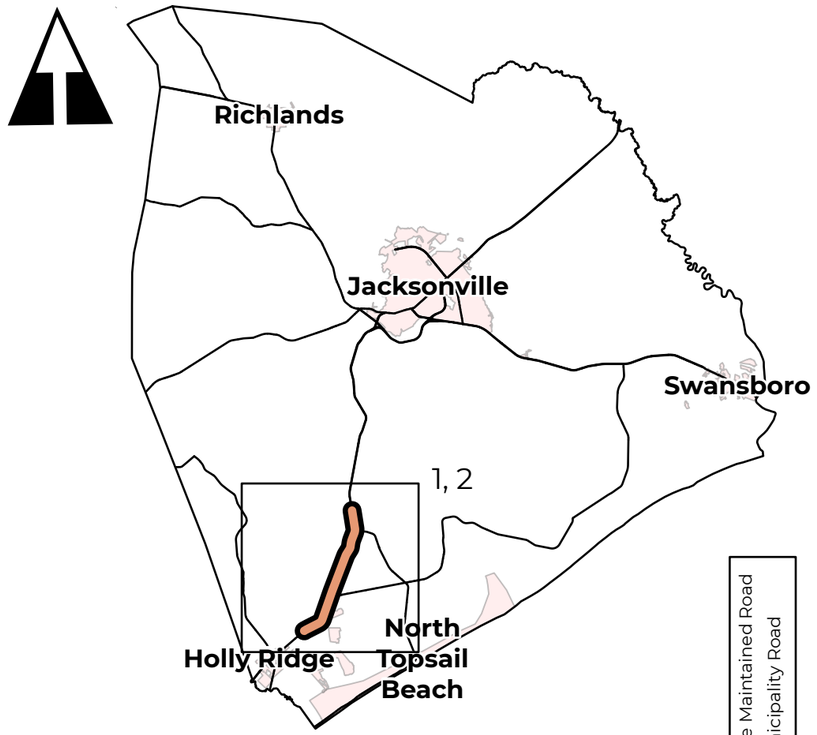
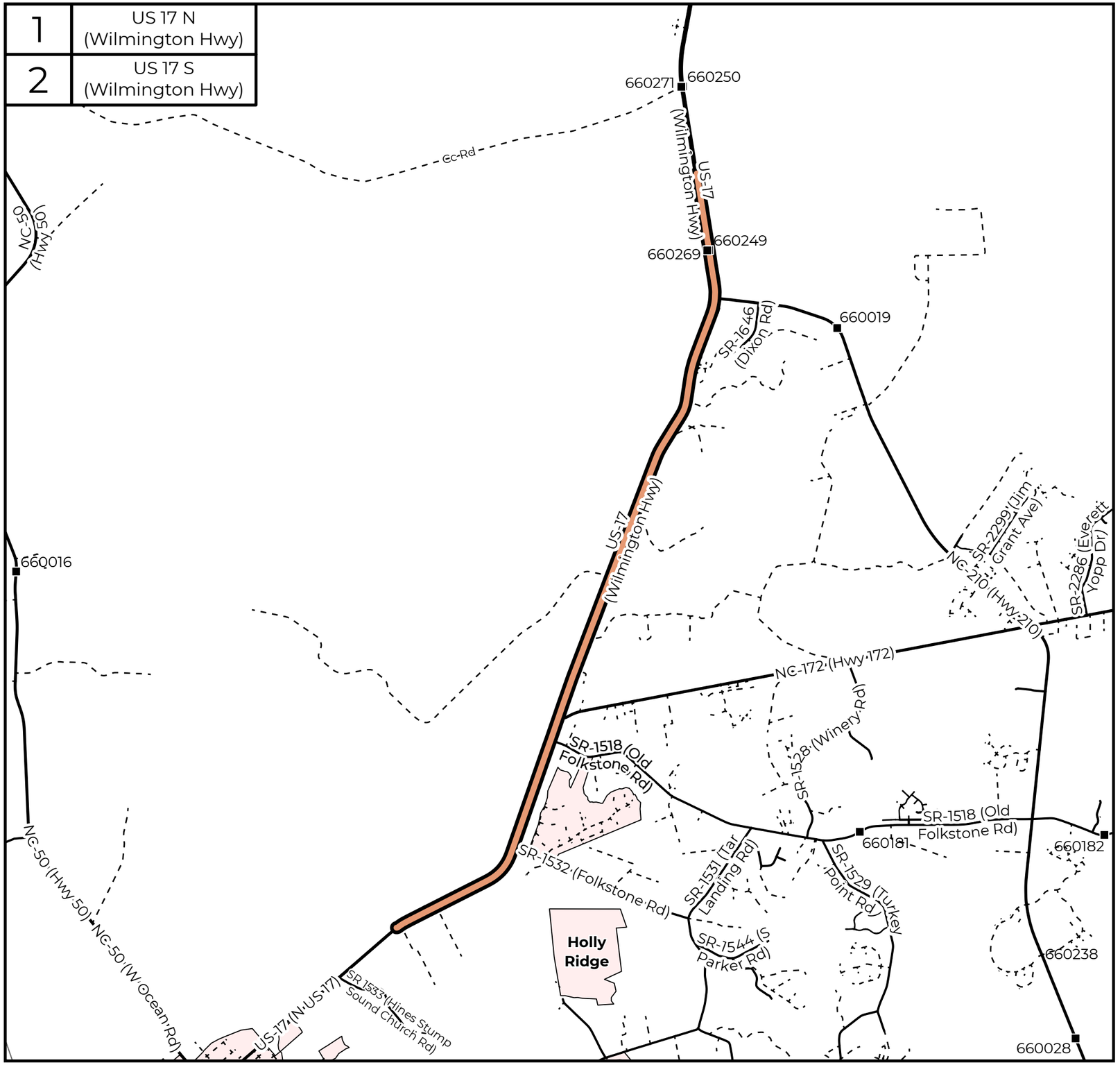
Onslow County

PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	1

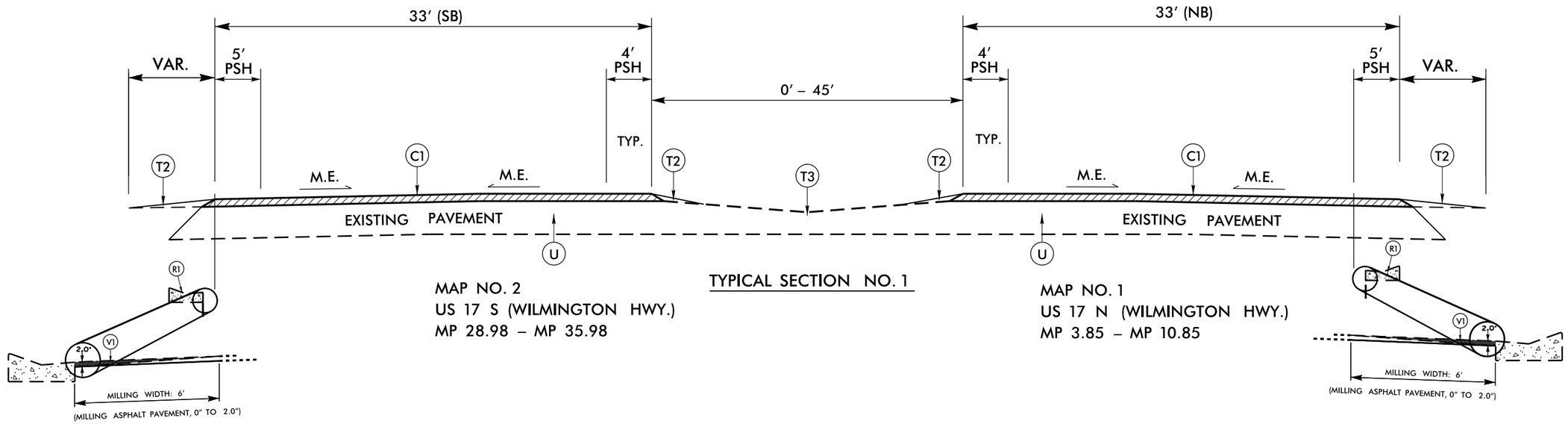
1	US 17 N (Wilmington Hwy)
2	US 17 S (Wilmington Hwy)



Legend
- Bridge
- Road Section
- State Maintained Road
- Municipality Road



PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	2

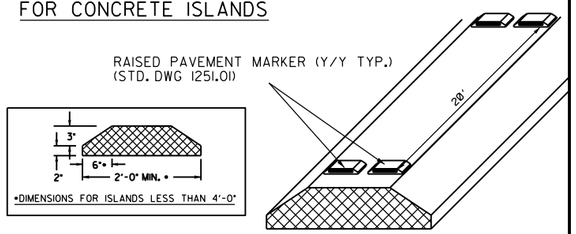


MAP NO. 2
US 17 S (WILMINGTON HWY.)
MP 28.98 – MP 35.98

TYPICAL SECTION NO. 1

MAP NO. 1
US 17 N (WILMINGTON HWY.)
MP 3.85 – MP 10.85

PAVEMENT MARKER DETAIL
FOR CONCRETE ISLANDS



MONOLITHIC CONCRETE ISLAND
(SEE STANDARD DRAWINGS 852.01, 852.02, & 852.06 FOR DETAILS.)

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2″ DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ.YD.
R1	EXISTING SHOULDER BERM GUTTER
T1	EARTH MATERIAL (SHOULDER RECONSTRUCTION)
T2	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION)
T3	EXISTING EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 0″ - 2.0″ DEPTH

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

NOTES:

BORROW EX. TO BE USED AT RADIUS OF CROSSOVERS.

EFF.01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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:

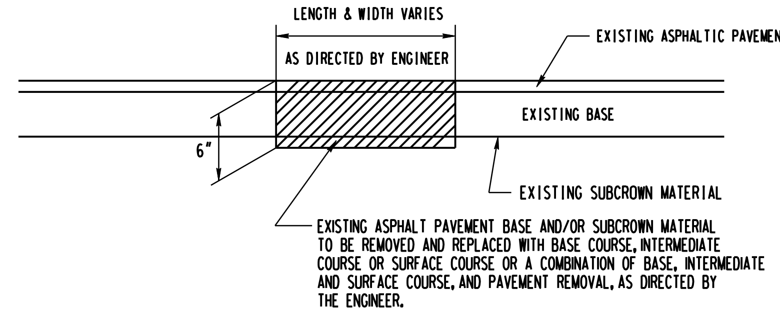
STD.NO.	TITLE
DIVISION 8 - INCIDENTALS	
862.01	*Guardrail Placement*
862.02	*Guardrail Installation*
DIVISION 12 - PVMT MARKING, MARKERS AND DELINEATION	
1205.08	*Pavement Markings - Symbols & Word Messages*

REVISIONS

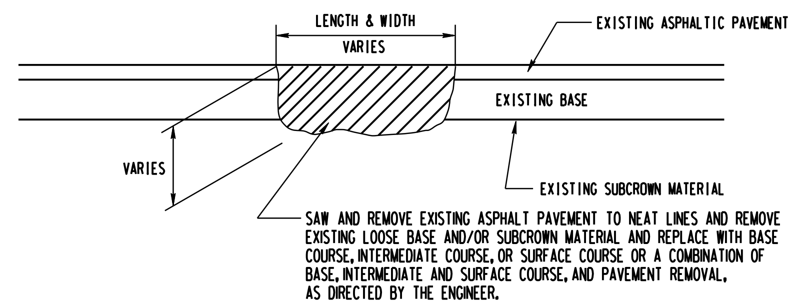
8/17/99

24-MAY-2021 10:08
C:\Users\$$$$\DOT\Resurfacing\Resurfacing Data\2021 Resurfacing\ONSLOW\2021 ONSLOW JUNE LET\2021CPT.03.23.10671 Rdy typ Spring Let.dgn
$$$$ INFORMIX $$$$

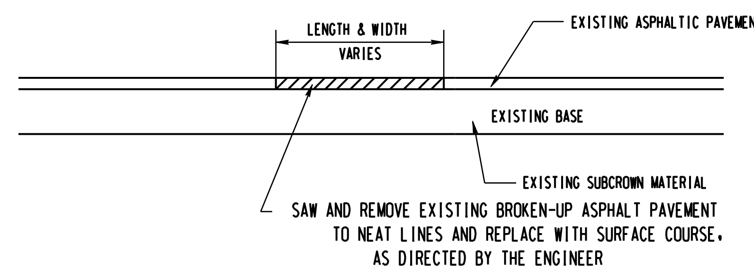
DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



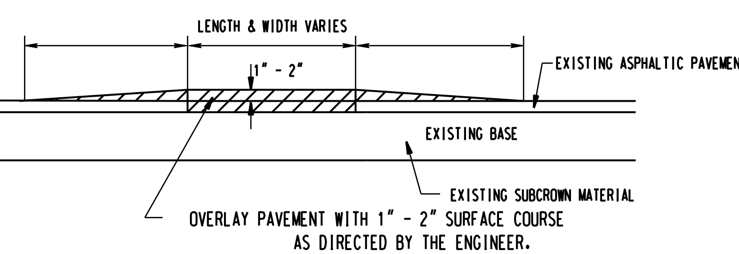
DETAIL NO. 1



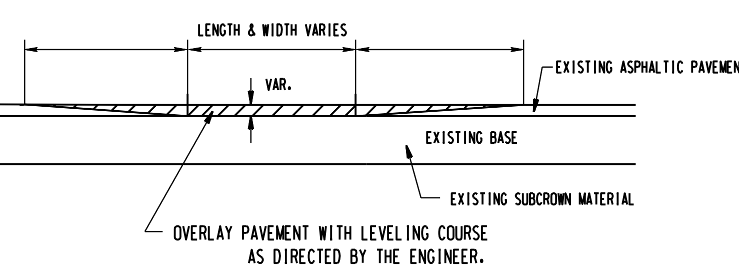
DETAIL NO. 2



DETAIL NO. 3



DETAIL NO. 4

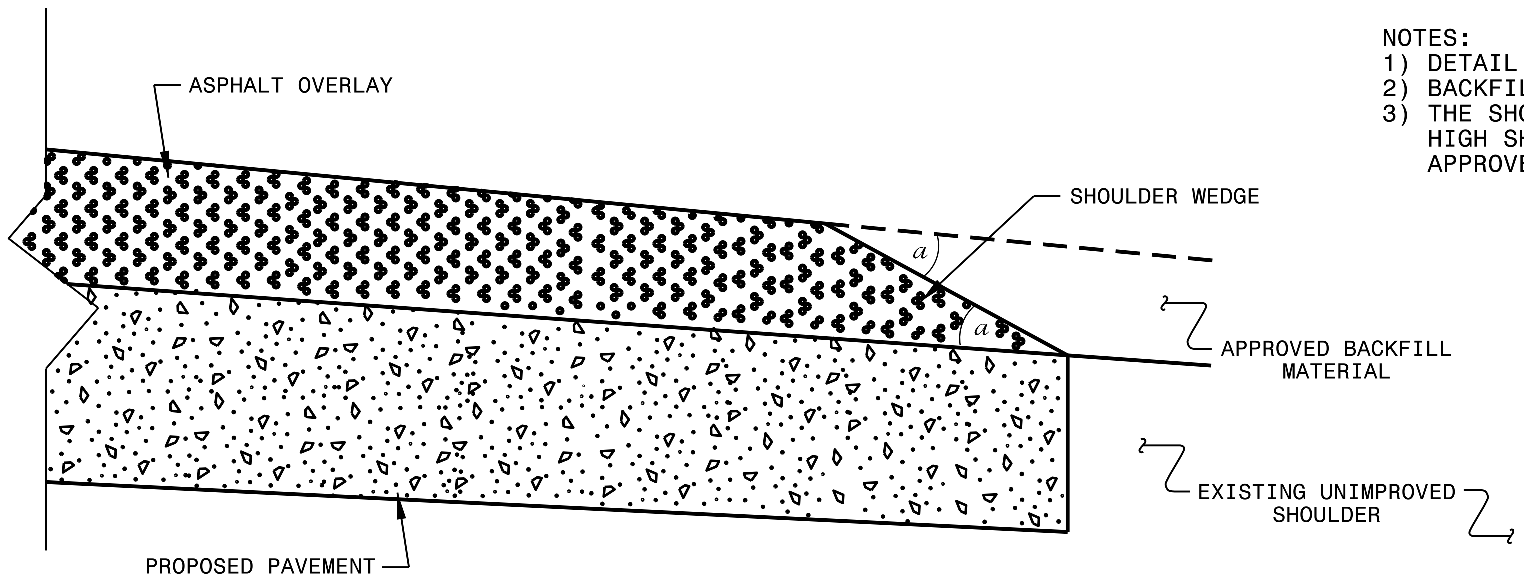


DETAIL NO. 5

REVISIONS

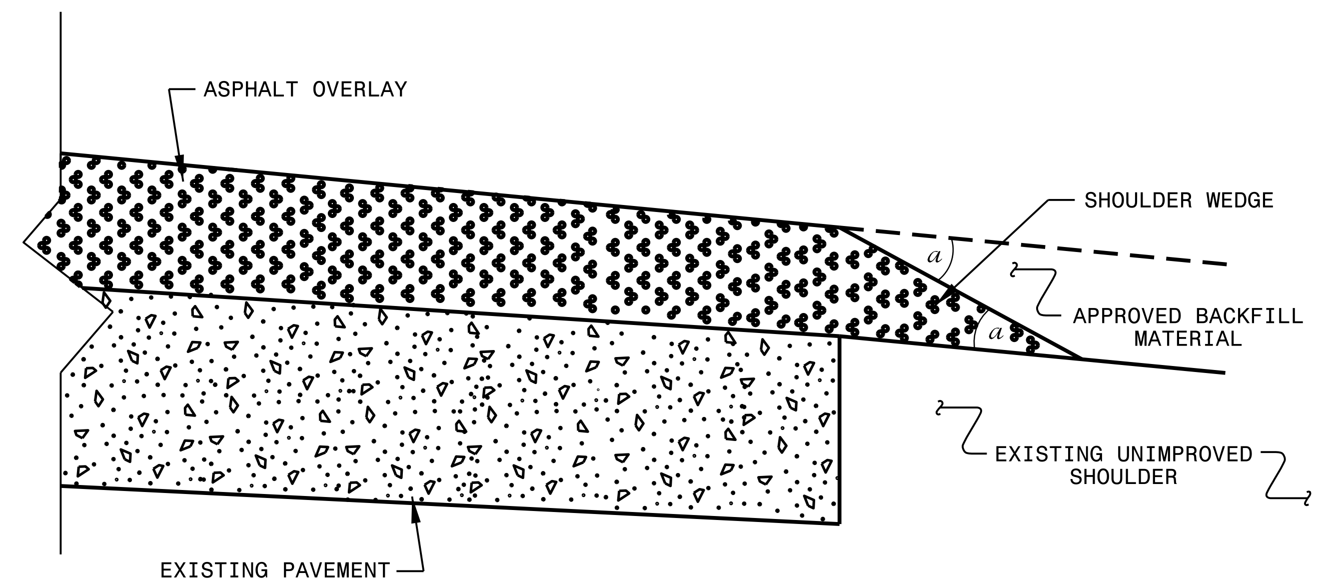
PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	4

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.



