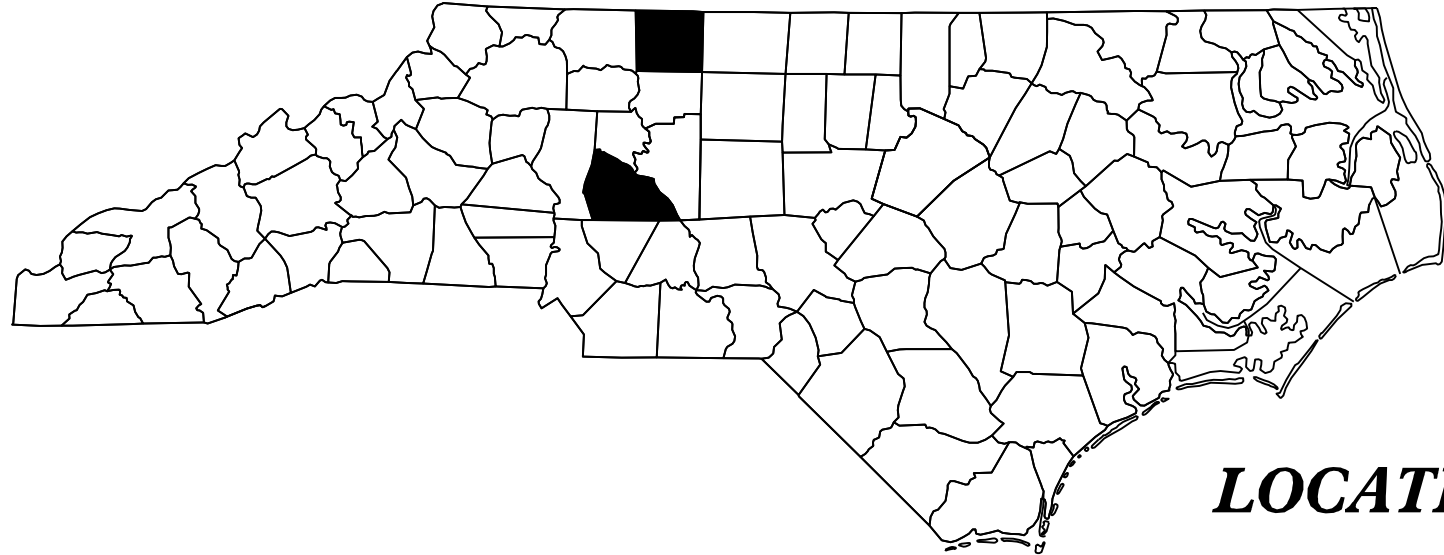


CONTRACT: DI00386

TIP PROJECT: HS-2409B, K, L



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROWAN & STOKES COUNTY

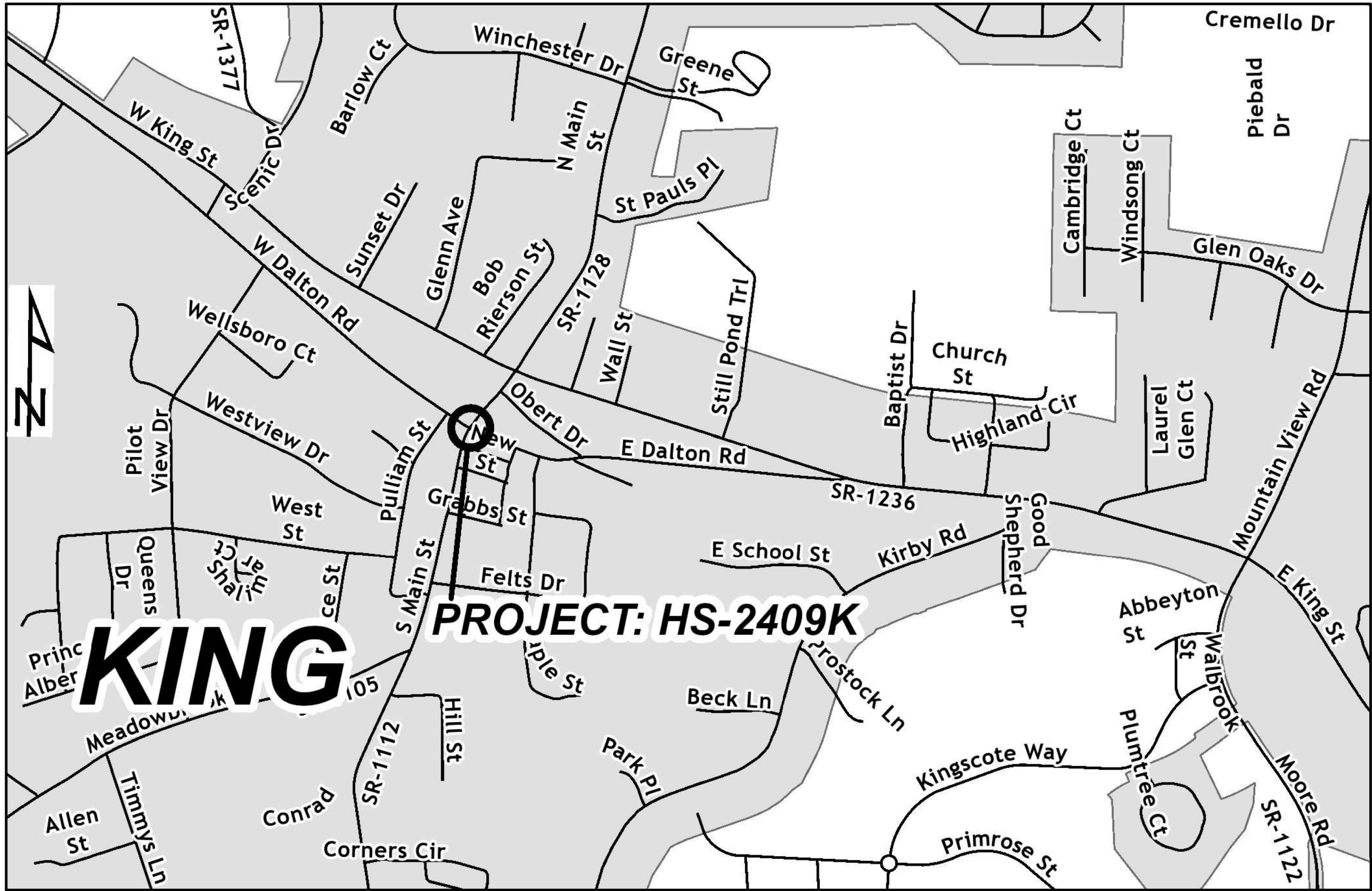
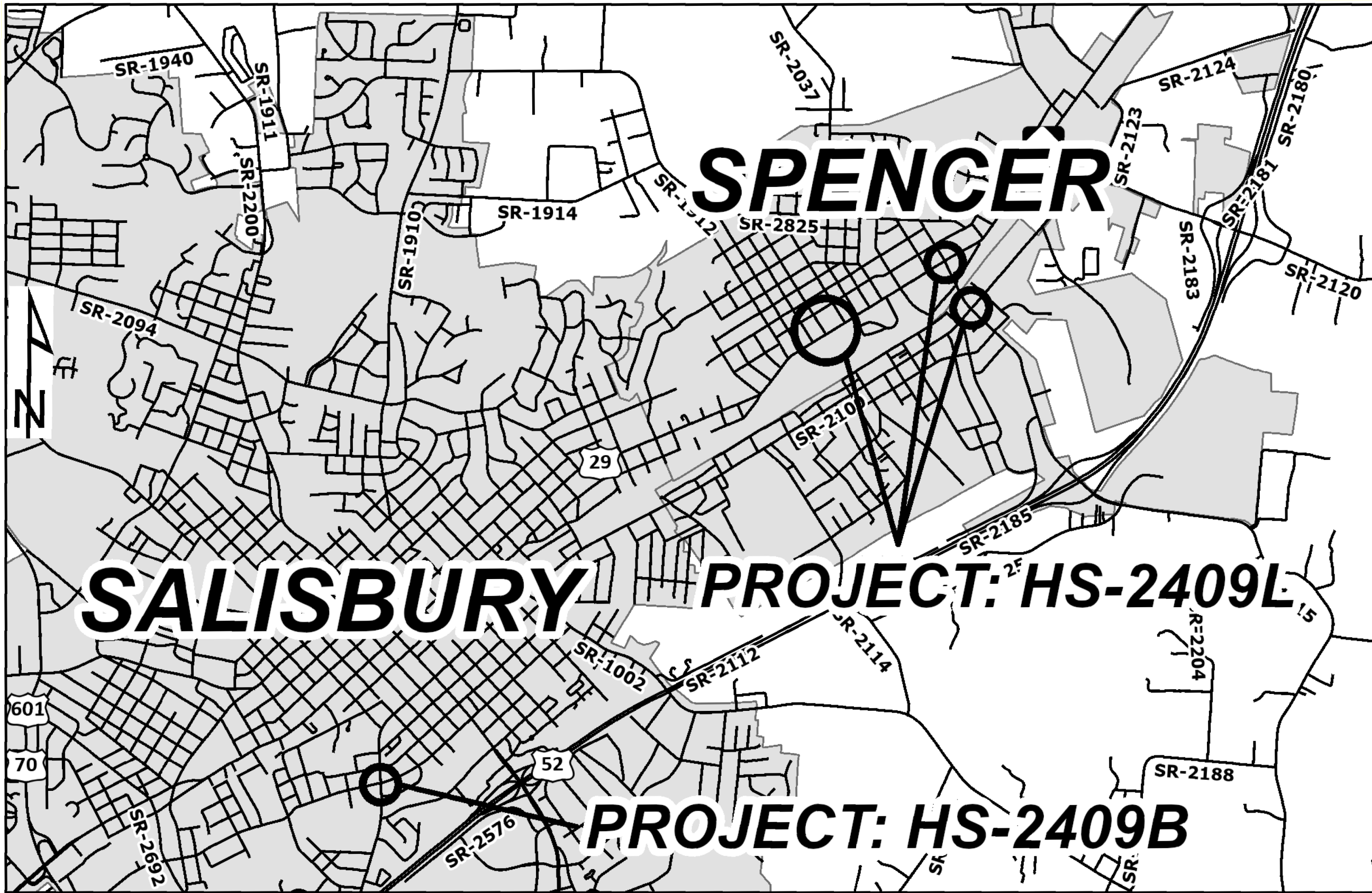
LOCATION: **HS-2409B: INTERSECTION OF SR 1002 (OLD CONCORD ROAD) AND MARTIN LUTHER KING JR. AVENUE**

HS-2409K: SR 1112 (SOUTH MAIN STREET) AT WEST DALTON ROAD /EAST DALTON ROAD INTERSECTION

HS-2409L: US 29-70/NC 150 (SALISBURY AVE.) AT SR 1915 (JEFFERSON ST.), 4TH STREET, 5TH STREET, & 6TH STREET INTERSECTIONS; AND SR 1915 (ANDREWS STREET/JEFFERSON STREET) AT SR 2100 (LONG STREET) INTERSECTION

TYPE OF WORK: CURB RAMP INSTALLATION, PEDESTRIAN SIGNALS, AND PAVEMENT MARKINGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2409B HS-2409K HS-2409L	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50981.1.3	5098103	HS-2409B (PE)	
50981.3.3	5098103	HS-2409B (CONST.)	
50981.1.12	5098112	HS-2409K (PE)	
50981.3.12	5098112	HS-2409K (CONST.)	
50981.1.13	5098113	HS-2409L (PE)	
50981.3.13	5098113	HS-2409L (CONST.)	



NOT TO SCALE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SHEET INDEX N/A	DESIGN DATA N/A	PROJECT LENGTH TOTAL LENGTH OF PROJECTS HS-2409B, K, L = N/A	Prepared in the Office of: DIVISION OF HIGHWAYS NINTH DIVISION DESIGN/CONSTRUCT 375 SILAS CREEK PARKWAY WINSTON-SALEM, N.C. 27127 2024 STANDARD SPECIFICATIONS RIGHT OF WAY DATE: N/A LETTING DATE: 08/26/2026 DANIEL C. ULRICH, PE, PLS PROJECT ENGINEER HUNTER S. GRIESER PROJECT DESIGN ENGINEER	ROADWAY DESIGN ENGINEER DocuSigned by: Daniel Ulrich 513BA0BFEF51E400 SIGNATURE: PROFESSIONAL SEAL 056044 ENGINEER DANIEL C. ULRICH P.E.	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
---------------------------------------	---------------------------------------	--	--	---	--

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1	TITLE SHEET (HS-2409B)
2A	TYPICAL SECTION
4	PLAN SHEET
SIG. 1 THRU 3	SIGNAL PLANS
1	TITLE SHEET (HS-2409K)
SIG. 1 THRU 2	SIGNAL PLANS
1	TITLE SHEET (HS-2409L)
4 THRU 5	PLAN SHEETS
SIG. 1.0 THRU SIG. 5.1	SIGNAL PLANS

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE ATT, DUKE ENERGY, VERIZON,

HOTWIRE COMMUNICATIONS LLC, CONTERRA ULTRA BROADBAND, LUMEN, PIEDMONT

NATURAL GAS, CITY OF SALISBURY, NCDOT, RIVERSTREET NETWORKS, & WINDSTREAM

COMMUNICATIONS

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.06.

EFF. 01-16-2024
REV.

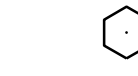
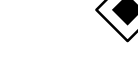
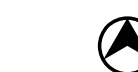
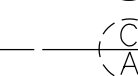
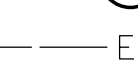
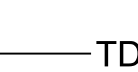
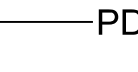
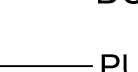
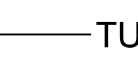
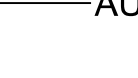
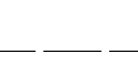
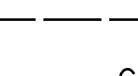
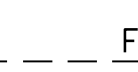
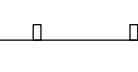
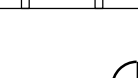
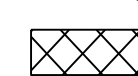
2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.06	Curb Ramp
DIVISION 12 - PAVEMENT MARKINGS, MARKERS AND DELINEATION	
1205.07	Pedestrian Crosswalks

State Line	-----	
County Line	-----	
Township Line	-----	
City Line	-----	
Reservation Line	-----	
Property Line	-----	
Existing Iron Pin (EIP)	-----	
Computed Property Corner	-----	
Existing Concrete Monument (ECM)	-----	
Parcel / Sequence Number	-----	
Existing Fence Line	-----	
Proposed Woven Wire Fence	-----	
Proposed Chain Link Fence	-----	
Proposed Barbed Wire Fence	-----	
Existing Wetland Boundary	-----	
Proposed Wetland Boundary	-----	
Existing Endangered Animal Boundary	-----	
Existing Endangered Plant Boundary	-----	
Existing Historic Property Boundary	-----	
Known Contamination Area: Soil	-----	
Potential Contamination Area: Soil	-----	
Known Contamination Area: Water	-----	
Potential Contamination Area: Water	-----	
Contaminated Site: Known or Potential	-----	
<i>BUILDINGS AND OTHER CULTURE:</i>		
Gas Pump Vent or U/G Tank Cap	-----	
Sign	-----	
Well	-----	
Small Mine	-----	
Foundation	-----	
Area Outline	-----	
Cemetery	-----	
Building	-----	
School	-----	
Church	-----	
Dam	-----	
<i>HYDROLOGY:</i>		
Stream or Body of Water	-----	
Hydro, Pool or Reservoir	-----	
Jurisdictional Stream	-----	
Buffer Zone 1	-----	
Buffer Zone 2	-----	
Flow Arrow	-----	
Disappearing Stream	-----	
Spring	-----	
Wetland	-----	
Proposed Lateral, Tail, Head Ditch	-----	
False Sump	-----	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	
RIGHT OF WAY & PROJECT CONTROL:	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Permanent Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	
ROADS AND RELATED FEATURES:	
Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
VEGETATION:	
Single Tree	
Single Shrub	

CONVENTIONAL PLAN SHEET SYMBOLS

Hedge		
Woods Line		
Orchard		
Vineyard		

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert		
Bridge Wing Wall, Head Wall and End Wall		

MINOR:

Head and End Wall		
Pipe Culvert		
Footbridge		
Drainage Box: Catch Basin, DI or JB		
Paved Ditch Gutter		
Storm Sewer Manhole		
Storm Sewer		

UTILITIES: * SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)

POWER:

Existing Power Pole		
Proposed Power Pole		
Existing Joint Use Pole		
Proposed Joint Use Pole		
Power Manhole		
Power Line Tower		
Power Transformer		
U/G Power Cable Hand Hole		
H-Frame Pole		
U/G Power Line Test Hole (SUE - LOS A)*		
U/G Power Line (SUE - LOS B)*		
U/G Power Line (SUE - LOS C)*		
U/G Power Line (SUE - LOS D)*		

TELEPHONE:

Existing Telephone Pole		
Proposed Telephone Pole		
Telephone Manhole		
Telephone Pedestal		
Telephone Cell Tower		
U/G Telephone Cable Hand Hole		
U/G Telephone Test Hole (SUE - LOS A)*		
U/G Telephone Cable (SUE - LOS B)*		
U/G Telephone Cable (SUE - LOS C)*		
U/G Telephone Cable (SUE - LOS D)*		
U/G Telephone Conduit (SUE - LOS B)*		
U/G Telephone Conduit (SUE - LOS C)*		
U/G Telephone Conduit (SUE - LOS D)*		
U/G Fiber Optics Cable (SUE - LOS B)*		
U/G Fiber Optics Cable (SUE - LOS C)*		
U/G Fiber Optics Cable (SUE - LOS D)*		

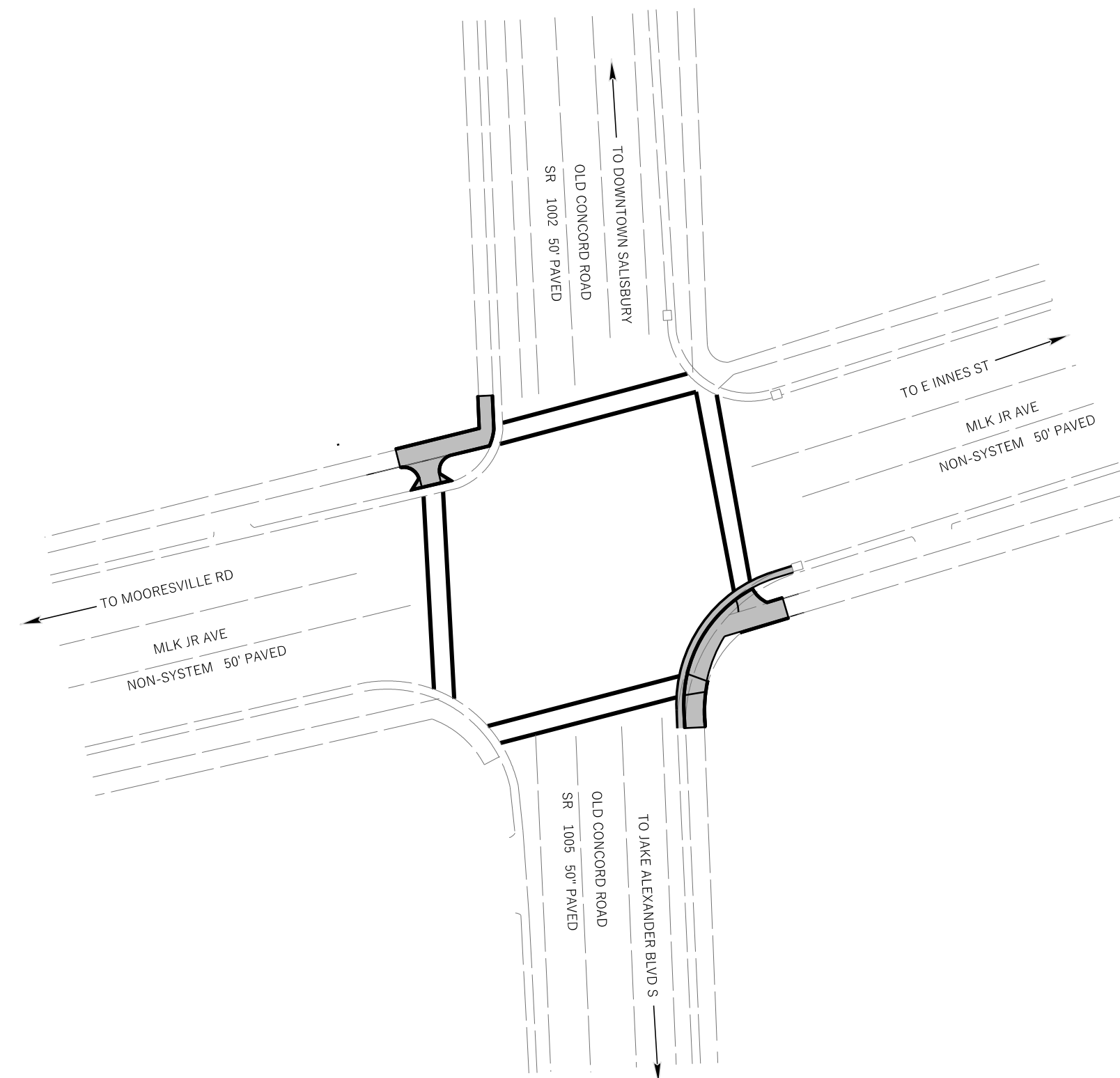
Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE - LOS A)*	
U/G Water Line (SUE - LOS B)*	-----W-----
U/G Water Line (SUE - LOS C)*	-----W-----
U/G Water Line (SUE - LOS D)*	-----W-----
Above Ground Water Line	-----A/G Water-----
TV:	
TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE - LOS A)*	
U/G TV Cable (SUE - LOS B)*	-----TV-----
U/G TV Cable (SUE - LOS C)*	-----TV-----
U/G TV Cable (SUE - LOS D)*	-----TV-----
U/G Fiber Optic Cable (SUE - LOS B)*	-----TV FO-----
U/G Fiber Optic Cable (SUE - LOS C)*	-----TV FO-----
U/G Fiber Optic Cable (SUE - LOS D)*	-----TV FO-----
GAS:	
Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE - LOS A)*	
U/G Gas Line (SUE - LOS B)*	-----G-----
U/G Gas Line (SUE - LOS C)*	-----G-----
U/G Gas Line (SUE - LOS D)*	-----G-----
Above Ground Gas Line	-----A/G Gas-----
SANITARY SEWER:	
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	-----SS-----
Above Ground Sanitary Sewer	-----A/G Sanitary Sewer-----
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	-----FSS-----
SS Force Main Line (SUE - LOS C)*	-----FSS-----
SS Force Main Line (SUE - LOS D)*	-----FSS-----
MISCELLANEOUS:	
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE - LOS B)*	-----UTIL-----
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

TIP PROJECT: HS-2409B

A map of North Carolina showing its county boundaries. Wayne County, located in the western-central part of the state, is highlighted in solid black. The rest of the state's counties are shown in white with black outlines.

