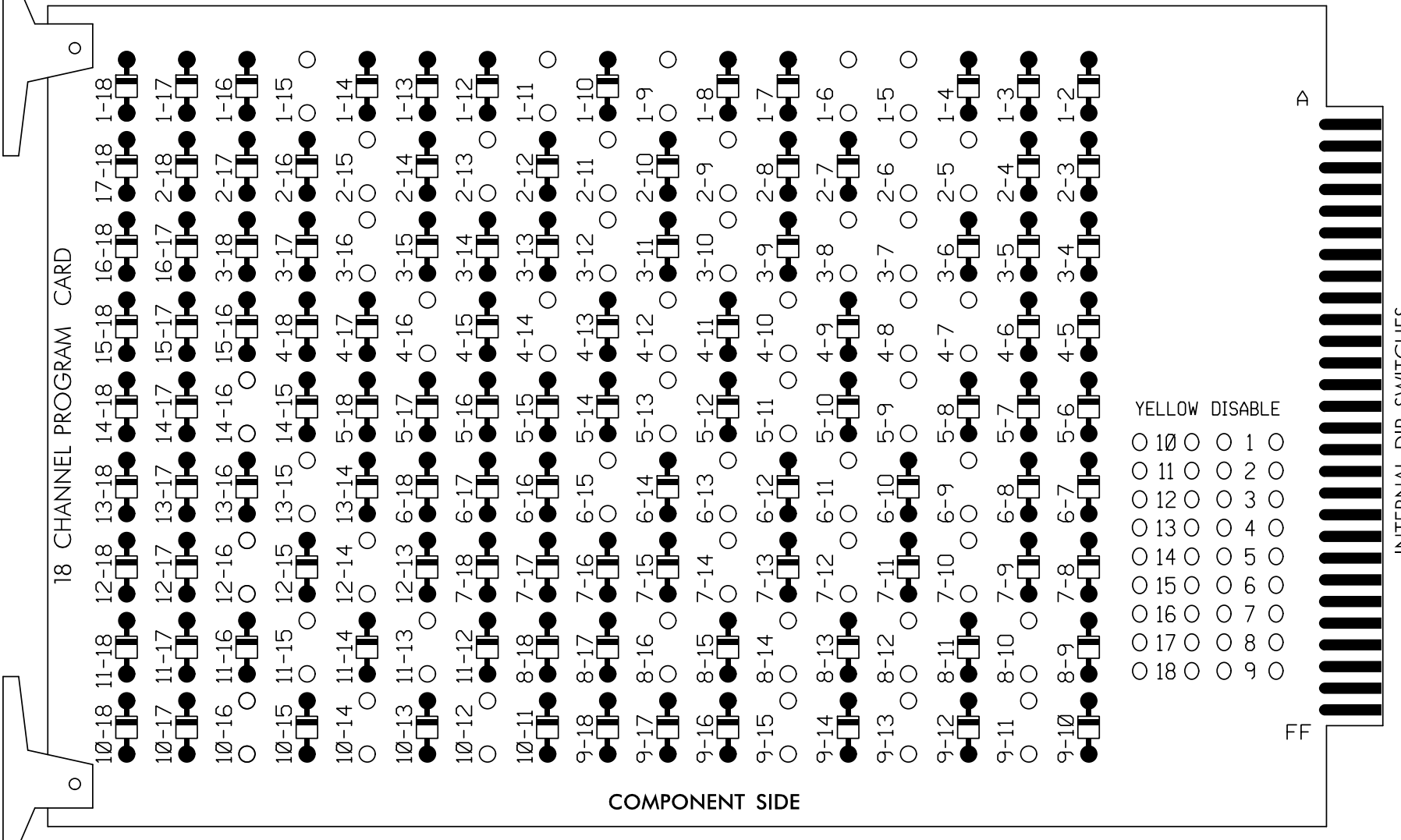
Accelerate Engineering, PLLC logo and contact information: 875 Walnut Street, Suite 316, Cary, NC 27511. Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

Professional Engineer seal for Z. Gavin Teng, State of North Carolina. Includes project details: SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane), Division 7, Alamance County, Mebane. Plan Date: November 2019. Prepared by: Z. Gavin Teng. Scale: 1" = 40'. Date: 12/17/2019.

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

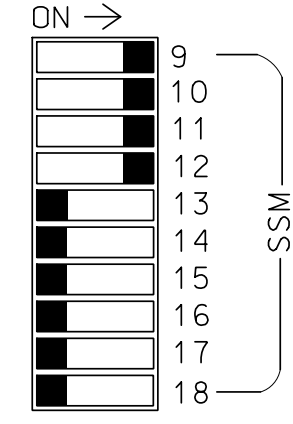
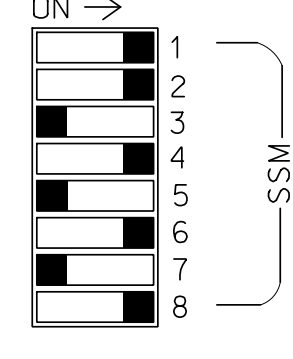
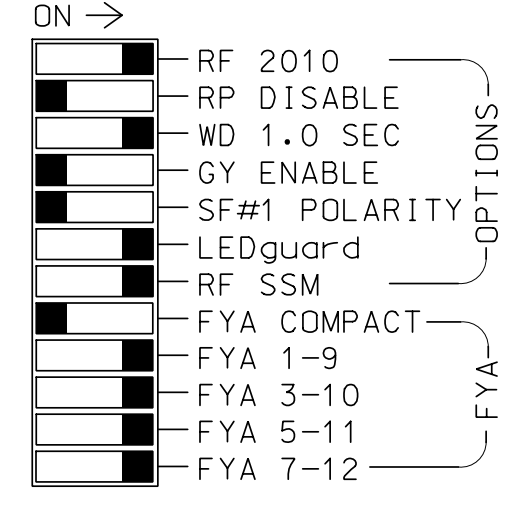
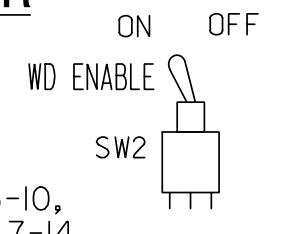
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15 AND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



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,
 S10,S11,S12,AUX S1,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED
 7,8,8PED

OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

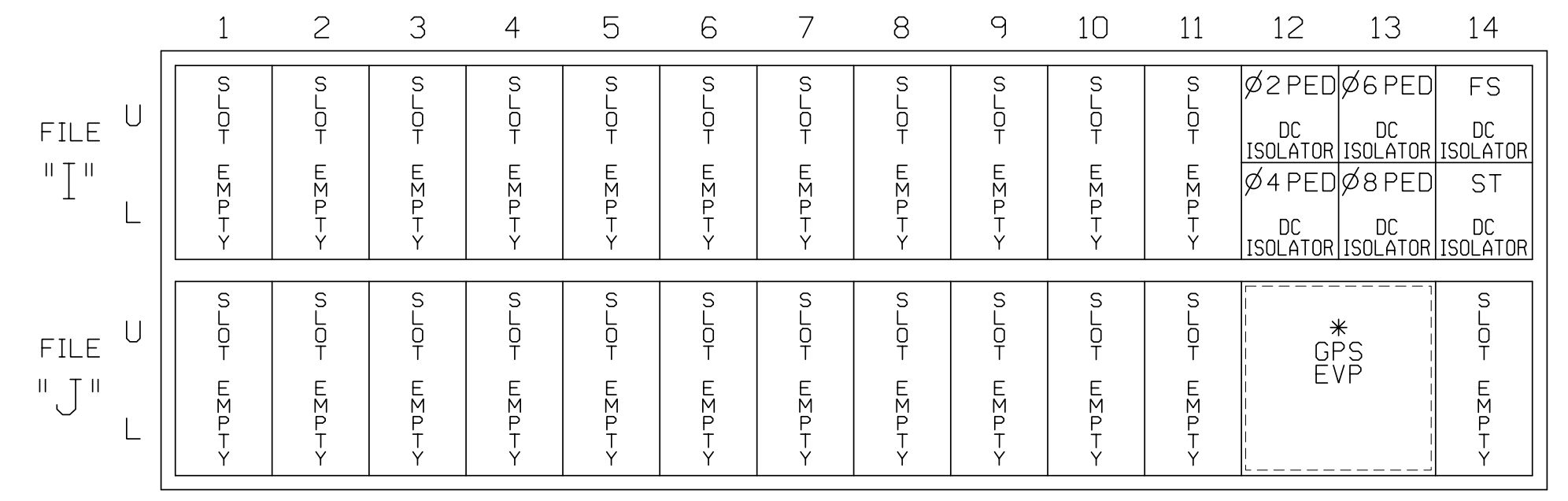
SIGNAL HEAD HOOK-UP CHART

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

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

INPUT FILE POSITION LAYOUT

(front view)

