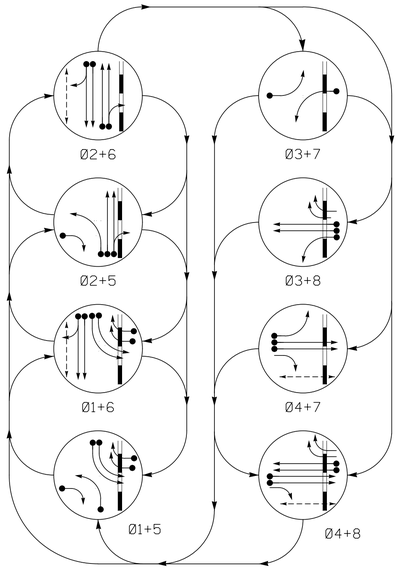
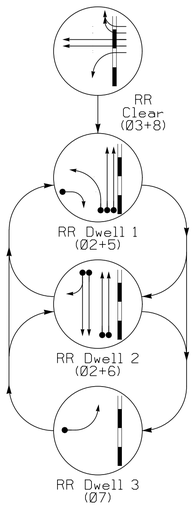
PROJECT REFERENCE NO.	SHEET NO.
C-5703	Sig.3.0

8 Phase Fully Actuated With Railroad Preemption and Emergency Vehicle Preemption Gastonia Signal System

PHASING DIAGRAM



RAIL PREEMPT PHASES
(High Priority)



EV PREEMPT PHASES
(Medium Priority)

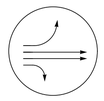


TABLE OF OPERATION

SIGNAL FACE	PHASE															
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	RR CLR	RR 1	DW RR 2	DW RR 3	PED 3	FLASH
11,12	←●	←●	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
21,22,23	R	R	G	G	R	R	R	R	G	G	R	R	Y	
31	←R	←R	←R	←R	←–	←R	←R	←–	←R	←R	←R	←R	←R	←R
41	R	R	R	R	R	R	G	G	R	R	R	R	G	R
42	R↘	R	R↘	R	R	R	G	G	R	R↘	R	R	G	R
51	←–	←R	←–	←R	←R	←R	←R	←R	←R	←–	←R	←R	←R	←R
61,62	R	G	R	G	R	R	R	R	R	R	G	R	R	Y
71	←R	←R	←R	←R	←–	←–	←R	←R	←R	←R	←–	←–	←–	←R
81,82	R	R	R	R	R	G	R	G	G	R	R	R	R	R
83,84	→–	→–	R	R	R	→–	R	→–	→–	R	R	R	R	R
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DW	DW	DW	DW	DW	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DW	DW	DW	DW	DW	DRK
SIGN Ⓐ	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	✳

✳ See Note 11

DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Yes	-	3	-	N	-	X
1B	6X60	+5	2-4-2	-	1	Yes	-	-	-	N	-	X
1C	6X60	+5	2-4-2	-	1	Yes	-	15	-	N	-	X
1D	6X60	+5	2-4-2	-	1	Yes	-	15	-	N	-	X
2A	6X6	50	EXIST	-	2	Yes	-	-	-	N	-	X
2B	6X6	50	EXIST	-	2	Yes	-	-	-	N	-	X
3A	6X60	+5	2-4-2	-	3	Yes	-	-	-	N	-	X
4A	6X6	300	EXIST	-	4	No	-	-	-	N	-	X
4B	6X6	300	EXIST	-	4	No	-	-	-	N	-	X
4C	6X40	0	2-4-2	-	4	Yes	2	5	-	N	-	X
4D	6X40	0	2-4-2	-	4	Yes	2	5	-	N	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	3	-	N	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	15	-	N	-	X
6A	6X6	70	EXIST	-	6	Yes	-	-	-	N	-	X
6B	6X6	70	EXIST	-	6	Yes	-	-	-	N	-	X
7A	6X60	0	2-4-2	-	7	Yes	-	-	-	N	-	X
8A	6X6	300	EXIST	-	8	No	-	-	-	N	-	X
8B	6X6	300	EXIST	-	8	No	-	-	-	N	-	X
8C	6X40	0	2-4-2	-	8	Yes	2	5	-	N	-	X
8D	6X40	0	2-4-2	-	8	Yes	2	5	-	N	-	X
S1	6X6	+250	EXIST	-	-	No	-	-	-	N	X	X
S2	6X6	+250	EXIST	-	-	No	-	-	-	N	X	X

