STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

February 07, 2022

Addendum No. 1
RE: Contract # C204426
WBS # 50163.3.1
STATE FUNDED
Rowan County (U-5738)
SR-2528 (JULIAN RD) FROM SR-2667 (SUMMIT PARK DR) TO US-601 (JAKE ALEXANDER BLVD) IN SALISBURY

February 15, 2022 Letting

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Signal plans.

Sheet No.	Revision
Sig 1.0	Modified to reflect elimination of sheet Sig. 11.9 (now only goes to 11.8)
Sig 9.0	Signal head 51 changed from 4-section FYA to 3-section left protected only; Phasing revised accordingly for phase 5 and also to include Alt Phasing for Phase 1
Sig 9.1	Now changed to 2nd sheet of Temp 1 Signal plan to include Alt Phasing addition
Sig 9.2-Sig 9.3	Modified Electrical Details for Phasing changes
New Sheets Sig 9.4-9.6	Sheets added as part of modified Electrical Details for Phasing changes
Sig 10.0	Signal head 51 changed from 4-section FYA to 3-section left protected only; Phasing revised accordingly for phase 5 and also to include Alt Phasing for Phase 1
Sig 10.1	Now changed to 2nd sheet of Temp 2 Signal plan to include Alt Phasing addition
Sig 10.2-10.3	Modified Electrical Details for Phasing changes
New Sheets Sig 10.4-10.6	Sheets added as part of modified Electrical Details for Phasing changes
Sig 11.0-11.1	Signal head 51 changed from 4-section FYA to 3-section left protected only; Phasing revised accordingly for phase 5 and also to include Alt Phasing for Phase 1

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

Website: www.ncdot.gov

Sheet No.	Revision
Sig 11.2-11.8	Modified Electrical Details for Phasing changes
Deleted Sheet Sig 11.9	Sheet removed as a result of phasing changes

Please void the above listed existing Sheets in your plans and staple the revised Sheets thereto. Staple New Sheets 9.4-9.6 and 10.4-10.6 in the appropriate place in your plans. Delete Sheet Sig 11.9 from your plan set.

The following revisions have been made to the proposal.

Page No.	Revision
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 02-07-2022".

Please void the above listed Page in your proposal and staple the revised Page thereto.

On the item sheets the following pay item revisions have been made:

Item	Description	Old Quantity	New Quantity
0193-7120000000-E-1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	57 EA	59 EA
0194-7132000000-E-1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	21 EA	19 EA

The Contractor's bid must include these pay item revisions.

The electronic bidding file has been updated to reflect these revisions. Please download the Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:
Ronald Davenport
F81B6038A47A442...

Ronald E. Davenport, Jr., PE
State Contract Officer

RED/jjr
Attachments

cc: Mr. Lamar Sylvester, PE
Mr. Pat Ivey, PE
Mr. Boyd Tharrington, PE
Mr. Jon Weathersbee, PE
Mr. Ken Kennedy, PE
Project File (2)
Mr. Forrest Dungan, PE
Ms. Jaci Kincaid
Ms. Lori Strickland
Mr. Mike Gwyn
Ms. Penny Higgins
Mr. Kyle Kempf

County : Rowan

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0015000000-N	205	SEALING ABANDONED WELLS	1 EA		
0004	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ********** (70+72.50 -L-)	Lump Sum	L.S.	
0005	0036000000-E	225	UNDERCUT EXCAVATION	975 CY		
0006	0043000000-N	226	GRADING	Lump Sum	L.S.	
0007	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	1 ACR		
0008	0134000000-E	240	DRAINAGE DITCH EXCAVATION	2,356 CY		
0009	0195000000-E	265	SELECT GRANULAR MATERIAL	875 CY		
0010	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	3,155 SY		
0011	0199000000-E	SP	TEMPORARY SHORING	540 SF		
0012	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	570 TON		
0013	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	1,790 SY		
0014	0343000000-E	310	15" SIDE DRAIN PIPE	668 LF		
0015	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (15")	26 EA		
0016	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (12")	56 LF		
0017	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	4,020 LF		
0018	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	188 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	320 LF		
0020	0453000000-E	310	**" PIPE END SECTION (36")	1 EA		
0021	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.500")	54 LF		
0022	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.500")	54 LF		
0023	0995000000-E	340	PIPE REMOVAL	1,473 LF		
0024	0996000000-N	350	PIPE CLEAN OUT	7 EA		
0025	1099500000-E	505	SHALLOW UNDERCUT	390 CY		
0026	1099700000-E	505	CLASS IV SUBGRADE STABILIZA-TION	780 TON		
0027	1220000000-E	545	INCIDENTAL STONE BASE	1,000 TON		
0028	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")	20,800 SY		
0029	1330000000-E	607	INCIDENTAL MILLING	500 SY		
0030	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	7,400 TON		
0031	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	7,600 TON		
0032	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	8,500 TON		
0033	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	1,275 TON		
0034	1682000000-E	652	PERMEABLE ASPHALT DRAINAGE COURSE, TYPE P-57	120 TON		
0035	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	20 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0036	1847000000-E	710	******" PORT CEM CONC PAVEMENT, THROUGH LANES (WITH DOWELS) (9")	700 SY		
0037	1891000000-E	SP	GENERIC PAVING ITEM 7" JOINTED CONCRETE TRUCK APRON WITH WIRE MESH	70 SY		
0038	2000000000-N	806	RIGHT-OF-WAY MARKERS	27 EA		
0039	2022000000-E	815	SUBDRAIN EXCAVATION	231 CY		
0040	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	1,030 SY		
0041	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	173 CY		
0042	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	1,030 LF		
0043	2070000000-N	815	SUBDRAIN PIPE OUTLET	3 EA		
0044	2077000000-E	815	6" OUTLET PIPE	18 LF		
0045	2099000000-E	816	SHOULDER DRAIN	240 LF		
0046	2110000000-E	816	4" SHOULDER DRAIN PIPE	240 LF		
0047	2209000000-E	838	ENDWALLS	3.4 CY		
0048	2253000000-E	840	PIPE COLLARS	1.292 CY		
0049	2264000000-E	840	PIPE PLUGS	0.13 CY		
0050	2275000000-E	SP	FLOWABLE FILL	144 CY		
0051	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	73 EA		
0052	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	7.3 LF		
0053	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	19 EA		
0054	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0055	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	1 EA		
0056	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	4 EA		
0057	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	15 EA		
0058	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	30 EA		
0059	2396000000-N	840	FRAME WITH COVER, STD 840.54	2 EA		
0060	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	6 EA		
0061	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	19 EA		
0062	2535000000-E	846	**"X **" CONCRETE CURB (9" X 18")	120 LF		
0063	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	3,600 LF		
0064	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	9,500 LF		
0065	2591000000-E	848	4" CONCRETE SIDEWALK	5,500 SY		
0066	2605000000-N	848	CONCRETE CURB RAMPS	32 EA		
0067	2612000000-E	848	6" CONCRETE DRIVEWAY	150 SY		
0068	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	200 SY		
0069	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	2,000 SY		
0070	2800000000-N	858	ADJUSTMENT OF CATCH BASINS	1 EA		
0071	2845000000-N	858	ADJUSTMENT OF METER BOXES OR VALVE BOXES	9 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0072	3030000000-E	862	STEEL BEAM GUARDRAIL	3,050 LF		
0073	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	250 LF		
0074	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	20 EA		
0075	3195000000-N	862	GUARDRAIL END UNITS, TYPE AT-1	2 EA		
0076	3210000000-N	862	GUARDRAIL END UNITS, TYPE CAT-1	5 EA		
0077	3215000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE III	6 EA		
0078	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	7 EA		
0079	3360000000-E	863	REMOVE EXISTING GUARDRAIL	3,100 LF		
0080	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	800 LF		
0081	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	44 EA		
0082	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	25 EA		
0083	3564000000-E	866	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (47", 12', 12')	1 EA		
0084	3628000000-E	876	RIP RAP, CLASS I	330 TON		
0085	3635000000-E	876	RIP RAP, CLASS II	460 TON		
0086	3642000000-E	876	RIP RAP, CLASS A	20 TON		
0087	3649000000-E	876	RIP RAP, CLASS B	1,488 TON		
0088	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	6,485 SY		
0089	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (D)	105 SF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0090	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (E)	345 SF		
0091	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (F)	230 SF		
0092	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,275 LF		
0093	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA		
0094	4102000000-N	904	SIGN ERECTION, TYPE E	67 EA		
0095	4108000000-N	904	SIGN ERECTION, TYPE F	10 EA		
0096	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	34 EA		
0097	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	80 SF		
0098	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	617 SF		
0099	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	184 SF		
0100	4415000000-N	1115	FLASHING ARROW BOARD	3 EA		
0101	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	4 EA		
0102	4430000000-N	1130	DRUMS	450 EA		
0103	4435000000-N	1135	CONES	100 EA		
0104	4445000000-E	1145	BARRICADES (TYPE III)	256 LF		
0105	4447000000-E	SP	PEDESTRIAN CHANNELIZING DE-VICES	16 LF		
0106	4455000000-N	1150	FLAGGER	250 DAY		
0107	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	4 EA		
0108	4480000000-N	1165	TMA	2 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0109	4485000000-E	1170	PORTABLE CONCRETE BARRIER	320 LF		
0110	4516000000-N	1180	SKINNY DRUM	100 EA		
0111	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	20,555 LF		
0112	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	1,690 LF		
0113	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	5,460 LF		
0114	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	500 LF		
0115	4720000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (90 MILS)	24 EA		
0116	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	139 EA		
0117	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (III)	2,055 LF		
0118	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	250 LF		
0119	4775000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (6") (III)	230 LF		
0120	4785000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (12") (III)	130 LF		
0121	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	18,652 LF		
0122	4815000000-E	1205	PAINT PAVEMENT MARKING LINES (6")	736 LF		
0123	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	177 LF		
0124	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	184 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0125	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	31 EA		
0126	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	550 LF		
0127	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	700 LF		
0128	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	1,015 EA		
0129	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum	L.S.	
0130	5326200000-E	1510	12" WATER LINE	1,250 LF		
0131	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	5,235 LB		
0132	5540000000-E	1515	6" VALVE	3 EA		
0133	5558000000-E	1515	12" VALVE	6 EA		
0134	5648000000-N	1515	RELOCATE WATER METER	2 EA		
0135	5666000000-N	1515	FIRE HYDRANT	2 EA		
0136	5672000000-N	1515	RELOCATE FIRE HYDRANT	4 EA		
0137	5673000000-E	1515	FIRE HYDRANT LEG	60 LF		
0138	5686000000-E	1515	**" WATER SERVICE LINE (6")	100 LF		
0139	5691200000-E	1520	6" SANITARY GRAVITY SEWER	160 LF		
0140	5691300000-E	1520	8" SANITARY GRAVITY SEWER	1,200 LF		
0141	5691600000-E	1520	16" SANITARY GRAVITY SEWER	340 LF		
0142	5691900000-E	1520	24" SANITARY GRAVITY SEWER	300 LF		
0143	5775000000-E	1525	4' DIA UTILITY MANHOLE	3 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0144	5776000000-E	1525	5' DIA UTILITY MANHOLE	6 EA		
0145	5781000000-E	1525	UTILITY MANHOLE WALL 4' DIA	4 LF		
0146	5782000000-E	1525	UTILITY MANHOLE WALL 5' DIA	32 LF		
0147	5798000000-E	1530	ABANDON **" UTILITY PIPE (21")	60 LF		
0148	5800000000-E	1530	ABANDON 6" UTILITY PIPE	60 LF		
0149	5811000000-E	1530	ABANDON 18" UTILITY PIPE	170 LF		
0150	5815500000-N	1530	REMOVE FIRE HYDRANT	1 EA		
0151	5816000000-N	1530	ABANDON UTILITY MANHOLE	7 EA		
0152	5836200000-E	1540	30" ENCASEMENT PIPE	260 LF		
0153	5836400000-E	1540	36" ENCASEMENT PIPE	90 LF		
0154	5872500000-E	1550	BORE AND JACK OF **" (30")	260 LF		
0155	5872500000-E	1550	BORE AND JACK OF **" (36")	90 LF		
0156	5872600000-E	1550	DIRECTIONAL DRILLING OF **" (12")	100 LF		
0157	6000000000-E	1605	TEMPORARY SILT FENCE	13,855 LF		
0158	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	455 TON		
0159	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	1,315 TON		
0160	6012000000-E	1610	SEDIMENT CONTROL STONE	1,460 TON		
0161	6015000000-E	1615	TEMPORARY MULCHING	30.5 ACR		
0162	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	1,700 LB		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0163	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	9.5 TON		
0164	6024000000-E	1622	TEMPORARY SLOPE DRAINS	1,020 LF		
0165	6029000000-E	SP	SAFETY FENCE	560 LF		
0166	6030000000-E	1630	SILT EXCAVATION	4,940 CY		
0167	6036000000-E	1631	MATTING FOR EROSION CONTROL	37,000 SY		
0168	6037000000-E	SP	COIR FIBER MAT	1,190 SY		
0169	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	450 SY		
0170	6042000000-E	1632	1/4" HARDWARE CLOTH	3,995 LF		
0171	6048000000-E	SP	FLOATING TURBIDITY CURTAIN	1,015 SY		
0172	6069000000-E	1638	STILLING BASINS	41 CY		
0173	6070000000-N	1639	SPECIAL STILLING BASINS	12 EA		
0174	6071010000-E	SP	WATTLE	550 LF		
0175	6071020000-E	SP	POLYACRYLAMIDE (PAM)	385 LB		
0176	6071030000-E	1640	COIR FIBER BAFFLE	1,050 LF		
0177	6071050000-E	SP	**" SKIMMER (1-1/2")	2 EA		
0178	6071050000-E	SP	**" SKIMMER (2")	4 EA		
0179	6084000000-E	1660	SEEDING & MULCHING	27 ACR		
0180	6087000000-E	1660	MOWING	21 ACR		
0181	6090000000-E	1661	SEED FOR REPAIR SEEDING	350 LB		
0182	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	1 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0183	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	625 LB		
0184	6108000000-E	1665	FERTILIZER TOPDRESSING	18.75 TON		
0185	6111000000-E	SP	IMPERVIOUS DIKE	164 LF		
0186	6114500000-N	1667	SPECIALIZED HAND MOWING	10 MHR		
0187	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	75 EA		
0188	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	6 EA		
0189	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	45 EA		
0190	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	15 EA		
0191	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	14 EA		
0192	7060000000-E	1705	SIGNAL CABLE	15,600 LF		
0193	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	59 EA		
0194	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	19 EA		
0195	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	5 EA		
0196	7264000000-E	1710	MESSENGER CABLE (3/8")	3,300 LF		
0197	7279000000-E	1715	TRACER WIRE	6,600 LF		
0198	7288000000-E	1715	PAVED TRENCHING (**********) (1, 2")	100 LF		
0199	7288000000-E	1715	PAVED TRENCHING (**********) (2, 2")	50 LF		
0200	7300000000-E	1715	UNPAVED TRENCHING (**********) (1, 2")	3,850 LF		

County : Rowan

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0201	7300000000-E	1715	UNPAVED TRENCHING (**********) (2, 2")	4,900 LF		
0202	7300000000-E	1715	UNPAVED TRENCHING (**********) (3, 2")	500 LF		
0203	7301000000-E	1715	DIRECTIONAL DRILL (**********) (2, 2")	1,550 LF		
0204	7301000000-E	1715	DIRECTIONAL DRILL (**********) (3, 2")	250 LF		
0205	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	54 EA		
0206	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEA-VY DUTY)	35 EA		
0207	7360000000-N	1720	WOOD POLE	4 EA		
0208	7372000000-N	1721	GUY ASSEMBLY	15 EA		
0209	7408000000-E	1722	1" RISER WITH WEATHERHEAD	2 EA		
0210	7420000000-E	1722	2" RISER WITH WEATHERHEAD	4 EA		
0211	7430000000-N	1722	HEAT SHRINK TUBING RETROFIT KIT	1 EA		
0212	7432000000-E	1722	2" RISER WITH HEAT SHRINK TUBING	1 EA		
0213	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	6,000 LF		
0214	7456000000-E	1726	LEAD-IN CABLE (**********) (14-2)	23,300 LF		
0215	7481000000-N	SP	SITE SURVEY	3 EA		
0216	7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	10 EA		
0217	7481260000-N	SP	EXTERNAL LOOP EMULATOR PRO-CESSING UNIT	3 EA		
0218	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (12)	9,400 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0219	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (96)	700 LF		
0220	7528000000-E	1730	DROP CABLE	1,600 LF		
0221	7540000000-N	1731	SPLICE ENCLOSURE	2 EA		
0222	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	3 EA		
0223	7552000000-N	1731	INTERCONNECT CENTER	4 EA		
0224	7566000000-N	1733	DELINEATOR MARKER	19 EA		
0225	7575160000-E	1734	REMOVE EXISTING COMMUNICATIONS CABLE	6,900 LF		
0226	7576000000-N	SP	METAL STRAIN SIGNAL POLE	16 EA		
0227	7613000000-N	SP	SOIL TEST	16 EA		
0228	7614100000-E	SP	DRILLED PIER FOUNDATION	96 CY		
0229	7636000000-N	1745	SIGN FOR SIGNALS	11 EA		
0230	7642200000-N	1743	TYPE II PEDESTAL WITH FOUND-ATION	13 EA		
0231	7684000000-N	1750	SIGNAL CABINET FOUNDATION	4 EA		
0232	7696000000-N	1751	CONTROLLERS WITH CABINET (**********) (2070E, 332, BASE MOUNTED)	4 EA		
0233	7744000000-N	1751	DETECTOR CARD (TYPE 170)	32 EA		
0234	7901000000-N	1753	CABINET BASE EXTENDER	4 EA		
0235	7980000000-N	SP	GENERIC SIGNAL ITEM ETHERNET EDGE SWITCH	1 EA		
0236	7980000000-N	SP	GENERIC SIGNAL ITEM JUNCTION BOX MARKER	16 EA		

County : Rowan

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			CULVERT ITEMS			
0237	6037000000-E	SP	COIR FIBER MAT	80 SY		
0238	8126000000-N	414	CULVERT EXCAVATION, STA ****** (41+20.00 -L-)	Lump Sum	L.S.	
0239	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	107 TON		
0240	8196000000-E	420	CLASS A CONCRETE (CULVERT)	171.4 CY		
0241	8245000000-E	425	REINFORCING STEEL (CULVERT)	22,832 LB		
0242	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	175 TON		
0243	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	170 SY		
			STRUCTURE ITEMS			
0244	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (70+72.50 -L-)	Lump Sum	L.S.	
0245	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0246	8105540000-E	411	3'-6" DIA DRILLED PIERS IN SOIL	88.5 LF		
0247	8105640000-E	411	3'-6" DIA DRILLED PIERS NOT IN SOIL	62 LF		
0248	8111400000-E	411	PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER	70 LF		
0249	8112730000-N	450	PDA TESTING	1 EA		
0250	8113000000-N	411	SID INSPECTIONS	4 EA		
0251	8114000000-N	411	SPT TESTING	7 EA		
0252	8115000000-N	411	CSL TESTING	1 EA		

County : Rowan

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0253	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (70+72.50 -L-)	Lump Sum	L.S.	
0254	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	10,491 SF		
0255	8161000000-E	420	GROOVING BRIDGE FLOORS	10,918 SF		
0256	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	250.1 CY		
0257	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (70+72.50 -L-)	Lump Sum	L.S.	
0258	8217000000-E	425	REINFORCING STEEL (BRIDGE)	39,639 LB		
0259	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	3,841 LB		
0260	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	325,000 LS		
0261	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	26 EA		
0262	8364000000-E	450	HP12X53 STEEL PILES	440 LF		
0263	8391000000-N	450	STEEL PILE POINTS	26 EA		
0264	8482000000-E	460	THREE BAR METAL RAIL	209.2 LF		
0265	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	460 TON		
0266	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	510 SY		
0267	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0268	8692000000-N	SP	FOAM JOINT SEALS	Lump Sum	L.S.	

