

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps
Overlap Plan 1

ALTERNATE PHASING CHANGE SUMMARY

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

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

Disables phase 2 call on detection zone 5A
and reduces delay time for phase 5
call on detection zone 5A to 3 seconds.

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Detector	Call Phase	Delay
35	5	3.0
127	0	0.0

NO SERVICE PHASE PLANS

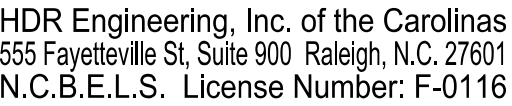
Front Panel
Main Menu >Controller >Sequence & Phs Config>Sequences

Web Interface
Home >Controller >Sequence

Front Panel
Main Menu >Controller >Sequence & Phs Config>No Served Phase Plans

Web Interface
Home >Controller >Phase Configuration>No Served Phase Plans

Phase	No Serve Phase
3	7



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774T2
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

EAL

NC 73 (Sam Furr Rd)
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE:	July, 2026	REVIEWED BY:	Z Wang
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PREPARED BY: K Hector	REVIEWED BY:
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REVISIONS

	DATE

7/10/2026

SIG. INVENTORY NO. 10-17747

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. 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.
4. 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.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

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.

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	125	Is Module A input B ON	Number	2	Number	1	0.0	0.0
2	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 33 to vehicle detector 125

Statement 2 Description: Mirrors vehicle detector 35 to vehicle detector 127

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774T2
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

Electrical and Programming
Details For:

Prepared in the Offices of:



TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
SIGNALS MANAGEMENT SECTION

NC 73 (Sam Furr Rd)
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
039071
KARL E. HECHE

7/10/2026
DATE

SIG. INVENTORY NO. 10-1774T2



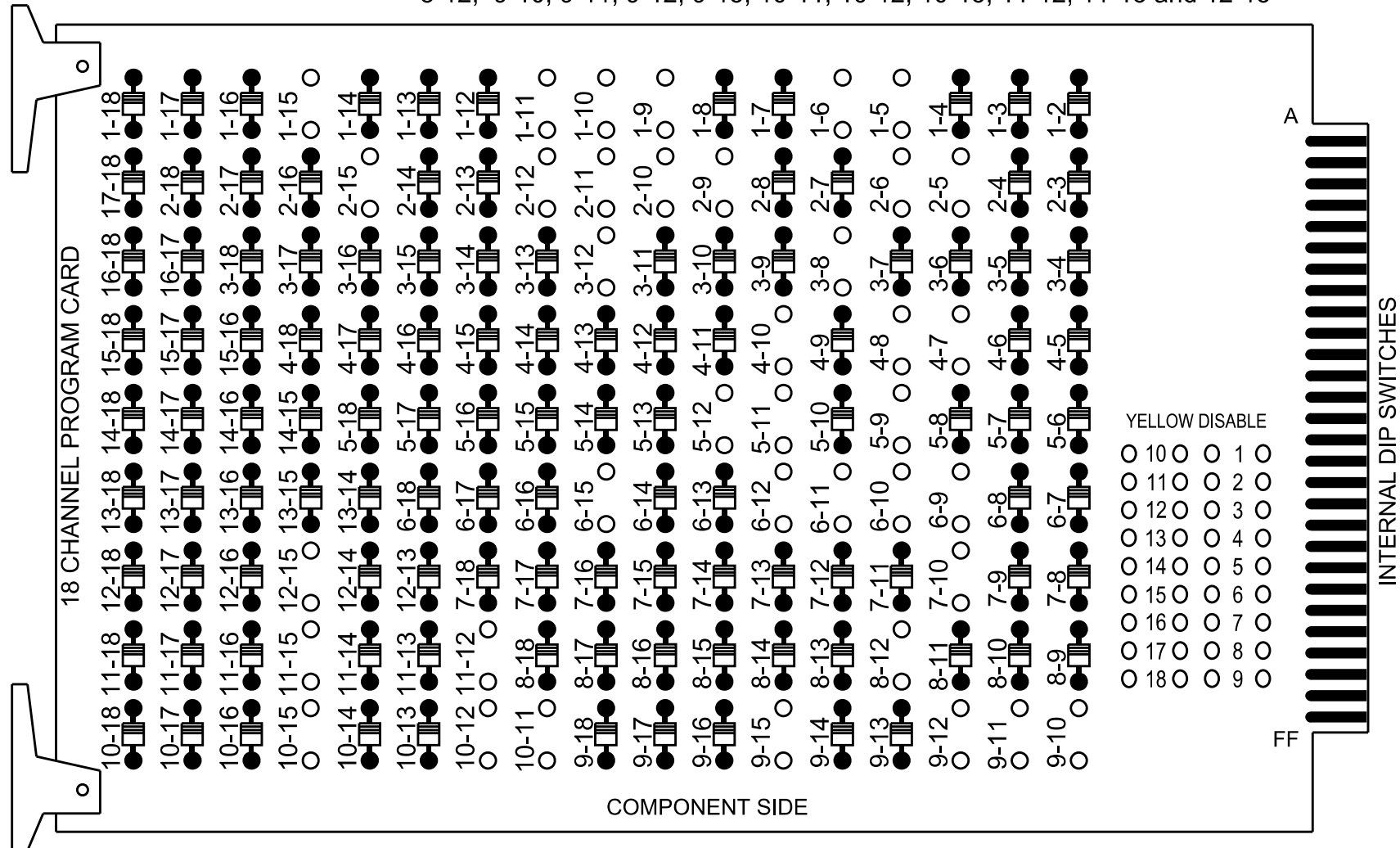
HDR Engineering, Inc. of the Carolinas
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N.C.B.E.L.S. License Number: F-0116

750 N. Greenfield Pkwy, Garner, NC 27529

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1, S2, S4, S5, S6, S7, S8, S9, S10, S11,
AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 3, 4, 4PED, 5, 6, 6PED, 7, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

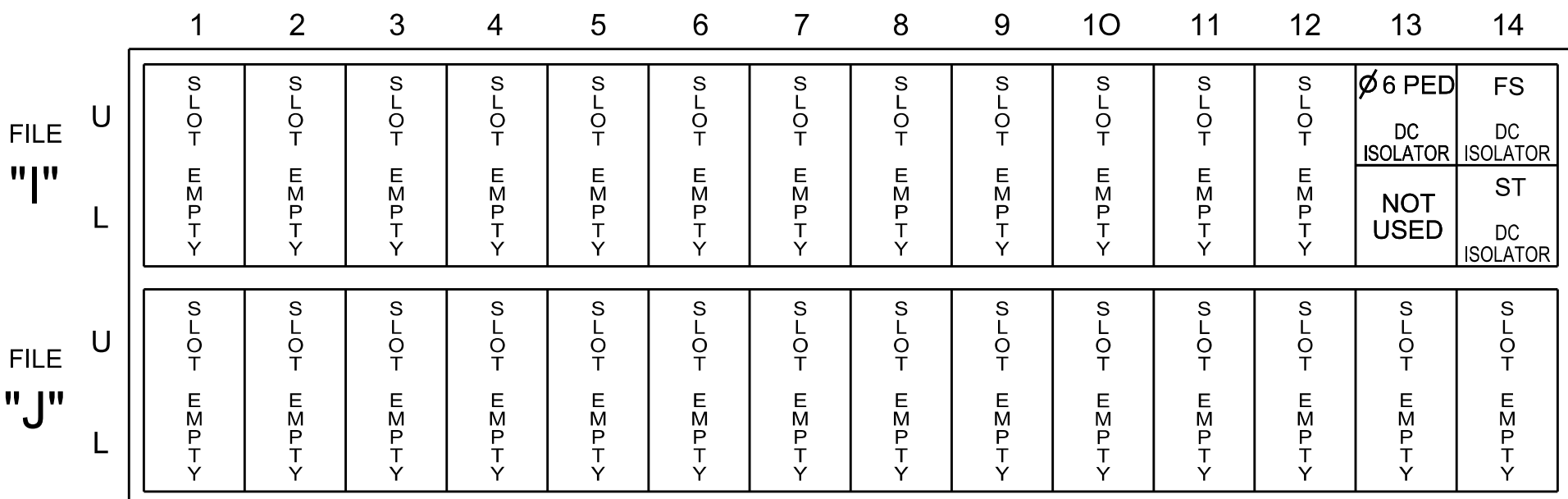
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	-	-	-	*	33*	1	15.0		X		X	
2A	-	-	-	*	125*	6	3.0		X		X	X
3A	-	-	-	*	38	2			X		X	
4A	-	-	-	*	34	3			X		X	
5A	-	-	-	*	44	4			X		X	
5B	-	-	-	*	35*	5	15.0		X		X	
6A	-	-	-	*	127*	2	3.0		X		X	X
7A	-	-	-	*	51	5	15.0		X		X	
7B	-	-	-	*	54	6			X		X	
8A	-	-	-	*	36	7			X		X	
8B	-	-	-	*	52	7			X		X	
8A	-	-	-	*	60	8			X		X	
8B	-	-	-	*	61	8	15.0		X		X	
PED PUSH BUTTONS												
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						

- * For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.
- * For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SDLC NON-INTRUSIVE DETECTION CHART

Input Point	Detector Rack #3		Detector Rack #4	
	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	1A	49	NU
2	34	3A	50	NU
3	35	5A	51	5B
4	36	7A	52	7B
5	37	NU	53	NU
6	38	2A	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	NU
12	44	4A	60	8A
13	45	NU	61	8B
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

NU = Not Used

SPECIAL DETECTOR NOTE

Install a multizone microwave 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.

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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	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	31	41	NU	42	51★	61,62 63	P61, P62	71,72	81,82	NU	11★	64★	NU	51★	23★	NU
RED		128			101			★	134			107			A124			A101	
YELLOW	★	129			102				135			108							
GREEN		130			103				136			109							
RED ARROW				116							122			A121			A114		
YELLOW ARROW				117			132				123			A122	A125		A115	A102	
FLASHING YELLOW ARROW														A123	A126		A116	A103	
GREEN ARROW	127			118			133	133			124								
										119									
										121									

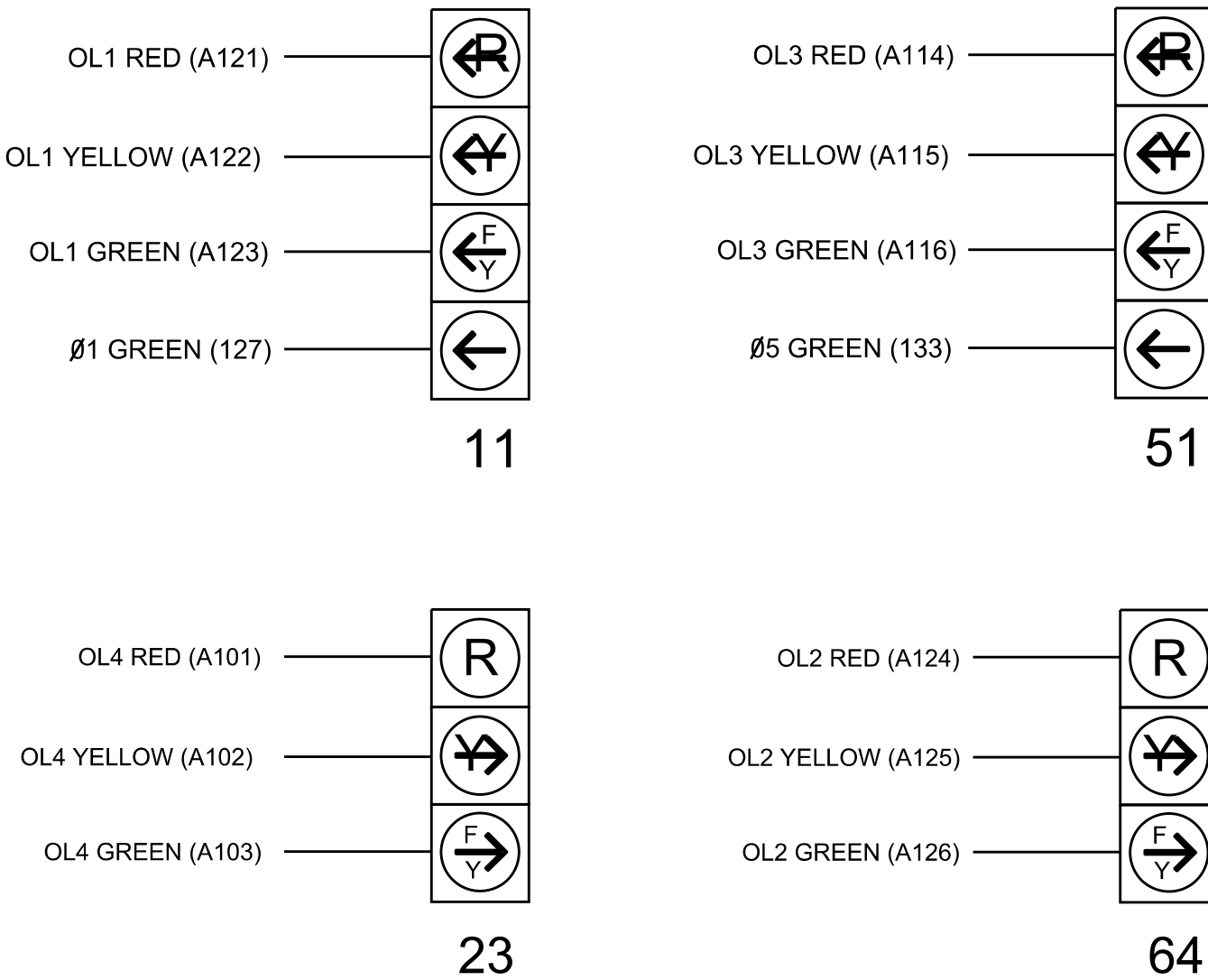
NU = Not Used

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

*See pictorial of head wiring in detail this sheet.

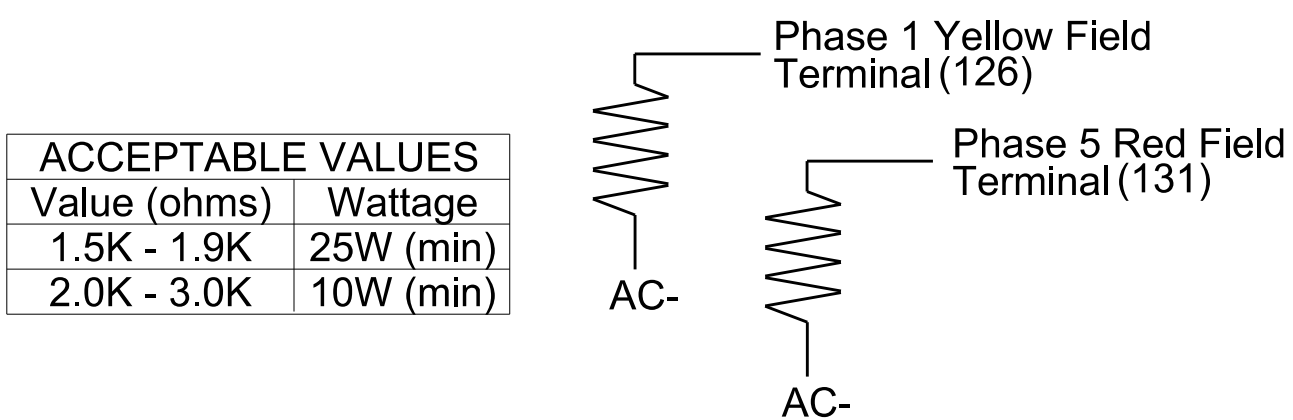
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774T3
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 1 of 3

Electrical and Programming
Details For:
Prepared in the Offices of:
North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector REVIEWED BY:

REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL



7/10/2026

DATE

SIG. INVENTORY NO. 10-1774T3

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. 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.
4. 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.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

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.

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	125	Is Module A input B ON	Number	2	Number	1	0.0	0.0
2	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 33 to vehicle detector 125

Statement 2 Description: Mirrors vehicle detector 35 to vehicle detector 127

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774T3
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

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ENGINEER
SEAL
039071
KARL E. HECTOR

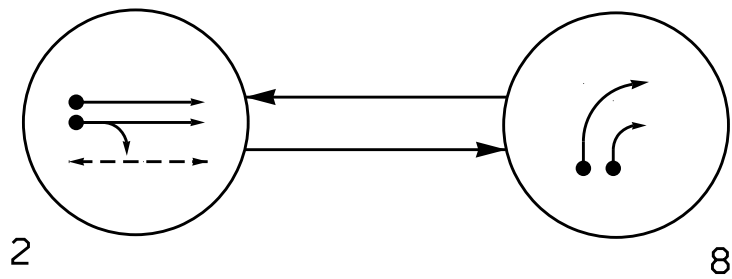
7/10/2026
DATE

SIG. INVENTORY NO. 10-1774T3

2 Phase
Fully Actuated
Signal System #: D10-43_Huntersville
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered # 21,22, 23,81,82.
- 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 accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- See traffic control plans for stop line and crosswalk placement.

PHASING DIAGRAM



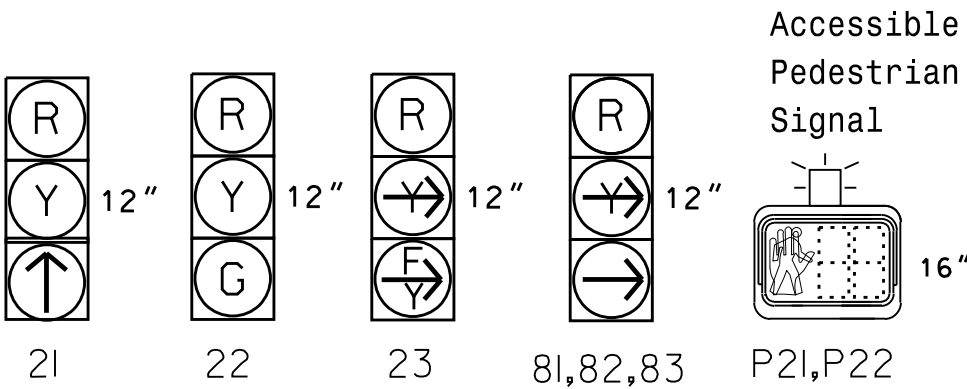
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		FLASH
	2	8	
21	↑	R	R
22	G	R	R
23	↓	R	R
81,82,83	R	→	R
P21,P22	W	DW	DRK

SIGNAL FACE I.D.

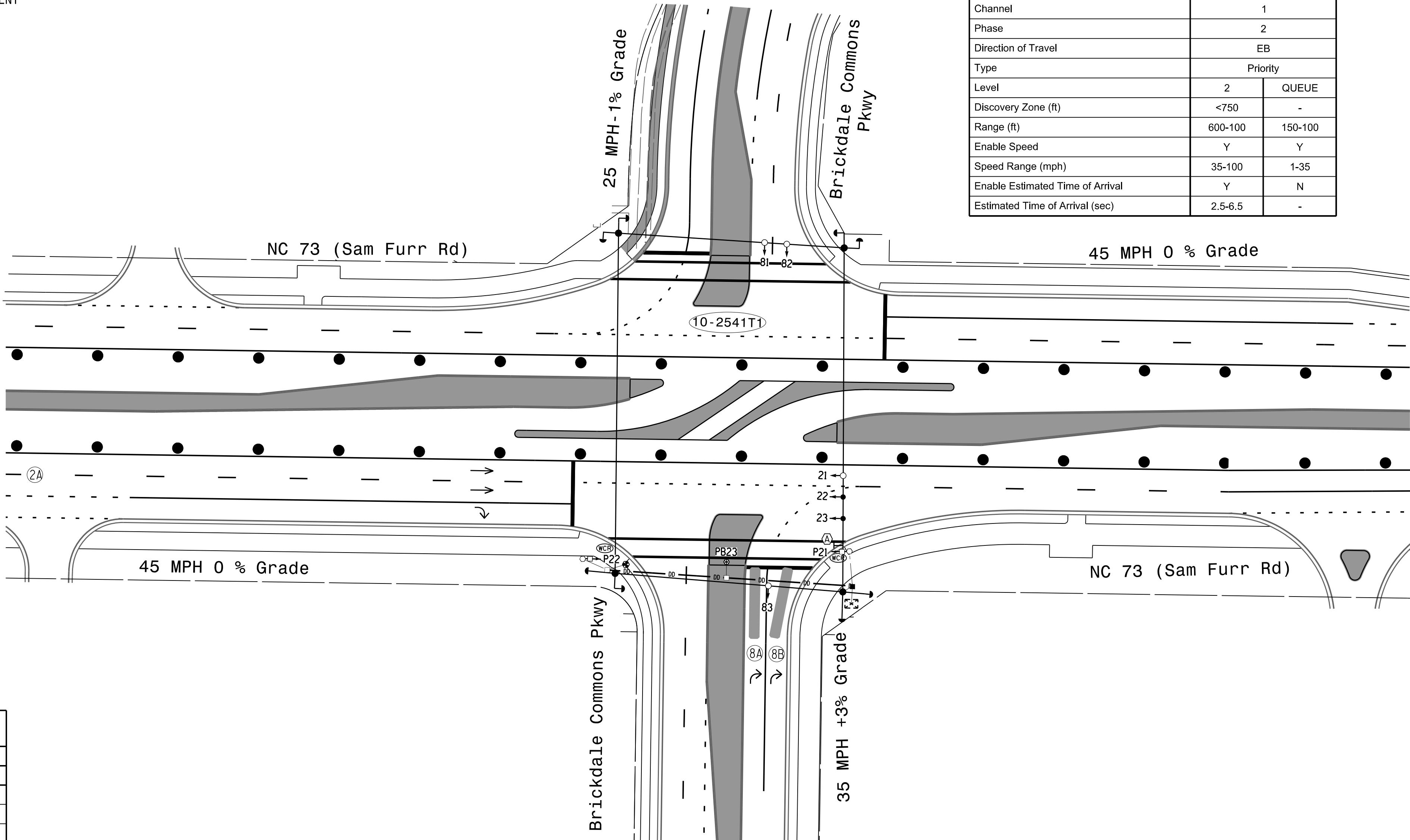
All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURN	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL CALL	DELAY DURING GREEN	NEW CARD
2A	*	*	*	*	2	-	-	X	-	X	*
8A	*	*	*	*	8	10.0	-	X	-	X	*
8B	*	*	*	*	8	10.0	-	X	-	X	*

* Multi-zone Microwave Detection.

Microwave Detection System		
FUNCTION		Sensor 1 (2A)
Channel	1	
Phase	2	
Direction of Travel	EB	
Type	Priority	
Level	2	QUEUE
Discovery Zone (ft)	<750	
Range (ft)	600-100	150-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	1-35
Enable Estimated Time of Arrival	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-

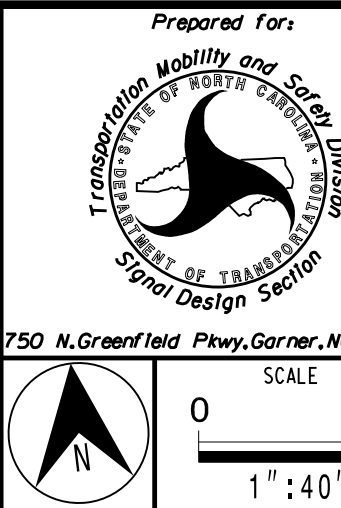


MAXTIME TIMING CHART		
FEATURE	PHASE	
	2	8
Walk *	7	-
Ped Clear	30	-
Min Green *	12	7
Passage *	2.0	2.0
Max I *	90	25
Yellow Change	4.5	3.7
Red Clear	2.4	1.5
Added Initial *	-	-
Maximum Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Advance Walk	7	-
Non Lock Detector	-	X
Vehicle Recall	MIN RECALL	-
Dual Entry	-	-

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

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION				
SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons
P22	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons

Temporary Design #4
(TMP Phase 2)



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900, Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NC 73 (Sam Furr Rd) EB at Brickdale Commons Pkwy	
Division 10 Mecklenburg County	Huntersville
PLAN DATE: July 2026	REVIEWED BY: Z Wang
PREPARED BY: K Hector	RKA PROJ. No.:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039071

7/10/2026

SIGNATURE DATE

SIG. INVENTORY NO. 10-177474

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	Off	Off	Off	FYA 4 - Section
Included Phases	-	-	-	2
Modifier Phases	-	-	-	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. 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.
4. 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.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774T4
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 2

Electrical and Programming Details For:

Prepared in the Offices of:



TRANSPORTATION MOBILITY AND SAFETY DIVISION
DIVISION OF TRANSPORTATION
STATE OF NORTH CAROLINA
Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd) EB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT.

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL

039071

ENGINEER

KARL E. HECHE

7/10/2026

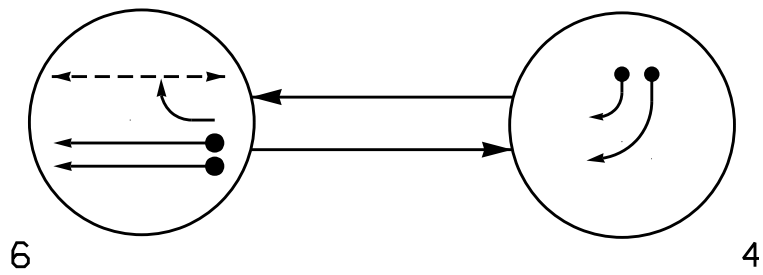
DATE

SIG. INVENTORY NO. 10-1774T4

2 Phase
Fully Actuated
Signal System #: D10-43_Huntersville
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered # 61,62, 63,41,42
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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 accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- See traffic control plans for stop line and crosswalk placement.

PHASING DIAGRAM

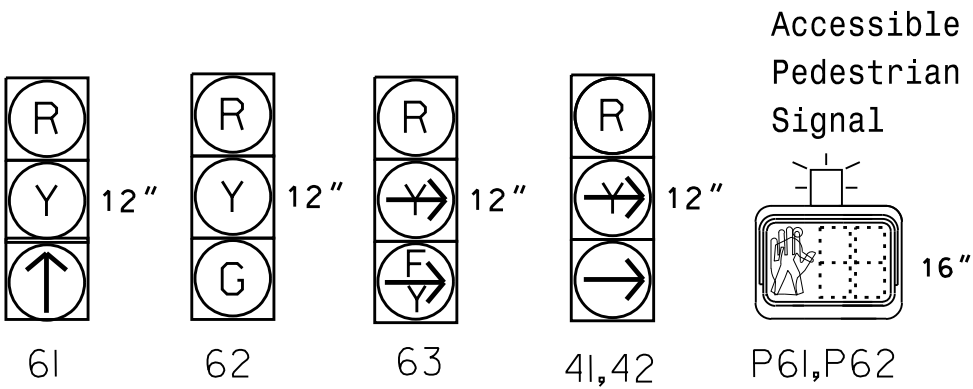


- PHASING DIAGRAM DETECTION LEGEND
- DETECTED MOVEMENT
 - UNDETECTED MOVEMENT (OVERLAP)
 - UNSIGNALIZED MOVEMENT
 - PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	6	4	FLASH
41,42	R	→	R
61	↑	R	R
62	G	G	R
63	↓	R	R
P61,P62	W	DW	DRK

SIGNAL FACE I.D.