ROWAN COUNTY

**TYPE OF WORK: CURB RAMP INSTALLATION, SIGNALS,
AND PAVEMENT MARKINGS**



N

The seal of the North Carolina Department of Transportation is a circular emblem. It features a stylized map of North Carolina in the center, with a large, flowing line representing a river or a highway winding through the state. The words "STATE OF NORTH CAROLINA" are inscribed along the top inner edge of the circle, and "DEPARTMENT OF TRANSPORTATION" is inscribed along the bottom inner edge. A small star is positioned on the right side of the circle, separating the top and bottom text.

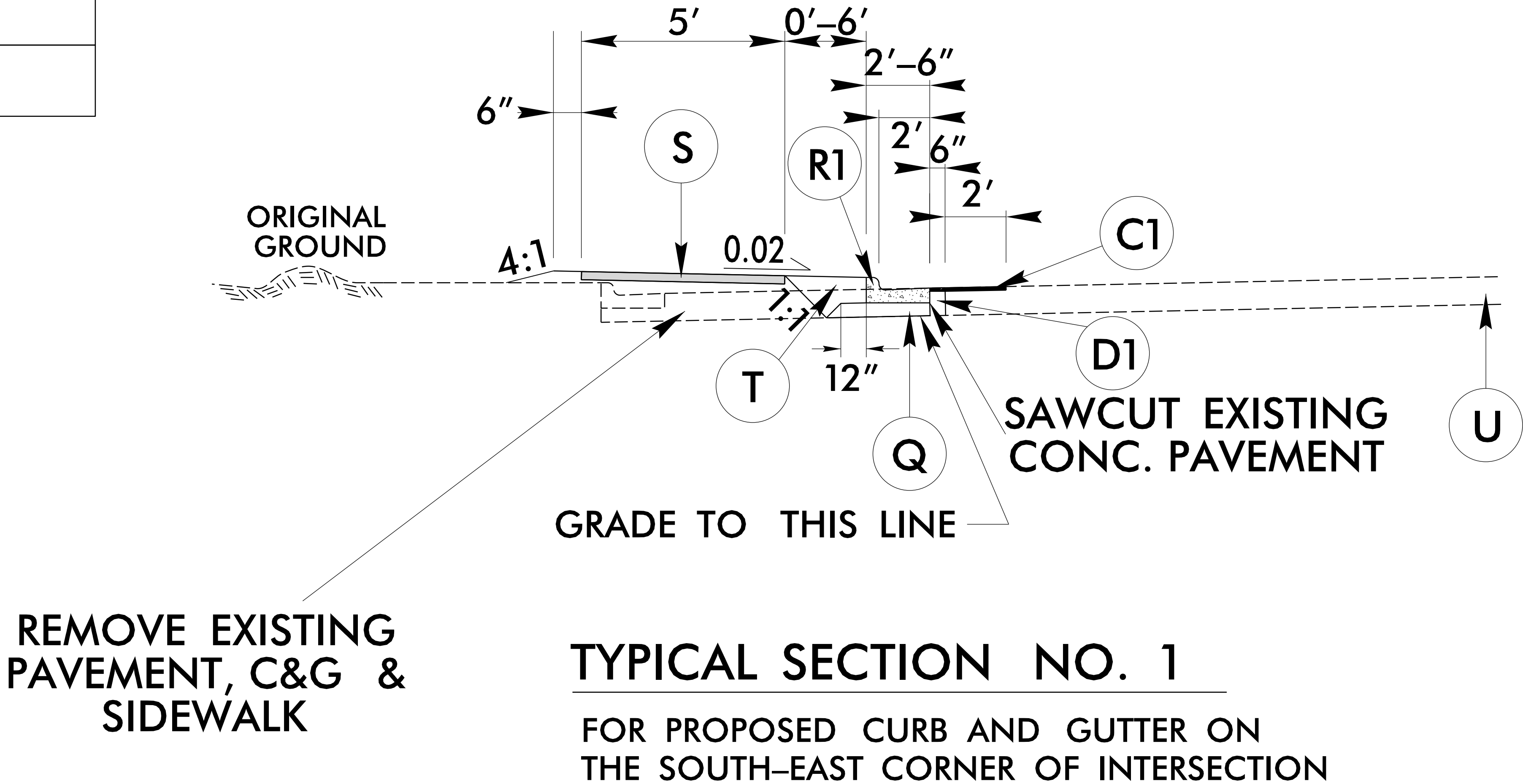
HUNTER S. GRIESER
PROJECT DESIGN ENGINEER



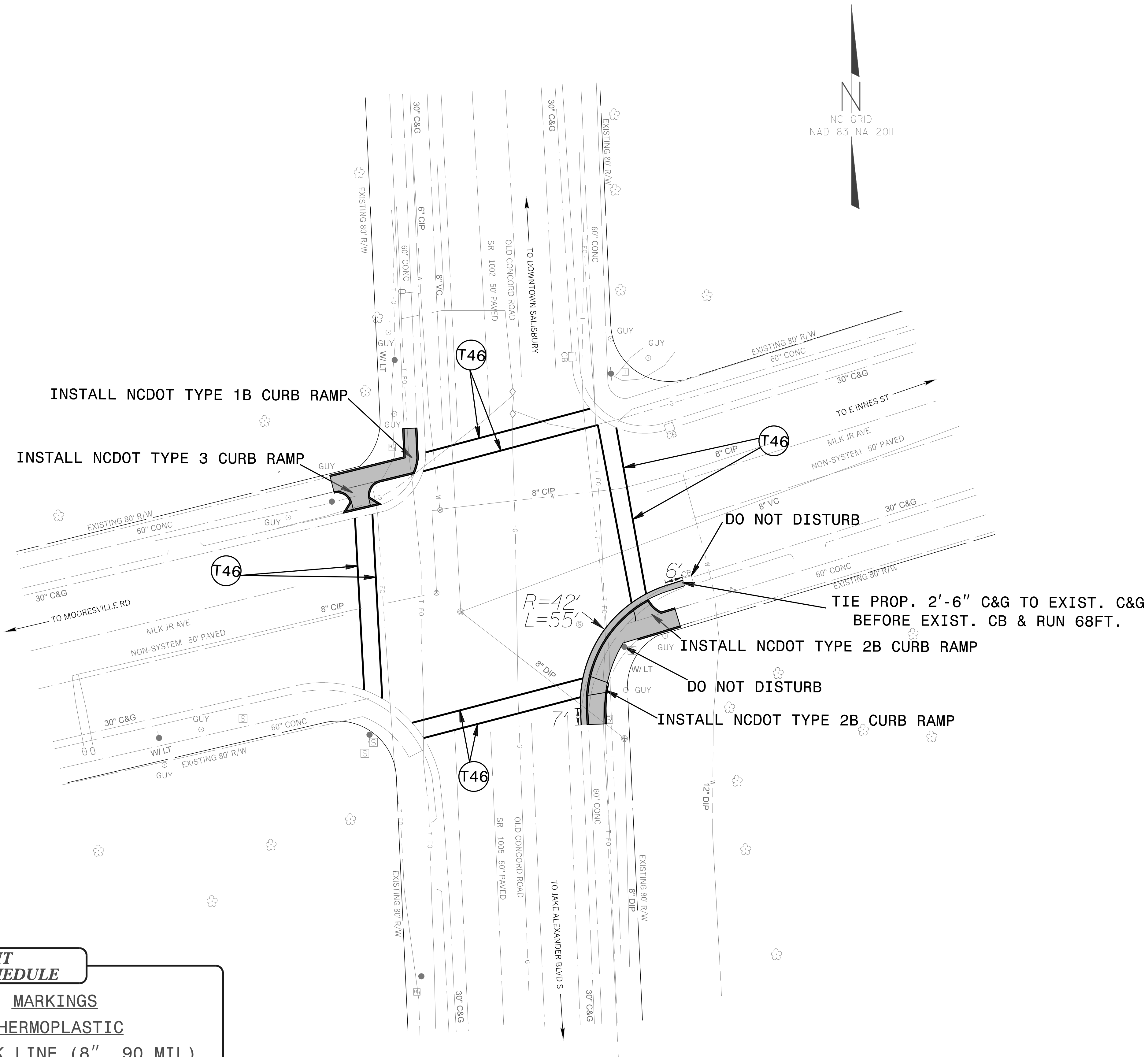
P.E

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 8.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
Q	6" (MAX.) COMPACTED INCIDENTAL STONE BASE
R1	PROP. 2'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.

PROJECT REFERENCE NO.	SHEET NO.
HS-2409B	2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 056044 DANIEL C. URICH	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 1
FOR PROPOSED CURB AND GUTTER ON
THE SOUTH-EAST CORNER OF INTERSECTION



PAVEMENT MARKING SCHEDULE	
SYMBOL	MARKINGS
T46	WHITE CROSSWALK LINE (8", 90 MIL)

HS-2409B

R/W004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROWAN COUNTY

DIVISION NINE DESIGN CONSTRUCT

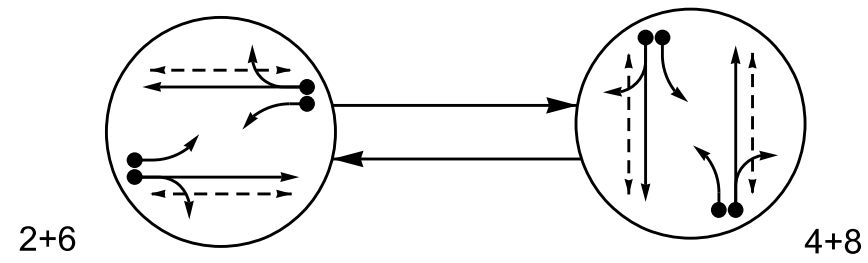
ROADWAY DESIGN
ENGINEER

Document
Daniel Ulrich

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

PHASING DIAGRAM



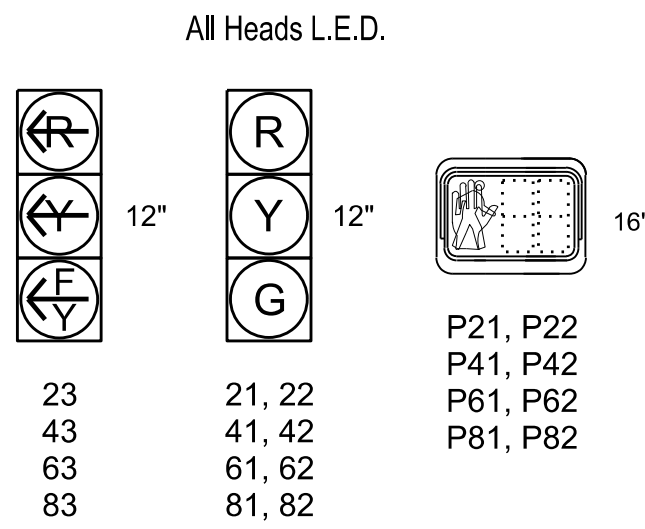
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	2	4	8
21, 22	G	R	R
23	F	R	R
41, 42	R	G	R
43	R	F	R
61, 62	G	R	R
63	F	R	R
81, 82	R	G	R
83	R	F	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

SIGNAL FACE I.D.

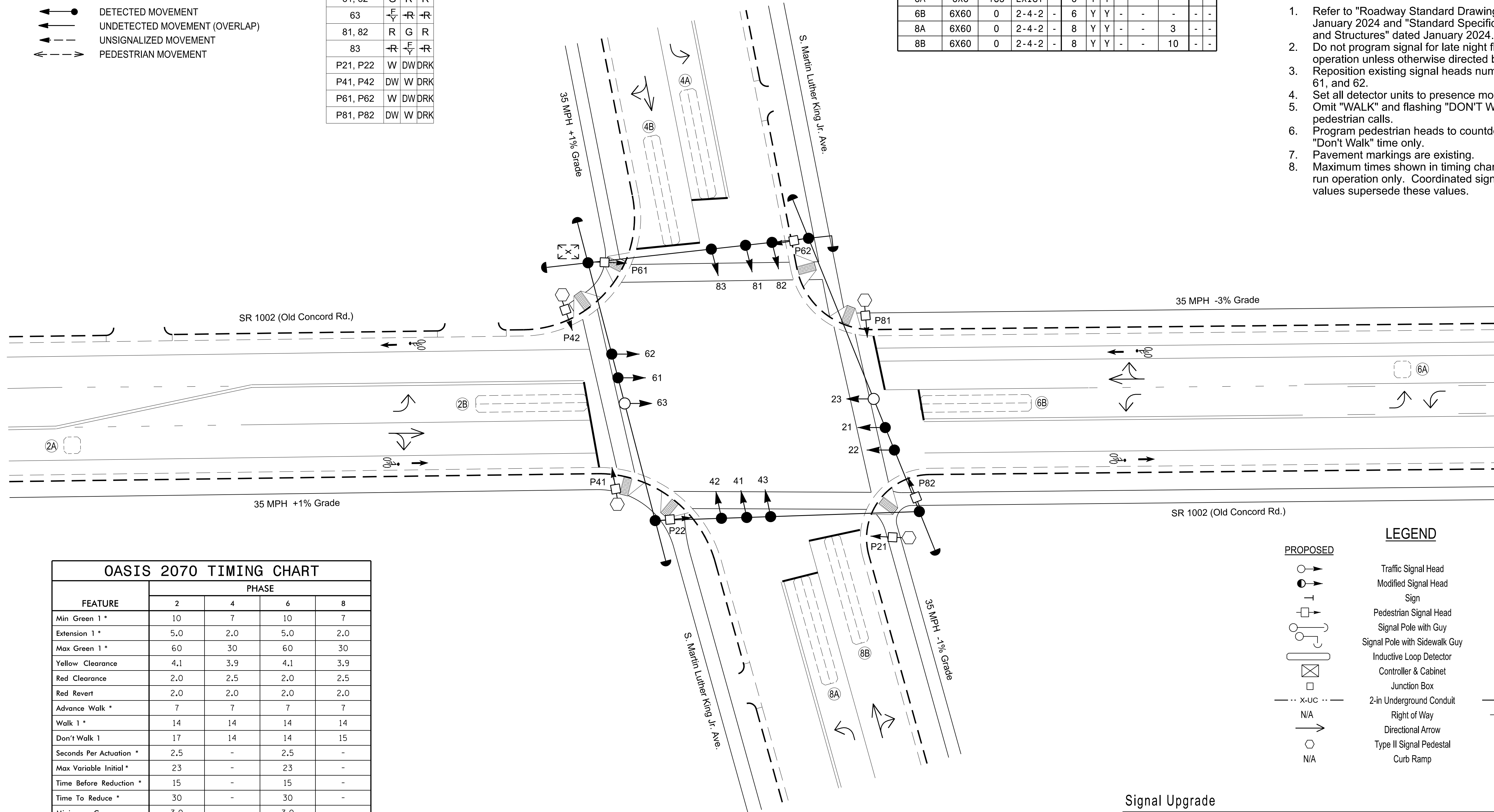


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
INDUCTIVE LOOPS						DETECTOR PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURN	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP NEW CARD
2A	6X6	185	EXIST	-	2	Y	Y	-	-	-	-
2B	6X60	0	2-4-2	-	2	Y	Y	-	-	-	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-
6A	6X6	185	EXIST	-	6	Y	Y	-	-	-	-
6B	6X60	0	2-4-2	-	6	Y	Y	-	-	-	-
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-

2 Phase
Fully Actuated
(Salisbury Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered 21, 22, 61, and 62.
- 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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070 TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	5.0	2.0	5.0	2.0
Max Green 1 *	60	30	60	30
Yellow Clearance	4.1	3.9	4.1	3.9
Red Clearance	2.0	2.5	2.0	2.5
Red Revert	2.0	2.0	2.0	2.0
Advance Walk *	7	7	7	7
Walk 1 *	14	14	14	14
Don't Walk 1	17	14	14	15
Seconds Per Actuation *	2.5	-	2.5	-
Max Variable Initial *	23	-	23	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
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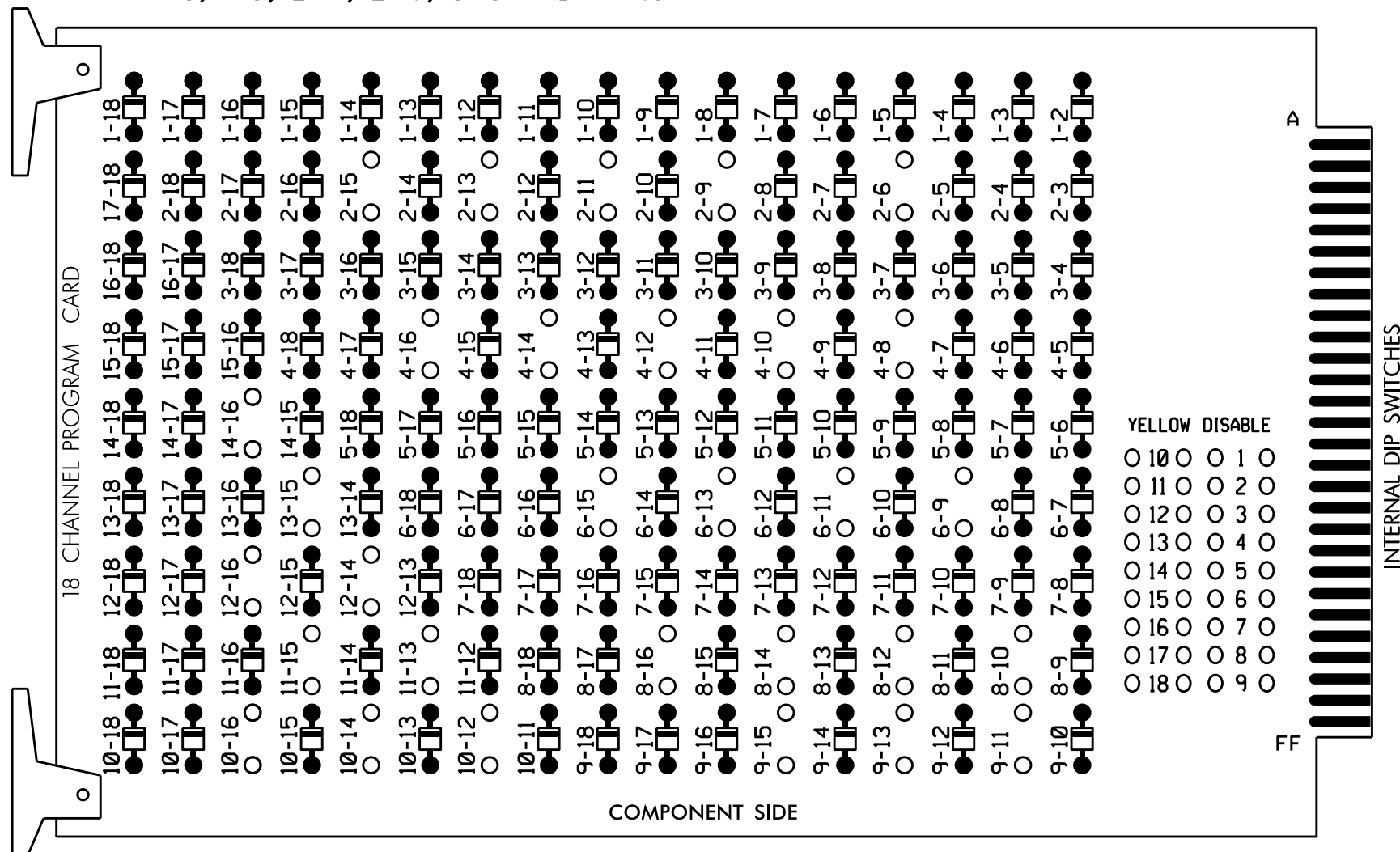
Signal Upgrade

Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1002 (Old Concord Road) at S. Martin Luther King Jr. Avenue Division 9 Rowan County Salisbury PLAN DATE: November 2024 PREPARED BY: J.A. Lohr REVIEWED BY: [Signature] REVISIONS: [Table] INIT. DATE	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZEMBA 026486 1/02/2025 DATE SIG. INVENTORY NO. 09-0635
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18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

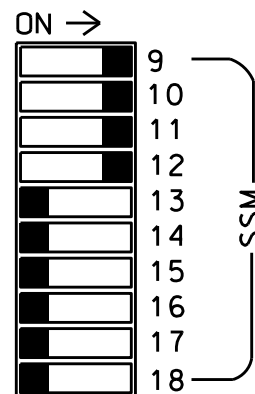
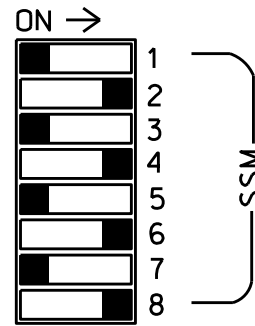
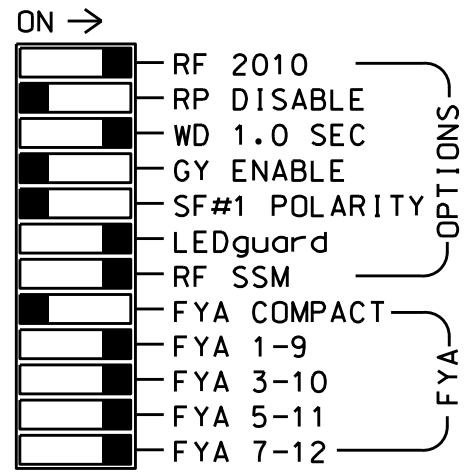
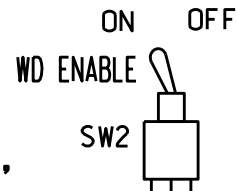
REMOVE DIODE JUMPERS 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15 AND 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Disable all phases for Startup In Green.
- Disable all phases for Startup Ped Call.
- Program phases 2 and 6 as First Phases.
- Disable all phases for Yellow Flash.
- Program overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the Salisbury Signal System.