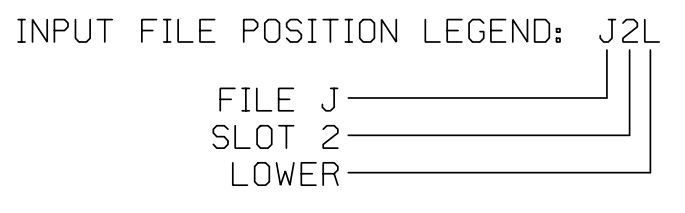


EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

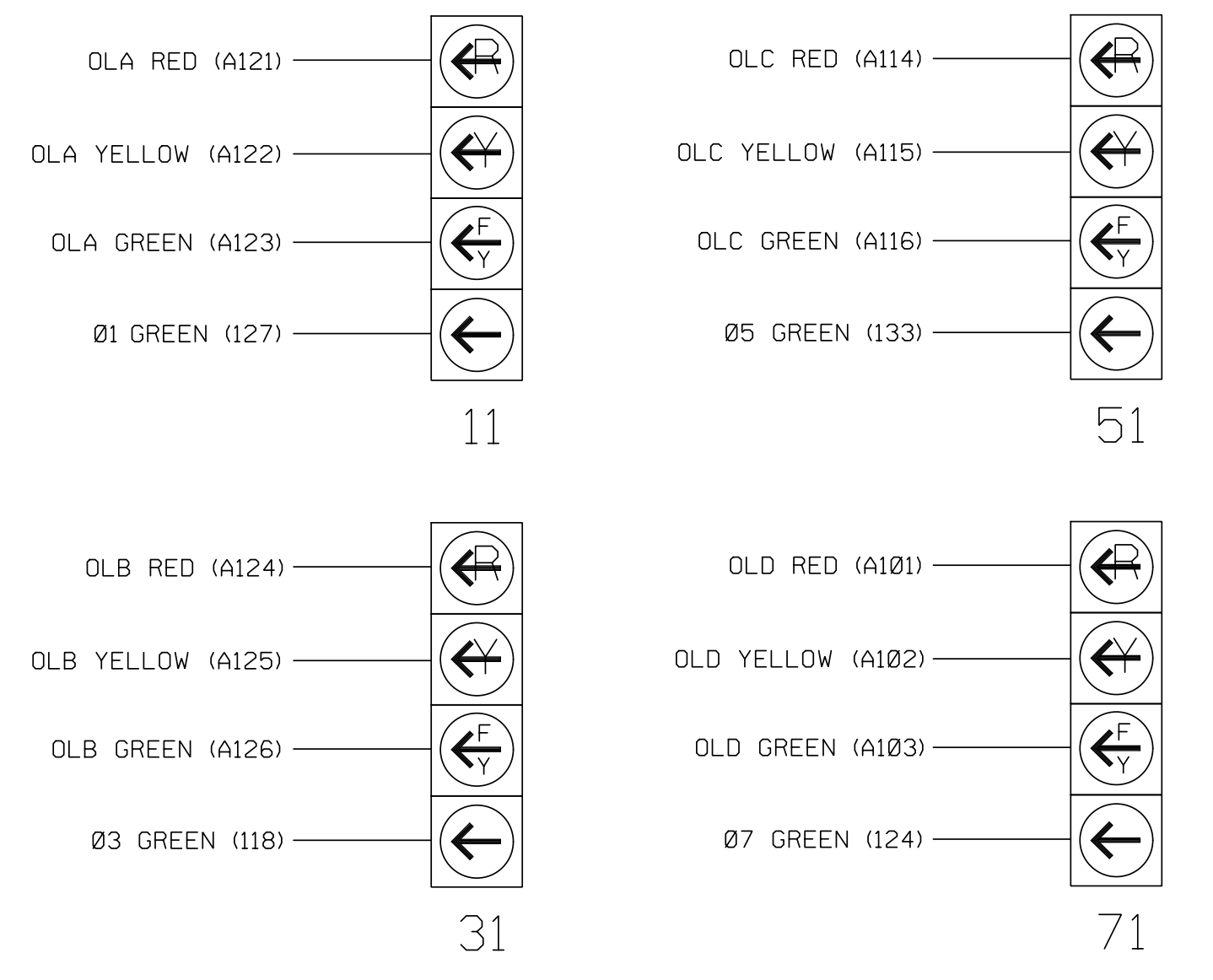
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70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

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

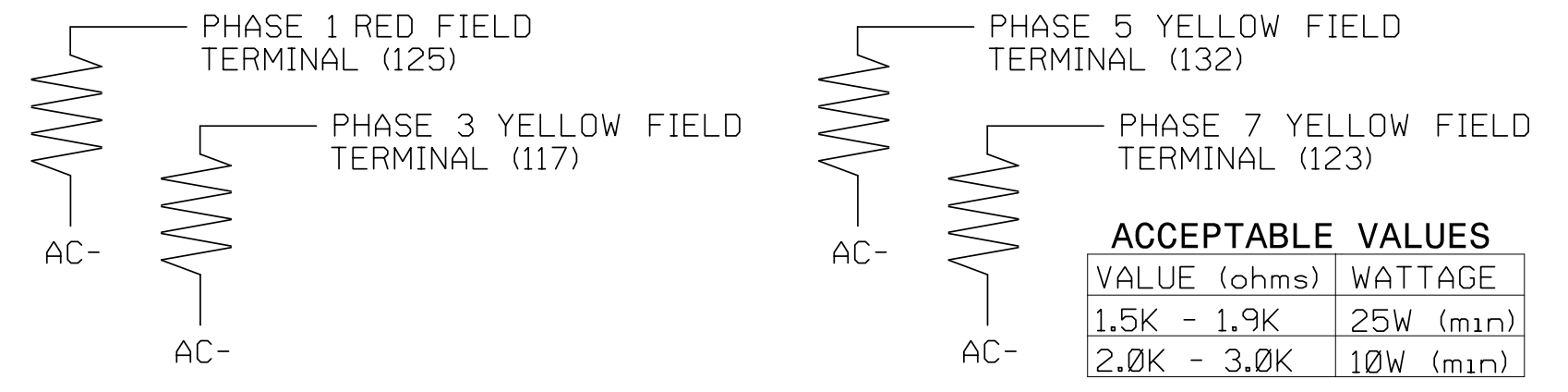
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

Temporary Design 3
 Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG

Division 7
 SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)
 Alamance County Mebane
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY: Z. "Gavin" Teng
 REVISIONS: INIT. DATE