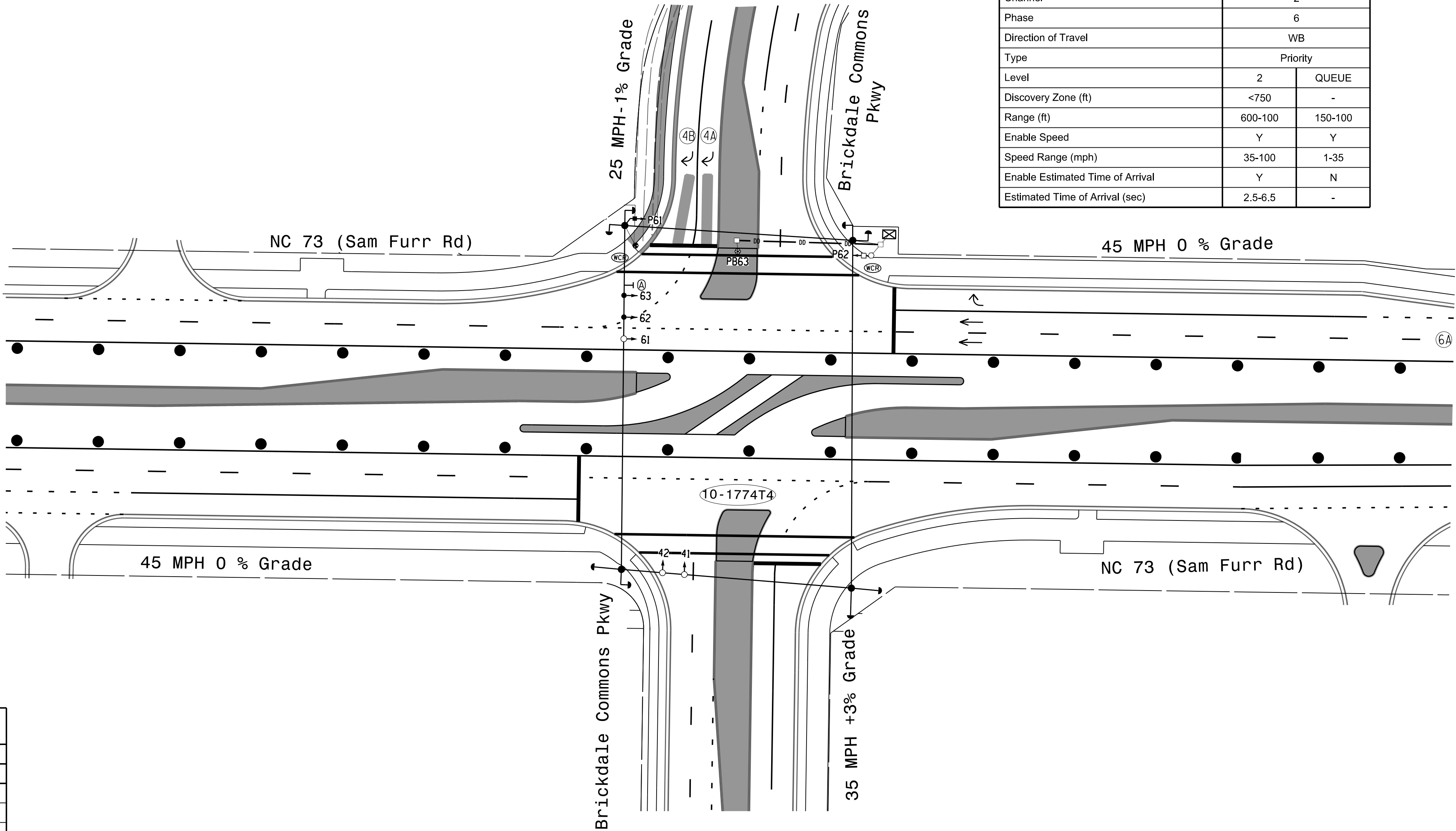
All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART										
DETECTOR					PROGRAMMING					
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	URNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL CALL	DELAY DURING GREEN NEW CARD
4A	*	*	*	*	4	10.0	-	X	-	X
4B	*	*	*	*	4	10.0	-	X	-	X
6A	*	*	*	*	6	-	-	X	-	X

* Multi-zone Microwave Detection.

Microwave Detection System		
FUNCTION		Sensor 2 (6A)
Channel	2	
Phase	6	
Direction of Travel	WB	
Type	Priority	
Level	2	QUEUE
Discovery Zone (ft)	<750	-
Range (ft)	600-100	150-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	1-35
Enable Estimated Time of Arrival	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-



MAXTIME TIMING CHART		
FEATURE	PHASE	
	4	6
Walk *	-	7
Ped Clear	-	32
Min Green *	7	12
Passage *	2.0	2.0
Max I *	25	90
Yellow Change	3.2	4.5
Red Clear	2.1	2.4
Added Initial *	-	-
Maximum Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Advance Walk	-	7
Non Lock Detector	X	-
Vehicle Recall	MIN RECALL	-
Dual Entry	-	-

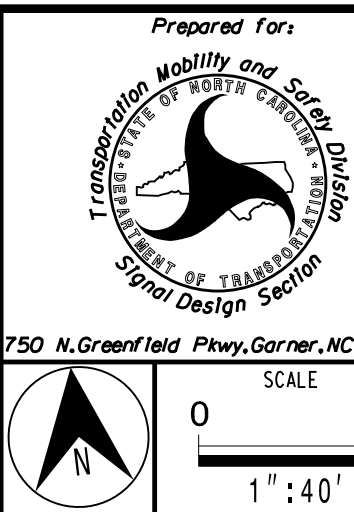
* These values may be field adjusted. Do not adjust Min Green and Passage times for phase 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION				
SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons
P22	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons

LEGEND

- | PROPOSED | EXISTING |
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Temporary Design #4
(TMP Phase 2)



NC 73 (Sam Furr Rd) EB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector RKA PROJ. No.:

REVISIONS

INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

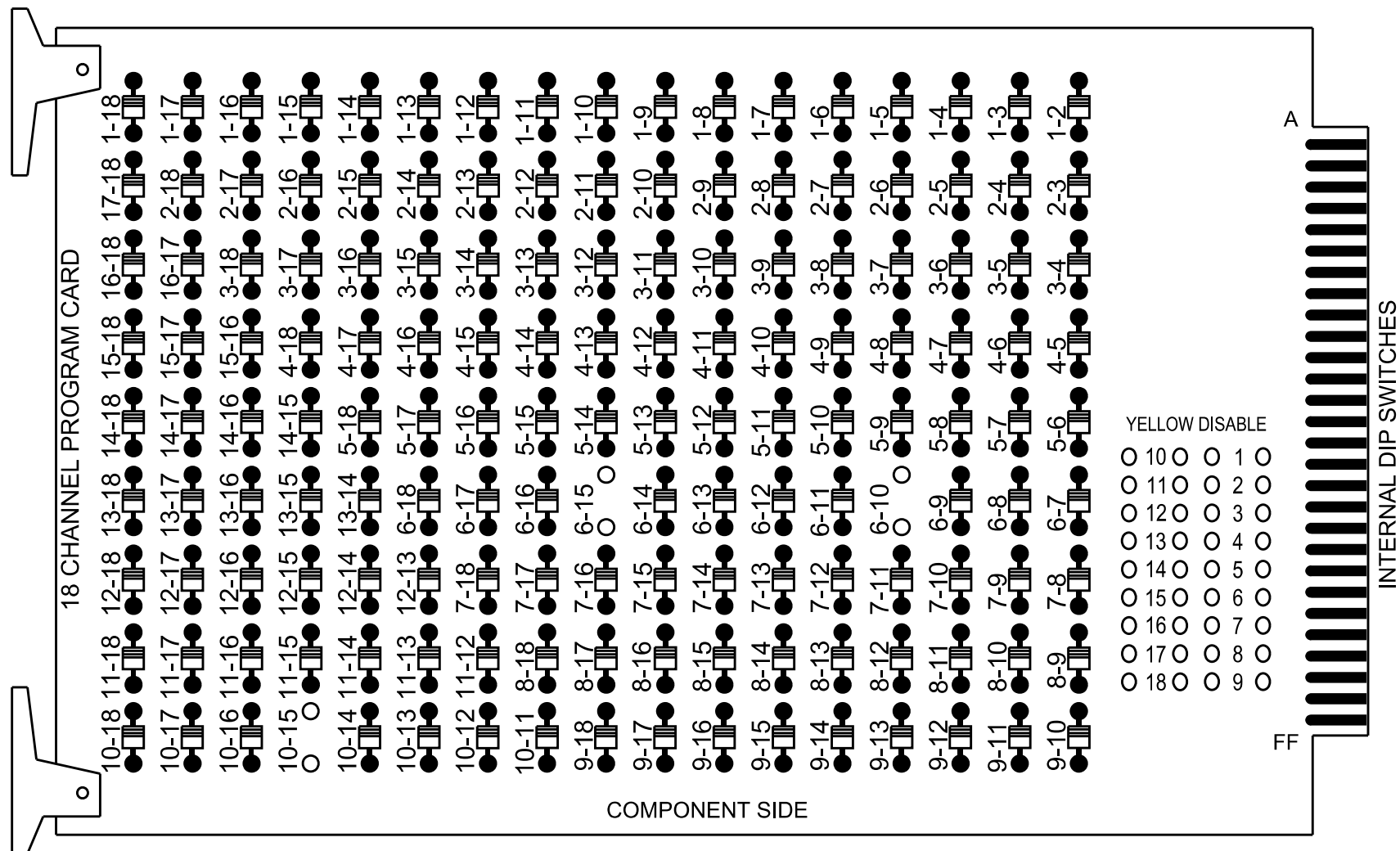


SIG. INVENTORY NO. 10-254111

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 6-10, 6-15 and 10-15.



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 6 Green No Walk and 2 Phase Not On.
- Remove Min Vehicle Recall on phase 2.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S5, S8, S9, AUX S2
Phases Used.....4, 6, 6PED
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....NOT USED

SIGNAL HEAD HOOK-UP CHART

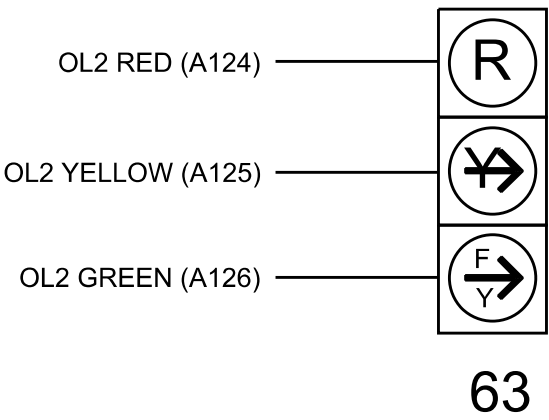
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	NU	NU	NU	41,42	NU	NU	61	62	P61, P62	NU	NU	NU	63	NU	NU	NU	NU
RED					101			134	134					A124				
YELLOW								135	135									
GREEN									136									
RED ARROW																		
YELLOW ARROW					102									A125				
FLASHING YELLOW ARROW														A126				
GREEN ARROW					103			136										
Hand icon										119								
Walking person icon										121								

NU = Not Used

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	U	U	U	U	U	U	U	U	U	U	U	U	U
FILE "J"	U	U	U	U	U	U	U	U	U	U	U	U	U	U

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

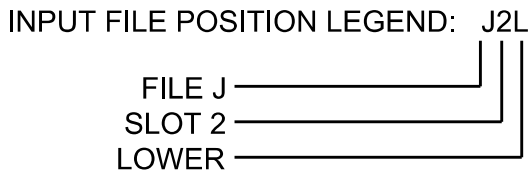
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
4A	-	-	-	*	44	4	10.0		X		X	
4B	-	-	-	*	45	4	10.0		X		X	
6A	-	-	-	*	54	6			X		X	
PED PUSH BUTTONS												
P61,P62,P63	TB8-7,9	I13U	68	34	6	PED 6	NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS I13.					

* For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

SDLC NON-INTRUSIVE DETECTION CHART

	Detector Rack #3		Detector Rack #4	
Input Point	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	NU
2	34	NU	50	NU
3	35	NU	51	NU
4	36	NU	52	NU
5	37	NU	53	NU
6	38	NU	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	NU
12	44	4A	60	UN
13	45	NU	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2541T1
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd) EB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector REVIEWED BY:

REVISIONS

INIT. DATE

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

7/10/2026

DATE

SIG. INVENTORY NO. 10-2541T1

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps
Overlap Plan 1

Overlap	1	2	3
Type	Off	FYA 4 - Section	Off
Included Phases	-	6	-
Modifier Phases	-	-	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. 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.
4. 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.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters	Unit Flash Parameters
StartUp Clearance Hold 6	All Red Flash Exit Time 6

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2541T1
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 2

Electrical and Programming Details For:

Prepared in the Offices of:



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
& Traffic Management Solutions

750 N. Greenfield Pkwy, Garner, NC 27529



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NC 73 (Sam Furr Rd) EB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



SEAL
039071
KARL E. HECTOR
ENGINEER

7/10/2026

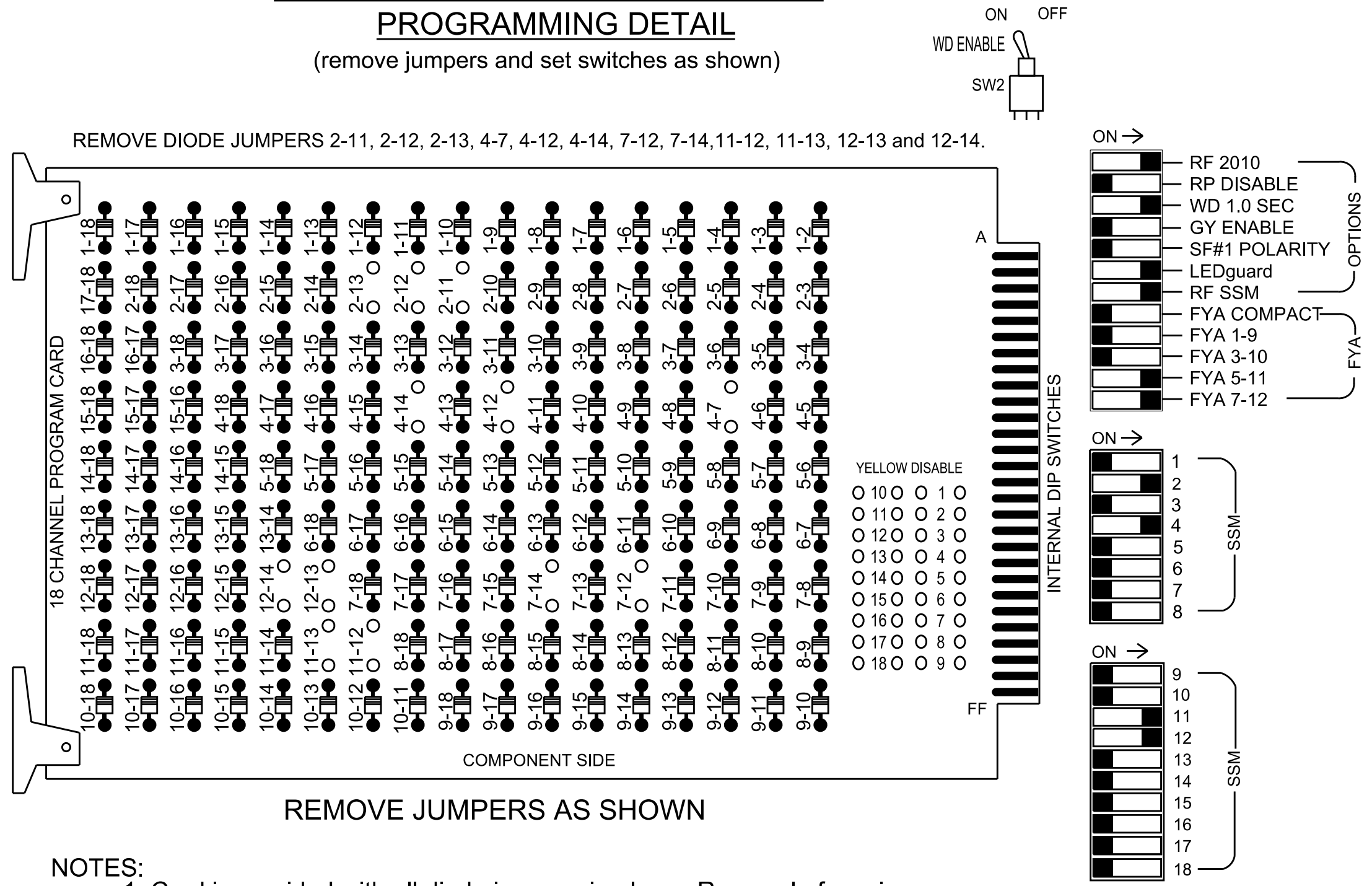
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SIG. INVENTORY NO.

10-2541T1

18 CHANNEL IP 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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program phases 4 and 7 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and 6 Phase Not On.
- Remove Min Vehicle Recall on phase 6.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S3, S5, S6, S10, AUX S4, AUX S5
Phases Used.....2, 2PED, 4, 4PED, 7
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*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	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21	22,23	P21, P22	NU	41,42	P41, P42	NU	NU	NU	71,72	NU	NU	NU	NU	24	71,72	NU
RED		128	128			101										A114		
YELLOW		129	129							*								
GREEN			130															
RED ARROW																	A101	
YELLOW ARROW						102										A115	A102	
FLASHING YELLOW ARROW																A116	A103	
GREEN ARROW		130				103				124								
HAND				113		104												
WALK				115		106												

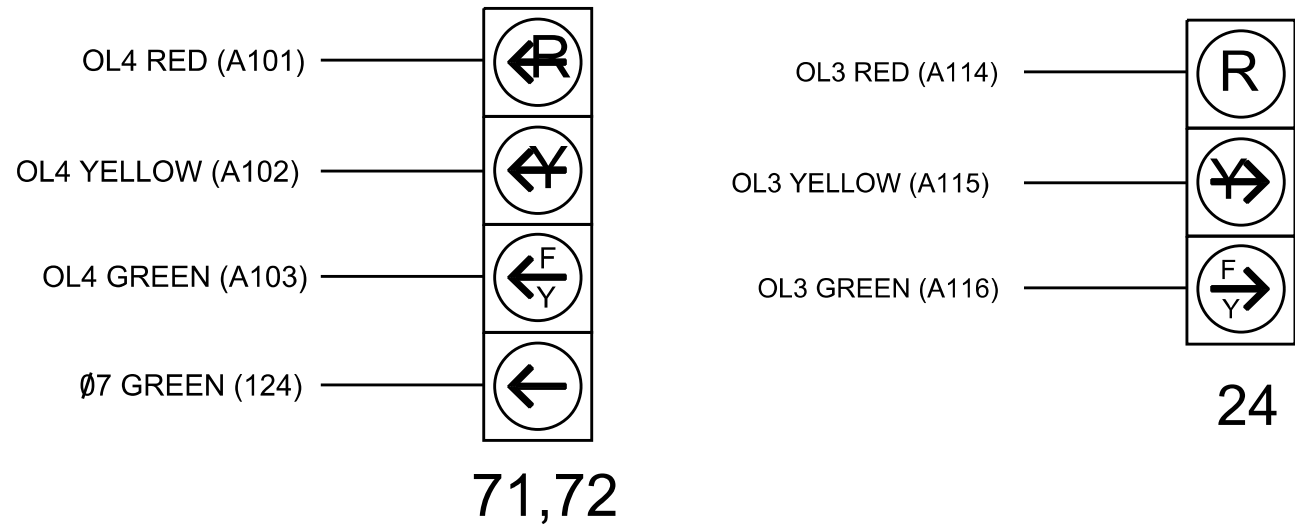
NU = Not Used

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

* See pictorial of head wiring in detail this sheet.

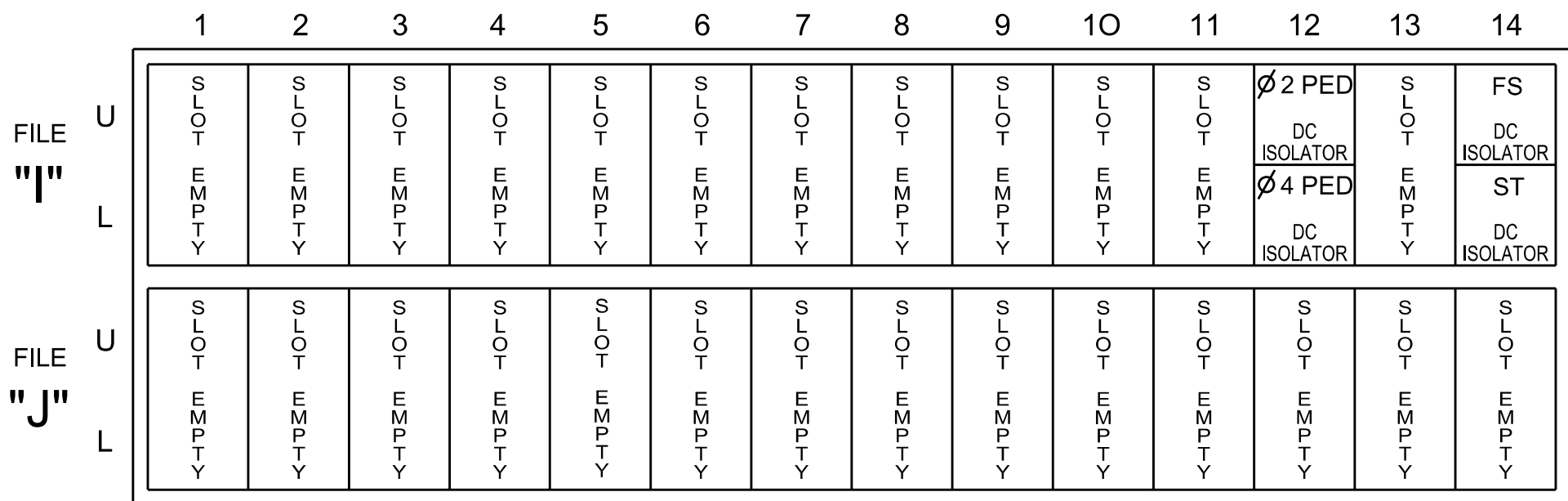
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	-	-	-	*	38	2			X		X	
4A	-	-	-	*	44	4	15.0		X		X	
4B	-	-	-	*	45	4	15.0		X		X	
7A	-	-	-	*	36	7	15.0		X		X	
PED PUSH BUTTONS												
P21,P22,PB23	TB8-4,6	I12U	67	33	2	PED 2						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4						

* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

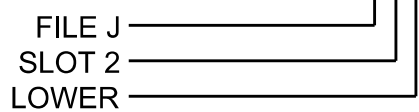
* For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

SDLC NON-INTRUSIVE DETECTION CHART

Input Point	Detector Rack #3		Detector Rack #4	
	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	NU
2	34	NU	50	NU
3	35	NU	51	NU
4	36	7A	52	NU
5	37	NU	53	NU
6	38	2A	54	NU
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	NU
12	44	4A	60	NU
13	45	4B	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

NU = Not Used

INPUT FILE POSITION LEGEND: J2L



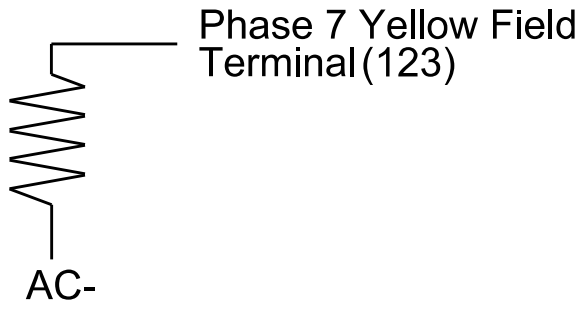
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 3

Electrical and Programming Details For:

Prepared in the Offices of:

NC 73 (Sam Furr Rd) EB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector REVIEWED BY:

REVISIONS

INIT. DATE

7/10/2026

DATE

SIG. INVENTORY NO. 10-1774

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 039071

ENGINEER

APPROVED

7/9/2026
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11:20:52 AM

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	3	4
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	2	2
Modifier Phases	-	7
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0
FYA Ped Delay	7.0	0.0

MAXTIME ALTERNATE PHASING PATTERN
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	3	4
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	2	-
Modifier Phases	-	7
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0

← NOTICE INCLUDED PHASE

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2. A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for heads 71 to run protected turns only.

VEH DET PLAN 2: Reduce delay time for phase 7 call on detection zone 7A to 0 seconds.

MAXTIME DETECTOR PROGRAMMING DETAIL
FOR ALTERNATE PHASING DETECTION ZONE 7A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Detector	Call Phase	Delay
36	7	0

7A

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming Details For:	NC 73 (Sam Furr Rd) EB at Brickdale Commons Pkwy	SEAL
Prepared in the Offices of:	Division 10 Mecklenburg County Huntersville	SEAL 039071 ENGINEER KARL E. HECOF
	PLAN DATE: July 2026 REVIEWED BY: Z Wang PREPARED BY: K Hector REVIEWED BY:	7/10/2026 DATE
750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS	SIG. INVENTORY NO. 10-1774

 HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters	Unit Flash Parameters
StartUp Clearance Hold	All Red Flash Exit Time
6	6

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. 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.
4. 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.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

FLASHER CIRCUIT MODIFICATION DETAIL

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

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
 2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
 3. REMOVE FLASHER UNIT 2.
- THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

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.

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1774
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

[illegible]

The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Differences for:	Pole 7	
Baseline reference point at Foundation @ ground level	0.0 ft.	
Elevation difference at High point of roadway surface	+1.1 ft.	
Elevation difference at Edge of travelway or face of curb	+0.1 ft.	



BASE PLATE TEMPLATE & ANCHOR BOLT
LOCK PLATE DETAIL
For 8 Bolt Base Plate

PROJECT REFERENCE NO.	SHEET NO.
U-5765	Sig. 16.5

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"x3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	LUMINAIRE	EPA 0.87 S.F.	13.25" W X 26.25" L	35 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0" W X 30.0" L	11 LBS

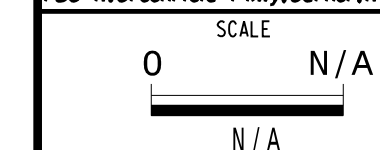
DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
 - The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2024 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website:
<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using force ratios that do not exceed 0.9.
4. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
5. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
6. The mast arm attachment height (H1) shown is based on the following design assumptions:
 - a. Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - b. Signal heads are rigidly mounted and vertically centered on the mast arm.
 - c. The roadway clearance height for design is as shown in the elevation views.
 - d. The top of the pole base plate is 0.75 feet above the ground elevation.
 - e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - f. Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
7. The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
8. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
9. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
10. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
11. Comply with NEC code 230.2(E) concerning service equipment disconnect.
12. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
13. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

NCDOT Wind Zone 5 (110 mph)

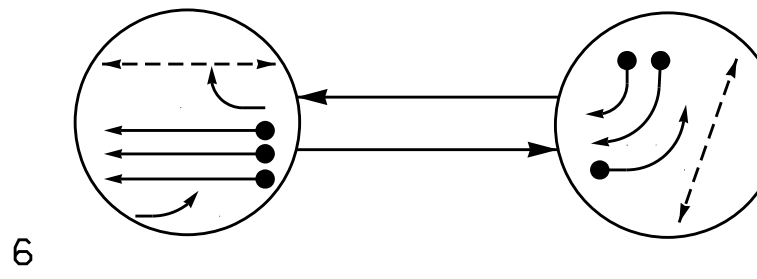
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7/10/2026
DATE
SIG. INVENTORY NO. 10-1774

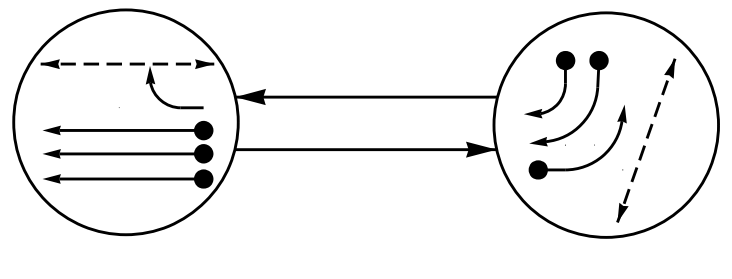
2 Phase
Fully Actuated
w/ Alternate Phasing Operation
Signal System #: D10-43_Huntersville
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night operation unless otherwise directed by the Engineer.
3. All signal heads shall have backplates with retro-reflective sheeting.
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 accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
8. The Division Traffic Engineer will determine the hours of use for each phasing plan.
9. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. See pavement markings plans for stopline and crosswalk placement.