EQUIPMENT INFORMATION

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

SIGNAL HEAD HOOK-UP CHART

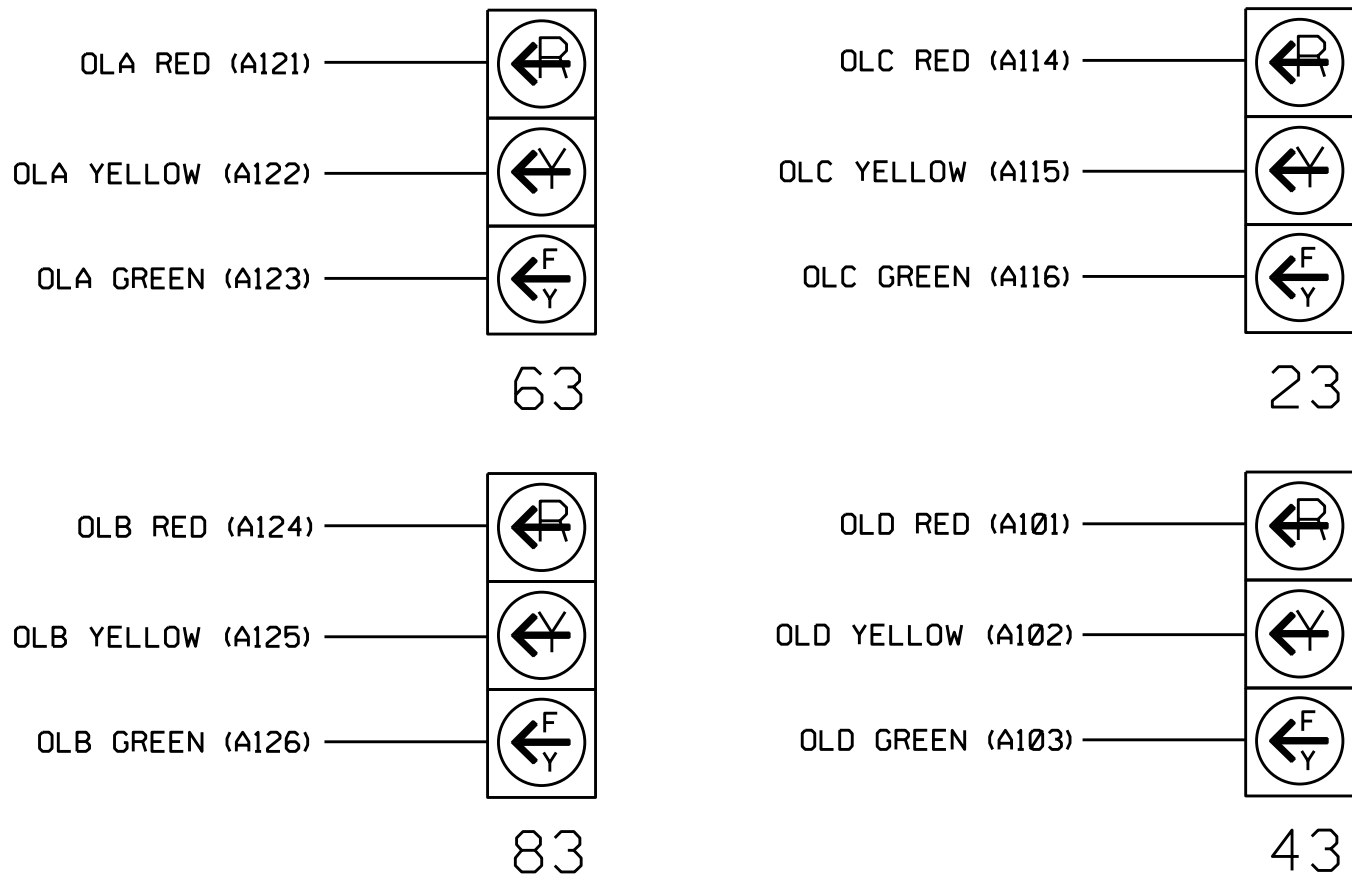
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62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

NU = Not Used

★ See pictorial of head wiring in detail this sheet.

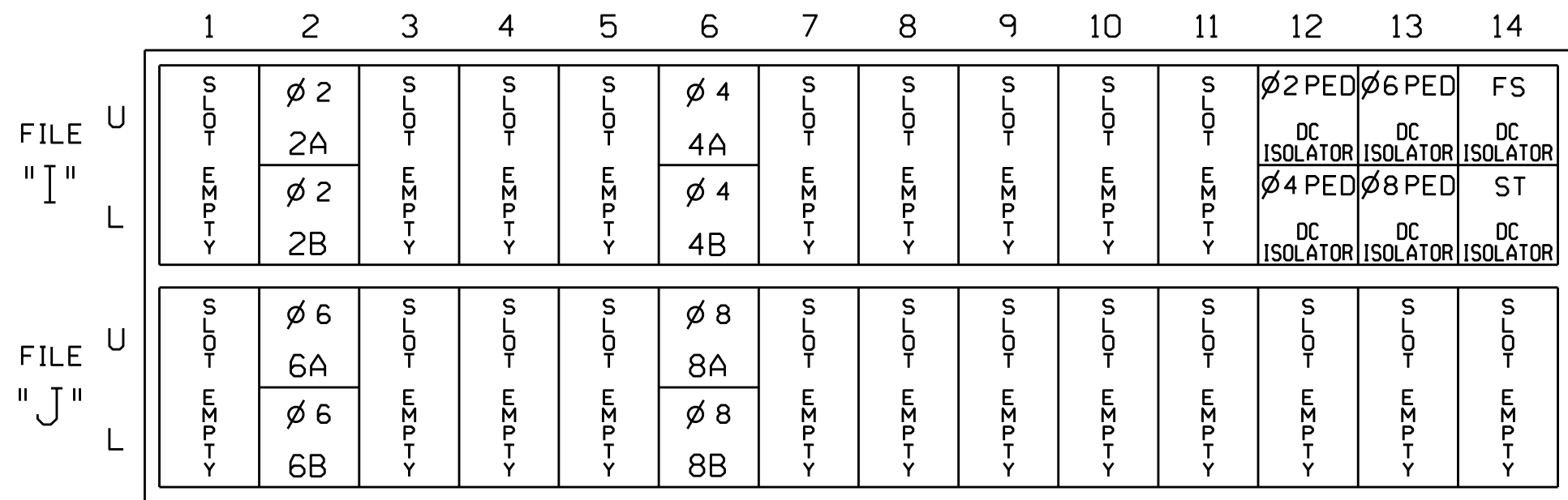
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

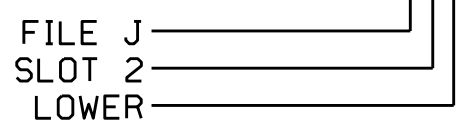
FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

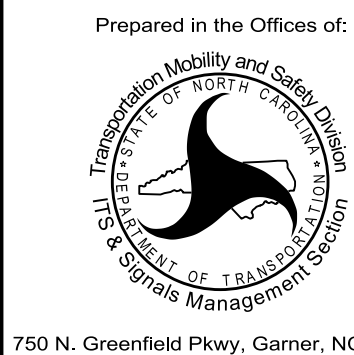
NOTE:
INSTALL DC ISOLATORS
IN INPUT FILE SLOTS
112 AND 113.

INPUT FILE POSITION LEGEND: J2L



Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:



SR 1002 (Old Concord Road)
at
S. Martin Luther King JR. Avenue

Division 9 Rowan County Salisbury

PLAN DATE: December 2024 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

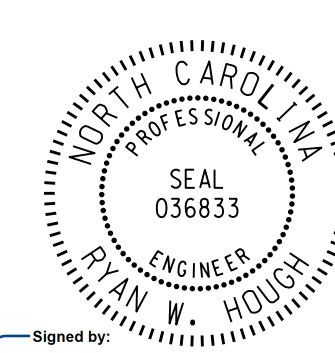
REVISIONS INIT. DATE

DATE

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



Signed by: Ryan W. Houff 01/03/2025

DATE

SIG. INVENTORY NO. 09-0635

OVERLAP PROGRAMMING DETAIL
(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN
'1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0

NOTICE
VEH OVL
PARENTS 2

NOTICE
GREEN
FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0

NOTICE
VEH OVL
PARENTS 4

NOTICE
GREEN
FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0

NOTICE
VEH OVL
PARENTS 6

NOTICE
GREEN
FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0

NOTICE
VEH OVL
PARENTS 8

NOTICE
GREEN
FLASH

OVERLAP PROGRAMMING COMPLETE

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.

ADVANCE WALK NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control
Functions). Program phases 2,4,6 and 8 for 'Advanced Walk'. Make
sure the Walk Advance Time shown on the Signal Design plans are
programmed in the 'Phase Timing' menu.

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: 09-0635
DESIGNED: November 2024
SEALED: 01-02-25
REVISED: N/A

Electrical Detail - Sheet 2 of 2

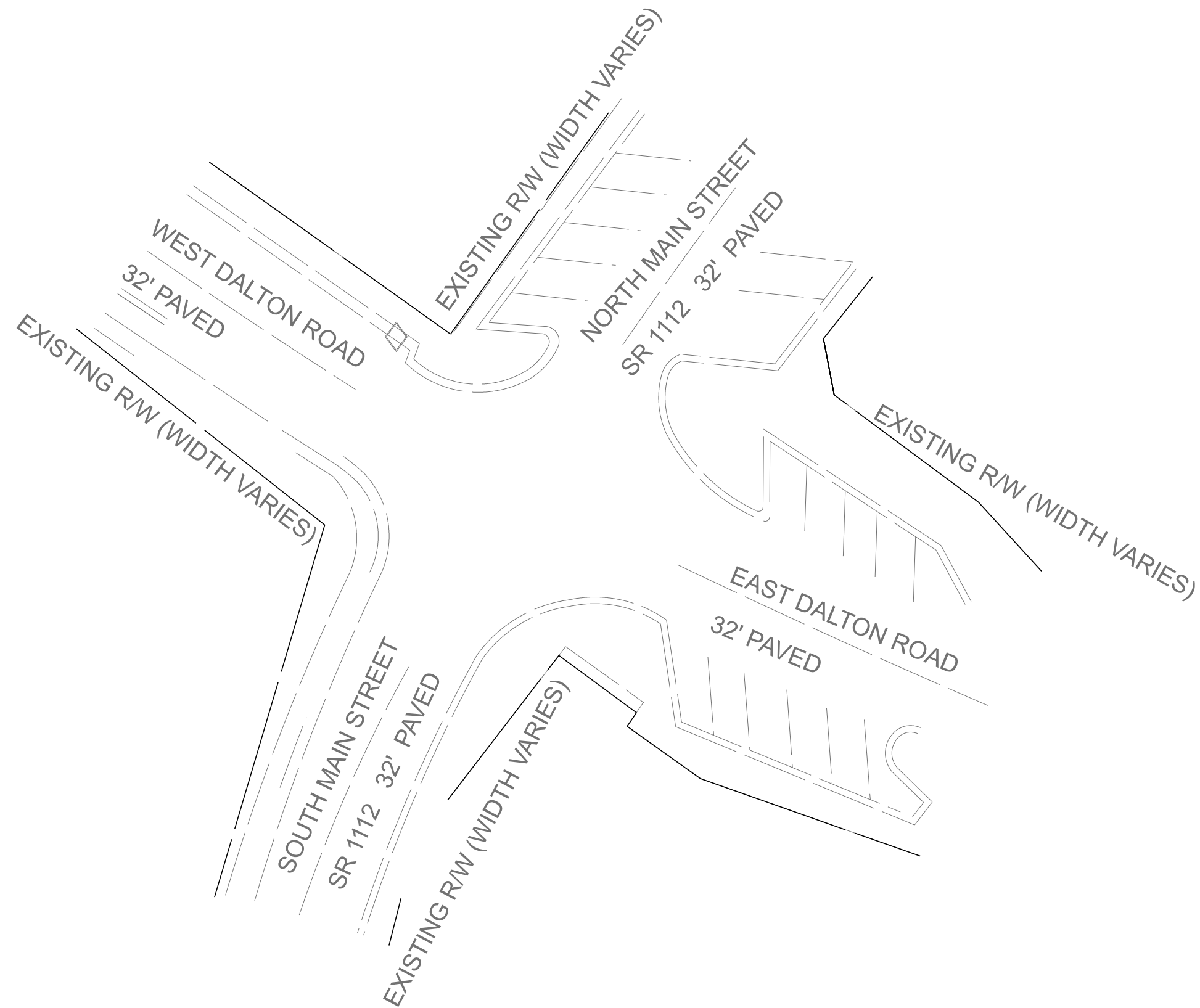
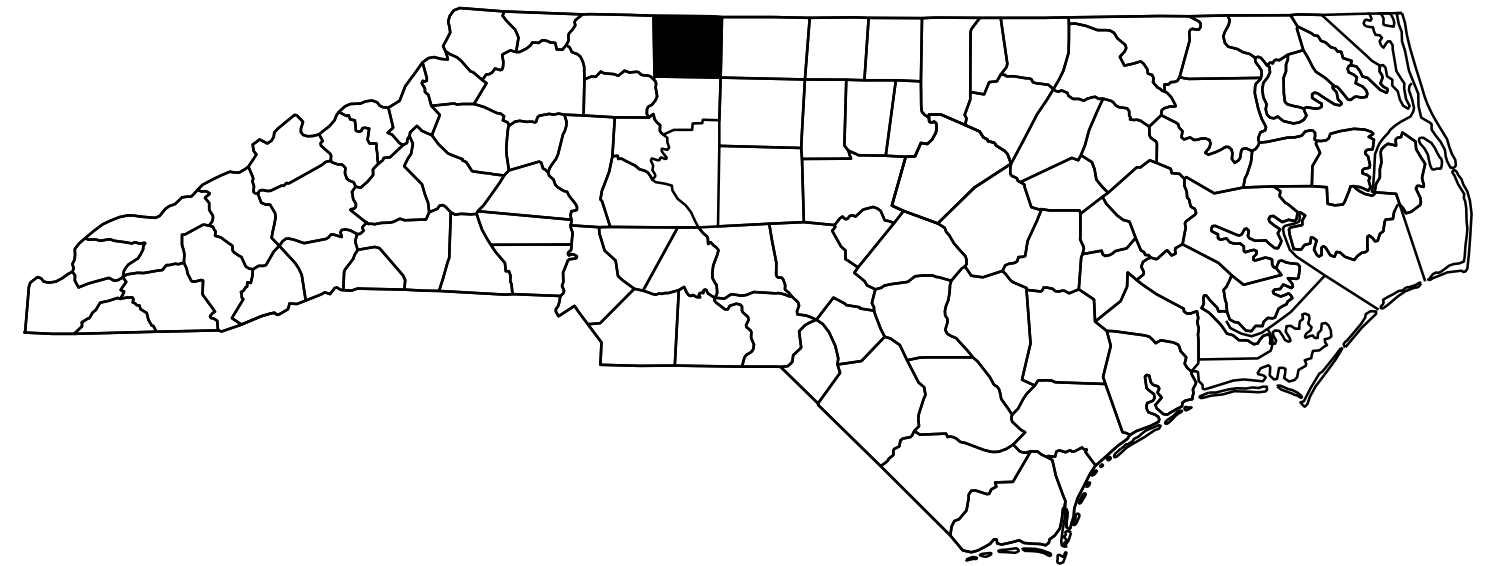
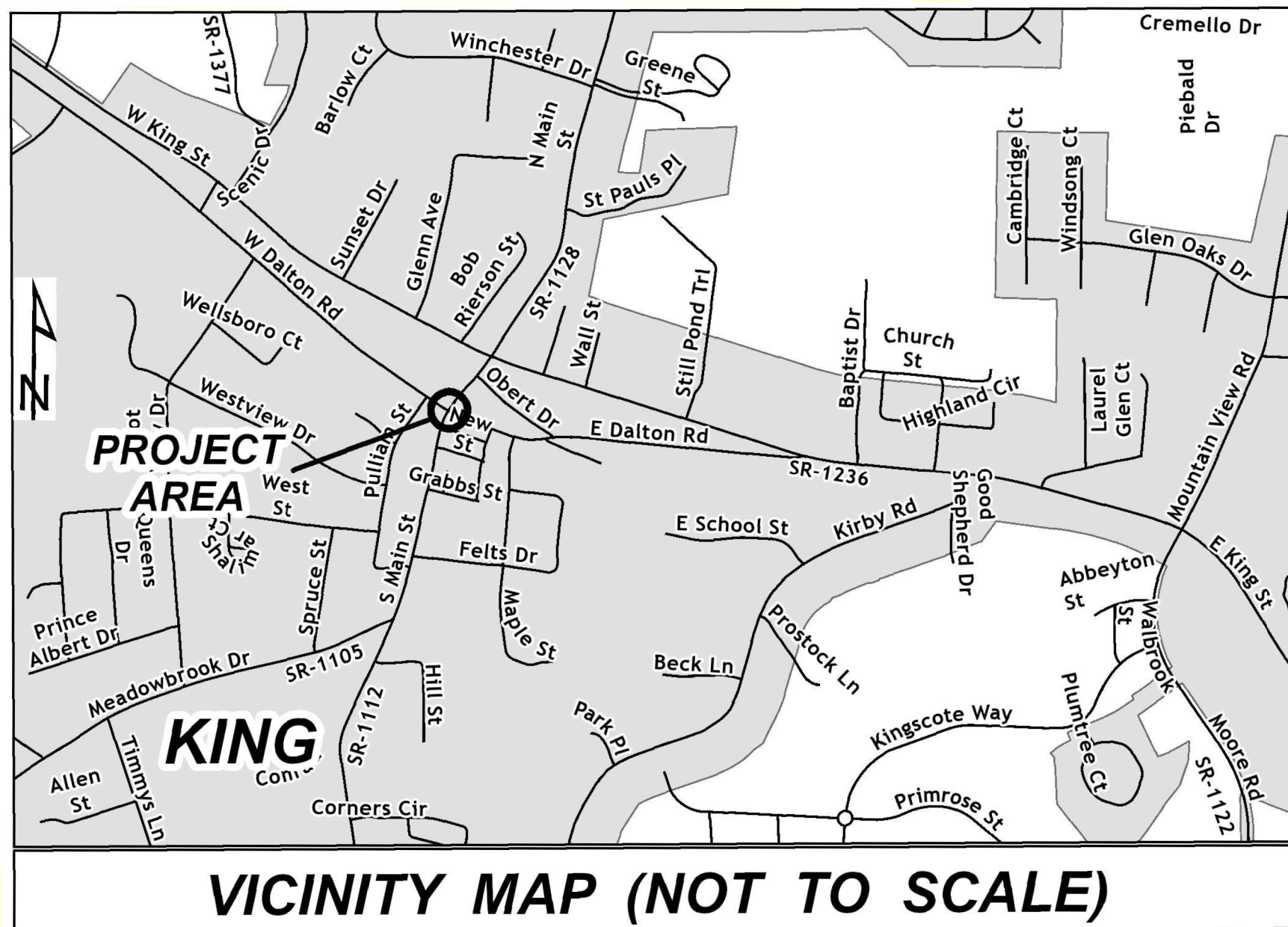
Electrical and Programming Details For:		SR 1002 (Old Concord Road) at S. Martin Luther King JR. Avenue		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Offices of:		Division 9 Rowan County Salisbury		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH	
		PLAN DATE: December 2024 REVIEWED BY: PREPARED BY: James Peterson REVIEWED BY:		Signed by: Ryan W. Hough DATE: 01/03/2025 1302205-A-1385-6C3	
750 N. Greenfield Pkwy, Garner, NC 27529		REVISIONS		INIT. DATE	
				SIG. INVENTORY NO. 09-0635	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STOKES COUNTY