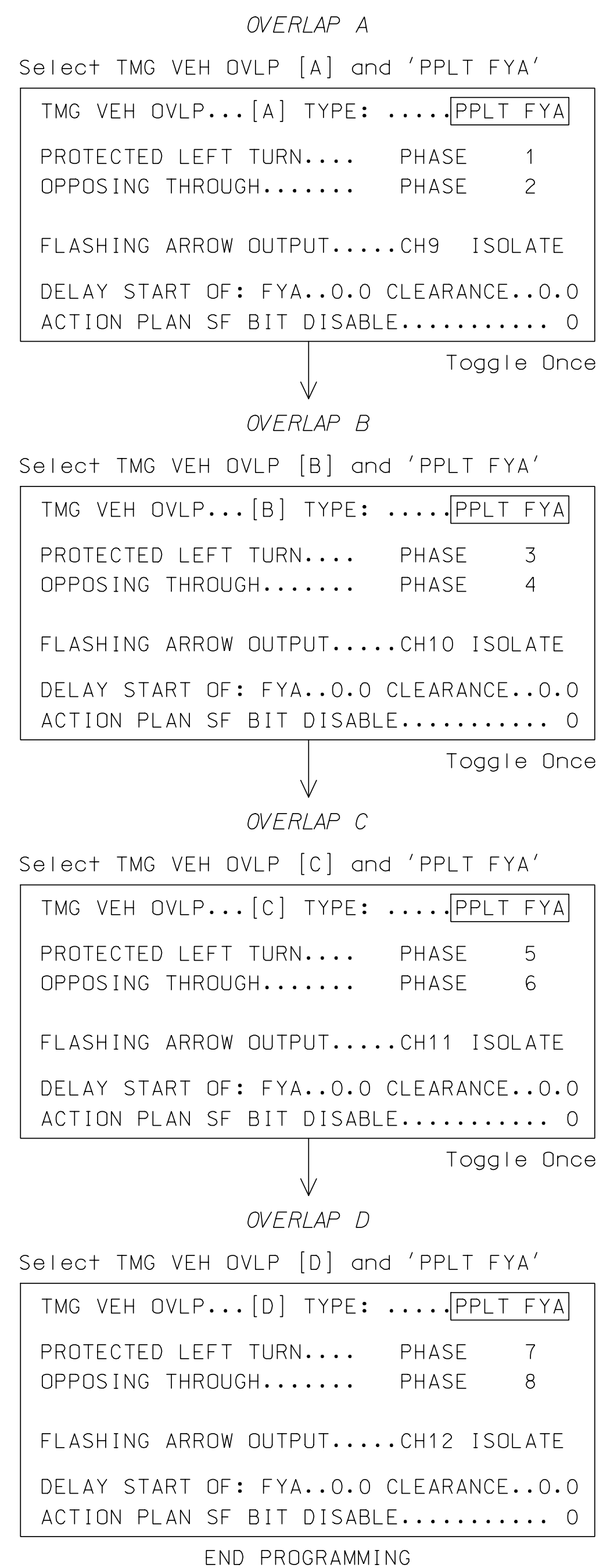
DocuSigned by:
 Zhaolong Teng
 12/17/2019
 SIG. INVENTORY NO. 07-1349T3

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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



FLASHER CIRCUIT MODIFICATION DETAIL

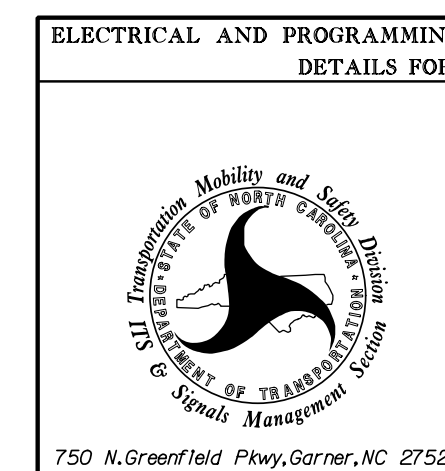
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-1349T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 2 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

DocuSigned by:
Zhaolong Teng
12/17/2019

DATE

SIG. INVENTORY NO. 07-1349T3

PREPARED IN THE OFFICE OF:
AE Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