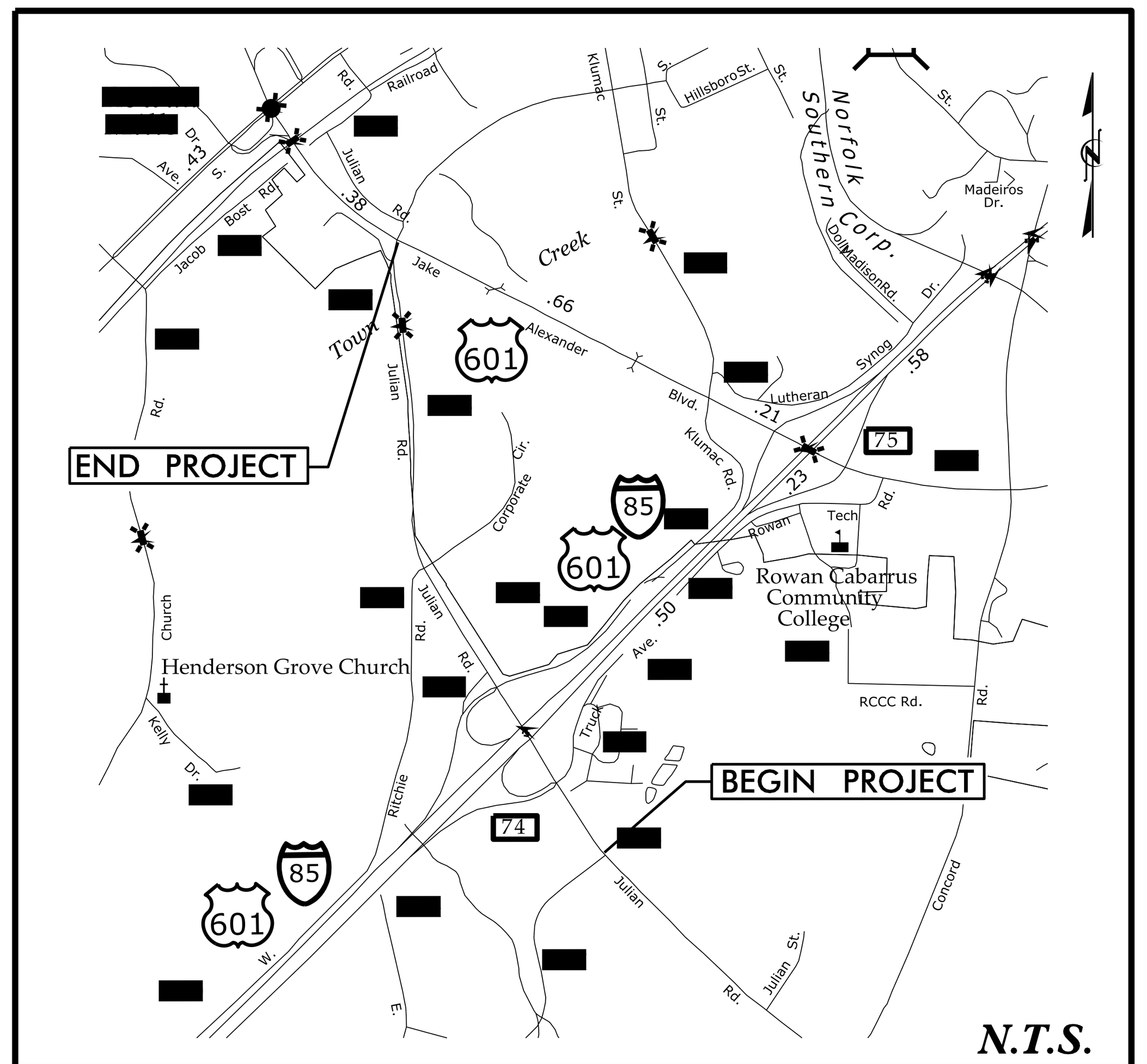
T.I.P. Project: U-5738

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

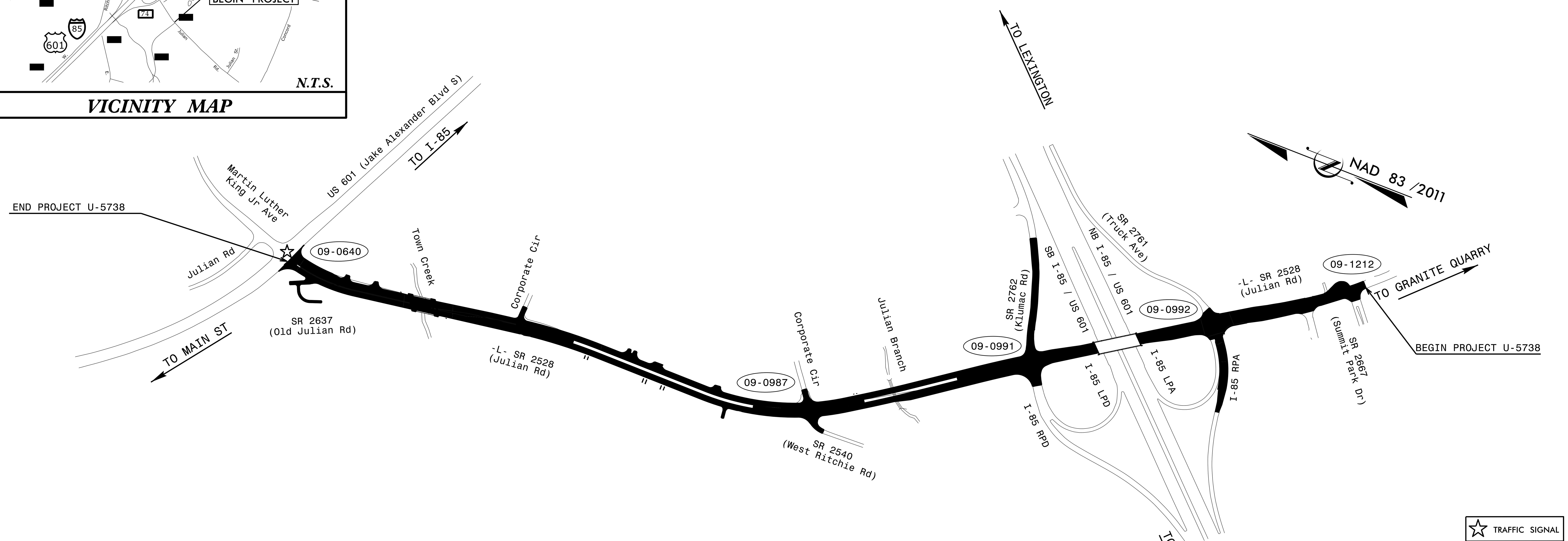
ROWAN COUNTY

LOCATION: SR 2528 (JULIAN ROAD) FROM SR 2667 (SUMMIT PARK DRIVE) TO US 601 (JAKE ALEXANDER BOULEVARD) IN SALISBURY

TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS



VICINITY MAP



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

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

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1.0	--------	Title Sheet
Sig. 1.1–1.2	--------	Standard Plate Sheets
Sig. 2.0–2.7	09–1212	SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr)
Sig. 3.0–4.6	09–0992	SR 2528 (Julian Rd) at I–85/US 601 NB Ramps and SR 2761 (Truck Ave)
Sig. 5.0–7.5	09–0991	SR 2528 (Julian Rd) at I–85/US 601 SB Ramps and SR 2762 (Klumac Rd)
Sig. 8.0–8.5	09–0987	SR 2528 (Julian Rd) at Corporate Cir and SR 2540 (W. Ritchie Rd)
Sig. 9.0–11.8	09–0640	US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave
Sig. M1–M8	--------	Metal Pole Standard Drawings
Scp. 1–10	--------	Signal Communications Plans

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT

Contacts:

Robert J. Ziemba, PE – Central Region Signals Engineer
Keith M. Mims, PE – Signal Equipment Design Engineer
Gregory A. Green – Signal Communications Project Engineer

DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY DIVISION

Transportation Mobility and Safety Division · State of North Carolina · Department of Transportation · TSMO Unit

750 N. Greenfield Parkway, Garner, NC 27529

CONTRACT: C–204426

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rziemba

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 9.0

8 Phase
Fully Actuated
with Emergency Vehicle Preemption
(Salisbury Signal System)

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	*	1	Y	Y	-	-	@15	-	*
					6#	Y	Y	Y	-	3	-	*
2A/S16	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	Y
2B/S17	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	Y
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X40	0	*	*	4	Y	Y	-	-	-	-	*
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
5B	6X40	0	*	*	5	Y	Y	-	-	15	-	*
6A/S18	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
6B/S19	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
7A	6X40	0	*	*	7	Y	Y	-	-	3	-	*
7B	6X40	0	*	*	7	Y	Y	-	-	–	-	*
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	Y

@ Reduce Delay to 3 Seconds During Alternate Phasing Operation.
# Disable Phase Call For Loop(s) During Alternate Phasing Operation.
* Video Detection Zone

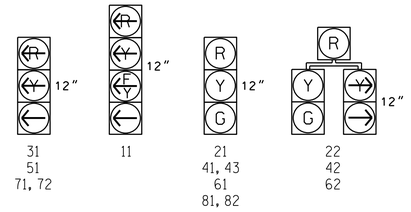
OASIS 2070 EV PREEMPT

FUNCTION	PRE 3	PRE 4	PRE 5	PRE 6
Interval 1 – Dwell Green	255	255	255	255
Interval 1 – Dwell Yellow	0.0*	0.0*	0.0*	0.0*
Interval 1 – Dwell Red	0.0*	0.0*	0.0*	0.0*
Interval 5 – Exit Green	1	1	1	1
Interval 5 – Yellow	0.0	0.0	0.0	0.0
Interval 5 – Red	0.0	0.0	0.0	0.0
Exit Phase(s)	2+6	2+6	4+8	4+8
Priority	MED	MED	MED	MED
Delay Time	0.0	0.0	0.0	0.0
Min Green Before Pre	1	1	1	1
Ped Clear Before Pre	0	0	0	0
Yellow Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Dwell Min Time	7	7	7	7
Dwell Max Time (Minutes)	2	2	2	2
Enable Backup Protection	N	N	N	N
Ped Clear Through Yellow	N	N	N	N
Omit Overlaps	-	-	-	-
Preempt Extend**	2	2	2	2

* Time defaults to time used for phase during normal operation
** Program Timing on Detection Unit

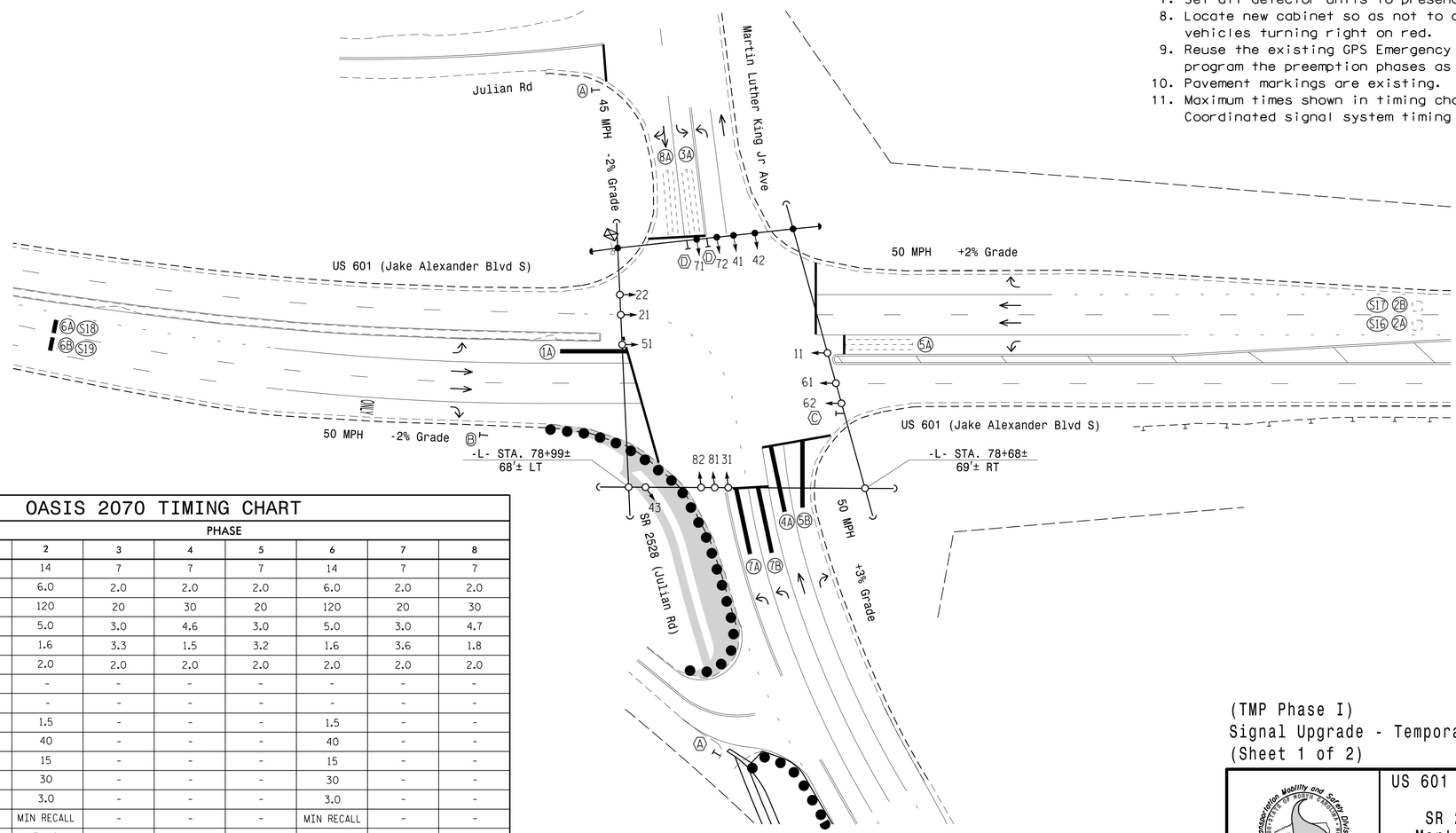
SIGNAL FACE I.D.

All Heads L.E.D.



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reuse the existing loops and lead-in cables for detectors 2A, 2B, 3A, 5A and 8A.
6. Install a video imaging loop emulator detection system to maintain vehicle detection during construction. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to obtain optimum detection zones as shown.
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. Reuse the existing GPS Emergency Vehicle Preemption equipment, and program the preemption phases as shown.
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	
	2-in Underground Conduit	
N/A	Right of Way	N/A
	Directional Arrow	
	Construction Zone Drums	
	Construction Zone	
	Video Detection Area	
N/A	Guardrail	N/A
A	"STOP" Sign (R1-1)	A
B	"RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)	B
C	Right Arrow "ONLY" Sign (R3-5R)	C
D	Left Arrow "ONLY" Sign (R3-5L)	D

OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	14	7	7	7	14	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	120	20	30	20	120	20	30
Yellow Clearance	3.0	5.0	3.0	4.6	3.0	5.0	3.0	4.7
Red Clearance	2.6	1.6	3.3	1.5	3.2	1.6	3.6	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	40	-	-	-	40	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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

(TMP Phase I)
Signal Upgrade - Temporary Design 1
(Sheet 1 of 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY:
PREPARED BY: I.O. Umozurike REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE
0 40
1" = 40'

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
026486
ENGINEER
ROBERT J. ZIEMBA

