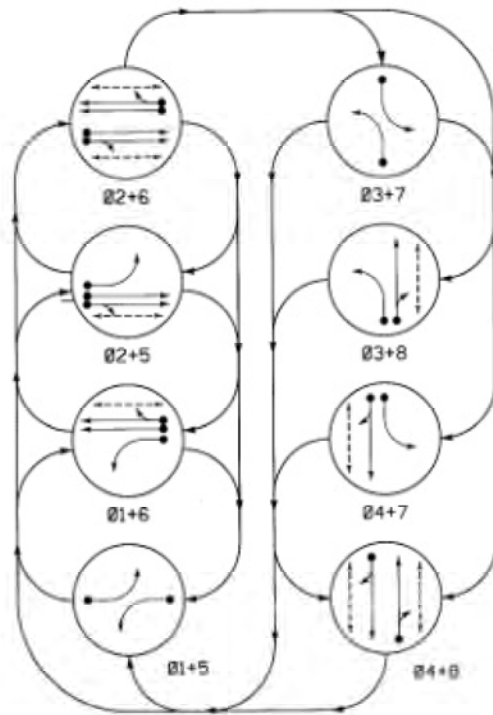


PHASING DIAGRAM



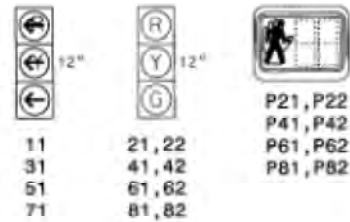
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE							
	01	02	03	04	05	06	07	08
11	←	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←	←
61,62	R	G	G	R	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.

All Heads L.E.D.

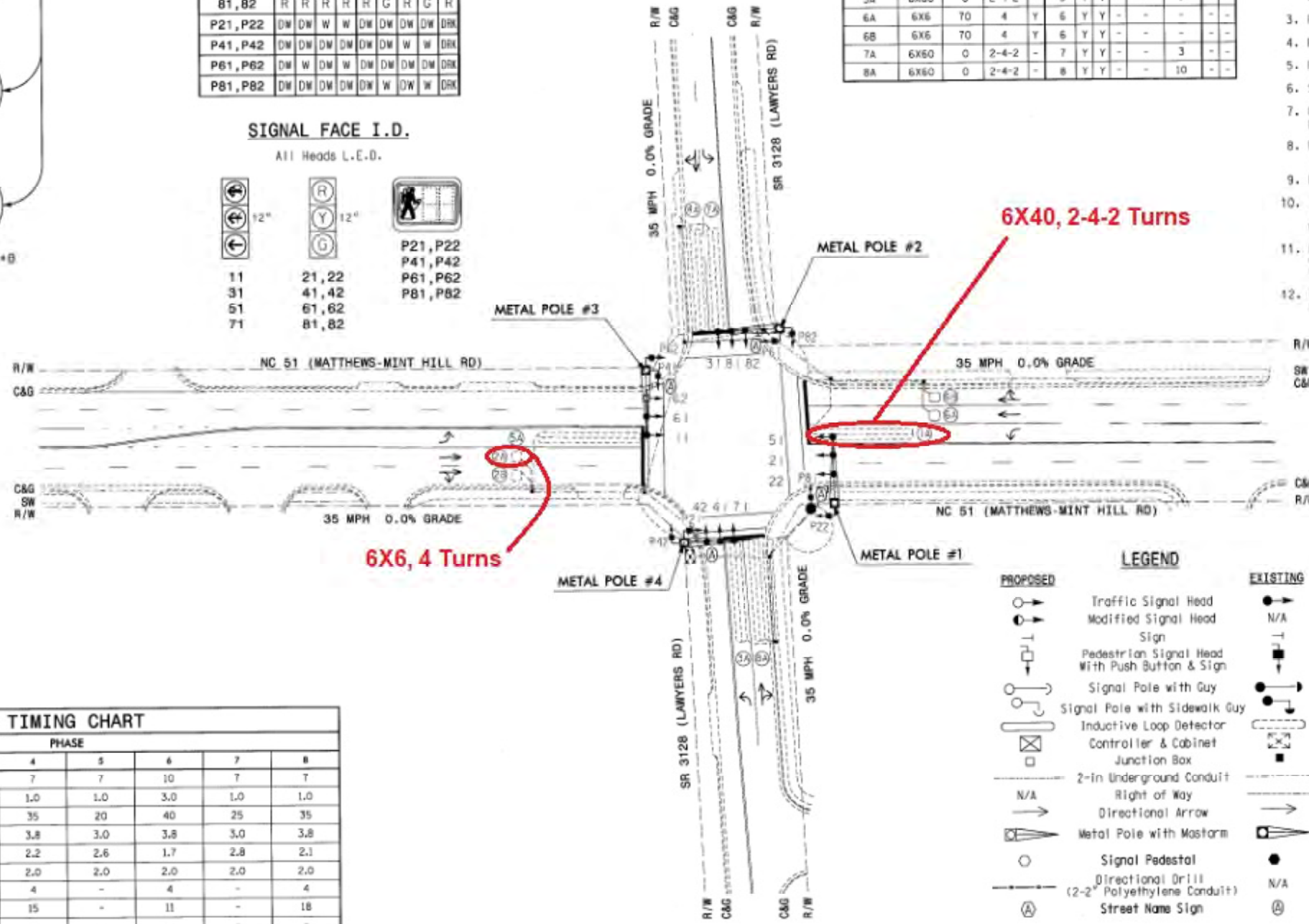


OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FLUSH (TIME DELAY)				
1A	6x40	0	4	-	1	Y	Y	-	3	-	-	-
2A	6x6	70	4	-	2	Y	Y	-	-	-	-	-
2B	6x6	70	4	-	2	Y	Y	-	-	-	-	-
3A	6x60	0	2-4-2	-	3	Y	Y	-	3	-	-	-
4A	6x60	0	2-4-2	-	4	Y	Y	-	10	-	-	-
5A	6x60	0	2-4-2	-	5	Y	Y	-	3	-	-	-
6A	6x6	70	4	Y	6	Y	Y	-	-	-	-	-
6B	6x6	70	4	Y	6	Y	Y	-	-	-	-	-
7A	6x60	0	2-4-2	-	7	Y	Y	-	3	-	-	-
8A	6x60	0	2-4-2	-	8	Y	Y	-	10	-	-	-

8 PHASE FULLY ACTUATED NC 51 (MATTHEWS-MINT HILL RD) CLOSED LOOP SYSTEM

NOTES

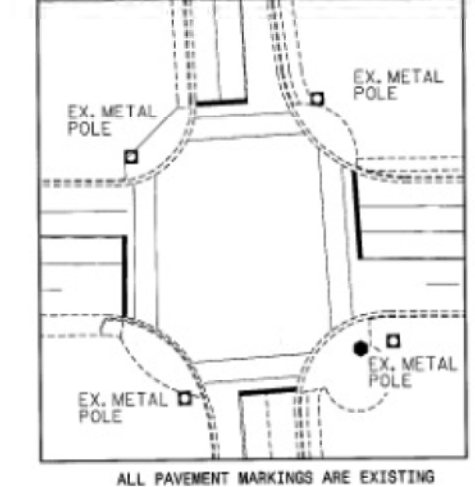
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/lits>.
- 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.
- Reposition signal head numbered 61.
- 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.
- Pavement markings are existing.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a plan of record to the Signals Design Section.
- 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 # 0469



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 Junction Box              | □ → N/A  |
| — → 2-in Underground Conduit                       | — → N/A  |
| — → Right of Way                                   | — → N/A  |
| → → Directional Arrow                              | → → N/A  |
| ⊙ → Metal Pole with Mastarm                        | ⊙ → N/A  |
| ○ → Signal Pedestal                                | ○ → N/A  |
| ○ → Directional Drill (2-2" Polyethylene Conduit)  | ○ → N/A  |
| ⊙ → Street Name Sign                               | ⊙ → N/A  |

POLE AND STOPBAR LOCATIONS



ALL PAVEMENT MARKINGS ARE EXISTING

FEATURE	OASIS 2070L TIMING CHART							
	1	2	3	4	5	6	7	8
Min Green 1*	7	10	7	7	7	10	7	7
Extension 1*	1.0	3.0	1.0	1.0	1.0	3.0	1.0	1.0
Max Green 1*	20	40	25	35	20	40	25	35
Yellow Clearance	3.0	3.8	3.0	3.8	3.0	3.8	3.0	3.8
Red Clearance	2.6	1.7	2.8	2.2	2.6	1.7	2.8	2.1
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	4	-	4	-	4	-	4
Don't Walk 1	-	11	-	15	-	11	-	18
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	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.

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
FINAL DRAWING Date: 6/20/2014  
Traffic Engineering Branch

SEPI ENGINEERING & CONSTRUCTION  
11020 David Taylor Drive  
Suite 115  
Charlotte, NC 28262  
Tel: 704-714-4880  
License #: C-2197

SIGNAL UPGRADE

Prepared for the Office of:  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

NC 51 (MATTHEWS-MINT HILL RD)  
AT  
SR 3128 (LAWYERS ROAD)

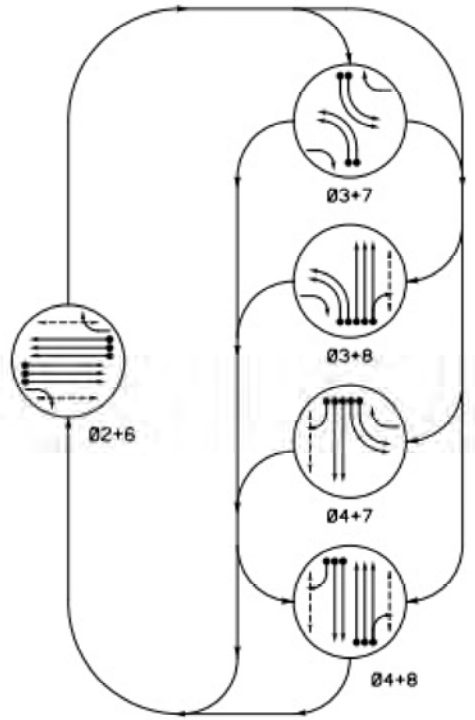
DIVISION 10 WECKLENBURG COUNTY MINT HILL  
PLAN DATE: MAY 2014 REVIEWED BY: JPH  
PREPARED BY: JBK REVIEWED BY:

SCALE: 1" = 40'

5/20/2014  
C.D. INVENTORY NO. 10-0469

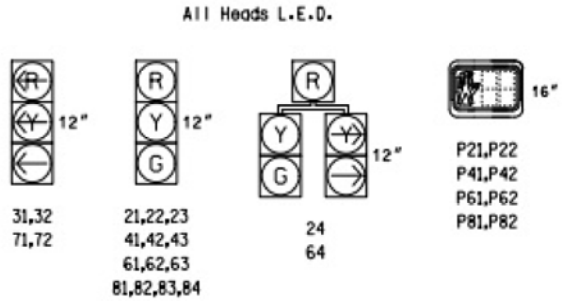


PHASING DIAGRAM



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

SIGNAL FACE I.D.



**TABLE OF OPERATION**

SIGNAL FACE	PHASE					
	Ø 2+6	Ø 3+7	Ø 3+8	Ø 4+7	Ø 4+8	F
21,22,23	G	R	R	R	R	Y
24	G	R	R	R	R	Y
31,32	R					R
41,42,43	R	R	R	G	G	R
61,62,63	G	R	R	R	R	Y
64	G	R	R	R	R	Y
71,72	R					R
81,82,83,84	R	R	G	R	G	R
P21,P22	W	DW	DW	DW	DW	DRK
P41,P42	DW	DW	DW	W	W	DRK
P61,P62	W	DW	DW	DW	DW	DRK
P81,P82	DW	DW	W	DW	W	DRK

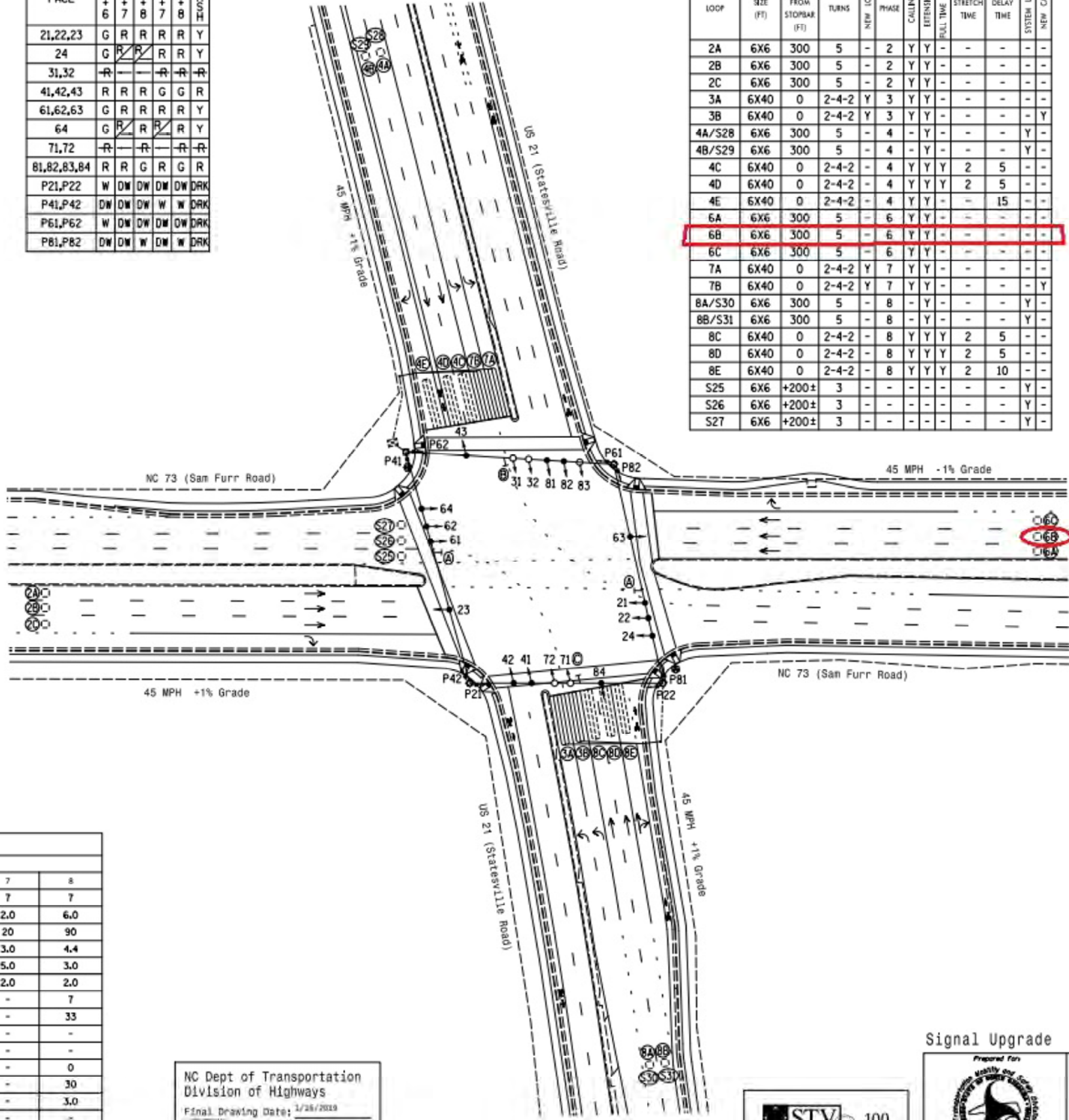
**OASIS 2070 LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CORD
					PHASE	CALLING	EXTENSION	PULL TIME DELAY				
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	-	2	Y	Y	-	-	-	-	-
2C	6X6	300	5	-	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
4A/S28	6X6	300	5	-	4	-	-	-	-	-	-	-
4B/S29	6X6	300	5	-	4	-	-	-	-	-	-	-
4C	6X40	0	2-4-2	-	4	Y	Y	2	5	-	-	-
4D	6X40	0	2-4-2	-	4	Y	Y	2	5	-	-	-
4E	6X40	0	2-4-2	-	4	Y	Y	-	15	-	-	-
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	-	6	Y	Y	-	-	-	-	-
6C	6X6	300	5	-	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
8A/S30	6X6	300	5	-	8	-	-	-	-	-	-	-
8B/S31	6X6	300	5	-	8	-	-	-	-	-	-	-
8C	6X40	0	2-4-2	-	8	Y	Y	2	5	-	-	-
8D	6X40	0	2-4-2	-	8	Y	Y	2	5	-	-	-
8E	6X40	0	2-4-2	-	8	Y	Y	2	10	-	-	-
S25	6X6	+200±	3	-	-	-	-	-	-	-	-	-
S26	6X6	+200±	3	-	-	-	-	-	-	-	-	-
S27	6X6	+200±	3	-	-	-	-	-	-	-	-	-

5 Phase Fully Actuated NC 73 (Sam Furr Road) CLS

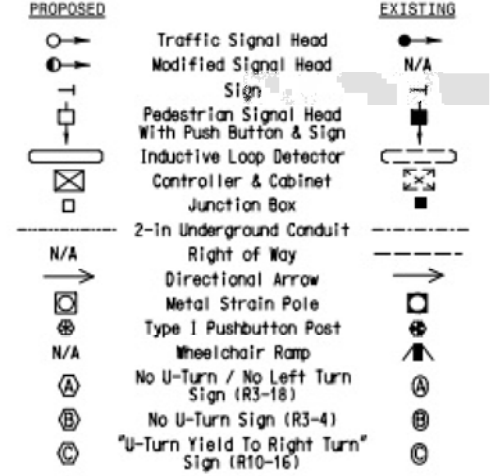
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/pages/ITS-Design-Resources.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 3 and/or phase 7 may be lagged.
- Reposition existing signal heads numbered 81 and 82.
- Renumber existing signal head 83 to 84.
- 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.
- 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 #0610.



6x6, 5 Turns

LEGEND



**2070 TIMING CHART**

FEATURE	PHASE					
	2	3	4	6	7	8
Min Green 1"	12	7	7	12	7	7
Extension 1"	6.0	2.0	6.0	6.0	2.0	6.0
Max Green 1"	90	20	90	90	20	90
Yellow Clearance	4.4	3.0	4.4	4.6	3.0	4.4
Red Clearance	2.9	4.4	3.1	2.9	5.0	3.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1"	7	-	7	7	-	7
Don't Walk 1	33	-	36	32	-	33
Seconds Per Actuation	1.8	-	-	1.8	-	-
Max Variable Initial	34	-	-	34	-	-
Time Before Reduction	15	-	0	15	-	0
Time To Reduce	40	-	30	40	-	30
Minimum Gap	3.0	-	3.0	3.0	-	3.0
Rollback Mode	MIN RECALL	-	-	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-
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 8 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

NC Dept of Transportation  
 Division of Highways  
 Final Drawing Date: 1/28/2019  
 R. N. Zeman  
 ITS & Signals Unit

**STV** 100 years  
 STV Engineers, Inc.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 (704) 372-1885  
 NC License Number F-0991

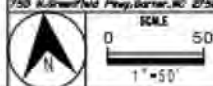
Signal Upgrade



NC 73 (Sam Furr Road)  
 at  
 US 21 (Statesville Road)  
 Division 40 - Weldonburg County - Huntersville  
 PLAN DATE: August 2018 REVIEWED BY: R. Bubnicka  
 PREPARED BY: J. Trueblood REVIEWED BY: J. Carroll

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 J. CARROLL  
 License No. 63005

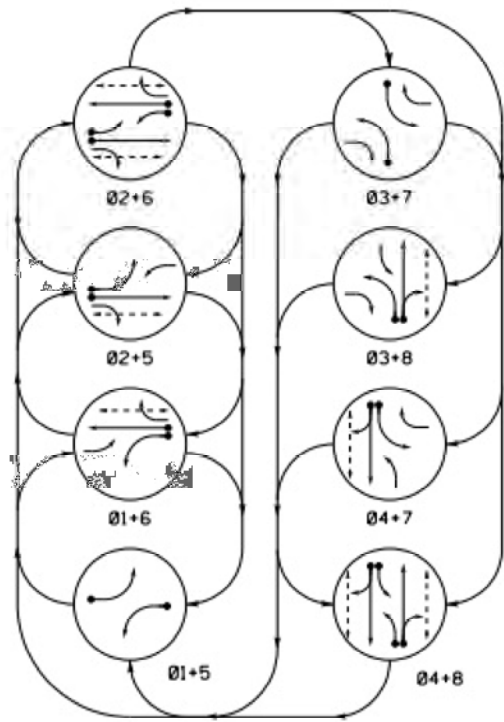


REVISIONS	INIT.	DATE

SIGNATURE DATE  
 1/11/2019  
 SIG. INVENTORY NO. 10-0610

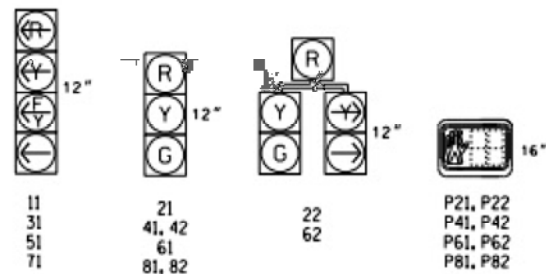


**PHASING DIAGRAM**



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

**SIGNAL FACE I.D.**  
All Heads L.E.D.



**PHASING DIAGRAM DETECTION LEGEND**

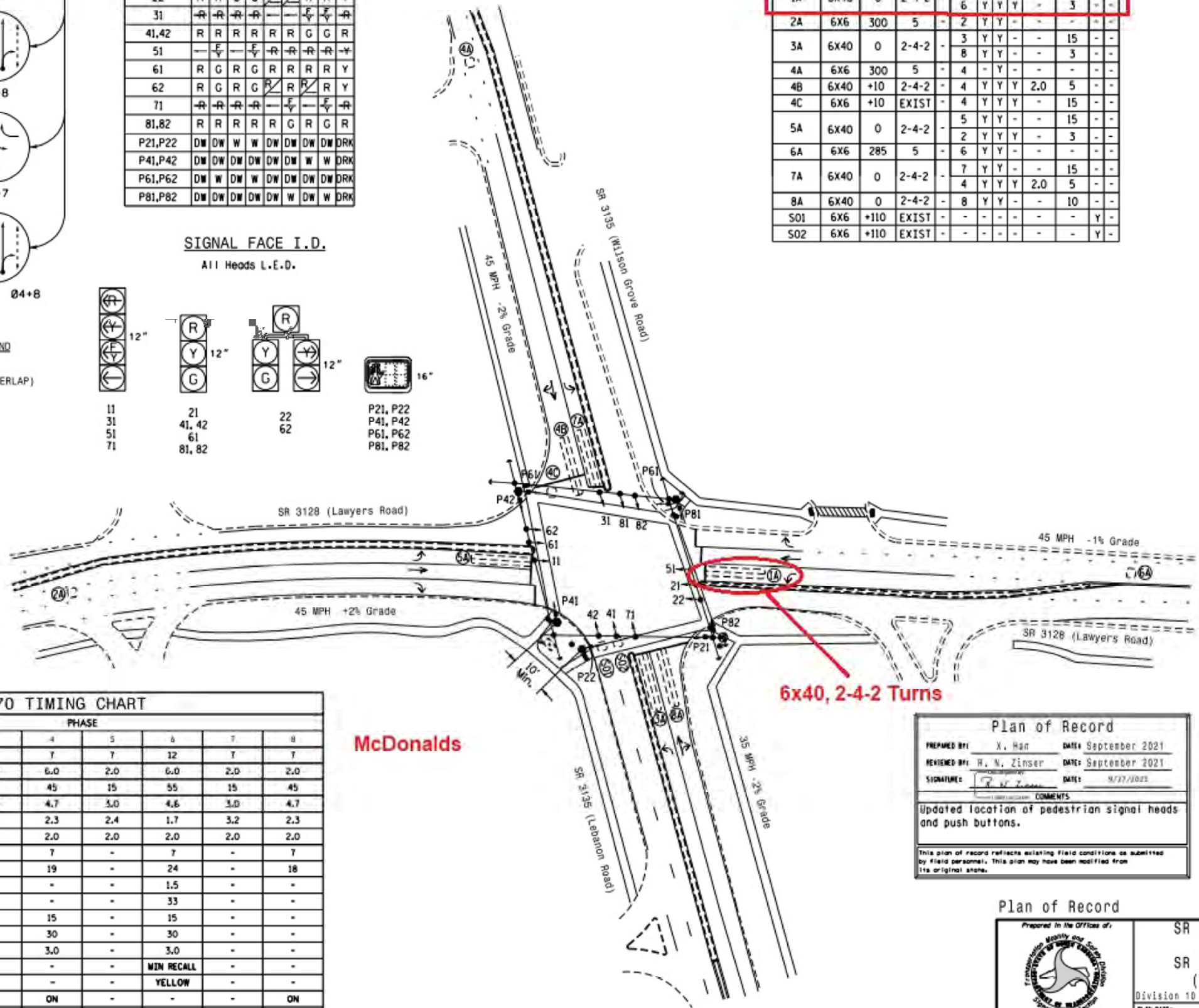
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