\$\$\$\$SYTIME\$\$\$\$
 \$\$\$DOCSIGN\$\$\$\$
 \$\$\$SERIALNAME\$\$\$

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLPF1 .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. INTERLOCK. NO
DET LOCK... XIDELAY.. 0 IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLPF1 .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YES IPMT OVRIDE.. INTERLOCK. NO
DET LOCK... XIDELAY.. 0 IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

```

PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

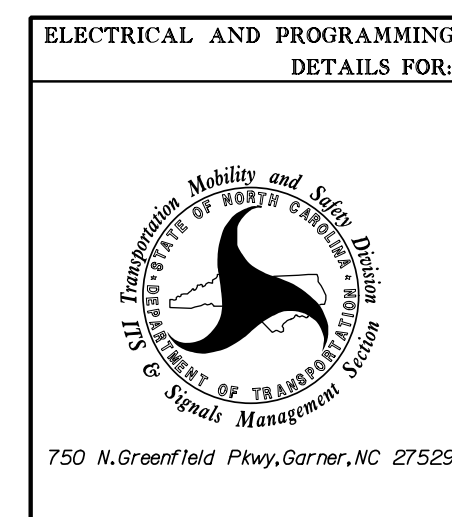
- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

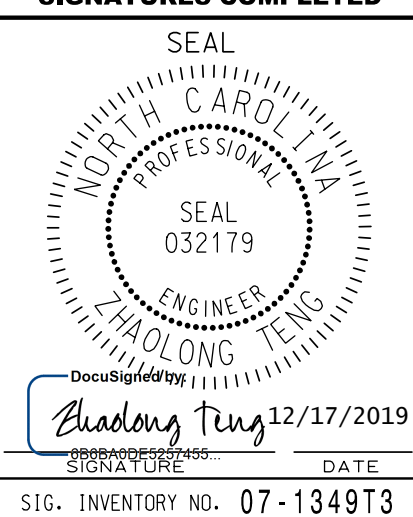
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Temporary Design 3
 Electrical Detail - Sheet 3 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road)	
		at	
		SR 2186 (Brundage Lane) /	
		SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
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 NC License No. P-1442

750 N. Greenfield Pkwy, Garner, NC 27529

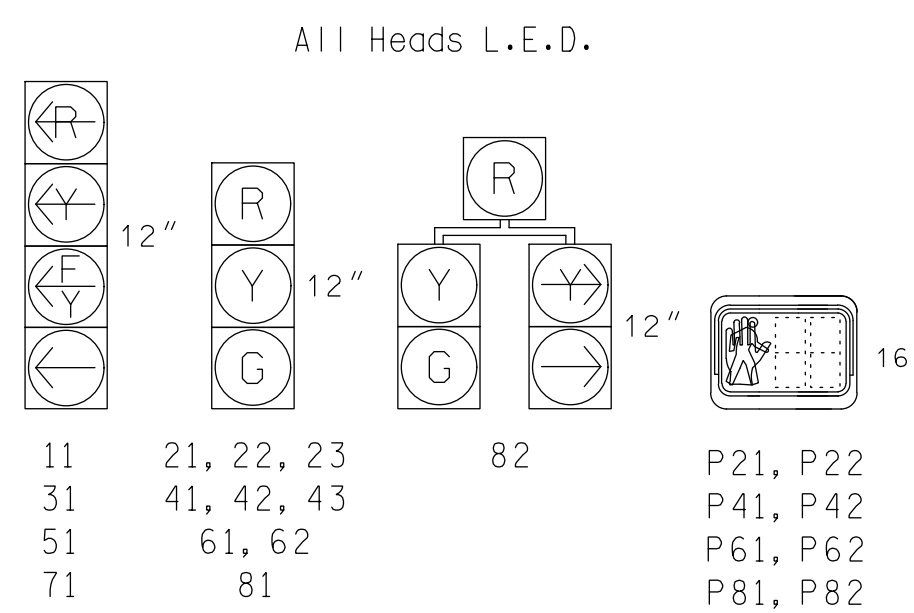
SIG. INVENTORY NO. 07-1349T3

8 Phase
Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing pedestrian signal head numbered P41.
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. This intersection features a GPS Emergency Vehicle Preemption system.
10. The Division 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 timing values supersede these values.
12. Closed loop system data:
 Controller Asset #: 1349.

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	*15	-	S	-	X
1B	6X40	0	2-4-2	X	#6	Yes	-	-	-	S	-	X
2A	6X6	70	5	X	2	Yes	-	-	-	S	-	X
2B	6X6	70	5	X	2	Yes	-	-	-	S	-	X
2B	6X6	70	5	X	2	Yes	-	-	-	S	-	X
3A	6X40	0	2-4-2	X	3	Yes	-	15	-	S	-	X
4A	6X40	0	2-4-2	X	8	Yes	-	3	-	S	-	X
4A	6X40	0	2-4-2	X	4	Yes	-	10	-	S	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	*15	-	S	-	X
6A	6X6	70	3	X	#2	Yes	-	-	-	S	-	X
6A	6X6	70	3	X	6	Yes	-	-	-	S	-	X
6B	6X6	70	3	X	6	Yes	-	-	-	S	-	X
7A	6X40	0	2-4-2	X	7	Yes	-	15	-	S	-	X
8A	6X40	0	2-4-2	X	4	Yes	-	3	-	S	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	-	-	S	-	X
S17	6x6	+145	4	X	-	No	-	-	-	N	X	X
S18	6x6	+145	4	X	-	No	-	-	-	N	X	X
S19	6x6	+145	4	X	-	No	-	-	-	N	X	X

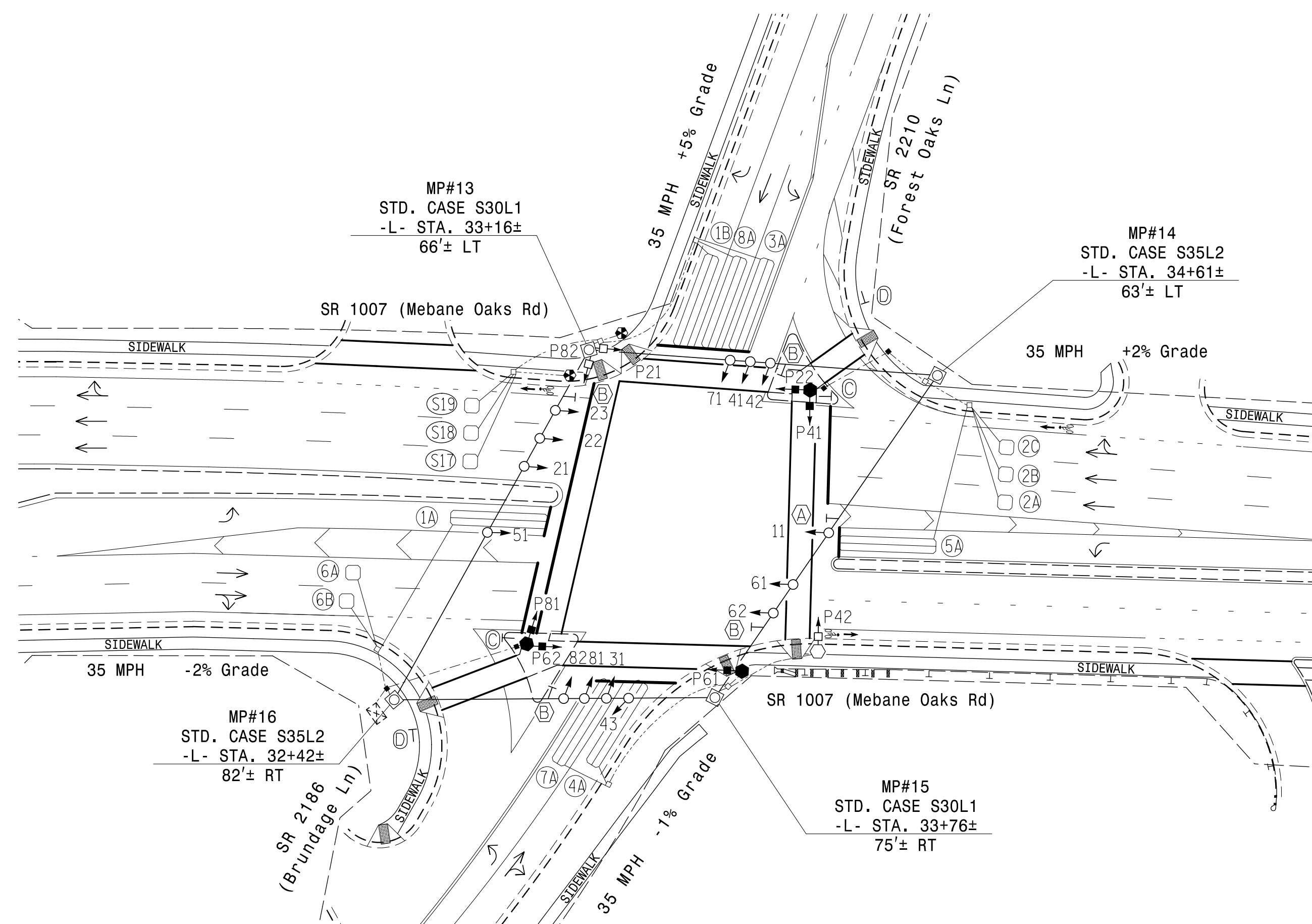
* Disable delay during Alternate Phasing Operation.
 # Disable Phase Call for Loop during Alternate Phasing Operation.

ASC/3 EV PREEMPT		
FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	Y	Y
Terminate Phases	N	N
Entrance Walk	1	1
Entrance Ped Clear	14	14
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

ASC/3 TIMING CHART								
FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	0	7	0	4	0	7	0	4
Ped Clear	0	14	0	25	0	15	0	28
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow	3.0	4.0	3.0	3.9	3.0	4.0	3.0	3.9
Red Clear	3.3	2.6	3.2	2.6	3.3	2.6	2.9	2.6
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	X	X	X	X	X	X

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



LEGEND	
PROPOSED	EXISTING
N/A	
N/A	
N/A	

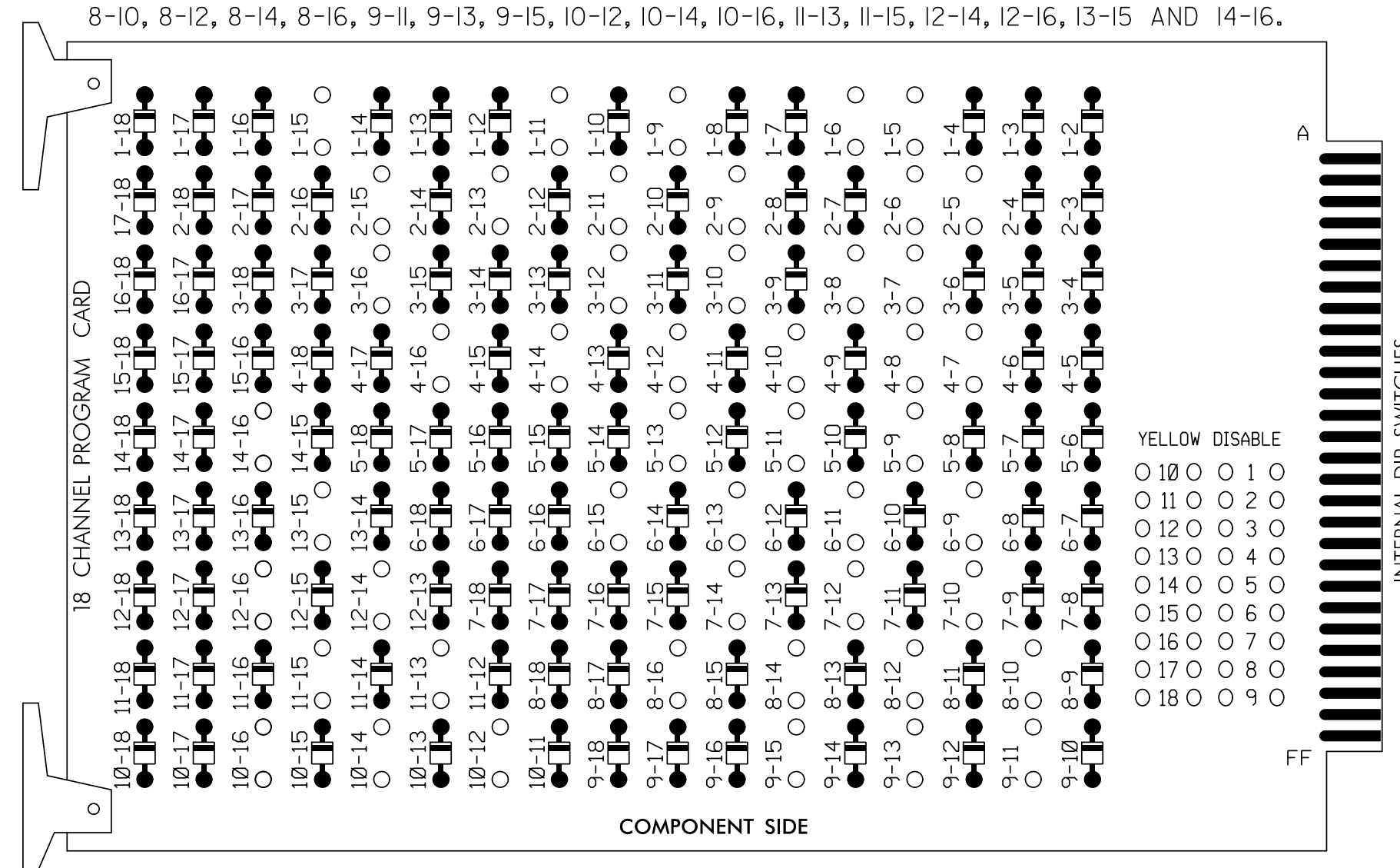
Signal Upgrade - Final Design (Sheet 1 of 2)

 PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442	SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane) Division 7 Alamance County Mebane PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL SEAL 12/17/2019 DATE SIG. INVENTORY NO. 07-1349					
	SCALE 0 40 1" = 40'		REVISIONS <table border="1"> <tr><td>INIT.</td><td>DATE</td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>	INIT.	DATE		
INIT.	DATE						

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,
 S10,S11,S12,AUX S1,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED
 7,8,8PED

OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMJ CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	11★	82	21,22 23	P21, P22	31★	41,42 43	P41, P42	51★	61,62	P61, P62	71★	81,82	P81, P82	11★	31★	NU	51★	71★	NU
RED	*		128		101			134			107								
YELLOW			129	*	102	*	135		*	108									
GREEN			130		103		136			109									
RED ARROW														A121	A124		A114	A101	
YELLOW ARROW		126												A122	A125		A115	A102	
FLASHING YELLOW ARROW														A123	A126		A116	A103	
GREEN ARROW	127	127			118		133			124									
Hand					113		104			119				110					
Walking					115		106			121				112					

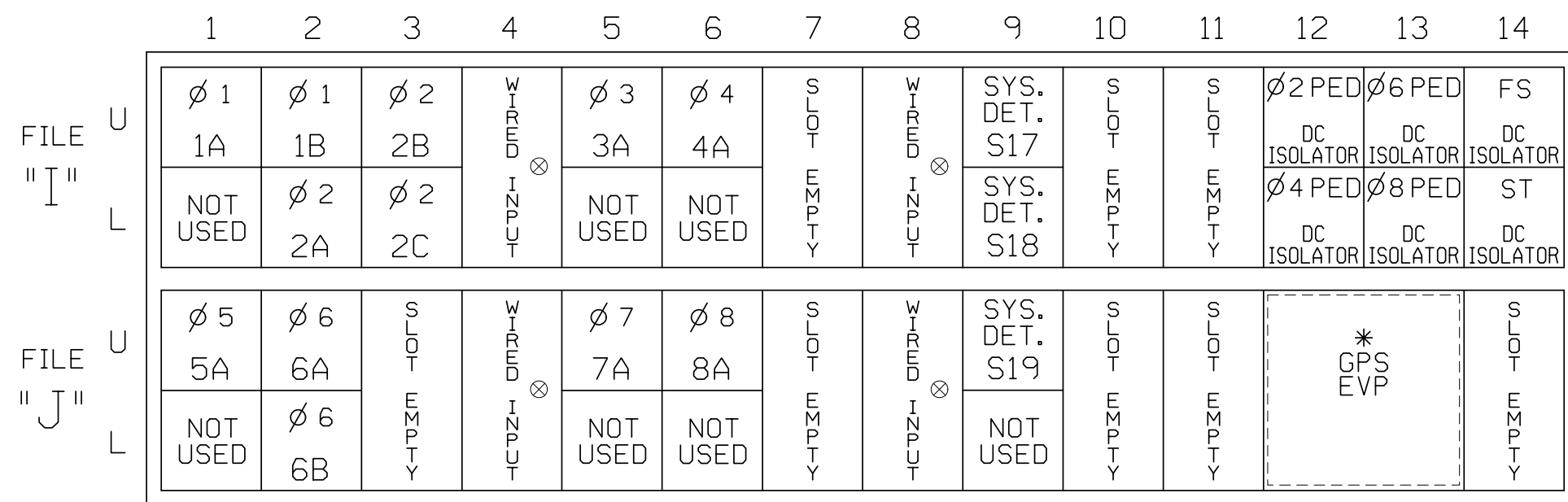
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

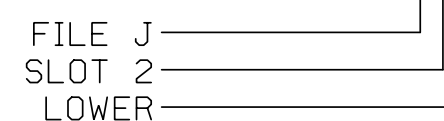
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1★	1	YES		15		S
	-	J4U	48	26★	6	YES				S
1B	TB2-5,6	I2U	39	2	1	YES		15		S
2A	TB2-7,8	I2L	43	12	2	YES				S
2B	TB2-9,10	I3U	63	32	2	YES				S
2C	TB2-11,12	I3L	76	42	2	YES				S
3A ²	TB4-5,6	I5U	58	3	3	YES		15		S
	-	J8U	50	28	8	YES		3		S
4A	TB4-9,10	I6U	41	4	4	YES		10		S
5A ³	TB3-1,2	J1U	55	5★	5	YES		15		S
	-	I4U	47	22★	2	YES				S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S
7A ⁴	TB5-5,6	J5U	57	7	7	YES		15		S
	-	I8U	49	24	4	YES		3		S
8A	TB5-9,10	J6U	42	8	8	YES				S
* S17	TB6-9,10	I9U	60	11	SYS	NO				N
* S18	TB6-11,12	I9L	62	13	SYS	NO				N
* S19	TB7-9,10	J9U	59	15	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-1349
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

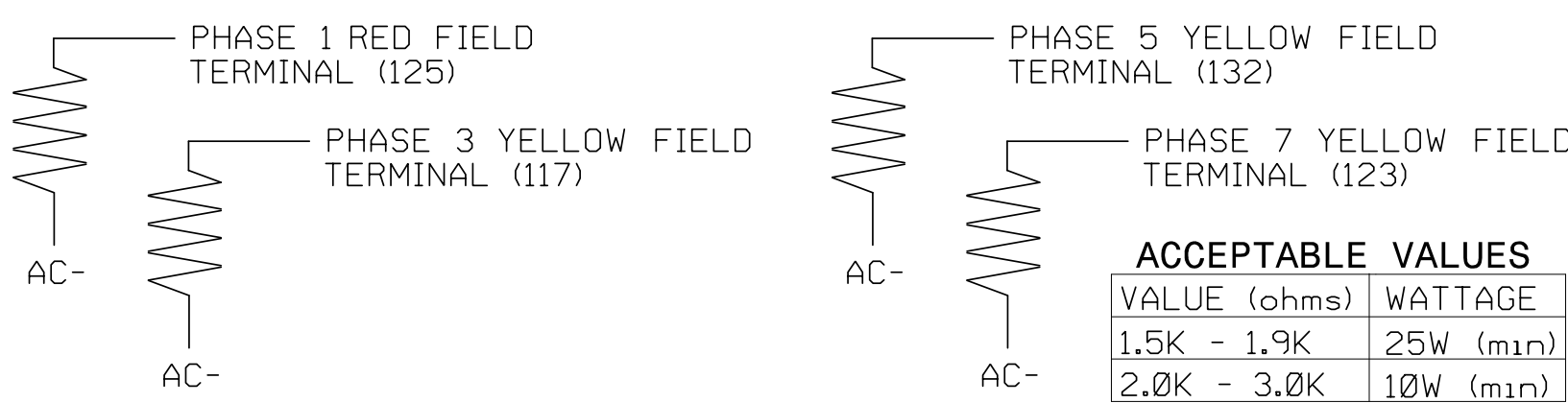
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from I5-W to J8-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.
- * System detector only. Remove any assigned vehicle phase.
 ★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on Sheet 4.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

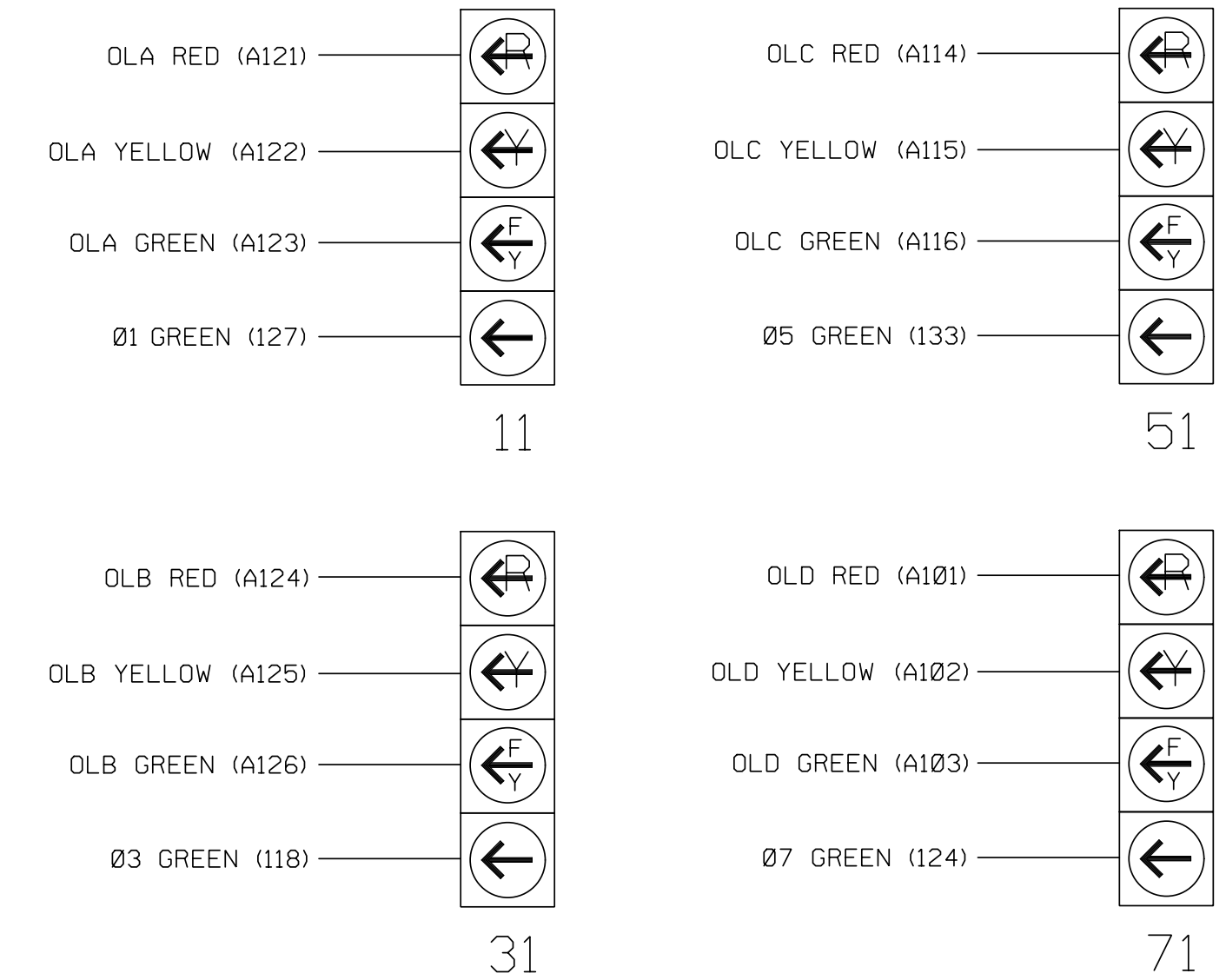
(install resistors as shown)



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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



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.

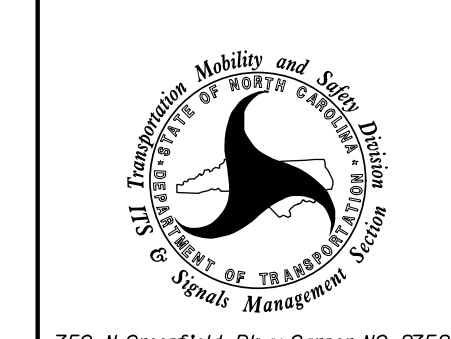
Final Design
 Electrical Detail - Sheet 1 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

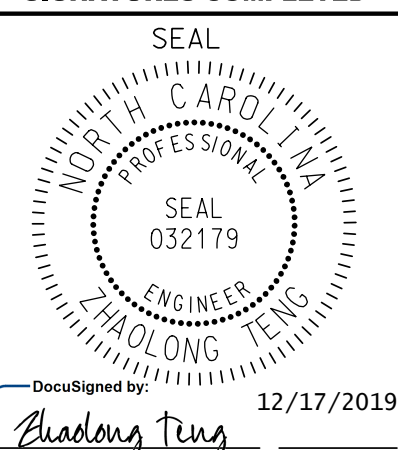
SR 1007 (Mebane Oaks Road)

at
 SR 2186 (Brundage Lane) /
 SR 2210 (Forest Oaks Lane)

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



750 N. Greenfield Pkwy, Garner, NC 27529

DocuSigned by: 12/17/2019

SIG. INVENTORY NO. 07-1349

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLPF1 .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLPF1 .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .

