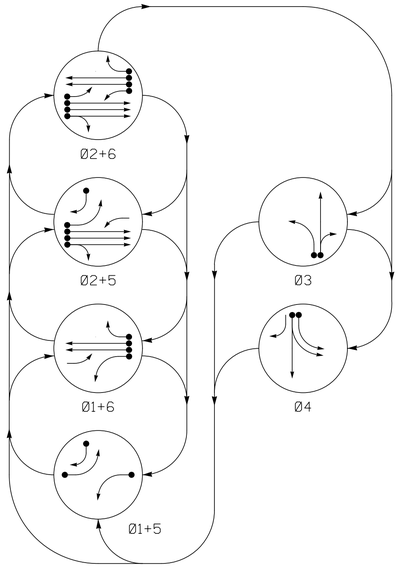
DocuSign Envelope ID: 71A6ECA9-99B4-4A07-8B92-D1E2A58F3BE5

PROJECT REFERENCE NO.	SHEET NO.
C-5703	Sig.102.0

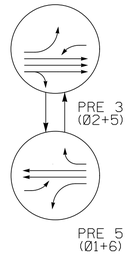
6 Phase Fully Actuated w/ Alternate Phasing Operation and Emergency Vehicle Preemption Gastonia Signal System

DEFAULT PHASING DIAGRAM



DEFAULT EV PREEMPT PHASES

(Medium Priority)



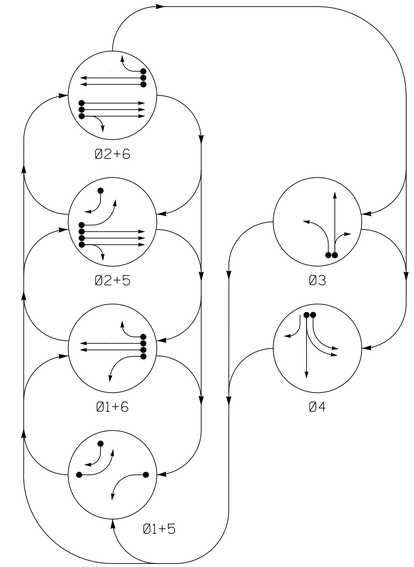
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	PRE 3	PRE 5	FLASH
11	←	←	←F Y	←F Y	←R	←R	←F Y	←	←Y
21,22,23	R	R	G	G	R	R	G	R	Y
31	R	R	R	R	G ←	R	R	R	R
32	R	R	R	R	G	R	R	R	R
41	←R	←R	←R	←R	←R	←	←R	←R	←R
42	R	R	R	R	R	G ←	R	R	R
43	R/	R	R/	R	R	G	R	R	R
51	←	←F Y	←	←F Y	←R	←R	←F Y	←	←Y
61,62,63	R	G	R	G	R	R	R	G	Y

ALTERNATE PHASING TABLE OF OPERATION

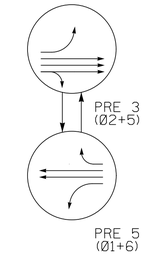
SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	PRE 3	PRE 5	FLASH
11	←	←	←R	←R	←R	←R	←R	←	←Y
21,22,23	R	R	G	G	R	R	G	R	Y
31	R	R	R	R	G ←	R	R	R	R
32	R	R	R	R	G	R	R	R	R
41	←R	←R	←R	←R	←R	←	←R	←R	←R
42	R	R	R	R	R	G ←	R	R	R
43	R/	R	R/	R	R	G	R	R	R
51	←	←R	←	←R	←R	←R	←	←R	←Y
61,62,63	R	G	R	G	R	R	R	G	Y

ALTERNATE PHASING DIAGRAM



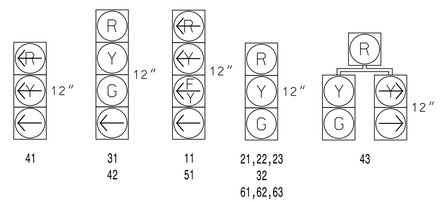
ALTERNATE EV PREEMPT PHASES

(Medium Priority)