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

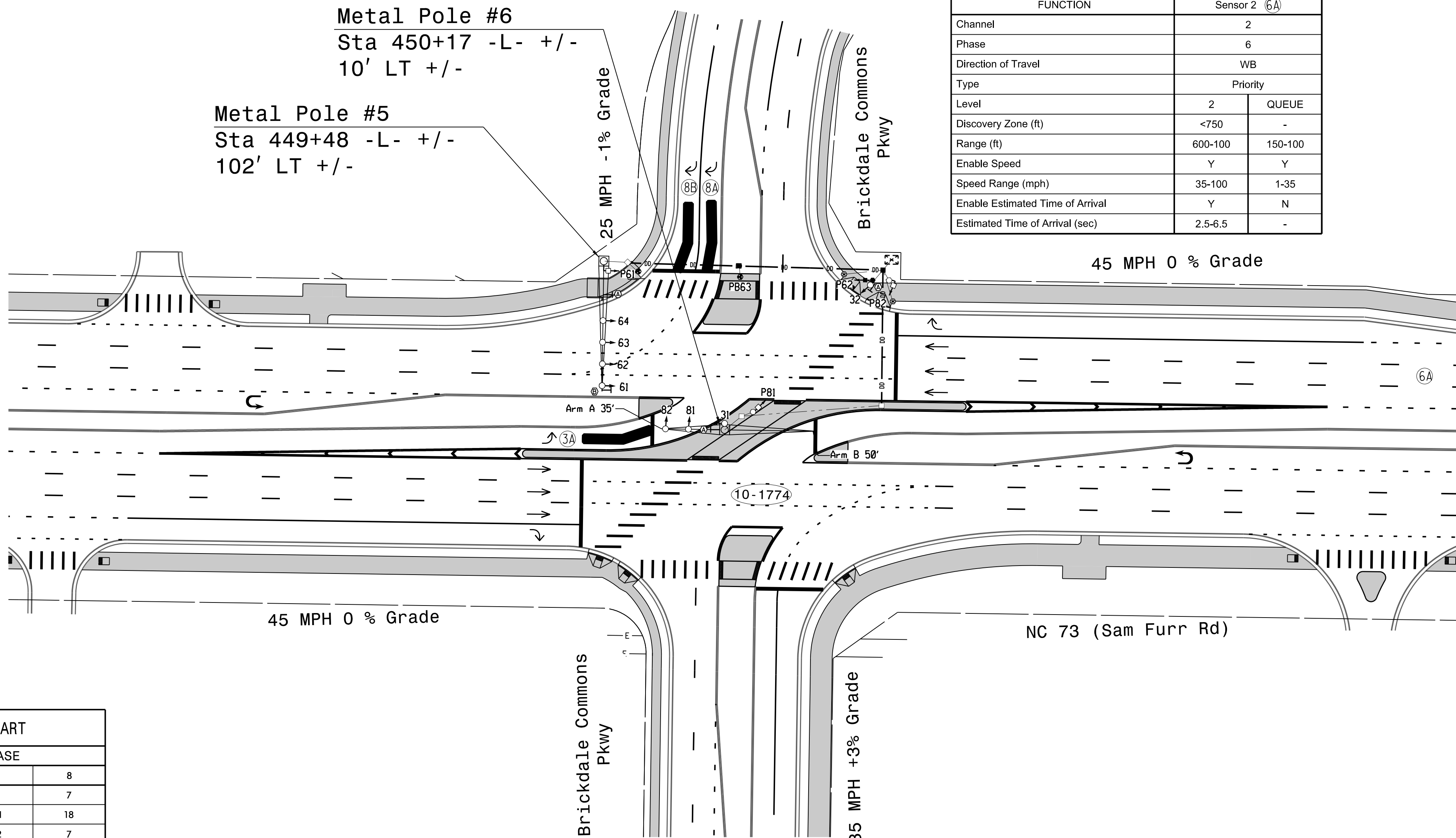
DEFAULT PHASE TABLE OF OPERATION			
SIGNAL FACE	PHASE		
31,32	6	3	FLASH
61	↑	R	R
62,63	G	R	R
64	↓	R	R
81,82	R	→	R
P61,P62	W	DW	DRK
P81,P82	DW	W	DRK

ALTERNATE PHASE TABLE OF OPERATION			
SIGNAL FACE	PHASE		
31,32	6	3	FLASH
61	↑	R	R
62,63	G	R	R
64	↓	R	R
81,82	R	→	R
P61,P62	W	DW	DRK
P81,P82	DW	W	DRK

MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURN	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	NEW CARD
3A	*	*	*	*	3	15.0#	-	X	-	X	*
6A	*	*	*	*	6	-	-	X	-	X	*
8A	*	*	*	*	8	15.0	-	X	-	X	*
8B	*	*	*	*	8	15.0	-	X	-	X	*

* Multi-zone Microwave Detection.
Disable Delay During Alternate Phasing Operation.

Microwave Detection System		
FUNCTION		Sensor 2 (6A)
Channel	2	
Phase	6	
Direction of Travel	WB	
Type	Priority	
Level	2	QUEUE
Discovery Zone (ft)	<750	-
Range (ft)	600-100	150-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	1-35
Enable Estimated Time of Arrival	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-

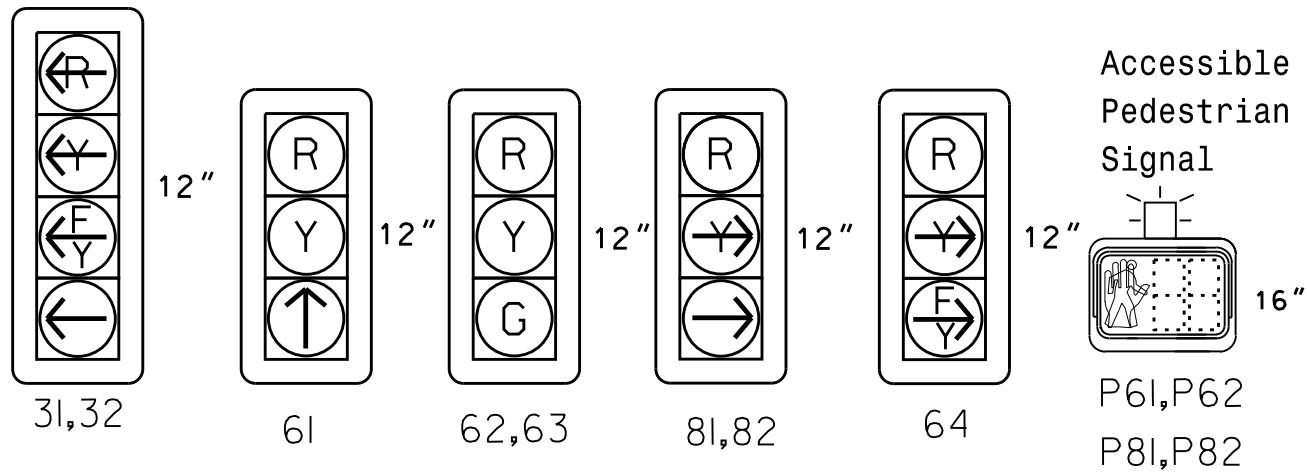


MAXTIME TIMING CHART			
FEATURE	PHASE		
	3	6	8
Walk *	-	7	7
Ped Clear	-	31	18
Min Green *	7	12	7
Passage *	2.0	2.0	2.0
Max I *	25	90	25
Yellow Change	3.2	4.5	3.2
Red Clear	3.0	2.3	2.2
Added Initial *	-	-	-
Maximum Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Advance Walk	-	7	-
Non Lock Detector	X	-	X
Vehicle Recall	-	MIN RECALL	-
Dual Entry	X	-	X

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

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION				
SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P61	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons
P62	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Brickdale Commons
P81	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Sam Furr
P82	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait, wait to cross Sam Furr

SIGNAL FACE I.D.



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

Signal Upgrade - Final Design

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900, Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

750 N. Greenfield Pkwy, Garner, NC 27529

Prepared for:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
Signal Design Section

NC 73 (Sam Furr Rd) WB
at
Brickdale Commons Pkwy

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector RKA PROJ. No.:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039071 APRIL 15, 2024

SIGNATURE DATE 7/10/2026

SIG. INVENTORY NO. 10-2541

7/9/2026
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OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps
Overlap Plan 1

Overlap	1	2
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	6	6
Modifier Phases	-	3
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0
FYA Ped Delay	7.0	0.0

MAXTIME ALTERNATE PHASING PATTERN
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters		
Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap	1	2
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	6	-
Modifier Phases	-	3
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0
FYA Ped Delay	7.0	0.0

NOTICE INCLUDED PHASE

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2. A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for heads 31 to run protected turns only.

VEH DET PLAN 2: Reduces delay time for phase 3 call on detection zone 3A to 0 seconds.

MAXTIME DETECTOR PROGRAMMING DETAIL
FOR ALTERNATE PHASING DETECTION ZONE 3A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Detector	Call Phase	Delay
3A	3	0

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2541
DESIGNED: June 2026
SEALED: 06-XX-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming Details For:	NC 73 (Sam Furr Rd) WB at Brickdale Commons Pkwy	SEAL	
Prepared in the Offices of:	Division 10 Mecklenburg County Huntersville		
	PLAN DATE: July 2026 REVIEWED BY: Z Wang		
	PREPARED BY: K Hector REVIEWED BY:		
	REVISIONS		INIT. DATE
750 N. Greenfield Pkwy, Garner, NC 27529			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		SIG. INVENTORY NO. 10-2541	

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

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.
- An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
- A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

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.

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2541
DESIGNED: June 2026
SEALED: 06-XX-2026
REVISED: N/A

Advanced Cabinet Options

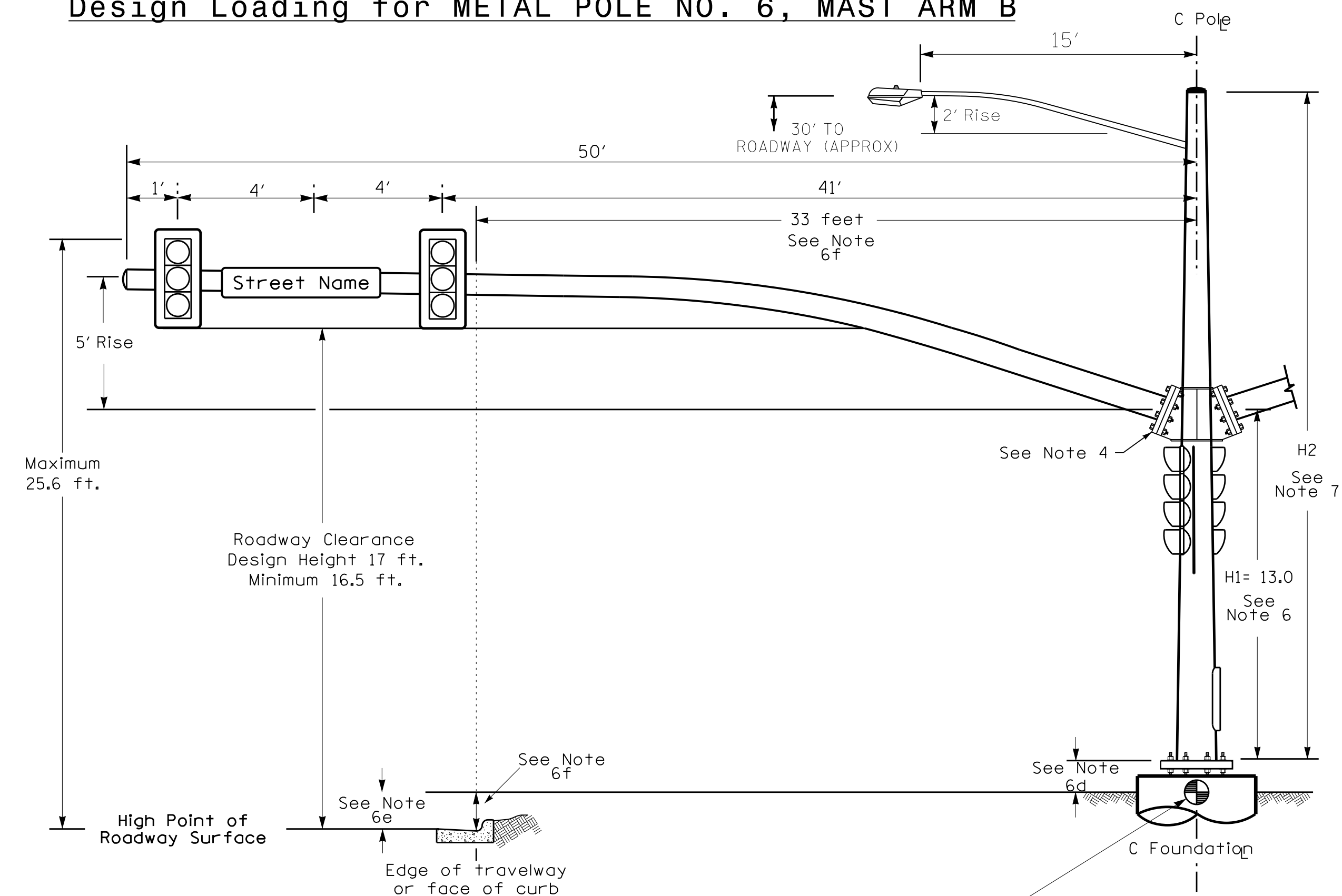
- ☒ Disable TS2 Cabinet Alarms

Electrical Detail - Sheet 3 of 3

Diagram illustrating the design loading for a street lighting pole and luminaire assembly. The diagram shows a vertical pole with a luminaire arm extending horizontally. Key dimensions and notes include:

- Pole:** Total height is 13.0 ft (H1). The base is labeled "Foundation".
- Luminaire Arm:** The arm is 12 feet long (See Note 6f). It has a 2' rise at the end. The distance from the pole to the luminaire is 30'.
- Luminaire:** The luminaire is 35' long. It has a 5' rise at the end. The distance from the pole to the luminaire is 30'.
- Notes:**
 - See Note 4: Points to the luminaire arm.
 - See Note 6: Points to the pole.
 - See Note 6d: Points to the base of the pole.
 - See Note 6e: Points to the edge of the travelway or face of the curb.
 - See Note 6f: Points to the luminaire arm.
 - See Note 7: Points to the pole.
- Dimensions:**
 - 15' (Distance from pole to luminaire arm)
 - 30' (Distance from pole to luminaire)
 - 35' (Length of luminaire)
 - 12 feet (Length of luminaire arm)
 - 2' Rise (At end of luminaire arm)
 - 30' TO ROADWAY (APPROX) (Distance from pole to roadway)
 - 4' (Distance from luminaire to roadway)
 - 1' (Distance from luminaire to roadway)
 - 5' Rise (At end of luminaire)
 - Maximum 25.6 ft. (Total height of luminaire)
- Other Labels:**
 - Street Name (Label on luminaire)
 - Edge of travelway or face of curb (Point of reference)
 - High Point of Roadway Surface (Point of reference)
 - Base line reference elev. = 0.0' (Reference elevation)

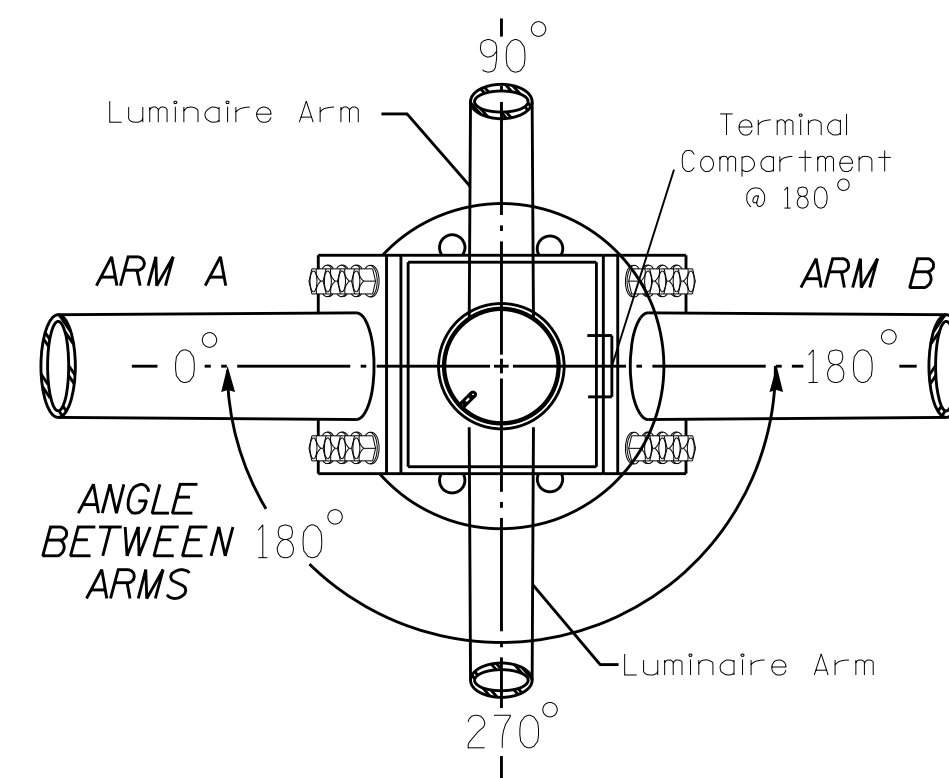
Design Loading for METAL POLE NO. 6, MAST ARM B



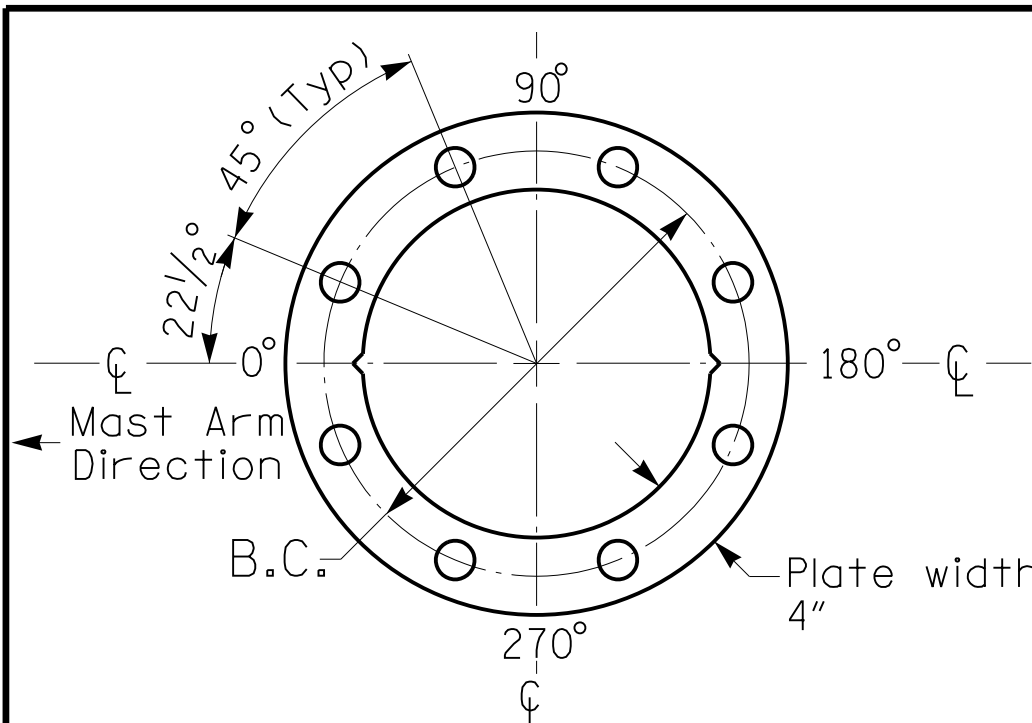
HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Differences for:	Arm A	Arm B
Baseline reference point at Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.5 ft.	-0.5 ft.
Elevation difference at Edge of travelway or face of curb	-0.5 ft.	-0.5 ft.



See Note 5



PROJECT REFERENCE NO.	SHEET NO.
U-5765	Sig. 17.5

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	LUMINAIRE	EPA 0.87 S.F.	13.25" W X 26.25" L	35 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0" W X 30.0" L	11 LBS

DESIGN REFERENCE MATERIAL

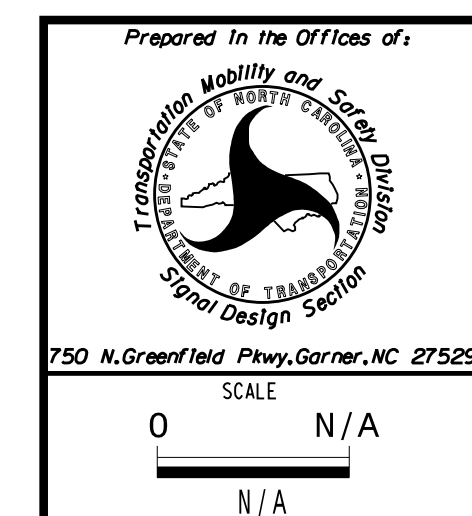
1. Design the traffic signal structure and foundation in accordance with:
 - The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2024 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website:
<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using force ratios that do not exceed 0.9.
4. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
5. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
6. The mast arm attachment height (H1) shown is based on the following design assumptions:
 - a. Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - b. Signal heads are rigidly mounted and vertically centered on the mast arm.
 - c. The roadway clearance height for design is as shown in the elevation views.
 - d. The top of the pole base plate is 0.75 feet above the ground elevation.
 - e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - f. Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
7. The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
8. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
9. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
10. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
11. Comply with NEC code 230.2(E) concerning service equipment disconnect.
12. Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
13. Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

ALL METAL POLES AND ARMS, PEDESTRIAN PEDESTALS, POSTS, BACKPLATES, LUMINAIRES AND SIGNAL HEADS SHOULD BE BLACK IN COLOR RAL-9005 (JET BLACK) OR EQUIVALENT IN COLOR. LUMINAIRES AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS.

NCDOT Wind Zone 5 (110 mph)



NC 73 (Sam Furr Rd) WB
at
Brickdale Commons Pkwy

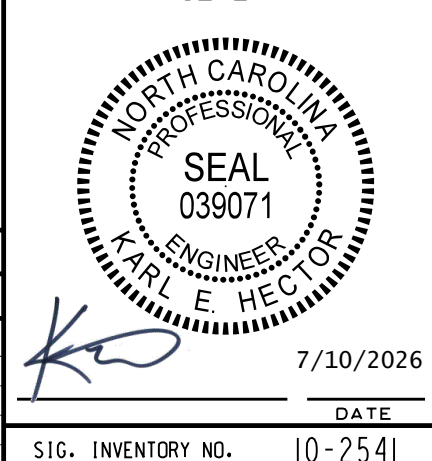
Division 10 Mecklenburg County Huntersville

529	PREPARED BY: K Hector	REVIEWED BY:
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REVISIONS	INIT.	DATE
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DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

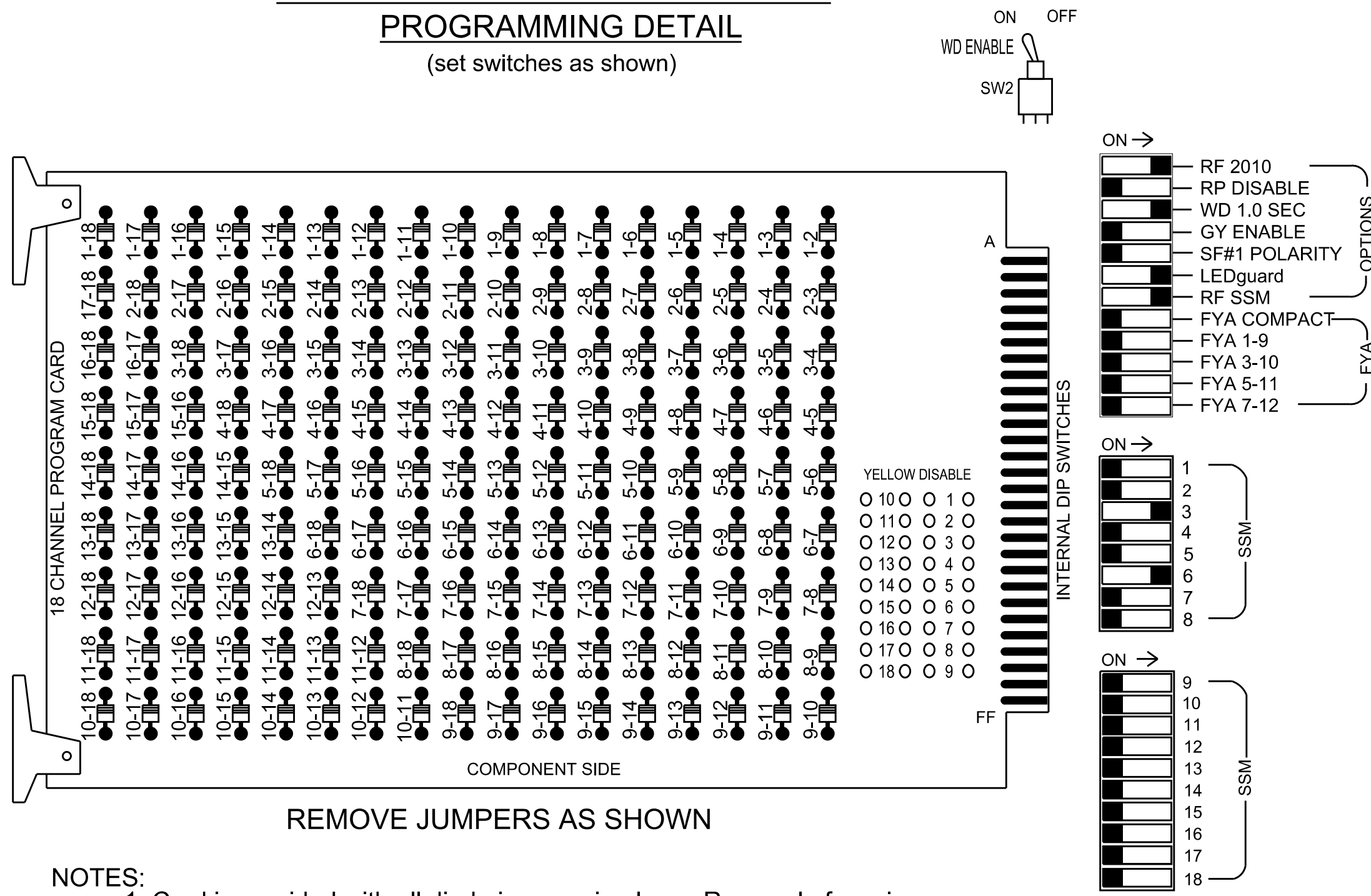


7/10/2026

DATE _____

SIG. INVENTORY NO.	10-2541
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18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL
(set switches as shown)



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 6 Green No Walk and 2 Phase Not On.
- Remove Min Vehicle Recall on phase 2.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S4, S8
Phases Used.....3, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

SPECIAL DETECTOR NOTE

Install a multizone microwave 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.