```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 14I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0

```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

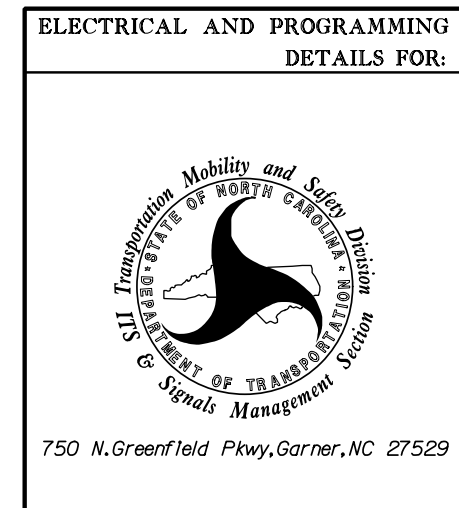
```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED... ..BYPASSED..
2 ...BYPASSED... ..BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED... ..BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED... ..BYPASSED..
7 ...BYPASSED... ..BYPASSED..
8 ...BYPASSED... ..BYPASSED..
9 ...BYPASSED... ..BYPASSED..
10 ...BYPASSED... ..BYPASSED..

```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 5



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road)	
		at	
		SR 2186 (Brundage Lane) /	
		SR 2210 (Forest Oaks Lane)	
PLAN DATE:	November 2019	REVIEWED BY:	Z. "Gavin" Teng
PREPARED BY:	Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: <i>Zhaolong Teng</i>	12/17/2019
SIG. INVENTORY NO.	07-1349

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

\$\$\$\$\$CYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DOCSIGN\$\$\$\$\$\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$NAME\$\$\$\$\$

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

(program controller as shown)

IMPORTANT!

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

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

