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Docusign Envelope ID: 93A16CE9-C2C8-468A-9329-F3C30693B02F

Project: U-5945

Project No.	Sheet No.
U-5945	Sig. 1.0

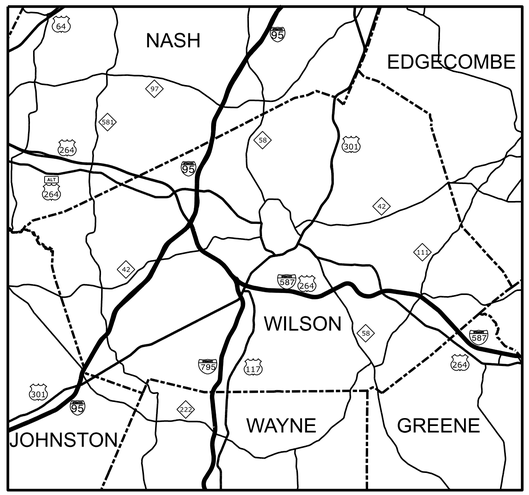
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WILSON COUNTY

LOCATION: CITY OF WILSON

TYPE OF WORK: SIGNALS AND SIGNAL COMMUNICATIONS

Vicinity



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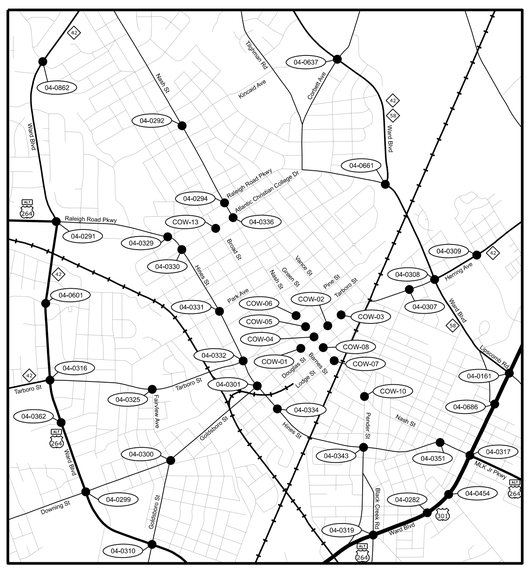

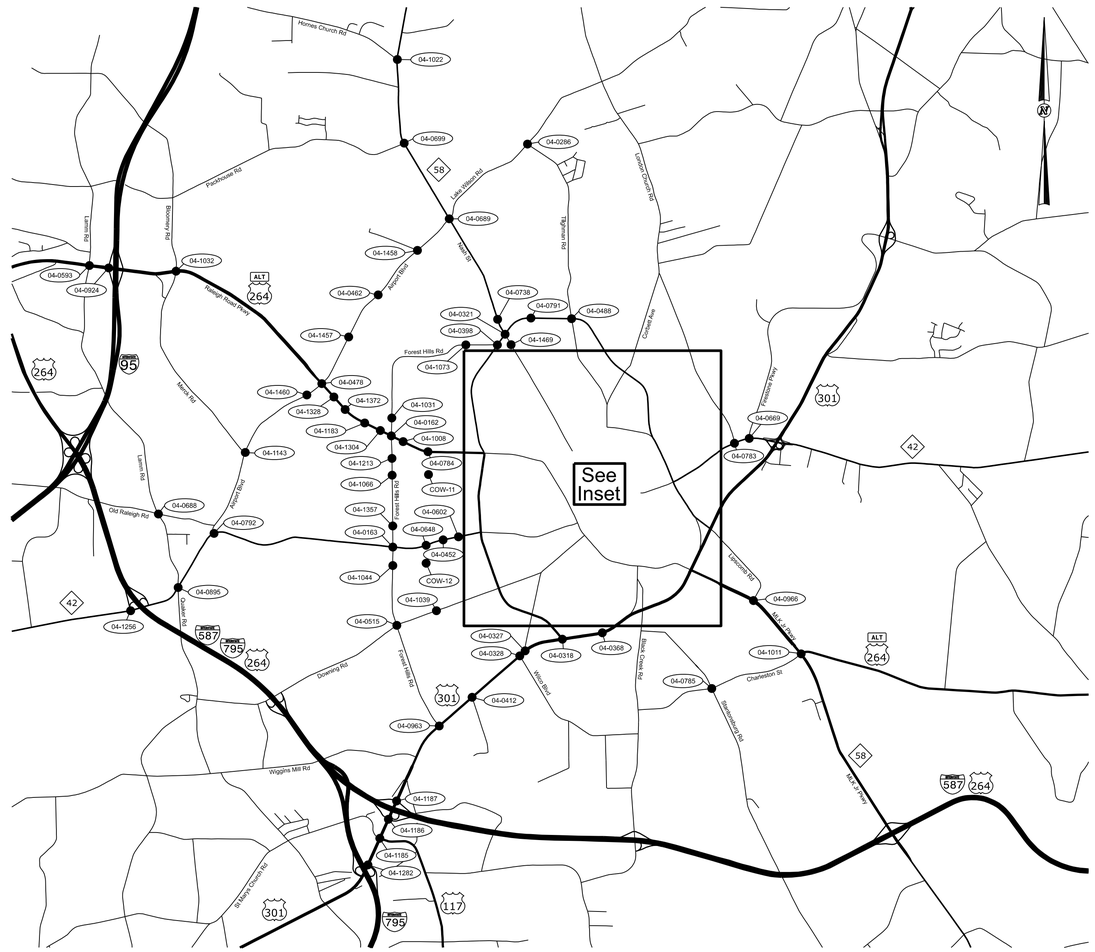

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams B2E4B32DCF384492 3/13/2025 DATE

Prepared By:

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Contacts:

Melissa B. Toth, PE - Project Manager

Timothy J. Williams, PE - Deputy Project Manager

Bradford J. Slocum, PE - Project ITS Engineer

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

Index of Sheets

Sheet #	Reference #	Location/Description
Sig. 1.0	--------	Title Sheet
Sig. 1.1	--------	Index of Plans
Sig. 1.2 - 1.6	--------	Summary of Work
Sig. 2.0 - 96.0	--------	Signal Plans
SCP 1.0 - 107.0	--------	Signal Communication Plans
TMP 1.0 - 4.0	--------	Transportation Management Plans

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

Contacts:

Alex D. Stewart, PE - State ITS Engineer

Zachary M. Little, PE - Eastern Region Signals Engineer

Keith M. Mims, PE - State Signal Equipment Engineer

Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION

Transportation Mobility and Safety Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TSMO Unit

750 N. Greenfield Pkwy, Garner, NC 27529

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.1

Sheet #	Signal Inventory #	Location/Description
2.0	04-0161	US 301/NC 58 (Ward Boulevard) at NC 58/SR 1515 (Lipscomb Road)
3.0	04-0162	US 264 Alternate (Raleigh Road Parkway) at SR 1165 (Forest Hills Road)
4.0	04-0163	NC 42 (Tarboro Street) at SR 1165 (Forest Hills Road)
5.0	04-0282	US 301 at New Bern Street
6.0	04-0286	SR 1332 (Lake Wilson Road) at SR 1323 (Tilghman Road)/Pinehurst Drive
7.0	04-0291	US 264 Alternate/SR 1192 (Raleigh Road Parkway) at US 264 Alternate/NC 42 (Ward Boulevard)
8.0	04-0292	SR 1377 (Nash Street) at Kincaid Avenue
9.0	04-0294	SR 1377 (Nash Street) at Raleigh Road Parkway
10.0	04-0299	US 264 Alternate (Ward Boulevard) at SR 1163 (Downing Street)
11.0	04-0300	SR 1163 (Downing Street) at SR 1163/SR 1168 (Goldsboro Street)
12.0	04-0301	SR 1192 (Hines Street) at SR 1163 (Goldsboro Street)
13.0	04-0307	SR 1253 (Herring Avenue) at Pender Street
14.0	04-0308	NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1253 (Herring Avenue)
15.0	04-0309	NC 42 (Herring Avenue) at Samuel Street
16.0	04-0310	US 264 Alternate (Ward Boulevard) at SR 1168 (Goldsboro Street)
17.0	04-0316	US 264 Alternate (Ward Boulevard) at NC 42/SR 1184 (Tarboro Street)
18.0	04-0317	US 264 Alternate/US 301 (Ward Boulevard) at US 264 Alternate-NC 58 (MLK Jr. Parkway)/SR 1192 (Nash Street)
19.0	04-0318	US 264 Alternate/US 301 (Ward Boulevard) at US 264 Alternate (Ward Boulevard)/Entrance To Herrings Tractor
20.0	04-0319	US 301 (Ward Boulevard) at SR 1606 (Black Creek Road)
21.0	04-0321	NC 42/NC 58 (Ward Boulevard) at NC 58/SR 1377 (Nash Street) [North Intersection] (Upgraded under SM-6104D)
22.0	04-0325	SR 1184 (Tarboro Street) at Fairview Avenue
23.0	04-0327	US 301 at SR 1168 (Goldsboro Street)
24.0	04-0328	US 301 at SR 1608 (Wilco Boulevard)
25.0	04-0329	SR 1192 (Raleigh Road Parkway) at SR 1192 (Hines Street)
26.0	04-0330	SR 1192 (Hines Street) at Deans Street/Atlantic Christian College Drive
27.0	04-0331	SR 1192 (Hines Street) at Park Avenue
28.0	04-0332	SR 1192 (Hines Street) at SR 1184 (Tarboro Street)
29.0	04-0334	SR 1192 (Hines Street) at Lodge Street
30.0	04-0336	SR 1377 (Nash Street) at Atlantic Christian College Drive
31.0	04-0343	SR 1192 (Hines Street) at SR 1670 (Pender Street) / Pender Street
32.0	04-0351	SR 1192 (Hines Street/Nash Street) at Nash Street
33.0	04-0362	US 264 Alternate (Ward Boulevard) at Churchill Ave/Pike Street
34.0	04-0368	US 264 Alternate/US 301 (Ward Boulevard) at Thorne Street
35.0	04-0398	NC 42 (Ward Boulevard) at SR 1165 (Forest Hills Road) (Upgraded under SM-6104D)
36.0	04-0452	NC 42 (Tarboro Street) at Wilson Medical Center / Medical Cut-through
37.0	04-0454	US 264 Alternate/US 301 (Ward Boulevard) at Lane Street
38.0	04-0462	SR 1320 (Airport Boulevard) at Airport Drive
39.0	04-0478	US 264 Alternate (Raleigh Road Parkway) at SR 1320 (Airport Boulevard) / SR 1158 (Airport Boulevard)
40.0	04-0488	NC 42/NC 58 (Ward Boulevard) at SR 1323 (Tilghman Road)
41.0	04-0515	SR 1165 (Forest Hills Road) at SR 1163 (Downing Street)
42.0	04-0593	US 264 Alternate (Raleigh Road Parkway) at SR 1001 (Lamm Road)
43.0	04-0601	US 264 Alternate/NC 42 (Ward Boulevard) at Parkwood Boulevard/Lillian Road
44.0	04-0602	NC 42 (Tarboro Street) at Bynum School Drive/Parkwood Boulevard
45.0	04-0637	NC 42/NC 58 (Ward Boulevard) at SR 1326 (Corbett Avenue)
46.0	04-0648	NC 42 (Tarboro Street) at Glendale Drive
47.0	04-0661	NC 42/NC 58 (Ward Boulevard) at SR 1356 (Raleigh Road Parkway)
48.0	04-0669	NC 42 (Herring Avenue) at SR 1328 (Firestone Parkway)/Entrance To City Of Wilson Operation Center
49.0	04-0686	US 301 at SR 1516 (Marlow Street)/Fikewood Shopping Center
50.0	04-0688	SR 1136 (Old Raleigh Road) at SR 1001 (Lamm Road)

Sheet #	Signal Inventory #	Location/Description
51.0	04-0689	NC 58 (Nash Street) at SR 1320 (Airport Boulevard)/SR 1332 (Lake Wilson Road)
52.0	04-0699	NC 58 (Nash Street) at SR 1382 (Packhouse Road)/Saint Andrews Drive
53.0	04-0738	NC 58 (Nash Street) at Brentwood Center Lane
54.0	04-0783	NC 42 (Herring Avenue) at SR 1327 (London Church Road)
55.0	04-0784	US 264 Alternate (Raleigh Road Parkway) at Glendale Drive/Lakeside Drive
56.0	04-0785	SR 1602 (Stantonsburg Road) at SR 1607 (Charleston Street)
57.0	04-0791	NC 42/NC 58 (Ward Boulevard) at Brentwood Drive
58.0	04-0792	NC 42 at SR 1158 (Airport Boulevard)
59.0	04-0862	NC 42 (Ward Boulevard) at Albert Ave/Canal Drive
60.0	04-0895	NC 42 at SR 1001 (Lamm Road)/SR 1162 (Quaker Road)
61.0	04-0924	US 264 Alternate (Raleigh Road Parkway) at I-95 SB Ramp
62.0	04-0963	US 301 at SR 1165 (Forest Hills Road)/Commercial Drive
63.0	04-0966	US 264 Alternate/NC 58 (MLK Jr. Parkway) at SR 1515 (Lipscomb Road)
64.0	04-1008	US 264 Alternate (Raleigh Road Parkway) at Walmart/Shopping Center Entrance
65.0	04-1011	US 264 Alternate/NC 58 (MLK Jr. Parkway) at US 264 Alternate/SR 1607 (Charleston Street)
66.0	04-1022	NC 58 at SR 1313 (Hornes Church Road)
67.0	04-1031	SR 1165 (Forest Hills Road) at Shopping Center/Forest Hills Middle School
68.0	04-1032	US 264 Alternate (Raleigh Road Parkway) at SR 1157 (Merck Road)/SR 1309 (Bloomery Road)
69.0	04-1039	SR 1163 (Downing Street) at Glendale Drive
70.0	04-1044	SR 1165 (Forest Hills Road) at Wooten Boulevard
71.0	04-1066	SR 1165 (Forest Hills Road) at Westwood Avenue
72.0	04-1073	SR 1165 (Forest Hills Road) at Canal Drive
73.0	04-1143	SR 1158 (Airport Boulevard) at SR 1157 (Merck Road)
74.0	04-1183	US 264 Alternate (Raleigh Road Parkway) at Wolf Trap Drive
75.0	04-1185	US 301 at US 117/SR 1100 (St. Mary's Church Road)
76.0	04-1186	US 301 at I-587 EB/I-795 SB/US 264 EB Ramps
77.0	04-1187	US 301 at I-587 WB/US 264 WB Ramps
78.0	04-1213	SR 1165 (Forest Hills Road) at Entrance to Lowe's/Westwood Shopping Center
79.0	04-1256	NC 42 at I-587 EB/I-795 SB/US 264 EB Ramps
80.0	04-1282	US 301 at I-795 NB Ramps
81.0	04-1304	US 264 Alternate (Raleigh Road Parkway) at Westpoint Shopping Center/Gateway Plaza Shopping Center
82.0	04-1328	US 264 Alternate (Raleigh Road Parkway) at Heritage Crossing/Belle Meade Commons
83.0	04-1357	SR 1165 (Forest Hills Road) at City of Wilson Fire Station 2
84.0	04-1372	US 264 Alternate (Raleigh Road Parkway) at Heritage Drive West
85.0	COW-01	Goldsboro St at Barnes St
86.0	COW-02	Goldsboro St at Green St
87.0	COW-03	Goldsboro St at Vance St
88.0	COW-04	Goldsboro St at Nash Street
89.0	COW-05	Tarboro St at Nash Street
90.0	COW-06	Pine St at Nash Street
91.0	COW-07	Nash St at Lodge St
92.0	COW-08	Nash St at Douglas St
93.0	COW-10	Pender St at Nash St
94.0	COW-11	Glendale Drive at Westwood Avenue
95.0	COW-12	Glendale Drive at Wooten Boulevard / Wilson Medical Center
96.0	COW-13	Atlantic Christian College Drive at Broad Street (Overhead Flasher)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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1616 EAST MILLBROOK ROAD, SUITE 160
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(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

Index of Plans

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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3/13/2025
DATE

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.2

Summary of Work by Intersections

Reference Information						Signal Items																					Power Service				
	NCDOT / City Signal Inv. No.	Intersection Name	Cable Routing Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	CONTROLLERS WITH CABINET (TYPE 2070LX, BASE MOUNTED)	CONTROLLERS WITH CABINET (TYPE 2070LX, POLE MOUNTED)	DETECTOR CARD (TYPE 170)	SIGNAL CABINET FOUNDATION	TERMINAL SPLICE CABINET	BEACON CONTROLLER ASSEMBLY & CABINET (TYPE F1)	MODIFY FOUNDATION FOR CONTROLLER CABINET	CABINET BASE EXTENDER	VEHICLE SIGNAL HEAD (8", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 4 SECTION)	VEHICLE SIGNAL HEAD (12", 5 SECTION)	SIGNAL CABLE	UNPAVED TRENCHING (1)(2")	DIRECTIONAL DRILL (1)(2")	TYPE II PEDESTAL WITH FOUNDATION	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service
1	04-0161	US 301/NC 58 (Ward Boulevard) at NC 58/SR 1515 (Lipscomb Road)	SCP 58.0	Sig 2.0		1		12																							
2	04-0162	US 264 Alternate (Raleigh Road Parkway) at SR 1165 (Forest Hills Road)	SCP 9.0	Sig 3.0		1		9																							
3	04-0163	NC 42 (Tarboro Street) at SR 1165 (Forest Hills Road)	SCP 42.0	Sig 4.0		1		14																							
4	04-0282	US 301 at New Bern Street	SCP 55.0	Sig 5.0		1		6																							
5	04-0286	SR 1332 (Lake Wilson Road) at SR 1323 (Tilghman Road)/Pinehurst Drive	SCP 20.0	Sig 6.0		1		5							4			510													
6	04-0291	US 264 Alternate/SR 1192 (Raleigh Road Parkway) at US 264 Alternate/NC 42 (Ward Boulevard)	SCP 12.0	Sig 7.0		1		8																							
7	04-0292	SR 1377 (Nash Street) at Kincaid Avenue	SCP 25.0	Sig 8.0	Y		1	2							2			140													
8	04-0294	SR 1377 (Nash Street) at Raleigh Road Parkway	SCP 26.0	Sig 9.0	Y	1		2																							
9	04-0299	US 264 Alternate (Ward Boulevard) at SR 1163 (Downing Street)	SCP 50.0	Sig 10.0		1		9																							
10	04-0300	SR 1163 (Downing Street) at SR 1163/SR 1168 (Goldsboro Street)	SCP 65.0	Sig 11.0		1		5						1	1			360													
11	04-0301	SR 1192 (Hines Street) at SR 1163 (Goldsboro Street)	SCP 66.0	Sig 12.0	Y	1		10										1760	170		8	8	4		1760						
12	04-0307	SR 1253 (Herring Avenue) at Pender Street	SCP 70.0	Sig 13.0		1		2	1	1			1																		
13	04-0308	NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1253 (Herring Avenue)	SCP 71.0	Sig 14.0		1		10																							
14	04-0309	NC 42 (Herring Avenue) at Samuel Street	SCP 72.0	Sig 15.0			1	6							8			480													
15	04-0310	US 264 Alternate (Ward Boulevard) at SR 1168 (Goldsboro Street)	SCP 51.0	Sig 16.0		1		8																	1330						
16	04-0316	US 264 Alternate (Ward Boulevard) at NC 42/SR 1184 (Tarboro Street)	SCP 48.0	Sig 17.0		1		11																	980						
17	04-0317	US 264 Alternate/US 301 (Ward Boulevard) at US 264 Alternate-NC 58 (MLK Jr. Parkway)/SR 1192 (Nash Street)	SCP 35.0	Sig 18.0	Y	1		10																							
18	04-0318	US 264 Alternate/US 301 (Ward Boulevard) at US 264 Alternate (Ward Boulevard)/Entrance To Herrings Tractor	SCP 52.0	Sig 19.0		1		7																							
19	04-0319	US 301 (Ward Boulevard) at SR 1606 (Black Creek Road)	SCP 54.0	Sig 20.0		1		10																							
20	04-0321	NC 42/NC 58 (Ward Boulevard) at NC 58/SR 1377 (Nash Street) [North Intersection]	SCP 23.0	Sig 21.0																											
21	04-0325	SR 1184 (Tarboro Street) at Fairview Avenue	SCP 62.0	Sig 22.0			1	4							2	1		190													
22	04-0327	US 301 at SR 1168 (Goldsboro Street)	SCP 82.0	Sig 23.0		1		3	1	1			1			1		110													
23	04-0328	US 301 at SR 1608 (Wilco Boulevard)	SCP 83.0	Sig 24.0		1		5																							
24	04-0329	SR 1192 (Raleigh Road Parkway) at SR 1192 (Hines Street)	SCP 88.0	Sig 25.0			1	4											320	120			6	110	930						

Work shown on this sheet is for the upgrade of the traffic signals, including installation of new controllers and cabinets, new or modified foundations, electrical service and miscellaneous signal related items. Additional information can be found in the signal plans. Work to be done for fiber-optic cable routing and interconnection is shown on the cable layout plans and on the sheets entitled "Summary of Work by Cable Layout Plans".

The items listed above are for informational purposes only and represent work that is necessary to complete the contract and are not necessarily pay items. See the Project Special Provisions for additional information on defined Pay Items for this contract.

Areas within this project have been determined to contain properties with documented historical significance. If it is necessary to deviate from the plans in an area identified to contain properties with historic significance, alert the engineer to contact Environmental Analysis Unit – Historic Architecture Group of North Carolina Department of Transportation for an effects determination before proceeding.

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

Summary of Work

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
DocuSigned by:
3/13/2025
DATE

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.3

Summary of Work by Intersections

Reference Information						Signal Items																				Power Service				
	NCDOT / City Signal Inv. No.	Intersection Name	Cable Routing Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	CONTROLLERS WITH CABINET (TYPE 2070LX, BASE MOUNTED)	CONTROLLERS WITH CABINET (TYPE 2070LX, POLE MOUNTED)	DETECTOR CARD (TYPE 170)	SIGNAL CABINET FOUNDATION	TERMINAL SPLICE CABINET	BEACON CONTROLLER ASSEMBLY & CABINET (TYPE F1)	MODIFY FOUNDATION FOR CONTROLLER CABINET	CABINET BASE EXTENDER	VEHICLE SIGNAL HEAD (8", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 4 SECTION)	VEHICLE SIGNAL HEAD (12", 5 SECTION)	SIGNAL CABLE	UNPAVED TRENCHING (1)(2")	DIRECTIONAL DRILL (1)(2")	TYPE II PEDESTAL WITH FOUNDATION	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service
25	04-0330	SR 1192 (Hines Street) at Deans Street/Atlantic Christian College Drive	SCP 89.0	Sig 26.0	Y		1	5							1	1		280	460	70			8	170	1990						
26	04-0331	SR 1192 (Hines Street) at Park Avenue	SCP 90.0	Sig 27.0	Y	1		4											380	190			5	240	1900						
27	04-0332	SR 1192 (Hines Street) at SR 1184 (Tarboro Street)	SCP 63.0	Sig 28.0	Y	1		9																	780						
28	04-0334	SR 1192 (Hines Street) at Lodge Street	SCP 91.0	Sig 29.0		1		6							2			320							1140						
29	04-0336	SR 1377 (Nash Street) at Atlantic Christian College Drive	SCP 27.0	Sig 30.0	Y	1		2							2			300													
30	04-0343	SR 1192 (Hines Street) at SR 1670 (Pender Street) / Pender Street	SCP 92.0	Sig 31.0	Y	1		8																	910						
31	04-0351	SR 1192 (Hines Street/Nash Street) at Nash Street	SCP 34.0	Sig 32.0	Y		1	4							2	1		330						270							
32	04-0362	US 264 Alternate (Ward Boulevard) at Churchill Ave/Pike Street	SCP 49.0	Sig 33.0		1		5							1			200													
33	04-0368	US 264 Alternate/US 301 (Ward Boulevard) at Thorne Street	SCP 53.0	Sig 34.0		1		6							2			400													
34	04-0398	NC 42 (Ward Boulevard) at SR 1165 (Forest Hills Road)	SCP 24.0	Sig 35.0																											
35	04-0452	NC 42 (Tarboro Street) at Wilson Medical Center / Medical Cut-through	SCP 60.0	Sig 36.0		1		6							2			330													
36	04-0454	US 264 Alternate/US 301 (Ward Boulevard) at Lane Street	SCP 56.0	Sig 37.0		1		8																							
37	04-0462	SR 1320 (Airport Boulevard) at Airport Drive	SCP 17.0	Sig 38.0		1		5							3			440							990						
38	04-0478	US 264 Alternate (Raleigh Road Parkway) at SR 1320 (Airport Boulevard) / SR 1158 (Airport Boulevard)	SCP 5.0	Sig 39.0		1		12																							
39	04-0488	NC 42/NC 58 (Ward Boulevard) at SR 1323 (Tilghman Road)	SCP 76.0	Sig 40.0		1		6							4			620								1					
40	04-0515	SR 1165 (Forest Hills Road) at SR 1163 (Downing Street)	SCP 44.0	Sig 41.0		1		10																	1100	1					
41	04-0593	US 264 Alternate (Raleigh Road Parkway) at SR 1001 (Lamm Road)	SCP 2.0	Sig 42.0		1		8							2			400								1					
42	04-0601	US 264 Alternate/NC 42 (Ward Boulevard) at Parkwood Boulevard/Lillian Road	SCP 47.0	Sig 43.0		1		7																	1100						
43	04-0602	NC 42 (Tarboro Street) at Bynum School Drive/Parkwood Boulevard	SCP 61.0	Sig 44.0		1		7							5			200							920	2					
44	04-0637	NC 42/NC 58 (Ward Boulevard) at SR 1326 (Corbett Avenue)	SCP 77.0	Sig 45.0		1		6							2			320							1090	1					
45	04-0648	NC 42 (Tarboro Street) at Glendale Drive	SCP 59.0	Sig 46.0		1		9																	950						
46	04-0661	NC 42/NC 58 (Ward Boulevard) at SR 1356 (Raleigh Road Parkway)	SCP 78.0	Sig 47.0		1		4																							
47	04-0669	NC 42 (Herring Avenue) at SR 1328 (Firestone Parkway)/Entrance To City Of Wilson Operation Center	SCP 74.0	Sig 48.0		1		6							1			110													
48	04-0686	US 301 at SR 1516 (Marlow Street)/Fikewood Shopping Center	SCP 57.0	Sig 49.0		1		7							2			350													

Work shown on this sheet is for the upgrade of the traffic signals, including installation of new controllers and cabinets, new or modified foundations, electrical service and miscellaneous signal related items. Additional information can be found in the signal plans. Work to be done for fiber-optic cable routing and interconnection is shown on the cable layout plans and on the sheets entitled "Summary of Work by Cable Layout Plans".

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

Summary of Work

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 3/13/2025
DATE

12/MAR/2025 14:16
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.4

Summary of Work by Intersections

Reference Information						Signal Items																				Power Service				
	NCDOT / City Signal Inv. No.	Intersection Name	Cable Routing Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	CONTROLLERS WITH CABINET (TYPE 2070LX, BASE MOUNTED)	CONTROLLERS WITH CABINET (TYPE 2070LX, POLE MOUNTED)	DETECTOR CARD (TYPE 170)	SIGNAL CABINET FOUNDATION	TERMINAL SPLICE CABINET	BEACON CONTROLLER ASSEMBLY & CABINET (TYPE F1)	MODIFY FOUNDATION FOR CONTROLLER CABINET	CABINET BASE EXTENDER	VEHICLE SIGNAL HEAD (8", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 4 SECTION)	VEHICLE SIGNAL HEAD (12", 5 SECTION)	SIGNAL CABLE	UNPAVED TRENCHING (1)(2")	DIRECTIONAL DRILL (1)(2")	TYPE II PEDESTAL WITH FOUNDATION	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service
49	04-0688	SR 1136 (Old Raleigh Road) at SR 1001 (Lamm Road)	SCP 79.0	Sig 50.0			1	5							2	1		490													
50	04-0689	NC 58 (Nash Street) at SR 1320 (Airport Boulevard)/SR 1332 (Lake Wilson Road)	SCP 19.0	Sig 51.0		1		11																							
51	04-0699	NC 58 (Nash Street) at SR 1382 (Packhouse Road)/Saint Andrews Drive	SCP 22.0	Sig 52.0		1		7							1			120	300	80			4	100	1180						
52	04-0738	NC 58 (Nash Street) at Brentwood Center Lane	SCP 23.0	Sig 53.0		1		6																							
53	04-0783	NC 42 (Herring Avenue) at SR 1327 (London Church Road)	SCP 73.0	Sig 54.0		1		6							3			520							1050						
54	04-0784	US 264 Alternate (Raleigh Road Parkway) at Glendale Drive/Lakeside Drive	SCP 11.0	Sig 55.0		1		6							1	1		200							1380						
55	04-0785	SR 1602 (Stantonsburg Road) at SR 1607 (Charleston Street)	SCP 93.0	Sig 56.0		1		4							3			500													
56	04-0791	NC 42/NC 58 (Ward Boulevard) at Brentwood Drive	SCP 75.0	Sig 57.0		1		4							4			510													
57	04-0792	NC 42 at SR 1158 (Airport Boulevard)	SCP 13.0	Sig 58.0		1		4							3			330							1070						
58	04-0862	NC 42 (Ward Boulevard) at Albert Ave/Canal Drive	SCP 46.0	Sig 59.0		1		4							2			360						90	350						
59	04-0895	NC 42 at SR 1001 (Lamm Road)/SR 1162 (Quaker Road)	SCP 80.0	Sig 60.0		1		6							2			600	590				4	180	2240						
60	04-0924	US 264 Alternate (Raleigh Road Parkway) at I-95 SB Ramp	SCP 3.0	Sig 61.0		1		4							3			390								1					
61	04-0963	US 301 at SR 1165 (Forest Hills Road)/Commercial Drive	SCP 45.0	Sig 62.0		1		9																							
62	04-0966	US 264 Alternate/NC 58 (MLK Jr. Parkway) at SR 1515 (Lipscomb Road)	SCP 36.0	Sig 63.0		1		5							3			560								1					
63	04-1008	US 264 Alternate (Raleigh Road Parkway) at Walmart/Shopping Center Entrance	SCP 10.0	Sig 64.0		1		6							1			110													
64	04-1011	US 264 Alternate/NC 58 (MLK Jr. Parkway) at US 264 Alternate/SR 1607 (Charleston Street)	SCP 37.0	Sig 65.0		1		6																		1					
65	04-1022	NC 58 at SR 1313 (Hornes Church Road)	SCP 21.0	Sig 66.0		1		5							4	1		530													
66	04-1031	SR 1165 (Forest Hills Road) at Shopping Center/Forest Hills Middle School	SCP 9.0	Sig 67.0		1		6							1			90													
67	04-1032	US 264 Alternate (Raleigh Road Parkway) at SR 1157 (Merck Road)/SR 1309 (Bloomery Road)	SCP 4.0	Sig 68.0		0		0							2			470													
68	04-1039	SR 1163 (Downing Street) at Glendale Drive	SCP 64.0	Sig 69.0		1		6							2			280													
69	04-1044	SR 1165 (Forest Hills Road) at Wooten Boulevard	SCP 43.0	Sig 70.0		1		7																							
70	04-1066	SR 1165 (Forest Hills Road) at Westwood Avenue	SCP 40.0	Sig 71.0		1		8											80					200	1290						
71	04-1073	SR 1165 (Forest Hills Road) at Canal Drive	SCP 39.0	Sig 72.0			1	5							4	1		600													
72	04-1143	SR 1158 (Airport Boulevard) at SR 1157 (Merck Road)	SCP 14.0	Sig 73.0		1		6							3			520													

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Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Summary of Work

Division 4 | Wilson County | Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
BDE4832DCFB4482
3/13/2025
DATE

12/16/2024 3:45:45 PM
jtstiff@atkinsglobal.com
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.5

Summary of Work by Intersections

	Reference Information					Signal Items																					Power Service				
	NCDOT / City Signal Inv. No.	Intersection Name	Cable Routing Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	CONTROLLERS WITH CABINET (TYPE 2070LX, BASE MOUNTED)	CONTROLLERS WITH CABINET (TYPE 2070LX, POLE MOUNTED)	DETECTOR CARD (TYPE 170)	SIGNAL CABINET FOUNDATION	TERMINAL SPLICE CABINET	BEACON CONTROLLER ASSEMBLY & CABINET (TYPE F1)	MODIFY FOUNDATION FOR CONTROLLER CABINET	CABINET BASE EXTENDER	VEHICLE SIGNAL HEAD (8", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 4 SECTION)	VEHICLE SIGNAL HEAD (12", 5 SECTION)	SIGNAL CABLE	UNPAVED TRENCHING (1)(2")	DIRECTIONAL DRILL (1)(2")	TYPE II PEDESTAL WITH FOUNDATION	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service
73	04-1183	US 264 Alternate (Raleigh Road Parkway) at Wolf Trap Drive	SCP 7.0	Sig 74.0		1		7							1			110													
74	04-1185	US 301 at US 117/SR 1100 (St. Mary's Church Road)	SCP 86.0	Sig 75.0		1		9							2			420								1					
75	04-1186	US 301 at I-587 EB/I-795 SB/US 264 EB Ramps	SCP 85.0	Sig 76.0		1		9							4	1		900								2					
76	04-1187	US 301 at I-587 WB/US 264 WB Ramps	SCP 84.0	Sig 77.0		1		7							2	1		460								1					
77	04-1213	SR 1165 (Forest Hills Road) at Entrance to Lowe's/Westwood Shopping Center	SCP 40.0	Sig 78.0		1		6																	1010						
78	04-1256	NC 42 at I-587 EB/I-795 SB/US 264 EB Ramps	SCP 81.0	Sig 79.0		1		4							2			230							1190						
79	04-1282	US 301 at I-795 NB Ramps	SCP 87.0	Sig 80.0		1		9							5	1		1250								1					
80	04-1304	US 264 Alternate (Raleigh Road Parkway) at Westpoint Shopping Center/Gateway Plaza Shopping Center	SCP 8.0	Sig 81.0		1		8							1			260								2					
81	04-1328	US 264 Alternate (Raleigh Road Parkway) at Heritage Crossing/Belle Meade Commons	SCP 6.0	Sig 82.0		1		7							2			400													
82	04-1357	SR 1165 (Forest Hills Road) at City of Wilson Fire Station 2	SCP 41.0	Sig 83.0		1		0																							
83	04-1372	US 264 Alternate (Raleigh Road Parkway) at Heritage Drive West	SCP 6.0	Sig 84.0		1		5							3		1	560													
84	04-1457	SR 1320 (Airport Road) at Chelsea Drive - FUTURE	SCP 16.0																												
85	04-1458	SR 1320 (Airport Road) at SR 1316 (Jetstream Drive) - FUTURE	SCP 18.0																												
86	04-1460	SR 1158 (Airport Boulevard) at Heritage Crossing Mall / Site Driveway - FUTURE	SCP 15.0																												
87	04-1469	SR 1377 (Nash Street) at Forest Hills Road - FUTURE	SCP 24.0																												
88	COW-01	Goldsboro St at Barnes St	SCP 67.0	Sig 85.0	Y		1	1																							
89	COW-02	Goldsboro St at Green St	SCP 68.0	Sig 86.0	Y		1	2																							
90	COW-03	Goldsboro St at Vance St	SCP 69.0	Sig 87.0	Y	1		1																							
91	COW-04	Goldsboro St at Nash Street	SCP 30.0	Sig 88.0	Y	1		5																							
92	COW-05	Tarboro St at Nash Street	SCP 29.0	Sig 89.0	Y	1		8																							
93	COW-06	Pine St at Nash Street	SCP 28.0	Sig 90.0	Y	1		8															200	80							
94	COW-07	Nash St at Lodge St	SCP 32.0	Sig 91.0	Y	1						1						180		60		8			180		1	1	1	3	1
95	COW-08	Nash St at Douglas St	SCP 31.0	Sig 92.0		1						1										8					1	1	1	3	1
96	COW-10	Pender St at Nash St	SCP 33.0	Sig 93.0	Y	1						1															1	1	1	3	1

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

Summary of Work

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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3/13/2025
DATE

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 1.6

Summary of Work by Intersections

Reference Information						Signal Items																					Power Service				
	NCDOT / City Signal Inv. No.	Intersection Name	Cable Routing Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	CONTROLLERS WITH CABINET (TYPE 2070LX, BASE MOUNTED)	CONTROLLERS WITH CABINET (TYPE 2070LX, POLE MOUNTED)	DETECTOR CARD (TYPE 170)	SIGNAL CABINET FOUNDATION	TERMINAL SPLICE CABINET	BEACON CONTROLLER ASSEMBLY & CABINET (TYPE F1)	MODIFY FOUNDATION FOR CONTROLLER CABINET	CABINET BASE EXTENDER	VEHICLE SIGNAL HEAD (8", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 3 SECTION)	VEHICLE SIGNAL HEAD (12", 4 SECTION)	VEHICLE SIGNAL HEAD (12", 5 SECTION)	SIGNAL CABLE	UNPAVED TRENCHING (1)(2")	DIRECTIONAL DRILL (1)(2")	TYPE II PEDESTAL WITH FOUNDATION	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service
97	COW-11	Glendale Drive at Westwood Avenue	SCP 94.0	Sig 95.0		1		6																							
98	COW-12	Glendale Drive at Wooten Boulevard / Wilson Medical Center	SCP 95.0	Sig 96.0		1		2							1			180													
99	COW-13	Atlantic Christian College Drive at Broad Street		Sig 97.0				0			1																				
		Total				81	10	552	2	2	1	3	2	1	115	11	1	20280	2300	520	8	24	31	1560	28890	16	3	3	3	9	3

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Summary of Work

Division 4 Wilson County Wilson

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PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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DATE

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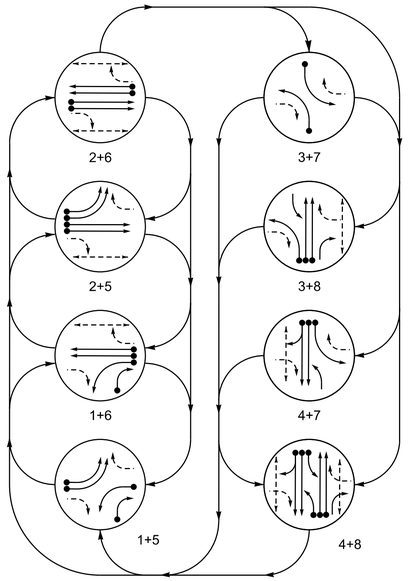
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 2.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

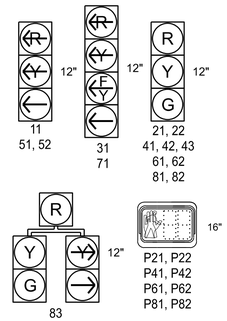
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	F Y	F Y	~~R~~
41, 42, 43	R	R	R	R	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	F Y	←	F Y	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
83	R/→	R/→	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



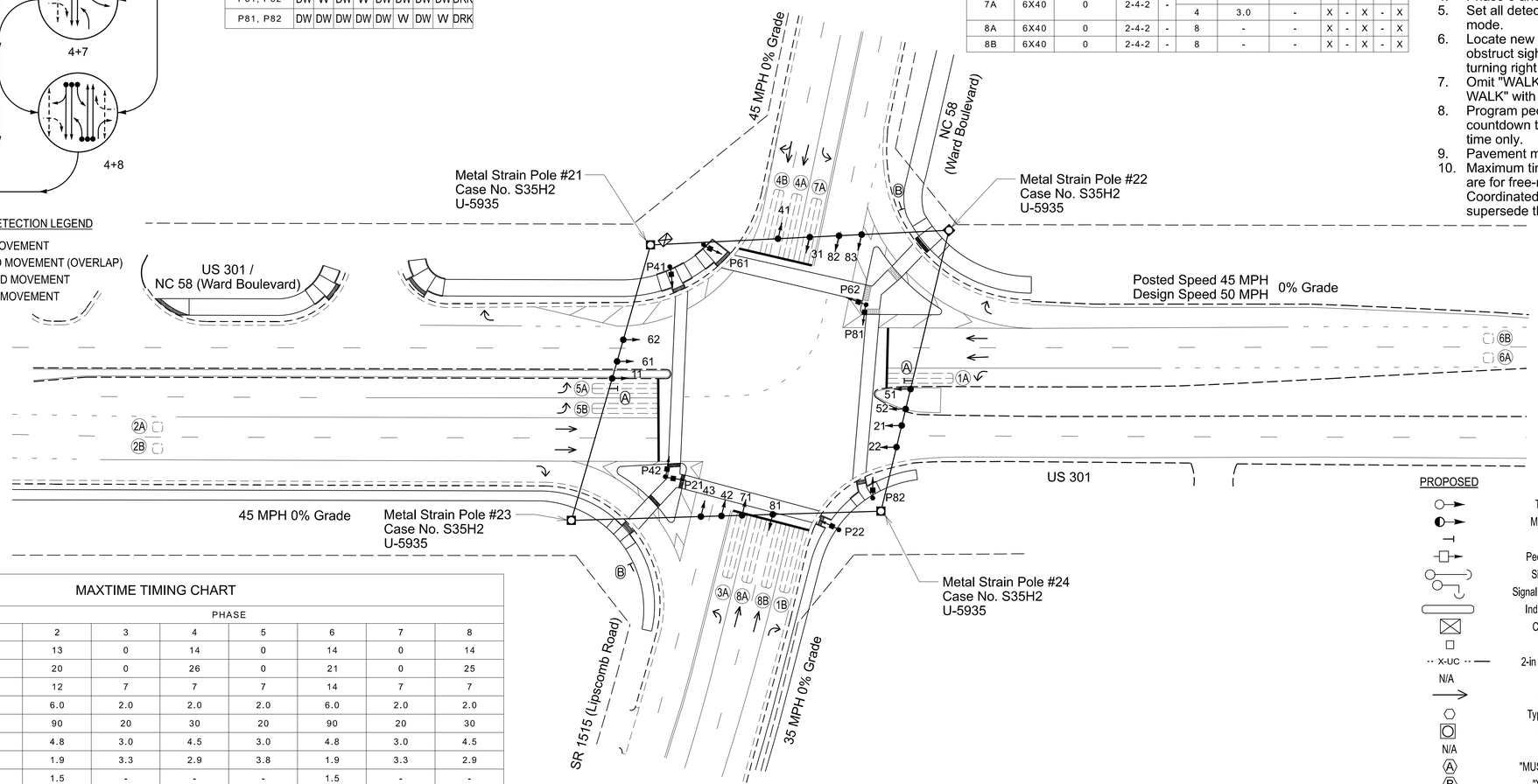
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
1B	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	15.0	-	X	-	X	-	X
					8	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
5B	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	360	5	-	6	-	-	X	X	X	-	X
6B	6X6	360	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	15.0	-	X	-	X	-	X
					4	3.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
	Metal Strain Pole	
N/A	Curb Ramp	
A	"MUST YIELD" U-turn Sign	A
B	"YIELD" Sign (R1-2)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	13	0	14	0	14	0	14
Ped Clear	0	20	0	26	0	21	0	25
Min Green *	7	12	7	7	7	14	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow Change	3.0	4.8	3.0	4.5	3.0	4.8	3.0	4.5
Red Clear	3.6	1.9	3.3	2.9	3.8	1.9	3.3	2.9
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	40	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	6	-	7	-	7	-	7
Non Lock Detector	X	-	X	X	X	-	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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 1"=40' (0 – 40)

US 301/ NC 58 (Ward Boulevard)
at
SR 1515 (Lipscomb Road)/
NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F6FC87CC66564F1...
DATE

SIG. INVENTORY NO. 04-0161

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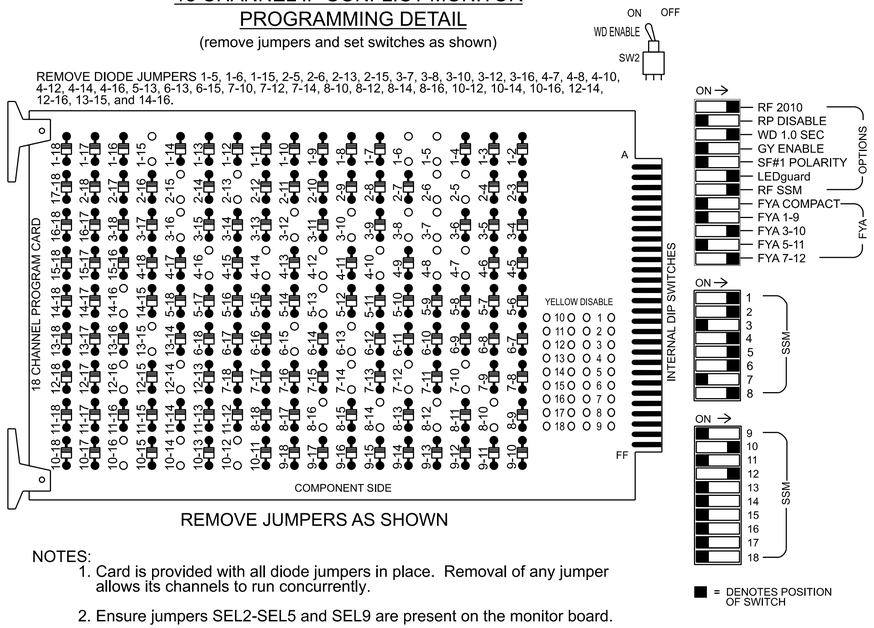
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 2.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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.

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, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, AUX S2, AUX S5
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail 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.	11	83	21,22	P21, P22	31★	41,42,43	P41, P42	51,52	61,62	P61, P62	71★	81,82,83	P81, P82	NU	31★	NU	NU	71★	NU
RED			128			101			134			107							
YELLOW			129		*	102			135		*	108							
GREEN			130			103			136			109							
RED ARROW	125							131							A124			A101	
YELLOW ARROW	126	126						132							A125			A102	
FLASHING YELLOW ARROW															A126			A103	
GREEN ARROW	127	127			118			133			124								
✋			113			104			119			110							
🚶			115			106			121			112							

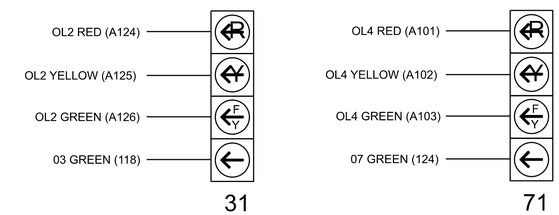
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	15.0	-	X	-	X	-
				-	30	8	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
5B	TB3-5,6	J2U	40	2	16	5	-	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
6B	TB3-11,12	J3L	77	43	19	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	15.0	-	X	-	X	-
				-	32	4	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	-	X	-	X	-
8B	TB5-11,12	J6L	46	8	23	8	-	-	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						

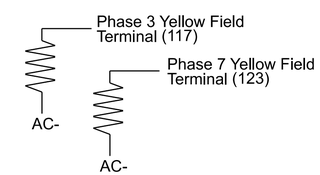
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0161
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

US 301/ NC 58 (Ward Boulevard) at SR 1515 (Lipscomb Road)/ NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

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

PLAN DATE: November 2024	REVIEWED BY: TJ Williams
PREPARED BY: MF Evans	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams (PECF1FC0B9B41...) 2/28/2025
DATE

SIG. INVENTORY NO. 04-0161

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 2.2

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	FYA 4 - Section	Off	FYA 4 - Section
Included Phases	-	4	-	8
Modifier Phases	-	3	-	7
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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0161
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301/ NC 58 (Ward Boulevard)
at
SR 1515 (Lipscomb Road)/
NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0161

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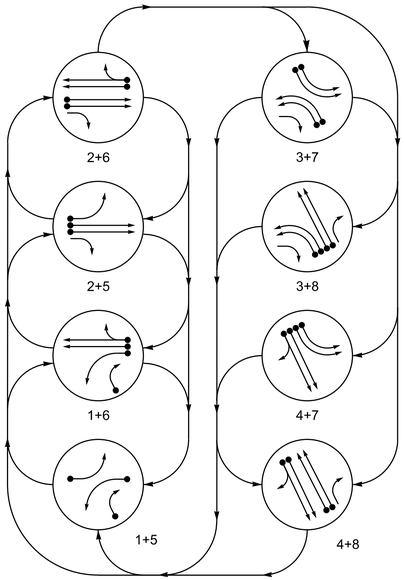
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 3.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	↚	↚	R̸	R̸	R̸	R̸	R̸	R̸	R̸
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R/→	R/→	R	R	R
31, 32	R̸	R̸	R̸	R̸	↚	↚	R̸	R̸	R̸
41, 42	R	R	R	R	R	R	G	G	R
51	↚	R̸	↚	R̸	R̸	R̸	R̸	R̸	R̸
61, 62	R	G	R	G	R	R	R	R	R
71, 72	R̸	R̸	R̸	R̸	↚	R̸	↚	R̸	R̸
81	R	R	R	R	R	G	R	G	R
82	R/→	R/→	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

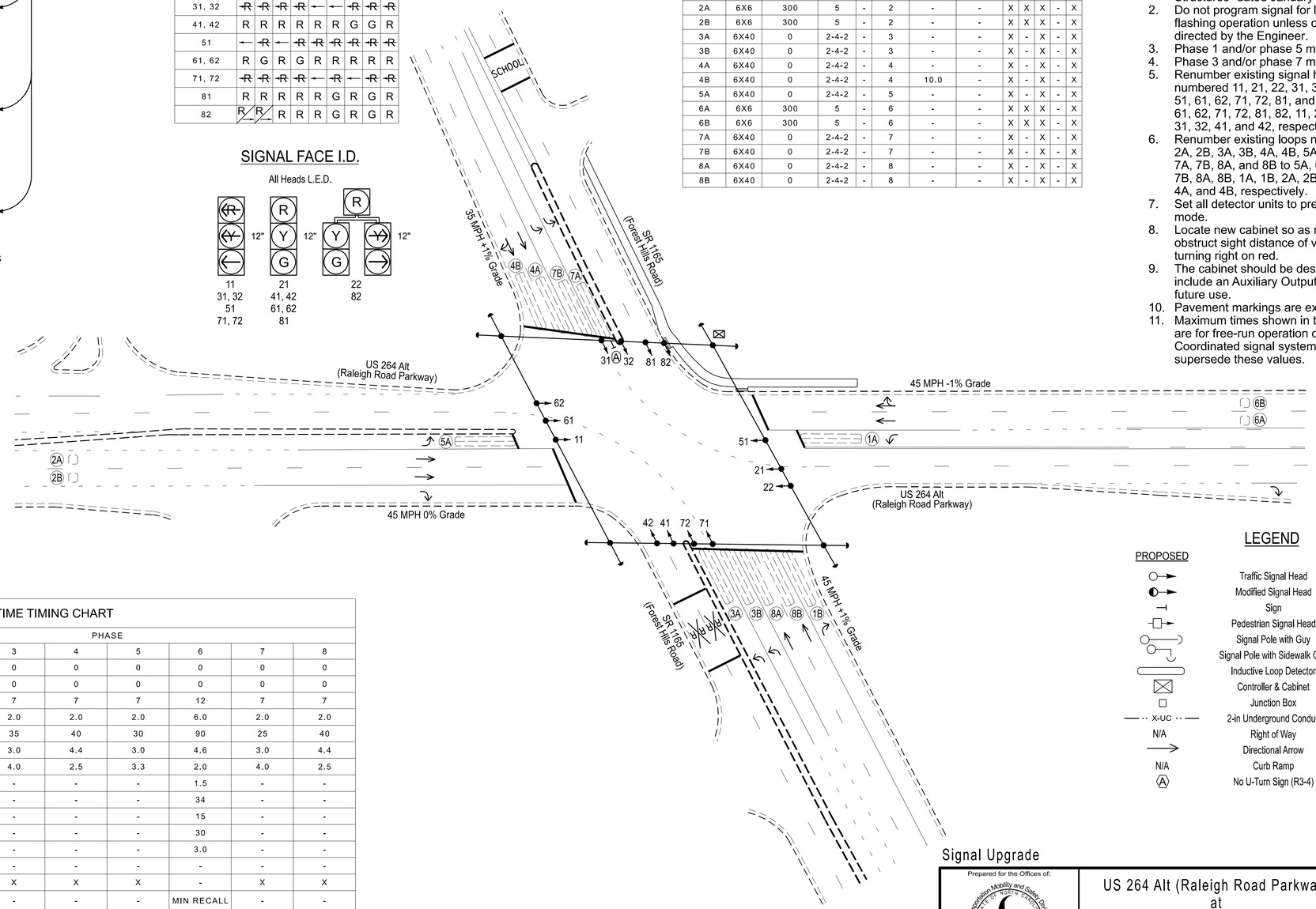
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	3.0	-	X	-	X	-	X
1B	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
7B	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Renumber existing signal heads numbered 11, 21, 22, 31, 32, 41, 42, 51, 61, 62, 71, 72, 81, and 82 to 51, 61, 62, 71, 72, 81, 82, 11, 21, 22, 31, 32, 41, and 42, respectively.
6. Renumber existing loops numbered 1A, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, and 8B to 5A, 6A, 6B, 7A, 7B, 8A, 8B, 1A, 1B, 2A, 2B, 3A, 3B, 4A, and 4B, respectively.
7. Set all detector units to presence mode.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. The cabinet should be designed to include an Auxiliary Output file for future use.
10. Pavement markings are existing.
11. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	No U-Turn Sign (R3-4)	A

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	25	90	35	40	30	90	25	40
Yellow Change	3.0	4.6	3.0	4.4	3.0	4.6	3.0	4.4
Red Clear	3.3	2.0	4.0	2.5	3.3	2.0	4.0	2.5
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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

SCALE 0 40 1"=40'

US 264 Alt (Raleigh Road Parkway)
at
SR 1165 (Forest Hills Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DocuSigned by: 9C3B8A87A7B4AC0... DATE

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jstiff@atkinsglobal.onmicrosoft.com
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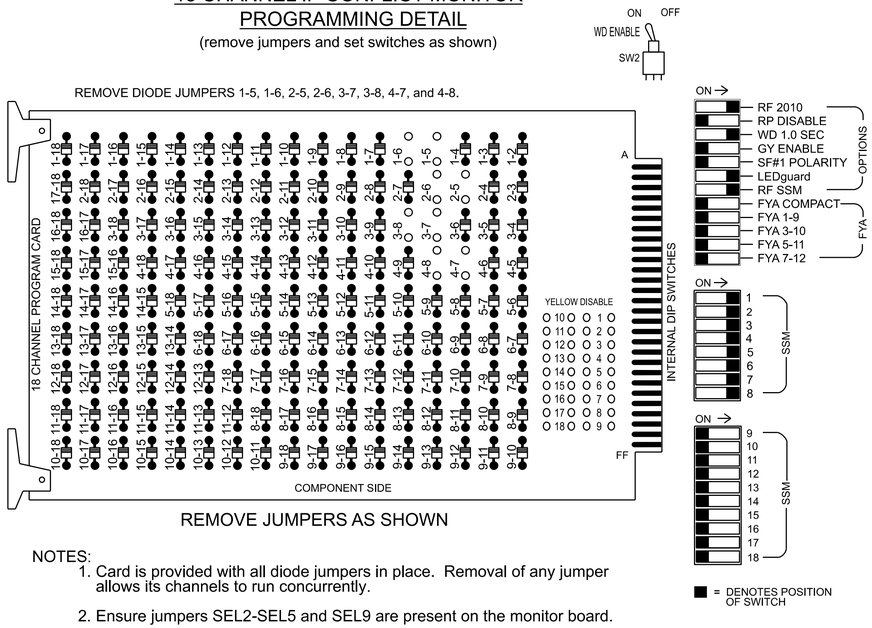
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 3.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	82	21,22	NU	22	31,32	41,42	NU	51	61,62	NU	71,72	81,82	NU	NU	NU	NU	NU	NU	NU
RED			128				101			134			107							
YELLOW			129				102			135			108							
GREEN			130				103			136			109							
RED ARROW	125					116			131			122								
YELLOW ARROW	126	126			117	117			132			123								
GREEN ARROW	127	127			118	118			133			124								

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2A	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø 2 2B		Ø 3 3B	Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED		Ø 6 6B		Ø 7 7B	Ø 8 8B								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	-	-	X	-	X	-
3B	TB4-7,8	I5L	58	20	7	3	-	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	-	-	X	-	X	-
7B	TB5-7,8	J5L	57	19	21	7	-	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	-	X	-	X	-
8B	TB5-11,12	J6L	46	8	23	8	-	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0162
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

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

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

US 264 Alt (Raleigh Road Parkway)
at
SR 1165 (Forest Hills Road)

Division 4 Wilson County Wilson

PLAN DATE: December 2024 REVIEWED BY: JT Stiff
PREPARED BY: MF Evans REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
NC DOMAIN CONTROLLER DATE

SIG. INVENTORY NO. 04-0162

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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STIFF6885

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 4.0

PHASING DIAGRAM

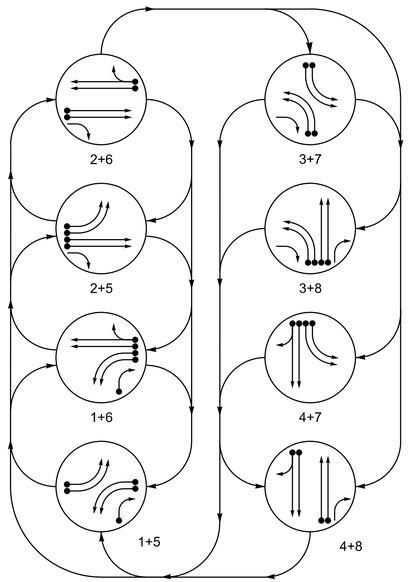


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11, 12	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R/→	R/→	R	R	R
31, 32	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81	R	R	R	R	R	G	R	G	R
82	R/→	R/→	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

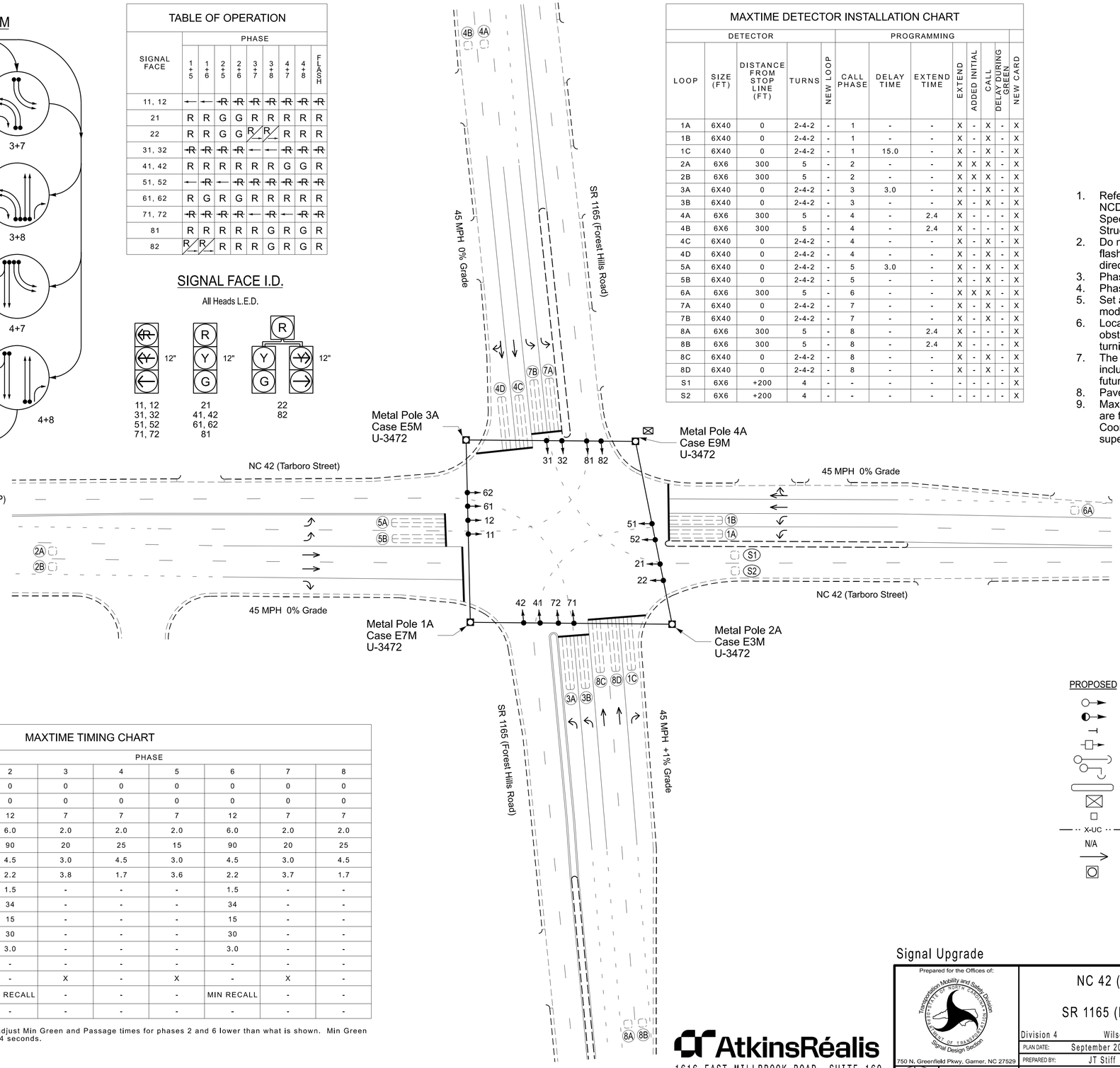
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
1B	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
1C	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
4A	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4B	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4C	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4D	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	3.0	-	X	-	X	-	X
5B	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
7B	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
8A	6X6	300	5	-	8	-	2.4	X	-	-	-	X
8B	6X6	300	5	-	8	-	2.4	X	-	-	-	X
8C	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8D	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
S1	6X6	+200	4	-	-	-	-	-	-	-	-	X
S2	6X6	+200	4	-	-	-	-	-	-	-	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



PHASING DIAGRAM DETECTION LEGEND

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

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	15	90	20	25	15	90	20	25
Yellow Change	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Red Clear	3.7	2.2	3.8	1.7	3.6	2.2	3.7	1.7
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 42 (Tarboro Street)
at
SR 1165 (Forest Hills Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8FC57FCD8B9491...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0163

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jtstiff@atkinsglobal.com
STIF4865

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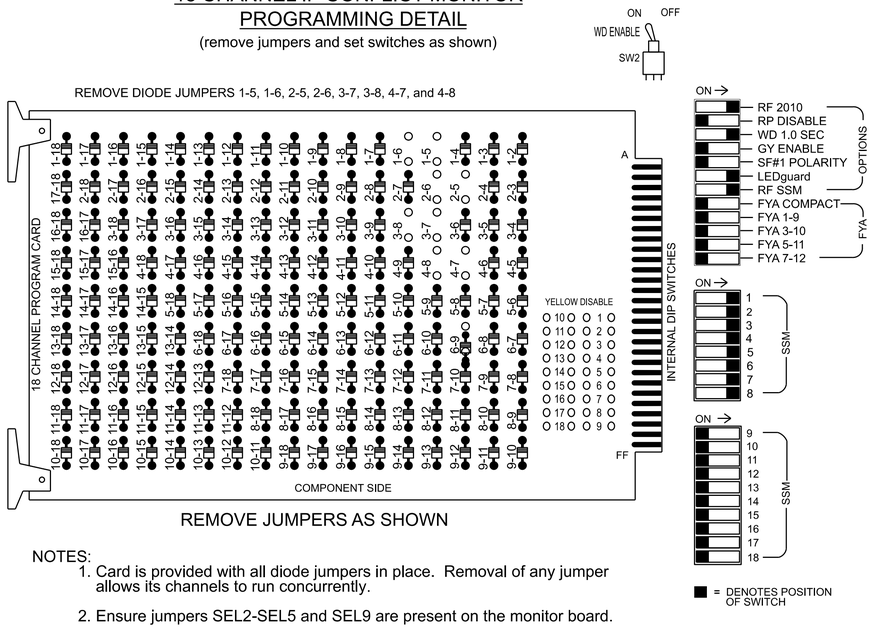
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 4.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11,12	82	21,22	NU	22	31,32	41,42	NU	51,52	61,62	NU	71,72	81,82	NU	NU	NU	NU	NU	NU	NU
RED			128				101			134			107							
YELLOW			129				102			135			108							
GREEN			130				103			136			109							
RED ARROW	125					116			131			122								
YELLOW ARROW	126	126			117	117			132			123								
GREEN ARROW	127	127			118	118			133			124								

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1C	Ø 2 2A	Ø 3 3A	Ø 3 3B	Ø 4 4A	Ø 4 4C	SLOT EMPTY	SYS. DET. S1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	Ø 1 1B	NOT USED	Ø 2 2B	NOT USED	NOT USED	Ø 4 4B	Ø 4 4D		SYS. DET. S2					ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	Ø 7 7A	Ø 8 8A	Ø 8 8C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	NOT USED		Ø 7 7B	Ø 8 8B	Ø 8 8D							

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
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
1B	TB2-3,4	I1L	56	18	1	1	-	-	X	-	X	-
1C	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	X	X	-
3A	TB4-1,2	I4U	47	9	6	3	3.0	-	X	-	X	-
3B	TB4-5,6	I5U	58	20	7	3	-	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	2.4	X	-	-	-
4B	TB4-11,12	I6L	45	7	9	4	-	2.4	X	-	-	-
4C	TB6-1,2	I7U	65	31	10	4	-	-	X	-	X	-
4D	TB6-3,4	I7L	78	44	11	4	-	-	X	-	X	-
*S1	TB6-9,10	I9U	60	22	13	SYS	-	-	-	-	-	-
*S2	TB6-11,12	I9L	62	24	14	SYS	-	-	-	-	-	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
5B	TB3-5,6	J2U	40	2	16	5	-	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	-	-	X	-	X	-
7B	TB5-7,8	J5L	57	19	21	7	-	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	2.4	X	-	-	-
8B	TB5-11,12	J6L	46	8	23	8	-	2.4	X	-	-	-
8C	TB7-1,2	J7U	66	32	24	8	-	-	X	-	X	-
8D	TB7-3,4	J7L	79	45	25	8	-	-	X	-	X	-

*System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0163
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Tarboro Street)
at
SR 1165 (Forest Hills Road)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0163

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jtsutton@ncdot.gov
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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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0163
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Tarboro Street)
at
SR 1165 (Forest Hills Road)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8BC87C0B8B481...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0163

28-FEB-2025 10:55
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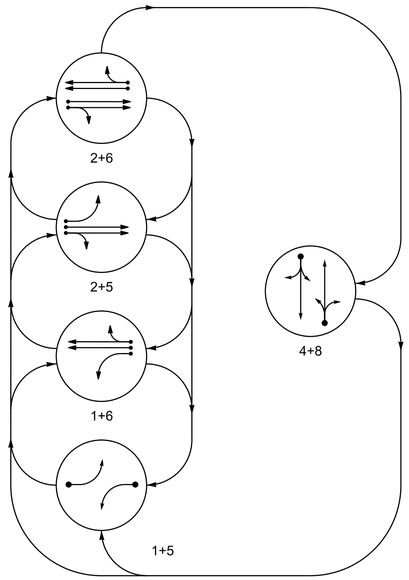
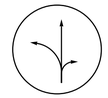
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 5.0

PHASING DIAGRAM



PREEMPTION PHASES

(Medium Priority)



PRE 2
(3+8)

SIGNAL FACE I.D.

All Heads L.E.D.

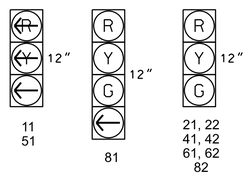


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	PRE 3	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R
41,42	R	R	R	R	G	R	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R
81	R	R	R	R	G	G ←	R
82	R	R	R	R	G	G	R

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2, 6
Delay	**
Max Presence	0
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	255*
Enter Yellow Change	25.5*
Enter Red Clear	25.5*
Track Green	0
Track Yellow Change	25.5*
Track Red Clear	25.5*
Dwell Green	**
Exit Min Green	255*
Exit Yellow Change	25.5*
Exit Red Clear	25.5*
Call Extend Time	1.0
Exit Type	EXIT PHASES
Ped Clear Through Yellow	-
Require All Red Entry	Y

* Directs controller to use default phase timing.
** See Note 9.

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
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

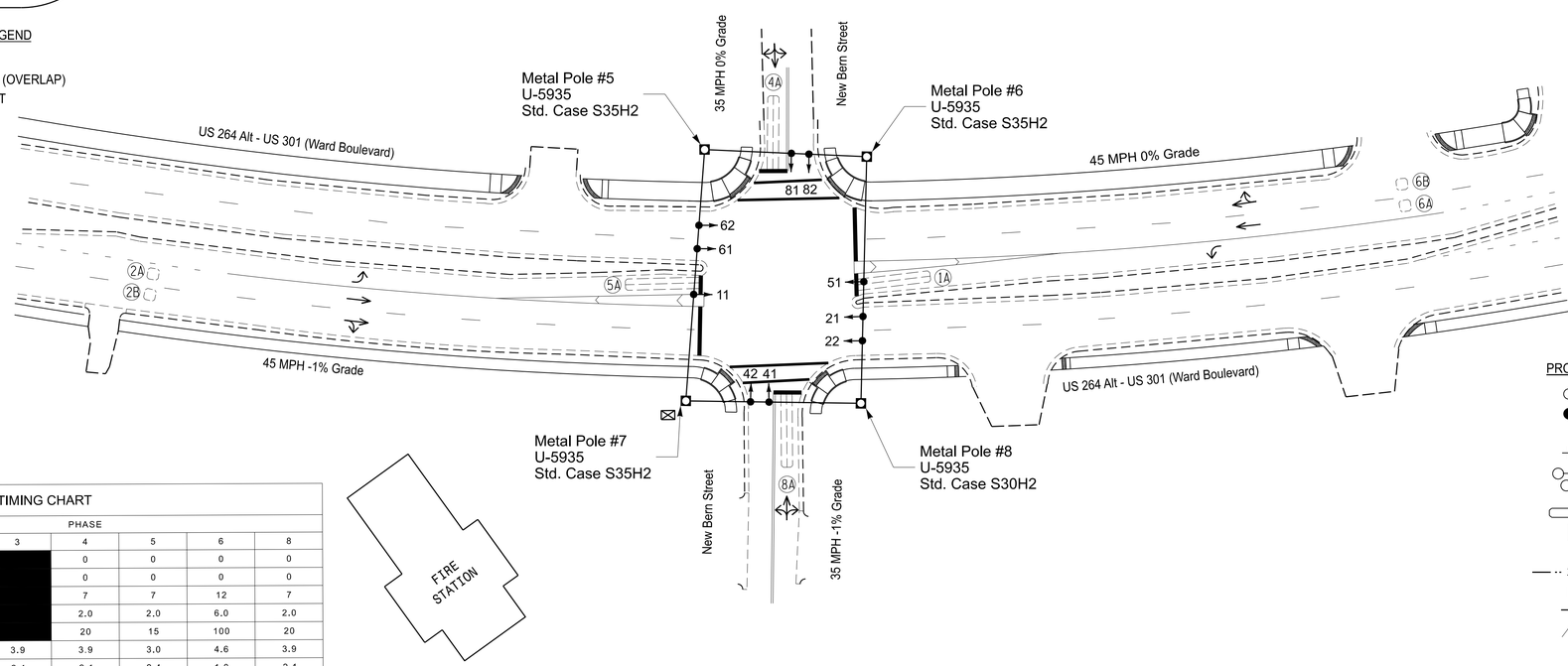
5 Phase
Fully Actuated
w/ EV Preemption
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. The cabinet should be designed to include an Auxiliary Output file for future use.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Emergency vehicle preemption switch is located in the Fire Station.
9. The Division Traffic Engineer will determine the Delay Time and Preempt Dwell Min Time for the emergency vehicle preemption timing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Curb Ramp	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	8
Walk *	0	0		0	0	0	0
Ped Clear *	0	0		0	0	0	0
Min Green *	7	12		7	7	12	7
Passage *	2.0	6.0		2.0	2.0	6.0	2.0
Max 1 *	15	100		20	15	100	20
Yellow Change	3.0	4.6	3.9	3.9	3.0	4.6	3.9
Red Clear	2.4	1.0	2.1	2.1	2.4	1.0	2.1
Added Initial *	-	1.5		-	-	1.5	-
Maximum Initial *	-	34		-	-	34	-
Time Before Reduction *	-	15		-	-	15	-
Time To Reduce *	-	50		-	-	50	-
Minimum Gap	-	3.0		-	-	3.0	-
Advance Walk	-	-		-	-	-	-
Non Lock Detector	X	-		X	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.