LOCATION: SR 1112 (SOUTH MAIN STREET) AT WEST DALTON ROAD/EAST DALTON ROAD INTERSECTION

TYPE OF WORK: INSTALL PEDESTRIAN SIGNALS



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

GRAPHIC SCALES

DESIGN DATA

ADT 2026 = 10,700
ADT 2036 = 11,300
DESIGN SPEED = 25 MPH

FUNC CLASS =
MINOR ARTERIAL

PROJECT LENGTH

TOTAL LENGTH HS-2409K: N/A

Prepared in the Office of:

DIVISION OF HIGHWAYS

NINTH DIVISION DESIGN/CONSTRUCT
375 SILAS CREEK PARKWAY WINSTON-SALEM, N.C. 27127

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

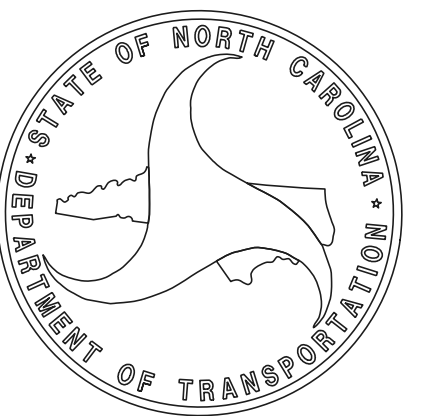
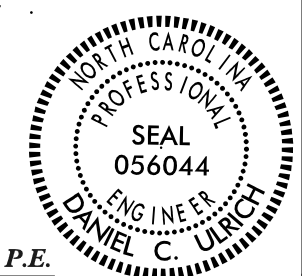
DANIEL C. ULRICH, PE, PLS
PROJECT ENGINEER

LETTING DATE:
08/26/2026

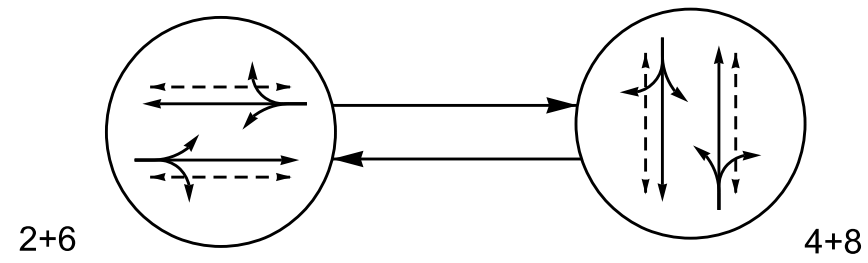
HUNTER S. GRIESER
PROJECT DESIGN ENGINEER

**ROADWAY DESIGN
ENGINEER**

DocuSigned by:
Daniel Ulrich
0136A995F81E400
SIGNATURE:



PHASING DIAGRAM



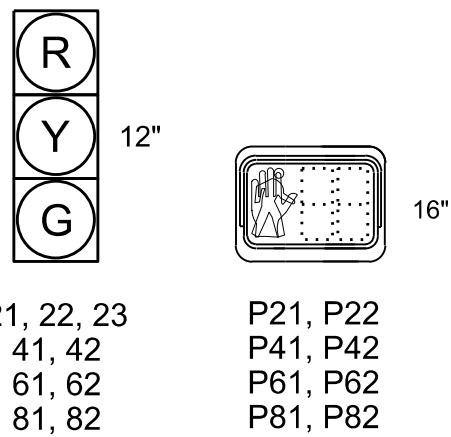
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	2 + 6	4 + 8	FLASH
21, 22, 23	G	R	R
41, 42	R	G	R
61, 62	G	R	R
81, 82	R	G	R
P21, P22	W	DW DRK	
P41, P42	DW	W DRK	
P61, P62	W	DW DRK	
P81, P82	DW	W DRK	

SIGNAL FACE I.D.

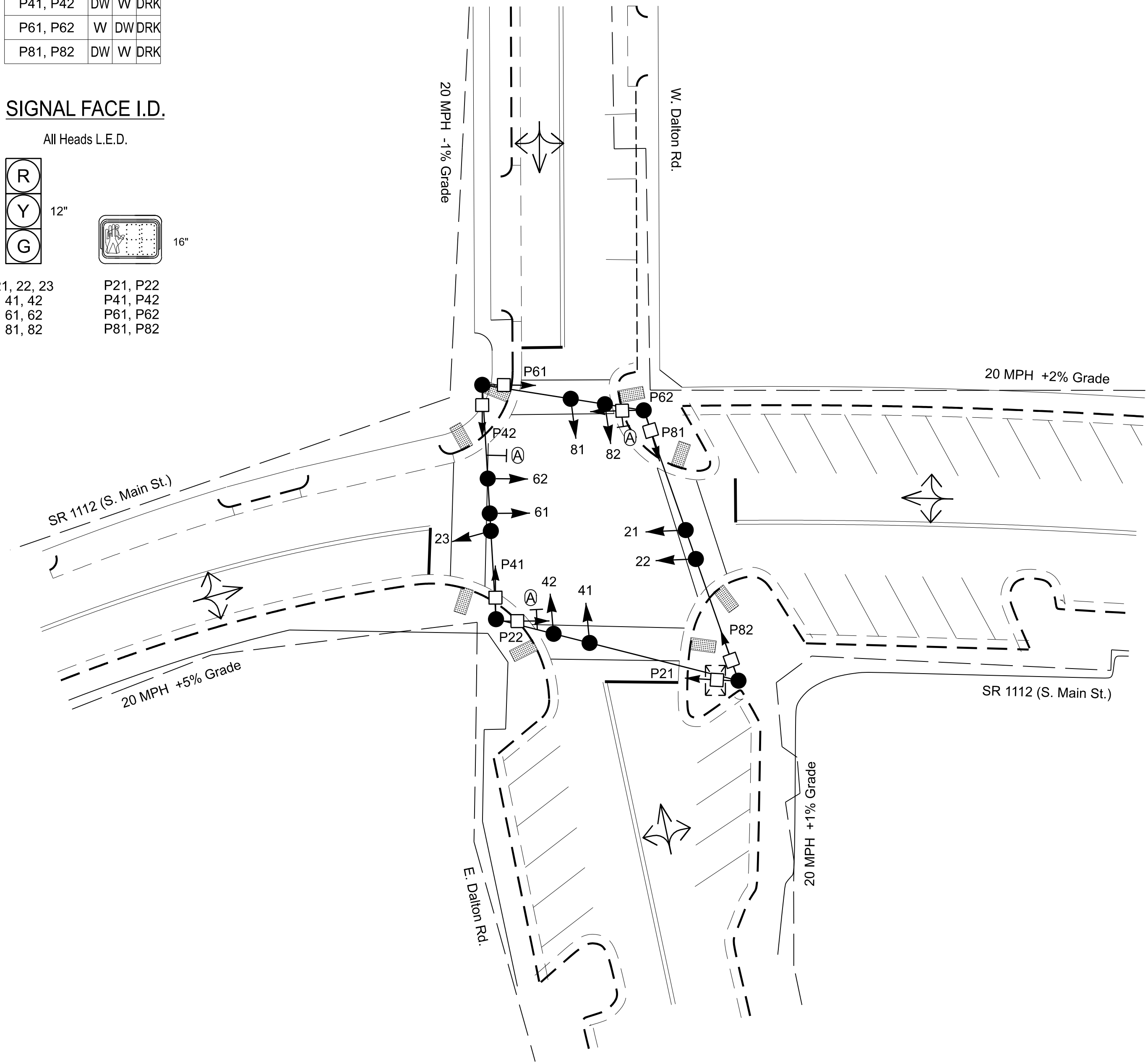
All Heads L.E.D.



2 Phase
Pre-Timed
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.



MAXTIME TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Walk *	12	13	12	13
Ped Clear	9	7	5	7
Min Green *	10	7	10	7
Passage *	0.0	0.0	0.0	0.0
Max 1 *	25	20	25	20
Yellow Change	3.0	3.0	3.0	3.0
Red Clear	2.3	2.4	2.3	2.4
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	5	6	5	6
Non Lock Detector	-	-	-	-
Vehicle Recall	MAX/PED RECALL	MAX/PED RECALL	MAX/PED RECALL	MAX/PED 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.

LEGEND

- | PROPOSED | EXISTING |
|--------------------------------|----------|
| Traffic Signal Head | |
| Modified Signal Head | |
| Sign | |
| Pedestrian Signal Head | |
| Signal Pole with Guy | |
| Signal Pole with Sidewalk Guy | |
| Inductive Loop Detector | |
| Controller & Cabinet | |
| Junction Box | |
| 2-in Underground Conduit | |
| Right of Way | |
| Directional Arrow | |
| Curb Ramp | |
| Type II Signal Pedestal | |
| "NO TURN ON RED" Sign (R10-11) | |

Signal Upgrade

Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1112 (S. Main Street) at Dalton Road Division 9 Stokes County King	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZEMBA 026486 04/16/2026 DATE SIG. INVENTORY NO. 09-0550
PLAN DATE: March 2026 PREPARED BY: J.A. Lohr REVIEWED BY:	REVISIONS INIT. DATE	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

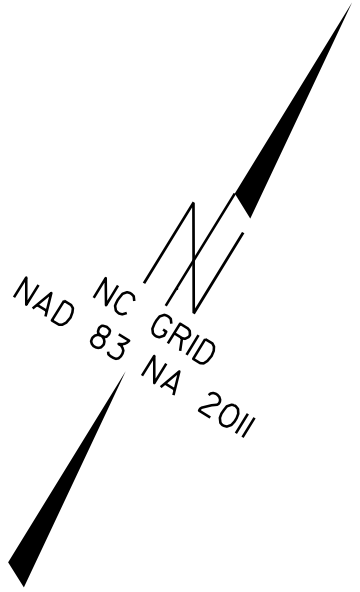
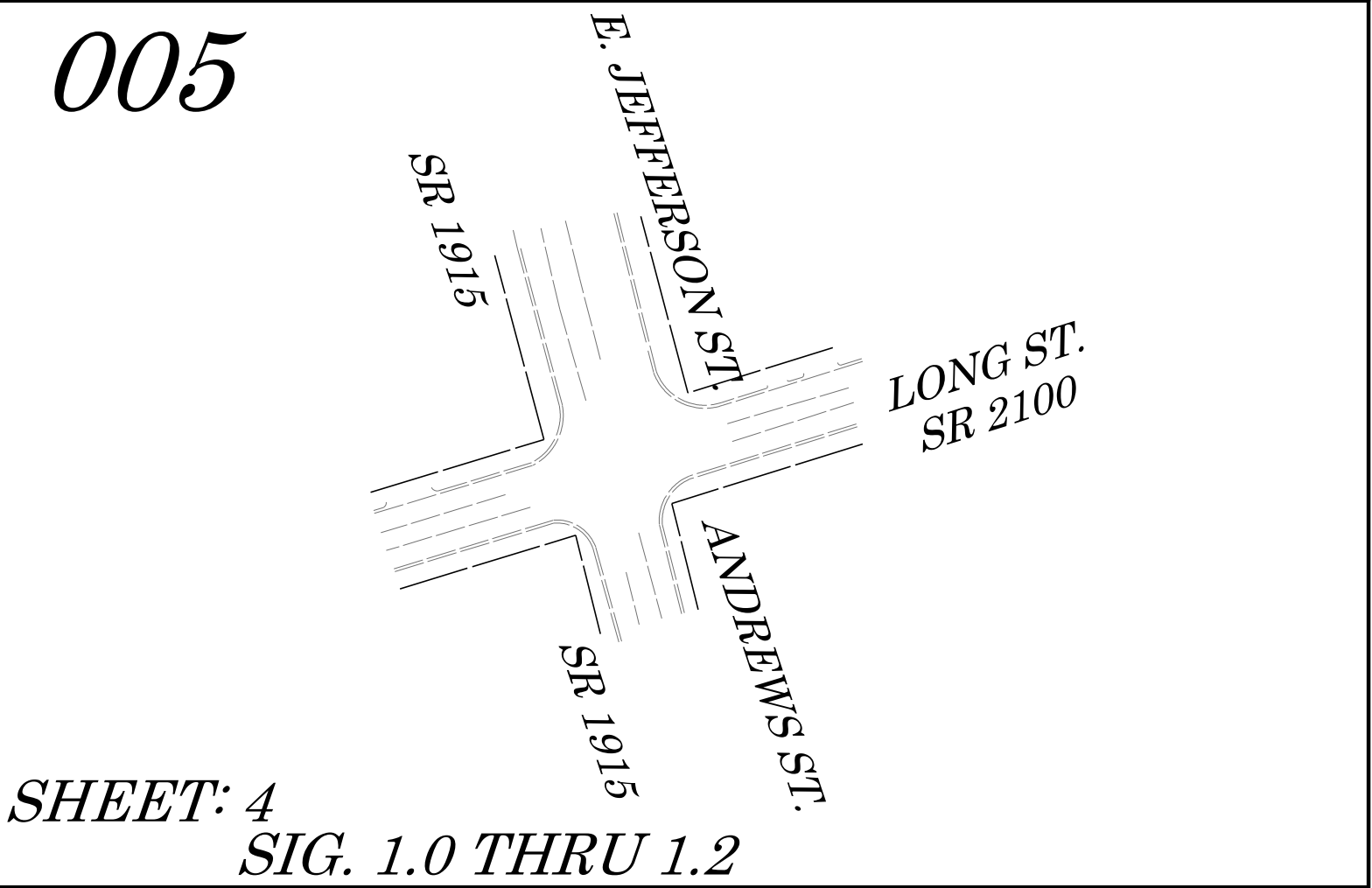
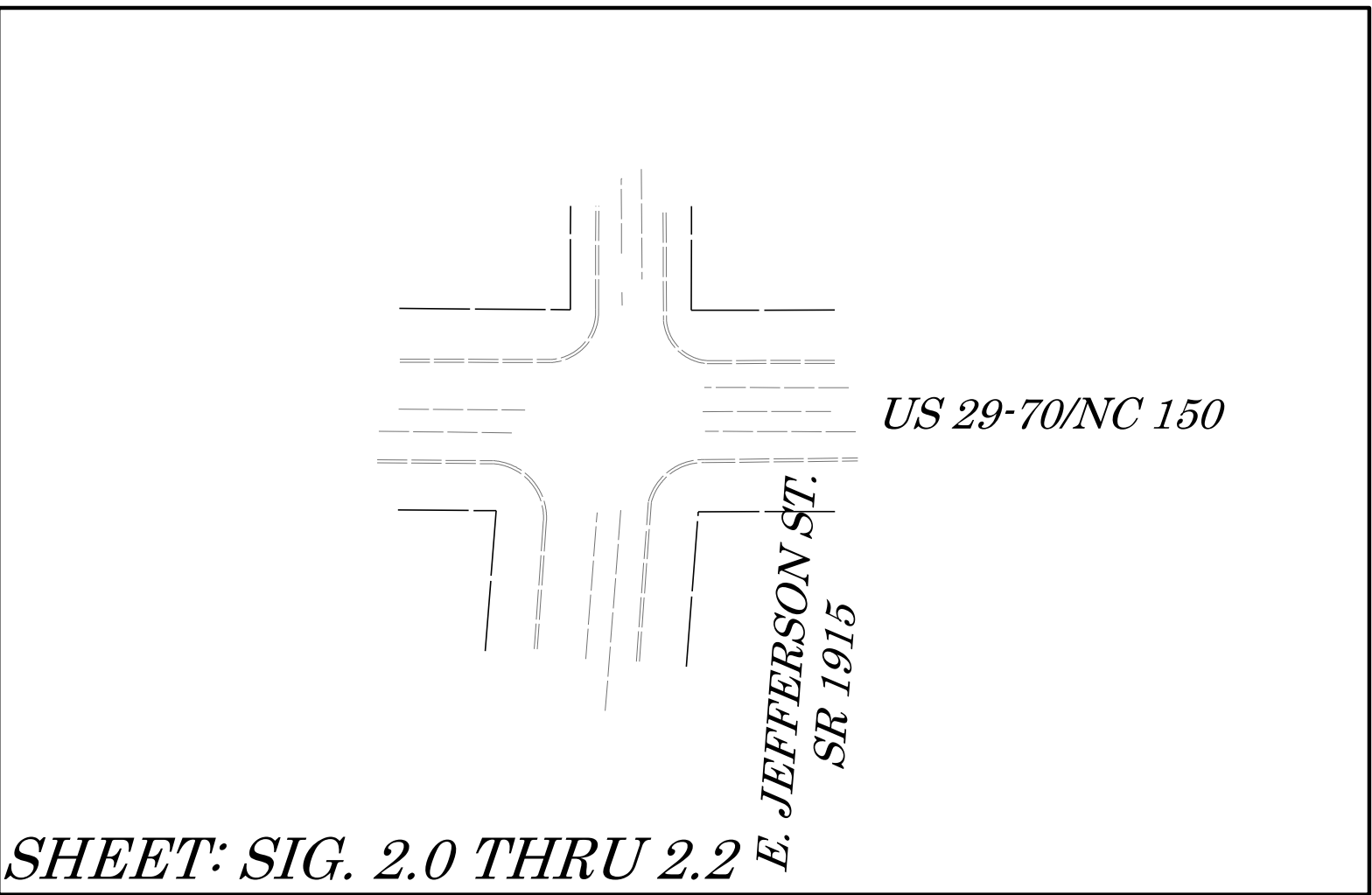
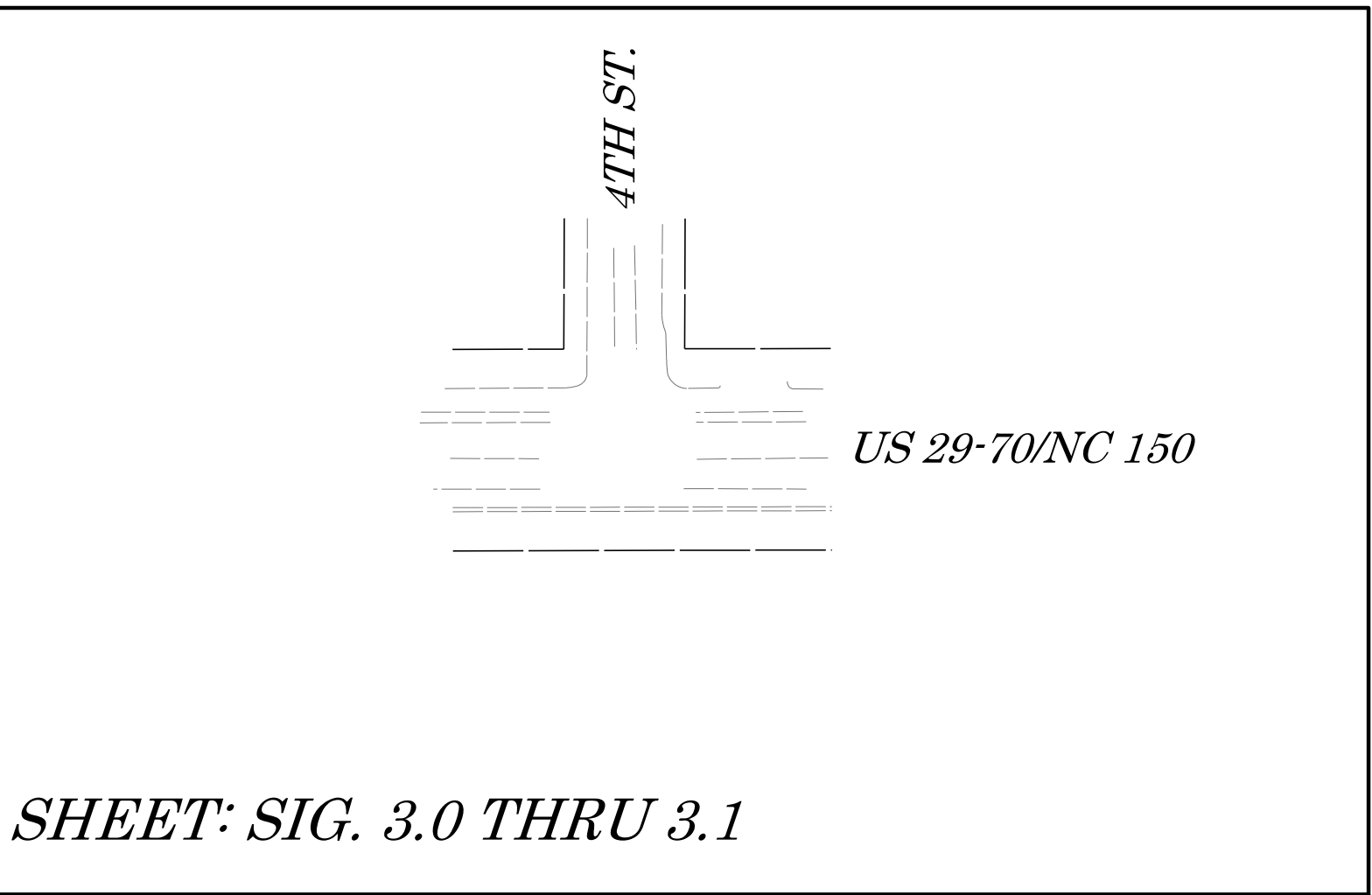
ROWAN COUNTY

