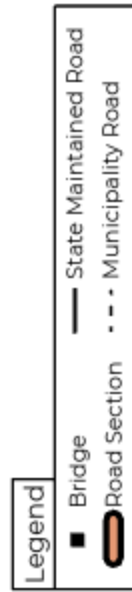
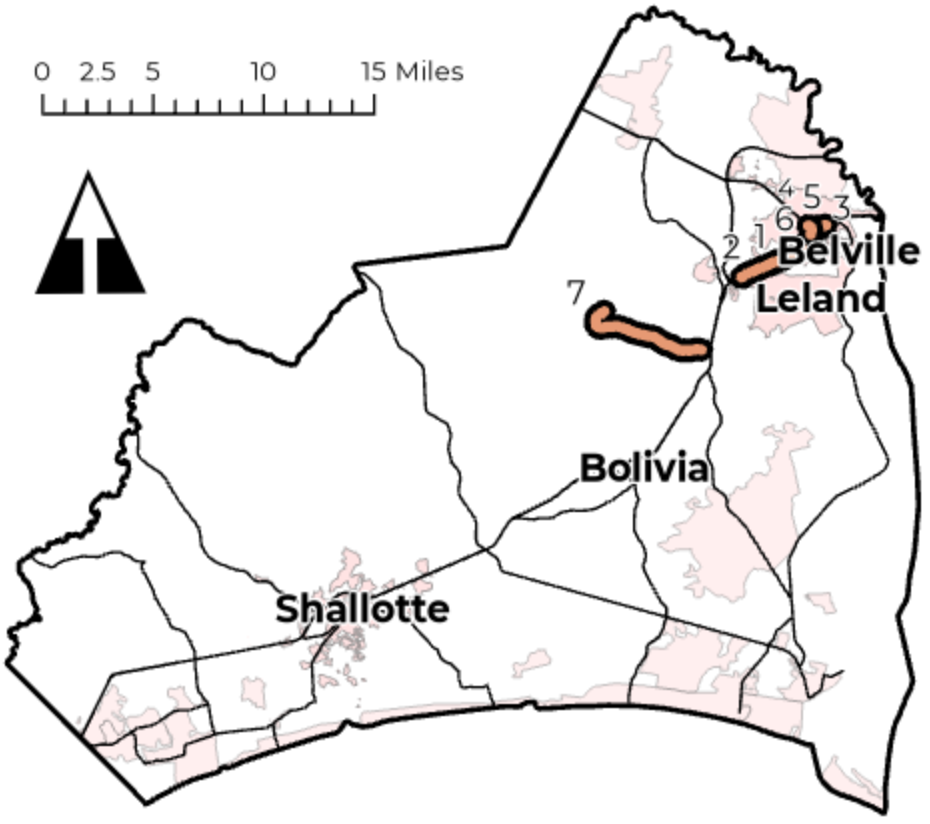
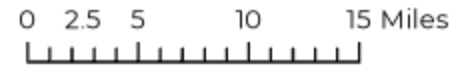
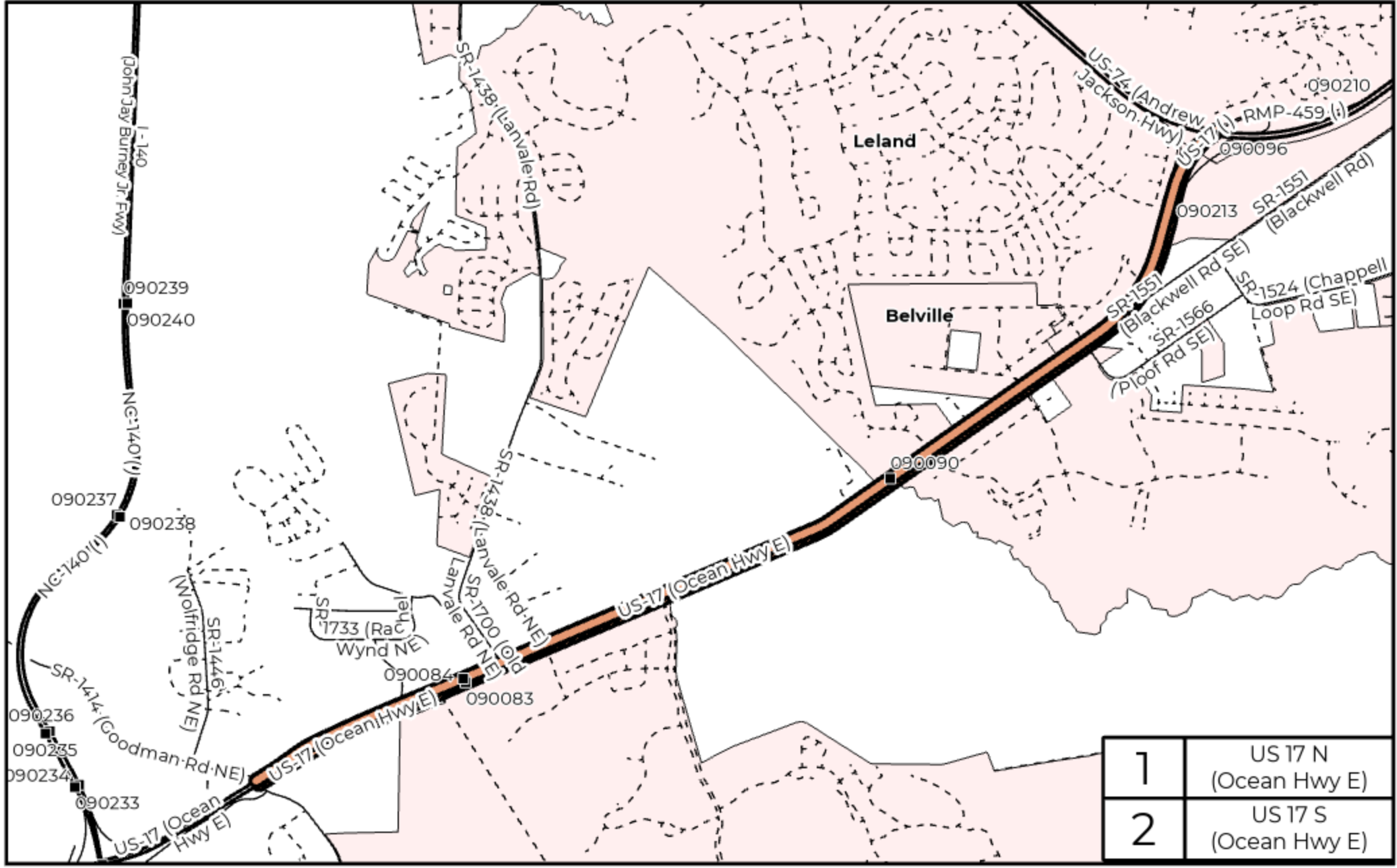
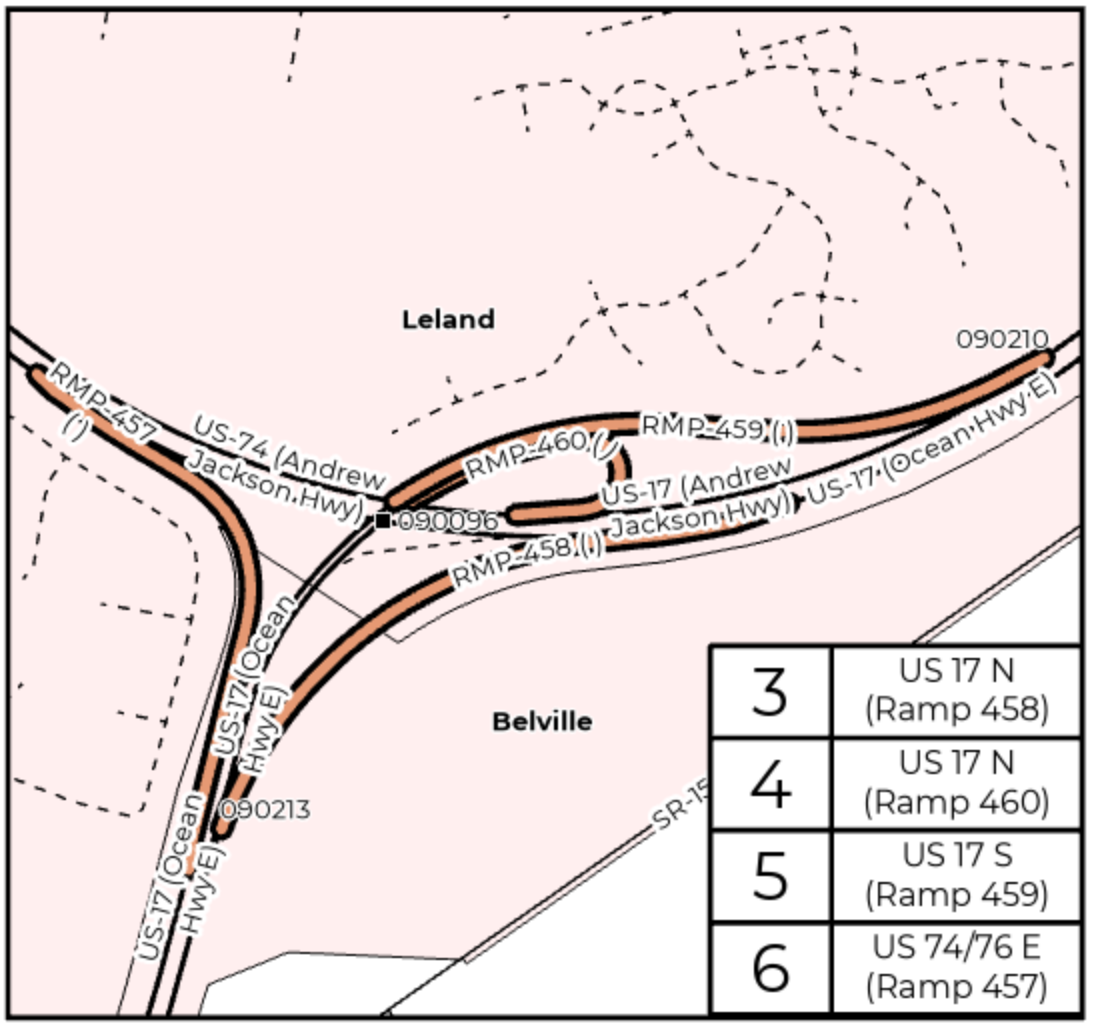
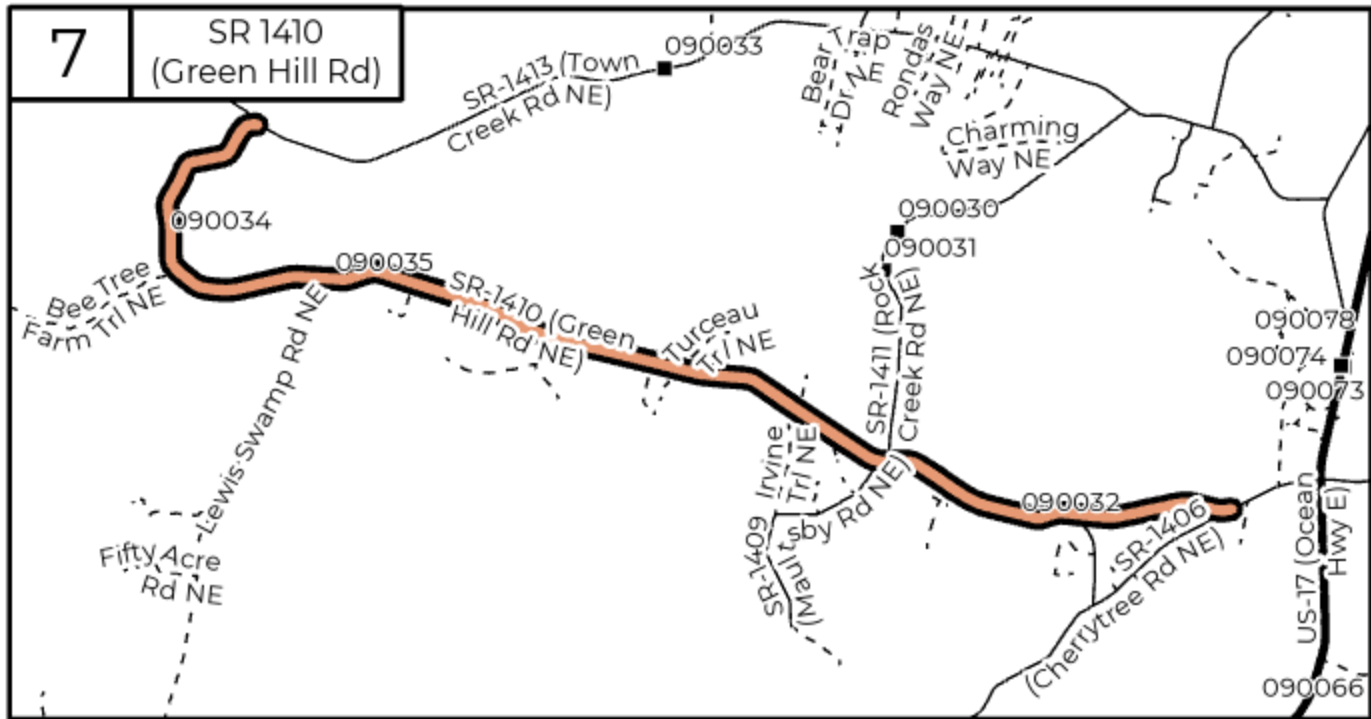
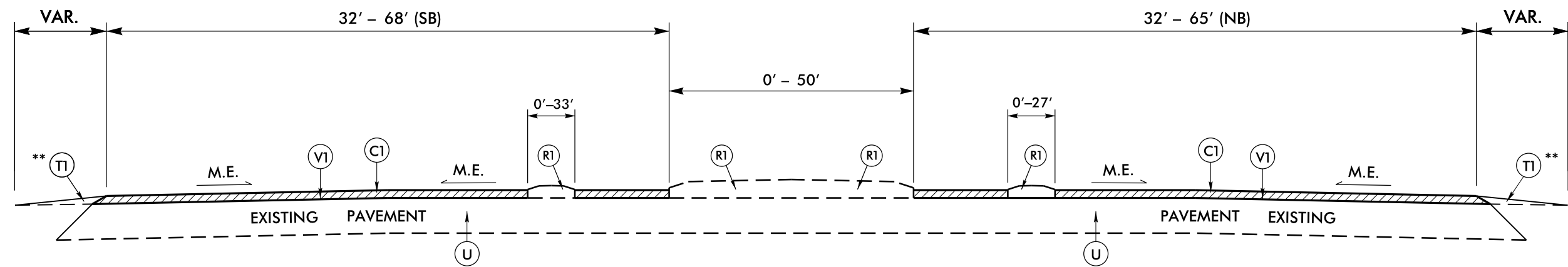


# Brunswick County 1 - 7



PROJECT REFERENCE NO. 2021CPT.03.31.10101, ETC.	SHEET NO. 1
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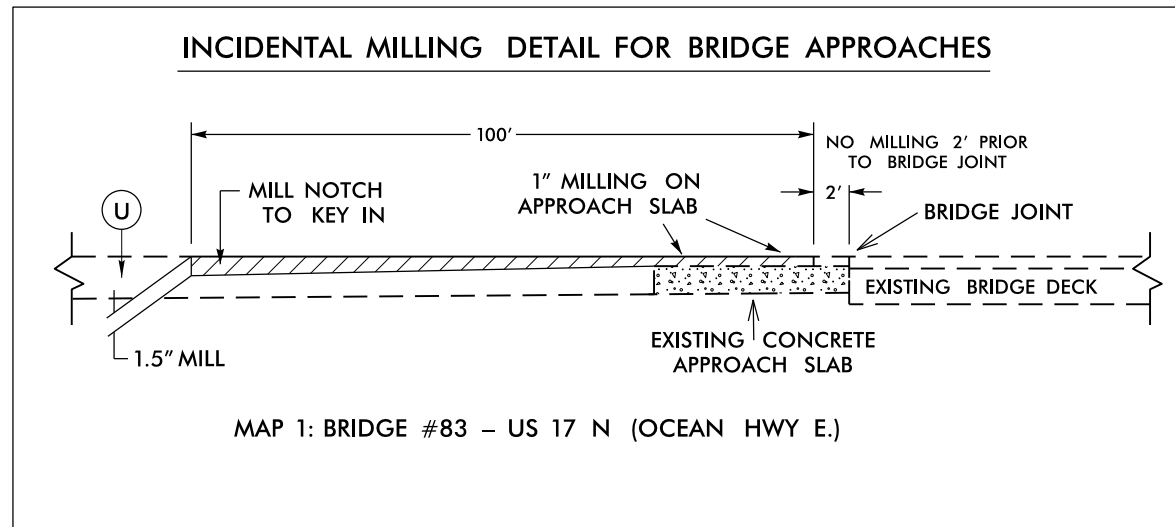




TYPICAL SECTION NO. 1

NOTES: MILL A SINGLE LANE AND PAVE BACK BY THE END OF EACH WORK DAY (AND SECONDARY ROUTE -Y- LINE TIE-INS)

\*\* SHOULDER WORK ON MAP NO. 1 - 6 AS NEEDED, TO BE DETERMINED BY ENGINEER.



INCIDENTAL MILLING DETAIL FOR BRIDGE APPROACHES

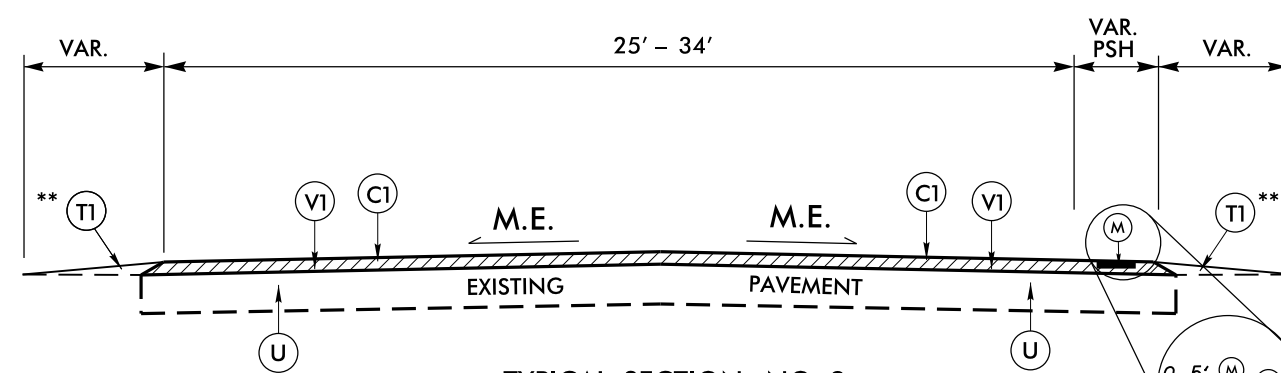
MAP 1: BRIDGE #83 - US 17 N (OCEAN HWY E.)

MAP NO. 1  
US 17 N (OCEAN HWY. E.)  
MP 40.10 - MP 44.00  
NO PAVING BRIDGE #83

MAP NO. 2  
US 17 S (OCEAN HWY. E.)  
MP 3.34 - MP 7.24  
NO PAVING BRIDGE #84

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ.YD.
M	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)
R1	EXISTING CONCRETE MONOLITHIC ISLAND
R2	EXISTING CONCRETE BRIDGE RAIL
R3	EXISTING CONCRETE 2'-6" CURB & GUTTER
T1	EARTH MATERIAL (SHOULDER RECONSTRUCTION)
T2	EXISTING EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1½" DEPTH



TYPICAL SECTION NO. 2

MILLED RUMBLE STRIPS  
RIGHT SIDE ONLY - LENGTH 50 FT.  
FOR MAPS 5 & 6 (SEE STD. DWG. 665.01)

PAVEMENT EDGE SLOPES ARE 1:1, EXCEPT FINAL SURFACE COURSE. SEE SHOULDER WEDGE DETAIL.

MAP NO. 3  
US 17 N ENTRANCE RAMP #458  
MP 0.09 - MP 0.43

MAP NO. 5  
US 17 S EXIT RAMP #459  
MP 0.10 - MP 0.56

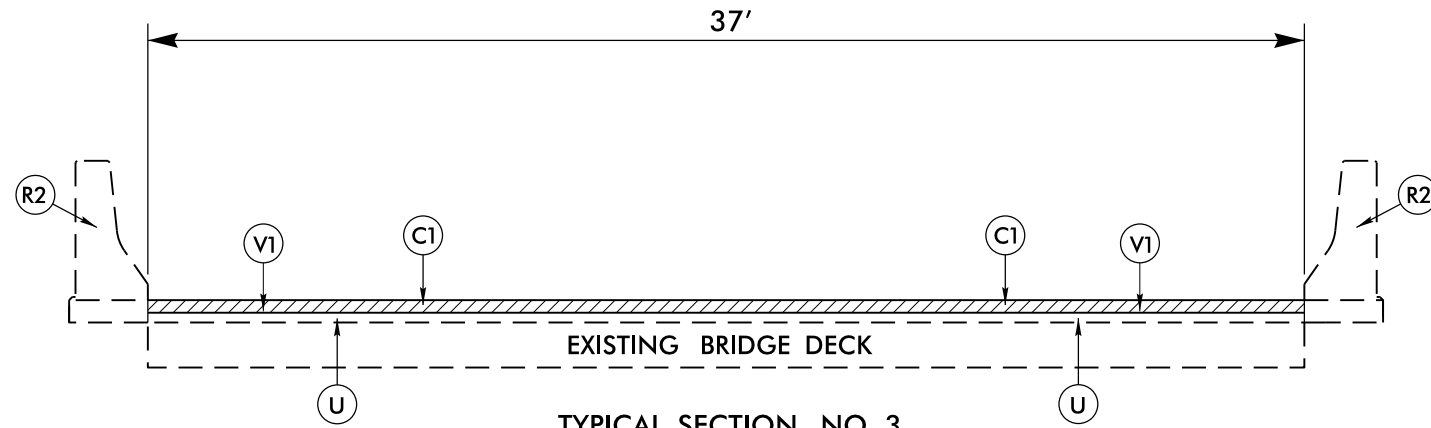
MAP NO. 4  
US 17 N EXIT RAMP #460  
MP 0.00 - MP 0.20

MAP NO. 6  
US 74 /76 E EXIT RAMP #457  
MP 0.12 - MP 0.36

REVISIONS

8/17/99

02-NOV-2021(2021) S:\Division\Resurfacing\Resurfacing Data\2021\Resurfacing\BRUNSWICK\2021 BRUNSWICK FALL LET\RALEIGH REVISIONS\2021CPT.03.31.10101 Etc. Rdy. typ.dgn



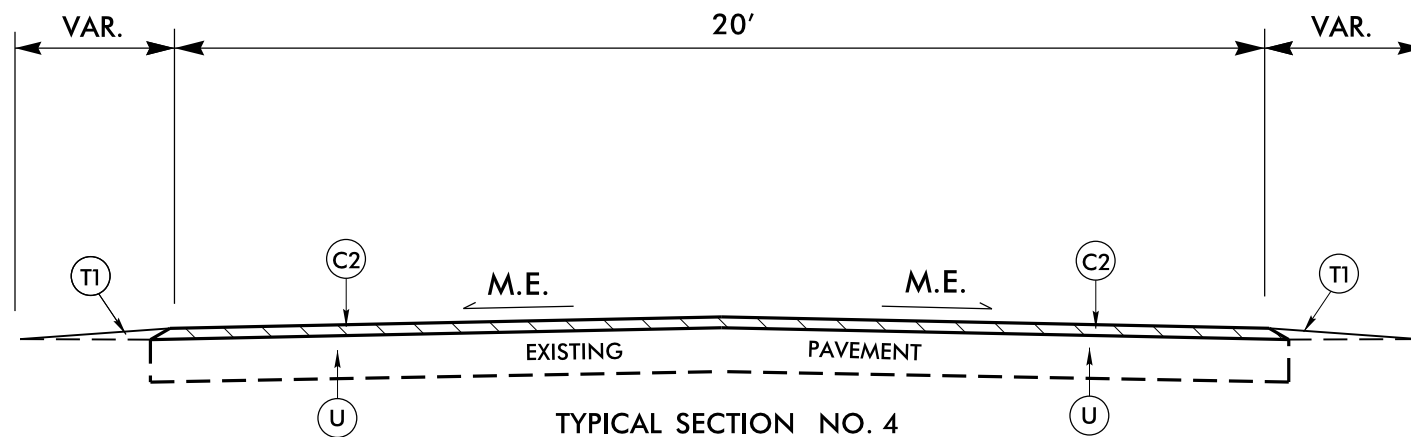
TYPICAL SECTION NO. 3

MAP NO. 2  
US 17 (OCEAN HWY E)  
BRUNSWICK BRIDGE #90  
MP 4.93 - MP 4.94

PAVEMENT SCHEDULE	
C1	1½" S9.5C
C2	1½" S9.5B
R2	EXISTING CONCRETE BRIDGE RAIL
T1	EARTH MATERIAL SHOULDER RECONST.
U	EXISTING PAVEMENT
V1	MILLING 1½" DEPTH

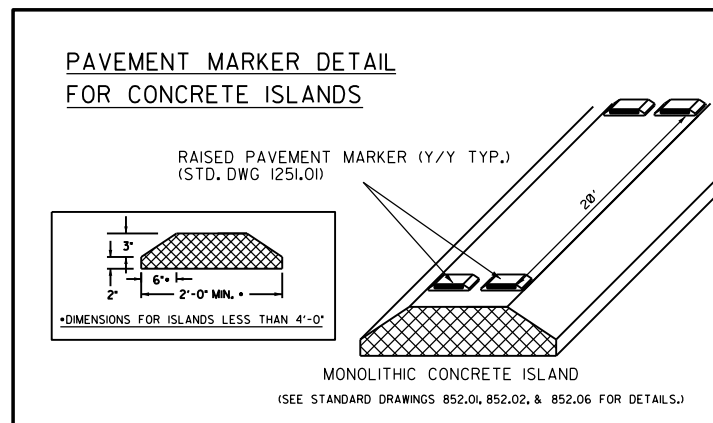
NOTES: MILL A SINGLE LANE AND PAVE BACK BY THE END OF EACH WORK DAY (AND SECONDARY ROUTE -Y- LINE TIE-INS)

\*\* SHOULDER WORK ON MAP NO. 7 AS NEEDED, TO BE DETERMINED BY ENGINEER.



TYPICAL SECTION NO. 4

MAP NO. 7  
SR 1410 (GREEN HILL RD.)  
MP 0.00 - MP 5.97



2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF.01-16-2018  
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

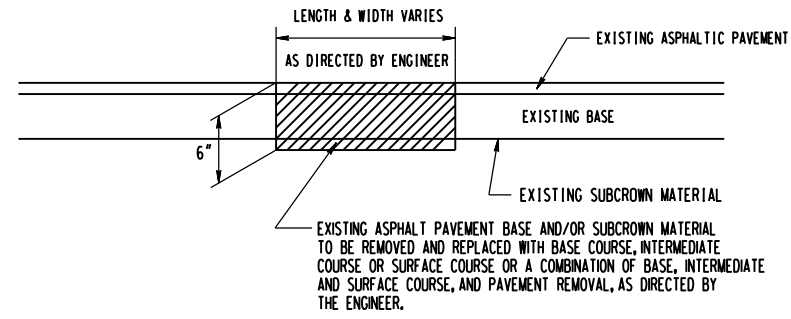
STD.NO.	TITLE
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
665.01	Asphalt Shoulders Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
DIVISION 12 - PVMT MARKING, MARKERS AND DELINEATION	
1205.06	Lane Drops
1205.08	Pavement Markings - Symbols & Word Messages
1266.01	Raised Pavement Markers - Tubular Markers

REVISIONS

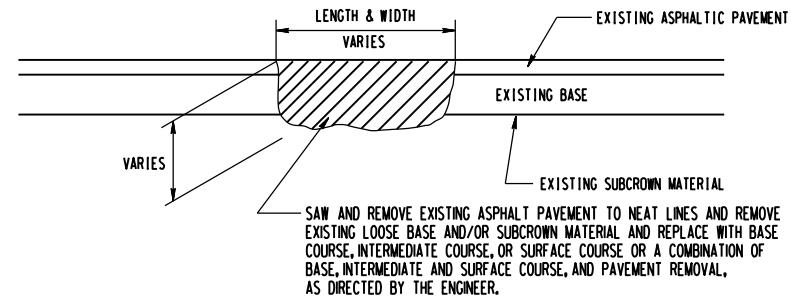
8/17/99

02-NOV-2021(2:05) S:\Division 12\Resurfacing\Resurfacing Data\2021\Resurfacing\BRUNSWICK FALL LET\RALEIGH REVISIONS\2021CPT.03.31.10101.Etc.Rdy.txd.dgn

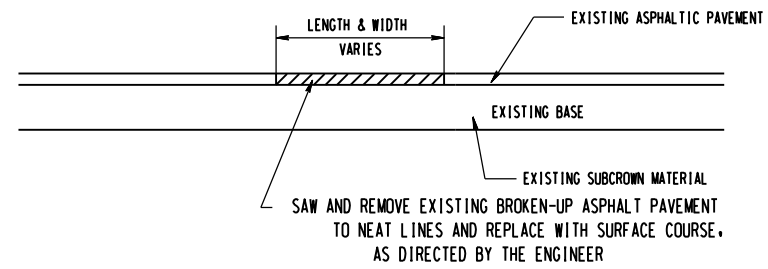
DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



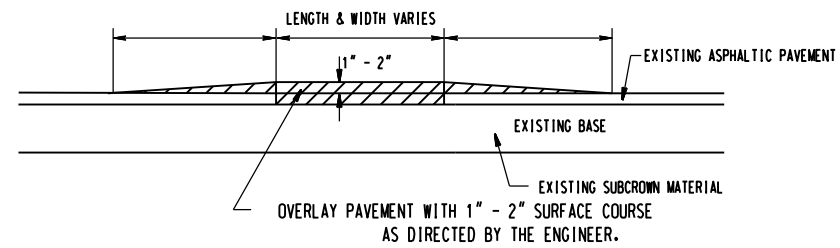
DETAIL NO. 1



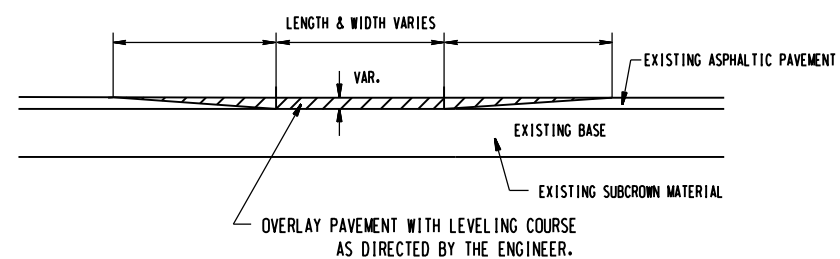
DETAIL NO. 2



DETAIL NO. 3



DETAIL NO. 4



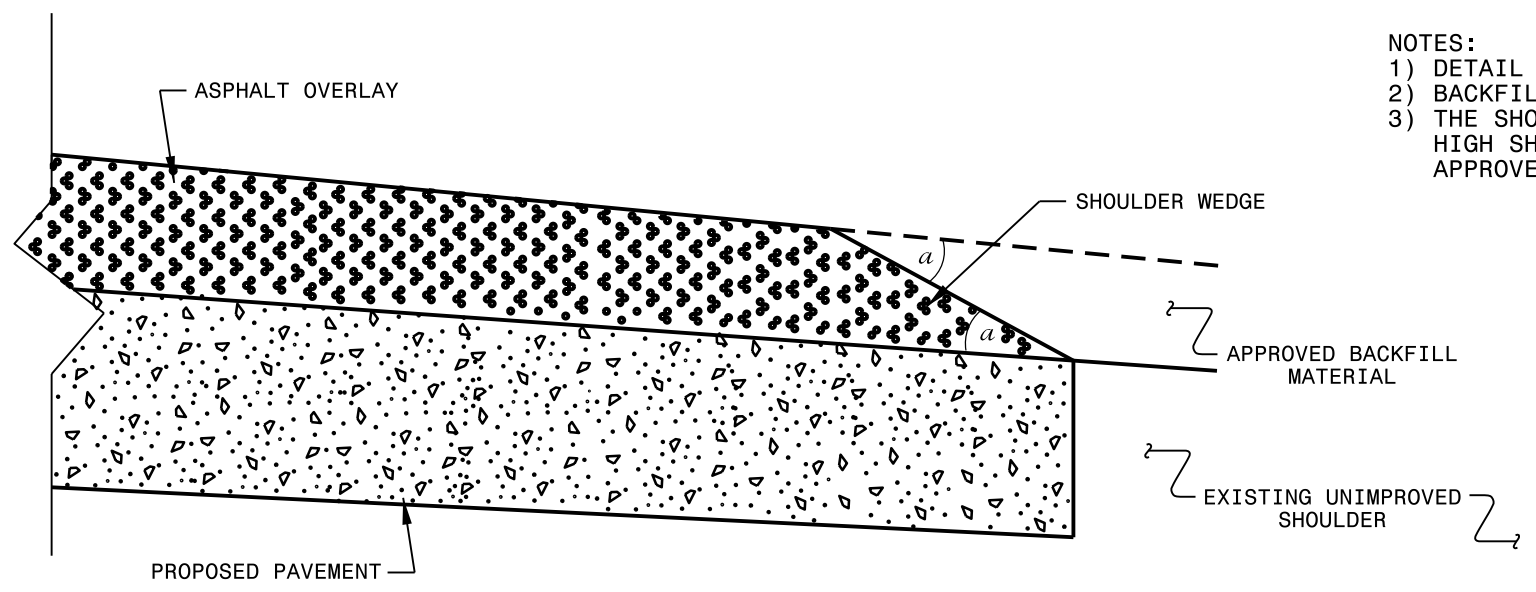
DETAIL NO. 5

REVISIONS

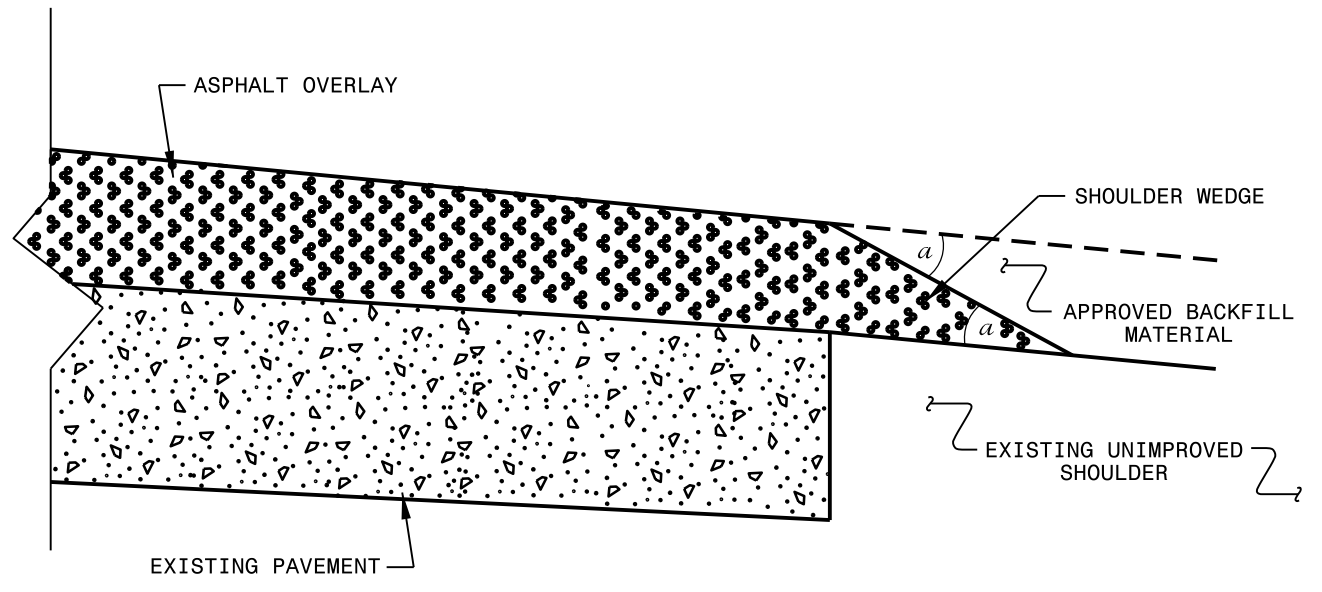
20-APP-2015-1156  
 C:\Users\jmkim\OneDrive\Desktop\DETAIL\_PSHS\Microsoft\Station Files\3CR\20711173\_Patch.dgn  
 \$\$\$SUSFRNME\$\$\$



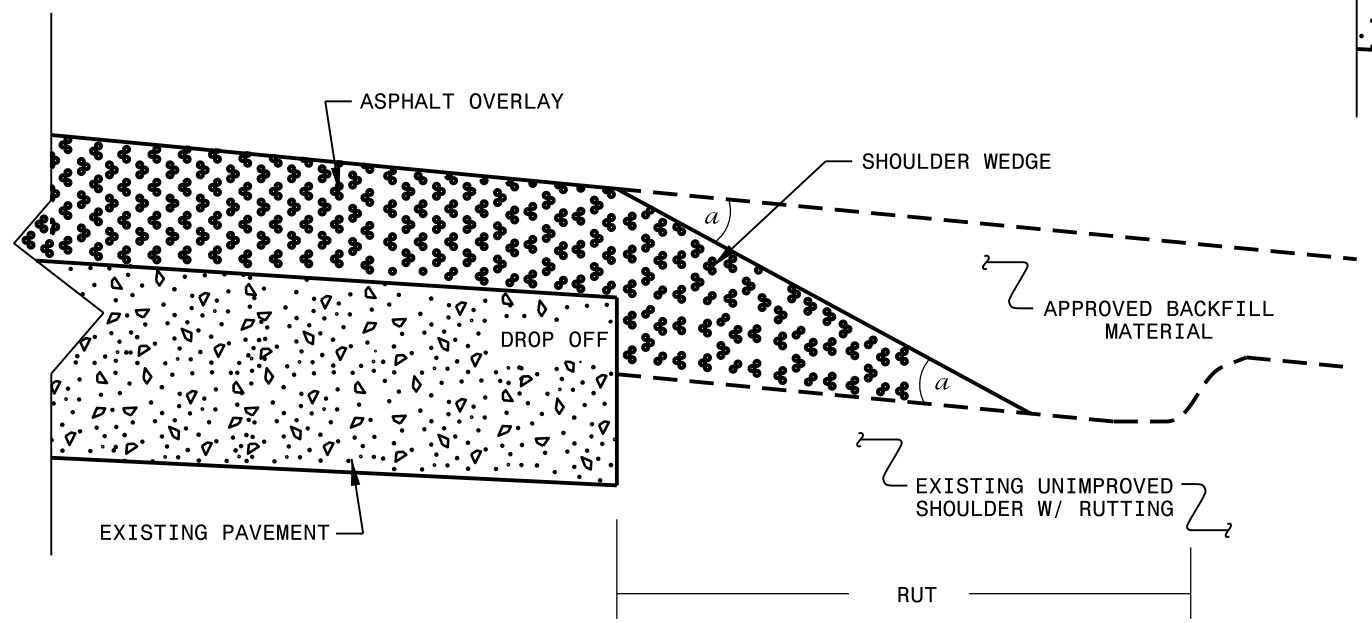
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ Widening or  
 with Existing Paved Shoulder having no dropoffs)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ NO Widening)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Adjacent to  
 Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>			
Office 919-707-6950		FAX 919-250-4119	
<b>SHOULDER WEDGE DETAILS</b>			
ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	2/2/16
CHECKED BY:		DATE:	
FILE SPEC.:	s:\usr\details\stand\shoulderwedgedetail.dgn		

27 JUN 2018 13:22  
 C:\Users\jacob\Documents\Resurfacing Projects\Division 3\Sampson August 2018\Revised Shoulder Wedge Detail.dgn  
 P:\porter\A1\CSO\2015\2542

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	6

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	0106000000-E	1220000000-E	1245000000-E	1297000000-E	1330000000-E	1519000000-E	1520000000-E	1523000000-E	1575000000-E	1840000000-E	1880000000-E		
												BORROW EXCAVATION	INCIDENTAL STONE BASE	SHOULDER RECONSTRUCTION	1.5" MILLING	INCIDENTAL MILLING	SURFACE COURSE, S9.5B	LEVELING COURSE, S9.5B	SURFACE COURSE, S9.5C	ASPHALT BINDER FOR PLANT MIX	MILLED RUMBLE STRIPS	PATCHING EXISTING PAVEMENT (MILL) GENERIC		
												MI	FT	CY	TON	SMI	SY	SY	TON	TON	TON	TON	LF	TON
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	NO	NO	3.9	32 - 65	127	25	7.80	100,255	667			10,149	609		200		
<b>TOTAL FOR MAP NO. 1</b>											<b>3.9</b>		<b>127</b>	<b>25</b>	<b>7.80</b>	<b>100,255</b>	<b>667</b>			<b>10,149</b>	<b>609</b>		<b>200</b>	
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	NO	NO	3.9	32 - 68	127	20	7.80	113,165	500			11,767	706		250		
<b>TOTAL FOR MAP NO. 2</b>											<b>3.9</b>		<b>127</b>	<b>20</b>	<b>7.80</b>	<b>113,165</b>	<b>500</b>			<b>11,767</b>	<b>706</b>		<b>250</b>	
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		NO	NO	0.34	33	11		0.68	6,582				583	35		144		
<b>TOTAL FOR MAP NO. 3</b>											<b>0.34</b>		<b>11</b>		<b>0.68</b>	<b>6,582</b>				<b>583</b>	<b>35</b>		<b>144</b>	
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		NO	NO	0.2	29	8		0.40	3,470				307	18				
<b>TOTAL FOR MAP NO. 4</b>											<b>0.2</b>		<b>8</b>		<b>0.40</b>	<b>3,470</b>				<b>307</b>	<b>18</b>			
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		NO	NO	0.46	34	15		0.92	9,176				812	49	50			
<b>TOTAL FOR MAP NO. 5</b>											<b>0.46</b>		<b>15</b>		<b>0.92</b>	<b>9,176</b>				<b>812</b>	<b>49</b>	<b>50</b>		
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		NO	NO	0.24	25	8		0.48	3,520				312	19	50			
<b>TOTAL FOR MAP NO. 6</b>											<b>0.24</b>		<b>8</b>		<b>0.48</b>	<b>3,520</b>				<b>312</b>	<b>19</b>	<b>50</b>		
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>											<b>9.04</b>		<b>296</b>	<b>45</b>	<b>18.08</b>	<b>236,168</b>	<b>1,167</b>			<b>23,930</b>	<b>1,436</b>	<b>100</b>	<b>594</b>	
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>																<b>236,168</b>								
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	NO	NO	5.97	20	730	236	11.94		277	6,397	200		442		1,300		
<b>TOTAL FOR MAP NO. 7</b>											<b>5.97</b>		<b>730</b>	<b>236</b>	<b>11.94</b>		<b>277</b>	<b>6,397</b>	<b>200</b>		<b>442</b>		<b>1,300</b>	
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>											<b>5.97</b>		<b>730</b>	<b>236</b>	<b>11.94</b>		<b>277</b>	<b>6,397</b>	<b>200</b>		<b>442</b>		<b>1,300</b>	
<b>GRAND TOTAL</b>											<b>15.01</b>		<b>1,026</b>	<b>281</b>	<b>30.02</b>	<b>236,168</b>	<b>1,444</b>			<b>23,930</b>	<b>1,878</b>	<b>100</b>	<b>1,894</b>	
<b>GRAND TOTAL</b>																<b>236,168</b>								

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	7

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	315000000-N	321000000-N	328700000-N	342000000-E	343500000-N	452000000-N	525500000-N	600000000-E	600900000-E	601200000-E
												ADDITIONAL GUARDRAIL POSTS	GUARDRAIL END UNITS, TYPE CAT-1	GUARDRAIL END UNITS, TYPE TL-3	REMOVE & REPLACE EXISTING GUARDRAIL (GENERIC)	GUARDRAIL PRE FAB ANCHOR POSTS (GENERIC)	TUBULAR MARKERS (FIXED)	PORTABLE LIGHTING	TEMPORARY SILT FENCE	STONE FOR EC CLASS B	SEDIMENT CONTROL STONE
												EA	EA	EA	LF	EA	EA	LS	LF	TON	TON
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	NO	NO	3.9	32 - 65	6	2	4	225	4	10	0.40	194	49	49
<b>TOTAL FOR MAP NO. 1</b>											<b>6</b>	<b>2</b>	<b>4</b>	<b>225</b>	<b>4</b>	<b>10</b>	<b>0.40</b>	<b>194</b>	<b>49</b>	<b>49</b>	
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	NO	NO	3.9	32 - 68			2	100			0.40	194	49	49
<b>TOTAL FOR MAP NO. 2</b>													<b>2</b>	<b>100</b>			<b>0.40</b>	<b>194</b>	<b>49</b>	<b>49</b>	
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		NO	NO	0.34	33							0.05			
<b>TOTAL FOR MAP NO. 3</b>																	<b>0.05</b>				
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		NO	NO	0.2	29							0.05			
<b>TOTAL FOR MAP NO. 4</b>																	<b>0.05</b>				
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		NO	NO	0.46	34							0.05			
<b>TOTAL FOR MAP NO. 5</b>																	<b>0.05</b>				
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		NO	NO	0.24	25							0.05			
<b>TOTAL FOR MAP NO. 6</b>																	<b>0.05</b>				
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>											<b>6</b>	<b>2</b>	<b>6</b>	<b>325</b>	<b>4</b>	<b>10</b>	<b>1.00</b>	<b>388</b>	<b>98</b>	<b>98</b>	
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	NO	NO	5.97	20								597	149	149
<b>TOTAL FOR MAP NO. 7</b>																	<b>597</b>	<b>149</b>	<b>149</b>		
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>																	<b>597</b>	<b>149</b>	<b>149</b>		
<b>GRAND TOTAL</b>											<b>6</b>	<b>2</b>	<b>6</b>	<b>325</b>	<b>4</b>	<b>10</b>	<b>1.00</b>	<b>985</b>	<b>247</b>	<b>247</b>	

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	8

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH		6015000000-E	6018000000-E	6021000000-E	6036000000-E	6042000000-E	6071010000-E	6084000000-E	6090000000-E	6093000000-E	6117000000-N	7060000000-E	
										MI	FT	TEMPORARY MULCHING	SEED FOR TEMPORARY SEEDING	FERTILIZER FOR TEMPORARY SEEDING	MATting FOR EROSION CONTROL	1/4" HARDWARE CLOTH	WATTLE	SEED & MULCHING	SEED FOR REPAIR SEEDING	FERTILIZER FOR REPAIR SEEDING	RESPONSE FOR EROSION CONTROL	SIGNAL CABLE 16-7	
											ACR	LBS	TON	SY	LF	LF	AC	LB	TON	EA	LF		
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	NO	NO	3.9	32 - 65	1.92	97	0.49	15	97	30	1.41	97	0.49	6	2,135	
<b>TOTAL FOR MAP NO. 1</b>											<b>3.9</b>		<b>1.92</b>	<b>97</b>	<b>0.49</b>	<b>15</b>	<b>97</b>	<b>30</b>	<b>1.41</b>	<b>97</b>	<b>0.49</b>	<b>6</b>	<b>2,135</b>
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	NO	NO	3.9	32 - 68	1.92	97	0.49	15	97	30	1.41	97	0.49	6		
<b>TOTAL FOR MAP NO. 2</b>											<b>3.9</b>		<b>1.92</b>	<b>97</b>	<b>0.49</b>	<b>15</b>	<b>97</b>	<b>30</b>	<b>1.41</b>	<b>97</b>	<b>0.49</b>	<b>6</b>	
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		NO	NO	0.34	33												
<b>TOTAL FOR MAP NO. 3</b>											<b>0.34</b>												
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		NO	NO	0.2	29												
<b>TOTAL FOR MAP NO. 4</b>											<b>0.2</b>												
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		NO	NO	0.46	34												
<b>TOTAL FOR MAP NO. 5</b>											<b>0.46</b>												
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		NO	NO	0.24	25												
<b>TOTAL FOR MAP NO. 6</b>											<b>0.24</b>												
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>											<b>9.04</b>		<b>3.84</b>	<b>194</b>	<b>0.98</b>	<b>30</b>	<b>194</b>	<b>60</b>	<b>3.62</b>	<b>194</b>	<b>0.98</b>	<b>12</b>	<b>2,135</b>
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	NO	NO	5.97	20	5.97	299	1.50	40	299	90	5.79	299	1.50	12		
<b>TOTAL FOR MAP NO. 7</b>											<b>5.97</b>		<b>5.97</b>	<b>299</b>	<b>1.50</b>	<b>40</b>	<b>299</b>	<b>90</b>	<b>5.79</b>	<b>299</b>	<b>1.50</b>	<b>12</b>	
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>											<b>5.97</b>		<b>5.97</b>	<b>299</b>	<b>1.50</b>	<b>40</b>	<b>299</b>	<b>90</b>	<b>5.79</b>	<b>299</b>	<b>1.50</b>	<b>12</b>	
<b>GRAND TOTAL</b>											<b>15.01</b>		<b>9.81</b>	<b>493</b>	<b>2.48</b>	<b>70</b>	<b>493</b>	<b>150</b>	<b>9.41</b>	<b>493</b>	<b>2.48</b>	<b>24</b>	<b>2,135</b>