Signal Upgrade

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

US 264 Alt - US 301 (Ward Boulevard)
at
New Bern Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 7A69DAAD3BE34DB... 2/28/2025
DATE

SIG. INVENTORY NO. 04-0282

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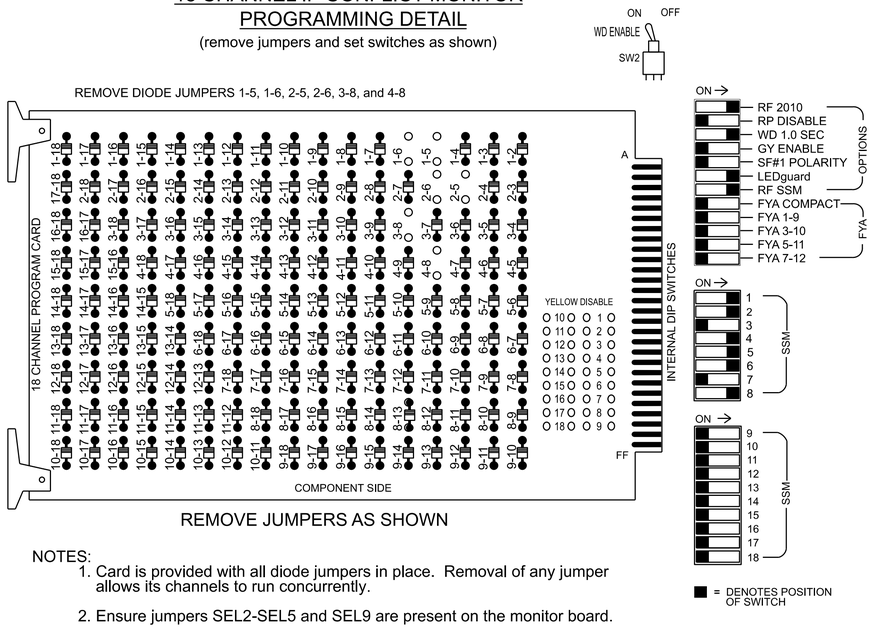
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 5.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S3*, S4, S5, S7, S8, S11
Phases Used.....1, 2, 3**, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

*Used for Fire Station Pilot Lamp
**Used during preempt only

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	PRE 2	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	FIRE PILOT LAMP	81	41,42	NU	51	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129		*	102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131											
YELLOW ARROW	126						132											
GREEN ARROW	127			118			133											
✋																		
PED YELLOW			* 114															
🚶			*															

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED
	L	NOT USED	Ø 6 6B				NOT USED								PRE2 AC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

INPUT FILE CONNECTION & PROGRAMMING CHART

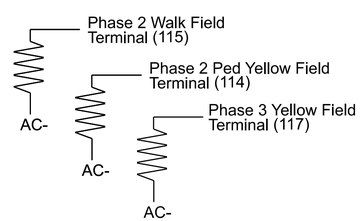
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
8A	TB5-9,10	J6U	42	4	22	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0282
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

US 264 Alt - US 301 (Ward Boulevard) at New Bern Street

Division 4 Wilson County Wilson

PLAN DATE: November 2024 REVIEWED BY: AM Encarnacion
PREPARED BY: JT Sutton REVIEWED BY: PL Alexander

REVISIONS INIT. DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER PHILLIP L. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
TABULATING NO. DATE
SIG. INVENTORY NO. 04-0282

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 5.2

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emerg Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	3,8
Dwell Peds	-
Dwell Overlaps	-
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2,6
Exit Overlaps	-
Delay	**
Call Ext Time	1.0
Max Presence	0
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	**
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	
Not Ovrd Flash	X
Not Ovrd Nxt Pre	
Require All Red Entry	X
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

** Denotes to be determined in the field

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	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Turn pilot lamp on during preemption

OUTPUT POINTS CONFIGURATION

Front Panel
Main Menu >Cabinet Configuration >Output Points

Web Interface
Home >Cabinet Configuration >Output Points

Output Point Configuration

Output Point	Description	Output Control Type	Index
33	C1-35	Global Variable	33

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0282
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt - US 301 (Ward Boulevard)
at
New Bern Street

Division 4 Wilson County Wilson

PLAN DATE: November 2024		REVIEWED BY:	AM Encarnacion
PREPARED BY: JT Sutton		REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion
7A89D4AD09E34D8...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0282

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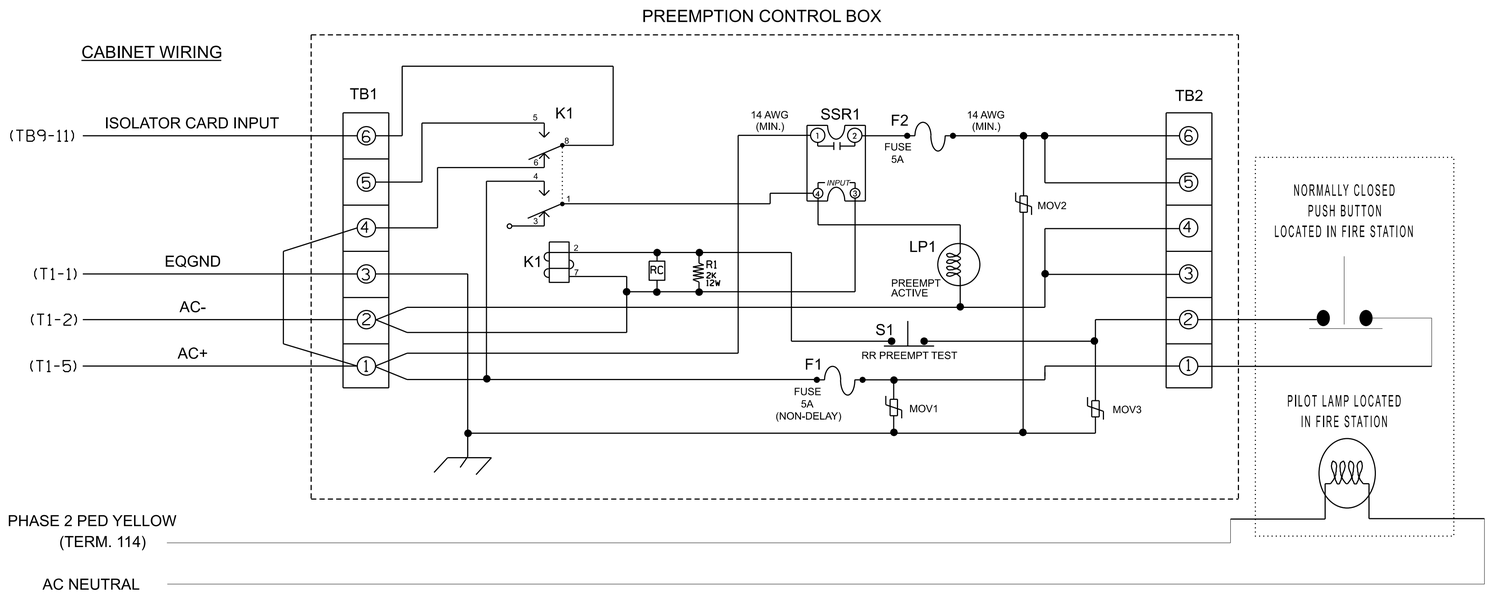
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 5.3

EV Preemption Control Box Wiring Detail

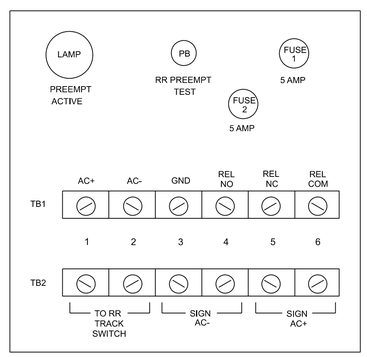
(wire as shown below)



NOTES

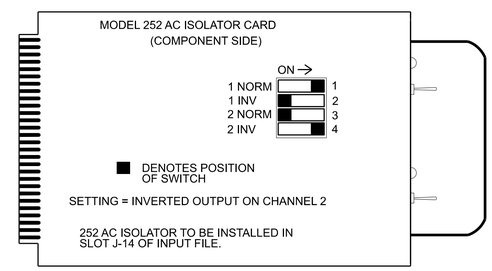
1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay 'K1' is an enclosed DPDT general purpose relay with a 120VAC coil, 10A contacts, and octal-style plug.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this, set invert dip switch on AC Isolator Card.
5. IMPORTANT!! Terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



PREEMPT 2 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0282
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 264 Alt - US 301 (Ward Boulevard)
at
New Bern Street

Division 4 | Wilson County | Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion
7A69DA4D39E34D8...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0282

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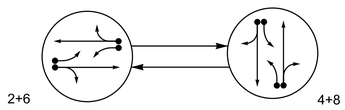
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 6.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21	F Y	~~R~~	~~R~~
22, 23	G	R	R
41	~~R~~	F Y	~~R~~
42, 43	R	G	R
61	F Y	~~R~~	~~R~~
62, 63	G	R	R
81	~~R~~	F Y	~~R~~
82, 83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

21	22, 23
41	42, 43
61	62, 63
81	82, 83

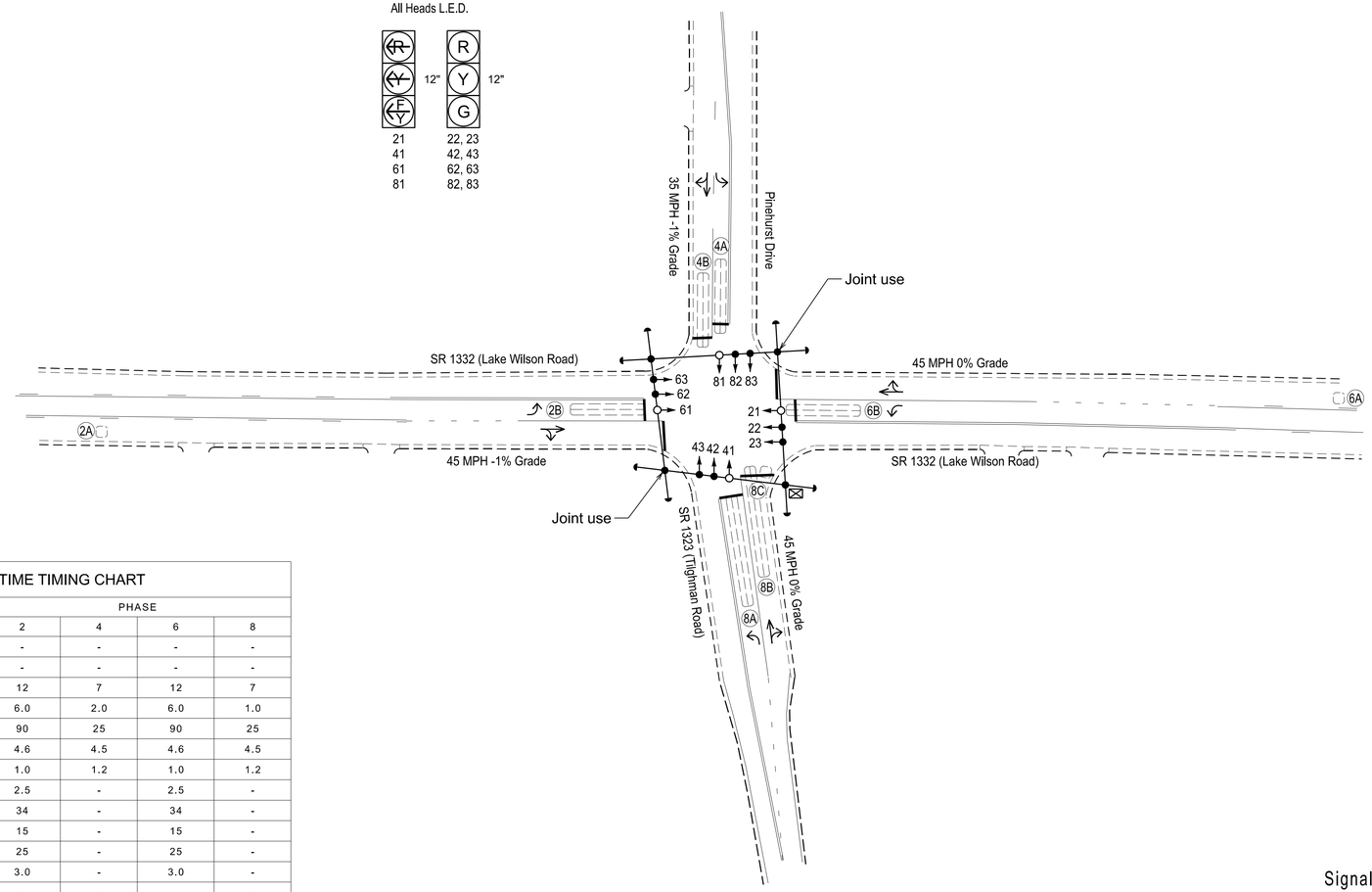
MAXTIME DETECTOR INSTALLATION CHART

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
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X40	0	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X40	+5	2-4-2	-	6	3.0	-	X	-	X	X	X
8A	6X60	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X60	+5	2-4-2	-	8	10.0	-	X	-	X	-	X
8C	6X6	+5	4	-	8	10.0	-	X	-	X	-	X

2 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 41, 42, 61, 62, 81, and 82.
4. Renumber existing signal heads numbered 21, 22, 41, 42, 61, 62, 81, and 82 to 22, 23, 42, 43, 62, 63, 82, and 83, respectively.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Min Green *	12	7	12	7
Passage *	6.0	2.0	6.0	1.0
Max 1 *	90	25	90	25
Yellow Change	4.6	4.5	4.6	4.5
Red Clear	1.0	1.2	1.0	1.2
Added Initial *	2.5	-	2.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	25	-	25	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	-	-	-	-
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1332 (Lake Wilson Road)
at
SR 1323 (Tilghman Road)/
Pinehurst Drive

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0286

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ADMINISTRATOR
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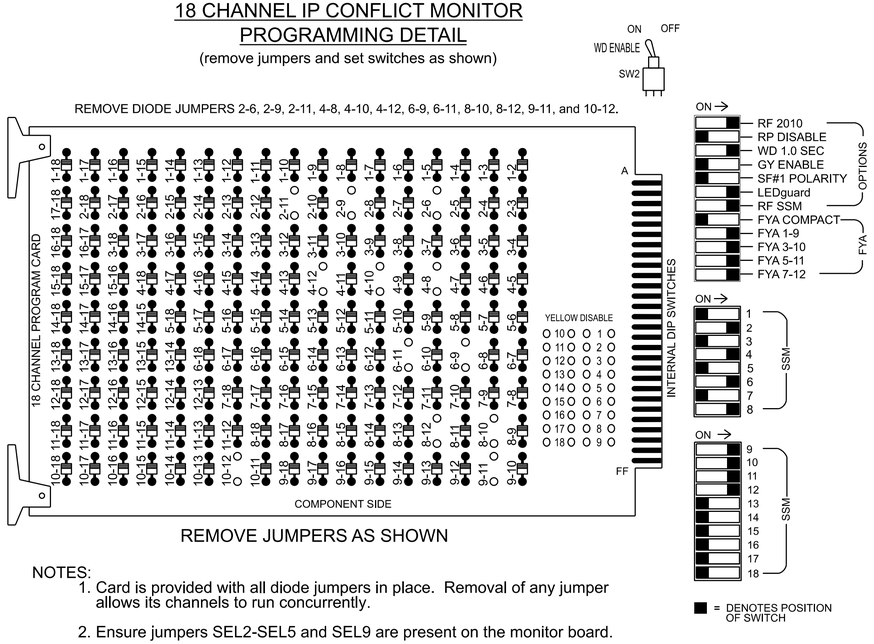
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 6.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

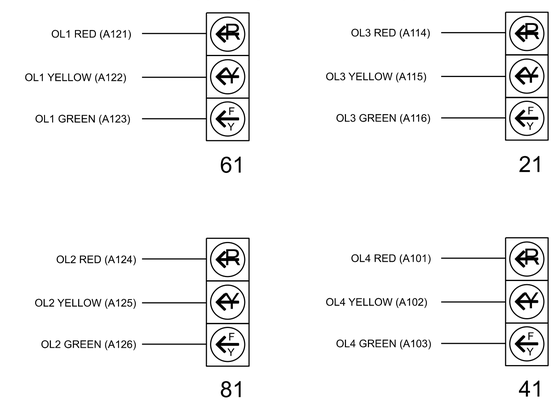
SIGNAL HEAD HOOK-UP CHART

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	22,23	NU	NU	42,43	NU	NU	62,63	NU	NU	82,83	NU	61★	81★	NU	21★	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW																		

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)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT	Ø 2	SLOT	SLOT	SLOT	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
			2A				4A								
	L	EMPTY	Ø 2	EMPTY	EMPTY	EMPTY	Ø 4	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
			2B				4B								
FILE "J"	U	SLOT	Ø 6	SLOT	SLOT	SLOT	Ø 8	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
			6A				8A	8C							
	L	EMPTY	Ø 6	EMPTY	EMPTY	EMPTY	Ø 8	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
			6B				8B								

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
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	3.0	-	X	-	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	X	-
6B	TB3-7,8	J2L	44	6	17	6	3.0	-	X	-	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	-
8C	TB7-1,2	J7U	66	32	24	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0286
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1332 (Lake Wilson Road)
at
SR 1323 (Tilghman Road)/
Pinehurst Drive

Division 4 | Wilson County | Wilson

PLAN DATE: January 2025 | REVIEWED BY: AM Encarnacion
PREPARED BY: MR Day | REVIEWED BY: PL Alexander

REVISIONS | INIT. | DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044476 ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE
SIG. INVENTORY NO. 04-0286

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 6.2

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

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	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

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.

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: 04-0286
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1332 (Lake Wilson Road)
at
SR 1323 (Tilghman Road)/
Pinehurst Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Docusigned by: Anthony Encarnacion 2/28/2025
TRANSPORTATION ENGINEER DATE
SIG. INVENTORY NO. 04-0286

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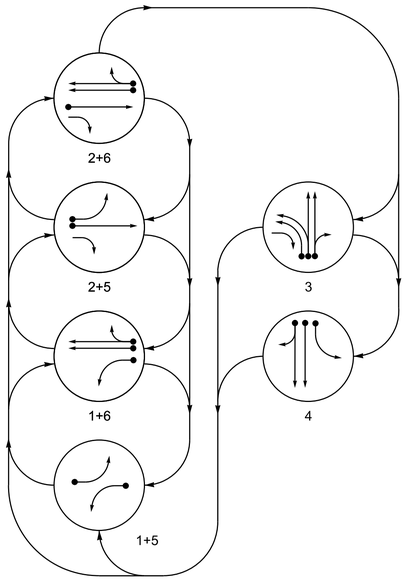
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 7.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3	4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R
22	R	R	G	G	R/—	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
32	R	R	R	R	G	R	R
33	R	R	R	R	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~
42, 43	R	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R

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
1A	6X40	0	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
3B, 3C	6X40	+5	2-4-2	-	3	-	-	X	-	X	-	X
4A, 4B	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4C	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
4D	Exist.	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6x40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A, 6B	6x6	70	4	-	6	-	-	X	-	X	-	X

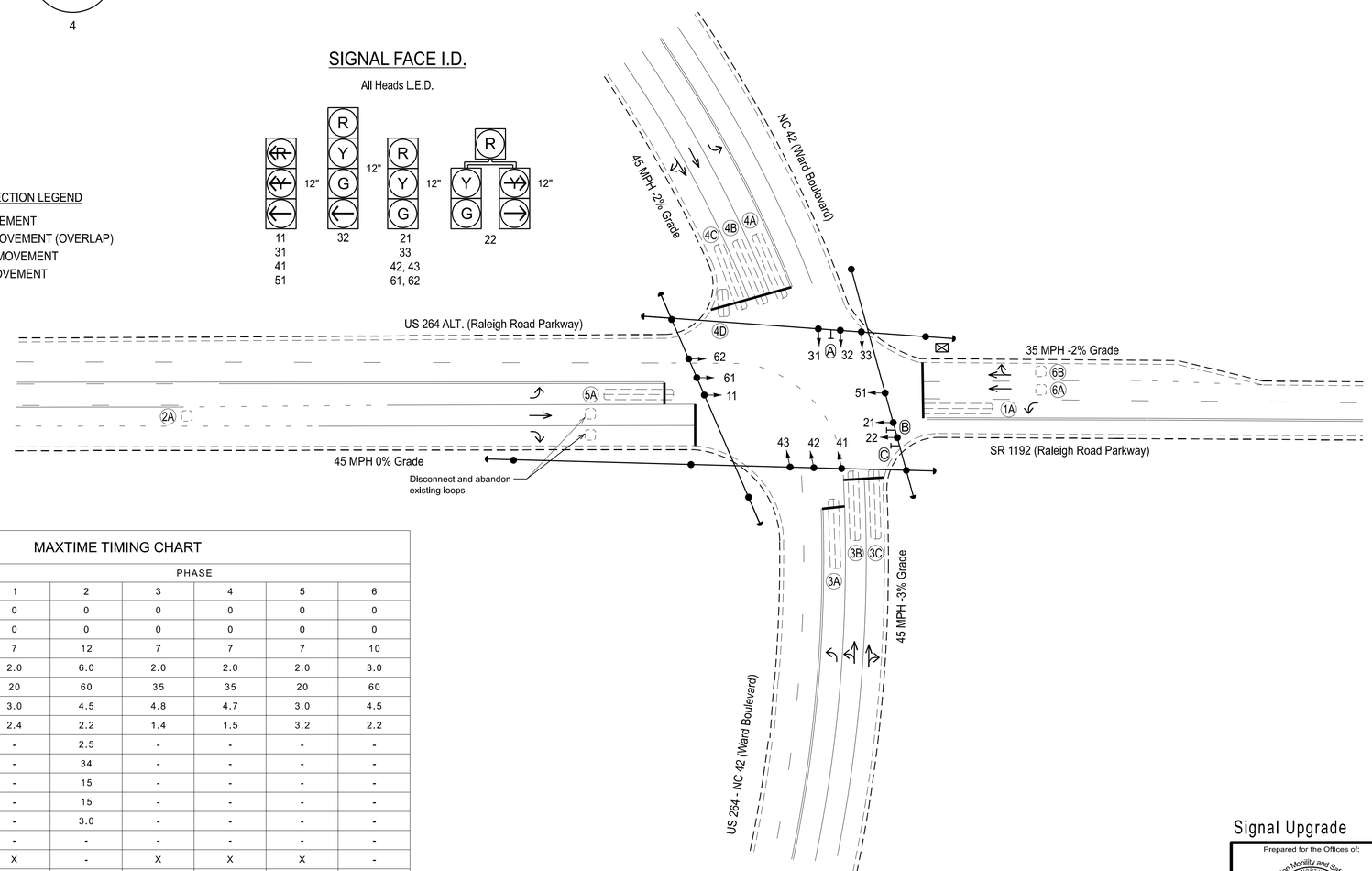
6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phases 3 and 4 may be reversed.
5. Renumber existing signal heads 33, 31, 41, and 43 to 31, 33, 43, and 41, respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. The cabinet should be designed to include an Auxiliary Output file for future use.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Comb. Left/Thru Arrow Sign (R3-6L)	A
B	"No Through Trucks" Sign	B
C	Curved Right Arrow "Only" Sign (R3-5R)	C

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	10
Passage *	2.0	6.0	2.0	2.0	2.0	3.0
Max 1 *	20	60	35	35	20	60
Yellow Change	3.0	4.5	4.8	4.7	3.0	4.5
Red Clear	2.4	2.2	1.4	1.5	3.2	2.2
Added Initial *	-	2.5	-	-	-	-
Maximum Initial *	-	34	-	-	-	-
Time Before Reduction *	-	15	-	-	-	-
Time To Reduce *	-	15	-	-	-	-
Minimum Gap	-	3.0	-	-	-	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of: Transportation Mobility and Safety Division, Signal Design Section, State of North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alternate/
SR 1192 (Raleigh Road Parkway) at
US 264 Alternate/
NC 42 (Ward Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0291

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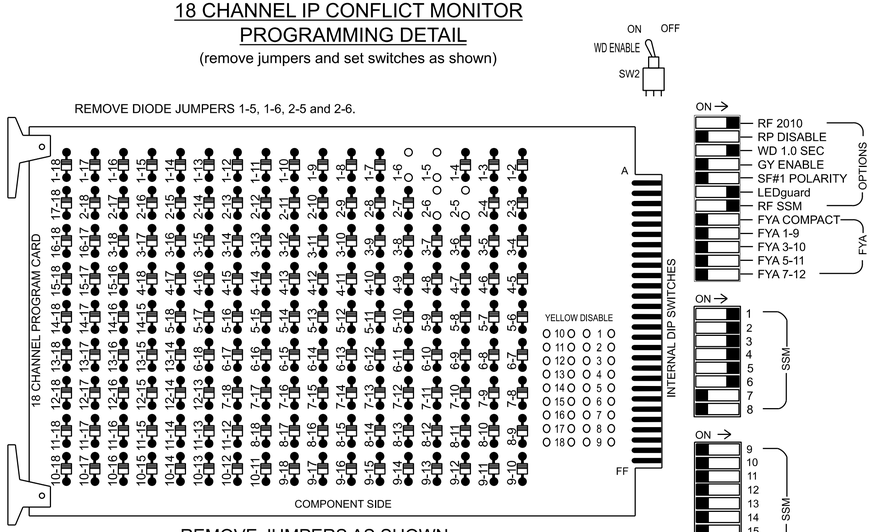
18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8
Phases Used.....1, 2, 3, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	22	31	32	33	41	42,43	NU	51	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128				116	116		101			134										
YELLOW		129				117	117		102			135										
GREEN		130				118	118		103			136										
RED ARROW	125				116			101			131											
YELLOW ARROW	126			117	117			102			132											
GREEN ARROW	127			118	118	118		103			133											

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	SLOT	Ø 3	Ø 4	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
		1A	2A	EMPTY	EMPTY	3A	4A,4B	4C	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	
	L	NOT USED	NOT USED			NOT USED	Ø 3 3B,3C	Ø 4 4D							ST DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
		5A	6A,6B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
	L	NOT USED	NOT USED												

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A, 4B	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
3B, 3C	TB4-11,12	I6L	45	7	9	3	-	-	X	-	X	-
4C	TB6-1,2	I7U	65	31	10	4	5.0	-	X	-	X	-
4D	TB6-3,4	I7L	78	44	11	4	5.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A, 6B	TB3-5,6	J2U	40	2	16	6	-	-	X	-	X	-

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: 04-0291
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail

Electrical and Programming Details For:

US 264 Alternate/
SR 1192 (Raleigh Road Parkway) at
US 264 Alternate/
NC 42 (Ward Boulevard)

Division 4 Wilson County Wilson

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

PLAN DATE: November 2024	REVIEWED BY: TJ Williams
PREPARED BY: MF Evans	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: DATE
SIG. INVENTORY NO. 04-0291

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 11:00
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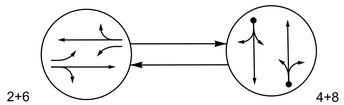
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig 8.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21	FY	~~R~~	~~R~~
22,23	G	R	R
41,42	R	G	R
61	FY	~~R~~	~~R~~
62,63	G	R	R
81,82	R	G	R

MAXTIME DETECTOR INSTALLATION CHART

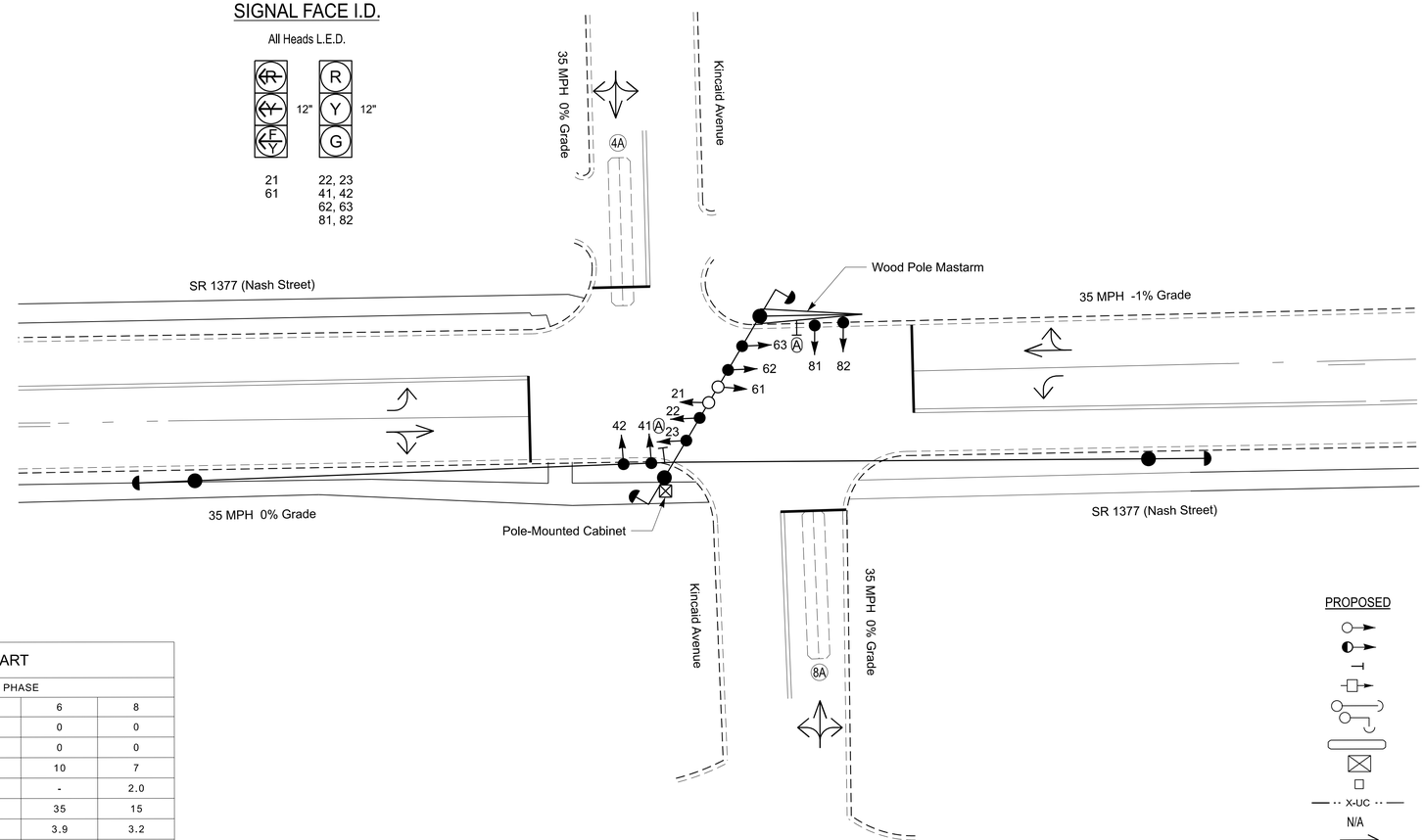
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	5.0	-	X	-	X	-	X

SIGNAL FACE I.D.

All Heads L.E.D.

21
61

22, 23
41, 42
62, 63
81, 82



2 Phase Semi-Actuated Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 61 and 62.
4. Renumber existing signal heads 21, 22, 61 and 62 as 22, 23, 62 and 63 respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Program controller to operate using FYA compact mode.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	10	7	10	7
Passage *	-	2.0	-	2.0
Max 1 *	35	15	35	15
Yellow Change	3.9	3.2	3.9	3.2
Red Clear	1.8	2.6	1.8	2.6
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Non Lock Detector	-	X	-	X
Vehicle Recall	MAX RECALL	-	MAX 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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	A
	Wood Pole Mastarm	

Signal Upgrade

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

SCALE 0 20 1"=20'

SR 1377 (Nash Street) at Kincaid Avenue

Division 4 | Wilson County | Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
T-1A8D4A5DB63E3B... DATE

SIG. INVENTORY NO. 04-0292

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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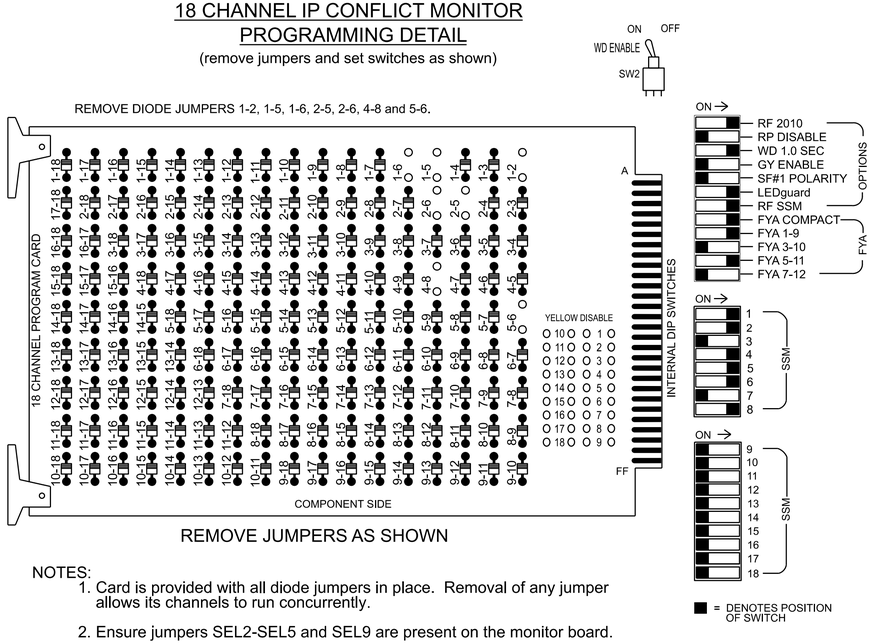
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 8.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S1, S2, S5, S7, S8, S11
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
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
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	OL1	2	2 PED	3	4	4 PED	OL3	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61★	22,23	NU	NU	41,42	NU	21★	62,63	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
FLASHING YELLOW ARROW	127						133					
GREEN ARROW												

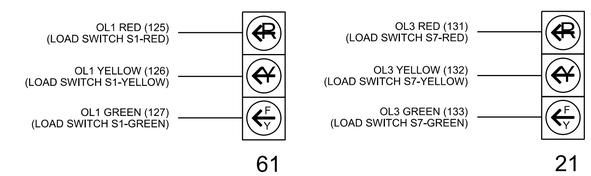
NU = Not Used

★See pictorial of head wiring in detail this sheet.

NOTE: Load Switches S1 and S5 require output remapping. See this sheet for instructions.

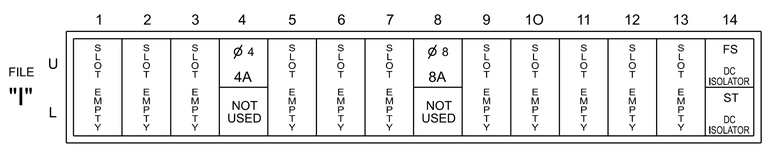
FYA SIGNAL WIRING DETAIL

(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	TB21-7,8	I4U	41	3	8	4	5.0	-	X	-	X	-
8A	TB22-1,2	I8U	42	4	22	8	5.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0292
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1377 (Nash Street)
at
Kincaid Avenue

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Docusigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0292

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 8.2

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTE CHANNEL 1 CHANGED TO OVERLAP 1

NOTE CHANNEL 5 CHANGED TO OVERLAP 3

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Overlap	3		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

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	6	-	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

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: 04-0292
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1377 (Nash Street)
at
Kincaid Avenue

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0292

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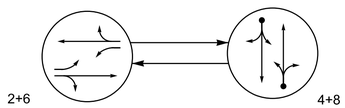
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 9.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	PHASE FLASH
21, 22	G	R	R
41, 42	R	G	R
61, 62	G	R	R
81, 82	R	G	R

SIGNAL FACE I.D.

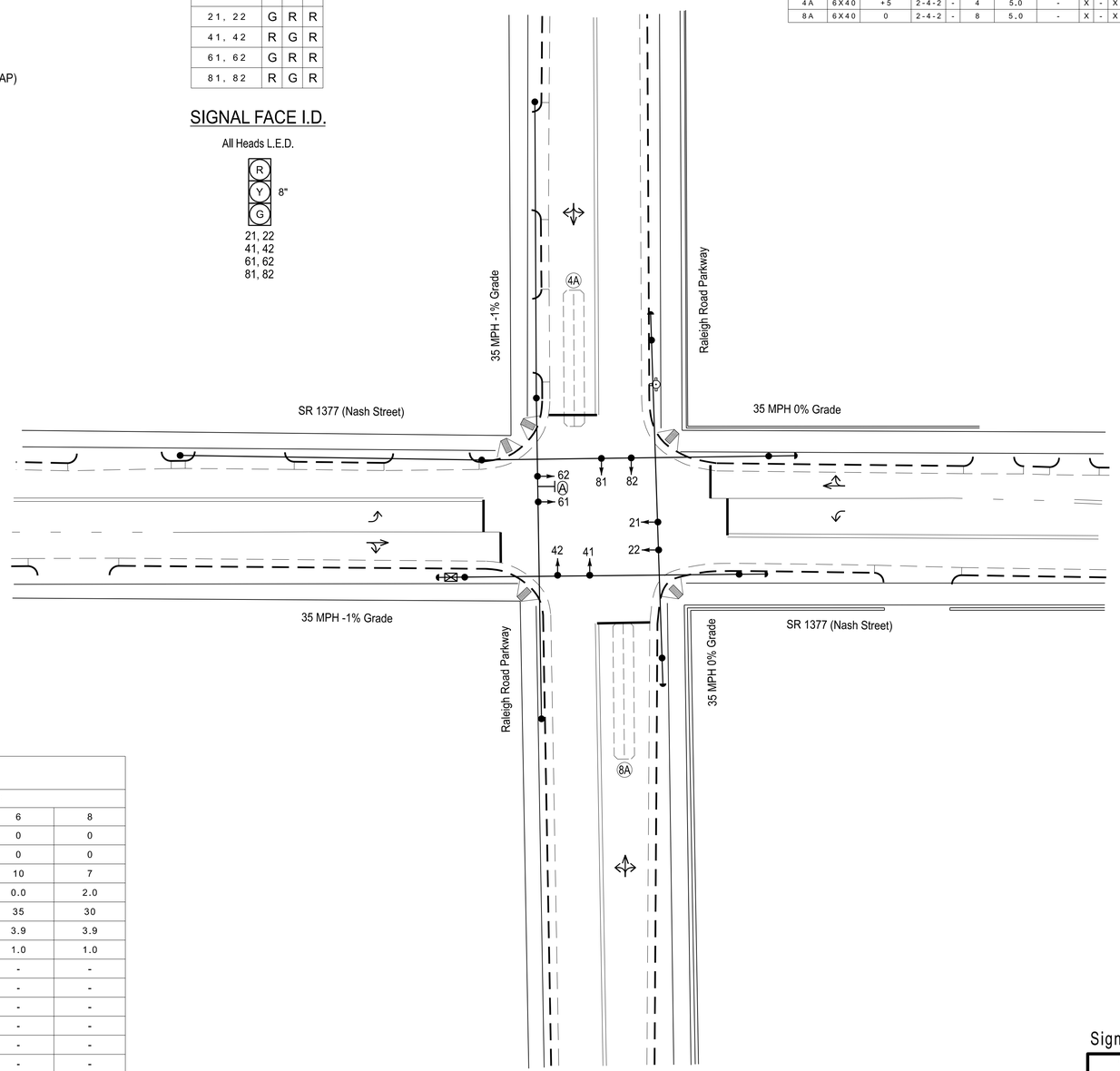
All Heads L.E.D.

21, 22
41, 42
61, 62
81, 82

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	-	X
8A	6X40	0	2-4-2	-	8	5.0	-	X	-	X	-	X

2 Phase
Semi-Actuated
Wilson Signal System



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. The cabinet should be designed to include an Auxiliary Output file for future use.
6. Pavement markings are existing.
7. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	"NO TURN ON RED" Sign (R10-11A)	A

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	10	7	10	7
Passage *	0.0	2.0	0.0	2.0
Max 1 *	35	30	35	30
Yellow Change	3.9	3.9	3.9	3.9
Red Clear	1.0	1.0	1.0	1.0
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Non Lock Detector	-	X	-	X
Vehicle Recall	MAX RECALL	-	MAX 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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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

SCALE 0 20 1"=20'

SR 1377 (Nash Street)
at
Raleigh Road Parkway

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	WL Larson	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
7A6DDA2C8F1B2B... DATE

SIG. INVENTORY NO. 04-0294

28-FEB-2025 11:04
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SIT#4985

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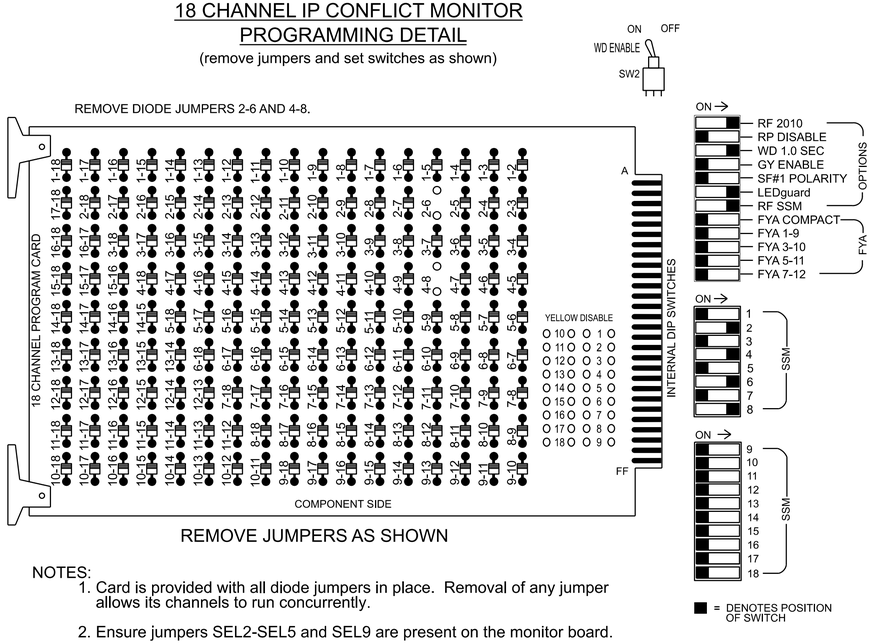
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 9.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

NU = Not Used

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, S8, S11
Phases Used.....2, 4, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....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

INPUT FILE POSITION LAYOUT

(front view)

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

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	5.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		X		X	

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: 04-0294
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1377 (Nash Street)
at
Raleigh Road Parkway

Division 4 | Wilson County | Wilson

PLAN DATE: November 2024	REVIEWED BY: JT Stiff		
PREPARED BY: MF Evans	REVIEWED BY: PL Alexander		

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DocuSigned by: 4C1B9A8E4A7E4AC...
DATE

SIG. INVENTORY NO. 04-0294

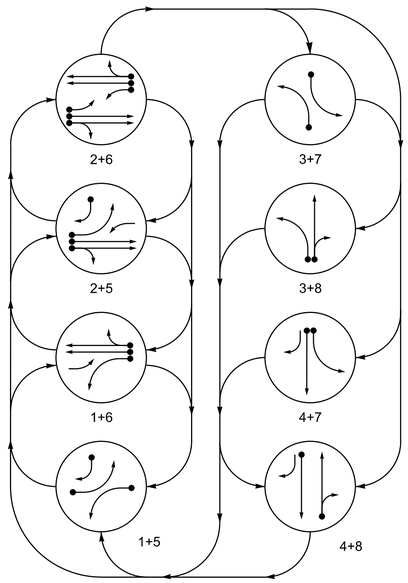
AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 11:04
pw:\\pw-dot01.bentley.com:ncdot-pw-01\Documents\Division_04\U-5945\TSMO\Signals Management\040294_sm_ele_2024nmd4.dgn
STIFF4895

Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 10.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41	R	R	R	R	R	R	G	G	R
42	R	R	R	R	R	R	G	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

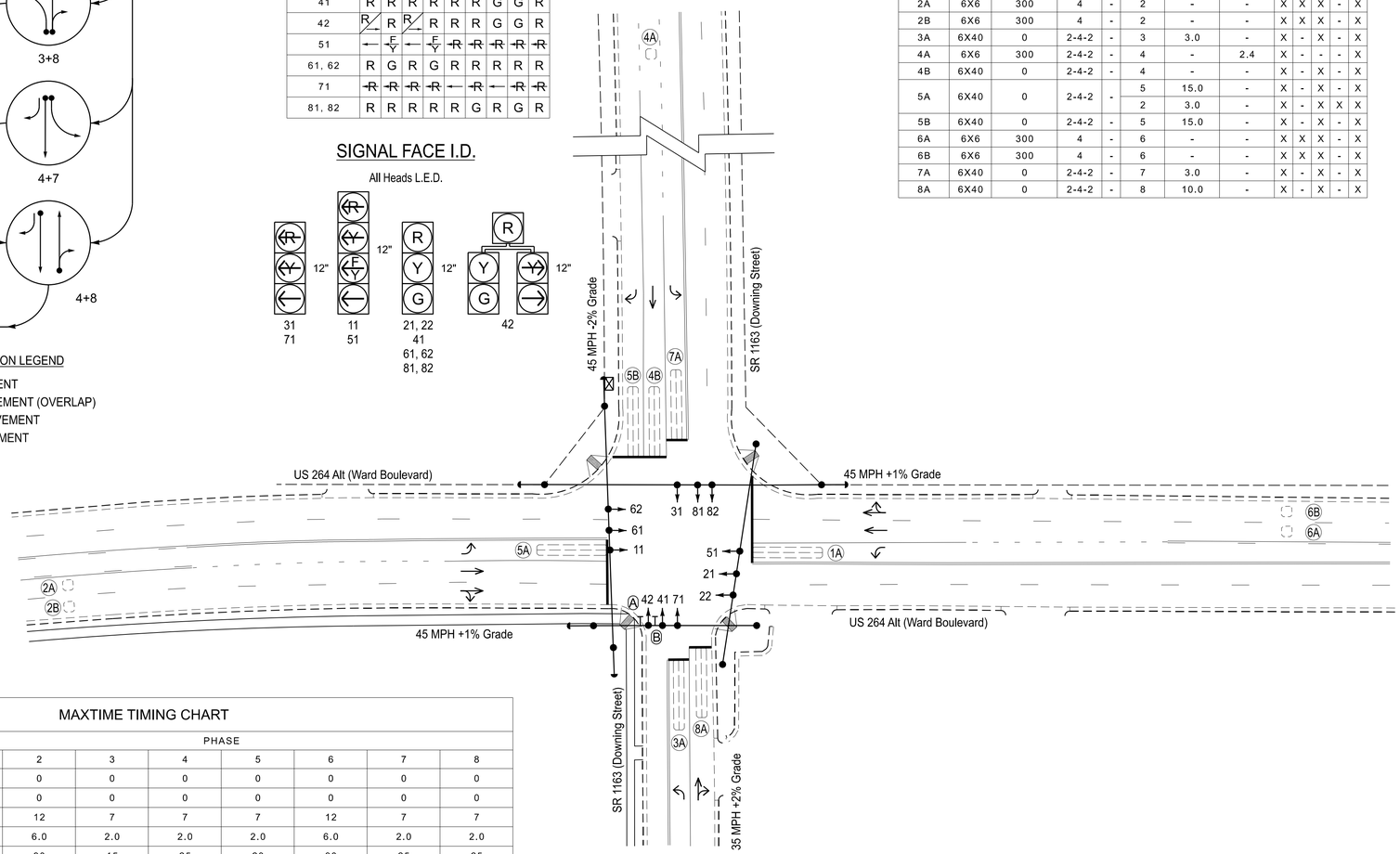
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X6	300	2-4-2	-	4	-	2.4	X	-	-	-	X
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
5B	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Existing sign B may be removed at the discretion of the Division Traffic Engineer.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	Right Arrow "ONLY" Sign (R3-5R)	A
B	Through Arrow "ONLY" Sign (R3-5A)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	15	25	20	90	25	25
Yellow Change	3.0	4.4	3.0	4.7	3.0	4.4	3.0	4.7
Red Clear	2.1	1.2	2.8	1.7	2.1	1.2	2.8	1.7
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 40 1"=40'

US 264 Alt (Ward Boulevard)
at
SR 1163 (Downing Street)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 7AF1C371C0664A1... DATE

SIG. INVENTORY NO. 04-0299

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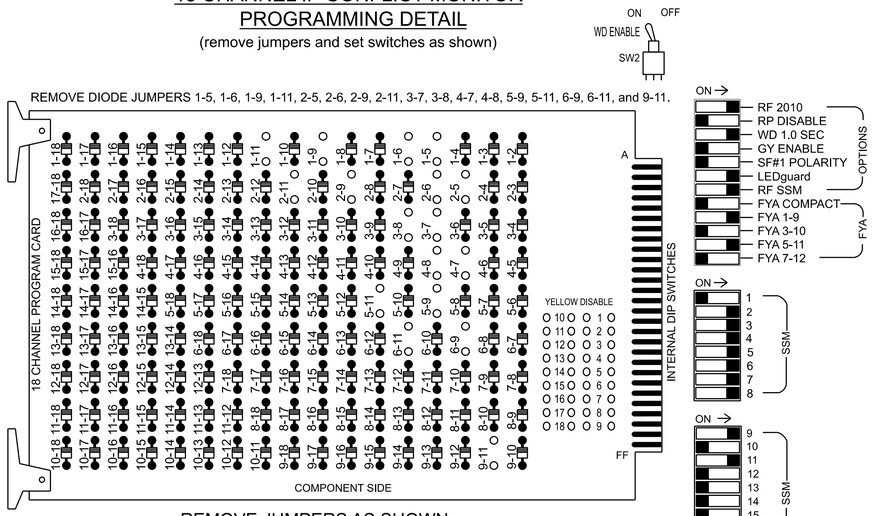
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 10.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11, AUX S1, AUX S4
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail this sheet

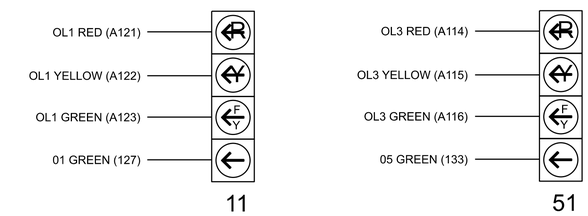
SIGNAL HEAD HOOK-UP CHART

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	41,42	NU	42	51★	61,62	NU	71	81,82	NU	11★	NU	NU	51★	NU	NU
RED		128			101		*		134			107							
YELLOW	*	129			102				135			108							
GREEN		130			103				136			109							
RED ARROW				116							122			A121			A114		
YELLOW ARROW				117			132				123			A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW	127			118			133	133			124								

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	1O	11	12	13	14
FILE "I"	U	ø 1 1A	ø 2 2A	SLOT EMPTY	SLOT EMPTY	ø 3 3A	ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	ø 2 2B			NOT USED	ø 4 4B								ST DC ISOLATOR
FILE "J"	U	ø 5 5A	ø 5 5B	ø 6 6A	SLOT EMPTY	ø 7 7A	ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	ø 6 6B		NOT USED	NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

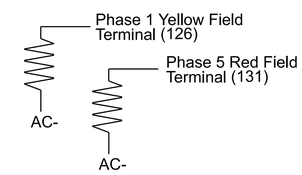
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	2.4	X	-	-	-
4B	TB4-11,12	I6L	45	7	9	4	-	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
6B	TB3-11,12	J3L	77	43	19	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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)



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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1		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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0299
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 264 Alt (Ward Boulevard)
at
SR 1163 (Downing Street)

Division 4 | Wilson County | Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE
SIG. INVENTORY NO. 04-0299

AtkinsRéalis
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(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 10.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0299
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt (Ward Boulevard)
at
SR 1163 (Downing Street)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0299

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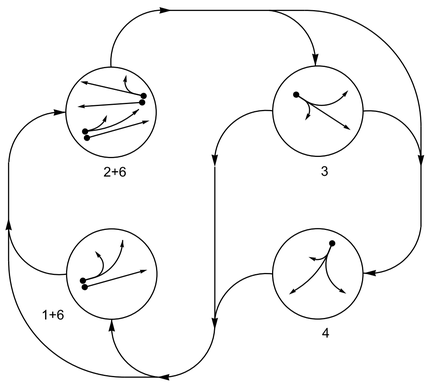
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 11.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 3	PHASE 4	PHASE FLASH
11	←	F Y	R	R	R
21, 22	R	G	R	R	R
31, 32	R	R	G	R	R
41	R	R	R	G ←	R
42	R	R	R	G	R
61, 62	G	G	R	R	R

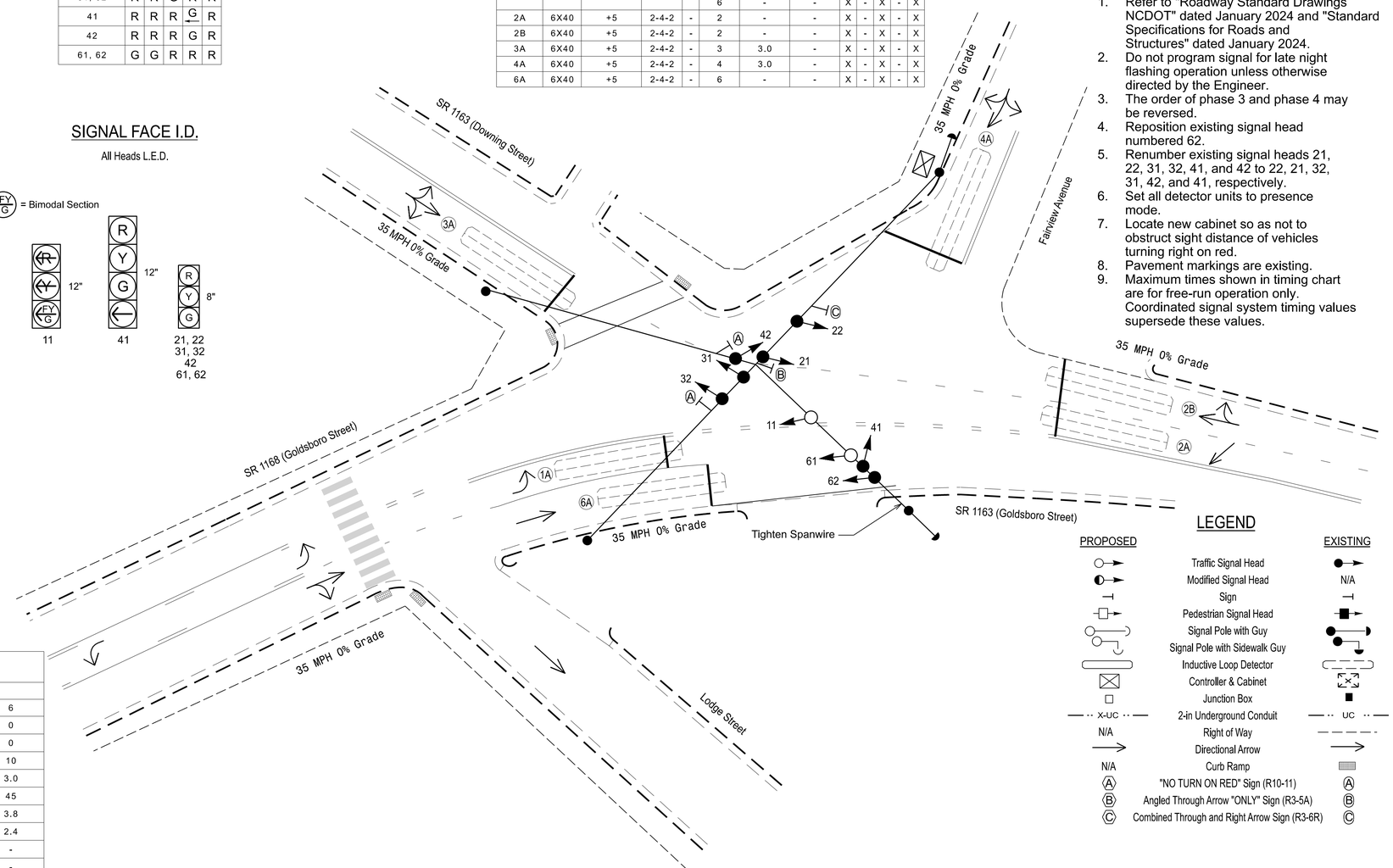
SIGNAL FACE I.D.

All Heads L.E.D.

FY G = Bimodal Section

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
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	-	-	X	-	X	-	X
2A	6X40	+5	2-4-2	-	2	-	-	X	-	X	-	X
2B	6X40	+5	2-4-2	-	2	-	-	X	-	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
6A	6X40	+5	2-4-2	-	6	-	-	X	-	X	-	X



4 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Reposition existing signal head numbered 62.
5. Renumber existing signal heads 21, 22, 31, 32, 41, and 42 to 22, 21, 32, 31, 42, and 41, respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	"NO TURN ON RED" Sign (R10-11)	A
B	Angled Through Arrow "ONLY" Sign (R3-5A)	B
C	Combined Through and Right Arrow Sign (R3-6R)	C

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 6
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Min Green *	7	10	7	7	10
Passage *	2.0	3.0	2.0	2.0	3.0
Max 1 *	20	45	20	25	45
Yellow Change	3.0	3.8	3.8	3.8	3.8
Red Clear	3.2	2.4	2.9	2.1	2.4
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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SR 1168/ SR 1163 (Goldsboro Street)
at
SR 1163 (Downing Street)/
Fairview Avenue

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Digitally signed by: Anthony Encarnacion 2/28/2025
DocuSigned by:
F7A90DAC19E34D6...
DATE

SIG. INVENTORY NO. 04-0300

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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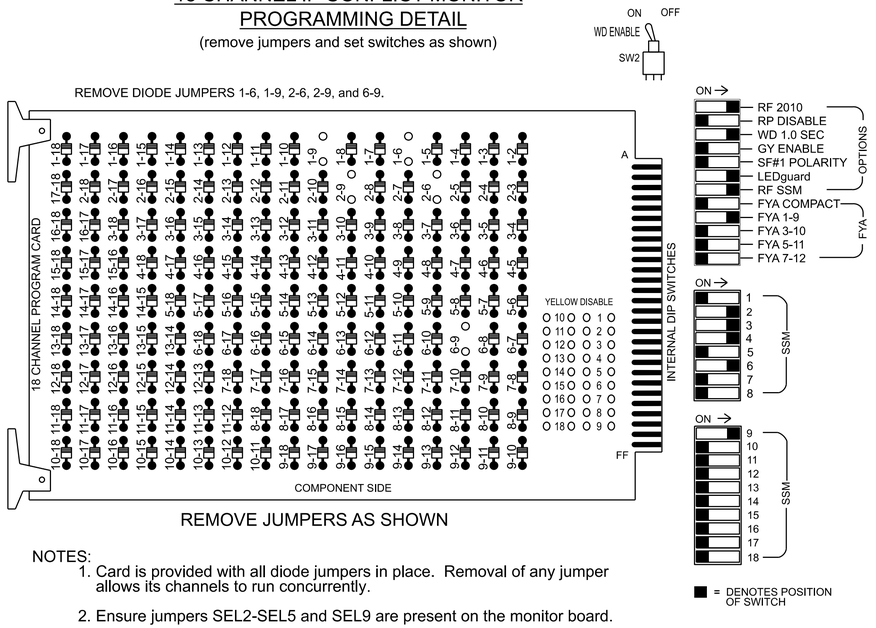
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 11.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S8, AUX S1
Phases Used.....1, 2, 3, 4, 6
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

*See overlap programming detail this sheet

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	31,32	41	42	NU	NU	61,62	NU	NU	NU	NU	★ 11	NU	NU	NU	NU	NU
RED		128		116	101	101			134										
YELLOW	*	129		117	102	102			135										
GREEN		130		118	103	103			136										
RED ARROW														A121					
YELLOW ARROW														A122					
FLASHING YELLOW ARROW														A123					
GREEN ARROW	127				103														

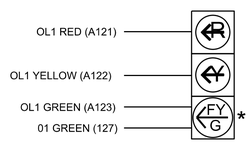
NU = Not Used

*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)



* Bimodal Section

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED												

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

FS = FLASH SENSE
ST = STOP TIME

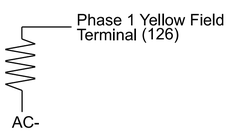
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	-	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	-	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	-	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	-	X	-

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)

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	FYA 4 - Section	Off	Off	Off
Included Phases	2	-	-	-
Modifier Phases	1	-	-	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0300
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

SR 1168/ SR 1163 (Goldsboro Street) at SR 1163 (Downing Street)/ Fairview Avenue

Division 4 Wilson County Wilson

PLAN DATE: November 2024 REVIEWED BY: TJ Williams
PREPARED BY: MF Evans REVIEWED BY: PL Alexander

REVISIONS | INIT. | DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1BE2CE71C0B8481... DATE

SIG. INVENTORY NO. 04-0300

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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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0300
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1168/ SR 1163 (Goldsboro Street)
at
SR 1163 (Downing Street)/
Fairview Avenue

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0300

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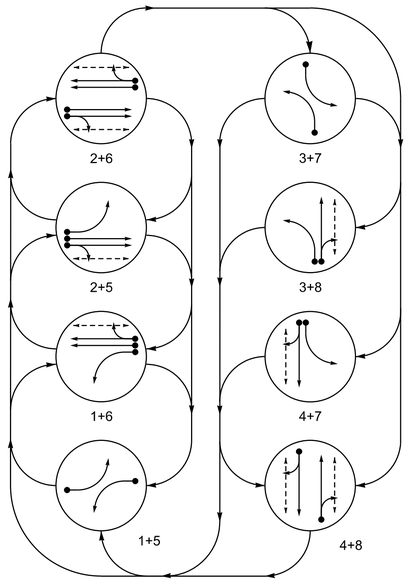
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 12.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

11	21, 22	P21, P22
31	41, 42	P41, P42
51	61, 62	P61, P62
71	81, 82	P81, P82

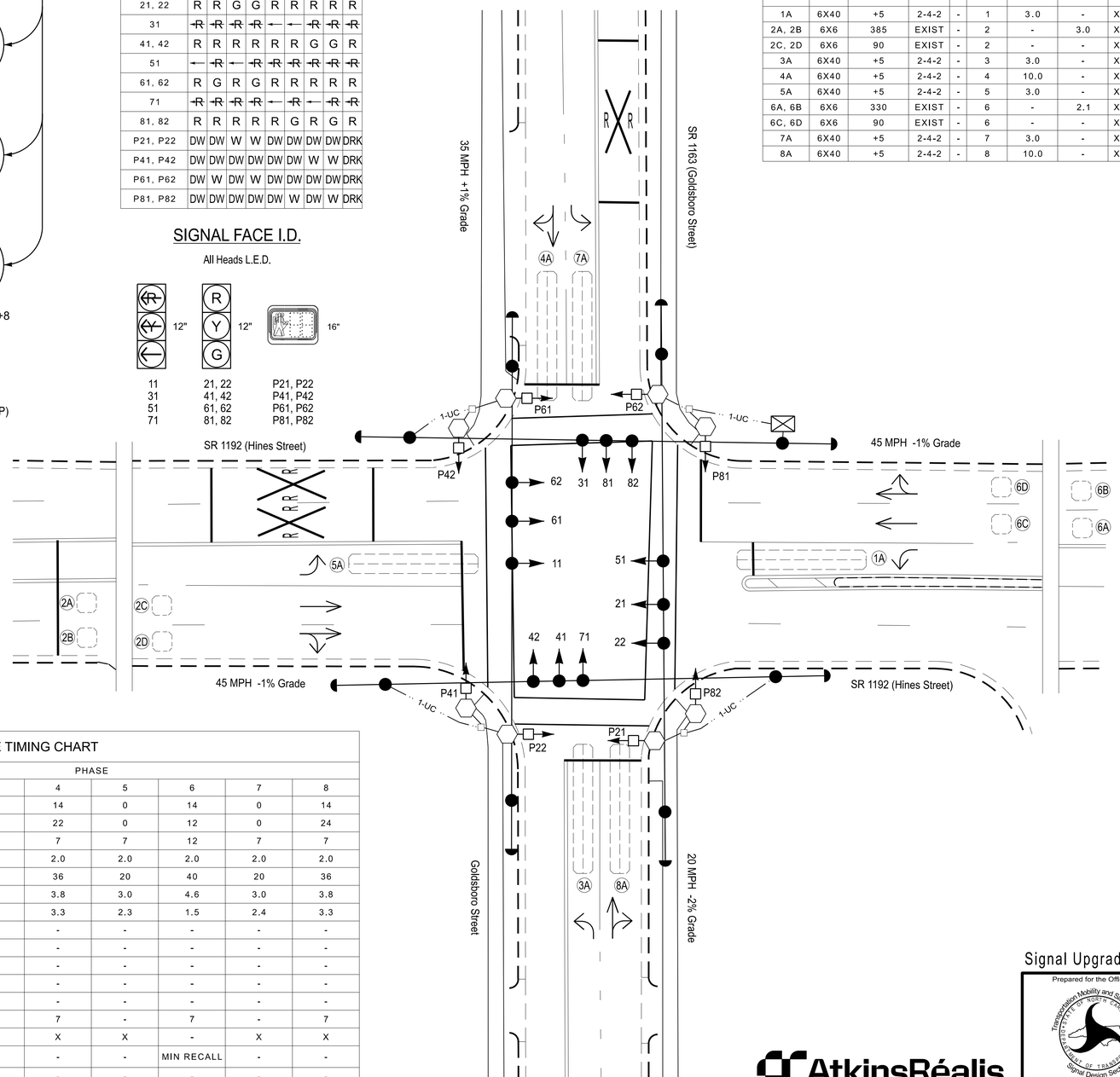
MAXTIME DETECTOR INSTALLATION CHART

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
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A, 2B	6X6	385	EXIST	-	2	-	3.0	X	-	X	-	X
2C, 2D	6X6	90	EXIST	-	2	-	-	X	-	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A, 6B	6X6	330	EXIST	-	6	-	2.1	X	-	X	-	X
6C, 6D	6X6	90	EXIST	-	6	-	-	X	-	X	-	X
7A	6X40	+5	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Pavement markings are existing.
11. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	13	0	14	0	14	0	14
Ped Clear *	0	10	0	22	0	12	0	24
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	20	40	20	36	20	40	20	36
Yellow Change	3.0	4.6	3.0	3.8	3.0	4.6	3.0	3.8
Red Clear	2.8	1.5	2.6	3.3	2.3	1.5	2.4	3.3
Added Initial *	-	-	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Advance Walk	-	6	-	7	-	7	-	7
Non Lock Detector	X	-	X	X	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.

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Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
SR 1163 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

SCALE 1"=20' (0 – 20)

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F6F1C571C0669451...
DATE

SIG. INVENTORY NO. 04-0301

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STIFF4685

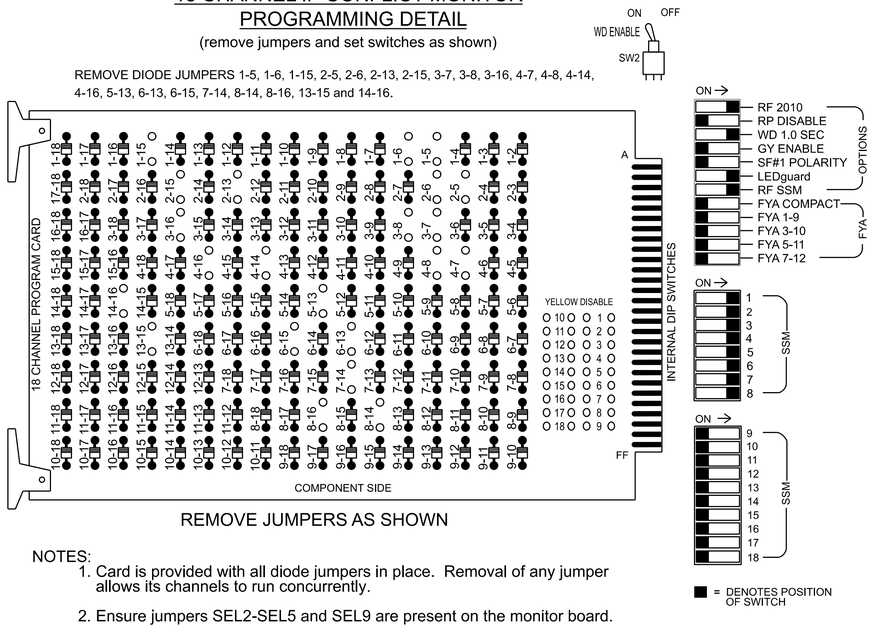
Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 12.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	P21, P22	31	41,42	P41, P42	51	61,62	P61, P62	71	81,82	P81, P82	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125			116			131			122								
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								
✋			113			104			119			110						
🚶			115			106			121			112						

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A, 2B	TB2-5,6	I2U	39	1	2	2		3.0	X		X	
2C, 2D	TB2-7,8	I2L	43	5	3	2			X		X	
3A	TB4-5,6	I5U	58	20	7	3	3.0		X		X	
4A	TB4-9,10	I6U	41	3	8	4	10.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
6A, 6B	TB3-5,6	J2U	40	2	16	6		2.1	X		X	
6C, 6D	TB3-7,8	J2L	44	6	17	6			X		X	
7A	TB5-5,6	J5U	57	19	21	7	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	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						

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0301
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
SR 1163 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE: January 2025 REVIEWED BY: TJ Williams
PREPARED BY: JT Stiff REVIEWED BY: PL Alexander

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DATE
SIG. INVENTORY NO. 04-0301

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

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(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 12.2

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0301
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
SR 1163 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F4B0C871C0B8481... DATE

SIG. INVENTORY NO. 04-0301

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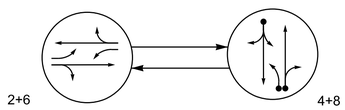
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 13.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21,22	G	R	R
41,42	R	G	R
61,62	G	R	R
81,82	R	G	R

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	-	X
8A	6X40	+5	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

2 Phase
Semi-Actuated
Wilson Signal System

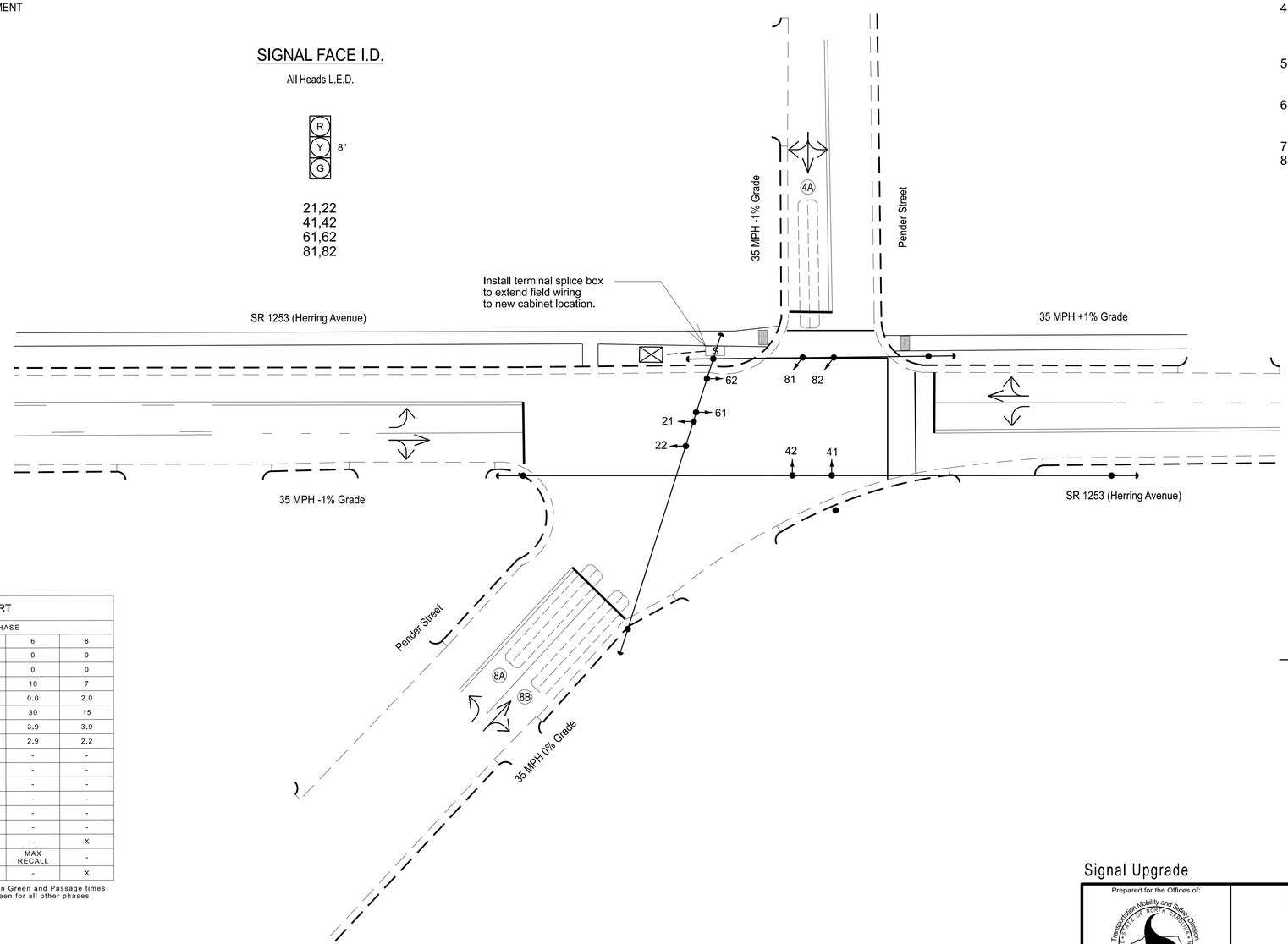
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. 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. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. The cabinet should be designed to include an Auxiliary Output file for future use.
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.

SIGNAL FACE I.D.

All Heads L.E.D.

21,22
41,42
61,62
81,82



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	10	7	10	7
Passage *	0.0	2.0	0.0	2.0
Max 1 *	30	15	30	15
Yellow Change	3.9	3.9	3.9	3.9
Red Clear	2.9	2.2	2.9	2.2
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Non Lock Detector	-	X	-	X
Vehicle Recall	MAX RECALL	-	MAX 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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
S	Terminal Splice Box	N/A

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 0 20 1"=20'

SR 1253 (Herring Avenue)
at
Pender Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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ecarnacion@atkinsglobal.com
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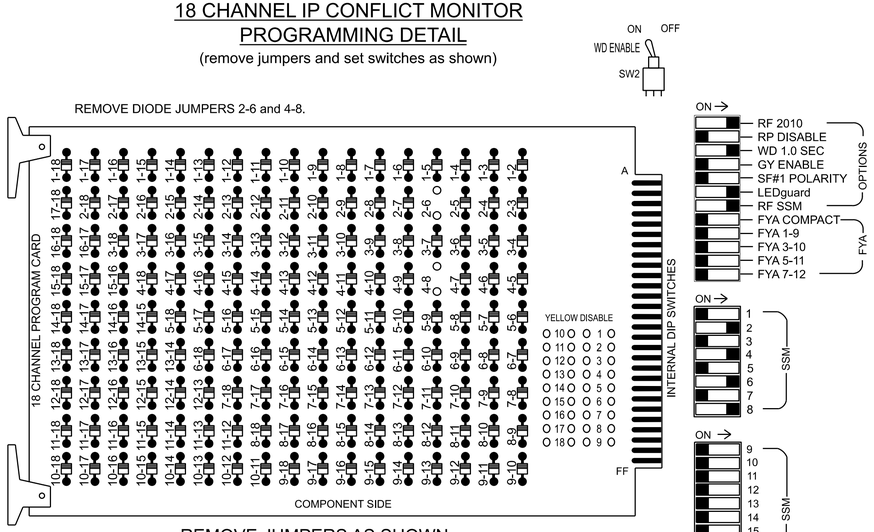
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 13.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

NU = Not Used

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, S8, S11
Phases Used.....2, 4, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

OUTPUT CHANNEL CONFIGURATION

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

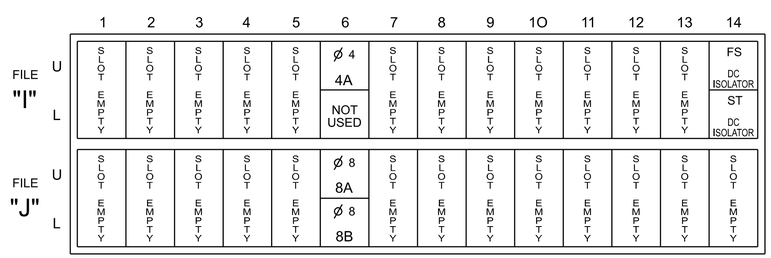
Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

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

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	5.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8			X		X	
8B	TB5-11,12	J6L	46	8	23	8	10.0		X		X	

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: 04-0307
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

SR 1253 (Herring Avenue)
at
Pender Street

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0307

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(919) 876-6888 NCBEES #F-0326

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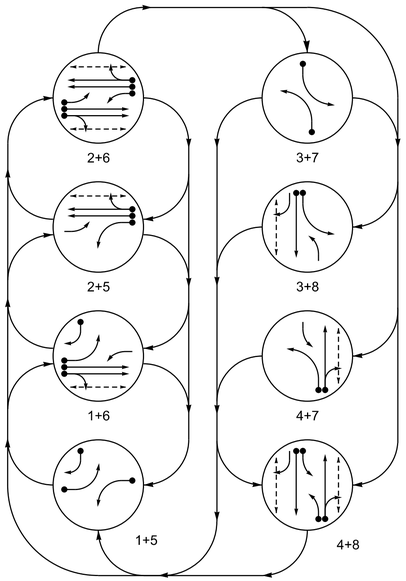
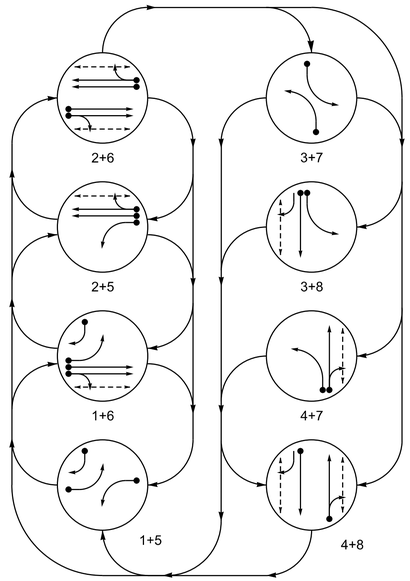
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 14.0

8 Phase
Fully Actuated
with Alternate Phasing
Wilson Signal System

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←●	←●	F Y	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←—	←—	F Y	F Y	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←—	F Y	←—	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←—	F Y	←—	F Y	~~R~~
81	R	R	R	R	R	G	R	G	R
82	R/	R/	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←●	←●	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←—	←—	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←—	~~R~~	←—	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←—	~~R~~	←—	~~R~~	~~R~~
81	R	R	R	R	R	G	R	G	R
82	R/	R/	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	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
1A	6X40	0	2-4-2	-	1	15.0*	-	X	-	X	-	X
					6#	3.0	-	X	-	X	X	X
1B	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	15.0*	-	X	-	X	-	X
					8#	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0*	-	X	-	X	-	X
					2#	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	15.0*	-	X	-	X	-	X
					4#	3.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

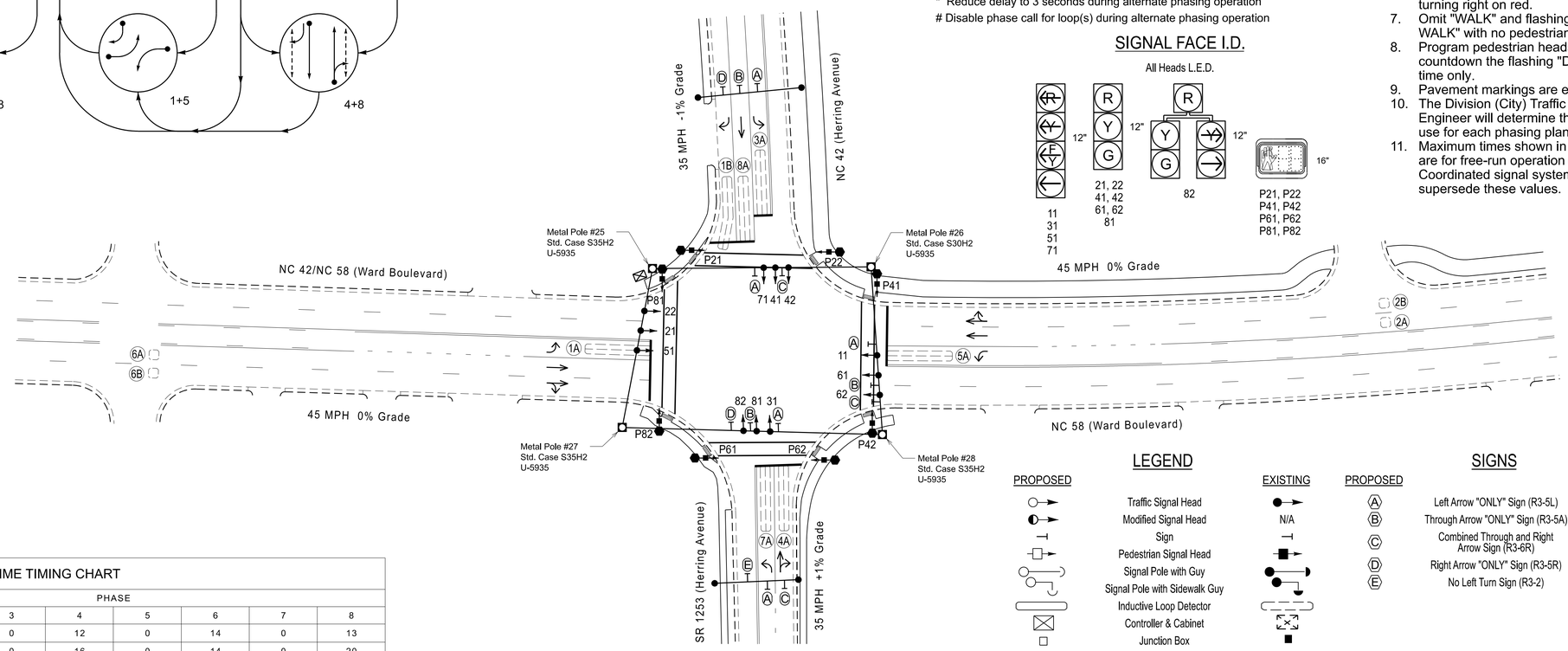
* Reduce delay to 3 seconds during alternate phasing operation
\# Disable phase call for loop(s) during alternate phasing operation

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
	Type II Signal Pedestal	
N/A	Curb Ramp	

SIGNS

PROPOSED		EXISTING
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	Through Arrow "ONLY" Sign (R3-5A)	B
C	Combined Through and Right Arrow Sign (R3-6R)	C
D	Right Arrow "ONLY" Sign (R3-5R)	D
E	No Left Turn Sign (R3-2)	E

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	14	0	12	0	14	0	13
Ped Clear *	0	16	0	16	0	14	0	20
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow Change	3.0	4.5	3.0	3.9	3.0	4.5	3.0	3.9
Red Clear	3.2	2.0	3.5	2.6	3.3	2.0	3.3	2.6
Added Initial *	-	1.8	-	-	-	1.8	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	7	-	5	-	7	-	6
Non Lock Detector	X	-	X	X	X	-	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

NC 42/NC 58 (Ward Boulevard)
at
NC 42/SR 1253 (Herring Avenue)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F8FC57FC0B6B491...
DATE

SIG. INVENTORY NO. 04-0308

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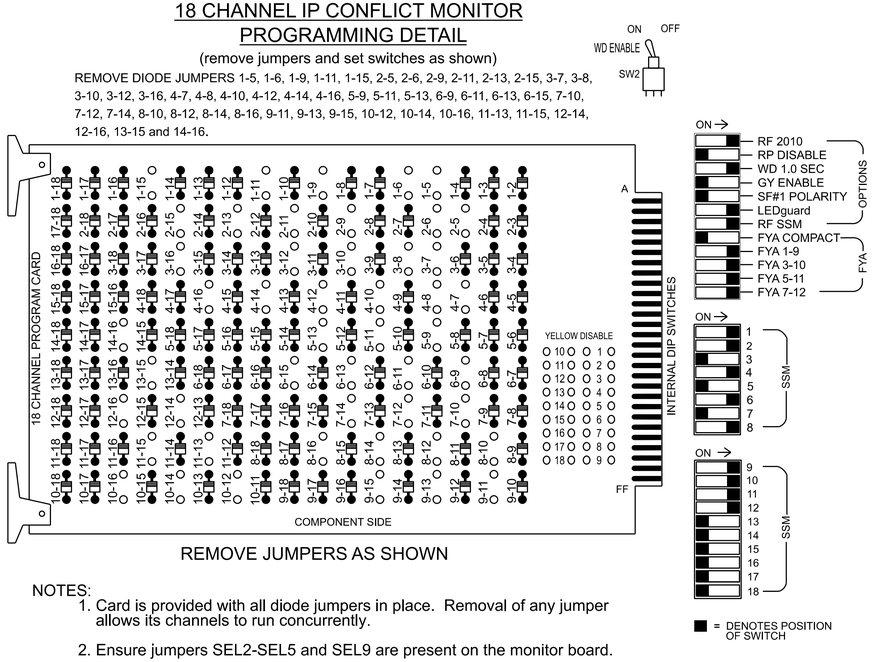
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 14.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

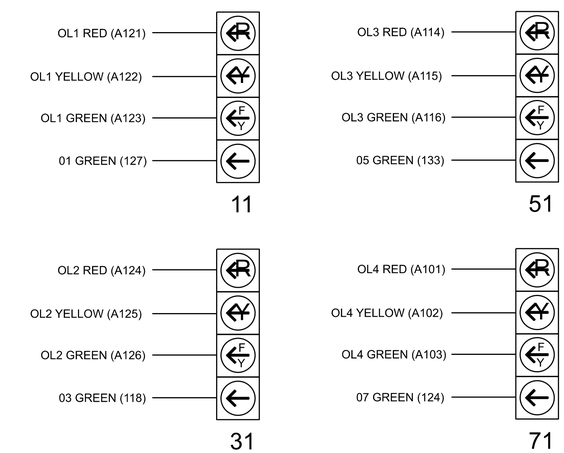
SIGNAL HEAD HOOK-UP CHART

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.	11★	82	21,22	P21, P22	31★	41,42	P41, P42	51★	61,62	P61, P62	71★	81,82	P81, P82	11★	31★	NU	51★	71★	NU
RED		*	128			101			134			107							
YELLOW			129		*	102		*	135		*	108							
GREEN			130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW		126											A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127	127		118			133			124								
✋			113			104			119			110						
🚶			115			106			121			112						

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1 ★	1	15.0		X		X	
				-	29 ★	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7 ★	3	15.0		X		X	
				-	30 ★	8	3.0		X		X	
4A	TB4-9,10	I6U	41	3	8	4	5.0		X		X	
5A	TB3-1,2	J1U	55	17	15 ★	5	15.0		X		X	
				-	31 ★	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
7A	TB5-5,6	J5U	57	19	21 ★	7	15.0		X		X	
				-	32 ★	4	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8			X		X	
1B	TB5-11,12	J6L	46	8	23	1	15.0		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						

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

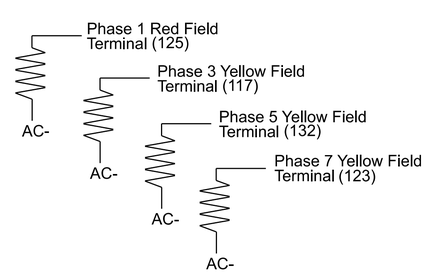
★ For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0308
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1253 (Herring Avenue)

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

Signed by: T.J. Williams 2/28/2025
PROJECT ENGINEER DATE

SIG. INVENTORY NO. 04-0308

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

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

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 14.2

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
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

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.

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	-	-	-	-
Modifier Phases	1	3	5	7
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

← 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 11, 31, 51, and 71 to run protected turns only.

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

Disables phase 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 3 seconds.

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

Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 3 seconds.

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.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 3A, 5A & 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.