EV PREEMPT

FUNCTION	PRE 3
Exit Phase(s)	2+6
Preempt Override	OFF
Delay Time	0
Ped Clear Through Yellow	Y
Terminate Phases	N
Entrance Walk	1
Entrance Ped Clear	255✳
Entrance Min Green	1
Entrance Yellow Change	25.5✳
Entrance Red Clear	25.5✳
Minimum Dwell Time	7
Preempt Input Extension Time **	2
Preempt Max Time	120
Exit Yellow Change	25.5✳
Exit Red Clear	25.5✳

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

RR PREEMPT

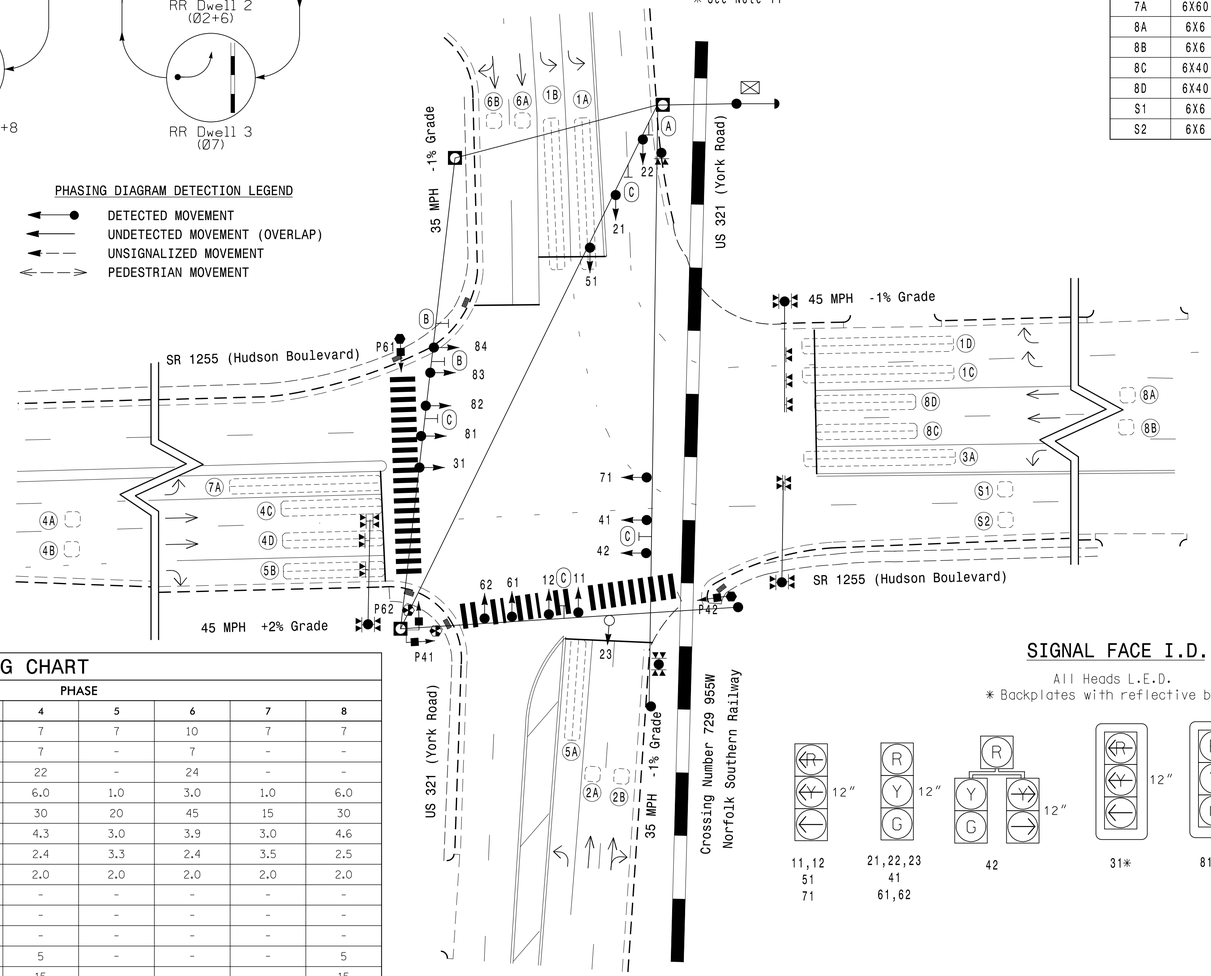
FUNCTION	PRE 1
Exit Phase(s)	3+7
Preempt Override	ON
Delay Time	0
Ped Clear Trough Yellow	Y
Terminate Phases	N
Track Clear Reservice	Y
Entrance Walk	1
Entrance Ped Clear	5
Entrance Min Green	1
Entrance Yellow Change	4.6
Entrance Red Clear	3.8
Track Clear Min Green	11
Track Clear Yellow Change	4.3
Track Clear Red Clear	3.5
Min Dwell Time	7
Exit Yellow Change	25.5✳
Exit Red Clear	25.5✳