See Sheet 1A For Index of Sheets

SPENCER

PROJECT AREA

VICINITY MAP (NOT TO SCALE)



LENGTH OF ROADWAY PROJECT HS-2409L: N/A

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
08/26/2026

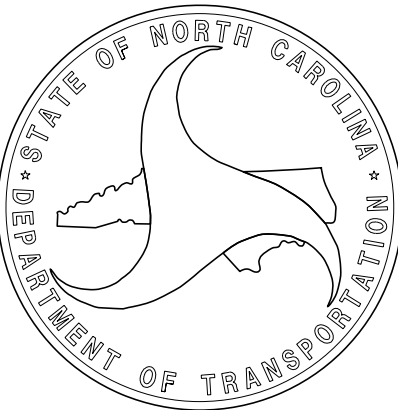
DANIEL C. ULRICH, PE, PLS
PROJECT ENGINEER

HUNTER S. GRIESER
PROJECT DESIGN ENGINEER

ROADWAY DESIGN ENGINEER

DocuSigned by:
Daniel Ulrich
9136A995F61E46
SIGNATURE

P.E.



HS-2409L

R/W004

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

ROWAN COUNTY



DIVISION NINE DESIGN CONSTRUCT

ROADWAY DESIGN
ENGINEER

NORTH CAROLINA

PROFESSIONAL

SEAL

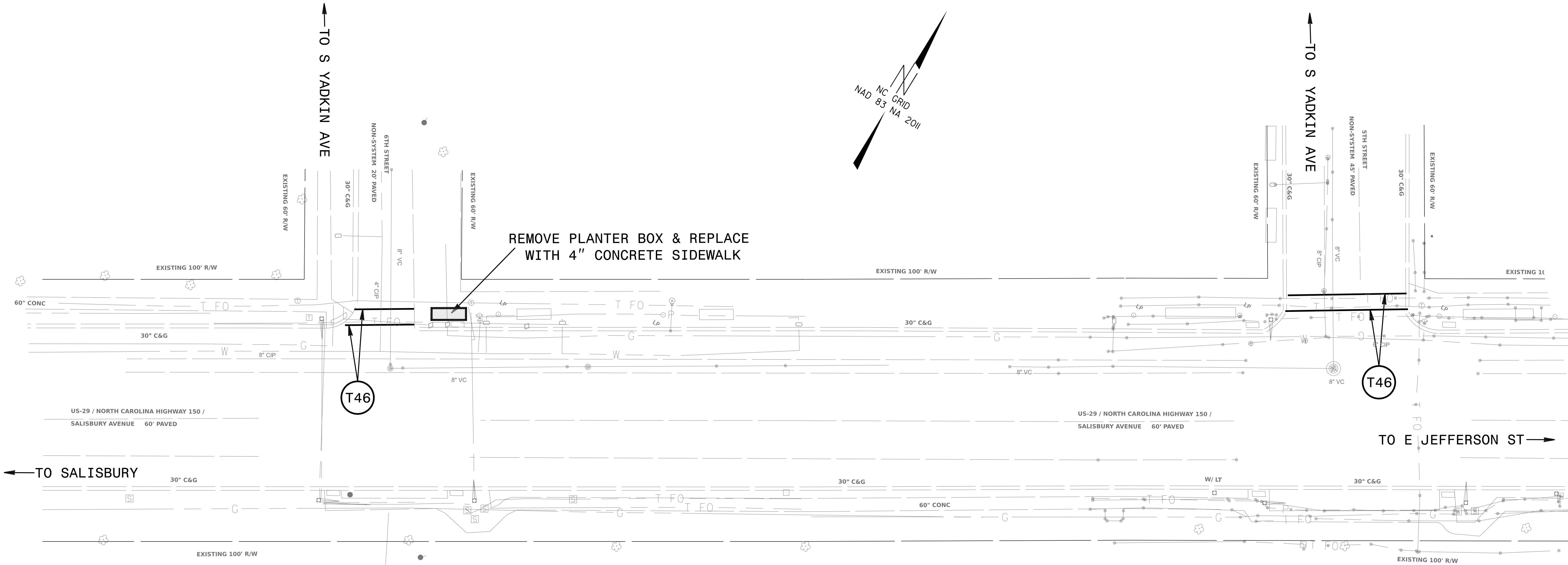
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ENGINEER

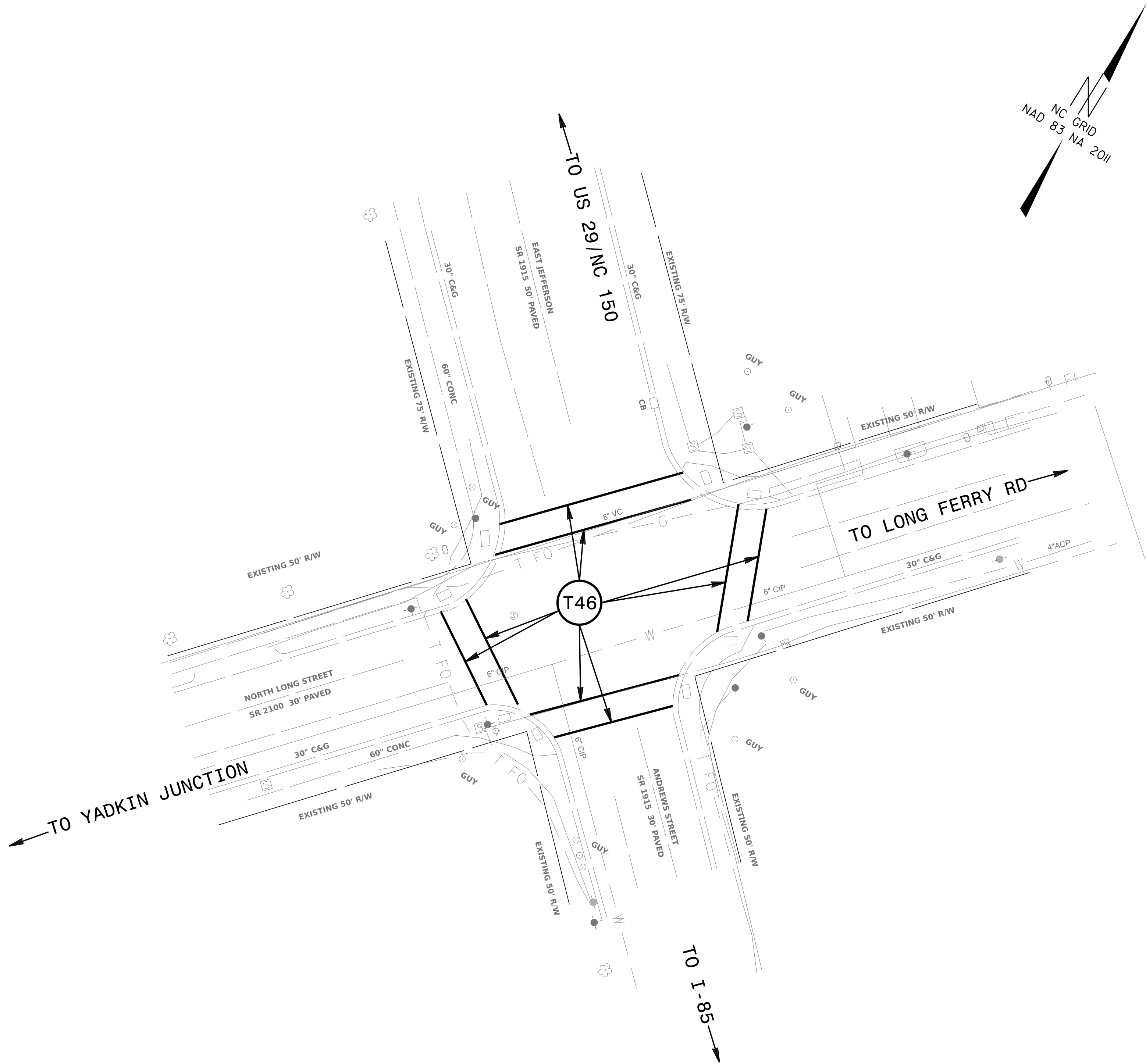
DAVID C. URICH

David Urich

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UNLESS ALL SIGNATURES COMPLETED



PAVEMENT MARKING SCHEDULE	
SYMBOL	MARKINGS
T46	WHITE CROSSWALK LINE (8", 90 MIL)



PAVEMENT MARKING SCHEDULE	
SYMBOL	MARKINGS
T46	WHITE CROSSWALK LINE (8", 90 MIL)

HS-2409L

R/W005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROWAN COUNTY

DIVISION NINE DESIGN CONSTRUCT

ROADWAY DESIGN
ENGINEER

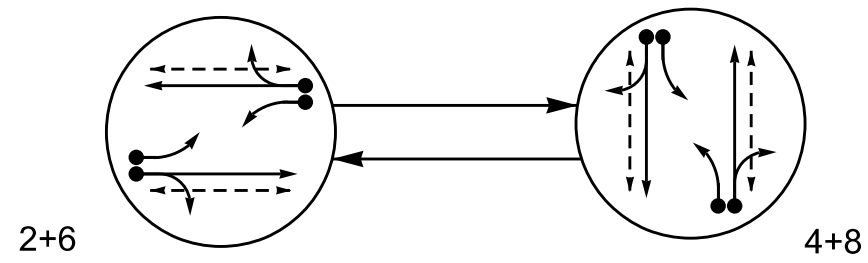
Document

Daniel Ulrich

6138405505@ROWAN.EDU

DOCUMENT NOT CONSIDERED FINAL
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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	2+6	4+8	FLASH
21, 22	G	R	R
23	F	R	R
41, 42	R	G	R
43	R	F	R
61, 62	G	R	R
63	F	R	R
81, 82	R	G	R
83	R	F	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

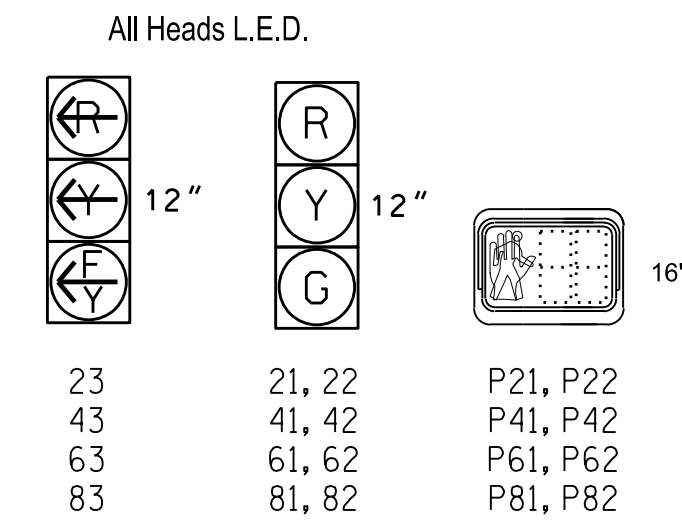
MAXTIME DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6X6	70	EXISTING	-	2	-	-	X	-	X	-	-
2B	6X6	0	2-4-2	-	2	-	-	X	-	X	-	-
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	-
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	-
6A	6X6	70	EXISTING	-	6	-	-	X	-	X	-	-
6B	6X6	0	2-4-2	-	6	-	-	X	-	X	-	-
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	-
8B	6X40	0	2-4-2	-	8	-	-	X	-	X	-	-
SII	6X6	+100	EXISTING	-	-	-	-	-	-	-	-	-
SI2	6X6	+100	EXISTING	-	-	-	-	-	-	-	-	-

2 Phase
Fully Actuated
(US 29-70 - NC 150 (Salisbury Ave.) CLS)
Signal System #: D09-21_Spencer

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- 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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.



FEATURE	PHASE			
	2	4	6	8
Walk *	12	13	11	13
Ped Clear	7	16	8	9
Min Green *	10	7	10	7
Passage *	3.0	2.0	3.0	2.0
Max I *	40	20	40	20
Yellow Change	4.4	3.7	4.4	3.7
Red Clear	1.5	1.9	1.5	1.9
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	5	6	4	6
Non Lock Detector	-	X	-	X
Vehicle Recall	MIN 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.

PROPOSED	LEGEND	EXISTING
	Traffic Signal Head	
	Modified Signal Head	
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Right of Way	
	Directional Arrow	
	Guardrail	
	Type II Signal Pedestal	
	Curb Ramp	
	Left Arrow "ONLY" Sign (R3-5L)	

Signal Upgrade

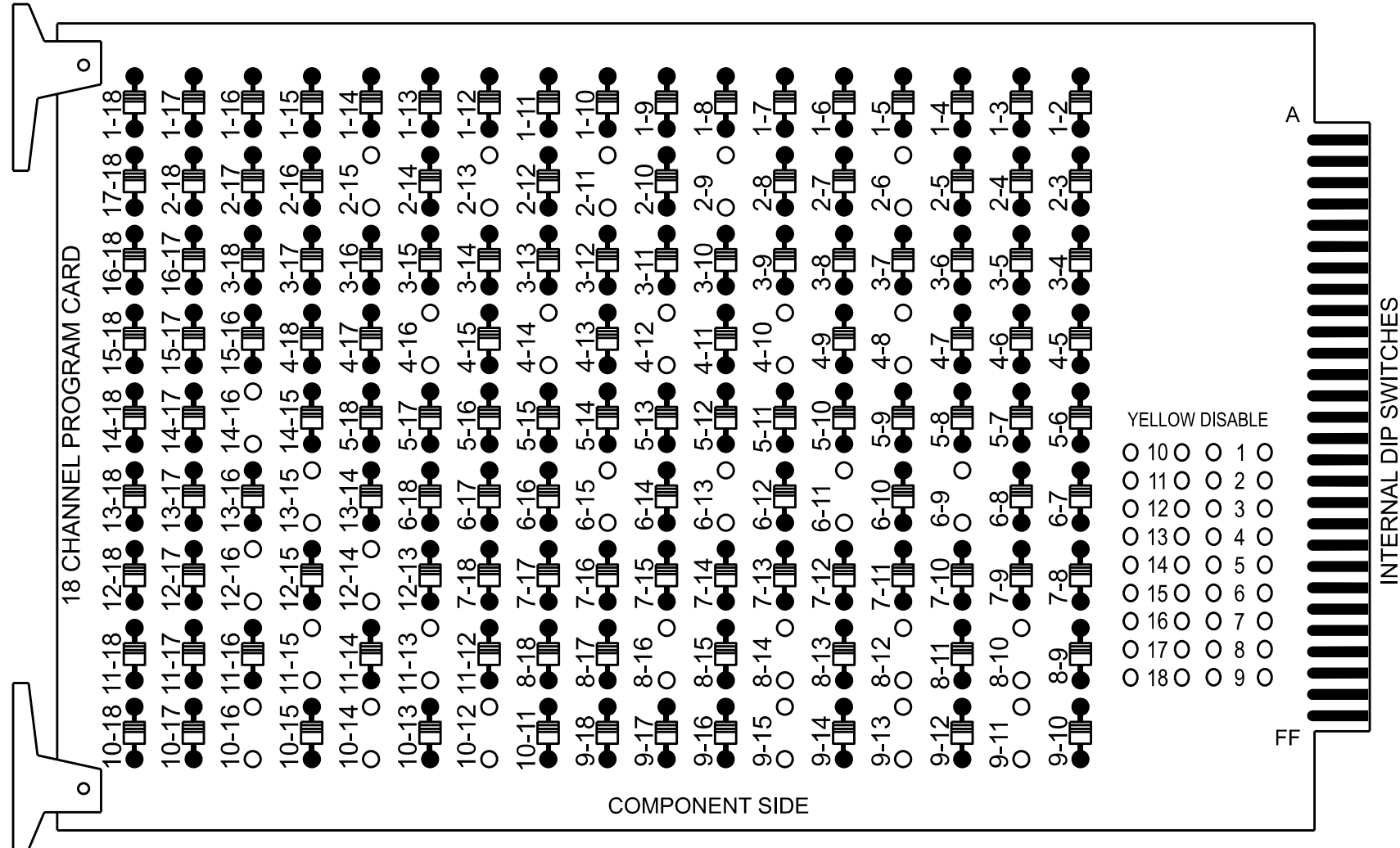
	SR 1915 (E. Jefferson St./Andrews St.) at SR 2100 (Long Street)			
	Division 9	Rowan County		Spencer
	PLAN DATE: October 2025	REVIEWED BY: J.A Lohr		
	PREPARED BY: I.O. Umozurike	REVIEWED BY:		
750 N. Greenfield Pkwy, Garner, NC 27529	SCALE: 0 20 1"=20'	REVISIONS	INIT.	DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED				

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1:slongston

18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that the Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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 (US 29-70 - NC 150 (Salisbury Ave.) CLS), Signal System #: D09-21_Spencer.

EQUIPMENT INFORMATION

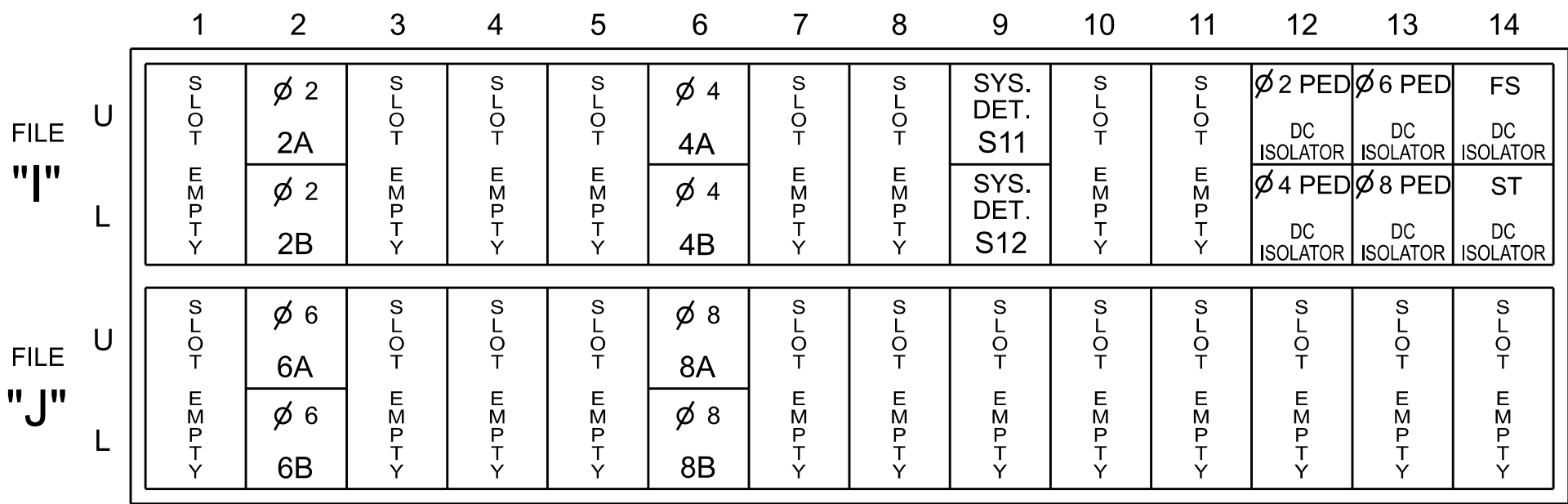
Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S3, S5, S6, S8, S9, S11, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....2, 2PED, 4, 4PED, 6, 6PED, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

INPUT FILE CONNECTION & PROGRAMMING CHART

INPUT FILE POSITION LAYOUT

(front view)



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	TB2-5,6	I2U	39	1	2	2			X		X	
2B	TB2-7,8	I2L	43	5	3	2			X		X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4	10.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X		X	
6B	TB3-7,8	J2L	44	6	17	6			X		X	
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	
8B	TB5-11,12	J6L	46	8	23	8			X		X	
*S11	TB6-9,10	I9U	60	22	13	SYS						
*S12	TB6-11,12	I9L	62	24	14	SYS						
PED PUSH BUTTONS												
P21,P22	TB8-4,6	I12U	67	33	2	PED 2						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						
P81,P82	TB8-8,9	I13L	70	36	8	PED 8						

*System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.
FILE J
SLOT 2
LOWER

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.

