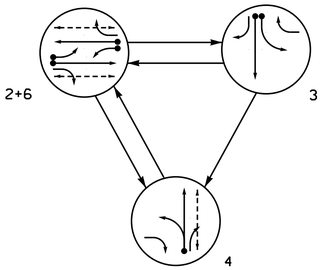
Docusign Envelope ID: 05876772-1DAF-4309-B21B-9789C5DB6FF4

PROJECT REFERENCE NO.	SHEET NO.
HL-0065	Sig. 5.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES

(Medium Priority)

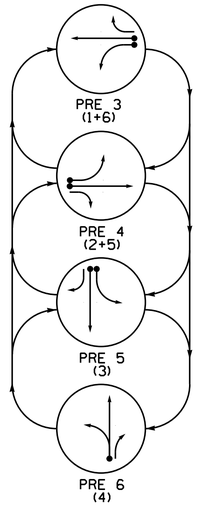
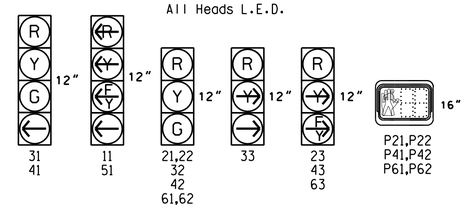


TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6	3	4	PREEV 3	PREEV 4	PREEV 5	PREEV 6	FLASH
11	F̶Y̶	R̶	R̶	—	R̶	R̶	R̶	R̶
21,22	G	R	R	R	G	R	R	R
23	F̶Y̶	R	F̶Y̶	R	F̶Y̶	R	R	R
31	R	G̶	R	R	R	G̶	R	R
32	R	G	R	R	R	G	R	R
33	R	—	R	R	R	—	R	R
41	R	R	G̶	R	R	R	G̶	R
42	R	R	G	R	R	R	G	R
43	R	R	F̶Y̶	R	R	R	F̶Y̶	R
51	F̶Y̶	R̶	R̶	R̶	—	R̶	R̶	R̶
61,62	G	R	R	G	R	R	R	R
63	F̶Y̶	F̶Y̶	R	F̶Y̶	R	R	R	R
P21,P22	W	DW	DW	DW	DW	DW	DW	DRK
P41,P42	DW	DW	W	DW	DW	DW	DW	DRK
P61,P62	W	DW	DW	DW	DW	DW	DW	DRK

SIGNAL FACE I.D.

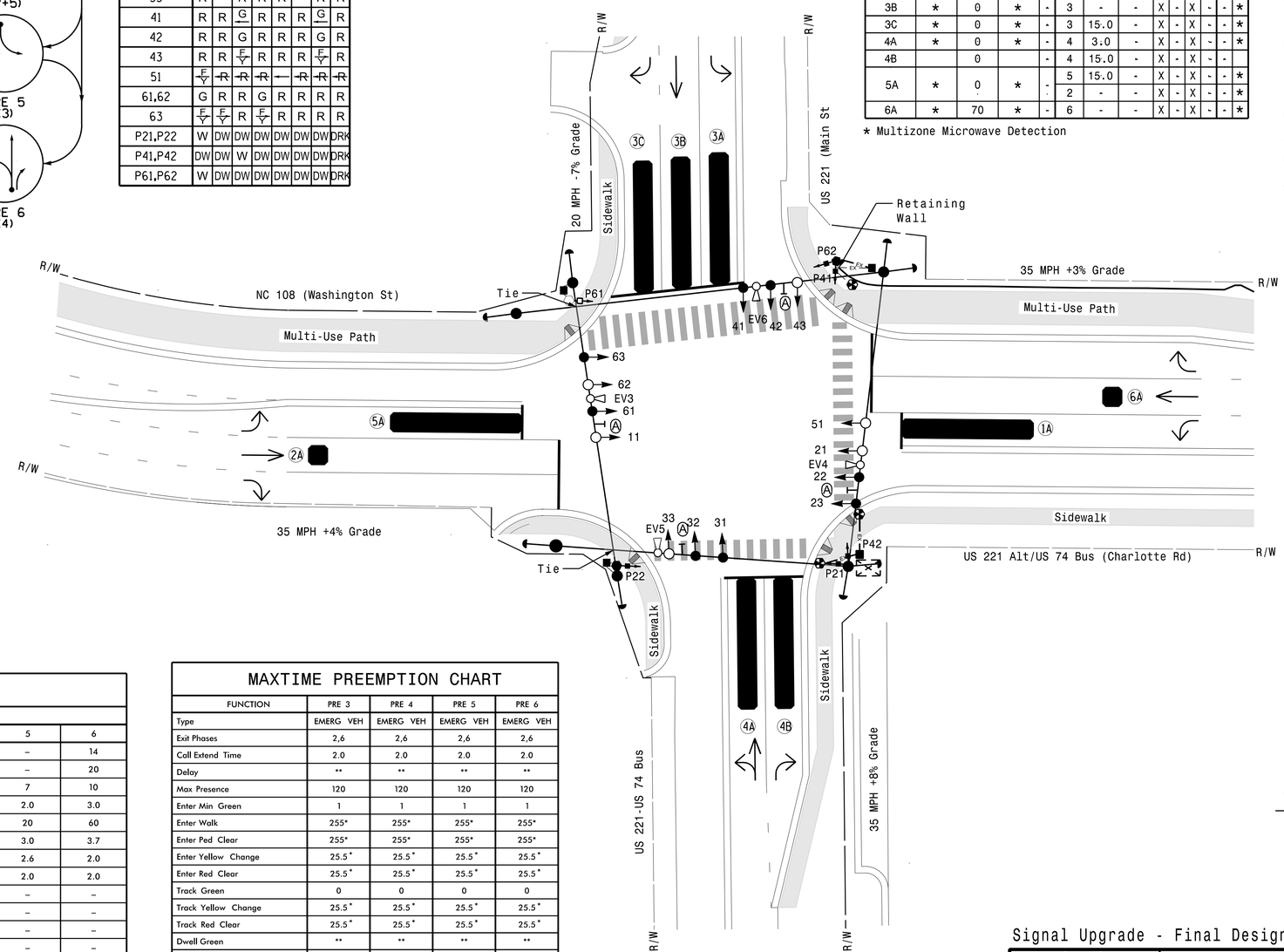
All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING								
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	SYSTEM LOOP	NEW CARD
1A	*	0	*	-	1	15.0	-	X	-	X	-	-	*
					6	-	-	X	-	X	-	-	*
2A	*	70	*	-	2	-	-	X	-	X	-	-	*
3A	*	0	*	-	3	3.0	-	X	-	X	-	-	*
3B	*	0	*	-	3	-	-	X	-	X	-	-	*
3C	*	0	*	-	3	15.0	-	X	-	X	-	-	*
4A	*	0	*	-	4	3.0	-	X	-	X	-	-	*
4B		0		-	4	15.0	-	X	-	X	-	-	
5A	*	0	*	-	5	15.0	-	X	-	X	-	-	*
					2	-	-	X	-	X	-	-	*
6A	*	70	*	-	6	-	-	X	-	X	-	-	*