```

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

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

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

```

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

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

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

ENSURE PHASE IS SET TO "0" →

```

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

← NOTICE VEH DET PLAN 2

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

```

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

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

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

ENSURE PHASE IS SET TO "0" →

```

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

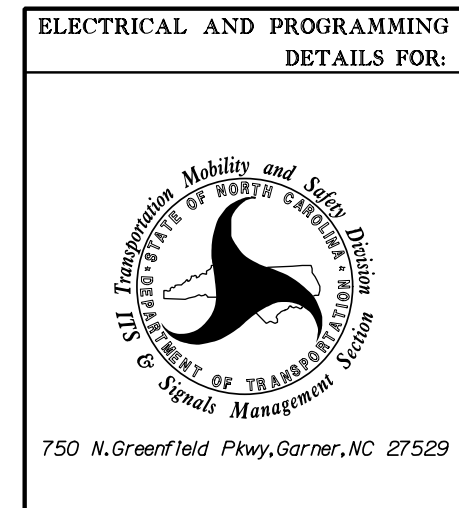
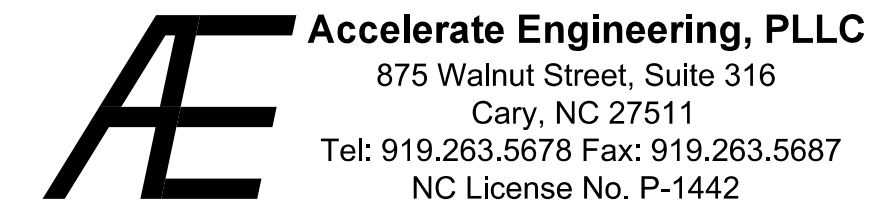
← NOTICE VEH DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1349
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DOCSIGN\$\$\$\$\$\$\$\$\$\$
\$\$\$\$\$SERIALNAME\$\$\$\$\$

Final Design
Electrical Detail - Sheet 4 of 5



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Road) at SR 2186 (Brundage Lane) / SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG

DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-1349

ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

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

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

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

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

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

```

ACTION PLAN...[ 1]
PATTERN.....AUTO    SYS OVERRIDE.... NO
TIMING PLAN..... 0    SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --    RED REST..... NO
VEH DET DIAG PLN.. 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY    NO

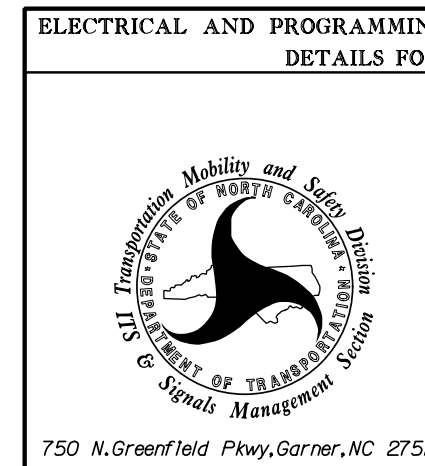
  PHASE 1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL . . . . .
WALK 2 . . . . .
VEX 2 . . . . .
VEH RCL . . . . .
MAX RCL . . . . .
MAX 2 . . . . .
  PHASE 1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3 . . . . .
CS INH . . . . .
OMIT . . . . .
SPC FCT X . . . X . . . (1-8)
AUX FCT . . . (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15 . . . . .
LP 16-30 . . . . .
LP 31-45 . . . . .
LP 46-60 . . . . .
LP 61-75 . . . . .
LP 76-90 . . . . .
LP 91-100 . . . . .

```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1349
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Final Design
Electrical Detail - Sheet 5 of 5

PREPARED IN THE OFFICE OF:
AE Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
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Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1007 (Mebane Oaks Road)	
	at	
	SR 2186 (Brundage Lane) /	
	SR 2210 (Forest Oaks Lane)	
Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

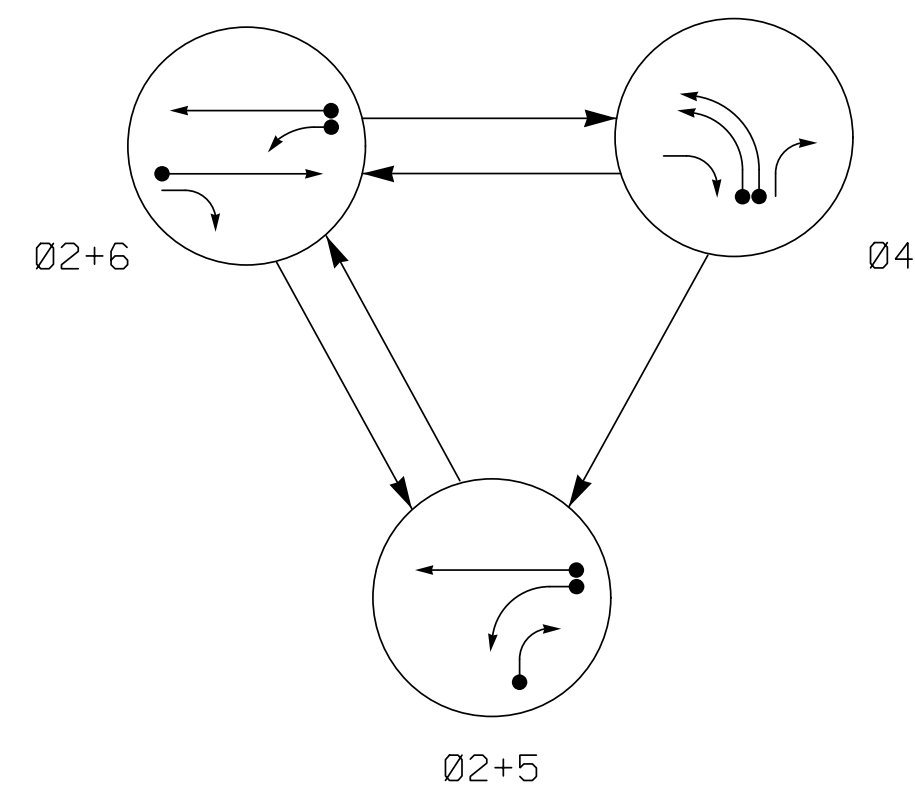
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DocuSigned by:
Zhaolong Teng
 12/17/2019
 DATE

SIG. INVENTORY NO. 07-1349

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DOCSIGN\$\$\$\$\$\$\$\$\$\$
\$\$\$\$\$SYTIME\$\$\$\$\$