DocuSigned by:
01/27/2022
SIGNATURE DATE

SIG. INVENTORY NO. 09-0640T1

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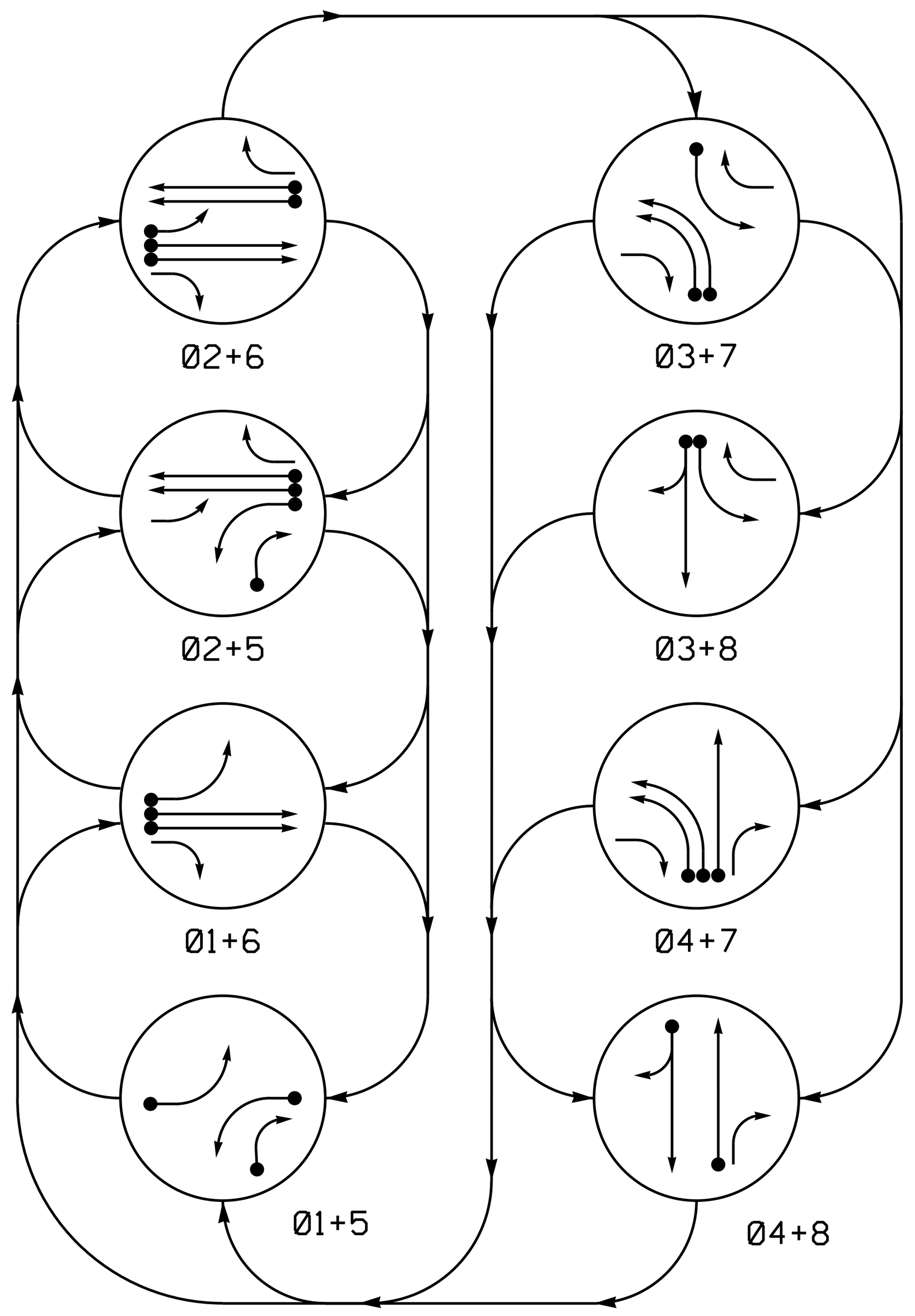
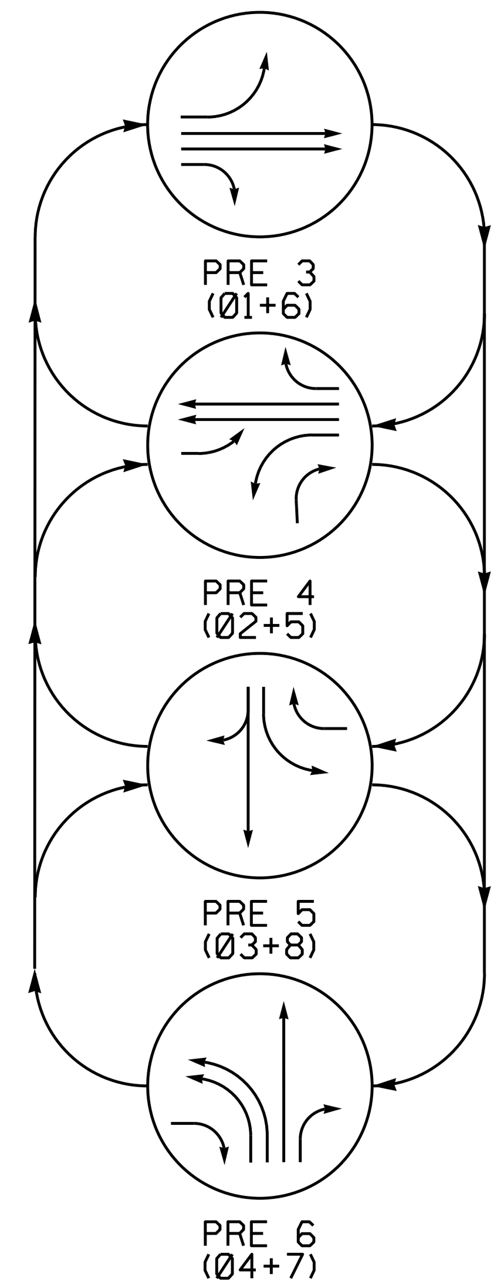
PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 9.1

DEFAULT PHASING DIAGRAM



DEFAULT PHASING EV PREEMPT PHASES

(Medium Priority)



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE3	PRE4	PRE5	PRE6	FLASH
11	←	←	←F/Y	←F/Y	←R	←R	←R	←R	←	←F/Y	←R	←R	←Y
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	R	G	R/→	R	Y
31	←R	←R	←R	←R	←	←	←R	←R	←R	←R	←	←R	←R
41, 43	R	R	R	R	R	R	G	G	R	R	R	G	R
42	R/→	R	R/→	R	R	R	G	G	R	R/→	R	G	R
51	←	←R	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R/→	R	R/→	R	G	R	R	R/→	Y
71, 72	←R	←R	←R	←R	←	←R	←	←R	←R	←R	←R	←	←R
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

8 Phase Fully Actuated with Emergency Vehicle Preemption (Salisbury Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
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5. Reuse the existing loops and lead-in cables for detectors 2A, 2B, 3A, 5A and 8A.
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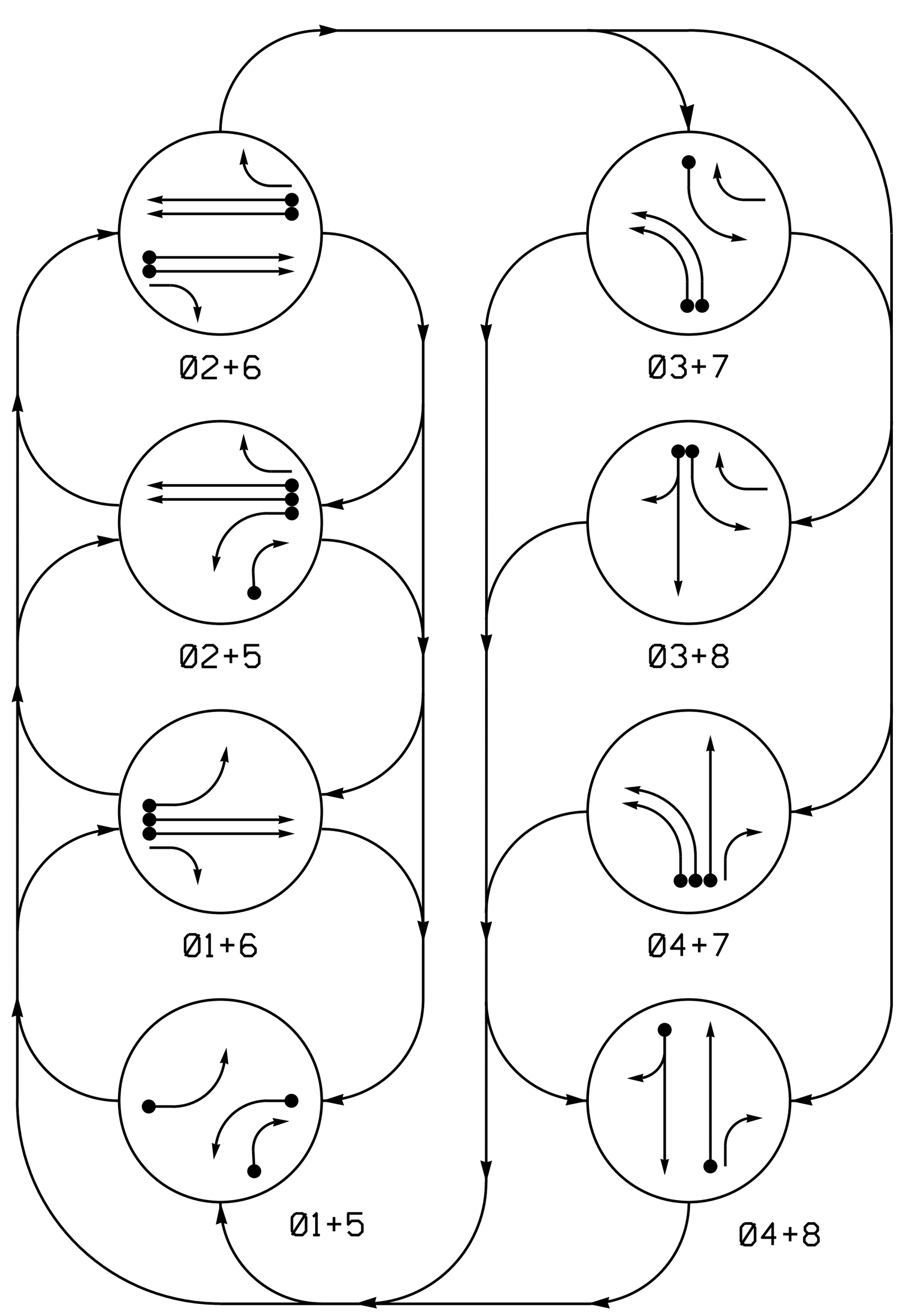
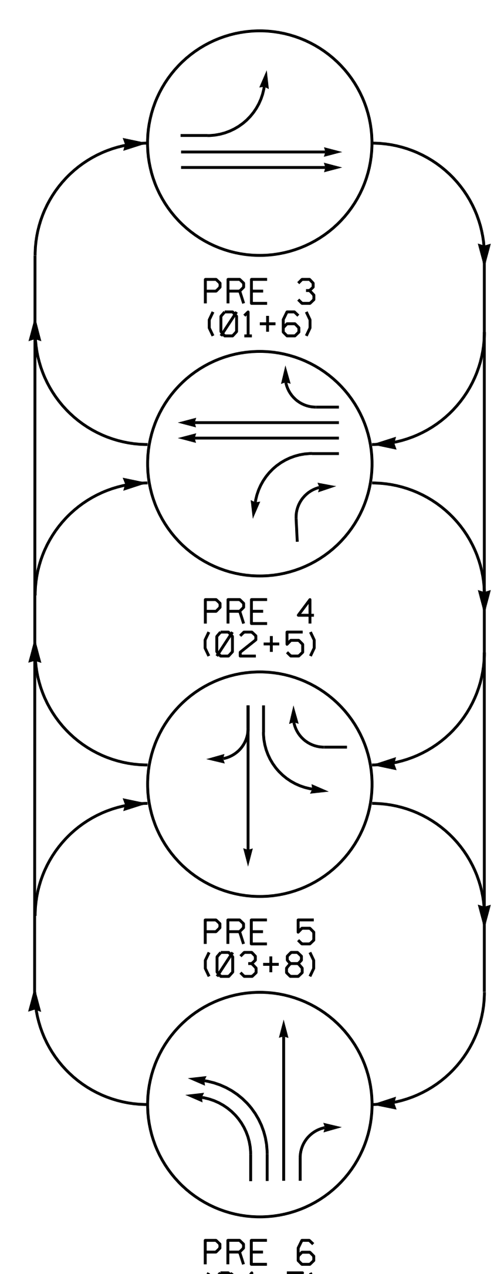
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING EV PREEMPT PHASES

(Medium Priority)

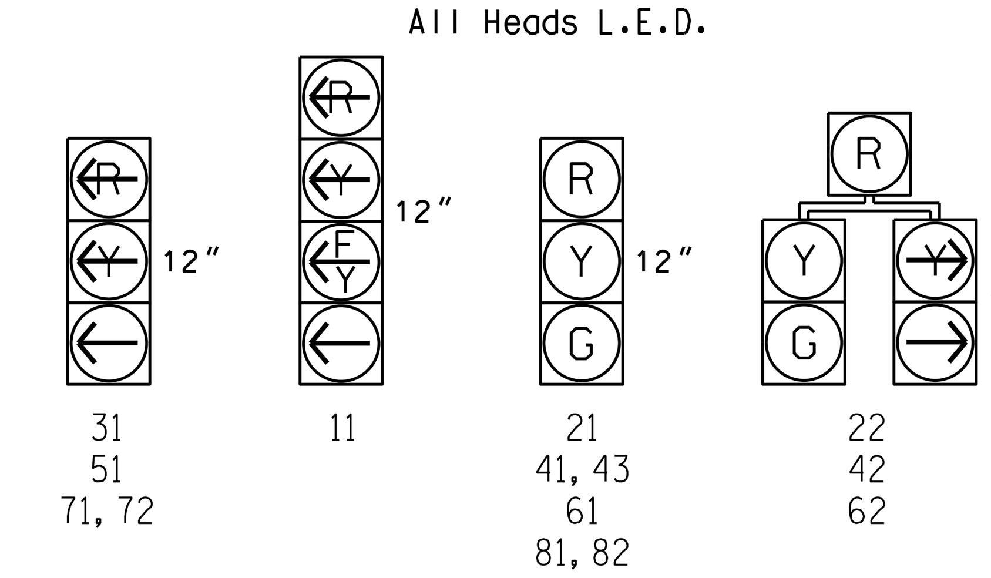


ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE3	PRE4	PRE5	PRE6	FLASH
11	←	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R	←Y
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	R	G	R/→	R	Y
31	←R	←R	←R	←R	←	←	←R	←R	←R	←R	←	←R	←R
41, 43	R	R	R	R	R	R	G	G	R	R	R	G	R
42	R/→	R	R/→	R	R	R	G	G	R	R/→	R	G	R
51	←	←R	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R/→	R	R/→	R	G	R	R	R/→	Y
71, 72	←R	←R	←R	←R	←	←R	←	←R	←R	←R	←R	←	←R
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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

(TMP Phase I)
Signal Upgrade - Temporary Design 1
(Sheet 2 of 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022	REVIEWED BY:
PREPARED BY: I.O. Umozurike	REVIEWED BY:

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by:
SIGNATURE 01/27/2022 DATE

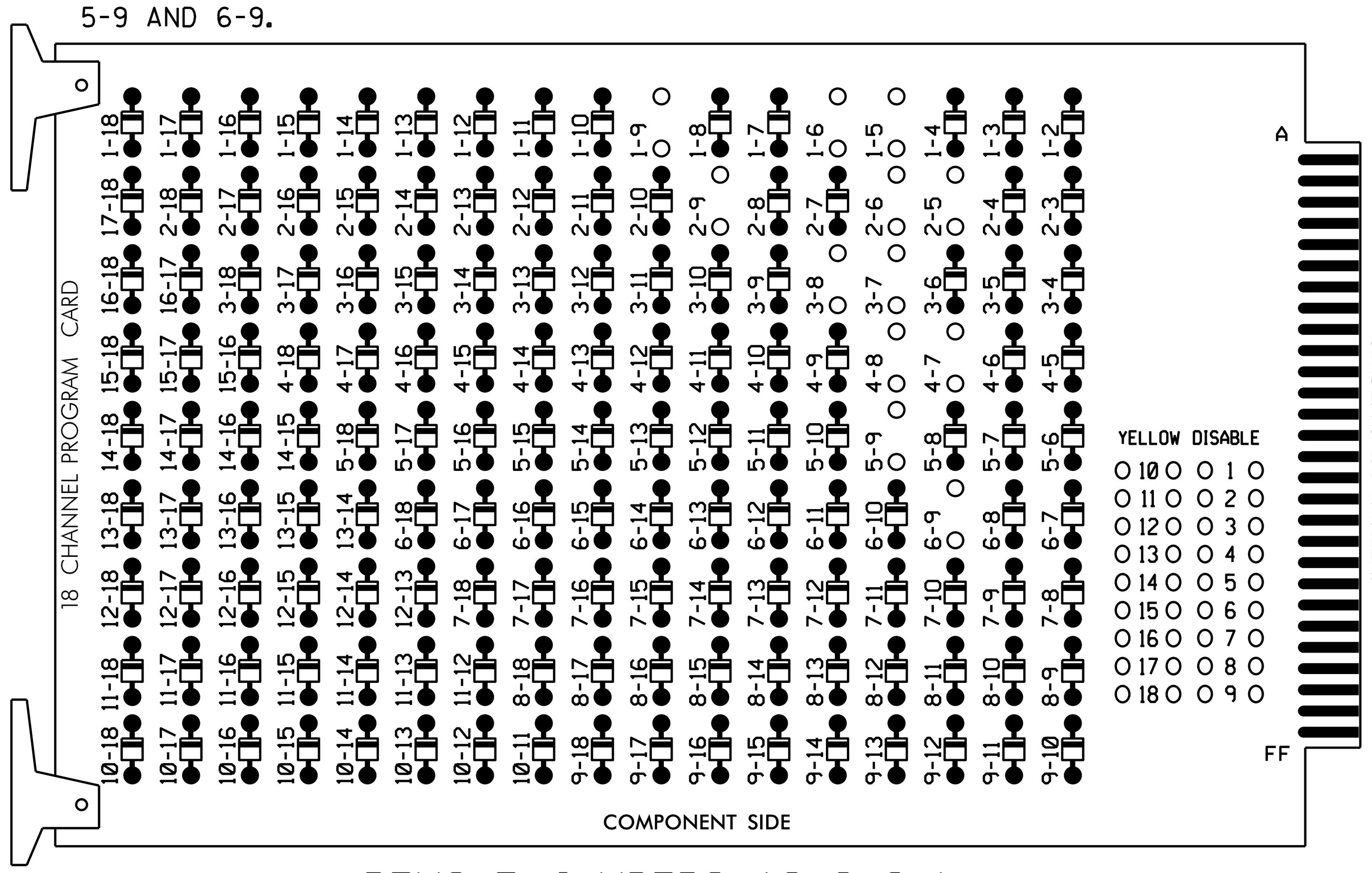
SIG. INVENTORY NO. 09-0640T1

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 9.2

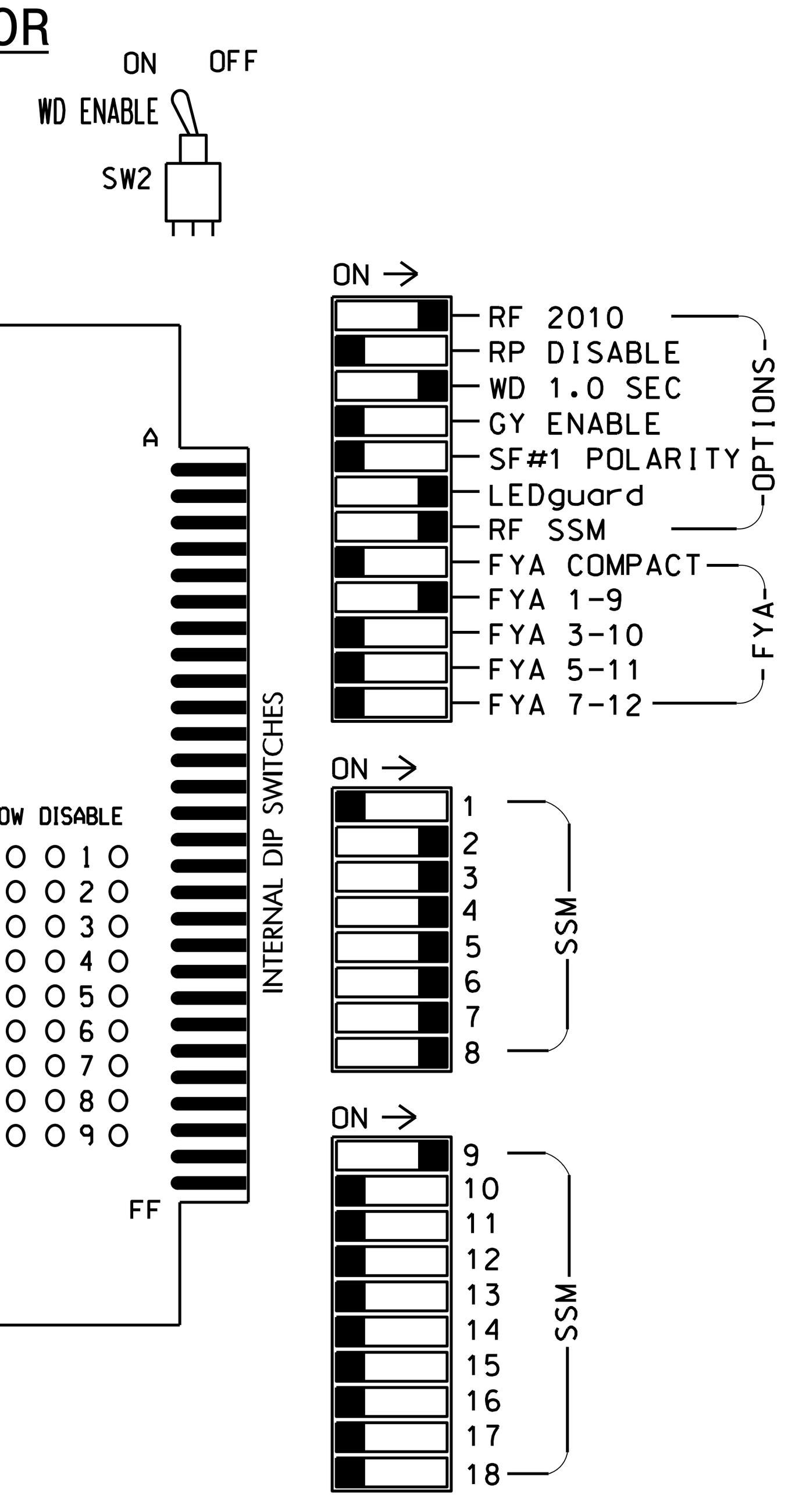
EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 2-5, 2-6, 2-9, 3-7, 3-8, 4-7, 4-8, 5-9 AND 6-9.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. 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 unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
6. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
7. The cabinet and controller are part of the Salisbury Signal System.

