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Project: U-5935

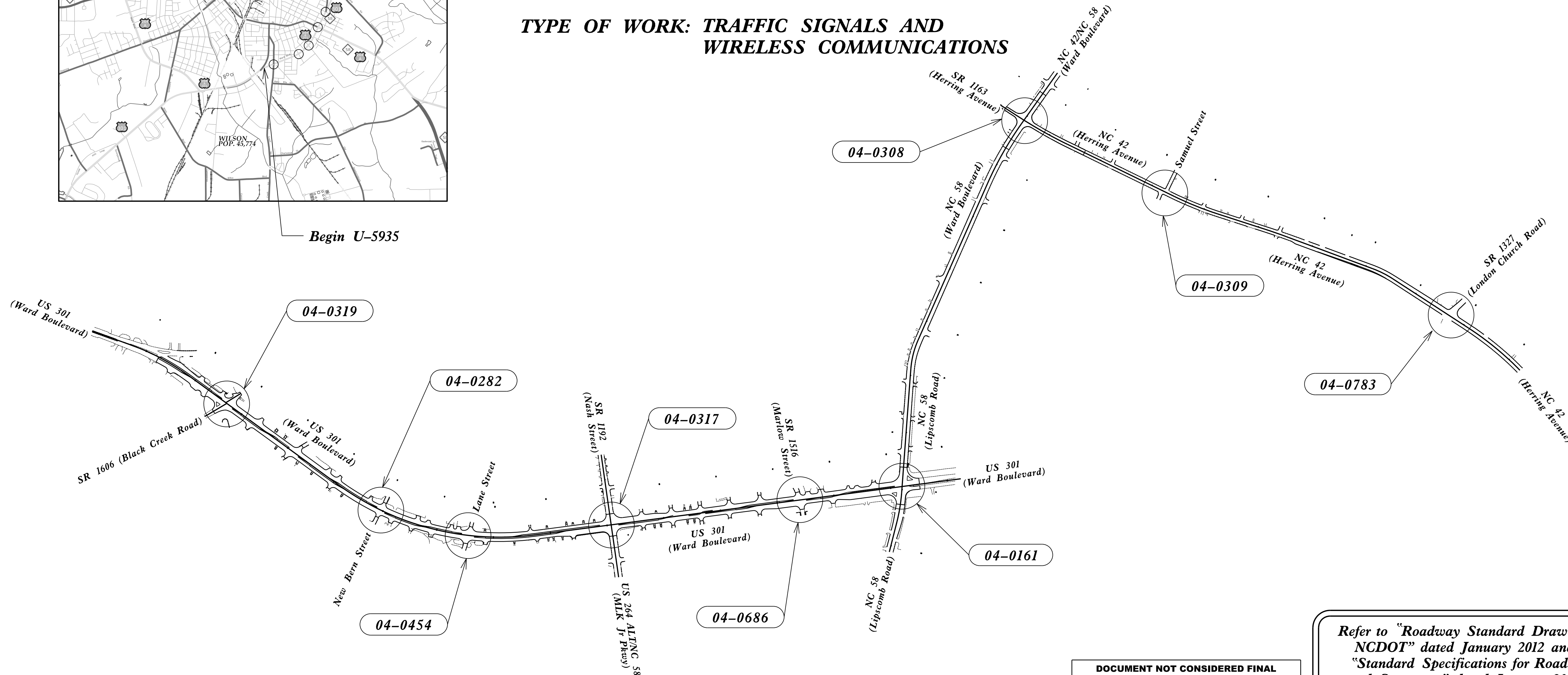
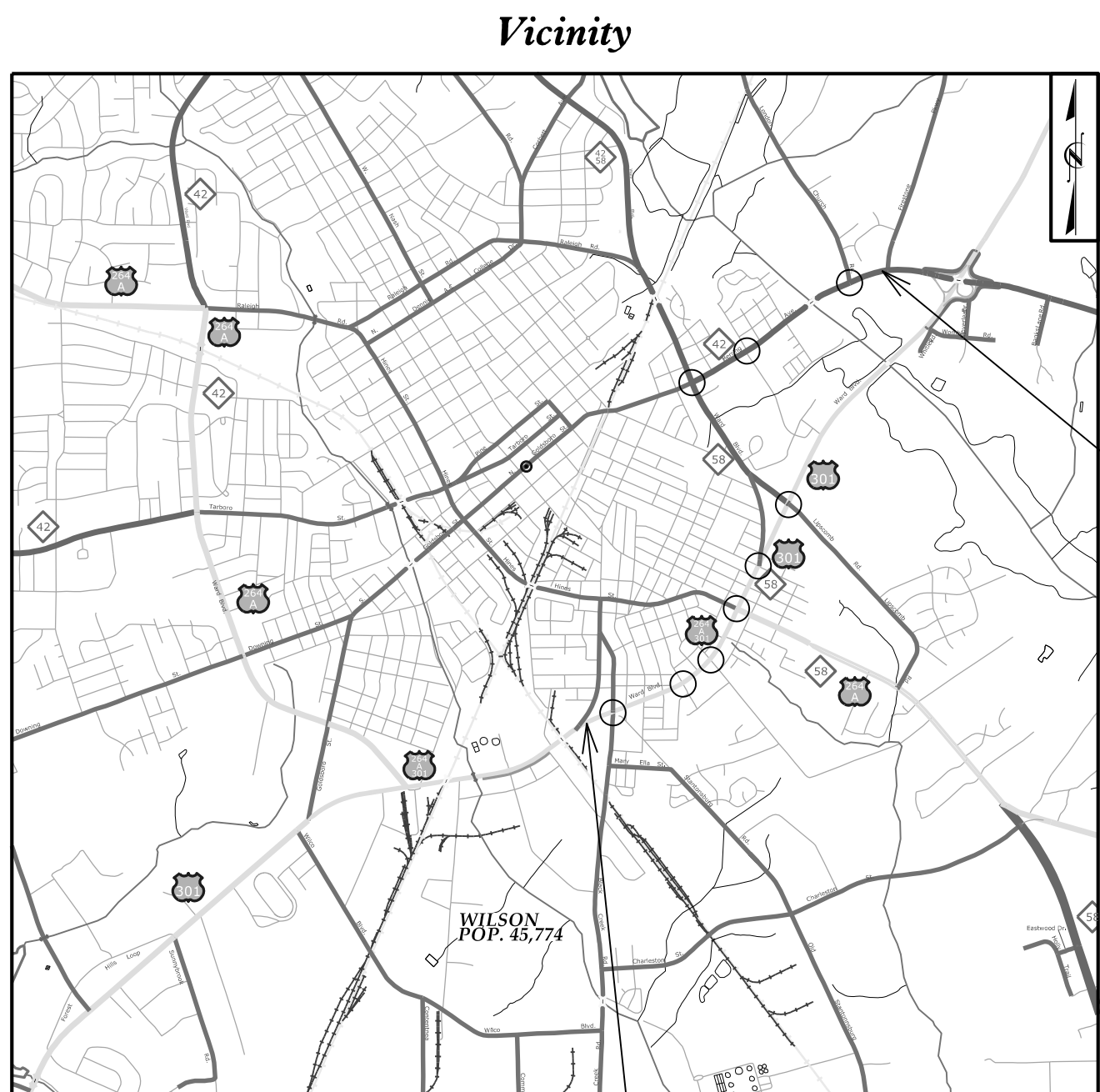
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Project No.	Sheet No.
U-5935	SIG-1.0

WILSON COUNTY

LOCATION: US 301 (WARD BOULEVARD) FROM SR 1606 (BLACK CREEK ROAD) TO NC 58 (LIPSCOMB ROAD) AND NC 42 (HERRING AVENUE) FROM NC 58 (WARD BOULEVARD) TO SR 1327 (LONDON CHURCH ROAD)

TYPE OF WORK: TRAFFIC SIGNALS AND WIRELESS COMMUNICATIONS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.

Sheet #	Reference #	Index of Plans Location/Description
SIG-1.0	-----	Title Sheet
SIG-2.0-2.2	04-0319	US 301 (Ward Boulevard) at SR 1606 (Black Creek Road)
SIG-3.0-3.3	04-0282	US 301 (Ward Boulevard) at New Bern Street
SIG-4.0-4.2	04-0454	US 301 (Ward Boulevard) at Lane Street
SIG-5.0-5.2	04-0317	US 301 (Ward Boulevard) at SR 1192 (Nash Street)/US 264 ALT/NC 58 (Martin Luther King Jr. Parkway)
SIG-6.0-6.2	04-0686	US 301 (Ward Boulevard) at SR 1516 (Marlow Street)/Fikewood Shopping Center
SIG-7.0-7.2	04-0161	US 301 (Ward Boulevard) at NC 58 (Lipscomb Road)
SIG-8.0-8.7	04-0308	NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1163 (Herring Avenue)
SIG-9.0-9.1	04-0309	NC 42 (Herring Avenue) at Samuel Street
SIG-10.0-10.1	04-0783	NC 42 (Herring Avenue) at SR 1317 (London Church Road)
SCP 1-2	-----	Wireless Communications Plans
SIG M1-M8	-----	Standard Drawings for Metal Poles
SIG P1-P3	-----	Pedestrian Pushbutton Location Details

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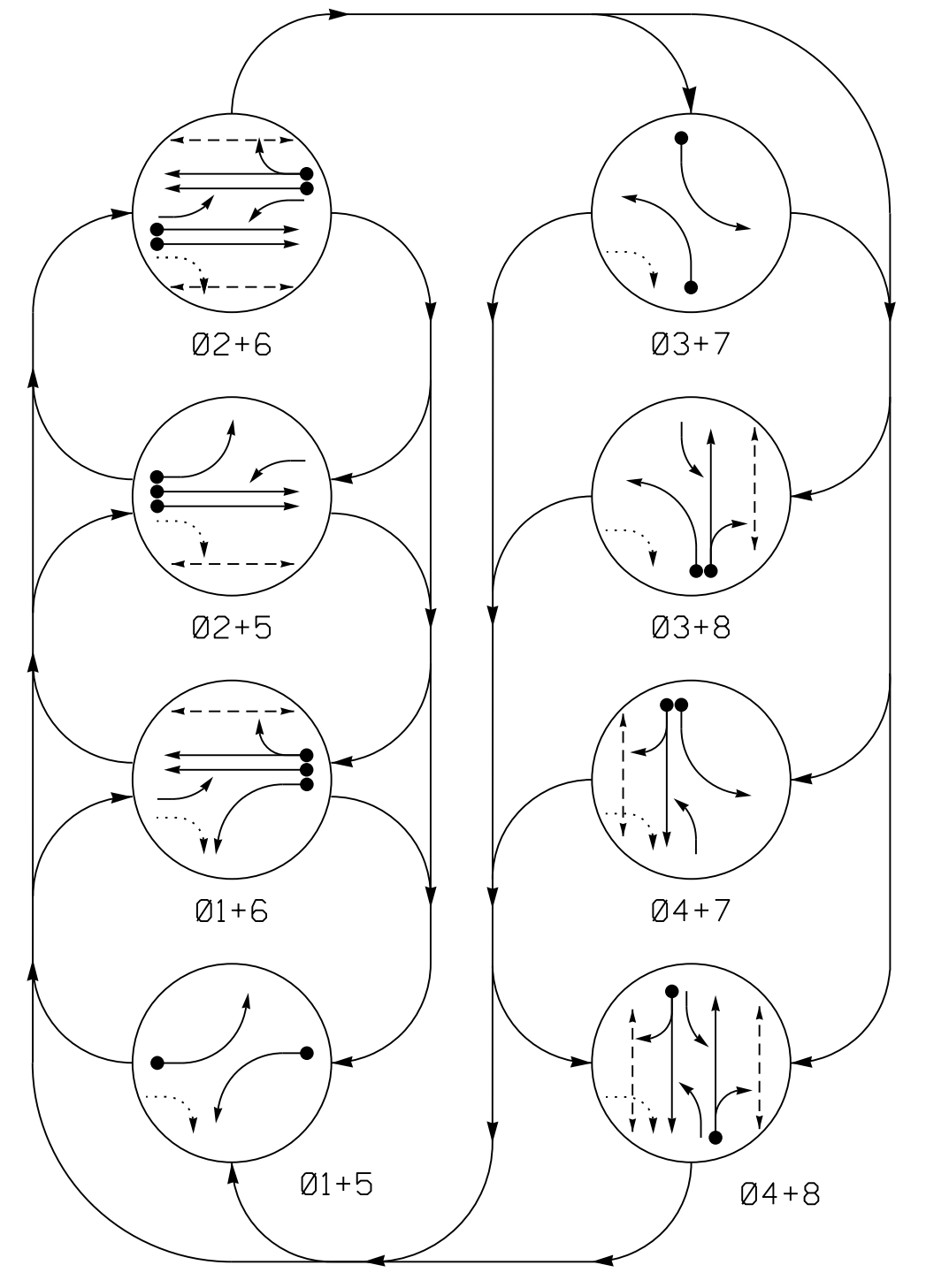
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Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY DIVISION

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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

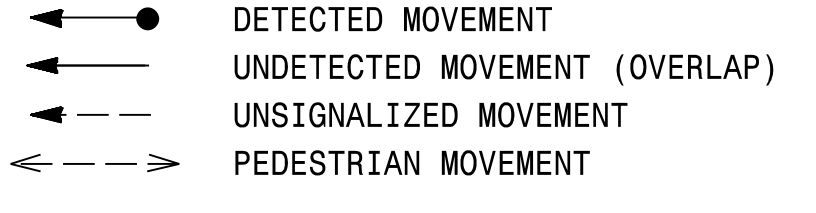
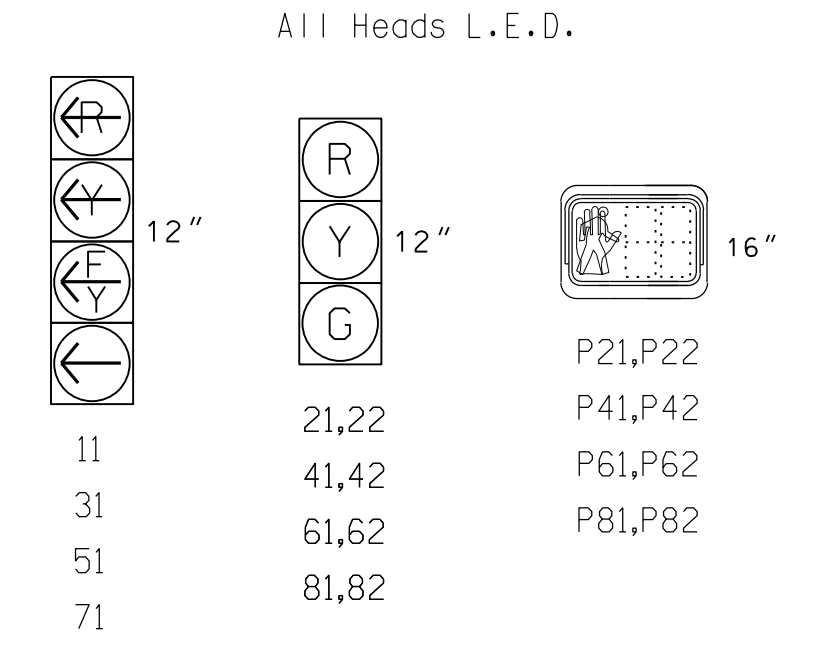


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	←	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	R	G	R
51	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81,82	R	R	R	R	G	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.



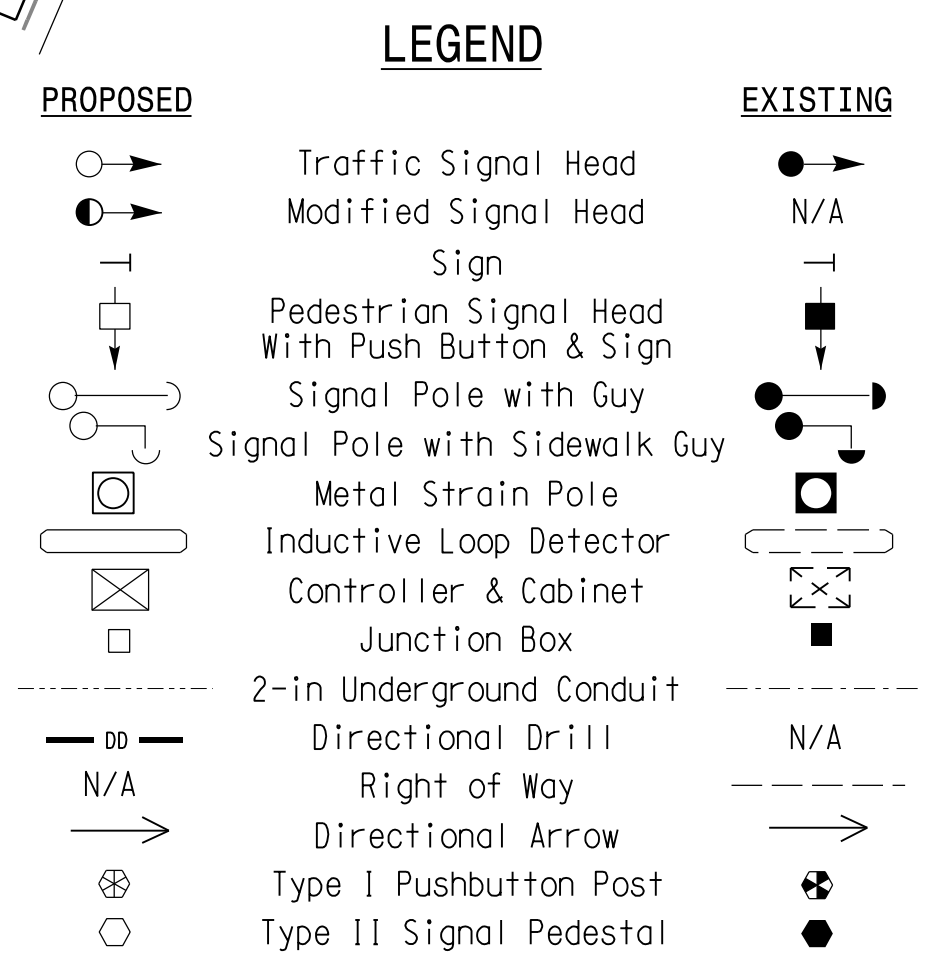
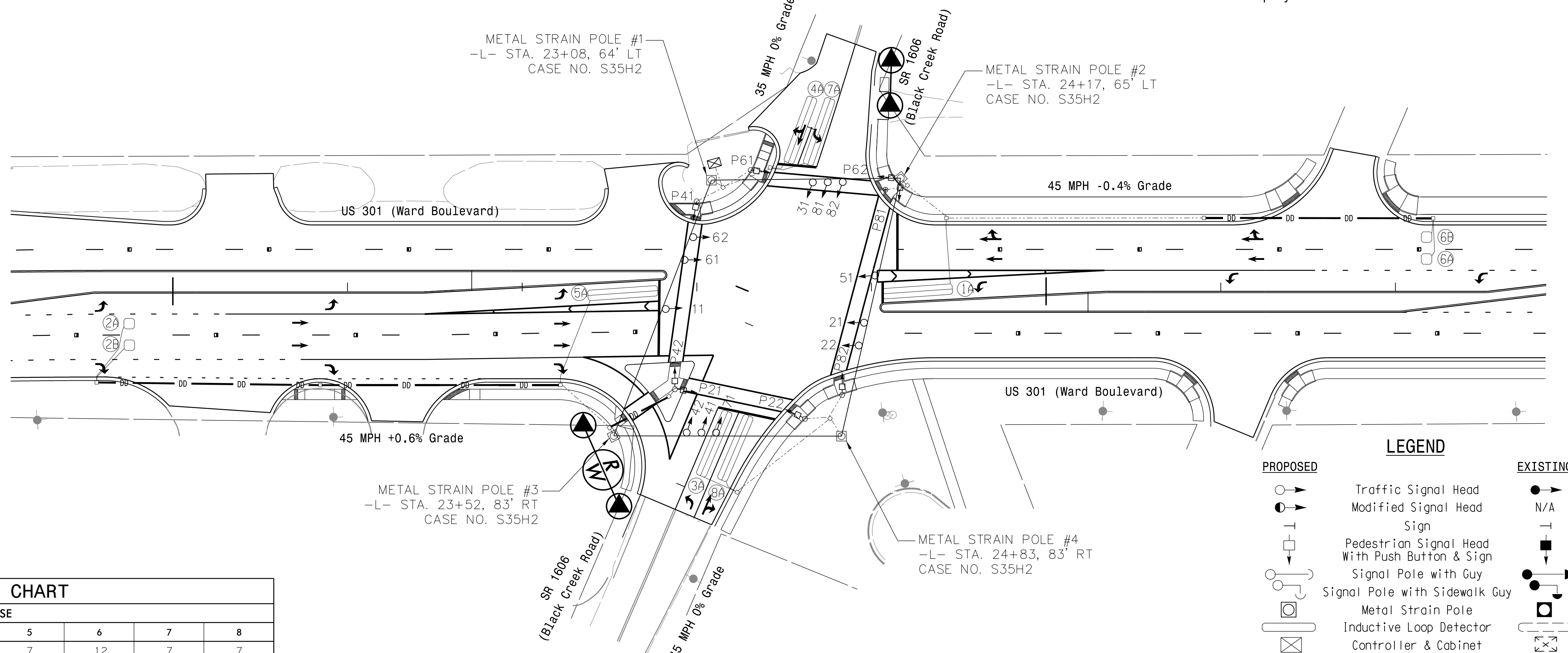
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x40	0	2-4-2	Y	1	Y	Y	-	15	-	Y
2A	6x6	300	5	Y	2	Y	Y	-	-	-	Y
2B	6x6	300	5	Y	2	Y	Y	-	-	-	Y
3A	6x40	0	2-4-2	Y	3	Y	Y	-	15	-	Y
4A	6x40	0	2-4-2	Y	4	Y	Y	-	10	-	Y
5A	6x40	0	2-4-2	Y	5	Y	Y	-	15	-	Y
6A	6x6	300	5	Y	6	Y	Y	-	-	-	Y
6B	6x6	300	5	Y	6	Y	Y	-	-	-	Y
7A	6x40	0	2-4-2	Y	7	Y	Y	-	15	-	Y
8A	6x40	0	2-4-2	Y	8	Y	Y	-	10	-	Y

8-Phase Fully Actuated US 301 (Ward Boulevard) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and /or Phase 5 may be lagged.
- Phase 3 and/or Phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Controller Asset #0319



OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	50	20	30	20	50	20	30
Yellow Clearance	3.0	4.6	3.0	4.5	3.0	4.6	3.0	4.5
Red Clearance	3.4	1.9	3.1	2.8	3.4	1.9	3.2	2.8
Red Revert	-	-	-	-	-	-	-	-
Walk 1 *	-	4.0	-	4.0	-	4.0	-	4.0
Don't Walk 1	-	15	-	21	-	14	-	27
Seconds Per Actuation *	-	1.8	-	-	-	1.8	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	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

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US 301 (Ward Boulevard)
at
SR 1606 (Black Creek Road)

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam

PREPARED BY: K M Cory REVIEWED BY:

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
038970
KELLY M. CORY

DocuSigned by:
Kelly M Cory
8/4/2017

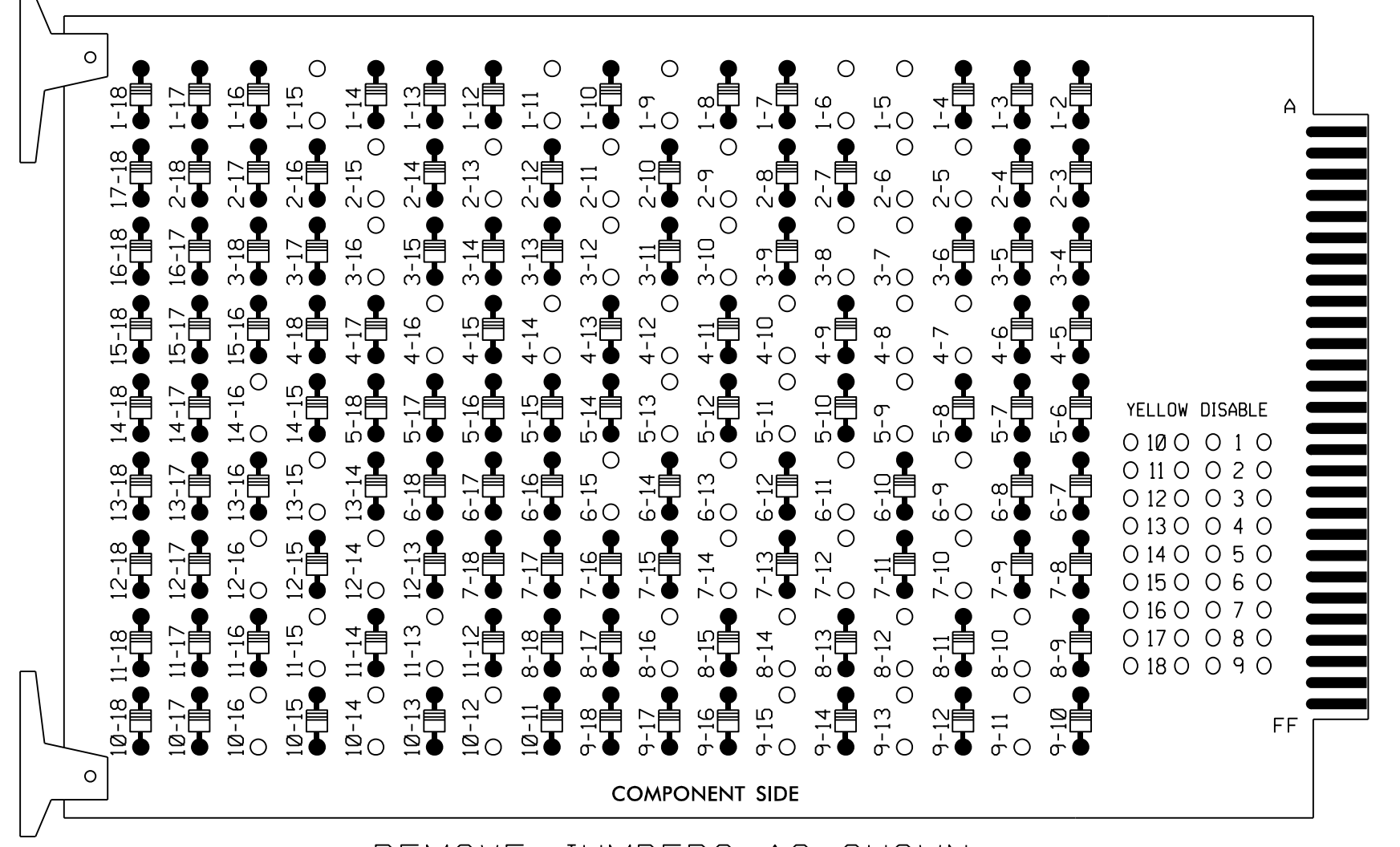
SIG. INVENTORY NO. 04-0319

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EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

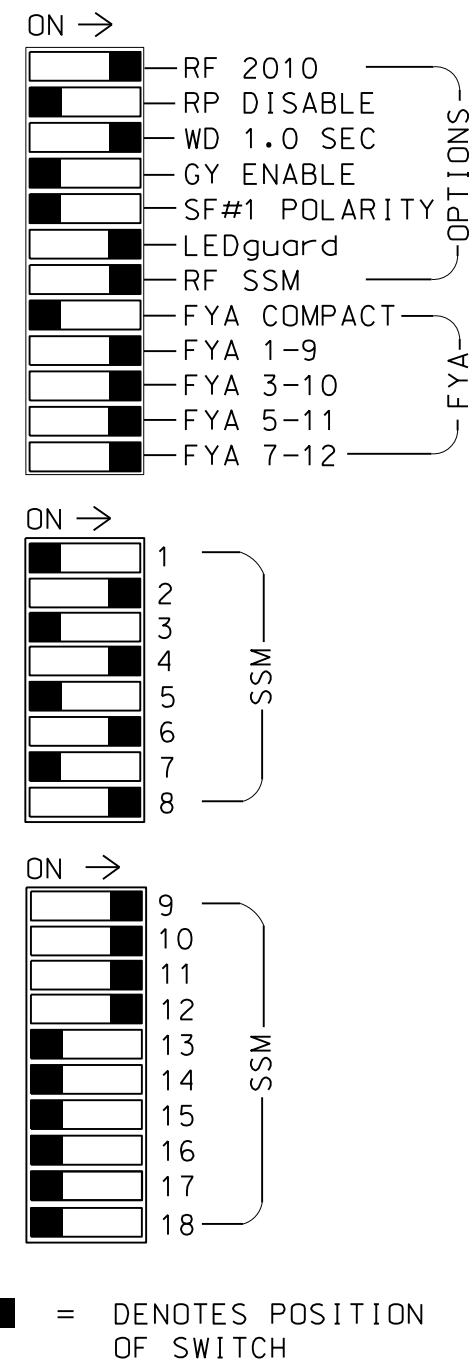
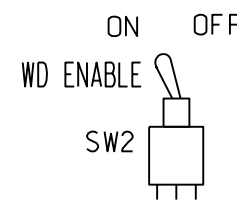
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and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



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2, 4, 6, and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the US 301 (Ward Boulevard) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332 W/ AUX FILE
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	31	41,42	P41, P42	51	61,62	P61, P62	71	81,82	P81, P82	11	31	NU	51	71	NU
RED	128			101				134		107								
YELLOW	*	129		*	102			* 135		* 108								
GREEN		130			103			136		109								
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133			124								
Hand			113			104			119		110							
Walker				115		106			121		112							

NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	-OFS	-OFS	∅ 3	∅ 4	-OFS	-OFS	-OFS	-OFS	-OFS	∅ 2 PED	∅ 6 PED	FS
L	1A	2A	-OFS	-OFS	3A	4A	-OFS	-OFS	-OFS	-OFS	-OFS	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	NOT USED	∅ 2	-OFS	-OFS	NOT USED	NOT USED	-OFS	-OFS	-OFS	-OFS	-OFS	∅ 4 PED	∅ 8 PED	ST
L	2B	2B	-OFS	-OFS	NOT USED	NOT USED	-OFS	-OFS	-OFS	-OFS	-OFS	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 5	∅ 6	-OFS	-OFS	∅ 7	∅ 8	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS
L	5A	6A	-OFS	-OFS	7A	8A	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS
U	NOT USED	∅ 6	-OFS	-OFS	NOT USED	NOT USED	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS
L	6B	6B	-OFS	-OFS	NOT USED	NOT USED	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS	-OFS

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

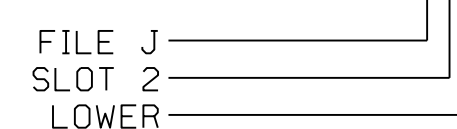
INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y	Y		15
	-	I4U	47	9	22	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			
7A ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29							2 PED
P41,P42	TB8-5,6	I12L	69	31							4 PED
P61,P62	TB8-7,9	I13U	68	30							6 PED
P81,P82	TB8-8,9	I13L	70	32							8 PED

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

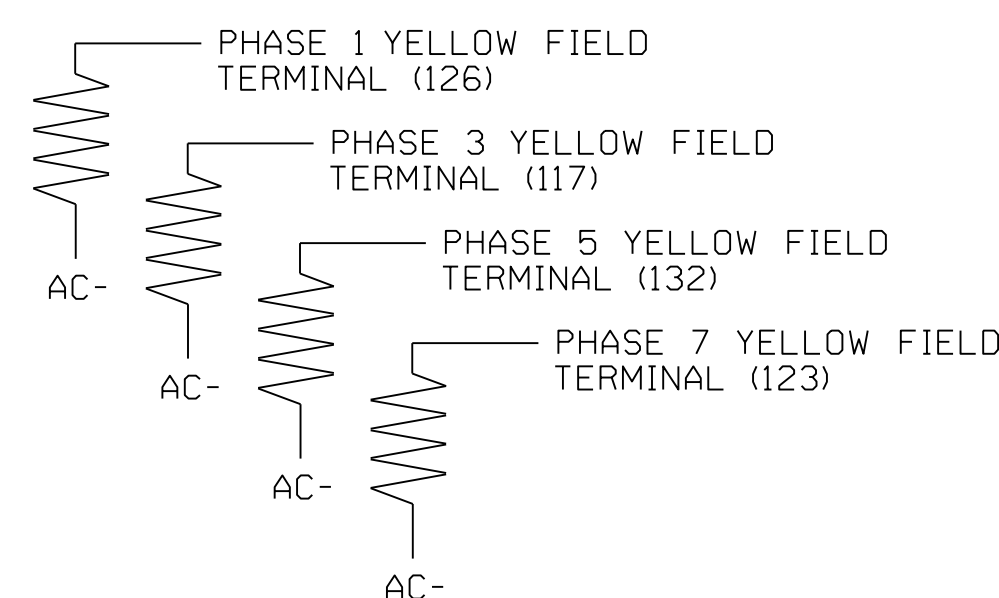
- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0319
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 2 - Signal Upgrade

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ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 301 (Ward Boulevard) at SR 1606 (Black Creek Road)
 Division 4 Wilson County Wilson
 PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
 PREPARED BY: K M Cory REVIEWED BY:
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL

 DocuSigned by: Kelly M Cory 8/4/2017
 DATE
 SIG. INVENTORY NO. 04-0319

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

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 AND 12.
- 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

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON
AND RED CLEAR ON PHASE #3 IS ON

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON PHASE #3 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON
AND RED CLEAR ON PHASE #7 IS ON

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

← NOTICE GREEN FLASH

PRESS '+'

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

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

PRESS '+'

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?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

PRESS '+'

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

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE
USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39	=	Overlap D Red
OUTPUT 40	=	Overlap D Yellow
OUTPUT 41	=	Overlap D Green
OUTPUT 42	=	Overlap C Red
OUTPUT 43	=	Overlap C Yellow
OUTPUT 44	=	Overlap C Green
OUTPUT 47	=	Overlap B Red
OUTPUT 48	=	Overlap B Yellow
OUTPUT 49	=	Overlap B Green
OUTPUT 50	=	Overlap A Red
OUTPUT 51	=	Overlap A Yellow
OUTPUT 52	=	Overlap A Green

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0319
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

04-AUG-2017 11:31 X:\PROJ\FACTS\US_301\TTC\offices\signal\mku\5935\SIG_02.dgn KMK:cry AT NDR\CMCORY

Electrical Detail - Sheet 2 of 2 - Signal Upgrade

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<p>Michael Baker INTERNATIONAL 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No.: F-1084 MBAKERINTL.COM</p>	<p>Prepared in the Offices of:</p> <p>Kelly M Cory Professional Engineer No. 038970 State of North Carolina</p>	<p>US 301 (Ward Boulevard) at SR 1606 (Black Creek Road)</p>											
		<p>Division 4 Wilson County Wilson</p> <p>PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam</p> <p>PREPARED BY: K M Cory REVIEWED BY:</p> <table border="1"> <tr><th>REVISIONS</th><th>INIT.</th><th>DATE</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table> <p>DocuSigned by: Kelly M Cory 8/4/2017</p> <p>SIG. INVENTORY NO. 04-0319</p>		REVISIONS	INIT.	DATE							
REVISIONS	INIT.	DATE											

PHASING DIAGRAM

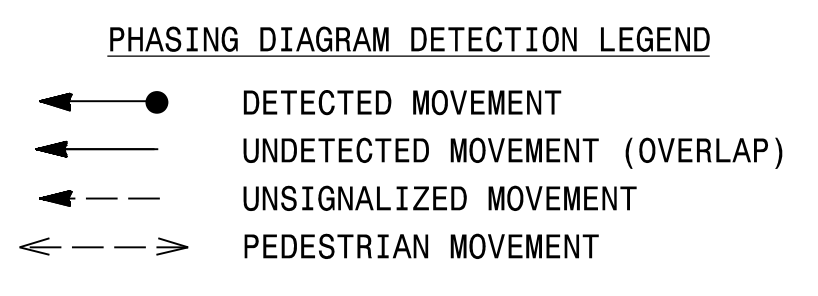
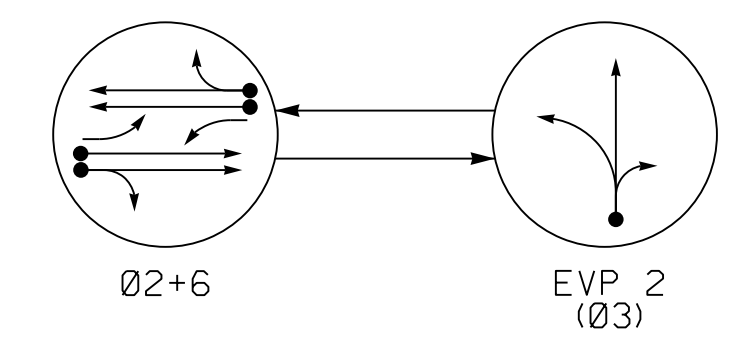
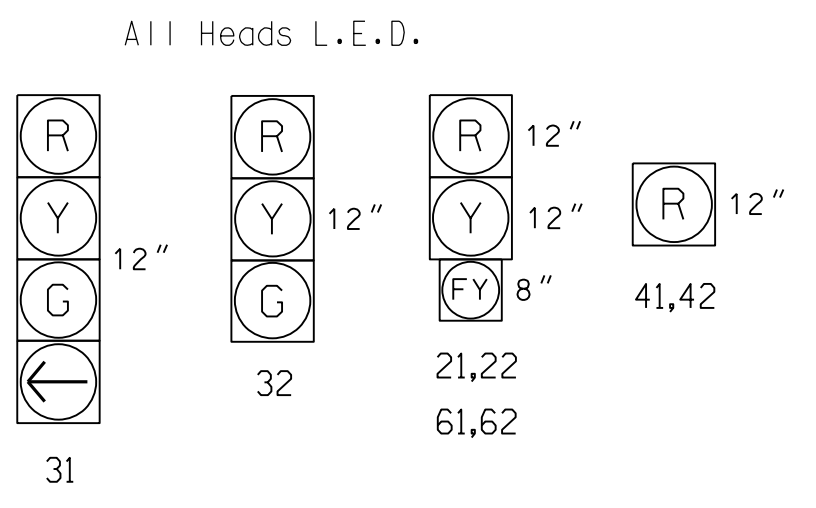


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	2+6	EVP 2	FL	HL*
21,22	FY	R	Y	
31	FR	G	R	
32	FR	G	R	
41,42	FR	R	R	
61,62	FY	R	Y	

FY = 8" FLASHING YELLOW
FR = FLASHING RED
*SEE NOTE #2

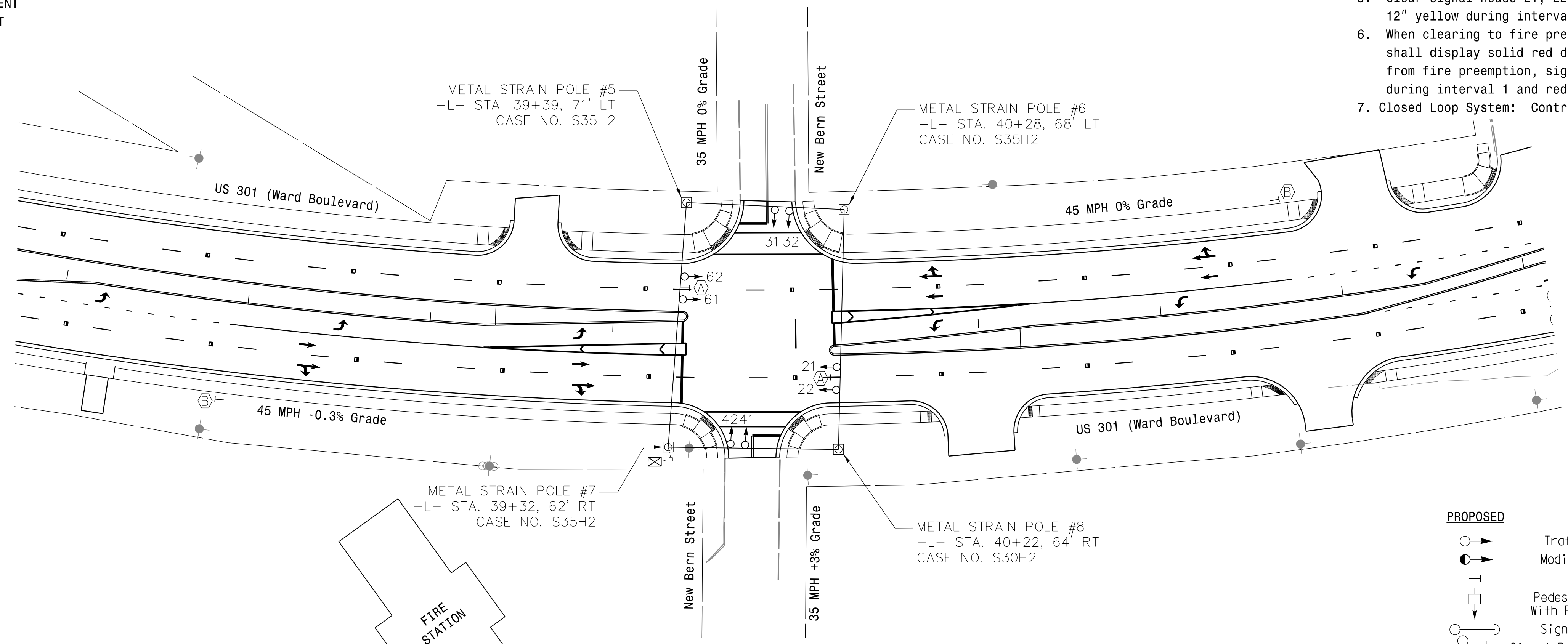
SIGNAL FACE I.D.



2-Phase Semi-Actuated With Emergency Vehicle Preemption US 301 (Ward Boulevard) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Division Traffic Engineer.
- Reconnect new cabinet to existing emergency vehicle preemption switch, which is located in the Fire Station.
- The Division Traffic Engineer will determine the Delay Time and Dwell Time for the emergency vehicle preemption timing.
- Clear signal heads 21, 22, 61, and 62 from flashing 8" yellow to 12" yellow during interval 1 and steady red during interval 2.
- When clearing to fire preemption, signal heads 31, 32, 41 and 42 shall display solid red during intervals 1 and 2. When clearing from fire preemption, signal heads 31 and 32 shall display yellow during interval 1 and red during interval 2.
- Closed Loop System: Controller Asset # 0282



OASIS 2070 TIMING CHART

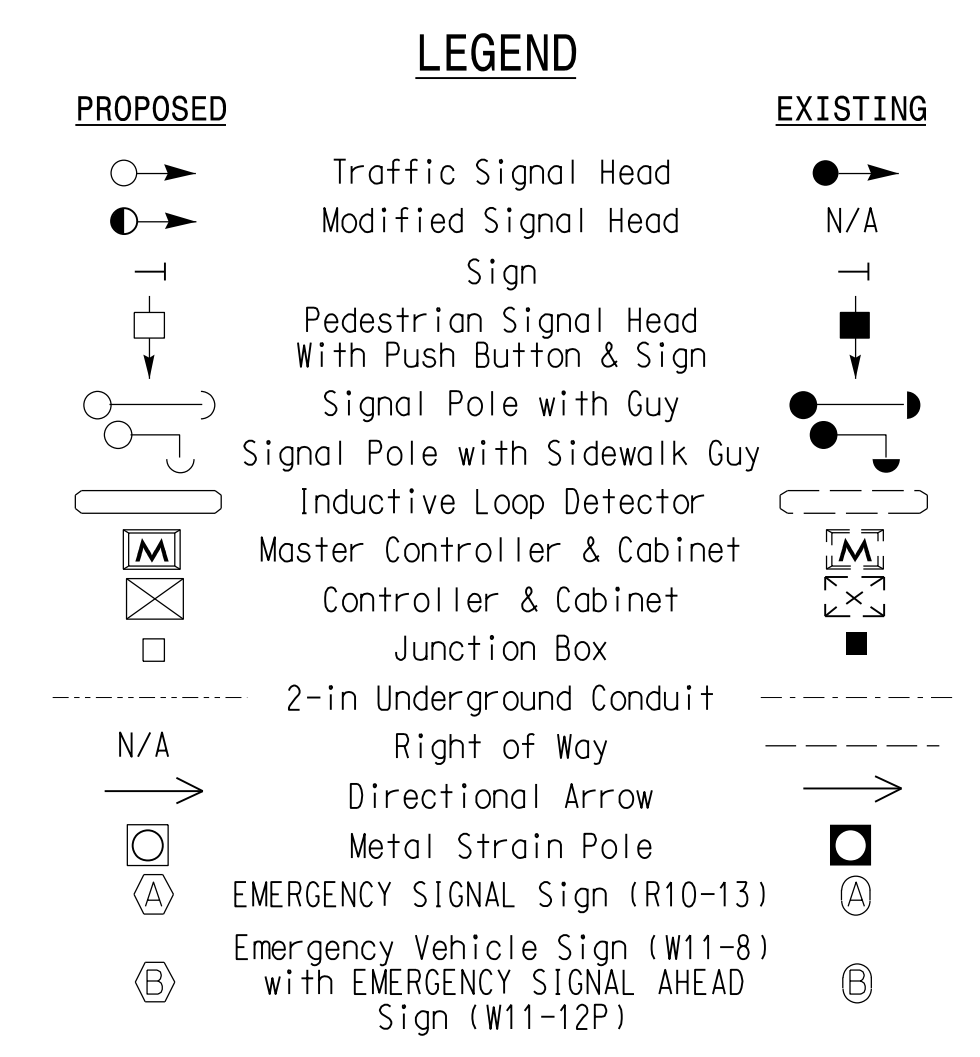
FEATURE	PHASE		
	2	3	6
Min Green 1 *	12	7	12
Extension 1 *	0.0	0.0	0.0
Max Green 1 *	30	30	30
Yellow Clearance	4.6	3.7	4.6
Red Clearance	1.0	1.9	1.0
Red Revert	2.0	2.0	2.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

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

OASIS 2070 EV PREEMPT

FUNCTION	EV PRE 2
Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	3.7
Interval 1 - Dwell Red	1.9
Interval 5 - Exit Green	1
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Exit Phase(s)	2+6
Priority	MEDIUM
Delay Time	**
Min Green Before Pre	1
Ped Clear Before Pre	-
Yellow Clear Before Pre	4.6
Red Clear Before Pre	1.0
Dwell Min Time	**
Enable Backup Protection	Y
Ped Clear Through Yellow	N
Omit Overlaps	-
Preempt Extend	N/A

** SEE NOTE #3



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Signal Modification

US 301 (Ward Boulevard) at New Bern Street

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam

PREPARED BY: K M Cory REVIEWED BY:

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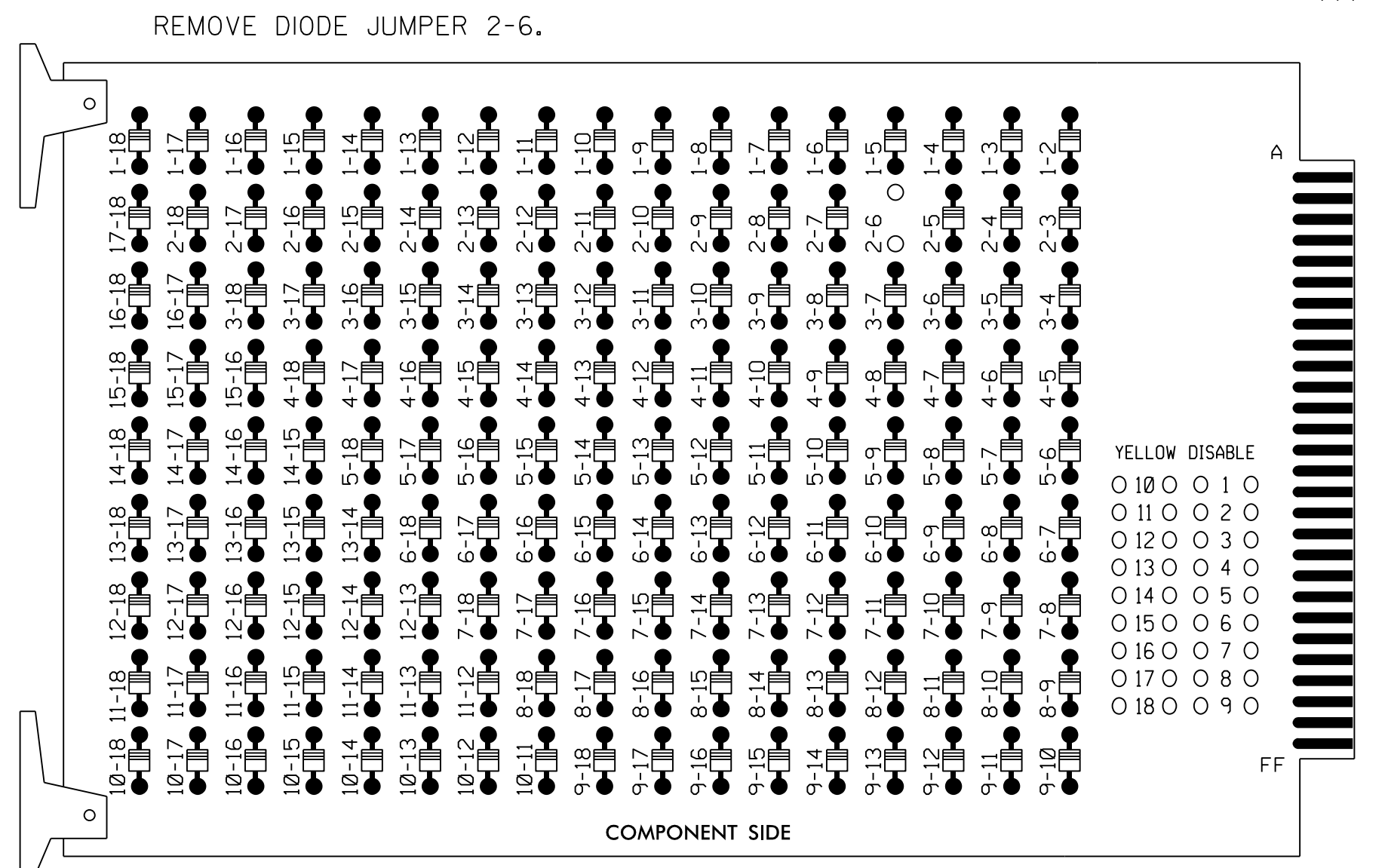
SEAL

DocuSigned by: Kelly M Cory 8/4/2017

SIG. INVENTORY NO. 04-0282

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

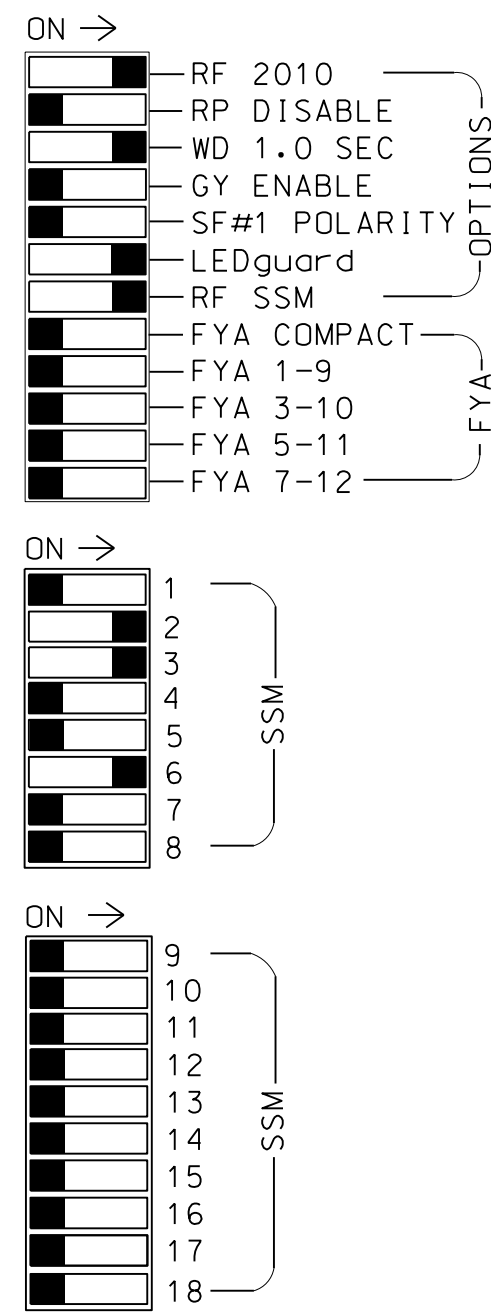
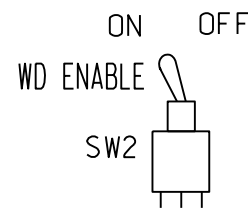
(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,*S3,S4,S5,S8,S11
 PHASES USED.....2,**3,6
 OVERLAPS.....NONE

* S3 USED FOR FIREHOUSE PILOT LIGHT CONTROL
 ** USED DURING PREEMPT ONLY

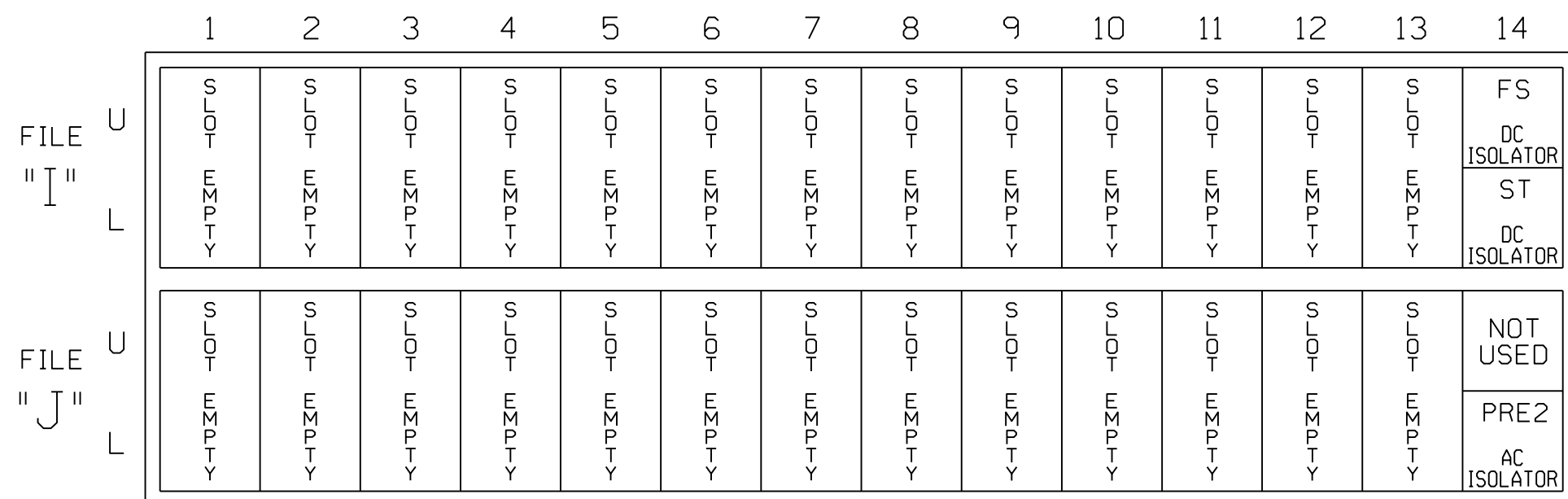
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	FIRE PILOT LAMP	31	32	41,42	NU	NU	61,62	NU	NU	NU
RED		128		** 116	** 116	** 101			134			
YELLOW		129		117	117	*			135			
GREEN				118	118	*						
RED ARROW												
YELLOW ARROW												
GREEN ARROW				118								
8' FLASHING YELLOW		130							136			
PED YELLOW				* 114								
				*								

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ** Denotes that phases 3 and 4 red are driven by OLA and OLB, respectively. Phase 4 is not enabled in controller sequence. This is done to provide in-cycle flashing/steady operations of signals during preemption. See Sheet 2 of this electrical detail for Logic Programming and Sheet 3 for Output Programming.