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	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	NU	NU	31	NU	NU	NU	61	62,63	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED								134	134									
YELLOW								135	135									
GREEN								136										
RED ARROW				116														
YELLOW ARROW				117														
FLASHING YELLOW ARROW																		
GREEN ARROW				118				136										

NU = Not Used

OUTPUT CHANNEL CONFIGURATION

Front Panel

Main Menu >Controller >More>Channels>Channels Config

Web Interface

Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

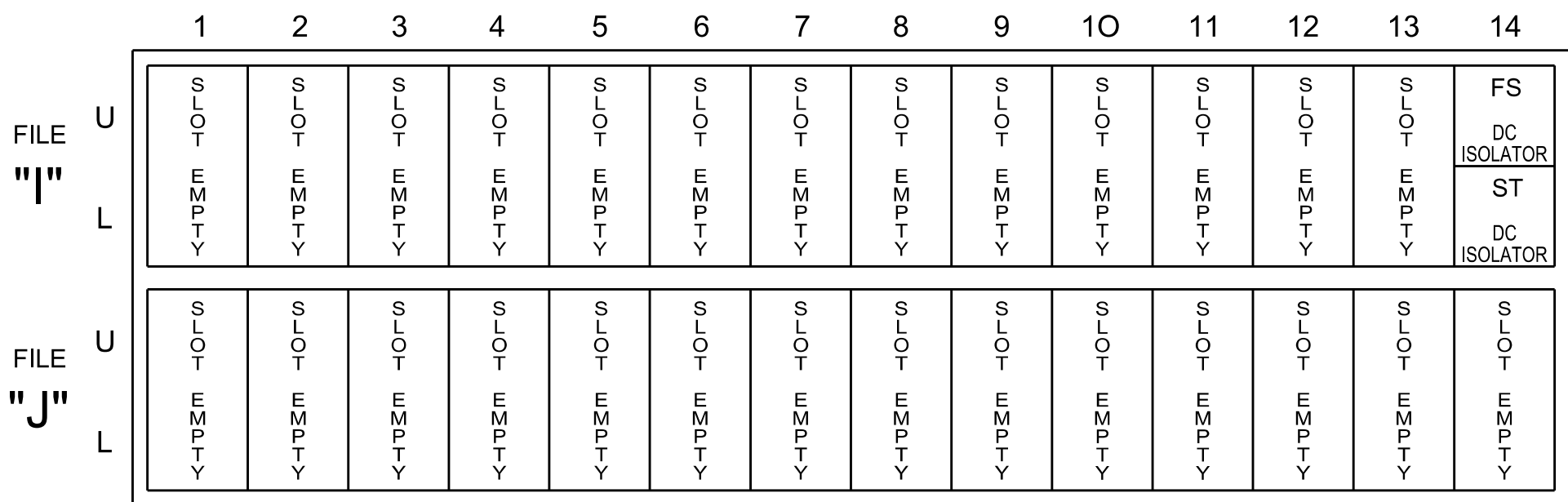
SDLC NON-INTRUSIVE DETECTION CHART

Input Point	Detector Rack #3		Detector Rack #4	
	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	NU
2	34	3A	50	NU
3	35	NU	51	NU
4	36	NA	52	NU
5	37	NU	53	NU
6	38	NA	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	NU
12	44	NU	60	NU
13	45	NU	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel

Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface

Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
3A	-	-	-	*	34	3			X		X	
6A	-	-	-	*	54	6			X		X	

*For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

INPUT FILE POSITION LEGEND: J2L

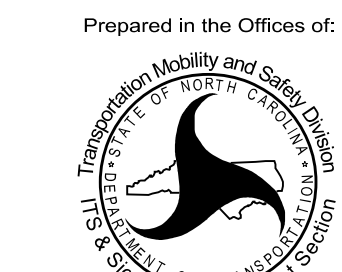
FILE J _____
SLOT 2 _____
LOWER _____



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

Electrical Detail

Electrical and Programming Details For:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
U-Turn West of
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector REVIEWED BY:

REVISIONS

INIT. DATE

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

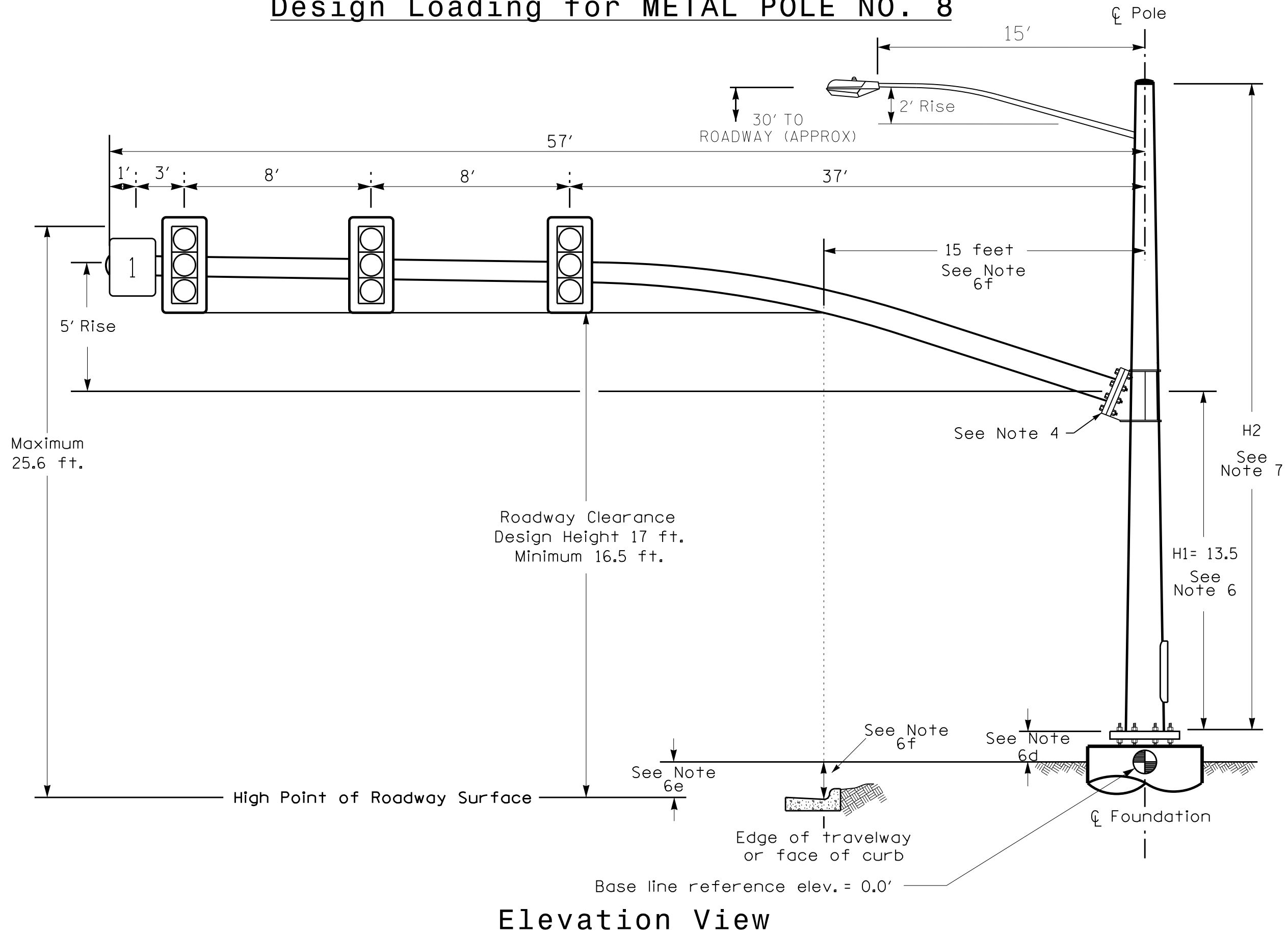
SEAL



7/10/2026

SIG. INVENTORY NO. 10-2454

Design Loading for METAL POLE NO. 8



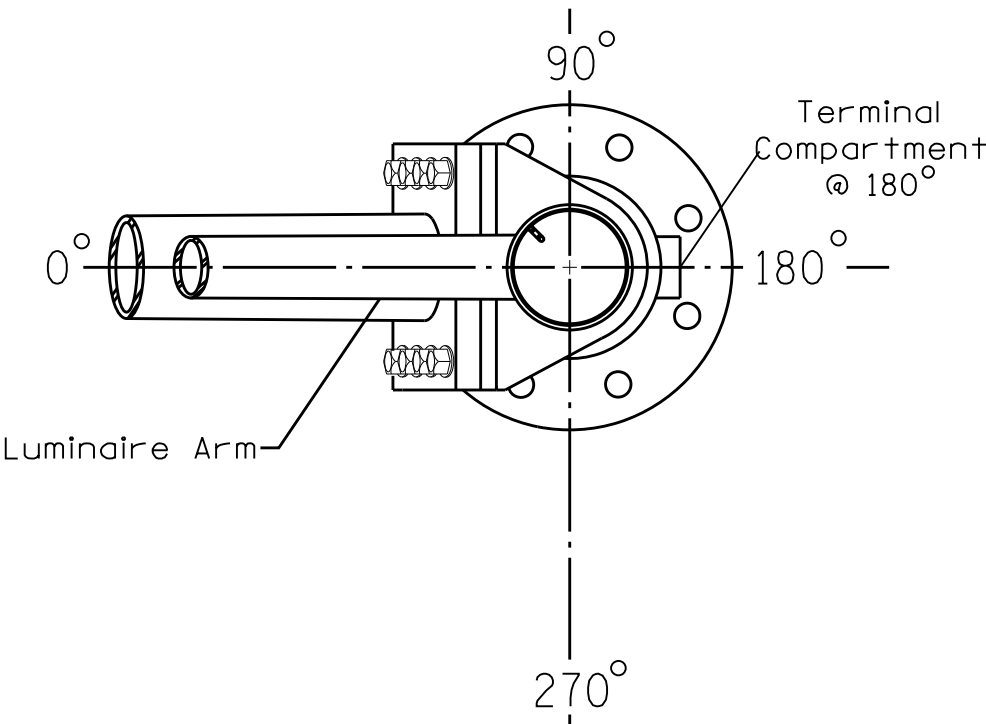
Elevation View

SPECIAL NOTE

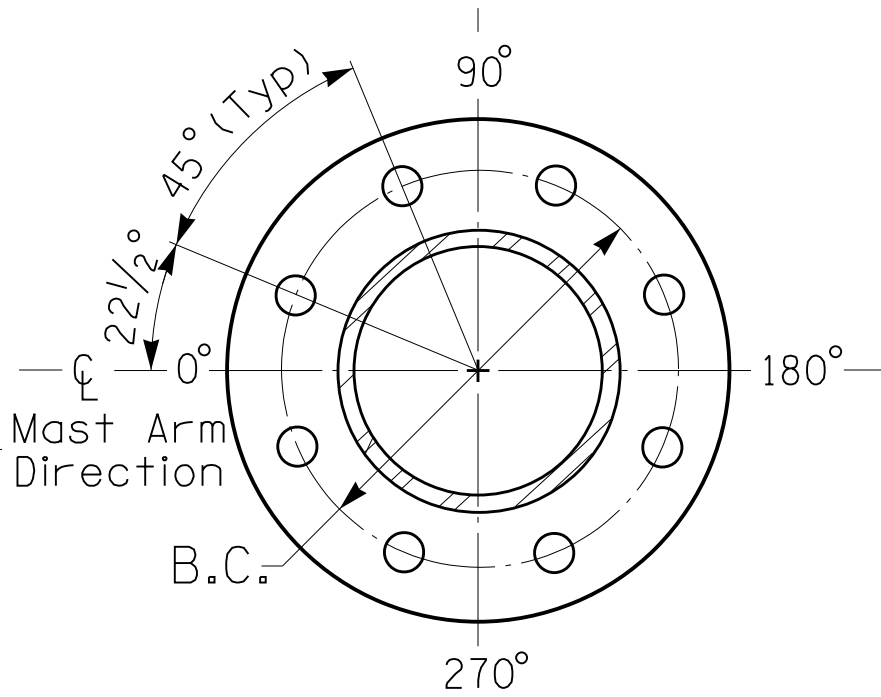
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 8	
Baseline reference point at Foundation @ ground level	0.0 ft.	
Elevation difference at High point of roadway surface	-0.2 ft.	
Elevation difference at Edge of travelway or face of curb	-1.1 ft.	

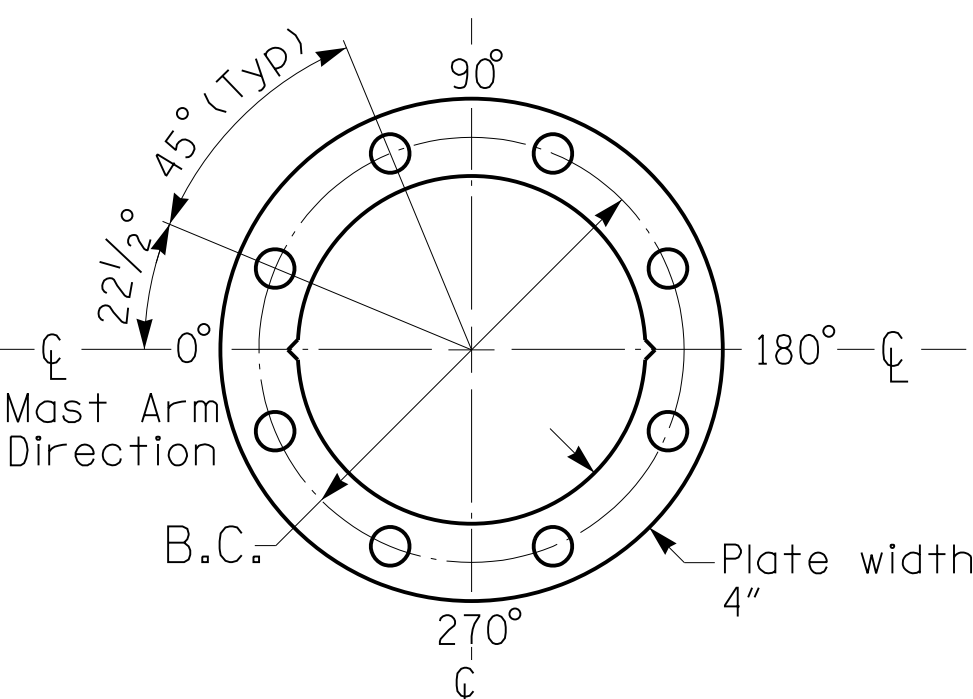


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT
LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 8

PROJECT REFERENCE NO.	SHEET NO.
U-5785	Sig. 18.2

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	LUMINAIRE	EPA 0.87 S.F.	13.25"W X 26.25"L	35 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0"W X 30.0"L	11 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2024 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website:
<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole based on the luminaire height requirement of 30 ft.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.
- Comply with NEC code 230.2(E) concerning service equipment disconnect.
- Lighting fixture and luminaire arm represent a load condition to the pole and may not represent exactly how the fixtures will be mounted. The contractor is responsible for ensuring that any required factory preps for mounting fixtures to the pole are included on the shop drawings.
- Design the luminaire support arm using design dimensions as shown on elevations views. Refer to the Radial Orientation Detail for attachment to the signal pole. Design arm end for a nominal 2 inch slip fit socket connection for light assembly.

ALL METAL POLES AND ARMS, PEDESTRIAN PEDESTALS, POSTS, BACKPLATES, LUMINAIRES AND SIGNAL HEADS SHOULD BE BLACK IN COLOR RAL-9005 (JET BLACK) OR EQUIVALENT IN COLOR. LUMINAIRES AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS.

NCDOT Wind Zone 5 (110 mph)

 Prepared in the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION STATE OF NORTH CAROLINA SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529	NC 73 (Sam Furr Rd) WB at U-Turn West of Lindholm Drive Division 10 Mecklenburg County Huntersville PLAN DATE: July 2026 REVIEWED BY: Z Wang		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039071 F. HEC OF 7/10/2026 DATE 10-2454		
	PREPARED BY: K Hector	REVIEWED BY:		REVISIONS	INIT.
SCALE 0 N/A N/A					

4 Phase Fully Actuated Signal System #: D10-43_Huntersville NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night operation unless otherwise directed by the Engineer.
3. The order of phase 1 and phase 5 may be reversed, but phase 1 and phase 5 shall not operate simultaneously.
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. The Division Traffic Engineer will determine the hours of use for each phasing plan.
7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. See traffic control plans for stop line and crosswalk placement.

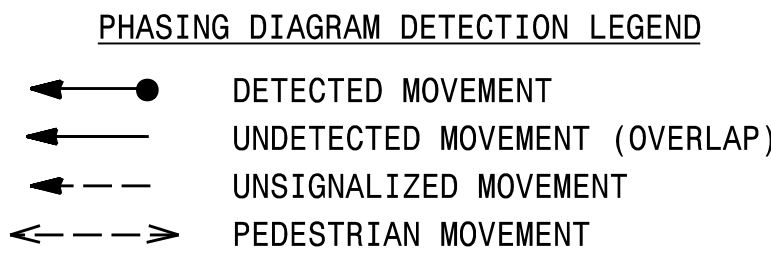
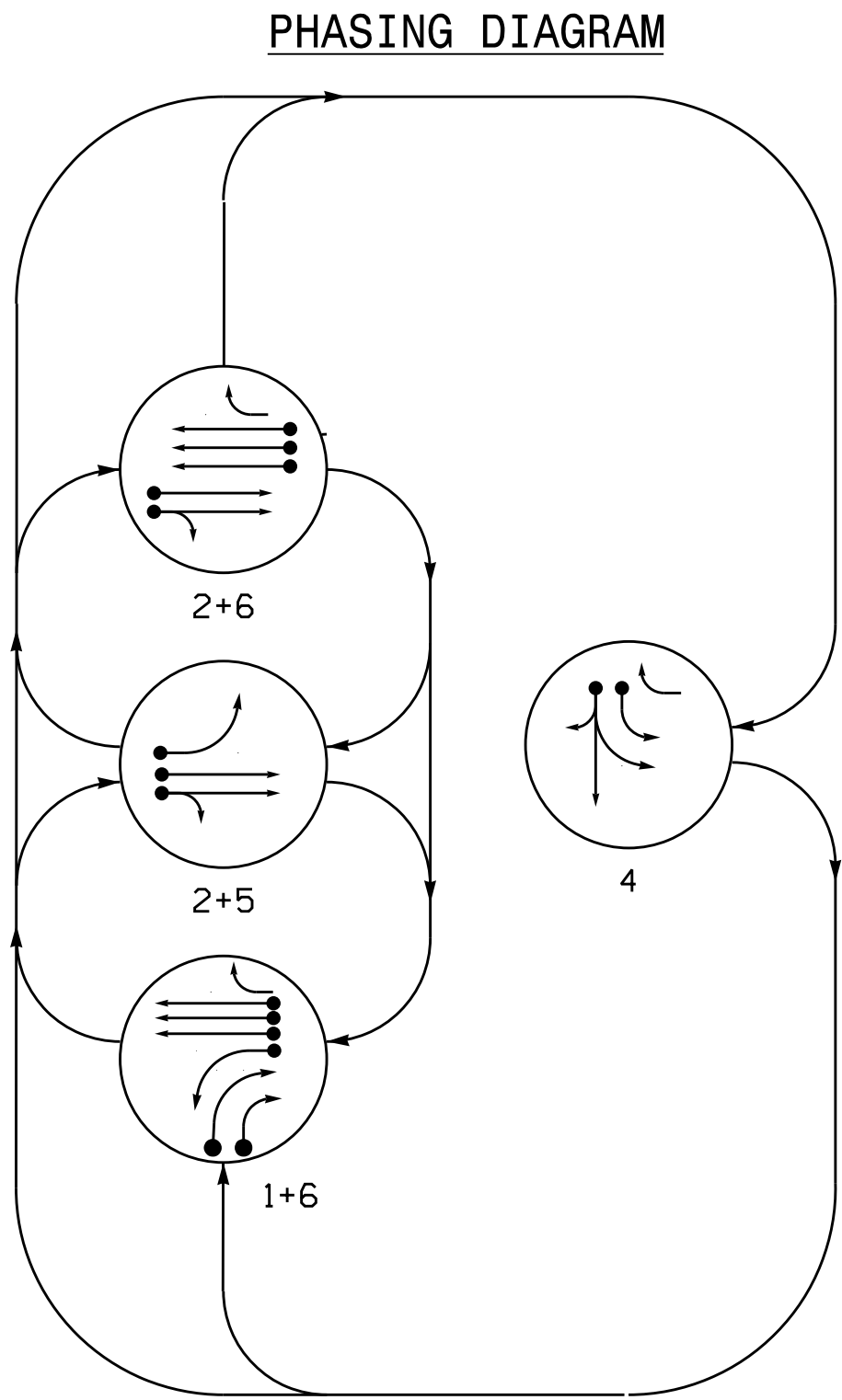
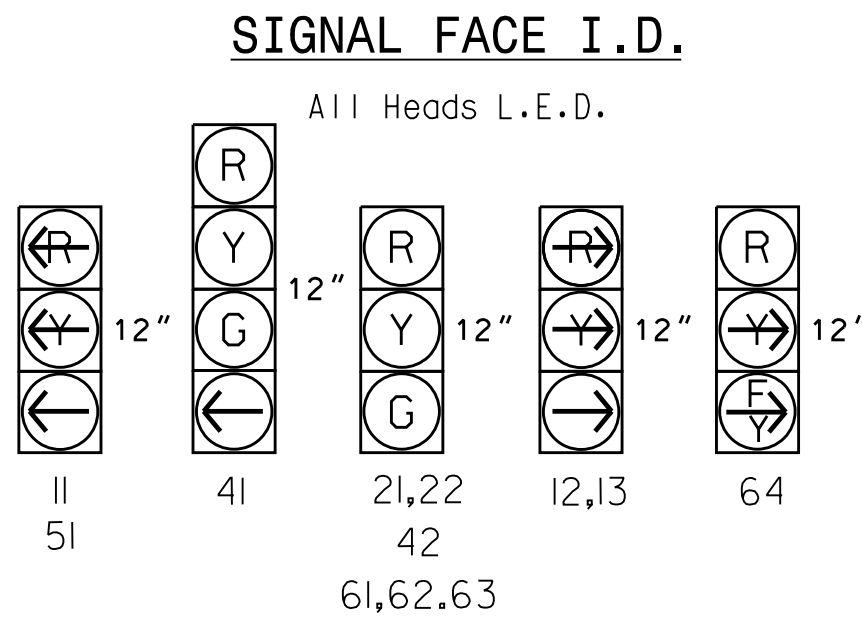


TABLE OF OPERATION

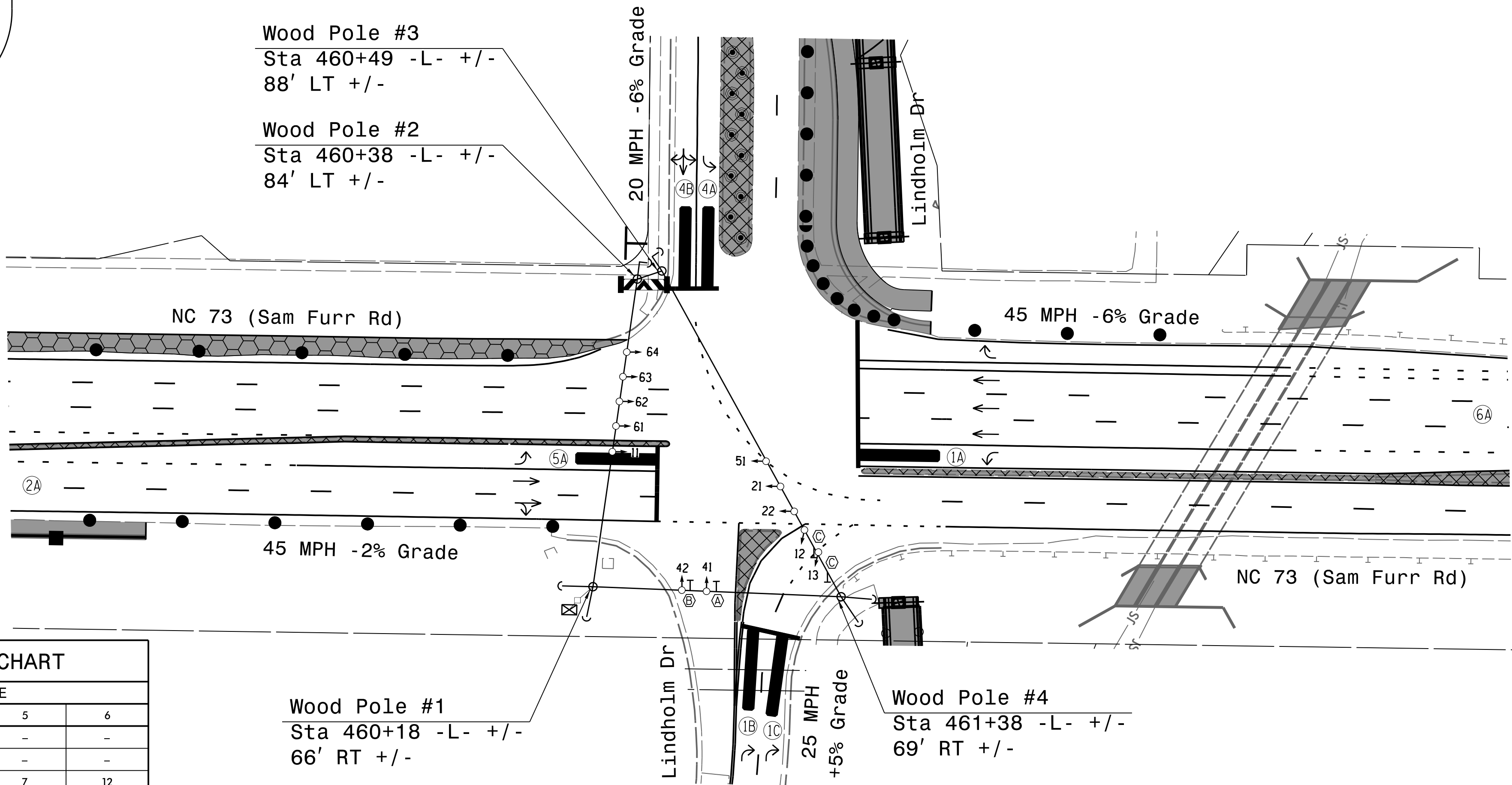
SIGNAL FACE	PHASE				
	1 + 6	2 + 5	2 + 6	4	FLASH
11	←	→	→	→	→
12,13	→	→	→	→	→
21,22	R	G	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
51	→	→	→	→	→
61,62,63	G	R	G	R	R
64	→	R	→	→	R



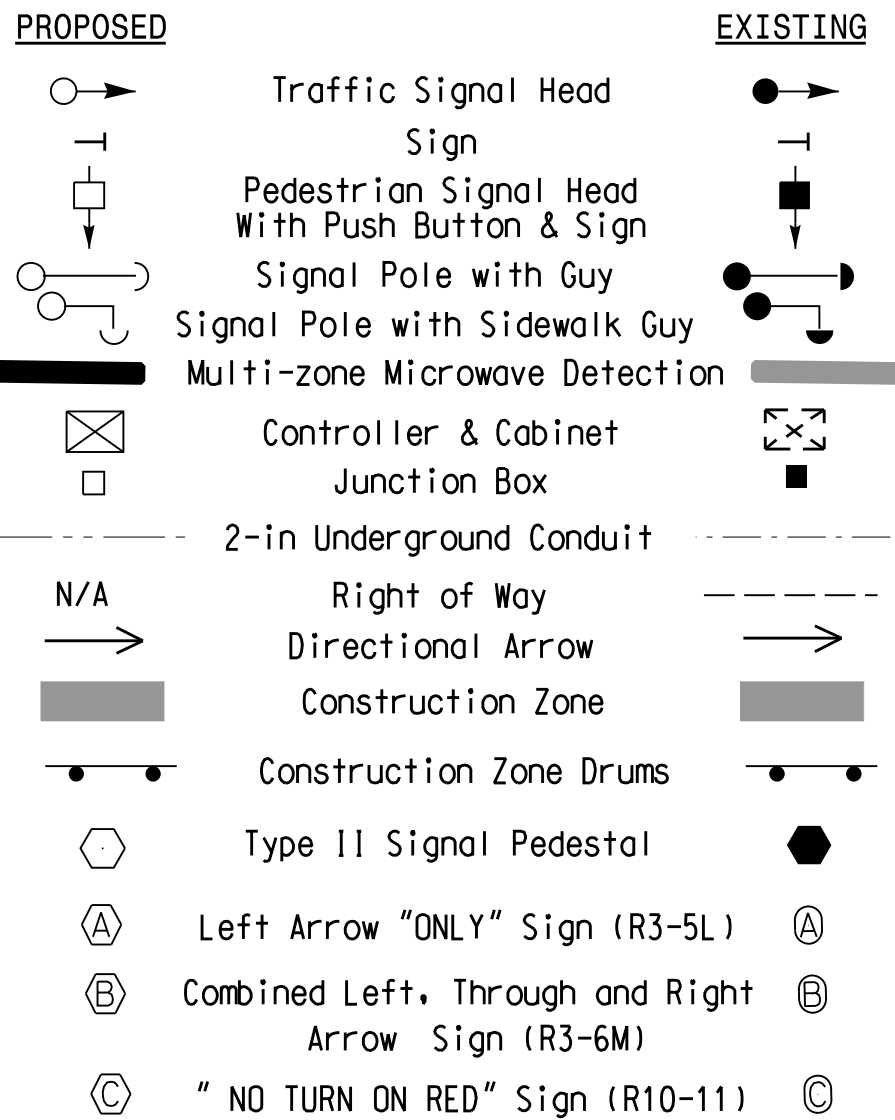
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	URNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	INITIAL	CALL	NEW CARD
1A	*	*	*	*	1	-	-	X	-	X	*
1B	*	*	*	*	1	-	-	X	-	X	*
1C	*	*	*	*	1	-	-	X	-	X	*
2A	*	*	*	*	2	-	-	X	-	X	*
4A	*	*	*	*	4	-	-	X	-	X	*
4B	*	*	*	*	4	10	-	X	-	X	*
5A	*	*	*	*	5	-	-	X	-	X	*
6A	*	*	*	*	6	-	-	X	-	X	*

* Multi-zone Microwave Detection.