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	9

**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	7120000000-E	7288000000-E	7300000000-E	7324000000-N	7444000000-E	7456000000-E	7636000000-N	7642200000-N	7744000000-N	
												VEHICLE SIGNAL HEAD (12", 3 SECTION)	PAVED TRENCHING (1 CONDUIT, 2 INCH)	UNPAVED TRENCHING (1 CONDUIT, 2 INCH)	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)	SIGN FOR SIGNALS	TYPE II PEDESTRAL WITH FOUNDATION	DETECTOR CARD (TYPE 170)	
											MI	FT	EA	LF	LF	EA	LF	LF	EA	EA	EA
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	NO	NO	3.9	32 - 65	10	160	800	8	10,435	260	15	9	1	
<b>TOTAL FOR MAP NO. 1</b>											<b>3.9</b>		<b>10</b>	<b>160</b>	<b>800</b>	<b>8</b>	<b>10,435</b>	<b>260</b>	<b>15</b>	<b>9</b>	<b>1</b>
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	NO	NO	3.9	32 - 68										
<b>TOTAL FOR MAP NO. 2</b>											<b>3.9</b>										
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		NO	NO	0.34	33										
<b>TOTAL FOR MAP NO. 3</b>											<b>0.34</b>										
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		NO	NO	0.2	29										
<b>TOTAL FOR MAP NO. 4</b>											<b>0.2</b>										
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		NO	NO	0.46	34										
<b>TOTAL FOR MAP NO. 5</b>											<b>0.46</b>										
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		NO	NO	0.24	25										
<b>TOTAL FOR MAP NO. 6</b>											<b>0.24</b>										
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>											<b>9.04</b>		<b>10</b>	<b>160</b>	<b>800</b>	<b>8</b>	<b>10,435</b>	<b>260</b>	<b>15</b>	<b>9</b>	<b>1</b>
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	NO	NO	5.97	20										
<b>TOTAL FOR MAP NO. 7</b>											<b>5.97</b>										
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>											<b>5.97</b>										
<b>GRAND TOTAL</b>											<b>15.01</b>		<b>10</b>	<b>160</b>	<b>800</b>	<b>8</b>	<b>10,435</b>	<b>260</b>	<b>15</b>	<b>9</b>	<b>1</b>

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	10

## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4413000000-E	4415000000-N	4420000000-N	4434000000-N	4457000000-N	4480000000-N	4510000000-N	4685000000-E	4695000000-E	4700000000-E	4720000000-E			
								MI	FT	SF	EA	EA	EA	LS	EA	HR	LF	LF	LF	LF	LF	LF	EA
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	3.9	32 - 65	437	1	1	17										
<b>TOTAL FOR MAP NO. 1</b>								<b>3.9</b>		<b>437</b>	<b>1</b>	<b>1</b>	<b>17</b>										
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	3.9	32 - 68	437	1	1	17										
<b>TOTAL FOR MAP NO. 2</b>								<b>3.9</b>		<b>437</b>	<b>1</b>	<b>1</b>	<b>17</b>										
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		0.34	33														
<b>TOTAL FOR MAP NO. 3</b>								<b>0.34</b>															
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		0.2	29														
<b>TOTAL FOR MAP NO. 4</b>								<b>0.2</b>															
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		0.46	34														
<b>TOTAL FOR MAP NO. 5</b>								<b>0.46</b>															
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		0.24	25														
<b>TOTAL FOR MAP NO. 6</b>								<b>0.24</b>															
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>								<b>9.04</b>		<b>874</b>	<b>2</b>	<b>2</b>	<b>34</b>	<b>*</b>	<b>2</b>	<b>300</b>	<b>50,640</b>	<b>70,664</b>	<b>226</b>	<b>5,125</b>	<b>660</b>	<b>50</b>	<b>4</b>
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>																	<b>121,304</b>	<b>5,351</b>	<b>710</b>				
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	5.97	20	669													
<b>TOTAL FOR MAP NO. 7</b>								<b>5.97</b>		<b>669</b>													
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>								<b>5.97</b>		<b>669</b>													
<b>GRAND TOTAL</b>								<b>15.01</b>		<b>1,543</b>	<b>2</b>	<b>2</b>	<b>34</b>	<b>1.00</b>	<b>2</b>	<b>300</b>	<b>50,640</b>	<b>70,664</b>	<b>226</b>	<b>5,125</b>	<b>660</b>	<b>50</b>	<b>4</b>
<b>GRAND TOTAL</b>																	<b>121,304</b>	<b>5,351</b>	<b>710</b>				

PROJECT NO.	SHEET NO.
2021CPT.03.31.10101, Etc.	11

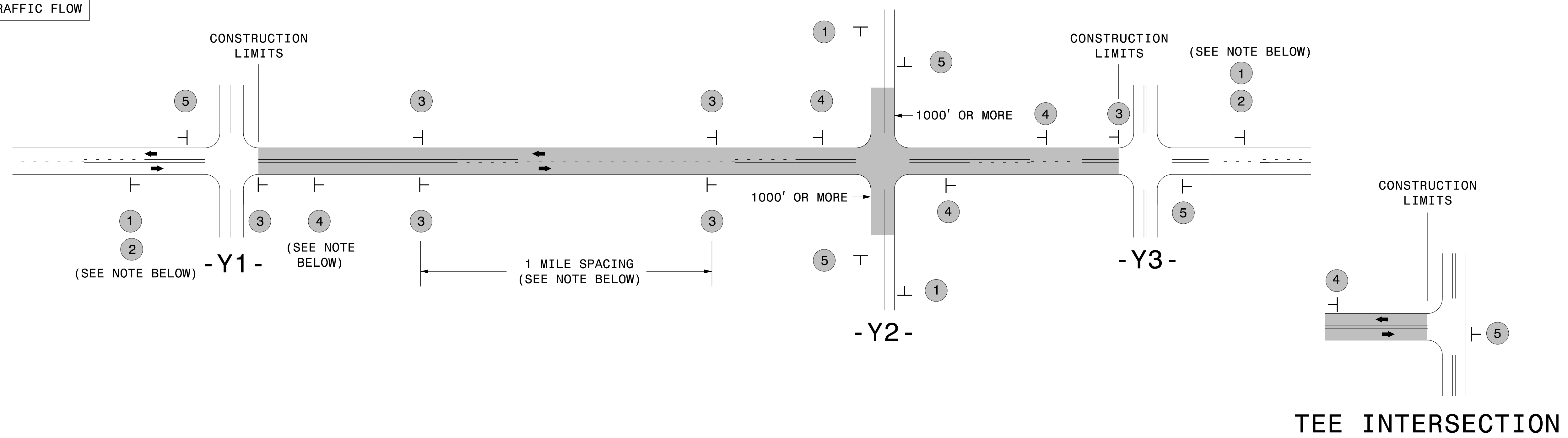
## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4725000000-E							4810000000-E		4850000000-E	4891000000-E	4900000000-N		4905000000-N					
										THERMO RT ARROW 90 M	THERMO LT ARROW 90 M	THERMO U-TURN ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	MERGE ARROW 90 M	WRONG WAY RAMP ARROW 90 M	4" YELLOW PAINT	4" WHITE PAINT	REMOVAL OF PAVEMENT MARKING LINES (4")	GENERIC MARKING, 24" X 90 M WHITE THERMO	YELLOW & YELLOW MARKERS	CRYSTAL & RED MARKERS	NON CAST IRON SNOWPLOWABLE MARKERS (C/R)	NON CAST IRON SNOWPLOWABLE MARKERS (Y/Y)				
										EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA				
2021CPT.03.31.10101	Brunswick	1	US 17 NORTH (OCEAN HIGHWAY EAST)	FROM 0.22 MILES N. OF SR 1461 (HEWETT- BURTON RD ) TO BRIDGE #96 (US 74 E. - ANDREW JACKSON OVERPASS) [MP 40.10 - MP 44.00]	1	2	2WD	3.9	32 - 65	18	21	28	50	2			1,110	1,130	1,120	1,410	110	3	630	25				
<b>TOTAL FOR MAP NO. 1</b>																	<b>1,110</b>	<b>1,130</b>	<b>1,120</b>	<b>1,410</b>	<b>110</b>	<b>3</b>	<b>630</b>	<b>25</b>				
2021CPT.03.31.10101	Brunswick	2	US 17 SOUTH (OCEAN HIGHWAY EAST)	FROM BRIDGE #96 (US 74 W. ANDREW JACKSON OVERPASS) TO 0.22 MILES N. OF SR 1461 (HEWETT-BURTON RD. SE) [MP 3.34 - MP 7.24]	1,3	2	2WD	3.9	32 - 68	18	42	20	52		3		1,222	1,000	1,200	825	165	3	675					
<b>TOTAL FOR MAP NO. 2</b>																	<b>1,222</b>	<b>1,000</b>	<b>1,200</b>	<b>825</b>	<b>165</b>	<b>3</b>	<b>675</b>					
2021CPT.03.31.10101	Brunswick	3	US 17 NORTH - RAMP 458	ENTRANCE RAMP FROM US 17 N. (OCEAN HWY E.) TO US 17 N. (OCEAN HWY E.) [MP 0.09 - MP 0.43]	2	1		0.34	33														23					
<b>TOTAL FOR MAP NO. 3</b>																									<b>23</b>			
2021CPT.03.31.10101	Brunswick	4	US 17 NORTH - RAMP 460	EXIT RAMP FROM US 17 NB OVERPASS BRIDGE #96 TO US 74 W. (ANDREW JACKSON HWY.) [MP 0.00 - MP 0.20]	2	1		0.2	29														8					
<b>TOTAL FOR MAP NO. 4</b>																										<b>8</b>		
2021CPT.03.31.10101	Brunswick	5	US 17 SOUTH - RAMP 459	EXIT RAMP FROM US 17 SB (OCEAN HWY. E.) TO US 17 OVERPASS BRIDGE #96 [MP 0.10 - MP 0.56]	2	1		0.46	34															31				
<b>TOTAL FOR MAP NO. 5</b>																										<b>31</b>		
2021CPT.03.31.10101	Brunswick	6	US 74/76 EAST - RAMP 457	EXIT RAMP FROM US 74/76 E. (ANDREW JACKSON HWY.) TO US 17 S. [MP 0.12 - MP 0.36]	2	1		0.24	25							1				65	10	33						
<b>TOTAL FOR MAP NO. 6</b>																		<b>1</b>			<b>65</b>	<b>10</b>	<b>33</b>					
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.10101</b>												<b>9.04</b>						<b>3</b>		<b>1</b>	<b>2,332</b>	<b>2,130</b>	<b>2,320</b>	<b>2,300</b>	<b>285</b>	<b>47</b>	<b>1,359</b>	<b>25</b>
																		<b>4,462</b>				<b>332</b>		<b>1,384</b>				
2021CPT.03.31.20101	Brunswick	7	SR 1410 (GREEN HILL ROAD)	FROM SR 1413 (TOWN CREEK RD.) TO SR 1406 (CHERRYTREE RD.) [MP 0.00 - MP 5.97]	4	2	2WU	5.97	20								100,970	128,474					400					
<b>TOTAL FOR MAP NO. 7</b>												<b>5.97</b>							<b>100,970</b>	<b>128,474</b>				<b>400</b>				
<b>TOTAL FOR PROJ NO. 2021CPT.03.31.20101</b>												<b>5.97</b>							<b>100,970</b>	<b>128,474</b>				<b>400</b>				
																		<b>229,444</b>				<b>400</b>						
<b>GRAND TOTAL</b>												<b>15.01</b>								<b>103,302</b>	<b>130,604</b>	<b>2,320</b>	<b>2,300</b>	<b>685</b>	<b>47</b>	<b>1,359</b>	<b>25</b>	
																		<b>255</b>				<b>732</b>		<b>1,384</b>				



# SIGNING FOR RESURFACING PROJECTS

**LEGEND**  
 ┆ STATIONARY SIGN  
 ← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1		PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	<p>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">             W20-1 48" X 48"            PLACED 500' IN ADVANCE OF FLAGGER.         </div> <div style="text-align: center;">             W20-7 A 48" X 48"            PLACED 250' IN ADVANCE OF FLAGGER.         </div> </div>
	2		#2 SIGN ONLY USED WHEN CONSTRUCTION LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	
	3		- PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACE 1 MILE APART THEREAFTER. - AT TEE INTERSECTIONS INSTALL INITIALLY 1/2 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.	
	4		- THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. - DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. - INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. - FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. - A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN. - FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.	
	5		PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	

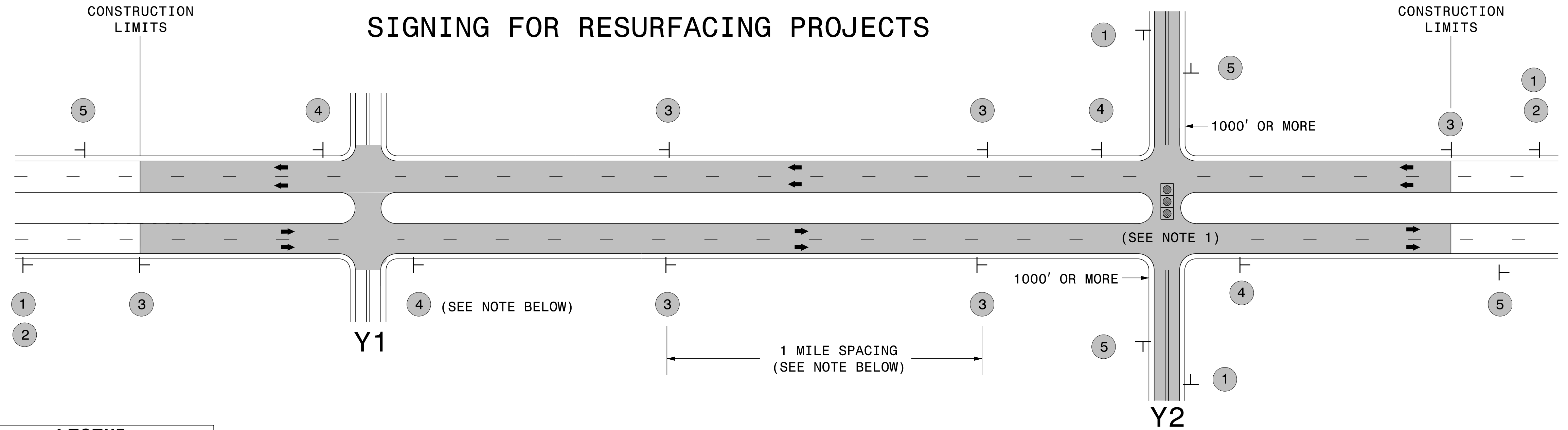
THE ABOVE SIGNS ARE ALL THAT ARE REQUIRED FOR A CONTRACTOR TO BEGIN A RESURFACING CONTRACT. ANY ADDITIONAL SIGNS REQUESTED BY NCDOT DIVISIONS SHALL BE INSTALLED WITHIN 7 BUSINESS DAYS OF THE START OF CONTRACT WORK.

### MAPS LESS THAN 2 MILES

FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNINGS SIGNS.



ADVANCE WARNING SIGNS FOR RURAL AND SUBURBAN 2-LANE ROADWAY RESURFACING



**LEGEND**  
 T STATIONARY SIGN  
 ← DIRECTION OF TRAFFIC FLOW

**MAINLINE (-L-) SIGNING**

**-Y- LINE SIGNING**

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 W20-1 48" X 48"	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	<p><b>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">           W20-1          48" X 48"       </div> <div style="text-align: center;">           W20-7 A          48" X 48"       </div> </div> <p>PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p> <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.</li> </ol>
	2	 W7-3aP 24" X 18"	#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	
	3	 SP 13107 48" X 48"	PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.	
	4	 SP 13106 48" X 48"	THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.	
5	 G20-2 A 48" X 24"	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.		

**RESURFACING  
 ADVANCE WARNING SIGNS  
 FOR RURAL AND SUBURBAN  
 MULTI-LANE ROADWAYS  
 W/ SHOULDER SECTIONS**

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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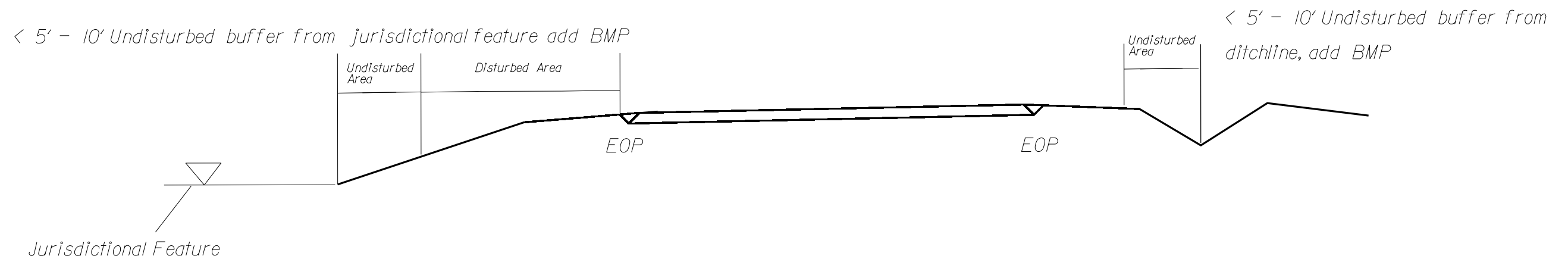
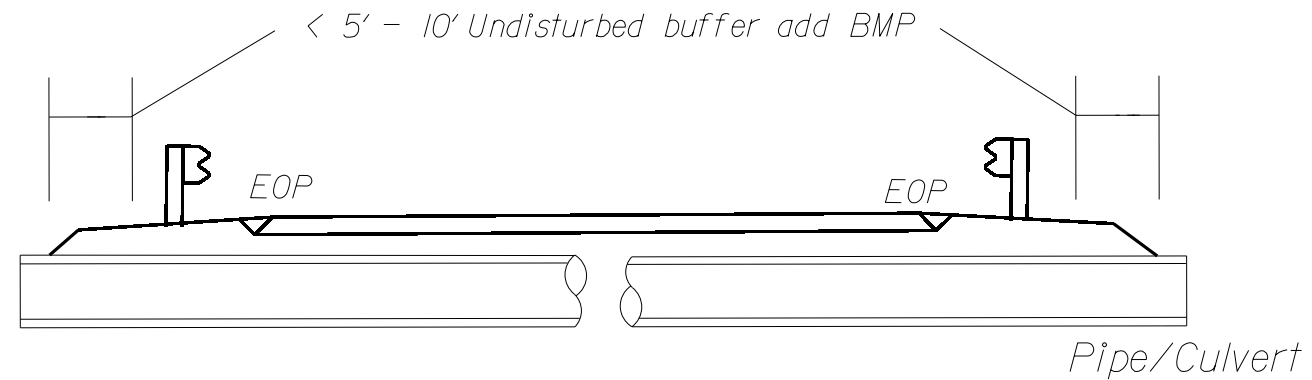
## ***SOIL STABILIZATION TIMEFRAMES***

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

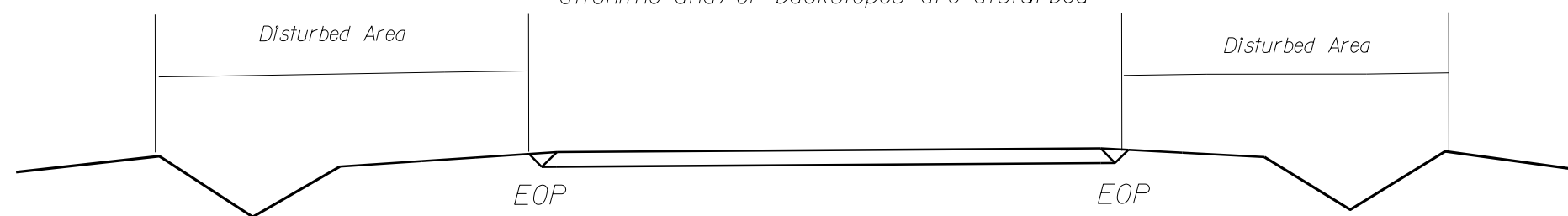
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle or Silt Fence

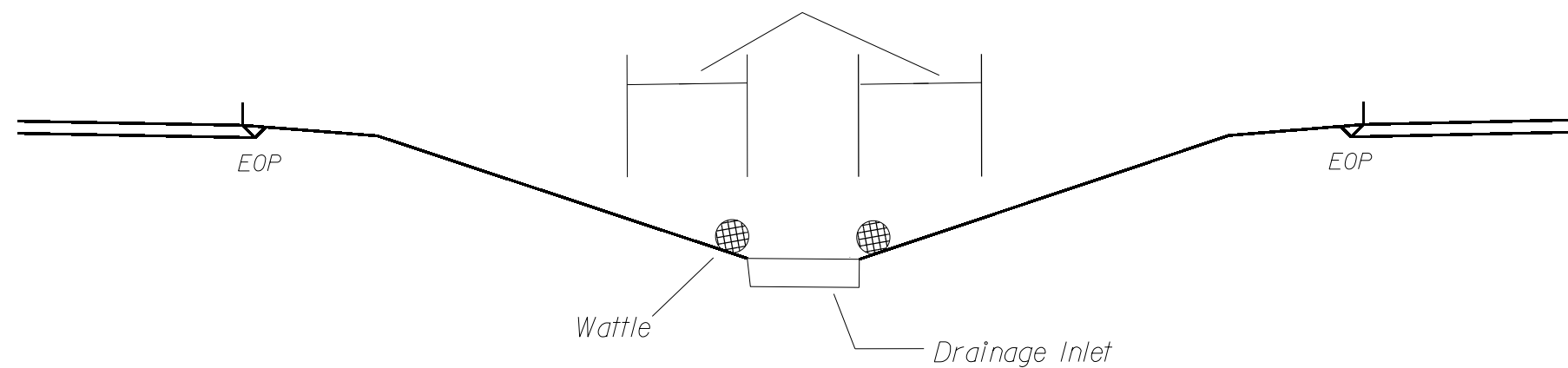
# EROSION CONTROL DETAIL



Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed

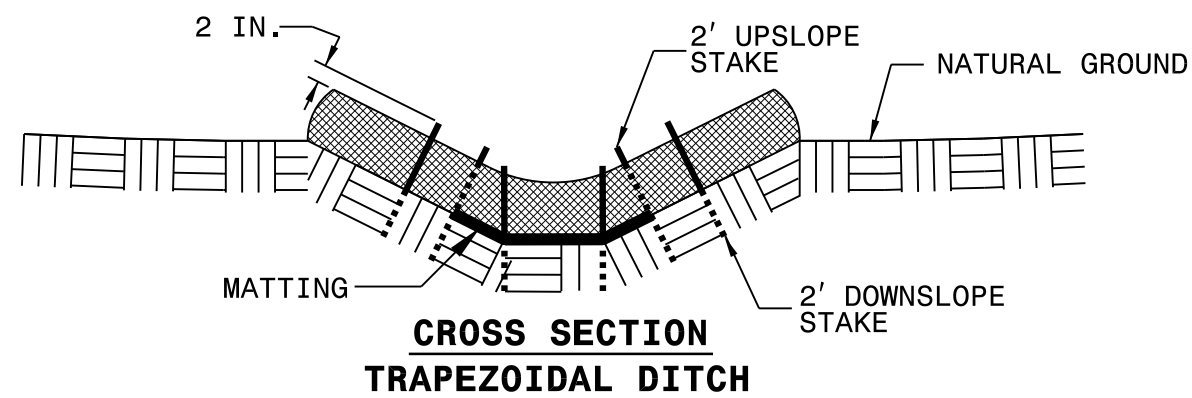
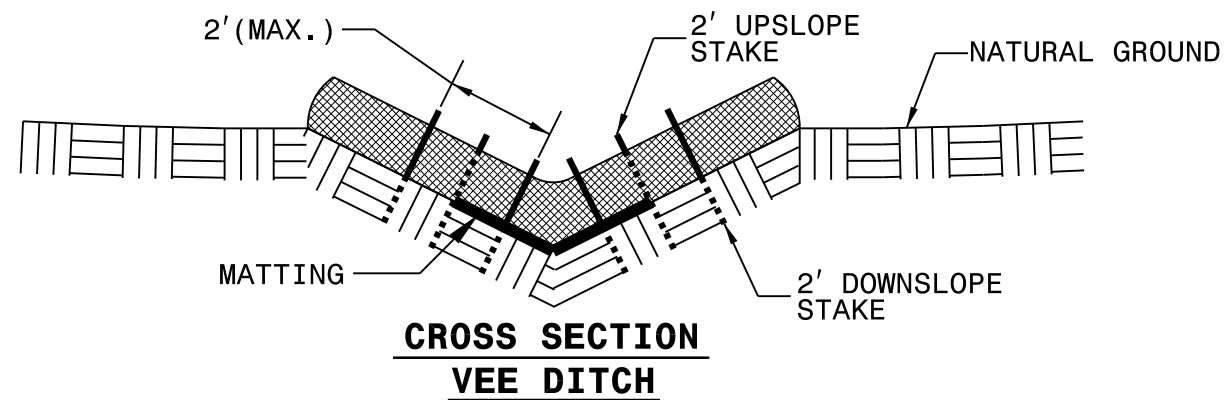
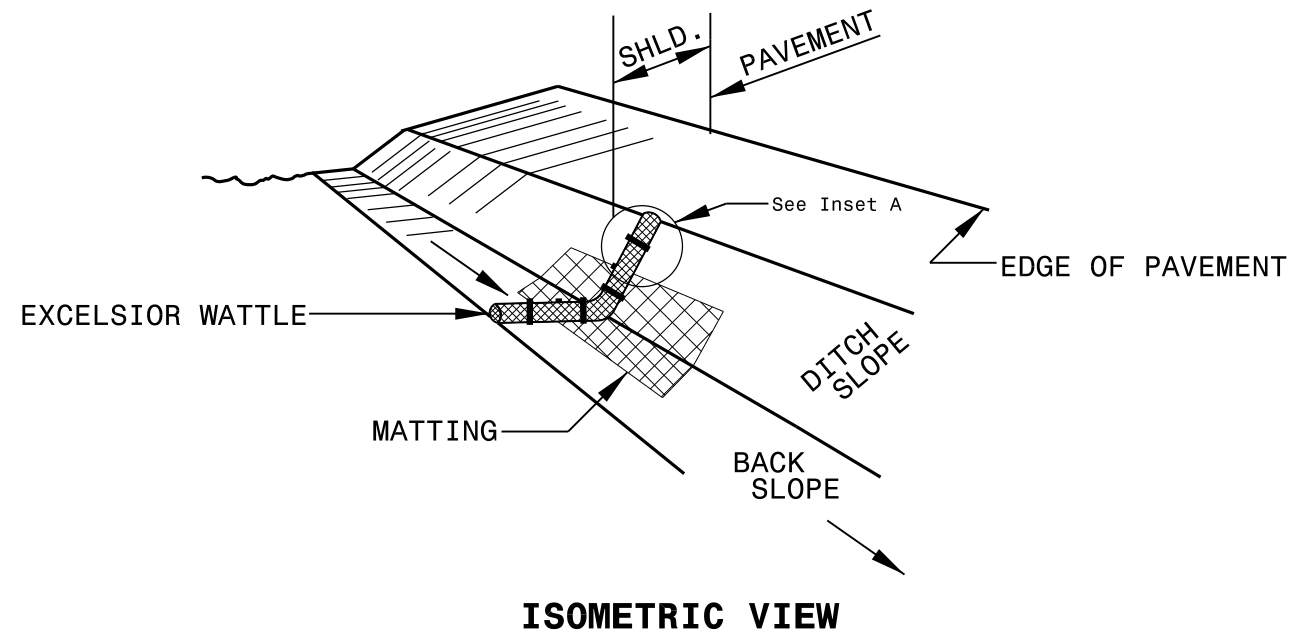


< 5' - 10' Undisturbed buffer from inlet, add wattle



NOT TO SCALE

# WATTLE DETAIL



**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

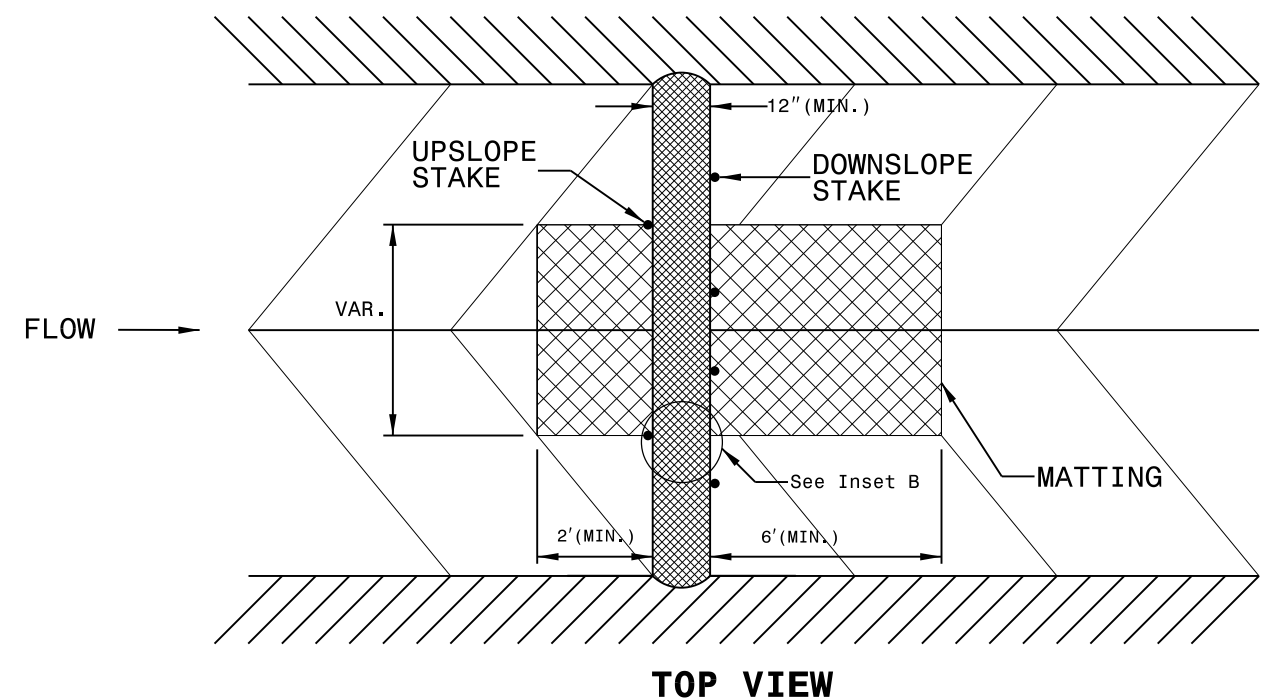
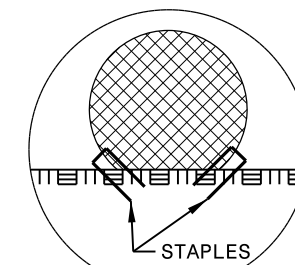
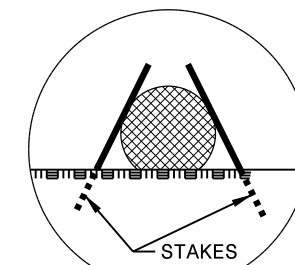
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

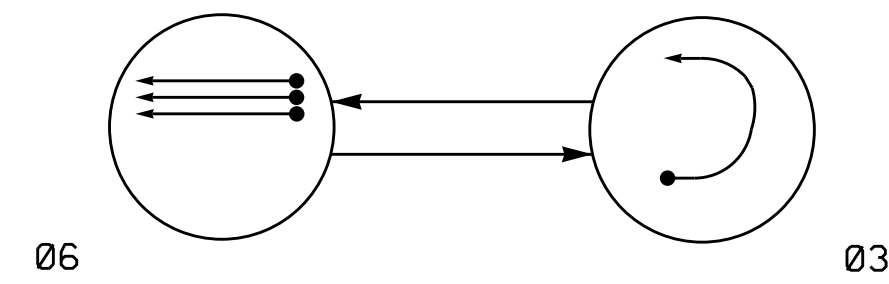
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



### PHASING DIAGRAM



**PHASING DIAGRAM DETECTION LEGEND**

- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ←-- UN SIGNALIZED MOVEMENT
- ←- - - PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	06	03	FLASH
31,32,33	R	L	R
61,62	G	R	Y

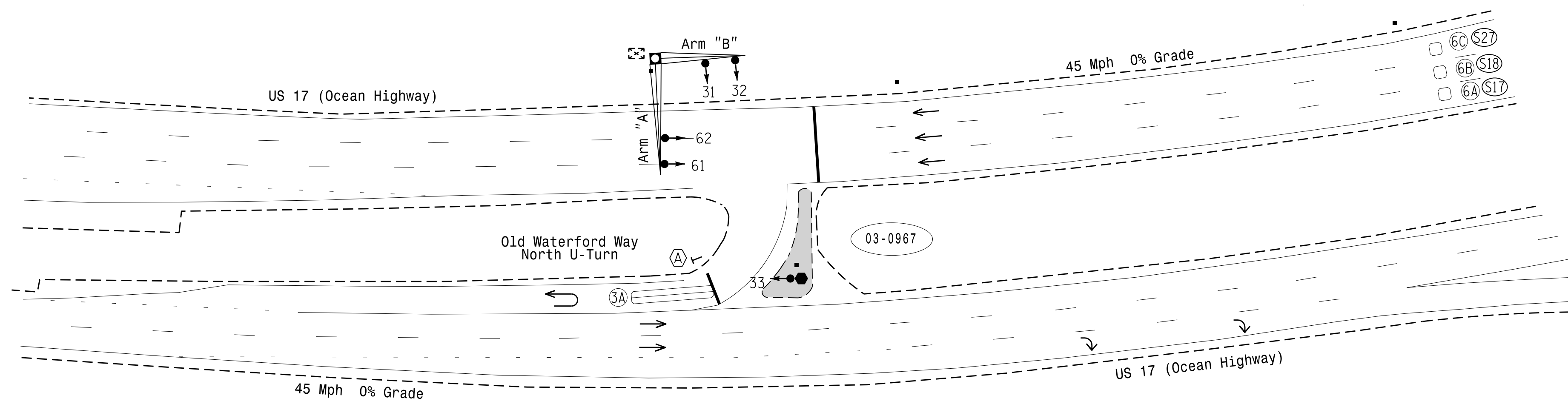
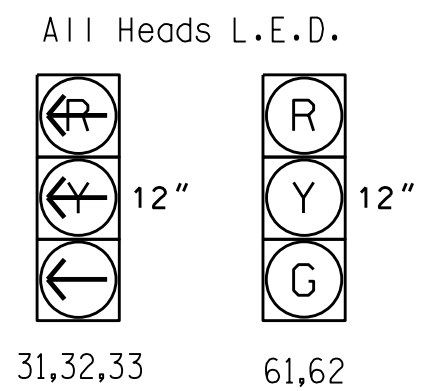
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							SYSTEM LOOP NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME		
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
6A/S17	6X6	300	4	Y	6	Y	Y	-	-	-	-	Y
6B/S18	6X6	300	4	Y	6	Y	Y	-	-	-	-	Y
6C/S27	6X6	300	4	Y	6	Y	Y	-	-	-	-	Y

### 2 Phase Fully Actuated US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland

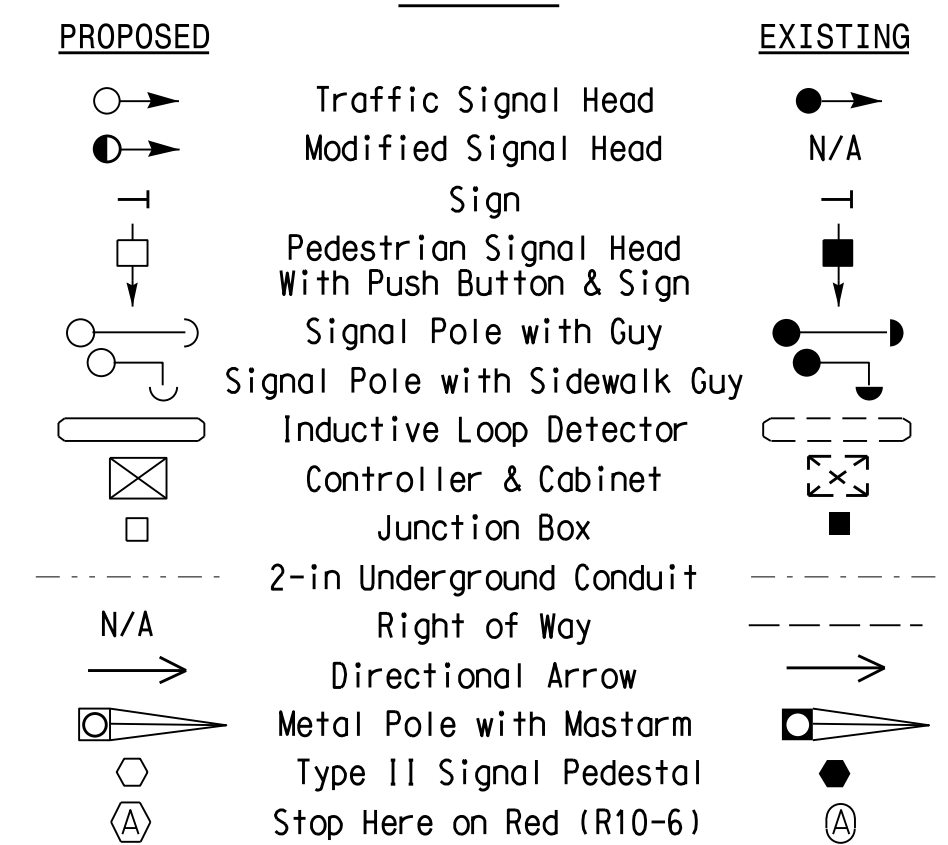
#### NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0967.

#### SIGNAL FACE I.D.

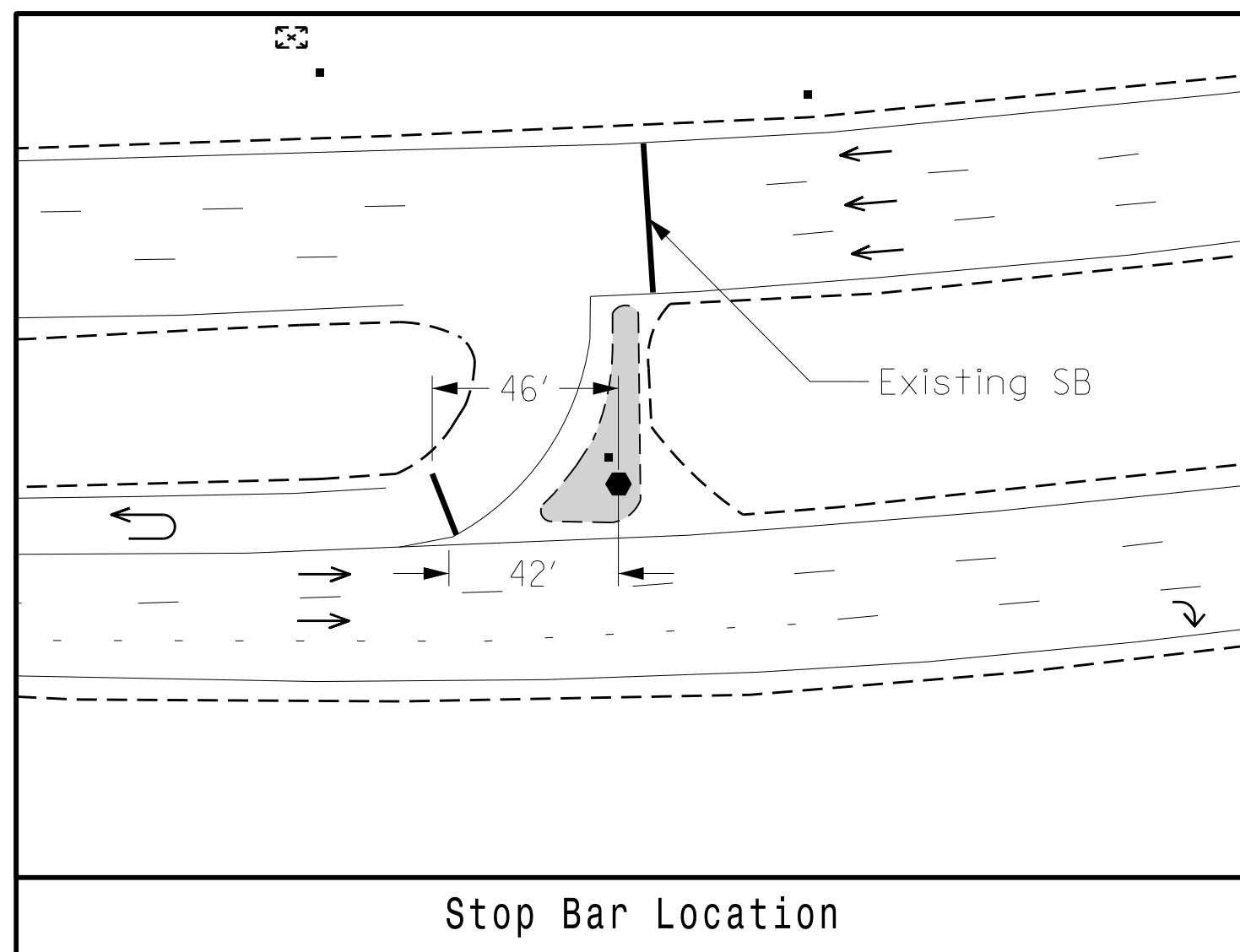


#### LEGEND



OASIS 2070 TIMING CHART		
FEATURE	PHASE	
	3	6
Min Green 1 *	7	12
Extension 1 *	2.0	6.0
Max Green 1 *	30	90
Yellow Clearance	3.0	4.5
Red Clearance	3.8	1.0
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	-	1.5
Max Variable Initial *	-	34
Time Before Reduction *	-	15
Time To Reduce *	-	50
Minimum Gap	-	3.0
Recall Mode	-	MIN RECALL
Vehicle Call Memory	-	YELLOW
Dual Entry	-	-
Simultaneous Gap	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.



#### Signal Upgrade

Prepared in the Offices of:  
**TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS**  
750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at Old Waterford Way North U-Turn  
Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: MEL  
PREPARED BY: KGP, Jr. REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE: 1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

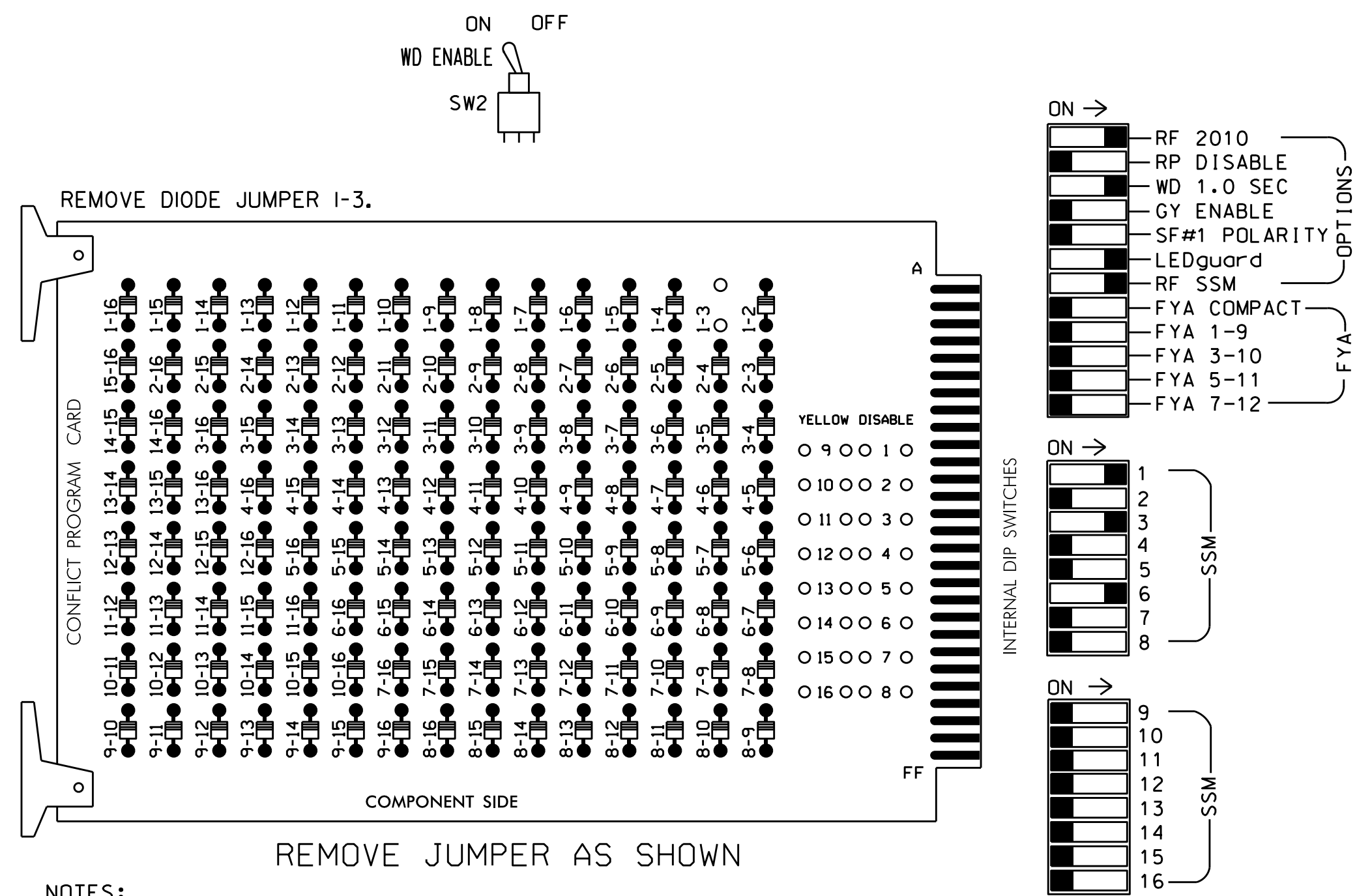
SEAL: **MELAN E. LEBLANC**, PROFESSIONAL ENGINEER, No. 042608, State of North Carolina

DATE: 10/25/2021  
SIG. INVENTORY NO. 03-0967



**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4,5,7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6  
 PHASES USED.....3,6  
 OVERLAP'G'.....3

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	** OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	33	NU	NU	31,32	NU	NU	NU	61,62	NU	NU	NU	NU
RED								134				
YELLOW								135				
GREEN								136				
RED ARROW	125			116								
YELLOW ARROW	126			117								
GREEN ARROW	127			118								

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

**INPUT FILE POSITION LAYOUT**

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	FS	∅ 3A	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS
L	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
U	FS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS	∅ 6/SYS
L	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

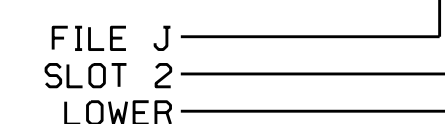
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB2-5,6	J2U	39	1	2	3	Y	Y			
6A/S17	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S18	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
6C/S27	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0967  
 DESIGNED: October 2021  
 SEALED: 10/25/2021  
 REVISED:

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for: US 17 (Ocean Highway) at Old Waterford Way North U-Turn

Prepared In the Offices of: [Logo] 750 N. Greenfield Pkwy, Garner, NC 27529

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS: \_\_\_\_\_ INIT. DATE

DocuSigned by: *T. Joyce* 10/28/2021

SIG. INVENTORY NO. 03-0967

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: [Professional Engineer Seal for Todd Joyce, License No. 031001]

28-OCT-2021 10:50 S:\IT\ASST\TJ: Signal\work\housas\g\_MonPrj\Projects From Signal\_Design\Active Projects\ckl\amd\030967\_sm1.ele.xxx.dgn cbsr\ckl\amd