EQUIPMENT INFORMATION

CONTROLLER.............2070
CABINET.................332 W/ AUX
SOFTWARE...............ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,S4,S5,S7,S8,S10,S11,AUX S1
PHASES USED............1,2,3,4,5,6,7,8
OVERLAP "A"............1+2
OVERLAP "B"............NOT USED
OVERLAP "C"............NOT USED
OVERLAP "D"............NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4		S5	S6	S7		S8	S9	S10		S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3		4	14	5		6	15	7		8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4	4 PED	5		6	6 PED	7		8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	22	31	41,42 43	NU	42	51	61,62	NU	62	71,72	81,82	NU	11★	NU	NU	NU	NU	NU
RED		128				101				134				107							
YELLOW	✳	129				102				135				108							
GREEN		130				103				136				109							
RED ARROW					116				131				122			A121					
YELLOW ARROW				117	117			132	132			123	123			A122					
FLASHING YELLOW ARROW																A123					
GREEN ARROW	127			118	118			133	133			124	124								

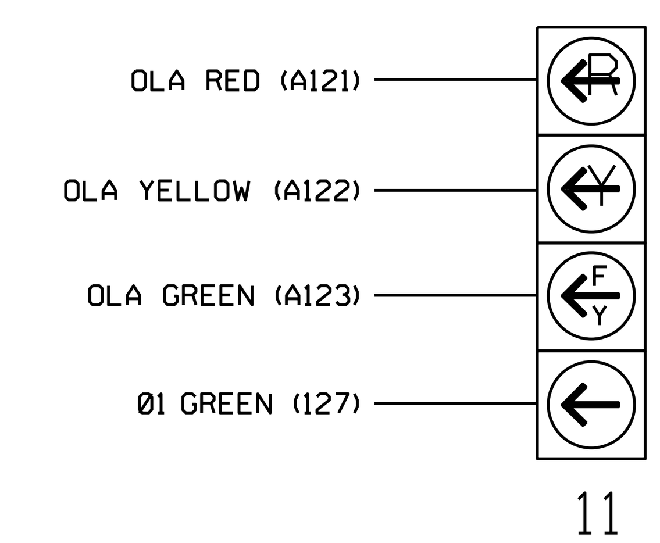
NU = Not Used

✳ 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 head as shown)



NOTE

The sequence display for signal head 11 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø2/SYS 2A/S16	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2/SYS 2B/S17			NOT USED									ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	SLOT EMPTY	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	✳ GPS EVP		SLOT EMPTY
	L	NOT USED					Ø 8 8A								

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

•See GPS Preemption Installation Note Below

⊗ Wired Input - Do not populate slot with detector card

GPS PREEMPTION INSTALLATION NOTE

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

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A [1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10 ★	26	6	Y	Y	Y		3
	-	I1U	56	18 ★	51	1	Y	Y			3
2A/S16	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S17	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
8A	TB5-11,12	J6L	46	8	18	8	Y	Y			10

[1] Add jumper from I1-W to J4-W, on rear of input file.

★ See Input Page Assignment programming details on sheet 3.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

DETECTOR NOTES

1) Install a video detection system for detection zones 1A, 4A, 5B, 6A/S18, 6B/S19, 7A and 7B. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

2) For detection area 1A detector card placement and slots reserved for wired inputs are typical for a NCDOT installation. Inputs associated with these slots are compatible with time of day instructions located on sheet 3 of this electrical detail.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES

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

PHASE 1 YELLOW FIELD TERMINAL (126)

AC-

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 1 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS | INIT. | DATE

750 N.Greenfield Pkwy,Garner,NC 27529

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022

DATE

SIG. INVENTORY NO. 09-0640T1

27-JAN-2022 14:42
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Projects From Signal Design*Active Projects*Strickland*090640_sm_ele_xxx-t1.dgn
cestrickland

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

              SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

              SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

              SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL
FOR DEFAULT PHASING

(program controller as shown below)

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

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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

NOTICE PAGE 2

```
 PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:           |12345678910111213141516
VEH OVL PARENTS:  |X
VEH OVL NOT VEH:  |
VEH OVL NOT PED:  |
VEH OVL GRN EXT:  |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 2 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

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

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640T1

27-JAN-2022 14:43
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cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 9.4

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

NOTES:
1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.

```
PAGE: 2 C1 PIN:48  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64).............26
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._ OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

ENTER A 'Y' FOR NOT ENABLED

DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 1A - PHASE 6)

```
PAGE: 2 C1 PIN:48  NOT ENABLED
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._ OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

PRESS '+' TO ADVANCE TO INPUT 18

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)..................._
VEHICLE DETECTOR (1-64).............1
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._ OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

ENTER '51' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 1A - PHASE 1)

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)..................._
VEHICLE DETECTOR (1-64).............51
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._ OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................N
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          |12345678910111213141516
PHASES ASSIGNED |
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................0
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '1' FOR PHASES ASSIGNED

ENSURE DELAY IS '3'

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................Y
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          |12345678910111213141516
PHASES ASSIGNED |X
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................3
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
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Electrical Detail - Temp 1 - Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADEDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640T1

27-JAN-2022 14:44
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cestrickland

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4, 5 and 6.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |X  X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 | X X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:             | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW|
 OMIT OVERLAPS:        |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 | X X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 | X  X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:             | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW|
 OMIT OVERLAPS:        |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |  X  X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 |   X X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:             | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW|
 OMIT OVERLAPS:        |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |   X X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 |   X  X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:             | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW|
 OMIT OVERLAPS:        |
```

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 4 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

Transportation Mobility and Safety Division — Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022

DATE

SIG. INVENTORY NO. 09-0640T1

27-JAN-2022 14:45
cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 9.6

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 to run protected turns only.

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 5 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

Transportation Mobility and Safety Division — ITS & Signals Management Section — State of North Carolina Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640T1

27-JAN-2022 14:45
.*09640_sm_ele_xxx-t1.dgn
cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 10.0

8 Phase
Fully Actuated
with Emergency Vehicle Preemption
(Salisbury Signal System)

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP/ ZONE	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	✳	✳	1	Y	Y	-	-	@15	-	✳
					6#	Y	Y	Y	-	3	-	✳
2A/S16	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	-
2B/S17	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	3	-	-
4A	6X40	0	✳	✳	4	Y	Y	-	-	-	-	✳
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	3	-	-
5B	6X40	0	✳	✳	5	Y	Y	-	-	15	-	✳
6A/S18	6X6	355	✳	✳	6	Y	Y	-	-	-	Y	✳
6B/S19	6X6	355	✳	✳	6	Y	Y	-	-	-	Y	✳
7A	6X40	0	✳	✳	7	Y	Y	-	-	3	-	✳
7B	6X40	0	✳	✳	7	Y	Y	-	-	-	-	✳
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

@ Disable Delay during Alternate Phasing Operation.
\# Disable Phase Call for Loop during Alternate Phasing Operation.
✳ Video Detection Zone

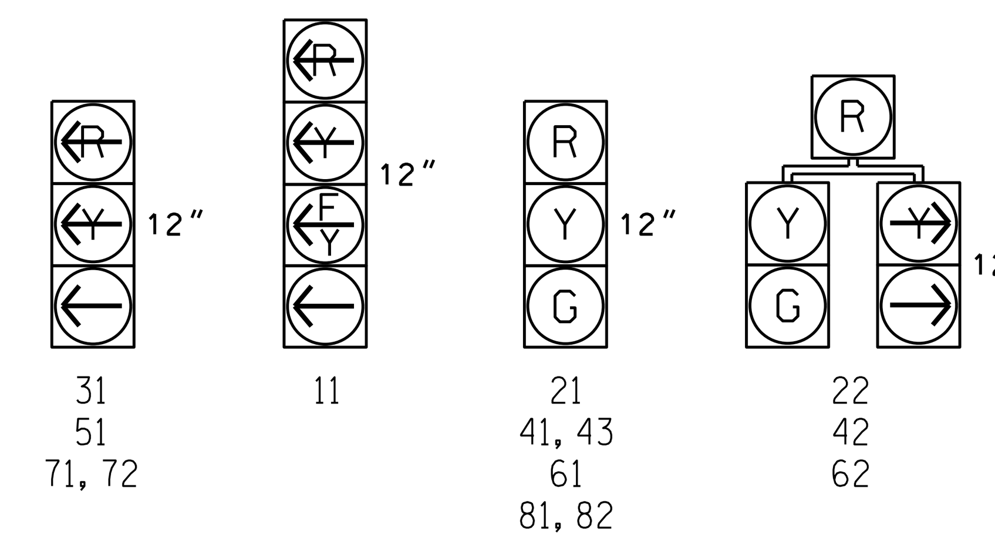
OASIS 2070 EV PREEMPT

FUNCTION	PRE 3	PRE 4	PRE 5	PRE 6
Interval 1 – Dwell Green	255	255	255	255
Interval 1 – Dwell Yellow	0.0*	0.0*	0.0*	0.0*
Interval 1 – Dwell Red	0.0*	0.0*	0.0*	0.0*
Interval 5 – Exit Green	1	1	1	1
Interval 5 – Yellow	0.0	0.0	0.0	0.0
Interval 5 – Red	0.0	0.0	0.0	0.0
Exit Phase(s)	2+6	2+6	4+8	4+8
Priority	MED	MED	MED	MED
Delay Time	0.0	0.0	0.0	0.0
Min Green Before Pre	1	1	1	1
Ped Clear Before Pre	0	0	0	0
Yellow Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Dwell Min Time	7	7	7	7
Dwell Max Time (Minutes)	2	2	2	2
Enable Backup Protection	N	N	N	N
Ped Clear Through Yellow	N	N	N	N
Omit Overlaps	-	-	-	-
Preempt Extend**	2	2	2	2

* Time defaults to time used for phase during normal operation
** Program Timing on Detection Unit

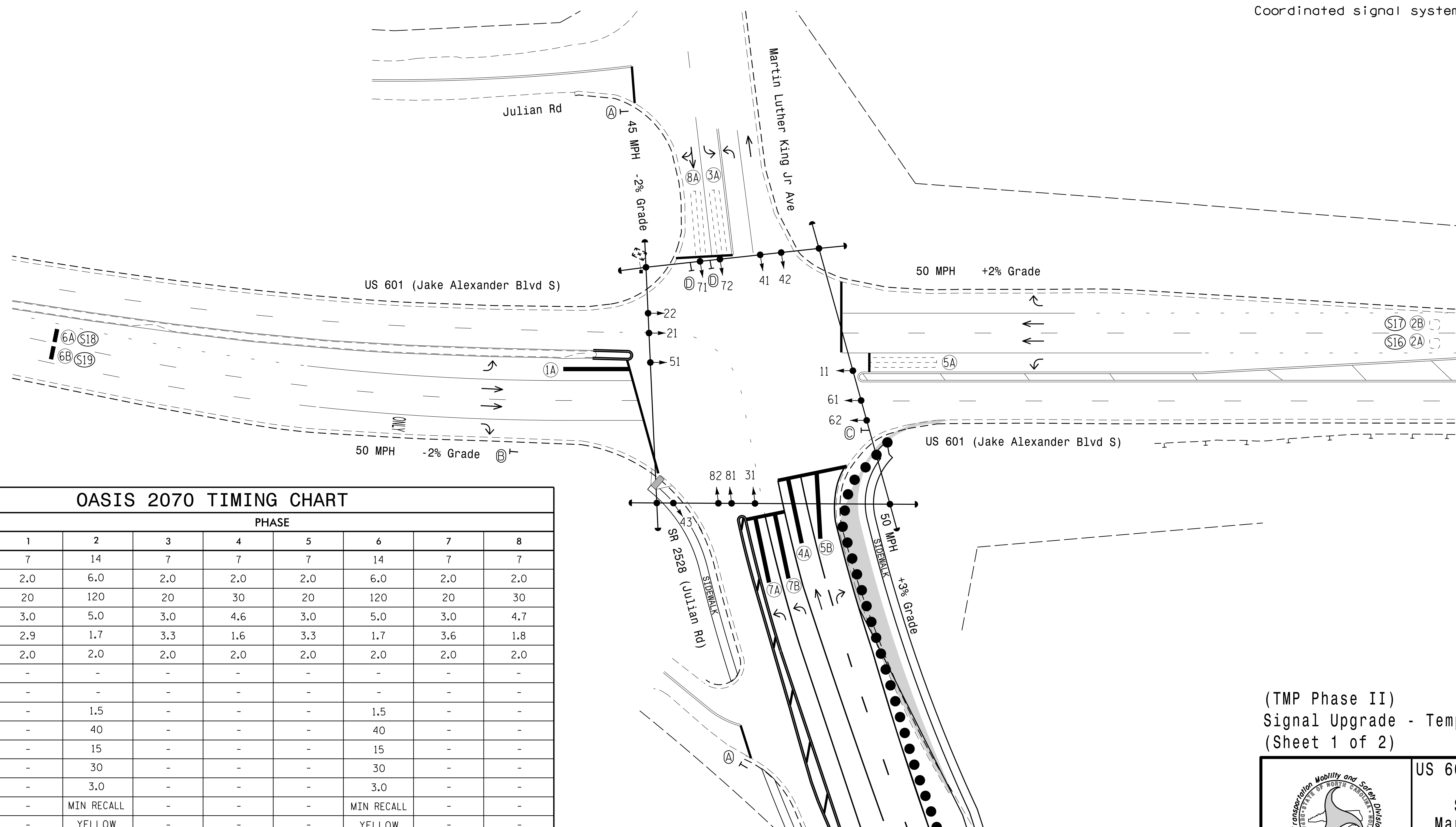
SIGNAL FACE I.D.

All Heads L.E.D.



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 41, 42, 71, 72 and signs D.
6. Adjust the video imaging loop emulator detection system to maintain vehicle detection during construction and obtain optimum detection zones as shown.
7. Set all detector units to presence mode.
8. This intersection features a GPS Emergency Vehicle Preemption system.
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	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Construction Zone Drums	
	Construction Zone	
	Video Detection Area	
N/A	Curb Ramp	
N/A	Guardrail	
Ⓐ	"STOP" Sign (R1-1)	Ⓐ
Ⓑ	"RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)	Ⓑ
Ⓒ	Right Arrow "ONLY" Sign (R3-5R)	Ⓒ
Ⓓ	Left Arrow "ONLY" Sign (R3-5L)	Ⓓ

OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	14	7	7	7	14	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	120	20	30	20	120	20	30
Yellow Clearance	3.0	5.0	3.0	4.6	3.0	5.0	3.0	4.7
Red Clearance	2.9	1.7	3.3	1.6	3.3	1.7	3.6	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	40	-	-	-	40	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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

(TMP Phase II)
Signal Upgrade - Temporary Design 2
(Sheet 1 of 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 601 (Jake Alexander Blvd. S) at SR 2528 (Julian Rd) and Martin Luther King Jr. Ave.