LEGEND



MAXTIME TIMING CHART

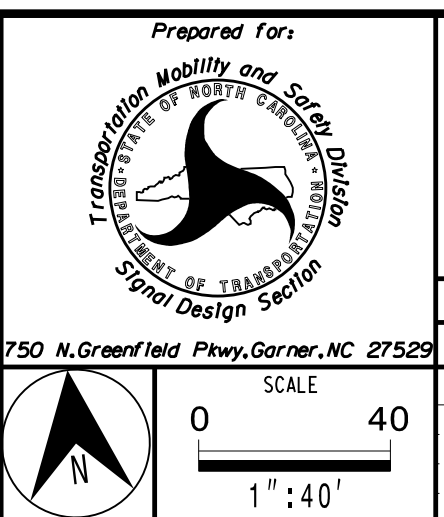
FEATURE	PHASE					
	1	2	4	5	6	
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Min Green *	7	12	7	7	12	
Passage *	2.0	2.0	2.0	2.0	2.0	
Max 1 *	25	90	25	25	90	
Yellow Change	3.0	5.1	3.5	3.3	5.1	
Red Clear	2.4	1.5	3.5	2.6	1.5	
Added Initial *	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Advance Walk	-	-	-	-	-	
Non Lock Detector	X	-	X	X	-	
Vehicle Recall	-	MIN RECALL	-	-	MIN RECALL	
Dual Entry	-	-	-	-	-	

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

Microwave Detection System

FUNCTION	Sensor 1 (2A)	Sensor 2 (6A)
Channel	1	2
Phase	2	6
Direction of Travel	EB	WB
Type	Priority	Priority
Level	2	2
Discovery Zone (ft)	<750	<750
Range (ft)	600-100	600-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	35-100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	2.5-6.5	2.5-6.5

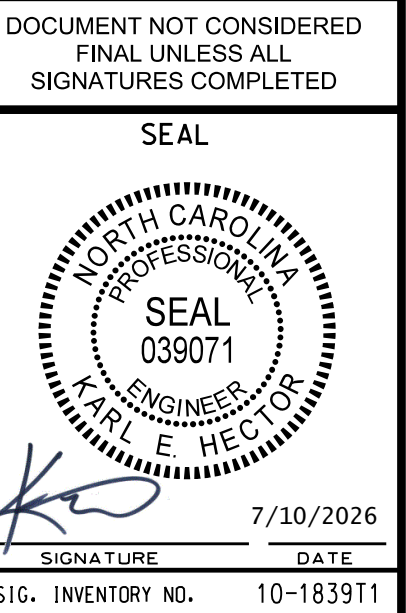
Temporary Design #1 (TMP Phase 1 Step 1)



NC 73 (Sam Furr Rd) at Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026	REVIEWED BY: Z Wang
PREPARED BY: K Hector	RKA PROJ. No.:
REVISIONS	INIT. DATE



HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps
Overlap Plan 1

Overlap	1	2	3	4	7
Type	Off	FYA 4 - Section	Off	Off	Normal
Included Phases	-	6,4	-	-	1
Modifier Phases	-	-	-	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Overlap	7		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

NOTE
OVERLAP 7
ASSIGNED TO
CHANNEL 8



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T1
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
& TRAFFIC MANAGEMENT

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL



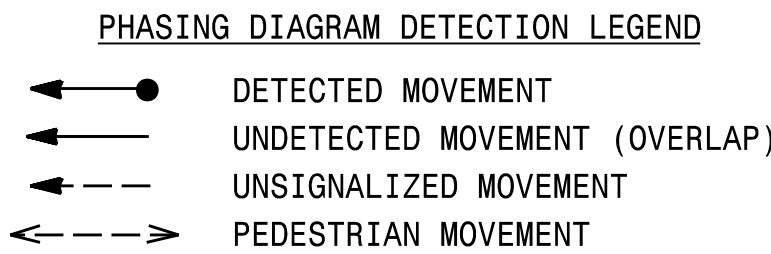
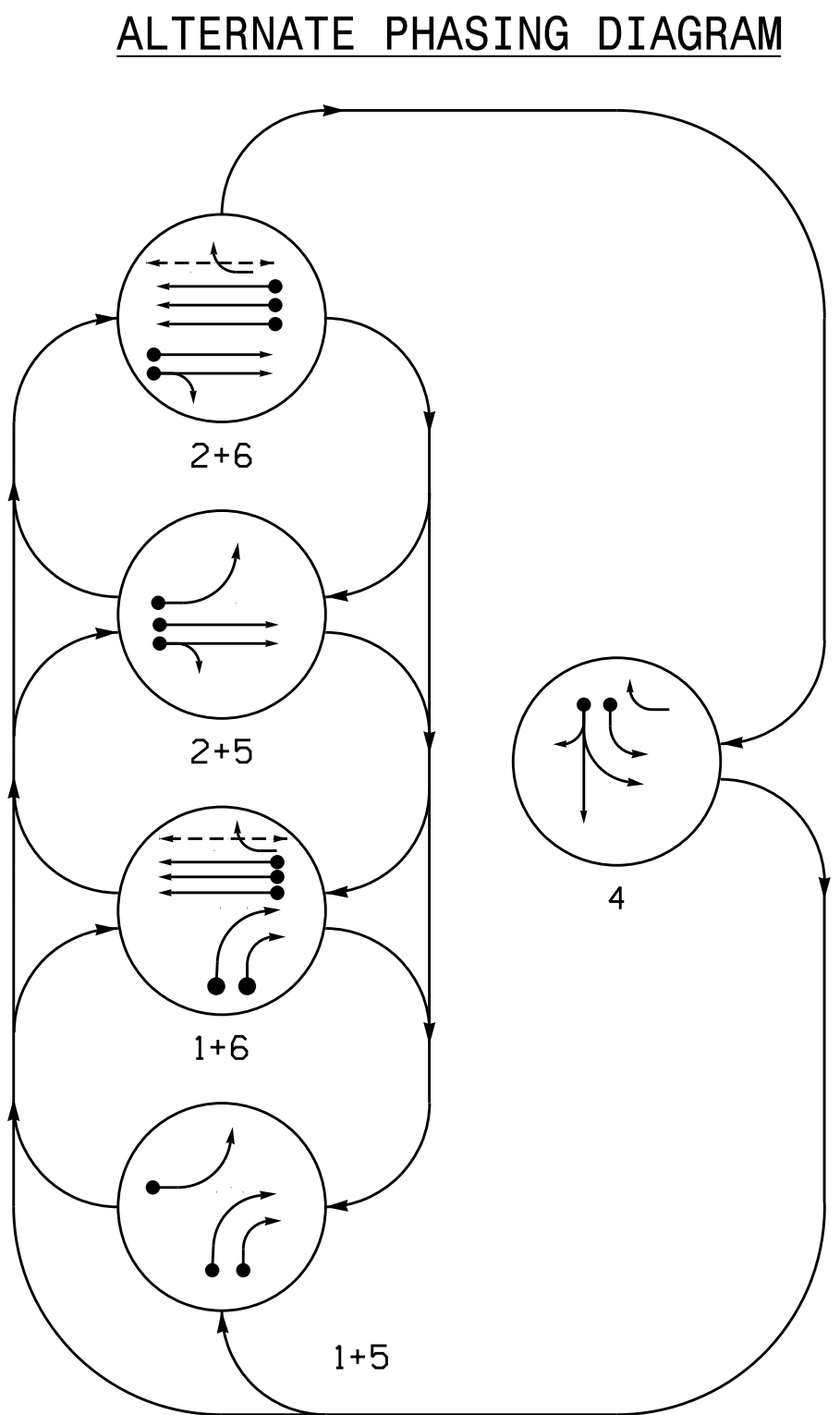
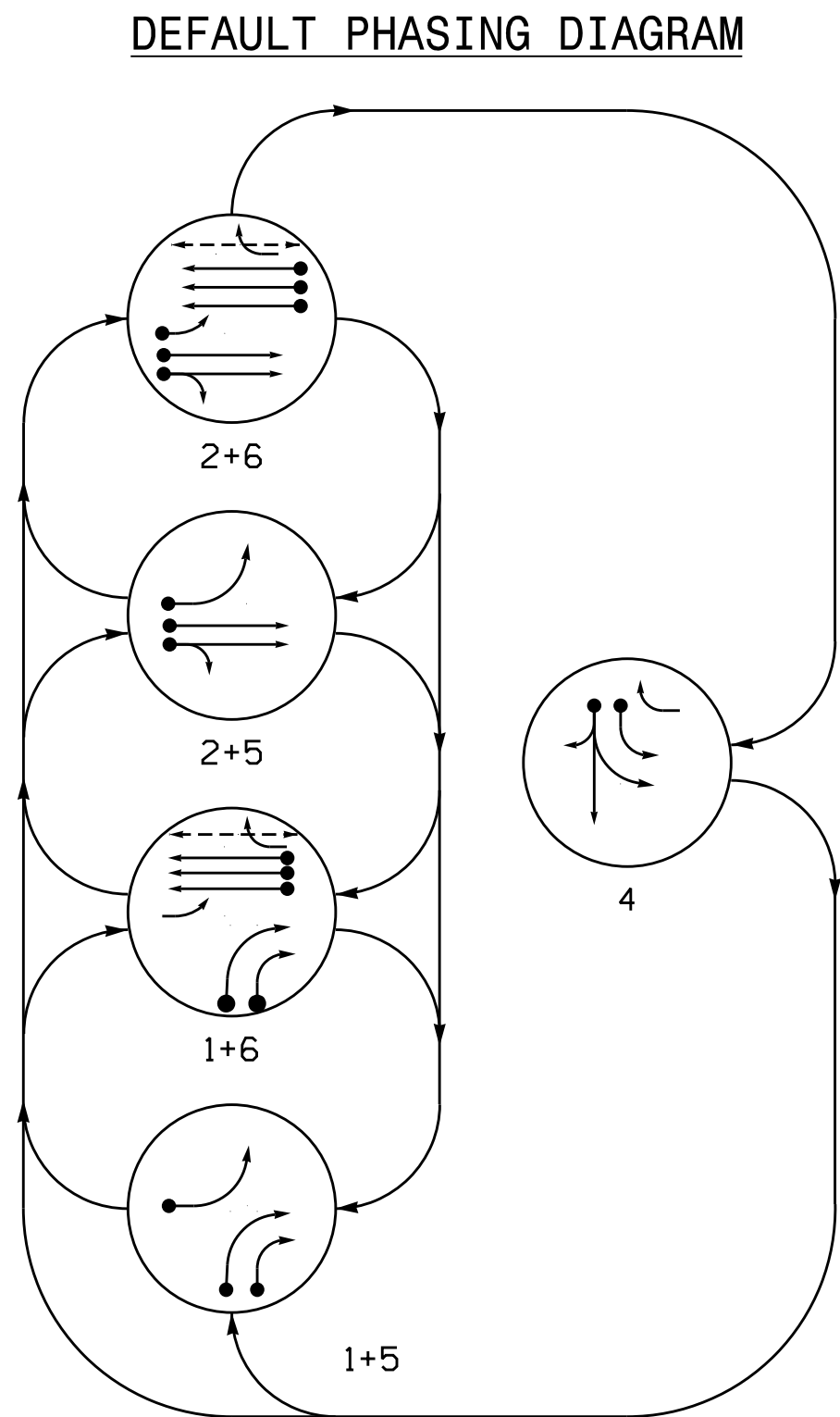
7/10/2026

DATE

SIG. INVENTORY NO. 10-1839T1

5 Phase Fully Actuated Signal System #: D10-43_Huntersville NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night operation unless otherwise directed by the Engineer.
- Remove existing signal heads numbered # 11 & 63.
- Reposition existing signal heads numbered # 21, 22, 41,42,62,64.
- 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
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- See traffic control plans for stop line and crosswalk placement.



DEFAULT PHASE TABLE OF OPERATION

SIGNAL FACE	PHASE				
	1 + 5	1 + 6	2 + 5	2 + 6	F
12,13	→	→	→	→	→
21,22	R	R	G	G	R
41	R	R	R	G	R
42	R	R	R	G	R
51	←	←	←	←	←
61	R	↑	↑	↑	R
62	R	G	G	G	R
64	R	←	←	←	R
P61,P62	DW	W	DW	W	DRK

ALTERNATE PHASE TABLE OF OPERATION

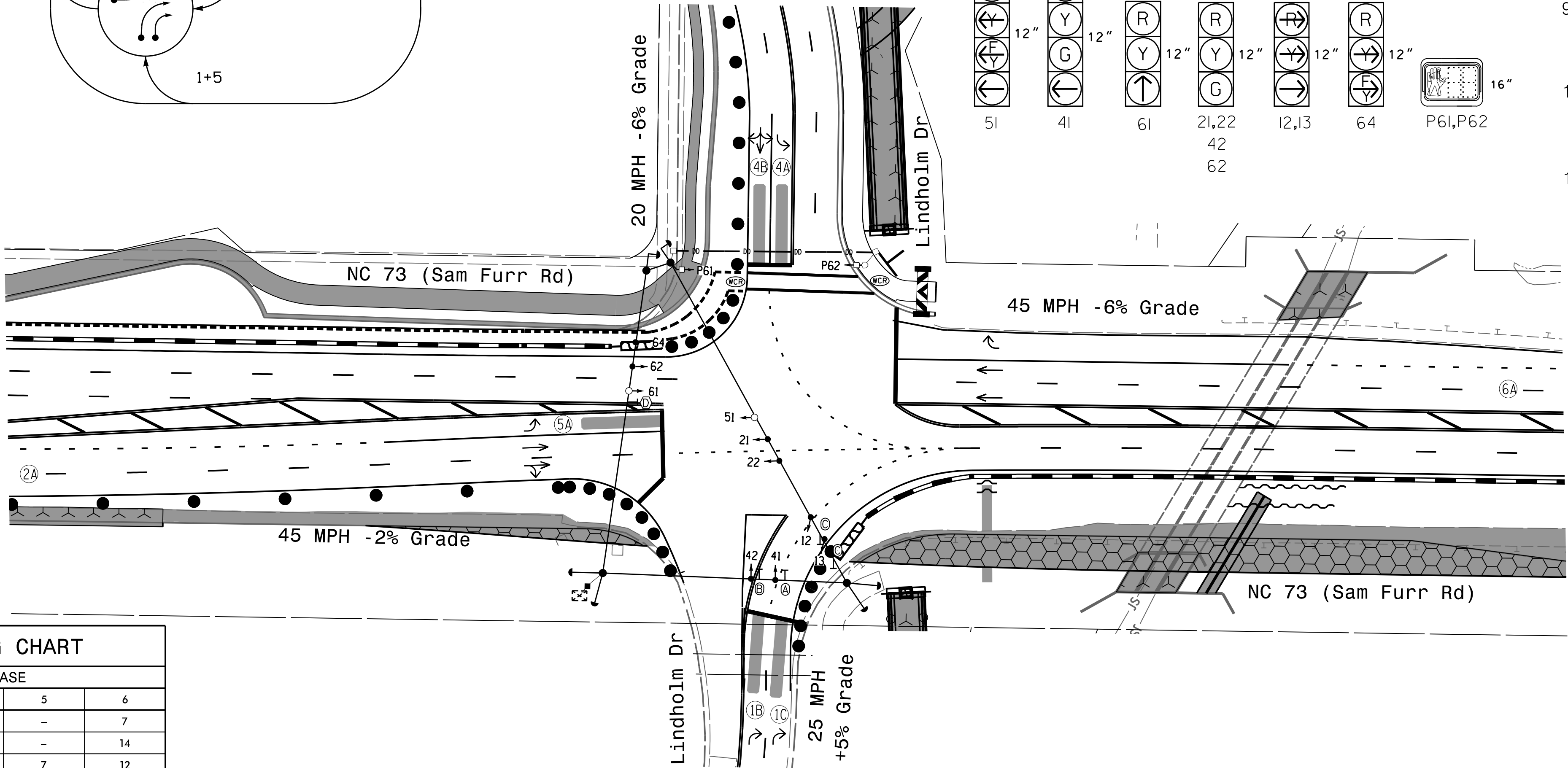
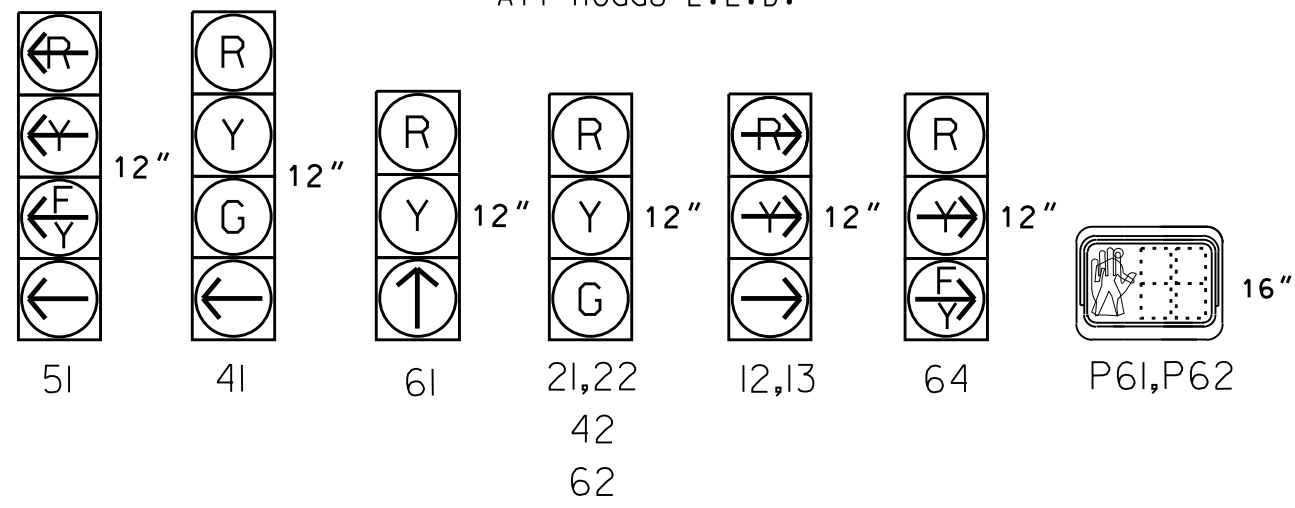
SIGNAL FACE	PHASE				
	1 + 5	1 + 6	2 + 5	2 + 6	F
12,13	→	→	→	→	→
21,22	R	R	G	G	R
41	R	R	R	G	R
42	R	R	R	G	R
51	←	←	←	←	←
61	R	↑	↑	↑	R
62	R	G	G	G	R
64	R	←	←	←	R
P61,P62	DW	W	DW	W	DRK

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR				PROGRAMMING						
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL
1B	*	*	*	*	1	-	-	X	-	X
1C	*	*	*	*	1	-	-	X	-	X
2A	*	*	*	*	2	-	-	X	-	X
4A	*	*	*	*	4	-	-	X	-	X
4B	*	*	*	*	4	10.0	-	X	-	X
5A	*	*	*	*	5	15.0	-	X	-	X
6A	*	*	*	*	6	3.0	-	X	-	X

* Multi-zone Microwave Detection.
** Reduce Delay to 3 Seconds During Alternative Phasing Operation.
Disable Delay During Alternate Phasing Operation.

SIGNAL FACE I.D. All Heads L.E.D.



MAXTIME TIMING CHART

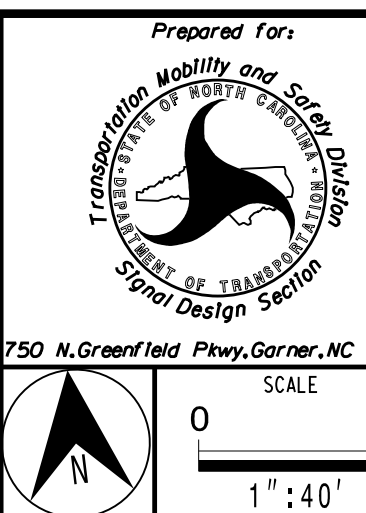
FEATURE	PHASE					
	1	2	4	5	6	
Walk *	-	-	-	-	-	7
Ped Clear	-	-	-	-	-	14
Min Green *	7	12	7	7	12	
Passage *	2.0	2.0	2.0	2.0	2.0	
Max 1 *	25	90	25	25	90	
Yellow Change	3.0	5.1	3.5	3.3	5.1	
Red Clear	3.0	1.8	3.2	2.6	1.8	
Added Initial *	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Advance Walk	-	-	-	-	-	7
Non Lock Detector	X	-	X	X	-	
Vehicle Recall	-	MIN RECALL	-	-	MIN RECALL	
Dual Entry	-	-	-	-	-	

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

Microwave Detection System

FUNCTION	Sensor 1 (2A)	Sensor 2 (6A)
Channel	1	2
Phase	2	6
Direction of Travel	EB	WB
Type	Priority	Priority
Level	2	2
Discovery Zone (ft)	<750	<750
Range (ft)	600-100	600-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	35-100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	2.5-6.5	2.5-6.5

Temporary Design #2 (TMP Phase 1 Step 2)



Project Information Table

NC 73 (Sam Furr Rd) at Lindholm Drive	
Division 10 Mecklenburg County	Huntersville
PLAN DATE: July 2026	REVIEWED BY: Z Wang
PREPARED BY: K Hector	RKA PROJ. No.:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039071

7/10/2026

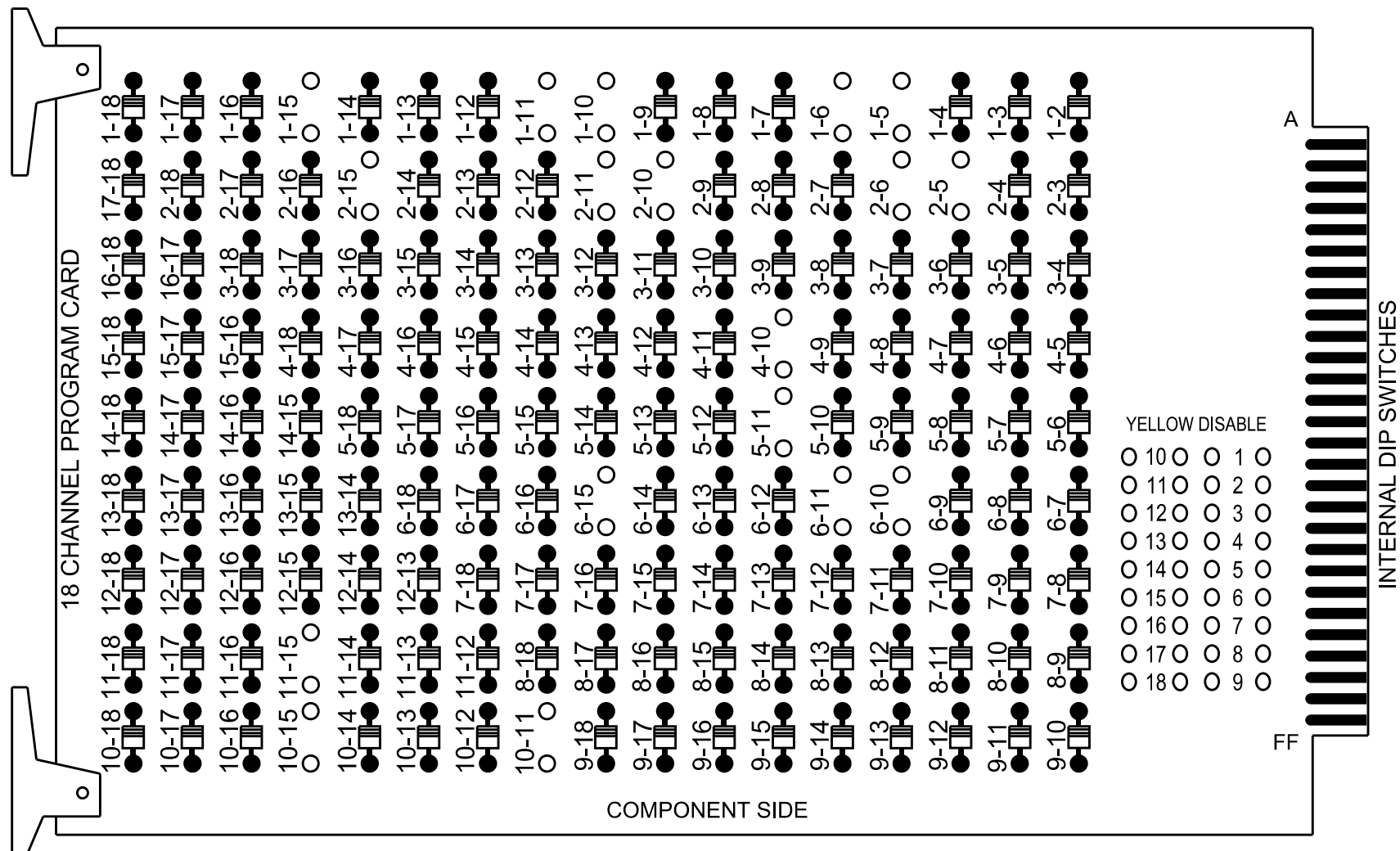
SIGNATURE DATE

SIG. INVENTORY NO. 10-183912

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-10, 1-11, 1-15, 2-5, 2-6, 2-10, 2-11, 2-15, 4-10, 5-11, 6-10, 6-11, 6-15, 10-11, 1-15, 10-15 and 11-15



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1,S2, S5, S7, S8, S9,
AUX S2, AUX S4
Phases Used.....1,2, 4, 5, 6, 6PED
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....*
Overlap "4".....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	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	12,13	21,22	NU	NU	41	42	NU	51*	61	62	P61, P62	NU	NU	NU	64*	NU	51*	NU
RED		128			101	101			134	134					A124			
YELLOW		129			102	102		*	135	135								
GREEN		130			103	103				136								
RED ARROW	125																A114	
YELLOW ARROW	126														A125		A115	
FLASHING YELLOW ARROW															A126		A116	
GREEN ARROW	127				103			133	136									
Hand icon												119						
Walking person icon												121						

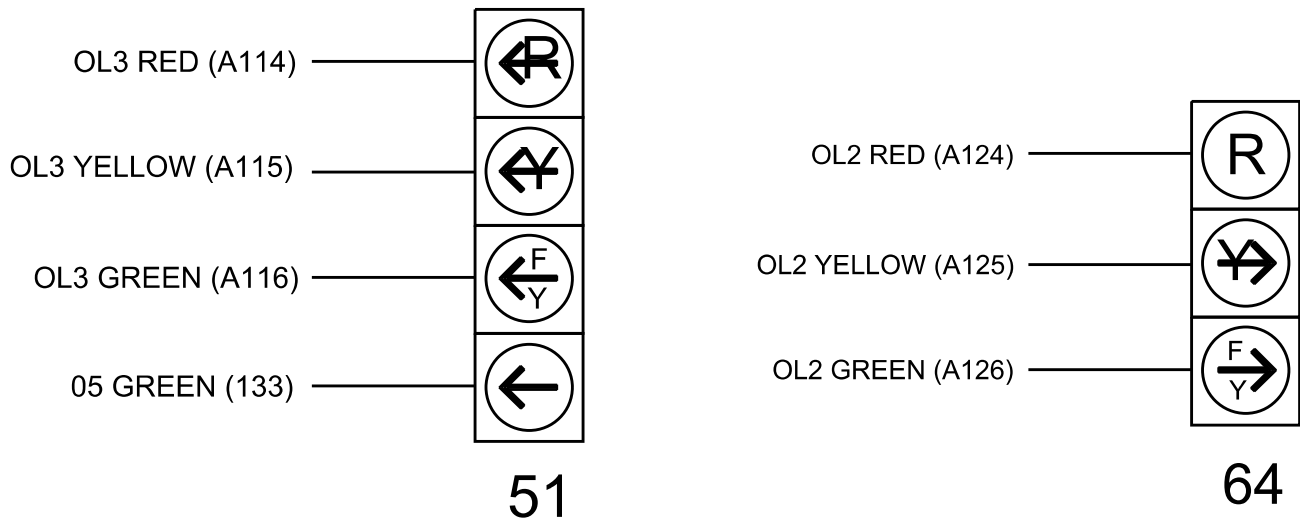
NU = Not Used

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

*See pictorial of head wiring in detail this sheet.

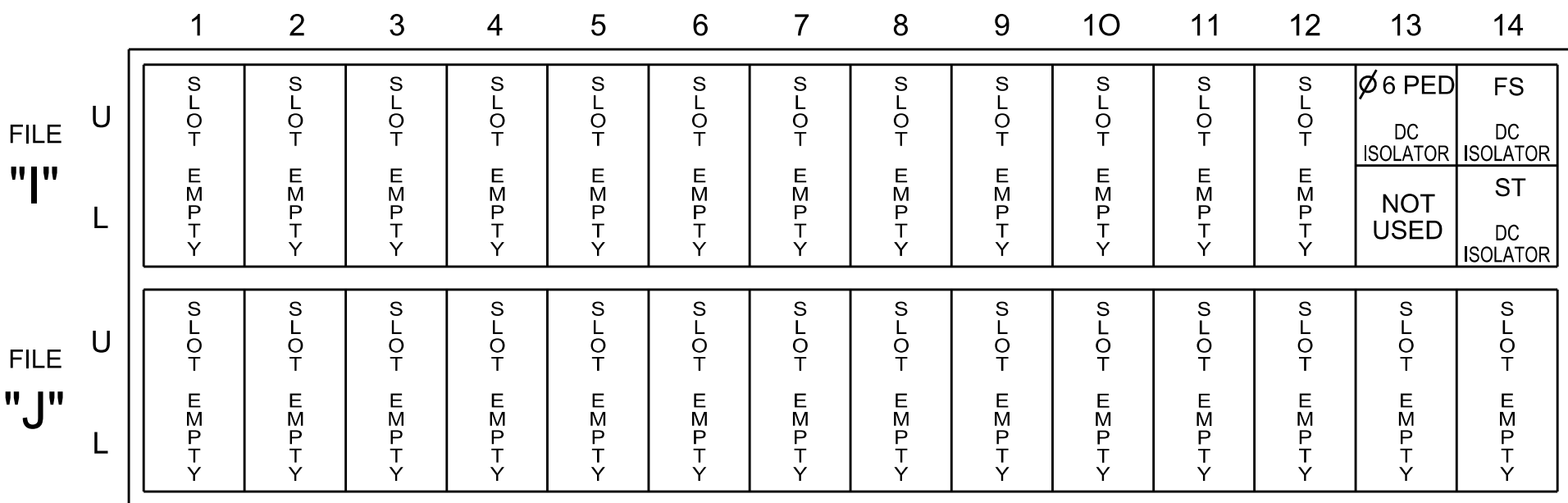
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1B	-	-	-	*	49	1			X		X	
1C	-	-	-	*	59	1			X		X	
2A	-	-	-	*	38	2			X		X	
4A	-	-	-	*	44	4			X		X	
4B	-	-	-	*	45	4	10.0		X		X	
5A	-	-	-	*	35*	5	15.0		X		X	
6A	-	-	-	*	127*	2	3.0		X		X	X
PED PUSH BUTTONS												
P61,P62	TB8-7,9	H3U	68	34	6	PED 6						

* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

* For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

NOTE:
INSTALL DC ISOLATORS
IN INPUT FILE SLOTS
113.