**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).  
PRESS '+' UNTIL OVERLAP 'G' APPEARS.

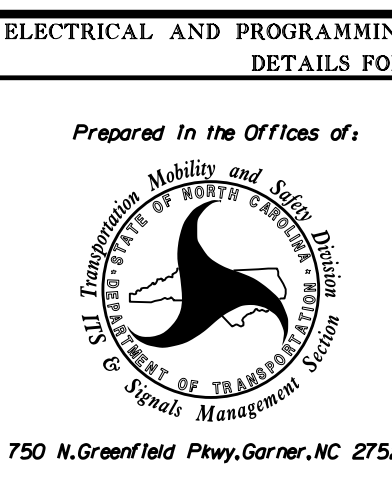
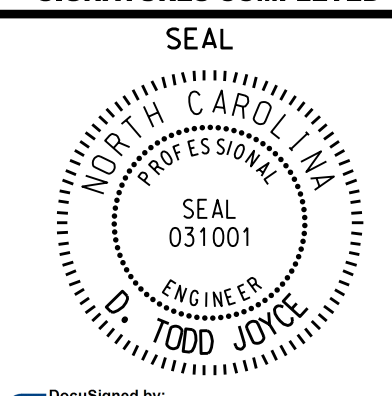
```

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)...0.0
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 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0967  
DESIGNED: October 2021  
SEALED: 10/25/2021  
REVISED:

Electrical Detail - Sheet 2 of 2

 <p>Prepared In the Offices of: Brunswick County 750 N. Greenfield Pkwy, Garner, NC 27529</p>	US 17 (Ocean Highway) at Old Waterford Way North U-Turn		SEAL  SEAL 031001 ENGINEER TODD JOYCE
	Division 3 PLAN DATE: October 2021 PREPARED BY: C. Strickland	Brunswick County Leland REVIEWED BY: T. Joyce REVIEWED BY:	

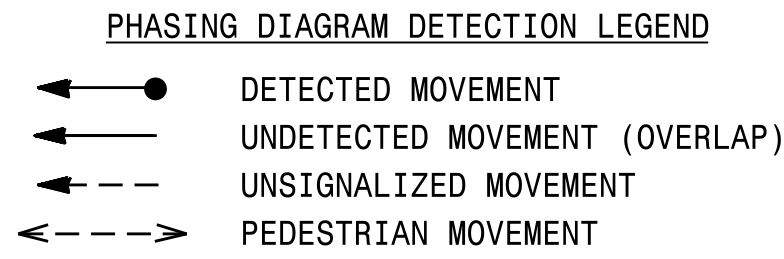
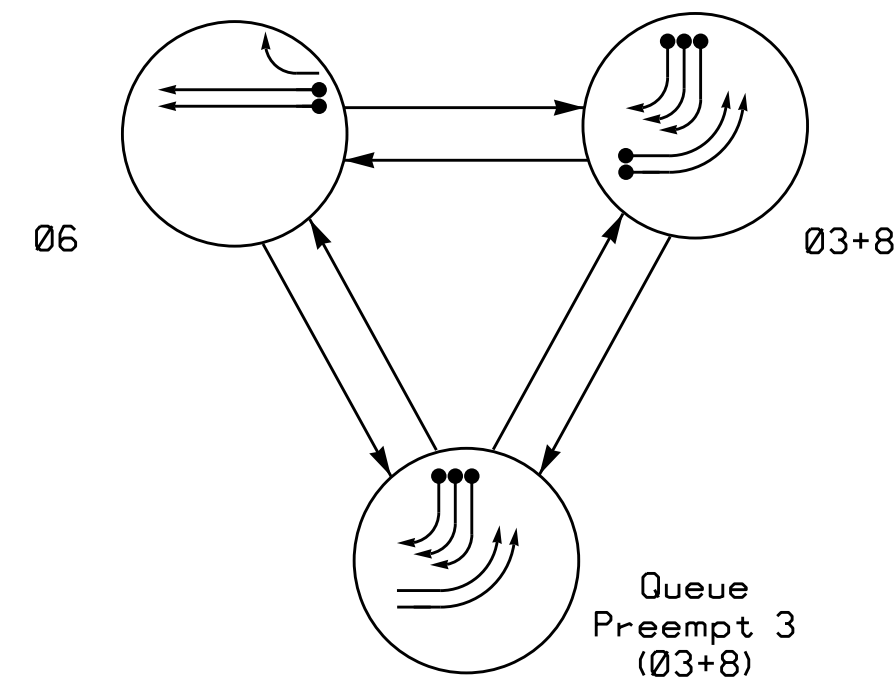
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: *T. Todd Joyce* 10/28/2021  
DATE  
SIC. INVENTORY NO. 03-0967

28 OCT 2021 08:48  
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C:\EST\1\0101



**PHASING DIAGRAM**

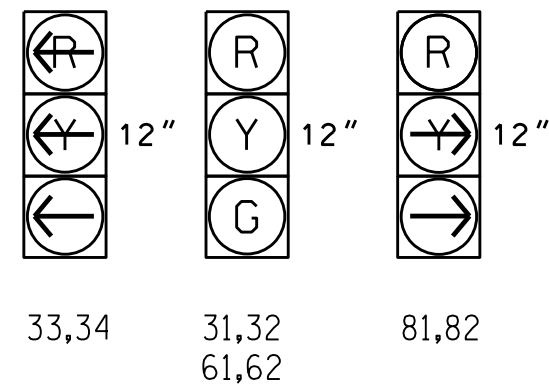


**TABLE OF OPERATION**

SIGNAL FACE	PHASE			
	03+8	03	08	8
31,32	G	R	G	R
33,34	←	→	←	→
61,62	R	G	R	Y
81,82	←	→	←	→

**SIGNAL FACE I.D.**

All Heads L.E.D.



**OASIS 2070 TIMING CHART**

FEATURE	PHASE		
	3	6	8
Min Green 1 *	7	12	7
Extension 1 *	2.0	6.0	2.0
Max Green 1 *	30	90	30
Yellow Clearance	3.0	4.5	3.0
Red Clearance	3.6	1.8	3.6
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	1.5	-
Max Variable Initial *	-	34	-
Time Before Reduction *	-	15	-
Time To Reduce *	-	50	-
Minimum Gap	-	3.0	-
Recall Mode	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-
Dual Entry	ON	-	ON
Simultaneous Gap	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.

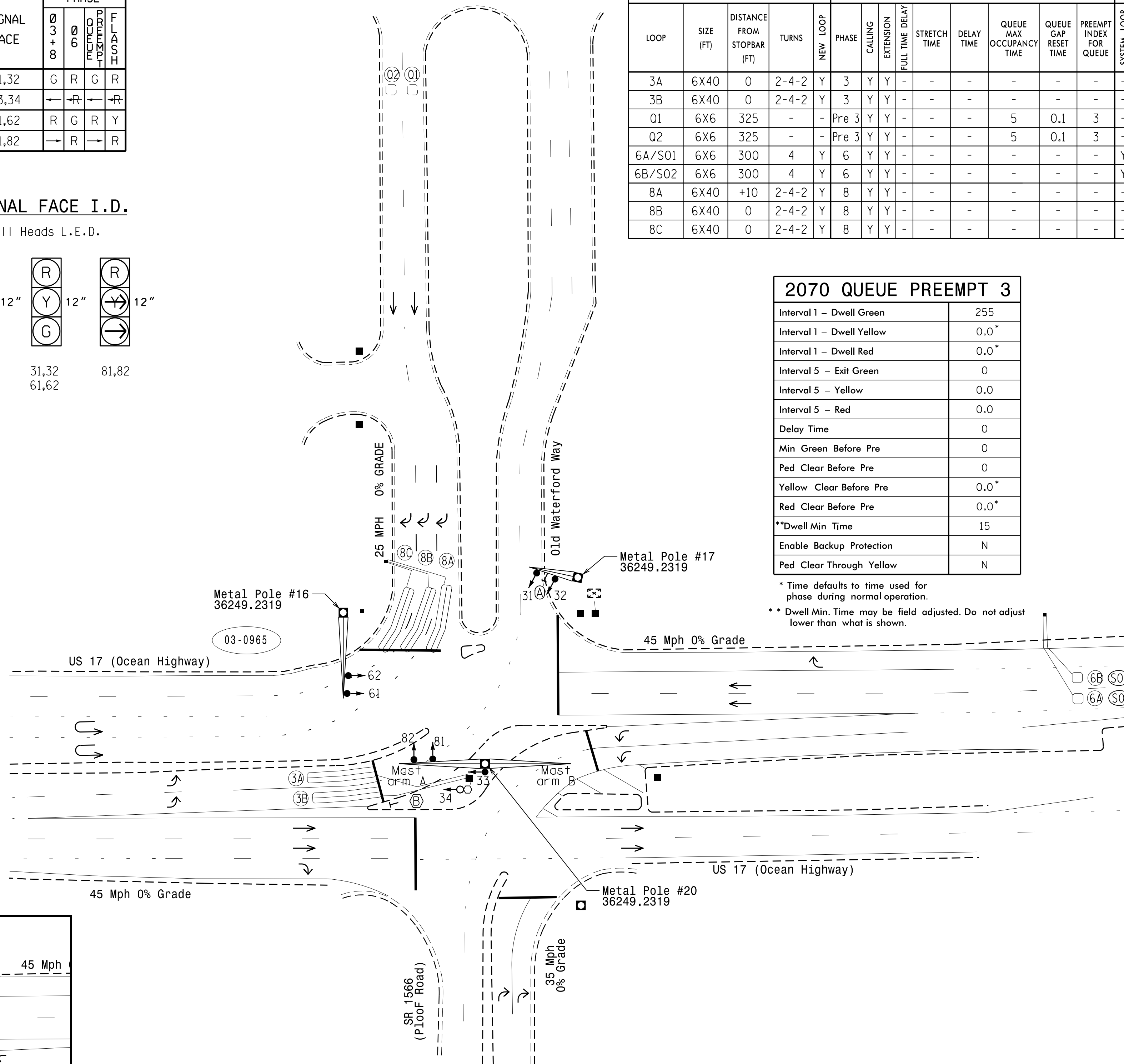
**OASIS 2070 LOOP & DETECTOR INSTALLATION CHART**

INDUCTIVE LOOPS				DETECTOR PROGRAMMING											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	QUEUE MAX OCCUPANCY TIME	QUEUE GAP RESET TIME	PREEMPT INDEX FOR QUEUE	SYSTEM LOOP	NEW CARD
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-	-	-	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-	-	-	-
01	6X6	325	-	-	Pre 3	Y	Y	-	-	-	5	0.1	3	-	-
02	6X6	325	-	-	Pre 3	Y	Y	-	-	-	5	0.1	3	-	-
6A/S01	6X6	300	4	Y	6	Y	Y	-	-	-	-	-	-	Y	-
6B/S02	6X6	300	4	Y	6	Y	Y	-	-	-	-	-	-	Y	-
8A	6X40	+10	2-4-2	Y	8	Y	Y	-	-	-	-	-	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	-	-	-	-
8C	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	-	-	-	Y

**2070 QUEUE PREEMPT 3**

Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	0.0*
Interval 1 - Dwell Red	0.0*
Interval 5 - Exit Green	0
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Delay Time	0
Min Green Before Pre	0
Ped Clear Before Pre	0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
**Dwell Min Time	15
Enable Backup Protection	N
Ped Clear Through Yellow	N

\* Time defaults to time used for phase during normal operation.  
\*\* Dwell Min. Time may be field adjusted. Do not adjust lower than what is shown.

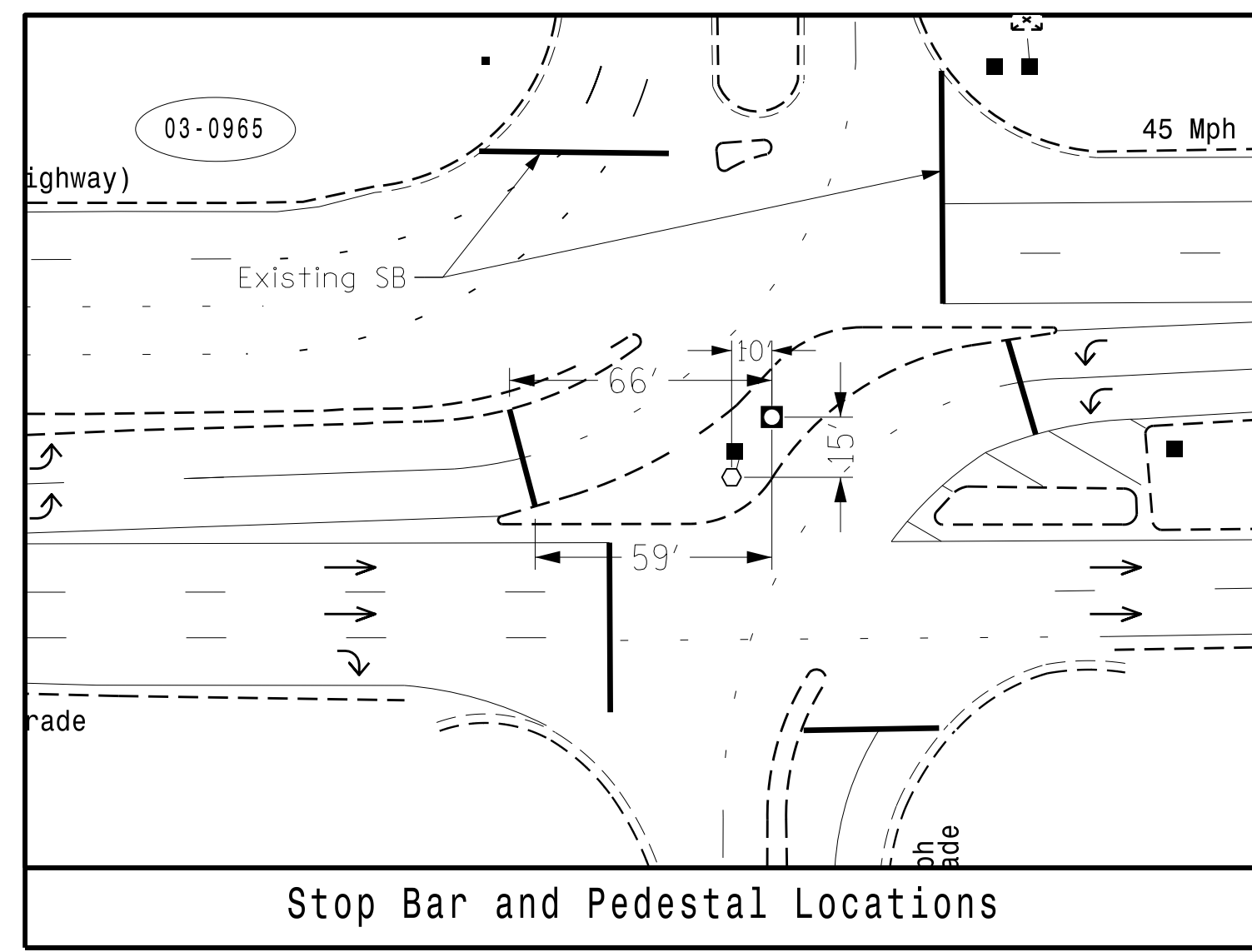
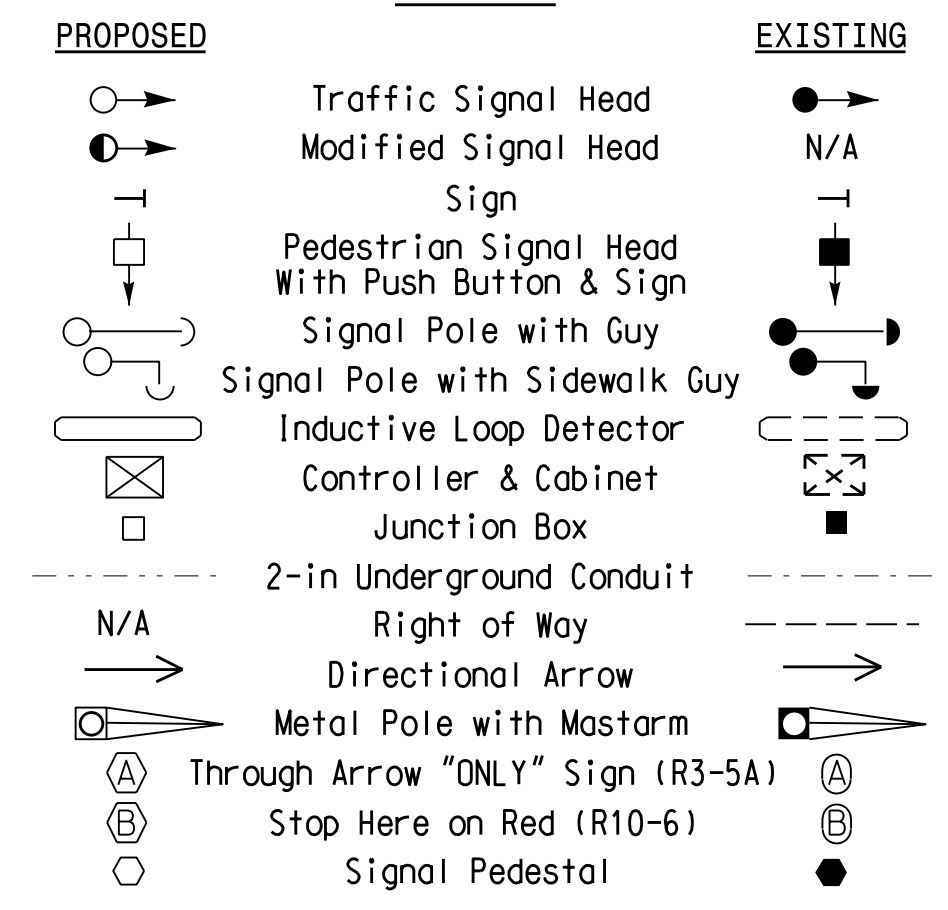


2 Phase Fully Actuated W/Queue Preemption US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 34 and 35 as 81 and 82, respectively.
- Renumber existing loops 3C and 3D as 8A and 8B, respectively.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Program controller to initiate backup preemption upon activation of queue backup loops.
- Closed loop system data: Controller Asset #: 0965.

**LEGEND**



**Signal Upgrade**

Prepared in the Offices of:  
  
 TRANSPORTATION MOBILITY AND SAFETY DIVISION  
 DEPARTMENT OF TRANSPORTATION  
 SIGNAL DESIGN SECTION  
 750 N. Greenfield Pkwy, Garner, NC 27529

**US 17 (Ocean Highway) at Old Waterford Way**

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: MEL

PREPARED BY: KGP, JR. REVIEWED BY:

REVISIONS	INIT.	DATE

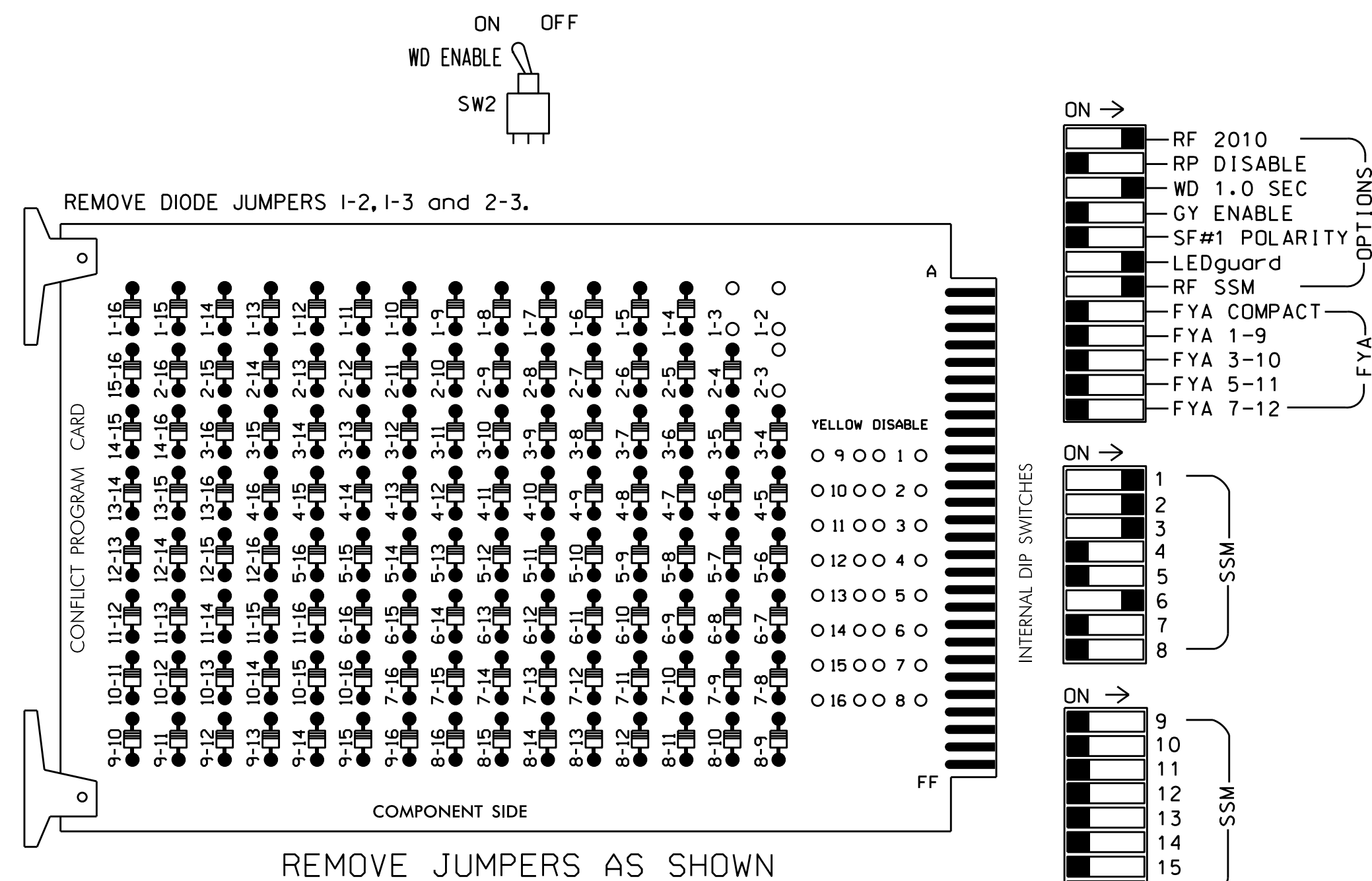
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MEGHAN E. LEBLANC  
 ENGINEER  
 10/25/2021  
 S/G. INVENTORY NO. 03-0965

22-007-2021-13126 SS#175850175 Signal Design Section Eastern Region 03-0965 US 17 Leland 2022 Resurfacing 03-0965-030965\_sdg\_dsn\_202110add.dgn

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 4,5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 3 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
CABINET.....332  
SOFTWARE.....ECONOLITE OASIS  
CABINET MOUNT.....BASE  
OUTPUT FILE POSITIONS...12  
LOAD SWITCHES USED.....S1,S2,S3,S6  
PHASES USED.....3,6,8  
OVERLAP'G'.....3  
OVERLAP'H'.....8

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	* * OLG	* * OLH	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	33,34	81,82	NU	31,32	NU	NU	NU	61,62	NU	NU	NU	NU
RED		128		116				134				
YELLOW				117				135				
GREEN				118				136				
RED ARROW	125											
YELLOW ARROW	126	129										
GREEN ARROW	127	130										

NU = Not Used

\* \* Requires special programming and output remapping. See sheets 2 and 3.

### INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	FS
U	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	DC ISOLATOR
L	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	ST
U	∅ 3	∅ 3	∅ 8	∅ 6/SYS	∅ 6/SYS	PRE 3	S	S	S	S	S	S	S	S	DC ISOLATOR
L	3A	3B	8B	6A/S01	6B/S02	Q1	TOP	TOP	TOP	TOP	TOP	TOP	TOP	TOP	DC ISOLATOR
U	NOT USED	∅ 8	∅ 8	NOT USED	NOT USED	PRE 3	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	DC ISOLATOR
L		8A	8C			Q2	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	Y-T	DC ISOLATOR

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

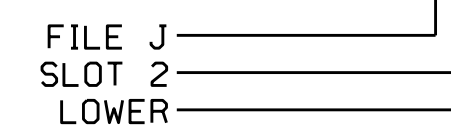
FS = FLASH SENSE  
ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB3-1,2	J1U	55	17	5	3	Y	Y			
3B	TB3-5,6	J2U	40	2	6	3	Y	Y			
* O1	TB5-9,10	J6U	42	4	8	PRE3	Y	Y			
* O2	TB5-11,12	J6L	46	8	18	PRE3	Y	Y			
6A/S01	TB5-1,2	J4U	48	10	26	6/SYS	Y	Y			
6B/S02	TB5-5,6	J5U	57	19	7	6/SYS	Y	Y			
8A	TB3-7,8	J2L	44	6	16	8	Y	Y			
8B	TB3-9,10	J3U	64	26	36	8	Y	Y			
8C	TB3-11,12	J3L	77	39	46	8	Y	Y			

\* See Vehicle Detector Programming Detail on sheet 2.

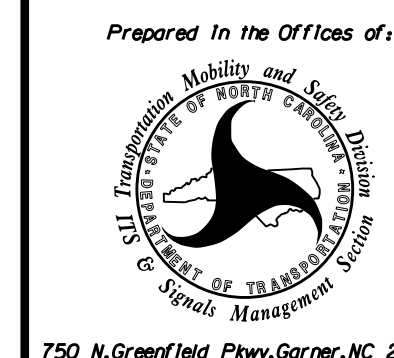
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0965  
DESIGNED: October 2021  
SEALED: 10/25/2021  
REVISED:

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:



750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at Old Waterford Way

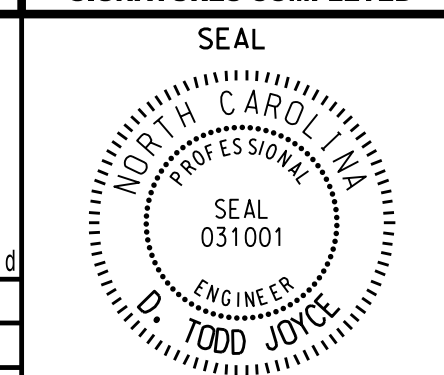
Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



10/28/2021 DATE

SIG. INVENTORY NO. 03-0965



**QUEUE PREEMPTION PROGRAMMING DETAIL**

(program controller as shown below)

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS 'NEXT' UNTIL PREEMPTION #3 IS DISPLAYED.

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 0 0.0 0.0	

EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT) .....MED

DELAY TIMER (0-255 SEC) .....0

MIN GREEN BEFORE PRE (0= DEFAULT)....0

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) .....15

DWELL MAX TIMER (0=OFF,1-255MIN) ....0

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: ABCDEFGHIJKLMNPO

DWELL INT FLASH YELLOW

OMIT OVERLAPS:

**VEHICLE DETECTOR #8 SETTINGS**

FOR QUEUE PREEMPT

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN '1' (VEHICLE DETECTOR ASSIGNMENTS). PRESS '+' UNTIL DETECTOR #8 IS DISPLAYED.

VEHICLE DETECTOR #8 SETTINGS (+,-,1-64)

SETTING: (Y/N)

ENABLE DETECTOR.....Y

ENABLE LOGGING.....Y

ENABLE DIAGNOSTICS.....Y

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).....5

QUEUE GAP RESET TIME (0-25.5).....0.1

PREEMPTION INDEX FOR QUEUE (0-10)....3

**VEHICLE DETECTOR #18 SETTINGS**

FOR QUEUE PREEMPT

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN '1' (VEHICLE DETECTOR ASSIGNMENTS). PRESS '+' UNTIL DETECTOR #18 IS DISPLAYED.

VEHICLE DETECTOR #18 SETTINGS (+,-,1-64)

SETTING: (Y/N)

ENABLE DETECTOR.....Y

ENABLE LOGGING.....Y

ENABLE DIAGNOSTICS.....Y

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).....5

QUEUE GAP RESET TIME (0-25.5).....0.1

PREEMPTION INDEX FOR QUEUE (0-10)....3

**OVERLAP 'G' PROGRAMMING DETAIL**

(program controller as shown below)

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

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

OVERLAP 'G' PROGRAMMING COMPLETE

**OVERLAP 'H' PROGRAMMING DETAIL**

(program controller as shown below)

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

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

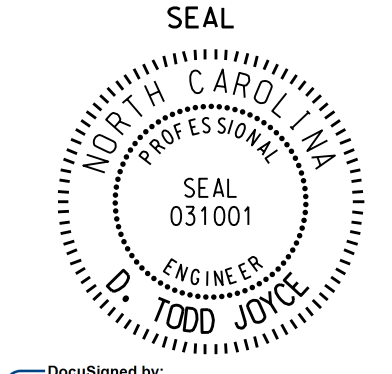
RED CLEAR (0=PARENT,0.1-25.5 SEC)....0.0

OUTPUT AS PHASE # (0=NONE, 1-16)....0

OVERLAP 'H' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0965  
DESIGNED: October 2021  
SEALED: 10/25/2021  
REVISED:

Electrical Detail - Sheet 2 of 3

	<p>US 17 (Ocean Highway) at Old Waterford Way</p>	
	<p>Division 3 Brunswick County Leland</p> <p>PLAN DATE: October 2021 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: C. Strickland REVIEWED BY:</p>	<p>REVISIONS</p> <p>INIT. DATE</p>
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>DocuSigned by: D. Todd Joyce 10/28/2021</p>	<p>SIG. INVENTORY NO. 03-0965</p>



**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:**  
**OVERLAP "H" TO LOADSWITCH "S2" AND OVERLAP "G" TO LOADSWITCH "S1"**  
*(program controller as shown below)*

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 11, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

STEP 1

```

PAGE:1 C1 PIN:12 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....11
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:12 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....11
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.....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.....
    
```

```

PAGE:1 C1 PIN:12 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...8
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 INPUTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 12

STEP 2

```

PAGE:1 C1 PIN:13 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....12
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:13 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....12
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.....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.....
    
```

```

PAGE:1 C1 PIN:13 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...8
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 INPUTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 13

STEP 3

```

PAGE:1 C1 PIN:15 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....13
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:15 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....13
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.....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.....
    
```

```

PAGE:1 C1 PIN:15 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...8
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 INPUTING DATA, THEN 'ESC'.

PRESS "+" UNTIL OUTPUT 14 IS REACHED.

STEP 4

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 15

STEP 5

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
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.....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.....
    
```

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 16

STEP 6

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

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

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
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.....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.....
    
```

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

OUTPUT PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0965  
 DESIGNED: October 2021  
 SEALED: 10/25/2021  
 REVISED:

Electrical Detail - Sheet 3 of 3

Prepared In the Office of:



US 17 (Ocean Highway) at Old Waterford Way

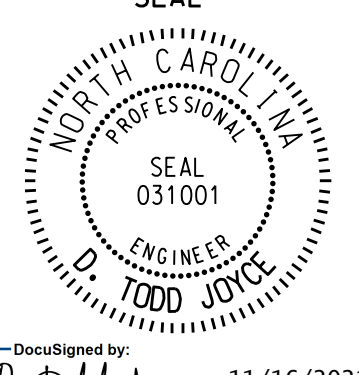
Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

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



DESIGNED BY: T. Joyce 11/16/2021

SIG. INVENTORY NO. 03-0965

I:\Projects\2021\11-17-21\SIG-03-0965\03-0965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000.dgn



PHASING DIAGRAM

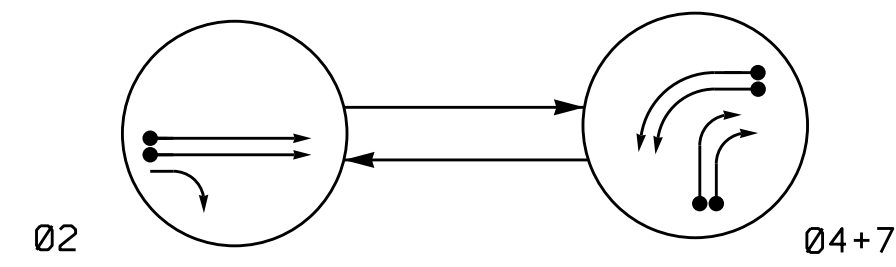


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+7	F Loop
21,22	G	R	Y
41,42	R	→	R
71,72	R	G	R
73,74	←	←	←

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

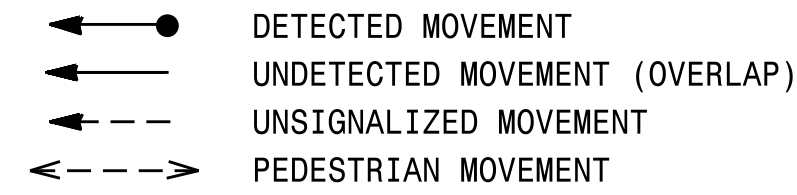
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S15	6X6	285	5	-	2	Y	Y	-	-	-	-	-
2B/S16	6X6	285	5	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	-	-	-
7B	6X40	0	2-4-2	-	7	Y	Y	-	-	-	-	-

2 Phase Fully Actuated  
US 17 (Ocean Highway) - Leland Superstreet  
D03-12 Leland

NOTES

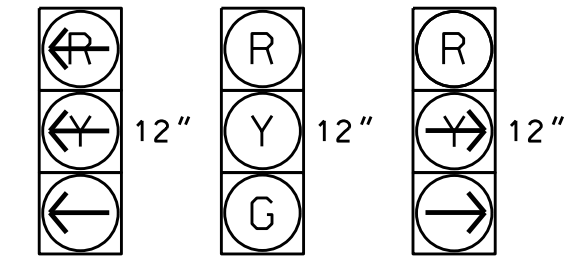
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Renumber existing heads 14 and 15 as 41 and 42, respectively. Renumber existing heads 11, 12, and 13 as 71, 72, and 73, respectively.
- Renumber existing loops 1A 1B, 1C, and 1D as 7A, 7B, 4A, and 4B, respectively.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 0966.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

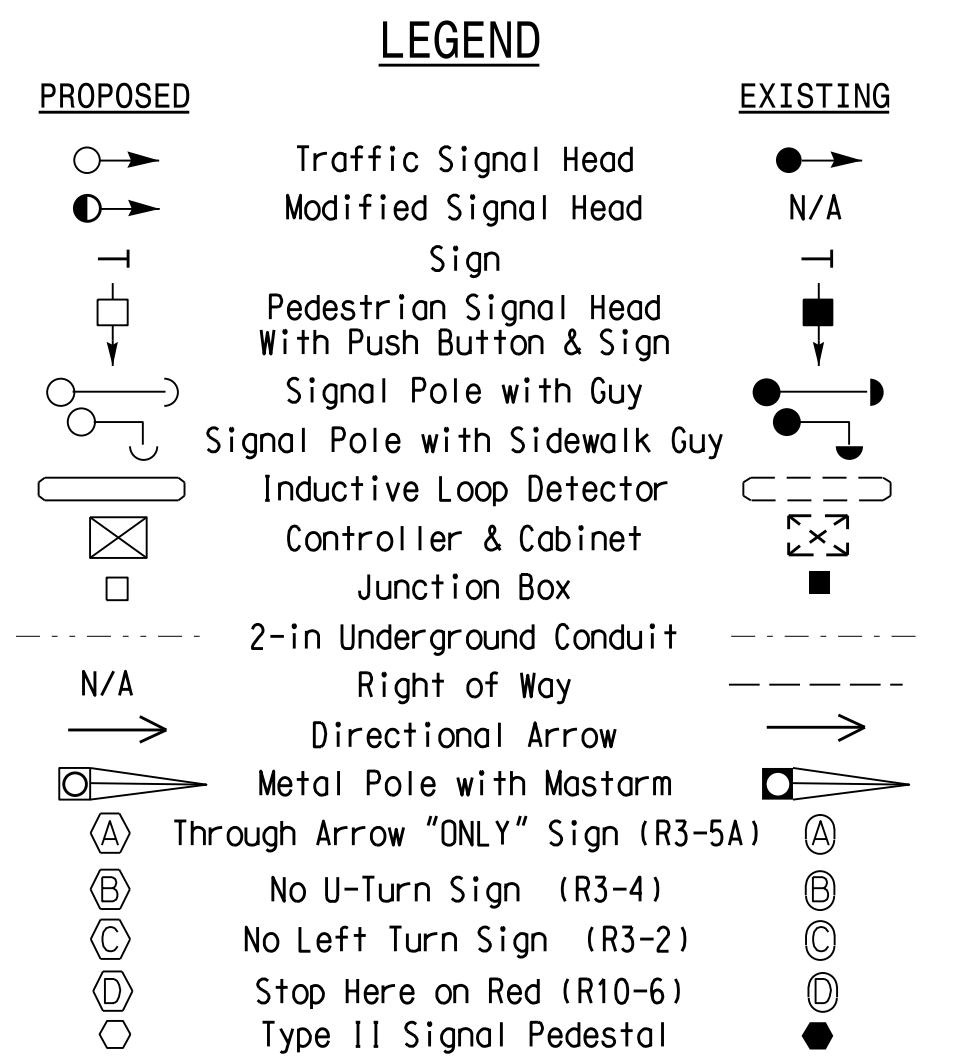
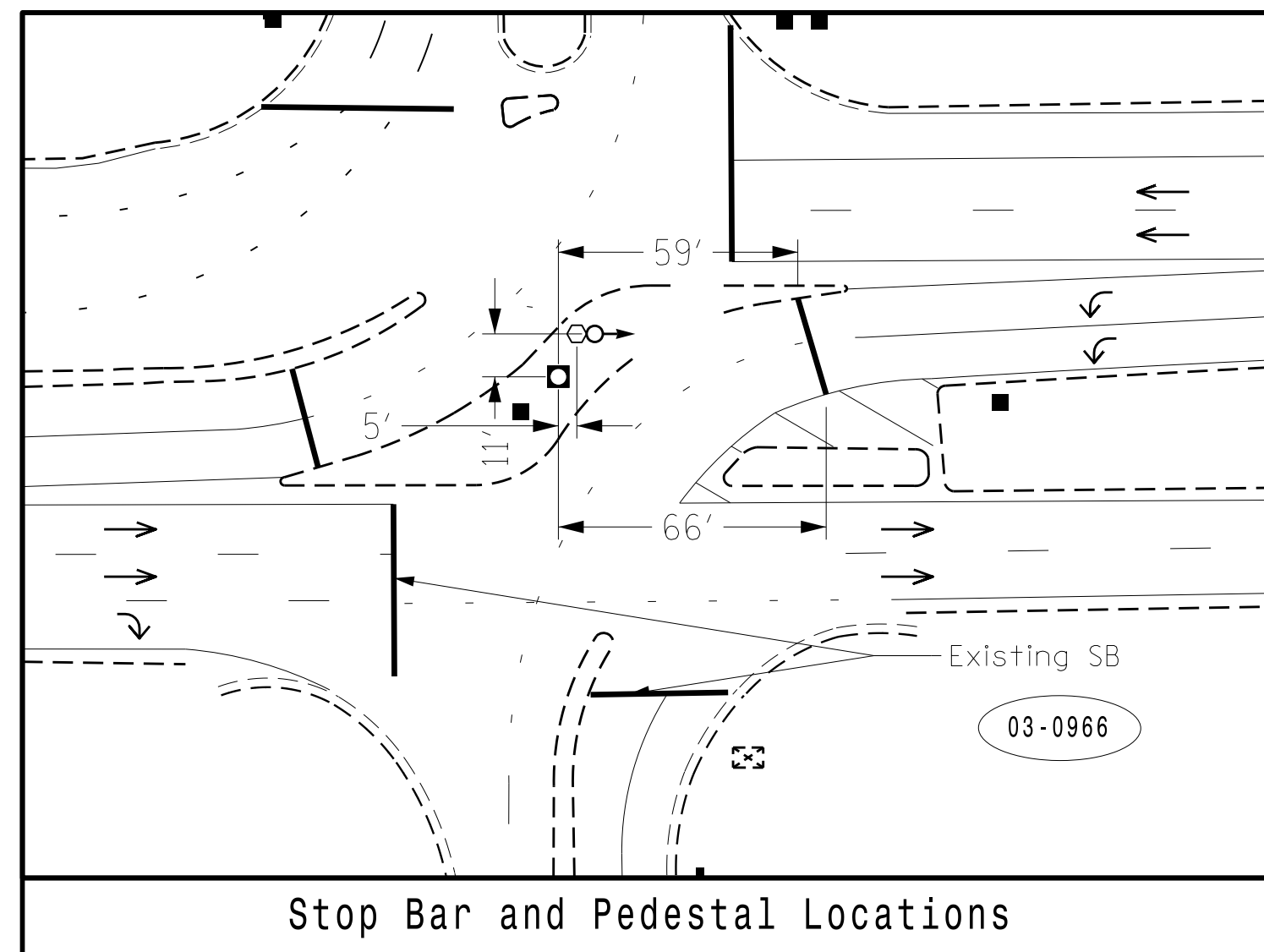
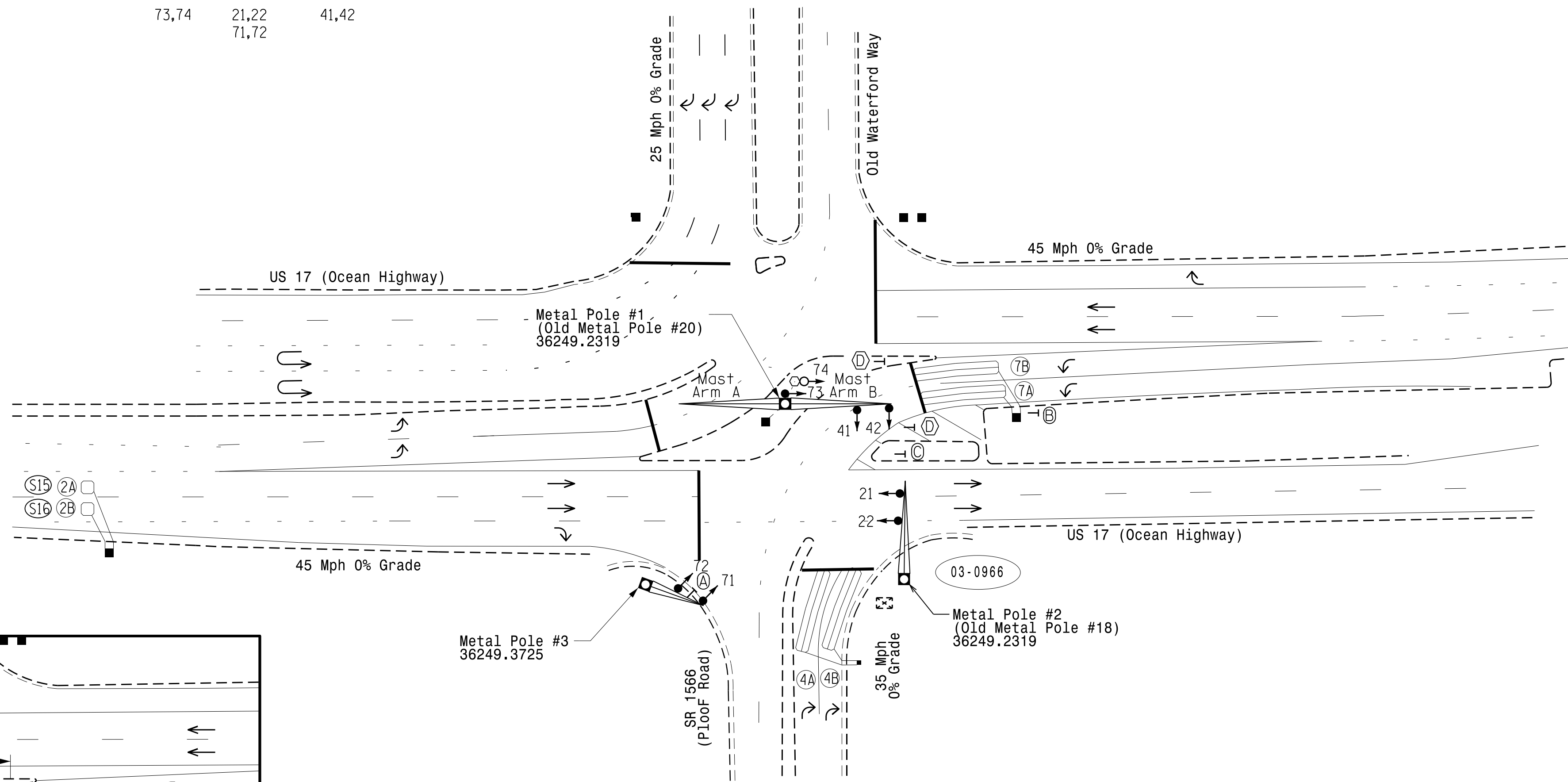
All Heads L.E.D.



OASIS 2070 TIMING CHART

FEATURE	PHASE		
	2	4	7
Min Green 1 *	12	7	7
Extension 1 *	5.0	2.0	2.0
Max Green 1 *	90	30	30
Yellow Clearance	4.5	3.0	3.0
Red Clearance	1.8	3.5	3.5
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	1.5	-	-
Max Variable Initial *	32	-	-
Time Before Reduction *	25	-	-
Time To Reduce *	50	-	-
Minimum Gap	3.0	-	-
Recall Mode	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-
Dual Entry	-	ON	ON
Simultaneous Gap	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.



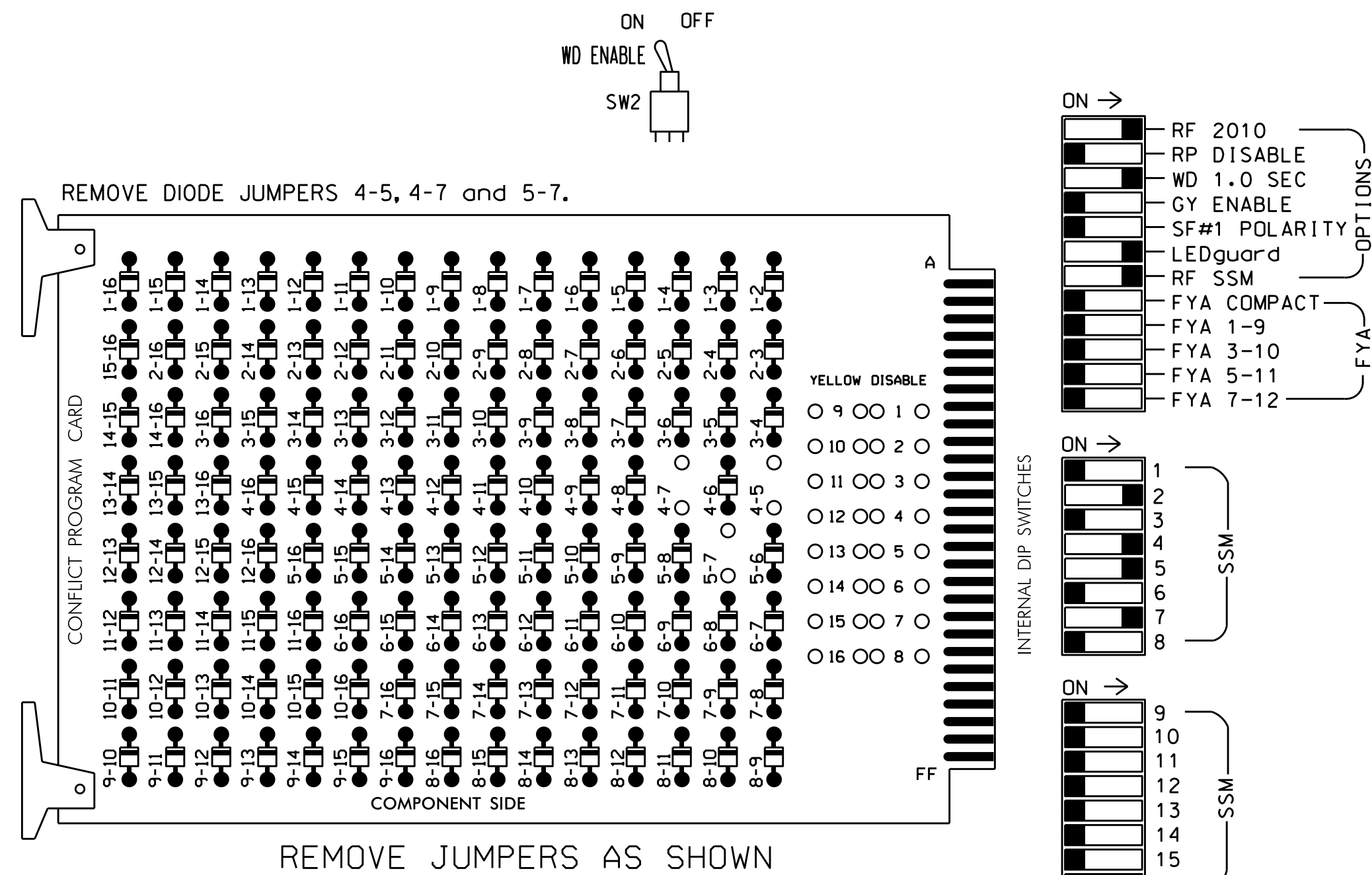
Signal Upgrade

Prepared in the Offices of:  
  
 US 17 (Ocean Highway) at SR 1566 (Ploof Road)  
 Division 3 Brunswick County Leland  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: KGP, JR. REVIEWED BY:  
 SCALE: 1" = 40'  
 REVISIONS: \_\_\_\_\_ INIT. DATE \_\_\_\_\_  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 Meghan E. LeBlanc 10/25/2021  
 SIG. INVENTORY NO. 03-0966

22-001-2021-13128 SS#1756504175 Signal Design Region: Eastern Region: M01V-03MUS 17 Leland 2022 Resurfacing: 03-0966: 03-0966: sig\_dsn\_2021.madd.dgn klpaced.in

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,6, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 7 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	** OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	73,74	NU	NU	71,72	NU	NU
RED		128			101					122		
YELLOW		129								123		
GREEN		130								124		
RED ARROW							131					
YELLOW ARROW					102		132					
GREEN ARROW					103		133					

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S5,S7  
 PHASES USED.....2,4,7  
 OVERLAP G.....7

### INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S	∅ 7	∅ 2/SYS	-O/S	-O/S	-O/S	-O/S	-O/S	-O/S	-O/S	-O/S	-O/S	-O/S	FS
L	7A	2A/S15												DC ISOLATOR
L	7B	2B/S16												ST
U						∅ 4								DC ISOLATOR
L						4A								
L						4B								

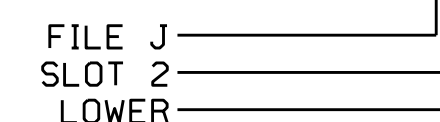
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S15	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/S16	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
4A	TB5-9,10	J6U	42	4	8	4	Y	Y			15
4B	TB5-11,12	J6L	46	8	18	4	Y	Y			15
7A	TB2-5,6	I2U	39	1	2	7	Y	Y			
7B	TB2-7,8	I2L	43	5	12	7	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0966  
 DESIGNED: October 2021  
 SEALED: 10/25/2021  
 REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at SR 1566 (Ploof Road)		SEAL  SEAL 031001 ENGINEER TODD JOYCE
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY: T. Joyce PREPARED BY: C. Strickland REVIEWED BY:	

28\_0017-2021\_12.dwg  
 10/25/2021 10:28:00  
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 C:\Users\cstrickland\OneDrive\Documents\2021\03\03-0966\03-0966.dwg

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:  
 Todd Joyce  
 10/28/2021  
 DATE  
 SIG. INVENTORY NO. 03-0966



OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S5"

(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 30, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

STEP 1

```

PAGE:1  C1 PIN:32  VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1  C1 PIN:32  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 INPUTING DATA, THEN 'ESC'.

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

```

PAGE:1  C1 PIN:32  VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....

```

PRESS "+" KEY FOR OUTPUT 31

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

STEP 2

```

PAGE:1  C1 PIN:33  VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1  C1 PIN:33  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 INPUTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 32

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

STEP 3

```

PAGE:1  C1 PIN:34  VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1  C1 PIN:34  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 INPUTING DATA, THEN 'ESC'.

OUTPUT PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PRESS '+' UNTIL OVERLAP G IS REACHED

```

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 (O=PARENT,3-25.5 SEC)...0.0
RED CLEAR (O=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (O=NONE, 1-16)...0

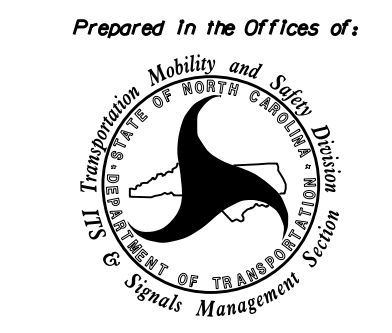
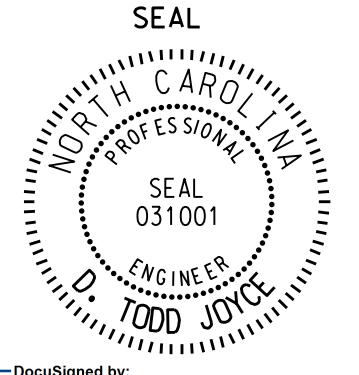
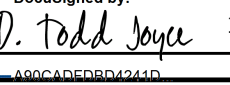
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0966  
DESIGNED: October 2021  
SEALED: 10/25/2021  
REVISED:

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 Prepared In the Offices of: STATE OF NORTH CAROLINA TRANSPORTATION MOBILITY AND SAFETY DIVISION SIGNAL MANAGEMENT SECTION 750 N. Greenfield Pkwy, Garner, NC 27529	DETAILS FOR: <b>US 17 (Ocean Highway)</b> <b>at</b> <b>SR 1566 (Ploof Road)</b>		
	Division 3 Brunswick County Leland		
	PLAN DATE: October 2021	REVIEWED BY: T. Joyce	
	PREPARED BY: C. Strickland	REVIEWED BY:	
	REVISIONS	INIT.	DATE
DocuSigned by:  10/28/2021 DATE			SIGNED BY:
SIGNED DATE:			DATE:
SIGNED BY:			DATE:

28 OCT 2021 08:25  
W:\030666\em\et\ec\mkx.dgn  
C:\ST1\CK1.DWG

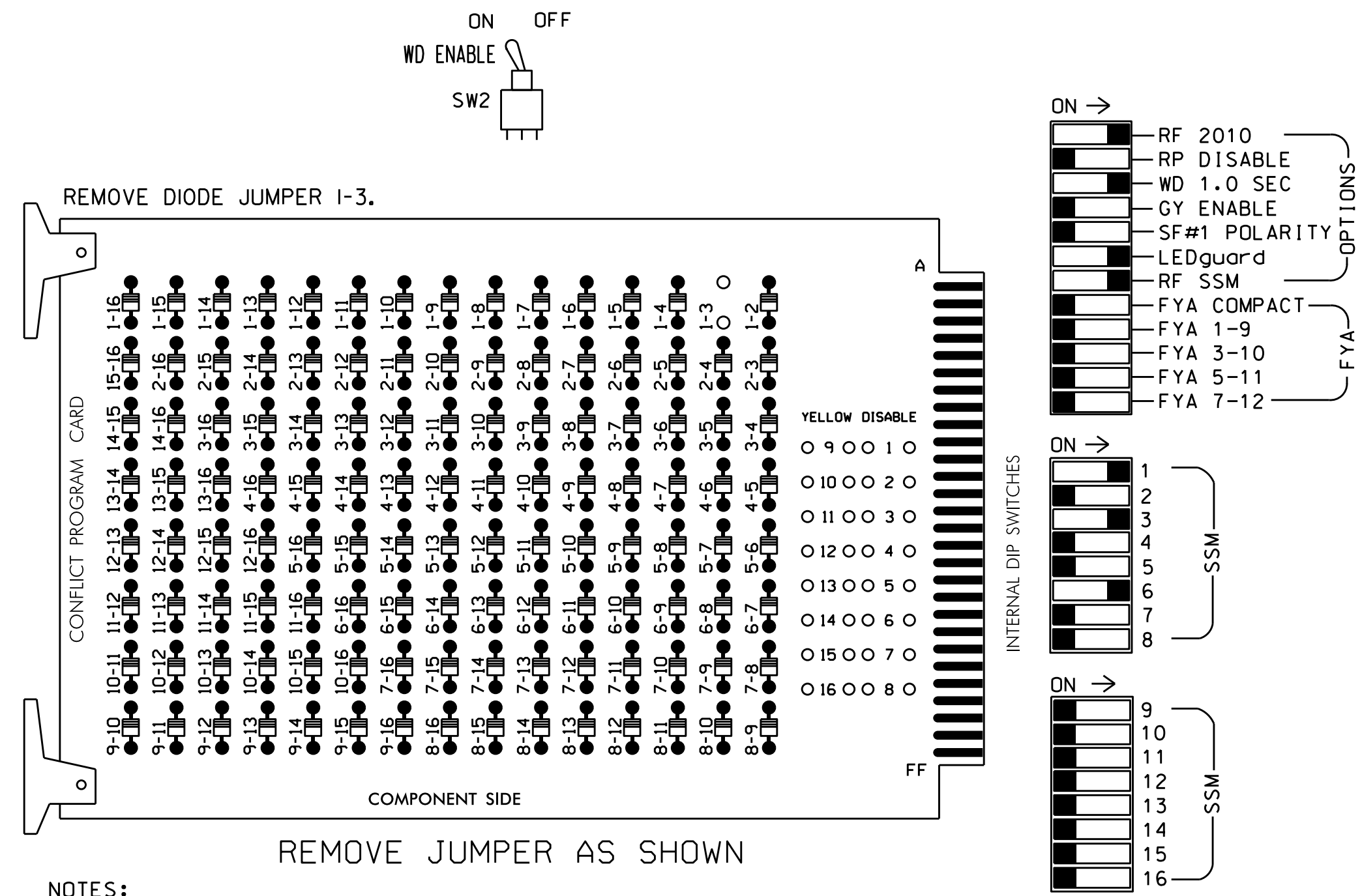




# EDI MODEL 2010ECL-NC CONFLICT MONITOR

## PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

## NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4,5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the US 17 (Ocean Hwy) - Leland Superstreet D03-12 Leland.

## EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6  
 PHASES USED.....3,6  
 OVERLAP'G'.....3

## SIGNAL HEAD HOOK-UP CHART

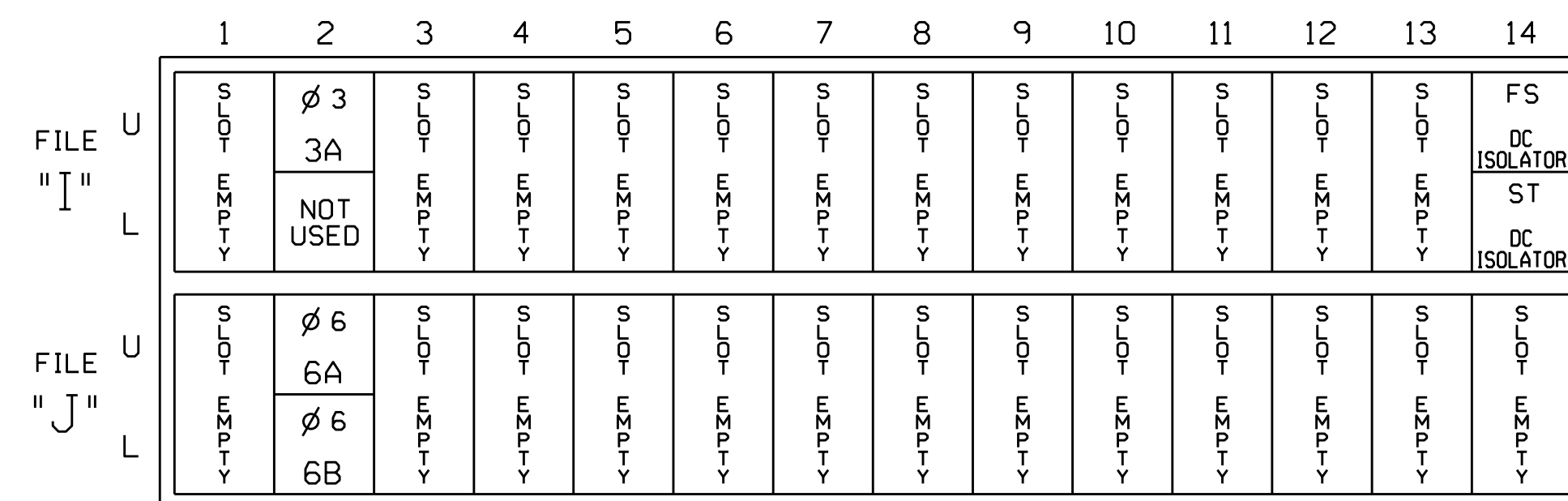
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	* * OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	33	NU	NU	31,32	NU	NU	NU	61,62	NU	NU	NU	NU
RED								134				
YELLOW								135				
GREEN								136				
RED ARROW	125			116								
YELLOW ARROW	126			117								
GREEN ARROW	127			118								

NU = Not Used

\* \* Requires special programming and output remapping. See sheet 2.

## INPUT FILE POSITION LAYOUT

(front view)



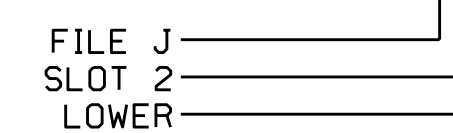
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB2-5,6	J2U	39	1	2	3	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			

### INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0971  
 DESIGNED: October 2021  
 SEALED: 10/27/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Ocean Gate Plaza North U-Turn		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. Todd Joyce
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: Zarrar Zafar REVIEWED BY:	
REVISIONS		INIT.	DATE
DocuSign by: 11/1/2021		DATE	
SIG. INVENTORY NO. 03-0971		DATE	

28-003-2021 1P:00  
 S:\11\5504115\SIGNAL\work\hous\51g\_MarkZafar\plans\030971\_sme.e\_2021mdata.dgn  
 2/22/21

**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).  
PRESS '+' UNTIL OVERLAP 'G' APPEARS.

```

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)...0.0
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 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0971  
DESIGNED: October 2021  
SEALED: 10/27/2021  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

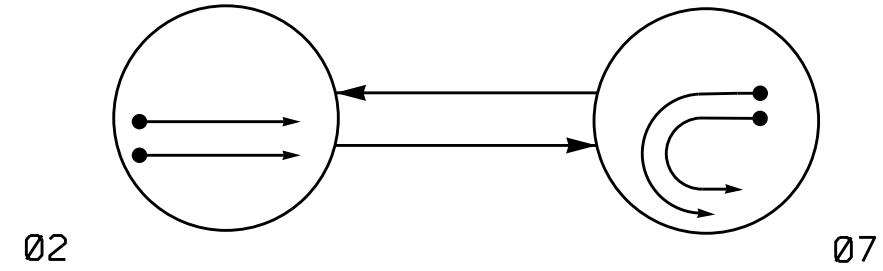
	US 17 (Ocean Highway) at Ocean Gate Plaza North U-Turn	
	Division 3 Brunswick County Leland	SEAL
PLAN DATE: October 2021	REVIEWED BY:	PREPARED BY: Zarrar Zafar
REVISIONS	INIT.	DATE
750 N. Greenfield Pkwy, Garner, NC 27529	D. Todd Joyce 11/1/2021	SIG. INVENTORY NO. 03-0971

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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10/30/21  
1:shu,ef,2021mmcd,sgm  
2/20/21



**PHASING DIAGRAM**



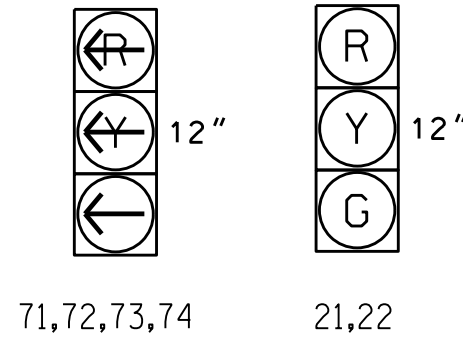
**PHASING DIAGRAM DETECTION LEGEND**  
 ● - DETECTED MOVEMENT  
 ◓ - UNDETECTED MOVEMENT  
 - - - - UNSIGNALIZED MOVEMENT  
 <--- ---> PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE		
	02	07	FLASH
21,22	G	R	Y
71,72,73,74	R	-	R

**SIGNAL FACE I.D.**

All Heads L.E.D.



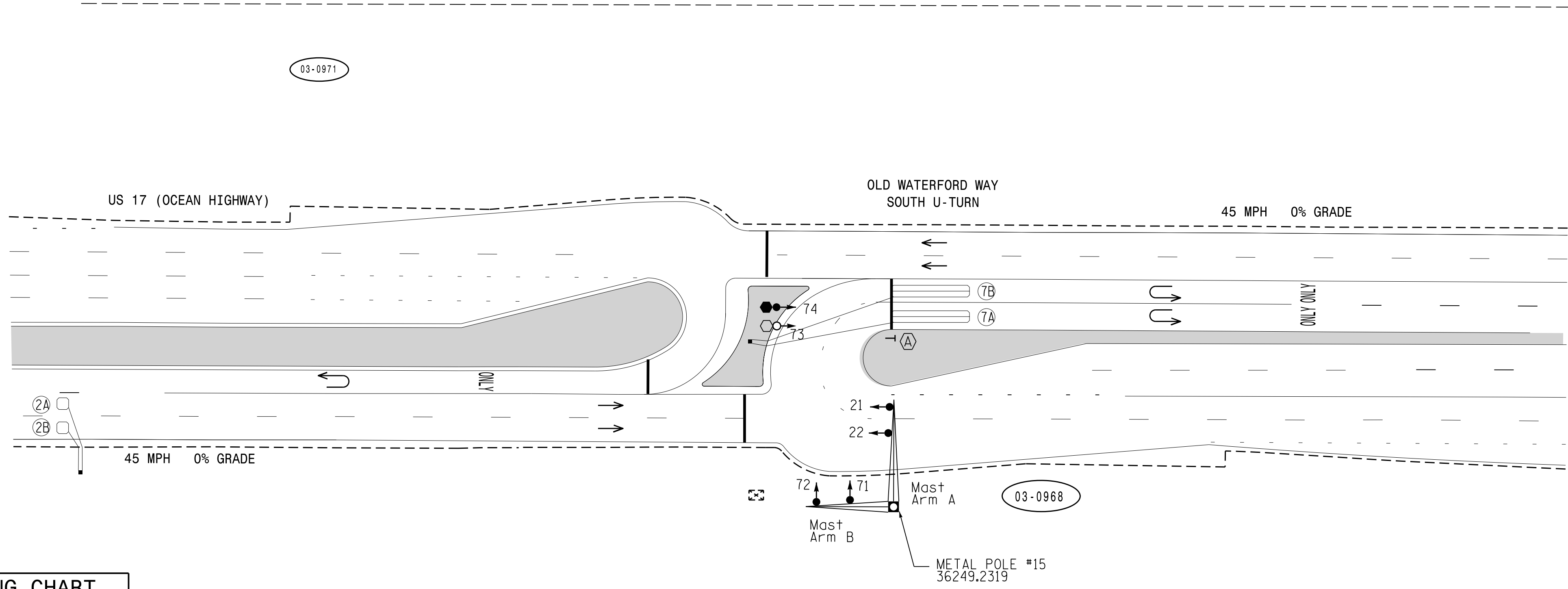
**2070 LOOP & DETECTOR INSTALLATION**

LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	DETECTOR PROGRAMMING										
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	SYSTEM LOOP	STRETCH TIME	DELAY TIME	NEW CARD		
2A	6X6	4	300	Y	2	Y	Y	-	-	-	-	-	-	-
2B	6X6	4	300	Y	2	Y	Y	-	-	-	-	-	-	-
7A	6X40	2-4-2	0	Y	7	Y	Y	-	-	-	-	-	-	-
7B	6X40	2-4-2	0	Y	7	Y	Y	-	-	-	-	-	-	-

**2 Phase Fully Actuated US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland**

**NOTES**

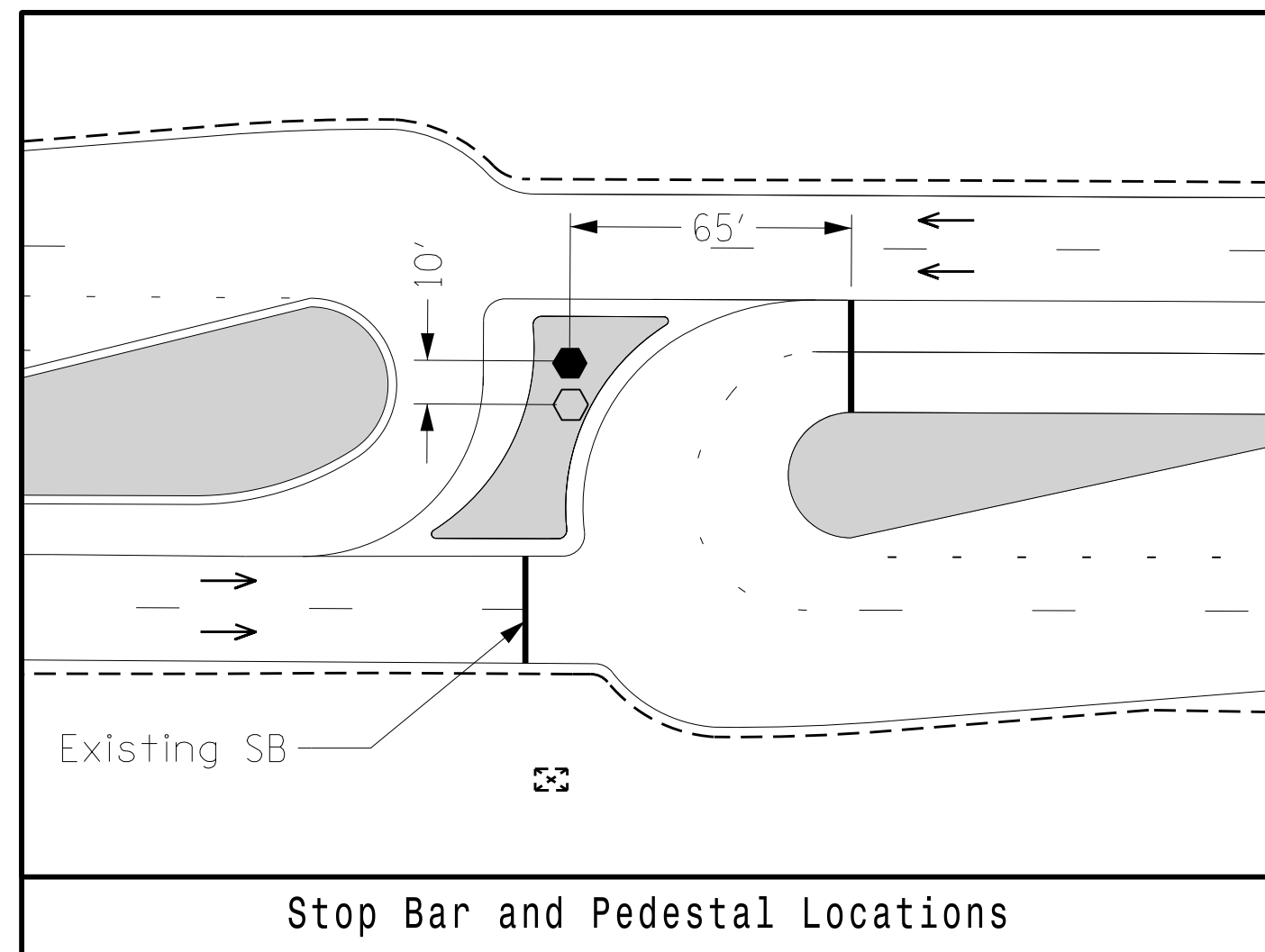
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 11, 12, and 13 as 71, 72, and 74, respectively.
- Renumber existing loops 1A and 1B as 7A and 7B, respectively.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0968.



**2070 TIMING CHART**

FEATURE	PHASE	
	2	7
Min Green 1 *	12	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	4.5	3.0
Red Clearance	1.0	4.4
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.5	-
Max Variable Initial *	34	-
Time Before Reduction *	15	-
Time To Reduction *	50	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

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



**LEGEND**

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
● → Modified Signal Head	-
⊥ Sign	-
⊥ Pedestrian Signal Head With Push Button & Sign	⊥
⊥ 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	→
○ Metal Pole with Mastarm	○
○ Type II Signal Pedestal	●
⊗ Stop Here on Red (R10-6)	⊗

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**Signal Upgrade**

US 17 (Ocean Highway) at Old Waterford Way South U-Turn

Division 3 Brunswick County Leland

Prepared by: KGP, Jr. Reviewed by: MEL

DATE: October 2021

Scale: 1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

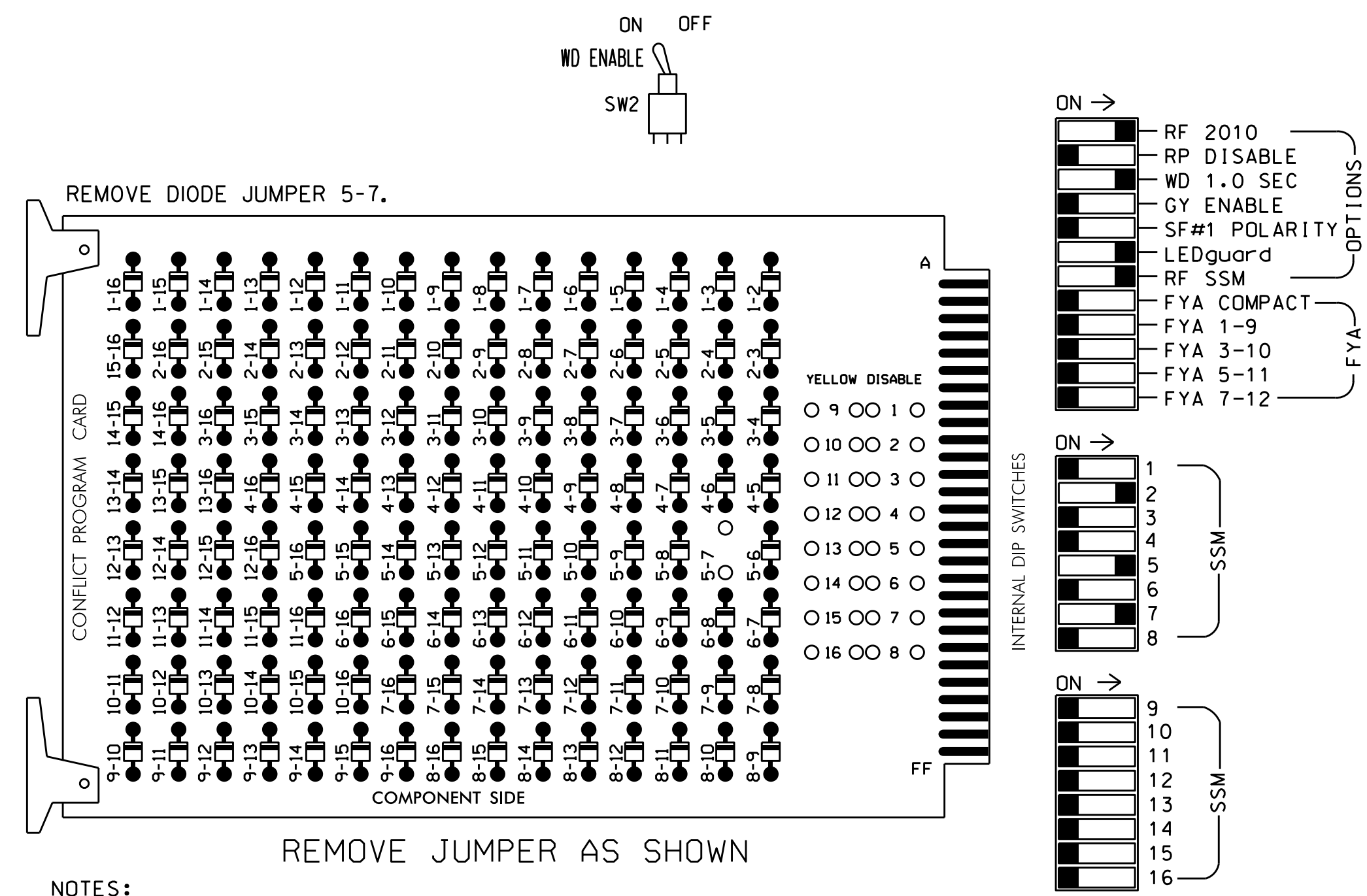
SEAL: MICHAN E. LEBLANC, Professional Engineer, No. 042608

DATE: 10/25/2021

SIG. INVENTORY NO. 03-0968

**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,4, 6,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

**SIGNAL HEAD HOOK-UP CHART**

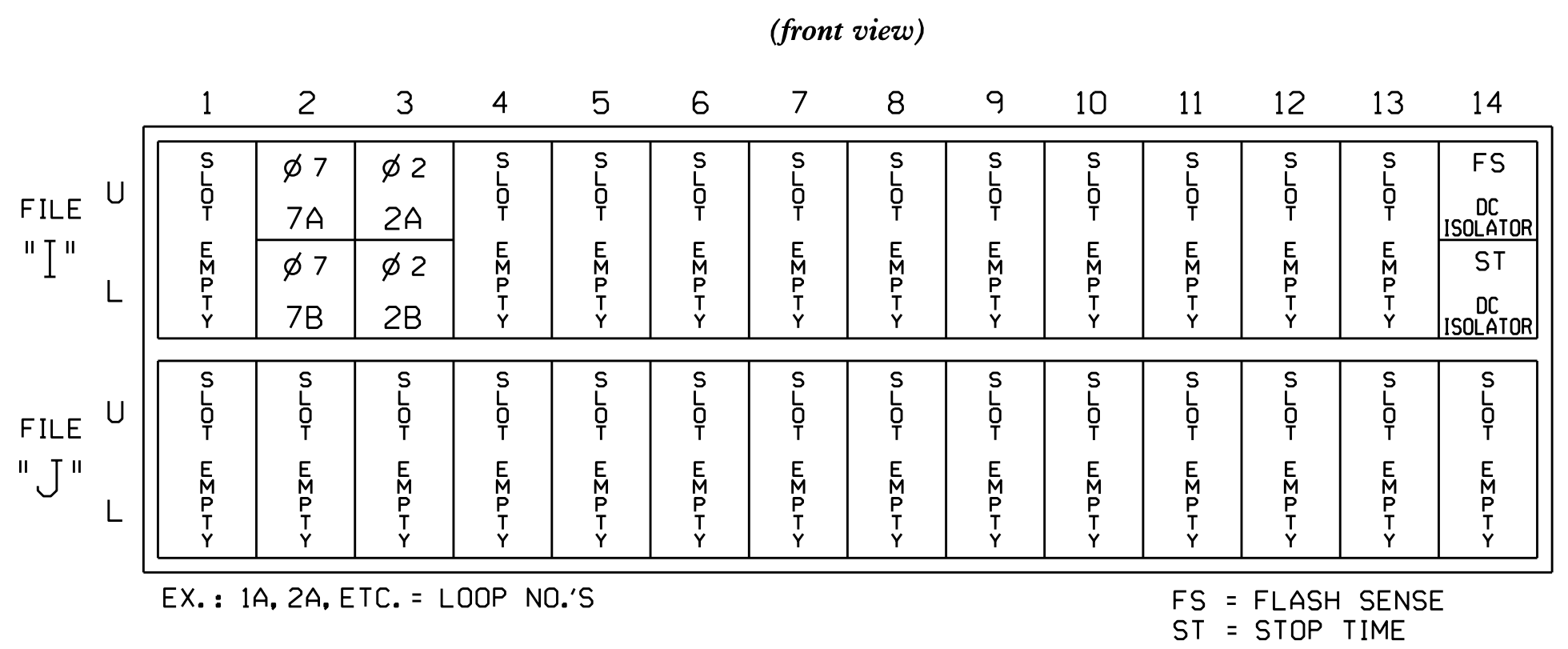
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	** OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	71,72	NU	NU	73,74	NU	NU
RED		128										
YELLOW		129										
GREEN		130										
RED ARROW							131			122		
YELLOW ARROW							132			123		
GREEN ARROW							133			124		

NU = Not Used  
 \*\* Requires special programming and output remapping. See sheet 2.

**EQUIPMENT INFORMATION**

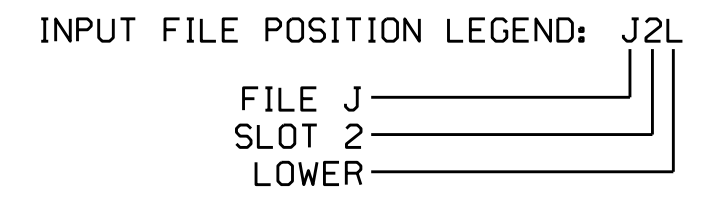
CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S5,S7  
 PHASES USED.....2,7  
 OVERLAP G.....7

**INPUT FILE POSITION LAYOUT**



**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
7A	TB2-5,6	I2U	39	1	2	7	Y	Y			
7B	TB2-7,8	I2L	43	5	12	7	Y	Y			



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0968  
 DESIGNED: October 2021  
 SEALED: 10/25/2021  
 REVISED:

Electrical Detail - Sheet 1 of 2

Prepared In the Offices of:  
 Mobility and Signal Division  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at Old Waterford Way South U-turn

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: T. Joyce  
 PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by: D. Todd Joyce 10/28/2021

SIG. INVENTORY NO. 03-0968

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 SEAL 031001  
 ENGINEER  
 TODD JOYCE

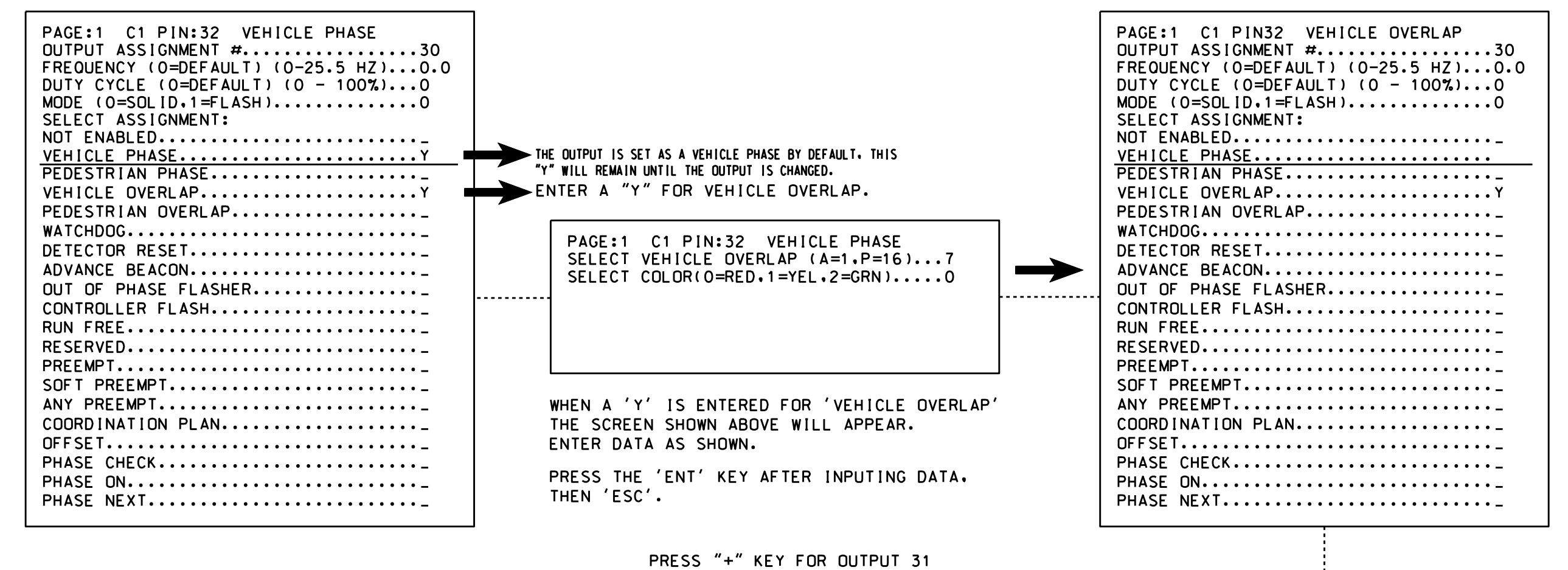
28-0074-2021\_15-14  
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 C:\strickland



**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:**  
**OVERLAP "G" TO LOADSWITCH "S5"**  
*(program controller as shown below)*

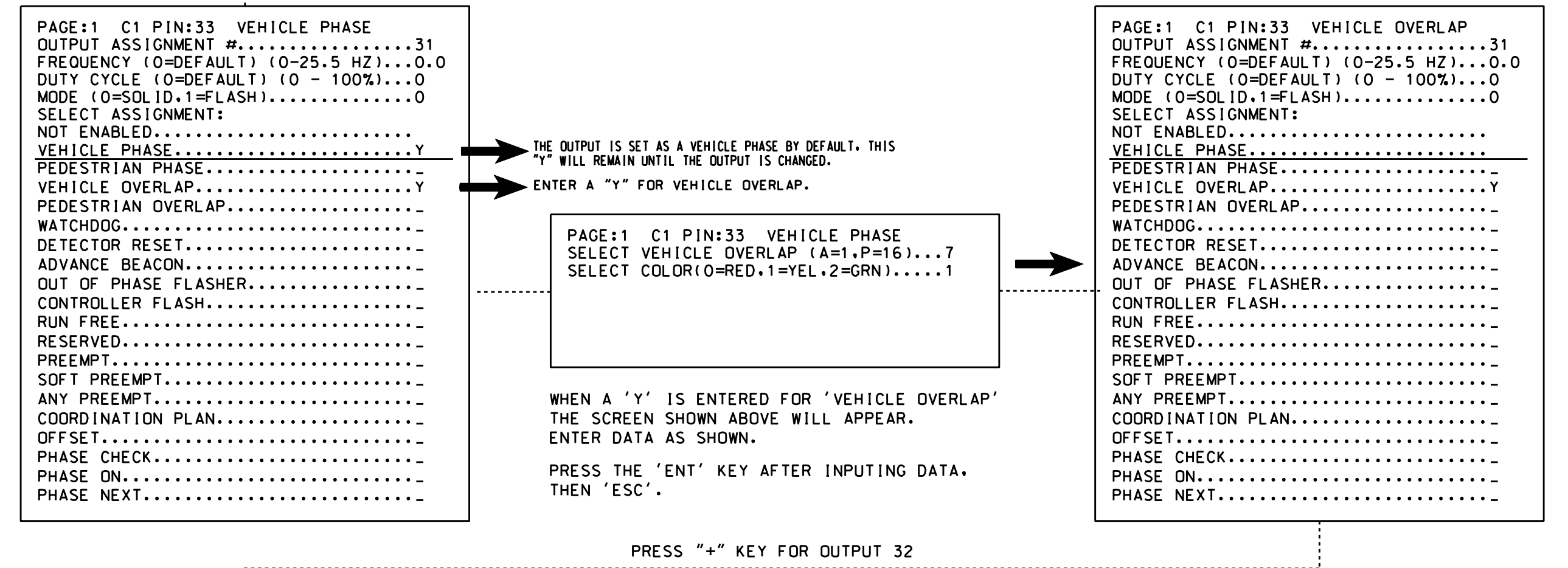
1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 30, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

STEP 1



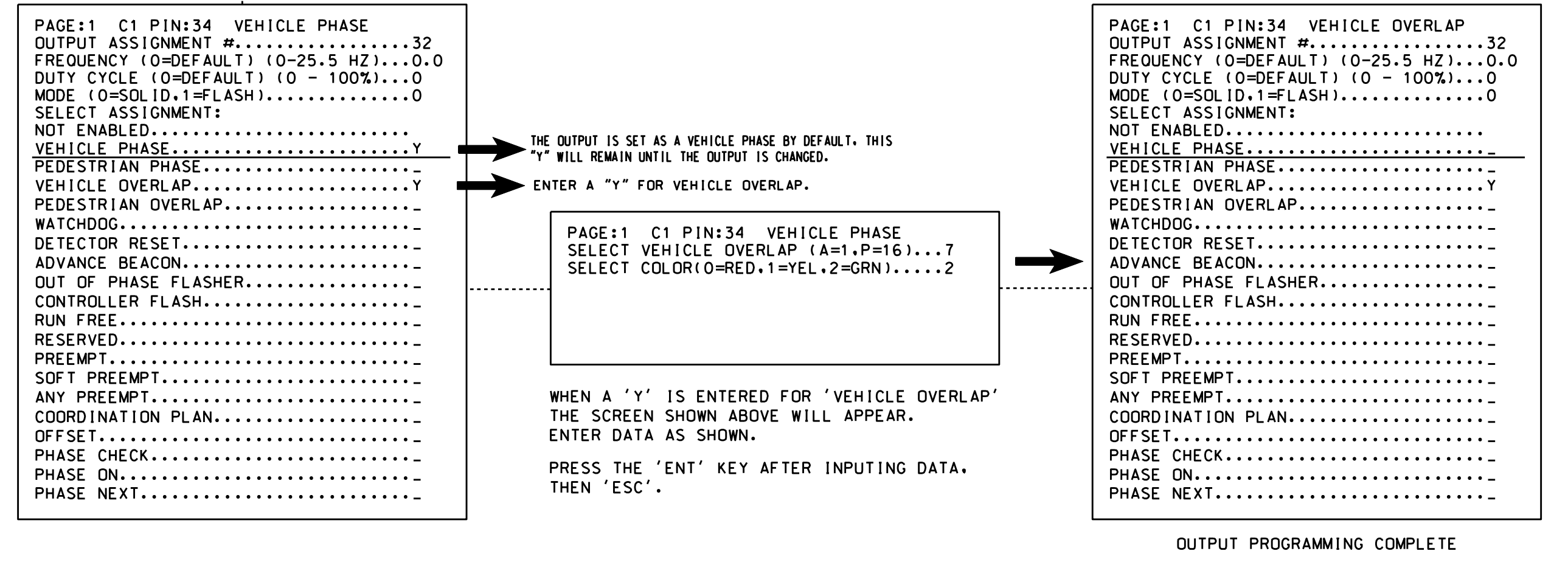
DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

STEP 2



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

STEP 3



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

OUTPUT PROGRAMMING COMPLETE

**OVERLAP PROGRAMMING DETAIL**  
*(program controller as shown below)*

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

PRESS '+' UNTIL OVERLAP G IS REACHED

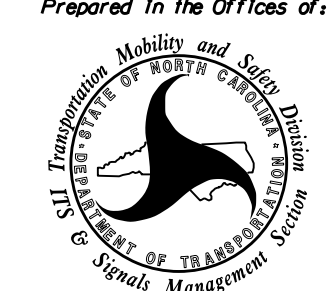
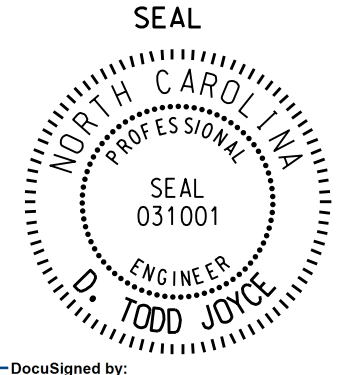
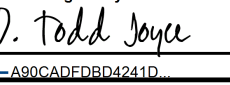
```

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)...0.0
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: 03-0968  
 DESIGNED: October 2021  
 SEALED: 10/25/2021  
 REVISED:

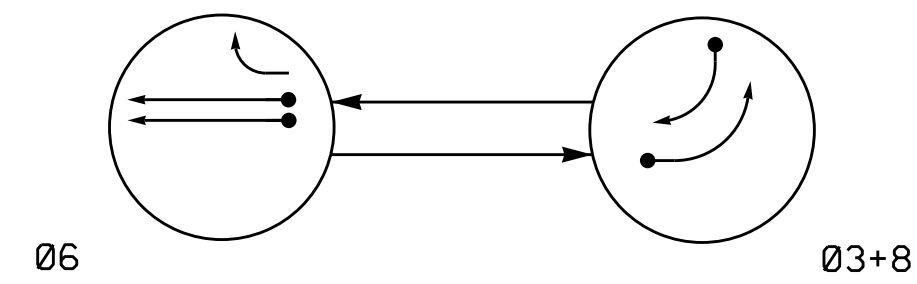
Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Old Waterford Way South U-turn		SEAL  SEAL 031001 ENGINEER TODD JOYCE
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY: T. Joyce	
REVISIONS	INIT.	DATE	DocuSigned by:  10/28/2021 DATE
SIG. INVENTORY NO. 03-0968			DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

28 OCT 2021 15:12  
 W:\30368\em\_elec\wk.dgn  
 C:\EST\CK1.DWG



PHASING DIAGRAM

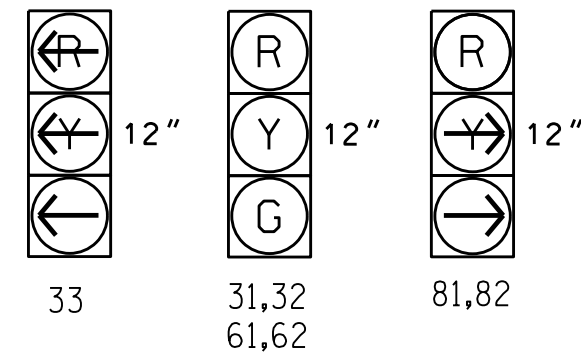


PHASING DIAGRAM DETECTION LEGEND  
 ● ← DETECTED MOVEMENT  
 ○ ← UNDETECTED MOVEMENT (OVERLAP)  
 - - ← UNSIGNALIZED MOVEMENT  
 - - - - ← PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	0 2 + 5	0 6	FLASH
31,32	G	R	R
33	-	R	R
61,62	R	G	Y
81,82	-	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



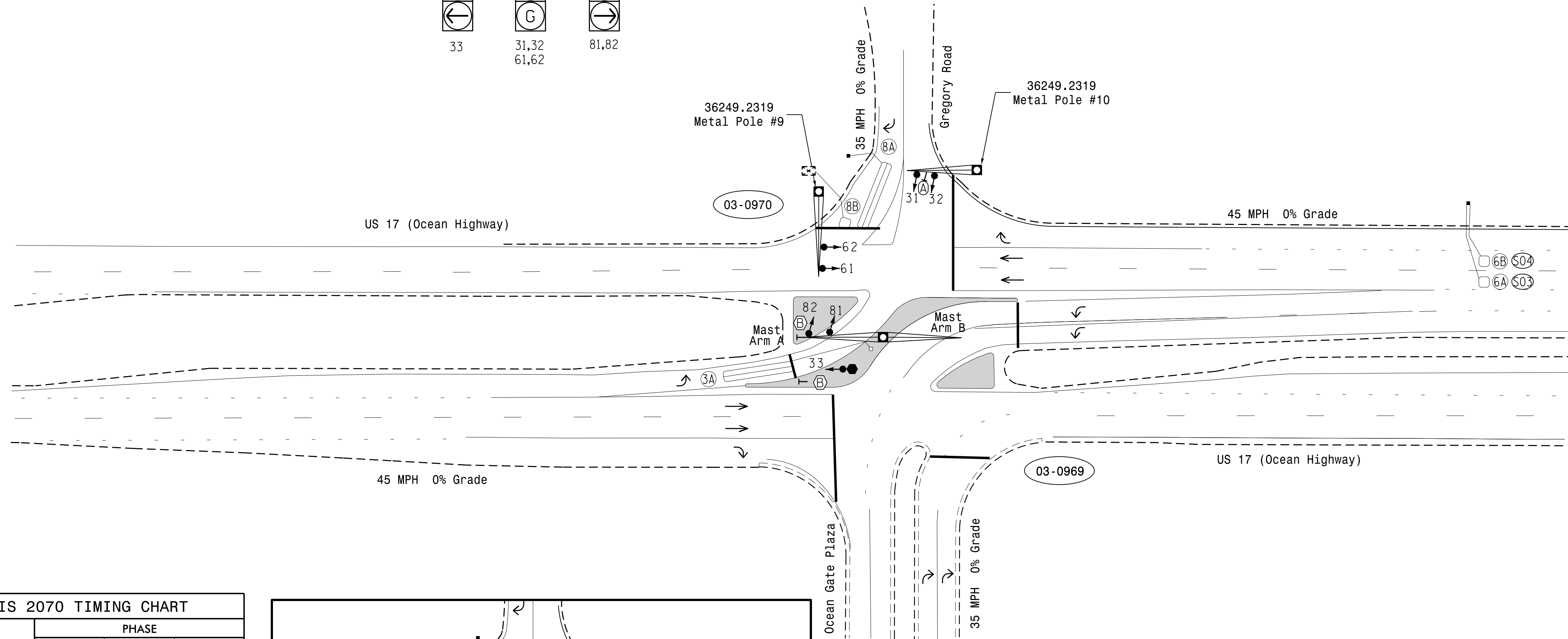
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
6A/S03	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
6B/S04	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	20	-	-
8B	6X6	0	3	Y	8	Y	Y	-	-	20	-	-

2 Phase Fully Actuated  
 US 17 (Ocean Hwy) - Leland Superstreet  
 D03-12 Leland

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Renumber existing signal heads numbered 51,52,53,54 and 55 as 31,32,33,81, and 82, respectively.
- Renumber existing loops 5A and 5B as 3A and 8A, respectively.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0970.

