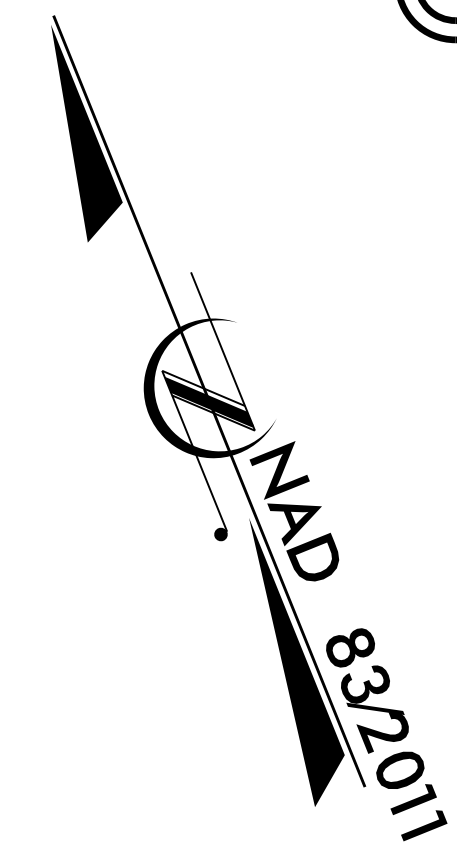


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

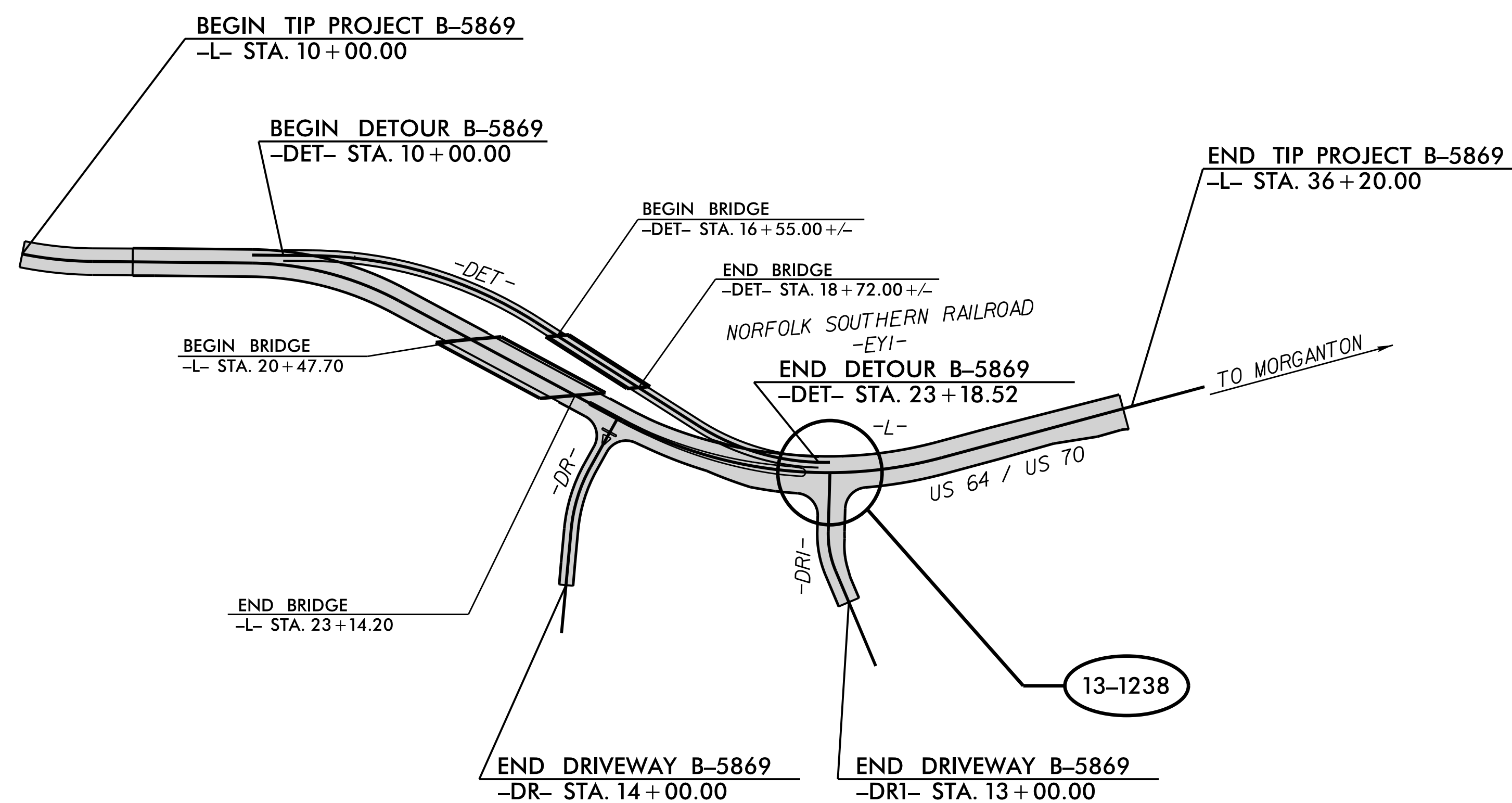
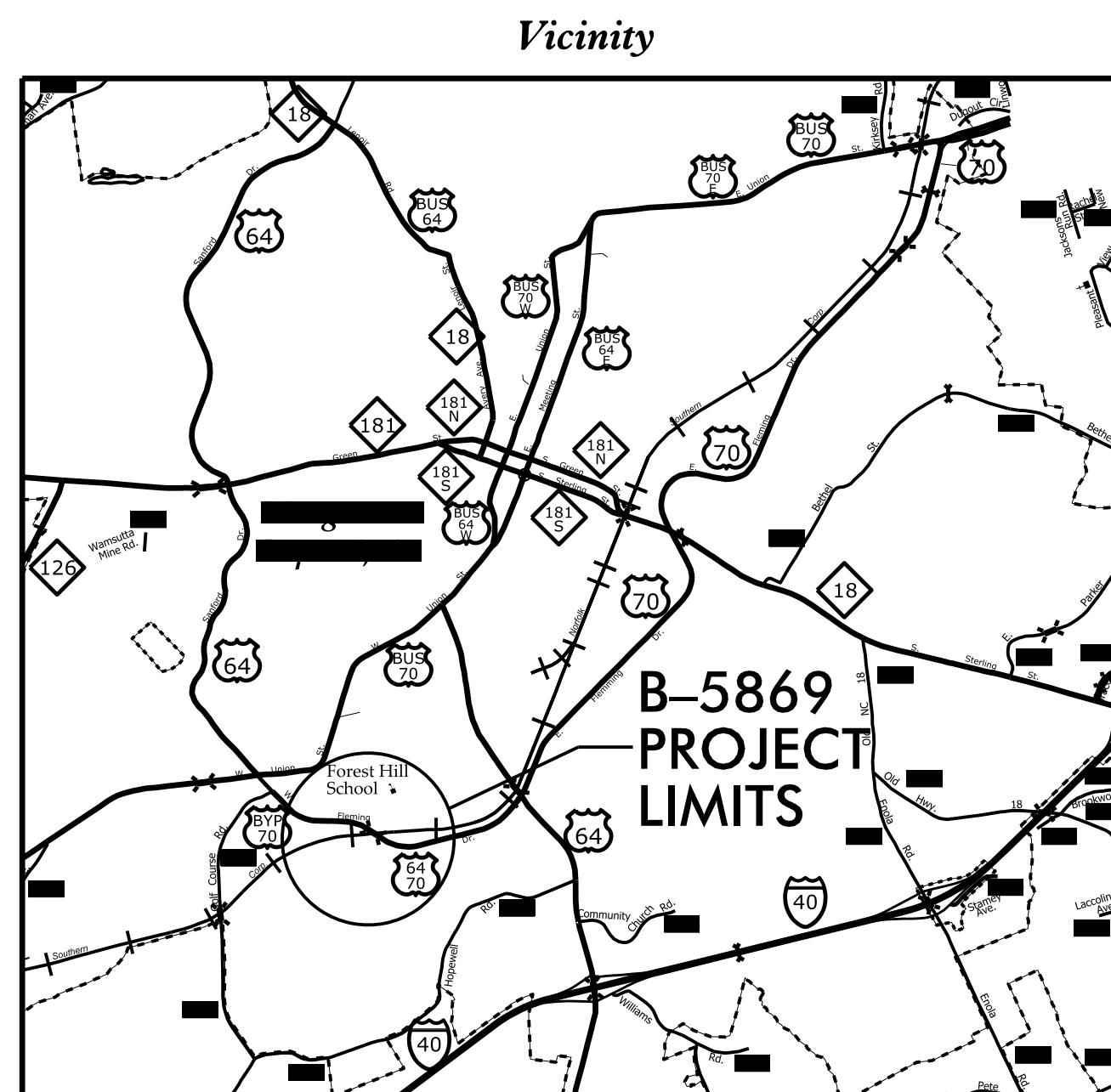
BURKE COUNTY

**LOCATION: US 64-70 (Fleming Drive)
at Morganton Heights Blvd**

TYPE OF WORK: TRAFFIC SIGNAL



Project: B-5869



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

Sheet #	Reference #	Index of Plans	Location/Description
Sig. 1.0	-----	Title Sheet	
Sig. 2.0 - 5.1	13-1238	US 64-70 (Fleming Drive) at Morganton Heights Blvd	
Sig. 6.0 - 6.1	N/A	Revised Standard Drawings	

**TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS**

Contacts:

Timothy J. Williams, PE - Western Region Signals Engineer
Ryan W. Hough, PE - Signal Equipment Design Engineer

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

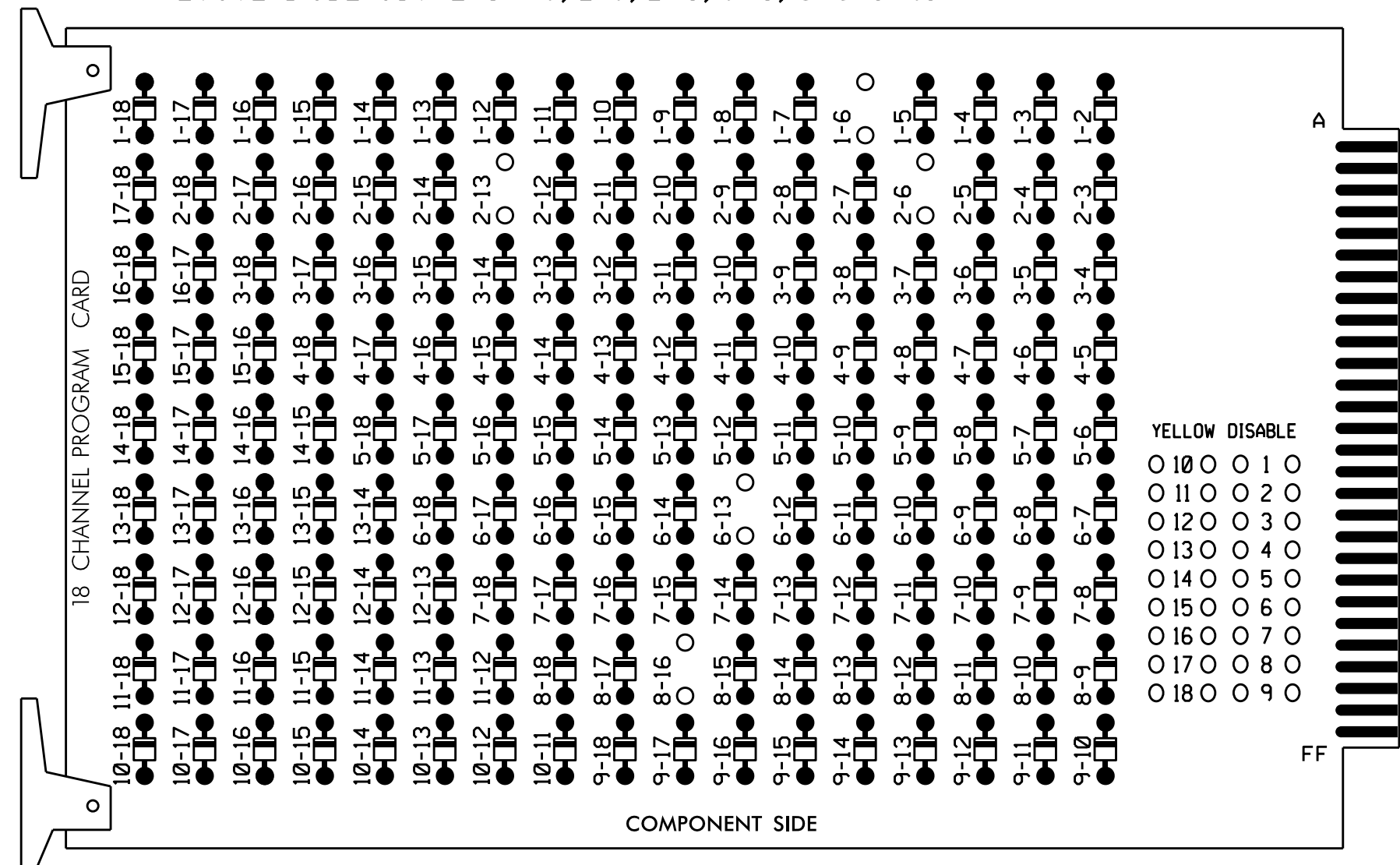
750 N. Greenfield Parkway, Garner, NC 27529

R:\JAN_2022_16\1617\Groups-TECC\ITS&S\UNITS_Signals\Signal Design_Section\Western_Region\Div-13\B-5869\B-5869_sig_1.sh.dgn

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

(remove jumpers and set switches as shown)