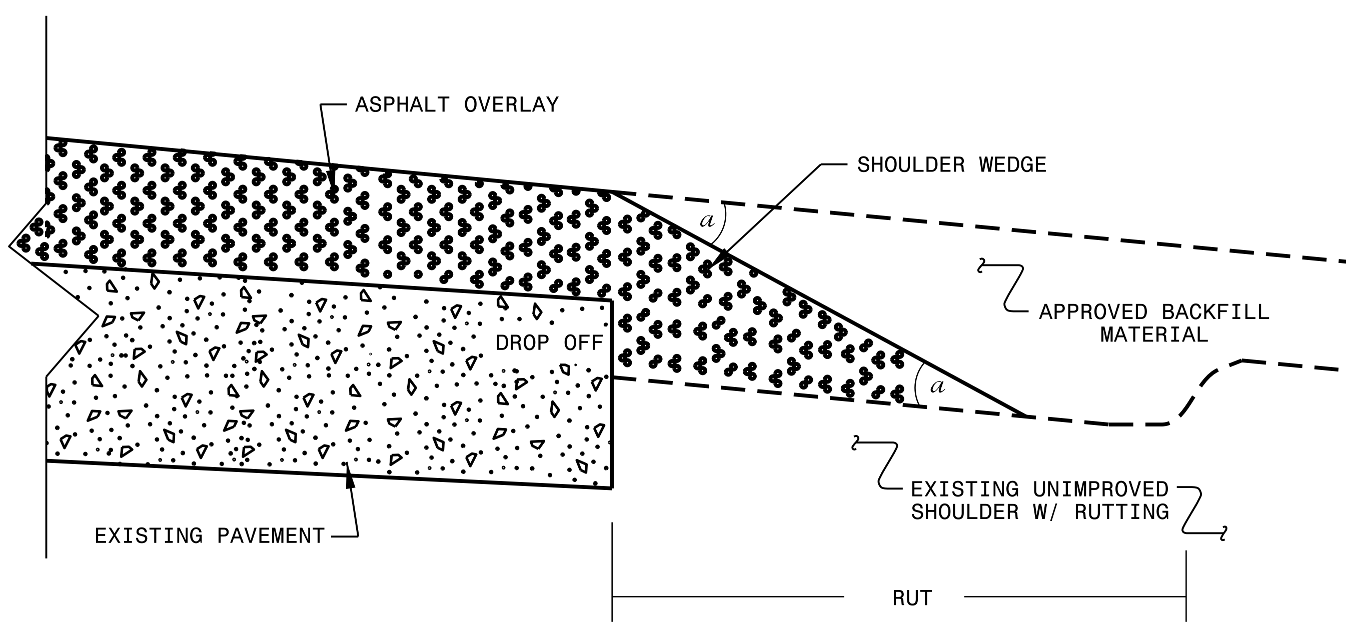
SHOULDER WEDGE DETAIL

(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°

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAILS

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

PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	EC-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
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.

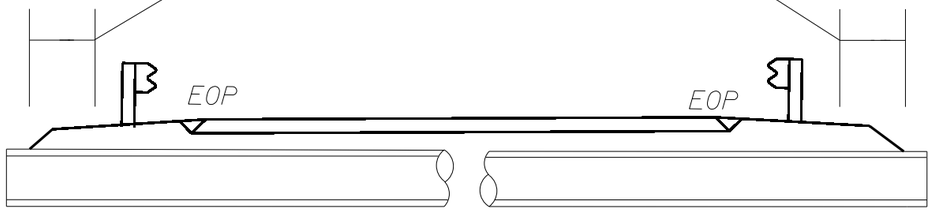
PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	EC-2

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

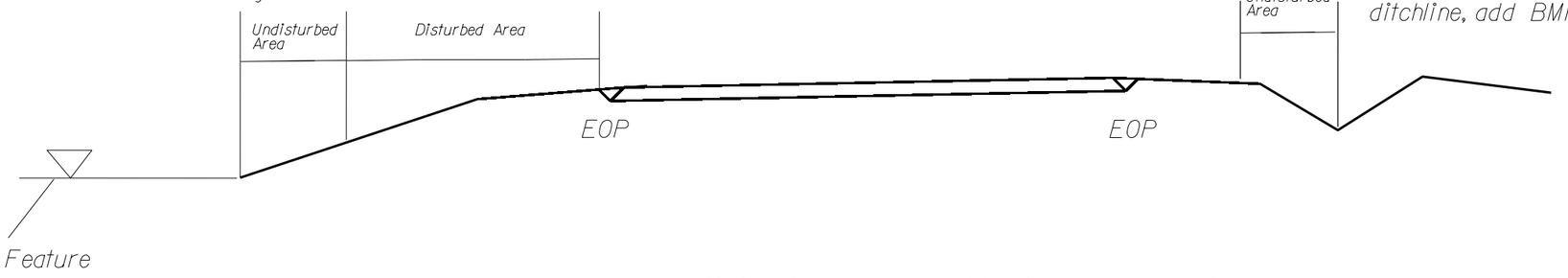
< 5' - 10' Undisturbed buffer add BMP



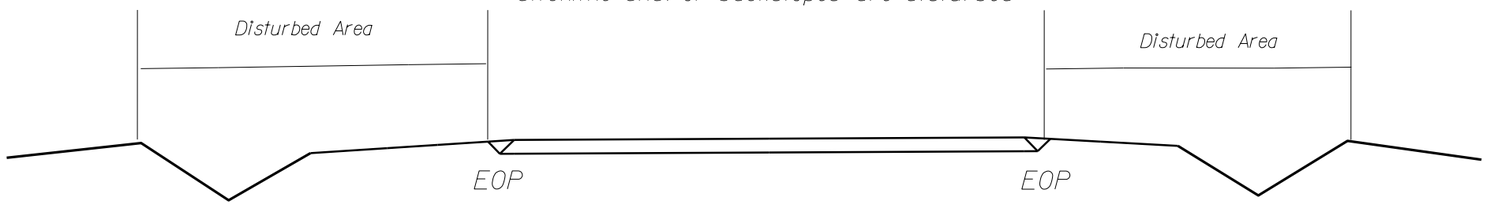
Pipe/Culvert

< 5' - 10' Undisturbed buffer from jurisdictional feature add BMP

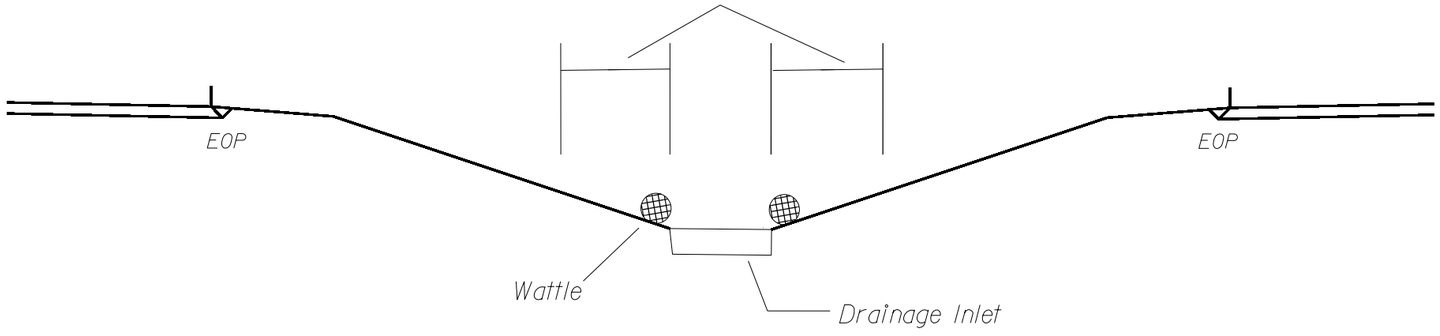
< 5' - 10' Undisturbed buffer from ditchline, add BMP



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

PROJECT REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	EC-3

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.

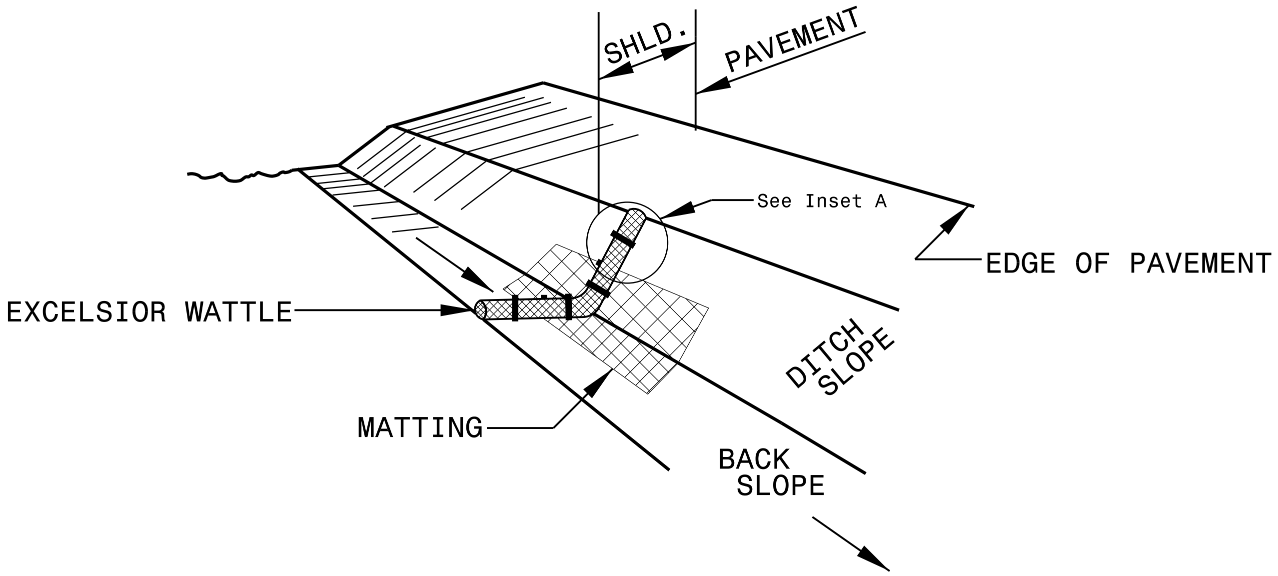
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

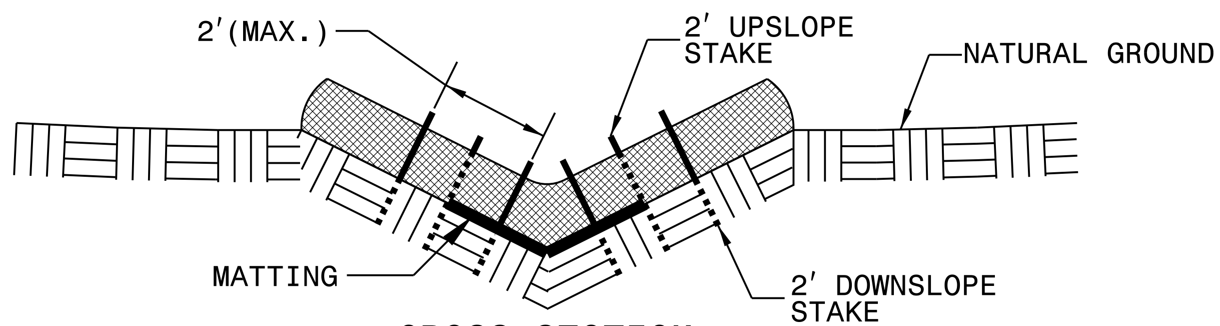
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

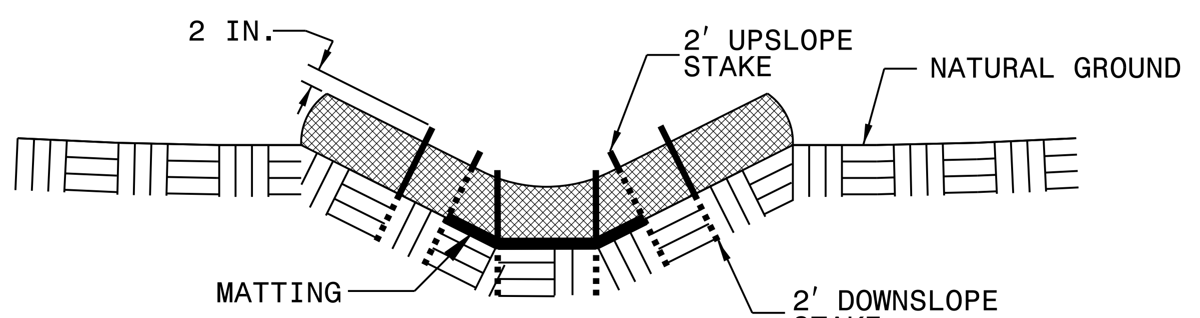
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



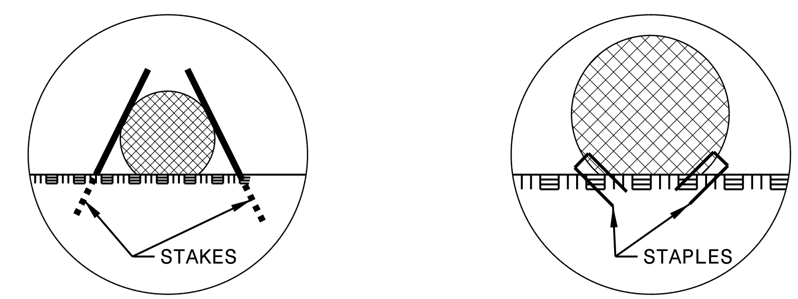
ISOMETRIC VIEW



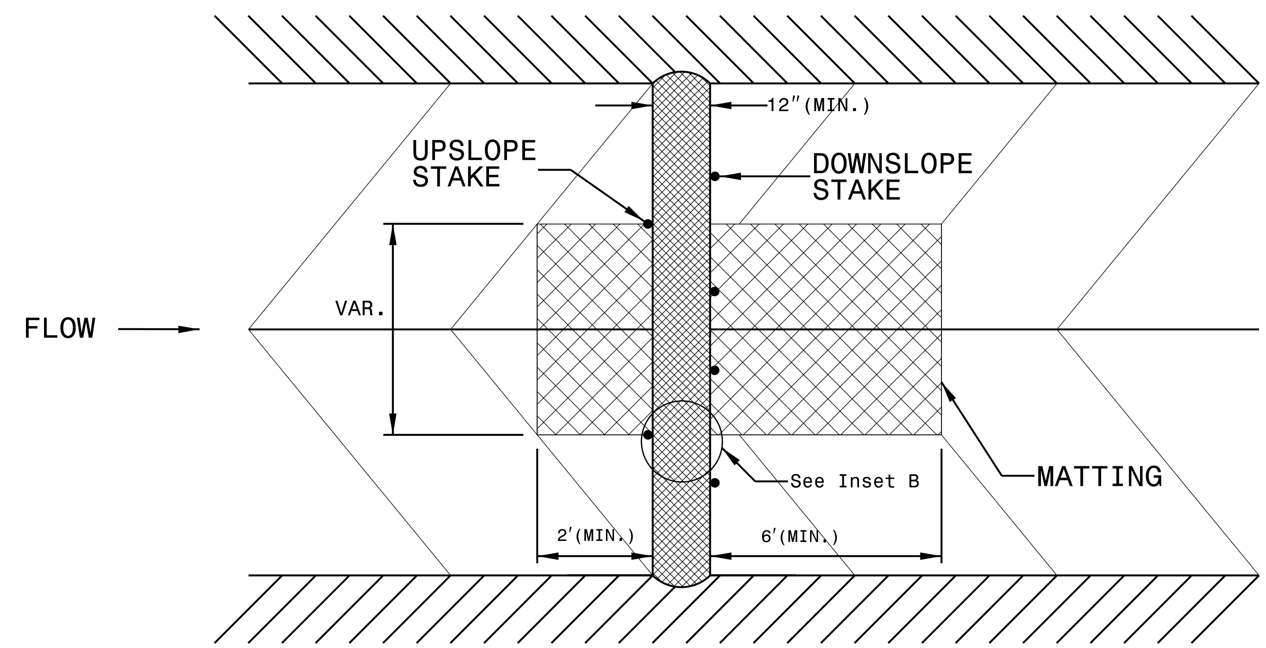
CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH



INSET A INSET B



TOP VIEW

PROJECT NO.	SHEET NO.
2021CPT.03.23.10671	5

SUMMARY OF QUANTITIES

												0106000000-E	0255000000-E	1220000000-E	1245000000-E	1308000000-E	1330000000-E	1520000000-E	1523000000-E	1575000000-E	1880000000-E
PROJECT NO	**COUNTY**	**MAP NO**	**ROUTE**	**DESCRIPTION**	**TYP NO**	**LANES**	**LANE TYPE**	**FINAL SURFACE TESTING REQUIRED**	**WARM MIX ASPHALT REQUIRED**	**LENGTH**	**WIDTH**	**BORROW EXCAVATION**	**AGGREGATE SHOULDER BORROW**	**INCIDENTAL STONE BASE**	**SHOULDER RECONSTRUCTION**	**MILLING ASPHALT PAVEMENT, 0" TO 2"**	**INCIDENTAL MILLING**	**LEVELING COURSE, S9.5B**	**SURFACE COURSE, S9.5C**	**ASPHALT BINDER FOR PLANT MIX**	**PATCHING EXISTING PAVEMENT [2.0"] (GENERIC)**
										MI	**FT**	**CY**	**TON**	**TON**	**SMI**	**SY**	**SY**	**TON**	**TON**	**TON**	**TONS**
2021CPT.03.23.10671	Onslow	1	US 17 NORTH (WILMINGTON HIGHWAY)	FROM 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) TO 0.98 MILES N. OF HWY. 210 [MP 3.85 TO MP 10.85]	1	2	MD	NO	NO	7	33	285	2,520	68	14.00	1,390	7,800	1,054	19,009	1,211	500
TOTAL FOR MAP NO. 1										**7**		**285**	**2,520**	**68**	**14.00**	**1,390**	**7,800**	**1,054**	**19,009**	**1,211**	**500**
2021CPT.03.23.10671	Onslow	2	US 17 SOUTH (WILMINGTON HIGHWAY)	FROM 0.98 MILES N. OF HWY. 210 TO 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) [MP 28.98 - MP 35.98]	1	2	MD	NO	NO	7	33	285	2,520	8	14.00	1,560	2,244	1,700	18,717	1,237	920
TOTAL FOR MAP NO. 2										**7**		**285**	**2,520**	**8**	**14.00**	**1,560**	**2,244**	**1,700**	**18,717**	**1,237**	**920**
TOTAL FOR PROJ NO. 2021CPT.03.23.10671										**14**		**570**	**5,040**	**76**	**28.00**	**2,950**	**10,044**	**2,754**	**37,726**	**2,448**	**1,420**
GRAND TOTAL										**14**		**570**	**5,040**	**76**	**28.00**	**2,950**	**10,044**	**2,754**	**37,726**	**2,448**	**1,420**

PROJECT NO.	SHEET NO.
2021CPT.03.23.10671	6

SUMMARY OF QUANTITIES

													3210000000-N	3287000000-N	3420000000-E	5255000000-N	6000000000-E	6036000000-E	6071010000-E	6084000000-E	6117000000-N	7324000000-N	7444000000-E
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	GUARDRAIL END UNITS, TYPE CAT-1	GUARDRAIL END UNITS, TYPE TL-3	REMOVE & REPLACE EXISTING GUARDRAIL (GENERIC)	PORTABLE LIGHTING	TEMPORARY SILT FENCE	MATTING FOR EROSION CONTROL	WATTLE	SEED & MULCHING	RESPONSE FOR EROSION CONTROL	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT
										MI	FT	EA	EA	LF	LS	LF	SY	LF	AC	EA	EA	LF
2021CPT.03.23.10671	Onslow	1	US 17 NORTH (WILMINGTON HIGHWAY)	FROM 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) TO 0.98 MILES N. OF HWY. 210 [MP 3.85 TO MP 10.85]	1	2	MD	NO	NO	7	33	1.00	1.00	375.00	0.50	700	425	120	0.25	4	3	2,090.00
TOTAL FOR MAP NO. 1										**7**		**1.00**	**1.00**	**375.00**	**0.50**	**700**	**425**	**120**	**0.25**	**4**	**3**	**2,090.00**
2021CPT.03.23.10671	Onslow	2	US 17 SOUTH (WILMINGTON HIGHWAY)	FROM 0.98 MILES N. OF HWY. 210 TO 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) [MP 28.98 - MP 35.98]	1	2	MD	NO	NO	7	33	1.00	1.00	425.00	0.50	700	475	120	0.25	4		
TOTAL FOR MAP NO. 2										**7**		**1.00**	**1.00**	**425.00**	**0.50**	**700**	**475**	**120**	**0.25**	**4**		
TOTAL FOR PROJ NO. 2021CPT.03.23.10671										**14**		**2.00**	**2.00**	**800.00**	**1.00**	**1,400**	**900**	**240**	**0.50**	**8**	**3**	**2,090.00**
GRAND TOTAL										**14**		**2.00**	**2.00**	**800.00**	**1.00**	**1,400**	**900**	**240**	**0.50**	**8**	**3**	**2,090.00**