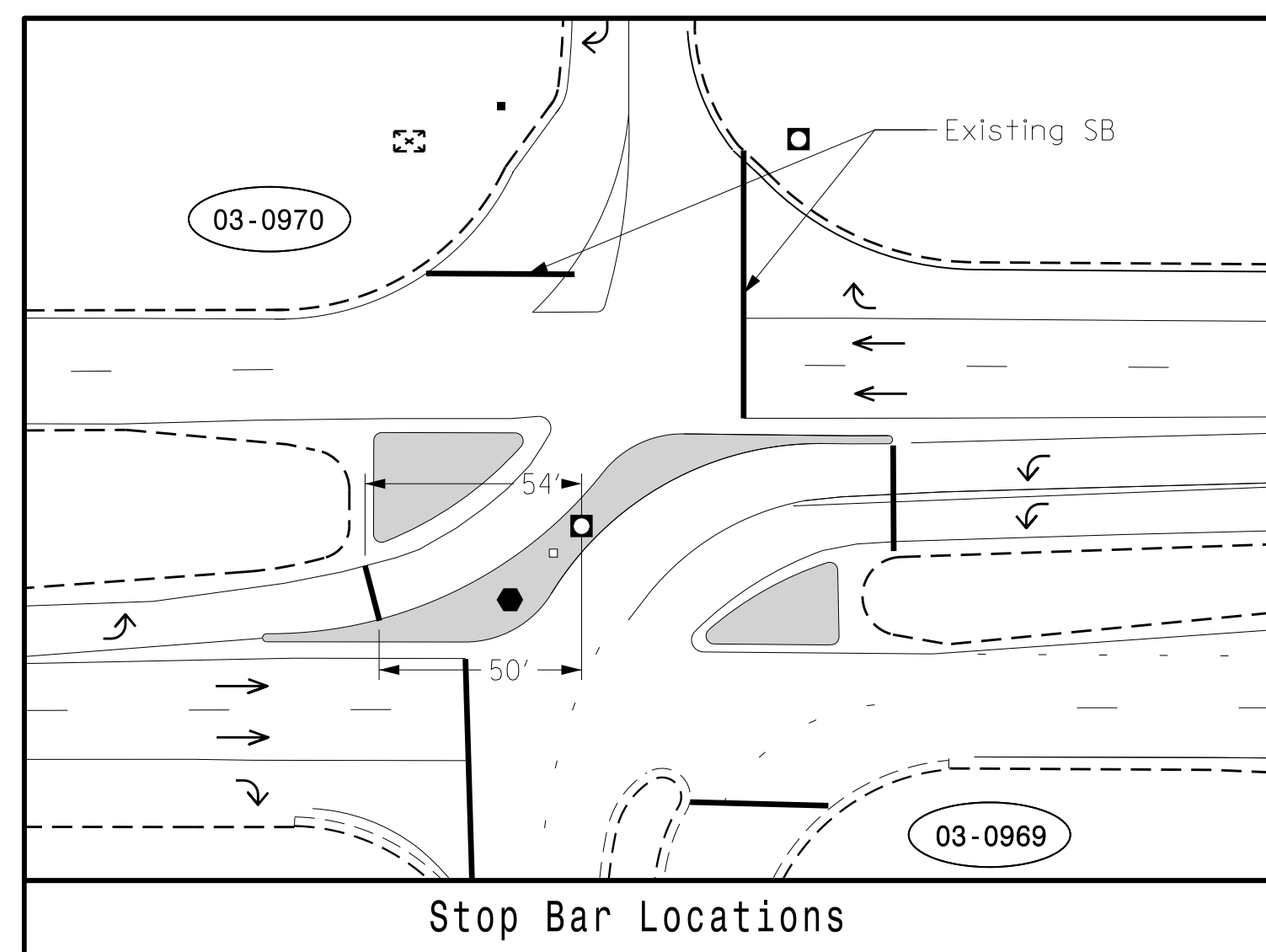


LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → Traffic Signal Head
○ → Modified Signal Head	N/A
□ → Sign	□ → Sign
□ → Pedestrian Signal Head With Push Button & Sign	□ → Pedestrian Signal Head With Push Button & Sign
□ → Signal Pole with Guy	□ → Signal Pole with Guy
□ → Signal Pole with Sidewalk Guy	□ → Signal Pole with Sidewalk Guy
□ → Inductive Loop Detector	□ → Inductive Loop Detector
□ → Controller & Cabinet	□ → Controller & Cabinet
□ → Junction Box	□ → Junction Box
□ → 2-in Underground Conduit	□ → 2-in Underground Conduit
N/A	→ Right of Way
→ Directional Arrow	→ Directional Arrow
○ → Metal Pole with Mastarm	○ → Metal Pole with Mastarm
○ → Type II Signal Pedestal	○ → Type II Signal Pedestal
Ⓐ → Through Arrow "ONLY" Sign (R3-5A)	Ⓐ → Through Arrow "ONLY" Sign (R3-5A)
Ⓑ → Stop Here on Red (R10-6)	Ⓑ → Stop Here on Red (R10-6)

FEATURE	PHASE		
	3	6	8
Min Green 1 *	7	12	7
Extension 1 *	2.0	6.0	2.0
Max Green 1 *	30	90	30
Yellow Clearance	3.0	4.5	3.0
Red Clearance	3.5	1.0	3.5
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	1.5	-
Max Variable Initial *	-	34	-
Time Before Reduction *	-	15	-
Time To Reduce *	-	50	-
Minimum Gap	-	3.0	-
Recall Mode	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-
Dual Entry	ON	-	ON
Simultaneous Gap	ON	ON	ON

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



Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 STATE OF CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 Signal Design Section

US 17 (Ocean Highway) at Gregory Road  
 Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: KGP, Jr. REVIEWED BY:

750 N. Greenfield Pkwy, Garner, NC 27529

REVISIONS: INIT. DATE

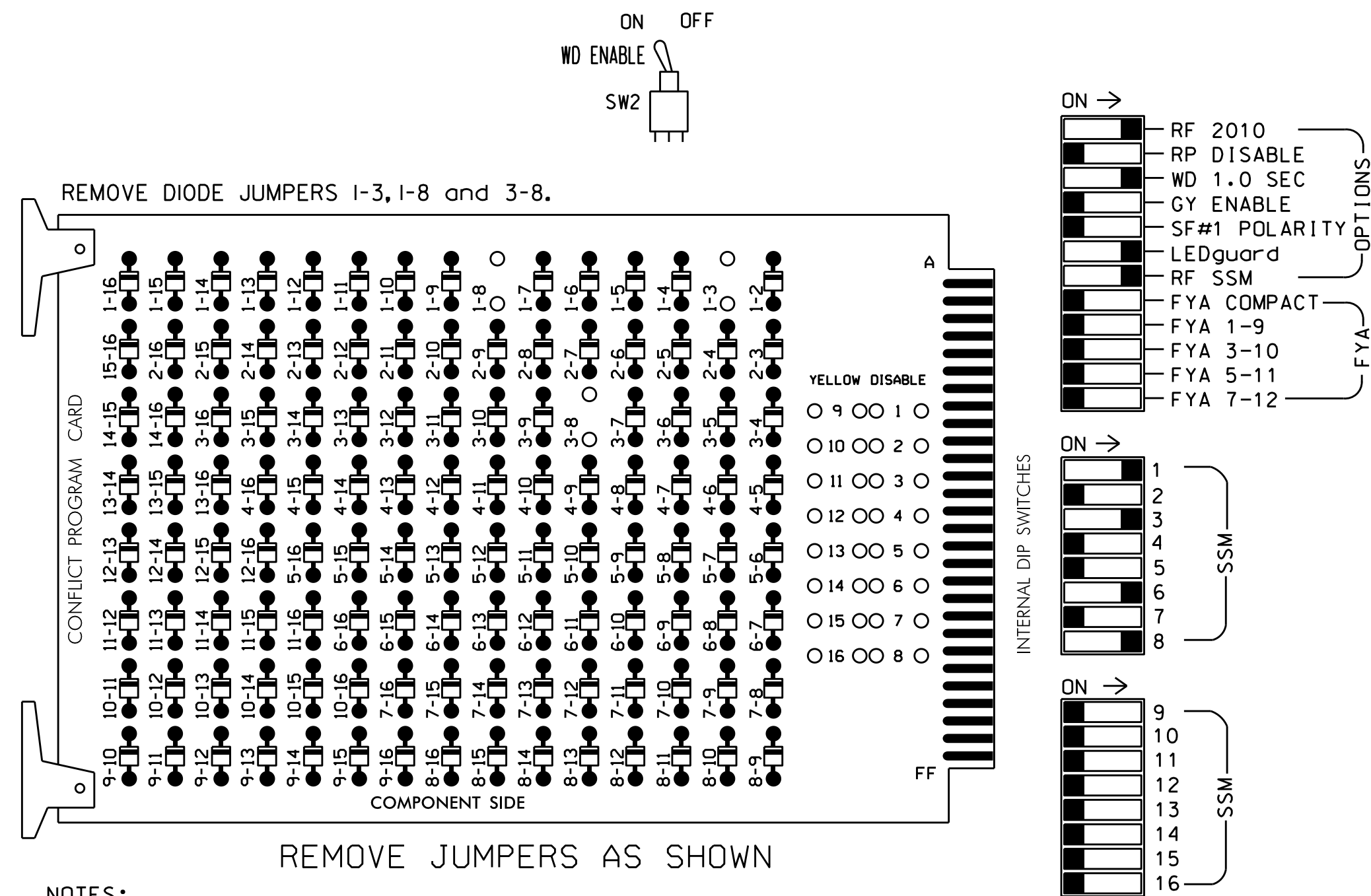
SCALE: 1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 MICHAEL E. LEBLANC  
 PROFESSIONAL ENGINEER  
 042608  
 DATE: 10/27/2021  
 SIG. INVENTORY NO. 03-0970

**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4, 5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 3 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the US 17 (Ocean Hwy) - Leland Superstreet D03-12 Leland.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6,S8  
 PHASES USED.....3,6,8  
 OVERLAP'G'.....3

**SIGNAL HEAD HOOK-UP CHART**

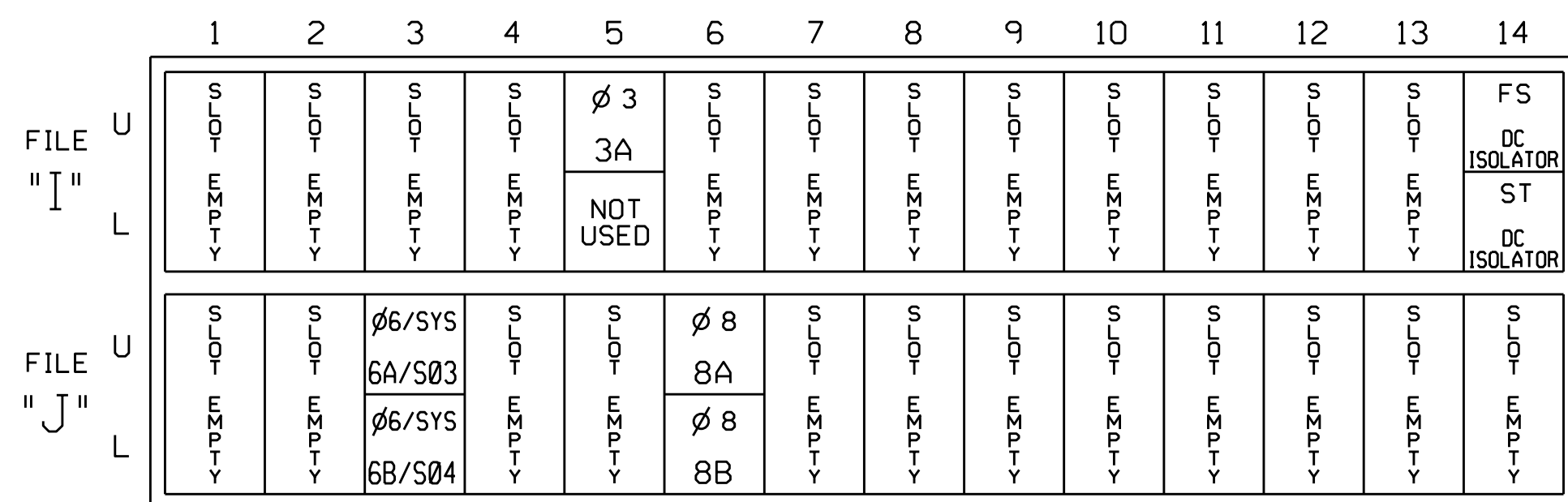
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	** OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	31,32	NU	NU	33	NU	NU	NU	61,62	NU	NU	81,82	NU
RED				116				134			107	
YELLOW				117				135				
GREEN				118				136				
RED ARROW	125											
YELLOW ARROW	126										108	
GREEN ARROW	127										109	

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

**INPUT FILE POSITION LAYOUT**

(front view)



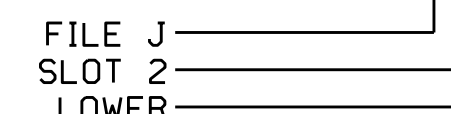
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
6A/S03	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S04	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			20
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			20

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0970  
 DESIGNED: October 2021  
 SEALED: 10/27/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for: **US 17 (Ocean Highway) at Gregory Road**

Prepared In the Offices of: **Signal Management Solutions**

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: [Signature]

PREPARED BY: Zarrar Zafar REVIEWED BY: [Signature]

REVISIONS: [Table with columns for REVISIONS, INIT., DATE]

DocuSigned by: **D. Todd Joyce** 11/1/2021

SIG. INVENTORY NO. 03-0970

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: SEAL 031001 ENGINEER TODD JOYCE

28-001-2021-11-54 S:\11550\11550\11550\Signal\work\hous\51g\_MarkZafar\plans\030970\_sme.e\_2021mddst.dgn



**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).  
PRESS '+' UNTIL OVERLAP 'G' APPEARS.

```

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)...0.0
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 'G' PROGRAMMING COMPLETE

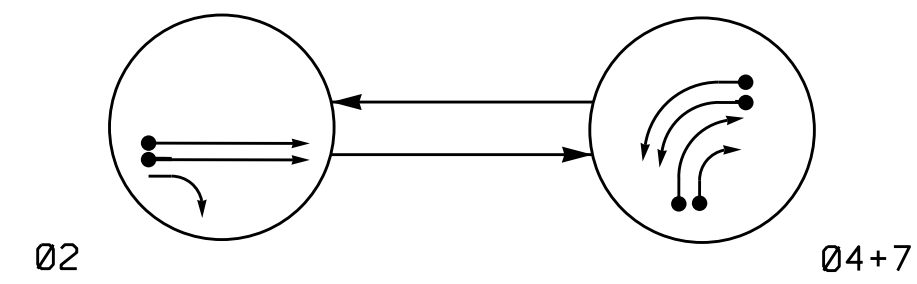
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0970  
DESIGNED: October 2021  
SEALED: 10/27/2021  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

	US 17 (Ocean Highway) at Gregory Road	
	Division 3 Brunswick County Leland	PREPARED BY: Zarrar Zafar REVIEWED BY:
PLAN DATE: October 2021	REVISIONS	DATE
750 N. Greenfield Pkwy, Garner, NC 27529	DocuSigned by: D. Todd Joyce 11/1/2021	SIG. INVENTORY NO. 03-0970

28\_007\_2021\_11-55  
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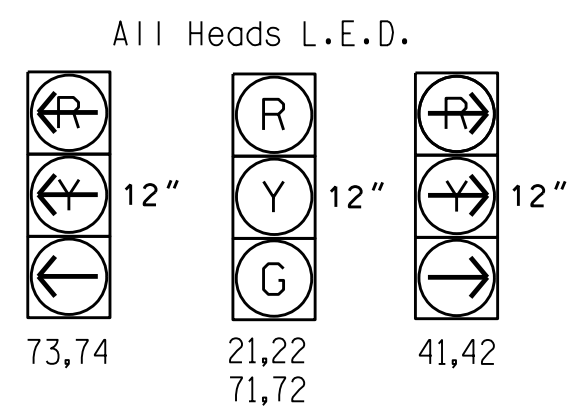
PHASING DIAGRAM



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

SIGNAL FACE	PHASE		
	02	04+7	04+7
21,22	G	R	Y
41,42	R	Y	R
71,72	R	G	R
73,74	R	Y	R

SIGNAL FACE I.D.

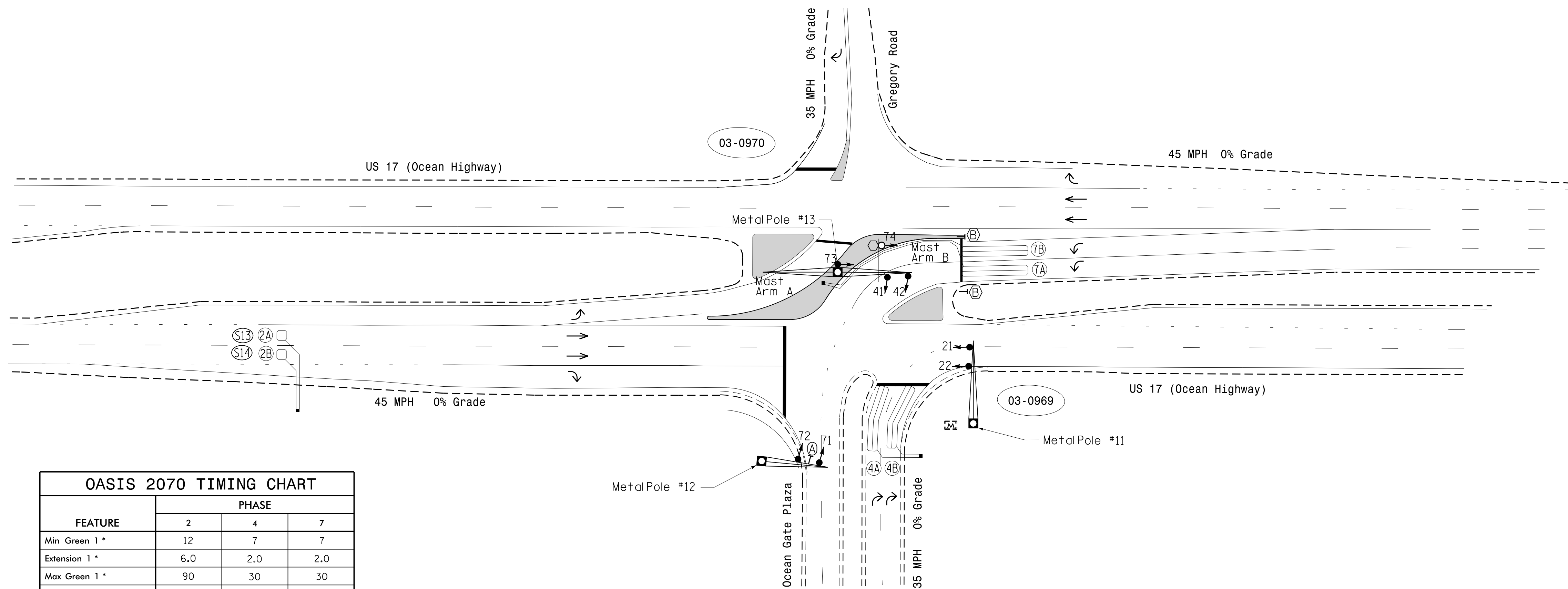


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S13	6X6	4	300	Y	2	Y	Y	-	-	-	Y	-
2B/S14	6X6	4	300	Y	2	Y	Y	-	-	-	Y	-
4A	6X40	2-4-2	0	Y	4	Y	Y	-	-	10	-	-
4B	6X40	2-4-2	0	Y	4	Y	Y	-	-	15	-	-
7A	6X40	2-4-2	0	Y	7	Y	Y	-	-	-	-	-
7B	6X40	2-4-2	0	Y	7	Y	Y	-	-	-	-	-

2 Phase Fully Actuated  
 US 17 (Ocean Highway) - Leland Superstreet  
 D03-12 Leland

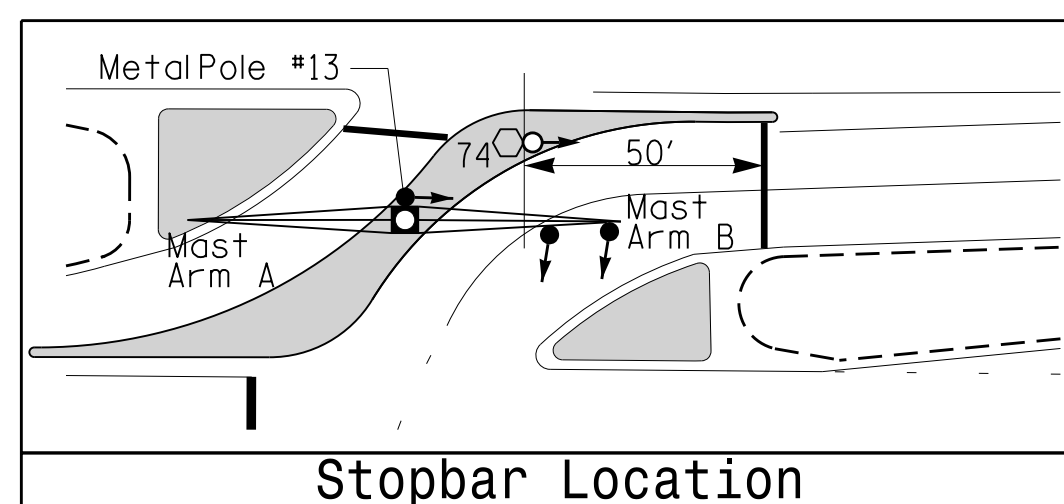
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 14 and 15 as 41 and 42, respectively. Renumbering existing heads 11,12, and 13 as 71,72, and 73 respectively.
- Renumbering existing loops 1A, 1B,1C, and 1D as 7A,7B,4A, and 4B, respectively.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal System data:  
 Master Asset # 10312  
 Controller Asset # 0969



FEATURE	PHASE		
	2	4	7
Min Green 1 *	12	7	7
Extension 1 *	6.0	2.0	2.0
Max Green 1 *	90	30	30
Yellow Clearance	4.5	3.0	3.0
Red Clearance	1.4	4.0	4.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	1.5	-	-
Max Variable Initial *	34	-	-
Time Before Reduction *	15	-	-
Time To Reduce *	50	-	-
Minimum Gap	3.0	-	-
Recall Mode	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-
Dual Entry	-	ON	ON
Simultaneous Gap	ON	ON	ON

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



PROPOSED	EXISTING
○ → Traffic Signal Head	● → Modified Signal Head
○ → Sign	○ → Sign
□ → Pedestrian Signal Head With Push Button & Sign	□ → Pedestrian Signal Head
○ → Signal Pole with Guy	○ → Signal Pole with Guy
○ → Signal Pole with Sidewalk Guy	○ → Signal Pole with Sidewalk Guy
⊗ → Inductive Loop Detector	⊗ → Inductive Loop Detector
□ → Controller & Cabinet	□ → Controller & Cabinet
□ → Junction Box	□ → Junction Box
--- 2-in Underground Conduit	--- 2-in Underground Conduit
N/A → Right of Way	--- Right of Way
→ → Directional Arrow	→ → Directional Arrow
○ → Metal Pole with Mastarm	○ → Metal Pole with Mastarm
○ → Signal Pedestal	○ → Signal Pedestal
Ⓐ → Through Arrow "ONLY" Sign (R3-5A)	Ⓐ → Through Arrow "ONLY" Sign (R3-5A)
Ⓑ → Stop Here on Red (R10-6)	Ⓑ → Stop Here on Red (R10-6)

Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 NORTH CAROLINA PROFESSIONAL ENGINEERS  
 750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at Ocean Gate Plaza  
 Division 3 Brunswick County Leland  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: Jeff Spence REVIEWED BY:

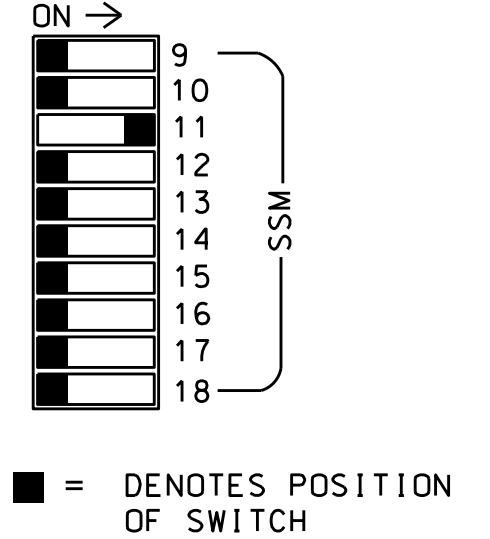
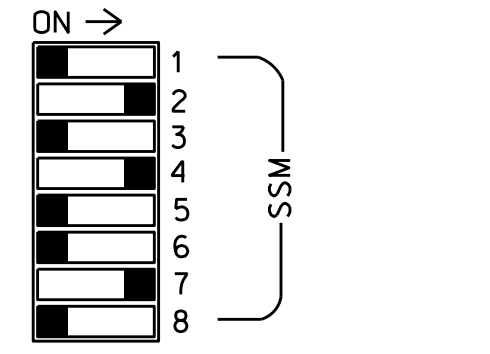
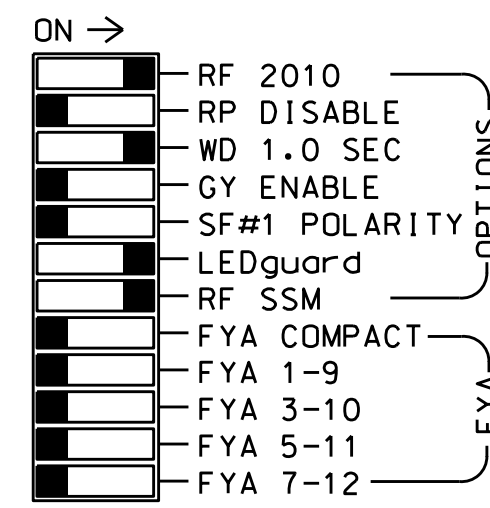
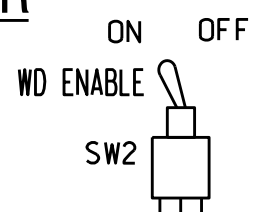
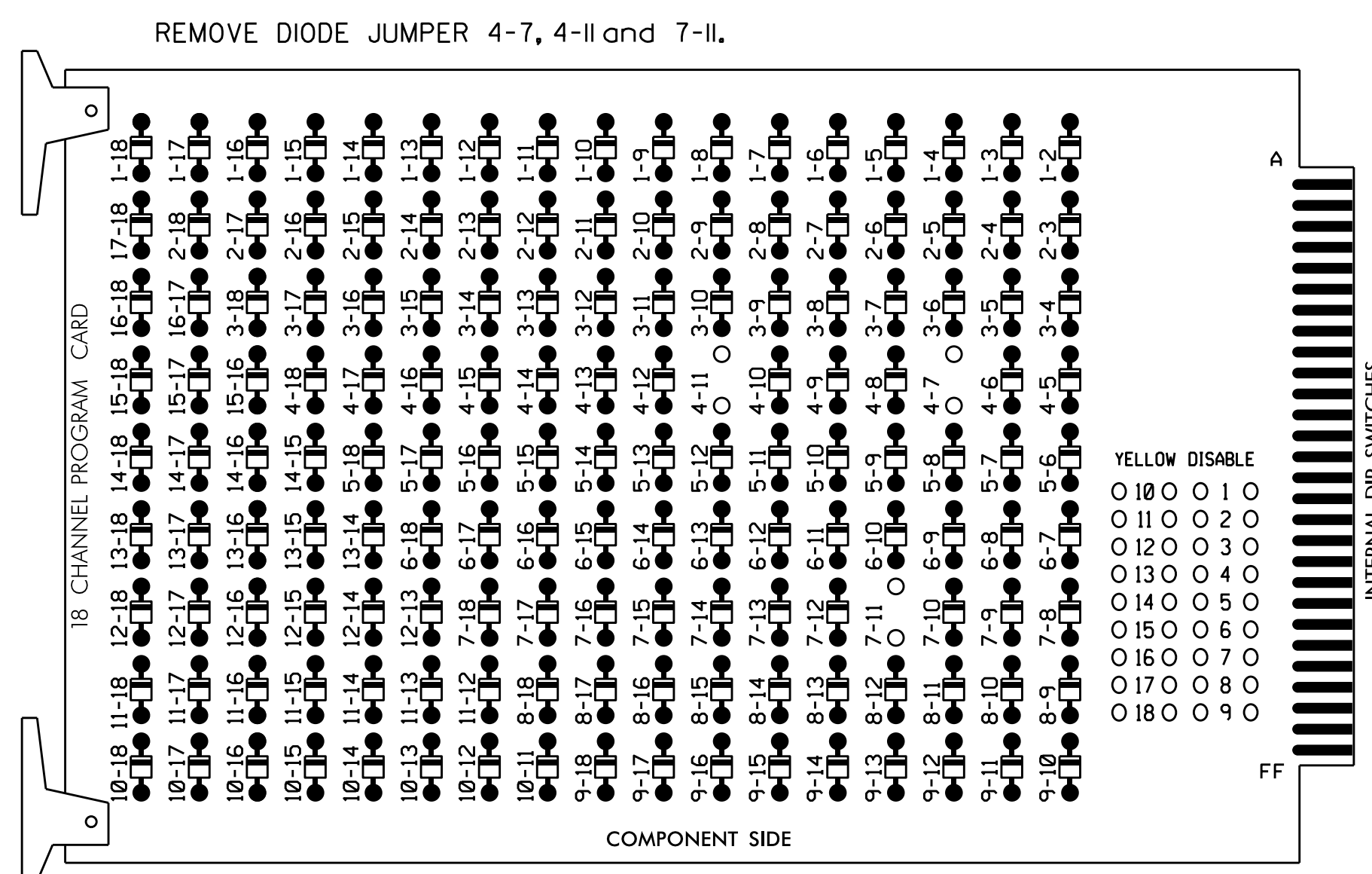
REVISIONS: INIT. DATE

10/26/2021  
 Mughan E. LeBlanc  
 SEAL 042608  
 SIG. INVENTORY NO. 03-0969



**EDI MODEL 2018ECL-NC CONFLICT MONITOR  
PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**NOTES:**

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

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 7 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leeland Superstreet D03-12 Leland.

**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
EMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	NU	NU	73,74	NU	NU	NU	NU	NU	71,72	NU	NU
RED		128														A114		
YELLOW		129														A115		
GREEN		130														A116		
RED ARROW						101				122								
YELLOW ARROW						102				123								
GREEN ARROW						103				124								

NU = Not Used

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332 W/ AUX  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE  
 LOAD SWITCHES USED.....S2,S5,S10,AUX S4  
 PHASES USED.....2,4,7  
 OVERLAP 'A'.....NOT USED  
 OVERLAP 'B'.....NOT USED  
 OVERLAP 'C'.....7  
 OVERLAP 'D'.....NOT USED

**OVERLAP PROGRAMMING DETAIL**

(program controller as shown below)

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

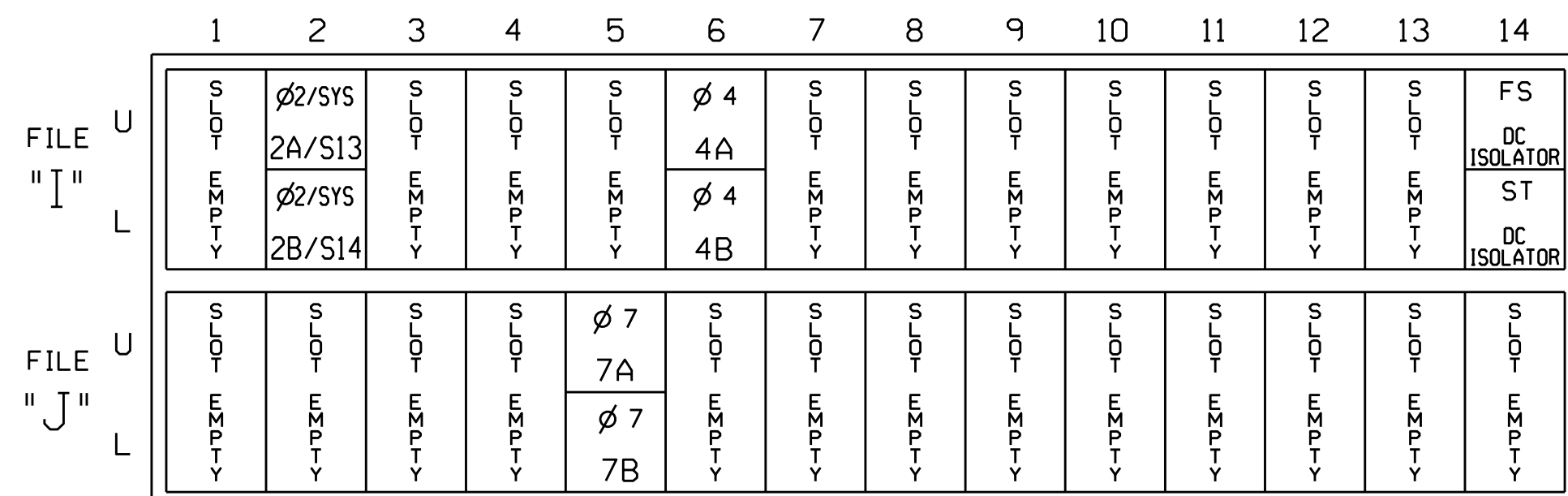
PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS  
 PHASE: ;12345678910111213141516  
 VEH OVL PARENTS: ; X  
 VEH OVL NOT VEH: ;  
 VEH OVL NOT PED: ;  
 VEH OVL GRN EXT: ;  
 STARTUP COLOR: - RED - YELLOW - GREEN  
 FLASH COLORS: - RED - YELLOW - 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

**INPUT FILE POSITION LAYOUT**

(front view)



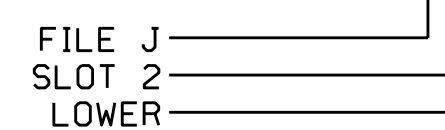
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S13	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S14	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 03-0969  
 DESIGNED: October 2021  
 SEALED: 10-26-21  
 REVISED: N/A

**Electrical Detail**

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In the Offices of:  
 TRANSPORTATION MOBILITY AND SAFETY DIVISION  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 SIGNALS MANAGEMENT SECTION  
 750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway)  
 at  
 Ocean Gate Plaza

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

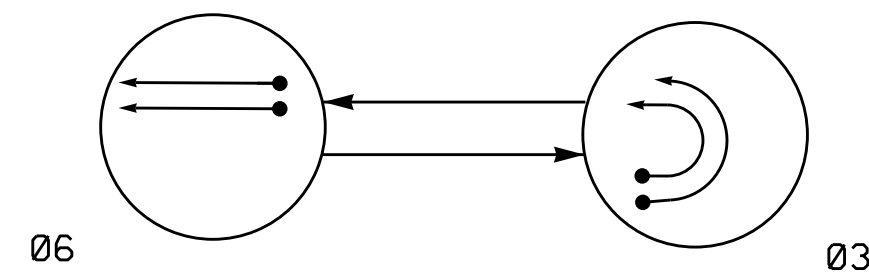
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 036833  
 RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 10/28/2021 43022FA2A2054C3 DATE

SIG. INVENTORY NO. 03-0969

PHASING DIAGRAM



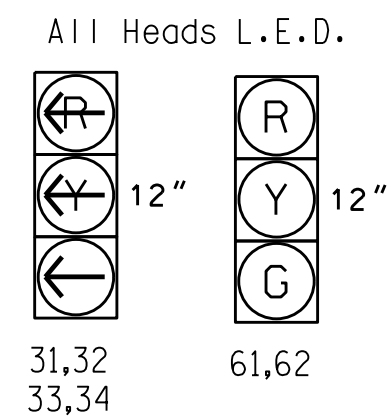
PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT
- ←--- UN SIGNALIZED MOVEMENT
- ←- - - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	03	06	03/06
31,32,33,34	←	→	←
61,62	R	G	Y

SIGNAL FACE I.D.



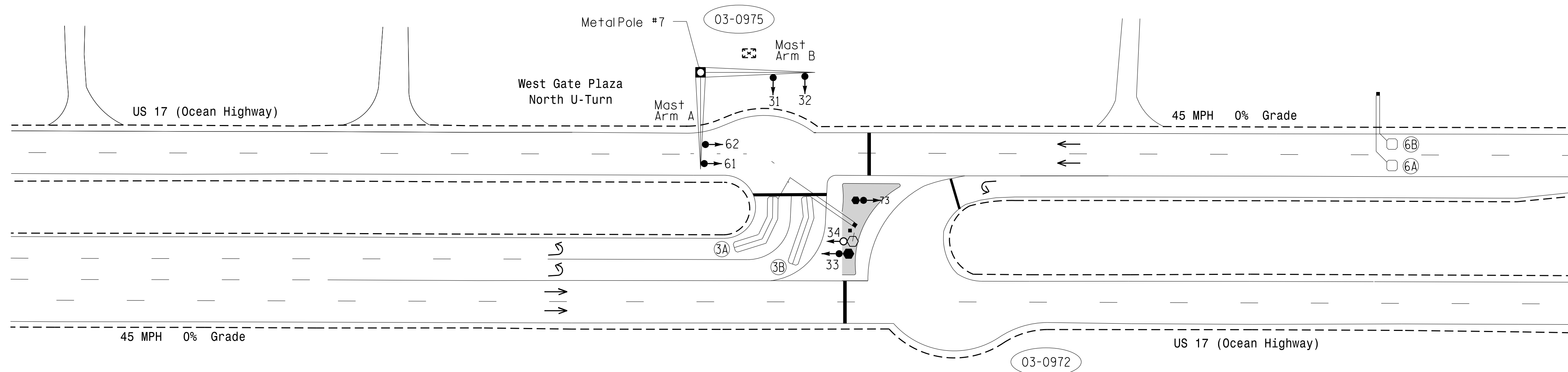
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	4	Y	6	Y	Y	-	-	-	-	-

2 Phase Fully Actuated  
US 17 (Ocean Highway) - Leland Superstreet  
D03-12 Leland

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 51,52,53 and 54 as 31,32,33, and 34, respectively.
- Renumber existing loops 5A and 5B as 3A and 3B, respectively.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal System data: Controller Asset # 0975.



OASIS 2070 TIMING CHART

FEATURE	PHASE	
	3	6
Min Green 1 *	7	12
Extension 1 *	2.0	6.0
Max Green 1 *	30	90
Yellow Clearance	3.0	4.5
Red Clearance	2.3	1.1
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	-	1.5
Max Variable Initial *	-	34
Time Before Reduction *	-	15
Time To Reduction *	-	50
Minimum Gap	-	3.0
Recall Mode	-	MIN RECALL
Vehicle Call Memory	-	YELLOW
Dual Entry	-	-
Simultaneous Gap	ON	ON

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

LEGEND

- |  |   |  |  |
|--|---|--|--|
|  | PROPOSED Traffic Signal Head                            |  | EXISTING Traffic Signal Head           |
|  | PROPOSED Modified Signal Head                           |  | EXISTING N/A                           |
|  | PROPOSED Pedestrian Signal Head With Push Button & Sign |  | EXISTING N/A                           |
|  | PROPOSED Signal Pole with Guy                           |  | EXISTING Signal Pole with Guy          |
|  | PROPOSED Signal Pole with Sidewalk Guy                  |  | EXISTING Signal Pole with Sidewalk Guy |
|  | PROPOSED Inductive Loop Detector                        |  | EXISTING Inductive Loop Detector       |
|  | PROPOSED Controller & Cabinet                           |  | EXISTING Controller & Cabinet          |
|  | PROPOSED Junction Box                                   |  | EXISTING Junction Box                  |
|  | PROPOSED Oversized Junction Box                         |  | EXISTING Oversized Junction Box        |
|  | PROPOSED 2-in Underground Conduit                       |  | EXISTING 2-in Underground Conduit      |
|  | PROPOSED Right of Way with Marker                       |  | EXISTING Right of Way with Marker      |
|  | PROPOSED Directional Arrow                              |  | EXISTING Directional Arrow             |
|  | PROPOSED Metal Pole with Mastarm                        |  | EXISTING Metal Pole with Mastarm       |
|  | PROPOSED Signal Pedestal                                |  | EXISTING Signal Pedestal               |

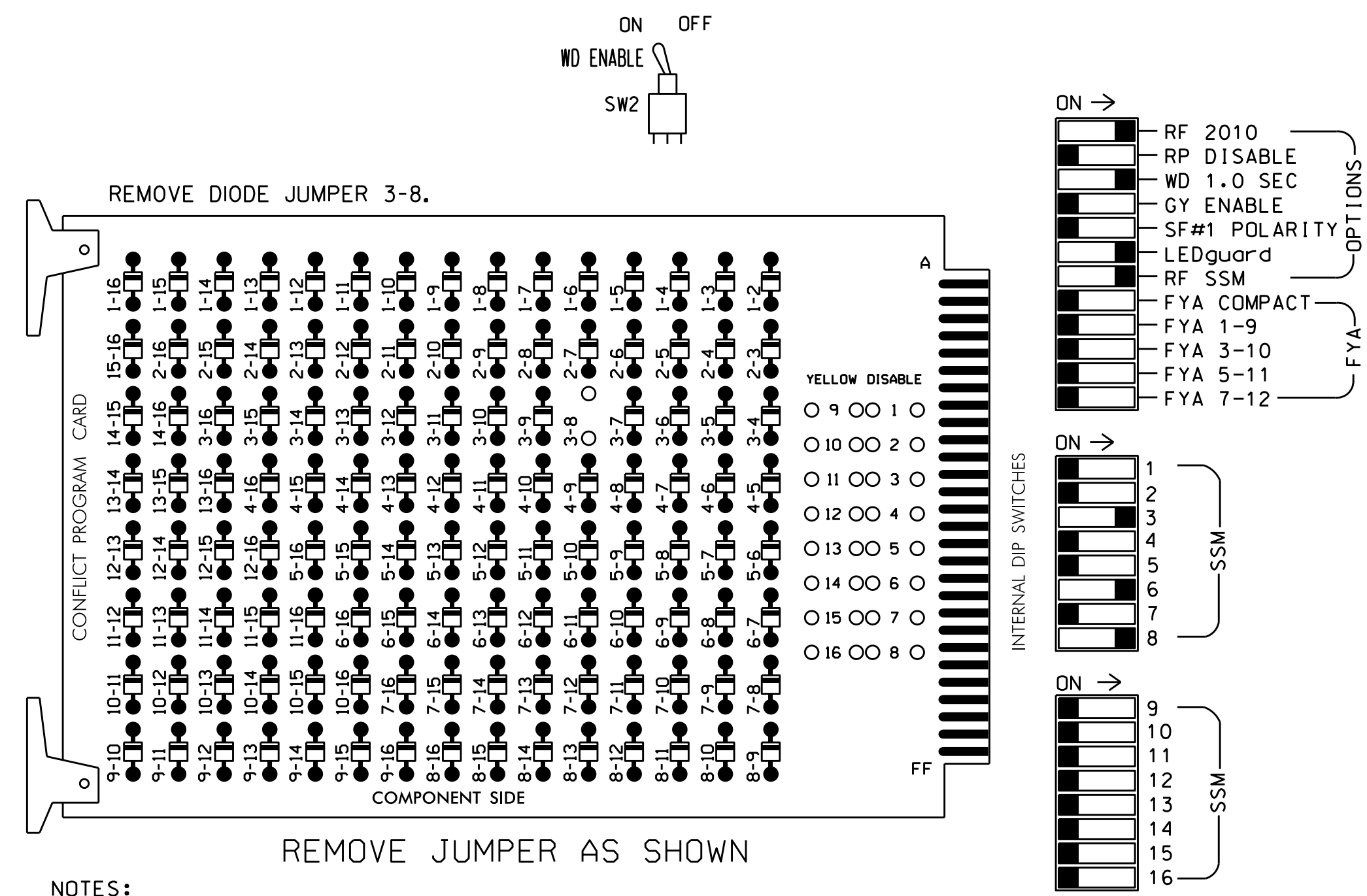
Signal Upgrade

	<p>US 17 (Ocean Highway) at West Gate North U-Turn</p>		<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER MICHAEL E. LEBLANC 10/26/2021</p>								
	<p>Division 3 Brunswick County Leland</p> <p>PLAN DATE: October 2021 REVIEWED BY: MEL</p> <p>PREPARED BY: Jeff Spence REVIEWED BY:</p>	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>									
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p> <p>SCALE: 0 40 1" = 40'</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	INIT.	DATE					<p>SIG. INVENTORY NO. 03-0975</p>	
NO.	DATE	INIT.	DATE								



**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,2, 4,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland System.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	OLG	8 PED
SIGNAL HEAD NO.	NU	NU	NU	31,32	NU	NU	NU	61,62	NU	NU	33,34	NU
RED								134				
YELLOW								135				
GREEN								136				
RED ARROW				116							107	
YELLOW ARROW				117							108	
GREEN ARROW				118							109	

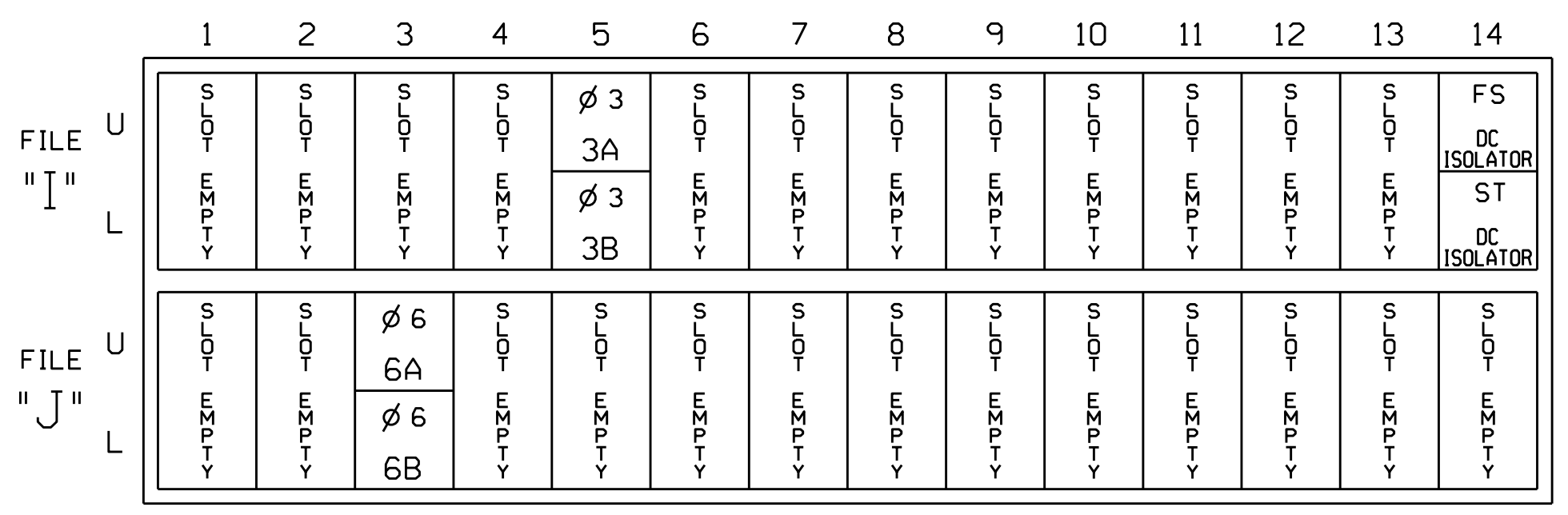
NU = Not Used  
 NOTE: Outputs for load switch S8 have been reassigned. See sheet 2.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S3,S6,S8  
 PHASES USED.....3,6  
 OVERLAP G.....3

**INPUT FILE POSITION LAYOUT**

(front view)



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

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
3B	TB4-7,8	I5L	58	20	3	3	Y	Y			
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L  
 FILE J  
 SLOT 2  
 LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0975  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for: **US 17 at West Gate North U-Turn**

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY:

PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

DocSigned by: **Ryan W. Hough** 10/27/2021

SEAL: SEAL 036833 ENGINEER RYAN W. HOUGH

SIG. INVENTORY NO. 03-0975

27-0075-2021-07-107  
 S:\IT\ASIS\US Signal\work\housas\g\mon\projects\armstrong\11\Projects\03-0975\_0516\_0975\_0980\_1001 div project\03-0975-0516-0975-0980-1001 div project\03-0975-sm.ele.xxk.dgn  
 sarmstrong

### OUTPUT REASSIGNMENT PROGRAMMING DETAIL FOR LOAD SWITCH S8 (OVERLAP G)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN 'OUTPUT ASSIGNMENT#' POSITION, ENTER '19'

```

PAGE:1 C1 PIN:21 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....19
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.....0
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:21 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:21 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....19
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.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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 20

```

PAGE:1 C1 PIN:22 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....20
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.....0
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:22 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:22 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....20
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.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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 21

```

PAGE:1 C1 PIN:23 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....21
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.....0
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:23 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:23 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....21
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.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
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 LOAD SWITCH S8 COMPLETE

### OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PRESS '+' TO ADVANCE TO OVERLAP 'G'

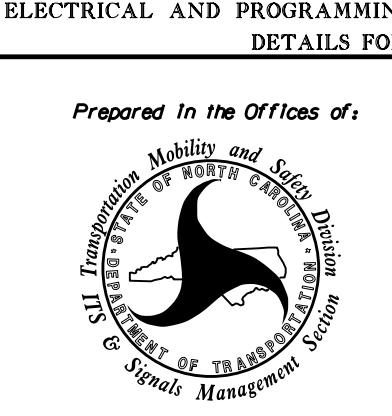
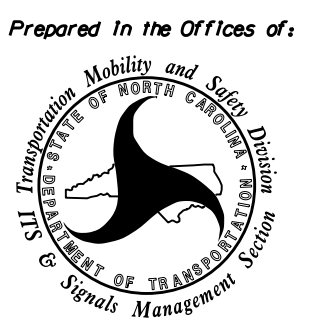
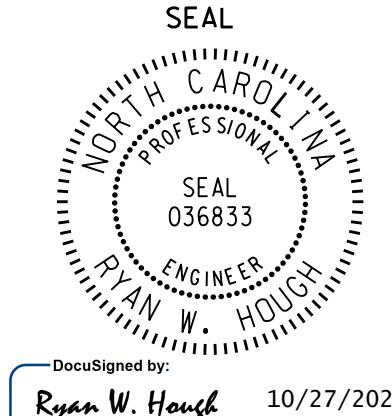
```

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)...0.0
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: 03-0975  
DESIGNED: October 2021  
SEALED: 10/26/2021  
REVISED: N/A

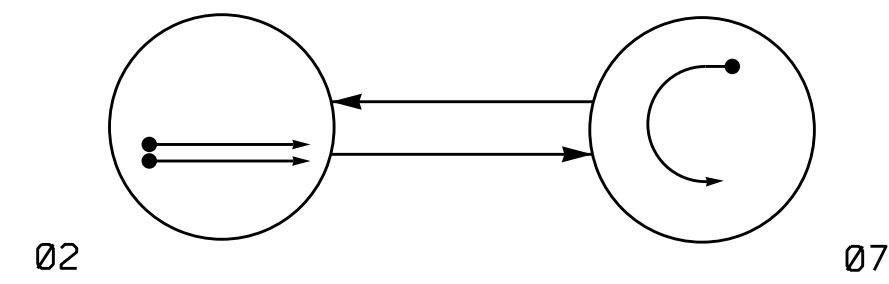
Electrical Detail - Sheet 2 of 2

 <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	Prepared In the Offices of: 	US 17 at West Gate North U-Turn	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL 
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY:	PREPARED BY: S. Armstrong REVIEWED BY:
REVISIONS		INIT. DATE	SIG. INVENTORY NO. 03-0975

27-0017-2021 01:08  
430320FAA268453  
S:\MST\0103



**PHASING DIAGRAM**

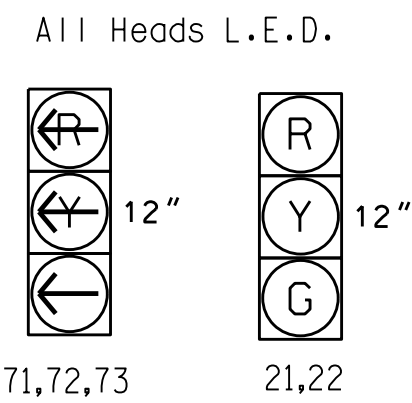


**PHASING DIAGRAM DETECTION LEGEND**

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

SIGNAL FACE	PHASE		
	02	07	FLASH
21,22	G	R	Y
71,72,73	R	Y	G

**SIGNAL FACE I.D.**

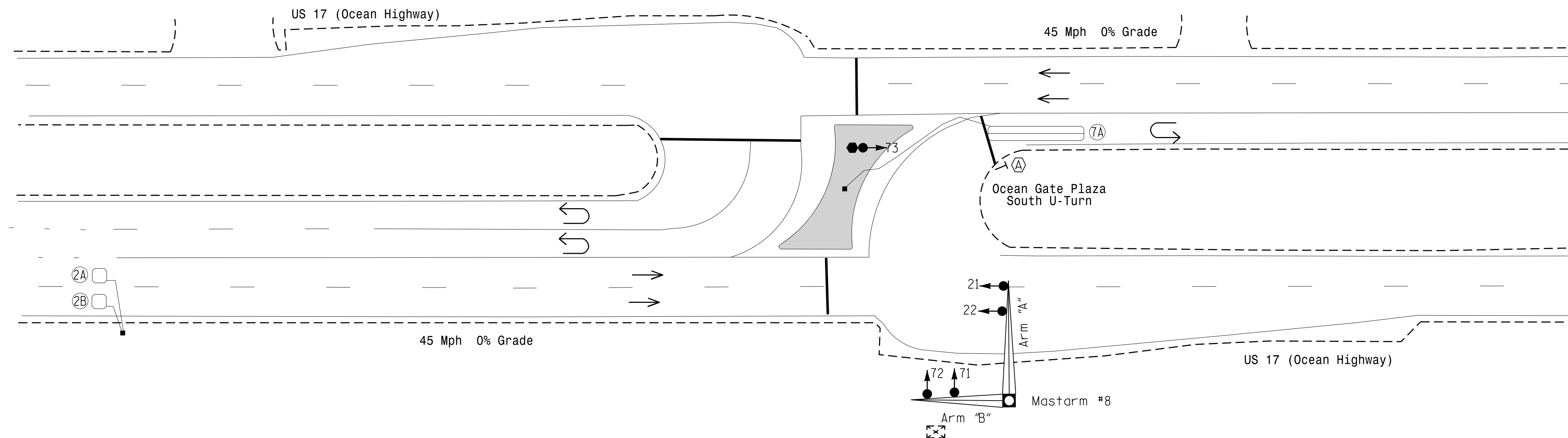


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-

2 Phase  
Fully Actuated  
US 17 (Ocean Highway) - Leland Superstreet  
D03-12 Leland

**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. Set all detector units to presence mode.
4. Renumber existing loop 7C as 7A.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Signal System data: Controller Asset # 0972.

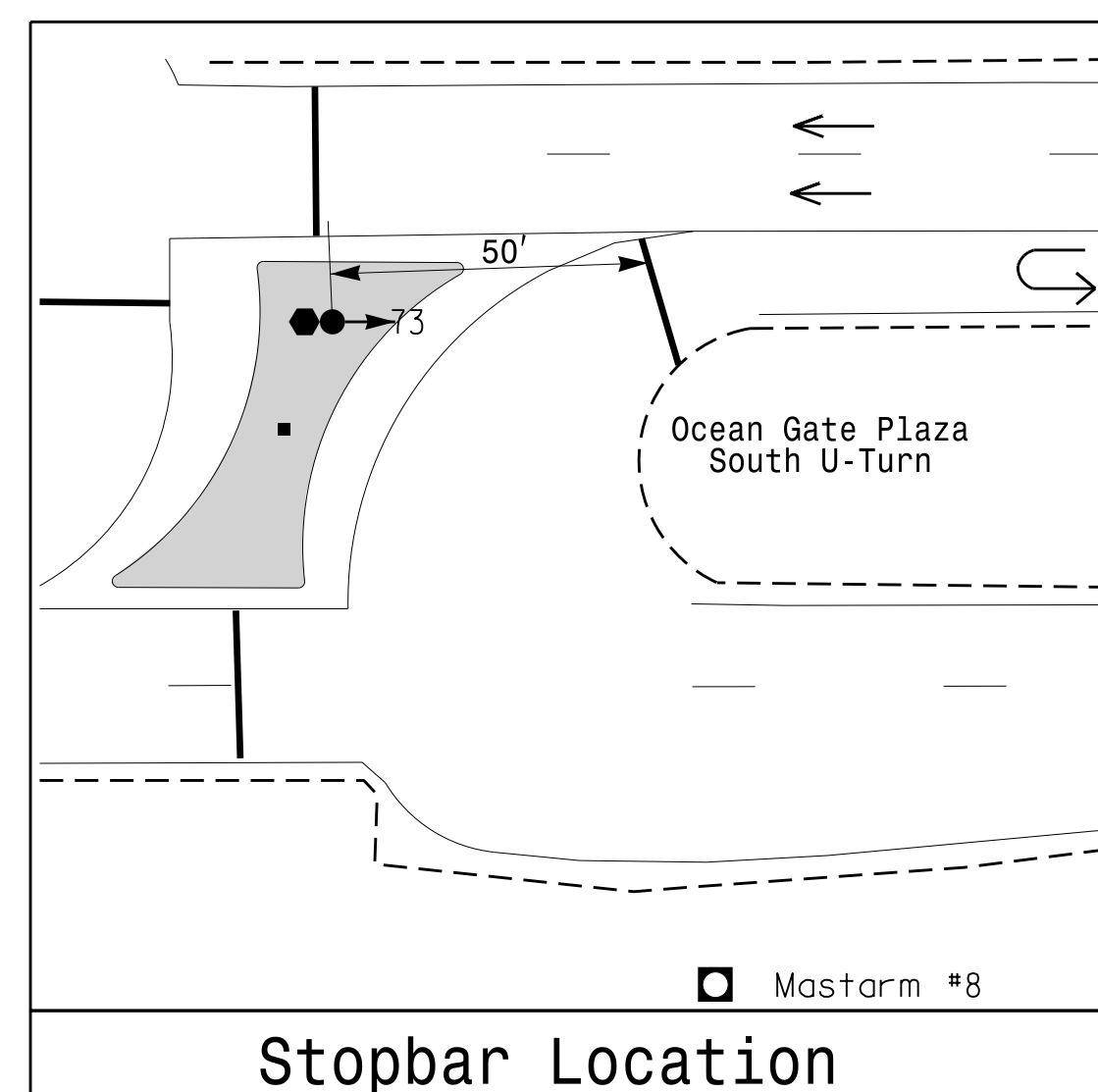


**LEGEND**

PROPOSED	EXISTING

FEATURE	PHASE	
	2	7
Min Green 1 *	12	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	4.5	3.0
Red Clearance	1.0	3.9
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.5	-
Max Variable Initial *	34	-
Time Before Reduction *	15	-
Time To Reduce *	50	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	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.

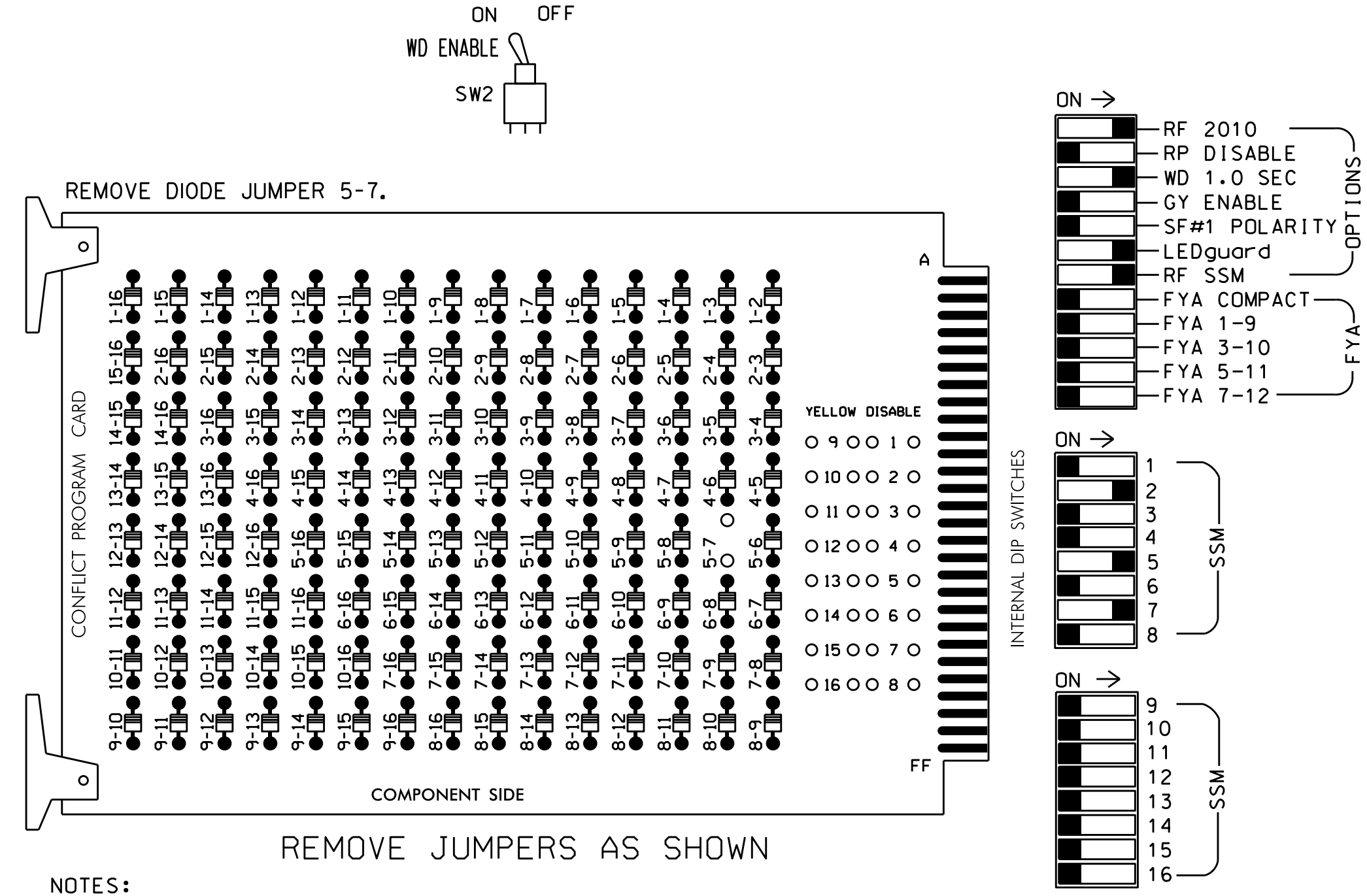


**Signal Upgrade**

	<p>US 17 (Ocean Highway) at Ocean Gate Plaza South U-Turn</p>		
	<p>Division 3 Brunswick County Leland</p>		
	<p>PLAN DATE: October 2021</p>	<p>REVIEWED BY: MEL</p>	
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>PREPARED BY: Jeff Spence</p>	<p>REVIEWED BY:</p>	<p>DATE: 10/26/2021</p>

## EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,4,6,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S5,S7  
 PHASES USED.....2,7  
 OVERLAP'G'.....7

### SIGNAL HEAD HOOK-UP CHART

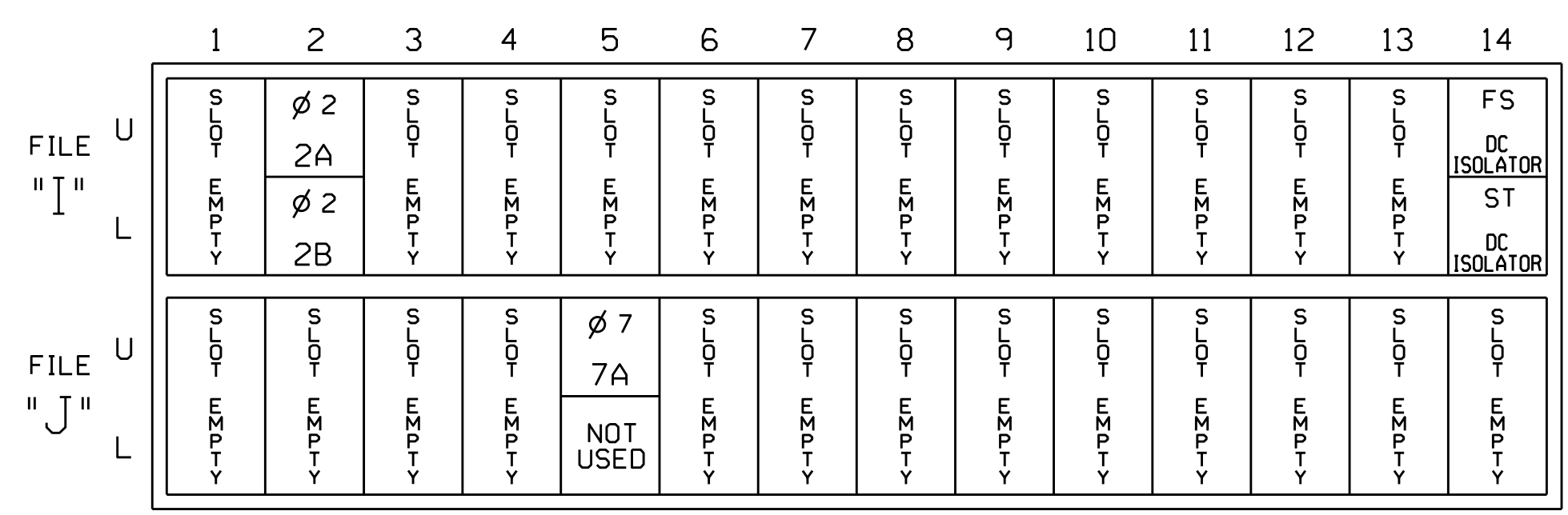
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	** OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	71,72	NU	NU	73	NU	NU
RED		128										
YELLOW		129										
GREEN		130										
RED ARROW							134			122		
YELLOW ARROW							135			123		
GREEN ARROW							135			124		

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

### INPUT FILE POSITION LAYOUT

(front view)



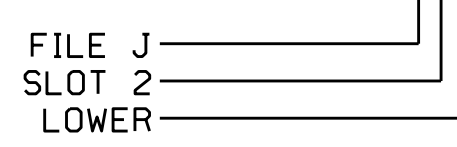
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
7A	TB3-5,6	J2U	40	2	6	7	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0972  
 DESIGNED: October 2021  
 SEALED: 10-26-21  
 REVISED: N/A

15-1010-2021\_09-22  
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 Peterson

Electrical Detail - Sheet 1 of 2

<p>Electrical and Programming Details for:</p> <p style="text-align: center;">Prepared in the Offices of:</p> <p style="text-align: center;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p><b>US 17 (Ocean Highway)</b>        at  <b>Ocean Gate Plaza</b>        South U-Turn</p> <p>Division 3 Brunswick County Leland</p> <p>PLAN DATE: October 2021 REVIEWED BY:</p> <p>PREPARED BY: James Peterson REVIEWED BY:</p> <p>REVISIONS: _____ INIT. DATE</p>	<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p> <p>SEAL</p> <p>DocuSigned by:        Ryan W. Hough        11/15/2021</p> <p>SIG. INVENTORY NO. 03-0972</p>
---	---	--



**OUTPUT REASSIGNMENT PROGRAMMING DETAIL**  
**FOR LOAD SWITCH S5 (OVERLAP G)**  
*(program controller as shown below)*

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION, ENTER "30"

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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 31

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

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 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 ENTERING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:33 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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 32

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

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 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 ENTERING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:34 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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 LOAD SWITCH S5 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
*(program controller as shown below)*

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

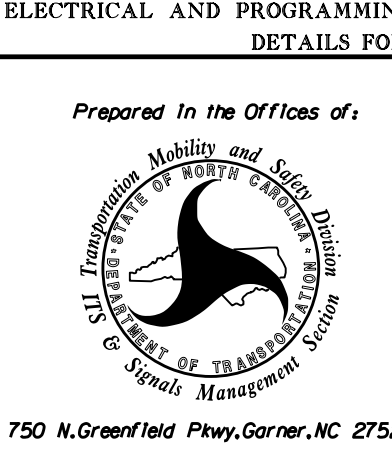
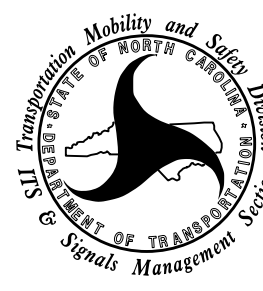
```

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)...0.0
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 'G' PROGRAMMING COMPLETE

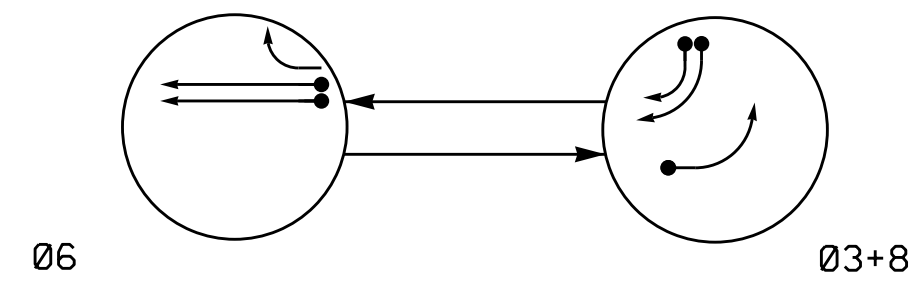
THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 03-0972  
 DESIGNED: October 2021  
 SEALED: 10-26-21  
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

	Prepared In the Offices of: 		US 17 (Ocean Highway) at Ocean Gate Plaza South U-Turn	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER RYAN W. HOUGH 036833
	ELECTRICAL AND PROGRAMMING DETAILS FOR:	Division 3 Brunswick County Leland		
PREPARED BY: James Peterson		REVIEWED BY:	REVISIONS	INIT. DATE
750 N. Greenfield Pkwy, Garner, NC 27529		Documented by: Ryan W. Hough 11/15/2021	SIG. INVENTORY NO. 03-0972	DATE

15-10101-2021\_09:23  
 4030972/sem\_elec\_20211028.dgn  
 J. Peterson

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT
- ←--- UNSIGNALIZED MOVEMENT
- ←---> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	06	03+8	F-L
31,32	R	G	R
33	R	---	R
61,62	G	R	Y
81,82	R	---	R

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME		
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
6A/S05	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
6B/S06	6X6	300	4	Y	6	Y	Y	-	-	-	Y	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	20	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	20	-	-
S07	6X6	300	4	Y	-	-	-	-	-	-	Y	-
S08	6X6	300	4	Y	-	-	-	-	-	-	Y	-

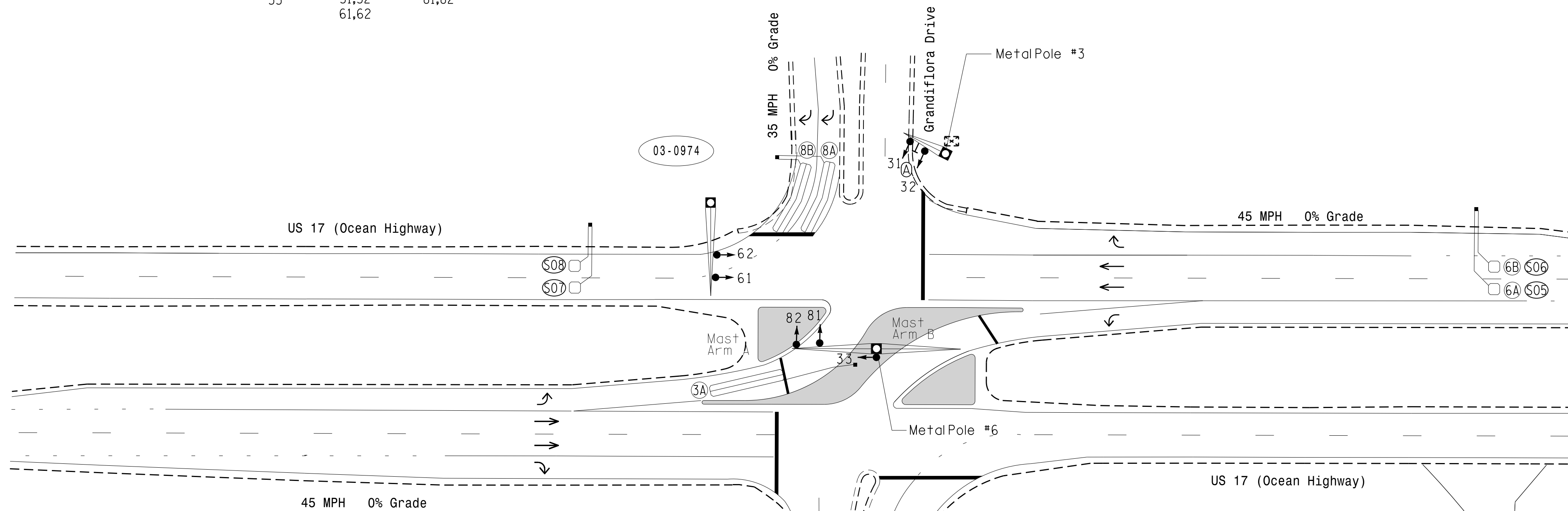
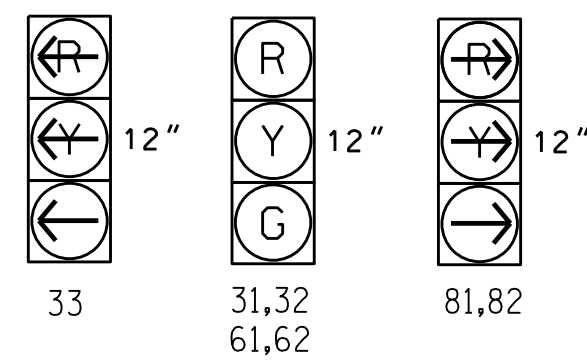
2 Phase Fully Actuated  
US 17 (Ocean Highway) - Leland Superstreet  
D03-12 Leland

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 54 and 55 as 81 and 82, respectively. Renumber existing heads 51,52, and 53 as 31,32, and 33, respectively.
- Renumber existing loops 5A,5B, and 5C as 3A,8A, and 8B, respectively.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal System data: Controller Asset # 0974.

SIGNAL FACE I.D.

All Heads L.E.D.



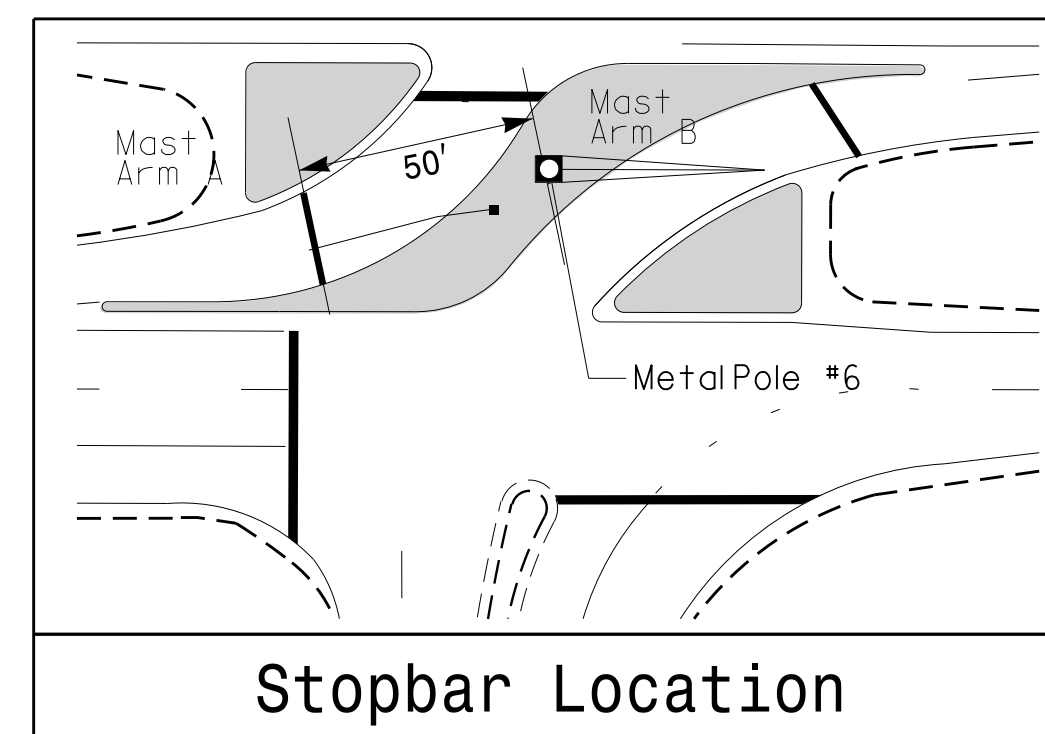
LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
|          |          |
|          | N/A      |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |

OASIS 2070 TIMING CHART

FEATURE	PHASE		
	3	6	8
Min Green 1 *	7	12	7
Extension 1 *	2.0	6.0	2.0
Max Green 1 *	30	90	30
Yellow Clearance	3.0	4.5	3.0
Red Clearance	3.4	1.5	3.4
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	1.5	-
Max Variable Initial *	-	34	-
Time Before Reduction *	-	15	-
Time To Reduction *	-	50	-
Minimum Gap	-	3.0	-
Recall Mode	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-
Dual Entry	ON	-	ON
Simultaneous Gap	ON	ON	ON

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



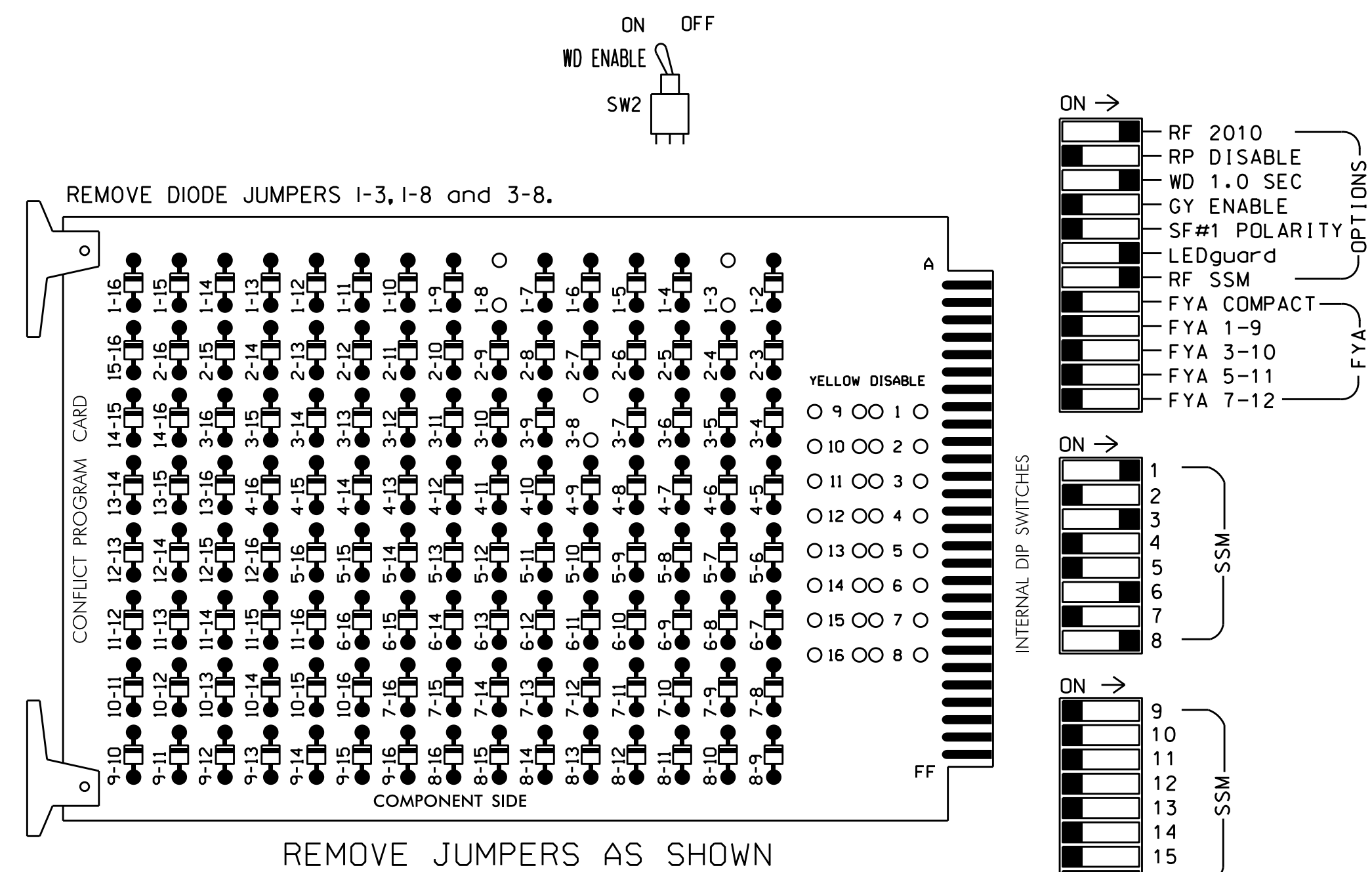
Signal Upgrade

Prepared in the Offices of:  
  
**US 17 (Ocean Highway) at Grandiflora Drive**  
 Division 3 Brunswick County Leland  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: Jeff Spence REVIEWED BY:  
 SCALE: 1" = 40'  
 REVISIONS: \_\_\_\_\_ INIT. DATE \_\_\_\_\_  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL: \_\_\_\_\_  
 DATE: 10/26/2021  
 SIG. INVENTORY NO. 03-0974



**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 3 and 8 for Dual Entry.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6,S8  
 PHASES USED.....3,6,8  
 OVERLAP "G".....3

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	** OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	31,32	NU	NU	33	NU	NU	NU	61,62	NU	NU	81,82	NU
RED	125							134				
YELLOW	126							135				
GREEN	127							136				
RED ARROW				116							107	
YELLOW ARROW				117							108	
GREEN ARROW				118							109	

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

**INPUT FILE POSITION LAYOUT**

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S	S	S	S	∅ 3	S	S	S	SYS. DET. S07	S	S	S	S	FS
I	S	S	S	S	3A	S	S	S	SYS. DET. S07	S	S	S	S	DC ISOLATOR
L	S	S	S	S	NOT USED	S	S	S	SYS. DET. S08	S	S	S	S	ST
U	S	∅6/SYS	S	S	S	∅ 8	S	S	S	S	S	S	S	S
J	S	6A/S05	S	S	S	8A	S	S	S	S	S	S	S	S
L	S	∅6/SYS	S	S	S	8B	S	S	S	S	S	S	S	S
	S	6B/S06	S	S	S		S	S	S	S	S	S	S	S

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

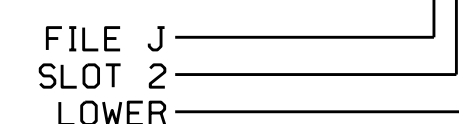
FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
*S07	TB6-9,10	I9U	60	22	11	SYS					
*S08	TB6-11,12	I9L	62	24	13	SYS					
6A/S05	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B/S06	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			20
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			20

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

**INPUT FILE POSITION LEGEND:**



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0974  
 DESIGNED: October 2021  
 SEALED: 10-26-21  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for: **US 17 (Ocean Highway) at Grandiflora Drive**

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: \_\_\_\_\_ INIT. DATE

DocuSigned by: **Ryan W. Hough** 11/15/2021

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH

SIG. INVENTORY NO. 03-0974

15-1004-2021\_03-33  
 4303074.cem, ete\_20211028.dgn  
 J. Peterson

**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
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.....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.....
    
```

PRESS "+" KEY FOR OUTPUT 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
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.....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.....
    
```

OUTPUT PROGRAMMING COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

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

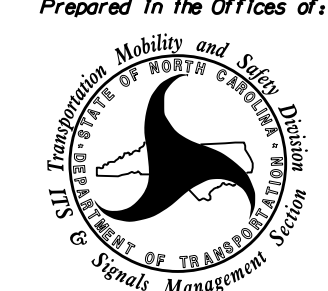
```

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
    
```

OVERLAP 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0974  
DESIGNED: October 2021  
SEALED: 10-26-21  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

Electrical and Programming Details For:  
Prepared In the Offices of:  
  
750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at Grandiflora Drive	
Division 3	Brunswick County
PLAN DATE: October 2021	REVIEWED BY:
PREPARED BY: James Peterson	REVIEWED BY:
REVISIONS	INIT. DATE

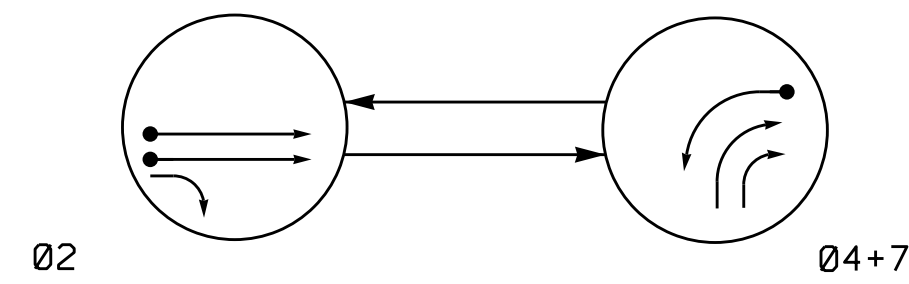
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
SEAL 036833  
RYAN W. HOUGH  
11/15/2021  
DATE  
SIG. INVENTORY NO. 03-0974

15-10101-2021\_03-31-10101.dgn  
10/20/21 10:04:14 AM  
J.Peterson



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

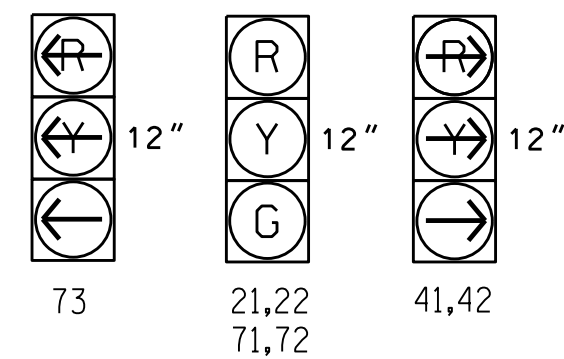
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT
- ←---→ UNSIGNALIZED MOVEMENT
- ←- - - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+7	FLASH
21, 22	G	R	Y
41, 42	FR	FR	FR
71, 72	R	G	R
73	FR	FR	FR

SIGNAL FACE I.D.

All Heads L.E.D.

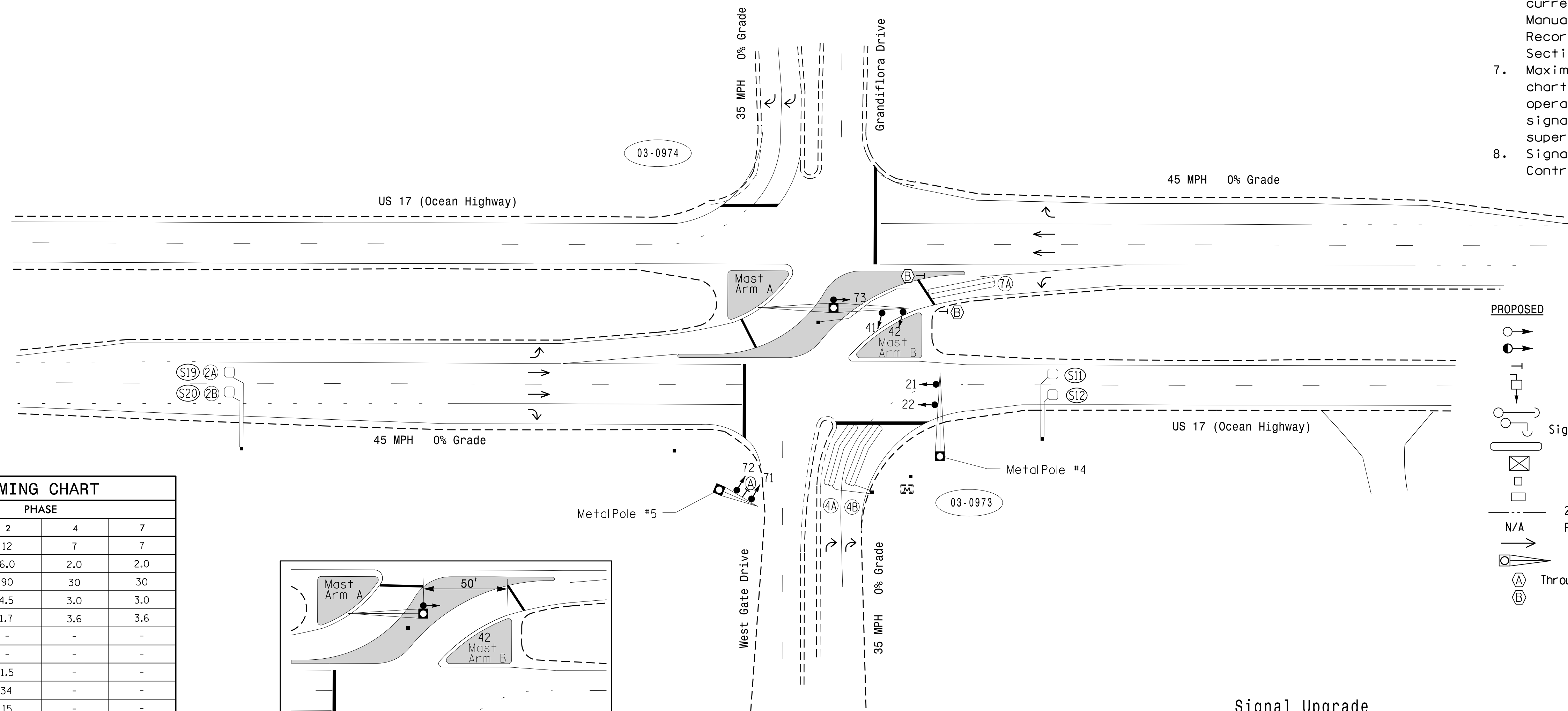


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY				
2A/S19	6X6	300	4	Y	2	Y	Y	-	-	-	Y	-
2B/S20	6X6	300	4	Y	2	Y	Y	-	-	-	Y	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	20	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	20	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
S11	6X6	+180	3	Y	-	-	-	-	-	-	Y	-
S12	6X6	+180	3	Y	-	-	-	-	-	-	Y	-

2 Phase Fully Actuated  
US 17 (Ocean Highway) - Leland Superstreet  
D03-12 Leland

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode
- Renumber existing heads 11,12, and 13 as 71,72, and 73, respectively. Renumber existing heads 14 and 15 as 41 and 42, respectively.
- Renumber existing loops 1A,1B, and 1C as 7A, 4A, and 4B, respectively.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal System data: Controller Asset # 0973.

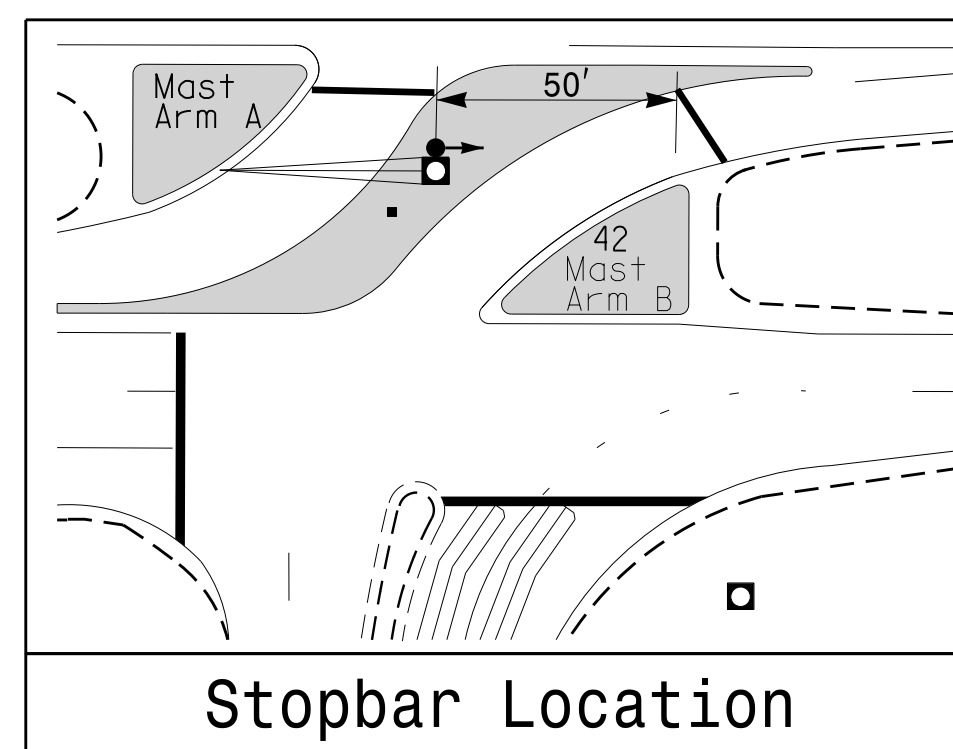


LEGEND

- | PROPOSED   | EXISTING                            |
|--|-------------------------------------|
| ○→ Traffic Signal Head                           | ●→ Traffic Signal Head              |
| ●→ Modified Signal Head                          | N/A                                 |
| ○ Sign   | N/A                                 |
| ○ Pedestrian Signal Head With Push Button & Sign | ○ Pedestrian Signal Head            |
| ○ Signal Pole with Guy                           | ○ Signal Pole with Guy              |
| ○ Signal Pole with Sidewalk Guy                  | ○ Signal Pole with Sidewalk Guy     |
| □ Inductive Loop Detector                        | □ Inductive Loop Detector           |
| □ Controller & Cabinet                           | □ Controller & Cabinet              |
| □ Junction Box                                   | □ Junction Box                      |
| □ Oversized Junction Box                         | □ Oversized Junction Box            |
| □ 2-in Underground Conduit                       | □ 2-in Underground Conduit          |
| N/A Right of Way with Marker                     | △ Right of Way with Marker          |
| → Directional Arrow                              | → Directional Arrow                 |
| ○ Metal Pole with Mastarm                        | ○ Metal Pole with Mastarm           |
| ⓐ Through Arrow "ONLY" Sign (R3-5A)              | ⓐ Through Arrow "ONLY" Sign (R3-5A) |
| ⓑ Stop Here on Red (R10-6)                       | ⓑ Stop Here on Red (R10-6)          |

FEATURE	PHASE		
	2	4	7
Min Green 1 *	12	7	7
Extension 1 *	6.0	2.0	2.0
Max Green 1 *	90	30	30
Yellow Clearance	4.5	3.0	3.0
Red Clearance	1.7	3.6	3.6
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	1.5	-	-
Max Variable Initial *	34	-	-
Time Before Reduction *	15	-	-
Time To Reduction *	50	-	-
Minimum Gap	3.0	-	-
Recall Mode	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-
Dual Entry	-	ON	ON
Simultaneous Gap	ON	ON	ON

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



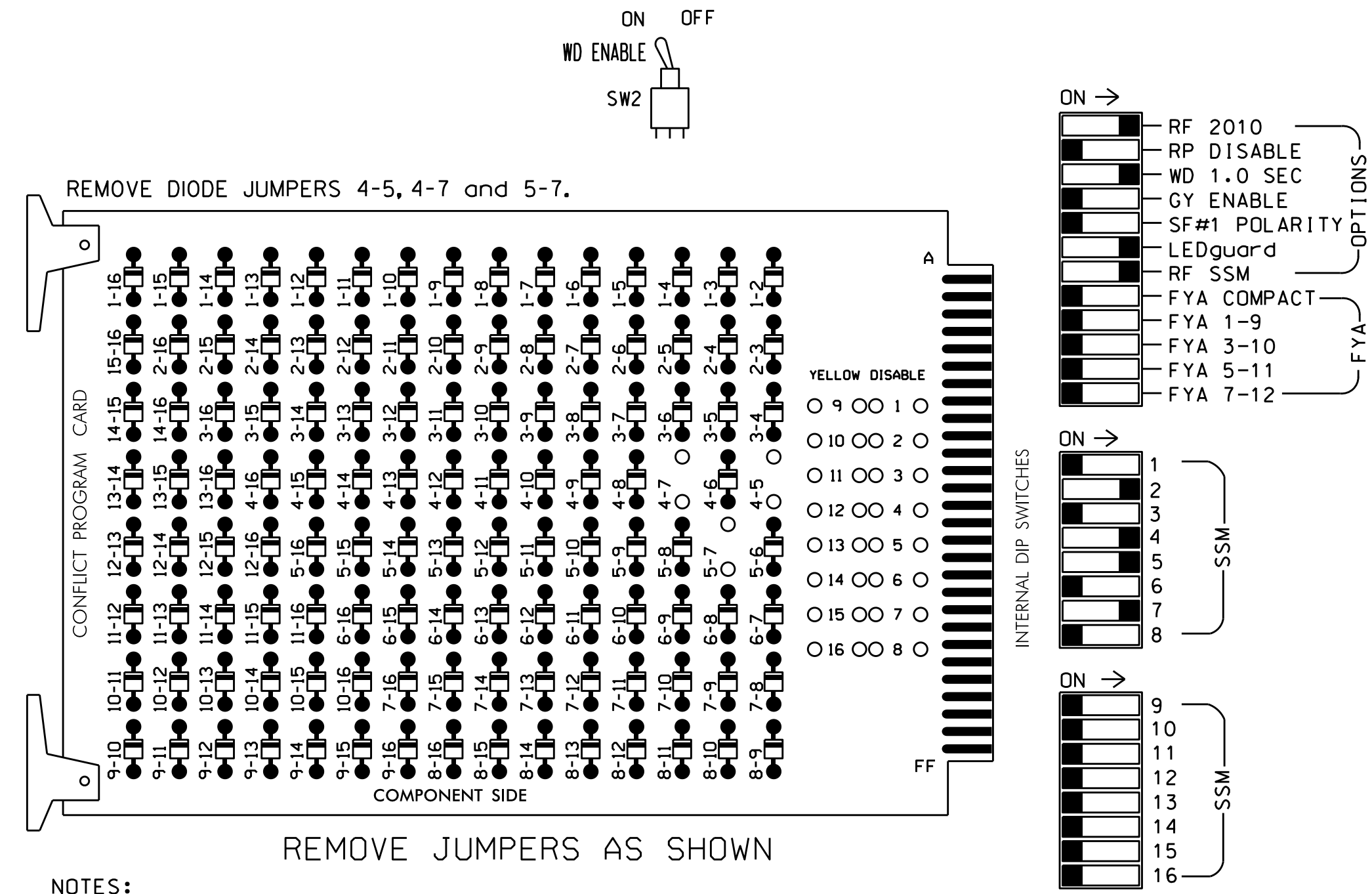
Signal Upgrade

Prepared in the Offices of:  
  
**US 17 (Ocean Highway) at West Gate Drive**  
 Division 3 Brunswick County Leland  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: Jeff Spence REVIEWED BY:  
 SCALE: 1" = 40'  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL  
 Nathan E. LeBlanc  
 PROFESSIONAL ENGINEER  
 License No. 042608  
 State of North Carolina  
 DATE: 10/26/2021  
 SIG. INVENTORY NO. 03-0973



### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



**NOTES:**

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

### 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. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,6,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 4 and 7 for Dual Entry.
5. Program phase 2 for Variable Initial and Gap Reduction.
6. Program phase 2 for Startup In Green.
7. Program phase 2 for Yellow Flash.
8. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
9. The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 Leland.

### EQUIPMENT INFORMATION

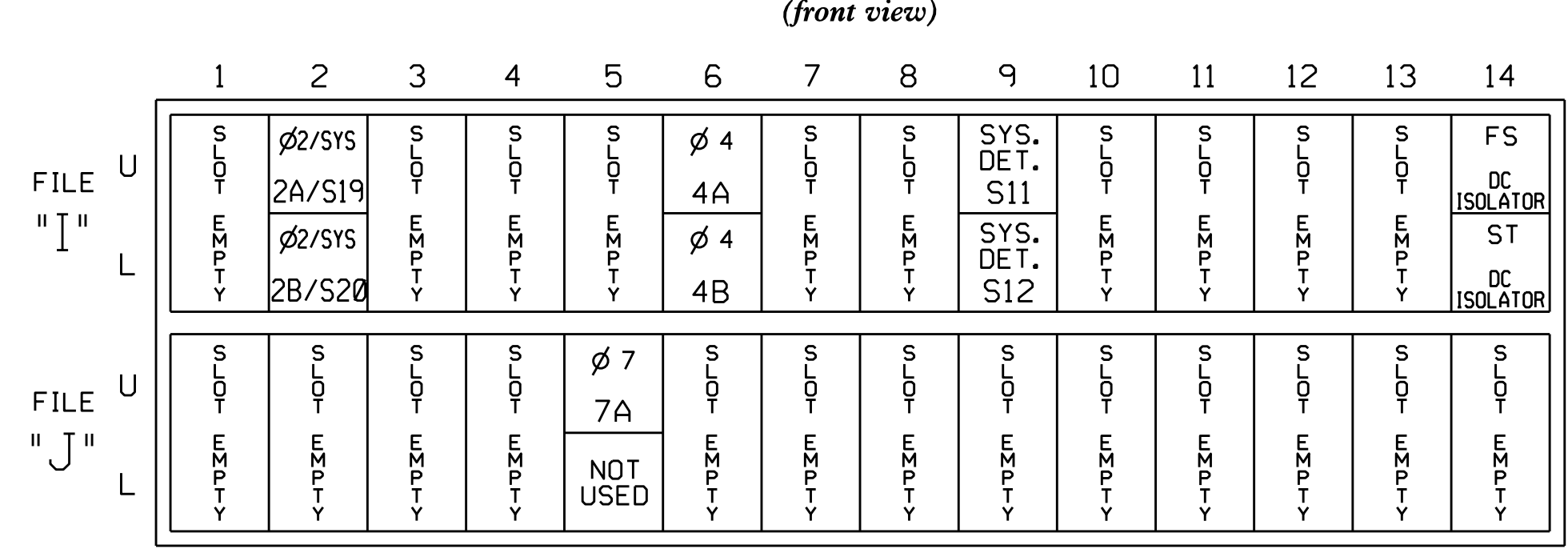
CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S5,S7  
 PHASES USED.....2,4,7  
 OVERLAP "G".....7

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	** OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	71,72	NU	NU	73	NU	NU
RED		128					131					
YELLOW		129					132					
GREEN		130					133					
RED ARROW					101					122		
YELLOW ARROW					102					123		
GREEN ARROW					103					124		

NU = Not Used  
 \*\* Requires special programming and output remapping.  
 See sheet 2.