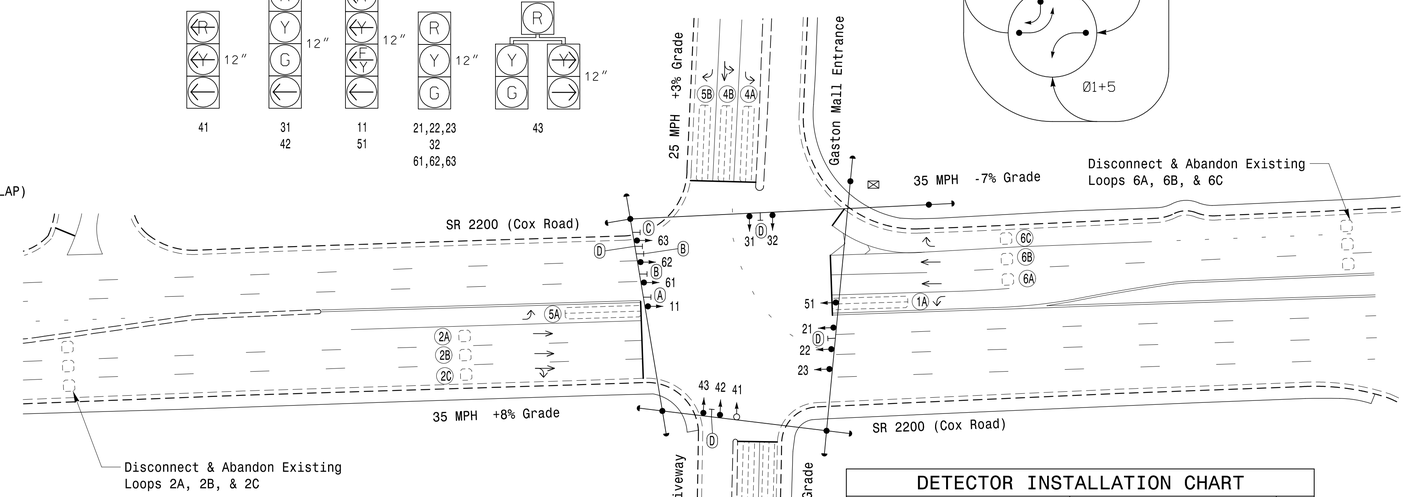
SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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



NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Reposition existing signal heads numbered 42 & 43.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Remove existing Left Arrow "ONLY" sign-(R3-5L) and existing Through Arrow "ONLY" signs-(R3-5A).
10. Pavement markings are existing.
11. The City Engineer or their representative will determine the hours of use for each phasing plan.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
13. Disconnect and abandon existing loops 2A, 2B, 2C, 6A, 6B, and 6C, and relabel existing loops 2D, 2E, 2F, 6D, 6E, and 6F as 2A, 2B, 2C, 6A, 6B, and 6C, respectively.
14. Install new cabinet on the existing cabinet foundation.
15. Existing signal heads 41 & 42 have been relabeled to 42 & 43, respectively.
16. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
17. Reconnect lead-in cable to separate loops 2A, 2B, & 2C and 6A, 6B, & 6C, as shown.
18. Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
19. City of system data:
    Controller Asset #1238.

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	
Ⓐ	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ
Ⓑ	Through Arrow "ONLY" Sign (R3-5A)	Ⓑ
Ⓒ	Right Arrow "ONLY" Sign (R3-5R)	Ⓒ
Ⓓ	Street Name Sign (D3-1)	Ⓓ

DETECTOR INSTALLATION CHART

DETECTOR LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	-	-	N	-	X
					6**	Yes	-	-	-	N	-	X
2A	6X6	90	EXIST	-	2	Yes	-	-	-	N	-	X
2B	6X6	90	EXIST	-	2	Yes	-	-	-	N	-	X
2C	6X6	90	EXIST	-	2	Yes	-	-	-	N	-	X
3A	6X40	0	2-4-2	-	3	Yes	-	-	-	N	-	X
3B	6X40	0	2-4-2	-	3	Yes	-	10	-	N	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-	X
4B	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	-	-	N	-	X
					2**	Yes	-	-	-	N	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	15	-	N	-	X
6A	6X6	90	EXIST	-	6	Yes	-	-	-	N	-	X
6B	6X6	90	EXIST	-	6	Yes	-	-	-	N	-	X
6C	6X6	90	EXIST	-	6	Yes	-	-	-	N	-	X

** Disable Phase call for loop during Alternate Phasing operation.

TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	20	90	30	30	20	90
Yellow	3.2	4.4	3.0	3.1	3.0	4.4
Red Clear	2.4	2.4	3.0	3.2	2.8	2.4
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X
Recall Position	-	MIN RECALL	-	-	-	MIN RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

* 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.

EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	-	-
Entrance Ped Clear	-	-
Entrance Min Green	1	1
Entrance Yellow Change	25.5✳	25.5✳
Entrance Red Clear	25.5✳	25.5✳
Minimum Dwell Time	7	7
Preempt Input Extension Time **	2	2
Preempt Max Time	120	120
Exit Yellow Change	25.5✳	25.5✳
Exit Red Clear	25.5✳	25.5✳

* Time defaults to time used for phase during normal operation
** Program Timing on GPS Detection Unit

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

Signal Upgrade

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

SCALE 0 40 1"=40'

SR 2200 (Cox Road) at Gaston Mall Entrance / Commercial Driveway

Division 12 Gaston County Gastonia

PLAN DATE: May 2021		REVIEWED BY: SL Phillips	
PREPARED BY: CF Davis		REVIEWED BY: KP Baumann	
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 044434 ENGINEER KEVIN P. BAUMANN

DocuSigned by: 3/11/2022
SIGNATURE DATE

SIG. INVENTORY NO. 12-1238

3/9/2022 11:17:10 AM Danielle.Curri \\kimley-horn.com\SE_RAL1\RAL_TPTD_ITS\011036569 Gastonia Signal System\3 Signals\54 - Signal Design\C121238-2021.dgn