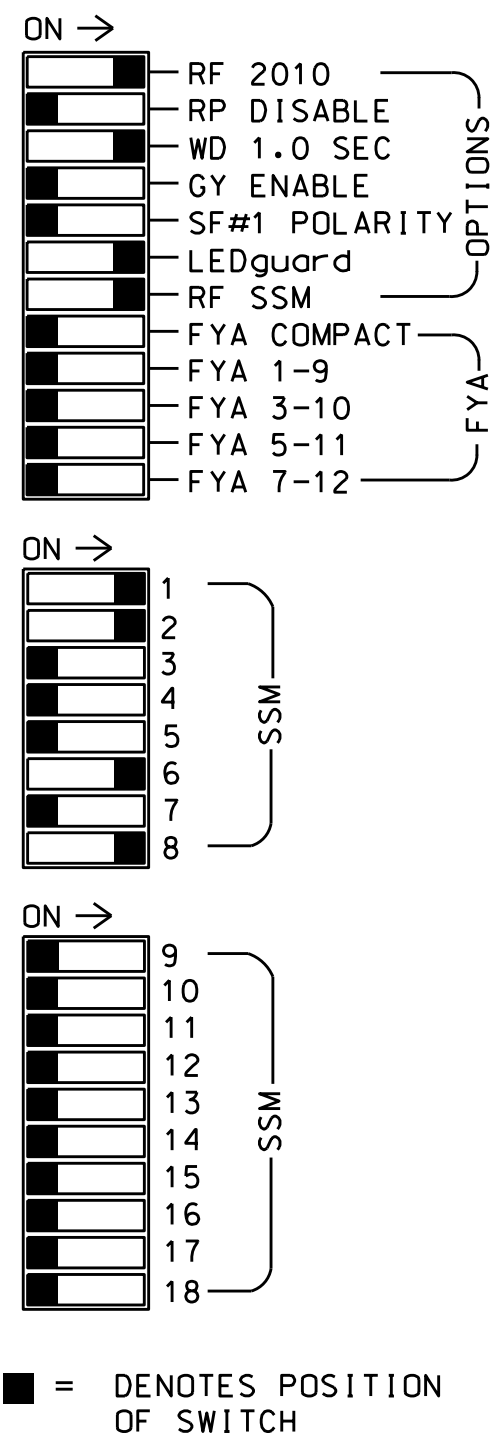
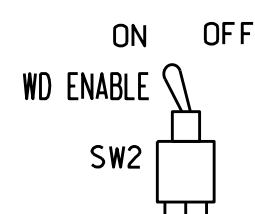
REMOVE DIODE JUMPERS 1-6, 2-6, 2-13, 6-13, and 8-16.



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.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phase 2 and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S8,S11,S12
 PHASES USED.....1,2,2PED,6,8,8PED
 OVERLAPS.....NONE

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.	12	82	21,22	P21, P22	NU	NU	NU	NU	61,62	NU	NU	81,82
RED		128						134				107
YELLOW		129						135				108
GREEN		130						136				109
RED ARROW	125											
YELLOW ARROW	126	126										
GREEN ARROW	127	127										
Hand icon			113									110
Person icon			115									112

NU = Not Used

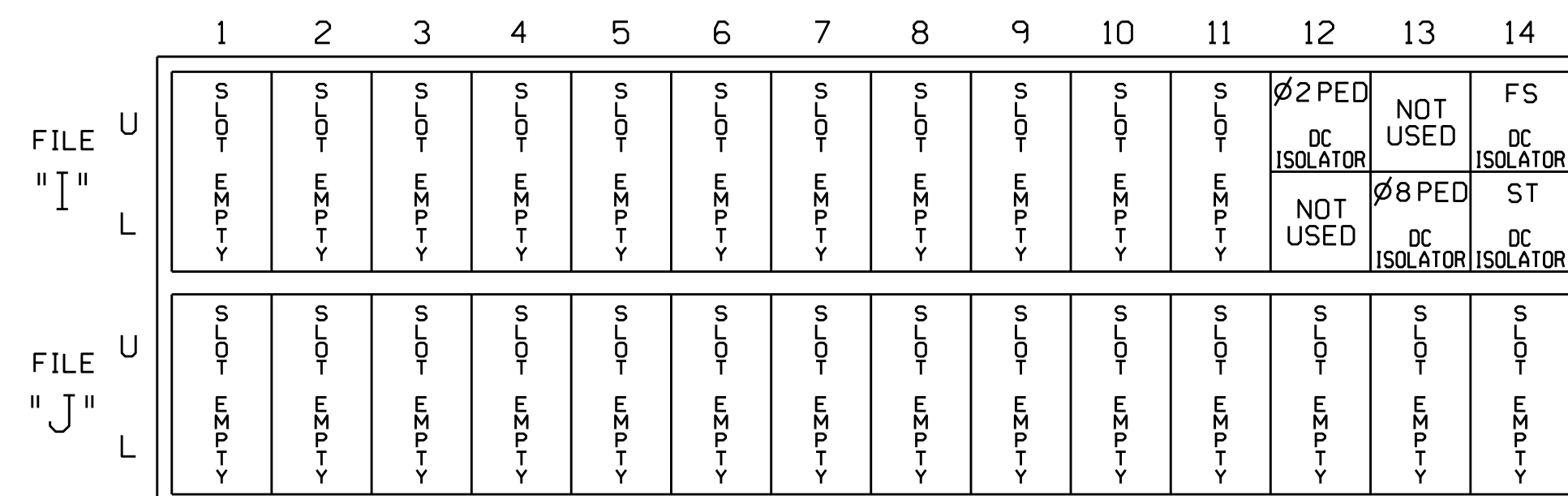
NOTE: Signal head 11 is hanging but is bagged and disconnected.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

INPUT FILE POSITION LAYOUT

(front view)



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

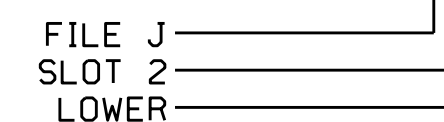
FS = FLASH SENSE
 ST = STOP TIME

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
PED PUSH BUTTONS											
P21,P22	TB8-4,6	112U	67	29	PED 2	2 PED					
P81,P82	TB8-8,9	113L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: J2L



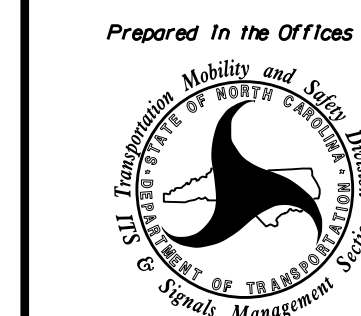
SPECIAL DETECTOR NOTE

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

Electrical Detail - Temp 1 - TMP Phase II

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 64-70 (Fleming Drive)
 at
 Morganton Heights Blvd



Division 13 Burke County Morganton

PLAN DATE: January 2022 REVIEWED BY:
 PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

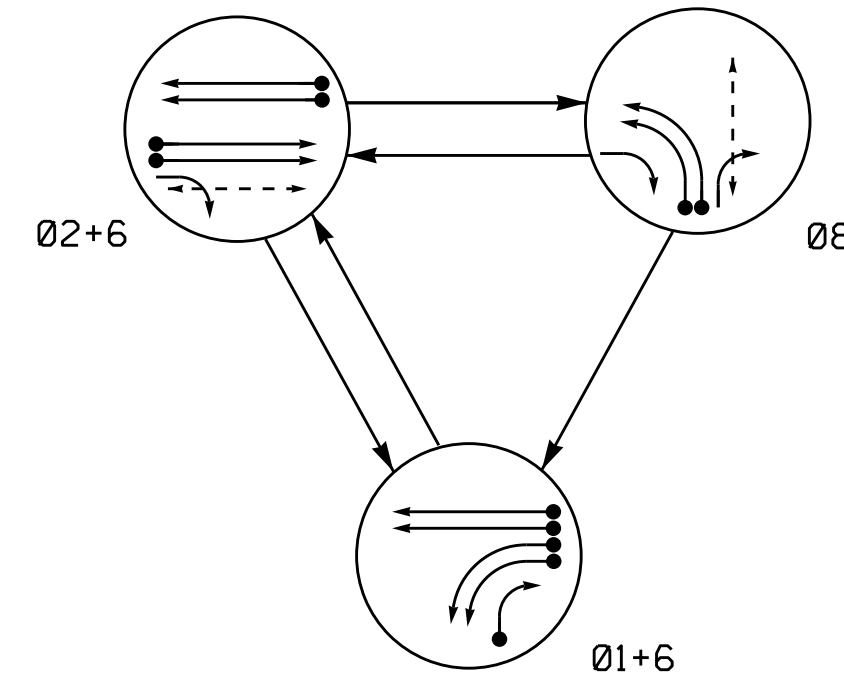
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 RYAN W. HOUGH
 SEAL 036833

DocuSigned by: Ryan W. Hough 01/19/2022

SIG. INVENTORY NO. 13-1238T1

PHASING DIAGRAM

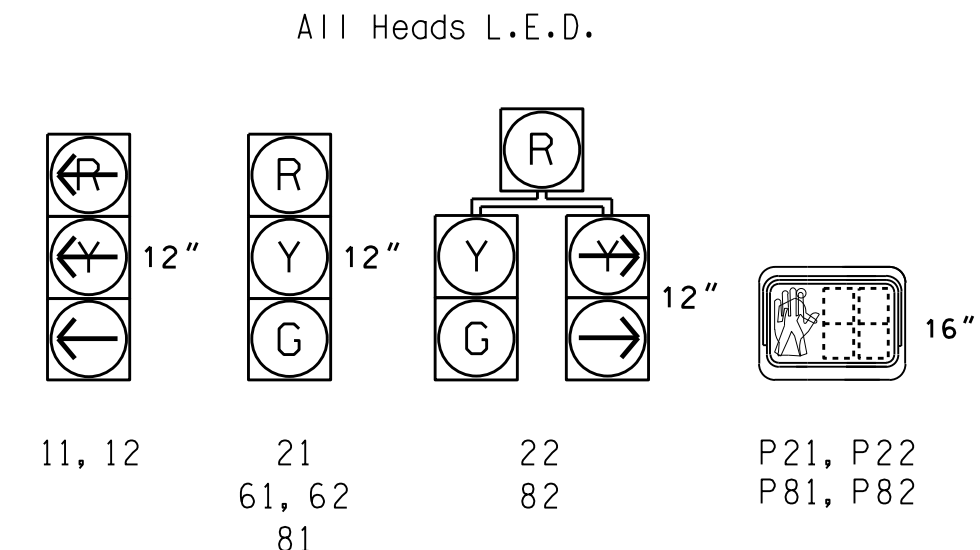


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE			
	Ø 1+6	Ø 2+6	Ø 8	FLIGHT
11, 12	←	←	←	←
21	R	G	R	Y
22	R	G	R	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

SIGNAL FACE I.D.



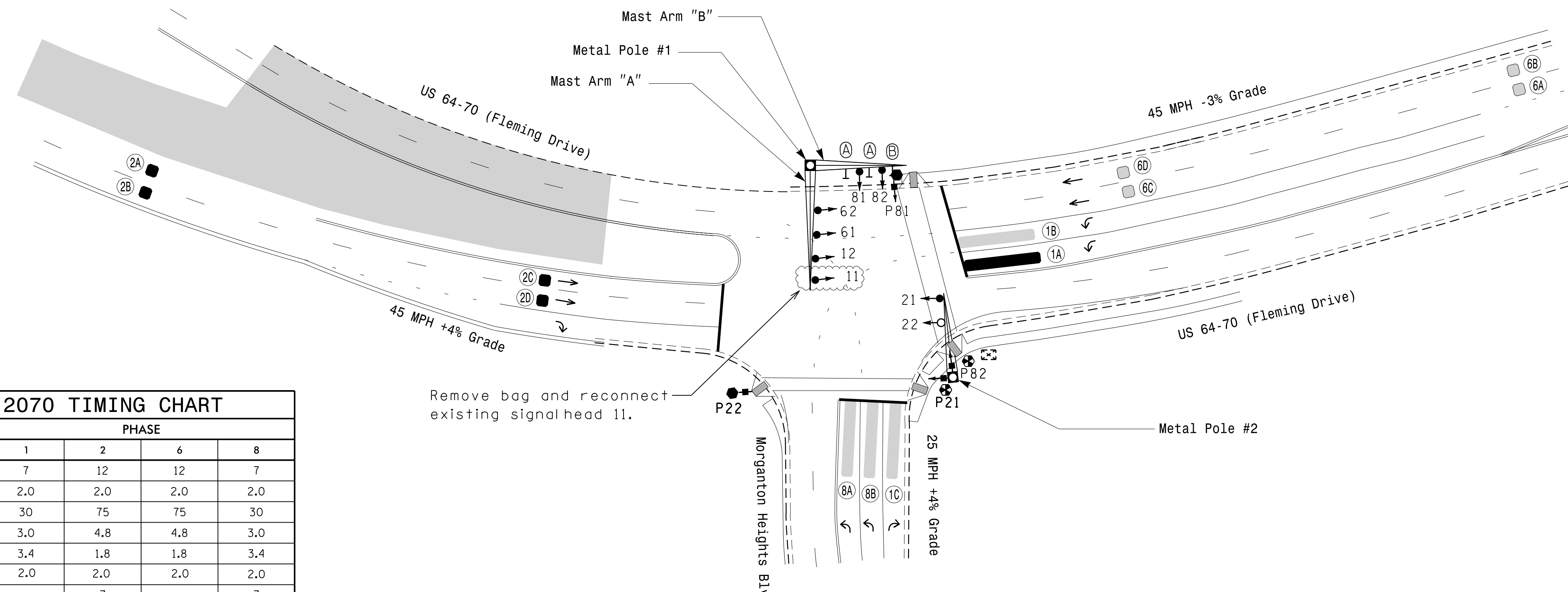
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
						CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
1A*	6X40	0	*	Y	1	Y	Y	-	-	-	-	*
1B*	6X40	0	*	-	1	Y	Y	-	-	-	-	-
1C*	6X40	0	*	-	1	Y	Y	-	-	15	-	-
2A*	6X6	300	*	Y	2	Y	Y	-	-	-	-	-
2B*	6X6	300	*	Y	2	Y	Y	-	-	-	-	-
2C*	6X6	90	*	Y	2	Y	Y	-	1.6	-	-	-
2D*	6X6	90	*	Y	2	Y	Y	-	1.6	-	-	-
6A*	6X6	300	*	-	6	Y	Y	-	-	-	-	-
6B*	6X6	300	*	-	6	Y	Y	-	-	-	-	-
6C*	6X6	90	*	-	6	Y	Y	-	1.6	-	-	-
6D*	6X6	90	*	-	6	Y	Y	-	1.6	-	-	-
8A*	6X40	0	*	-	8	Y	Y	-	-	3	-	-
8B*	6X40	0	*	-	8	Y	Y	-	-	-	-	-