INPUT FILE POSITION LAYOUT

(front view)

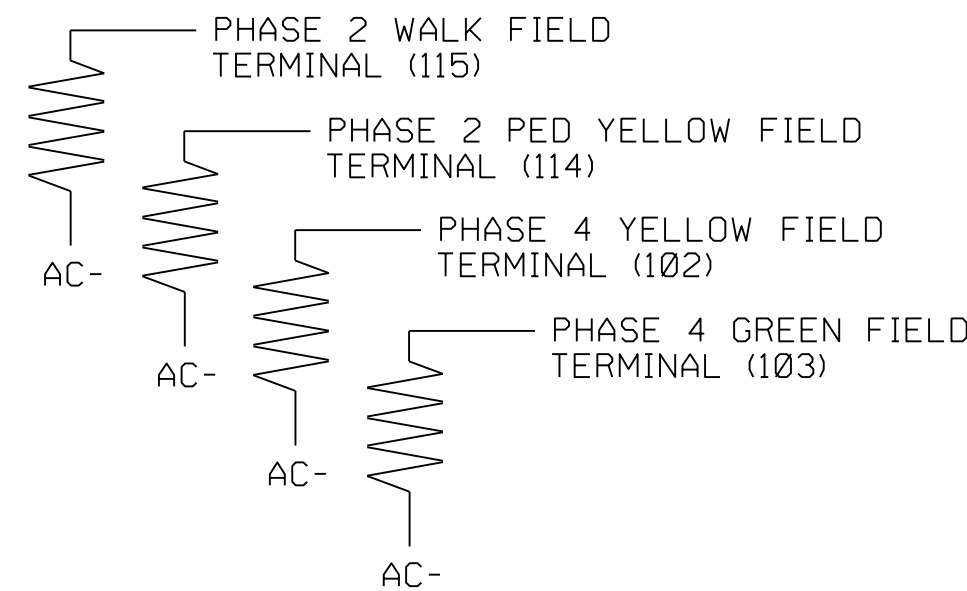


EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME
 PRE = PREEMPT

LOAD RESISTOR INSTALLATION DETAIL

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



PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 3 for 'Omit Phase' and Phases 2 and 6 for 'Startup Calls'. This is to prevent Phase 3 from being served when not in Preempt.

GREEN INTERVAL FLASH PROGRAMMING DETAIL TO PROVIDE IN CYCLE FLASHING FOR HEADS 21,22,61 & 62

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phases 2 and 6 for 'Green Interval Flash'.

Electrical Detail - Sheet 1 of 3 - Signal Modification

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ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 301 (Ward Boulevard)
at
New Bern Street

Division 4 Wilson County Wilson

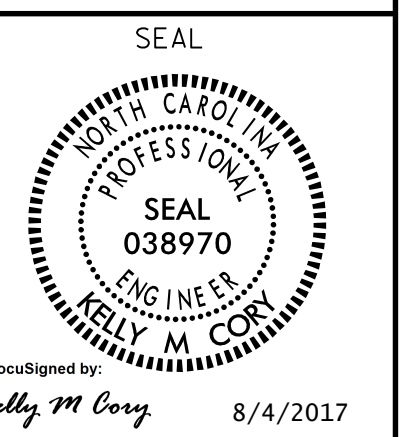
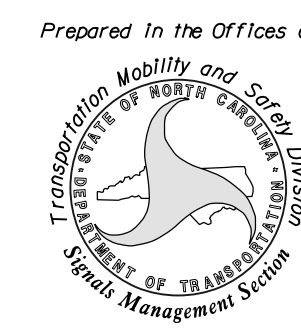
PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam

PREPARED BY: K M Cory REVIEWED BY:

REVISIONS INIT. DATE

750 N.Greenfield Pkwy, Garner, NC 27529

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 M.BAKER@INTL.COM



DocuSigned by: Kelly M Cory 8/4/2017

SIGNATURE DATE

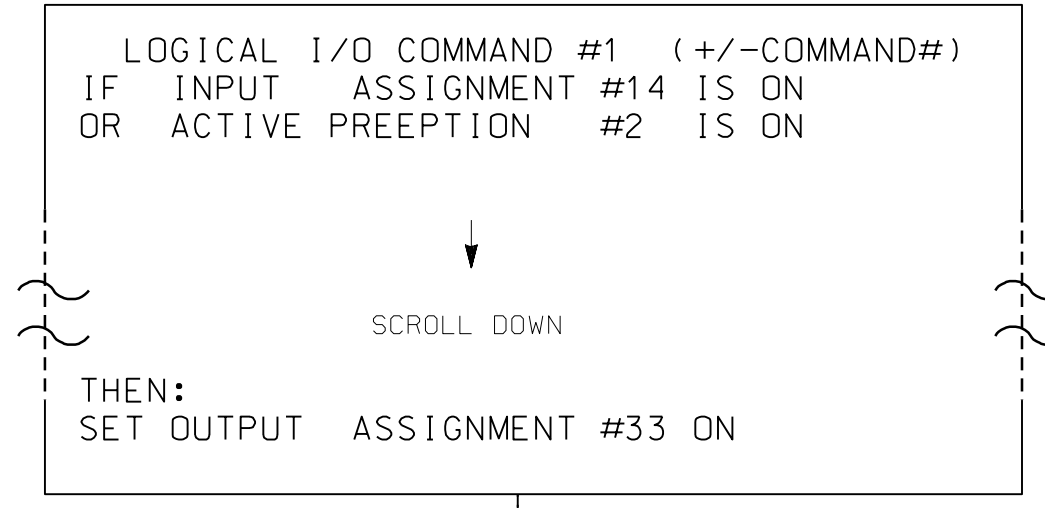
SIG. INVENTORY NO. 04-0282

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0282
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

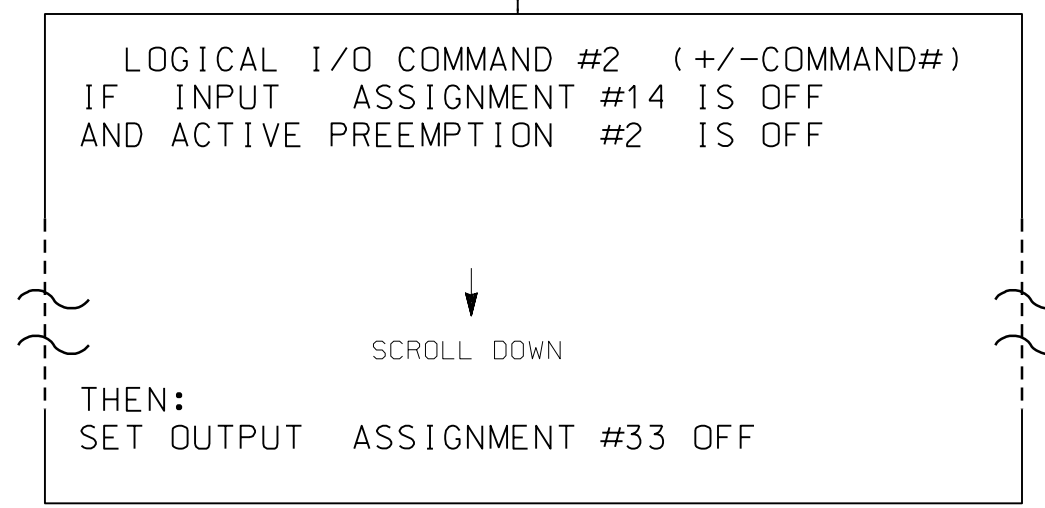
LOGICAL I/O PROCESSOR PROGRAMMING DETAIL FOR INDICATOR LAMP CONTROL

(program controller as shown below)

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



NOTE: FIRE HOUSE PILOT LAMP LOGIC.



NOTE: FIRE HOUSE PILOT LAMP LOGIC.

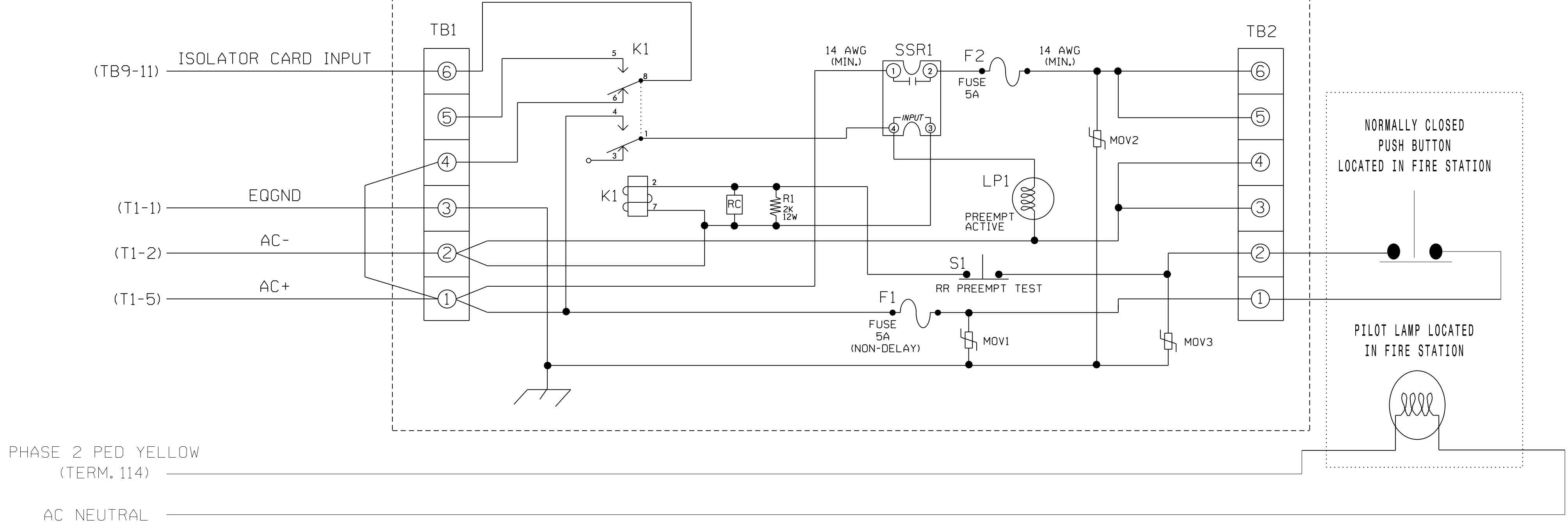
END OF PROGRAMMING

OUTPUT REFERENCE SCHEDULE	
USE TO INTERPRET LOGIC PROCESSOR	
INPUT 14 =	Preempt 2
OUTPUT 33 =	Phase 2 PED Yellow

EV Preemption Control Box Wiring Detail

(wire as shown below)

CABINET WIRING



PHASE 2 PED YELLOW (TERM. 114) _____

AC NEUTRAL _____

LAMP NOTES

- If field terminal 114 has a conflict monitor wire attached, remove, tape, and label wire.
- Make sure load resistors are in place as shown in the Load Resistor Installation Detail.
- Install a loadswitch in Output File Slot S3.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0282
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #2.

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

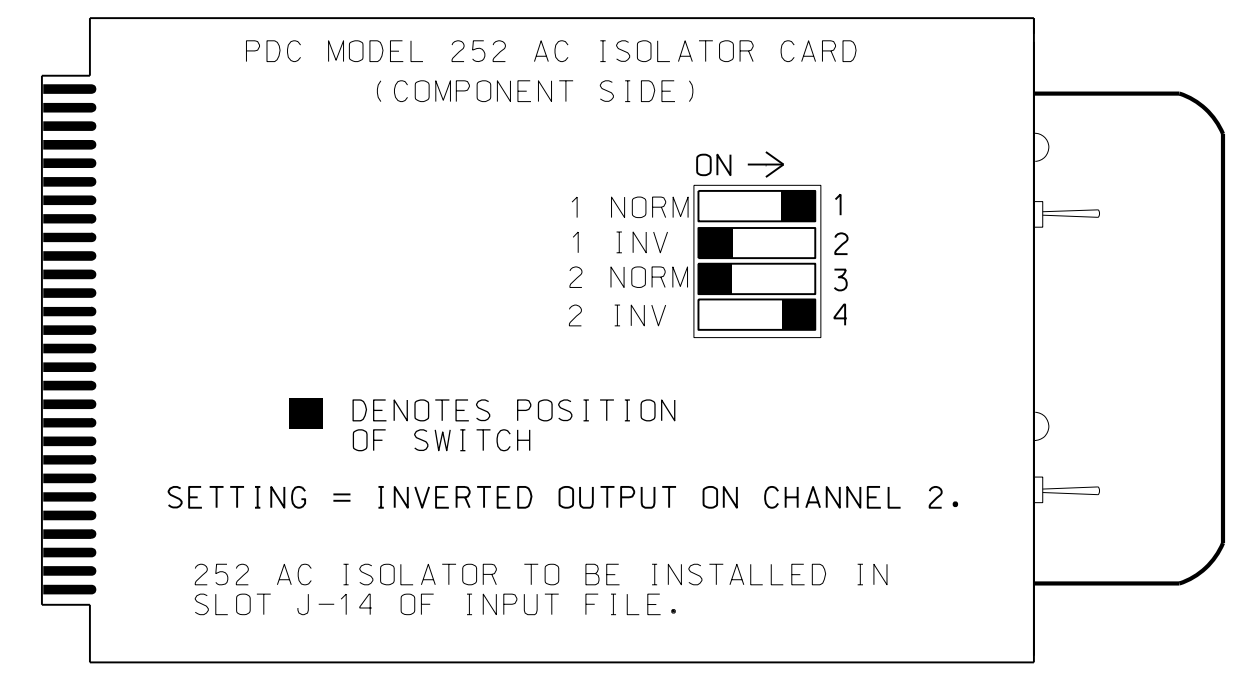
* Denotes timing to be determined in field.

NOTES

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

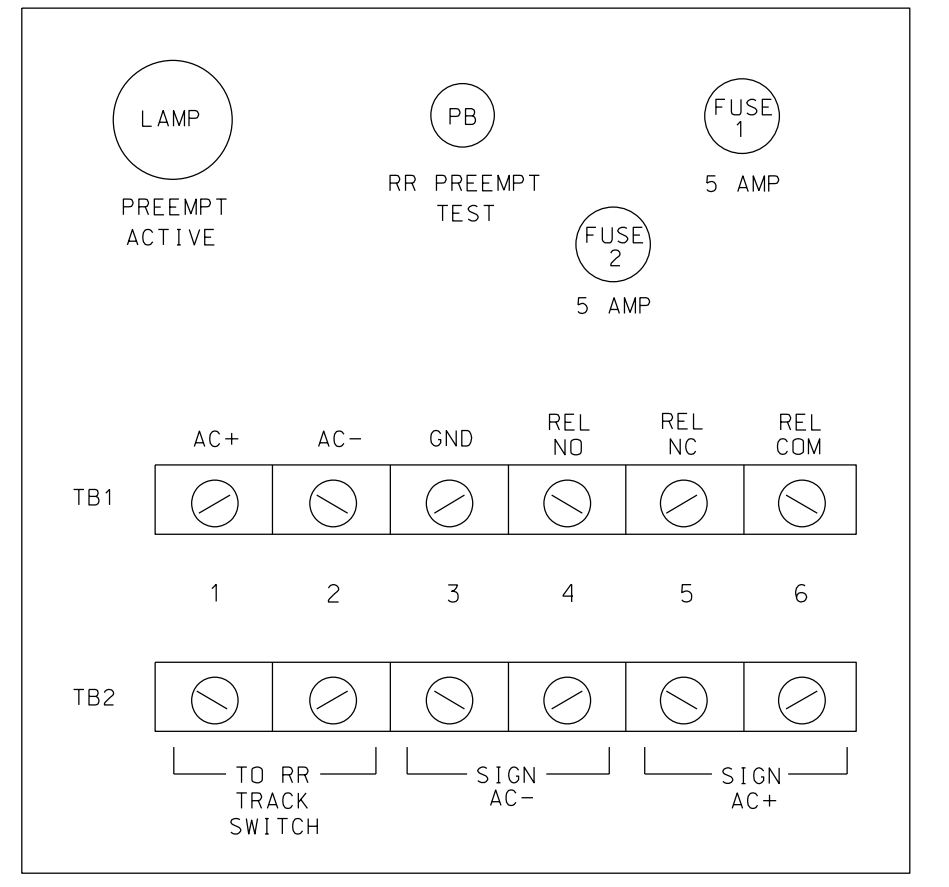
PREEMPT 2 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(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.

FRONT VIEW



Electrical Detail - Sheet 2 of 3 - Signal Modification

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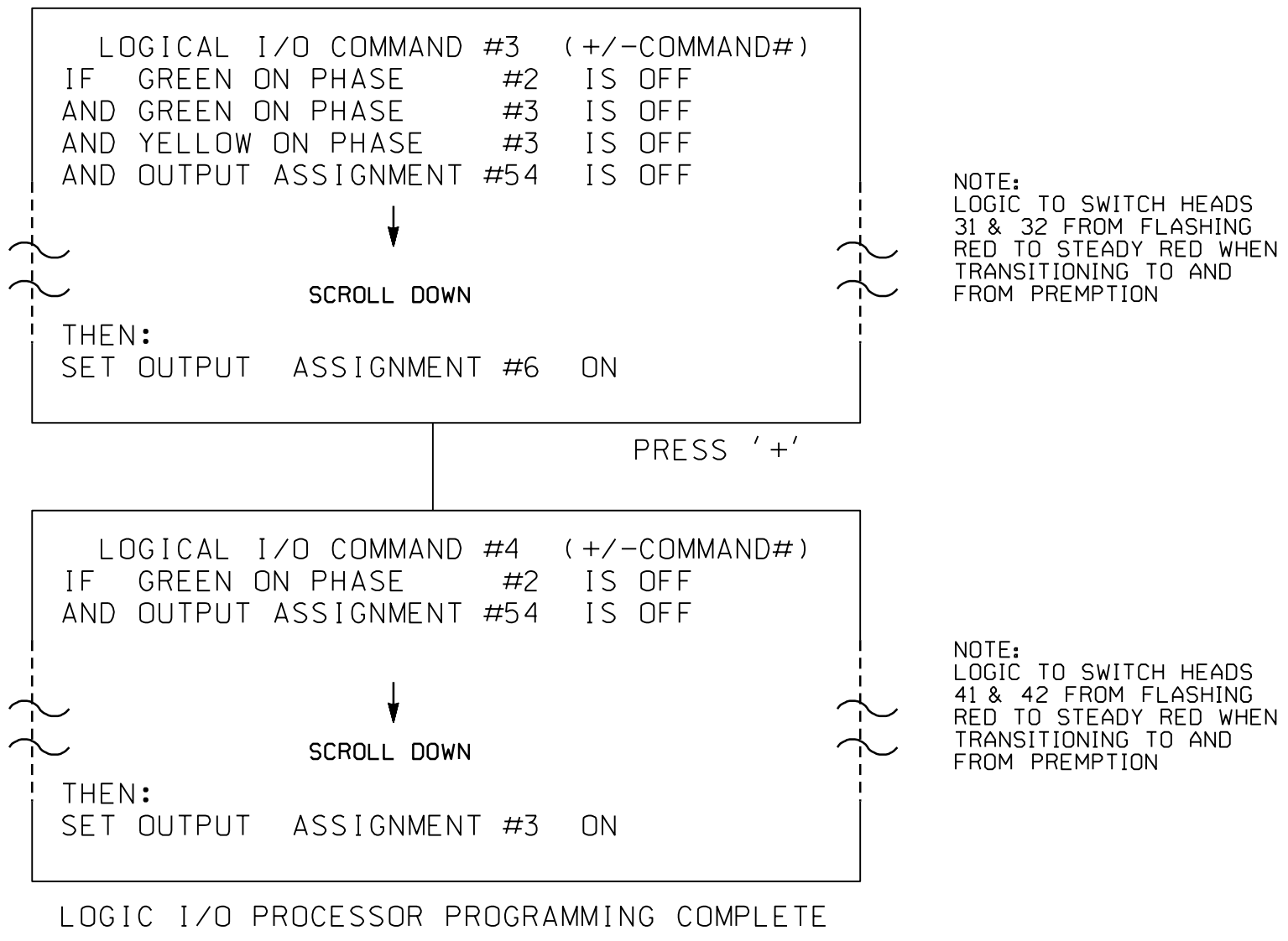
ELECTRICAL AND PROGRAMMING DETAILS FOR:
Prepared in the Offices of:
Transmission Mobility and Safety Solutions
A Division of
KELLY M. CORY ENGINEERS
Signal Management Solutions
750 N. Greenfield Pkwy, Garner, NC 27529

US 301 (Ward Boulevard) at New Bern Street
Division 4 Wilson County Wilson
PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
PREPARED BY: K M Cory REVIEWED BY:
REVISIONS INIT. DATE
DocuSigned by:
Kelly M Cory 8/4/2017
SIGNATURE DATE
SIG. INVENTORY NO. 04-0282

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NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 038970
KELLY M. CORY
DocuSigned by:
Kelly M Cory 8/4/2017
SIGNATURE DATE
SIG. INVENTORY NO. 04-0282

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL FOR SPECIAL OUTPUT CONTROL

- 1. FROM MAIN MENU PRESS '2' (PHASE CONTROL)... 2. FROM MAIN MENU PRESS '6' (OUTPUTS)... 3. THE PROGRAMMING SHOWN BELOW IS NECESSARY FOR SIGNAL HEAD 31&32 AND 41&42 TO OPERATE AS SHOWN ON THE SIGNAL DESIGN PLANS.



OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC PROCESSOR OUTPUT 6 = Overlap A Red (Phase 3 Red) OUTPUT 3 = Overlap B Red (Phase 4 Red) OUTPUT 54 = Controller Flash

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... PAGE 1: VEHICLE OVERLAP 'B' SETTINGS... OVERLAP PROGRAMMING COMPLETE

OVERLAP 'A' AND 'B' RED OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #6 (PIN 7) IS REACHED.

PAGE:1 C1 PIN:7 VEHICLE PHASE OUTPUT ASSIGNMENT #.....6 FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0 DUTY CYCLE (0=DEFAULT) (0 - 100%)...0 MODE (0=SOLID,1=FLASH)...0.0 SELECT ASSIGNMENT: NOT ENABLED..... THIS ENTRY IS EXISTING BY DEFAULT

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

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

PAGE:1 C1 PIN:7 VEHICLE OVERLAP OUTPUT ASSIGNMENT #.....6 FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0 DUTY CYCLE (0=DEFAULT) (0 - 100%)...0 MODE (0=SOLID,1=FLASH)...0.0 SELECT ASSIGNMENT: NOT ENABLED..... VEHICLE PHASE.....Y VEHICLE OVERLAP.....Y

PRESS '-' KEY THREE TIMES

OVERLAP 'A' RED WILL NOW DRIVE PHASE 3 RED

PAGE:1 C1 PIN:4 VEHICLE PHASE OUTPUT ASSIGNMENT #.....3 FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0 DUTY CYCLE (0=DEFAULT) (0 - 100%)...0 MODE (0=SOLID,1=FLASH)...0.0 SELECT ASSIGNMENT: NOT ENABLED..... THIS ENTRY IS EXISTING BY DEFAULT

PAGE:1 C1 PIN:4 VEHICLE PHASE SELECT VEHICLE OVERLAP (A=1, P=16)...2 SELECT COLOR (0=RED, 1=YEL, 2=GRN)...0

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

PAGE:1 C1 PIN:4 VEHICLE OVERLAP OUTPUT ASSIGNMENT #.....3 FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0 DUTY CYCLE (0=DEFAULT) (0 - 100%)...0 MODE (0=SOLID,1=FLASH)...0.0 SELECT ASSIGNMENT: NOT ENABLED..... VEHICLE PHASE.....Y VEHICLE OVERLAP.....Y

END OF PROGRAMMING

OVERLAP 'B' RED WILL NOW DRIVE PHASE 4 RED

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0282 DESIGNED: June 2017 SEALED: 08/04/2017 REVISED: N/A

04-AUG-2017 11:01 X:\PROJ\FACTS\US_301\TFC\offices\signal\mku\5935\SIG_03.dgn KMK:CY AT NDR\KMK:CY

Electrical Detail - Sheet 3 of 3 - Signal Modification

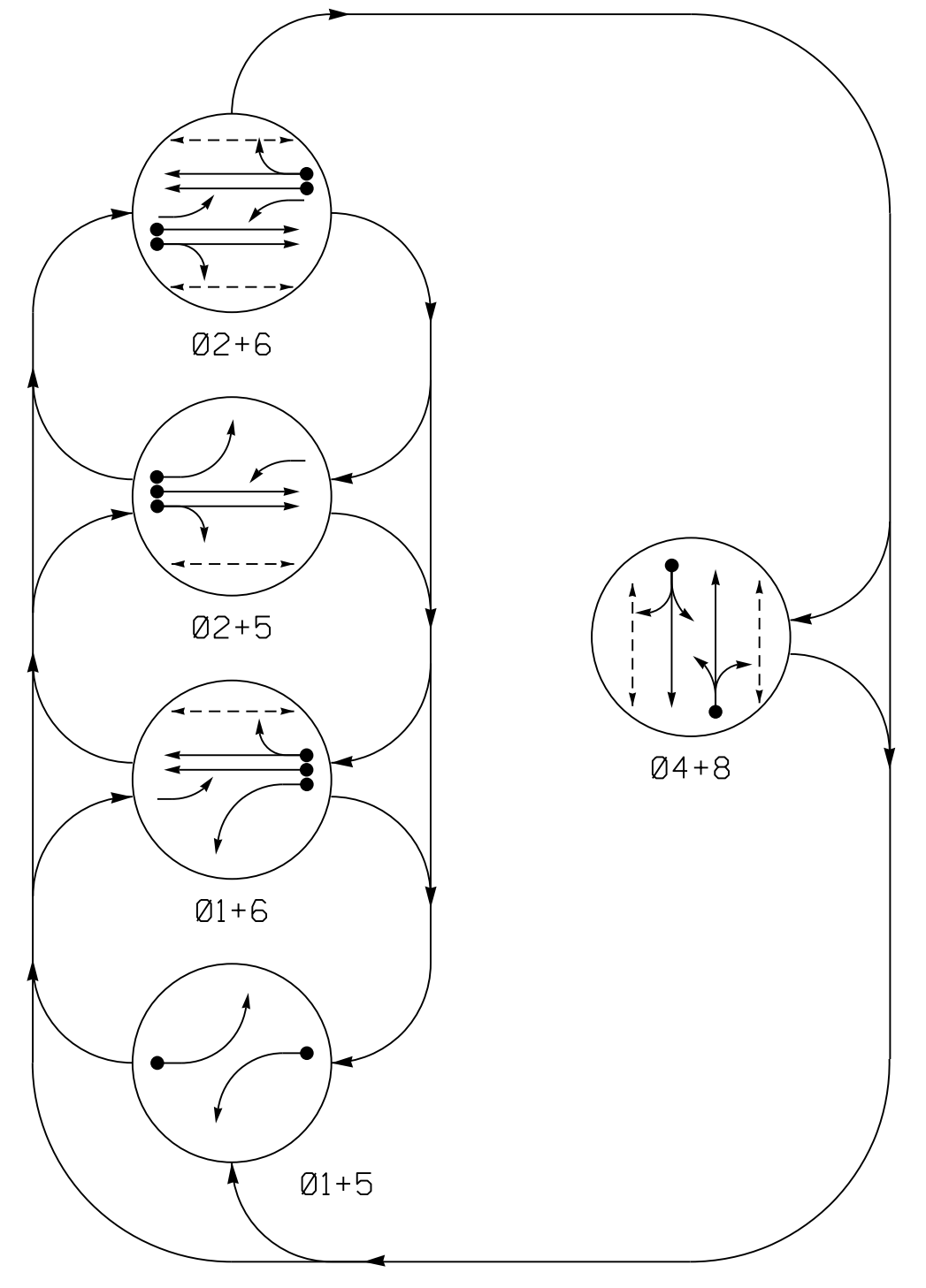
Michael Baker INTERNATIONAL 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No.: F-1084 MBAKERINTL.COM

ELECTRICAL AND PROGRAMMING DETAILS FOR Prepared in the Offices of: Transportation Mobility and Safety Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Management Section 750 N.Greenfield Pkwy, Garner, NC 27529

US 301 (Ward Boulevard) at New Bern Street Division 4 Wilson County Wilson PLAN DATE: June 2017 REVIEWED BY: W M Ruhssan PREPARED BY: K M Cory REVIEWED BY: REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038970 K M CORY 8/4/2017

PHASING DIAGRAM



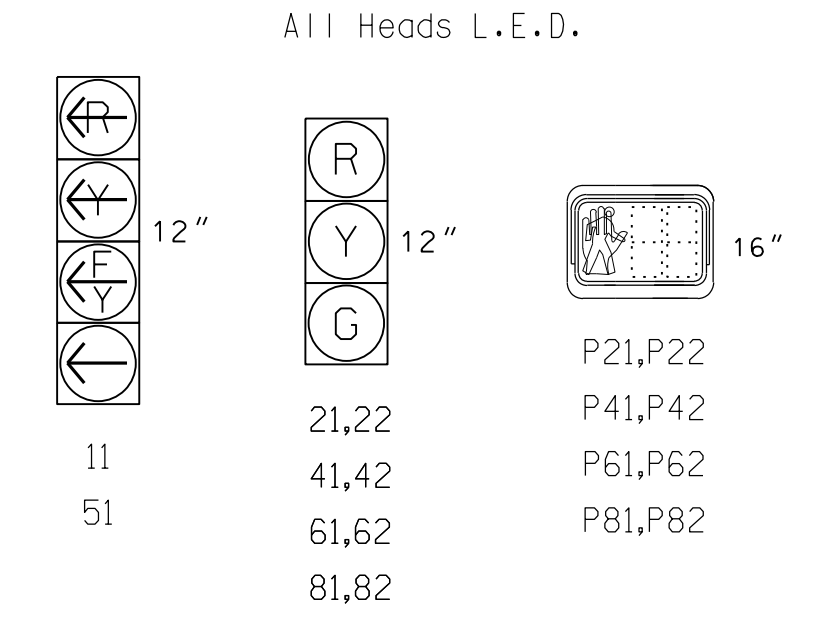
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

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

SIGNAL FACE I.D.



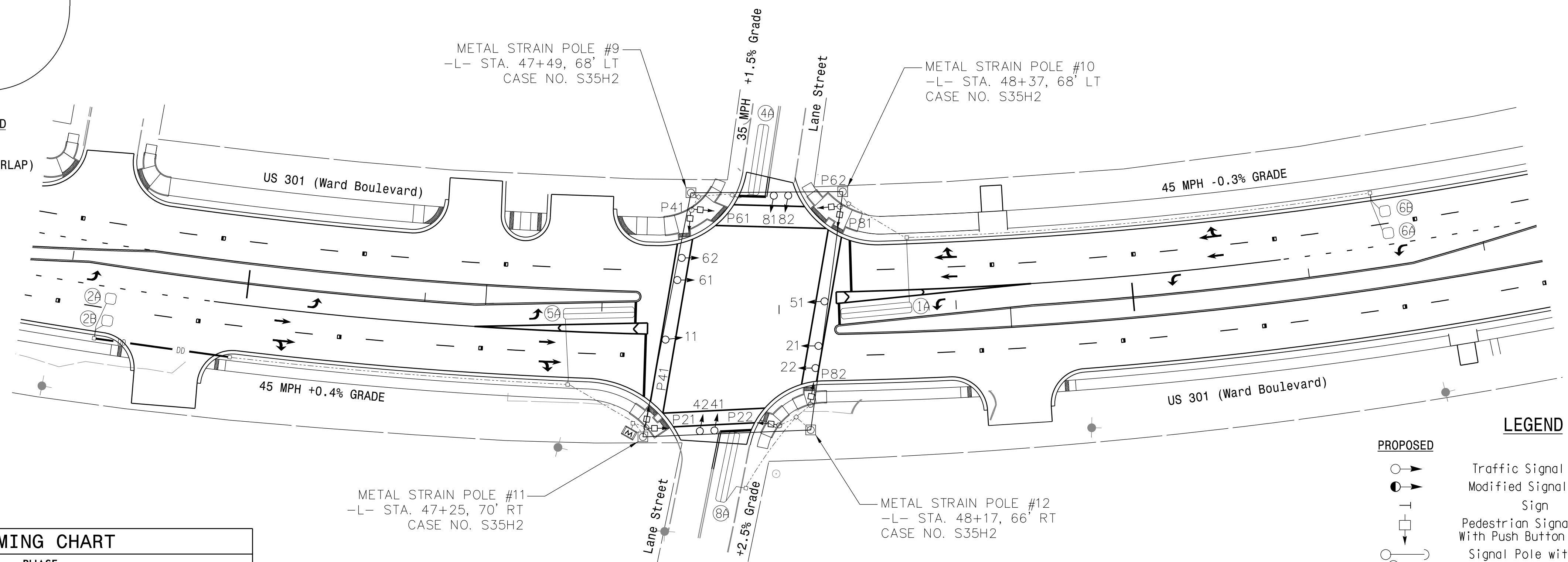
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6x40	0	2-4-2	Y	1	Y	Y	-	15	-
2A	6x6	300	5	Y	2	Y	Y	-	-	-
2B	6x6	300	5	Y	2	Y	Y	-	-	-
4A	6x40	0	2-4-2	Y	4	Y	Y	-	10	-
5A	6x40	0	2-4-2	Y	5	Y	Y	-	15	-
6A	6x6	300	5	Y	6	Y	Y	-	-	-
6B	6x6	300	5	Y	6	Y	Y	-	-	-
8A	6x40	0	2-4-2	Y	8	Y	Y	-	10	-

5-Phase Fully Actuated US 301 (Ward Boulevard) CLS

NOTES

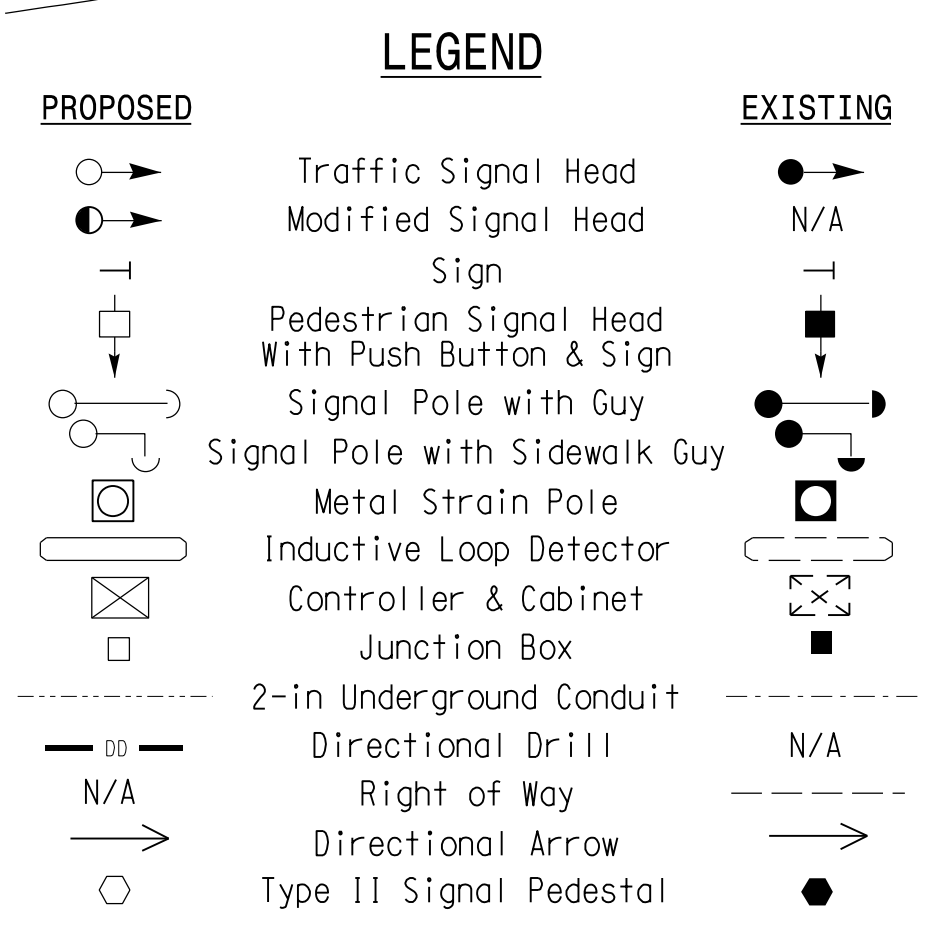
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and /or Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Master Asset #10431, Controller Asset #0454.



OASIS 2070 TIMING CHART

FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green 1 *	7	12	7	7	12	7	
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0	
Max Green 1 *	20	50	30	20	50	30	
Yellow Clearance	3.0	4.6	3.8	3.0	4.6	3.7	
Red Clearance	3.1	1.5	2.5	3.1	1.5	2.4	
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	
Walk 1 *	-	4.0	4.0	-	4.0	4.0	
Don't Walk 1	-	12	24	-	13	23	
Seconds Per Actuation *	-	1.8	-	-	1.8	-	
Max Variable Initial *	-	34	-	-	34	-	
Time Before Reduction *	-	15	-	-	15	-	
Time To Reduce *	-	30	-	-	30	-	
Minimum Gap	-	3.0	-	-	3.0	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	
Dual Entry	-	-	ON	-	-	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	

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



Signal Upgrade

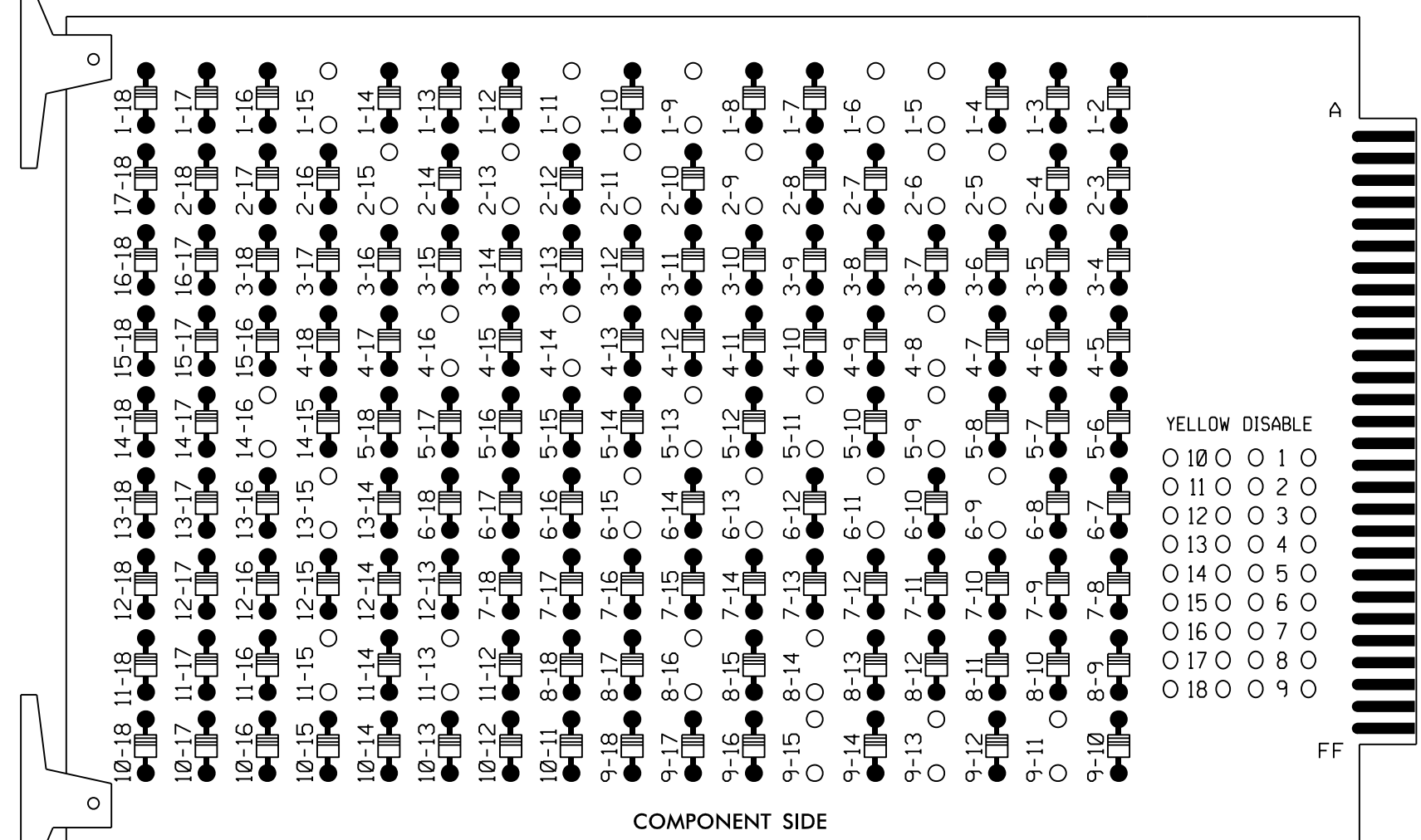
<p>Michael Baker INTERNATIONAL</p> <p>8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No. : F-1084 MBAKERINTL.COM</p>	<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 301 (Ward Boulevard) at Lane Street</p>		<p>SEAL</p>				
		<p>Division 4 Wilson County Wilson</p> <p>PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam</p> <p>PREPARED BY: K M Cory REVIEWED BY:</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	INIT.	DATE	
NO.	INIT.	DATE						

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 KMCORY AT NDC\W\CORY

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2, 4, 6, and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the US 301 (Ward Boulevard) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332 W/ AUX FILE
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12
 AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8,2PED,4PED,6PED,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11*	21,22	P21, P22	NU	41,42	P41, P42	51*	61,62	P61, P62	NU	81,82	P81, P82	11*	NU	NU	51*	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121				A114	
YELLOW ARROW													A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW	127							133										
Hand			113				104		119			110						
Walker			115				106		121			112						

NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14
L	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A
U	NOT USED	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14
L	2B	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	13B	14B	

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

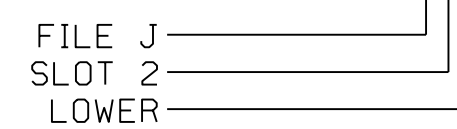
INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	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			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

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

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.

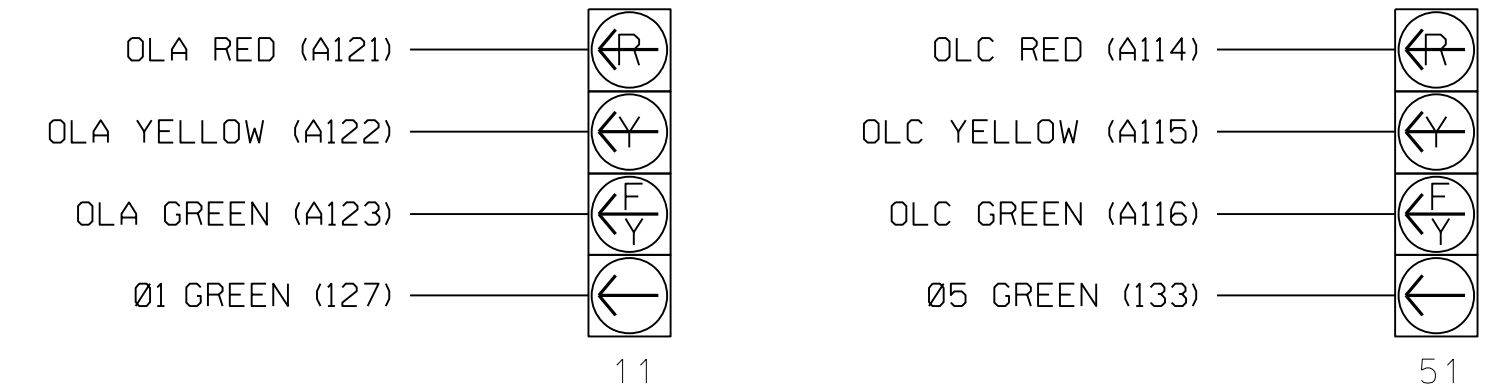
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0454
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

- The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 of 2 for programming instructions.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 2 - Signal Upgrade

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Prepared in the Offices of:

US 301 (Ward Boulevard) at Lane Street
 Division 4 Wilson County Wilson
 PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
 PREPARED BY: K M Cory REVIEWED BY:

SEAL

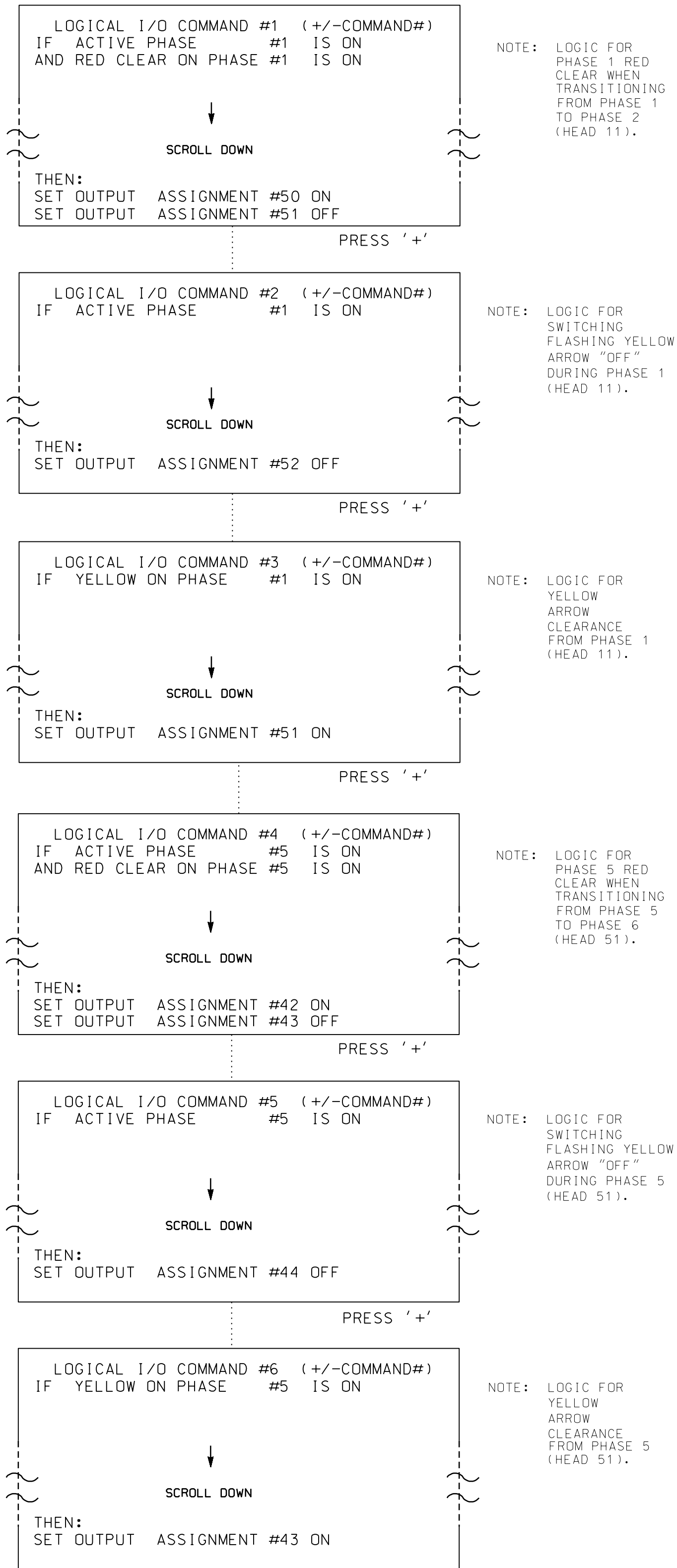
REVISIONS	INIT.	DATE

DocuSigned by: Kelly M Cory
 8/4/2017
 SIG. INVENTORY NO. 04-0454

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

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, AND 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
USE TO INTERPRET LOGIC PROCESSOR	
OUTPUT 42 =	Overlap C Red
OUTPUT 43 =	Overlap C Yellow
OUTPUT 44 =	Overlap C Green
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:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
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