PROJECT NO.	SHEET NO.
2021CPT.03.23.10671	7

THERMOPLASTIC AND PAINT QUANTITIES

											4413000000-E	4420000000-N	4434000000-N	4457000000-N	4480000000-N	4510000000-N	4685000000-E		4695000000-E	4720000000-E	
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	WORK ZONE ADVANCE/GENERAL WARNING SIGNING	PORT CHANG MSG SIGN	SEQUENTIAL FLASHING WARNING LIGHTS	TEMPORARY TRAFFIC CONTROL	TMA	LAW ENFORCEMENT	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	8" X 90 M WHITE THERMO	THERMO MSG ONLY (90 MIL)	THERMO MSG SCHOOL 90 M
								MI	FT	SF	EA	EA	LS	EA	HR	LF	LF	LF	EA	EA
2021CPT.03.23.10671	Onslow	1	US 17 NORTH (WILMINGTON HIGHWAY)	FROM 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) TO 0.98 MILES N. OF HWY. 210 [MP 3.85 TO MP 10.85]	1	2	MD	7	33	336	1	17	0.50	1	200	51,145	37,800	420	4	6
TOTAL FOR MAP NO. 1								**7**		**336**	**1**	**17**	**0.50**	**1**	**200**	**51,145**	**37,800**	**420**	**4**	**6**
2021CPT.03.23.10671	Onslow	2	US 17 SOUTH (WILMINGTON HIGHWAY)	FROM 0.98 MILES N. OF HWY. 210 TO 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) [MP 28.98 - MP 35.98]	1	2	MD	7	33	288	1	17	0.50	1	200	49,897	36,960			
TOTAL FOR MAP NO. 2								**7**		**288**	**1**	**17**	**0.50**	**1**	**200**	**49,897**	**36,960**			
TOTAL FOR PROJ NO. 2021CPT.03.23.10671								**14**		**624**	**2**	**34**	**1.00**	**2**	**400**	**101,042**	**74,760**	**420**	**4**	**6**
																175,802			**10**	
GRAND TOTAL								**14**		**624**	**2**	**34**	**1.00**	**2**	**400**	**101,042**	**74,760**	**420**	**4**	**6**
																175,802			**10**	

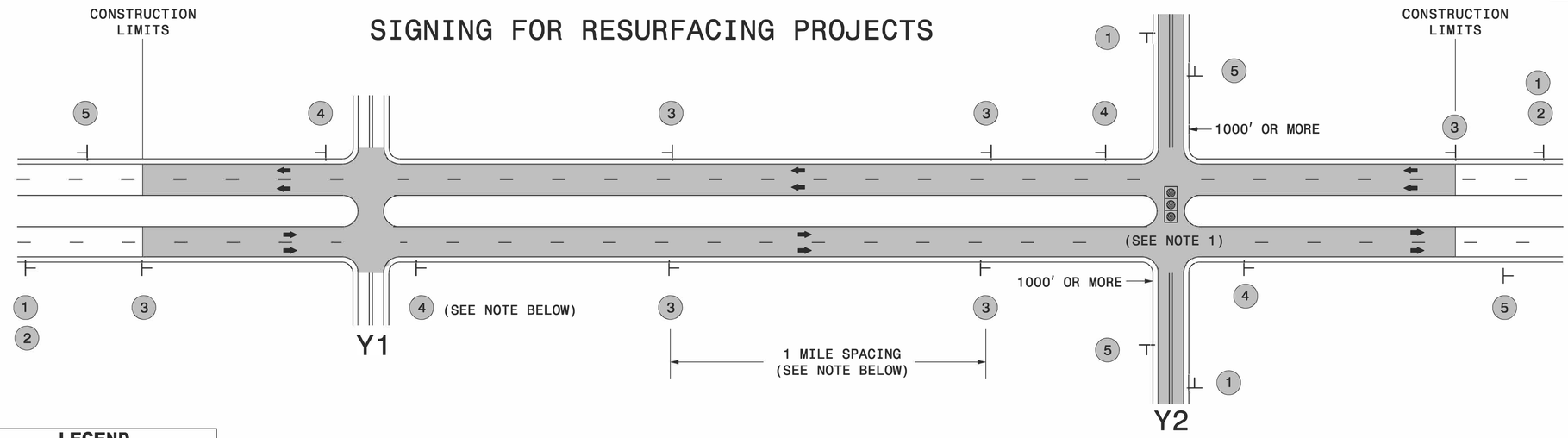
PROJECT NO.	SHEET NO.
2021CPT.03.23.10671	8

THERMOPLASTIC AND PAINT QUANTITIES

											4725000000-E				481000000-E		4850000000-E	4891000000-E	4900000000-N		4905000000-N
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	THERMO STR ARROW 90 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & LT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	REMOVAL OF PAVEMENT MARKING LINES (4")	24" X 90 M WHITE THERMO	YELLOW & YELLOW MARKERS	CRYSTAL & RED MARKERS	SNOW PLOWABLE MARKERS (C/R)
								MI	FT	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA
2021CPT.03.23.10671	Onslow	1	US 17 NORTH (WILMINGTON HIGHWAY)	FROM 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) TO 0.98 MILES N. OF HWY. 210 [MP 3.85 TO MP 10.85]	1	2	MD	7	33	60	43	16	14	360	300	330	270	54	4	745
TOTAL FOR MAP NO. 1								**7**		**60**	**43**	**16**	**14**	**360**	**300**	**330**	**270**	**54**	**4**	**745**
2021CPT.03.23.10671	Onslow	2	US 17 SOUTH (WILMINGTON HIGHWAY)	FROM 0.98 MILES N. OF HWY. 210 TO 0.64 MILES N. OF SR 1533 (HINES STUMP SOUND CHURCH RD.) [MP 28.98 - MP 35.98]	1	2	MD	7	33	72	38	2		360	300	330	40		4	618
TOTAL FOR MAP NO. 2								**7**		**72**	**38**	**2**		**360**	**300**	**330**	**40**		**4**	**618**
TOTAL FOR PROJ NO. 2021CPT.03.23.10671								**14**		**132**	**81**	**18**	**14**	**720**	**600**	**660**	**310**	**54**	**8**	**1,363**
										245				**1,320**				**62**		
GRAND TOTAL								**14**		**132**	**81**	**18**	**14**	**720**	**600**	**660**	**310**	**54**	**8**	**1,363**
										245				**1,320**				**62**		

PROJ. REFERENCE NO.	SHEET NO.
2021CPT.03.23.10671	TCP-1

SIGNING FOR RESURFACING PROJECTS



LEGEND
- ⊢ STATIONARY SIGN
- ⬅ DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION

1 — ROAD WORK AHEAD 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.

2 — NEXT XX MILES 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 — LOW/SOFT SHOULDER 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 ½ MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.

4 — ROAD UNDER CONST 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 — END ROAD WORK G20-2 A 48″ X 24″

PLACE 500′ FOLLOWING THE END OF CONSTRUCTION LIMITS.

-Y- LINE SIGNING

NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:

1) LESS THAN 1000′ OF RESURFACING ALONG -Y- LINE
2) SUBDIVISION ROADS
3) DEAD END ROADS

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.

ROAD WORK AHEAD W20-1 48″ X 48″ — PLACED 500′ IN ADVANCE OF FLAGGER.

W20-7 A 48″ X 48″ — PLACED 250′ IN ADVANCE OF FLAGGER.

NOTES:

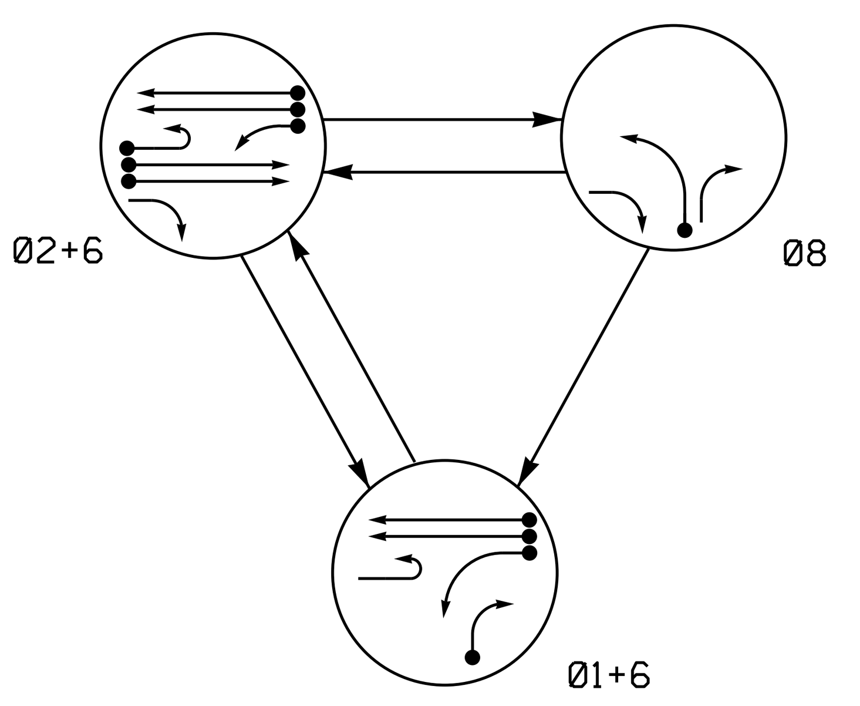
1) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500′ IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

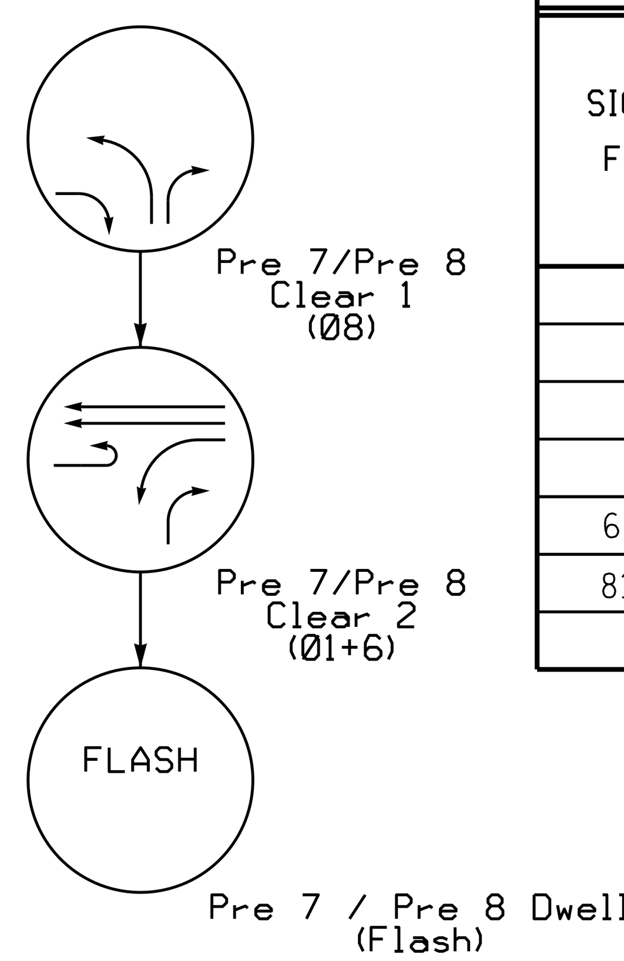
RESURFACING
ADVANCE WARNING SIGNS
FOR RURAL AND SUBURBAN
MULTI-LANE ROADWAYS
W/ SHOULDER SECTIONS

3/23/2015
C:\Users\rmgarrett\Downloads\Resurfacing_AdvWarn_UrSu_Shldr.dgn
User:rmgarrett

PHASING DIAGRAM



DRE FAILURE PREEMPT



PHASING DIAGRAM DETECTION LEGEND

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

All ground disturbance for the project to install signalized interesection devices will not extend beyond the paved road and road shoulder areas.

TABLE OF OPERATION

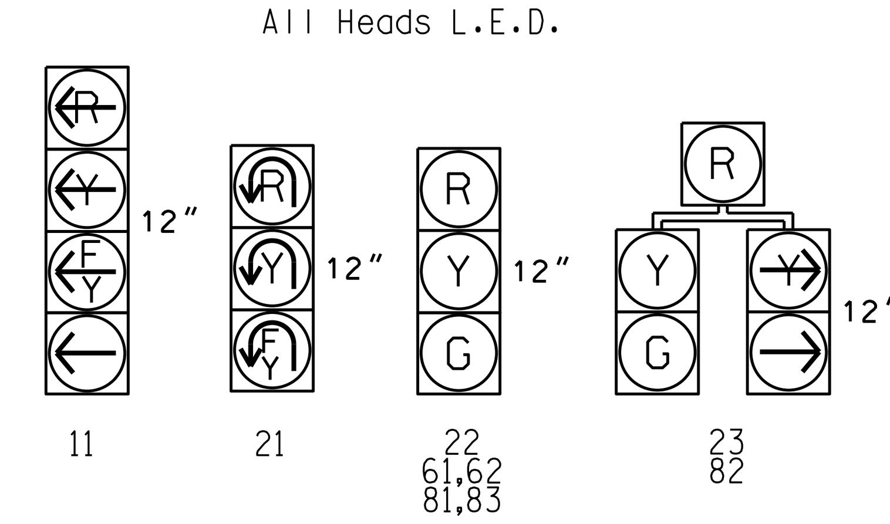
SIGNAL FACE	Ø1+6	Ø2+6	Ø8	Pre 7/8 CLEAR 1	Pre 7/8 CLEAR 2	Pre 7/8 DWELL	FLASH
11	←	F/Y ←	R ←	R ←	←	Y ←	Y ←
21	FY ↶	FY ↶	R ↶	R ↶	FY ↶	Y ↶	Y ↶
22	R	G	R	R	R	Y	Y
23	R	G	R / →	R / →	R	Y	Y
61,62	G	G	R	R	G	Y	Y
81,83	R	R	G	G	R	R	R
82	R / →	R	G	G	R / →	R	R

TABLE OF OPERATION

SIGNAL FACE	INTERVAL 1	INTERVAL 2
24,26	ON	OFF
25,27	OFF	ON
63,65	ON	OFF
64,66	OFF	ON

SIGNAL FACE I.D.

All Heads L.E.D.



DRE FAILURE PREEMPT

FUNCTION	PRE 7	PRE 8
Interval 1 – Green Clear	15	15
Interval 1 – Yellow Clear	0.0*	0.0*
Interval 1 – Red Clear	0.0*	0.0*
Interval 2 – Green Clear	15	15
Interval 2 – Yellow Clear	0.0*	0.0*
Interval 2 – Red Clear	0.0*	0.0*
Interval 3 – Dwell Green	255	255
Interval 3 – Dwell Yellow	0.0*	0.0*
Interval 3 – Dwell Red	0.0*	0.0*
Interval 5 – Exit Green	1	1
Interval 5 – Yellow	0.0	0.0
Interval 5 – Red	0.0	0.0
Exit Phase(s)	2,6	2,6
Priority	High	High
Delay Time	0	0
Min Green Before Pre	20	20
Ped Clear Before Pre	0	0
Yellow Clear Before Pre	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*
Dwell Min Time	20	20
Flash Dwell Interval?	Y	Y
Enable Backup Protection	N	N
Ped Clear Through Yellow	N	N
Omit Overlaps	-	-

* Time defaults to time used for phase during normal operation

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
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
1B	6X40	+10	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	420	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	420	5	Y	2	Y	Y	-	-	-	-	Y
2C	6X40	0	2-4-2	Y	2	Y	Y	Y	-	3	-	Y
6A	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
Isolated

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. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Activate beacons 24, 25, 26, 27 2 seconds prior to the end of phase 2 green.
6. Activate beacons 63, 64, 65, 66 2 seconds prior to the end of phase 6 green.

DYNAMIC RED EXTENSION (DRE) SYSTEM
NORTHSTAR NQ4 LOOP & DETECTION INSTALLATION CHART

INDUCTIVE LOOPS						DETECTOR UNITS									
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	SYSTEM NUMBER	LANE NO.	DETECTOR NUMBER	CHANNEL	NEMA PHASE	TIMING FEATURE	TIMING TIME	PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN?
DR1	6X6	5	256	X		①	1	1	1	2	NONE	- SEC.	ALL	NO
DR2	6X6	5	240	X			1		2		NONE	- SEC.	ALL	NO
DR3	6X6	5	256	X			2	2	1	2	NONE	- SEC.	ALL	NO
DR4	6X6	5	240	X			2		2		NONE	- SEC.	ALL	NO
DR5	6X6	5	256	X		②	1	1	1	6	NONE	- SEC.	ALL	NO
DR6	6X6	5	240	X			1		2		NONE	- SEC.	ALL	NO
DR7	6X6	5	256	X			2	2	1	6	NONE	- SEC.	ALL	NO
DR8	6X6	5	240	X			2		2		NONE	- SEC.	ALL	NO
SET SPEED (MPH)		50								2/6				
SET LENGTH (FT)		1								2/6				
ALARM TIME (SEC)		5*								2/6				

* If output is present during associated phase's red clear, place stop time on red clearance interval.

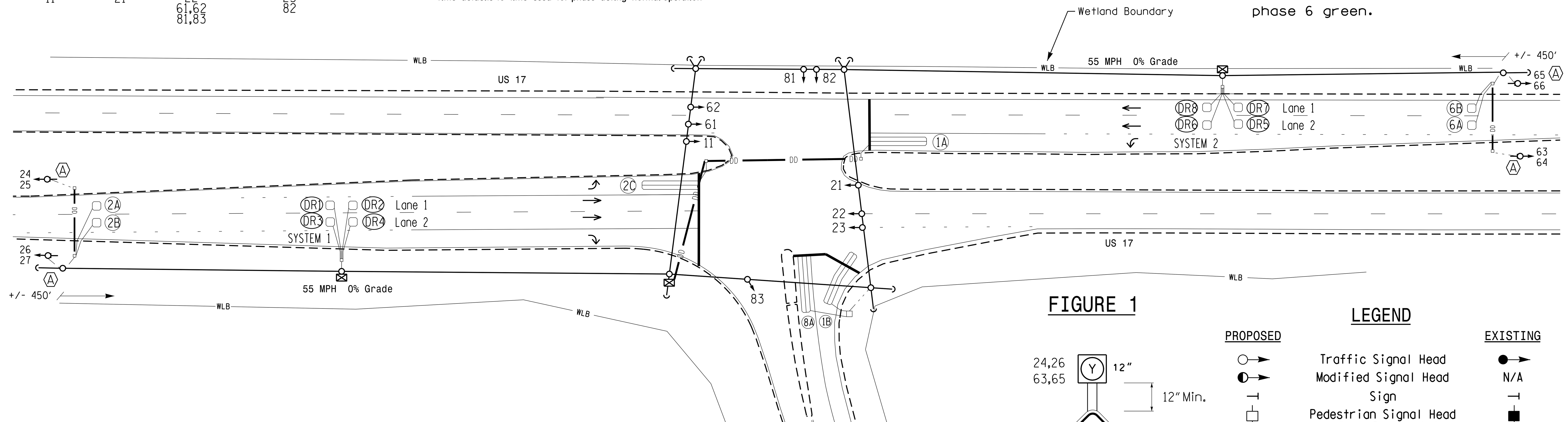
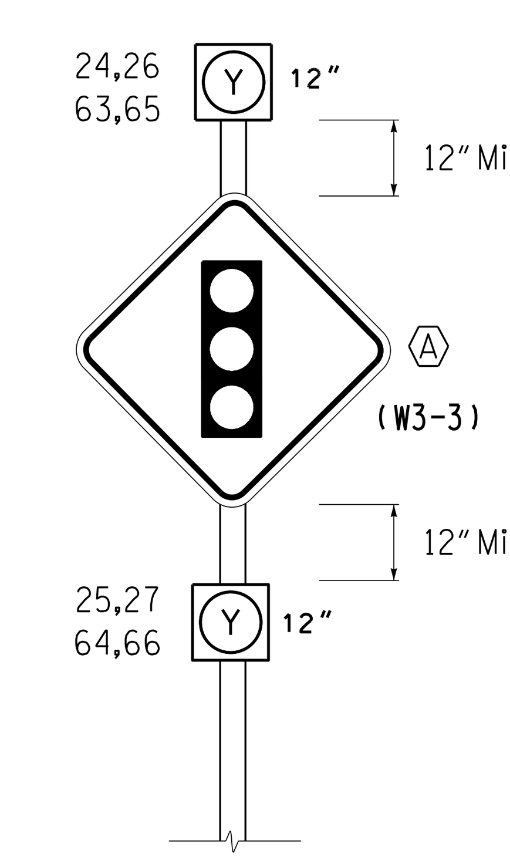