Division 9 Rowan County Salisbury

Transportation Mobility and Safety Division — State of North Carolina Department of Transportation — Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

PLAN DATE: January 2022	REVIEWED BY:
PREPARED BY: I.O. Umozurike	REVIEWED BY:

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

SEAL
North Carolina Professional Engineer Seal 026486 Robert J. Ziemba
DocuSigned by: 1B9B4B66274A494...
SIGNATURE 01/27/2022 DATE
SIG. INVENTORY NO. 09-0640T2

27-JAN-2022 17:17
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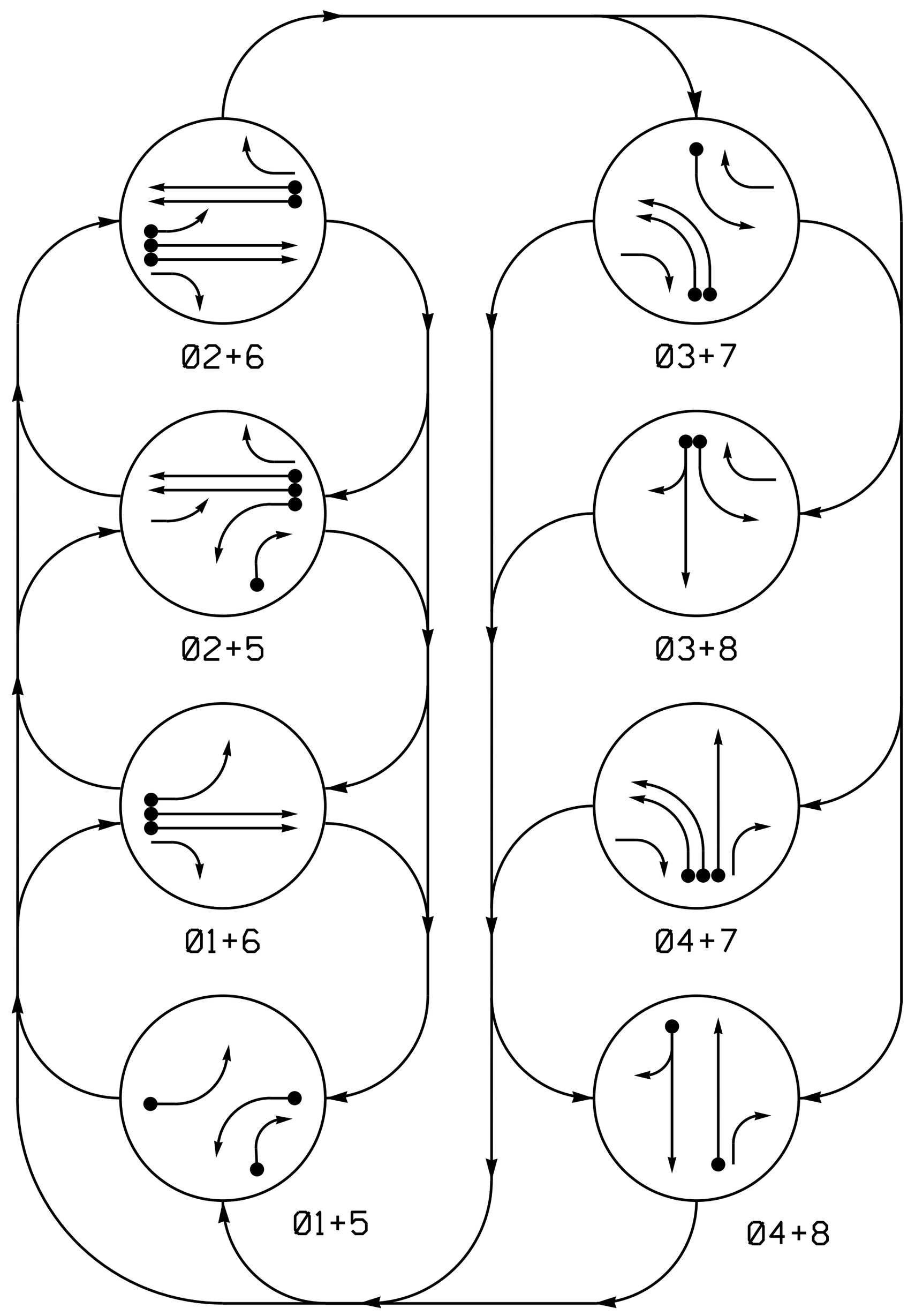
ioumozurike

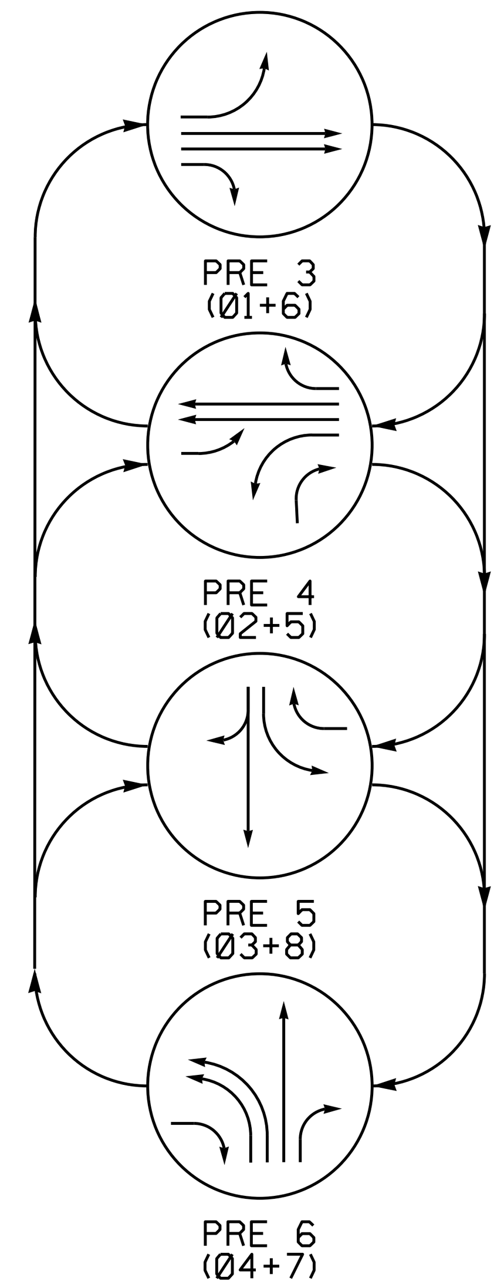
8 Phase
Fully Actuated
with Emergency Vehicle Preemption
(Salisbury Signal System)

DEFAULT PHASING DIAGRAM



DEFAULT PHASING EV PREEMPT PHASES

(Medium Priority)



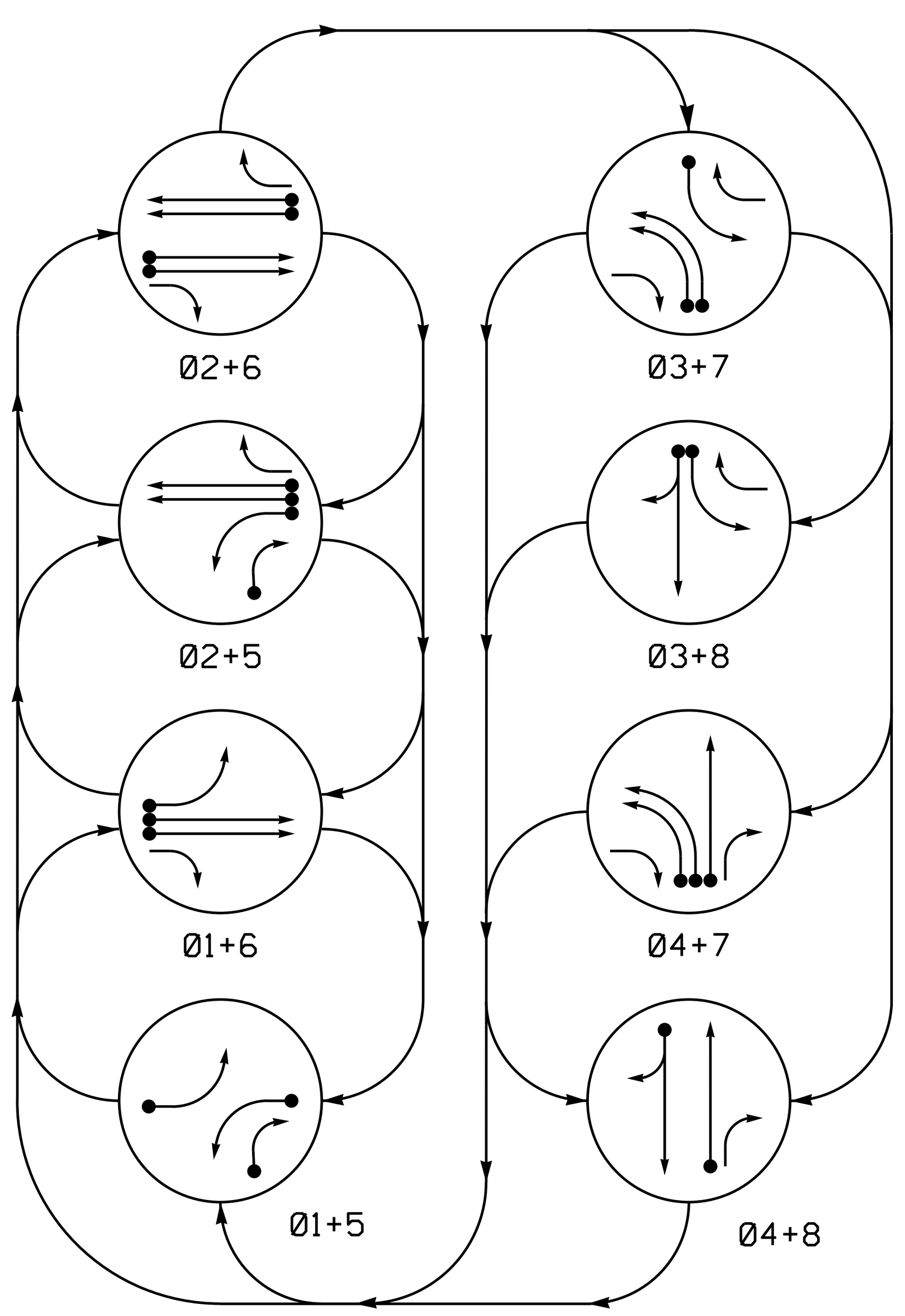
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE 3	PRE 4	PRE 5	PRE 6	FLASH
11	←	←	←FY	←FY	←R	←R	←R	←R	←	←FY	←R	←R	←Y
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	R	G	R/→	R	Y
31	←R	←R	←R	←R	←	←	←R	←R	←R	←R	←	←R	←R
41, 43	R	R	R	R	R	R	G	G	R	R	R	G	R
42	R/→	R	R/→	R	R	R	G	G	R	R/→	R	G	R
51	←	←R	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R/→	R	R/→	R	G	R	R	R/→	Y
71, 72	←R	←R	←R	←R	←	←R	←	←R	←R	←R	←R	←	←R
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

NOTES

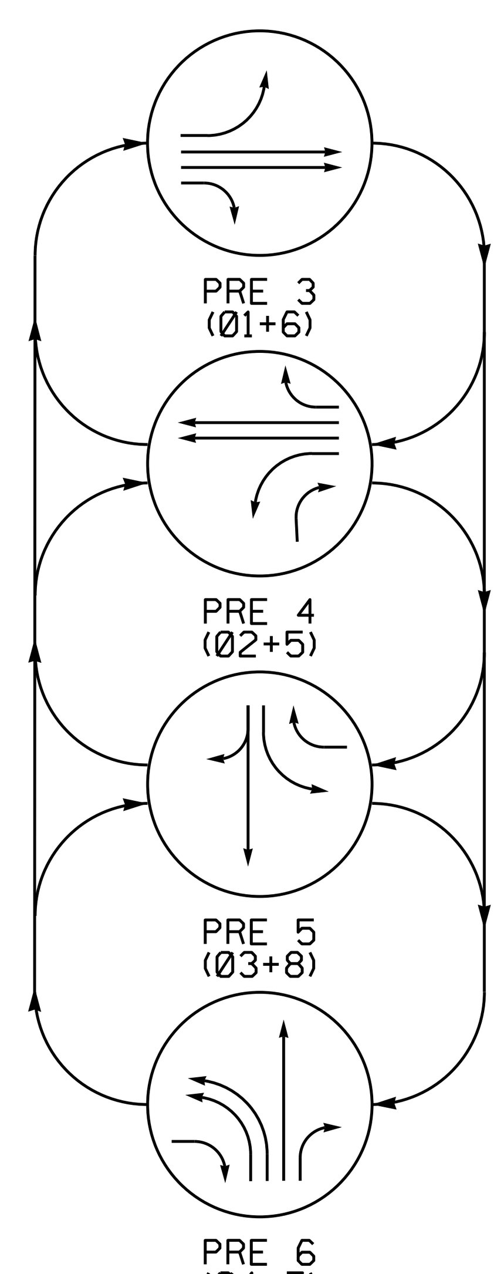
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 71, 72, 81, 82 and signs D.
6. Adjust the video imaging loop emulator detection system to maintain vehicle detection during construction and obtain optimum detection zones as shown.
7. Set all detector units to presence mode.
8. This intersection features a GPS Emergency Vehicle Preemption system.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING EV PREEMPT PHASES

(Medium Priority)

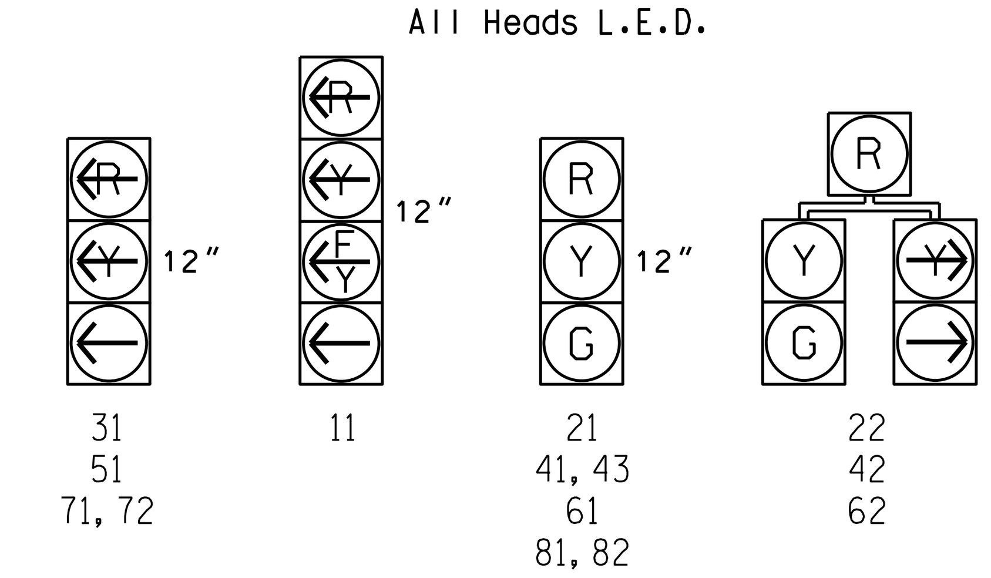


ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE 3	PRE 4	PRE 5	PRE 6	FLASH
11	←	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R	←Y
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R/→	R/→	R	R	R	G	R/→	R	Y
31	←R	←R	←R	←R	←	←	←R	←R	←R	←R	←	←R	←R
41, 43	R	R	R	R	R	R	G	G	R	R	R	G	R
42	R/→	R	R/→	R	R	R	G	G	R	R/→	R	G	R
51	←	←R	←	←R	←R	←R	←R	←R	←R	←	←R	←R	←R
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R/→	R	R/→	R	G	R	R	R/→	Y
71, 72	←R	←R	←R	←R	←	←R	←	←R	←R	←R	←R	←	←R
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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

(TMP Phase II)
Signal Upgrade - Temporary Design 2
(Sheet 2 of 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Transportation Mobility and Safety Division — Signal Design Section
750 N.Greenfield Pkwy.Garner.NC 27529

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY:
PREPARED BY: I.O. Umozurike | REVIEWED BY:

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026486 ROBERT J. ZIEMBA

DocuSigned by: SIGNATURE DATE 01/27/2022

SIG. INVENTORY NO. 09-0640T2

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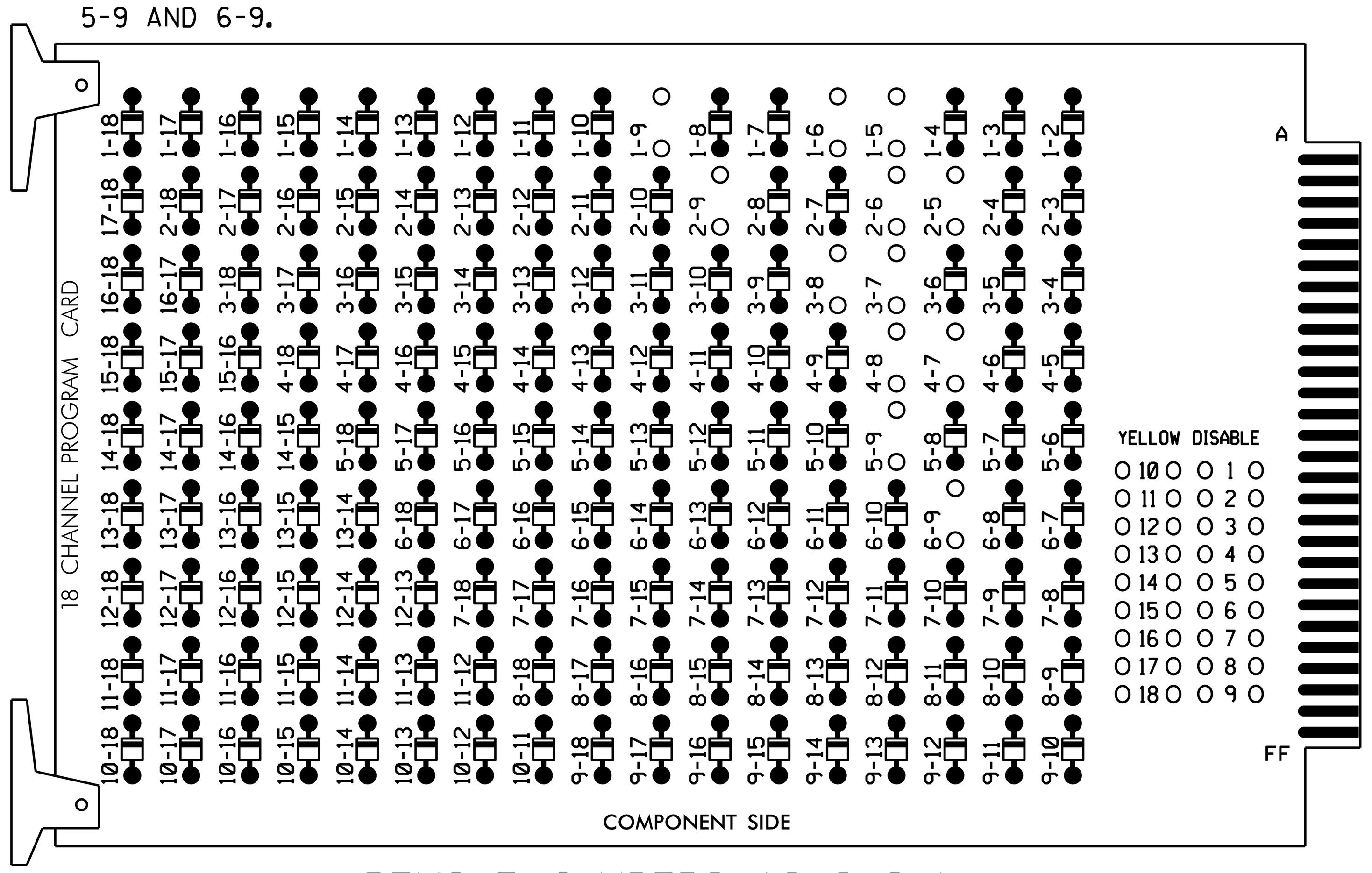
ioumozurike

