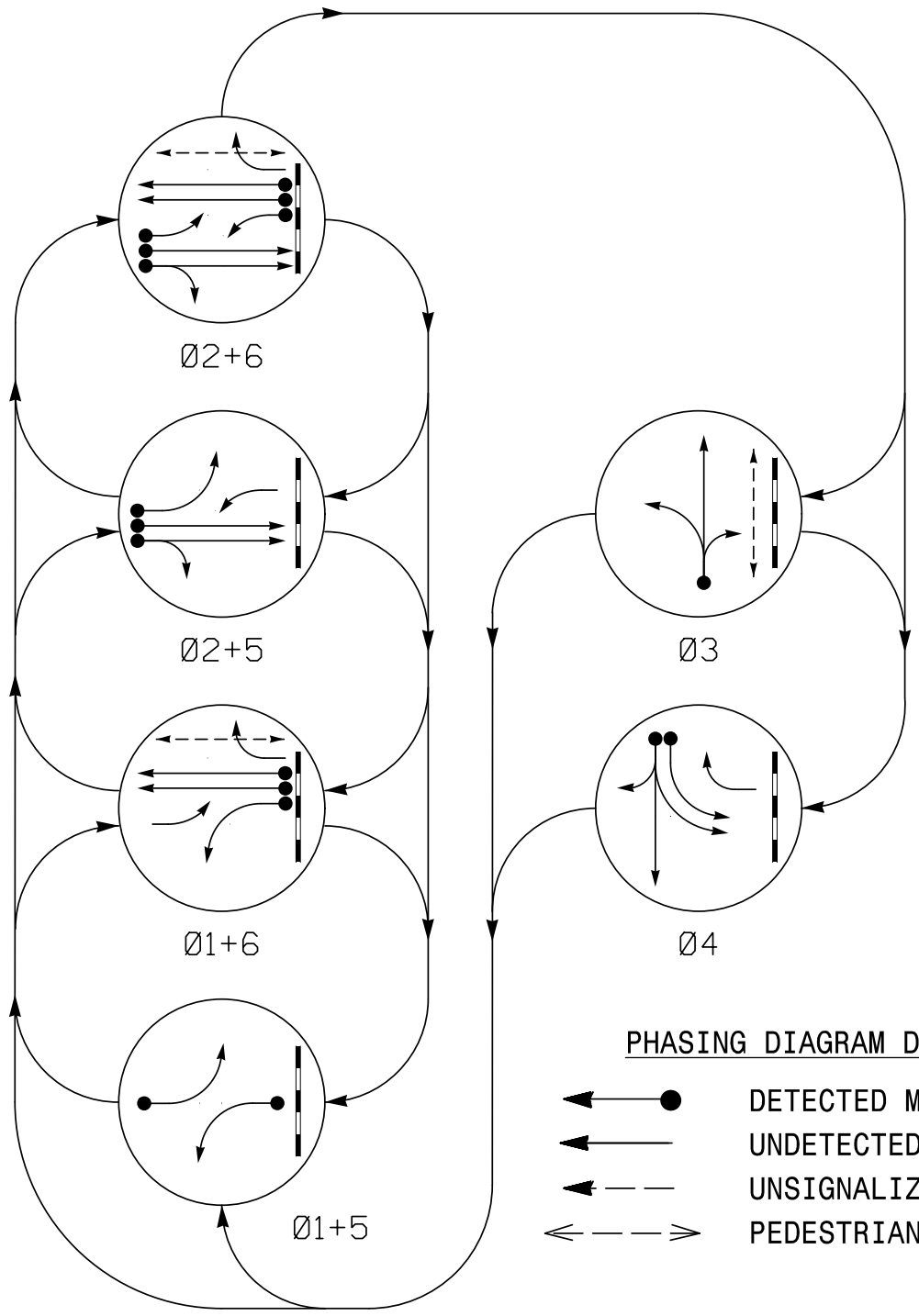


6 Phase
Fully Actuated
w/ Railroad Preemption
Signal System #D06-18 Lumberton
NC 211 (N. Roberts Avenue)

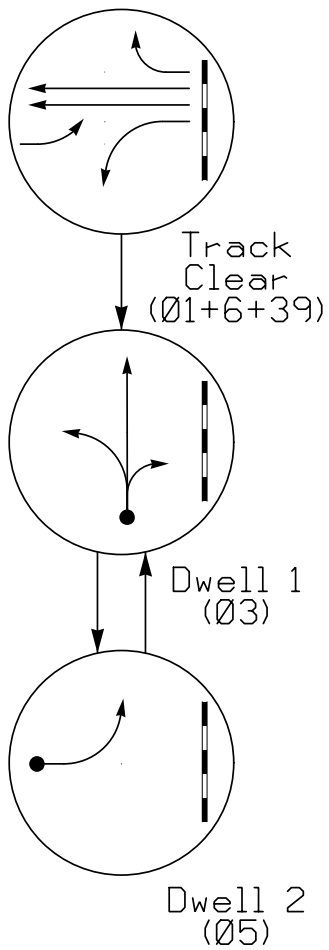
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Program phase 40 to run concurrently with all phases during normal operation. Phase 39 must be incompatible with phase 40 and included as a track clear phase.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