FIGURE 1



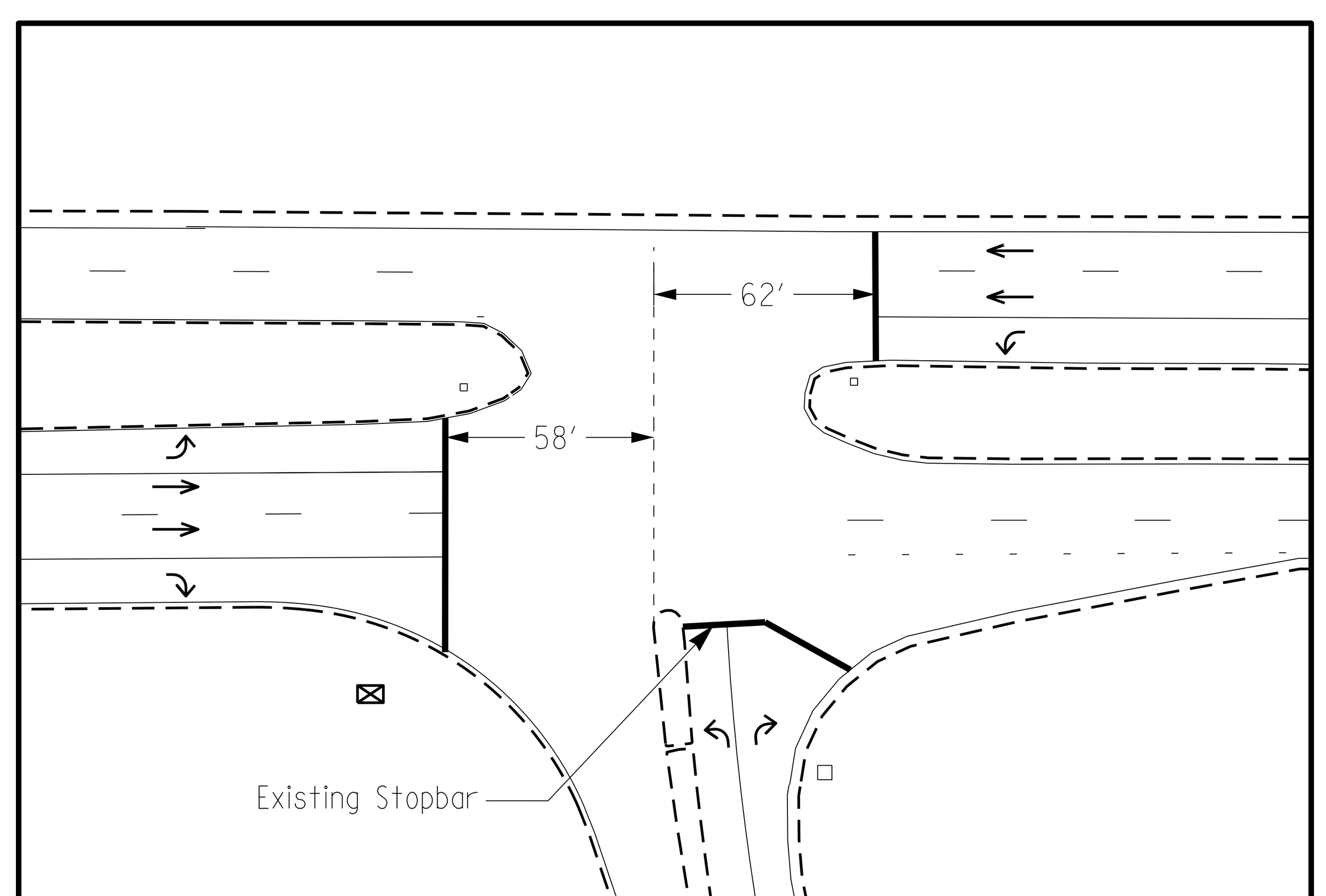
LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	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	
Ⓐ	Signal Ahead Sign (W3-3) See Figure 1	Ⓐ

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	14	14	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	30	90	90	25
Yellow Clearance	3.0	5.2	5.2	3.0
Red Clearance	3.3	2.5	2.5	3.5
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	1.5	1.5	-
Max Variable Initial *	-	46	46	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* 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.



Proposed Stopbar Locations

New Installation Corr. File: 03-16-43651

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

PLAN DATE: July 2018 REVIEWED BY: ZML
PREPARED BY: KGP, Jr. REVIEWED BY:

SCALE 0 50 1"=50'

REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030530 ZACHARY M. LITTLE
DocuSigned by: Zachary Little 8/30/2018
DATE

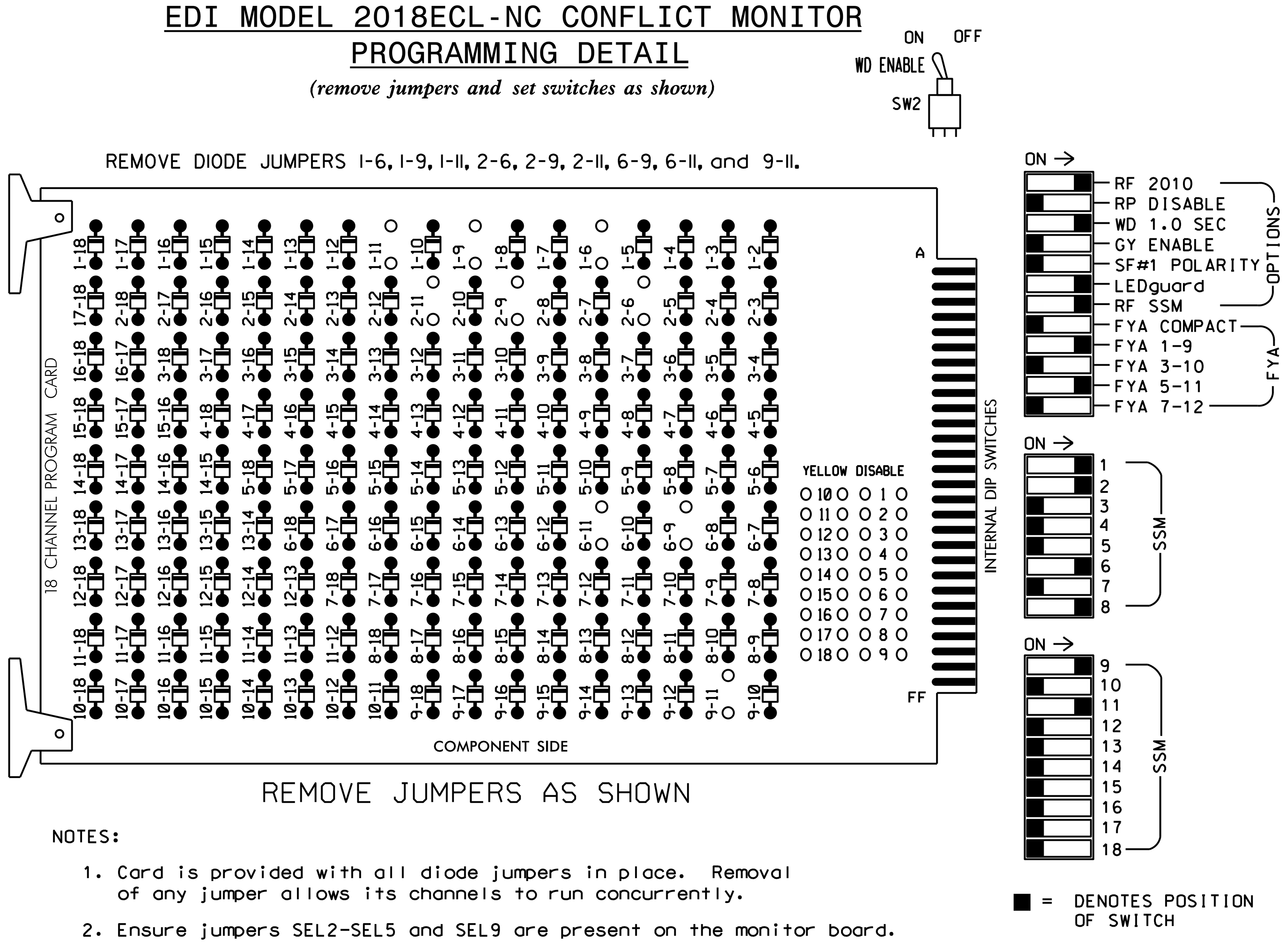
SIG. INVENTORY NO. 03-0299

PROJECT REFERENCE NO.	SHEET NO.
SS-4903CX	Sig. 1.1

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 2-6, 2-9, 2-11, 6-9, 6-11, and 9-11.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.

EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1, S2, S3*, S6*, S8, S9*, S10**, S11, S12*, AUX S1, AUX S4
PHASES USED.............1, 2, 6, 8
OVERLAP "A".............1+2
OVERLAP "B".............NOT USED
OVERLAP "C".............6
OVERLAP "D".............NOT USED

* Used for Advance Beacon only
** Used for Dynamic Red Extension (DRE) system

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1		S2	S3		S4	S5	S6		S7	S8	S9		S10	S11		S12		AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1		2	13		3	4	14		5	6	15		7	8		16		9	10	17	11	12	18
PHASE	1		2	2 PED	ADVANCE BEACON	3	4	4 PED	ADVANCE BEACON	5	6	6 PED	ADVANCE BEACON	7	8		8 PED	ADVANCE BEACON	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	82	22,23	NU	24,26	NU	NU	NU	63,65	NU	61,62	NU	25,27	★★ DRE	23	81,82 83	NU	64,66	11★	NU	NU	21★	NU	NU
RED		*	128								134					107								
YELLOW			129								135			*		108								
GREEN			130								136			*		109								
RED ARROW																			A121			A114		
YELLOW ARROW		126													108				A122			A115		
FLASHING YELLOW ARROW																			A123			A116		
GREEN ARROW	127	127													109									
(DON'T WALK hand symbol)																								
PED YELLOW					** 114				** 105				** 120					** 111						
(WALK symbol)				*				*				*					*							

NU = Not Used

* Denotes install load resistor. See load resistor installation details sheets 1, 12, and 13.

** Special advance beacons will be wired to S3-Y, S6-Y, S9-Y, and S12-Y. See wiring and programming details on sheets 12 and 13 of this electrical detail.

★ See pictorial of head wiring in detail below.

★★ Load switch S10 used for Dynamic Red Extension (DRE) Supervisor Relays. See sheet 3 for details.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	Ø 1 1A	Ø 1 1B	Ø 2 2B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	(WIRED INPUT) Ø 2 SUPERVISOR RELAY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
"I"	L	NOT USED	Ø 2 2A	Ø 2 2C						(WIRED INPUT) Ø 6 SUPERVISOR RELAY					ST DC ISOLATOR
"J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	ST Ø 2 AC ISOLATOR	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
"J"	L		Ø 6 6B				NOT USED			ST Ø 6 AC ISOLATOR					

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

! NOTE: The 'F' and 'W' pins of slot I9 are wired to the DRE Supervisor relays. Do not populate this slot with a detector card.

!! CAUTION! BE SURE TO REMOVE SURGE ARRESTORS EXISTING ON INPUT PANEL TERMINALS TB7-9&10 AND TB7-11&12. THIS WILL EQUIP SLOT J9 FOR USE WITH THE AC ISOLATOR CARD AS SHOWN ABOVE. SEE STOP TIME AC ISOLATOR OUTPUT PROGRAMMING DETAIL ON SHEET 3.

INPUT FILE CONNECTION & PROGRAMMING CHART

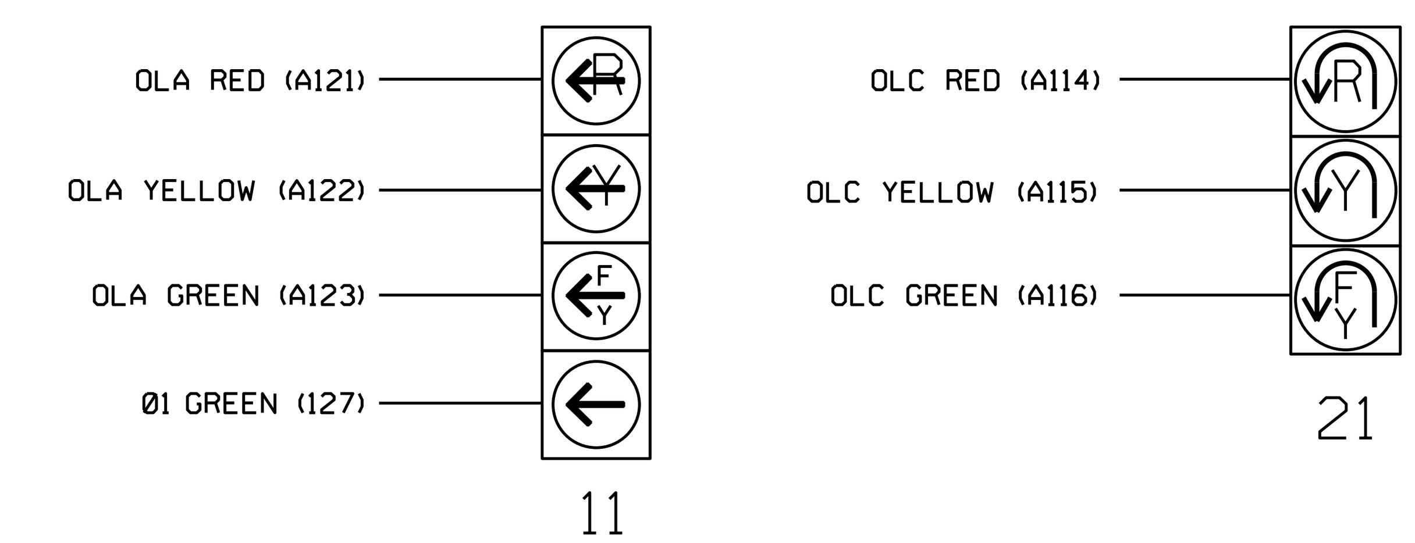
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A	TB2-7,8	I2L	43	5	12	2	Y	Y			
2B	TB2-9,10	I3U	63	25	32	2	Y	Y			
2C	TB2-11,12	I3L	76	38	42	2	Y	Y	Y		3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

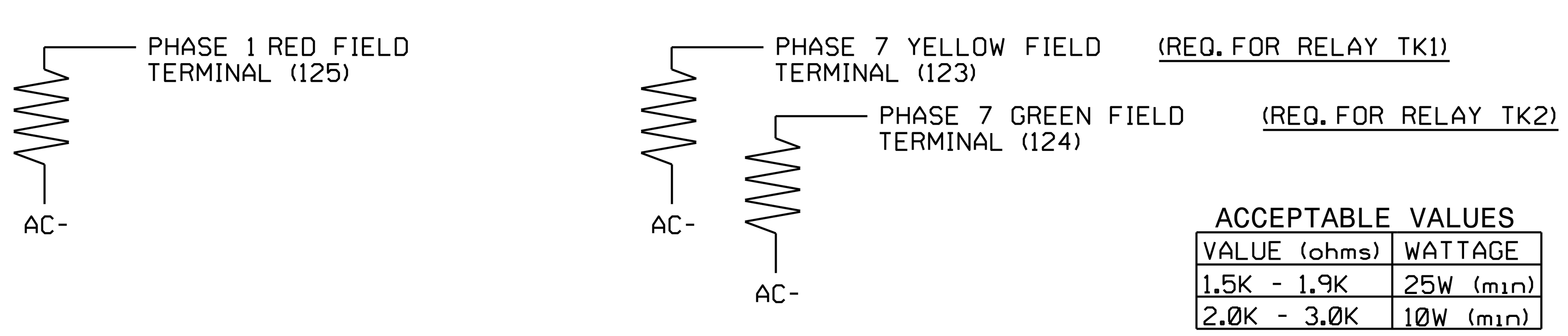


NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



ACCEPTABLE VALUES

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 1 of 13

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320FAA2654C3... 9/4/2018 DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:51
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sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
SS-4903CX	Sig. 1.2

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

(program controller as shown below)

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

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

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

            SCROLL DOWN

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

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

PRESS '+'

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

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

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

PRESS '+'

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

            SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

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

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

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

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          ¦12345678910111213141516
VEH OVL PARENTS:¦XX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦ X
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........2
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
```

← VEH OVL GRN EXT
← NOTICE GREEN FLASH
← GREEN EXTENSION

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:¦    X
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........2
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
```

← VEH OVL GRN EXT
← NOTICE GREEN FLASH
← GREEN EXTENSION

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 | Onslow County | Folkstone

PLAN DATE: August 2018 | REVIEWED BY:

PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 9/4/2018 DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:52
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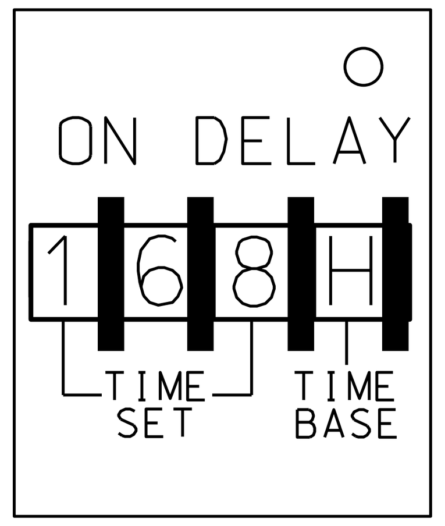
sarmstrong

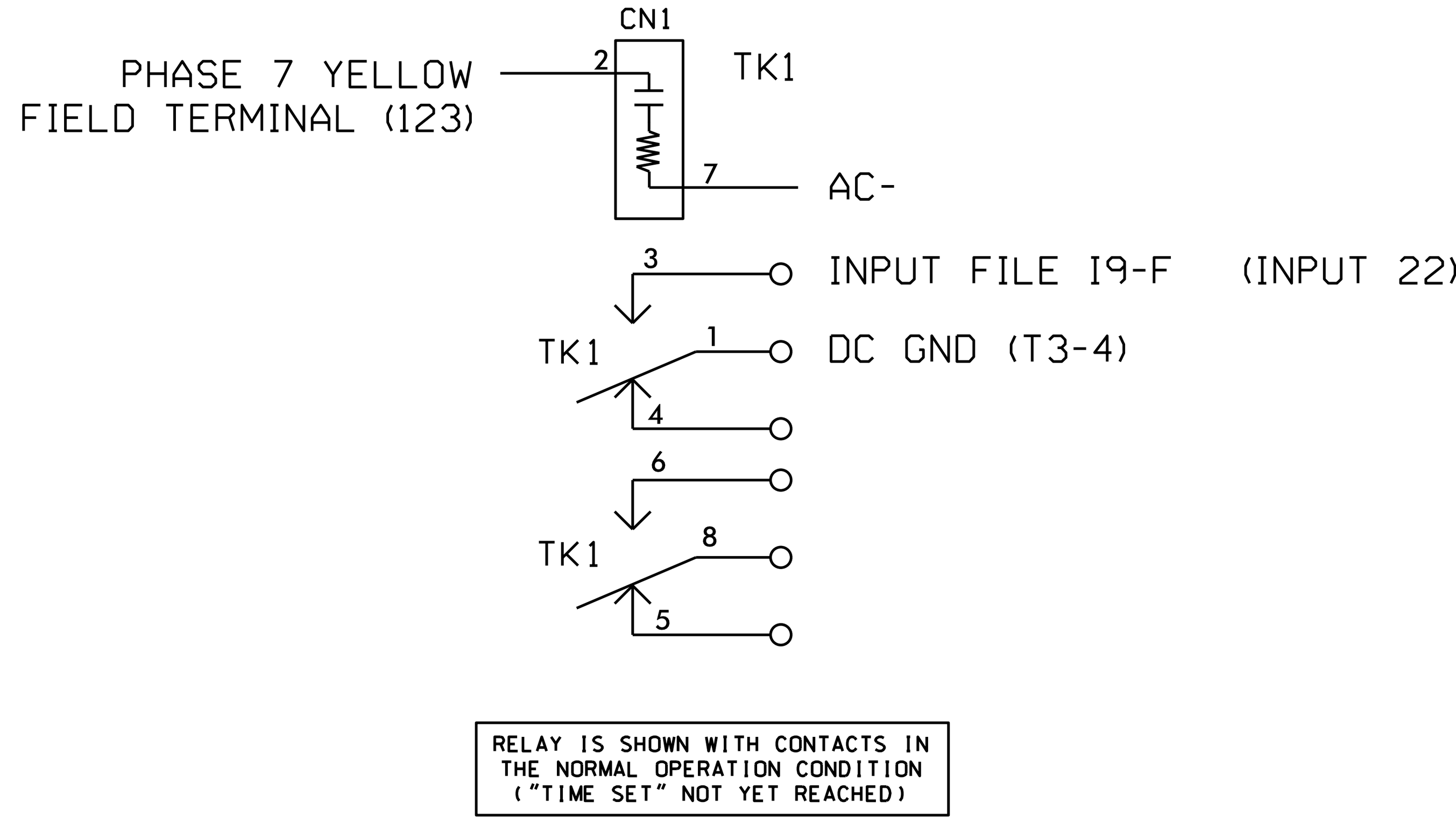
WIRING DETAIL FOR PHASE 2 DRE SUPERVISOR RELAY

TKI RELAY PROGRAMMING

SET SWITCHES AS SHOWN



SET 'ON DELAY' = 24 HOURS



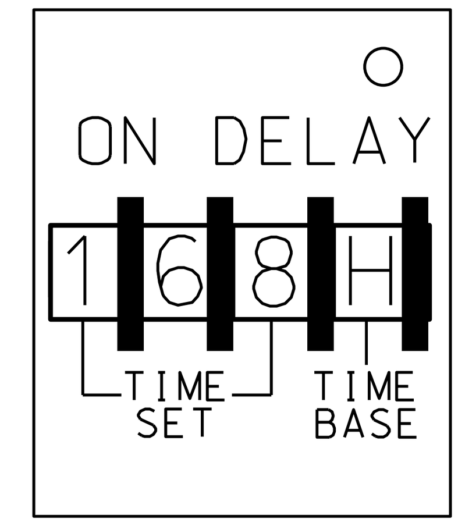
SUPERVISOR RELAY OPERATION NOTES

1. Relay 'TK1' is a DPDT, on delay, time delay relay with 120VAC coil, 10 Amp contacts, programmable delay time and octal-style plug. Potter and Brumfield part no. CN1.
2. Relay TK1 is supplied AC power from the load switch S10 Yellow output. The relay output contacts turn 'ON' at the end of the programmed time interval which is started by applying input voltage to 'TK1'.
3. When a DRE event occurs, the controller will initiate a supervisor relay reset by turning load switch output S10-Y 'OFF'.
4. After a DRE event has cleared, the controller will enable the supervisor relay by turning load switch output S10-Y 'ON'.
5. When no DRE events are detected over the programmed delay time interval, the relay output contacts will turn 'ON' and remain in that state until the relay is reset.
6. To disable the DRE supervisor relay system upon activation, remove load switch S10. To enable the system, reinsert load switch S10.
7. To prevent false conflicts, remove, tape, and label the conflict monitor wire attached to the rear of field terminal 123 (phase 7 Yellow).