SIGNAL HEAD HOOK-UP CHART

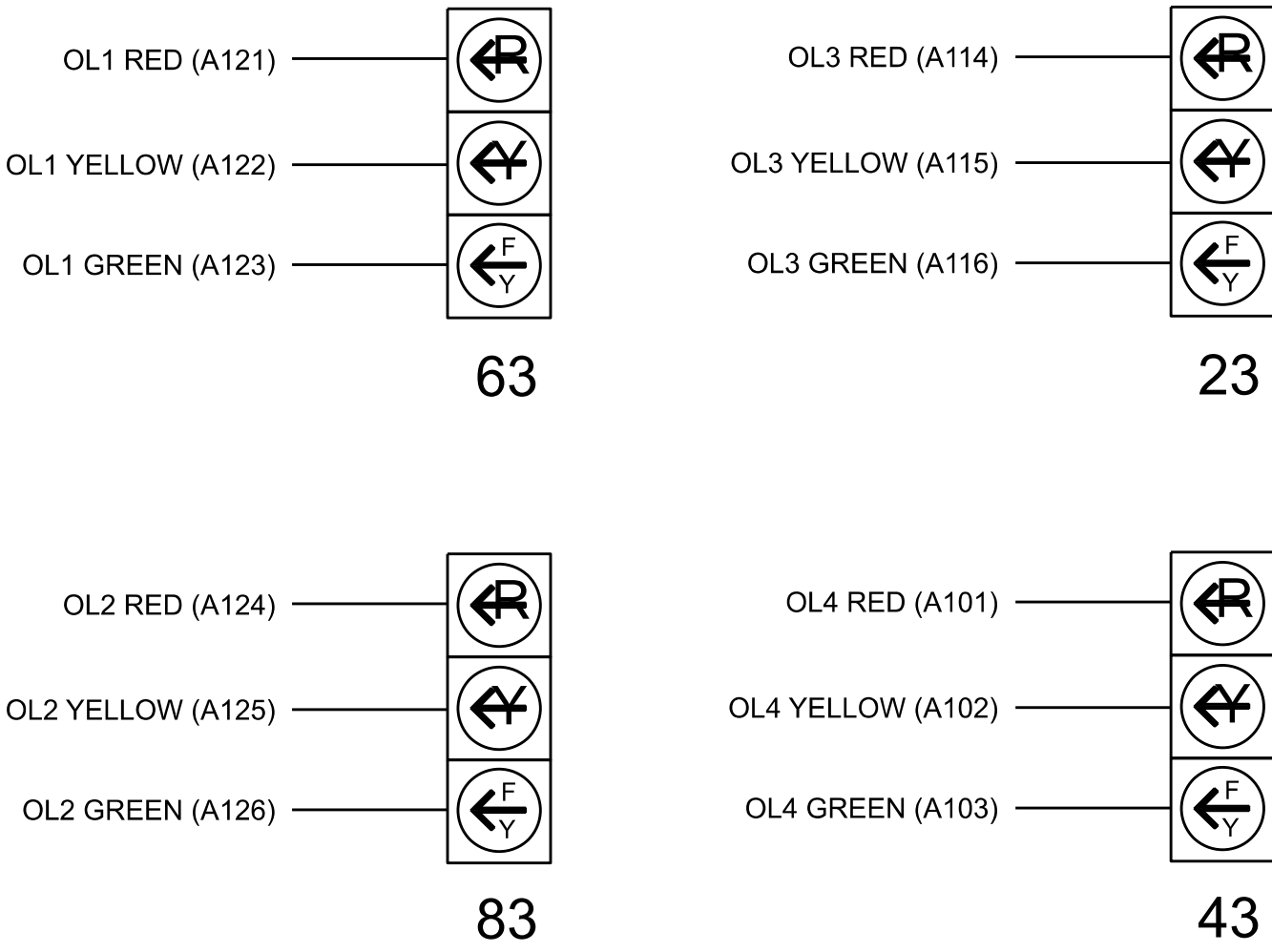
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82	63	83	NU	23	43	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW																		
Hand icon			113			104			119			110						
Walking person icon			115			106			121			112						

NU = Not Used

★See pictorial of head wiring in detail this sheet.

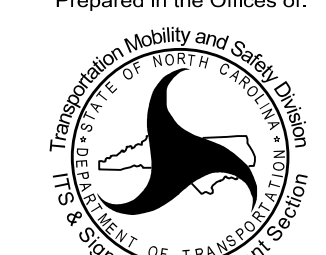
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0250
DESIGNED: October 2025
SEALED: 12/04/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:	SR 1915 (E. Jefferson St./Andrews St.) at SR 2100 (Long Street)	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	Division 9 PLAN DATE: December 2025 PREPARED BY: Tim Langston REVISIONS INIT. DATE	Rowan County Spencer REVIEWED BY: REVIEWED BY: DATE 12/04/2025 DATE 09-0250

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap (Signal Head No.)	1 (63)	2 (83)	3 (23)	4 (43)
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
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

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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical and Programming Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1915 (E. Jefferson St./Andrews St.)
at
SR 2100 (Long Street)

Division 9

Rowan County

Spencer

PLAN DATE: December 2025

REVIEWED BY:

PREPARED BY: Tim Langston

REVIEWED BY:

REVISIONS

INIT.

DATE

Seal of the State of North Carolina Professional Engineer Seal 031001

DocuSigned by:
D. Todd Joyce

12/04/2025

DATE

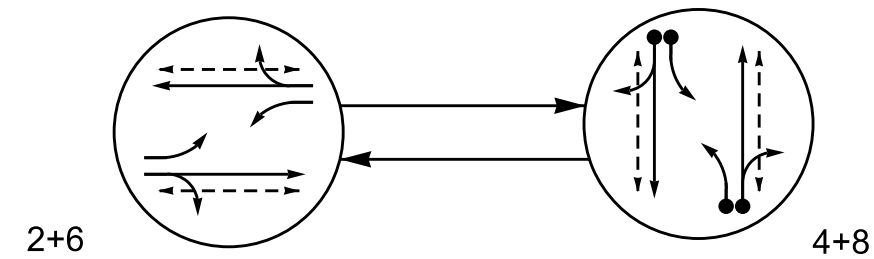
SIG. INVENTORY NO.

09-0250

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0250
DESIGNED: October 2025
SEALED: 12/04/2025
REVISED: N/A

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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

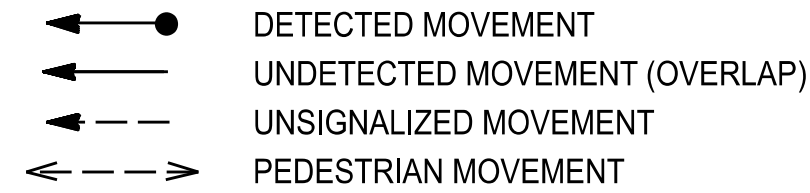


TABLE OF OPERATION

SIGNAL FACE	2 + 4 + FLASH		
	2 + 6	4 + 8	FLASH
21, 22	G	R	R
41, 42	R	G	R
43	R	F	R
61, 62	G	R	R
63	F	R	R
81, 82	R	G	R
83	R	F	R
P21, P22	W	DW	DR
P41, P42	DW	W	DR
P61, P62	W	DW	DR
P81, P82	DW	W	DR

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DURING GREEN	NEW CAPD
4A	6X60	+5	2-4-2	-	4	3.0	-	X	-	X	-
4B	6X60	+5	2-4-2	-	4	10.0	-	X	-	X	-
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-
8B	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-

2 Phase
Semi Actuated
(US 29-70/NC 150 (Salisbury Ave.) CLS)
Signal System #: D09-21_Spencer

NOTES

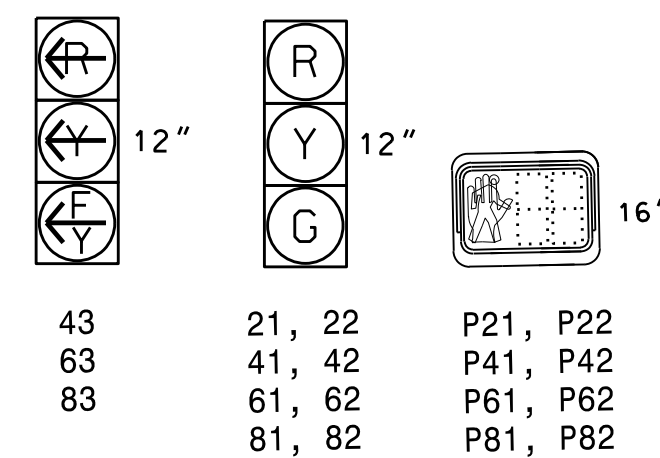
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
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. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
N/A	Fire Hydrant	
N/A	Guardrail	
	Type II Signal Pedestal	
N/A	Curb Ramp	
	Left Arrow "ONLY" Sign (R3-5L)	

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Walk *	12	13	14	12
Ped Clear	14	15	12	13
Min Green *	10	7	10	7
Passage *	0.0	2.0	0.0	2.0
Max 1 *	40	20	40	20
Yellow Change	3.8	4.2	3.8	4.2
Red Clear	2.0	2.0	2.0	2.0
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	5	6	7	5
Non Lock Detector	-	X	-	X
Vehicle Recall	MIN 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.

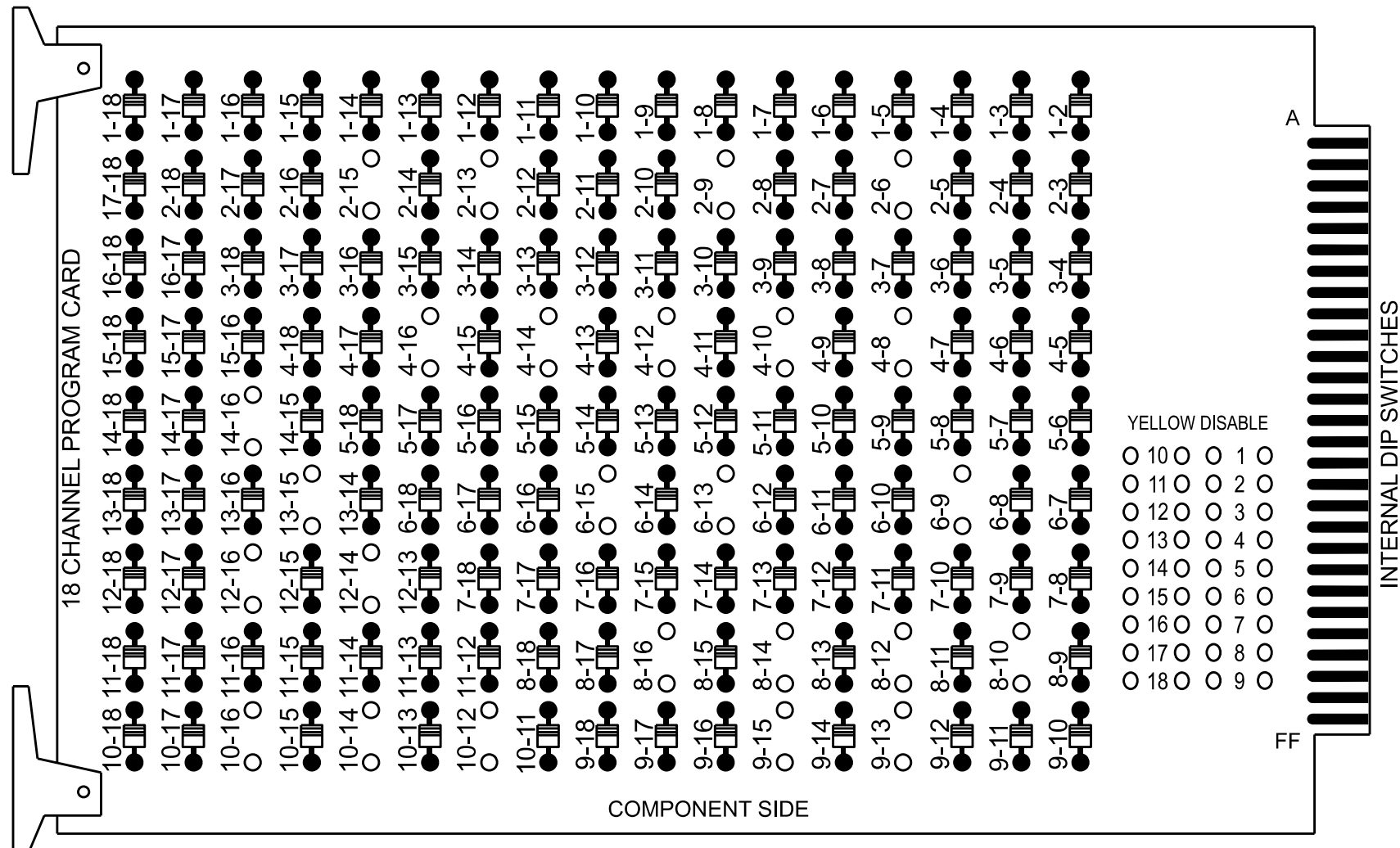
Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 29-70/NC 150 (N. Salisbury Avenue) at SR 1915 (Jefferson Street)	SEAL 																																	
Division 9 Rowan County Spencer																																			
PLAN DATE: <u>November 2025</u> REVIEWED BY:		Signed by: <u>[Signature]</u> 12/04/2025 DATE																																	
PREPARED BY: <u>I.O. Umozurike</u> REVIEWED BY:																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>			REVISIONS	INIT.	DATE																														
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18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

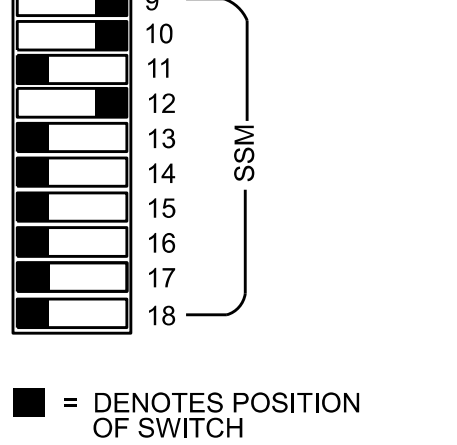
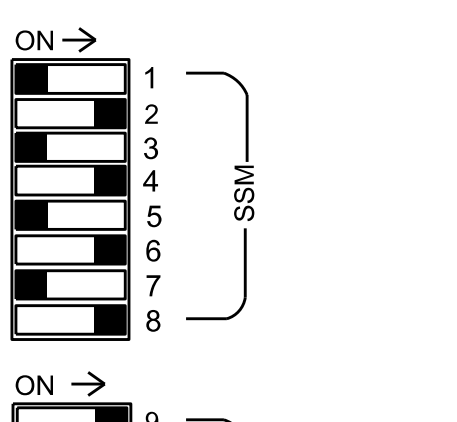
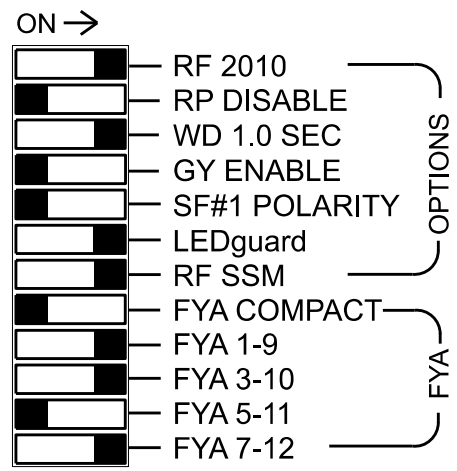
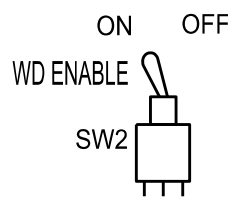
REMOVE DIODE JUMPERS 2-6, 2-9, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 6-9, 6-13, 6-15,
8-10, 8-12, 8-14, 8-16, 9-13, 9-15, 10-12, 10-14, 10-16, 12-14
12-16, 13-15 and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that the Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



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 (US 29-70 - NC 150 (Salisbury Ave.) CLS), Signal System #: D09-21_Spencer.

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, S8, S9, S11, S12,
AUX S1, AUX S2, AUX S5
Phases Used.....2, 2PED, 4, 4PED, 6, 6PED, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....Not Used
Overlap "4".....*

*See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

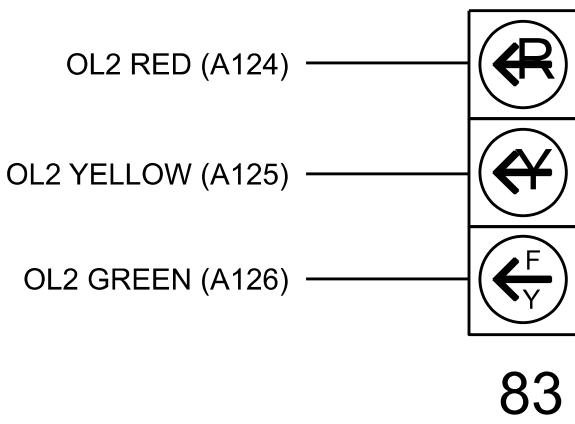
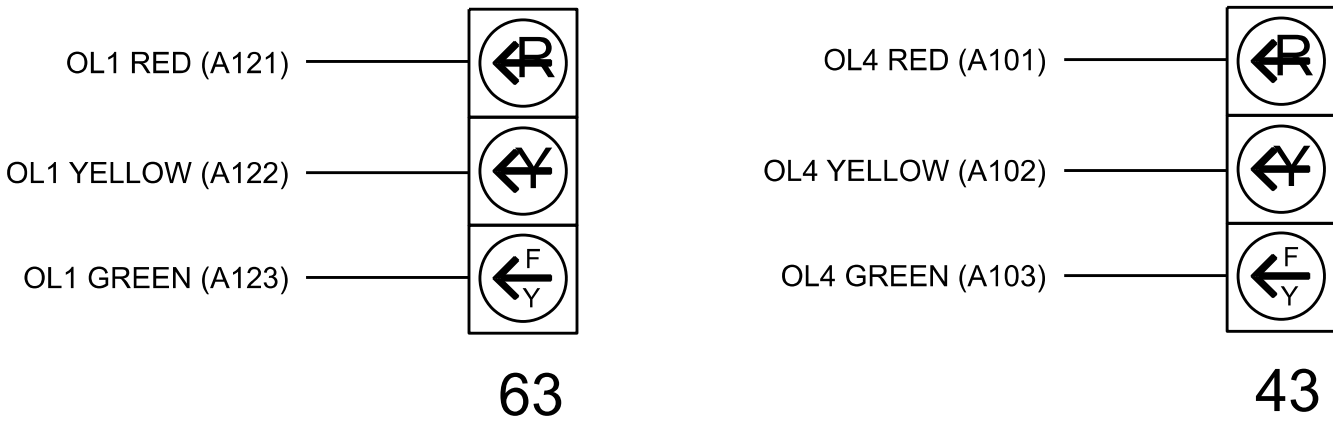
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82	63	83	NU	NU	43	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124			A101	
YELLOW ARROW													A122	A125			A102	
FLASHING YELLOW ARROW													A123	A126			A103	
GREEN ARROW																		
Hand icon			113		104			119			110							
Walking person icon			115		106			121			112							

NU = Not Used

★See pictorial of head wiring in detail this sheet.