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	CALL TIME DELAY	STRETCH TIME	DELAY TIME		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A	6X6	300	5	-	2	Y	Y	-	-	3	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	15	-	-
4A	6X6	300	5	-	4	-	Y	-	-	-	-	-
4B	6X40	+10	2-4-2	-	4	Y	Y	Y	2.0	5	-	-
4C	6X6	+10	EXIST	-	4	Y	Y	Y	-	15	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	285	5	-	6	Y	Y	-	-	3	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	15	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	Y	2.0	5	-	-
S01	6X6	+110	EXIST	-	-	-	-	-	-	-	-	Y
S02	6X6	+110	EXIST	-	-	-	-	-	-	-	-	Y

**8 Phase Fully Actuated**  
**D10-20\_Mint Hill**

**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 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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	OASIS 2070 TIMING CHART							
	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	6.0	2.0	6.0	2.0	2.0
Max Green 1*	15	55	15	45	15	55	15	45
Yellow Clearance	3.0	4.6	3.0	4.7	3.0	4.6	3.0	4.7
Red Clearance	2.6	1.7	3.3	2.3	2.4	1.7	3.2	2.3
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	7	-	7	-	7	-	7
Don't Walk 1	-	19	-	19	-	24	-	18
Seconds Per Actuation*	-	1.5	-	-	-	1.5	-	-
Max Variable In/Out*	-	34	-	-	-	33	-	-
Time Before Reduction*	-	15	-	15	-	15	-	-
Time To Reduce*	-	30	-	30	-	30	-	-
Minimum Gap	-	3.0	-	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

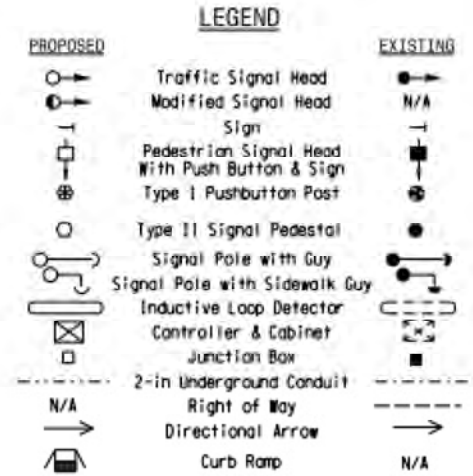
\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

**Plan of Record**

PREPARED BY: X. Han DATE: September 2021  
 REVIEWED BY: H. N. Zinser DATE: September 2021  
 SIGNATURE: [Signature] DATE: 9/27/2021

COMMENTS: Updated location of pedestrian signal heads and push buttons.

This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.



**Plan of Record**

Prepared in the Office of:  

 SR 3128 (Lawyers Road) at SR 3135 (Lebanon Road)/ (Wilson Grove Road)

Division 10 Wecklenburg County Mint Hill  
 PLAN DATE: May 2019 REVIEWED BY: H.N. Zinser  
 PREPARED BY: EM Winshaw REVIEWED BY:

SCALE: 1"=40'

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

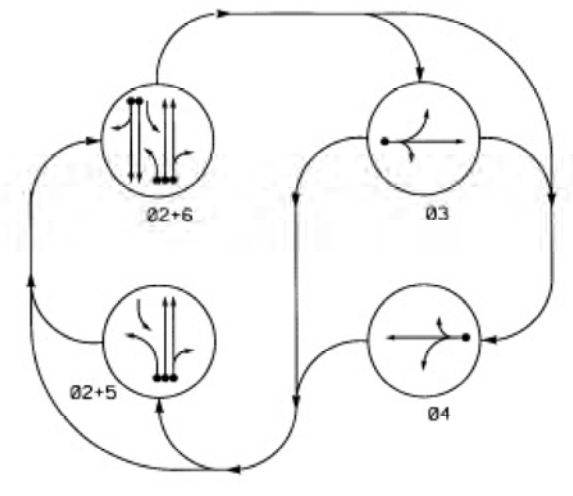
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 Not a certified document. This document originally issued and sealed by Richard N. Zinser, PE 043914 on 06/28/19. This document shall not be considered a certified document.

SIG. INVENTORY NO. 10-0623



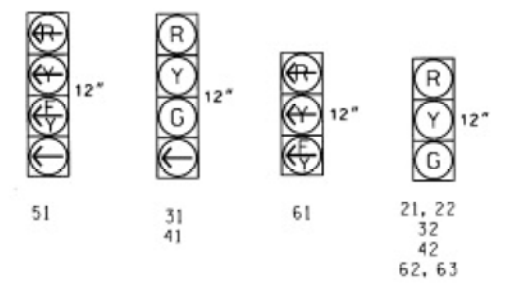
**PHASING DIAGRAM**



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

SIGNAL FACE	PHASE				
	02+5	02+6	03	04	PEDESTRIAN
21, 22	G	G	R	R	Y
31	R	R	G	R	R
32	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
51	-	-	-	-	-
61	-	-	-	-	-
62, 63	R	G	R	R	Y

**SIGNAL FACE I.D.**

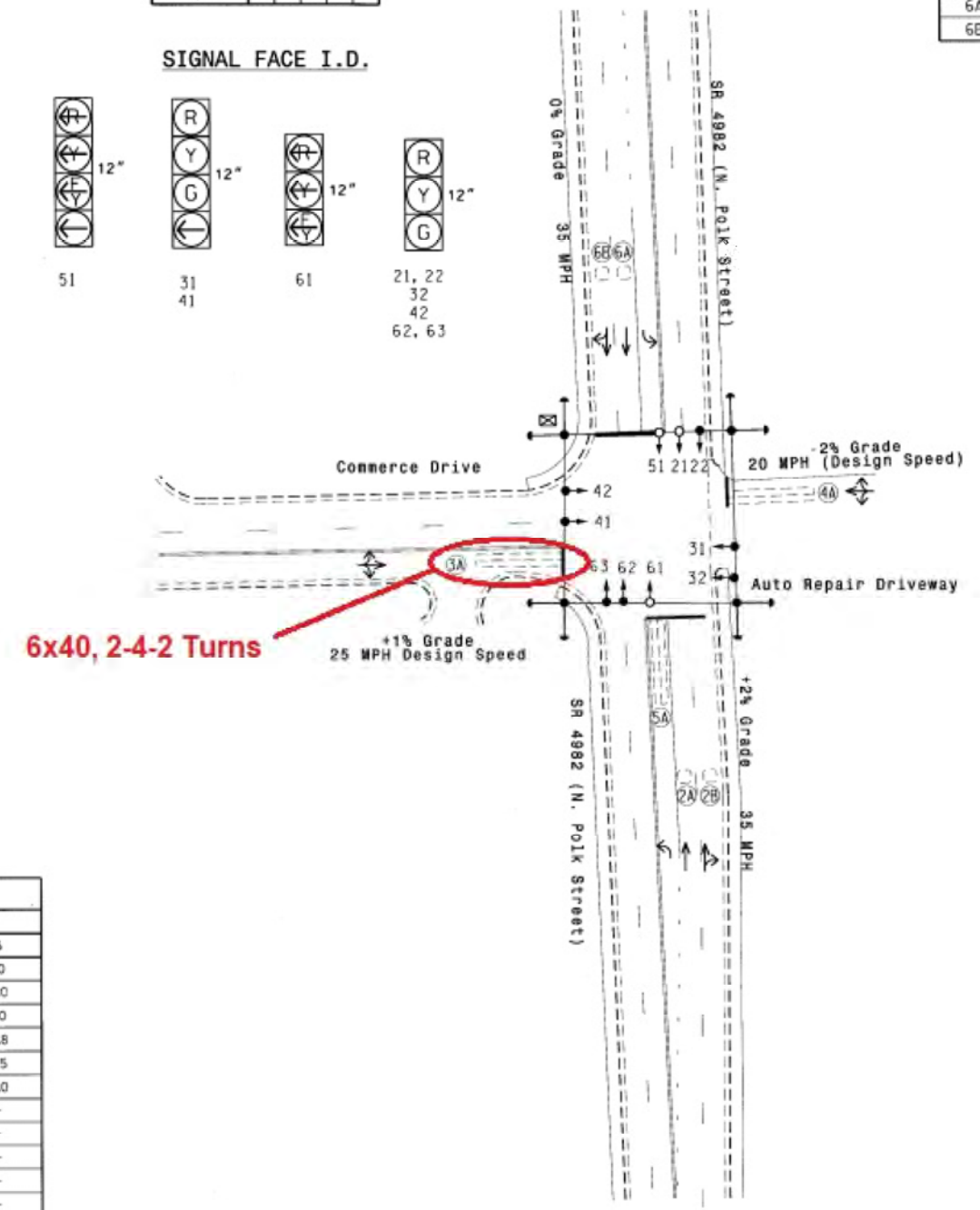


OASIS 2070L LOOP & DETECTOR INSTALLATION												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME		
2A	6X6	70	EXIST	-	2	Y	Y	-	-	-	-	Y
2B	6X6	70	EXIST	-	2	Y	Y	-	-	-	-	Y
3A	6X40	0	EXIST	-	3	Y	Y	-	-	10	-	Y
4A	6X40	0	EXIST	-	4	Y	Y	-	-	10	-	Y
5A	6X40	0	EXIST	-	5	Y	Y	-	-	15	-	Y
6A	6X6	70	EXIST	-	6	Y	Y	-	-	-	-	Y
6B	6X6	70	EXIST	-	6	Y	Y	-	-	-	-	Y

**4 Phase Fully Actuated**  
 NC 51 (Pineville-Matthews Rd./ SR 4982 (Polk Street) 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 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 22, 62 & 63
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0965.



PROPOSED		EXISTING	
○	Traffic Signal Head	●	N/A
○	Modified Signal Head	-	-
T	Sign	T	-
T	Pedestrian Signal Head With Push Button & Sign	T	-
○	Signal Pole with Guy	○	-
○	Signal Pole with Sidewalk Guy	○	-
⊗	Inductive Loop Detector	⊗	-
⊗	Controller & Cabinet Junction Box	⊗	-
- - -	2-in Underground Conduit	- - -	-
- - -	Right of Way	- - -	-
→	Directional Arrow	→	-
→	Pavement Marking Arrow	→	-

OASIS 2070L TIMING CHART					
FEATURE	PHASE				
	2	3	4	5	6
Min Green 1*	10	7	7	7	10
Extension 1*	3.0	2.0	2.0	2.0	3.0
Max Green 1*	60	30	15	20	60
Yellow Clearance	3.8	3.1	3.0	3.0	3.8
Red Clearance	1.5	2.5	2.3	1.8	1.5
Red Revert	2.0	2.0	2.0	2.0	2.0
WALK 1*	-	-	-	-	-
Don't Walk ?	-	-	-	-	-
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	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**

	SR 4982 (N. Polk Street) at Connerce Drive / Auto Repair Driveway Division 10 Wecklenburg County Pineville		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER TIMOTHY WILLIAMS License No. 24393
	PLAN DATE: September 2013 PREPARED BY: C. Pierce REVISIONS:	REVIEWED BY: P.L.A. REVIEWED BY:	



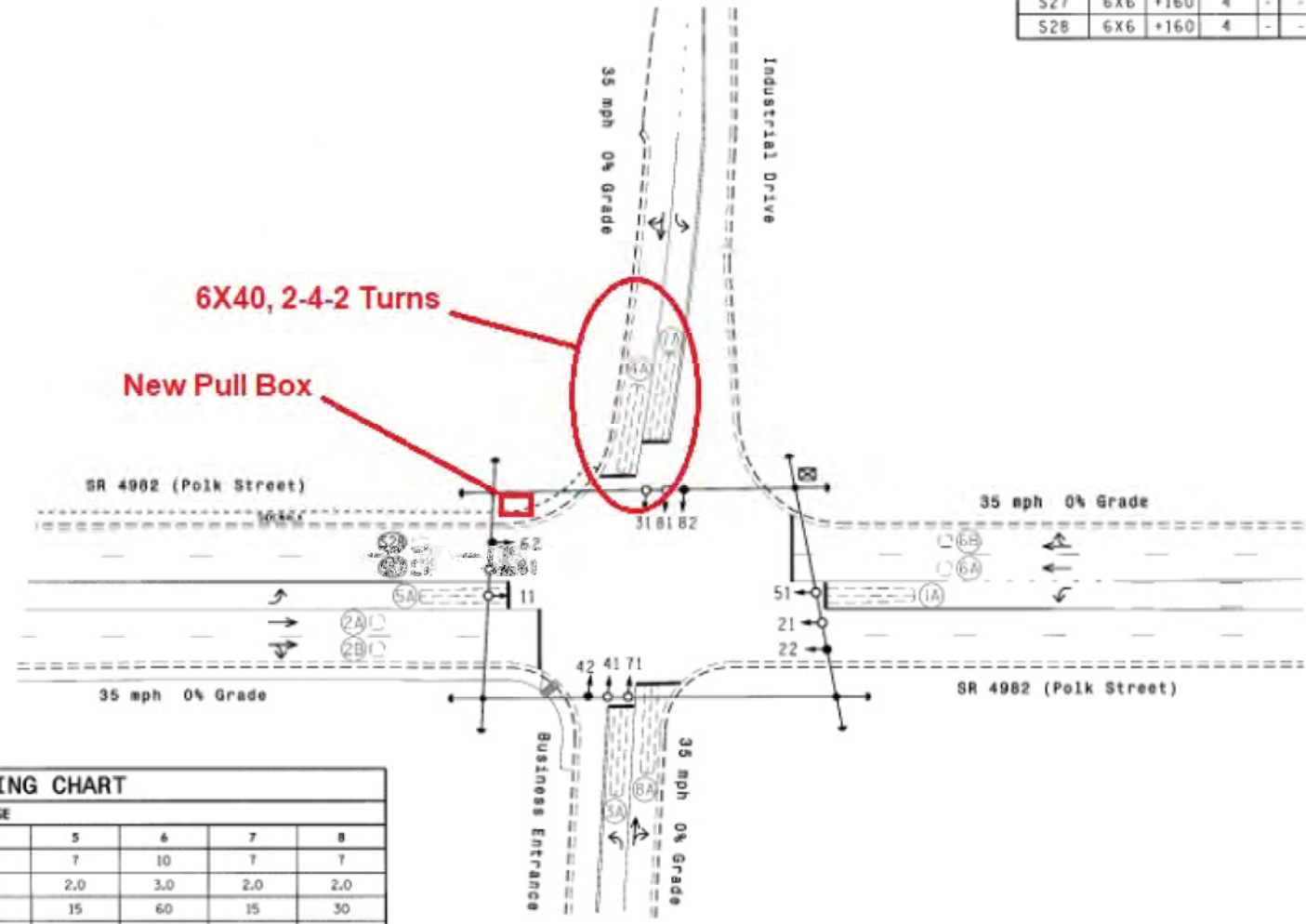
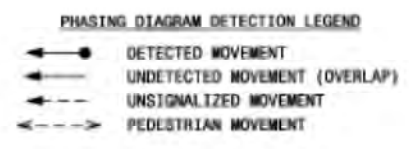
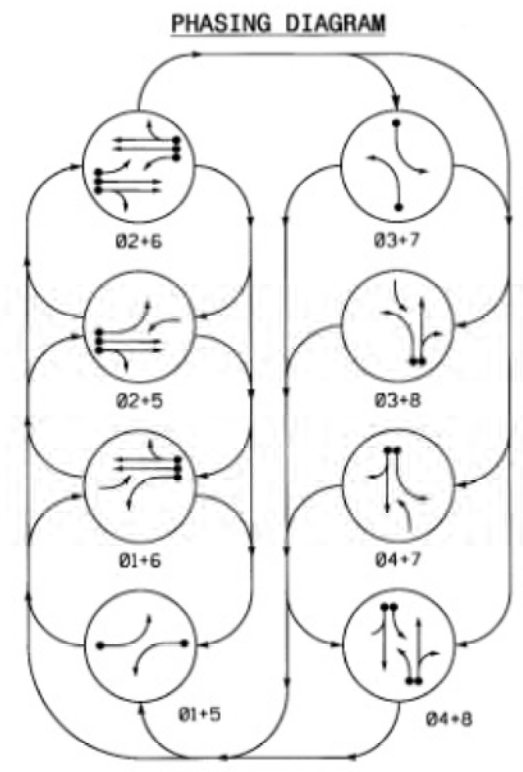
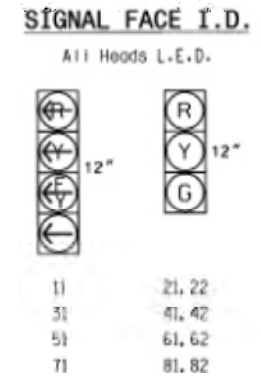
8 Phase Fully Actuated  
NC 51 (Pineville-Matthews Rd.) / SR 4982 (Polk Street) CLS

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. Phase 3 and/or phase 7 may be logged.
4. Phase 3 and/or phase 7 may be logged.
5. Reposition existing signal heads numbered # 22, 42, 62, & 82.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Closed loop system data: Controller Asset # 0966.

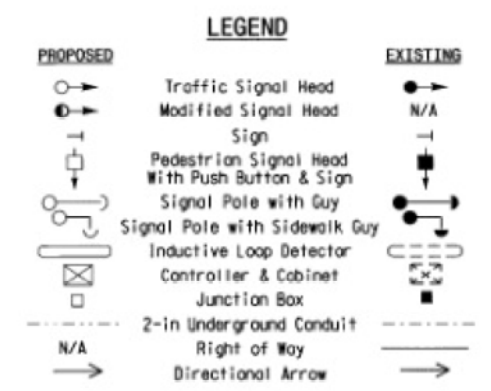
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING									
					PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAB		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	Y		
2A	6X6	70	3	-	2	Y	Y	-	-	-	-	Y		
2B	6X6	70	3	-	2	Y	Y	-	-	-	-	Y		
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	15	-	Y		
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	Y		
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	Y		
6A	6X6	70	3	-	2	Y	Y	-	-	-	-	Y		
6B	6X6	70	3	-	6	Y	Y	-	-	-	-	Y		
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	15	-	Y		
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	Y		
S27	6X6	+160	4	-	-	-	-	-	-	-	-	Y		
S28	6X6	+160	4	-	-	-	-	-	-	-	-	Y		

SIGNAL FACE	PHASE							
	01+5	02+5	02+6	03+7	03+8	04+7	04+8	PEDEST
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



FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	10	7	7	7	10	7	7
Extension 1*	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1*	15	60	15	30	15	60	15	30
Yellow Clearance	3.0	3.8	3.0	3.8	3.0	3.8	3.0	3.8
Red Clearance	3.3	2.5	2.4	2.0	2.6	2.5	2.8	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation*	-	-	-	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-	-	-	-
Time To Reduce*	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
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.

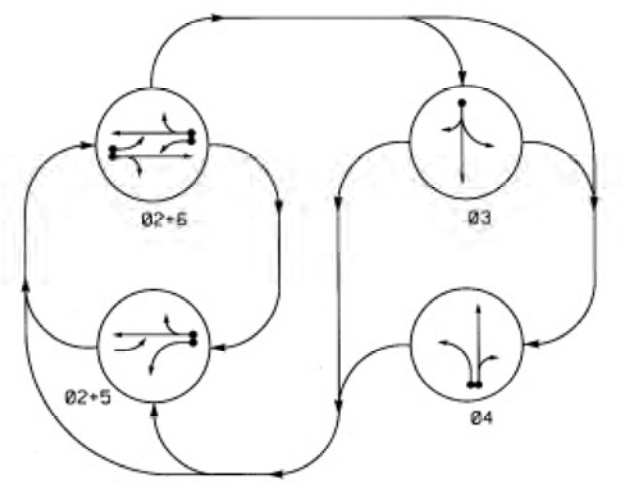


Signal Upgrade

	SR 4982 (Polk Street) at Industrial Drive / Business Entrance Becklenburg County Pineville		
	Division 10 PLAN DATE: September 2013 PREPARED BY: C. Pierce	REVIEWED BY: P.L.A. REVIEWED BY:	



PHASING DIAGRAM

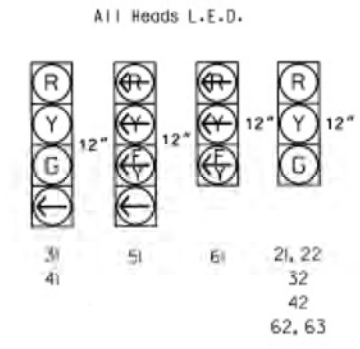


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE				
	02+5	02+6	03	04	PEDESTRIAN
21, 22	G	G	R	R	Y
31	R	R	G	R	R
32	R	R	G	R	R
41	R	R	G	R	R
42	R	R	G	R	R
51	Y	Y	R	R	R
61	Y	Y	R	R	R
62, 63	R	G	R	R	Y

SIGNAL FACE I.D.