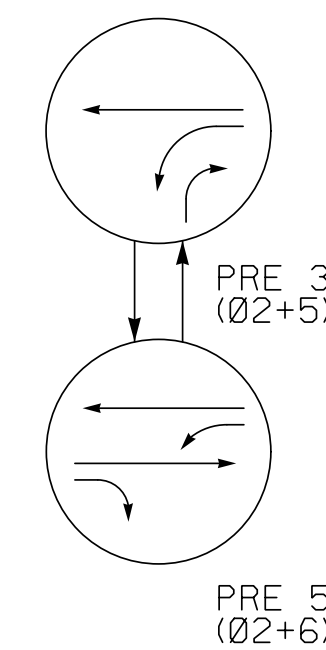
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

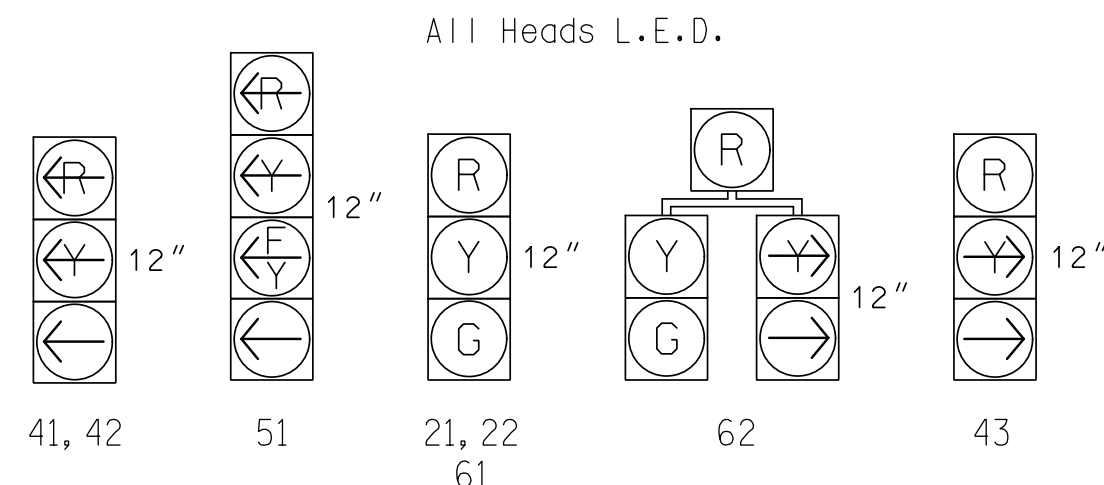
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT

EV PREEMPT PHASES
(Medium Priority)



SIGNAL FACE	PHASE					
	Ø 2+5	Ø 2+6	Ø 4	PRE 3	PRE 5	F 10/15
21, 22	G	G	R	G	G	Y
41, 42	-R	-R	-	-R	-R	-R
43	-	R	-	-	R	R
51	-	-	-R	-	-	-Y
61	R	G	R	R	G	Y
62	R	G	R	R	G	Y

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

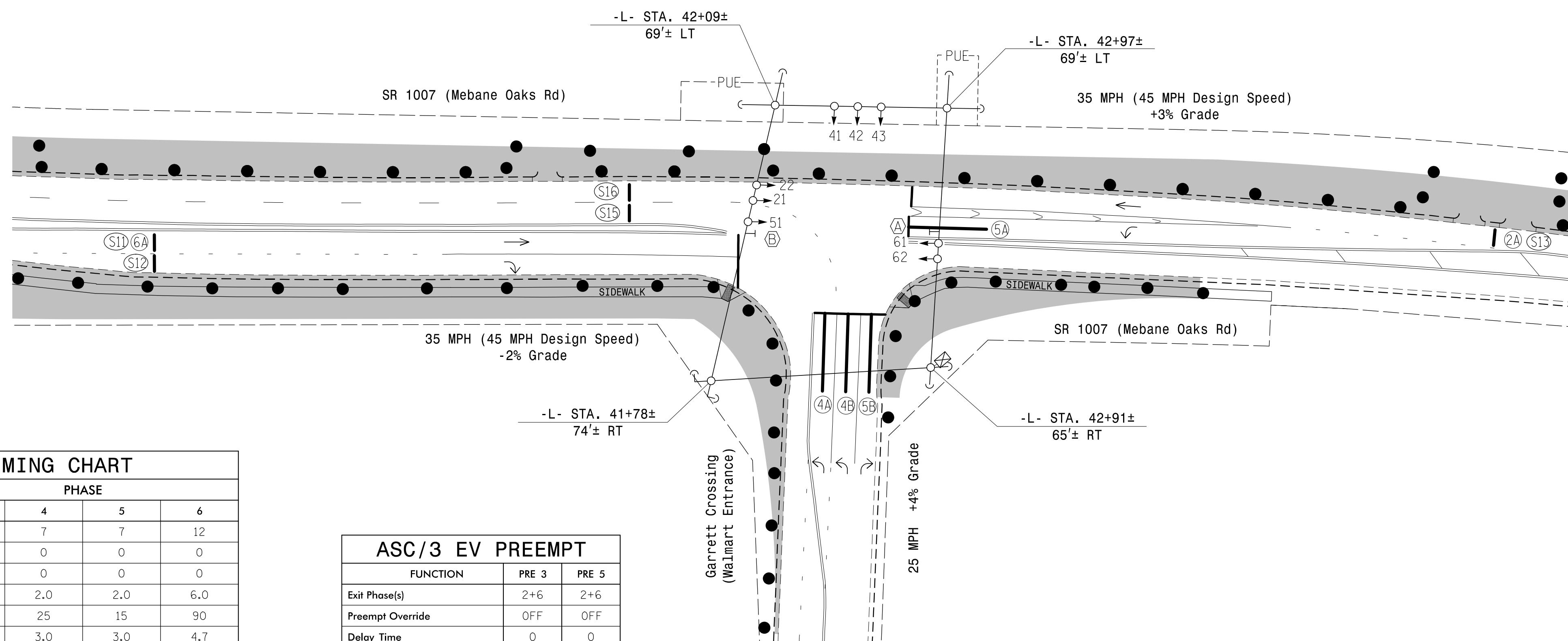
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A/S13	6X6	300	*	*	2	Yes	-	-	X	N	X	*
4A	6X40	0	*	*	4	Yes	-	3	-	S	-	*
4B	6X40	0	*	*	4	Yes	-	-	-	S	-	*
5A	6X40	0	*	*	5	Yes	-	15	-	S	-	*
					2	Yes	-	3	-	G	-	*
5B	6X40	0	*	*	5	Yes	-	15	-	S	-	*
6A/S11	6X6	300	*	*	6	Yes	-	-	X	N	X	*
S12	6x6	300	*	*	-	No	-	-	-	N	X	*
S15	6x6	+145	*	*	-	No	-	-	-	N	X	*
S16	6x6	+145	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

3 Phase
Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
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. Pavement markings are existing.
7. Relocate the existing GPS Emergency Vehicle Preemption system.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data:
Controller Asset #: 2060.



FEATURE	PHASE			
	2	4	5	6
Min Green *	12	7	7	12
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	6.0	2.0	2.0	6.0
Max I *	90	25	15	90
Yellow	4.7	3.0	3.0	4.7
Red Clear	1.2	2.4	2.1	1.2
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	0	-	-	0
Seconds /Actuation *	2.5	-	-	2.5
Max Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Locking Detector	X	-	-	X
Recall Position	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
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(TMP Phase I)
Signal Upgrade - Temporary Design 1

SR 1007 (Mebane Oaks Rd)
at
Garrett Crossing
(Walmart Entrance)

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY: Z. "Gavin" Teng

REVISIONS: _____ INIT. DATE

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SEAL

DATE: 12/17/2019

SIG. INVENTORY NO. 07-2060T1

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