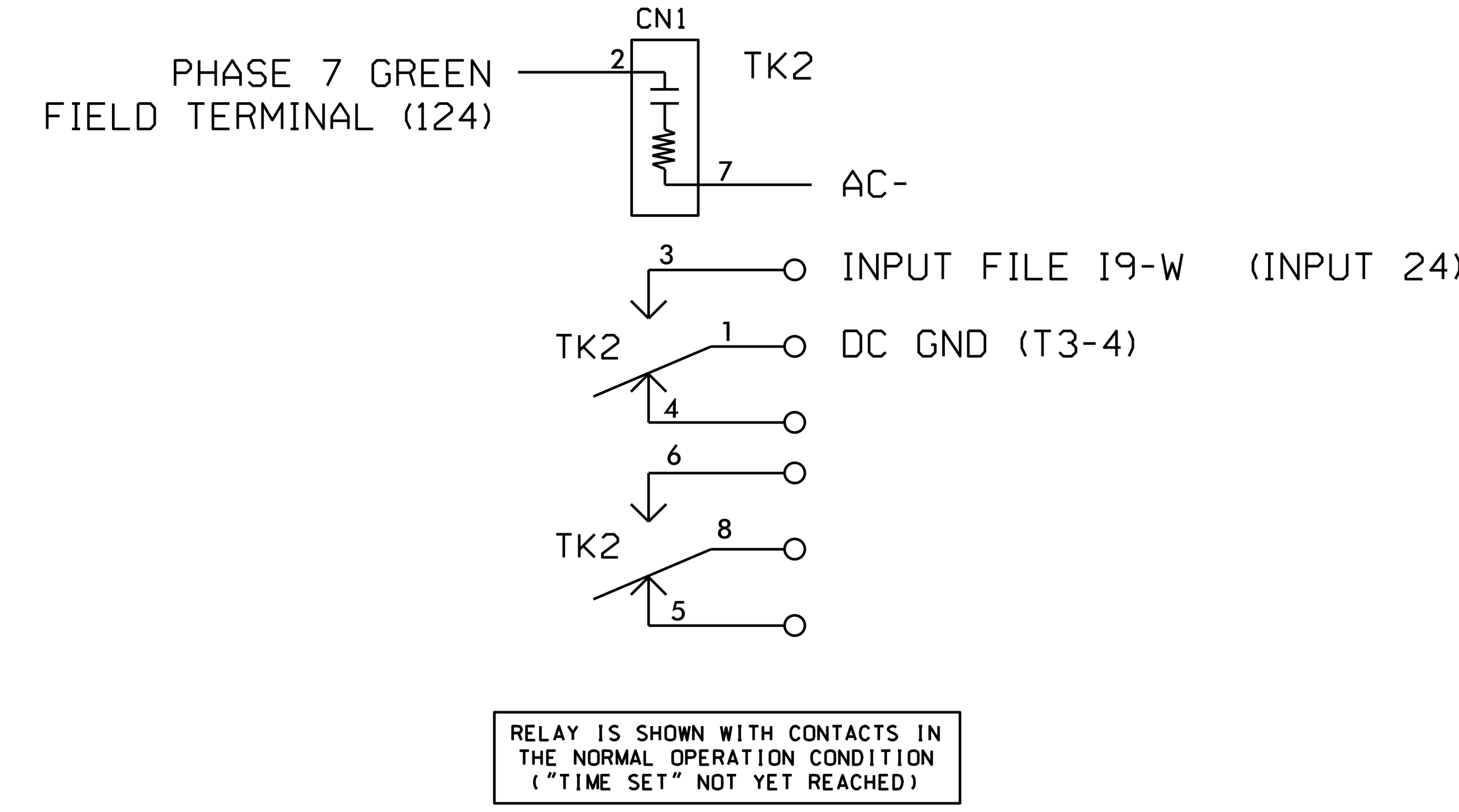
WIRING DETAIL FOR PHASE 6 DRE SUPERVISOR RELAY

TK2 RELAY PROGRAMMING

SET SWITCHES AS SHOWN



SET 'ON DELAY' = 24 HOURS

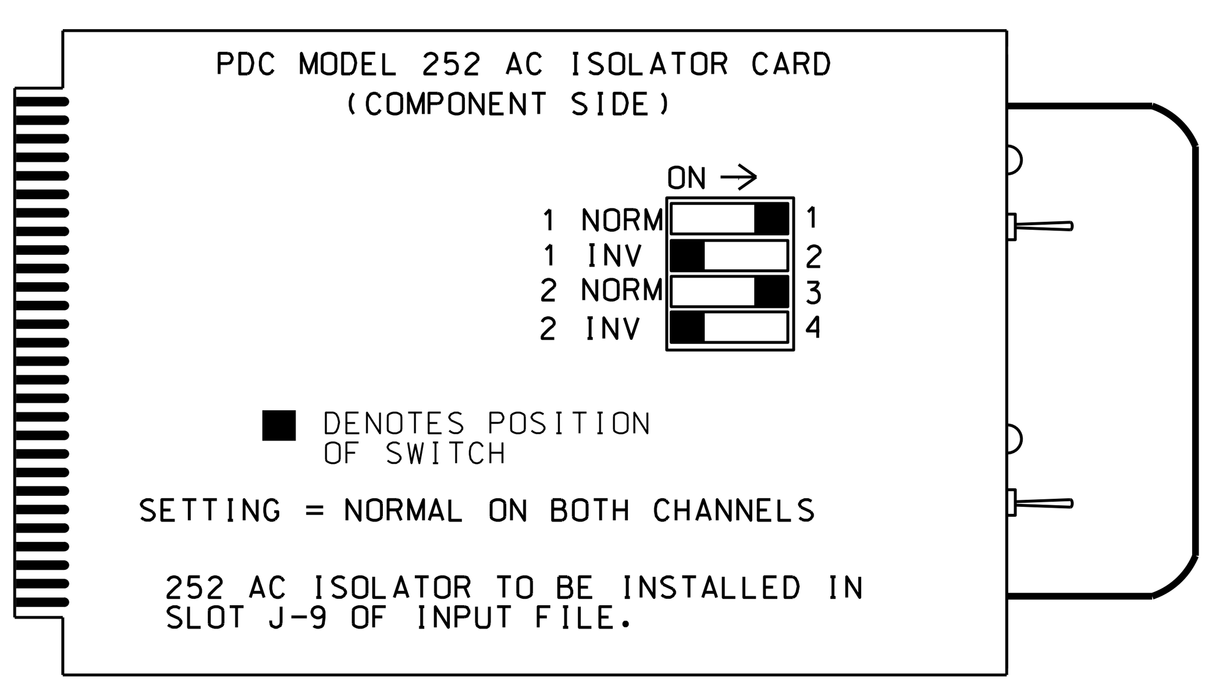


SUPERVISOR RELAY OPERATION NOTES

1. Relay 'TK2' is a DPDT, on delay, time delay relay with 120VAC coil, 10 Amp contacts, programmable delay time and octal-style plug. Potter and Brumfield part no. CN1.
2. Relay TK2 is supplied AC power from the load switch S10 Green output. The relay output contacts turn 'ON' at the end of the programmed time interval which is started by applying input voltage to 'TK2'.
3. When a DRE event occurs, the controller will initiate a supervisor relay reset by turning load switch output S10-G 'OFF'.
4. After a DRE event has cleared, the controller will enable the supervisor relay by turning load switch output S10-G 'ON'.
5. When no DRE events are detected over the programmed delay time interval, the relay output contacts will turn 'ON' and remain in that state until the relay is reset.
6. To disable the DRE supervisor relay system upon activation, remove load switch S10. To enable the system, reinsert load switch S10.
7. To prevent false conflicts, remove, tape, and label the conflict monitor wire attached to the rear of field terminal 124 (phase 7 Green).

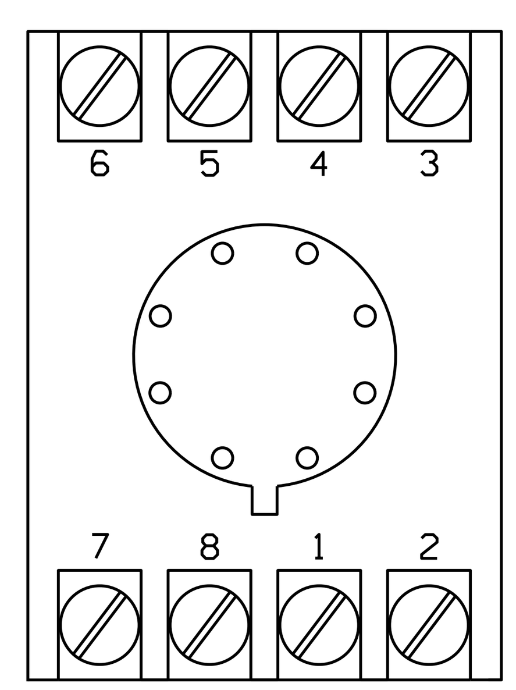
STOP TIME AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

*(set **DIP** switches as shown below)*



NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RELAY OCTAL BASE TERMINAL LOCATIONS



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 3 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In the Offices of:

Transportation Mobility and Safety Division, ITS & Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 9/4/2018 DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:52
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sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
SS-4903CX	Sig. 1.4

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL FOR PHASE 2 DYNAMIC RED EXTENSION SYSTEM

(program controller as shown below)

1. From main menu press '2' (PHASE CONTROL), then '1' (PHASE CONTROL FUNCTIONS). scroll to the bottom of the menu and enable ACT logic commands 4, 5, 6, 7, 8, 9, 10, and 11.

2. From main menu press '6' (OUTPUTS), then '3' (LOGICAL I/O PROCESSOR).

```
  LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #21 IS ON
AND RED CLEAR ON PHASE #2  IS ON
AND YELLOW ON PHASE    #6  IS OFF
                SCROLL DOWN
THEN:
SET LOGIC FLAG         #1  ON
SET INPUT   ASSIGNMENT #61 ON
    DELAY FOR   30.0 SECONDS
SET LOGIC FLAG         #2 ON
```

NOTE: STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 2 APPROACH. (FOR DYNAMIC RED EXTENSION SYSTEM)

NOTE: LOGIC FLAG #2 TO PLACE THE CONTROLLER IN FLASH IF THE STOP TIME INPUT FROM NQ4 SYSTEM IS ACTIVE FOR LONGER THAN 30 SECONDS.

PRESS '+'

```
  LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #21 IS OFF
OR  RED CLEAR ON PHASE #2  IS OFF
                SCROLL DOWN
THEN:
SET LOGIC FLAG         #1  OFF
SET INPUT   ASSIGNMENT #61 OFF
```

NOTE: RESET STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 2 APPROACH. (FOR DYNAMIC RED EXTENSION SYSTEM)

PRESS '+'

```
  LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  LOGIC FLAG         #1  IS ON
OR  INPUT   ASSIGNMENT #44 IS ON
                SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #60 ON
```

NOTE: LOGIC TO SWITCH STOP TIME "ON" IF DYNAMIC RED SYSTEM PHASE 2 "OR" CABINET STOP TIME INPUT IS ACTIVE.

PRESS '+'

```
  LOGICAL I/O COMMAND #7  (+/-COMMAND#)
IF  LOGIC FLAG         #1  IS OFF
AND INPUT   ASSIGNMENT #44 IS OFF
                SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #60 OFF
```

NOTE: LOGIC TO SWITCH STOP TIME "OFF" WHEN ALL INPUTS ARE OFF.

PRESS '+'

```
  LOGICAL I/O COMMAND #8  (+/-COMMAND#)
IF  LOGIC FLAG         #2  IS ON
OR  INPUT   ASSIGNMENT #22 IS ON
                SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #64 ON
```

NOTE: LATCHED LOGIC FLAG #2 OR SUPERVISOR RELAY OUTPUT ACTUATES PREEMPT 7 AND PLACES CONTROLLER IN FLASH.

PRESS '+'

```
  LOGICAL I/O COMMAND #9  (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #21 IS OFF
                SCROLL DOWN
THEN:
SET LOGIC FLAG         #2  OFF
```

NOTE: RESETS LATCHED LOGIC FLAGS.

PRESS '+'

```
  LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #61 IS ON
AND ACTIVE PREEMPTION  #7  IS OFF
                SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #23 OFF
```

NOTE: BEGIN LOGIC FOR SUPERVISOR RELAY CONTROL (RESETS RELAY).

PRESS '+'

```
  LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #61 IS OFF
OR  ACTIVE PREEMPTION  #7  IS ON
                SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #23 ON
```

NOTE: END LOGIC FOR SUPERVISOR RELAY CONTROL (RELEASE RESET TO ENABLE RELAY).

LOGIC PROGRAMMING COMPLETE

! NOTE: THIS LOGIC IS BASED UPON CHANGES MADE TO INPUT MAPS WHICH ARE SHOWN ON SHEETS 7, 8 AND 9 OF THIS ELECTRICAL DETAIL. !

INPUT/OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- INPUT 22 = OUTPUT FROM SUPERVISOR RELAY (PHASE 2)
- INPUT 21 = OUTPUT FROM DYNAMIC RED EXTENSION SYSTEM (PHASE 2)
- INPUT 44 = CABINET CIRCUITRY STOP TIME CONTROL INPUT
- INPUT 60 = STOP TIME
- INPUT 61 = SPECIAL FUNCTION ALARM 1
- INPUT 64 = PREEMPT 7
- OUTPUT 23 = PHASE 7 YELLOW/SUPERVISOR RELAY CONTROL

FLASH PREEMPTION PROGRAMMING DETAIL FOR PREEMPT 7 (DRE PHASE 2)

(program controller as shown below)

THIS PREEMPT PLACES THE CONTROLLER IN FLASH IF RED EXTENSION IS GREATER THAN 30 SECONDS, OR IF NO DRE EVENT OCCURS FOR 168 HOURS.

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS 'NEXT' UNTIL PREEMPTION #7 IS REACHED.

```
  PREEMPTION  #7  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦12345678910111213141516
1  15  0.0  0.0 ¦      X
2  15  0.0  0.0 ¦X    X
3 255  0.0  0.0 ¦ X   X
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦ X   X
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....20
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) .........20
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? ...............Y
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............Y
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦ X X
OMIT OVERLAPS:           ¦
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 4 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 — Onslow County — Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	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 — DATE 9/4/2018

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:53
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sarmstrong

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

FOR PHASE 6 DYNAMIC RED EXTENSION SYSTEM

(program controller as shown below)

1. From main menu press '2' (PHASE CONTROL), then '1' (PHASE CONTROL FUNCTIONS). scroll to the bottom of the menu and enable ACT logic commands 12, 13, 14, 15, 16, 17, 18, and 19.

2. From main menu press '6' (OUTPUTS), then '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #23 IS ON
AND RED CLEAR ON PHASE #6  IS ON
AND YELLOW ON PHASE    #2  IS OFF
AND YELLOW ON PHASE    #1  IS OFF
        SCROLL DOWN
THEN:
SET LOGIC FLAG         #3  ON
SET INPUT   ASSIGNMENT #62 ON
    DELAY FOR   30.0 SECONDS
SET LOGIC FLAG         #4  ON
```
PRESS '+'

NOTE: STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 6 APPROACH. (FOR DYNAMIC RED EXTENSION SYSTEM)

NOTE: LOGIC FLAG #4 TO PLACE THE CONTROLLER IN FLASH IF THE STOP TIME INPUT FROM NQ4 SYSTEM IS ACTIVE FOR LONGER THAN 30 SECONDS.

```
LOGICAL I/O COMMAND #13 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #23 IS OFF
OR  RED CLEAR ON PHASE #6  IS OFF
        SCROLL DOWN
THEN:
SET LOGIC FLAG         #3  OFF
SET INPUT   ASSIGNMENT #62 OFF
```
PRESS '+'

NOTE: RESET STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 6 APPROACH. (FOR DYNAMIC RED EXTENSION SYSTEM)

```
LOGICAL I/O COMMAND #14 (+/-COMMAND#)
IF  LOGIC FLAG         #3  IS ON
OR  INPUT   ASSIGNMENT #44 IS ON
        SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #58 ON
```
PRESS '+'

NOTE: LOGIC TO SWITCH STOP TIME "ON" IF DYNAMIC RED SYSTEM PHASE 6 "OR" CABINET STOP TIME INPUT IS ACTIVE.

```
LOGICAL I/O COMMAND #15 (+/-COMMAND#)
IF  LOGIC FLAG         #3  IS OFF
AND INPUT   ASSIGNMENT #44 IS OFF
        SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #58 OFF
```
PRESS '+'

NOTE: LOGIC TO SWITCH STOP TIME "OFF" WHEN ALL INPUTS ARE OFF.

```
LOGICAL I/O COMMAND #16 (+/-COMMAND#)
IF  LOGIC FLAG         #4  IS ON
OR  INPUT   ASSIGNMENT #24 IS ON
        SCROLL DOWN
THEN:
SET INPUT   ASSIGNMENT #63 ON
```
PRESS '+'

NOTE: LATCHED LOGIC FLAG #4 OR SUPERVISOR RELAY OUTPUT ACTUATES PREEMPT 8 AND PLACES CONTROLLER IN FLASH.

```
LOGICAL I/O COMMAND #17 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #23 IS OFF
        SCROLL DOWN
THEN:
SET LOGIC FLAG         #4  OFF
```
PRESS '+'

NOTE: RESETS LATCHED LOGIC FLAGS.

```
LOGICAL I/O COMMAND #18 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #62 IS ON
AND ACTIVE PREEMPTION  #8  IS OFF
        SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #24 OFF
```
PRESS '+'

NOTE: BEGIN LOGIC FOR SUPERVISOR RELAY CONTROL (RESETS RELAY).

```
LOGICAL I/O COMMAND #19 (+/-COMMAND#)
IF  INPUT   ASSIGNMENT #62 IS OFF
OR  ACTIVE PREEMPTION  #8  IS ON
        SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #24 ON
```
LOGIC PROGRAMMING COMPLETE

NOTE: END LOGIC FOR SUPERVISOR RELAY CONTROL (RELEASE RESET TO ENABLE RELAY).

! NOTE: THIS LOGIC IS BASED UPON CHANGES MADE TO INPUT MAPS WHICH ARE SHOWN ON SHEETS 7, 8 AND 9 OF THIS ELECTRICAL DETAIL. !