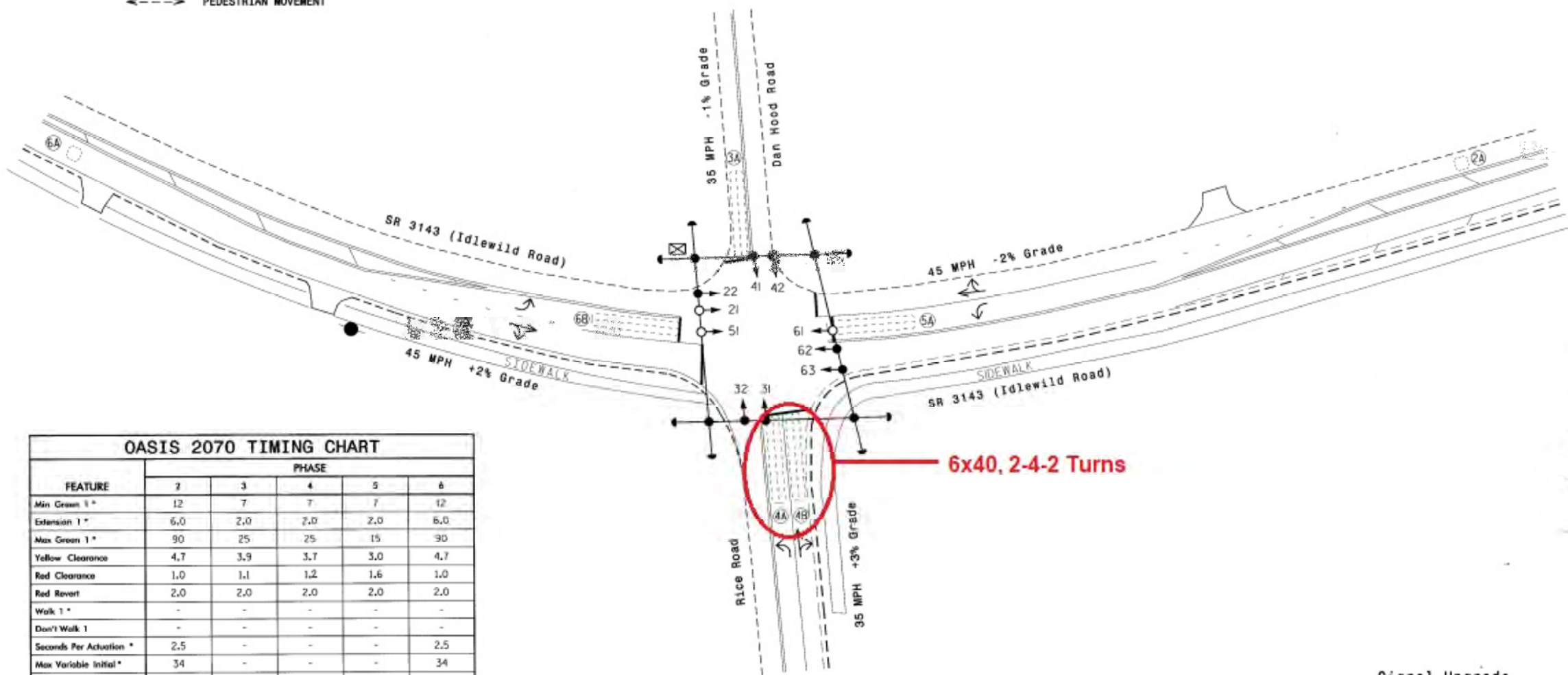


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	DETECTOR PROGRAMMING		STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAB
						CALLING EXTENSION	FULL TIME DELAY				
2A	6X6	300	4	-	2	Y	Y	-	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	10	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	3	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	10	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	15	-	-
6A	6X6	300	5	-	6	Y	Y	-	-	-	-
6B	6X40	0	2-4-2	-	6	Y	Y	-	3	-	-

4 Phase Fully Actuated Isolated

NOTES

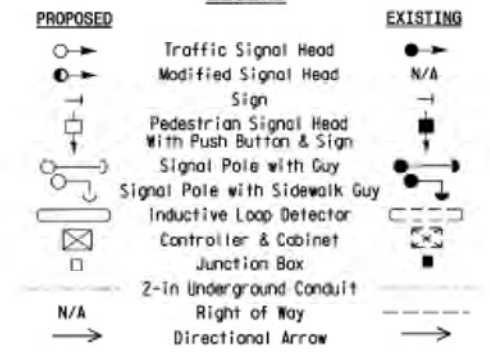
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Reposition existing signal heads numbered 22, 62 & 63.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.



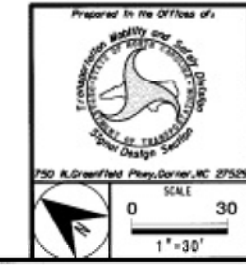
OASIS 2070 TIMING CHART					
FEATURE	PHASE				
	2	3	4	5	6
Min Green 1 *	12	7	7	7	12
Extension 1 *	6.0	2.0	2.0	2.0	6.0
Max Green 1 *	90	25	25	15	90
Yellow Clearance	4.7	3.9	3.7	3.0	4.7
Red Clearance	1.0	1.1	1.2	1.6	1.0
Red Revert	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	2.5	-	-	-	2.5
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	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



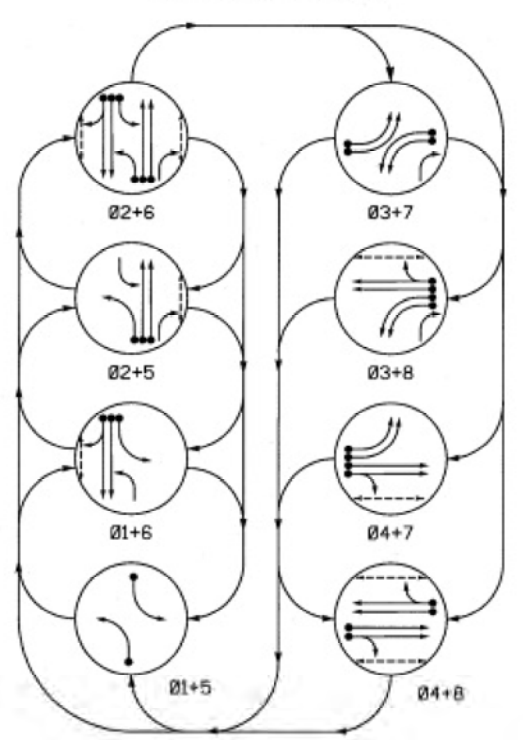
SR 3143 (Idlewild Road) at Dan Hood Road / Rice Road	
Prepared by:	W. Wahbooba
Reviewed by:	P. Alexander
Plan Date:	October 2013
Scale:	1" = 30'
Revisions:	INIT. DATE



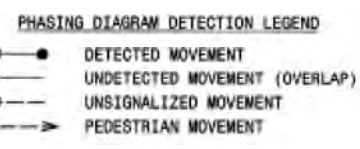
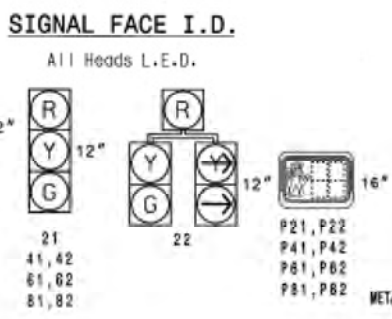
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8 PHASE FULLY ACTUATED NC 115 (OLD STATESVILLE ROAD) CLOSED LOOP SYSTEM



SIGNAL FACE	PHASE							
	01+5	02+5	03+5	04+5	01+6	02+6	03+6	04+6
11								
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31,32	R	R	R	R	R	R	R	R
41,42	R	R	R	R	R	R	G	G
51								
61,62	R	G	R	G	R	R	R	Y
71,72	R	R	R	R	R	R	R	R
81,82	R	R	R	R	R	G	R	G
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	DW	W	W	DRK



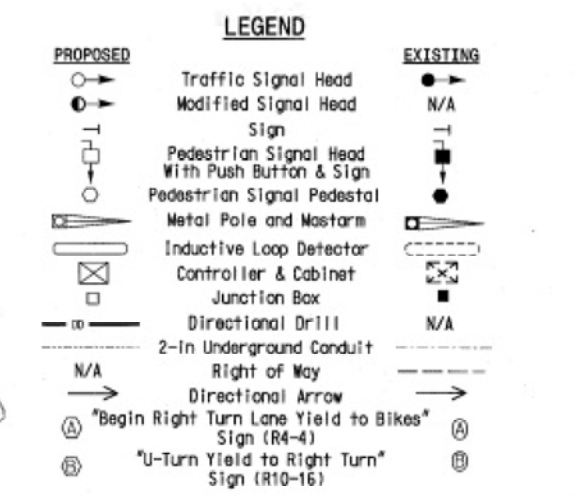
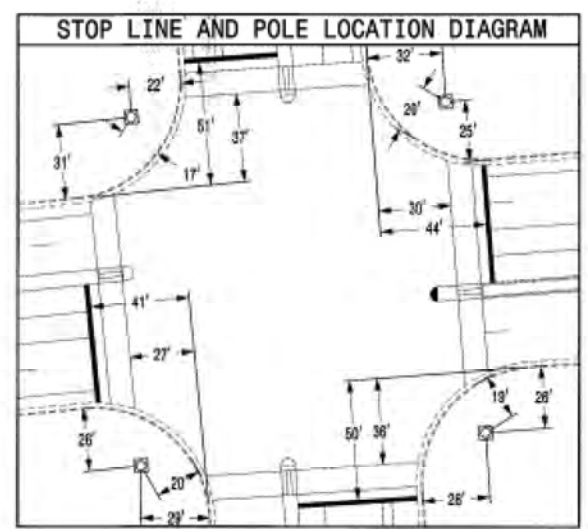
TO	FROM			
	1	2	1	2
F				
R				
O				
M				

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	12	7	4	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	70	20	40	20	70	20	40
Yellow Clearance	3.0	4.6	3.0	4.3	3.0	4.6	3.0	4.4
Red Clearance	4.3	2.9	4.3	2.4	4.1	2.9	4.3	2.5
Walk 1*	-	7	-	7	-	7	-	7
Don't Walk 1	-	20	-	20	-	20	-	16
Seconds Per Actuation*	-	1.8	-	-	-	1.8	-	-
Max Variable Initial*	-	34	-	-	-	34	-	-
Time Before Reduction*	-	15	-	-	-	15	-	-
Time To Reduce*	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

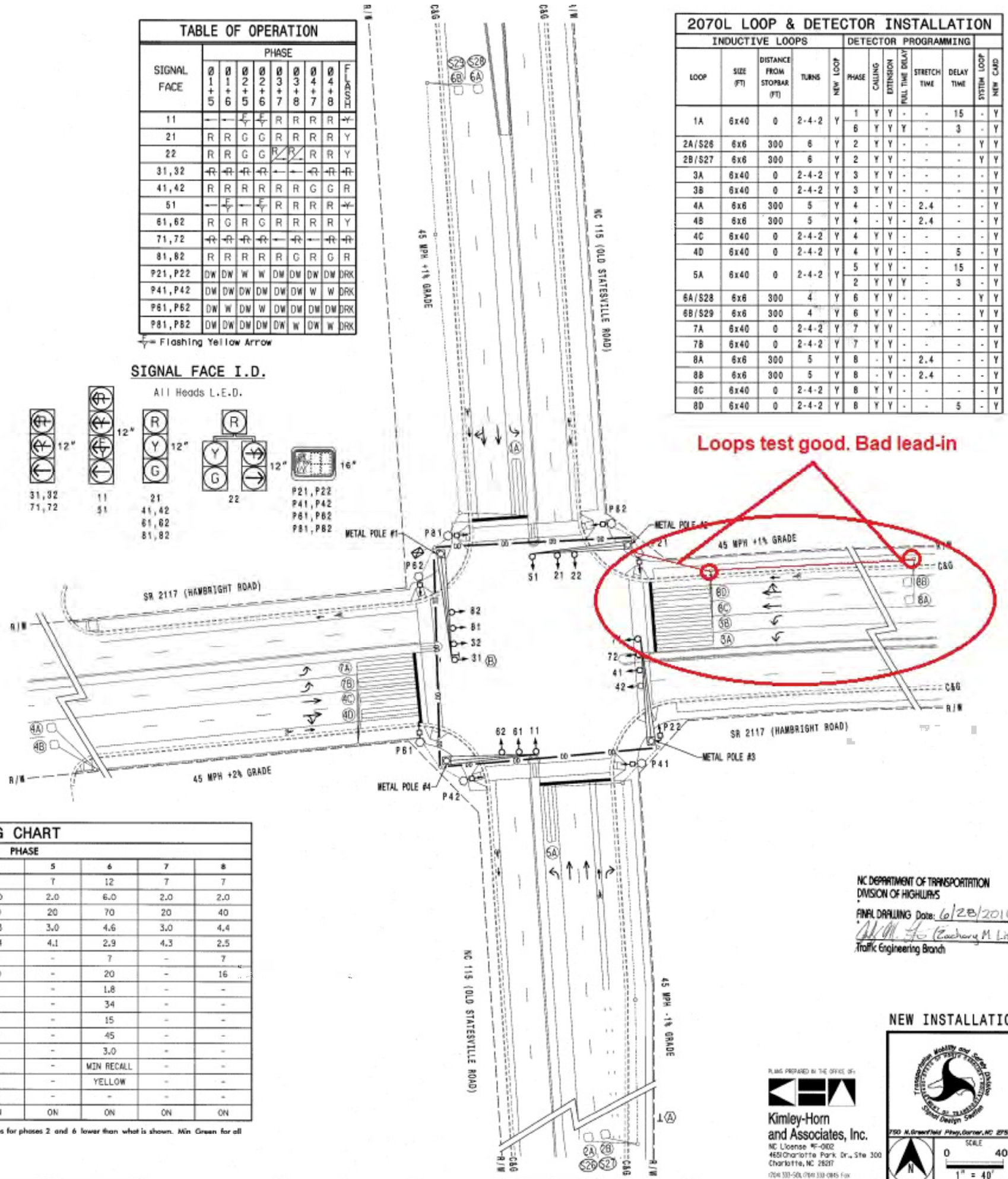
\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

2070L LOOP & DETECTOR INSTALLATION												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A/S26	6x6	300	6	Y	2	Y	Y	-	-	3	-	Y
2B/S27	6x6	300	6	Y	2	Y	Y	-	-	-	-	Y
3A	6x40	0	2-4-2	Y	3	Y	Y	-	-	-	-	Y
3B	6x40	0	2-4-2	Y	3	Y	Y	-	-	-	-	Y
4A	6x6	300	5	Y	4	-	Y	-	2.4	-	-	Y
4B	6x6	300	5	Y	4	-	Y	-	2.4	-	-	Y
4C	6x40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
4D	6x40	0	2-4-2	Y	4	Y	Y	-	-	5	-	Y
5A	6x40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A/S28	6x6	300	4	Y	6	Y	Y	-	-	-	-	Y
6B/S29	6x6	300	4	Y	6	Y	Y	-	-	-	-	Y
7A	6x40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
7B	6x40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
8A	6x6	300	5	Y	8	-	Y	-	2.4	-	-	Y
8B	6x6	300	5	Y	8	-	Y	-	2.4	-	-	Y
8C	6x40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y
8D	6x40	0	2-4-2	Y	8	Y	Y	-	-	5	-	Y

- NOTES**
- Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/ITSS/>
  - 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 shall supersede these values.
  - All signal heads to be polycarbonate.
  - Closed loop system data: Controller Asset # 1081.



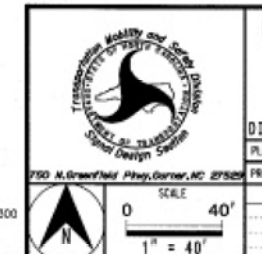
Loops test good. Bad lead-in



NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
FINAL DRAWING Date: 6/28/2010  
Traffic Engineering Branch

NEW INSTALLATION

Kimley-Horn and Associates, Inc.  
616 License #0-002  
4650 Charlotte Park Dr., Ste 300  
Charlotte, NC 28207  
704.333.0100 Fax

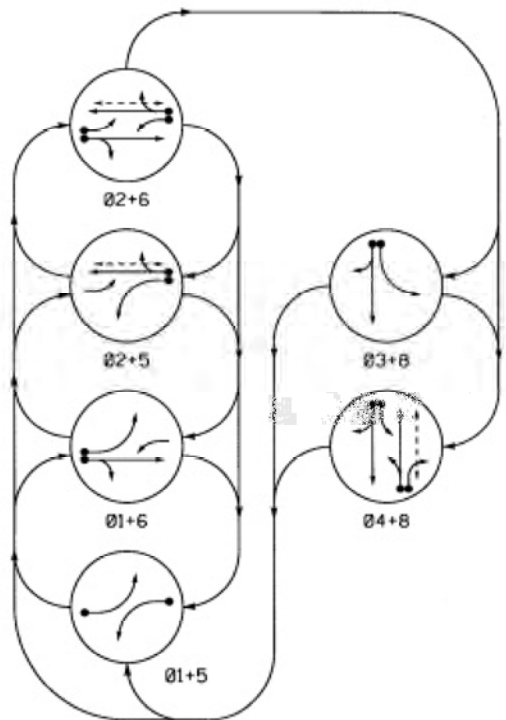


NC 115 (OLD STATESVILLE ROAD)  
AT  
SR 2117 (HAMBRIGHT ROAD)  
DIVISION 10 MECKLENBURG COUNTY HUNTERSVILLE  
PLAN DATE: FEBRUARY 2009 REVIEWED BY: T SPACEK  
PREPARED BY: B FINKLEA REVIEWED BY:

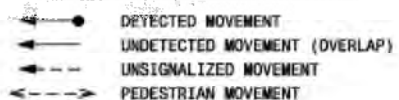




PHASING DIAGRAM

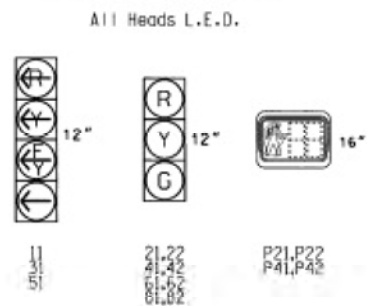


PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE	PHASE						
	01+5	02+5	03+6	04+8	F	1	2
11	-	-	-	-	-	-	-
21,22	R	R	G	R	R	Y	Y
31	-R	-R	-R	-R	-	-	-
41,42	R	R	R	R	G	R	Y
51	-	-	-	-	-	-	-
61,62	R	G	R	G	R	R	Y
81,82	R	R	R	R	G	R	Y
P21,P22	DW	DW	W	W	DW	DRK	DRK
P41,P42	DW	DW	DW	DW	W	DRK	DRK

SIGNAL FACE I.D.