PRESS '+' TWICE

```

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?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0454
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

Electrical Detail - Sheet 2 of 2 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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	<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Division 4 Wilson County Wilson</p> <p>PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam</p> <p>PREPARED BY: K M Cory REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">REVISIONS</th> <th style="font-size: x-small;">INIT.</th> <th style="font-size: x-small;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE			
REVISIONS	INIT.	DATE						

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PHASING DIAGRAM

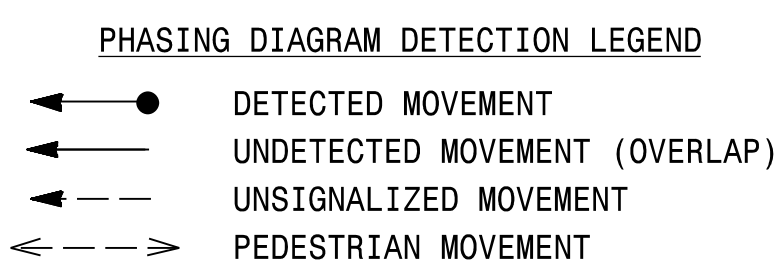
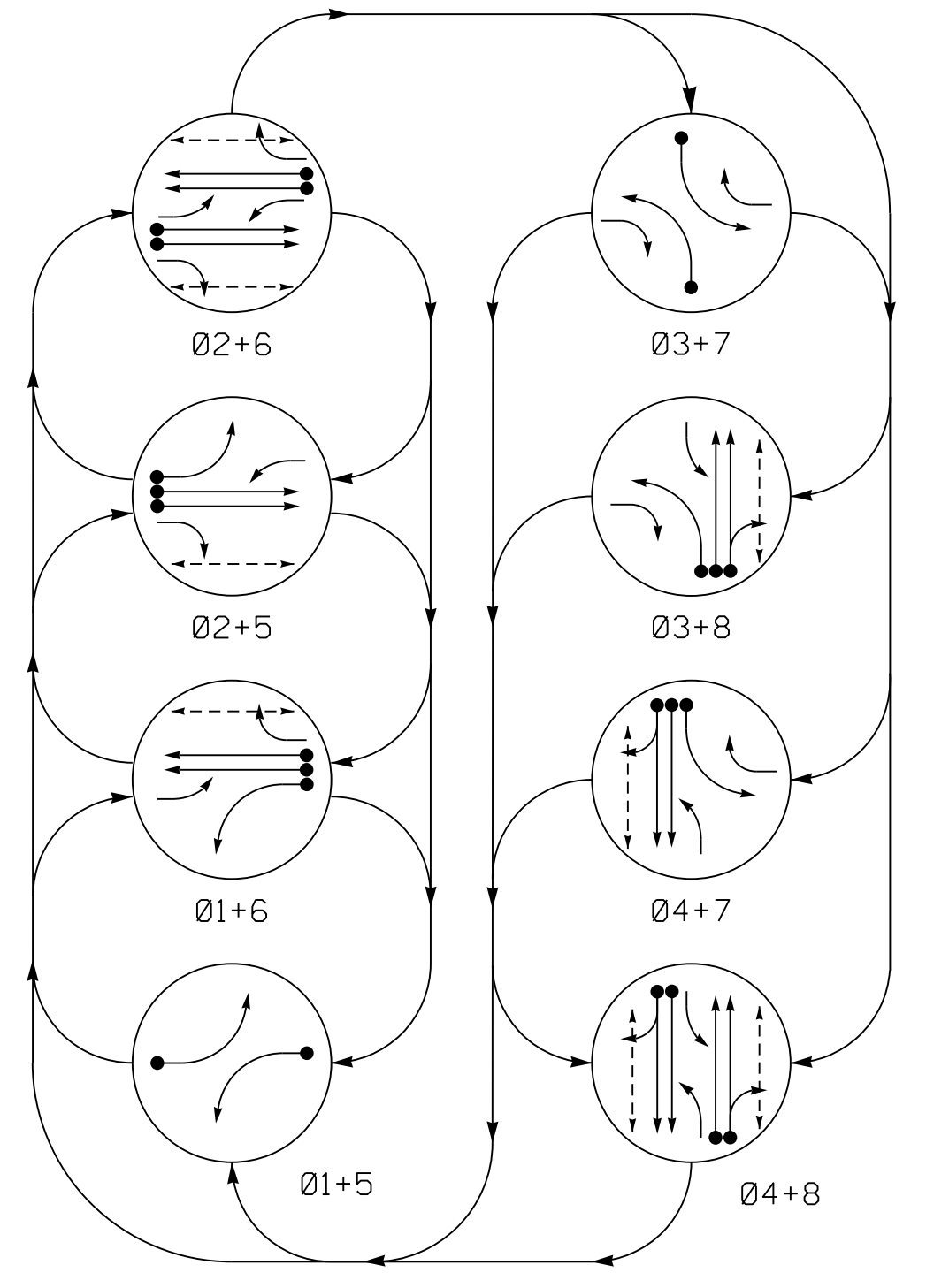
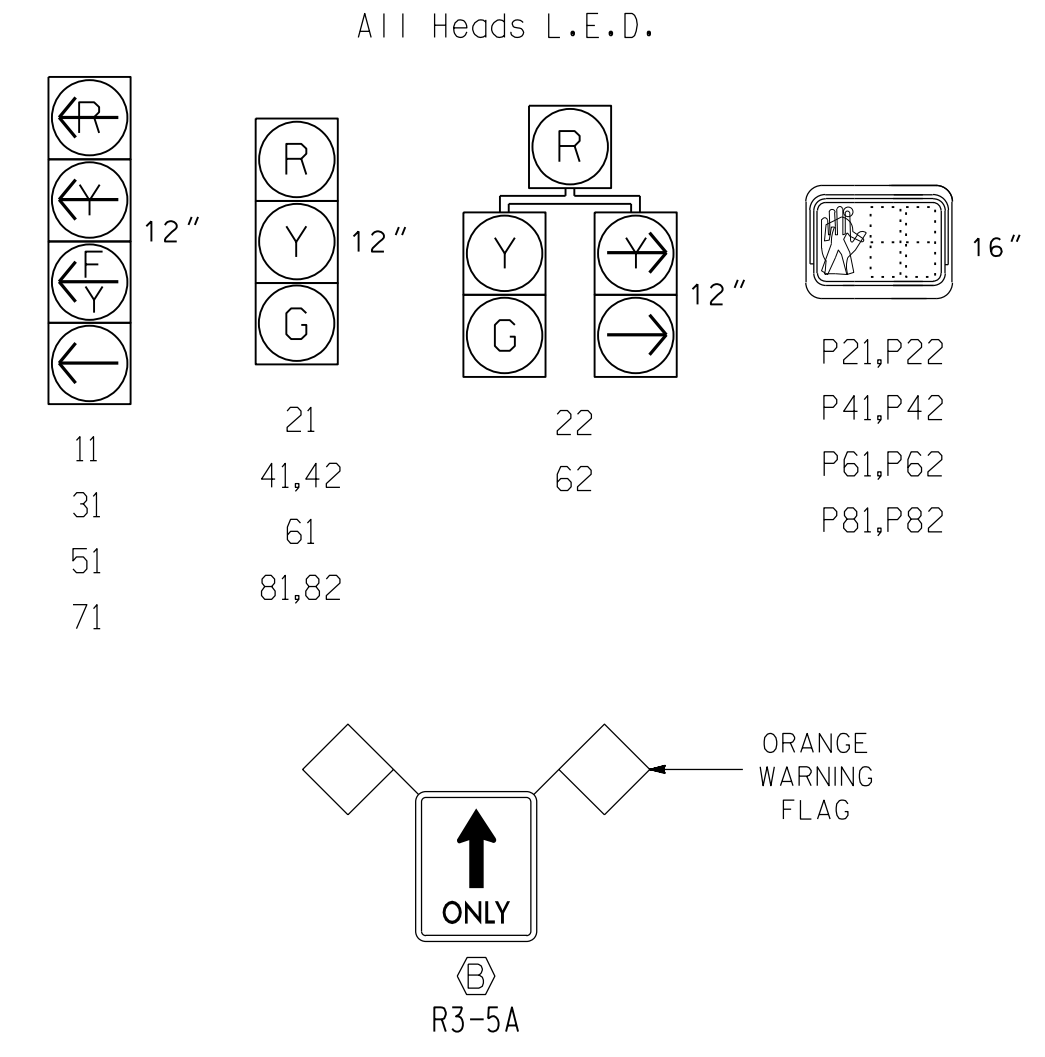


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	R
31	R	R	G	G	R	R	R	R
41,42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	R
62	R	G	R	G	R	R	R	R
71	←	←	←	←	←	←	←	←
81,82	R	R	R	R	G	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.



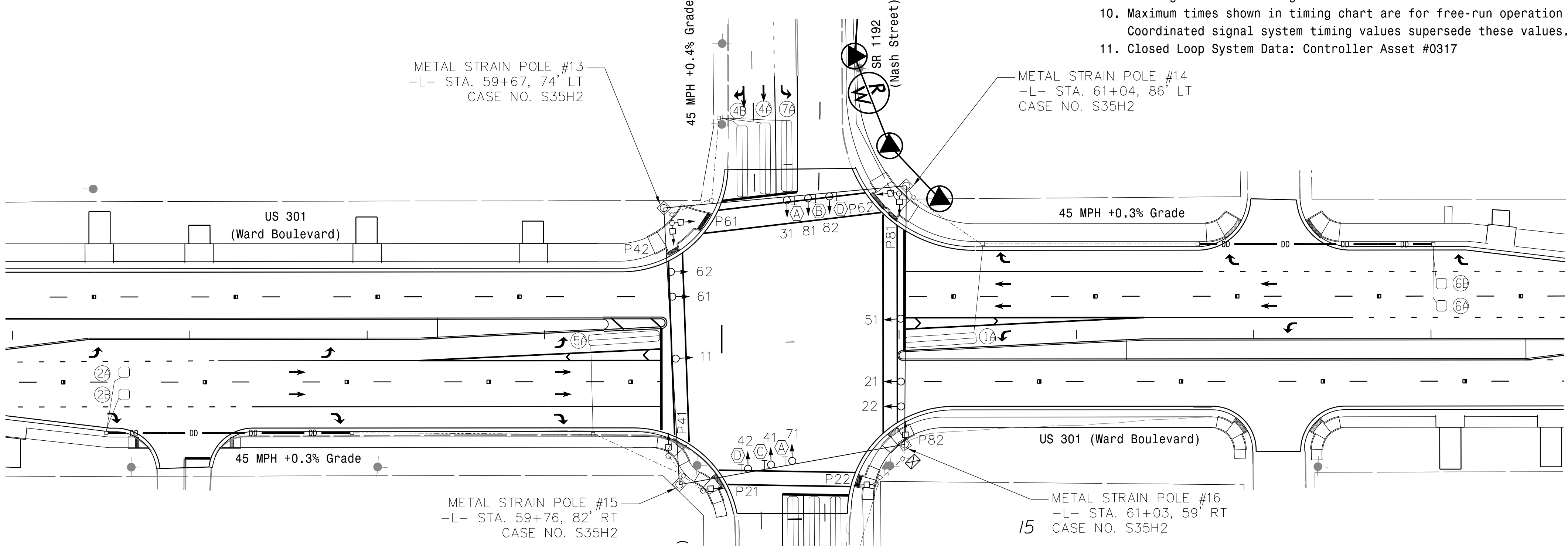
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	INDUCTIVE LOOPS			DETECTOR PROGRAMMING								
	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
2A	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
2B	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
3A	6x40	0	2-4-2	Y	3	Y	Y	-	-	15	-	Y
4A	6x40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
4B	6x40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6x40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A	6x6	300	5	Y	6	Y	Y	-	-	-	-	Y
6B	6x6	300	5	Y	6	Y	Y	-	-	-	-	Y
7A	6x40	0	2-4-2	Y	7	Y	Y	-	-	15	-	Y
8A	6x40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y
8B	6x40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

8-Phase Fully Actuated US 301 (Ward Boulevard) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and /or Phase 5 may be lagged.
- Phase 3 and/or Phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Thirty days after implementation of the revised signal operation, signs R3-5A and/or orange flags may be removed at the discretion of the Regional Traffic Engineer.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Controller Asset #0317

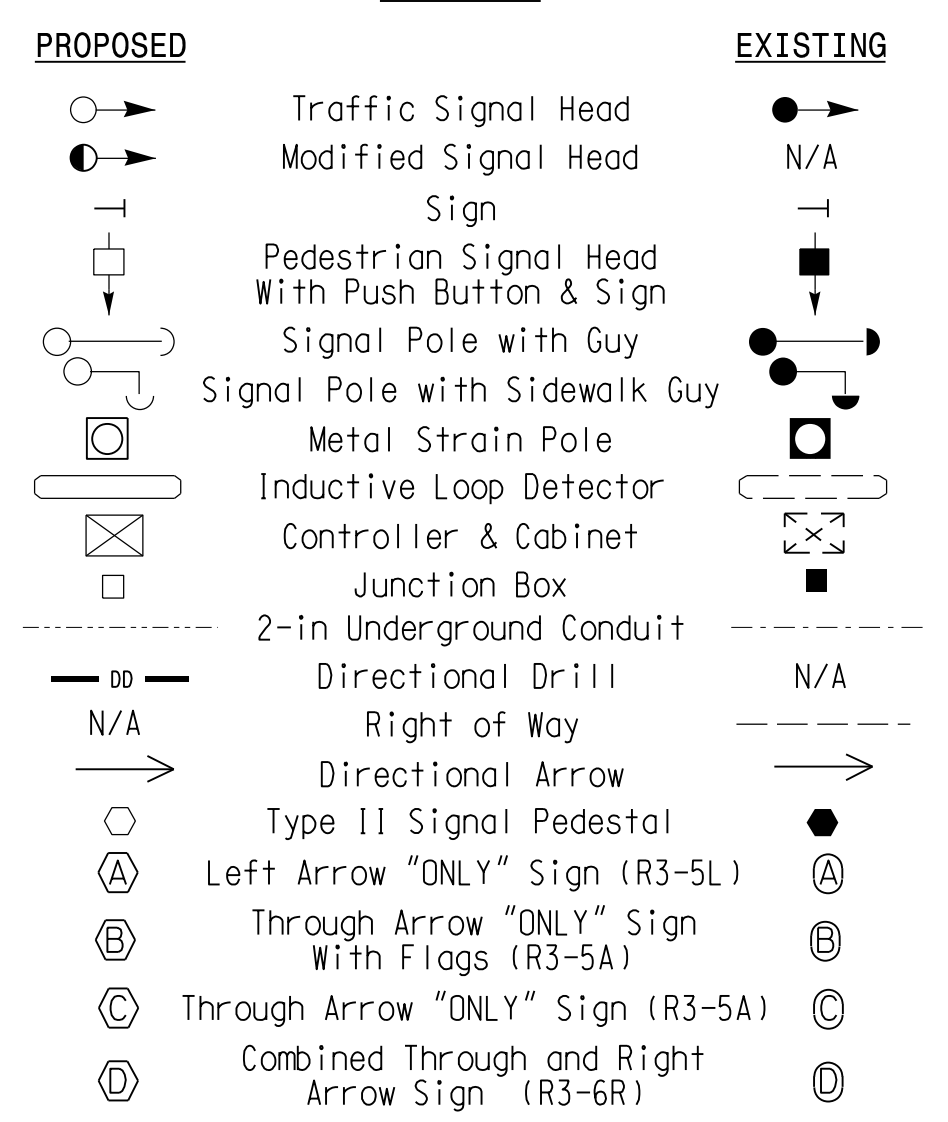


OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	50	20	30	20	50	20	30
Yellow Clearance	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5
Red Clearance	3.4	1.9	3.7	2.5	3.4	1.9	3.5	2.5
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	4.0	-	4.0	-	4.0	-	4.0
Don't Walk 1	-	19	-	27	-	25	-	32
Seconds Per Actuation *	-	1.8	-	-	-	1.8	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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

LEGEND



Signal Upgrade

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US 264 ALT/NC 58 (MLK Jr Pkwy)

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam

PREPARED BY: K M Cory REVIEWED BY:

SEAL

PROFESSIONAL ENGINEER

SEAL 038970

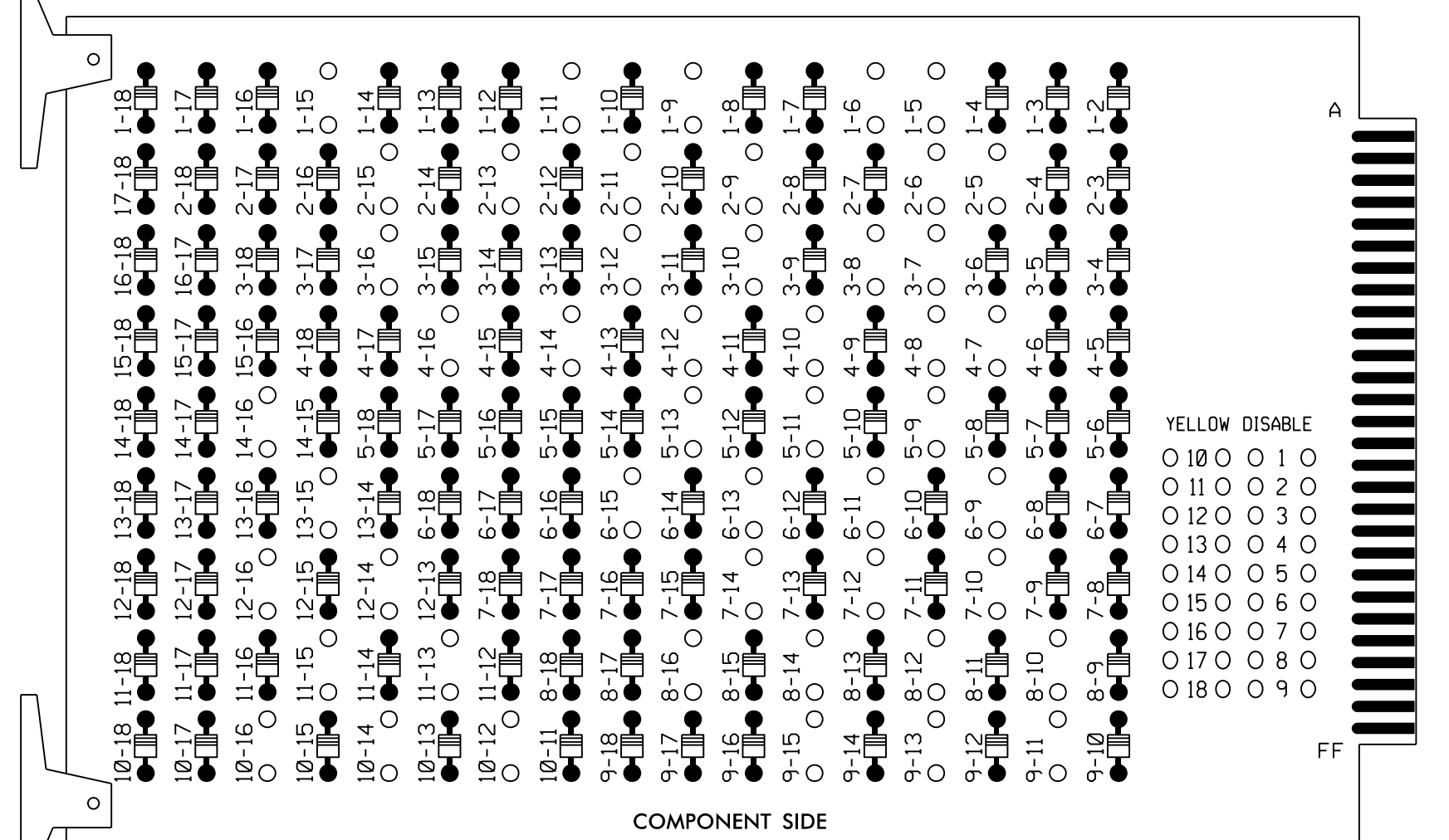
DATE 8/4/2017

04-AUG-2017 11:01 X:\P\0\fact\US_301\T\off\c\signal\m\k\5935\SIG_05.dgn KMCORY AT NDC\W\CORY

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

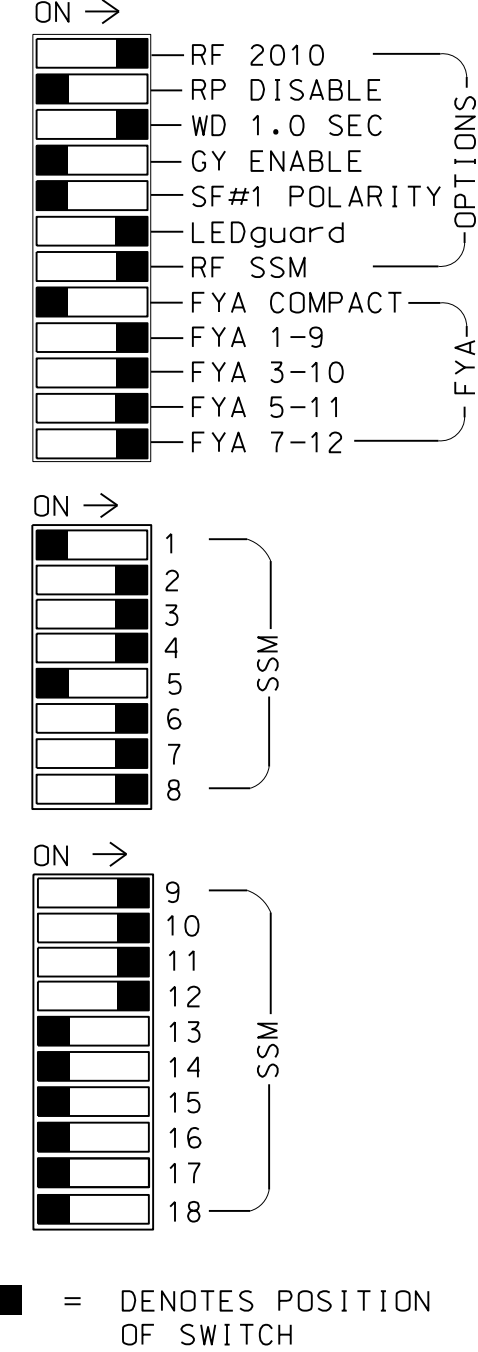
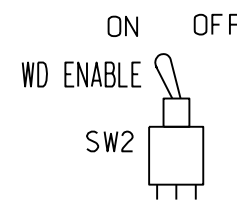
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and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



REMOVE JUMPERS AS SHOWN

NOTES:

- 1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that 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. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Startup In Green.
6. Program phases 2, 4, 6, and 8 for Startup Ped Call.
7. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
8. The cabinet and controller are part of the US 301 (Ward Boulevard) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET332 W/ AUX FILE
SOFTWAREECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,AUX S1,AUX S2,AUX S4,AUX S5
PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
OVERLAP "A".....1+2
OVERLAP "B".....3+4
OVERLAP "C".....5+6
OVERLAP "D".....7+8

Table with columns: LOAD SWITCH NO., S1-S12, AUX S1-S6, PHASE, SIGNAL HEAD NO., RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW. Includes signal head hook-up chart.

NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

Table showing input file positions for loops 1-14, including terminals like 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A and their corresponding loop numbers.

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

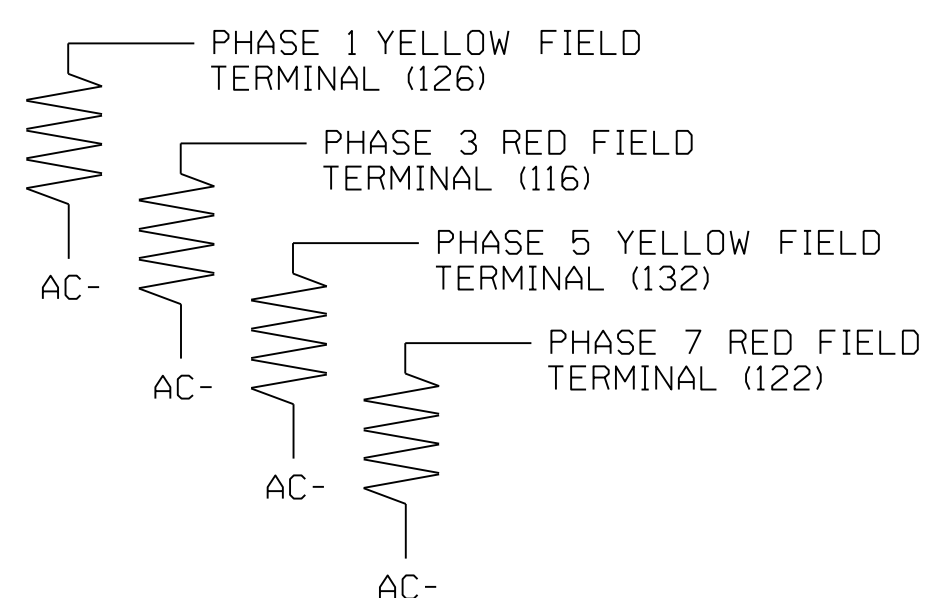
Table with columns: LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., INPUT ASSIGNMENT NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND, FULL TIME DELAY, STRETCH TIME, DELAY TIME. Includes notes about DC isolators.

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

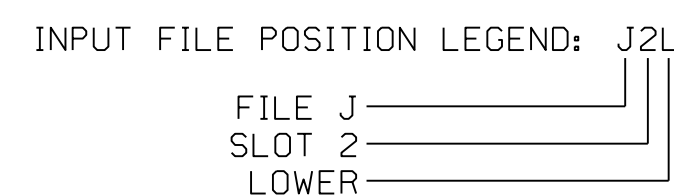
- 1 Add jumper from I1-W to J4-W, on rear of input file.
2 Add jumper from I5-W to J8-W, on rear of input file.
3 Add jumper from J1-W to I4-W, on rear of input file.
4 Add jumper from J5-W to I8-W, on rear of input file.

LOAD RESISTOR INSTALLATION DETAIL

Table with columns: VALUE (ohms), WATTAGE. Values: 1.5K - 1.9K, 25W (min); 2.0K - 3.0K, 10W (min).

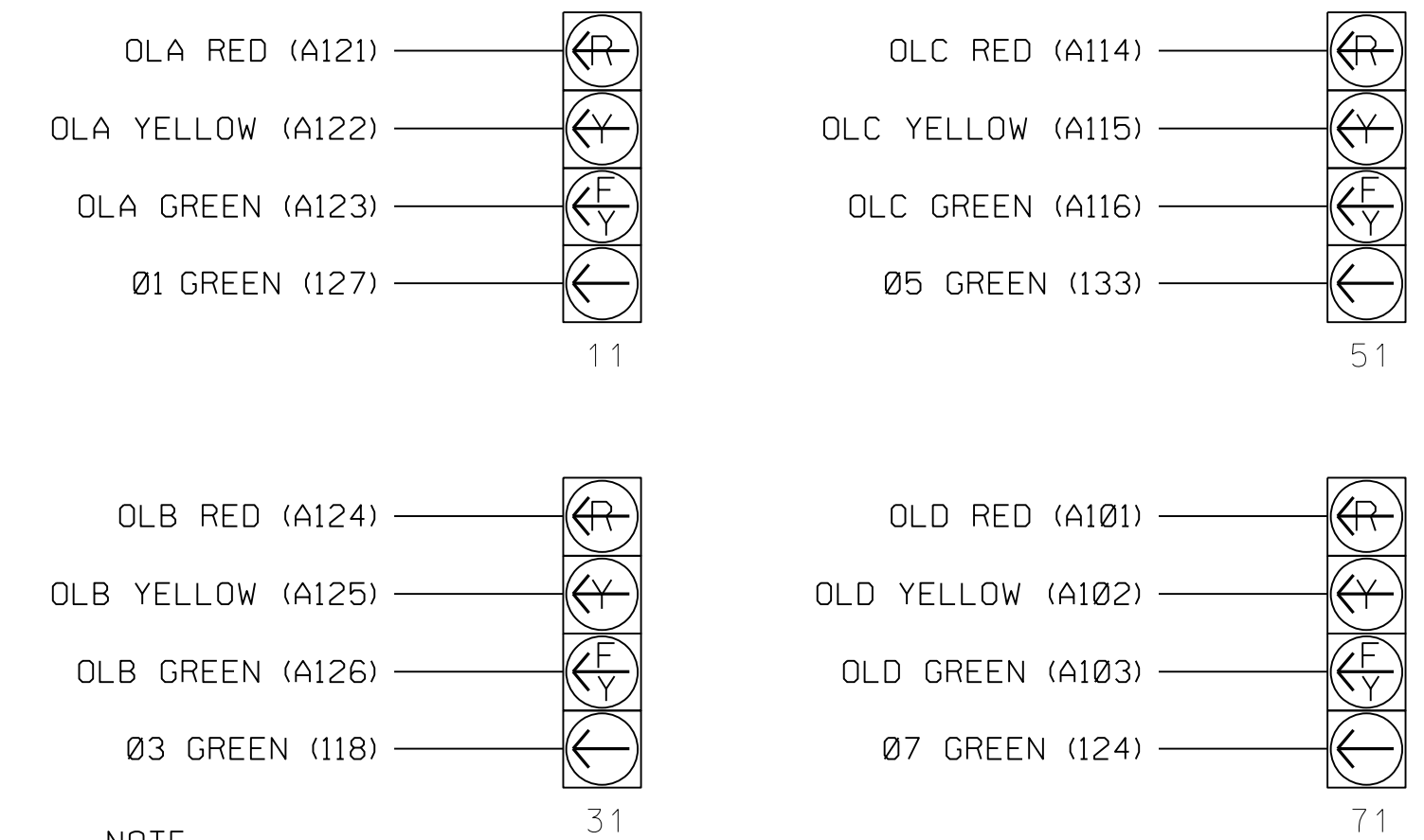


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0317
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal heads 11,31,51,and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 2 - Signal Upgrade

Michael Baker INTERNATIONAL logo and address: 8000 Regency Parkway, Suite 600, Cary, North Carolina 27518

Electrical and Programming Details For: US 301 (Ward Boulevard) at SR 1192 (Nash Street) / US 64 ALT/NC 58 (MLK Jr Pkwy)

Division 4 Wilson County Wilson. Prepared by: K M Cory. Reviewed by: W M Ruhssam.

Professional Engineer Seal for Kelly M Cory, License No. 038970, State of North Carolina.

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

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 AND 12.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

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

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON
AND RED CLEAR ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON
AND RED CLEAR ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

PRESS '+'

NOTICE GREEN FLASH

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

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

PRESS '+'

NOTICE GREEN FLASH

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?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

PRESS '+'

NOTICE GREEN FLASH

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

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

PRESS '+'

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- OUTPUT 39 = Overlap D Red
- OUTPUT 40 = Overlap D Yellow
- OUTPUT 41 = Overlap D Green
- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 47 = Overlap B Red
- OUTPUT 48 = Overlap B Yellow
- OUTPUT 49 = Overlap B Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0317
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

Electrical Detail - Sheet 2 of 2 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

US 301 (Ward Boulevard)
at
SR 1192 (Nash Street)/
US 64 ALT/NC 58 (MLK Jr Pkwy)

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
PREPARED BY: K M Cory REVIEWED BY:

REVISIONS	INIT.	DATE

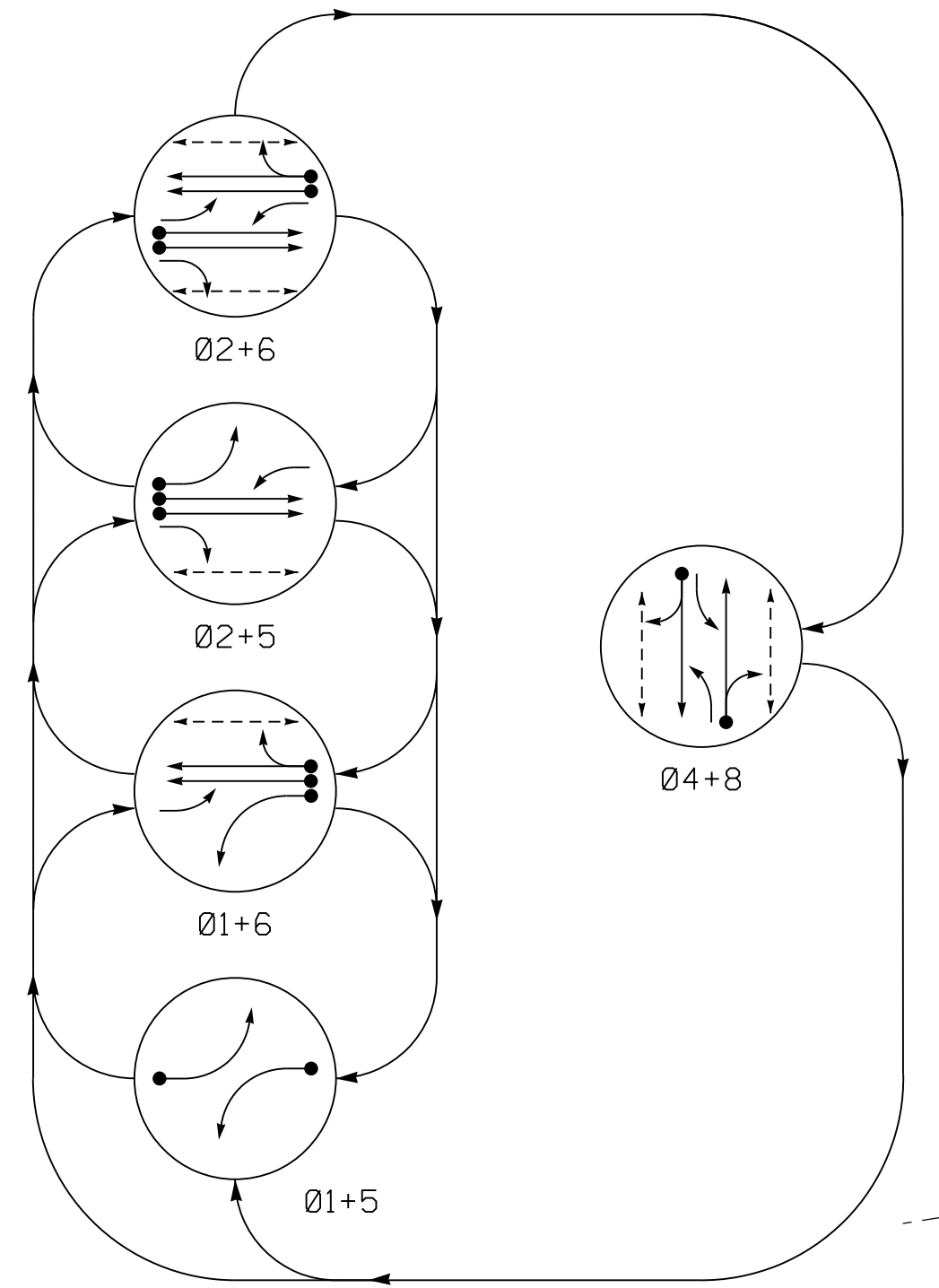
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PROFESSIONAL
SEAL
038970
ENGINEER
KELLY M. CORY

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Kelly M Cory 8/4/2017

SIGNATURE DATE
SIGNATURE DATE

SIG. INVENTORY NO. 04-0317

PHASING DIAGRAM



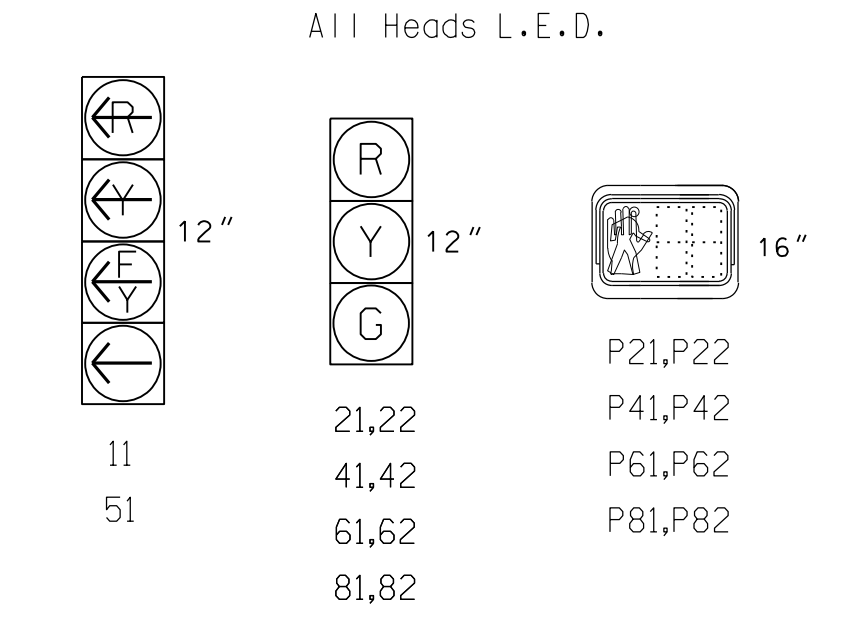
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

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

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

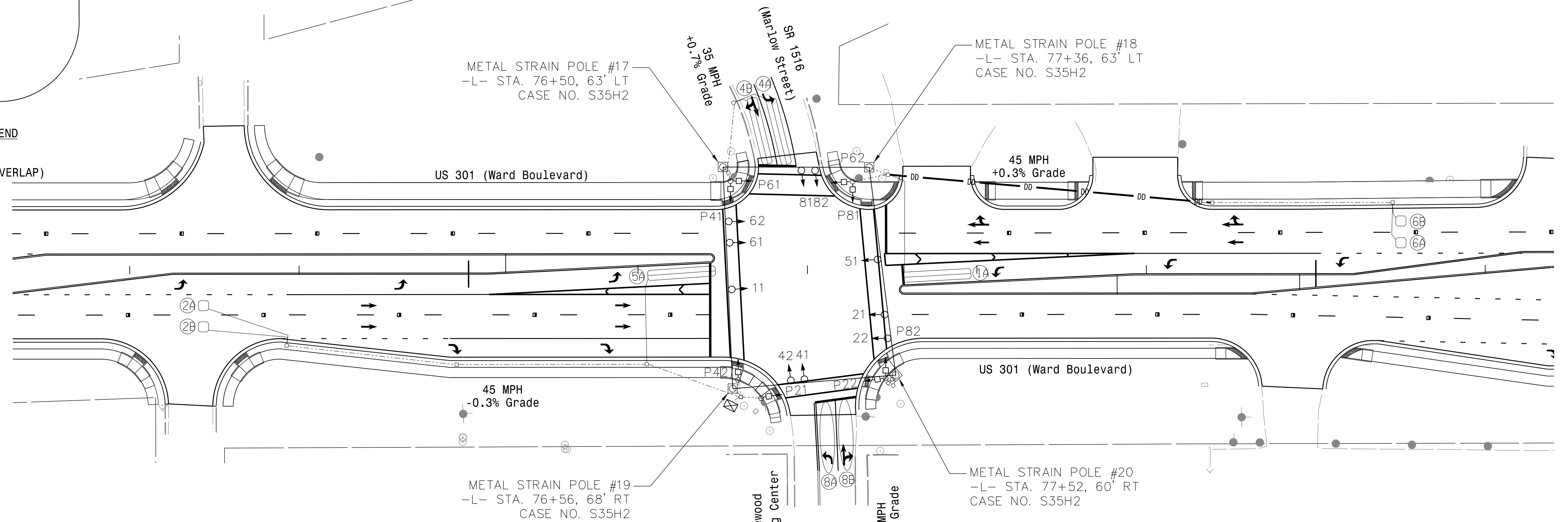
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
2B	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
4A	6x40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6x40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6x40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A	6x6	300	5	Y	6	Y	Y	-	-	-	-	Y
6B	6x6	300	5	Y	6	Y	Y	-	-	-	-	Y
8A	6x40	0	*	Y	8	Y	Y	-	-	3	-	*
8B	6x40	0	*	Y	8	Y	Y	-	-	10	-	*

* Multi-Zone Microwave Detection

5-Phase Fully Actuated US 301 (Ward Boulevard) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and /or Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Provide the Engineer with the manufacturer's approved detector locations and mounting heights to obtain detection zones as shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Controller Asset #0686.



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	20	50	30	20	50	30
Yellow Clearance	3.0	4.6	3.8	3.0	4.6	3.1
Red Clearance	2.9	1.5	2.6	2.6	1.5	3.3
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	4.0	4.0	-	4.0	4.0
Don't Walk 1	-	12	24	-	10	23
Seconds Per Actuation *	-	1.8	-	-	1.8	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

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

LEGEND

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

Signal Upgrade

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US 301 (Ward Boulevard)
at
SR 1516 (Marlow Street)/
Fikewood Shopping Center

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhman

PREPARED BY: K M Cory REVIEWED BY:

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038970

DocuSigned by:
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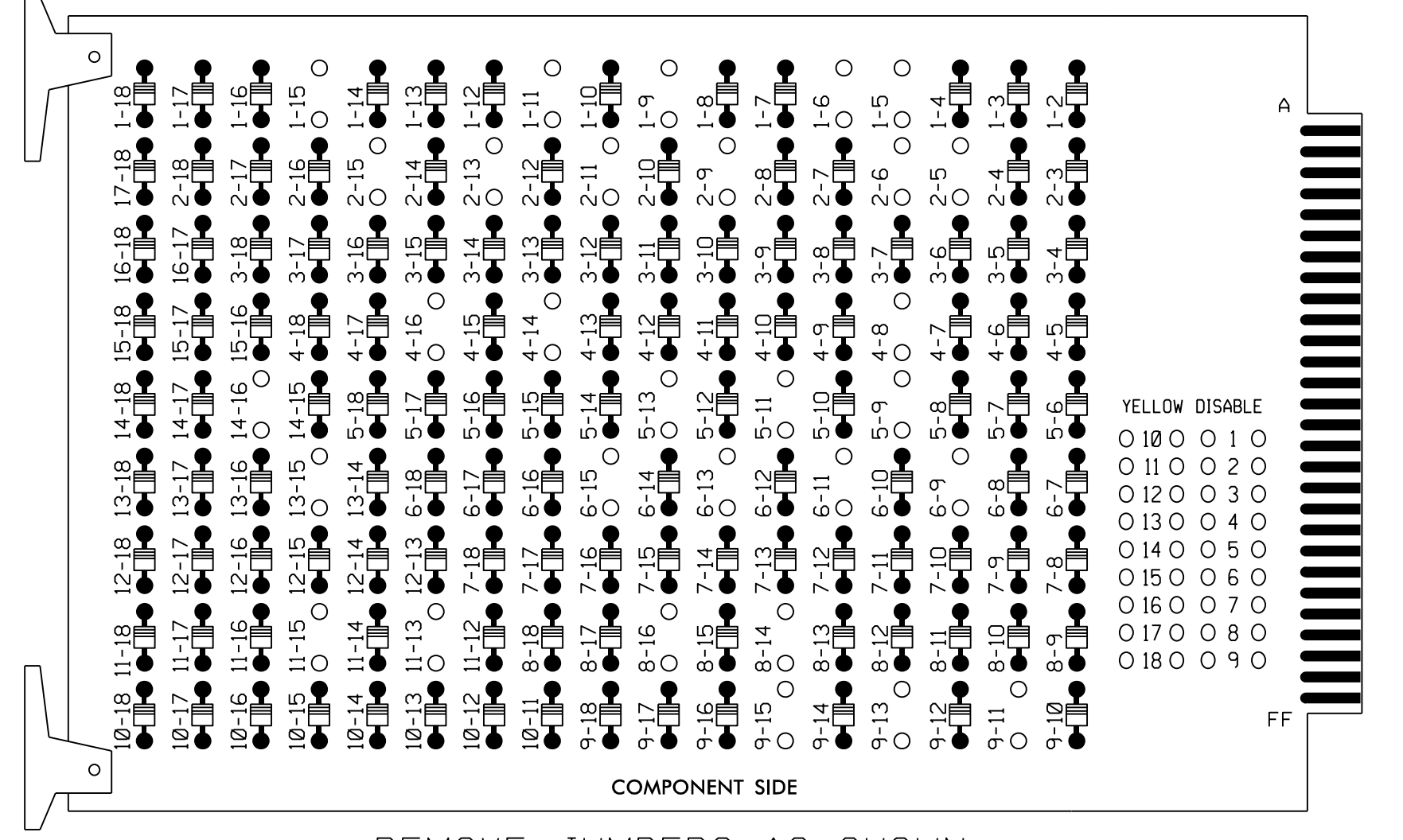
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 KMCORY AT NCDRAW.CORP

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2, 4, 6, and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
- The cabinet and controller are part of the US 301 (Ward Boulevard) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332 W/ AUX FILE
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12
 AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8,2PED,4PED,6PED,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)

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

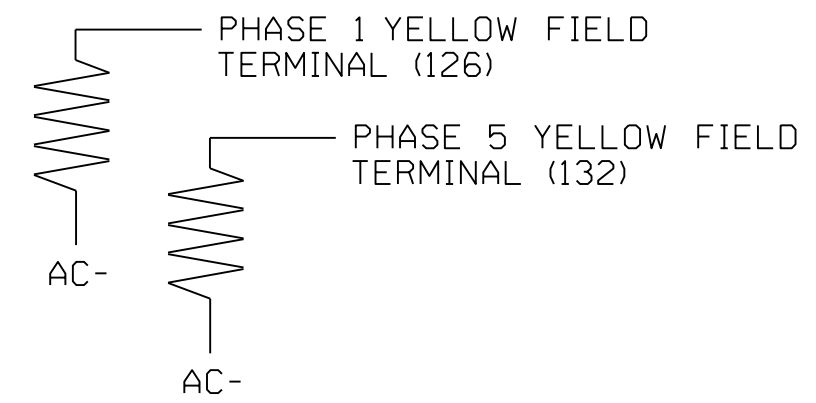
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card
 * Multizone Microwave Detection Zone

SPECIAL DETECTOR NOTE

Install a multizone microwave detection system for vehicle detection for 8A and 8B. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

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



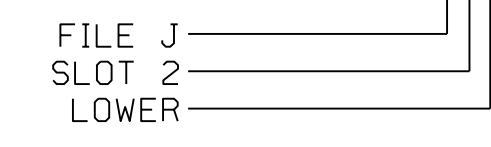
INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	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	*	J6U	42	4	8	8	Y	Y			3
8B	*	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29					2 PED		
P41,P42	TB8-5,6	I12L	69	31					4 PED		
P61,P62	TB8-7,9	I13U	68	30					6 PED		
P81,P82	TB8-8,9	I13L	70	32					8 PED		

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

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- * Multizone Microwave Detection Zone. See Special Detector Note this sheet.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0686
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	NU	41,42	P41, P42	51	61,62	P61, P62	NU	81,82	P81, P82	11	NU	NU	51	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121				A114	
YELLOW ARROW													A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW	127							133										
Hand				113				104		119							110	
Walker																		

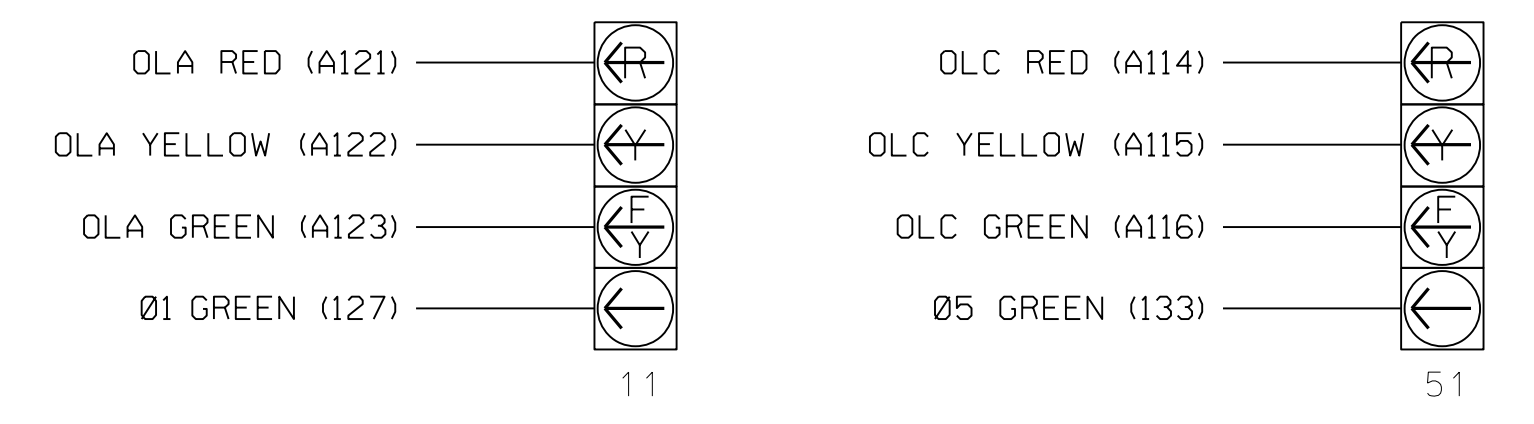
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 of 2 for programming instructions.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 2 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Prepared in the Offices of:

US 301 (Ward Boulevard) at SR 1516 (Marlow Street)/ Fikewood Shopping Center
 Division 4 Wilson County Wilson
 PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
 PREPARED BY: K M Cory REVIEWED BY:

SEAL

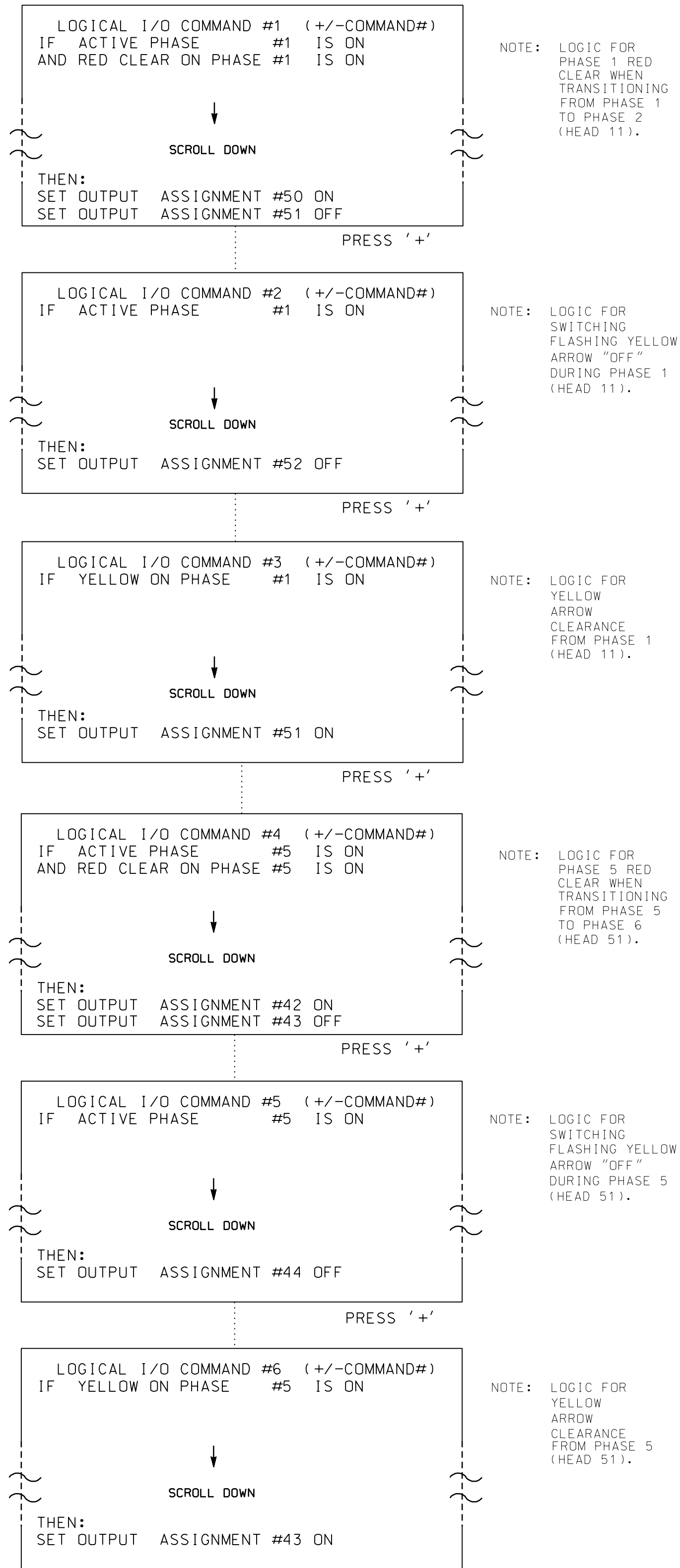
REVISIONS	INIT.	DATE

DocuSigned by: Kelly M Cory 8/4/2017
 SIGNATURE DATE
 SIG. INVENTORY NO. 04-0686

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

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
USE TO INTERPRET LOGIC PROCESSOR	
OUTPUT 42 =	Overlap C Red
OUTPUT 43 =	Overlap C Yellow
OUTPUT 44 =	Overlap C Green
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: |
STARTUP COLOR:  | _ RED _ YELLOW _ GREEN
FLASH COLORS:   | _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

← NOTICE GREEN FLASH

PRESS '+' TWICE

```

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?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0686
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

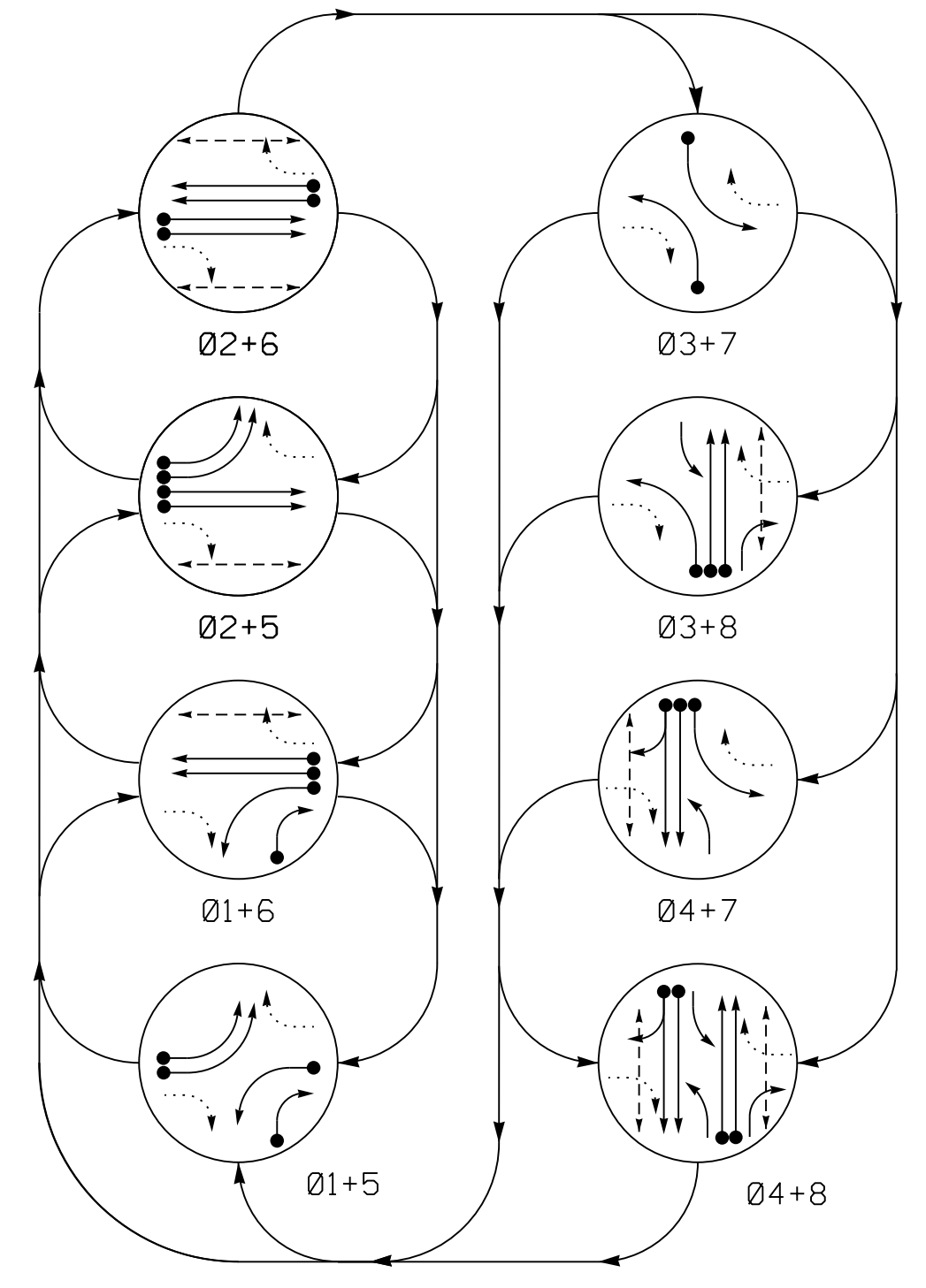
Electrical Detail - Sheet 2 of 2 - Signal Upgrade

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SIGNATURES COMPLETED

<p style="text-align: center;">Michael Baker INTERNATIONAL</p> <p style="font-size: small;">8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No. : F-1084 MBAKERINTL.COM</p>	<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared in the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-size: large;">US 301 (Ward Boulevard) at SR 1516 (Marlow Street)/ Fikewood Shopping Center</p> <p style="font-size: x-small;">Division 4 Wilson County Wilson</p> <p style="font-size: x-small;">PLAN DATE: June 2017 REVIEWED BY: W M RuhSAM</p> <p style="font-size: x-small;">PREPARED BY: K M Cory REVIEWED BY:</p> <table border="1" style="width: 100%; font-size: x-small;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE				<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">DocuSigned by: Kelly M Cory 8/4/2017</p> <p style="font-size: x-small;">SIGNATURE DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 04-0686</p>
	REVISIONS	INIT.	DATE						
<p>8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No. : F-1084 MBAKERINTL.COM</p>		<p>Electrical Detail - Sheet 2 of 2 - Signal Upgrade</p>	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>						

04-AUG-2017 11:01
X:\PROJ\FACTS\US_301\T1\off\esign\signal\mku-5935\SIG_06.dgn
KMCOR7 AT NDR\KMCOR7

PHASING DIAGRAM



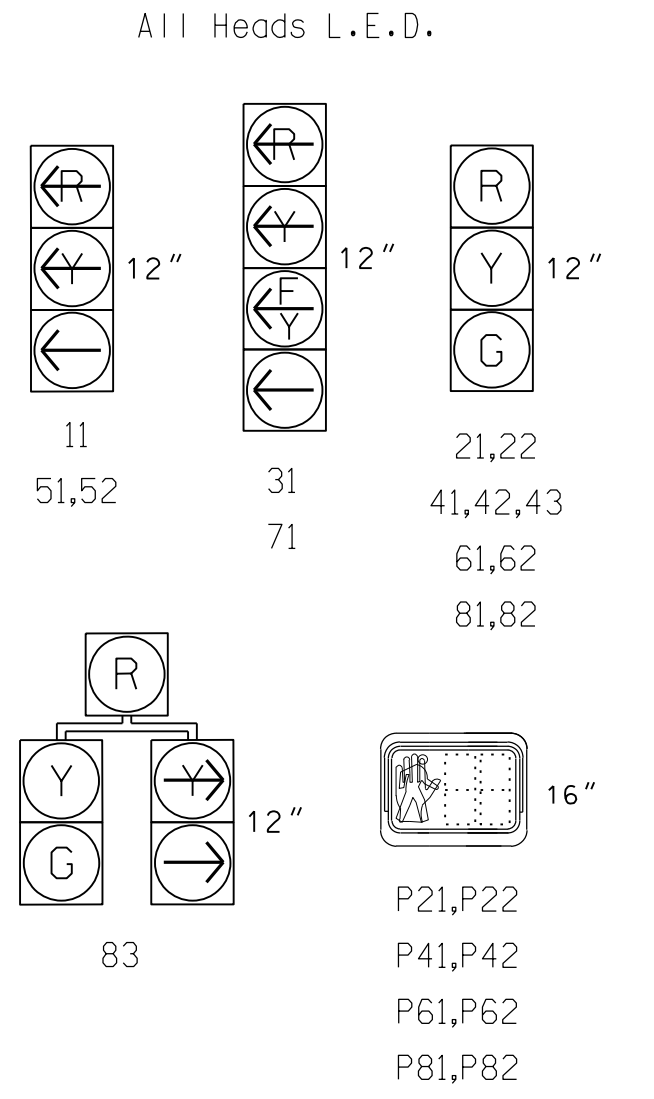
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	←	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	R	R
31	R	R	R	R	←	←	←	←
41,42,43	R	R	R	R	R	G	G	R
51,52	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	R
71	←	←	←	←	←	←	←	←
81,82	R	R	R	R	R	G	G	R
83	R	R	R	R	R	G	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.