* Video Detection Zone

3 Phase Fully Actuated Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Remove bag and reconnect existing signal head 11.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



FEATURE	PHASE			
	1	2	6	8
Min Green 1*	7	12	12	7
Extension 1*	2.0	2.0	2.0	2.0
Max Green 1*	30	75	75	30
Yellow Clearance	3.0	4.8	4.8	3.0
Red Clearance	3.4	1.8	1.8	3.4
Red Revert	2.0	2.0	2.0	2.0
Walk 1*	-	7	-	7
Don't Walk 1	-	19	-	20
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 | ● |
| ○ | 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 | ○ |
| □ | Controller & Cabinet | □ |
| □ | Junction Box | □ |
| □ | 2-in Underground Conduit | □ |
| - - - | Right of Way | - - - |
| N/A | Directional Arrow | - - - |
| N/A | Guardrail | - - - |
| ○ | Directional Drill | N/A |
| ○ | Metal Pole with Mastarm | ○ |
| ○ | Type I Pushbutton Post | ○ |
| ○ | Type II Signal Pedestal | ○ |
| N/A | Curb Ramp | ○ |
| ○ | Video Detection Area | ○ |
| ○ | Construction Zone | ○ |
| (A) | Left Arrow "ONLY" Sign (R3-5L) | (A) |
| (B) | Right Arrow "ONLY" Sign (R3-5R) | (B) |

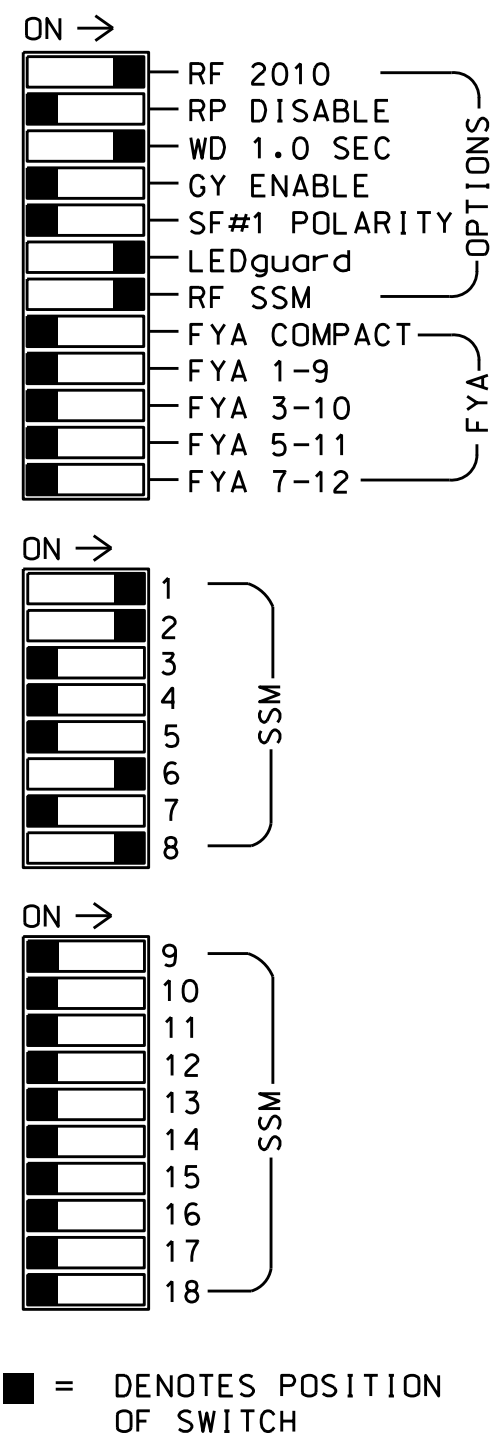
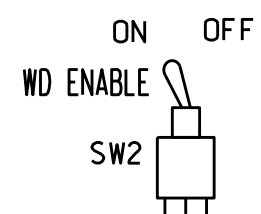
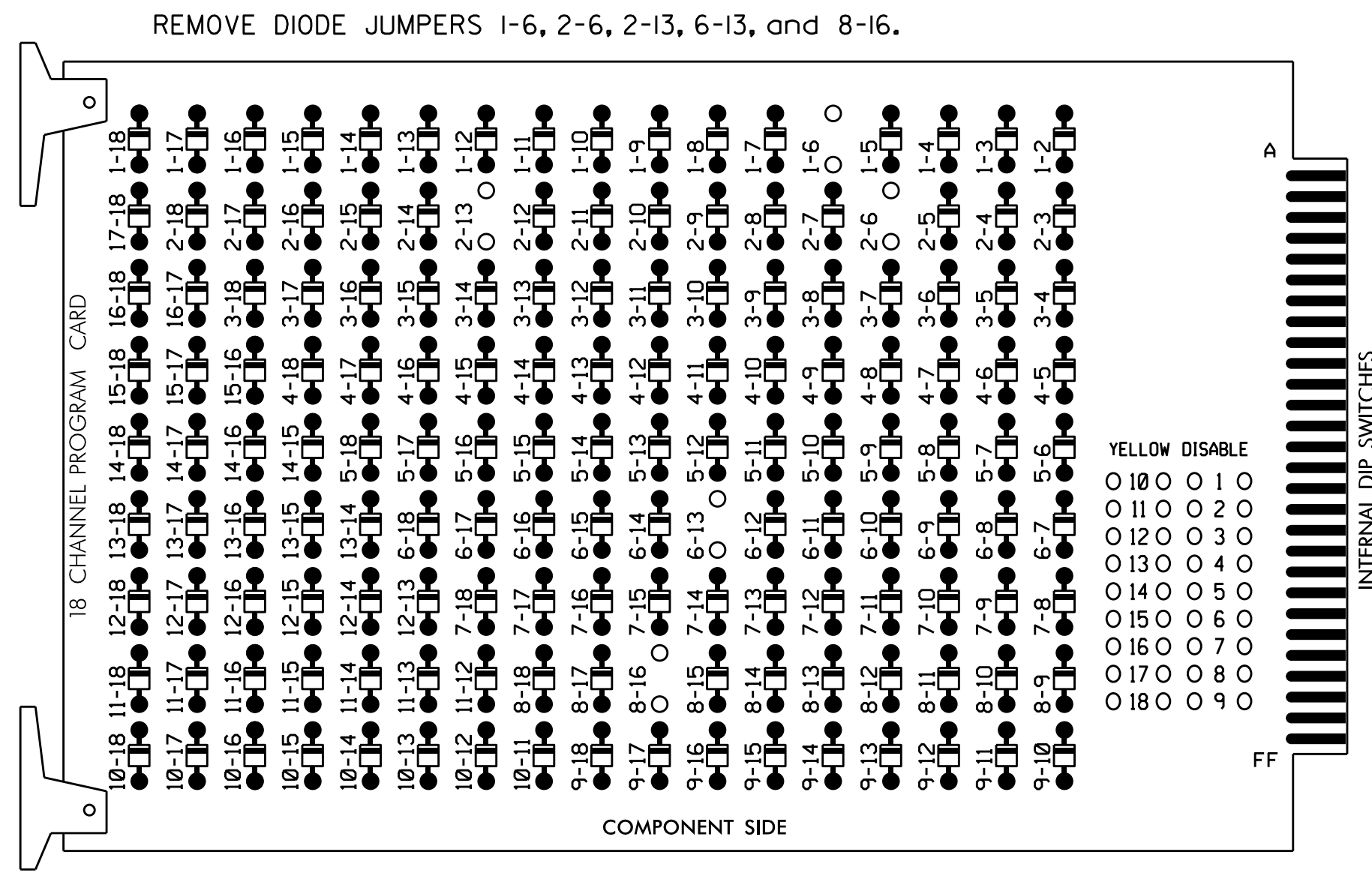
Signal Upgrade - Temporary Design 2 - TMP Phase III

	<p>US 64-70 (Fleming Drive) at Morganton Heights Blvd</p>	
	<p>Division 13 Burke County Morganton</p>	<p>PLAN DATE: November 2021 REVIEWED BY: R.N. Zinser</p>
<p>PREPARED BY: X. Han</p>	<p>RKA PROJ:</p>	<p>DATE: 1/18/2022</p>
<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>
<p>SCALE: 1" = 40'</p>		<p>SIG. INVENTORY NO. 13-1238T2</p>

28-Jan-2022 12:51
 S:\IT\5869\13-1238T2\Sig.dgn
 13-1238T2\Sig.dgn
 13-1238T2\Sig.dgn

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

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Startup In Green.
4. Program phase 2 and 8 for Startup Ped Call.
5. Program phases 2 and 6 for Yellow Flash.
6. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S8,S11,S12
 PHASES USED.....1,2,2PED,6,8,8PED
 OVERLAPS.....NONE

PROJECT REFERENCE NO.	SHEET NO.
B-5869	Sig. 3.1

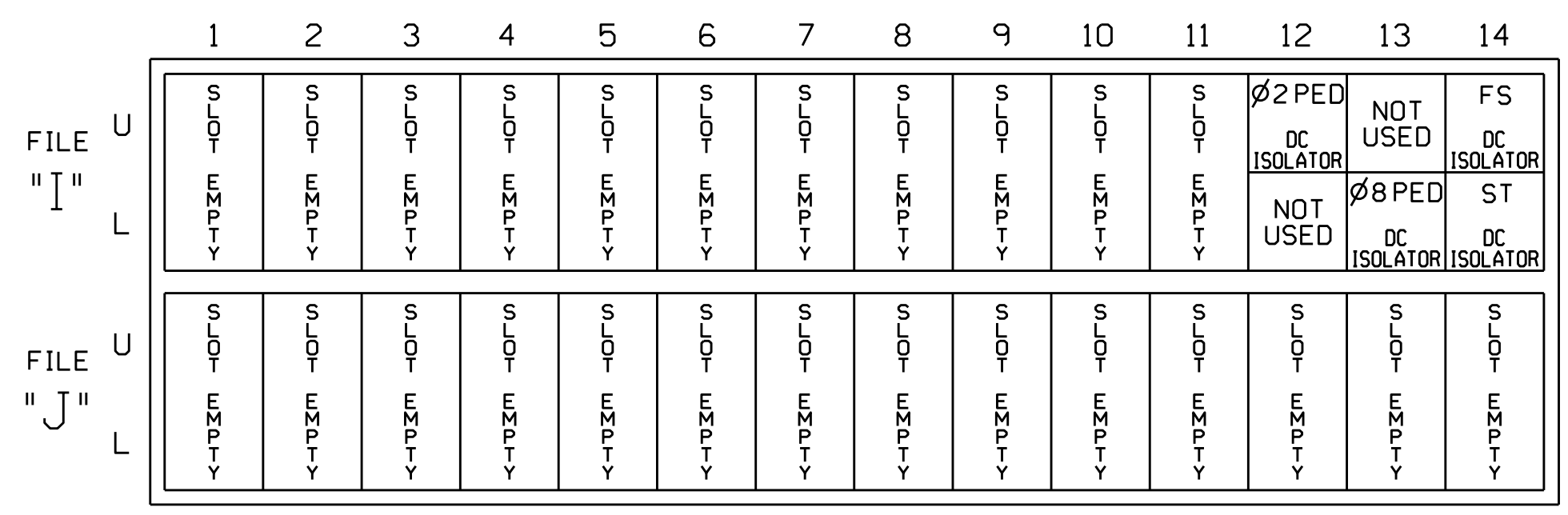
SIGNAL HEAD HOOK-UP CHART

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.	11,12	82	21,22	P21, P22	NU	NU	NU	61,62	NU	NU	22	81,82
RED		128						134				107
YELLOW		129						135				108
GREEN		130						136				109
RED ARROW	125											
YELLOW ARROW	126	126									108	
GREEN ARROW	127	127									109	
				113								110
				115								112

NU = Not Used

INPUT FILE POSITION LAYOUT

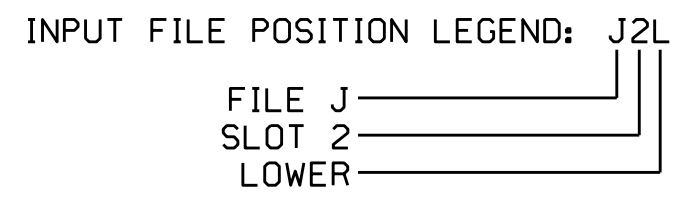
(front view)



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
PED PUSH BUTTONS											
P21,P22	TB8-4,6	112U	67	29	PED 2	2 PED					
P81,P82	TB8-8,9	113L	70	32	PED 8	8 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.