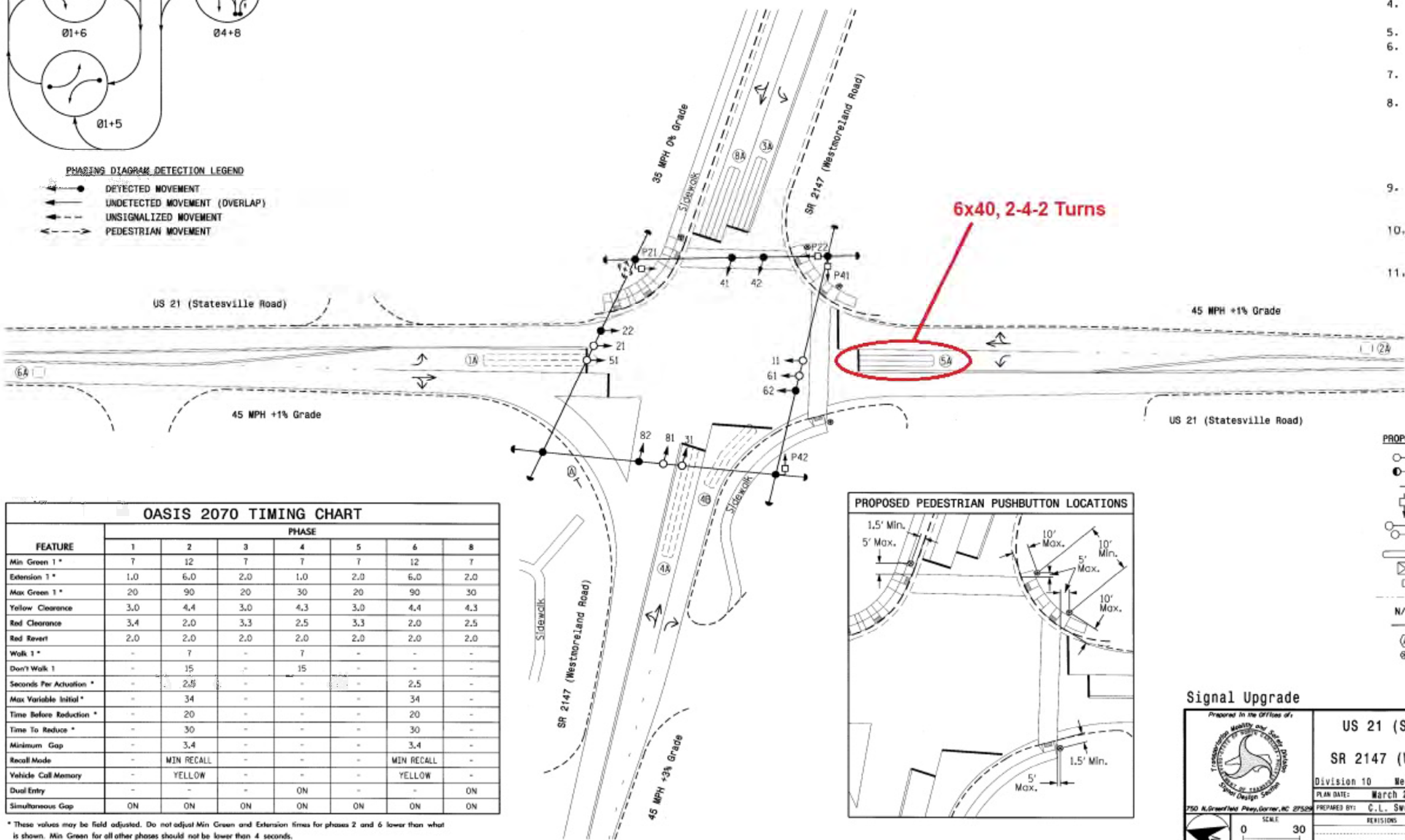


INDUCTIVE LOOPS		DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING EXTENSION FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	EXIST	-	1	Y Y	-	15	-	-
2A	6X6	278	EXIST	-	2	Y Y	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y Y	-	15	-	-
4A	6X60	0	EXIST	-	4	Y Y	-	3	-	-
4B	6X40	0	EXIST	-	4	Y Y	-	10	-	-
5A	6X40	0	2-4-2	Y	5	Y Y	-	15	-	-
6A	6X6	300	EXIST	-	6	Y Y	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y Y	-	10	-	-

6 Phase Fully Actuated Isolated

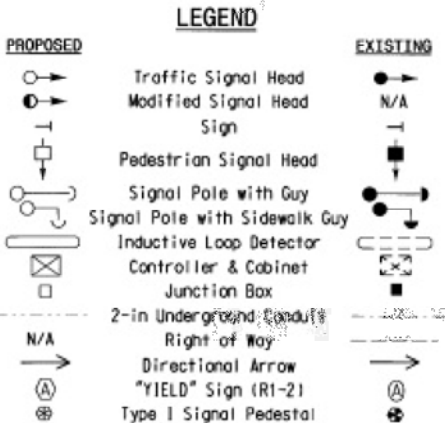
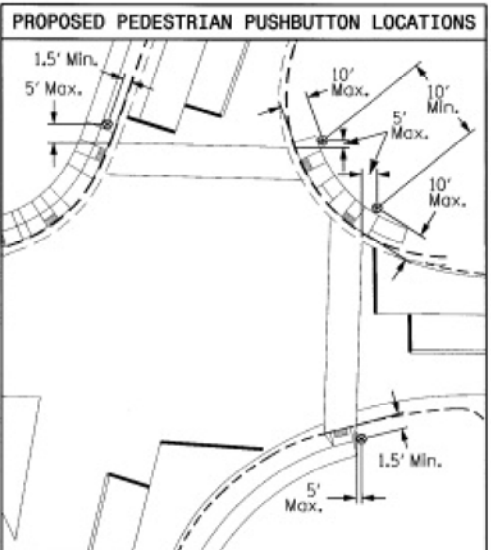
NOTES

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. Disable Backup Protect for phase 2+6.
4. Phase 1 and/or phase 5 may be lagged.
5. Omit phase 3 during phase 4 on.
6. Reposition existing signal heads numbered 22, 62, and 82.
7. Set all detector units to presence mode.
8. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
9. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
10. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
11. Pavement markings are existing.



FEATURE	PHASE						
	1	2	3	4	5	6	8
Min Green 1 *	7	12	7	7	7	12	7
Extension 1 *	1.0	6.0	2.0	1.0	2.0	6.0	2.0
Max Green 1 *	20	90	20	30	20	90	30
Yellow Clearance	3.0	4.4	3.0	4.3	3.0	4.4	4.3
Red Clearance	3.4	2.0	3.3	2.5	3.3	2.0	2.5
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7	-	-	-
Don't Walk 1	-	15	-	15	-	-	-
Seconds Per Actuation *	-	2.5	-	-	-	2.5	-
Max Variable Initial *	-	34	-	-	-	34	-
Time Before Reduction *	-	20	-	-	-	20	-
Time To Reduce *	-	30	-	-	-	30	-
Minimum Gap	-	3.4	-	-	-	3.4	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-
Dual Entry	-	-	-	ON	-	-	ON
Simultaneous Gap	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

**US 21 (Statesville Road) at SR 2147 (Westmoreland Road)**

Division 10 - Mecklenburg County - Cornelius

PLAN DATE: March 2014 REVIEWED BY: Z.W. Little

PREPARED BY: C.L. Sweeney REVIEWED BY:

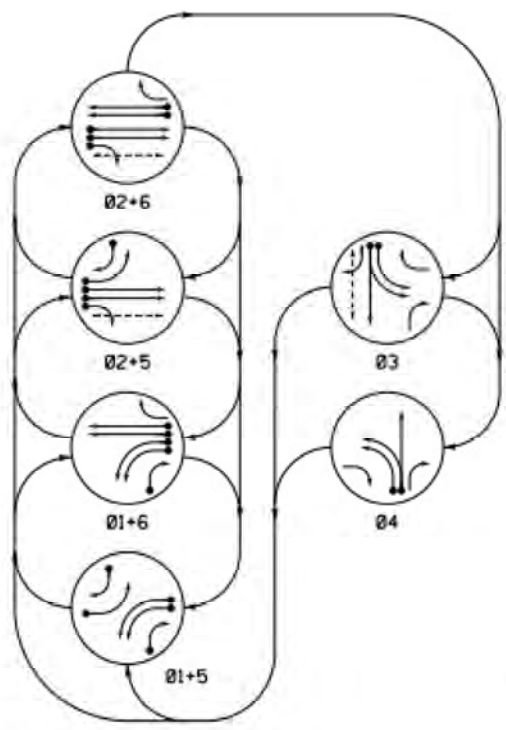
SCALE: 1"=30'

REVISIONS: [Table with columns for Revisions, Initials, and Dates]

DATE: [Blank]

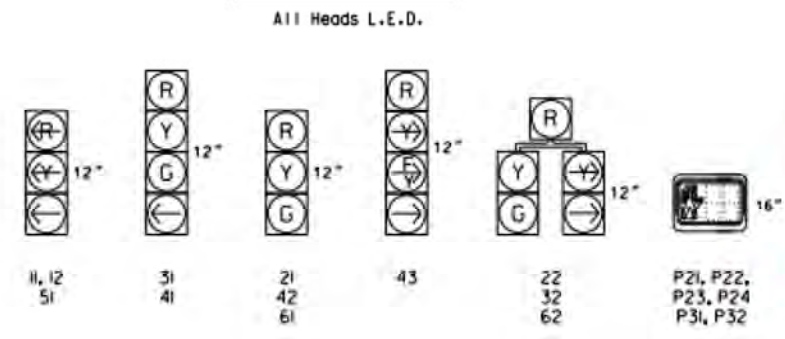


PHASING DIAGRAM



SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
11,12	-	-	-	-	-	-
21	R	R	G	G	R	Y
22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	G	R
42	R	R	R	R	G	R
43	-	-	R	R	Y	R
51	-	-	-	-	-	-
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y
P21,P22,P23,P24	DW	DW	W	W	DW	DRK
P31,P32	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

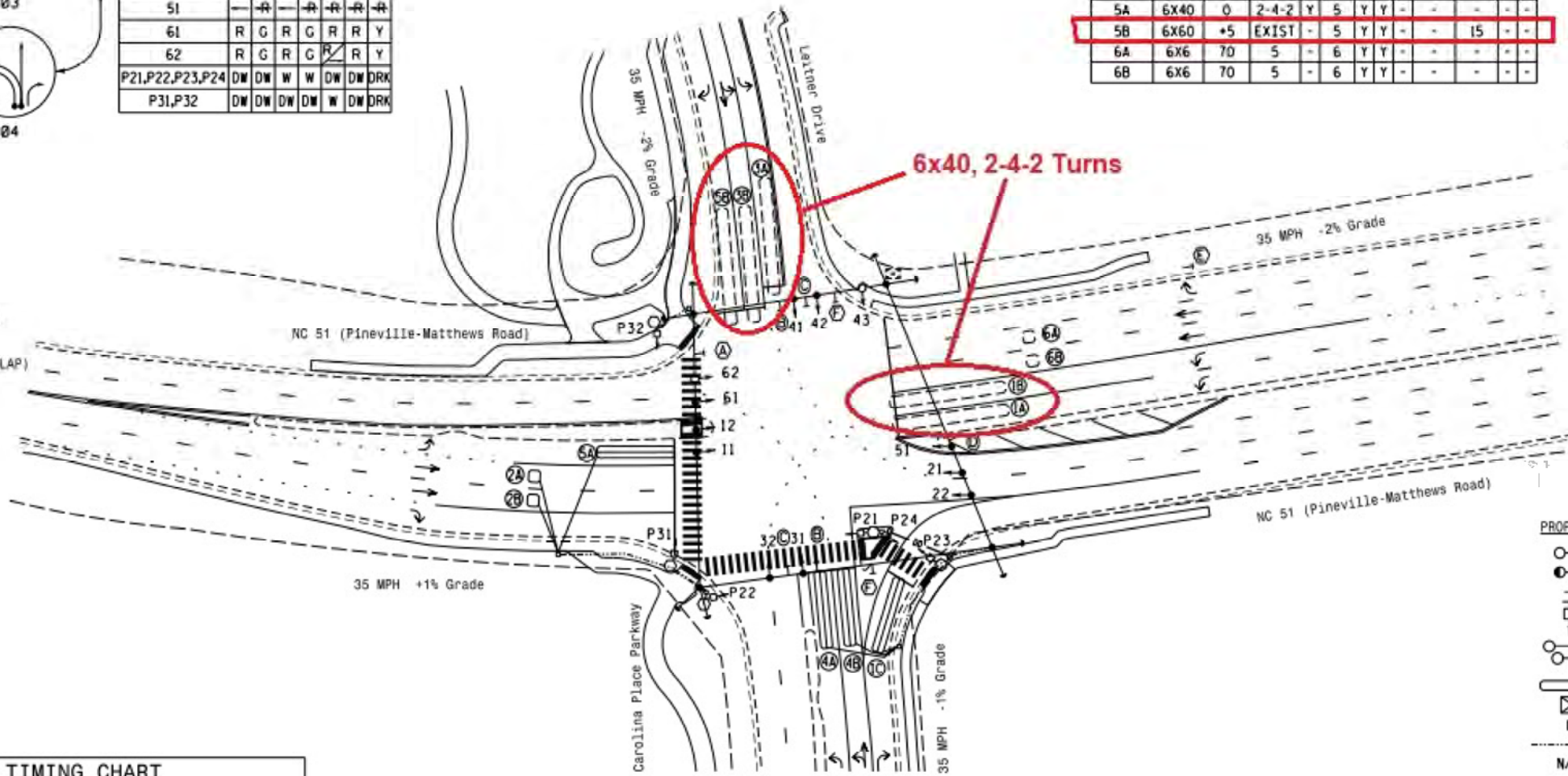
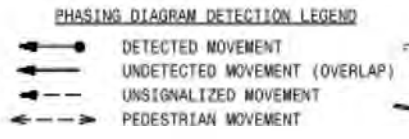


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x40	0	EXIST	-	1	Y	Y	-	-	-	-	-
1B	6x40	0	EXIST	-	1	Y	Y	-	-	-	-	-
1C	6x40	0	2-4-2	Y	1	Y	Y	-	-	-	-	Y
2A	6x6	70	5	Y	2	Y	Y	-	-	-	-	-
2B	6x6	70	5	Y	2	Y	Y	-	-	-	-	-
3A	6x60	+5	EXIST	-	3	Y	Y	-	-	3	-	-
3B	6x60	+5	EXIST	-	3	Y	Y	-	-	-	-	-
4A	6x40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6x40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
5A	6x40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5B	6x60	+5	EXIST	-	5	Y	Y	-	-	15	-	-
6A	6x6	70	5	-	6	Y	Y	-	-	-	-	-
6B	6x6	70	5	-	6	Y	Y	-	-	-	-	-

6 Phase Fully Actuated NC 51 (Pineville) CLS

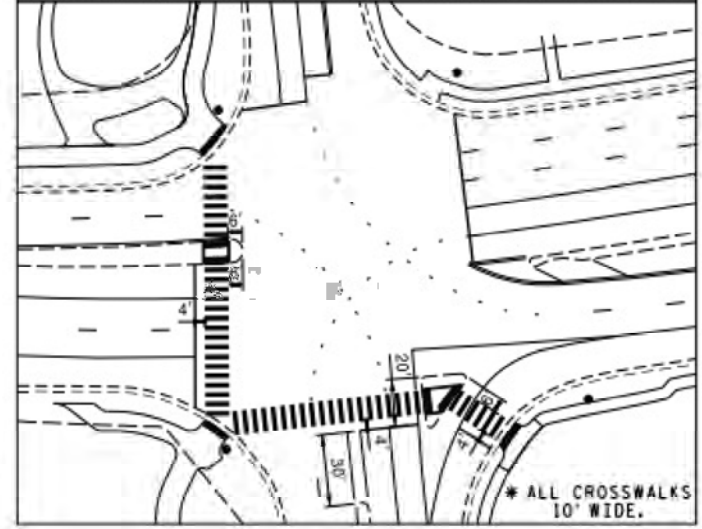
NOTES

- Refer to "Roadway Standard Drawings MCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2014.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- 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.

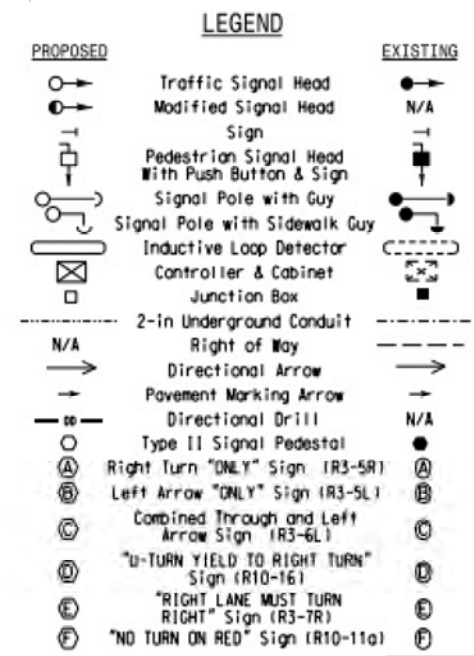


OASIS 2070L TIMING CHART						
FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1"	7	10	7	7	7	10
Extension 1"	1.0	3.0	1.0	2.0	2.0	3.0
Max Green 1"	20	90	30	30	20	90
Yellow Clearance	3.0	3.8	4.0	3.9	3.0	4.0
Red Clearance	3.5	1.8	2.5	2.9	3.3	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1"	-	7	7	-	-	-
Don't Walk 1"	-	32	29	-	-	-
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	ON	ON

CROSSWALK AND STOP LINE LOCATION DIAGRAM



\* 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.



NC Dept of Transportation  
Division of Highways  
Final Drawing Date: 4/14/2020  
J. J. Williams  
ITS & Signals Unit

Signal Upgrade

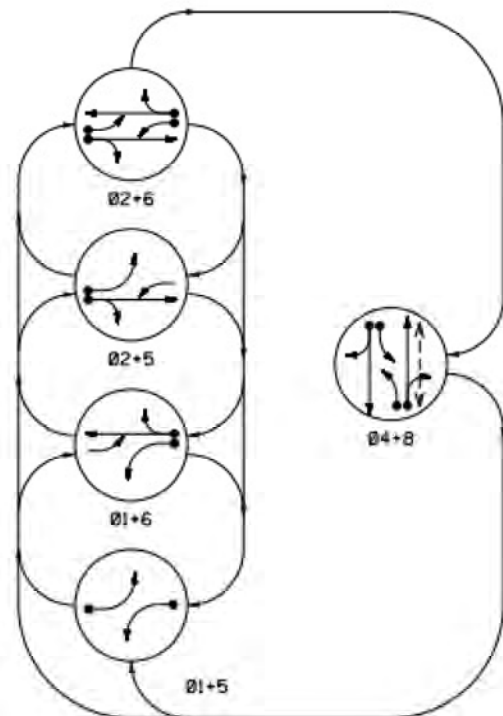


Prepared For Transportation Mobility and Safety Division Signal Design Section		NC 51 (Pineville-Matthews Road) at Carolina Place Parkway / Leitner Drive		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER WILLIAM J. HAMILTON SEAL 12396	
Division 10	Mecklenburg County	Pineville	Division 10	Mecklenburg County	Pineville
PLAN DATE: April 2020	REVIEWED BY: WJ Hamilton		PREPARED BY: TS Papaleka	TRA PROJ. NO. 19405 (040)	
REVISIONS	INIT.	DATE			
SCALE 0 40 1"=40'			SIGNATURE DATE 4/8/20		
			SIC. INVENTORY NO. 10-1235		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PHASING DIAGRAM



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

SIGNAL FACE	PHASE						F	L	P
	01+5	01+6	02+5	02+6	04+8	04+8			
II	-	-	F	F	R	Y			
21, 22	R	R	G	G	R	Y			
41, 42	R	R	R	R	G	R			
51	-	F	-	F	R	Y			
61, 62	R	G	R	G	R	Y			
81, 82	R	R	R	R	G	R			
P81, P82	DN	DN	DN	DN	W	DRK			

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	PULL TIME DELAY				
1A	6x15	45	4	-	1	Y	Y	-	-	20	-	-
2A	6x40	+5	2-4-2	-	2	Y	Y	Y	-	3	-	-
2B	6x6	70	4	-	2	Y	Y	-	-	-	-	-
4A	6x40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
4B	6x40	0	2-4-2	-	4	Y	Y	-	-	5	-	-
5A	6x15	50	4	-	5	Y	Y	-	-	20	-	-
6A	6x40	+10	2-4-2	-	6	Y	Y	Y	-	3	-	-
6B/S33	6x6	65	4	-	6	Y	Y	-	-	-	Y	-
8A	6x60	+5	2-4-2	-	8	Y	Y	-	-	-	-	-
8B	6x60	+5	2-4-2	-	8	Y	Y	-	-	5	-	-

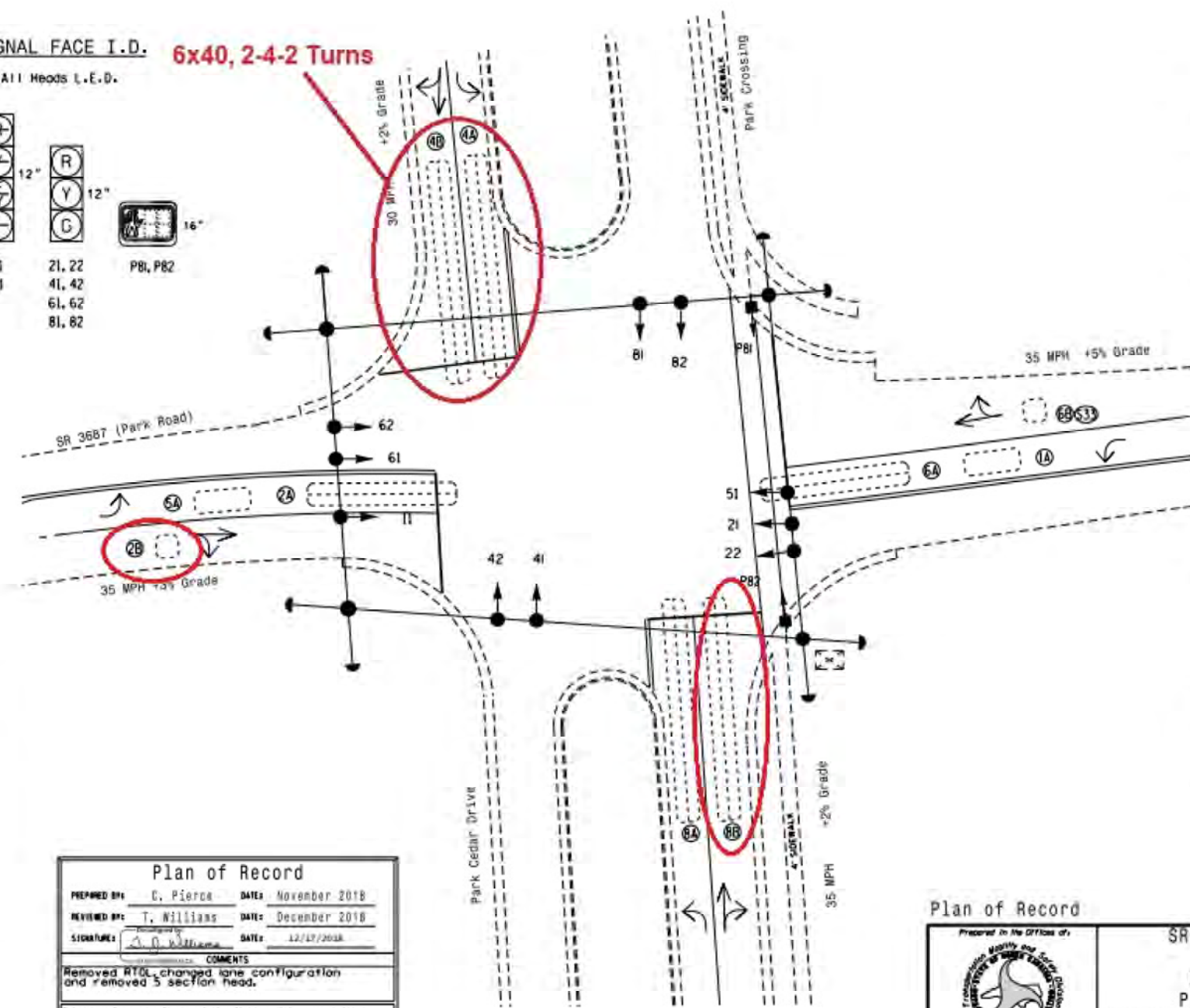
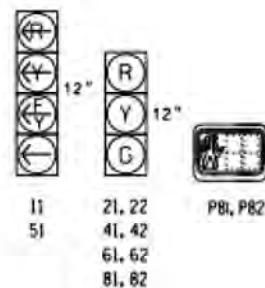
5 Phase Fully Actuated NC 51 (Pineville) CLS

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 and/or phase 5 may be lagged.
- Set all detector calls 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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #1263.

SIGNAL FACE I.D. 6x40, 2-4-2 Turns

All Heads L.E.D.



FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1"	8	10	7	8	10	7
Extension 1"	2.0	3.0	1.0	2.0	3.0	1.0
Max Green 1"	15	45	20	15	45	20
Yellow Clearance	3.0	3.7	3.7	3.0	3.7	3.7
Red Clearance	2.4	2.1	2.5	2.8	2.1	2.5
Red Reset	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1"	-	-	-	-	-	7
Don't Walk 1"	-	-	-	-	-	23
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Interval *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Reset 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.

**Plan of Record**  
 PREPARED BY: C. Pierce DATE: November 2018  
 REVIEWED BY: T. Williams DATE: December 2018  
 SIGNATURE: [Signature] DATE: 12/17/2018  
 COMMENTS: Removed RTCL, changed lane configuration and removed 5 section head.  
 This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.

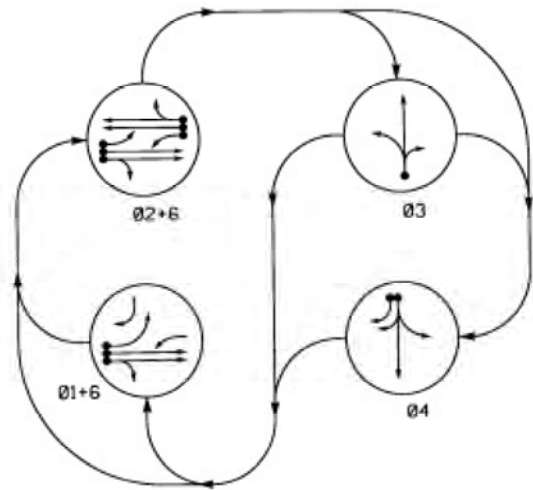


**Plan of Record**

Prepared in the Office of:  
  
 SR 3687 (Park Road) at Park Crossing/ Park Cedar Drive  
 Division 10 Mecklenburg County Charlotte  
 PLAN DATE: November 2018 REVIEWED BY: [Signature]  
 PREPARED BY: C. Pierce REVIEWED BY: [Signature]  
 SCALE: 1"=20'  
  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
  
 DATE: 12/7/2018  
 SIG. INVENTORY NO. 10-1263



**PHASING DIAGRAM:**



**PHASING DIAGRAM DETECTION LEGEND**

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

SIGNAL FACE	PHASE				
	01+6	02+6	03	04	F
11	←	←	←	←	←
21	←	←	←	←	←
22, 23	R	G	R	R	Y
31	R	R	G	R	R
32	R	R	G	R	R
41	R	R	G	R	R
42	←	←	←	←	←
61, 62	G	G	R	R	Y

⚡ = Flashing Yellow Arrow

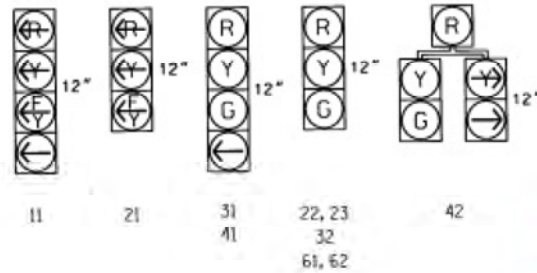
**STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL**

		TO					
		1	2	1	2	1	2
R	←	←	←	←	←	←	←
	←	←	←	←	←	←	←
L	←	←	←	←	←	←	←
	←	←	←	←	←	←	←

⚡ = Flashing Yellow Arrow

**SIGNAL FACE I.D.**

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CAB	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A	6X6	70	3	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	3	Y	2	Y	Y	-	-	-	-	Y
2C	6X40	0	2-4-2	-	2	Y	Y	-	-	-	-	Y
3A	6X60	EX151	2-4-2	-	3	Y	Y	-	-	10	-	Y
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	5	-	Y
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	70	3	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	3	Y	6	Y	Y	-	-	-	-	Y
S38	6X6	+125	3	Y	-	-	-	-	-	-	-	Y
S39	6X6	+125	3	Y	-	-	-	-	-	-	-	Y
S40	6X6	+110	3	Y	-	-	-	-	-	-	-	Y
S41	6X6	+110	3	Y	-	-	-	-	-	-	-	Y

4 Phase Fully Actuated  
NC 51 (Pineville-Matthews Rd.) / SR 4982 (Polk St.) CLS

**NOTES**

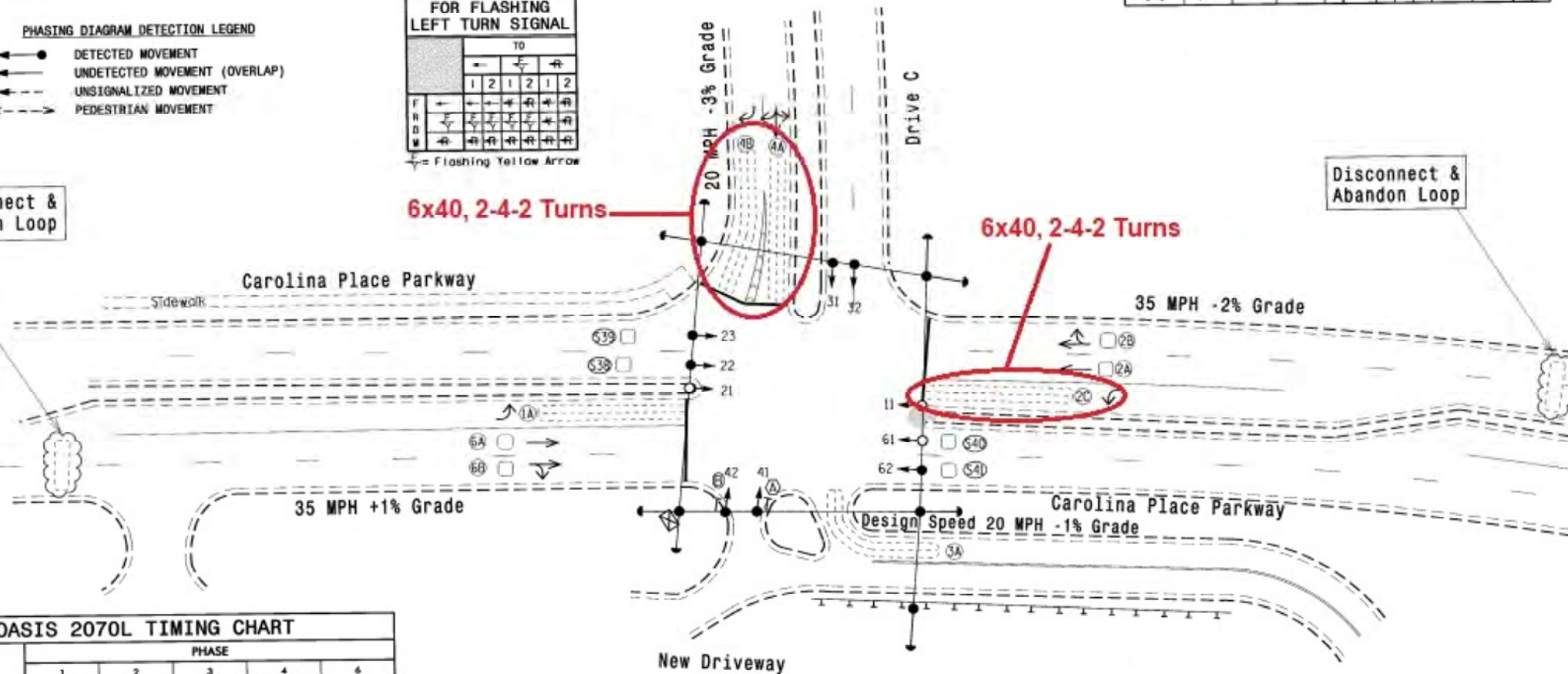
- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be logged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 22, 23, & 62.
- Abandon existing loops as shown.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 1356.

Disconnect & Abandon Loop

6x40, 2-4-2 Turns

6x40, 2-4-2 Turns

Disconnect & Abandon Loop



**OASIS 2070L TIMING CHART**

FEATURE	PHASE				
	1	2	3	4	6
Min Green 1*	7	10	7	7	10
Extension 1*	2.0	3.0	2.0	2.0	3.0
Max Green 1*	20	50	20	40	50
Yellow Clearance	3.0	4.0	3.0	3.0	4.0
Red Clearance	2.4	1.9	2.8	2.6	1.9
Walk 1*	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation*	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-
Time To Reducer*	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-	-
Simultaneous Gap	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**

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| <b>PROPOSED</b>                     | <b>EXISTING</b>                     |
| ○ Traffic Signal Head               | ● Traffic Signal Head               |
| ○ Modified Signal Head              | N/A                                 |
| ⊥ Sign                              | ⊥ Sign                              |
| ⊥ Pedestrian Signal Head            | ⊥ Pedestrian Signal Head            |
| ⊥ With Push Button & Sign           | ⊥ With Push Button & Sign           |
| ⊥ Signal Pole with Guy              | ⊥ Signal Pole with Guy              |
| ⊥ Signal Pole with Sidewalk Guy     | ⊥ Signal Pole with Sidewalk Guy     |
| □ Inductive Loop Detector           | □ Inductive Loop Detector           |
| □ Controller & Cabinet              | □ Controller & Cabinet              |
| □ Junction Box                      | □ Junction Box                      |
| --- 2-in Underground Conduit        | --- 2-in Underground Conduit        |
| N/A Right of Way                    | --- Right of Way                    |
| N/A Directional Arrow               | → Directional Arrow                 |
| N/A Guardrail                       | --- Guardrail                       |
| ⊙ Dual Turn and Through Arrows Sign | ⊙ Dual Turn and Through Arrows Sign |
| ⊙ Right Arrow "ONLY" Sign (R3-5R)   | ⊙ Right Arrow "ONLY" Sign (R3-5R)   |

**Signal Upgrade**

	<p>Carolina Place Parkway at Drive C / New Driveway</p>	
	<p>Division 10 Wecklenburg County Pineville</p>	<p>PLN DATE: January 2011</p>
<p>PREPARED BY: W. Mahbooba</p>	<p>REVIEWED BY:</p>	<p>DATE: 2/4/11</p>
<p>SCALE: 1"=30'</p>	<p>REVISIONS:</p>	<p>INIT. DATE</p>
<p>SIC. INVENTORY NO. 10-1356</p>		



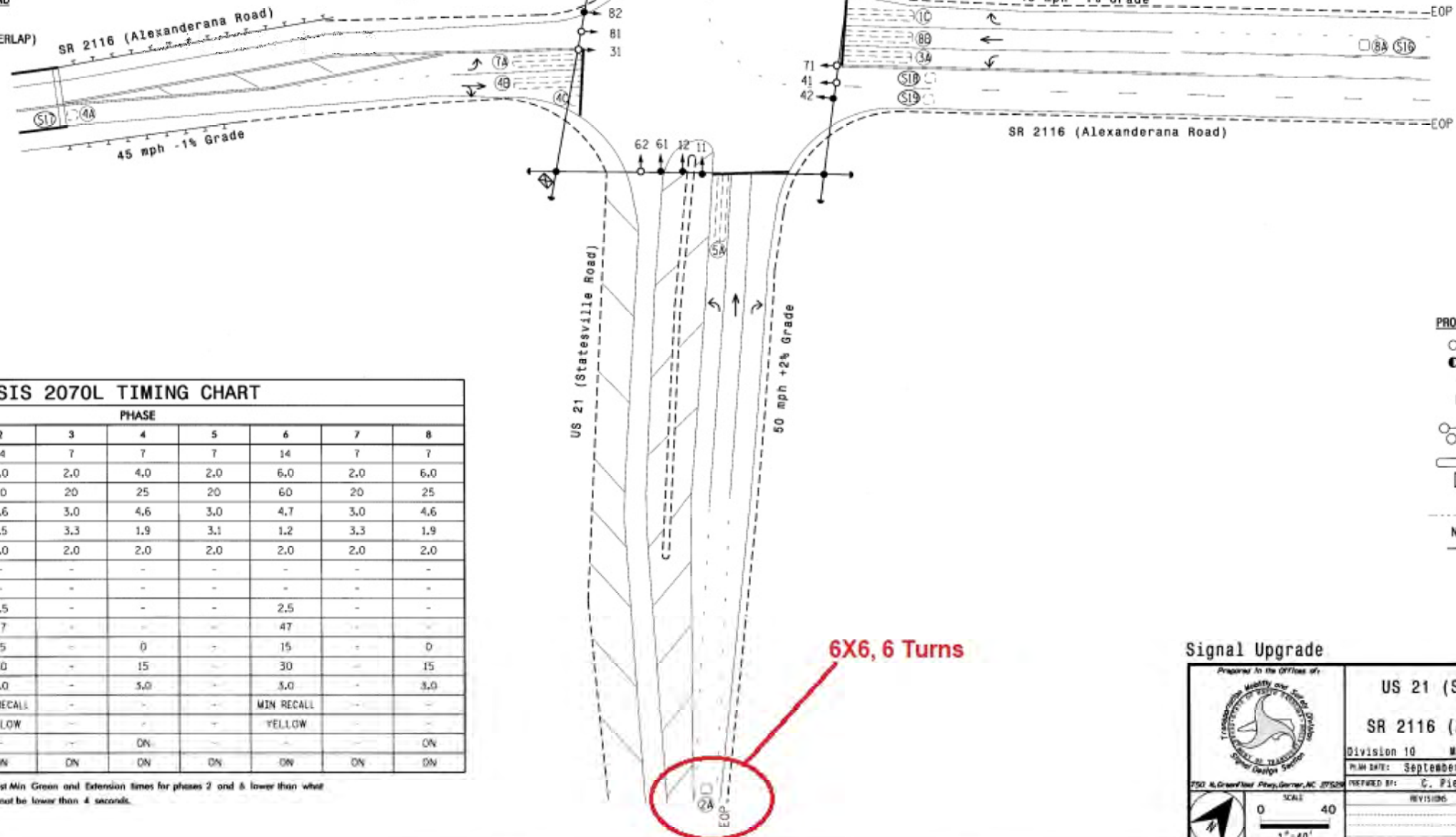
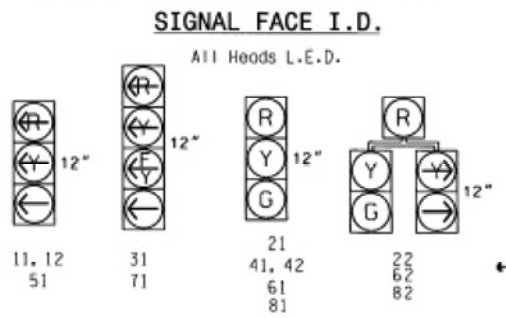
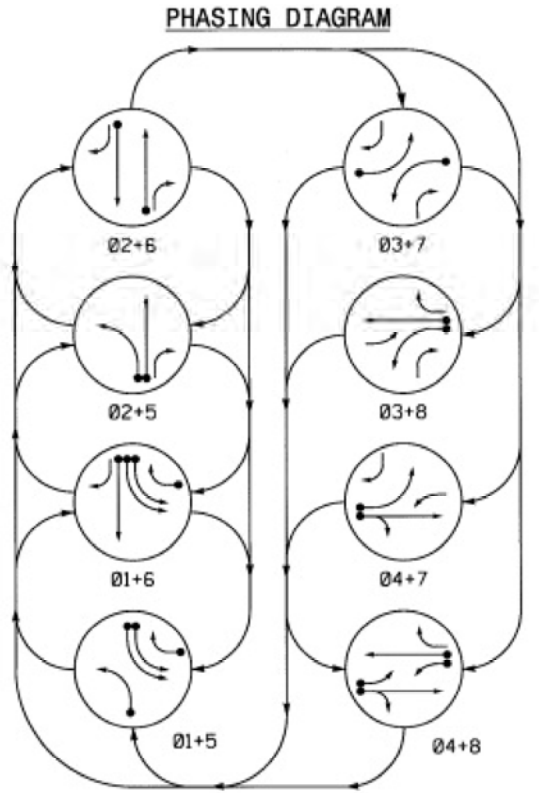
8 Phase Fully Actuated NC 115 (Old Statesville Rd.) CLS

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. Phase 1 and/or phase 5 may be logged.
4. Phase 3 and/or phase 7 may be logged.
5. Reposition existing signal heads numbered # 42 & 82.
6. Set all detector units to presence mode.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset #1481.

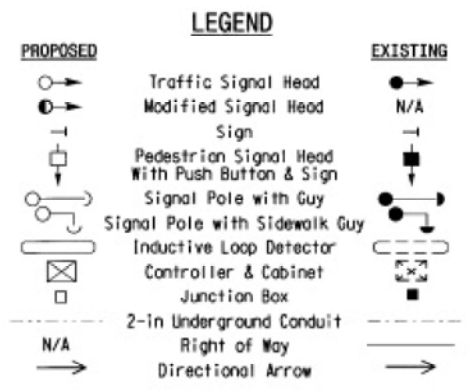
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1C	6X40	6	2-4-2	-	1	Y	Y	-	-	15	-	-
2A	6X6	355	6	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	15	-	-
4A/S17	6X6	290	5	-	4	-	-	-	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	Y	2.0	5	-	-
4C	6X6	0	6	-	4	Y	Y	-	-	15	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-	-	-
6A	6X6	355	6	Y	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	15	-	-
8A/S16	6X6	300	6	Y	8	-	-	-	-	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	Y	2.0	5	-	-
S18	6X6	+200	6	-	-	-	-	-	-	-	-	-
S19	6X6	+200	6	-	-	-	-	-	-	-	-	-

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11, 12	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41, 42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81	R	R	R	R	R	G	R	G
82	←	←	←	←	←	←	←	←



FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	14	7	7	7	14	7	7
Extension 1*	2.0	6.0	2.0	4.0	2.0	6.0	2.0	6.0
Max Green 1*	20	60	20	25	20	60	20	25
Yellow Clearance	3.0	4.6	3.0	4.6	3.0	4.7	3.0	4.6
Red Clearance	3.2	1.5	3.3	1.9	3.1	1.2	3.3	1.9
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation*	-	2.5	-	-	-	2.5	-	-
Max Variable Initial*	-	47	-	-	-	47	-	-
Time Before Reduction*	-	15	-	0	-	15	-	0
Time To Reduce*	-	30	-	15	-	30	-	15
Minimum Gap	-	3.0	-	5.0	-	5.0	-	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 8 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



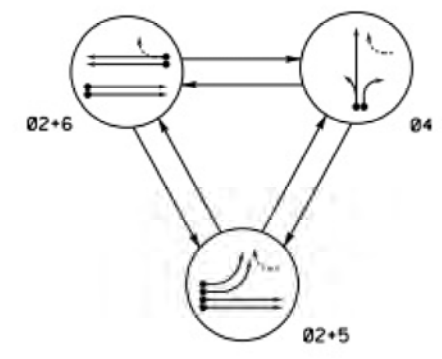
Signal Upgrade

Prepared in the Office of  
  
 US 21 (Statesville Road) at SR 2116 (Alexanderana Road)  
 Division 10 Mecklenburg County Huntersville  
 PLAN DATE: September 2013 REVIEWED BY: P.L.A.  
 PREPARED BY: C. Pierce REVIEWED BY:  
 SCALE: 1"=40'  
 SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24393  
 DATE: 11/13/13  
 SIG. INVENTORY NO. 10-1481

S:\21\2013\1115\1115\_01.dwg 11/13/13 10:48:14 AM 11/13/13 10:48:14 AM 11/13/13 10:48:14 AM 11/13/13 10:48:14 AM



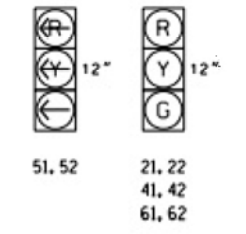
PHASING DIAGRAM



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

SIGNAL FACE	PHASE			
	02+6	02+5	04	02+6
21, 22	G	G	R	Y
41, 42	R	R	G	R
51, 52	-	-	-	-
61, 62	R	G	R	Y

**SIGNAL FACE I.D.**  
 All Heads L.E.D.



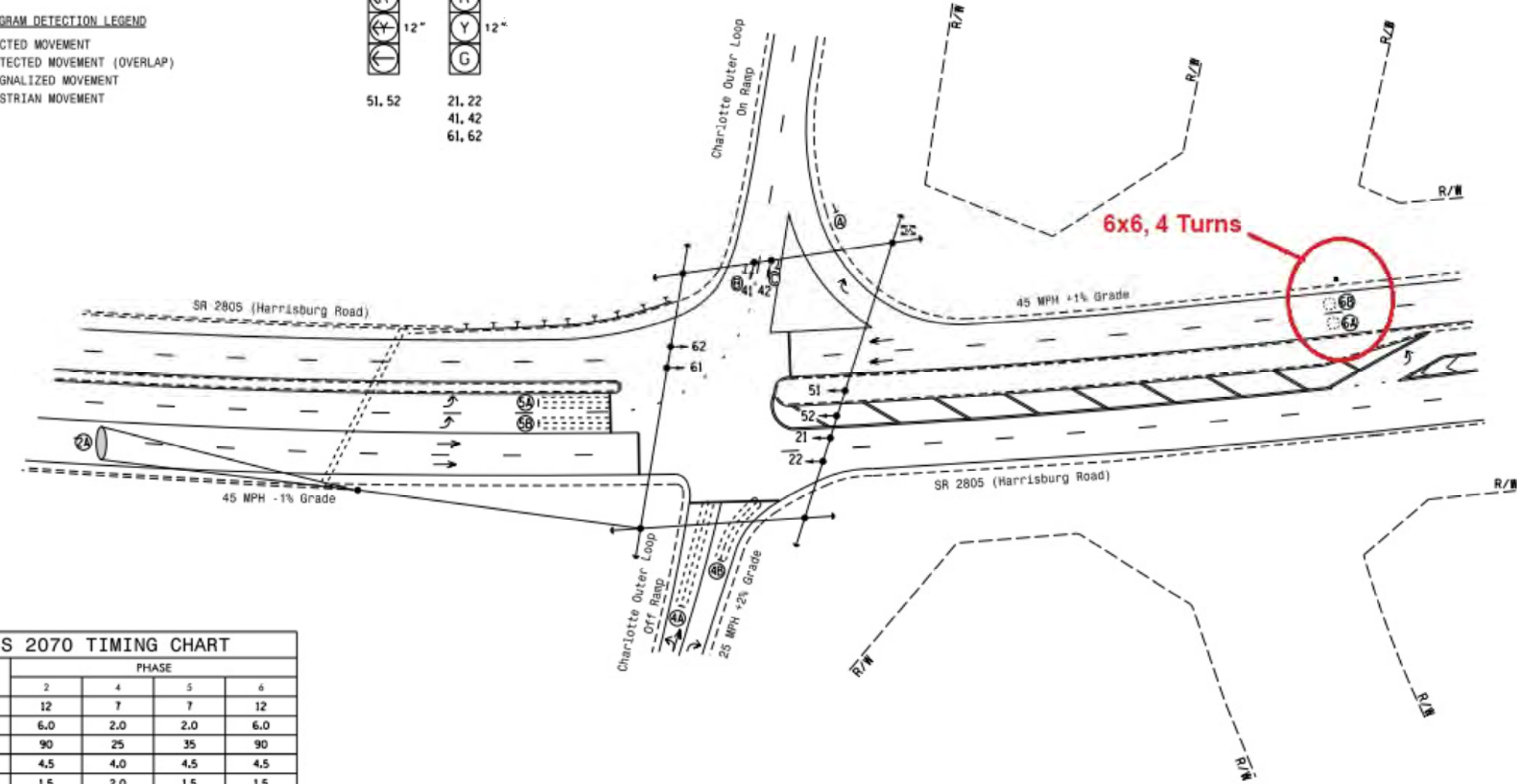
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A**	6X18*	300	-	-	2	Y	Y	-	-	-	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	15	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-	-
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	-	-
6A	6X6	300	4	-	6	Y	Y	-	-	-	-
6B	6X6	300	4	-	6	Y	Y	-	-	-	-

\* Zone of Detection  
 \*\* Microwave Detection

3 Phase Fully Actuated SR 2805 (Harrisburg Road)CLS

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. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Master Asset # 11030, Controller Asset # 1722.