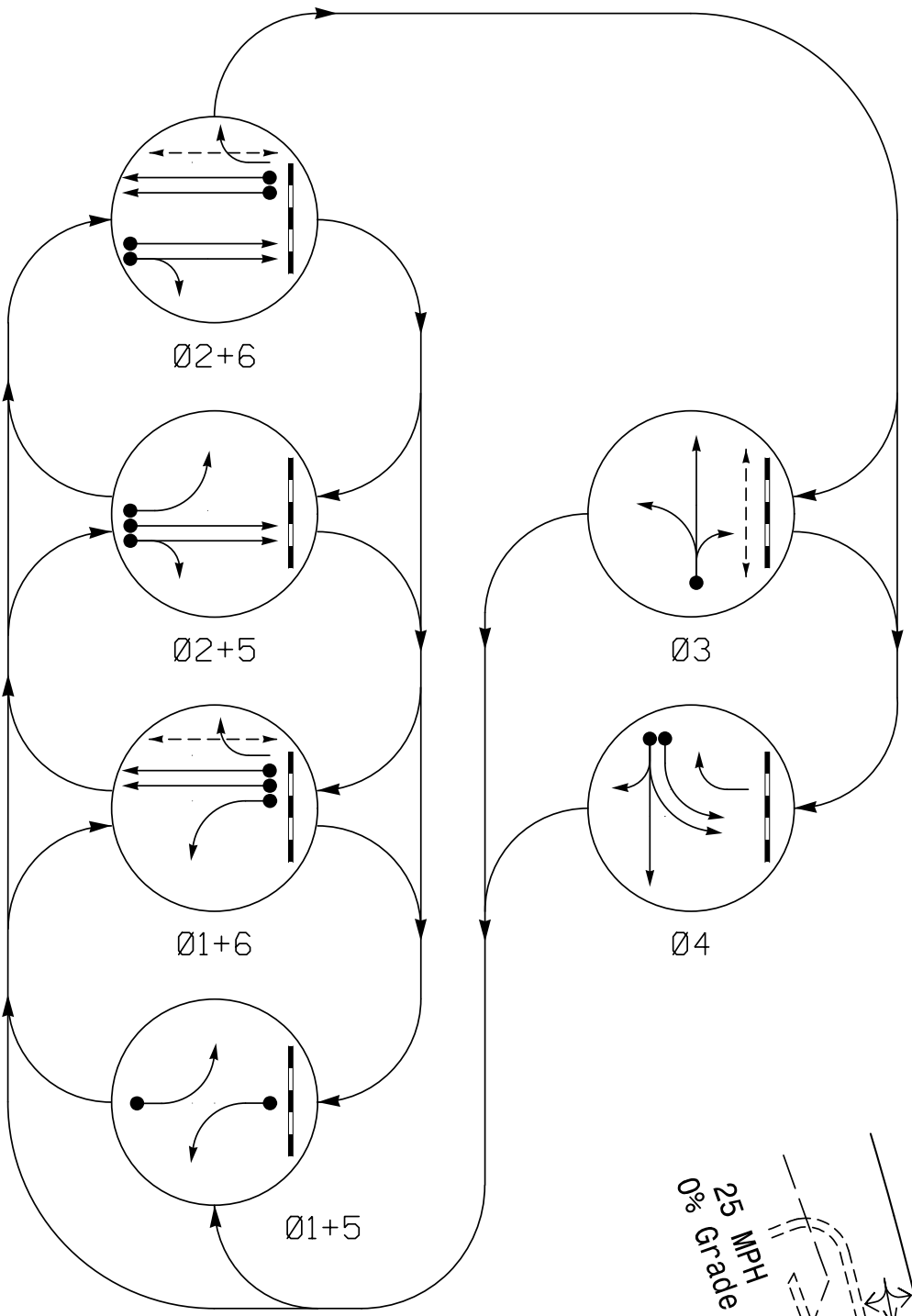
DEFAULT PHASING DIAGRAM



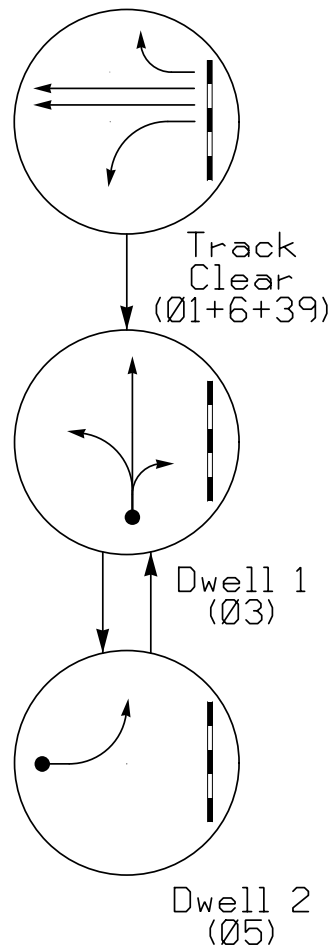
DEFAULT RAIL
PREEMPT PHASES
(High Priority)



ALTERNATE PHASING DIAGRAM



ALTERNATE RAIL
PREEMPT PHASES
(High Priority)



DEFAULT TABLE OF OPERATION

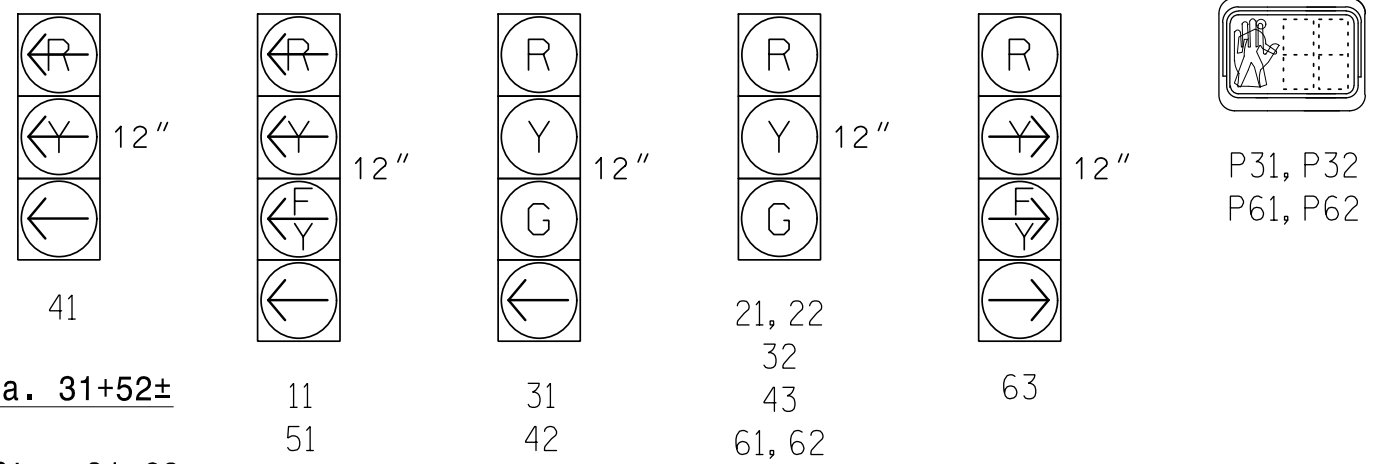
SIGNAL FACE	PHASE											
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	R R C C R	D W R L L 1	D W R L L 2	F L S H		
11	←	←	←	←	←	←	←	←	←	←		
21, 22	R	R	G	G	R	R	R	R	R	R		
31	R	R	R	R	G	G	R	R	R	R		
32	R	R	R	R	G	G	R	R	R	R		
41	←	←	←	←	←	←	←	←	←	←		
42	R	R	R	R	G	G	R	R	R	R		
43	R	R	R	R	G	G	R	R	R	R		
51	←	←	←	←	←	←	←	←	←	←		
61, 62	R	G	R	G	R	R	G	R	R	R		
63	R	←	R	←	←	←	←	←	←	←		
P31, P32	DW	DW	DW	DW	W	DW	DW	DW	DW	DRK		
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DRK		

ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE											
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	R R C C R	D W R L L 1	D W R L L 2	F L S H		
11	←	←	←	←	←	←	←	←	←	←		
21, 22	R	R	G	G	R	R	R	R	R	R		
31	R	R	R	R	G	G	R	R	R	R		
32	R	R	R	R	G	G	R	R	R	R		
41	←	←	←	←	←	←	←	←	←	←		
42	R	R	R	R	G	G	R	R	R	R		
43	R	R	R	R	G	G	R	R	R	R		
51	←	←	←	←	←	←	←	←	←	←		
61, 62	R	G	R	G	R	R	G	R	R	R		
63	R	←	R	←	←	←	←	←	←	←		
P31, P32	DW	DW	DW	DW	W	DW	DW	DW	DW	DRK		
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DRK		

SIGNAL FACE I.D.

All Heads L.E.D.



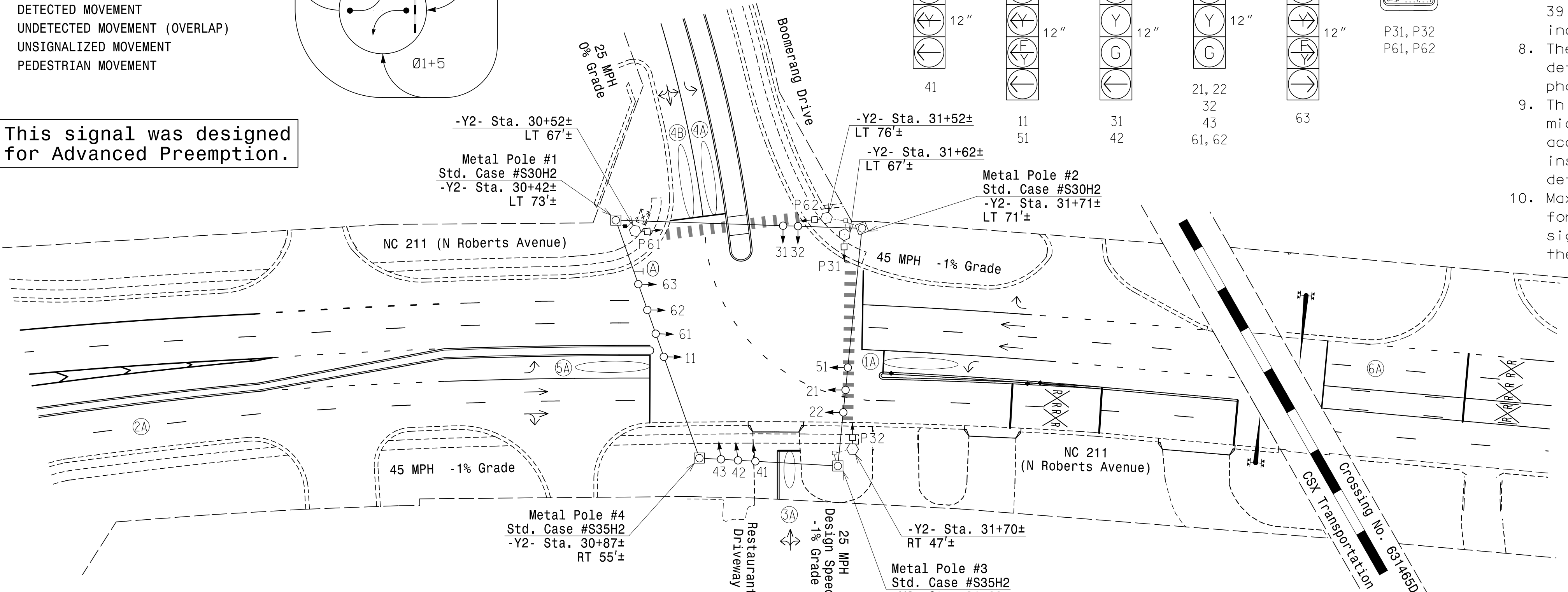
MAXTIME PREEMPTION CHART

FUNCTION		PRE 1
Type	RAIL ROAD	
Exit Phases	2, 6	
Delay	0.0	
Max Presence	0	
Enter Min Green	1	
Enter Walk	1	
Enter Ped Clear	4	
Enter Yellow Change	4.6	
Enter Red Clear	3.7	
Track Green	37	
Track Yellow Change	4.6	
Track Red Clear	2.4	
Dwell Green	7	
Exit Min Green	255 *	
Exit Yellow Change	25.5 *	
Exit Red Clear	25.5 *	
Call Extend Time	1.0	
Exit Type	EXIT PHASES	
Ped Clear Through Yellow	Y	
Require All Red Entry	N	

* Directs controller to use default phase timing.

This signal was designed for Advanced Preemption.

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



MAXTIME TIMING CHART

FEATURE	PHASE						39	40
	1	2	3	4	5	6		
Walk *	-	-	13	-	-	14		
Ped Clear *	-	-	22	-	-	17		
Min Green	7	12	7	7	7	12		
Passage *	2.0	2.0	2.0	2.0	2.0	2.0		
Max 1 *	15	90	20	20	15	90		
Yellow Change	3.0	4.6	3.2	3.2	3.0	4.6	4.6	4.6
Red Clear	2.4	1.8	3.3	3.7	3.4	1.8	2.4	3.7
Added Initial *	-	-	-	-	-	-		
Maximum Initial *	-	-	-	-	-	-		
Time Before Reduction *	-	-	-	-	-	-		
Time To Reduce *	-	-	-	-	-	-		
Minimum Gap	-	-	-	-	-	-		
Advance Walk	-	-	6	-	-	7		
Non Lock Detector	X	-	-	X	X	-		
Vehicle Recall	-	MIN RECALL	-	-	-	MIN RECALL		
Dual Entry	-	-	-	-	-	-		

* 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.