SPECIAL DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1238T2
 DESIGNED: November 2021
 SEALED: 1/18/2022
 REVISED: N/A

Electrical Detail - Temp 2 - TMP Phase III

Prepared In the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

DETAILS FOR: **US 64-70 (Fleming Drive) at Morganton Heights Blvd**

Division 13 Burke County Morganton

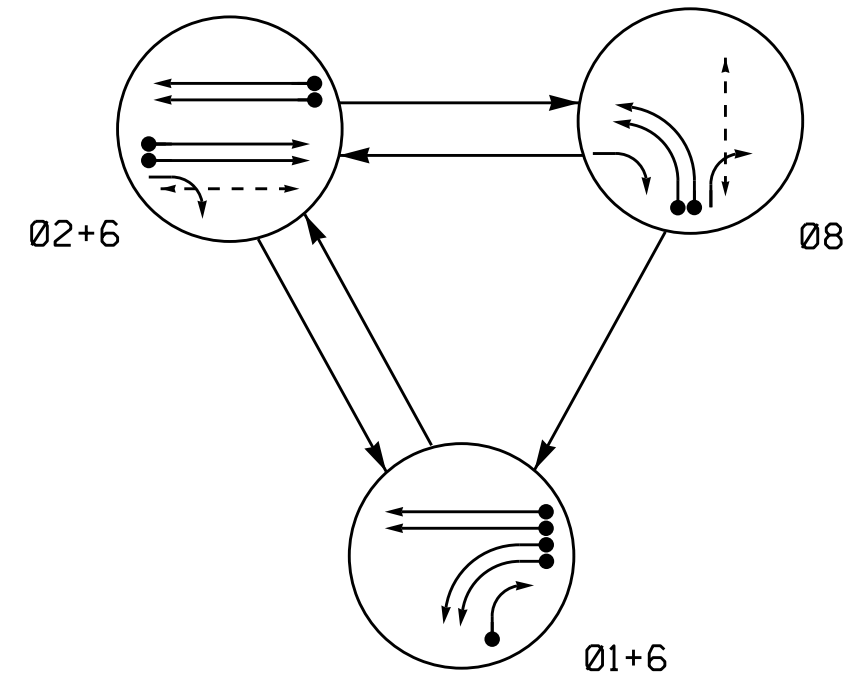
PLAN DATE: January 2022 REVIEWED BY:
 PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS: _____ INIT. DATE

DocuSigned by: **Ryan W. Hough** 01/19/2022
 SEAL 036833
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 RYAN W. HOUGH
 SIG. INVENTORY NO. 13-1238T2

13-1116-2022 05:59
 *131238T2.dwg encl:vwk.dgn
 SOR:MSF:000

PHASING DIAGRAM

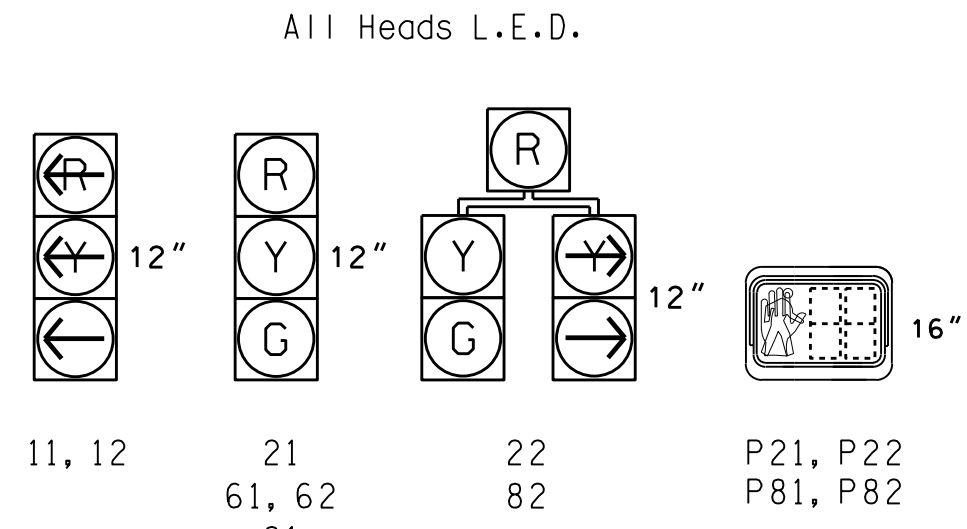


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE			
	Ø 1 + 6	Ø 2 + 6	Ø 8	FL
11, 12	←	←	←	←
21	R	G	R	Y
22	R	G	R	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

SIGNAL FACE I.D.



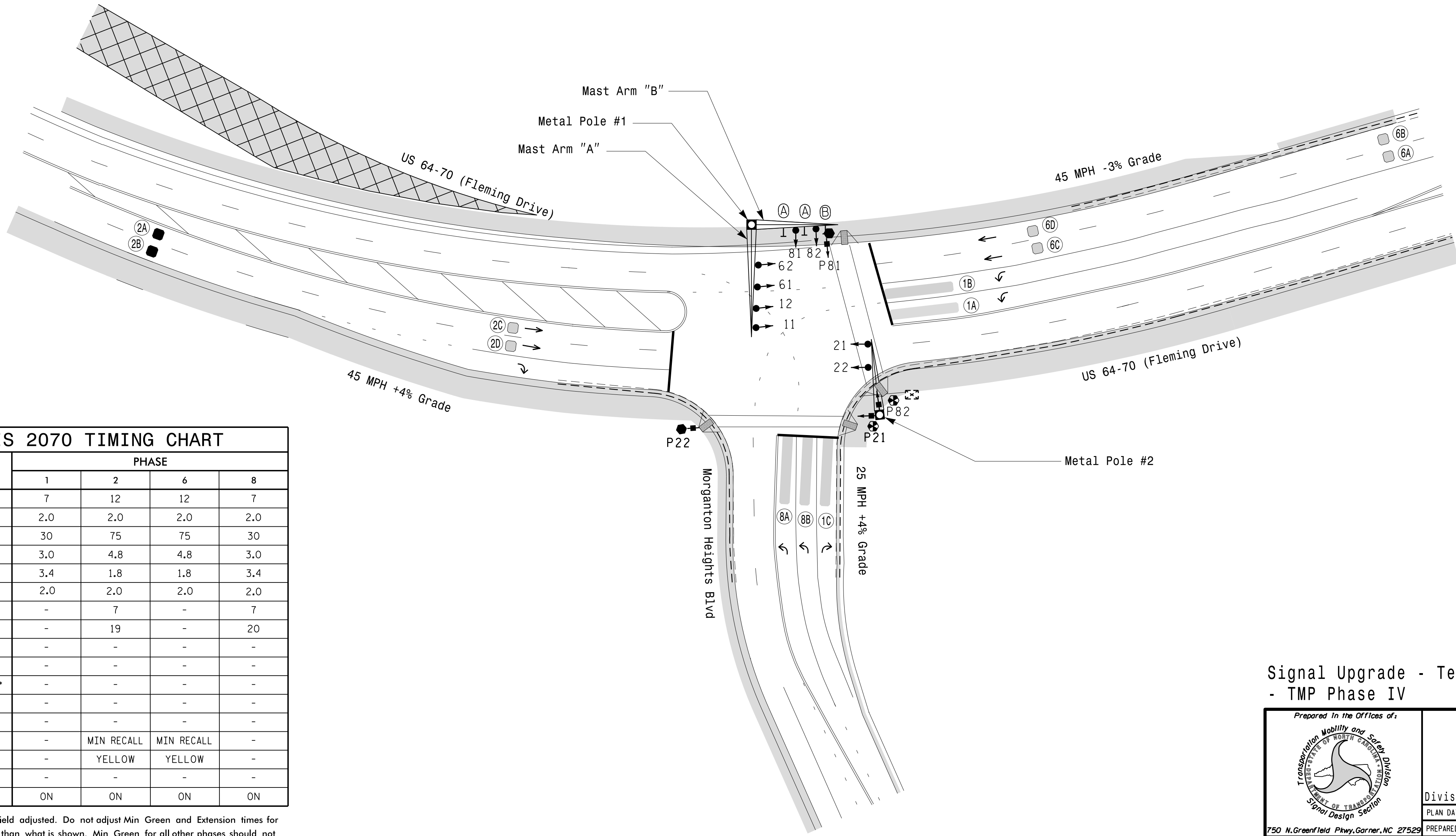
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART													
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING								
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
1A*	6X40	0	*	-	1	Y	Y	-	-	-	-	-	-
1B*	6X40	0	*	-	1	Y	Y	-	-	-	-	-	-
1C*	6X40	0	*	-	1	Y	Y	-	-	15	-	-	-
2A*	6X6	300	*	Y	2	Y	Y	-	-	-	-	-	-
2B*	6X6	300	*	Y	2	Y	Y	-	-	-	-	-	-
2C*	6X6	90	*	-	2	Y	Y	-	1.6	-	-	-	-
2D*	6X6	90	*	-	2	Y	Y	-	1.6	-	-	-	-
6A*	6X6	300	*	-	6	Y	Y	-	-	-	-	-	-
6B*	6X6	300	*	-	6	Y	Y	-	-	-	-	-	-
6C*	6X6	90	*	-	6	Y	Y	-	1.6	-	-	-	-
6D*	6X6	90	*	-	6	Y	Y	-	1.6	-	-	-	-
8A*	6X40	0	*	-	8	Y	Y	-	-	3	-	-	-
8B*	6X40	0	*	-	8	Y	Y	-	-	-	-	-	-

* Video Detection Zone

3 Phase Fully Actuated Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 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.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	30	75	75	30
Yellow Clearance	3.0	4.8	4.8	3.0
Red Clearance	3.4	1.8	1.8	3.4
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	19	-	20
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

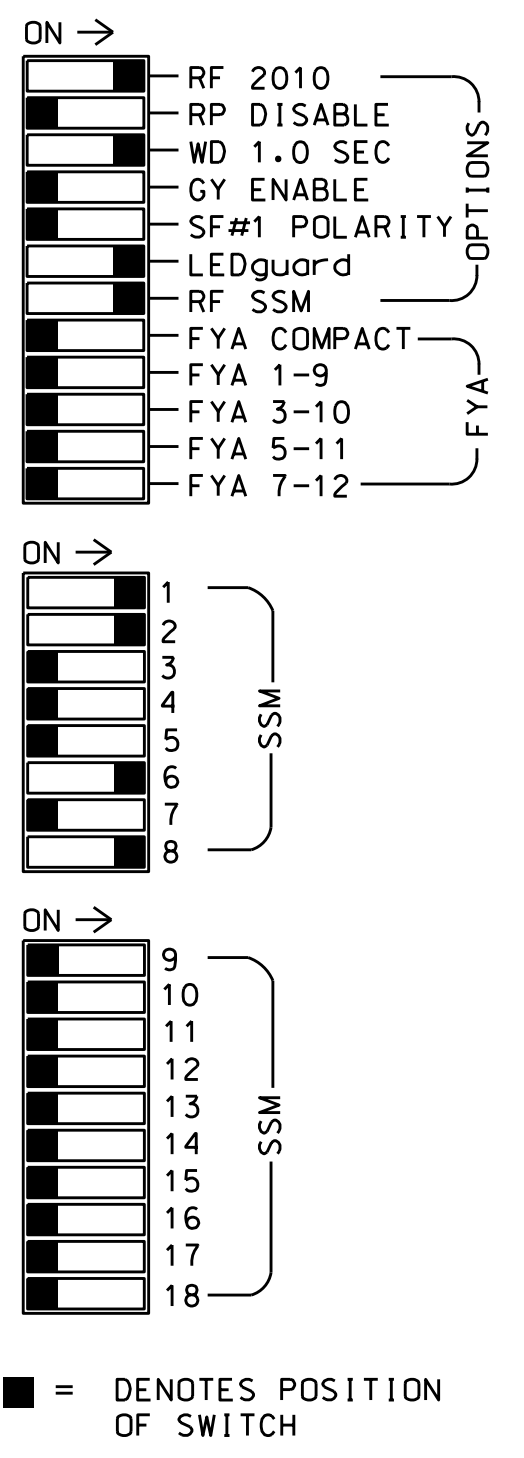
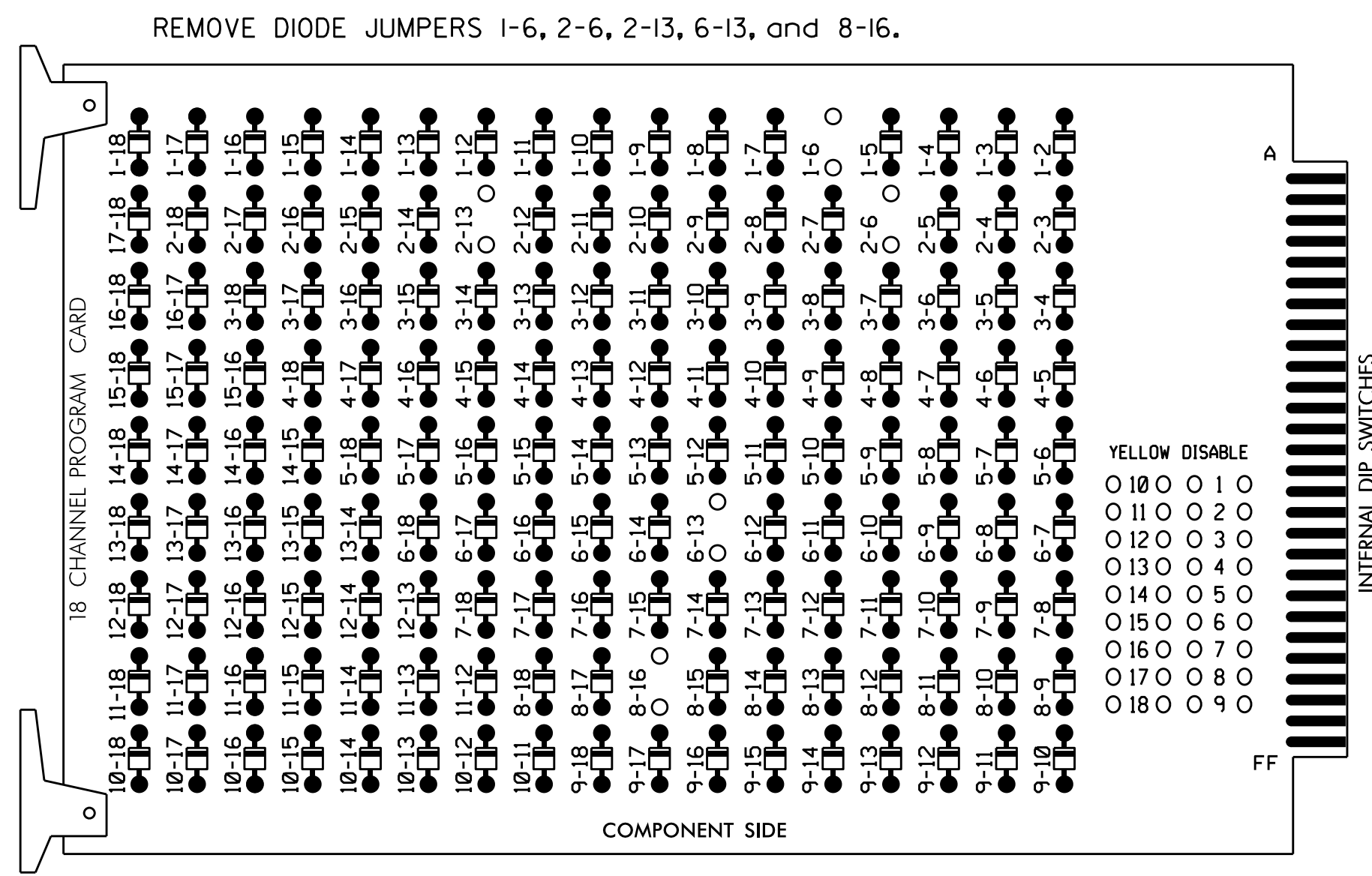
- | | | | |
|--|---|--|---|
| | PROPOSED Traffic Signal Head | | EXISTING Traffic Signal Head |
| | PROPOSED Modified Signal Head | | EXISTING Modified Signal Head |
| | PROPOSED Sign | | EXISTING Sign |
| | PROPOSED Pedestrian Signal Head With Push Button & Sign | | EXISTING Pedestrian Signal Head With Push Button & Sign |
| | PROPOSED Signal Pole with Guy | | EXISTING Signal Pole with Guy |
| | PROPOSED Signal Pole with Sidewalk Guy | | EXISTING Signal Pole with Sidewalk Guy |
| | PROPOSED Inductive Loop Detector | | EXISTING Inductive Loop Detector |
| | PROPOSED Controller & Cabinet | | EXISTING Controller & Cabinet |
| | PROPOSED Junction Box | | EXISTING Junction Box |
| | PROPOSED 2-in Underground Conduit | | EXISTING 2-in Underground Conduit |
| | PROPOSED Right of Way | | EXISTING Right of Way |
| | PROPOSED Directional Arrow | | EXISTING Directional Arrow |
| | PROPOSED Guardrail | | EXISTING Guardrail |
| | PROPOSED Directional Drill | | EXISTING Directional Drill |
| | PROPOSED Metal Pole with Mastarm | | EXISTING Metal Pole with Mastarm |
| | PROPOSED Type I Pushbutton Post | | EXISTING Type I Pushbutton Post |
| | PROPOSED Type II Signal Pedestal | | EXISTING Type II Signal Pedestal |
| | PROPOSED Curb Ramp | | EXISTING Curb Ramp |
| | PROPOSED Video Detection Area | | EXISTING Video Detection Area |
| | PROPOSED Construction Zone | | EXISTING Construction Zone |
| | PROPOSED Left Arrow "ONLY" Sign (R3-5L) | | EXISTING Left Arrow "ONLY" Sign (R3-5L) |
| | PROPOSED Right Arrow "ONLY" Sign (R3-5R) | | EXISTING Right Arrow "ONLY" Sign (R3-5R) |