FEATURE	PHASE			
	2	4	5	6
Min Green 1"	12	7	7	12
Extension 1"	6.0	2.0	2.0	6.0
Max Green 1"	90	25	35	90
Yellow Clearance	4.5	4.0	4.5	4.5
Red Clearance	1.5	2.0	1.5	1.5
Red Revert	2.0	2.0	2.0	2.0
Walk 1"	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.5	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	SOFT RECALL	-	-	SOFT RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

PROPOSED	EXISTING
	N/A

**Plan of Record**  
 PREPARED BY: V. Mahbooba DATE: November 2011  
 REVIEWED BY: T. Williams DATE: November 2011  
 SIGNATURE: [Signature] DATE: 2/10/2012  
**COMMENTS:**  
 Disconnected loops EC & ED. Relocated SR 2804 (Ready Creek Road).  
 This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.

**Plan Of Record**

SR 2805 (Harrisburg Road) at Charlotte Outer Loop Westbound On/Off Ramps

Division 10 Wecklenburg County Charlotte

PLANNING DATE: August 1998 REVIEWED BY: C.F.Andrews  
 PREPARED BY: W.A.Kadibhai REVIEWED BY: A.L.Grandy

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

SCALE: 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Not a certified document. This document originally issued and sealed by Gene G. Murr, Jr., 1145431 on 10/13/1998. This document shall not be considered a certified document.

SIG. INVENTORY NO. 10-1722



3 Phase  
Fully Actuated  
SR 2136 (Gilead Road)/I-77 Ramps CLS

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. Phase 1 may be logged.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset #1752.

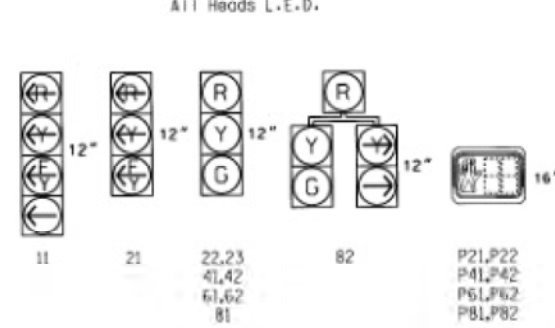
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOPS	DETECTOR PROGRAMMING						
					PHASE	CALLING EXTENSION	PULL TIME (SECS)	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAB
1A	6X60	0	EXIST	-	1	Y	-	-	15	-	-
1B	6X60	+5	EXIST	-	1	Y	-	-	15	-	-
2A	6X6	70	3	Y	2	Y	-	-	-	-	-
2B	6X6	70	3	Y	2	Y	-	-	-	-	-
2C	6X40	0	2-4-2	Y	2	Y	-	-	-	-	-
4A	6X60	0	EXIST	-	4	Y	-	-	5	-	-
6A	6X6	70	EXIST	-	6	Y	-	-	-	-	-
8A	6X40	0	EXIST	-	8	Y	-	-	10	-	-
S09	6X6	+200	3	-	-	-	-	-	-	-	Y
S10	6X6	+200	EXIST	-	-	-	-	-	-	-	Y
S11	6X6	+200	3	Y	-	-	-	-	-	-	Y

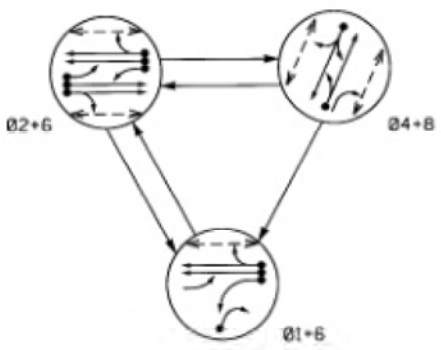
TABLE OF OPERATION

SIGNAL FACE	PHASE				
	01+6	02+6	04+B	01+6	F
11	-	-	-	-	-
21	-	-	-	-	-
22,23	R	G	R	Y	-
41,42	R	R	G	R	-
61,62	G	G	R	Y	-
81	R	R	G	R	-
82	-	R	G	R	-
P21,P22	DW	W	DW	DRK	-
P41,P42	DW	DW	W	DRK	-
P61,P62	W	W	DW	DRK	-
P81,P82	DW	DW	W	DRK	-

SIGNAL FACE I.D.



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

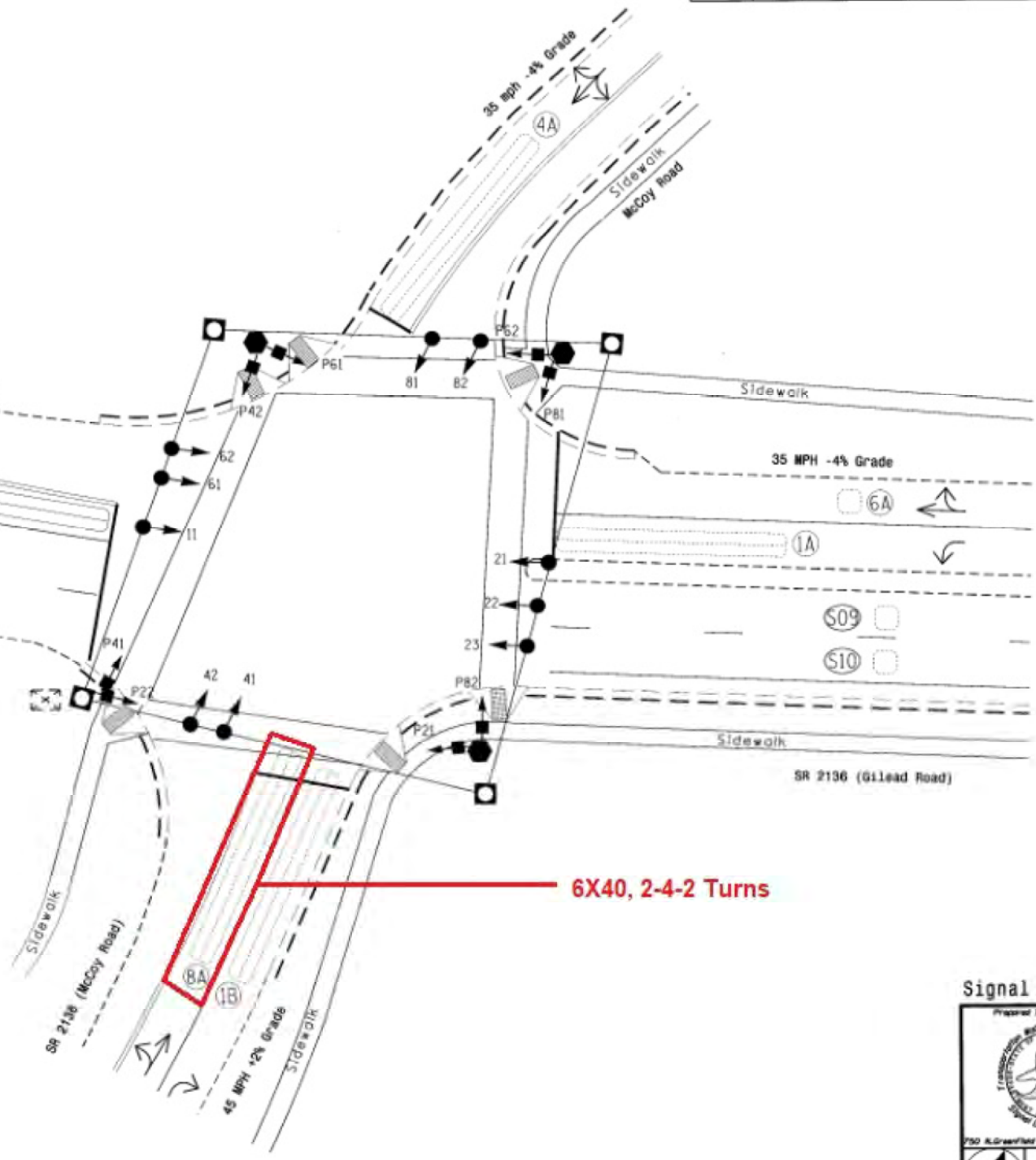
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

- W - Walk
- DW - Don't Walk
- DRK - Dark

OASIS 2070L TIMING CHART

FEATURE	PHASE				
	1	2	4	6	8
Min Green 1 *	7	10	7	10	7
Extension 1 *	1.0	3.0	1.0	3.0	1.0
Max Green 1 *	30	60	40	60	40
Yellow Clearance	3.0	4.1	4.1	4.1	4.3
Red Clearance	3.2	2.2	2.3	2.2	1.7
Walk 1 *	-	7	7	7	7
Don't Walk 1	-	13	21	11	18
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	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

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



LEGEND

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

Signal Upgrade

SR 2136 (Gilead Road)  
at  
SR 2138 (McCoy Road) /  
McCoy Road

Division 10 Mecklenburg County Huntersville

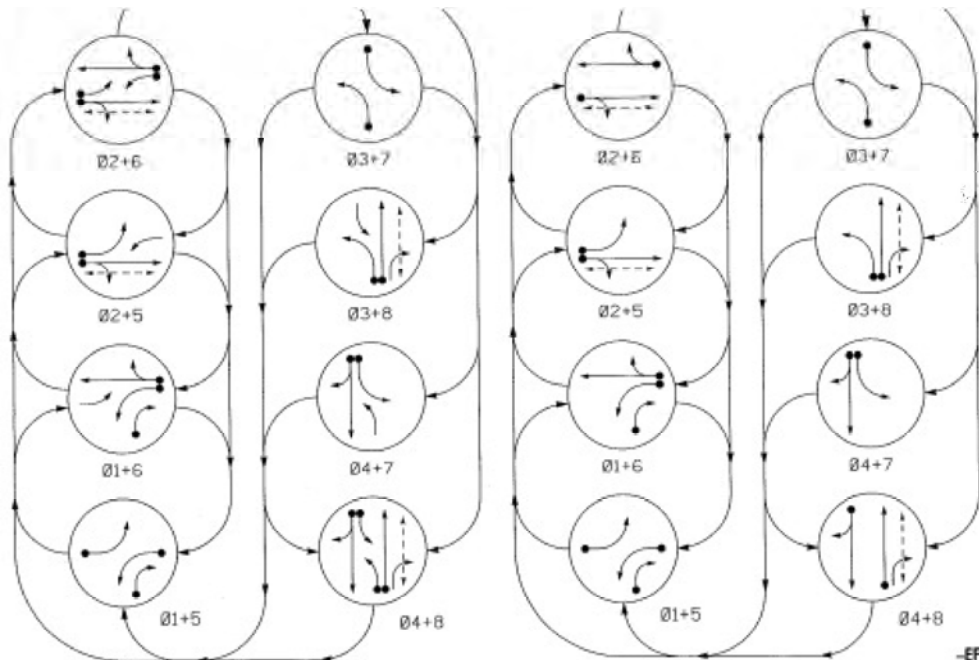
PLANNED BY: August 2013 REVIEWED BY: W. Mahbooba

PREPARED BY: S. Ip REVIEWED BY: Z. Little

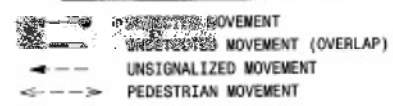
REVISIONS: \_\_\_\_\_ DATE: \_\_\_\_\_

SCALE: 1"=20'





**PHASING DIAGRAM DETECTION LEGEND**



**NORMAL PHASING TABLE OF OPERATION**

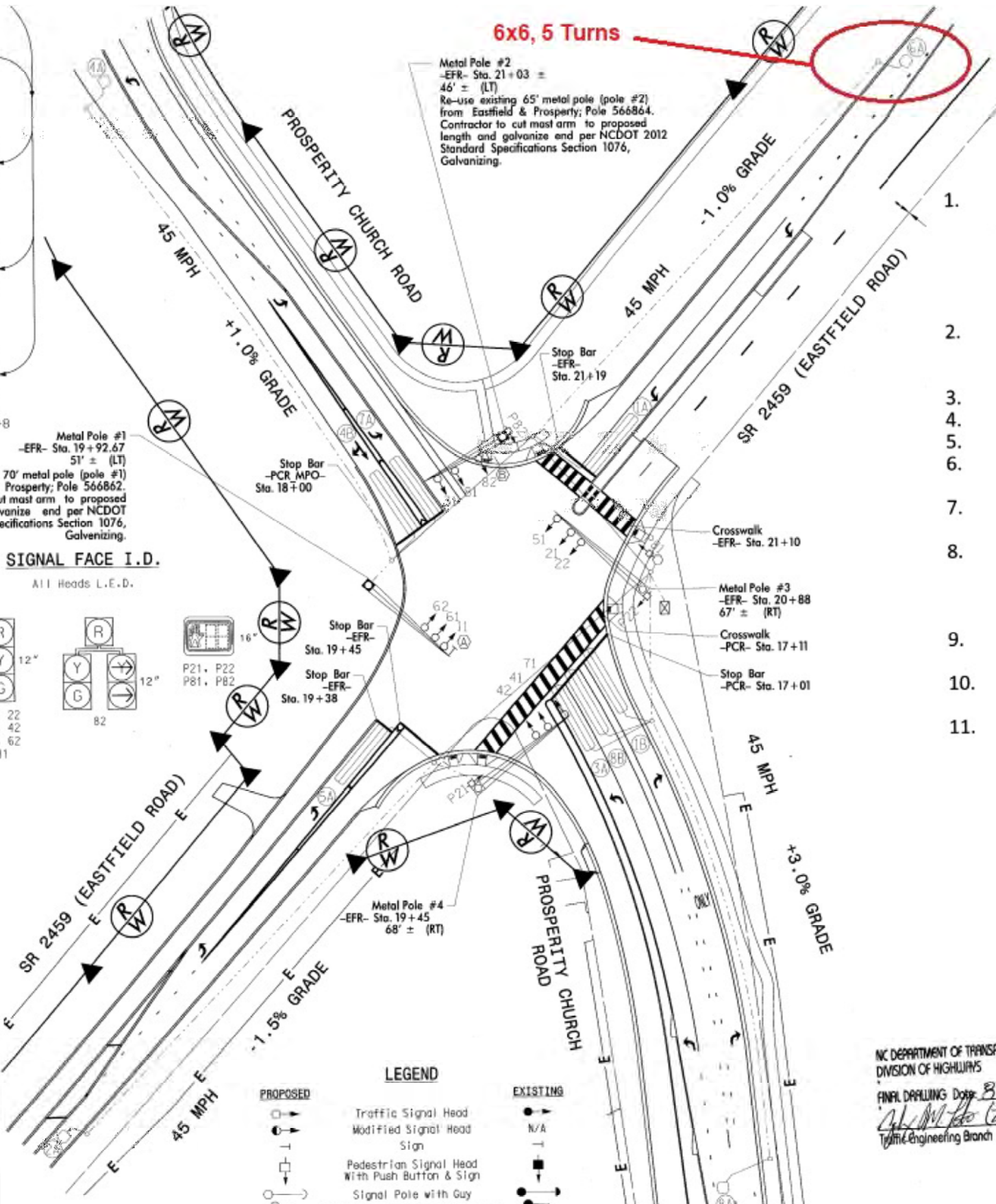
SIGNAL FACE	PHASE							
	01	02	03	04	05	06	07	08
11								
21, 22	R	R	G	G	R	R	R	Y
31								
41, 42	R	R	R	R	R	R	G	R
51								
61, 62	R	G	R	G	R	R	R	Y
71								
81	R	R	R	R	R	G	R	R
82	R	R	R	R	R	G	R	R
P21, P22	DW	DW	W	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK

**ALTERNATE PHASING TABLE OF OPERATION**

SIGNAL FACE	PHASE							
	01	02	03	04	05	06	07	08
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	R	R	R	R	R	G	R	R
82	R	R	R	R	R	G	R	R
P21, P22	DW	DW	W	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK

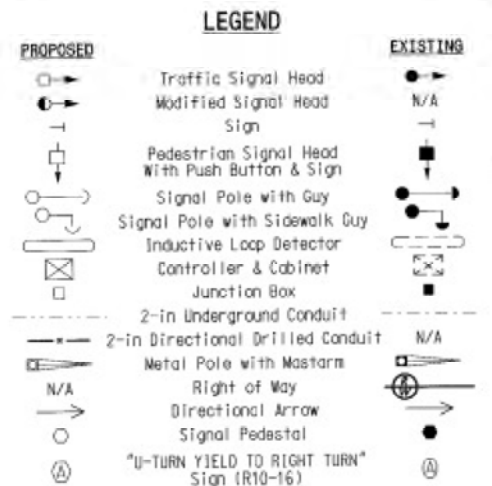
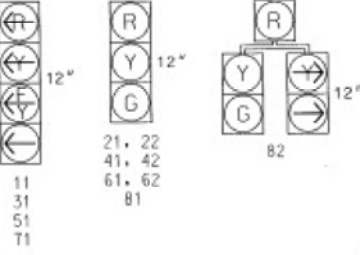
**OASIS 2070L TIMING CHART**

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	6.0	2.0	6.0	2.0	6.0
Max Green 1*	20	90	15	60	20	90	15	60
Yellow Clearance	3.0	4.7	3.0	4.4	3.0	4.7	3.0	4.4
Red Clearance	5.9	2.5	2.4	2.2	3.4	2.5	3.6	2.2
Walk 1*	-	7	-	-	-	-	-	7
Don't Walk 1	-	26	-	-	-	-	-	15
Seconds Per Actuation*	-	2.5	-	-	-	2.5	-	-
Max Variable Initial*	-	34	-	-	-	34	-	-
Time Before Reduction*	-	45	-	0	-	45	-	0
Time To Reduce*	-	15	-	15	-	15	-	15
Minimum Gap	-	3.0	-	3.0	-	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



**SIGNAL FACE I.D.**

All Heads L.E.D.



6x6, 5 Turns

Metal Pole #2  
-EFR- Sta. 21+03 ±  
46' ± (LT)  
Re-use existing 65' metal pole (pole #2) from Eastfield & Prosperity; Pole 566864. Contractor to cut mast arm to proposed length and galvanize end per NCDOT 2012 Standard Specifications Section 1076, Galvanizing.

Metal Pole #1  
-EFR- Sta. 19+92.67  
51' ± (LT)  
Re-use existing 70' metal pole (pole #1) from Eastfield & Prosperity; Pole 566862. Contractor to cut mast arm to proposed length and galvanize end per NCDOT 2012 Standard Specifications Section 1076, Galvanizing.

Metal Pole #4  
-EFR- Sta. 19+45  
68' ± (RT)

Metal Pole #3  
-EFR- Sta. 20+88  
67' ± (RT)

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
FINAL DRAWINGS Date: 8/20/13  
Zachary M. L...  
Traffic Engineering Branch

8 Phase Fully Actuated (Isolated) 10-1891

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/itss/>
- Do not program signal for late night flashing operation unless otherwise directed by the Division Traffic 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.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Relocate existing underground fiber to new controller location.
- Pushbutton locations must be approved in the field by the Division Traffic Engineer prior to installation.

**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

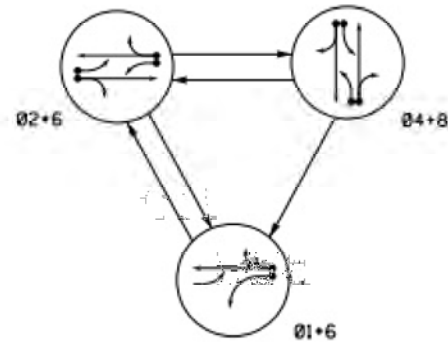
LOOP	SIZE (FT)	DISTANCE FROM STOP BAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CAB		
					PHASE	CALLING	EXTENSION	STRETCH TIME				
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	**15	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	**15	-	Y
4A	6X6	300	5	Y	4	-	Y	-	-	-	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	2.0	5	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	*15	-	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	*15	-	Y
8A	6X6	300	5	Y	8	-	Y	-	-	-	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	2.0	5	-

\* Use 3 Seconds of Delay For Loop 5A and 7A During Alternate Phasing Operation.  
\*\* Disable Delay During Alternate Phasing Operation.  
\*\*\* Disable Phase 24/68 Call For Loops 1A, 3A, 5A and 7A During Alternate Phasing Operation.

 Plans Prepared By: Parsons Brinckerhoff 221 W. Trade Street Suite 1950 Charlotte, NC 28202 704-342-5400 NC LIC. NO. P-8065	Prepared in the Office of:  DEPARTMENT OF TRANSPORTATION Signal Design Section 750 Greenfield Parkway, Garner, NC 27529	<b>SR 2459 (EASTFIELD ROAD) AT PROSPERITY CHURCH ROAD</b>		SEAL  SEAL 034224 ZACHARY M. L... ENGINEER
		Division 10 Wecklenburg County in Huntersville PLAN DATE: August 9, 2013 REVIEWED BY: J. Gorrie PREPARED BY: K. Purnell REVIEWED BY:		



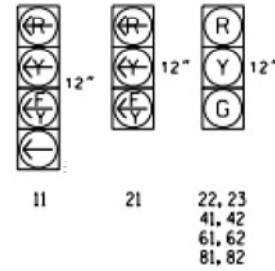
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	04+8	FLASH
11	—	—	—	—
21	—	—	—	—
22, 23	R	G	R	Y
41, 42	R	R	G	R
61, 62	G	G	R	Y
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.O.