* Multizone Microwave Detection



3 Phase
Fully Actuated With EVP
Signal System #: D13-24_Rutherfordton

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and 4 may be reversed.
4. Reposition existing sign Ⓐ.
5. Renumber existing signal heads 12, 13, 22, and 23 to 22, 23, 61, and 63, respectively. Renumber existing pedestrian signal heads P11, P12, and P22 to P21, P22, and P62 respectively.
6. Reposition existing signal head numbered 61.
7. Set all detector units to presence mode.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. To provide a leading pedestrian interval on phases 2, 4, and 6, program FYA heads numbered 11, 23, 43, 51, and 63 to delay for 7 seconds after the start of the phases 2, 4, and 6 walk interval, respectively. See Electrical Details for programming.
11. The Division Traffic Engineer will determine the Delay Before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
12. This intersection features an optical preemption system. Shown locations of optical detectors are conceptual only.
13. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
14. Maximum times shown in the timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Non-Intrusive Detection Zone	
	Controller & Cabinet	
	Junction Box	
	Type I Pushbutton Post	
	Type II Signal Pedestal	
X-DD	Directional Drill	DD
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
	EV Preemption Detector	
	Street Name Sign	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	–	14	–	14	–	14
Ped Clear	–	12	–	15	–	20
Min Green *	7	10	7	7	7	10
Passage *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	20	60	40	40	20	60
Yellow Change	3.0	3.7	3.2	3.4	3.0	3.7
Red Clear	2.4	2.0	2.8	2.0	2.6	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Added Initial *	–	–	–	–	–	–
Maximum Initial *	–	–	–	–	–	–
Time Before Reduction *	–	–	–	–	–	–
Time To Reduce *	–	–	–	–	–	–
Minimum Gap	–	–	–	–	–	–
Advance Walk	–	**	–	**	–	**
Non Lock Detector	X	–	X	X	X	–
Vehicle Recall	–	MIN RECALL	–	–	–	MIN RECALL
Dual Entry	–	–	–	–	–	–

* These values may be field adjusted. Do not adjust Min Green and Passage times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.
** See Note 10.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 3	PRE 4	PRE 5	PRE 6
Type	EMERG VEH	EMERG VEH	EMERG VEH	EMERG VEH
Exit Phases	2,6	2,6	2,6	2,6
Call Extend Time	2.0	2.0	2.0	2.0
Delay	**	**	**	**
Max Presence	120	120	120	120
Enter Min Green	1	1	1	1
Enter Walk	255*	255*	255*	255*
Enter Ped Clear	255*	255*	255*	255*
Enter Yellow Change	25.5*	25.5*	25.5*	25.5*
Enter Red Clear	25.5*	25.5*	25.5*	25.5*
Track Green	0	0	0	0
Track Yellow Change	25.5*	25.5*	25.5*	25.5*
Track Red Clear	25.5*	25.5*	25.5*	25.5*
Dwell Green	**	**	**	**
Exit Min Green	255*	255*	255*	255*
Exit Yellow Change	25.5*	25.5*	25.5*	25.5*
Exit Red Clear	25.5*	25.5*	25.5*	25.5*
Exit Type	EXIT PHASES	EXIT PHASES	EXIT PHASES	EXIT PHASES
Ped Clear Through Yellow	Y	Y	Y	Y
Require All Red Entry	–	–	–	–

* Directs controller to use default phase timing.
** See Note 11.

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Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, State of North Carolina, Department of Transportation, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 221 Alt-US 74 Bus
(Charlotte Rd)/NC 108 (Washington St)
at
US 221 (Main St)/US 221-74 Bus

Division 13 Rutherford County Rutherfordton

PLAN DATE:	February 2026	REVIEWED BY:	N.K. Vlanich
PREPARED BY:	E.E. Tiller	REVIEWED BY:	N.R. Simmons

REVISIONS | INIT. | DATE

0 20
1"=20'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R. Simmons 5/12/2026
SIGNATURE DATE

SIG. INVENTORY NO. 13-0183