Signal Upgrade - Temporary Design 3 - TMP Phase IV

	US 64-70 (Fleming Drive) at Morganton Heights Blvd		
	Division 13 Burke County Morganton PLAN DATE: November 2021 REVIEWED BY: R.N. Zinser PREPARED BY: X. Han RKA PROJ:	REVISIONS INIT. DATE	
750 N. Greenfield Pkwy, Garner, NC 27529 SCALE: 0 40' 1"=40'	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SEAL DATE: 1/18/2022 SIG. INVENTORY NO. 13-1238T3

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

(remove jumpers and set switches as shown)



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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phase 2 and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S8,S11,S12
 PHASES USED.....1,2,2PED,6,8,8PED
 OVERLAPS.....NONE

PROJECT REFERENCE NO.	SHEET NO.
B-5869	Sig. 4.1

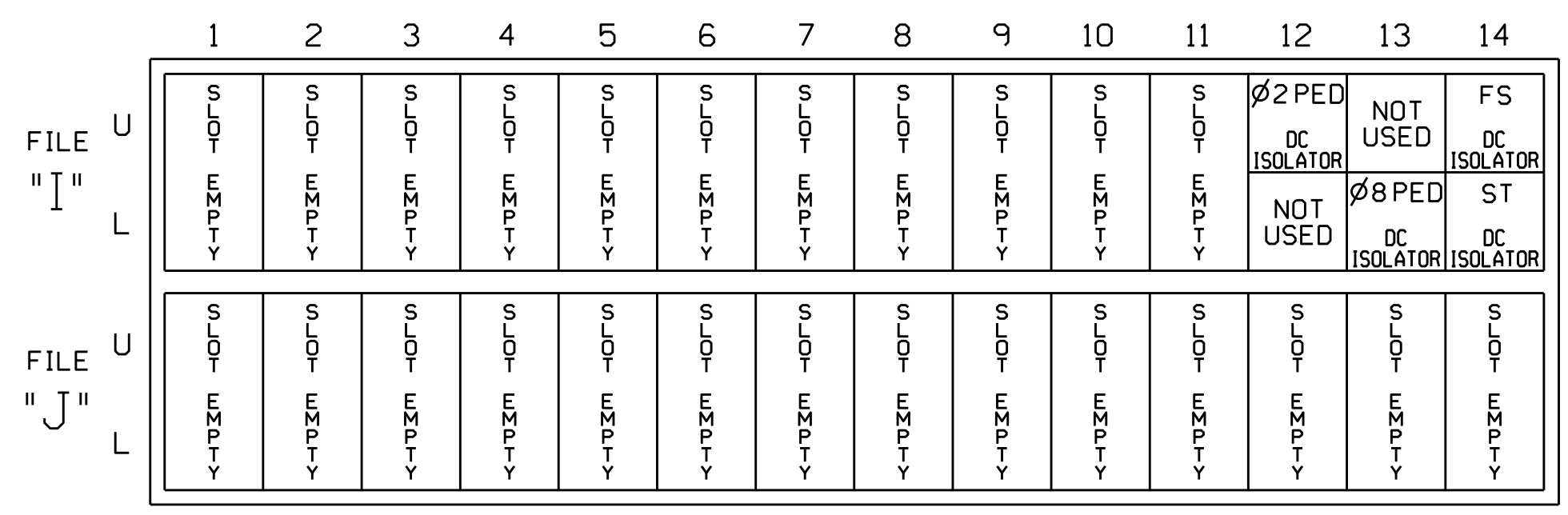
SIGNAL HEAD HOOK-UP CHART

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.	11,12	82	21,22	P21, P22	NU	NU	NU	61,62	NU	NU	22	81,82
RED		128						134				107
YELLOW		129						135				108
GREEN		130						136				109
RED ARROW	125											
YELLOW ARROW	126	126									108	
GREEN ARROW	127	127									109	
				113								110
				115								112

NU = Not Used

INPUT FILE POSITION LAYOUT

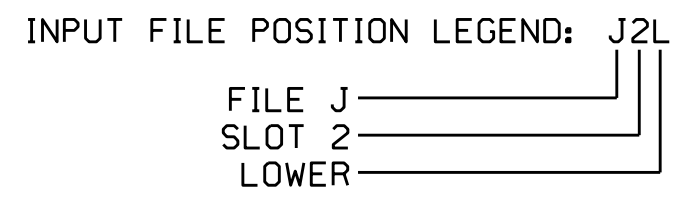
(front view)



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
PED PUSH BUTTONS											
P21,P22	TB8-4,6	112U	67	29	PED 2	2 PED					
P81,P82	TB8-8,9	113L	70	32	PED 8	8 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.

SPECIAL DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1238T3
 DESIGNED: November 2021
 SEALED: 1/18/2022
 REVISED: N/A

Electrical Detail - Temp 3 - TMP Phase IV

Prepared In the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 64-70 (Fleming Drive) at Morganton Heights Blvd

Division 13 Burke County Morganton

PLAN DATE: January 2022 REVIEWED BY:
 PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by:
 Ryan W. Hough 01/19/2022
 430320FAA2854C3 DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 036833
 RYAN W. HOUGH

SIG. INVENTORY NO. 13-1238T3

13-1116-2022 05:59
 *131238T3.dwg encl-wk.dgn
 S01MSTR003

PHASING DIAGRAM

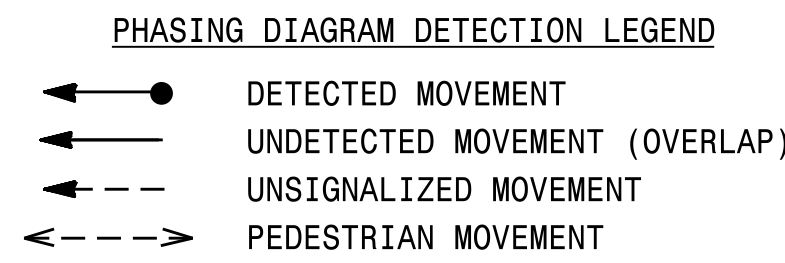
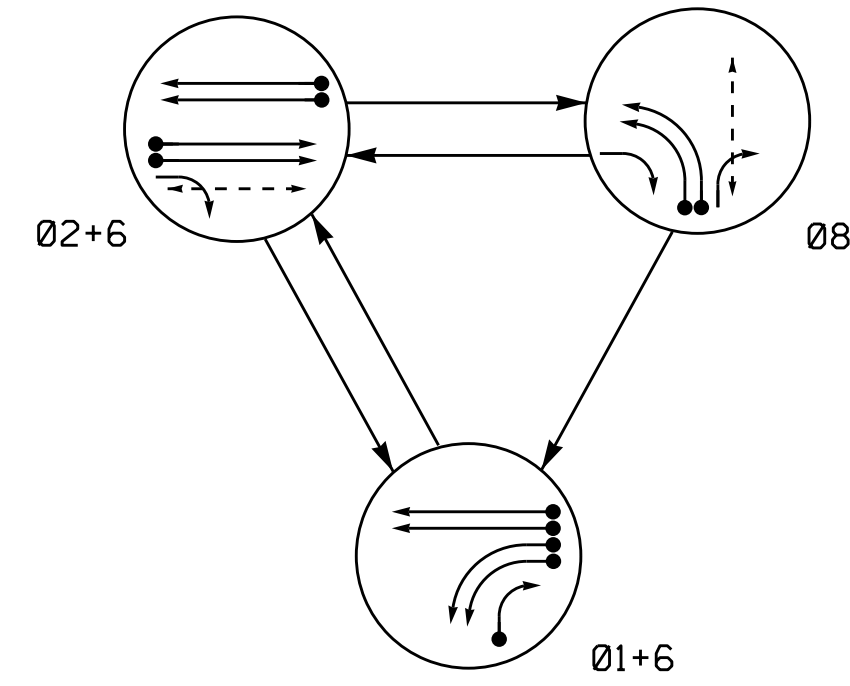
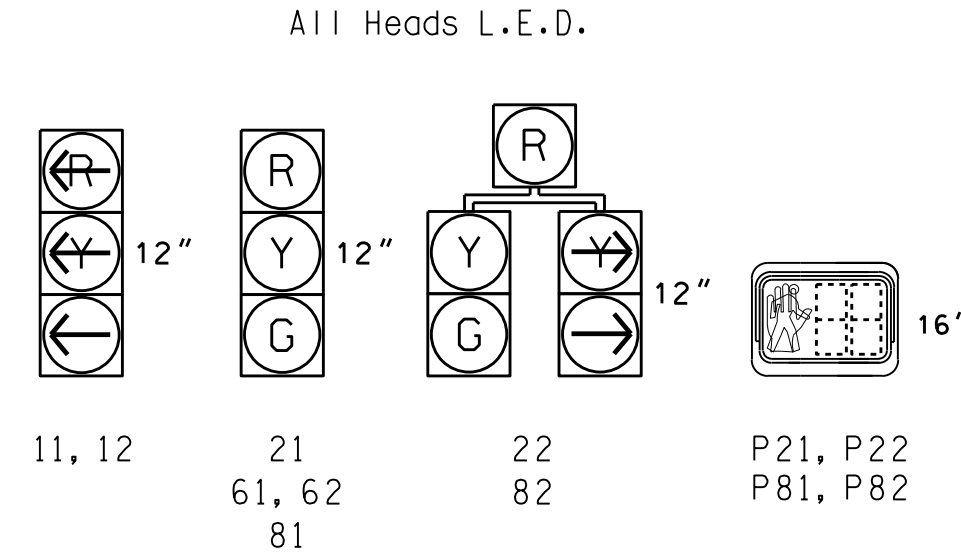


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 1+6	Ø 2+6	Ø 8	FLIGHT
11, 12	←	←	←	←
21	R	G	R	Y
22	R	G	R	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

SIGNAL FACE I.D.