PHASING DIAGRAM DETECTION LEGEND

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

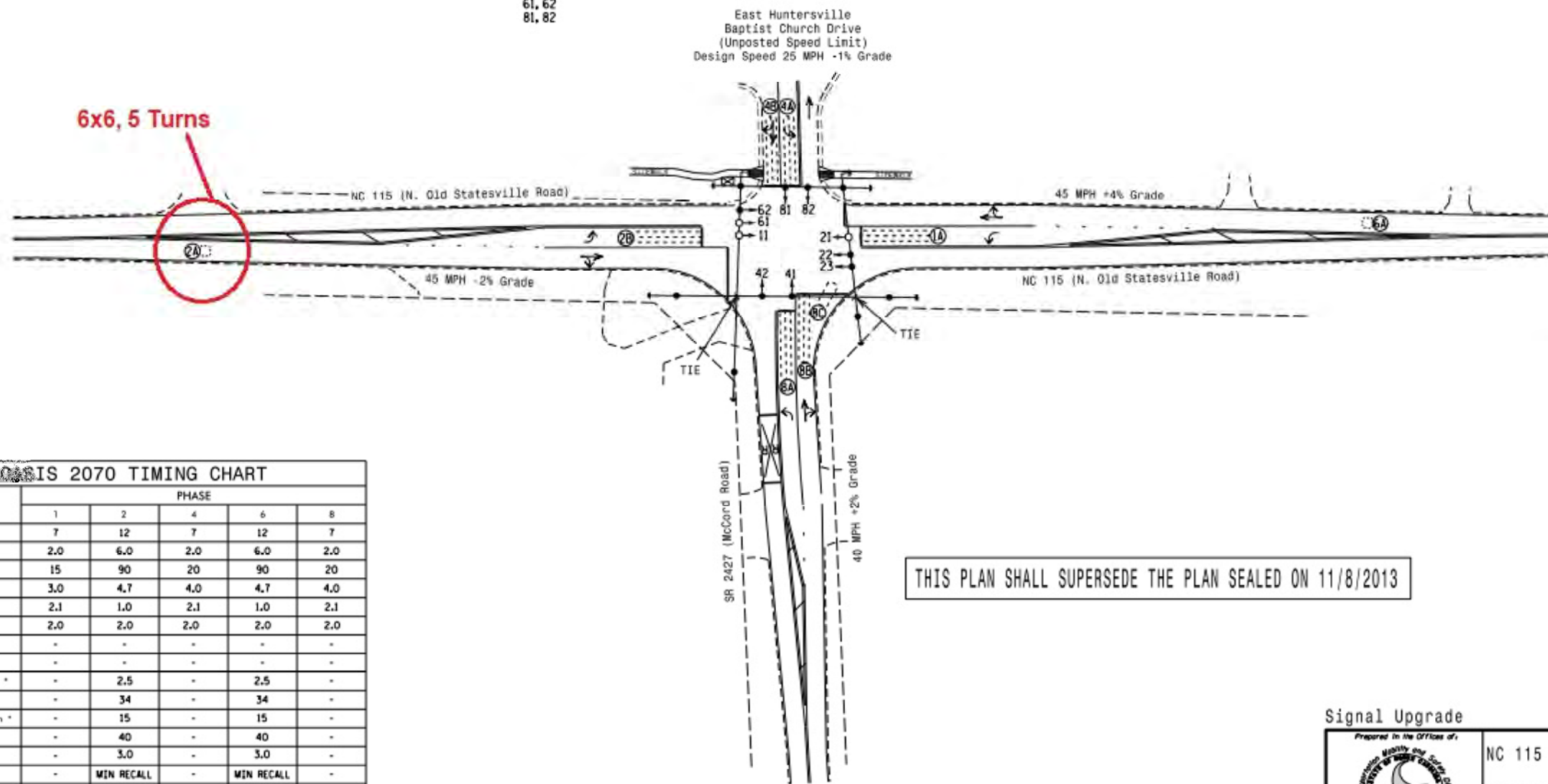
OASIS 2070 LOOP & DETECTOR INSTALLATION												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A	6X6	300	5	-	2	Y	Y	-	-	3	-	Y
2B	6X40	0	2-4-2	-	2	Y	Y	-	-	3	-	Y
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	Y
8C	6X15	+5	3	-	8	Y	Y	-	-	15	-	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. Phase 1 may be lagged.
4. Reposition existing signal heads numbered 22, 23 & 62.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.

6x6, 5 Turns



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

OASIS 2070 TIMING CHART					
FEATURE	PHASE				
	1	2	4	6	8
Min Green 1"	7	12	7	12	7
Extension 1"	2.0	6.0	2.0	6.0	2.0
Max Green 1"	15	90	20	90	20
Yellow Clearance	3.0	4.7	4.0	4.7	4.0
Red Clearance	2.1	1.0	2.1	1.0	2.1
Red Revert	2.0	2.0	2.0	2.0	2.0
Walk 1"	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	2.5	-	2.5	-
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	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

\* These values may be field adjusted. Do not adjust Max Green and Extension times for phases 2 and 8 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

THIS PLAN SHALL SUPERSEDE THE PLAN SEALED ON 11/8/2013

Signal Upgrade

Prepared in the Office of:  
  
 NC 115 (N. Old Statesville Road) at SR 2427 (McCord Road)/Church Dr  
 Division 10 Wecklenburg County Huntersville  
 PLAN DATE: February 2017 REVIEWED BY: T. Williams  
 PREPARED BY: V. Vahabzoda REVIEWED BY:  
 SCALE: 1"=40'  
 REVISIONS: [Table with columns for REVISIONS, INIT., DATE]  
 DATE: 2/13/2017  
 SIGNED: J. Williams  
 TITLE: ENGINEER  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024393  
 SIGNED: J. Williams  
 TITLE: ENGINEER  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 10-1942



PHASING DIAGRAM

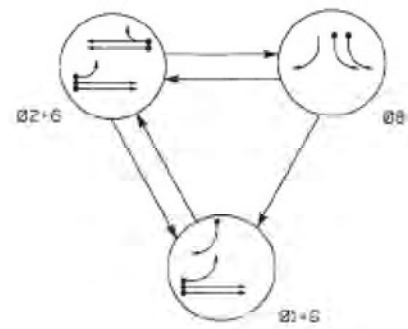


TABLE OF OPERATION

SIGNAL FACE	PHASE				FLASH
	1	2	6	8	
11	←	←	←	←	←
21,22	R	G	R	Y	
61,62	G	G	R	Y	
81	R	R	G	R	
82	R	G	R		

← = Flashing Yellow Arrow

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

TO	TO			
	1	2	1	2
←	←	←	←	←
←	←	←	←	←
←	←	←	←	←
←	←	←	←	←

← = Flashing Yellow Arrow

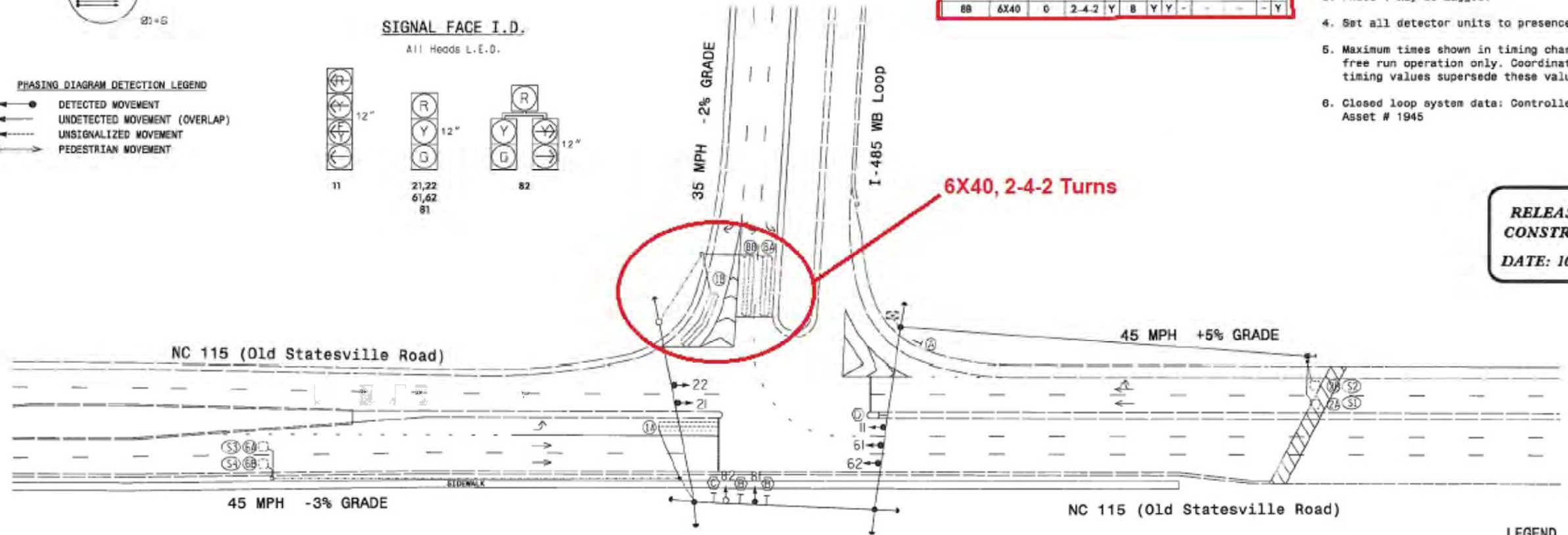
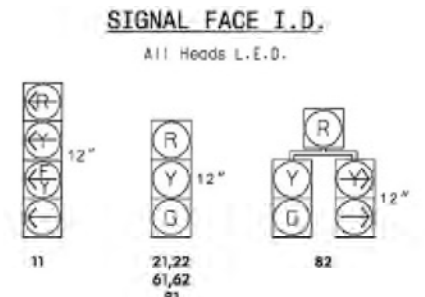
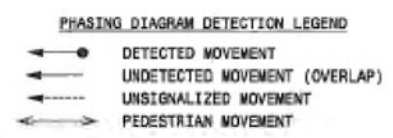
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING			
					PHASE	CALLING	EXTENSION	PULL TIME DELAY
1A	6X40	0	2-4-2	-	1	Y	Y	15
1B	6X40	0	2-4-2	Y	1	Y	Y	15
2A/S1	6X6	300	5	-	2	Y	Y	-
2B/S2	6X6	300	5	-	2	Y	Y	-
6A/S3	6X6	300	6	-	6	Y	Y	-
6B/S4	6X6	300	6	-	6	Y	Y	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-

3 Phase Fully Actuated NC 115 (Old Statesville Road) Closed Loop System

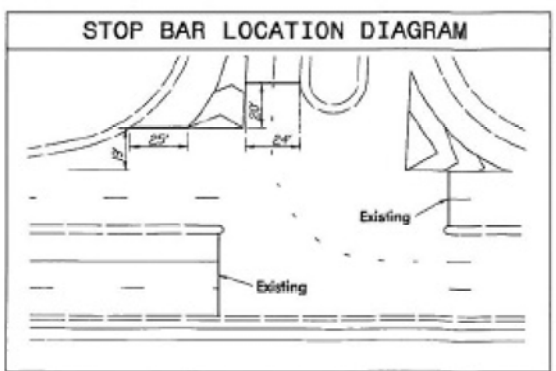
- NOTES
- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
  - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
  - Phase 1 may be lagged.
  - Set all detector units to presence mode.
  - Maximum times shown in timing chart are for free run operation only. Coordinated signal timing values supersede these values.
  - Closed loop system data: Controller Asset # 1945

RELEASE FOR CONSTRUCTION DATE: 10/14/2014

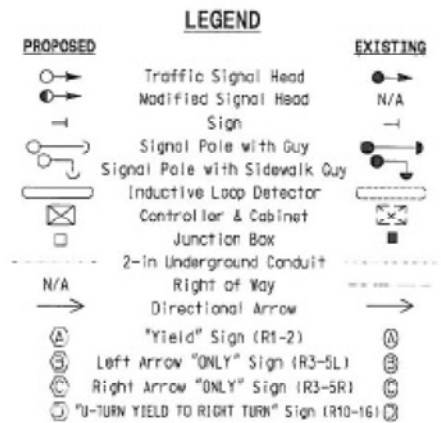


OASIS 2070L TIMING CHART

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*	15	30	30	25
Yellow Clearance	3.0	4.8	4.8	3.0
Red Clearance	2.6	2.2	2.2	3.3
Red Revert	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation*	-	1.5	1.5	-
Max Variable Initial*	-	34	34	-
Time Before Reduction*	-	15	15	-
Time To Reduction*	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON



THIS PLAN SHALL SUPERSEDE THE PLAN ISSUED ON 9/20/2011



Signal Upgrade

NC 115 (Old Statesville Road) at I-485 WB Loop

Division 10 Wecklenburg County Hestersville

PLAN DATE: October 2014 PREPARED BY: C. Hall REVIEWED BY: B. Web

SCALE: 1"=40'

10/14/14

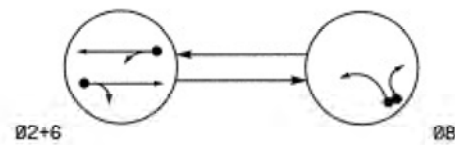
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034384

CDM Smith 5400 GLENWOOD AVENUE Suite 400 RALEIGH, NC 27612 NC License F-1255

DATE: 10/20/14 4:10:20 PM



**PHASING DIAGRAM**



**PHASING DIAGRAM DETECTION LEGEND**

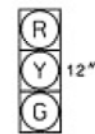
- → DETECTED MOVEMENT
- → UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE		
	Ø2+6	Ø8	Ø8
21,22	G	R	Y
61,62	G	R	Y
81,82,83	R	G	R

**SIGNAL FACE I.D.**

All Heads L.E.D.



21, 22  
61, 62  
81, 82, 83

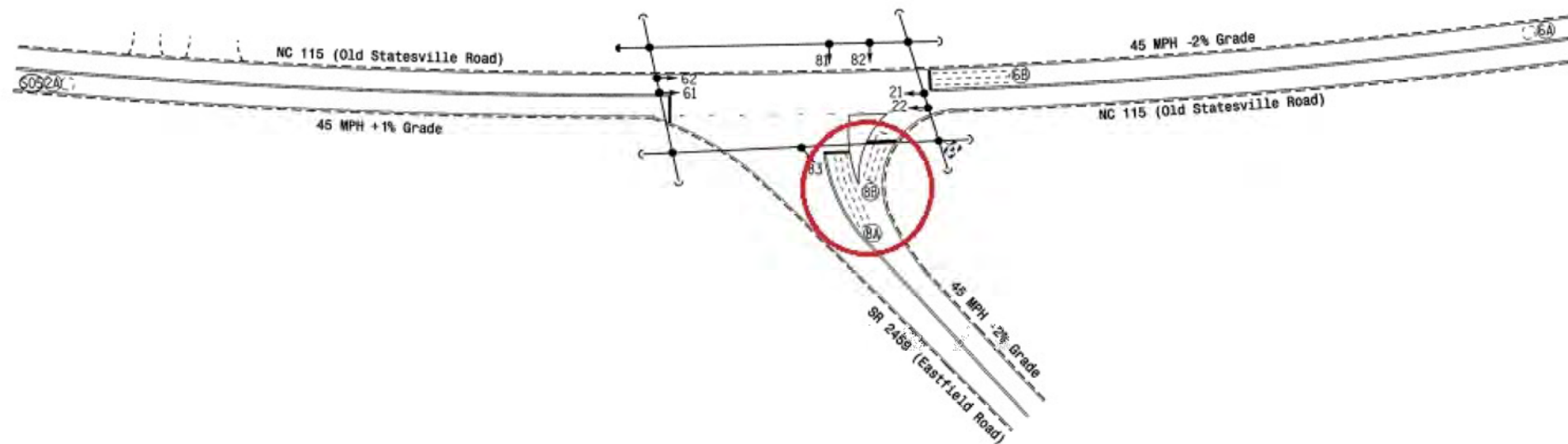
**2070L LOOP & DETECTOR INSTALLATION**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING								
					PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
2A/S05	6X6	300	5	-	2	Y	Y	-	-	-	-	Y	-
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	-	-
6B	6X40	0	2-4-2	-	6	Y	Y	Y	2	5	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	5	-	-	-
8B	6X25	+5	2-4-2	-	8	Y	Y	-	-	15	-	-	-

2 Phase Fully Actuated NC 115 CLS

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 1997.



**LEGEND**

- | PROPOSED   | EXISTING                          |
|--|-----------------------------------|
| ○ → Traffic Signal Head                            | ● → N/A                           |
| ○ → Modified Signal Head Sign                      | ○ → N/A                           |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A                           |
| N/A  | ○ → Utility Pole                  |
| ○ → Signal Pole with Guy                           | ○ → Signal Pole with Sidewalk Guy |
| ○ → Inductive Loop Detector                        | ○ → Junction Box                  |
| ○ → Controller & Cabinet                           | ○ → Junction Box                  |
| ○ → 2-in Underground Conduit                       | ○ → Right of Way                  |
| → → Directional Arrow                              | → → Pavement Marking Arrow        |

**2070L TIMING CHART**

FEATURE	PHASE		
	2	6	8
Min Green 1 *	12	12	7
Extension 1 *	6.0	6.0	2.0
Max Green 1 *	90	90	20
Yellow Clearance	4.4	4.7	3.0
Red Clearance	1.9	1.6	2.6
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	2.0	-	-
Max Variable Initial *	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	-	-
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

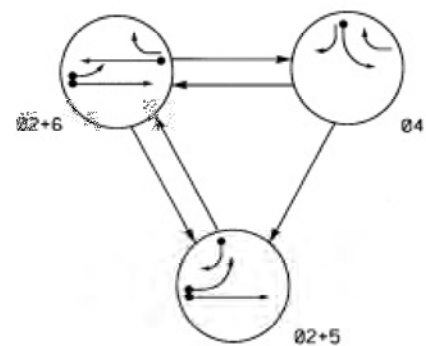
\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

**Signal Upgrade**

	<p>NC 115 (Old Statesville Road) at SR 2459 (Eastfield Road)</p>	
	<p>Division 10 Wecklenburg County Huntersville</p>	
<p>PLANNED BY: W. Wahbooba</p>	<p>REVIEWED BY:</p>	<p>DATE: 8/20/09</p>
<p>REVISIONS:</p>	<p>INIT. DATE</p>	<p>SIGNATURE: Timothy Williams</p>
<p>SCALE: 1"=40'</p>	<p>SIG. INVENTORY NO. 10-1997</p>	

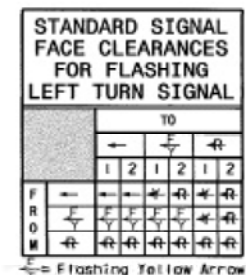


**PHASING DIAGRAM**



SIGNAL FACE	PHASE			
	02+6	02+6	04	04
21,22	G	G	R	Y
41	R	R	G	R
42	Y	R	G	R
51	Y	R	G	Y
61	R	G	R	Y
62	R	G	Y	Y

⚡ = Flashing Yellow Arrow



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S01	6X6	420	6	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5C	6X6	0	3	Y	5	Y	Y	-	-	15	-	Y
6A	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y

3 Phase Fully Actuated NC 24-27 (Albemarle Rd.) CLS

**NOTES**

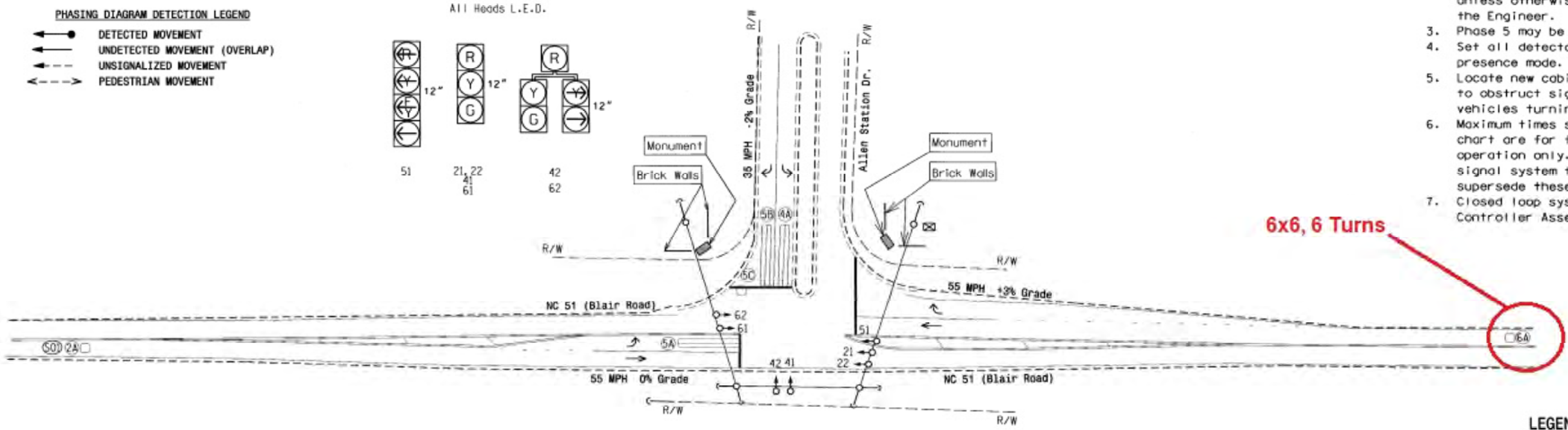
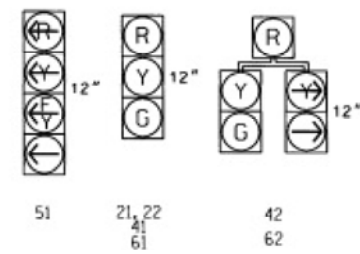
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be logged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset # 2092.

**PHASING DIAGRAM DETECTION LEGEND**

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

**SIGNAL FACE I.D.**

All Heads L.E.D.