INPUT/OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- INPUT 24 = OUTPUT FROM SUPERVISOR RELAY (PHASE 6)
- INPUT 23 = OUTPUT FROM DYNAMIC RED EXTENSION SYSTEM (PHASE 6)
- INPUT 44 = CABINET CIRCUITRY STOP TIME CONTROL INPUT
- INPUT 58 = STOP TIME
- INPUT 62 = SPECIAL FUNCTION ALARM 2
- INPUT 63 = PREEMPT 8
- OUTPUT 24 = PHASE 7 GREEN/SUPERVISOR RELAY CONTROL

FLASH PREEMPTION PROGRAMMING DETAIL

FOR PREEMPT 8 (DRE PHASE 6)

(program controller as shown below)

THIS PREEMPT PLACES THE CONTROLLER IN FLASH IF RED EXTENSION IS GREATER THAN 30 SECONDS, OR IF NO DRE EVENT OCCURS FOR 168 HOURS.

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS 'NEXT' UNTIL PREEMPTION #8 IS REACHED.

```
  PREEMPTION  #8  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦12345678910111213141516
1  15  0.0  0.0 ¦      X
2  15  0.0  0.0 ¦X    X
3 255  0.0  0.0 ¦ X   X
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦ X   X
EXIT CALLS      ¦
              OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0.0
MIN GREEN BEFORE PRE (0= DEFAULT)....20
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) .........20
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? ...............Y
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............Y
OVERLAPS:                 ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW    ¦ X X
OMIT OVERLAPS:            ¦
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 5 of 13

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

PLAN DATE:	August 2018	REVIEWED BY:	
PREPARED BY:	S. Armstrong	REVIEWED BY:	

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 9/4/2018
430320FAA2654C3
DATE

SIG. INVENTORY NO. 03-0299

INPUT REASSIGNMENT PROGRAMMING TABLE

INPUT	DEFAULT VALUE	REASSIGNED VALUE	FUNCTION	COMMENTS
21	VEH. DET. 15	NOT ENABLED	DRE OUT Ø2	This input comes from the NQ4 DRE system #1 output for the phase 2 approach.
23	VEH. DET. 17	NOT ENABLED	DRE OUT Ø6	This input comes from the NQ4 DRE system #2 output for the phase 6 approach.
44	STOP TIME	NOT ENABLED	ST SWITCH I14L	STOP TIME switch is disabled and control is relinquished to the logic processor.
60	NOT ENABLED	STOP TIME	USER DEFINED ST Ø2	A STOP TIME input to be used exclusively when a phase 2 DRE event is active.
58	NOT ENABLED	STOP TIME	USER DEFINED ST Ø6	A STOP TIME input to be used exclusively when a phase 6 DRE event is active.
61	NOT ENABLED	SF ALARM 1	DRE Ø2	Used as an event log to count phase 2 DRE events.
62	NOT ENABLED	SF ALARM 2	DRE Ø6	Used as an event log to count phase 6 DRE events.
64	NOT ENABLED	PREEMPT 7	DRE Ø2	Active when DRE equipment is "stuck ON" or no DRE events occur in a 168 hr period.
63	NOT ENABLED	PREEMPT 8	DRE Ø6	Active when DRE equipment is "stuck ON" or no DRE events occur in a 168 hr period.
22	VEH. DET. 11	NOT ENABLED	SUPERVISOR OUT Ø2	Relay contact that goes TRUE when no DRE event occurs during a 168 hr period.
24	VEH. DET. 13	NOT ENABLED	SUPERVISOR OUT Ø6	Relay contact that goes TRUE when no DRE event occurs during a 168 hr period.

NOTE: THIS TABLE SUMMARIZES CHANGES MADE TO INPUT MAPS WHICH ARE SHOWN ON SHEETS 7, 8 AND 9 OF THIS ELECTRICAL DETAIL.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 | Onslow County | Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough
430320EAA2654C3
9/4/2018
DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:54
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sarmstrong

INPUT REASSIGNMENT PROGRAMMING DETAIL

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM VEH. DET. 15 TO "NOT ENABLED"

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 21, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:59  VEHICLE DETECTOR ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................21
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)........... 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y  --> ENTER A "Y" FOR NOT ENABLED
VEHICLE DETECTOR (1-64).............15 ........ DEFAULT PROGRAMMING
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:59  NOT ENABLED
INPUT ASSIGNMENT #..................21
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y
VEHICLE DETECTOR (1-64).............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM VEH. DET. 17 TO "NOT ENABLED"

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 23, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:61  VEHICLE DETECTOR ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................23
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)........... 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y  --> ENTER A "Y" FOR NOT ENABLED
VEHICLE DETECTOR (1-64).............17 ........ DEFAULT PROGRAMMING
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:61  NOT ENABLED
INPUT ASSIGNMENT #..................23
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y
VEHICLE DETECTOR (1-64).............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM VEH. DET. 11 TO "NOT ENABLED"

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 22, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:60  VEHICLE DETECTOR ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................22
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)........... 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y  --> ENTER A "Y" FOR NOT ENABLED
VEHICLE DETECTOR (1-64).............11 ........ DEFAULT PROGRAMMING
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:60  NOT ENABLED
INPUT ASSIGNMENT #..................22
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y
VEHICLE DETECTOR (1-64).............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM VEH. DET. 13 TO "NOT ENABLED"

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 24, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:62  VEHICLE DETECTOR ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................24
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)........... 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y  --> ENTER A "Y" FOR NOT ENABLED
VEHICLE DETECTOR (1-64).............13 ........ DEFAULT PROGRAMMING
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:62  NOT ENABLED
INPUT ASSIGNMENT #..................24
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y
VEHICLE DETECTOR (1-64).............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N)......................_
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16)..................._
PLAN (65=FLSH,66=FREE)..._  OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)............
CHANGE OUTPUT PAGE (1-4)...........
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 7 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Transportation Mobility and Safety Division, ITS & Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 — Onslow County — Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320FAA2654C3

DATE 9/4/2018

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:55
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Armstrong*030299_sm_ele_xxx.dgn
sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
SS-4903CX	Sig. 1.8

INPUT REASSIGNMENT PROGRAMMING DETAIL CONTINUED...

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM CABINET STOP TIME TO "NOT ENABLED"

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 44, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:82  STOP TIME ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #..................44
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED.........................Y  --> ENTER A "Y" FOR NOT ENABLED
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................Y ........ DEFAULT PROGRAMMING
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

```
PAGE:1  C1 PIN:82  NOT ENABLED
INPUT ASSIGNMENT #..................44
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED.........................Y
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO USER DEFINED STOP TIME PHASE 2

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 60, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0  NOT ENABLED ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #..................60
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED.........................Y ........ DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................Y  --> ENTER A "Y" IN STOP TIME FIELD
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

```
PAGE:1  C1 PIN:0  STOP TIME
INPUT ASSIGNMENT #..................60
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................._
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................Y
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO USER DEFINED STOP TIME PHASE 6

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 58, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0  NOT ENABLED ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #..................58
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED.........................Y ........ DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................Y  --> ENTER A "Y" IN STOP TIME FIELD
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

```
PAGE:1  C1 PIN:0   STOP TIME
INPUT ASSIGNMENT #..................58
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................._
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................Y
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO SF ALARM 1

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 61, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0  NOT ENABLED ........ DEFAULT PROGRAMMING
INPUT ASSIGNMENT #..................61
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED.........................Y ........ DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N)....................._
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........1  --> ENTER A "1" FOR SPECIAL FUNCTION ALARM
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

```
PAGE:1  C1 PIN:0  SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #..................61
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................._
VEHICLE DETECTOR (1-64)............._
PEDESTRIAN DETECTOR (1-16)..........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10)......................_
INVERTED PREEMPT (1-10).............
STOP TIME (Y/N).....................
FLASH SENSE (Y/N)...................
DOOR OPEN (Y/N).....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........1
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)................
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE)..._ OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 8 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17
at
NC 172 (Snead's Ferry Road)

Division 3	Onslow County	Folkstone
PLAN DATE: August 2018	REVIEWED BY:	
PREPARED BY: S. Armstrong	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
9/4/2018
DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:56
S:\ITS&SU\ITS Signals\Workgroups\Sig Man\Armstrong\030299_sm_ele_xxx.dgn
sarmstrong

INPUT REASSIGNMENT PROGRAMMING DETAIL CONTINUED...

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO SF ALARM 2

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 62, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0   NOT ENABLED ------------- DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................62
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y ------------- DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................__
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........2  --> ENTER A "2" FOR SPECIAL FUNCTION ALARM
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:0   SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #.................62
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................_
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................
INVERTED PREEMPT (1-10)............_
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........2
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO PREEMPT 7 (DRE PHASE 2)

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 64, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0   NOT ENABLED ------------- DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................64
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y ------------- DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................7  --> ENTER PREEMPT 7
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:0   PREEMPT
INPUT ASSIGNMENT #.................64
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................_
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................7
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT REASSIGNMENT PROGRAMMING DETAIL FROM "NOT ENABLED" TO PREEMPT 8 (DRE PHASE 6)

(program controller as shown below)

1. FROM MAIN MENU PRESS '5' (INPUTS).
2. WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 63, AS SHOWN BELOW.
3. PROGRAM CONTROLLER AS SHOWN:

```
PAGE:1  C1 PIN:0   NOT ENABLED ------------- DEFAULT PROGRAMMING
INPUT ASSIGNMENT #.................63
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC)............ 0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................Y ------------- DEFAULT PROGRAMMING
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................8  --> ENTER PREEMPT 8
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

SCROLL DOWN TO VIEW ALL DATA ↓

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT →

```
PAGE:1  C1 PIN:0   PREEMPT
INPUT ASSIGNMENT #.................63
DEBOUNCE TIME (0-25.5 SEC)..........0.5
DELAY TIME (0-25.5 SEC).............0.0
HOLD-OVER TIME (0-25.5 SEC).........0.0
ASSIGNMENT SELECTION:
NOT ENABLED........................_
VEHICLE DETECTOR (1-64)............_
PEDESTRIAN DETECTOR (1-16).........
ALTERNATE PED DETECTOR (1-16).......
PREEMPT (1-10).....................8
INVERTED PREEMPT (1-10)............
STOP TIME (Y/N)....................
FLASH SENSE (Y/N)..................
DOOR OPEN (Y/N)....................
MANUAL CONTROL ENABLE (Y/N).........
MANUAL CONTROL ADVANCE (Y/N)........
SPECIAL FUNCTION ALARM (1-8)........_
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4)...............
HOLD PHASES (1-16).................._
PLAN (65=FLSH,66=FREE).._  OFFSET#._
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)......
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4).............
CHANGE OUTPUT PAGE (1-4)............
OVERRIDE PHASE CONTROL FUNCTION (Y)._
```

INPUT PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 9 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

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

750 N.Greenfield Pkwy,Garner,NC 27529

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 — Onslow County — Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

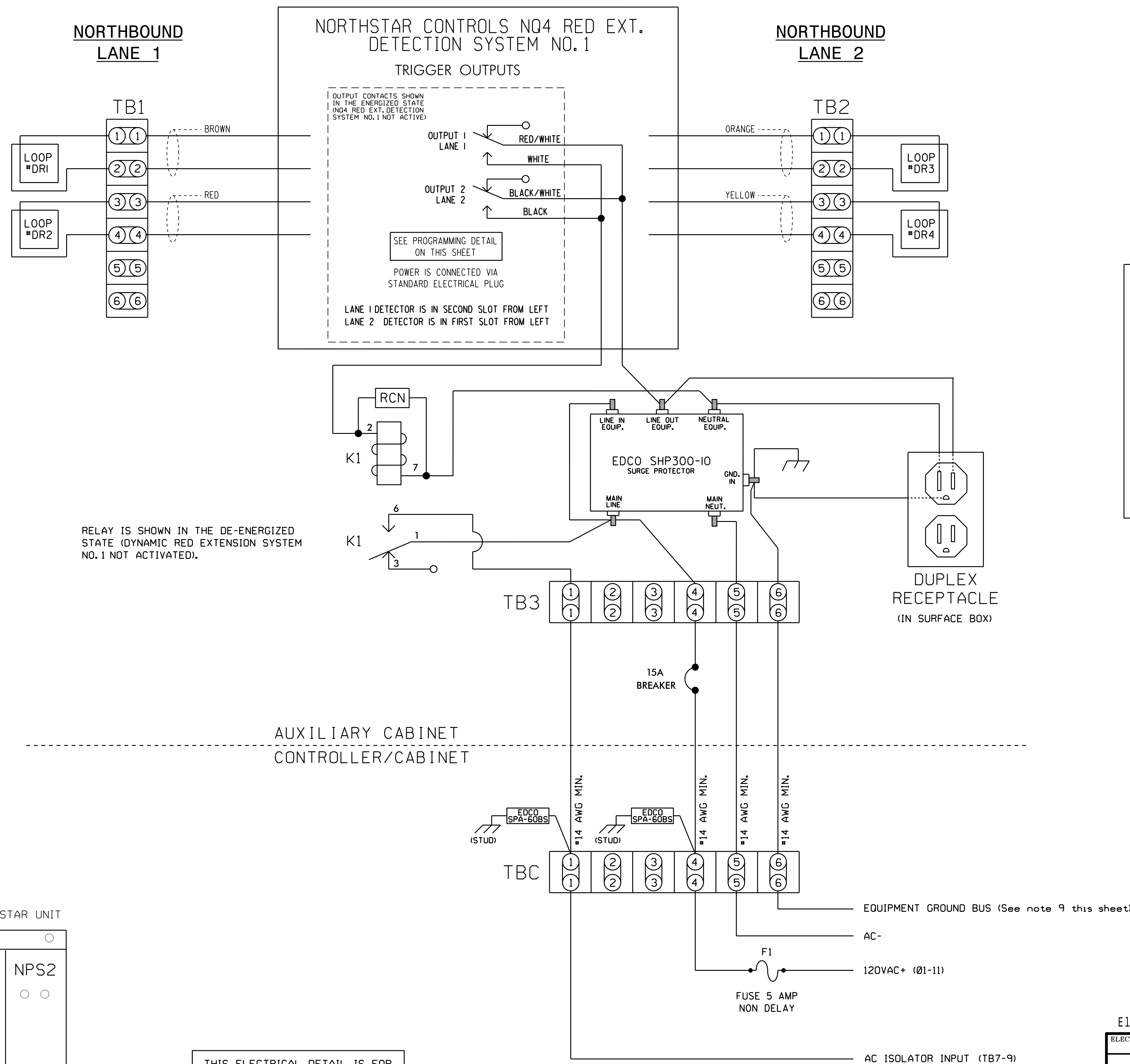
DocuSigned by: Ryan W. Hough 9/4/2018
430320EAA2654C3...
DATE

SIG. INVENTORY NO. 03-0299

PROJECT REFERENCE NO.	SHEET NO.
SS-4903CX	Sig. 1.10

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 USED FOR DYNAMIC RED EXTENSION - SYSTEM NO. 1

(wire unit as shown below)



NOTES

1. Loop spacing is critical to the proper operation of this Overspeed Detection system. Make sure loop spacing is correctly programmed in the NQ4 unit.
2. The NQ4 unit shall be located in an auxiliary cabinet adjacent to the Dynamic Red Extension system loops.
3. Relay K1 is an enclosed SPDT general purpose relay with a 120VAC coil, 10A contacts, and octal style plug.
4. The RC network across the coil of K1 is 0.1 micro farad, 100 ohm.
5. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits.
6. EDCO SHP300-10 is an AC service surge protector.
7. Terminal strips TB1, TB2, TB3, and TBC to be added by the installer.
8. DO NOT install ground rods at the auxiliary cabinet.
9. Install equipment ground from the controller cabinet to the auxiliary cabinet if not already present.
10. Install a disconnect at the auxiliary cabinet if there is no disconnect already present.
11. IMPORTANT! A jumper must be installed between Input File terminals J9-E and J9-K.
12. IMPORTANT! For proper operation of the Dynamic Red Extension System, tie TB7-12 to AC neutral.
13. IMPORTANT! Make sure both channels of the AC Isolator card inserted in Input File slot J9 are set for NORMAL OUTPUT operation. See sheet 3 of this electrical detail.

NORTHSTAR CONTROLS MODEL NQ4 PROGRAMMING DETAIL

(program unit as shown below)

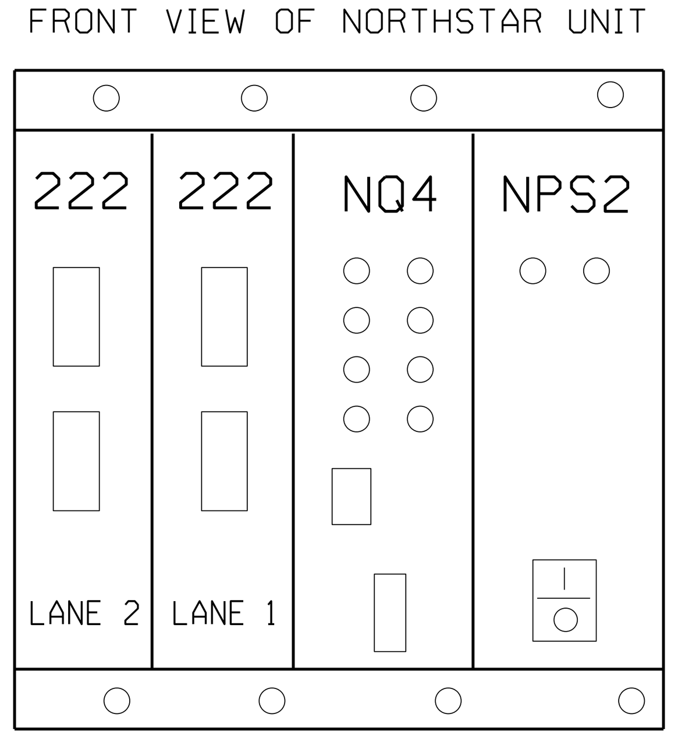
NOTE: Unit must be programmed using a PC and a terminal emulator program. For connection to the terminal emulator, refer to the NQ4 operation manual.

Program the NQ4 by typing the following commands:

1. SET SPEED = 50
2. SET LENGTH = 1'
3. SET ALARMTIME = 5
4. SET SEPARATION = 16' (leading edge to leading edge - program actual measured separation)
5. SET LOOP LENGTH = 6' (program actual measured loop length)
6. SAVE

ALARM LOG NOTE: When Dynamic Red Extension System No. 1 detects a violation, a Special Function 1 Alarm is recorded within the Oasis alarm log with a time and date stamp.