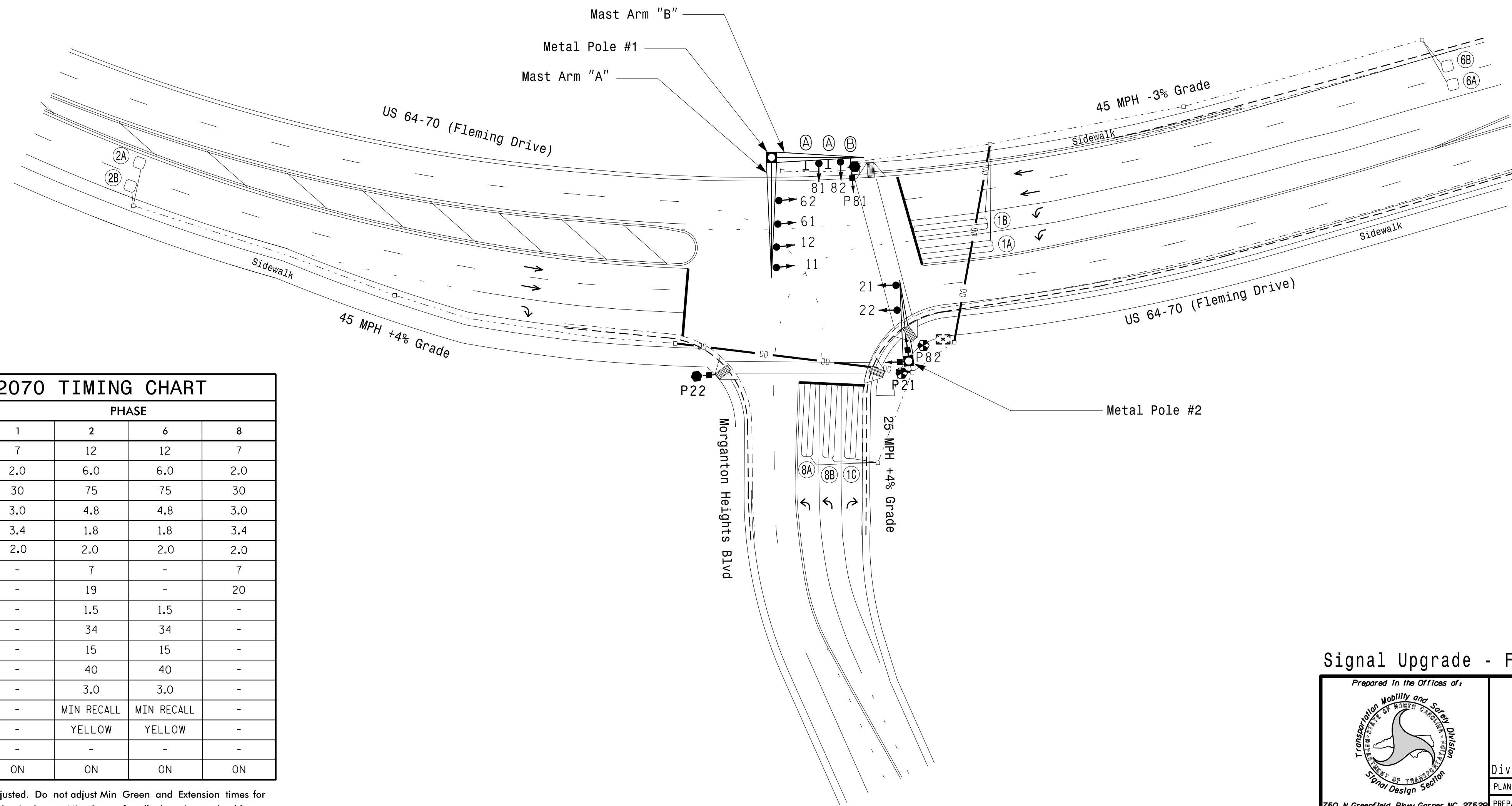
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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	-	-	-	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	-
1C	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	-	-	-	-	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	X	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	-

3 Phase Fully Actuated Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 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.
- See Pavement Marking Plans for stop bar and crosswalk locations.

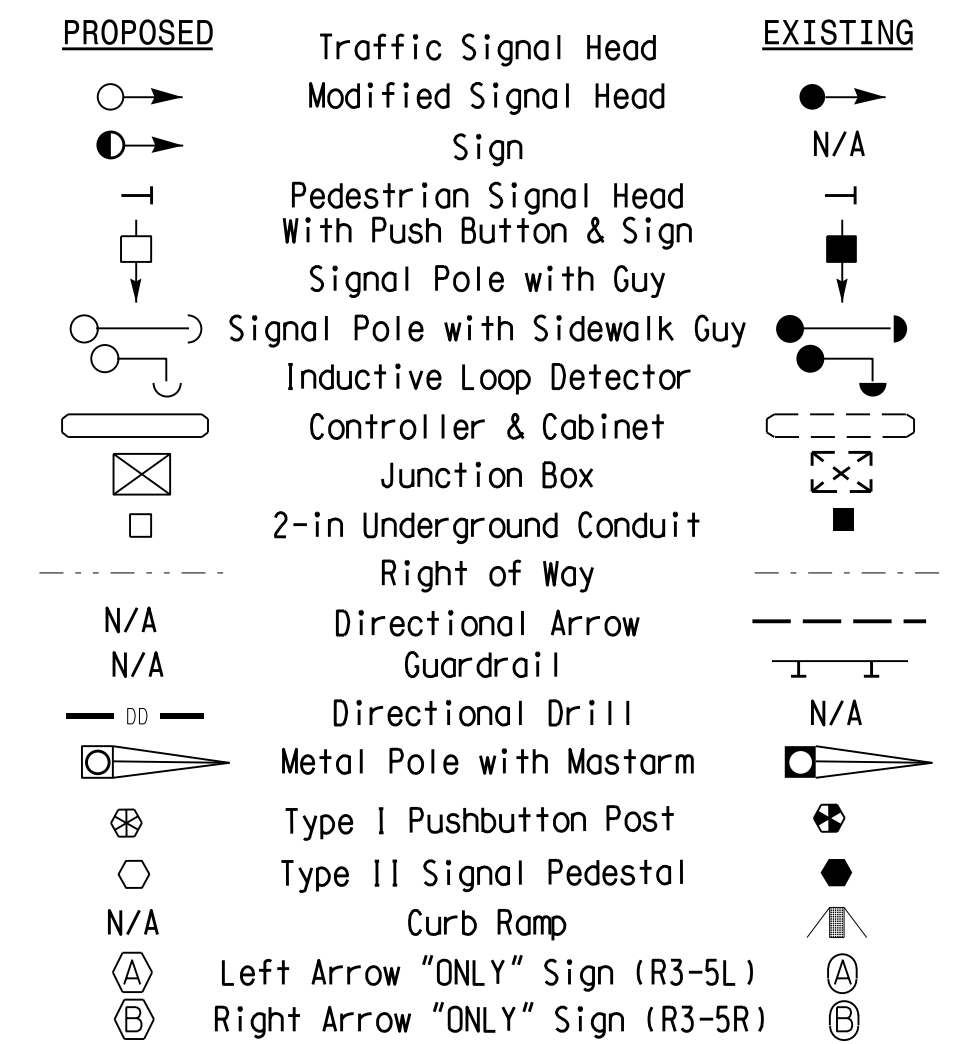


OASIS 2070 TIMING CHART

FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	30	75	75	30
Yellow Clearance	3.0	4.8	4.8	3.0
Red Clearance	3.4	1.8	1.8	3.4
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	19	-	20
Seconds Per Actuation *	-	1.5	1.5	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	40	40	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

LEGEND

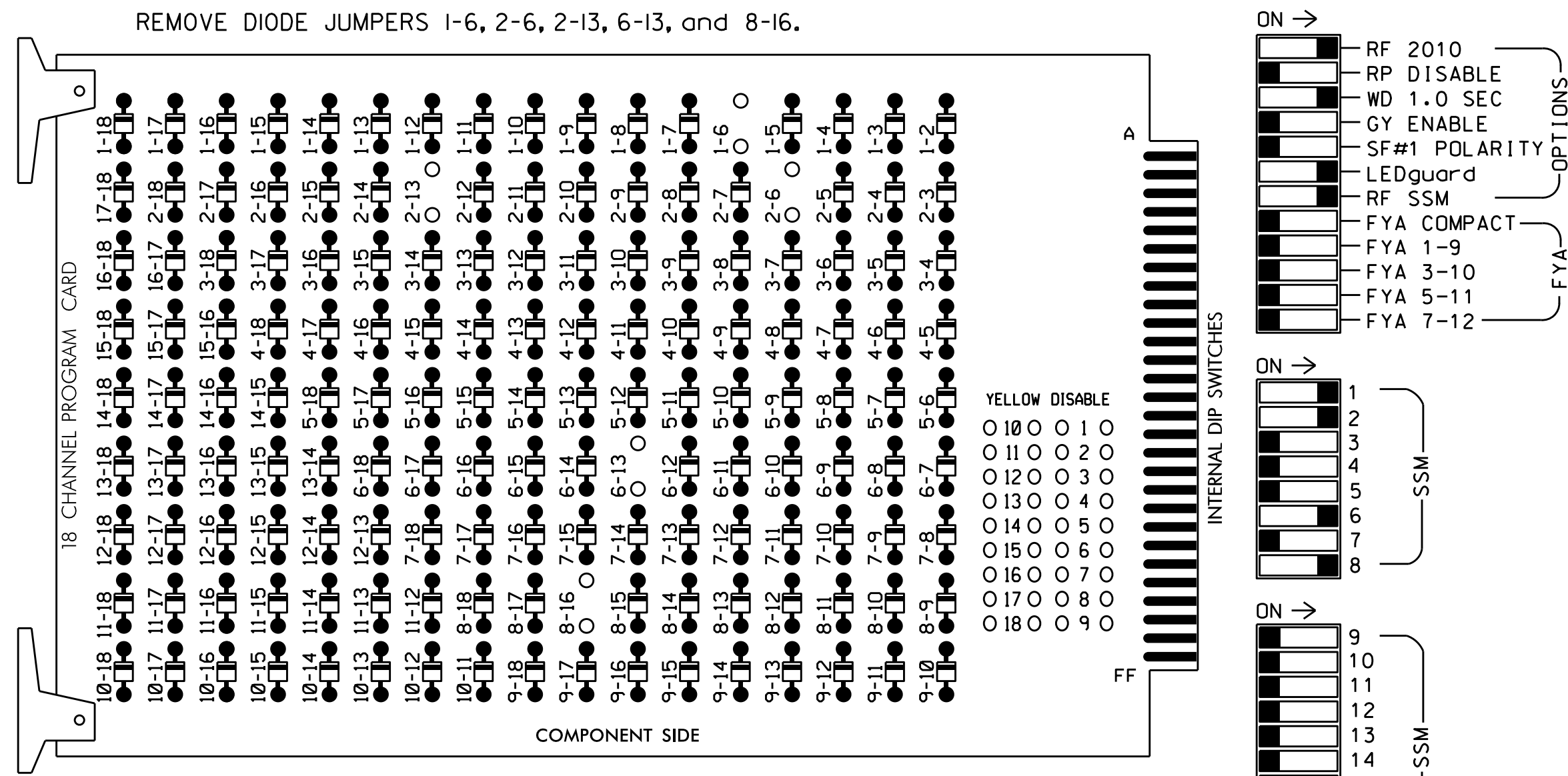


Signal Upgrade - Final Design

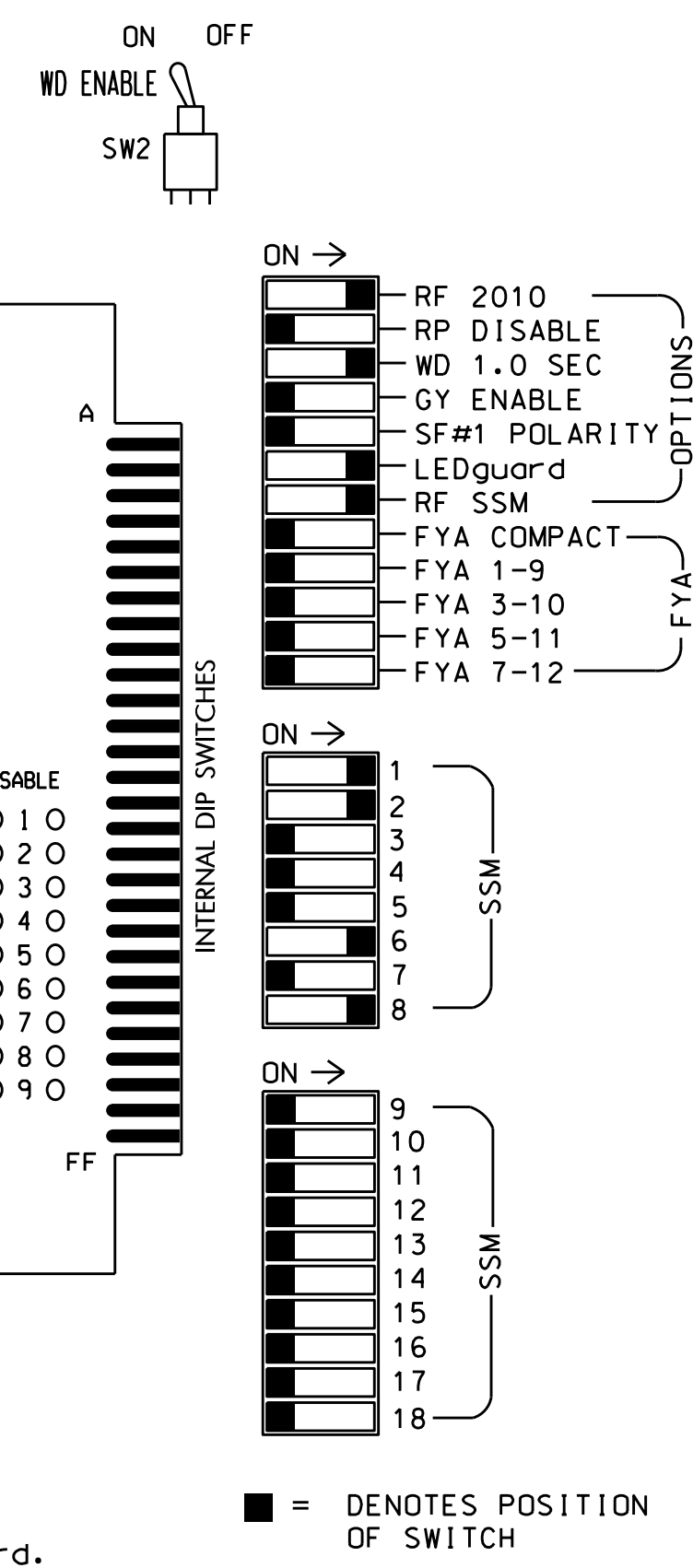
	<p>US 64-70 (Fleming Drive) at Morganton Heights Blvd</p>	
	<p>Division 13 Burke County Morganton</p>	<p>PLAN DATE: November 2021 REVIEWED BY: R.N. Zinser</p>
<p>PREPARED BY: X. Han</p>	<p>RKA PROJ:</p>	<p>DATE: 1/18/2022</p>
<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>