Plan 2

1A

Detector	Call Phase	Delay
1	1	3.0
29	0	0.0

3A

Detector	Call Phase	Delay
7	3	3.0
30	0	0.0

5A

Detector	Call Phase	Delay
15	5	3.0
31	0	0.0

7A

Detector	Call Phase	Delay
21	7	3.0
32	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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0308
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

NC 42/NC 58 (Ward Boulevard)
at
NC 42/SR 1253 (Herring Avenue)

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

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1BEC571C0B9B481...
DATE

SIG. INVENTORY NO. 04-0308

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 14.3

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0308
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42/NC 58 (Ward Boulevard)
at
NC 42/SR 1253 (Herring Avenue)

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DOCUSIGNED BY: DATE
SIG. INVENTORY NO. 04-0308

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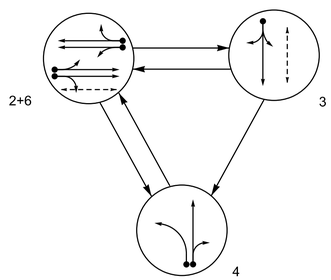
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 15.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

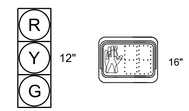
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	3	4	FLASH
21, 22	G	R	R	R
31, 32	R	G	R	R
41, 42	R	R	G	R
61, 62	G	R	R	R
P21, P22	W	DW	DW	DRK
P31, P32	DW	W	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
31, 32
41, 42
61, 62

P21, P22
P31, P32

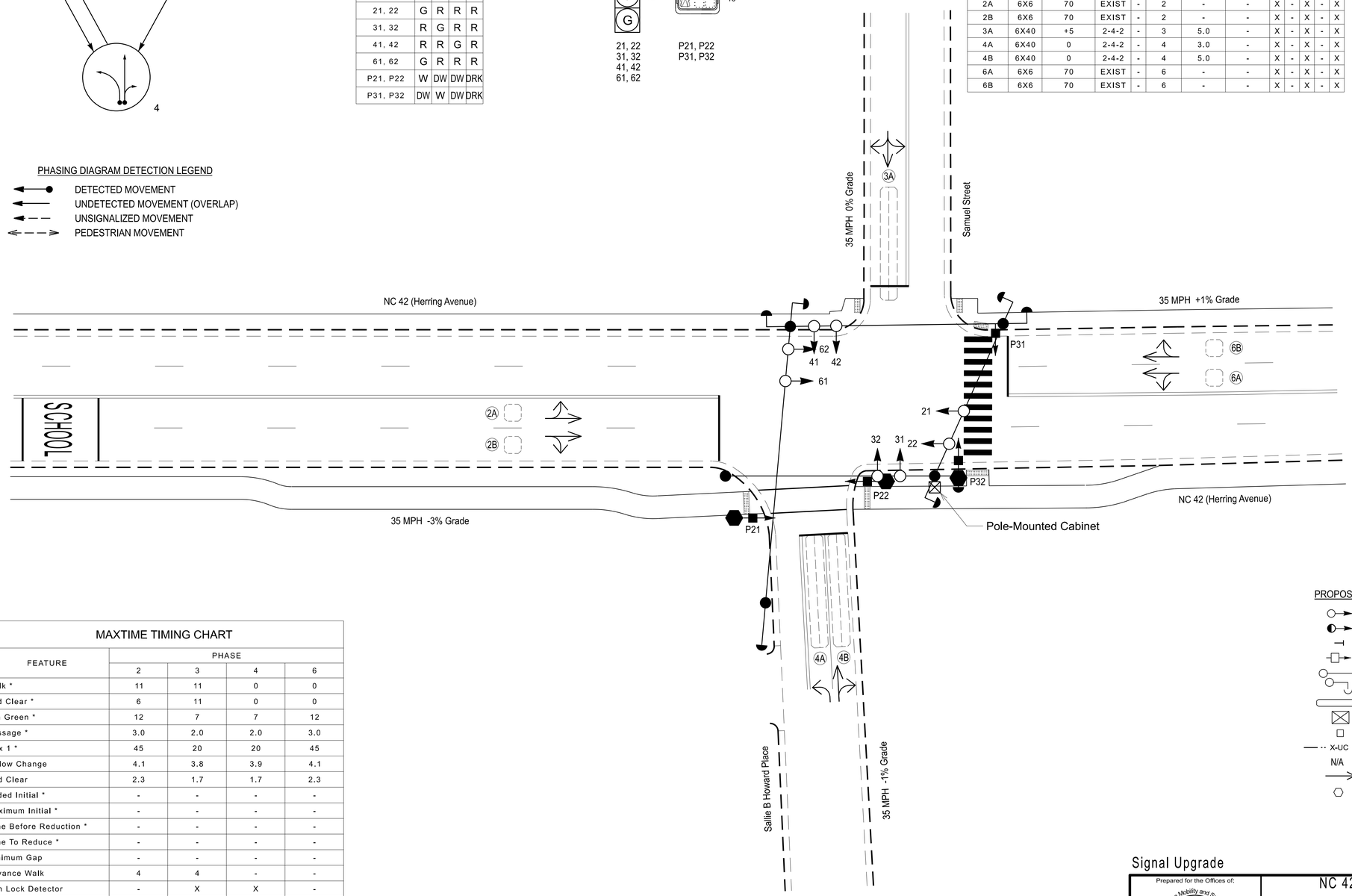
MAXTIME DETECTOR INSTALLATION CHART

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
2A	6X6	70	EXIST	-	2	-	-	X	-	X	-	X
2B	6X6	70	EXIST	-	2	-	-	X	-	X	-	X
3A	6X40	+5	2-4-2	-	3	5.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	5.0	-	X	-	X	-	X
6A	6X6	70	EXIST	-	6	-	-	X	-	X	-	X
6B	6X6	70	EXIST	-	6	-	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
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. 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. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 2	3	4	6
Walk *	11	11	0	0
Ped Clear *	6	11	0	0
Min Green *	12	7	7	12
Passage *	3.0	2.0	2.0	3.0
Max 1 *	45	20	20	45
Yellow Change	4.1	3.8	3.9	4.1
Red Clear	2.3	1.7	1.7	2.3
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	4	4	-	-
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
at
Samuel Street/
Sallie B Howard Place

Division 4 | Wilson County | Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

SCALE 1"=20' (0 – 20)

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0309

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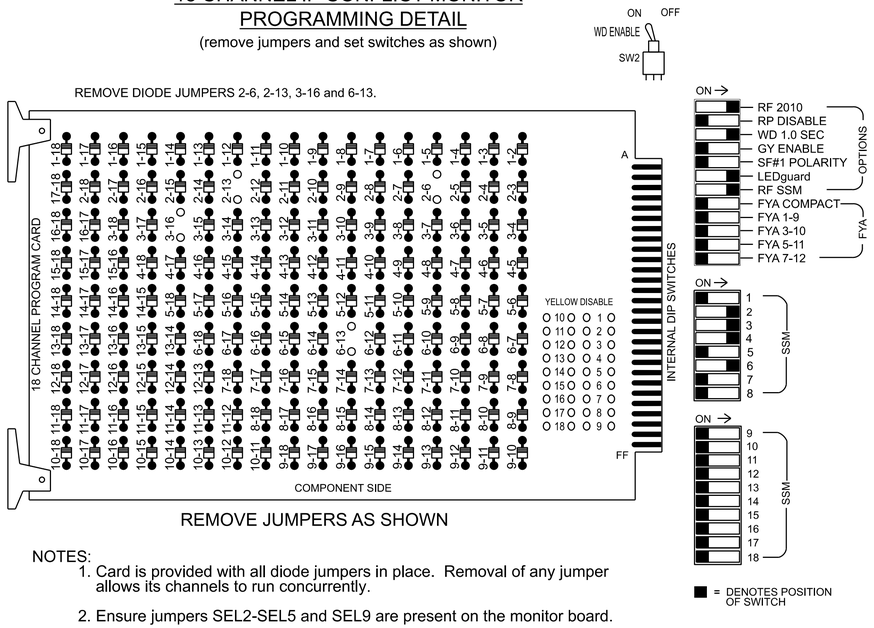
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 15.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. Program phases 2 and 6 for Simultaneous Start.
4. The cabinet and controller are part of the Wilson Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S3, S4, S5, S8, S12
Phases Used.....2, 2PED, 3, 3PED, 4, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED
SIGNAL HEAD NO.	NU	21,22	P21, P22	31,32	41,42	NU	NU	61,62	NU	NU	NU	P31, P32
RED		128		116	101			134				
YELLOW		129		117	102			135				
GREEN		130		118	103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113									110
🚶			115									112

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	SLOT EMPTY	Ø 2 2A	Ø 3 3A	Ø 4 4A	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 2 PED DC ISOLATOR	NOT USED	FS DC ISOLATOR
L		Ø 2 2B	NOT USED	Ø 4 4B		Ø 6 6B						NOT USED	Ø 3 PED DC ISOLATOR	ST 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
2A	TB21-3,4	I2U	39	1	2	2			X		X	
2B	TB23-3,4	I2L	43	5	3	2			X		X	
3A	TB21-5,6	I3U	58	20	7	3	5.0		X		X	
4A	TB21-7,8	I4U	41	3	8	4	3.0		X		X	
4B	TB23-7,8	I4L	45	7	9	4	5.0		X		X	
6A	TB21-11,12	I6U	40	2	16	6			X		X	
6B	TB23-11,12	I6L	44	6	17	6			X		X	
PED PUSH BUTTONS												
P21,P22	TB22-9,10	I12U	67	33	2	PED 2						
P31,P32	TB24-11,12	I13L	70	36	8	PED 3						

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: 04-0309
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
at
Samuel Street/
Sallie B Howard Place

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
DocuSigned by: 7BEC5E1FC0B84E3...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0309

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 15.2

PED 3 PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Detector Configuration >Pedestrian Detector

Plan 1

NOTICE PHASE 3 PED ASSIGNED TO DETECTOR 8 PED

Detector	Descripton	Call Phase	Call Overlap
2		2	0
4		4	0
6		6	0
8		3	0

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

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

Channel Configuration

NOTICE PHASE 3 PED ASSIGNED TO CHANNEL 16

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	3				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0309
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
at
Samuel Street/
Sallie B Howard Place

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0309

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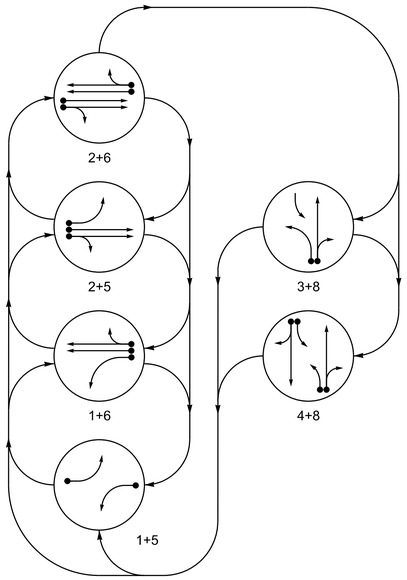
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig 16.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+8	4+8	FLASH
11	↚	↚	̸R	̸R	̸R	̸R	̸R
21,22	R	R	G	G	R	R	R
31	̸R	̸R	̸R	̸R	↚	FY	̸R
41	̸R	̸R	̸R	̸R	FY	FY	̸R
42,43	R	R	R	R	R	G	R
51	↚	̸R	↚	̸R	̸R	̸R	̸R
61,62	R	G	R	G	R	R	R
81,82	R	R	R	R	G	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

MAXTIME DETECTOR INSTALLATION CHART

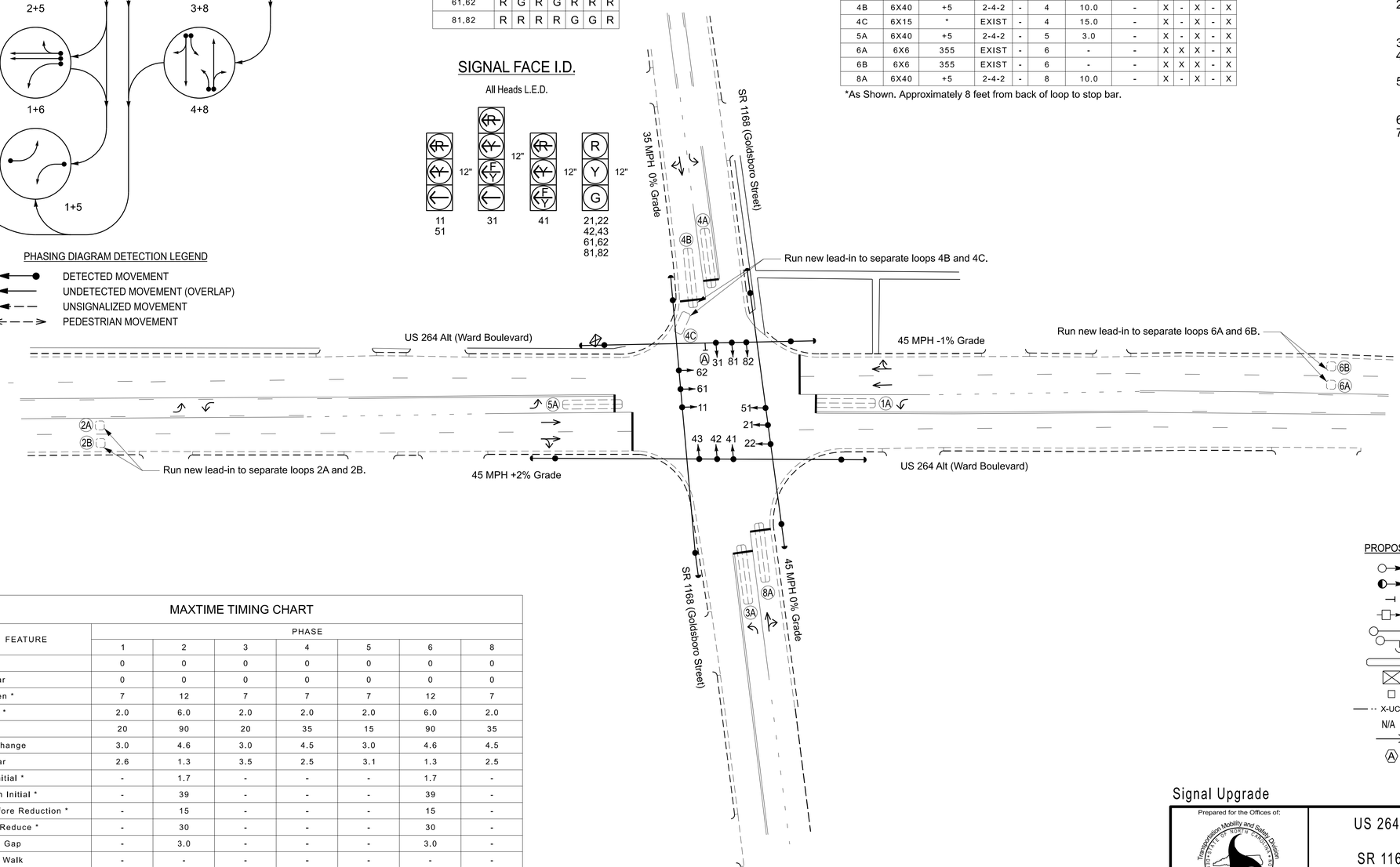
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	355	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	355	EXIST	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	15.0	-	X	-	X	-	X
					8	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
4C	6X15	*	EXIST	-	4	15.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	355	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	355	EXIST	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

*As Shown. Approximately 8 feet from back of loop to stop bar.

6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only.Coordinated signal system timing values supercede 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	8
Walk *	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0
Max 1 *	20	90	20	35	15	90	35
Yellow Change	3.0	4.6	3.0	4.5	3.0	4.6	4.5
Red Clear	2.6	1.3	3.5	2.5	3.1	1.3	2.5
Added Initial *	-	1.7	-	-	-	1.7	-
Maximum Initial *	-	39	-	-	-	39	-
Time Before Reduction *	-	15	-	-	-	15	-
Time To Reduce *	-	30	-	-	-	30	-
Minimum Gap	-	3.0	-	-	-	3.0	-
Advance Walk	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

US 264 Alt (Ward Boulevard)
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion
2/28/2025
DATE

SIG. INVENTORY NO. 04-0310

2/28/2025 11:17
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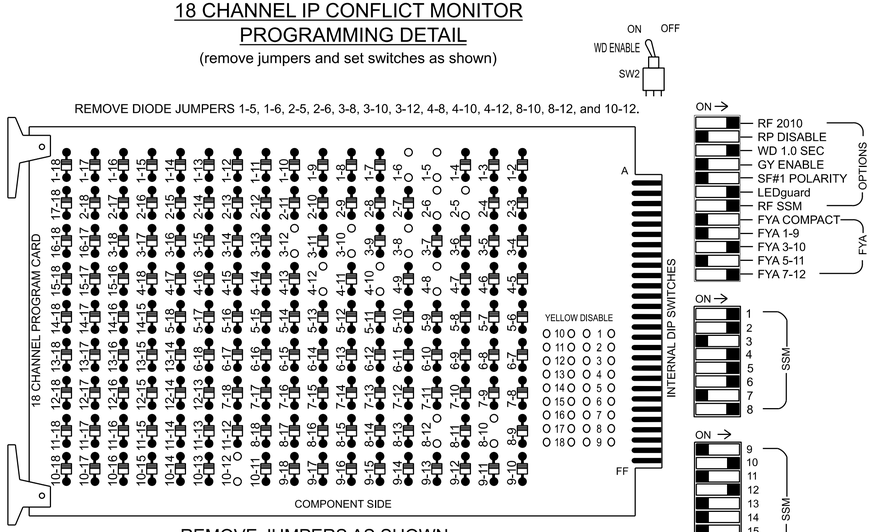
Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 16.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S2, AUX S5
Phases Used.....1, 2, 3, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet

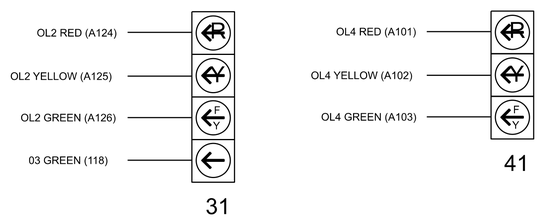
SIGNAL HEAD HOOK-UP CHART

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★	42,43	NU	51	61,62	NU	NU	81,82	NU	NU	31★	NU	NU	41★	NU
RED		128			101			134			107							
YELLOW		129		*	102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132							A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW	127			118			133											

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	1O	11	12	13	14
FILE "I"	U	ø 1 1A	ø 2 2A	SLOT EMPTY	SLOT EMPTY	ø 3 3A	ø 4 4A	ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	ø 2 2B			NOT USED	ø 4 4B	NOT USED							ST DC ISOLATOR
FILE "J"	U	ø 5 5A	ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	ø 6 6B				NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	15.0	-	X	-	X	-
				-	30	8	3.0	-	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	-
4C	TB6-1,2	I7U	65	31	10	4	15.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
8A	TB5-9,10	J6U	42	4	22	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
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:

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.

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

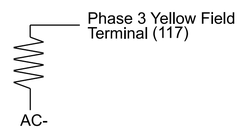
Overlap Plan 1

Overlap	1	2	3	4
Type	Off	FYA 4 - Section	Off	FYA 4 - Section
Included Phases	-	4	-	8
Modifier Phases	-	3	-	-
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

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: 04-0310
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 264 Alt (Ward Boulevard)
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE
SIG. INVENTORY NO. 04-0310

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 16.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0310
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Ward Boulevard)
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0310

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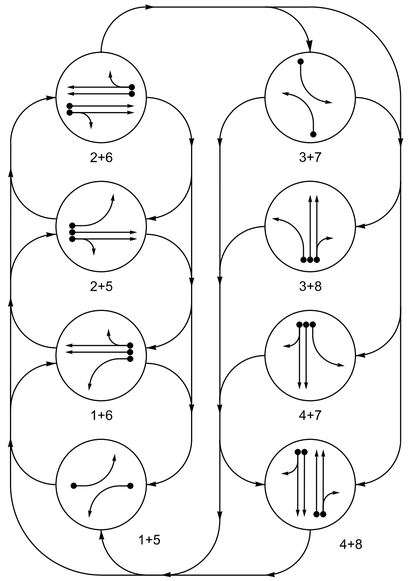
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 17.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←—	←—	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←—	←—	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←—	~~R~~	←—	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←—	~~R~~	←—	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

11	21, 22
31	41, 42
51	61, 62
71	81, 82

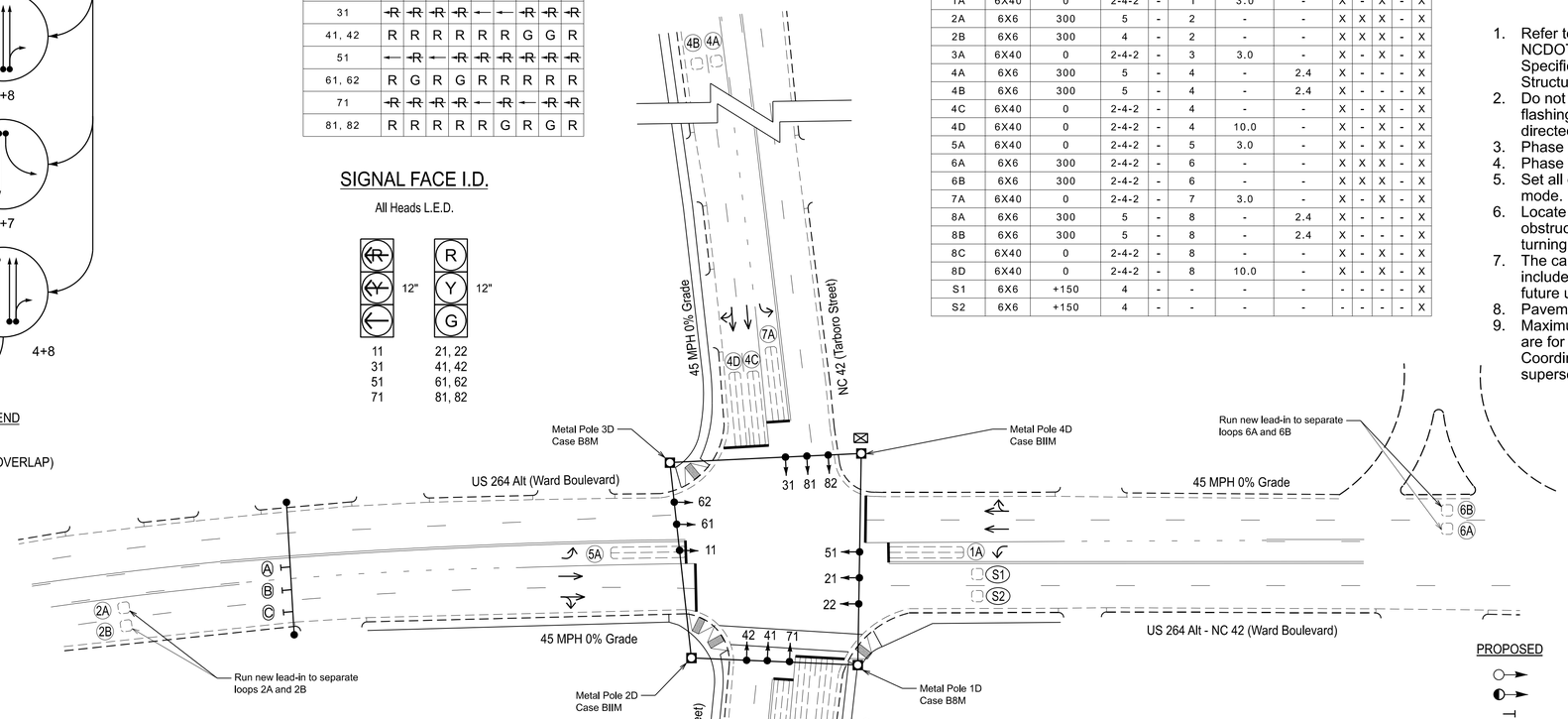
MAXTIME DETECTOR INSTALLATION CHART

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 GR/YEL	NEW CARD
1A	6X40	0	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4B	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4C	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4D	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	300	2-4-2	-	6	-	-	X	X	X	-	X
6B	6X6	300	2-4-2	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X6	300	5	-	8	-	2.4	X	-	-	-	X
8B	6X6	300	5	-	8	-	2.4	X	-	-	-	X
8C	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8D	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X
S1	6X6	+150	4	-	-	-	-	-	-	-	-	X
S2	6X6	+150	4	-	-	-	-	-	-	-	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
	Metal Strain Pole	
A	Left Arrow "WEST" NC 42 Sign	A
B	Through Arrow ONLY" Sign (R3-5A)	B
C	Combined Through and Right Arrow Sign (R3-6R)	C

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	30	90	25	50	45	90	25	50
Yellow Change	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Red Clear	2.6	1.3	2.9	1.6	2.4	1.3	3.1	1.6
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt / NC 42 (Ward Boulevard)
at
NC 42/ SR 1184 (Tarboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F6FC87CC66564F1...
DATE

SIG. INVENTORY NO. 04-0316

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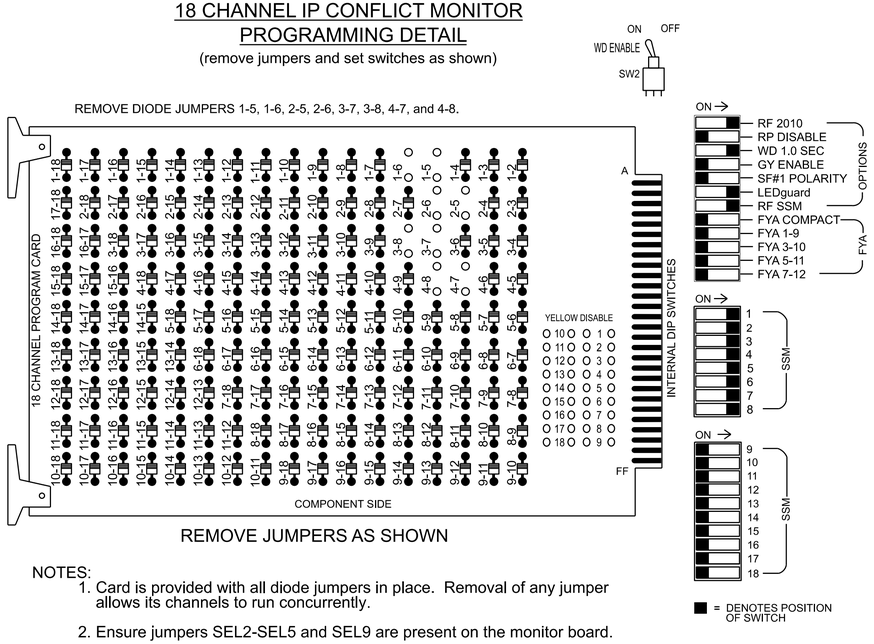
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 17.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125			116			131			122								
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	SLOT	Ø 3	Ø 4	Ø 4	SLOT	SYS. DET.	SLOT	SLOT	SLOT	SLOT	FS
		1A	2A	EMPTY	EMPTY	3A	4A	4C	EMPTY	S1	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
	L	NOT USED	Ø 2			NOT USED	Ø 4	Ø 4		SYS. DET.					ST
			2B				4B	4D		S2					DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	SLOT	Ø 7	Ø 8	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
		5A	6A	EMPTY	EMPTY	7A	8A	8C	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
	L	NOT USED	Ø 6			NOT USED	Ø 8	Ø 8							
			6B				8B	8D							

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	2.4	X	-	-	-
4B	TB4-11,12	I6L	45	7	9	4	-	2.4	X	-	-	-
4C	TB6-1,2	I7U	65	31	10	4	-	-	X	-	X	-
4D	TB6-3,4	I7L	78	44	11	4	10.0	-	X	-	X	-
*S1	TB6-9,10	I9U	60	22	13	SYS	-	-	-	-	-	-
*S2	TB6-11,12	I9L	62	24	14	SYS	-	-	-	-	-	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	2.4	X	-	-	-
8B	TB5-11,12	J6L	46	8	23	8	-	2.4	X	-	-	-
8C	TB7-1,2	J7U	66	32	24	8	-	-	X	-	X	-
8D	TB7-3,4	J7L	79	45	25	8	10.0	-	X	-	X	-

*System detector only. Remove any assigned vehicle phase.

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: 04-0316
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

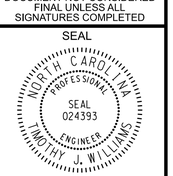
US 264 Alt / NC 42 (Ward Boulevard) at NC 42/ SR 1184 (Tarboro Street)

Division 4 | Wilson County | Wilson

PLAN DATE: November 2024 | REVIEWED BY: TJ Williams
PREPARED BY: MF Evans | REVIEWED BY: PL Alexander

REVISIONS | INIT. | DATE

SEAL



Signed by: T.J. Williams 2/28/2025
DocuSigned by:
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DATE

SIG. INVENTORY NO. 04-0316

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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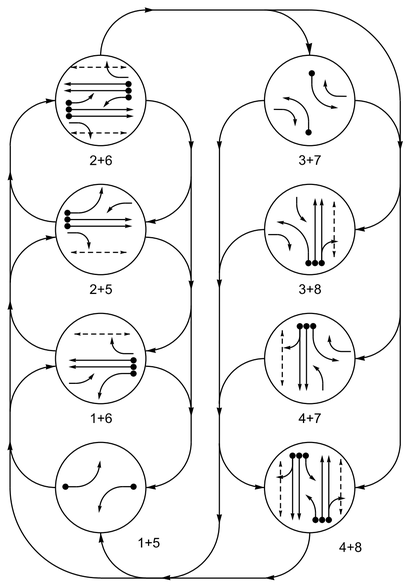
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 18.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

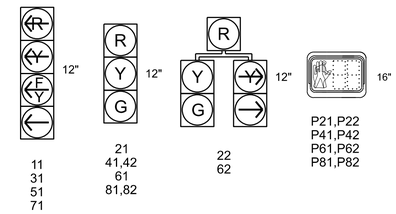
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	F Y	F Y	R	R	R	R	R
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R / ←	R / ←	R	R	R
31	R	R	R	R	←	←	F Y	F Y	R
41,42	R	R	R	R	R	R	G	G	R
51	←	F Y	←	F Y	R	R	R	R	R
61	R	G	R	G	R	R	R	R	R
62	R	G	R	G	R / ←	R	R / ←	R	R
71	R	R	R	R	←	F Y	←	F Y	R
81,82	R	R	R	R	R	G	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



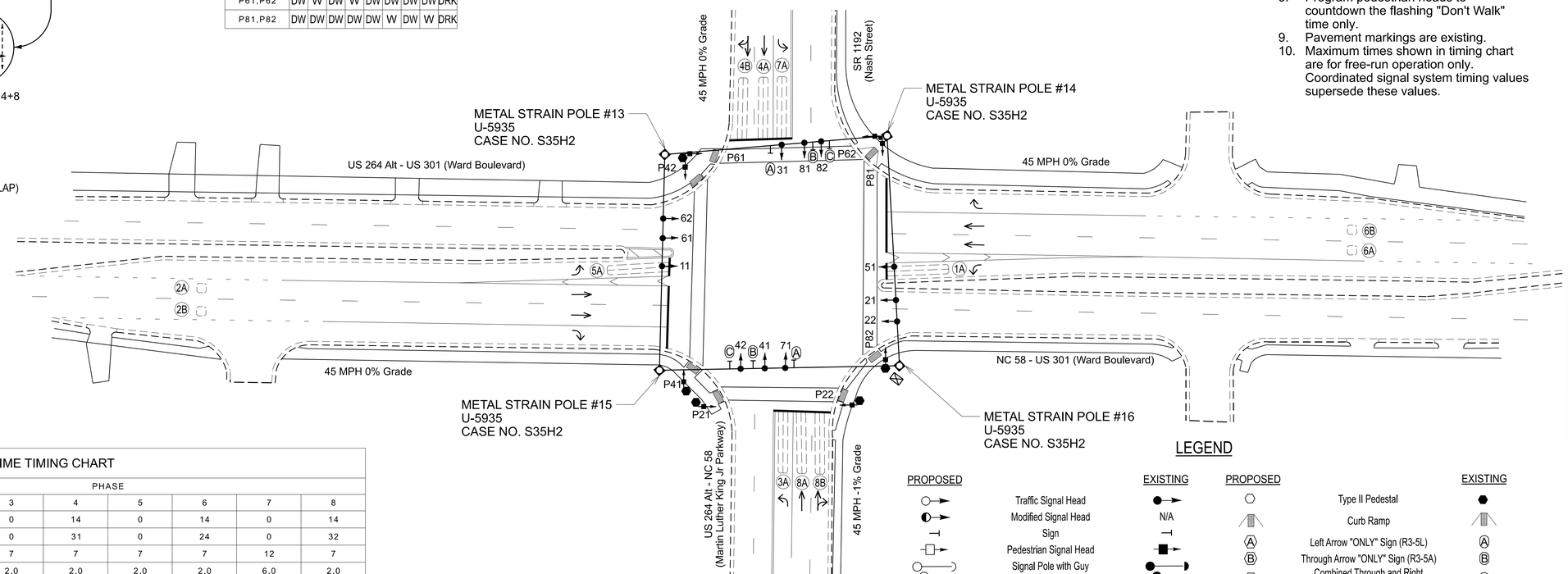
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X6	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X40	300	5	-	2	-	-	X	X	X	-	X
2B	6X40	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	15.0	-	X	-	X	-	X
					8	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	15.0	-	X	-	X	-	X
					4	3.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as to not obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	14	0	14	0	14	0	14
Ped Clear	0	18	0	31	0	24	0	32
Min Green *	7	12	7	7	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	2.0	2.0	6.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow Change	3.0	4.5	3.0	4.6	3.0	4.5	3.0	4.6
Red Clear	3.4	1.9	3.6	2.5	3.4	1.9	3.5	2.5
Added Initial *	-	1.8	-	-	-	1.8	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	7	-	7	-	7	-	7
Non Lock Detector	X	-	X	X	X	-	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.

LEGEND

PROPOSED		EXISTING	PROPOSED		EXISTING
	Traffic Signal Head			Type II Pedestal	
	Modified Signal Head	N/A		Curb Ramp	
	Sign		A	Left Arrow "ONLY" Sign (R3-5L)	A
	Pedestrian Signal Head		B	Through Arrow "ONLY" Sign (R3-5A)	B
	Signal Pole with Guy		C	Combined Through and Right Arrow Sign (R3-6R)	C
	Signal Pole with Sidewalk Guy				
	Inductive Loop Detector				
	Controller & Cabinet				
	Junction Box				
X-UC	2-in Underground Conduit	UC			
N/A	Right of Way				
	Directional Arrow				

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SCALE 0 40 1"=40'

US 264 Alt / NC 58 - US 301 (Ward Blvd)
at
SR 1192 (Nash Street) /
US 264 Alt - NC 58 (MLK Jr Pkwy)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
-74B9D4AD39E34D8...
SIG. INVENTORY NO. 04-0317 DATE

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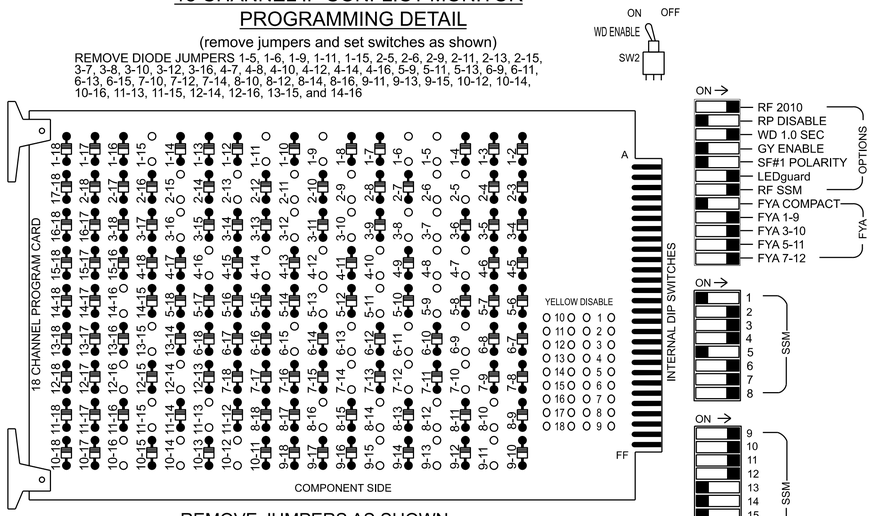
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 18.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S3, S4, S5, S6, S7, S8, S9
S10, S11, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED,
7, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

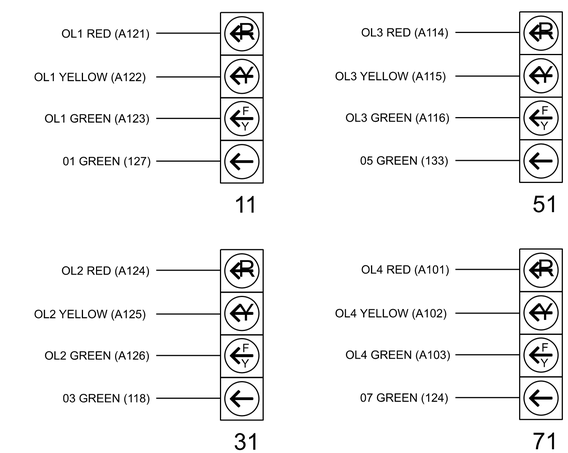
SIGNAL HEAD HOOK-UP CHART

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.	11★	21,22	P21, P22	22	31★	41,42	P41, P42	51★	61,62	P61, P62	62	71★	81,82	P81, P82	11★	31★	NU	51★	71★	NU
RED		128		*		101			134		*		107							
YELLOW	*	129				102		*	135				108							
GREEN		130				103			136				109							
RED ARROW															A121	A124		A114	A101	
YELLOW ARROW				117							123				A122	A125		A115	A102	
FLASHING YELLOW ARROW															A123	A126		A116	A103	
GREEN ARROW	127			118	118			133			124	124								
✋			113				104			119				110						
🚶			115				106			121				112						

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	15.0	-	X	-	X	-
				-	30	8	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	15.0	-	X	-	X	-
				-	32	4	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	-	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						

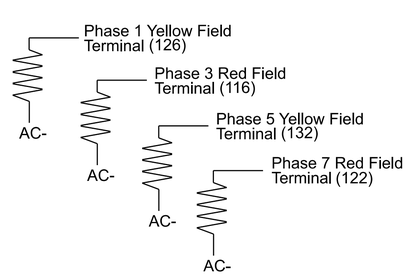
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0317
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
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(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

US 264 Alt / NC 58 - US 301 (Ward Blvd)
at
SR 1192 (Nash Street) /
US 264 Alt - NC 58 (MLK Jr. Pkwy)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0317

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 18.2

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
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

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.

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.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0317
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt / NC 58 - US 301 (Ward Blvd)
at
SR 1192 (Nash Street) /
US 264 Alt - NC 58 (MLK Jr. Pkwy)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion
7A6D9AAC9E34D8...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0317

28-FEB-2025 11:28
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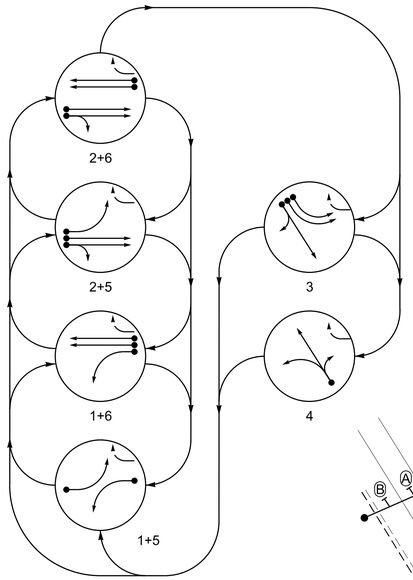
STIF4685

Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig 19.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

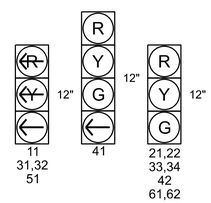
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3	4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R
31,32	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
33,34	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



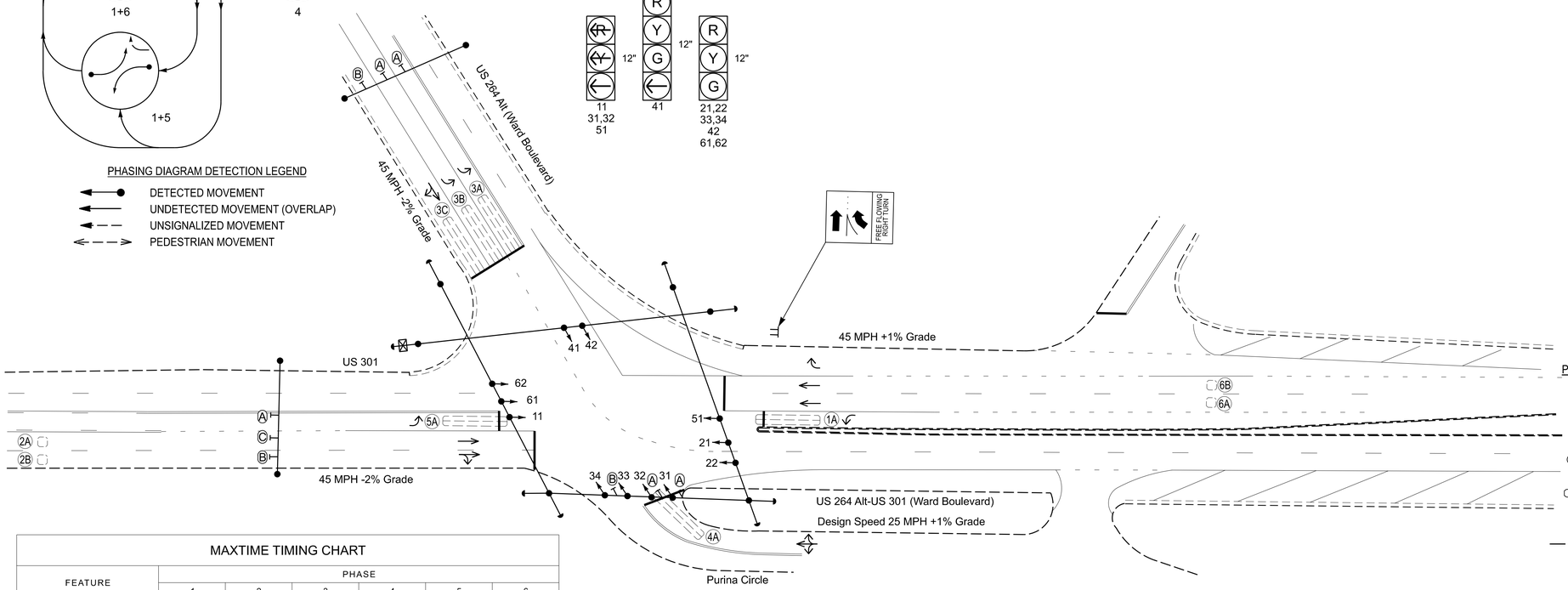
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD	
1A	6X40	+5	2-4-2	-	1	-	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
3C	6X40	0	2-4-2	-	3	10.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X

6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2024 and "Standard Specifications for Roads and Structures" dated July 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet as not to obstruct sight distance of vehicles turnin right on red.
7. The cabinet should be designed to include an Auxillary Output file for future use.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supercede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12
Passage *	2.0	6.0	4.0	2.0	2.0	6.0
Max 1 *	20	90	35	20	20	90
Yellow Change	3.0	4.7	4.7	3.1	3.0	4.7
Red Clear	3.3	1.9	2.5	3.2	2.6	1.9
Added Initial *	-	1.8	-	-	-	1.8
Maximum Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 1"=40'

US 301/US 264 Alt-US 301
(Ward Boulevard) at
US 264 Alt (Ward Boulevard)/
Purina Circle

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSign Envelope ID: F4FC371C0065491...
DATE:

SIG. INVENTORY NO. 04-0318

20-FEB-2025 11:28
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SIYF4885

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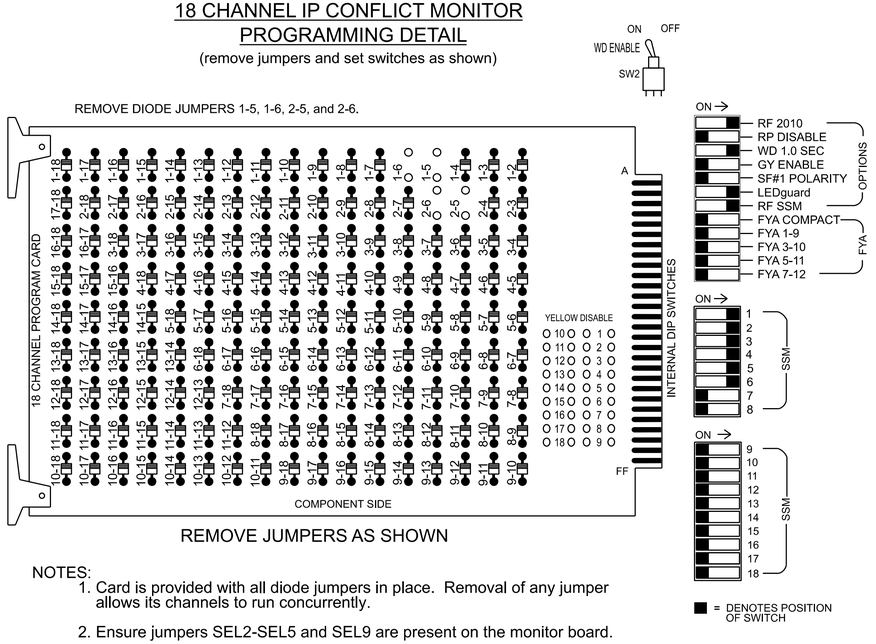
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 19.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8
Phases Used.....1, 2, 3, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	31,32	33,34	41	42	NU	51	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			116	101	101			134										
YELLOW		129			117	102	102			135										
GREEN		130			118	103	103			136										
RED ARROW	125			116					131											
YELLOW ARROW	126			117					132											
GREEN ARROW	127			118		103			133											

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	SLOT	Ø 3	Ø 3	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
		1A	2A	EMPTY	EMPTY	3A	3B	4A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
	L	NOT USED	Ø 2			NOT USED	Ø 3	NOT USED							ST
			2B				3C								DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
		5A	6A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
	L	NOT USED	Ø 6												
			6B												

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
3B	TB4-9,10	I6U	41	3	8	3	-	-	X	-	X	-
3C	TB4-11,12	I6L	45	7	9	3	10.0	-	X	-	X	-
4A	TB6-1,2	I7U	65	31	10	4	5.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-

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: 04-0318
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

STATE OF NORTH CAROLINA Transportation Mobility and Safety Division Traffic Engineering & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 301/US 264 Alt-US 301 (Ward Boulevard) at US 264 Alt (Ward Boulevard)/ Purina Circle

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DIGITALLY SIGNED DATE

SIG. INVENTORY NO. 04-0318

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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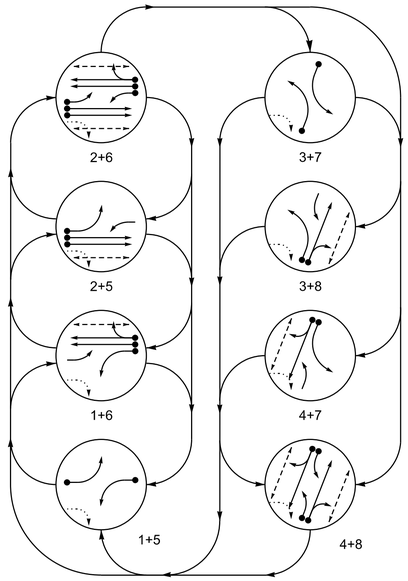
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 20.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

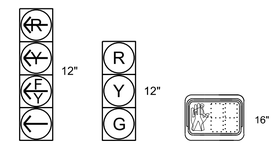
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	F Y	F Y	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	F Y	←	F Y	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



11	21, 22	P21, P22
31	41, 42	P41, P42
51	61, 62	P61, P62
71	81, 82	P81, P82

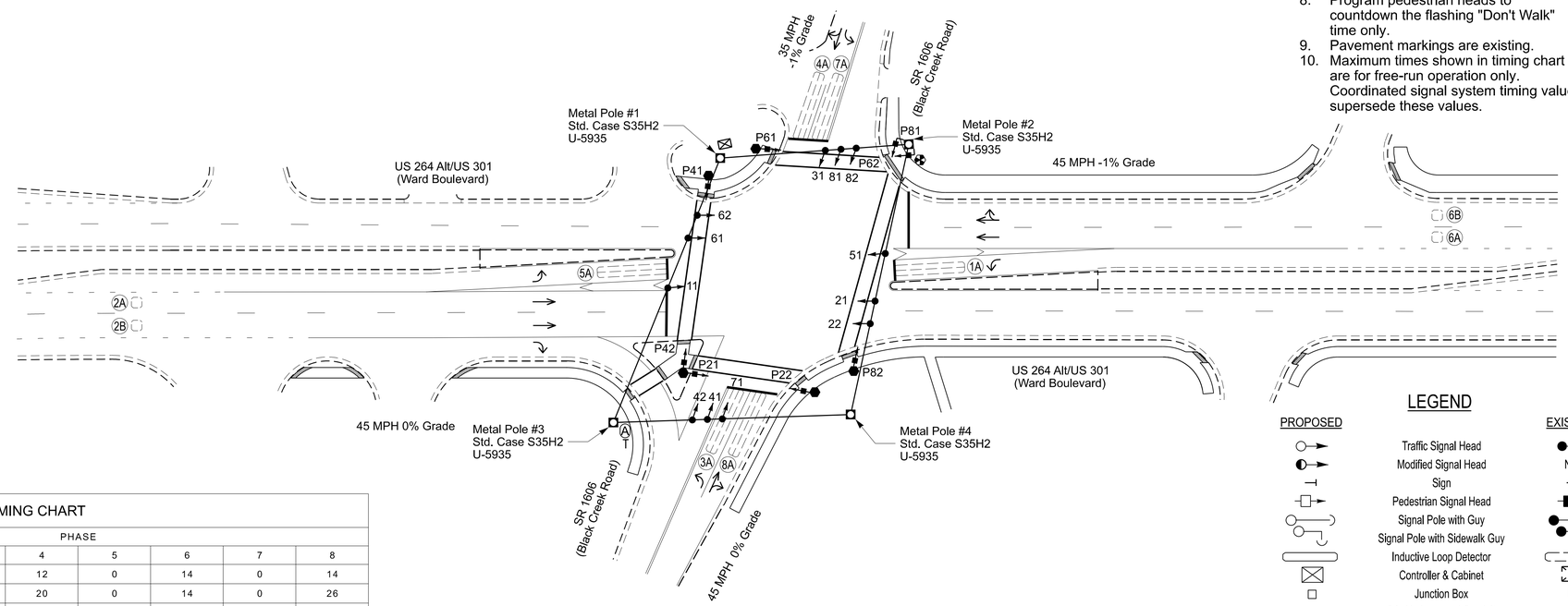
MAXTIME DETECTOR INSTALLATION CHART

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	
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	15.0	-	X	-	X	-	X
					8	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	15.0	-	X	-	X	-	X
					4	3.0	-	X	-	X	-	X
8A	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
	Type I Pushbutton Post	
	Type II Signal Pedestal	
N/A	Curb Ramp	
	"YIELD" Sign (R1-2)	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	14	0	12	0	14	0	14
Ped Clear	0	13	0	20	0	14	0	26
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	30	20	90	20	30
Yellow Change	3.0	4.6	3.0	4.5	3.0	4.6	3.0	4.5
Red Clear	3.4	1.9	2.9	2.7	3.4	1.9	3.1	2.7
Added Initial *	-	1.8	-	-	-	1.8	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	7	-	5	-	7	-	7
Non Lock Detector	X	-	X	X	X	-	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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 1"=40' (0 – 40)

US 264 Alt/US 301 (Ward Blvd.)
at
SR 1606 (Black Creek Road)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 4BF2C371C0B9B4F1
DATE

SIG. INVENTORY NO. 04-0319

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STIFF4685

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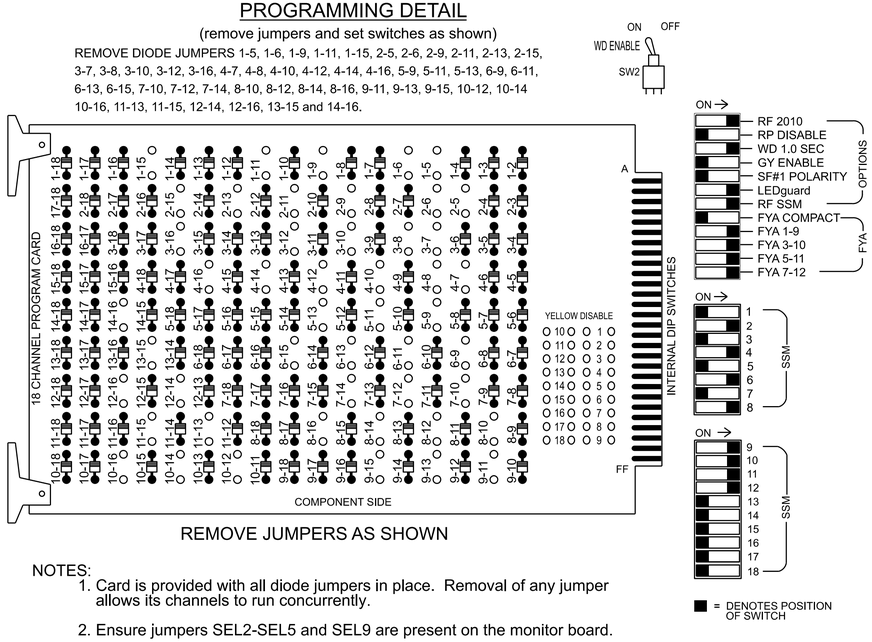
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 20.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

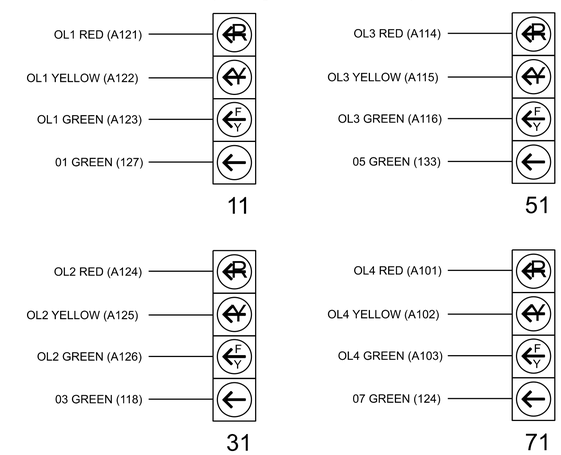
SIGNAL HEAD HOOK-UP CHART

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.	11★	21,22	P21, P22	31★	41,42	P41, P42	51★	61,62	P61, P62	71★	81,82	P81, P82	11★	31★	NU	51★	71★	NU
RED		128			101			134			107							
YELLOW	*	129		*	102		*	135		*	108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133			124								
✋			113			104			119			110						
🚶			115			106			121			112						

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7	3	15.0		X		X	
				-	30	8	3.0		X		X	
4A	TB4-9,10	I6U	41	3	8	4	10.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
7A	TB5-5,6	J5U	57	19	21	7	15.0		X		X	
				-	32	4	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	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						

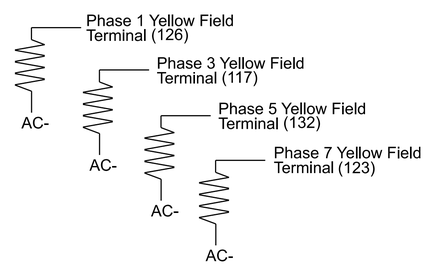
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0319
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt/US 301 (Ward Blvd.)
at
SR 1606 (Black Creek Road)

Division 4 Wilson County Wilson

PLAN DATE: November 2024	REVIEWED BY: TJ Williams
PREPARED BY: JT Stiff	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams (DocuSigned by:) 2/28/2025
SIG. INVENTORY NO. 04-0319

28-FEB-2025 11:32
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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	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
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

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

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0319
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt/US 301 (Ward Blvd.)
at
SR 1606 (Black Creek Road)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1BEC671C0B8B481... DATE

SIG. INVENTORY NO. 04-0319

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STIFF685

Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 21.0

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 22.0

PHASING DIAGRAM

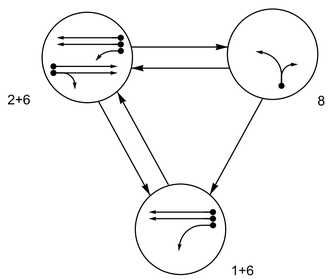


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 8	PHASE FLASH
11	←	F Y	~~R~~	~~R~~
21, 22	R	G	R	R
61, 62	G	G	R	R
81	R	R	←	R
82	R	R	→	R

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	
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

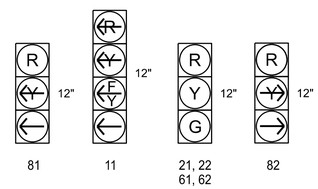
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Renumber existing signal heads numbered 61, 62, and 63 to 11, 61, and 62, respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Program controller to operate using FYA compact mode.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

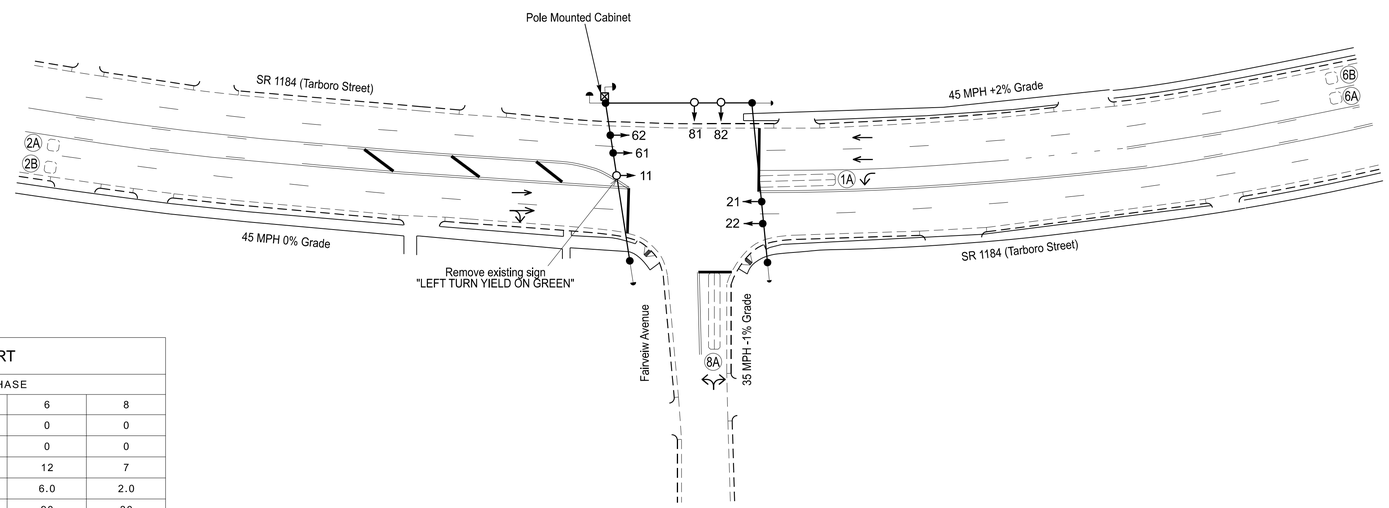
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.





MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	7	12	12	7
Passage *	2.0	6.0	6.0	2.0
Max 1 *	15	90	90	30
Yellow Change	3.0	4.5	4.5	3.0
Red Clear	1.8	1.0	1.0	1.9
Added Initial *	-	1.5	1.5	-
Maximum Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Advance Walk	-	-	-	-
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	

Signal Upgrade

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

SR 1184 (Tarboro Street)
at
Fairview Avenue

Division 4 | Wilson County | Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	Larson / Evans	REVIEWED BY:	PL Alexander

SCALE 1"=40' (0 – 40)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: F8FC5F1C2B9B481...
DATE

SIG. INVENTORY NO. 04-0325

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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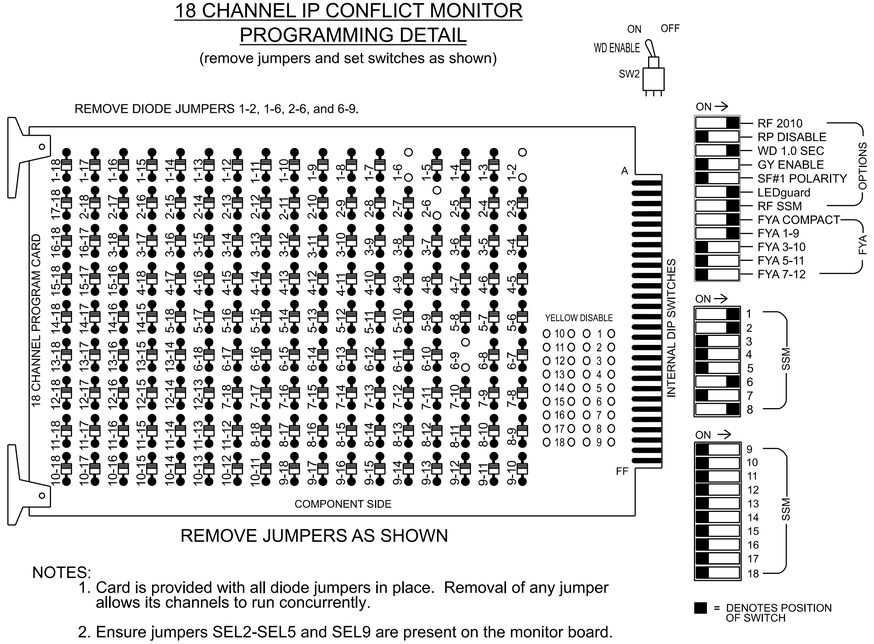
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 22.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3		S4	S5	S6	S7	S8	S9	S10	S11		S12
CMU CHANNEL NO.	1	2	9	13	3	4	14	5	6	15	7	8		16
PHASE	OL1	2	1 GRN	2 PED	3	4	4 PED	5	6	6 PED	7	8		8 PED
SIGNAL HEAD NO.	11★	21,22	11★	NU	NU	NU	NU	NU	61,62	NU	NU	81	82	NU
RED		128							134			107	107	
YELLOW		129							135					
GREEN		130							136					
RED ARROW	125													
YELLOW ARROW	126											108 (LEFT)	108 (RIGHT)	
FLASHING YELLOW ARROW	127													
GREEN ARROW			114									109 (LEFT)	109 (RIGHT)	
				*										

NU = Not Used

* Denotes install load resistor. See load resistor installation detail on sheet 2.

★See pictorial of head wiring in detail this sheet.

NOTE: Load Switches S1 and S3 require output remapping. See this sheet and sheet 2 for instructions.

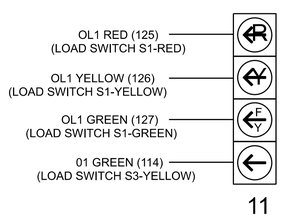
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S1, S2, S3, S8, S11
Phases Used.....1, 2, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L	NOT USED	Ø 2 2B				Ø 6 6B		NOT USED						ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 1 ASSIGNED TO CHANNEL 1 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	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

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	TB21-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB21-3,4	I2U	39	1	2	2			X	X	X	
2B	TB23-3,4	I2L	43	5	3	2			X	X	X	
6A	TB21-11,12	I6U	40	2	16	6			X	X	X	
6B	TB23-11,12	I6L	44	6	17	6			X	X	X	
8A	TB22-1,2	I8U	42	4	22	8	10.0		X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0325
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1184 (Tarboro Street)
at
Fairview Avenue

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0325 DATE

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 22.2

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	FYA 4 - Section	Off	Off	Off
Included Phases	2	-	-	-
Modifier Phases	1	-	-	-
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

PED YELLOW CONFLICT MONITOR WIRING DETAIL

(make cabinet wiring changes as shown below)

In order to use FYA COMPACT mode with the 16 or 18 Channel Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: From 2 PY (field term. 114) to chan. 9 green (monitor pin 13U).

Follow the instructions below to make appropriate connections:

STEP 1: Fold down rear panel of output file.

STEP 2: Find unused wiring harness fom conflict monitor card edge connector (which should be tied and bundled together).

STEP 3: Find the connector that corresponds to the following conflict monitor card edge pins and solder wire to the appropriate terminal on the rear of the output file shown below:

CMU-13 ----------2PY (term. 114)

NOTE: Some cabinet manufacturers use keyed connectors to accomplish this wiring configuration. If connectors are used, fold down the rear panel of the output file and find the set of 3 keyed connectors and connect them as shown below:

1 - 2PY	----------	1- CMU-13
2 - 4PY	----------	2- CMU-16
3 - 6PY	----------	3- CMU-R
4 - 8PY	----------	4- CMU-U

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL FOR SIGNAL HEAD 11

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

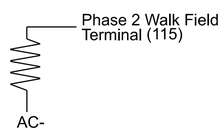
Plan 1

NOTICE OUTPUT POINTS 33 CONTROL TYPE & INDEX REASSIGNMENT →

Output Point	Description	Output Control Type	Index
33	C1-35	Phase Green	1

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)

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: 04-0325
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1184 (Tarboro Street)
at
Fairview Avenue

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1F8DC871C0B8481...
DATE

SIG. INVENTORY NO. 04-0325

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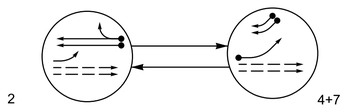
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 23.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2	PHASE 4+7	FLASH
21,22	G	R	R
41,42,43	R	↗	R
71,72	F Y	←	~~R~~

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	
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A,4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
7A	6X40	+5	2-4-2	-	7	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X

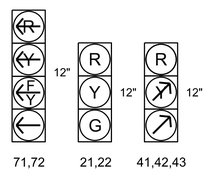
2 Phase
Fully Actuated
Wilson Signal System

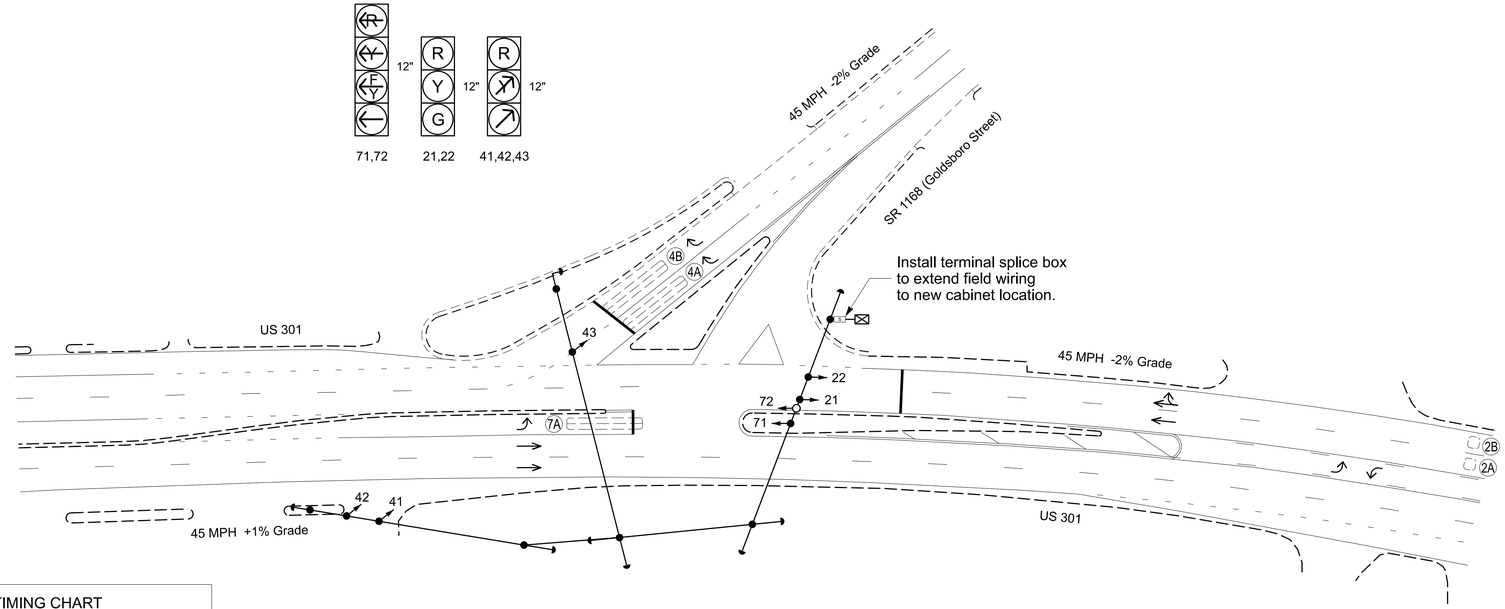
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Renumber existing signal heads numbered 73, 74, and 75 to 41, 42, and 43, respectively.
6. Renumber existing loop detectors numbered 7B, and 7C to 4A, and 4B, respectively.
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.

SIGNAL FACE I.D.

All Heads L.E.D.





MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 7
Walk *	0	0	0
Ped Clear	0	0	0
Min Green *	12	7	7
Passage *	6.0	2.0	2.0
Max 1 *	90	15	15
Yellow Change	4.7	4.7	3.0
Red Clear	3.2	1.3	1.8
Added Initial *	1.5	-	-
Maximum Initial *	34	-	-
Time Before Reduction *	15	-	-
Time To Reduce *	45	-	-
Minimum Gap	3.0	-	-
Advance Walk	-	-	-
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 phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
S	Terminal Splice Box	S

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1616 EAST MILLBROOK ROAD, SUITE 160
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(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

US 301
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0327

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jtstiff@ncdot.gov
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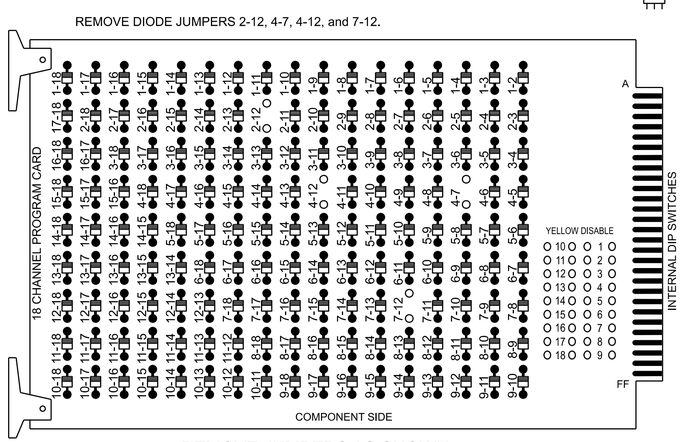
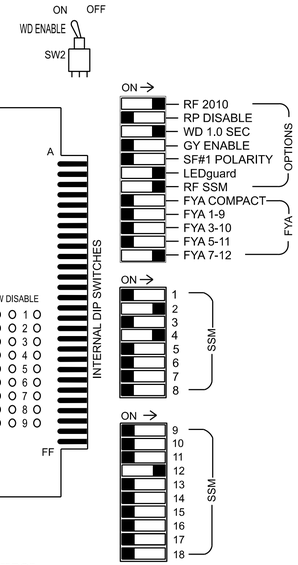
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 23.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 7 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S10, AUX S5
Phases Used.....2, 4, 7
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet.

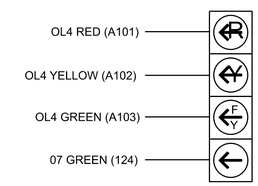
SIGNAL HEAD HOOK-UP CHART

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 43	NU	NU	NU	NU	★ 71,72	NU	NU	NU	NU	NU	NU	★ 71,72	NU
RED		128			101													
YELLOW		129								*								
GREEN		130																
RED ARROW																	A101	
YELLOW ARROW					102												A102	
FLASHING YELLOW ARROW																	A103	
GREEN ARROW					103					124								

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)



71,72

INPUT FILE POSITION LAYOUT

(front view)

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

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

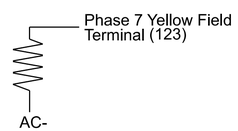
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A, 4B	TB4-9,10	I6U	41	3	8	4	10.0		X		X	
7A	TB5-5,6	J5U	57	19	21	7	15.0		X		X	
				-	32	2	3.0		X		X	X

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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)



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	-	-	-	7
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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0327
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 301
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0327
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 301
at
SR 1168 (Goldsboro Street)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0327

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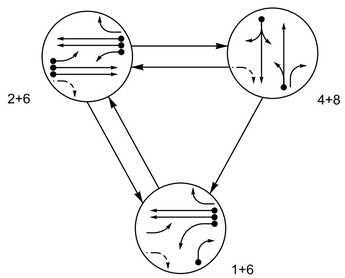
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 24.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

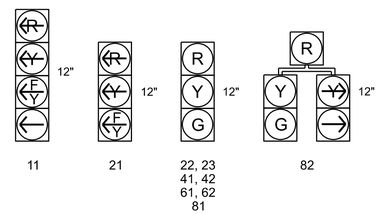
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4+8	FLASH
11	←	F Y	~~R~~	~~R~~
21	~~F Y~~	F Y	~~R~~	~~R~~
22, 23	R	G	R	R
41, 42	R	R	G	R
61, 62	G	G	R	R
81	R	R	G	R
82	R/→	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

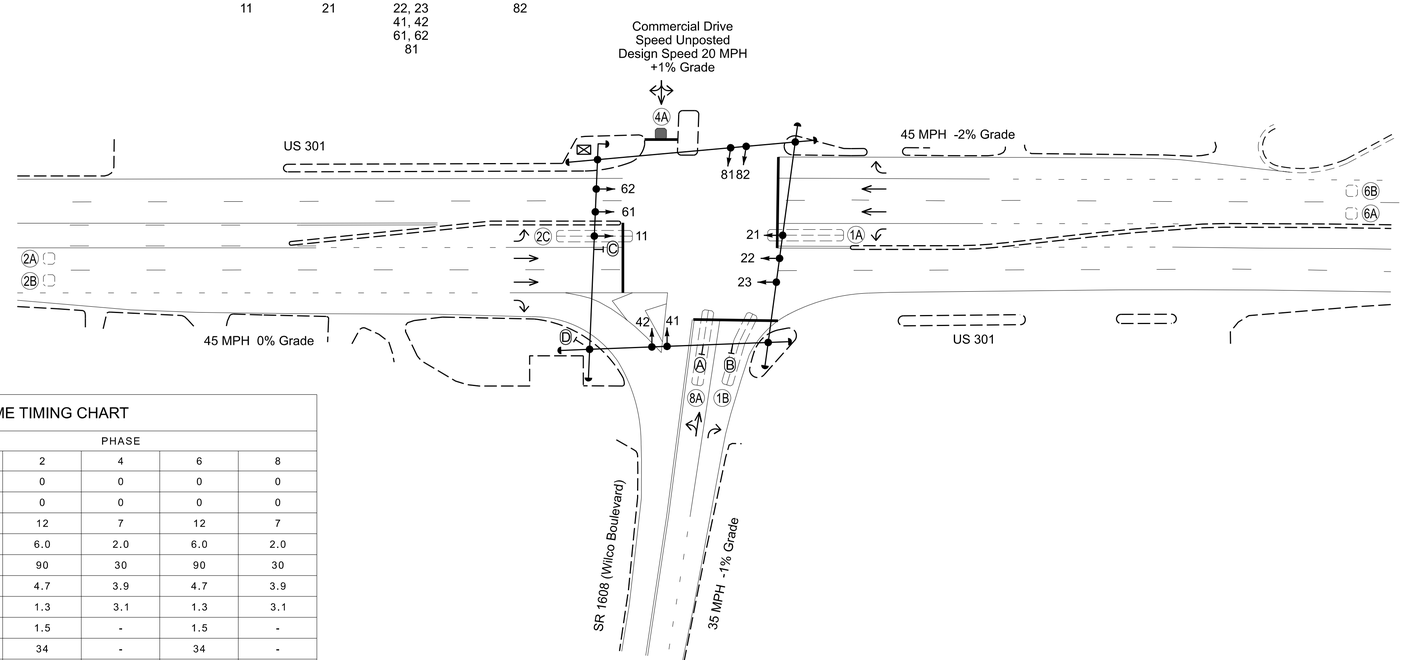
DETECTOR: LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
1A	6X40	+5	2-4-2	-	1	10.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
1B	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
2C	6X40	+5	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X6	0	*	-	4	5.0	-	X	-	X	-	*
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X

* Non-Intrusive Detection Zone

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Min Green *	7	12	7	12	7
Passage *	2.0	6.0	2.0	6.0	2.0
Max 1 *	20	90	30	90	30
Yellow Change	3.0	4.7	3.9	4.7	3.9
Red Clear	2.1	1.3	3.1	1.3	3.1
Added Initial *	-	1.5	-	1.5	-
Maximum Initial *	-	34	-	34	-
Time Before Reduction *	-	15	-	15	-
Time To Reduce *	-	30	-	30	-
Minimum Gap	-	3.0	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Non-Intrusive Detection Zone	
A	Combined Through and Left Arrow Sign (R3-6L)	A
B	Right Arrow "ONLY" Sign (R3-5R)	B
C	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	C
D	"YIELD" Sign (R1-2)	D

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 0 40 1"=40'

US 301
at
SR 1608 (Wilco Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Digitally signed by Anthony Encarnacion 2/28/2025
DocuSigned by:
7A69DA2C9E34D8...
DATE

SIG. INVENTORY NO. 04-0328

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STIFF4985

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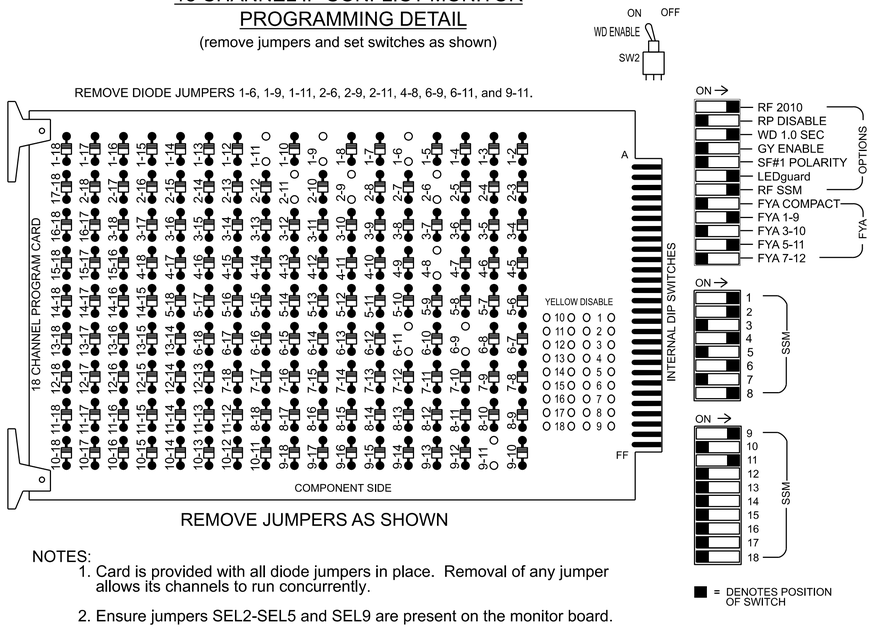
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 24.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S4
Phases Used.....1, 2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2.

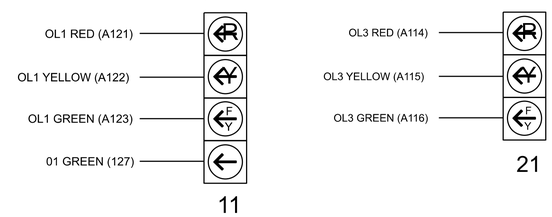
SIGNAL HEAD HOOK-UP CHART

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.	11★	82	22,23	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	11★	NU	NU	21★	NU	NU
RED		*	128			101			134			107							
YELLOW			129			102			135			108							
GREEN			130			103			136			109							
RED ARROW														A121			A114		
YELLOW ARROW		126												A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW	127	127																	

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	Ø 1 1A	Ø 2 2A	Ø 2 2C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B	Ø 1 1B											ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B				NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1	10.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
2C	TB2-9,10	I3U	63	29	4	2	3.0		X		X	X
1B	TB2-11,12	I3L	76	42	5	1	15.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	

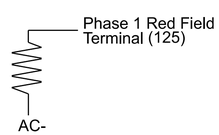
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

Maintain existing radar detection for vehicle detection for zone 4A. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



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: 04-0328
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301
at
SR 1608 (Wilco Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0328

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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

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	-	-
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

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: 04-0328
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301
at
SR 1608 (Wilco Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Docusigned by:
Anthony Encarnacion 2/28/2025
7A85DA0D98E4C05 DATE

SIG. INVENTORY NO. 04-0328

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bentlaz@ncdot.gov
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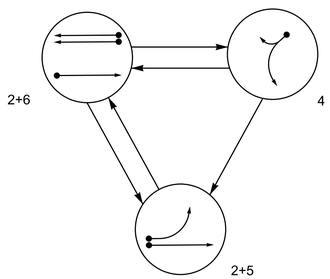
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 25.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4	FLASH
21,22	G	G	R	R
41,42	R	R	G	R
51	←	~~R~~	~~R~~	~~R~~
61,62	R	G	R	R

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
2A	6X6	70	3	-	2	-	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	300	4	X	6	-	2.0	X	-	X	-	X
6B	6X6	300	4	X	6	-	2.0	X	-	X	-	X
6C, 6D	6X6	70	3	-	6	-	-	X	-	X	-	X

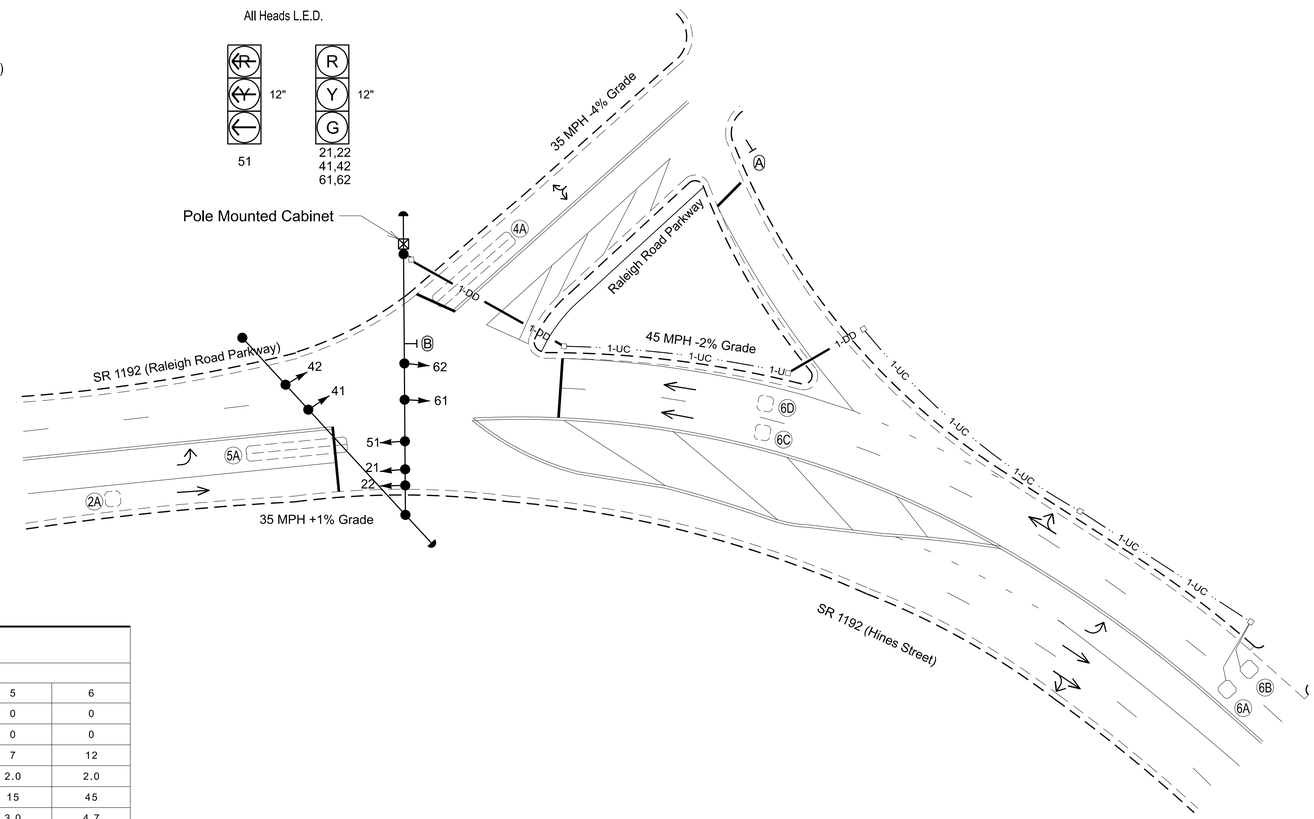
3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Renumber existing signal heads numbered 42 and 43 to 41 and 42 respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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.