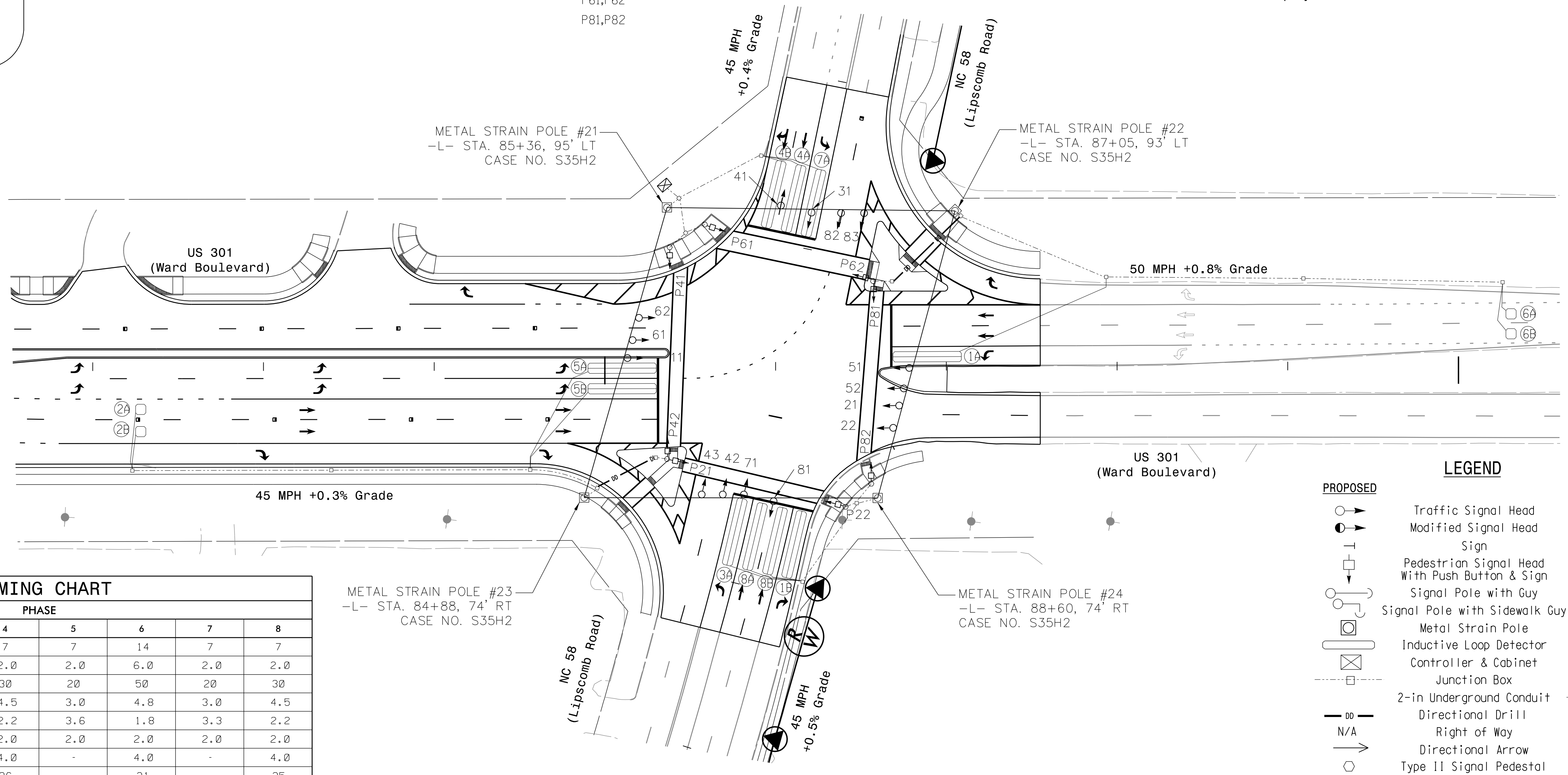
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY				
1A	6x40	0	2-4-2	Y	1	Y	Y	-	-	-	-	Y
1B	6x40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
2B	6x6	300	5	Y	2	Y	Y	-	-	-	-	Y
3A	6x40	0	2-4-2	Y	3	Y	Y	-	-	15	-	Y
4A	6x40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
4B	6x40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6x40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
5B	6x40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
6A	6x6	360	5	Y	6	Y	Y	-	-	-	-	Y
6B	6x6	360	5	Y	6	Y	Y	-	-	-	-	Y
7A	6x40	0	2-4-2	Y	7	Y	Y	-	-	15	-	Y
8A	6x40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6x40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

7-Phase Fully Actuated US 301 (Ward Boulevard) CLS

NOTES

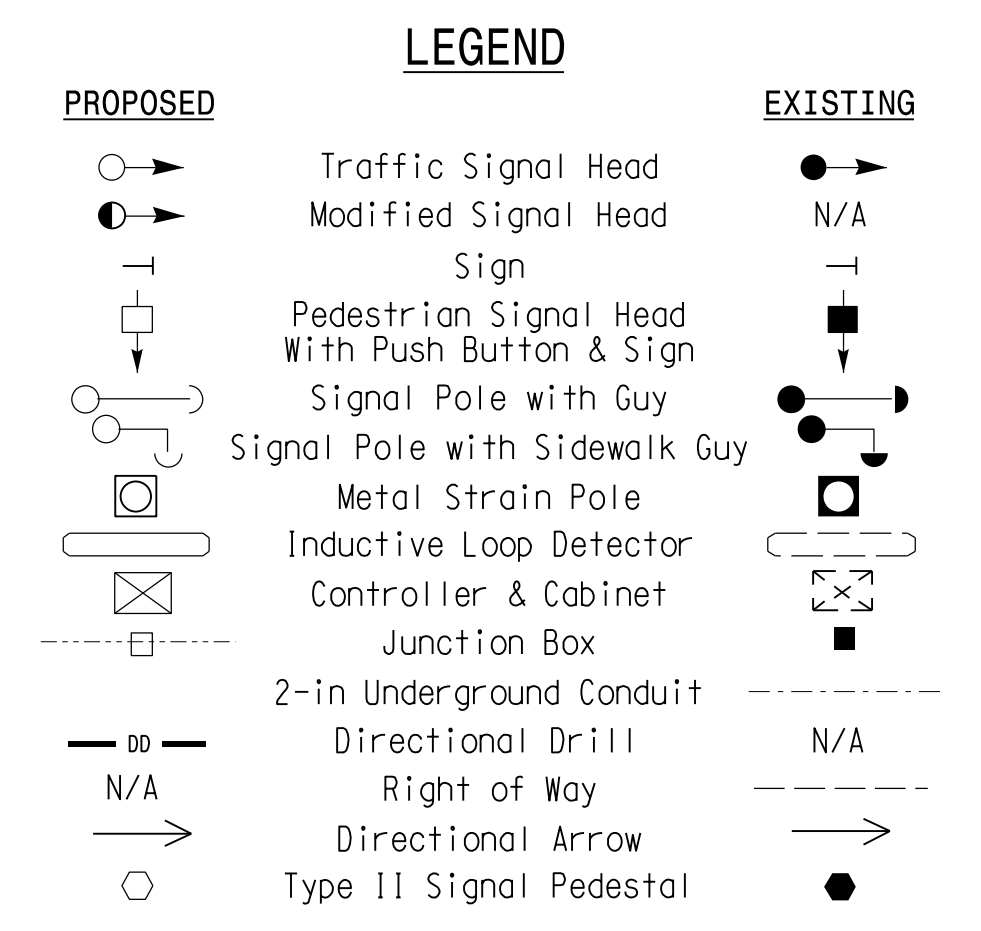
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 3 and/or Phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Controller Asset #0161.



OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	14	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	50	20	30	20	50	20	30
Yellow Clearance	3.0	4.5	3.0	4.5	3.0	4.8	3.0	4.5
Red Clearance	3.6	1.9	3.3	2.2	3.6	1.8	3.3	2.2
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	4.0	-	4.0	-	4.0	-	4.0
Don't Walk 1	-	20	-	26	-	21	-	25
Seconds Per Actuation *	-	1.8	-	-	-	1.8	-	-
Max Variable Initial *	-	34	-	-	-	40	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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



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Signal Upgrade

US 301 (Ward Boulevard) at NC 58 (Lipscomb Road)

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M Ruhsum

PREPARED BY: K M Cory REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

PROFESSIONAL ENGINEER

SEAL 038970

WILSON COUNTY, NORTH CAROLINA

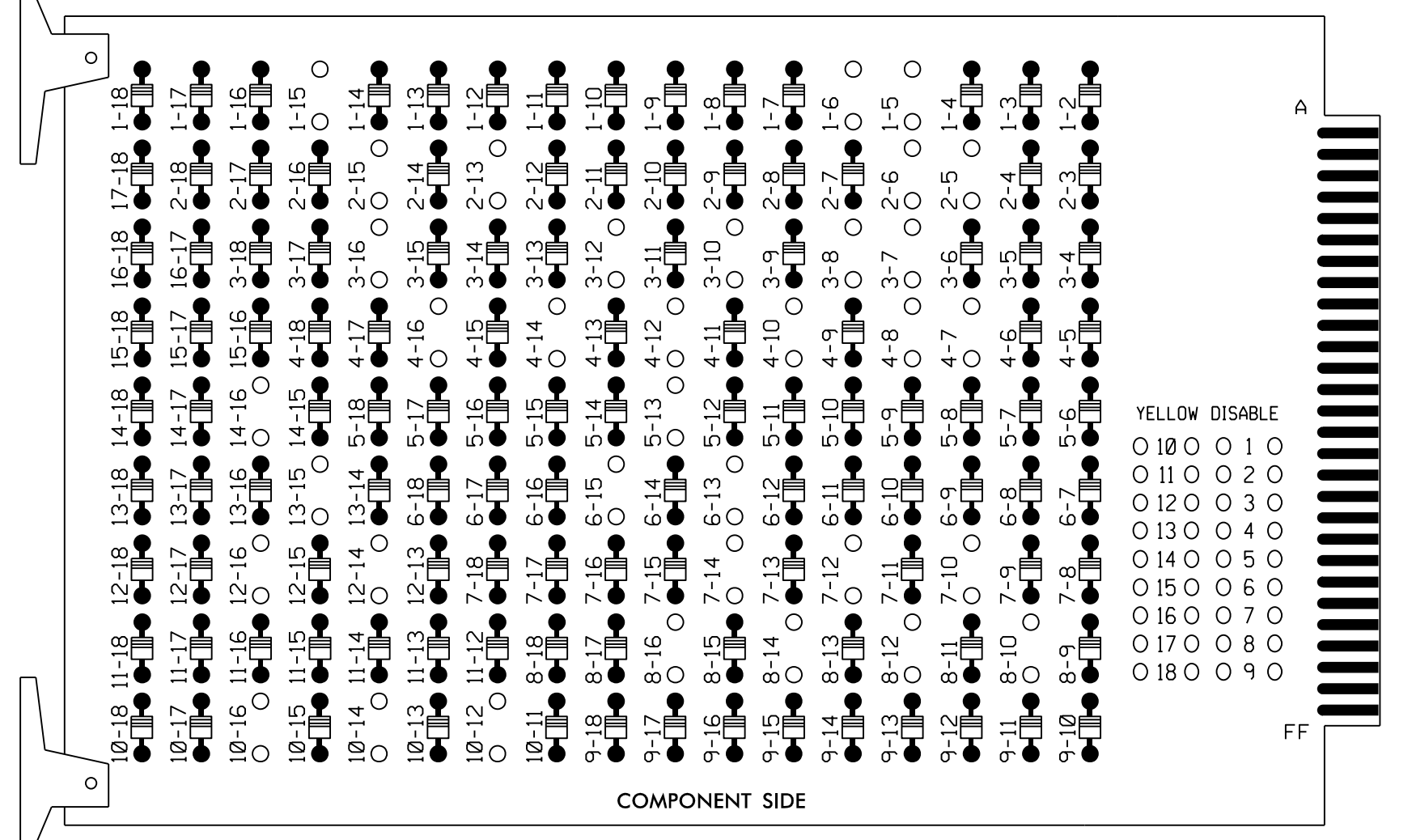
Kelly M Cory 8/4/2017

SIG. INVENTORY NO. 04-0161

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2, 4, 6, and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash, and overlap 2 as Wag Overlap.
- The cabinet and controller are part of the US 301 (Ward Boulevard) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332 W/ AUX FILE
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,
 S10,S11,S12,AUX S2,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,
 4PED,6PED,8PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....3+4
 OVERLAP "C".....NOT USED
 OVERLAP "D".....7+8

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22	P21, P22	31	41,42	P41, P42	51,52	61,62	P61, P62	71	81,82	P81, P82	NU	31	NU	NU	71
RED		128			101				134			107						
YELLOW		129		*	102				135		*	108						
GREEN		130			103				136			109						
RED ARROW	125								131					A124				A101
YELLOW ARROW	126	126							132					A125				A102
FLASHING YELLOW ARROW														A126				A103
GREEN ARROW	127	127			118				133			124						
Hand																		
Walking																		

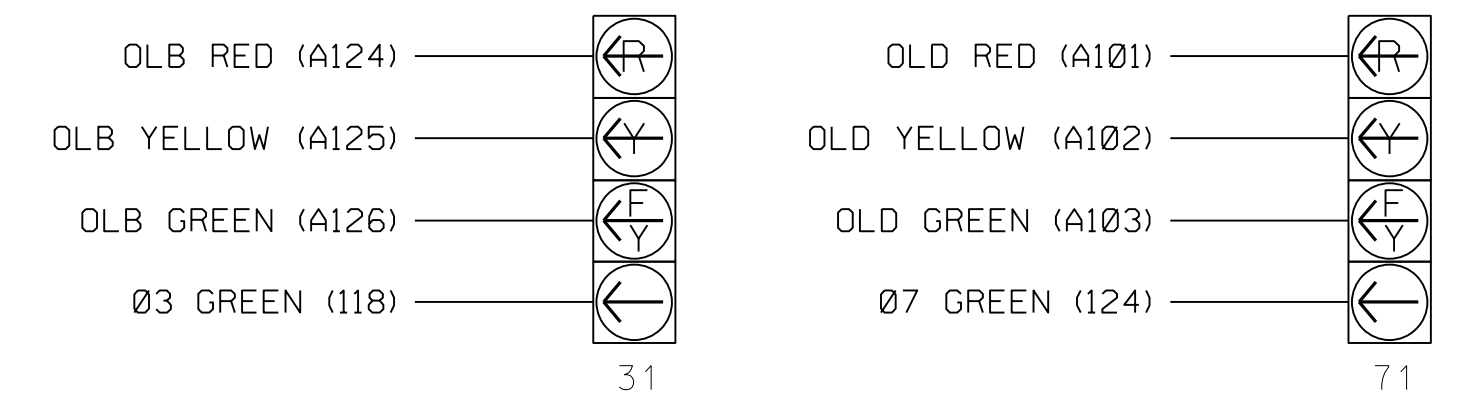
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal heads 31 and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	Ø 9	Ø 10	Ø 11	Ø 12	Ø 13	Ø 14
L	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A
U	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 7	Ø 8	Ø 9	Ø 10	Ø 11	Ø 12	Ø 13	Ø 14
L	1B	2B	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	13B	14B

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

FS = FLASH YENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

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	TB2-5,6	I2U	39	1	2	1	Y	Y			
1B	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			
3A ¹	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			
7A ²	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

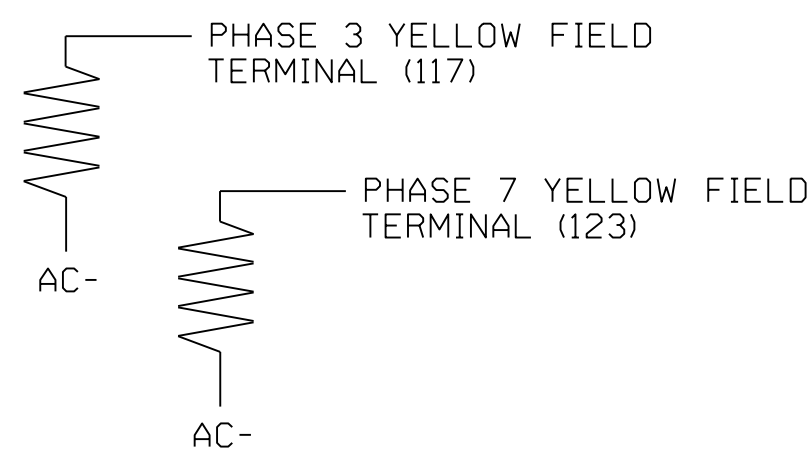
NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

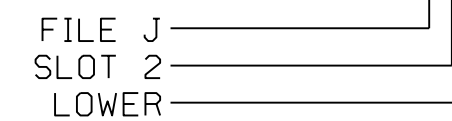
LOAD RESISTOR INSTALLATION DETAIL

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0161
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

INPUT FILE POSITION LEGEND: J2L



Electrical Detail - Sheet 1 of 2 - Signal Upgrade

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Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 301 (Ward Boulevard) at NC 58 (Lipscomb Road)

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M RuhSAM

PREPARED BY: K M Cory REVIEWED BY:

REVISIONS	INIT.	DATE

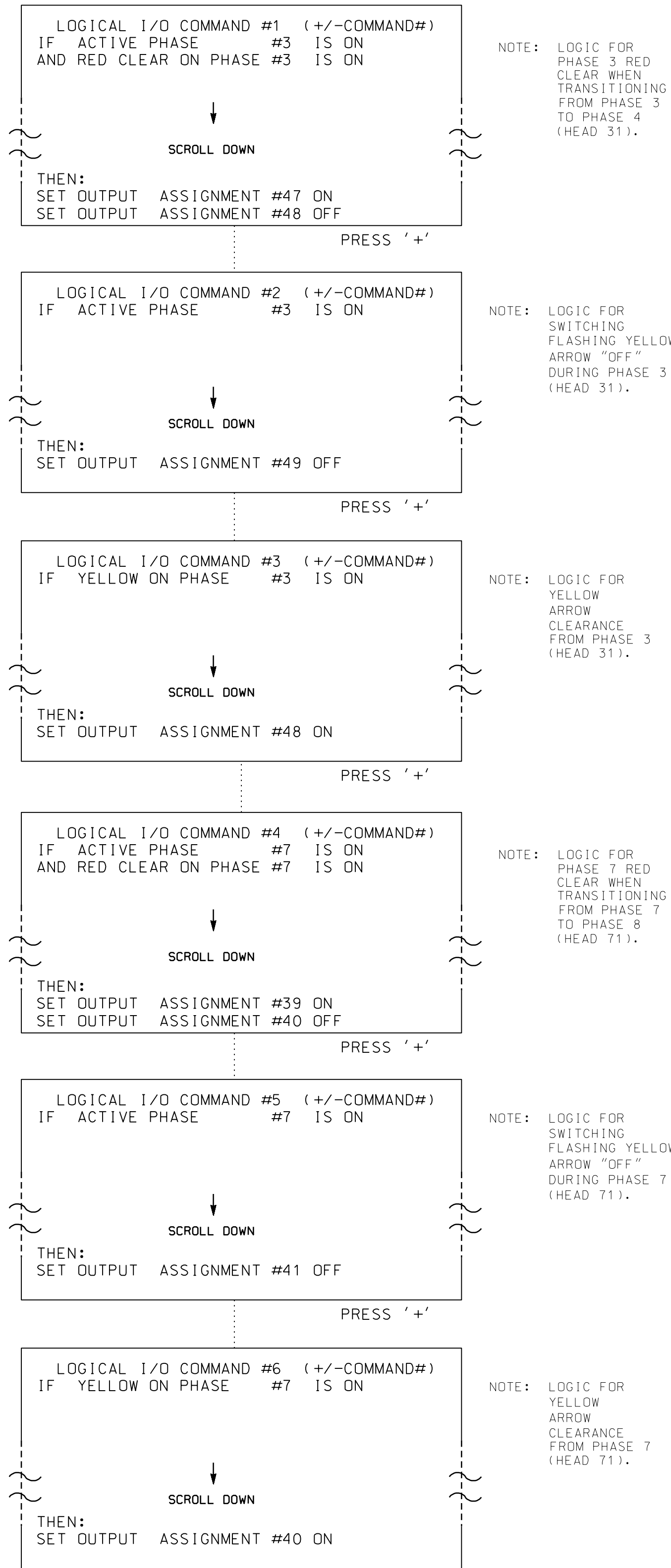
DocuSigned by: Kelly M Cory 8/4/2017

SIG. INVENTORY NO. 04-0161

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

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0161
DESIGNED: June 2017
SEALED: 08/04/2017
REVISED: N/A

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

```

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

NOTICE GREEN FLASH

PRESS '+' TWICE

```

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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

OUTPUT REFERENCE SCHEDULE

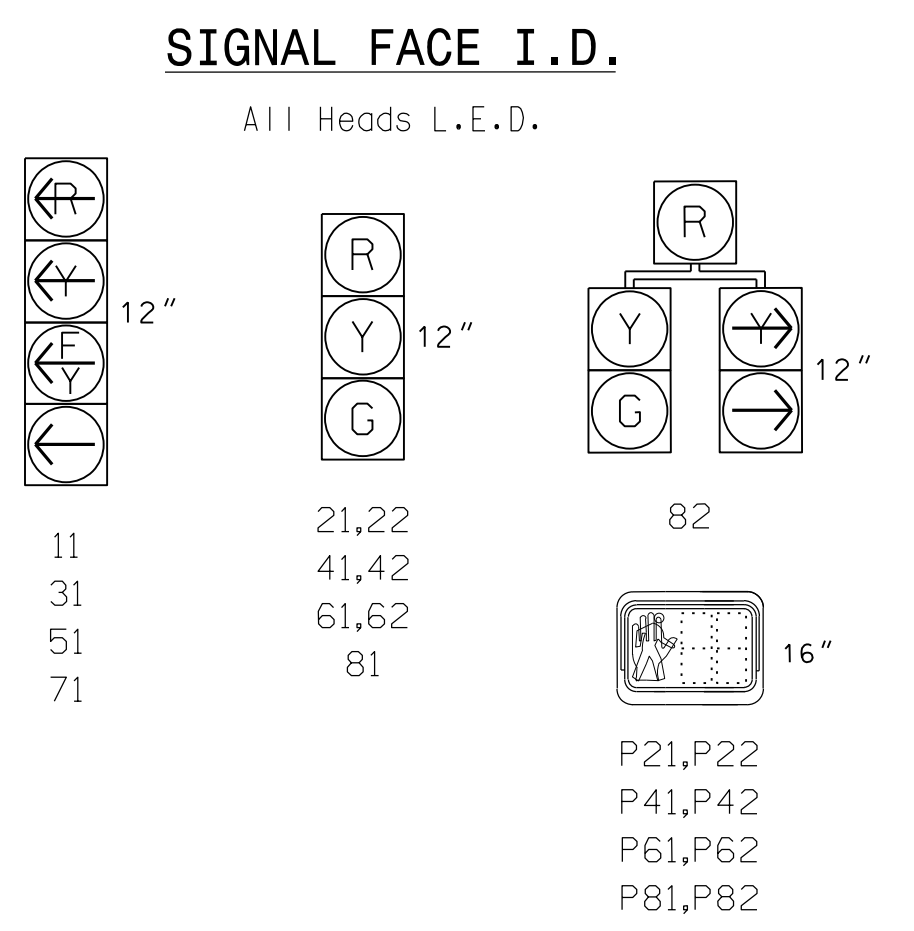
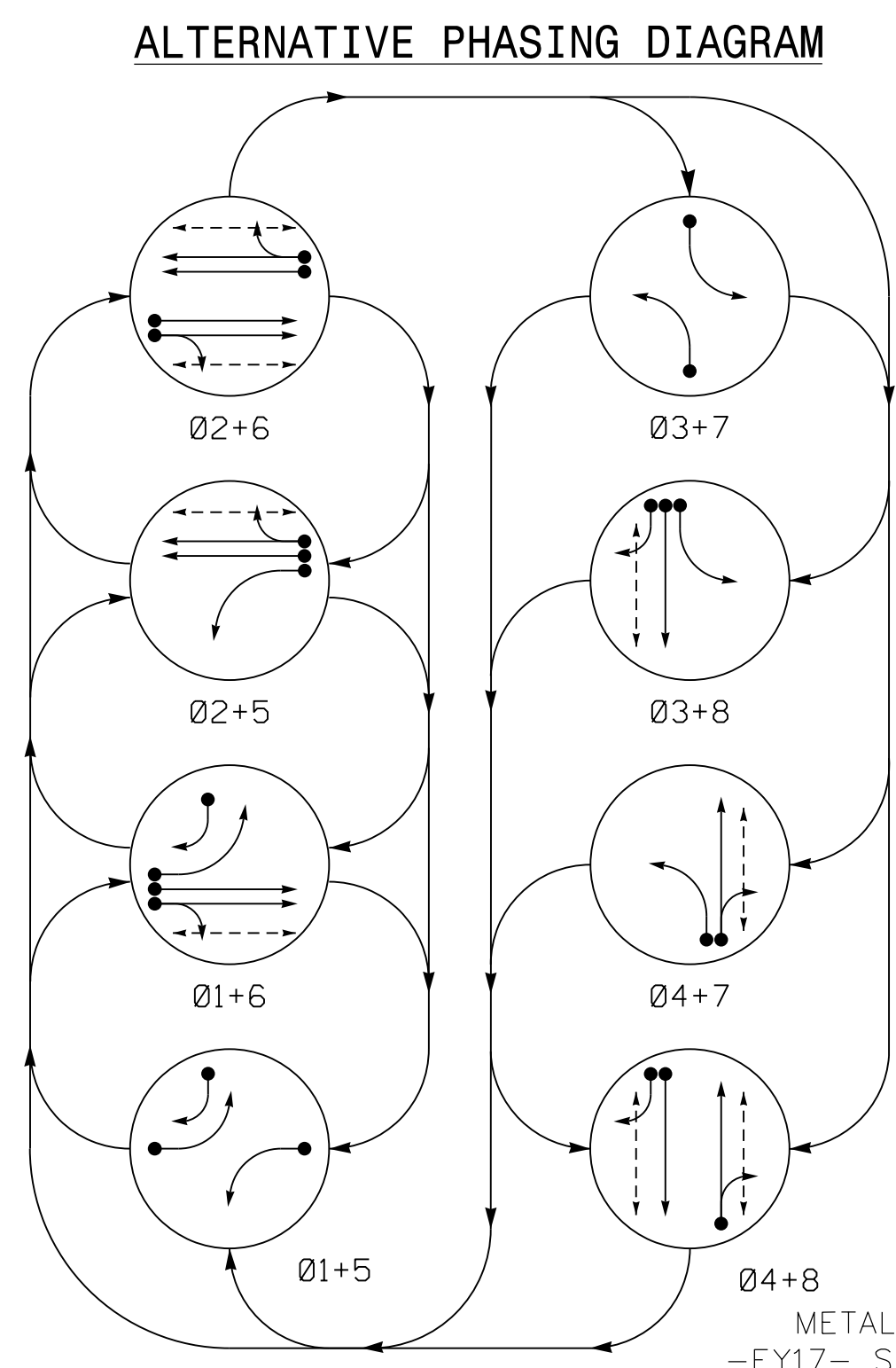
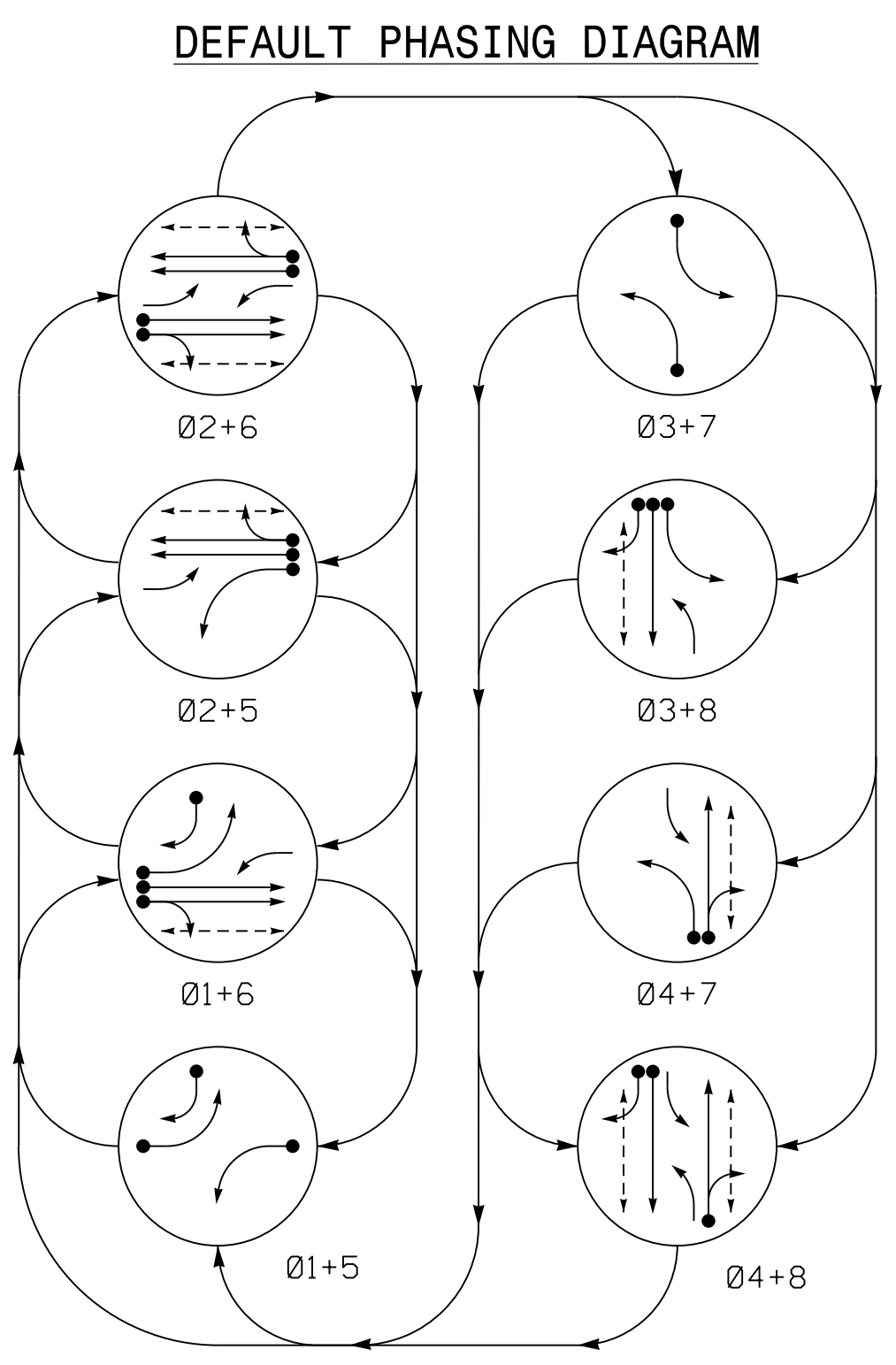
USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green

Electrical Detail - Sheet 2 of 2 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Michael Baker INTERNATIONAL 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No.: F-1084 MBAKERINTL.COM</p>	<p>Prepared in the Offices of: Transportation Mobility and Safety Solutions STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Management Section 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 301 (Ward Boulevard) at NC 58 (Lipscomb Road)</p>		<p>SEAL KELLY M. CORY ENGINEER 038970 NORTH CAROLINA</p>						
		<p>Division 4 Wilson County Wilson</p> <p>PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam</p> <p>PREPARED BY: K M Cory REVIEWED BY:</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	DATE	INIT.	DATE		
NO.	DATE	INIT.	DATE							



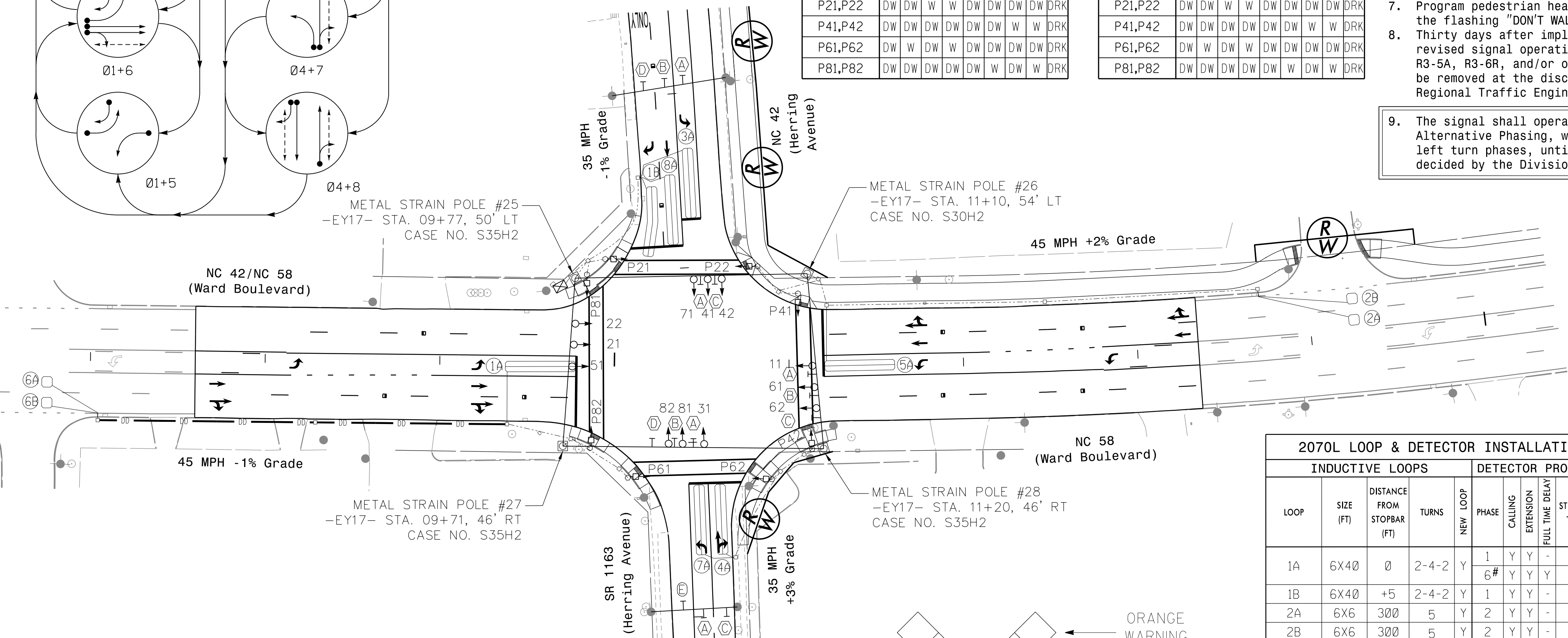
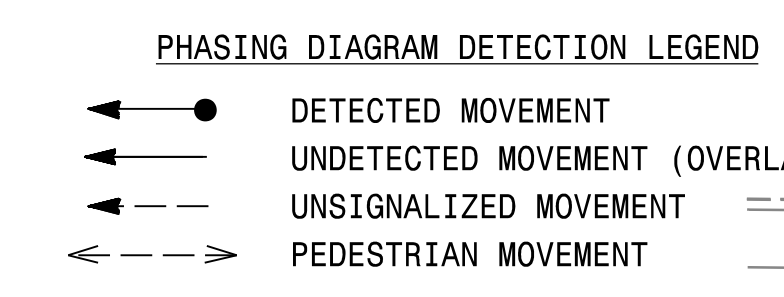
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	
11	←	←	←	←	←	←	←	←	Y
21,22	R	R	G	G	R	R	R	R	Y
31	←	←	←	←	←	←	←	←	Y
41,42	R	R	R	R	R	R	G	G	Y
51	←	←	←	←	←	←	←	←	Y
61,62	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	Y
81	R	R	R	R	R	G	G	R	Y
82	R	R	R	R	R	G	G	R	Y
P21,P22	DW	DW	W	W	DW	DW	DW	DRK	
P41,P42	DW	DW	DW	DW	DW	W	W	DRK	
P61,P62	DW	W	DW	W	DW	DW	DW	DRK	
P81,P82	DW	DW	DW	DW	W	DW	W	DRK	

ALTERNATIVE PHASING TABLE OF OPERATION

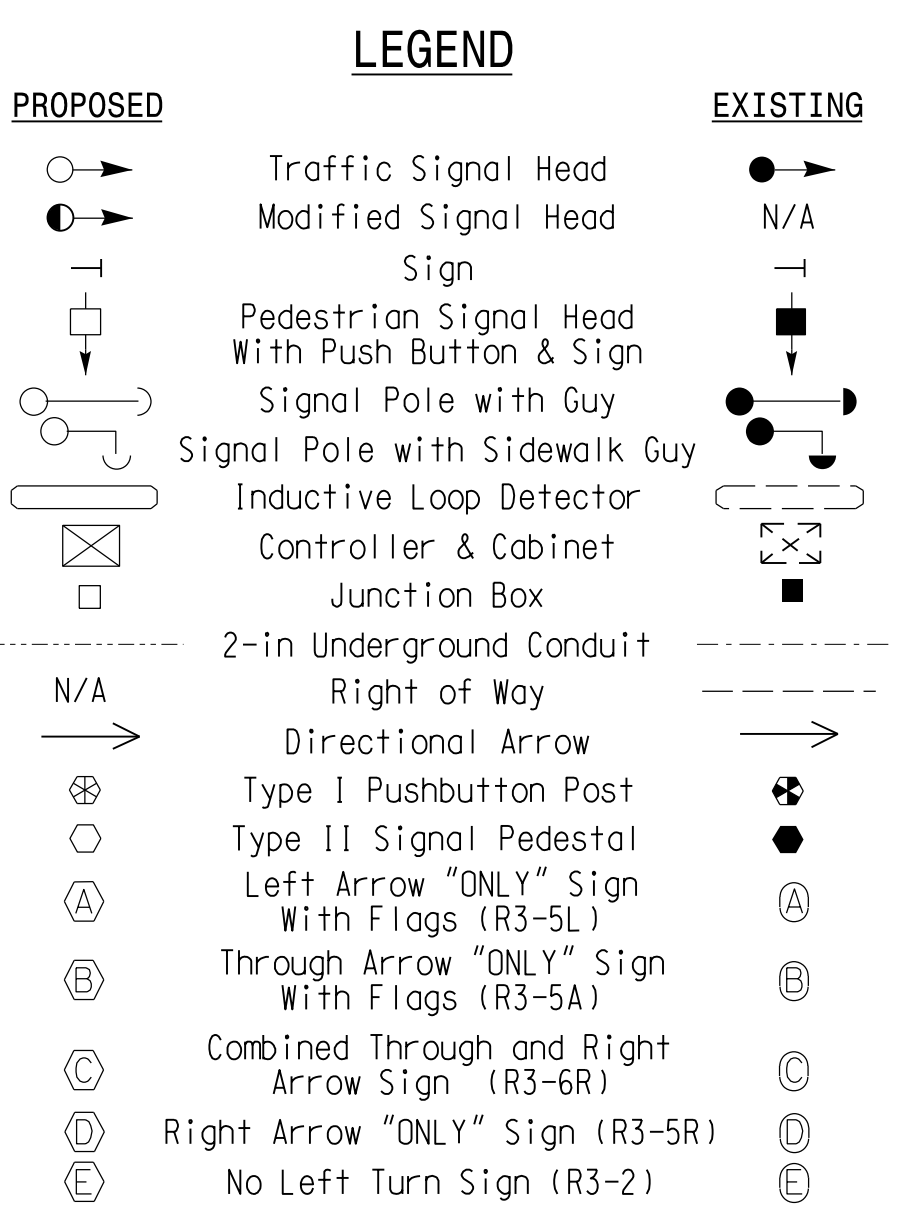
SIGNAL FACE	PHASE								FLASH
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	
11	←	←	←	←	←	←	←	←	Y
21,22	R	R	G	G	R	R	R	R	Y
31	←	←	←	←	←	←	←	←	Y
41,42	R	R	R	R	R	R	G	G	Y
51	←	←	←	←	←	←	←	←	Y
61,62	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	Y
81	R	R	R	R	R	G	G	R	Y
82	R	R	R	R	R	G	G	R	Y
P21,P22	DW	DW	W	W	DW	DW	DW	DRK	
P41,P42	DW	DW	DW	DW	DW	W	W	DRK	
P61,P62	DW	W	DW	W	DW	DW	DW	DRK	
P81,P82	DW	DW	DW	DW	W	DW	W	DRK	

- 8-Phase Fully Actuated Isolated**
- NOTES**
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
 - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
 - Phase 1 and/or Phase 5 may be lagged.
 - Phase 3 and/or Phase 7 may be lagged.
 - Set all detector units to presence mode.
 - Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
 - Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
 - Thirty days after implementation of the revised signal operation, signs R3-5L, R3-5A, R3-6R, and/or orange flags may be removed at the discretion of the Regional Traffic Engineer.
 - The signal shall operate only in Alternative Phasing, with fully-protected left turn phases, until such time as is decided by the Division Traffic Engineer.



OASIS 2070 TIMING CHART

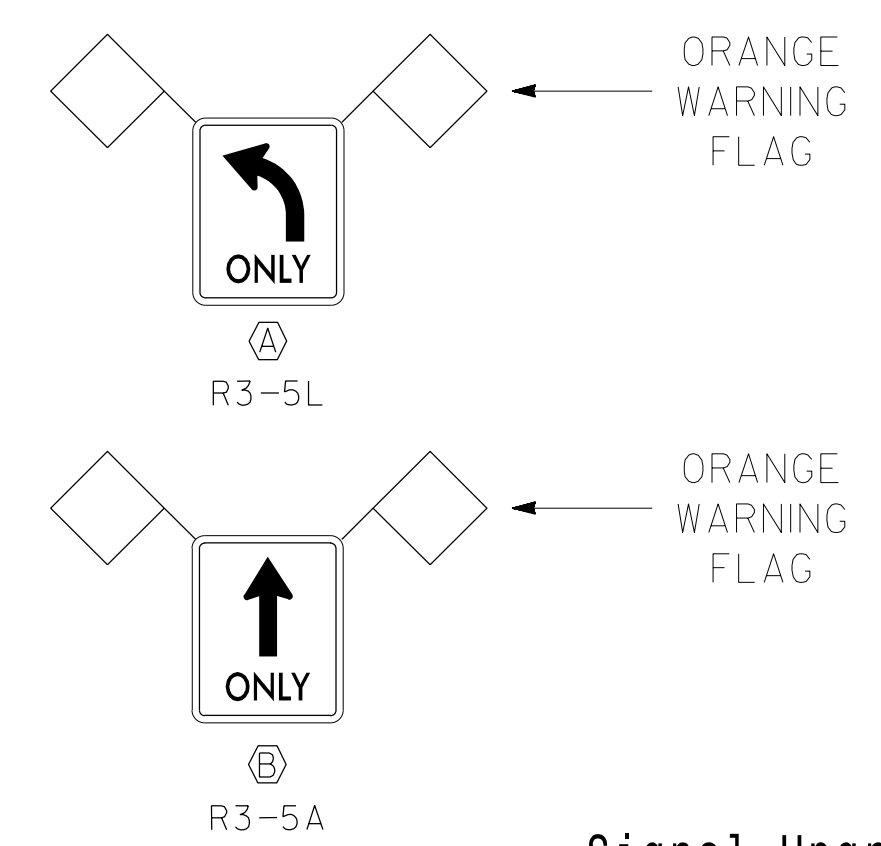
FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	50	20	30	20	50	20	30
Yellow Clearance	3.0	4.6	3.0	3.9	3.0	4.6	3.0	3.9
Red Clearance	3.2	0.0	3.5	2.6	3.3	2.0	3.2	2.6
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	4.0	-	4.0	-	4.0	-	4.0
Don't Walk 1	-	18	-	17	-	14	-	21
Seconds Per Actuation *	-	1.8	-	-	-	1.8	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON



2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	
1A	6X40	0	2-4-2	Y	1	Y	Y	-	15*	-	Y
1B	6X40	+5	2-4-2	Y	1	Y	Y	-	15	-	Y
2A	6X6	300	5	Y	2	Y	Y	-	-	-	Y
2B	6X6	300	5	Y	2	Y	Y	-	-	-	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	15*	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	5	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	15*	-	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	Y
6B	6X6	300	5	Y	6	Y	Y	-	-	-	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	15*	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	3	-	Y

* Reduce Delay Time to 3 Sec During Alternative Phasing Operation.
Disable Phase Call For Loop(s) During Alternative Phasing Operation.



Signal Upgrade

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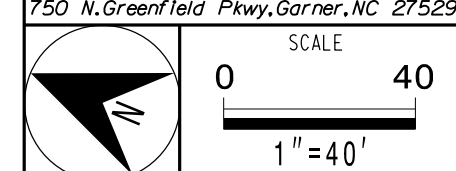
Prepared in the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
SIGNAL DESIGN SECTION

NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1163 (Herring Avenue)
Division 4 Wilson County Wilson
PLAN DATE: July 2017 REVIEWED BY: W M Ruhssam
PREPARED BY: K M Cory REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
KELLY M. CORY
ENGINEER
038970

DocuSigned by:
Kelly M Cory
8/4/2017



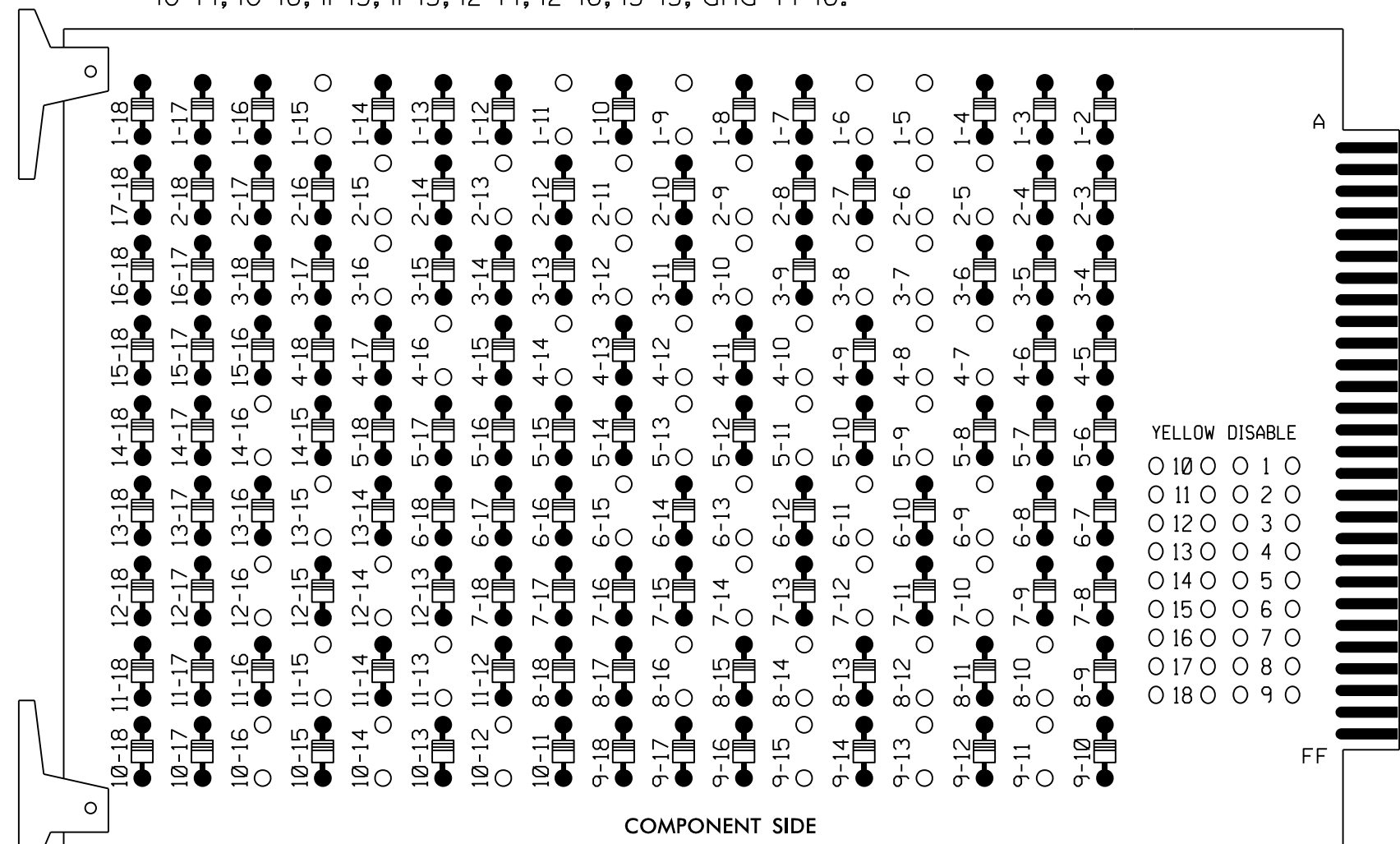
04-AUG-2017 11:02
X:\PROJ\FACTS\15-301\TRF\fact\signal\sig\5935_S10_08.dgn
KMCOR AT NDCR\KCDRY

* 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.

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET332 W/ AUX FILE
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
 S9,S10,S11,S12,AUX S1,
 AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8,
 2PED,4PED,6PED,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	82	21,22	P21, P22	31★	41,42	P41, P42	51★	61,62	P61, P62	71★	81,82	P81, P82	11★	31★	NU	51★	71★
RED		*	128		101			134			107							
YELLOW			129	*	102		*	135		*	108							
GREEN			130		103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW	126												A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127	127			118			133			124							
Hand icon								113			104							
Walking person icon								115			106							

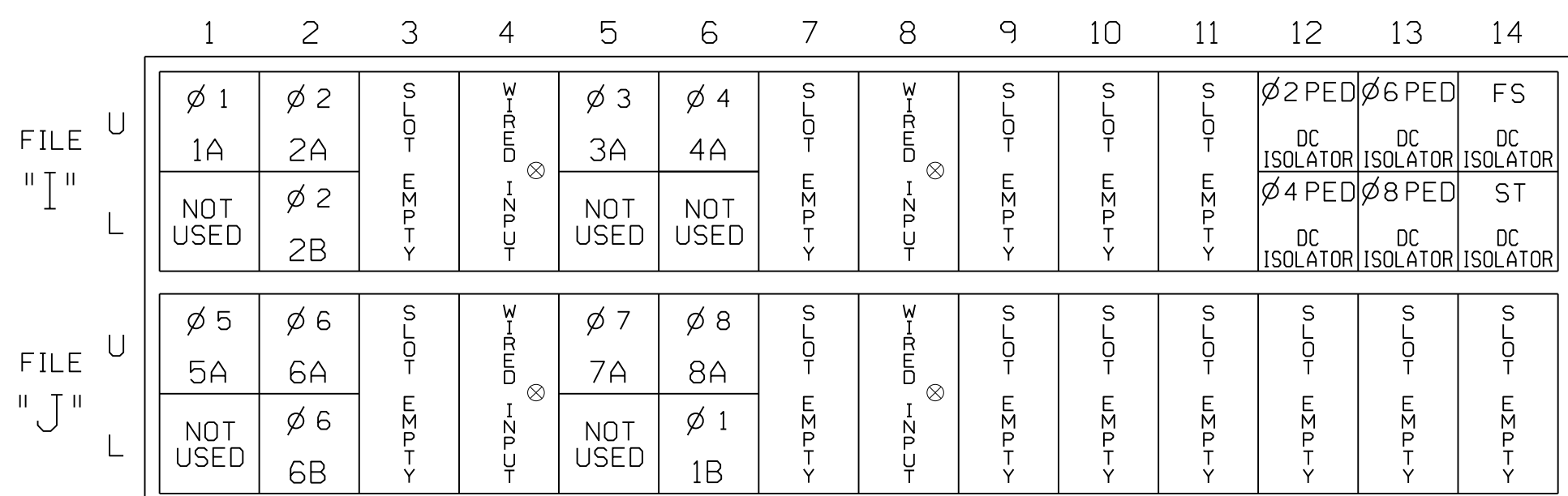
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

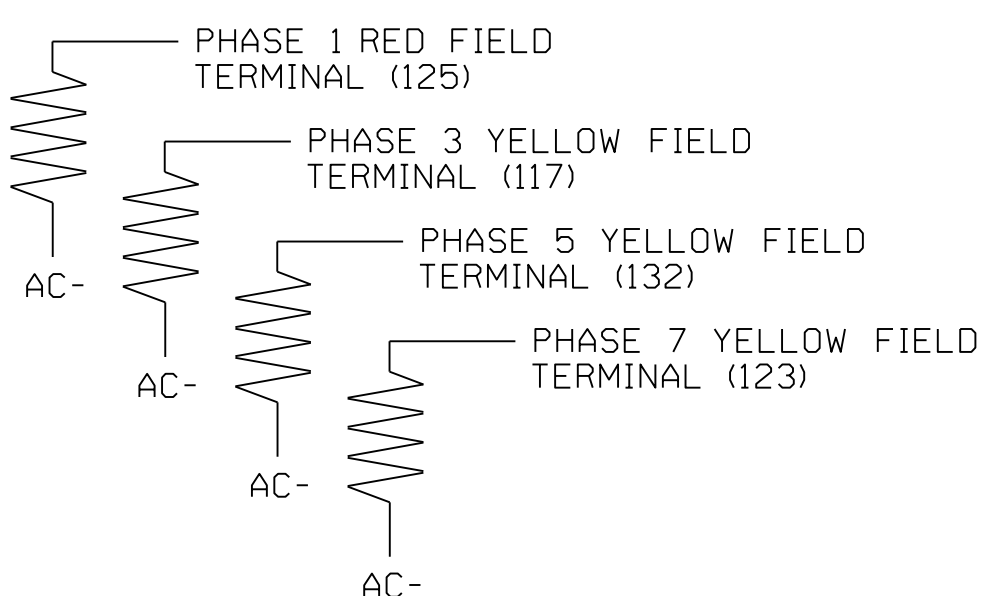
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10★	26	6	Y	Y	Y		3
	-	I1U	56	18★	51	1	Y	Y			
1B	TB5-11,12	J6L	46	8	18	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
	TB2-7,8	I2L	43	5	12	2	Y	Y			
2B	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12★	28	8	Y	Y			3
3A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I5U	58	20★	53	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
	-	J1U	55	17★	55	5	Y	Y			
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9★	22	2	Y	Y	Y		3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
	-	J1U	55	17★	55	5	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
	TB5-5,6	J5U	57	19	7	7	Y	Y			15
7A ⁴	-	I8U	49	11★	24	4	Y	Y			3
	-	J5U	57	19★	57	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

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

- ★ See Input Page Assignment programming details on sheets 3, 4, 5, and 6.
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from I5-W to J8-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.