SDLC NON-INTRUSIVE DETECTION CHART

Input Point	Detector Rack #3		Detector Rack #4	
	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	1B
2	34	NU	50	NU
3	35	5A	51	NU
4	36	NU	52	NU
5	37	NU	53	NU
6	38	2A	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	1C
12	44	4A	60	NU
13	45	4B	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

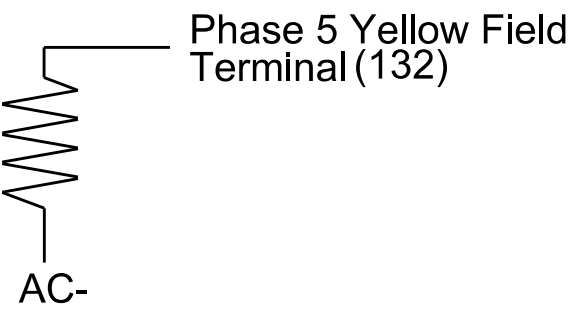
NU = Not Used

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T2
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 1 of 3

Electrical and Programming
Details For:
Prepared in the Offices of:
Seal of the State of North Carolina
Department of Transportation
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville
PLAN DATE: July, 2026 REVIEWED BY: Z Wang
PREPARED BY: K Hector REVIEWED BY:
REVISIONS
INIT. DATE
DATE

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NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
039071
KARL E. HECOT
7/10/2026
DATE
SIG. INVENTORY NO. 10-1839T2

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MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on detection zone 5A and reduces delay time for phase 5 call on detection zone 5A to 3 seconds.

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING DETECTION ZONE 5A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2		
Detector	Call Phase	Delay
35	5	3.0
127	0	0.0

5A

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.



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	Off	FYA 4 - Section	FYA 4 - Section	Off
Included Phases	-	4,6	6	-
Modifier Phases	-	-	5	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4
Type	Off	FYA 4 - Section	FYA 4 - Section	Off
Included Phases	-	4,6	-	-
Modifier Phases	-	-	5	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0

←
NOTICE INCLUDED PHASE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-1839T2
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

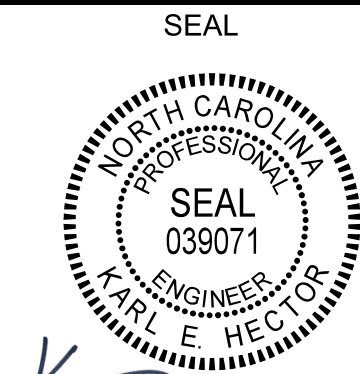
PLAN DATE: July, 2026

REVIEWED BY: Z Wang

PREPARED BY: K Hector

REVIEWED BY:

REVISIONS	INIT.	DATE



7/10/2026
DATE
SIG. INVENTORY NO. 10-1839T2

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold

6

Unit Flash Parameters

All Red Flash Exit Time

6

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 35 to vehicle detector 127

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

SEAL



7/10/2026

DATE

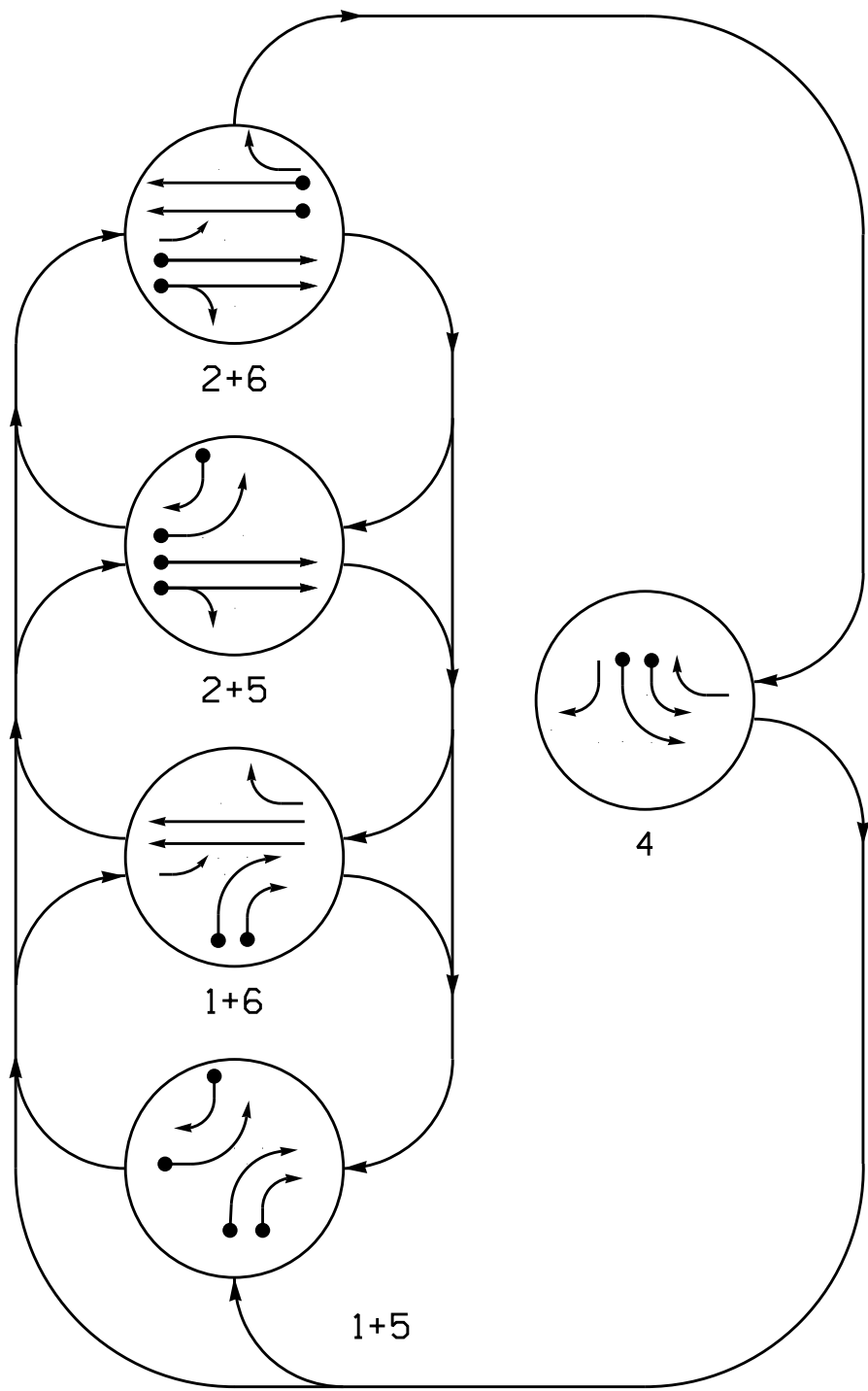
SIG. INVENTORY NO. 10-1839T2

5 Phase Fully Actuated Signal System #: D10-43_Huntersville

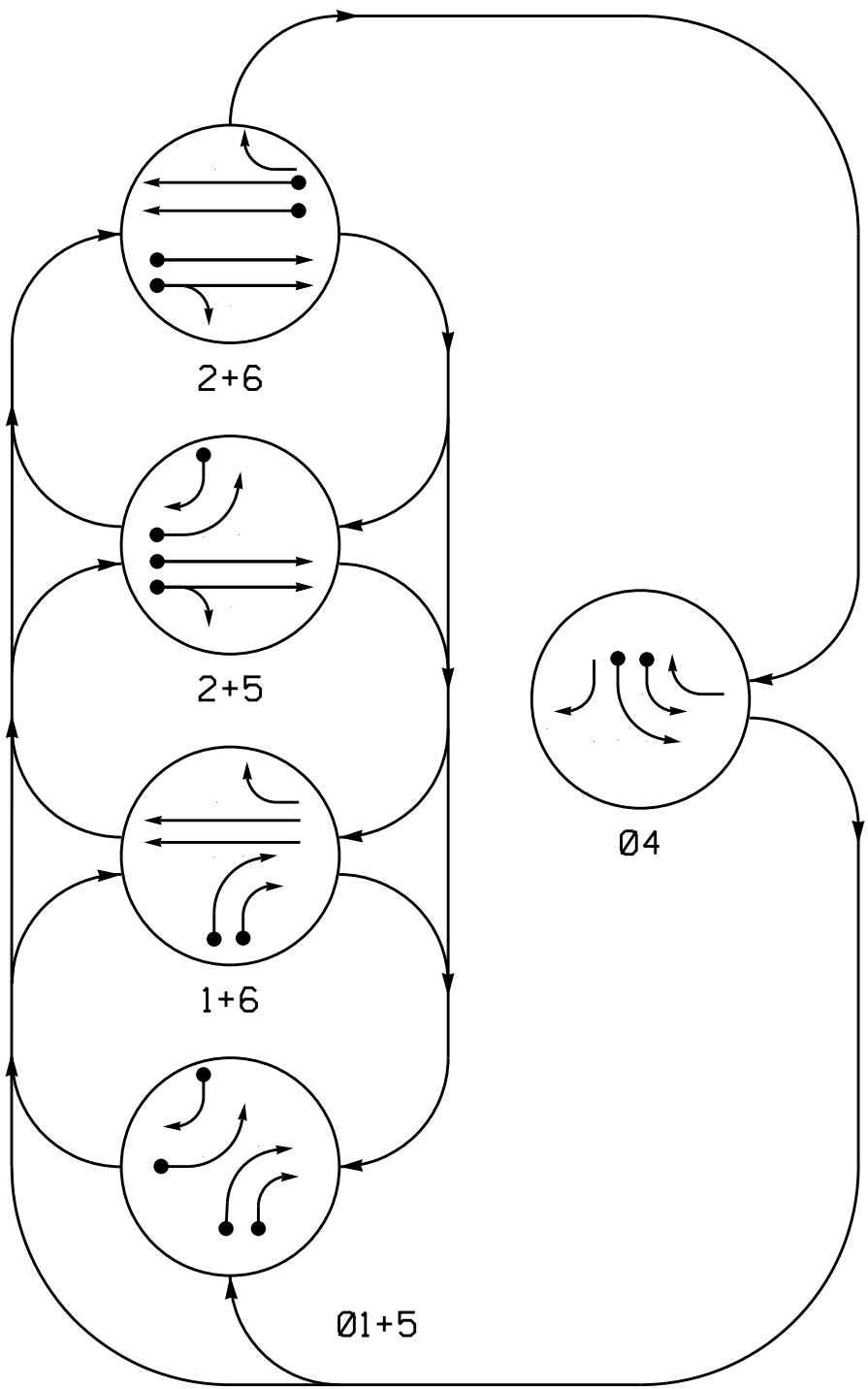
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered # 21, 22.
- Set all detector units to presence mode.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- See traffic control plans for stop line and crosswalk placement.

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE				
	1+5	1+6	2+5	2+6	4
12,13	→	→	→	→	→
21,22	R	R	G	G	R
41,42	R	R	R	R	→
43	→	R	→	R	→
51	←	←	←	←	←
61	R	↑	R	↑	R
62	R	G	R	G	R
64	R	←	R	←	R

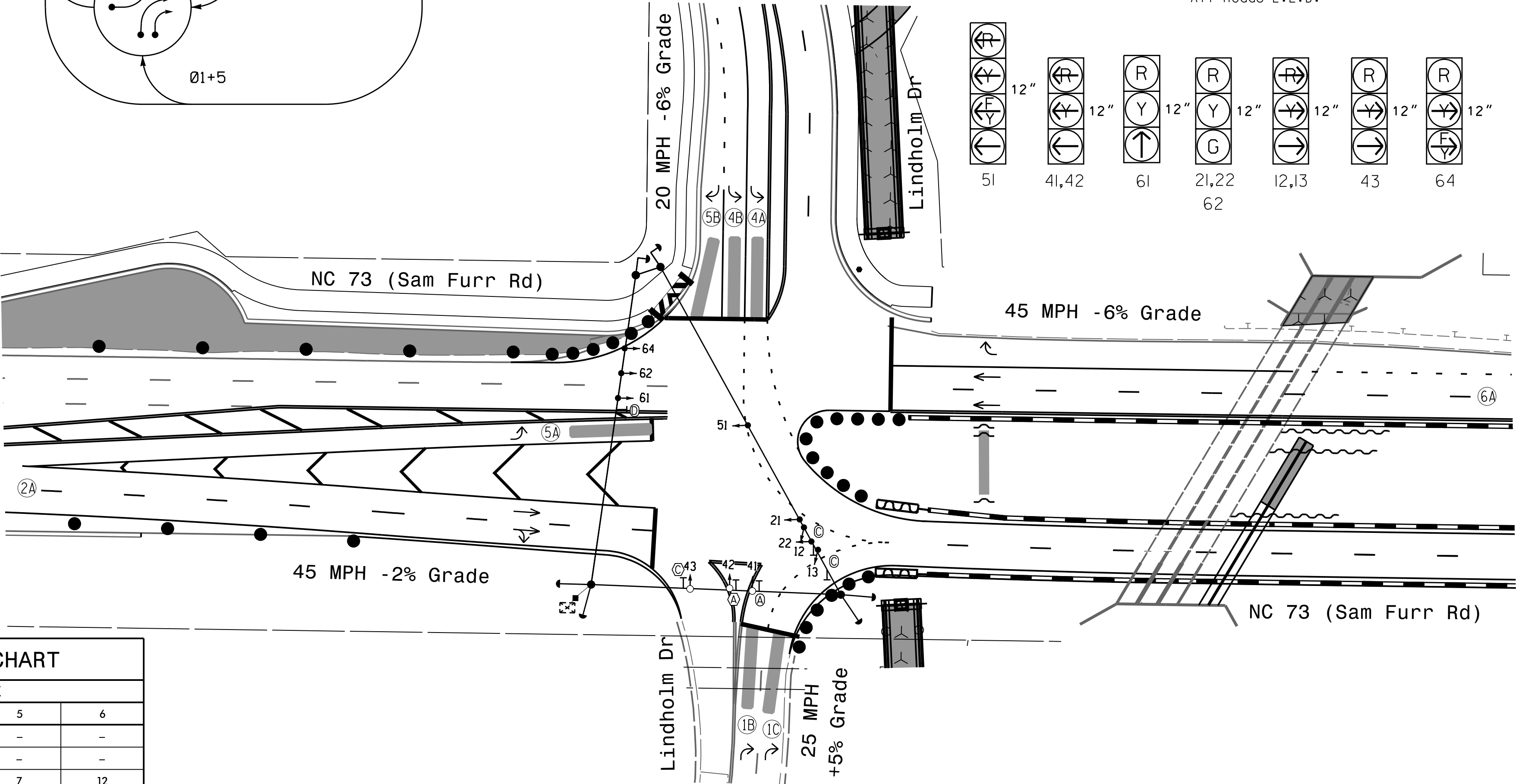
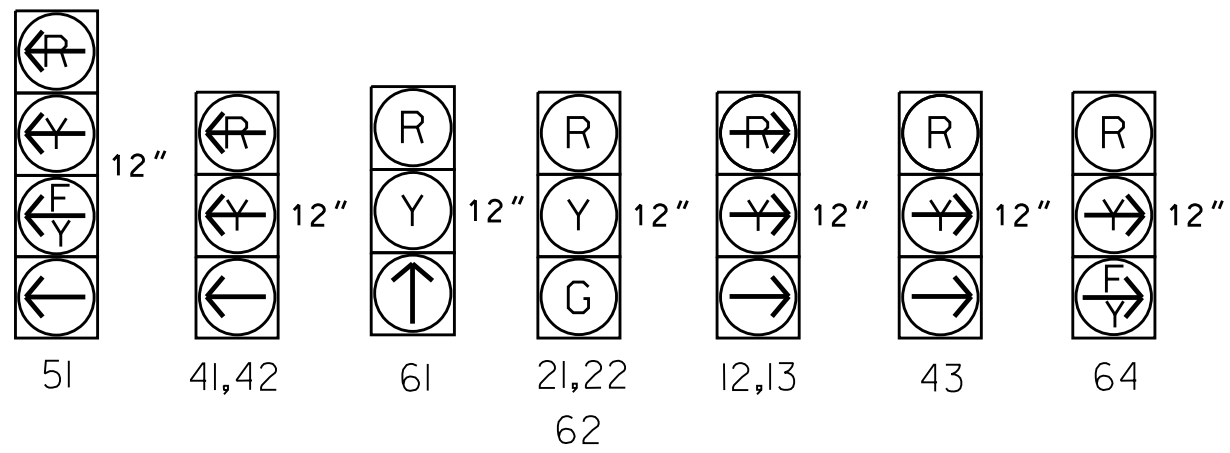
SIGNAL FACE	PHASE				
	1+5	1+6	2+5	2+6	4
12,13	→	→	→	→	→
21,22	R	R	G	G	R
41,42	R	R	R	R	→
43	→	R	→	R	→
51	←	←	←	←	←
61	R	↑	R	↑	R
62	R	G	R	G	R
64	R	←	R	←	R

MAXTIME DETECTOR INSTALLATION CHART												
DETECTOR						PROGRAMMING						
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	INITIAL	ADDED	CALL	NEW CARD
1B	*	*	*	*	1	-	-	X	-	X	-	*
1C	*	*	*	*	1	-	-	X	-	X	-	*
2A	*	*	*	*	2	-	-	X	-	X	-	*
4A	*	*	*	*	4	-	-	X	-	X	-	*
4B	*	*	*	*	4	-	-	X	-	X	-	*
5A	*	*	*	*	5	15.0**	-	X	-	X	-	*
					2#	3.0	-	X	-	X	X	*
5B	*	*	*	*	4	15.0	-	X	-	X	-	*
6A	*	*	*	*	6	-	-	X	-	X	-	*

* Multi-zone Microwave Detection.
** Reduce Delay to 3 Seconds During Alternative Phasing Operation.
Disable Delay During Alternate Phasing Operation.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

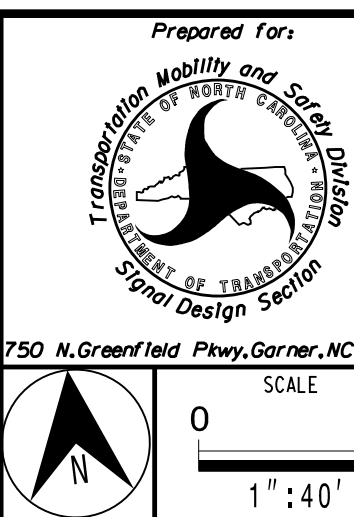
FEATURE	PHASE					
	1	2	4	5	6	
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Min Green *	7	12	7	7	12	
Passage *	2.0	2.0	2.0	2.0	2.0	
Max 1 *	25	90	25	25	90	
Yellow Change	3.0	5.1	3.5	3.3	5.1	
Red Clear	2.4	1.8	3.4	2.4	1.8	
Added Initial *	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Advance Walk	-	-	-	-	-	
Non Lock Detector	X	-	X	X	-	
Vehicle Recall	-	MIN RECALL	-	-	MIN RECALL	
Dual Entry	-	-	-	-	-	

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

Microwave Detection System

FUNCTION				
Sensor 1 (2A)		Sensor 2 (6A)		
Channel	1	2		
Phase	2	6		
Direction of Travel	EB	WB		
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Discovery Zone (ft)	<750	-	<750	-
Range (ft)	600-100	150-100	600-100	150-100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

Temporary Design #3 (TMP Phase 1 Step 3)



NC 73 (Sam Furr Rd) at Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026

REVIEWED BY: Z Wang

PREPARED BY: K Hector

RKA PROJ. No.:

REVISIONS

INIT.

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



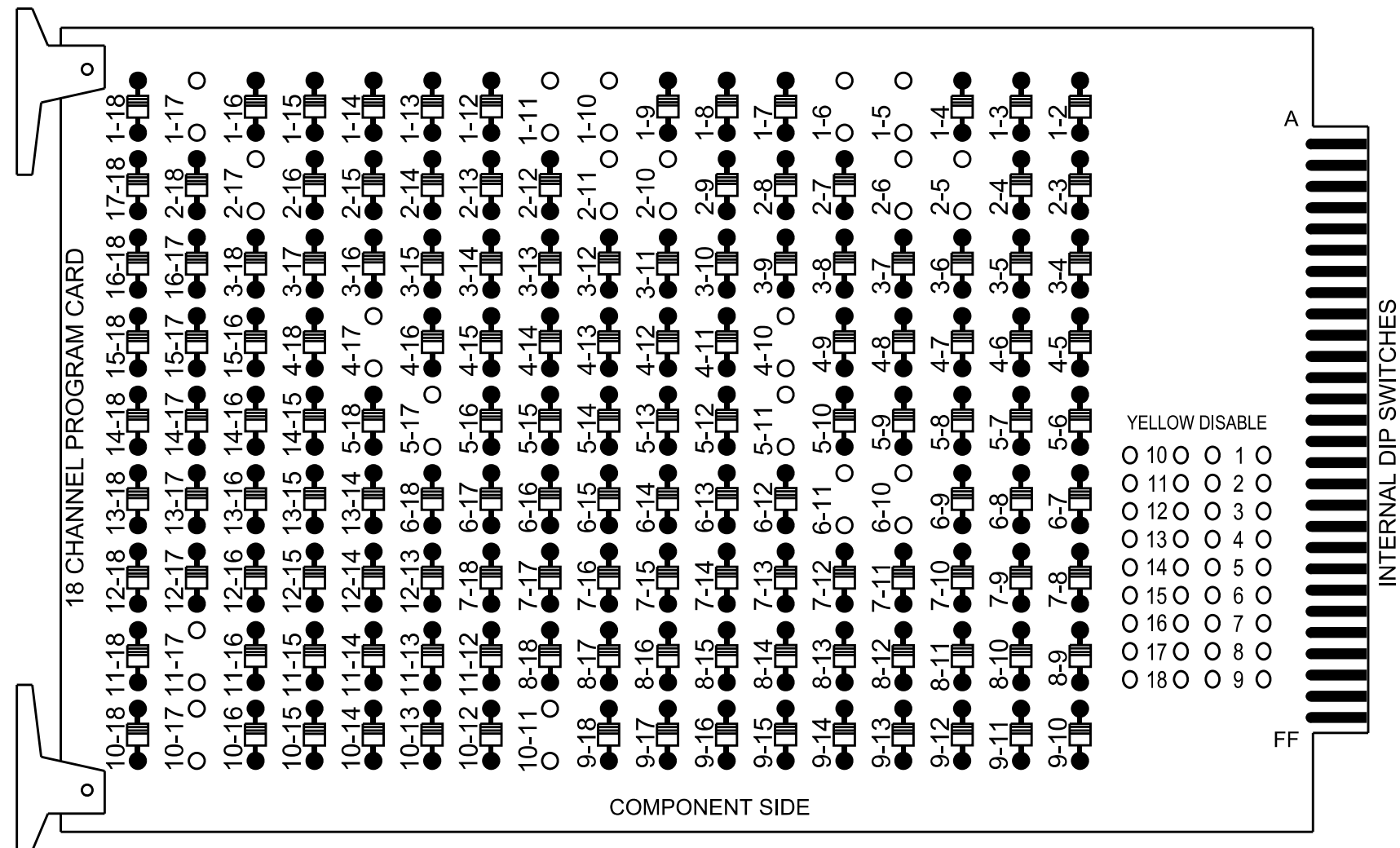
SIGNATURE DATE 7/10/2026

SIG. INVENTORY NO. 10-1839T3

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

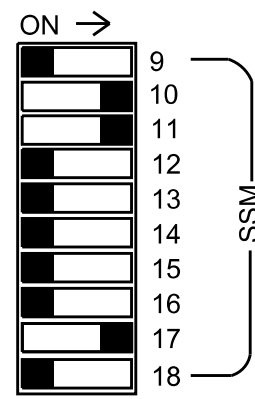
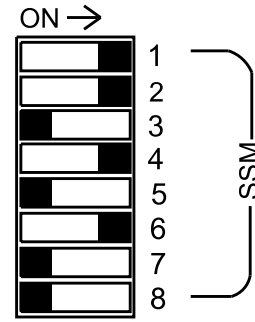
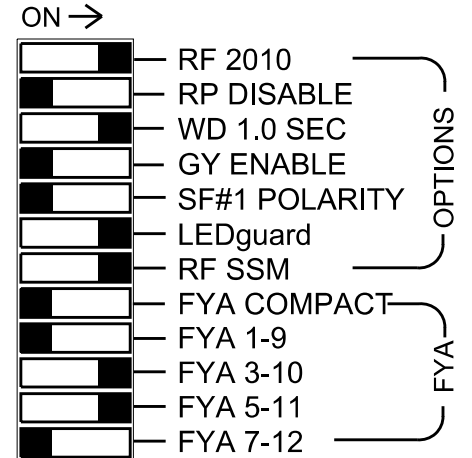
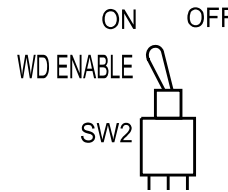
REMOVE DIODE JUMPERS 1-5, 1-6, 1-10, 1-11, 1-17, 2-5, 2-6, 2-10, 2-11, 2-17, 4-10, 4-17,
5-11, 5-17, 6-10, 6-11, 10-11, 10-17 and 11-17



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1,S2, S5, S7, S8,
AUX S2, AUX S3, AUX S4
Phases Used.....1,2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....*
Overlap "4".....NOT USED
Overlap "5".....*
*See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

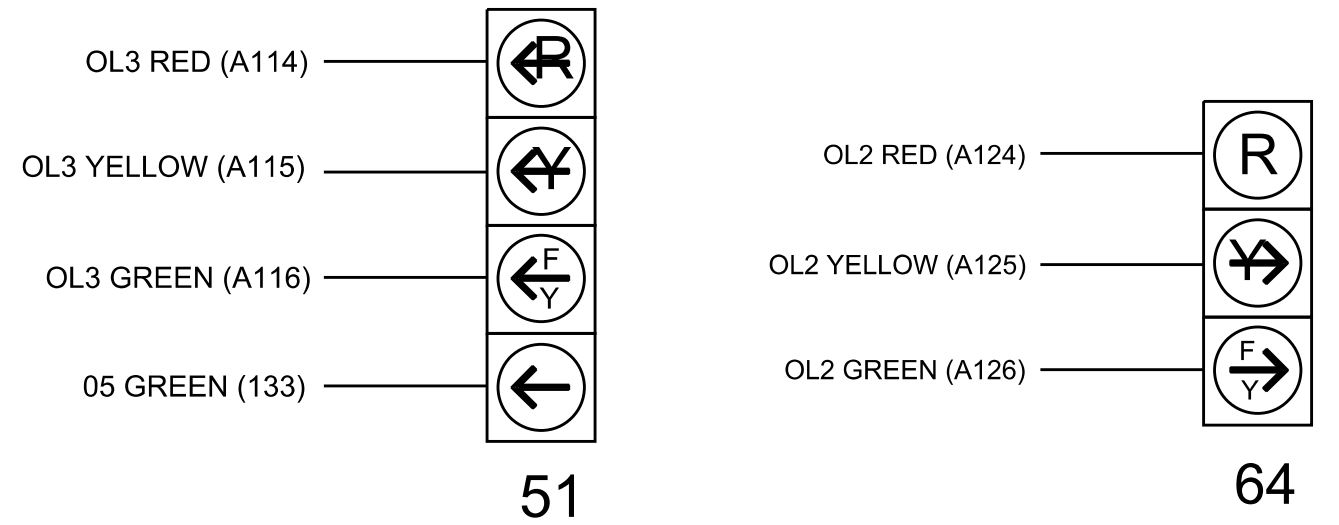
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	OL5	OL3	OL4	SPARE
SIGNAL HEAD NO.	12,13	21,22	NU	NU	41,42	NU	51*	61	62	NU	NU	NU	NU	64*	43	51*	NU	NU
RED		128						134	134					A124	A111			
YELLOW		129					*	135	135									
GREEN		130						136										
RED ARROW	125				101												A114	
YELLOW ARROW	126				102									A125	A112	A115		
FLASHING YELLOW ARROW														A126		A116		
GREEN ARROW	127				103		133	136							A113			

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)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	S	S	S	S	S	S	S	S	S	S	S	S	S	FS
L	T	T	T	T	T	T	T	T	T	T	T	T	T	DC ISOLATOR
FILE "J" U	S	S	S	S	S	S	S	S	S	S	S	S	S	ST
L	T	T	T	T	T	T	T	T	T	T	T	T	T	DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1B	-	-	-	*	49	1			X		X	
1C	-	-	-	*	59	1			X		X	
2A	-	-	-	*	38	2			X		X	
4A	-	-	-	*	44	4			X		X	
4B	-	-	-	*	45	4	10.0		X		X	
5A	-	-	-	*	35*	5	15.0		X		X	
				-	127*	2	3.0		X		X	X
5B	-	-	-	*	51	5			X		X	
6A	-	-	-	*	54	6			X		X	

* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

* For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

SDLC NON-INTRUSIVE DETECTION CHART

	Detector Rack #3		Detector Rack #4	
Input Point	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	1B
2	34	NU	50	NU
3	35	5A	51	5B
4	36	NU	52	NU
5	37	NU	53	NU
6	38	2A	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	1C
12	44	4A	60	NU
13	45	4B	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

NU = Not Used

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

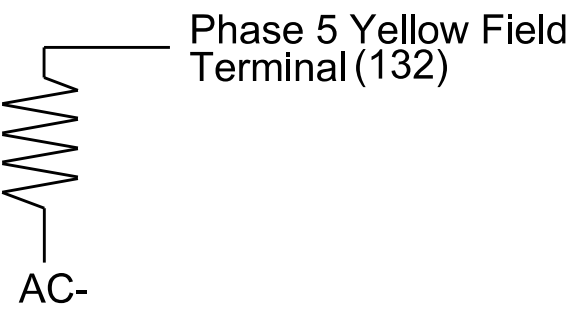
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 3

Electrical and Programming Details For:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector REVIEWED BY:

REVISIONS INIT. DATE

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



7/10/2026

SIG. INVENTORY NO. 10-1839T3



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

7/9/2026 1:01:51 PM P:\4***\pdruses01\HDR_LIS_East_01\Documents\3322\10323293\46-0_CAD\BIM\46-2_WIP\Trcf\cde5\gnal85\sheet1.dgn Dr**10-183913_ELE.dgn

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2. A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on detection zone 5A and reduces delay time for phase 5 call on detection zone 5A to 3 seconds.