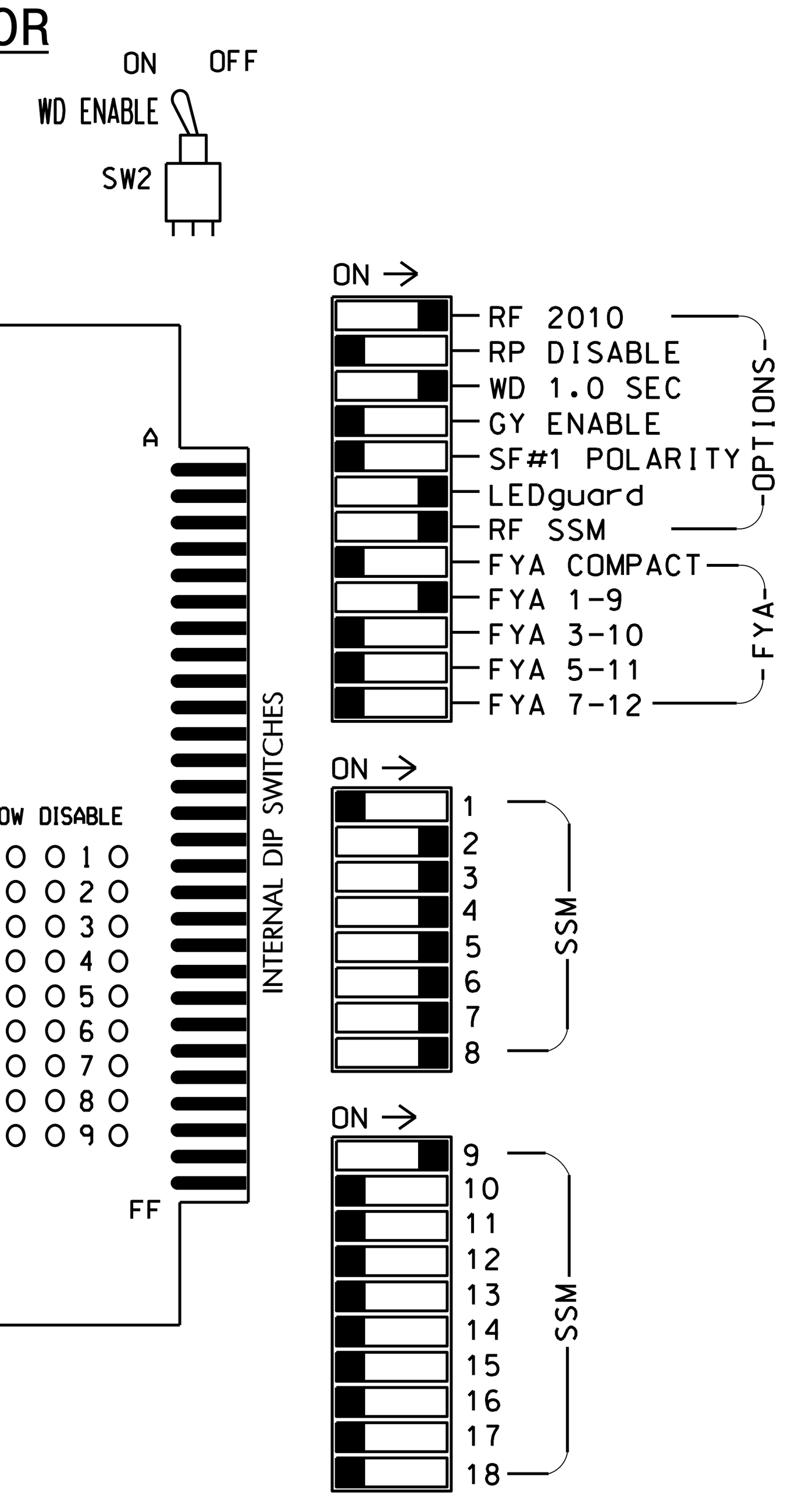
EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 2-5, 2-6, 2-9, 3-7, 3-8, 4-7, 4-8, 5-9 AND 6-9.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. 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 unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
6. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
7. The cabinet and controller are part of the Salisbury Signal System.

EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,S4,S5,S7,S8,S10,S11,AUX S1
PHASES USED.............1,2,3,4,5,6,7,8
OVERLAP "A".............1+2
OVERLAP "B".............NOT USED
OVERLAP "C".............NOT USED
OVERLAP "D".............NOT USED

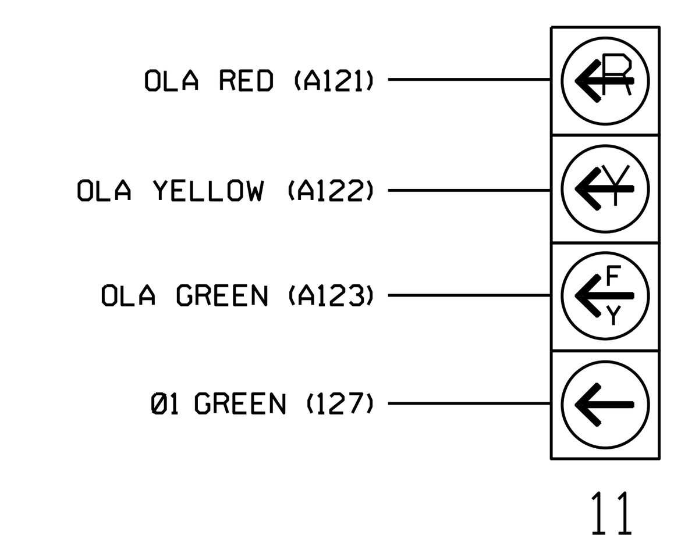
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4		S5	S6	S7		S8	S9	S10		S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3		4	14	5		6	15	7		8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4	4 PED	5		6	6 PED	7		8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	22	31	41,42 43	NU	42	51	61,62	NU	62	71,72	81,82	NU	11★	NU	NU	NU	NU	NU
RED		128				101				134				107							
YELLOW	✳	129				102				135				108							
GREEN		130				103				136				109							
RED ARROW					116				131				122			A121					
YELLOW ARROW				117	117			132	132			123	123			A122					
FLASHING YELLOW ARROW																A123					
GREEN ARROW	127			118	118			133	133			124	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 head as shown)



NOTE

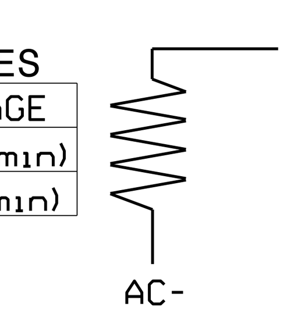
The sequence display for signal head 11 requires special logic programming. See sheet 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES

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



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø2/SYS 2A/S16	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2/SYS 2B/S17			NOT USED									ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	SLOT EMPTY	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	✳ GPS EVP		SLOT EMPTY
	L	NOT USED					Ø 8 8A								

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

FS = FLASH SENSE
ST = STOP TIME

GPS PREEMPTION INSTALLATION NOTE

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

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10 ★	26	6	Y	Y	Y		3
	-	I1U	56	18 ★	51	1	Y	Y			
2A/S16	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S17	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
8A	TB5-11,12	J6L	46	8	18	8	Y	Y			10

[1] Add jumper from I1-W to J4-W, on rear of input file.
★ See Input Page Assignment programming details on sheet 3.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

DETECTOR NOTES

1) Install a video detection system for detection zones 1A, 4A, 5B, 6A/S18, 6B/S19, 7A and 7B. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.
2) For detection area 1A detector card placement and slots reserved for wired inputs are typical for a NCDOT installation. Inputs associated with these slots are compatible with time of day instructions located on sheet 3 of this electrical detail.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T2
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 2 - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS | INIT. | DATE

750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE
DocuSigned by: D. Todd Joyce 01/28/2022
DATE

SIG. INVENTORY NO. 09-0640T2

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 10.3

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

          SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

          SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

          SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL
FOR DEFAULT PHASING

(program controller as shown below)

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

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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL
FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

NOTICE PAGE 2

```
 PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS: |X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T2
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 2 - Sheet 2 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division — ITS & Signals Management Section — State of North Carolina Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

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PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADEDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640T2

28-JAN-2022 08:23
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cestrickland

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

NOTES:
1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.

```
PAGE: 2 C1 PIN:48  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64).............26
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................._
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................._
DOOR OPEN (Y/N)......................_
MANUAL CONTROL ENABLE (Y/N).........._
MANUAL CONTROL ADVANCE (Y/N)........._
SPECIAL FUNCTION ALARM (1-8)........._
TOD HOUR SYCHRONIZATION (0-23)......._
FORCE OFF RING (1-4)................._
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)...._
CHANGE PHASE TIMING PAGE (1-4)......._
CHANGE PHASE CONTROL PAGE (1-4)......_
CHANGE OVERLAP CONTROL PAGE (1-4)...._
CHANGE INPUT PAGE (1-4).............._
CHANGE OUTPUT PAGE (1-4)............._
OVERRIDE PHASE CONTROL FUNCTION (Y).._
```

ENTER A 'Y' FOR NOT ENABLED

DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 1A - PHASE 6)

```
PAGE: 2 C1 PIN:48  NOT ENABLED
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................._
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................._
DOOR OPEN (Y/N)......................_
MANUAL CONTROL ENABLE (Y/N).........._
MANUAL CONTROL ADVANCE (Y/N)........._
SPECIAL FUNCTION ALARM (1-8)........._
TOD HOUR SYCHRONIZATION (0-23)......._
FORCE OFF RING (1-4)................._
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)...._
CHANGE PHASE TIMING PAGE (1-4)......._
CHANGE PHASE CONTROL PAGE (1-4)......_
CHANGE OVERLAP CONTROL PAGE (1-4)...._
CHANGE INPUT PAGE (1-4).............._
CHANGE OUTPUT PAGE (1-4)............._
OVERRIDE PHASE CONTROL FUNCTION (Y).._
```

PRESS '+' TO ADVANCE TO INPUT 18

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................._
VEHICLE DETECTOR (1-64).............1
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................._
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................._
DOOR OPEN (Y/N)......................_
MANUAL CONTROL ENABLE (Y/N).........._
MANUAL CONTROL ADVANCE (Y/N)........._
SPECIAL FUNCTION ALARM (1-8)........._
TOD HOUR SYCHRONIZATION (0-23)......._
FORCE OFF RING (1-4)................._
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)...._
CHANGE PHASE TIMING PAGE (1-4)......._
CHANGE PHASE CONTROL PAGE (1-4)......_
CHANGE OVERLAP CONTROL PAGE (1-4)...._
CHANGE INPUT PAGE (1-4).............._
CHANGE OUTPUT PAGE (1-4)............._
OVERRIDE PHASE CONTROL FUNCTION (Y).._
```

ENTER '51' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 1A - PHASE 1)

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................._
VEHICLE DETECTOR (1-64).............51
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................._
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................._
DOOR OPEN (Y/N)......................_
MANUAL CONTROL ENABLE (Y/N).........._
MANUAL CONTROL ADVANCE (Y/N)........._
SPECIAL FUNCTION ALARM (1-8)........._
TOD HOUR SYCHRONIZATION (0-23)......._
FORCE OFF RING (1-4)................._
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)...._
CHANGE PHASE TIMING PAGE (1-4)......._
CHANGE PHASE CONTROL PAGE (1-4)......_
CHANGE OVERLAP CONTROL PAGE (1-4)...._
CHANGE INPUT PAGE (1-4).............._
CHANGE OUTPUT PAGE (1-4)............._
OVERRIDE PHASE CONTROL FUNCTION (Y).._
```

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................N
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          |12345678910111213141516
PHASES ASSIGNED |
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................0
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '1' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................Y
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          |12345678910111213141516
PHASES ASSIGNED |X
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................0
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T2
DESIGNED: January 2022
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Electrical Detail - Temp 2 - Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY: T. Joyce
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Transportation Mobility and Safety Division — Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER J. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
DATE

SIG. INVENTORY NO. 09-0640T2

28-JAN-2022 08:24
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EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4, 5 and 6.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
   GRN YEL  RED  ¦12345678910111213141516
 1 255  0.0  0.0 ¦X    X
 2   0  0.0  0.0 ¦
 3   0  0.0  0.0 ¦
 4   0  0.0  0.0 ¦
 5   1  0.0  0.0 ¦ X   X
 EXIT CALLS      ¦
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:               ¦ ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW  ¦
 OMIT OVERLAPS:          ¦
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
   GRN YEL  RED  ¦12345678910111213141516
 1 255  0.0  0.0 ¦ X  X
 2   0  0.0  0.0 ¦
 3   0  0.0  0.0 ¦
 4   0  0.0  0.0 ¦
 5   1  0.0  0.0 ¦ X   X
 EXIT CALLS      ¦
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:               ¦ ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW  ¦
 OMIT OVERLAPS:          ¦
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
   GRN YEL  RED  ¦12345678910111213141516
 1 255  0.0  0.0 ¦  X    X
 2   0  0.0  0.0 ¦
 3   0  0.0  0.0 ¦
 4   0  0.0  0.0 ¦
 5   1  0.0  0.0 ¦   X   X
 EXIT CALLS      ¦
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:               ¦ ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW  ¦
 OMIT OVERLAPS:          ¦
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
   GRN YEL  RED  ¦12345678910111213141516
 1 255  0.0  0.0 ¦   X  X
 2   0  0.0  0.0 ¦
 3   0  0.0  0.0 ¦
 4   0  0.0  0.0 ¦
 5   1  0.0  0.0 ¦   X   X
 EXIT CALLS      ¦
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......N
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:               ¦ ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW  ¦
 OMIT OVERLAPS:          ¦
```

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T2
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 2 - Sheet 4 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy,Garner,NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
DATE

SIG. INVENTORY NO. 09-0640T2

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cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 10.6

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 to run protected turns only.

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T2
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 2 - Sheet 5 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

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

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce
A90CADEDBD4241D...
01/28/2022
DATE

SIG. INVENTORY NO. 09-0640T2

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cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 11.0

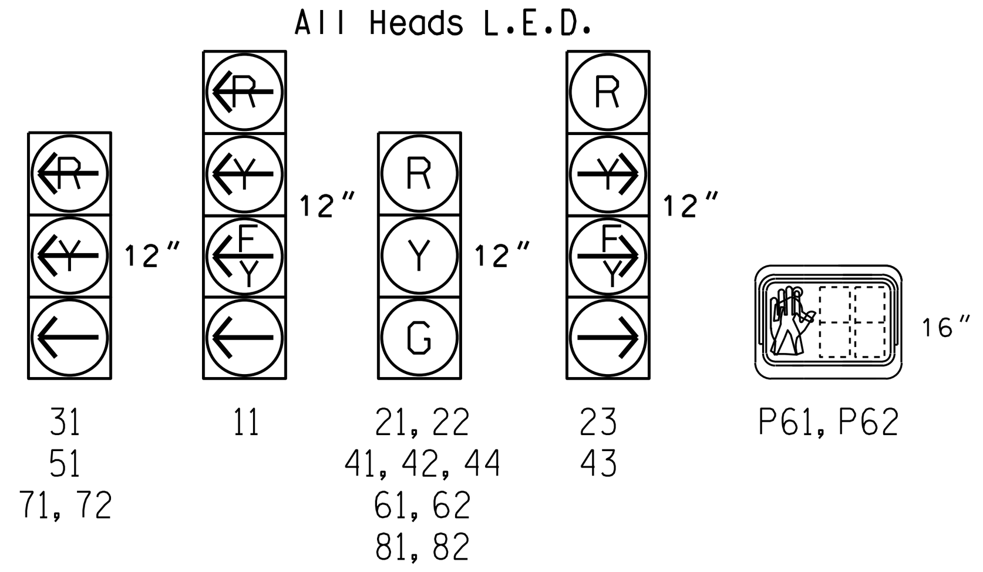
8 Phase
Fully Actuated
with Emergency Vehicle Preemption
(Salisbury Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. This intersection features a GPS Emergency Vehicle Preemption system.
9. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
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.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	✱15	-	Y
					#6	Y	Y	Y	-	3	-	Y
2A/S16	6X6	355	6	Y	2	Y	Y	-	-	-	Y	-
2B/S17	6X6	355	6	Y	2	Y	Y	-	-	-	Y	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	-
4A/S15	6X6	300	6	Y	4	-	Y	-	1.9	-	Y	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
★4C	6X6	0	★5	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	3	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A/S18	6X6	355	6	Y	6	Y	Y	-	-	-	Y	Y
6B/S19	6X6	355	6	Y	6	Y	Y	-	-	-	Y	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-

✱ Disable Delay during Alternate Phasing Operation.
\# Disable Phase Call for Loop during Alternate Phasing Operation.
★ Adjust sensitivity setting for bicycle detection.
See Figure 1 on Sheet 2 for bicycle loop construction details.

OASIS 2070 EV PREEMPT

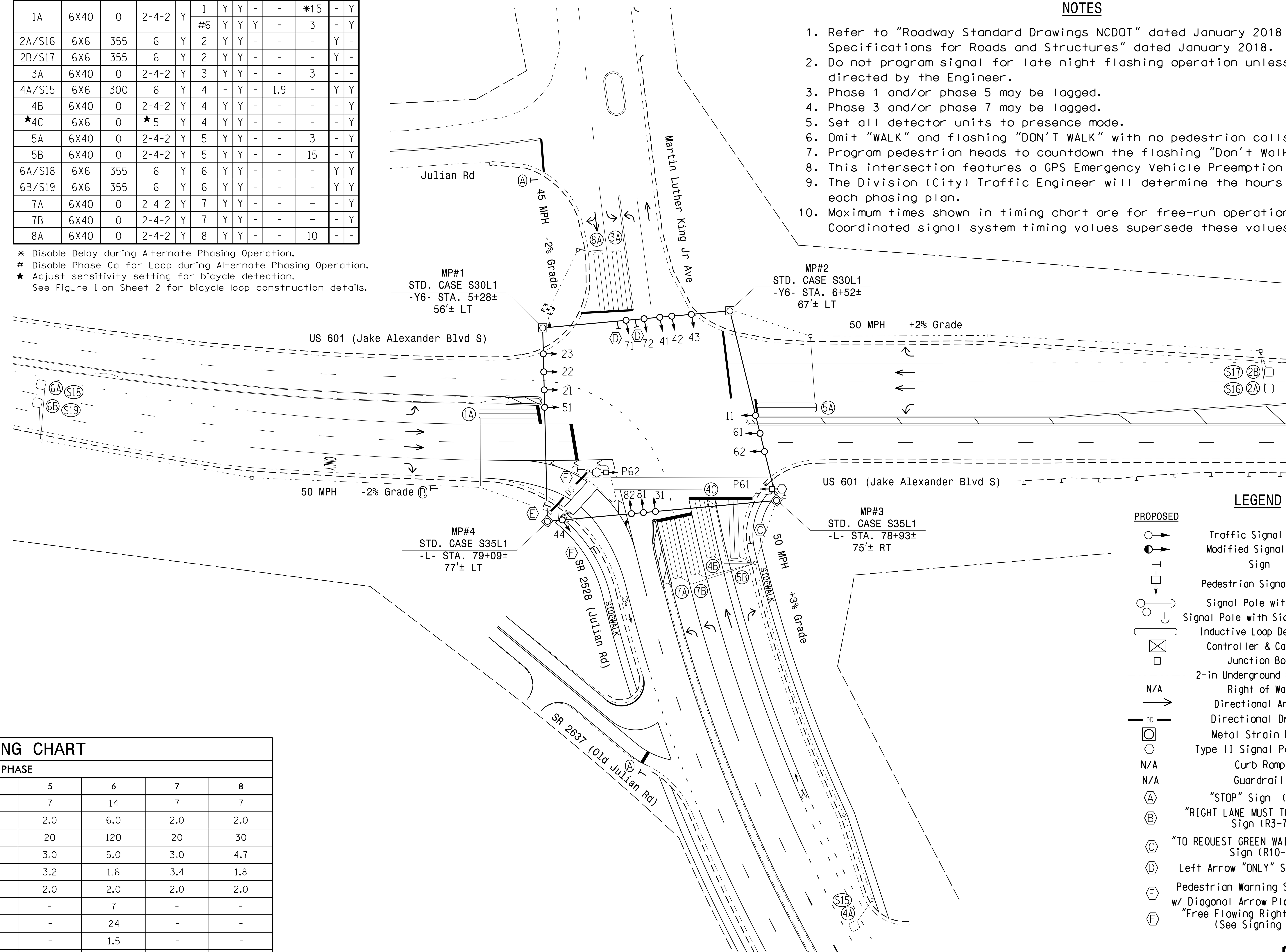
FUNCTION	PRE 3	PRE 4	PRE 5	PRE 6
Interval 1 – Dwell Green	255	255	255	255
Interval 1 – Dwell Yellow	0.0*	0.0*	0.0*	0.0*
Interval 1 – Dwell Red	0.0*	0.0*	0.0*	0.0*
Interval 5 – Exit Green	1	1	1	1
Interval 5 – Yellow	0.0	0.0	0.0	0.0
Interval 5 – Red	0.0	0.0	0.0	0.0
Exit Phase(s)	2+6	2+6	4+8	4+8
Priority	MED	MED	MED	MED
Delay Time	0.0	0.0	0.0	0.0
Min Green Before Pre	1	1	1	1
Ped Clear Before Pre	0*	0*	0*	0*
Yellow Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Dwell Min Time	7	7	7	7
Dwell Max Time (Minutes)	2	2	2	2
Enable Backup Protection	N	N	N	N
Ped Clear Through Yellow	Y	Y	Y	Y
Omit Overlaps	-	-	-	-
Preempt Extend**	2	2	2	2