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	
X-UC	2-in Underground Conduit	UC
1-DD	Directional Drilling	DD
N/A	Right of Way	
	Directional Arrow	
A	"STOP" Sign (R1-1)	A
B	No Right Turn Sign (R3-1)	B

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	10	7	7	12
Passage *	3.0	2.0	2.0	2.0
Max 1 *	45	15	15	45
Yellow Change	4.7	4.1	3.0	4.7
Red Clear	1.4	1.4	2.8	1.4
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Raleigh Road Parkway/ Hines Street) at Raleigh Road Parkway

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

SCALE 1"=30' (0 – 30)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
BD6483D3CFB4492...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0329

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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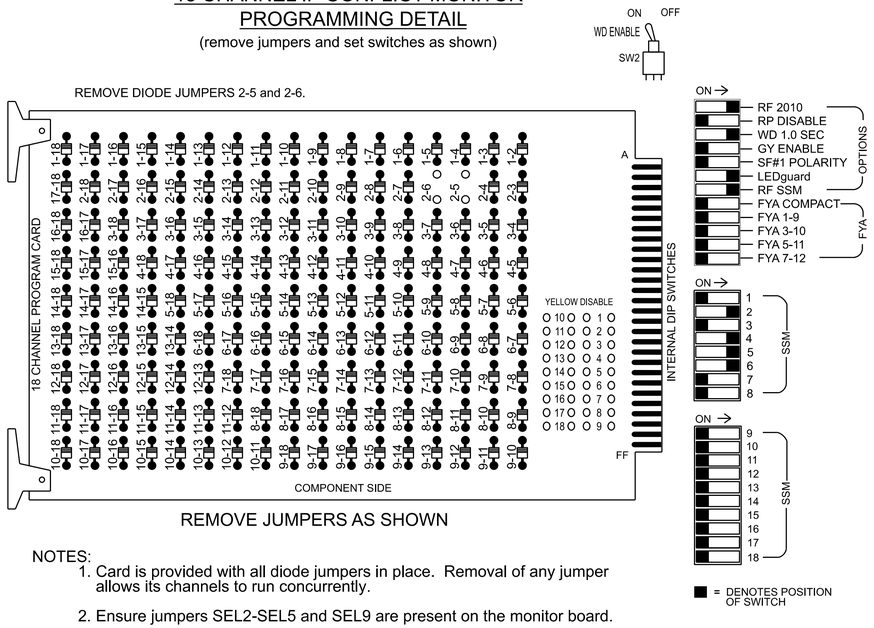
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 25.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW							131					
YELLOW ARROW							132					
GREEN ARROW							133					

NU = Not Used

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S5, S7, S8
Phases Used.....2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....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

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	Ø 4 4A	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L		NOT USED		NOT USED	Ø 6 6C, 6D	Ø 6 6B								ST 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
2A	TB21-3,4	I2U	39	1	2	2	-	-	X	-	X	-
4A	TB21-7,8	I4U	41	3	8	4	10.0	-	X	-	X	-
5A	TB21-9,10	I5U	55	17	15	5	-	-	X	-	X	-
6C, 6D	TB23-9,10	I5L	48	10	20	6	-	-	X	-	X	-
6A	TB21-11,12	I6U	40	2	16	6	-	2.0	X	-	X	-
6B	TB23-11,12	I6L	44	6	17	6	-	2.0	X	-	X	-

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0329
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

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

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Electrical Detail

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Electrical and Programming Details For:

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

SR 1192 (Raleigh Road Parkway/ Hines Street) at Raleigh Road Parkway

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8BD6371C0B8481...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0329

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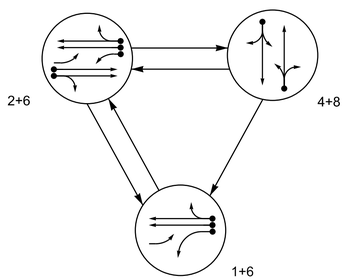
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 26.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4+8	FLASH
11	←	F Y	R	R
21	F Y	F Y	R	R
22,23	R	G	R	R
41,42	R	R	G	R
61,62	G	G	R	R
81,82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

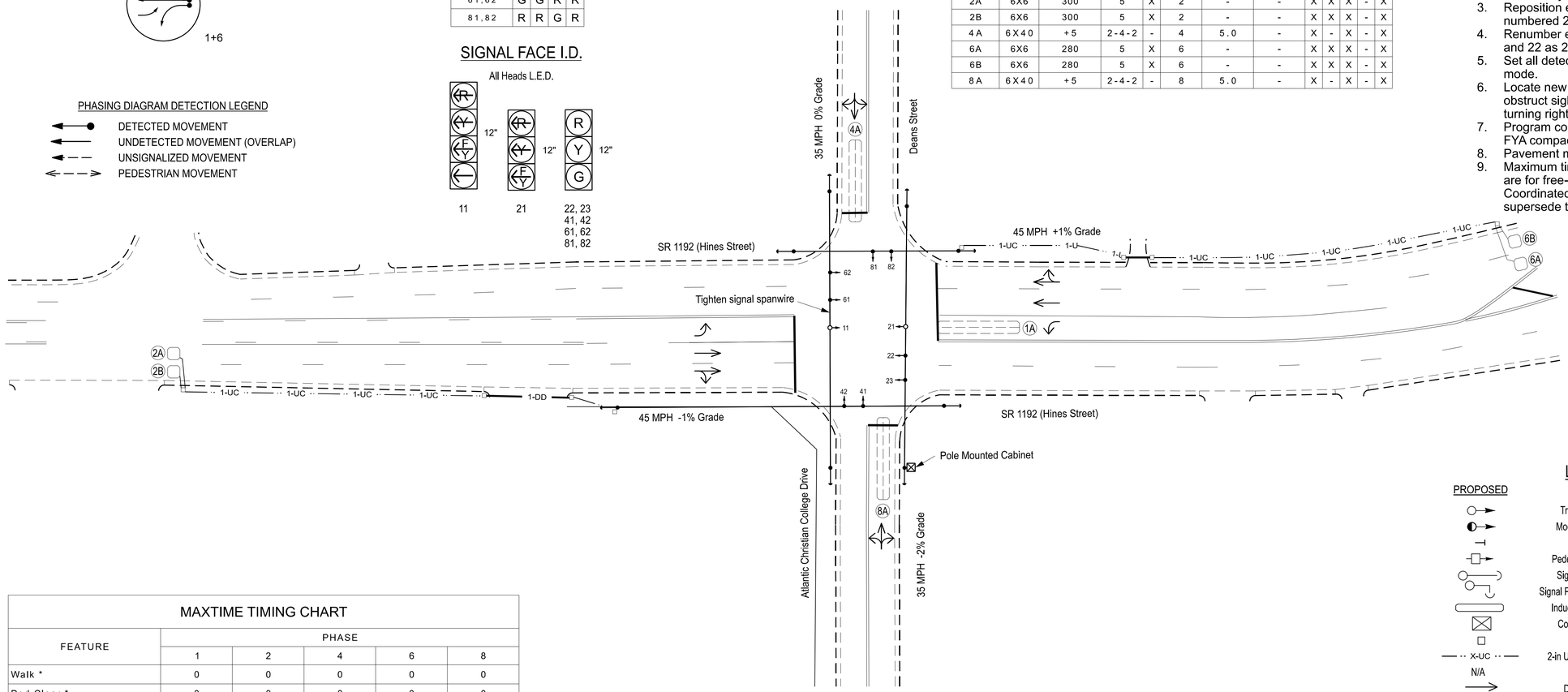
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
				-	6	3.0	-	X	-	X	X	X
2A	6X6	300	5	X	2	-	-	X	X	X	-	X
2B	6X6	300	5	X	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
6A	6X6	280	5	X	6	-	-	X	X	X	-	X
6B	6X6	280	5	X	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	5.0	-	X	-	X	-	X

3 Phase
Fully-Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21 and 22.
4. Renumber existing signal heads 21 and 22 as 22 and 23 respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Program controller to operate using FYA compact mode.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
1-DD	Directional Drill	N/A

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear *	0	0	0	0	0
Min Green *	7	12	7	12	7
Passage *	2.0	6.0	2.0	6.0	2.0
Max 1 *	15	60	20	60	20
Yellow Change	3.0	4.6	4.0	4.6	4.0
Red Clear	1.8	1.0	1.8	1.0	1.8
Added Initial *	-	1.5	-	1.5	-
Maximum Initial *	-	34	-	32	-
Time Before Reduction *	-	15	-	15	-
Time To Reduce *	-	15	-	15	-
Minimum Gap	-	3.0	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	X	-	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.

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(919) 876-6888 NCBEES #F-0326

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

SCALE 0 30 1"=30'

SR 1192 (Hines Street)
at
Atlantic Christian
College Drive/Deans Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	WL Larson	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 7A69DAAD9E34D8... 2/28/2025
DATE

SIG. INVENTORY NO. 04-0330

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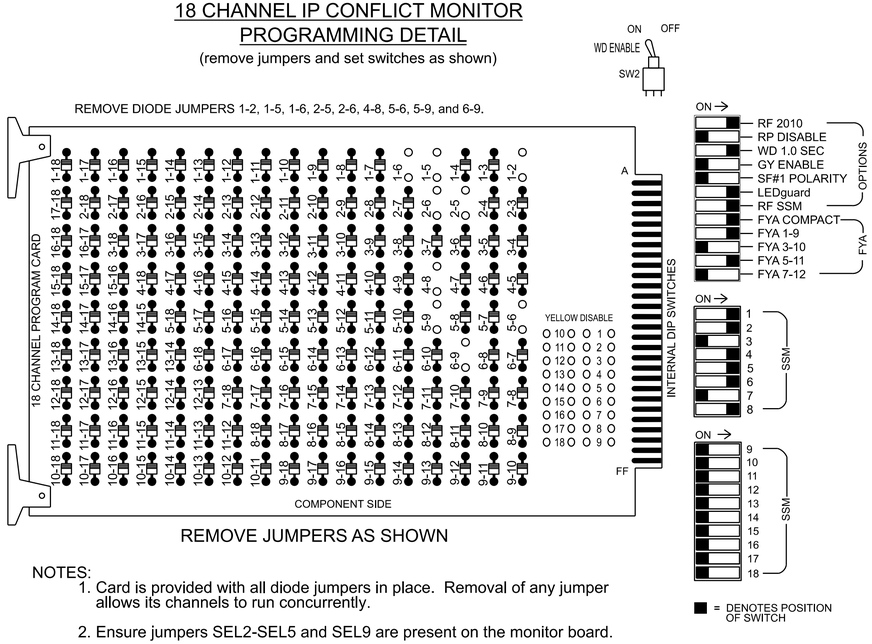
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 26.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S1, S2, S3, S5, S7, S8, S11
Phases Used.....1, 2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
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
CMU CHANNEL NO.	1	2	9	13	3	4	14	5	6	15	7	8	16
PHASE	OL1	2	1 GRN	2 PED	3	4	4 PED	OL3	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11★	22,23	11★	NU	NU	41,42	NU	21★	61,62	NU	NU	81,82	NU
RED		128				101			134			107	
YELLOW		129				102			135			108	
GREEN		130				103			136			109	
RED ARROW	125							131					
YELLOW ARROW	126							132					
FLASHING YELLOW ARROW	127							133					
✋													
GREEN ARROW			114										
🚶				*									

NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

NOTE: Load Switches S1, S3, and S7 require output remapping. See sheet 2 for instructions.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	Ø 1	Ø 2	SLOT	Ø 4	SLOT	Ø 6	SLOT	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	FS
	1A	2A	EMPTY	4A	EMPTY	6A	EMPTY	8A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
L	NOT USED	Ø 2		NOT USED		Ø 6		NOT USED						ST
		2B				6B								DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME

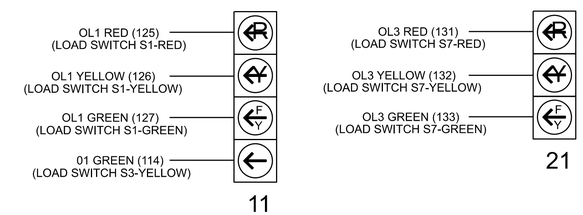
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB21-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB21-3,4	I2U	39	1	2	2			X	X	X	
2B	TB23-3,4	I2L	43	5	3	2			X	X	X	
4A	TB21-7,8	I4U	41	3	8	4	5.0		X		X	
6A	TB21-11,12	I6U	40	2	16	6			X	X	X	
6B	TB23-11,12	I6L	44	6	17	6			X	X	X	
8A	TB22-1,2	I8U	42	4	22	8	5.0		X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

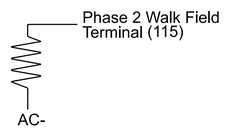
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



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: 04-0330
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
Atlantic Christian
College Drive/ Deans Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DOCUSIGN ENVELOPE ID: DATE
SIG. INVENTORY NO. 04-0330

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 26.2

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	-	-
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

PED YELLOW CONFLICT MONITOR WIRING DETAIL

(make cabinet wiring changes as shown below)

In order to use FYA COMPACT mode with the 16 or 18 Channel Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: From 2 PY (field term. 114) to chan. 9 green (monitor pin 13).

Follow the instructions below to make appropriate connections:

STEP 1: Fold down rear panel of output file.

STEP 2: Find unused wiring harness from conflict monitor card edge connector (which should be tied and bundled together).

STEP 3: Find the connector that corresponds to the following conflict monitor card edge pins and solder wire the appropriate terminal on the rear of the output file shown below:

CMU-13 ----------2PY (term. 114)

NOTE: Some cabinet manufacturers use keyed connectors to accomplish this wiring configuration. If connectors are used, fold down the rear panel of the output file and find the set of 3 keyed connectors and connect them as shown below:

1 - 2PY	----------	1- CMU-13
2 - 4PY	----------	2- CMU-16
3 - 6PY	----------	3- CMU-R
4 - 8PY	----------	4- CMU-U

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 1 ASSIGNED TO CHANNEL 1 →

NOTICE OVERLAP 3 ASSIGNED TO CHANNEL 5 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Overlap	3		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

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL FOR SIGNAL HEAD 11

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

Plan 1

NOTICE OUTPUT POINTS 33 CONTROL TYPE & INDEX REASSIGNMENT →

Output Point	Description	Output Control Type	Index
33	C1-35	Phase Green	1

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: 04-0330
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
Atlantic Christian
College Drive/ Deans Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DocuSigned by:
DATE

SIG. INVENTORY NO. 04-0330

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 11:42
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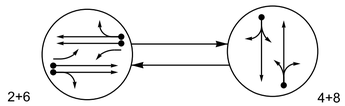
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 27.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES

(Medium Priority)

PRE 2
(2+5)

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	PHASE PRE2	PHASE FLASH
21, 22	G	R	R	R
41, 42	R	G	R	R
51	~~F Y~~	~~R~~	~~—~~	~~R~~
61	~~F Y~~	~~R~~	~~F Y~~	~~R~~
62, 63	G	R	G	R
81, 82	R	G	R	R

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
2A	6X6	300	5	X	2	-	-	X	X	X	-	X
2B	6X6	300	5	X	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	5.0	-	X	-	X	-	X
6A	6X6	300	5	X	6	-	-	X	X	X	-	X
6B	6X6	300	5	X	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	5.0	-	X	-	X	-	X

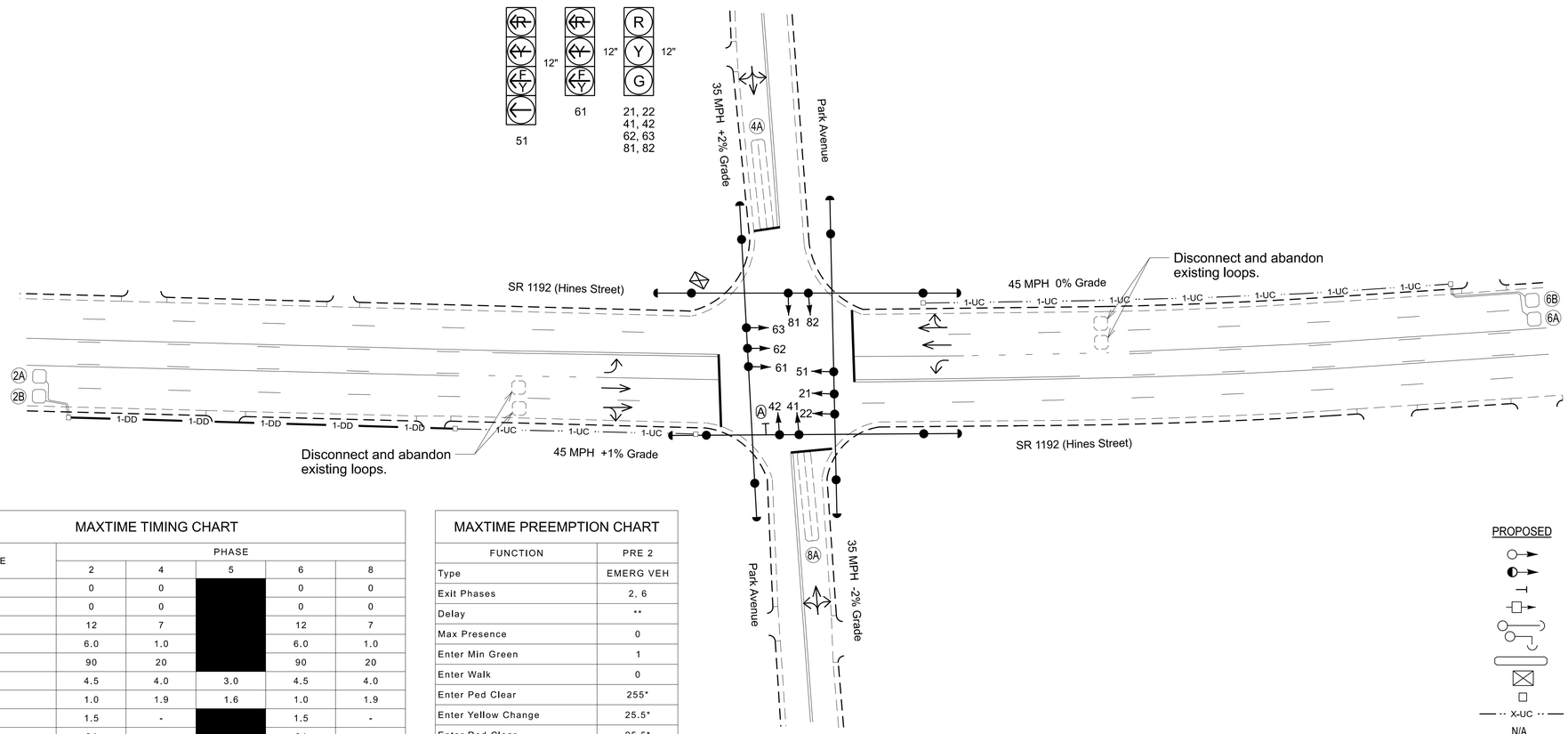
2 Phases
with EV Preempt
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Renumber existing signal heads 21, 22, 23, 41, 42, 61, 62, 63, 81 and 82 as 61, 62, 63, 81, 82, 51, 21, 22, 41 and 42 respectively.
4. Renumber existing loops 2A, 2B, 4A, 6A, 6B and 8A as 6A, 6B, 8A, 2A, 2B and 4A respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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. Emergency vehicle preemption switch is located in fire station.
10. The Division Traffic Engineer will determine the Delay Time and Dwell Green for the emergency vehicle preemption timing.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0		0	0
Ped Clear *	0	0		0	0
Min Green *	12	7		12	7
Passage *	6.0	1.0		6.0	1.0
Max 1 *	90	20		90	20
Yellow Change	4.5	4.0	3.0	4.5	4.0
Red Clear	1.0	1.9	1.6	1.0	1.9
Added Initial *	1.5	-		1.5	-
Maximum Initial *	34	-		34	-
Time Before Reduction *	15	-		15	-
Time To Reduce *	30	-		30	-
Minimum Gap	3.0	-		3.0	-
Advance Walk	-	-		-	-
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.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2, 6
Delay	**
Max Presence	0
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	255*
Enter Yellow Change	25.5*
Enter Red Clear	25.5*
Track Green	0
Track Yellow Change	25.5*
Track Red Clear	25.5*
Dwell Green	**
Exit Min Green	255*
Exit Yellow Change	25.5*
Exit Red Clear	25.5*
Call Extend Time	2.0
Exit Type	EXIT PHASES
Ped Clear Through Yellow	N
Require All Red Entry	N

* Directs controller to use default phase timing.
** See Note 10

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"NO TURN ON RED" Sign (R10-11a)	A
1-DD	1-in Directional Drilling	DD

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Signal Upgrade

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Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
Park Avenue

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

SCALE 0 30 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
DocuSigned by:
2/28/2025
DATE:

SIG. INVENTORY NO. 04-0331

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SIF#4883

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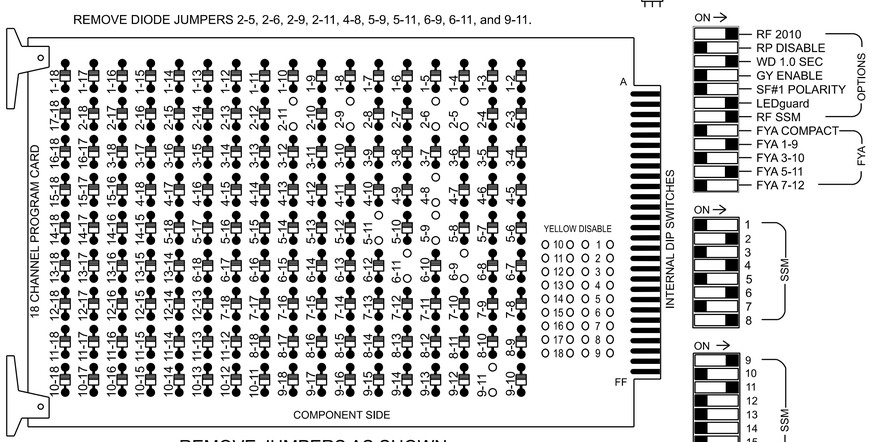
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 27.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S4
Phases Used.....2, 4, *5, 6, 8
Overlap "1".....**
Overlap "2".....NOT USED
Overlap "3".....**
Overlap "4".....NOT USED

* Used during preempt only
** See overlap programming detail on sheet 2
*** Used for Fire Station Pilot Lamp

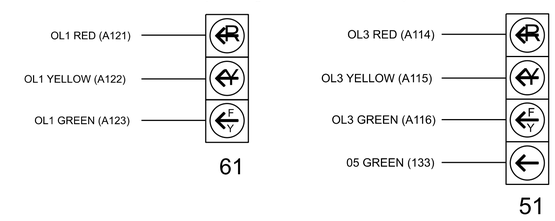
SIGNAL HEAD HOOK-UP CHART

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	PRE 2	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	FIRE PILOT LAMP	NU	41,42	NU	51★	62,63	NU	NU	81,82	NU	61★	NU	NU	51★	NU	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW							133											
✋																		
PED YELLOW			** 114															
🚶			*															

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
** Used for Fire Station Pilot Lamp.
★ 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	1O	11	12	13	14
FILE "I"	U	SLOT	Ø 2	SLOT	SLOT	SLOT	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
		EMPTY	2A	EMPTY	EMPTY	EMPTY	4A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
	L		Ø 2 2B				NOT USED								ST DC ISOLATOR
FILE "J"	U	SLOT	Ø 6	SLOT	SLOT	SLOT	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	NOT USED
		EMPTY	6A	EMPTY	EMPTY	EMPTY	8A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	PRE2
	L		Ø 6 6B				NOT USED								AC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

INPUT FILE CONNECTION & PROGRAMMING CHART

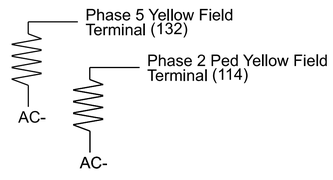
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	5.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0331
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street) at Park Avenue

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams (FROM FORMAT) 2/28/2025 DATE

SIG. INVENTORY NO. 04-0331

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 27.2

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emergency Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	2,5
Dwell Peds	-
Dwell Overlaps	1,3
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2,6
Exit Overlaps	1,3
Delay	**
Call Ext Time	1.0
Max Presence	0
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	**
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	
Not Ovrd Flash	X
Not Ovrd Nxt Pre	
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

** See Note 10 on the Signal Design

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	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

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	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0
2	Phase Phase Omit	5	Result=!A	Preempt Input	2	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Turn pilot lamp on during preemption
Statement 2 Description: Omits phase 5 while not in preempt.

OUTPUT POINTS CONFIGURATION

Front Panel
Main Menu >Cabinet Configuration >Output Points

Web Interface
Home >Cabinet Configuration >Output Points

Output Point Configuration

Output Point	Description	Output Control Type	Index
33	C1-35	Global Variable	33

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0331
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1192 (Hines Street)
at
Park Avenue

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
DocuSigned by: 5BE0E8F1A7B8B4A1...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0331

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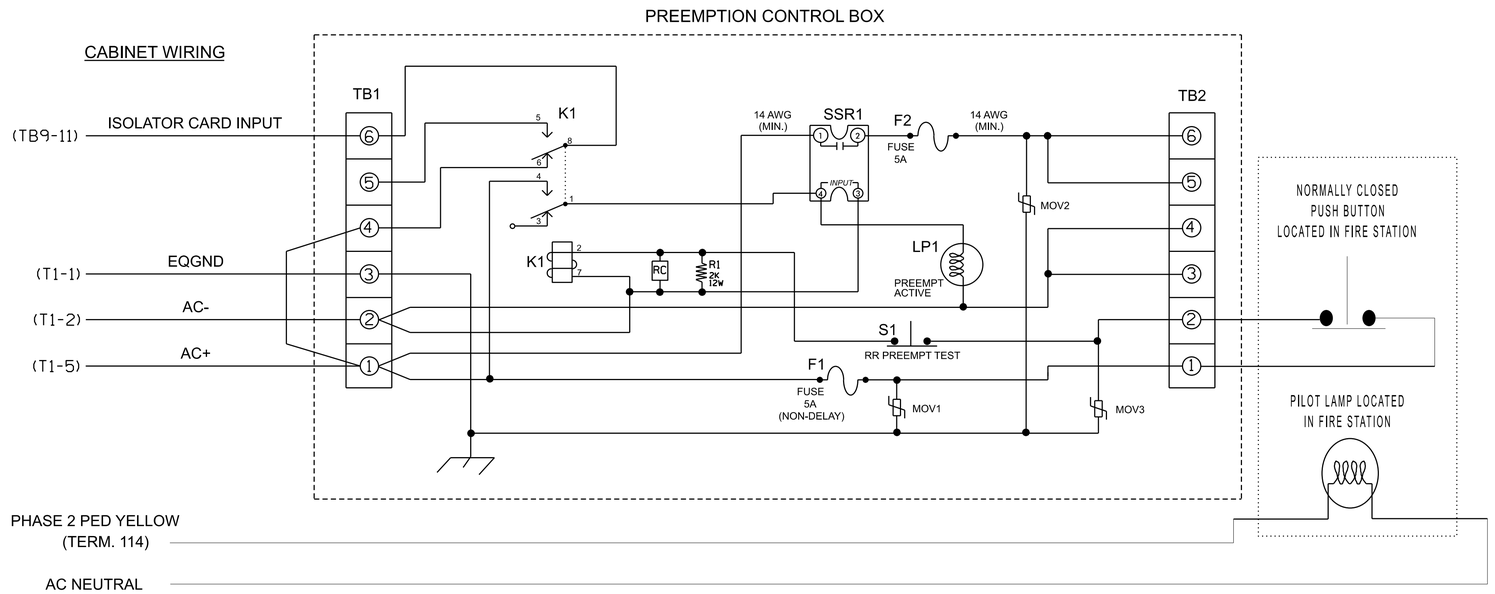
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 27.3

EV Preemption Control Box Wiring Detail

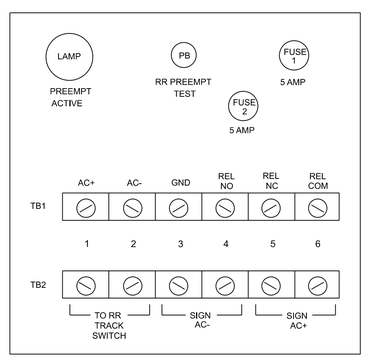
(wire as shown below)



NOTES

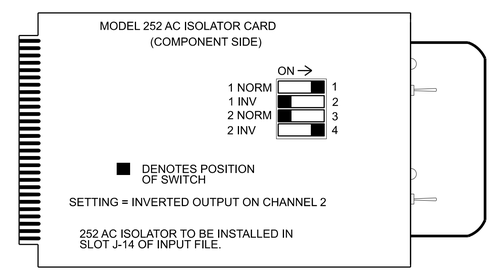
1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay 'K1' is an enclosed DPDT general purpose relay with a 120VAC coil, 10A contacts, and octal-style plug.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this, set invert dip switch on AC Isolator Card.
5. IMPORTANT!! Terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



PREEMPT 2 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0331
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1192 (Hines Street)
at
Park Avenue

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

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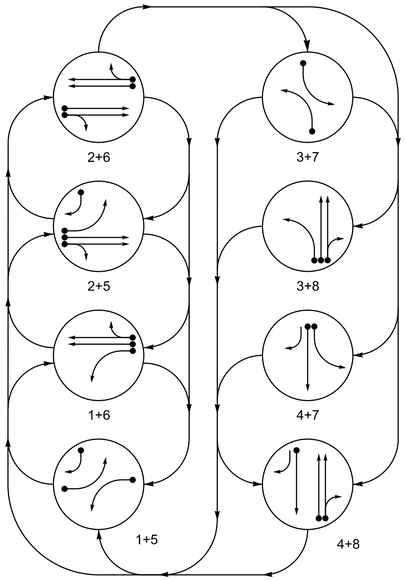
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 28.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41	R	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

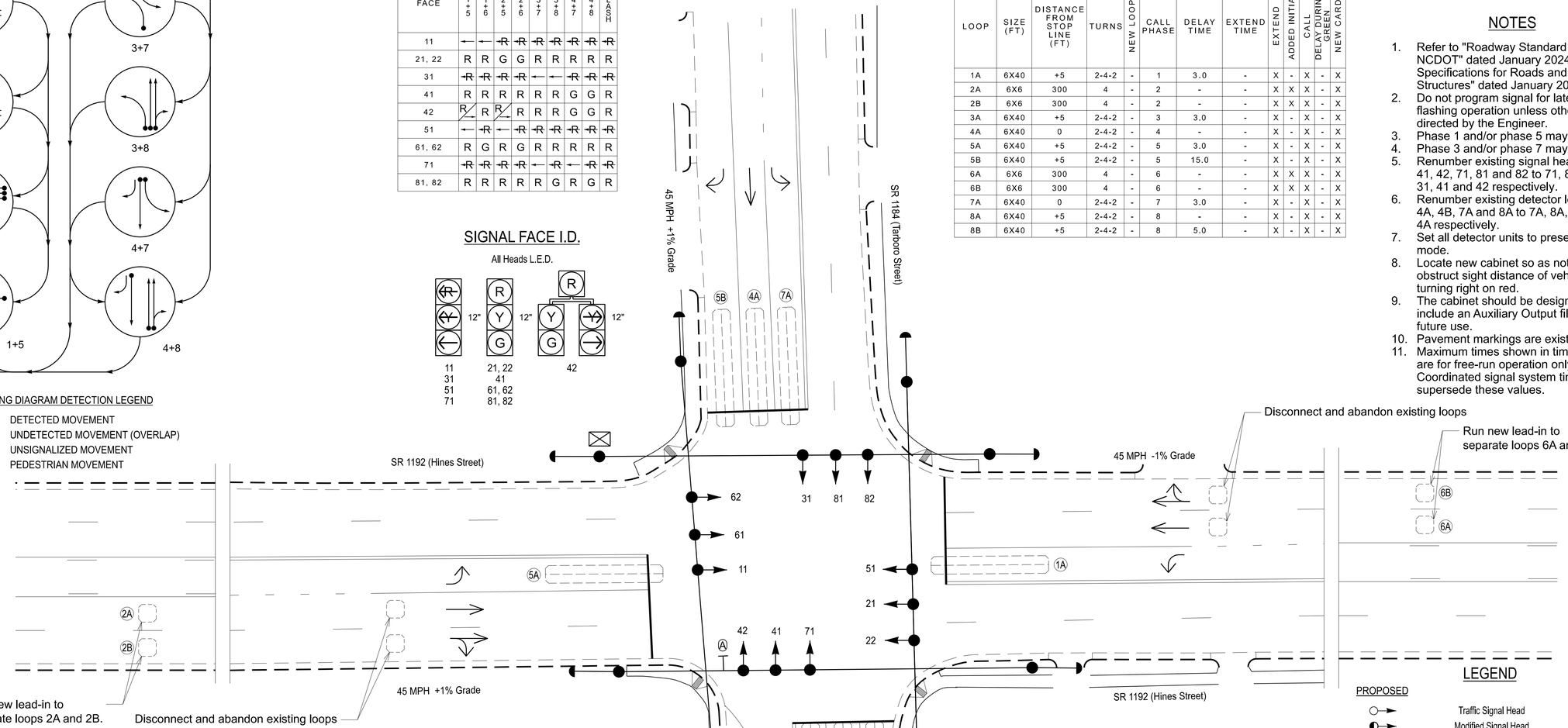
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR: LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
5B	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	5.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Renumber existing signal heads 31, 41, 42, 71, 81 and 82 to 71, 81, 82, 31, 41 and 42 respectively.
6. Renumber existing detector loops 3A, 4A, 4B, 7A and 8A to 7A, 8A, 8B, 3A and 4A respectively.
7. Set all detector units to presence mode.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. The cabinet should be designed to include an Auxiliary Output file for future use.
10. Pavement markings are existing.
11. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	Right Arrow "ONLY" Sign (R3-5L)	A

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear *	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	30	90	25	40	30	90	25	40
Yellow Change	3.0	4.6	3.0	4.4	3.0	4.6	3.0	4.4
Red Clear	2.3	1.3	2.4	1.7	2.4	1.3	2.4	1.7
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
SR 1184 (Tarboro Street)/Tarboro Street

Division 4 | Wilson County | Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	WL Larson	REVIEWED BY:	PL Alexander

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F6FC97FC0660451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0332

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 11:45
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STIFF4685

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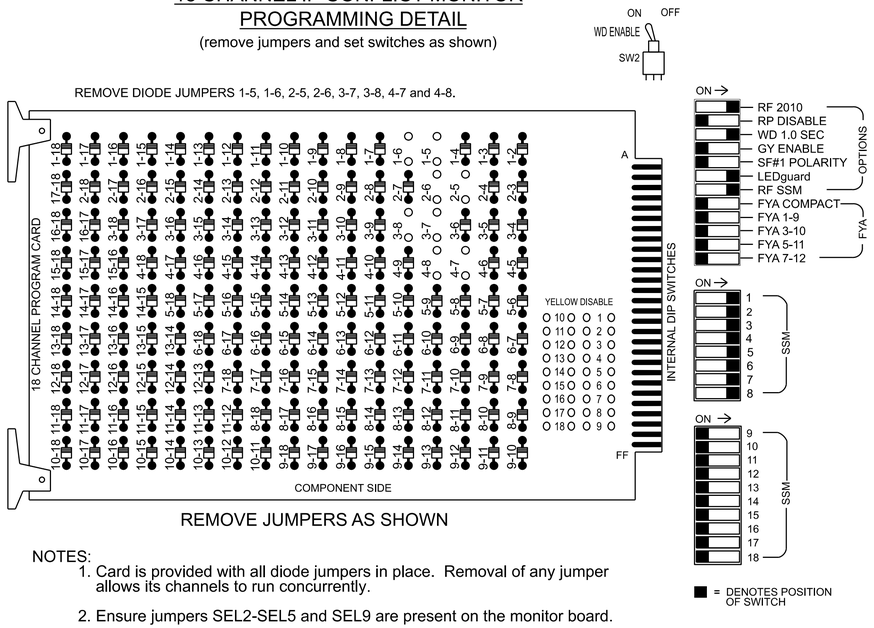
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 28.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7		S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5		6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5		6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	31	41,42	NU	42	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101				134			107							
YELLOW		129			102				135			108							
GREEN		130			103				136			109							
RED ARROW	125			116				131			122								
YELLOW ARROW	126			117			132	132			123								
GREEN ARROW	127			118			133	133			124								

NU = Not Used

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	Ø 5 5B	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B	NOT USED		NOT USED	Ø 8 8B								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7	3	3.0		X		X	
4A	TB4-9,10	I6U	41	3	8	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
5B	TB3-9,10	J3U	64	30	18	5	15.0		X		X	
7A	TB5-5,6	J5U	57	19	21	7	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8			X		X	
8B	TB5-11,12	J6L	46	8	23	8	5.0		X		X	

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: 04-0332
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
SR 1184 (Tarboro Street)/Tarboro Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
DocuSigned by: 7BEC5F1C7D8B4D1...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0332

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 11:46
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STIFF4685

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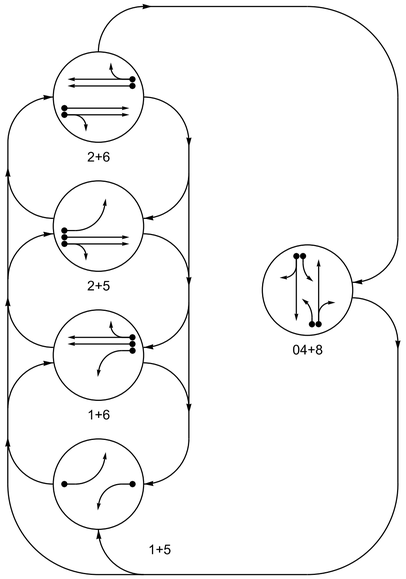
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 29.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42, 43	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82, 83	R	R	R	R	G	R

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
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	330	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	330	EXIST	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	330	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	330	EXIST	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

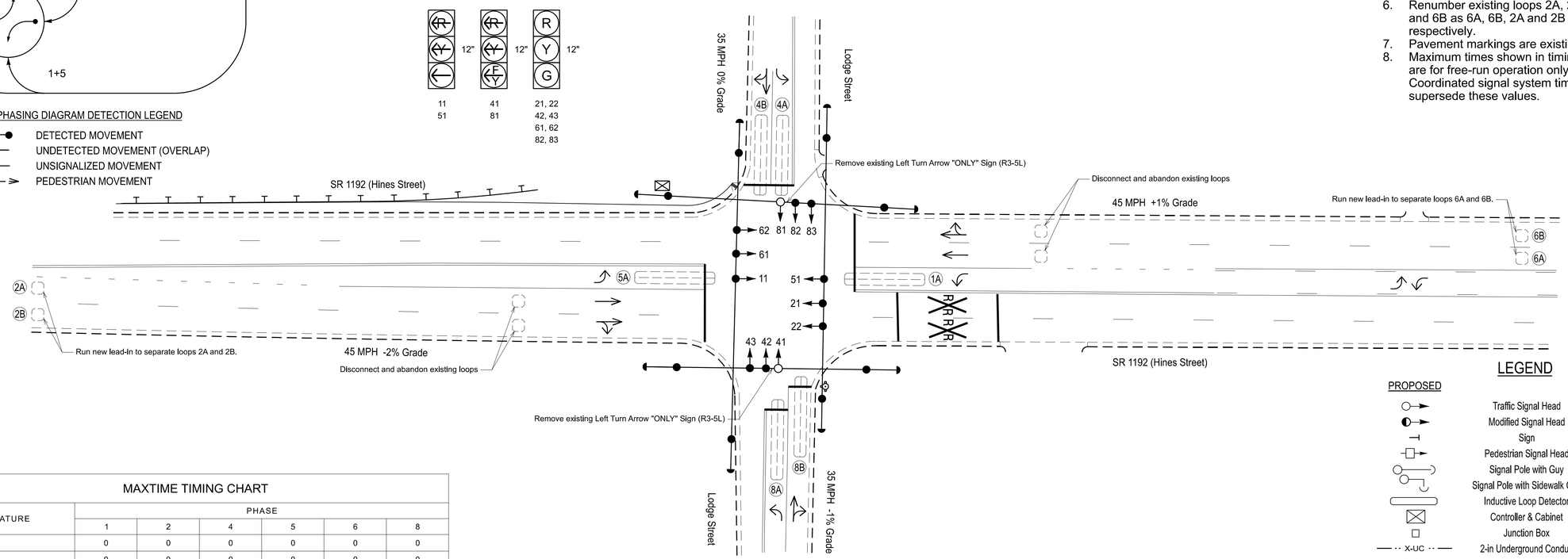
5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41, 42, 81 and 82.
5. Renumber existing signal heads numbered 21, 22, 61 and 62 as 61, 62, 21 and 22 respectively.
6. Renumber existing loops 2A, 2B, 6A and 6B as 6A, 6B, 2A and 2B respectively.
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
N/A	Guardrail	
N/A	Fire Hydrant	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear *	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	3.0	2.0	2.0	3.0	2.0
Max 1 *	20	90	25	15	90	25
Yellow Change	3.0	4.7	3.9	3.0	4.7	3.9
Red Clear	2.1	1.0	1.9	2.1	1.0	1.9
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	37	-	-	37	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

SR 1192 (Hines Street)
at
Lodge Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
6DE4A620CFB4402...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0334

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SIYF4985

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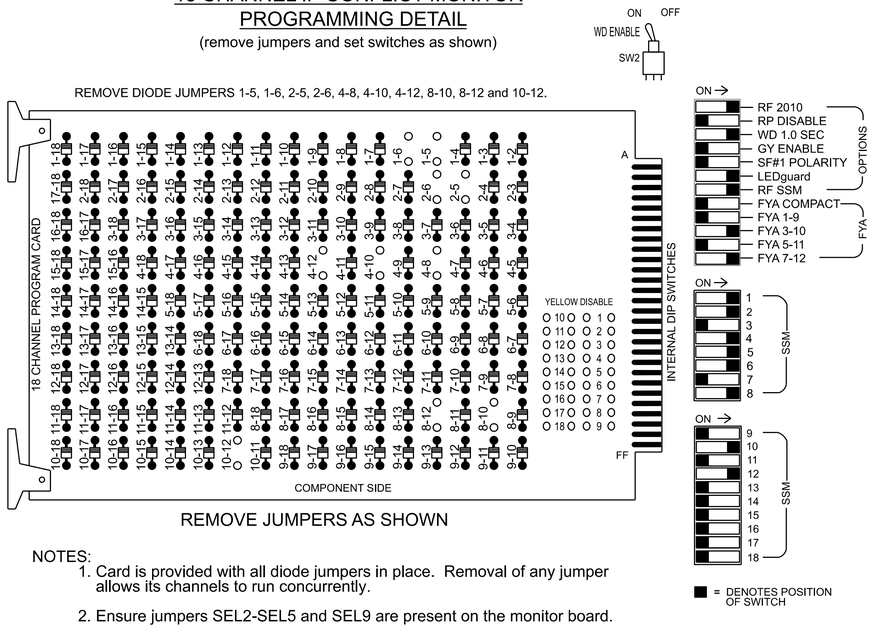
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 29.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	42,43	NU	51	61,62	NU	NU	82,83	NU	NU	81★	NU	NU	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132							A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW	127						133											

NU = Not Used

★See pictorial of head wiring in detail this sheet.

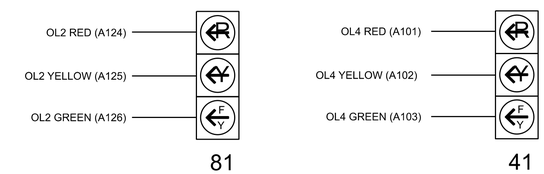
EQUIPMENT INFORMATION

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, S11, AUX S2, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on 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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	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	
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	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	

INPUT FILE POSITION LEGEND: J2L
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:

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.

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	Off	FYA 4 - Section
Included Phases	-	4	-	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0334
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
Lodge Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS INIT. DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1BFC5371C0B8481...
DATE

SIG. INVENTORY NO. 04-0334

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 29.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0334
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
Lodge Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
DocuSigned by: 2/28/2025
DATE

SIG. INVENTORY NO. 04-0334

28-FEB-2025 11:49
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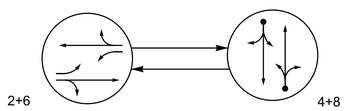
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 30.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	PHASE FLASH
21	~~F Y~~	~~R~~	~~R~~
22, 23	G	R	R
41, 42	R	G	R
61	~~F Y~~	~~R~~	~~R~~
62, 63	G	R	R
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

21
61

22, 23
41, 42
62, 63
81, 82

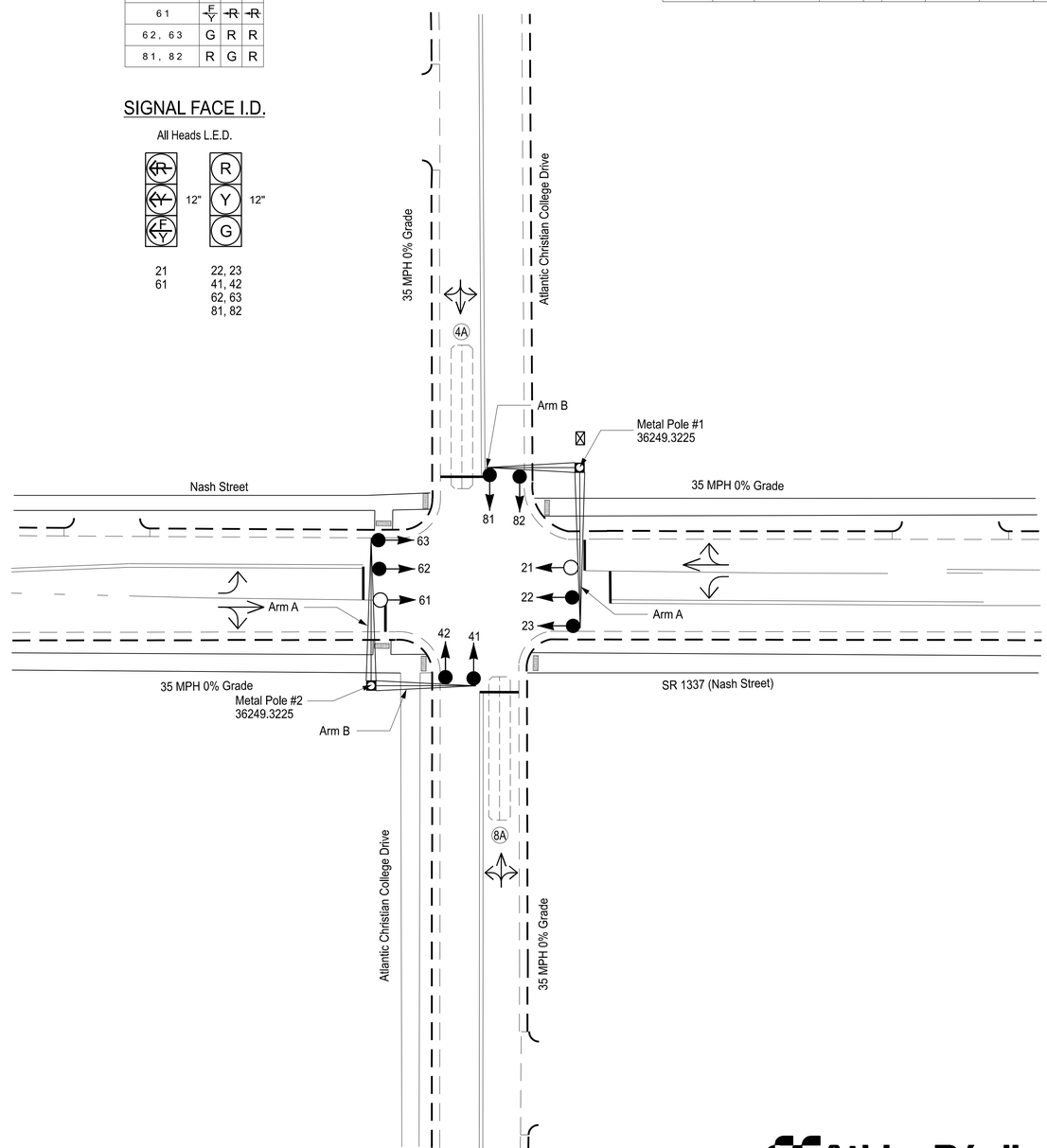
MAXTIME DETECTOR INSTALLATION CHART

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	-	X
8A	6X40	+5	2-4-2	-	8	5.0	-	X	-	X	-	X

2 Phase
Semi-Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 61 and 62.
4. Reposition existing signal heads 21, 22, 61 and 62 as 22, 23, 62 and 63 respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	10	7	10	7
Passage *	0.0	2.0	0.0	2.0
Max 1 *	35	35	35	35
Yellow Change	3.8	3.8	3.8	3.8
Red Clear	1.0	1.0	1.0	1.0
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Non Lock Detector	-	X	-	X
Vehicle Recall	MAX RECALL	-	MAX 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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
	Metal Pole with Mastarm	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 20 1"=20'

SR 1377 (Nash Street)
at
Atlantic Christian College Drive

Division 04 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	WL Larson	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
—7A9D4AC4E9E3435...
DATE

SIG. INVENTORY NO. 04-0336

2/28/2025 1:52
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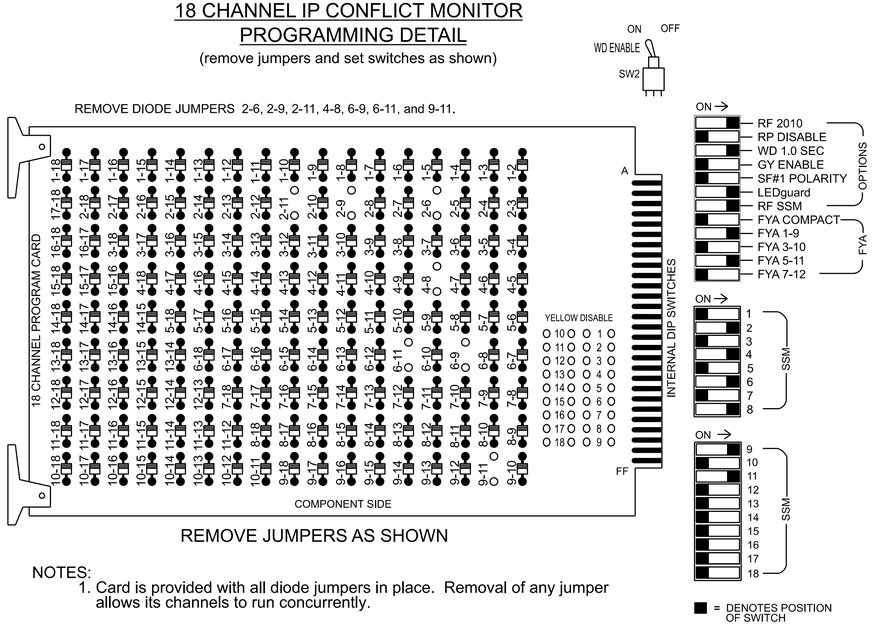
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 30.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S4
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on this sheet.

SIGNAL HEAD HOOK-UP CHART

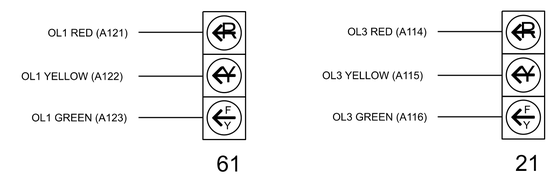
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	41,42	NU	NU	62,63	NU	NU	81,82	NU	61 ★	NU	NU	21 ★	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW																		

NU = Not Used

★See pictorial of head wiring in detail this sheet.

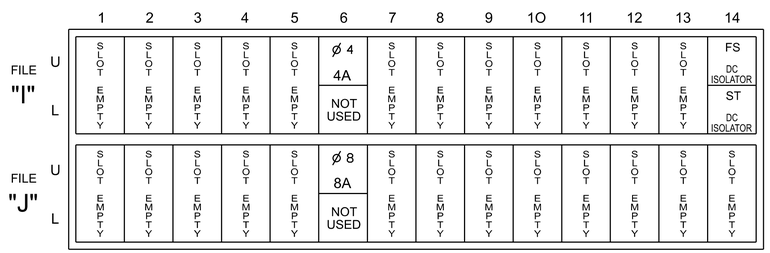
FYA SIGNAL WIRING DETAIL

(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	5.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0336
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

SR 1377 (Nash Street)
at
Atlantic
Christian College Drive

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

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE
SIG. INVENTORY NO. 04-0336

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 30.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0336
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1377 (Nash Street)
at
Atlantic
Christian College Drive

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by:
Anthony Encarnacion 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0336

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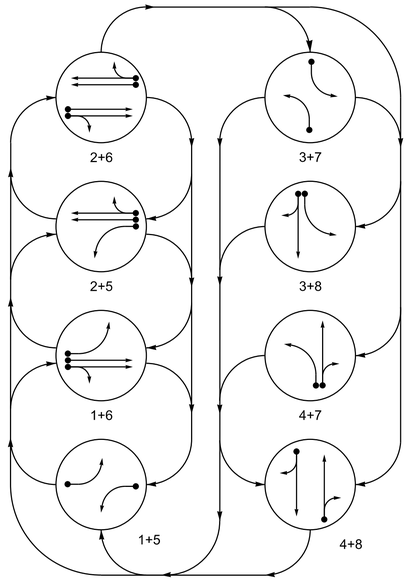
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 31.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

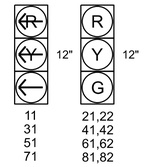


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41,42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R

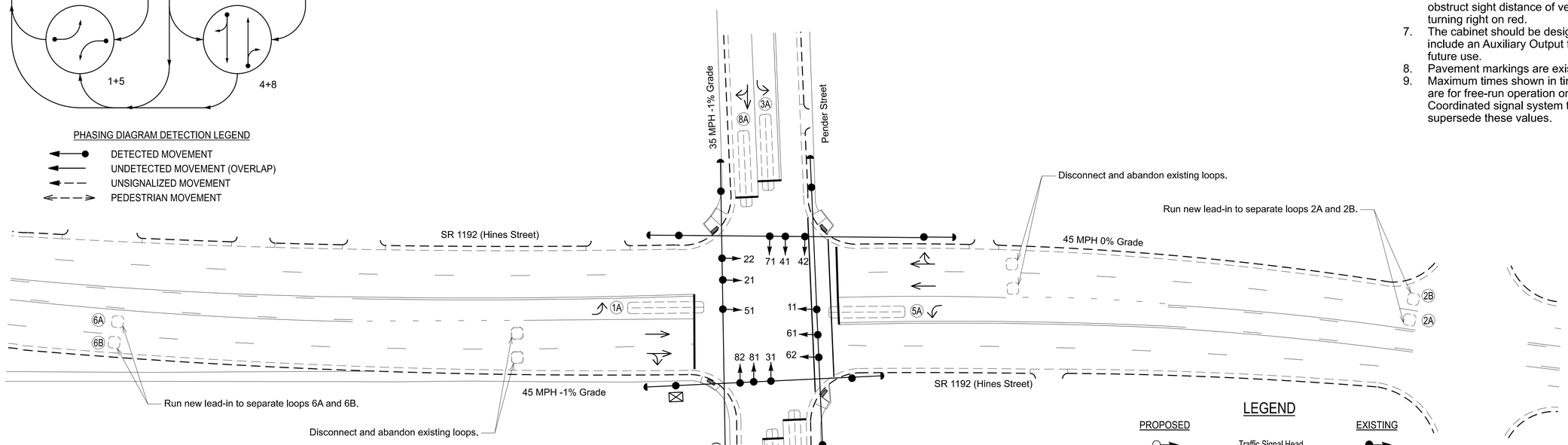
MAXTIME DETECTOR INSTALLATION CHART

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
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	+5	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	30	40	20	90	15	40
Yellow Change	3.0	4.6	3.0	3.9	3.0	4.6	3.0	3.9
Red Clear	2.1	1.4	2.9	1.9	1.9	1.4	2.8	1.9
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street)
at
SR 1670 (Pender Street)/Pender Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

SCALE 0 30 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: F0FC07C0998441
DATE

SIG. INVENTORY NO. 04-0343

28-FEB-2025 11:52
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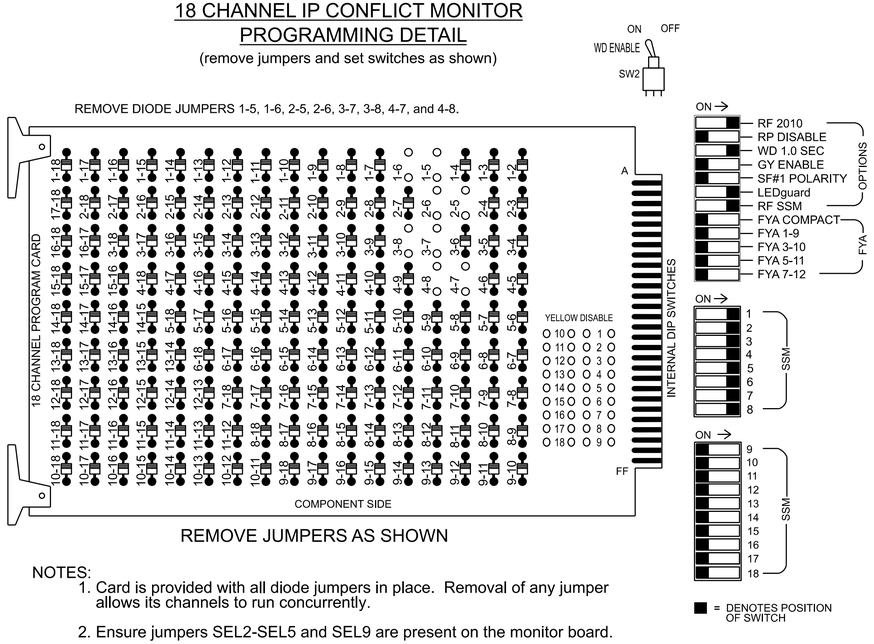
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 31.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125			116			131			122								
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B			NOT USED	NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7	3	3.0		X		X	
4A	TB4-9,10	I6U	41	3	8	4	10.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
7A	TB5-5,6	J5U	57	19	21	7	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8	10.0		X		X	

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: 04-0343
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street)
at
SR 1670 (Pender Street)/Pender Street

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS INIT. DATE

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

AtkinsRéalis
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(919) 876-6888 NCBEES #F-0326

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DOCUSIGN envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938
DATE

SIG. INVENTORY NO. 04-0343

28-FEB-2025 11:53
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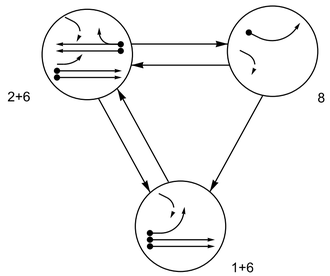
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 32.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	1+6	2+6	8	FLASH
11	←	F Y	R	R
21,22	R	G	R	R
62,63	G	G	R	R
81,82	R	R	←	R

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	
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	X	2	-	-	X	X	X	-	X
2B	6X6	300	5	X	2	-	-	X	X	X	-	X
6A	6X6	340	5	-	6	-	0.7	X	X	X	-	X
6B	6X6	340	5	-	6	-	0.7	X	X	X	-	X
8A	6X60	+5	2-4-2	-	8	3.0	-	X	-	X	-	X

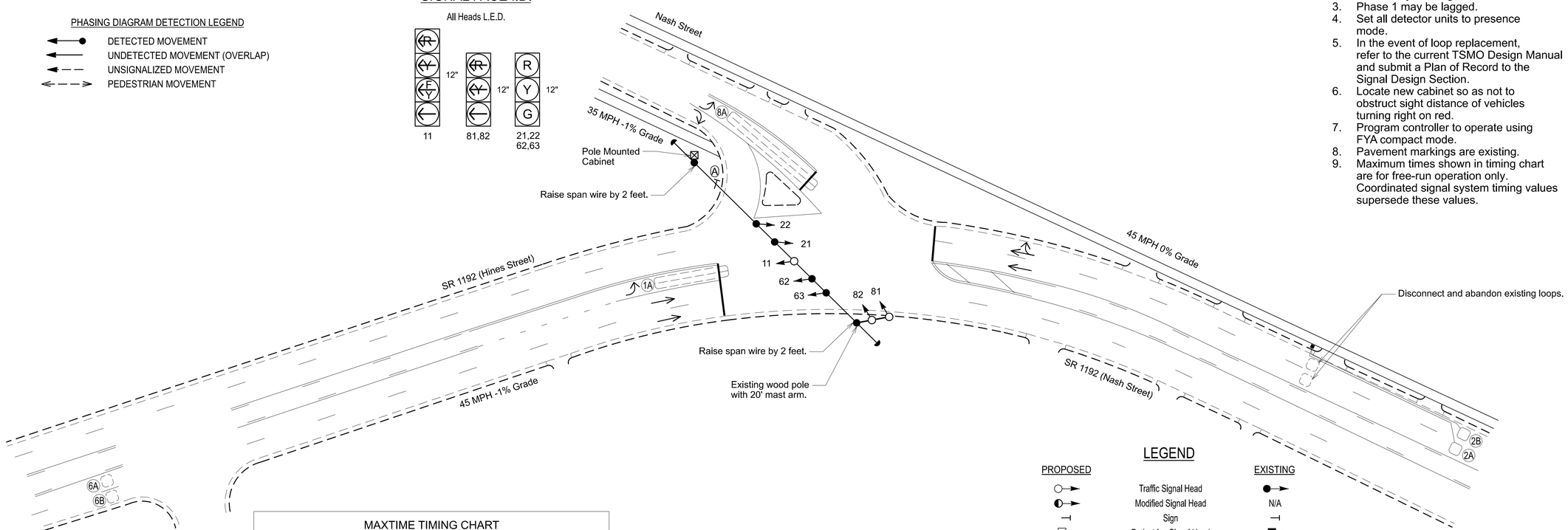
3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Program controller to operate using FYA compact mode.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	6	8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	7	12	12	7
Passage *	2.0	6.0	6.0	2.0
Max 1 *	20	90	90	25
Yellow Change	3.0	4.6	4.6	3.0
Red Clear	3.1	1.8	1.8	2.8
Added Initial *	-	2.0	2.0	-
Maximum Initial *	-	34	38	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Advance Walk	-	-	-	-
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"YIELD" Sign (R1-2)	A

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

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(919) 876-6888 NCBEES #F-0326

SR 1192 (Hines Street/Nash Street)
at
Nash Street

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

SCALE 0 30 1"=30'

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 7A69DAAD9E3408... 2/28/2025 DATE

SIG. INVENTORY NO. 04-0351

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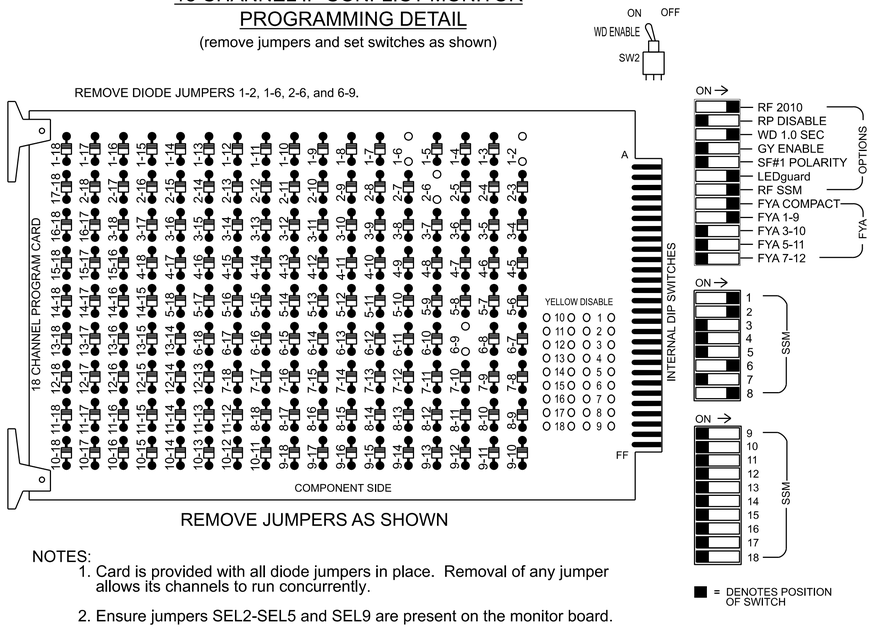
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 32.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S1, S2, S3, S8, S11
Phases Used.....1, 2, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2.

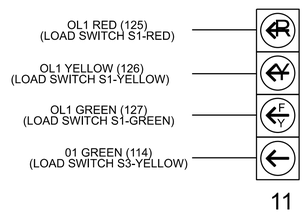
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3		S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	9	13	3	4	14	5	6	15	7	8	16
PHASE	OL1	2	1 GRN	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11★	21,22	11★	NU	NU	NU	NU	NU	62,63	NU	NU	81,82	NU
RED		128							134				
YELLOW		129							135				
GREEN		130							136				
RED ARROW	125											107	
YELLOW ARROW	126											108	
FLASHING YELLOW ARROW	127												
✋													
GREEN ARROW			114									109	
🚶				*									

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.
NOTE: Load Switches S1 and S3 require output remaping. See sheet 2 for instructions.

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L	NOT USED	Ø 2 2B				Ø 6 6B		NOT USED						ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME

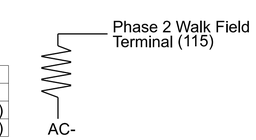
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB21-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB21-3,4	I2U	39	1	2	2			X	X	X	
2B	TB23-3,4	I2L	43	5	3	2			X	X	X	
6A	TB21-11,12	I6U	40	2	16	6		0.7	X	X	X	
6B	TB23-11,12	I6L	44	6	17	6		0.7	X	X	X	
8A	TB22-1,2	I8U	42	4	22	8	3.0		X		X	

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: 04-0351
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1192 (Hines Street/Nash Street)
at
Nash Street

Division 4 | Wilson County | Wilson

PLAN DATE: January 2025 | REVIEWED BY: AM Encarnacion
PREPARED BY: KG Sasaki | REVIEWED BY: PL Alexander

REVISIONS | INIT. | DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

Docusigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0351

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 32.2

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	FYA 4 - Section	Off	Off	Off
Included Phases	2	-	-	-
Modifier Phases	1	-	-	-
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

PED YELLOW CONFLICT MONITOR WIRING DETAIL

(make cabinet wiring changes as shown below)

In order to use FYA COMPACT mode with the 16 or 18 Channel Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: From 2 PY (field term. 114) to chan. 9 green (monitor pin 13U).

Follow the instructions below to make appropriate connections:

STEP 1: Fold down rear panel of output file.

STEP 2: Find unused wiring harness fom conflict monitor card edge connector (which should be tied and bundled together).

STEP 3: Find the connector that correspond to the following conflict monitor card edge pins and solder wire the the appropriate terminal on the rear of the output file shown below:

CMU-13 ----------2PY (term. 114)

NOTE: Some cabinet manufacturers use keyed connectors to accomlplish this wiring configuration. If connectors are used, fold down the rear panel of the output file and find the set of 3 keyed connectors and connect them as shown below:

1 - 2PY	----------	1- CMU-13
2 - 4PY	----------	2- CMU-16
3 - 6PY	----------	3- CMU-R
4 - 8PY	----------	4- CMU-U

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL FOR SIGNAL HEAD 11

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

IO Module 1

NOTICE OUTPUT POINTS 33 CONTROL TYPE & INDEX REASSIGNMENT →

Output Point	Description	Output Control Type	Index
33	C1-35	Phase Green	1

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

NOTICE OVERLAP 1 ASSIGNED TO CHANNEL 1 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	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

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(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0351
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1192 (Hines Street/Nash Street)
at
Nash Street

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0351

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pw:\\pwdc01.pw.bentley.com:pwdc01-pw-01\Documents\Division_04\U-5945\TSMO\Signals Management\040351_sm_ele_2024nmsd.dgn
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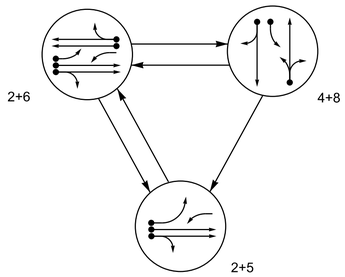
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 33.0

PHASING DIAGRAM



SIGNAL FACE I.D.

All Heads L.E.D.

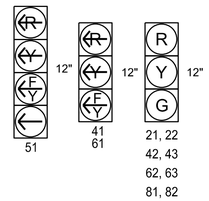


TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4+8	PHASE FLASH
21,22	G	G	R	R
41	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	G	R
51	←	F Y	~~R~~	~~R~~
61	F Y	F Y	~~R~~	~~R~~
62,63	R	G	R	R
81,82	R	R	G	R

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
2A	6X6	330	5	-	2	-	-	X	X	X	-	X
2B	6X6	330	5	-	2	-	-	X	X	X	-	X
4A	6X60	+5	1	-	4	3.0	-	X	-	X	-	X
4B	6X60	+5	1	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	2	-	6	-	-	X	X	X	-	X
6B	6X6	300	2	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	5.0	-	X	-	X	-	X

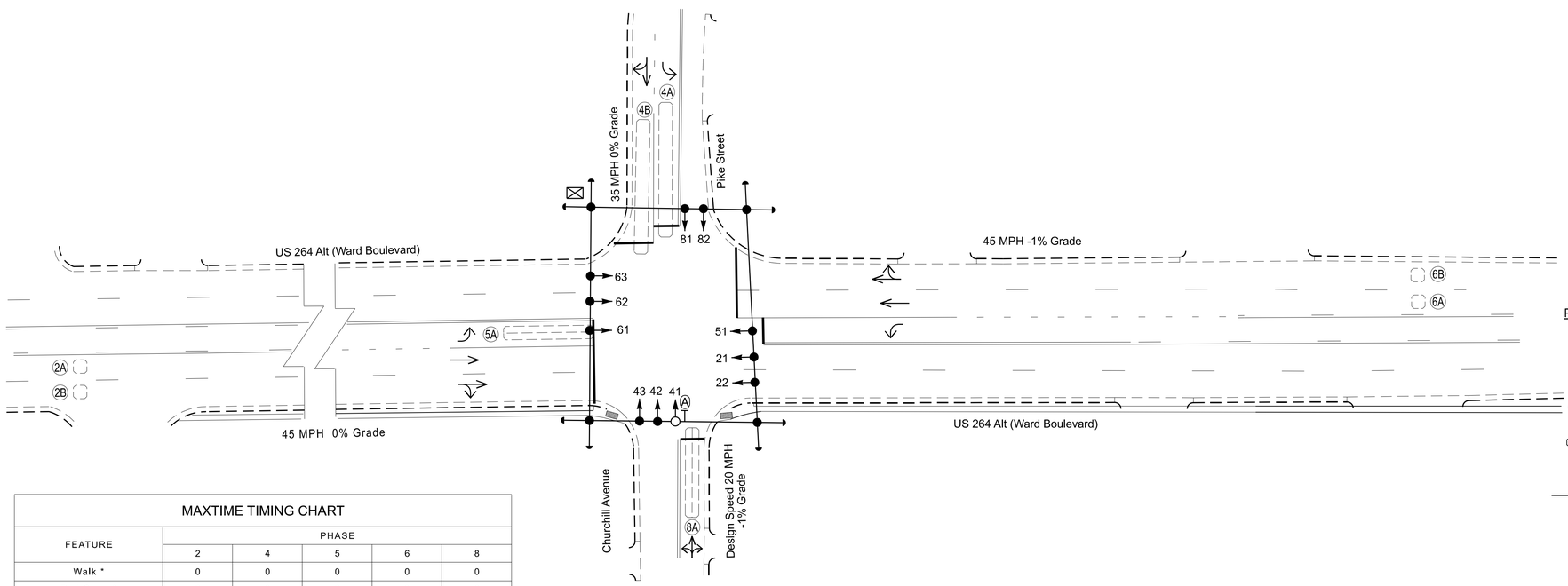
PHASING DIAGRAM DETECTION LEGEND

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

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Renumber existing signal heads 41 and 42 to 42 and 43, respectively.
5. Reposition existing signal heads numbered 42 and 43.
6. Set all detector units to presence mode.
7. Disconnect and abandon existing loops 2C, 2D, and 6B.
8. Existing loop 6A found in field to be two (2) 6X6 loops instead. Renumber loops to be 6A and 6B.
9. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
10. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
11. Existing sign A may be removed at the discretion of the Division Traffic Engineer.
12. Pavement markings are existing.
13. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear *	0	0	0	0	0
Min Green *	12	7	7	12	7
Passage *	6.0	1.0	1.0	6.0	2.0
Max 1 *	90	20	20	90	20
Yellow Change	4.6	3.8	3.0	4.6	3.8
Red Clear	1.0	2.8	1.9	1.0	2.8
Added Initial *	1.5	-	-	1.5	-
Maximum Initial *	37	-	-	34	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	30	-	-	30	-
Minimum Gap	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

US 264 Alt (Ward Boulevard)
at
Churchill Ave/Pike Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F8FC57FCD8B9491... DATE

SIG. INVENTORY NO. 04-0362

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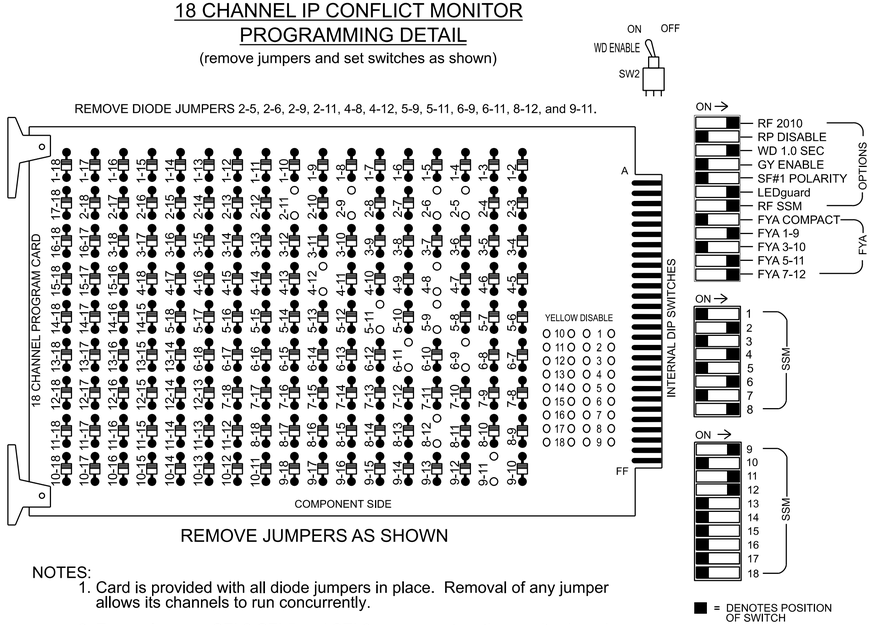
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 33.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	42,43	NU	51★	62,63	NU	NU	81,82	NU	61★	NU	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114	A101	
YELLOW ARROW													A122			A115	A102	
FLASHING YELLOW ARROW													A123			A116	A103	
GREEN ARROW							133											

NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

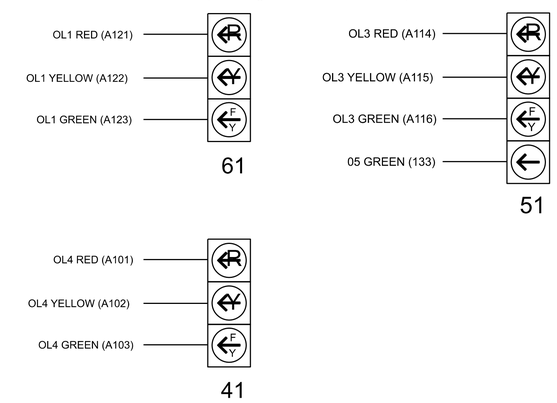
EQUIPMENT INFORMATION

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, S7, S8, S11, AUX S1, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

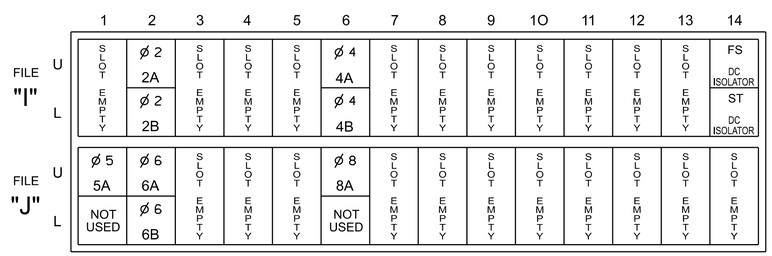
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



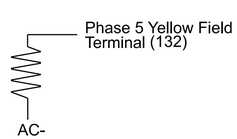
INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	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	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		X		X	

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: 04-0362
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt (Ward Boulevard) at Churchill Ave/Pike Street

Division 4 | Wilson County | Wilson

PLAN DATE: November 2024	REVIEWED BY:	TJ Williams	
PREPARED BY: KG Sasaki	REVIEWED BY:	PL Alexander	

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DATE

SIG. INVENTORY NO. 04-0362

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 33.2

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	FYA 4 - Section	Off	FYA 4 - Section	FYA 4 - Section
Included Phases	2	-	6	8
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

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.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0362
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Ward Boulevard)
at
Churchill Ave/Pike Street

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0362

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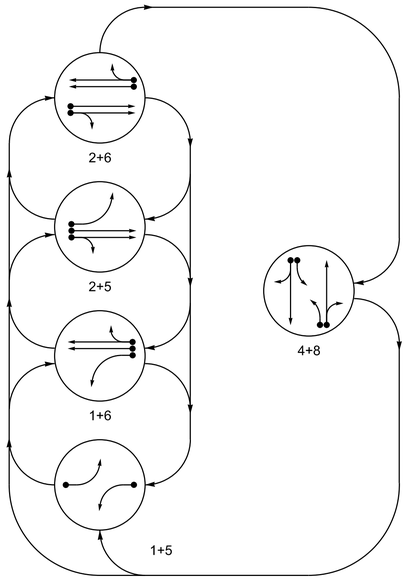
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 34.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

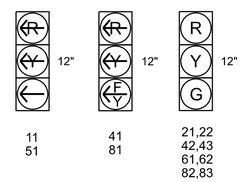
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	PHASE 1+6	PHASE 2+5	PHASE 2+6	PHASE 4+8	PHASE FLASH
11	←—	←—	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	R	R	G	R
51	←—	~~R~~	←—	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82,83	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



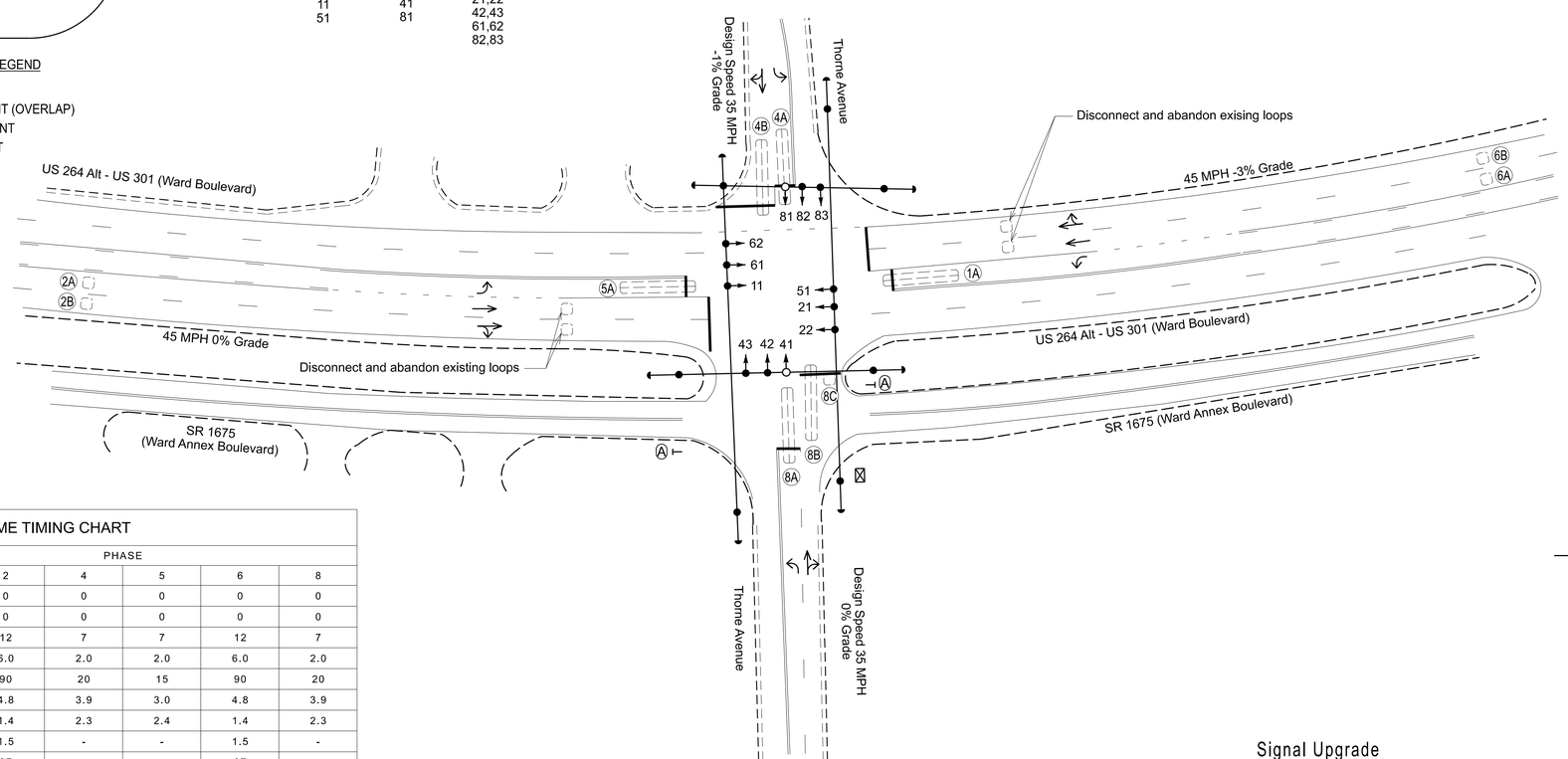
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD	
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	330	6	-	2	-	-	X	X	X	-	X
2B	6X6	330	6	-	2	-	-	X	X	X	-	X
4A	6X40	+10	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	330	6	-	6	-	-	X	X	X	-	X
6B	6X6	330	6	-	6	-	-	X	X	X	-	X
8A	6X40	+33	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X
8C	6X6	0	EXIST	-								

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads 41, 42, 81 and 82.
5. Renumber signal heads 41, 42, 81 and 82 to 42, 43, 82 and 83 respectively.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Set all detector units to presence mode.
8. Pavement markings are existing



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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"STOP" Sign (R1-1)	A

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	20	15	90	20
Yellow Change	3.0	4.8	3.9	3.0	4.8	3.9
Red Clear	2.6	1.4	2.3	2.4	1.4	2.3
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	37	-	-	37	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

US 264 Alt - US 301 (Ward Boulevard)
at
Thorne Avenue

Division 4	Wilson County		Wilson
PLAN DATE: August 2024		REVIEWED BY: TJ Williams	
PREPARED BY: JT Sutton		REVIEWED BY: PL Alexander	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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DATE

SIG. INVENTORY NO. 04-0368

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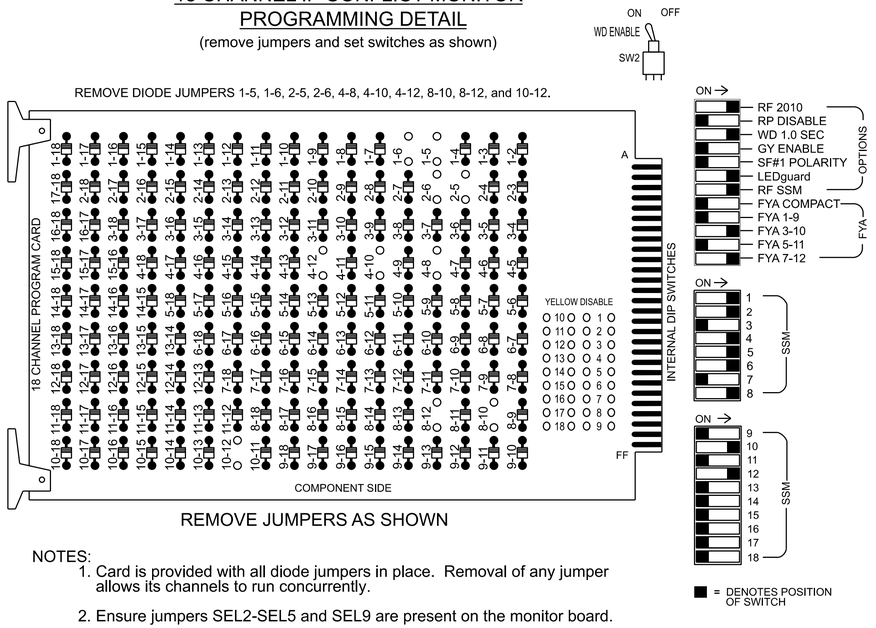
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 34.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S2, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet

SIGNAL HEAD HOOK-UP CHART

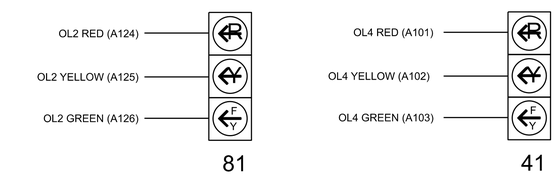
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	42,43	NU	51	61,62	NU	NU	82,83	NU	NU	81★	NU	NU	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132							A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW	127						133											

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)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 / 1A	Ø 2 / 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 / 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS / DC ISOLATOR
	L	NOT USED	Ø 2 / 2B				Ø 4 / 4B								ST / DC ISOLATOR
FILE "J"	U	Ø 5 / 5A	Ø 6 / 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 / 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 / 6B				Ø 8 / 8B, 8C								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	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	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
8A	TB5-9,10	J6U	42	4	22	8	3.0	-	X	-	X	-
8B, 8C	TB5-11,12	J6L	46	8	23	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
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:

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.