FRONT VIEW OF NORTHSTAR UNIT



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

Electrical Detail - Sheet 10 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

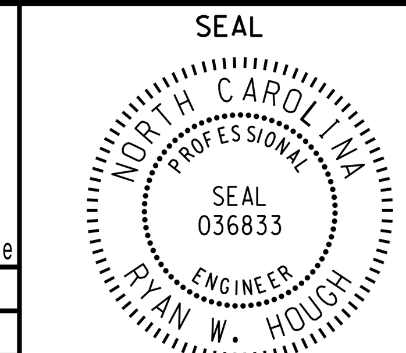
Prepared In the Offices of: Transportation Mobility and Safety Division, ITS & Signals Management Section, 750 N.Greenfield Pkwy,Garner,NC 27529

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



DocuSigned by: Ryan W. Hough 9/4/2018
DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:56
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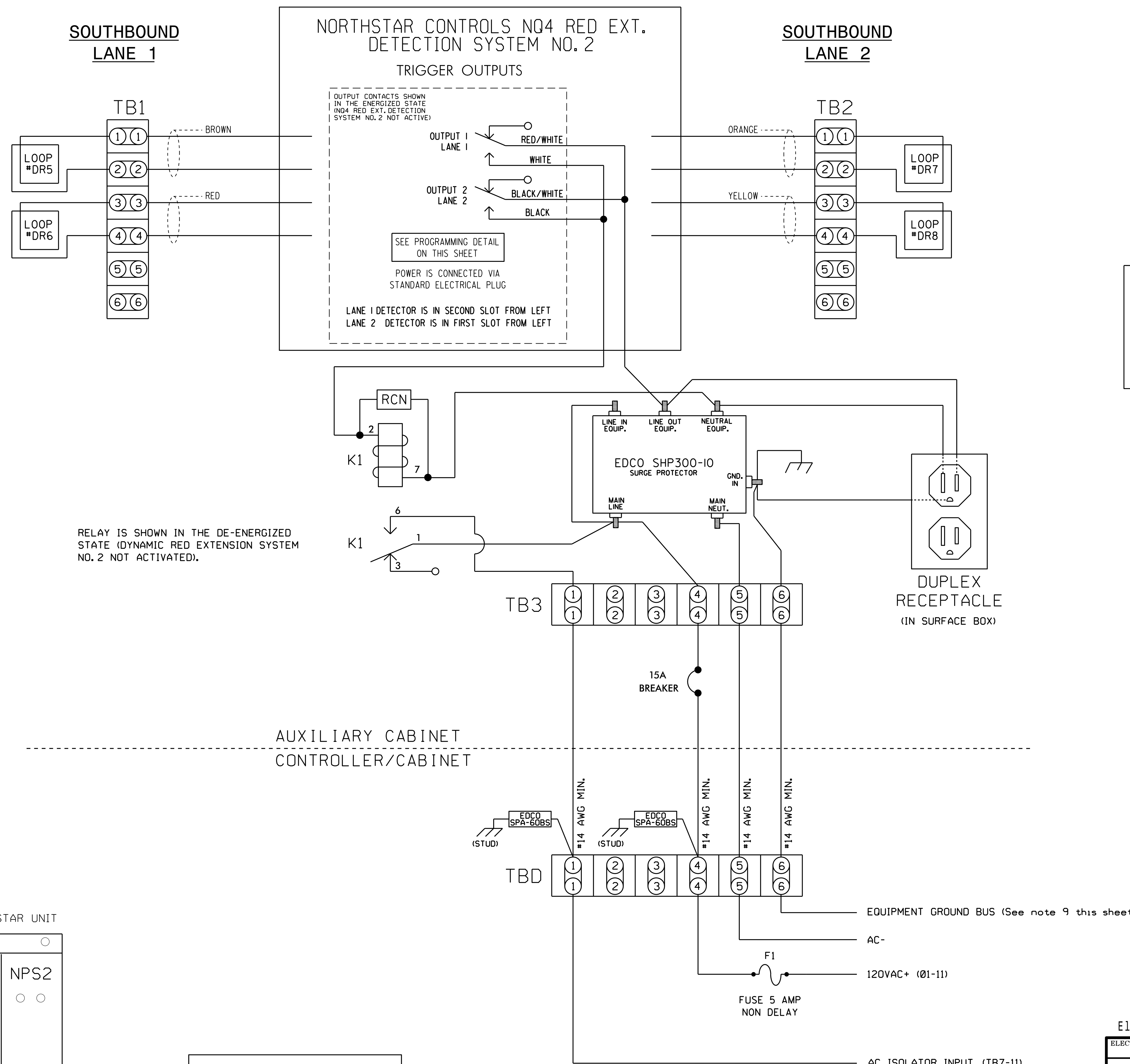
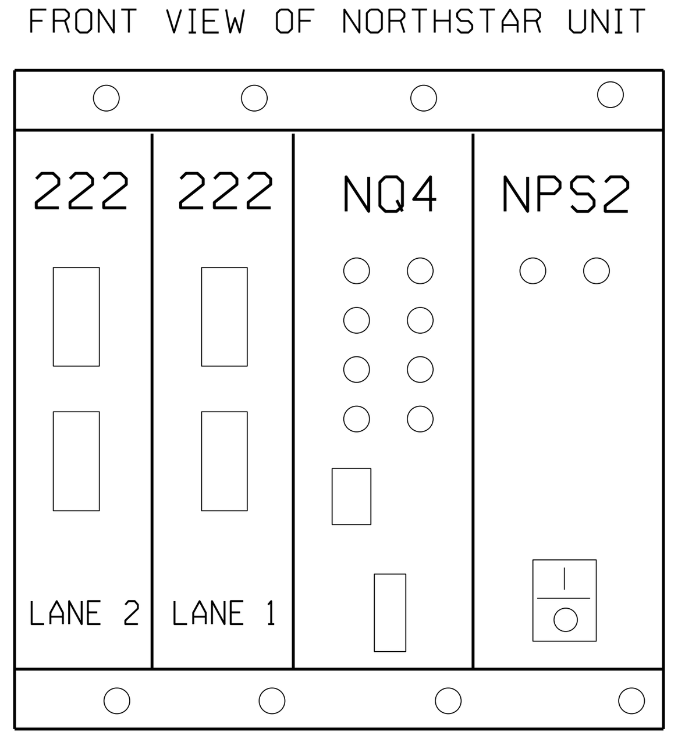
sarmstrong

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 USED FOR DYNAMIC RED EXTENSION - SYSTEM NO. 2

(wire unit as shown below)



FRONT VIEW OF NORTHSTAR UNIT



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

NOTES

1. Loop spacing is critical to the proper operation of this Overspeed Detection system. Make sure loop spacing is correctly programmed in the NQ4 unit.
2. The NQ4 unit shall be located in an auxiliary cabinet adjacent to the Dynamic Red Extension system loops.
3. Relay K1 is an enclosed SPDT general purpose relay with a 120VAC coil, 10A contacts, and octal style plug.
4. The RC network across the coil of K1 is 0.1 micro farad, 100 ohm.
5. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits.
6. EDCO SHP300-10 is an AC service surge protector.
7. Terminal strips TB1, TB2, TB3, and TBD to be added by the installer.
8. DO NOT install ground rods at the auxiliary cabinet.
9. Install equipment ground from the controller cabinet to the auxiliary cabinet if not already present.
10. Install a disconnect at the auxiliary cabinet if there is no disconnect already present.

NORTHSTAR CONTROLS MODEL NQ4 PROGRAMMING DETAIL

(program unit as shown below)

NOTE: Unit must be programmed using a PC and a terminal emulator program. For connection to the terminal emulator, refer to the NQ4 operation manual.

Program the NQ4 by typing the following commands:

1. SET SPEED = 50
2. SET LENGTH = 1'
3. SET ALARMTIME = 5
4. SET SEPARATION = 16' (leading edge to leading edge - program actual measured separation)
5. SET LOOP LENGTH = 6' (program actual measured loop length)
6. SAVE

ALARM LOG NOTE: When Dynamic Red Extension System No. 2 detects a violation, a Special Function 2 Alarm is recorded within the Oasis alarm log with a time and date stamp.

Electrical Detail - Sheet 11 of 13

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17
at
NC 172 (Snead's Ferry Road)

Division 3 Onslow County Folkstone

PLAN DATE: August 2018	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 9/4/2018
DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:57
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Armstrong*030299_sm_ele_xxx.dgn
sarmstrong

ADVANCE BEACON #1 OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #33 (PIN 35) IS REACHED.

```
PAGE:1  C1 PIN:35  NOT ENABLED
OUTPUT ASSIGNMENT #.................33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH)..............1
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................Y
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE AT WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```
PAGE:1  C1 PIN:35  NOT ENABLED
SELECT BEACON INDEX (1-4)...........1
```

WHEN A 'Y' IS ENTERED FOR 'ADVANCE BEACON' 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 'ADVANCE BEACON' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:35  ADVANCE BEACON
OUTPUT ASSIGNMENT #.................33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH)..............1
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................Y
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #34 (PIN 36) IS REACHED.

```
PAGE:1  C1 PIN:36  NOT ENABLED
OUTPUT ASSIGNMENT #.................34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................Y
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```
PAGE:1  C1 PIN:36  NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).......33
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' 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 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:36  OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.................34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................Y
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

OUTPUT REFERENCE SCHEDULE

OUTPUT 33 = Ø2 Ped Yellow
OUTPUT 34 = Ø6 Ped Yellow

ADVANCE BEACON PROGRAMMING DETAIL

(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '2' (OUTPUT BEACON SETTINGS).

```
          OUTPUT BEACON SETTINGS
TRIGGER PHASES: |12345678910111213141516
BEACON #1 OFF   | X
BEACON #2 OFF   |     X
BEACON #3 OFF   |
BEACON #4 OFF   |
          BEACON |   1   2   3   4
OFF DELAY TIME (0-255)|   0   0   0   0
ON DELAY TIME  (0-255)|   0   0   0   0
STOP-TIME HOLD (0-255)|   2   2   0   0
```

SCROLL DOWN TO VIEW ALL DATA

NOTICE STOP TIME HOLD

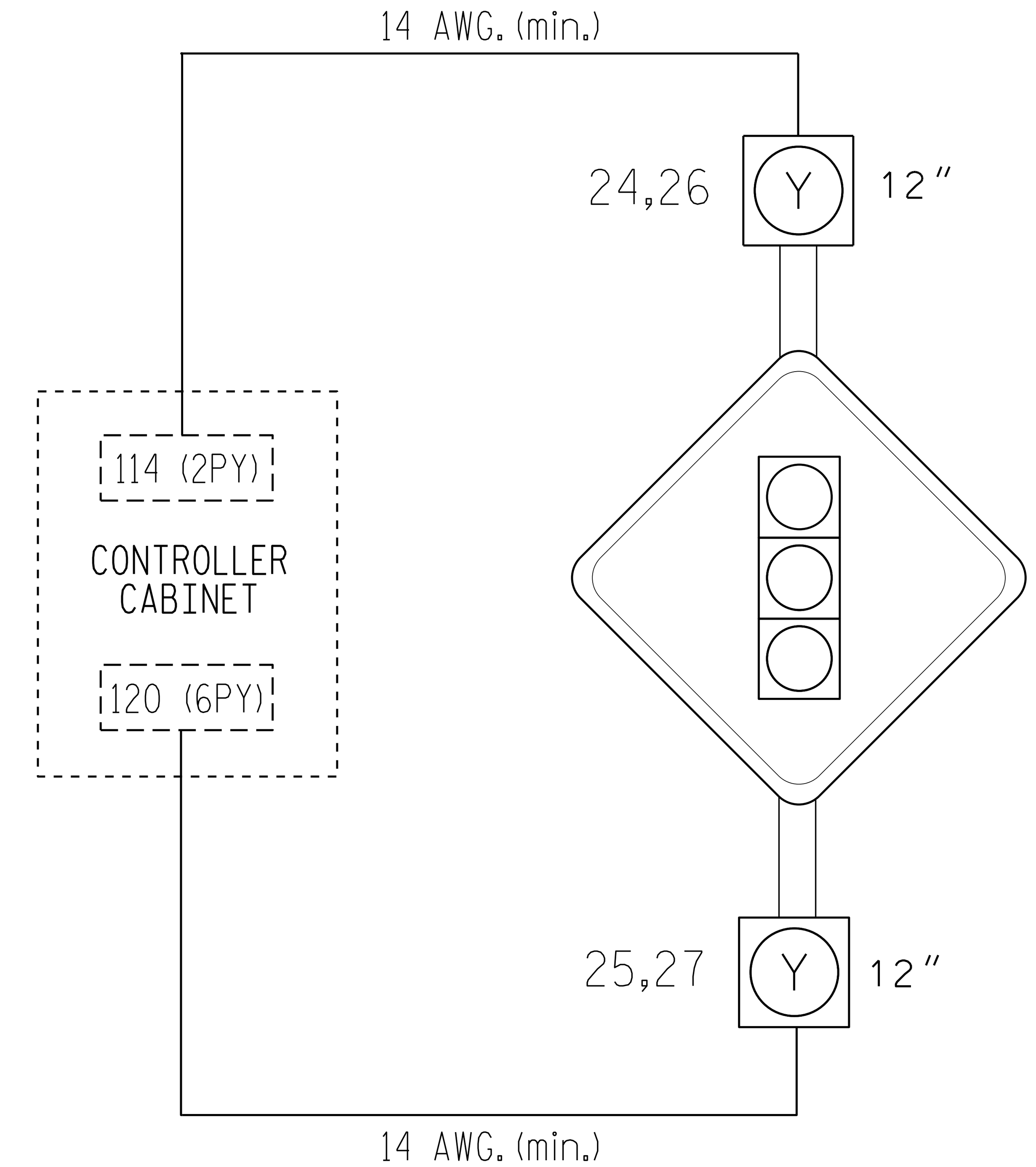
ADVANCE BEACON PROGRAMMING COMPLETE

NOTE: AN OUTPUT HAS TO BE ASSIGNED AS AN ADVANCE BEACON IN ORDER FOR PROPER OPERATION TO OCCUR. SEE OUTPUT ASSIGNMENT DETAIL ON THIS SHEET.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

ADVANCE BEACON #1 WIRING DETAIL

(wire flashers as shown below)



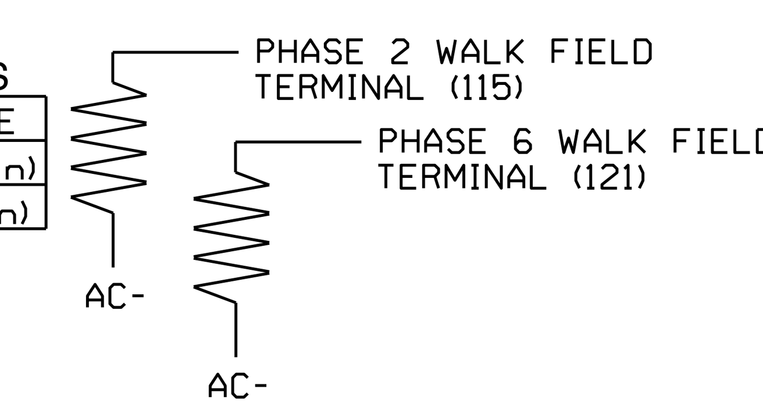
IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 114 (2PY) AND TERMINAL 120 (6PY).
2. INSERT LOAD SWITCH FOR S3 AND S9.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.
4. TO ACTIVATE SIGN OPERATION AS INDICATED ON THE SIGNAL PLANS, REASSIGN OUTPUT 33 AND 34 AS SHOWN ON THIS SHEET.

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



Electrical Detail - Sheet 12 of 13

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17 at NC 172 (Snead's Ferry Road)

Division 3 | Onslow County | Folkstone

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

PLAN DATE: August 2018 | REVIEWED BY:
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

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

DocuSigned by: Ryan W. Hough — DATE 9/4/2018

SIG. INVENTORY NO. 03-0299

ADVANCE BEACON #2
OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #35 (PIN 37) IS REACHED.

```
PAGE:1  C1 PIN:37  NOT ENABLED
OUTPUT ASSIGNMENT #.................35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH)..............1
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................Y
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE AT WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```
PAGE:1  C1 PIN:37  NOT ENABLED
SELECT BEACON INDEX (1-4)...........2
```

WHEN A 'Y' IS ENTERED FOR 'ADVANCE BEACON' 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 'ADVANCE BEACON' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:37  ADVANCE BEACON
OUTPUT ASSIGNMENT #.................35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH)..............1
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................Y
OUT OF PHASE FLASHER................
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #36 (PIN 38) IS REACHED.