* Time defaults to time used for phase during normal operation
** Program Timing on Detection Unit

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	14	7	7	7	14	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	120	20	30	20	120	20	30
Yellow Clearance	3.0	5.0	3.0	4.6	3.0	5.0	3.0	4.7
Red Clearance	2.9	1.6	3.3	1.5	3.2	1.6	3.4	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	7	-	-
Don't Walk 1	-	-	-	-	-	24	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	40	-	-	-	40	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Directional Drill	N/A
	Metal Strain Pole	
	Type II Signal Pedestal	
N/A	Curb Ramp	
N/A	Guardrail	
A	"STOP" Sign (R1-1)	A
B	"RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)	B
C	"TO REQUEST GREEN WAIT ON SYMBOL" Sign (R10-22)	C
D	Left Arrow "ONLY" Sign (R3-5L)	D
E	Pedestrian Warning Sign (W11-2) w/ Diagonal Arrow Plaque (W16-7P)	E
F	"Free Flowing Right Turn" Sign (See Signing Plan)	F

Signal Upgrade - Final Design (Sheet 1 of 2)

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Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY:
PREPARED BY: I.O. Umozurike REVIEWED BY:

SCALE 0 40
1" = 40'

REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 026486
ROBERT J. ZIEMBA

DocuSigned by:
01/27/2022
SIGNATURE DATE

SIG. INVENTORY NO. 09-0640

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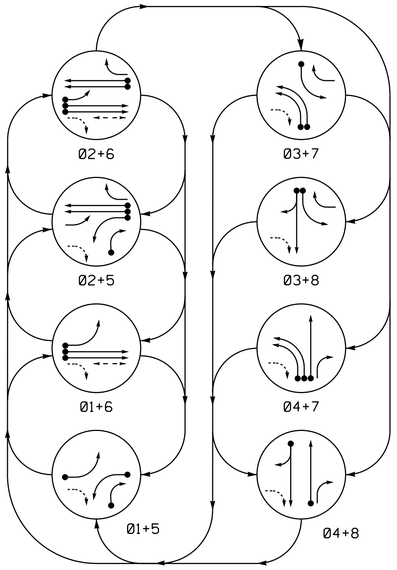
PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 11.1

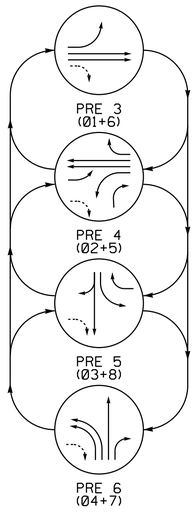
8 Phase
Fully Actuated
with Emergency Vehicle Preemption
(Salisbury Signal System)

DEFAULT PHASING DIAGRAM



DEFAULT PHASING EV PREEMPT PHASES

(Medium Priority)



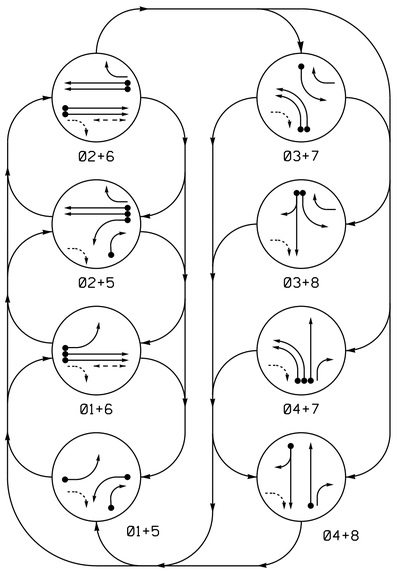
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE3	PRE4	PRE5	PRE6	FLASH
11	←-	←-	~~F~~ Y	~~F~~ Y	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~F~~ Y	~~R~~	~~R~~	~~Y~~
21, 22	R	R	G	G	R	R	R	R	R	G	R	R	Y
23	R	R	~~F~~ Y	~~F~~ Y	→-	→-	R	R	R	~~F~~ Y	→-	R	~~Y~~
31	~~R~~	~~R~~	~~R~~	~~R~~	←-	←-	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	~~R~~
41, 42, 44	R	R	R	R	R	R	G	G	R	R	R	G	R
43	→-	R	→-	R	R	R	~~F~~ Y	~~F~~ Y	R	→-	R	~~F~~ Y	R
51	←-	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	G	R	R	R	Y
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~
81, 82	R	R	R	R	R	G	R	G	R	R	R	G	R
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DW	DW	DW	DRK

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. This intersection features a GPS Emergency Vehicle Preemption system.
9. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

ALTERNATE PHASING DIAGRAM

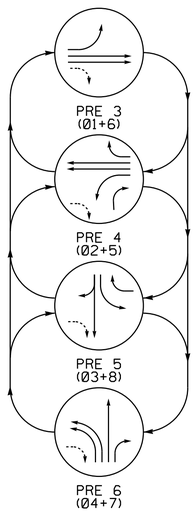


PHASING DIAGRAM DETECTION LEGEND

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

ALTERNATE PHASING EV PREEMPT PHASES

(Medium Priority)

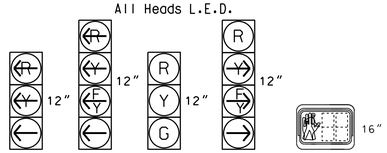


ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	PRE3	PRE4	PRE5	PRE6	FLASH
11	←-	←-	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~Y~~
21, 22	R	R	G	G	R	R	R	R	R	G	R	R	Y
23	R	R	~~F~~ Y	~~F~~ Y	→-	→-	R	R	R	~~F~~ Y	→-	R	~~Y~~
31	~~R~~	~~R~~	~~R~~	~~R~~	←-	←-	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	~~R~~
41, 42, 44	R	R	R	R	R	R	G	G	R	R	R	G	R
43	→-	R	→-	R	R	R	~~F~~ Y	~~F~~ Y	R	→-	R	~~F~~ Y	R
51	←-	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	G	R	R	R	Y
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~R~~	←-	~~R~~
81, 82	R	R	R	R	R	G	R	G	R	R	R	G	R
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DW	DW	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



31
51
71, 72

11

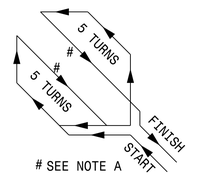
21, 22
41, 42, 44
61, 62
81, 82

23
43

P61, P62

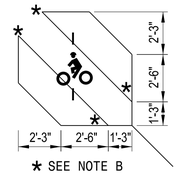
FIGURE 1: BICYCLE LOOP DETECTOR DETAILS

LOOP WINDING DETAIL



SEE NOTE A

SAW CUT DETAIL



★ SEE NOTE B

NOTES:
A. One turn is shown to illustrate the winding method.
   Five turns are required for bicycle detection.
   The two center segments shall be wound in the same direction.
B. Round corners of acute angle saw cuts to prevent damage to conductors.
C. See 2009 MUTCD Figure 9C-7 for bicycle detector pavement marking details.

Signal Upgrade - Final Design (Sheet 2 of 2)

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Transportation Mobility and Safety Division
DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
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Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY:
PREPARED BY: I.O. Umozurike | REVIEWED BY:

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. TIEMEY
DocuSigned by: Robert J. Tiemey
SIGNATURE 01/27/2022 DATE

SIG. INVENTORY NO. 09-0640

27-JAN-2022 11:01
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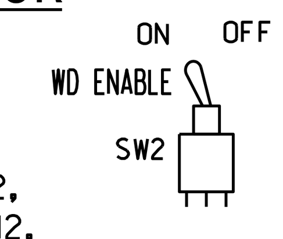
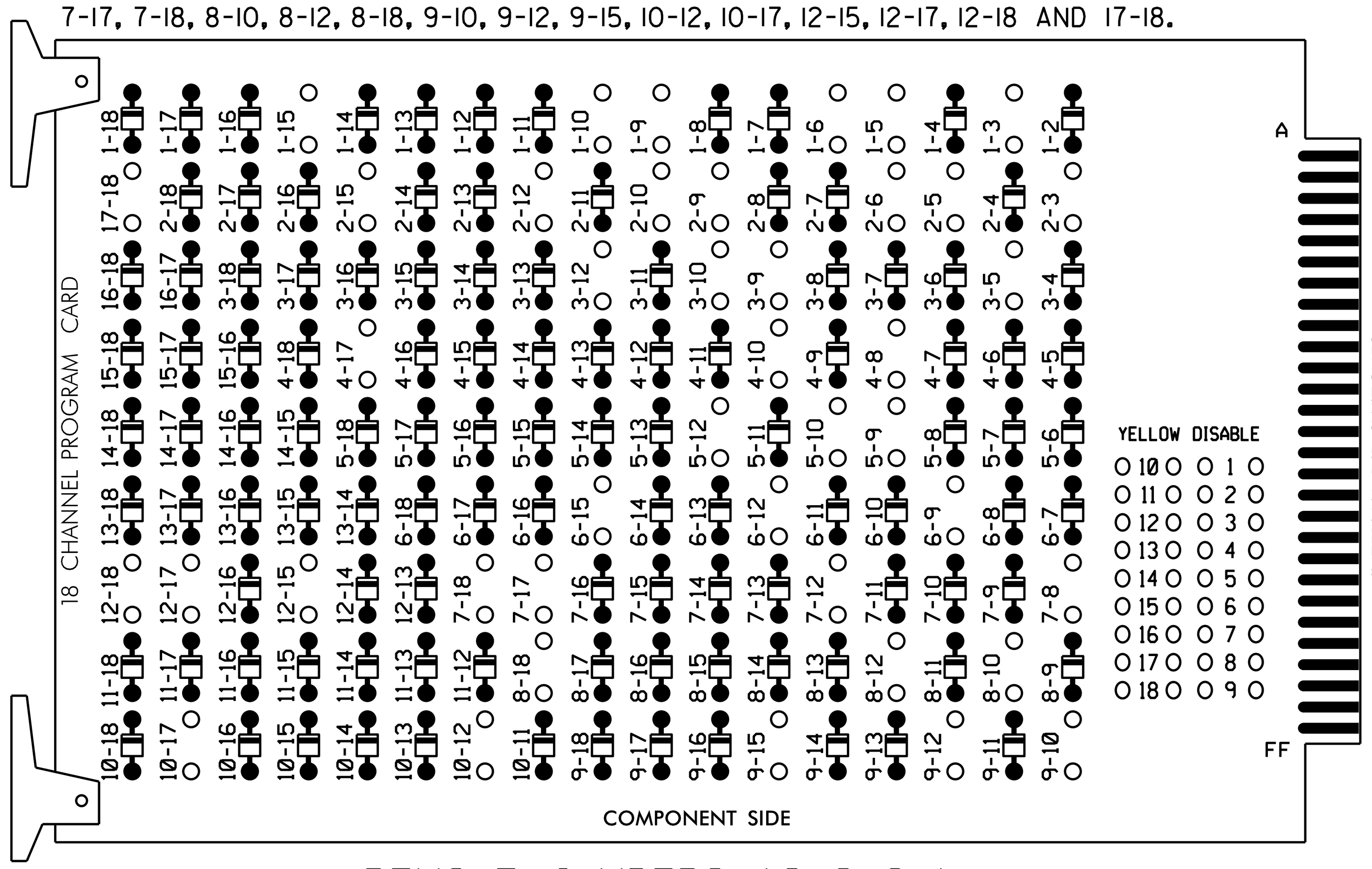
EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

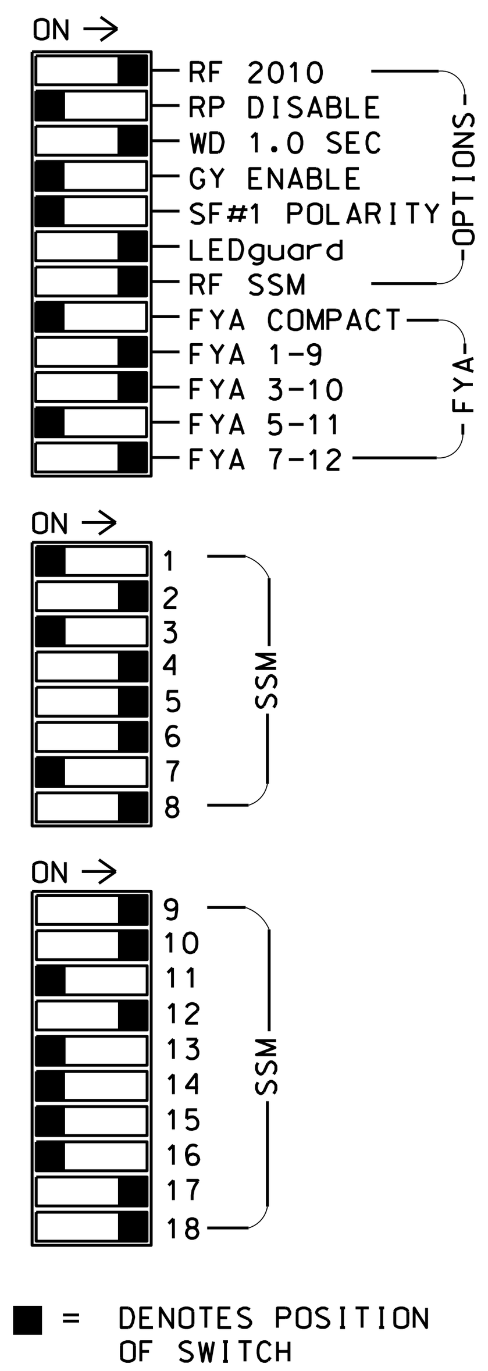
(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-3, 1-5, 1-6, 1-9, 1-10, 1-15, 2-3, 2-5, 2-6, 2-9, 2-10, 2-12, 2-15, 3-5, 3-9, 3-10, 3-12, 4-8, 4-10, 4-17, 5-9, 5-10, 5-12, 6-9, 6-12, 6-15, 7-8, 7-12, 7-17, 7-18, 8-10, 8-12, 8-18, 9-10, 9-12, 9-15, 10-12, 10-17, 12-15, 12-17, 12-18 AND 17-18.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. 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 unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Startup In Green and Yellow Flash.
5. Program phase 6 for Startup Ped Call.
6. Program overlaps 1 and 6 as Wag Overlaps.
7. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
8. The cabinet and controller are part of the Salisbury Signal System.

EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,S4,S5,S7,S8,S9,S10,S11
AUX S1,AUX S2,AUX S3,AUX S5,AUX S6
PHASES USED.............1,2,3,4,5,6,6PED,7,8
OVERLAP "A".............1+2
OVERLAP "B".............4+5
OVERLAP "C".............NOT USED
OVERLAP "D".............2+3
OVERLAP "E".............7
OVERLAP "F".............3
OVERLAP "G".............5
OVERLAP "H".............3

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	OLG	4	4 PED	5	6	6 PED	OLH	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11★	21,22	NU	43★	41,42 44	NU	51	61,62	P61 P62	23★	81,82	NU	11★	43★	71,72	NU	23★	31
RED		128			101			134			107			A124			A101	
YELLOW	✳	129		✳	102			135		✳	108							
GREEN		130			103			136			109							
RED ARROW							131						A121		A111			A104
YELLOW ARROW							132						A122	A125	A112		A102	A105
FLASHING YELLOW ARROW													A123	A126			A103	
GREEN ARROW	127			118			133			124					A113			A106
(Don't Walk hand symbol)									119									
(Walk pedestrian symbol)									121									