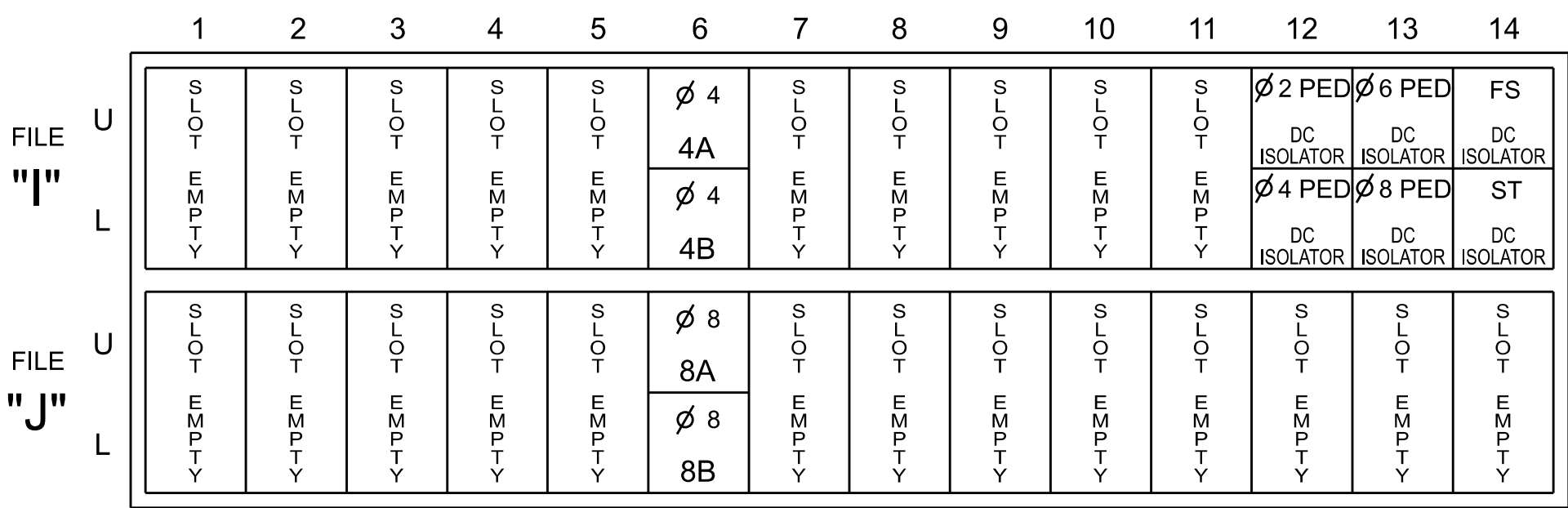
FYA SIGNAL WIRING DETAIL

(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
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4	10.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	
8B	TB5-11,12	J6L	46	8	23	8	10.0		X		X	
PED PUSH BUTTONS												
P21,P22	TB8-4,6	I12U	67	33	2	PED 2						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						
P81,P82	TB8-8,9	I13L	70	36	8	PED 8						

*System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.
FILE J
SLOT 2
LOWER

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.

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:
Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 29-70/NC 150
(N. Salisbury Avenue)
at
SR 1915 (Jefferson Street)

Division 9
PLAN DATE: December 2025
PREPARED BY: Tim Langston

Rowan County
REVIEWED BY:
REVIEWED BY:

Spencer

REVISIONS
INIT.
DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
D. TODD JOYCE
031001

DocuSigned by:
D. Todd Joyce
12/04/2025
DATE
SIG. INVENTORY NO. 09-0260

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap (Signal Head No.)	1 (63)	2 (83)	4 (43)
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	8
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

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

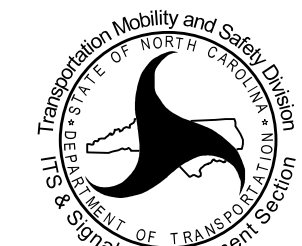
Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical and Programming
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 29-70/NC 150
(N. Salisbury Avenue)
at
R 1915 (Jefferson Street)

Division 9 Rowan County Spencer

PLAN DATE: December 2025	REVIEWED BY:
--------------------------	--------------

PREPARED BY: Tim Langston	REVIEWED BY:
---------------------------	--------------

PREPARED BY: <u>Tim Langston</u>		REVIEWED BY:	
REVISIONS		INIT.	DATE

REVISIONS	INIT.	DATE

[illegible]

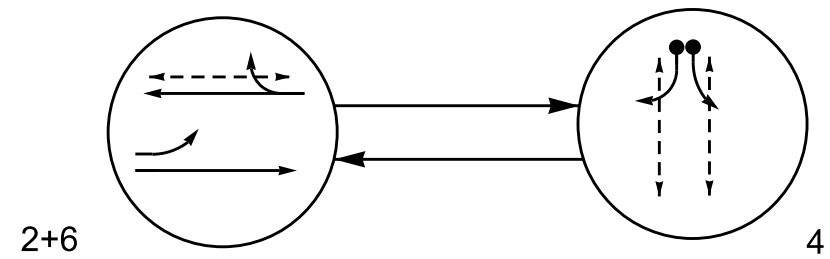
Seal of the Professional Engineer, North Carolina, License No. 031001, D. Todd Joyce.

DocuSigned by:
D Todd Miller 12/04/2025

V. Todd Joyce 12/04/2023
DATE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0260
DESIGNED: November 2025
SEALED: 12/04/2025
REVISED: N/A

PHASING DIAGRAM



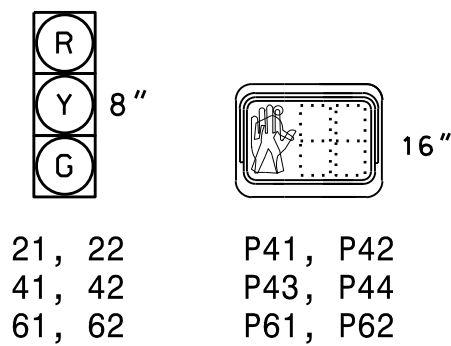
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	TABLE OF OPERATION		
	2 + 6	4	FL
21, 22	G	R	R
41, 42	R	G	R
61, 62	G	R	R
P41, P42	DW	W	DRK
P43, P44	DW	W	DRK
P61, P62	W	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

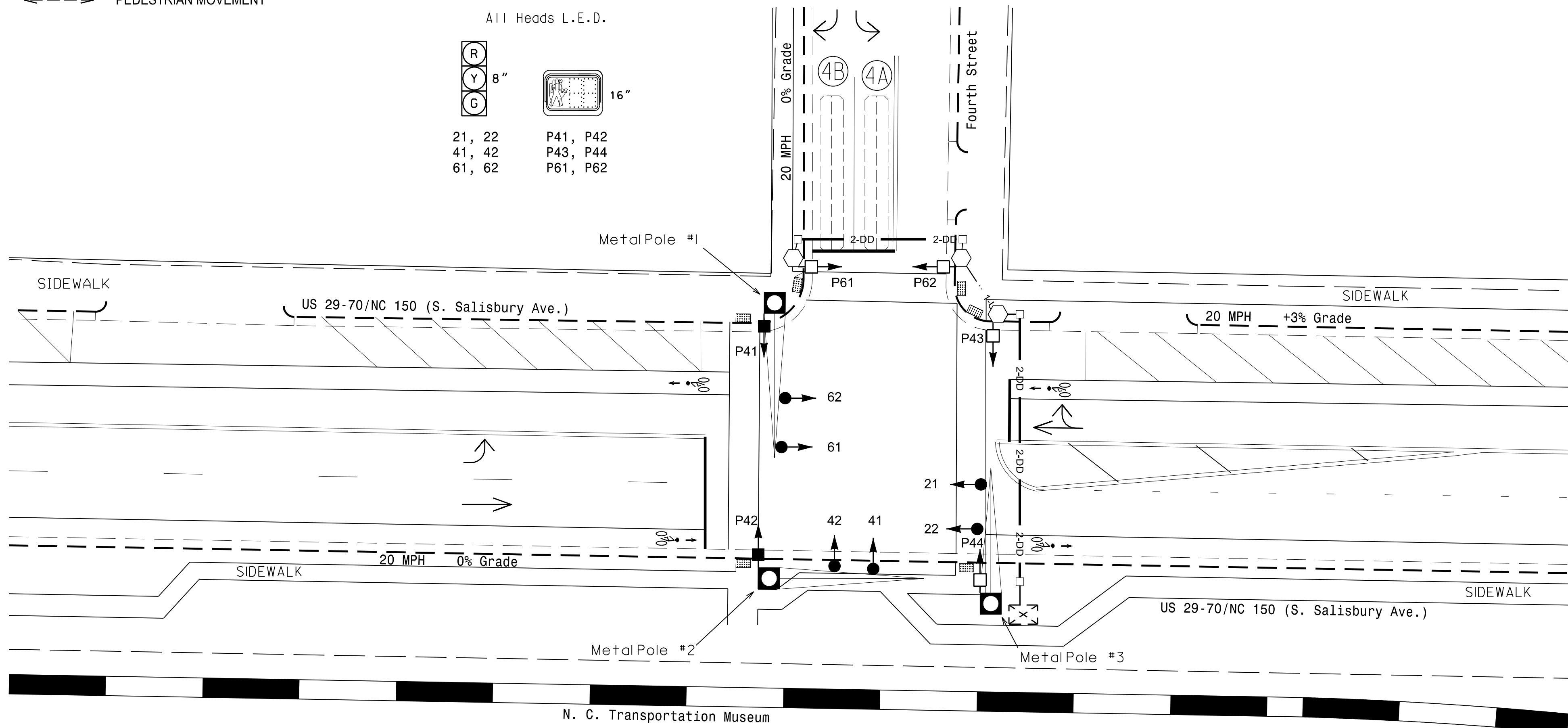


MAXTIME DETECTOR INSTALLATION CHART										
DETECTOR					PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X

2 Phase
Semi Actuated
(US 29-70/NC 150 (Salisbury Ave.) CLS)
Signal System #: D09-21_Spencer

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- All pedestals shall be black (Federal Std. 595C Color Chip 27038) in color.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Directional Drill	
	Right of Way	
	Directional Arrow	
	Metal Pole with Mastarm	
	Railroad Tracks	
	Type II Signal Pedestal	
	Curb Ramp	

FEATURE	PHASE		
	2	4	6
Walk *	-	14	12
Ped Clear	-	16	9
Min Green *	10	7	10
Passage *	0.0	2.0	0.0
Max 1 *	45	20	45
Yellow Change	3.0	3.0	3.0
Red Clear	2.4	2.4	2.4
Added Initial *	-	-	-
Maximum Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Advance Walk	-	7	5
Non Lock Detector	-	X	-
Vehicle Recall	MAX RECALL	-	MAX RECALL
Dual Entry	-	-	-

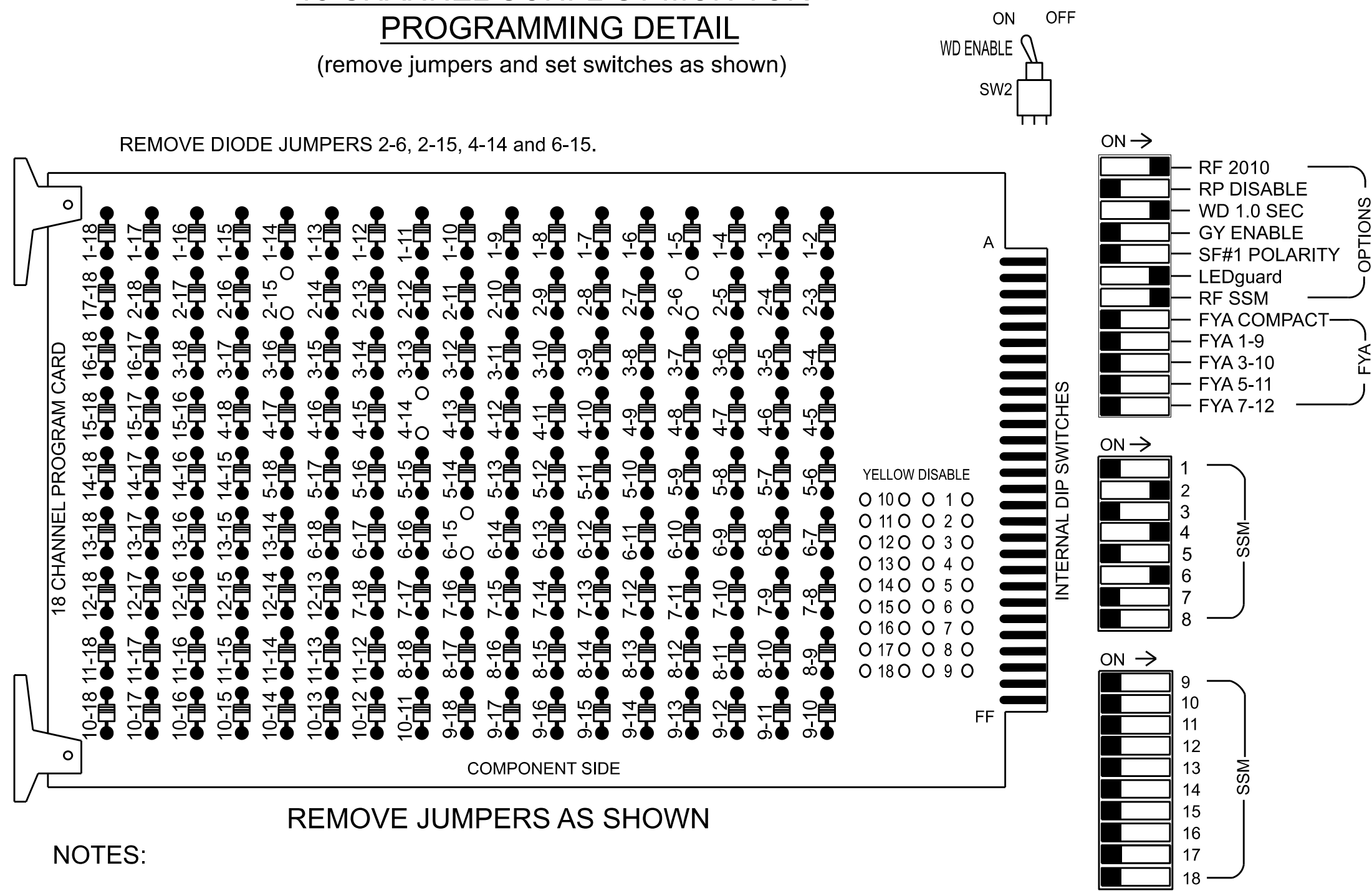
* These values may be field adjusted. Do not adjust Min Green and Passage times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 29-70/NC 150 (S. Salisbury Avenue) at Fourth Street Division 9 Rowan County Spencer	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZEMBA 12/08/2025 DATE SIG. INVENTORY NO. 09-0261
PLAN DATE: October 2025 PREPARED BY: I.O. Umzurike REVIEWED BY: J.A. Lohr	REVISIONS INIT. DATE	

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
4. The cabinet and controller are part of the US 29-70/NC 150 (Salisbury Ave.) CLS. Signal System #: D09-21 Spencer.

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, S5, S6, S8, S9
Phases Used.....	2, 4, 4 PED, 6, 6 PED
Overlaps.....	None

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.

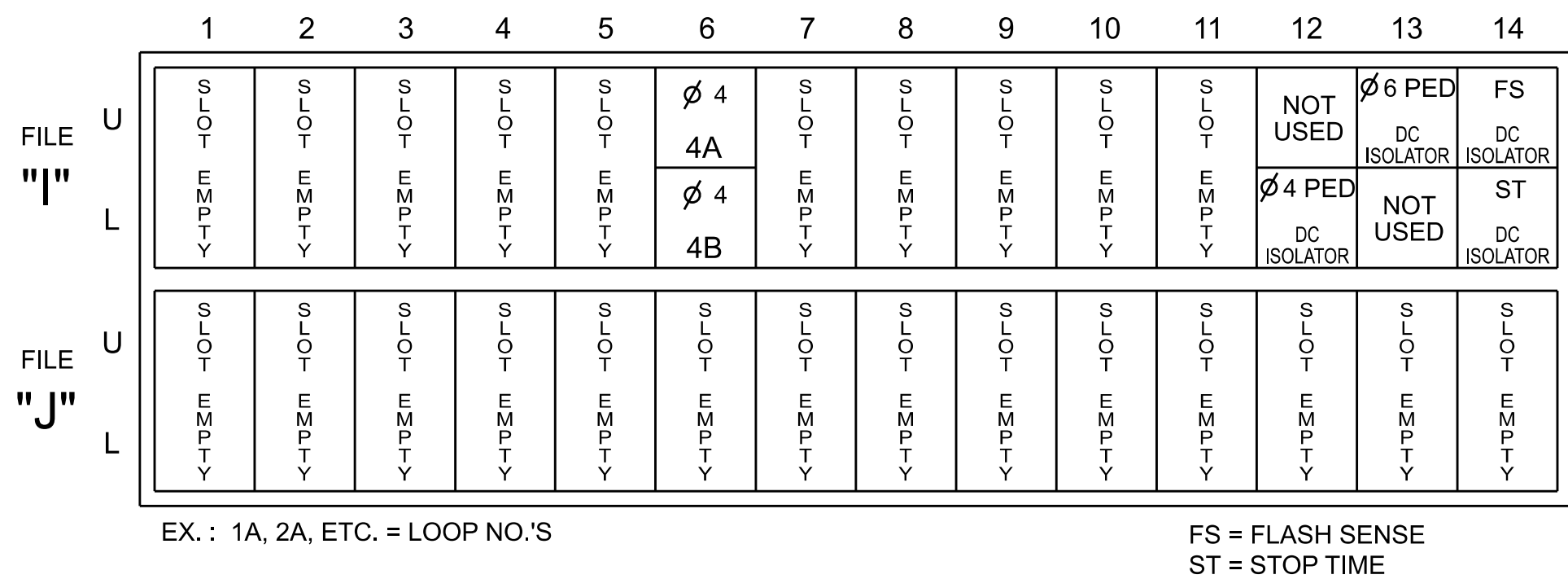
SIGNAL HEAD HOOK-UP CHART

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	NU	NU	41,42	P41,P42 P43,P44	NU	61,62	P61, P62	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		
						104			119									
						106			121									

NU = Not Used

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
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4	10.0		X		X	
PED PUSH BUTTONS												
P41,P42	TB8-5,6	I12L	69	35	4	PED 4	NOTE: INSTALL DC ISOLATORS IN LINE					
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						

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

INPUT FILE POSITION LEGEND: J2L

FILE J _____

SLOT 2 _____

LOWER _____

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0261
DESIGNED: October 2025
SEALED: 12/8/2025
REVISED: N/A

OUTPUT CHANNEL CONFIGURATION

Front Panel

Main Menu > Controller > More > Channels > Channels Confic

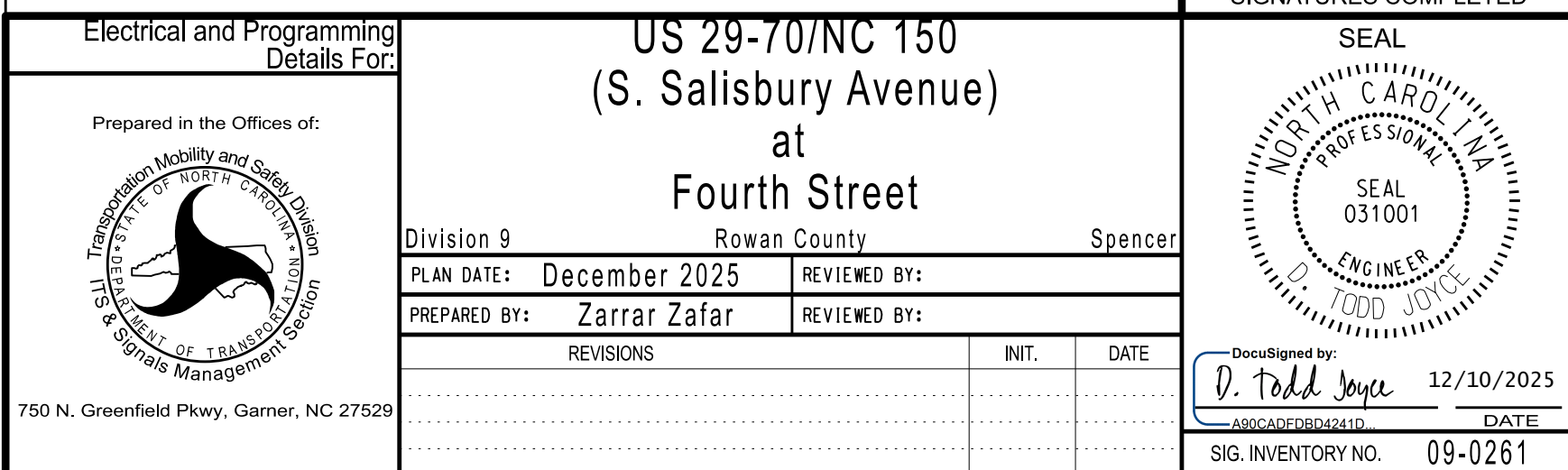
Web Interface

Home >Controller >Advanced IO>Channels>Channel Configuration

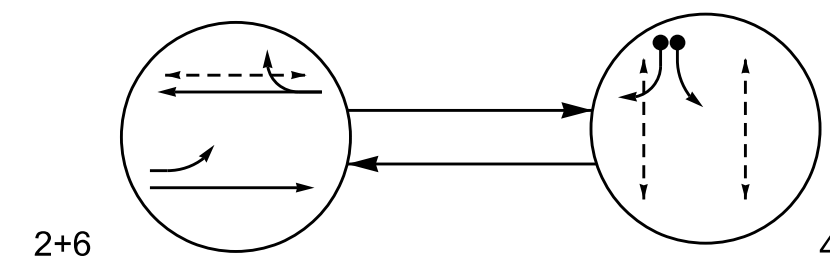
Channel Configuration

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

Electrical Detail



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	2 + 6	4	F A S H
21, 22	G	R	R
41, 42	R	G	R
61, 62	G	R	R
P41, P42	DW	W	DRK
P43, P44	DW	W	DRK
P61, P62	W	DW	DRK