```
PAGE:1  C1 PIN:38  NOT ENABLED
OUTPUT ASSIGNMENT #.................36
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................Y
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................Y
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```
PAGE:1  C1 PIN:38  NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).......35
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' 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 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```
PAGE:1  C1 PIN:38  OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.................36
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)..............0
SELECT ASSIGNMENT:
NOT ENABLED.........................
VEHICLE PHASE.......................
PEDESTRIAN PHASE....................
VEHICLE OVERLAP.....................
PEDESTRIAN OVERLAP..................
WATCHDOG............................
DETECTOR RESET......................
ADVANCE BEACON......................
OUT OF PHASE FLASHER................Y
CONTROLLER FLASH....................
RUN FREE............................
RESERVED............................
PREEMPT.............................
SOFT PREEMPT........................
ANY PREEMPT.........................
COORDINATION PLAN...................
OFFSET..............................
PHASE CHECK.........................
PHASE ON............................
PHASE NEXT..........................
```

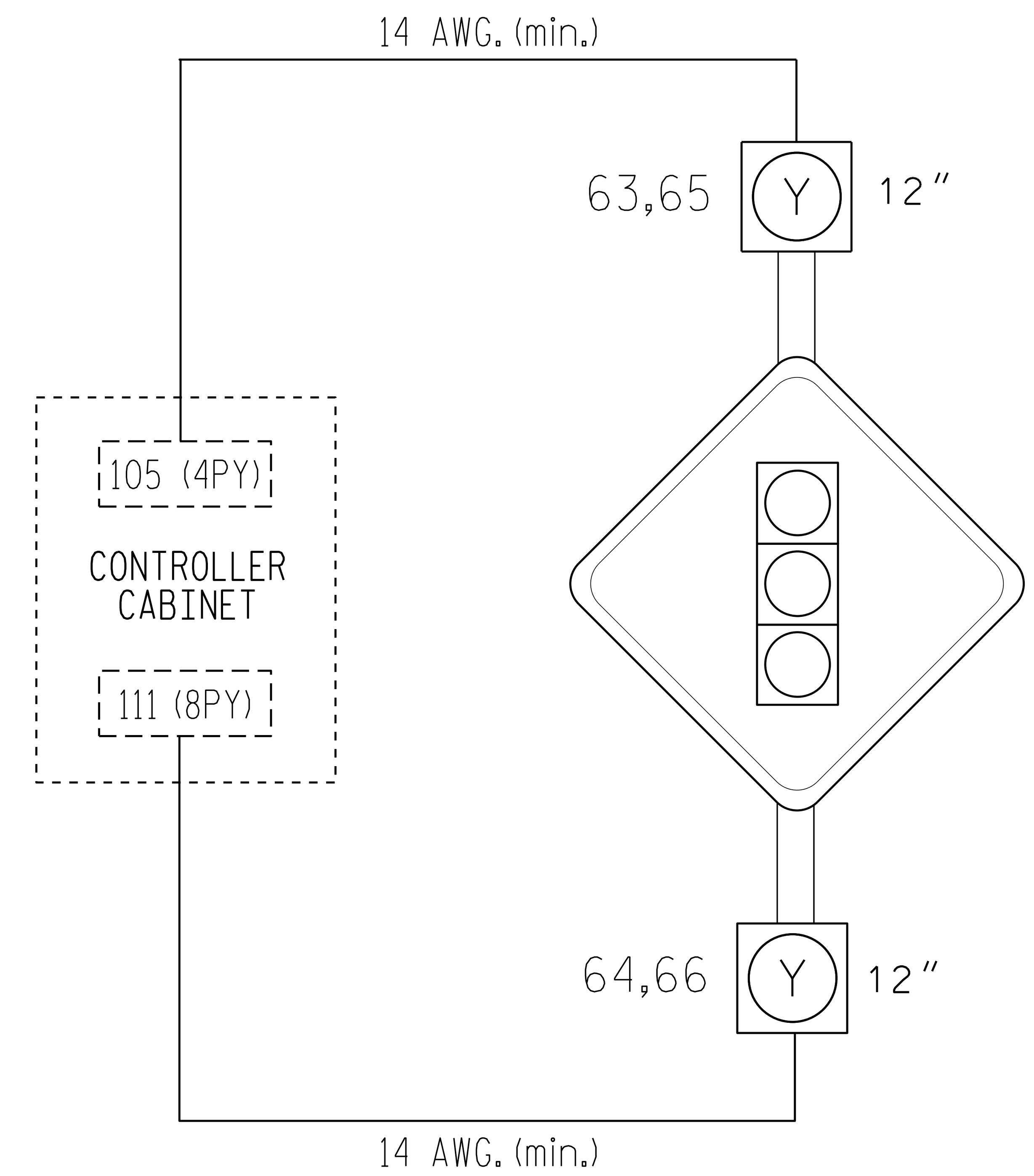
OUTPUT REFERENCE SCHEDULE

OUTPUT 35 = Ø 4 Ped Yellow
OUTPUT 36 = Ø 8 Ped Yellow

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0299
DESIGNED: July 2018
SEALED: 8/30/2018
REVISED: N/A

ADVANCE BEACON #2 WIRING DETAIL

(wire flashers as shown below)



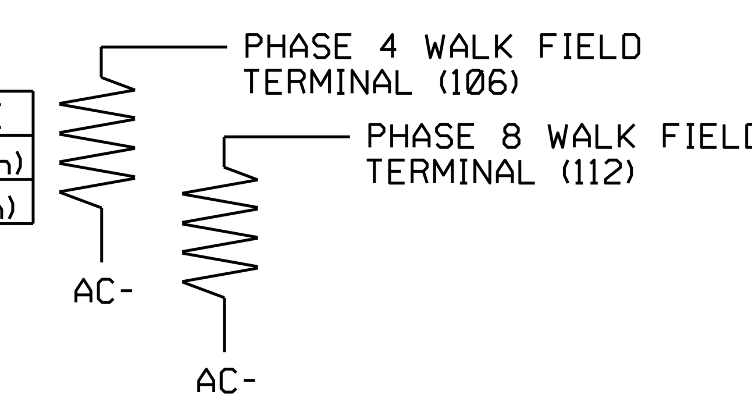
IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 105 (4PY) AND TERMINAL 111 (8PY).
2. INSERT LOAD SWITCH FOR S6 AND S12.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.
4. TO ACTIVATE SIGN OPERATION AS INDICATED ON THE SIGNAL PLANS, REASSIGN OUTPUT 35 AND 36 AS SHOWN ON THIS SHEET.

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



Electrical Detail - Sheet 13 of 13

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17
at
NC 172 (Snead's Ferry Road)

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

Division 3	Onslow County	Folkstone
PLAN DATE: August 2018	REVIEWED BY:	
PREPARED BY: S. Armstrong	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

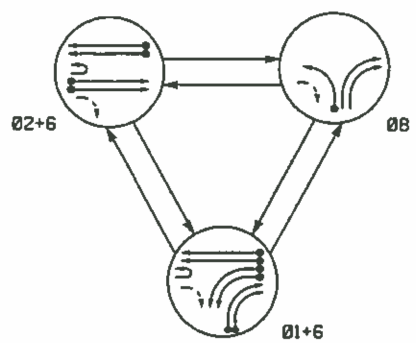
DocuSigned by: Ryan W. Hough 430320FAA2654C3 — 9/4/2018 DATE

SIG. INVENTORY NO. 03-0299

04-SEP-2018 06:58
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Armstrong*030299_sm_ele_xxx.dgn
sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
N/A	SIG-1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	PHASE FLASH
11, 12	←	←R	←R	←R
21	←FY	←FY	←R	←R
22, 23	R	G	R	Y
61, 62	G	G	R	Y
81	←R	←R	←	←R
82, 83, 84	→	R→	→	R→

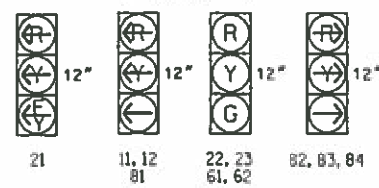
STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

		TO ← 1	TO ← 2	TO ←FY 1	TO ←FY 2	TO ←R 1	TO ←R 2
FROM	←	←	←	←Y	←R	←Y	←R
FROM	←FY	←FY	←FY	←FY	←FY	←Y	←R
FROM	←R	←R	←R	←R	←R	←R	←R

←FY = Flashing Yellow Arrow

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	~~6x60~~	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1B	~~6x80~~	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1C	~~6x60~~	0	2-4-2	-	1	Y	Y	-	-	15	-	-
1D	~~6x60~~	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A	6x6	420	5	-	2	Y	Y	-	-	-	-	-
2B	6x6	420	5	-	2	Y	Y	-	-	-	-	-
6A	6x6	420	4	-	6	Y	Y	-	-	-	-	-
6B	6x6	420	4	-	6	Y	Y	-	-	-	-	-
8A	~~6x60~~	0	2-4-2	-	8	Y	Y	-	-	-	-	-

6x40 (loops 1A, 1B, 1C, 1D)

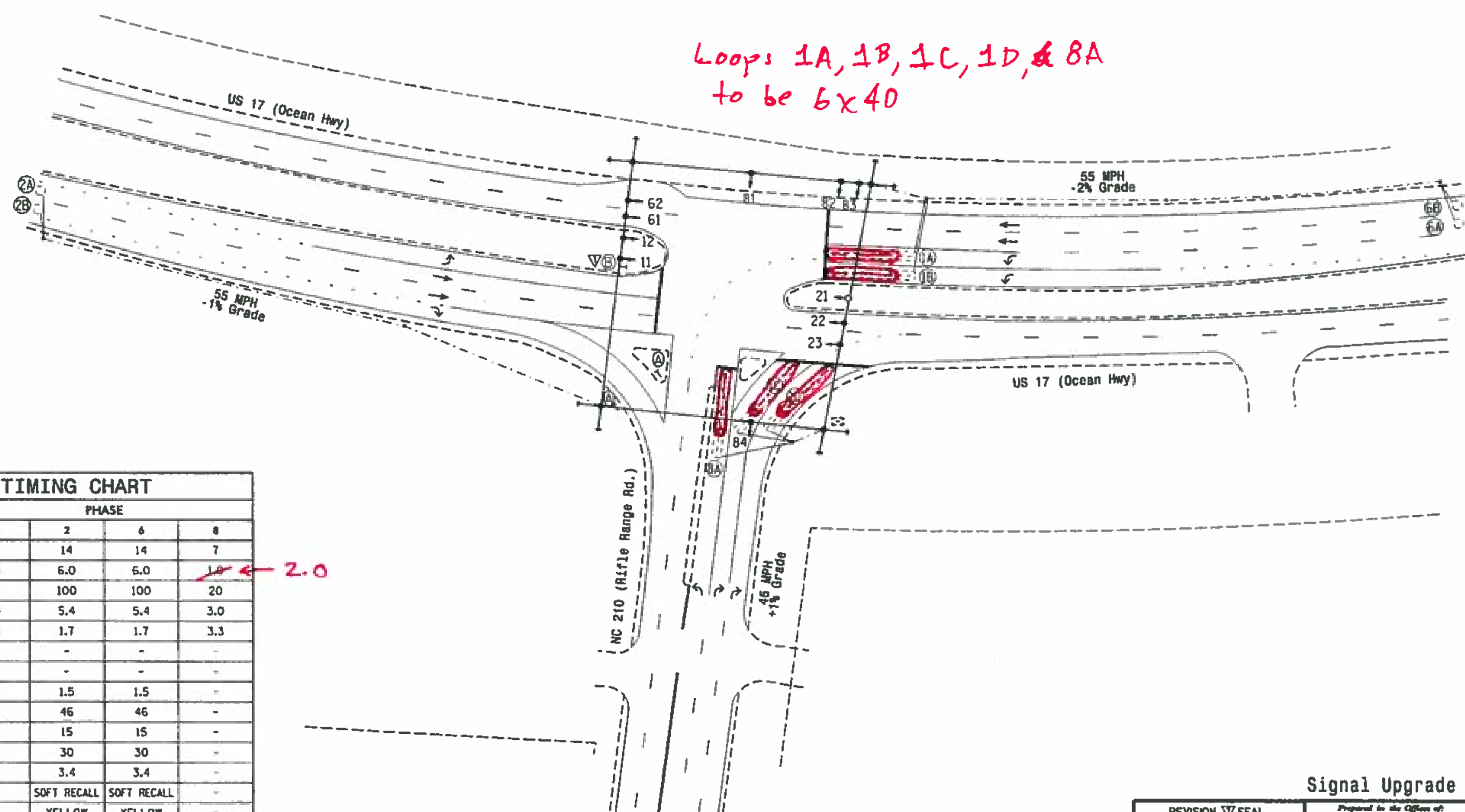
6x40 (loop 8A)

3 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 22 and 23.
4. Set all detector units to presence mode.
5. Pavement markings are existing.

Loops: 1A, 1B, 1C, 1D, & 8A to be 6x40



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	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	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	4	14	14	7
Extension 1 *	2.0	6.0	6.0	~~1.0~~ ← 2.0
Max Green 1 *	30	100	100	20
Yellow Clearance	3.0	5.4	5.4	3.0
Red Clearance	3.5	1.7	1.7	3.3
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	1.5	1.5	-
Max Variable Initial *	-	46	46	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.4	3.4	-
Recall Mode	-	SOFT RECALL	SOFT RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

Signal Upgrade

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 11/2/09 DATE

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, State of North Carolina Department of Transportation

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 17 (Ocean Hwy) at NC 210 (Rifle Range Road)

Division 3 Onslow County Dixon

PLAN DATE:	March 2006	REVIEWED BY:	N Bitting
PREPARED BY:	L Boyer	REVIEWED BY:	

REVISIONS	INIT.	DATE
▽ Revised for Red Revert Operation. Add Sign R10-16.	RJE	4/28/08
▽ Added three section flashing yellow arrow head.	JPG	11/2/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by Boniface A.Maduabuchukwu,P.E. #25475,on 3/7/06. This document is only certified as to the revisions.

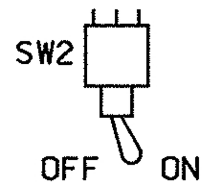
SIG. INVENTORY NO. 03-0211

PROJECT REFERENCE NO.	SHEET NO.
N/A	SIG-2

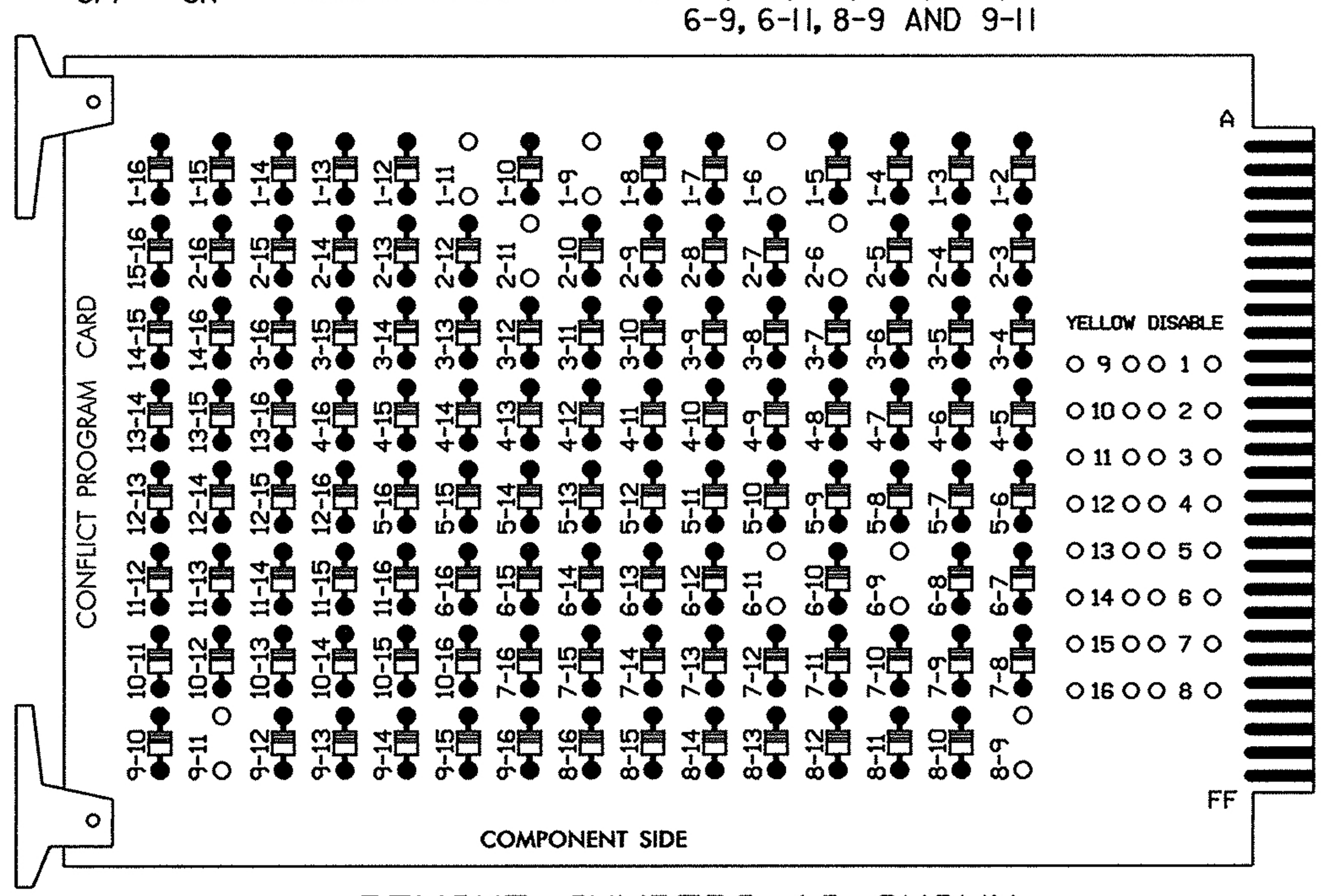
EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL (Rev. 2)

(remove jumpers and set switches as shown)

WD ENABLE

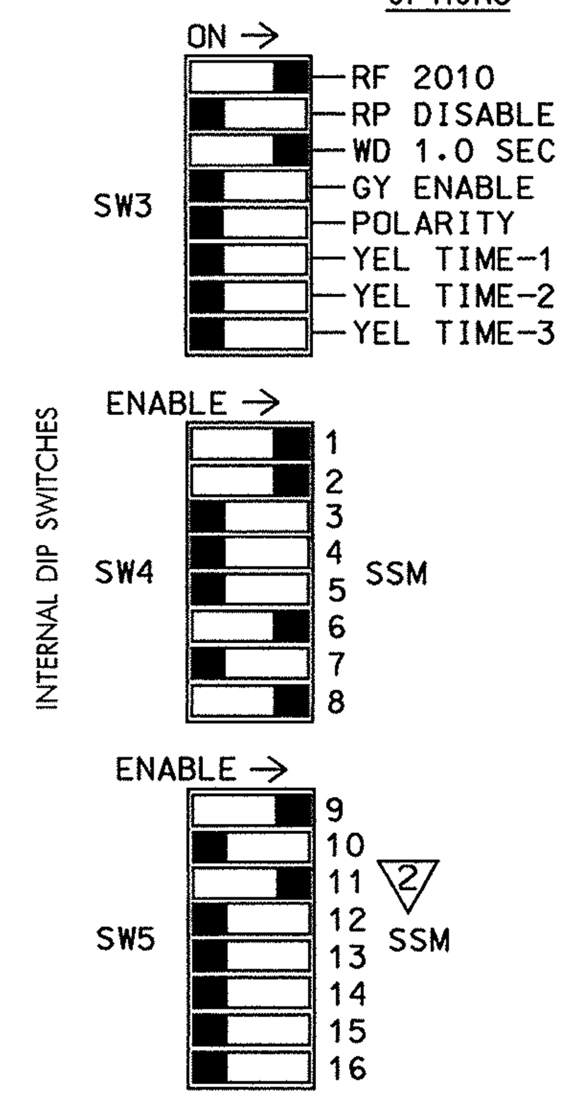


(Rev. 2) REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 2-6, 2-11, 6-9, 6-11, 8-9 AND 9-11



REMOVE JUMPERS AS SHOWN

OPTIONS



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL1-SEL5 are present on the monitor board.

NOTES (Rev. 2)

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. Verify that signal heads flash in accordance with the Signal Plans.
2. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start-Up in Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 Recall Mode for 'SOFT RECALL'.
7. Set all detector unit channels to 'PRESENCE' mode.
8. (Rev. 2) ! Under (Phase Control Functions) menu, scroll down to 'Backup Protect' and DISABLE programming for phase 6.

SIGNAL HEAD HOOK-UP CHART (Rev. 2)

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9 *	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11,12	22,23	NU	NU	NU	NU	NU	61,62	NU	NU	81	NU	82,83 84	NU	NU	21	NU	NU
RED		128						134										
YELLOW		129						135										
GREEN		130						136										
RED ARROW	125										107		A121			A114		
YELLOW ARROW	126										108		A122			A115		
GREEN ARROW	127										109		A123					
(Rev. 2) FLASHING YELLOW ARROW																A116		

* Wire Overlap A to flash on Flasher #2, Circuit #1.

EQUIPMENT INFORMATION (Rev. 2)

CONTROLLER.............EAGLE TYPE 2070L
CABINET................McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE...............ECONOLITE OASIS
CABINET MOUNT..........BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S6,S8,S9,S12 (Rev. 2)
PHASES USED............1,2,6,8
OVERLAP A..............1+8
OVERLAP B..............NOT USED
(Rev. 2) OVERLAP C..............1+2
OVERLAP D..............NOT USED

OVERLAP PROGRAMMING DETAIL (Rev. 2)

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

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

PRESS '+' TWICE

(Rev. 2)

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

<--- NOTICE GREEN FLASH !

OVERLAP PROGRAMMING COMPLETE

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	ø1 1A	ø1 1C	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
"I"	L	ø1 1B	ø1 1D	ø2 2B											ST DC ISOLATOR
"J"	U	SLOT EMPTY	ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
"J"	L		ø6 6B				NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

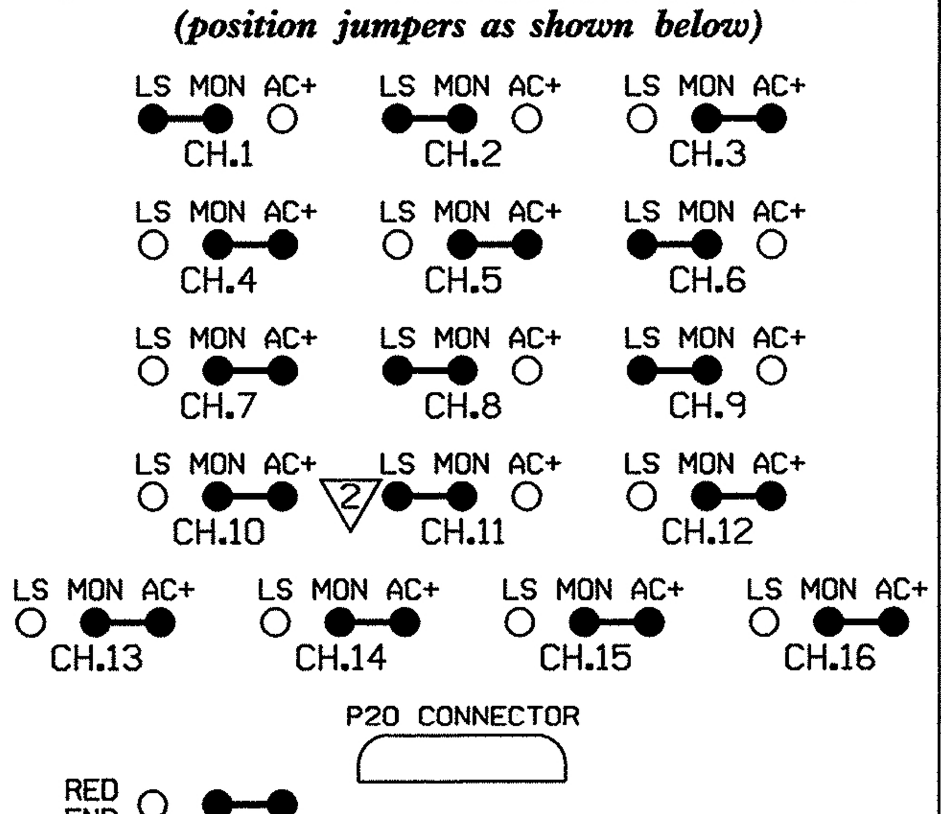
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB2-3,4	I1L	56	18	1	1	Y	Y			
1C	TB2-5,6	I2U	39	1	2	1	Y	Y			15
1D	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING (Rev. 2)

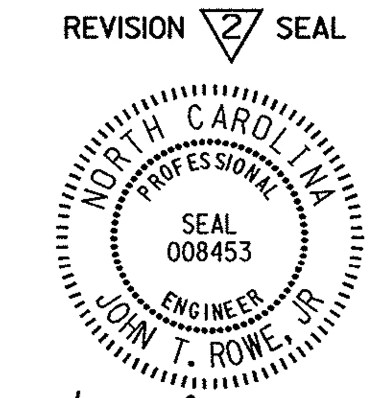
(position jumpers as shown below)



This pin clipped at the factory.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0211
DESIGNED: MARCH 2006
SEALED: 3/7/06
REVISED: 4/28/08 (Rev. 1)
REVISED: 11/2/09 (Rev. 2)

REVISION (Rev. 2) SEAL



SIGNATURE 11-16-09 DATE

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

US 17 (Ocean Hwy) at NC 210 (Rifle Range Road)

Division 3 Onslow County Dixon

PLAN DATE: MARCH 2006	REVIEWED BY: TODD JOYCE
PREPARED BY: JAMES M. PESZKO	REVIEWED BY:

REVISIONS	INIT.	DATE
(Rev. 1) Added Red Revert to signal. (JP)	JTR	5-5-08
(Rev. 2) ADDED 3-SECT. FLASHING YELLOW ARROW HEAD 21. 11-10-09 FER	JTR	11-16-09

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013 on 3/8/06. This document is only certified as to the Revisions.

SIGNATURE DATE

SIG. INVENTORY NO. 03-0211

13-NOV-2009 12:23
S:*ITS Signals*Workgroups*Sig Man*Russ*2070dwgs*030211_sm_ele_200911xx.dgn
feruss