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	Off	FYA 4 - Section
Included Phases	-	4	-	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0368
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt - US 301 (Ward Boulevard) at Thorne Avenue

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DATE

SIG. INVENTORY NO. 04-0368

28-FEB-2025 11:59
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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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0368
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt - US 301 (Ward Boulevard)
at
Thorne Avenue

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 1F8DC871C0B8481...
DATE

SIG. INVENTORY NO. 04-0368

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U-5945	Sig. 35.0

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

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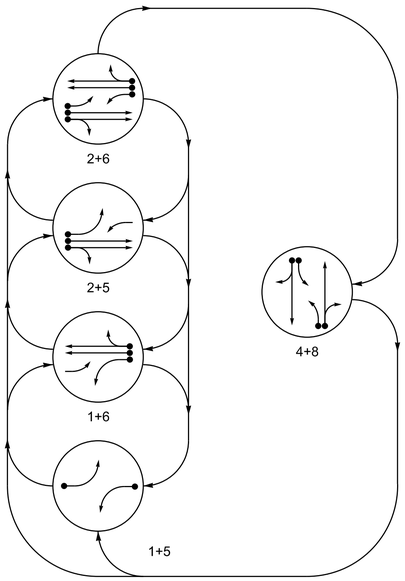
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 36.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

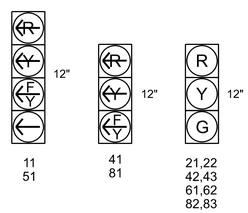
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	PHASE 1+6	PHASE 2+5	PHASE 2+6	PHASE 4+8	PHASE FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~
21,22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61,62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82,83	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



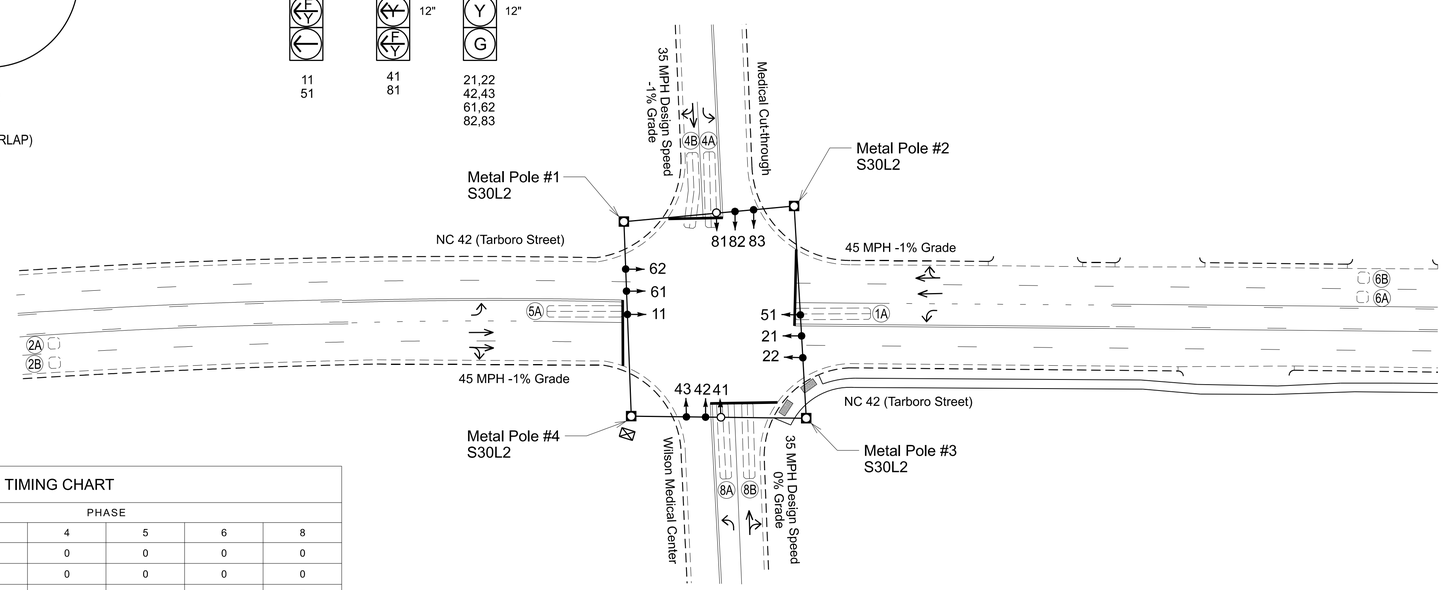
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR: LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41, 42, 81 and 82.
5. Renumber existing signal heads numbered 41, 42, 81 and 82 to 42, 43, 82 and 83 respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Pole	
	Curb Ramp	

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	25	15	90	25
Yellow Change	3.0	4.6	3.9	3.0	4.6	3.9
Red Clear	2.1	1.3	1.6	2.3	1.3	1.6
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

NC 42 (Tarboro Street)
at
Wilson Medical Center /
Medical Cut-through

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
6DE4832DCFB4492...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0452

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jtsutton@atkinsglobal.onmicrosoft.com
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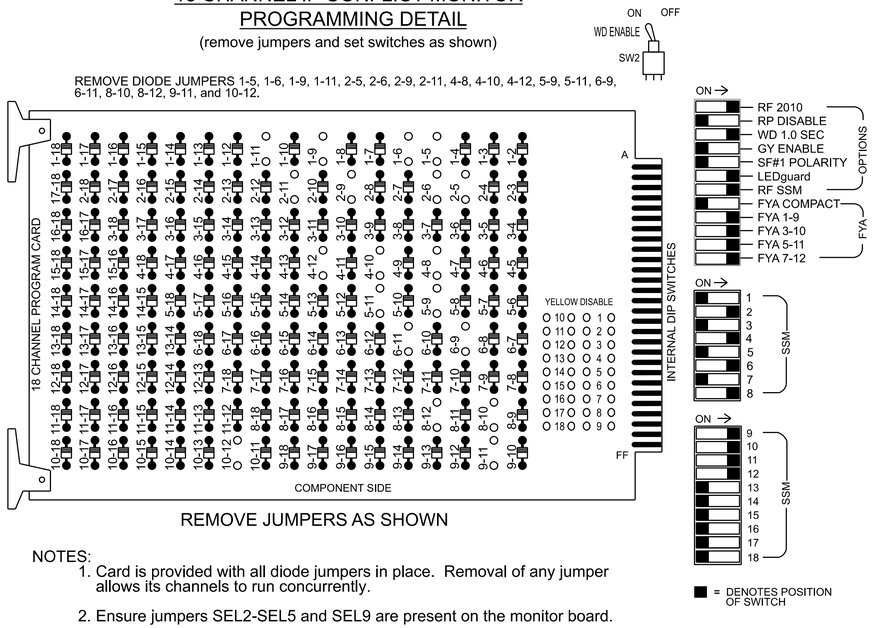
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 36.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

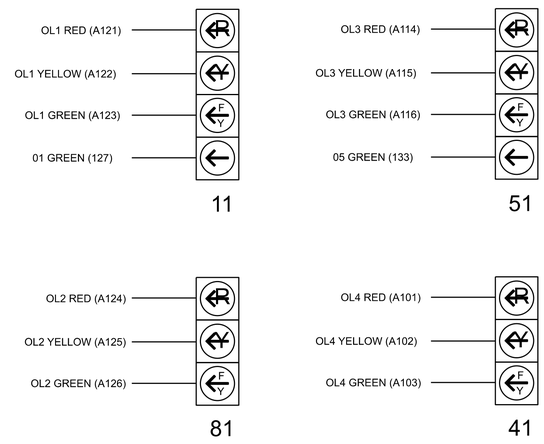
SIGNAL HEAD HOOK-UP CHART

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.	11★	21,22	NU	NU	42,43	NU	51★	61,62	NU	NU	82,83	NU	11★	81★	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127						133											

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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

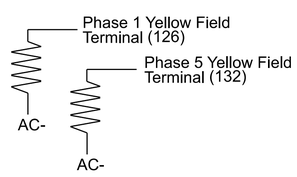
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0452
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

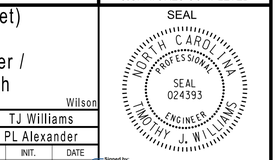
NC 42 (Tarboro Street)
at
Wilson Medical Center /
Medical Cut-through

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL



Signed by: T.J. Williams 2/28/2025
DATE

SIG. INVENTORY NO. 04-0452

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

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1616 EAST MILLBROOK ROAD, SUITE 160
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 36.2

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	-	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

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.

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: 04-0452
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42 (Tarboro Street)
at
Wilson Medical Center /
Medical Cut-through

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
PROFESSIONAL ENGINEER DATE

SIG. INVENTORY NO. 04-0452

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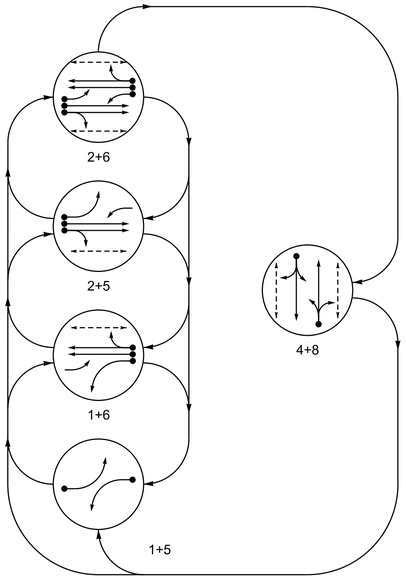
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 37.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

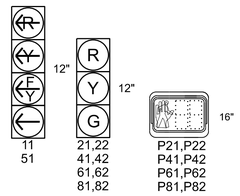


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	F Y	F Y	R	R
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←	F Y	←	F Y	R	R
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

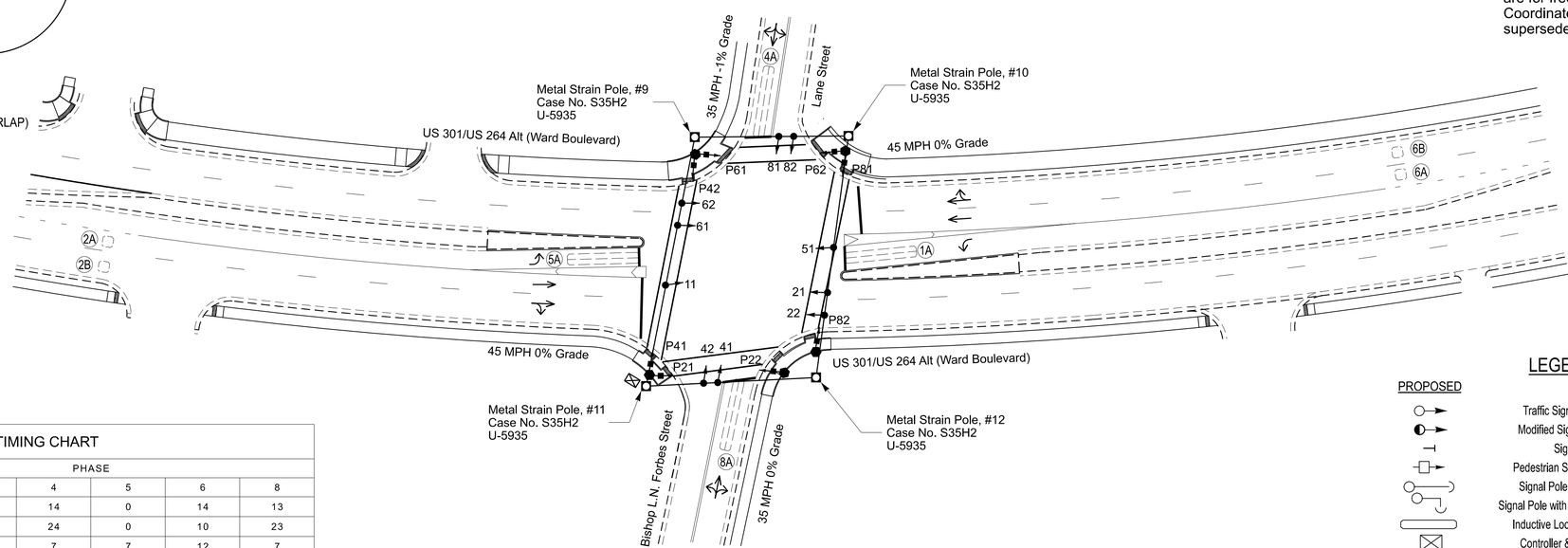
MAXTIME DETECTOR INSTALLATION CHART

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
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	5.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and /or Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	14	14	0	14	13
Ped Clear	0	13	24	0	10	23
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	20	90	30	20	90	30
Yellow Change	3.0	4.5	3.9	3.0	4.5	3.9
Red Clear	3.1	1.7	2.5	3.2	1.7	2.5
Added Initial *	-	1.8	-	-	1.8	-
Maximum Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	7	7	-	7	6
Non Lock Detector	X	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	

Signal Upgrade

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Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 0 40 1"=40'

US 301/US 264 Alt
(Ward Boulevard)
at Lane Street/
Bishop L.N. Forbes Street

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DOCUSIGNED BY: 6DE4632DCFB4492...
DATE

SIG. INVENTORY NO. 04-0454

08-FEB-2025 15:49
ssingleton@atkinsglobal.onmicrosoft.com
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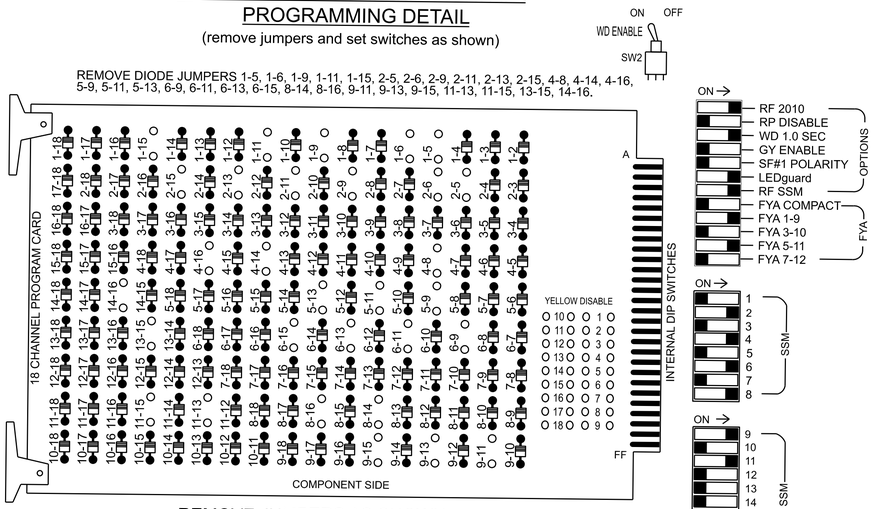
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 37.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phases 4 and 8 for Simultaneous Start.
5. The cabinet and controller are part of the Wilson Signal System.

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, S3, S5, S6, S7, S8, S9, S11, S12, AUX S1, AUX S4
Phases Used.....1, 2, 2PED, 4, 4PED, 5, 6, 6PED, 8, 8PED
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

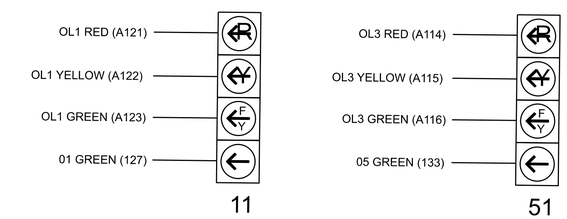
SIGNAL HEAD HOOK-UP CHART

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.	11★	21,22	P21, P22	NU	41,42	P41, P42	51★	61,62	P61, P62	NU	81,82	P81, P82	11★	NU	NU	51★	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127						133											
✋			113			104			119			110						
🚶			115			106			121			112						

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	5.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		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						

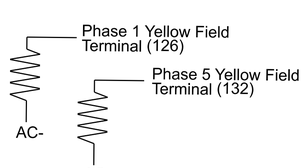
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0454
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 301/US 264 Alt
(Ward Boulevard)
at Lane Street/
Bishop L.N. Forbes Street

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8FC87C0B9B9481...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0454

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 37.2

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	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

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

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: 04-0454
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301/US 264 Alt
(Ward Boulevard)
at Lane Street/
Bishop L.N. Forbes Street

Division 4 Wilson County Wilson

PLAN DATE: November 2024	REVIEWED BY:	TJ Williams	
PREPARED BY: KG Sasaki	REVIEWED BY:	PL Alexander	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8FC271CD86941...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0454

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 38.0

PHASING DIAGRAM

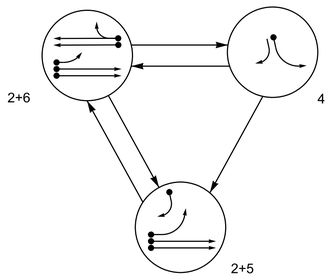


TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4	FLASH
21, 22	G	G	R	R
41, 42	~~R~~	~~R~~	←	~~R~~
43	→	R	→	R
51	←	F Y	~~R~~	~~R~~
61, 62	R	G	R	R

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
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
5B	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

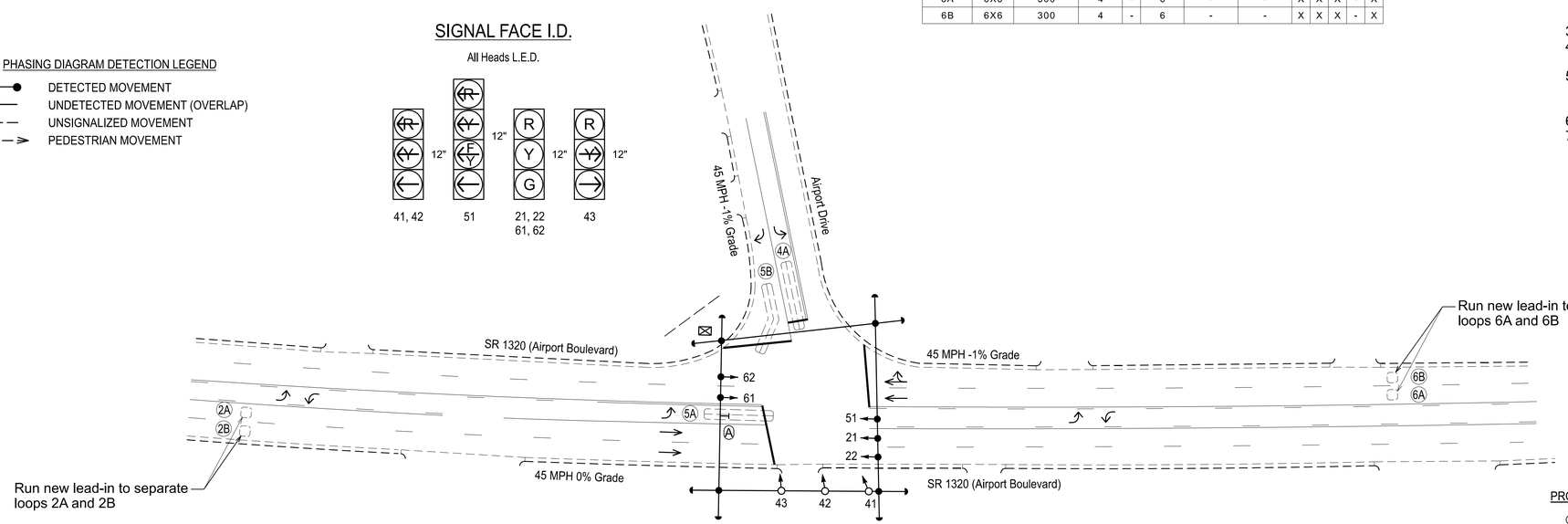
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN" Sign (W25-2)	A

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	7	12
Passage *	6.0	2.0	2.0	6.0
Max 1 *	90	30	20	90
Yellow Change	4.6	3.0	3.0	4.6
Red Clear	1.3	2.8	1.9	1.3
Added Initial *	1.5	-	1.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1320 (Airport Boulevard)
at
Airport Drive

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS | INIT. | DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F6FC571C0665451...
DATE

SIG. INVENTORY NO. 04-0462

28-FEB-2025 12:11
ssingleton@atkinsglobal.onmicrosoft.com
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ssingleton@atkinsglobal.onmicrosoft.com
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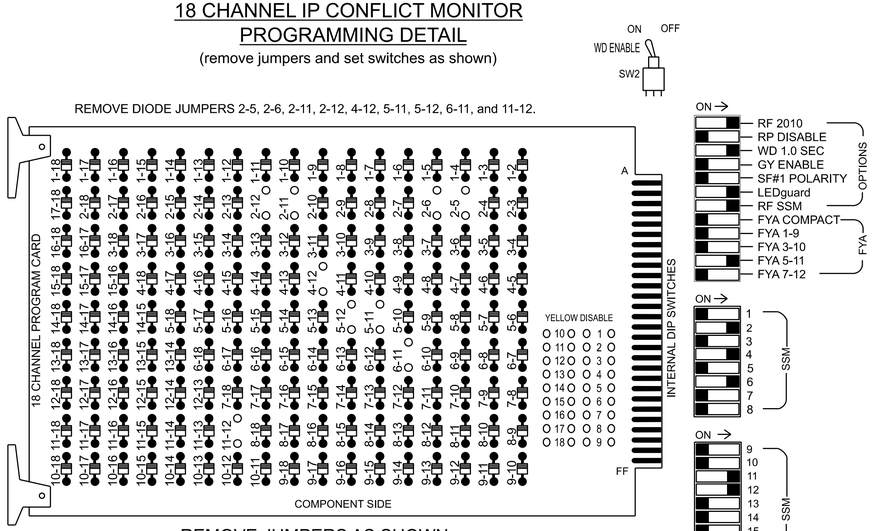
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 38.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail this sheet

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	NU	51★	61,62	NU	NU	NU	NU	NU	NU	NU	51★	43	NU
RED		128						134									A101	
YELLOW		129					*	135										
GREEN		130						136										
RED ARROW					101											A114		
YELLOW ARROW					102											A115	A102	
FLASHING YELLOW ARROW																A116		
GREEN ARROW					103		133										A103	

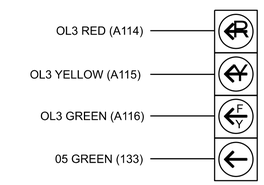
NU = Not Used

*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	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 2 2B				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø 6 6B											

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

FS = FLASH SENSE
ST = STOP TIME

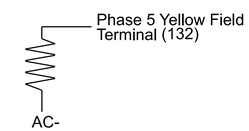
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	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	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
6B	TB3-11,12	J3L	77	43	19	6	-	-	X	X	X	-

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)

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	FYA 4 - Section	Normal
Included Phases	-	-	6	4,5
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

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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0462
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1320 (Airport Boulevard) at Airport Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
PROJECT ENGINEER DATE

SIG. INVENTORY NO. 04-0462

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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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0462
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1320 (Airport Boulevard)
at
Airport Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0462

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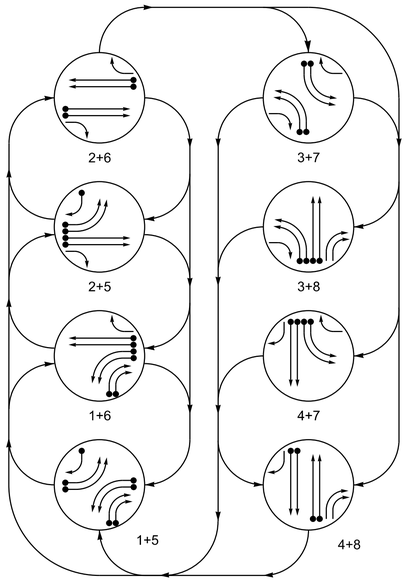
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 39.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11, 12	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R↘	R↘	R	R	R
31, 32	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41	R	R	R	R	R	R	G	G	R
42	R↘	R	R↘	R	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	R	R	R
62	R	G	R	G	R↘	R	R↘	R	R
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
83, 84	→	→	R	R	R	→	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.

11, 12
31, 32
51, 52
71, 72

21
41
61
81, 82

22
42
62

83, 84

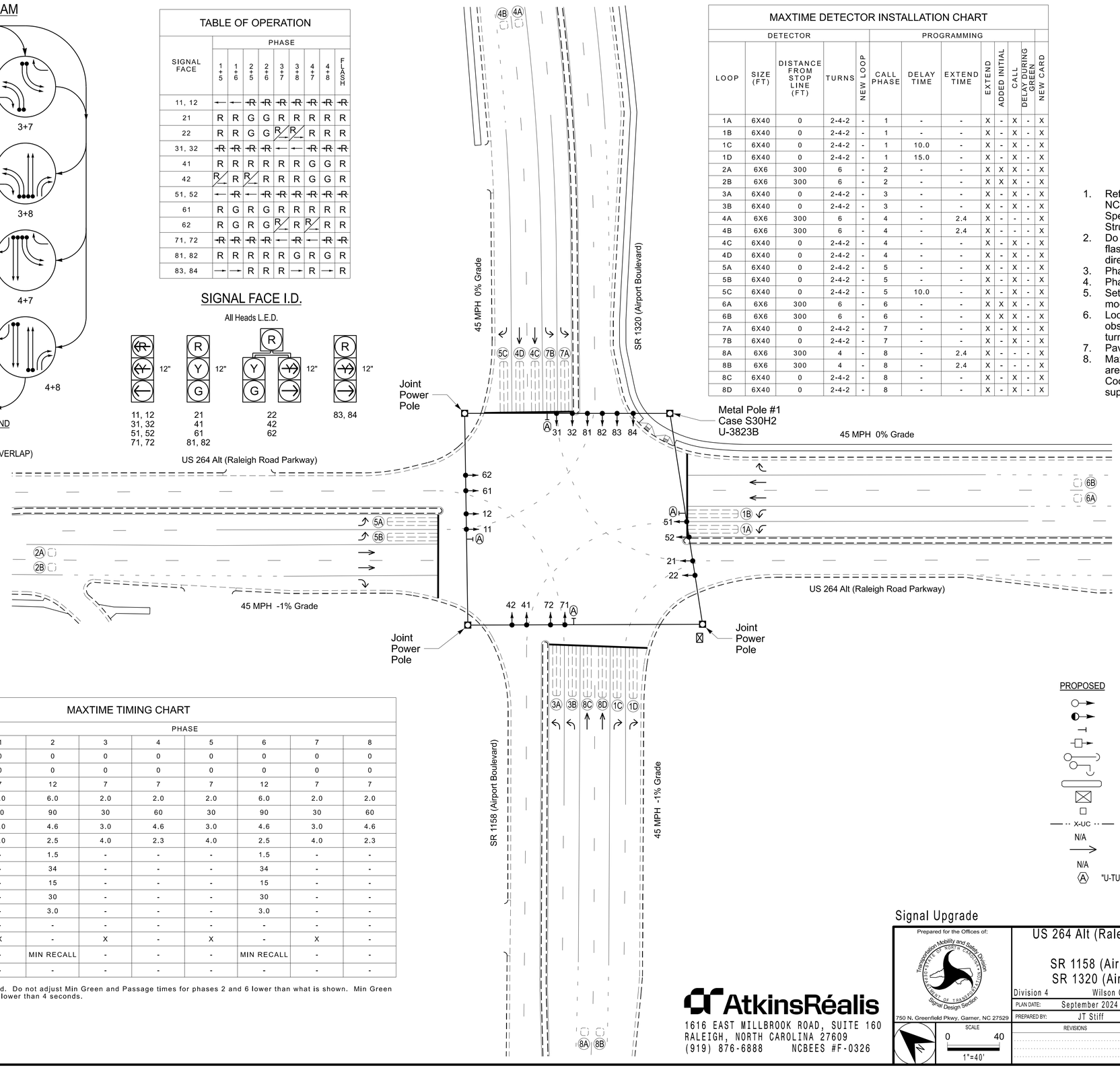
MAXTIME DETECTOR INSTALLATION CHART

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 PREEMPT	NEW CARD
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
1B	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
1C	6X40	0	2-4-2	-	1	10.0	-	X	-	X	-	X
1D	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	6	-	2	-	-	X	X	X	-	X
2B	6X6	300	6	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
4A	6X6	300	6	-	4	-	2.4	X	-	-	-	X
4B	6X6	300	6	-	4	-	2.4	X	-	-	-	X
4C	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4D	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
5B	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
5C	6X40	0	2-4-2	-	5	10.0	-	X	-	X	-	X
6A	6X6	300	6	-	6	-	-	X	X	X	-	X
6B	6X6	300	6	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
7B	6X40	0	2-4-2	-	7	-	-	X	-	X	-	X
8A	6X6	300	4	-	8	-	2.4	X	-	-	-	X
8B	6X6	300	4	-	8	-	2.4	X	-	-	-	X
8C	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X
8D	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	30	90	30	60	30	90	30	60
Yellow Change	3.0	4.6	3.0	4.6	3.0	4.6	3.0	4.6
Red Clear	4.0	2.5	4.0	2.3	4.0	2.5	4.0	2.3
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	A

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 0 40 1"=40'

US 264 Alt (Raleigh Road Parkway)
at
SR 1158 (Airport Boulevard)/
SR 1320 (Airport Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0478

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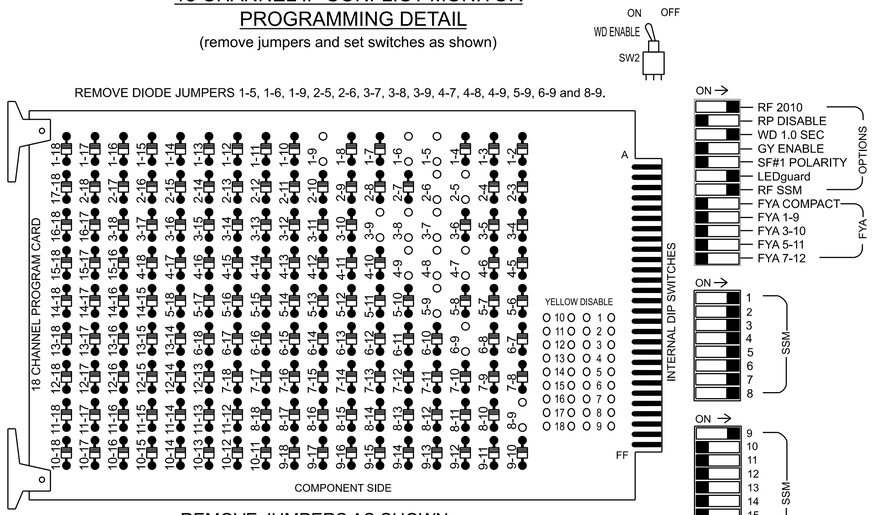
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 39.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11, AUX S1
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

*See overlap programming detail on this sheet

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.	11,12	21,22	NU	22	31,32	41,42	NU	42	51,52	61,62	NU	62	71,72	81,82	NU	83,84	NU	NU	NU	NU	NU
RED		128				101				134				107		A121					
YELLOW		129				102				135				108							
GREEN		130				103				136				109							
RED ARROW	125				116				131				122								
YELLOW ARROW	126			117	117			132	132			123	123			A122					
GREEN ARROW	127			118	118			133	133			124	124			A123					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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
1A	TB2-1,2	I1U	56	18	1	1			X		X	
1B	TB2-3,4	I1L	56	18	1	1			X		X	
1C	TB2-5,6	I2U	39	1	2	1	10.0		X		X	
1D	TB2-7,8	I2L	43	5	3	1	15.0		X		X	
2A	TB2-9,10	I3U	63	29	4	2			X	X	X	
2B	TB2-11,12	I3L	76	42	5	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7	3			X		X	
3B	TB4-7,8	I5L	58	20	7	3			X		X	
4A	TB4-9,10	I6U	41	3	8	4		2.4	X			
4B	TB4-11,12	I6L	45	7	9	4		2.4	X			
4C	TB6-1,2	I7U	65	31	10	4			X		X	
4D	TB6-3,4	I7L	78	44	11	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5			X		X	
5B	TB3-3,4	J1L	55	17	15	5			X		X	
5C	TB3-5,6	J2U	40	2	16	5	10.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	
6B	TB3-11,12	J3L	77	43	19	6			X	X	X	
7A	TB5-5,6	J5U	57	19	21	7			X		X	
7B	TB5-7,8	J5L	57	19	21	7			X		X	
8A	TB5-9,10	J6U	42	4	22	8		2.4	X			
8B	TB5-11,12	J6L	46	8	23	8		2.4	X			
8C	TB7-1,2	J7U	66	32	24	8			X		X	
8D	TB7-3,4	J7L	79	45	25	8			X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	Normal	Off	Off	Off
Included Phases	1,8	-	-	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0478
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
SR 1158 (Airport Boulevard)/
SR 1320 (Airport Boulevard)

Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0478

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 39.2

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0478
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt (Raleigh Road Parkway)
at
SR 1158 (Airport Boulevard)/
SR 1320 (Airport Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0478

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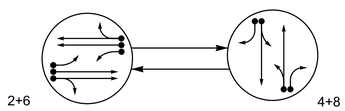
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 40.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	PHASE FLASH
21	F Y	~~R~~	~~R~~
22,23	G	R	R
41,42	R	G	R
43	R	F Y	R
61	F Y	~~R~~	~~R~~
62,63	G	R	R
81,82	R	G	R
83	R	F Y	R

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	
2A	6X6	330	5	-	2	-	-	X	X	X	-	X
2B	6X6	330	5	-	2	-	-	X	X	X	-	X
2C	6X40	0	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
6A	6X6	330	5	-	6	-	-	X	X	X	-	X
6B	6X6	330	5	-	6	-	-	X	X	X	-	X
6C	6X40	0	2-4-2	-	6	3.0	-	X	-	X	X	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X		X	-	X

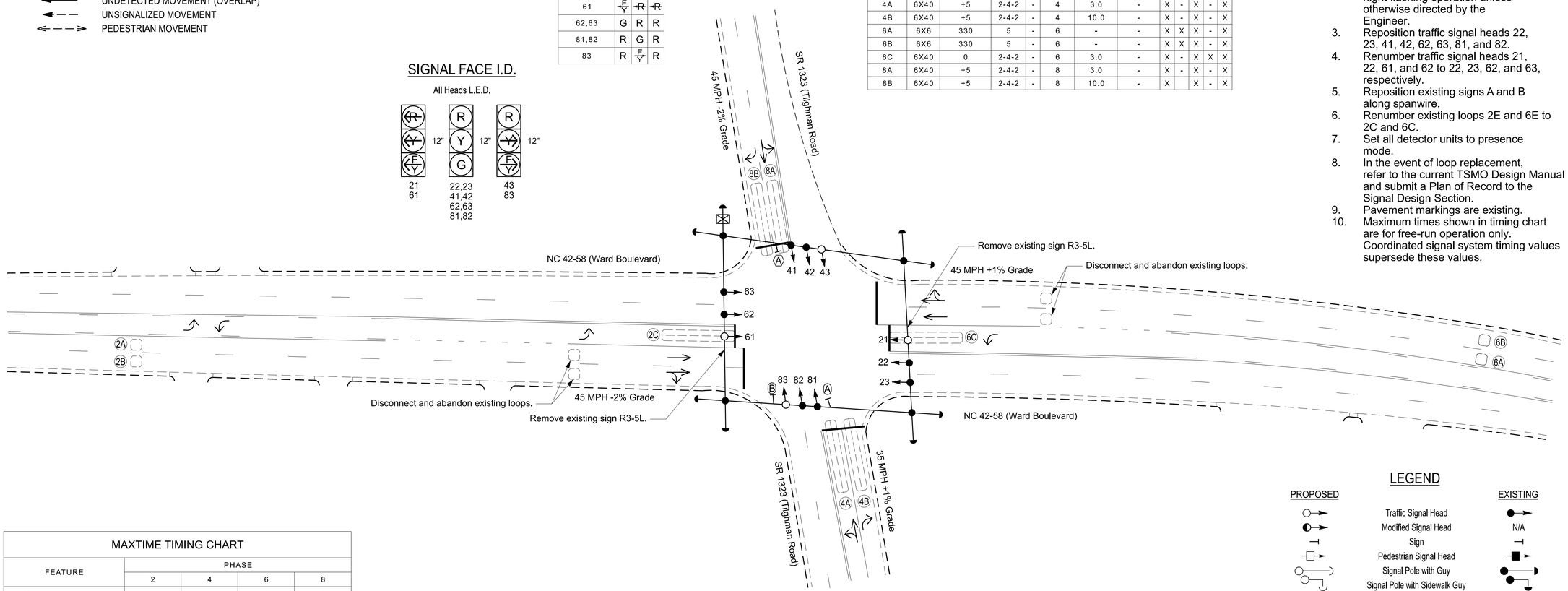
2 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition traffic signal heads 22, 23, 41, 42, 62, 63, 81, and 82.
4. Renumber traffic signal heads 21, 22, 61, and 62 to 22, 23, 62, and 63, respectively.
5. Reposition existing signs A and B along spanwire.
6. Renumber existing loops 2E and 6E to 2C and 6C.
7. Set all detector units to presence mode.
8. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Combined Through and Left Arrow Sign (R3-6L)	A
B	Right Arrow "ONLY" Sign (R3-5R)	B

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	12	7
Passage *	6.0	2.0	6.0	2.0
Max 1 *	90	25	90	25
Yellow Change	4.7	4.7	4.7	4.7
Red Clear	1.0	1.7	1.0	1.7
Added Initial *	1.5	-	1.5	-
Maximum Initial *	37	-	37	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	-	-	-	-
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.

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Signal Upgrade

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

NC 42-58 (Ward Boulevard)
at
SR 1323 (Tilghman Road)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

SCALE 1"=30' (0 – 30)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DocuSigned by: 9C3B8497A7E34C0...
DATE

SIG. INVENTORY NO. 04-0488

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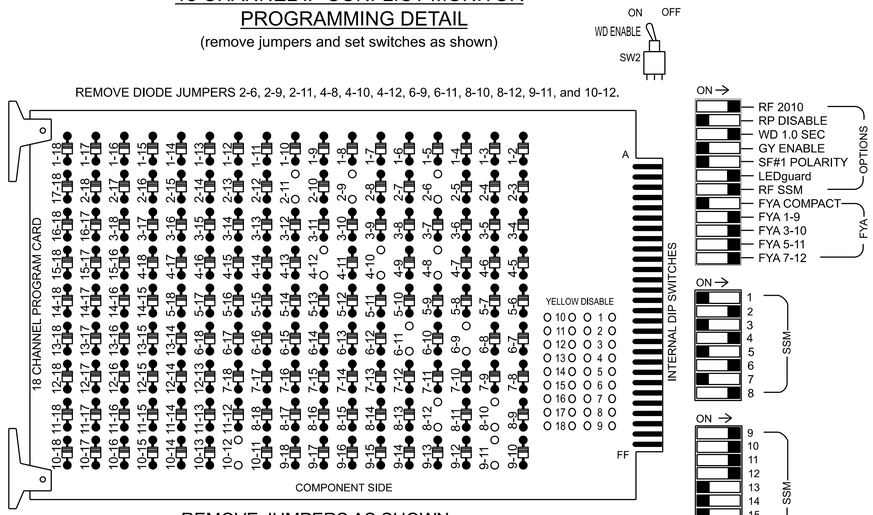
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 40.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

★See pictorial of head wiring in detail this sheet.

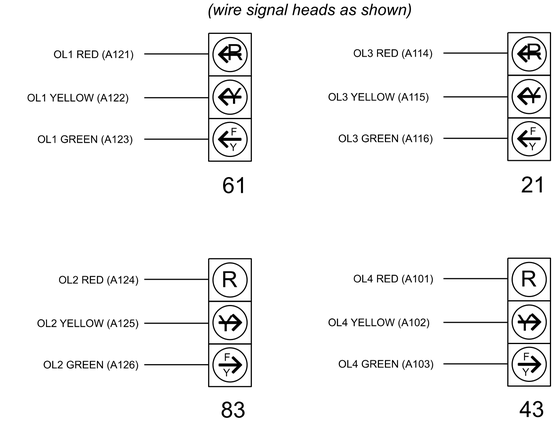
EQUIPMENT INFORMATION

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, S8, S11,
AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	Ø 2 2C	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 2 2B	NOT USED			Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A	Ø 6 6C	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B	NOT USED			Ø 8 8B								

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
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
2C	TB2-9,10	I3U	63	29	4	2	3.0		X		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	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
6C	TB3-9,10	J3U	64	30	18	6	3.0		X		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	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0488
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42-58 (Ward Boulevard)
at
SR 1323 (Tilghman Road)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF
Signed by: James Stiff 2/28/2025
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DATE
SIG. INVENTORY NO. 04-0488

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 40.2

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	8	6	4
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

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.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0488
DESIGNED: AUGUST 2024
SEALED: 02-28-2028
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42-58 (Ward Boulevard)
at
SR 1323 (Tilghman Road)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DocuSigned by: 9C1B9A97A7E4C0... DATE

SIG. INVENTORY NO. 04-0488

28-FEB-2025 12:17
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STIFF685

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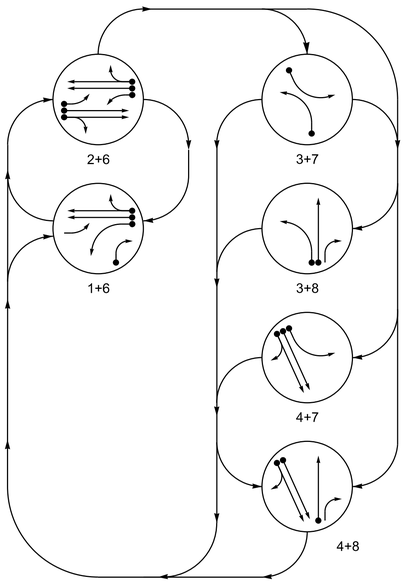
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 41.0

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	3+7	3+8	4+7	4+8	FLASH
11	←	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	F Y	F Y	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
22, 23	R	G	R	R	R	R	R
31	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	G	G	R
61, 62	G	G	R	R	R	R	R
71	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81	R	R	R	G	R	G	R
82	R	R	R	G	R	G	R

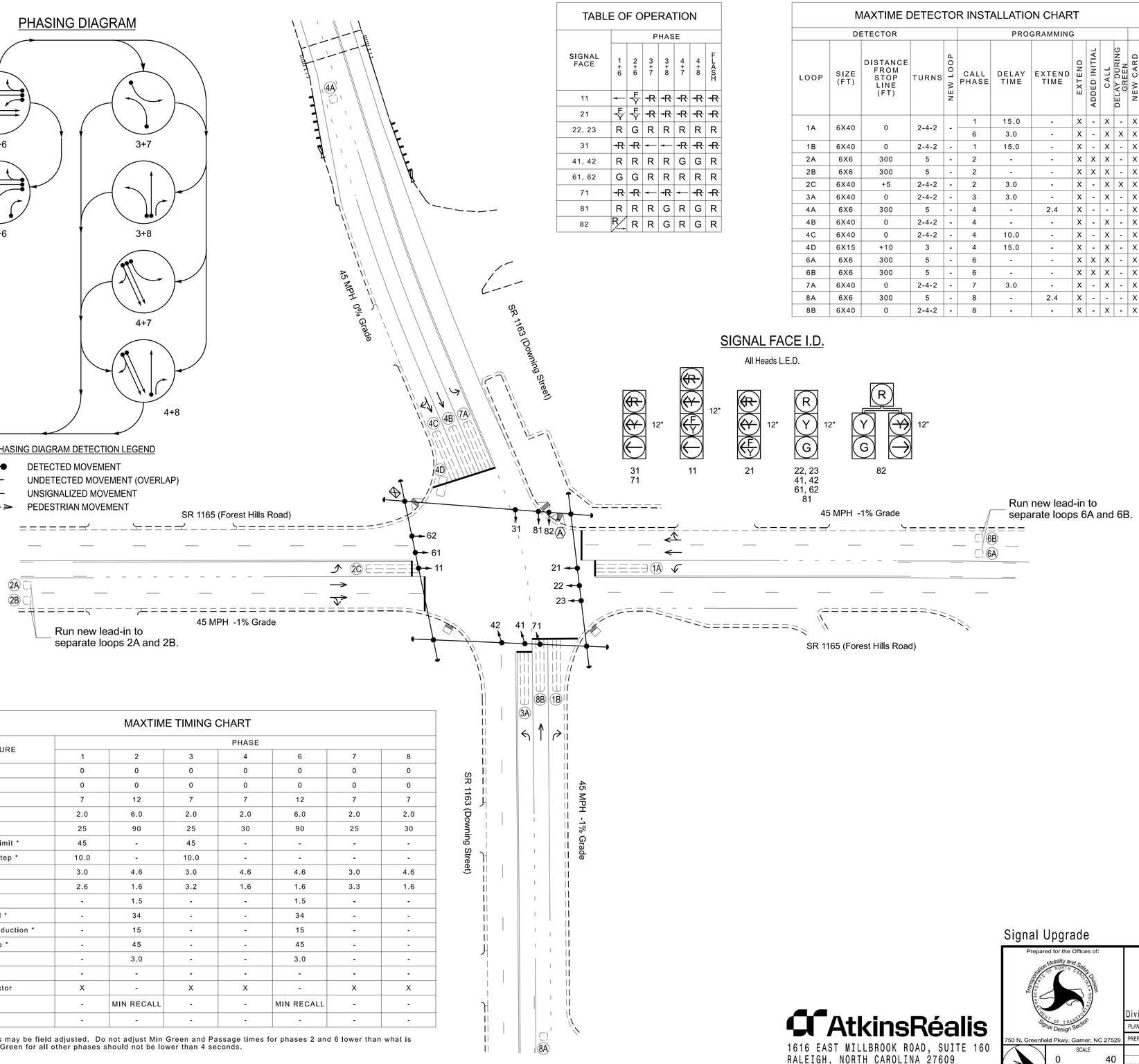
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY/RING GREEN	NEW CARD	
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
1B	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
2C	6X40	+5	2-4-2	-	2	3.0	-	X	-	X	X	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4C	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
4D	6X15	+10	3	-	4	15.0	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X6	300	5	-	8	-	2.4	X	-	-	-	X
8B	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	6	7	8
Walk *	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	25	90	25	30	90	25	30
Dynamic Max Limit *	45	-	45	-	-	-	-
Dynamic Max Step *	10.0	-	10.0	-	-	-	-
Yellow Change	3.0	4.6	3.0	4.6	4.6	3.0	4.6
Red Clear	2.6	1.6	3.2	1.6	1.6	3.3	1.6
Added Initial *	-	1.5	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	34	-	-
Time Before Reduction *	-	15	-	-	15	-	-
Time To Reduce *	-	45	-	-	45	-	-
Minimum Gap	-	3.0	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Right Arrow "ONLY" Sign (R3-5R)	
N/A	Curb Ramp	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SR 1165 (Forest Hills Road)
at
SR 1163 (Downing Street)

Division 4 | Wilson County | Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
BDE4832DCFB4492...
DATE

SIG. INVENTORY NO. 04-0515

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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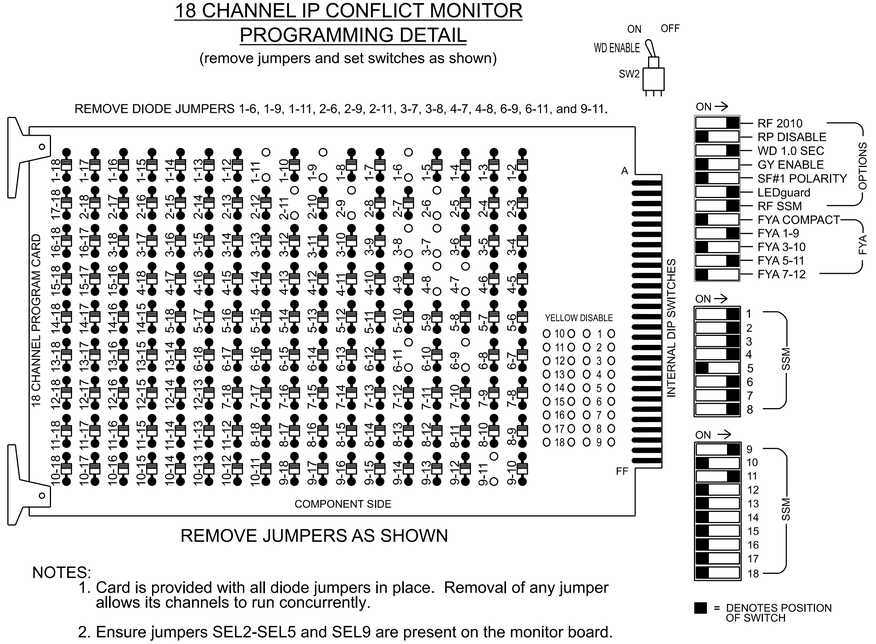
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 41.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S8, S10, S11, AUX S1, AUX S4
Phases Used.....1, 2, 3, 4, 6, 7, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

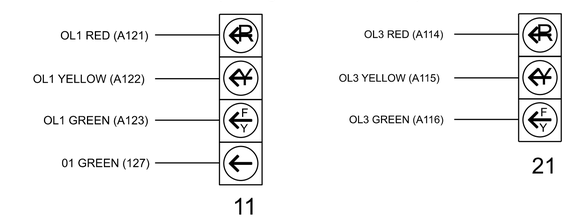
SIGNAL HEAD HOOK-UP CHART

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.	11★	82	22,23	NU	31	41,42	NU	NU	61,62	NU	71	81,82	NU	11★	NU	NU	21★	NU	NU
RED		*	128			101			134			107							
YELLOW			129			102			135			108							
GREEN			130			103			136			109							
RED ARROW					116						122			A121			A114		
YELLOW ARROW		126			117						123			A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW	127	127			118						124								

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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2A	Ø 2 2C	Ø 3 3A	Ø 4 4A	Ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø 2 2B	NOT USED	NOT USED	Ø 4 4B	Ø 4 4D							ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B			NOT USED	Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

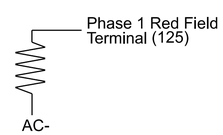
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	X	X	-
2C	TB4-1,2	I4U	47	9	6	2	3.0	-	X	-	X	X
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	2.4	X	-	-	-
4B	TB4-11,12	I6L	45	7	9	4	-	-	X	-	X	-
4C	TB6-1,2	I7U	65	31	10	4	10.0	-	X	-	X	-
4D	TB6-3,4	I7L	78	44	11	4	15.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	2.4	X	-	-	-
8B	TB5-11,12	J6L	46	8	23	8	-	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0515
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1165 (Forest Hills Road)
at
SR 1163 (Downing Street)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DocuSigned by: 7B0C7F1C2C8B4B1...
DATE

SIG. INVENTORY NO. 04-0515

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 41.2

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

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	-	-
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

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: 04-0515
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1165 (Forest Hills Road)
at
SR 1163 (Downing Street)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0515

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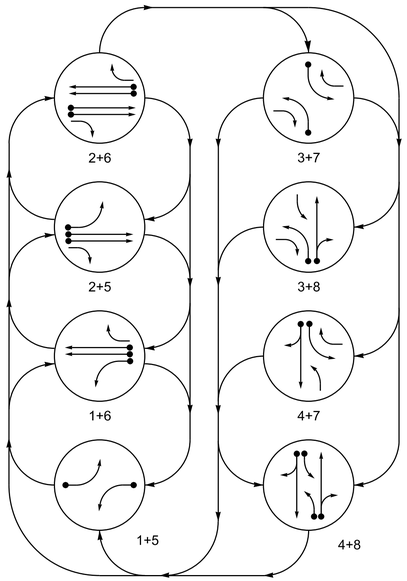
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 42.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	R
23	R	R	FY	FY	FY	FY	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	FY	FY	~~R~~
41,42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	R
63	R	FY	R	FY	FY	R	FY	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	FY	←	FY	~~R~~
81,82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

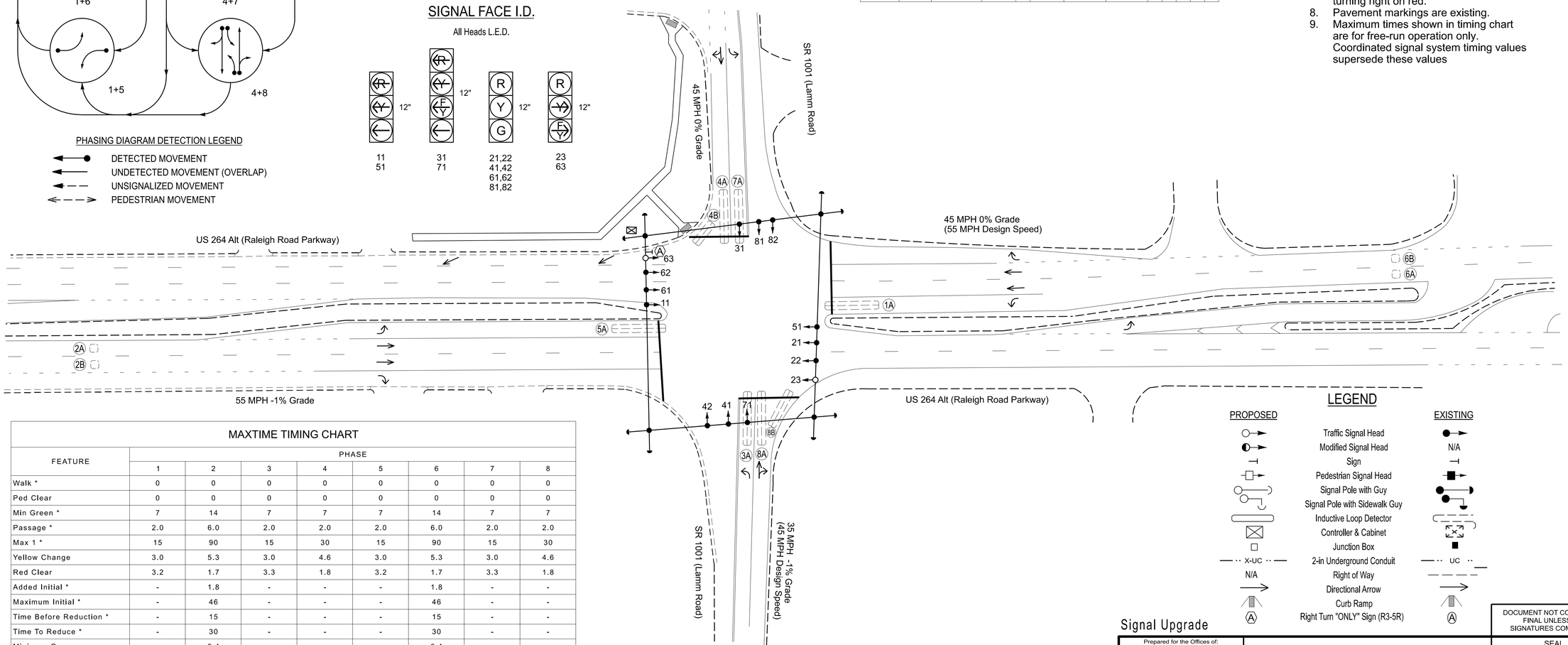
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	+5	2-4-2	-	1	-	-	X	-	X	-	X
2A	6X6	420	6	-	2	-	-	X	X	X	-	X
2B	6X6	420	6	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	15.0	-	X	-	X	-	X
					8	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
4B	6X20	+5	2-4-2	-	4	15.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	420	6	-	6	-	-	X	X	X	-	X
6B	6X6	420	6	-	6	-	-	X	X	X	-	X
7A	6X40	+5	2-4-2	-	7	15.0	-	X	-	X	-	X
					4	3.0	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X
8B	6X30	+5	2-4-2	-	8	15.0	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 21, 22, 61 and 62.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	14	7	7	7	14	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	15	90	15	30	15	90	15	30
Yellow Change	3.0	5.3	3.0	4.6	3.0	5.3	3.0	4.6
Red Clear	3.2	1.7	3.3	1.8	3.2	1.7	3.3	1.8
Added Initial *	-	1.8	-	-	-	1.8	-	-
Maximum Initial *	-	46	-	-	-	46	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.4	-	-	-	3.4	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Curb Ramp	
A	Right Turn "ONLY" Sign (R3-5R)	A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SCALE 0 40 1"=40'

US 264 Alt (Raleigh Road Parkway) at SR 1001 (Lamm Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F8FC57FC0884451
DATE

SIG. INVENTORY NO. 04-0593

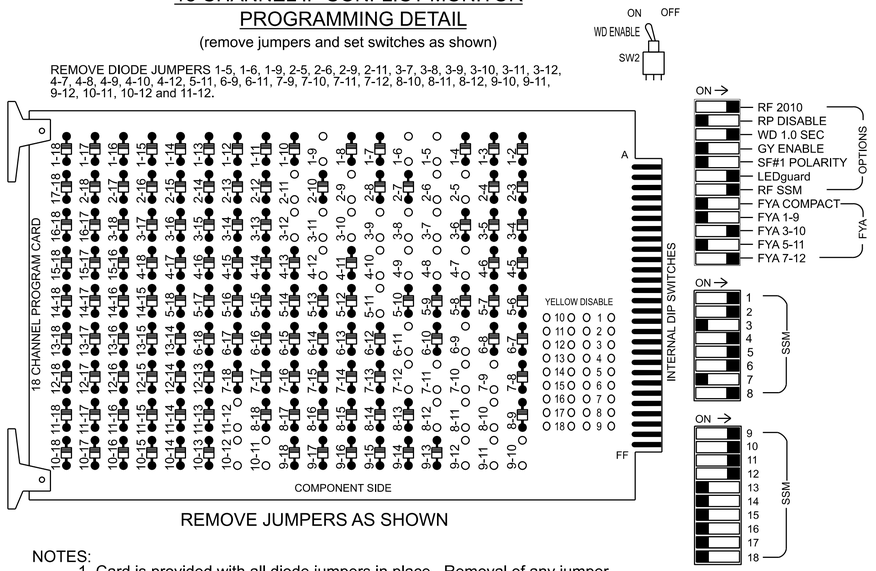
Docusign Envelope ID: 975F60DC-8CEC-40C0-AD6E-73234B20A938

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 42.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....*
Overlap "2".....*
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.	11	21,22	NU	31★	41,42	NU	51	61,62	NU	71★	81,82	NU	63★	31★	NU	23★	71★	NU
RED		128			101			134			107		A121			A114		
YELLOW		129		*	102			135		*	108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132						A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133			124								

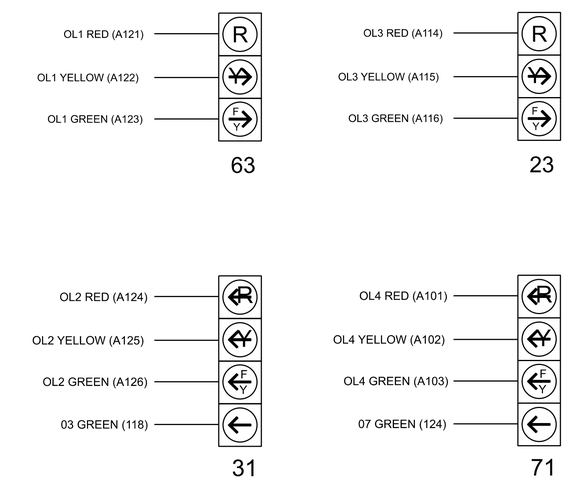
NU = Not Used

*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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B			NOT USED	Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

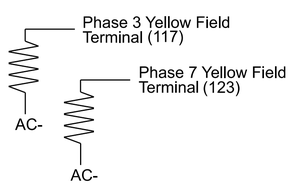
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	15.0	-	X	-	X	-
				-	30	8	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	10.0	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	15.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	15.0	-	X	-	X	-
				-	32	4	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	10.0	-	X	-	X	-
8B	TB5-11,12	J6L	46	8	23	8	15.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0593
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

US 264 Alt (Raleigh Road Parkway) at SR 1001 (Lamm Road)

Division 4 | Wilson County | Wilson

PLAN DATE: December 2024	REVIEWED BY: TJ Williams
PREPARED BY: JT Sutton	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
DOCUSIGN ENVELOPE ID: 1BEC671C0B8B481 DATE

SIG. INVENTORY NO. 04-0593

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 42.2

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	6, 7	4	2, 3	8
Modifier Phases	-	3	-	7
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0593
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
SR 1001 (Lamm Road)

Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
F8EC671C0B8B481...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0593

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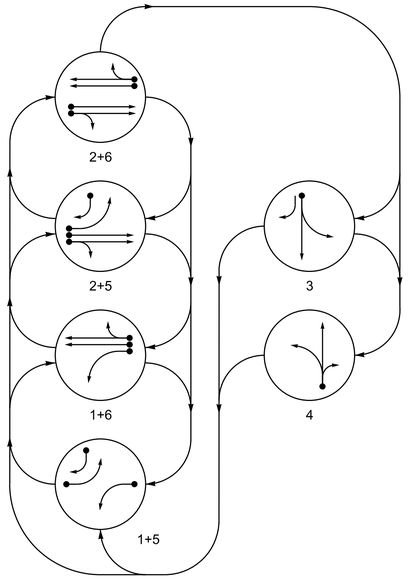
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 43.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3	4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R
31	R	R	R	R	G	R	R
32	R/→	R	R/→	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R

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
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	330	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	330	EXIST	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
5B	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	330	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	330	EXIST	-	6	-	-	X	X	X	-	X

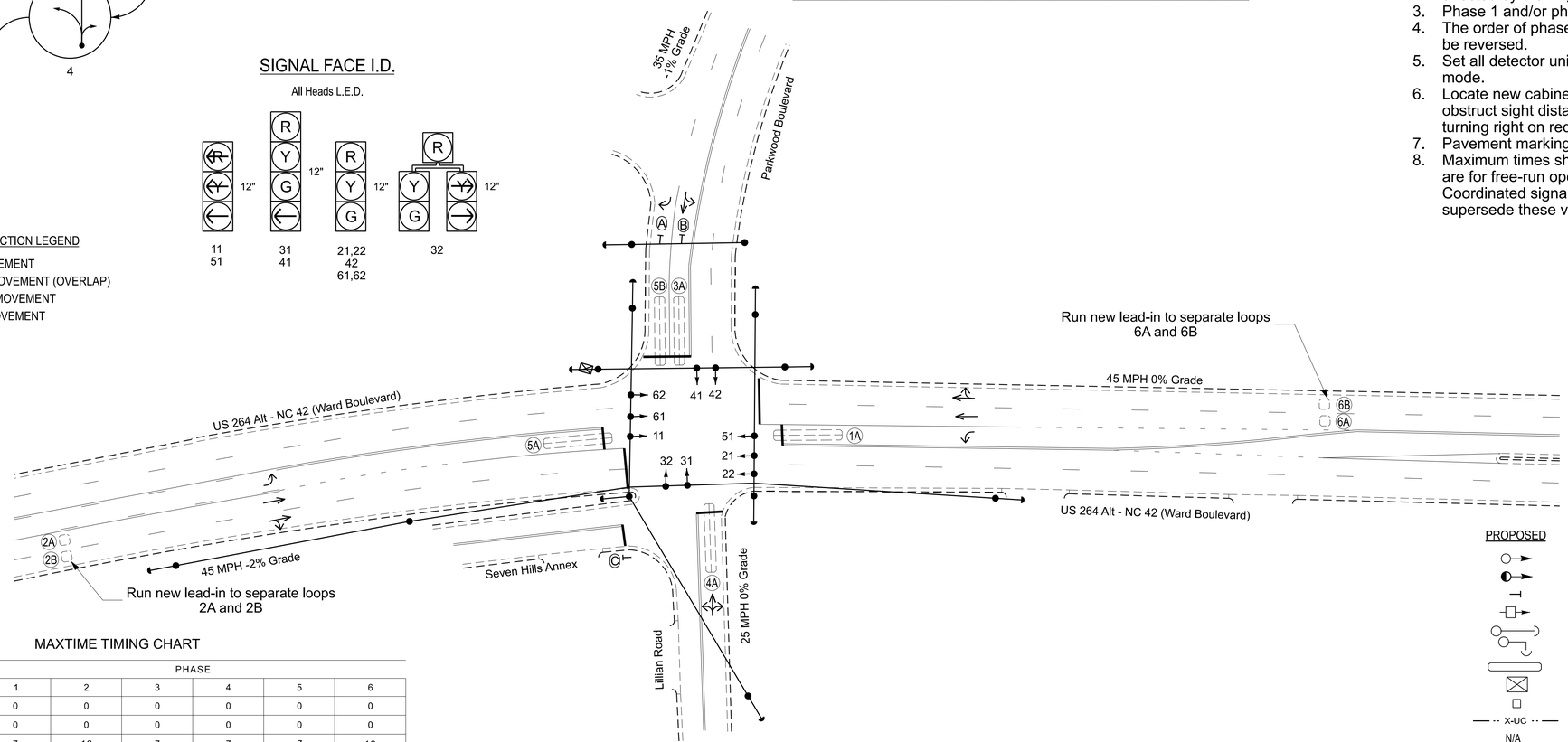
6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12
Passage *	2.0	6.0	2.0	2.0	2.0	6.0
Max 1 *	15	90	30	15	15	90
Yellow Change	3.0	4.7	3.9	3.2	3.0	4.7
Red Clear	2.3	1.5	1.6	2.2	2.3	1.5
Added Initial *	-	1.5	-	-	-	1.5
Maximum Initial *	-	37	-	-	-	37
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Right Arrow "ONLY" Sign (R3-5R)	A
B	Combined Through and Left Arrow Sign (R3-6L)	B
C	"STOP" Sign (R1-1)	C

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 264 Alt - NC 42 (Ward Boulevard) at Parkwood Boulevard / Lillian Road

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F6FC57FCD66945F...
DATE

SIG. INVENTORY NO. 04-0601

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
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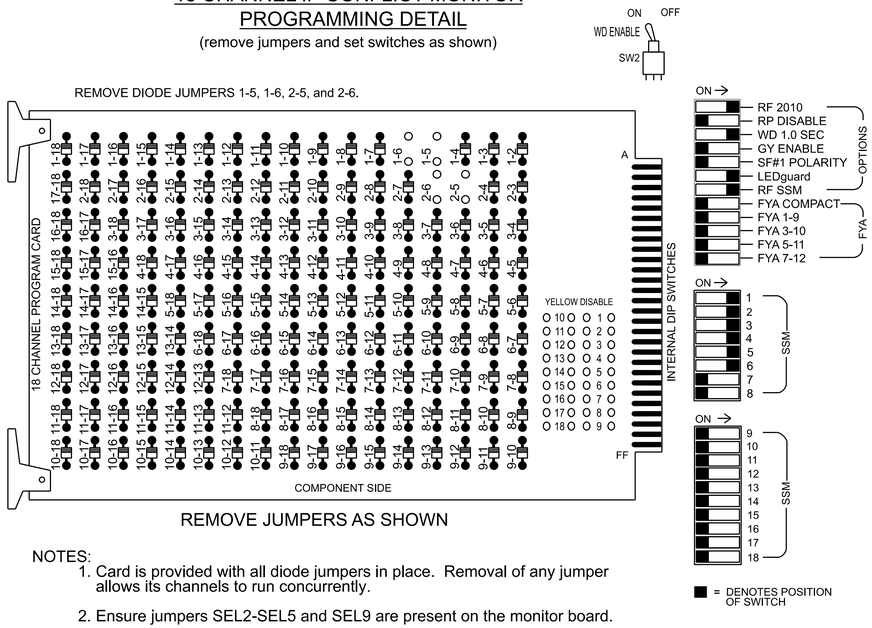
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 43.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4		S5		S6	S7		S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3		4		14	5		6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4		4 PED	5		6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	31	32	41	42	NU	32	51	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128		116	116	101	101				134										
YELLOW		129		117	117	102	102				135										
GREEN		130		118	118	103	103				136										
RED ARROW	125									131											
YELLOW ARROW	126								132	132											
GREEN ARROW	127			118		103			133	133											

NU = Not Used

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, S7, S8
Phases Used.....1, 2, 3, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø 6 6B											

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	5.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
5B	TB3-5,6	J2U	40	2	16	5	15.0	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
6B	TB3-11,12	J3L	77	43	19	6	-	-	X	X	X	-

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: 04-0601
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail

Electrical and Programming Details For:

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

US 264 Alt - NC 42 (Ward Boulevard)
at
Parkwood Boulevard / Lillian Road

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams (PROOF FORMAT) 2/28/2025 DATE

SIG. INVENTORY NO. 04-0601

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 12:23
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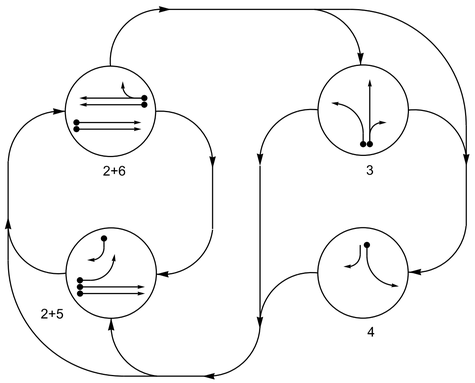
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 44.0

PHASING DIAGRAM



SIGNAL FACE I.D.

All Heads L.E.D.

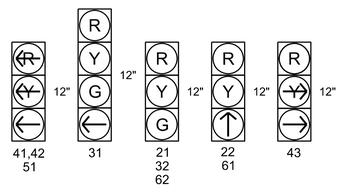


TABLE OF OPERATION

SIGNAL FACE	2+5	2+6	3	4	FLASH
21	G	G	R	R	R
22	↑	↑	R	R	R
31	R	R	G	R	R
32	R	R	G	R	R
41,42	~~R~~	~~R~~	~~R~~	←	~~R~~
43	→	R	R	→	R
51	←	~~R~~	~~R~~	~~R~~	~~R~~
61	R	↑	R	R	R
62	R	G	R	R	R

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
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	10.0	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	3.0	-	X	-	X	-	X
5B	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
S1	6X6	+150	4	-	-	-	-	-	-	-	-	X
S2	6X6	+150	4	-	-	-	-	-	-	-	-	X

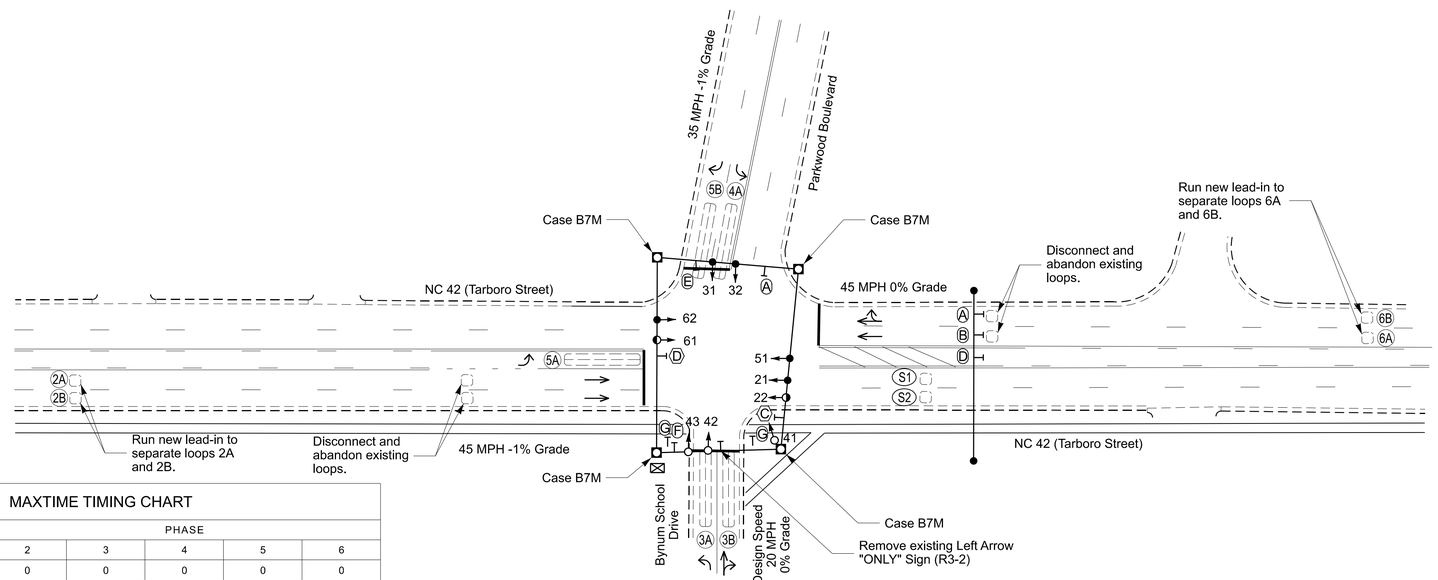
4 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



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	
— ·· X-UC ·· —	2-in Underground Conduit	— ·· UC ·· —
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
Ⓐ	Combined Through and Right Arrow Sign (R3-6R)	Ⓐ
Ⓑ	Through Arrow "ONLY" Sign (R3-5A)	Ⓑ
Ⓒ	No Right Turn Sign (R3-1)	Ⓒ
Ⓓ	No Left Turn Sign (R3-2)	Ⓓ
Ⓔ	Left Arrow "ONLY" Sign (R3-5L)	Ⓔ
Ⓕ	Right Arrow "ONLY" Sign (R3-5R)	Ⓕ
Ⓖ	"DO NOT ENTER" Sign (R5-1)	Ⓖ

MAXTIME TIMING CHART

MIN RECALL	PHASE				
	2	3	4	5	6
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
MIn Green *	12	7	7	7	12
Passage *	6.0	2.0	2.0	2.0	6.0
Max 1 *	90	20	20	20	90
Yellow Change	4.6	3.0	3.0	3.0	4.6
Red Clear	1.3	2.8	2.1	1.9	1.3
Added Initial *	1.5	-	-	-	1.5
Maximum Initial *	34	-	-	-	34
Time Before Reduction *	15	-	-	-	15
Time To Reduce *	30	-	-	-	30
Minimum Gap	3.0	-	-	-	3.0
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.