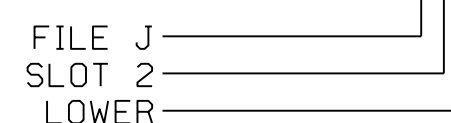
LOAD RESISTOR INSTALLATION DETAIL

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



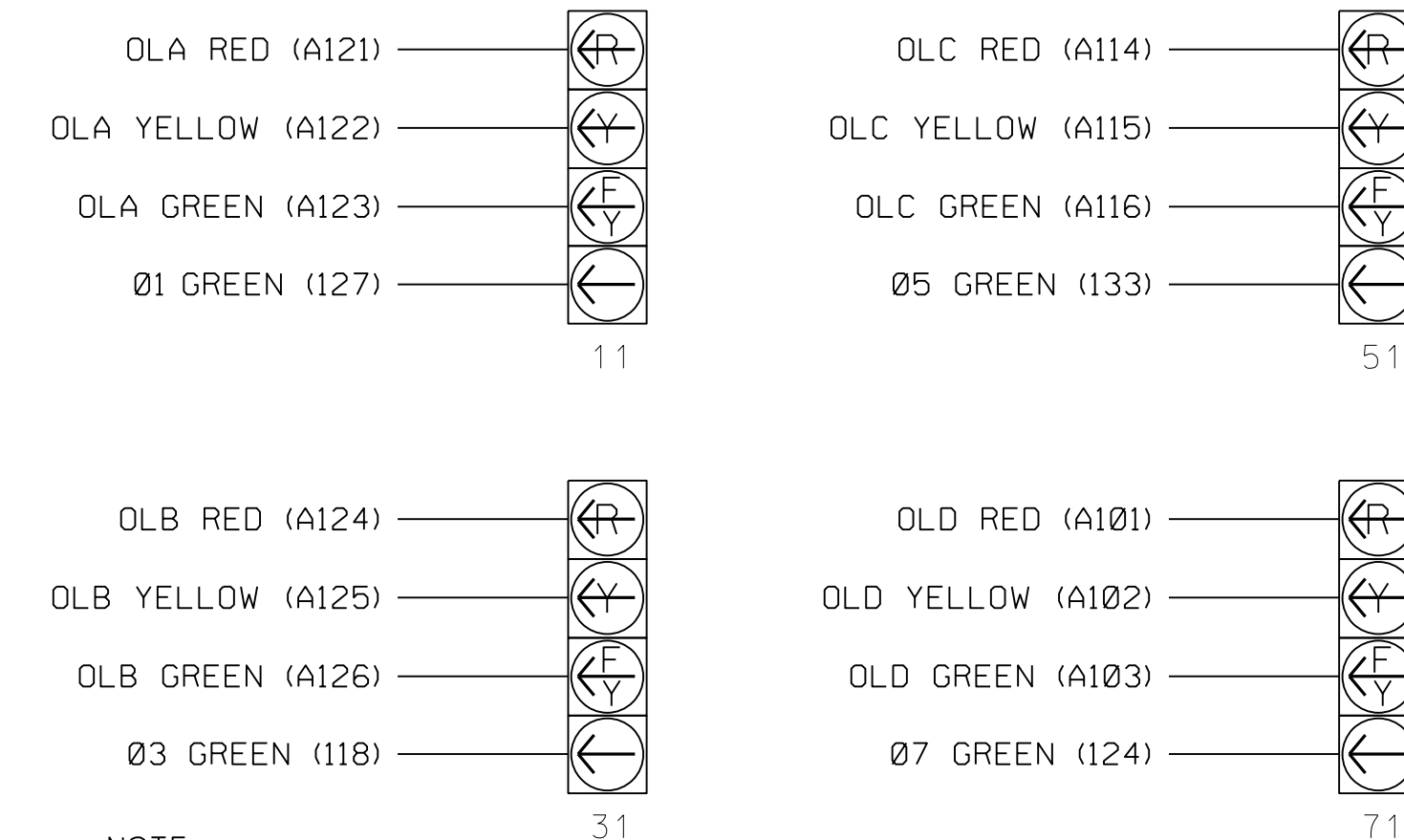
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0308
DESIGNED: July 2017
SEALED: 08/04/2017
REVISED: N/A

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal heads 11,31,51, and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 7 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC License No. : F-1084
 MBAKERINTL.COM

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared in the Offices of:

NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1163 (Herring Avenue)

Division 4	Wilson County	Wilson
PLAN DATE: July 2017	REVIEWED BY: W M Ruhssam	
PREPARED BY: K M Cory	REVIEWED BY:	
REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 KELLY M. CORY
 License No. 038970
 DocuSigned by:
 Kelly M Cory
 8/4/2017
 SIGNATURE DATE
 SIG. INVENTORY NO. 04-0308

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)...
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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

LOGICAL I/O COMMAND #4 (+/-COMMAND#) IF ACTIVE PHASE #5 IS ON AND RED CLEAR ON PHASE #5 IS ON

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #42 ON SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

LOGICAL I/O COMMAND #5 (+/-COMMAND#) IF ACTIVE PHASE #5 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

LOGICAL I/O COMMAND #6 (+/-COMMAND#) IF YELLOW ON PHASE #5 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

LOGICAL I/O COMMAND #7 (+/-COMMAND#) IF ACTIVE PHASE #3 IS ON AND RED CLEAR ON PHASE #3 IS ON

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #47 ON SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

LOGICAL I/O COMMAND #8 (+/-COMMAND#) IF ACTIVE PHASE #3 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

LOGICAL I/O COMMAND #9 (+/-COMMAND#) IF YELLOW ON PHASE #3 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

LOGICAL I/O COMMAND #10 (+/-COMMAND#) IF ACTIVE PHASE #7 IS ON AND RED CLEAR ON PHASE #7 IS ON

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #39 ON SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

LOGICAL I/O COMMAND #11 (+/-COMMAND#) IF ACTIVE PHASE #7 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

LOGICAL I/O COMMAND #12 (+/-COMMAND#) IF YELLOW ON PHASE #7 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

SCROLL DOWN

THEN: SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

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

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

NOTICE GREEN FLASH

PRESS '+'

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

NOTICE GREEN FLASH

PRESS '+'

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

NOTICE GREEN FLASH

PRESS '+'

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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATIVE PHASING

(program controller as shown below)

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

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN

PRESS '+'

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN

PRESS '+'

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN

PRESS '+'

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN

OVERLAP PROGRAMMING COMPLETE

Electrical Detail - Sheet 2 of 7 - Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

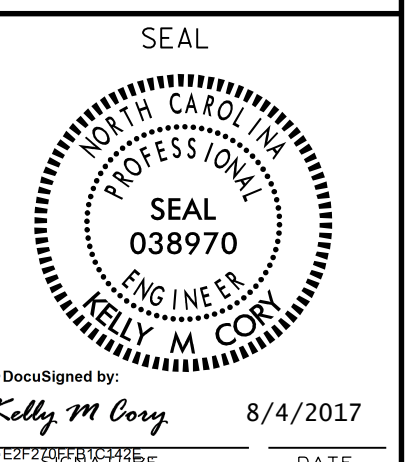
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ELECTRICAL AND PROGRAMMING DETAILS FOR:
Prepared in the Offices of:
Transposition Mobility and Signal Systems
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1163 (Herring Avenue)

Division 4 Wilson County Wilson
PLAN DATE: July 2017 REVIEWED BY: W M Ruhssam
PREPARED BY: K M Cory REVIEWED BY:

Table with columns: REVISIONS, INIT, DATE



DocuSigned by: Kelly M Cory 8/4/2017

SIG. INVENTORY NO. 04-0308

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

(program controller as shown below)

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

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

PAGE: 2 C1 PIN:48 VEHICLE DETECTOR INPUT ASSIGNMENT #.....10 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64).....26 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR 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).....

ENTER A 'Y' FOR NOT ENABLED
DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 1A - PHASE 6)

PAGE: 2 C1 PIN:48 NOT ENABLED INPUT ASSIGNMENT #.....10 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR 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).....

PRESS '+' TO ADVANCE TO INPUT 18

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....1 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR 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).....

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

(LOOP 1A - PHASE 1)

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....51 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR 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).....

PROGRAMMING COMPLETE

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

(program controller as shown below)

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

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

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '1' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

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

DETECTOR PROGRAMMING COMPLETE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0308 DESIGNED: July 2017 SEALED: REVISED: N/A

Electrical Detail - Sheet 3 of 7 - Signal Upgrade

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ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: Transportation Mobility and Safety Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION & SAFETY Management Section 750 N. Greenfield Pkwy, Garner, NC 27529

NC 42/NC 58 (Ward Boulevard) at NC 42/SR 1163 (Herring Avenue) Division 4 Wilson County Wilson PLAN DATE: July 2017 REVIEWED BY: W M RuhSAM PREPARED BY: K M Cory REVIEWED BY: REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL PROFESSIONAL ENGINEER KELLY M CORY SEAL 038970 DocuSigned by: Kelly M Cory 8/4/2017 EXP. DATE DATE SIG. INVENTORY NO. 04-0308

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 7A

(program controller as shown below)

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

2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #11 (DETECTOR 24) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 4 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 57 TO INPUT #19 SO THAT THE DELAY ON LOOP 7A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 11 IS REACHED.

PAGE: 2 C1 PIN:49 VEHICLE DETECTOR INPUT ASSIGNMENT #.....11 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64).....24 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).....

ENTER A 'Y' FOR NOT ENABLED
DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 7A - PHASE 4)

PAGE: 2 C1 PIN:49 NOT ENABLED INPUT ASSIGNMENT #.....11 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR 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).....

PRESS '+' TO ADVANCE TO INPUT 19

PAGE: 2 C1 PIN:57 VEHICLE DETECTOR INPUT ASSIGNMENT #.....19 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64).....7 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).....

ENTER '57' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 7A - PHASE 7)

PAGE: 2 C1 PIN:57 VEHICLE DETECTOR INPUT ASSIGNMENT #.....19 DEBOUNCE TIME (0-25.5 SEC).....0.5 DELAY TIME (0-25.5 SEC).....0.0 HOLD-OVER TIME (0-25.5 SEC).....0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64).....57 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).....

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 7A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #57.

VEHICLE DETECTOR #57 SETTINGS (+,-,1-64) SETTING: (Y/N) ENABLE DETECTOR.....N ENABLE LOGGING.....N ENABLE DIAGNOSTICS.....N SPEED TRAP.....N CALL DETECTOR.....Y EXTENSION DETECTOR.....Y MODE 2 STOP BAR.....N SWITCHING DETECTOR.....N DUPLICATING DETECTOR.....N ENABLE FULL TIME DELAY.....N IF FAILED, SET MIN RECALL?.....N IF FAILED, SET MAX1 RECALL?.....N IF FAILED, SET MAX2 RECALL?.....N PHASE# :12345678910111213141516 PHASES ASSIGNED : SWITCH/DUPLICATE : LOOP SIZE (0-255 FT).....6 SPEED TRAP DISTANCE (0-255 FT).....0 STOP BAR TIME (0-255 SEC).....0 STRETCH (0-25.5 SEC).....0.0 DELAY (0-255 SEC).....0.0 MAX CALLS/MIN (0-255).....255 MIN CALLS/DIAGNOSTIC PERIOD (0-255).....0 MAX OCCUPANCY (0-100%).....100 EXTENSION DISABLE TIME (0-255 SEC).....0 QUEUE MAX OCCUPANCY TIME (0-255).....0 QUEUE GAP RESET TIME (0-25.5).....0.0 PREEMPTION INDEX FOR QUEUE (0-10).....0

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '7' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

VEHICLE DETECTOR #57 SETTINGS (+,-,1-64) SETTING: (Y/N) ENABLE DETECTOR.....Y ENABLE LOGGING.....N ENABLE DIAGNOSTICS.....N SPEED TRAP.....N CALL DETECTOR.....Y EXTENSION DETECTOR.....Y MODE 2 STOP BAR.....N SWITCHING DETECTOR.....N DUPLICATING DETECTOR.....N ENABLE FULL TIME DELAY.....N IF FAILED, SET MIN RECALL?.....N IF FAILED, SET MAX1 RECALL?.....N IF FAILED, SET MAX2 RECALL?.....N PHASE# :12345678910111213141516 PHASES ASSIGNED : X SWITCH/DUPLICATE : LOOP SIZE (0-255 FT).....6 SPEED TRAP DISTANCE (0-255 FT).....0 STOP BAR TIME (0-255 SEC).....0 STRETCH (0-25.5 SEC).....0.0 DELAY (0-255 SEC).....0.0 MAX CALLS/MIN (0-255).....255 MIN CALLS/DIAGNOSTIC PERIOD (0-255).....0 MAX OCCUPANCY (0-100%).....100 EXTENSION DISABLE TIME (0-255 SEC).....0 QUEUE MAX OCCUPANCY TIME (0-255).....0 QUEUE GAP RESET TIME (0-25.5).....0.0 PREEMPTION INDEX FOR QUEUE (0-10).....0

DETECTOR PROGRAMMING COMPLETE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0308
DESIGNED: July 2017
SEALED: 08/04/2017
REVISED: N/A

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Electrical Detail - Sheet 6 of 7 - Signal Upgrade

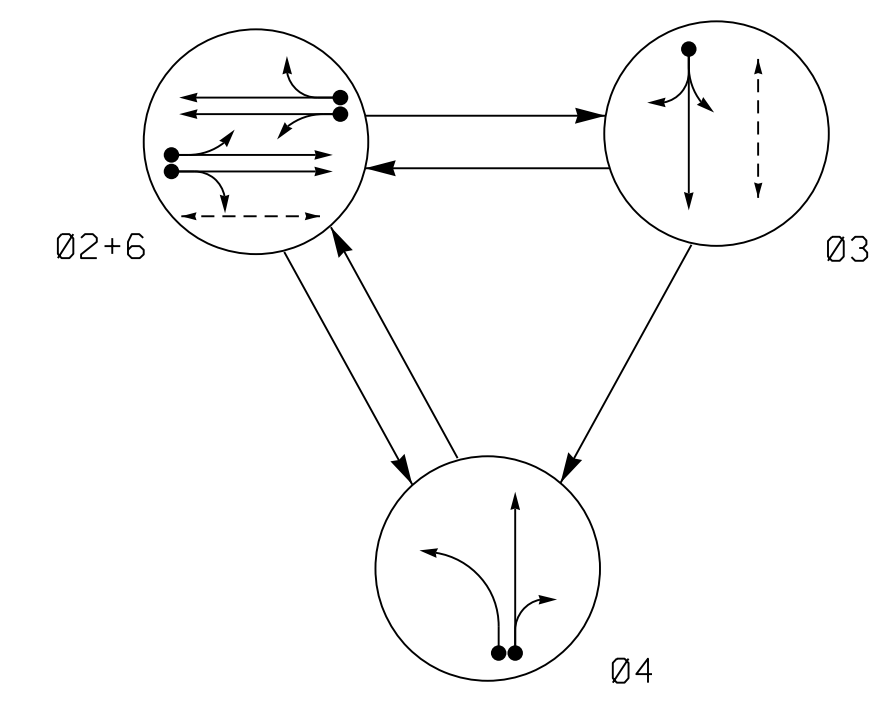
Michael Baker INTERNATIONAL
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
Phone: 919-463-5488
NC License No. : F-1084
MBAKERINTL.COM

ELECTRICAL AND PROGRAMMING DETAILS FOR:
Prepared in the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
SAFETY MANAGEMENT SYSTEMS
750 N. Greenfield Pkwy, Garner, NC 27529

NC 42/NC 58 (Ward Boulevard)
at
NC 42/SR 1163 (Herring Avenue)
Division 4 Wilson County Wilson
PLAN DATE: July 2017 REVIEWED BY: W M RuhSAM
PREPARED BY: K M Cory REVIEWED BY:
REVISIONS INIT. DATE
DocuSigned by:
Kelly M Cory 8/4/2017
SIG. INVENTORY NO. 04-0308

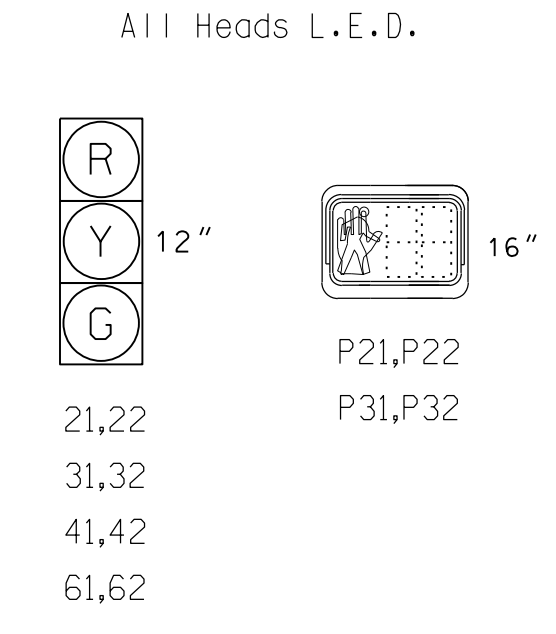
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
KELLY M. CORY
038970
DATE

PHASING DIAGRAM



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

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME		
2A	6x6	70	EXIST	-	2	Y	Y	-	-	-	-
2B	6x6	70	EXIST	-	2	Y	Y	-	-	-	-
3A	6x6Ø	+5	EXIST	-	3	Y	Y	-	-	5	-
4A	6x4Ø	Ø	2-4-2	Y	4	Y	Y	-	-	-	-
4B	6x4Ø	Ø	2-4-2	Y	4	Y	Y	-	-	5	-
6A	6x6	70	EXIST	-	6	Y	Y	-	-	-	-
6B	6x6	70	EXIST	-	6	Y	Y	-	-	-	-

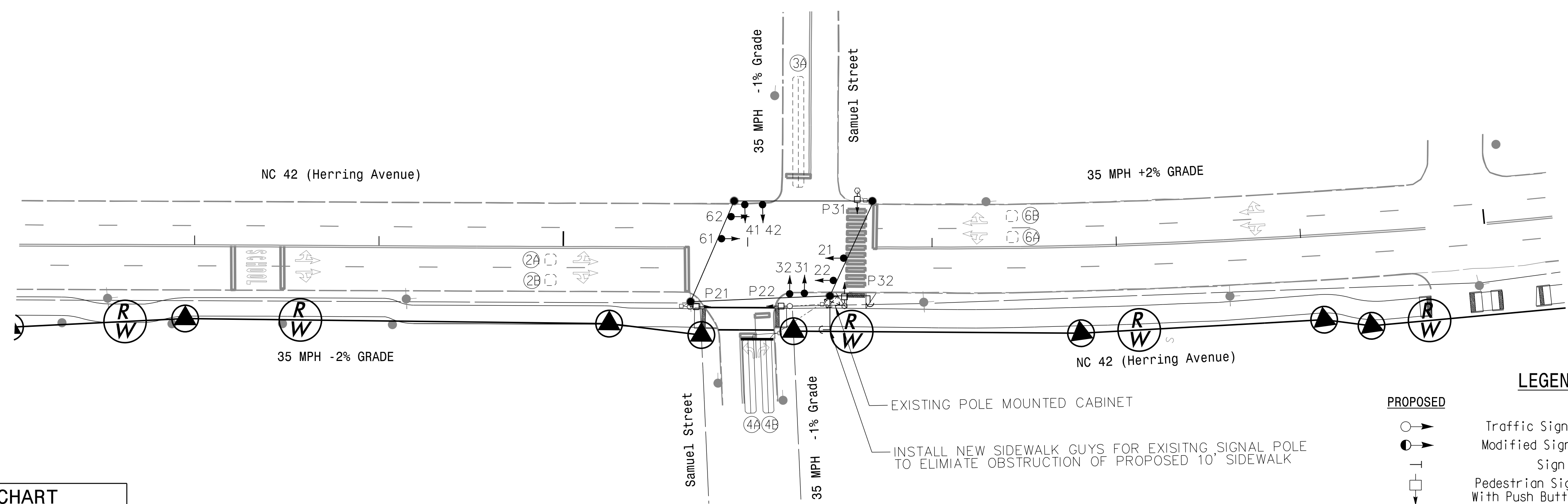
3-Phase Fully Actuated Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
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. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "DON'T WALK" time only.

PHASING DIAGRAM DETECTION LEGEND

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



OASIS 2070 TIMING CHART				
FEATURE	PHASE			
	2	3	4	6
Min Green 1 *	12	7	7	12
Extension 1 *	3.0	1.0	1.0	3.0
Max Green 1 *	45	20	20	45
Yellow Clearance	4.0	3.6	3.6	3.7
Red Clearance	1.8	2.0	2.0	2.2
Walk 1 *	4	4	-	-
Don't Walk 1	6	11	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
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.

LEGEND	
PROPOSED	EXISTING
○→ Traffic Signal Head	●→ N/A
○→ Modified Signal Head	○→ N/A
○→ Sign	○→ N/A
○→ Pedestrian Signal Head With Push Button & Sign	○→ N/A
○→ Signal Pole with Guy	○→ N/A
○→ Signal Pole with Sidewalk Guy	○→ N/A
□→ Inductive Loop Detector	□→ N/A
□→ Controller & Cabinet	□→ N/A
□→ Junction Box	□→ N/A
--- 2-in Underground Conduit	--- N/A
--- Directional Drill	--- N/A
--- N/A Right of Way	--- N/A
→ Directional Arrow	→ N/A
○ Type II Signal Pedestal	○ N/A

Signal Modification

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 Cary, North Carolina 27518
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 NC License No. : F-1084
 MBAKERINTL.COM

Prepared in the Offices of:

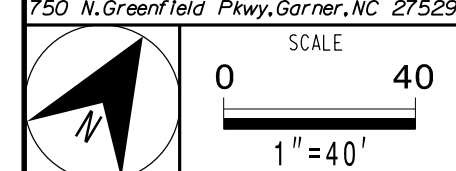
 Kelly M. Cory
 Professional Engineer
 State of North Carolina
 License No. 038970

NC 42 (Herring Avenue) at Samuel Street
 Division 4 Wilson County Wilson
 PLAN DATE: June 2017 REVIEWED BY: W M Ruhssam
 PREPARED BY: K M Cory REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

 Kelly M. Cory
 Professional Engineer
 State of North Carolina
 License No. 038970

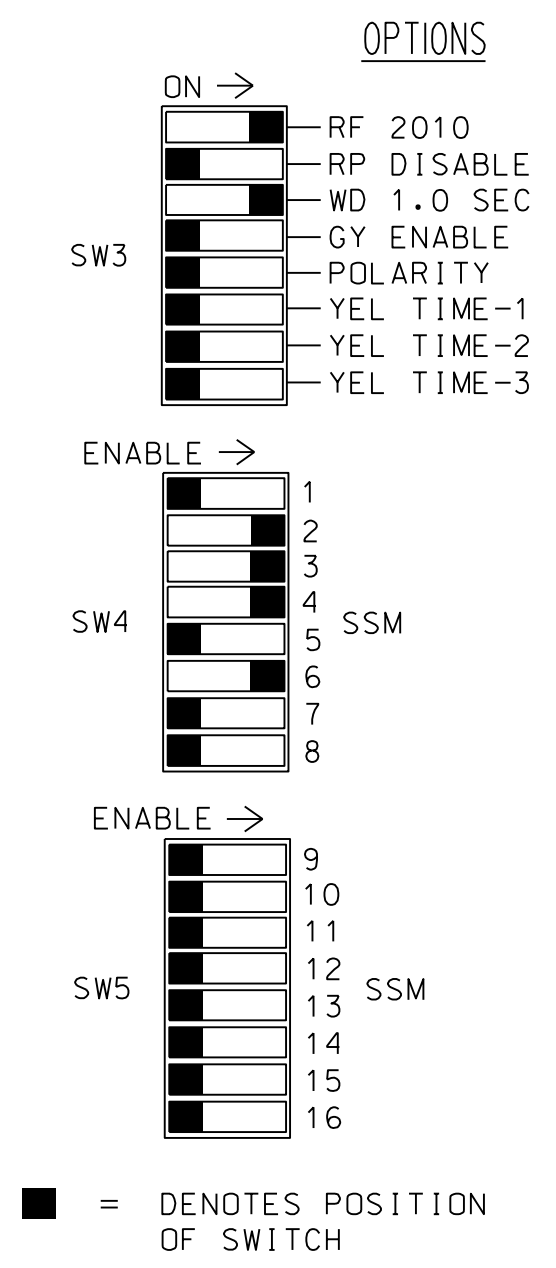
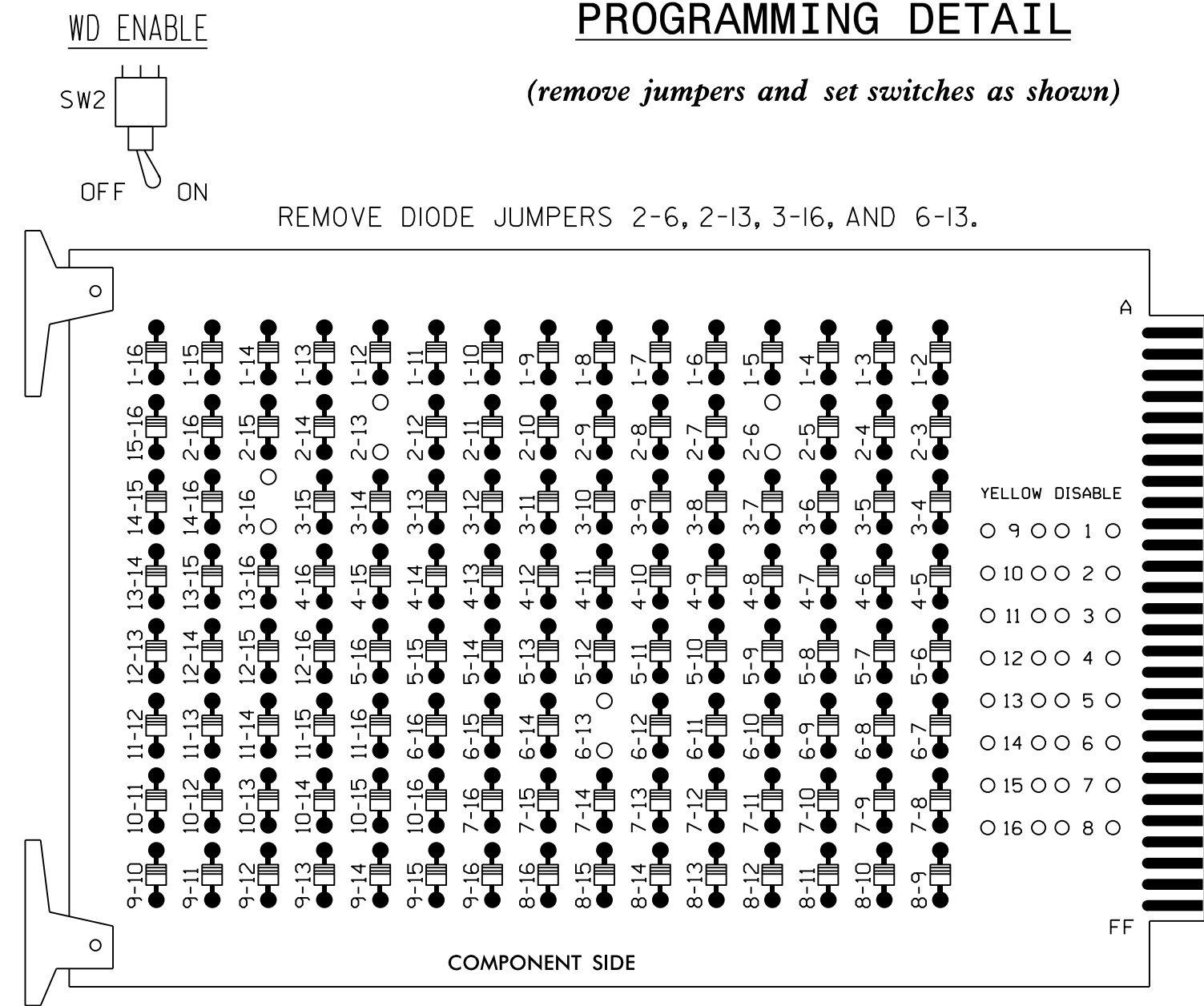


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 KMCORY AT NCDOT\KMCORY

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 3 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S2P,S3,S4,S6,S8P
 PHASES USED.....2,3,4,6,2PED,3PED
 OVERLAPS.....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED
SIGNAL HEAD NO.	NU	21,22	P21, P22	31,32	41,42	NU	NU	61,62	NU	NU	NU	P31, P32
RED		128		116	101			134				
YELLOW		129		117	102			135				
GREEN		130		118	103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
			113									110
			115									112

NU = Not Used

INPUT FILE POSITION LAYOUT

(from view)

FILE "I" L	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	2A	3A	4A	2A	3A	4A	6A	6A	2 PED	NOT USED	FS	NOT USED	NOT USED	FS
L	2B	NOT USED	4B	2B	NOT USED	6B	6B	NOT USED	3 PED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR

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

PED 3 PROGRAMMING DETAIL

(program controller as shown below)

CHANGING OUTPUT ASSIGNMENTS

- FROM MAIN MENU SELECT '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS)
- ENTER 17 (PHASE 8 DW) FOR OUTPUT ASSIGNMENT #.
- SCROLL DOWN TO 'PEDESTRIAN PHASE' AND ENTER 'Y' REGARDLESS OF DEFAULT PROGRAMMING
- ENTER '3' FOR 'SELECT PEDESTRIAN PHASE'. NO CHANGE NEEDED FOR 'SELECT COLOR'
- BACKUP TO 'OUTPUT ASSIGNMENTS AND SETTINGS MENU:' BY PRESSING THE 'ESC' BUTTON ON KEYBOARD.
- SELECT '1' (OUTPUT ASSIGNMENTS)
- ENTER 18 (PHASE 8 W) FOR OUTPUT ASSIGNMENT #.
- REPEAT STEPS # 3 AND # 4.

CHANGING INPUT ASSIGNMENTS

- FROM MAIN MENU SELECT '7' (DETECTORS), THEN '2' (PEDESTRIAN DETECTOR ASSIGNMENTS)
- CYCLE TO PED DETECTOR #8 BY REPEATEDLY DEPRESSING '+' KEY
- MODIFY PHASE ASSIGNED TO PED DETECTOR # 8 FROM PHASE 8 TO PHASE 3

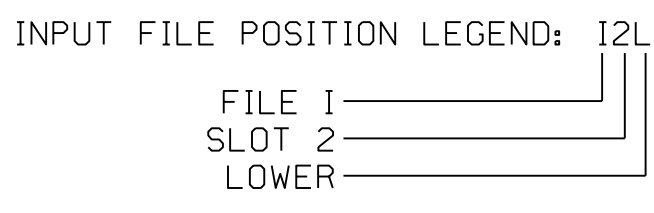
PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0309
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
3A	TB21-5,6	I3U	58	20	3	3	Y	Y			5
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			5
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P31,P32	TB24-11,12	I13L	70	32	PED 8	3 PED					

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



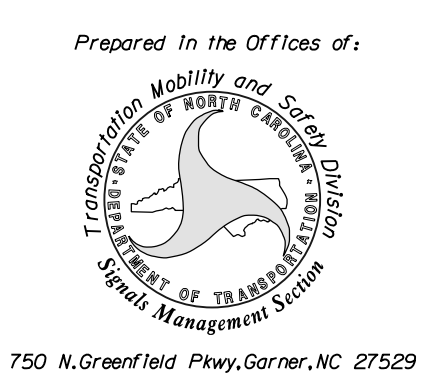
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 1 - Signal Modification

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 Phone: 919-463-5488
 NC License No. : F-1084
 MBAKERINTL.COM



Prepared in the Offices of:
 Transposition Mobility and Safety Solutions
 750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue) at Samuel Street

Division 4 Wilson County Wilson

PLAN DATE: June 2017 REVIEWED BY: W M RuhSAM

PREPARED BY: K M Cory REVIEWED BY:

REVISIONS	INIT.	DATE

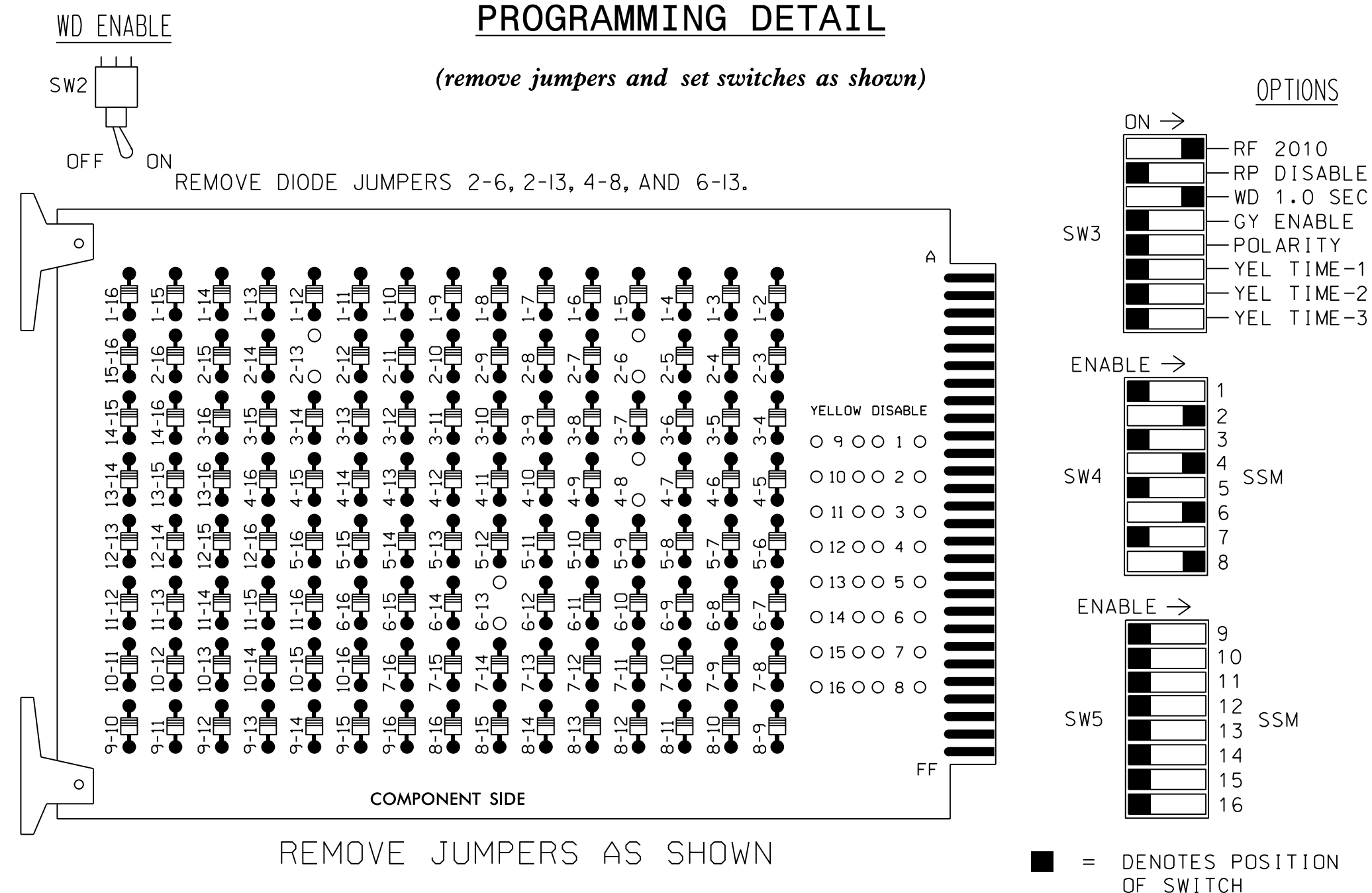
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 PROFESSIONAL ENGINEER
 KELLY M CORY
 038970
 8/4/2017
 DATE
 SIG. INVENTORY NO. 04-0309

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7, 9,10,11,12,13,14,15 &16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all Phases.
5. Program phases 2 and 6 for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 for Startup In Green.
7. Program phase 2 for Startup Ped Call.
8. Program phases 2 and 6 for Yellow Flash.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET332 w/ AUX
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
 LOAD SWITCHES USED.....S2,S2P,S4,S6,S8
 PHASES USED.....2,4,6,8,2PED
 OVERLAPS.....NOT USED

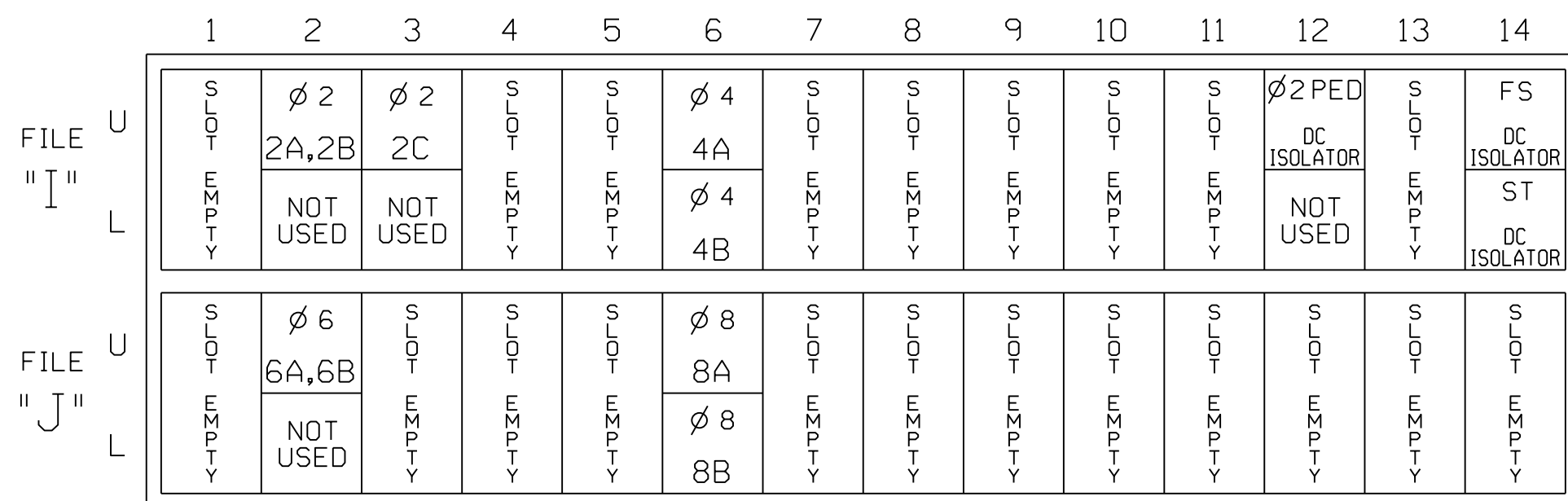
SIGNAL HEAD HOOK-UP CHART

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.	NU	21,22	P21, P22	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		
Hand icon																		113
Walking person icon																		115

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

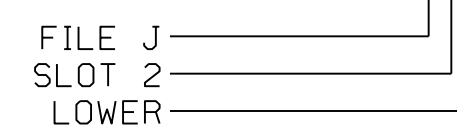
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0783
 DESIGNED: June 2017
 SEALED: 08/04/2017
 REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 1 - Signal Modification

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC License No. : F-1084
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Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 42 (Herring Avenue)
 at
SR 1327 (London Church Rd)/
Operations Center Entrance

Division 4 Wilson County Wilson

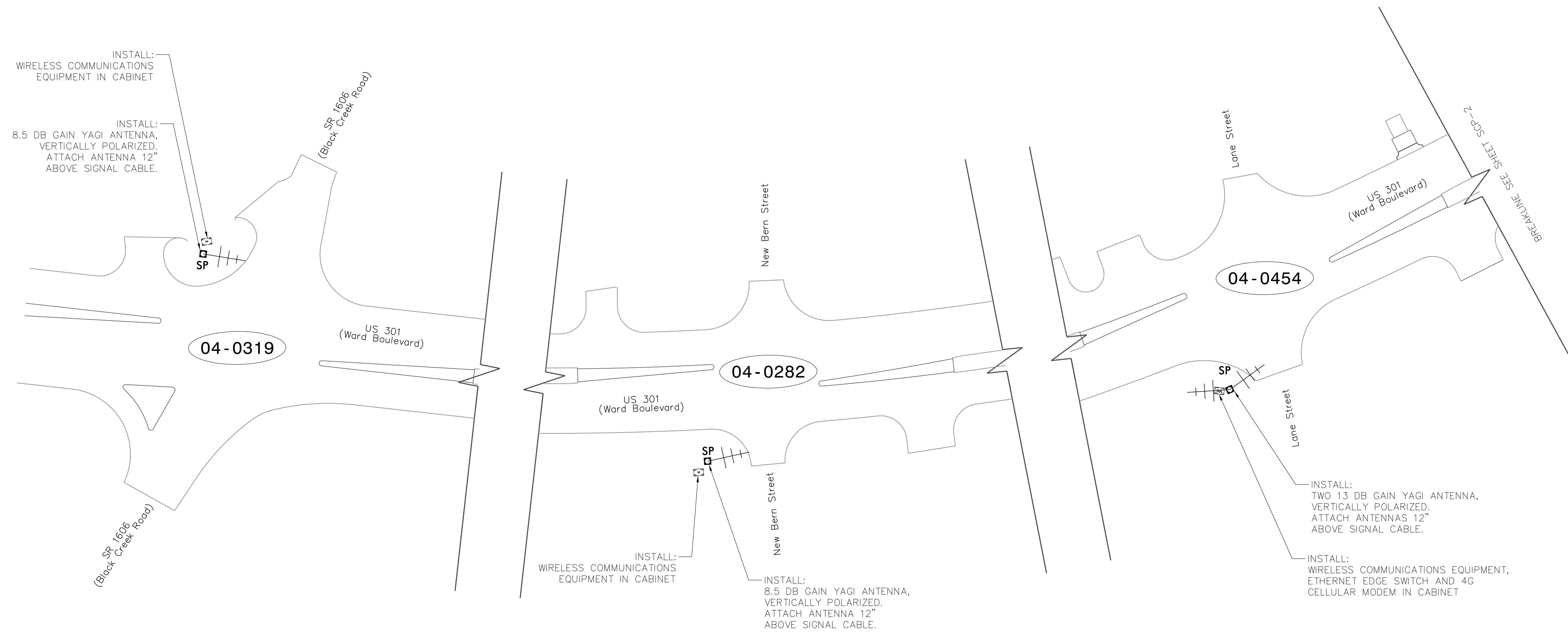
PLAN DATE: June 2017 REVIEWED BY: W M RuhSAM

PREPARED BY: K M Cory REVIEWED BY:

SEAL

DocuSigned by:
 Kelly M Cory
 8/4/2017

REVISIONS	INIT.	DATE



NOTES FOR WIRELESS COMMUNICATIONS:

- INSTALL COAXIAL CABLE:
 - ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISE, INSTALL A 2" RISER WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST MAR FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
 - ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - BETWEEN THE POINT OF EXITING THE RISER, METAL POLE, OR MAST ARM, AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
- IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISE IS AVAILABLE, INSTALL COAXIAL CABLE IN THE SPARE RISER.
- INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN. (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
- MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRIC SAFETY CODE.
- INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET. (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
- REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

LEGEND	
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	EXISTING CONTROLLER AND CABINET
	EXISTING MASTER CONTROLLER AND CABINET
	SIGNAL INVENTORY NUMBER
	EXISTING METAL POLE WITH MAST ARM
	EXISTING WOOD POLE
	NEW METAL POLE
	SIGNAL POLE
	EXISTING METAL POLE
	NEW OVERSIZED JUNCTION BOX
	EXISTING OVERSIZED JUNCTION BOX
	EXISTING CONDUIT
	EXISTING COMMUNICATIONS CABLE

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Prepared in the Offices of:

 750 N. Greenfield Pkwy., Garner, NC 27529

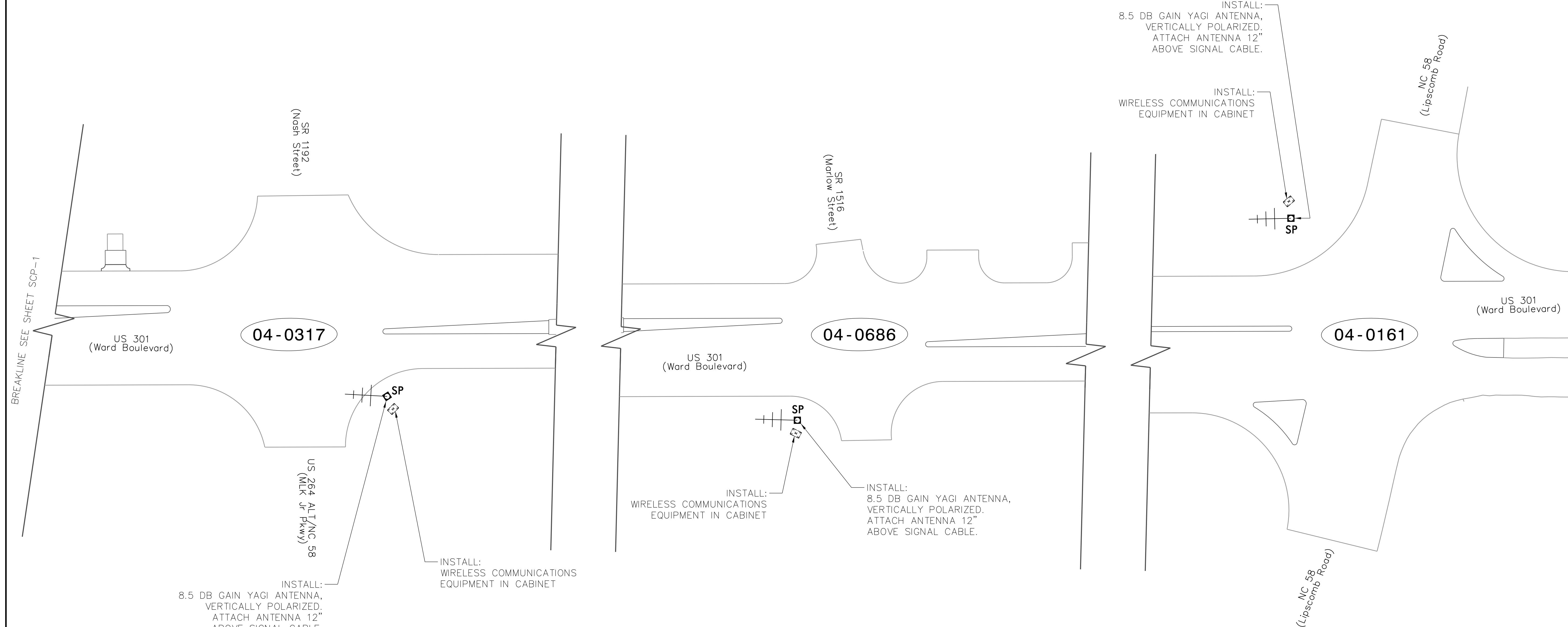
Wireless Communications Plan US 301 (Ward Boulevard) CLS

Division 4 Wilson County Wilson
 PLAN DATE: June 2017 REVIEWED BY: W M Ruhsam
 PREPARED BY: K M Cory REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

 Kelly M Cory 8/4/2017
 DATE
 CADD Filename:



NOTES FOR WIRELESS COMMUNICATIONS:

1. INSTALL COAXIAL CABLE:
 - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISE, INSTALL A 2" RISER WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST MAR FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
 - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE, OR MAST ARM, AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISE IS AVAILABLE, INSTALL COAXIAL CABLE IN THE SPARE RISER.
3. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN. (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRIC SAFETY CODE.
5. INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET. (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
6. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

LEGEND	
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	EXISTING CONTROLLER AND CABINET
	EXISTING MASTER CONTROLLER AND CABINET
	SIGNAL INVENTORY NUMBER
	EXISTING METAL POLE WITH MAST ARM
	EXISTING WOOD POLE
	NEW METAL POLE
	SIGNAL POLE
	EXISTING METAL POLE
	NEW OVERSIZED JUNCTION BOX
	EXISTING OVERSIZED JUNCTION BOX
	EXISTING CONDUIT
	EXISTING COMMUNICATIONS CABLE

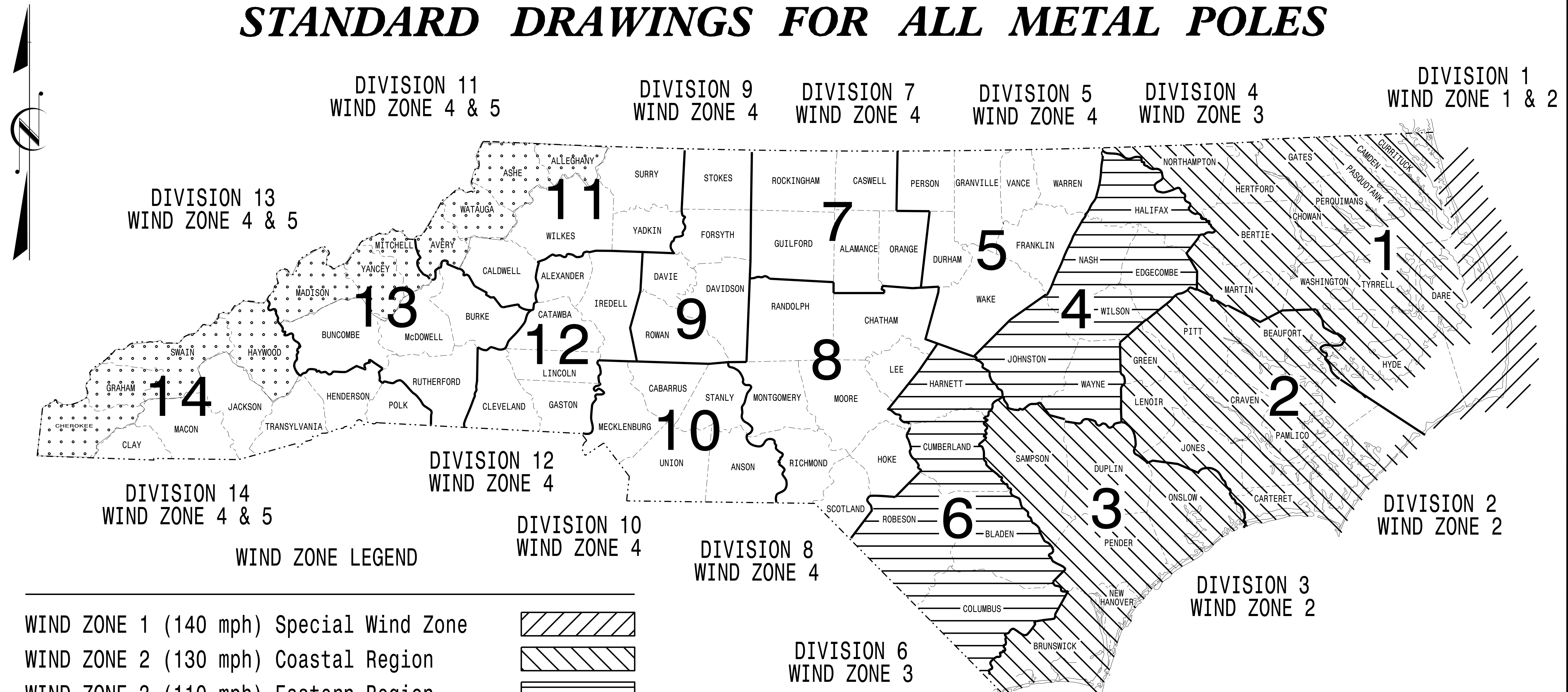
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Michael Baker INTERNATIONAL 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 Phone: 919-463-5488 NC License No.: F-1084 MBAKERINTL.COM</p>	<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy., Garner, NC 27529</p>	<p>Wireless Communications Plan US 301 (Ward Boulevard) CLS</p>					
		<p>Division 4 Wilson County Wilson</p> <p>PLAN DATE: June 2017 REVIEWED BY: W M Ruhsam</p> <p>PREPARED BY: K M Cory REVIEWED BY:</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	DESCRIPTION	
NO.	DATE	DESCRIPTION					
<p>SCALE: 0 40 1" = 40'</p>		<p>DocuSigned by: Kelly M Cory 8/4/2017</p>					