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING DETECTION ZONE 5A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2		
Detector	Call Phase	Delay
35	5	3.0
127	0	0.0

5A

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4	5
Type	Off	FYA 4 - Section	FYA 4 - Section	Off	Normal
Included Phases	-	4,6	6	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4	5
Type	Off	FYA 4 - Section	FYA 4 - Section	Off	Normal
Included Phases	-	4,6	-	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	

NOTICE INCLUDED PHASE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-1839T3
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:	NC 73 (Sam Furr Rd) at Lindholm Drive	SEAL
Prepared in the Offices of: 	Division 10 Mecklenburg County Huntersville PLAN DATE: July, 2026 PREPARED BY: K Hector REVIEWED BY: Z Wang	
750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS INIT. DATE	7/10/2026 DATE
		SIG. INVENTORY NO. 10-183913

 HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 35 to vehicle detector 127

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T3
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



STATE OF NORTH CAROLINA
Department of Transportation
Signal Management Section

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

SEAL



SEAL
039071
KARL E. HECTOR
ENGINEER

7/10/2026

DATE

SIG. INVENTORY NO. 10-1839T3



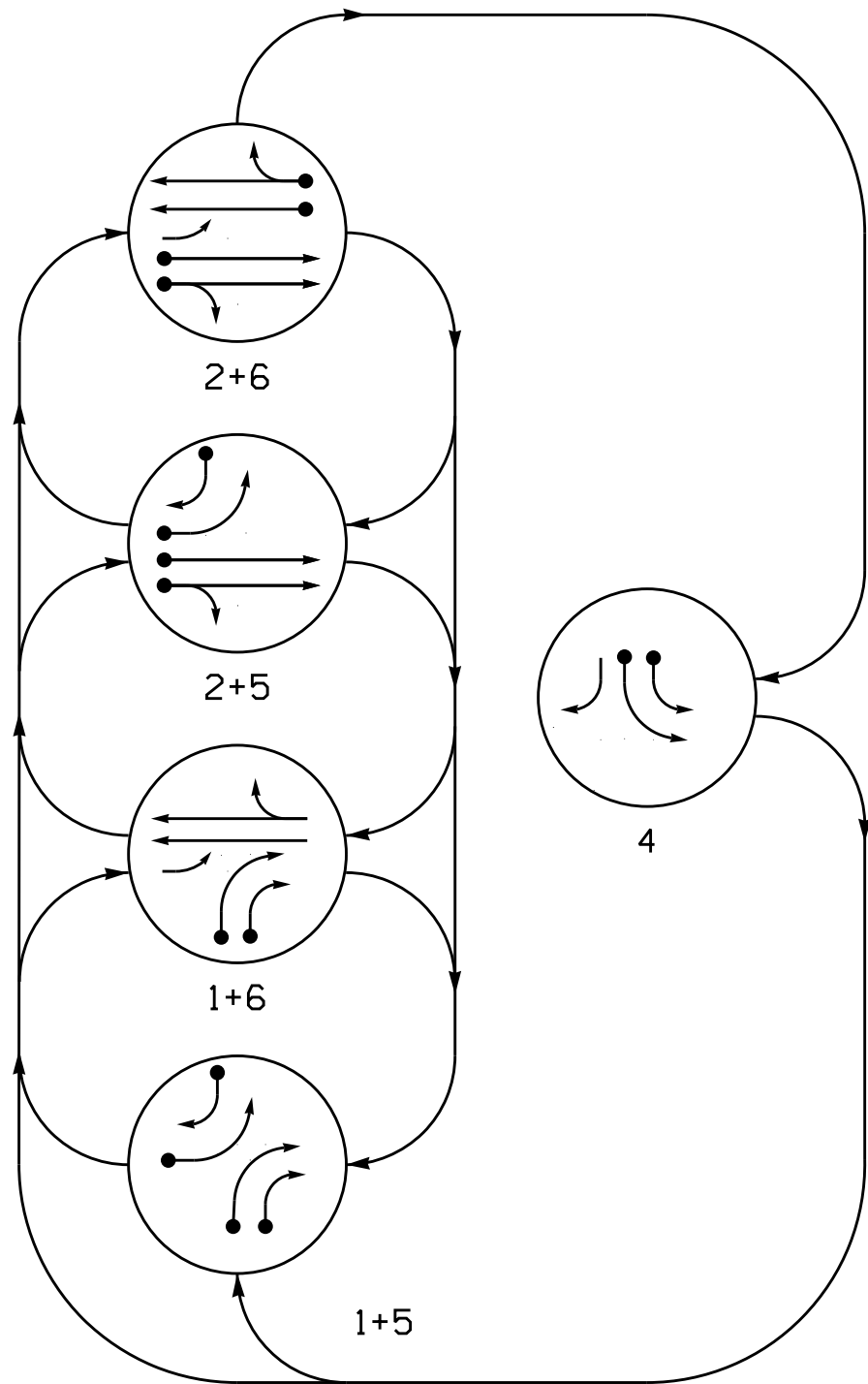
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

750 N. Greenfield Pkwy, Garner, NC 27529

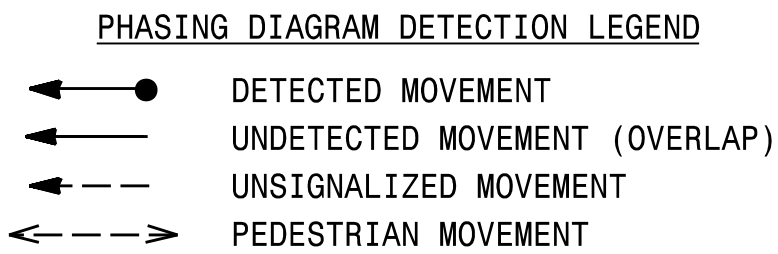
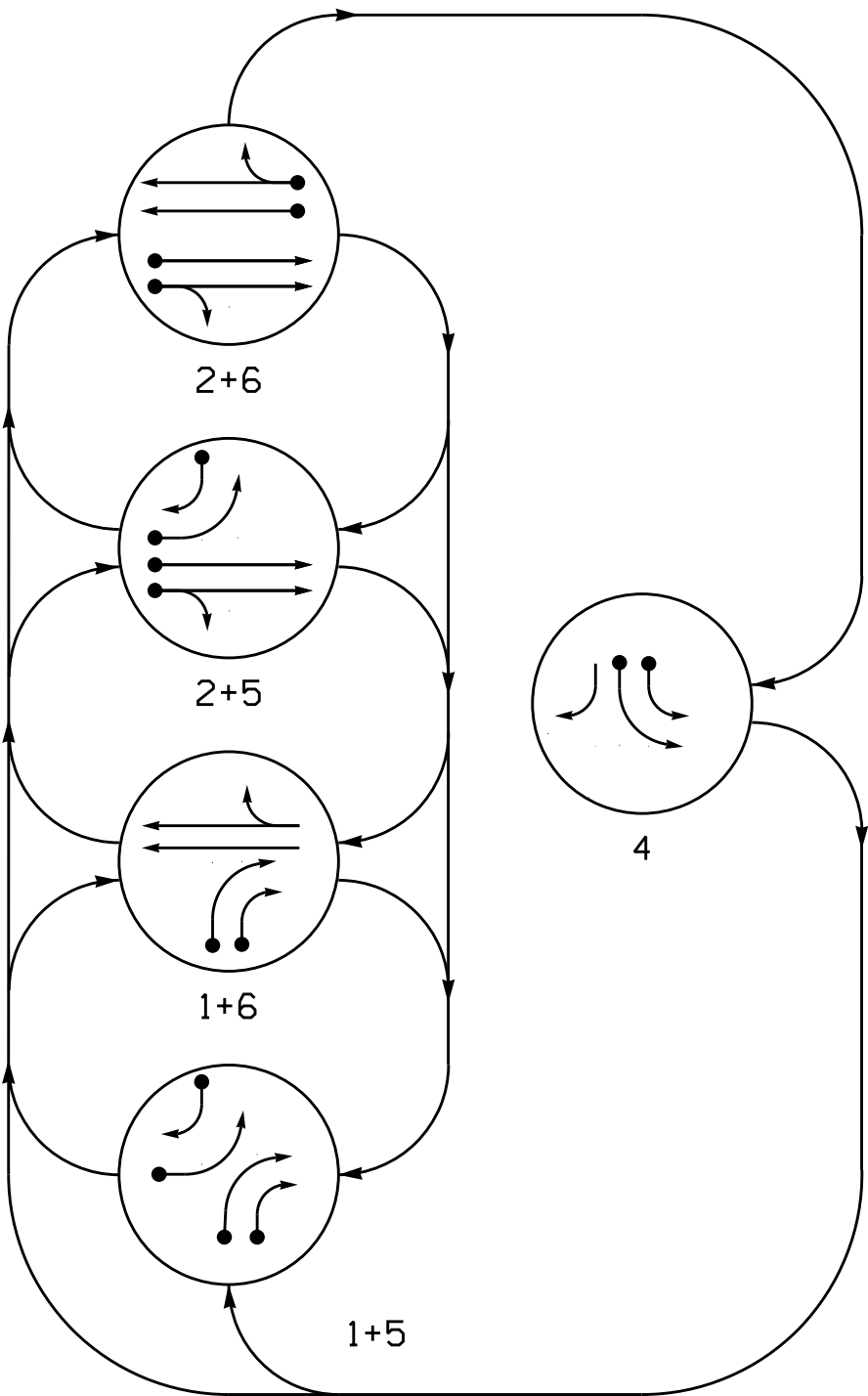
5 Phase Fully Actuated Signal System #: D10-43_Huntersville NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night operation unless otherwise directed by the Engineer.
- Disconnect and Bag head # 64.
- Reposition existing signal heads # 61, 62.
- Install signal head numbered # 63 on temporary trailer after bridge is installed.
- Set all detector units to presence mode.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- See traffic control plans for stop line and crosswalk placement.

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



SIGNAL FACE	PHASE					
	1+5	1+6	2+5	2+6	4	FLIGHT
12,13	→	→	→	→	→	→
21,22	R	R	G	G	R	R
41,42	R	R	R	R	←	R
43	→	R	→	R	→	R
51	←	←	←	←	←	←
61	R	↑	R	↑	R	R
62,63	R	G	R	G	R	R

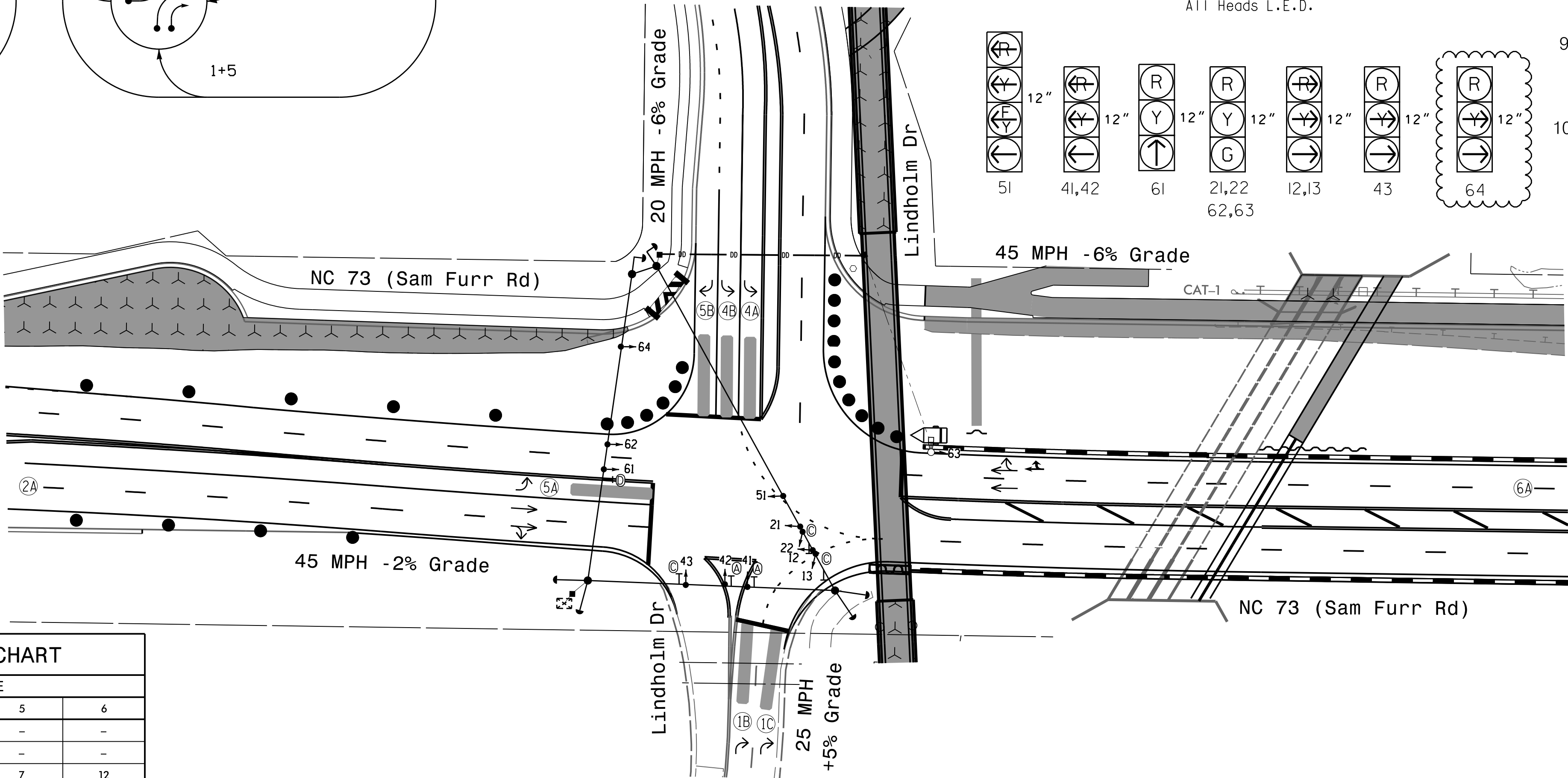
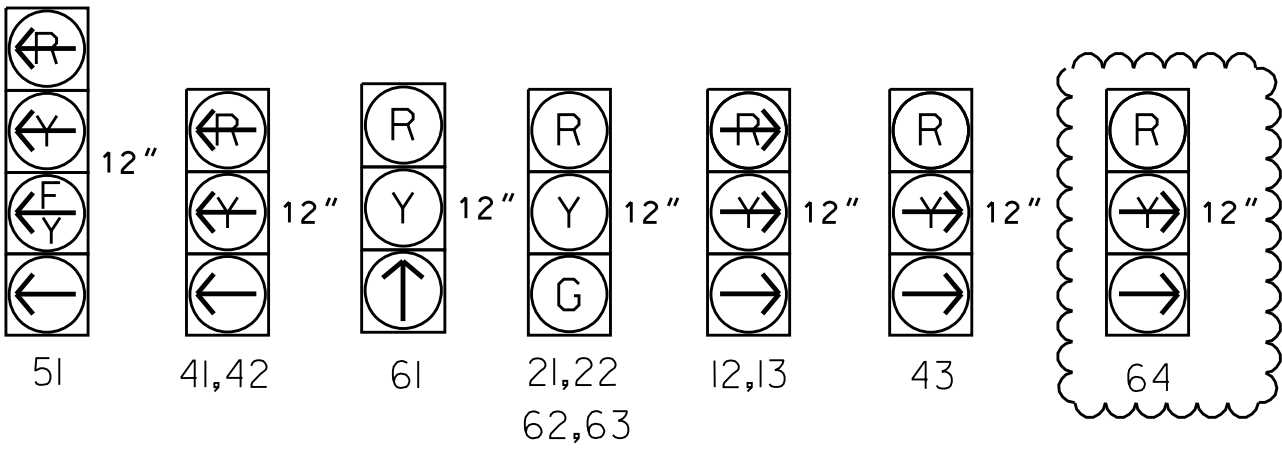
SIGNAL FACE	PHASE					
	1+5	1+6	2+5	2+6	4	FLIGHT
12,13	→	→	→	→	→	→
21,22	R	R	G	G	R	R
41,42	R	R	R	R	←	R
43	→	R	→	R	→	R
51	←	←	←	←	←	←
61	R	↑	R	↑	R	R
62,63	R	G	R	G	R	R

MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR					PROGRAMMING						
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1B	*	*	*	*	1	-	-	X	-	X	-
1C	*	*	*	*	1	-	-	X	-	X	-
2A	*	*	*	*	2	-	-	X	-	X	-
4A	*	*	*	*	4	-	-	X	-	X	-
4B	*	*	*	*	4	-	-	X	-	X	-
5A	*	*	*	*	5	15.0	-	X	-	X	-
5B	*	*	*	*	5	3.0	-	X	-	X	-
6A	*	*	*	*	6	-	-	X	-	X	-

* Multi-zone Microwave Detection.
** Reduce Delay to 3 Seconds During Alternative Phasing Operation.
Disable Delay During Alternate Phasing Operation.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART						
FEATURE	PHASE					
	1	2	4	5	6	
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Min Green *	7	12	7	7	12	
Passage *	2.0	2.0	2.0	2.0	2.0	
Max 1 *	25	90	25	25	90	
Yellow Change	3.0	5.1	3.5	3.3	5.1	
Red Clear	2.5	1.9	3.0	2.0	1.9	
Added Initial *	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Advance Walk	-	-	-	-	-	
Non Lock Detector	X	-	X	X	-	
Vehicle Recall	-	MIN RECALL	-	-	MIN RECALL	
Dual Entry	-	-	-	-	-	

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

Microwave Detection System				
FUNCTION	Sensor 1 (2A)		Sensor 2 (6A)	
Channel	1		2	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Discovery Zone (ft)	<750		<750	
Range (ft)	600-100	150-100	600-100	150-100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

Temporary Design #4 (TMP Phase 1 Step 4a)

Prepared for:

Transportation Mobility and Safety Unit

STATE OF NORTH CAROLINA

Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd) at Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026 REVIEWED BY: Z Wang

PREPARED BY: K Hector RKA PROJ. No.:

REVISIONS

INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER

SEAL 039071

KO

SIGNATURE DATE

SIG. INVENTORY NO. 10-1839T4

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on detection zone 5A and reduces delay time for phase 5 call on detection zone 5A to 3 seconds.

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4	5
Type	Off	Off	FYA 4 - Section	Off	Normal
Included Phases	-	-	6	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	0.0

MAXTIME OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4	5
Type	Off	Off	FYA 4 - Section	Off	Normal
Included Phases	-	-	-	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	0.0

←
NOTICE
INCLUDED
PHASE

MAXTIME DETECTOR PROGRAMMING DETAIL
FOR ALTERNATE PHASING DETECTION ZONE 5A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2		
Detector	Call Phase	Delay
35	5	3.0
127	0	0.0

5A

MAXTIME ALTERNATE PHASING PATTERN
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T4
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming Details For:	NC 73 (Sam Furr Rd) at Lindholm Drive	SEAL
Prepared in the Offices of: 	Division 10 Mecklenburg County Huntersville PLAN DATE: July, 2026 REVIEWED BY: Z Wang PREPARED BY: K Hector REVIEWED BY:	
750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS INIT. DATE	7/10/2026 DATE
		SIG. INVENTORY NO. 10-1839T4

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 35 to vehicle detector 127

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T4
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

SEAL



7/10/2026

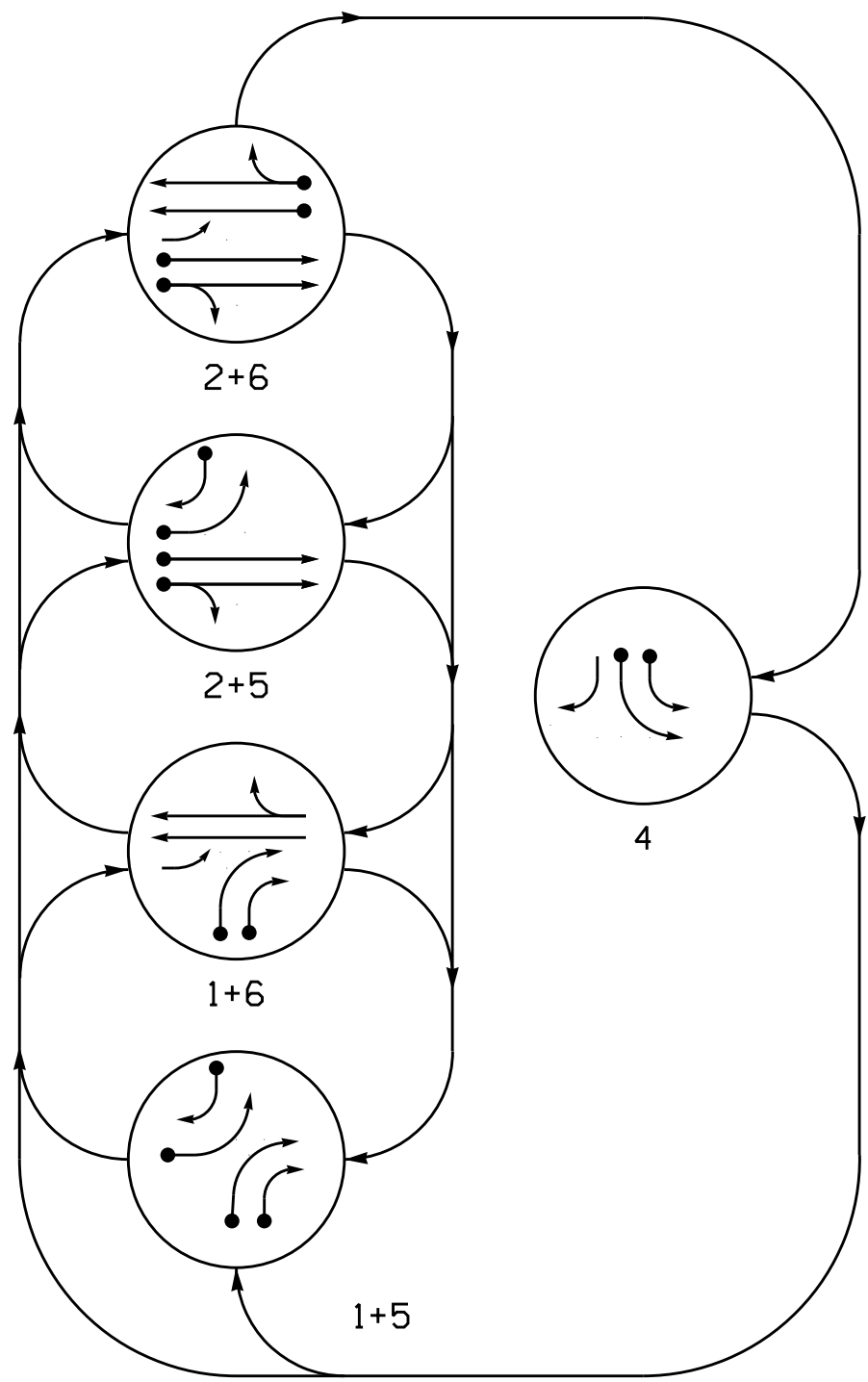
DATE

SIG. INVENTORY NO. 10-1839T4

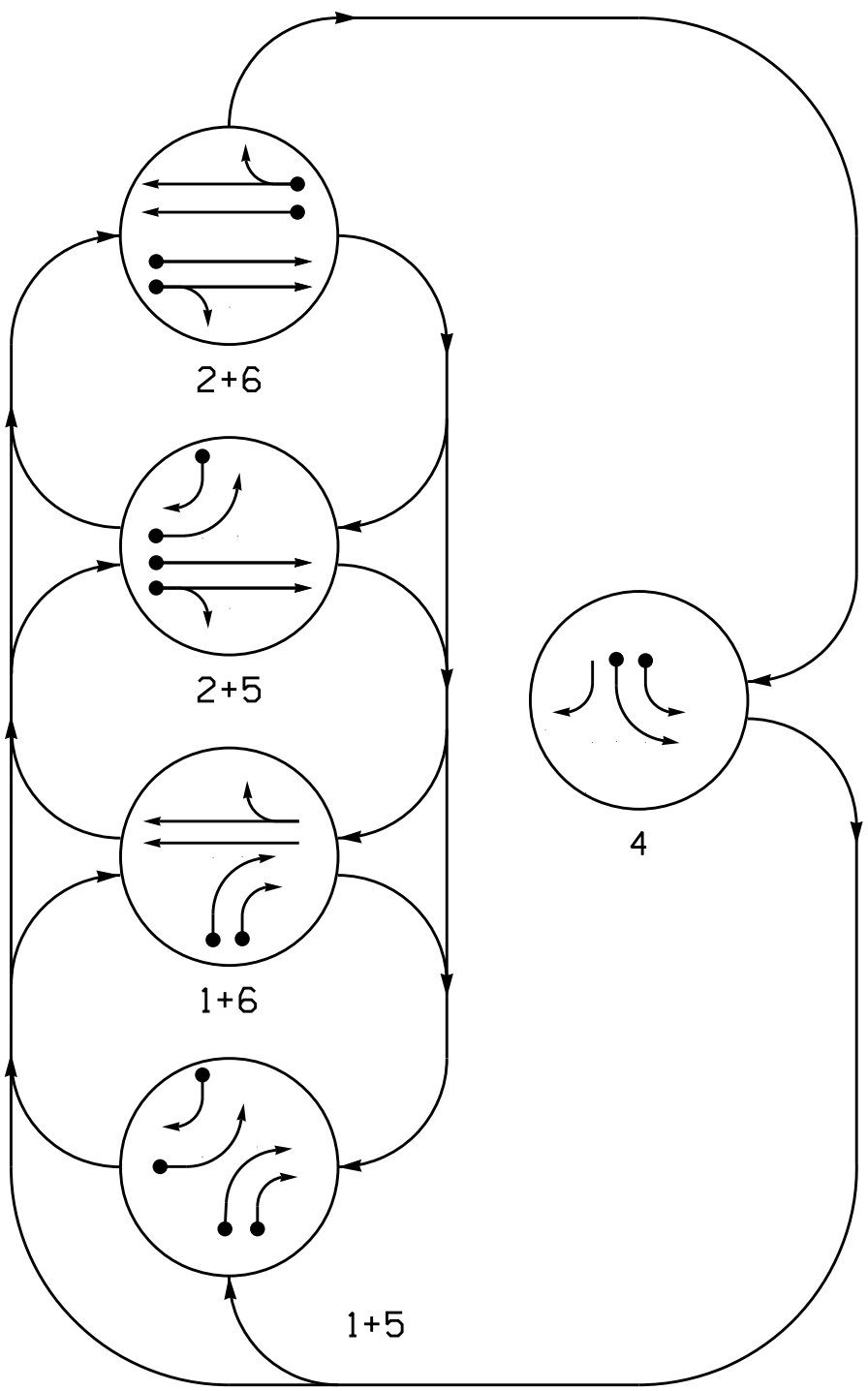
5 Phase Fully Actuated Signal System #: D10-43_Huntersville NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night operation unless otherwise directed by the Engineer.
3. Disconnect and Bag head # 64.
4. Set all detector units to presence mode.
5. The Division Traffic Engineer will determine the hours of use for each phasing plan.
6. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. See traffic control plans for stop line and crosswalk placement.