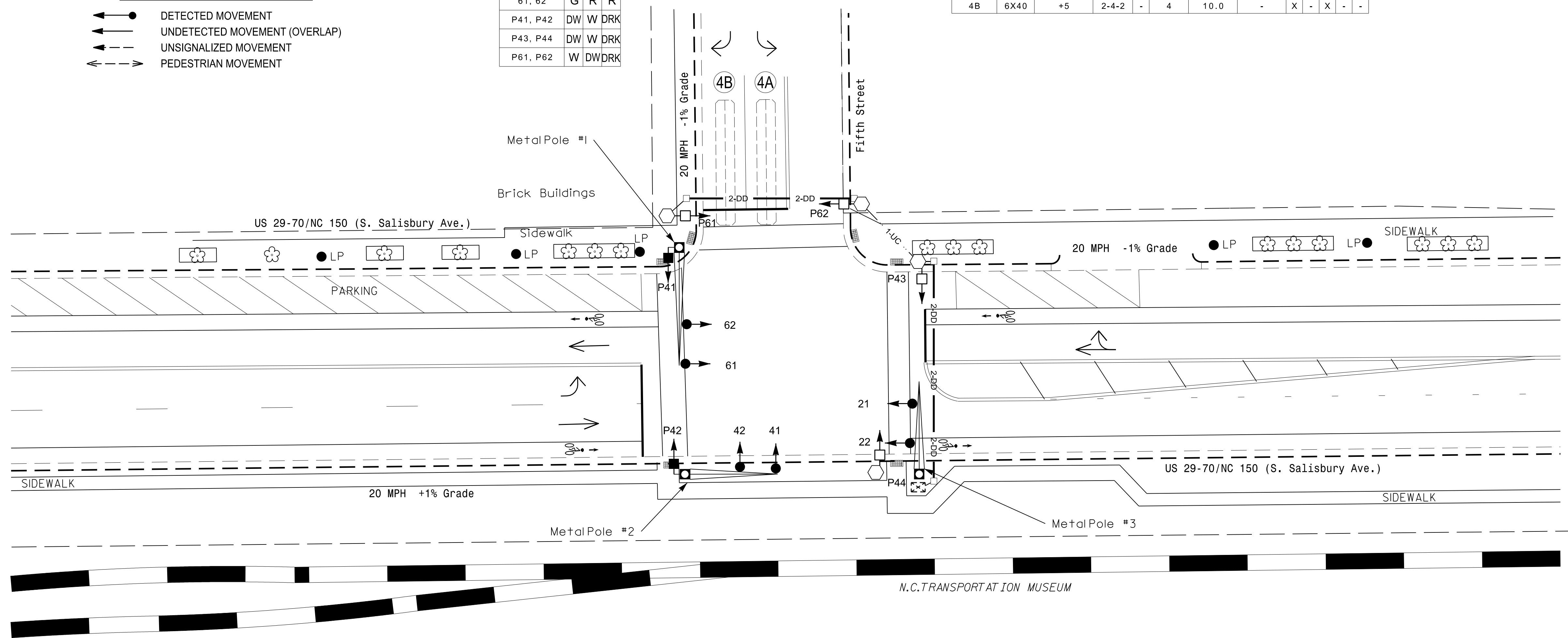
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-

2 Phase
Semi Actuated
US 29-70/NC 150 (Salisbury Ave.) CLS
Signal System #: D09-21_Spencer

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
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. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. All pedestals shall be black (Federal Std. 595C Color Chip 27038) in color.



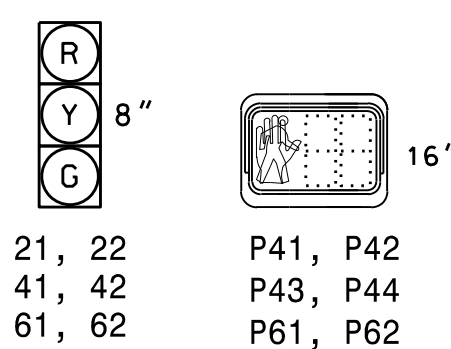
MAXTIME TIMING CHART

FEATURE	PHASE		
	2	4	6
Walk *	-	14	13
Ped Clear	-	15	12
Min Green *	10	7	10
Passage *	0.0	2.0	0.0
Max 1 *	45	20	45
Yellow Change	3.0	3.0	3.0
Red Clear	2.8	2.8	2.8
Added Initial *	-	-	-
Maximum Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Advance Walk	-	7	6
Non Lock Detector	-	X	-
Vehicle Recall	MAX RECALL	-	MAX 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.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Directional Drill	N/A
	Right of Way	
	Directional Arrow	
	Curb Ramp	
	Metal Pole with Mastarm	
	Railroad Tracks	
	Type II Signal Pedestal	

Signal Upgrade

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 29-70/NC 150

(S. Salisbury Avenue)

at

Fifth Street

Rowan County

SEAL



Division 9		Spencer	
PLAN DATE:	November 2025	REVIEWED BY:	J.A. Lohr
PREPARED BY:	I.O. Umozurike	REVIEWED BY:	

SCALE



REVISIONS	INIT.	DATE

Signed by:



12/08/2025

DATE

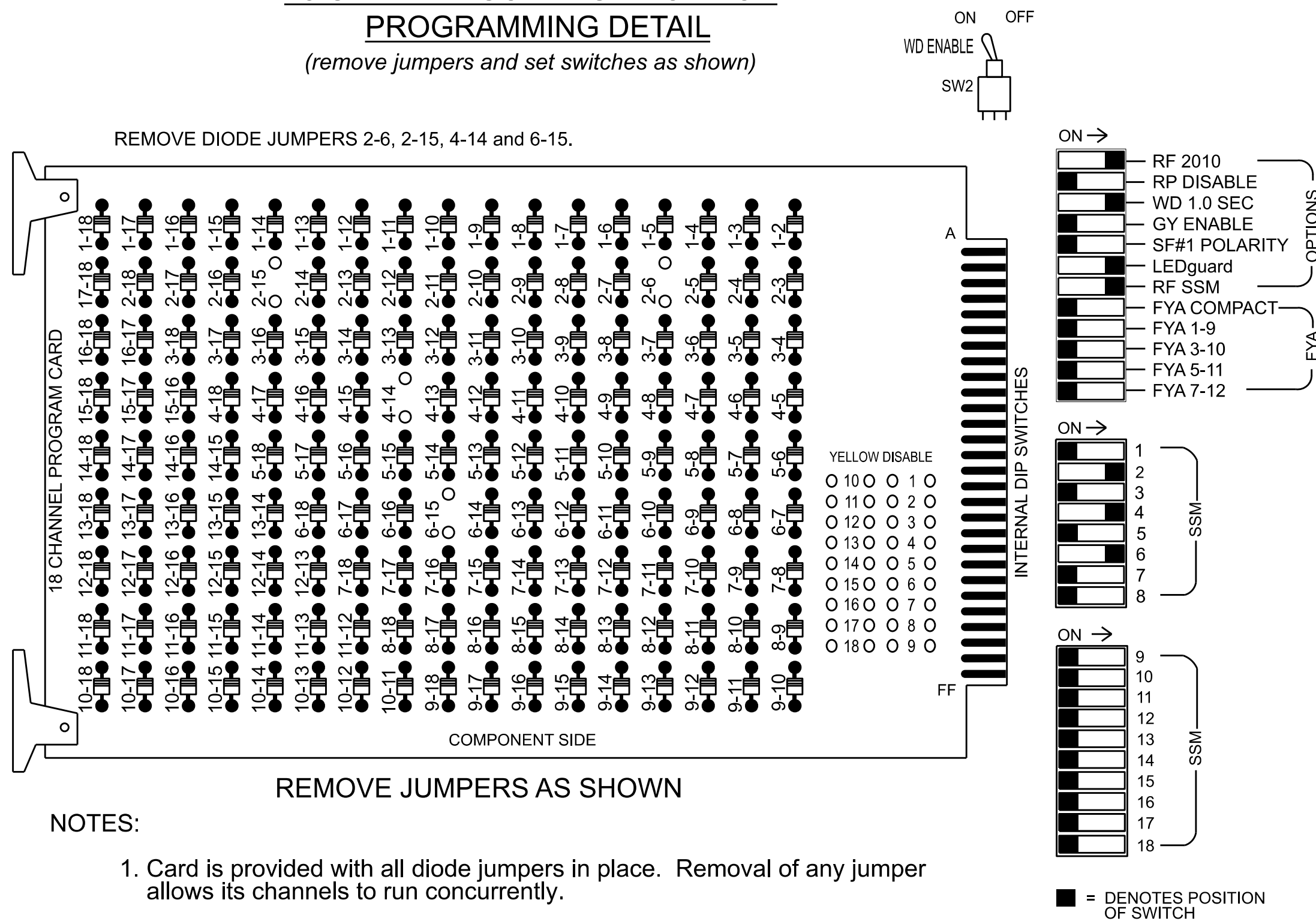
SIG. INVENTORY NO.

09-0262

DATE

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal 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 US 29-70/NC 150 (Salisbury Ave.) CLS, Signal System #: D09-21_Spencer.

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, S5, S6, S8, S9
Phases Used.....2, 4, 4PED, 6, 6PED
Overlaps.....NONE

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	NU	NU	41,42	P41,P42 P43,P44	NU	61,62	P61, P62	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		
						104			119									
						106			121									

NU = Not Used

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.

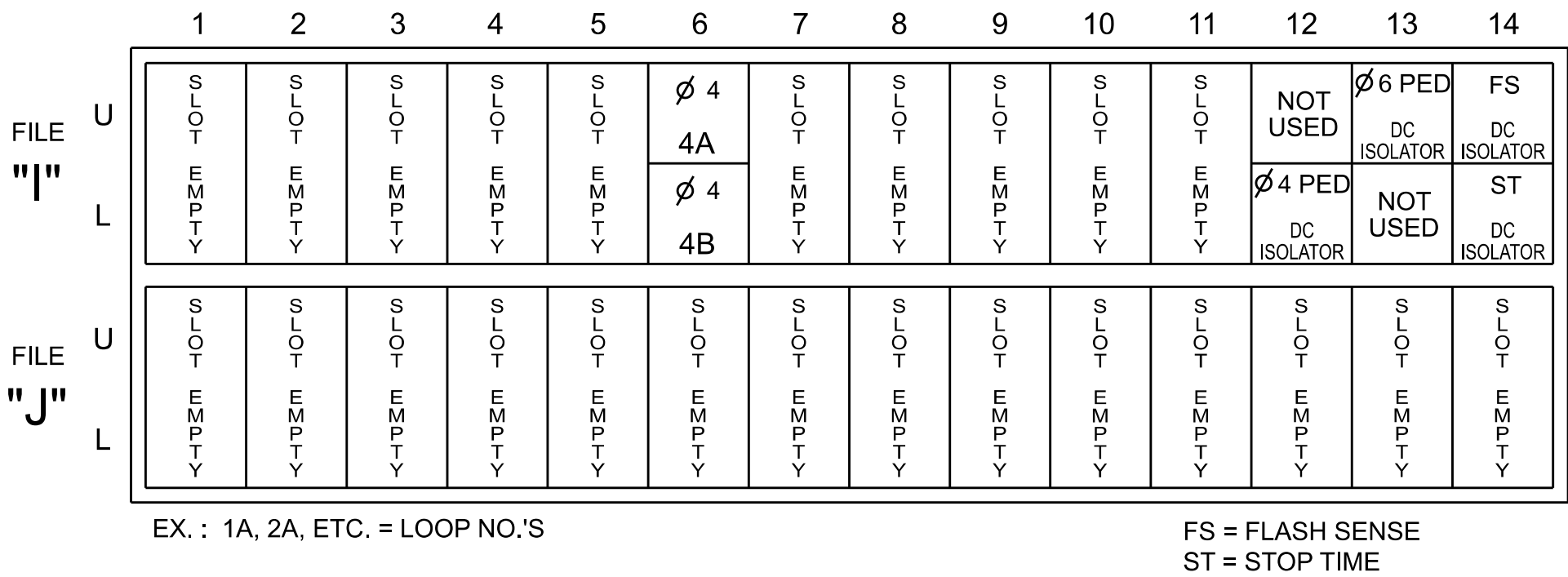
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0262
DESIGNED: November 2025
SEALED: 12/08/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 1

Electrical and Programming Details For:	US 29-70/NC 150 (S. Salisbury Avenue) at Fifth Street	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Prepared in the Offices of:	Division 9 Rowan County Spencer	SEAL NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE
	PLAN DATE: December 2025 REVIEWED BY: PREPARED BY: Tim Langston REVIEWED BY:	DocuSigned by: D. Todd Joyce 12/10/2025 DATE
750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS INIT. DATE	SIG. INVENTORY NO. 09-0262

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
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4	10.0		X		X	
PED PUSH BUTTONS												
P41,P42,P43,P44	TB8-5,6	I12L	69	35	4	PED 4						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

OUTPUT CHANNEL CONFIGURATION

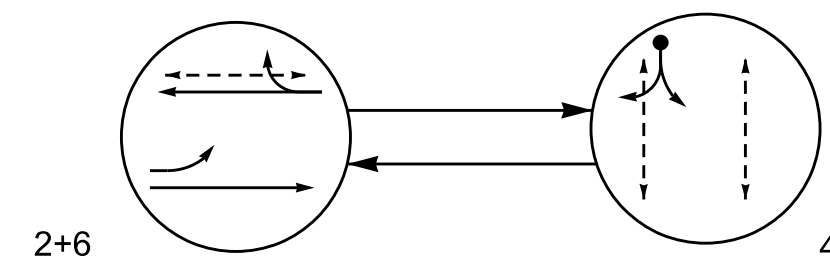
Front Panel
Main Menu >Controller >More>Channels>Channels Config

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

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	2 1 6	4	FLASH
21, 22	G	R	R
41, 42	R	G	R
61, 62	G	R	R
P41, P42	DW	W	DRK
P43, P44	DW	W	DRK
P61, P62	W	DW	DRK

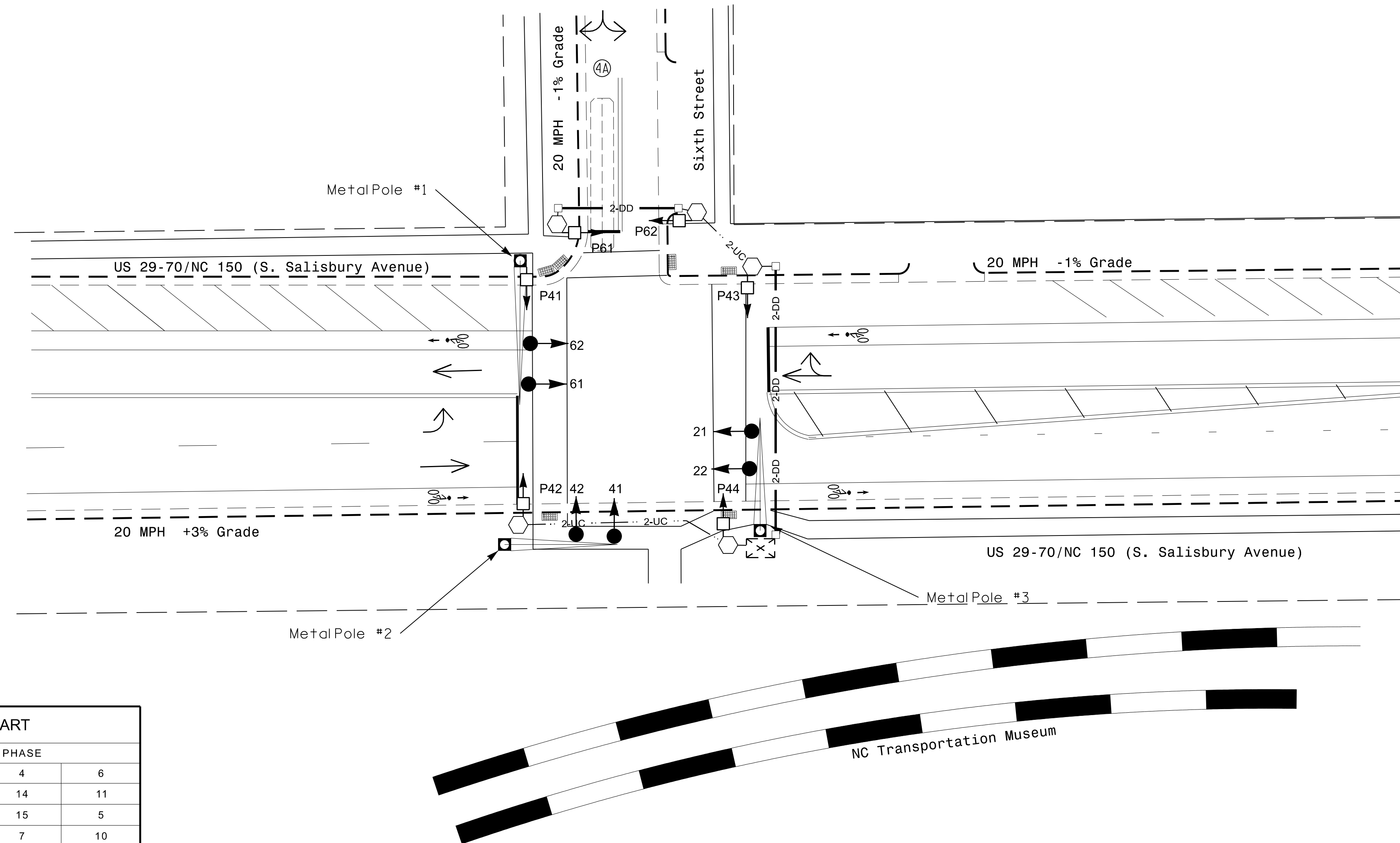
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-

2 Phase
Semi Actuated
US 29-70/NC 150 (Salisbury Ave.) CLS
Signal System #: D09-21_Spencer

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
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. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. All pedestals shall be black (Federal Std. 595C Color Chip 27038) in color.



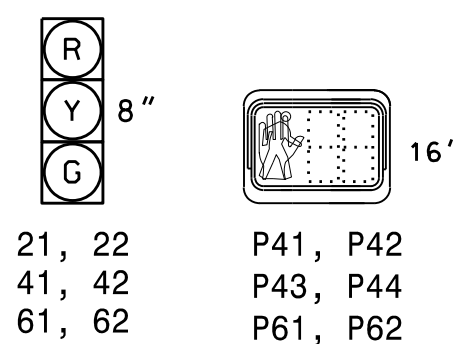
MAXTIME TIMING CHART

FEATURE	PHASE		
	2	4	6
Walk *	-	14	11
Ped Clear	-	15	5
Min Green *	10	7	10
Passage *	0.0	2.0	0.0
Max 1 *	45	20	45
Yellow Change	3.0	3.0	3.0
Red Clear	1.9	2.3	1.9
Added Initial *	-	-	-
Maximum Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Advance Walk	-	7	4
Non Lock Detector	-	X	-
Vehicle Recall	MAX RECALL	-	MAX 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.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Directional Drill	N/A
	Right of Way	
	Directional Arrow	
	Curb Ramp	
	Metal Pole with Mastarm	
	Railroad Tracks	
	Type II Signal Pedestal	

Signal Upgrade

Prepared in the Offices of:  Transportation Mobility and Safety Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529	US 29-70/NC 150 (S. Salisbury Avenue) at Sixth Street Rowan County	SPENCER
Division 9		Spencer
PLAN DATE: November 2025		REVIEWED BY: J.A. Lohr
PREPARED BY: I.O. Umozurike		REVIEWED BY:
REVISIONS		INIT. DATE
SCALE 0 20 1" = 20'		Seal of Robert J. Ziemba, Professional Engineer, No. 026486, State of North Carolina
750 N. Greenfield Pkwy, Garner, NC 27529		12/10/2025 DATE SIG. INVENTORY NO. 09-0263