### INPUT FILE POSITION LAYOUT

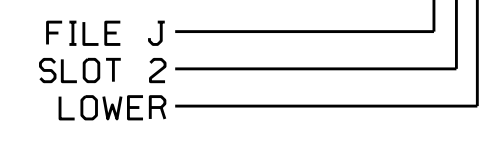


### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S19	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S20	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			20
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			20
* S11	TB6-9,10	I9U	60	22	11	SYS					
* S12	TB6-11,12	I9L	62	24	13	SYS					
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

### INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0973  
 DESIGNED: October 2021  
 SEALED: 10-26-21  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for: US 17 (Ocean Highway) at West Gate Drive

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: INIT. DATE

DocuSigned by: Ryan W. Hough 11/15/2021

750 N. Greenfield Pkwy, Garner, NC 27529

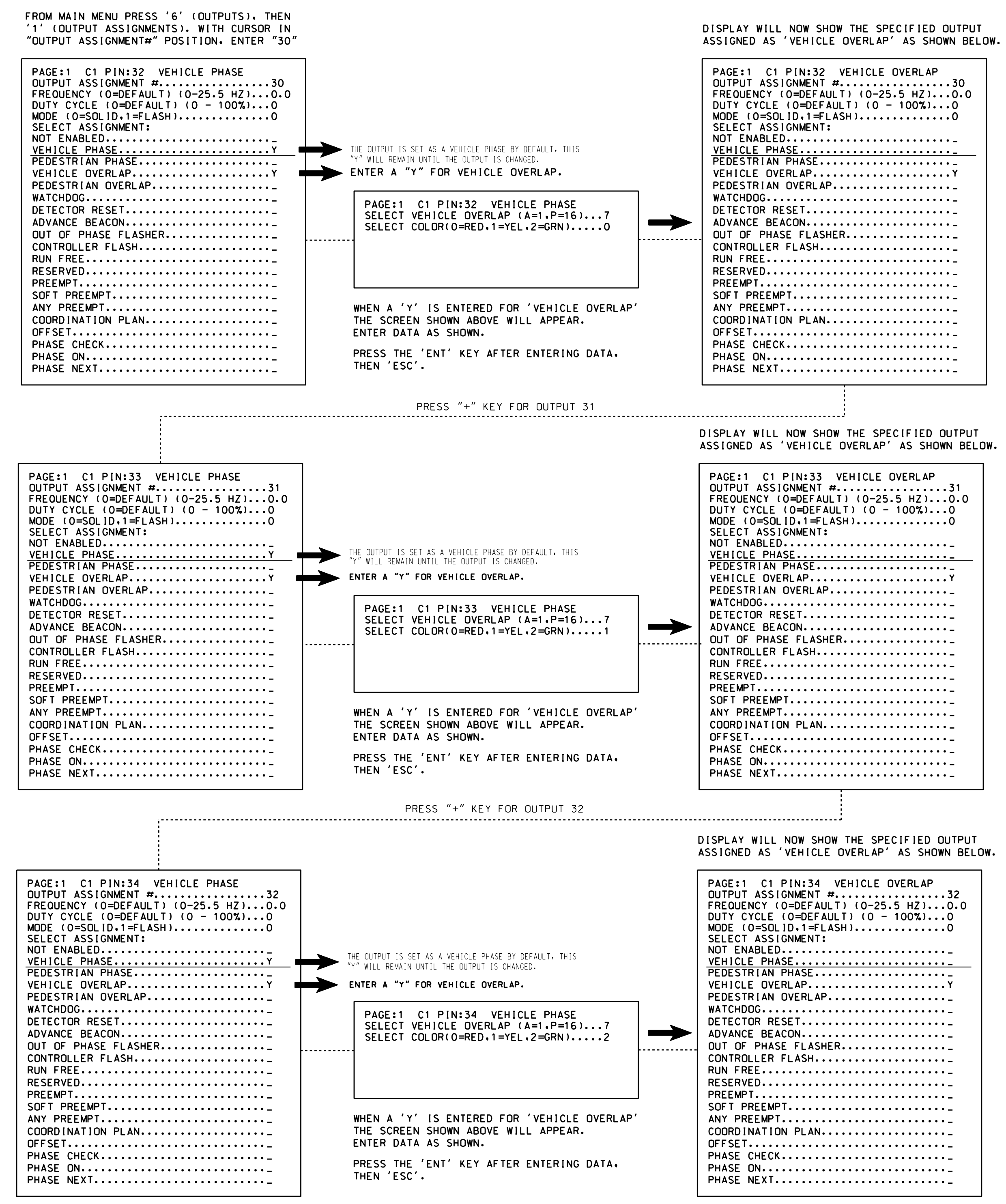
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH

SIG. INVENTORY NO. 03-0973

15-1004-2021\_08-16  
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 J. Peterson

### OUTPUT REASSIGNMENT PROGRAMMING DETAIL FOR LOAD SWITCH S5 (OVERLAP G)

(program controller as shown below)



### OVERLAP 'G' PROGRAMMING DETAIL (program controller as shown below)

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

```

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
                
```

OVERLAP 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0973  
DESIGNED: October 2021  
SEALED: 10-26-21  
REVISED: N/A

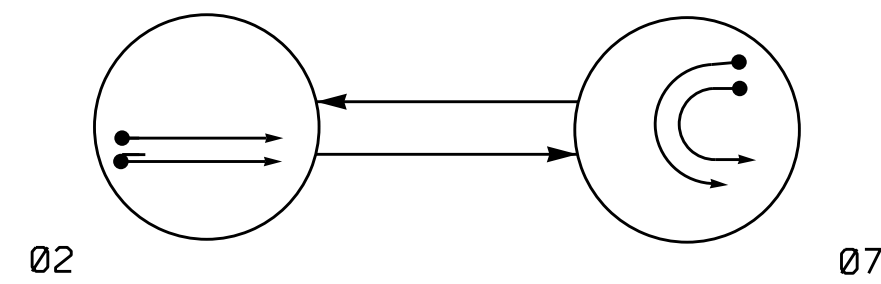
Electrical Detail - Sheet 2 of 2

<p>Prepared In the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p><b>US 17 (Ocean Highway) at West Gate Drive</b></p> <p>Division 3 Brunswick County Leland</p> <p>PLAN DATE: October 2021 REVIEWED BY:</p> <p>PREPARED BY: James Peterson REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE				<p style="text-align: center;"><b>SEAL</b></p> <p style="text-align: center;">RYAN W. HOUGH PROFESSIONAL ENGINEER 036833</p> <p>DocuSigned by: <b>Ryan W. Hough</b> 11/15/2021</p> <p>SIG. INVENTORY NO. 03-0973</p>
REVISIONS	INIT.	DATE						

15-0000-2021\_08-58  
403007373751em.enr.eco20211028.dgn  
J.Peterson



PHASING DIAGRAM



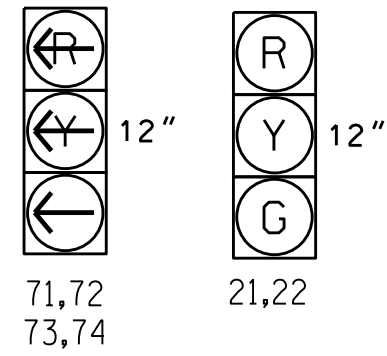
PHASING DIAGRAM DETECTION LEGEND  
 ● ← DETECTED MOVEMENT  
 ← UNDETECTED MOVEMENT  
 - - - ← UNSIGNALIZED MOVEMENT  
 <- - - - > PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	07	FLASH
21,22	G	R	Y
71,72,73,74	-R	-	-R

SIGNAL FACE I.D.

All Heads L.E.D.



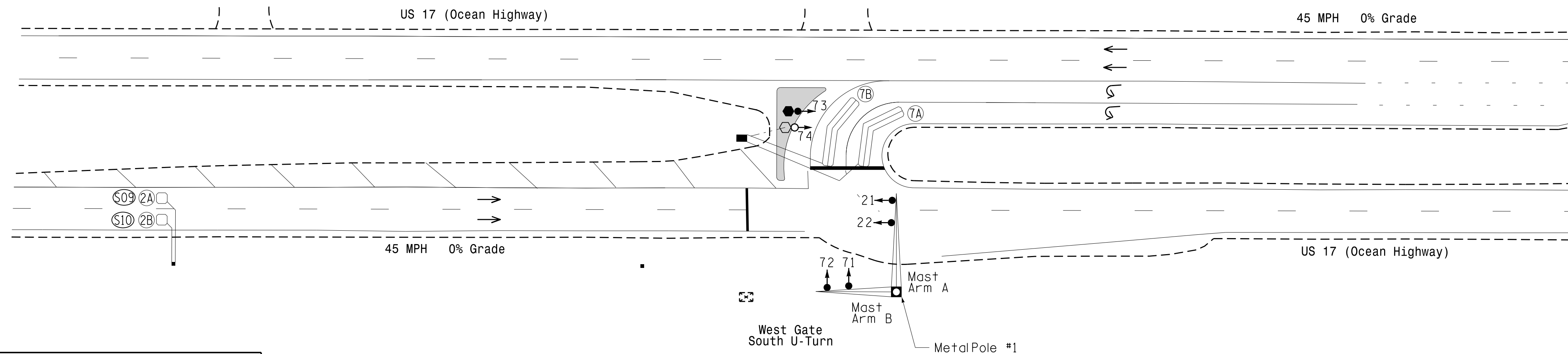
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
2A/S09	6X6	300	4	Y	2	Y	Y	-	-	-	Y	-
2B/S10	6X6	300	4	Y	2	-	-	-	-	-	Y	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-

2 Phase Fully Actuated  
 US 17 (Ocean Highway) - Leland Superstreet  
 D03-12 Leland

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Renumber existing heads 11,12,13, and 14 as 71,72,73, and 74, respectively.
- Renumber existing loops 1A and 1B as 7A and 7B, respectively.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal System data:  
 Controller Asset # 0976.



OASIS 2070 TIMING CHART

FEATURE	PHASE	
	2	7
Min Green 1 *	12	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	4.5	3.0
Red Clearance	1.3	2.3
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.5	-
Max Variable Initial *	34	-
Time Before Reduction *	15	-
Time To Reduction *	50	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

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

LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → Modified Signal Head
○ → Pedestrian Signal Head	N/A
○ → Signal Pole with Guy	○ → Signal Pole with Sidewalk Guy
○ → Inductive Loop Detector	○ → Controller & Cabinet
○ → Junction Box	○ → Oversized Junction Box
○ → 2-in Underground Conduit	○ → Right of Way with Marker
○ → Directional Arrow	○ → Metal Pole with Mastarm
○ → Signal Pedestal	○ → Signal Pedestal

Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 STATE OF CAROLINA  
 Signal Design Section  
 750 N. Greenfield Pkwy, Garner, NC 27529

US 17 (Ocean Highway) at West Gate South U-Turn  
 Division 3 Brunswick County Leland  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: Jeff Spence REVIEWED BY:

SCALE: 1" = 40'

REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

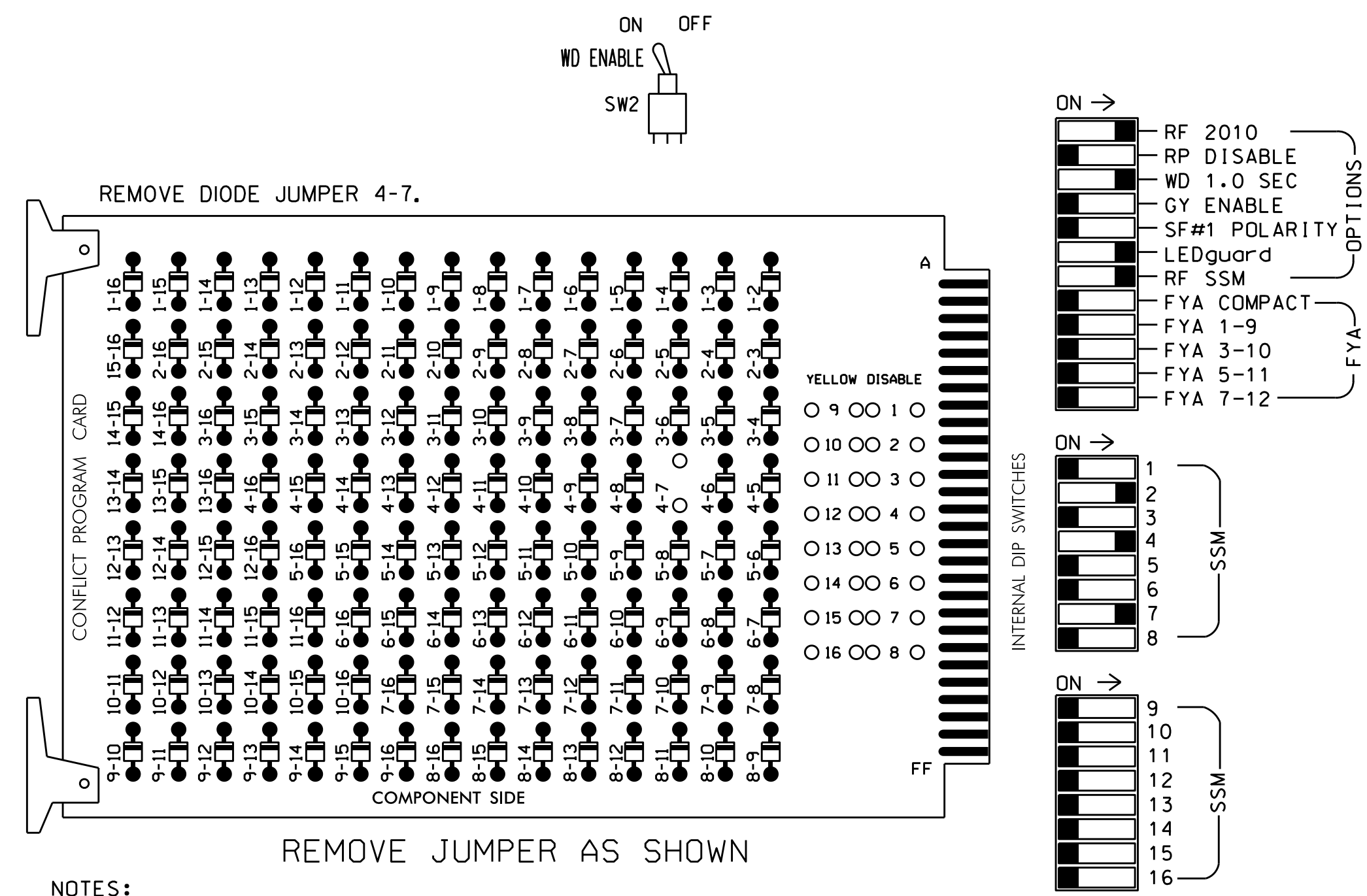
SEAL  
 MICHAEL E. LEBLANC  
 PROFESSIONAL ENGINEER  
 042608  
 10/26/2021  
 DATE

SIG. INVENTORY NO. 03-0976



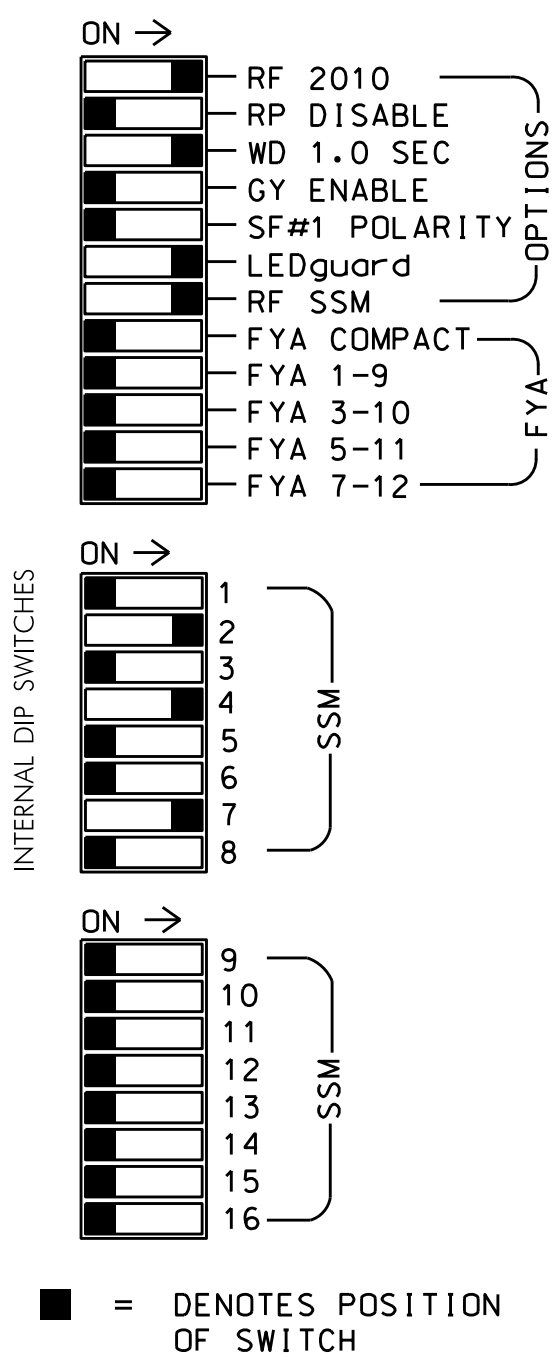
### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.



### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 5,6,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 or Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway - Leland Superstreet D03-12 Leland System).

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	OLG	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	73,74	NU	NU	NU	NU	71,72	NU	NU
RED		128										
YELLOW		129										
GREEN		130										
RED ARROW					101					122		
YELLOW ARROW					102					123		
GREEN ARROW					103					124		

NU = Not Used

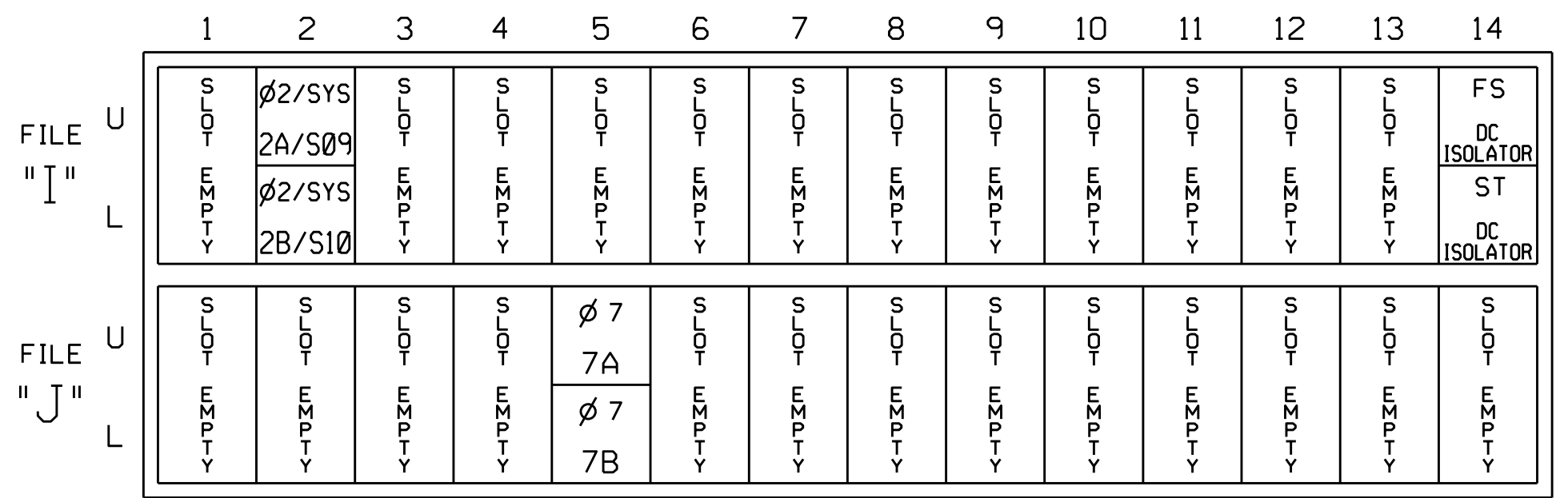
NOTE: Outputs for load switch S4 have been reassigned. See sheet 2.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S7  
 PHASES USED.....2,4,7  
 OVERLAP G.....7

### INPUT FILE POSITION LAYOUT

(front view)

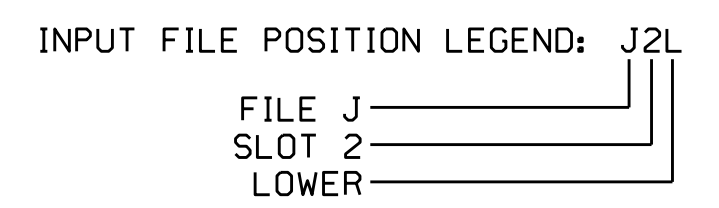


EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S09	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/S10	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0976  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

21-0076-2021-07-10  
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 sarmstrong

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 17 (Ocean Highway) at West Gate South U-Turn</b>		SEAL  SEAL 036833 RYAN W. HOUGH ENGINEER
	Division 3 Brunswick County Leland PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: S. Armstrong REVIEWED BY:	REVISIONS INIT. DATE	
DocuSigned by:  Ryan W. Hough 10/27/2021 430320FAA268453 DATE			SIG. INVENTORY NO. 03-0976

### OUTPUT REASSIGNMENT PROGRAMMING DETAIL FOR LOAD SWITCH S4 (OVERLAP G)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION, ENTER "3"

```

PAGE:1 C1 PIN:4 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....3
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:4 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA. THEN 'ESC'.

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

```

PAGE:1 C1 PIN:4 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....3
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.....Y
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 4

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

```

PAGE:1 C1 PIN:5 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....4
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:5 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA. THEN 'ESC'.

```

PAGE:1 C1 PIN:5 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....4
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.....Y
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 5

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

```

PAGE:1 C1 PIN:6 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....5
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:6 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA. THEN 'ESC'.

```

PAGE:1 C1 PIN:6 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....5
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.....Y
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 LOAD SWITCH S4 COMPLETE

### OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PRESS '+' TO ADVANCE TO OVERLAP 'G'


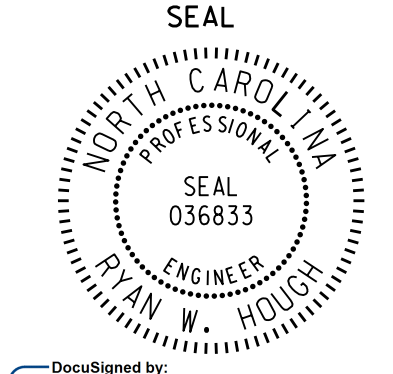
```

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)...0.0
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: 03-0976  
DESIGNED: October 2021  
SEALED: 10/26/2021  
REVISED: N/A

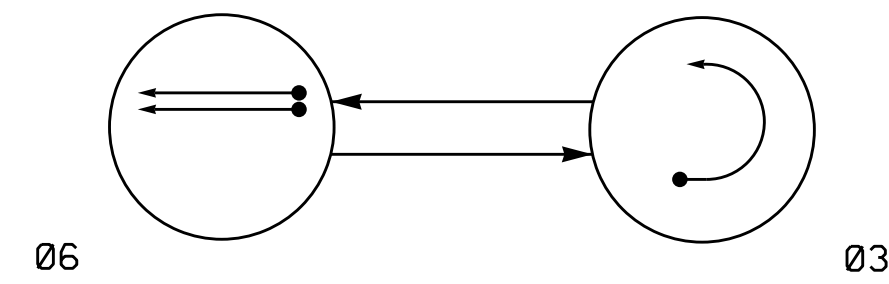
Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at West Gate South U-Turn		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  SEAL 036833 RYAN W. HOUGH ENGINEER
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY:	
REVISIONS	INIT.	DATE	DocuSigned by: Ryan W. Hough 10/27/2021 SIG. INVENTORY NO. 03-0976

27-0075-2021\_01:11  
4030076.dwg  
S:\MS\T\03



PHASING DIAGRAM

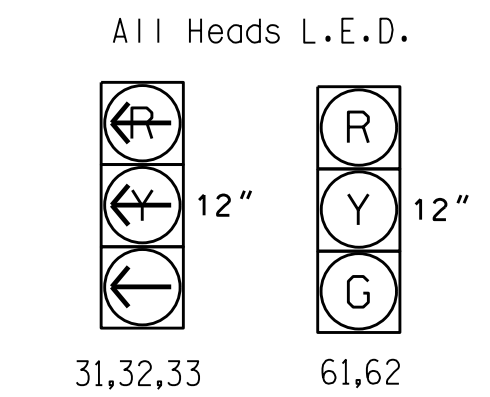


**PHASING DIAGRAM DETECTION LEGEND**  
 ● ← DETECTED MOVEMENT  
 ○ ← UNDETECTED MOVEMENT (OVERLAP)  
 - - ← UNSIGNALIZED MOVEMENT  
 - - - - ← PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	06	03	FLASH
31,32,33	R	L	R
61,62	G	R	Y

SIGNAL FACE I.D.



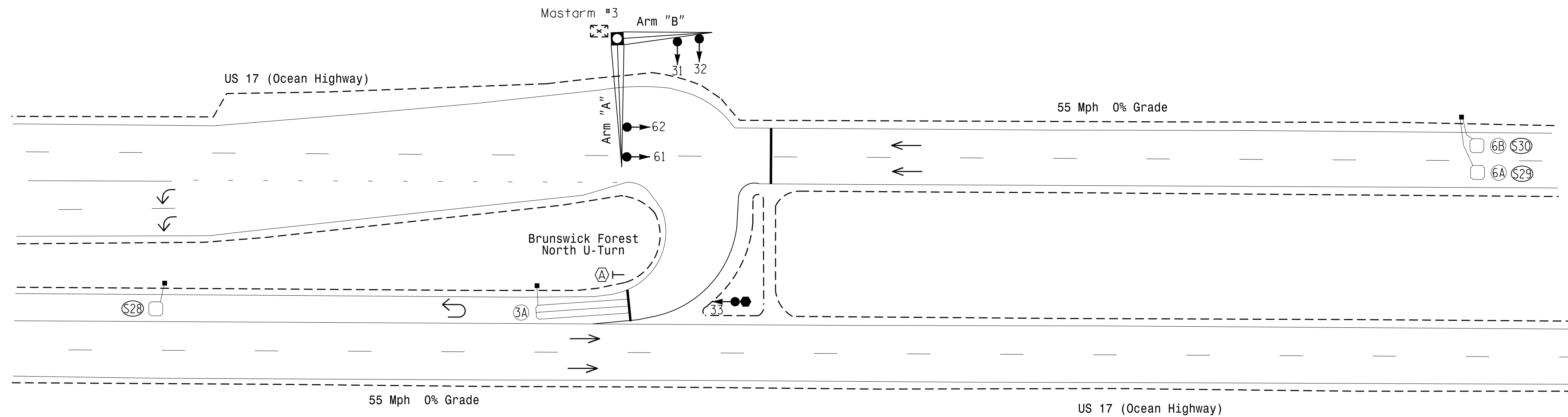
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
6A/S29	6X6	420	5	Y	6	Y	Y	-	-	-	Y	-
6B/S30	6X6	420	5	Y	6	Y	Y	-	-	-	Y	-
S28	6X6	200	3	Y	-	-	-	-	-	-	Y	-

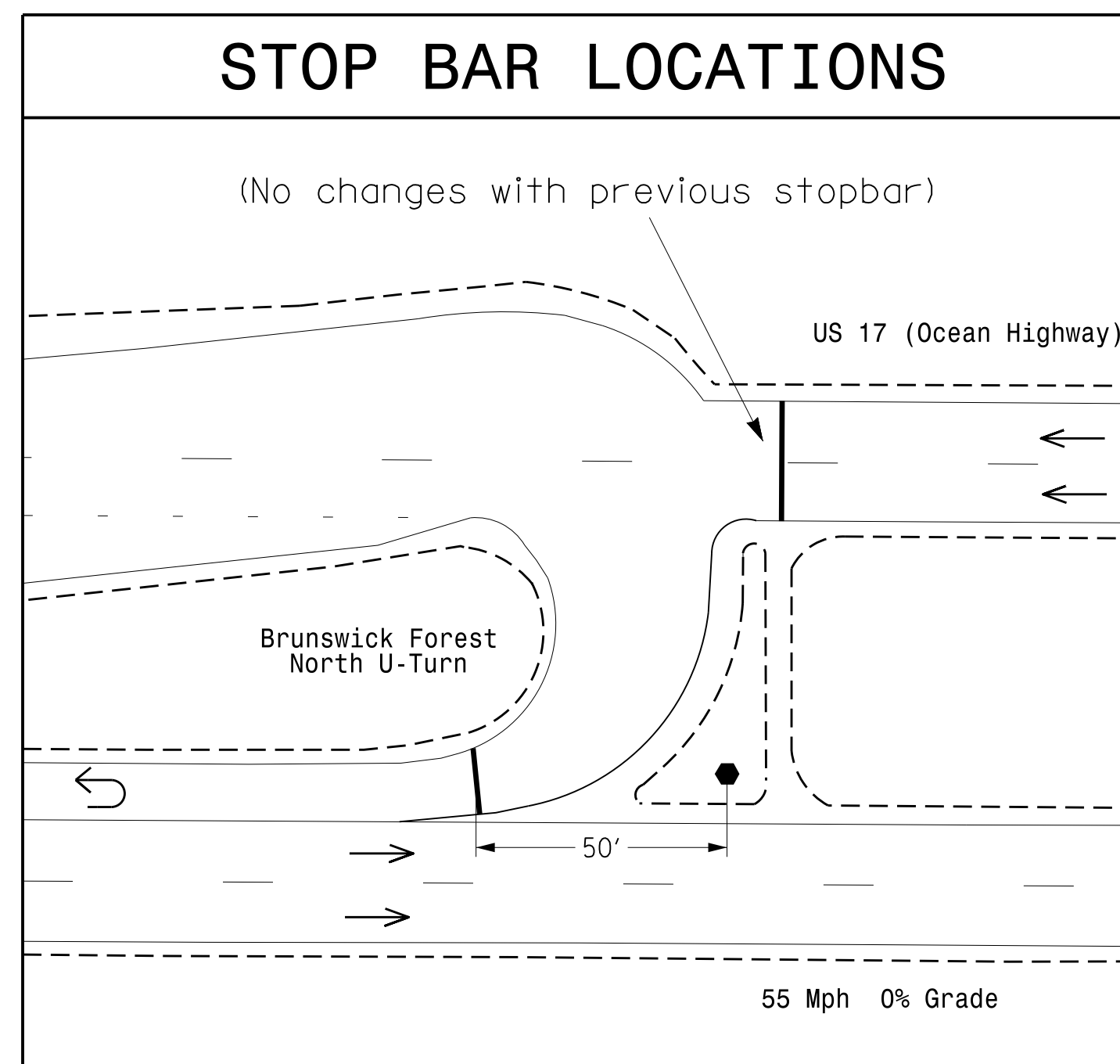
2 Phase  
 Fully Actuated  
 D03-12 Leland  
 US 17 (Ocean Hwy)-Leland Superstreet

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. Set all detector units to presence mode.
4. Pavement markings are existing.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
6. Closed loop system data: Controller Asset # 0980.



STOP BAR LOCATIONS



OASIS 2070 TIMING CHART

FEATURE	PHASE	
	3	6
Min Green 1 *	7	14
Extension 1 *	2.0	6.0
Max Green 1 *	30	90
Yellow Clearance	3.0	5.2
Red Clearance	3.8	1.0
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	-	1.5
Max Variable Initial *	-	46
Time Before Reduction *	-	15
Time To Reduce *	-	50
Minimum Gap	-	3.0
Recall Mode	-	MIN RECALL
Vehicle Call Memory	-	YELLOW
Dual Entry	-	-
Simultaneous Gap	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	● → Traffic Signal Head
○ → Modified Signal Head	N/A
⊥ Sign	⊥ Sign
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ Pedestrian Signal Head With Push Button & Sign
⊥ Signal Pole with Guy	⊥ Signal Pole with Guy
⊥ Signal Pole with Sidewalk Guy	⊥ Signal Pole with Sidewalk Guy
⊠ Inductive Loop Detector	⊠ Inductive Loop Detector
□ Controller & Cabinet	□ Controller & Cabinet
□ Junction Box	□ Junction Box
- - - 2-in Underground Conduit	- - - 2-in Underground Conduit
N/A Right of Way	— Right of Way
→ Directional Arrow	→ Directional Arrow
⊠ Metal Pole with Mastarm	⊠ Metal Pole with Mastarm
○ Signal Pedestal	○ Signal Pedestal
⊠ Stop Here on Red (R10-6)	⊠ Stop Here on Red (R10-6)

Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Division  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 SIGNAL DESIGN SECTION

US 17 (Ocean Highway)  
 at  
 Brunswick Forest North U-Turn

Division 3 Brunswick County Leland

PLAN DATE: October 2021 REVIEWED BY: MEL

PREPARED BY: X. Han REVIEWED BY:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 1" = 30'

REVISIONS: INIT. DATE

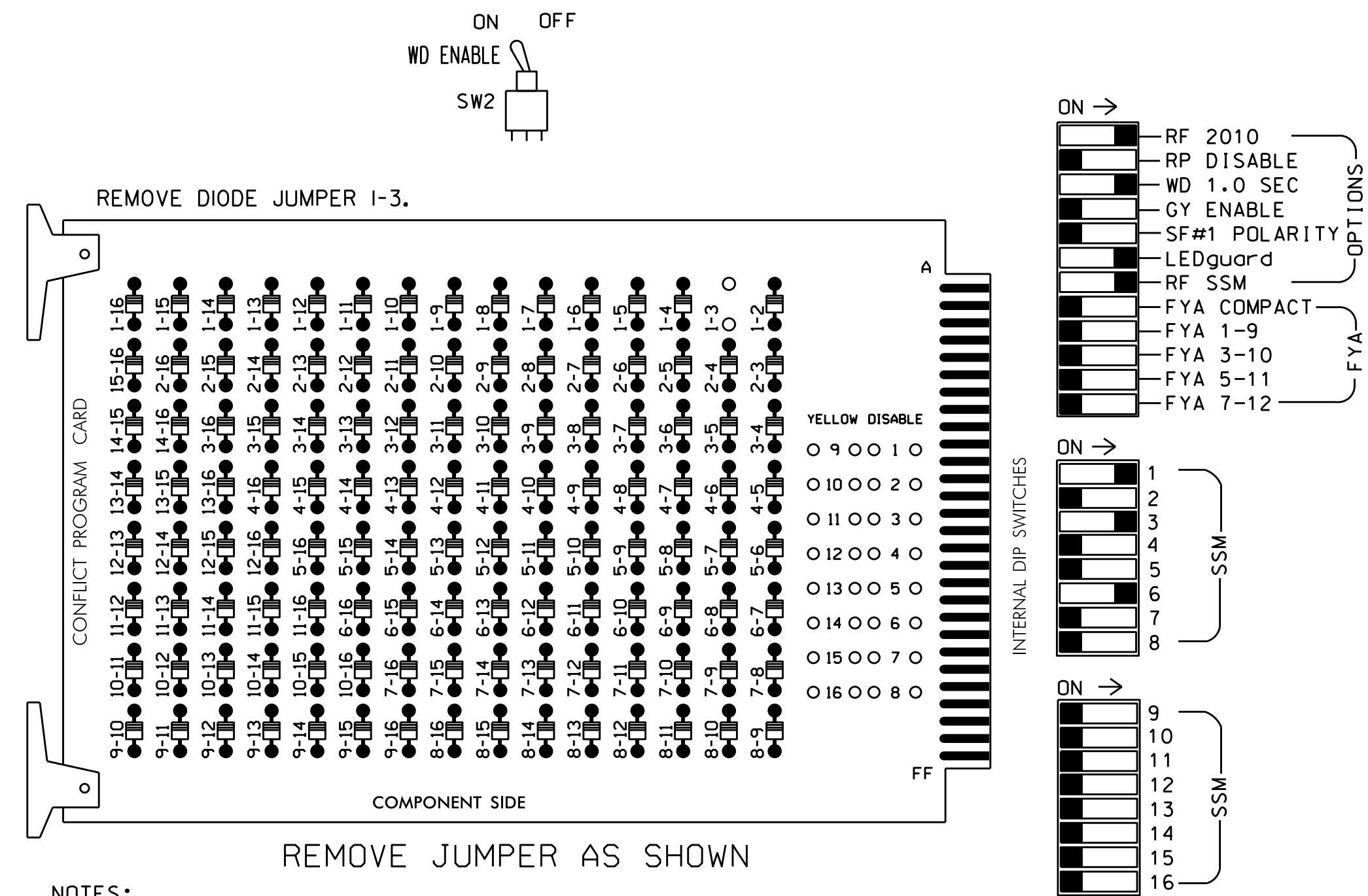
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 042608  
 MICHAN E. LEBLANC  
 10/26/2021  
 DATE  
 SIG. INVENTORY NO. 03-0980



### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4,5,7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Variable Initial and Gap Reduction.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-02 Leland System.

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	* OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	33	NU	NU	31,32	NU	NU	NU	61,62	NU	NU	NU	NU
RED								134				
YELLOW								135				
GREEN								136				
RED ARROW	125			116								
YELLOW ARROW	126			117								
GREEN ARROW	127			118								

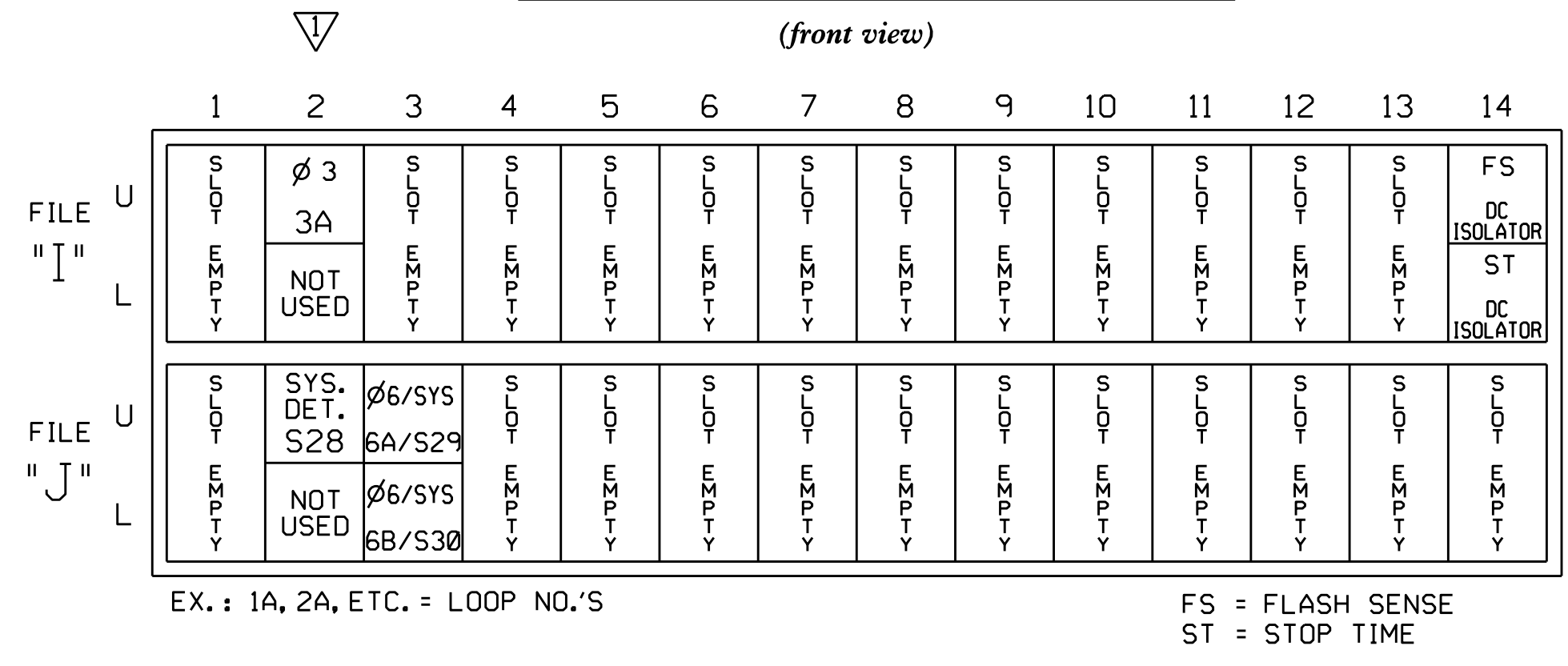
NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6  
 PHASES USED.....3,6  
 OVERLAP'G'.....3

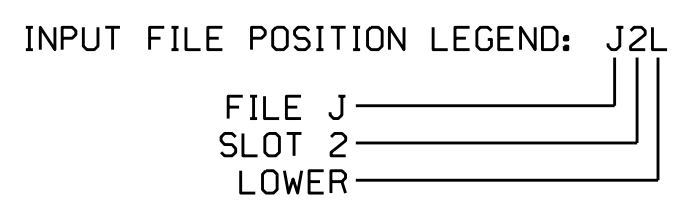
### INPUT FILE POSITION LAYOUT



### 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
3A	TB2-5,6	J2U	39	1	2	3	Y	Y			
* S28	TB3-5,6	J2U	40	2	6	SYS					
6A/S29	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S30	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0980  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISION SEAL

DocuSigned by: Ryan W. Hough  
 11/15/2021

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:  Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Brunswick Forest North U-Turn		SEAL	
	Division 3 Brunswick County Leland	Not a certified document as to the Original Document but only as to the Revisions - This document originally issued and sealed by D. Todd Joyce, #031001, on 6/19/2019. This document is only certified as to the revisions.		
	PLAN DATE: June 2019 PREPARED BY: B. Christian	REVIEWED BY: DTJ REVIEWED BY:	DATE: 11/15/21	
	REVISIONS: Removed loops 3B and 3C and added a note. (WSA)		DATE:	

I:\Signal\Workshops\Signal Management Solutions\Projects\03-0980\03-0980\_Sig.dgn  
 15-Nov-2021 1:57 PM  
 S:\Signal\Workshops\Signal Management Solutions\Projects\03-0980\03-0980\_Sig.dgn

**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:**  
**OVERLAP "G" TO LOADSWITCH "S1"**  
*(program controller as shown below)*

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```
PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
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.....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.....
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```
PAGE:1 C1 PIN:16 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

```
PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
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.....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.....
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```
PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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.....
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```
PAGE:1 C1 PIN:17 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

```
PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```
PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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.....
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```
PAGE:1 C1 PIN:18 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

```
PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
*(program controller as shown below)*

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

```
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)...0.0
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
```

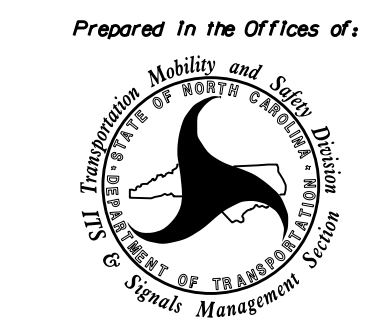
OVERLAP 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0980  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISION SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 036833  
 RYAN W. HOUGH  
 11/15/2021  
 430320FAA2664C3 DATE

Electrical Detail - Sheet 2 of 2

 <p>Prepared In the Offices of:          Division 3          Mobility and Signal Management          750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 17 (Ocean Highway) at Brunswick Forest North U-Turn</p>		<p>SEAL</p>
	<p>Division 3 Brunswick County Leland</p>	<p>PLAN DATE: June 2019 REVIEWED BY: DTJ</p>	<p>PREPARED BY: B. Christian REVIEWED BY:</p>
<p>REVISIONS</p> <p>Removed loops 3B and 3C and added a note. (WSA)</p>	<p>#BIT. DATE</p> <p>RWH 11/15/21</p>	<p>SIG. INVENTORY NO. 03-0980</p>	<p>DATE</p>

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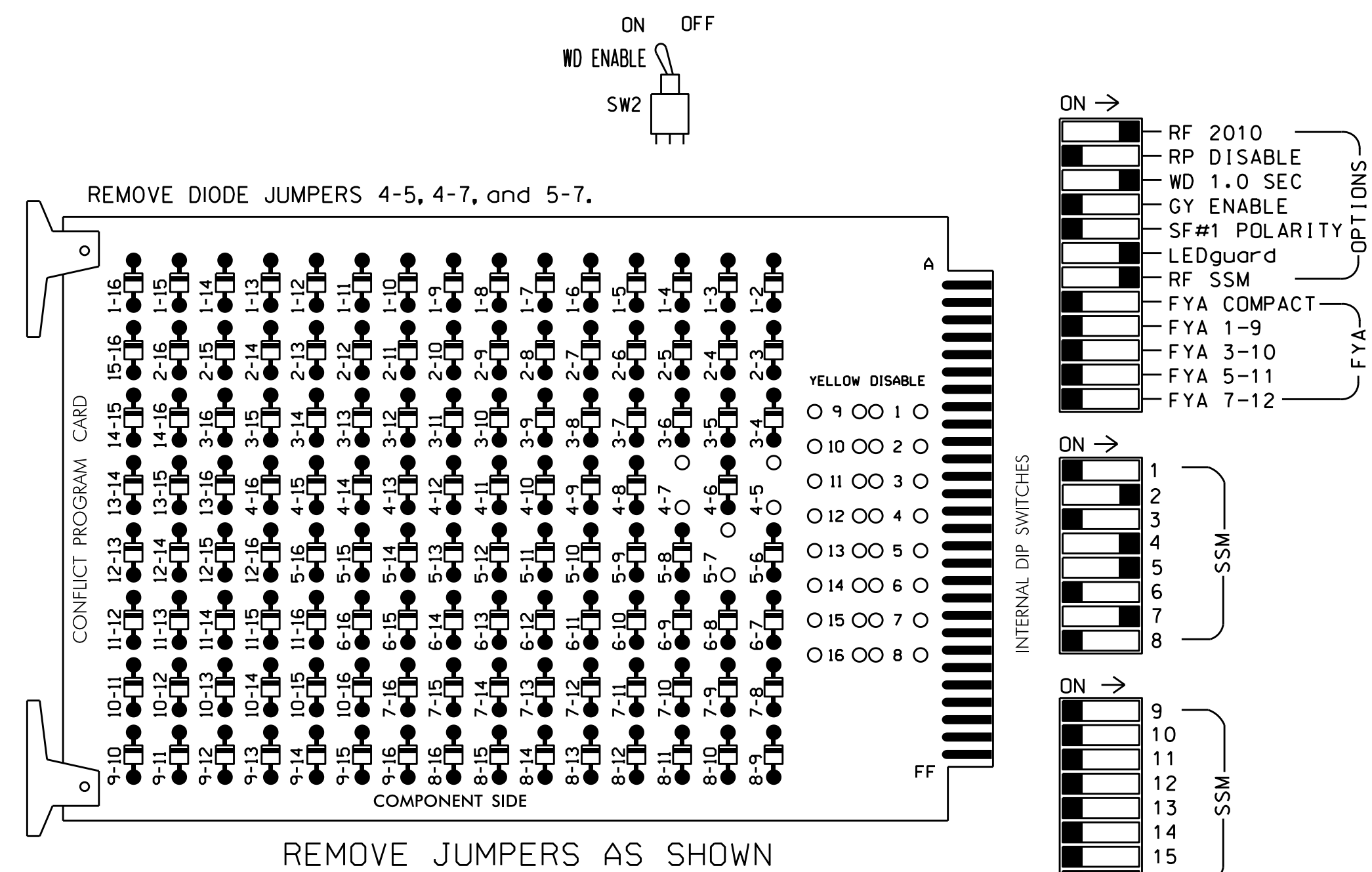






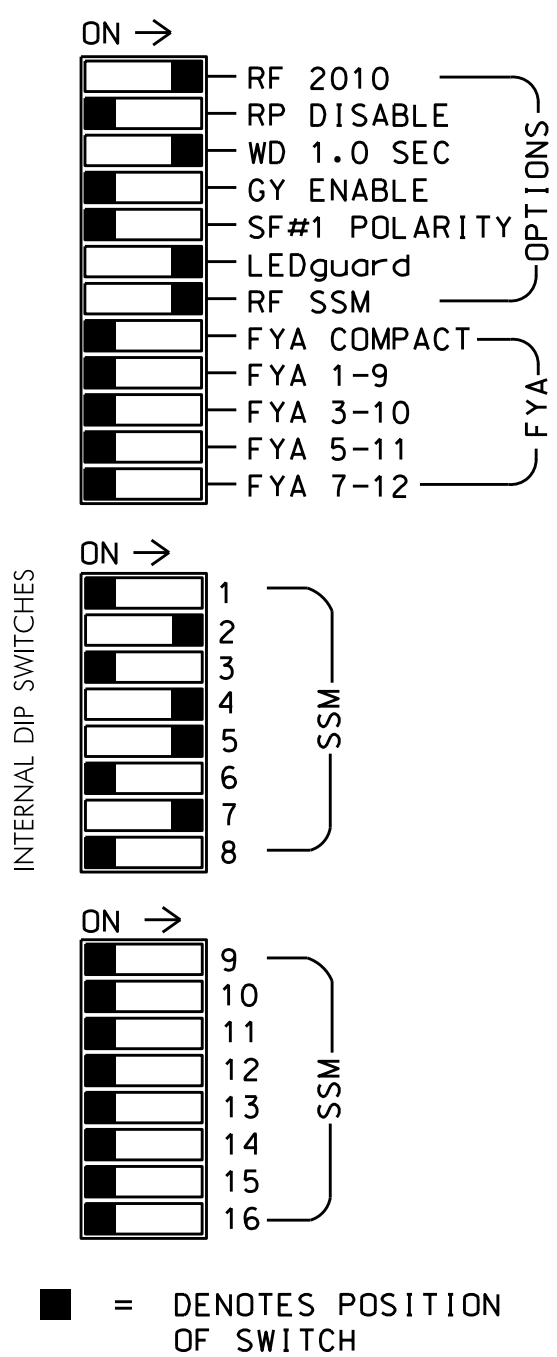
### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.



### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 6,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 4 and 7 for Dual Entry.
- Program phases 2 for Variable Initial and Gap Reduction.
- Program phase 2 Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 System.