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE					
	1 + 5	1 + 6	2 + 5	2 + 6	4	F L S H
12,13	→	→	→	→	→	→
21,22	R	R	G	G	R	R
41,42	R	R	R	R	→	→
43	→	R	→	R	→	R
51	→	→	→	→	→	→
61	R	↑	R	↑	R	R
62,63	R	G	R	G	R	R

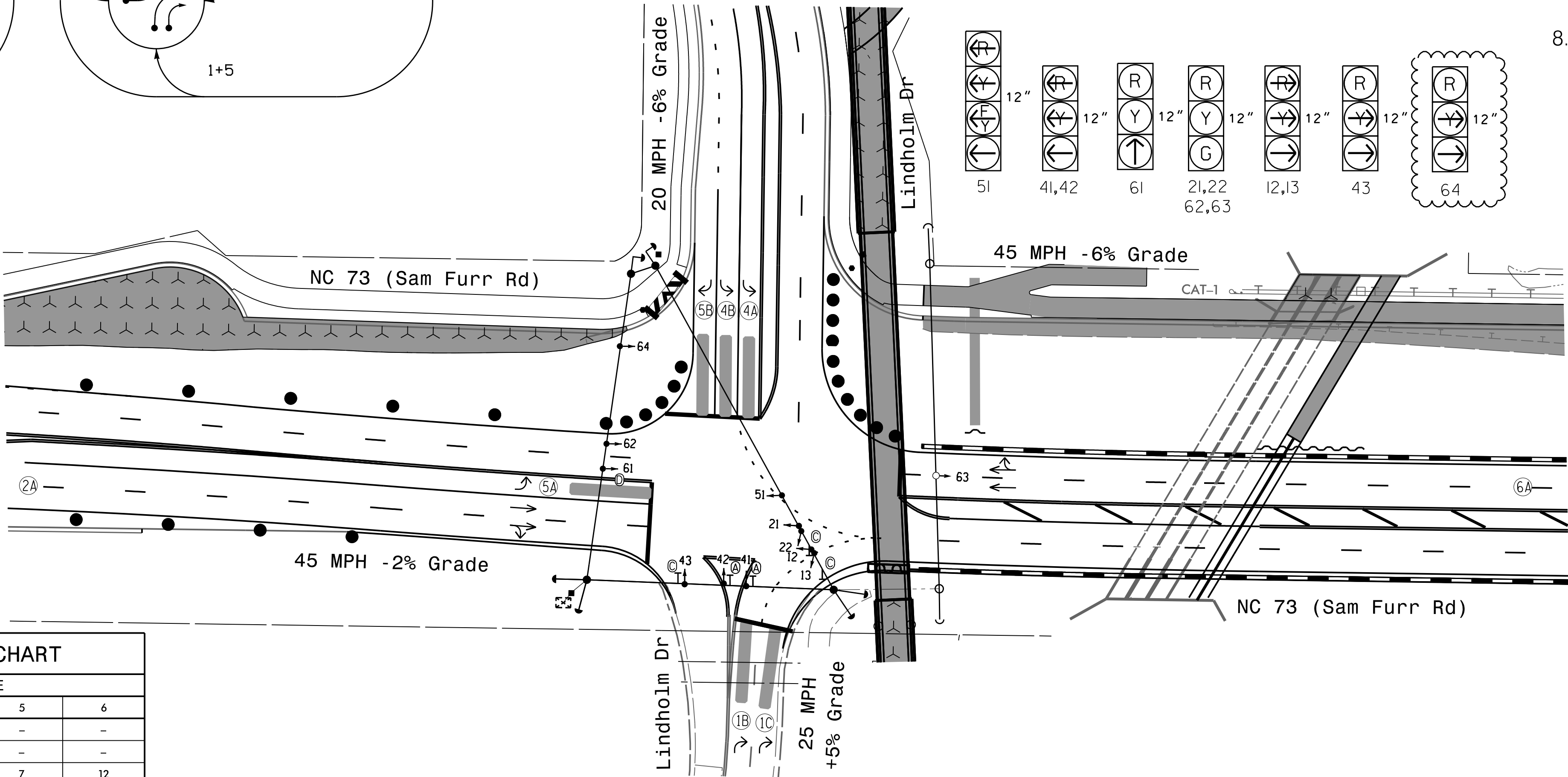
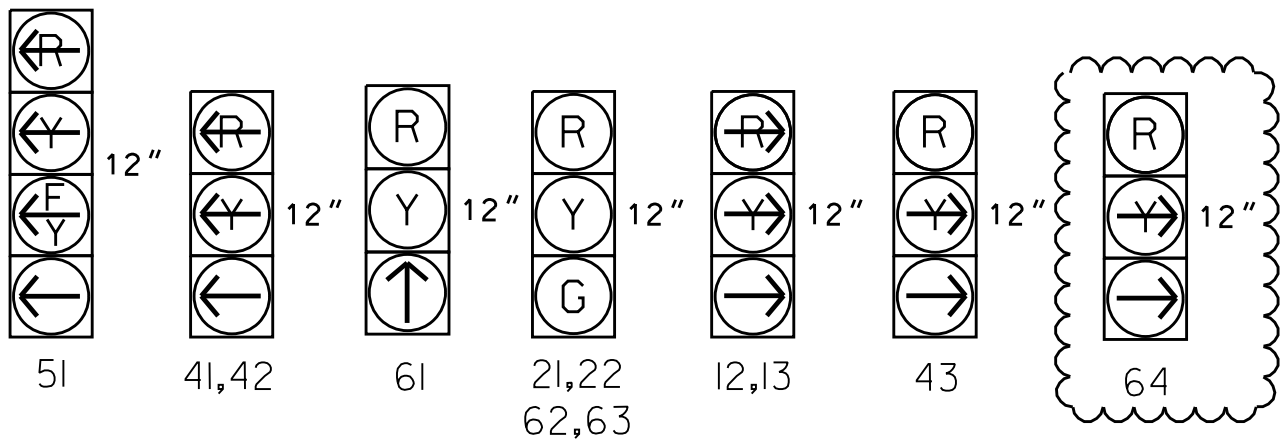
SIGNAL FACE	PHASE					
	1 + 5	1 + 6	2 + 5	2 + 6	4	F L S H
12,13	→	→	→	→	→	→
21,22	R	R	G	G	R	R
41,42	R	R	R	R	→	→
43	→	R	→	R	→	R
51	→	→	→	→	→	→
61	R	↑	R	↑	R	R
62,63	R	G	R	G	R	R

MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	NEW CARD
1B	*	*	*	*	1	-	-	X	-	X	*
1C	*	*	*	*	1	-	-	X	-	X	*
2A	*	*	*	*	2	-	-	X	-	X	*
4A	*	*	*	*	4	-	-	X	-	X	*
4B	*	*	*	*	4	-	-	X	-	X	*
5A	*	*	*	*	5	15.0	-	X	-	X	*
5B	*	*	*	*	5	15	-	X	-	X	*
6A	*	*	*	*	6	-	-	X	-	X	*

* Multi-zone Microwave Detection.
** Reduce Delay to 3 Seconds During Alternative Phasing Operation.
Disable Delay During Alternate Phasing Operation.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Min Green *	7	12	7	7	12	
Passage *	2.0	2.0	2.0	2.0	2.0	
Max 1 *	25	90	25	25	90	
Yellow Change	3.0	5.1	3.5	3.3	5.1	
Red Clear	2.5	1.9	3.0	2.0	1.9	
Added Initial *	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Advance Walk	-	-	-	-	-	
Non Lock Detector	X	-	X	X	-	
Vehicle Recall	-	MIN RECALL	-	-	MIN RECALL	
Dual Entry	-	-	-	-	-	

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

Microwave Detection System

FUNCTION	Sensor 1 (2A)	Sensor 2 (6A)
Channel	1	2
Phase	2	6
Direction of Travel	EB	WB
Type	Priority	Priority
Level	2	2
Discovery Zone (ft)	<750	<750
Range (ft)	600-100	600-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	35-100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	2.5-6.5	2.5-6.5

LEGEND

- PROPOSED
Traffic Signal Head
Pedestrian Signal Head
Signal Pole with Guy
Signal Pole with Sidewalk Guy
Multi-zone Microwave Detection
Controller & Cabinet
Junction Box
2-in Underground Conduit
N/A
Directional Arrow
Construction Zone
Construction Zone Drums
Type II Signal Pedestal
- EXISTING
Sign
With Push Button & Sign
Signal Pole with Guy
Signal Pole with Sidewalk Guy
Junction Box
Right of Way
Arrow Sign
Construction Zone
Construction Zone Drums
Type II Signal Pedestal
- (A) Left Arrow "ONLY" Sign (R3-5L)
(B) Combined Left, Through and Right Arrow Sign (R3-6M)
(C) Right Arrow "ONLY" Sign (R3-5R)
(D) No U-Turn/No Left Turn Sign (R3-18)

Temporary Design #5 (TMP Phase 1 Step 4b)

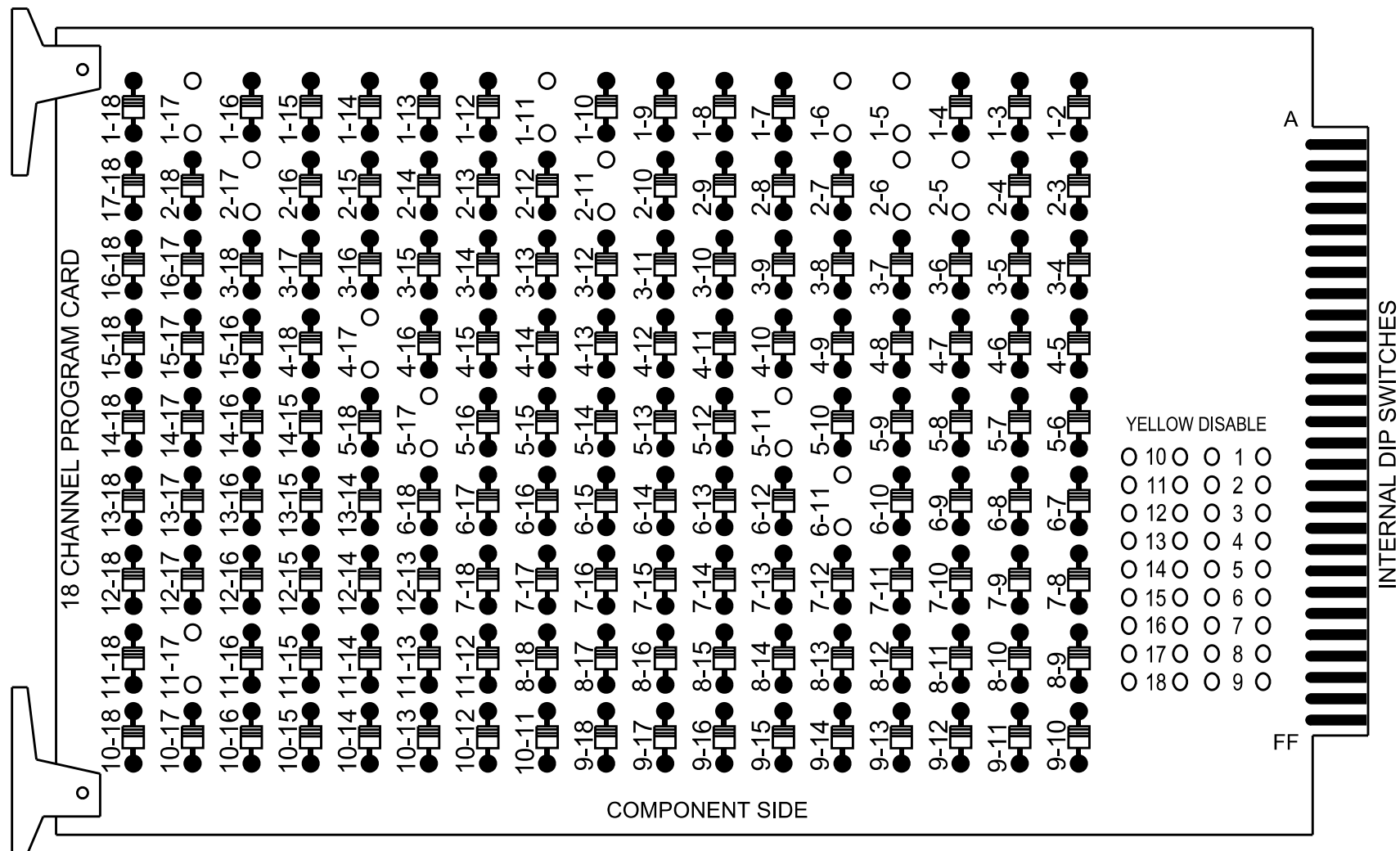
Division 10 Mecklenburg County Huntersville
Prepared By: K Hector
Reviewed By: Z Wang
Date: July 2026
Scale: 1" = 40'

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
039071
7/10/2026

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-11, 1-17, 2-5, 2-6, 2-11, 2-17, 4-17, 5-11, 5-17, 6-11 and 11-17.



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 the Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #: D10-43_Huntersville.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1,S2, S5, S7, S8, AUX S3, AUX S4
Phases Used.....1,2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED
Overlap "5".....*
*See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

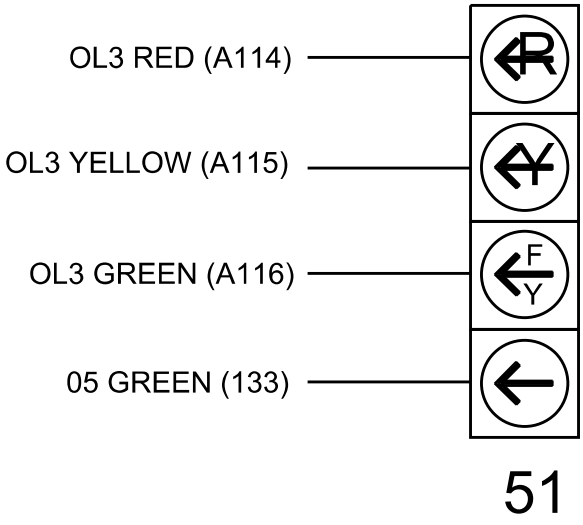
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	OL5	OL3	OL4	SPARE
SIGNAL HEAD NO.	12,13	21,22	NU	NU	41,42	NU	51*	61	62,63	NU	NU	NU	NU	NU	43	51*	NU	NU
RED		128						134	134						A111			
YELLOW		129					*	135	135									
GREEN		130						136										
RED ARROW	125				101										A114			
YELLOW ARROW	126				102										A112	A115		
FLASHING YELLOW ARROW															A116			
GREEN ARROW	127				103		133	136							A113			

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 head as shown)



INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	U	U	U	U	U	U	U	U	U	U	U	U	U
FILE "J"	U	U	U	U	U	U	U	U	U	U	U	U	U	U

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1B	-	-	-	*	49	1			X		X	
1C	-	-	-	*	59	1			X		X	
2A	-	-	-	*	38	2			X		X	
4A	-	-	-	*	44	4			X		X	
4B	-	-	-	*	45	4	10.0		X		X	
5A	-	-	-	*	35*	5	15.0		X		X	
5B	-	-	-	*	127*	2	3.0		X		X	X
6A	-	-	-	*	51	5			X		X	
6A	-	-	-	*	54	6			X		X	

* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

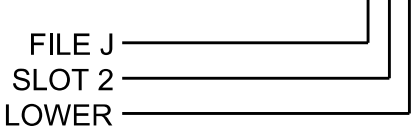
* For Input Point numbers, see SDLC Non-Intrusive Detection Chart detail on this sheet.

SDLC NON-INTRUSIVE DETECTION CHART

	Detector Rack #3		Detector Rack #4	
Input Point	Det # (Index)	Detector Zone	Det # (Index)	Detector Zone
1	33	NU	49	1B
2	34	NU	50	NU
3	35	5A	51	5B
4	36	NU	52	NU
5	37	NU	53	NU
6	38	2A	54	6A
7	39	NU	55	NU
8	40	NU	56	NU
9	41	NU	57	NU
10	42	NU	58	NU
11	43	NU	59	1C
12	44	4A	60	NU
13	45	4B	61	NU
14	46	NU	62	NU
15	47	NU	63	NU
16	48	NU	64	NU

NU = Not Used

INPUT FILE POSITION LEGEND: J2L



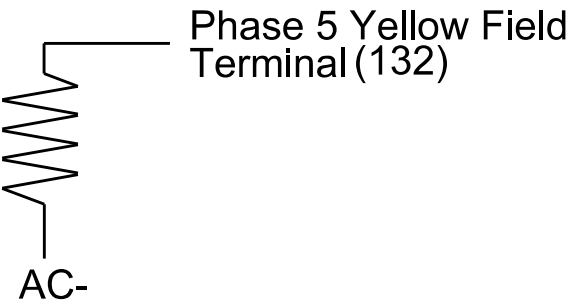
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 3



Electrical and Programming Details For:
Prepared in the Offices of:
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 039071
Division 10 Mecklenburg County Huntersville
PLAN DATE: July, 2026 REVIEWED BY: Z Wang
PREPARED BY: K Hector REVIEWED BY:
REVISIONS
INIT. DATE
DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 039071
7/10/2026
DATE
SIG. INVENTORY NO. 10-183915

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4	5
Type	Off	Off	FYA 4 - Section	Off	Normal
Included Phases	-	-	6	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	0.0

MAXTIME OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4	5
Type	Off	Off	FYA 4 - Section	Off	Normal
Included Phases	-	-	-	-	4,5
Modifier Phases	-	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0
FYA Ped Delay	0.0	0.0	0.0	0.0	0.0

←
NOTICE
INCLUDED
PHASE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T5
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026

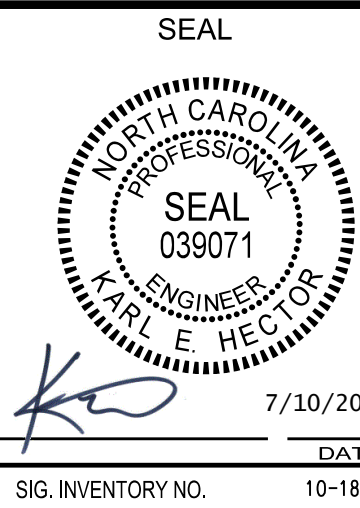
REVIEWED BY: Z Wang

PREPARED BY: K Hector

REVIEWED BY:

REVISIONS	INIT.	DATE

7/10/2026



SIG. INVENTORY NO. 10-1839T5

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN
OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE
TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases
for head 51 to
run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on detection zone 5A
and reduces delay time for phase 5
call on detection zone 5A to 3 seconds.

MAXTIME DETECTOR PROGRAMMING DETAIL
FOR ALTERNATE PHASING DETECTION ZONE 5A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in
the top left corner of the table. Copy the entire contents of
Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2.
Modify Detector Plan 2 as shown below and save changes.

Plan 2		
Detector	Call Phase	Delay
35	5	3.0
127	0	0.0

5A

MAXTIME ALTERNATE PHASING PATTERN
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

*The Pattern number(s) are to be determined by
the Division and/or City Traffic Engineer.

SPECIAL DETECTION IO MODULE PROGRAMMING

The Enhanced Out of Pavement Detection requires adjustments to the IO Modules in use. Follow the programming instructions below to ensure desired operation.

Front Panel
Main Menu >Controller >More >Advanced IO >IO Modules

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >IO Modules

IO Module	Type	Fault Response
1	Caltrans 332	Default
2	TS2 DR3 BIU	Default
3	TS2 DR4 BIU	Default
4	TS2 MMU	Default

Advanced Cabinet Options

☒ Disable TS2 Cabinet Alarms

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold

6

Unit Flash Parameters

All Red Flash Exit Time

6

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
1	Veh Detector Call	127	Is Module A input B ON	Number	2	Number	3	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Mirrors vehicle detector 35 to vehicle detector 127

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1839T5
DESIGNED: June 2026
SEALED: 07-10-2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July, 2026REVIEWED BY: Z Wang

PREPARED BY: K HectorREVIEWED BY:

REVISIONS

INIT. DATE

SEAL



7/10/2026

DATE

SIG. INVENTORY NO. 10-1839T5

3 Phase
Fully Actuated
Signal System #: D10-43_Huntersville

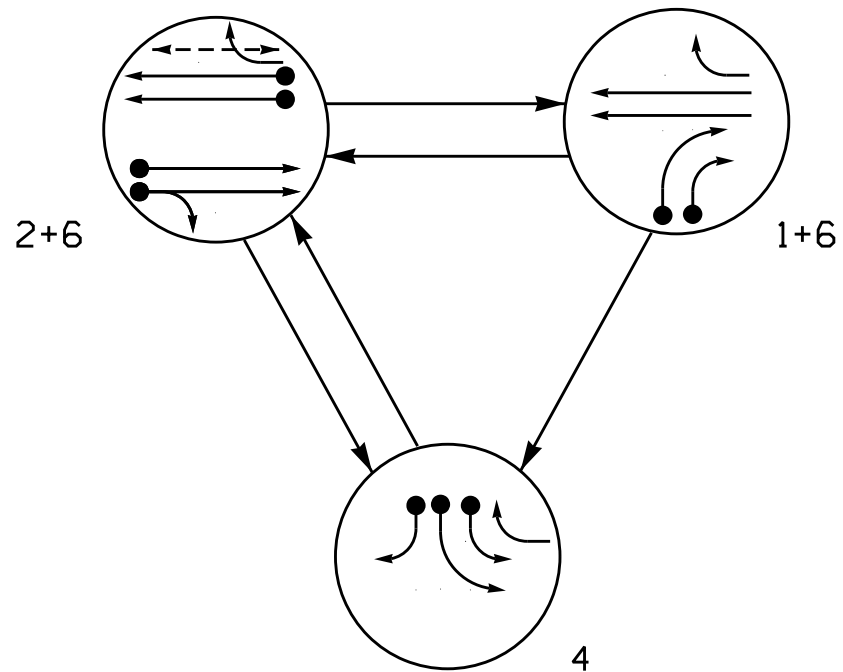
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night operation unless otherwise directed by the Engineer.
3. Remove existing signal heads numbered # 51.
4. Reposition existing signal heads numbered # 21, 22, 61,62,63, 64
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only
8. This intersection features accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
9. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. See traffic control plans for stop line and crosswalk placement.

LEGEND

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

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

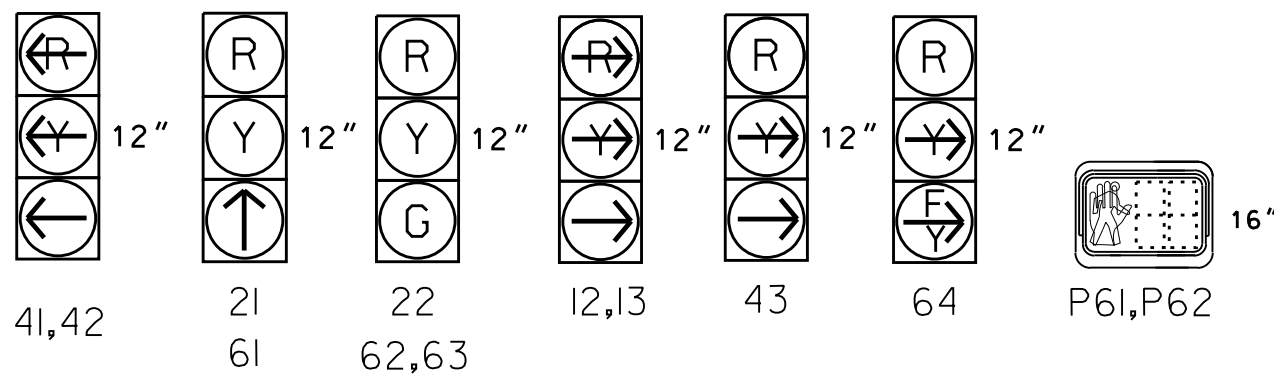
	DETECTED MOVEMENT
	UNDETECTED MOVEMENT (OVERLAP)
	UNSIGNALIZED MOVEMENT
	PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE			
	1 + 6	2 + 6	4	FLUSH
12,13	→	R	R	R
21	R	↑	R	R
22	R	G	R	R
41,42	→	→	→	→
43	R	R	→	R
61	↑	↑	R	R
62,63	G	G	R	R
64	→	→	→	R
P61,P62	W	W	DW	DRK

SIGNAL FACE I.D.

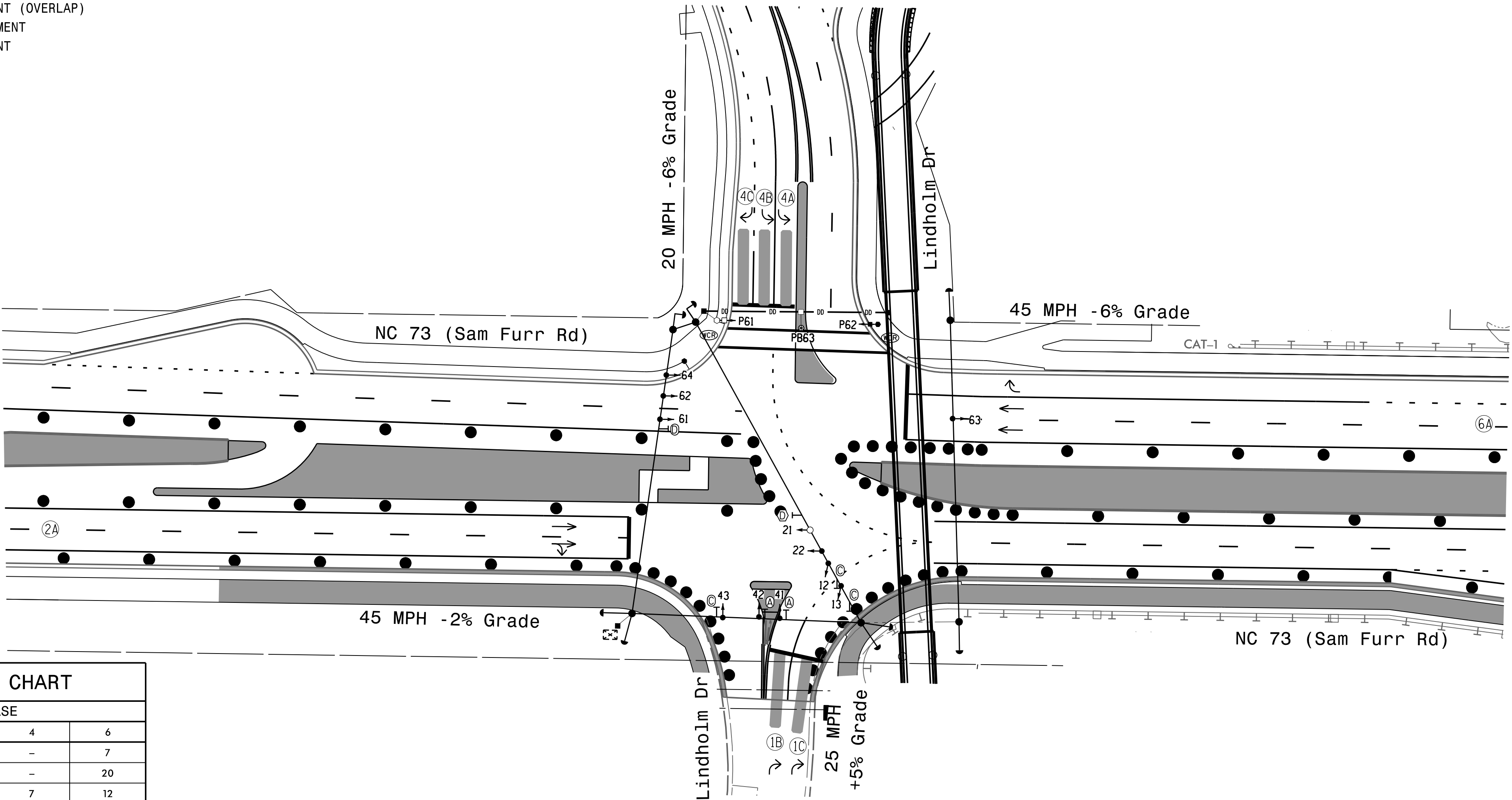
All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
DETECTOR ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	NEW CARD
1B	*	*	*	*	1	-	-	X	-	X	-
1C	*	*	*	*	1	-	-	X	-	X	-
2A	*	*	*	*	2	-	-	X	-	X	-
4A	*	*	*	*	4	-	-	X	-	X	-
4B	*	*	*	*	4	-	-	X	-	X	-
4C	*	*	*	*	4	15.0	-	X	-	X	-
6A	*	*	*	*	6	-	-	X	-	X	-

* Multi-zone Microwave Detection.



MAXTIME TIMING CHART

FEATURE	PHASE			
	1	2	4	6
Walk *	-	-	-	7
Ped Clear	-	-	-	20
Min Green *	7	12	7	12
Passage *	2.0	2.0	2.0	2.0
Max 1 *	25	90	25	90
Yellow Change	3.0	5.1	3.5	5.1
Red Clear	2.6	2.2	3.6	2.2
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	7
Non Lock Detector	X	-	X	-
Vehicle Recall	-	MIN RECALL	-	MIN RECALL
Dual Entry	-	-	-	-

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

Microwave Detection System

FUNCTION	Sensor 1 (2A)		Sensor 2 (6A)	
Channel	1		2	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Discovery Zone (ft)	<750		<750	
Range (ft)	600-100	150-100	600-100	150-100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

Temporary Design #6
(TMP Phase 2)



NC 73 (Sam Furr Rd)
at
Lindholm Drive

Division 10 Mecklenburg County Huntersville

PLAN DATE: July 2026

REVIEWED BY: Z Wang

PREPARED BY: K Hector

RKA PROJ. No.:

REVISIONS

INIT.

DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL



7/10/2026

SIGNATURE DATE

SIG. INVENTORY NO. 10-183916