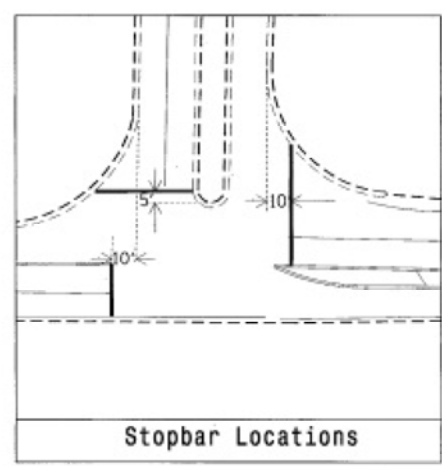
6x6, 6 Turns

**LEGEND**

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

OASIS 2070L TIMING CHART				
FEATURE	PHASE			
	2	4	5	6
Min Green 1*	14	7	7	14
Extension 1*	6.0	2.0	2.0	6.0
Max Green 1*	90	25	25	90
Yellow Clearance	5.2	3.0	3.0	5.2
Red Clearance	1.0	2.1	2.1	1.0
Walk 1*	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation*	2.0	-	-	2.0
Max Variable Initial*	46	-	-	46
Time Before Reduction*	15	-	-	15
Time To Reduce*	30	-	-	30
Minimum Gap	3.4	-	-	3.4
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.



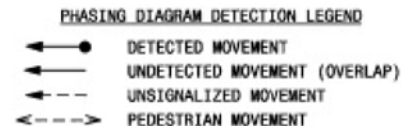
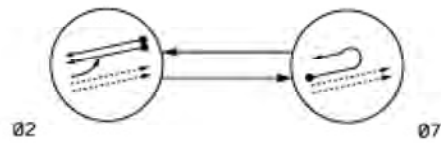
This plan shall supersede plan sealed on 6/24/2010.

**New Installation**

	<b>NC 51 (Blair Road) at Allen Station Drive</b>	
	Division 10 Wecklenburg County Near Mint Hill	
PLAN DATE: June 2010 PREPARED BY: M. Wahbooba REVISIONS:	REVIEWED BY: REVIEWED BY:	SIGNATURE: <i>T. M. Williams</i> DATE: 7/19/10
SCALE: 0 40 1"=40'	SIG. INVENTORY NO. 10-2092	



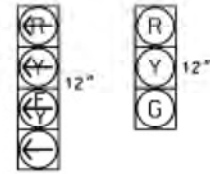
**PHASING DIAGRAM**



SIGNAL FACE	PHASE		
	02	07	71
21, 22	G	R	Y
71	F	-	-

**SIGNAL FACE I.D.**

All Heads L.E.D.



71      21, 22

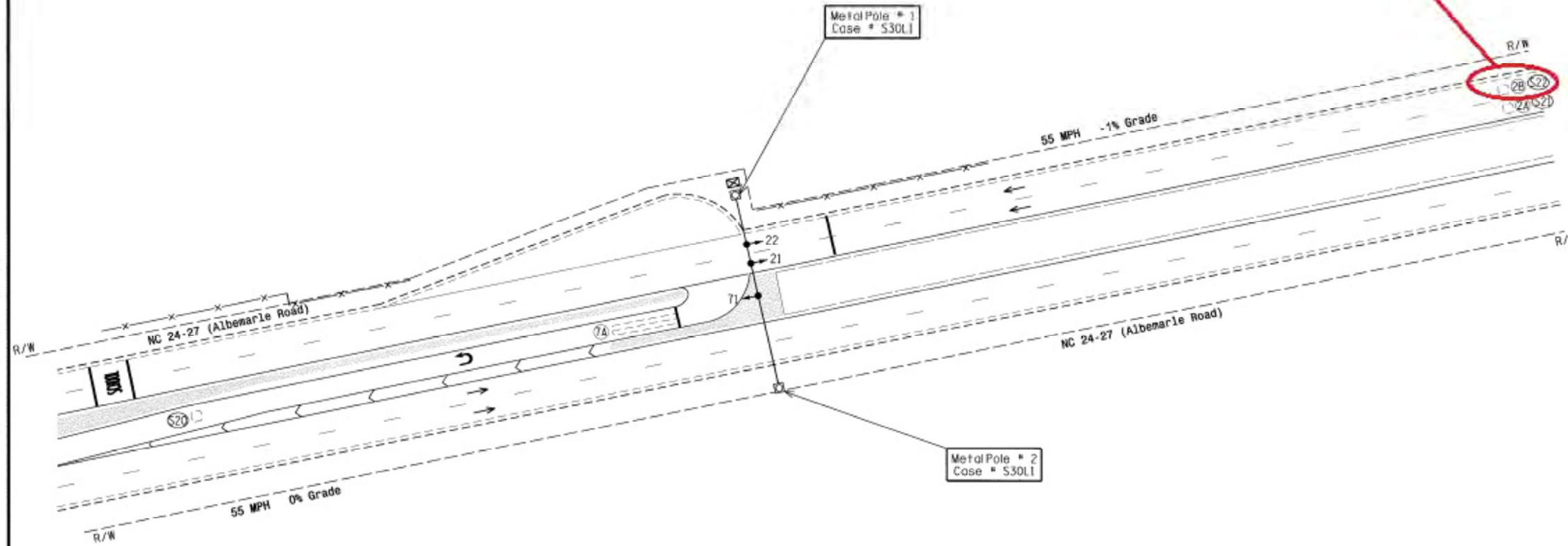
**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

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 CAB
2A/S21	6X6	420	6	-	2	Y	Y	-	-	-	-	Y
2B/S22	6X6	420	6	-	2	Y	Y	-	-	-	-	Y
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	15	-	-
S20	6X6	300	5	-	-	-	-	-	-	-	-	Y

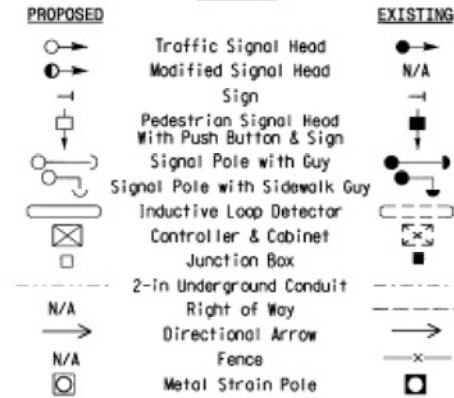
2 Phase Fully Actuated NC 24-27 (Albemarle Rd.) CLS

**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.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 2156.



**LEGEND**



**OASIS 2070L TIMING CHART**

FEATURE	PHASE	
	2	7
Min Green 1 *	14	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	20
Yellow Clearance	5.3	3.0
Red Clearance	1.7	4.2
Red Revert	2.0	2.0
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.8	-
Max Variable Initial *	46	-
Time Before Reduction *	15	-
Time To Reduce *	40	-
Minimum Gap	3.4	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

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

**Plan of Record**

PREPARED BY: C.L. Sweeney      DATE: February 2014

REVIEWED BY: Z.M. Little      DATE: February 2014

SIGNATURE: *[Signature]*      DATE: 2/18/14

COMMENTS:

ADDNO delay to 1000 TA.

This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from its original state.

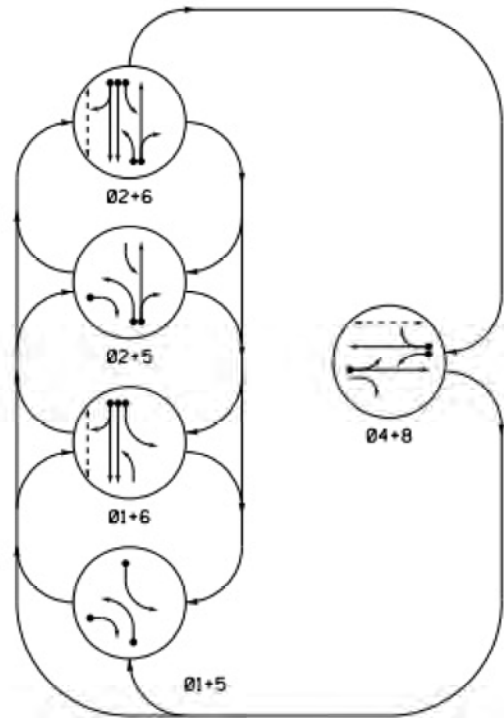
**Plan Of Record**

	NC 24-27 (Albemarle Road) at U-Turn Near SR 3106 (Cabarrus Road)		Not a certified document. This document originally issued and sealed by Zachary M. Little, PE no. 30530 on 6/17/2013. This document shall not be considered a certified document.	
	Division 10    Wecklenburg County    Charlotte	PLAN DATE: May 2013    REVIEWED BY: Z. Little		PREPARED BY: M. Mahbooba    REVIEWED BY:
	SCALE: 1" = 40'	REVISIONS		INITI.    DATE

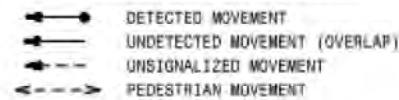
SIG. INVENTORY NO. 10-2156



**PHASING DIAGRAM**



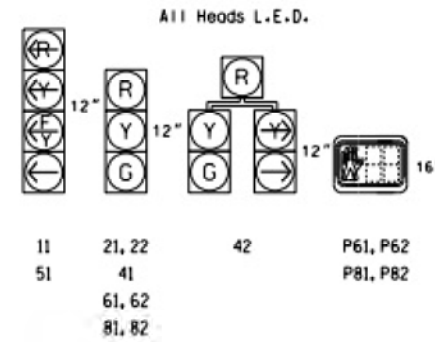
**PHASING DIAGRAM DETECTION LEGEND**



SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	EW/DF
11	-	-	-	-	-	-
21, 22	R	R	G	G	R	Y
41	R	R	R	R	G	R
42	R	R	R	R	G	R
51	-	-	-	-	-	-
61, 62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R
P61, P62	DW	W	DW	W	DW	DRK
P81, P82	DW	DW	DW	DW	W	DRK

W - Walk  
 DW - Don't Walk  
 DRK - Dark

**SIGNAL FACE I.D.**

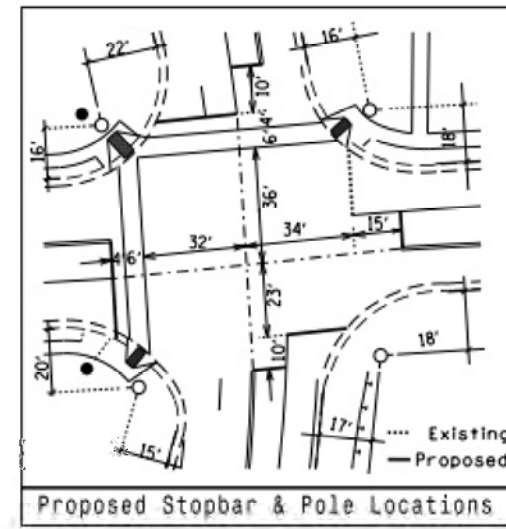
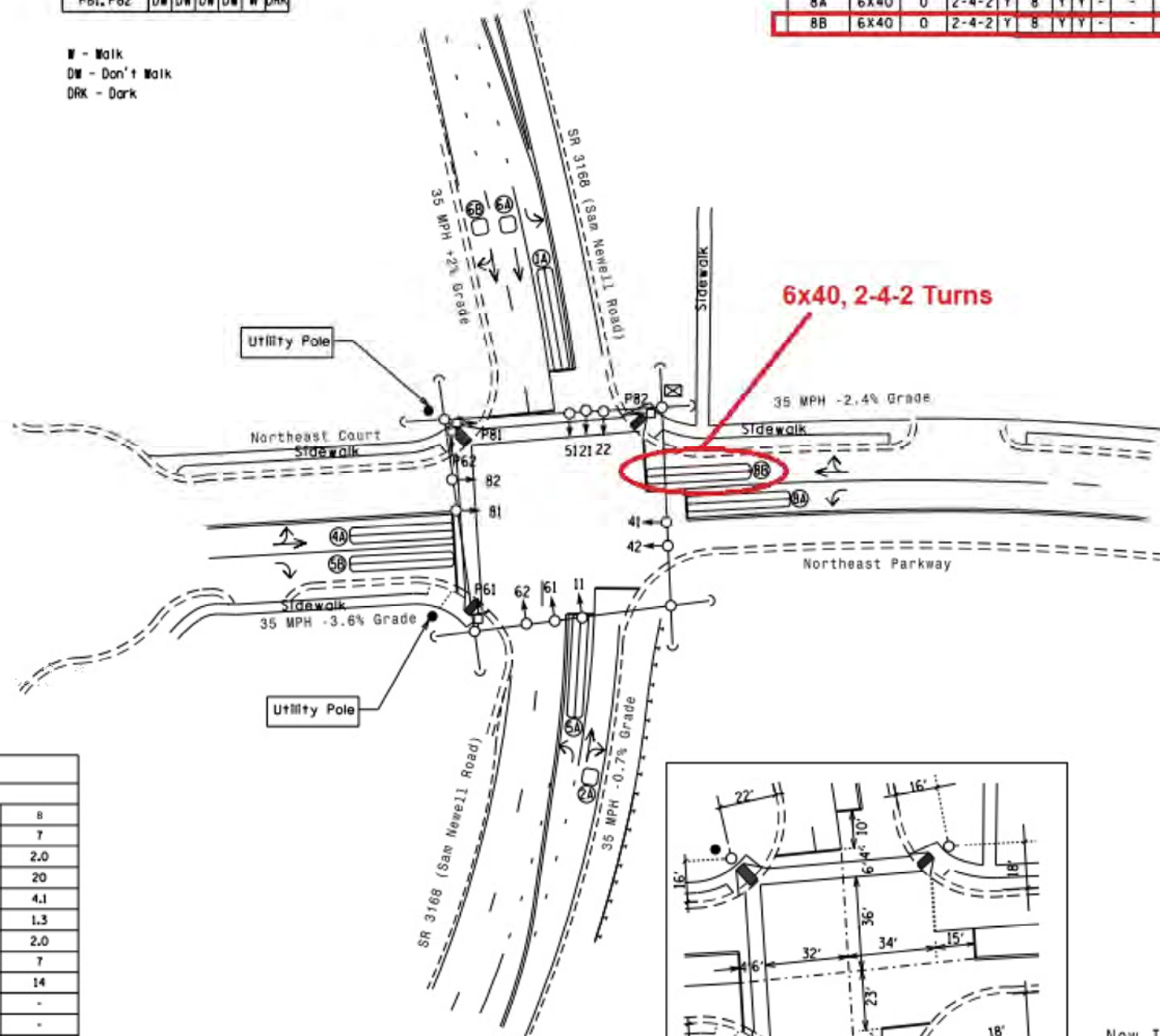


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAB
					PHASE	CALLING	EXTENSION	FULL TIME DELAY				
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	70	3	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A	6X6	70	3	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	3	Y	6	Y	Y	-	-	-	-	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

5 Phase Fully Actuated US 74 (Matthews) CLS

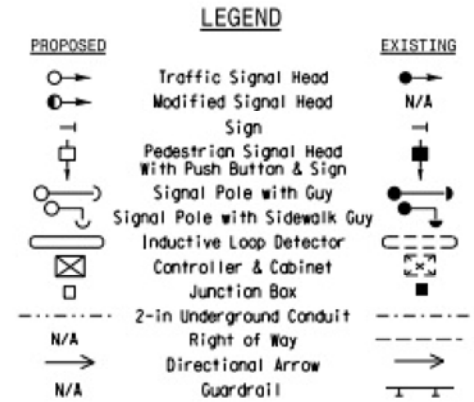
**NOTES**

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. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset # 2223.



FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1*	7	10	7	7	10	7
Extension 1*	2.0	3.0	2.0	2.0	3.0	2.0
Max Green 1*	15	50	20	15	50	20
Yellow Clearance	3.0	3.9	4.1	3.0	3.9	4.1
Red Clearance	2.4	1.7	1.4	2.1	1.7	1.3
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	7	7
Don't Walk	-	-	-	-	14	14
Seconds Per Rotation*	-	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-	-
Time To Reduce*	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
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 Max 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.



New Installation Corr. File No. 10-14-201

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

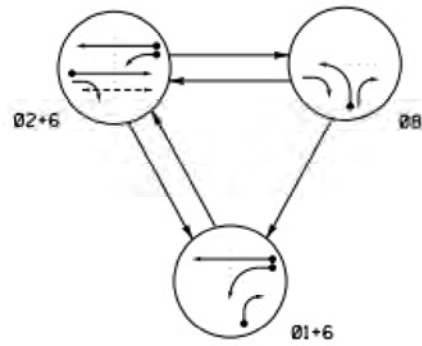
Prepared in the Office of:  

 SR 3168 (Sam Newell Road) at Northeast Parkway / Northeast Court  
 Division 10 Wecklenburg County Matthews  
 PLAN DATE: September 2018 REVIEWED BY: J. Williams  
 PREPARED BY: B. Bartosoba REVIEWED BY:  
 REVISIONS: INIT. DATE  

 J. Williams 11/9/2018  
 SIG. INVENTORY NO. 10-2223



PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	08	FLUSH
11	Y	R	Y	Y
21	R	G	R	Y
22	R	G	R	Y
61,62	G	G	R	Y
81	R	R	G	R
82	R	G	R	
P21,P22	DW	W	DW	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	355	5	Y	2	Y	Y	-	-	-	-	Y
6A	6X6	355	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

3 Phase Fully Actuated (Isolated)

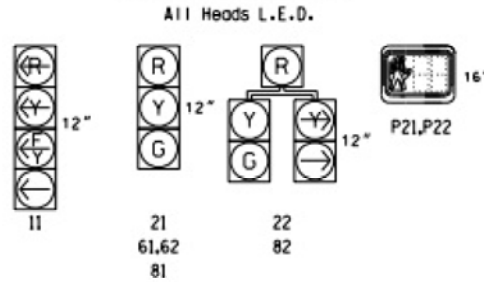
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>
- 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.
- 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.
- The Division Traffic Engineer will determine pushbutton locations.
- See roadway standard drawing 1743.01-04 for pedestal foundations.

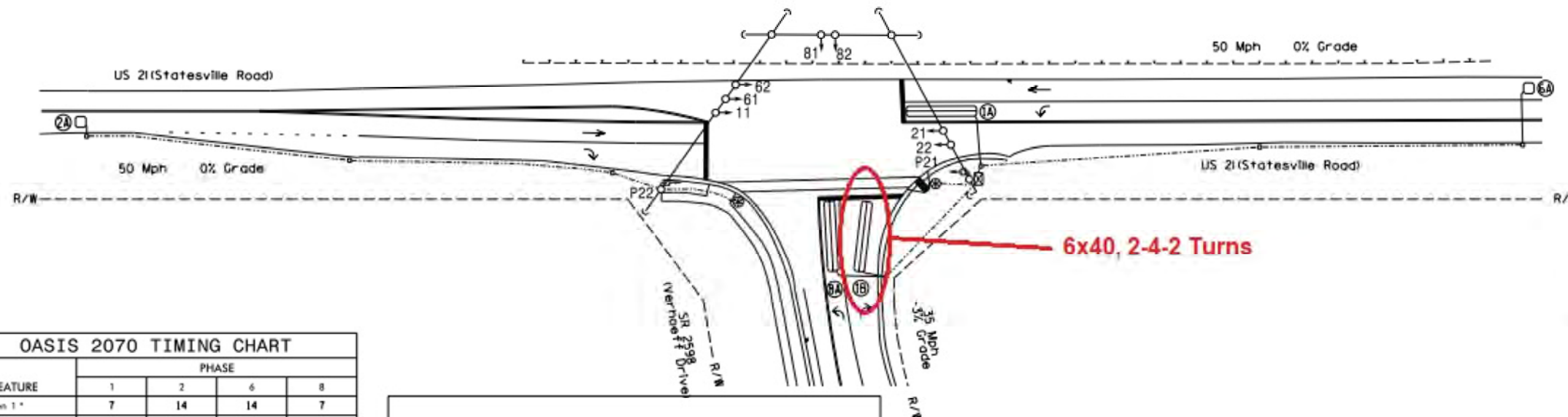
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

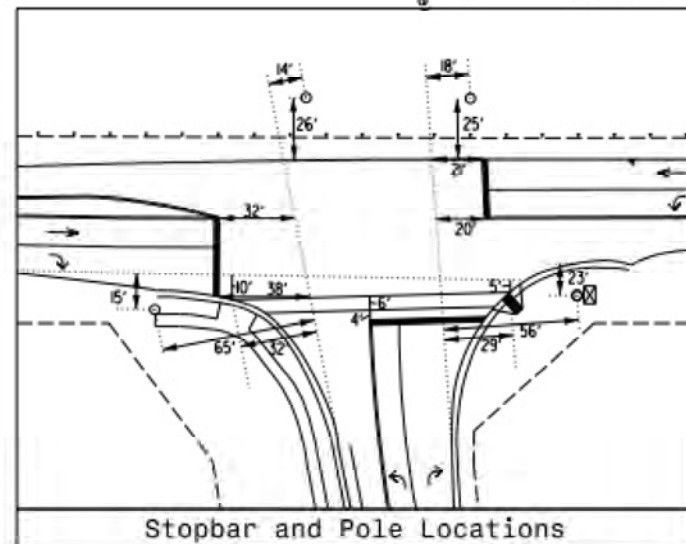


R/W-----R/W



FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	14	14	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	20	60	60	25
Yellow Clearance	3.0	4.8	4.8	3.0
Red Clearance	2.4	1.3	1.3	2.4
Red Recall	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	-
Don't Walk 1	-	25	-	-
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	40	40	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

\* These values may be held 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.



NC Dept of Transportation  
Division of Highways  
Final Drawing Date: 10/17/2018 5:30:30 AM PDT  
R.A. Zinn  
ITS & Signals Unit

LEGEND	
PROPOSED	EXISTING
	Traffic Signal Head
	Modified Signal Head
	Pedestrian Signal Head
	Signal Pole with Guy
	Inductive Loop Detector
	Controller & Cabinet
	Junction Box
	2-in Underground Conduit
	Right of Way
	Directional Arrow
	Guardrail
	Type I Pushbutton Post
	Wheelchair Ramp

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New Installation

US 21 (Statesville Road) at SR 2598 (Verhoeff Drive)

Division 10, Mecklenburg County, Huntersville

PLAN DATE: October 2018 REVIEWED BY: J. Hockaday

PREPARED BY: C. Lanson REVIEWED BY:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 28430, MICHAEL P. MOCHAMMEL

SIG. INVENTORY NO. 10-2300