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR				PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	NEW CARD
1A	6X40	0	*	*	1	15**	-	X	-	X	*
					6 #	-	-	X	-	X	*
3A	6X20	0	*	*	3	5	-	X	-	X	*
4A	6X40	0	*	*	4	-	-	X	-	X	*
4B	6X40	0	*	*	4	5	-	X	-	X	*
					5	15**	-	X	-	X	*
5A	6X40	0	*	*	2 #	-	-	X	-	X	*

* Multi-zone Microwave Detection Zone

** Disable Delay During Alternate Phasing

Disable Phase Call for Loop During Alternate Phasing

RADAR DETECTION
SYSTEM

FUNCTION	SENSOR 1 - (2A)	SENSOR 2 - (6A)
Channel	1	2
Phase	2	6
Direction of Travel	EB	WB
Detection Zone (ft)	500 - 100	500 - 100
Enable Speed	Y	Y
Speed Range (mph)	35 - 100	35 - 100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	2.5 - 6.5	2.5 - 6.5

LEGEND

PROPOSED	EXISTING
○ Traffic Signal Head	● N/A
○ Modified Signal Head	○ N/A
○ Pedestrian Signal Head	○ N/A
○ Signal Pole with Guy	○ N/A
○ Signal Pole with Sidewalk Guy	○ N/A
○ Inductive Loop Detector	○ N/A
○ Controller & Cabinet	○ N/A
○ Junction Box	○ N/A
○ 2-in Underground Conduit	○ N/A
○ Right of Way	○ N/A
○ Directional Arrow	○ N/A
○ Directional Drill	○ N/A
○ Out of Pavement Detector	○ N/A
○ Microwave Detection Zone	○ N/A
○ Railroad Tracks	○ N/A
○ Railroad Gate and Flasher	○ N/A
○ Right Arrow "ONLY" Sign (R3-5R)	○ N/A

Signal Upgrade - Final Design

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NC License Number F-0991

Prepared for the Offices of:
Transportation Mobility and Safety
University of North Carolina
Signal Design Section

NC 211 (N Roberts Avenue)
at
Boomerang Drive /
Restaurant Driveway
Robeson County Lumberton
Division 6
PLAN DATE: Jan 2026
REVIEWED BY: B.J. Roth-Roffy
PREPARED BY: J.C. Grimm
REVIEWED BY: T.M. Woody

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
RENT M. MOODY
1/27/2026
DATE
SIC. INVENTORY NO. 06-1387