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

(remove jumpers and set switches as shown)



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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phase 2 and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S8,S11,S12
 PHASES USED.....1,2,2PED,6,8,8PED
 OVERLAPS.....NONE

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.	11,12	82	21,22	P21, P22	NU	NU	NU	NU	61,62	NU	NU	22, 81,82, P81, P82
RED		128						134				107
YELLOW		129						135				108
GREEN		130						136				109
RED ARROW	125											
YELLOW ARROW	126	126									108	
GREEN ARROW	127	127									109	
				113								110
				115								112

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

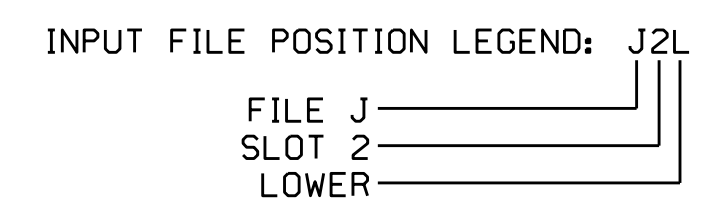
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			
1C	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 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.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1238
 DESIGNED: November 2021
 SEALED: 1/18/2022
 REVISED: N/A

Electrical Detail - Final

Electrical and Programming Details For: **US 64-70 (Fleming Drive) at Morganton Heights Blvd**

Prepared In the Offices of: **RYAN W. HOUGH ENGINEERS, P.C.**

Division 13 Burke County Morganton

PLAN DATE: January 2022 REVIEWED BY: _____

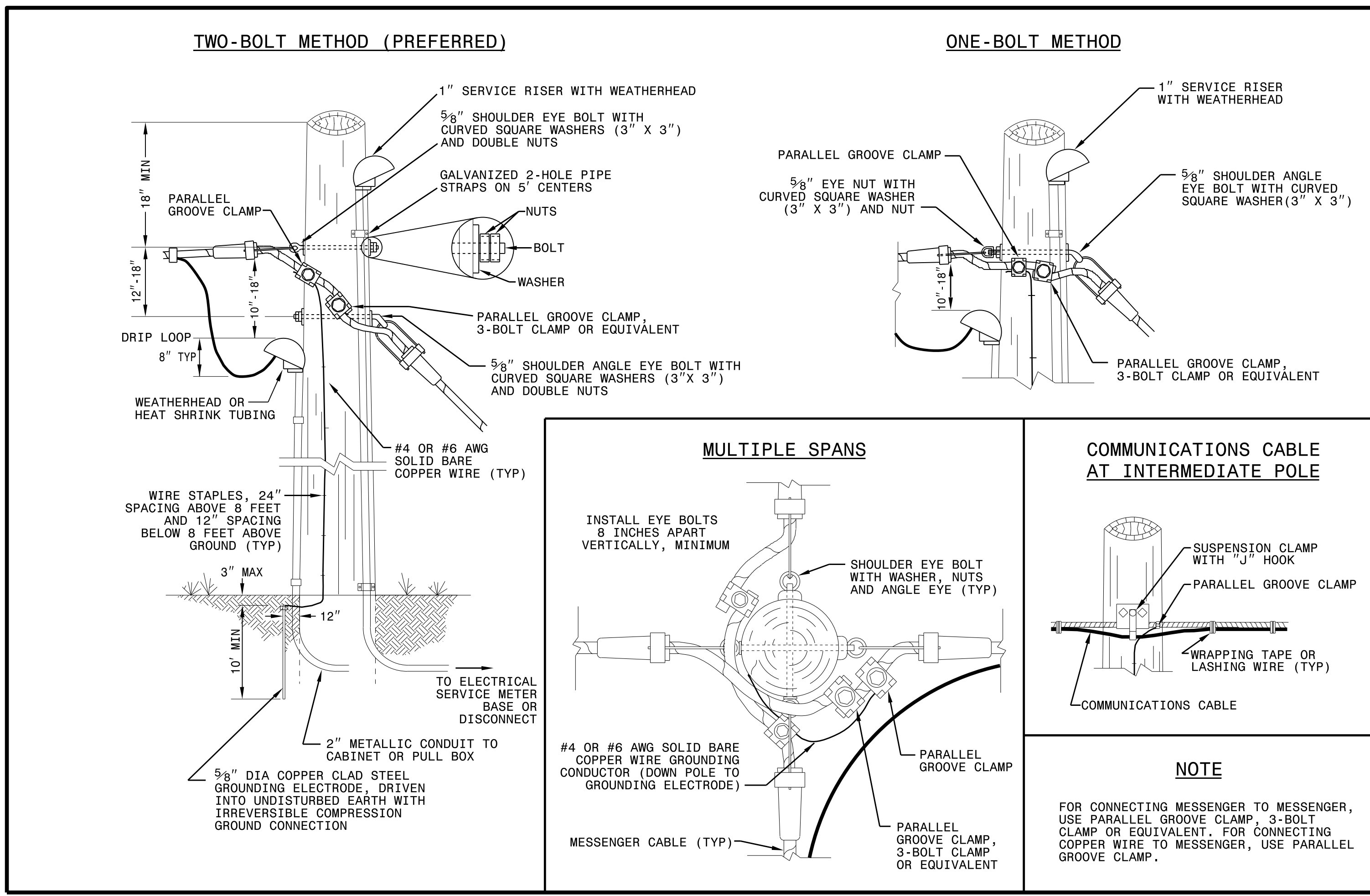
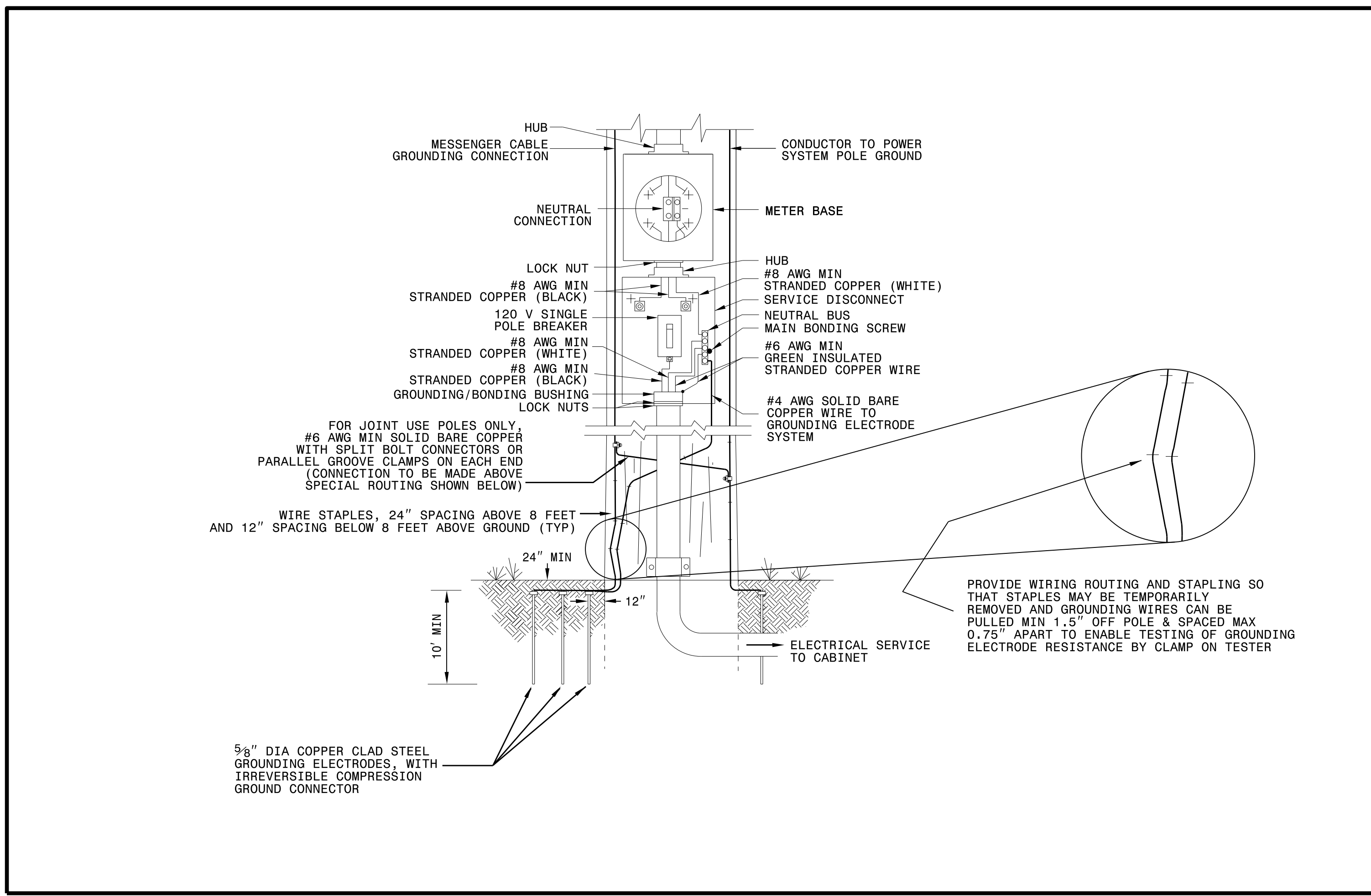
PREPARED BY: S. Armstrong REVIEWED BY: _____

REVISIONS: _____ INIT. DATE: _____

DocuSigned by: **Ryan W. Hough** 01/19/2022

SIG. INVENTORY NO. 13-1238

18-1116-2022 06:00
 *131238.dwg ete...
 s0r.mst:00g



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

See Plate for Title

Prepared in the Offices of:

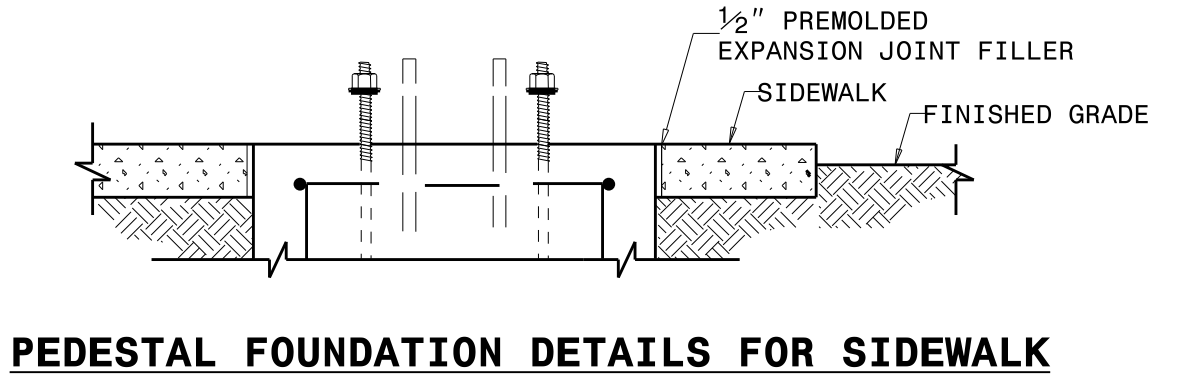
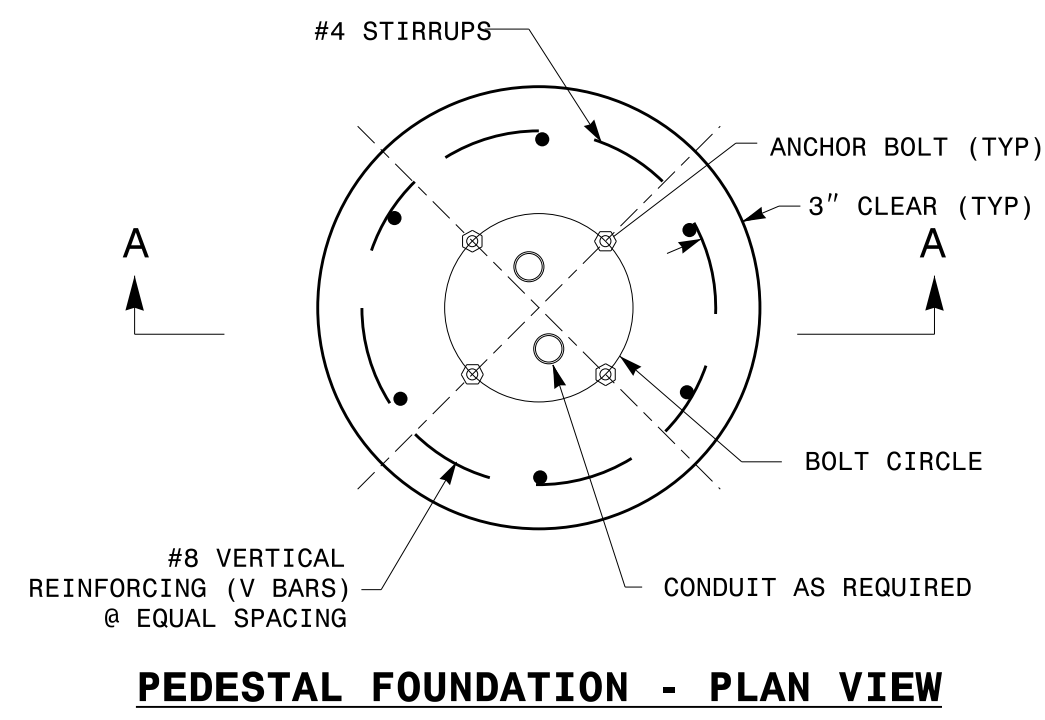
SEAL