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT I.D. NO. U-5935	SHEET NO. Sig.M1
----------------------------	---------------------

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared In the Offices of:

750 N. Greenfield Pkwy.
Garner, NC 27529

Designed in conformance with the latest 2015 Interim to the 6th Edition 2013 **AASHTO** Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions

NC DOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

G. A. FULLER, P.E. - STATE ITS AND SIGNALS ENGINEER

G. G. MURR, JR., P.E. - STATE SIGNALS ENGINEER

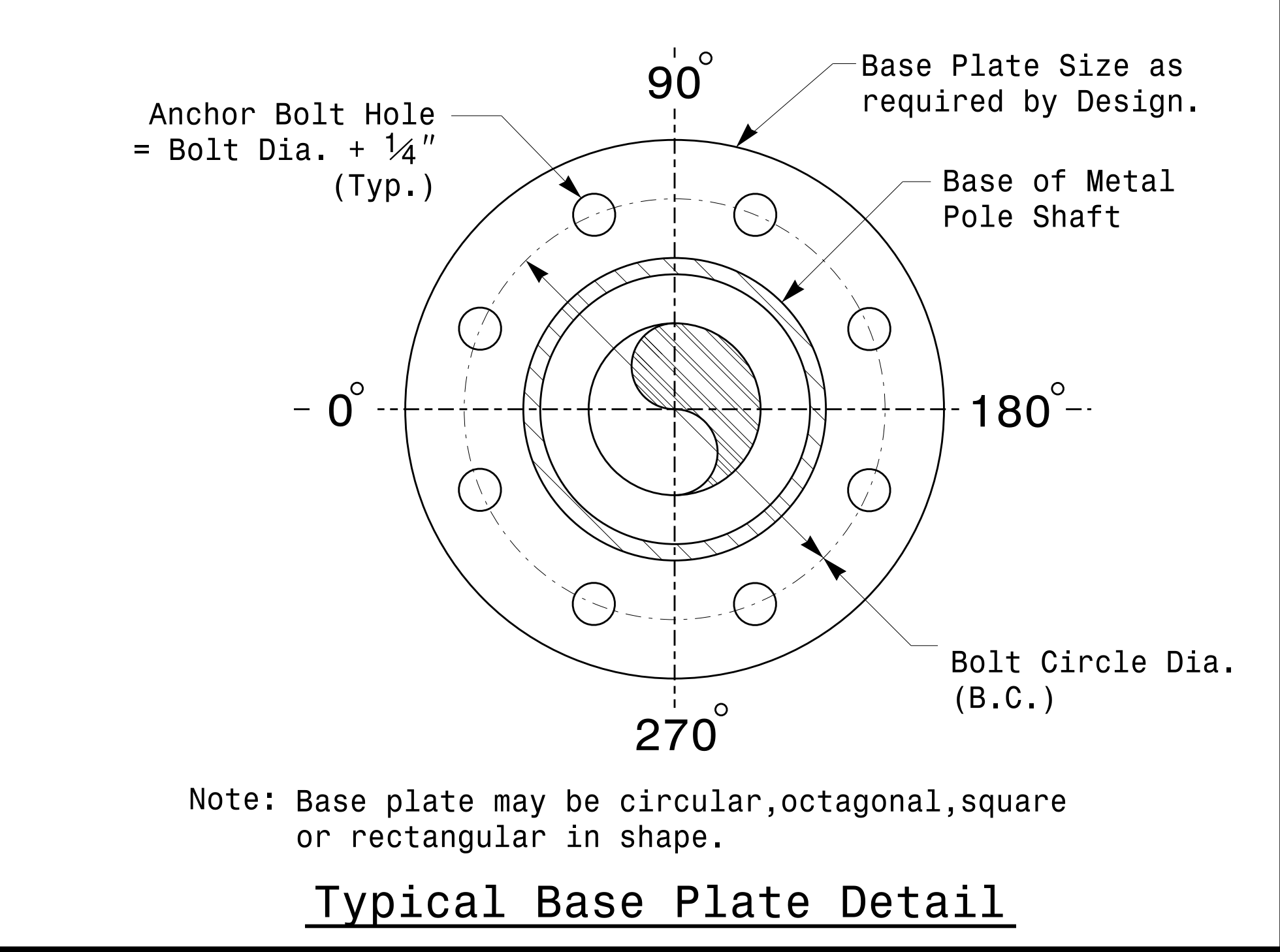
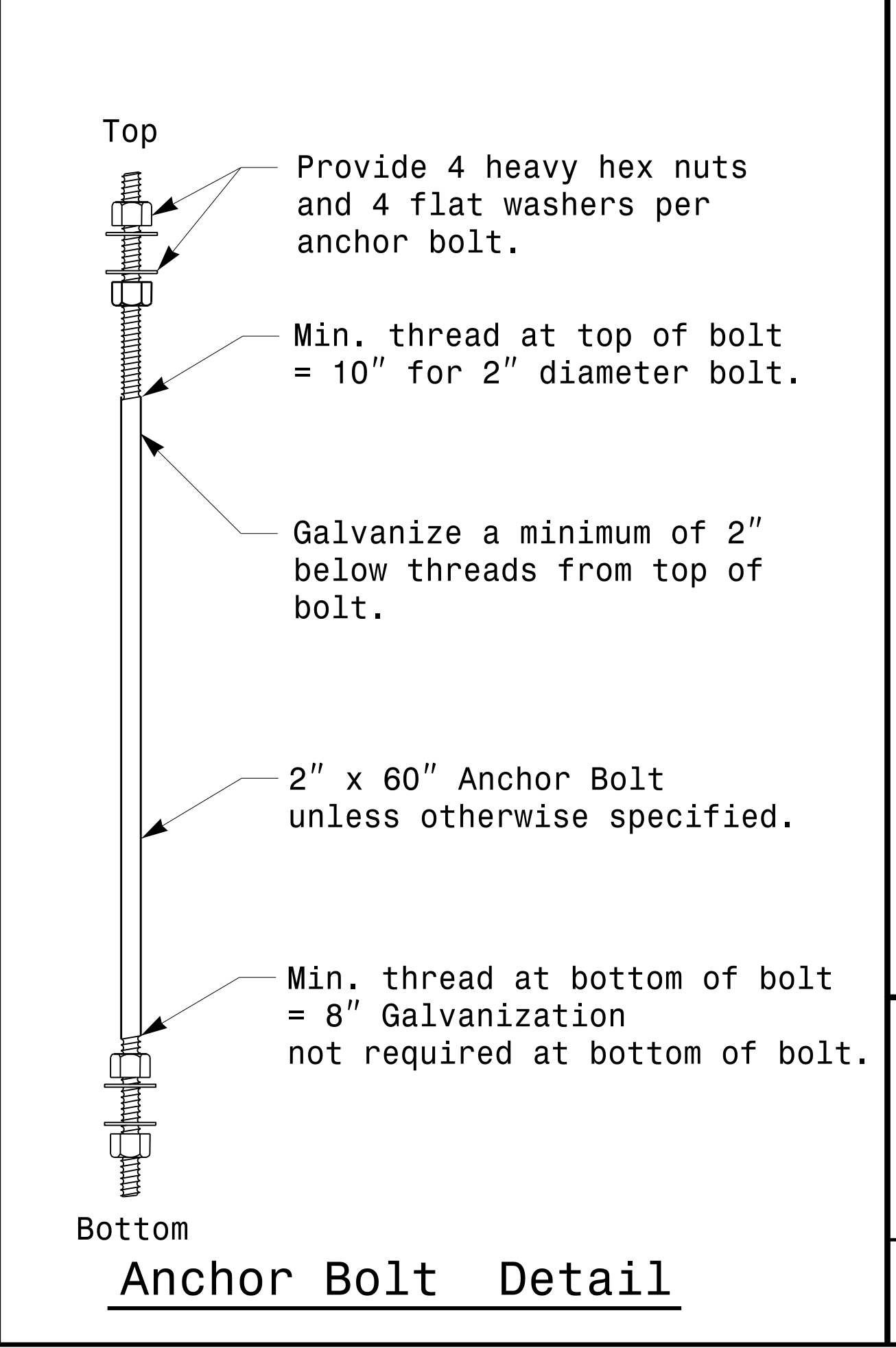
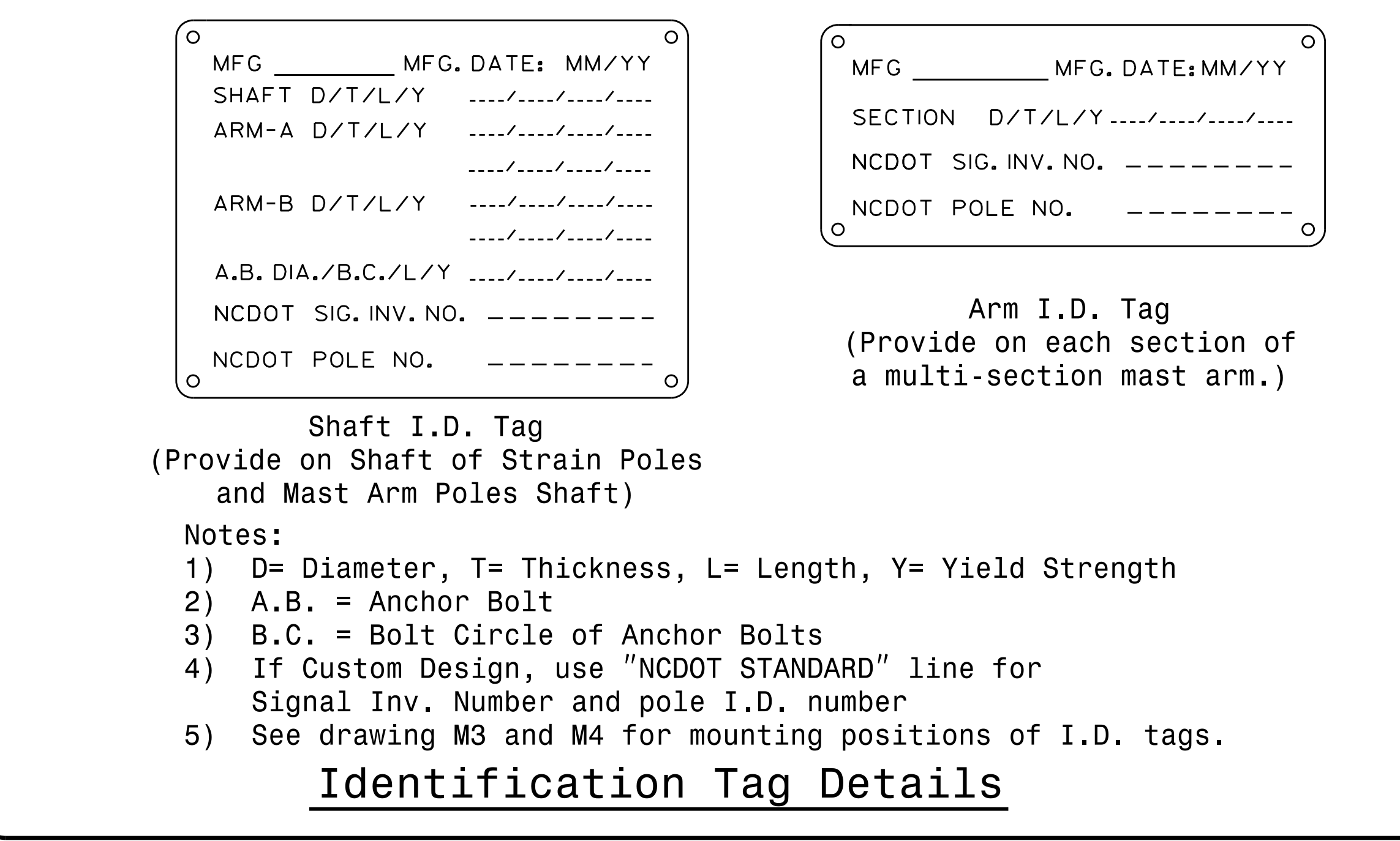
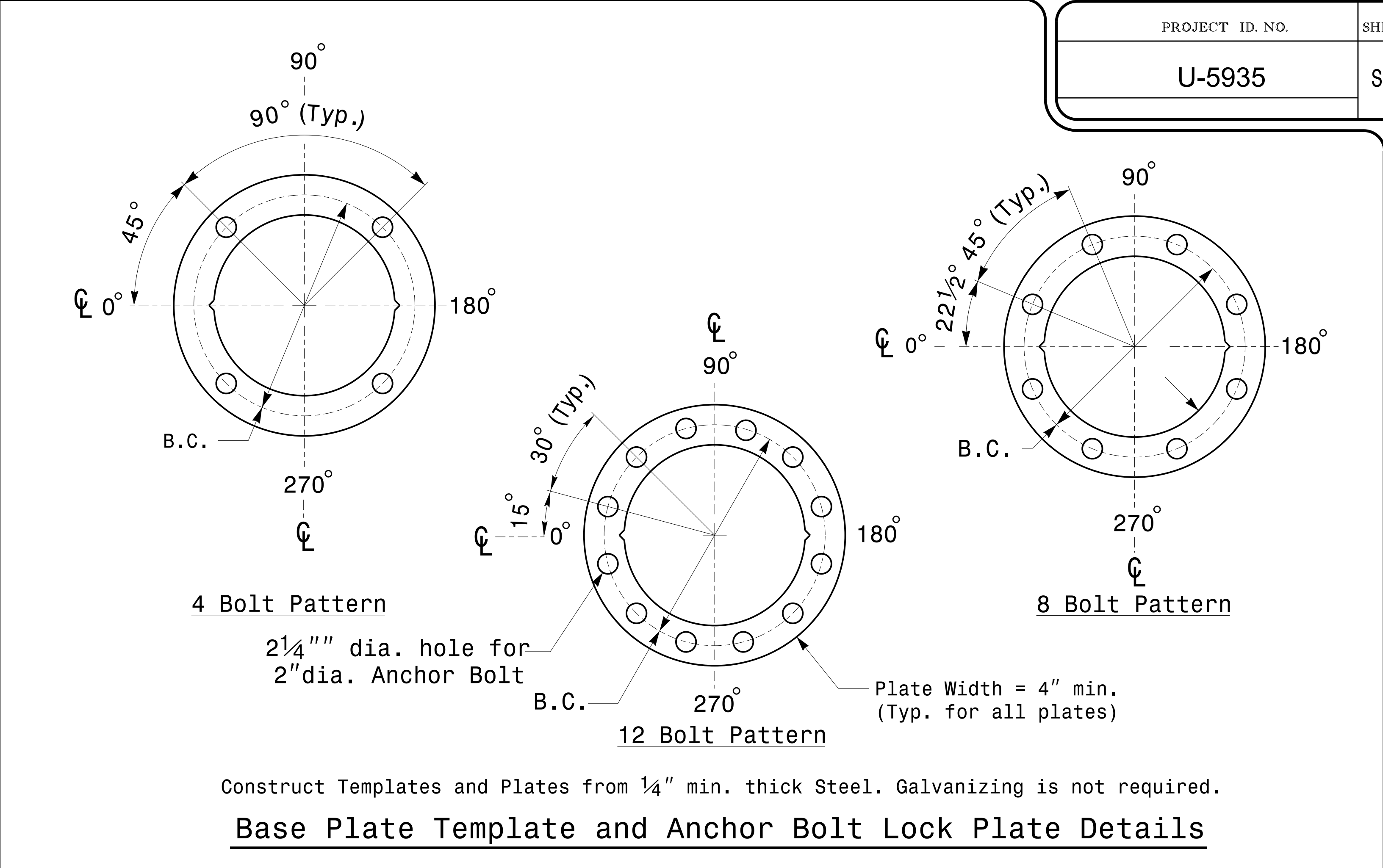
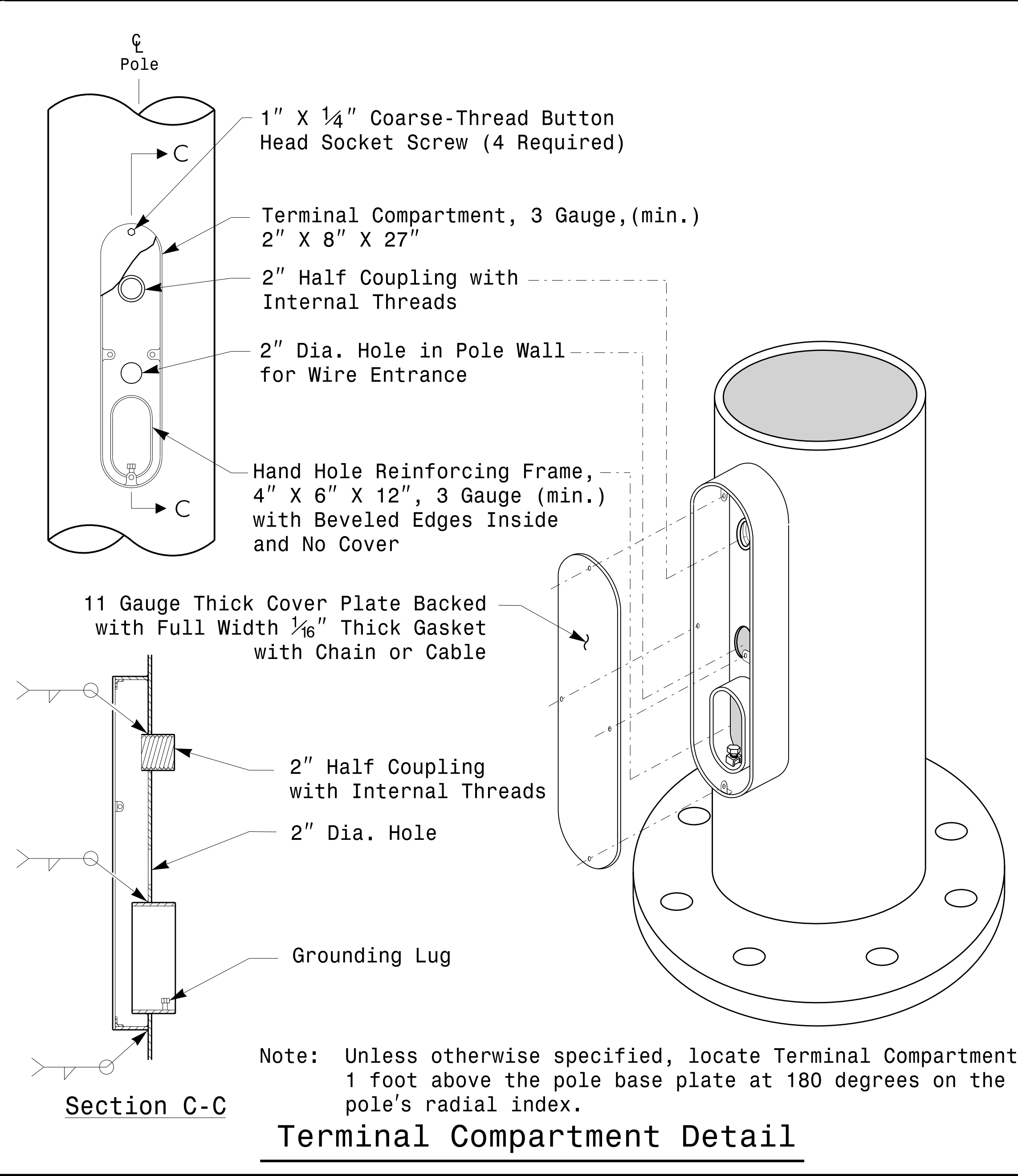
D. C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

C. F. ANDREWS - ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER

SEAL

DocuSigned by:
Debesh C. Sarkar 2/17/2016

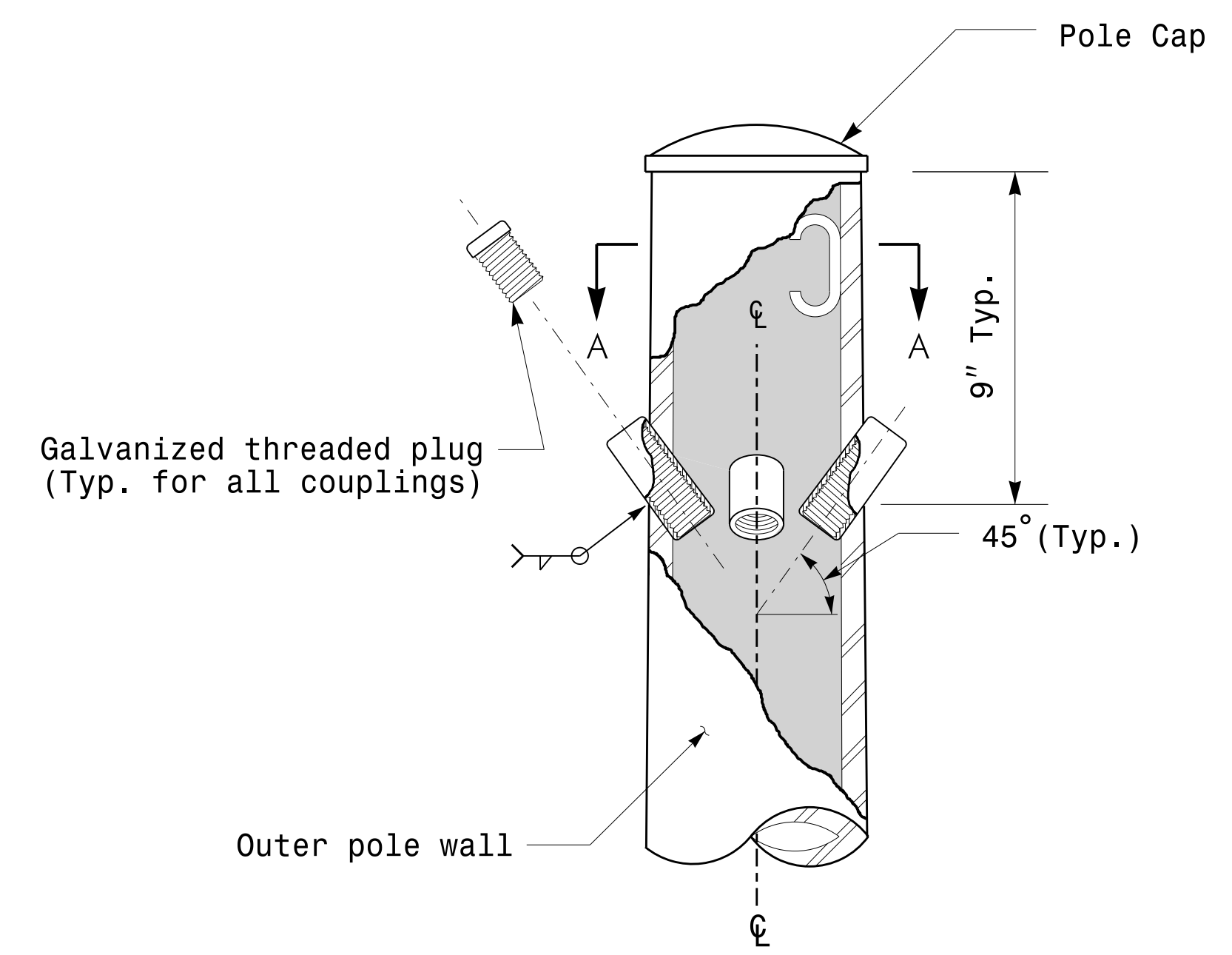
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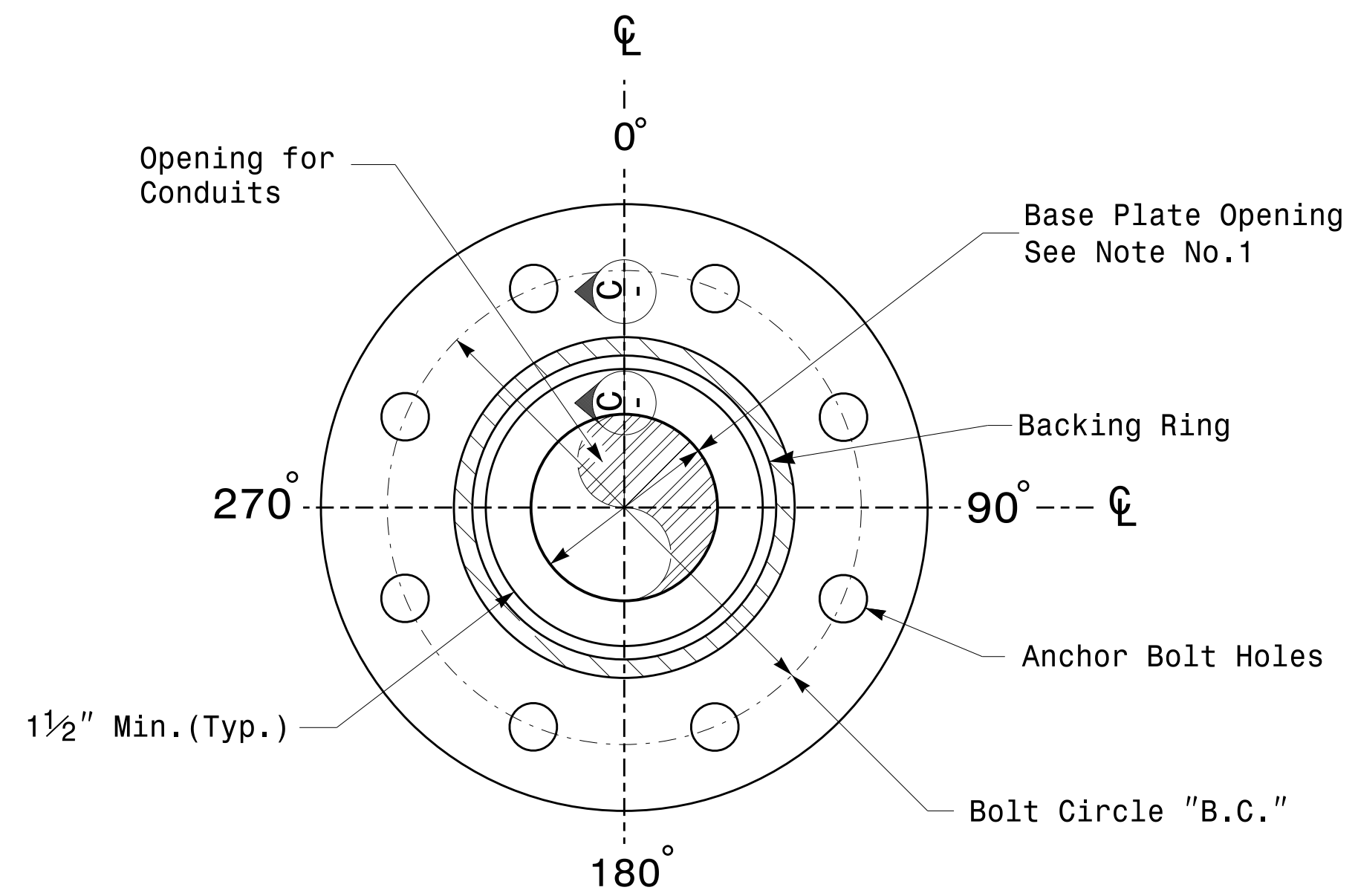
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	PLAN DATE: FEBRUARY 2016 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: NONE	REVISIONS:	INITI:	DATE:
DocuSigned by: <i>Debesh C. Sarkar</i>		44E8E32E147E4C4...	

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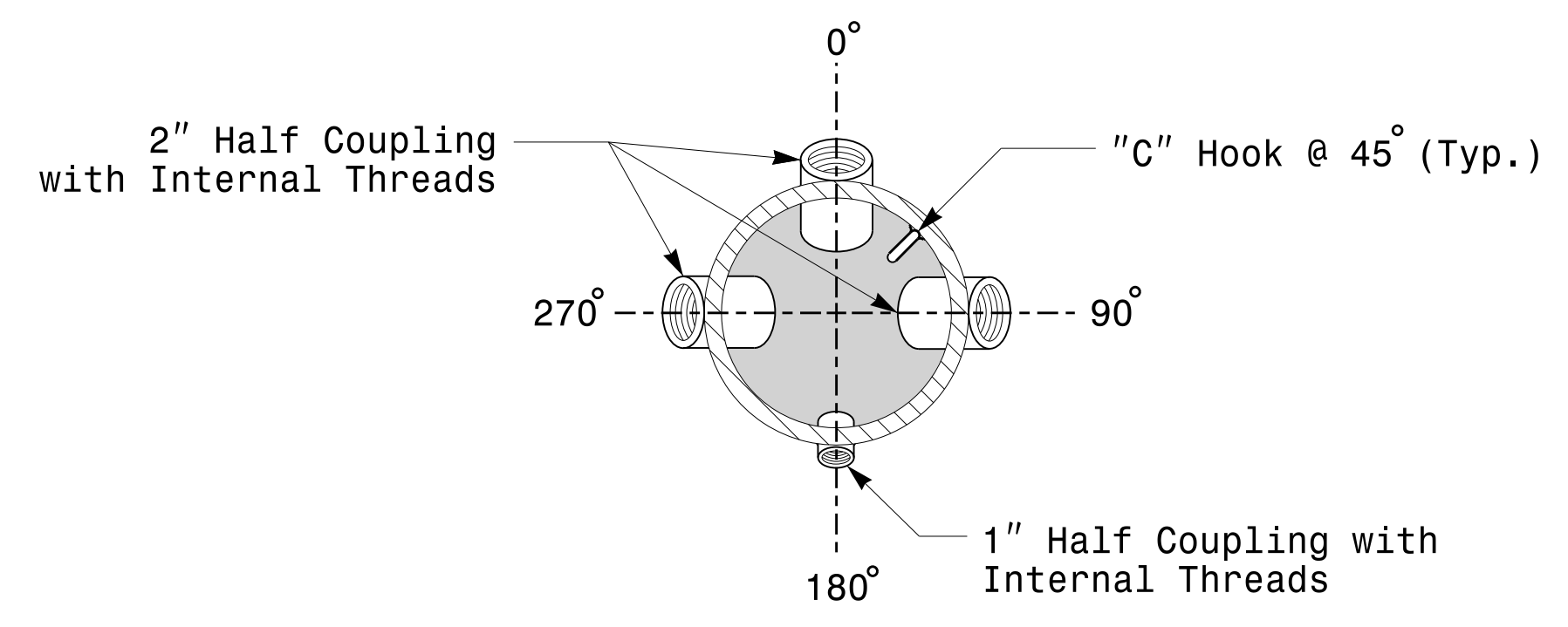
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



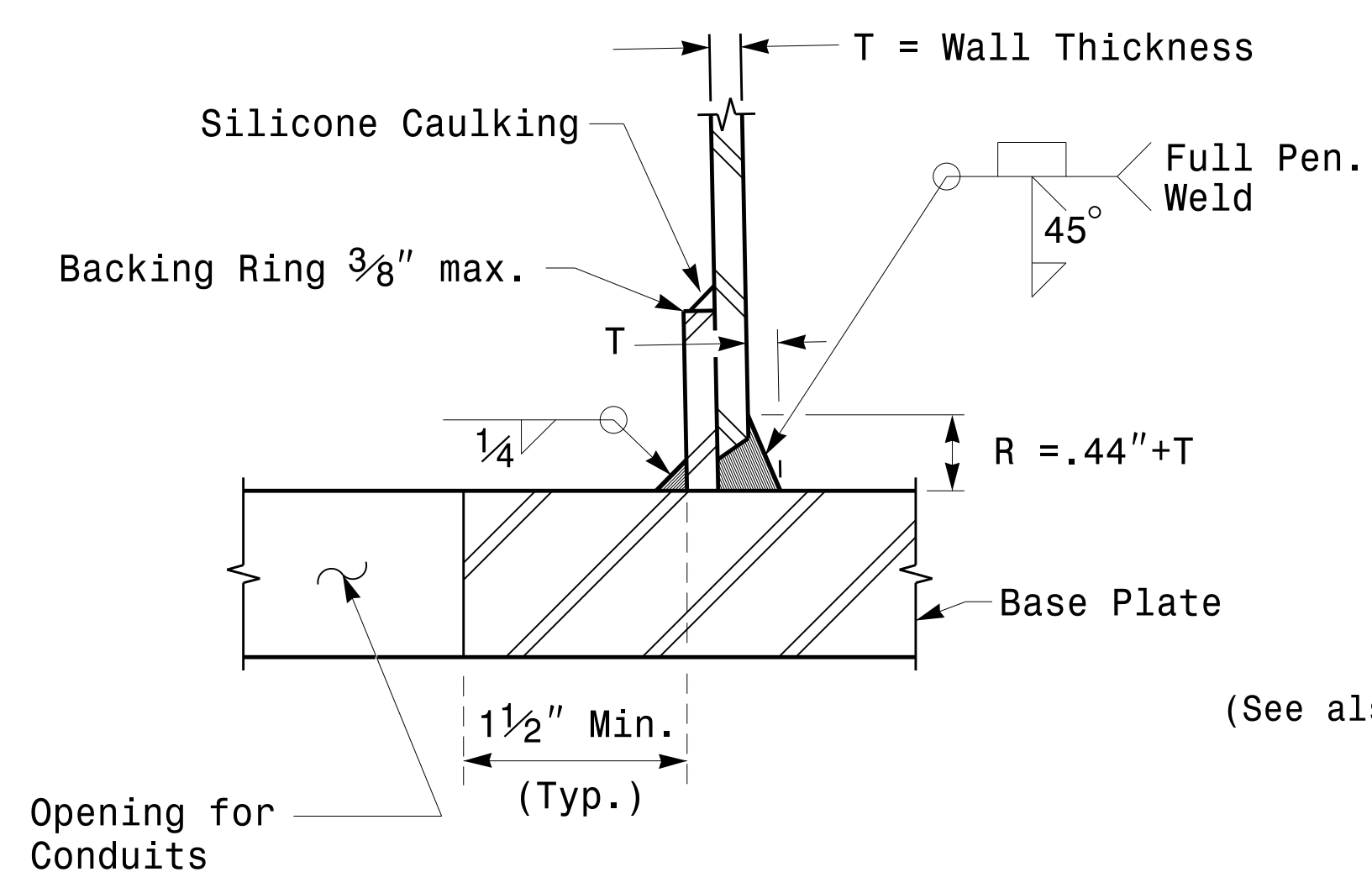
Cable Entrances at Top of Pole



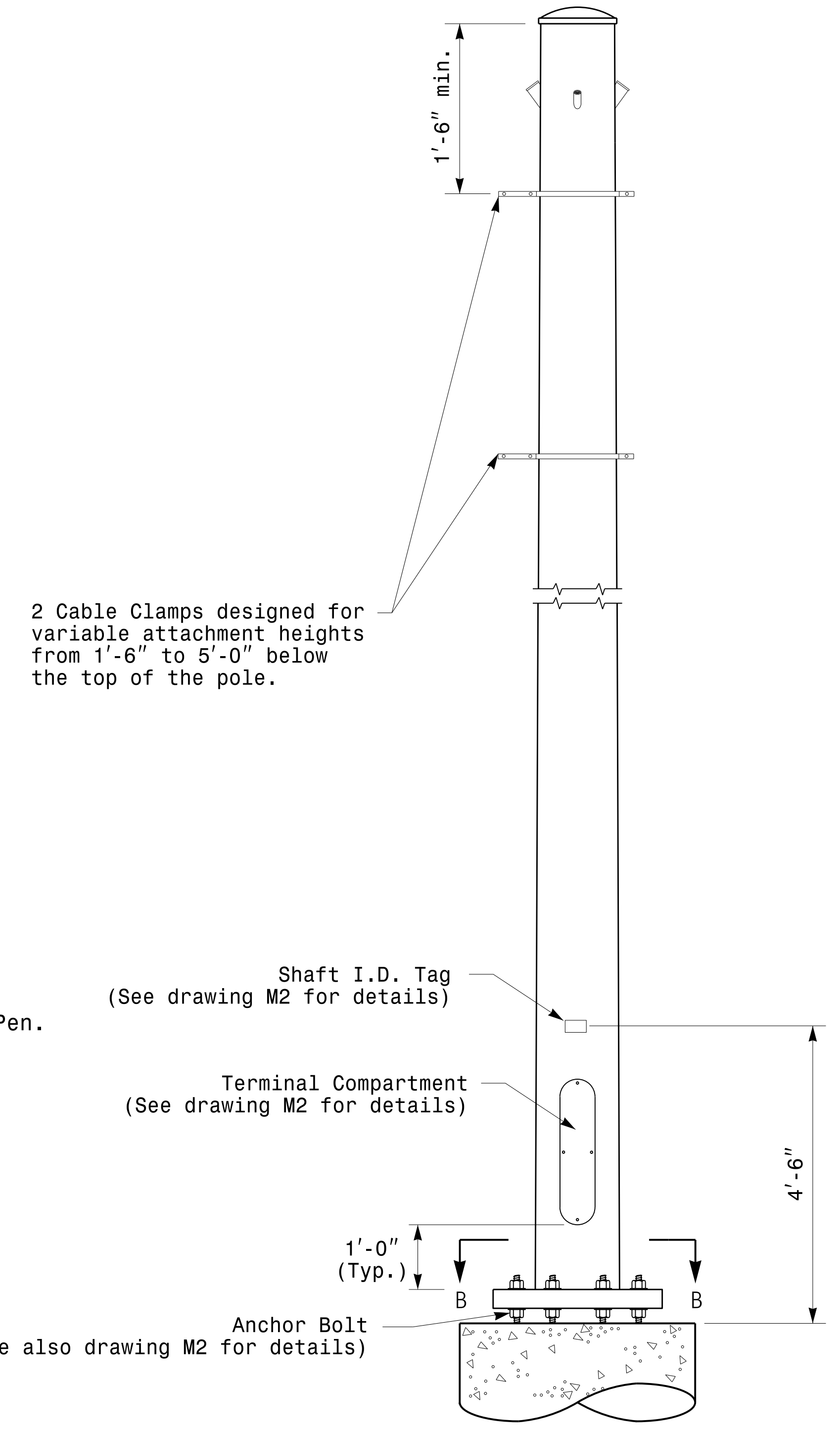
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



Section A-A
Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C
(Pole Attachment to Base Plate)
Full-Penetration
Groove Weld Detail



Monotube Strain Pole

Prepared in the Offices of:

 750 N. Greenleaf Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles			
PLAN DATE:	FEBRUARY 2016	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR
REVISIONS	INIT.	DATE	

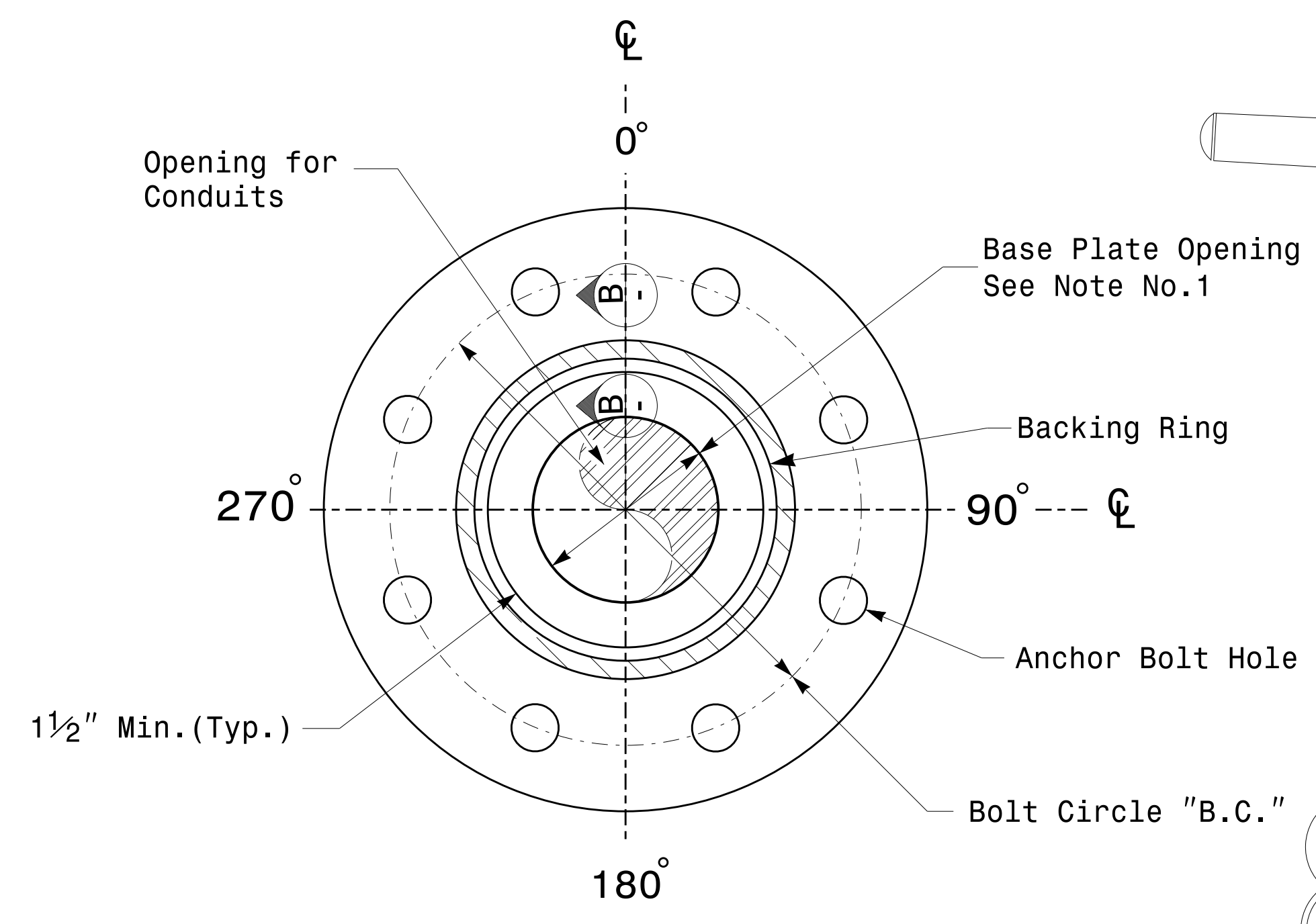
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 DocuSigned by:
 Debesh C. Sarkar
 SIGNATURE
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 2/17/2016
 DATE

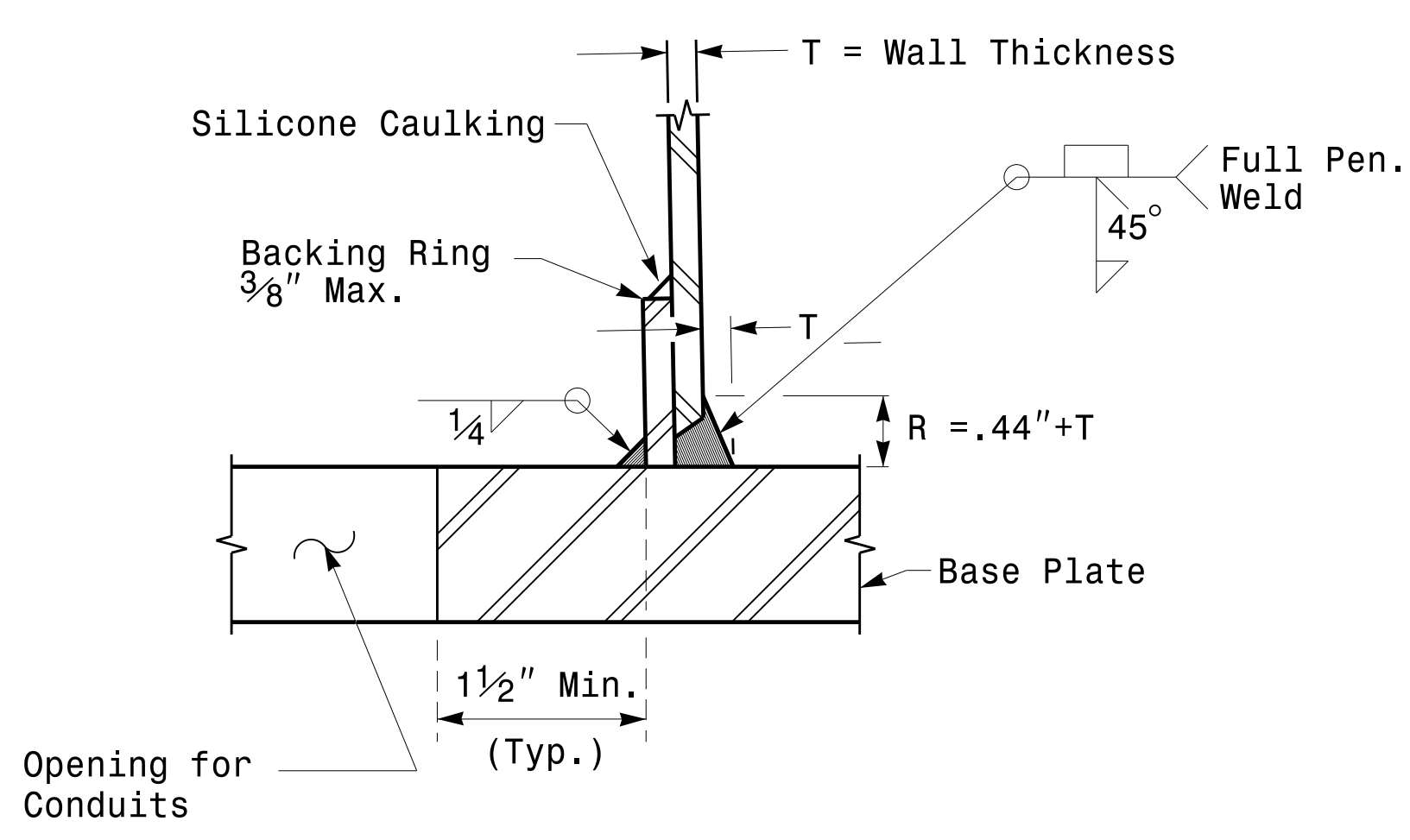
Fabrication Details – Strain Poles

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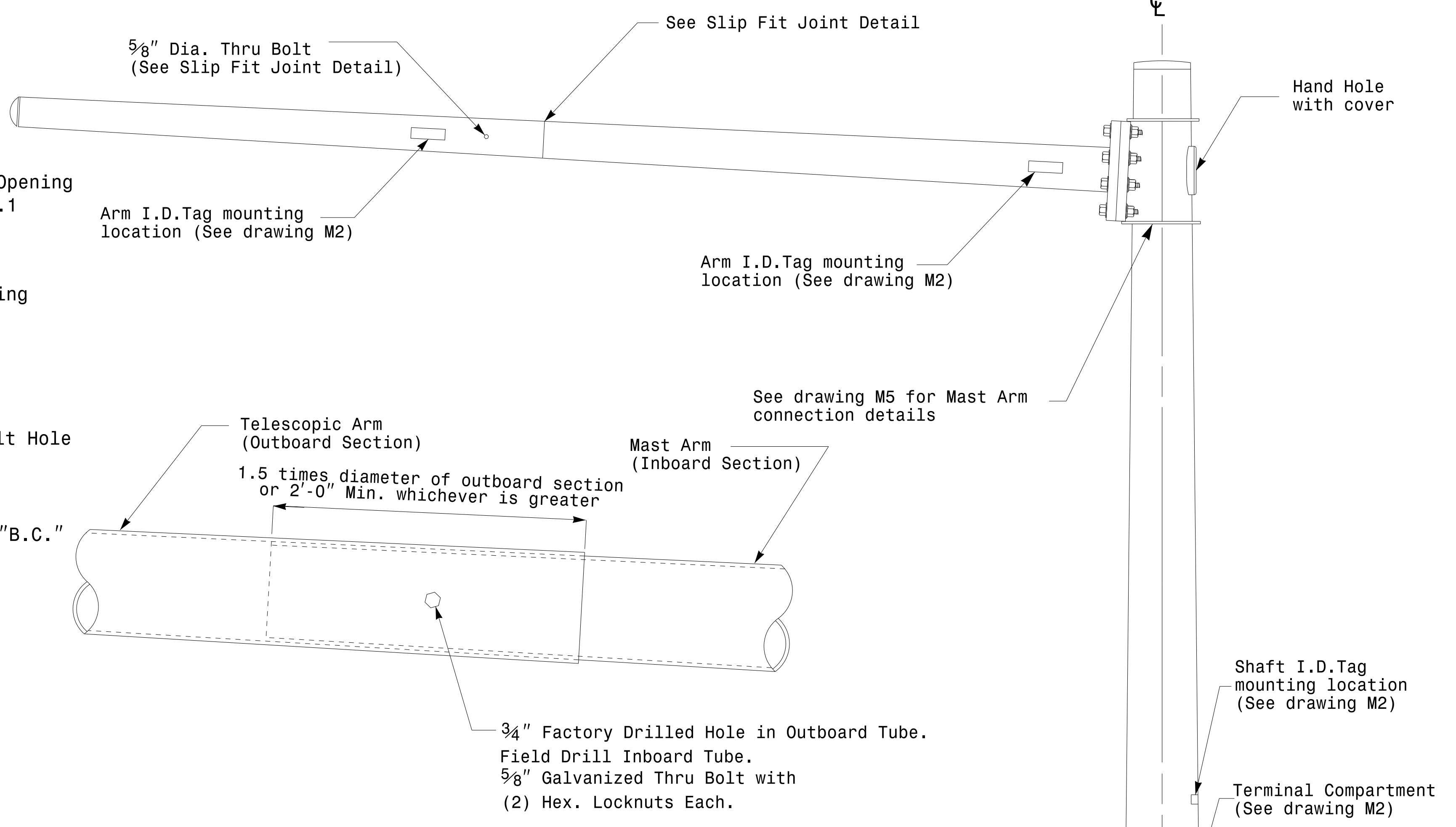
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus $3\frac{1}{2}$ " but shall not be less than $8\frac{1}{2}$ ".