Signal Upgrade

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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

SCALE 0 40 1"=40'

NC 42 (Tarboro Street) at Bynum School Drive/Parkwood Boulevard

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 7A89DA4D9E3440B... 2/28/2025
DATE

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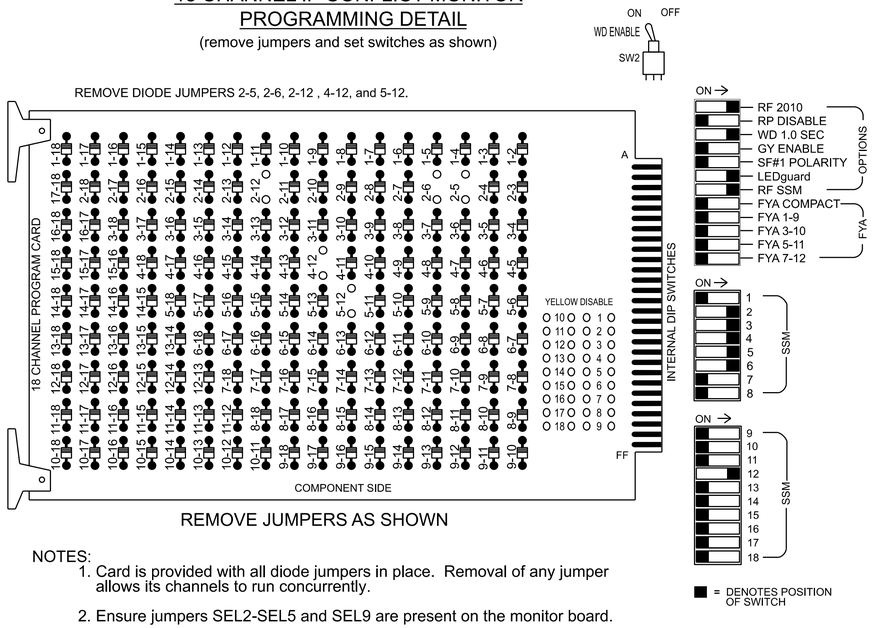
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 44.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S4, S5, S7, S8, AUX S5
Phases Used.....2, 3, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet.

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	31	32	41,42	NU	51	61	62	NU	NU	NU	NU	NU	NU	NU	NU	43	NU
RED		128	128		116	116				134	134									A101	
YELLOW		129	129		117	117				135	135										
GREEN		130			118	118					136										
RED ARROW							101		131												
YELLOW ARROW							102		132											A102	
GREEN ARROW			130		118		103		133	136										A103	

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SYS. DET. S1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 2 2B				Ø 3 3B	NOT USED		SYS. DET. S2					ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø 6 6B											

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	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	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-9,10	I6U	41	3	8	3			X		X	
3B	TB4-11,12	I6L	45	7	9	3	10.0		X		X	
4A	TB6-1,2	I7U	65	31	10	4	3.0		X		X	
*S1	TB6-9,10	I9U	60	22	13	SYS						
*S2	TB6-11,12	I9L	62	24	14	SYS						
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
5B	TB3-5,6	J2U	40	2	16	5	15.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	
6B	TB3-11,12	J3L	77	43	19	6			X	X	X	

*System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L
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:

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.

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	Normal
Included Phases	-	-	-	4,5
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0602
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Tarboro Street)
at
Bynum School Drive/Parkwood Boulevard

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0602

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 44.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0602
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42 (Tarboro Street)
at
Bynum School Drive/Parkwood Boulevard

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0602

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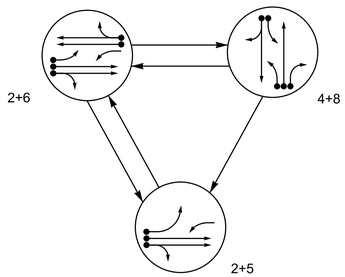
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 45.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4+8	FLASH
21, 22	G	G	R	R
41	~~R~~	~~R~~	F Y	~~R~~
42, 43	R	R	G	R
51	←	F Y	~~R~~	~~R~~
61	F Y	F Y	~~R~~	~~R~~
62, 63	R	G	R	R
81	~~R~~	~~R~~	F Y	~~R~~
82, 83	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

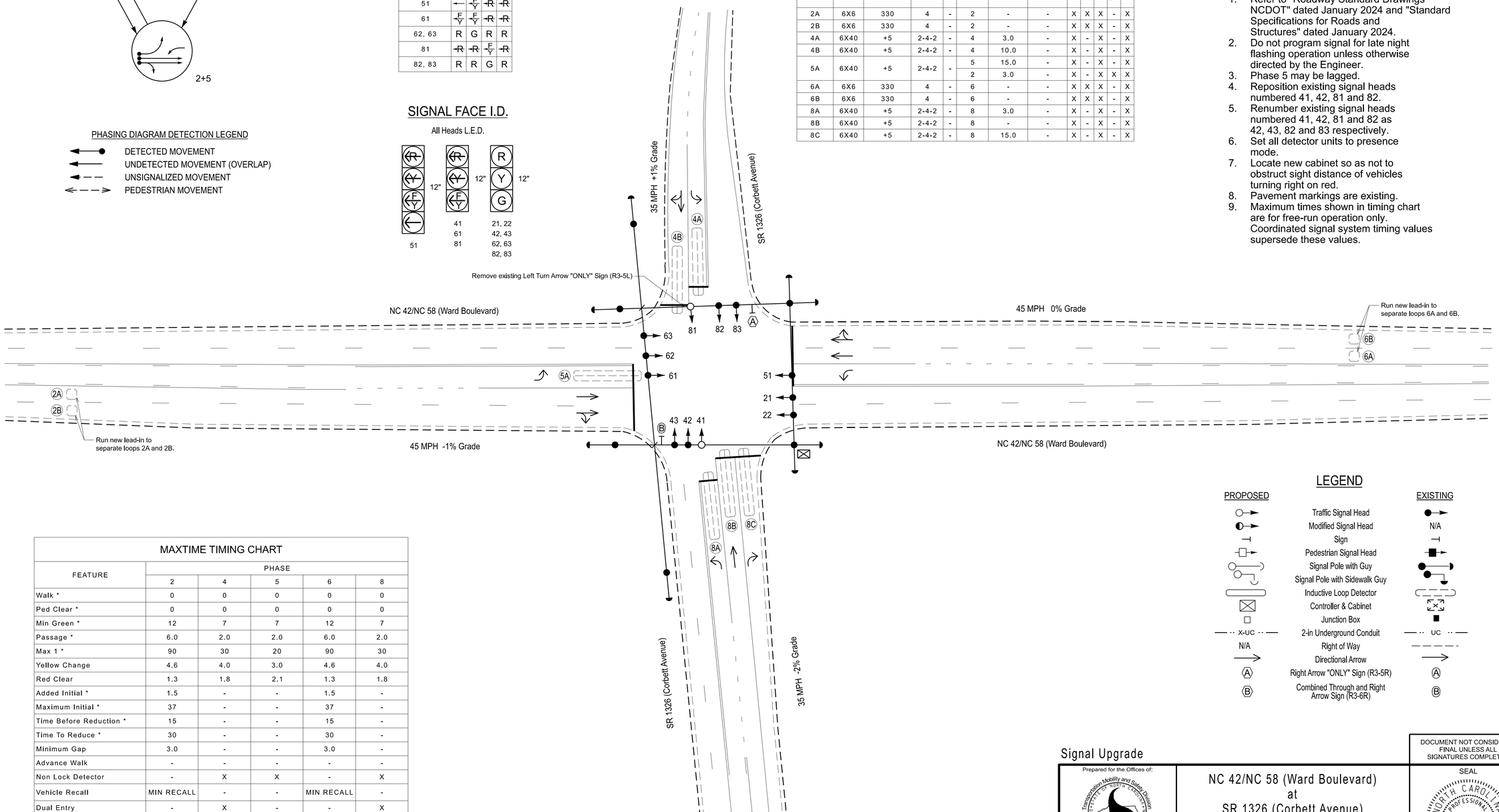
MAXTIME DETECTOR INSTALLATION CHART

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		NEW CARD
2A	6X6	330	4	-	2	-	-	X	X	X	-	X
2B	6X6	330	4	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	330	4	-	6	-	-	X	X	X	-	X
6B	6X6	330	4	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	-	-	X	-	X	-	X
8C	6X40	+5	2-4-2	-	8	15.0	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 41, 42, 81 and 82.
5. Renumber existing signal heads numbered 41, 42, 81 and 82 as 42, 43, 82 and 83 respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear *	0	0	0	0	0
Min Green *	12	7	7	12	7
Passage *	6.0	2.0	2.0	6.0	2.0
Max 1 *	90	30	20	90	30
Yellow Change	4.6	4.0	3.0	4.6	4.0
Red Clear	1.3	1.8	2.1	1.3	1.8
Added Initial *	1.5	-	-	1.5	-
Maximum Initial *	37	-	-	37	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	30	-	-	30	-
Minimum Gap	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Right Arrow "ONLY" Sign (R3-5R)	A
B	Combined Through and Right Arrow Sign (R3-6R)	B

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

NC 42/NC 58 (Ward Boulevard)
at
SR 1326 (Corbett Avenue)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
F8FC57FCD8B9491... DATE

SIG. INVENTORY NO. 04-0637

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pwilliams@atkinsglobal.com
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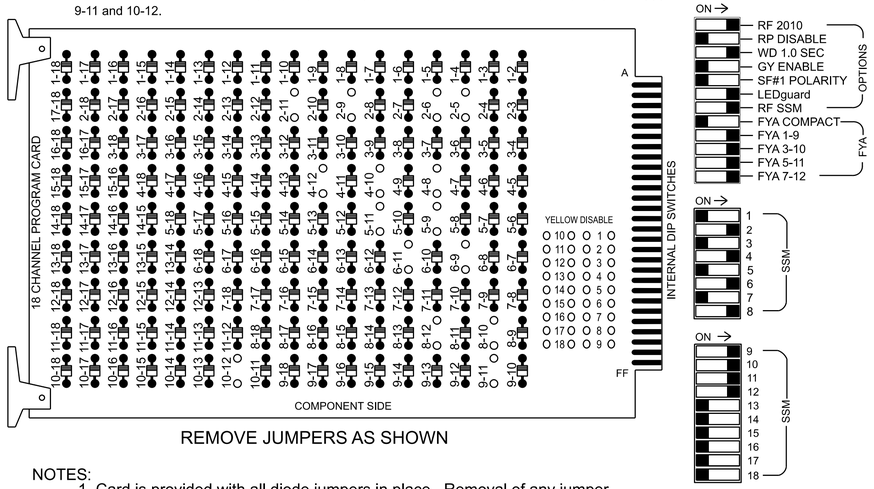
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 45.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 8-10, 8-12, 9-11 and 10-12.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on this sheet

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	42,43	NU	51★	62,63	NU	NU	82,83	NU	61★	81★	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW							133											

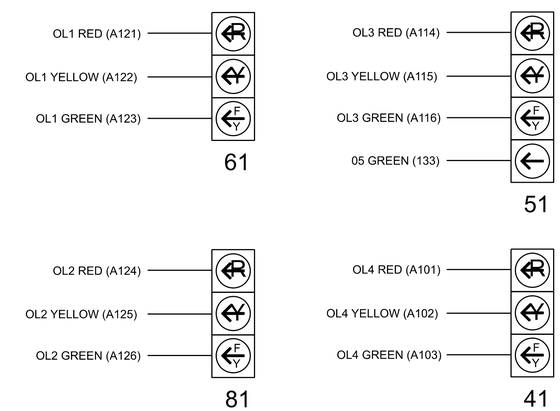
NU = Not Used

*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	1O	11	12	13	14
FILE "I"	U	SLOT	Ø 2	SLOT	SLOT	SLOT	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
			2A				4A								DC ISOLATOR
	L	EMPTY	Ø 2	EMPTY	EMPTY	EMPTY	Ø 4	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST
			2B				4B								DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	SLOT	SLOT	Ø 8	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
		5A	6A				8A	8C							
	L	NOT USED	Ø 6	EMPTY	EMPTY	EMPTY	Ø 8	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
			6B				8B								

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
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	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	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	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	
8C	TB7-1,2	J7U	66	32	24	8	15.0		X		X	

INPUT FILE POSITION LEGEND: J2L
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:

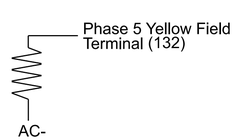
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

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)



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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0637
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

NC 42/NC 58 (Ward Boulevard) at SR 1326 (Corbett Avenue)

Division 4 | Wilson County | Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0637

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 45.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0637
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42/NC 58 (Ward Boulevard)
at
SR 1326 (Corbett Avenue)

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T.J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0637

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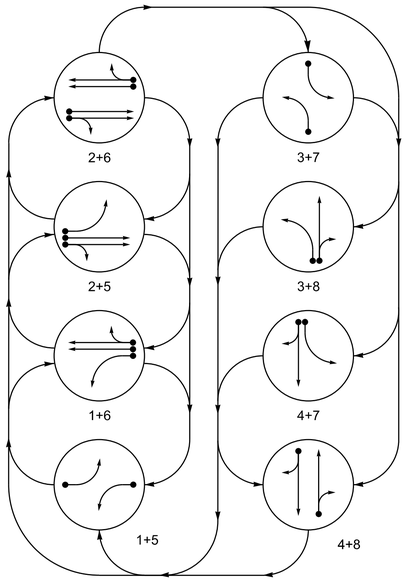
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 46.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41,42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

11	21,22
31	41,42
51	61,62
71	81,82

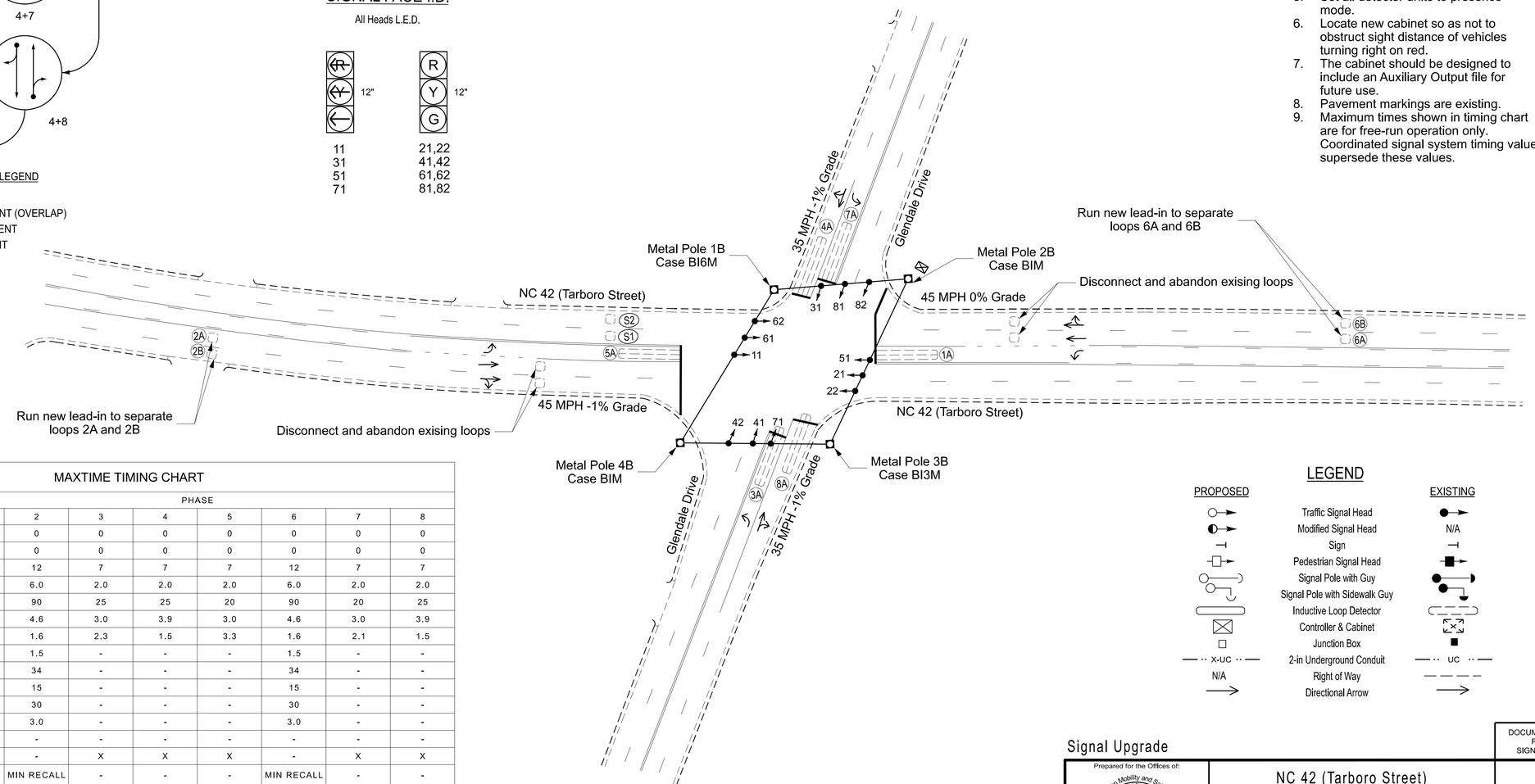
MAXTIME DETECTOR INSTALLATION CHART

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
1A	6X40	0	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
7A	6X40	0	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X
S1	6X6	+150	EXIST	-	-	-	-	-	-	-	-	X
S2	6X6	+150	EXIST	-	-	-	-	-	-	-	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	30	90	25	25	20	90	20	25
Yellow Change	3.0	4.6	3.0	3.9	3.0	4.6	3.0	3.9
Red Clear	2.4	1.6	2.3	1.5	3.3	1.6	2.1	1.5
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 42 (Tarboro Street) at Glendale Drive

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0648

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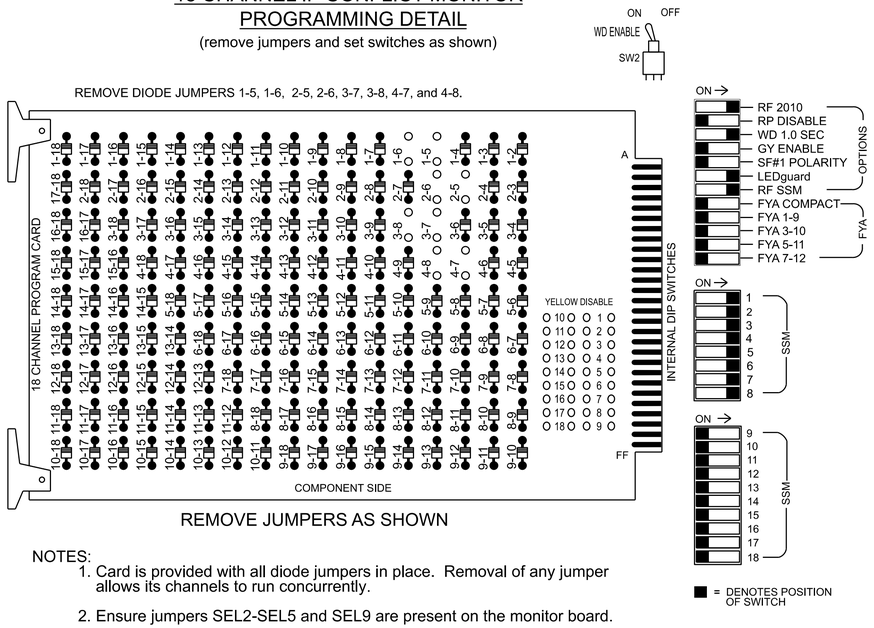
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 46.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125			116			131			122								
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. S1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B			NOT USED	NOT USED			SYS. DET. S2					ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B			NOT USED	NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	10.0	-	X	-	X	-
*S1	TB6-9,10	I9U	60	22	13	SYS	-	-	-	-	-	-
*S2	TB6-11,12	I9L	62	24	14	SYS	-	-	-	-	-	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	10.0	-	X	-	X	-

*System detector only. Remove any assigned vehicle phase.

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: 04-0648
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division, Traffic Engineering Branch, Signals & Signals Management Section, State of North Carolina Department of Transportation

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Tarboro Street)
at
Glendale Drive

Division 4 | Wilson County | Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F6FC671C0669451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0648

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

28-FEB-2025 12:23
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 46.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0648
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Tarboro Street)
at
Glendale Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0648

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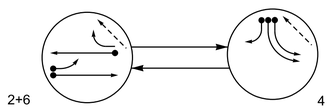
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 47.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

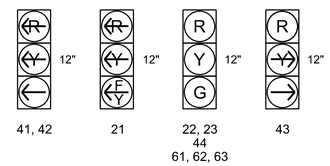
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4	PHASE FLASH
21	F Y	~~R~~	~~R~~
22, 23	G	R	R
41, 42	~~R~~	←	~~R~~
43	R	→	R
44	R	G	R
61, 62, 63	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



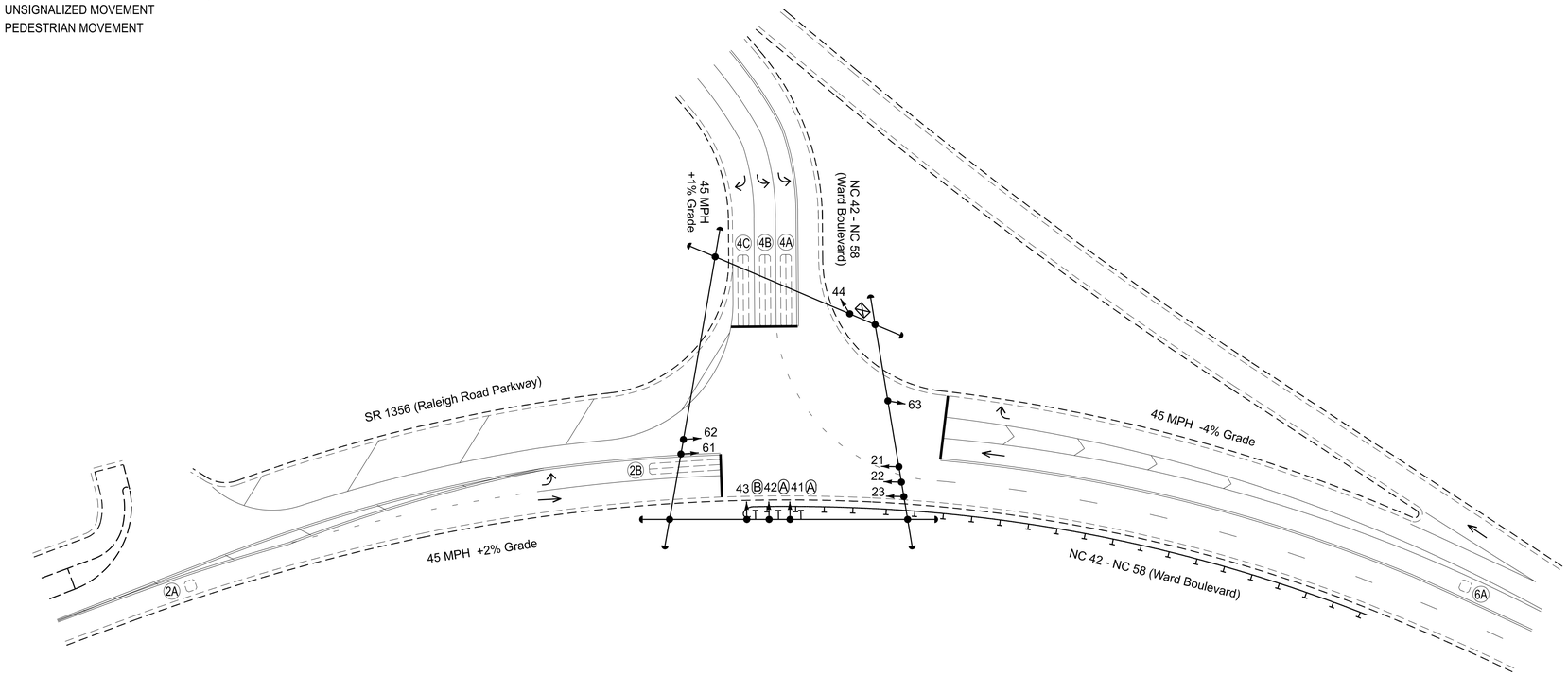
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X40	0	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
4C	6X40	0	2-4-2	-	4	15.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X

2 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Existing signs A and B may be removed at the discretion of the Division Traffic Engineer.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Walk *	0	0	0
Ped Clear	0	0	0
Min Green *	12	7	12
Passage *	6.0	1.0	6.0
Max 1 *	90	25	90
Yellow Change	4.9	4.0	4.9
Red Clear	1.9	3.1	1.9
Added Initial *	2.5	-	2.5
Maximum Initial *	34	-	34
Time Before Reduction *	15	-	15
Time To Reduce *	30	-	30
Minimum Gap	3.0	-	3.0
Advance Walk	-	-	-
Non Lock Detector	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Guardrail	
A	Left Arrow "ONLY" Sign (R5-3L)	A
B	Right Arrow "ONLY" Sign (R5-3R)	B

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Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

NC 42 - NC 58 (Ward Boulevard)/
SR 1356 (Raleigh Road Parkway)
at
NC 42 - NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0661

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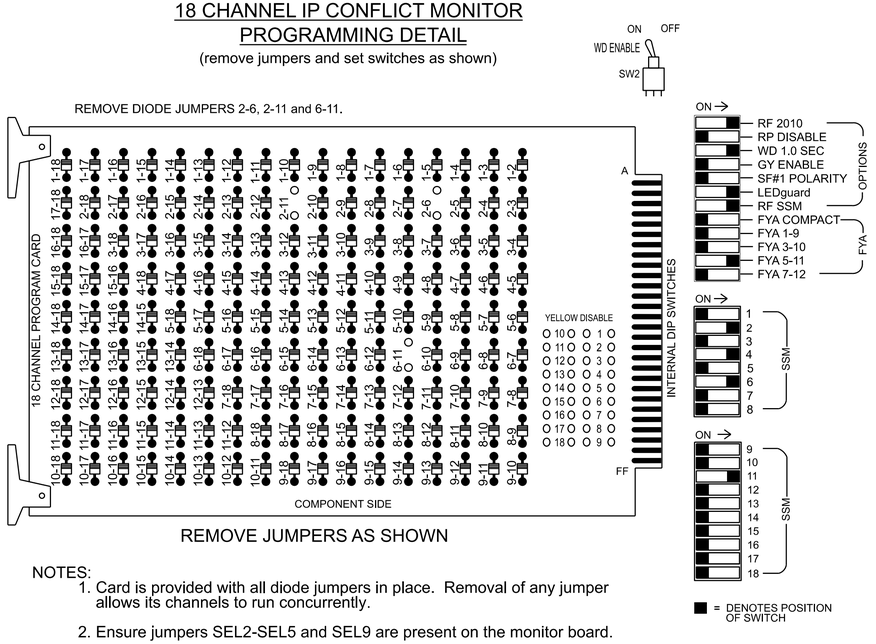
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 47.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5			S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4			14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4			4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	41,42	43	44	NU	NU	61,62, 63	NU	NU	NU	NU	NU	NU	NU	21★	NU	NU
RED		128				101	101			134										
YELLOW		129					102			135										
GREEN		130					103			136										
RED ARROW					101													A114		
YELLOW ARROW					102	102												A115		
FLASHING YELLOW ARROW																		A116		
GREEN ARROW					103	103														

NU = Not Used

★See pictorial of head wiring in detail this sheet.

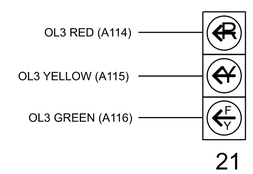
EQUIPMENT INFORMATION

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, S8, AUX S4
Phases Used.....2, 4, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on this sheet

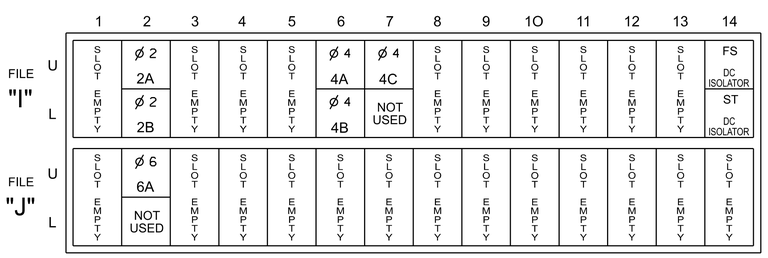
FYA SIGNAL WIRING DETAIL

(wire signal head 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
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2	3.0		X		X	X
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4			X		X	
4C	TB6-1,2	I7U	65	31	10	4	15.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	FYA 4 - Section	Off
Included Phases	-	-	6	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0661
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 42 - NC 58 (Ward Boulevard)/
SR 1356 (Raleigh Road Parkway)
at
NC 42 - NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

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

PLAN DATE: November 2024	REVIEWED BY: TJ Williams		
PREPARED BY: JT Stiff	REVIEWED BY: PL Alexander		
REVISIONS		INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0661

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 47.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0661
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 - NC 58 (Ward Boulevard)/
SR 1356 (Raleigh Road Parkway)
at
NC 42 - NC 58 (Ward Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

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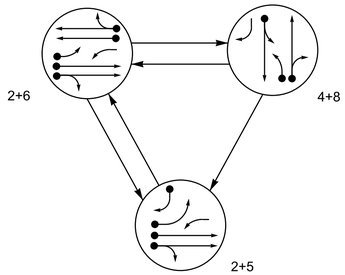
U-5945	Sig. 48.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4+8	PHASE FLASH
21,22	G	G	R	R
41	R	R	G	R
42	R	R	G	R
51	-	F Y	R	R
61	F Y	F Y	R	R
62,63	R	G	R	R
81	R	R	F Y	R
82,83	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

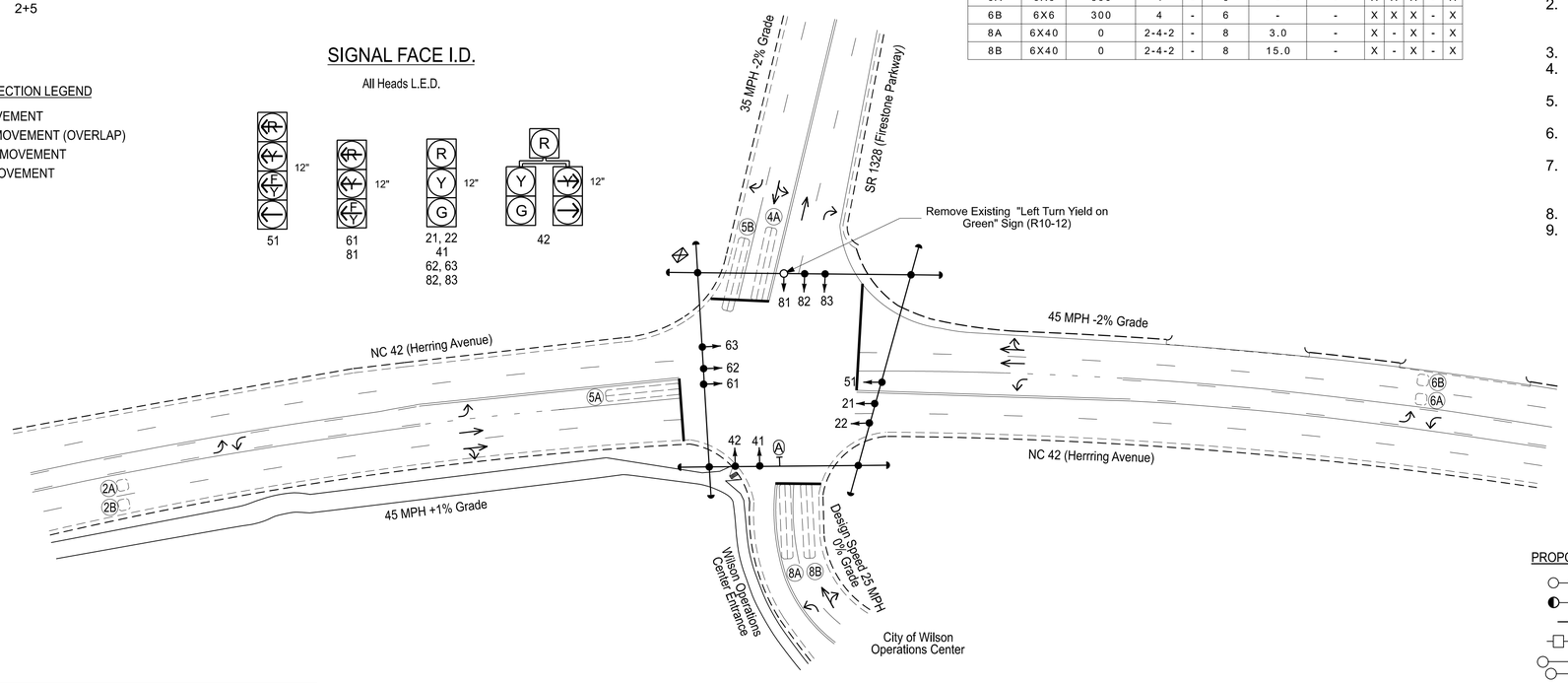
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
5B	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	15.0	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 81 and 82.
5. Renumber existing signal heads 81 and 82 to 82 and 83 respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	A

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear *	0	0	0	0	0
Min Green *	12	7	7	12	7
Passage *	6.0	2.0	2.0	6.0	2.0
Max 1 *	100	30	20	100	30
Yellow Change	4.7	4.0	3.0	4.7	4.0
Red Clear	1.3	2.6	1.9	1.3	2.6
Added Initial *	1.5	-	-	1.5	-
Maximum Initial *	34	-	-	34	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	40	-	-	40	-
Minimum Gap	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 42 (Herring Avenue)
at
SR 1328 (Firestone Pkwy)/
Wilson Operations Center Entrance

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	WL Larson	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
DATE

SIG. INVENTORY NO. 04-0669

2/28/2025 12:12
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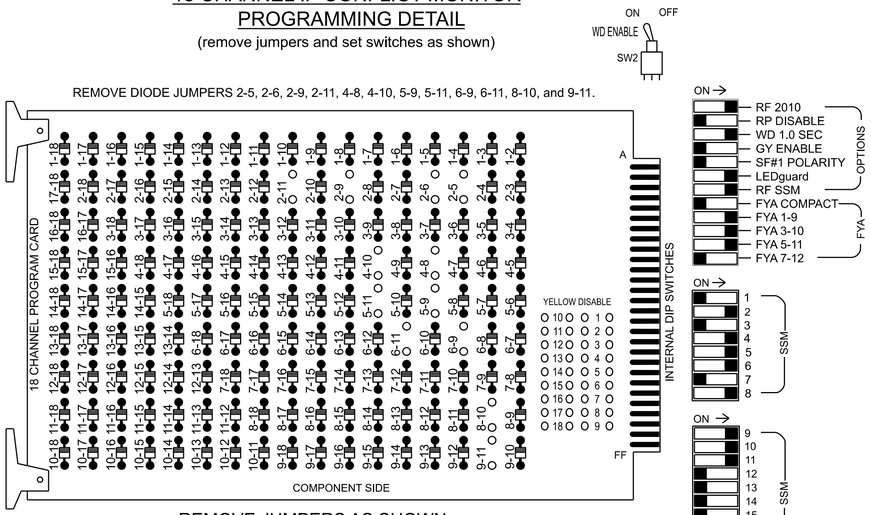
Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 48.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S2, AUX S4
Phases Used..... 2, 4, 5, 6, 8
Overlap "1".....*
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.	NU	21.22	NU	NU	41,42	NU	42	51★	62,63	NU	NU	82,83	NU	61★	81★	NU	51★	NU	NU
RED		128			101		*		134			107							
YELLOW		129			102				135			108							
GREEN		130			103				136			109							
RED ARROW														A121	A124		A114		
YELLOW ARROW							132							A122	A125		A115		
FLASHING YELLOW ARROW														A123	A126		A116		
GREEN ARROW							133	133											

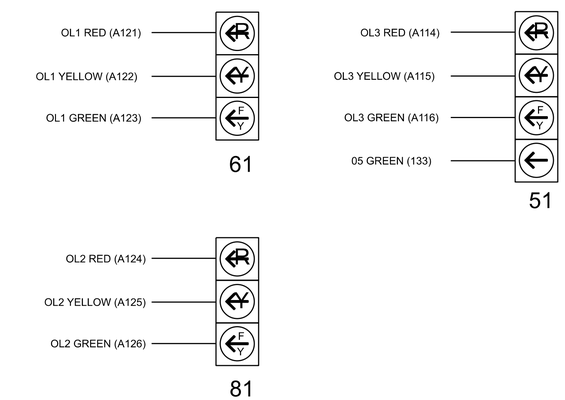
NU = Not Used

*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	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 2 2B				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø 6 6B			Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

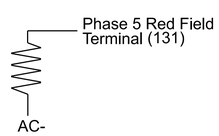
INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	
6B	TB3-11,12	J3L	77	43	19	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	
8B	TB5-11,12	J6L	46	8	23	8	15.0		X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0669
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42 (Herring Avenue)
at
SR 1328 (Firestone Parkway)/
Wilson Operation Center

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044476 ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0669

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 48.2

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Off
Included Phases	2	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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0669
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
at
SR 1328 (Firestone Parkway)/
Wilson Operation Center

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	AM Encarnacion
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 2/28/2025
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SIG. INVENTORY NO. 04-0669

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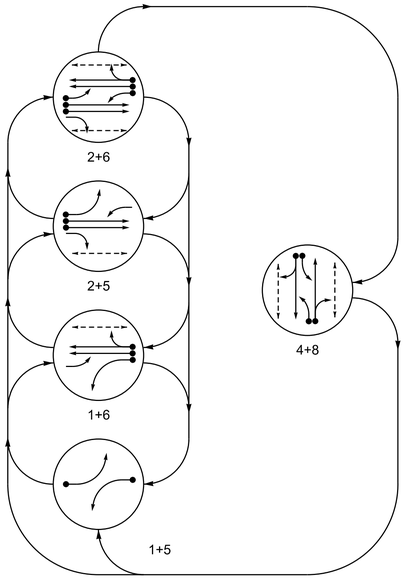
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 49.0

PHASING DIAGRAM



SIGNAL FACE I.D.

All Heads L.E.D.

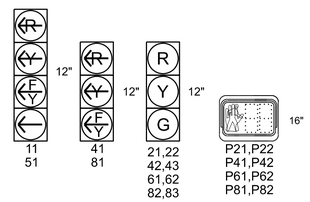


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~
21,22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61,62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82,83	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

MAXTIME DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
8A	6X40	0	*	-	8	3.0	-	X	-	X	-	*
8B	6X40	0	*	-	8	10.0	-	X	-	X	-	*

* Multi-Zone Microwave Detection

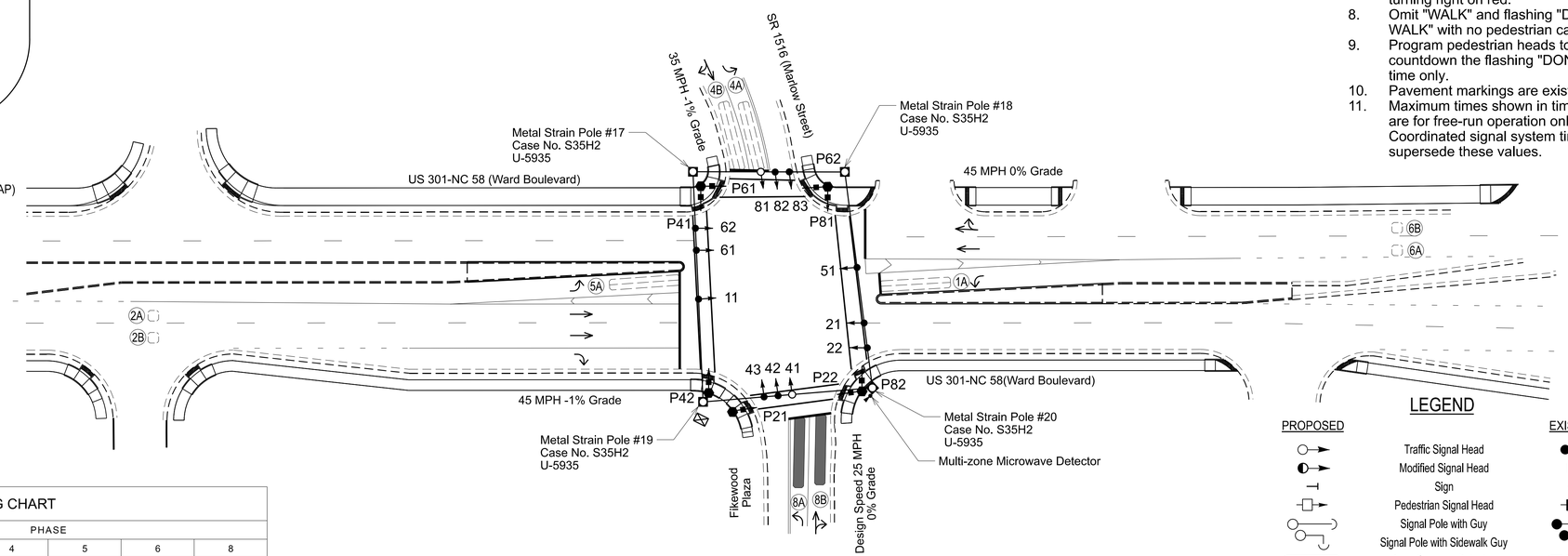
5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated Janauary 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and /or Phase 5 may be lagged.
4. Renumber existing signal heads 41, 42, 81, and 82 to 42, 43, 82, and 83, respectively.
5. Reposition existing signal heads 42, 43, 82, and 83.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	13	12	0	12	14
Ped Clear	0	10	23	0	9	23
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	20	90	30	20	90	30
Yellow Change	3.0	4.6	3.9	3.0	4.6	3.9
Red Clear	2.9	1.5	3.3	2.8	1.5	3.3
Added Initial *	-	1.8	-	-	1.8	-
Maximum Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	6	5	-	5	7
Non Lock Detector	X	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
	Metal Strain Pole	
	Out of Pavement Detector	
	Non-Intrusive Detection Zone	
N/A	Curb Ramp	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301-NC 58 (Ward Boulevard) at SR 1516 (Marlow Street)/ Fikewood Plaza

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

SCALE 1"=40' (0 – 40)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff SC38949A7634C0 — 2/28/2025 DATE

SIG. INVENTORY NO. 04-0686

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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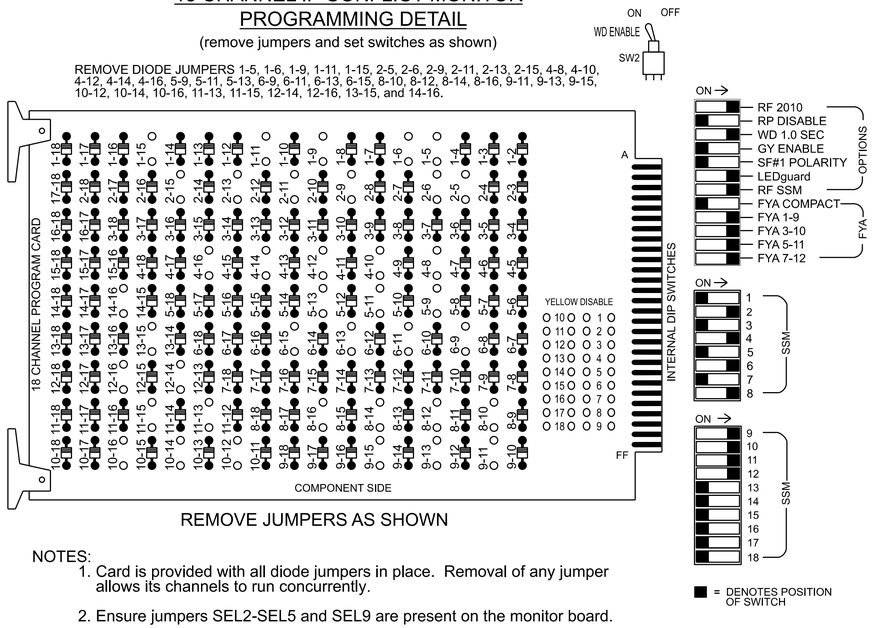
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 49.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S3, S5, S6, S7, S8, S9, S11, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 2PED, 4, 4PED, 5, 6, 6PED, 8, 8PED
Overlap "1".....*
Overlap "2".....*
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.	11★	21,22	P21, P22	NU	42,43	P41, P42	51★	61,62	P61, P62	NU	82,83	P81, P82	11★	81★	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127						133											
✋			113			104			119			110						
🚶			115			106			121			112						

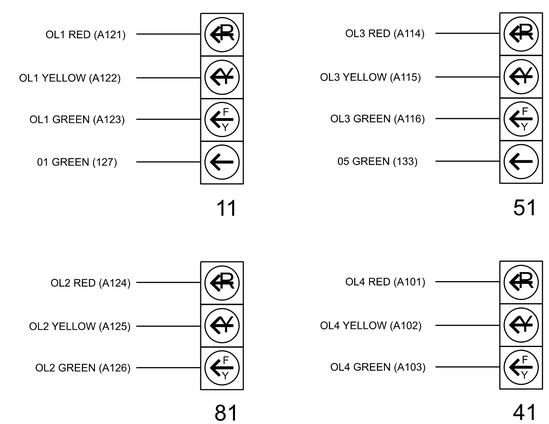
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

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

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	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	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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						

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

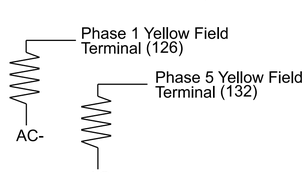
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0686
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

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)



SPECIAL DETECTOR NOTE

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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 301-NC 58 (Ward Boulevard) at SR 1516 (Marlow Street)/ Fikewood Plaza

Division 4 Wilson County Wilson

PLAN DATE: November 2024	REVIEWED BY: JT Stiff
PREPARED BY: MR Day	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
DocuSigned by: 9C38A67A783A00...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0686

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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.

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	-	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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0686
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 301-NC 58 (Ward Boulevard)
at
SR 1516 (Marlow Street)/
Fikewood Plaza

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC88487A783AC0...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0686

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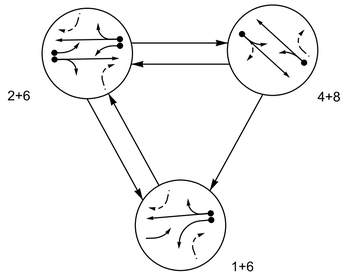
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 50.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4+8	FLASH
11	←	~~F Y~~	~~R~~	~~R~~
21	~~F Y~~	~~F Y~~	~~R~~	~~R~~
22, 23	R	G	R	R
41, 42	R	R	G	R
61, 62	G	G	R	R
81, 82	R	R	G	R

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
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	6	-	2	-	-	X	X	X	-	X
2B	6X60	+5	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X6	420	6	-	4	-	4.5	X	-	-	-	X
4B	6X60	+5	2-4-2	-	4	3.0	-	X	-	X	X	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X6	300	6	-	8	-	2.4	X	-	-	-	X
8B	6X40	0	2-4-2	-	8	3.0	-	X	-	X	X	X

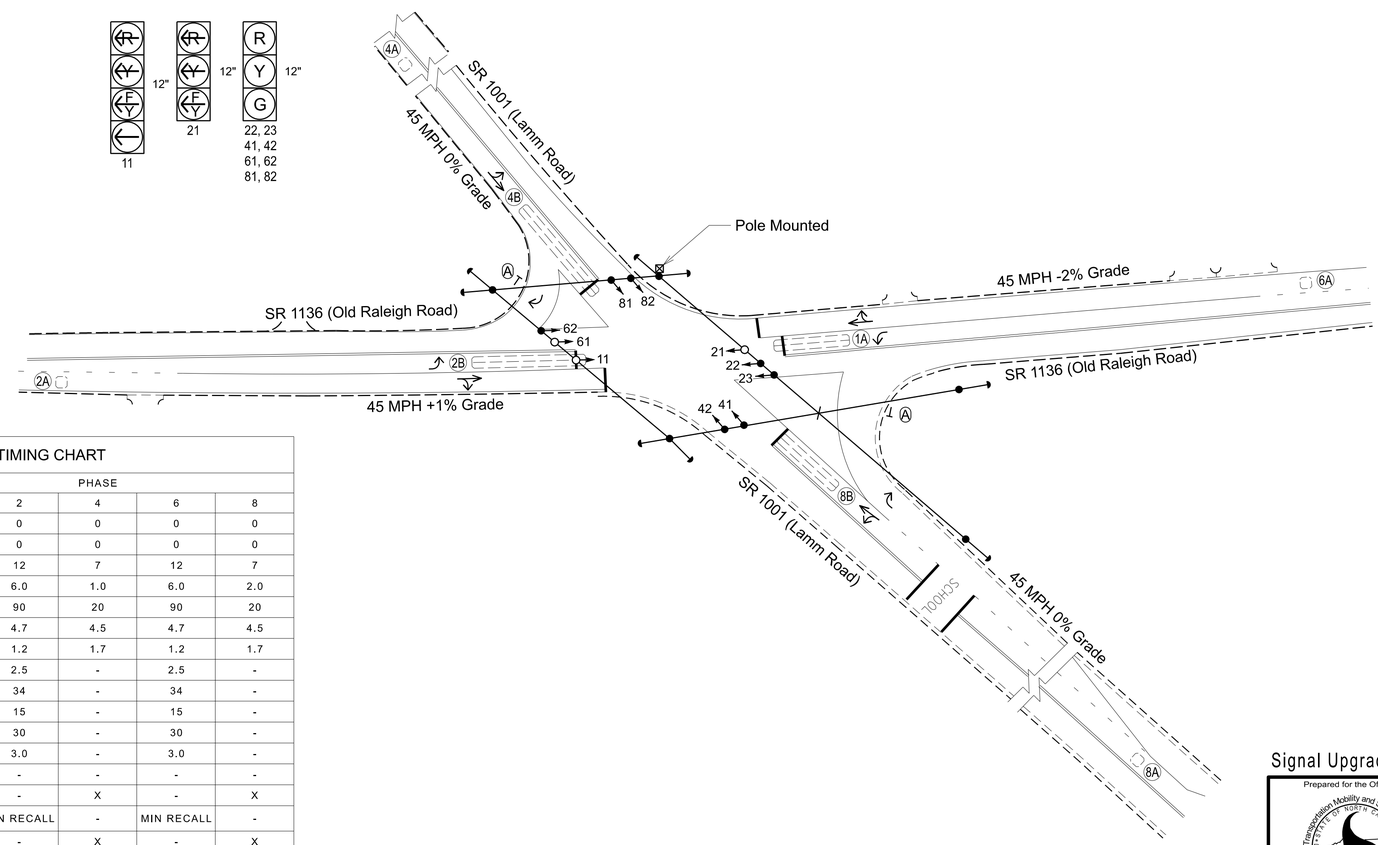
3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition existing signal heads numbered 21, 22, and 62.
5. Renumber existing signal heads numbered 21 and 22 to 22 and 23, respectively.
6. Set all detector units to presence mode.
7. Program controller to operate using FYA compact mode.
8. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
9. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Min Green *	7	12	7	12	7
Passage *	2.0	6.0	1.0	6.0	2.0
Max 1 *	20	90	20	90	20
Yellow Change	3.0	4.7	4.5	4.7	4.5
Red Clear	1.8	1.2	1.7	1.2	1.7
Added Initial *	-	2.5	-	2.5	-
Maximum Initial *	-	34	-	34	-
Time Before Reduction *	-	15	-	15	-
Time To Reduce *	-	30	-	30	-
Minimum Gap	-	3.0	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	X	-	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"YIELD" Sign (R1-2)	A

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SR 1136 (Old Raleigh Road)
at
SR 1001 (Lamm Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	AM Encarncacion
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS | INIT. | DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 044476 ENGINEER ANTHONY M. ENCARNACION

DocuSigned by: Anthony Encarnacion 7A80A0AD9E3408... 2/28/2025
DATE

SIG. INVENTORY NO. 04-0688

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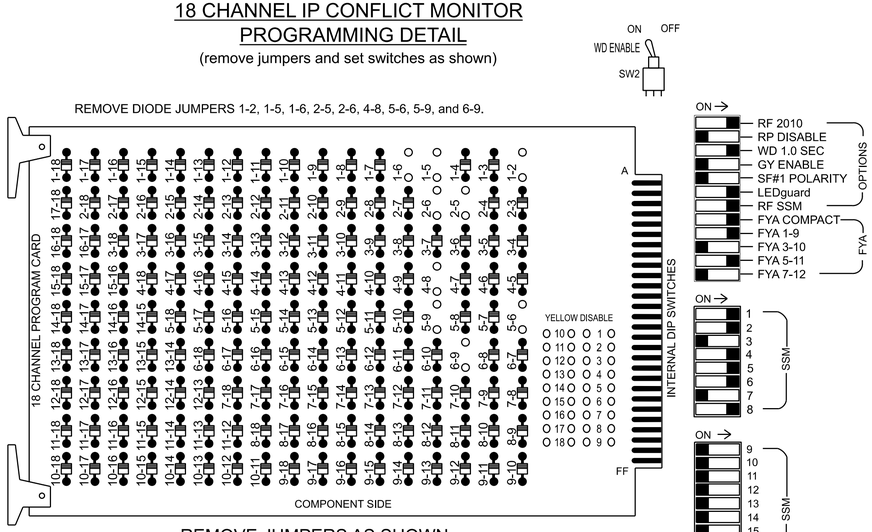
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 50.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S1, S2, S3, S5, S7, S8, S11
Phases Used.....1, 2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
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
CMU CHANNEL NO.	1	2	9	13	3	4	14	5	6	15	7	8	16
PHASE	OL1	2	1 GRN	2 PED	3	4	4 PED	OL3	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11★	22,23	11★	NU	NU	41,42	NU	21★	61,62	NU	NU	81,82	NU
RED		128				101			134			107	
YELLOW		129				102			135			108	
GREEN		130				103			136			109	
RED ARROW	125							131					
YELLOW ARROW	126							132					
FLASHING YELLOW ARROW	127							133					
✋													
GREEN ARROW			114										
🚶				*									

NU = Not Used

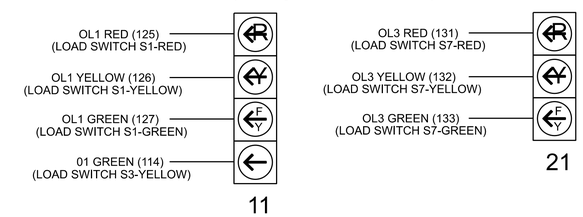
*Denotes install load resistor. See load resistor installation detail this sheet.

★See pictorial of head wiring in detail this sheet.

NOTE: Load Switches S1, S3, and S7 require output remapping. See sheet 2 for instructions.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L	NOT USED	Ø 2 2B		Ø 4 4B		NOT USED		Ø 8 8B						ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

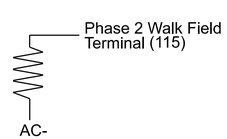
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB21-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB21-3,4	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB23-3,4	I2L	43	5	3	2	3.0	-	X	-	X	X
4A	TB21-7,8	I4U	41	3	8	4	-	4.5	X	-	-	-
4B	TB23-7,8	I4L	45	7	9	4	3.0	-	X	-	X	X
6A	TB21-11,12	I6U	40	2	16	6	-	-	X	X	X	-
8A	TB22-1,2	I8U	42	4	22	8	-	2.4	X	-	-	-
8B	TB24-1,2	I8L	46	8	23	8	3.0	-	X	-	X	X

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: 04-0688
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1136 (Old Raleigh Road)
at
SR 1001 (Lamm Road)

Division 4 | Wilson County | Wilson

PLAN DATE: December 2024	REVIEWED BY:	JT Stiff	
PREPARED BY: MF Evans	REVIEWED BY:	PL Alexander	

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC38B487A784C0...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0688

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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STIFF4685

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 50.2

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	-	-
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

PED YELLOW CONFLICT MONITOR WIRING DETAIL

(make cabinet wiring changes as shown below)

In order to use FYA COMPACT mode with the 16 or 18 Channel Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: From 2 PY (field term. 114) to chan. 9 green (monitor pin 13).

Follow the instructions below to make appropriate connections:

STEP 1: Fold down rear panel of output file.

STEP 2: Find unused wiring harness from conflict monitor card edge connector (which should be tied and bundled together).

STEP 3: Find the connector that corresponds to the following conflict monitor card edge pins and solder wire to the appropriate terminal on the rear of the output file shown below:

CMU-13 ----------2PY (term. 114)

NOTE: Some cabinet manufacturers use keyed connectors to accomplish this wiring configuration. If connectors are used, fold down the rear panel of the output file and find the set of 3 keyed connectors and connect them as shown below:

1 - 2PY	----------	1- CMU-13
2 - 4PY	----------	2- CMU-16
3 - 6PY	----------	3- CMU-R
4 - 8PY	----------	4- CMU-U

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 1 ASSIGNED TO CHANNEL 1 →

NOTICE OVERLAP 3 ASSIGNED TO CHANNEL 5 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Overlap	3		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

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL FOR SIGNAL HEAD 11

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

IO Module 1

NOTICE OUTPUT POINTS 33 CONTROL TYPE & INDEX REASSIGNMENT →

Output Point	Description	Output Control Type	Index
33	C1-35	Phase Green	1

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: 04-0688
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1136 (Old Raleigh Road)
at
SR 1001 (Lamm Road)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
DC38847A763400...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0688

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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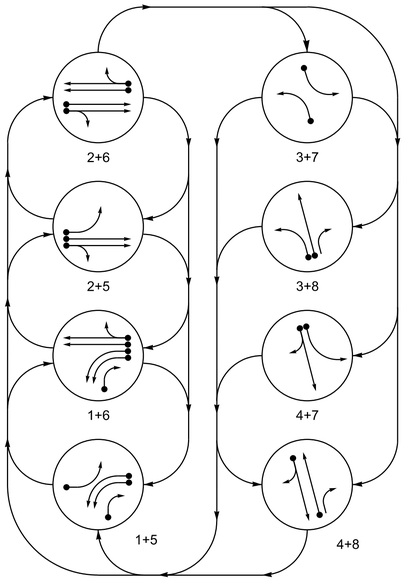
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 51.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11, 12	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81	R	R	R	R	R	G	R	G	R
82	R/←	R/←	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

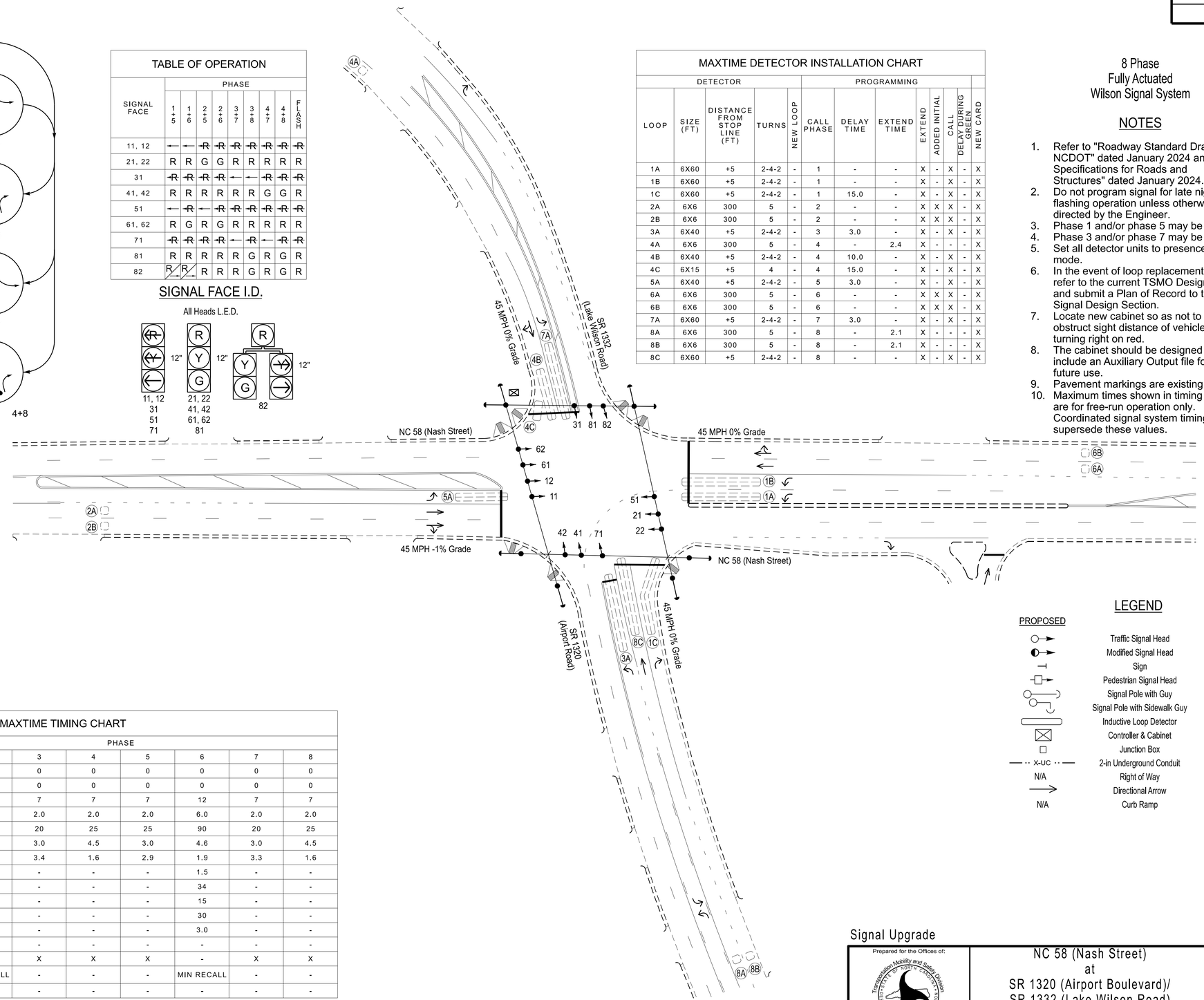
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD	
1A	6X60	+5	2-4-2	-	1	-	-	X	-	X	-	X
1B	6X60	+5	2-4-2	-	1	-	-	X	-	X	-	X
1C	6X60	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	+5	2-4-2	-	3	3.0	-	X	-	X	-	X
4A	6X6	300	5	-	4	-	2.4	X	-	-	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
4C	6X15	+5	4	-	4	15.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
7A	6X60	+5	2-4-2	-	7	3.0	-	X	-	X	-	X
8A	6X6	300	5	-	8	-	2.1	X	-	-	-	X
8B	6X6	300	5	-	8	-	2.1	X	-	-	-	X
8C	6X60	+5	2-4-2	-	8	-	-	X	-	X	-	X

8 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. The cabinet should be designed to include an Auxiliary Output file for future use.
9. Pavement markings are existing.
10. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	25	90	20	25	25	90	20	25
Yellow Change	3.0	4.6	3.0	4.5	3.0	4.6	3.0	4.5
Red Clear	3.3	1.9	3.4	1.6	2.9	1.9	3.3	1.6
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	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.

AtkinsRéalis
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Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

NC 58 (Nash Street)
at
SR 1320 (Airport Boulevard)/
SR 1332 (Lake Wilson Road)

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
—TIPECFTYCD89B4B1... DATE

SIG. INVENTORY NO. 04-0689

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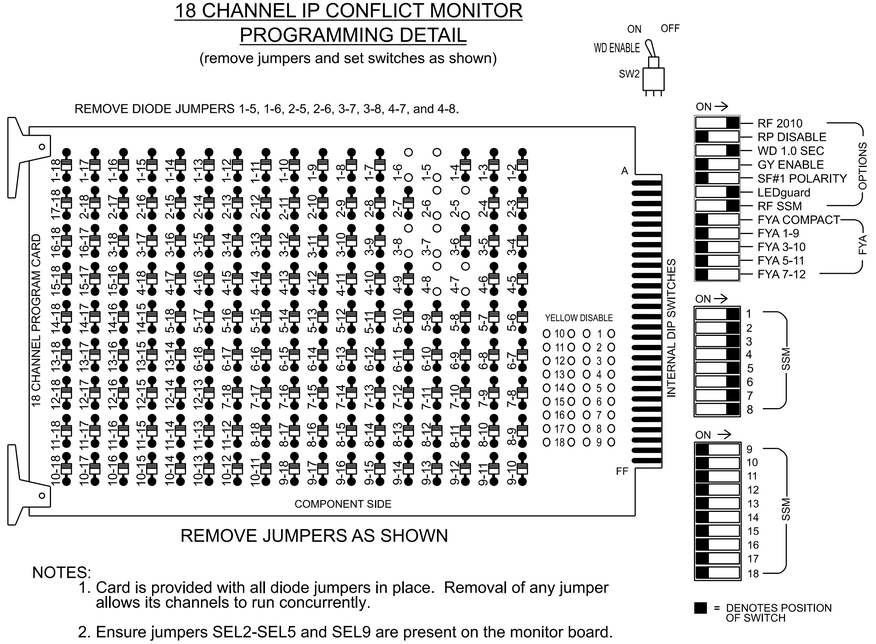
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 51.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S10, S11
Phases Used.....1, 2, 3, 4, 5, 6, 7, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11,12	82	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU	NU	NU
RED			128			101			134			107							
YELLOW			129			102			135			108							
GREEN			130			103			136			109							
RED ARROW	125				116			131			122								
YELLOW ARROW	126	126			117			132			123								
GREEN ARROW	127	127			118			133			124								

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1C	Ø 2 2A	SLOT EMPTY	Ø 3 3A	Ø 4 4A	Ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	Ø 1 1B	NOT USED	Ø 2 2B		NOT USED	Ø 4 4B	NOT USED							ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 7 7A	Ø 8 8A	Ø 8 8C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B			NOT USED	Ø 8 8B	NOT USED							

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
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
1B	TB2-3,4	I1L	56	18	1	1	-	-	X	-	X	-
1C	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	X	X	-
3A	TB4-5,6	I5U	58	20	7	3	3.0	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	2.4	X	-	-	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
4C	TB6-1,2	I7U	65	31	10	4	15.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	3.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
7A	TB5-5,6	J5U	57	19	21	7	3.0	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	-	2.1	X	-	-	-
8B	TB5-11,12	J6L	46	8	23	8	-	2.1	X	-	-	-
8C	TB7-1,2	J7U	66	32	24	8	-	-	X	-	X	-

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: 04-0689
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail

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Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 58 (Nash Street)
at
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SR 1332 (Lake Wison Road)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

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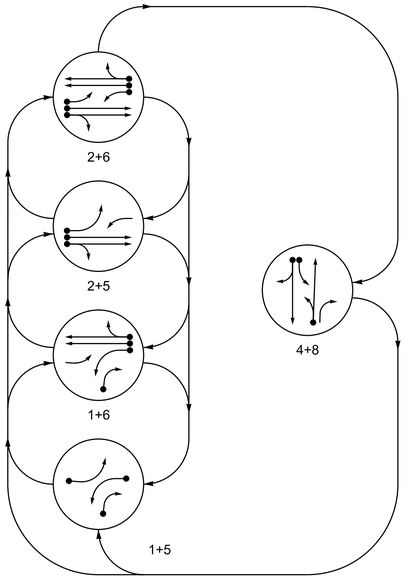
U-5945	Sig. 52.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

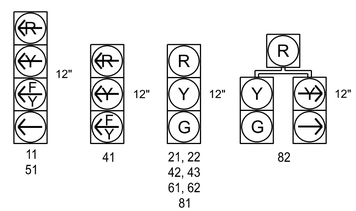
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~
21, 22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42, 43	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61, 62	R	G	R	G	R	R
81	R	R	R	R	G	R
82	R / ~~R~~		R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



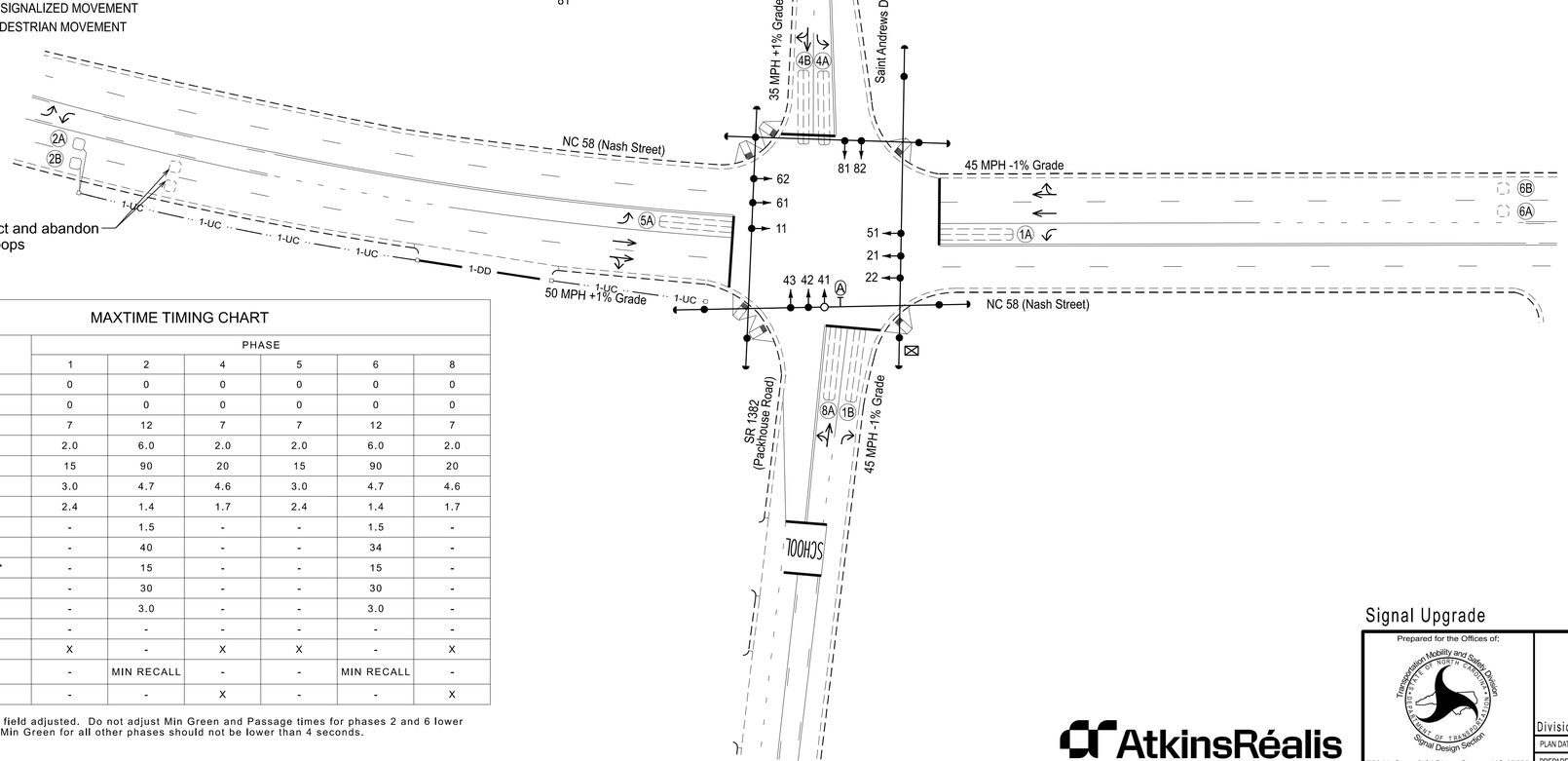
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
1B	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	355	4	X	2	-	-	X	X	X	-	X
2B	6X6	355	4	X	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41 and 42.
5. Renumber existing signal heads numbered 41 and 42 to 42 and 43, respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
1-DD	Directional Drill	DD
N/A	Curb Ramp	
A	Left Arrow "ONLY" Sign (R3-5L)	A

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	20	15	90	20
Yellow Change	3.0	4.7	4.6	3.0	4.7	4.6
Red Clear	2.4	1.4	1.7	2.4	1.4	1.7
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	40	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

Signal Upgrade

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

NC 58 (Nash Street)
at
SR 1382 (Packhouse Road)/
Saint Andrews Drive

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
—FBF2E7FCD8B9481...
DATE

SIG. INVENTORY NO. 04-0699

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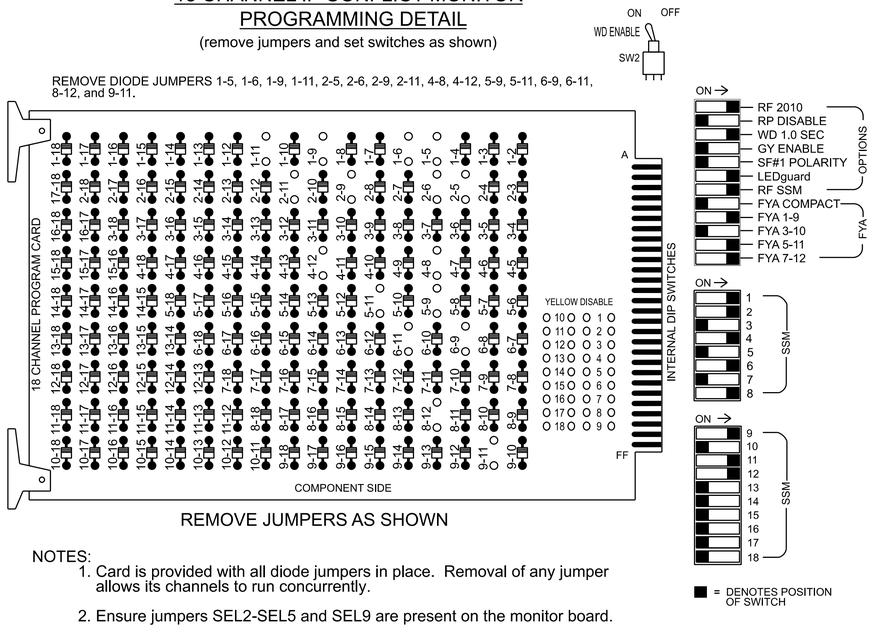
Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 52.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S1, AUX S4, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail this sheet

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★	82	21,22	NU	NU	42,43	NU	51★	61,62	NU	NU	81,82	NU	11★	NU	NU	51★	41★	NU
RED		*	128			101			134			107							
YELLOW			129			102		*	135			108							
GREEN			130			103			136			109							
RED ARROW														A121			A114	A101	
YELLOW ARROW		126												A122			A115	A102	
FLASHING YELLOW ARROW														A123			A116	A103	
GREEN ARROW	127	127						133											

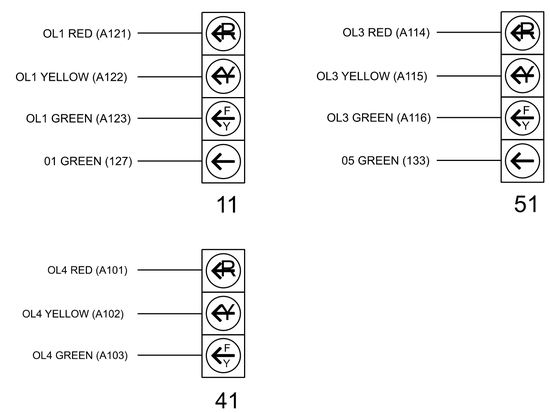
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø 2 2B			Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	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	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
8A	TB5-9,10	J6U	42	4	22	8	3.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

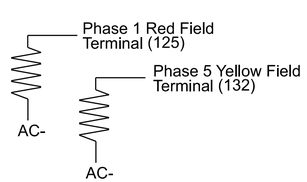
Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	Off	FYA 4 - Section	FYA 4 - Section
Included Phases	2	-	6	8
Modifier Phases	1	-	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

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)



AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0699
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

NC 58 (Nash Street)
at
SR 1382 (Packhouse Road)/
Saint Andrews Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0699

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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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0699
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 58 (Nash Street)
at
SR 1382 (Packhouse Road)/
Saint Andrews Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0699

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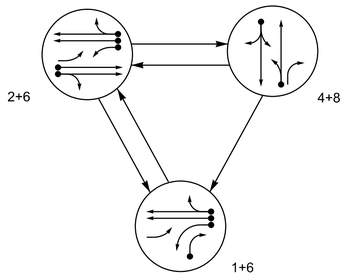
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 53.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

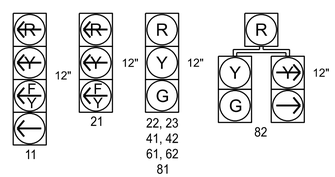
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4+8	FLASH
11	←	F Y	~~R~~	~~R~~
21	~~F Y~~	~~F Y~~	R	~~R~~
22, 23	R	G	R	R
41, 42	R	R	G	R
61, 62	G	G	R	R
81	R	R	G	R
82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



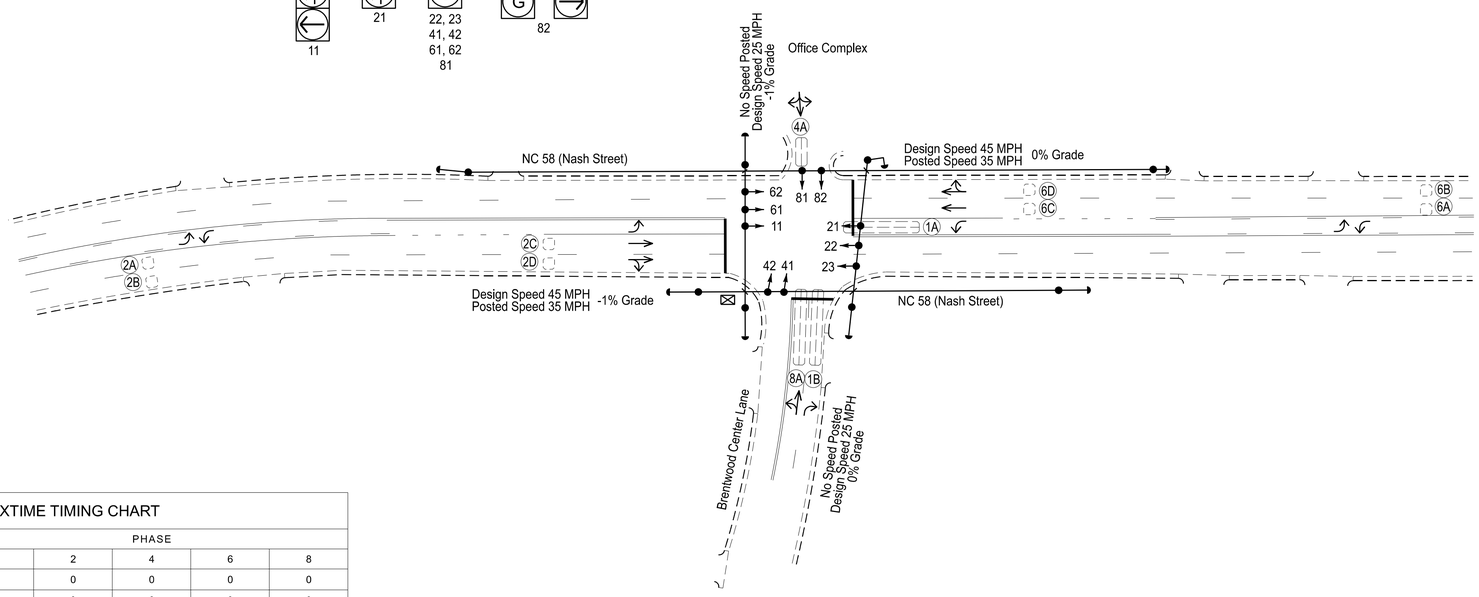
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	-	-	X	-	X	-	X
1B	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
2A, 2B	6X6	300	4	-	2	-	1.6	X	-	X	-	X
2C, 2D	6X6	90	4	-	2	-	-	X	-	X	-	X
4A	6X15	0	2-4-2	-	4	5.0	-	X	-	X	-	X
6A, 6B	6X6	300	4	-	6	-	1.6	X	-	X	-	X
6C, 6D	6X6	90	4	-	6	-	-	X	-	X	-	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Min Green *	7	12	7	12	7
Passage *	2.0	2.0	2.0	2.0	2.0
Max 1 *	15	90	20	90	20
Yellow Change	3.0	4.6	3.2	4.6	3.2
Red Clear	1.6	1.5	1.8	1.5	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	-	-	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 58 (Nash Street)
at
Brentwood Center Lane

Division 4	Wilson County		Wilson
PLAN DATE:	October 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
NC2B6B8BA7A5A0D9...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0738

28-FEB-2025 12:12
jstiff@atkinsglobal.onmicrosoft.com
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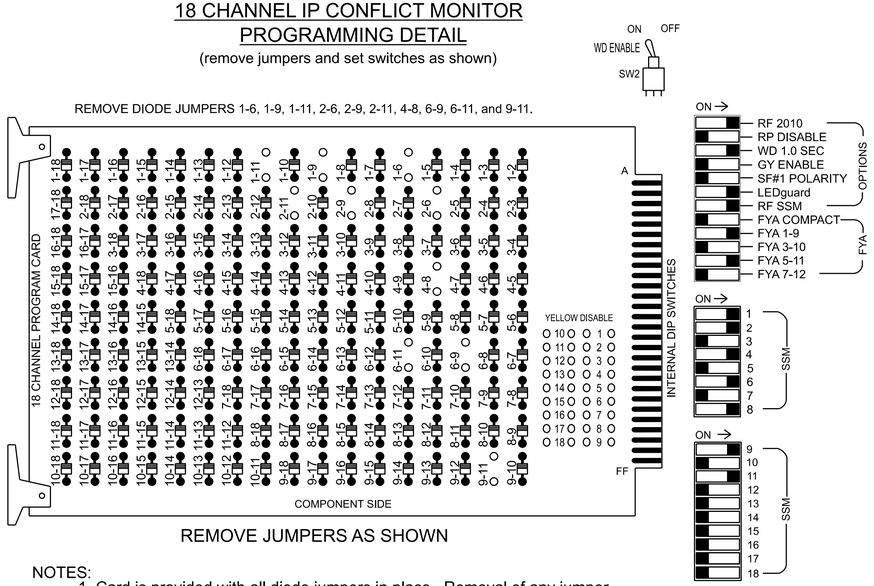
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 53.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S4
Phases Used.....1, 2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail this sheet

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★	82	22,23	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	11★	NU	NU	21★	NU	NU
RED		*	128			101			134			107							
YELLOW			129			102			135			108							
GREEN			130			103			136			109							
RED ARROW														A121			A114		
YELLOW ARROW		126												A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW	127	127																	

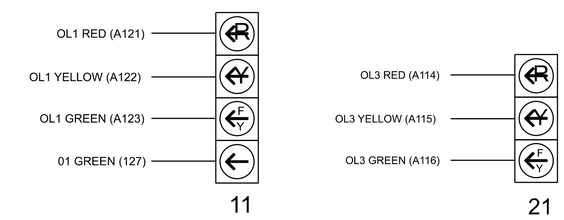
NU = Not Used

*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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2A,2B	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø 2 2C,2D			NOT USED								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A,6B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L						NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

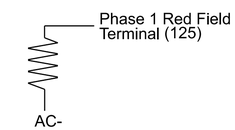
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	-	-	X	-	X	-
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A, 2B	TB2-9,10	I3U	63	29	4	2	-	1.6	X	-	X	-
2C, 2D	TB2-11,12	I3L	76	42	5	2	-	-	X	-	X	-
4A	TB4-9,10	I6U	41	3	8	4	5.0	-	X	-	X	-
6A, 6B	TB3-5,6	J2U	40	2	16	6	-	1.6	X	-	X	-
6C,6D	TB3-7,8	J2L	44	6	17	6	-	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	3.0	-	X	-	X	-

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)



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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
Modifier Phases	1	-	-	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0738
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 58 (Nash Street)
at
Brentwood Center Lane

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS INIT. DATE

SIGNATURES

Signed by: James Stiff 2/28/2025
DATE

SIG. INVENTORY NO. 04-0738

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 53.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0738
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 58 (Nash Street)
at
Brentwood Center Lane

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC38A67A783A43D...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0738

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DAYMG467

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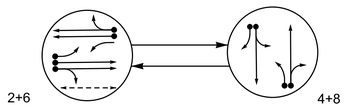
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig 54.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

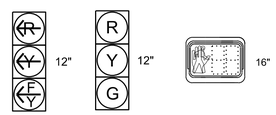
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21	F Y	~~R~~	~~R~~
22,23	G	R	R
41,42	R	G	R
61	F Y	~~R~~	~~R~~
62,63	G	R	R
81	~~R~~	F Y	~~R~~
82,83	R	G	R
P21,P22	W	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



P21,P22

21
61
81

22,23
41,42
62,63
82,83

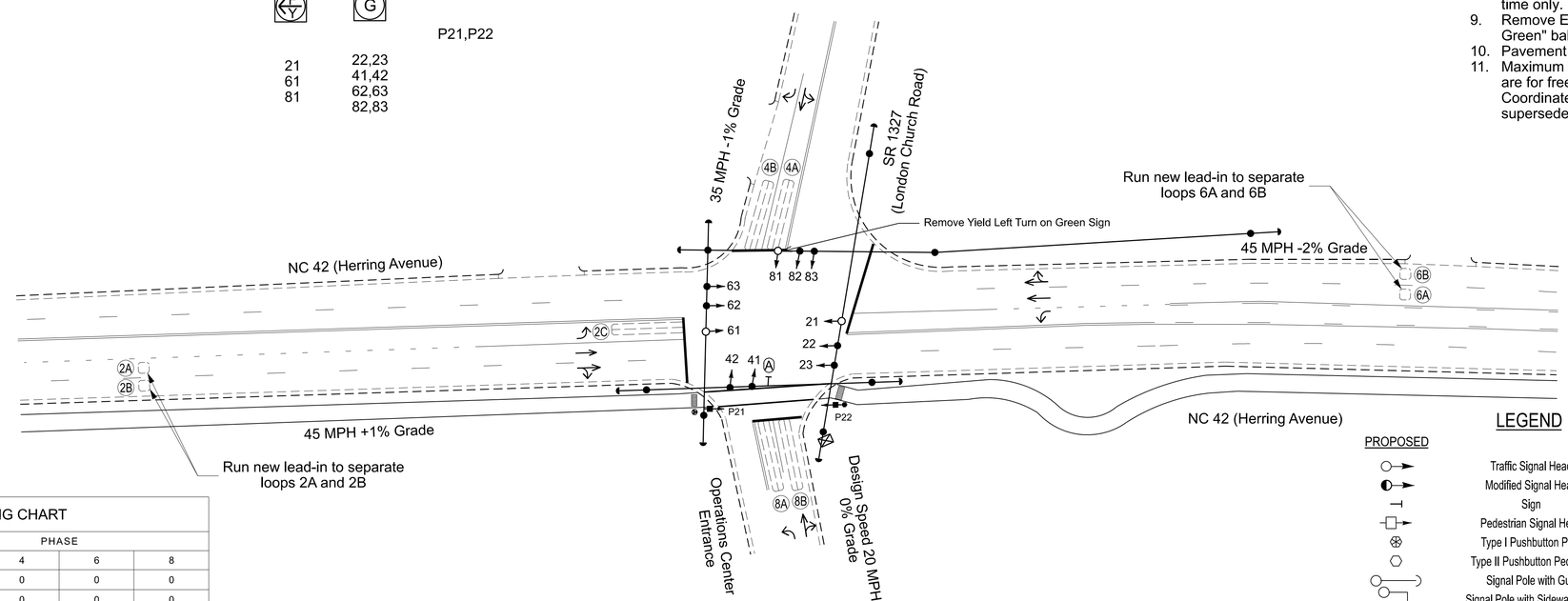
MAXTIME DETECTOR INSTALLATION CHART

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
2A	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
2C	6X40	0	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
6A	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

2-Phase Fully Actuated Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 61, 62, 81 and 82.
4. Renumber existing signal heads 21, 22, 61, 62, 81 and 82 as 22, 23, 62, 63, 82 and 83 respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Remove Existing "Left Turn Yield on Green" ball sign (R10-12).
10. Pavement markings are existing.
11. 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	
	Type I Pushbutton Post	
	Type II Pushbutton Pedestal	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	"Left Turn Yield on Green" Sign (R10-12)	A

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	14	0	0	0
Ped Clear *	15	0	0	0
Min Green *	12	7	12	7
Passage *	6.0	2.0	6.0	2.0
Max 1 *	90	20	90	20
Yellow Change	4.7	3.9	4.7	3.9
Red Clear	1.2	2.9	1.2	2.9
Added Initial *	1.5	-	1.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	7	-	-	-
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.