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	71,72	NU	NU	73,74	NU	NU
RED		128			101		131					
YELLOW		129					132					
GREEN		130					133					
RED ARROW										122		
YELLOW ARROW					102					123		
GREEN ARROW					103					124		

NU = Not Used

NOTE: Outputs for load switch S5 have been reassigned. See sheet 2.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S5,S7  
 PHASES USED.....2,4,7  
 OVERLAP G.....7

### INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S	S	ø2/SYS	ø2/SYS	S	SYS. DET. S24	ø 4	S	SYS. DET. S26	S	S	S	S	FS
L	←	←	2A/S21	2C/S23	←	SYS. DET. S25	ø 4	←	SYS. DET. S27	←	←	←	←	DC ISOLATOR
U	S	S	ø2/SYS	NOT USED	S	SYS. DET. S25	ø 4	S	SYS. DET. S27	S	S	S	S	ST
L	←	←	2B/S22	←	←	SYS. DET. S25	ø 4	←	SYS. DET. S27	←	←	←	←	DC ISOLATOR

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

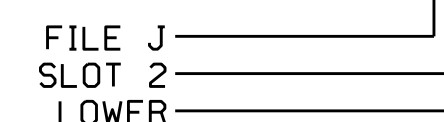
FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S21	TB2-9,10	13U	63	25	32	2/SYS	Y	Y			
2B/S22	TB2-11,12	13L	76	38	42	2/SYS	Y	Y			
2C/S23	TB4-1,2	14U	47	9	22	2/SYS	Y	Y			
4A	TB6-1,2	17U	65	27	34	4	Y	Y			15
4B	TB6-3,4	17L	78	40	44	4	Y	Y			15
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
*S24	TB4-9,10	16U	41	3	4	SYS					
*S25	TB4-11,12	16L	45	7	14	SYS					
*S26	TB6-9,10	19U	60	22	11	SYS					
*S27	TB6-11,12	19L	62	24	13	SYS					

\* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0979  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 17 (Ocean Highway) at Brunswick Forest Parkway</b>		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH
	Division 3 Brunswick County Leland PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: S. Armstrong REVIEWED BY:	REVISIONS INIT. DATE _____ _____ _____	
DocuSigned by: Ryan W. Hough 10/27/2021 DATE			SIG. INVENTORY NO. 03-0979

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 sarmstr.rdg

**OUTPUT REASSIGNMENT PROGRAMMING DETAIL**  
**FOR LOAD SWITCH S5 (OVERLAP G)**  
*(program controller as shown below)*

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN 'OUTPUT ASSIGNMENT#' POSITION, ENTER '30'

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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 31

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

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 32

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

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
 ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

OUTPUT PROGRAMMING FOR LOAD SWITCH S5 COMPLETE

**OVERLAP PROGRAMMING DETAIL**  
*(program controller as shown below)*

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

PRESS '+' TO ADVANCE TO OVERLAP 'G'


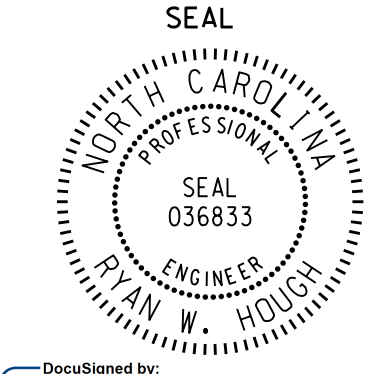
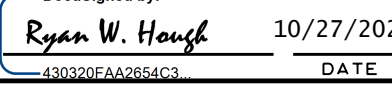
```

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)...0.0
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: 03-0979  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

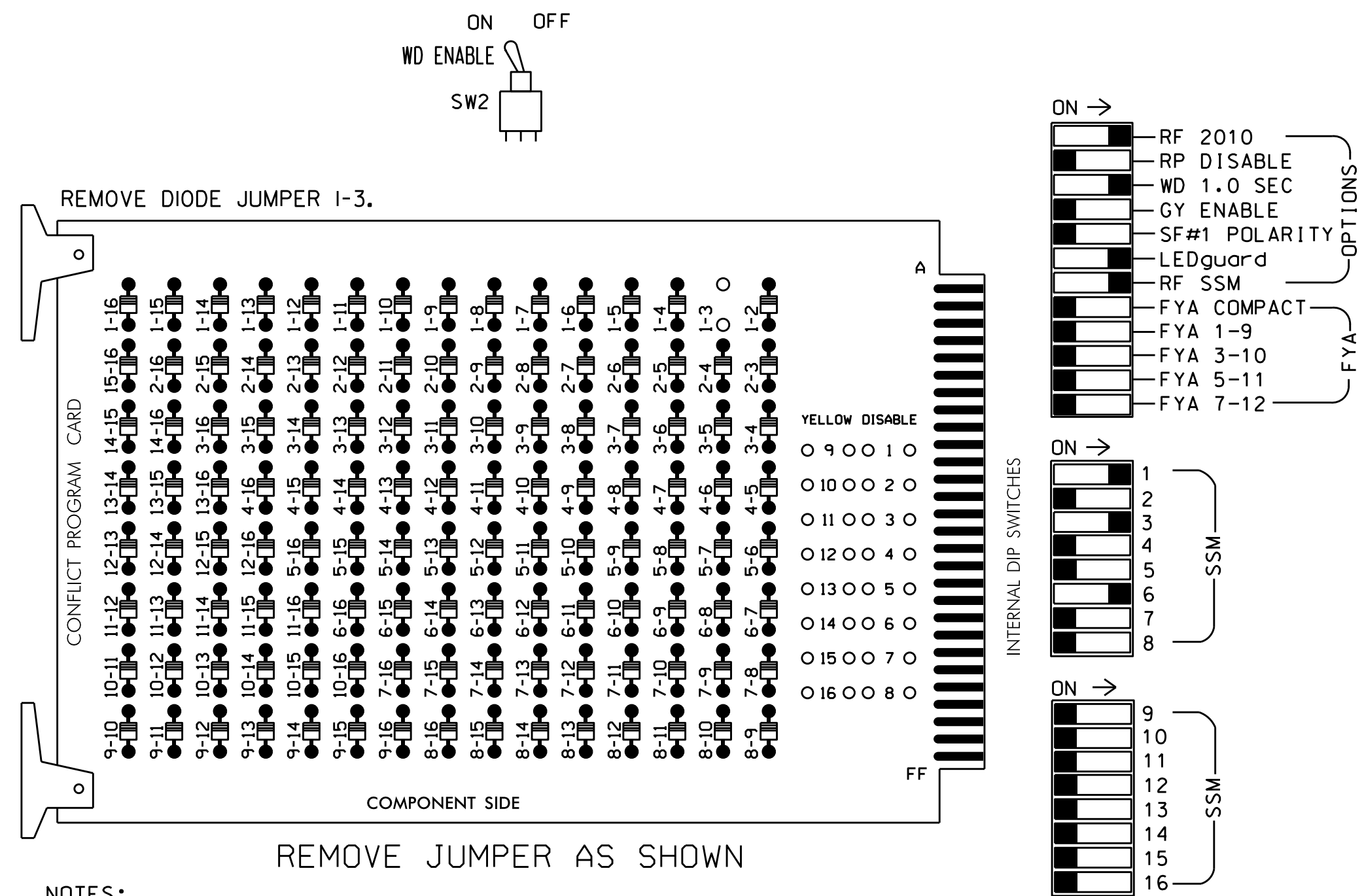
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Brunswick Forest Parkway		SEAL  SEAL 036833 ENGINEER RYAN W. HOUGH							
	Division 3 Brunswick County Leland PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: S. Armstrong REVIEWED BY:	REVISIONS <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DESCRIPTION	INIT.	DATE			
NO.	DESCRIPTION	INIT.	DATE							
DocuSigned by:  10/27/2021 DATE			SIG. INVENTORY NO. 03-0979							





**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



**NOTES:**

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

**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. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 2,4,5,7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phase 6 for Variable Initial and Gap Reduction.
5. Program phase 6 for Startup In Green.
6. Program phase 6 for Yellow Flash.
7. If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
8. The cabinet and controller are part of the US 17 (Ocean Hwy) - Leland Superstreet D03-12\_Leland.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S3,S6  
 PHASES USED.....3,6  
 OVERLAP'G'.....3

**SIGNAL HEAD HOOK-UP CHART**

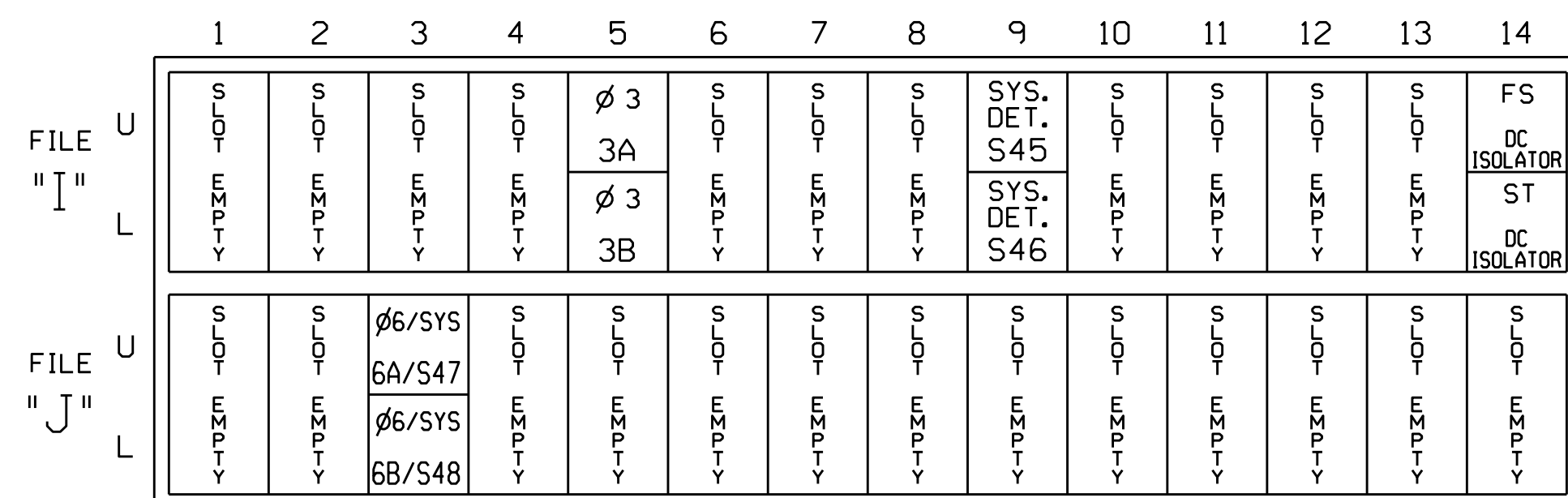
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	** OLG	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	31,32	NU	NU	33,34	NU	NU	NU	61,62	NU	NU	NU	NU
RED								134				
YELLOW								135				
GREEN								136				
RED ARROW	125			116								
YELLOW ARROW	126			117								
GREEN ARROW	127			118								

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

**INPUT FILE POSITION LAYOUT**

(front view)



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

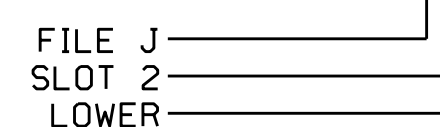
FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
3B	TB4-7,8	I5L	58	20	3	3	Y	Y			
6A/S47	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S48	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
* S45	TB6-9,10	I9U	60	22	11	SYS					
* S46	TB6-11,12	I9L	62	24	13	SYS					

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

**INPUT FILE POSITION LEGEND: J2L**



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1003  
 DESIGNED: October 2021  
 SEALED: 10/27/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Brunswick Forest Drive #2 North U-Turn		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  SEAL 031001 ENGINEER TODD JOYCE
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY:	
REVISIONS			INIT. DATE
DocuSigned by:  11/3/2021			DATE
SIG. INVENTORY NO. 03-1003			DATE

03-1003-2021\_08-29  
 S:\MITS\SSU\15\_Signal\work\hous\51g\_MarkZafar\plans\031003\_sme.e\_2021mddt.dgn  
 zzzz



**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
2. WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
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.....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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
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.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
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.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).  
PRESS '+' UNTIL OVERLAP 'G' APPEARS.

```

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)...0.0
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 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1003  
DESIGNED: October 2021  
SEALED: 10/27/2021  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

	US 17 (Ocean Highway) at Brunswick Forest Drive #2 North U-Turn		SEAL 
	Division 3 Brunswick County Leland	REVIEWED BY:	
PREPARED BY: Zarrar Zafar	PLAN DATE: October 2021	REVIEWED BY:	DATE: 11/3/2021
REVISIONS	INIT.	DATE	SIG. INVENTORY NO. 03-1003

03-1003-2021\_08.dwg  
W:\11003-Sig-03-1003-2021\mtd.dwg  
ZZZ







**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S1"**  
(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 14, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:16 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:16 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....14
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 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.....
    
```

PRESS "+" KEY FOR OUTPUT 15

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

STEP 2

```

PAGE:1 C1 PIN:17 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:17 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:17 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....15
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 16

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

STEP 3

```

PAGE:1 C1 PIN:18 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:18 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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:18 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....16
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

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

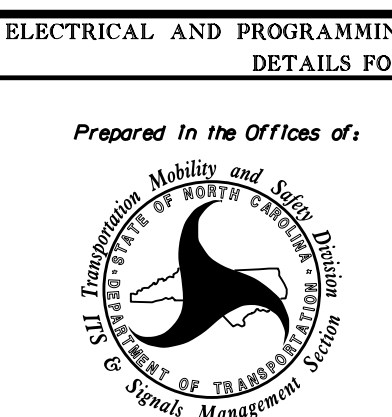
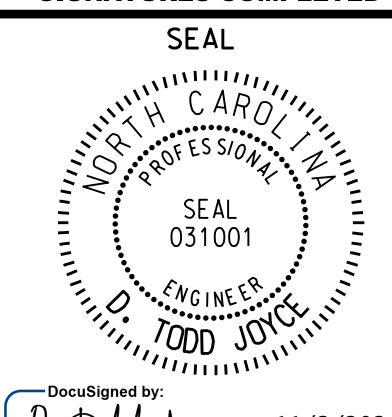
```

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)...0.0
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 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-1002  
DESIGNED: October 2021  
SEALED: 10/27/2021  
REVISED: N/A

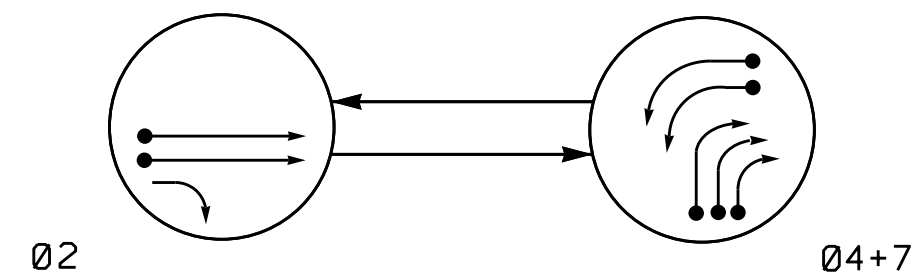
Electrical Detail - Sheet 2 of 2

 <p>Prepared In the Offices of: STATE OF NORTH CAROLINA Department of Transportation Signal Management Section</p>	DETAILS FOR: <b>US 17 (Ocean Highway) at SR 1438 (Lanvale Road)</b>		SEAL  SEAL 031001 ENGINEER TODD JOYCE
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: Zarrar Zafar REVIEWED BY:	
REVISIONS		INIT.	DATE
750 N. Greenfield Pkwy, Garner, NC 27529		Documented by: <i>Todd Joyce</i> 11/3/2021 DATE SIG. INVENTORY NO. 03-1002	

03-1002-2021\_06:51  
#031002-shs-ef-2021rmds.dgn  
ZZZ



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

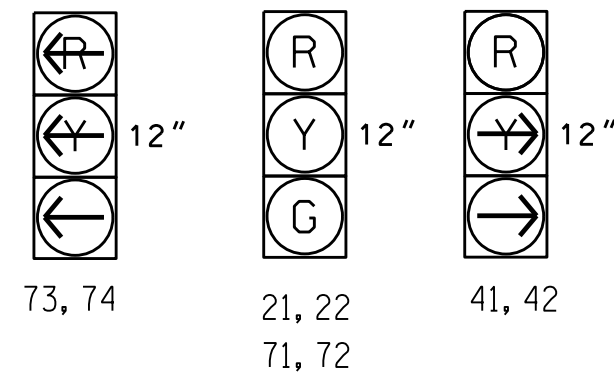
- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ←- - UNSIGNALIZED MOVEMENT
- ←- - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+7	FLASH
21, 22	G	R	Y
41, 42	R	—	R
71, 72	R	G	R
73, 74	—	—	—

SIGNAL FACE I.D.

All Heads L.E.D.



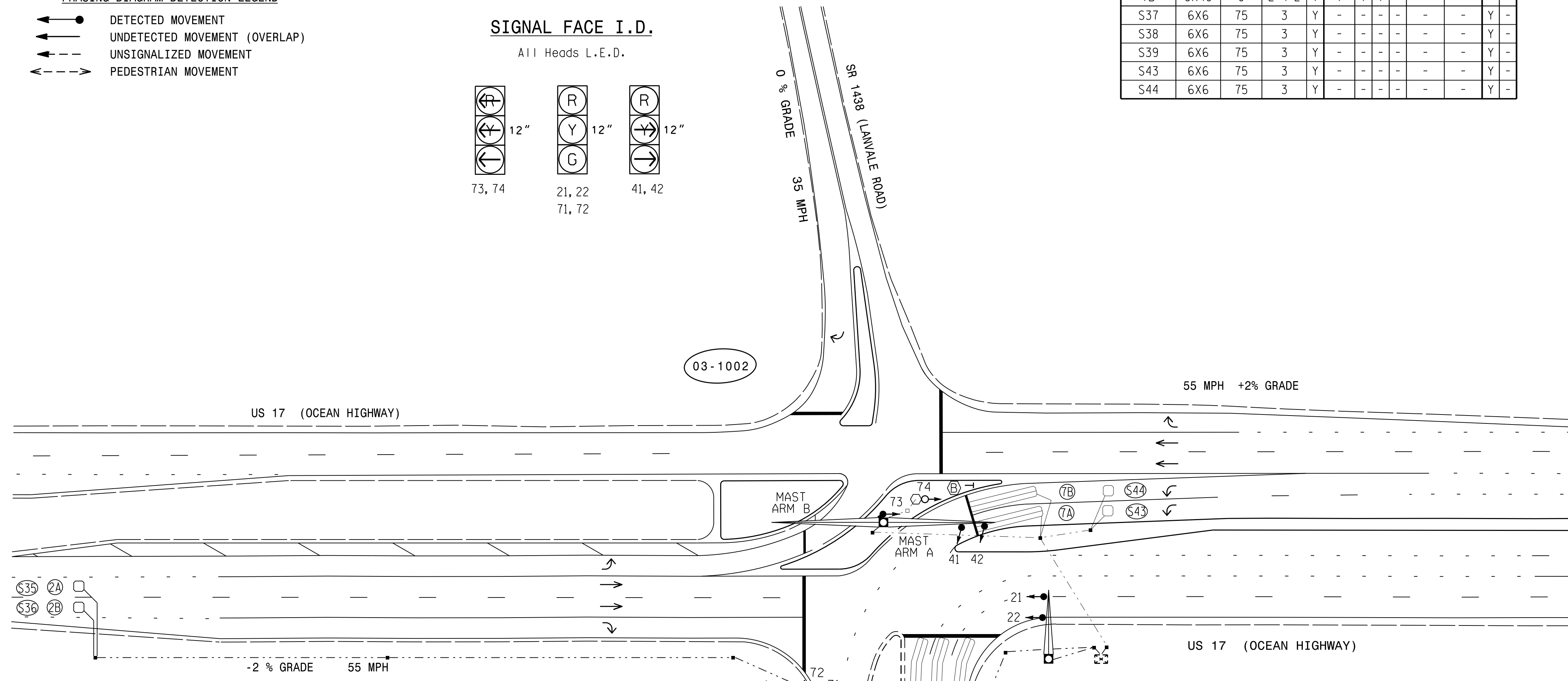
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S35	6X6	420	6	Y	2	Y	Y	-	-	-	Y	-
2B/S36	6X6	420	6	Y	2	Y	Y	-	-	-	Y	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4C	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
S37	6X6	75	3	Y	-	-	-	-	-	-	Y	-
S38	6X6	75	3	Y	-	-	-	-	-	-	Y	-
S39	6X6	75	3	Y	-	-	-	-	-	-	Y	-
S43	6X6	75	3	Y	-	-	-	-	-	-	Y	-
S44	6X6	75	3	Y	-	-	-	-	-	-	Y	-

2 Phase  
Fully Actuated  
D03-12 Leland  
US 17 (Ocean Hwy)-Leland Superstreet

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #1001.

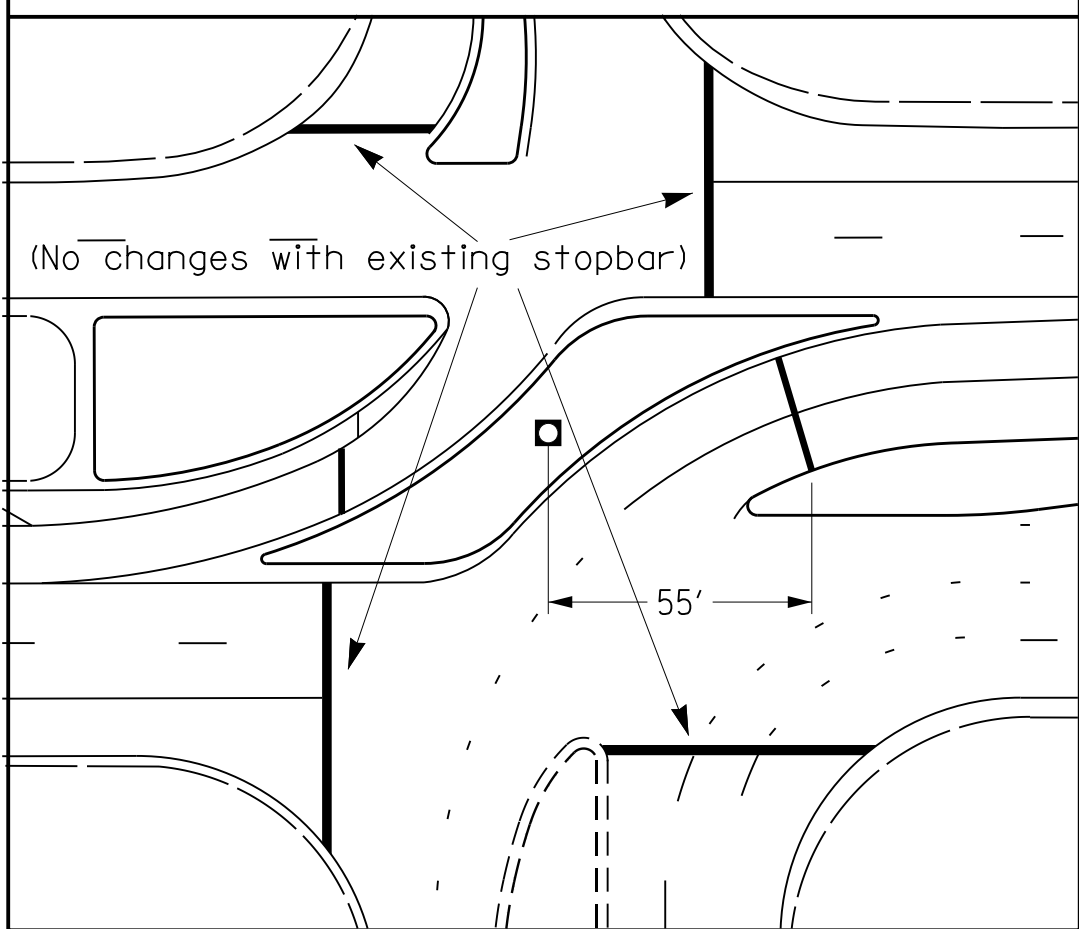


OASIS 2070 TIMING CHART

FEATURE	PHASE		
	2	4	7
Min Green 1*	14	7	7
Extension 1*	6.0	2.0	2.0
Max Green 1*	90	30	30
Yellow Clearance	5.4	3.0	3.0
Red Clearance	1.5	3.9	3.9
Walk 1*	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation*	1.5	-	-
Max Variable Initial*	46	-	-
Time Before Reduction*	15	-	-
Time To Reduce*	50	-	-
Minimum Gap	3.4	-	-
Recall Mode	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-
Dual Entry	-	ON	ON
Simultaneous Gap	ON	ON	ON

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

STOP BAR LOCATIONS



LEGEND

<b>PROPOSED</b>	<b>EXISTING</b>
○ Traffic Signal Head	● N/A
○ Modified Signal Head	○ N/A
○ Sign	○ N/A
○ Pedestrian Signal Head	○ N/A
○ With Push Button & Sign	○ N/A
○ Signal Pole with Guy	○ N/A
○ Signal Pole with Sidewalk Guy	○ N/A
□ Inductive Loop Detector	□ N/A
□ Controller & Cabinet	□ N/A
□ Junction Box	□ N/A
○ 2-in Underground Conduit	○ N/A
○ Right of Way	○ N/A
○ Directional Arrow	○ N/A
○ Metal Pole with Mastarm	○ N/A
○ Type II Signal Pedestal	○ N/A
○ Through Arrow "ONLY" Sign (R3-5A)	○ N/A
○ Stop Here on Red (R10-6)	○ N/A

Signal Upgrade

Prepared in the Offices of:  
  
 750 N. Greenfield Pkwy, Garner, NC 27529

**US 17 (OCEAN HIGHWAY)  
At Provision Parkway**

DIVISION 3 BRUNSWICK COUNTY LELAND  
 PLAN DATE: October 2021 REVIEWED BY: MEL  
 PREPARED BY: X. Han REVIEWED BY:

REVISIONS: \_\_\_\_\_ INIT. DATE \_\_\_\_\_

SCALE: 1" = 40'

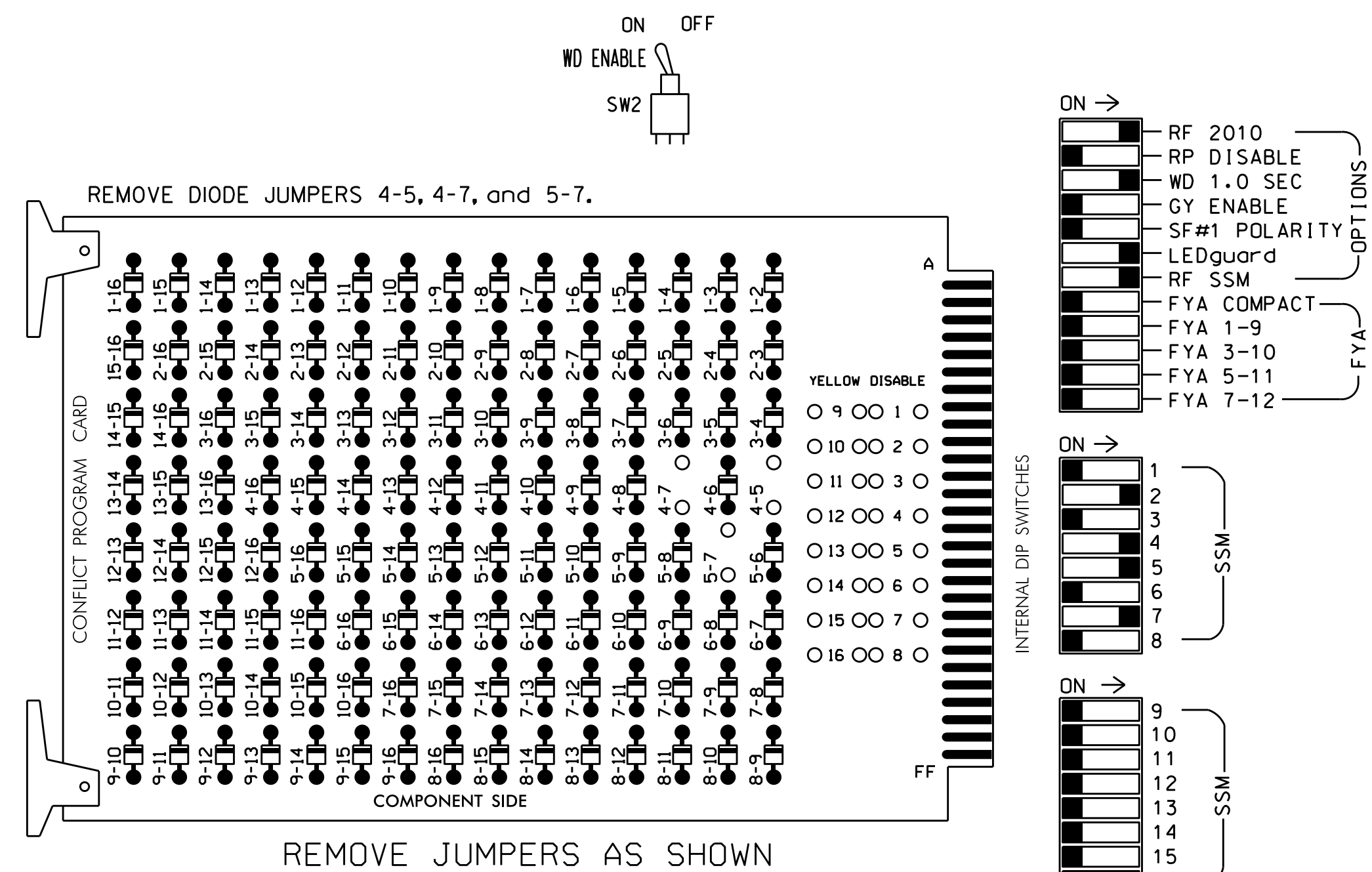
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 MICHAEL E. LEBLANC  
 PROFESSIONAL ENGINEER  
 042608  
 DATE: 10/26/2021  
 SIG. INVENTORY NO. 03-1001

27-OCT-2021 08:49  
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 2021 OCT 20 10:03 AM 17 Leland 2022 Resurf-fac-hg-03-1001-01.dgn  
 2021 OCT 20 10:03 AM 17 Leland 2022 Resurf-fac-hg-03-1001-01.dgn

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 6,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 4 and 7 for Dual Entry.
- Program phases 2 for Variable Initial and Gap Reduction.
- Program phase 2 Startup In Green.
- Program phase 2 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location
- The cabinet and controller are part of the US 17 (Ocean Highway) - Leland Superstreet D03-12 System.

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	71,72	NU	NU	73,74	NU	NU
RED		128			101		131					
YELLOW		129					132					
GREEN		130					133					
RED ARROW										122		
YELLOW ARROW					102					123		
GREEN ARROW					103					124		

NU = Not Used  
 NOTE: Outputs for load switch S5 have been reassigned. See sheet 2.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S5,S7  
 PHASES USED.....2,4,7  
 OVERLAP G.....7

### INPUT FILE POSITION LAYOUT

(front view)

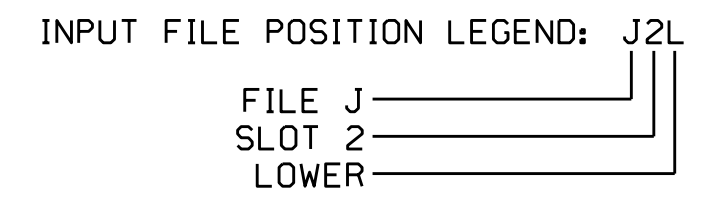
FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅2/SYS	∅2/SYS	∅2/SYS	∅2/SYS	∅4	∅4	SYS. DET. S37	SYS. DET. S38	S	S	S	S	S	FS
L	2A/S35	2A/S35	2B/S36	2B/S36	∅4	NOT USED	NOT USED	S39	S	S	S	S	S	DC ISOLATOR
U	S	S	S	S	∅7	S	S	SYS. DET. S43	S	S	S	S	S	S
L	S	S	S	S	7A	S	S	S44	S	S	S	S	S	EXT. PTY
					7B									

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

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S35	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S36	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	Y	Y				
4B	TB4-11,12	I6L	45	7	14	Y	Y				
4C	TB6-1,2	I7U	65	27	34	Y	Y				
7A	TB5-5,6	J5U	57	19	7	Y	Y				
7B	TB5-7,8	J5L	57	19	7	Y	Y				
*S37	TB6-5,6	I8U	49	11	24	SYS					
*S38	TB6-9,10	I9U	60	22	11	SYS					
*S39	TB6-11,12	I9L	62	24	13	SYS					
*S43	TB7-9,10	J9U	59	21	15	SYS					
*S44	TB7-11,12	J9L	61	23	17	SYS					

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1001  
 DESIGNED: October 2021  
 SEALED: 10/26/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 17 (Ocean Highway) at Provision Parkway</b>		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH
	Division 3 Brunswick County Leland PLAN DATE: October 2021 PREPARED BY: S. Armstrong	REVIEWED BY: REVIEWED BY:	
REVISIONS		INIT. DATE	SIG. INVENTORY NO. 03-1001

28-0076-2021 11:50  
 S:\IT\SSM\15\SIGNAL\work\housas\Sig\_Man\Projects From Signal\_Design\Active Projects\armstrong\11V Projects\03-0915\_0516\_0919\_0980\_1001 div project\03-1001\031001-sm\_ele\_20211027.dgn  
 armstrong



**OUTPUT REASSIGNMENT PROGRAMMING DETAIL  
FOR LOAD SWITCH S5 (OVERLAP G)**  
(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN 'OUTPUT ASSIGNMENT#' POSITION, ENTER '30'

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

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

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
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.....Y
PEDESTRIAN PHASE.....Y
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 31

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

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 32

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

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 ENTERING DATA, THEN 'ESC'.

OUTPUT PROGRAMMING FOR LOAD SWITCH S5 COMPLETE

**OVERLAP PROGRAMMING DETAIL**  
(program controller as shown below)

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

PRESS '+' TO ADVANCE TO OVERLAP 'G'

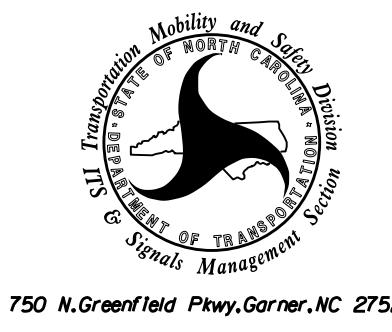
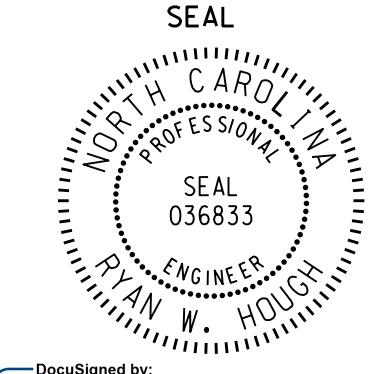
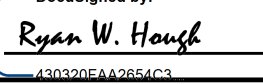
```

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)...0.0
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
    
```

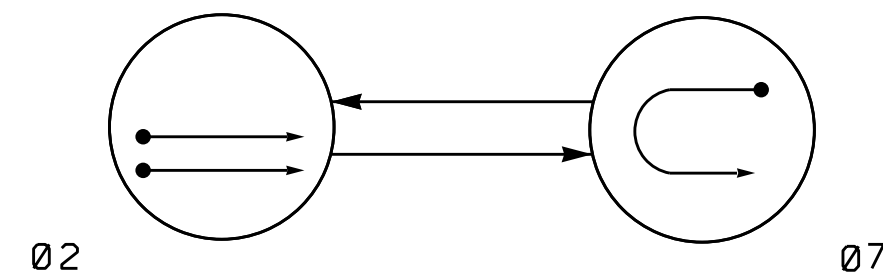
OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-1001  
DESIGNED: October 2021  
SEALED: 10/26/2021  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 17 (Ocean Highway) at Provision Parkway		SEAL  SEAL 036833 ENGINEER RYAN W. HOUGH
	Division 3 Brunswick County Leland	PLAN DATE: October 2021 REVIEWED BY:	
PREPARED BY: S. Armstrong	REVIEWED BY:	REVISIONS	INIT. DATE
DocuSigned by:  10/27/2021		SIG. INVENTORY NO. 03-1001	

PHASING DIAGRAM



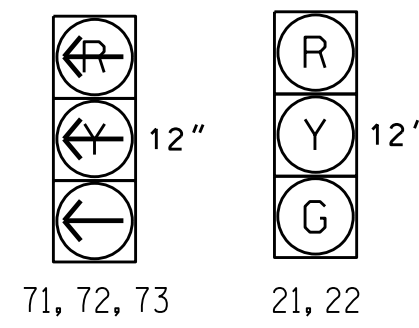
**PHASING DIAGRAM DETECTION LEGEND**  
 ● ← DETECTED MOVEMENT  
 ○ ← UNDETECTED MOVEMENT (OVERLAP)  
 - - ← UNSIGNALIZED MOVEMENT  
 - - - - → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	07	FLASH
21,22	G	R	Y
71,72,73	R	-	-

SIGNAL FACE I.D.

All Heads L.E.D.



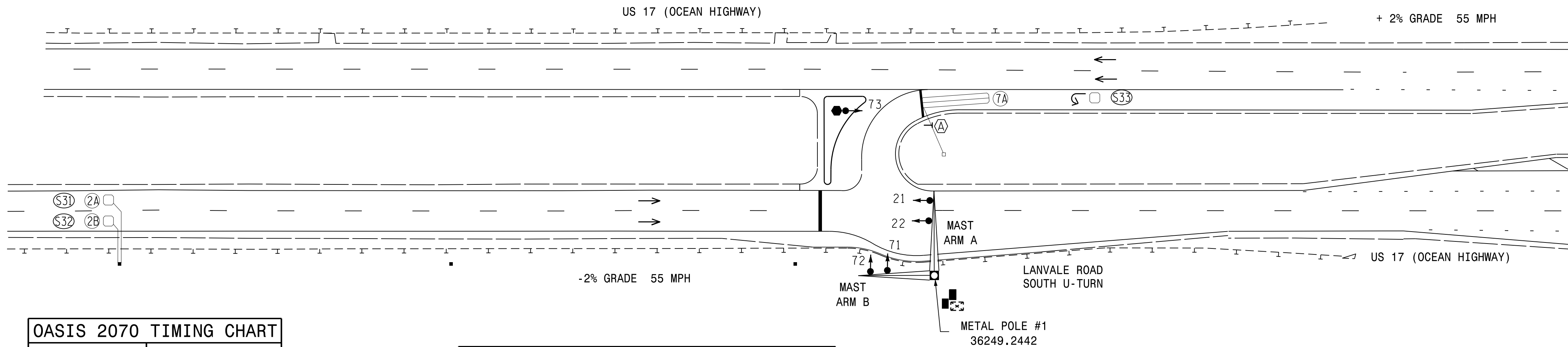
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S31	6X6	420	5	Y	2	Y	Y	-	-	-	Y	-
2B/S32	6X6	420	5	Y	2	Y	Y	-	-	-	Y	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
S33	6X6	100	3	Y	-	-	-	-	-	-	Y	-

2 Phase Fully Actuated US 17 (Ocean Hwy)-Leland Superstreet D03-12\_Leland

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. Set all detector units to presence mode.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. Closed loop system data: Controller Asset #1004.

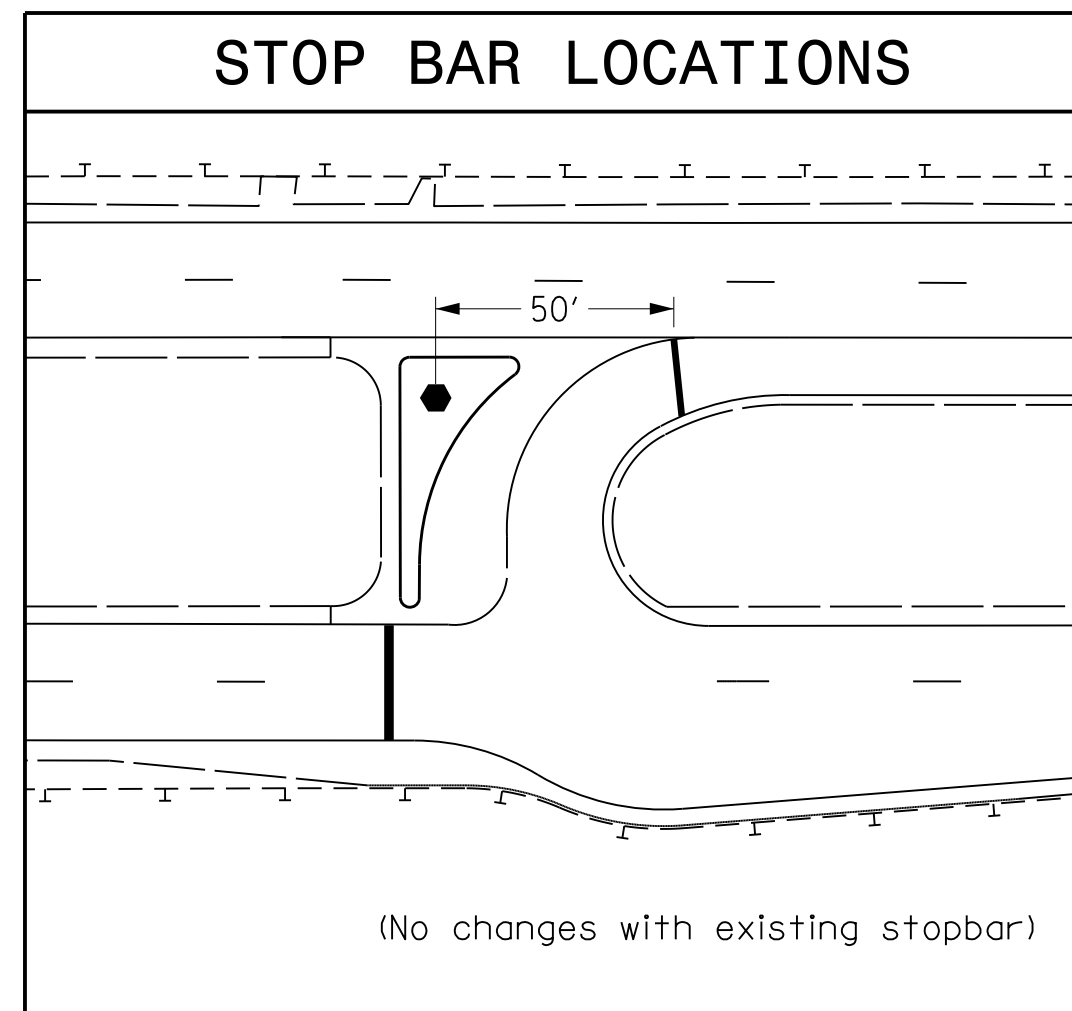


OASIS 2070 TIMING CHART

FEATURE	PHASE	
	2	7
Min Green 1 *	14	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	5.4	3.0
Red Clearance	1.0	3.9
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.5	-
Max Variable Initial *	46	-
Time Before Reduction *	15	-
Time To Reduce *	50	-
Minimum Gap	3.4	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

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

STOP BAR LOCATIONS



LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
○ → Modified Signal Head	○ → N/A
⊥ Sign	⊥ N/A
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ N/A
○ → Signal Pole with Guy	○ → N/A
○ → Signal Pole with Sidewalk Guy	○ → N/A
⊗ Inductive Loop Detector	⊗ N/A
□ Junction Box	□ N/A
- - - 2-in Underground Conduit	- - - N/A
- - - Right of Way	- - - N/A
→ Directional Arrow	→ N/A
○ → Metal Pole with Mastarm	○ → N/A
○ → Type II Signal Pedestal	○ → N/A
○ → Stop Here on Red (R10-6)	○ → N/A

Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 Signal Design Section

US 17 (Ocean Highway) at Lanvale Road South U-Turn

DIVISION 3 BRUNSWICK COUNTY LELAND

PLAN DATE: October 2021 REVIEWED BY: KGP, Jr.

PREPARED BY: X. Han REVIEWED BY: MEL

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 1" = 40'

REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

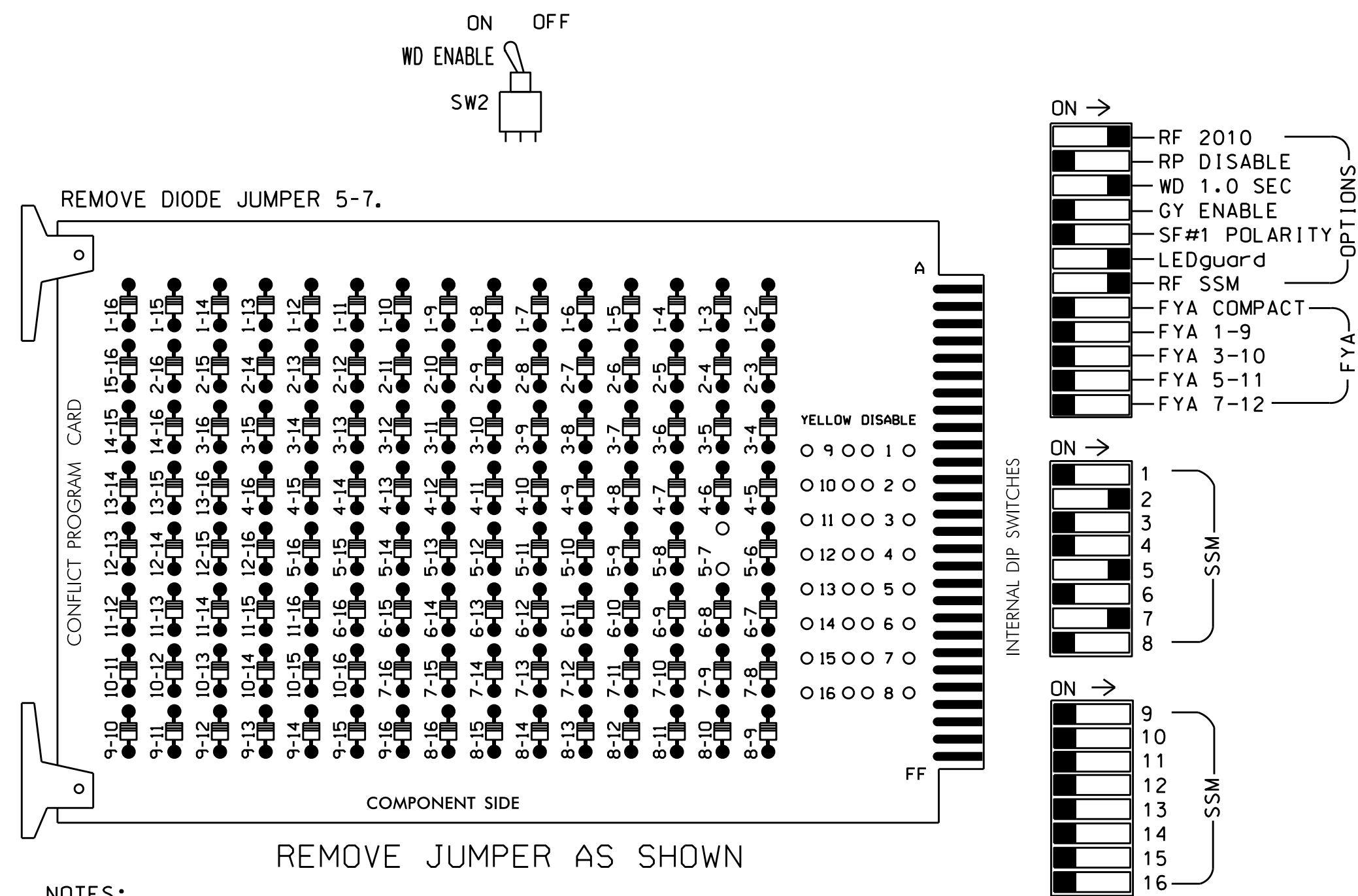
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, MICHAN E. LEBLANC, 042608, 10/27/2021

SIG. INVENTORY NO. 03-1004



**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



**NOTES:**

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

**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. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,4,6,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phase 2 for Variable Initial and Gap Reduction.
5. Program phase 2 for Startup In Green.
6. Program phase 2 for Yellow Flash.
7. If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
8. The cabinet and controller are part of the US 17 (Ocean Hwy)- Leland Superstreet D03-12\_Leland.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S5,S7  
 PHASES USED.....2,7  
 OVERLAP'G'.....7

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	** OLG	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	71,72	NU	NU	73	NU	NU
RED		128										
YELLOW		129										
GREEN		130										
RED ARROW							131			122		
YELLOW ARROW							132			123		
GREEN ARROW							133			124		

NU = Not Used

\*\* Requires special programming and output remapping. See sheet 2.

**INPUT FILE POSITION LAYOUT**

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	FS	FS	∅2/SYS	FS	FS	FS	FS	FS	SYS. DET. S33	FS	FS	FS	FS	FS
L	FS	FS	2A/S31	FS	FS	FS	FS	FS	NOT USED	FS	FS	FS	FS	FS
U	FS	FS	∅2/SYS	FS	FS	FS	FS	FS	NOT USED	FS	FS	FS	FS	FS
L	FS	FS	2B/S32	FS	FS	FS	FS	FS	NOT USED	FS	FS	FS	FS	FS
U	FS	FS	∅7	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
L	FS	FS	7A	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
U	FS	FS	NOT USED	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
L	FS	FS	NOT USED	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS

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

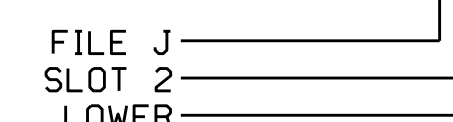
FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S31	TB2-9,10	13U	63	25	32	2/SYS	Y	Y			
2B/S32	TB2-11,12	13L	76	38	42	2/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
*S33	TB6-9,10	19U	60	22	11	SYS					

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1004  
 DESIGNED: October 2021  
 SEALED: 10/27/2021  
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 17 (Ocean Highway) at Lanvale Road South U-Turn</b>		SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 TODD JOYCE
	Division 3 Brunswick County Leland PLAN DATE: October 2021 REVIEWED BY: PREPARED BY: Zarrar Zafar REVIEWED BY:	REVISIONS: _____ INIT. DATE _____ _____ INIT. DATE _____ _____ INIT. DATE _____	
DocuSigned by:  11/3/2021			SIG. INVENTORY NO. 03-1004

03-1004-2021\_08-17  
 S:\IT\SIG\US17\Sig\03-1004\031004\_031004\_sme.e\_2021mdata.dgn  
 plone\031004\031004\_031004\_sme.e\_2021mdata.dgn

**OUTPUT ASSIGNMENT PROGRAMMING DETAIL:  
OVERLAP "G" TO LOADSWITCH "S5"**  
(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 30, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

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

STEP 1

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
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.....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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
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.....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.....
    
```

PRESS "+" KEY FOR OUTPUT 31

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

STEP 2

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:33 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....31
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.....Y
PEDESTRIAN PHASE.....Y
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 32

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

STEP 3

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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.....
    
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.  
ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...7
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 INPUTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:34 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....32
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.....Y
PEDESTRIAN PHASE.....Y
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 COMPLETE

**OVERLAP 'G' PROGRAMMING DETAIL**  
(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).  
PRESS '+' UNTIL OVERLAP 'G' APPEARS.

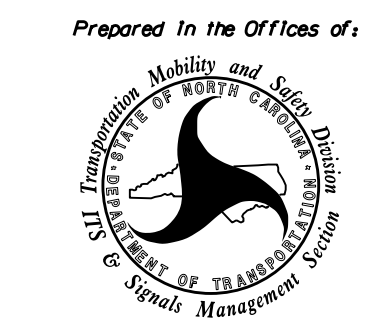
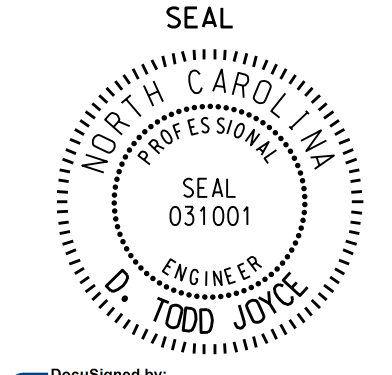
```

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)...0.0
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 'G' PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1004  
DESIGNED: October 2021  
SEALED: 10/27/2021  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

 <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	PREPARED BY: Zarrar Zafar REVIEWED BY:	US 17 (Ocean Highway) at Lanvale Road South U-Turn	SEAL  <p>SEAL 031001 ENGINEER TODD JOYCE</p>
	DIVISION 3 Brunswick County Leland PLAN DATE: October 2021 PREPARED BY: Zarrar Zafar	REVIEWED BY: REVISIONS INIT. DATE	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

03-1004-2021\_08.cdr  
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ZZZJG