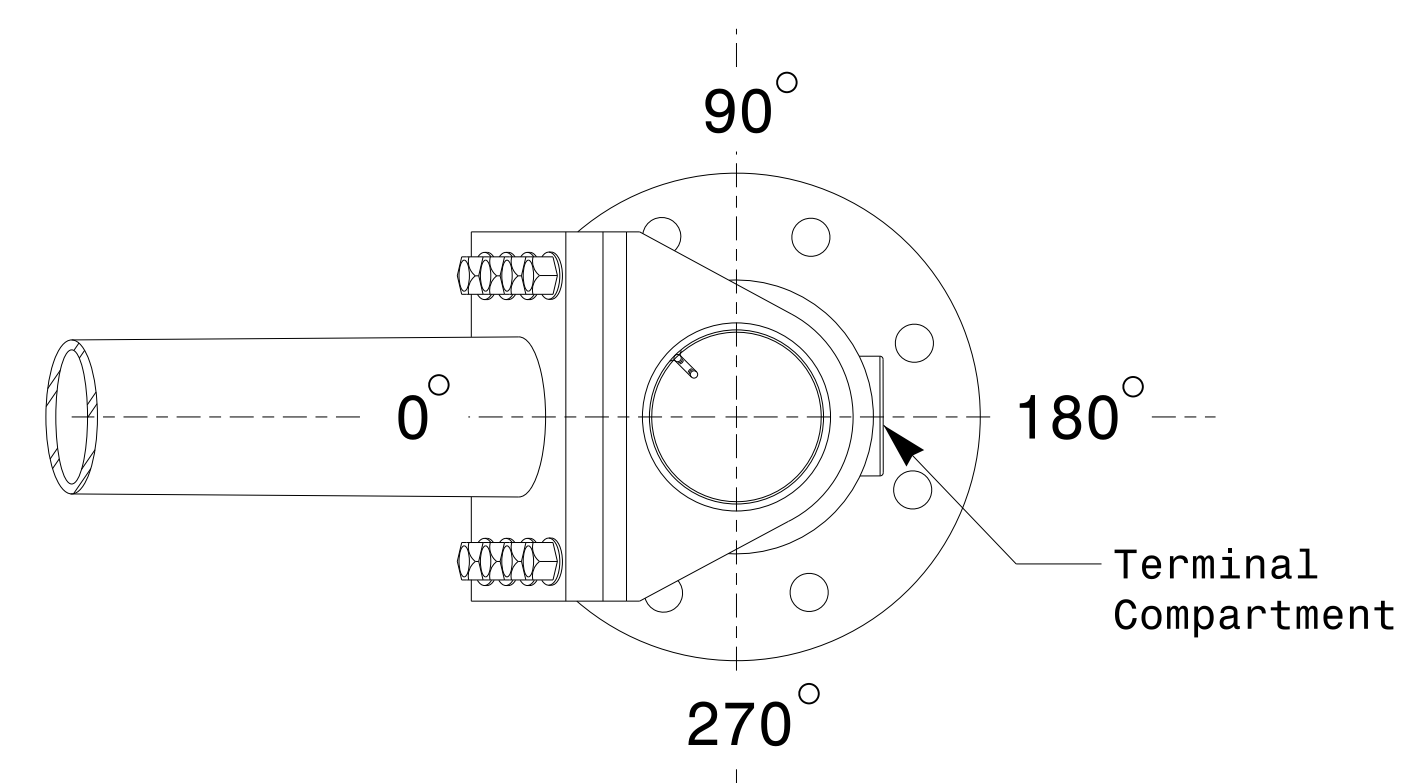
Section A-A
Pole Base Plate Details



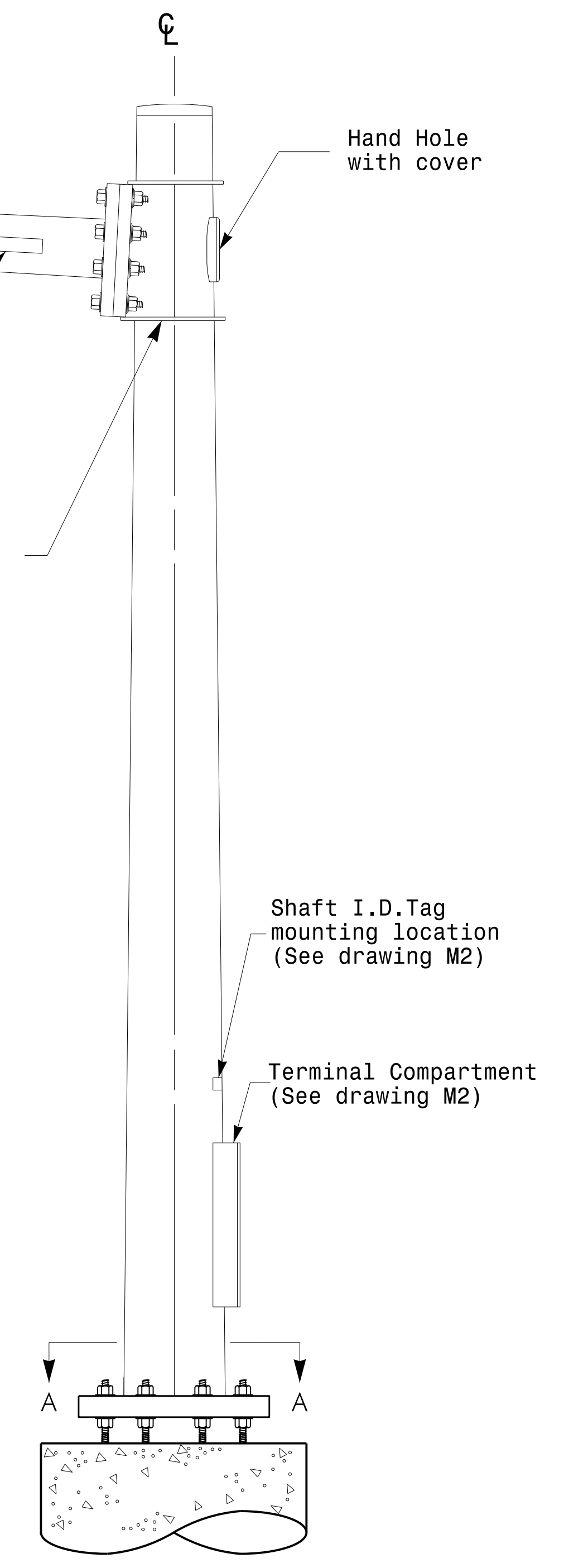
Section B-B
 (Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

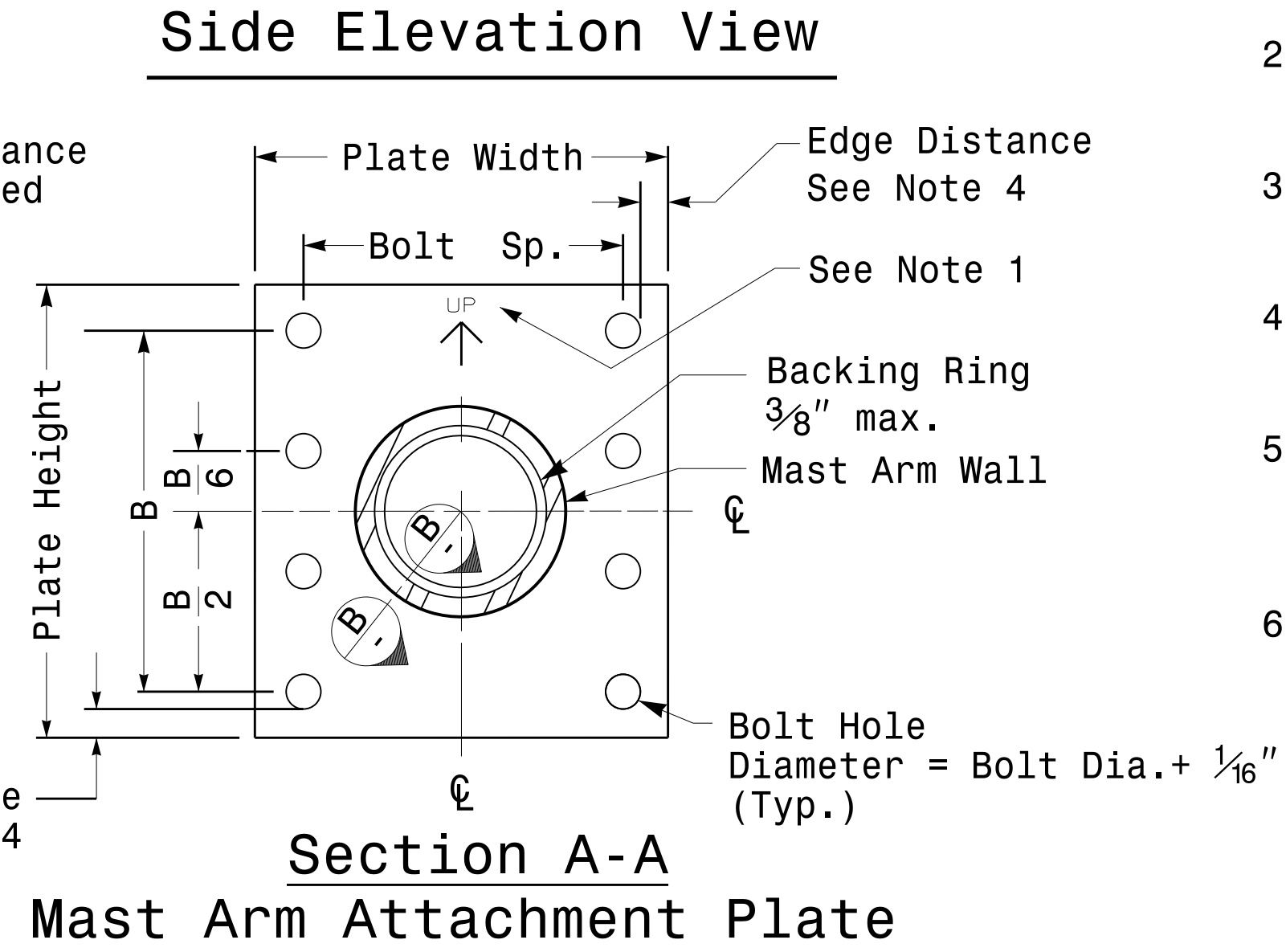
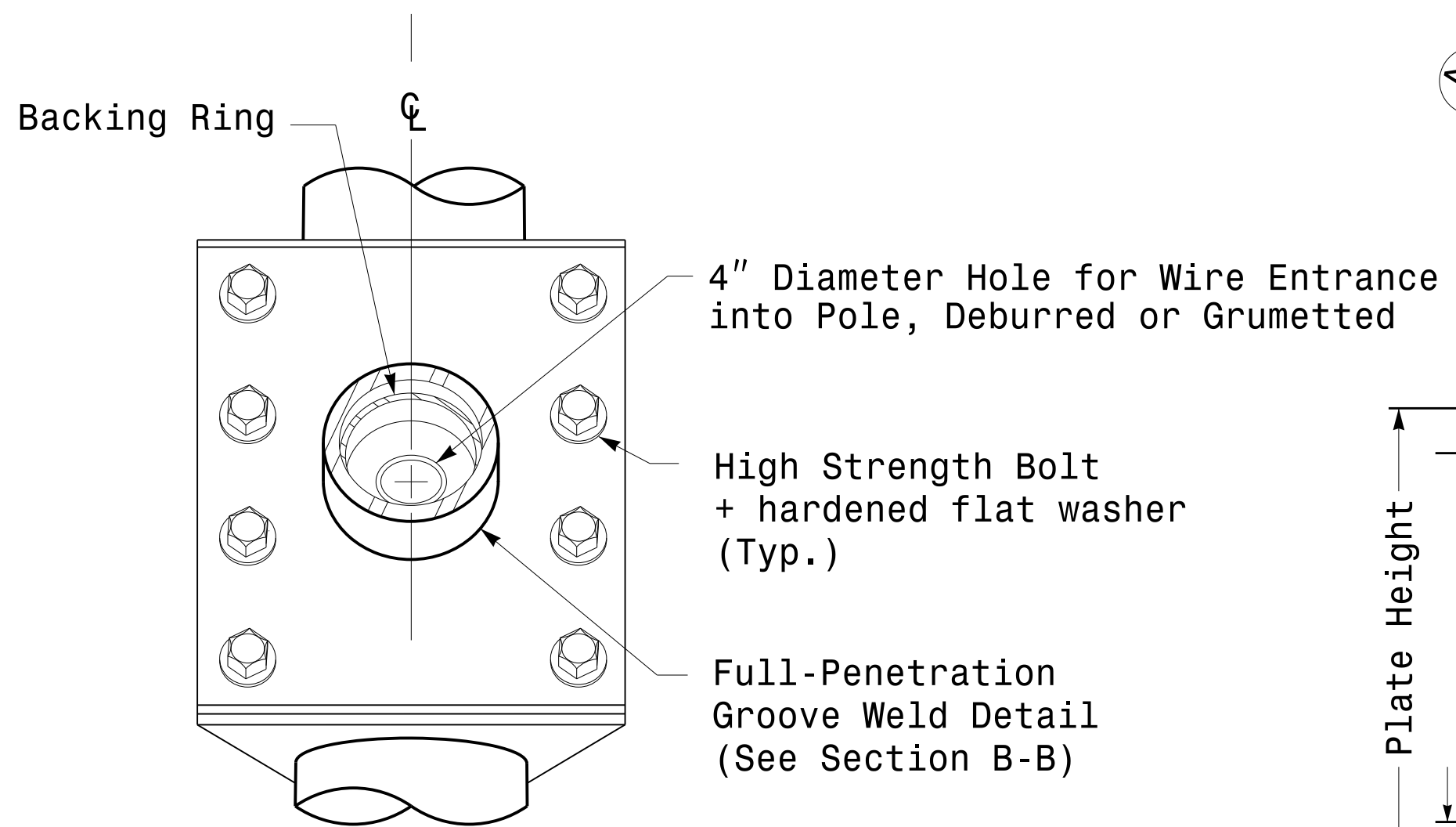
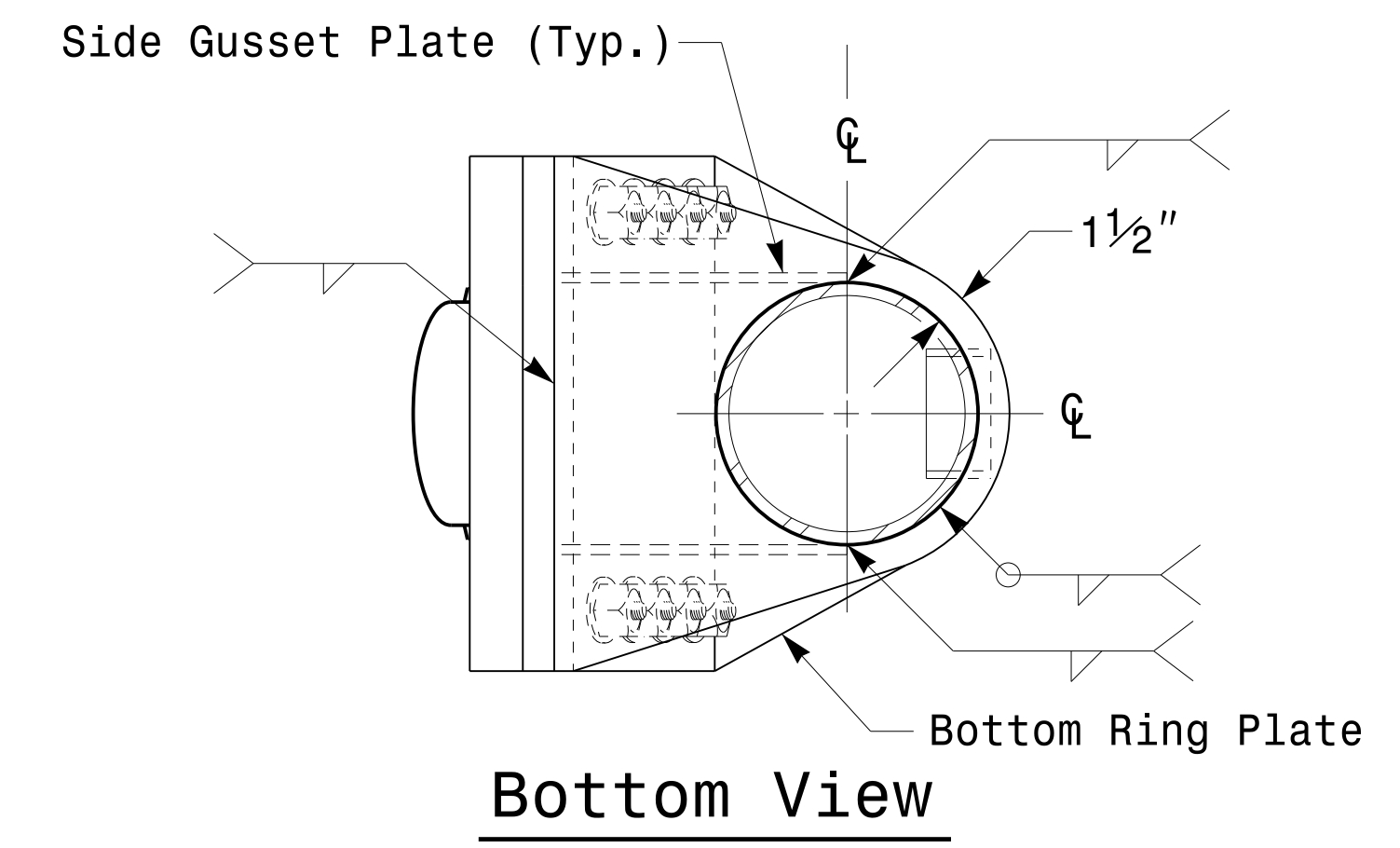
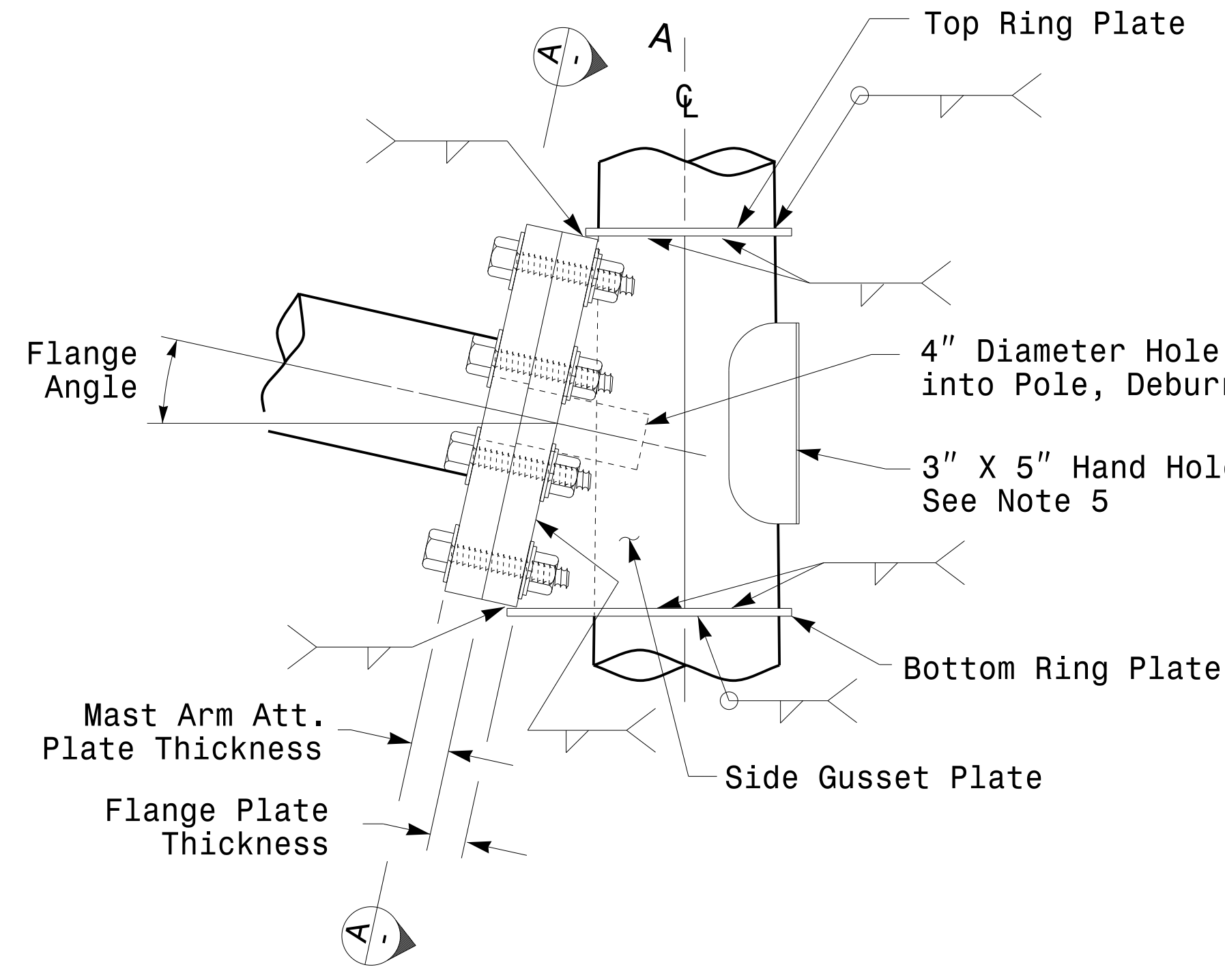
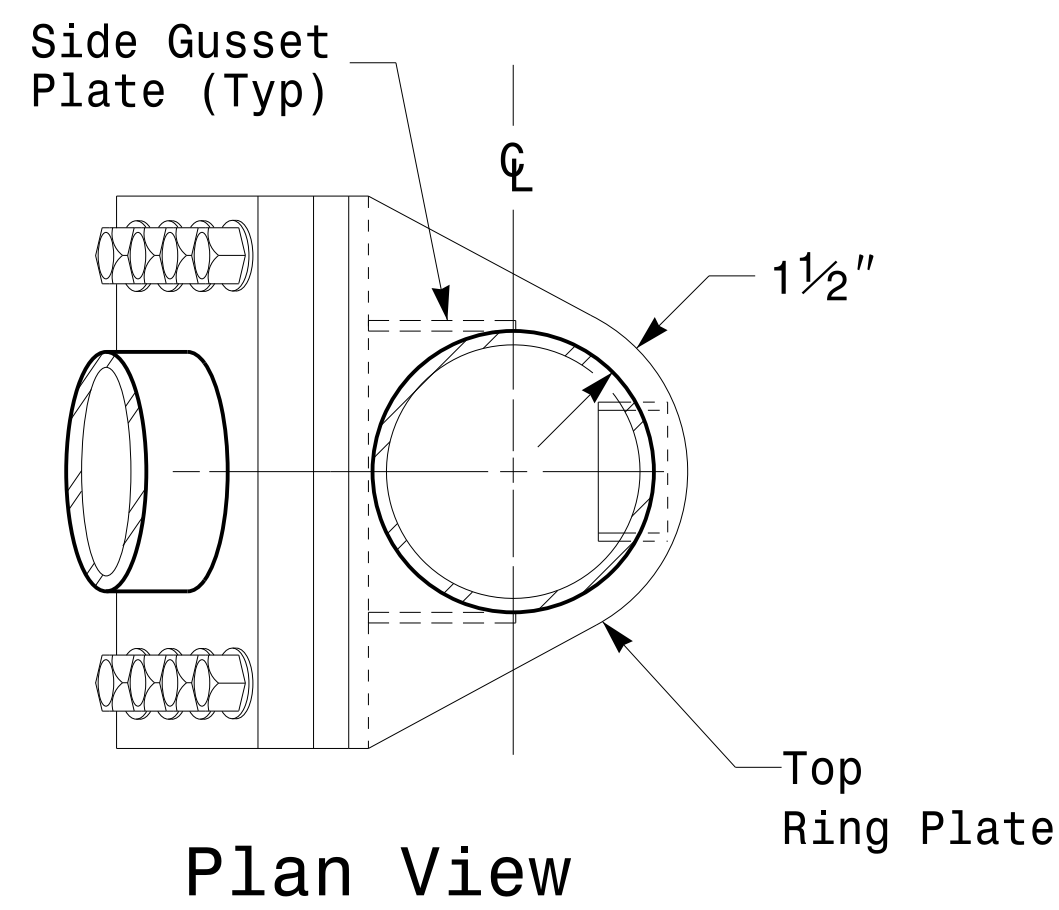
Fabrication Details – Mast Arm Poles

17-FEB-2016 16:05:13 TSC04115 ST01015451gnol Design Section Eastern RegionM4 Sheets20162014 Sig.M4 Std. Fabrication Detail-Mast Arm Poles.dgn

	Typical Fabrication Details For Mast Arm Poles		SEAL
	PLAN DATE: FEBRUARY 2016 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	DocuSigned by 		DATE: 2/17/2016

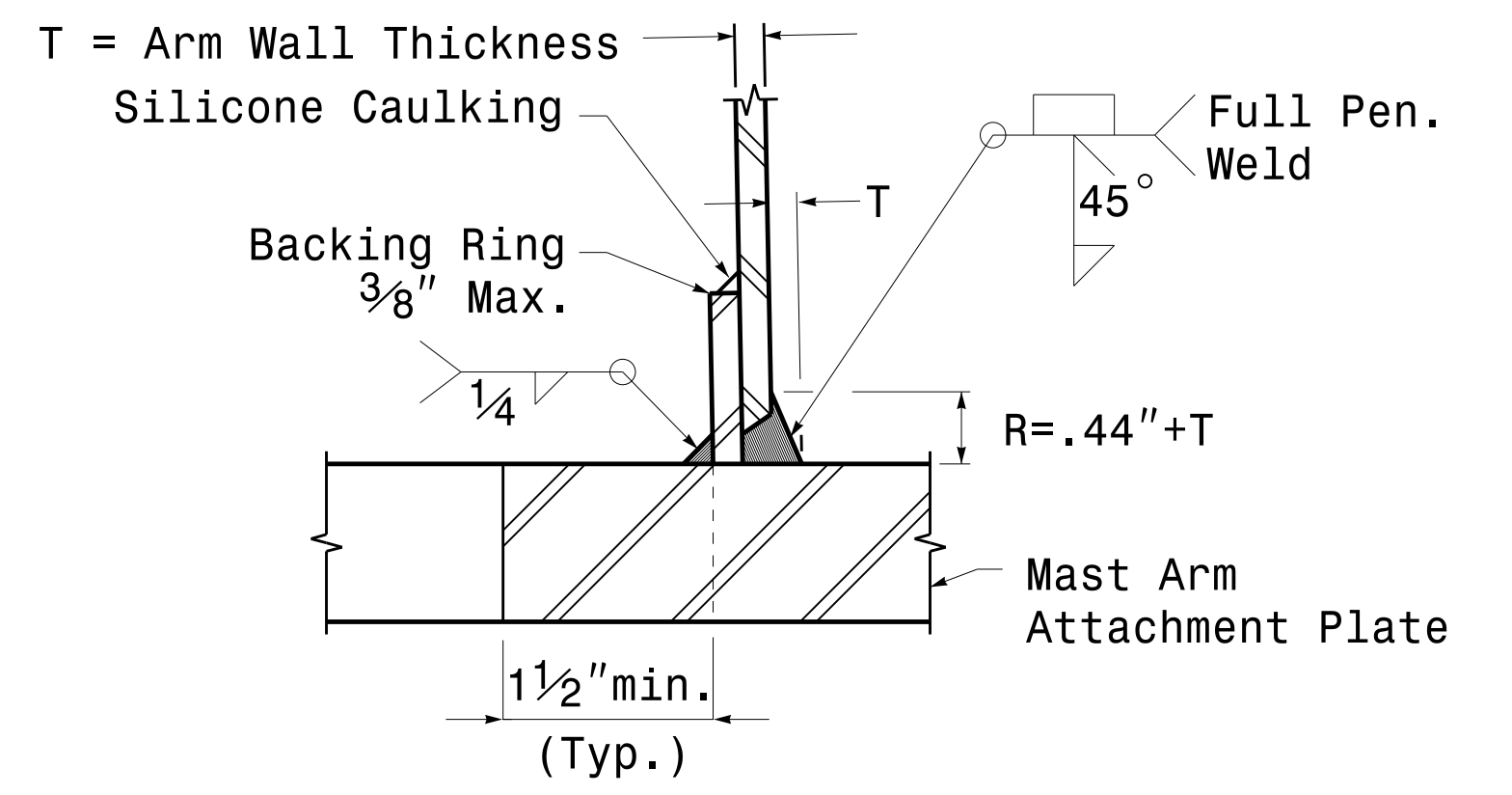
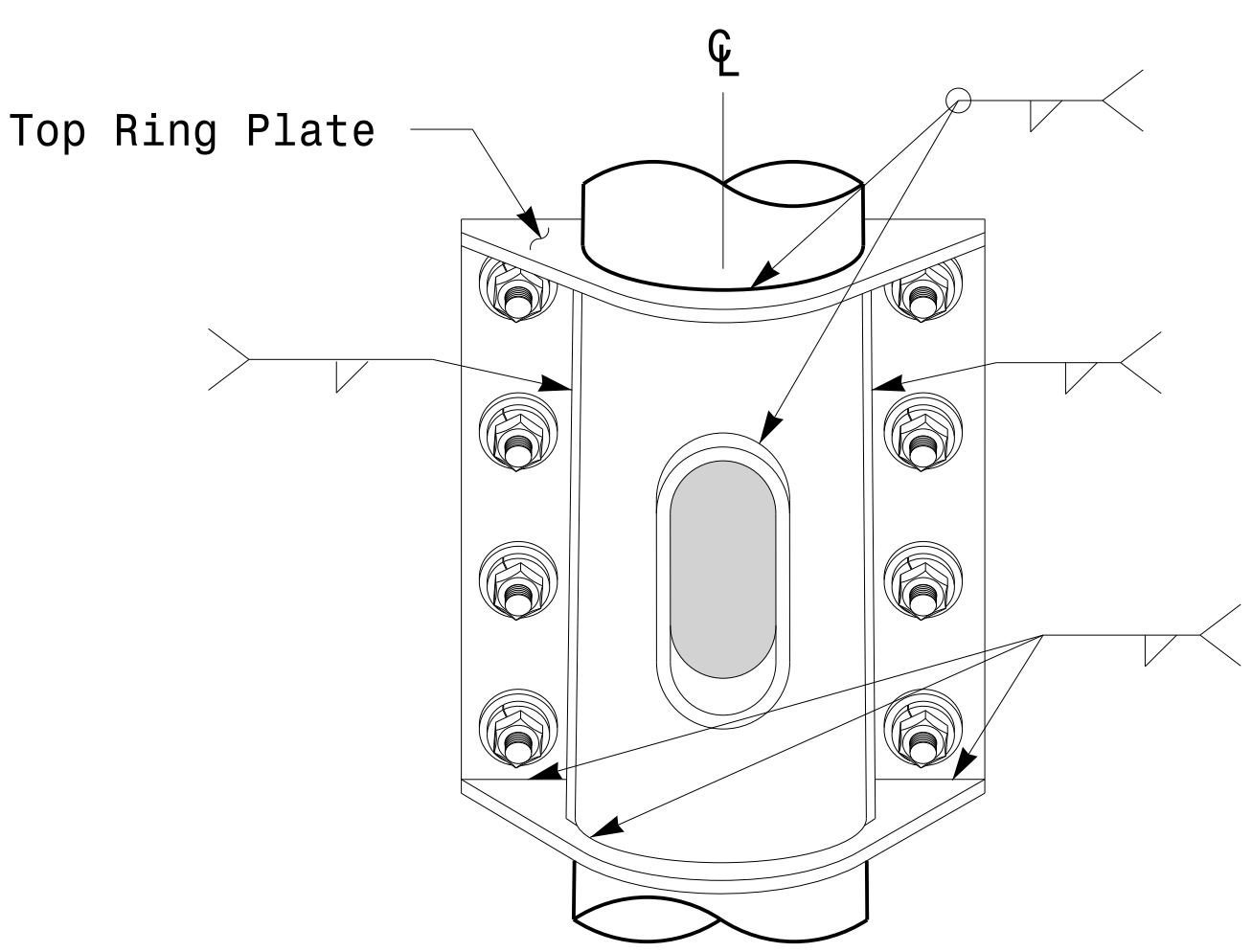
Welded Ring Stiffened Mast Arm Connection

PROJECT ID. NO.	SHEET NO.
U-5935	Sig.M5



Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Fabricator is responsible for providing appropriate holes at drainage points to drain galvanizing materials.
4. For minimum edge distance follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
5. Provide upper handhole as necessary when shaft extensions are required for luminaire arms or camera. For poles without luminaires/camera, wiring can be done through the top of pole.
6. Allowable range of flange tilt angle will vary from 0° to as required.



Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details For Mast Arm Connection To Pole	
PLAN DATE: FEBRUARY 2016	DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

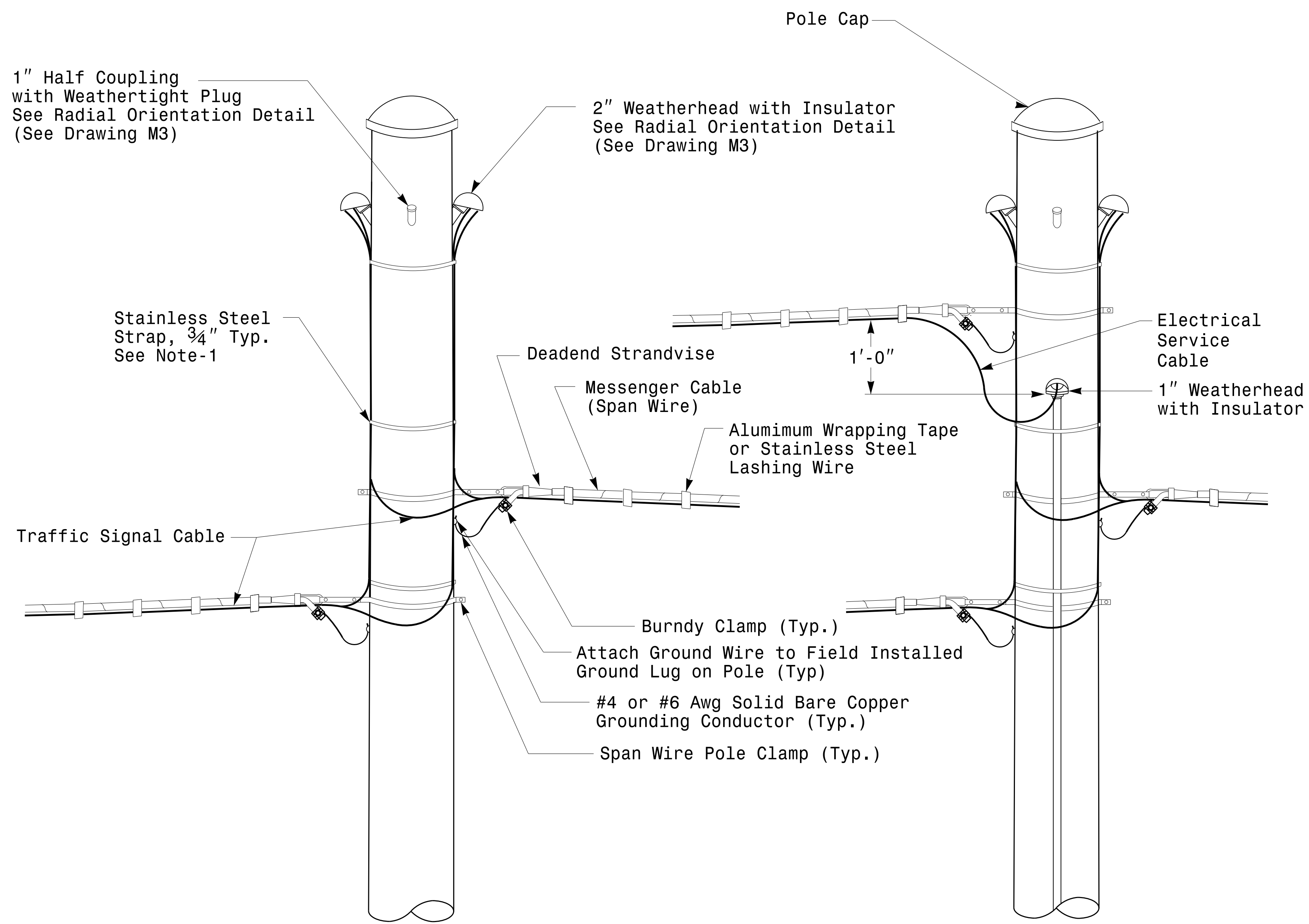
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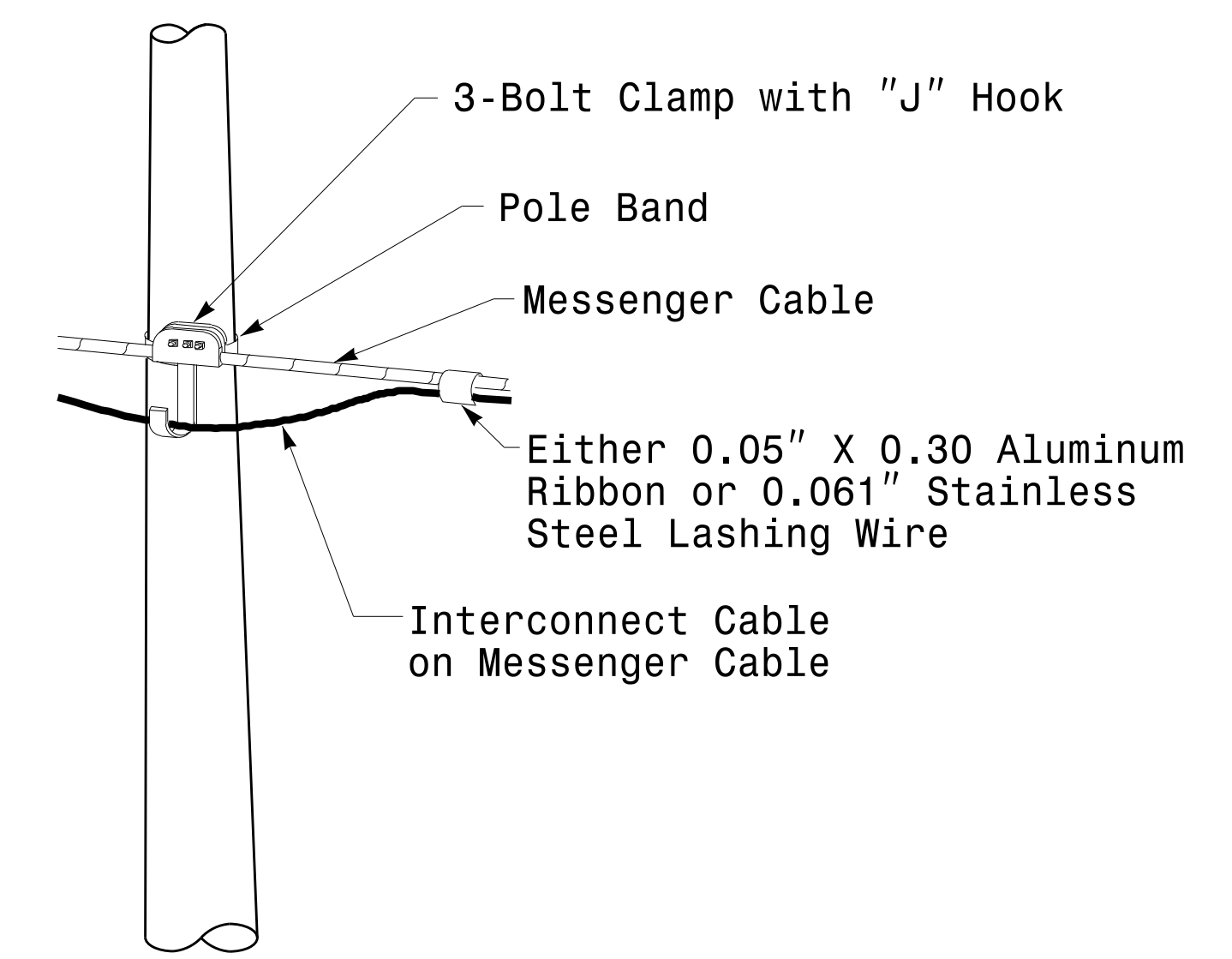
Fabrication Details - Mast Arm Connection



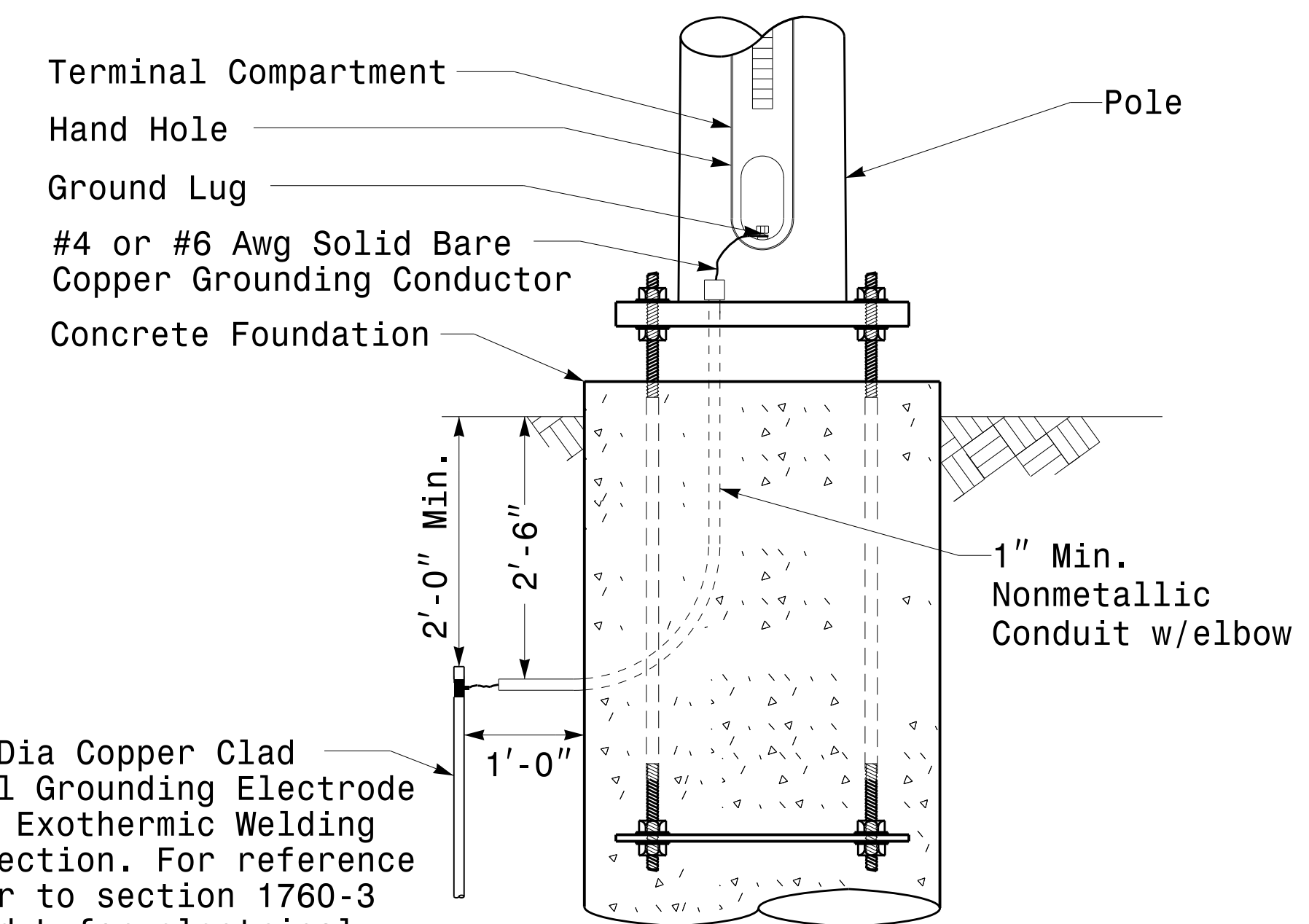
Strain Pole Attachments

NOTE:

1. Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 3'-0".
2. Provide minimum two spanwire pole clamps per pole.
3. It is prohibited to attach two span wires at one pole clamp.
4. For general requirements refer to NCDOT Standard Specifications for Roadway and Structures, January 2012.



Attachment of Cable to Intermediate Metal Pole

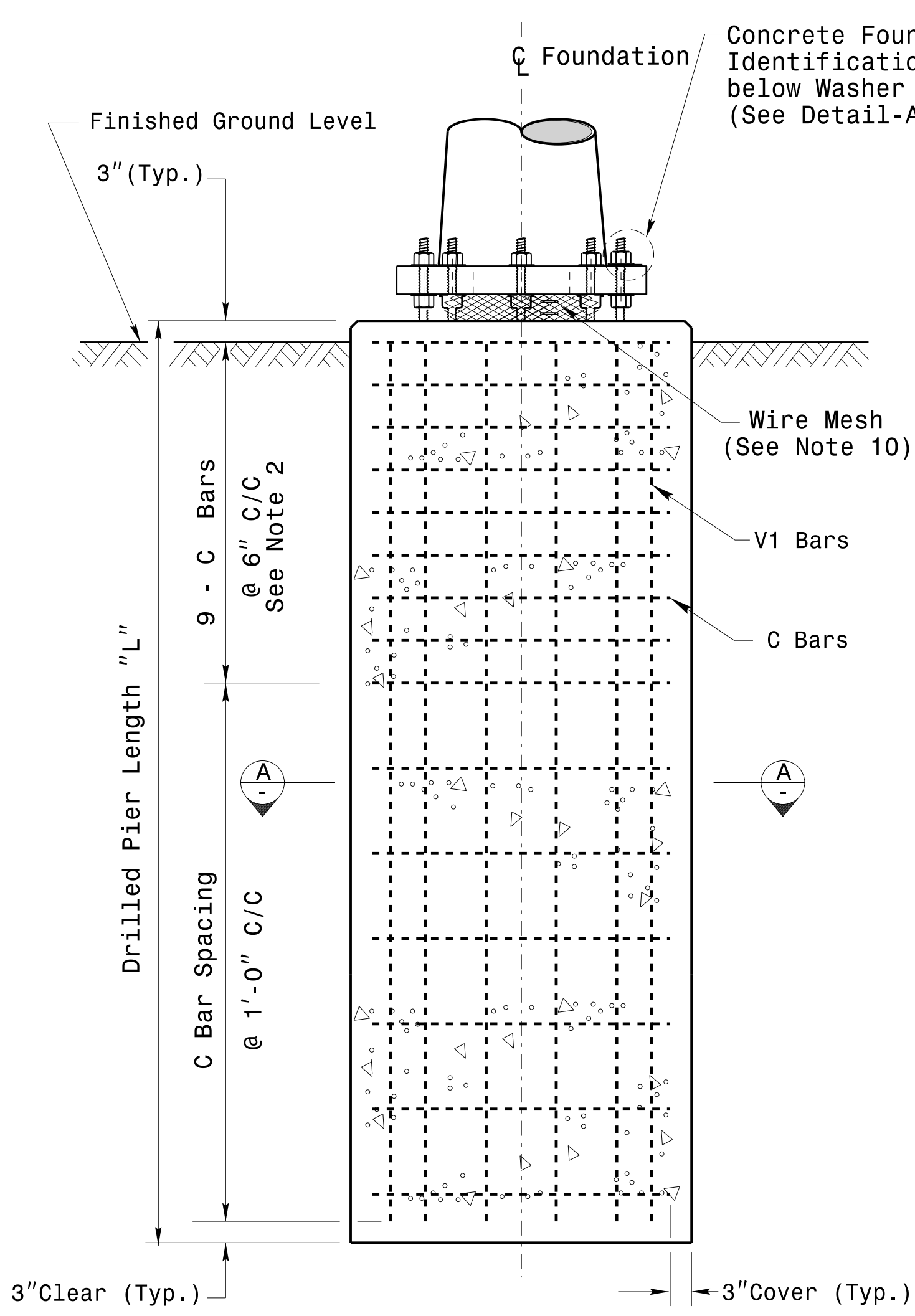


Metal Pole Grounding Detail For Strain Pole and Mast Arm

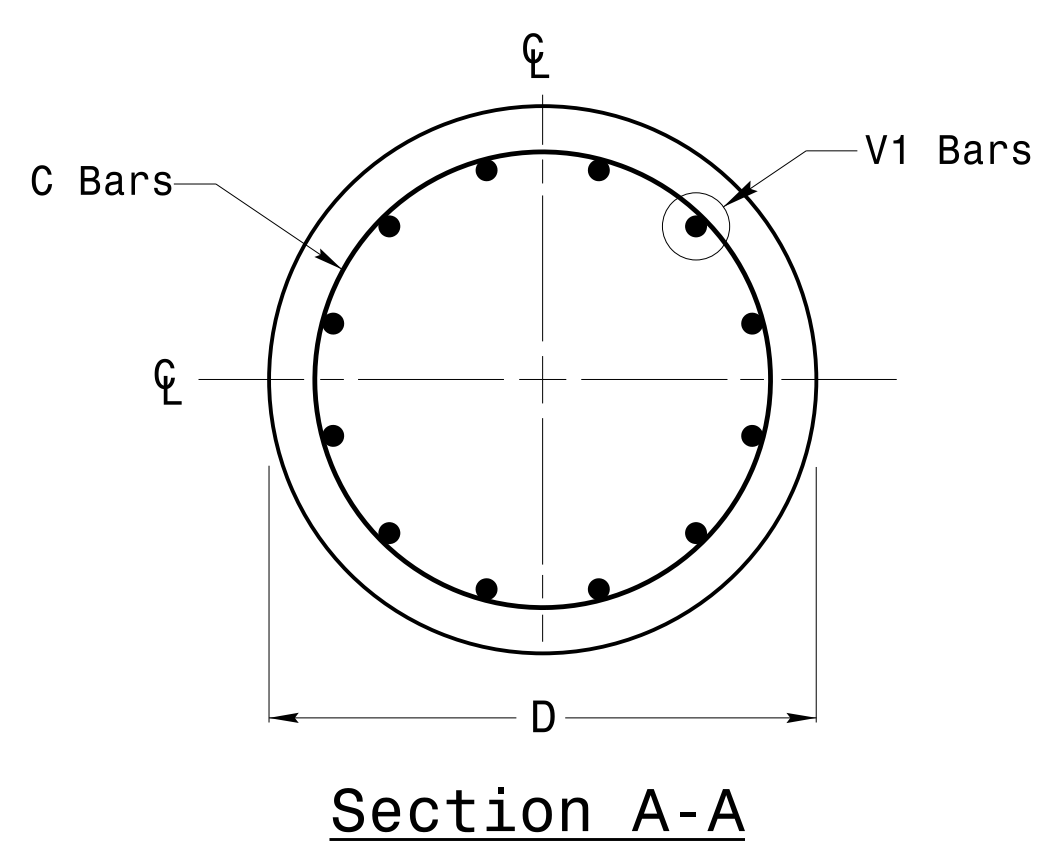
	<p>Typical Fabrication Details For Strain Pole Attachments</p>		
	<p>PLAN DATE: FEBRUARY 2016</p>	<p>DESIGNED BY: C.F. ANDREWS</p>		PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SCALE: 0 NA NONE</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>

DocuSigned By: *Devesh C. Sarkar* 2/17/2016
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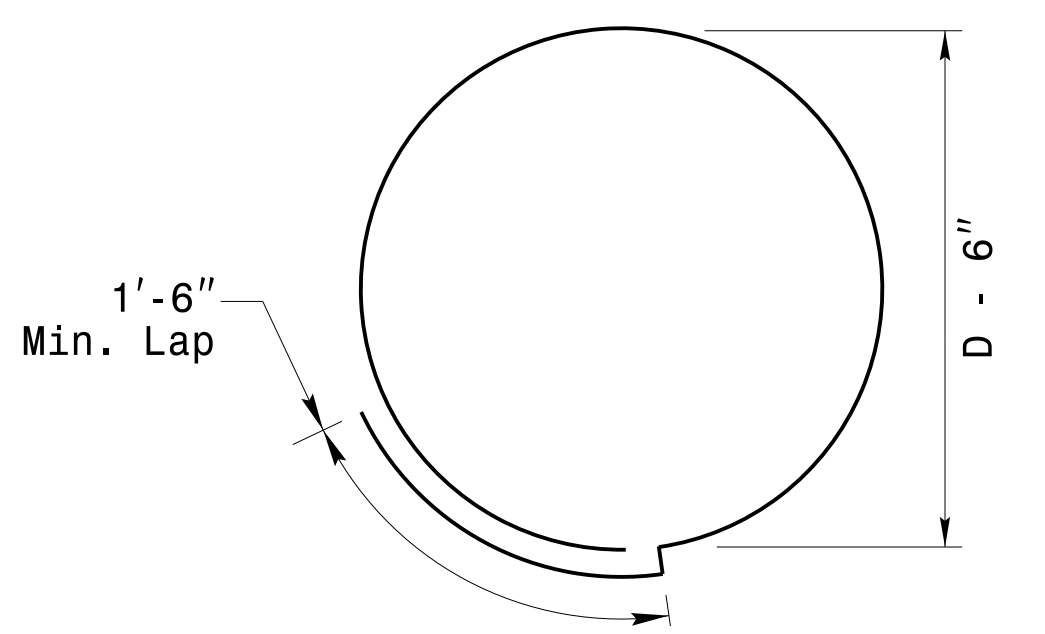
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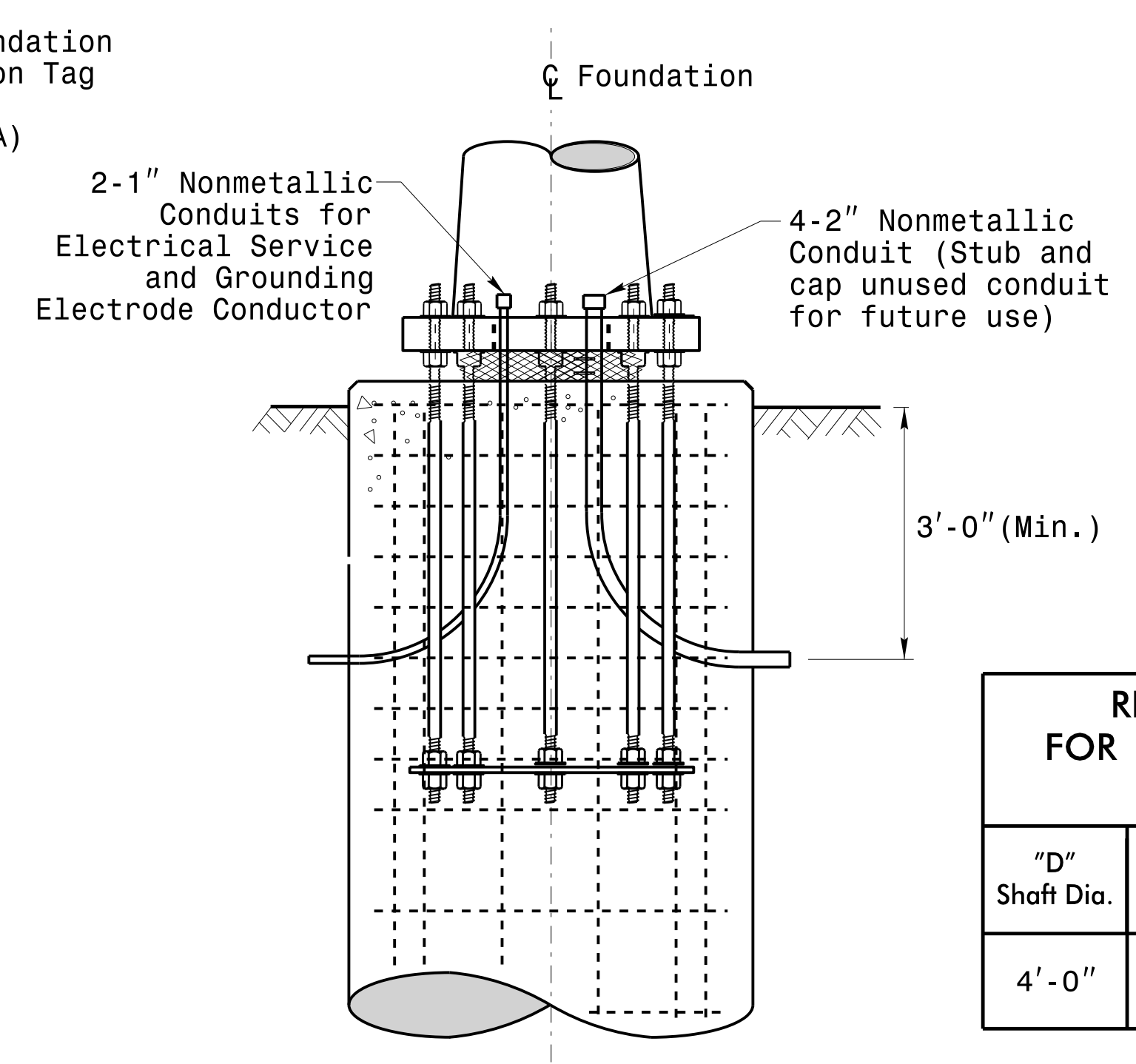
Concrete Shaft Elevation



Section A-A



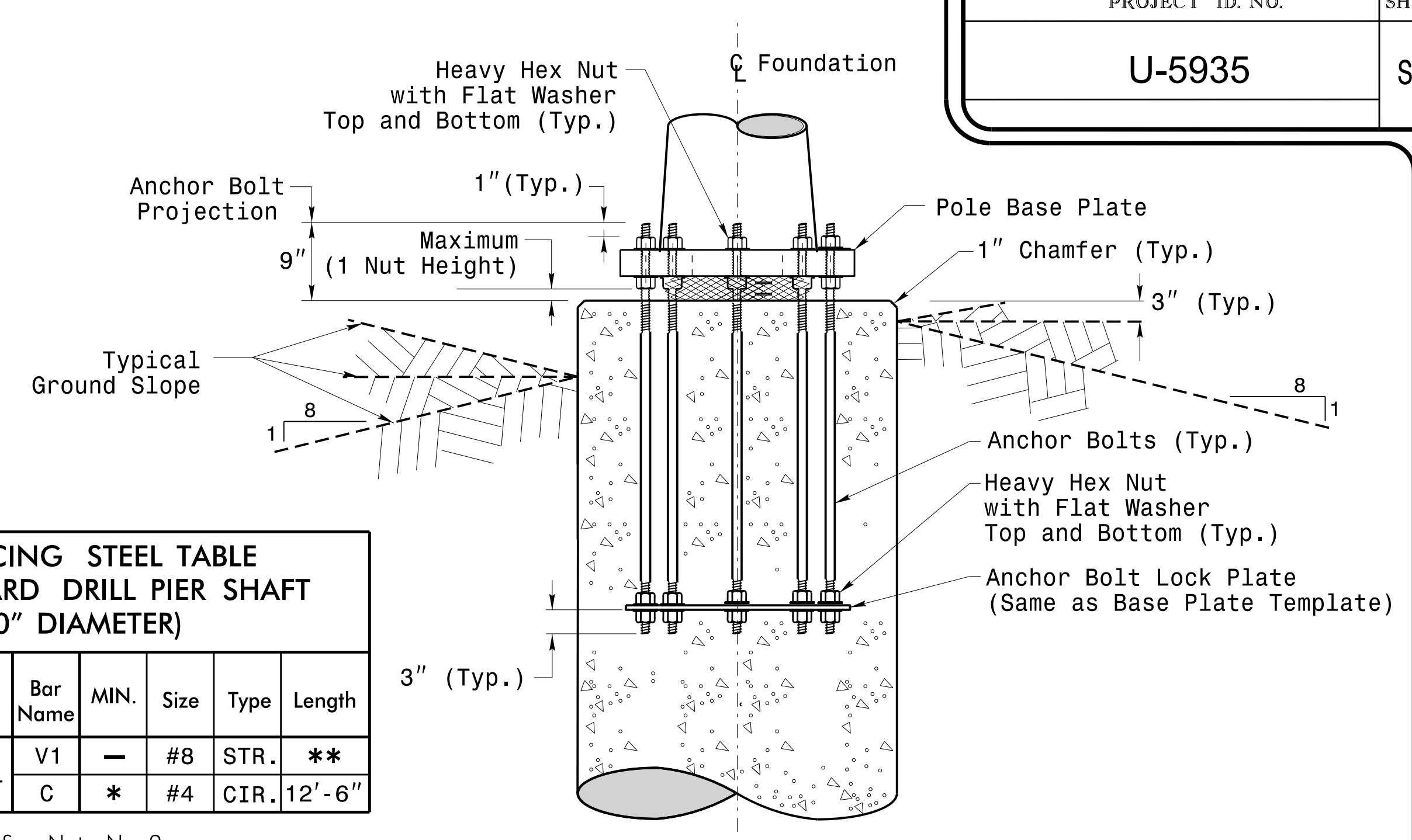
Typical "C" Bar Detail



Typical Foundation Conduit Details

"D" Shaft Dia.	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
4'-0"	.465 x L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 2
 ** See Note No. 3

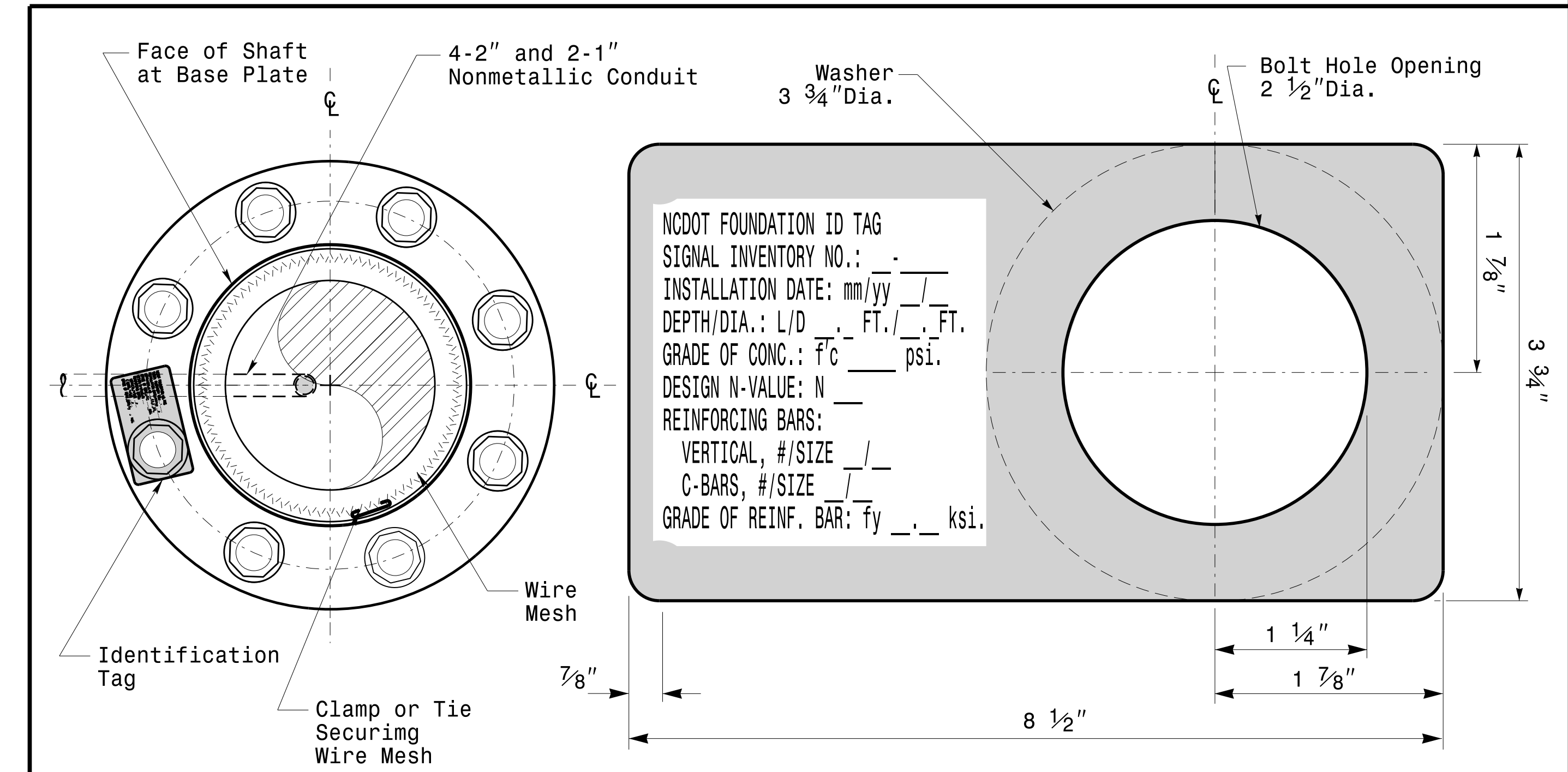


Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

General Notes:

- If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
- Circular tie reinforcing rings may be vertically adjusted by +/- 3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- For standard foundations, see sheet Sig. M8 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/- 3" to facilitate the installation of electrical conduit entering into the cage.
- Provide 2" to 5" foundation projection above ground level depending on the ground slope.
- Unless otherwise shown, foundation designs are based on non-sloping level ground surfaces with slope ratios of 8:1 (H:V) or flatter. If actual ground line slopes are steeper contact the Engineer before excavating or placing concrete.
- Construct foundations in accordance with NCDOT Standard Provisions SP09 R005- Foundations and Anchor Rod Assemblies for Metal Poles. All applicable 2012 NCDOT Standard Specifications are referenced in this provision. Refer to the NCDOT Resources/Specifications page located on the Connect NCDOT website.
[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
- Use air entrained AA concrete mix with a compression strength of f'c=4500 psi.(min.) after 28 days.
- Use ASTM A615 grade 60 deformed bars for all reinforcing steel. Maintain at least 3" cover on all reinforcement.
- Locate the Identification Tag on the top of the base plate, directly above the conduit's entry point.
- Provide two layers of galvanized welded 23 gauge (0.25) 6" wide 4 mesh wire around pipes under the base plate and secure it with ties if necessary.
- Preferred location for the I.D. Tag is as shown in Detail-A; directly above the conduit entering the foundation.