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Signal Upgrade

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 42 (Herring Avenue)
at
SR 1327 (London Church Rd) /
Operations Center Entrance

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0783

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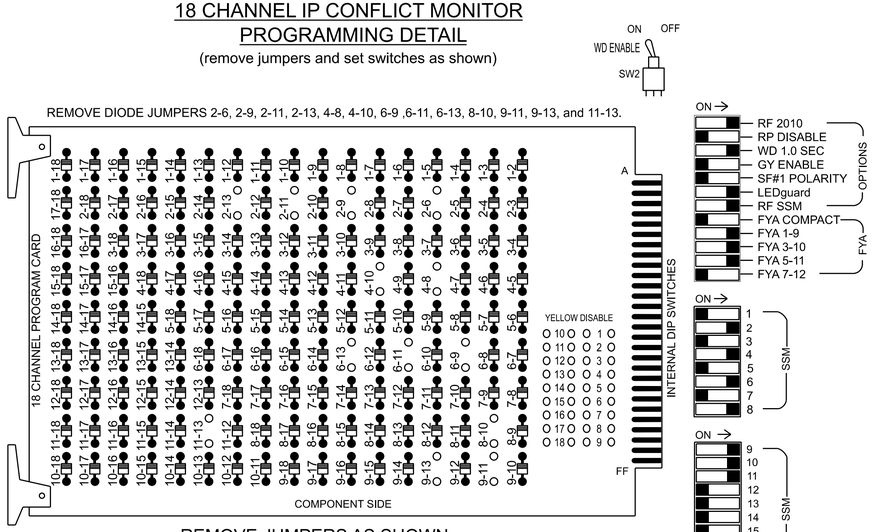
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 54.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8,
S11, AUX S1, AUX S2, AUX S4
Phases Used.....2, 2PED, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on this sheet

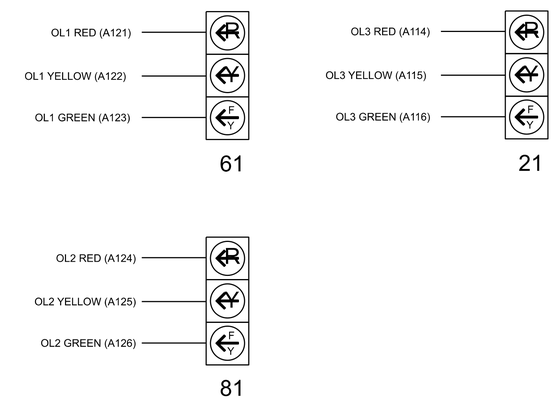
SIGNAL HEAD HOOK-UP CHART

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	22,23	P21, P22	NU	41,42	NU	NU	62,63	NU	NU	82,83	NU	61★	81★	NU	21★	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114		
YELLOW ARROW													A122	A125		A115		
FLASHING YELLOW ARROW													A123	A126		A116		
GREEN ARROW																		
✋			113															
🚶			115															

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)

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

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
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
2C	TB2-9,10	I3U	63	29	4	2	3.0	-	X	-	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	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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						

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT I12

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Off
Included Phases	2	4	6	-
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

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.

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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0783
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 42 (Herring Avenue)
at
SR 1327 (London Church Road) /
Operations Center Entrance

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS INIT. DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0783

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 54.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0783
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
at
SR 1327 (London Church Road) /
Operations Center Entrance

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
F6FC571C0669451...
DATE

SIG. INVENTORY NO. 04-0783

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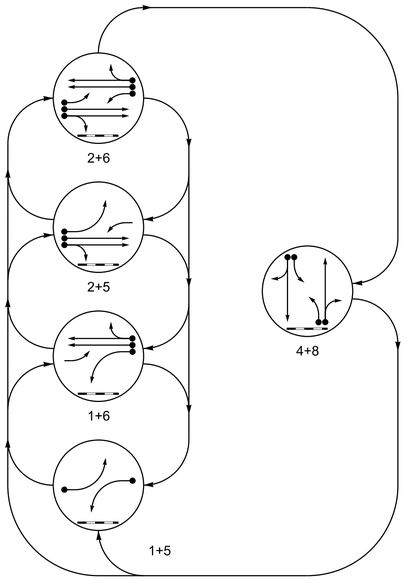
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 55.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

RAIL PREEMPT PHASES

(High Priority)

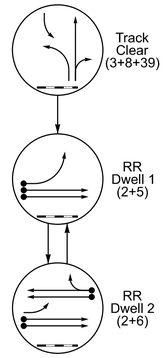


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	TRACK CLEAR	RR DWELL 1	RR DWELL 2	FLASH
11	←	←	F Y	F Y	R	R	R	R	R
21, 22	R	R	G	G	R	R	G	G	R
41	R	R	R	R	F Y	F Y	R	R	R
42, 43	R	R	R	R	G	R	R	R	R
51	←	F Y	←	F Y	R	R	←	F Y	R
61, 62	R	G	R	G	R	R	R	G	R
81	R	R	R	R	F Y	←	R	R	R
82, 83	R	R	R	R	G	G	R	R	R
Sign "A"	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	*

* See Note 7

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
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	330	5	-	2	-	-	X	X	X	-	X
2B	6X6	330	5	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	330	5	-	6	-	-	X	X	X	-	X
6B	6X6	330	5	-	6	-	-	X	X	X	-	X
8A, 8B	6X40	+5	2-4-2	-	8	-	-	X	-	X	-	X
8C, 8D	6X40	0	2-4-2	-	8	-	-	X	-	X	-	X

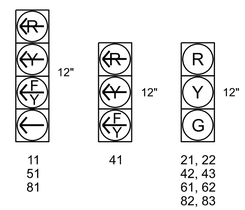
5 Phase
Fully Actuated
with Railroad Preemption
Wilson Signal System

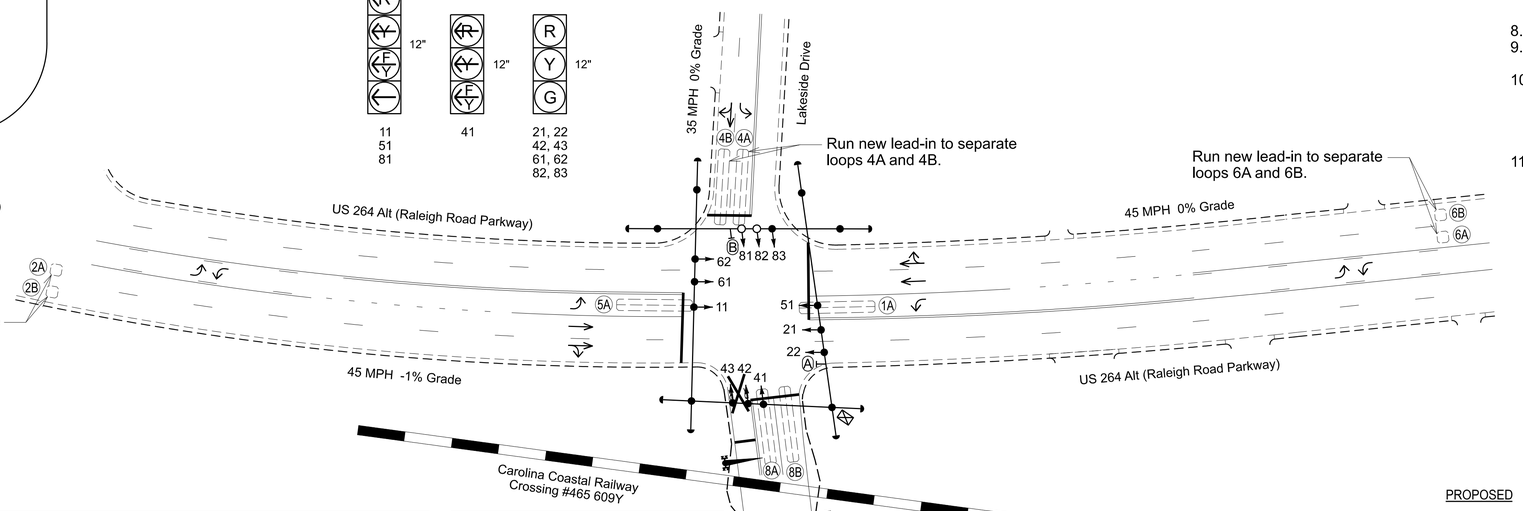
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 1 and/or phase 5 may be lagged.
4. Renumber signal head 82 as 83.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Existing Sign B may be removed at the discretion of the Division Traffic Engineer.
8. Pavement markings are existing.
9. Ensure flashing operation does not alter operation of blankout signs.
10. Program phase 40 to run concurrently with all phases during normal operation. Phase 39 must be incompatible with phase 40 and included as a track clear phase.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.





MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8	39	40
Walk *	0	0	0	0	0	0		
Ped Clear	0	0	0	0	0	0		
Min Green *	7	12	7	7	12	7		
Passage *	2.0	6.0	2.0	2.0	6.0	2.0		
Max 1 *	15	90	20	15	90	15		
Yellow Change	3.0	4.6	3.9	3.0	4.6	3.9	3.9	4.6
Red Clear	1.8	1.0	1.6	1.9	1.0	1.6	2.3	1.9
Added Initial *	-	1.5	-	-	1.5	-		
Maximum Initial *	-	37	-	-	37	-		
Time Before Reduction *	-	15	-	-	15	-		
Time To Reduce *	-	30	-	-	30	-		
Minimum Gap	-	3.0	-	-	3.0	-		
Advance Walk	-	-	-	-	-	-		
Non Lock Detector	X	-	X	X	-	X		
Vehicle Recall	-	MIN 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.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 1
Type	RAIL ROAD
Exit Phases	4, 8
Delay	0
Max Presence	0
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	0
Enter Yellow Change	4.6
Enter Red Clear	1.9
Track Green	12
Track Yellow Change	3.9
Track Red Clear	2.3
Dwell Green	12
Exit Min Green	255*
Exit Yellow Change	25.5*
Exit Red Clear	25.5*
Call Extend Time	1.0
Exit Type	EXIT PHASES
Ped Clear Through Yellow	N
Require All Red Entry	N

* Directs controller to use default phase timing.

This signal was designed for simultaneous preemption

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"NO RIGHT TURN - TRAIN" Blankout Sign	A
B	Left Arrow "ONLY" Sign (R3-5L)	B
C	"DO NOT STOP ON TRACKS" Sign (R8-8)	C

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(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 40 1"=40'

US 264 Alt (Raleigh Road Parkway) at Glendale Drive/Lakeside Drive

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
FIPCS7FCCD896451
2/28/2025
DATE

SIG. INVENTORY NO. 04-0784

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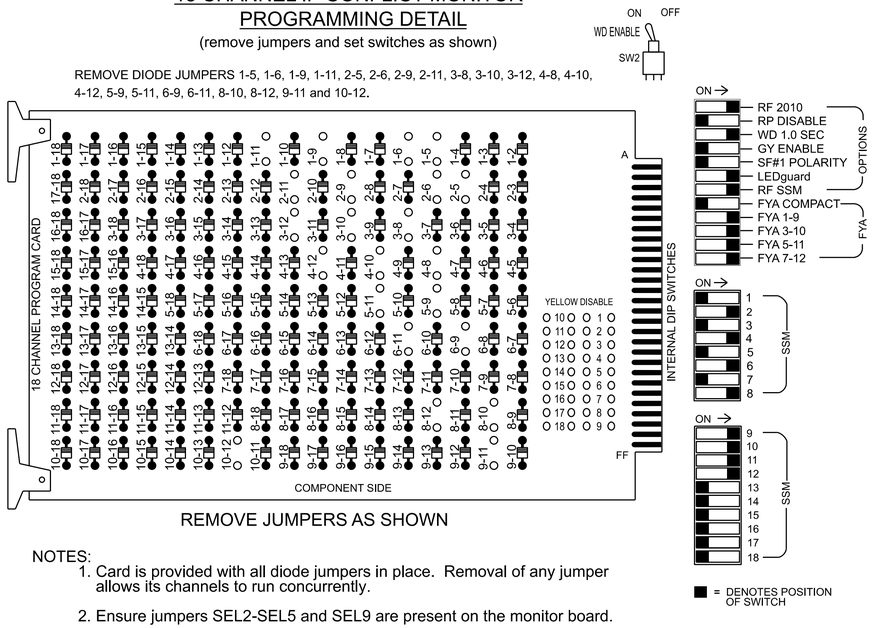
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 55.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk, 6 Green No Walk, 39 Phase Not On, and 40 Green No Walk.
4. Program Phase 39 for No Startup Veh Call.
5. Program Phase 40 for Min Recall.
6. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 3**, 4, 5, 6, 8, 39***, 40***
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2
**Phase used during preemption only.
***Phase used for preemption timing purposes only.

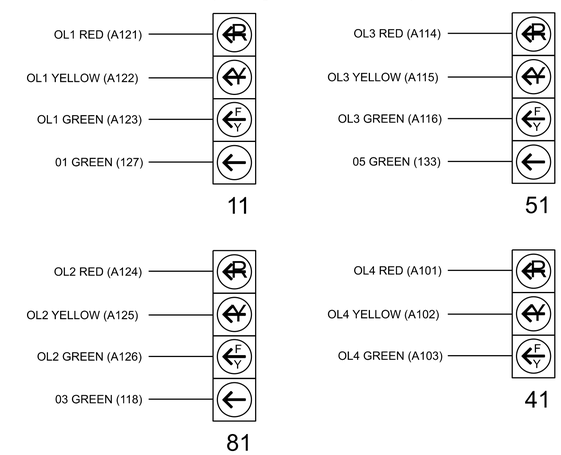
SIGNAL HEAD HOOK-UP CHART

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	81★	42,43	NU	51★	61,62	NU	NU	82,83	NU	11★	81★	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW	*	129		*	102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133											

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	1O	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	SLOT	SLOT	Ø 4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
		1A	2A	EMPTY	EMPTY	EMPTY	4A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
	L	NOT USED	Ø 2				Ø 4								ST
			2B				4B								DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	SLOT	SLOT	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	PRE1
		5A	6A	EMPTY	EMPTY	EMPTY	8A,8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	AC ISOLATOR
	L	NOT USED	Ø 6				Ø 8								NOT USED
			6B				8C,8D								

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

INPUT FILE CONNECTION & PROGRAMMING CHART

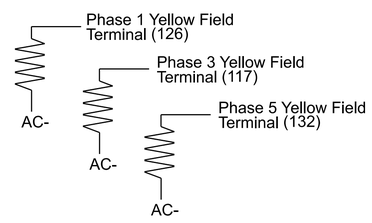
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0		X		X	
				-	29	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4	10.0		X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A, 8B	TB5-9,10	J6U	42	4	22	8			X		X	
8C, 8D	TB5-11,12	J6L	46	8	23	8			X		X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0784
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
Glendale Drive/Lakeside Drive

Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0784

AtkinsRéalis
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RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 55.2

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	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

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	Phase Phase Omit	3	Result=!A	Preempt Input	1	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: Omits phase 3 while not in preempt.

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.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0784
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
Glendale Drive/Lakeside Drive

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0784

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 55.3

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

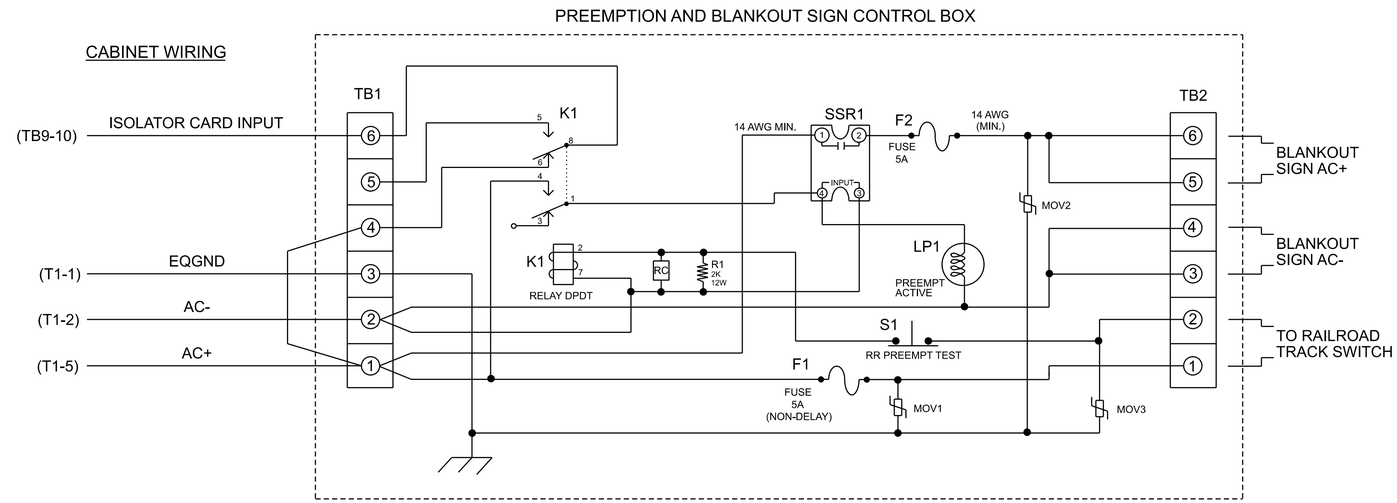
Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	1
Enabled	Enabled
Type	Rail Road
Track Phases	3,8,39
Track Overlaps	2,4
Dwell Phases	2,5
Dwell Peds	-
Dwell Overlaps	3
Cycling Phases	2,5,6
Cycling Peds	-
Cycling Overlaps	3
Exit Phases	4,8
Exit Overlaps	2,4
Delay	0
Call Ext Time	1.0
Max Presence	0
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	0
Enter Yellow Change	4.6
Enter Red Clear	1.9
Track Green	12
Track Yellow Clr	3.9
Track Red Clear	2.3
Dwell Green	12
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	-
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	X
Track Reserve	X

RAILROAD PREEMPTION WIRING DETAIL

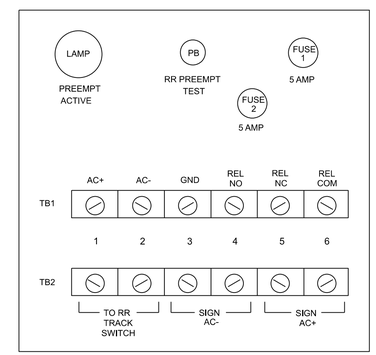
(wire as shown below)



NOTES

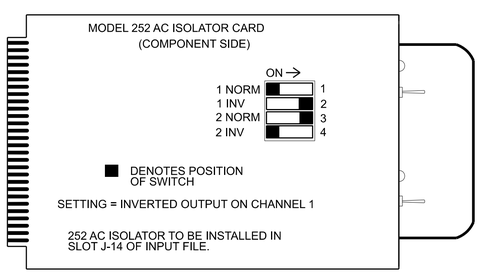
1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil with octal base.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



SEQUENCE DETAIL

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

Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	1,2,a,3,4,b
2	5,6,a,7,8,b
3	39,c,40,d

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0784
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
Glendale Drive/Lakeside Drive

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
F6FC571C0B9451... DATE

SIG. INVENTORY NO. 04-0784

28-FEB-2025 10:16
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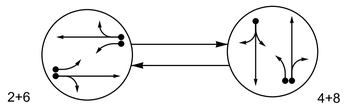
DATM6467

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 56.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	PHASE FLASH
21	F Y	~~R~~	~~R~~
22,23	G	R	R
41	~~R~~	F Y	~~R~~
42,43	R	G	R
61	F Y	~~R~~	~~R~~
62,63	G	R	R
81,82	R	G	R

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
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X40	0	2-4-2	-	2	3.0	-	X	-	X	X	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X40	0	2-4-2	-	6	3.0	-	X	-	X	X	X
8A	6X40	0	2-4-2	-	8	5.0	-	X	-	X	-	X
8B	6X6	+6	4	-	8	10.0	-	X	-	X	-	X

2 Phase
Fully Actuated
Wilson Signal System

NOTES

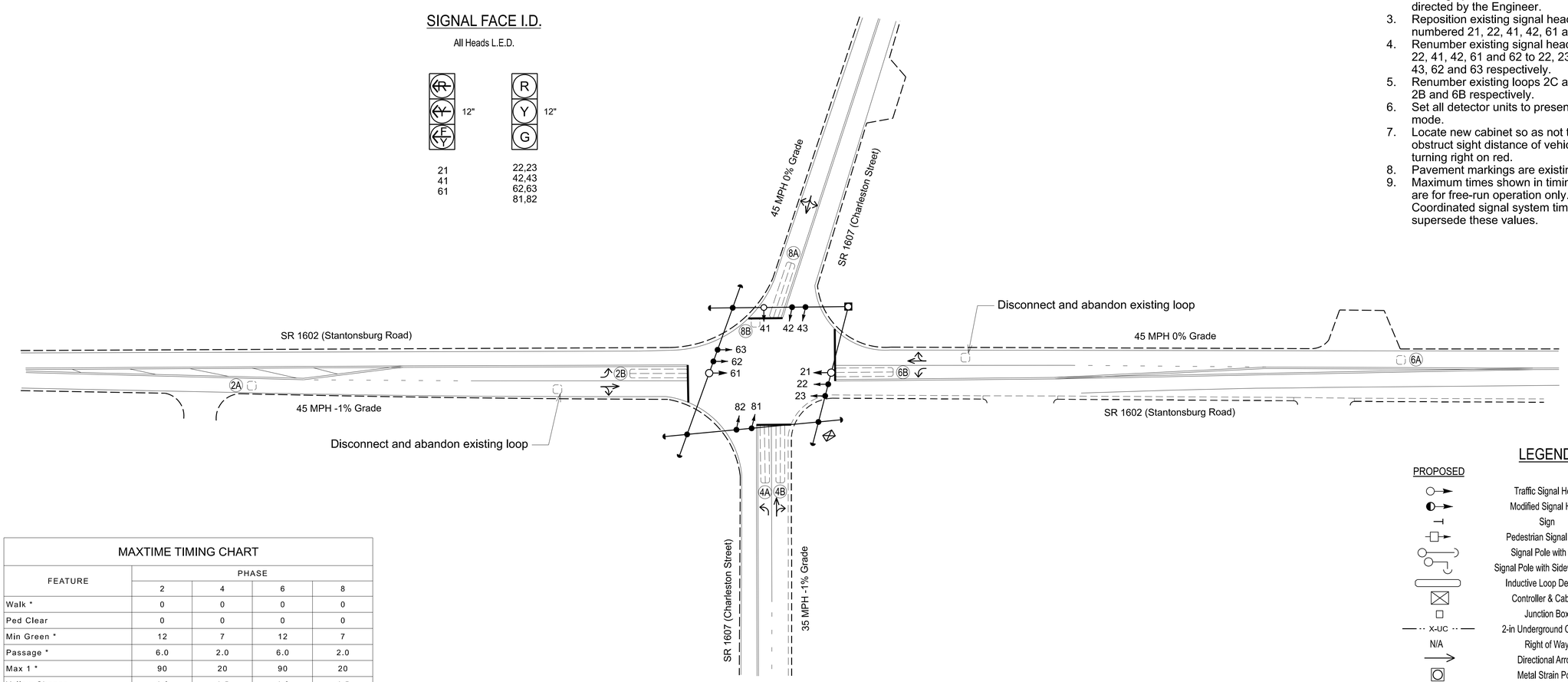
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 41, 42, 61 and 62.
4. Renumber existing signal heads 21, 22, 41, 42, 61 and 62 to 22, 23, 42, 43, 62 and 63 respectively.
5. Renumber existing loops 2C and 6C to 2B and 6B respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.

21
41
61

22,23
42,43
62,63
81,82



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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	12	7
Passage *	6.0	2.0	6.0	2.0
Max 1 *	90	20	90	20
Yellow Change	4.6	4.5	4.6	4.5
Red Clear	1.2	1.1	1.2	1.1
Added Initial *	2.5	-	2.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	12	-	12	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 1"=40' (0 – 40)

SR 1602 (Stantonsburg Road)
at
SR 1607 (Charleston Street)

Division 4 | Wilson County | Wilson

PLAN DATE:	August 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
DocSigned by:
2/28/2025
DATE

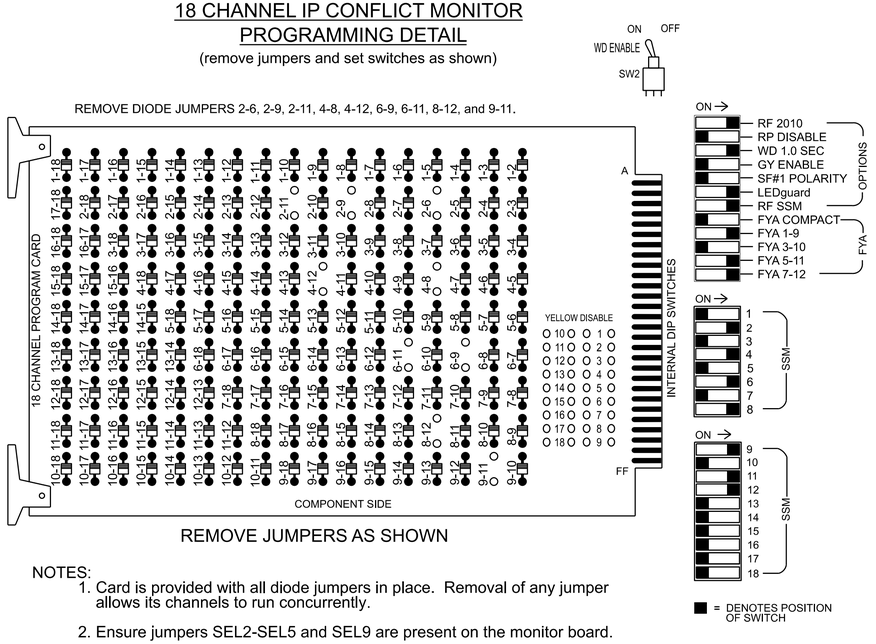
SIG. INVENTORY NO. 04-0785

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 56.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S4, AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on this sheet

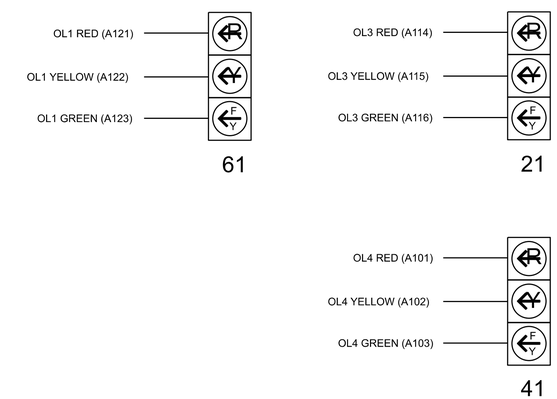
SIGNAL HEAD HOOK-UP CHART

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	22,23	NU	NU	42,43	NU	NU	62,63	NU	NU	81,82	NU	61★	NU	NU	21★	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114	A101	
YELLOW ARROW													A122			A115	A102	
FLASHING YELLOW ARROW													A123			A116	A103	
GREEN ARROW																		

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

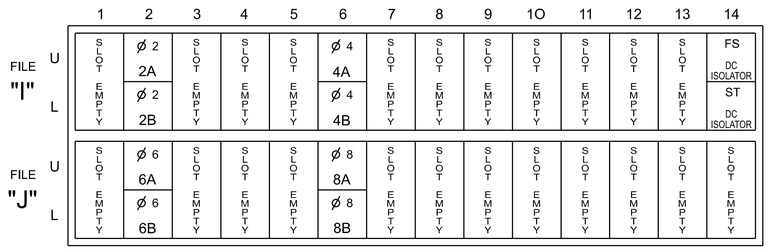
FYA SIGNAL WIRING DETAIL

(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
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	3.0	-	X	-	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	X	-
6B	TB3-7,8	J2L	44	6	17	6	3.0	-	X	-	X	X
8A	TB5-9,10	J6U	42	4	22	8	5.0	-	X	-	X	-
8B	TB5-11,12	J6L	46	8	23	8	10.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	FYA 4 - Section	Off	FYA 4 - Section	FYA 4 - Section
Included Phases	2	-	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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0785
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

SR 1602 (Stantonsburg Road)
at
SR 1607 (Charleston Street)

Division 4 | Wilson County | Wilson

PLAN DATE: November 2024	REVIEWED BY: JT Stiff
PREPARED BY: JT Sutton	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC38B8FA7E3A4C0...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0785

28-FEB-2025 10:18
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DATM6467

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 56.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0785
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
Traffic Engineering Branch
Traffic Signals Management Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1602 (Stantonsburg Road)
at
SR 1607 (Charleston Street)

Division 4 | Wilson County | Wilson

PLAN DATE:	November 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC38A67A783AC0...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0785

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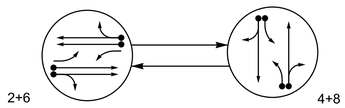
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 57.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21	FY	~~R~~	~~R~~
22, 23, 24	G	R	R
41	~~R~~	FY	~~R~~
42, 43	R	G	R
61	FY	~~R~~	~~R~~
62, 63	G	R	R
81	~~R~~	FY	~~R~~
82, 83	R	G	R

MAXTIME DETECTOR INSTALLATION CHART

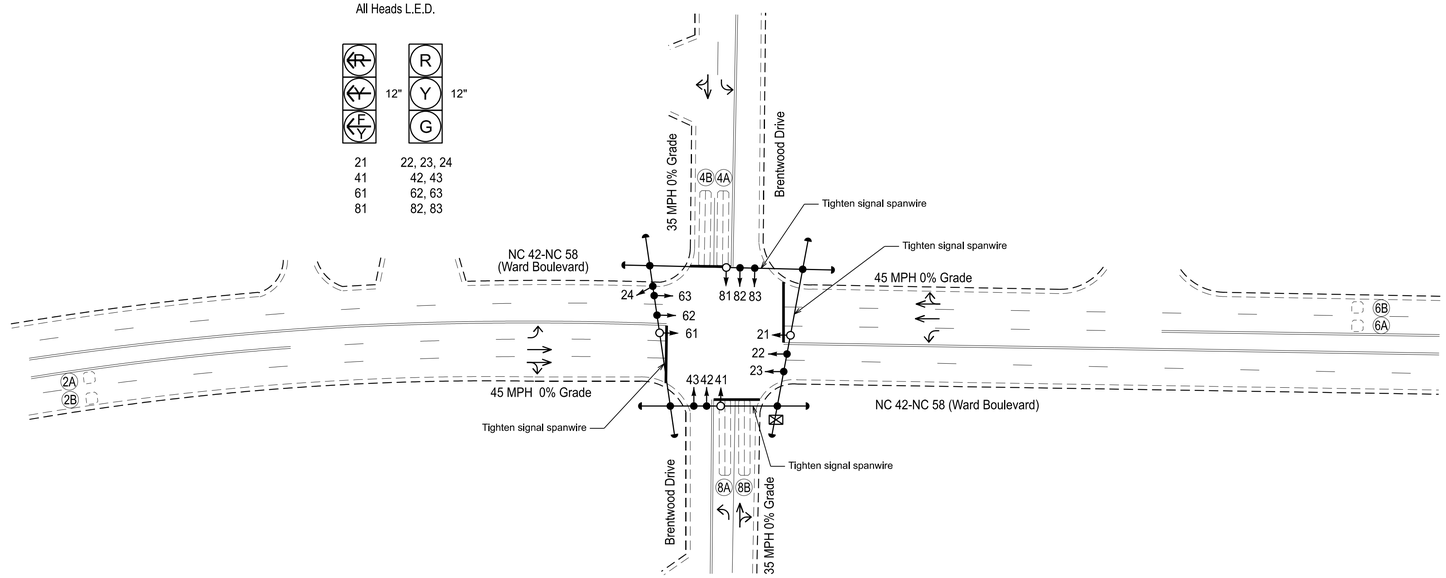
DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	0	2-4-2	-	8	10.0	-	X	-	X	-	X

2 Phase
Fully Actuated
Wilson Signal System

SIGNAL FACE I.D.

All Heads L.E.D.

21	22, 23, 24
41	42, 43
61	62, 63
81	82, 83



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. Reposition existing signal heads numbered 21, 22, 41, 42, 61, 62, 81, and 82.
4. Renumber existing signal heads 21, 22, 23, 41, 42, 61, 62, 81, and 82 to 22, 23, 24, 42, 43, 62, 63, 82, and 83, respectively.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear *	0	0	0	0
Min Green *	12	7	12	7
Passage *	6.0	2.0	6.0	2.0
Max 1 *	90	25	90	25
Yellow Change	4.5	3.8	4.5	3.8
Red Clear	1.0	1.2	1.0	1.2
Added Initial *	1.5	-	1.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 42-NC 58 (Ward Boulevard)
at
Brentwood Drive

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DocuSigned by: 1EFC57C0B69451...
DATE

SIG. INVENTORY NO. 04-0791

28-FEB-2025 10:18
DGN:(08087)
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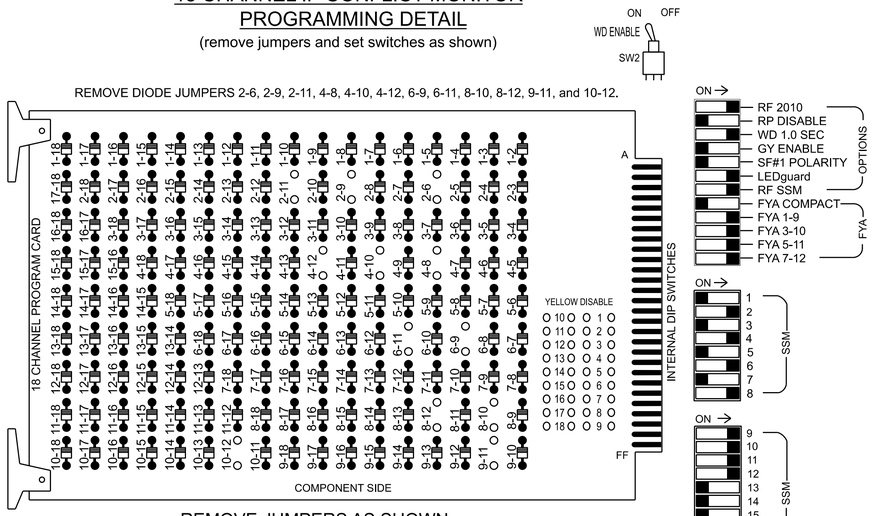
Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 57.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S2
AUX S4, AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail this sheet

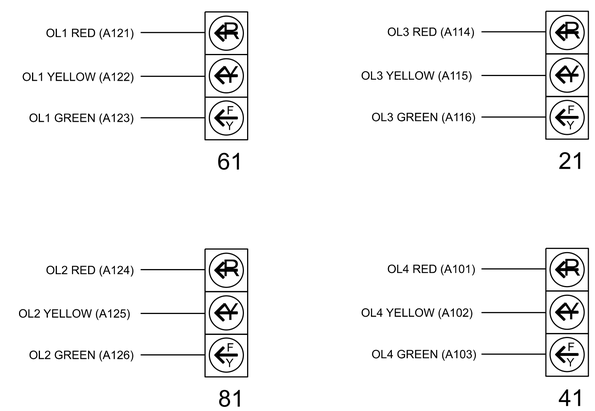
SIGNAL HEAD HOOK-UP CHART

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	22,23,24	NU	NU	42,43	NU	NU	62,63	NU	NU	82,83	NU	61★	81★	NU	21★	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW																		

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)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT	Ø 2 / 2A	SLOT	SLOT	SLOT	Ø 4 / 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	EMPTY	Ø 2 / 2B	EMPTY	EMPTY	EMPTY	Ø 4 / 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	SLOT	Ø 6 / 6A	SLOT	SLOT	SLOT	Ø 8 / 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	Ø 6 / 6B	EMPTY	EMPTY	EMPTY	Ø 8 / 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	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	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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	-

INPUT FILE POSITION LEGEND: J2L
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:

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.

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	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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0791
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

NC 42-NC 58 (Ward Boulevard)
at
Brentwood Drive

Division 4 Wilson County Wilson

PLAN DATE: November 2024	REVIEWED BY: TJ Williams
PREPARED BY: MF Evans	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS
Signed by: T. J. Williams
F8FC871C0B9451...
2/28/2025
DATE
SIG. INVENTORY NO. 04-0791

28-FEB-2025 10:20
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 57.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0791
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42-NC 58 (Ward Boulevard)
at
Brentwood Drive

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F6FC671C0969451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0791

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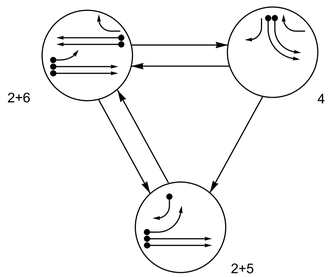
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 58.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

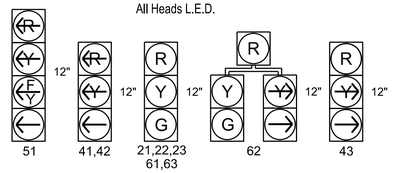
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4	FLASH
21,22,23	G	G	R	R
41,42	~~R~~	~~R~~	←	~~R~~
43	→	R	→	R
51	←	F Y	~~R~~	~~R~~
61,63	R	G	R	R
62	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



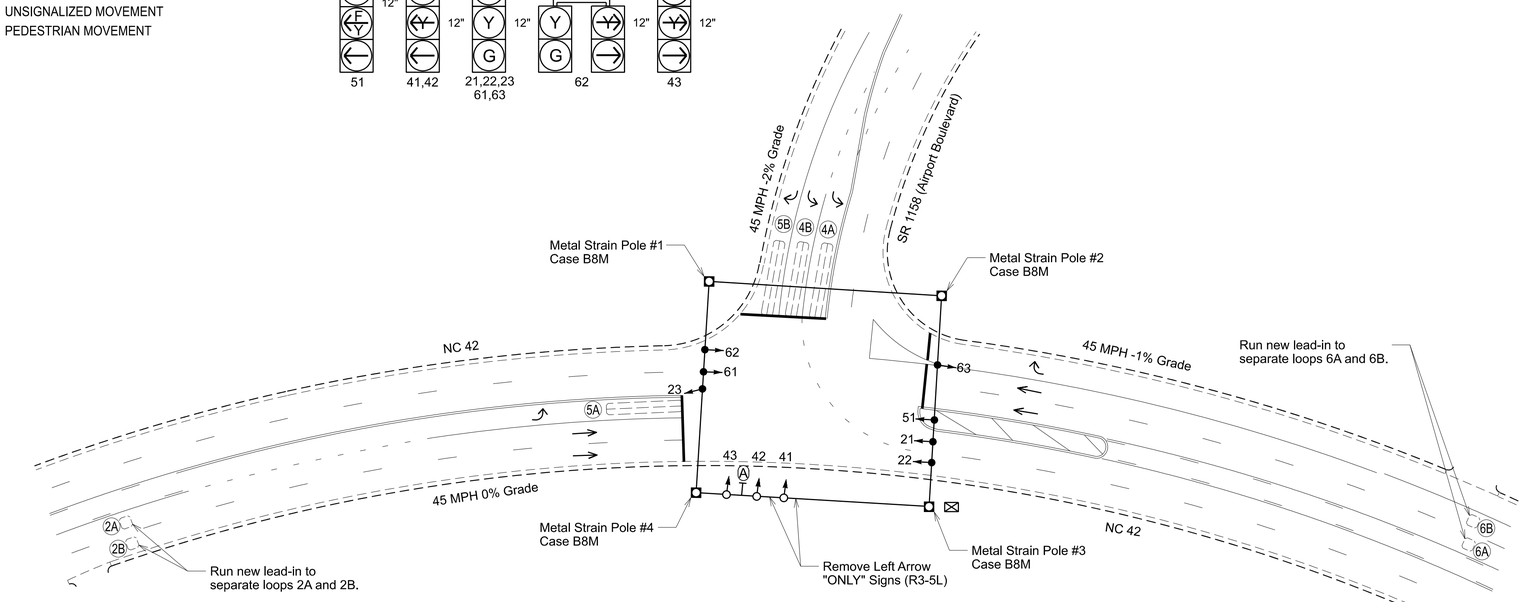
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
5B	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Existing sign A may be removed at the discretion of the Division Traffic Engineer.
7. Pavement markings are existing unless otherwise shown/noted.
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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
A	Right Arrow "ONLY" Sign (R3-5R)	A

-

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	7	12
Passage *	6.0	2.0	2.0	6.0
Max 1 *	90	25	15	90
Yellow Change	4.6	3.0	3.0	4.6
Red Clear	1.7	2.6	3.2	1.7
Added Initial *	1.5	-	-	1.5
Maximum Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 40 1"=40'

NC 42
at
SR 1158 (Airport Boulevard)

Division 4	Wilson County		Wilson
PLAN DATE: September 2024		REVIEWED BY: TJ Williams	
PREPARED BY: KG Sasaki		REVIEWED BY: PL Alexander	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0792

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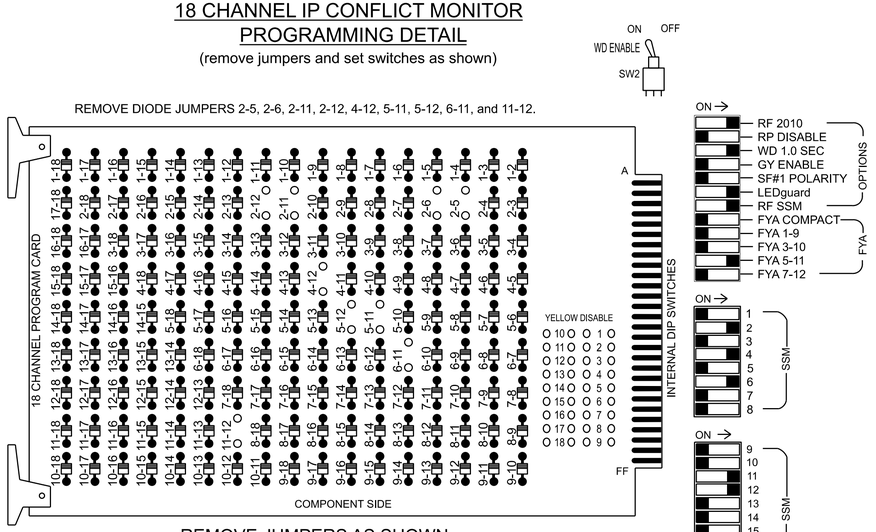
DATA: 0040792

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 58.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on this sheet.

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	NU	NU	41,42	62	NU	51★	61,62, 63	NU	NU	NU	NU	NU	NU	NU	51★	43	NU
RED		128							134									A101	
YELLOW		129						*	135										
GREEN		130							136										
RED ARROW					101												A114		
YELLOW ARROW					102	102											A115	A102	
FLASHING YELLOW ARROW																	A116		
GREEN ARROW					103	103		133										A103	

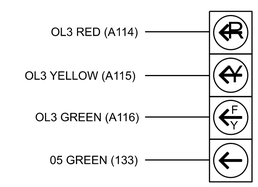
NU = Not Used

* 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	SLOT EMPTY	ø 2	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		2A				4A								ST DC ISOLATOR
			ø 2				ø 4								
			2B				4B								
FILE "J"	U	ø 5	ø 5	ø 6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
		5A	5B	6A											
	L	NOT USED	NOT USED	ø 6											
				6B											

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

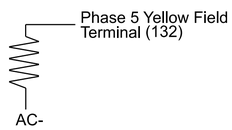
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	
6B	TB3-11,12	J3L	77	43	19	6			X	X	X	

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)

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	FYA 4 - Section	Normal
Included Phases	-	-	6	4,5
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

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THE SIGNAL DESIGN: 04-0792
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42
at
SR 1158 (Airport Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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SIG. INVENTORY NO. 04-0792

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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:

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.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0792
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42
at
SR 1158 (Airport Boulevard)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
F6FC571C0B9451... DATE

SIG. INVENTORY NO. 04-0792

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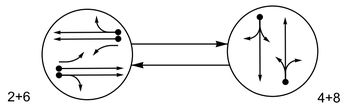
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 59.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	PHASE 4+8	FLASH
21	F Y	~~R~~	~~R~~
22, 23, 24	G	R	R
41, 42	R	G	R
61	F Y	~~R~~	~~R~~
62, 63	G	R	R
81, 82	R	G	R

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
2A	6X6	420	5	-	2	-	-	X	X	X	-	X
2B	6X6	420	5	-	2	-	-	X	X	X	-	X
4A	6X60	0	2-4-2	-	4	5.0	-	X	-	X	-	X
4B	6X6	0	3	X	4	15.0	-	X	-	X	-	X
6A	6X6	420	5	-	6	-	-	X	X	X	-	X
6B	6X6	420	5	-	6	-	-	X	X	X	-	X
8A	6X60	0	2-4-2	-	8	5.0	-	X	-	X	-	X
8B	6X6	0	3	X	8	15.0	-	X	-	X	-	X

2 Phase
Fully Actuated
Wilson Signal System

NOTES

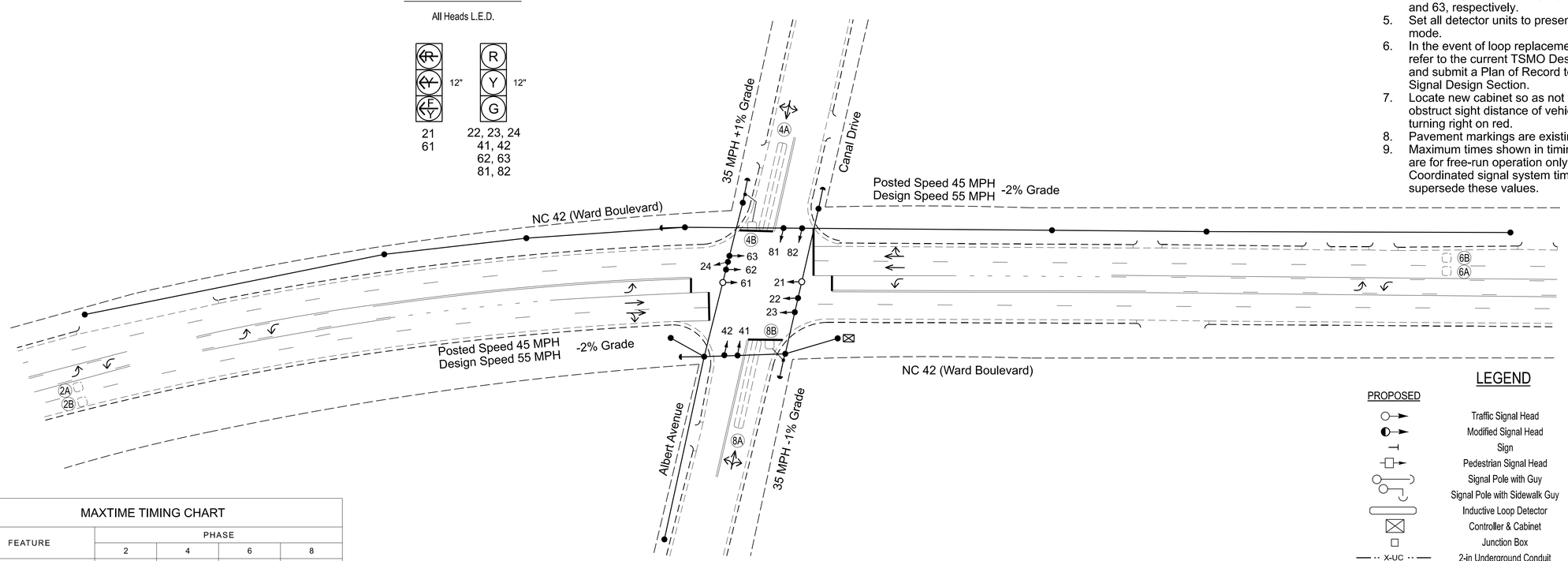
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 23, 61, and 62.
4. Renumber existing signal heads 21, 22, 23, 61, and 62 as 22, 23, 24, 62, and 63, respectively.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.

21
61

22, 23, 24
41, 42
62, 63
81, 82



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	14	7	14	7
Passage *	6.0	1.0	6.0	1.0
Max 1 *	90	20	90	20
Yellow Change	5.4	3.9	5.4	3.9
Red Clear	1.5	1.3	1.5	1.3
Added Initial *	2.0	-	2.0	-
Maximum Initial *	46	-	46	-
Time Before Reduction *	30	-	30	-
Time To Reduce *	15	-	15	-
Minimum Gap	3.4	-	3.4	-
Advance Walk	-	-	-	-
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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NC 42 (Ward Boulevard)
at
Albert Avenue/ Canal Drive

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DOCUSIGNED BY: DATE

SIG. INVENTORY NO. 04-0862

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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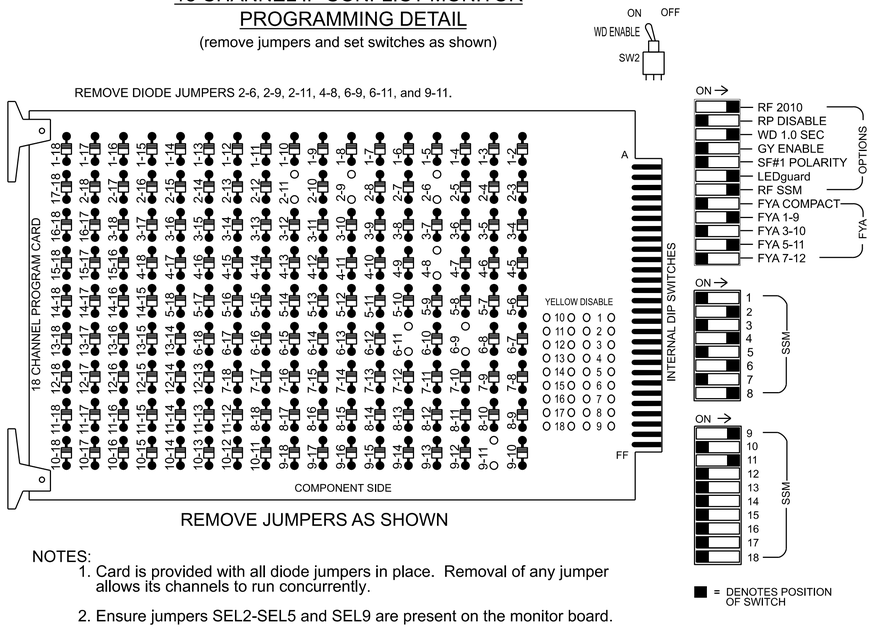
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 59.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S8, S11, AUX S1, AUX S4
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail this sheet

SIGNAL HEAD HOOK-UP CHART

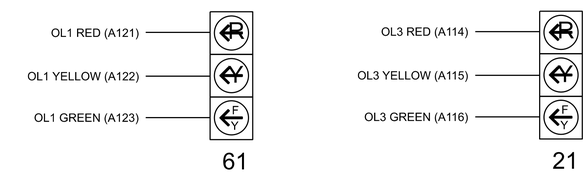
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22,23,24	NU	NU	41,42	NU	NU	62,63	NU	NU	81,82	NU	61★	NU	NU	21★	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW																		

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)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		2A / 2B				4A / 4B								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		6A / 6B				8A / 8B								

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
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	5.0	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	15.0	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
8A	TB5-9,10	J6U	42	4	22	8	5.0	-	X	-	X	-
8B	TB5-11,12	J6L	46	8	23	8	15.0	-	X	-	X	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	6	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0862
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42 (Ward Boulevard)
at
Albert Avenue/ Canal Drive

Division 4 | Wilson County | Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-0862

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 59.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0862
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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NC 42 (Ward Boulevard)
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Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

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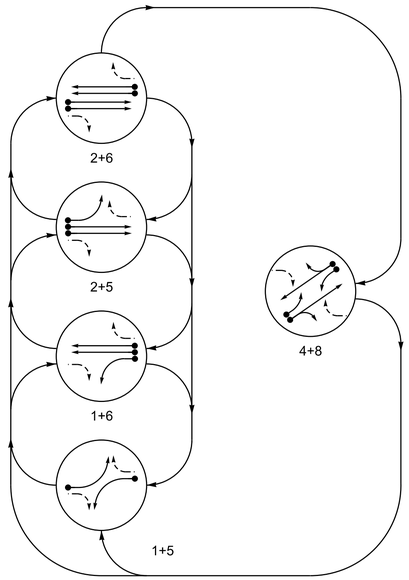
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 60.0

PHASING DIAGRAM



SIGNAL FACE I.D.

All Heads L.E.D.

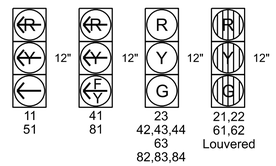


TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21,22,23	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42,43,44	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61,62,63	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82,83,84	R	R	R	R	G	R

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
1A	6X60	0	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	355	6	X	2	-	-	X	X	X	-	X
2B	6X6	355	6	X	2	-	-	X	X	X	-	X
4A	6X50	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X50	0	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X60	0	2-4-2	-	5	3.0	-	X	-	X	-	X
6A	6X6	355	4	X	6	-	-	X	X	X	-	X
6B	6X6	355	4	X	6	-	-	X	X	X	-	X
8A	6X50	0	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X50	0	2-4-2	-	8	10.0	-	X	-	X	-	X

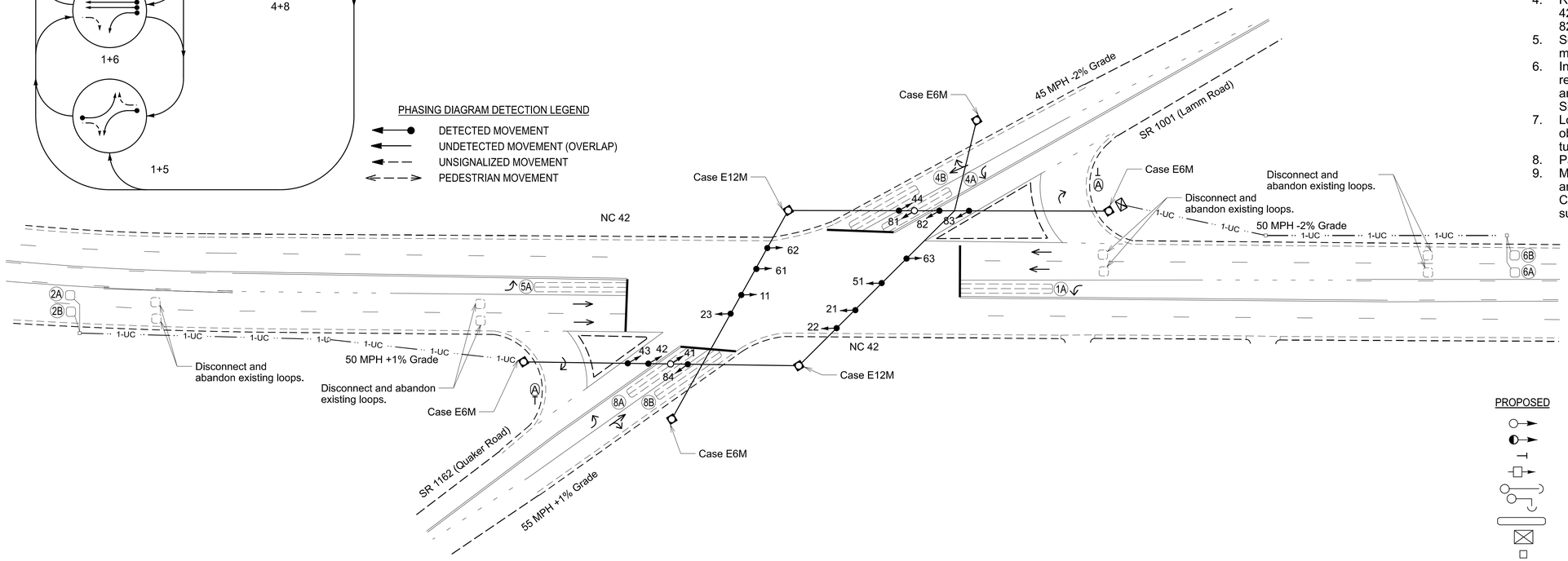
5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Renumber existing signal heads 41, 42, 43, 81, 82, and 83 to 42, 43, 44, 82, 83, and 84, respectively.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



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	
— ·· X-UC ·· —	2-in Underground Conduit	— ·· UC ·· —
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	14	7	7	14	7
Passage *	1.0	6.0	1.0	1.0	6.0	1.0
Max 1 *	15	90	25	15	90	25
Yellow Change	3.3	5.0	5.1	3.1	5.0	5.1
Red Clear	3.9	2.5	1.9	3.9	2.5	1.9
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	40	-	-	40	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42
at
SR 1001 (Lamm Road)/
SR 1162 (Quaker Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DATE

SIG. INVENTORY NO. 04-0895

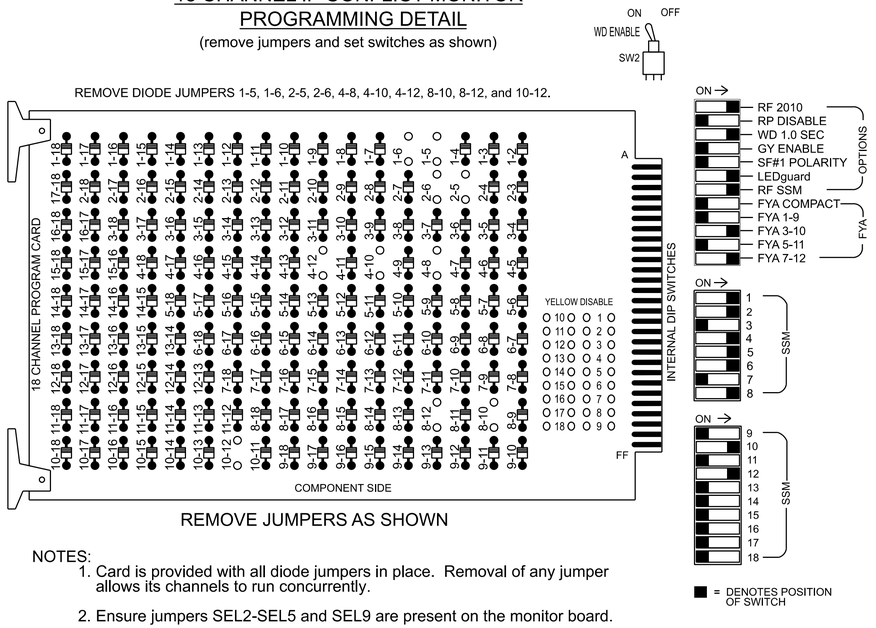
28-FEB-2025 10:24
DGN:\\ncdot.bentley.com\ncdot-pw-01\Documents\Division_04\U-5945\TSMO\Signal Design\040895_sig_dsn_2024mmtd.dgn

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 60.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S2, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet.

SIGNAL HEAD HOOK-UP CHART

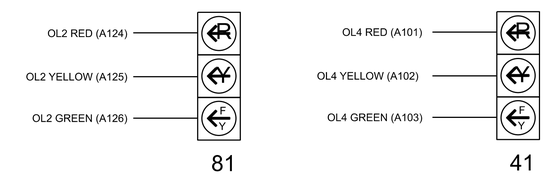
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	NU	42,43 44	NU	51	61,62 63	NU	NU	82,83 84	NU	NU	81★	NU	NU	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132							A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW	127						133											

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)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	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	
5A	TB3-1,2	J1U	55	17	15	5	3.0		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	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	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	Off	FYA 4 - Section
Included Phases	-	4	-	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0895
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 42
at
SR 1001 (Lamm Road)/
SR 1162 (Quaker Road)

Division 4 Wilson County Wilson

PLAN DATE: December 2024	REVIEWED BY: TJ Williams
PREPARED BY: KG Sasaki	REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
F8F0F271C0B9451...
DATE

SIG. INVENTORY NO. 04-0895

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 60.2

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0895
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 42
at
SR 1001 (Lamm Road)/
SR 1162 (Quaker Road)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	KG Sasaki	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
PROFESSIONAL ENGINEER DATE

SIG. INVENTORY NO. 04-0895

28-FEB-2025 10:25
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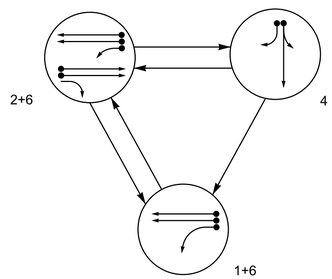
Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 61.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4	FLASH
11	←	F Y	R	R
21	R	↑	R	R
22	R	G	R	R
23	R	F Y	R	R
41,42,43,44	R	R	G	R
61	G	G	R	R
62	↑	↑	R	R

SIGNAL FACE I.D.

All Heads L.E.D.

MAXTIME DETECTOR INSTALLATION CHART

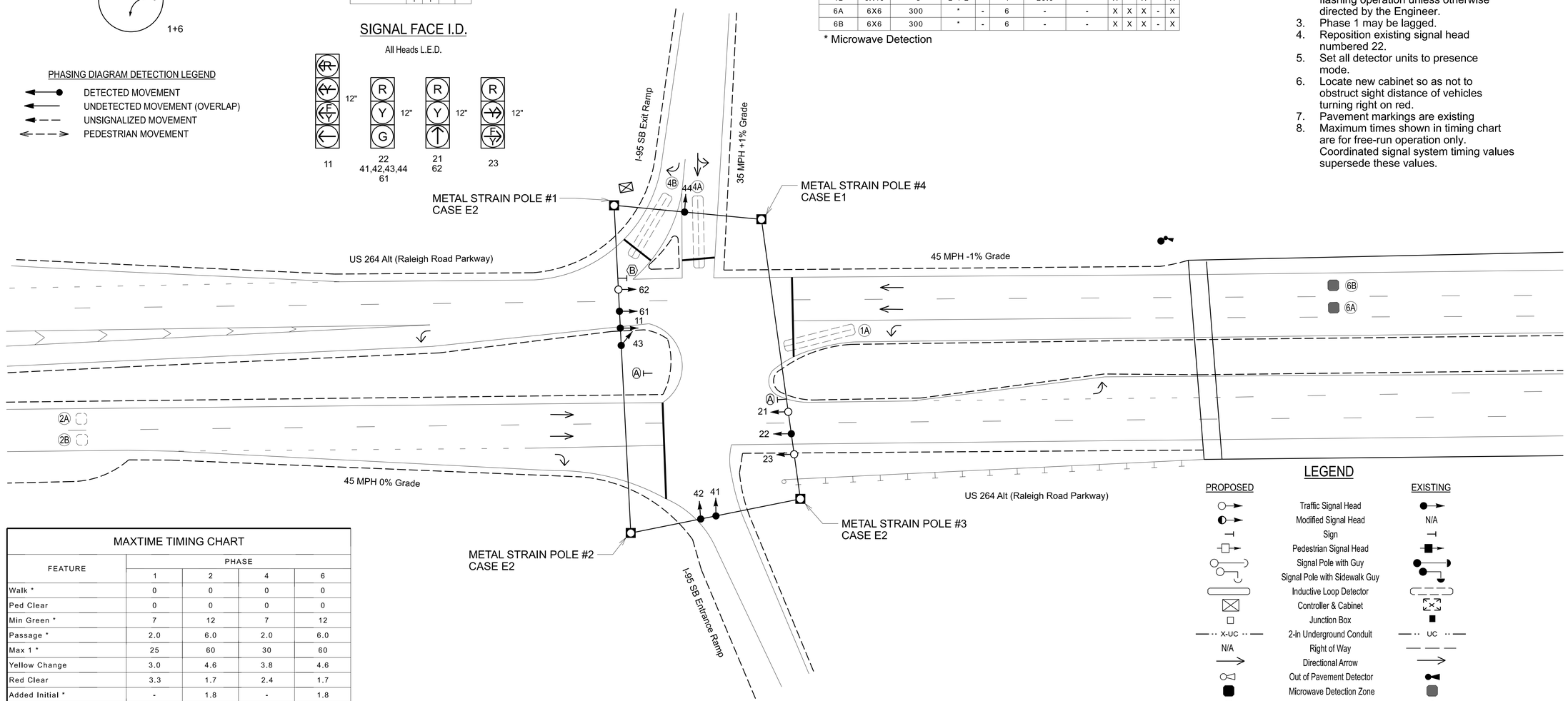
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	-	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	20.0	-	X	-	X	-	X
6A	6X6	300	*	-	6	-	-	X	X	X	-	X
6B	6X6	300	*	-	6	-	-	X	X	X	-	X

* Microwave Detection

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition existing signal head numbered 22.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Out of Pavement Detector	
	Microwave Detection Zone	
A	No U-Turn/No Left Turn Sign (R3-18)	A
B	No Right Turn Sign (R3-1)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	7	12	7	12
Passage *	2.0	6.0	2.0	6.0
Max 1 *	25	60	30	60
Yellow Change	3.0	4.6	3.8	4.6
Red Clear	3.3	1.7	2.4	1.7
Added Initial *	-	1.8	-	1.8
Maximum Initial *	-	34	-	34
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	30
Minimum Gap	-	3.0	-	3.0
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
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(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 30 1"=30'

US 264 Alt (Raleigh Road Parkway) at I-95 SB Ramp

Division 4 | Wilson County | Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DocuSigned by: 7FFCE371C0B9481...
DATE

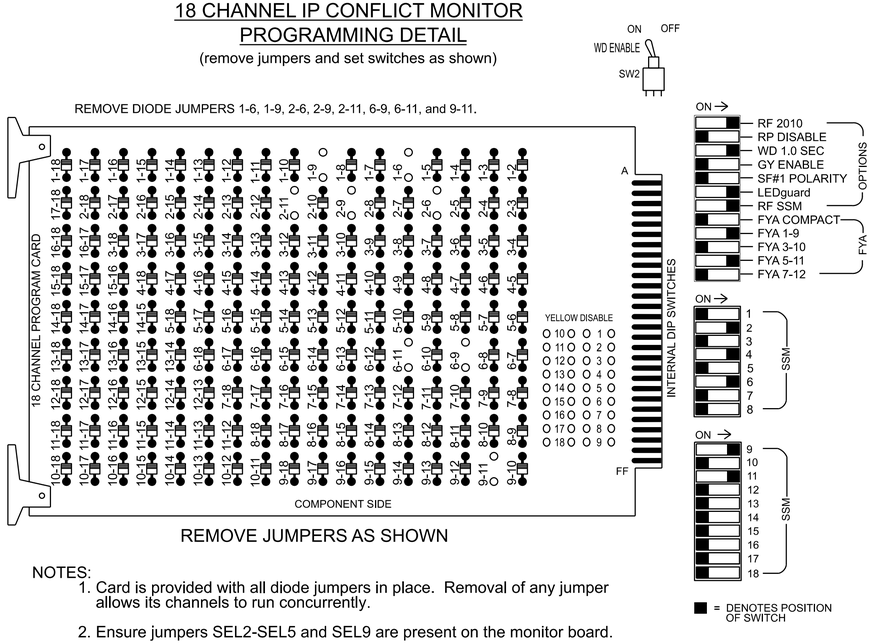
SIG. INVENTORY NO. 04-0924

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 61.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S8, AUX S1, AUX S4
Phases Used.....1, 2, 4, 6
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

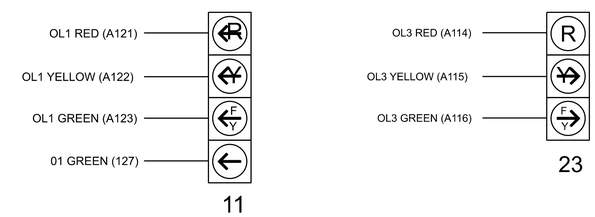
SIGNAL HEAD HOOK-UP CHART

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.	11★	21	22	NU	NU	41,42 43,44	NU	NU	61	62	NU	NU	NU	NU	11★	NU	NU	23★	NU	NU
RED		128	128			101			134	134								A114		
YELLOW	*	129	129			102			135	135										
GREEN			130			103			136											
RED ARROW															A121					
YELLOW ARROW															A122			A115		
FLASHING YELLOW ARROW															A123			A116		
GREEN ARROW	127	130								136										

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	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A DC ISOLATOR	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B DC ISOLATOR												

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

FS = FLASH SENSE
ST = STOP TIME

! Note: Install a model 242 DC isolator in slot J2 for use with microwave detector. See the Microwave Detector wiring details on sheet 2.

! IMPORTANT: For proper operation of the microwave detector, remove surge protection from TB3-5 and TB3-6, and from TB3-7 and TB3-8.

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	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	-	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	20.0	-	X	-	X	-
6A	*	J2U	40	2	16	*	-	-	-	-	-	-
	-	-	-	-	127	6	-	-	X	X	X	-
6B	*	J2L	44	6	17	*	-	-	-	-	-	-
	-	-	-	-	128	6	-	-	X	X	X	-

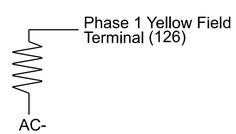
* Microwave pulse detector. See wiring and logic processor programming on sheet 2.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0924
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
I-95 SB Ramp

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F6F1C571C0B9451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0924

28-FEB-2025 10:26
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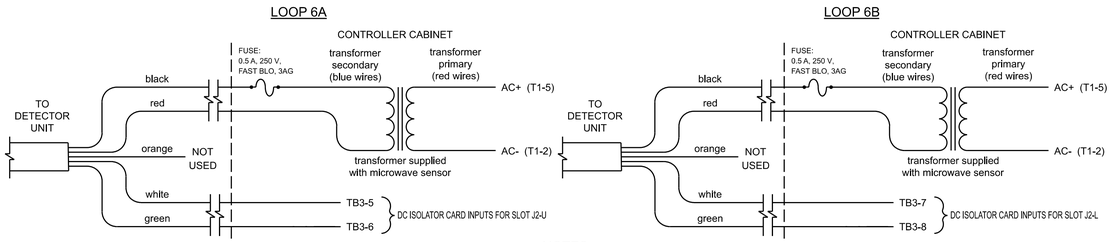
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 61.2

MICROWAVE DETECTOR WIRING DETAIL

(wire as shown)



MICROWAVE DETECTOR WIRE LIST

COLOR	FUNCTION
black	12V to 24V AC/DC (no polarity)
red	12V to 24V AC/DC (no polarity)
orange	Output Relay Normally Open
white	Output Relay Normally Closed
green	Output Relay Common

NOTES:

1. Sensor is a microwave motion detector mounted on poles as indicated on the Signal Design Plans.
2. Microwave wiring shown above will cause a permanent call unless the Vehicle Detector and Logic Processor Programming details are entered as shown on this sheet. These programming details will cause a call to be placed upon opening the normally closed contact on the microwave detector.
3. DC Isolator's LED will be ON when no call is present and will be OFF when a call is present.
4. Important: For proper operation of the microwave detector, remove surge protection from TB3-5, TB3-6, TB3-7, and TB3-8 and insert 242 DC Isolator in slot J2.

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	Vehicle Detector Call	127	Result=!A	Vehicle Detector Input	16	None	0	0.0	0.0
2	Vehicle Detector Call	128	Result=!A	Vehicle Detector Input	17	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 1 Description: If a call is present on Vehicle Detector 16, DO NOT place a call on Vehicle Detector 127.
If NO call is present on Vehicle Detector 16, place a call on Vehicle Detector 127.

Vehicle Detector 127 = logical detector for microwave detection zone 6A.

Statement 2 Description: If a call is present on Vehicle Detector 17, DO NOT place a call on Vehicle Detector 128.
If NO call is present on Vehicle Detector 17, place a call on Vehicle Detector 128.

Vehicle Detector 128 = logical detector for microwave detection zone 6B.

VEHICLE DETECTOR PROGRAMMING

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

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

Plan 1

6A

Detector	Call Phase	Delay
16	0	0.0
127	6	0.0

Plan 1

6B

Detector	Call Phase	Delay
17	0	0.0
128	6	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

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	FYA 4 - Section	Off	FYA 4 - Section	Off
Included Phases	2	-	2	-
Modifier Phases	1	-	-	-
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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0924
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 2 of 2

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Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DocuSigned by: 8AF247CC0B0B4A1... DATE

SIG. INVENTORY NO. 04-0924

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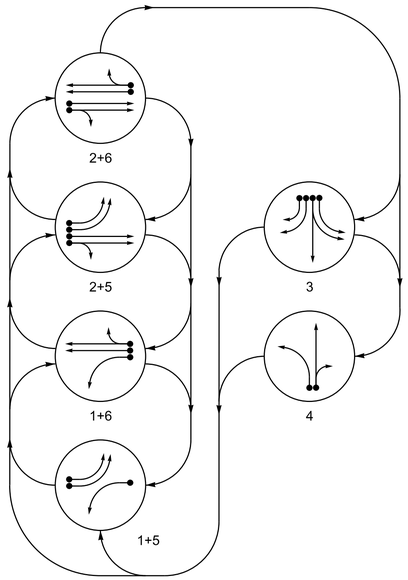
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 62.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3	4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R
31	R	R	R	R	G	R	R
32, 33	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R

SIGNAL FACE I.D.

All Heads L.E.D.