DocuSigned by:
Mohd Aslami

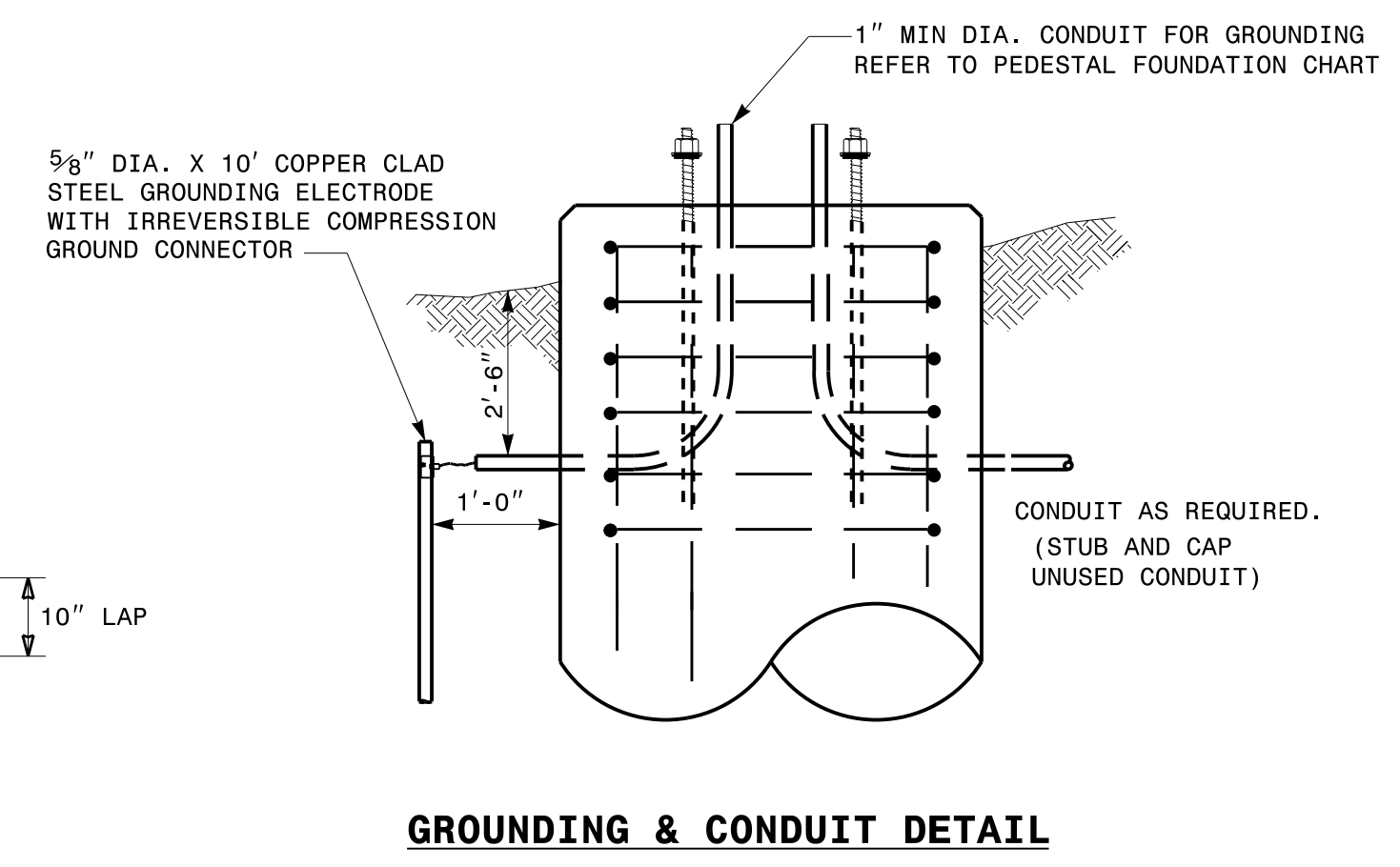
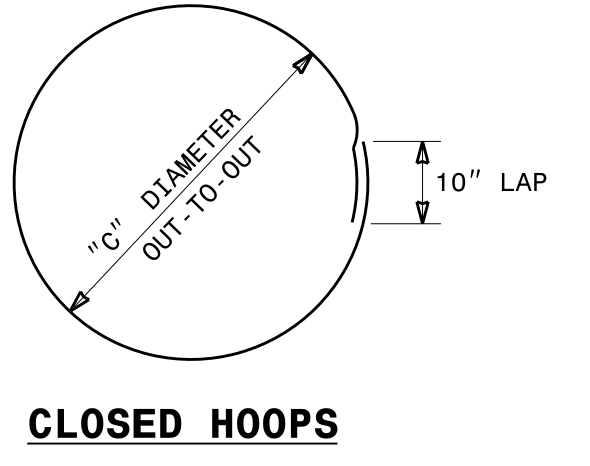
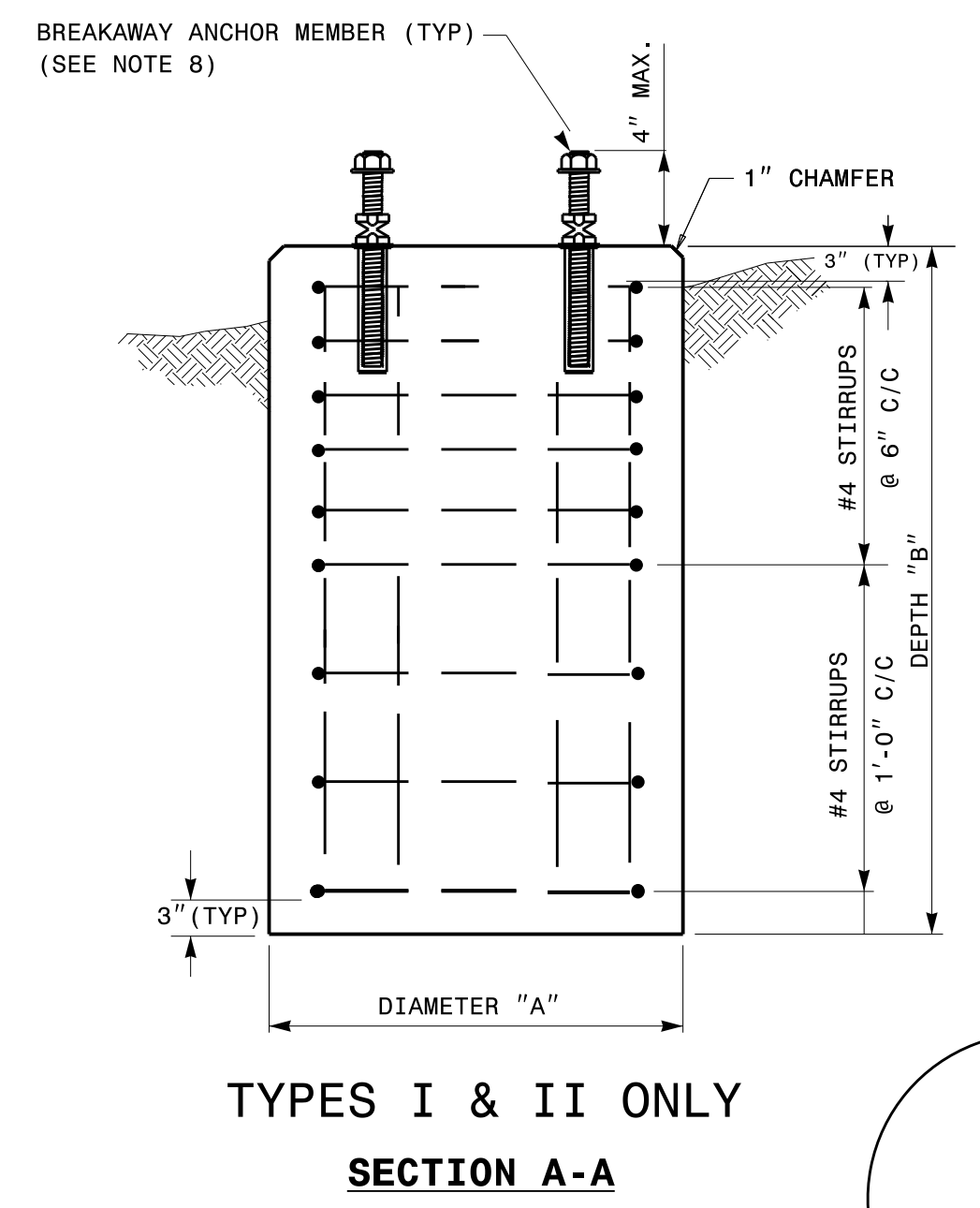
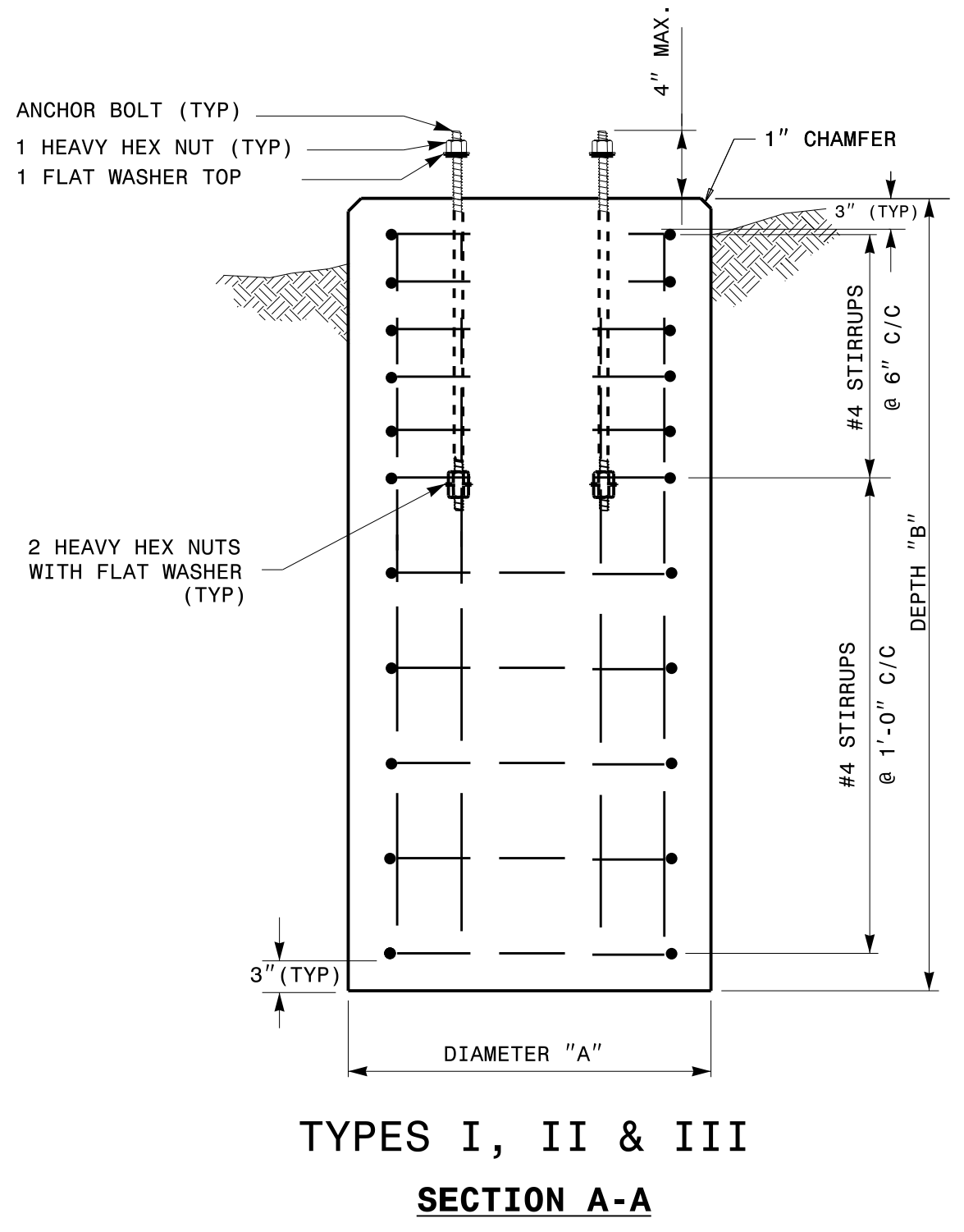
750 N. Greenfield Parkway
Garner, NC 27529

10/11/2017
DATE

11-0CT-2017_08-56
11-2018_S14_DrawingPlate_Sheets2018_Plate_Sheet.dgn
r:\rough



- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
 - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
 - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
 - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
 - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - SANDY TYPE SOIL
 - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
 - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
 - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
 - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE												
TYPE	V-BAR				STIRRUP							
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
					VERTICAL ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	7'-2"	2'-0"	0'-10"	53	175

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PEDESTALS
 FOUNDATIONS

SHEET 1 OF 1
1743D01

11-10CT-2017_08x03
 11-2018_S14 Drawings#Plate_Sheets#2018_Plate_Sheet - .dgn
 r:\rough

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

See Plate for Title