Concrete Foundation Identification Tag Details

D = Diameter
 L = Length/Depth
 mm = Month
 yy = Year

Detail-A

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Construction Details For Foundations</p>									
	<p>PLAN DATE: FEBRUARY 2016</p>	<p>DESIGNED BY: C.B. COGDILL</p>		<p>DocuSigned by Debeshi C. Sarkar 44E8E32E147E4C4</p>						
	<p>PREPARED BY: N. BITTING</p>	<p>REVIEWED BY: D.C. SARKAR</p>								
<p>SCALE: NONE</p>	<table border="1"> <tr> <th>REV. NO.</th> <th>COMMENTS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td>1</td> <td>Revised Foundation Top Details</td> <td>N.B.</td> <td>5/11/2015</td> </tr> </table>	REV. NO.	COMMENTS	INIT.	DATE	1	Revised Foundation Top Details	N.B.	5/11/2015	<p>DATE: 2/17/2016</p>
REV. NO.	COMMENTS	INIT.	DATE							
1	Revised Foundation Top Details	N.B.	5/11/2015							

Construction Details - Foundations

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SOIL CONDITION

PROJECT ID. NO.	SHEET NO.
U-5935	Sig.M8

		STANDARD STRAIN POLES					STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet							Reinforcement				
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	10	8	17	14.5	12.5	8	12	4	12
		S30L3	30	25	2	11	300	19.5	13.5	10	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	10.5	8	17.5	15	13	8	14	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	16	12	9	21	17.5	15	8	16	4	6
		S35H3	35	29	4	16	515	26	17	12.5	9.5	22	18.5	16	8	16	4	6
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11.5	8.5	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	9	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	9	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	13.5	10.5	8	18	15	13.5	8	16	4	6
		S35H1	35	25	4	12	350	21	14	10.5	8.5	18.5	15.5	13.5	8	16	4	6
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6

General Notes:

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

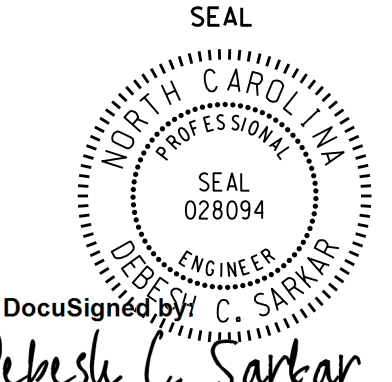
Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column under "Standard Foundations" based on soil type and "N" value. Select the appropriate row based on the pole load case.
6. The foundation depth is the value shown in the "Standard Foundations" category where the column and the row intersect.
7. Use Construction Procedures and Design Methods prescribed by FHWA-NHI-10-016 for Reference Drilled Shafts.

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Drilled Pier Length

Standard Strain Pole Foundation-All Soil Condition

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	Standard Strain Pole Foundation for All Soil Conditions	
	PLAN DATE: FEBRUARY 2016 PREPARED BY: N. BITTING	DESIGNED BY: C.B. COGDILL REVIEWED BY: D.C. SARKAR
SCALE: 0 NA NONE	REVISIONS: Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn.	DATE: 7/12/2015
DocuSigned by: <i>Debash C. Sarkar</i>		2/17/2016

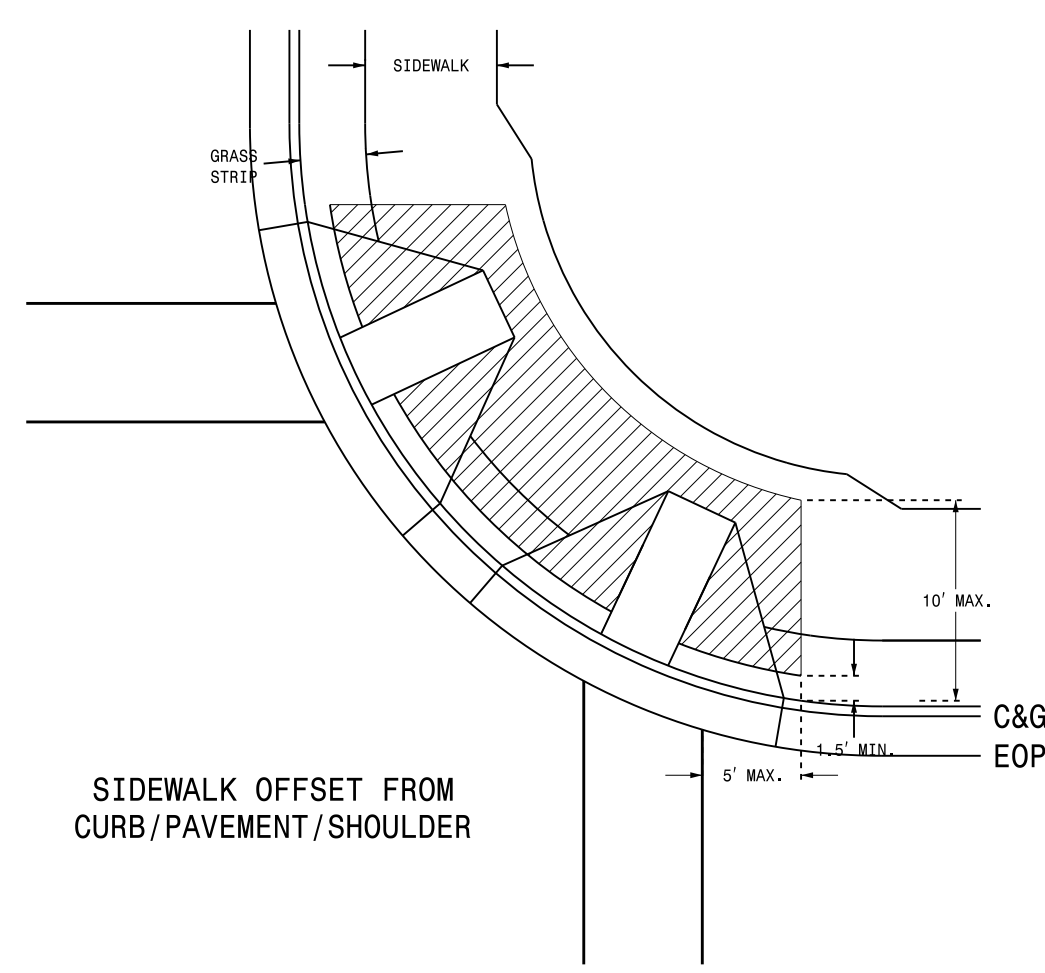
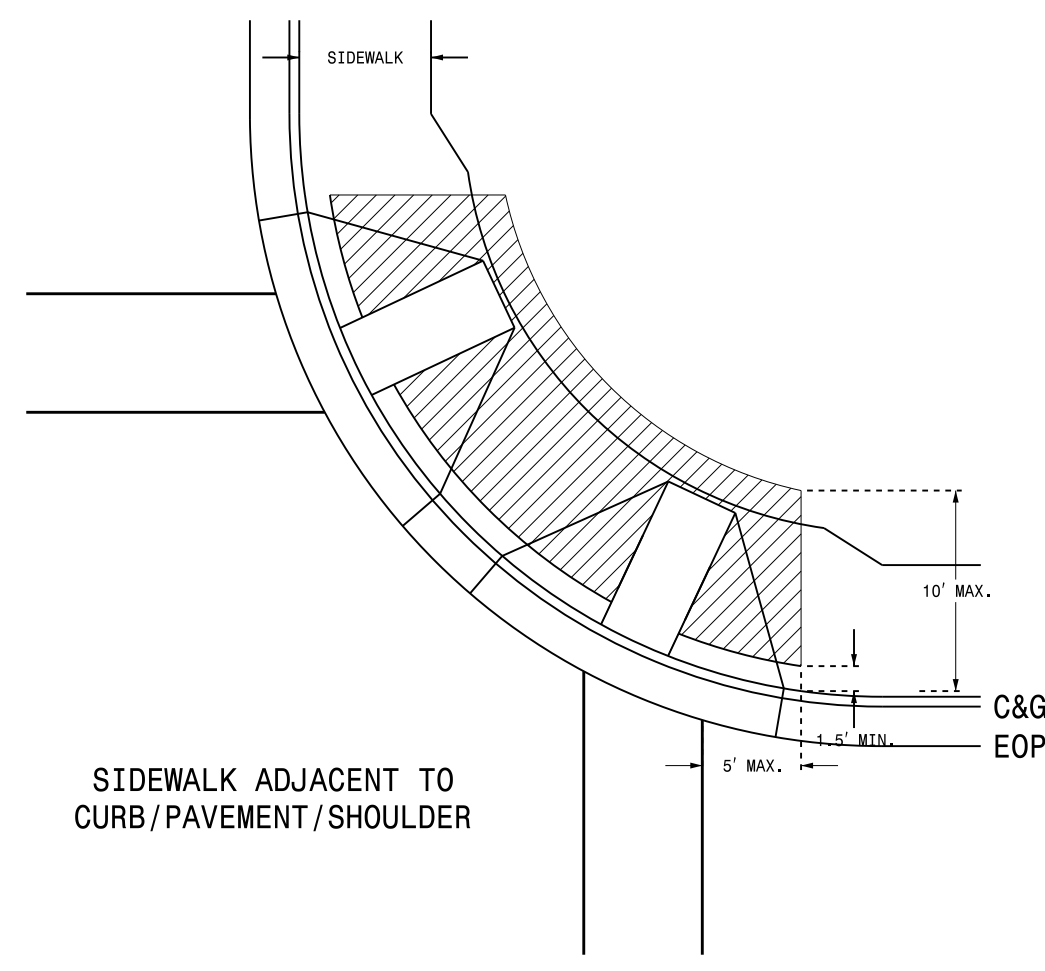
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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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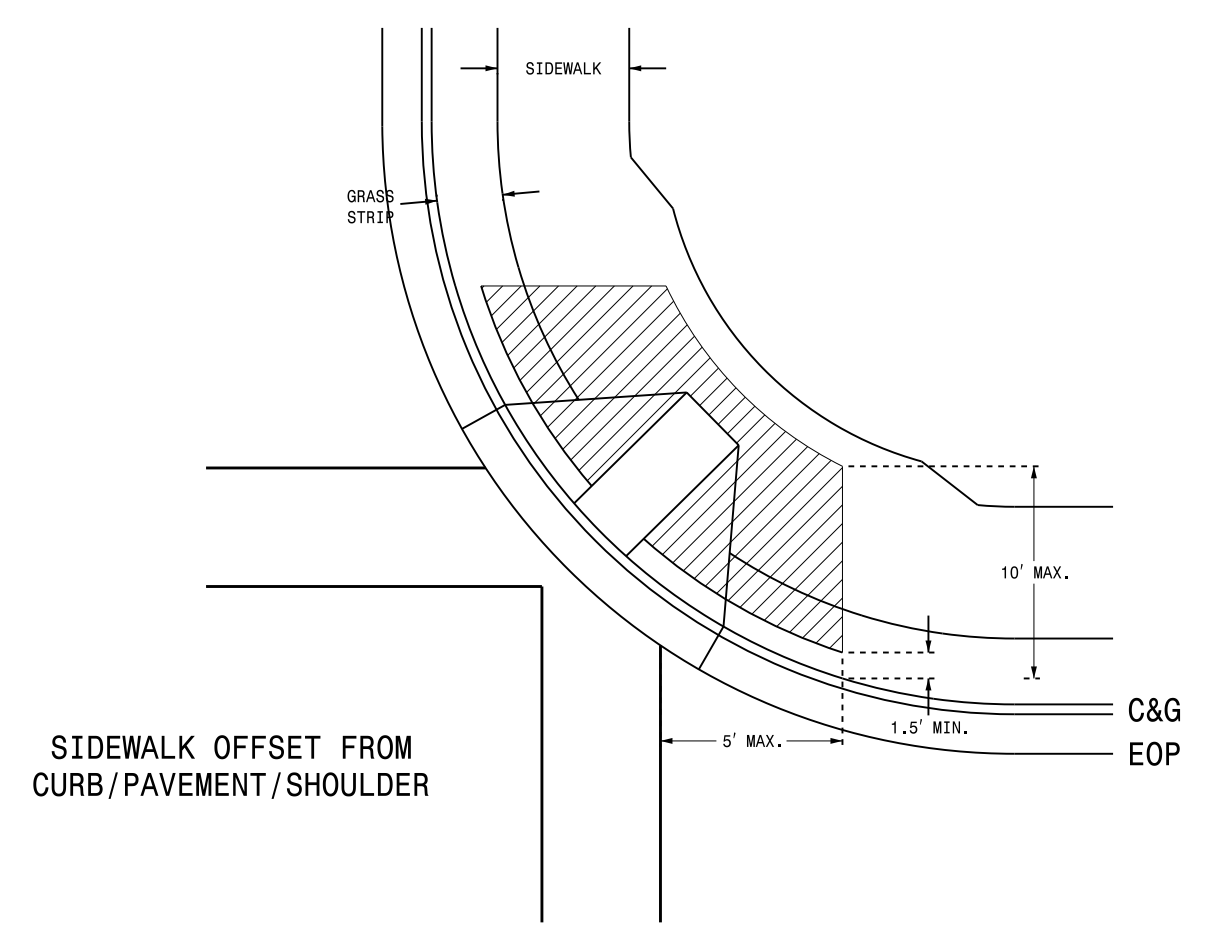
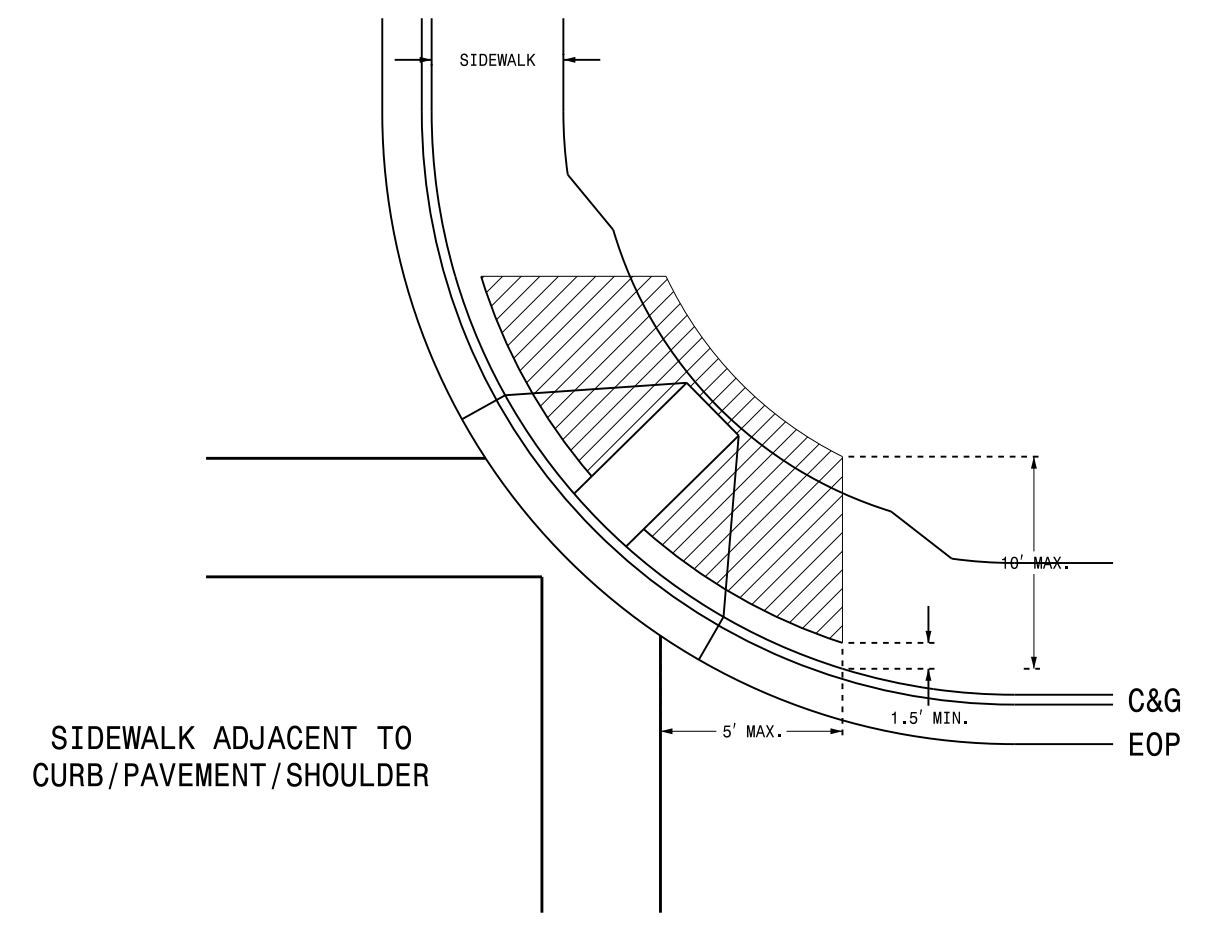
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 1 OF 3
1705D01

PUSHBUTTON PLACEMENT
SEPARATE CURB RAMPS



PUSHBUTTON PLACEMENT
SHARED CURB RAMP



- NOTES**
1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
 2. The face of the pushbutton should be parallel to the applicable crosswalk.
 3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
 4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
 5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
 6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
 7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
 8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
 9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

PROPOSED

	Signal Pole
	Type I Pushbutton Post
	Type II Signal Pedestal
	Pushbutton & Sign
	Pedestrian Signal Head
	Curb Ramp
	Pushbutton Location Area

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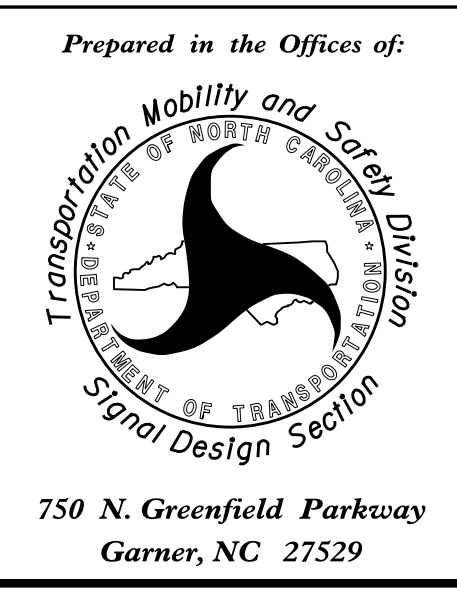
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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 1 OF 3
1705D01

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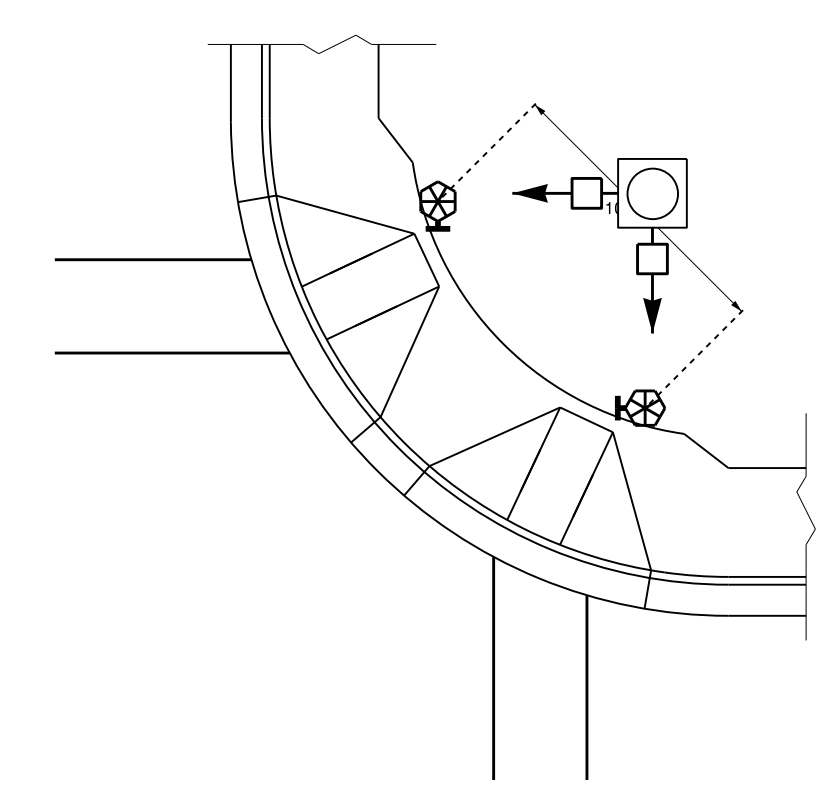
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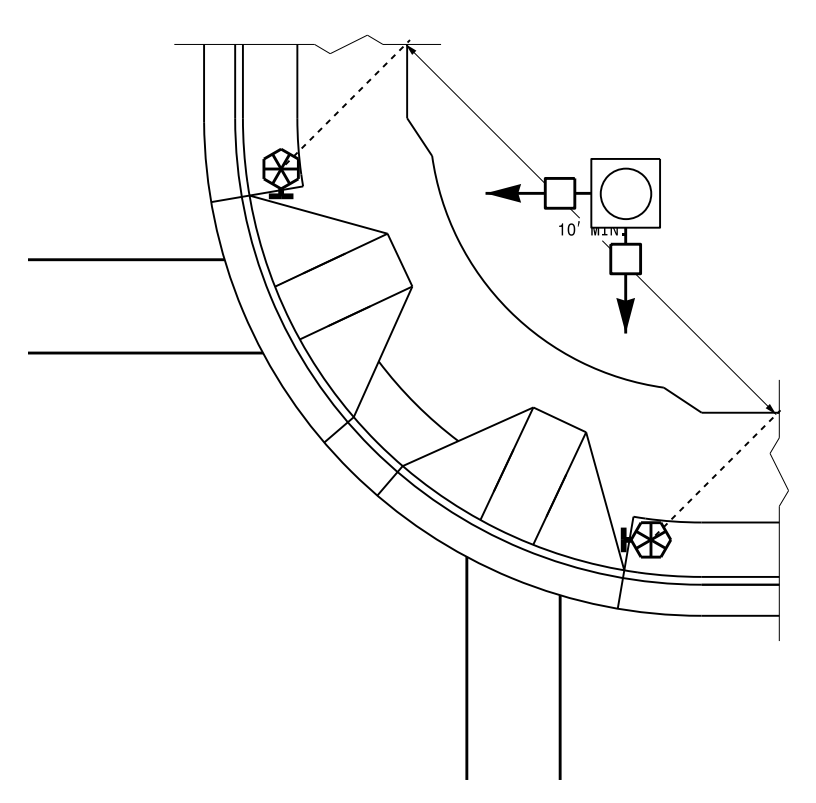
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

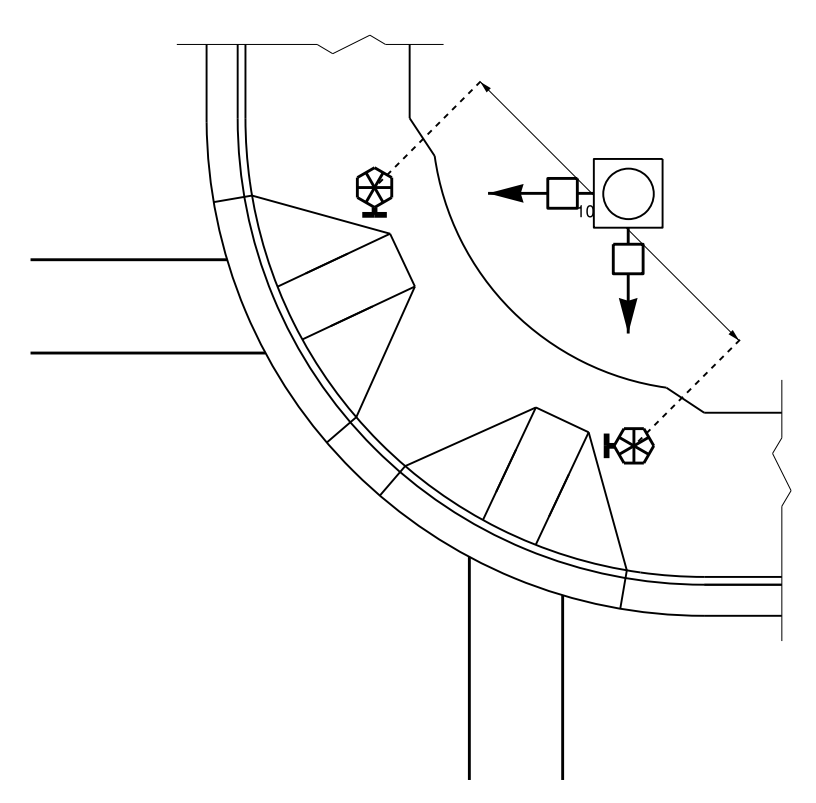
TYPICAL PUSHBUTTON LOCATIONS (CASE I)
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

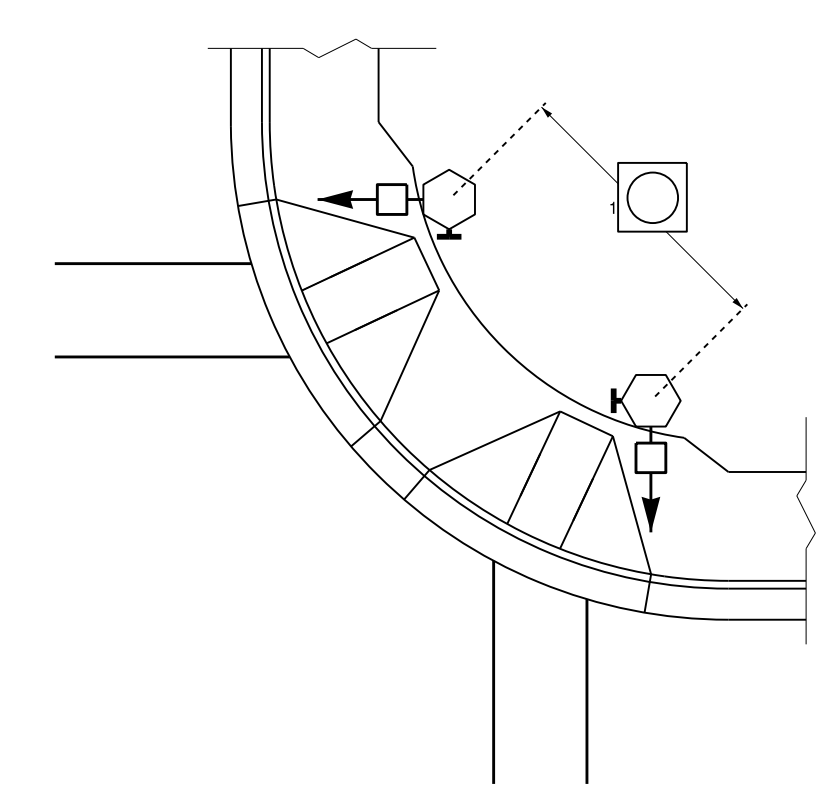


PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

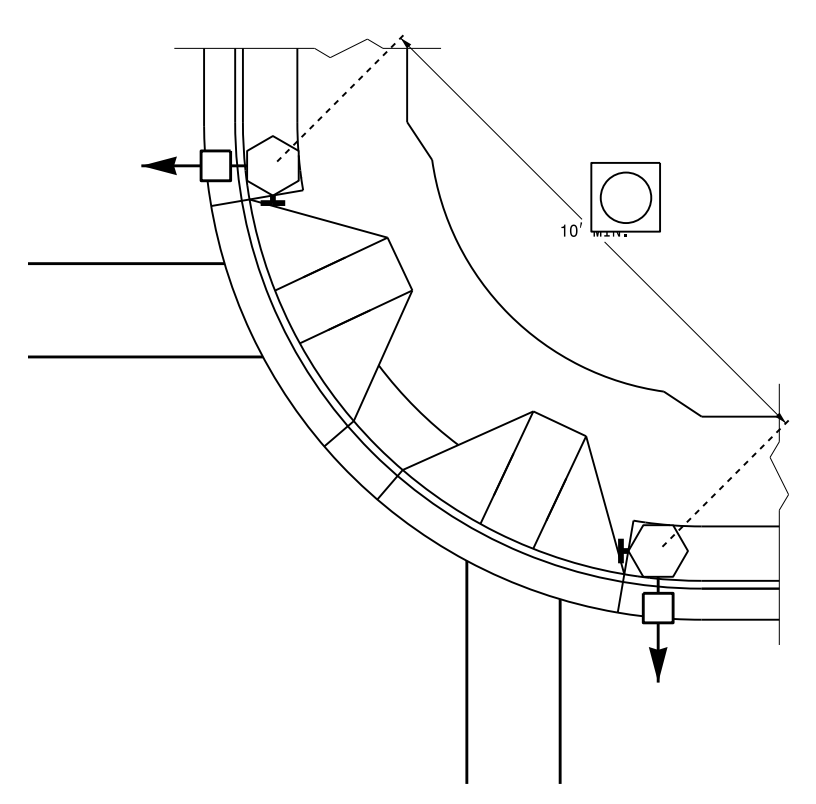
- PROPOSED**
- Signal Pole
 - Type I Pushbutton Post
 - Type II Signal Pedestal
 - Pushbutton & Sign
 - Pedestrian Signal Head
 - Curb Ramp
 - Pushbutton Location Area

LEGEND

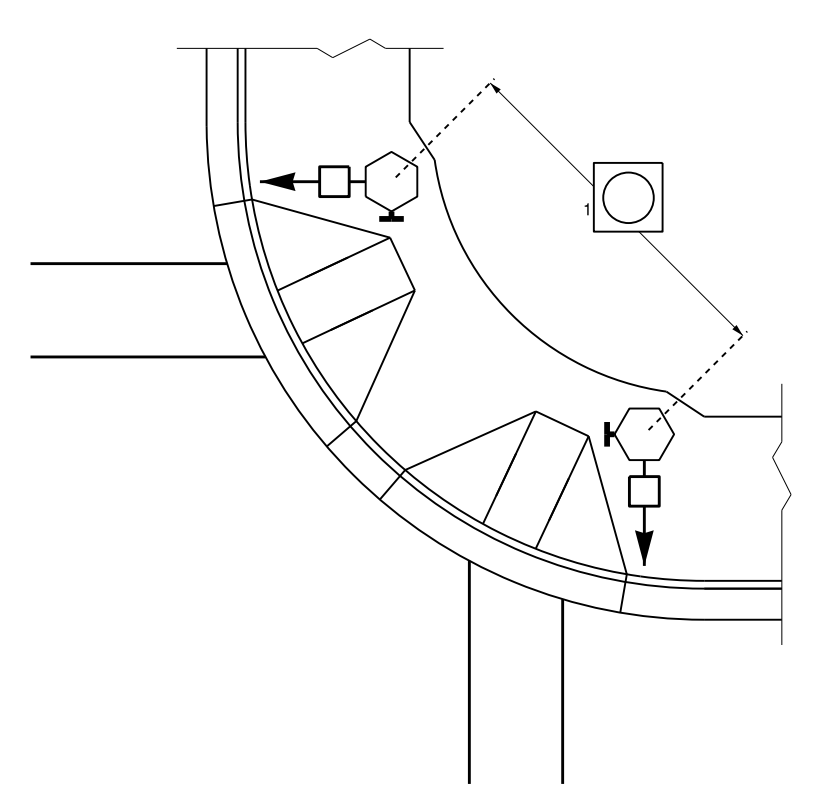
TYPICAL PUSHBUTTON LOCATIONS (CASE II)
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

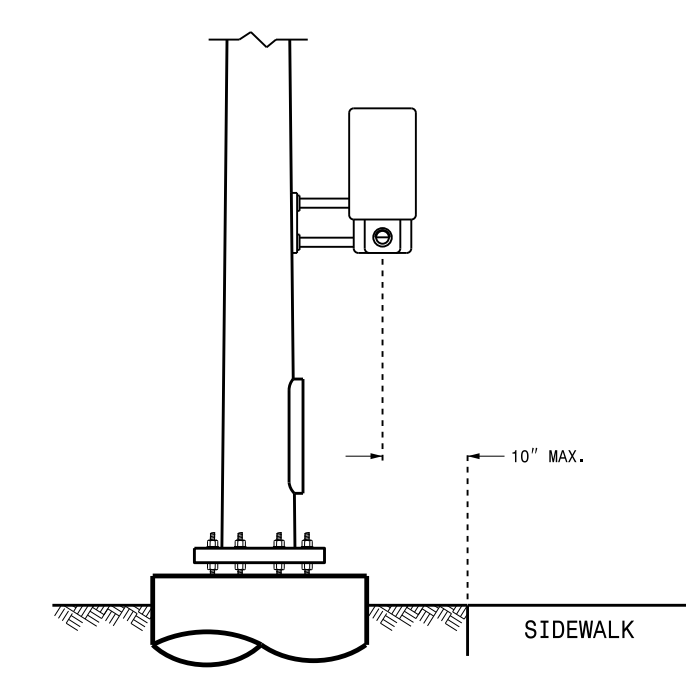


GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION
FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 3 OF 3
1705D01

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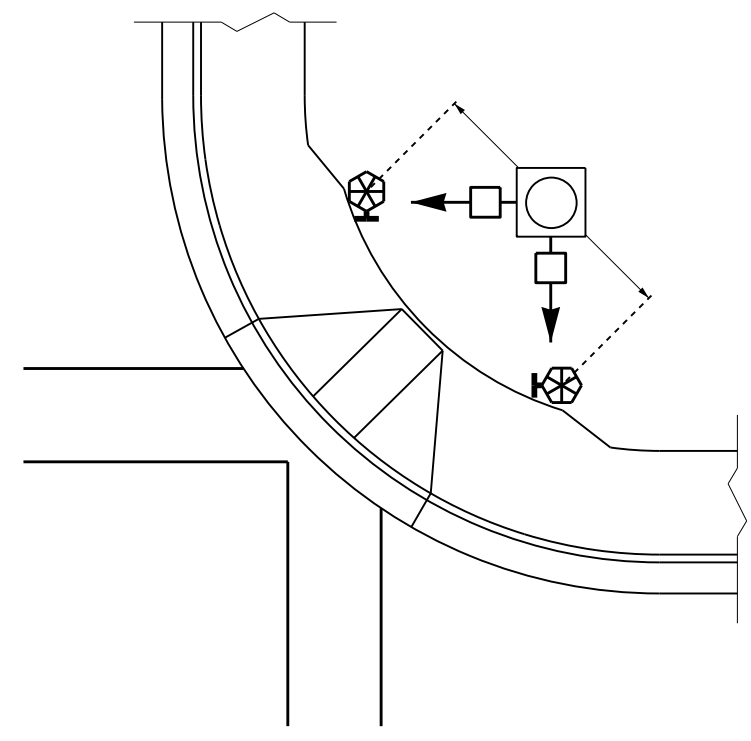
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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

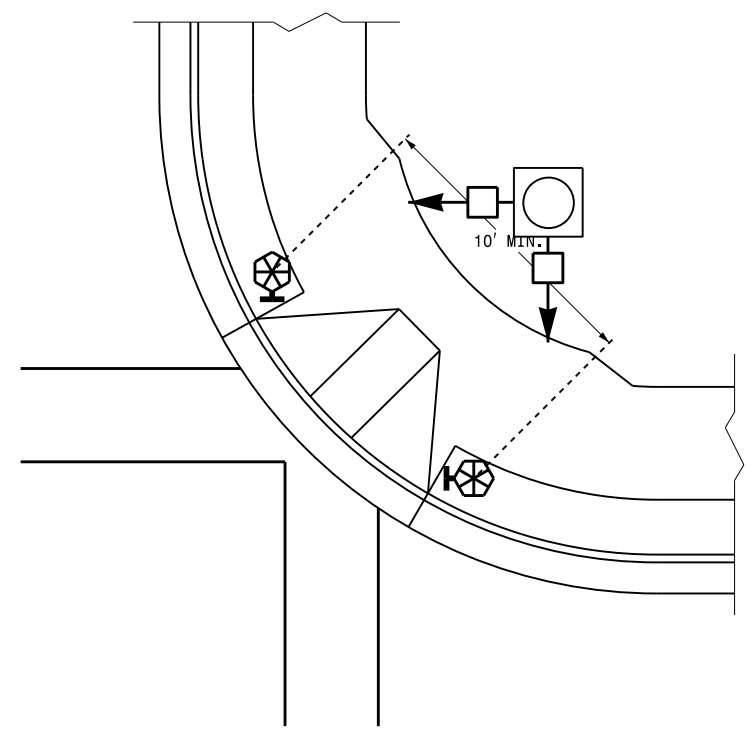
SHEET 3 OF 3
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

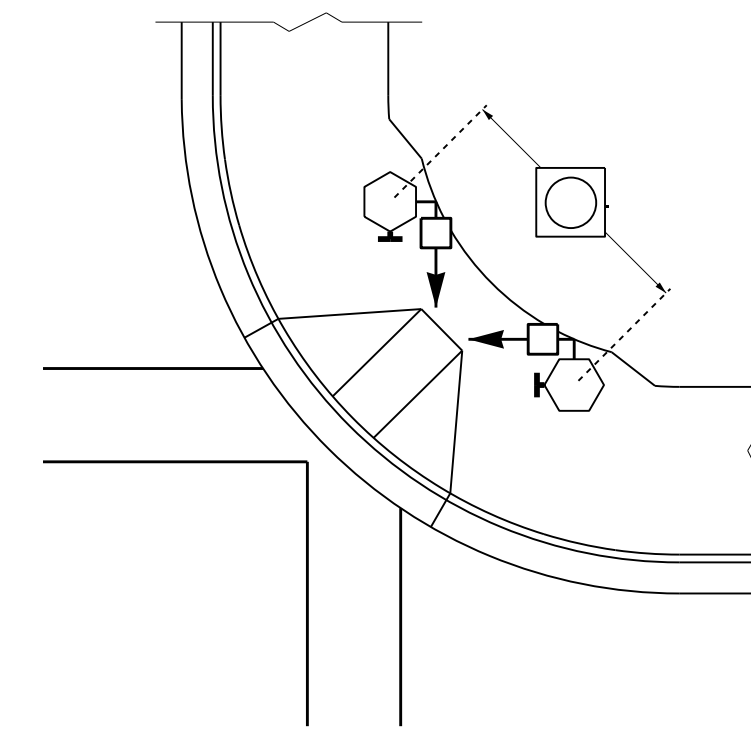
SHARED CURB RAMPS



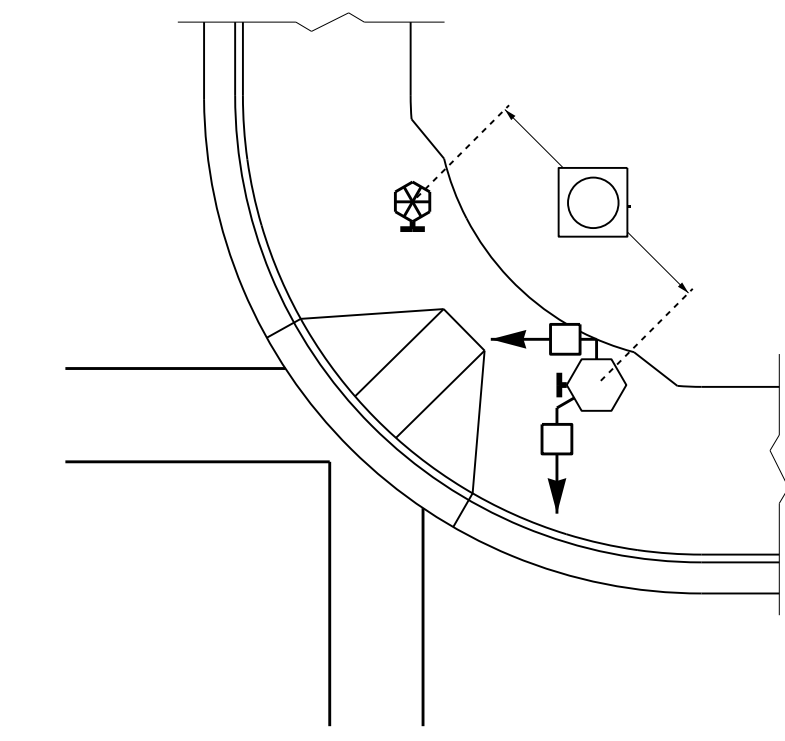
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK OF SIDEWALK EXCEEDS 10' FROM CURB OR PAVEMENT/SHOULDER

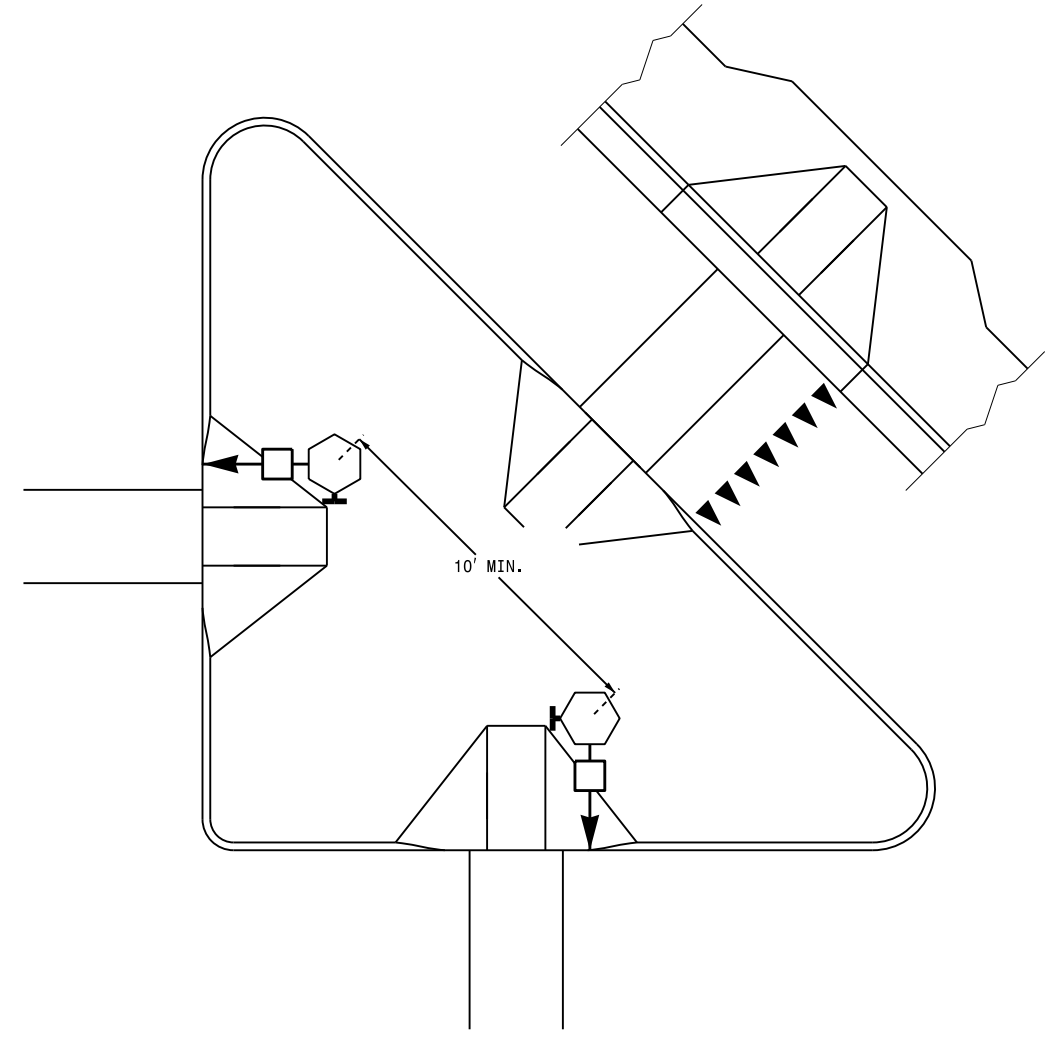


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

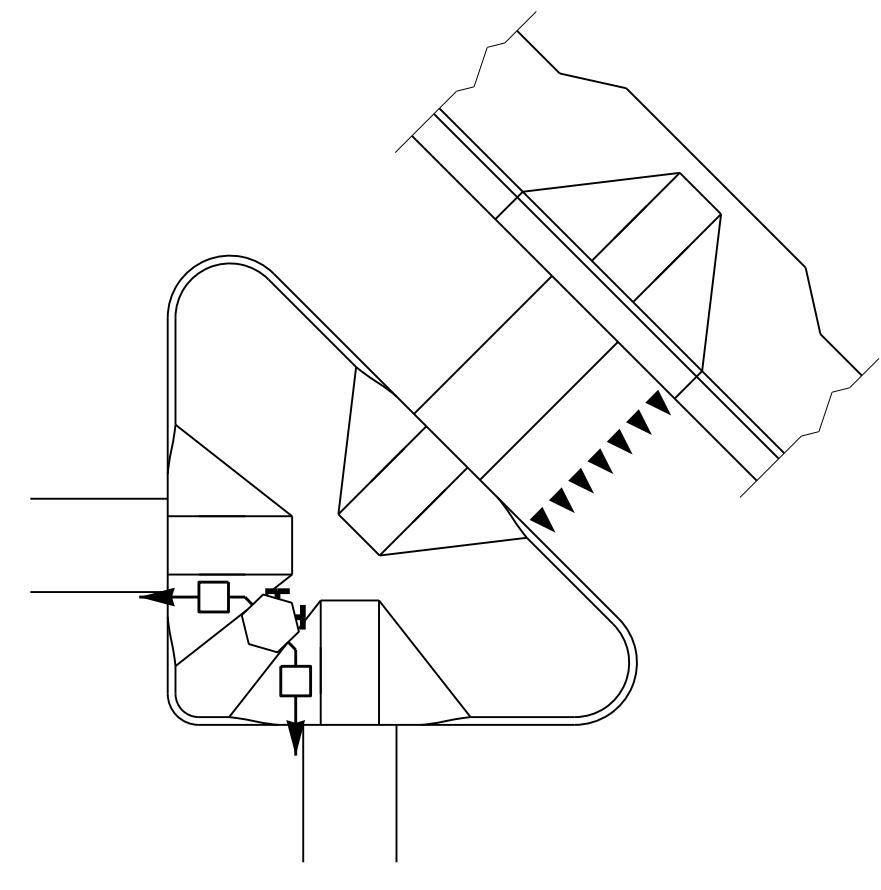


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS



PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN

TYPE II PEDESTAL (FOR STAGED OR MULTI-PHASE CROSSING)

TYPE I PEDESTAL (FOR COMPLETE CROSSING CURB TO CURB WITH OPTIONAL REFUGE)

PROPOSED

	Signal Pole
	Type I Pushbutton Post
	Type II Signal Pedestal
	Pushbutton & Sign
	Pedestrian Signal Head
	Curb Ramp
	Pushbutton Location Area

LEGEND

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