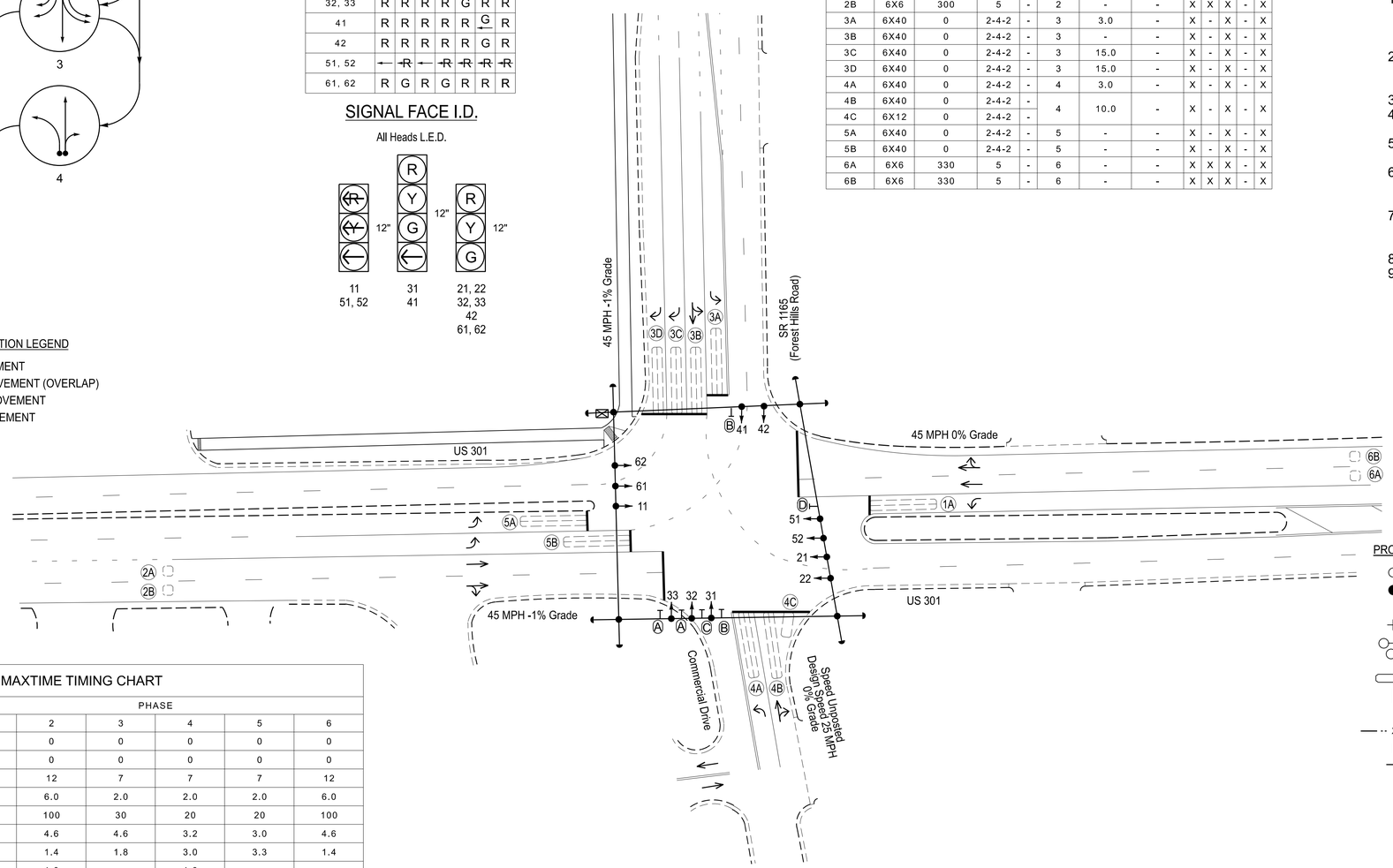
MAXTIME DETECTOR INSTALLATION CHART

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		NEW CARD
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	X
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
3A	6X40	0	2-4-2	-	3	3.0	-	X	-	X	-	X
3B	6X40	0	2-4-2	-	3	-	-	X	-	X	-	X
3C	6X40	0	2-4-2	-	3	15.0	-	X	-	X	-	X
3D	6X40	0	2-4-2	-	3	15.0	-	X	-	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	X
4C	6X12	0	2-4-2	-								
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
5B	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	330	5	-	6	-	-	X	X	X	-	X
6B	6X6	330	5	-	6	-	-	X	X	X	-	X

6 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The cabinet should be designed to include an Auxiliary Output file for future use.
8. Pavement markings are existing.
9. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
A	Right Arrow "ONLY" Sign (R3-5R)	A
B	Left Arrow "ONLY" Sign (R3-5L)	B
C	Combined Through and Left Arrow Sign (R3-6L)	C
D	No U-Turn Sign (R3-4)	D

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12
Passage *	2.0	6.0	2.0	2.0	2.0	6.0
Max 1 *	20	100	30	20	20	100
Yellow Change	3.0	4.6	4.6	3.2	3.0	4.6
Red Clear	3.3	1.4	1.8	3.0	3.3	1.4
Added Initial *	-	1.8	-	1.8	-	-
Maximum Initial *	-	34	-	34	-	-
Time Before Reduction *	-	15	-	15	-	-
Time To Reduce *	-	50	-	50	-	-
Minimum Gap	-	3.0	-	3.0	-	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	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.

Signal Upgrade

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

US 301
at
SR 1165 (Forest Hills Road)/
Commercial Drive

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0963

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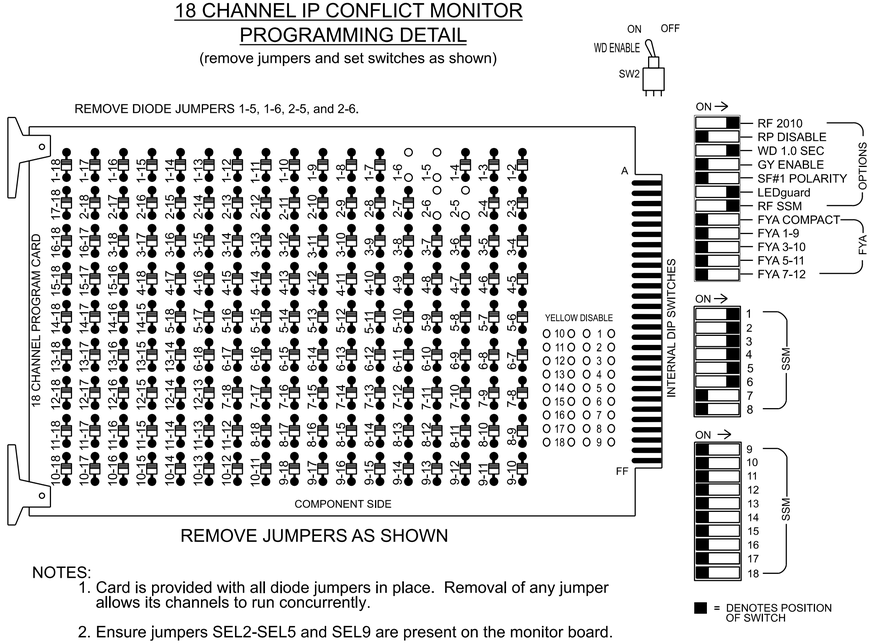
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 62.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8
Phases Used.....1, 2, 3, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
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.	11	21,22	NU	31	32,33	41	42	NU	51,52	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128		116	116	101	101			134										
YELLOW		129		117	117	102	102			135										
GREEN		130		118	118	103	103			136										
RED ARROW	125								131											
YELLOW ARROW	126								132											
GREEN ARROW	127			118		103			133											

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	Ø 3 3A	Ø 3 3B	Ø 3 3C	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B		NOT USED	NOT USED	Ø 3 3D	Ø 4 4B,4C							ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	Ø 5 5B	Ø 6 6B												

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	-	-	X	-	X	-
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
3A	TB4-1,2	I4U	47	9	6	3	3.0	-	X	-	X	-
3B	TB4-5,6	I5U	58	20	7	3	-	-	X	-	X	-
3C	TB4-9,10	I6U	41	3	8	3	15.0	-	X	-	X	-
3D	TB4-11,12	I6L	45	7	9	3	15.0	-	X	-	X	-
4A	TB6-1,2	I7U	65	31	10	4	3.0	-	X	-	X	-
4B,4C	TB6-3,4	I7L	78	44	11	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	-	-	X	-	X	-
5B	TB3-3,4	J1L	55	17	15	5	-	-	X	-	X	-
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-

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: 04-0963
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail

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US 301
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Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-0963

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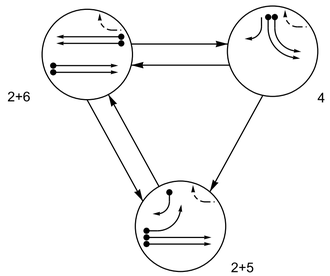
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 63.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4	FLASH
21, 22	G	G	R	R
41, 42	~~R~~	~~R~~	←	~~R~~
43	→	R	→	R
51	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.

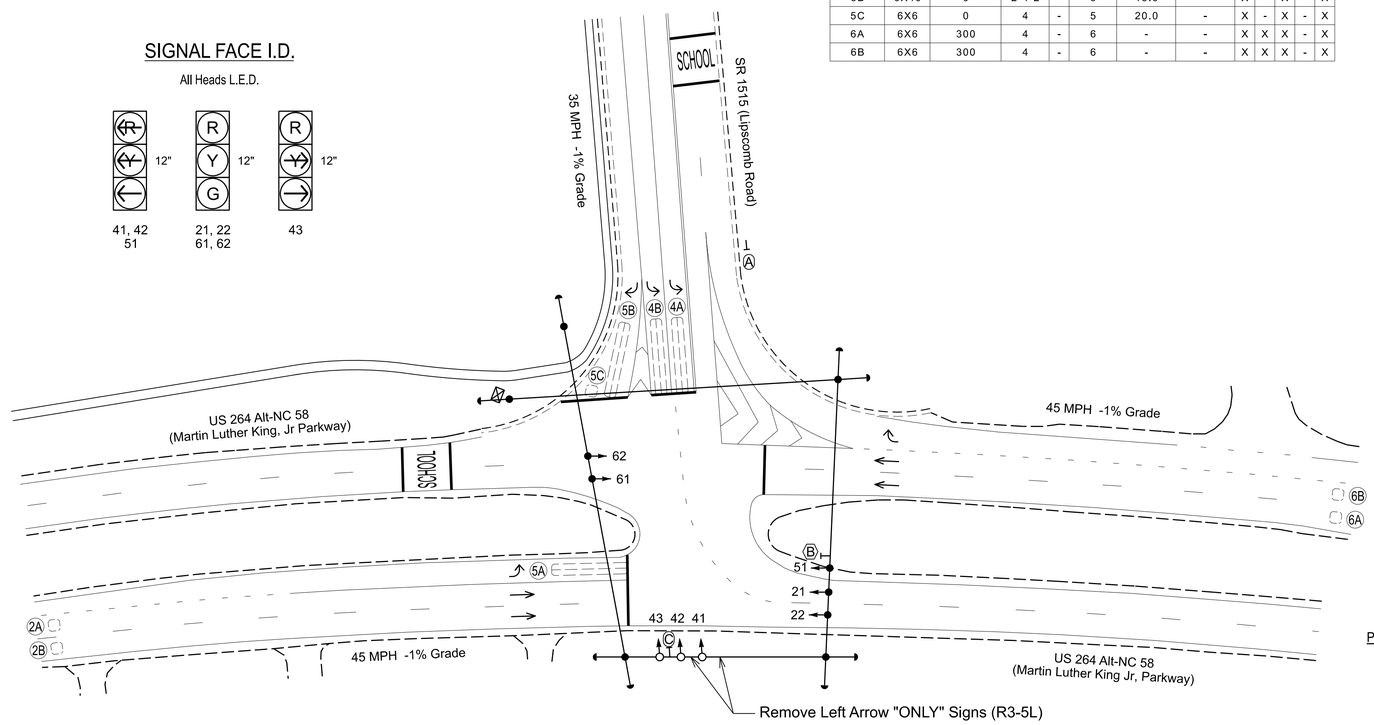
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY TURNING GREEN	NEW CARD	
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	X
5B	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
5C	6X6	0	4	-	5	20.0	-	X	-	X	-	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Existing sign C may be removed at the discretion of the Division Traffic Engineer.
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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Added Lane Sign (W4-3)	A
B	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	B
C	Right Arrow "ONLY" Sign (R3-5R)	C

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	7	12
Passage *	6.0	2.0	2.0	6.0
Max 1 *	100	30	15	100
Yellow Change	4.6	3.0	3.0	4.6
Red Clear	1.6	3.6	2.9	1.6
Added Initial *	1.5	-	-	1.5
Maximum Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Advance Walk	-	-	-	-
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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

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

SCALE 0 40 1"=40'

US 264 Alt-NC 58
(Martin Luther King, Jr Parkway)
at
SR 1515 (Lipscomb Road)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DocuSigned by: 7FFCE71C0495481...
SIG. INVENTORY NO. 04-0966

28-FEB-2025 15:28
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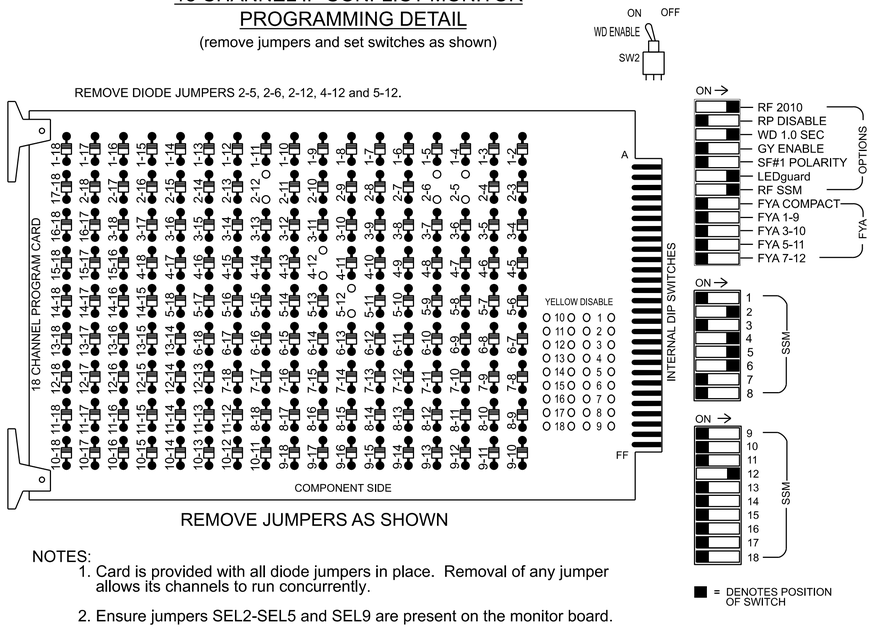
DAVIMORAY

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 63.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	NU	NU	NU	NU	NU	NU	43	NU
RED		128						134									A101	
YELLOW		129						135										
GREEN		130						136										
RED ARROW					101		131											
YELLOW ARROW					102		132										A102	
GREEN ARROW					103		133										A103	

NU = Not Used

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, S7, S8, AUX S5
Phases Used.....2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....*

*See overlap programming detail on this sheet

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 / 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 / 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS / DC ISOLATOR
	L		Ø 2 / 2B				Ø 4 / 4B								ST / DC ISOLATOR
FILE "J"	U	Ø 5 / 5A	Ø 5 / 5B	Ø 6 / 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 5 / 5C	Ø 6 / 6B											

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	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	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5			X		X	
5B	TB3-5,6	J2U	40	2	16	5	15.0		X		X	
5C	TB3-7,8	J2L	44	6	17	5	20.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	
6B	TB3-11,12	J3L	77	43	19	6			X	X	X	

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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	Normal
Included Phases	-	-	-	4, 5
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

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.

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0966
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail

Electrical and Programming Details For:

US 264 Alt-NC 58
(Martin Luther King, Jr Parkway)
at
SR 1515 (Lipscomb Road)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F8FC671C0969451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-0966

28-FEB-2025 10:30
ow:\\ncdot.com\ncdot-pw-01\Documents\Division_04\U-5945/TSMO/Signals Management/040966_sm_ele_2024mmdd.dgn
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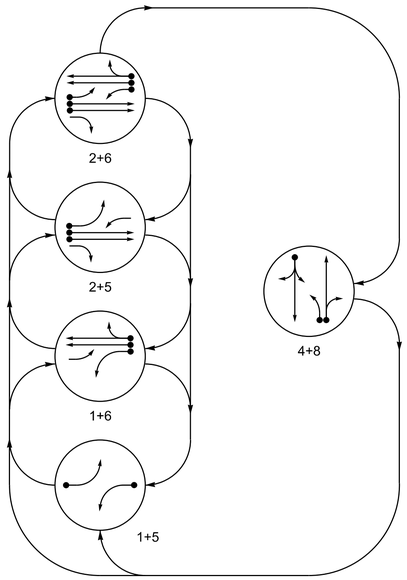
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 64.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

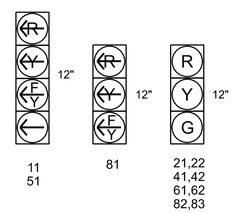
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	PHASE 1+6	PHASE 2+5	PHASE 2+6	PHASE 4+8	PHASE FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61,62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82,83	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



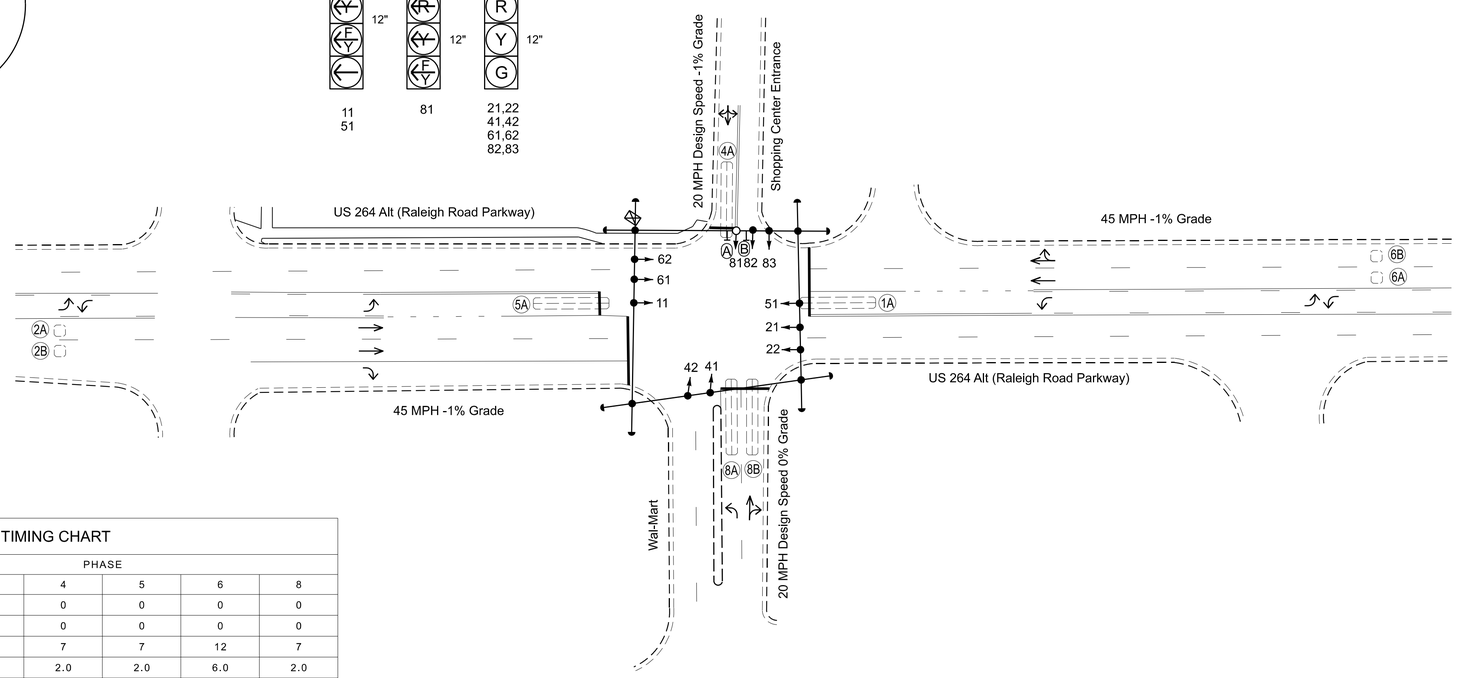
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
2A	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
2B	6X6	300	EXIST	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	5.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
6B	6X6	300	EXIST	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 81 and 82.
5. Renumber existing signal heads 81 and 82 to 82 and 83 respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operations only. Coordinated signnal system 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	Combined Through and Right Arrow Sign (R3-6R)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	15	90	20	15	90	20
Yellow Change	3.0	4.6	3.0	3.0	4.6	3.0
Red Clear	2.4	1.3	2.9	2.9	1.3	2.9
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

US 264 Alt (Raleigh Road Parkway)
at
Walmart / Shopping Center Entrance

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F8FC57FCD69451...
2/28/2025
DATE

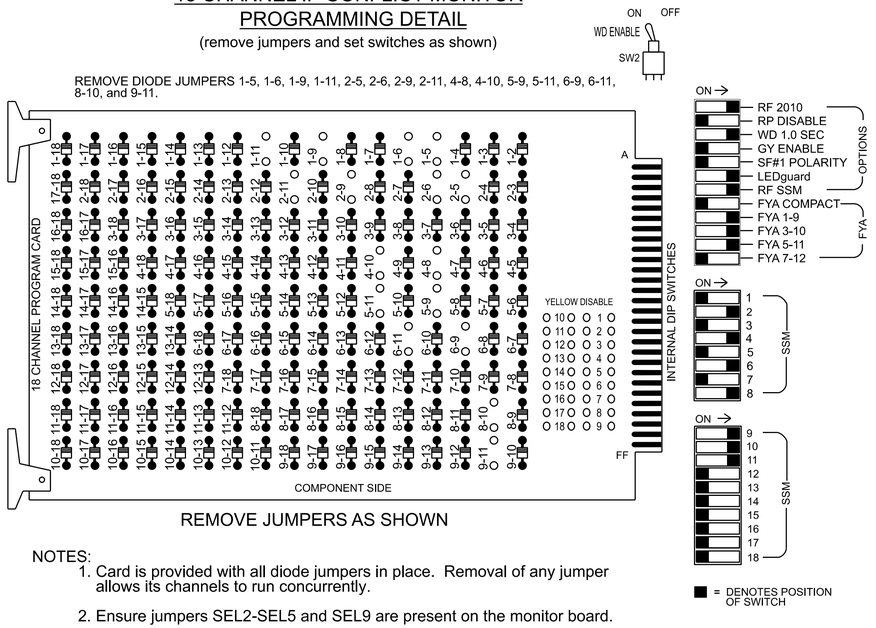
SIG. INVENTORY NO. 04-1008

Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 64.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S1, AUX S2, AUX S4
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

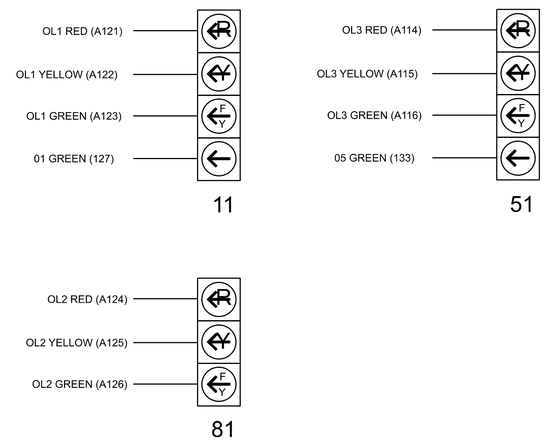
SIGNAL HEAD HOOK-UP CHART

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.	11★	21,22	NU	NU	41,42	NU	51★	61,62	NU	NU	82,83	NU	11★	81★	NU	51★	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114		
YELLOW ARROW													A122	A125		A115		
FLASHING YELLOW ARROW													A123	A126		A116		
GREEN ARROW	127						133											

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

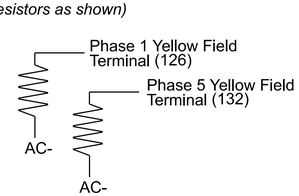
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	5.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-1008
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

US 264 Alt (Raleigh Road Parkway)
at
Walmart / Shopping Center Entrance

Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F8FC671C0969451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-1008

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

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 64.2

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Off
Included Phases	2	4	6	-
Modifier Phases	1	-	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

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.

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: 04-1008
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
Walmart / Shopping Center Entrance

Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
DocuSigned by: 4BF2A71C0B9B4A1...
DATE

SIG. INVENTORY NO. 04-1008

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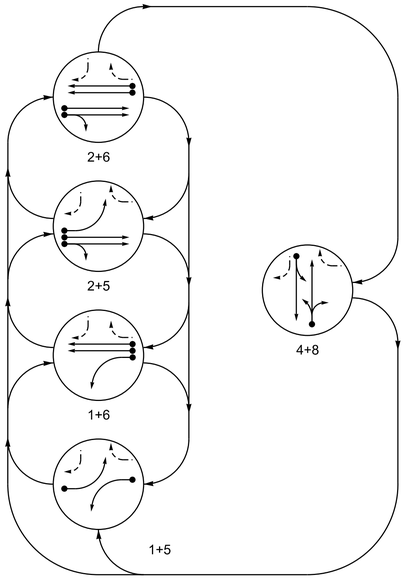
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 65.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R
41, 42	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R
81, 82	R	R	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.

11
51

21, 22
41, 42
61, 62
81, 82

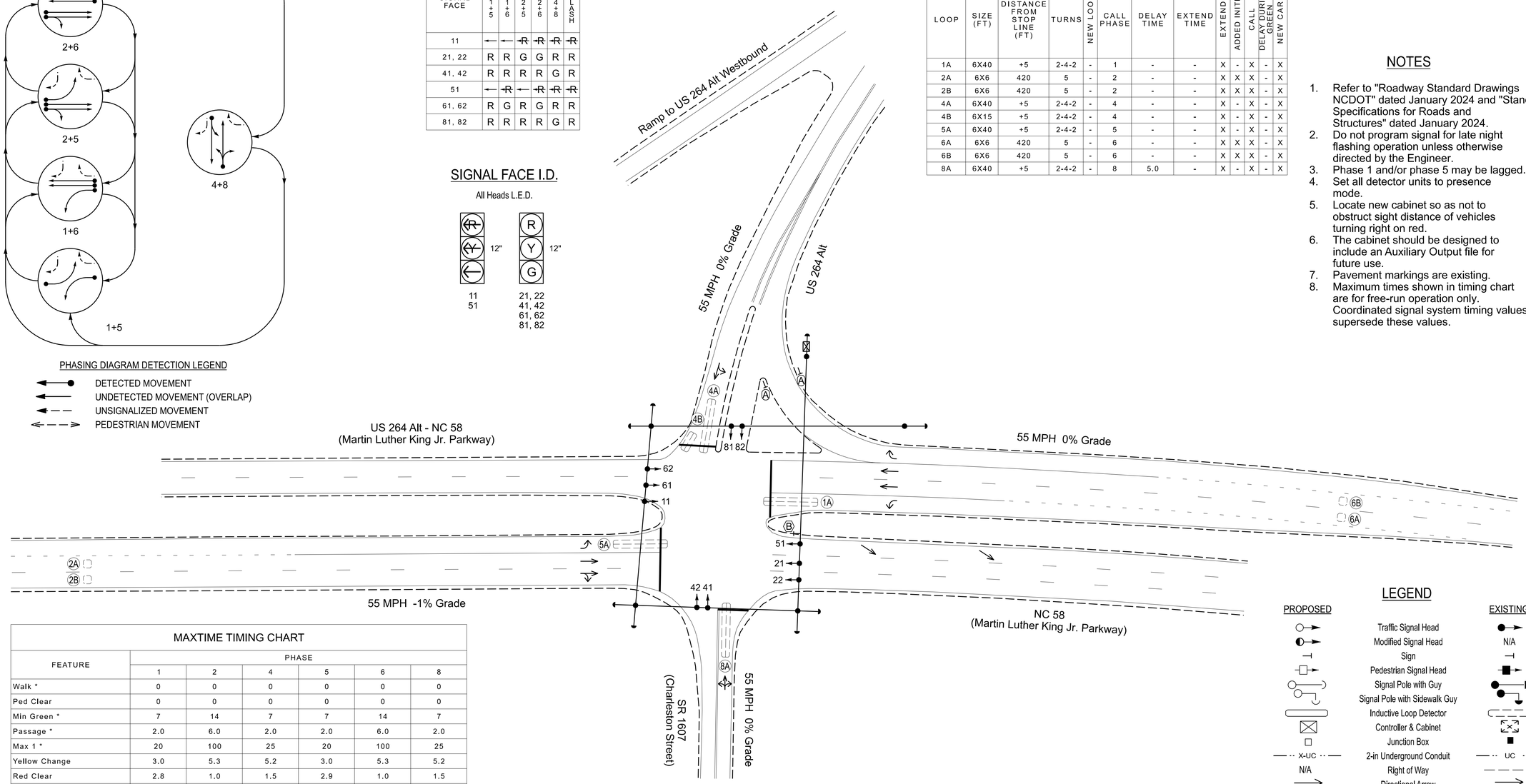
MAXTIME DETECTOR INSTALLATION CHART

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
1A	6X40	+5	2-4-2	-	1	-	-	X	-	X	-	X
2A	6X6	420	5	-	2	-	-	X	X	X	-	X
2B	6X6	420	5	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	-	-	X	-	X	-	X
4B	6X15	+5	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	-	-	X	-	X	-	X
6A	6X6	420	5	-	6	-	-	X	X	X	-	X
6B	6X6	420	5	-	6	-	-	X	X	X	-	X
8A	6X40	+5	2-4-2	-	8	5.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. The cabinet should be designed to include an Auxiliary Output file for future use.
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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"YIELD" Sign (R1-2)	A
B	Left Arrow "ONLY" Sign (R3-5L)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	14	7	7	14	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	20	100	25	20	100	25
Yellow Change	3.0	5.3	5.2	3.0	5.3	5.2
Red Clear	2.8	1.0	1.5	2.9	1.0	1.5
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	46	-	-	46	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	50	-	-	50	-
Minimum Gap	-	3.4	-	-	3.4	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

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Signal Upgrade

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

SCALE 0 40 1"=40'

US 264 Alt - NC 58/NC 58
(Martin Luther King Jr. Parkway)
at
US 264 Alt/SR 1607 (Charleston Street)

Division 4 Wilson County Wilson

PLAN DATE:	August 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
F8FC87C0B69451...
2/28/2025
DATE

SIG. INVENTORY NO. 04-1011

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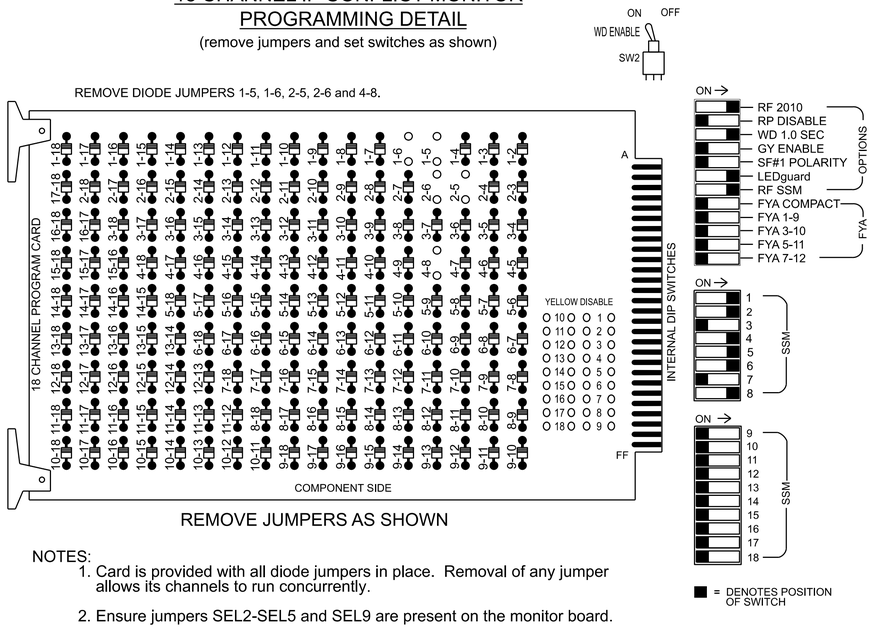
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 65.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131											
YELLOW ARROW	126						132											
GREEN ARROW	127						133											

NU = Not Used

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, S11
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				NOT USED								

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
1A	TB2-1,2	I1U	56	18	1	1			X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4			X		X	
4B	TB4-11,12	I6L	45	7	9	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5			X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	5.0		X		X	

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: 04-1011
DESIGNED: AUGUST 2024
SEALED: 02-28-2025
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail

Electrical and Programming Details For:

US 264 Alt - NC 58/NC 58
(Martin Luther King Jr. Parkway)
at
US 264 Alt/SR 1607 (Charleston Street)

Division 4 Wilson County Wilson

PLAN DATE:	November 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-1011

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1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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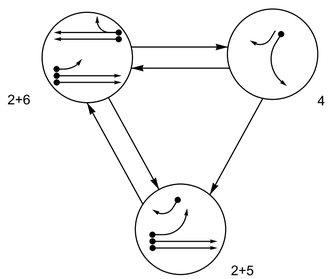
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 66.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4	FLASH
21, 22	G	G	R	R
41, 42	~~R~~	~~R~~	←	~~R~~
43	→	R	→	R
51	←	F Y	~~R~~	~~R~~
61, 62	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.

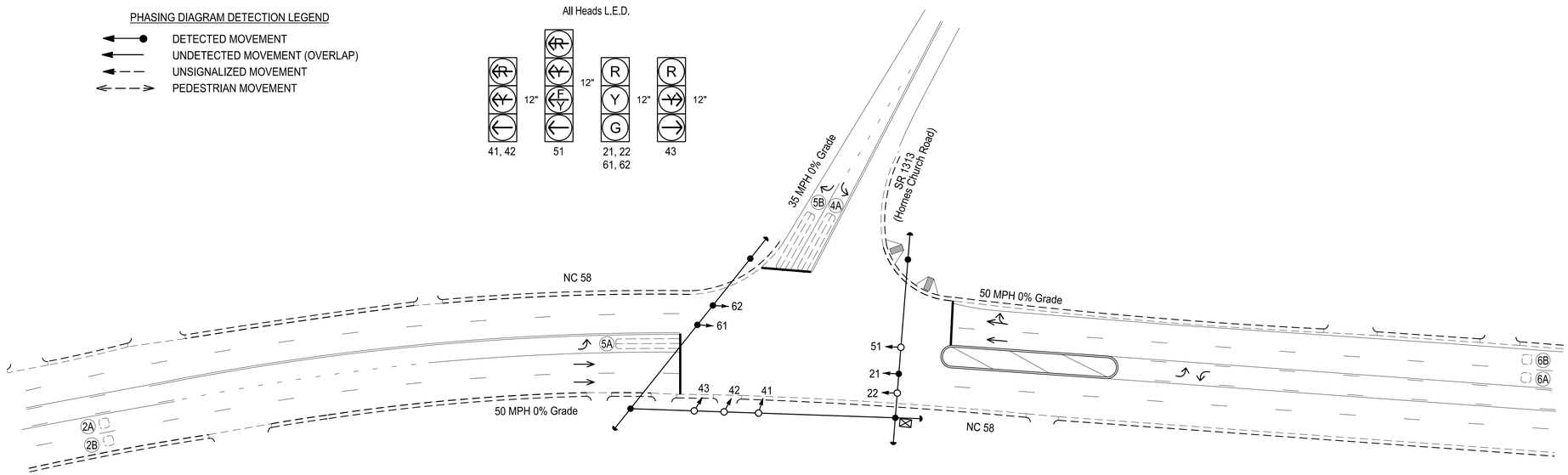
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
2A	6X6	355	5	-	2	-	-	X	X	X	-	X
2B	6X6	355	5	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
5B	6X40	0	2-4-2	-	5	15.0	-	X	-	X	-	X
6A	6X6	355	5	-	6	-	-	X	X	X	-	X
6B	6X6	355	5	-	6	-	-	X	X	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	14	7	7	14
Passage *	6.0	2.0	2.0	6.0
Max 1 *	90	20	15	90
Yellow Change	4.8	3.0	3.0	4.8
Red Clear	1.8	2.9	2.9	1.8
Added Initial *	1.8	-	-	1.8
Maximum Initial *	40	-	-	40
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Advance Walk	-	-	-	-
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.

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Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

NC 58
at
SR 1313 (Hornes Church Road)

Division 4 Wilson County Wilson

PLAN DATE:	October 2024	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
SIGNATURE/STAMP DATE

SIG. INVENTORY NO. 04-1022

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DAN NIMMER

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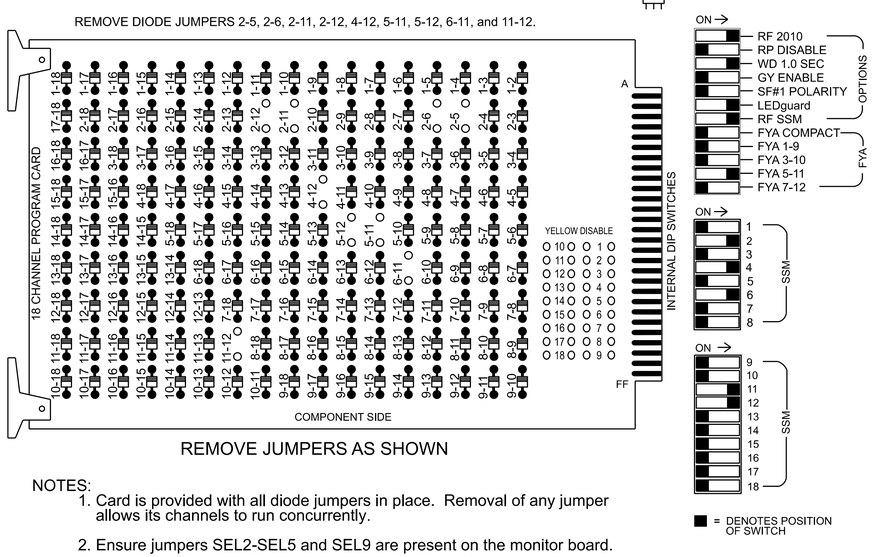
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 66.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail this sheet

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	NU	51★	61,62	NU	NU	NU	NU	NU	NU	NU	51★	43	NU
RED		128						134									A101	
YELLOW		129					*	135										
GREEN		130						136										
RED ARROW					101											A114		
YELLOW ARROW					102											A115	A102	
FLASHING YELLOW ARROW																A116		
GREEN ARROW					103		133										A103	

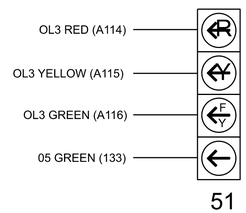
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

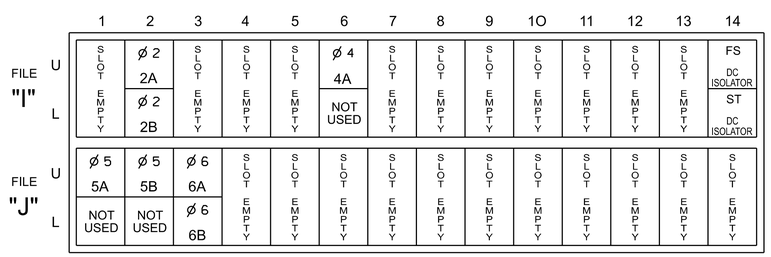
FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

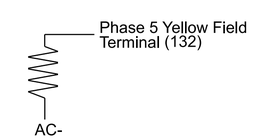
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0	-	X	-	X	-
6A	TB3-9,10	J3U	64	30	18	6	-	-	X	X	X	-
6B	TB3-11,12	J3L	77	43	19	6	-	-	X	X	X	-

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)



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	FYA 4 - Section	Normal
Included Phases	-	-	6	4,5
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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1022
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

NC 58
at
SR 1313 (Hornes Church Road)

Division 4 | Wilson County | Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

Signed by: James Stiff
DocuSigned by: 9C38A87A783440...
2/28/2025
DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

SIG. INVENTORY NO. 04-1022

28-FEB-2025 10:35
dgn:T:\Corporate\Traffic Operations\Division_04\U-5945/TSMO/Signals Management/041022_sm_ele_2025mmdd.dgn
DATA6467

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 66.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1022
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:

Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals & Signals Management Section
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Pkwy, Garner, NC 27529

NC 58
at
SR 1313 (Hornes Church Road)

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
BC38A67A783AC0...
2/28/2025
DATE

SIG. INVENTORY NO. 04-1022

28-FEB-2025 10:35
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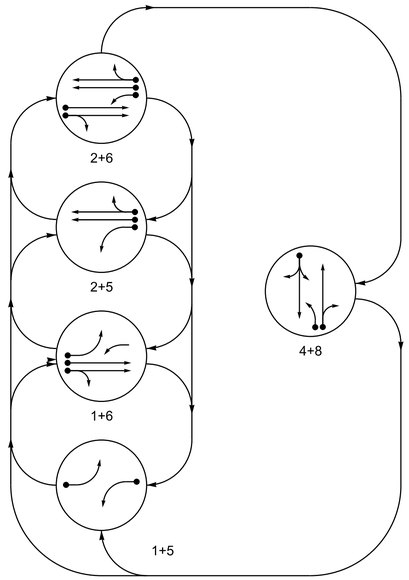
Docusign Envelope ID: F52132F5-6756-4863-B966-BBCDACC7AD0A

PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 67.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

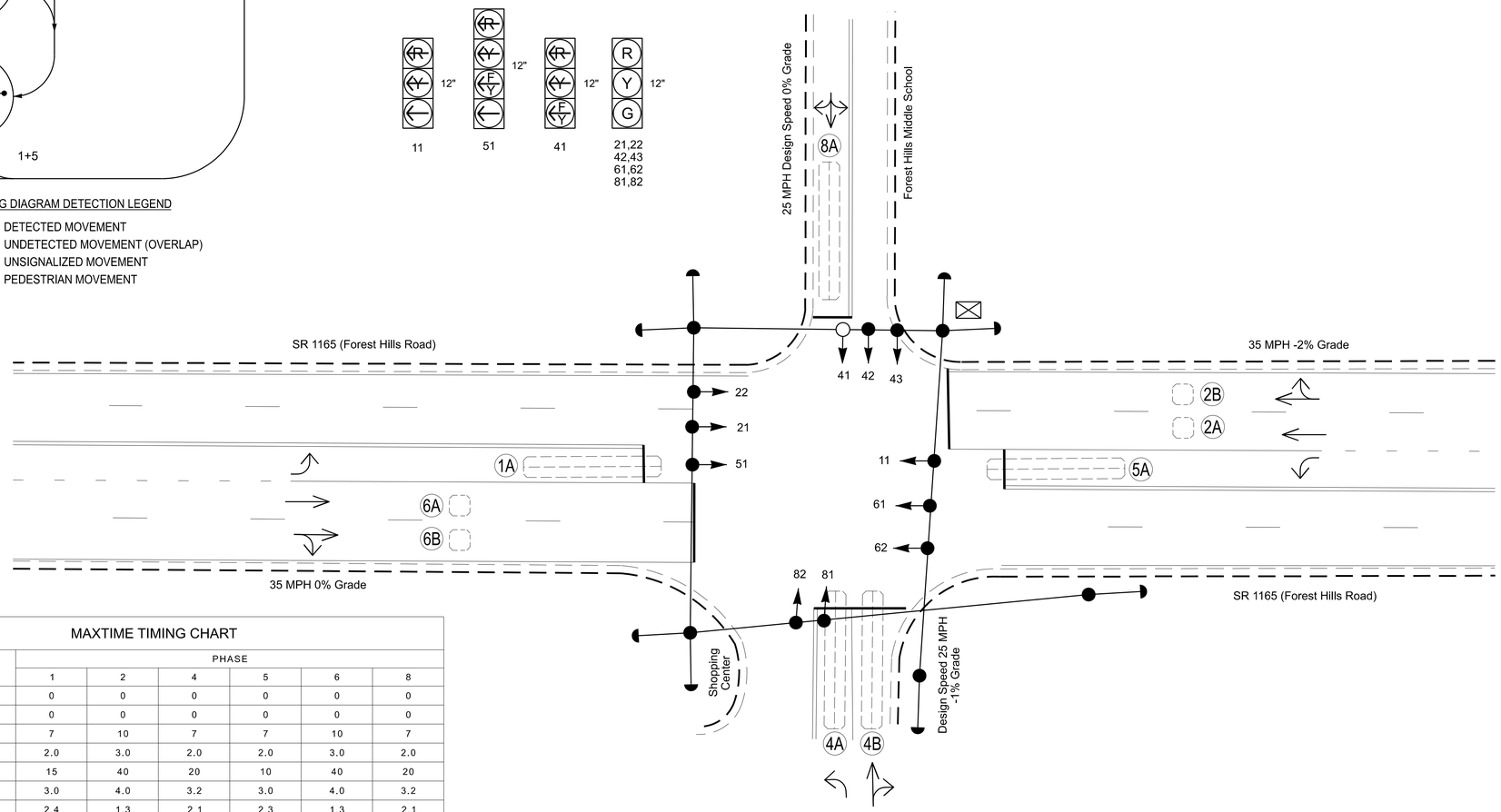
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD
1A	6X40	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A,2B	6X6	70	3	-	2	-	-	X	-	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	-	-	X	-	X	-	X
6A,6B	6X6	70	3	-	6	-	-	X	-	X	-	X
8A	6X40	5	2-4-2	-	8	3.0	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41 and 42.
5. Renumber existing signal heads 41 and 42 to 42 and 43 respectively.
6. Renumber loops 4A and 4B to 4B and 4A respectively.
7. Set all detector units to presence mode.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Pavement markings are existing.
10. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	10	7	7	10	7
Passage *	2.0	3.0	2.0	2.0	3.0	2.0
Max 1 *	15	40	20	10	40	20
Yellow Change	3.0	4.0	3.2	3.0	4.0	3.2
Red Clear	2.4	1.3	2.1	2.3	1.3	2.1
Added Initial *	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1"=20'

SR 1165 (Forest Hills Road) at Forest Hills Middle School / Shopping Center

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
F8FC57FC0969451...
DATE

SIG. INVENTORY NO. 04-1031

28-FEB-2025 10:26
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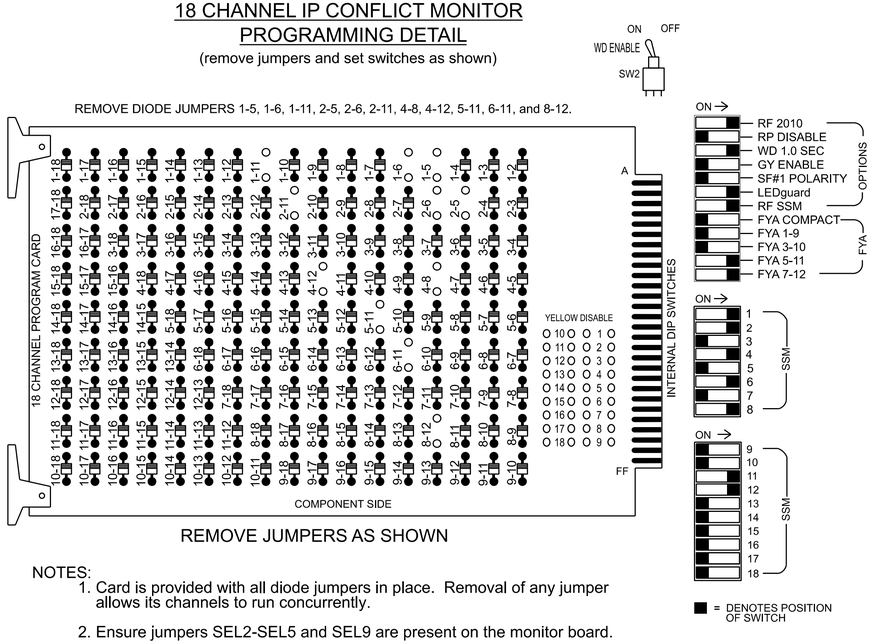
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 67.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S4, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail this sheet

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	NU	42,43	NU	51★	61,62	NU	NU	81,82	NU	NU	NU	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW	125															A114	A101	
YELLOW ARROW	126															A115	A102	
FLASHING YELLOW ARROW																A116	A103	
GREEN ARROW	127						133											

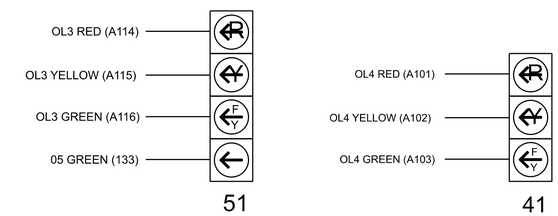
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A, 2B	SLOT	SLOT	SLOT	Ø 4 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	NOT USED	NOT USED	EMPTY	EMPTY	EMPTY	Ø 4 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A, 6B	SLOT	SLOT	SLOT	Ø 8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	NOT USED	EMPTY	EMPTY	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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

FS = FLASH SENSE
ST = STOP TIME

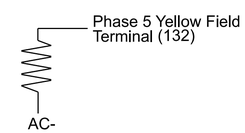
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB2-1,2	I1U	56	18	1	1	3.0	-	X	-	X	-
2A, 2B	TB2-5,6	I2U	39	1	2	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	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	-	-	X	-	X	-
6A, 6B	TB3-5,6	J2U	40	2	16	6	-	-	X	-	X	-
8A	TB5-9,10	J6U	42	4	22	8	3.0	-	X	-	X	-

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)

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	FYA 4 - Section	FYA 4 - Section
Included Phases	-	-	6	8
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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1031
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

SR 1165 (Forest Hills Road)
at
Forest Hills Middle School / Shopping Center

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
PROFESSIONAL ENGINEER DATE

SIG. INVENTORY NO. 04-1031

28-FEB-2025 10:36
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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 67.2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1031
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1165 (Forest Hills Road)
at
Forest Hills Middle School / Shopping Center

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	MF Evans	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-1031

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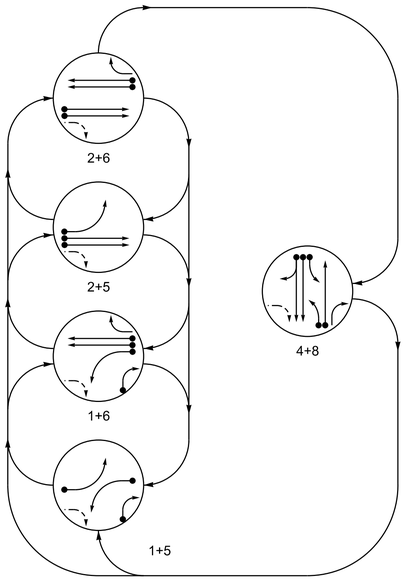
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 68.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	~~F Y~~	~~R~~
42, 43	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R
63	R	~~F Y~~	R	~~F Y~~	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	~~F Y~~	~~R~~
82, 83	R	R	R	R	G	R
84	→	→	R	R	~~F Y~~	R

SIGNAL FACE I.D.

All Heads L.E.D.

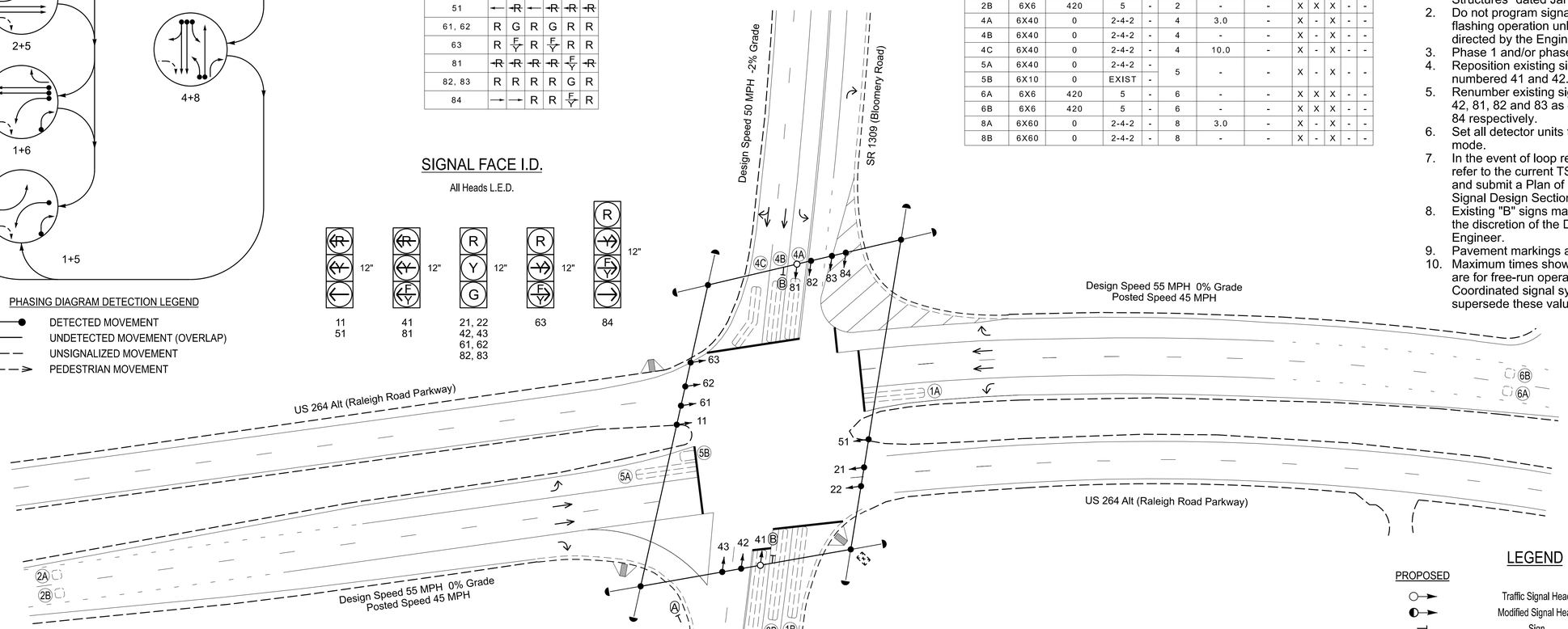
MAXTIME DETECTOR INSTALLATION CHART

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	NEW CARD	
1A	6X40	0	2-4-2	-	1	-	-	X	-	X	-	-
1B	6X60	0	2-4-2	-	1	15.0	-	X	-	X	-	-
2A	6X6	420	5	-	2	-	-	X	X	X	-	-
2B	6X6	420	5	-	2	-	-	X	X	X	-	-
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	-
4B	6X40	0	2-4-2	-	4	-	-	X	-	X	-	-
4C	6X40	0	2-4-2	-	4	10.0	-	X	-	X	-	-
5A	6X40	0	2-4-2	-	5	-	-	X	-	X	-	-
5B	6X10	0	EXIST	-								
6A	6X6	420	5	-	6	-	-	X	X	X	-	-
6B	6X6	420	5	-	6	-	-	X	X	X	-	-
8A	6X60	0	2-4-2	-	8	3.0	-	X	-	X	-	-
8B	6X60	0	2-4-2	-	8	-	-	X	-	X	-	-

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41 and 42.
5. Renumber existing signal heads 41, 42, 81, 82 and 83 as 42, 43, 82, 83 and 84 respectively.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
8. Existing "B" signs may be removed at the discretion of the Division Traffic Engineer.
9. Pavement markings are existing.
10. 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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
A	"YIELD" Sign (R1-2)	A
B	Left Arrow "ONLY" Sign (R3-5L)	B

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	14	7	7	14	7
Passage *	2.0	6.0	2.0	2.0	6.0	1.0
Max 1 *	15	125	25	15	125	25
Yellow Change	3.0	5.2	5.0	3.0	5.2	5.0
Red Clear	3.3	1.3	1.8	3.4	1.3	1.8
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	46	-	-	46	-
Time Before Reduction *	-	25	-	-	25	-
Time To Reduce *	-	50	-	-	50	-
Minimum Gap	-	3.4	-	-	3.4	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

Signal Upgrade

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AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

US 264 Alt (Raleigh Road Parkway)
at
SR 1157 (Merck Road)/
SR 1309 (Bloomery Road)

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-1032

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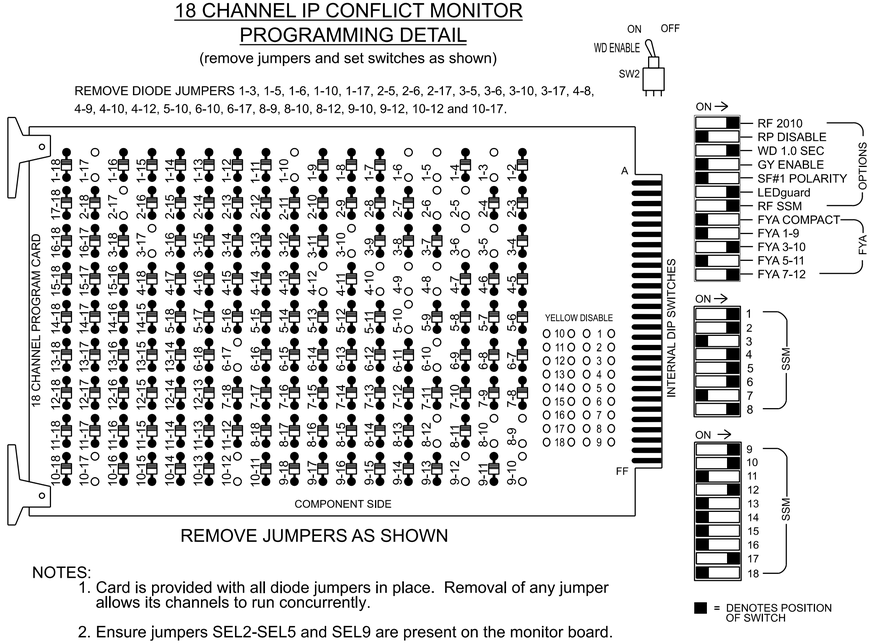
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 68.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-3, 1-5, 1-6, 1-10, 1-17, 2-5, 2-6, 2-17, 3-5, 3-6, 3-10, 3-17, 4-8, 4-9, 4-10, 4-12, 5-10, 6-10, 6-17, 8-9, 8-10, 8-12, 9-10, 9-12, 10-12 and 10-17.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S2, AUX S3, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....*
Overlap "5".....*
Overlap "6".....NOT USED
Overlap "7".....*

*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	OL7	4	4 PED	5	6	8 PED	7	8	8 PED	OL1	OL2	OL5	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	84★	42,43	NU	51	61,62	NU	NU	82,83	NU	81★	84★	63★	NU	41★	NU
RED		128			101			134			107			A124	A111			
YELLOW		129		*	102			135			108							
GREEN		130			103			136			109							
RED ARROW	125						131						A121				A101	
YELLOW ARROW	126						132						A122	A125	A112		A102	
FLASHING YELLOW ARROW													A123	A126	A113		A103	
GREEN ARROW	127			118			133											

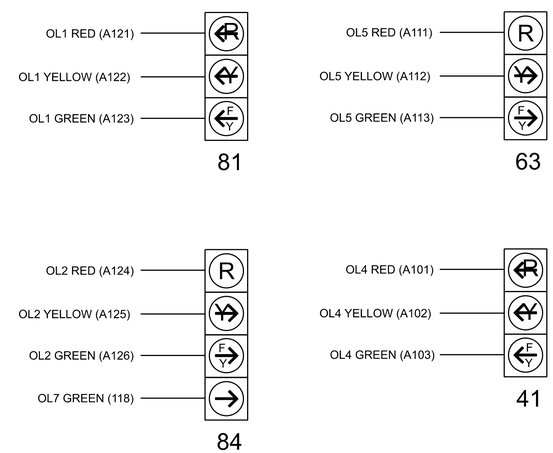
NU = Not Used

* 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	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	Ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B	NOT USED							ST DC ISOLATOR
FILE "J"	U	Ø 5 5A,5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	Ø 1 1B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B	NOT USED							

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

FS = FLASH SENSE
ST = STOP TIME

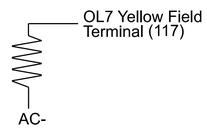
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB2-1,2	I1U	56	18	1	1			X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4			X		X	
4C	TB6-1,2	I7U	65	31	10	4	10.0		X		X	
5A, 5B	TB3-1,2	J1U	55	17	15	5			X		X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	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	
1B	TB7-1,2	J7U	66	32	24	1	15.0		X		X	

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: 04-1032
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

US 264 Alt (Raleigh Road Parkway)
at
SR 1157 (Merck Road)/
SR 1309 (Bloomery Road)

Division 4 Wilson County Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

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OUTPUT CHANNEL CONFIGURATION

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

Web Interface
Home >Controller >Advanced IO>Channels>Channels 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	Overlap	7		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

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 3 → (Overlap 7 / Channel 3)

NOTICE OVERLAP 5 ASSIGNED TO CHANNEL 17 → (Overlap 5 / Channel 17)

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	6	7
Type	FYA 4 - Section	FYA 4 - Section	Off	FYA 4 - Section	FYA 4 - Section	Off	Normal
Included Phases	4	8	-	8	6	-	1
Modifier Phases	-	1	-	-	-	-	-
Modifier Overlaps	-	-	-	-	-	-	-
Trail Green	0	0	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1032
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

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Division 4 | Wilson County | Wilson

PLAN DATE:	December 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-1032

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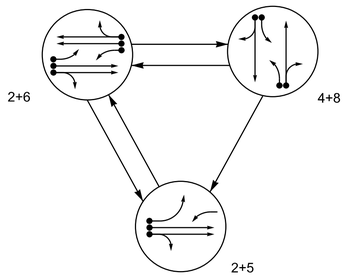
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 69.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

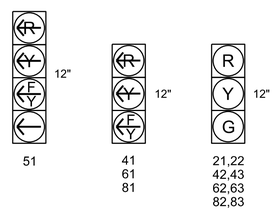
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+5	PHASE 2+6	PHASE 4+8	FLASH
21,22	G	G	R	R
41	~~R~~	~~R~~	F Y	~~R~~
42,43	R	R	G	R
51	←	F Y	~~R~~	~~R~~
61	F Y	F Y	~~R~~	~~R~~
62,63	R	G	R	R
81	~~R~~	~~R~~	F Y	~~R~~
82,83	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



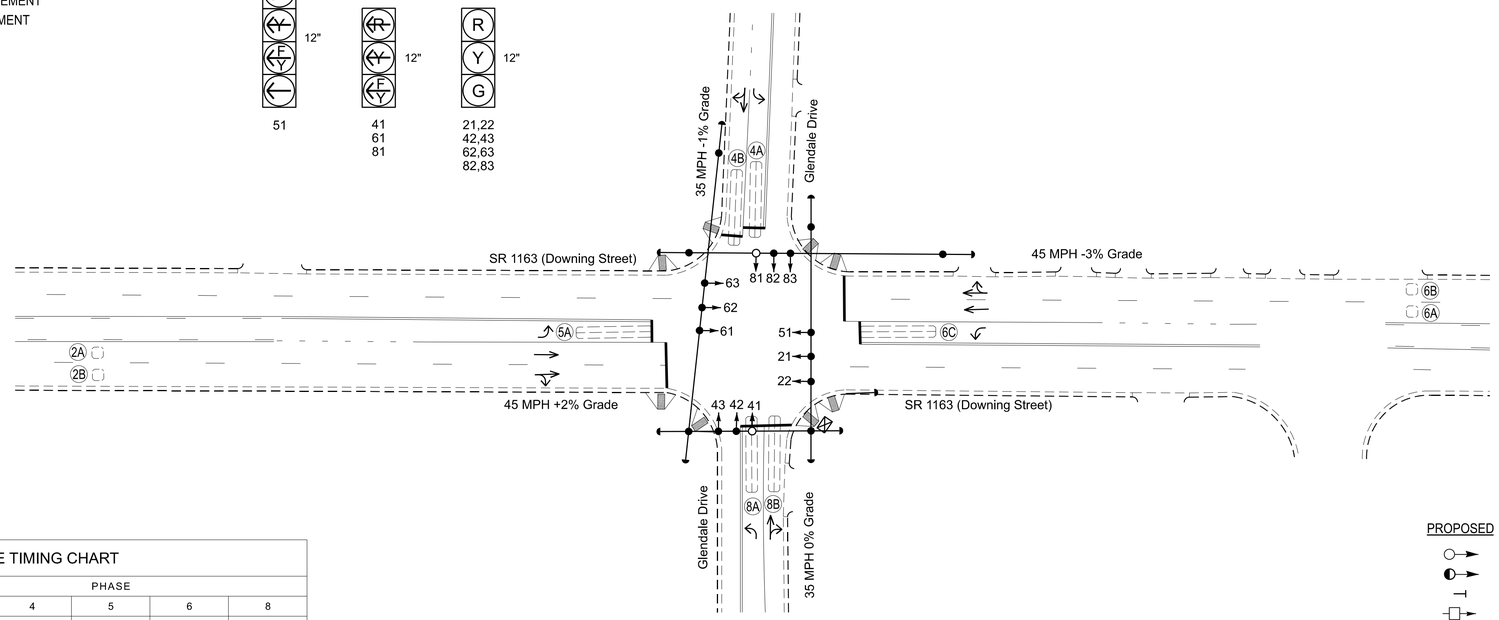
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL VOLT DELAY/TIMING	NEW CARD
2A	6X6	300	5	-	2	-	-	X	X	X	-	X
2B	6X6	300	5	-	2	-	-	X	X	X	-	X
4A	6X40	+5	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	0	2-4-2	-	5	10.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	5	-	6	-	-	X	X	X	-	X
6B	6X6	300	5	-	6	-	-	X	X	X	-	X
6C	6X40	0	2-4-2	-	6	3.0	-	X	-	X	X	X
8A	6X40	+5	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	10.0	-	X	-	X	-	X

3 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 41, 42, 81 and 82.
5. Renumber existing signal heads numbered 41, 42, 81 and 82 to 42, 43, 82 and 83 respectively.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Min Green *	12	7	7	12	7
Passage *	6.0	2.0	2.0	6.0	2.0
Max 1 *	90	25	15	90	25
Yellow Change	4.8	3.9	3.0	4.8	3.9
Red Clear	1.1	1.7	2.4	1.1	1.7
Added Initial *	1.5	-	-	1.5	-
Maximum Initial *	34	-	-	34	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	30	-	-	30	-
Minimum Gap	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Curb Ramp	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40
1"=40'

SR 1163 (Downing Street)
at
Glendale Drive

Division 4	Wilson County		Wilson
PLAN DATE: October 2024		REVIEWED BY: JT Stiff	
PREPARED BY: JT Sutton		REVIEWED BY: PL Alexander	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff
9C3B8497A764400...
2/28/2025
DATE

SIG. INVENTORY NO. 04-1039

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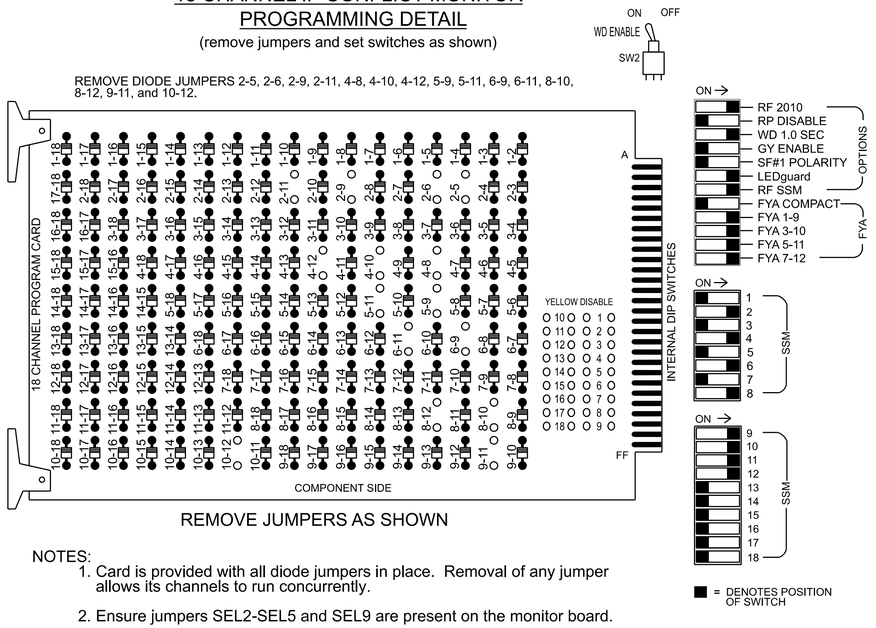
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 69.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S7, S8, S11, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

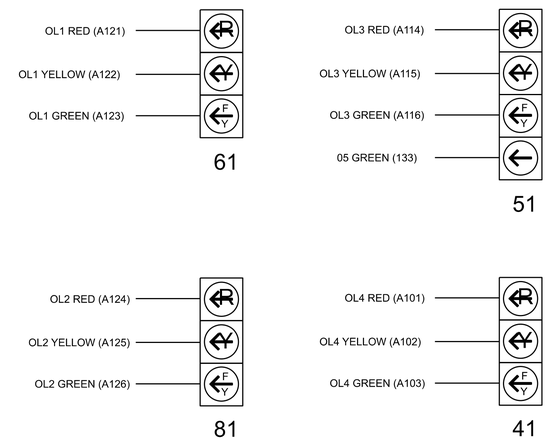
SIGNAL HEAD HOOK-UP CHART

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	NU	NU	42,43	NU	51★	62,63	NU	NU	82,83	NU	61★	81★	NU	51★	41★	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW							133											

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	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	ø 2 / 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 4 / 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		ø 2 / 2B				ø 4 / 4B								ST DC ISOLATOR
FILE "J"	U	ø 5 / 5A	ø 6 / 6A	ø 6 / 6C	SLOT EMPTY	SLOT EMPTY	ø 8 / 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	ø 6 / 6B	NOT USED			ø 8 / 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

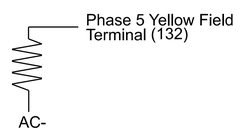
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2	-	-	X	X	X	-
2B	TB2-7,8	I2L	43	5	3	2	-	-	X	X	X	-
4A	TB4-9,10	I6U	41	3	8	4	3.0	-	X	-	X	-
4B	TB4-11,12	I6L	45	7	9	4	10.0	-	X	-	X	-
5A	TB3-1,2	J1U	55	17	15	5	10.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	X	X	-
6C	TB3-9,10	J3U	64	30	18	6	3.0	-	X	-	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	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-1039
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1163 (Downing Street) at Glendale Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by: James Stiff 2/28/2025
DC38847A763AC0...
DATE

SIG. INVENTORY NO. 04-1039

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 69.2

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
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

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.

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: 04-1039
DESIGNED: OCTOBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

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

SR 1163 (Downing Street)
at
Glendale Drive

Division 4 Wilson County Wilson

PLAN DATE:	January 2025	REVIEWED BY:	JT Stiff
PREPARED BY:	MR Day	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 056276 ENGINEER JAMES T. STIFF

Signed by:
James Stiff
4C0B4BFA7A3A4C...
2/28/2025
DATE

SIG. INVENTORY NO. 04-1039

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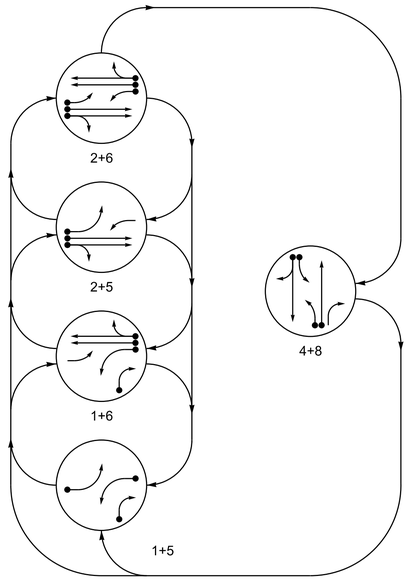
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 70.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~
21, 22	R	R	G	G	R	R
41	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
42, 43	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~
61, 62	R	G	R	G	R	R
81	~~R~~	~~R~~	~~R~~	~~R~~	F Y	~~R~~
82	R	R	R	R	G	R
83	R / ←	R / ←	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

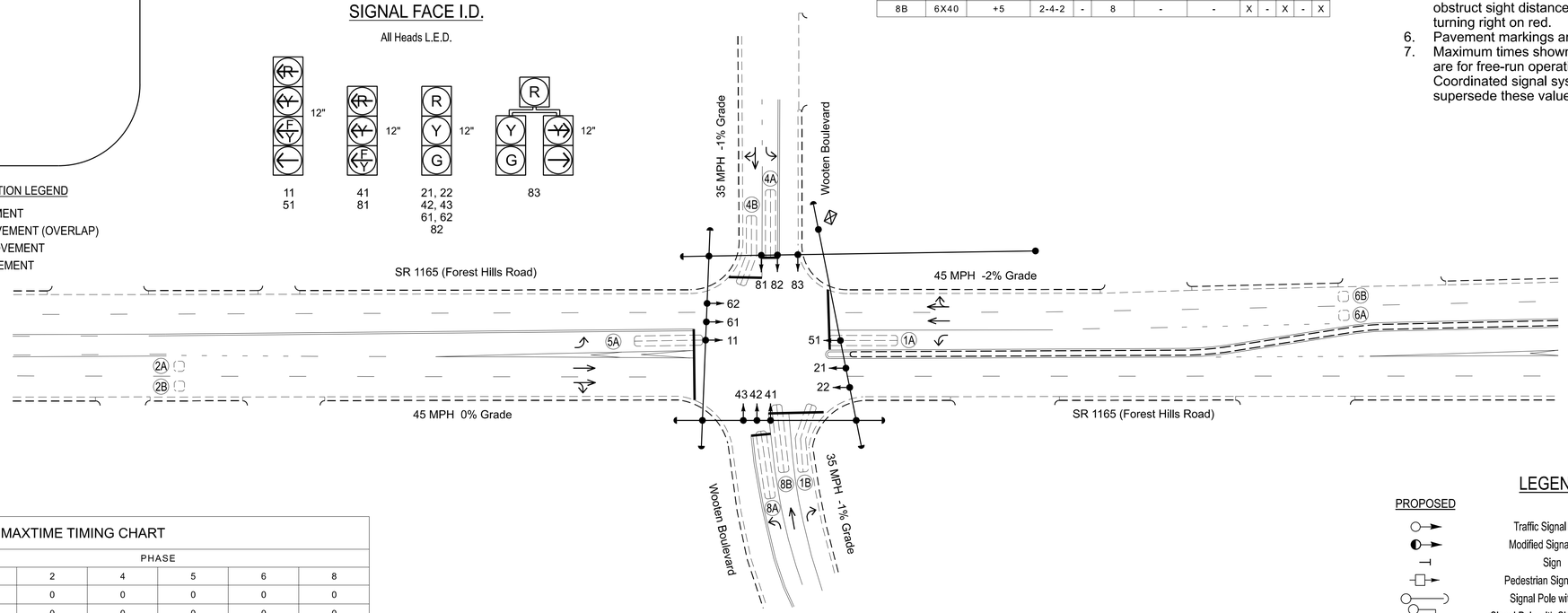
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR: LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0	-	X	-	X	-	X
					6	3.0	-	X	-	X	X	X
1B	6X40	+5	2-4-2	-	1	15.0	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
2B	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	-	4	3.0	-	X	-	X	-	X
4B	6X40	+5	2-4-2	-	4	10.0	-	X	-	X	-	X
5A	6X40	+5	2-4-2	-	5	15.0	-	X	-	X	-	X
					2	3.0	-	X	-	X	X	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
6B	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X40	+2	2-4-2	-	8	3.0	-	X	-	X	-	X
8B	6X40	+5	2-4-2	-	8	-	-	X	-	X	-	X

5 Phase
Fully Actuated
Wilson Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	20	90	30	15	90	30
Yellow Change	3.0	4.7	3.9	3.0	4.7	3.9
Red Clear	2.3	1.0	1.5	2.1	1.0	1.5
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Advance Walk	-	-	-	-	-	-
Non Lock Detector	X	-	X	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.

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	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1165 (Forest Hills Road)
at
Wooten Boulevard

Division 4 Wilson County Wilson

PLAN DATE:	September 2024	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Stiff	REVIEWED BY:	PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams
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2/28/2025
DATE

SIG. INVENTORY NO. 04-1044

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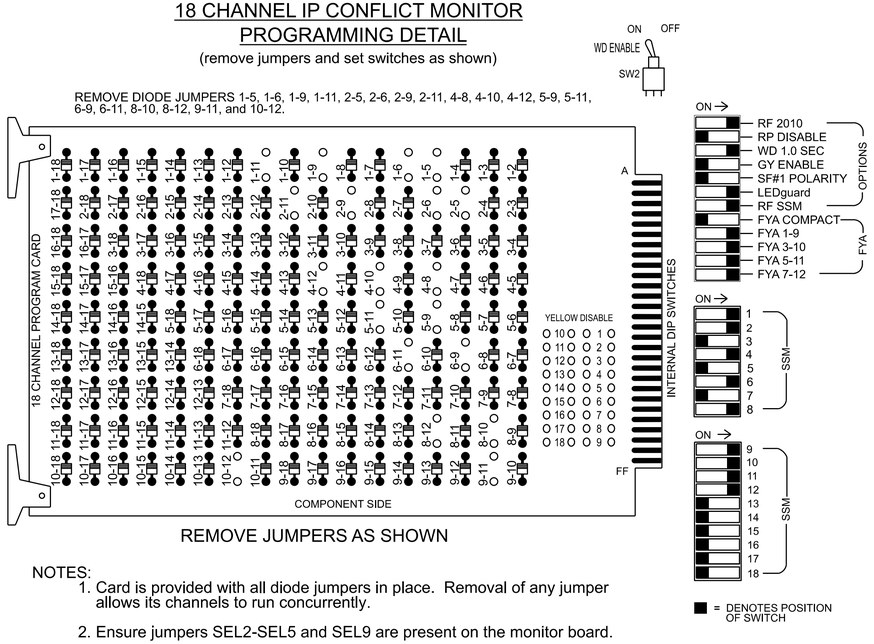
PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 70.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Wilson Signal System.

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, S11, AUX S1
AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

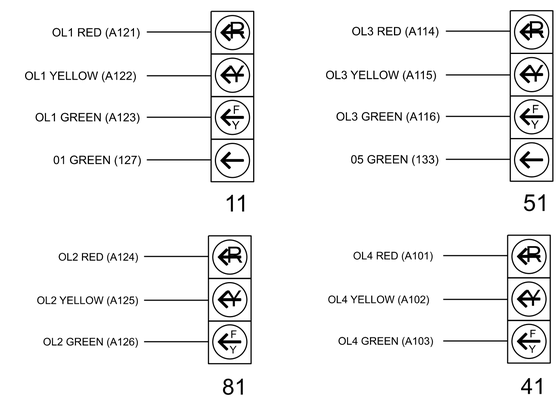
SIGNAL HEAD HOOK-UP CHART

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.	11★	83	21,22	NU	NU	42,43	NU	51★	61,62	NU	NU	82,83	NU	11★	81★	NU	51★	41★	NU
RED		*	128			101			134			107							
YELLOW			129			102		*	135			108							
GREEN			130			103			136			109							
RED ARROW														A121	A124		A114	A101	
YELLOW ARROW		126												A122	A125		A115	A102	
FLASHING YELLOW ARROW														A123	A126		A116	A103	
GREEN ARROW	127	127						133											

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø 2 2B			Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B				Ø 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

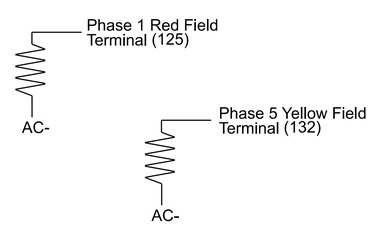
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1	1	15.0	-	X	-	X	-
				-	29	6	3.0	-	X	-	X	X
1B	TB2-5,6	I2U	39	1	2	1	15.0	-	X	-	X	-
2A	TB2-9,10	I3U	63	29	4	2	-	-	X	X	X	-
2B	TB2-11,12	I3L	76	42	5	2	-	-	X	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	-
5A	TB3-1,2	J1U	55	17	15	5	15.0	-	X	-	X	-
				-	31	2	3.0	-	X	-	X	X
6A	TB3-5,6	J2U	40	2	16	6	-	-	X	X	X	-
6B	TB3-7,8	J2L	44	6	17	6	-	-	X	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	-

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-1044
DESIGNED: SEPTEMBER 2024
SEALED: 02-28-2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Electrical and Programming Details For:

SR 1165 (Forest Hills Road)
at
Wooten Boulevard

Division 4 | Wilson County | Wilson

PLAN DATE:	January 2025	REVIEWED BY:	TJ Williams
PREPARED BY:	JT Sutton	REVIEWED BY:	PL Alexander

REVISIONS | INIT. | DATE

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

Signed by: T. J. Williams 2/28/2025
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DATE

SIG. INVENTORY NO. 04-1044

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PROJECT REFERENCE NO.	SHEET NO.
U-5945	Sig. 70.2

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

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	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	-	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

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:

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.

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