* Time defaults to time used for phase during normal operation

THIS SIGNAL WAS DESIGNED FOR SIMULTANEOUS PREEMPTION

PHASING DIAGRAM DETECTION LEGEND

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



TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	-	-	-	7	-	7	-	-
Ped Clear	-	-	-	22	-	24	-	-
Veh. Extension *	1.0	3.0	2.0	6.0	1.0	3.0	1.0	6.0
Max 1 *	20	45	15	30	20	45	15	30
Yellow	3.0	3.9	3.0	4.3	3.0	3.9	3.0	4.6
Red Clear	3.4	2.5	3.8	2.4	3.3	2.4	3.5	2.5
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	5	-	-	-	5
Time To Reduce *	-	-	-	15	-	-	-	15
Minimum Gap	-	-	-	3.0	-	-	-	3.0
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	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.

SIGNAL FACE I.D.

All Heads L.E.D.
✳ Backplates with reflective borders

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. This location contains railroad preemption phasing. Do not program for late night flashing operation.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. 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.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. Pavement markings are existing.
11. Ensure flashing operation does not alter operation of blankout signs.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
13. Install new cabinet on the existing cabinet foundation.
14. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
15. Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
16. City of system data:
    Controller Asset #0016.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▭↓	Pedestrian Signal Head With Push Button & Sign	■↓
⊛	Type I Pushbutton Post	●
⬡	Type II Signal Pedestal	⬢
○	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	→
N/A	Railroad Tracks	▬
N/A	Curb Ramp	◢
N/A	Railroad Cantilever	⊠●
Ⓐ	"NO RIGHT TURN - TRAIN" Internally Illuminated Blankout Sign	Ⓐ
Ⓑ	"NO TURN ON RED" Sign (R10-11)	Ⓑ
Ⓒ	Street Name Sign (D3-1)	Ⓒ

PLANS PREPARED IN THE OFFICE OF:
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Signal Upgrade

Prepared For:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 30 1"=30'

US 321 (York Road) at SR 1255 (Hudson Boulevard)

Division 12 Gaston County Gastonia

PLAN DATE:	May 2021	REVIEWED BY:	SL Phillips
PREPARED BY:	DM Curri	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:
SIGNATURE 3/11/2022 DATE

SIG. INVENTORY NO. 12-0016