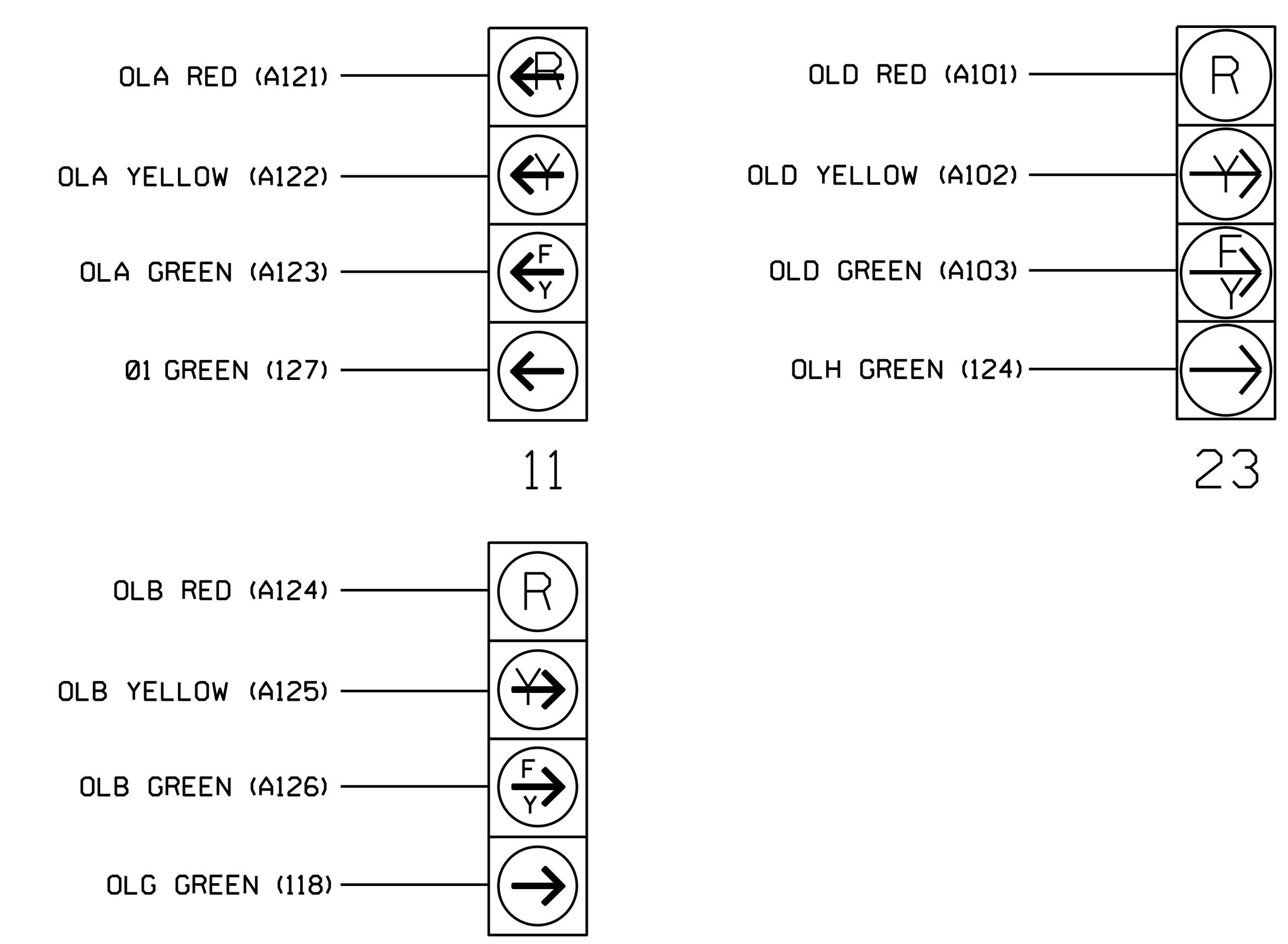
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11, 23 and 43 requires special logic programming. See sheet 5 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø2/SYS 2A/S16	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	Ø4/SYS 4A/S15	Ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L	NOT USED	Ø2/SYS 2B/S17			NOT USED	Ø 4 4B	NOT USED						NOT USED	ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø6/SYS 6A/S18	WIRED INPUT ⊗	Ø 7 7A	Ø 7 7B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	* GPS EVP	SLOT EMPTY
	L	NOT USED	NOT USED	Ø6/SYS 6B/S19		NOT USED	Ø 8 8A							

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

*See GPS Preemption Installation Note Below

⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE
ST = STOP TIME

GPS PREEMPTION INSTALLATION NOTE

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

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10 ★	26	6	Y	Y	Y		3
	-	I1U	56	18 ★	51	1	Y	Y			
2A/S16	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S17	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A/S15	TB4-9,10	I6U	41	3	4	4/SYS	-	Y		1.9	
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
✳ 4C	TB6-1,2	I7U	65	27	34	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A/S18	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S19	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-9,10	J6U	42	4	8	7	Y	Y			
8A	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE: INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

[1] Add jumper from I1-W to J4-W, on rear of input file.

★ See Input Page Assignment programming details on sheets 6 and 7.

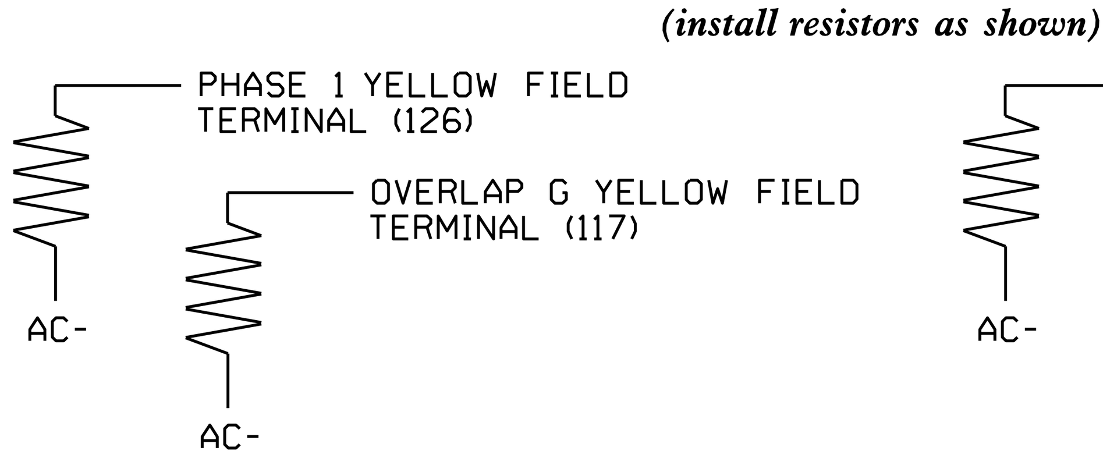
✳ Adjust sensitivity setting for bicycle detection.

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: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 1 of 7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 | REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

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 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640

27-JAN-2022 15:08
S:\ITS&SU\ITS Signals\Workgroups\Sig Man\Projects from Signal Design\Active Projects\Strickland\090640_sm_ele_xxx.dgn
cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 11.3

OUTPUT PHASE ASSIGNMENT FOR LOADSWITCH AUX S3 (OVERLAP E)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "45"

```
PAGE:1  C1 PIN:91   NOT ENABLED
OUTPUT ASSIGNMENT #..................45
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE......................._
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH AUX S3 RED

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:91   NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...5
SELECT COLOR (0=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:91   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................45
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

PRESS "+" KEY FOR OUTPUT 46

```
PAGE:1  C1 PIN:93   NOT ENABLED
OUTPUT ASSIGNMENT #..................46
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE......................._
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH AUX S3 GREEN

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:93   NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...5
SELECT COLOR (0=RED,1=YEL,2=GRN).....2
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:93   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................46
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

PRESS "+" KEY TO ADVANCE TO OUTPUT 54

```
PAGE:1  C1 PIN:101   CONTROLLER FLASH
OUTPUT ASSIGNMENT #..................54
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................Y
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

LOADSWITCH AUX S3 YELLOW

THE CONTROLLER FLASH ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:101   CONTROLLER FLASH
SELECT VEHICLE OVERLAP (A=1, P=16)...5
SELECT COLOR (0=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:101   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................54
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

OUTPUT PROGRAMMING FOR LOADSWITCH AUX S3 COMPLETE

OUTPUT PHASE ASSIGNMENT FOR LOADSWITCH AUX S6 (OVERLAP F)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "37"

```
PAGE:1  C1 PIN:83   NOT ENABLED
OUTPUT ASSIGNMENT #..................37
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

LOADSWITCH AUX S6 RED

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:83   NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...6
SELECT COLOR (0=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:83   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................37
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

PRESS "+" KEY FOR OUTPUT 38

```
PAGE:1  C1 PIN:84   NOT ENABLED
OUTPUT ASSIGNMENT #..................38
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

LOADSWITCH AUX S6 GREEN

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:84   NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...6
SELECT COLOR (0=RED,1=YEL,2=GRN).....2
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:84   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................38
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

PRESS "+" KEY TO ADVANCE TO OUTPUT 53

```
PAGE:1  C1 PIN:100   NOT ENABLED
OUTPUT ASSIGNMENT #..................53
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

LOADSWITCH AUX S6 YELLOW

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:100   NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...6
SELECT COLOR (0=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:100   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #..................53
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................Y
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

OUTPUT PROGRAMMING FOR LOADSWITCH AUX S6 COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 2 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

ITS & Signals Management Section — Transportation Mobility and Safety Division — State of North Carolina Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. TODD JOYCE

DocuSigned by: D. Todd Joyce A90CADEDBD4241D... 01/28/2022 DATE

SIG. INVENTORY NO. 09-0640

27-JAN-2022 15:09
.*09640_sm_ele_xxx.dgn
cestrickland

OUTPUT PHASE REASSIGNMENT FOR LOADSWITCH S4
(REASSIGN AS OVERLAP G)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "6"

```
PAGE:1  C1 PIN:7   VEHICLE PHASE
OUTPUT ASSIGNMENT #................6
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S4 RED

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:7   VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (O=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:7   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #................6
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

PRESS "+" KEY FOR OUTPUT 7

```
PAGE:1  C1 PIN:8   VEHICLE PHASE
OUTPUT ASSIGNMENT #................7
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S4 YELLOW

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:8   VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (O=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:8   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #................7
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

PRESS "+" KEY FOR OUTPUT 8

```
PAGE:1  C1 PIN:9   VEHICLE PHASE
OUTPUT ASSIGNMENT #................8
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S4 GREEN

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:9   VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (O=RED,1=YEL,2=GRN).....2
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:9   VEHICLE OVERLAP
OUTPUT ASSIGNMENT #................8
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

OUTPUT PROGRAMMING FOR LOADSWITCH S4 COMPLETE

OUTPUT PHASE REASSIGNMENT FOR LOADSWITCH S10
(REASSIGN AS OVERLAP H)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "22"

```
PAGE:1  C1 PIN:24  VEHICLE PHASE
OUTPUT ASSIGNMENT #...............22
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S10 RED

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:24  VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (O=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:24  VEHICLE OVERLAP
OUTPUT ASSIGNMENT #...............22
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

PRESS "+" KEY FOR OUTPUT 23

```
PAGE:1  C1 PIN:25  VEHICLE PHASE
OUTPUT ASSIGNMENT #...............23
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S10 YELLOW

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:25  VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (O=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:25  VEHICLE OVERLAP
OUTPUT ASSIGNMENT #...............23
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

PRESS "+" KEY FOR OUTPUT 24

```
PAGE:1  C1 PIN:26  VEHICLE PHASE
OUTPUT ASSIGNMENT #...............24
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................Y
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

LOADSWITCH S10 GREEN

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

```
PAGE:1  C1 PIN:26  VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (O=RED,1=YEL,2=GRN).....2
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:26  VEHICLE OVERLAP
OUTPUT ASSIGNMENT #...............24
FREQUENCY (O=DEFAULT) (O-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (O - 100%)...0
MODE (O=SOLID,1=FLASH).............0
SELECT ASSIGNMENT:
NOT ENABLED........................_
VEHICLE PHASE......................_
PEDESTRIAN PHASE...................._
VEHICLE OVERLAP....................Y
PEDESTRIAN OVERLAP.................._
WATCHDOG............................_
DETECTOR RESET......................_
ADVANCE BEACON......................_
OUT OF PHASE FLASHER................_
CONTROLLER FLASH...................._
RUN FREE............................_
RESERVED............................_
PREEMPT............................._
SOFT PREEMPT........................_
ANY PREEMPT........................._
COORDINATION PLAN..................._
OFFSET.............................._
PHASE CHECK........................._
PHASE ON............................_
PHASE NEXT.........................._
```

OUTPUT PROGRAMMING FOR LOADSWITCH S10 COMPLETE

Electrical Detail - Sheet 3 of 7

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

ITS & Signals Management Section, Transportation Mobility and Safety Division, State of North Carolina Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9	Rowan County	Salisbury
PLAN DATE: January 2022	REVIEWED BY: T. Joyce	
PREPARED BY: C. Strickland	REVIEWED BY:	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640

PROJECT REFERENCE NO.	SHEET NO.
U-5738	Sig 11.5

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

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

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

PRESS '+'

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

PRESS '+' TWICE

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

PRESS '+'

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

PRESS '+'

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

PRESS '+'

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

PRESS '+'

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

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS),
THEN '1' (VEHICLE OVERLAP SETTINGS).
PRESS 'NEXT' TO ADVANCE TO PAGE 2.

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:|X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'B' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:|   XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN   <- NOTICE GREEN FLASH
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+' TWICE

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'D' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:| XX
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN   <- NOTICE GREEN FLASH
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'E' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:|      X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'F' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:| X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'G' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:|    X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

PRESS '+'

```
NOTICE PAGE 2 ->
 PAGE 2: VEHICLE OVERLAP 'H' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS:| X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 4 of 7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 09-0640

27-JAN-2022 15:10
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cestrickland

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8 AND 9.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF
PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #52 OFF
PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #51 ON
PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE OVERLAP #7 IS ON
AND RED CLEAR ON OVL #7 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF
PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 (HEAD 43).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE OVERLAP #7 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #49 OFF
PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 43).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON OVERLAP #7 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #48 ON
PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 43).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE OVERLAP #8 IS ON
AND RED CLEAR ON OVL #8 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF
PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 (HEAD 23).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE OVERLAP #8 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #41 OFF
PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 23).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON OVERLAP #8 IS ON
SCROLL DOWN
THEN:
SET OUTPUT ASSIGNMENT #40 ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 23).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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

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

OUTPUT REFERENCE SCHEDULE
USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 5 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:
US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave
Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy,Garner,NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE
DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D DATE

SIG. INVENTORY NO. 09-0640

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PROJECT REFERENCE NO. U-5738 | SHEET NO. Sig 11.7

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.

2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.

```
PAGE: 2 C1 PIN:48  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64).............26
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............-
STOP TIME (Y/N).....................-
FLASH SENSE (Y/N)...................-
DOOR OPEN (Y/N).....................-
MANUAL CONTROL ENABLE (Y/N).........-
MANUAL CONTROL ADVANCE (Y/N)........-
SPECIAL FUNCTION ALARM (1-8)........-
TOD HOUR SYCHRONIZATION (0-23)......-
FORCE OFF RING (1-4)................-
HOLD PHASES (1-16)..................-
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

ENTER A 'Y' FOR NOT ENABLED →

DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 1A - PHASE 6)

```
PAGE: 2 C1 PIN:48  NOT ENABLED
INPUT ASSIGNMENT #..................10
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)...................Y
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

PRESS '+' TO ADVANCE TO INPUT 18

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)..................._
VEHICLE DETECTOR (1-64).............1
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

ENTER '51' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT →

(LOOP 1A - PHASE 1)

```
PAGE: 2 C1 PIN:56  VEHICLE DETECTOR
INPUT ASSIGNMENT #..................18
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N)..................._
VEHICLE DETECTOR (1-64).............51
PEDESTRIAN DETECTOR (1-16).........._
ALTERNATE PED DETECTOR (1-16)......._
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............._
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)..................._
DOOR OPEN (Y/N)....................._
MANUAL CONTROL ENABLE (Y/N)........._
MANUAL CONTROL ADVANCE (Y/N)........_
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYCHRONIZATION (0-23)......_
FORCE OFF RING (1-4)................_
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#.._
CHANGE PHASE SEQUENCE PAGE (1-12)..._
CHANGE PHASE TIMING PAGE (1-4)......_
CHANGE PHASE CONTROL PAGE (1-4)....._
CHANGE OVERLAP CONTROL PAGE (1-4)..._
CHANGE INPUT PAGE (1-4)............._
CHANGE OUTPUT PAGE (1-4)............_
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................N
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          ¦12345678910111213141516
PHASES ASSIGNED ¦
SWITCH/DUPLICATE¦
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................0
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

→ ENTER 'Y' FOR ENABLE DETECTOR →

ENTER '1' FOR PHASES ASSIGNED →

ENSURE DELAY IS '0' →

```
VEHICLE DETECTOR #51  SETTINGS (+-,1-64)
SETTING:                           (Y/N)
ENABLE DETECTOR.....................Y
ENABLE LOGGING......................N
ENABLE DIAGNOSTICS..................N
SPEED TRAP..........................N
CALL DETECTOR.......................Y
EXTENSION DETECTOR..................Y
MODE 2 STOP BAR.....................N
SWITCHING DETECTOR..................N
DUPLICATING DETECTOR................N
ENABLE FULL TIME DELAY..............N
IF FAILED, SET MIN RECALL?..........N
IF FAILED, SET MAX1 RECALL?.........N
IF FAILED, SET MAX2 RECALL?.........N
PHASE#          ¦12345678910111213141516
PHASES ASSIGNED ¦X
SWITCH/DUPLICATE¦
LOOP SIZE (0-255 FT)................6
SPEED TRAP DISTANCE (0-255 FT)......0
STOP BAR TIME (0-255 SEC)...........0
STRETCH (0-25.5 SEC)................0.0
DELAY (0-255 SEC)...................0
MAX CALLS/MIN (0-255)...............255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).0
MAX OCCUPANCY (0-100%)..............100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).......0.0
PREEMPTION INDEX FOR QUEUE (0-10)...0
```

DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 6 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022 | REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy,Garner,NC 27529

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
A90CADFDBD4241D...
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SIG. INVENTORY NO. 09-0640

27-JAN-2022 15:11
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EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4, 5 and 6.

```
   PREEMPTION  #3  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |X    X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 | X   X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......Y
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:                   | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW      |
 OMIT OVERLAPS:              |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #4  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 | X  X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 | X   X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......Y
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:                   | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW      |
 OMIT OVERLAPS:              |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #5  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |  X    X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 |   X   X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......Y
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:                   | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW      |
 OMIT OVERLAPS:              |
```

PRESS 'NEXT' ONCE

```
   PREEMPTION  #6  SETTINGS (NEXT:1-10)
 INTERVAL/TIMING |  CLEAR/DWELL PHASES
   GRN YEL  RED  |12345678910111213141516
 1 255  0.0  0.0 |   X  X
 2   0  0.0  0.0 |
 3   0  0.0  0.0 |
 4   0  0.0  0.0 |
 5   1  0.0  0.0 |   X   X
 EXIT CALLS      |
                OPTIONS
 PRIORITY (Y/N TO SELECT) ............MED
 DELAY TIMER (0-255 SEC) .............0
 MIN GREEN BEFORE PRE (0= DEFAULT)....1
 PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
 RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
 DWELL MIN TIMER (0-255 SEC) .........7
 DWELL MAX TIMER (0=OFF,1-255MIN) ....2
 DWELL HOLD-OVER TIMER (0-255) .......0
 LATCH CALL? .........................N
 LINK TO NEXT PREEMPT? ...............N
 ENABLE BACKUP PROTECTION? ...........N
 HOLD CLEAR 1 PHASES DURING DELAY? ...N
 FAST GREEN FLASH DWELL PHASES? ......N
 PED CLEARANCE THROUGH YELLOW? .......Y
 INHIBIT OVERLAP GREEN EXTENSION? ....N
 SERVICE DURING SOFTWARE FLASH? ......N
 REST IN RED DURING DWELL INTERVAL? ..N
 FLASH DWELL INTERVAL? ...............N
 ALLOW PEDS IN DWELL INTERVAL? .......N
 RE-TIME DWELL INTERVAL? .............N
 OVERLAPS:                   | ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW      |
 OMIT OVERLAPS:              |
```

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

* Time defaults to time used for phase during normal operation.

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for head 11 to run protected turns only.

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED: N/A

Electrical Detail - Sheet 7 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

ITS & Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 | Rowan County | Salisbury

PLAN DATE: January 2022	REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 01/28/2022
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DATE

SIG. INVENTORY NO. 09-0640

27-JAN-2022 15:12
cestrickland